Dialight OPTICS LABORATORY

NVLAP Lab Code 201033-0

Test Report

Report Number: L14130 Date: Dec 9, 2014

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

Test of one Vigilant Highbay Fixture With Acrylic Lens
Unit manufacturer: Dialight Corporation
Unit model number: HE1MN4PN-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: L14130
Manufacturer: Dialight Corporation
Product Name: Vigilant Highbay
Description: Vigilant Highbay Fixture With Acrylic Lens
Model Number: HE1MN4PN-xxx

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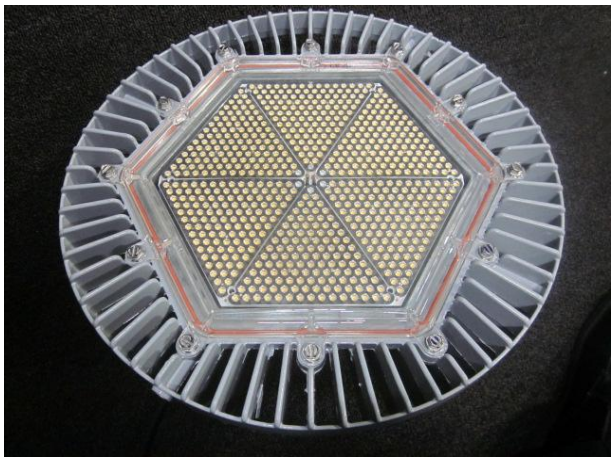
Report Summary

Sample number L14130

Dialight unit model number HE1MN4PN-xxx

Photograph(s) of sample:



*Photographs not to scale. For reference only.

Summary of Results:

	Integrating Sphere	Goniophotometer
Luminous Flux:	25580 (lumens)	25606 (lumens)
Electrical Power:	211.5 (W)	211.2 (W)
Luminous Efficacy:	120.9 (lumens/W)	121.2 (lumens/W)

Electrical Measurements:

Input Power (120VAC):	211.5	(W)
Power Factor (120VAC):	0.996	
Current ATHD % (120VAC):	5.523	
Input Power (277VAC):	204.8	(W)
Power Factor (277VAC):	0.966	
Current ATHD % (277VAC):	11.891	

Color Measurements:

Correlated Color Temperature (CCT):	3842
Color Rendering Index (CRI):	73.4
Chromaticity Coordinate (x):	0.3885
Chromaticity Coordinate (y):	0.3837
Chromaticity Coordinate (u'):	0.2276
Chromaticity Coordinate (v'):	0.3372
DUV:	0.00095

Temperature Measurements:

In Situ LED Source Temperature:	59.8	(°C)

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Test Results: Integrating Sphere

Results include unit color, flux, efficacy and electrical power for sample number L14130.
Dialight unit model number HE1MN4PN-xxx

Test Conditions:

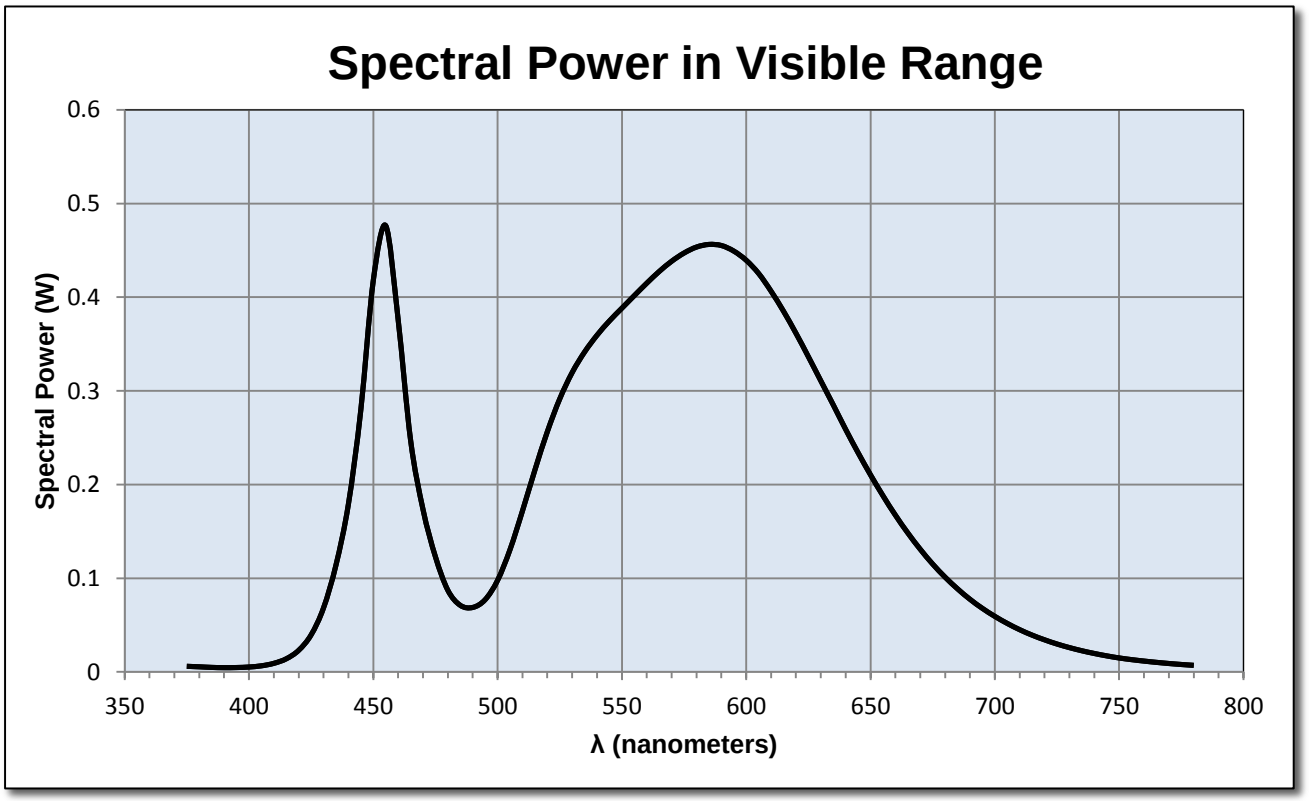
Ambient Temperature:	25 ± 1	(°C)

Electrical Measurements:

Input Voltage:	120	(VAC)
Input Current:	1.768	(A)
Input Power:	211.5	(W)
Input Power Factor:	0.996	
Current ATHD:	5.523	(%)

Photometric measurements:

Luminous Flux:	25580	(lumens)
Luminous Efficacy:	120.9	(lumens/W)
Correlated Color Temperature (CCT):	3842	(K)
CRI -Ra:	73.4	
CRI -R9:	-21.2	
DUV:	0.00095	
CIE Coordinate (x):	0.3885	
CIE Coordinate (y):	0.3837	
CIE Coordinate (u'):	0.2276	
CIE Coordinate (v'):	0.3372	



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	0.341	675	0.115
400	0.005	540	0.359	680	0.101
405	0.006	545	0.375	685	0.089
410	0.009	550	0.388	690	0.077
415	0.014	555	0.402	695	0.068
420	0.023	560	0.415	700	0.059
425	0.039	565	0.427	705	0.052
430	0.068	570	0.438	710	0.045
435	0.114	575	0.447	715	0.039
440	0.179	580	0.453	720	0.034
445	0.28	585	0.456	725	0.030
450	0.418	590	0.455	730	0.026
455	0.476	595	0.449	735	0.023
460	0.376	600	0.439	740	0.020
465	0.248	605	0.425	745	0.017
470	0.173	610	0.406	750	0.015
475	0.123	615	0.385	755	0.013
480	0.087	620	0.362	760	0.012
485	0.071	625	0.336	765	0.010
490	0.069	630	0.311	770	0.009
495	0.077	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 L14130.
Dialight unit model number HE1MN4PN-xxx

Electrical Measurements:

Input Voltage:	120	(VAC)
Input current:	1.766	(A)
Input Power:	211.2	(W)
Power Factor:	0.9967	

Photometric measurements:

Absolute Luminous Flux:	25606	(lumens)
Luminous Efficacy:	121.2	(lumens/W)

Intensity Summary:

INTENSITY (CANDLEPOWER) SUMMARY

ANGLE	ALONG	22.5	45	67.5	ACROSS	OUTPUT LUMENS
0	10108	10108	10108	10108	10108	
5	10309	10318	10316	10307	10307	383
15	10247	10174	10232	10230	10094	2186
25	10425	10521	10491	10450	10409	4111
35	10276	10350	10264	10256	10232	5939
45	7964	8011	7955	7959	7950	6489
55	3929	3866	3872	3892	3815	4633
65	741	751	734	734	753	1609
75	82	82	81	83	82	228
85	0	0	0	0	0	28
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	

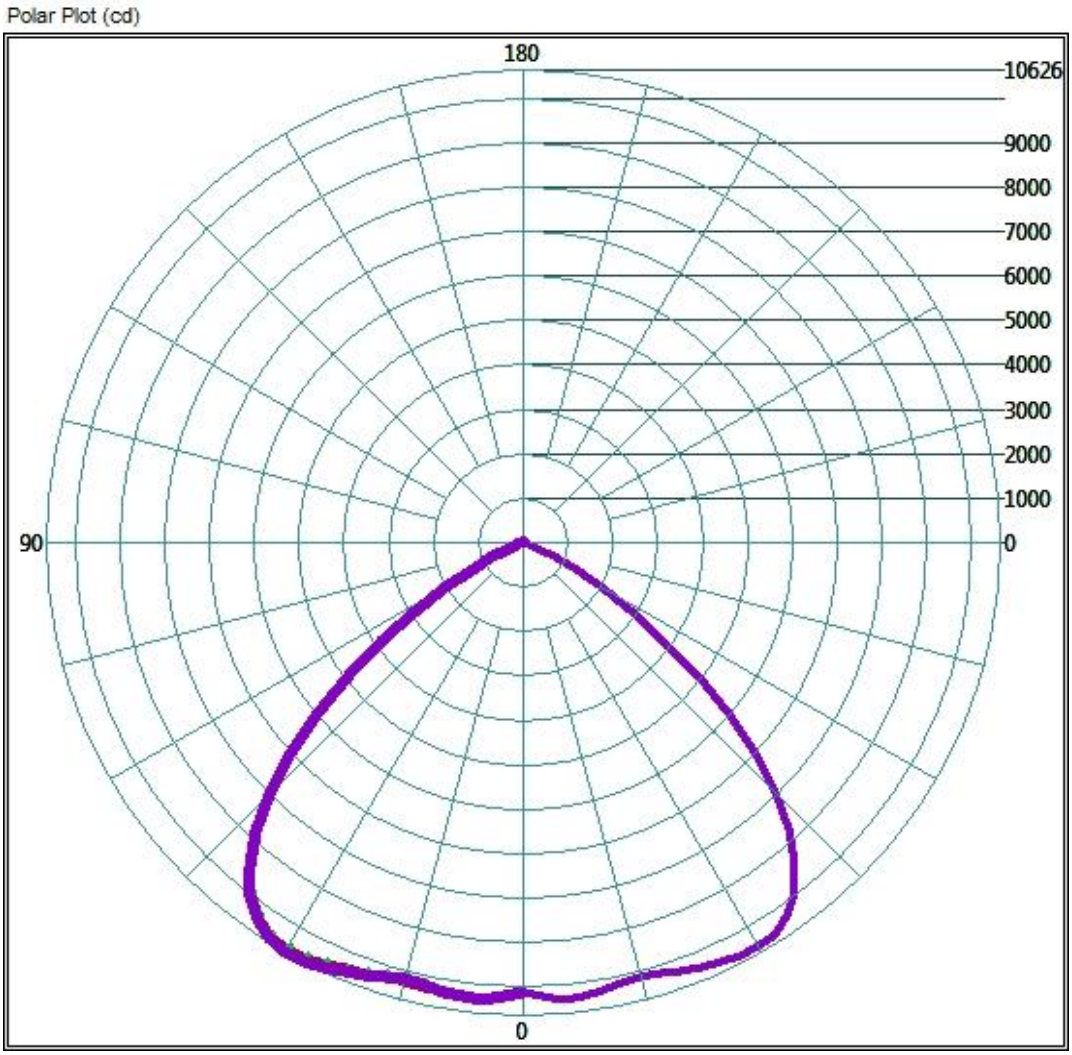
ZONAL LUMEN AND PERCENTAGES

ZONE	LUMENS	% LUMINAIRE
0-30	9460.14	36.9%
0-40	15939.5	62.2%
0-60	24861.42	97.1%
60-90	1207.2	4.7%
0-90	25605.96	100.0%
90-180	0	0.0%
0-180	25605.96	100.0%

Test Results: Goniometer

Results continued from previous page.

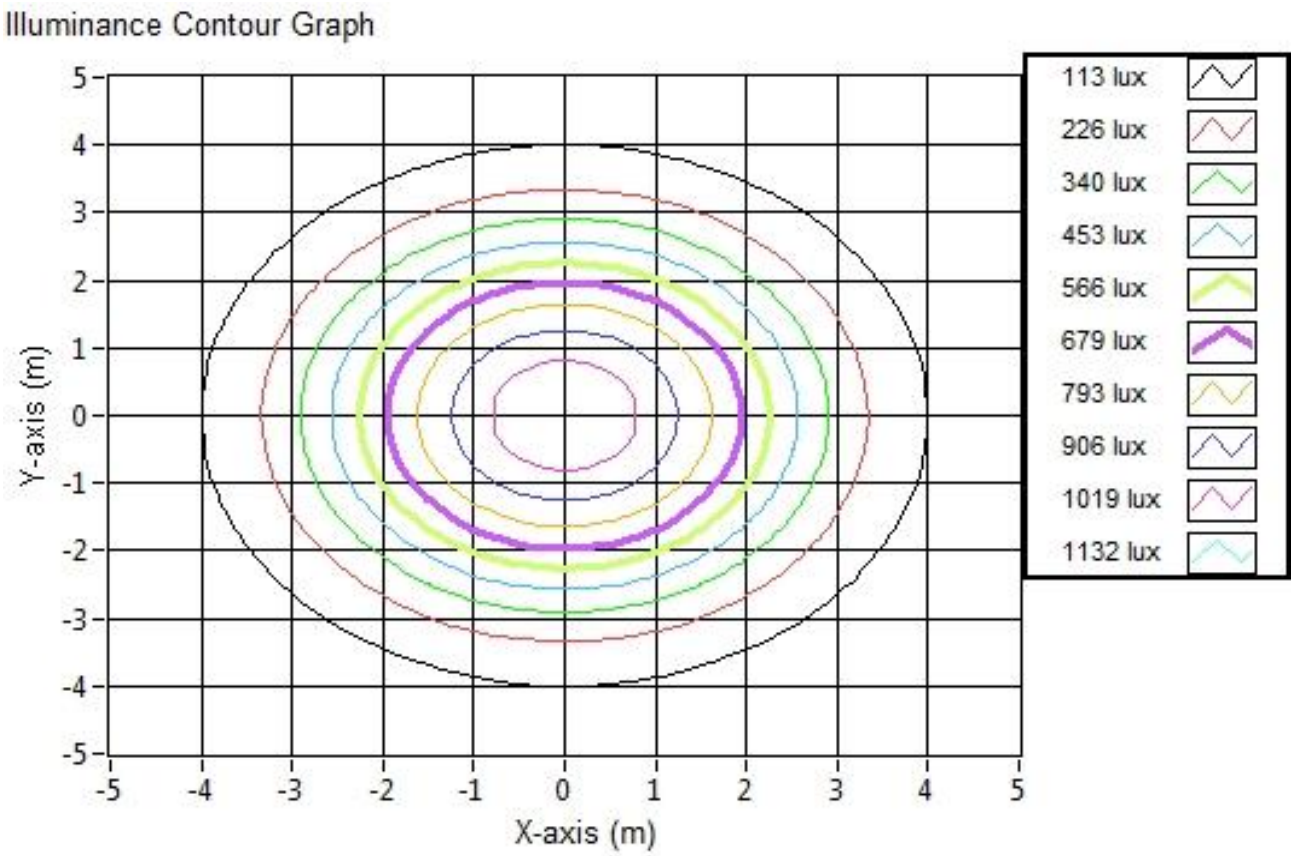
Polar Polt:



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	7.92	7.84	1088.0
6.096	15.84	15.67	272.0
9.144	23.75	23.51	120.9
12.192	31.67	31.34	68.0
15.24	39.59	39.18	43.5
18.288	47.51	47.01	30.2
21.336	55.43	54.85	22.2
24.384	63.35	62.68	17.0
27.432	71.26	70.52	13.4
30.48	79.18	78.35	10.9

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Test Results: In Situ Temperature Measurement Test

Results include maximum LED chip temperature for sample number L14130.
Dialight unit model number HE1MN4PN-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:

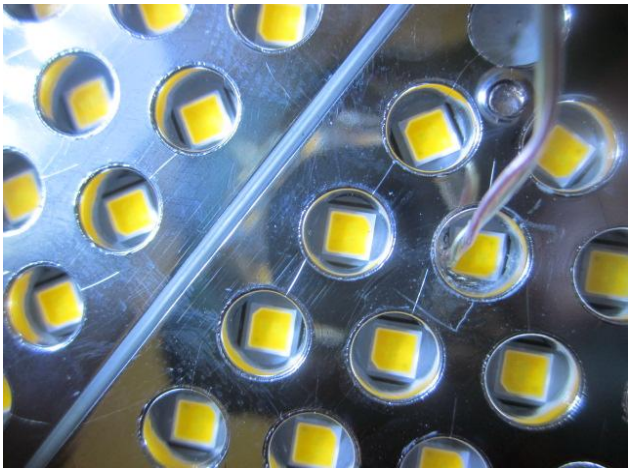
Maximum Power at Indicated Current:	0.35	(W)
Maximum Source Temperature:	113.7	(°C)

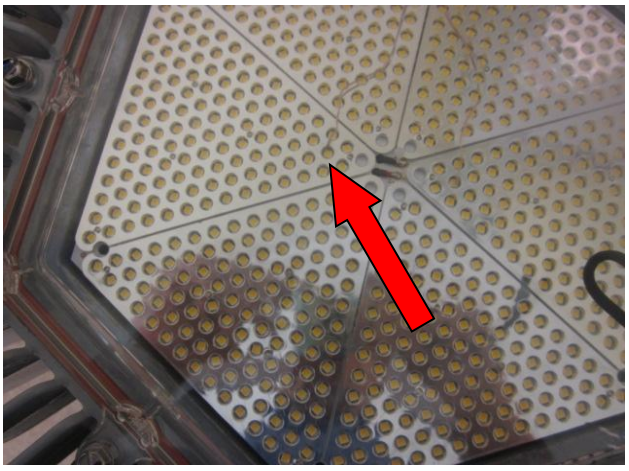
Test Conditions:

Temperature Measurement Location:	See Photographs Below	
Ambient Temperature:	25° ± 1°	(°C)
Ambient temperature at time of measurement:	24	(°C)
Relative humidity at time of measurement:	31%	

Results:

Measured LED source temperature:	59.8	(°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