

Test Report

Report Number: L16029

Date: Apr 18, 2016

Issued by:

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

Test of one Vigilant Highbay With Polycarbonate Dome Lens
Unit manufacturer: Dialight Corporation
Unit model number: HELMM4Px-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 31, 2016 through April 6, 2016

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

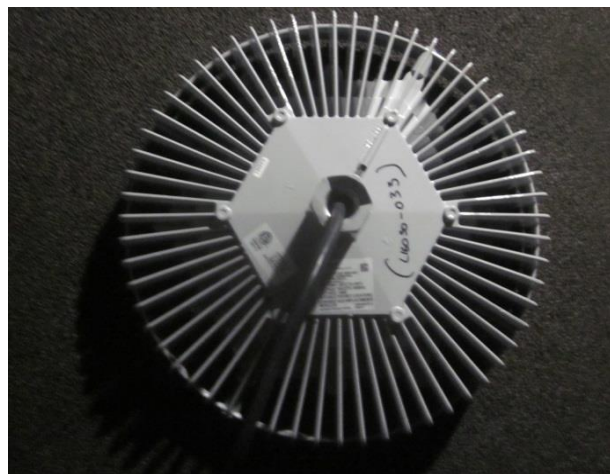
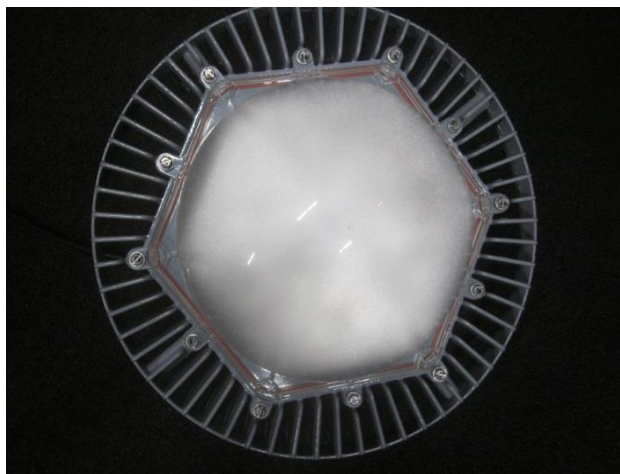
Description of sample:

Sample Number: L16029
Manufacturer: Dialight Corporation
Product Name: Vigilant Highbay
Description: Vigilant Highbay With Polycarbonate Dome Lens
Model Number: HELMM4Px-xxx

Report Summary

Sample number L16029
Dialight unit model number HELMM4Px-xxx

Photograph(s) of sample:



*Photographs not to scale. For reference only.

Summary of Results:

	<u>Integrating Sphere</u>	<u>Goniophotometer</u>
Luminous Flux:	24470 (lumens)	23875 (lumens)
Electrical Power:	213.3 (W)	212.7 (W)
Luminous Efficacy:	114.8 (lumens/W)	112.2 (lumens/W)

Electrical Measurements:

Input Power (120VAC): 213.3 (W)
 Power Factor (120VAC): 0.996
 Current ATHD % (120VAC): 5.828
 Input Power (277VAC): 205.4 (W)
 Power Factor (277VAC): 0.965
 Current ATHD % (277VAC): 12.39

Color Measurements:

Correlated Color Temperature (CCT): 3984
 Color Rendering Index (CRI): 83.1
 Chromaticity Coordinate (x): 0.383
 Chromaticity Coordinate (y): 0.384
 Chromaticity Coordinate (u'): 0.224
 Chromaticity Coordinate (v'): 0.337
 DUV: 0.0025

Temperature Measurements:

In Situ LED Source Temperature: 62.6 (°C)

Test Results: Integrating Sphere

Results include unit color, flux, efficacy and electrical power for sample number L16029.
Dialight unit model number HELMM4Px-xxx

Test Conditions:

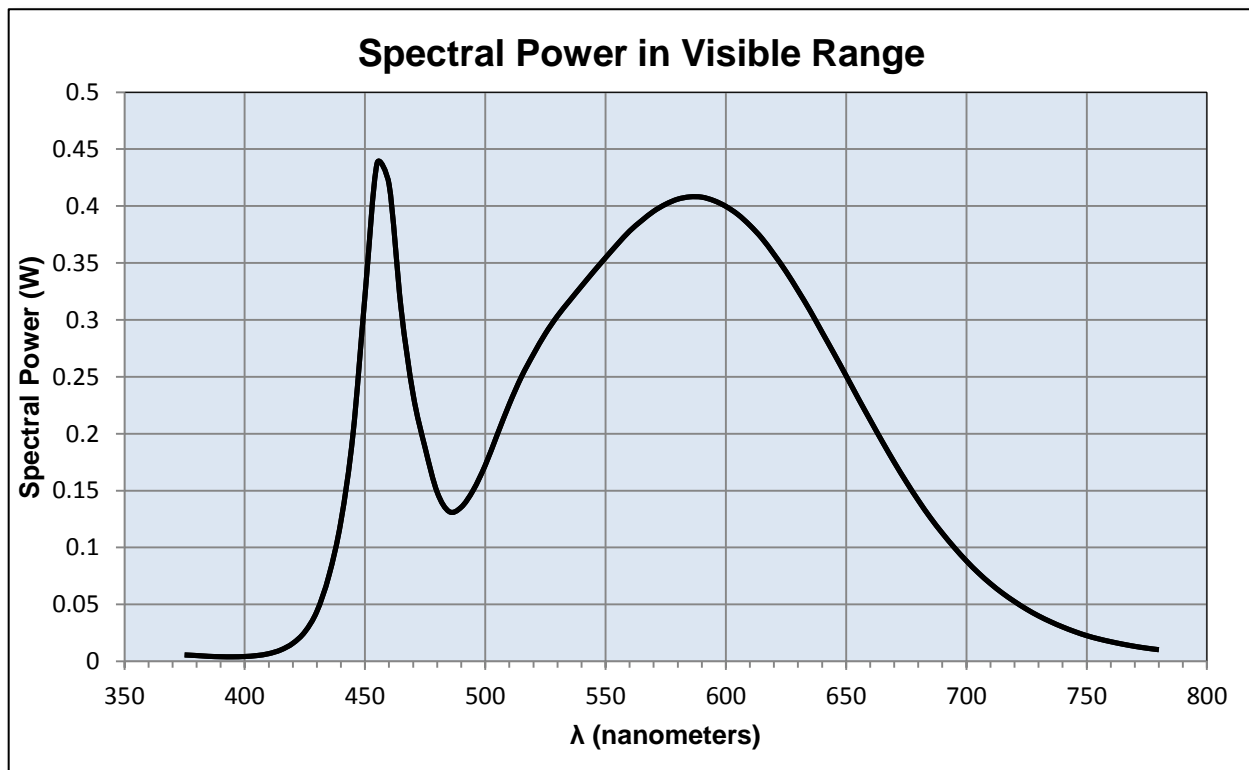
Ambient Temperature: 25 ± 1 (°C)

Electrical Measurements:

Input Voltage: 120 (VAC)
Input Current: 1.784 (A)
Input Power: 213.3 (W)
Input Power Factor: 0.996
Current ATHD: 5.828 (%)

Photometric measurements:

Luminous Flux: 24470 (lumens)
Luminous Efficacy: 114.8 (lumens/W)
Correlated Color Temperature (CCT): 3984 (K)
CRI -Ra: 83.1
CRI -R9: 19.7
DUV: 0.0025
CIE Coordinate (x): 0.383
CIE Coordinate (y): 0.384
CIE Coordinate (u'): 0.224
CIE Coordinate (v'): 0.337



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	0.006	515	0.250	655	0.231
380	0.005	520	0.270	660	0.212
385	0.004	525	0.288	665	0.193
390	0.004	530	0.303	670	0.175
395	0.004	535	0.317	675	0.158
400	0.004	540	0.330	680	0.141
405	0.005	545	0.342	685	0.126
410	0.007	550	0.355	690	0.113
415	0.010	555	0.367	695	0.100
420	0.016	560	0.378	700	0.088
425	0.026	565	0.387	705	0.078
430	0.044	570	0.395	710	0.068
435	0.075	575	0.402	715	0.060
440	0.123	580	0.406	720	0.053
445	0.199	585	0.408	725	0.046
450	0.321	590	0.408	730	0.040
455	0.437	595	0.405	735	0.035
460	0.419	600	0.400	740	0.030
465	0.310	605	0.393	745	0.026
470	0.234	610	0.383	750	0.023
475	0.187	615	0.372	755	0.020
480	0.149	620	0.358	760	0.017
485	0.132	625	0.343	765	0.015
490	0.135	630	0.326	770	0.013
495	0.150	635	0.308	775	0.012
500	0.172	640	0.289	780	0.010
505	0.199	645	0.270		
510	0.226	650	0.251		

Test Results: Goniometer

Results include unit flux, distribution, efficacy, and electrical power for sample number L16029.
Dialight unit model number HELMM4Px-xxx

Electrical Measurements:

Input Voltage: 120 (VAC)
Input current: 1.77 (A)
Input Power: 212.7 (W)
Power Factor: 0.996

Photometric measurements:

Absolute Luminous Flux: 23875 (lumens)
Luminous Efficacy: 112.2 (lumens/W)

Intensity Summary:

INTENSITY (CANDLEPOWER) SUMMARY						
ANGLE	ALONG	23	45	68	ACROSS	OUTPUT LUMENS
0	8505	8505	8505	8505	8505	
5	8551	8551	8551	8551	8551	319
15	8895	8895	8895	8895	8895	1873
25	9278	9278	9278	9278	9278	3643
35	8712	8712	8712	8712	8712	5125
45	6664	6664	6664	6664	6664	5420
55	3732	3732	3732	3732	3732	4107
65	1514	1514	1514	1514	1514	2140
75	509	509	509	509	509	829
85	262	262	262	262	262	351
95	0	0	0	0	0	66
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

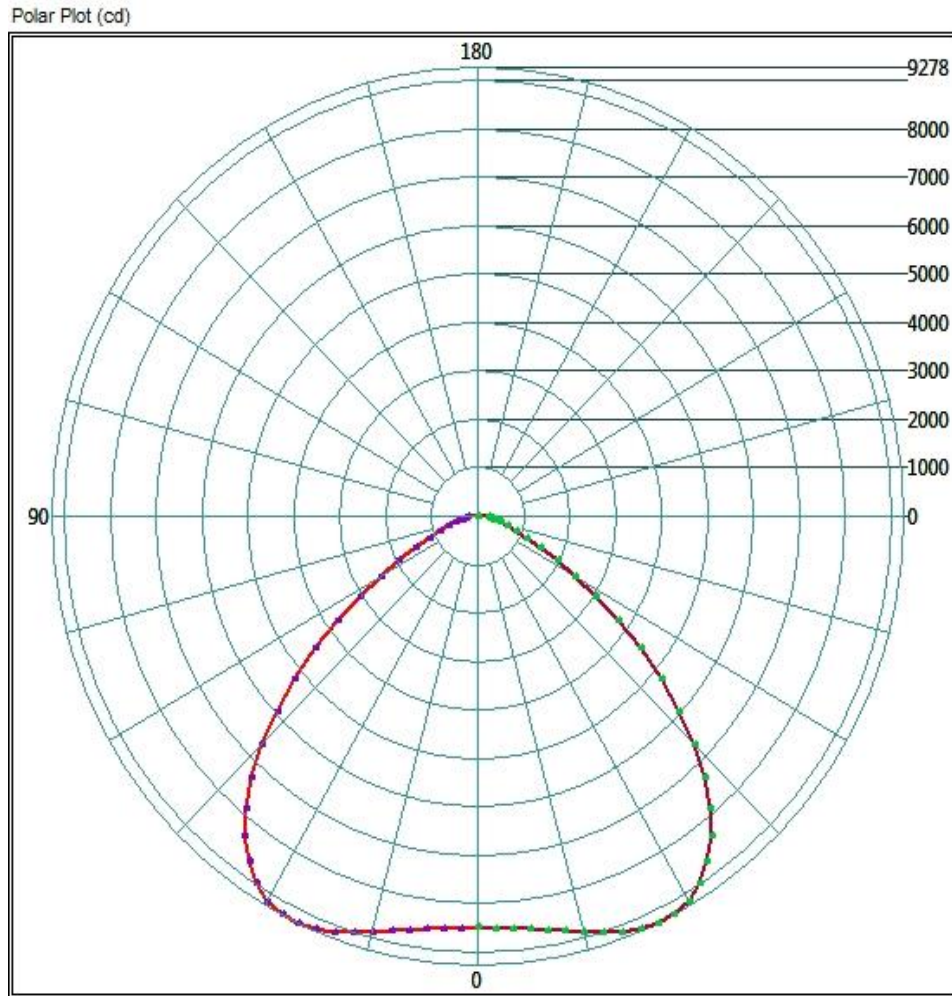
ZONAL LUMEN AND PERCENTAGES

ZONE	LUMENS	% LUMINAIRE
0-30	8265.76	34.6%
0-40	13736.16	57.5%
0-60	21777.76	91.2%
60-90	2680.16	11.2%
0-90	23874.08	100.0%
90-180	0	0.0%
0-180	23874.08	100.0%

Test Results: Goniometer

Results continued from previous page.

Polar Plot:

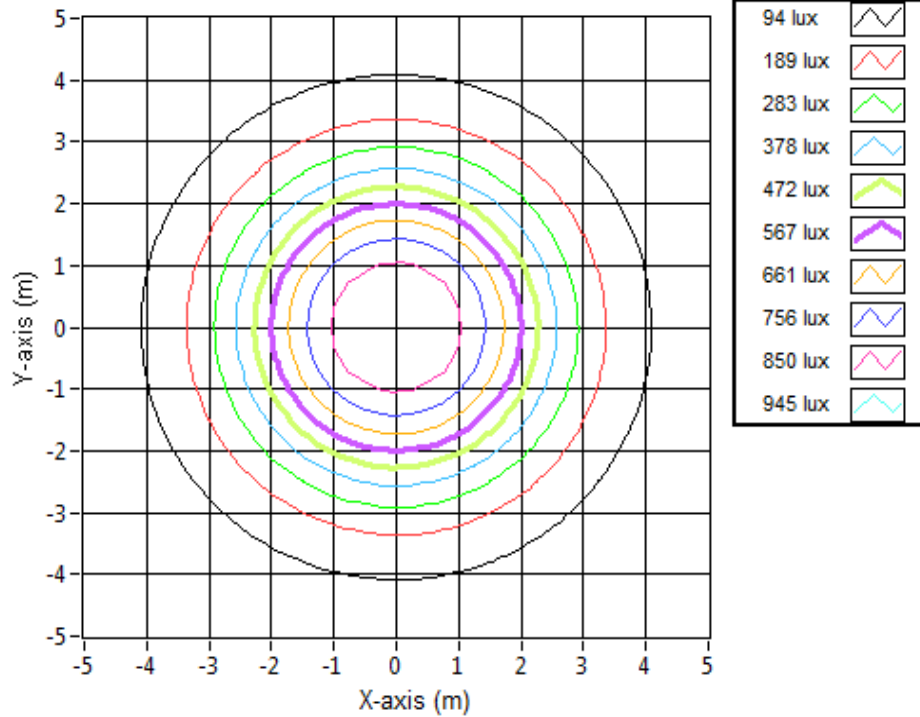


Test Results: Goniometer

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	8.15	8.15	915.4
6.096	16.30	16.30	228.9
9.144	24.46	24.46	101.7
12.192	32.61	32.61	57.2
15.24	40.76	40.76	36.6
18.288	48.91	48.91	25.4
21.336	57.06	57.06	18.7
24.384	65.22	65.22	14.3
27.432	73.37	73.37	11.3
30.48	81.52	81.52	9.2

Test Results: In Situ Temperature Measurement Test

Results include maximum LED chip temperature for sample number L16029.
Dialight unit model number HELMM4Px-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:

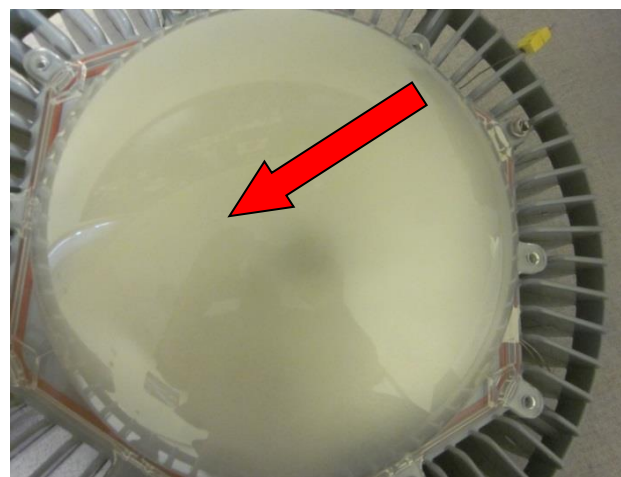
Maximum Power at Indicated Current: 0.35 (W)
Maximum Source Temperature: 113.7 (°C)

Test Conditions:

Temperature Measurement Location: See Photographs Below
Ambient Temperature: 25° ± 5' (°C)
Ambient temperature at time of measurement: 23.4 (°C)
Relative humidity at time of measurement: 19%

Results:

Measured LED source temperature: 62.6 (°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.

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