Dialight OPTICS LABORATORY

NVLAP Lab Code 201033-0

Test Report

Report Number: L15116 Date: Aug 19, 2015

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: HELNC4DN-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: July 9, 2015 through July 16, 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:	L15116
Manufacturer:	Dialight Corporation
Product Name:	Vigilant Highbay
Description:	Vigilant Highbay With Polycarbonate Dome Lens
Model Number:	HELNC4DN-xxx

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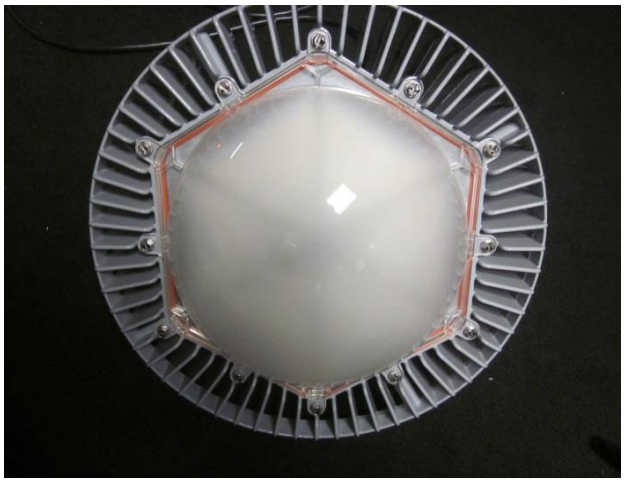
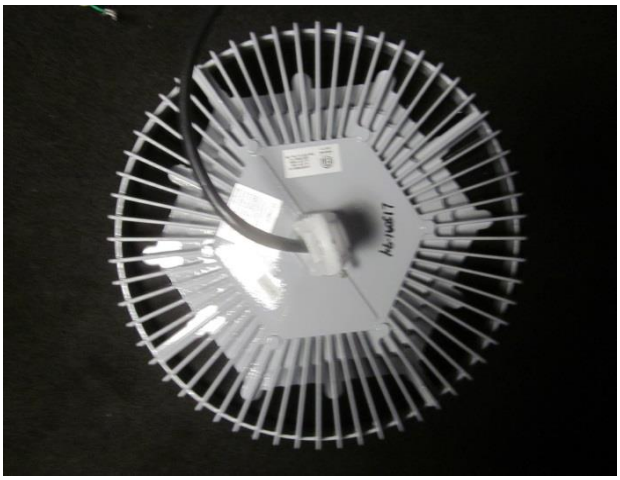
Report Summary

Sample number L15116

Dialight unit model number HELNC4DN-xxx

Photograph(s) of sample:





*Photographs not to scale. For reference only.

Summary of Results:

	Integrating Sphere		Goniophotometer	
Luminous Flux:	10720	(lumens)	10588	(lumens)
Electrical Power:	87.5	(W)	87.7	(W)
Luminous Efficacy:	122.5	(lumens/W)	120.7	(lumens/W)

Electrical Measurements:

Input Power (120VAC):	87.5	(W)
Power Factor (120VAC):	0.991	
Current ATHD % (120VAC):	10.02	
Input Power (277VAC):	87.2	(W)
Power Factor (277VAC):	0.923	
Current ATHD % (277VAC):	18.69	

Color Measurements:

Correlated Color Temperature (CCT):	4924
Color Rendering Index (CRI):	79.1
Chromaticity Coordinate (x):	0.347
Chromaticity Coordinate (y):	0.355
Chromaticity Coordinate (u'):	0.212
Chromaticity Coordinate (v'):	0.324
DUV:	0.00054

Temperature Measurements:

In Situ LED Source Temperature:	51.5	(°C)

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Test Results: Integrating Sphere

Results include unit color, flux, efficacy and electrical power for sample number L15116.
Dialight unit model number HELNC4DN-xxx

Test Conditions:

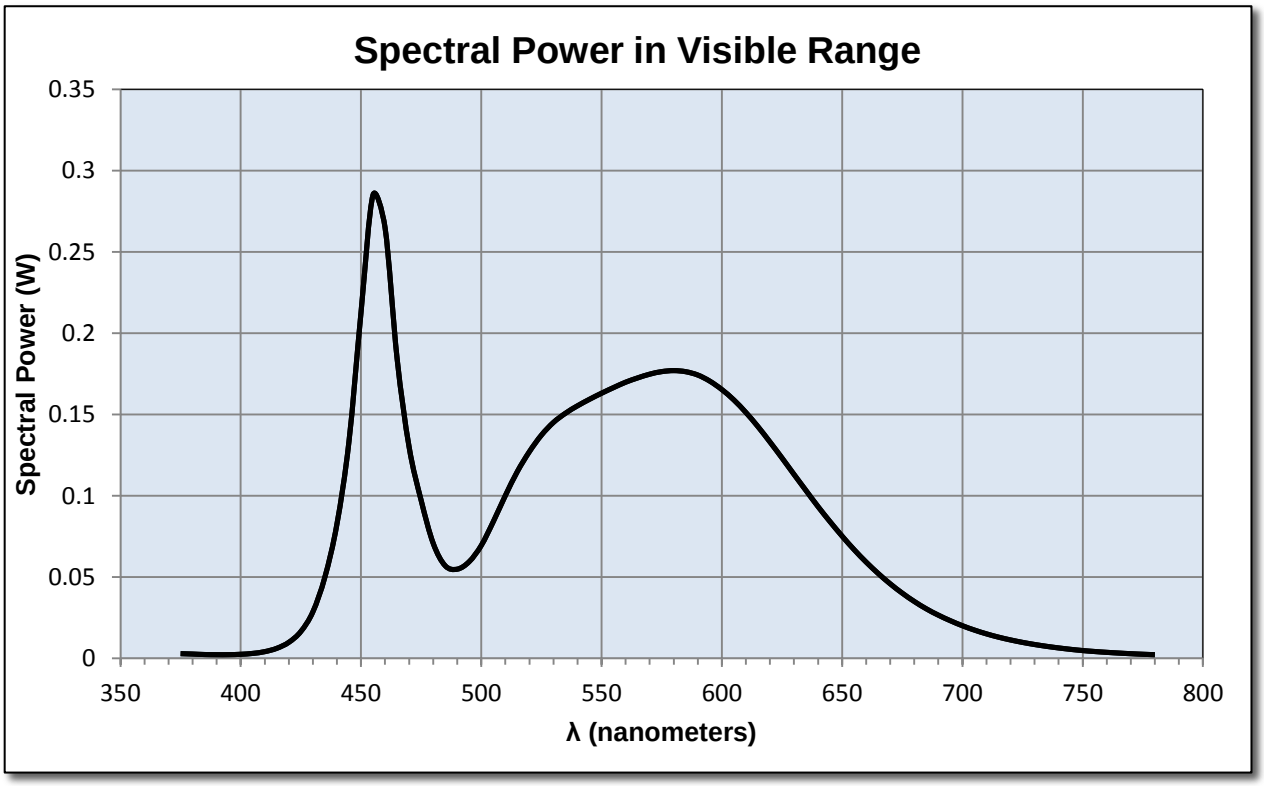
Ambient Temperature:	25 ± 1	(°C)

Electrical Measurements:

Input Voltage:	120	(VAC)
Input Current:	0.736	(A)
Input Power:	87.5	(W)
Input Power Factor:	0.991	
Current ATHD:	10.02	(%)

Photometric measurements:

Luminous Flux:	10720	(lumens)
Luminous Efficacy:	122.5	(lumens/W)
Correlated Color Temperature (CCT):	4924	(K)
CRI -Ra:	79.1	
CRI -R9:	-4.4	
DUV:	0.00054	
CIE Coordinate (x):	0.347	
CIE Coordinate (y):	0.355	
CIE Coordinate (u'):	0.212	
CIE Coordinate (v'):	0.324	



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	0.003	515	0.115	655	0.067
380	0.003	520	0.127	660	0.059
385	0.002	525	0.137	665	0.052
390	0.002	530	0.145	670	0.046
395	0.002	535	0.151	675	0.04
400	0.002	540	0.155	680	0.035
405	0.003	545	0.159	685	0.03
410	0.004	550	0.163	690	0.027
415	0.006	555	0.167	695	0.023
420	0.01	560	0.17	700	0.02
425	0.017	565	0.172	705	0.017
430	0.029	570	0.175	710	0.015
435	0.05	575	0.176	715	0.013
440	0.083	580	0.177	720	0.011
445	0.133	585	0.176	725	0.01
450	0.213	590	0.174	730	0.009
455	0.285	595	0.17	735	0.007
460	0.265	600	0.165	740	0.006
465	0.184	605	0.159	745	0.006
470	0.13	610	0.151	750	0.005
475	0.097	615	0.143	755	0.004
480	0.071	620	0.133	760	0.004
485	0.057	625	0.123	765	0.003
490	0.055	630	0.113	770	0.003
495	0.059	635	0.103	775	0.003
500	0.069	640	0.093	780	0.002
505	0.084	645	0.084		
510	0.1	650	0.075		

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Test Results: Goniometer

Results include unit flux, distribution, efficacy, and electrical power for sample number L15116.
Dialight unit model number HELNC4DN-xxx

Electrical Measurements:

Input Voltage:	120	(VAC)
Input current:	0.737	(A)
Input Power:	87.7	(W)
Power Factor:	0.991	

Photometric measurements:

Absolute Luminous Flux:	10588	(lumens)
Luminous Efficacy:	120.7	(lumens/W)

Intensity Summary:

INTENSITY (CANDLEPOWER) SUMMARY

ANGLE	ALONG	23	45	68	ACROSS	OUTPUT LUMENS
0	9883	9883	9883	9883	9883	
5	9422	9422	9422	9422	9422	357
15	6794	6794	6794	6794	6794	1638
25	4484	4484	4484	4484	4484	2058
35	3255	3255	3255	3255	3255	2062
45	2395	2395	2395	2395	2395	1955
55	1311	1311	1311	1311	1311	1473
65	433	433	433	433	433	679
75	153	153	153	153	153	234
85	85	85	85	85	85	112
95	0	0	0	0	0	22
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	

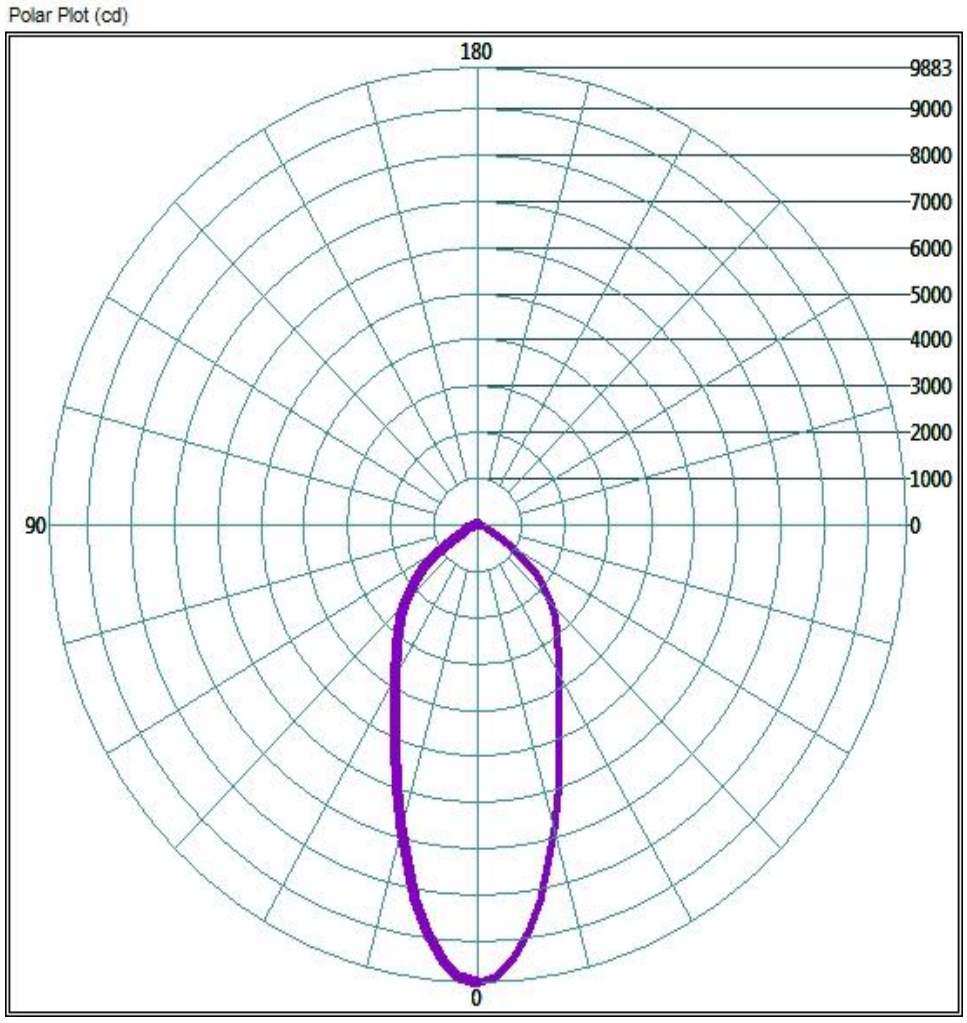
ZONAL LUMEN AND PERCENTAGES

ZONE	LUMENS	% LUMINAIRE
0-30	5087.36	48.0%
0-40	7119.52	67.2%
0-60	9969.12	94.2%
60-90	806.72	7.6%
0-90	10587.84	100.0%
90-180	0	0.0%
0-180	10587.84	100.0%

Test Results: Goniometer

Results continued from previous page.

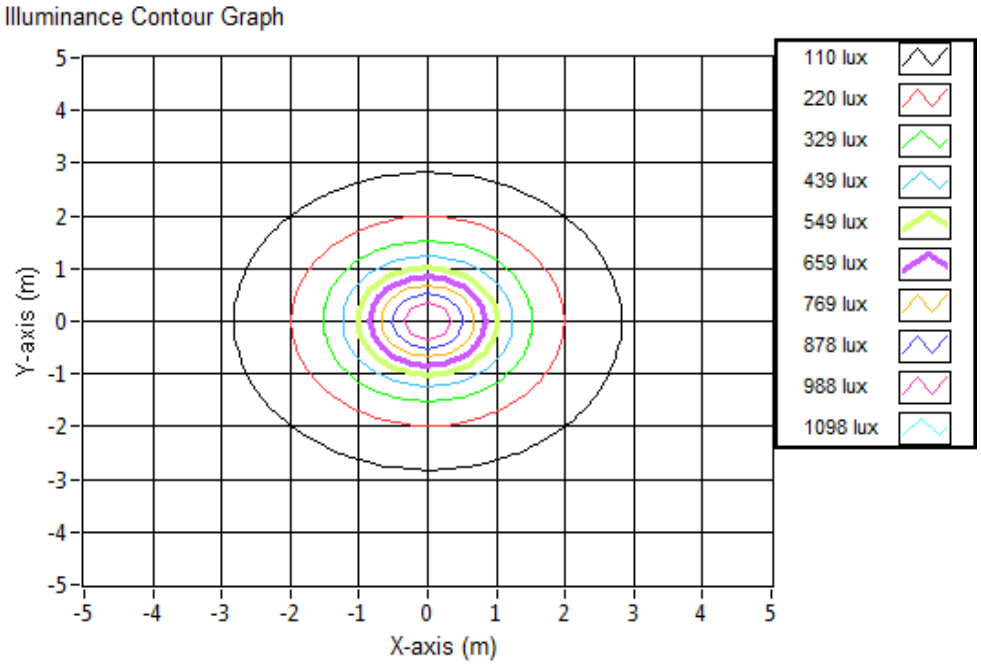
Polar Plot:



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	2.53	2.53	1063.7
6.096	5.06	5.06	265.9
9.144	7.59	7.59	118.2
12.192	10.12	10.12	66.5
15.24	12.65	12.65	42.5
18.288	15.18	15.18	29.5
21.336	17.71	17.71	21.7
24.384	20.25	20.25	16.6
27.432	22.78	22.78	13.1
30.48	25.31	25.31	10.6

Test Results: In Situ Temperature Measurement Test

Results include maximum LED chip temperature for sample number L15116.
Dialight unit model number HELNC4DN-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:

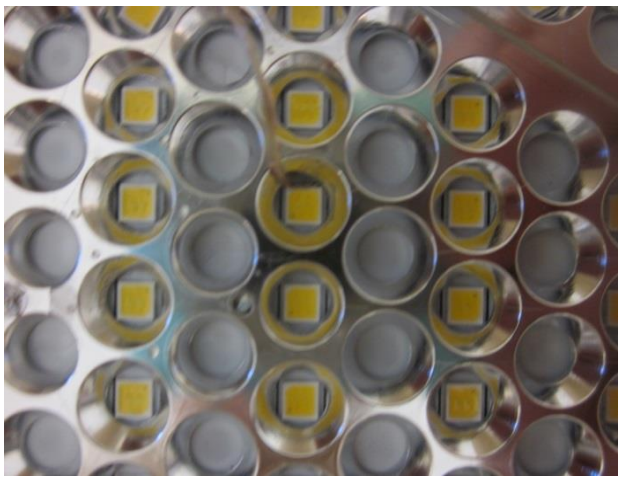
Maximum Power at Indicated Current:	0.35	(W)
Maximum Source Temperature:	113.7	(°C)

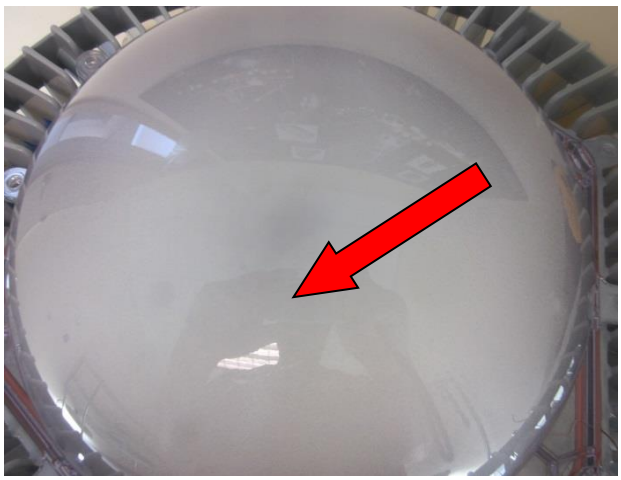
Test Conditions:

Temperature Measurement Location:	See Photographs Below	
Ambient Temperature:	25° ± 1‘	(°C)
Ambient temperature at time of measurement:	25.6	(°C)
Relative humidity at time of measurement:	39%	

Results:

Measured LED source temperature:	51.5	(°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 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
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.

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