Dialight OPTICS LABORATORY

NVLAP Lab Code 201033-0

Test Report

Report Number: L15086 Date: Jul 1, 2015

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

Test of one Vigilant Highbay With Clear Acrylic Lens
Unit manufacturer: Dialight Corporation
Unit model number: HE1NC4KN-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: June 18, 2015 through June 22, 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: L15086
Manufacturer: Dialight Corporation
Product Name: Vigilant Highbay
Description: Vigilant Highbay With Clear Acrylic Lens
Model Number: HE1NC4KN-xxx

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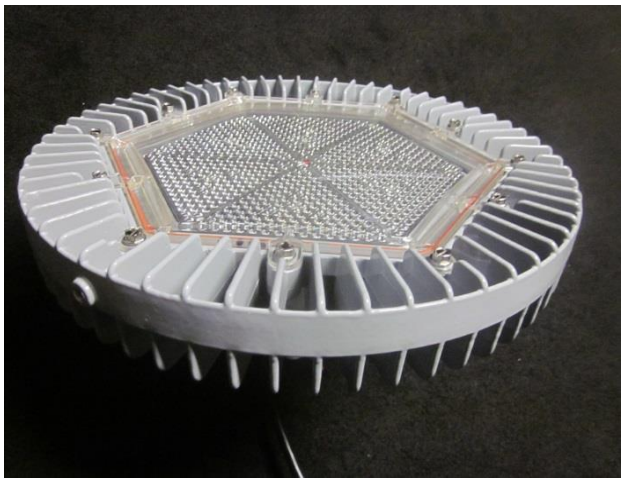
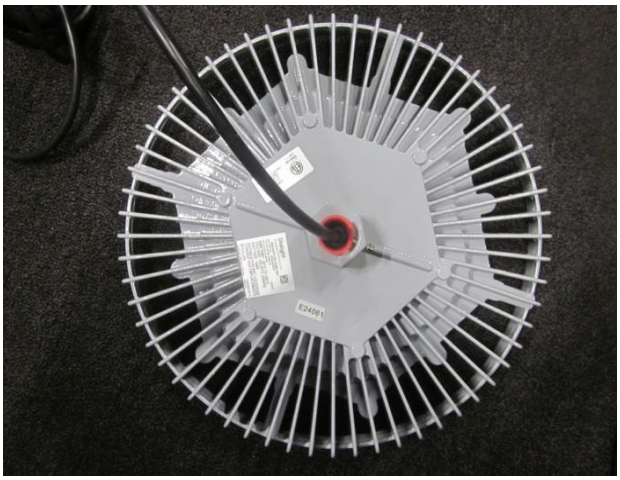
Report Summary

Sample number L15086

Dialight unit model number HE1NC4KN-xxx

Photograph(s) of sample:





*Photographs not to scale. For reference only.

Summary of Results:

	Integrating Sphere	Goniophotometer
Luminous Flux:	17810 (lumens)	17612 (lumens)
Electrical Power:	142.2 (W)	142.6 (W)
Luminous Efficacy:	125.2 (lumens/W)	123.5 (lumens/W)

Electrical Measurements:

Input Power (120VAC):	142.2	(W)
Power Factor (120VAC):	0.995	
Current ATHD % (120VAC):	8.119	
Input Power (277VAC):	139.7	(W)
Power Factor (277VAC):	0.958	
Current ATHD % (277VAC):	13.35	

Color Measurements:

Correlated Color Temperature (CCT):	4948
Color Rendering Index (CRI):	79.2
Chromaticity Coordinate (x):	0.347
Chromaticity Coordinate (y):	0.353
Chromaticity Coordinate (u'):	0.212
Chromaticity Coordinate (v'):	0.324
DUV:	0.00016

Temperature Measurements:

In Situ LED Source Temperature:	58.5	(°C)

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Test Results: Integrating Sphere

Results include unit color, flux, efficacy and electrical power for sample number L15086.
Dialight unit model number HE1NC4KN-xxx

Test Conditions:

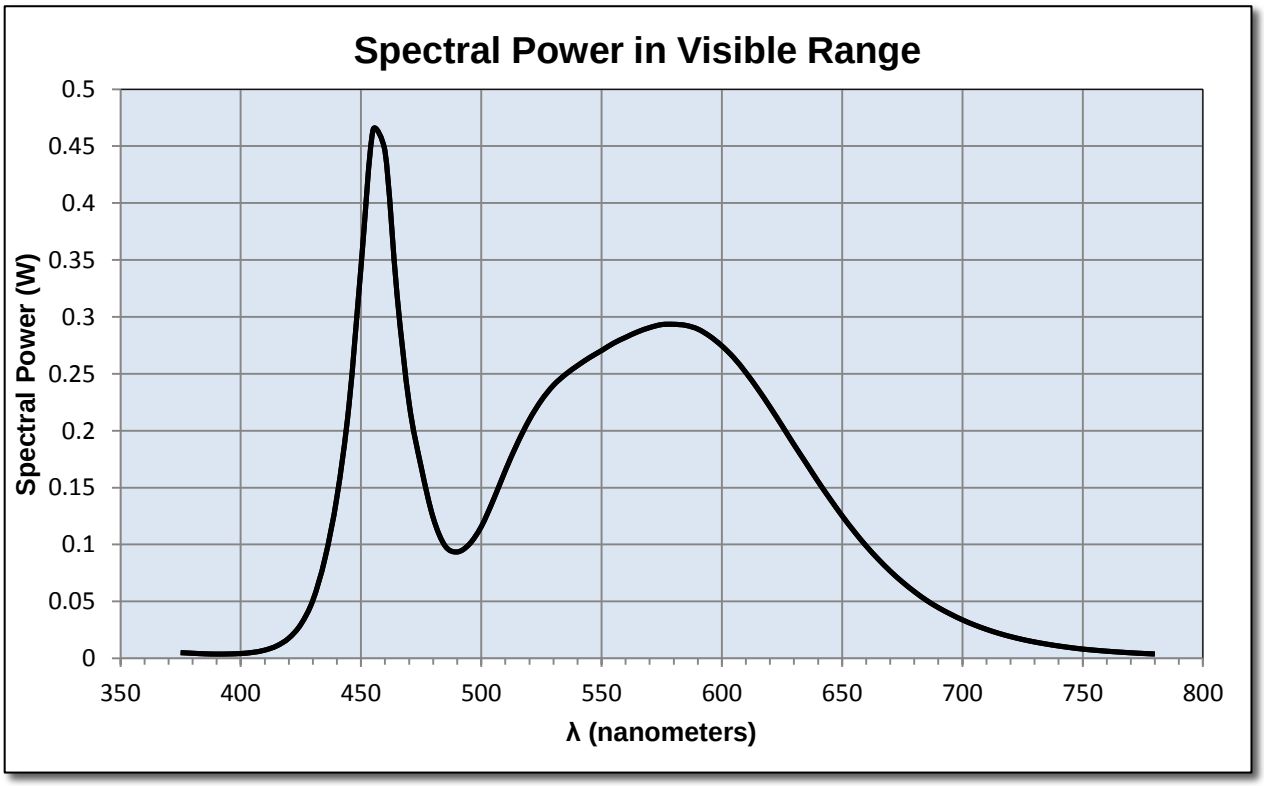
Ambient Temperature:	25 ± 1	(°C)

Electrical Measurements:

Input Voltage:	120	(VAC)
Input Current:	1.18	(A)
Input Power:	142.2	(W)
Input Power Factor:	0.995	
Current ATHD:	8.119	(%)

Photometric measurements:

Luminous Flux:	17810	(lumens)
Luminous Efficacy:	125.2	(lumens/W)
Correlated Color Temperature (CCT):	4948	(K)
CRI -Ra:	79.2	
CRI -R9:	-4	
DUV:	0.00016	
CIE Coordinate (x):	0.347	
CIE Coordinate (y):	0.353	
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	0.005	515	0.189	655	0.112
380	0.004	520	0.21	660	0.099
385	0.004	525	0.227	665	0.087
390	0.004	530	0.24	670	0.077
395	0.004	535	0.249	675	0.067
400	0.004	540	0.257	680	0.059
405	0.005	545	0.264	685	0.051
410	0.007	550	0.27	690	0.045
415	0.011	555	0.277	695	0.039
420	0.018	560	0.282	700	0.034
425	0.03	565	0.287	705	0.029
430	0.051	570	0.291	710	0.025
435	0.088	575	0.293	715	0.022
440	0.142	580	0.293	720	0.019
445	0.222	585	0.293	725	0.017
450	0.344	590	0.289	730	0.014
455	0.464	595	0.283	735	0.013
460	0.445	600	0.275	740	0.011
465	0.319	605	0.264	745	0.009
470	0.224	610	0.251	750	0.008
475	0.168	615	0.237	755	0.007
480	0.124	620	0.221	760	0.006
485	0.099	625	0.204	765	0.006
490	0.093	630	0.188	770	0.005
495	0.1	635	0.172	775	0.004
500	0.116	640	0.155	780	0.004
505	0.139	645	0.14		
510	0.165	650	0.125		

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Test Results: Goniometer

Results include unit flux, distribution, efficacy, and electrical power for sample number L15086.
Dialight unit model number HE1NC4KN-xxx

Electrical Measurements:

Input Voltage:	120	(VAC)
Input current:	1.193	(A)
Input Power:	142.6	(W)
Power Factor:	0.994	

Photometric measurements:

Absolute Luminous Flux:	17612	(lumens)
Luminous Efficacy:	123.5	(lumens/W)

Intensity Summary:

INTENSITY (CANDLEPOWER) SUMMARY

ANGLE	ALONG	23	45	68	ACROSS	OUTPUT LUMENS
0	23786	23786	23786	23786	23786	
5	21829	21829	21829	21829	21829	836
15	12586	12586	12586	12586	12586	3280
25	7523	7523	7523	7523	7523	3544
35	5747	5747	5747	5747	5747	3553
45	4296	4296	4296	4296	4296	3521
55	1673	1673	1673	1673	1673	2308
65	148	148	148	148	148	479
75	46	46	46	46	46	69
85	8	8	8	8	8	23
95	0	0	0	0	0	1
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	

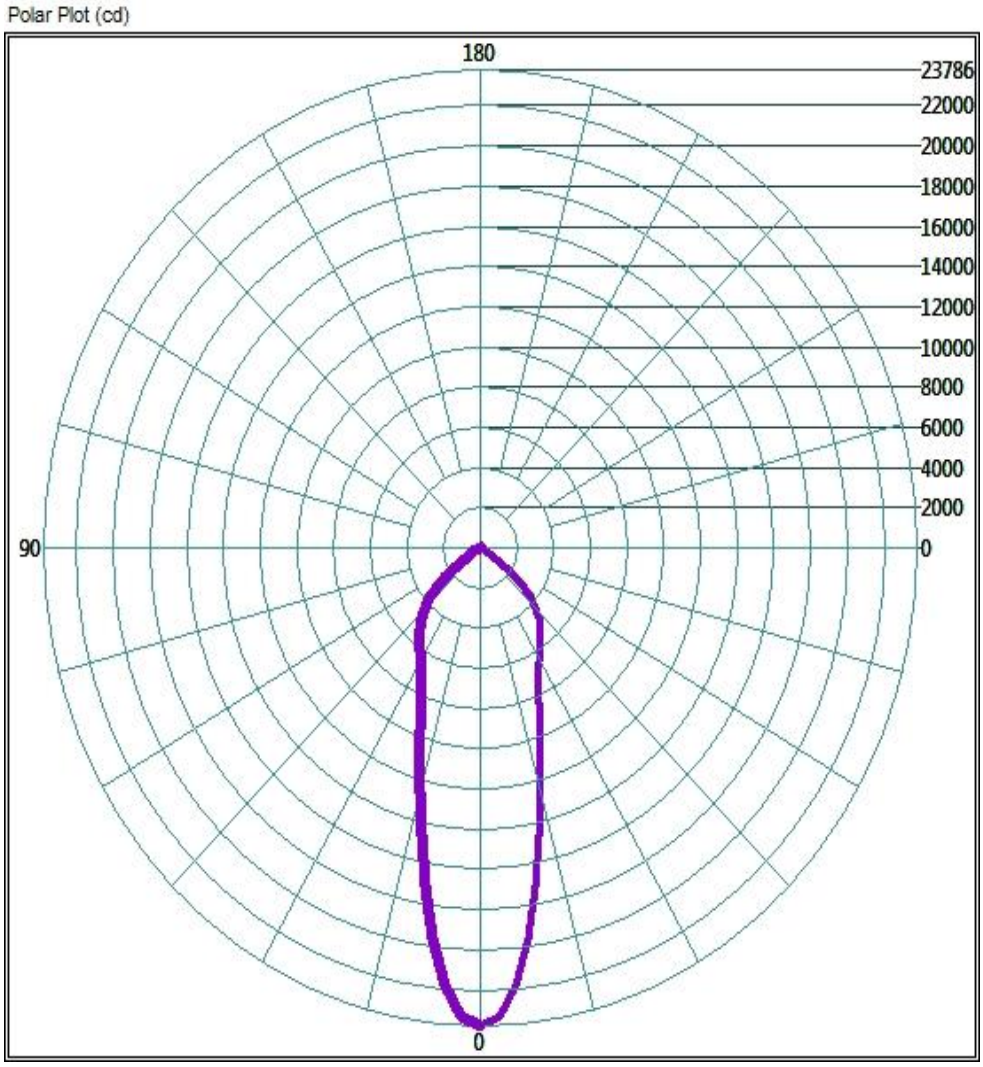
ZONAL LUMEN AND PERCENTAGES

ZONE	LUMENS	% LUMINAIRE
0-30	9415.04	53.5%
0-40	13021.92	73.9%
0-60	17414.24	98.9%
60-90	332	1.9%
0-90	17612.32	100.0%
90-180	0	0.0%
0-180	17612.32	100.0%

Test Results: Goniometer

Results continued from previous page.

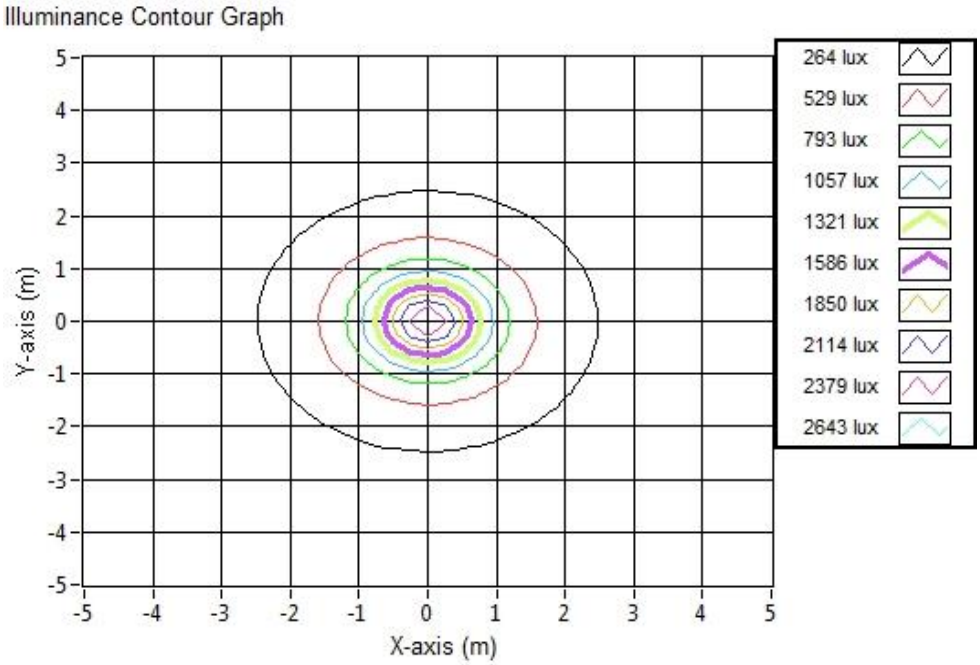
Polar Plot:



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	1.75	1.75	2560.3
6.096	3.51	3.51	640.1
9.144	5.26	5.26	284.5
12.192	7.01	7.01	160.0
15.24	8.76	8.76	102.4
18.288	10.52	10.52	71.1
21.336	12.27	12.27	52.3
24.384	14.02	14.02	40.0
27.432	15.77	15.77	31.6
30.48	17.53	17.53	25.6

Test Results: In Situ Temperature Measurement Test

Results include maximum LED chip temperature for sample number L15086.
Dialight unit model number HE1NC4KN-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:

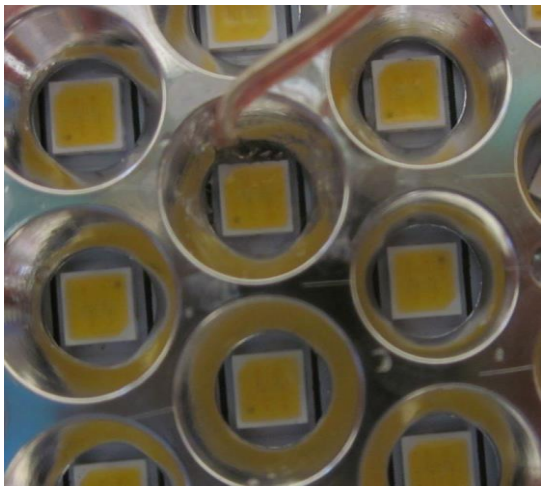
Maximum Power at Indicated Current:	0.35	(W)
Maximum Source Temperature:	113.7	(°C)

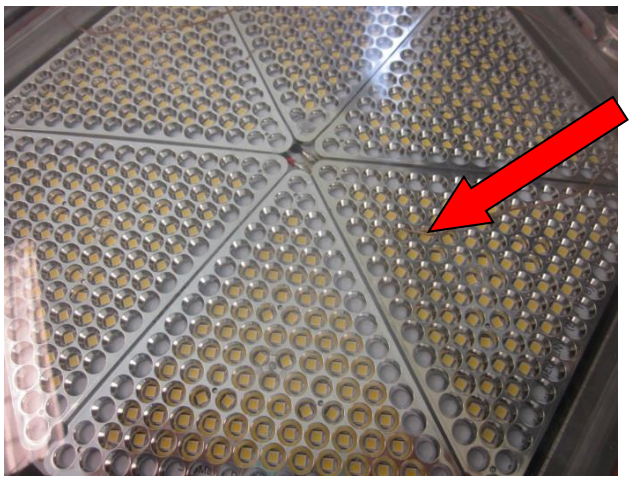
Test Conditions:

Temperature Measurement Location:	See Photographs Below	
Ambient Temperature:	25° ± 1‘	(°C)
Ambient temperature at time of measurement:	24.1	(°C)
Relative humidity at time of measurement:	20%	

Results:

Measured LED source temperature:	58.5	(°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

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