Dialight OPTICS LABORATORY

NVLAP Lab Code 201033-0

Test Report

Report Number: L15132 Date: Oct 19, 2015

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

Test of one Vigilant Highbay With Acrylic Lens
Unit manufacturer: Dialight Corporation
Unit model number: HE1RC4KN-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: October 15, 2015 through October 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:	L15132
Manufacturer:	Dialight Corporation
Product Name:	Vigilant
Description:	Vigilant Highbay With Acrylic Lens
Model Number:	HE1RC4KN-xxx

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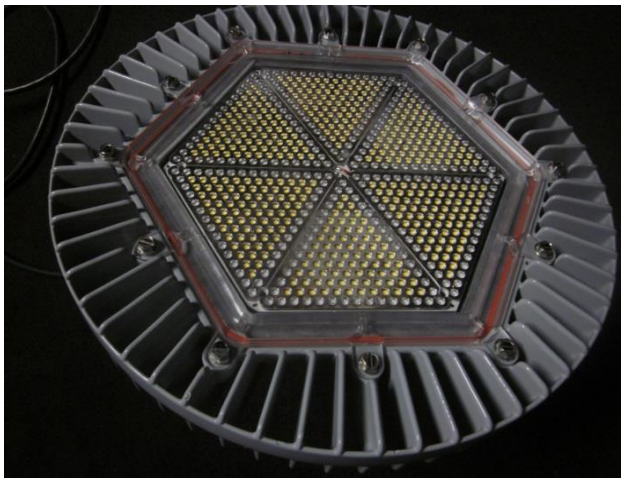
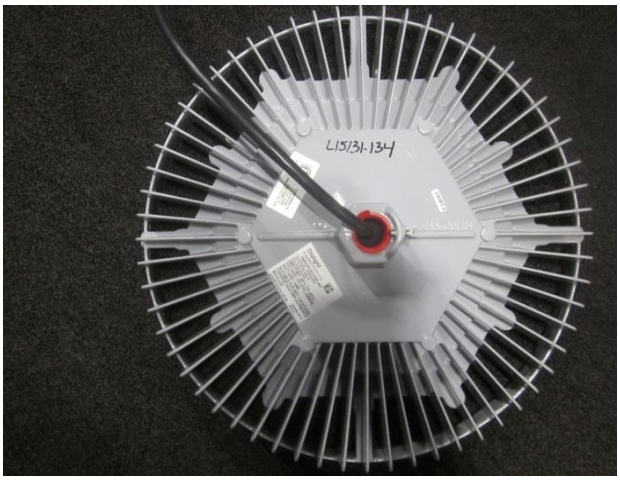
Report Summary

Sample number L15132
Dialight unit model number HE1RC4KN-xxx

Photograph(s) of sample:





*Photographs not to scale. For reference only.

Summary of Results:

	Integrating Sphere		Goniophotometer	
Luminous Flux:	17350	(lumens)	17168	(lumens)
Electrical Power:	144.2	(W)	144.3	(W)
Luminous Efficacy:	120.4	(lumens/W)	119	(lumens/W)

Electrical Measurements:

Input Power (120VAC):	144.2	(W)
Power Factor (120VAC):	0.996	
Current ATHD % (120VAC):	6.45	
Input Power (277VAC):	141.6	(W)
Power Factor (277VAC):	0.969	
Current ATHD % (277VAC):	13.14	

Color Measurements:

Correlated Color Temperature (CCT):	4899
Color Rendering Index (CRI):	78.9
Chromaticity Coordinate (x):	0.348
Chromaticity Coordinate (y):	0.357
Chromaticity Coordinate (u'):	0.212
Chromaticity Coordinate (v'):	0.325
DUV:	0.0012

Temperature Measurements:

In Situ LED Source Temperature:	52.5	(°C)

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Test Results: Integrating Sphere

Results include unit color, flux, efficacy and electrical power for sample number L15132.
Dialight unit model number HE1RC4KN-xxx

Test Conditions:

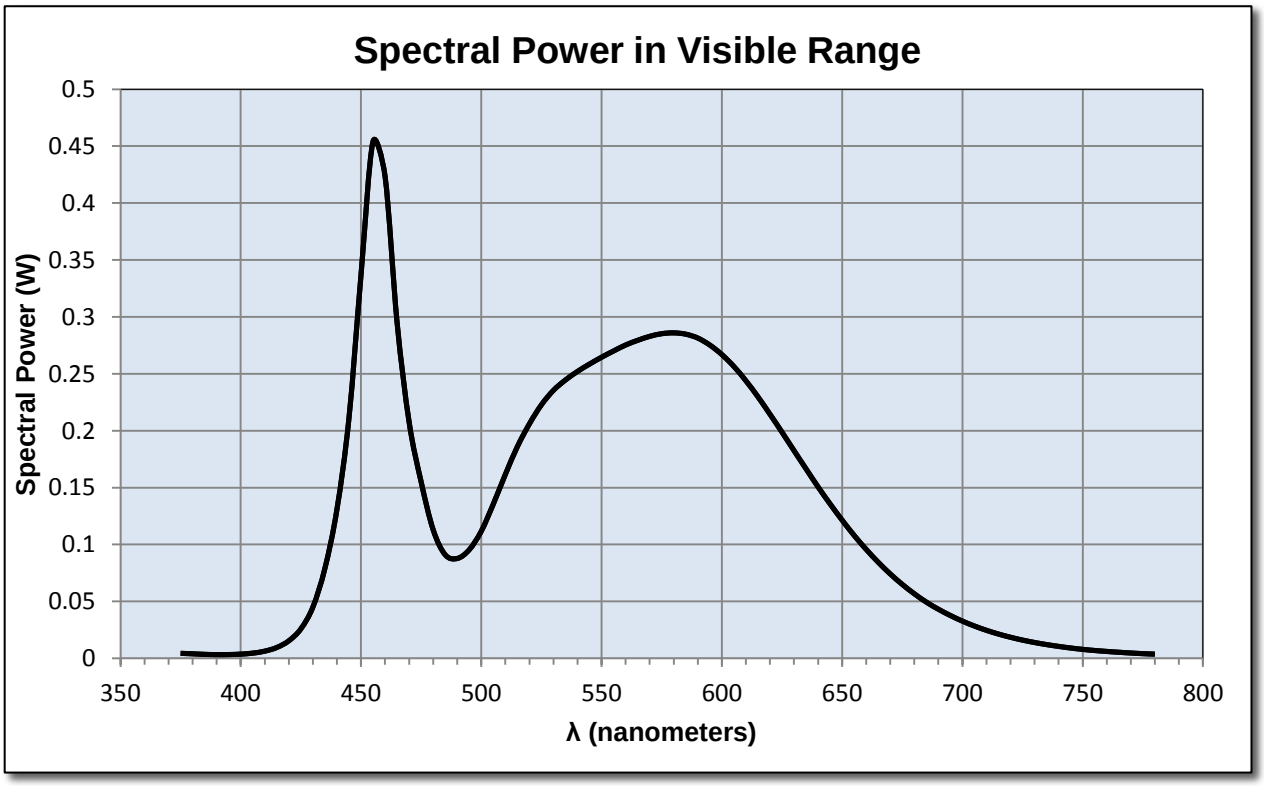
Ambient Temperature:	25 ± 1	(°C)

Electrical Measurements:

Input Voltage:	120	(VAC)
Input Current:	1.205	(A)
Input Power:	144.2	(W)
Input Power Factor:	0.996	
Current ATHD:	6.45	(%)

Photometric measurements:

Luminous Flux:	17350	(lumens)
Luminous Efficacy:	120.4	(lumens/W)
Correlated Color Temperature (CCT):	4899	(K)
CRI -Ra:	78.9	
CRI -R9:	-5	
DUV:	0.0012	
CIE Coordinate (x):	0.348	
CIE Coordinate (y):	0.357	
CIE Coordinate (u'):	0.212	
CIE Coordinate (v'):	0.325	



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	0.004	515	0.186	655	0.108
380	0.004	520	0.206	660	0.096
385	0.003	525	0.223	665	0.084
390	0.003	530	0.235	670	0.074
395	0.003	535	0.245	675	0.065
400	0.004	540	0.252	680	0.057
405	0.005	545	0.259	685	0.049
410	0.006	550	0.265	690	0.043
415	0.01	555	0.27	695	0.038
420	0.015	560	0.275	700	0.033
425	0.026	565	0.279	705	0.028
430	0.045	570	0.283	710	0.025
435	0.079	575	0.285	715	0.021
440	0.131	580	0.286	720	0.019
445	0.211	585	0.285	725	0.016
450	0.337	590	0.281	730	0.014
455	0.454	595	0.275	735	0.012
460	0.424	600	0.267	740	0.01
465	0.295	605	0.256	745	0.009
470	0.207	610	0.244	750	0.008
475	0.155	615	0.23	755	0.007
480	0.113	620	0.214	760	0.006
485	0.091	625	0.199	765	0.005
490	0.088	630	0.182	770	0.005
495	0.095	635	0.166	775	0.004
500	0.112	640	0.151	780	0.004
505	0.136	645	0.136		
510	0.162	650	0.121		

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Test Results: Goniometer

Results include unit flux, distribution, efficacy, and electrical power for sample number L15132.
Dialight unit model number HE1RC4KN-xxx

Electrical Measurements:

Input Voltage:	120	(VAC)
Input current:	1.205	(A)
Input Power:	144.3	(W)
Power Factor:	0.996	

Photometric measurements:

Absolute Luminous Flux:	17168	(lumens)
Luminous Efficacy:	119.0	(lumens/W)

Intensity Summary:

INTENSITY (CANDLEPOWER) SUMMARY

ANGLE	ALONG	23	45	68	ACROSS	OUTPUT LUMENS
0	6720	6720	6720	6720	6720	
5	6754	6754	6754	6754	6754	252
15	6483	6483	6483	6483	6483	1403
25	6234	6234	6234	6234	6234	2504
35	6325	6325	6325	6325	6325	3556
45	6207	6207	6207	6207	6207	4588
55	3047	3047	3047	3047	3047	3815
65	264	264	264	264	264	950
75	42	42	42	42	42	77
85	10	10	10	10	10	22
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	

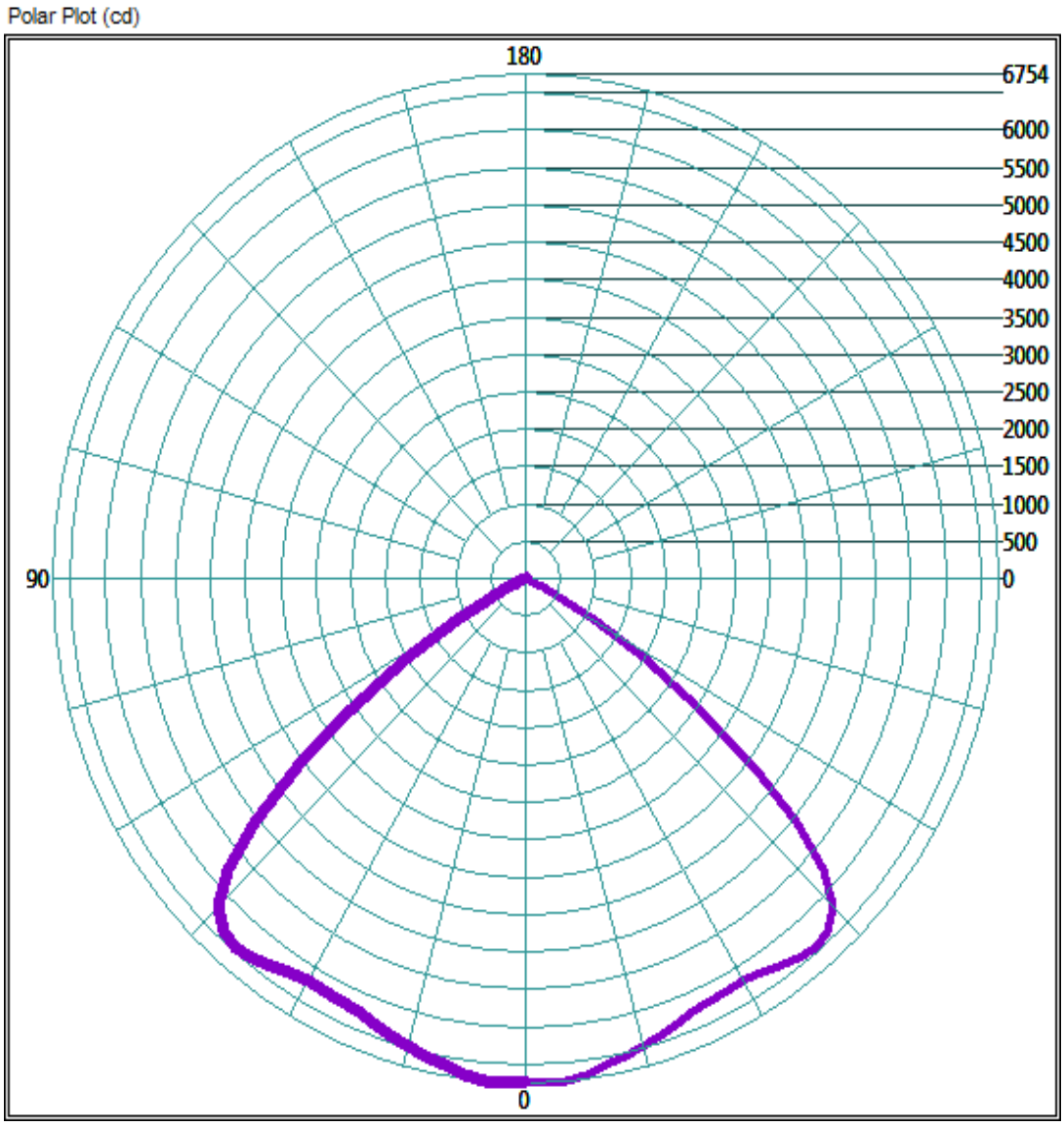
ZONAL LUMEN AND PERCENTAGES

ZONE	LUMENS	% LUMINAIRE
0-30	5798.24	33.8%
0-40	9914.88	57.8%
0-60	16859.36	98.2%
60-90	585.76	3.4%
0-90	17168.16	100.0%
90-180	0	0.0%
0-180	17168.16	100.0%

Test Results: Goniometer

Results continued from previous page.

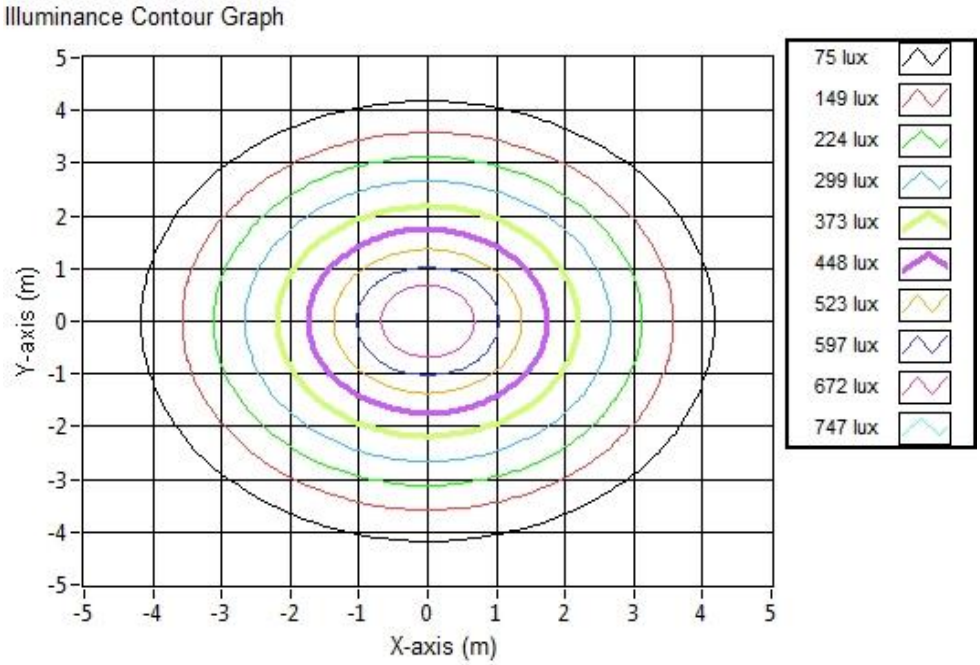
Polar Plot:



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	8.48	8.48	723.4
6.096	16.95	16.95	180.8
9.144	25.43	25.43	80.4
12.192	33.90	33.90	45.2
15.24	42.38	42.38	28.9
18.288	50.86	50.86	20.1
21.336	59.33	59.33	14.8
24.384	67.81	67.81	11.3
27.432	76.28	76.28	8.9
30.48	84.76	84.76	7.2

Test Results: In Situ Temperature Measurement Test

Results include maximum LED chip temperature for sample number L15132.
Dialight unit model number HE1RC4KN-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:

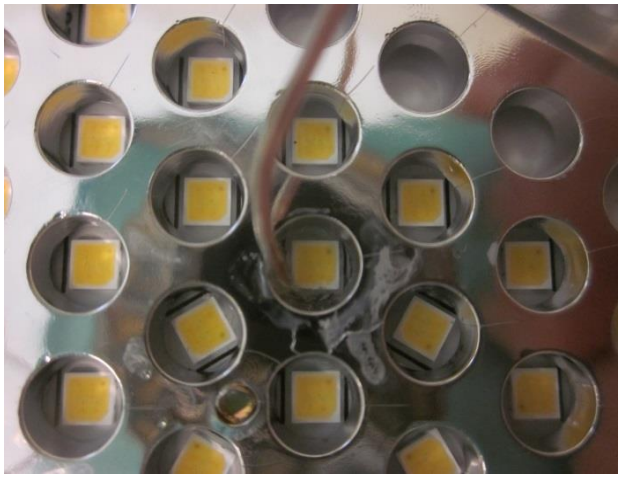
Maximum Power at Indicated Current:	0.35	(W)
Maximum Source Temperature:	113.7	(°C)

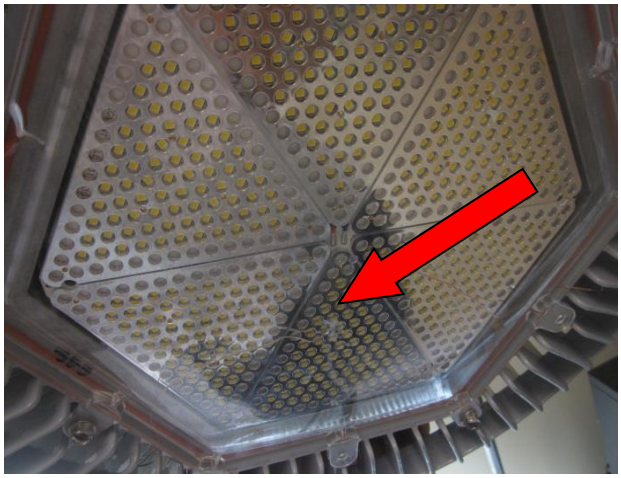
Test Conditions:

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:	30%	

Results:

Measured LED source temperature:	52.5	(°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