

Test Report

Report Number: L15013

Date: Apr 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: HE1RC4DN-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: February 18, 2015 through March 27, 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):

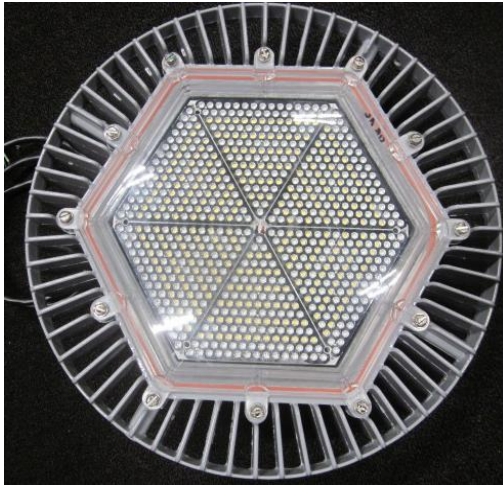
- IES LM-79:2008: Electrical and Photometric Measurements of Solid-State Lighting Products
- ANSI/UL 1598:2008: Underwriters Laboratories Inc. Standard for Safety: Luminaires
- ENERGY STAR Manufacturer's Guide for Qualifying Solid State Lighting Luminaires Version 2.1

Description of sample:

Sample Number: L15013
Manufacturer: Dialight Corporation
Product Name: Vigilant Highbay
Description: Vigilant Highbay With Clear Acrylic Lens
Model Number: HE1RC4DN-xxx

Report Summary
Sample number L15013
Dialight unit model number HE1RC4DN-xxx

Photograph(s) of sample:



*Photographs not to scale. For reference only.

Summary of Results:

	<u>Integrating Sphere</u>	<u>Goniophotometer</u>
Luminous Flux:	10590 (lumens)	10555 (lumens)
Electrical Power:	87.9 (W)	88.0 (W)
Luminous Efficacy:	120.5 (lumens/W)	120 (lumens/W)

Electrical Measurements:

Input Power (120VAC): 87.9 (W)
 Power Factor (120VAC): 0.991
 Current ATHD % (120VAC): 9.44
 Input Power (277VAC): 87.4 (W)
 Power Factor (277VAC): 0.945
 Current ATHD % (277VAC): 16.55

Color Measurements:

Correlated Color Temperature (CCT): 4903
 Color Rendering Index (CRI): 77.8
 Chromaticity Coordinate (x): 0.348
 Chromaticity Coordinate (y): 0.357
 Chromaticity Coordinate (u'): 0.212
 Chromaticity Coordinate (v'): 0.488
 DUV: 0.0014

Temperature Measurements:

In Situ LED Source Temperature: 46.1 (°C)

Test Results: Integrating Sphere

Results include unit color, flux, efficacy and electrical power for sample number L15013.
Dialight unit model number HE1RC4DN-xxx

Test Conditions:

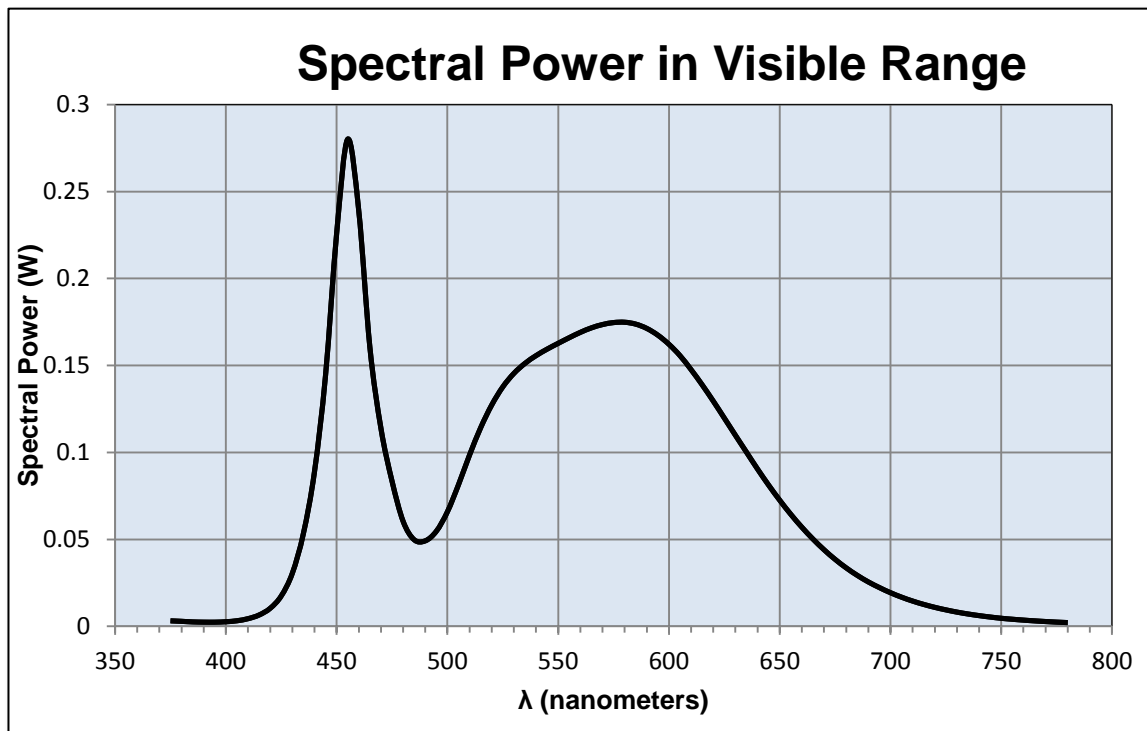
Ambient Temperature: 25 ± 1 (°C)

Electrical Measurements:

Input Voltage: 120 (VAC)
Input Current: 0.737 (A)
Input Power: 87.9 (W)
Input Power Factor: 0.991
Current ATHD: 9.44 (%)

Photometric measurements:

Luminous Flux: 10590 (lumens)
Luminous Efficacy: 120.5 (lumens/W)
Correlated Color Temperature (CCT): 4903 (K)
CRI -Ra: 77.8
CRI -R9: -9.1
DUV: 0.0014
CIE Coordinate (x): 0.348
CIE Coordinate (y): 0.357
CIE Coordinate (u'): 0.212
CIE Coordinate (v'): 0.488



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	0.003	515	0.114	655	0.064
380	0.003	520	0.127	660	0.057
385	0.003	525	0.138	665	0.05
390	0.002	530	0.145	670	0.044
395	0.002	535	0.151	675	0.039
400	0.003	540	0.156	680	0.034
405	0.003	545	0.159	685	0.029
410	0.004	550	0.163	690	0.026
415	0.006	555	0.166	695	0.022
420	0.01	560	0.169	700	0.019
425	0.017	565	0.172	705	0.017
430	0.031	570	0.174	710	0.015
435	0.053	575	0.175	715	0.013
440	0.089	580	0.175	720	0.011
445	0.145	585	0.174	725	0.009
450	0.226	590	0.171	730	0.008
455	0.28	595	0.167	735	0.007
460	0.239	600	0.162	740	0.006
465	0.161	605	0.156	745	0.005
470	0.114	610	0.148	750	0.005
475	0.083	615	0.139	755	0.004
480	0.06	620	0.129	760	0.004
485	0.05	625	0.12	765	0.003
490	0.049	630	0.11	770	0.003
495	0.055	635	0.1	775	0.002
500	0.066	640	0.09	780	0.002
505	0.081	645	0.081		
510	0.099	650	0.073		

Test Results: Goniometer

Results include unit flux, distribution, efficacy, and electrical power for sample number L15013.
Dialight unit model number HE1RC4DN-xxx

Electrical Measurements:

Input Voltage: 120 (VAC)
Input current: 0.737 (A)
Input Power: 88.0 (W)
Power Factor: 0.991

Photometric measurements:

Absolute Luminous Flux: 10555 (lumens)
Luminous Efficacy: 120.0 (lumens/W)

Intensity Summary:

INTENSITY (CANDLEPOWER) SUMMARY						
ANGLE	ALONG	23	45	68	ACROSS	OUTPUT LUMENS
0	4043	4043	4043	4043	4043	
5	4111	4111	4111	4111	4111	153
15	3974	3974	3974	3974	3974	860
25	4072	4072	4072	4072	4072	1593
35	4705	4705	4705	4705	4705	2534
45	4210	4210	4210	4210	4210	3339
55	976	976	976	976	976	1855
65	52	52	52	52	52	196
75	12	12	12	12	12	22
85	0	0	0	0	0	3
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	0

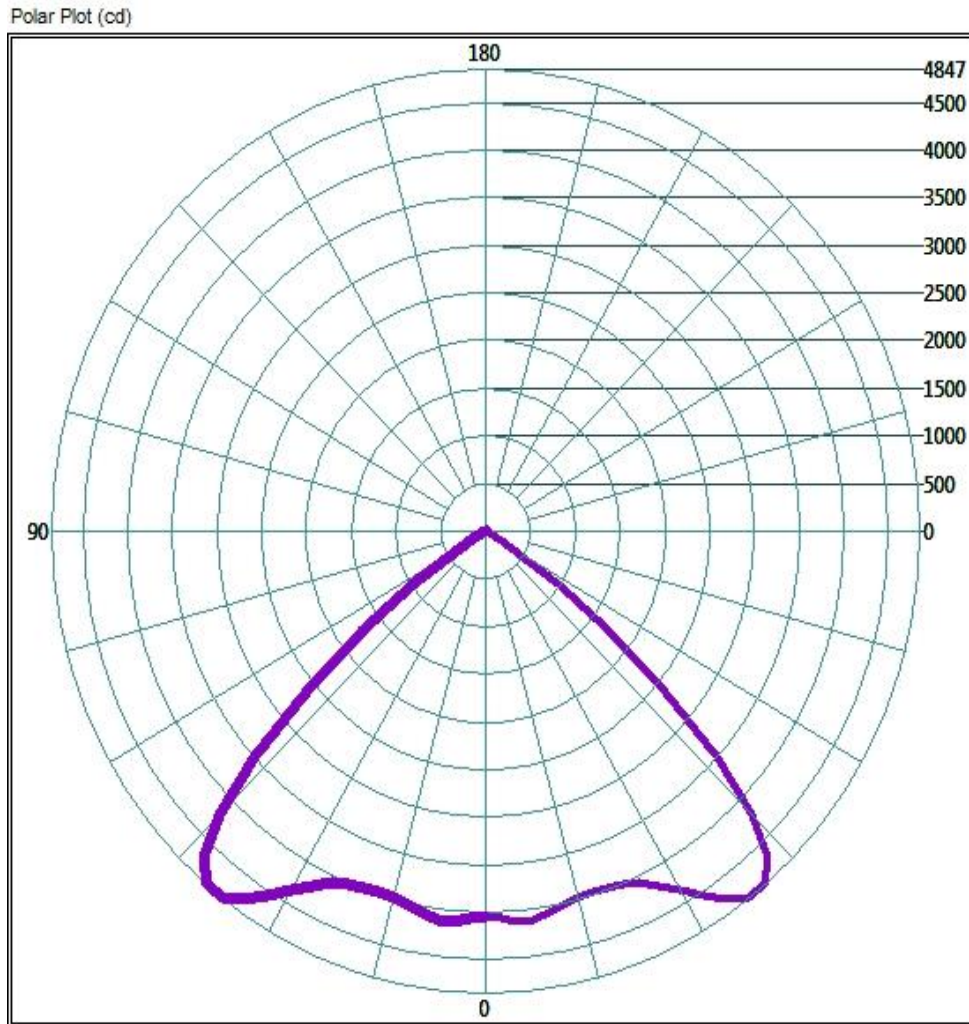
ZONAL LUMEN AND PERCENTAGES

ZONE	LUMENS	% LUMINAIRE
0-30	3733.12	35.4%
0-40	6800.96	64.4%
0-60	10494.56	99.4%
60-90	110.4	1.0%
0-90	10555.2	100.0%
90-180	0	0.0%
0-180	10555.2	100.0%

Test Results: Goniometer

Results continued from previous page.

Polar Plot:

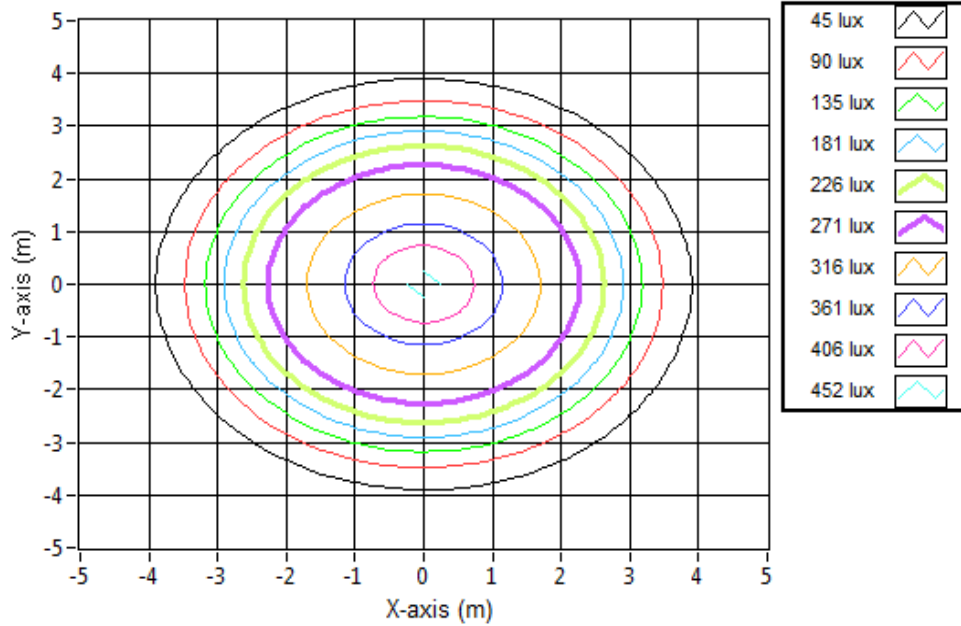


Test Results: Goniometer

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	7.71	7.71	435.2
6.096	15.43	15.43	108.8
9.144	23.14	23.14	48.4
12.192	30.86	30.86	27.2
15.24	38.57	38.57	17.4
18.288	46.29	46.29	12.1
21.336	54.00	54.00	8.9
24.384	61.72	61.72	6.8
27.432	69.43	69.43	5.4
30.48	77.15	77.15	4.4

Test Results: In Situ Temperature Measurement Test

Results include maximum LED chip temperature for sample number L15013.
Dialight unit model number HE1RC4DN-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:

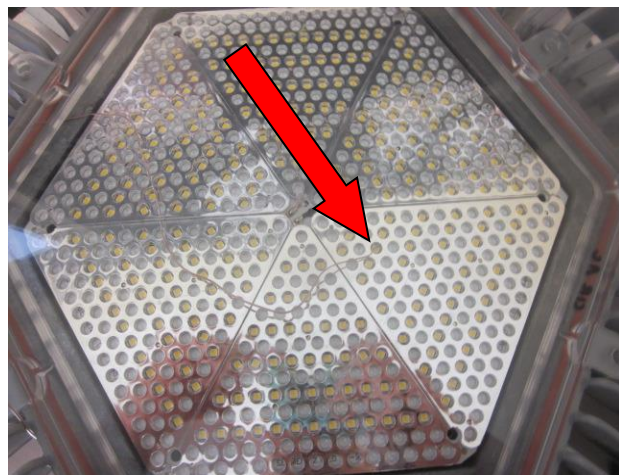
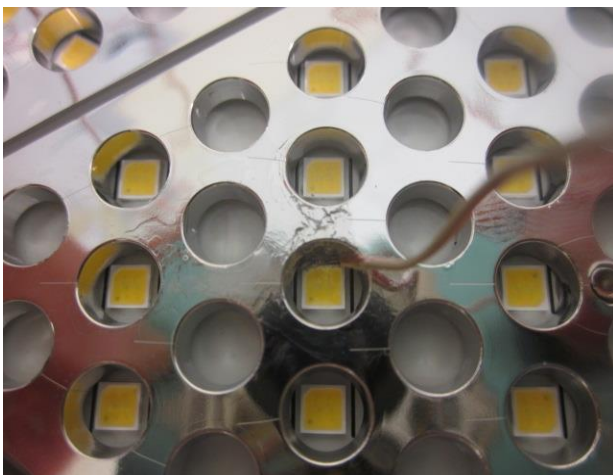
Maximum Power at Indicated Current: 0.35 (W)
Maximum Source Temperature: 113.7 (°C)

Test Conditions:

Temperature Measurement Location: See Photographs Below
Ambient Temperature: $25^{\circ} \pm 1^{\circ}$ (°C)
Ambient temperature at time of measurement: 24.4 (°C)
Relative humidity at time of measurement: 10%

Results:

Measured LED source temperature: 46.1 (°C)



Equipment Used:

Equipment Name	Model Number
Omega TC	Dpi8
Fluke 8808A Digit Multimeter	8808A
YOKOGAWA Digital Power Meter	760401
LSI Standard Lamps	#30279
LSI High Speed Mirror Goniometer	6240T
Instrument System Spectrometer	CAS140B-151
Instrument System Sphere Lamps (Osram Sylvania)	STD-20WF-3
Instrument System Sphere Lamps (Osram Sylvania)	STD-20WF-3
Instrument System Sphere Lamps (Osram Sylvania)	STD-20WF-3
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	445703
Extech Hygro-Thermometer	445703
Fluke 52II Thermometer	52II Thermometer
Volttech Power Analyzer	PM1000+
Tenma AC Power Source	72-7675
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

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.

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