

Test Report

Report Number: L14062

Date: Sep 22, 2014

Issued by:

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

Test of one Vigilant Highbay fixture
Unit manufacturer: Dialight Corporation
Unit model number: HE2MC4GN-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: September 18, 2014 through September 18, 2014

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:

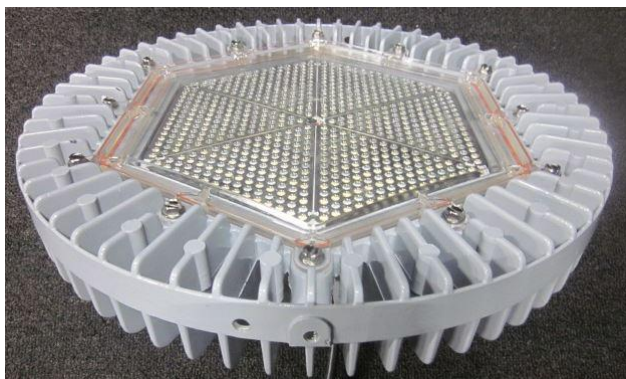
Sample Number: L14062
Manufacturer: Dialight Corporation
Product Name: Vigilant Highbay
Description: Vigilant Highbay Fixture With Ultra Clear Polycarbonate Lens
Model Number: HE2MC4GN-xxx

Report Summary

Sample number L14062

Dialight unit model number HE2MC4GN-xxx

Photograph(s) of sample:



*Photographs not to scale. For reference only.

Summary of Results:

	<u>Integrating Sphere</u>	<u>Goniophotometer</u>
Luminous Flux:	14140 (lumens)	13933 (lumens)
Electrical Power:	113.4 (W)	113.7 (W)
Luminous Efficacy:	124.6 (lumens/W)	122.5 (lumens/W)

Electrical Measurements:

Input Power (120VAC): 113.4 (W)
 Power Factor (120VAC): 0.992
 Current ATHD % (120VAC): 9.059
 Input Power (277VAC): 111.9 (W)
 Power Factor (277VAC): 0.939
 Current ATHD % (277VAC): 15.89

Color Measurements:

Correlated Color Temperature (CCT): 4848
 Color Rendering Index (CRI): 77.5
 Chromaticity Coordinate (x): 0.35
 Chromaticity Coordinate (y): 0.36
 Chromaticity Coordinate (u'): 0.212
 Chromaticity Coordinate (v'): 0.49
 DUV: 0.0022

Temperature Measurements:

In Situ LED Source Temperature: 47.7 (°C)

Test Results: Integrating Sphere

Results include unit color, flux, efficacy and electrical power for sample number L14062.

Dialight unit model number HE2MC4GN-xxx

Test Conditions:

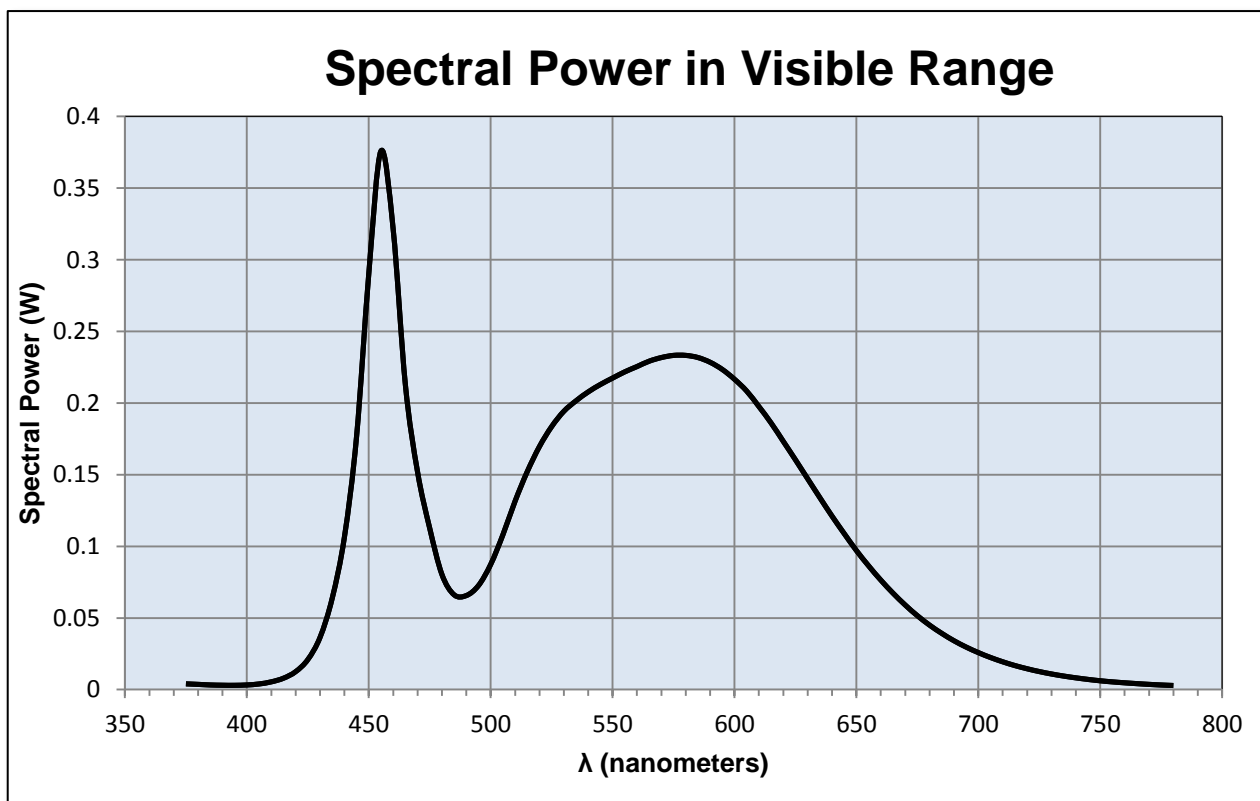
Ambient Temperature: 25 ± 1 (°C)

Electrical Measurements:

Input Voltage: 120 (VAC)
Input Current: 0.952 (A)
Input Power: 113.4 (W)
Input Power Factor: 0.992
Current ATHD: 9.059 (%)

Photometric measurements:

Luminous Flux: 14140 (lumens)
Luminous Efficacy: 124.6 (lumens/W)
Correlated Color Temperature (CCT): 4848 (K)
CRI -Ra: 77.5
CRI -R9: -11.4
DUV: 0.0022
CIE Coordinate (x): 0.35
CIE Coordinate (y): 0.36
CIE Coordinate (u'): 0.212
CIE Coordinate (v'): 0.49



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	0.152	655	0.086
380	0.004	520	0.17	660	0.076
385	0.003	525	0.184	665	0.067
390	0.003	530	0.194	670	0.059
395	0.003	535	0.202	675	0.052
400	0.003	540	0.208	680	0.045
405	0.004	545	0.213	685	0.039
410	0.005	550	0.217	690	0.034
415	0.008	555	0.222	695	0.03
420	0.013	560	0.225	700	0.026
425	0.021	565	0.229	705	0.022
430	0.036	570	0.232	710	0.019
435	0.064	575	0.233	715	0.017
440	0.106	580	0.233	720	0.015
445	0.177	585	0.232	725	0.013
450	0.29	590	0.228	730	0.011
455	0.376	595	0.223	735	0.009
460	0.321	600	0.217	740	0.008
465	0.213	605	0.208	745	0.007
470	0.152	610	0.198	750	0.006
475	0.113	615	0.186	755	0.005
480	0.08	620	0.173	760	0.005
485	0.066	625	0.16	765	0.004
490	0.066	630	0.147	770	0.004
495	0.073	635	0.134	775	0.003
500	0.087	640	0.121	780	0.003
505	0.108	645	0.109		
510	0.132	650	0.097		

Test Results: Goniometer

Results include unit flux, distribution, efficacy, and electrical power for sample number L14062.
Dialight unit model number HE2MC4GN-xxx

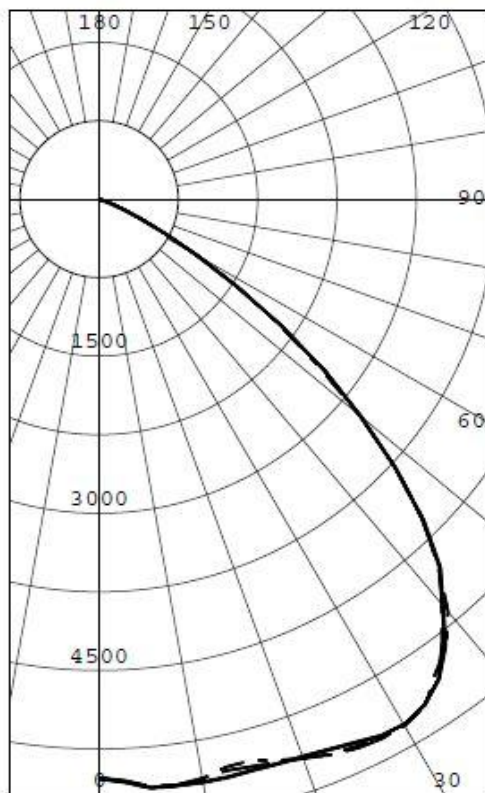
Electrical Measurements:

Input Voltage: 120 (VAC)
Input current: 0.954 (A)
Input Power: 113.7 (W)
Power Factor: 0.993

Photometric measurements:

Absolute Luminous Flux: 13933 (lumens)
Luminous Efficacy: 122.5 (lumens/W)

Intensity Summary:



INTENSITY (CANDLEPOWER) SUMMARY						OUTPUT LUMENS
ANGLE	ALONG	22.5	45	67.5	ACROSS	
0	5530	5530	5530	5530	5530	
5	5649	5635	5631	5636	5641	545
15	5550	5612	5608	5562	5644	1591
25	5765	5750	5785	5771	5730	2661
35	5536	5565	5591	5642	5595	3461
45	4340	4317	4320	4346	4334	3274
55	2039	2122	2099	2045	2090	1867
65	452	424	439	434	413	486
75	28	30	31	32	32	46
85	0	0	0	0	0	2
90	0	0	0	0	0	
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	

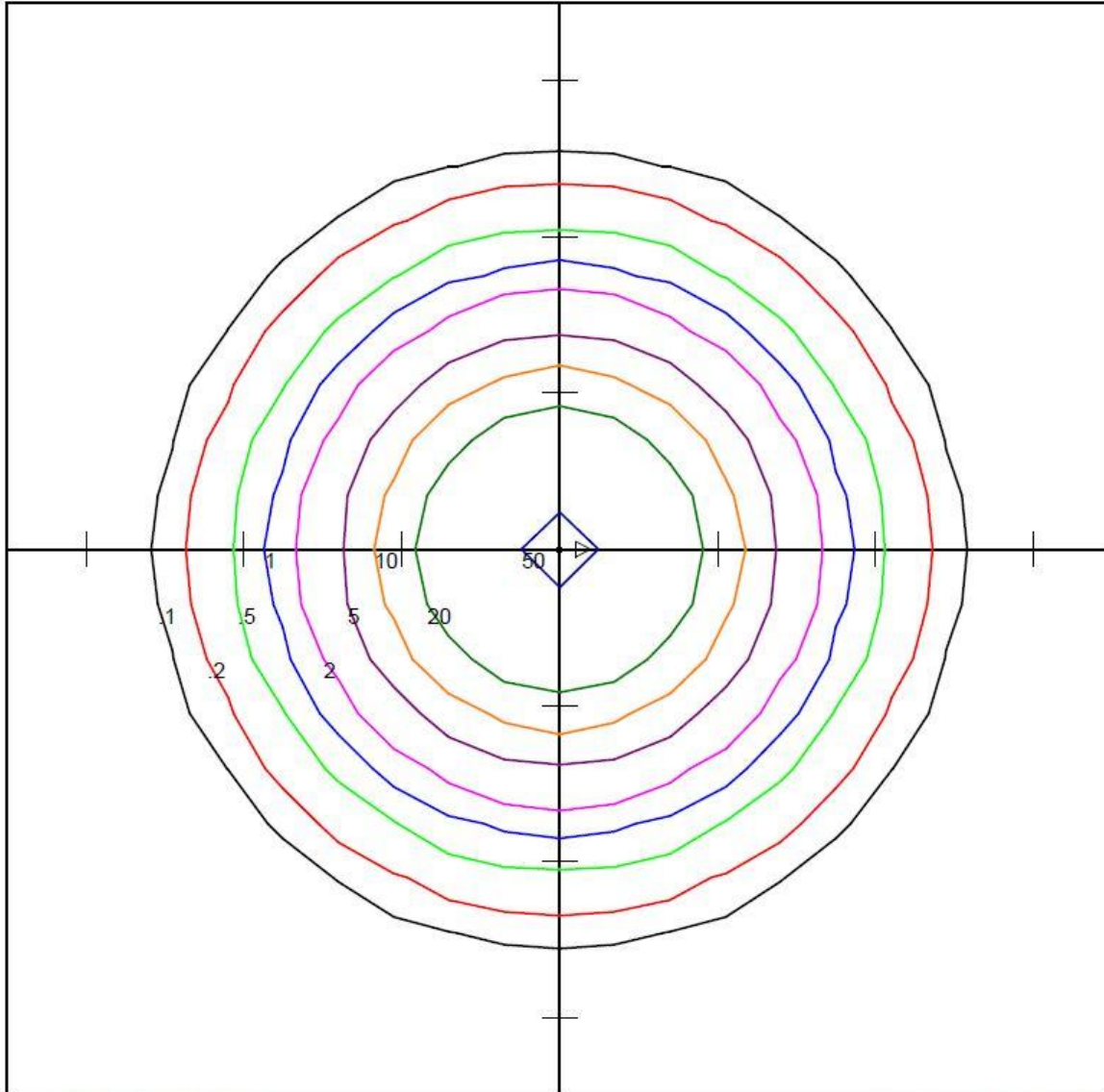
ZONAL LUMENS AND PERCENTAGES

ZONE	LUMENS	% LUMINAIRE
0-30	4797	34.43
0-40	8258	59.27
0-60	13399	96.17
0-90	13933	100.00
40-90	5674	40.73
60-90	533	3.83
90-180	0	0.00
0-180	13933	100.00

Test Results: Goniometer

Results continued from previous page.

Iso-illuminance Plot:



DIALIGHT COPORATION
HE2MC4GN
MOD: HE2MC4GN
LED

Horizontal Footcandles
Scale: 1 Inch = 10 Ft.
Light Loss Factor = 1.00
Lumens Per Lamp = N.A. (absolute photometry)
Luminaire Lumens = 13950
Mounting Height = 10.00 Ft
Maximum Calculated Value = 55.30 Fc
Arrangement: Single

Test Results: In Situ Temperature Measurement Test

Results include maximum LED chip temperature for sample number L14062.

Dialight unit model number HE2MC4GN-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:

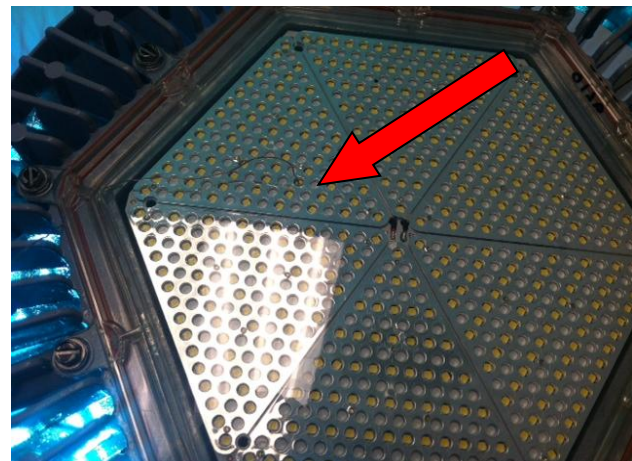
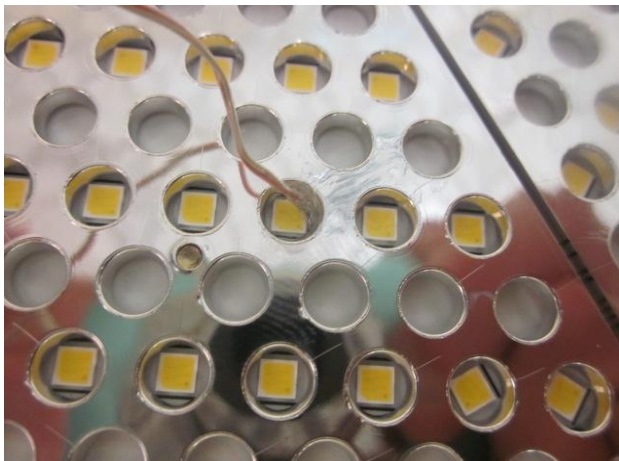
Maximum Power at Indicated Current: 0.35 (W)
Maximum Source Temperature: 113.7 (°C) (Tj - [power dissipation * Rth])

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: 38%

Results:

Measured LED source temperature: 47.7 (°C)



Equipment Used:

Equipment Name	Model Number	Calibration Due Date
Omega TC	Dpi8	3/7/2015
Fluke 8808A Digit Multimeter	8808A	4/7/2015
YOKOGAWA Digital Power Meter	760401	4/7/2015
LSI Standard Lamps	#30279	4/17/2015
LSI High Speed Mirror Goniometer	6240T	-
Instrument System Spectrometer	CAS140B-151	-
Instrument System Sphere Lamps (Osram Sylvania)	STD-20WF-3	4/17/2015
Instrument System Sphere Lamps (Osram Sylvania)	STD-20WF-3	4/17/2015
Instrument System Sphere Lamps (Osram Sylvania)	STD-20WF-3	4/17/2015
Instrument System 1.5 Meter Sphere	ISP1500	-
Volttech Power Analyzer	PM1000+	4/17/2015
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	3/6/2015
Volttech Power Analyzer	PM1000+	4/17/2015
Tenma AC Power Source	72-7675	-
BK Precision	1715A	-
TDK-Lambda	GEN1500W	-
Fluke 8808A Digit Multimeter	8808A	4/14/2015
TPI Digital Thermometer 343	343	4/17/2015
TPI Digital Thermometer 343	343	4/17/2015

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.

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Optical Engineering Manager
Approved Signatory