Dialight
OPTICS LABORATORY

NVLAP
NVLAP Lab Code 201033-0

Test Report

Report Number: L16016 Date: Feb 19, 2016

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

Test of one Vigilant High Bay With Clear Polycarbonate Lens
Unit manufacturer: Dialight Corporation
Unit model number: HE2MC4PJ-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 19, 2016 through February 19, 2016

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: L16016
Manufacturer: Dialight Corporation
Product Name: Vigilant High Bay With Clear Polycarbonate Lens
Description: Vigilant High Bay With Clear Polycarbonate Lens
Model Number: HE2MC4PJ-xxx

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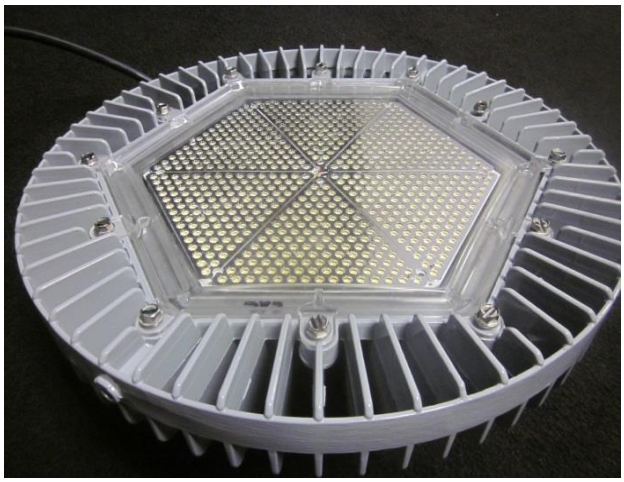
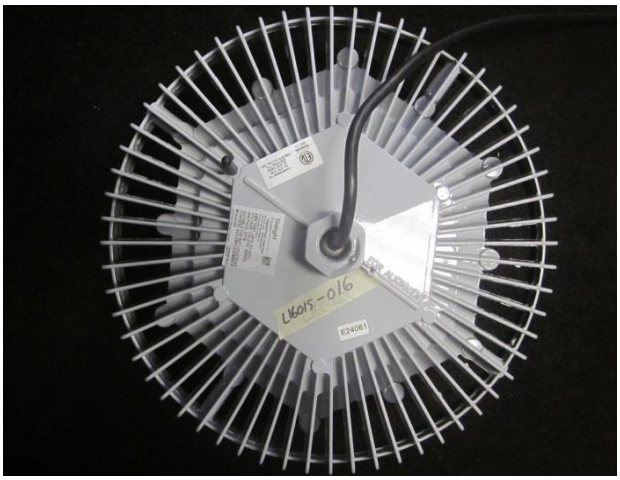
Report Summary

Sample number L16016
Dialight unit model number HE2MC4PJ-xxx

Photograph(s) of sample:





*Photographs not to scale. For reference only.

Summary of Results:

	Integrating Sphere	Goniophotometer
Luminous Flux:	24520 (lumens)	24301 (lumens)
Electrical Power:	211.9 (W)	211.9 (W)
Luminous Efficacy:	115.8 (lumens/W)	114.7 (lumens/W)

Electrical Measurements:

Input Power ():	211.9	(W)
Power Factor ():	0.997	
Current ATHD % ():	4.994	
Input Power ():	205.4	(W)
Power Factor (VAC):	0.974	
Current ATHD % (VAC):	12.57	

Color Measurements:

Correlated Color Temperature (CCT):	4969
Color Rendering Index (CRI):	79.2
Chromaticity Coordinate (x):	0.346
Chromaticity Coordinate (y):	0.354
Chromaticity Coordinate (u'):	0.211
Chromaticity Coordinate (v'):	0.324
DUV:	0.00088

Temperature Measurements:

In Situ LED Source Temperature:	58.7	(°C)

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Test Results: Integrating Sphere

Results include unit color, flux, efficacy and electrical power for sample number L16016.
Dialight unit model number HE2MC4PJ-xxx

Test Conditions:

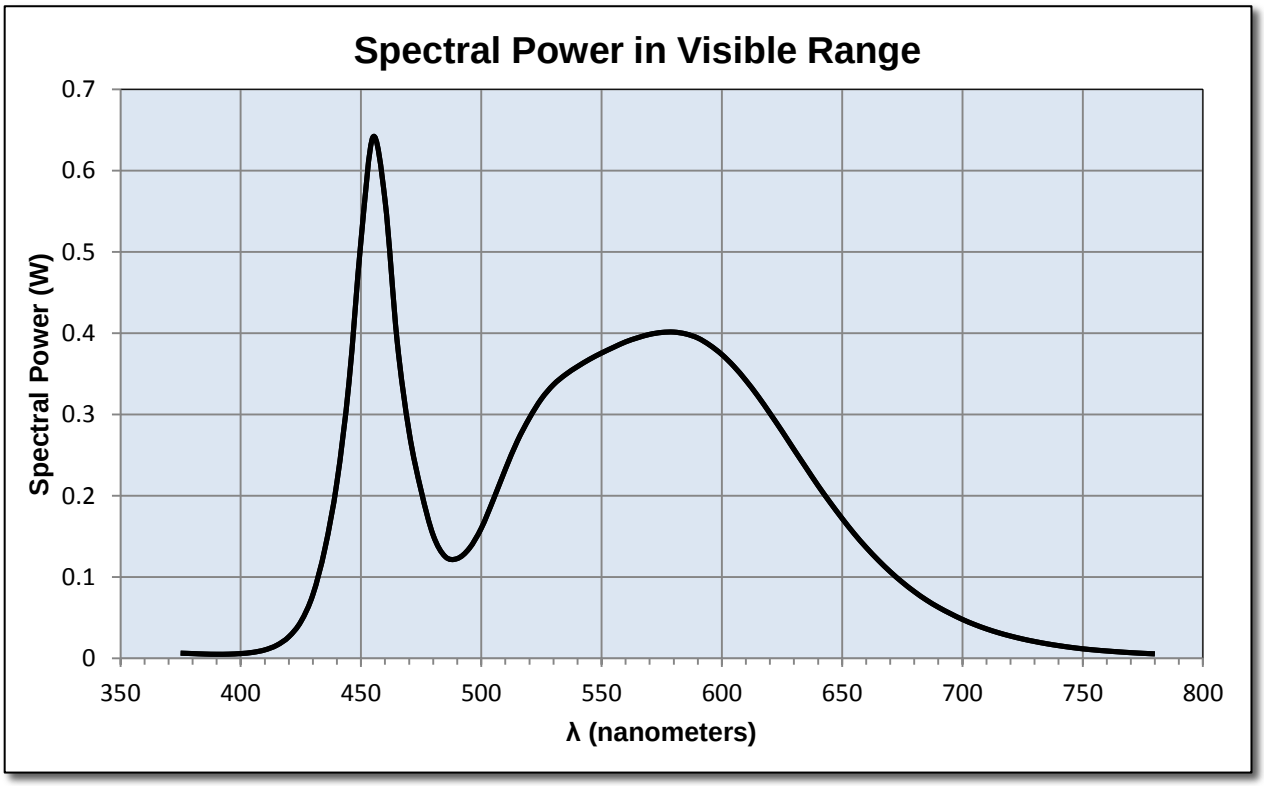
Ambient Temperature:	25 ± 1	(°C)

Electrical Measurements:

Input Voltage:	120	(VAC)
Input Current:	1.765	(A)
Input Power:	211.9	(W)
Input Power Factor:	0.997	
Current ATHD:	4.994	(%)

Photometric measurements:

Luminous Flux:	24520	(lumens)
Luminous Efficacy:	115.8	(lumens/W)
Correlated Color Temperature (CCT):	4969	(K)
CRI -Ra:	79.2	
CRI -R9:	-4.2	
DUV:	0.00088	
CIE Coordinate (x):	0.346	
CIE Coordinate (y):	0.354	
CIE Coordinate (u'):	0.211	
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	0.006	515	0.267	655	0.153
380	0.006	520	0.296	660	0.136
385	0.005	525	0.319	665	0.121
390	0.005	530	0.337	670	0.107
395	0.005	535	0.349	675	0.094
400	0.006	540	0.359	680	0.082
405	0.007	545	0.368	685	0.072
410	0.010	550	0.376	690	0.063
415	0.016	555	0.383	695	0.055
420	0.027	560	0.389	700	0.048
425	0.045	565	0.394	705	0.042
430	0.078	570	0.398	710	0.036
435	0.135	575	0.401	715	0.031
440	0.217	580	0.401	720	0.027
445	0.339	585	0.399	725	0.024
450	0.514	590	0.394	730	0.021
455	0.641	595	0.385	735	0.018
460	0.563	600	0.374	740	0.016
465	0.391	605	0.359	745	0.014
470	0.278	610	0.342	750	0.012
475	0.206	615	0.323	755	0.010
480	0.151	620	0.301	760	0.009
485	0.125	625	0.279	765	0.008
490	0.123	630	0.257	770	0.007
495	0.135	635	0.235	775	0.006
500	0.160	640	0.212	780	0.006
505	0.195	645	0.192		
510	0.232	650	0.172		

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Test Results: Goniometer

Results include unit flux, distribution, efficacy, and electrical power for sample number L16016.
Dialight unit model number HE2MC4PJ-xxx

Electrical Measurements:

Input Voltage:	120	(VAC)
Input current:	1.769	(A)
Input Power:	211.9	(W)
Power Factor:	0.977	

Photometric measurements:

Absolute Luminous Flux:	24301	(lumens)
Luminous Efficacy:	114.7	(lumens/W)

Intensity Summary:

INTENSITY (CANDLEPOWER) SUMMARY

ANGLE	ALONG	23	45	68	ACROSS	OUTPUT LUMENS
0	9244	9244	9244	9244	9244	
5	9489	9489	9489	9489	9489	352
15	9894	9894	9894	9894	9894	2086
25	10660	10660	10660	10660	10660	4134
35	10208	10208	10208	10208	10208	5983
45	7390	7390	7390	7390	7390	6188
55	3148	3148	3148	3148	3148	4001
65	671	671	671	671	671	1320
75	72	72	72	72	72	200
85	13	13	13	13	13	34
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	

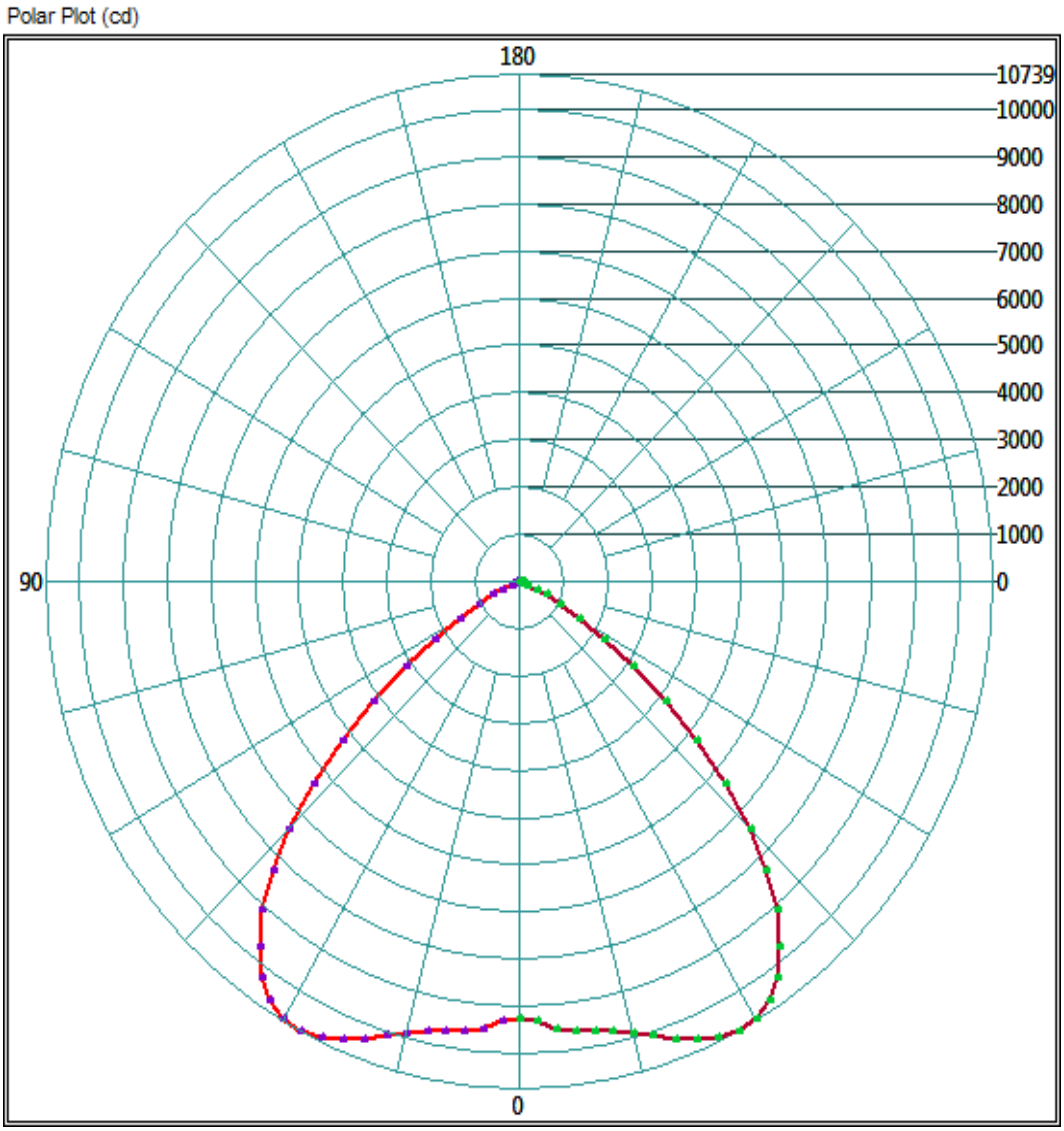
ZONAL LUMEN AND PERCENTAGES

ZONE	LUMENS	% LUMINAIRE
0-30	9399.2	38.7%
0-40	15775.04	64.9%
0-60	23644.16	97.3%
60-90	1030.56	4.2%
0-90	24300.32	100.0%
90-180	0	0.0%
0-180	24300.32	100.0%

Test Results: Goniometer

Results continued from previous page.

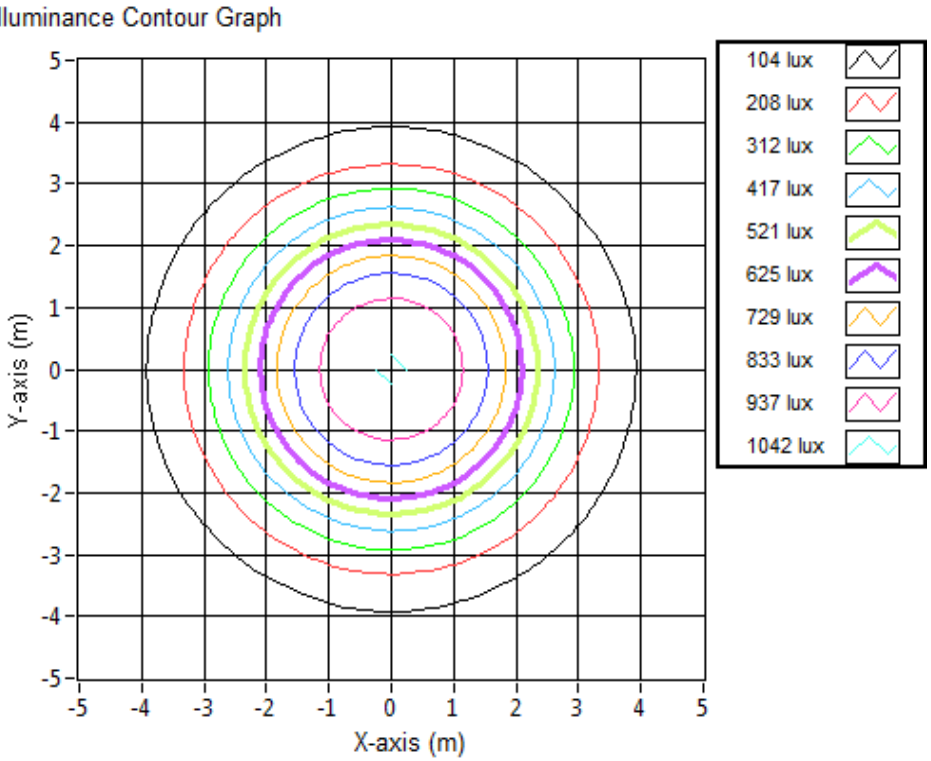
Polar Plot:



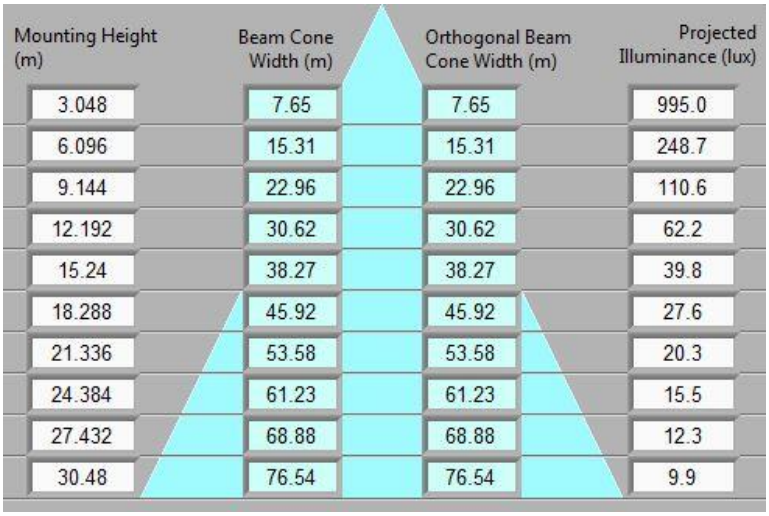
Test Results: Goniometer

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	7.65	7.65	995.0
6.096	15.31	15.31	248.7
9.144	22.96	22.96	110.6
12.192	30.62	30.62	62.2
15.24	38.27	38.27	39.8
18.288	45.92	45.92	27.6
21.336	53.58	53.58	20.3
24.384	61.23	61.23	15.5
27.432	68.88	68.88	12.3
30.48	76.54	76.54	9.9

Test Results: In Situ Temperature Measurement Test

Results include maximum LED chip temperature for sample number L16016.
Dialight unit model number HE2MC4PJ-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:

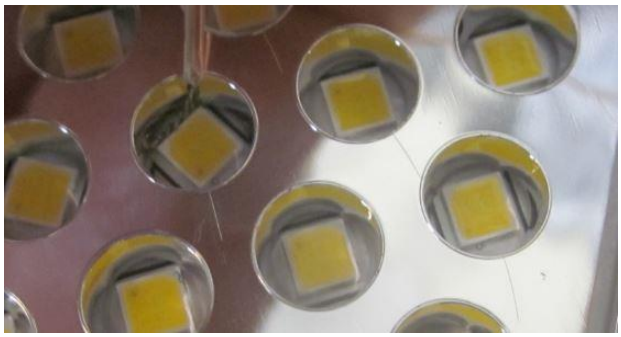
Maximum Power at Indicated Current:	0.35	(W)
Maximum Source Temperature:	113.7	(°C)

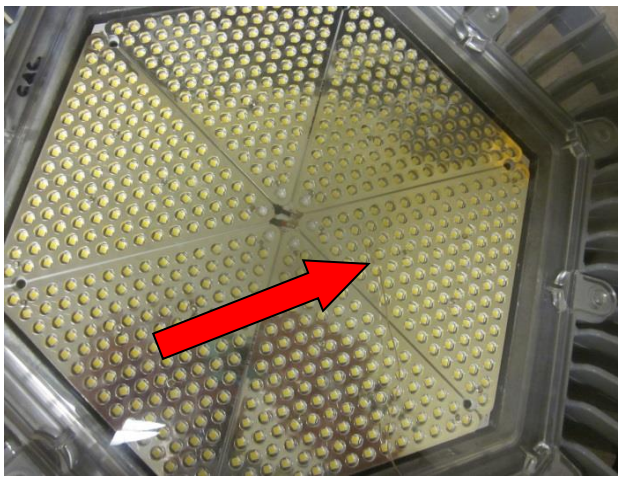
Test Conditions:

Temperature Measurement Location:	See Photographs Below	
Ambient Temperature:	25° ± 5‘	(°C)
Ambient temperature at time of measurement:	25.5	(°C)
Relative humidity at time of measurement:	19%	

Results:

Measured LED source temperature:	58.7	(°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