

Test Report

Report Number: L19037

Date: May 23, 2019

Issued by:

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

Test of one Reliant High Bay
Unit manufacturer: Dialight Corporation
Unit model number: RRE-2MC2-Cxxx-xxN

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: May 16, 2019 through May 23, 2019

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

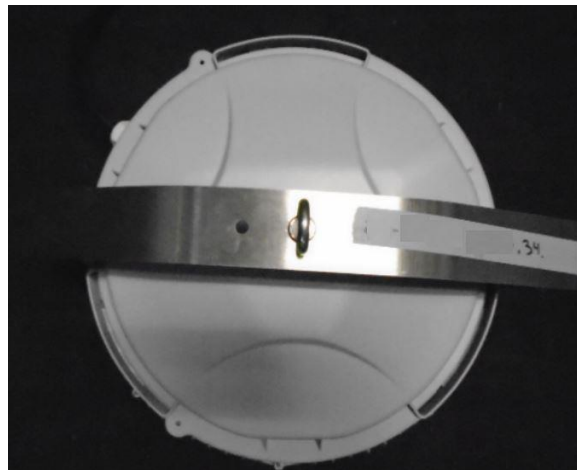
Description of sample:

Sample Number: L19037
Manufacturer: Dialight Corporation
Product Name: Reliant High Bay - RRE-2MC2-Cxxx-xxN
Description: Reliant High Bay
Model Number: RRE-2MC2-Cxxx-xxN

Report Summary

Sample number L19037
Dialight unit model number RRE-2MC2-Cxxx-xxN

Photograph(s) of sample:



*Photographs not to scale. For reference only.

Summary of Results:

	<u>Integrating Sphere</u>	<u>Goniophotometer</u>
Luminous Flux:	17610 (lumens)	17412 (lumens)
Electrical Power:	113.0 (W)	112.9 (W)
Luminous Efficacy:	155.8 (lumens/W)	154.3 (lumens/W)

Electrical Measurements:

Input Power (230 VAC): 113.0 (W)
Power Factor (230 VAC): 0.958
Current ATHD % (230 VAC): 8.064
Input Power (110 VAC): 116.4 (W)
Power Factor (110 VAC): 0.996
Current ATHD % (110 VAC): 4.84

Color Measurements:

Correlated Color Temperature (CCT): 5028
Color Rendering Index (CRI): 86.2
Chromaticity Coordinate (x): 0.345
Chromaticity Coordinate (y): 0.355
Chromaticity Coordinate (u'): 0.21
Chromaticity Coordinate (v'): 0.324
DUV: 0.0019

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 L19037.

Dialight unit model number RRE-2MC2-Cxxx-xxN

Test Conditions:

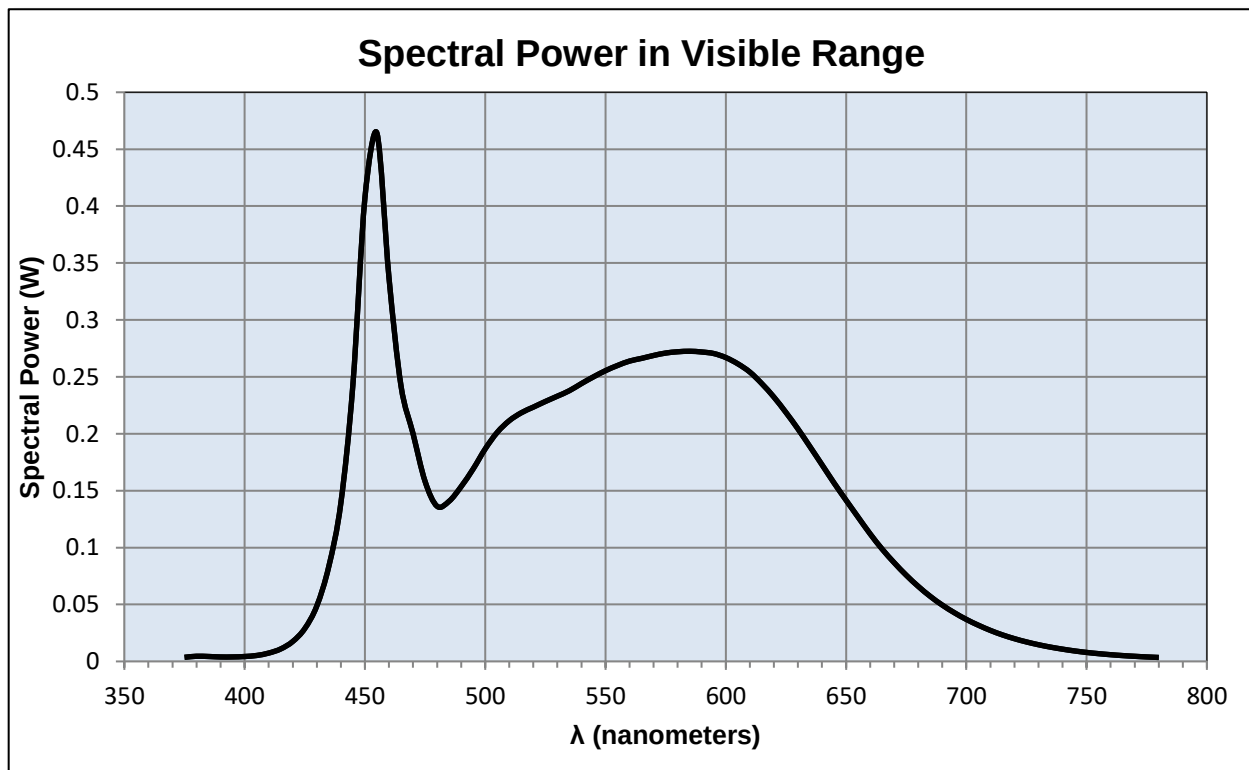
Ambient Temperature: 25 ± 1 (°C)

Electrical Measurements:

Input Voltage: 230 (VAC)
Input Current: 0.513 (A)
Input Power: 113.0 (W)
Input Power Factor: 0.958
Current ATHD: 8.064 (%)

Photometric measurements:

Luminous Flux: 17610 (lumens)
Luminous Efficacy: 155.8 (lumens/W)
Correlated Color Temperature (CCT): 5028 (K)
CRI -Ra: 86.2
CRI -R9: 21.8
DUV: 0.0019
CIE Coordinate (x): 0.345
CIE Coordinate (y): 0.355
CIE Coordinate (u'): 0.21
CIE Coordinate (v'): 0.324



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	0.004	515	0.218	655	0.127
380	0.005	520	0.223	660	0.112
385	0.004	525	0.228	665	0.099
390	0.004	530	0.233	670	0.087
395	0.004	535	0.238	675	0.076
400	0.004	540	0.244	680	0.066
405	0.005	545	0.250	685	0.057
410	0.007	550	0.255	690	0.050
415	0.011	555	0.260	695	0.043
420	0.018	560	0.264	700	0.037
425	0.029	565	0.266	705	0.032
430	0.049	570	0.269	710	0.027
435	0.084	575	0.271	715	0.023
440	0.139	580	0.272	720	0.020
445	0.243	585	0.272	725	0.017
450	0.407	590	0.272	730	0.015
455	0.464	595	0.270	735	0.013
460	0.337	600	0.267	740	0.011
465	0.242	605	0.261	745	0.009
470	0.200	610	0.254	750	0.008
475	0.158	615	0.244	755	0.007
480	0.136	620	0.232	760	0.006
485	0.141	625	0.219	765	0.005
490	0.154	630	0.204	770	0.004
495	0.169	635	0.189	775	0.004
500	0.187	640	0.173	780	0.003
505	0.201	645	0.157		
510	0.211	650	0.142		

Test Results: Goniometer

Results include unit flux, distribution, efficacy, and electrical power for sample number L19037.
Dialight unit model number RRE-2MC2-Cxxx-xxN

Electrical Measurements:

Input Voltage: 230 (VAC)
Input current: 0.516 (A)
Input Power: 112.9 (W)
Power Factor: 0.95

Photometric measurements:

Absolute Luminous Flux: 17412 (lumens)
Luminous Efficacy: 154.3 (lumens/W)

Intensity Summary:

<u>INTENSITY (CANDLEPOWER) SUMMARY</u>						
ANGLE	ALONG	23	45	67.5	ACROSS	OUTPUT LUMENS
0	6526	6526	6526	6526	6526	
5	6515	6515	6515	6515	6515	243
15	6508	6508	6508	6508	6508	1388
25	6828	6828	6828	6828	6828	2656
35	6995	6995	6995	6995	6995	3983
45	5497	5497	5497	5497	5497	4458
55	2796	2796	2796	2796	2796	3283
65	499	499	499	499	499	1132
75	109	109	109	109	109	199
85	36	36	36	36	36	63
95	0	0	0	0	0	6
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

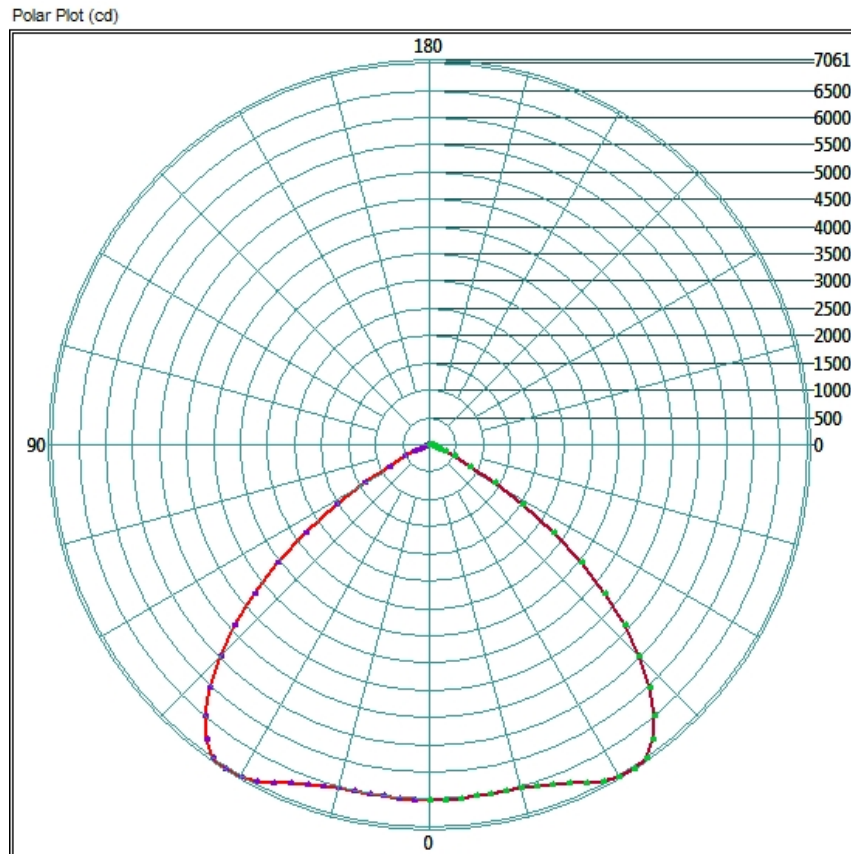
ZONAL LUMEN AND PERCENTAGES

ZONE	LUMENS	% LUMINAIRE
0-30	6130.56	35.2%
0-40	10547.52	60.6%
0-60	16811.52	96.6%
60-90	926.88	5.3%
0-90	17411.84	100.0%
90-180	0	0.0%
0-180	17411.84	100.0%

Test Results: Goniometer

Results continued from previous page.

Polar Plot:

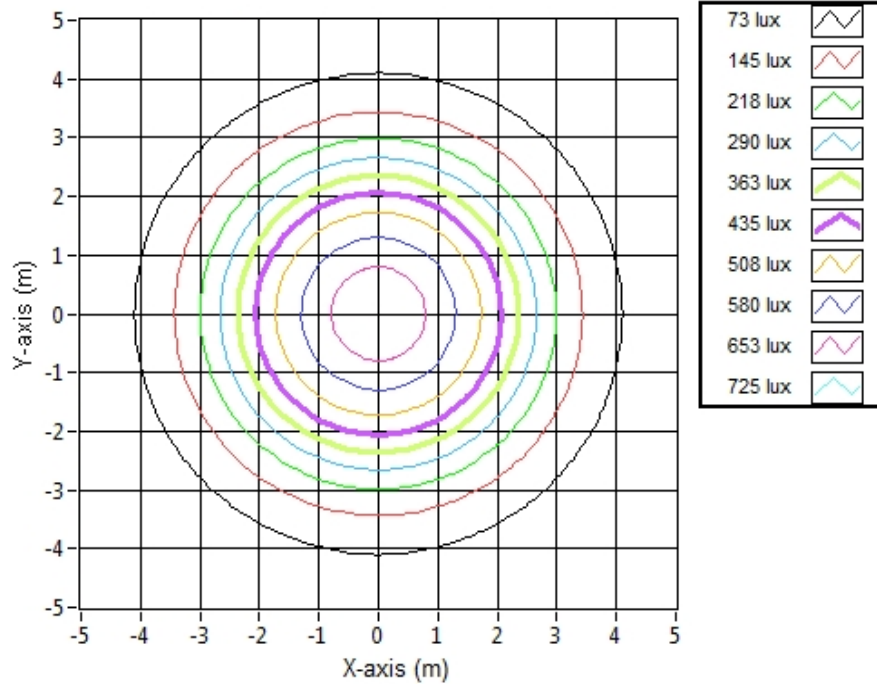


Test Results: Goniometer

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	8.22	8.22	702.5
6.096	16.44	16.44	175.6
9.144	24.66	24.66	78.1
12.192	32.88	32.88	43.9
15.24	41.10	41.10	28.1
18.288	49.32	49.32	19.5
21.336	57.54	57.54	14.3
24.384	65.76	65.76	11.0
27.432	73.98	73.98	8.7
30.48	82.20	82.20	7.0

Test Results: In Situ Temperature Measurement Test

Results include maximum LED chip temperature for sample number L19037.

Dialight unit model number RRE-2MC2-Cxxx-xxN

LED identified as Seoul Semiconductor part number SAW8C22B.

LED drive current (as indicated by customer): 27.81 (mA)

LED Specifications:

LED specifications are taken from LED manufacturer datasheet:

Maximum Forward Current (If):	250	(mA)
Maximum Rated Power Dissipation:	1.5	(W)
Maximum Junction Temp. (Tj):	125	(°C)
Thermal Resistance (Rth):	17	(°C/W)

Derived Specifications:

Maximum Power at Indicated Current:	0.167	(W)
Maximum Source Temperature:	122.2	(°C)

Test Conditions:

Temperature Measurement Location:	See Photographs Below
Ambient Temperature:	25° ± 5' (°C)
Ambient temperature at time of measurement:	24.5 (°C)
Relative humidity at time of measurement:	39%

Results:

Measured LED source temperature: 47.7 (°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
Delta Elektronika DC Power Supply	SM.300-5
Instek AC Power Supply	APS-9501
Sorensen DC Power Supply	XHR150-7
TPI Digital Thermometer	TPI 343
Fluke 52II Thermometer	068158
Fluke 971 Humidity Meter	971
Volttech Power Analyzer	PM1000+
Volttech Universal Breakout Box	PM1000+
BK Precision	1715A
Step-Up Transformer	
Omega TC	Dpi8-C24
Agilent True RMS OLED Multimeter	U1273A
ITL Osram Calibraton lamps for Goniometer	J9a8
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ITL Osram Calibraton lamps for Goniometer	J9a8
Adaptive Power Systems AC Power Supply	FC-210
Xitron Power Analyzer	XT2640
GwINSTEK DC Power Supply	GEP172679
Osram Sylvania Calibration Lamp for Sphere	STD-20WF-3

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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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