

Test Report

Report Number: L19033

Date: May 16, 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-Exxx-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 15, 2019 through May 16, 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: L19033
Manufacturer: Dialight Corporation
Product Name: Reliant High Bay - RRE-2MC2-Exxx-xxN
Description: Reliant High Bay
Model Number: RRE-2MC2-Exxx-xxN

Report Summary

Sample number L19033
Dialight unit model number RRE-2MC2-Exxx-xxN

Photograph(s) of sample:



*Photographs not to scale. For reference only.

Summary of Results:

	<u>Integrating Sphere</u>	<u>Goniophotometer</u>
Luminous Flux:	24130 (lumens)	24102 (lumens)
Electrical Power:	159.7 (W)	159.5 (W)
Luminous Efficacy:	151 (lumens/W)	151.1 (lumens/W)

Electrical Measurements:

Input Power (230 VAC): 159.7 (W)
Power Factor (230 VAC): 0.974
Current ATHD % (230 VAC): 8.151
Input Power (110 VAC): 165.4 (W)
Power Factor (110 VAC): 0.997
Current ATHD % (110 VAC): 4.284

Color Measurements:

Correlated Color Temperature (CCT): 5048
Color Rendering Index (CRI): 86
Chromaticity Coordinate (x): 0.344
Chromaticity Coordinate (y): 0.354
Chromaticity Coordinate (u'): 0.21
Chromaticity Coordinate (v'): 0.324
DUV: 0.0017

Temperature Measurements:

In Situ LED Source Temperature: 48.0 (°C)

Test Results: Integrating Sphere

Results include unit color, flux, efficacy and electrical power for sample number L19033.

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

Test Conditions:

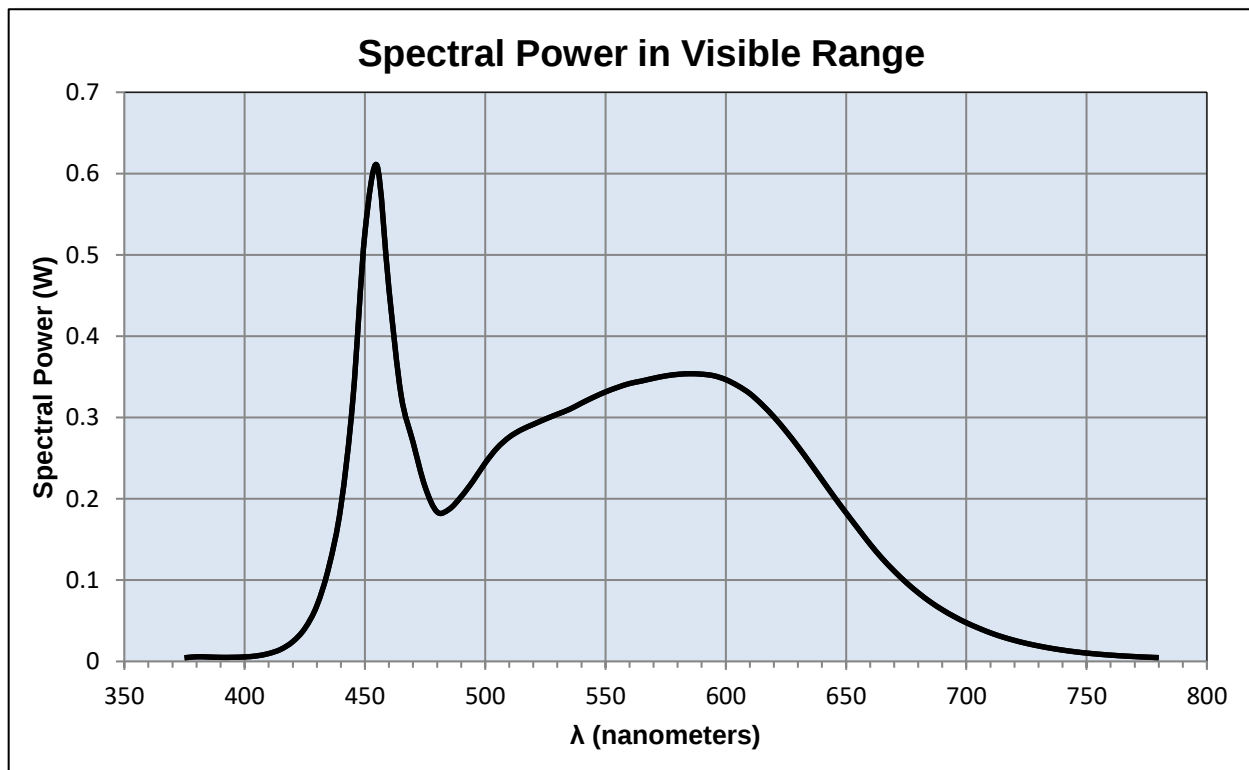
Ambient Temperature: 25 ± 1 (°C)

Electrical Measurements:

Input Voltage: 230 (VAC)
Input Current: 0.711 (A)
Input Power: 159.7 (W)
Input Power Factor: 0.974
Current ATHD: 8.151 (%)

Photometric measurements:

Luminous Flux: 24130 (lumens)
Luminous Efficacy: 151.0 (lumens/W)
Correlated Color Temperature (CCT): 5048 (K)
CRI -Ra: 86
CRI -R9: 21
DUV: 0.0017
CIE Coordinate (x): 0.344
CIE Coordinate (y): 0.354
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	0.005	515	0.285	655	0.163
380	0.006	520	0.292	660	0.144
385	0.005	525	0.298	665	0.127
390	0.005	530	0.304	670	0.111
395	0.005	535	0.310	675	0.097
400	0.006	540	0.318	680	0.084
405	0.007	545	0.325	685	0.073
410	0.010	550	0.331	690	0.064
415	0.015	555	0.337	695	0.055
420	0.024	560	0.342	700	0.048
425	0.040	565	0.345	705	0.041
430	0.068	570	0.348	710	0.035
435	0.116	575	0.351	715	0.030
440	0.191	580	0.353	720	0.026
445	0.322	585	0.354	725	0.022
450	0.527	590	0.353	730	0.019
455	0.610	595	0.351	735	0.016
460	0.458	600	0.347	740	0.014
465	0.328	605	0.339	745	0.012
470	0.270	610	0.329	750	0.010
475	0.215	615	0.316	755	0.009
480	0.184	620	0.301	760	0.008
485	0.187	625	0.283	765	0.007
490	0.203	630	0.264	770	0.006
495	0.222	635	0.244	775	0.005
500	0.244	640	0.223	780	0.005
505	0.263	645	0.203		
510	0.276	650	0.183		

Test Results: Goniometer

Results include unit flux, distribution, efficacy, and electrical power for sample number L19033.
Dialight unit model number RRE-2MC2-Exxx-xxN

Electrical Measurements:

Input Voltage: 230.2 (VAC)
Input current: 0.715 (A)
Input Power: 159.5 (W)
Power Factor: 0.969

Photometric measurements:

Absolute Luminous Flux: 24102 (lumens)
Luminous Efficacy: 151.1 (lumens/W)

Intensity Summary:

<u>INTENSITY (CANDLEPOWER) SUMMARY</u>						
ANGLE	ALONG	23	45	67.5	ACROSS	OUTPUT LUMENS
0	9092	9092	9092	9092	9092	
5	9074	9074	9074	9074	9074	339
15	9067	9067	9067	9067	9067	1934
25	9523	9523	9523	9523	9523	3703
35	9734	9734	9734	9734	9734	5547
45	7603	7603	7603	7603	7603	6183
55	3821	3821	3821	3821	3821	4512
65	662	662	662	662	662	1521
75	148	148	148	148	148	269
85	48	48	48	48	48	85
95	0	0	0	0	0	8
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

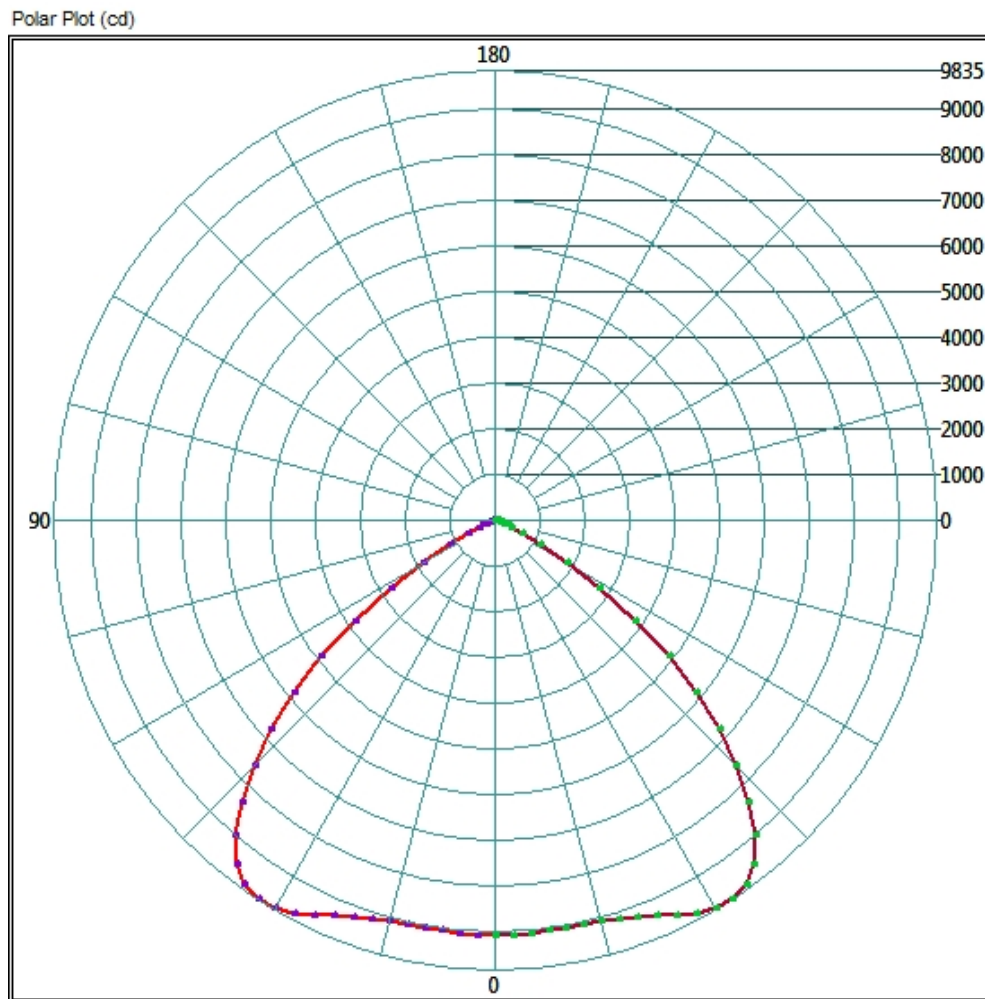
ZONAL LUMEN AND PERCENTAGES

ZONE	LUMENS	% LUMINAIRE
0-30	8544.48	35.5%
0-40	14685.28	60.9%
0-60	23297.44	96.7%
60-90	1243.36	5.2%
0-90	24101.92	100.0%
90-180	0	0.0%
0-180	24101.92	100.0%

Test Results: Goniometer

Results continued from previous page.

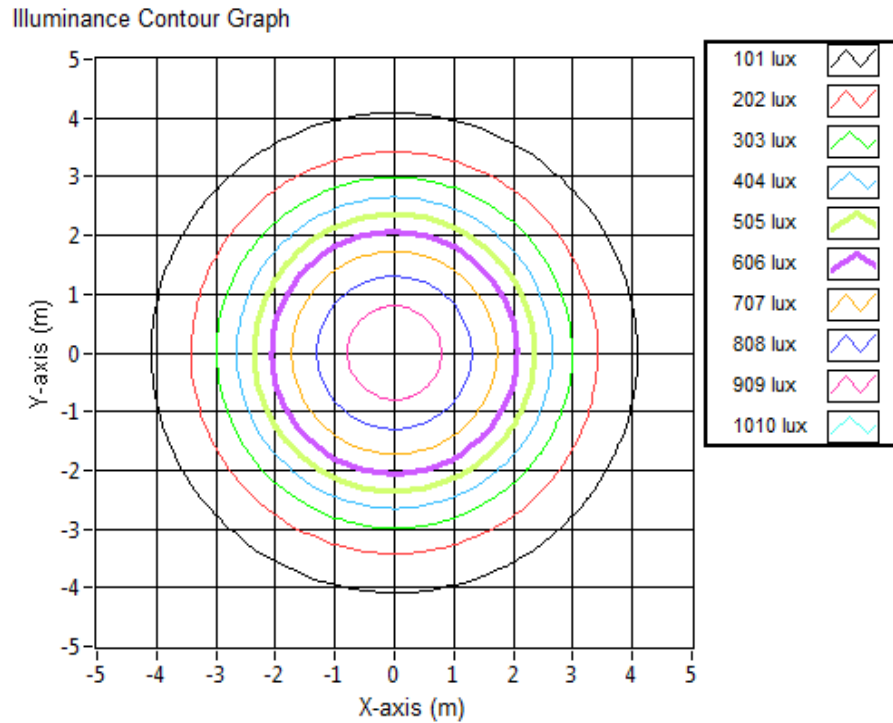
Polar Plot:



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	8.17	8.17	978.7
6.096	16.34	16.34	244.7
9.144	24.50	24.50	108.7
12.192	32.67	32.67	61.2
15.24	40.84	40.84	39.1
18.288	49.01	49.01	27.2
21.336	57.17	57.17	20.0
24.384	65.34	65.34	15.3
27.432	73.51	73.51	12.1
30.48	81.68	81.68	9.8

Test Results: In Situ Temperature Measurement Test

Results include maximum LED chip temperature for sample number L19033.

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

LED identified as Seoul Semiconductor part number SAW8C22B.

LED drive current (as indicated by customer): 38.11 (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:

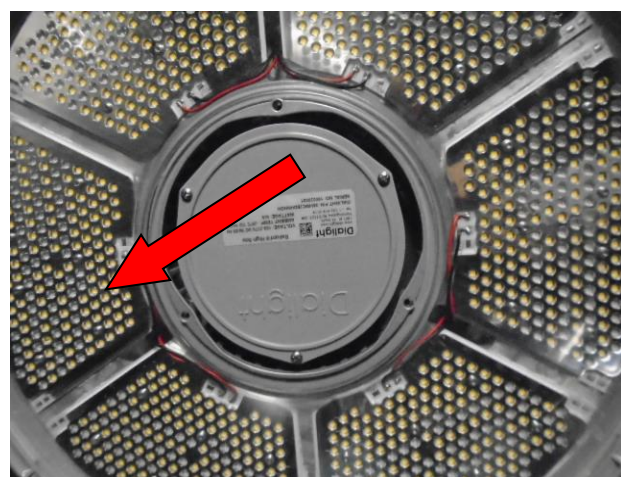
Maximum Power at Indicated Current:	0.229	(W)
Maximum Source Temperature:	121.1	(°C)

Test Conditions:

Temperature Measurement Location:	See Photographs Below
Ambient Temperature:	25° ± 5' (°C)
Ambient temperature at time of measurement:	24.1 (°C)
Relative humidity at time of measurement:	39%

Results:

Measured LED source temperature: 48 (°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
ITL Osram Calibraton lamps for Goniometer	J9a8
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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