

REPORT NUMBER: RAB03247

ISSUE DATE: 04/27/17

CATALOG NUMBER: RTLED2X4-49YW/D10

LUMINAIRE: WHITE PAINTED SHEET METAL HOUSING, 2 WHITE CIRCUIT BOARDS

EACH WITH 98 LEDS, MATTE WHITE POLYCARBONATE LENS IN THE CENTER, ROUGH SURFACE FACING OUT. FIXTURE WAS MOUNTED IN Lithonia Lighting Model #2GT8 4 32 A12 MVOLT 1/4 MVISPWS1836LP741 HOUSING.

LAMPS: ONE HUNDRED AND NINETY-SIX LIGHT EMITTING DIODES (LEDs), VERTICAL BASE-UP POSITION.

(SEE PAGE 2 FOR MORE INFORMATION)

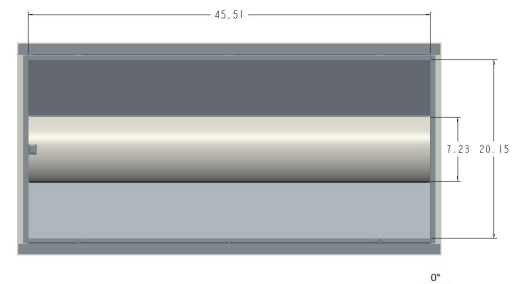
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DATE SAMPLE TESTED: 04/27/17

CANDELA DISTRIBUTION

	0.0	22.5	45.0	67.5	90.0	
0	2108	2108	2108	2108	2108	
5	2071	2083	2109	2116	2113	200
15	1988	2003	2034	2047	2051	572
25	1830	1847	1887	1910	1921	866
35	1601	1627	1678	1715	1730	1046
45	1332	1360	1419	1474	1498	1093
55	1030	1061	1135	1210	1241	1016
65	710	752	843	913	940	825
75	399	455	524	612	648	558
85	117	165	228	262	270	222
90	9	16	11	9	8	

FLUX



ZONAL LUMEN SUMMARY

ZONE	LUMENS	%FIXT
0- 30	1638	25.6
0- 40	2683	41.9
0- 60	4792	74.9
0- 90	6399	100.0
90-180	0	0.0
0-180	6399	100.0

TOTAL INPUT WATTS = 49.1

EFFICACY = 130.3 Lm/W

CIE TYPE - DIRECT

PLANE : 0-DEG 90-DEG

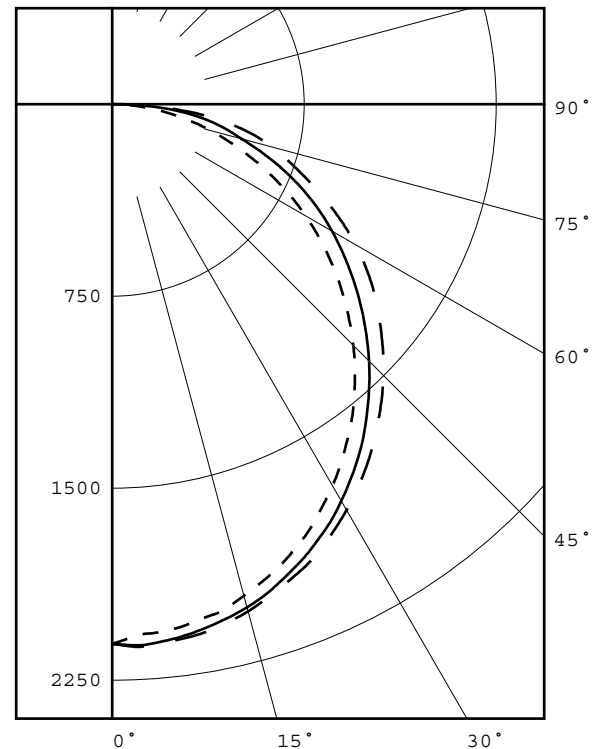
SPACING CRITERIA : 1.2 1.3

PLANE : 0-DEG 90-DEG

LUMINOUS LENGTH : 45.510 20.150

LUMINANCE DATA IN CANDELA/SQ METER

ANGLE IN DEG	AVERAGE 0-DEG	AVERAGE 45-DEG	AVERAGE 90-DEG
45	3183.	3391.	3579.
55	3034.	3343.	3656.
65	2839.	3370.	3758.
75	2605.	3421.	4230.
85	2268.	4420.	5234.



LEGEND:

0-deg: - - - - -
 45-deg: _____
 90-deg:

Checked P. ALBERS

Approved D. WANG-MUNSON

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ADDITIONAL INFORMATION

NOTE: THIS REPORT WITH THE USE OF THE NVLAP LOGO SHALL NOT BE USED BY THE CLIENT TO CLAIM PRODUCT CERTIFICATION, APPROVAL, OR ENDORSEMENT BY NVLAP, NIST, OR ANY AGENCY OF THE FEDERAL GOVERNMENT.

NOTE: DATA SHOWN IS ABSOLUTE FOR THE SAMPLE PROVIDED.

TOTAL INPUT WATTS = 49.059 W AT 120.0 VAC.

LED DRIVER: RD-050-EUH-A1050

TEST PROCEDURE: IESNA LM-79-08

LM-80 DATA AVAILABLE FROM MANUFACTURER FOR SOLID STATE SOURCE

AMBIENT: 24.3

ACCREDITED LABORATORY CODE 201058-0

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PLANE : 0-DEG 90-DEG
BEAM ANGLE (50%) : 108.0 X 122.4 DEGREES
FIELD ANGLE (10%) : 162.9 X 171.9 DEGREES

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CANDELA DISTRIBUTION

	0.0	22.5	45.0	67.5	90.0
0.0	2108	2108	2108	2108	2108
2.5	2079	2092	2116	2121	2122
5.0	2071	2083	2109	2116	2113
7.5	2059	2070	2097	2107	2106
10.0	2039	2051	2079	2092	2094
12.5	2022	2030	2059	2072	2074
15.0	1988	2003	2034	2047	2051
17.5	1954	1969	2006	2019	2021
20.0	1918	1935	1968	1986	1990
22.5	1875	1893	1930	1950	1959
25.0	1830	1847	1887	1910	1921
27.5	1775	1799	1842	1866	1877
30.0	1721	1743	1790	1821	1831
32.5	1663	1685	1735	1771	1782
35.0	1601	1627	1678	1715	1730
37.5	1540	1565	1617	1659	1675
40.0	1472	1497	1552	1599	1617
42.5	1403	1430	1487	1537	1559
45.0	1332	1360	1419	1474	1498
47.5	1258	1288	1349	1409	1435
50.0	1183	1214	1278	1343	1370
52.5	1108	1139	1207	1278	1307
55.0	1030	1061	1135	1210	1241
57.5	952	984	1063	1142	1171
60.0	873	908	992	1071	1098
62.5	793	830	919	994	1020
65.0	710	752	843	913	940
67.5	629	675	765	833	860
70.0	549	599	684	754	783
72.5	473	524	603	678	714
75.0	399	455	524	612	648
77.5	325	380	458	544	574
80.0	253	303	394	466	489
82.5	183	230	316	373	391
85.0	117	165	228	262	270
87.5	55	92	116	125	116
90.0	9	16	11	9	8

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ZONAL LUMEN SUMMARY

0- 5	50.
5- 10	149.
10- 15	243.
15- 20	329.
20- 25	403.
25- 30	463.
30- 35	509.
35- 40	537.
40- 45	549.
45- 50	544.
50- 55	525.
55- 60	491.
60- 65	443.
65- 70	382.
70- 75	314.
75- 80	244.
80- 85	163.
85- 90	59.

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5-DEGREE ZONAL LUMEN SUMMARY

0- 5	50
5- 10	149
10- 15	243
15- 20	329
20- 25	403
25- 30	463
30- 35	509
35- 40	537
40- 45	549
45- 50	544
50- 55	525
55- 60	491
60- 65	443
65- 70	382
70- 75	314
75- 80	244
80- 85	163
85- 90	59
90- 95	2
95-100	0
100-105	0
105-110	0
110-115	0
115-120	0
120-125	0
125-130	0
130-135	0
135-140	0
140-145	0
145-150	0
150-155	0
155-160	0
160-165	0
165-170	0
170-175	0
175-180	0

10-DEGREE ZONAL LUMEN SUMMARY

0- 10	200
0- 20	771
0- 30	1638
0- 40	2683
0- 50	3777
0- 60	4792
0- 70	5617
0- 80	6176
0- 90	6398
0-100	6399
0-110	6399
0-120	6399
0-130	6399
0-140	6399
0-150	6399
0-160	6399
0-170	6399
0-180	6399

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COEFFICIENTS OF UTILIZATION - ZONAL CAVITY METHOD

EFFECTIVE FLOOR CAVITY REFLECTANCE 0.20

RC	80				70				50			30			10			0
RW	70	50	30	10	70	50	30	10	50	30	10	50	30	10	50	30	10	0
0	119	119	119	119	116	116	116	116	111	111	111	106	106	106	102	102	102	100
1	108	102	98	94	105	100	96	92	96	92	89	92	89	86	88	86	84	82
2	97	89	81	75	95	87	80	74	83	77	73	80	75	71	77	73	69	67
3	89	77	69	62	86	76	68	61	73	66	60	70	64	59	67	62	58	56
4	81	68	59	52	79	67	58	52	64	57	51	62	56	50	60	54	50	47
5	74	61	52	45	72	60	51	45	58	50	44	56	49	44	54	48	43	41
6	69	55	46	39	67	54	45	39	52	44	38	50	43	38	49	43	38	36
7	64	50	41	34	62	49	40	34	47	40	34	46	39	34	44	38	33	31
8	59	45	37	31	58	45	36	30	43	36	30	42	35	30	41	35	30	28
9	55	42	33	27	54	41	33	27	40	32	27	39	32	27	38	31	27	25
10	52	38	30	25	50	38	30	25	37	30	25	36	29	25	35	29	24	23

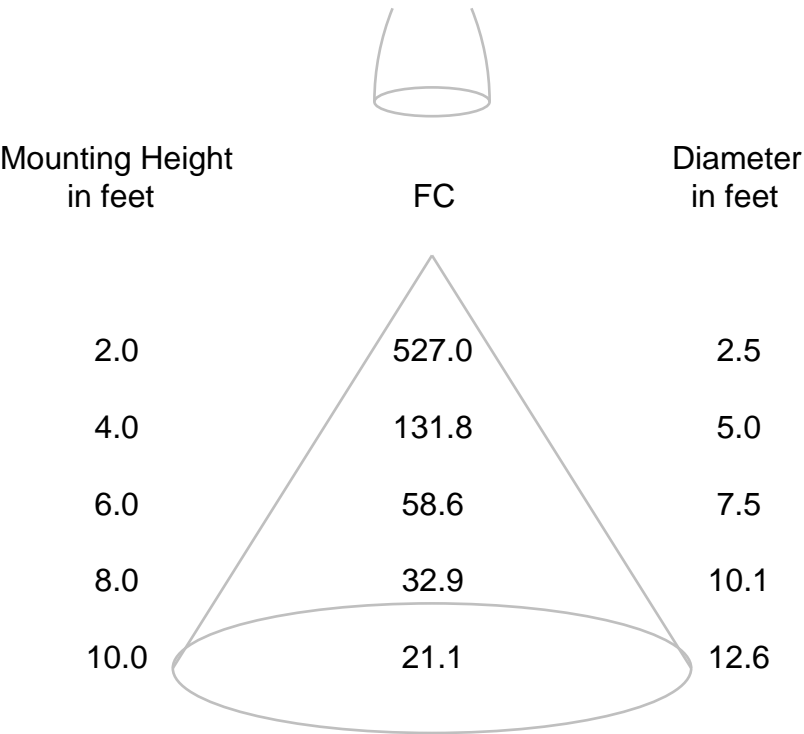
ALL CANDELA, LUMENS, LUMINANCE, AND VCP VALUES IN THIS REPORT ARE BASED ON ABSOLUTE PHOTOMETRY. THE COEFFICIENT OF UTILIZATION VALUES ARE BASED ON THE TOTAL ABSOLUTE LUMEN OUTPUT OF THIS LUMINAIRE SAMPLE.

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CONE OF LIGHT DIAGRAM

(diameter shown is where fc value is half the fc at nadir)



Note: The candela values used to generate this diagram were obtained by averaging the photometric data into a single plane.

REPORT NUMBER: RAB03248
DATE: 4/25/2017
PREPARED FOR: RAB LIGHTING INC.
CATALOG NUMBER: RTLED2X4-49YW/D10

ADDRESS: 170 LUDLOW AVE, NORTHVALE, NJ 07647

LUMINAIRE: WHITE PAINTED SHEET METAL HOUSING, 2 WHITE CIRCUIT BOARDS EACH WITH 98 LEDS, MATTE WHITE POLYCARBONATE LENS IN THE CENTER, ROUGH SURFACE FACING OUT. FIXTURE WAS MOUNTED IN Lithonia Lighting Model #2GT8 4 32 A12 MVOLT 1/4 MVISPWS1836LP741 HOUSING.

LAMP: ONE HUNDRED AND NINETY-SIX LIGHT EMITTING DIODES (LEDs), VERTICAL BASE-UP POSITION.

DRIVER: RD-050-EUH-A1050

OBJECT OF TEST: DATA SHOWN IS ABSOLUTE FOR THE SAMPLE PROVIDED AT THE RATED INPUT VOLTAGES (120.0 AND 277.0 VAC, 60Hz) TO THE TEST SAMPLE.

INSTRUMENTS:	GWINSTEK PROGRAMMABLE AC POWER SOURCE APS-7100	Calibration Due:
	CHROMA PROGRAMMABLE DIGITAL POWER METER MODEL 66202	N/A
	OCEAN OPTICS QE65PRO Spectroradiometer	3/01/18
	RAB 2.0 meter Diameter Integrating Sphere, 4PI Geometry	04/10/18

OBJECT OF TEST: Measure the Absolute Flux in lumens*, Total Radiant Flux*, Spectral Power Distribution (SPD), Correlated Color Temperature (CCT), Color Rendering Indices (CRIa,1-14), Chromaticity Coordinates (x,y; u'v'), ANSI C78.377 Duv, and electrical data including ANSI C82.77-2002 Power Factor (PF), and Total Harmonic Distortion (THD) to the test sample. Measure electrical data including Total Harmonic Distortion (THD) at maximum nominal rated input voltage. Report Off-State Power.

PROCEDURE: The test sample was mounted inside the integrating sphere, energized, and allowed to stabilize. After stabilization occurred, measurements were taken. In order to measure mean performance, multiple data sets were recorded and averaged. Readings were taken with the test sample operating at 60 HZ input in a 25 +/-1 degree Celsius free air ambient and in accordance with IESNA LM-79-08. Electrical data was also recorded at maximum nominal rated input voltage (277.0 VAC). All data are traceable to the National Institute of Standards and Technology. Off-State Power was reported with no voltage applied to the sample.

*NOTE: Proper calibration of integrating spheres for measuring total flux output of non-directional samples will produce reliable, repeatable results within the calibration tolerances of the equipment used. However, measurement of test samples with significant self absorption and/or directional output, even when these effects are compensated for, are likely to have a greater variation in results compared to the flux output calculated from a goniophotometric exploration since these artifacts do not affect the goniophotometric results.

RESULTS: (continued subsequent pages)

Checked X.CAO

Approved D.WANG-MUNSON
Lighting Engineer

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RESULTS:

PHOTOMETRIC	
Total Integrated Flux (lumens)	6399 *
SPECTRORADIOMETRIC	
Observer	CIE 1931 2 degree
Chromaticity Ordinate x	0.4306
Chromaticity Ordinate y	0.3983
Observer	CIE 1976 2 degree
Chromaticity Ordinate u'	0.2490
Chromaticity Ordinate v'	0.5181
Correlated Color Temp CCT (K)	3061
ANSI C78.377-2008 Duv	-0.001
Total Radiant Flux (milliWatts)	19547 *
ELECTRICAL	
Input Voltage (Volts AC)	120.0
Input Current (Amps AC)	0.411
Input Power (Watts)	49.1
Input Power Factor (%)	99.4
Input Current THD (%)	8.1
Input Voltage THD (%)	0.2
EFFICACY (Lumens/Watt)	
	130.3
ELECTRICAL AT MAX NONIMAL INPUT	
Input Voltage (Volts AC)	277.0
Input Current (Amps AC)	0.181
Input Power (Watts)	48.0
Input Power Factor (%)	95.5
Input Current THD (%)	8.5
Input Voltage THD (%)	0.2
Off-State Power (Watts)	0.0

COLOR RENDERING INDICES	CRI
Ra (Average 1-8)	84
R1 Light greyish red	82
R2 Dark greyish yellow	92
R3 Strong yellowish green	96
R4 Moderate yellowish green	83
R5 Light bluish green	83
R6 Light blue	91
R7 Light violet	83
R8 Light reddish purple	60
R9 Strong red	10
R10 Strong yellow	82
R11 Strong green	83
R12 Strong blue	77
R13 Light yellowish pink (skin)	84
R14 Moderate olive green (leaf)	99

*NOTE:

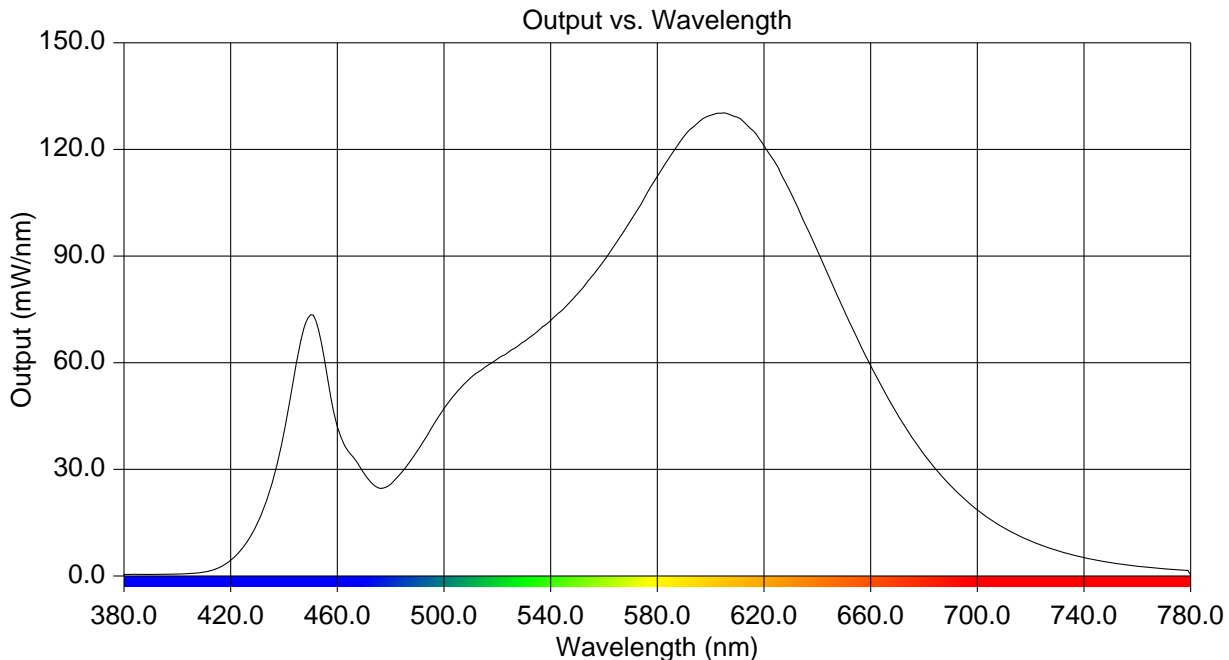
Proper calibration of integrating spheres for measuring total flux output of non-directional samples will produce reliable, repeatable results within the calibration tolerances of the equipment used. However, measurement of test samples with significant self absorption and/or directional output, even when these effects are compensated for, are likely to have a greater variation in results compared to the flux output calculated from a goniophotometric exploration since these artifacts do not affect the goniophotometric results.

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RESULTS:

Wavelength	mW per nm	Wavelength	mW per nm	Wavelength	mW per nm
380	0.425	515	58.471	650	74.796
385	0.461	520	61.020	655	66.814
390	0.467	525	63.456	660	59.272
395	0.500	530	65.917	665	52.040
400	0.559	535	68.770	670	45.470
405	0.701	540	71.849	675	39.580
410	1.083	545	75.249	680	34.247
415	2.151	550	79.307	685	29.548
420	4.378	555	83.793	690	25.350
425	8.289	560	88.657	695	21.804
430	14.857	565	94.109	700	18.590
435	24.730	570	99.882	705	15.855
440	40.549	575	106.103	710	13.534
445	61.250	580	112.413	715	11.527
450	73.470	585	118.130	720	9.823
455	61.644	590	123.664	725	8.371
460	42.013	595	127.315	730	7.128
465	34.227	600	129.560	735	6.060
470	28.865	605	130.267	740	5.168
475	24.921	610	129.035	745	4.412
480	25.790	615	125.816	750	3.775
485	29.931	620	121.058	755	3.213
490	35.202	625	115.359	760	2.761
495	41.226	630	107.816	765	2.354
500	47.121	635	99.622	770	2.023
505	51.905	640	91.494	775	1.744
510	55.757	645	83.094	780	0.262



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CIE Chromaticity Diagram

