

REPORT NUMBER: RAB03228

ISSUE DATE: 04/19/17

CATALOG NUMBER: RTLED2X2-19YW/D10

PAGE: 1 OF 8

DATE SAMPLE TESTED: 04/19/17

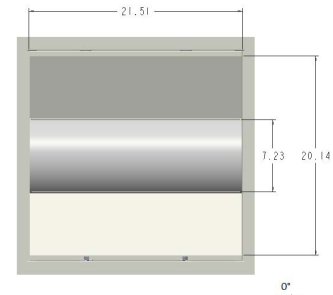
LUMINAIRE: WHITE PAINTED SHEET METAL HOUSING, 2 WHITE CIRCUIT BOARDS
EACH WITH 40 LEDS, MATTE WHITE POLYCARBONATE LENS IN THE CENTER,
ROUGH SURFACE FACING OUT. FIXTURE WAS MOUNTED IN Lithonia Lighting
Model #2GT8 2 U316 A12 MVOLT GEB10IS HOUSING.

LAMPS: EIGHTY WHITE LIGHT EMITTING DIODES (LEDS), VERTICAL BASE-UP
POSITION.

(SEE PAGE 2 FOR MORE INFORMATION)

CANDELA DISTRIBUTION

	0.0	22.5	45.0	67.5	90.0	FLUX
0	792	792	792	792	792	
5	787	787	788	790	791	75
15	754	756	760	764	766	214
25	692	695	702	713	715	324
35	606	611	623	638	643	390
45	501	509	525	548	556	407
55	388	397	420	449	461	378
65	269	283	313	341	351	308
75	150	166	192	227	243	206
85	43	56	73	82	82	73
90	0	1	0	0	0	



ZONAL LUMEN SUMMARY

ZONE	LUMENS	%FIXT
0- 30	614	25.8
0- 40	1004	42.2
0- 60	1789	75.3
0- 90	2377	100.0
90-180	0	0.0
0-180	2377	100.0

TOTAL INPUT WATTS = 19.4

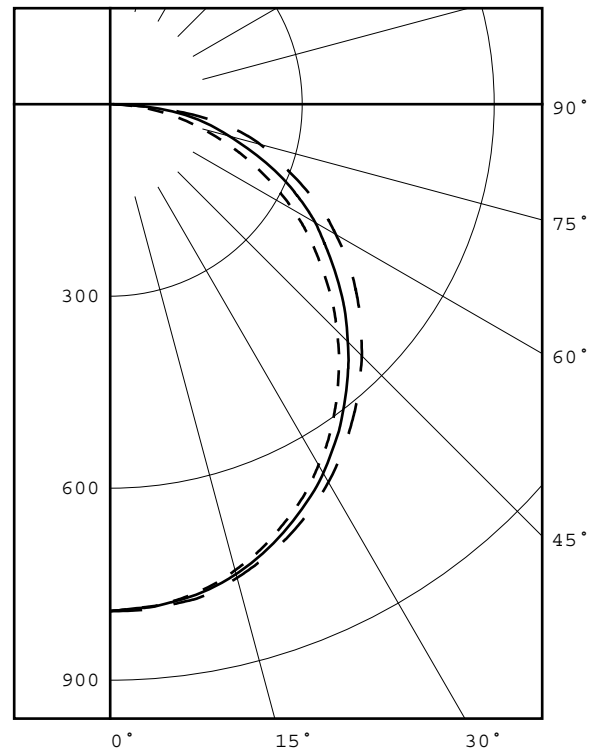
EFFICACY = 122.5 Lm/W

CIE TYPE - DIRECT

PLANE : 0-DEG 90-DEG
SPACING CRITERIA : 1.2 1.3
PLANE : 0-DEG 90-DEG
LUMINOUS LENGTH : 20.140 21.510

LUMINANCE DATA IN CANDELA/SQ METER

ANGLE IN DEG	AVERAGE 0-DEG	AVERAGE 45-DEG	AVERAGE 90-DEG
45	2534.	2656.	2812.
55	2419.	2619.	2875.
65	2277.	2649.	2971.
75	2073.	2653.	3358.
85	1765.	2996.	3365.



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 = 19.422 W AT 277.0 VAC.

LED DRIVER: RDF25U7-39

TEST PROCEDURE: IESNA LM-79-08

LM-80 DATA AVAILABLE FROM MANUFACTURER FOR SOLID STATE SOURCE

AMBIENT: 24.6

ACCREDITED LABORATORY CODE 201058-0

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PLANE : 0-DEG 90-DEG
BEAM ANGLE (50%) : 108.6 X 122.1 DEGREES
FIELD ANGLE (10%) : 163.0 X 170.2 DEGREES

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CANDELA DISTRIBUTION

	0.0	22.5	45.0	67.5	90.0
0.0	792	792	792	792	792
2.5	789	788	789	792	792
5.0	787	787	788	790	791
7.5	782	781	783	786	787
10.0	775	776	778	782	784
12.5	766	766	770	774	776
15.0	754	756	760	764	766
17.5	741	743	748	754	755
20.0	726	728	734	741	743
22.5	709	712	719	727	730
25.0	692	695	702	713	715
27.5	673	676	685	697	699
30.0	651	656	666	679	682
32.5	630	634	644	659	663
35.0	606	611	623	638	643
37.5	581	586	599	616	622
40.0	555	561	575	594	601
42.5	529	535	551	571	578
45.0	501	509	525	548	556
47.5	474	481	500	523	532
50.0	445	454	474	499	509
52.5	416	425	447	474	485
55.0	388	397	420	449	461
57.5	360	371	394	423	435
60.0	330	341	370	397	407
62.5	300	313	342	371	381
65.0	269	283	313	341	351
67.5	239	254	284	310	321
70.0	209	224	253	280	292
72.5	178	195	221	252	267
75.0	150	166	192	227	243
77.5	122	137	166	201	214
80.0	94	109	140	168	178
82.5	69	82	110	130	136
85.0	43	56	73	82	82
87.5	19	26	27	27	23
90.0	0	1	0	0	0

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ZONAL LUMEN SUMMARY

0- 5	19.
5- 10	56.
10- 15	91.
15- 20	123.
20- 25	151.
25- 30	173.
30- 35	190.
35- 40	200.
40- 45	204.
45- 50	203.
50- 55	195.
55- 60	183.
60- 65	166.
65- 70	143.
70- 75	117.
75- 80	90.
80- 85	57.
85- 90	16.

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5-DEGREE ZONAL LUMEN SUMMARY

0- 5	19
5- 10	56
10- 15	91
15- 20	123
20- 25	151
25- 30	173
30- 35	190
35- 40	200
40- 45	204
45- 50	203
50- 55	195
55- 60	183
60- 65	166
65- 70	143
70- 75	117
75- 80	90
80- 85	57
85- 90	16
90- 95	0
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	75
0- 20	289
0- 30	614
0- 40	1004
0- 50	1411
0- 60	1789
0- 70	2098
0- 80	2304
0- 90	2377
0-100	2377
0-110	2377
0-120	2377
0-130	2377
0-140	2377
0-150	2377
0-160	2377
0-170	2377
0-180	2377

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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	103	98	94	105	100	96	92	96	93	89	92	89	87	89	86	84	82
2	98	89	82	76	95	87	80	75	83	78	73	80	75	71	77	73	70	67
3	89	78	69	62	86	76	68	62	73	66	61	70	64	60	68	63	59	56
4	81	69	59	53	79	67	59	52	65	57	51	62	56	51	60	55	50	48
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	39	51	44	38	49	43	38	36
7	64	50	41	35	62	49	40	34	47	40	34	46	39	34	45	38	34	32
8	59	45	37	31	58	45	36	31	43	36	30	42	35	30	41	35	30	28
9	55	42	33	28	54	41	33	28	40	33	27	39	32	27	38	32	27	25
10	52	38	30	25	51	38	30	25	37	30	25	36	29	25	35	29	25	23

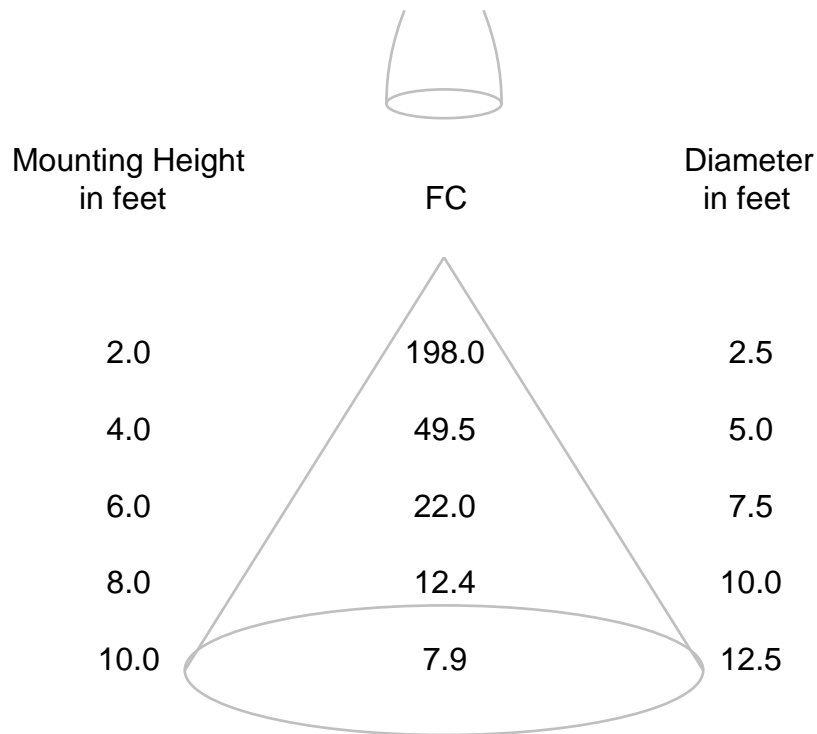
ALL CANDELA, LUMENS, LUMINANCE, AND VCP VALUES IN THIS REPORT ARE BASED ON ABSOLUTE PHOTOMETRY. THE COEFFICIENT OF UTILIZATION VALUES ARE BASED ON THE TOTAL ABSOLUTE LUMEN OUTPUT OF THIS LUMINAIRE SAMPLE.

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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: RAB03229
DATE: 4/21/2017
PREPARED FOR: RAB LIGHTING INC.
CATALOG NUMBER: RTLED2X2-19YW/D10

ADDRESS: 170 LUDLOW AVE, NORTHVALE, NJ 07647

LUMINAIRE: WHITE PAINTED SHEET METAL HOUSING, 2 WHITE CIRCUIT BOARDS EACH WITH 40 LEDS, MATTE WHITE POLYCARBONATE LENS IN THE CENTER, ROUGH SURFACE FACING OUT. FIXTURE WAS MOUNTED IN Lithonia Lighting Model #2GT8 2 U316 A12 MVOLT GEB10IS HOUSING.

LAMP: EIGHTY WHITE LIGHT EMITTING DIODES (LEDs), VERTICAL BASE-UP POSITION.

DRIVER: RDF25U7-39

OBJECT OF TEST: DATA SHOWN IS ABSOLUTE FOR THE SAMPLE PROVIDED AT THE RATED INPUT VOLTAGES (277.0 AND 120.0 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 (120.0 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	<u>X.CAO</u>
Approved	<u>D.WANG-MUNSON</u> Lighting Engineer

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RESULTS:

PHOTOMETRIC	
Total Integrated Flux (lumens)	2377 *
SPECTRORADIOMETRIC	
Observer	CIE 1931 2 degree
Chromaticity Ordinate x	0.4311
Chromaticity Ordinate y	0.3988
Observer	CIE 1976 2 degree
Chromaticity Ordinate u'	0.2491
Chromaticity Ordinate v'	0.5184
Correlated Color Temp CCT (K)	3057
ANSI C78.377-2008 Duv	-0.001
Total Radiant Flux (milliWatts)	7272 *
ELECTRICAL	
Input Voltage (Volts AC)	277.0
Input Current (Amps AC)	0.078
Input Power (Watts)	19.4
Input Power Factor (%)	89.7
Input Current THD (%)	13.9
Input Voltage THD (%)	0.2
EFFICACY (Lumens/Watt)	
	122.5
ELECTRICAL AT MAX NONIMAL INPUT	
Input Voltage (Volts AC)	120.0
Input Current (Amps AC)	0.158
Input Power (Watts)	18.7
Input Power Factor (%)	98.9
Input Current THD (%)	9.9
Input Voltage THD (%)	0.2
Off-State Power (Watts)	
	0.0

COLOR RENDERING INDICES	CRI
Ra (Average 1-8)	84
R1 Light greyish red	83
R2 Dark greyish yellow	92
R3 Strong yellowish green	96
R4 Moderate yellowish green	83
R5 Light bluish green	84
R6 Light blue	91
R7 Light violet	83
R8 Light reddish purple	61
R9 Strong red	11
R10 Strong yellow	82
R11 Strong green	84
R12 Strong blue	78
R13 Light yellowish pink (skin)	85
R14 Moderate olive green (leaf)	99

*NOTE:

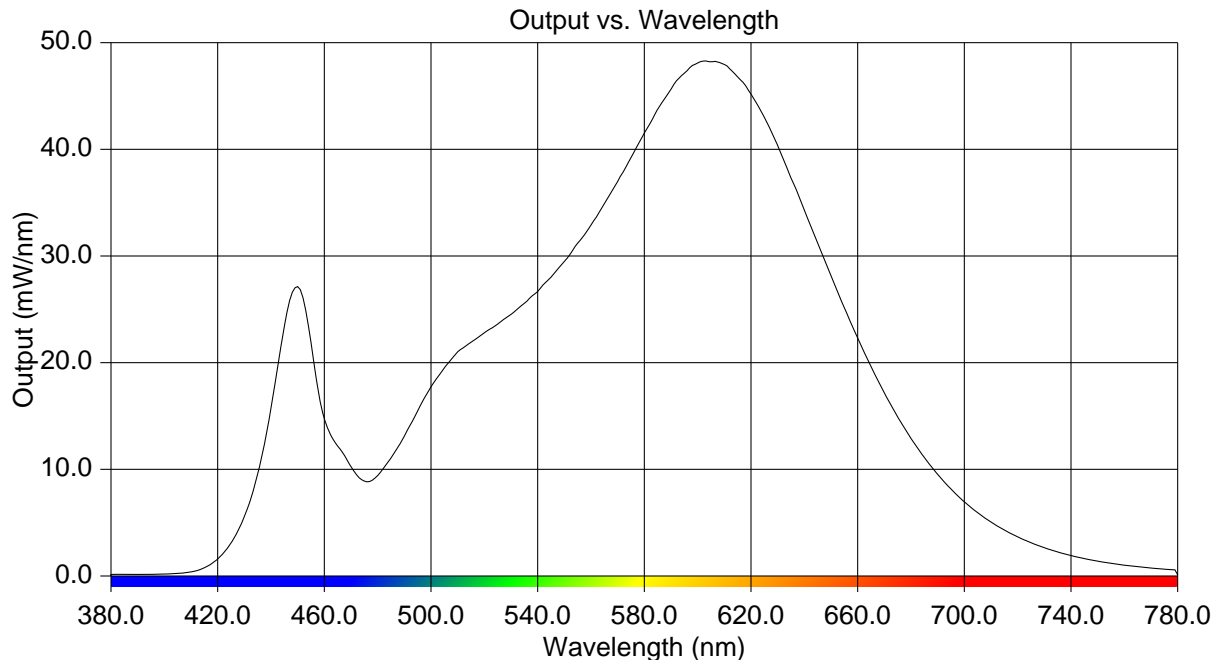
Proper calibration of integrating spheres for measuring total flux output of non-directional samples will produce reliable, repeatable results within the calibration tolerances of the equipment used. However, measurement of test samples with significant self absorption and/or directional output, even 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	0.140	515	21.910	650	28.165
385	0.151	520	22.800	655	25.150
390	0.146	525	23.613	660	22.312
395	0.156	530	24.523	665	19.618
400	0.183	535	25.563	670	17.175
405	0.238	540	26.670	675	14.948
410	0.378	545	28.013	680	12.908
415	0.773	550	29.473	685	11.119
420	1.579	555	31.204	690	9.514
425	3.081	560	32.915	695	8.157
430	5.580	565	34.867	700	6.965
435	9.523	570	36.988	705	5.938
440	15.742	575	39.222	710	5.055
445	23.378	580	41.527	715	4.309
450	27.130	585	43.761	720	3.650
455	21.908	590	45.653	725	3.115
460	14.733	595	47.138	730	2.658
465	12.177	600	48.094	735	2.251
470	10.236	605	48.203	740	1.910
475	8.899	610	47.954	745	1.632
480	9.411	615	46.787	750	1.397
485	11.063	620	45.164	755	1.184
490	13.109	625	43.050	760	1.016
495	15.478	630	40.336	765	0.869
500	17.743	635	37.307	770	0.749
505	19.511	640	34.276	775	0.639
510	21.016	645	31.228	780	0.097



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CIE Chromaticity Diagram

