

REPORT NUMBER: RAB00851

ISSUE DATE: 05/05/15

PREPARED FOR: RAB LIGHTING INC.

CATALOG NUMBER: RAIL150W

LUMINAIRE: EXTRUDED METAL HOUSING WITH HEAT SINK FINS, FOUR WHITE
CIRCUIT BOARD WITH NINETY SIX LEDS ON EACH BOARD, METAL REFLECTOR
WITH SPECULAR FINISH, FLAT TRANSLUCENT LENS WITH FROSTED SIDE IN.
LAMPS: THREE HUNDRED AND EIGHTY FOUR LIGHT EMITTING DIODES (LEDs).

NOTE: DATA SHOWN IS ABSOLUTE FOR THE SAMPLE PROVIDED.

TOTAL INPUT WATTS = 149.95 AT 120.0 VAC.

TEST PROCEDURE: IESNA LM-79-08

(SEE PAGE 2 FOR MORE INFORMATION)

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CANDELA DISTRIBUTION

	0.0	45.0	90.0	135.0	180.0	FLUX
0	7582	7582	7582	7582	7582	
5	7532	7531	7537	7551	7560	715
15	7174	7136	7113	7198	7265	2017
25	6444	6340	6250	6433	6582	2936
35	5448	5266	5112	5377	5602	3323
45	4279	4061	3887	4186	4466	3181
55	3084	2907	2753	2998	3257	2643
65	1953	1825	1721	1917	2113	1855
75	954	883	845	961	1077	982
85	160	218	271	258	239	280
90	3	63	110	85	20	
95	1	1	16	4	0	18
105	1	2	2	1	1	2
115	2	2	2	2	1	2
125	2	2	2	2	2	2
135	3	3	3	2	2	2
145	3	4	4	3	3	2
155	4	4	5	4	4	2
165	5	5	5	5	4	1
175	5	6	7	6	5	1
180	6	6	6	6	6	

ZONAL LUMEN SUMMARY

ZONE	LUMENS	%FIXT
0- 30	5668	31.6
0- 40	8991	50.1
0- 60	14816	82.5
0- 90	17933	99.8
90-120	21	0.1
90-130	23	0.1
90-150	27	0.2
90-180	31	0.2
0-180	17964	100.0

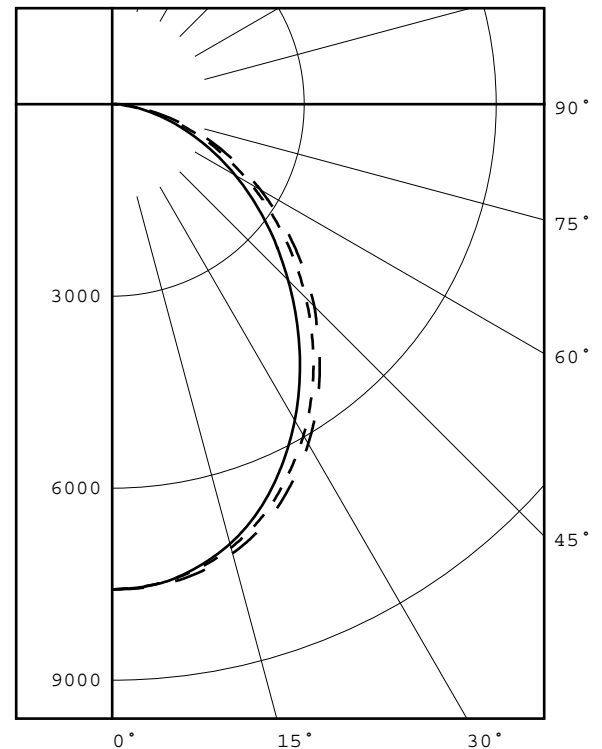
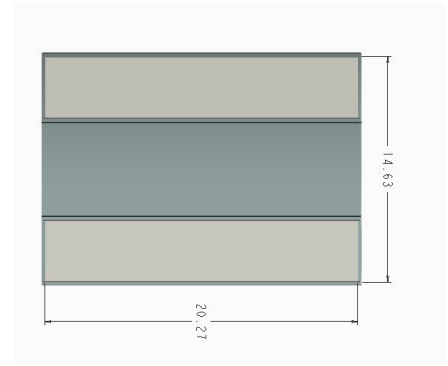
TOTAL INPUT WATTS = 149.9

EFFICACY = 119.8 Lm/W

CIE TYPE - DIRECT

PLANE : 0-DEG 90-DEG 180-DEG

SPACING CRITERIA : 1.2 1.1 1.2



LEGEND:
0-deg: - - - - -
90-deg: _____
180-deg: - - - - -

Checked X CAO
Approved D.WANG-MUNSON

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ADDITIONAL INFORMATION

TEST DISTANCE: 28.25 FEET
DRIVER: 2 X RD-075-A1400
LM-80 DATA AVAILABLE FROM MANUFACTURER FOR SOLID STATE SOURCE
ACCREDITED LABORATORY CODE 201058-0

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PLANE : 0-DEG 90-DEG
BEAM ANGLE (50%) : 99.6 X 91.6 DEGREES
FIELD ANGLE (10%) : 155.5 X 152.3 DEGREES

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ZONAL LUMEN SUMMARY

0- 5	181.
5- 10	535.
10- 15	864.
15- 20	1153.
20- 25	1385.
25- 30	1551.
30- 35	1648.
35- 40	1675.
40- 45	1637.
45- 50	1544.
50- 55	1408.
55- 60	1235.
60- 65	1035.
65- 70	820.
70- 75	598.
75- 80	383.
80- 85	202.
85- 90	78.
90- 95	16.
95-100	1.
100-105	1.
105-110	1.
110-115	1.
115-120	1.
120-125	1.
125-130	1.
130-135	1.
135-140	1.
140-145	1.
145-150	1.
150-155	1.
155-160	1.
160-165	1.
165-170	1.
170-175	0.
175-180	0.

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5-DEGREE ZONAL LUMEN SUMMARY

0- 5	181
5- 10	535
10- 15	864
15- 20	1153
20- 25	1385
25- 30	1551
30- 35	1648
35- 40	1675
40- 45	1637
45- 50	1544
50- 55	1408
55- 60	1235
60- 65	1035
65- 70	820
70- 75	598
75- 80	383
80- 85	202
85- 90	78
90- 95	16
95-100	1
100-105	1
105-110	1
110-115	1
115-120	1
120-125	1
125-130	1
130-135	1
135-140	1
140-145	1
145-150	1
150-155	1
155-160	1
160-165	1
165-170	1
170-175	0
175-180	0

10-DEGREE ZONAL LUMEN SUMMARY

0- 10	715
0- 20	2732
0- 30	5668
0- 40	8991
0- 50	12172
0- 60	14816
0- 70	16671
0- 80	17653
0- 90	17933
0-100	17951
0-110	17952
0-120	17954
0-130	17956
0-140	17958
0-150	17960
0-160	17962
0-170	17963
0-180	17964

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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	109	105	101	97	107	103	99	96	98	95	93	94	92	90	91	89	87	85
2	100	92	86	80	97	90	84	79	87	82	77	84	79	76	81	77	74	72
3	92	82	74	68	89	80	73	67	77	71	66	74	69	65	72	67	64	61
4	84	73	64	58	82	71	64	58	69	62	57	67	61	56	64	59	55	53
5	78	65	57	50	76	64	56	50	62	55	50	60	54	49	58	53	48	46
6	72	59	51	44	70	58	50	44	56	49	44	55	48	43	53	47	43	41
7	67	54	45	39	65	53	45	39	52	44	39	50	44	39	49	43	38	36
8	62	49	41	35	61	49	41	35	47	40	35	46	40	35	45	39	35	33
9	58	45	37	32	57	45	37	32	44	37	32	43	36	32	42	36	31	30
10	55	42	34	29	54	41	34	29	40	34	29	40	33	29	39	33	29	27

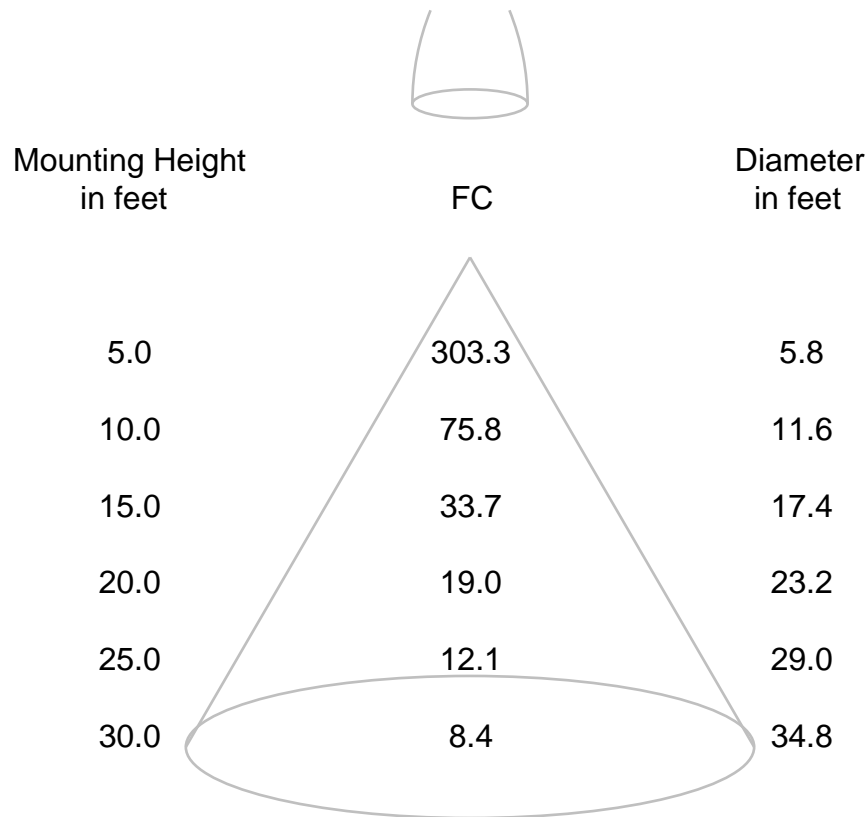
ALL CANDELA, LUMENS, LUMINANCE, AND VCP VALUES IN THIS REPORT ARE BASED ON ABSOLUTE PHOTOMETRY. THE COEFFICIENT OF UTILIZATION VALUES ARE BASED ON THE TOTAL ABSOLUTE LUMEN OUTPUT OF THIS LUMINAIRE SAMPLE.

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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.

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ADDRESS: 170 LUDLOW AVE, NORTHVALE, NJ 07647

LUMINAIRE: EXTRUDED METAL HOUSING WITH HEAT SINK FINS, FOUR WHITE CIRCUIT BOARD WITH NINETY SIX LEDS ON EACH BOARD, METAL REFLECTOR WITH SPECULAR FINISH, FLAT TRANSLUCENT LENS WITH FROSTED SIDE IN.

LAMP: THREE HUNDRED AND EIGHTY FOUR LIGHT EMITTING DIODES (LEDS).

DRIVER: 2 X RD-075-A1400

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:	CHROMA PROGRAMMABLE AC POWER SOURCE MODEL 61602	Calibration Due: N/A
	CHROMA PROGRAMMABLE DIGITAL POWER METER MODEL 66202	3/9/16
	OCEAN OPTICS QE65PRO Spectroradiometer	5/15/16
	RAB 2.0 meter Diameter Integrating Sphere, 4PI Geometry	5/15/16

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)	17963 *
SPECTRORADIOMETRIC	
Observer	CIE 1931 2 degree
Chromaticity Ordinate x	0.3458
Chromaticity Ordinate y	0.3548
Observer	CIE 1976 2 degree
Chromaticity Ordinate u'	0.2106
Chromaticity Ordinate v'	0.4863
Correlated Color Temp CCT (K)	4985
ANSI C78.377-2008 Duv	0.001
Total Radiant Flux (milliWatts)	54205 *
ELECTRICAL	
Input Voltage (Volts AC)	120.0
Input Current (Amps AC)	1.25
Input Power (Watts)	149.9
Input Power Factor (%)	99.6
Input Current THD (%)	5.2
Input Voltage THD (%)	0.2
EFFICACY (Lumens/Watt)	
	119.8
ELECTRICAL AT MAX NONIMAL INPUT	
Input Voltage (Volts AC)	277.0
Input Current (Amps AC)	0.563
Input Power (Watts)	146.8
Input Power Factor (%)	94.1
Input Current THD (%)	10.6
Input Voltage THD (%)	0.2
Off-State Power (Watts)	0.0

COLOR RENDERING INDICES	CRI
Ra (Average 1-8)	75
R1 Light greyish red	72
R2 Dark greyish yellow	79
R3 Strong yellowish green	83
R4 Moderate yellowish green	75
R5 Light bluish green	73
R6 Light blue	71
R7 Light violet	83
R8 Light reddish purple	61
R9 Strong red	-17
R10 Strong yellow	49
R11 Strong green	72
R12 Strong blue	44
R13 Light yellowish pink (skin)	73
R14 Moderate olive green (leaf)	90

*NOTE:

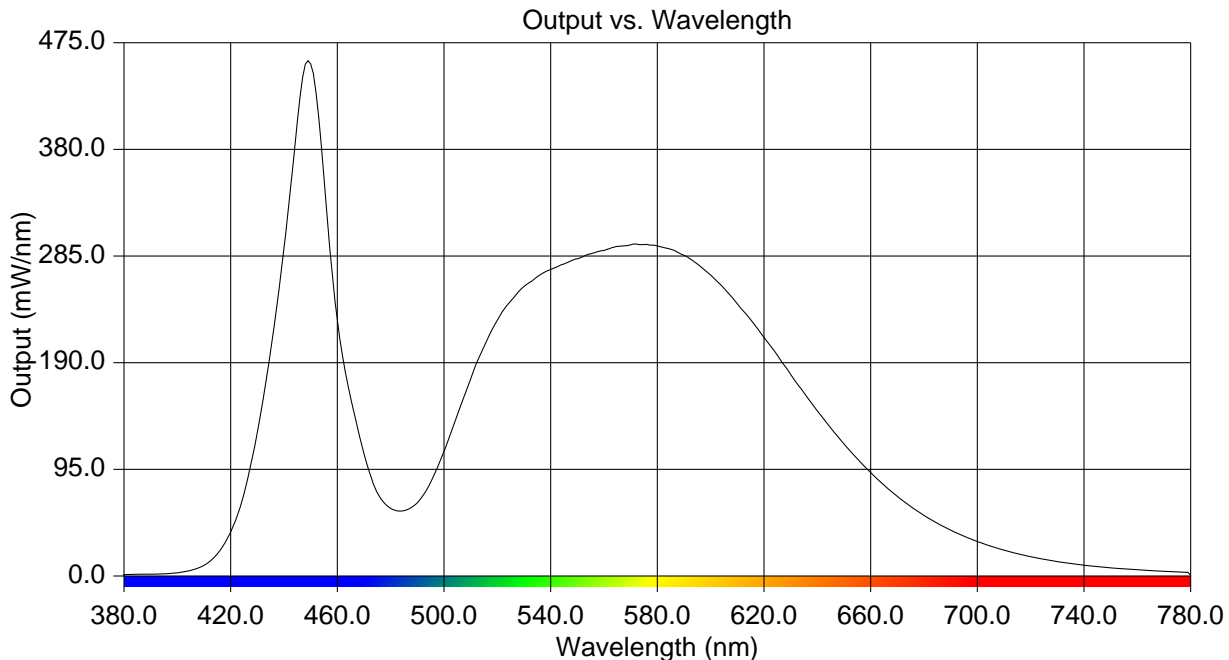
Proper calibration of integrating spheres for measuring total flux output of non-directional samples will produce reliable, repeatable results within the calibration tolerances of the equipment used. However, measurement of test samples with significant self absorption and/or directional output, even 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	1.213	515	204.176	650	117.694
385	1.412	520	227.820	655	104.371
390	1.583	525	244.710	660	92.260
395	2.010	530	257.857	665	80.928
400	2.920	535	266.608	670	70.935
405	4.821	540	272.912	675	61.920
410	9.550	545	278.070	680	53.883
415	19.665	550	282.535	685	47.044
420	39.157	555	286.893	690	40.806
425	73.403	560	289.888	695	35.470
430	127.883	565	293.716	700	30.677
435	201.452	570	294.957	705	26.598
440	292.174	575	295.153	710	22.941
445	404.779	580	294.002	715	19.828
450	456.086	585	291.053	720	17.198
455	354.525	590	285.656	725	14.837
460	227.625	595	278.104	730	12.797
465	158.632	600	267.706	735	11.153
470	108.855	605	256.294	740	9.667
475	74.315	610	242.423	745	8.384
480	60.149	615	228.277	750	7.256
485	58.219	620	212.346	755	6.289
490	65.183	625	196.686	760	5.472
495	83.373	630	179.568	765	4.749
500	111.240	635	163.192	770	4.129
505	142.964	640	147.117	775	3.616
510	175.458	645	131.843	780	0.550



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CIE Chromaticity Diagram

