

REPORT NUMBER: RAB00853

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ISSUE DATE: 05/04/15

PREPARED FOR: RAB LIGHTING INC.

CATALOG NUMBER: RAIL150YNW

LUMINAIRE: EXTRUDED METAL HOUSING WITH HEAT SINK FINS, FOUR WHITE CIRCUIT BOARDS, 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).

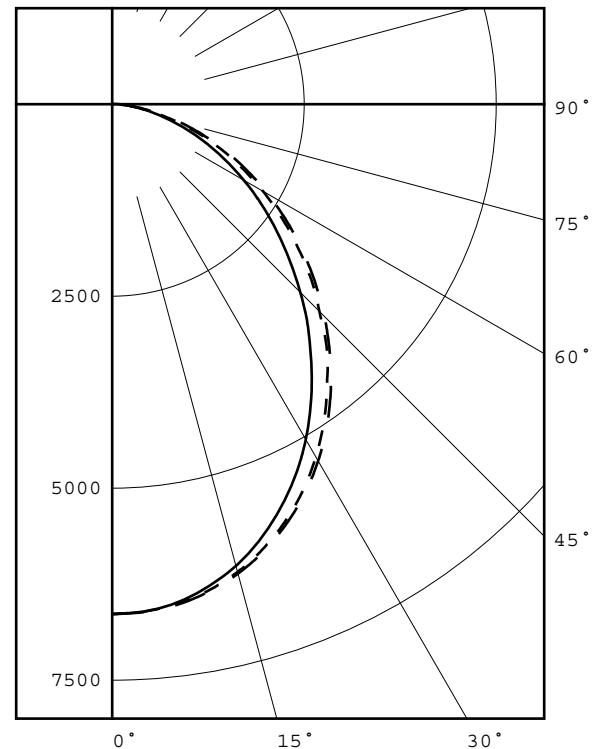
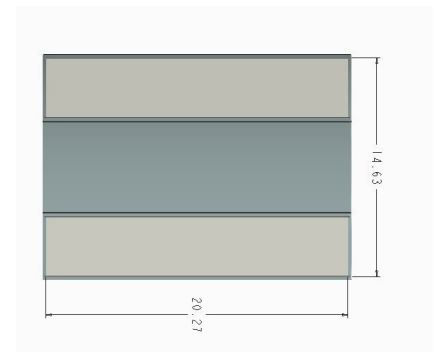
NOTE: DATA SHOWN IS ABSOLUTE FOR THE SAMPLE PROVIDED.

(SEE PAGE 2 FOR MORE INFORMATION)

CANDELA DISTRIBUTION

	0.0	45.0	90.0	135.0	180.0	
0	6639	6639	6639	6639	6639	
5	6603	6598	6599	6606	6612	626
15	6306	6258	6225	6281	6328	1765
25	5706	5601	5501	5633	5751	2582
35	4844	4683	4527	4728	4916	2942
45	3815	3643	3462	3685	3907	2832
55	2779	2591	2449	2649	2856	2352
65	1772	1634	1535	1687	1841	1653
75	862	795	752	837	921	875
85	153	198	241	221	198	250
90	3	58	97	70	14	
95	0	2	14	3	1	16
105	1	2	2	2	2	2
115	1	2	2	2	2	2
125	2	2	2	2	2	2
135	2	2	3	3	3	2
145	3	3	4	4	4	2
155	4	4	5	5	5	2
165	4	5	6	6	5	1
175	5	6	6	6	6	1
180	6	6	6	6	6	

FLUX



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

ZONAL LUMEN SUMMARY

ZONE	LUMENS	%FIXT
0- 30	4973	31.3
0- 40	7915	49.8
0- 60	13099	82.3
0- 90	15877	99.8
90-120	20	0.1
90-130	22	0.1
90-150	26	0.2
90-180	30	0.2
0-180	15907	100.0

TOTAL INPUT WATTS = 149.4

EFFICACY = 106.5 Lm/W

CIE TYPE - DIRECT

PLANE : 0-DEG 90-DEG 180-DEG

SPACING CRITERIA : 1.2 1.1 1.2

Checked X.CAO
 Approved D.WANG-MUNSON

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ADDITIONAL INFORMATION

TOTAL INPUT WATTS = 149.3 AT 120.0 VAC.
TEST PROCEDURE: IESNA LM-79-08
TEST DISTANCE: 28.25 FEET
DRIVER: 2 X RD-075-A1400
ACCREDITED LABORATORY CODE 201058-0

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PLANE : 0-DEG 90-DEG
BEAM ANGLE (50%) : 100.4 X 92.7 DEGREES
FIELD ANGLE (10%) : 155.5 X 152.7 DEGREES

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ZONAL LUMEN SUMMARY

0- 5	158.
5- 10	468.
10- 15	756.
15- 20	1009.
20- 25	1215.
25- 30	1367.
30- 35	1457.
35- 40	1486.
40- 45	1456.
45- 50	1375.
50- 55	1253.
55- 60	1099.
60- 65	922.
65- 70	731.
70- 75	533.
75- 80	342.
80- 85	180.
85- 90	70.
90- 95	15.
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	158
5- 10	468
10- 15	756
15- 20	1009
20- 25	1215
25- 30	1367
30- 35	1457
35- 40	1486
40- 45	1456
45- 50	1375
50- 55	1253
55- 60	1099
60- 65	922
65- 70	731
70- 75	533
75- 80	342
80- 85	180
85- 90	70
90- 95	15
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	626
0- 20	2391
0- 30	4973
0- 40	7915
0- 50	10747
0- 60	13099
0- 70	14751
0- 80	15626
0- 90	15877
0-100	15893
0-110	15895
0-120	15896
0-130	15898
0-140	15901
0-150	15903
0-160	15905
0-170	15906
0-180	15907

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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	83	79	76	80	77	74	72
3	92	82	74	68	89	80	73	67	77	71	66	74	69	65	72	67	63	61
4	84	73	64	58	82	71	63	57	69	62	57	67	61	56	64	59	55	53
5	78	65	57	50	76	64	56	50	62	55	49	60	54	49	58	53	48	46
6	72	59	50	44	70	58	50	44	56	49	44	55	48	43	53	47	43	41
7	67	54	45	39	65	53	45	39	51	44	39	50	43	39	49	43	38	36
8	62	49	41	35	61	48	41	35	47	40	35	46	39	35	45	39	34	33
9	58	45	37	32	57	45	37	32	44	37	32	42	36	31	41	36	31	29
10	55	42	34	29	53	41	34	29	40	34	29	39	33	29	39	33	29	27

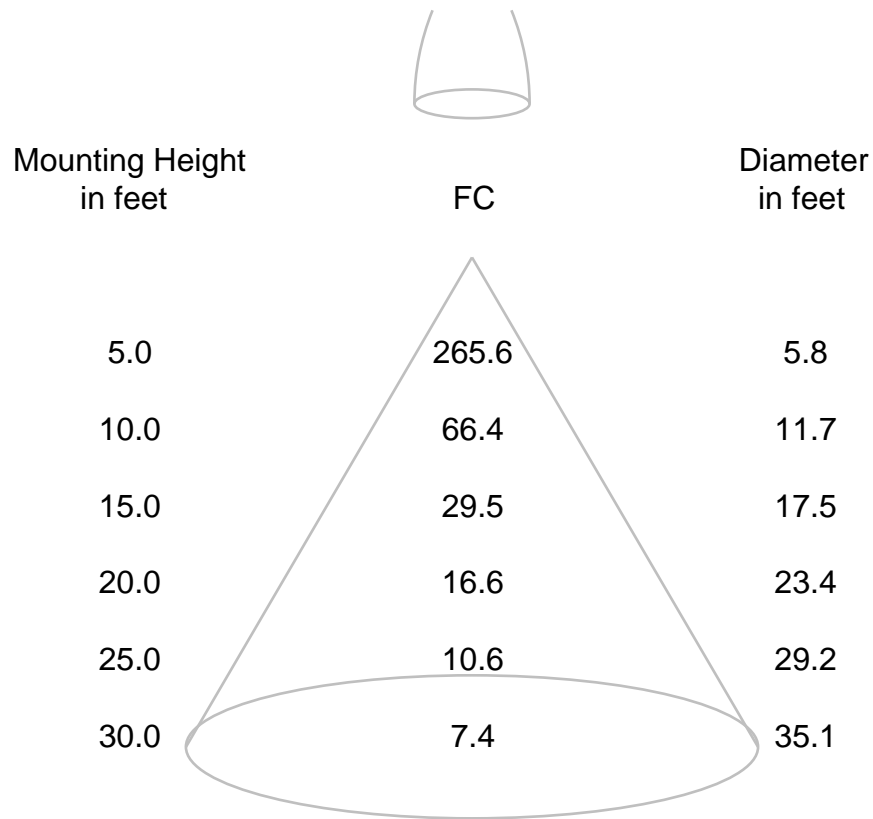
ALL CANDELA, LUMENS, LUMINANCE, AND VCP VALUES IN THIS REPORT ARE BASED ON ABSOLUTE PHOTOMETRY. THE COEFFICIENT OF UTILIZATION VALUES ARE BASED ON THE TOTAL ABSOLUTE LUMEN OUTPUT OF THIS LUMINAIRE SAMPLE.

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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)	15907 *
SPECTRORADIOMETRIC	
Observer	CIE 1931 2 degree
Chromaticity Ordinate x	0.4066
Chromaticity Ordinate y	0.3882
Observer	CIE 1976 2 degree
Chromaticity Ordinate u'	0.2376
Chromaticity Ordinate v'	0.5104
Correlated Color Temp CCT (K)	3450
ANSI C78.377-2008 Duv	-0.001
Total Radiant Flux (milliWatts)	49889 *
ELECTRICAL	
Input Voltage (Volts AC)	120.0
Input Current (Amps AC)	1.25
Input Power (Watts)	149.3
Input Power Factor (%)	99.5
Input Current THD (%)	5.1
Input Voltage THD (%)	0.2
EFFICACY (Lumens/Watt)	
	106.5
ELECTRICAL AT MAX NONIMAL INPUT	
Input Voltage (Volts AC)	277.0
Input Current (Amps AC)	0.560
Input Power (Watts)	146.3
Input Power Factor (%)	94.3
Input Current THD (%)	10.6
Input Voltage THD (%)	0.2
Off-State Power (Watts)	0.0

COLOR RENDERING INDICES	CRI
Ra (Average 1-8)	82
R1 Light greyish red	81
R2 Dark greyish yellow	87
R3 Strong yellowish green	92
R4 Moderate yellowish green	82
R5 Light bluish green	81
R6 Light blue	83
R7 Light violet	86
R8 Light reddish purple	67
R9 Strong red	18
R10 Strong yellow	70
R11 Strong green	80
R12 Strong blue	63
R13 Light yellowish pink (skin)	82
R14 Moderate olive green (leaf)	95

*NOTE:

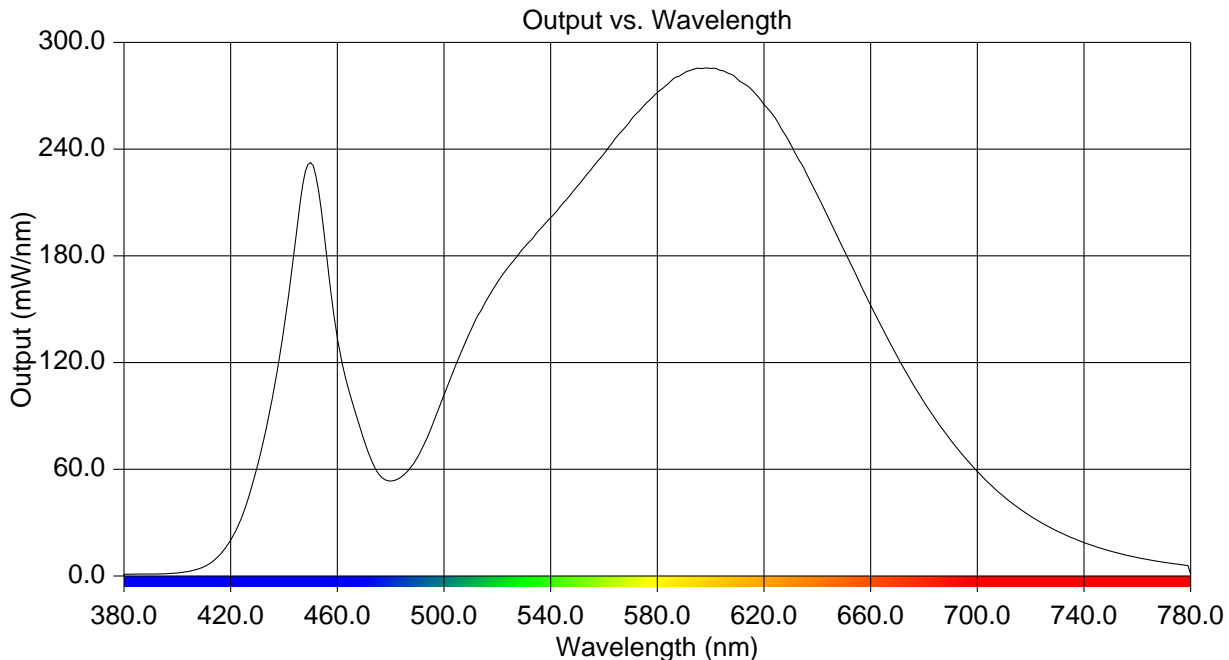
Proper calibration of integrating spheres for measuring total flux output of non-directional samples will produce reliable, repeatable results within the calibration tolerances of the equipment used. However, measurement of test samples with significant self absorption and/or directional output, even 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	0.911	515	152.335	650	183.327
385	1.027	520	165.100	655	167.888
390	1.071	525	175.215	660	152.630
395	1.283	530	184.709	665	137.482
400	1.730	535	193.398	670	123.547
405	2.769	540	201.450	675	110.136
410	5.169	545	210.287	680	97.800
415	10.484	550	219.088	685	86.763
420	20.189	555	228.313	690	76.428
425	36.460	560	237.417	695	67.205
430	61.722	565	247.577	700	58.813
435	95.591	570	256.324	705	51.216
440	139.799	575	264.544	710	44.566
445	197.387	580	271.990	715	38.717
450	232.470	585	278.281	720	33.634
455	193.207	590	282.850	725	29.060
460	134.043	595	285.670	730	25.211
465	100.836	600	285.484	735	21.757
470	76.421	605	284.054	740	18.803
475	58.555	610	279.526	745	16.224
480	53.384	615	274.138	750	13.968
485	56.995	620	265.185	755	11.986
490	66.549	625	255.806	760	10.385
495	82.455	630	242.819	765	8.951
500	102.115	635	229.340	770	7.717
505	120.649	640	214.259	775	6.644
510	137.798	645	198.877	780	0.995



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CIE Chromaticity Diagram

