

REPORT NUMBER: RAB00847

ISSUE DATE: 05/04/15

PREPARED FOR: RAB LIGHTING INC.

CATALOG NUMBER: RAIL95YNW

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

LAMPS: TWO HUNDRED AND FIFTY SIX LIGHT EMITTING DIODES (LEDs).

NOTE: DATA SHOWN IS ABSOLUTE FOR THE SAMPLE PROVIDED.

TOTAL INPUT WATTS = 92.615W AT 120.0 VAC.

LED DRIVER: RD-085-A1750

TEST PROCEDURE: IESNA LM-79-08

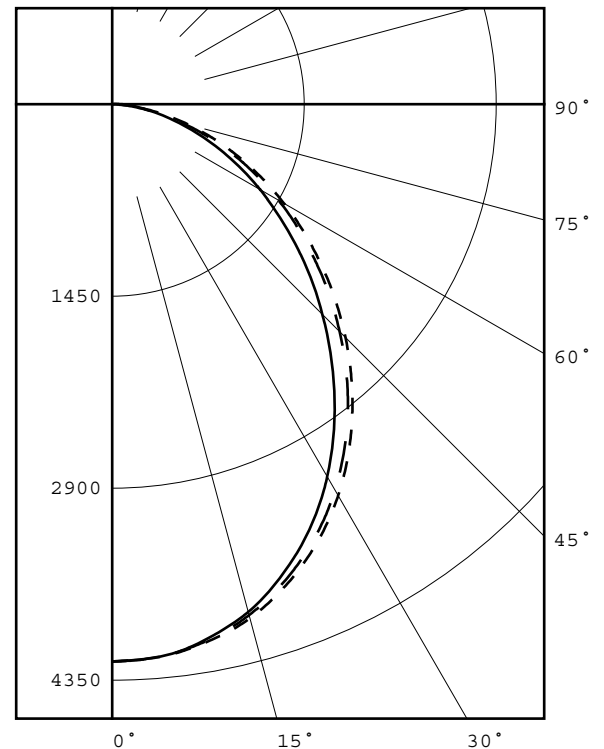
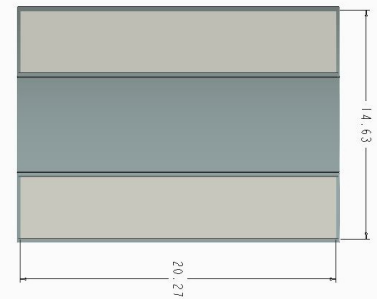
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CANDELA DISTRIBUTION

	0.0	45.0	90.0	135.0	180.0	
0	4209	4209	4209	4209	4209	
5	4189	4188	4187	4187	4188	397
15	4019	3996	3970	3981	3995	1124
25	3656	3602	3534	3577	3616	1651
35	3130	3040	2926	3008	3077	1889
45	2491	2386	2244	2343	2429	1821
55	1824	1718	1589	1672	1760	1519
65	1183	1097	1002	1066	1138	1075
75	593	546	493	520	552	574
85	123	149	167	137	96	169
90	8	51	70	43	3	
95	0	3	11	1	1	12
105	1	1	1	1	1	1
115	1	1	1	1	1	1
125	1	1	1	1	1	1
135	1	1	2	2	2	1
145	2	2	2	2	2	1
155	2	2	3	3	3	1
165	3	3	3	3	3	1
175	3	3	4	3	3	0
180	3	3	3	3	3	

FLUX



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

ZONAL LUMEN SUMMARY

ZONE	LUMENS	%FIXT
0- 30	3172	31.0
0- 40	5061	49.4
0- 60	8401	82.1
0- 90	10218	99.8
90-120	14	0.1
90-130	15	0.1
90-150	18	0.2
90-180	20	0.2
0-180	10238	100.0

TOTAL INPUT WATTS = 92.6

EFFICACY = 110.6 Lm/W

CIE TYPE - DIRECT

PLANE : 0-DEG 90-DEG 180-DEG

SPACING CRITERIA : 1.2 1.2 1.2

Checked X.CAO
Approved D.WANG-MUNSON

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PLANE : 0-DEG 90-DEG
BEAM ANGLE (50%) : 100.7 X 94.3 DEGREES
FIELD ANGLE (10%) : 156.0 X 153.6 DEGREES

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ZONAL LUMEN SUMMARY

0- 5	100.
5- 10	297.
10- 15	481.
15- 20	643.
20- 25	776.
25- 30	875.
30- 35	934.
35- 40	954.
40- 45	936.
45- 50	885.
50- 55	808.
55- 60	711.
60- 65	599.
65- 70	476.
70- 75	348.
75- 80	226.
80- 85	120.
85- 90	49.
90- 95	11.
95-100	1.
100-105	1.
105-110	1.
110-115	1.
115-120	0.
120-125	0.
125-130	1.
130-135	1.
135-140	1.
140-145	1.
145-150	1.
150-155	1.
155-160	1.
160-165	0.
165-170	0.
170-175	0.
175-180	0.

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5-DEGREE
ZONAL LUMEN SUMMARY

0- 5	100
5- 10	297
10- 15	481
15- 20	643
20- 25	776
25- 30	875
30- 35	934
35- 40	954
40- 45	936
45- 50	885
50- 55	808
55- 60	711
60- 65	599
65- 70	476
70- 75	348
75- 80	226
80- 85	120
85- 90	49
90- 95	11
95-100	1
100-105	1
105-110	1
110-115	1
115-120	0
120-125	0
125-130	1
130-135	1
135-140	1
140-145	1
145-150	1
150-155	1
155-160	1
160-165	0
165-170	0
170-175	0
175-180	0

10-DEGREE
ZONAL LUMEN SUMMARY

0- 10	397
0- 20	1521
0- 30	3172
0- 40	5061
0- 50	6882
0- 60	8401
0- 70	9475
0- 80	10049
0- 90	10218
0-100	10230
0-110	10231
0-120	10232
0-130	10233
0-140	10235
0-150	10236
0-160	10237
0-170	10238
0-180	10238

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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	102	99	95	98	95	92	94	92	90	91	89	87	85
2	100	92	85	80	97	90	84	79	87	82	77	83	79	75	80	77	74	72
3	91	81	74	67	89	80	73	67	77	71	65	74	69	64	71	67	63	61
4	84	72	64	58	82	71	63	57	69	62	56	66	60	56	64	59	55	53
5	78	65	56	50	75	64	56	50	62	55	49	60	54	49	58	52	48	46
6	72	59	50	44	70	58	50	44	56	49	43	54	48	43	53	47	43	41
7	67	54	45	39	65	53	45	39	51	44	39	50	43	38	48	43	38	36
8	62	49	41	35	61	48	40	35	47	40	35	46	39	34	45	39	34	32
9	58	45	37	32	57	44	37	32	43	36	31	42	36	31	41	35	31	29
10	55	42	34	29	53	41	34	29	40	33	29	39	33	28	38	33	28	27

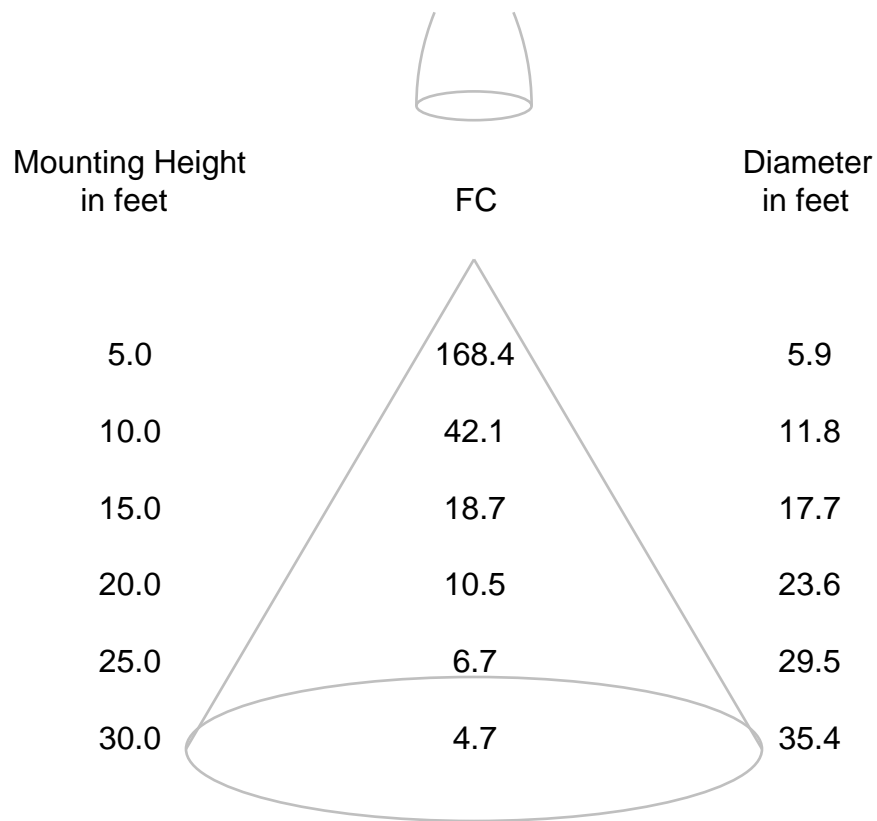
ALL CANDELA, LUMENS, LUMINANCE, AND VCP VALUES IN THIS REPORT ARE BASED ON ABSOLUTE PHOTOMETRY. THE COEFFICIENT OF UTILIZATION VALUES ARE BASED ON THE TOTAL ABSOLUTE LUMEN OUTPUT OF THIS LUMINAIRE SAMPLE.

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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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DATE: 5/15/2015
PREPARED FOR: RAB LIGHTING INC.
CATALOG NUMBER: RAIL95YNW

ADDRESS: 170 LUDLOW AVE, NORTHVALE, NJ 07647

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

LAMP: TWO HUNDRED AND FIFTY SIX LIGHT EMITTING DIODES (LEDS).

DRIVER: RD-085-A1750

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)	10239 *
SPECTRORADIOMETRIC	
Observer	CIE 1931 2 degree
Chromaticity Ordinate x	0.4053
Chromaticity Ordinate y	0.3887
Observer	CIE 1976 2 degree
Chromaticity Ordinate u'	0.2365
Chromaticity Ordinate v'	0.5104
Correlated Color Temp CCT (K)	3483
ANSI C78.377-2008 Duv	-0.001
Total Radiant Flux (milliWatts)	31993 *
ELECTRICAL	
Input Voltage (Volts AC)	120.0
Input Current (Amps AC)	0.775
Input Power (Watts)	92.6
Input Power Factor (%)	99.6
Input Current THD (%)	4.7
Input Voltage THD (%)	0.2
EFFICACY (Lumens/Watt)	
	110.6
ELECTRICAL AT MAX NONIMAL INPUT	
Input Voltage (Volts AC)	277.0
Input Current (Amps AC)	0.343
Input Power (Watts)	90.4
Input Power Factor (%)	95.1
Input Current THD (%)	11.0
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	80
R6 Light blue	82
R7 Light violet	86
R8 Light reddish purple	67
R9 Strong red	17
R10 Strong yellow	69
R11 Strong green	80
R12 Strong blue	63
R13 Light yellowish pink (skin)	82
R14 Moderate olive green (leaf)	95

*NOTE:

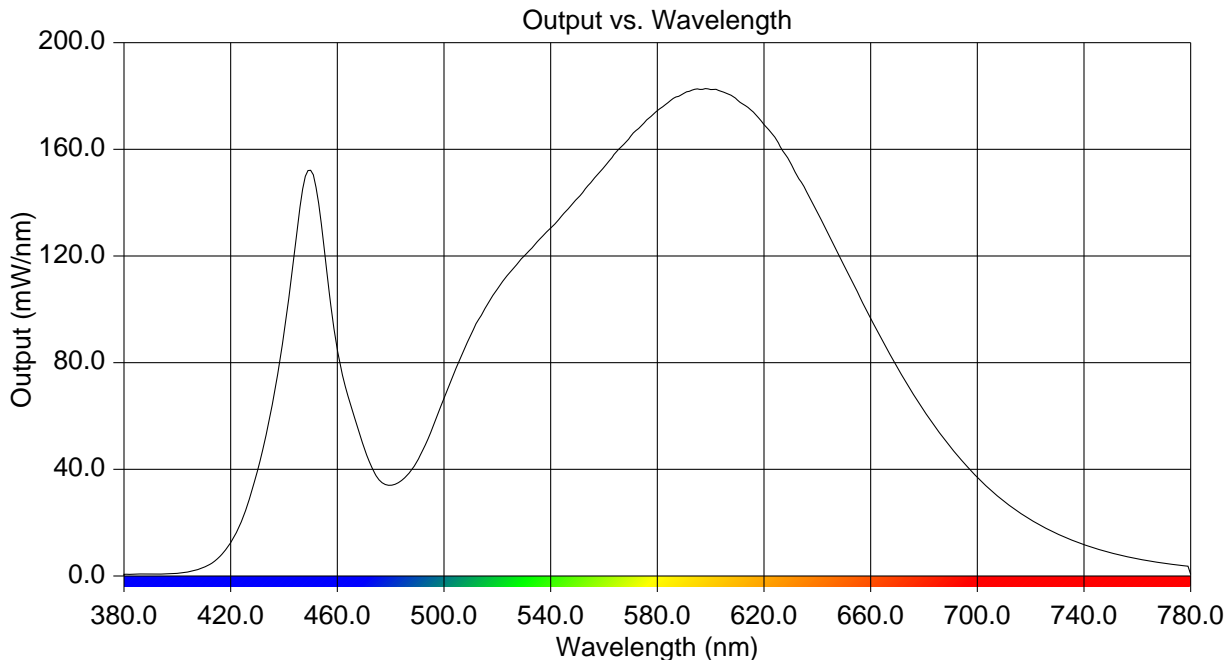
Proper calibration of integrating spheres for measuring total flux output of non-directional samples will produce reliable, repeatable results within the calibration tolerances of the equipment used. However, measurement of test samples with significant self absorption and/or directional output, even 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	0.628	515	99.501	650	116.568
385	0.645	520	107.574	655	106.646
390	0.682	525	114.109	660	96.835
395	0.803	530	119.925	665	87.176
400	1.072	535	125.382	670	78.224
405	1.699	540	130.409	675	69.790
410	3.175	545	136.033	680	61.982
415	6.426	550	141.514	685	54.879
420	12.549	555	147.446	690	48.232
425	22.994	560	153.146	695	42.386
430	39.225	565	159.544	700	37.066
435	61.525	570	164.907	705	32.290
440	91.239	575	169.857	710	28.018
445	130.377	580	174.504	715	24.337
450	152.134	585	178.345	720	21.106
455	123.476	590	181.024	725	18.253
460	84.897	595	182.666	730	15.786
465	64.165	600	182.418	735	13.609
470	48.166	605	181.494	740	11.741
475	36.977	610	178.508	745	10.138
480	34.052	615	174.831	750	8.762
485	36.552	620	169.273	755	7.489
490	43.136	625	163.104	760	6.461
495	53.774	630	154.810	765	5.549
500	66.752	635	146.048	770	4.790
505	78.992	640	136.341	775	4.137
510	90.103	645	126.541	780	0.621



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CIE Chromaticity Diagram

