

REPORT NUMBER: RAB00840

ISSUE DATE: 05/07/15

PREPARED FOR: RAB LIGHTING INC.

CATALOG NUMBER: RAIL225NW

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

LAMPS: FIVE HUNDRED AND SEVENTY SIX LIGHT EMITTING DIODES (LEDs), DATA SHOWN IS ABSOLUTE FOR THE SAMPLE PROVIDED AT RATED INPUT LED

(SEE PAGE 2 FOR MORE INFORMATION)

PAGE: 1 OF 8

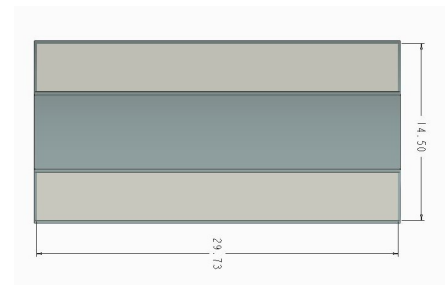
DATE SAMPLE TESTED: 05/07/15

CANDELA DISTRIBUTION

	0.0	45.0	90.0	135.0	180.0
0	9748	9748	9748	9748	9748
5	9629	9679	9739	9706	9670
15	9159	9158	9177	9241	9279
25	8300	8189	8119	8307	8465
35	7078	6853	6699	6999	7286
45	5611	5315	5099	5476	5850
55	4081	3779	3582	3954	4356
65	2602	2389	2253	2543	2859
75	1275	1162	1126	1288	1476
85	209	318	411	397	334
90	1	114	196	154	31
95	1	15	56	26	6
105	2	3	5	6	7
115	2	3	5	6	7
125	2	3	5	6	7
135	3	4	6	7	8
145	4	5	7	8	9
155	5	6	8	9	10
165	5	6	9	10	10
175	6	7	10	11	11
180	9	9	9	9	9

FLUX

920
2593
3796
4332
4174
3476
2457
1324
415
44
5
5
4
4
4
3
2
1



ZONAL LUMEN SUMMARY

ZONE	LUMENS	%FIXT
0- 30	7309	31.0
0- 40	11641	49.4
0- 60	19291	81.9
0- 90	23487	99.7
90-120	53	0.2
90-130	58	0.2
90-150	66	0.3
90-180	73	0.3
0-180	23560	100.0

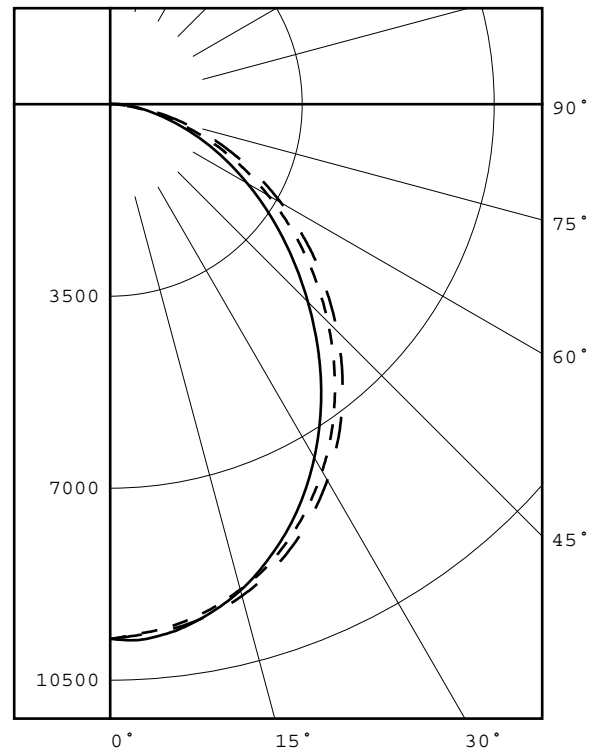
TOTAL INPUT WATTS = 222.9

EFFICACY = 105.7 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

DRIVER: RD-144-Q0700-R + RD-075-A1400

NOTE: DATA SHOWN IS ABSOLUTE FOR THE SAMPLE PROVIDED.

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PLANE : 0-DEG 90-DEG
BEAM ANGLE (50%) : 101.1 X 92.6 DEGREES
FIELD ANGLE (10%) : 156.4 X 153.3 DEGREES

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ZONAL LUMEN SUMMARY

0- 5	233.
5- 10	687.
10- 15	1110.
15- 20	1482.
20- 25	1786.
25- 30	2010.
30- 35	2144.
35- 40	2188.
40- 45	2146.
45- 50	2028.
50- 55	1851.
55- 60	1625.
60- 65	1368.
65- 70	1089.
70- 75	800.
75- 80	524.
80- 85	290.
85- 90	125.
90- 95	37.
95-100	7.
100-105	3.
105-110	2.
110-115	2.
115-120	2.
120-125	2.
125-130	2.
130-135	2.
135-140	2.
140-145	2.
145-150	2.
150-155	2.
155-160	2.
160-165	1.
165-170	1.
170-175	1.
175-180	0.

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5-DEGREE ZONAL LUMEN SUMMARY

0- 5	233
5- 10	687
10- 15	1110
15- 20	1482
20- 25	1786
25- 30	2010
30- 35	2144
35- 40	2188
40- 45	2146
45- 50	2028
50- 55	1851
55- 60	1625
60- 65	1368
65- 70	1089
70- 75	800
75- 80	524
80- 85	290
85- 90	125
90- 95	37
95-100	7
100-105	3
105-110	2
110-115	2
115-120	2
120-125	2
125-130	2
130-135	2
135-140	2
140-145	2
145-150	2
150-155	2
155-160	2
160-165	1
165-170	1
170-175	1
175-180	0

10-DEGREE ZONAL LUMEN SUMMARY

0- 10	920
0- 20	3513
0- 30	7309
0- 40	11641
0- 50	15815
0- 60	19291
0- 70	21748
0- 80	23072
0- 90	23487
0-100	23531
0-110	23536
0-120	23540
0-130	23545
0-140	23549
0-150	23553
0-160	23557
0-170	23559
0-180	23560

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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	106	102	99	95	98	95	92	94	92	89	91	89	87	85
2	100	92	85	80	97	90	84	79	86	81	77	83	79	75	80	77	74	71
3	91	81	73	67	89	80	72	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	77	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	42	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

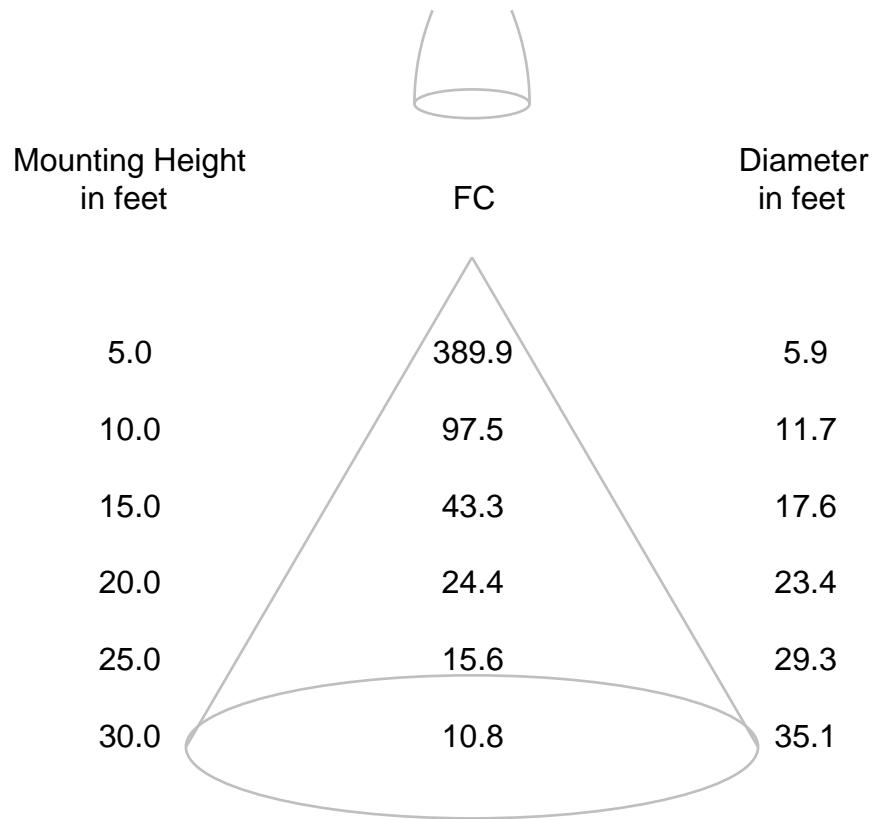
ALL CANDELA, LUMENS, LUMINANCE, AND VCP VALUES IN THIS REPORT ARE BASED ON ABSOLUTE PHOTOMETRY. THE COEFFICIENT OF UTILIZATION VALUES ARE BASED ON THE TOTAL ABSOLUTE LUMEN OUTPUT OF THIS LUMINAIRE SAMPLE.

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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.

REPORT NUMBER: RAB00843
DATE: 5/19/2015
PREPARED FOR: RAB LIGHTING INC.
CATALOG NUMBER: RAIL225NW

ADDRESS: 170 LUDLOW AVE, NORTHVALE, NJ 07647

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

LAMP: FIVE HUNDRED AND SEVENTY SIX LIGHT EMITTING DIODES (LEDs).

DRIVER: RD-144-Q0700-R + 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	<u>X.CAO</u>
Approved	<u>D.WANG-MUNSON</u> Lighting Engineer

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RESULTS:

PHOTOMETRIC	
Total Integrated Flux (lumens)	23559 *
SPECTRORADIOMETRIC	
Observer	CIE 1931 2 degree
Chromaticity Ordinate x	0.3805
Chromaticity Ordinate y	0.3771
Observer	CIE 1976 2 degree
Chromaticity Ordinate u'	0.2250
Chromaticity Ordinate v'	0.5018
Correlated Color Temp CCT (K)	4000
ANSI C78.377-2008 Duv	0.000
Total Radiant Flux (milliWatts)	72645 *
ELECTRICAL	
Input Voltage (Volts AC)	120.0
Input Current (Amps AC)	1.86
Input Power (Watts)	222.9
Input Power Factor (%)	99.8
Input Current THD (%)	4.6
Input Voltage THD (%)	0.2
EFFICACY (Lumens/Watt)	
	105.7
ELECTRICAL AT MAX NONIMAL INPUT	
Input Voltage (Volts AC)	277.0
Input Current (Amps AC)	0.833
Input Power (Watts)	218.6
Input Power Factor (%)	94.7
Input Current THD (%)	10.1
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	90
R3 Strong yellowish green	94
R4 Moderate yellowish green	82
R5 Light bluish green	82
R6 Light blue	85
R7 Light violet	87
R8 Light reddish purple	67
R9 Strong red	16
R10 Strong yellow	74
R11 Strong green	80
R12 Strong blue	60
R13 Light yellowish pink (skin)	84
R14 Moderate olive green (leaf)	97

*NOTE:

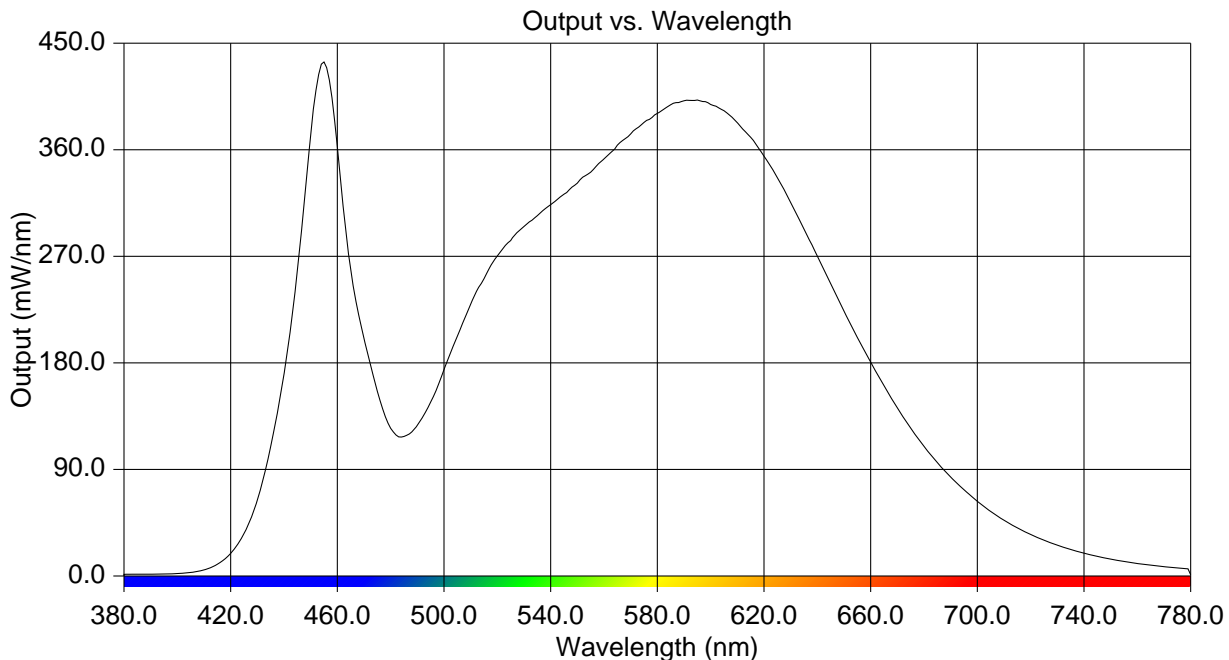
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RESULTS:

Wavelength	mW per nm	Wavelength	mW per nm	Wavelength	mW per nm
380	1.388	515	250.808	650	223.603
385	1.499	520	270.094	655	201.264
390	1.529	525	283.013	660	180.717
395	1.723	530	294.799	665	160.414
400	2.082	535	304.026	670	141.896
405	2.955	540	313.321	675	124.760
410	5.123	545	321.996	680	109.227
415	9.913	550	331.474	685	95.790
420	19.089	555	340.689	690	83.303
425	35.830	560	351.746	695	72.792
430	64.123	565	363.508	700	63.100
435	109.175	570	372.981	705	54.567
440	171.356	575	382.706	710	47.056
445	256.194	580	390.473	715	40.651
450	372.755	585	397.612	720	35.042
455	433.707	590	400.967	725	30.217
460	362.268	595	401.603	730	26.002
465	258.667	600	397.838	735	22.349
470	200.307	605	392.596	740	19.176
475	155.844	610	382.320	745	16.627
480	124.606	615	370.172	750	14.254
485	117.741	620	354.217	755	12.272
490	127.105	625	336.307	760	10.566
495	146.768	630	315.309	765	9.148
500	174.166	635	293.128	770	7.879
505	202.296	640	269.949	775	6.799
510	229.077	645	246.600	780	1.025



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CIE Chromaticity Diagram

