

REPORT NUMBER: RAB00835

ISSUE DATE: 05/07/15

PREPARED FOR: RAB LIGHTING INC.

CATALOG NUMBER: RAIL185YNW

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).

NOTE: DATA SHOWN IS ABSOLUTE FOR THE SAMPLE PROVIDED.

TOTAL INPUT WATTS = 183.61 AT 120.0 VAC.

TEST PROCEDURE: IESNA LM-79-08

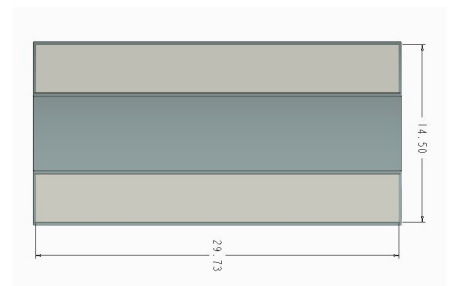
(SEE PAGE 2 FOR MORE INFORMATION)

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CANDELA DISTRIBUTION

	0.0	45.0	90.0	135.0	180.0	
0	8610	8610	8610	8610	8610	
5	8527	8560	8601	8558	8522	812
15	8147	8123	8102	8113	8135	2288
25	7394	7273	7143	7265	7379	3344
35	6322	6114	5861	6101	6339	3813
45	5075	4762	4477	4749	5060	3675
55	3720	3403	3133	3392	3715	3058
65	2407	2171	1972	2148	2405	2160
75	1199	1075	950	1065	1199	1148
85	231	260	275	257	226	312
90	12	71	100	69	6	
95	5	4	10	2	2	17
105	5	3	2	3	3	4
115	5	4	3	3	3	3
125	5	3	3	3	3	3
135	4	4	3	4	4	3
145	4	4	4	5	5	3
155	5	5	5	5	6	2
165	5	5	6	6	6	2
175	5	6	7	7	7	1
180	6	6	6	6	6	

FLUX



ZONAL LUMEN SUMMARY

ZONE	LUMENS	%FIXT
0- 30	6444	31.2
0- 40	10257	49.7
0- 60	16990	82.3
0- 90	20610	99.8
90-120	24	0.1
90-130	27	0.1
90-150	33	0.2
90-180	37	0.2
0-180	20647	100.0

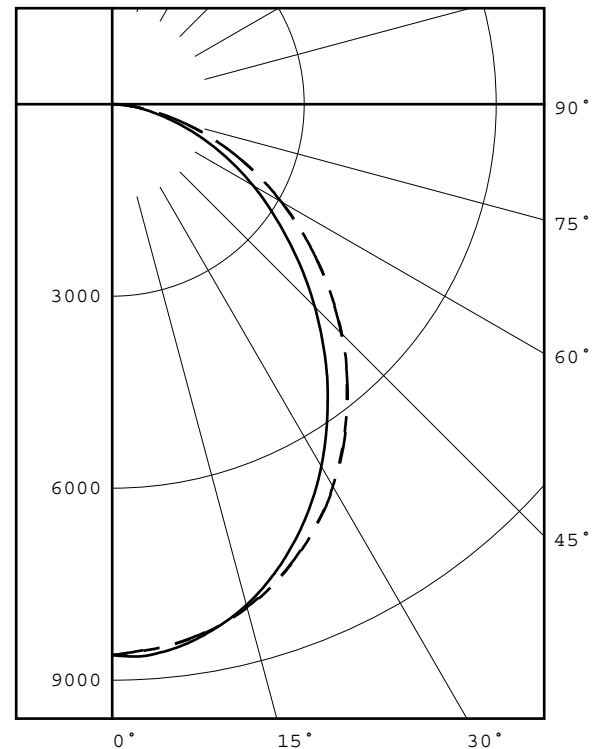
TOTAL INPUT WATTS = 183.6

EFFICACY = 112.5 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-085-A1750
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%) : 101.1 X 92.3 DEGREES
FIELD ANGLE (10%) : 156.1 X 152.1 DEGREES

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ZONAL LUMEN SUMMARY

0- 5	205.
5- 10	607.
10- 15	980.
15- 20	1307.
20- 25	1574.
25- 30	1770.
30- 35	1888.
35- 40	1926.
40- 45	1889.
45- 50	1786.
50- 55	1628.
55- 60	1430.
60- 65	1204.
65- 70	956.
70- 75	699.
75- 80	448.
80- 85	230.
85- 90	82.
90- 95	15.
95-100	2.
100-105	2.
105-110	2.
110-115	2.
115-120	2.
120-125	2.
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	205
5- 10	607
10- 15	980
15- 20	1307
20- 25	1574
25- 30	1770
30- 35	1888
35- 40	1926
40- 45	1889
45- 50	1786
50- 55	1628
55- 60	1430
60- 65	1204
65- 70	956
70- 75	699
75- 80	448
80- 85	230
85- 90	82
90- 95	15
95-100	2
100-105	2
105-110	2
110-115	2
115-120	2
120-125	2
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	812
0- 20	3100
0- 30	6444
0- 40	10257
0- 50	13932
0- 60	16990
0- 70	19150
0- 80	20298
0- 90	20610
0-100	20627
0-110	20630
0-120	20634
0-130	20637
0-140	20640
0-150	20643
0-160	20645
0-170	20647
0-180	20647

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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	81	74	67	89	80	73	67	77	71	66	74	69	64	72	67	63	61
4	84	73	64	58	82	71	63	57	69	62	57	66	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	38	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	43	36	32	42	36	31	41	36	31	29
10	55	42	34	29	53	41	34	29	40	33	29	39	33	29	38	33	28	27

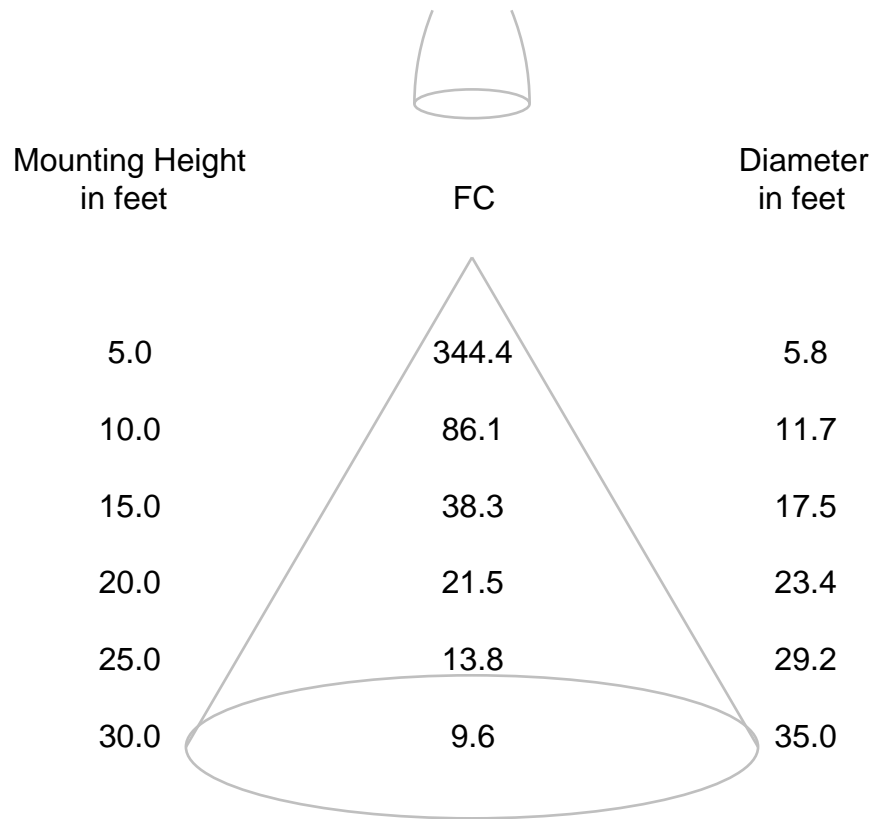
ALL CANDELA, LUMENS, LUMINANCE, AND VCP VALUES IN THIS REPORT ARE BASED ON ABSOLUTE PHOTOMETRY. THE COEFFICIENT OF UTILIZATION VALUES ARE BASED ON THE TOTAL ABSOLUTE LUMEN OUTPUT OF THIS LUMINAIRE SAMPLE.

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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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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: 2 X 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)	20647 *
SPECTRORADIOMETRIC	
Observer	CIE 1931 2 degree
Chromaticity Ordinate x	0.4057
Chromaticity Ordinate y	0.3878
Observer	CIE 1976 2 degree
Chromaticity Ordinate u'	0.2372
Chromaticity Ordinate v'	0.5101
Correlated Color Temp CCT (K)	3467
ANSI C78.377-2008 Duv	-0.001
Total Radiant Flux (milliWatts)	64657 *
ELECTRICAL	
Input Voltage (Volts AC)	120.0
Input Current (Amps AC)	1.54
Input Power (Watts)	183.6
Input Power Factor (%)	99.4
Input Current THD (%)	5.0
Input Voltage THD (%)	0.2
EFFICACY (Lumens/Watt)	
	112.5
ELECTRICAL AT MAX NONIMAL INPUT	
Input Voltage (Volts AC)	277.0
Input Current (Amps AC)	0.679
Input Power (Watts)	179.0
Input Power Factor (%)	95.2
Input Current THD (%)	11.6
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:

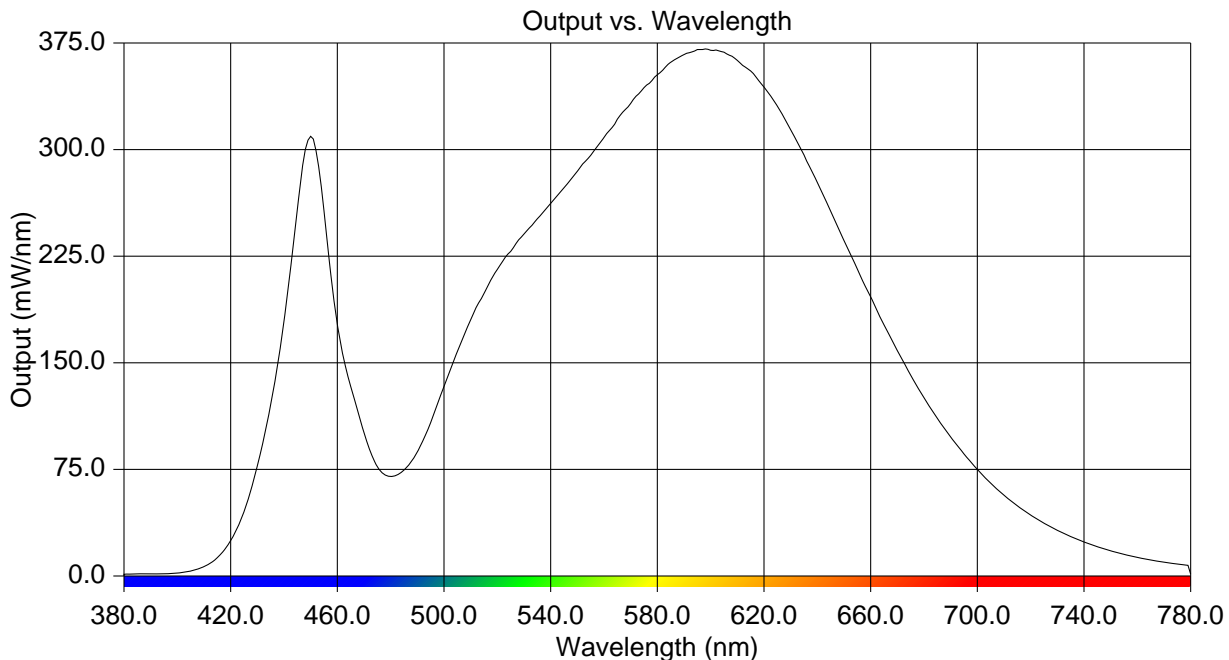
Proper calibration of integrating spheres for measuring total flux output of non-directional samples will produce reliable, repeatable results within the calibration tolerances of the equipment used. However, measurement of test samples with significant self absorption and/or directional output, even 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	1.216	515	198.506	650	236.139
385	1.292	520	215.557	655	215.832
390	1.394	525	228.193	660	196.413
395	1.634	530	240.455	665	176.595
400	2.188	535	251.174	670	158.601
405	3.459	540	261.888	675	141.220
410	6.472	545	272.838	680	125.272
415	12.921	550	284.312	685	110.929
420	24.826	555	295.727	690	97.640
425	45.539	560	308.273	695	85.789
430	77.535	565	321.180	700	75.213
435	120.803	570	332.247	705	65.437
440	179.484	575	343.361	710	56.812
445	258.529	580	352.435	715	49.314
450	309.141	585	361.132	720	42.766
455	256.690	590	366.742	725	37.037
460	177.193	595	370.155	730	32.105
465	133.364	600	369.630	735	27.714
470	100.611	605	368.307	740	23.791
475	76.918	610	362.525	745	20.613
480	69.829	615	355.106	750	17.753
485	74.682	620	343.532	755	15.217
490	87.168	625	330.600	760	13.139
495	107.855	630	313.883	765	11.325
500	133.717	635	296.062	770	9.742
505	157.579	640	276.652	775	8.414
510	179.892	645	256.361	780	1.267



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CIE Chromaticity Diagram

