

REPORT NUMBER: RAB01695

ISSUE DATE: 02/01/16

PREPARED FOR: RAB LIGHTING INC.

CATALOG NUMBER: RAIL225YNW/480

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 = 222.06 AT 480.0 VAC.

TEST PROCEDURE: IESNA LM-79-08

(SEE PAGE 2 FOR MORE INFORMATION)

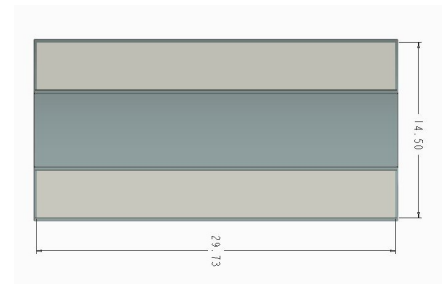
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CANDELA DISTRIBUTION

	0.0	22.5	45.0	67.5	90.0
0	10057	10057	10057	10057	10057
5	9945	9974	9994	10033	10045
15	9499	9509	9480	9469	9458
25	8628	8589	8486	8391	8334
35	7398	7310	7125	6925	6851
45	5888	5793	5552	5303	5221
55	4326	4211	3963	3726	3658
65	2799	2709	2509	2337	2279
75	1383	1338	1227	1133	1102
85	258	265	288	304	311
90	10	32	74	100	109
95	0	0	0	4	7
105	0	0	1	1	1
115	0	1	1	1	1
125	1	1	1	1	1
135	2	2	2	2	2
145	2	2	2	3	3
155	3	3	3	3	3
165	3	3	4	4	4
175	3	4	4	5	6
180	5	5	5	5	5

FLUX

948
2671
3904
4450
4282
3557
2503
1317
350
15
1
1
1
1
2
1
1
0



ZONAL LUMEN SUMMARY

ZONE	LUMENS	%FIXT
0- 30	7523	31.3
0- 40	11973	49.9
0- 60	19812	82.5
0- 90	23982	99.9
90-120	16	0.1
90-130	17	0.1
90-150	20	0.1
90-180	23	0.1
0-180	24005	100.0

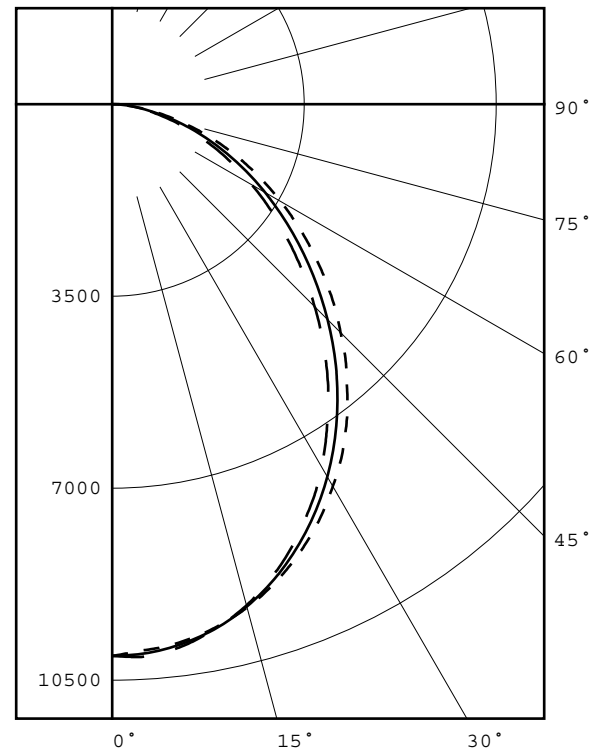
TOTAL INPUT WATTS = 222.1

EFFICACY = 108.1 Lm/W

CIE TYPE - DIRECT

PLANE : 0-DEG 90-DEG

SPACING CRITERIA : 1.2 1.1



LEGEND:

0-deg: - - - - -
45-deg: _____
90-deg: - - - - -

Checked

X.CAO

Approved

D.WANG-MUNSON

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ADDITIONAL INFORMATION

TEST DISTANCE: 28.25 FEET
DRIVER: 3 x RD-S075-A1400/480
ACCREDITED LABORATORY CODE 201058-0
LM-80 DATA AVAILABLE FROM MANUFACTURER FOR SOLID STATE SOURCE

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PLANE : 0-DEG 90-DEG
BEAM ANGLE (50%) : 100.9 X 92.2 DEGREES
FIELD ANGLE (10%) : 155.8 X 151.9 DEGREES

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PLANE : 0-DEG 90-DEG
LUMINOUS LENGTH :29.730 14.500

LUMINANCE DATA IN CANDELA/SQ METER

ANGLE IN DEG	AVERAGE 0-DEG	AVERAGE 45-DEG	AVERAGE 90-DEG
45	29929.	28221.	26539.
55	27109.	24834.	22923.
65	23805.	21339.	19382.
75	19206.	17040.	15304.
85	10640.	11877.	12826.

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CANDELA DISTRIBUTION

	0.0	22.5	45.0	67.5	90.0
0.0	10057	10057	10057	10057	10057
5.0	9945	9974	9994	10033	10045
10.0	9777	9800	9804	9821	9819
15.0	9499	9509	9480	9469	9458
20.0	9110	9104	9034	8979	8953
25.0	8628	8589	8486	8391	8334
30.0	8045	7992	7842	7692	7636
35.0	7398	7310	7125	6925	6851
40.0	6655	6569	6359	6124	6052
45.0	5888	5793	5552	5303	5221
50.0	5118	4999	4746	4496	4413
55.0	4326	4211	3963	3726	3658
60.0	3548	3438	3216	3012	2945
65.0	2799	2709	2509	2337	2279
70.0	2075	2002	1844	1707	1660
75.0	1383	1338	1227	1133	1102
80.0	759	742	692	644	632
85.0	258	265	288	304	311
90.0	10	32	74	100	109
95.0	0	0	0	4	7
100.0	0	0	0	0	1
105.0	0	0	1	1	1
110.0	0	0	1	1	1
115.0	0	1	1	1	1
120.0	1	1	1	1	1
125.0	1	1	1	1	1
130.0	1	1	1	2	2
135.0	2	2	2	2	2
140.0	2	2	2	2	2
145.0	2	2	2	3	3
150.0	3	3	3	3	3
155.0	3	3	3	3	3
160.0	3	3	3	4	4
165.0	3	3	4	4	4
170.0	3	3	4	4	5
175.0	3	4	4	5	6
180.0	5	5	5	5	5

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ZONAL LUMEN SUMMARY

0- 5	240.
5- 10	709.
10- 15	1144.
15- 20	1526.
20- 25	1838.
25- 30	2066.
30- 35	2203.
35- 40	2247.
40- 45	2203.
45- 50	2080.
50- 55	1895.
55- 60	1662.
60- 65	1396.
65- 70	1107.
70- 75	805.
75- 80	512.
80- 85	260.
85- 90	90.
90- 95	15.
95-100	0.
100-105	0.
105-110	0.
110-115	0.
115-120	0.
120-125	0.
125-130	0.
130-135	1.
135-140	1.
140-145	1.
145-150	1.
150-155	1.
155-160	1.
160-165	1.
165-170	0.
170-175	0.
175-180	0.

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5-DEGREE ZONAL LUMEN SUMMARY

0- 5	240
5- 10	709
10- 15	1144
15- 20	1526
20- 25	1838
25- 30	2066
30- 35	2203
35- 40	2247
40- 45	2203
45- 50	2080
50- 55	1895
55- 60	1662
60- 65	1396
65- 70	1107
70- 75	805
75- 80	512
80- 85	260
85- 90	90
90- 95	15
95-100	0
100-105	0
105-110	0
110-115	0
115-120	0
120-125	0
125-130	0
130-135	1
135-140	1
140-145	1
145-150	1
150-155	1
155-160	1
160-165	1
165-170	0
170-175	0
175-180	0

10-DEGREE ZONAL LUMEN SUMMARY

0- 10	948
0- 20	3619
0- 30	7523
0- 40	11973
0- 50	16256
0- 60	19812
0- 70	22315
0- 80	23633
0- 90	23982
0-100	23997
0-110	23998
0-120	23999
0-130	24000
0-140	24001
0-150	24003
0-160	24004
0-170	24005
0-180	24005

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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	95	92	90	91	89	87	85
2	100	92	86	80	97	90	84	79	87	82	78	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	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	49	41	35	47	40	35	46	39	35	45	39	35	33
9	58	45	37	32	57	45	37	32	44	37	32	43	36	31	41	36	31	30
10	55	42	34	29	54	41	34	29	40	34	29	39	33	29	39	33	29	27

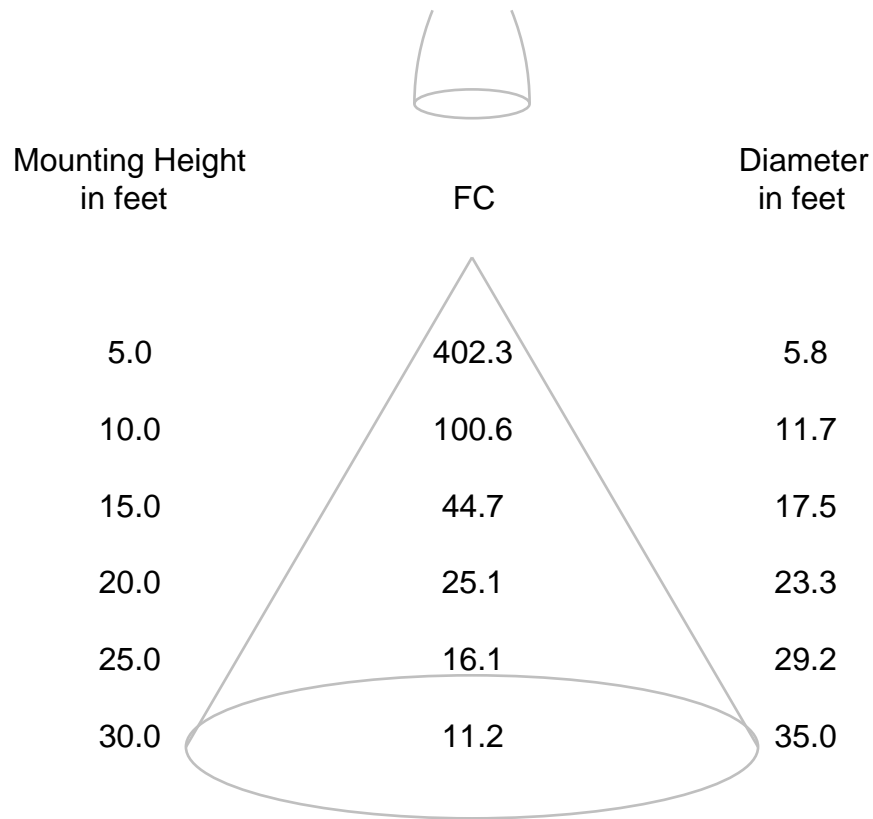
ALL CANDELA, LUMENS, LUMINANCE, AND VCP VALUES IN THIS REPORT ARE BASED ON ABSOLUTE PHOTOMETRY. THE COEFFICIENT OF UTILIZATION VALUES ARE BASED ON THE TOTAL ABSOLUTE LUMEN OUTPUT OF THIS LUMINAIRE SAMPLE.

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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.

REPORT NUMBER: RAB01696
 DATE: 2/1/2016
 PREPARED FOR: RAB LIGHTING INC.
 CATALOG NUMBER: RAIL225YNW/480

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: 3 x RD-S075-A1400/480

OBJECT OF TEST: DATA SHOWN IS ABSOLUTE FOR THE SAMPLE PROVIDED AT THE RATED INPUT VOLTAGES (480.0 AND 347.0 VAC, 60Hz) TO THE TEST SAMPLE.

INSTRUMENTS:	GWINSTEK PROGRAMMABLE AC POWER SOURCE APS-7100	Calibration Due: N/A
	CHROMA PROGRAMMABLE DIGITAL POWER METER MODEL 66202	3/9/16
	OCEAN OPTICS QE65PRO Spectroradiometer	1/25/17
	RAB 2.0 meter Diameter Integrating Sphere, 4PI Geometry	1/25/17

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 (347.0 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)	24005 *
SPECTRORADIOMETRIC	
Observer	CIE 1931 2 degree
Chromaticity Ordinate x	0.4052
Chromaticity Ordinate y	0.3875
Observer	CIE 1976 2 degree
Chromaticity Ordinate u'	0.2370
Chromaticity Ordinate v'	0.5099
Correlated Color Temp CCT (K)	3476
ANSI C78.377-2008 Duv	-0.001
Total Radiant Flux (milliWatts)	75237 *
ELECTRICAL	
Input Voltage (Volts AC)	480.0
Input Current (Amps AC)	0.500
Input Power (Watts)	222.1
Input Power Factor (%)	92.5
Input Current THD (%)	13.8
Input Voltage THD (%)	0.2
EFFICACY (Lumens/Watt)	
	108.1
ELECTRICAL AT MAX NONIMAL INPUT	
Input Voltage (Volts AC)	347.0
Input Current (Amps AC)	0.641
Input Power (Watts)	220.8
Input Power Factor (%)	99.3
Input Current THD (%)	10.4
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	17
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:

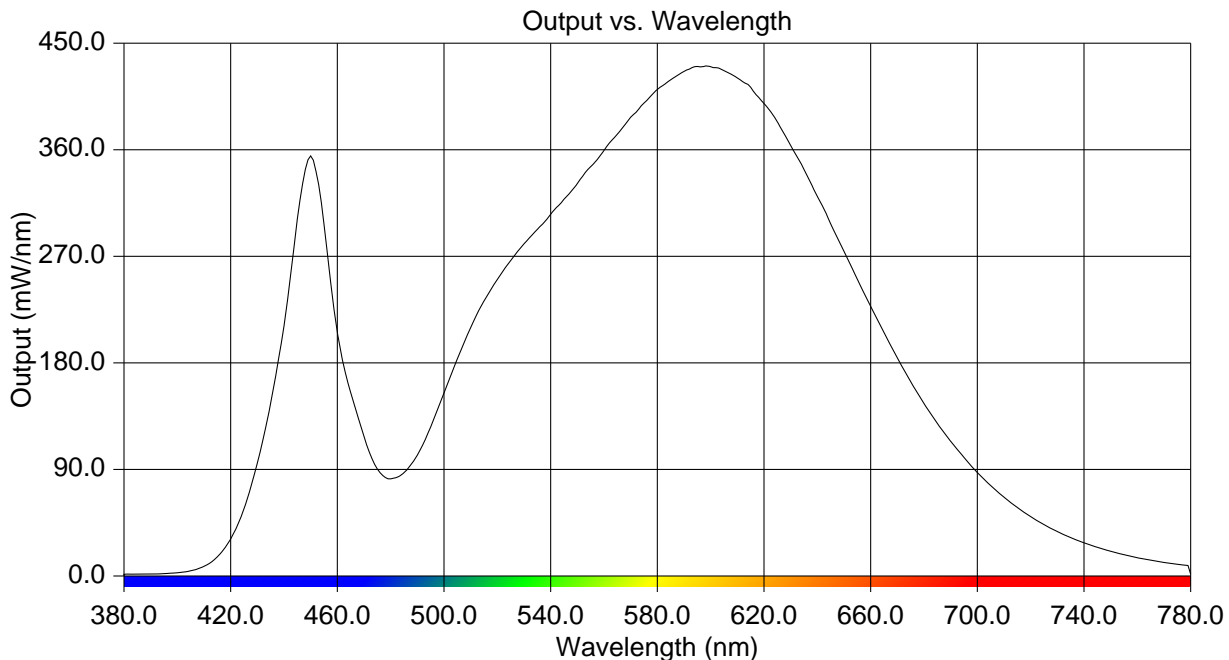
Proper calibration of integrating spheres for measuring total flux output of non-directional samples will produce reliable, repeatable results within the calibration tolerances of the equipment used. However, measurement of test samples with significant self absorption and/or directional output, even 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	1.408	515	231.871	650	273.734
385	1.594	520	250.716	655	250.393
390	1.672	525	266.225	660	227.670
395	1.952	530	280.254	665	205.456
400	2.690	535	292.439	670	184.103
405	4.286	540	305.408	675	164.044
410	8.242	545	317.919	680	145.531
415	16.190	550	331.297	685	128.717
420	31.174	555	345.371	690	113.597
425	56.906	560	359.158	695	100.046
430	95.282	565	372.796	700	87.494
435	145.639	570	387.096	705	76.494
440	210.863	575	399.041	710	66.594
445	301.284	580	410.617	715	57.550
450	354.431	585	418.805	720	50.031
455	296.712	590	425.635	725	43.335
460	205.670	595	429.937	730	37.602
465	154.826	600	429.439	735	32.420
470	117.386	605	426.491	740	28.060
475	90.275	610	420.216	745	24.246
480	81.957	615	412.393	750	20.819
485	87.206	620	398.652	755	17.949
490	101.959	625	383.252	760	15.442
495	125.704	630	363.303	765	13.328
500	154.572	635	343.008	770	11.483
505	183.409	640	320.186	775	9.890
510	209.741	645	297.126	780	1.501



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CIE Chromaticity Diagram

