

REPORT NUMBER: RAB00903

ISSUE DATE: 05/22/15

PREPARED FOR: RAB LIGHTING INC.

CATALOG NUMBER: FALCORA160YW

LUMINAIRE: ONE LUMINAIRE CONSISTING OF TWO PAIRS OF HEADS. EACH PAIR MOUNTED IN OPPOSING DIRECTIONS, EACH LIGHT HEAD CONSISTING OF: CAST FINNED METAL HOUSING, MOLDED PLASTIC REFLECTOR WITH SPECULAR FINISH, ONE CIRCUIT BOARD WITH 16 LEDS, CLEAR FLAT PRISMATIC GLASS LENS.

(SEE PAGE 2 FOR MORE INFORMATION)

PAGE: 1 OF 8

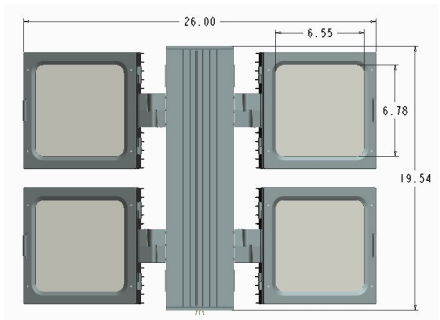
DATE SAMPLE TESTED: 05/22/15

CANDELA DISTRIBUTION

	0.0	22.5	45.0	67.5	90.0
0	11858	11858	11858	11858	11858
5	11307	11413	11546	11686	11747
15	6011	6468	7804	10336	11252
25	2902	3309	4574	7492	10165
35	858	1173	2364	4900	8365
45	251	371	967	3116	6612
55	125	157	387	1824	4849
65	82	99	179	887	3072
75	48	58	88	355	1564
85	12	22	51	155	621
90	0	11	35	100	332
95	0	3	15	56	152
105	0	2	0	0	0
115	0	2	0	0	0
125	0	2	0	0	0
135	0	3	2	0	0
145	1	4	3	1	0
155	2	5	3	0	0
165	4	7	4	0	0
175	6	8	5	0	0
180	4	4	4	4	4

FLUX

1054
2323
2511
2061
1534
1092
684
353
153
43
2
0
1
1
1
1
0



ZONAL LUMEN SUMMARY

ZONE	LUMENS	%FIXT
0- 30	5888	49.8
0- 40	7948	67.3
0- 60	10574	89.5
0- 90	11765	99.6
90-120	46	0.4
90-130	46	0.4
90-150	48	0.4
90-180	51	0.4
0-180	11816	100.0

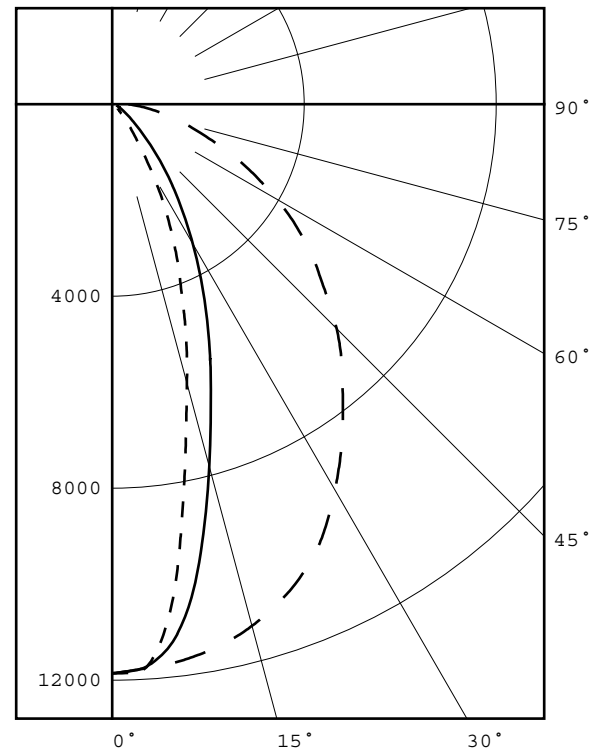
TOTAL INPUT WATTS = 164.3

EFFICACY = 71.9 Lm/W

CIE TYPE - DIRECT

PLANE : 0-DEG 90-DEG

SPACING CRITERIA : 0.5 1.2



LEGEND:

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

Checked

X.CAO

Approved

D.WANG-MUNSON

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ADDITIONAL INFORMATION

LAMPS: SIXTY-FOUR WHITE MULTI-CHIP LIGHT EMITTING DIODES (LEDs), TILTED
15-DEGREES FROM VERTICAL BASE-UP POSITION.

NOTE: DATA SHOWN IS ABSOLUTE FOR THE SAMPLE PROVIDED.

TOTAL INPUT WATTS =164.28 AT 120.0 VAC.

LED DRIVER: RD-144-Q0700-R

TEST PROCEDURE: IESNA LM-79-08

ACCREDITED LABORATORY CODE 201058-0

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PLANE : 0-DEG 90-DEG
BEAM ANGLE (50%) : 30.5 X 97.2 DEGREES
FIELD ANGLE (10%): 65.2 X 157.1 DEGREES

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CANDELA DISTRIBUTION

	0.0	22.5	45.0	67.5	90.0
0.0	11858	11858	11858	11858	11858
5.0	11307	11413	11546	11686	11747
10.0	8486	8977	10052	11231	11564
15.0	6011	6468	7804	10336	11252
20.0	4253	4702	6003	8982	10796
25.0	2902	3309	4574	7492	10165
30.0	1698	2144	3363	6084	9283
35.0	858	1173	2364	4900	8365
40.0	458	644	1581	3927	7463
45.0	251	371	967	3116	6612
50.0	165	223	597	2421	5679
55.0	125	157	387	1824	4849
60.0	100	122	256	1322	3942
65.0	82	99	179	887	3072
70.0	65	79	129	563	2216
75.0	48	58	88	355	1564
80.0	29	38	63	236	1044
85.0	12	22	51	155	621
90.0	0	11	35	100	332
95.0	0	3	15	56	152
100.0	0	2	0	14	39
105.0	0	2	0	0	0
110.0	0	2	0	0	0
115.0	0	2	0	0	0
120.0	0	2	0	0	0
125.0	0	2	0	0	0
130.0	0	2	1	0	0
135.0	0	3	2	0	0
140.0	1	3	2	1	0
145.0	1	4	3	1	0
150.0	1	4	4	1	0
155.0	2	5	3	0	0
160.0	3	6	4	0	0
165.0	4	7	4	0	0
170.0	5	7	4	0	0
175.0	6	8	5	0	0
180.0	4	4	4	4	4

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ZONAL LUMEN SUMMARY

0- 5	280.
5- 10	774.
10- 15	1083.
15- 20	1240.
20- 25	1282.
25- 30	1229.
30- 35	1101.
35- 40	959.
40- 45	829.
45- 50	705.
50- 55	597.
55- 60	495.
60- 65	391.
65- 70	293.
70- 75	209.
75- 80	145.
80- 85	95.
85- 90	58.
90- 95	31.
95-100	12.
100-105	2.
105-110	0.
110-115	0.
115-120	0.
120-125	0.
125-130	0.
130-135	0.
135-140	0.
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	280
5- 10	774
10- 15	1083
15- 20	1240
20- 25	1282
25- 30	1229
30- 35	1101
35- 40	959
40- 45	829
45- 50	705
50- 55	597
55- 60	495
60- 65	391
65- 70	293
70- 75	209
75- 80	145
80- 85	95
85- 90	58
90- 95	31
95-100	12
100-105	2
105-110	0
110-115	0
115-120	0
120-125	0
125-130	0
130-135	0
135-140	0
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	1054
0- 20	3377
0- 30	5888
0- 40	7948
0- 50	9483
0- 60	10574
0- 70	11258
0- 80	11612
0- 90	11765
0-100	11808
0-110	11810
0-120	11810
0-130	11811
0-140	11812
0-150	11813
0-160	11814
0-170	11815
0-180	11816

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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	111	107	104	101	108	105	102	99	101	98	96	97	95	93	93	92	90	88
2	103	97	92	87	101	95	90	86	92	88	84	88	85	82	86	83	80	78
3	96	88	82	76	94	87	81	76	84	79	74	81	77	73	79	75	72	70
4	90	81	73	68	88	79	73	68	77	71	67	75	70	66	73	68	65	63
5	84	74	67	61	83	73	66	61	71	65	60	69	64	60	67	63	59	57
6	79	68	61	56	78	67	61	55	66	60	55	64	59	55	63	58	54	52
7	75	63	56	51	73	63	56	51	61	55	51	60	54	50	59	54	50	48
8	71	59	52	47	69	59	52	47	57	51	47	56	51	46	55	50	46	45
9	67	55	48	44	65	55	48	44	54	48	43	53	47	43	52	47	43	41
10	63	52	45	41	62	52	45	41	51	45	41	50	44	40	49	44	40	39

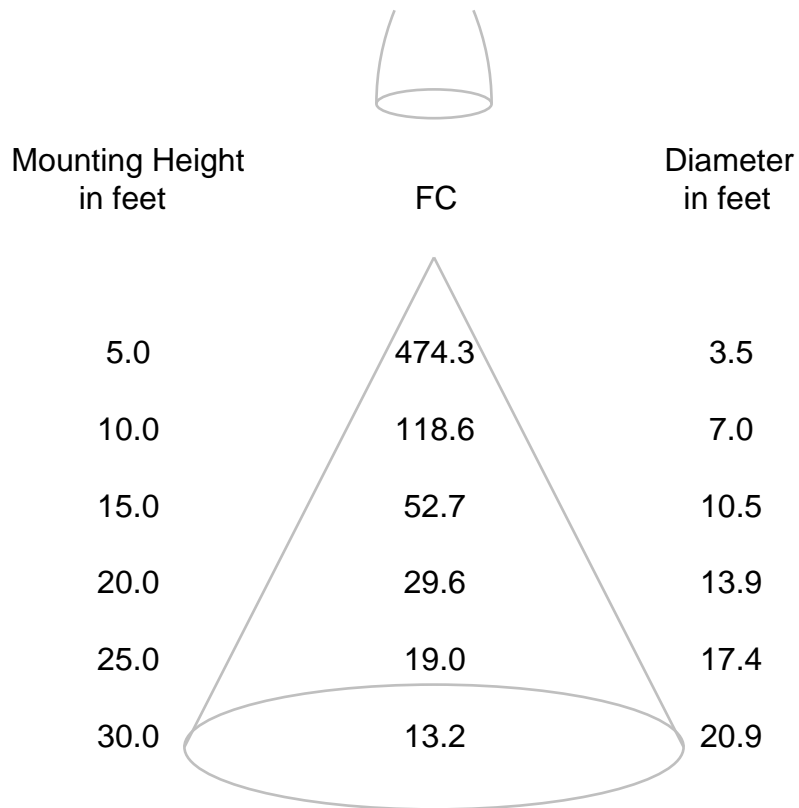
ALL CANDELA, LUMENS, LUMINANCE, AND VCP VALUES IN THIS REPORT ARE BASED ON ABSOLUTE PHOTOMETRY. THE COEFFICIENT OF UTILIZATION VALUES ARE BASED ON THE TOTAL ABSOLUTE LUMEN OUTPUT OF THIS LUMINAIRE SAMPLE.

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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: RAB00904
 DATE: 5/22/2015
 PREPARED FOR: RAB LIGHTING INC.
 CATALOG NUMBER: FALCORA160YW

ADDRESS: 170 LUDLOW AVE, NORTHVALE, NJ 07647

LUMINAIRE: ONE LUMINAIRE CONSISTING OF TWO PAIRS OF HEADS. EACH PAIR MOUNTED IN OPPOSING DIRECTIONS, EACH LIGHT HEAD CONSISTING OF: CAST FINNED METAL HOUSING, MOLDED PLASTIC REFLECTOR WITH SPECULAR FINISH, ONE CIRCUIT BOARD WITH 16 LEDS, CLEAR FLAT PRISMATIC GLASS LENS.

LAMP: SIXTY-FOUR WHITE MULTI-CHIP LIGHT EMITTING DIODES (LEDS), TILTED 15-DEGREES FROM VERTICAL BASE-UP POSITION.

DRIVER: RD-144-Q0700-R

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 (CRI_a, 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)	11816 *
SPECTRORADIOMETRIC	
Observer	CIE 1931 2 degree
Chromaticity Ordinate x	0.4288
Chromaticity Ordinate y	0.3981
Observer	CIE 1976 2 degree
Chromaticity Ordinate u'	0.2478
Chromaticity Ordinate v'	0.5178
Correlated Color Temp CCT (K)	3093
ANSI C78.377-2008 Duv	-0.001
Total Radiant Flux (milliWatts)	36240 *
ELECTRICAL	
Input Voltage (Volts AC)	120.0
Input Current (Amps AC)	1.37
Input Power (Watts)	164.3
Input Power Factor (%)	99.9
Input Current THD (%)	4.2
Input Voltage THD (%)	0.2
EFFICACY (Lumens/Watt)	
	71.9
ELECTRICAL AT MAX NONIMAL INPUT	
Input Voltage (Volts AC)	277.0
Input Current (Amps AC)	0.608
Input Power (Watts)	161.2
Input Power Factor (%)	95.7
Input Current THD (%)	8.7
Input Voltage THD (%)	0.2
Off-State Power (Watts)	
	0.0

COLOR RENDERING INDICES	CRI
Ra (Average 1-8)	81
R1 Light greyish red	79
R2 Dark greyish yellow	87
R3 Strong yellowish green	93
R4 Moderate yellowish green	80
R5 Light bluish green	78
R6 Light blue	82
R7 Light violet	84
R8 Light reddish purple	61
R9 Strong red	8
R10 Strong yellow	69
R11 Strong green	77
R12 Strong blue	63
R13 Light yellowish pink (skin)	80
R14 Moderate olive green (leaf)	95

*NOTE:

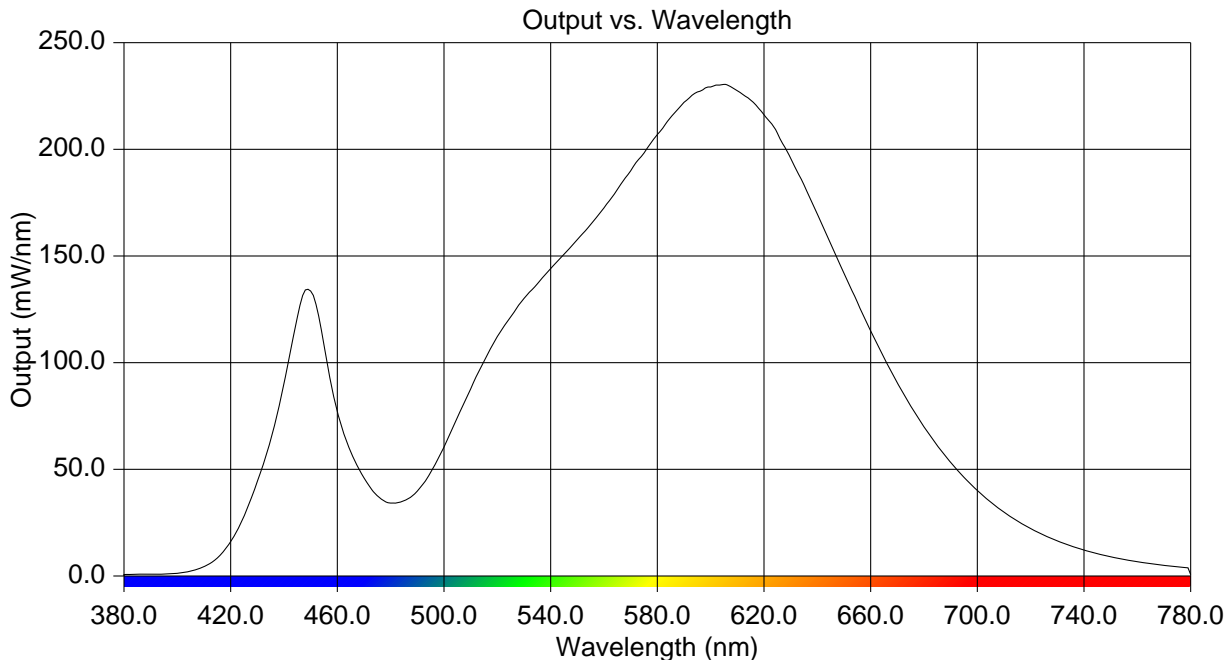
Proper calibration of integrating spheres for measuring total flux output of non-directional samples will produce reliable, repeatable results within the calibration tolerances of the equipment used. However, measurement of test samples with significant self absorption and/or directional output, even 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	0.671	515	100.619	650	141.909
385	0.741	520	112.258	655	128.399
390	0.793	525	121.341	660	114.898
395	0.997	530	130.101	665	102.396
400	1.340	535	136.932	670	90.662
405	2.235	540	144.078	675	79.732
410	4.296	545	150.788	680	69.855
415	8.440	550	157.601	685	61.175
420	16.073	555	164.651	690	53.173
425	28.028	560	172.554	695	46.237
430	44.347	565	181.128	700	40.146
435	64.013	570	189.911	705	34.600
440	90.249	575	198.248	710	30.003
445	121.275	580	206.910	715	25.822
450	133.571	585	215.016	720	22.253
455	108.522	590	222.030	725	19.127
460	76.926	595	226.876	730	16.419
465	58.508	600	229.221	735	14.128
470	45.985	605	230.496	740	12.140
475	37.595	610	227.455	745	10.502
480	34.180	615	223.082	750	9.002
485	35.268	620	216.211	755	7.722
490	39.802	625	207.640	760	6.716
495	48.375	630	195.915	765	5.757
500	60.794	635	183.336	770	4.985
505	74.112	640	169.470	775	4.315
510	87.673	645	155.978	780	0.649



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CIE Chromaticity Diagram

