

REPORT NUMBER: RAB00899

ISSUE DATE: 05/26/15

PREPARED FOR: RAB LIGHTING INC.

CATALOG NUMBER: FALCORA160W

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

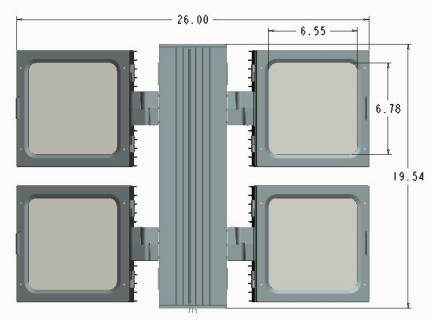
DATE SAMPLE TESTED: 05/26/15

CANDELA DISTRIBUTION

	0.0	22.5	45.0	67.5	90.0
0	13658	13658	13658	13658	13658
5	12888	12983	13183	13394	13494
15	6933	7535	9172	11819	12915
25	3388	3775	5228	8793	11681
35	1033	1452	2807	5876	9795
45	210	351	1212	3668	7963
55	102	128	408	2194	5947
65	61	76	139	1122	3715
75	31	40	65	467	2108
85	6	14	34	205	1036
90	0	7	20	123	616
95	0	3	7	57	293
105	0	2	0	0	0
115	0	2	0	0	0
125	0	2	0	0	0
135	0	3	1	0	0
145	1	4	3	1	0
155	2	6	4	0	0
165	5	7	4	0	0
175	6	9	5	0	0
180	5	5	5	5	5

FLUX

1209
2682
2909
2447
1816
1289
808
443
215
62
2
0
1
1
1
1
0



ZONAL LUMEN SUMMARY

ZONE	LUMENS	%FIXT
0- 30	6799	49.0
0- 40	9246	66.6
0- 60	12352	88.9
0- 90	13818	99.5
90-120	65	0.5
90-130	66	0.5
90-150	68	0.5
90-180	70	0.5
0-180	13889	100.0

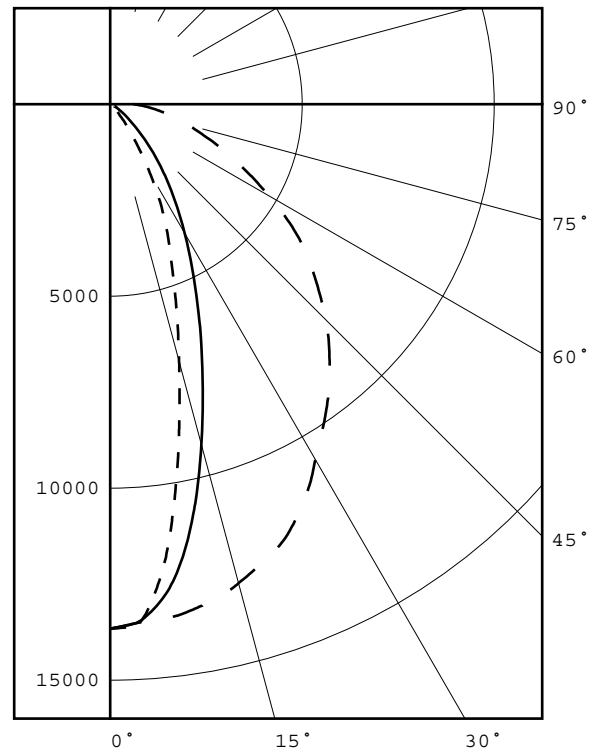
TOTAL INPUT WATTS = 156.9

EFFICACY = 88.5 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

REPORT NUMBER: RAB00899
ISSUE DATE: 05/26/15
PREPARED FOR: RAB LIGHTING INC.

PAGE: 2 OF 8
DATE SAMPLE TESTED: 05/26/15

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 =156.86 AT 120.0 VAC.

LED DRIVER: RD-144-Q0700-R

TEST PROCEDURE: IESNA LM-79-08

ACCREDITED LABORATORY CODE 201058-0

REPORT NUMBER: RAB00899
ISSUE DATE: 05/26/15
PREPARED FOR: RAB LIGHTING INC.

PAGE: 3 OF 8
DATE SAMPLE TESTED: 05/26/15

PLANE : 0-DEG 90-DEG
BEAM ANGLE (50%) : 30.5 X 101.1 DEGREES
FIELD ANGLE (10%): 66.3 X 163.4 DEGREES

REPORT NUMBER: RAB00899
 ISSUE DATE: 05/26/15
 PREPARED FOR: RAB LIGHTING INC.

PAGE: 4 OF 8
 DATE SAMPLE TESTED: 05/26/15

CANDELA DISTRIBUTION

	0.0	22.5	45.0	67.5	90.0
0.0	13658	13658	13658	13658	13658
5.0	12888	12983	13183	13394	13494
10.0	9930	10475	11563	12816	13295
15.0	6933	7535	9172	11819	12915
20.0	4810	5288	6974	10396	12419
25.0	3388	3775	5228	8793	11681
30.0	2073	2554	3880	7246	10689
35.0	1033	1452	2807	5876	9795
40.0	461	740	1933	4691	8889
45.0	210	351	1212	3668	7963
50.0	136	183	711	2848	6935
55.0	102	128	408	2194	5947
60.0	79	98	230	1630	4771
65.0	61	76	139	1122	3715
70.0	46	57	93	723	2830
75.0	31	40	65	467	2108
80.0	18	25	47	317	1548
85.0	6	14	34	205	1036
90.0	0	7	20	123	616
95.0	0	3	7	57	293
100.0	0	2	0	9	64
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	3	1	0	0
135.0	0	3	1	0	0
140.0	0	4	3	1	0
145.0	1	4	3	1	0
150.0	1	5	4	0	0
155.0	2	6	4	0	0
160.0	3	7	4	0	0
165.0	5	7	4	0	0
170.0	6	8	5	0	0
175.0	6	9	5	0	0
180.0	5	5	5	5	5

REPORT NUMBER: RAB00899
ISSUE DATE: 05/26/15
PREPARED FOR: RAB LIGHTING INC.

PAGE: 5 OF 8
DATE SAMPLE TESTED: 05/26/15

ZONAL LUMEN SUMMARY

0- 5	321.
5- 10	888.
10- 15	1253.
15- 20	1428.
20- 25	1477.
25- 30	1432.
30- 35	1303.
35- 40	1144.
40- 45	983.
45- 50	833.
50- 55	706.
55- 60	584.
60- 65	460.
65- 70	348.
70- 75	256.
75- 80	187.
80- 85	131.
85- 90	84.
90- 95	45.
95-100	17.
100-105	2.
105-110	0.
110-115	0.
115-120	0.
120-125	0.
125-130	0.
130-135	0.
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.

REPORT NUMBER: RAB00899
 ISSUE DATE: 05/26/15
 PREPARED FOR: RAB LIGHTING INC.

PAGE: 6 OF 8
 DATE SAMPLE TESTED: 05/26/15

5-DEGREE ZONAL LUMEN SUMMARY

0- 5	321
5- 10	888
10- 15	1253
15- 20	1428
20- 25	1477
25- 30	1432
30- 35	1303
35- 40	1144
40- 45	983
45- 50	833
50- 55	706
55- 60	584
60- 65	460
65- 70	348
70- 75	256
75- 80	187
80- 85	131
85- 90	84
90- 95	45
95-100	17
100-105	2
105-110	0
110-115	0
115-120	0
120-125	0
125-130	0
130-135	0
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	1209
0- 20	3890
0- 30	6799
0- 40	9246
0- 50	11062
0- 60	12352
0- 70	13160
0- 80	13603
0- 90	13818
0-100	13881
0-110	13883
0-120	13883
0-130	13884
0-140	13885
0-150	13886
0-160	13887
0-170	13888
0-180	13889

REPORT NUMBER: RAB00899
ISSUE DATE: 05/26/15

PAGE: 7 OF 8
DATE SAMPLE TESTED: 05/26/15

PREPARED FOR: RAB LIGHTING INC.

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	91	90	88
2	103	97	91	87	101	95	90	86	91	87	84	88	85	82	85	82	80	78
3	96	88	81	76	94	86	80	75	83	78	74	81	76	73	78	75	71	69
4	90	80	73	68	88	79	72	67	76	71	66	74	69	65	72	68	64	63
5	84	74	66	61	82	73	66	60	71	64	60	69	63	59	67	62	59	57
6	79	68	61	55	77	67	60	55	65	59	54	64	58	54	62	57	54	52
7	74	63	56	51	73	62	55	50	61	55	50	59	54	50	58	53	49	48
8	70	59	52	47	69	58	51	46	57	51	46	56	50	46	55	49	46	44
9	66	55	48	43	65	54	48	43	53	47	43	52	47	43	51	46	42	41
10	63	52	45	40	62	51	45	40	50	44	40	49	44	40	48	43	40	38

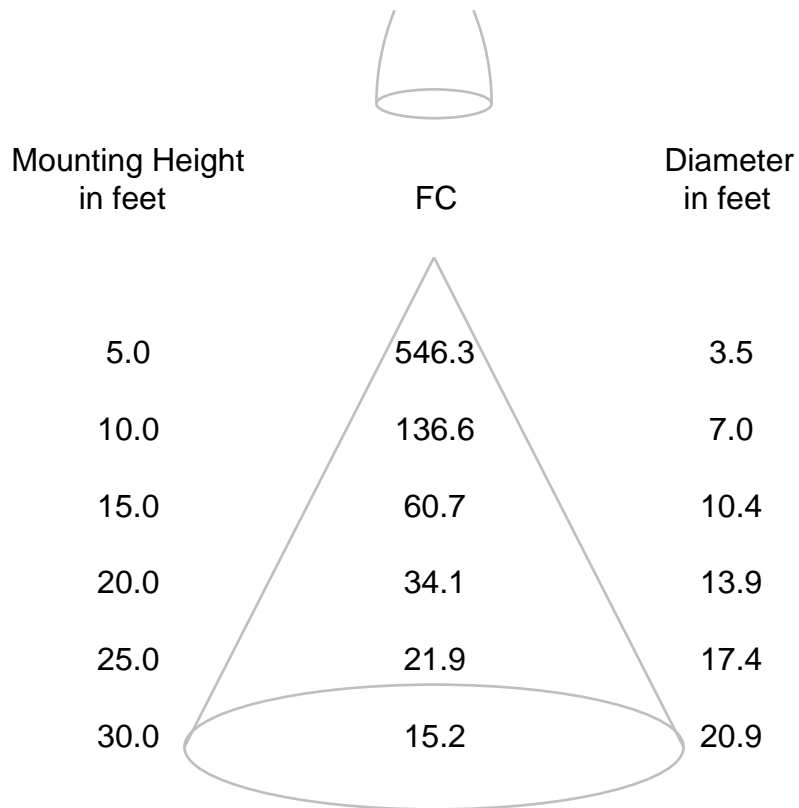
ALL CANDELA, LUMENS, LUMINANCE, AND VCP VALUES IN THIS REPORT ARE BASED ON ABSOLUTE PHOTOMETRY. THE COEFFICIENT OF UTILIZATION VALUES ARE BASED ON THE TOTAL ABSOLUTE LUMEN OUTPUT OF THIS LUMINAIRE SAMPLE.

REPORT NUMBER: RAB00899
ISSUE DATE: 05/26/15
PREPARED FOR: RAB LIGHTING INC.

PAGE: 8 OF 8
DATE SAMPLE TESTED: 05/26/15

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: RAB00900
DATE: 5/26/2015
PREPARED FOR: RAB LIGHTING INC.
CATALOG NUMBER: FALCORA160W

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 (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

REPORT NUMBER: RAB00900
 DATE: 5/26/2015
 PREPARED FOR: RAB LIGHTING INC.
 CATALOG NUMBER: FALCORA160W

Page 2 of 4

RESULTS:

PHOTOMETRIC	
Total Integrated Flux (lumens)	13889 *
SPECTRORADIOMETRIC	
Observer	CIE 1931 2 degree
Chromaticity Ordinate x	0.3411
Chromaticity Ordinate y	0.3470
Observer	CIE 1976 2 degree
Chromaticity Ordinate u'	0.2105
Chromaticity Ordinate v'	0.4818
Correlated Color Temp CCT (K)	5142
ANSI C78.377-2008 Duv	-0.001
Total Radiant Flux (milliWatts)	43591 *
ELECTRICAL	
Input Voltage (Volts AC)	120.0
Input Current (Amps AC)	1.31
Input Power (Watts)	156.9
Input Power Factor (%)	99.8
Input Current THD (%)	3.5
Input Voltage THD (%)	0.2
EFFICACY (Lumens/Watt)	
	88.5
ELECTRICAL AT MAX NONIMAL INPUT	
Input Voltage (Volts AC)	277.0
Input Current (Amps AC)	0.583
Input Power (Watts)	154.0
Input Power Factor (%)	95.4
Input Current THD (%)	8.6
Input Voltage THD (%)	0.2
Off-State Power (Watts)	0.0

COLOR RENDERING INDICES	CRI
Ra (Average 1-8)	72
R1 Light greyish red	73
R2 Dark greyish yellow	74
R3 Strong yellowish green	74
R4 Moderate yellowish green	73
R5 Light bluish green	74
R6 Light blue	67
R7 Light violet	76
R8 Light reddish purple	62
R9 Strong red	-14
R10 Strong yellow	38
R11 Strong green	76
R12 Strong blue	49
R13 Light yellowish pink (skin)	71
R14 Moderate olive green (leaf)	85

*NOTE:

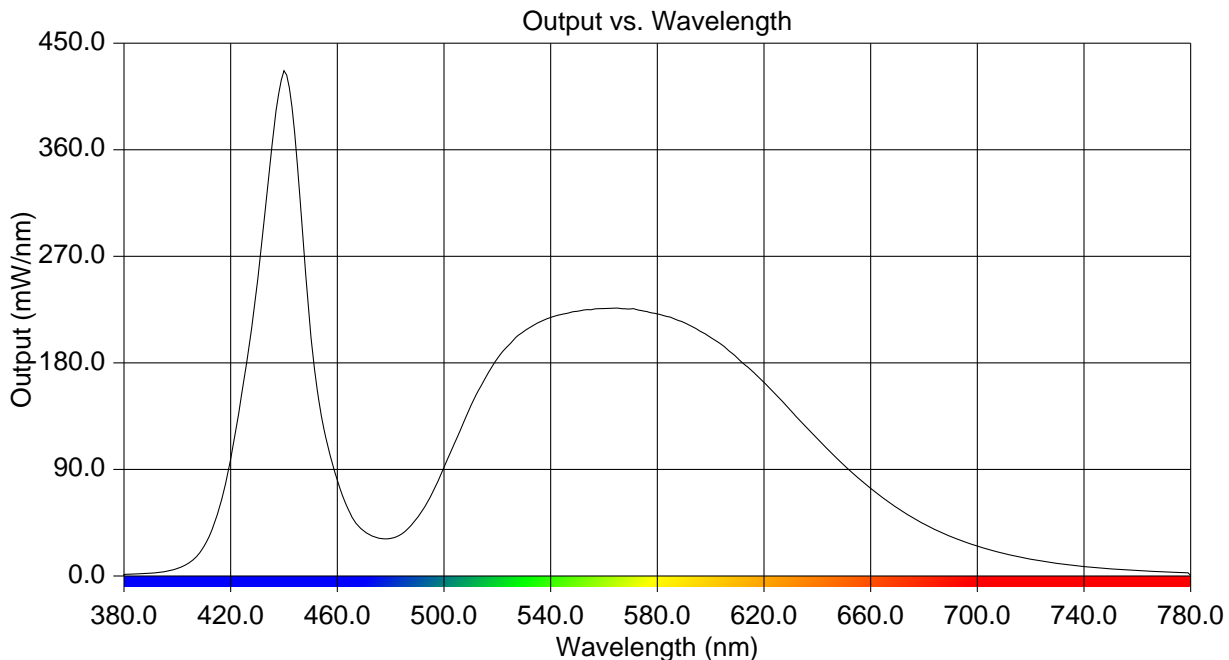
Proper calibration of integrating spheres for measuring total flux output of non-directional samples will produce reliable, repeatable results within the calibration tolerances of the equipment used. However, measurement of test samples with significant self absorption and/or directional output, even 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.

REPORT NUMBER: RAB00900
 DATE: 5/26/2015
 PREPARED FOR: RAB LIGHTING INC.
 CATALOG NUMBER: FALCORA160W

Page 3 of 4

RESULTS:

Wavelength	mW per nm	Wavelength	mW per nm	Wavelength	mW per nm
380	1.268	515	164.947	650	93.524
385	1.714	520	183.369	655	83.473
390	2.391	525	196.406	660	74.051
395	3.610	530	206.546	665	65.309
400	6.307	535	213.430	670	57.344
405	11.972	540	218.319	675	50.175
410	25.025	545	221.013	680	43.819
415	51.845	550	223.361	685	38.300
420	99.099	555	224.592	690	33.328
425	165.911	560	225.549	695	29.016
430	247.766	565	226.074	700	25.198
435	353.787	570	225.346	705	21.843
440	426.342	575	223.465	710	18.914
445	347.447	580	221.115	715	16.422
450	204.752	585	218.346	720	14.165
455	123.650	590	213.896	725	12.269
460	80.652	595	208.069	730	10.645
465	52.088	600	201.134	735	9.235
470	37.679	605	193.784	740	7.991
475	32.335	610	183.960	745	6.947
480	31.486	615	174.327	750	6.066
485	36.846	620	163.041	755	5.245
490	48.921	625	151.869	760	4.563
495	67.523	630	139.715	765	3.970
500	91.423	635	127.709	770	3.459
505	117.237	640	115.787	775	2.989
510	143.086	645	104.317	780	0.461



REPORT NUMBER: RAB00900
DATE: 5/26/2015
PREPARED FOR: RAB LIGHTING INC.
CATALOG NUMBER: FALCORA160W

Page 4 of 4

CIE Chromaticity Diagram

