

REPORT NUMBER: RAB01130

ISSUE DATE: 09/09/15

PREPARED FOR: RAB LIGHTING INC.

CATALOG NUMBER: SHARK2-25YW/D10 (STANDARD DISTRIBUTION)

LUMINAIRE: FABRICATED WHITE PLASTIC HOUSING, PERFORATED WHITE METAL HEAT SINK, 2 WHITE CIRCUIT BOARDS EACH WITH 32 LEDS, FROSTED POLYCARBONATE LENS ENCLOSURE.

LAMPS: SIXTY FOUR WHITE LIGHT EMITTING DIODES (LEDS), TILTED 15-DEGREE FROM VERTICAL BASE-UP POSITION.

TOTAL INPUT WATTS = 25.431 AT 277.0 VOLTS

LED DRIVERS: RD-026-A0450-C

(SEE PAGE 2 FOR MORE INFORMATION)

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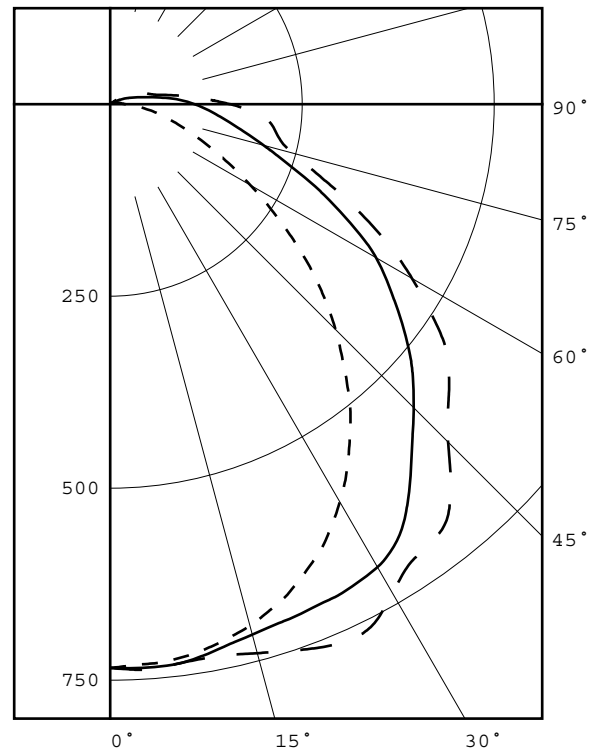
DATE SAMPLE TESTED: 09/09/15

CANDELA DISTRIBUTION

	0.0	22.5	45.0	67.5	90.0
0	734	734	734	734	734
5	730	733	735	738	737
15	703	706	715	732	740
25	644	651	705	750	764
35	543	581	666	690	709
45	415	482	559	617	622
55	275	346	454	512	527
65	157	215	330	369	378
75	83	120	207	240	246
85	37	66	136	185	202
90	18	48	110	149	156
95	14	35	82	103	106
105	9	13	35	47	52
115	6	6	13	24	28
125	4	4	3	6	9
135	2	2	2	2	2
145	1	1	1	1	1
155	1	1	1	1	1
165	1	1	1	1	0
175	1	1	0	0	0
180	1	1	1	1	1

FLUX

70
204
323
401
420
382
293
197
137
77
34
15
5
2
1
0
0
0



LEGEND:

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

ZONAL LUMEN SUMMARY

ZONE	LUMENS	%FIXT
0- 30	597	23.3
0- 40	998	39.0
0- 60	1799	70.3
0- 90	2426	94.7
90-120	127	5.0
90-130	132	5.1
90-150	134	5.2
90-180	135	5.3
0-180	2561	100.0

TOTAL INPUT WATTS = 25.4

EFFICACY = 100.8 Lm/W

CIE TYPE - DIRECT

PLANE : 0-DEG 90-DEG

SPACING CRITERIA : 1.2 1.5

Checked X.CAO
 Approved D.WANG-MUNSON

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ADDITIONAL INFORMATION

NOTE: DATA SHOWN IS ABSOLUTE FOR THE SAMPLE PROVIDED AT RATED INPUT
VOLTAGE TO THE LED DRIVERS.
TEST PROCEDURE: IESNA LM-79-08
TEST DISTANCE = 28.25 FEET
ACCREDITED LABORATORY CODE 201058-0

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PLANE : 0-DEG 90-DEG
BEAM ANGLE (50%) : 94.9 X 129.5 DEGREES
FIELD ANGLE (10%) : 152.5 X 198.1 DEGREES

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CANDELA DISTRIBUTION

	0.0	22.5	45.0	67.5	90.0
0.0	734	734	734	734	734
5.0	730	733	735	738	737
10.0	720	724	727	731	732
15.0	703	706	715	732	740
20.0	678	679	709	743	755
25.0	644	651	705	750	764
30.0	598	619	696	729	735
35.0	543	581	666	690	709
40.0	481	536	610	669	687
45.0	415	482	559	617	622
50.0	347	415	510	561	576
55.0	275	346	454	512	527
60.0	211	276	400	439	454
65.0	157	215	330	369	378
70.0	115	162	262	297	303
75.0	83	120	207	240	246
80.0	59	90	166	206	220
85.0	37	66	136	185	202
90.0	18	48	110	149	156
95.0	14	35	82	103	106
100.0	11	23	53	67	70
105.0	9	13	35	47	52
110.0	7	7	23	36	42
115.0	6	6	13	24	28
120.0	5	5	5	14	17
125.0	4	4	3	6	9
130.0	3	3	3	2	2
135.0	2	2	2	2	2
140.0	2	2	2	1	1
145.0	1	1	1	1	1
150.0	1	1	1	1	1
155.0	1	1	1	1	1
160.0	1	1	1	1	1
165.0	1	1	1	1	0
170.0	1	1	1	0	0
175.0	1	1	0	0	0
180.0	1	1	1	1	1

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ZONAL LUMEN SUMMARY

0- 5	18.
5- 10	52.
10- 15	86.
15- 20	118.
20- 25	148.
25- 30	175.
30- 35	194.
35- 40	207.
40- 45	212.
45- 50	208.
50- 55	199.
55- 60	183.
60- 65	160.
65- 70	133.
70- 75	108.
75- 80	89.
80- 85	75.
85- 90	62.
90- 95	46.
95-100	31.
100-105	20.
105-110	14.
110-115	10.
115-120	6.
120-125	3.
125-130	2.
130-135	1.
135-140	1.
140-145	0.
145-150	0.
150-155	0.
155-160	0.
160-165	0.
165-170	0.
170-175	0.
175-180	0.

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5-DEGREE ZONAL LUMEN SUMMARY

0- 5	18
5- 10	52
10- 15	86
15- 20	118
20- 25	148
25- 30	175
30- 35	194
35- 40	207
40- 45	212
45- 50	208
50- 55	199
55- 60	183
60- 65	160
65- 70	133
70- 75	108
75- 80	89
80- 85	75
85- 90	62
90- 95	46
95-100	31
100-105	20
105-110	14
110-115	10
115-120	6
120-125	3
125-130	2
130-135	1
135-140	1
140-145	0
145-150	0
150-155	0
155-160	0
160-165	0
165-170	0
170-175	0
175-180	0

10-DEGREE ZONAL LUMEN SUMMARY

0- 10	70
0- 20	273
0- 30	597
0- 40	998
0- 50	1418
0- 60	1799
0- 70	2093
0- 80	2289
0- 90	2426
0-100	2504
0-110	2538
0-120	2553
0-130	2558
0-140	2559
0-150	2560
0-160	2561
0-170	2561
0-180	2561

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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	118	118	118	118	114	114	114	114	108	108	108	102	102	102	97	97	97	95
1	106	101	96	91	103	98	93	89	92	89	85	88	85	82	83	81	79	76
2	96	87	80	73	93	85	78	72	80	74	70	76	71	67	72	68	65	62
3	87	76	67	61	84	74	66	60	70	63	58	67	61	56	63	59	55	52
4	80	67	58	51	77	65	57	50	62	55	49	59	53	48	56	51	47	44
5	73	60	51	44	71	58	50	43	56	48	42	53	46	41	51	45	40	38
6	67	54	45	38	65	52	44	38	50	42	37	48	41	36	46	40	35	33
7	62	49	40	33	60	48	39	33	45	38	32	44	37	32	42	36	31	29
8	58	44	36	30	56	43	35	29	42	34	29	40	33	28	38	32	28	26
9	54	41	32	27	52	40	32	26	38	31	26	37	30	25	35	29	25	23
10	51	37	29	24	49	37	29	24	35	28	23	34	28	23	33	27	23	21

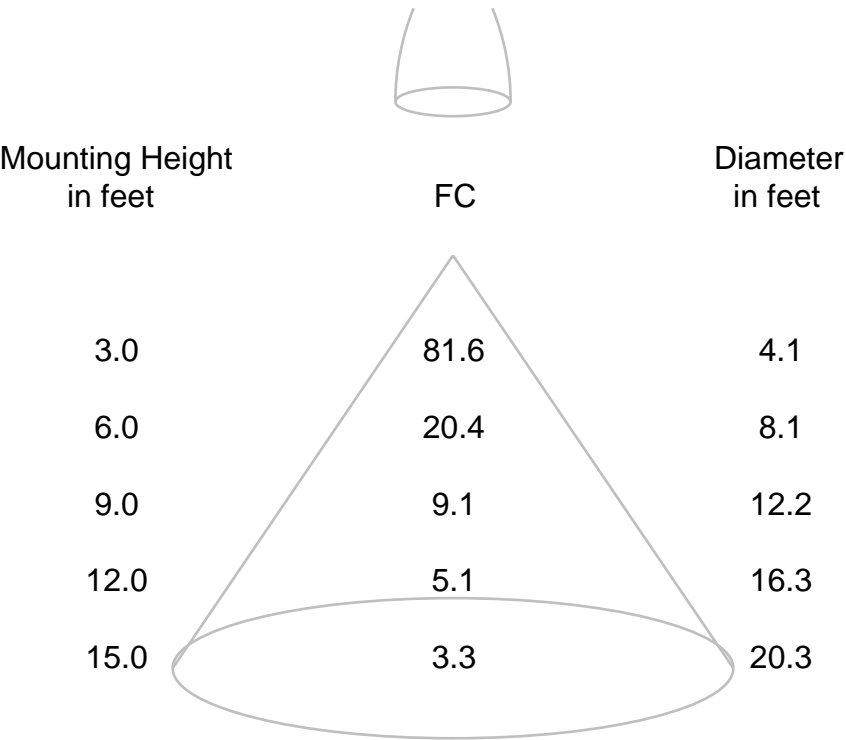
ALL CANDELA, LUMENS, LUMINANCE, AND VCP VALUES IN THIS REPORT ARE BASED ON ABSOLUTE PHOTOMETRY. THE COEFFICIENT OF UTILIZATION VALUES ARE BASED ON THE TOTAL ABSOLUTE LUMEN OUTPUT OF THIS LUMINAIRE SAMPLE.

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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: RAB01129
DATE: 9/8/2015
PREPARED FOR: RAB LIGHTING INC.
CATALOG NUMBER: SHARK2-25YW/D10 (STANDARD DISTRIBUTION)

ADDRESS: 170 LUDLOW AVE, NORTHVALE, NJ 07647

LUMINAIRE: FABRICATED WHITE PLASTIC HOUSING, PERFORATED WHITE METAL HEAT SINK, 2 WHITE CIRCUIT BOARDS EACH WITH 32 LEDS, FROSTED POLYCARBONATE LENS ENCLOSURE.

LAMP: SIXTY FOUR WHITE LIGHT EMITTING DIODES (LEDs), TILTED 15-DEGREE FROM VERTICAL BASE-UP POSITION.

DRIVER: RD-026-A0450-C

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	8/21/16
	RAB 2.0 meter Diameter Integrating Sphere, 4PI Geometry	8/21/16

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)	2561 *
SPECTRORADIOMETRIC	
Observer	CIE 1931 2 degree
Chromaticity Ordinate x	0.4305
Chromaticity Ordinate y	0.3995
Observer	CIE 1976 2 degree
Chromaticity Ordinate u'	0.2484
Chromaticity Ordinate v'	0.5186
Correlated Color Temp CCT (K)	3074
ANSI C78.377-2008 Duv	-0.001
Total Radiant Flux (milliWatts)	7527 *
ELECTRICAL	
Input Voltage (Volts AC)	120.0
Input Current (Amps AC)	0.211
Input Power (Watts)	24.9
Input Power Factor (%)	98.3
Input Current THD (%)	9.2
Input Voltage THD (%)	0.2
EFFICACY (Lumens/Watt)	
	102.9
ELECTRICAL AT MAX NONIMAL INPUT	
Input Voltage (Volts AC)	277.0
Input Current (Amps AC)	0.098
Input Power (Watts)	25.4
Input Power Factor (%)	93.6
Input Current THD (%)	13.2
Input Voltage THD (%)	0.2
Off-State Power (Watts)	
	0.0

COLOR RENDERING INDICES	CRI
Ra (Average 1-8)	74
R1 Light greyish red	71
R2 Dark greyish yellow	82
R3 Strong yellowish green	91
R4 Moderate yellowish green	70
R5 Light bluish green	69
R6 Light blue	74
R7 Light violet	80
R8 Light reddish purple	50
R9 Strong red	-19
R10 Strong yellow	57
R11 Strong green	64
R12 Strong blue	47
R13 Light yellowish pink (skin)	73
R14 Moderate olive green (leaf)	94

*NOTE:

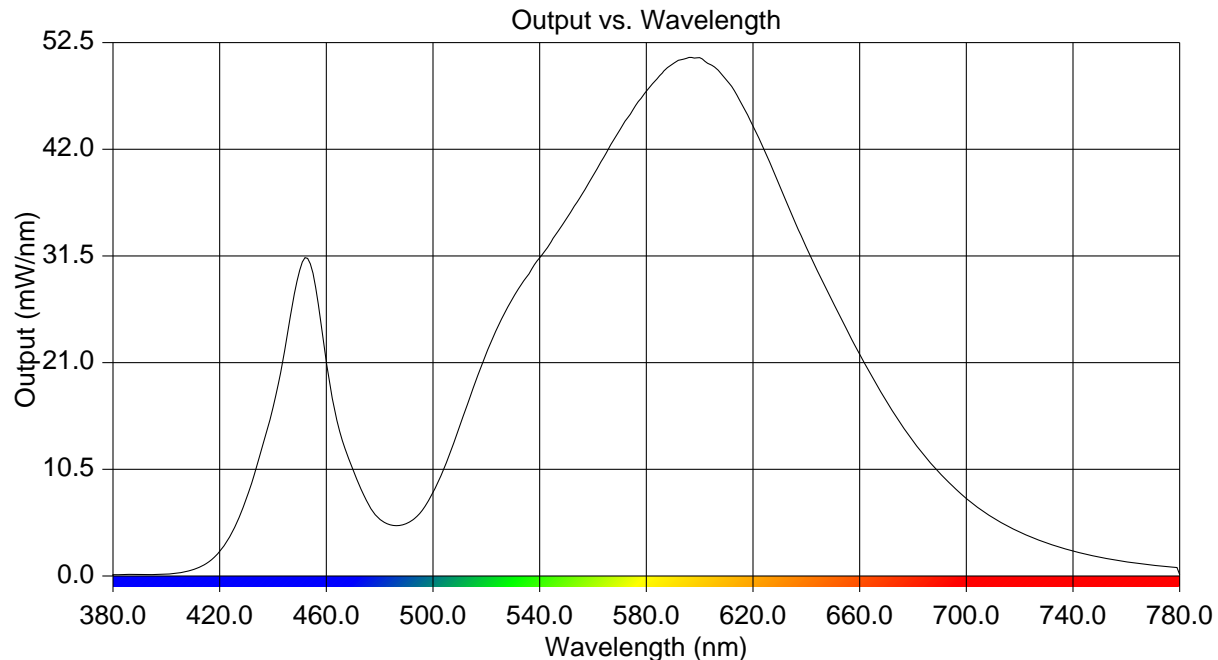
Proper calibration of integrating spheres for measuring total flux output of non-directional samples will produce reliable, repeatable results within the calibration tolerances of the equipment used. However, measurement of test samples with significant self absorption and/or directional output, even 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	0.127	515	18.454	650	26.948
385	0.137	520	21.909	655	24.349
390	0.135	525	24.936	660	21.835
395	0.153	530	27.383	665	19.450
400	0.202	535	29.398	670	17.228
405	0.316	540	31.318	675	15.143
410	0.602	545	33.228	680	13.277
415	1.227	550	35.165	685	11.610
420	2.415	555	37.194	690	10.147
425	4.469	560	39.393	695	8.824
430	7.609	565	41.655	700	7.636
435	11.814	570	43.872	705	6.595
440	16.575	575	45.900	710	5.725
445	23.189	580	47.718	715	4.998
450	30.084	585	49.250	720	4.335
455	29.807	590	50.423	725	3.762
460	21.123	595	50.951	730	3.265
465	14.239	600	51.026	735	2.822
470	10.450	605	50.203	740	2.448
475	7.453	610	48.846	745	2.124
480	5.586	615	46.824	750	1.850
485	4.989	620	44.289	755	1.609
490	5.158	625	41.525	760	1.409
495	6.145	630	38.413	765	1.220
500	8.229	635	35.309	770	1.067
505	11.185	640	32.398	775	0.934
510	14.750	645	29.552	780	0.141



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CIE Chromaticity Diagram

