

REPORT NUMBER: RAB01122

ISSUE DATE: 09/08/15

PREPARED FOR: RAB LIGHTING INC.

CATALOG NUMBER: SHARK2-18YNW/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 = 19.195 AT 277.0 VOLTS

LED DRIVERS: RD-LU018-A035C0SP

(SEE PAGE 2 FOR MORE INFORMATION)

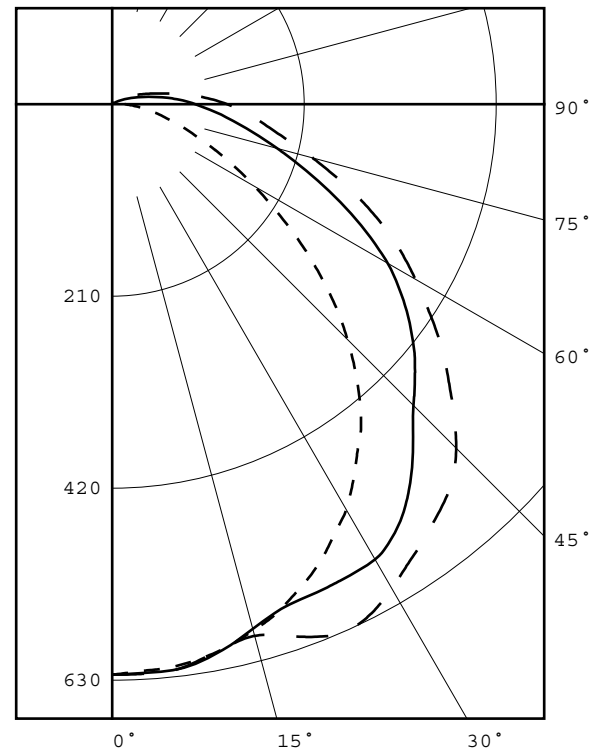
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DATE SAMPLE TESTED: 09/04/15

CANDELA DISTRIBUTION

	0.0	22.5	45.0	67.5	90.0
0	624	624	624	624	624
5	620	620	623	625	624
15	596	598	594	600	602
25	546	544	578	618	630
35	467	485	552	576	588
45	364	412	466	521	532
55	238	298	393	428	433
65	132	186	292	323	334
75	64	105	187	223	227
85	26	54	117	147	154
90	13	38	91	119	126
95	10	27	68	92	96
105	7	10	29	42	45
115	5	5	10	18	21
125	3	3	3	5	7
135	2	2	1	1	1
145	1	1	1	1	1
155	1	1	1	1	1
165	1	1	1	0	0
175	1	1	0	0	0
180	0	0	0	0	0

FLUX



LEGEND:

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

ZONAL LUMEN SUMMARY

ZONE	LUMENS	%FIXT
0- 30	497	22.9
0- 40	832	38.3
0- 60	1513	69.7
0- 90	2057	94.8
90-120	107	4.9
90-130	111	5.1
90-150	113	5.2
90-180	113	5.2
0-180	2170	100.0

TOTAL INPUT WATTS = 19.2

EFFICACY = 113.0 Lm/W

CIE TYPE - DIRECT

PLANE : 0-DEG 90-DEG

SPACING CRITERIA : 1.2 1.4

Checked M.MILNIKIEWICZ

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%) : 98.0 X 133.5 DEGREES
FIELD ANGLE (10%): 150.5 X 201.5 DEGREES

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CANDELA DISTRIBUTION

	0.0	22.5	45.0	67.5	90.0
0.0	624	624	624	624	624
5.0	620	620	623	625	624
10.0	612	613	614	614	612
15.0	596	598	594	600	602
20.0	574	574	580	607	620
25.0	546	544	578	618	630
30.0	512	516	575	605	612
35.0	467	485	552	576	588
40.0	421	451	511	551	566
45.0	364	412	466	521	532
50.0	302	359	432	478	482
55.0	238	298	393	428	433
60.0	180	238	348	375	383
65.0	132	186	292	323	334
70.0	93	141	236	271	280
75.0	64	105	187	223	227
80.0	43	76	148	180	184
85.0	26	54	117	147	154
90.0	13	38	91	119	126
95.0	10	27	68	92	96
100.0	8	18	46	63	67
105.0	7	10	29	42	45
110.0	6	6	18	28	31
115.0	5	5	10	18	21
120.0	4	4	4	11	14
125.0	3	3	3	5	7
130.0	2	2	2	2	2
135.0	2	2	1	1	1
140.0	1	2	1	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	0	0
165.0	1	1	1	0	0
170.0	1	1	1	1	1
175.0	1	1	0	0	0
180.0	0	0	0	0	0

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ZONAL LUMEN SUMMARY

0- 5	15.
5- 10	44.
10- 15	72.
15- 20	98.
20- 25	123.
25- 30	145.
30- 35	162.
35- 40	173.
40- 45	179.
45- 50	177.
50- 55	169.
55- 60	156.
60- 65	138.
65- 70	118.
70- 75	97.
75- 80	78.
80- 85	63.
85- 90	50.
90- 95	38.
95-100	28.
100-105	18.
105-110	11.
110-115	7.
115-120	4.
120-125	3.
125-130	1.
130-135	1.
135-140	0.
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	15
5- 10	44
10- 15	72
15- 20	98
20- 25	123
25- 30	145
30- 35	162
35- 40	173
40- 45	179
45- 50	177
50- 55	169
55- 60	156
60- 65	138
65- 70	118
70- 75	97
75- 80	78
80- 85	63
85- 90	50
90- 95	38
95-100	28
100-105	18
105-110	11
110-115	7
115-120	4
120-125	3
125-130	1
130-135	1
135-140	0
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	59
0- 20	229
0- 30	497
0- 40	832
0- 50	1188
0- 60	1513
0- 70	1769
0- 80	1945
0- 90	2057
0-100	2123
0-110	2152
0-120	2164
0-130	2168
0-140	2169
0-150	2170
0-160	2170
0-170	2170
0-180	2170

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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	100	96	91	103	98	93	89	92	89	85	88	85	82	83	81	78	76
2	96	87	79	73	93	84	78	72	80	74	69	76	71	67	72	68	65	62
3	87	76	67	60	84	74	66	59	70	63	58	66	61	56	63	58	54	52
4	79	67	58	51	77	65	57	50	62	55	49	59	53	47	56	51	46	44
5	73	60	50	43	70	58	49	43	55	48	42	53	46	41	50	45	40	38
6	67	53	44	38	65	52	43	37	50	42	36	48	41	36	46	40	35	33
7	62	48	39	33	60	47	39	33	45	38	32	43	37	31	41	35	31	29
8	58	44	35	29	56	43	35	29	41	34	29	40	33	28	38	32	28	26
9	54	40	32	26	52	39	31	26	38	31	26	36	30	25	35	29	25	23
10	51	37	29	24	49	36	29	23	35	28	23	34	27	23	33	27	22	21

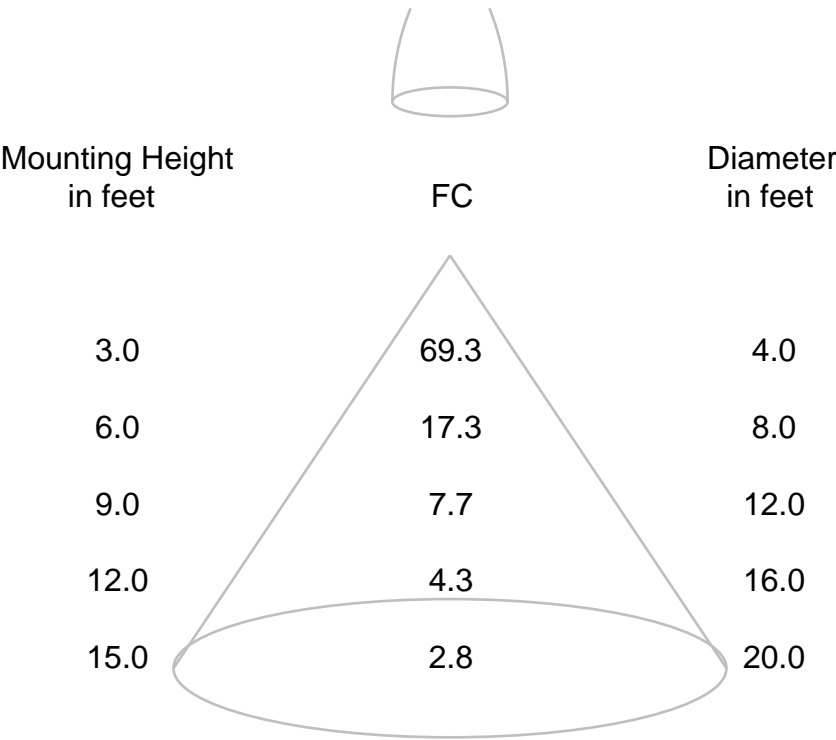
ALL CANDELA, LUMENS, LUMINANCE, AND VCP VALUES IN THIS REPORT ARE BASED ON ABSOLUTE PHOTOMETRY. THE COEFFICIENT OF UTILIZATION VALUES ARE BASED ON THE TOTAL ABSOLUTE LUMEN OUTPUT OF THIS LUMINAIRE SAMPLE.

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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.

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DATE: 9/2/2015
PREPARED FOR: RAB LIGHTING INC.
CATALOG NUMBER: SHARK2-18YNW/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-LU018-A035C0SP

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	<u>M. MILNIKIEWICZ</u>
Approved	<u>D. WANG-MUNSON</u>
	Lighting Engineer

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RESULTS:

PHOTOMETRIC	
Total Integrated Flux (lumens)	2170 *
SPECTRORADIOMETRIC	
Observer	CIE 1931 2 degree
Chromaticity Ordinate x	0.4046
Chromaticity Ordinate y	0.3903
Observer	CIE 1976 2 degree
Chromaticity Ordinate u'	0.2354
Chromaticity Ordinate v'	0.5110
Correlated Color Temp CCT (K)	3512
ANSI C78.377-2008 Duv	0.000
Total Radiant Flux (milliWatts)	6380 *
ELECTRICAL	
Input Voltage (Volts AC)	120.0
Input Current (Amps AC)	0.158
Input Power (Watts)	19.0
Input Power Factor (%)	99.5
Input Current THD (%)	6.6
Input Voltage THD (%)	0.2
EFFICACY (Lumens/Watt)	
	114.2
ELECTRICAL AT MAX NONIMAL INPUT	
Input Voltage (Volts AC)	277.0
Input Current (Amps AC)	0.076
Input Power (Watts)	19.2
Input Power Factor (%)	91.2
Input Current THD (%)	10.2
Input Voltage THD (%)	0.2
Off-State Power (Watts)	
	0.0

COLOR RENDERING INDICES	CRI
Ra (Average 1-8)	75
R1 Light greyish red	73
R2 Dark greyish yellow	83
R3 Strong yellowish green	90
R4 Moderate yellowish green	72
R5 Light bluish green	71
R6 Light blue	75
R7 Light violet	83
R8 Light reddish purple	55
R9 Strong red	-13
R10 Strong yellow	58
R11 Strong green	66
R12 Strong blue	45
R13 Light yellowish pink (skin)	75
R14 Moderate olive green (leaf)	94

*NOTE:

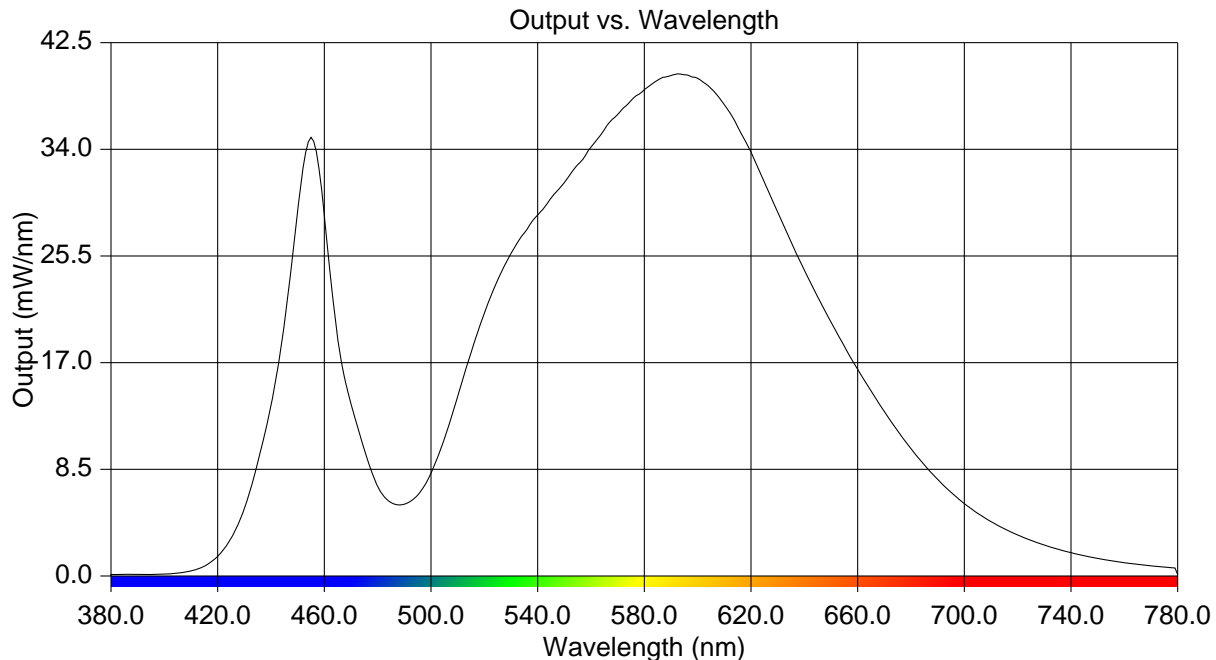
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RESULTS:

Wavelength	mW per nm	Wavelength	mW per nm	Wavelength	mW per nm
380	0.112	515	17.781	650	20.215
385	0.123	520	20.941	655	18.315
390	0.117	525	23.591	660	16.433
395	0.131	530	25.687	665	14.737
400	0.155	535	27.338	670	13.107
405	0.225	540	28.768	675	11.580
410	0.393	545	30.120	680	10.133
415	0.781	550	31.362	685	8.841
420	1.560	555	32.773	690	7.688
425	3.000	560	34.190	695	6.670
430	5.362	565	35.564	700	5.760
435	9.031	570	36.776	705	4.983
440	13.603	575	37.881	710	4.330
445	20.015	580	38.747	715	3.762
450	29.179	585	39.512	720	3.269
455	34.953	590	39.882	725	2.842
460	28.720	595	39.942	730	2.466
465	18.964	600	39.661	735	2.137
470	13.708	605	38.853	740	1.852
475	10.075	610	37.572	745	1.596
480	7.134	615	35.801	750	1.401
485	5.834	620	33.779	755	1.220
490	5.720	625	31.425	760	1.061
495	6.442	630	29.002	765	0.924
500	8.189	635	26.621	770	0.806
505	10.930	640	24.363	775	0.714
510	14.309	645	22.241	780	0.108



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CIE Chromaticity Diagram

