

REPORT NUMBER: PRORATED FROM RAB02635

PAGE: 1 OF 9

ISSUE DATE: 12/13/16

PREPARED FOR: RAB LIGHTING INC.

CATALOG NUMBER: SHARK8-100NW/D10

LUMINAIRE: FABRICATED WHITE PLASTIC HOUSING, PERFORATED WHITE METAL HEAT SINK, 4 WHITE CIRCUIT BOARDS EACH WITH 64 LEDS, FROSTED POLYCARBONATE LENS ENCLOSURE.

LAMPS: TWO HUNDRED AND FIFTY SIX WHITE EMITTING DIODES (LEDs), TILTED 15-DEGREE FROM VERTICAL BASE-UP POSITION.

TOTAL INPUT WATTS = 95.0 AT 277.0 VOLTS

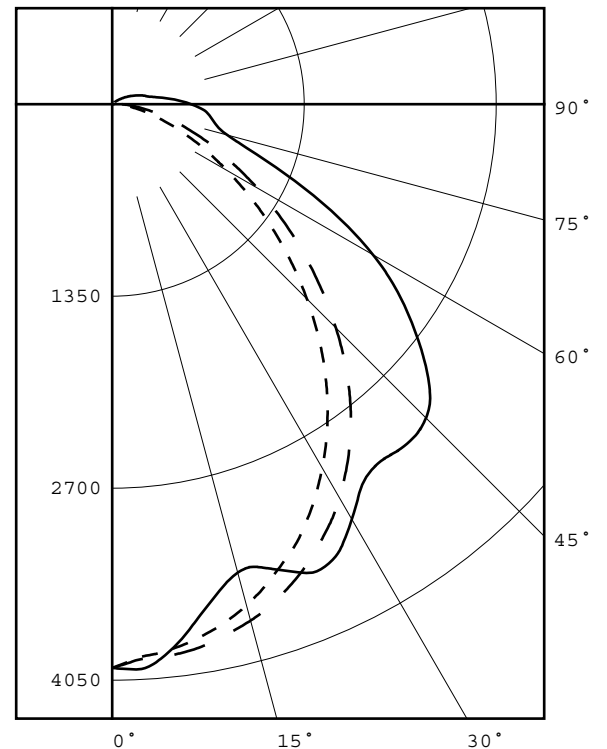
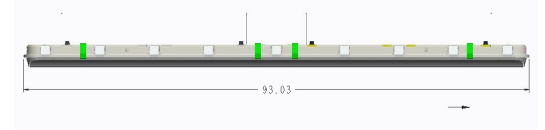
LED DRIVERS: 2 X RD-052-A1050-C-089C

(SEE PAGE 2 FOR MORE INFORMATION)

CANDELA DISTRIBUTION

	0.0	45.0	90.0	135.0	180.0
0	3964	3964	3964	3964	3964
5	3873	3927	3916	3959	3907
15	3648	3462	3410	3525	3759
25	3234	3241	3574	3324	3427
35	2640	3119	3159	3263	2914
45	1937	2599	3121	2759	2225
55	1241	2301	2529	2515	1502
65	676	1529	1615	1748	885
75	293	781	838	903	439
85	67	446	669	522	151
90	4	356	554	421	58
95	4	277	419	329	40
105	4	126	232	156	27
115	4	49	133	65	16
125	4	14	50	20	11
135	5	9	14	11	7
145	7	7	9	7	7
155	7	5	7	5	7
165	7	5	5	4	7
175	7	5	5	5	7
180	5	5	5	5	5

FLUX



LEGEND:

0-deg: - - - - -
 90-deg: — — — — —
 180-deg: — — — — —

ZONAL LUMEN SUMMARY

ZONE	LUMENS	%FIXT
0- 30	2914	24.1
0- 40	4813	39.9
0- 60	8847	73.3
0- 90	11550	95.6
90-120	487	4.0
90-130	509	4.2
90-150	522	4.3
90-180	527	4.4
0-180	12077	100.0

TOTAL INPUT WATTS = 95

EFFICACY = 127.1 Lm/W

CIE TYPE - DIRECT

PLANE : 0-DEG 90-DEG 180-DEG

SPACING CRITERIA : 1.1 1.3 1.2

Checked X.CAO
 Approved D.WANG-MUNSON

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ADDITIONAL INFORMATION

THIS REPORT WAS PRORATED FROM RAB TEST NUMBER 2635 WHICH WAS A 4' (128 LED) LUMINAIRE. THE DATA WAS DOUBLED TO REPRESENT AN 8' LUMINAIRE WITH 256 LEDS AND USING TWO OF THE SAME DRIVERS AS WAS USED FOR THE 4' TEST. ACTUAL PERFORMANCE MAY VARY.

TEST PROCEDURE: IESNA LM-79-08

TEST DISTANCE = 28.25 FEET

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PLANE : 0-DEG 90-DEG
BEAM ANGLE (50%) : 92.3 X 122.5 DEGREES
FIELD ANGLE (10%): 147.9 X 191.5 DEGREES

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PLANE : 0-DEG 90-DEG
LUMINOUS LENGTH : 96.060 5.150
HEIGHT OF SIDE : 1.860 1.860

LUMINANCE DATA IN CANDELA/SQ METER

ANGLE IN DEG	AVERAGE 0-DEG	AVERAGE 90-DEG	AVERAGE 180-DEG
45	8418.	10155.	9668.
55	6595.	9110.	7981.
65	4812.	6746.	6297.
75	3309.	4320.	4953.
85	1958.	4689.	4446.

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ZONAL LUMEN SUMMARY

0- 5	94.
5- 10	274.
10- 15	430.
15- 20	570.
20- 25	710.
25- 30	835.
30- 35	920.
35- 40	979.
40- 45	1028.
45- 50	1051.
50- 55	1021.
55- 60	934.
60- 65	795.
65- 70	623.
70- 75	458.
75- 80	341.
80- 85	270.
85- 90	216.
90- 95	167.
95-100	119.
100-105	81.
105-110	57.
110-115	39.
115-120	25.
120-125	14.
125-130	8.
130-135	5.
135-140	3.
140-145	3.
145-150	2.
150-155	2.
155-160	1.
160-165	1.
165-170	1.
170-175	0.
175-180	0.

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5-DEGREE ZONAL LUMEN SUMMARY

0- 5	94
5- 10	274
10- 15	430
15- 20	570
20- 25	710
25- 30	835
30- 35	920
35- 40	979
40- 45	1028
45- 50	1051
50- 55	1021
55- 60	934
60- 65	795
65- 70	623
70- 75	458
75- 80	341
80- 85	270
85- 90	216
90- 95	167
95-100	119
100-105	81
105-110	57
110-115	39
115-120	25
120-125	14
125-130	8
130-135	5
135-140	3
140-145	3
145-150	2
150-155	2
155-160	1
160-165	1
165-170	1
170-175	0
175-180	0

10-DEGREE ZONAL LUMEN SUMMARY

0- 10	368
0- 20	1369
0- 30	2914
0- 40	4813
0- 50	6892
0- 60	8847
0- 70	10264
0- 80	11064
0- 90	11550
0-100	11836
0-110	11974
0-120	12038
0-130	12059
0-140	12067
0-150	12072
0-160	12075
0-170	12077
0-180	12077

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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	115	115	115	115	109	109	109	103	103	103	98	98	98	96
1	107	102	97	93	104	99	95	91	94	90	87	89	86	84	85	83	81	78
2	97	88	81	75	94	86	79	74	82	76	71	78	73	69	74	70	67	65
3	88	77	69	62	85	75	67	61	72	65	60	68	63	58	65	60	56	54
4	81	68	59	52	78	67	58	52	63	56	50	61	54	49	58	53	48	46
5	74	61	52	45	71	59	51	44	57	49	43	54	48	43	52	46	42	39
6	68	55	45	39	66	53	45	39	51	43	38	49	42	37	47	41	36	34
7	63	49	40	34	61	48	40	34	46	39	33	45	38	33	43	37	32	30
8	59	45	36	30	57	44	36	30	42	35	30	41	34	29	39	33	29	27
9	55	41	33	27	53	40	32	27	39	32	27	37	31	26	36	30	26	24
10	51	38	30	25	50	37	30	24	36	29	24	35	28	24	34	28	23	22

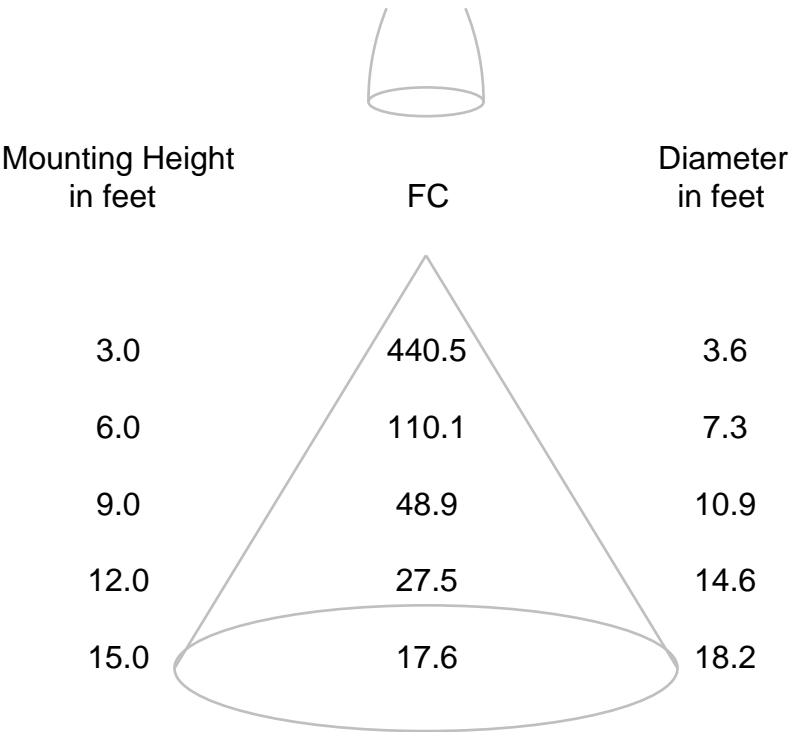
ALL CANDELA, LUMENS, LUMINANCE, AND VCP VALUES IN THIS REPORT ARE BASED ON ABSOLUTE PHOTOMETRY. THE COEFFICIENT OF UTILIZATION VALUES ARE BASED ON THE TOTAL ABSOLUTE LUMEN OUTPUT OF THIS LUMINAIRE SAMPLE.

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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: RAB02814
DATE: 12/13/2016
PREPARED FOR: RAB LIGHTING INC.
CATALOG NUMBER: SHARK8-100NW/D10

ADDRESS: 170 LUDLOW AVE, NORTHVALE, NJ 07647

LUMINAIRE: FABRICATED WHITE PLASTIC HOUSING, PERFORATED WHITE METAL HEAT SINK, 4 WHITE CIRCUIT BOARDS EACH WITH 64 LEDS, FROSTED POLYCARBONATE LENS ENCLOSURE.

LAMP: TWO HUNDRED AND FIFTY SIX WHITE EMITTING DIODES (LEDS), TILTED 15-DEGREE FROM VERTICAL BASE-UP POSITION.

DRIVER: 2 X RD-052-A1050-C-089C

OBJECT OF TEST: DATA SHOWN IS ABSOLUTE FOR THE SAMPLE PROVIDED AT THE RATED INPUT VOLTAGES (277.0 AND 120.0 VAC, 60Hz) TO THE TEST SAMPLE.

INSTRUMENTS:	GWINSTEK PROGRAMMABLE AC POWER SOURCE APS-7100	N/A
	CHROMA PROGRAMMABLE DIGITAL POWER METER MODEL 66202	2/26/17
	OCEAN OPTICS QE65PRO Spectroradiometer	12/05/17
	RAB 2.0 meter Diameter Integrating Sphere, 4PI Geometry	12/05/17

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 (120.0 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)	12077 *
SPECTRORADIOMETRIC	
Observer	CIE 1931 2 degree
Chromaticity Ordinate x	0.3754
Chromaticity Ordinate y	0.3696
Observer	CIE 1976 2 degree
Chromaticity Ordinate u'	0.2247
Chromaticity Ordinate v'	0.4977
Correlated Color Temp CCT (K)	4088
ANSI C78.377-2008 Duv	-0.002
Total Radiant Flux (milliWatts)	35697 *
ELECTRICAL	
Input Voltage (Volts AC)	277.0
Input Current (Amps AC)	0.359
Input Power (Watts)	95.0
Input Power Factor (%)	95.5
Input Current THD (%)	11.1
Input Voltage THD (%)	0.1
EFFICACY (Lumens/Watt)	
	127.1
ELECTRICAL AT MAX NONIMAL INPUT	
Input Voltage (Volts AC)	120.0
Input Current (Amps AC)	0.792
Input Power (Watts)	94.5
Input Power Factor (%)	99.3
Input Current THD (%)	7.1
Input Voltage THD (%)	0.1
Off-State Power (Watts)	0.0

COLOR RENDERING INDICES	CRI
Ra (Average 1-8)	77
R1 Light greyish red	75
R2 Dark greyish yellow	86
R3 Strong yellowish green	93
R4 Moderate yellowish green	74
R5 Light bluish green	75
R6 Light blue	80
R7 Light violet	82
R8 Light reddish purple	55
R9 Strong red	-17
R10 Strong yellow	66
R11 Strong green	71
R12 Strong blue	52
R13 Light yellowish pink (skin)	77
R14 Moderate olive green (leaf)	96

*NOTE:

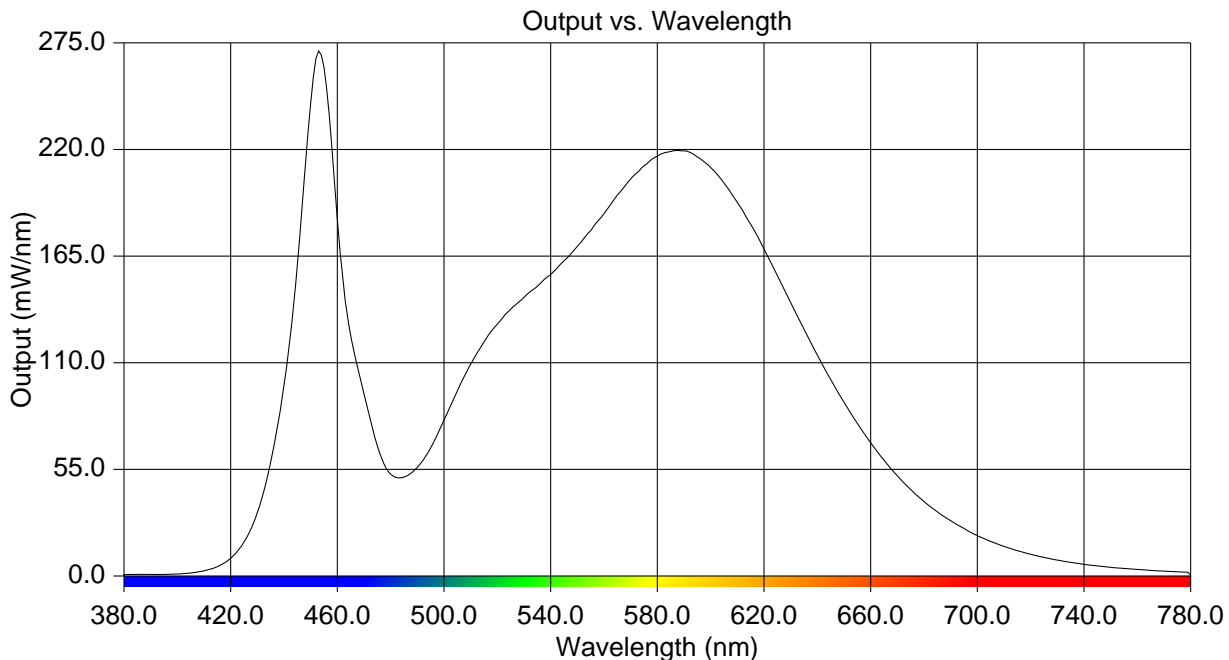
Proper calibration of integrating spheres for measuring total flux output of non-directional samples will produce reliable, repeatable results within the calibration tolerances of the equipment used. However, measurement of test samples with significant self absorption and/or directional output, even 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	0.730	515	120.671	650	89.514
385	0.785	520	129.875	655	78.722
390	0.796	525	137.519	660	68.774
395	0.851	530	143.493	665	59.668
400	1.041	535	149.374	670	51.666
405	1.538	540	155.388	675	44.565
410	2.598	545	162.538	680	38.373
415	4.797	550	169.970	685	33.041
420	9.156	555	178.047	690	28.412
425	17.407	560	186.862	695	24.535
430	32.548	565	196.448	700	20.835
435	58.493	570	204.938	705	17.780
440	98.103	575	211.546	710	15.207
445	160.246	580	216.448	715	13.033
450	243.589	585	218.903	720	11.215
455	262.305	590	219.204	725	9.605
460	183.936	595	216.075	730	8.190
465	124.132	600	210.683	735	6.999
470	93.994	605	202.701	740	6.015
475	67.094	610	192.558	745	5.167
480	52.413	615	181.404	750	4.466
485	51.060	620	168.538	755	3.854
490	56.047	625	155.093	760	3.342
495	66.051	630	140.913	765	2.869
500	80.274	635	127.241	770	2.489
505	95.550	640	113.807	775	2.159
510	109.442	645	101.245	780	0.329



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CIE Chromaticity Diagram

