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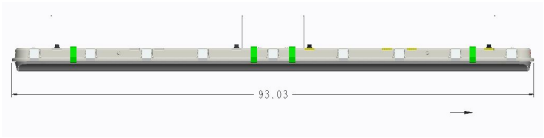
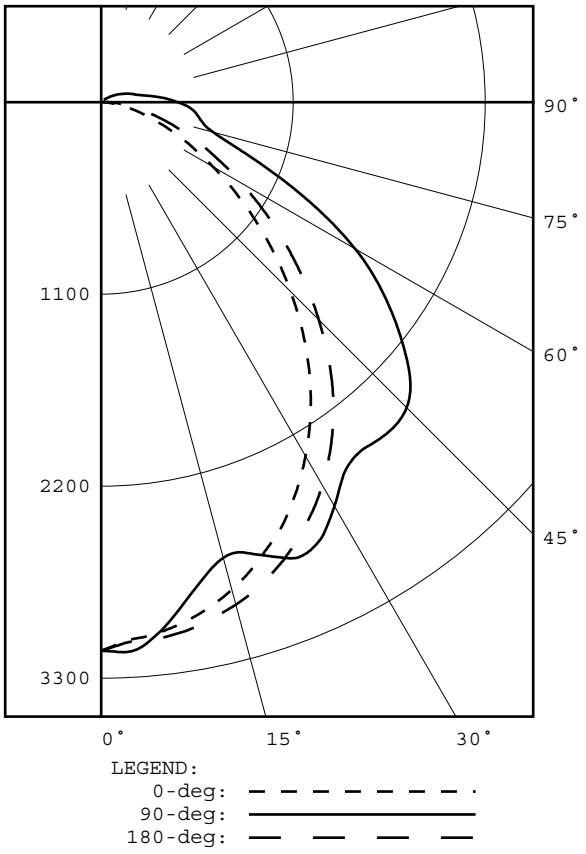
ISSUE DATE: 12/15/16
PREPARED FOR: RAB LIGHTING INC.
CATALOG NUMBER: SHARK8-70YNW/480/D10, SHARK8-70YNW/347/D10
LUMINAIRE: FABRICATED WHITE PLASTIC HOUSING, PERFORATED WHITE METAL HEAT SINK, 4 WHITE CIRCUIT BOARDS EACH WITH 64 LEDS, FROSTED POLYCARBONATE LENS ENCLOSURE.
LAMPS: TWO HUNDRED AND FIFTY SIX WHITE EMITTING DIODES (LEDS), TILTED 15-DEGREE FROM VERTICAL BASE-UP POSITION.
TOTAL INPUT WATTS = 73.0 AT 480.0 VOLTS
LED DRIVERS: 2 X RDD-LT40-A0700-60PF
(SEE PAGE 2 FOR MORE INFORMATION)

CANDELA DISTRIBUTION

	0.0	45.0	90.0	135.0	180.0	FLUX
0	3143	3143	3143	3143	3143	
5	3070	3113	3104	3139	3097	292
15	2892	2745	2704	2795	2980	793
25	2564	2570	2833	2635	2717	1225
35	2093	2473	2504	2587	2310	1506
45	1536	2061	2474	2187	1764	1648
55	984	1824	2005	1994	1191	1550
65	536	1212	1281	1386	702	1124
75	232	619	665	716	348	634
85	53	354	530	414	120	385
90	3	282	439	334	46	
95	3	220	332	261	31	227
105	3	100	184	124	21	109
115	3	39	106	51	13	51
125	3	11	40	16	9	17
135	4	7	11	9	6	6
145	6	6	7	6	6	4
155	6	4	6	4	6	2
165	6	4	4	3	6	1
175	6	4	4	4	6	0
180	4	4	4	4	4	





ZONAL LUMEN SUMMARY

ZONE	LUMENS	%FIXT
0- 30	2310	24.1
0- 40	3816	39.9
0- 60	7014	73.3
0- 90	9157	95.6
90-120	386	4.0
90-130	404	4.2
90-150	414	4.3
90-180	418	4.4
0-180	9575	100.0

TOTAL INPUT WATTS = 73
EFFICACY = 131.2 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

REPORT NUMBER: PRORATED FROM RAB02635 PAGE: 3 OF 9
ISSUE DATE: 12/15/16
PREPARED FOR: RAB LIGHTING INC.

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

REPORT NUMBER: PRORATED FROM RAB02635 PAGE: 4 OF 9
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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	6673.	8051.	7665.
55	5228.	7223.	6327.
65	3815.	5348.	4992.
75	2623.	3425.	3927.
85	1552.	3717.	3525.

REPORT NUMBER: PRORATED FROM RAB02635 PAGE: 5 OF 9
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PREPARED FOR: RAB LIGHTING INC.

CANDELA DISTRIBUTION

	0.0	22.5	45.0	67.5	90.0	112.5	135.0	157.5	180.0
0.0	3143	3143	3143	3143	3143	3143	3143	3143	3143
5.0	3070	3084	3113	3114	3104	3127	3139	3114	3097
10.0	3000	2992	2952	2900	2881	2920	2992	3049	3057
15.0	2892	2843	2745	2702	2704	2721	2795	2920	2980
20.0	2741	2654	2600	2689	2765	2719	2651	2751	2869
25.0	2564	2464	2570	2771	2833	2812	2635	2571	2717
30.0	2341	2294	2585	2671	2672	2719	2674	2413	2533
35.0	2093	2152	2473	2454	2504	2511	2587	2286	2310
40.0	1822	2029	2250	2381	2505	2437	2376	2183	2052
45.0	1536	1878	2061	2366	2474	2438	2187	2065	1764
50.0	1252	1664	1965	2229	2284	2310	2112	1875	1472
55.0	984	1403	1824	1961	2005	2046	1994	1620	1191
60.0	740	1137	1557	1633	1680	1728	1735	1349	931
65.0	536	878	1212	1253	1281	1346	1386	1091	702
70.0	366	640	880	897	904	973	1020	829	509
75.0	232	436	619	647	665	694	716	586	348
80.0	131	287	451	536	578	569	528	394	220
85.0	53	185	354	473	530	505	414	264	120
90.0	3	121	282	396	439	426	334	178	46
95.0	3	80	220	301	332	327	261	123	31
100.0	3	44	148	208	232	227	181	77	27
105.0	3	16	100	155	184	170	124	40	21
110.0	3	9	67	120	143	131	84	19	17
115.0	3	7	39	84	106	93	51	16	13
120.0	3	6	16	53	70	58	23	13	10
125.0	3	6	11	27	40	30	16	10	9
130.0	4	6	9	14	17	14	11	9	7
135.0	4	4	7	10	11	10	9	7	6
140.0	4	6	6	9	9	9	7	6	6
145.0	6	6	6	7	7	7	6	6	6
150.0	4	6	4	6	6	6	4	4	4
155.0	6	6	4	4	6	4	4	4	6
160.0	6	6	4	4	4	4	4	4	6
165.0	6	6	4	3	4	3	3	4	6
170.0	6	6	4	3	3	3	4	4	6
175.0	6	6	4	3	4	3	4	6	6
180.0	4	4	4	4	4	4	4	4	4

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PREPARED FOR: RAB LIGHTING INC.

ZONAL LUMEN SUMMARY

0- 5	75.
5- 10	217.
10- 15	341.
15- 20	452.
20- 25	563.
25- 30	662.
30- 35	729.
35- 40	776.
40- 45	815.
45- 50	833.
50- 55	809.
55- 60	741.
60- 65	630.
65- 70	494.
70- 75	363.
75- 80	271.
80- 85	214.
85- 90	171.
90- 95	132.
95-100	94.
100-105	64.
105-110	45.
110-115	31.
115-120	20.
120-125	11.
125-130	6.
130-135	4.
135-140	3.
140-145	2.
145-150	2.
150-155	1.
155-160	1.
160-165	1.
165-170	0.
170-175	0.
175-180	0.

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PREPARED FOR: RAB LIGHTING INC.

5-DEGREE ZONAL LUMEN SUMMARY

0- 5	75
5- 10	217
10- 15	341
15- 20	452
20- 25	563
25- 30	662
30- 35	729
35- 40	776
40- 45	815
45- 50	833
50- 55	809
55- 60	741
60- 65	630
65- 70	494
70- 75	363
75- 80	271
80- 85	214
85- 90	171
90- 95	132
95-100	94
100-105	64
105-110	45
110-115	31
115-120	20
120-125	11
125-130	6
130-135	4
135-140	3
140-145	2
145-150	2
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	292
0- 20	1085
0- 30	2310
0- 40	3816
0- 50	5464
0- 60	7014
0- 70	8138
0- 80	8772
0- 90	9157
0-100	9384
0-110	9493
0-120	9543
0-130	9561
0-140	9567
0-150	9571
0-160	9573
0-170	9574
0-180	9575

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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	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	38	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.

REPORT NUMBER: PRORATED FROM RAB02635
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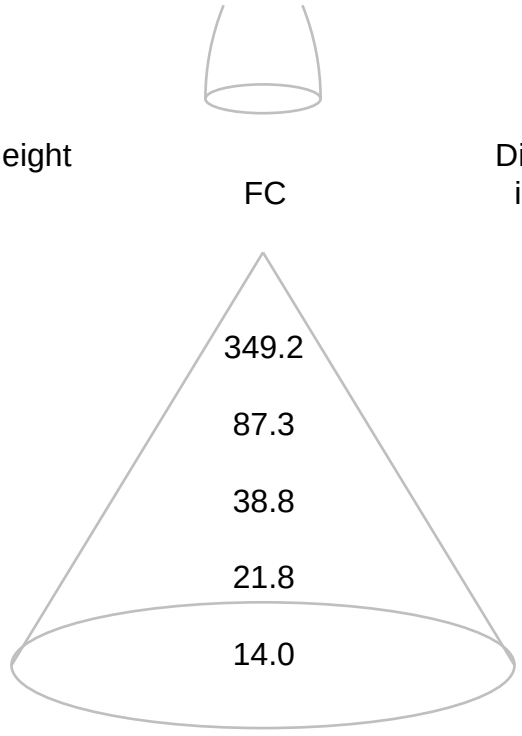
PREPARED FOR: RAB LIGHTING INC.

CONE OF LIGHT DIAGRAM

(diameter shown is where fc value is half the fc at nadir)



Mounting Height in feet	FC	Diameter in feet
3.0	349.2	3.6
6.0	87.3	7.3
9.0	38.8	10.9
12.0	21.8	14.6
15.0	14.0	18.2

Note: The candela values used to generate this diagram were obtained by averaging the photometric data into a single plane.

NVLAP LAB CODE: 201058-0

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REPORT NUMBER: RAB02816
DATE: 12/15/2016
PREPARED FOR: RAB LIGHTING INC.
CATALOG NUMBER: SHARK8-70YNW/480/D10, SHARK8-70YNW/347/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 RDD-LT40-A0700-60PF

OBJECT OF TEST: DATA SHOWN IS ABSOLUTE FOR THE SAMPLE PROVIDED AT THE RATED INPUT VOLTAGES (480.0 AND 347.0 VAC, 60Hz) TO THE TEST SAMPLE.

INSTRUMENTS:	Calibration Due:
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 (347.0 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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DATE: 12/15/2016
PREPARED FOR: RAB LIGHTING INC.
CATALOG NUMBER: SHARK8-70YNW/480/D10, SHARK8-70YNW/347/D10

RESULTS:

PHOTOMETRIC	
Total Integrated Flux (lumens)	9575 *
SPECTRORADIOMETRIC	
Observer	CIE 1931 2 degree
Chromaticity Ordinate x	0.4066
Chromaticity Ordinate y	0.3906
Observer	CIE 1976 2 degree
Chromaticity Ordinate u'	0.2366
Chromaticity Ordinate v'	0.5114
Correlated Color Temp CCT (K)	3470
ANSI C78.377-2008 Duv	0.000
Total Radiant Flux (milliWatts)	27455 *
ELECTRICAL	
Input Voltage (Volts AC)	480.0
Input Current (Amps AC)	0.157
Input Power (Watts)	73.0
Input Power Factor (%)	96.9
Input Current THD (%)	10.1
Input Voltage THD (%)	0.1
EFFICACY (Lumens/Watt)	131.2
ELECTRICAL AT MAX NONIMAL INPUT	
Input Voltage (Volts AC)	347.0
Input Current (Amps AC)	0.211
Input Power (Watts)	72.7
Input Power Factor (%)	99.2
Input Current THD (%)	12.2
Input Voltage THD (%)	0.1
Off-State Power (Watts)	0.0

COLOR RENDERING INDICES	CRI
Ra (Average 1-8)	75
R1 Light greyish red	71
R2 Dark greyish yellow	84
R3 Strong yellowish green	94
R4 Moderate yellowish green	72
R5 Light bluish green	72
R6 Light blue	78
R7 Light violet	80
R8 Light reddish purple	49
R9 Strong red	-26
R10 Strong yellow	63
R11 Strong green	69
R12 Strong blue	52
R13 Light yellowish pink (skin)	74
R14 Moderate olive green (leaf)	97

*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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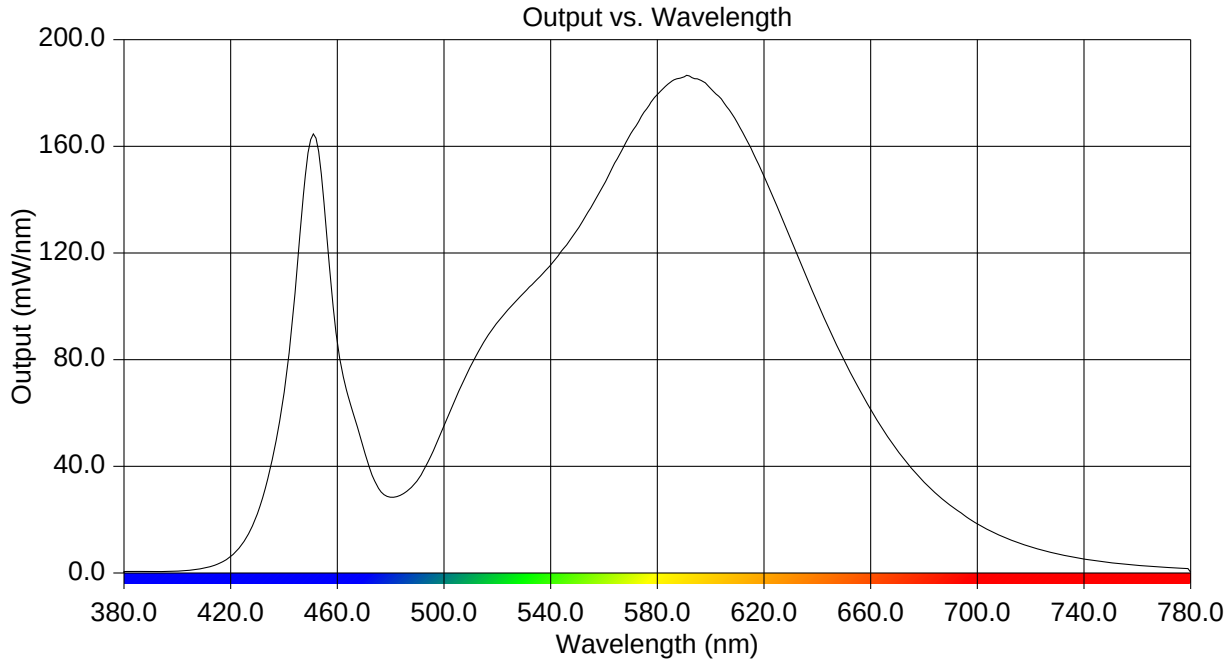
DATE: 12/15/2016
PREPARED FOR: RAB LIGHTING INC.
CATALOG NUMBER: SHARK8-70YNW/480/D10, SHARK8-70YNW/347/D10

RESULTS:

Wavelength	mW per nm	Wavelength	mW per nm	Wavelength	mW per nm
380	0.502	515	86.706	650	79.788
385	0.544	520	93.892	655	70.269
390	0.534	525	99.903	660	61.376
395	0.598	530	104.980	665	53.203
400	0.742	535	110.183	670	46.006
405	1.071	540	115.430	675	39.620
410	1.777	545	121.873	680	34.084
415	3.292	550	128.782	685	29.348
420	6.228	555	136.863	690	25.205
425	11.872	560	145.712	695	21.694
430	22.165	565	155.599	700	18.415
435	39.761	570	164.812	705	15.696
440	67.369	575	172.798	710	13.410
445	115.082	580	179.516	715	11.471
450	162.520	585	184.101	720	9.838
455	138.839	590	186.083	725	8.393
460	86.339	595	185.319	730	7.181
465	63.026	600	181.609	735	6.134
470	46.115	605	176.287	740	5.212
475	32.612	610	168.852	745	4.499
480	28.331	615	159.558	750	3.882
485	29.856	620	148.875	755	3.320
490	34.761	625	137.399	760	2.870
495	43.685	630	125.076	765	2.476
500	55.343	635	113.174	770	2.146
505	66.901	640	101.411	775	1.862
510	77.636	645	90.236	780	0.279



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CIE Chromaticity Diagram