

REPORT NUMBER: RAB02088

ISSUE DATE: 06/17/16

PREPARED FOR: RAB LIGHTING INC.

CATALOG NUMBER: RDLED2AR8-40YHC-TW

LUMINAIRE: FABRICATED METAL UPPER HOUSING AND BALLAST HOUSING, CAST BLACK PAINTED FINNED METAL HEAT SINK, CAST WHITE PAINTED METAL GIMBAL, 1 WHITE CIRCUIT BOARD WITH ONE LED, MOLDED PLASTIC REFLECTOR WITH SPECULAR FINISH, HOLOGRAPHIC FLAT PLASTIC LENS, CAST WHITE METAL LOWER HOUSING.

LAMP: ONE WHITE MULTI-CHIP LIGHT EMITTING DIODE (LED) WITH CLEAR HEMISPHERICAL INTEGRAL LENS, VERTICAL BASE-UP POSITION.

NOTE: DATA SHOWN IS ABSOLUTE FOR THE SAMPLE PROVIDED.

TOTAL INPUT WATTS: 8.197 W AT 120.0 VOLTS

(SEE PAGE 2 FOR MORE INFORMATION)

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DEG	CANDELA	LUMENS
0	1181	
5	1139	103
15	716	198
25	334	154
35	115	74
45	24	21
55	9	9
65	6	6
75	4	4
85	2	2
90	0	

ZONAL LUMEN SUMMARY		
ZONE	LUMENS	%FIXT
0- 30	455	79.8
0- 40	529	92.8
0- 60	558	98.0
0- 90	570	100.0
90-180	0	0.0
0-180	570	100.0

TOTAL INPUT WATTS = 8.2

EFFICACY = 69.5 Lm/W

CIE TYPE - DIRECT

LUMINAIRE SPACING CRITERION = 0.6

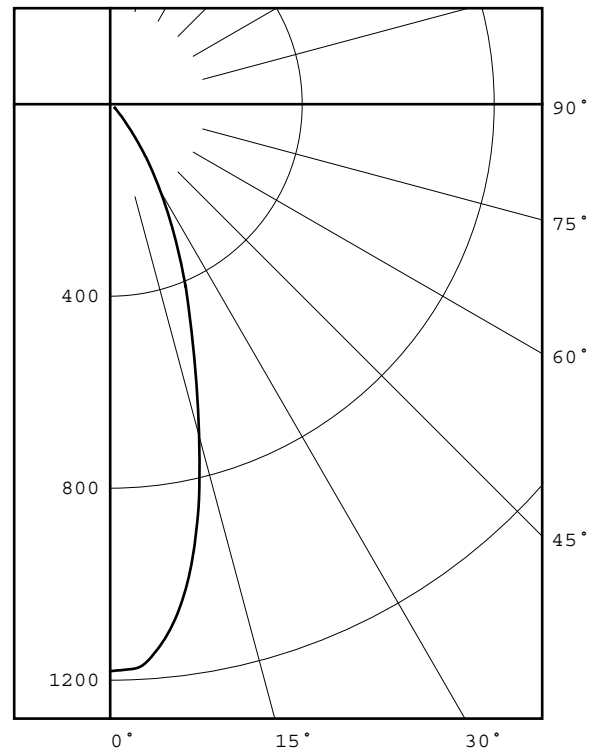
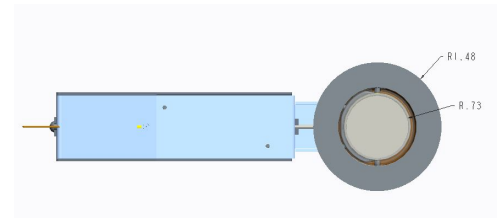
LUMINOUS DIAMETER: 0.730

LUMINANCE DATA IN CANDELA/SQ METER

ANGLE AVERAGE

IN DEG

45	125651.
55	58089.
65	52558.
75	57214.
85	84952.



Checked X.CAO
Approved D.WANG-MUNSON

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ADDITIONAL INFORMATION

TEST PROCEDURE: IESNA LM-79-08
TEST DISTANCE: 28.25 FEET
PREPARED FOR: RAB LIGHTING INC.
LED DRIVER: RD-008-E1-A0200

ACCREDITED LABORATORY CODE 201085-0

NOTE: THIS REPORT WITH THE USE OF THE NVLAP LOGO SHALL NOT BE USED BY
THE CLIENT TO CLAIM PRODUCT CERTIFICATION, APPROVAL, OR
ENDORSEMENT BY NVLAP, NIST, OR ANY AGENCY OF THE FEDERAL
GOVERNMENT.

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BEAM ANGLE (50%) : 35.1 DEGREES
FIELD ANGLE (10%) : 69.6 DEGREES

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CANDELA DISTRIBUTION

	0.0
0.0	1181
2.5	1177
5.0	1139
7.5	1071
10.0	974
12.5	852
15.0	716
17.5	592
20.0	493
22.5	410
25.0	334
27.5	267
30.0	209
32.5	159
35.0	115
37.5	78
40.0	52
42.5	35
45.0	24
47.5	18
50.0	14
52.5	11
55.0	9
57.5	8
60.0	7
62.5	7
65.0	6
67.5	5
70.0	5
72.5	4
75.0	4
77.5	3
80.0	3
82.5	2
85.0	2
87.5	1
90.0	0

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ZONAL LUMEN SUMMARY

0- 5	28.
5- 10	76.
10- 15	100.
15- 20	98.
20- 25	86.
25- 30	68.
30- 35	47.
35- 40	27.
40- 45	13.
45- 50	7.
50- 55	5.
55- 60	4.
60- 65	3.
65- 70	3.
70- 75	2.
75- 80	2.
80- 85	1.
85- 90	1.

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5-DEGREE ZONAL LUMEN SUMMARY

0- 5	28
5- 10	76
10- 15	100
15- 20	98
20- 25	86
25- 30	68
30- 35	47
35- 40	27
40- 45	13
45- 50	7
50- 55	5
55- 60	4
60- 65	3
65- 70	3
70- 75	2
75- 80	2
80- 85	1
85- 90	1
90- 95	0
95-100	0
100-105	0
105-110	0
110-115	0
115-120	0
120-125	0
125-130	0
130-135	0
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	103
0- 20	301
0- 30	455
0- 40	529
0- 50	550
0- 60	558
0- 70	564
0- 80	568
0- 90	570
0-100	570
0-110	570
0-120	570
0-130	570
0-140	570
0-150	570
0-160	570
0-170	570
0-180	570

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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	119	119	119	119	116	116	116	116	111	111	111	106	106	106	102	102	102	100
1	114	111	109	106	111	109	107	105	105	103	102	101	100	99	98	97	96	94
2	109	104	100	97	106	102	99	96	99	96	94	96	94	92	93	91	90	88
3	104	98	93	89	102	96	92	89	94	90	87	91	88	86	89	87	85	83
4	99	92	87	83	97	91	86	83	89	85	82	87	83	81	85	82	80	78
5	95	87	82	78	93	86	81	77	84	80	77	83	79	76	81	78	75	74
6	91	83	77	73	89	82	77	73	80	76	73	79	75	72	78	74	72	70
7	87	79	73	69	86	78	73	69	77	72	69	76	71	68	74	71	68	67
8	83	75	69	66	82	74	69	66	73	69	65	72	68	65	71	68	65	64
9	80	71	66	63	79	71	66	62	70	65	62	69	65	62	68	65	62	61
10	77	68	63	60	76	68	63	60	67	63	59	66	62	59	66	62	59	58

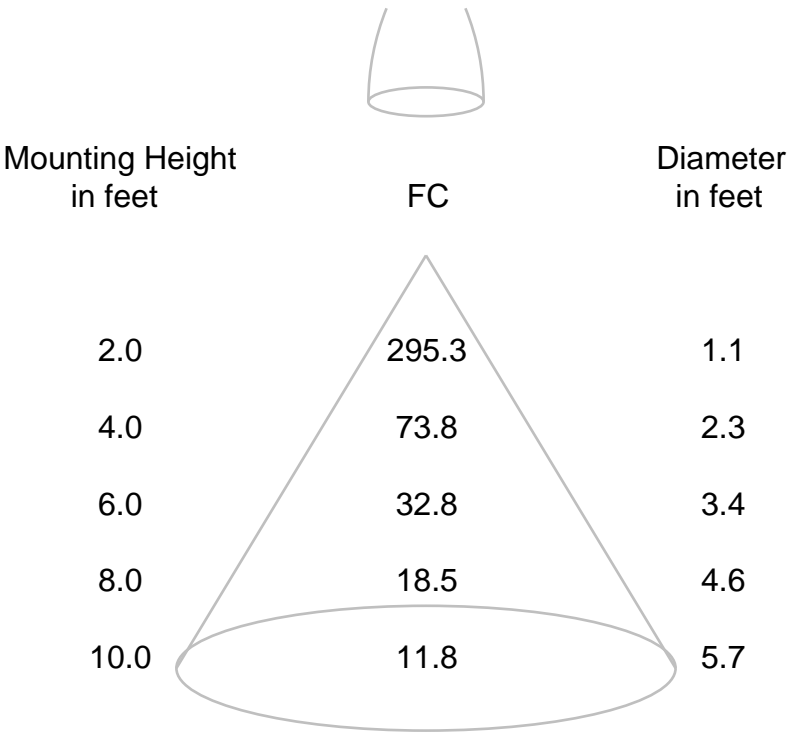
ALL CANDELA, LUMENS, LUMINANCE, AND VCP VALUES IN THIS REPORT ARE BASED ON ABSOLUTE PHOTOMETRY. THE COEFFICIENT OF UTILIZATION VALUES ARE BASED ON THE TOTAL ABSOLUTE LUMEN OUTPUT OF THIS LUMINAIRE SAMPLE.

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CONE OF LIGHT DIAGRAM

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



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ADDRESS: 170 LUDLOW AVE, NORTHVALE, NJ 07647

LUMINAIRE: FABRICATED METAL UPPER HOUSING AND BALLAST HOUSING, CAST BLACK PAINTED FINNED METAL HEAT SINK, CAST WHITE PAINTED METAL GIMBAL, 1 WHITE CIRCUIT BOARD WITH ONE LED, MOLDED PLASTIC REFLECTOR WITH SPECULAR FINISH, HOLOGRAPHIC FLAT PLASTIC LENS, CAST WHITE METAL LOWER HOUSING.

LAMP: ONE WHITE MULTI-CHIP LIGHT EMITTING DIODE (LED) WITH CLEAR HEMISPHERICAL INTEGRAL LENS, VERTICALBASE-UP POSITION.

DRIVER: RD-008-E1-A0200

NOTE: DATA SHOWN IS ABSOLUTE FOR THE SAMPLE PROVIDED AT RATED INPUT VOLTAGE (120.0 VAC , 60Hz) TO THE TEST SAMPLE.

INSTRUMENTS:	GWINSTEK PROGRAMMABLE AC POWER SOURCE APS-7100	Calibration Due:
	CHROMA PROGRAMMABLE DIGITAL POWER METER MODEL 66202	N/A
	OCEAN OPTICS QE65PRO Spectroradiometer	2/26/17
	RAB 2.0 meter Diameter Integrating Sphere, 4PI Geometry	5/31/17

OBJECT OF TEST: Measure the Total Radiant Flux*, Spectral Power Distribution (SPD), Correlated Color Temperature (CCT), Color Rendering Indices (CRI_a,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. Report Off-State Power.

PROCEDURE: The test sample was provided by the customer and had an unknown number of burn hours. The test sample was mounted inside the integrating sphere 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 120.0 VAC input in a 25 +/-1 degree Celsius free air ambient and in accordance with IESNA LM-79-08. 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:

SPECTRORADIOMETRIC	
Observer	CIE 1931 2 degree
Chromaticity Ordinate x	0.4405
Chromaticity Ordinate y	0.4043
Observer	CIE 1976 2 degree
Chromaticity Ordinate u'	0.2528
Chromaticity Ordinate v'	0.5220
Correlated Color Temp CCT (K)	2943
Color Rendering Index (CRIa)	92
Color Rendering Index 1 (Light greyish red)	92
Color Rendering Index 2 (Dark greyish yellow)	97
Color Rendering Index 3 (Strong yellowish green)	98
Color Rendering Index 4 (Moderate yellowish green)	90
Color Rendering Index 5 (Light bluish green)	91
Color Rendering Index 6 (Light blue)	96
Color Rendering Index 7 (Light violet)	90
Color Rendering Index 8 (Light reddish purple)	79
Color Rendering Index 9 (Strong red)	56
Color Rendering Index 10 (Strong yellow)	91
Color Rendering Index 11 (Strong green)	89
Color Rendering Index 12 (Strong blue)	80
Color Rendering Index 13 (Light yellowish pink (skin))	93
Color Rendering Index 14 (Moderate olive green (leaf))	99
ANSI C78.377-2008 Duv	0.000
Total Radiant Flux (milliWatts)	1980 *
ELECTRICAL FOR SPECTRORADIOMETRIC TEST	
Input Voltage (Volts AC)	120.0
Input Current (Amps AC)	0.070
Input Power (Watts)	8.20
Input Power Factor (%)	97.5
Input Current THD (%)	19.5
Input Voltage THD (%)	0.2
Off-State Power (Watts)	0.0

*NOTE:

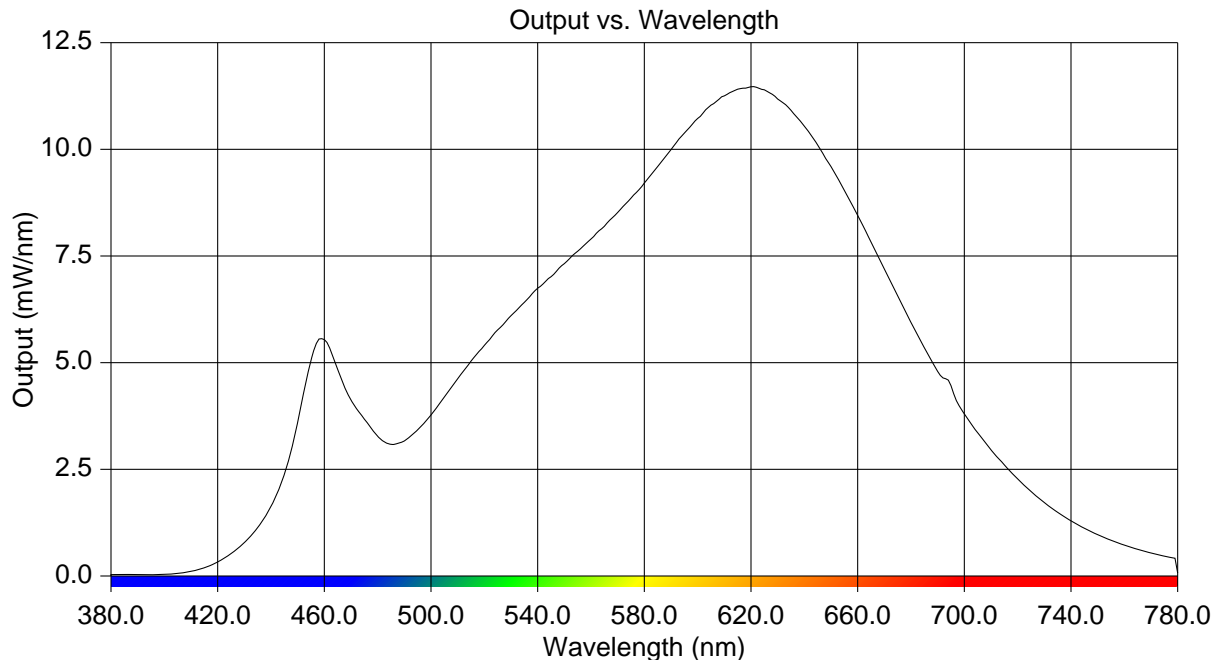
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RESULTS:

Wavelength	mW per nm	Wavelength	mW per nm	Wavelength	mW per nm
380	0.032	515	5.036	650	9.596
385	0.029	520	5.405	655	9.041
390	0.031	525	5.768	660	8.451
395	0.034	530	6.101	665	7.829
400	0.042	535	6.413	670	7.185
405	0.061	540	6.745	675	6.563
410	0.106	545	7.013	680	5.949
415	0.192	550	7.321	685	5.343
420	0.329	555	7.611	690	4.794
425	0.525	560	7.898	695	4.461
430	0.781	565	8.196	700	3.799
435	1.138	570	8.520	705	3.358
440	1.632	575	8.856	710	2.959
445	2.386	580	9.209	715	2.604
450	3.606	585	9.602	720	2.278
455	5.063	590	9.992	725	1.975
460	5.541	595	10.380	730	1.717
465	4.848	600	10.724	735	1.492
470	4.122	605	11.037	740	1.290
475	3.677	610	11.253	745	1.116
480	3.268	615	11.409	750	0.971
485	3.087	620	11.467	755	0.838
490	3.165	625	11.395	760	0.723
495	3.424	630	11.179	765	0.625
500	3.773	635	10.914	770	0.540
505	4.185	640	10.545	775	0.466
510	4.628	645	10.104	780	0.070



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CIE Chromaticity Diagram

