

REPORT NUMBER: RAB02092

ISSUE DATE: 06/17/16

PREPARED FOR: RAB LIGHTING INC.

CATALOG NUMBER: RDLED2AR8-40YNHC-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: 8.3139 W AT 120.0 VOLTS

\*(SEE PAGE 2 FOR MORE INFORMATION)\*

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DEG	CANDELA	LUMENS
0	929	
5	909	85
15	702	192
25	375	172
35	152	97
45	46	38
55	21	19
65	12	12
75	7	7
85	2	2
90	0	

ZONAL LUMEN SUMMARY		
ZONE	LUMENS	%FIXT
0- 30	449	71.9
0- 40	546	87.4
0- 60	603	96.5
0- 90	625	100.0
90-180	0	0.0
0-180	625	100.0

TOTAL INPUT WATTS = 8.3

EFFICACY = 75.3 Lm/W

CIE TYPE - DIRECT

LUMINAIRE SPACING CRITERION = 0.7

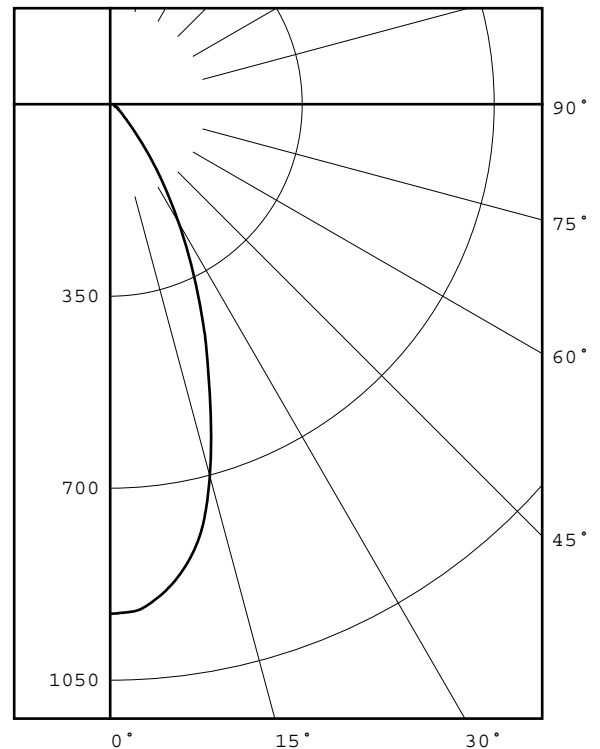
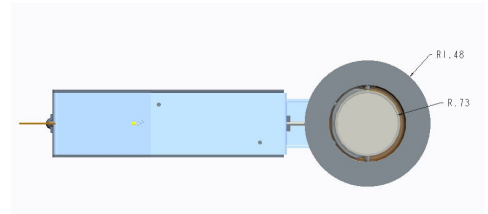
LUMINOUS DIAMETER: 0.730

LUMINANCE DATA IN CANDELA/SQ METER

ANGLE AVERAGE

IN DEG

45 240831.  
55 135540.  
65 105117.  
75 100125.  
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%) : 44.0 DEGREES  
FIELD ANGLE (10%) : 78.4 DEGREES

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## CANDELA DISTRIBUTION

	0.0
0.0	929
2.5	926
5.0	909
7.5	880
10.0	840
12.5	783
15.0	702
17.5	611
20.0	524
22.5	449
25.0	375
27.5	310
30.0	250
32.5	198
35.0	152
37.5	114
40.0	83
42.5	61
45.0	46
47.5	36
50.0	29
52.5	25
55.0	21
57.5	18
60.0	16
62.5	14
65.0	12
67.5	11
70.0	9
72.5	8
75.0	7
77.5	6
80.0	4
82.5	3
85.0	2
87.5	1
90.0	0

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## ZONAL LUMEN SUMMARY

0- 5	22.
5- 10	63.
10- 15	92.
15- 20	100.
20- 25	94.
25- 30	78.
30- 35	59.
35- 40	38.
40- 45	23.
45- 50	15.
50- 55	11.
55- 60	8.
60- 65	7.
65- 70	5.
70- 75	4.
75- 80	3.
80- 85	2.
85- 90	1.

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### 5-DEGREE ZONAL LUMEN SUMMARY

0- 5	22
5- 10	63
10- 15	92
15- 20	100
20- 25	94
25- 30	78
30- 35	59
35- 40	38
40- 45	23
45- 50	15
50- 55	11
55- 60	8
60- 65	7
65- 70	5
70- 75	4
75- 80	3
80- 85	2
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	85
0- 20	277
0- 30	449
0- 40	546
0- 50	584
0- 60	603
0- 70	615
0- 80	623
0- 90	625
0-100	625
0-110	625
0-120	625
0-130	625
0-140	625
0-150	625
0-160	625
0-170	625
0-180	625

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## COEFFICIENTS OF UTILIZATION - ZONAL CAVITY METHOD

EFFECTIVE FLOOR CAVITY REFLECTANCE 0.20

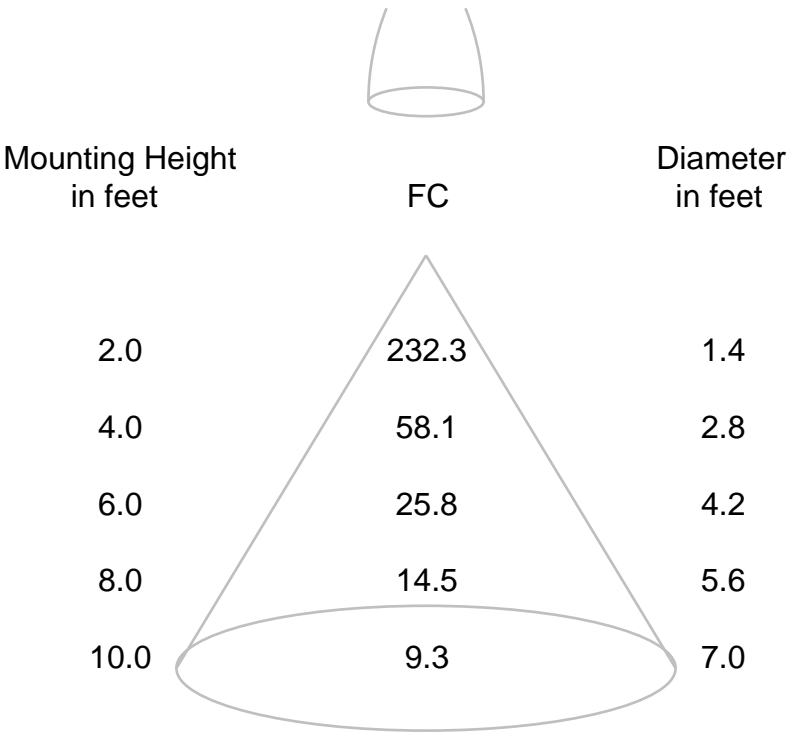
RC	80				70				50			30			10			0
RW	70	50	30	10	70	50	30	10	50	30	10	50	30	10	50	30	10	0
0	119	119	119	119	116	116	116	116	111	111	111	106	106	106	102	102	102	100
1	113	110	108	105	111	108	106	104	104	102	100	100	99	97	97	96	95	93
2	107	102	98	94	105	101	97	93	97	94	91	94	92	89	91	89	88	86
3	102	95	90	86	100	94	89	85	91	87	84	89	85	83	86	84	81	80
4	97	89	83	79	95	88	83	79	86	81	78	84	80	77	82	79	76	74
5	92	84	78	73	90	83	77	73	81	76	72	79	75	72	78	74	71	70
6	88	79	73	68	86	78	72	68	76	71	68	75	71	67	74	70	67	65
7	83	74	68	64	82	74	68	64	72	67	63	71	67	63	70	66	63	61
8	80	70	64	60	78	70	64	60	69	63	60	68	63	60	67	62	59	58
9	76	67	61	57	75	66	61	57	65	60	57	64	60	56	63	59	56	55
10	73	63	58	54	72	63	57	54	62	57	54	61	57	53	61	56	53	52

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<sub>a</sub>,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	0.4112
Chromaticity Ordinate y	0.3917
Observer	CIE 1976 2 degree
Chromaticity Ordinate u'	0.2392
Chromaticity Ordinate v'	0.5125
Correlated Color Temp CCT (K)	3380
Color Rendering Index (CRIa)	93
Color Rendering Index 1 (Light greyish red)	93
Color Rendering Index 2 (Dark greyish yellow)	96
Color Rendering Index 3 (Strong yellowish green)	97
Color Rendering Index 4 (Moderate yellowish green)	92
Color Rendering Index 5 (Light bluish green)	92
Color Rendering Index 6 (Light blue)	94
Color Rendering Index 7 (Light violet)	93
Color Rendering Index 8 (Light reddish purple)	85
Color Rendering Index 9 (Strong red)	64
Color Rendering Index 10 (Strong yellow)	89
Color Rendering Index 11 (Strong green)	91
Color Rendering Index 12 (Strong blue)	77
Color Rendering Index 13 (Light yellowish pink (skin))	94
Color Rendering Index 14 (Moderate olive green (leaf))	98
ANSI C78.377-2008 Duv	-0.001
Total Radiant Flux (milliWatts)	2172 *
ELECTRICAL FOR SPECTRORADIOMETRIC TEST	
Input Voltage (Volts AC )	120.0
Input Current (Amps AC )	0.071
Input Power (Watts)	8.31
Input Power Factor (%)	97.3
Input Current THD (%)	20.8
Input Voltage THD (%)	0.2
Off-State Power (Watts)	0.0

\*NOTE:

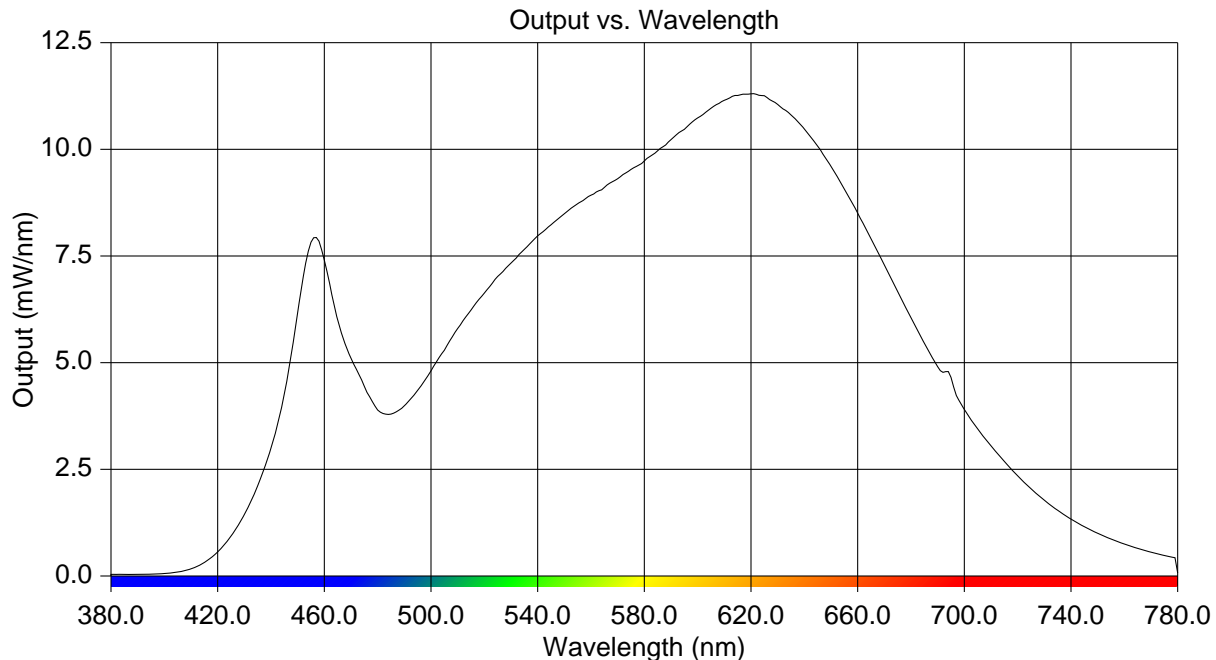
Proper calibration of integrating spheres for measuring total flux output of non-directional samples will produce reliable, repeatable results within the calibration tolerances of the equipment used. However, measurement of test samples with significant self absorption and/or directional output, even 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	0.038	515	6.232	650	9.603
385	0.037	520	6.630	655	9.069
390	0.037	525	7.020	660	8.505
395	0.041	530	7.334	665	7.905
400	0.058	535	7.655	670	7.285
405	0.091	540	7.972	675	6.672
410	0.169	545	8.231	680	6.055
415	0.319	550	8.488	685	5.455
420	0.564	555	8.726	690	4.905
425	0.937	560	8.925	695	4.656
430	1.431	565	9.107	700	3.901
435	2.114	570	9.311	705	3.451
440	3.011	575	9.529	710	3.047
445	4.259	580	9.727	715	2.686
450	6.182	585	9.967	720	2.347
455	7.824	590	10.227	725	2.043
460	7.402	595	10.468	730	1.774
465	6.006	600	10.736	735	1.540
470	5.099	605	10.963	740	1.332
475	4.445	610	11.150	745	1.153
480	3.890	615	11.262	750	1.003
485	3.795	620	11.301	755	0.864
490	3.983	625	11.257	760	0.749
495	4.345	630	11.053	765	0.648
500	4.808	635	10.806	770	0.558
505	5.290	640	10.471	775	0.482
510	5.801	645	10.074	780	0.073



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## CIE Chromaticity Diagram

