

REPORT NUMBER: RAB02096

ISSUE DATE: 06/17/16

PREPARED FOR: RAB LIGHTING INC.

CATALOG NUMBER: RDLED2AR8-40NHC-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: 8.3844 W AT 120.0 VOLTS

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

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DEG	CANDELA	LUMENS
0	997	
5	971	90
15	728	200
25	388	178
35	159	101
45	50	41
55	24	22
65	15	15
75	8	9
85	3	3
90	0	

ZONAL LUMEN SUMMARY		
ZONE	LUMENS	%FIXT
0- 30	468	71.0
0- 40	569	86.3
0- 60	632	96.0
0- 90	659	100.0
90-180	0	0.0
0-180	659	100.0

TOTAL INPUT WATTS = 8.4

EFFICACY = 78.5 Lm/W

CIE TYPE - DIRECT

LUMINAIRE SPACING CRITERION = 0.7

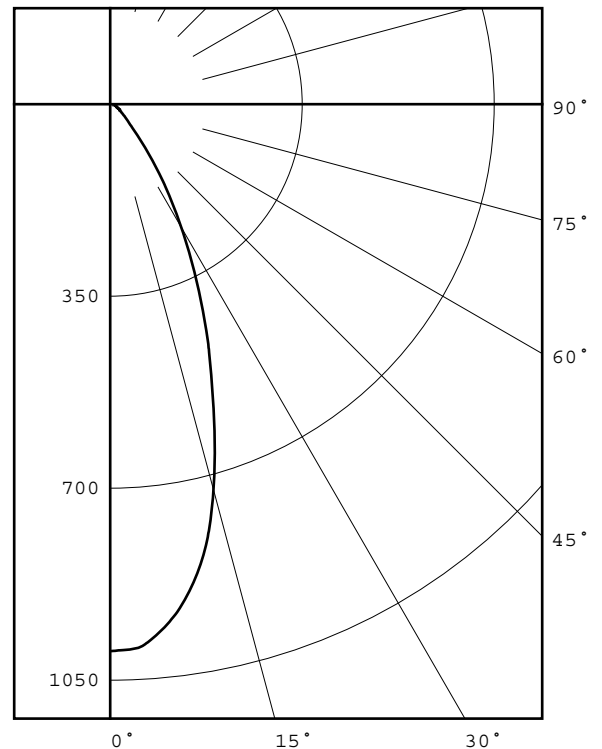
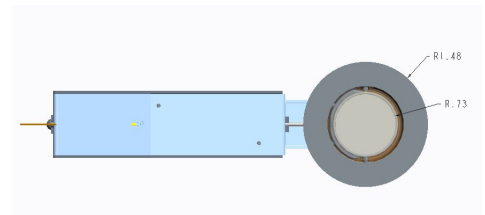
LUMINOUS DIAMETER: 0.730

LUMINANCE DATA IN CANDELA/SQ METER

ANGLE AVERAGE

IN DEG

45 261773.  
55 154903.  
65 131396.  
75 114428.  
85 127428.



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%) : 42.8 DEGREES  
FIELD ANGLE (10%): 78.0 DEGREES

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## CANDELA DISTRIBUTION

	0.0
0.0	997
2.5	994
5.0	971
7.5	934
10.0	882
12.5	815
15.0	728
17.5	633
20.0	542
22.5	464
25.0	388
27.5	320
30.0	259
32.5	206
35.0	159
37.5	119
40.0	87
42.5	65
45.0	50
47.5	41
50.0	34
52.5	28
55.0	24
57.5	21
60.0	19
62.5	17
65.0	15
67.5	13
70.0	11
72.5	10
75.0	8
77.5	7
80.0	5
82.5	4
85.0	3
87.5	2
90.0	0

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ZONAL LUMEN SUMMARY

0- 5	24.
5- 10	66.
10- 15	96.
15- 20	104.
20- 25	97.
25- 30	81.
30- 35	61.
35- 40	40.
40- 45	25.
45- 50	17.
50- 55	12.
55- 60	10.
60- 65	8.
65- 70	7.
70- 75	5.
75- 80	4.
80- 85	2.
85- 90	1.

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### 5-DEGREE ZONAL LUMEN SUMMARY

0- 5	24
5- 10	66
10- 15	96
15- 20	104
20- 25	97
25- 30	81
30- 35	61
35- 40	40
40- 45	25
45- 50	17
50- 55	12
55- 60	10
60- 65	8
65- 70	7
70- 75	5
75- 80	4
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	90
0- 20	289
0- 30	468
0- 40	569
0- 50	610
0- 60	632
0- 70	647
0- 80	656
0- 90	659
0-100	659
0-110	659
0-120	659
0-130	659
0-140	659
0-150	659
0-160	659
0-170	659
0-180	659

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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	107	105	111	108	105	103	104	102	100	100	99	97	97	95	94	92
2	107	102	98	94	105	100	96	93	97	94	91	94	91	89	91	89	87	85
3	102	95	90	86	100	93	89	85	91	87	83	88	85	82	86	83	81	79
4	96	89	83	79	95	87	82	78	85	81	77	83	79	76	81	78	75	74
5	92	83	77	73	90	82	77	72	80	75	72	79	74	71	77	73	70	69
6	87	78	72	68	86	77	72	68	76	71	67	74	70	67	73	69	66	65
7	83	74	68	63	82	73	67	63	72	67	63	71	66	63	69	65	62	61
8	79	70	64	60	78	69	64	60	68	63	59	67	62	59	66	62	59	57
9	76	66	60	56	75	66	60	56	65	60	56	64	59	56	63	59	56	54
10	73	63	57	53	72	62	57	53	62	57	53	61	56	53	60	56	53	52

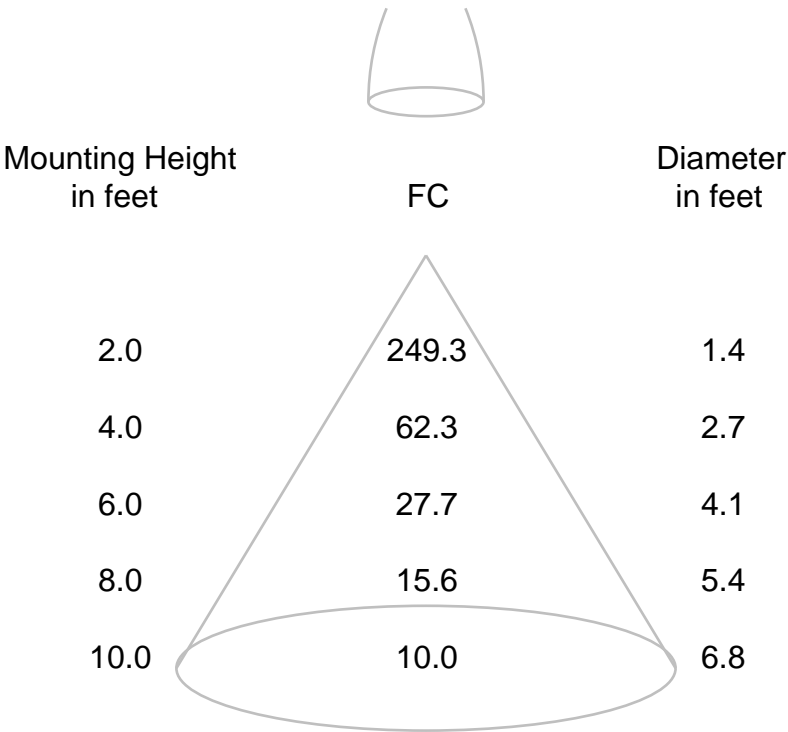
ALL CANDELA, LUMENS, LUMINANCE, AND VCP VALUES IN THIS REPORT ARE BASED ON ABSOLUTE PHOTOMETRY. THE COEFFICIENT OF UTILIZATION VALUES ARE BASED ON THE TOTAL ABSOLUTE LUMEN OUTPUT OF THIS LUMINAIRE SAMPLE.

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CONE OF LIGHT DIAGRAM

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





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CATALOG NUMBER: RDLED2AR8-40NHC-TW

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	0.3862
Chromaticity Ordinate y	0.3796
Observer	CIE 1976 2 degree
Chromaticity Ordinate u'	0.2277
Chromaticity Ordinate v'	0.5037
Correlated Color Temp CCT (K)	3869
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)	96
Color Rendering Index 4 (Moderate yellowish green)	92
Color Rendering Index 5 (Light bluish green)	92
Color Rendering Index 6 (Light blue)	93
Color Rendering Index 7 (Light violet)	95
Color Rendering Index 8 (Light reddish purple)	87
Color Rendering Index 9 (Strong red)	68
Color Rendering Index 10 (Strong yellow)	88
Color Rendering Index 11 (Strong green)	91
Color Rendering Index 12 (Strong blue)	72
Color Rendering Index 13 (Light yellowish pink (skin))	94
Color Rendering Index 14 (Moderate olive green (leaf))	97
ANSI C78.377-2008 Duv	0.000
Total Radiant Flux (milliWatts)	2277 *
ELECTRICAL FOR SPECTRORADIOMETRIC TEST	
Input Voltage (Volts AC )	120.0
Input Current (Amps AC )	0.072
Input Power (Watts)	8.38
Input Power Factor (%)	97.6
Input Current THD (%)	19.1
Input Voltage THD (%)	0.2
Off-State Power (Watts)	0.0

\*NOTE:

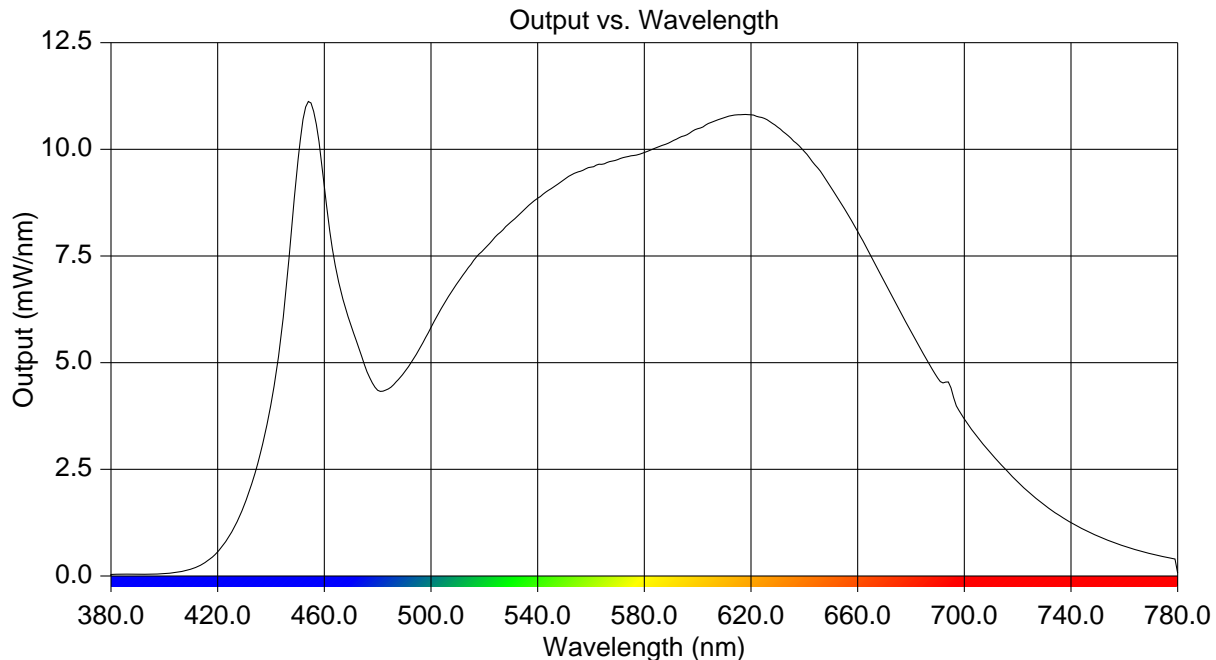
Proper calibration of integrating spheres for measuring total flux output of non-directional samples will produce reliable, repeatable results within the calibration tolerances of the equipment used. However, measurement of test samples with significant self absorption and/or directional output, even 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	0.036	515	7.303	650	9.104
385	0.041	520	7.664	655	8.609
390	0.039	525	8.004	660	8.075
395	0.041	530	8.299	665	7.484
400	0.059	535	8.584	670	6.910
405	0.090	540	8.848	675	6.308
410	0.161	545	9.075	680	5.735
415	0.306	550	9.293	685	5.157
420	0.568	555	9.467	690	4.641
425	1.006	560	9.582	695	4.409
430	1.662	565	9.661	700	3.676
435	2.628	570	9.759	705	3.252
440	4.026	575	9.848	710	2.867
445	6.338	580	9.923	715	2.530
450	9.641	585	10.053	720	2.205
455	11.086	590	10.176	725	1.914
460	9.131	595	10.317	730	1.665
465	6.990	600	10.483	735	1.445
470	5.874	605	10.629	740	1.247
475	4.959	610	10.747	745	1.082
480	4.353	615	10.814	750	0.937
485	4.426	620	10.810	755	0.810
490	4.768	625	10.725	760	0.699
495	5.247	630	10.520	765	0.603
500	5.826	635	10.260	770	0.519
505	6.377	640	9.949	775	0.449
510	6.882	645	9.566	780	0.068



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## CIE Chromaticity Diagram

