

REPORT NUMBER: RAB02057

ISSUE DATE: 06/08/16

PREPARED FOR: RAB LIGHTING INC.

CATALOG NUMBER: RDLED2AR8-30YYHC-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: 8.2418 W AT 120.0 VOLTS

(SEE PAGE 2 FOR MORE INFORMATION)

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DATE SAMPLE TESTED: 06/08/16

DEG	CANDELA	LUMENS
0	1309	
5	1243	111
15	651	181
25	246	117
35	113	71
45	36	29
55	18	17
65	11	11
75	6	6
85	2	2
90	0	

ZONAL LUMEN SUMMARY		
ZONE	LUMENS	%FIXT
0- 30	409	75.0
0- 40	480	88.0
0- 60	526	96.4
0- 90	545	100.0
90-180	0	0.0
0-180	545	100.0

TOTAL INPUT WATTS = 8.2

EFFICACY = 66.5 Lm/W

CIE TYPE - DIRECT

LUMINAIRE SPACING CRITERION = 0.5

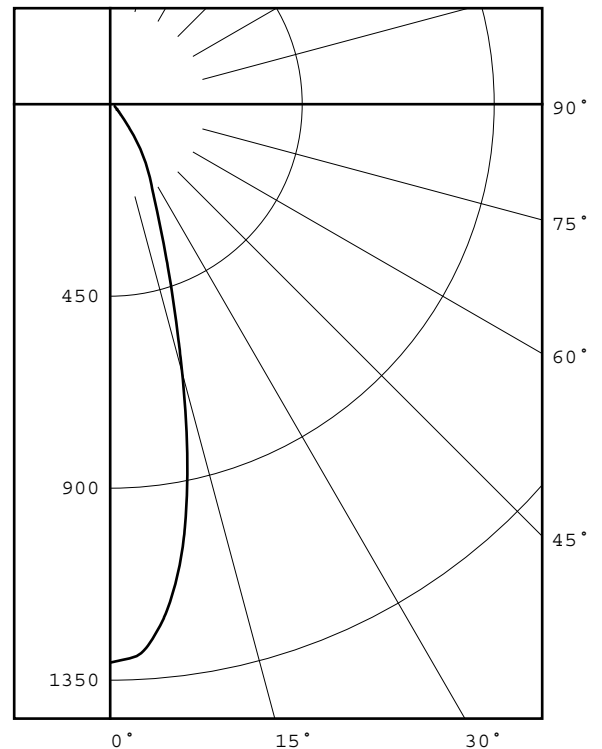
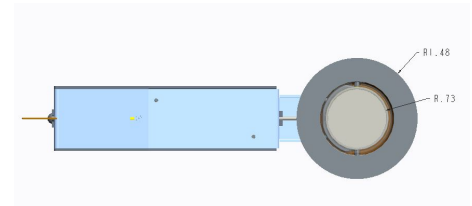
LUMINOUS DIAMETER: 0.950

LUMINANCE DATA IN CANDELA/SQ METER

ANGLE AVERAGE

IN DEG

45	111290.
55	68599.
65	56896.
75	50675.
85	50162.



Checked	<u>X.CAO</u>
Approved	<u>D.WANG-MUNSON</u>

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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%) : 29.9 DEGREES
FIELD ANGLE (10%): 67.1 DEGREES

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CANDELA DISTRIBUTION

	0.0
0.0	1309
2.5	1297
5.0	1243
7.5	1146
10.0	1008
12.5	835
15.0	651
17.5	499
20.0	385
22.5	303
25.0	246
27.5	206
30.0	175
32.5	144
35.0	113
37.5	84
40.0	61
42.5	46
45.0	36
47.5	29
50.0	25
52.5	21
55.0	18
57.5	16
60.0	14
62.5	13
65.0	11
67.5	10
70.0	8
72.5	7
75.0	6
77.5	5
80.0	4
82.5	3
85.0	2
87.5	1
90.0	0

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ZONAL LUMEN SUMMARY

0- 5	31.
5- 10	81.
10- 15	98.
15- 20	83.
20- 25	64.
25- 30	53.
30- 35	42.
35- 40	28.
40- 45	17.
45- 50	12.
50- 55	9.
55- 60	7.
60- 65	6.
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	31
5- 10	81
10- 15	98
15- 20	83
20- 25	64
25- 30	53
30- 35	42
35- 40	28
40- 45	17
45- 50	12
50- 55	9
55- 60	7
60- 65	6
65- 70	5
70- 75	4
75- 80	3
80- 85	2
85- 90	1

10-DEGREE ZONAL LUMEN SUMMARY

0- 10	111
0- 20	292
0- 30	409
0- 40	480
0- 50	509
0- 60	526
0- 70	537
0- 80	543
0- 90	545

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COEFFICIENTS OF UTILIZATION - ZONAL CAVITY METHOD

EFFECTIVE FLOOR CAVITY REFLECTANCE 0.20

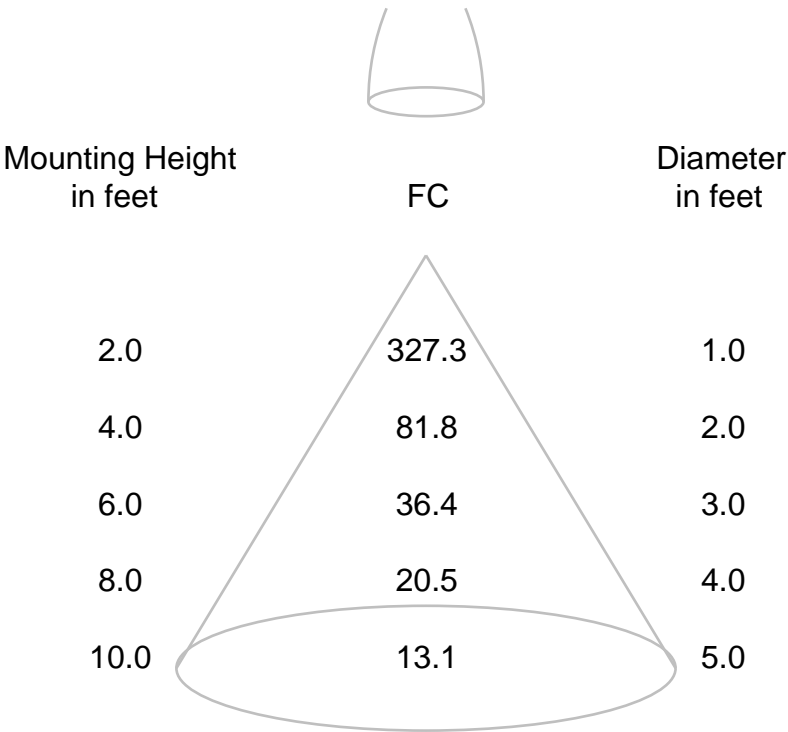
RC	80				70				50			30			10			0
RW	70	50	30	10	70	50	30	10	50	30	10	50	30	10	50	30	10	0
0	119	119	119	119	116	116	116	116	111	111	111	106	106	106	102	102	102	100
1	113	111	108	106	111	108	106	104	104	103	101	101	99	98	97	96	95	93
2	108	103	99	96	106	101	98	95	98	95	93	95	93	91	92	90	89	87
3	103	97	92	88	101	95	91	87	93	89	86	90	87	84	88	85	83	82
4	98	91	86	82	96	90	85	81	88	83	80	86	82	79	84	81	78	77
5	94	86	80	76	92	85	80	76	83	79	75	82	78	75	80	77	74	72
6	90	81	76	72	88	81	75	71	79	74	71	78	74	71	76	73	70	69
7	86	77	72	68	85	77	71	68	75	71	67	74	70	67	73	69	67	65
8	83	74	68	64	81	73	68	64	72	67	64	71	67	64	70	66	63	62
9	79	70	65	61	78	70	65	61	69	64	61	68	64	61	67	64	61	59
10	76	67	62	59	75	67	62	59	66	62	58	66	61	58	65	61	58	57

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	0.4636
Chromaticity Ordinate y	0.4112
Observer	CIE 1976 2 degree
Chromaticity Ordinate u'	0.2647
Chromaticity Ordinate v'	0.5281
Correlated Color Temp CCT (K)	2652
Color Rendering Index (CRIa)	92
Color Rendering Index 1 (Light greyish red)	92
Color Rendering Index 2 (Dark greyish yellow)	96
Color Rendering Index 3 (Strong yellowish green)	98
Color Rendering Index 4 (Moderate yellowish green)	92
Color Rendering Index 5 (Light bluish green)	92
Color Rendering Index 6 (Light blue)	96
Color Rendering Index 7 (Light violet)	91
Color Rendering Index 8 (Light reddish purple)	80
Color Rendering Index 9 (Strong red)	56
Color Rendering Index 10 (Strong yellow)	89
Color Rendering Index 11 (Strong green)	92
Color Rendering Index 12 (Strong blue)	85
Color Rendering Index 13 (Light yellowish pink (skin))	93
Color Rendering Index 14 (Moderate olive green (leaf))	98
ANSI C78.377-2008 Duv	0.000
Total Radiant Flux (milliWatts)	1949 *
ELECTRICAL FOR SPECTRORADIOMETRIC TEST	
Input Voltage (Volts AC)	120.0
Input Current (Amps AC)	0.071
Input Power (Watts)	8.24
Input Power Factor (%)	97.0
Input Current THD (%)	22.7
Input Voltage THD (%)	0.2
Off-State Power (Watts)	0.0

*NOTE:

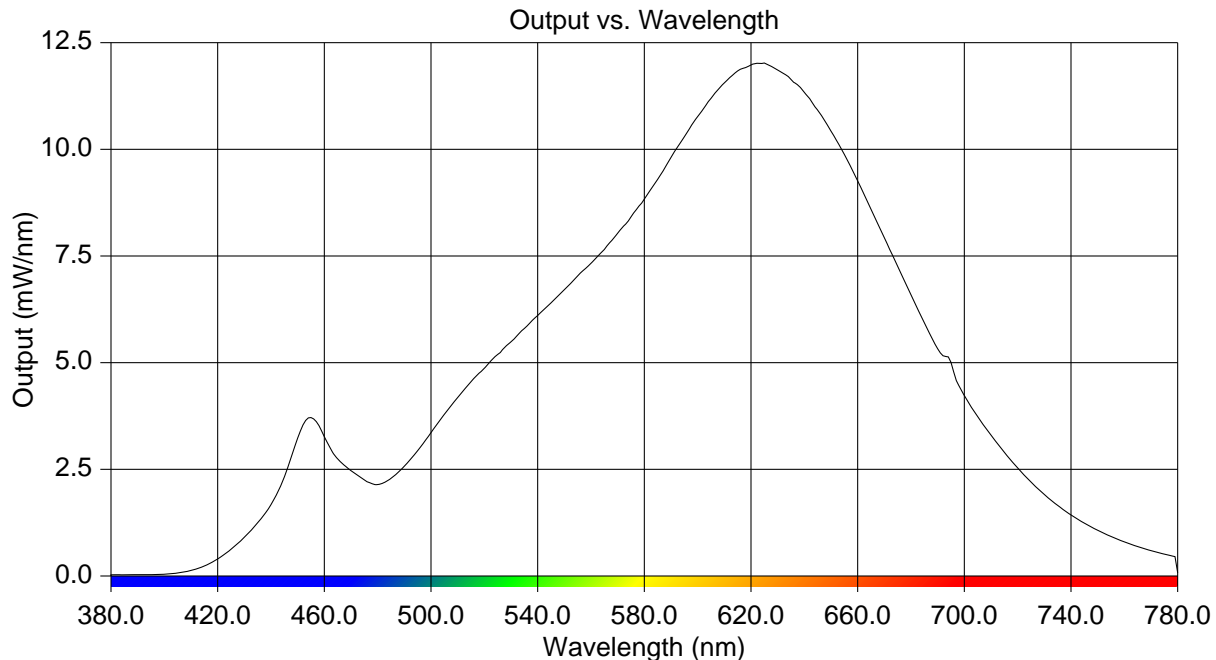
Proper calibration of integrating spheres for measuring total flux output of non-directional samples will produce reliable, repeatable results within the calibration tolerances of the equipment used. However, measurement of test samples with significant self absorption and/or directional output, even 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	0.027	515	4.553	650	10.426
385	0.028	520	4.867	655	9.882
390	0.028	525	5.192	660	9.257
395	0.031	530	5.486	665	8.601
400	0.042	535	5.800	670	7.927
405	0.071	540	6.105	675	7.255
410	0.128	545	6.401	680	6.588
415	0.233	550	6.705	685	5.934
420	0.399	555	7.041	690	5.326
425	0.627	560	7.328	695	5.006
430	0.906	565	7.652	700	4.225
435	1.244	570	8.028	705	3.737
440	1.673	575	8.416	710	3.299
445	2.320	580	8.830	715	2.900
450	3.232	585	9.297	720	2.534
455	3.713	590	9.819	725	2.195
460	3.264	595	10.294	730	1.908
465	2.746	600	10.776	735	1.655
470	2.468	605	11.194	740	1.430
475	2.249	610	11.554	745	1.237
480	2.140	615	11.838	750	1.073
485	2.286	620	11.976	755	0.924
490	2.568	625	12.023	760	0.801
495	2.938	630	11.857	765	0.688
500	3.361	635	11.638	770	0.594
505	3.786	640	11.334	775	0.512
510	4.185	645	10.917	780	0.077



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CIE Chromaticity Diagram

