

REPORT NUMBER: RAB01209

ISSUE DATE: 09/30/15

PREPARED FOR: RAB LIGHTING INC.

CATALOG NUMBER: RDLED2R8-20YYHC-TW (2" Round recessed downlight - narrow beam - >90 High CRI)

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

LAMP: ONE WHITE MULTI-CHIP LIGHT EMITTING DIODES (LEDs), VERTICAL BASE-UP POSITION.

NOTE: DATA SHOWN IS ABSOLUTE FOR THE SAMPLE PROVIDED.

TOTAL INPUT WATTS: 8.2315 W AT 120.0 VOLTS

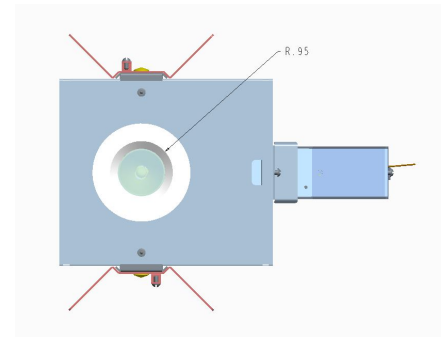
TEST PROCEDURE: IESNA LM-79-08

TEST DISTANCE: 28.25 FEET

PREPARED FOR: RAB LIGHTING INC.

LED DRIVER: RD-008-E1-A0200

ACCREDITED LABORATORY CODE 201085-0



DEG	CANDELA	LUMENS
0	2245	
5	1890	152
15	474	143
25	193	91
35	98	60
45	15	14
55	6	5
65	3	3
75	1	1
85	0	0
90	0	

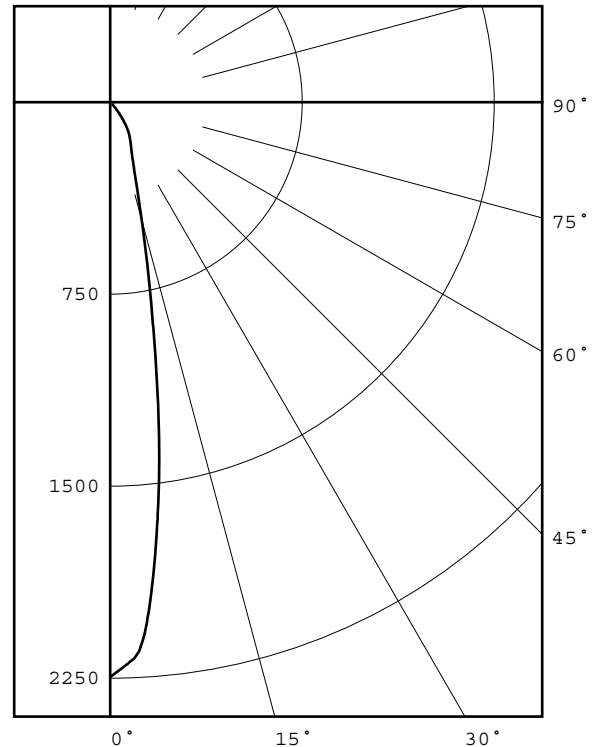
ZONAL LUMEN ZONE	SUMMARY LUMENS	%FIXT
0- 30	385	82.2
0- 40	445	94.9
0- 60	465	99.2
0- 90	468	100.0
90-180	0	0.0
0-180	468	100.0

TOTAL INPUT WATTS = 8.2

EFFICACY = 57.1 Lm/W

CIE TYPE - DIRECT

LUMINAIRE SPACING CRITERION = 0.3



Checked X.CAO  
Approved D.WANG-MUNSON

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BEAM ANGLE (50%) : 18.9 DEGREES  
FIELD ANGLE (10%): 44.8 DEGREES

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## CANDELA DISTRIBUTION

	0.0
0.0	2245
2.5	2174
5.0	1890
7.5	1464
10.0	1023
12.5	692
15.0	474
17.5	347
20.0	270
22.5	223
25.0	193
27.5	171
30.0	150
32.5	126
35.0	98
37.5	69
40.0	44
42.5	25
45.0	15
47.5	10
50.0	9
52.5	7
55.0	6
57.5	5
60.0	4
62.5	3
65.0	3
67.5	2
70.0	2
72.5	1
75.0	1
77.5	1
80.0	0
82.5	0
85.0	0
87.5	0
90.0	0

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ZONAL LUMEN SUMMARY

0- 5	50.
5- 10	102.
10- 15	84.
15- 20	59.
20- 25	47.
25- 30	43.
30- 35	37.
35- 40	23.
40- 45	10.
45- 50	4.
50- 55	3.
55- 60	2.
60- 65	2.
65- 70	1.
70- 75	1.
75- 80	0.
80- 85	0.
85- 90	0.

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5-DEGREE  
ZONAL LUMEN SUMMARY

0- 5	50
5- 10	102
10- 15	84
15- 20	59
20- 25	47
25- 30	43
30- 35	37
35- 40	23
40- 45	10
45- 50	4
50- 55	3
55- 60	2
60- 65	2
65- 70	1
70- 75	1
75- 80	0
80- 85	0
85- 90	0

10-DEGREE  
ZONAL LUMEN SUMMARY

0- 10	152
0- 20	294
0- 30	385
0- 40	445
0- 50	459
0- 60	465
0- 70	467
0- 80	468
0- 90	468

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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	112	110	108	112	110	108	106	106	104	103	102	101	100	99	98	97	95
2	110	106	102	100	108	104	101	98	101	98	96	98	96	94	95	94	92	91
3	106	100	96	93	104	99	95	92	96	93	91	94	92	89	92	90	88	87
4	102	95	91	87	100	94	90	87	92	89	86	90	87	85	89	86	84	83
5	98	91	86	83	96	90	86	82	89	85	82	87	84	81	86	83	80	79
6	94	87	82	79	93	86	82	79	85	81	78	84	80	78	83	80	77	76
7	91	84	79	75	90	83	79	75	82	78	75	81	77	75	80	77	74	73
8	88	80	76	72	87	80	75	72	79	75	72	78	74	72	77	74	71	70
9	85	78	73	70	84	77	73	70	76	72	69	76	72	69	75	71	69	68
10	83	75	70	67	82	75	70	67	74	70	67	73	69	67	73	69	67	66

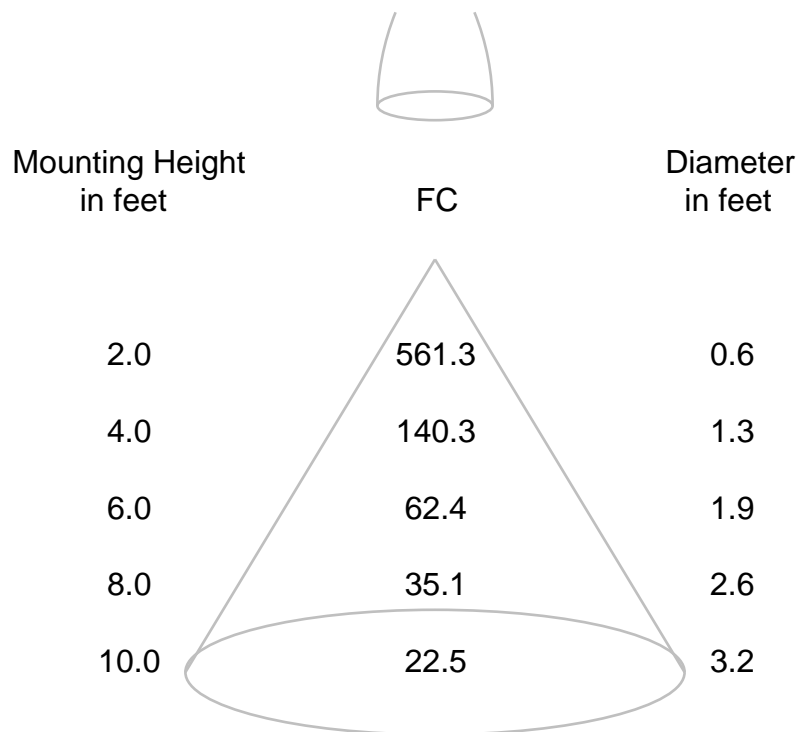
ALL CANDELA, LUMENS, LUMINANCE, AND VCP VALUES IN THIS REPORT ARE BASED ON ABSOLUTE PHOTOMETRY. THE COEFFICIENT OF UTILIZATION VALUES ARE BASED ON THE TOTAL ABSOLUTE LUMEN OUTPUT OF THIS LUMINAIRE SAMPLE.

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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 WHITE PAINTED FINNED METAL HEAT SINK, 1 WHITE CIRCUIT BOARD WITH ONE LED, MOLDED PLASTIC REFLECTOR WITH SPECULAR FINISH, HOLOGRAPHIC FLAT PLASTIC LENS, CAST WHITE PAINTED METAL LOWER HOUSING.

LAMP: ONE WHITE MULTI-CHIP LIGHT EMITTING DIODES (LEDs), VERTICAL BASE-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:	CHROMA PROGRAMMABLE AC POWER SOURCE MODEL 61602	Calibration Due: N/A
	CHROMA PROGRAMMABLE DIGITAL POWER METER MODEL 66202	3/9/16
	OCEAN OPTICS QE65PRO Spectroradiometer	8/21/16
	RAB 2.0 meter Diameter Integrating Sphere, 4PI Geometry	8/21/16

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 X.CAO

Approved D.WANG-MUNSON  
Lighting Engineer



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RESULTS:

SPECTRORADIOMETRIC	
Observer	CIE 1931 2 degree
Chromaticity Ordinate x	0.4615
Chromaticity Ordinate y	0.4145
Observer	CIE 1976 2 degree
Chromaticity Ordinate u'	0.2618
Chromaticity Ordinate v'	0.5291
Correlated Color Temp CCT (K)	2707
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)	89
Color Rendering Index 5 (Light bluish green)	91
Color Rendering Index 6 (Light blue)	98
Color Rendering Index 7 (Light violet)	89
Color Rendering Index 8 (Light reddish purple)	78
Color Rendering Index 9 (Strong red)	54
Color Rendering Index 10 (Strong yellow)	93
Color Rendering Index 11 (Strong green)	89
Color Rendering Index 12 (Strong blue)	82
Color Rendering Index 13 (Light yellowish pink (skin))	93
Color Rendering Index 14 (Moderate olive green (leaf))	100
ANSI C78.377-2008 Duv	0.001
Total Radiant Flux (milliWatts)	1641 *
ELECTRICAL FOR SPECTRORADIOMETRIC TEST	
Input Voltage (Volts AC )	120.0
Input Current (Amps AC )	0.071
Input Power (Watts)	8.23
Input Power Factor (%)	96.6
Input Current THD (%)	22.6
Input Voltage THD (%)	0.2
Off-State Power (Watts)	0.0

\*NOTE:

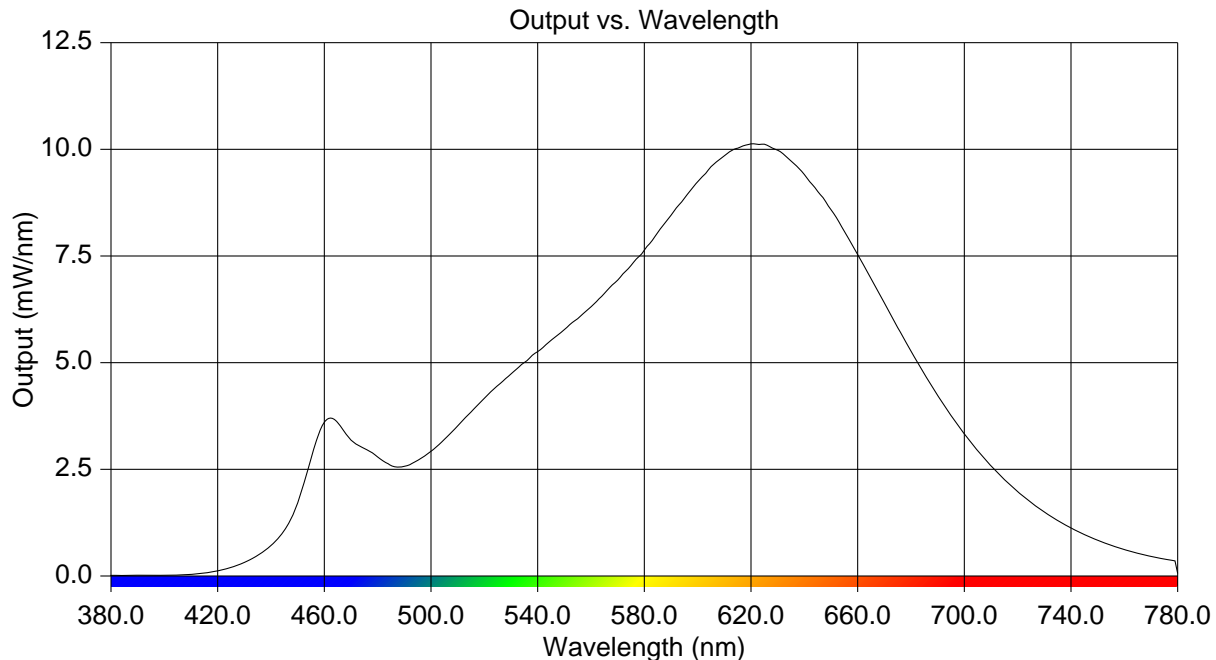
Proper calibration of integrating spheres for measuring total flux output of non-directional samples will produce reliable, repeatable results within the calibration tolerances of the equipment used. However, measurement of test samples with significant self absorption and/or directional output, even 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	0.014	515	3.842	650	8.585
385	0.014	520	4.164	655	8.084
390	0.014	525	4.459	660	7.534
395	0.015	530	4.736	665	6.975
400	0.016	535	5.003	670	6.404
405	0.024	540	5.259	675	5.823
410	0.040	545	5.530	680	5.266
415	0.068	550	5.775	685	4.733
420	0.117	555	6.030	690	4.232
425	0.202	560	6.304	695	3.773
430	0.318	565	6.621	700	3.336
435	0.487	570	6.934	705	2.939
440	0.713	575	7.277	710	2.580
445	1.069	580	7.637	715	2.259
450	1.715	585	8.051	720	1.977
455	2.748	590	8.458	725	1.723
460	3.605	595	8.843	730	1.496
465	3.595	600	9.242	735	1.297
470	3.188	605	9.593	740	1.122
475	2.989	610	9.850	745	0.969
480	2.789	615	10.026	750	0.841
485	2.591	620	10.128	755	0.724
490	2.572	625	10.121	760	0.623
495	2.711	630	9.979	765	0.536
500	2.924	635	9.728	770	0.462
505	3.201	640	9.410	775	0.397
510	3.516	645	9.015	780	0.060



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## CIE Chromaticity Diagram

