

REPORT NUMBER: RAB01767

ISSUE DATE: 03/11/16

PREPARED FOR: RAB LIGHTING INC.

CATALOG NUMBER: RDLED2R8-40N-TW (2" Round recessed downlight - wide beam)

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.

(SEE PAGE 2 FOR MORE INFORMATION)

CANDELA DISTRIBUTION

	0.0	22.5	45.0	67.5	90.0
0	1317	1317	1317	1317	1317
5	1290	1290	1289	1291	1290
15	924	930	930	929	932
25	460	462	465	468	469
35	161	162	163	165	165
45	22	21	21	21	21
55	7	7	8	8	8
65	5	4	4	5	4
75	2	2	2	2	2
85	0	0	0	0	0
90	0	0	0	0	0

FLUX

119
255
212
103
21
7
4
2
0

ZONAL LUMEN SUMMARY

ZONE	LUMENS	%FIXT
0- 30	587	81.0
0- 40	690	95.2
0- 60	718	99.0
0- 90	725	100.0
90-180	0	0.0
0-180	725	100.0

TOTAL INPUT WATTS = 8.3

EFFICACY = 87.3 lm/W

CIE TYPE - DIRECT

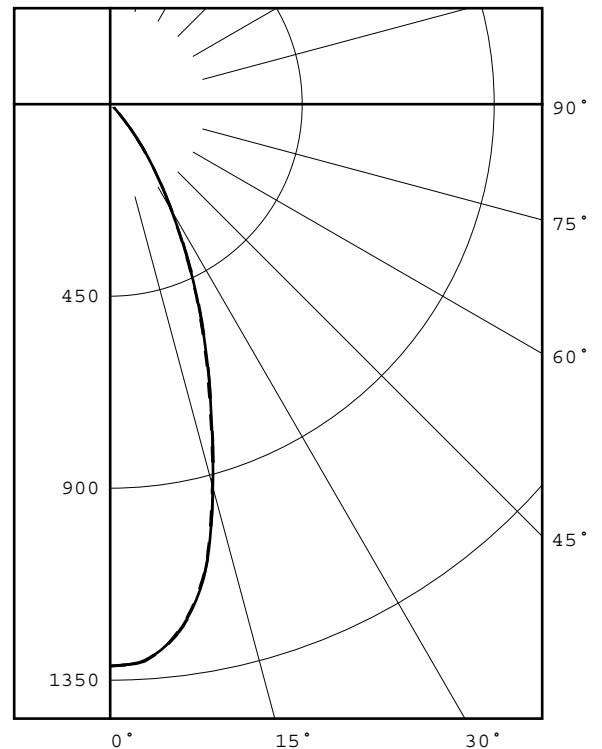
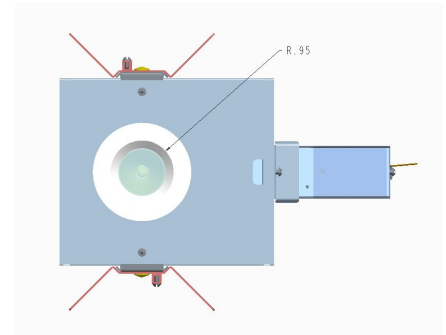
PLANE : 0-DEG 90-DEG

SPACING CRITERIA : 0.6 0.7

LUMINOUS DIAMETER: 0.950

LUMINANCE DATA IN CANDELA/SQ METER

ANGLE IN DEG	AVERAGE 0-DEG	AVERAGE 45-DEG	AVERAGE 90-DEG
45	68010.	64919.	64919.
55	26677.	30489.	30489.
65	25862.	20689.	20689.
75	16892.	16892.	16892.
85	0.	0.	0.



LEGEND:

0-deg: - - - - -
45-deg: - - - - -
90-deg: - - - - -

Checked X.CAO
Approved D.WANG-MUNSON

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ADDITIONAL INFORMATION

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: 8.3233 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

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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PLANE : 0-DEG 90-DEG
BEAM ANGLE (50%) : 40.3 X 40.9 DEGREES
FIELD ANGLE (10%): 72.8 X 73.2 DEGREES

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CANDELA DISTRIBUTION

	0.0	22.5	45.0	67.5	90.0
0.0	1317	1317	1317	1317	1317
2.5	1314	1314	1312	1314	1313
5.0	1290	1290	1289	1291	1290
7.5	1242	1244	1244	1247	1246
10.0	1170	1172	1174	1176	1174
12.5	1064	1068	1069	1070	1068
15.0	924	930	930	929	932
17.5	785	790	792	791	795
20.0	666	670	674	673	677
22.5	558	561	564	567	569
25.0	460	462	465	468	469
27.5	366	368	370	373	375
30.0	285	286	287	290	292
32.5	218	220	220	222	223
35.0	161	162	163	165	165
37.5	109	110	111	112	113
40.0	66	66	68	68	69
42.5	37	35	36	36	36
45.0	22	21	21	21	21
47.5	15	14	14	15	15
50.0	11	11	11	11	11
52.5	9	9	9	9	9
55.0	7	7	8	8	8
57.5	6	6	7	7	7
60.0	6	6	6	6	6
62.5	5	5	5	5	5
65.0	5	4	4	5	4
67.5	4	4	4	4	4
70.0	3	3	3	3	3
72.5	3	3	3	3	3
75.0	2	2	2	2	2
77.5	2	2	2	2	2
80.0	1	1	1	1	1
82.5	0	0	0	0	0
85.0	0	0	0	0	0
87.5	0	0	0	0	0
90.0	0	0	0	0	0

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ZONAL LUMEN SUMMARY

0- 5	31.
5- 10	88.
10- 15	125.
15- 20	130.
20- 25	118.
25- 30	94.
30- 35	65.
35- 40	38.
40- 45	15.
45- 50	6.
50- 55	4.
55- 60	3.
60- 65	2.
65- 70	2.
70- 75	1.
75- 80	1.
80- 85	0.
85- 90	0.

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5-DEGREE ZONAL LUMEN SUMMARY

0- 5	31
5- 10	88
10- 15	125
15- 20	130
20- 25	118
25- 30	94
30- 35	65
35- 40	38
40- 45	15
45- 50	6
50- 55	4
55- 60	3
60- 65	2
65- 70	2
70- 75	1
75- 80	1
80- 85	0
85- 90	0
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	119
0- 20	375
0- 30	587
0- 40	690
0- 50	711
0- 60	718
0- 70	722
0- 80	725
0- 90	725
0-100	725
0-110	725
0-120	725
0-130	725
0-140	725
0-150	725
0-160	725
0-170	725
0-180	725

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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	107	112	109	107	105	105	104	102	101	100	99	98	97	96	94
2	109	104	101	98	107	103	99	96	99	97	94	97	94	92	94	92	90	89
3	104	98	94	90	102	97	93	89	94	91	88	92	89	86	90	87	85	84
4	99	93	88	84	98	91	87	83	89	85	82	87	84	81	86	83	80	79
5	95	88	82	78	94	87	82	78	85	81	77	83	80	77	82	79	76	75
6	91	83	78	74	90	82	77	73	81	76	73	79	75	72	78	75	72	71
7	87	79	73	70	86	78	73	69	77	72	69	76	72	69	75	71	68	67
8	84	75	70	66	82	74	69	66	73	69	65	72	68	65	72	68	65	64
9	80	72	66	63	79	71	66	62	70	66	62	69	65	62	69	65	62	61
10	77	68	63	60	76	68	63	60	67	63	59	66	62	59	66	62	59	58

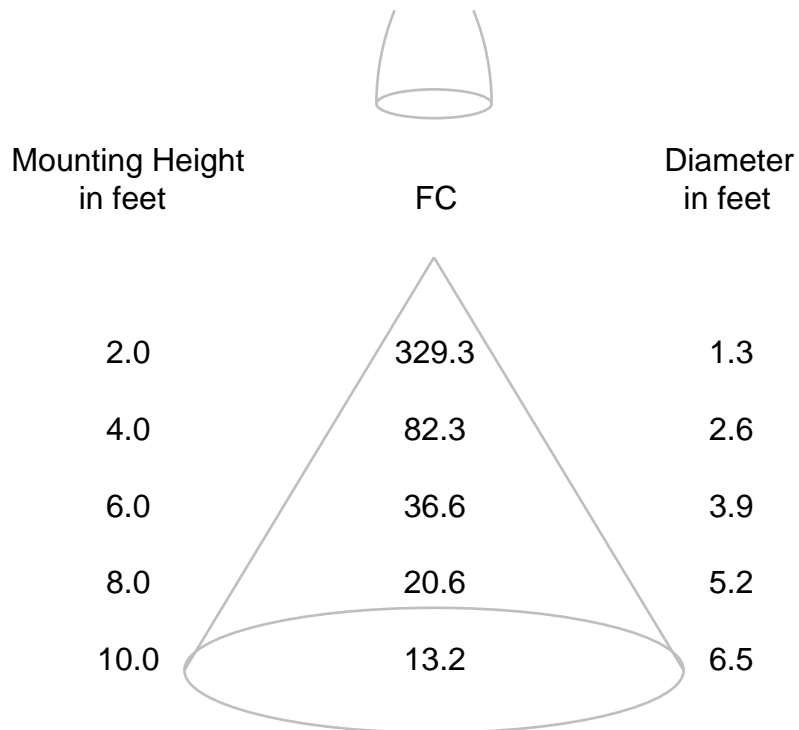
ALL CANDELA, LUMENS, LUMINANCE, AND VCP VALUES IN THIS REPORT ARE BASED ON ABSOLUTE PHOTOMETRY. THE COEFFICIENT OF UTILIZATION VALUES ARE BASED ON THE TOTAL ABSOLUTE LUMEN OUTPUT OF THIS LUMINAIRE SAMPLE.

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CONE OF LIGHT DIAGRAM

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



Note: The candela values used to generate this diagram were obtained by averaging the photometric data into a single plane.

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DATE: 3/11/2016
PREPARED FOR: RAB LIGHTING INC.
CATALOG NUMBER: RDLED2R8-40N-TW (2" Round recessed downlight - wide beam)

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 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	3/10/17

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 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	0.3896
Chromaticity Ordinate y	0.3828
Observer	CIE 1976 2 degree
Chromaticity Ordinate u'	0.2287
Chromaticity Ordinate v'	0.5056
Correlated Color Temp CCT (K)	3806
Color Rendering Index (CRIa)	83
Color Rendering Index 1 (Light greyish red)	81
Color Rendering Index 2 (Dark greyish yellow)	87
Color Rendering Index 3 (Strong yellowish green)	93
Color Rendering Index 4 (Moderate yellowish green)	83
Color Rendering Index 5 (Light bluish green)	82
Color Rendering Index 6 (Light blue)	84
Color Rendering Index 7 (Light violet)	87
Color Rendering Index 8 (Light reddish purple)	66
Color Rendering Index 9 (Strong red)	13
Color Rendering Index 10 (Strong yellow)	71
Color Rendering Index 11 (Strong green)	82
Color Rendering Index 12 (Strong blue)	68
Color Rendering Index 13 (Light yellowish pink (skin))	82
Color Rendering Index 14 (Moderate olive green (leaf))	96
ANSI C78.377-2008 Duv	0.000
Total Radiant Flux (milliWatts)	2232 *
ELECTRICAL FOR SPECTRORADIOMETRIC TEST	
Input Voltage (Volts AC)	120.0
Input Current (Amps AC)	0.071
Input Power (Watts)	8.32
Input Power Factor (%)	97.5
Input Current THD (%)	19.9
Input Voltage THD (%)	0.2
Off-State Power (Watts)	0.0

*NOTE:

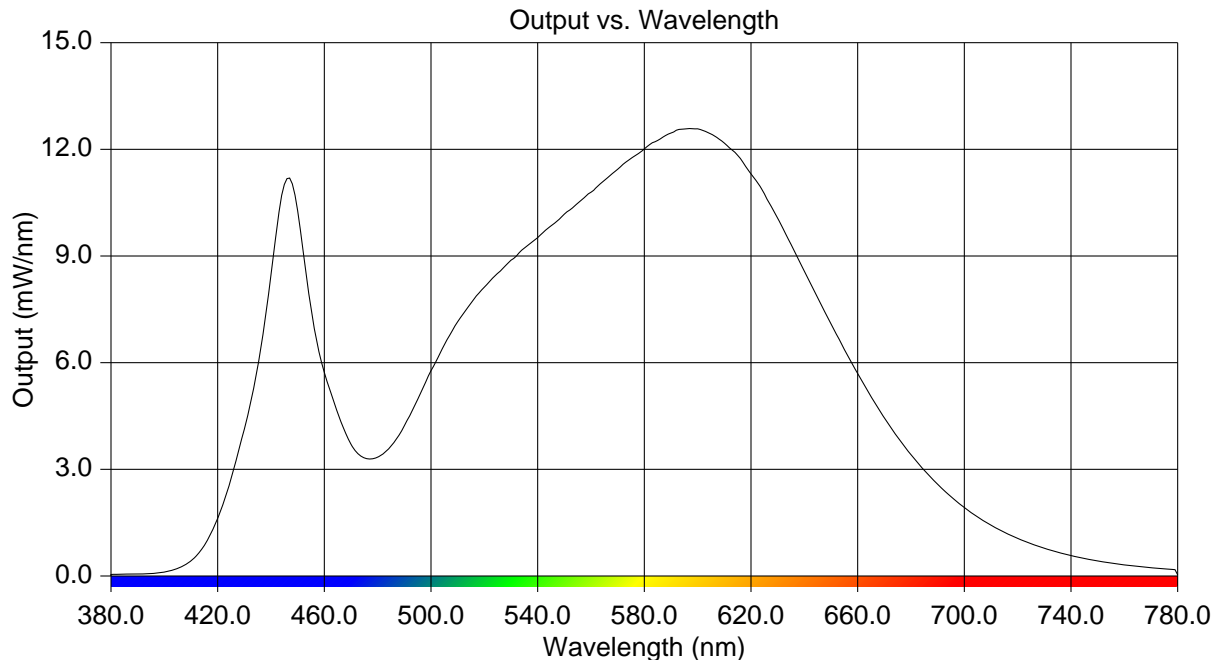
Proper calibration of integrating spheres for measuring total flux output of non-directional samples will produce reliable, repeatable results within the calibration tolerances of the equipment used. However, measurement of test samples with significant self absorption and/or directional output, even 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	0.043	515	7.679	650	7.082
385	0.046	520	8.121	655	6.371
390	0.056	525	8.505	660	5.702
395	0.070	530	8.882	665	5.045
400	0.115	535	9.228	670	4.446
405	0.207	540	9.516	675	3.900
410	0.429	545	9.850	680	3.413
415	0.859	550	10.178	685	2.975
420	1.613	555	10.481	690	2.577
425	2.721	560	10.793	695	2.232
430	4.128	565	11.121	700	1.927
435	5.862	570	11.439	705	1.661
440	8.498	575	11.745	710	1.427
445	11.013	580	12.012	715	1.231
450	10.271	585	12.250	720	1.057
455	7.523	590	12.459	725	0.907
460	5.725	595	12.571	730	0.778
465	4.584	600	12.577	735	0.667
470	3.705	605	12.439	740	0.572
475	3.323	610	12.176	745	0.492
480	3.345	615	11.831	750	0.425
485	3.657	620	11.309	755	0.364
490	4.226	625	10.752	760	0.314
495	4.972	630	10.059	765	0.271
500	5.775	635	9.329	770	0.233
505	6.501	640	8.573	775	0.202
510	7.151	645	7.842	780	0.030



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CIE Chromaticity Diagram

