

REPORT NUMBER: RAB01758

ISSUE DATE: 03/09/16

PREPARED FOR: RAB LIGHTING INC.

CATALOG NUMBER: RDLED2R8-20N-TW (2" Round recessed downlight - narrow 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.

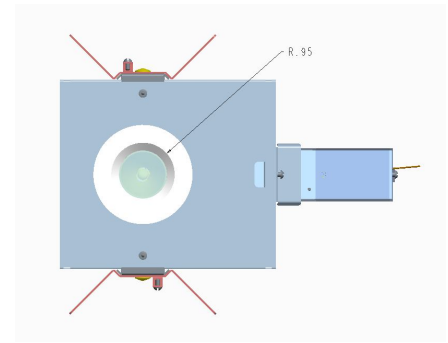
(SEE PAGE 2 FOR MORE INFORMATION)

CANDELA DISTRIBUTION

	0.0	22.5	45.0	67.5	90.0
0	3773	3773	3773	3773	3773
5	3221	3261	3228	3253	3219
15	732	747	746	754	734
25	296	302	301	304	305
35	155	155	155	153	152
45	19	18	18	19	19
55	9	9	10	10	10
65	3	4	3	4	4
75	2	2	2	2	2
85	0	0	0	0	0
90	0	0	0	0	0

FLUX

255
225
142
93
19
8
4
2
0



ZONAL LUMEN SUMMARY

ZONE	LUMENS	%FIXT
0- 30	622	83.1
0- 40	716	95.6
0- 60	743	99.2
0- 90	749	100.0
90-180	0	0.0
0-180	749	100.0

TOTAL INPUT WATTS = 8.3

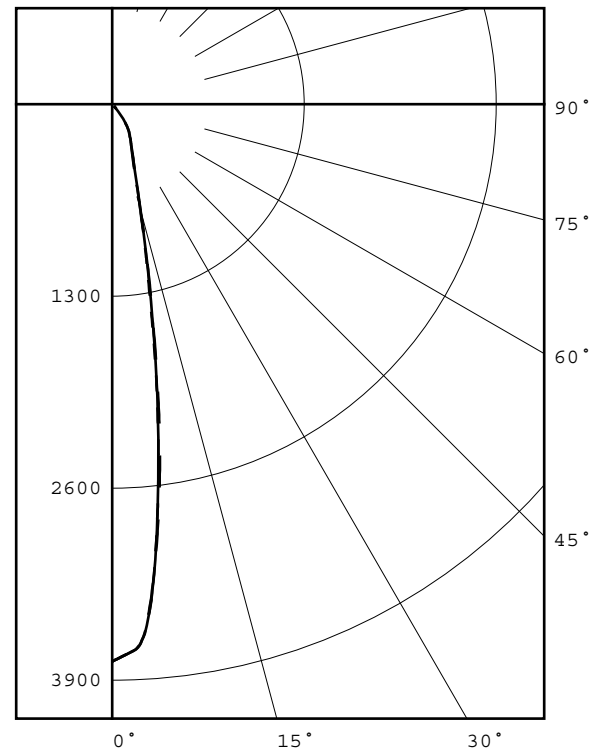
EFFICACY = 90.2 lm/W

CIE TYPE - DIRECT

PLANE	: 0-DEG	90-DEG
SPACING CRITERIA	: 0.3	0.3
PLANE	: 0-DEG	90-DEG
LUMINOUS LENGTH	: 1.780	1.780

LUMINANCE DATA IN CANDELA/SQ METER

ANGLE IN DEG	AVERAGE 0-DEG	AVERAGE 45-DEG	AVERAGE 90-DEG
45	13140.	12449.	13140.
55	7673.	8526.	8526.
65	3471.	3471.	4629.
75	3779.	3779.	3779.
85	0.	0.	0.



LEGEND:

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

Checked X.CAO
Approved D.WANG-MUNSON

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ISSUE DATE: 03/09/16
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PAGE: 2 OF 8
DATE SAMPLE TESTED: 03/09/16

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: 8.3386 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.

REPORT NUMBER: RAB01758
ISSUE DATE: 03/09/16
PREPARED FOR: RAB LIGHTING INC.

PAGE: 3 OF 8
DATE SAMPLE TESTED: 03/09/16

PLANE : 0-DEG 90-DEG
BEAM ANGLE (50%) : 18.2 X 18.7 DEGREES
FIELD ANGLE (10%): 43.1 X 43.6 DEGREES

REPORT NUMBER: RAB01758
 ISSUE DATE: 03/09/16
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PAGE: 4 OF 8
 DATE SAMPLE TESTED: 03/09/16

CANDELA DISTRIBUTION

	0.0	22.5	45.0	67.5	90.0
0.0	3773	3773	3773	3773	3773
2.5	3692	3706	3696	3703	3694
5.0	3221	3261	3228	3253	3219
7.5	2401	2455	2399	2479	2473
10.0	1608	1655	1646	1647	1673
12.5	1061	1090	1089	1093	1104
15.0	732	747	746	754	734
17.5	534	552	543	548	539
20.0	419	431	426	430	427
22.5	352	353	350	355	358
25.0	296	302	301	304	305
27.5	262	266	266	267	268
30.0	235	236	236	237	236
32.5	201	200	202	200	200
35.0	155	155	155	153	152
37.5	111	106	105	103	103
40.0	66	63	61	60	60
42.5	33	32	31	32	31
45.0	19	18	18	19	19
47.5	14	13	14	14	14
50.0	11	11	12	12	12
52.5	10	10	11	11	11
55.0	9	9	10	10	10
57.5	8	8	8	9	9
60.0	7	7	7	7	7
62.5	5	5	5	5	5
65.0	3	4	3	4	4
67.5	3	3	3	3	3
70.0	2	2	2	2	2
72.5	2	2	2	2	2
75.0	2	2	2	2	2
77.5	1	1	1	1	1
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

REPORT NUMBER: RAB01758
ISSUE DATE: 03/09/16
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PAGE: 5 OF 8
DATE SAMPLE TESTED: 03/09/16

ZONAL LUMEN SUMMARY

0- 5	85.
5- 10	170.
10- 15	133.
15- 20	92.
20- 25	75.
25- 30	68.
30- 35	58.
35- 40	35.
40- 45	13.
45- 50	6.
50- 55	5.
55- 60	4.
60- 65	3.
65- 70	1.
70- 75	1.
75- 80	1.
80- 85	0.
85- 90	0.

REPORT NUMBER: RAB01758
 ISSUE DATE: 03/09/16
 PREPARED FOR: RAB LIGHTING INC.

PAGE: 6 OF 8
 DATE SAMPLE TESTED: 03/09/16

5-DEGREE ZONAL LUMEN SUMMARY

0- 5	85
5- 10	170
10- 15	133
15- 20	92
20- 25	75
25- 30	68
30- 35	58
35- 40	35
40- 45	13
45- 50	6
50- 55	5
55- 60	4
60- 65	3
65- 70	1
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	255
0- 20	480
0- 30	622
0- 40	716
0- 50	735
0- 60	743
0- 70	747
0- 80	749
0- 90	749
0-100	749
0-110	749
0-120	749
0-130	749
0-140	749
0-150	749
0-160	749
0-170	749
0-180	749

REPORT NUMBER: RAB01758
ISSUE DATE: 03/09/16

PAGE: 7 OF 8
DATE SAMPLE TESTED: 03/09/16

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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	105	103	102	101	100	99	98	97	96
2	110	106	103	100	108	104	101	99	101	99	97	98	96	95	96	94	93	91
3	106	101	97	93	104	99	96	93	97	94	91	94	92	90	92	90	88	87
4	102	96	91	88	100	95	91	87	93	89	86	91	88	86	89	87	85	83
5	98	92	87	84	97	91	86	83	89	85	82	88	84	82	86	83	81	80
6	95	88	83	80	94	87	83	79	86	82	79	84	81	78	83	80	78	77
7	92	84	80	76	91	84	79	76	83	79	76	82	78	75	81	77	75	74
8	89	81	77	73	88	81	76	73	80	76	73	79	75	73	78	75	72	71
9	86	78	74	71	85	78	74	71	77	73	70	76	73	70	76	72	70	69
10	83	76	71	68	83	75	71	68	75	71	68	74	70	68	73	70	68	67

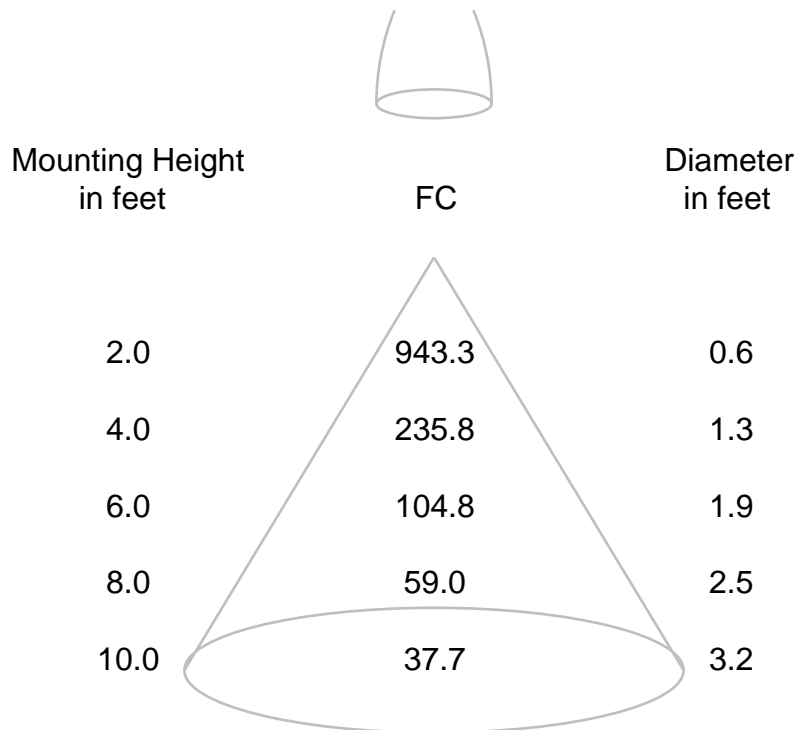
ALL CANDELA, LUMENS, LUMINANCE, AND VCP VALUES IN THIS REPORT ARE BASED ON ABSOLUTE PHOTOMETRY. THE COEFFICIENT OF UTILIZATION VALUES ARE BASED ON THE TOTAL ABSOLUTE LUMEN OUTPUT OF THIS LUMINAIRE SAMPLE.

REPORT NUMBER: RAB01758
ISSUE DATE: 03/09/16
PREPARED FOR: RAB LIGHTING INC.

PAGE: 8 OF 8
DATE SAMPLE TESTED: 03/09/16

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.

REPORT NUMBER: RAB01759 Page 1 of 4
DATE: 3/8/2016
PREPARED FOR: RAB LIGHTING INC.
CATALOG NUMBER: RDLED2R8-20N-TW (2" Round recessed downlight - narrow 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	2/29/17

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 X.CAO

Approved D.WANG-MUNSON
Lighting Engineer

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Page 2 of 4

RESULTS:

SPECTRORADIOMETRIC	
Observer	CIE 1931 2 degree
Chromaticity Ordinate x	0.3881
Chromaticity Ordinate y	0.3815
Observer	CIE 1976 2 degree
Chromaticity Ordinate u'	0.2282
Chromaticity Ordinate v'	0.5048
Correlated Color Temp CCT (K)	3833
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)	92
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)	67
Color Rendering Index 9 (Strong red)	14
Color Rendering Index 10 (Strong yellow)	71
Color Rendering Index 11 (Strong green)	83
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)	2310 *
ELECTRICAL FOR SPECTRORADIOMETRIC TEST	
Input Voltage (Volts AC)	120.0
Input Current (Amps AC)	0.071
Input Power (Watts)	8.34
Input Power Factor (%)	97.5
Input Current THD (%)	19.6
Input Voltage THD (%)	0.2
Off-State Power (Watts)	0.0

*NOTE:

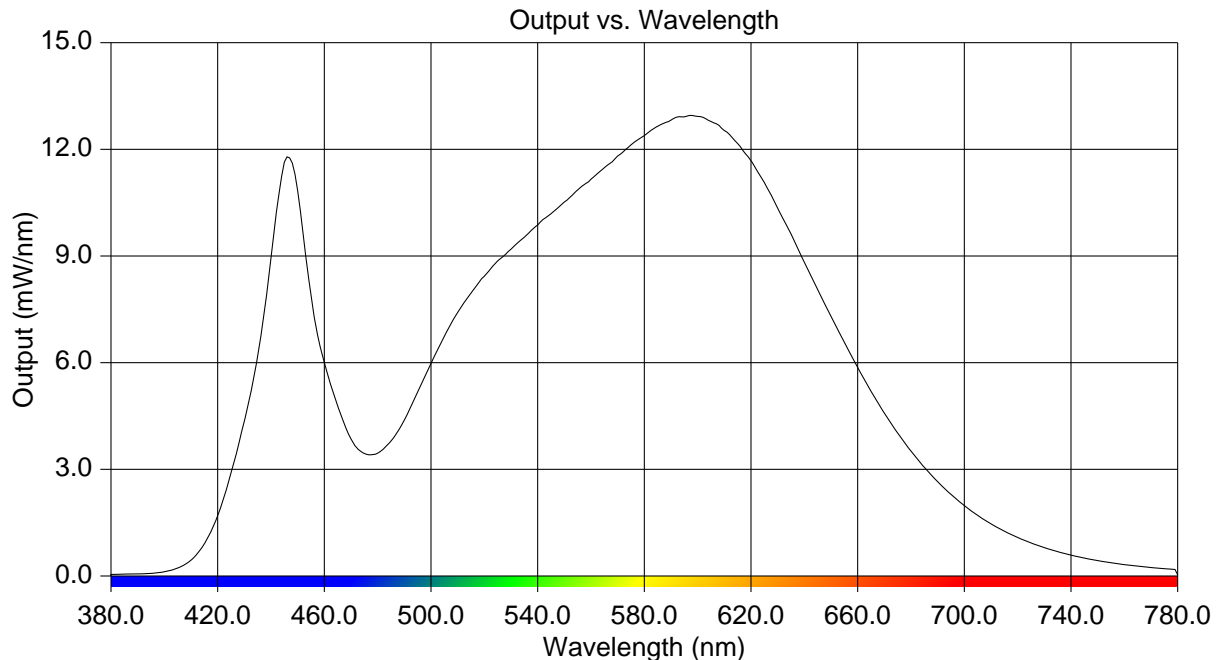
Proper calibration of integrating spheres for measuring total flux output of non-directional samples will produce reliable, repeatable results within the calibration tolerances of the equipment used. However, measurement of test samples with significant self absorption and/or directional output, even 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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Page 3 of 4

RESULTS:

Wavelength	mW per nm	Wavelength	mW per nm	Wavelength	mW per nm
380	0.044	515	7.963	650	7.302
385	0.050	520	8.429	655	6.575
390	0.057	525	8.858	660	5.865
395	0.074	530	9.192	665	5.201
400	0.119	535	9.532	670	4.578
405	0.223	540	9.871	675	4.023
410	0.445	545	10.190	680	3.512
415	0.904	550	10.518	685	3.056
420	1.698	555	10.865	690	2.653
425	2.891	560	11.161	695	2.295
430	4.363	565	11.488	700	1.978
435	6.158	570	11.813	705	1.704
440	8.965	575	12.124	710	1.468
445	11.640	580	12.386	715	1.260
450	10.836	585	12.647	720	1.082
455	7.887	590	12.822	725	0.928
460	6.005	595	12.913	730	0.799
465	4.790	600	12.926	735	0.685
470	3.855	605	12.783	740	0.587
475	3.447	610	12.528	745	0.503
480	3.451	615	12.163	750	0.434
485	3.796	620	11.684	755	0.374
490	4.385	625	11.066	760	0.319
495	5.165	630	10.347	765	0.275
500	5.981	635	9.623	770	0.238
505	6.731	640	8.822	775	0.205
510	7.411	645	8.060	780	0.031



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Page 4 of 4

CIE Chromaticity Diagram

