

REPORT NUMBER: RAB01756

ISSUE DATE: 03/08/16

PREPARED FOR: RAB LIGHTING INC.

CATALOG NUMBER: RDLED2S8-20N-TW (2" square 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.

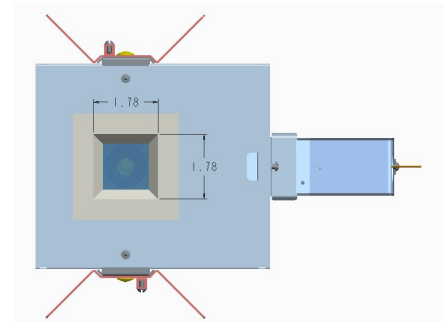
(SEE PAGE 2 FOR MORE INFORMATION)

CANDELA DISTRIBUTION

	0.0	22.5	45.0	67.5	90.0
0	3043	3043	3043	3043	3043
5	2822	2856	2833	2849	2841
15	853	853	839	835	793
25	314	318	320	320	313
35	103	136	165	137	101
45	16	19	27	20	17
55	8	8	10	8	8
65	5	5	5	4	5
75	2	2	2	2	2
85	0	0	0	0	0
90	0	0	0	0	0

FLUX

238
252
149
84
19
8
5
2
0



ZONAL LUMEN SUMMARY

ZONE	LUMENS	%FIXT
0- 30	639	84.5
0- 40	724	95.6
0- 60	750	99.1
0- 90	757	100.0
90-180	0	0.0
0-180	757	100.0

TOTAL INPUT WATTS = 8.3

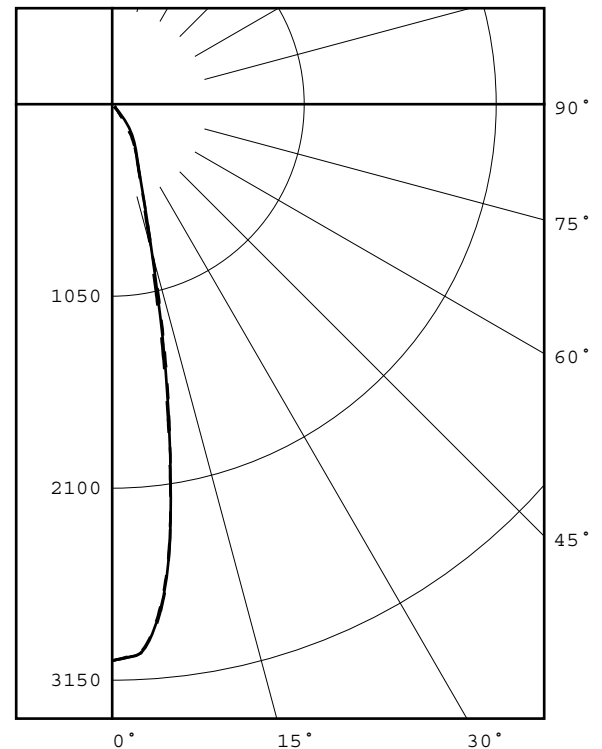
EFFICACY = 91.2 lm/W

CIE TYPE - DIRECT

PLANE	: 0-DEG	90-DEG
SPACING CRITERIA	: 0.4	0.4
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	11065.	18673.	11757.
55	6821.	8526.	6821.
65	5786.	5786.	5786.
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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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: 8.3004 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%) : 22.7 X 22.0 DEGREES
FIELD ANGLE (10%): 51.1 X 50.9 DEGREES

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CANDELA DISTRIBUTION

	0.0	22.5	45.0	67.5	90.0
0.0	3043	3043	3043	3043	3043
2.5	3012	3023	3017	3021	3019
5.0	2822	2856	2833	2849	2841
7.5	2403	2465	2414	2472	2415
10.0	1805	1879	1796	1839	1759
12.5	1281	1276	1240	1233	1170
15.0	853	853	839	835	793
17.5	601	605	605	599	574
20.0	457	465	467	465	451
22.5	372	377	379	379	369
25.0	314	318	320	320	313
27.5	268	275	278	276	266
30.0	217	236	244	236	215
32.5	160	189	208	190	157
35.0	103	136	165	137	101
37.5	58	86	118	88	61
40.0	33	49	77	51	35
42.5	22	29	46	30	23
45.0	16	19	27	20	17
47.5	13	14	18	14	13
50.0	10	11	14	11	10
52.5	9	9	11	9	9
55.0	8	8	10	8	8
57.5	7	7	8	7	7
60.0	7	6	7	6	7
62.5	6	5	6	5	6
65.0	5	5	5	4	5
67.5	4	4	4	4	4
70.0	4	3	3	3	4
72.5	3	2	2	2	3
75.0	2	2	2	2	2
77.5	1	1	1	1	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	71.
5- 10	168.
10- 15	150.
15- 20	102.
20- 25	80.
25- 30	69.
30- 35	54.
35- 40	30.
40- 45	13.
45- 50	6.
50- 55	4.
55- 60	3.
60- 65	3.
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	71
5- 10	168
10- 15	150
15- 20	102
20- 25	80
25- 30	69
30- 35	54
35- 40	30
40- 45	13
45- 50	6
50- 55	4
55- 60	3
60- 65	3
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	238
0- 20	490
0- 30	639
0- 40	724
0- 50	743
0- 60	750
0- 70	755
0- 80	757
0- 90	757
0-100	757
0-110	757
0-120	757
0-130	757
0-140	757
0-150	757
0-160	757
0-170	757
0-180	757

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

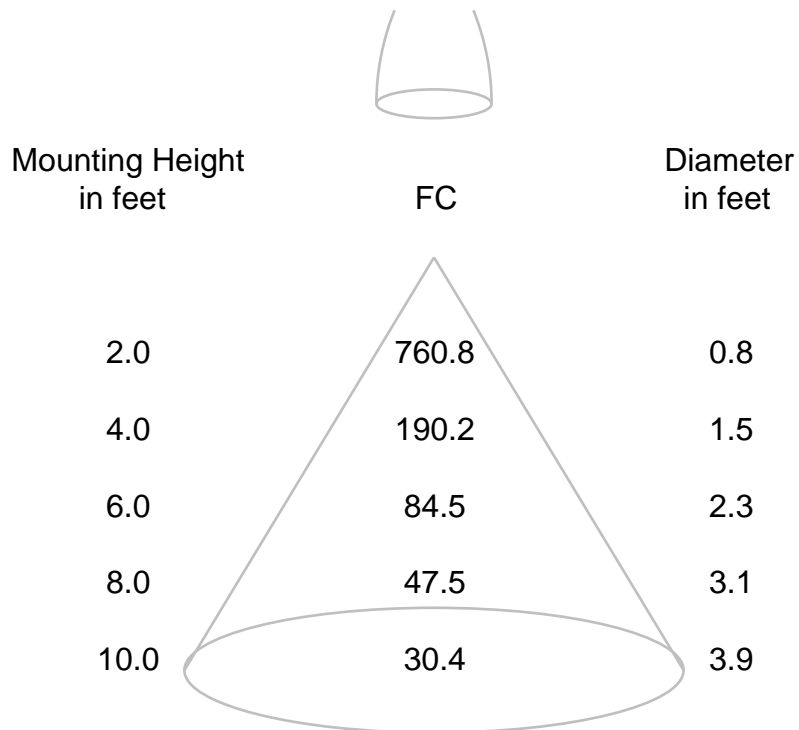
ALL CANDELA, LUMENS, LUMINANCE, AND VCP VALUES IN THIS REPORT ARE BASED ON ABSOLUTE PHOTOMETRY. THE COEFFICIENT OF UTILIZATION VALUES ARE BASED ON THE TOTAL ABSOLUTE LUMEN OUTPUT OF THIS LUMINAIRE SAMPLE.

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CONE OF LIGHT DIAGRAM

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



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

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CATALOG NUMBER: RDLED2S8-20N-TW (2" square recessed downlight - narrow beam)

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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 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 X.CAO

Approved D.WANG-MUNSON
Lighting Engineer

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RESULTS:

SPECTRORADIOMETRIC	
Observer	CIE 1931 2 degree
Chromaticity Ordinate x	0.3881
Chromaticity Ordinate y	0.3857
Observer	CIE 1976 2 degree
Chromaticity Ordinate u'	0.2265
Chromaticity Ordinate v'	0.5066
Correlated Color Temp CCT (K)	3866
Color Rendering Index (CRIa)	80
Color Rendering Index 1 (Light greyish red)	78
Color Rendering Index 2 (Dark greyish yellow)	85
Color Rendering Index 3 (Strong yellowish green)	90
Color Rendering Index 4 (Moderate yellowish green)	80
Color Rendering Index 5 (Light bluish green)	78
Color Rendering Index 6 (Light blue)	79
Color Rendering Index 7 (Light violet)	86
Color Rendering Index 8 (Light reddish purple)	64
Color Rendering Index 9 (Strong red)	5
Color Rendering Index 10 (Strong yellow)	63
Color Rendering Index 11 (Strong green)	78
Color Rendering Index 12 (Strong blue)	57
Color Rendering Index 13 (Light yellowish pink (skin))	79
Color Rendering Index 14 (Moderate olive green (leaf))	94
ANSI C78.377-2008 Duv	0.002
Total Radiant Flux (milliWatts)	2284 *
ELECTRICAL FOR SPECTRORADIOMETRIC TEST	
Input Voltage (Volts AC)	120.0
Input Current (Amps AC)	0.071
Input Power (Watts)	8.30
Input Power Factor (%)	97.4
Input Current THD (%)	20.3
Input Voltage THD (%)	0.2
Off-State Power (Watts)	0.0

*NOTE:

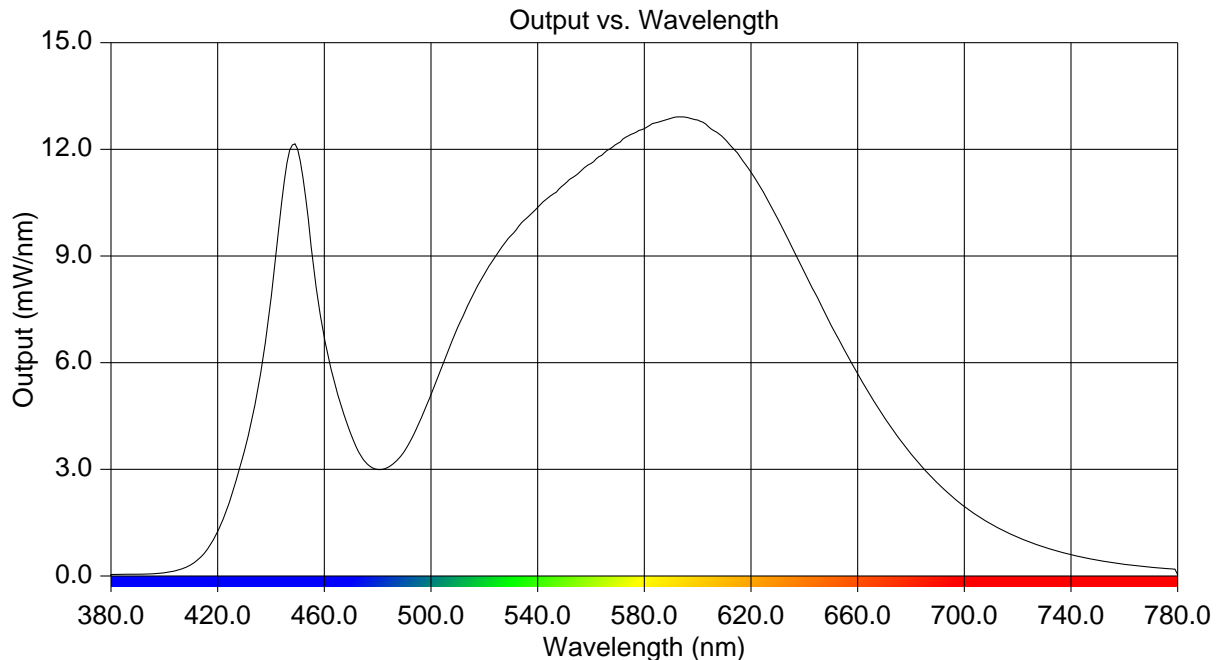
Proper calibration of integrating spheres for measuring total flux output of non-directional samples will produce reliable, repeatable results within the calibration tolerances of the equipment used. However, measurement of test samples with significant self absorption and/or directional output, even 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	0.040	515	7.791	650	7.058
385	0.047	520	8.500	655	6.360
390	0.049	525	9.085	660	5.693
395	0.063	530	9.576	665	5.048
400	0.091	535	10.009	670	4.462
405	0.159	540	10.368	675	3.921
410	0.323	545	10.700	680	3.435
415	0.639	550	11.016	685	3.002
420	1.258	555	11.307	690	2.608
425	2.205	560	11.601	695	2.265
430	3.507	565	11.901	700	1.962
435	5.218	570	12.165	705	1.700
440	7.803	575	12.420	710	1.466
445	11.115	580	12.581	715	1.260
450	12.002	585	12.761	720	1.091
455	9.382	590	12.872	725	0.936
460	6.668	595	12.908	730	0.808
465	5.126	600	12.825	735	0.697
470	3.983	605	12.575	740	0.596
475	3.248	610	12.301	745	0.517
480	2.990	615	11.892	750	0.446
485	3.104	620	11.353	755	0.382
490	3.506	625	10.754	760	0.329
495	4.203	630	10.043	765	0.285
500	5.116	635	9.303	770	0.249
505	6.053	640	8.552	775	0.215
510	6.991	645	7.821	780	0.032



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CIE Chromaticity Diagram

