

REPORT NUMBER: RAB01765

ISSUE DATE: 03/11/16

PREPARED FOR: RAB LIGHTING INC.

CATALOG NUMBER: RDLED2S8-40N-TW (2" Square 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.

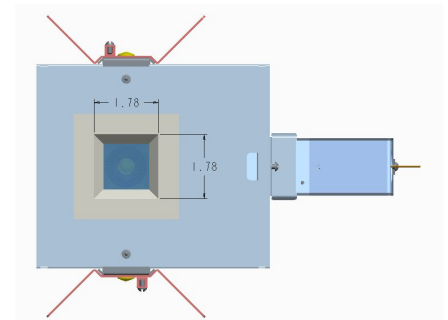
(SEE PAGE 2 FOR MORE INFORMATION)

CANDELA DISTRIBUTION

	0.0	22.5	45.0	67.5	90.0
0	1277	1277	1277	1277	1277
5	1234	1231	1230	1228	1227
15	826	839	868	843	832
25	454	488	479	493	456
35	116	165	242	167	119
45	20	24	53	25	21
55	15	10	15	10	15
65	5	4	4	4	5
75	2	2	2	2	2
85	0	0	0	0	0
90	0	0	0	0	0

FLUX

112
235
218
111
27
11
5
2
0



ZONAL LUMEN SUMMARY

ZONE	LUMENS	%FIXT
0- 30	566	78.3
0- 40	677	93.7
0- 60	716	99.1
0- 90	722	100.0
90-180	0	0.0
0-180	722	100.0

TOTAL INPUT WATTS = 8.3

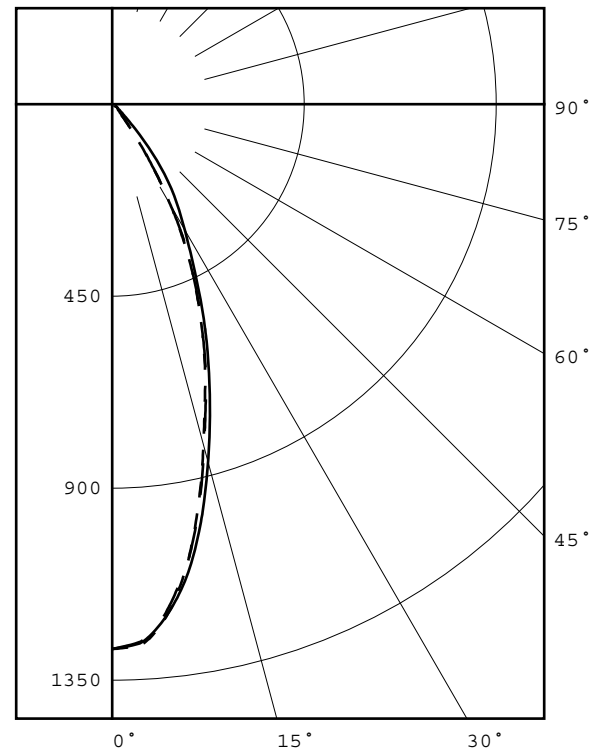
EFFICACY = 87.0 lm/W

CIE TYPE - DIRECT

PLANE	: 0-DEG	90-DEG
SPACING CRITERIA	: 0.6	0.6
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	13832.	36654.	14523.
55	12789.	12789.	12789.
65	5786.	4629.	5786.
75	3779.	3779.	3779.
85	0.	0.	0.



LEGEND:

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

Checked

X.CAO

Approved

D.WANG-MUNSON

REPORT NUMBER: RAB01765
ISSUE DATE: 03/11/16
PREPARED FOR: RAB LIGHTING INC.

PAGE: 2 OF 8
DATE SAMPLE TESTED: 03/11/16

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: 8.2912 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: RAB01765
ISSUE DATE: 03/11/16
PREPARED FOR: RAB LIGHTING INC.

PAGE: 3 OF 8
DATE SAMPLE TESTED: 03/11/16

PLANE : 0-DEG 90-DEG
BEAM ANGLE (50%) : 39.7 X 39.9 DEGREES
FIELD ANGLE (10%): 69.2 X 69.4 DEGREES

REPORT NUMBER: RAB01765
ISSUE DATE: 03/11/16
PREPARED FOR: RAB LIGHTING INC.

PAGE: 4 OF 8
DATE SAMPLE TESTED: 03/11/16

CANDELA DISTRIBUTION

	0.0	22.5	45.0	67.5	90.0
0.0	1277	1277	1277	1277	1277
2.5	1272	1269	1268	1268	1265
5.0	1234	1231	1230	1228	1227
7.5	1160	1158	1167	1156	1151
10.0	1060	1064	1083	1063	1062
12.5	944	953	979	954	949
15.0	826	839	868	843	832
17.5	723	739	762	744	729
20.0	633	650	662	657	636
22.5	541	566	569	574	542
25.0	454	488	479	493	456
27.5	366	411	402	416	370
30.0	275	332	340	334	278
32.5	188	246	289	248	189
35.0	116	165	242	167	119
37.5	65	100	190	103	68
40.0	38	57	135	59	40
42.5	26	35	87	36	27
45.0	20	24	53	25	21
47.5	18	19	35	19	18
50.0	17	15	25	15	17
52.5	16	12	19	12	17
55.0	15	10	15	10	15
57.5	13	8	11	8	13
60.0	10	6	8	6	10
62.5	7	5	6	5	7
65.0	5	4	4	4	5
67.5	4	4	3	3	4
70.0	3	3	3	3	3
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: RAB01765
ISSUE DATE: 03/11/16
PREPARED FOR: RAB LIGHTING INC.

PAGE: 5 OF 8
DATE SAMPLE TESTED: 03/11/16

ZONAL LUMEN SUMMARY

0- 5	30.
5- 10	82.
10- 15	113.
15- 20	122.
20- 25	118.
25- 30	101.
30- 35	72.
35- 40	39.
40- 45	18.
45- 50	9.
50- 55	7.
55- 60	5.
60- 65	3.
65- 70	2.
70- 75	1.
75- 80	1.
80- 85	0.
85- 90	0.

REPORT NUMBER: RAB01765
 ISSUE DATE: 03/11/16
 PREPARED FOR: RAB LIGHTING INC.

PAGE: 6 OF 8
 DATE SAMPLE TESTED: 03/11/16

5-DEGREE ZONAL LUMEN SUMMARY

0- 5	30
5- 10	82
10- 15	113
15- 20	122
20- 25	118
25- 30	101
30- 35	72
35- 40	39
40- 45	18
45- 50	9
50- 55	7
55- 60	5
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	112
0- 20	347
0- 30	566
0- 40	677
0- 50	704
0- 60	716
0- 70	720
0- 80	722
0- 90	722
0-100	722
0-110	722
0-120	722
0-130	722
0-140	722
0-150	722
0-160	722
0-170	722
0-180	722

REPORT NUMBER: RAB01765
ISSUE DATE: 03/11/16

PAGE: 7 OF 8
DATE SAMPLE TESTED: 03/11/16

PREPARED FOR: RAB LIGHTING INC.

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	111	109	107	105	105	103	102	101	100	99	98	97	96	94
2	109	104	100	97	106	102	99	96	99	96	94	96	94	92	93	92	90	88
3	104	98	93	89	102	96	92	88	94	90	87	91	88	86	89	86	84	83
4	99	92	87	83	97	91	86	82	89	84	81	87	83	80	85	82	79	78
5	94	87	81	77	93	86	81	77	84	79	76	82	78	75	81	77	75	73
6	90	82	76	72	89	81	76	72	80	75	72	78	74	71	77	73	71	69
7	86	78	72	68	85	77	72	68	76	71	67	74	70	67	73	70	67	65
8	82	74	68	64	81	73	68	64	72	67	64	71	67	64	70	66	63	62
9	79	70	65	61	78	70	64	61	69	64	61	68	63	60	67	63	60	59
10	76	67	61	58	75	66	61	58	66	61	58	65	60	57	64	60	57	56

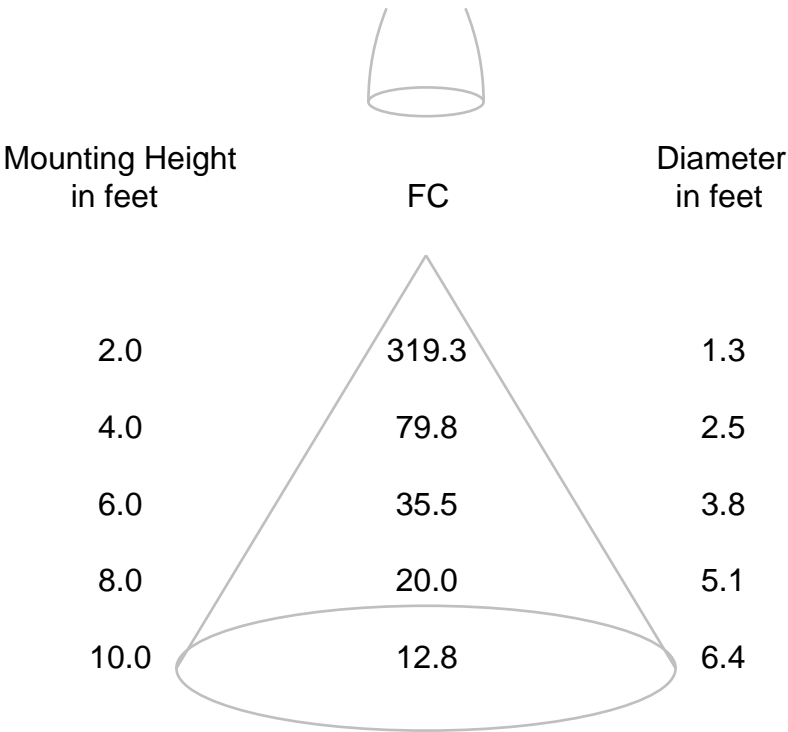
ALL CANDELA, LUMENS, LUMINANCE, AND VCP VALUES IN THIS REPORT ARE BASED ON ABSOLUTE PHOTOMETRY. THE COEFFICIENT OF UTILIZATION VALUES ARE BASED ON THE TOTAL ABSOLUTE LUMEN OUTPUT OF THIS LUMINAIRE SAMPLE.

REPORT NUMBER: RAB01765
ISSUE DATE: 03/11/16
PREPARED FOR: RAB LIGHTING INC.

PAGE: 8 OF 8
DATE SAMPLE TESTED: 03/11/16

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: RAB01766 Page 1 of 4
DATE: 3/11/2016
PREPARED FOR: RAB LIGHTING INC.
CATALOG NUMBER: RDLED2S8-40N-TW (2" Square 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 X.CAO

Approved D.WANG-MUNSON
Lighting Engineer

REPORT NUMBER: RAB01766
 DATE: 3/11/2016
 PREPARED FOR: RAB LIGHTING INC.
 CATALOG NUMBER: RDLED2S8-40N-TW (2" Square recessed downlight - wide beam)

Page 2 of 4

RESULTS:

SPECTRORADIOMETRIC	
Observer	CIE 1931 2 degree
Chromaticity Ordinate x	0.3874
Chromaticity Ordinate y	0.3855
Observer	CIE 1976 2 degree
Chromaticity Ordinate u'	0.2262
Chromaticity Ordinate v'	0.5064
Correlated Color Temp CCT (K)	3882
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)	4
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)	2177 *
ELECTRICAL FOR SPECTRORADIOMETRIC TEST	
Input Voltage (Volts AC)	120.0
Input Current (Amps AC)	0.071
Input Power (Watts)	8.29
Input Power Factor (%)	97.4
Input Current THD (%)	20.3
Input Voltage THD (%)	0.2
Off-State Power (Watts)	0.0

*NOTE:

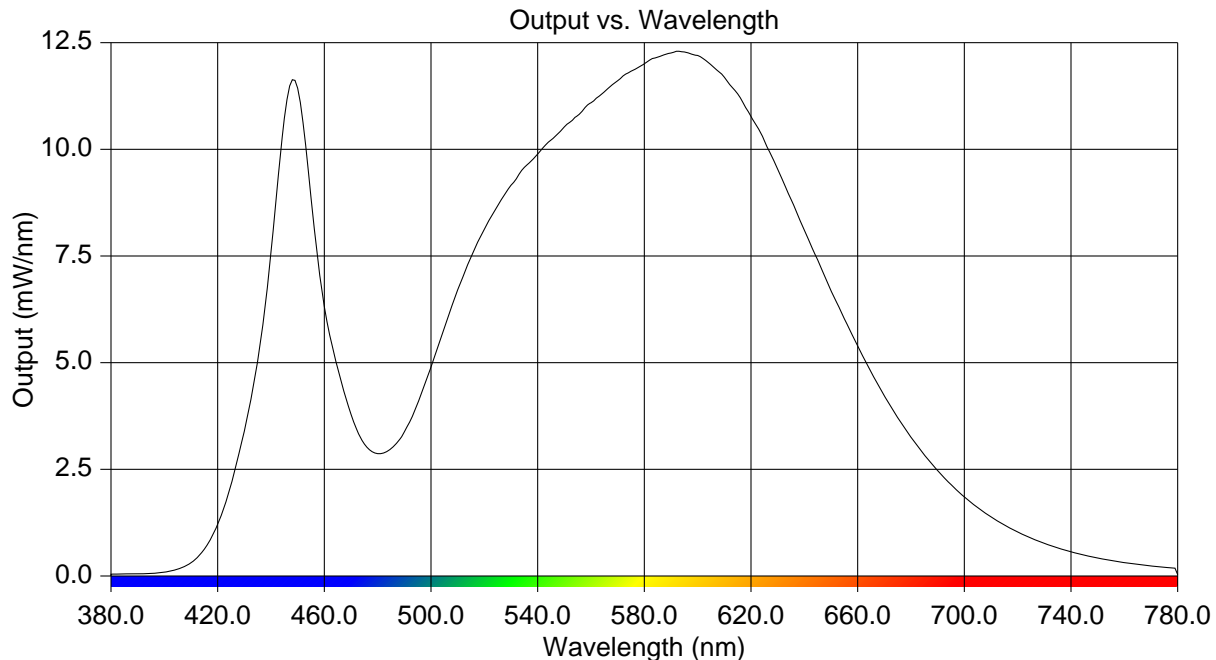
Proper calibration of integrating spheres for measuring total flux output of non-directional samples will produce reliable, repeatable results within the calibration tolerances of the equipment used. However, measurement of test samples with significant self absorption and/or directional output, even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

REPORT NUMBER: RAB01766
 DATE: 3/11/2016
 PREPARED FOR: RAB LIGHTING INC.
 CATALOG NUMBER: RDLED2S8-40N-TW (2" Square recessed downlight - wide beam)

Page 3 of 4

RESULTS:

Wavelength	mW per nm	Wavelength	mW per nm	Wavelength	mW per nm
380	0.042	515	7.474	650	6.692
385	0.047	520	8.126	655	6.029
390	0.050	525	8.675	660	5.392
395	0.061	530	9.158	665	4.789
400	0.092	535	9.577	670	4.226
405	0.157	540	9.885	675	3.716
410	0.312	545	10.220	680	3.251
415	0.628	550	10.526	685	2.841
420	1.205	555	10.795	690	2.471
425	2.136	560	11.091	695	2.144
430	3.394	565	11.345	700	1.852
435	5.042	570	11.608	705	1.607
440	7.592	575	11.831	710	1.385
445	10.727	580	12.007	715	1.195
450	11.432	585	12.161	720	1.030
455	8.870	590	12.258	725	0.886
460	6.322	595	12.279	730	0.765
465	4.862	600	12.200	735	0.660
470	3.790	605	11.988	740	0.567
475	3.097	610	11.691	745	0.489
480	2.870	615	11.301	750	0.420
485	2.986	620	10.768	755	0.365
490	3.378	625	10.203	760	0.313
495	4.043	630	9.533	765	0.271
500	4.907	635	8.829	770	0.236
505	5.814	640	8.109	775	0.203
510	6.706	645	7.410	780	0.031



REPORT NUMBER: RAB01766
DATE: 3/11/2016
PREPARED FOR: RAB LIGHTING INC.
CATALOG NUMBER: RDLED2S8-40N-TW (2" Square recessed downlight - wide beam)

Page 4 of 4

CIE Chromaticity Diagram

