

REPORT NUMBER: RAB01070

ISSUE DATE: 08/12/15

PREPARED FOR: RAB LIGHTING INC.

CATALOG NUMBER: RDLED2S8-40YYHC-TW (2" Square recessed downlight - wide 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: 8.3689 W AT 120.0 VOLTS

TEST PROCEDURE: IESNA LM-79-08

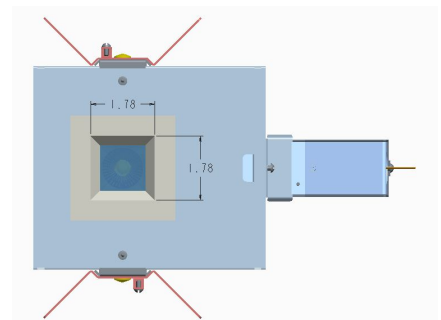
TEST DISTANCE: 28.25 FEET

PREPARED FOR: RAB LIGHTING INC.

LED DRIVER: RD-008-E1-A0200

ACCREDITED LABORATORY CODE 201085-0

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CANDELA DISTRIBUTION

	0.0	22.5	45.0	67.5	90.0
0	794	794	794	794	794
5	763	761	763	761	764
15	502	514	532	516	502
25	275	302	292	299	274
35	75	107	147	106	71
45	12	15	33	15	12
55	8	6	9	6	8
65	3	2	2	2	3
75	1	1	1	1	1
85	0	0	0	0	0
90	0	0	0	0	0

FLUX

69
144
134
69
17
6
3
1
0

ZONAL LUMEN SUMMARY

ZONE	LUMENS	%FIXT
0- 30	347	78.3
0- 40	417	94.0
0- 60	440	99.2
0- 90	443	100.0
90-180	0	0.0
0-180	443	100.0

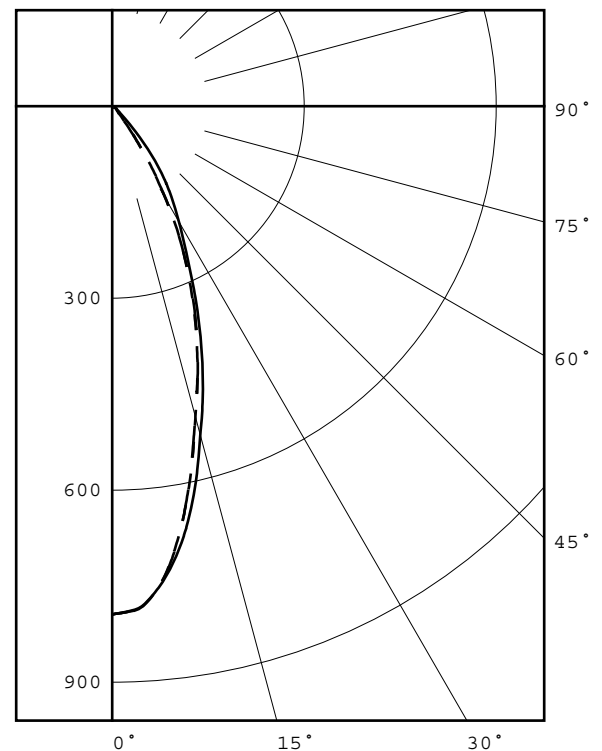
TOTAL INPUT WATTS = 8.4

EFFICACY = 52.7 Lm/W

CIE TYPE - DIRECT

PLANE : 0-DEG 90-DEG

SPACING CRITERIA : 0.6 0.6



LEGEND:

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

Checked X.CAO
Approved D.WANG-MUNSON

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PLANE : 0-DEG 90-DEG
BEAM ANGLE (50%) : 39.0 X 39.2 DEGREES
FIELD ANGLE (10%): 69.5 X 69.0 DEGREES

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CANDELA DISTRIBUTION

	0.0	22.5	45.0	67.5	90.0
0.0	794	794	794	794	794
2.5	789	787	788	787	789
5.0	763	761	763	761	764
7.5	713	714	722	715	714
10.0	647	653	668	653	647
12.5	575	584	603	584	572
15.0	502	514	532	516	502
17.5	443	458	471	459	444
20.0	385	405	409	403	388
22.5	329	353	349	350	332
25.0	275	302	292	299	274
27.5	223	254	246	253	222
30.0	168	207	208	204	167
32.5	120	156	177	154	115
35.0	75	107	147	106	71
37.5	43	67	116	66	41
40.0	24	38	83	38	23
42.5	15	22	54	22	15
45.0	12	15	33	15	12
47.5	10	11	21	11	10
50.0	10	9	15	9	10
52.5	9	7	12	7	9
55.0	8	6	9	6	8
57.5	7	4	7	4	7
60.0	5	4	5	4	6
62.5	4	3	3	3	4
65.0	3	2	2	2	3
67.5	2	2	2	2	2
70.0	2	1	1	1	2
72.5	1	1	1	1	1
75.0	1	1	1	1	1
77.5	1	1	1	1	1
80.0	0	0	0	0	0
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	19.
5- 10	51.
10- 15	69.
15- 20	75.
20- 25	72.
25- 30	62.
30- 35	44.
35- 40	25.
40- 45	11.
45- 50	6.
50- 55	4.
55- 60	3.
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	19
5- 10	51
10- 15	69
15- 20	75
20- 25	72
25- 30	62
30- 35	44
35- 40	25
40- 45	11
45- 50	6
50- 55	4
55- 60	3
60- 65	2
65- 70	1
70- 75	1
75- 80	0
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	69
0- 20	214
0- 30	347
0- 40	417
0- 50	433
0- 60	440
0- 70	443
0- 80	443
0- 90	443
0-100	443
0-110	443
0-120	443
0-130	443
0-140	443
0-150	443
0-160	443
0-170	443
0-180	443

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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	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	89	94	90	87	91	88	86	89	87	84	83
4	99	92	87	83	97	91	86	82	89	85	81	87	83	80	85	82	79	78
5	94	87	81	77	93	86	81	77	84	80	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	68	75	70	67	73	70	67	66
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	64	60	67	63	60	59
10	76	67	61	58	75	66	61	58	66	61	58	65	61	57	64	60	57	56

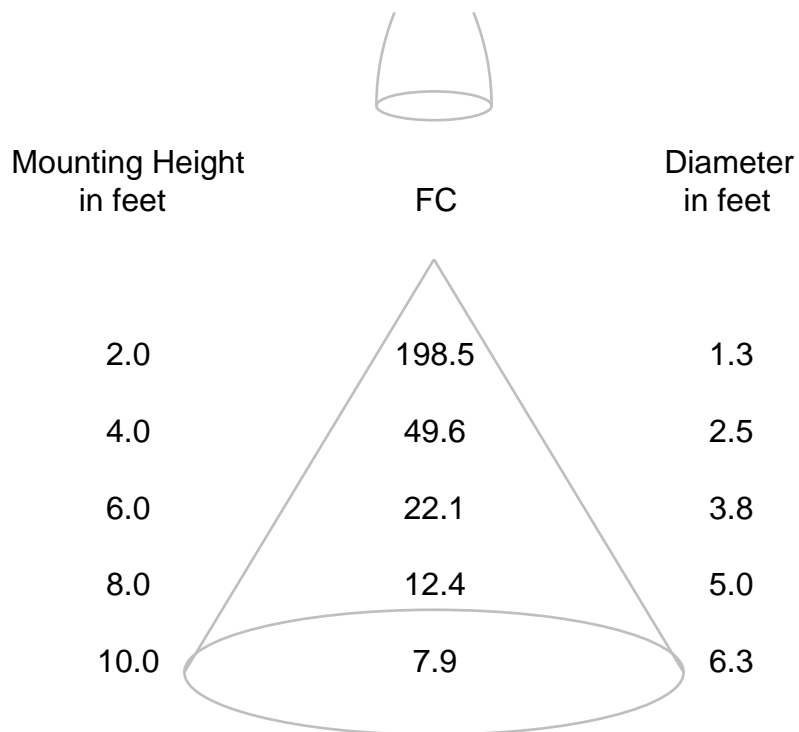
ALL CANDELA, LUMENS, LUMINANCE, AND VCP VALUES IN THIS REPORT ARE BASED ON ABSOLUTE PHOTOMETRY. THE COEFFICIENT OF UTILIZATION VALUES ARE BASED ON THE TOTAL ABSOLUTE LUMEN OUTPUT OF THIS LUMINAIRE SAMPLE.

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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.

REPORT NUMBER: RAB01071
DATE: 8/11/2015
PREPARED FOR: RAB LIGHTING INC.
CATALOG NUMBER: RDLED2S8-40YYHC-TW (2" Square recessed downlight - wide beam - >90 High CRI)

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	7/24/16
	RAB 2.0 meter Diameter Integrating Sphere, 4PI Geometry	7/24/16

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 120.0 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	<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	0.4596
Chromaticity Ordinate y	0.4111
Observer	CIE 1976 2 degree
Chromaticity Ordinate u'	0.2621
Chromaticity Ordinate v'	0.5275
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)	98
Color Rendering Index 3 (Strong yellowish green)	98
Color Rendering Index 4 (Moderate yellowish green)	90
Color Rendering Index 5 (Light bluish green)	92
Color Rendering Index 6 (Light blue)	97
Color Rendering Index 7 (Light violet)	89
Color Rendering Index 8 (Light reddish purple)	78
Color Rendering Index 9 (Strong red)	55
Color Rendering Index 10 (Strong yellow)	94
Color Rendering Index 11 (Strong green)	90
Color Rendering Index 12 (Strong blue)	83
Color Rendering Index 13 (Light yellowish pink (skin))	94
Color Rendering Index 14 (Moderate olive green (leaf))	100
ANSI C78.377-2008 Duv	0.000
Total Radiant Flux (milliWatts)	1559 *
ELECTRICAL FOR SPECTRORADIOMETRIC TEST	
Input Voltage (Volts AC)	120.0
Input Current (Amps AC)	0.072
Input Power (Watts)	8.37
Input Power Factor (%)	97.5
Input Current THD (%)	19.7
Input Voltage THD (%)	0.2
Off-State Power (Watts)	0.0

*NOTE:

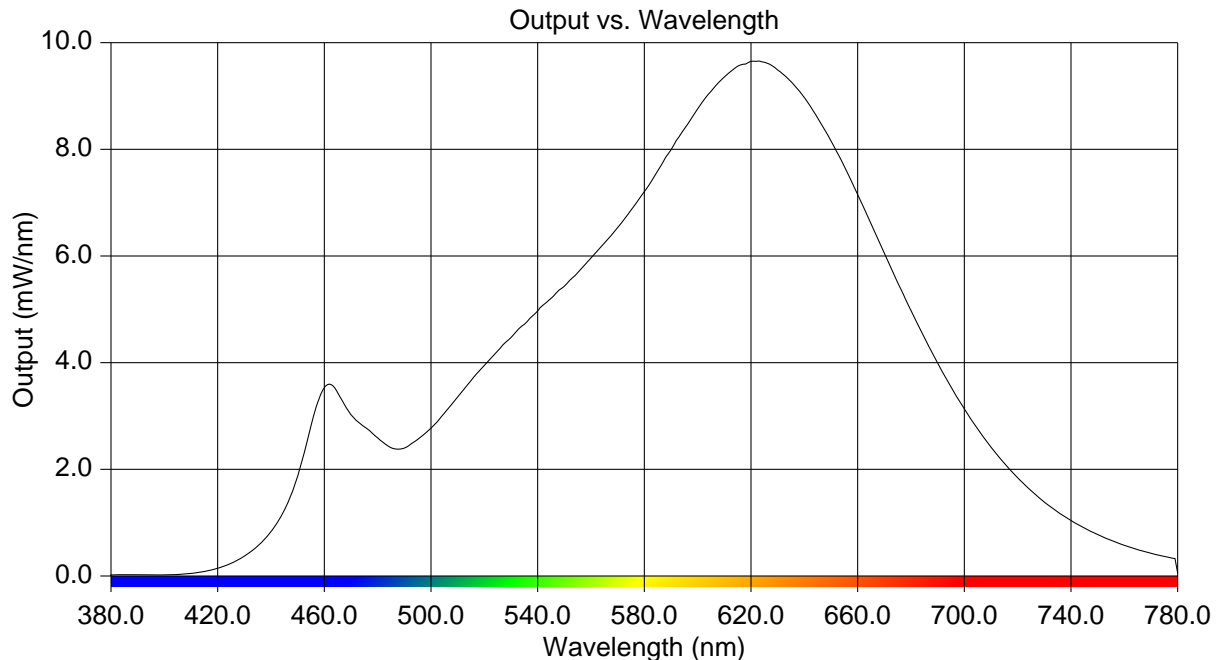
Proper calibration of integrating spheres for measuring total flux output of non-directional samples will produce reliable, repeatable results within the calibration tolerances of the equipment used. However, measurement of test samples with significant self absorption and/or directional output, even 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	0.019	515	3.664	650	8.162
385	0.022	520	3.946	655	7.676
390	0.020	525	4.215	660	7.156
395	0.020	530	4.471	665	6.604
400	0.022	535	4.719	670	6.049
405	0.030	540	4.971	675	5.501
410	0.047	545	5.204	680	4.978
415	0.082	550	5.433	685	4.471
420	0.144	555	5.693	690	3.983
425	0.238	560	5.963	695	3.548
430	0.372	565	6.235	700	3.133
435	0.562	570	6.536	705	2.761
440	0.829	575	6.861	710	2.416
445	1.233	580	7.208	715	2.112
450	1.876	585	7.595	720	1.843
455	2.816	590	7.989	725	1.599
460	3.532	595	8.390	730	1.385
465	3.435	600	8.766	735	1.204
470	3.021	605	9.086	740	1.035
475	2.798	610	9.357	745	0.900
480	2.589	615	9.559	750	0.776
485	2.408	620	9.651	755	0.668
490	2.396	625	9.632	760	0.574
495	2.557	630	9.487	765	0.495
500	2.776	635	9.278	770	0.426
505	3.052	640	8.971	775	0.367
510	3.362	645	8.580	780	0.055



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CIE Chromaticity Diagram

