

REPORT NUMBER: RAB01219

PAGE: 1 OF 7

ISSUE DATE: 09/30/15

PREPARED FOR: RAB LIGHTING INC.

CATALOG NUMBER: RDLED2S8-20YHC-TW (2" Square recessed downlight - narrow 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: 8.2965 W AT 120.0 VOLTS

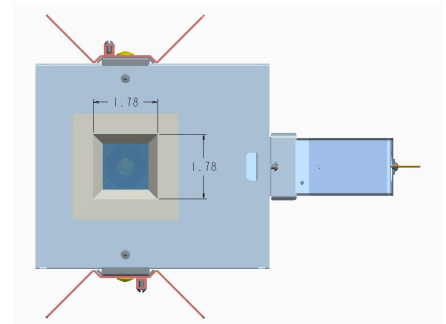
TEST PROCEDURE: IESNA LM-79-08

TEST DISTANCE: 28.25 FEET

PREPARED FOR: RAB LIGHTING INC.

LED DRIVER: RD-008-E1-A0200

ACCREDITED LABORATORY CODE 201085-0



DEG	CANDELA	LUMENS
0	2323	
5	2138	176
15	570	174
25	235	110
35	100	63
45	15	14
55	6	6
65	3	3
75	1	1
85	0	0
90	0	

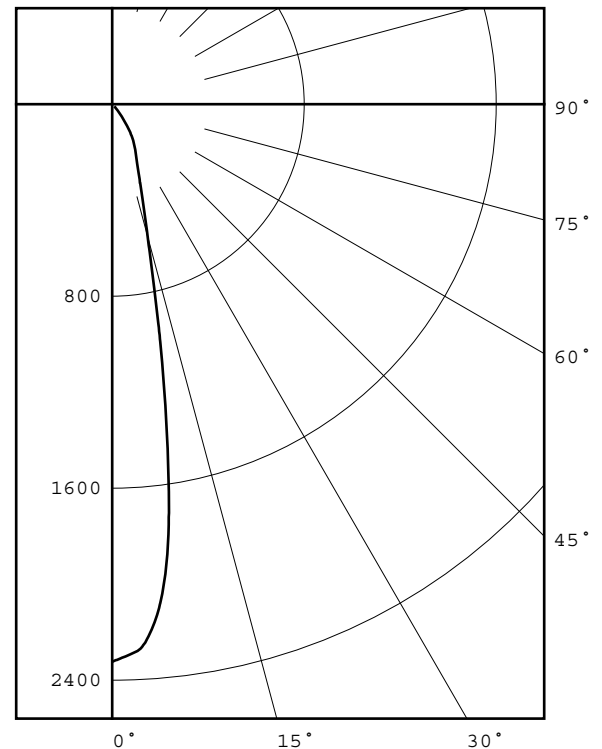
ZONAL LUMEN SUMMARY		
ZONE	LUMENS	%FIXT
0- 30	460	84.0
0- 40	523	95.5
0- 60	542	99.1
0- 90	547	100.0
90-180	0	0.0
0-180	547	100.0

TOTAL INPUT WATTS = 8.3

EFFICACY = 65.9 Lm/W

CIE TYPE - DIRECT

LUMINAIRE SPACING CRITERION = 0.4



Checked X.CAO
Approved D.WANG-MUNSON

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PAGE: 2 OF 7

BEAM ANGLE (50%) : 21.3 DEGREES
FIELD ANGLE (10%): 50.4 DEGREES

REPORT NUMBER: RAB01219
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PAGE: 3 OF 7

CANDELA DISTRIBUTION

	0.0
0.0	2323
2.5	2284
5.0	2138
7.5	1799
10.0	1276
12.5	837
15.0	570
17.5	424
20.0	333
22.5	275
25.0	235
27.5	204
30.0	175
32.5	140
35.0	100
37.5	65
40.0	38
42.5	23
45.0	15
47.5	11
50.0	9
52.5	7
55.0	6
57.5	6
60.0	5
62.5	4
65.0	3
67.5	3
70.0	2
72.5	2
75.0	1
77.5	1
80.0	1
82.5	0
85.0	0
87.5	0
90.0	0

REPORT NUMBER: RAB01219
ISSUE DATE: 09/30/15
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PAGE: 4 OF 7

ZONAL LUMEN SUMMARY

0- 5	53.
5- 10	123.
10- 15	102.
15- 20	71.
20- 25	58.
25- 30	52.
30- 35	41.
35- 40	22.
40- 45	9.
45- 50	5.
50- 55	3.
55- 60	3.
60- 65	2.
65- 70	1.
70- 75	1.
75- 80	1.
80- 85	0.
85- 90	0.

REPORT NUMBER: RAB01219
 ISSUE DATE: 09/30/15
 PREPARED FOR: RAB LIGHTING INC.

PAGE: 5 OF 7

5-DEGREE ZONAL LUMEN SUMMARY

0- 5	53
5- 10	123
10- 15	102
15- 20	71
20- 25	58
25- 30	52
30- 35	41
35- 40	22
40- 45	9
45- 50	5
50- 55	3
55- 60	3
60- 65	2
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	176
0- 20	350
0- 30	460
0- 40	523
0- 50	537
0- 60	542
0- 70	546
0- 80	547
0- 90	547
0-100	547
0-110	547
0-120	547
0-130	547
0-140	547
0-150	547
0-160	547
0-170	547
0-180	547

REPORT NUMBER: RAB01219
ISSUE DATE: 09/30/15

PAGE: 6 OF 7

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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	96	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	90	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	85	82	79	84	81	78	83	80	78	76
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	80	76	73	79	75	73	79	75	72	78	74	72	71
9	86	78	73	70	85	78	73	70	77	73	70	76	72	70	75	72	70	69
10	83	75	71	68	82	75	71	68	74	70	68	74	70	67	73	70	67	66

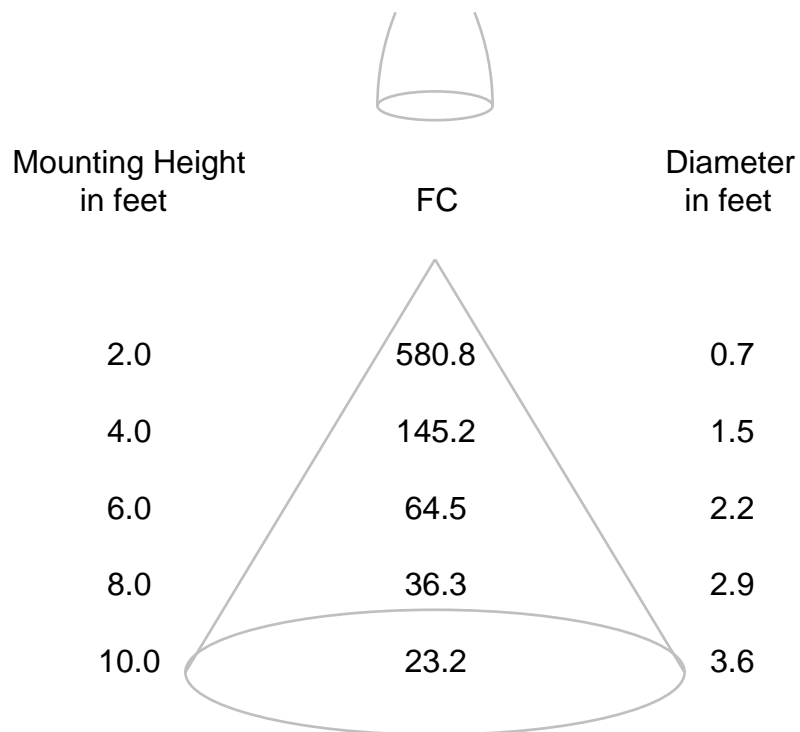
ALL CANDELA, LUMENS, LUMINANCE, AND VCP VALUES IN THIS REPORT ARE BASED ON ABSOLUTE PHOTOMETRY. THE COEFFICIENT OF UTILIZATION VALUES ARE BASED ON THE TOTAL ABSOLUTE LUMEN OUTPUT OF THIS LUMINAIRE SAMPLE.

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PAGE: 7 OF 7

CONE OF LIGHT DIAGRAM

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



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CATALOG NUMBER: RDLED2S8-20YHC-TW (2" Square recessed downlight - narrow beam - >90 High CRI)

Page 1 of 4

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:
	CHROMA PROGRAMMABLE DIGITAL POWER METER MODEL 66202	N/A
	OCEAN OPTICS QE65PRO Spectroradiometer	3/9/16
	RAB 2.0 meter Diameter Integrating Sphere, 4PI Geometry	8/21/16

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 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	0.4361
Chromaticity Ordinate y	0.4031
Observer	CIE 1976 2 degree
Chromaticity Ordinate u'	0.2505
Chromaticity Ordinate v'	0.5209
Correlated Color Temp CCT (K)	3005
Color Rendering Index (CRIa)	92
Color Rendering Index 1 (Light greyish red)	92
Color Rendering Index 2 (Dark greyish yellow)	95
Color Rendering Index 3 (Strong yellowish green)	97
Color Rendering Index 4 (Moderate yellowish green)	92
Color Rendering Index 5 (Light bluish green)	92
Color Rendering Index 6 (Light blue)	94
Color Rendering Index 7 (Light violet)	92
Color Rendering Index 8 (Light reddish purple)	82
Color Rendering Index 9 (Strong red)	59
Color Rendering Index 10 (Strong yellow)	88
Color Rendering Index 11 (Strong green)	92
Color Rendering Index 12 (Strong blue)	82
Color Rendering Index 13 (Light yellowish pink (skin))	93
Color Rendering Index 14 (Moderate olive green (leaf))	97
ANSI C78.377-2008 Duv	0.000
Total Radiant Flux (milliWatts)	1899 *
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 (%)	19.0
Input Voltage THD (%)	0.2
Off-State Power (Watts)	0.0

*NOTE:

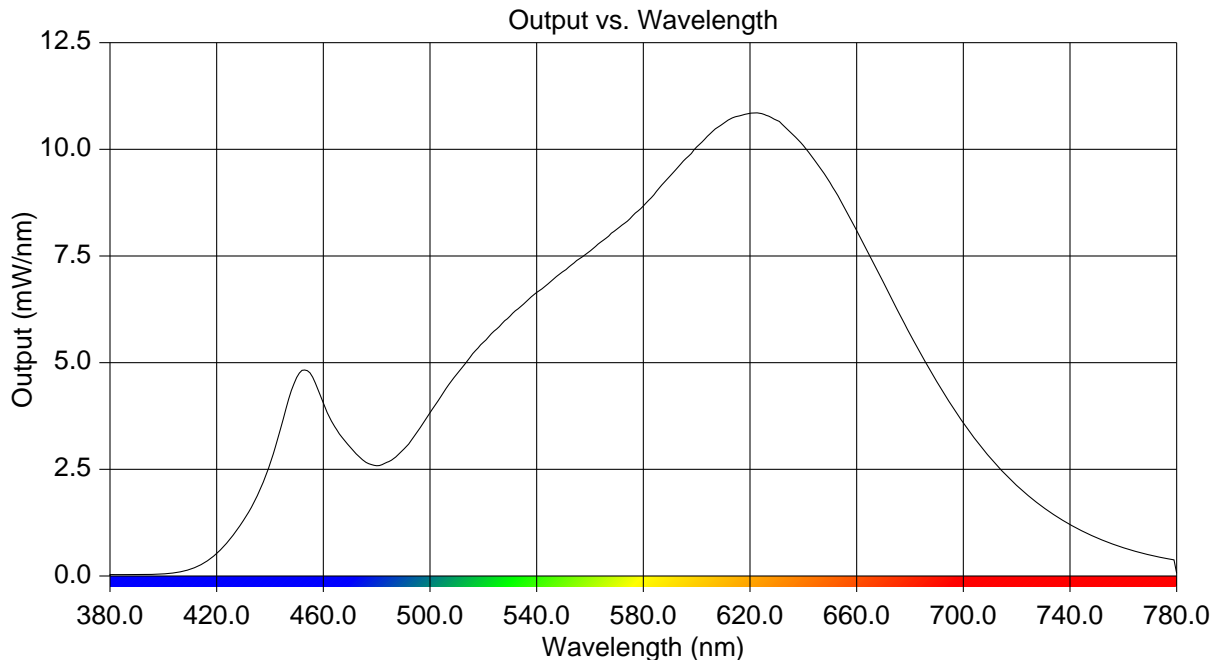
Proper calibration of integrating spheres for measuring total flux output of non-directional samples will produce reliable, repeatable results within the calibration tolerances of the equipment used. However, measurement of test samples with significant self absorption and/or directional output, even 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	0.032	515	5.122	650	9.215
385	0.032	520	5.477	655	8.676
390	0.033	525	5.788	660	8.101
395	0.036	530	6.089	665	7.495
400	0.050	535	6.368	670	6.884
405	0.083	540	6.646	675	6.266
410	0.154	545	6.887	680	5.666
415	0.296	550	7.137	685	5.094
420	0.527	555	7.393	690	4.556
425	0.866	560	7.613	695	4.059
430	1.299	565	7.870	700	3.587
435	1.854	570	8.125	705	3.160
440	2.622	575	8.374	710	2.781
445	3.686	580	8.672	715	2.429
450	4.652	585	9.020	720	2.121
455	4.761	590	9.373	725	1.847
460	4.051	595	9.726	730	1.608
465	3.432	600	10.055	735	1.389
470	3.024	605	10.363	740	1.203
475	2.712	610	10.605	745	1.040
480	2.584	615	10.770	750	0.898
485	2.695	620	10.846	755	0.772
490	2.962	625	10.825	760	0.668
495	3.357	630	10.681	765	0.572
500	3.829	635	10.411	770	0.495
505	4.295	640	10.089	775	0.425
510	4.726	645	9.672	780	0.064



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Page 4 of 4

CIE Chromaticity Diagram

