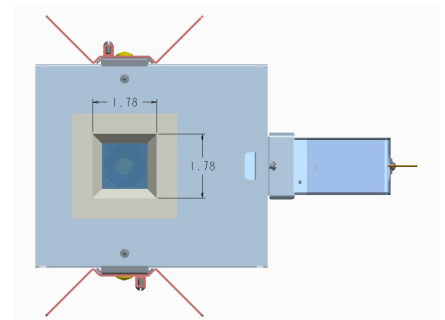


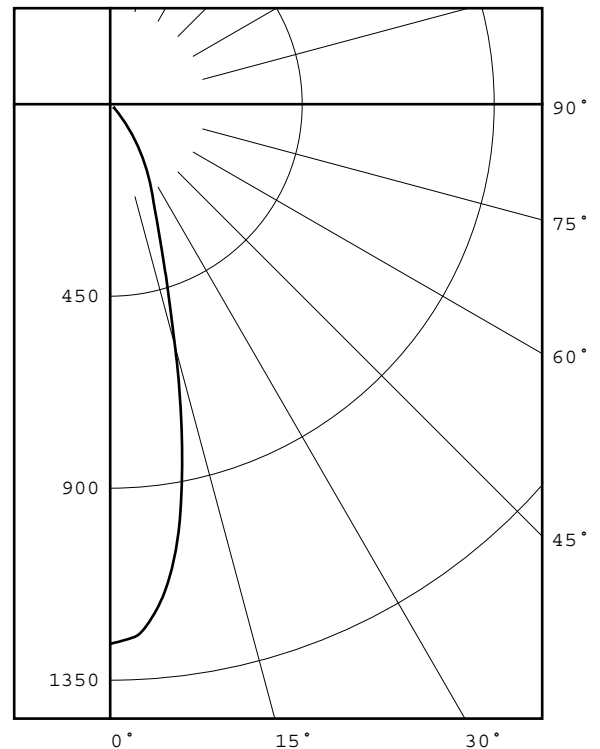
REPORT NUMBER: RAB01225  
 ISSUE DATE: 10/01/15  
 PREPARED FOR: RAB LIGHTING INC.  
 CATALOG NUMBER: RDLED2S8-30YYHC-TW (2" Square recessed downlight - medium beam - >90 High CRI)  
 LUMINAIRE: FABRICATED METAL UPPER HOUSING AND BALLAST HOUSING, CAST WHITE PAINTED FINNED METAL HEAT SINK, 1 WHITE CIRCUIT 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: 8.3693 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	1265	
5	1197	107
15	586	165
25	232	109
35	98	61
45	18	16
55	6	6
65	3	3
75	1	1
85	0	0
90	0	

ZONAL LUMEN ZONE	SUMMARY LUMENS	%FIXT
0- 30	380	81.3
0- 40	442	94.5
0- 60	463	99.1
0- 90	468	100.0
90-180	0	0.0
0-180	468	100.0

TOTAL INPUT WATTS = 8.4  
 EFFICACY = 55.7 Lm/W  
 CIE TYPE - DIRECT  
 LUMINAIRE SPACING CRITERION = 0.5



Checked	<u>X.CAO</u>
Approved	<u>D.WANG-MUNSON</u>

REPORT NUMBER: RAB01225  
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DATE SAMPLE TESTED: 10/01/15

BEAM ANGLE (50%) : 28.8 DEGREES  
FIELD ANGLE (10%) : 65.7 DEGREES

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DATE SAMPLE TESTED: 10/01/15

CANDELA DISTRIBUTION

	0.0
0.0	1265
2.5	1251
5.0	1197
7.5	1101
10.0	955
12.5	772
15.0	586
17.5	445
20.0	345
22.5	279
25.0	232
27.5	196
30.0	164
32.5	131
35.0	98
37.5	68
40.0	43
42.5	27
45.0	18
47.5	13
50.0	10
52.5	8
55.0	6
57.5	5
60.0	4
62.5	4
65.0	3
67.5	2
70.0	2
72.5	1
75.0	1
77.5	1
80.0	0
82.5	0
85.0	0
87.5	0
90.0	0

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ZONAL LUMEN SUMMARY

0- 5	29.
5- 10	77.
10- 15	90.
15- 20	74.
20- 25	59.
25- 30	50.
30- 35	38.
35- 40	23.
40- 45	11.
45- 50	5.
50- 55	3.
55- 60	2.
60- 65	2.
65- 70	1.
70- 75	1.
75- 80	0.
80- 85	0.
85- 90	0.

REPORT NUMBER: RAB01225  
 ISSUE DATE: 10/01/15  
 PREPARED FOR: RAB LIGHTING INC.

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 DATE SAMPLE TESTED: 10/01/15

### 5-DEGREE ZONAL LUMEN SUMMARY

0- 5	29
5- 10	77
10- 15	90
15- 20	74
20- 25	59
25- 30	50
30- 35	38
35- 40	23
40- 45	11
45- 50	5
50- 55	3
55- 60	2
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	107
0- 20	271
0- 30	380
0- 40	442
0- 50	458
0- 60	463
0- 70	466
0- 80	468
0- 90	468
0-100	468
0-110	468
0-120	468
0-130	468
0-140	468
0-150	468
0-160	468
0-170	468
0-180	468

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PREPARED FOR: RAB LIGHTING INC.

## COEFFICIENTS OF UTILIZATION - ZONAL CAVITY METHOD

EFFECTIVE FLOOR CAVITY REFLECTANCE 0.20

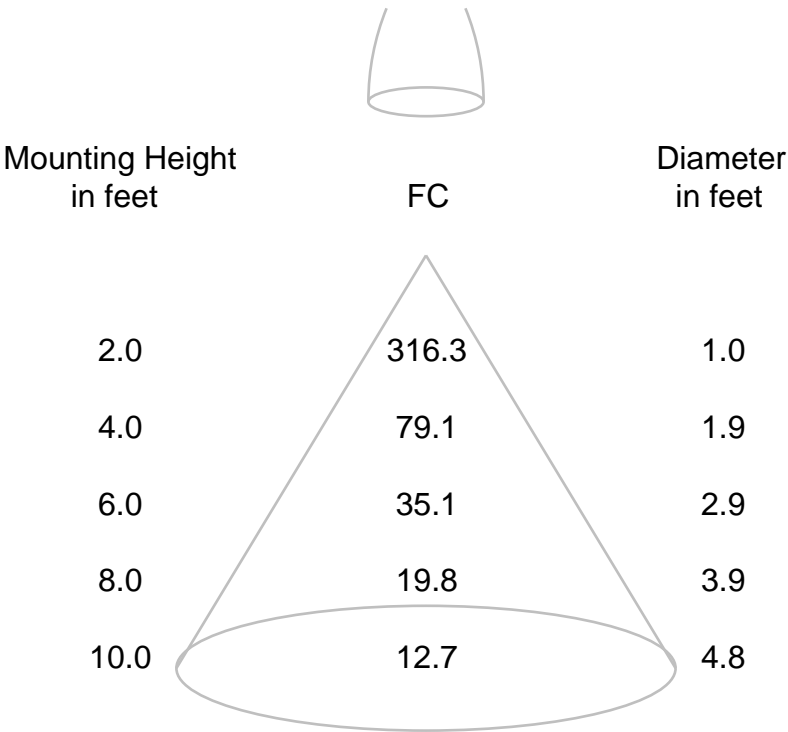
RC	80				70				50			30			10			0
RW	70	50	30	10	70	50	30	10	50	30	10	50	30	10	50	30	10	0
0	119	119	119	119	116	116	116	116	111	111	111	106	106	106	102	102	102	100
1	114	112	109	107	112	110	108	106	106	104	102	102	101	99	98	97	97	95
2	109	105	101	98	107	103	100	97	100	97	95	97	95	93	94	93	91	90
3	105	99	95	91	103	98	94	91	95	92	89	93	90	88	91	88	86	85
4	100	94	89	85	99	93	88	85	91	87	84	89	85	83	87	84	82	81
5	96	89	84	80	95	88	83	80	86	82	79	85	81	79	83	80	78	77
6	92	85	80	76	91	84	79	76	83	78	75	81	78	75	80	77	74	73
7	89	81	76	72	88	80	75	72	79	75	72	78	74	71	77	73	71	70
8	86	77	72	69	84	77	72	69	76	71	68	75	71	68	74	70	68	67
9	82	74	69	66	81	74	69	66	73	68	65	72	68	65	71	68	65	64
10	79	71	66	63	79	71	66	63	70	66	63	69	65	63	69	65	62	61

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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ISSUE DATE: 10/01/15	DATE SAMPLE TESTED: 10/01/15
PREPARED FOR: RAB LIGHTING INC.	

# CONE OF LIGHT DIAGRAM

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



REPORT NUMBER: RAB01224  
DATE: 10/2/2015  
PREPARED FOR: RAB LIGHTING INC.  
CATALOG NUMBER: RDLED2S8-30YYHC-TW (2" Square recessed downlight - medium beam - >90 High CRI)

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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 (120.0 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<sub>a</sub>,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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RESULTS:

SPECTRORADIOMETRIC	
Observer	CIE 1931 2 degree
Chromaticity Ordinate x	0.4596
Chromaticity Ordinate y	0.4117
Observer	CIE 1976 2 degree
Chromaticity Ordinate u'	0.2618
Chromaticity Ordinate v'	0.5277
Correlated Color Temp CCT (K)	2712
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)	93
Color Rendering Index 11 (Strong green)	91
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)	1642 *
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 (%)	20.0
Input Voltage THD (%)	0.2
Off-State Power (Watts)	0.0

\*NOTE:

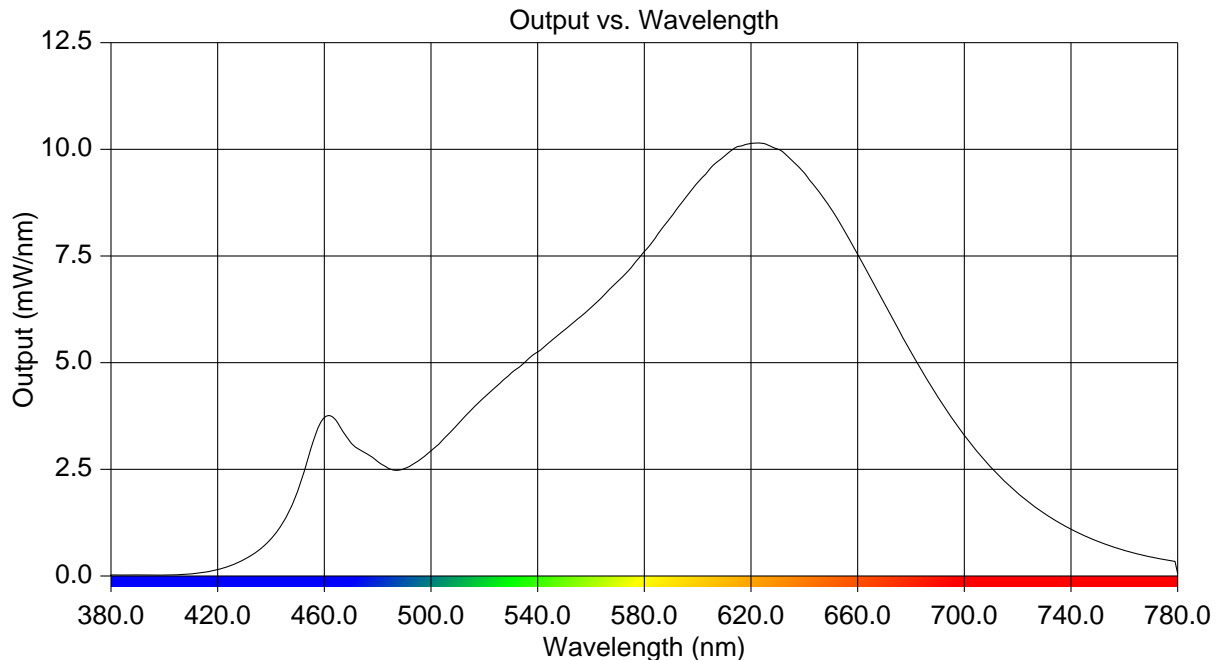
Proper calibration of integrating spheres for measuring total flux output of non-directional samples will produce reliable, repeatable results within the calibration tolerances of the equipment used. However, measurement of test samples with significant self absorption and/or directional output, even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

Wavelength	mW per nm	Wavelength	mW per nm	Wavelength	mW per nm
380	0.023	515	3.885	650	8.607
385	0.023	520	4.188	655	8.094
390	0.021	525	4.471	660	7.544
395	0.022	530	4.752	665	6.974
400	0.022	535	4.996	670	6.391
405	0.031	540	5.249	675	5.817
410	0.048	545	5.509	680	5.243
415	0.085	550	5.764	685	4.705
420	0.149	555	6.026	690	4.203
425	0.250	560	6.293	695	3.737
430	0.390	565	6.590	700	3.296
435	0.592	570	6.897	705	2.906
440	0.870	575	7.222	710	2.548
445	1.300	580	7.607	715	2.224
450	1.990	585	7.998	720	1.941
455	2.996	590	8.413	725	1.687
460	3.717	595	8.830	730	1.464
465	3.592	600	9.225	735	1.265
470	3.123	605	9.574	740	1.094
475	2.902	610	9.843	745	0.946
480	2.683	615	10.066	750	0.817
485	2.498	620	10.143	755	0.703
490	2.517	625	10.138	760	0.603
495	2.689	630	10.005	765	0.522
500	2.934	635	9.767	770	0.448
505	3.230	640	9.446	775	0.388
510	3.550	645	9.048	780	0.058



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## CIE Chromaticity Diagram

