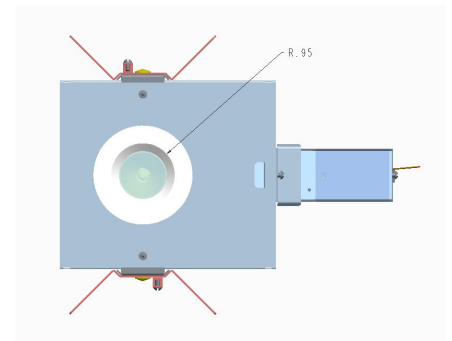


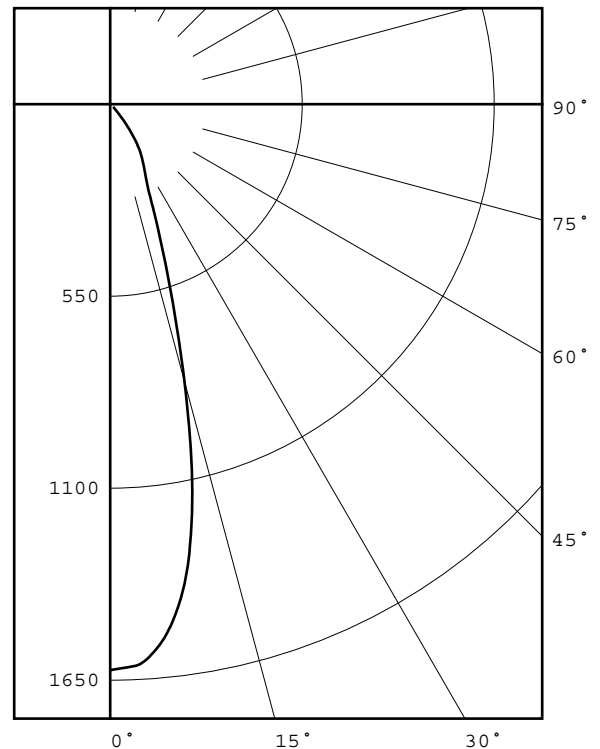
REPORT NUMBER: RAB01211
 ISSUE DATE: 10/01/15
 PREPARED FOR: RAB LIGHTING INC.
 CATALOG NUMBER: RDLED2R8-30YHC-TW (2" Round recessed downlight - medium beam - >90 High CRI)
 LUMINAIRE: FABRICATED METAL UPPER HOUSING AND BALLAST HOUSING, CAST WHITE PAINTED FINNED METAL HEAT SINK, 1 WHITE CIRCUIT BOARD 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: 8.3235 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	1621	
5	1562	141
15	821	226
25	249	123
35	123	75
45	16	16
55	6	5
65	3	3
75	2	2
85	0	0
90	0	

ZONAL LUMEN ZONE	SUMMARY LUMENS	%FIXT
0- 30	489	82.9
0- 40	564	95.5
0- 60	586	99.1
0- 90	591	100.0
90-180	0	0.0
0-180	591	100.0

TOTAL INPUT WATTS = 8.3
 EFFICACY = 71.2 Lm/W
 CIE TYPE - DIRECT
 LUMINAIRE SPACING CRITERION = 0.5



Checked X.CAO
 Approved D.WANG-MUNSON

REPORT NUMBER: RAB01211
ISSUE DATE: 10/01/15
PREPARED FOR: RAB LIGHTING INC.

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DATE SAMPLE TESTED: 10/01/15

BEAM ANGLE (50%) : 30.2 DEGREES
FIELD ANGLE (10%) : 64.3 DEGREES

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CANDELA DISTRIBUTION

	0.0
0.0	1621
2.5	1611
5.0	1562
7.5	1463
10.0	1306
12.5	1082
15.0	821
17.5	596
20.0	434
22.5	319
25.0	249
27.5	211
30.0	186
32.5	158
35.0	123
37.5	86
40.0	52
42.5	28
45.0	16
47.5	11
50.0	9
52.5	7
55.0	6
57.5	5
60.0	4
62.5	4
65.0	3
67.5	3
70.0	2
72.5	2
75.0	2
77.5	1
80.0	1
82.5	0
85.0	0
87.5	0
90.0	0

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PREPARED FOR: RAB LIGHTING INC.

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ZONAL LUMEN SUMMARY

0- 5	38.
5- 10	103.
10- 15	126.
15- 20	100.
20- 25	69.
25- 30	54.
30- 35	46.
35- 40	29.
40- 45	11.
45- 50	5.
50- 55	3.
55- 60	2.
60- 65	2.
65- 70	1.
70- 75	1.
75- 80	1.
80- 85	0.
85- 90	0.

REPORT NUMBER: RAB01211
 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	38
5- 10	103
10- 15	126
15- 20	100
20- 25	69
25- 30	54
30- 35	46
35- 40	29
40- 45	11
45- 50	5
50- 55	3
55- 60	2
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	141
0- 20	367
0- 30	489
0- 40	564
0- 50	580
0- 60	586
0- 70	589
0- 80	591
0- 90	591
0-100	591
0-110	591
0-120	591
0-130	591
0-140	591
0-150	591
0-160	591
0-170	591
0-180	591

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DATE SAMPLE TESTED: 10/01/15

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

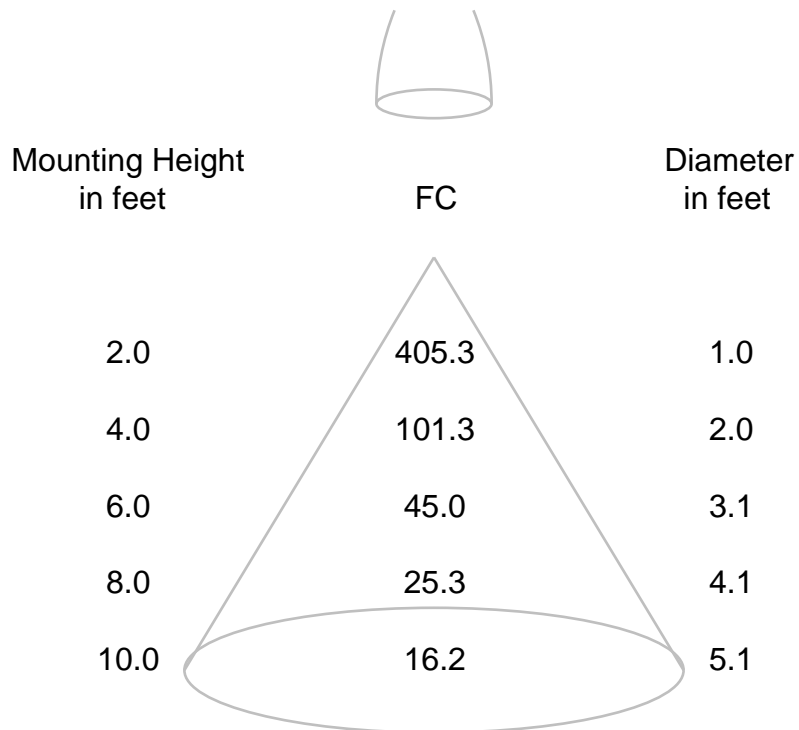
ALL CANDELA, LUMENS, LUMINANCE, AND VCP VALUES IN THIS REPORT ARE BASED ON ABSOLUTE PHOTOMETRY. THE COEFFICIENT OF UTILIZATION VALUES ARE BASED ON THE TOTAL ABSOLUTE LUMEN OUTPUT OF THIS LUMINAIRE SAMPLE.

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

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DATE SAMPLE TESTED: 10/01/15

CONE OF LIGHT DIAGRAM

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



REPORT NUMBER: RAB01210
DATE: 10/1/2015
PREPARED FOR: RAB LIGHTING INC.
CATALOG NUMBER: RDLED2R8-30YHC-TW (2" Round recessed downlight - medium 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	8/21/16
	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

REPORT NUMBER: RAB01210
 DATE: 10/1/2015
 PREPARED FOR: RAB LIGHTING INC.
 CATALOG NUMBER: RDLED2R8-30YHC-TW (2" Round recessed downlight - medium beam - >90 High CRI)

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RESULTS:

SPECTRORADIOMETRIC	
Observer	CIE 1931 2 degree
Chromaticity Ordinate x	0.4380
Chromaticity Ordinate y	0.4048
Observer	CIE 1976 2 degree
Chromaticity Ordinate u'	0.2509
Chromaticity Ordinate v'	0.5218
Correlated Color Temp CCT (K)	2988
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)	80
Color Rendering Index 13 (Light yellowish pink (skin))	93
Color Rendering Index 14 (Moderate olive green (leaf))	98
ANSI C78.377-2008 Duv	0.000
Total Radiant Flux (milliWatts)	2045 *
ELECTRICAL FOR SPECTRORADIOMETRIC TEST	
Input Voltage (Volts AC)	120.0
Input Current (Amps AC)	0.071
Input Power (Watts)	8.32
Input Power Factor (%)	97.7
Input Current THD (%)	19.8
Input Voltage THD (%)	0.2
Off-State Power (Watts)	0.0

*NOTE:

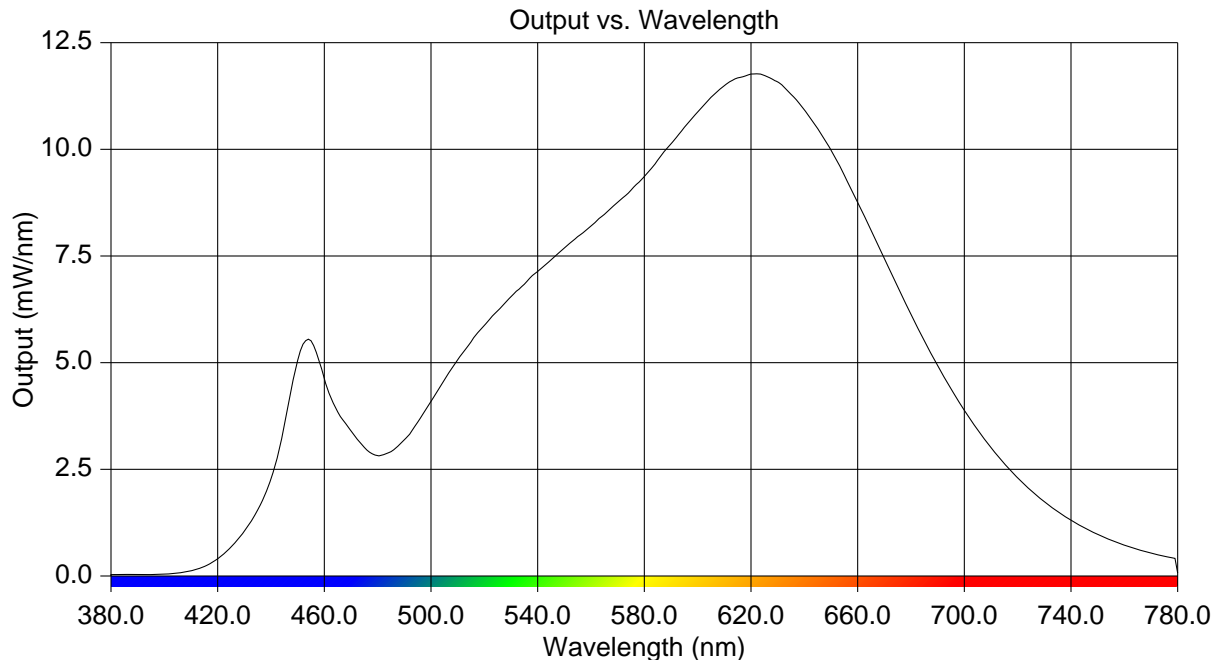
Proper calibration of integrating spheres for measuring total flux output of non-directional samples will produce reliable, repeatable results within the calibration tolerances of the equipment used. However, measurement of test samples with significant self absorption and/or directional output, even 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: RAB01210
 DATE: 10/1/2015
 PREPARED FOR: RAB LIGHTING INC.
 CATALOG NUMBER: RDLED2R8-30YHC-TW (2" Round recessed downlight - medium beam - >90 High CRI)

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RESULTS:

Wavelength	mW per nm	Wavelength	mW per nm	Wavelength	mW per nm
380	0.032	515	5.486	650	9.980
385	0.034	520	5.873	655	9.393
390	0.033	525	6.212	660	8.762
395	0.035	530	6.540	665	8.103
400	0.044	535	6.838	670	7.447
405	0.068	540	7.139	675	6.775
410	0.118	545	7.410	680	6.123
415	0.224	550	7.686	685	5.509
420	0.402	555	7.954	690	4.934
425	0.678	560	8.199	695	4.388
430	1.050	565	8.474	700	3.883
435	1.548	570	8.762	705	3.422
440	2.271	575	9.042	710	3.008
445	3.533	580	9.364	715	2.634
450	5.063	585	9.745	720	2.301
455	5.514	590	10.131	725	2.005
460	4.626	595	10.515	730	1.743
465	3.848	600	10.884	735	1.507
470	3.398	605	11.218	740	1.304
475	3.014	610	11.486	745	1.129
480	2.819	615	11.674	750	0.978
485	2.914	620	11.765	755	0.841
490	3.195	625	11.734	760	0.724
495	3.604	630	11.579	765	0.625
500	4.099	635	11.290	770	0.539
505	4.597	640	10.930	775	0.463
510	5.063	645	10.480	780	0.070



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CATALOG NUMBER: RDLED2R8-30YHC-TW (2" Round recessed downlight - medium beam - >90 High CRI)

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CIE Chromaticity Diagram

