

REPORT NUMBER: ITL82096

PAGE: 1 OF 7

ISSUE DATE: 07/01/14

PREPARED FOR: RAB LIGHTING, INC.

CATALOG NUMBER: BAYLED104Y (FLAT GLASS LENS - CEILING AND/OR PENDENT MOUNT - STANDARD DISTRIBUTION)

LUMINAIRE: CAST 2-PIECE WHITE PAINTED FINNED METAL HOUSING, FLAT METAL HEAT SINK MOUNTING PLATE WITH 4 EXTRUDED METAL HEAT SINKS, 4 CIRCUIT BOARDS EACH WITH 1 LED AND MOLDED PLASTIC REFLECTOR WITH SPECULAR FINISH, MOLDED PLASTIC REFLECTOR WITH SPECULAR FINISH AND 1 APERTURE PER LED, CLEAR FLAT GLASS LENS IN CAST WHITE PAINTED METAL LENS FRAME.

LAMPS: FOUR WHITE MULTI-CHIP LIGHT EMITTING DIODES (LEDs), TILTED 30-DEGREES FROM VERTICAL BASE-UP POSITION.

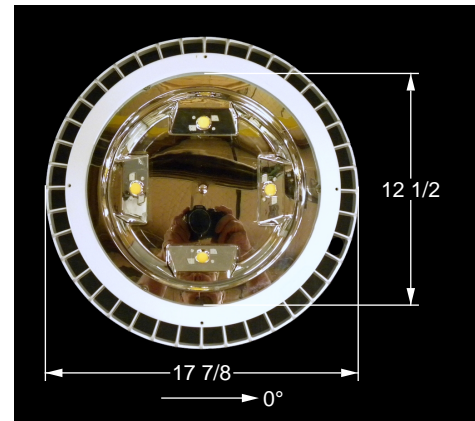
TOTAL INPUT WATTS = 121.3 AT 120.0 VOLTS

LED DRIVERS: FOUR RAB RD26

NOTE: DATA SHOWN IS ABSOLUTE FOR THE SAMPLE PROVIDED AT RATED INPUT VOLTAGE (120VAC, 60Hz) TO THE DRIVERS.

TEST PROCEDURE: IESNA LM-79-08

TEST DISTANCE = 20.0 FEET



CANDELA DISTRIBUTION

FLUX

	0.0	22.5	45.0	67.5	90.0	
0	3500	3500	3500	3500	3500	
5	3522	3513	3529	3509	3545	341
15	3631	3610	3646	3632	3636	1021
25	3392	3225	3408	3236	3399	1529
35	3174	3036	2875	2970	3102	1841
45	2402	2203	2240	2191	2341	1743
55	1603	1580	1501	1560	1575	1412
65	1109	1056	980	1036	1094	1027
75	468	515	533	503	449	535
85	7	5	4	5	7	47
90	0	0	0	0	0	
95	0	0	0	0	0	0
105	0	0	0	0	0	0
115	0	0	0	0	0	0
125	0	0	0	0	0	0
135	0	0	0	0	0	0
145	0	0	0	0	0	0
155	0	0	0	0	0	0
165	0	0	0	0	0	0
175	0	0	0	0	0	0
180	0	0	0	0	0	0

ZONAL LUMEN SUMMARY

ZONE	LUMENS	%FIXT
0- 30	2892	30.4
0- 40	4733	49.8
0- 60	7889	83.1
0- 90	9498	100.0
90-120	0	0.0
90-130	0	0.0
90-150	0	0.0
90-180	0	0.0
0-180	9498	100.0

EFFICACY = 78.3 lm/W

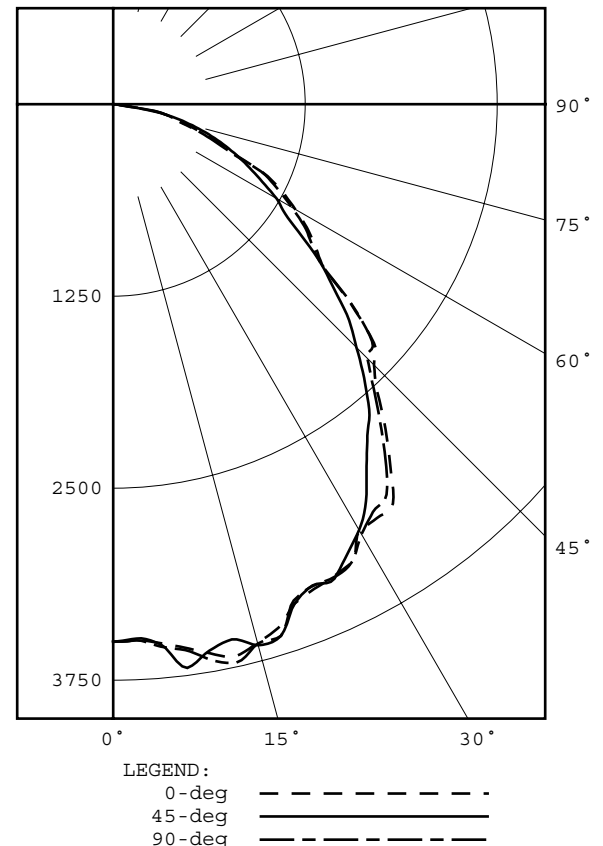
CIE TYPE - DIRECT

PLANE : 0-DEG 90-DEG

SPACING CRITERIA : 1.40 1.37

BEAM ANGLE (50%) : 102.6 X 102.6 DEGREES

FIELD ANGLE (10%) : 156.3 X 155.9 DEGREES



Checked M KLOPF
Approved R BEATTIE
Lighting Engineer



itl boulder
THE LIGHT CENTER OF THE INDUSTRY SINCE 1955



INDEPENDENT TESTING LABORATORIES, INC.
4066 CAMELOT CIRCLE, LONGMONT, CO 80504 USA

PHONE: (303) 442-1255 • FAX: (970) 535-3114 • E-MAIL: itl@itlboulder.com • WEBSITE: www.itlboulder.com

REPORT NUMBER: ITL82096
ISSUE DATE: 07/01/14
PREPARED FOR: RAB LIGHTING, INC.

PAGE: 2 OF 7

LUMINOUS DIAMETER: 12.500

LUMINANCE DATA IN CANDELA/SQ M				
ANGLE IN DEG	AVERAGE 0-DEG	AVERAGE 45-DEG	AVERAGE 90-DEG	
45	42905.	40012.	41816.	
55	35299.	33053.	34683.	
65	33144.	29289.	32696.	
75	22839.	26011.	21912.	
85	1014.	580.	1014.	



INDEPENDENT TESTING LABORATORIES, INC.
4066 CAMELOT CIRCLE, LONGMONT, CO 80504 USA

PHONE: (303) 442-1255 • FAX: (970) 535-3114 • E-MAIL: itl@itlboulder.com • WEBSITE: www.itlboulder.com

REPORT NUMBER: ITL82096

PAGE: 3 OF 7

ISSUE DATE: 07/01/14

PREPARED FOR: RAB LIGHTING, INC.

CANDELA DISTRIBUTION
LATERAL ANGLE

	0.0	22.5	45.0	67.5	90.0
0.0	3500	3500	3500	3500	3500
5.0	3522	3513	3529	3509	3545
10.0	3630	3642	3612	3646	3673
15.0	3631	3610	3646	3632	3636
20.0	3459	3493	3458	3466	3438
25.0	3392	3225	3408	3236	3399
30.0	3207	3102	3202	3097	3233
35.0	3174	3036	2875	2970	3102
40.0	2758	2573	2592	2529	2704
45.0	2402	2203	2240	2191	2341
50.0	2016	1879	1880	1860	2025
55.0	1603	1580	1501	1560	1575
60.0	1370	1418	1228	1359	1341
65.0	1109	1056	980	1036	1094
70.0	717	766	762	751	697
75.0	468	515	533	503	449
80.0	300	237	276	232	311
85.0	7	5	4	5	7
90.0	0	0	0	0	0
95.0	0	0	0	0	0
100.0	0	0	0	0	0
105.0	0	0	0	0	0
110.0	0	0	0	0	0
115.0	0	0	0	0	0
120.0	0	0	0	0	0
125.0	0	0	0	0	0
130.0	0	0	0	0	0
135.0	0	0	0	0	0
140.0	0	0	0	0	0
145.0	0	0	0	0	0
150.0	0	0	0	0	0
155.0	0	0	0	0	0
160.0	0	0	0	0	0
165.0	0	0	0	0	0
170.0	0	0	0	0	0
175.0	0	0	0	0	0
180.0	0	0	0	0	0



INDEPENDENT TESTING LABORATORIES, INC.
4066 CAMELOT CIRCLE, LONGMONT, CO 80504 USA

PHONE: (303) 442-1255 • FAX: (970) 535-3114 • E-MAIL: itl@itlboulder.com • WEBSITE: www.itlboulder.com

REPORT NUMBER: ITL82096
ISSUE DATE: 07/01/14
PREPARED FOR: RAB LIGHTING, INC.

PAGE: 4 OF 7

5-DEGREE
ZONAL LUMEN SUMMARY

0- 5	84
5- 10	258
10- 15	430
15- 20	591
20- 25	708
25- 30	821
30- 35	903
35- 40	938
40- 45	898
45- 50	845
50- 55	748
55- 60	664
60- 65	581
65- 70	446
70- 75	326
75- 80	209
80- 85	46
85- 90	1
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	341
0- 20	1362
0- 30	2892
0- 40	4733
0- 50	6477
0- 60	7889
0- 70	8916
0- 80	9451
0- 90	9498
0-100	9498
0-110	9498
0-120	9498
0-130	9498
0-140	9498
0-150	9498
0-160	9498
0-170	9498
0-180	9498



itl boulder
THE LIGHT CENTER OF THE INDUSTRY SINCE 1955



INDEPENDENT TESTING LABORATORIES, INC.
4066 CAMELOT CIRCLE, LONGMONT, CO 80504 USA

PHONE: (303) 442-1255 • FAX: (970) 535-3114 • E-MAIL: itl@itlboulder.com • WEBSITE: www.itlboulder.com

REPORT NUMBER: ITL82096

PAGE: 5 OF 7

ISSUE DATE: 07/01/14

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	110	105	101	98	107	103	100	96	99	96	93	95	93	90	91	90	88	86
2	100	93	86	81	98	91	85	80	87	82	78	84	80	76	81	78	74	72
3	92	82	74	68	89	80	73	67	77	71	66	75	69	65	72	68	64	62
4	84	73	64	58	82	71	64	58	69	62	57	67	61	56	65	59	55	53
5	78	65	57	50	76	64	56	50	62	55	49	60	54	49	58	53	48	46
6	72	59	50	44	70	58	50	44	56	49	43	55	48	43	53	47	43	41
7	67	54	45	39	65	53	45	39	51	44	39	50	43	38	48	43	38	36
8	62	49	41	35	61	48	40	35	47	40	35	46	39	34	45	39	34	32
9	58	45	37	32	57	44	37	31	43	36	31	42	36	31	41	35	31	29
10	55	42	34	29	53	41	34	29	40	33	28	39	33	28	38	32	28	27

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 TEST SAMPLE.



REPORT NUMBER: ITL82096

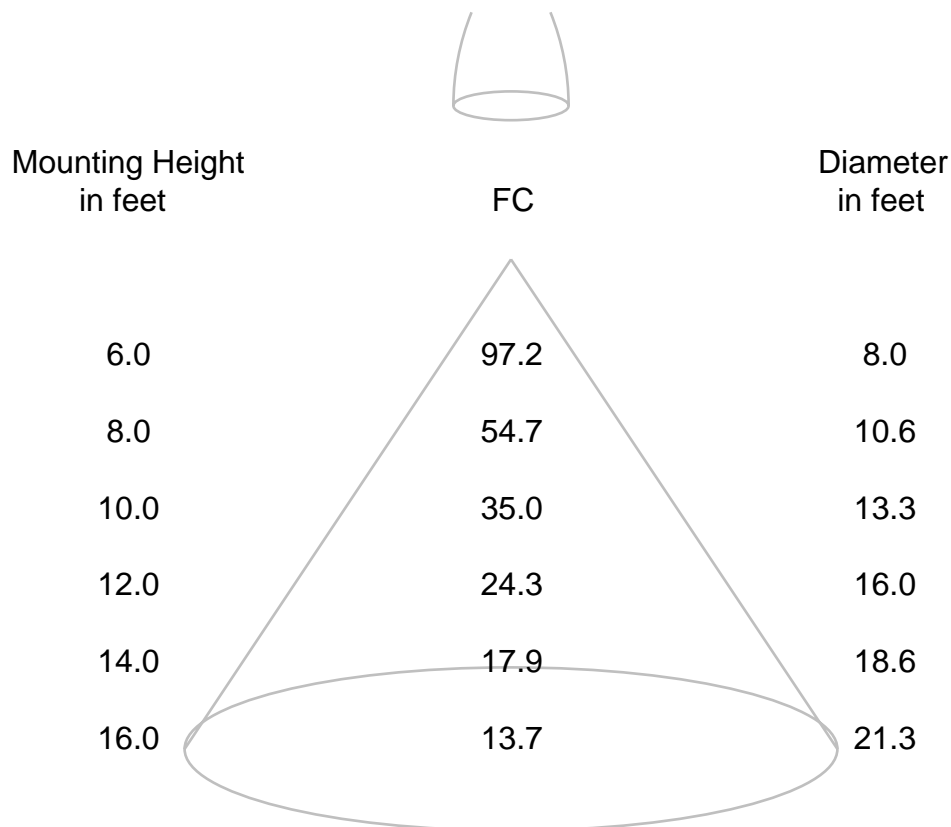
PAGE: 6 OF 7

ISSUE DATE: 07/01/14

PREPARED FOR: RAB LIGHTING, INC.

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.



itl boulder
THE LIGHT CENTER OF THE INDUSTRY SINCE 1955



INDEPENDENT TESTING LABORATORIES, INC.
4066 CAMELOT CIRCLE, LONGMONT, CO 80504 USA

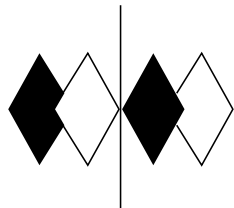
PHONE: (303) 442-1255 • FAX: (970) 535-3114 • E-MAIL: itl@itlboulder.com • WEBSITE: www.itlboulder.com

REPORT NUMBER: ITL82096
ISSUE DATE: 07/01/14
PREPARED FOR: RAB LIGHTING, INC.

PAGE: 7 OF 7

ADDRESS: 170 LUDLOW AVE
NORTHVALE, NJ 07647

THIS ITL 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.



itl boulder
THE LIGHT CENTER OF THE INDUSTRY SINCE 1955



INDEPENDENT TESTING LABORATORIES, INC.
4066 CAMELOT CIRCLE, LONGMONT, CO 80504 USA

PHONE: (303)442-1255 • FAX: (970)535-3114 • E-MAIL: itl@itlboulder.com • WEBSITE: www.itlboulder.com

Page 1 of 4

REPORT NUMBER: ITL82099
DATE: 07/07/14
PREPARED FOR: RAB LIGHTING, INC.
CATALOG NUMBER: BAYLED104Y (FLAT GLASS LENS - CEILING AND/OR PENDENT MOUNT - STANDARD DISTRIBUTION)

ADDRESS: 170 LUDLOW AVE
NORTHVALE, NJ 07647

LUMINAIRE: CAST 2-PIECE WHITE PAINTED FINNED METAL HOUSING, FLAT METAL HEAT SINK MOUNTING PLATE WITH 4 EXTRUDED METAL HEAT SINKS, 4 CIRCUIT BOARDS EACH WITH 1 LED AND MOLDED PLASTIC REFLECTOR WITH SPECULAR FINISH, MOLDED PLASTIC REFLECTOR WITH SPECULAR FINISH AND 1 APERTURE PER LED, CLEAR FLAT GLASS LENS IN CAST WHITE PAINTED METAL LENS FRAME.

LAMP: FOUR WHITE MULTI-CHIP LIGHT EMITTING DIODES (LEDS), TILTED 30-DEGREES FROM VERTICAL BASE-UP POSITION.

DRIVERS: FOUR RAB RD26

NOTE: DATA SHOWN IS ABSOLUTE FOR THE SAMPLE PROVIDED AT RATED INPUT VOLTAGE (120.0 AND 277.0 VAC, 60Hz) TO THE DRIVERS.

INSTRUMENTS:	Associated Power Technologies APT5040 AC Power Source	Calibration Due: N/A
	Yokogawa WT210 Digital Power Meter #8	12/31/14
	Ocean Optics QE65000 Spectroradiometer	04/13/14
	ITL 2.0m Diameter Integrating Sphere S20-2, 4PI Geometry	04/13/14

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. Measure electrical data including Total Harmonic Distortion (THD) at maximum rated voltage.

PROCEDURE: The test sample was provided by the customer and had an unknown number of operating 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. Electrical data was also recorded at maximum nominal rated input voltage (277.0 VAC). All testing performed 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)

THIS ITL 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.

Checked	<i>N THOMAS</i>
Approved	<i>P O'CONNOR</i> Sphere Lab Supervisor



itl boulder

THE LIGHT CENTER OF THE INDUSTRY SINCE 1955

NVLAP[®]

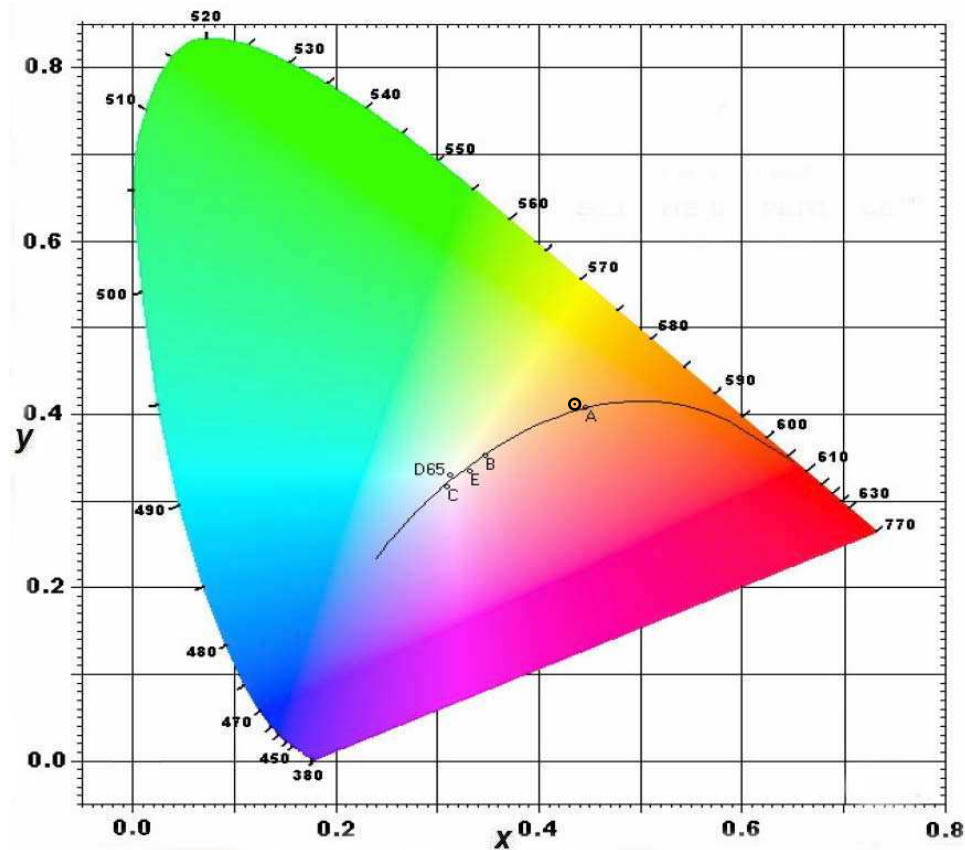
NVLAP LAB CODE: 200925-0

INDEPENDENT TESTING LABORATORIES, INC.
4066 CAMELOT CIRCLE, LONGMONT, CO 80504 USA

PHONE: (303)442-1255 • FAX: (970)535-3114 • E-MAIL: itl@itlboulder.com • WEBSITE: www.itlboulder.com
REPORT NUMBER: ITL82099
DATE: 07/07/14
PREPARED FOR: RAB LIGHTING, INC.
CATALOG NUMBER: BAYLED104Y (FLAT GLASS LENS - CEILING AND/OR PENDENT MOUNT - STANDARD DISTRIBUTION)

Page 4 of 4

CIE Chromaticity Diagram





INDEPENDENT TESTING LABORATORIES, INC.
4066 CAMELOT CIRCLE, LONGMONT, CO 80504 USA

PHONE: (303)442-1255 • FAX: (970)535-3114 • E-MAIL: itl@itlboulder.com • WEBSITE: www.itlboulder.com

Page 2 of 4

REPORT NUMBER: ITL82099
DATE: 07/07/14
PREPARED FOR: RAB LIGHTING, INC.
CATALOG NUMBER: BAYLED104Y (FLAT GLASS LENS - CEILING AND/OR PENDENT MOUNT - STANDARD DISTRIBUTION)

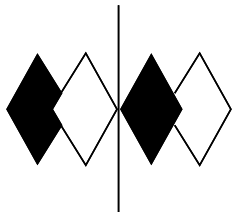
RESULTS:

SPECTRORADIOMETRIC	
Observer	CIE 1931 2 degree
Chromaticity Ordinate x	0.4351
Chromaticity Ordinate y	0.4112
Observer	CIE 1976 2 degree
Chromaticity Ordinate u'	0.2464
Chromaticity Ordinate v'	0.5239
Correlated Color Temp CCT (K)	3087
ANSI C78.377-2008 Duv	0.003
Total Radiant Flux (milliWatts)	27949 *
ELECTRICAL	
Input Voltage (Volts AC)	120.0
Input Current (Amps AC)	1.02
Input Power (Watts)	121.2
Input Power Factor (%)	99.0
Input Current THD (%)	8.2
Input Voltage THD (%)	0.1
Off-State Power (Watts)	
	0.0
ELECTRICAL AT MAX NONIMAL INPUT	
Input Voltage (Volts AC)	277.0
Input Current (Amps AC)	0.477
Input Power (Watts)	120.4
Input Power Factor (%)	91.1
Input Current THD (%)	11.1
Input Voltage THD (%)	0.1

COLOR RENDERING INDICES	CRI
Ra (Average 1-8)	81
R1 Light greyish red	79
R2 Dark greyish yellow	87
R3 Strong yellowish green	96
R4 Moderate yellowish green	82
R5 Light bluish green	79
R6 Light blue	85
R7 Light violet	84
R8 Light reddish purple	58
R9 Strong red	-1
R10 Strong yellow	72
R11 Strong green	82
R12 Strong blue	65
R13 Light yellowish pink (skin)	81
R14 Moderate olive green (leaf)	98

*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.



itl boulder
THE LIGHT CENTER OF THE INDUSTRY SINCE 1955

NVLAP
NVLAP LAB CODE: 200925-0

INDEPENDENT TESTING LABORATORIES, INC.
4066 CAMELOT CIRCLE, LONGMONT, CO 80504 USA

PHONE: (303)442-1255 • FAX: (970)535-3114 • E-MAIL: itl@itlboulder.com • WEBSITE: www.itlboulder.com

Page 3 of 4

REPORT NUMBER:

ITL82099

DATE:

07/07/14

PREPARED FOR:

RAB LIGHTING, INC.

CATALOG NUMBER:

BAYLED104Y (FLAT GLASS LENS - CEILING AND/OR PENDENT MOUNT - STANDARD DISTRIBUTION)

RESULTS:

Wavelength	mW per nm	Wavelength	mW per nm	Wavelength	mW per nm
380	0.601	515	91.614	650	103.795
385	0.583	520	98.679	655	92.539
390	0.611	525	103.825	660	81.765
395	0.672	530	107.635	665	71.801
400	0.830	535	110.587	670	62.743
405	1.170	540	113.167	675	54.626
410	1.853	545	116.074	680	47.377
415	3.257	550	119.796	685	40.961
420	6.173	555	124.623	690	35.297
425	11.902	560	131.056	695	30.326
430	21.837	565	139.149	700	26.012
435	37.253	570	147.957	705	22.301
440	62.233	575	157.460	710	19.072
445	92.666	580	167.183	715	16.260
450	96.871	585	176.168	720	13.859
455	71.158	590	183.351	725	11.808
460	49.856	595	188.319	730	10.063
465	37.843	600	190.437	735	8.577
470	28.875	605	189.932	740	7.312
475	24.605	610	186.768	745	6.245
480	25.217	615	181.059	750	5.361
485	29.383	620	172.986	755	4.575
490	36.925	625	163.221	760	3.921
495	47.467	630	151.956	765	3.352
500	59.660	635	140.167	770	2.871
505	71.636	640	127.991	775	2.471
510	82.620	645	115.738	780	2.129

