

**REPORT NUMBER:** RAB04703

**PAGE:** 1 OF 10

**ISSUE DATE:** 11/21/18

**DATE SAMPLE TESTED:** 11/21/18

**PREPARED FOR:** RAB LIGHTING INC.

**CATALOG NUMBER:** W34-90L-830

**LUMINAIRE:** WALLPACK WITH ALUMINUM PRECISION DIE CAST CONSTRUCTION, CLEAR GLASS LENS AND SPECULAR ALUMINUM REFLECTOR.

**LAMPS:** ONE HUNDRED AND EIGHTY WHITE LIGHT EMITTING DIODES (LEDs)

**ABSOLUTE:** NOTE: DATA SHOWN IS ABSOLUTE FOR THE SAMPLE PROVIDED.

**WATT:** TOTAL INPUT WATTS = 87.393 W AT 120.0 VAC.

**LED DRIVER:** LED DRIVER: RDD-SLP-080-A1750-S (-40C)

**PROCEDURE:** TEST PROCEDURE: IESNA LM-79-08

**NOTE:** LM-80 DATA AVAILABLE FROM MANUFACTURER FOR SOLID STATE SOURCE  
AMBIENT: 24.4

**NVLAP LAB CODE:** ACCREDITED LABORATORY CODE 201058-0



THIS 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 X.CAO

Approved D.WANG-MUNSON

REPORT NUMBER: RAB04703

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## ISOFOOTCANDLE LINES OF HORIZONTAL ILLUMINATION

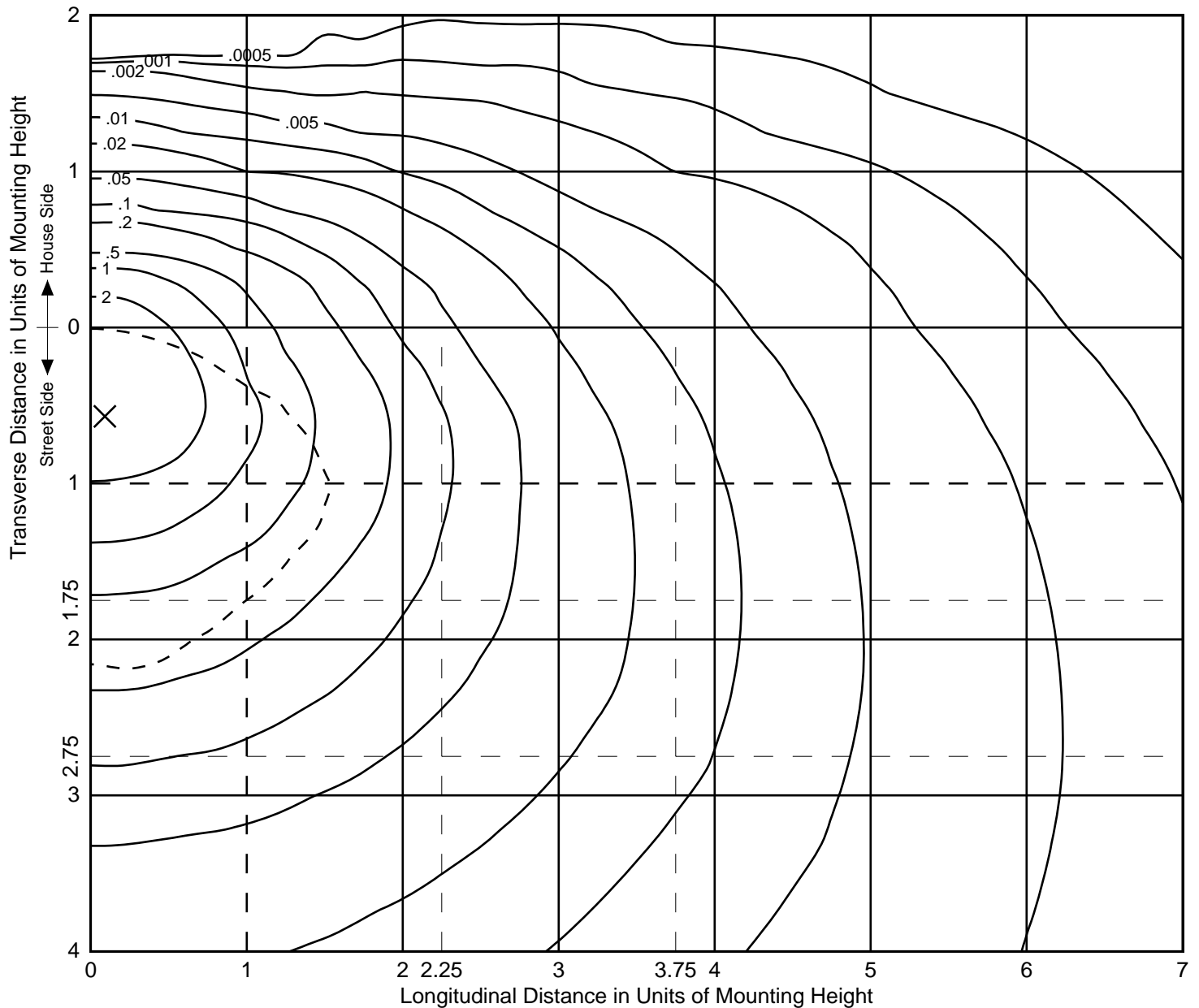
Values based on 28-foot mounting height

IES Classification: (does not classify)

Cutoff Classification (deprecated): Semicutoff

--- 1/2 Maximum Candela trace

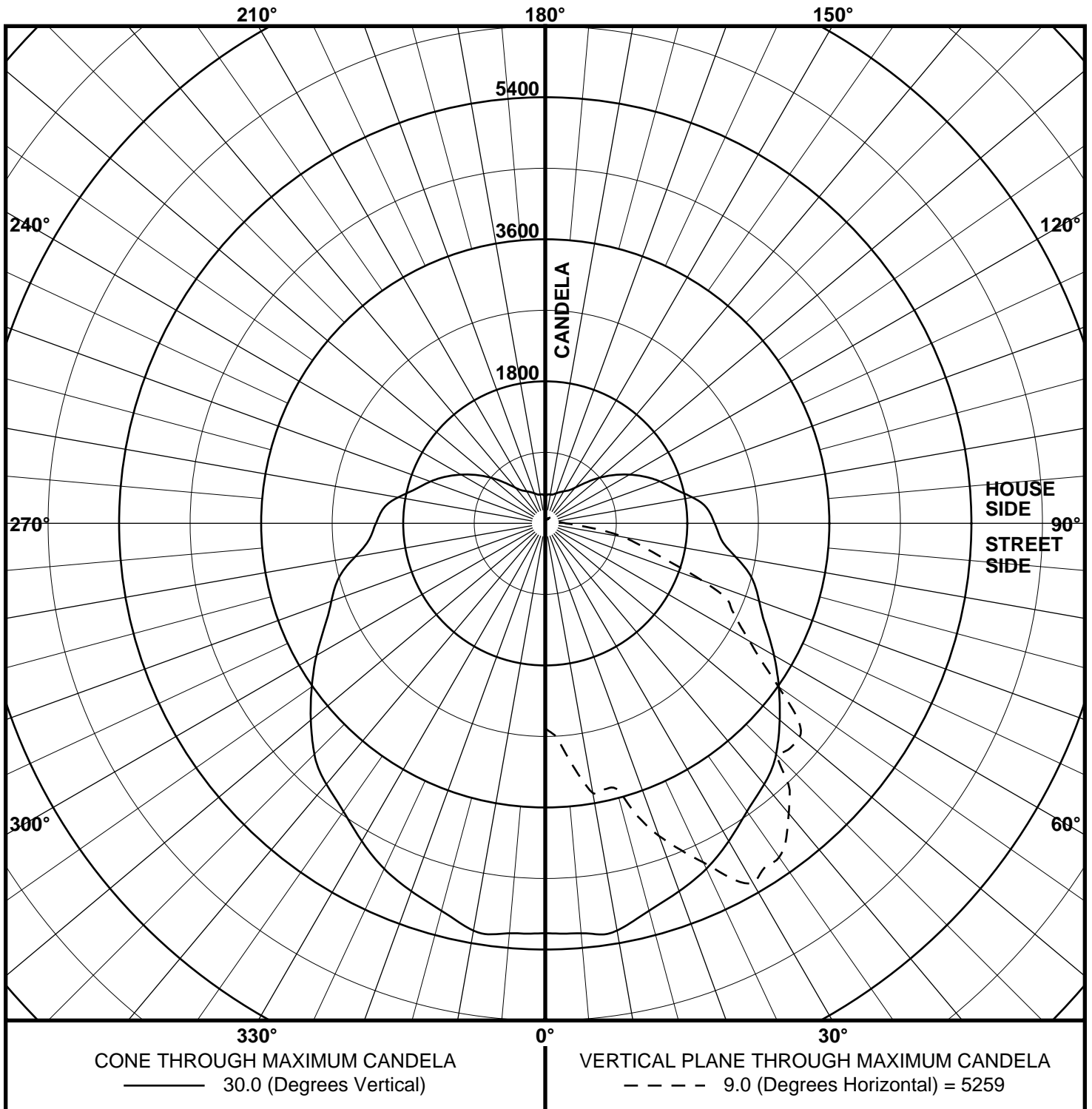
× Maximum Candela point



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## MAXIMUM PLANE AND MAXIMUM CONE PLOTS OF CANDELA



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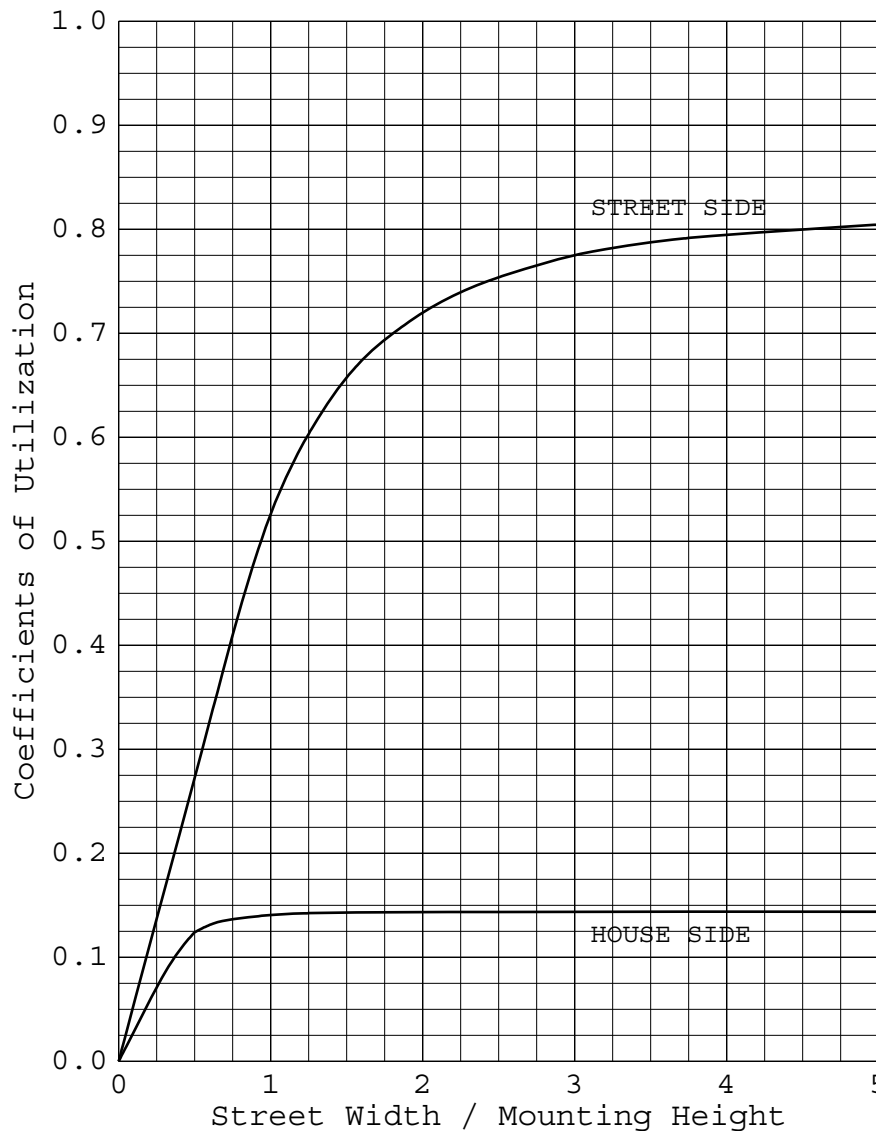
**ISSUE DATE:** 11/21/18

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## COEFFICIENTS OF UTILIZATION AND FLUX DISTRIBUTION



	LUMENS	PERCENT OF FIXTURE
DOWNWARD STREET SIDE	7360	82.6
DOWNWARD HOUSE SIDE	1289	14.5
DOWNWARD TOTAL	8649	97.1
UPWARD STREET SIDE	231	2.6
UPWARD HOUSE SIDE	29	0.3
UPWARD TOTAL	260	2.9
TOTAL FLUX	8909	100.0

EFFICACY = 101.9 lm/W

ALL CANDELA AND LUMENS 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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BUG Rating			B2 U3 G3		
Zonal Summary			Zone Ratings		
			B	U	G
Forward					
FL	(0° – 30°)	7360			
FM	(30° – 60°)	1443.7			
FH	(60° – 80°)	3987.8			
FVH	(80° – 90°)	1691.3			G1
		236.7			G3
Backward					
BL	(0° – 30°)	1289			
BM	(30° – 60°)	645.6	B2		
BH	(60° – 80°)	539.7	B1		
BVH	(80° – 90°)	93.1	B0		G0
		10.8			G1
Upward					
UL	(90° – 100°)	260			
UH	(100° – 180°)	76.8		U3	
		183.5		U3	
Trapped Light					
Total Flux					
		0			
		8909			
		100.0			

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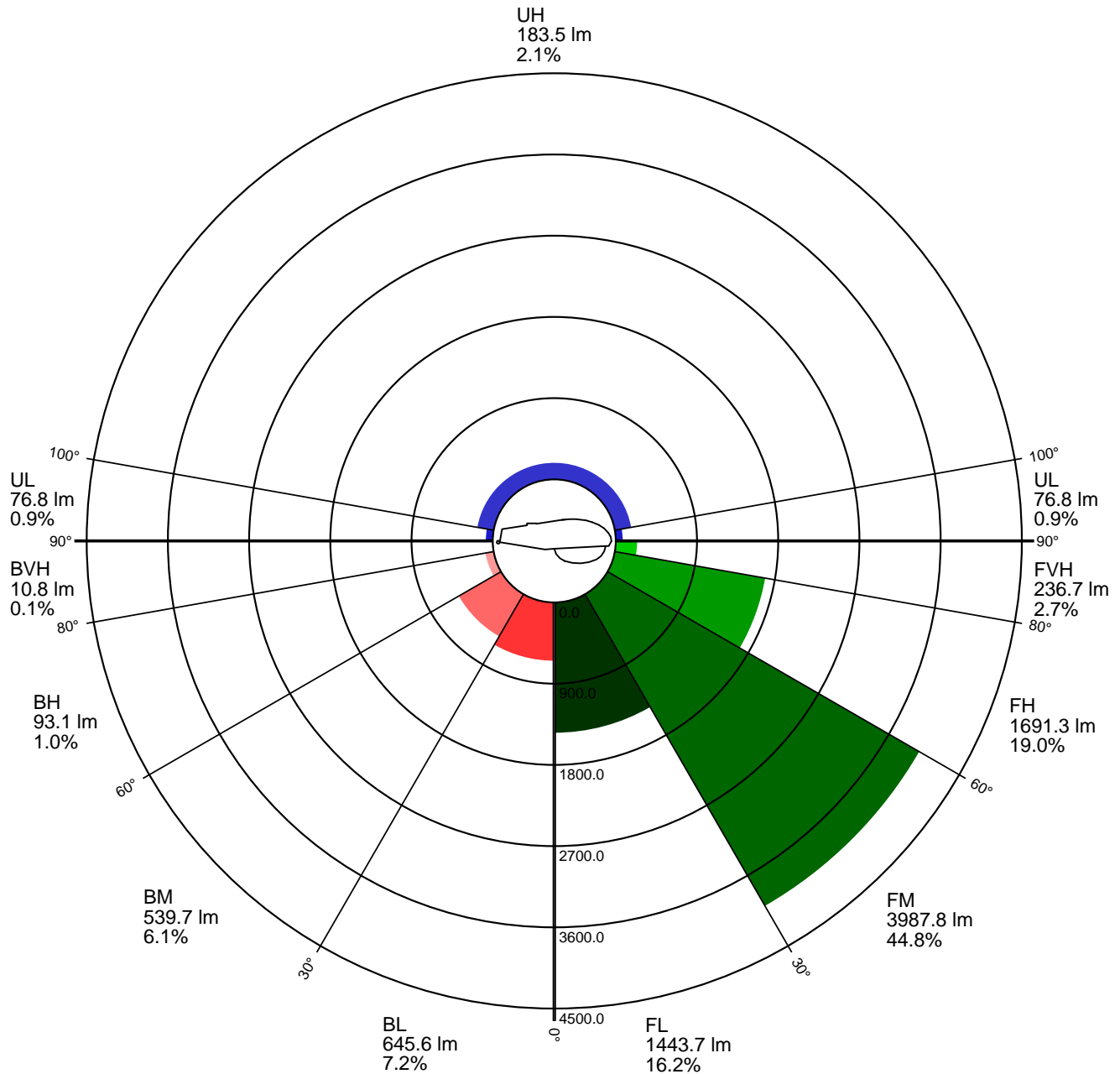
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## Zonal Lumen Summary

(Linear scale)

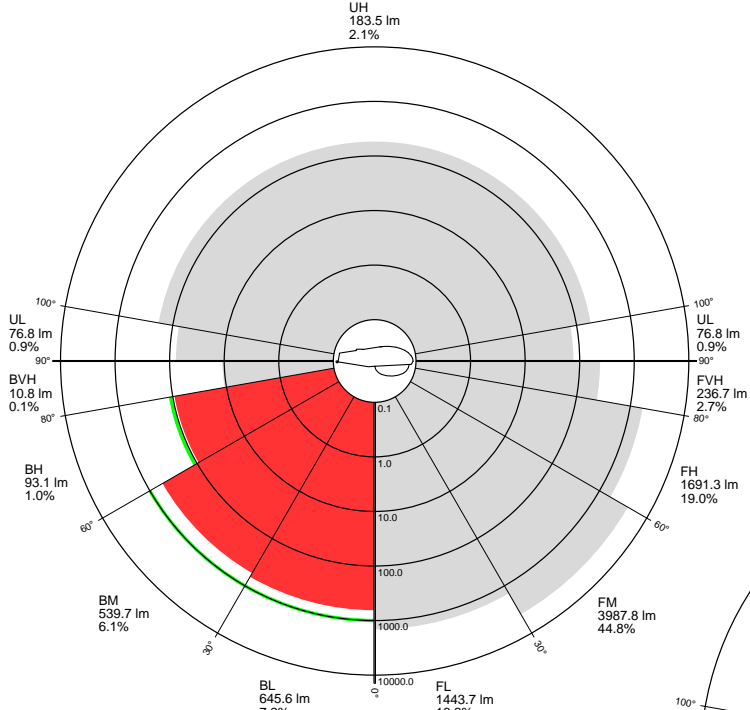


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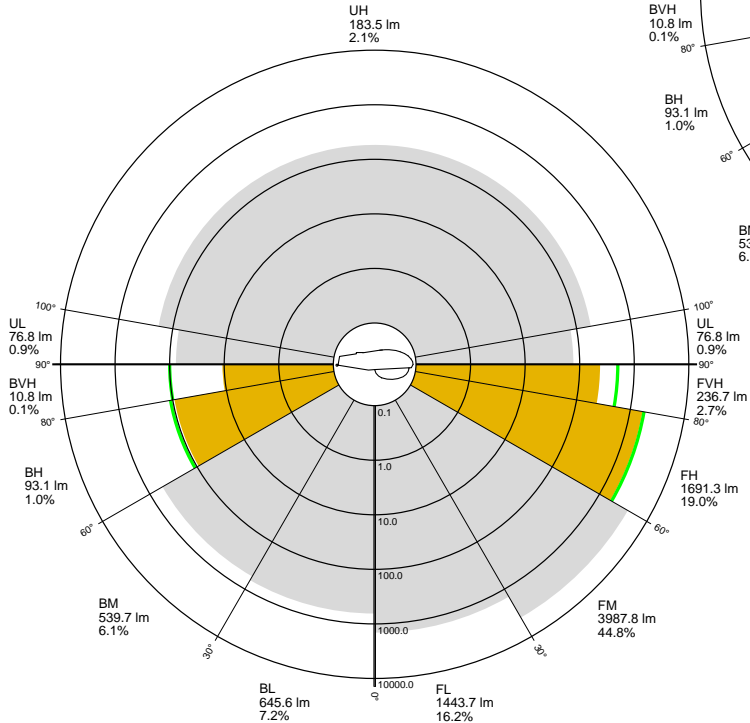
### Backlight Rating Details

(Logarithmic scale)



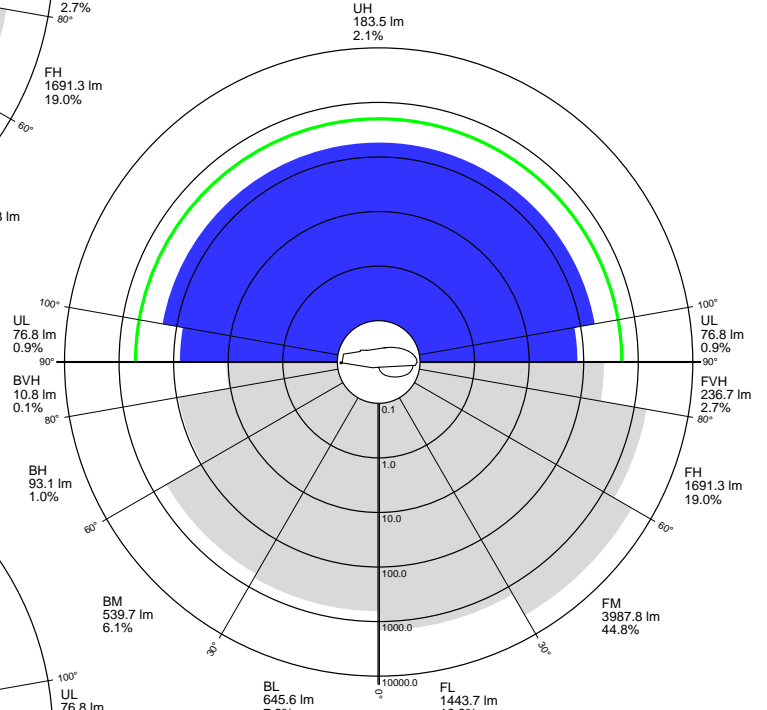
### Glare Rating Details

(Logarithmic scale)



### Uplight Rating Details

(Logarithmic scale)



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### CANDELA TABULATION

	STREET SIDE			LATERAL ANGLE							
	0.0	5.0	9.0	15.0	25.0	35.0	45.0	55.0	65.0	75.0	85.0
	180.0	5.	5.	5.	5.	5.	5.	5.	5.	5.	5.
	175.0	2.	2.	2.	2.	3.	4.	6.	7.	8.	8.
	165.0	16.	16.	16.	15.	13.	11.	8.	6.	7.	9.
	155.0	44.	43.	43.	41.	37.	31.	24.	16.	10.	9.
	145.0	81.	80.	80.	77.	68.	58.	45.	32.	19.	11.
	135.0	108.	107.	106.	102.	92.	80.	63.	46.	32.	16.
	125.0	116.	116.	114.	109.	98.	85.	71.	53.	37.	21.
	115.0	133.	132.	130.	124.	110.	91.	74.	59.	46.	33.
	105.0	144.	143.	142.	136.	121.	102.	83.	70.	59.	43.
	95.0	185.	184.	181.	180.	163.	145.	123.	108.	94.	68.
	92.5	217.	216.	215.	210.	192.	174.	153.	140.	120.	84.
	90.0	263.	261.	256.	259.	239.	226.	203.	186.	160.	112.
	87.5	376.	369.	363.	374.	345.	332.	287.	263.	230.	161.
	85.0	546.	527.	520.	548.	505.	480.	451.	418.	343.	233.
V	82.5	801.	786.	772.	780.	736.	711.	648.	576.	471.	338.
E	80.0	1029.	1020.	1008.	1016.	975.	898.	820.	781.	639.	464.
R	77.5	1217.	1200.	1194.	1185.	1132.	1106.	1075.	1042.	827.	603.
T	75.0	1404.	1435.	1410.	1433.	1398.	1414.	1393.	1299.	1016.	726.
I	72.5	1717.	1702.	1701.	1740.	1755.	1784.	1715.	1533.	1202.	903.
C	70.0	2116.	2145.	2110.	2177.	2137.	2079.	1933.	1748.	1421.	1134.
A	67.5	2462.	2531.	2482.	2497.	2396.	2271.	2119.	1991.	1689.	1308.
L	65.0	2658.	2692.	2613.	2631.	2547.	2459.	2337.	2289.	1936.	1504.
	62.5	2762.	2818.	2776.	2839.	2745.	2702.	2667.	2605.	2152.	1632.
A	60.0	2990.	3082.	2990.	3050.	2985.	3044.	3023.	2843.	2346.	1808.
N	57.5	3207.	3289.	3250.	3360.	3348.	3466.	3333.	2996.	2560.	1933.
G	55.0	3613.	3678.	3605.	3697.	3753.	3688.	3476.	3128.	2758.	2012.
L	52.5	3975.	4048.	4010.	4124.	4034.	3845.	3593.	3398.	2869.	2061.
E	50.0	4258.	4342.	4209.	4196.	4151.	3888.	3787.	3574.	2922.	2077.
	47.5	4319.	4371.	4213.	4211.	4158.	4111.	4006.	3708.	2975.	2148.
	45.0	4274.	4338.	4174.	4198.	4422.	4380.	4121.	3788.	3020.	2280.
	42.5	4593.	4699.	4584.	4563.	4647.	4587.	4272.	3819.	3098.	2396.
	40.0	4755.	4852.	4800.	4753.	4832.	4711.	4365.	3749.	3113.	2453.
	37.5	4964.	5054.	5019.	4961.	4924.	4754.	4405.	3745.	3107.	2622.
	35.0	5046.	5119.	5167.	4984.	4938.	4772.	4300.	3741.	3064.	2733.
	32.5	5131.	5163.	5174.	5048.	4971.	4716.	4203.	3703.	3060.	2712.
	30.0<<	5194.	5214.	5259.	5082.	4830.	4458.	4137.	3613.	3082.	2715.
	25.0	4697.	4721.	4742.	4590.	4314.	4102.	3795.	3357.	3113.	2717.
	20.0	4229.	4217.	4216.	4108.	3914.	3623.	3432.	3314.	3028.	2639.
	15.0	3483.	3505.	3483.	3484.	3460.	3396.	3338.	3028.	2854.	2644.
	10.0	3484.	3491.	3469.	3376.	3169.	3086.	3124.	2762.	2837.	2617.
	5.0	2907.	2913.	2921.	2929.	2916.	2826.	2715.	2638.	2701.	2651.
	0.0	2597.	2597.	2597.	2597.	2597.	2597.	2597.	2597.	2597.	2597.

||  
PLANE OF MAXIMUM CANDELA

CONE OF MAXIMUM CANDELA



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### CANDELA TABULATION

	LATERAL ANGLE										
	HOUSE SIDE	90.0	95.0	105.0	115.0	125.0	135.0	145.0	155.0	165.0	175.0 180.0
	180.0	5.	5.	5.	5.	5.	5.	5.	5.	5.	5.
	175.0	8.	8.	8.	8.	7.	7.	6.	5.	5.	5.
	165.0	9.	9.	9.	9.	8.	8.	7.	7.	8.	8.
	155.0	9.	9.	9.	9.	9.	9.	9.	9.	9.	9.
	145.0	9.	9.	9.	9.	9.	9.	10.	10.	10.	10.
	135.0	10.	10.	9.	9.	9.	9.	9.	9.	10.	10.
	125.0	12.	11.	9.	9.	8.	8.	8.	8.	8.	8.
	115.0	18.	14.	10.	9.	8.	8.	7.	7.	7.	7.
	105.0	24.	21.	12.	10.	8.	7.	7.	7.	7.	7.
	95.0	28.	24.	16.	10.	8.	7.	6.	5.	6.	6.
	92.5	34.	26.	18.	11.	8.	7.	6.	5.	5.	5.
	90.0	52.	31.	21.	11.	8.	7.	6.	5.	5.	5.
	87.5	79.	41.	26.	13.	9.	7.	5.	5.	5.	5.
	85.0	118.	70.	35.	15.	9.	6.	5.	4.	4.	4.
V	82.5	160.	110.	47.	19.	10.	6.	5.	4.	3.	4.
E	80.0	223.	171.	64.	23.	10.	6.	5.	4.	3.	3.
R	77.5	297.	234.	82.	29.	11.	6.	4.	3.	3.	2.
T	75.0	370.	282.	104.	38.	13.	7.	4.	3.	2.	2.
I	72.5	430.	334.	138.	54.	17.	7.	4.	3.	2.	2.
C	70.0	517.	401.	182.	76.	24.	8.	4.	3.	2.	1.
A	67.5	617.	514.	232.	103.	37.	9.	4.	3.	2.	1.
L	65.0	708.	608.	304.	134.	53.	17.	4.	2.	2.	1.
	62.5	793.	690.	377.	172.	72.	30.	8.	3.	2.	1.
A	60.0	916.	809.	487.	217.	96.	43.	23.	9.	4.	1.
N	57.5	1036.	917.	571.	268.	123.	61.	33.	26.	16.	13.
G	55.0	1139.	1008.	651.	323.	160.	79.	45.	35.	33.	32.
L	52.5	1211.	1100.	751.	386.	206.	104.	65.	45.	40.	40.
E	50.0	1363.	1238.	882.	457.	258.	132.	83.	66.	51.	48.
	47.5	1492.	1311.	975.	551.	315.	174.	107.	83.	72.	68.
	45.0	1590.	1432.	1090.	647.	371.	223.	135.	105.	91.	85.
	42.5	1702.	1537.	1177.	751.	435.	278.	180.	128.	113.	107.
	40.0	1768.	1615.	1289.	896.	505.	340.	233.	173.	136.	125.
	37.5	1864.	1703.	1405.	1012.	604.	408.	299.	230.	185.	166.
	35.0	1978.	1815.	1466.	1152.	736.	478.	364.	297.	244.	228.
	32.5	2090.	1951.	1541.	1267.	916.	568.	438.	366.	315.	304.
	30.0<<	2146.	2066.	1693.	1397.	1068.	730.	508.	435.	379.	367.
	25.0	2296.	2231.	1828.	1635.	1376.	1098.	848.	676.	550.	525.
	20.0	2423.	2283.	2200.	1847.	1660.	1457.	1277.	1113.	1088.	972.
	15.0	2482.	2354.	2210.	2056.	1915.	1767.	1592.	1630.	1478.	1370.
	10.0	2538.	2526.	2522.	2250.	2389.	1943.	2044.	1923.	1830.	1738.
	5.0	2586.	2558.	2515.	2601.	2577.	2500.	2361.	2314.	2328.	2386.
	0.0	2597.	2597.	2597.	2597.	2597.	2597.	2597.	2597.	2597.	2597.

CONE OF MAXIMUM CANDELA

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### 5-DEGREE ZONAL LUMEN SUMMARY

0- 5	62
5- 10	185
10- 15	300
15- 20	408
20- 25	517
25- 30	618
30- 35	710
35- 40	768
40- 45	790
45- 50	785
50- 55	771
55- 60	705
60- 65	609
65- 70	516
70- 75	392
75- 80	268
80- 85	166
85- 90	82
90- 95	45
95-100	32
100-105	27
105-110	24
110-115	22
115-120	20
120-125	18
125-130	16
130-135	15
135-140	12
140-145	10
145-150	7
150-155	5
155-160	3
160-165	2
165-170	1
170-175	0
175-180	0

### 10-DEGREE ZONAL LUMEN SUMMARY

0- 10	247
0- 20	955
0- 30	2089
0- 40	3567
0- 50	5142
0- 60	6617
0- 70	7741
0- 80	8401
0- 90	8649
0-100	8725
0-110	8777
0-120	8819
0-130	8854
0-140	8881
0-150	8898
0-160	8906
0-170	8908
0-180	8909

REPORT NUMBER: RAB04733  
DATE: 12/18/2018  
PREPARED FOR: RAB LIGHTING INC.  
CATALOG NUMBER: W34-90L-830

ADDRESS: 170 LUDLOW AVE, NORTHVALE, NJ 07647

LUMINAIRE: WALLPACK WITH ALUMINUM PRECISION DIE CAST CONSTRUCTION, CLEAR GLASS LENS AND SPECULAR ALUMINUM REFLECTOR.

LAMP: ONE HUNDRED AND EIGHTY WHITE LIGHT EMITTING DIODES (LEDs)

DRIVER: RDD-SLP-080-A1750-S (-40C)

OBJECT OF TEST: DATA SHOWN IS ABSOLUTE FOR THE SAMPLE PROVIDED AT THE RATED INPUT VOLTAGES (120.0 AND 277.0 VAC, 60Hz) TO THE TEST SAMPLE.

INSTRUMENTS:	GWINSTEK PROGRAMMABLE AC POWER SOURCE APS-7100	Calibration Due:
	CHROMA PROGRAMMABLE DIGITAL POWER METER MODEL 66202	N/A
	OCEAN OPTICS QE65PRO Spectroradiometer	3/08/19
	RAB 2.0 meter Diameter Integrating Sphere, 4PI Geometry	12/11/19

OBJECT OF TEST: Measure the Absolute Flux in lumens\*, Total Radiant Flux\*, Spectral Power Distribution (SPD), Correlated Color Temperature (CCT), Color Rendering Indices (CRIa,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. Measure electrical data including Total Harmonic Distortion (THD) at maximum nominal rated input voltage. Report Off-State Power.

PROCEDURE: The test sample was mounted inside the integrating sphere, energized, 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 60 HZ input in a 25 +/-1 degree Celsius free air ambient and in accordance with IESNA LM-79-08. Electrical data was also recorded at maximum nominal rated input voltage (277.0 VAC). 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:

PHOTOMETRIC	
Total Integrated Flux (lumens)	8909 *
SPECTRORADIOMETRIC	
Observer	CIE 1931 2 degree
Chromaticity Ordinate x	0.4284
Chromaticity Ordinate y	0.3976
Observer	CIE 1976 2 degree
Chromaticity Ordinate u'	0.2479
Chromaticity Ordinate v'	0.5175
Correlated Color Temp CCT (K)	3094
ANSI C78.377-2008 Duv	-0.001
Total Radiant Flux (milliWatts)	27423 *
ELECTRICAL	
Input Voltage (Volts AC)	120.0
Input Current (Amps AC)	0.731
Input Power (Watts)	87.4
Input Power Factor (%)	99.6
Input Current THD (%)	7.7
Input Voltage THD (%)	0.2
EFFICACY (Lumens/Watt)	
	101.9
ELECTRICAL AT MAX NONIMAL INPUT	
Input Voltage (Volts AC)	277.0
Input Current (Amps AC)	0.314
Input Power (Watts)	84.6
Input Power Factor (%)	97.3
Input Current THD (%)	9.0
Input Voltage THD (%)	0.2
Off-State Power (Watts)	
	0.0

COLOR RENDERING INDICES	CRI
Ra (Average 1-8)	82
R1 Light greyish red	81
R2 Dark greyish yellow	90
R3 Strong yellowish green	96
R4 Moderate yellowish green	80
R5 Light bluish green	81
R6 Light blue	88
R7 Light violet	83
R8 Light reddish purple	60
R9 Strong red	9
R10 Strong yellow	78
R11 Strong green	79
R12 Strong blue	70
R13 Light yellowish pink (skin)	83
R14 Moderate olive green (leaf)	98

### \*NOTE:

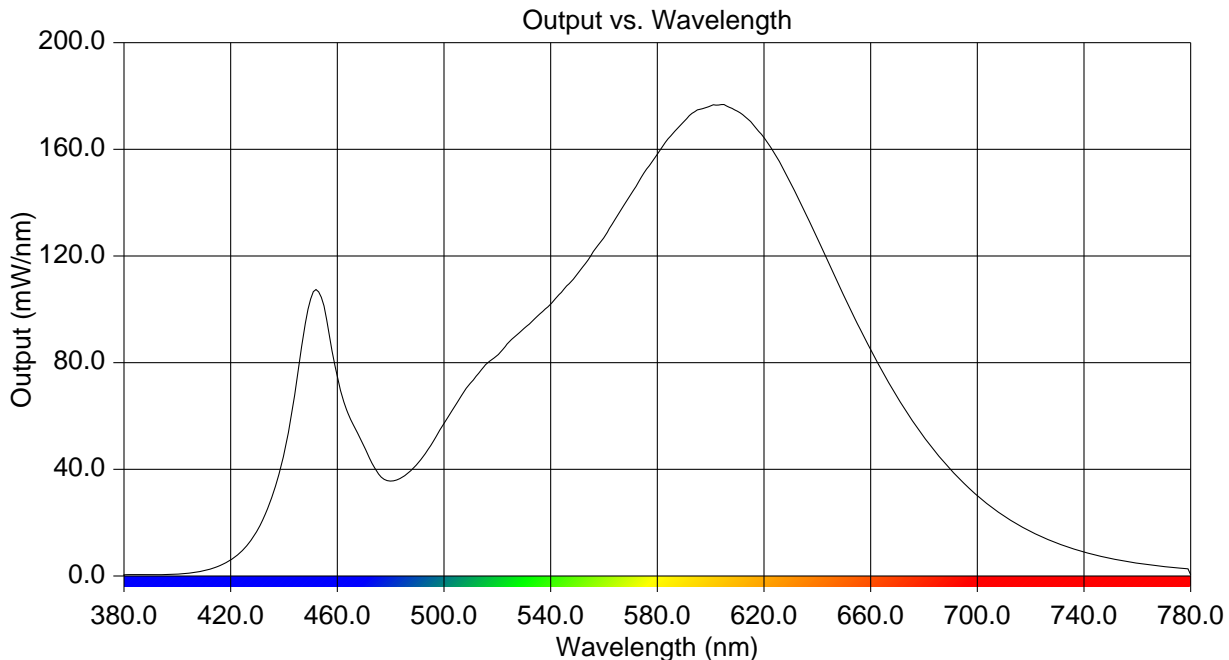
Proper calibration of integrating spheres for measuring total flux output of non-directional samples will produce reliable, repeatable results within the calibration tolerances of the equipment used. However, measurement of test samples with significant self absorption and/or directional output, even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

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### RESULTS:

Wavelength	mW per nm	Wavelength	mW per nm	Wavelength	mW per nm
380	0.434	515	78.506	650	104.935
385	0.457	520	82.711	655	94.626
390	0.486	525	88.405	660	84.883
395	0.539	530	92.824	665	75.650
400	0.709	535	97.407	670	67.021
405	1.136	540	101.904	675	59.299
410	1.964	545	107.584	680	52.018
415	3.498	550	113.282	685	45.659
420	6.020	555	119.984	690	39.845
425	10.143	560	126.915	695	34.744
430	17.084	565	135.065	700	30.138
435	28.283	570	143.083	705	26.062
440	45.900	575	151.166	710	22.566
445	74.533	580	158.297	715	19.387
450	103.884	585	164.988	720	16.661
455	101.303	590	170.344	725	14.291
460	74.755	595	174.784	730	12.248
465	58.679	600	176.355	735	10.507
470	48.686	605	176.803	740	8.996
475	38.979	610	174.308	745	7.691
480	35.546	615	170.418	750	6.585
485	37.409	620	164.389	755	5.646
490	42.038	625	156.835	760	4.806
495	48.877	630	147.237	765	4.110
500	57.309	635	137.165	770	3.548
505	65.129	640	126.515	775	3.031
510	72.332	645	115.939	780	0.455



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## CIE Chromaticity Diagram

