

REPORT NUMBER: RAB04712

PAGE: 1 OF 10

ISSUE DATE: 11/30/18

DATE SAMPLE TESTED: 11/30/18

PREPARED FOR: RAB LIGHTING INC.

CATALOG NUMBER: W34-70L-830

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

LAMPS: ONE HUNDRED AND FORTY FOUR WHITE LIGHT EMITTING DIODES (LEDs)

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

WATT: TOTAL INPUT WATTS = 69.6 W AT 120.0 VAC.

LED DRIVER: LED DRIVER: RDD-SL-060-A1300 (-40C)

PROCEDURE: TEST PROCEDURE: IESNA LM-79-08

NOTE: LM-80 DATA AVAILABLE FROM MANUFACTURER FOR SOLID STATE SOURCE
AMBIENT: 25.0

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

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ISOFOOTCANDLE LINES OF HORIZONTAL ILLUMINATION

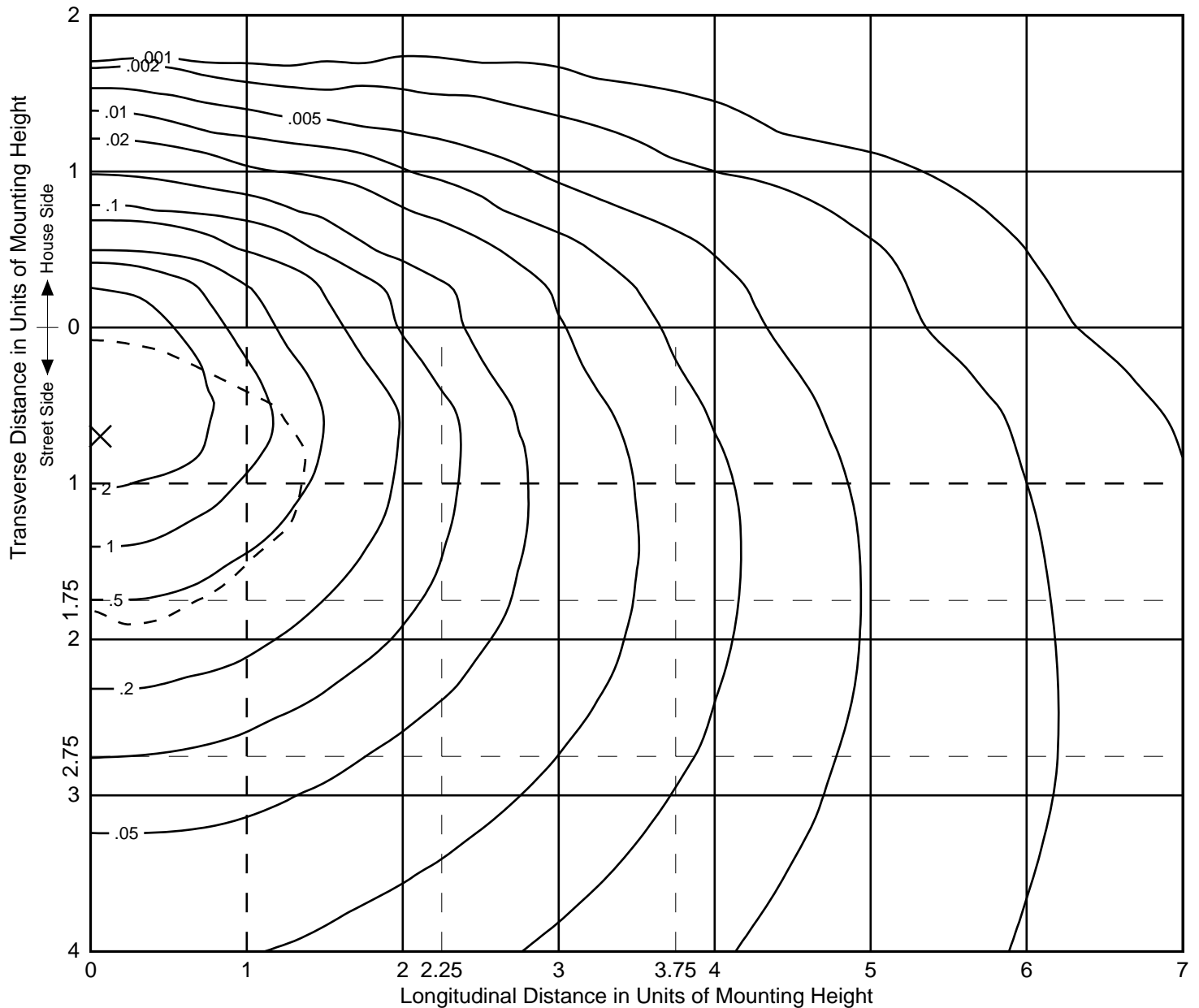
Values based on 24-foot mounting height

IES Classification: (does not classify)

Cutoff Classification (deprecated): Semicutoff

— — — — — 1/2 Maximum Candela trace

× Maximum Candela point



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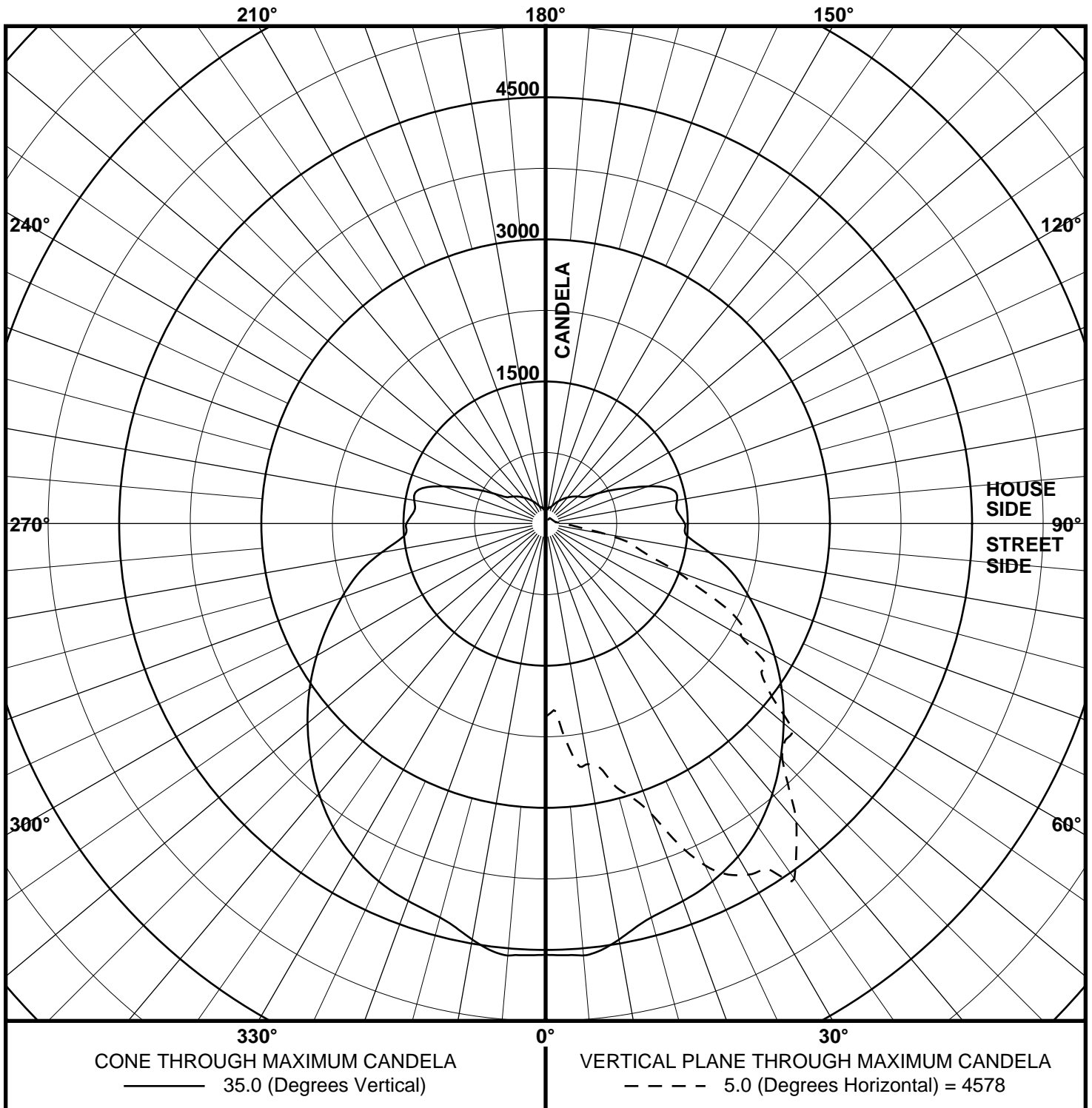
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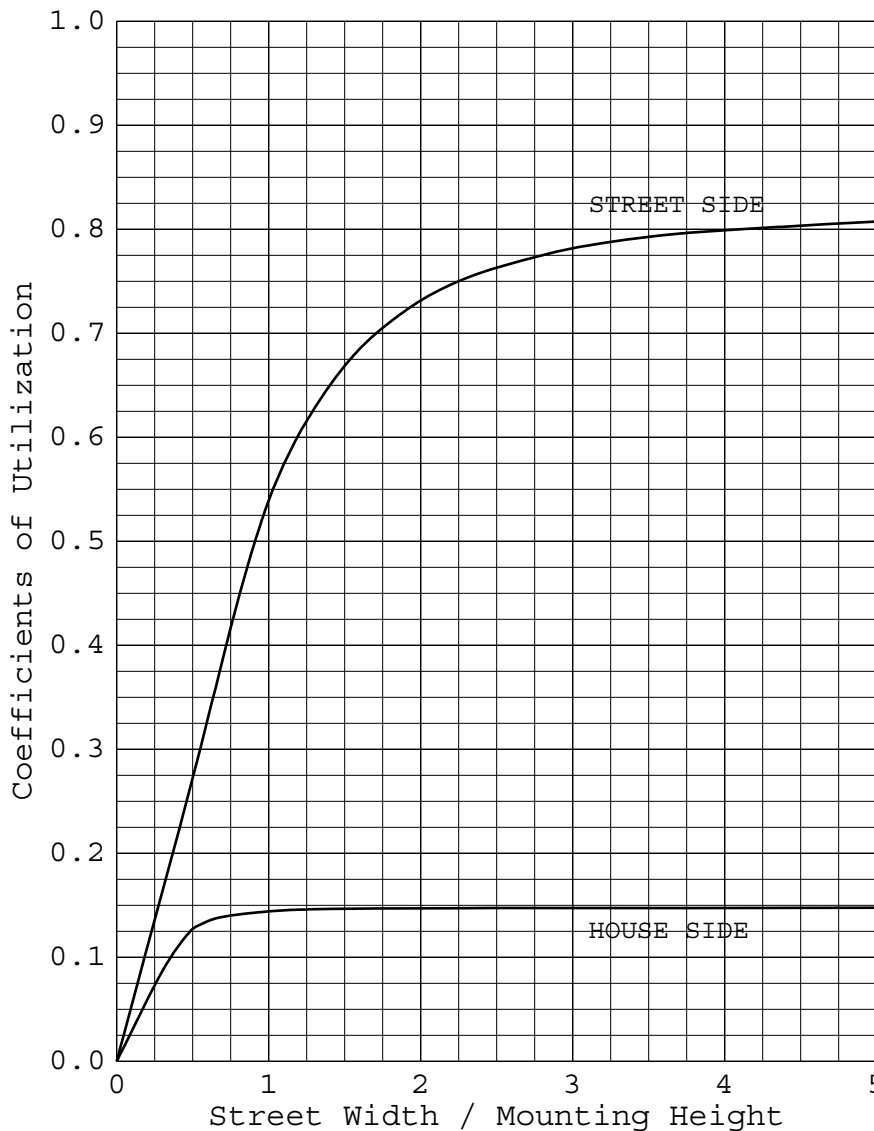
MAXIMUM PLANE AND MAXIMUM CONE PLOTS OF CANDELA



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COEFFICIENTS OF UTILIZATION AND FLUX DISTRIBUTION



	LUMENS	PERCENT OF FIXTURE
DOWNWARD STREET SIDE	5811	82.5
DOWNWARD HOUSE SIDE	1044	14.8
DOWNWARD TOTAL	6855	97.3
UPWARD STREET SIDE	170	2.4
UPWARD HOUSE SIDE	23	0.3
UPWARD TOTAL	192	2.7
TOTAL FLUX	7047	100.0

EFFICACY = 101.3 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			<div>B2 U3 G2</div>		
Zonal Summary			Zone Ratings		
			B	U	G
Forward					
FL	(0° – 30°)	5811			
FM	(30° – 60°)	1139.0			
FH	(60° – 80°)	3240.9			
FVH	(80° – 90°)	1279.3			G1
		152.0			G2
Backward					
BL	(0° – 30°)	1044			
BM	(30° – 60°)	526.9	B2		
BH	(60° – 80°)	431.6	B1		
BVH	(80° – 90°)	77.2	B0		G0
		8.2			G0
Upward					
UL	(90° – 100°)	192			
UH	(100° – 180°)	55.8		U3	
		136.3		U3	
Trapped Light					
Total Flux					
		0			
		7047			
		100.0			

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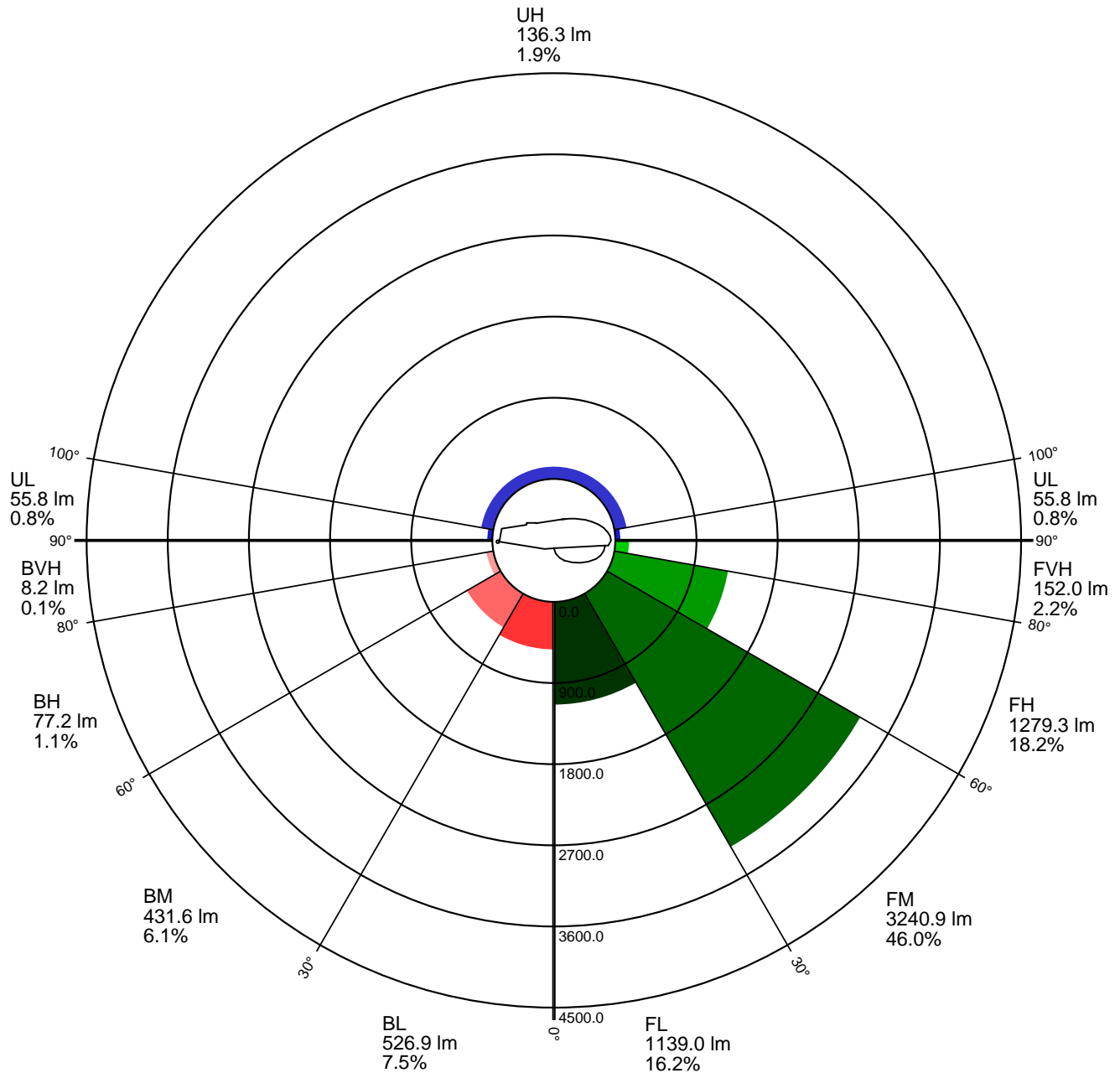
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Zonal Lumen Summary

(Linear scale)

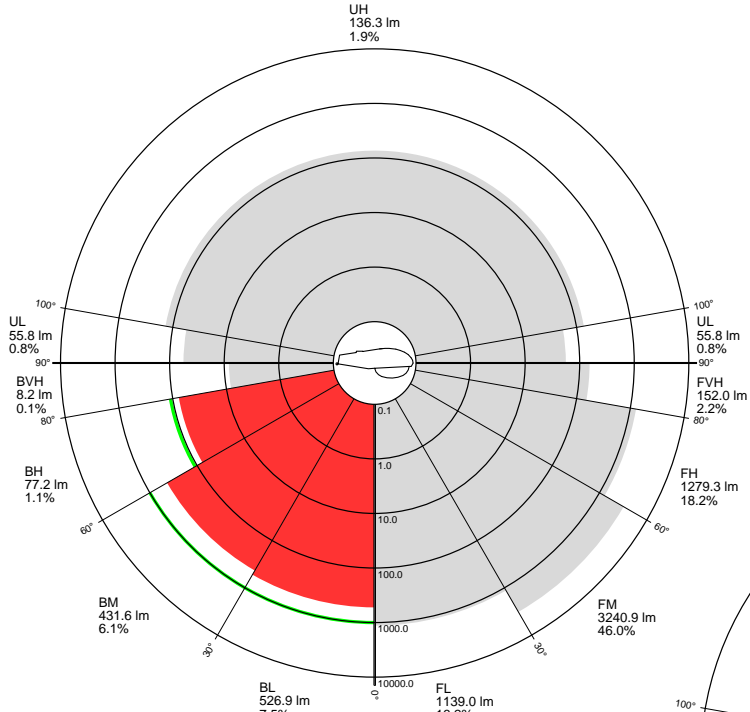


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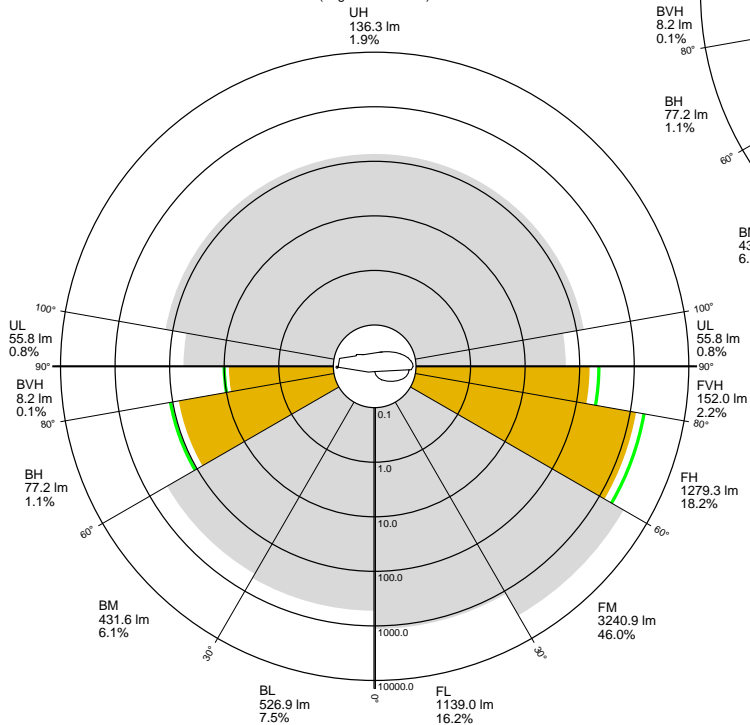
Backlight Rating Details

(Logarithmic scale)



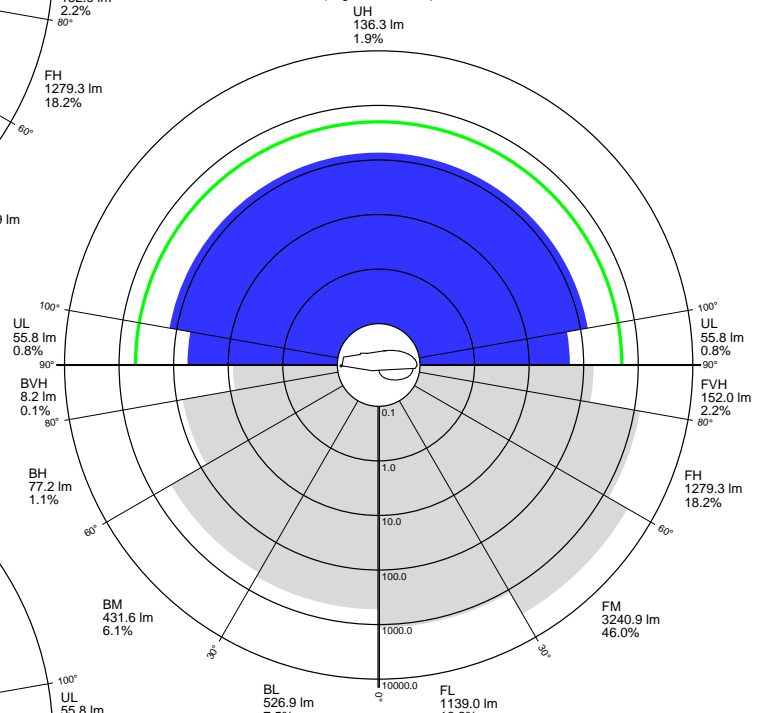
Glare Rating Details

(Logarithmic scale)



Uplight Rating Details

(Logarithmic scale)



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CANDELA TABULATION

	STREET SIDE		LATERAL ANGLE								
	0.0	4.0	5.0	15.0	25.0	35.0	45.0	55.0	65.0	75.0	85.0
	180.0	4.	4.	4.	4.	4.	4.	4.	4.	4.	4.
	175.0	1.	1.	2.	2.	3.	4.	5.	6.	6.	6.
	165.0	11.	10.	10.	10.	8.	7.	6.	6.	6.	7.
	155.0	31.	31.	31.	29.	26.	22.	17.	11.	7.	6.
	145.0	59.	59.	59.	56.	49.	41.	32.	23.	14.	8.
	135.0	81.	80.	80.	77.	71.	60.	47.	34.	23.	12.
	125.0	88.	88.	87.	82.	74.	64.	54.	41.	29.	16.
	115.0	91.	91.	90.	85.	78.	68.	57.	47.	36.	27.
	105.0	94.	92.	92.	89.	83.	75.	67.	59.	49.	35.
	95.0	125.	126.	125.	123.	117.	109.	98.	86.	73.	52.
	92.5	148.	150.	150.	146.	137.	126.	113.	101.	89.	63.
	90.0	180.	177.	180.	175.	164.	152.	146.	127.	112.	82.
	87.5	230.	234.	233.	235.	225.	210.	189.	171.	158.	119.
	85.0	309.	306.	306.	303.	286.	271.	262.	260.	236.	169.
V	82.5	430.	414.	420.	423.	421.	424.	440.	408.	342.	247.
E	80.0	630.	630.	641.	640.	655.	613.	585.	530.	451.	348.
R	77.5	888.	874.	877.	831.	783.	753.	737.	695.	586.	465.
T	75.0	988.	991.	1000.	1007.	935.	945.	955.	917.	764.	566.
I	72.5	1143.	1155.	1166.	1214.	1219.	1187.	1218.	1141.	943.	696.
C	70.0	1462.	1459.	1465.	1473.	1487.	1482.	1493.	1375.	1116.	859.
A	67.5	1703.	1711.	1717.	1764.	1792.	1765.	1711.	1580.	1312.	1077.
L	65.0	2019.	2064.	2095.	2133.	2093.	1975.	1894.	1803.	1516.	1269.
	62.5	2271.	2317.	2343.	2275.	2241.	2160.	2130.	2038.	1709.	1391.
A	60.0	2337.	2358.	2383.	2441.	2430.	2378.	2377.	2205.	1927.	1511.
N	57.5	2704.	2731.	2755.	2728.	2567.	2661.	2555.	2400.	2153.	1598.
G	55.0	2742.	2785.	2784.	2754.	2872.	2848.	2689.	2610.	2357.	1632.
L	52.5	2946.	3000.	3017.	3146.	3100.	2992.	2908.	2892.	2444.	1666.
E	50.0	3324.	3406.	3395.	3288.	3218.	3142.	3177.	3045.	2433.	1744.
	47.5	3324.	3415.	3418.	3335.	3349.	3408.	3400.	3086.	2460.	1799.
	45.0	3439.	3530.	3536.	3481.	3629.	3660.	3549.	3130.	2495.	1899.
	42.5	3723.	3783.	3803.	3850.	3961.	3897.	3600.	3073.	2562.	1980.
	40.0	4071.	4117.	4115.	4127.	4179.	4007.	3620.	3027.	2479.	1954.
	37.5	4275.	4327.	4347.	4320.	4288.	3968.	3591.	3030.	2488.	2025.
	35.0<<	4552.	4566.	4578.	4305.	4167.	3912.	3507.	3041.	2535.	2048.
	32.5	4289.	4308.	4323.	4221.	4081.	3768.	3437.	2973.	2585.	2074.
	30.0	4213.	4276.	4280.	4167.	3936.	3642.	3392.	2831.	2544.	2146.
	25.0	4033.	3963.	3982.	3758.	3584.	3291.	2909.	2750.	2410.	2129.
	20.0	3321.	3279.	3261.	3193.	3023.	2886.	2770.	2491.	2364.	2112.
	15.0	2905.	2877.	2881.	2835.	2767.	2606.	2475.	2401.	2274.	1937.
	10.0	2555.	2575.	2578.	2550.	2492.	2553.	2458.	2287.	2053.	1935.
	5.0	2284.	2255.	2261.	2215.	2095.	2040.	1998.	1962.	1935.	1965.
	0.0	2040.	2040.	2040.	2040.	2040.	2040.	2040.	2040.	2040.	2040.

||
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	4.	4.	4.	4.	4.	4.	4.	4.	4.	4.
	175.0	7.	6.	6.	6.	6.	5.	4.	4.	4.	4.
	165.0	7.	7.	7.	7.	7.	6.	6.	6.	6.	6.
	155.0	7.	7.	7.	7.	7.	7.	7.	7.	8.	8.
	145.0	7.	7.	8.	8.	7.	8.	8.	8.	9.	8.
	135.0	8.	8.	7.	7.	7.	7.	7.	8.	8.	8.
	125.0	9.	8.	7.	7.	7.	6.	6.	6.	6.	7.
	115.0	15.	11.	8.	7.	7.	6.	5.	5.	5.	5.
	105.0	20.	17.	9.	7.	6.	6.	5.	5.	5.	5.
	95.0	21.	19.	12.	8.	6.	5.	5.	4.	4.	4.
	92.5	27.	21.	14.	8.	7.	5.	5.	4.	4.	4.
	90.0	40.	24.	17.	9.	7.	5.	4.	4.	3.	4.
	87.5	60.	31.	21.	10.	7.	5.	4.	3.	3.	3.
	85.0	97.	47.	27.	12.	7.	5.	4.	3.	3.	3.
V	82.5	124.	79.	35.	15.	7.	5.	4.	3.	3.	2.
E	80.0	169.	144.	49.	18.	8.	5.	3.	3.	2.	2.
R	77.5	239.	203.	64.	23.	9.	5.	3.	3.	2.	1.
T	75.0	303.	252.	85.	30.	10.	5.	3.	2.	2.	1.
I	72.5	363.	300.	112.	42.	13.	5.	3.	2.	2.	1.
C	70.0	415.	379.	151.	60.	20.	6.	3.	2.	2.	1.
A	67.5	489.	484.	191.	81.	31.	7.	3.	2.	2.	1.
L	65.0	558.	551.	219.	107.	44.	15.	3.	2.	1.	0.
	62.5	622.	614.	255.	139.	57.	24.	7.	2.	1.	0.
A	60.0	722.	742.	332.	174.	76.	35.	19.	8.	5.	2.
N	57.5	799.	823.	397.	212.	96.	50.	27.	23.	17.	13.
G	55.0	879.	889.	469.	260.	125.	64.	39.	28.	28.	29.
L	52.5	954.	952.	566.	302.	161.	80.	55.	38.	33.	33.
E	50.0	1047.	1048.	679.	338.	206.	100.	69.	58.	44.	41.
	47.5	1139.	1091.	785.	397.	261.	131.	82.	70.	64.	60.
	45.0	1206.	1166.	918.	451.	311.	169.	98.	81.	77.	75.
	42.5	1264.	1229.	1041.	519.	353.	222.	133.	92.	86.	84.
	40.0	1317.	1277.	1151.	625.	398.	288.	177.	121.	95.	90.
	37.5	1372.	1329.	1318.	743.	441.	347.	244.	165.	128.	115.
	35.0<<	1469.	1397.	1385.	866.	485.	401.	316.	233.	175.	160.
	32.5	1534.	1486.	1475.	999.	610.	448.	381.	311.	264.	241.
	30.0	1588.	1563.	1571.	1185.	747.	490.	427.	373.	333.	311.
	25.0	1748.	1750.	1581.	1586.	1098.	780.	532.	464.	444.	423.
	20.0	1846.	1869.	1604.	1678.	1542.	1185.	981.	813.	712.	609.
	15.0	1946.	1929.	1741.	1609.	1715.	1759.	1512.	1383.	1202.	1120.
	10.0	2015.	1984.	2009.	1815.	1674.	1695.	1829.	1696.	1735.	1781.
	5.0	2023.	2034.	2008.	2089.	2015.	1901.	1833.	1807.	1808.	1843.
	0.0	2040.	2040.	2040.	2040.	2040.	2040.	2040.	2040.	2040.	2040.

CONE OF MAXIMUM CANDELA

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5-DEGREE ZONAL LUMEN SUMMARY

0- 5	48
5- 10	145
10- 15	242
15- 20	325
20- 25	408
25- 30	498
30- 35	577
35- 40	633
40- 45	651
45- 50	639
50- 55	612
55- 60	560
60- 65	488
65- 70	396
70- 75	283
75- 80	189
80- 85	107
85- 90	53
90- 95	32
95-100	24
100-105	20
105-110	18
110-115	16
115-120	15
120-125	14
125-130	12
130-135	11
135-140	9
140-145	7
145-150	5
150-155	4
155-160	2
160-165	1
165-170	1
170-175	0
175-180	0

10-DEGREE ZONAL LUMEN SUMMARY

0- 10	193
0- 20	760
0- 30	1666
0- 40	2876
0- 50	4166
0- 60	5338
0- 70	6223
0- 80	6695
0- 90	6855
0-100	6911
0-110	6949
0-120	6980
0-130	7006
0-140	7027
0-150	7039
0-160	7045
0-170	7047
0-180	7047

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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 FORTY FOUR WHITE LIGHT EMITTING DIODES (LEDs)

DRIVER: RDD-SL-060-A1300 (-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 (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. 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	<u>X.CAO</u>
Approved	<u>D.WANG-MUNSON</u> Lighting Engineer

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RESULTS:

PHOTOMETRIC	
Total Integrated Flux (lumens)	7047 *
SPECTRORADIOMETRIC	
Observer	CIE 1931 2 degree
Chromaticity Ordinate x	0.4259
Chromaticity Ordinate y	0.3978
Observer	CIE 1976 2 degree
Chromaticity Ordinate u'	0.2461
Chromaticity Ordinate v'	0.5173
Correlated Color Temp CCT (K)	3142
ANSI C78.377-2008 Duv	-0.001
Total Radiant Flux (milliWatts)	21375 *
ELECTRICAL	
Input Voltage (Volts AC)	120.0
Input Current (Amps AC)	0.583
Input Power (Watts)	69.6
Input Power Factor (%)	99.5
Input Current THD (%)	7.1
Input Voltage THD (%)	0.2
EFFICACY (Lumens/Watt)	
	101.3
ELECTRICAL AT MAX NONIMAL INPUT	
Input Voltage (Volts AC)	277.0
Input Current (Amps AC)	0.253
Input Power (Watts)	67.7
Input Power Factor (%)	96.7
Input Current THD (%)	8.3
Input Voltage THD (%)	0.2
Off-State Power (Watts)	
	0.0

COLOR RENDERING INDICES	CRI
Ra (Average 1-8)	82
R1 Light greyish red	80
R2 Dark greyish yellow	91
R3 Strong yellowish green	95
R4 Moderate yellowish green	79
R5 Light bluish green	81
R6 Light blue	89
R7 Light violet	82
R8 Light reddish purple	58
R9 Strong red	5
R10 Strong yellow	80
R11 Strong green	77
R12 Strong blue	70
R13 Light yellowish pink (skin)	83
R14 Moderate olive green (leaf)	98

*NOTE:

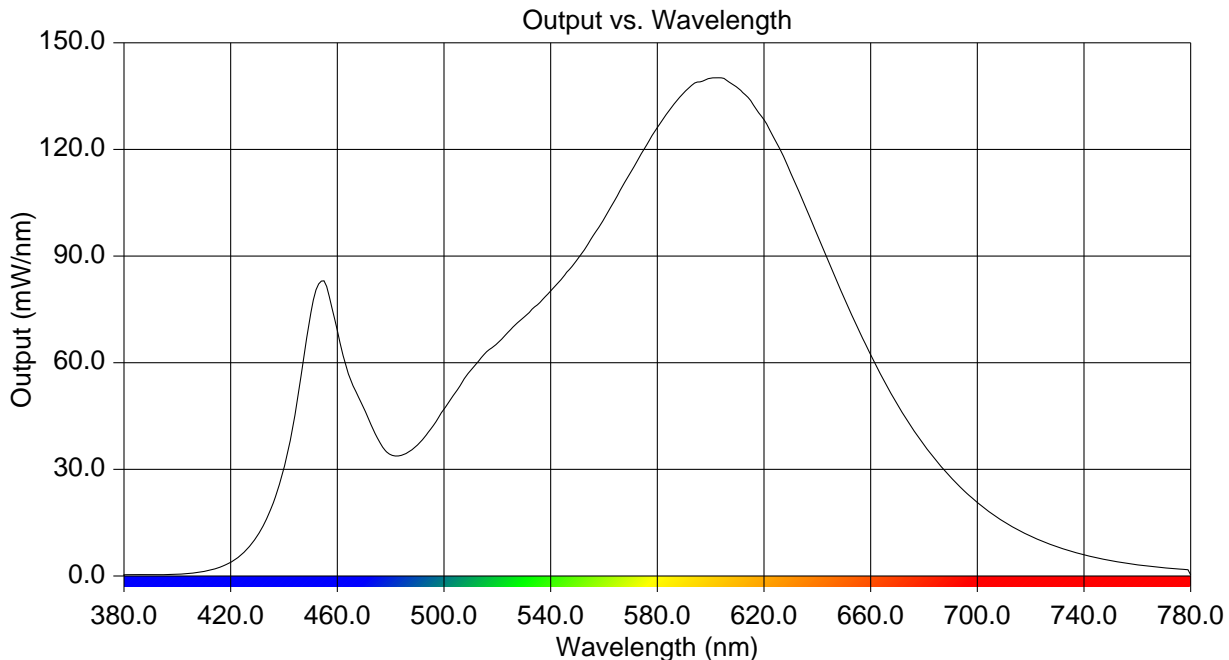
Proper calibration of integrating spheres for measuring total flux output of non-directional samples will produce reliable, repeatable results within the calibration tolerances of the equipment used. However, measurement of test samples with significant self absorption and/or directional output, even 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	0.334	515	62.286	650	78.185
385	0.371	520	65.402	655	70.041
390	0.359	525	69.301	660	62.260
395	0.406	530	72.828	665	54.876
400	0.499	535	76.240	670	48.316
405	0.746	540	80.177	675	42.349
410	1.269	545	84.421	680	36.852
415	2.214	550	89.026	685	32.049
420	3.857	555	94.615	690	27.711
425	6.686	560	100.464	695	23.986
430	11.325	565	106.927	700	20.741
435	18.721	570	113.532	705	17.857
440	30.459	575	119.999	710	15.272
445	49.319	580	126.095	715	13.072
450	73.612	585	131.461	720	11.168
455	83.020	590	135.968	725	9.563
460	69.058	595	138.928	730	8.157
465	55.073	600	140.064	735	6.972
470	47.090	605	139.947	740	5.930
475	38.846	610	137.406	745	5.110
480	34.131	615	133.725	750	4.342
485	34.204	620	128.331	755	3.702
490	36.733	625	121.519	760	3.161
495	41.299	630	113.356	765	2.706
500	46.965	635	104.787	770	2.326
505	52.337	640	95.810	775	1.979
510	57.829	645	87.065	780	0.297



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CIE Chromaticity Diagram

