

**REPORT NUMBER:** RAB04689

**PAGE:** 1 OF 10

**ISSUE DATE:** 11/12/18

**DATE SAMPLE TESTED:** 11/12/18

**PREPARED FOR:** RAB LIGHTING INC.

**CATALOG NUMBER:** W34-35L

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

**LAMPS:** SEVENTY WHITE LIGHT EMITTING DIODES (LEDs)

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

**WATT:** TOTAL INPUT WATTS = 33.1 W AT 120.0 VAC.

**LED DRIVER:** LED DRIVER: RDD-SLE-035-A0700-R (-40C)

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

**NOTE:** LM-80 DATA AVAILABLE FROM MANUFACTURER FOR SOLID STATE SOURCE  
AMBIENT: 24.7

**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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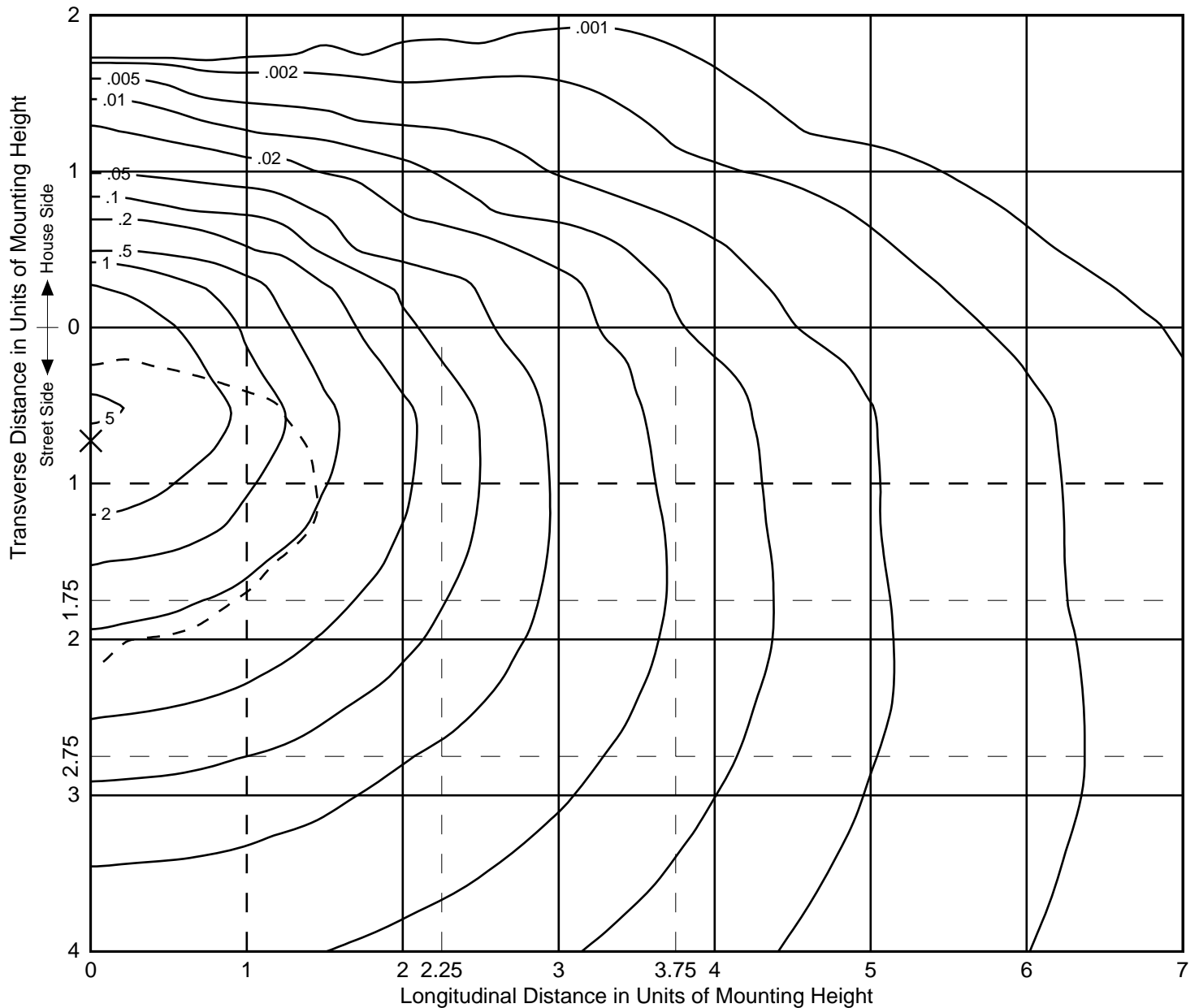
**ISOFOOTCANDLE LINES OF HORIZONTAL ILLUMINATION**  
Values based on 16-foot mounting height

IES Classification: (does not classify)

Cutoff Classification (deprecated): Semicutoff

— — — — — 1/2 Maximum Candela trace

× Maximum Candela point



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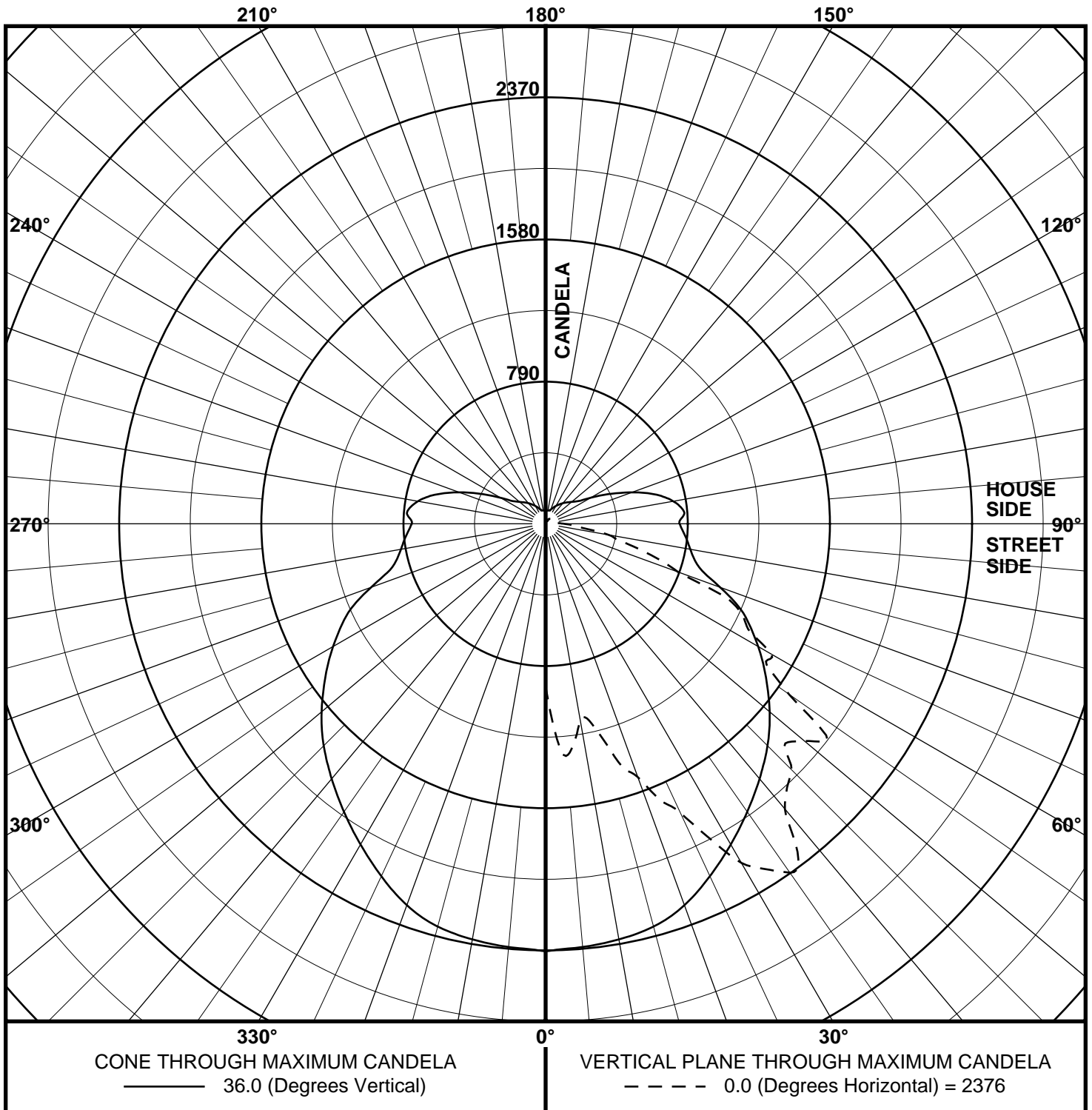
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MAXIMUM PLANE AND MAXIMUM CONE PLOTS OF CANDELA



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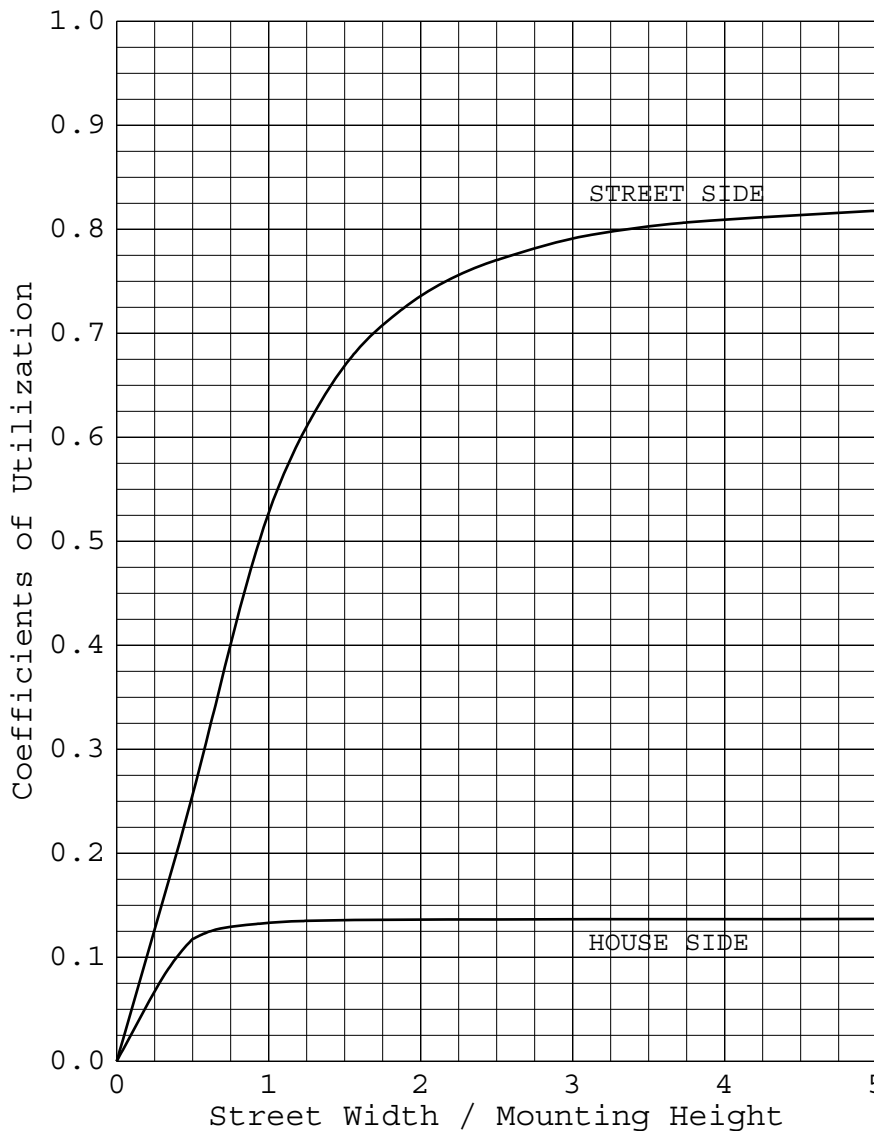
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## COEFFICIENTS OF UTILIZATION AND FLUX DISTRIBUTION



	LUMENS	PERCENT OF FIXTURE
DOWNWARD STREET SIDE	3013	83.7
DOWNWARD HOUSE SIDE	496	13.8
DOWNWARD TOTAL	3509	97.4
UPWARD STREET SIDE	79	2.2
UPWARD HOUSE SIDE	13	0.4
UPWARD TOTAL	92	2.6
TOTAL FLUX	3601	100.0

EFFICACY = 108.8 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			B1 U3 G1				
Zonal Summary			Lumens	% of Fixture	Zone Ratings		
					B	U	G
Forward			3013	83.7			
FL	(0° – 30°)		535.3	14.9			
FM	(30° – 60°)		1689.2	46.9			
FH	(60° – 80°)		706.6	19.6			G1
FVH	(80° – 90°)		81.5	2.3			G1
Backward			496	13.8			
BL	(0° – 30°)		233.4	6.5	B1		
BM	(30° – 60°)		218.8	6.1	B0		
BH	(60° – 80°)		39.4	1.1	B0		G0
BVH	(80° – 90°)		4.6	0.1			G0
Upward			92	2.6			
UL	(90° – 100°)		28.0	0.8		U2	
UH	(100° – 180°)		64.1	1.8		U3	
Trapped Light			0	0.0			
Total Flux			3601	100.0			

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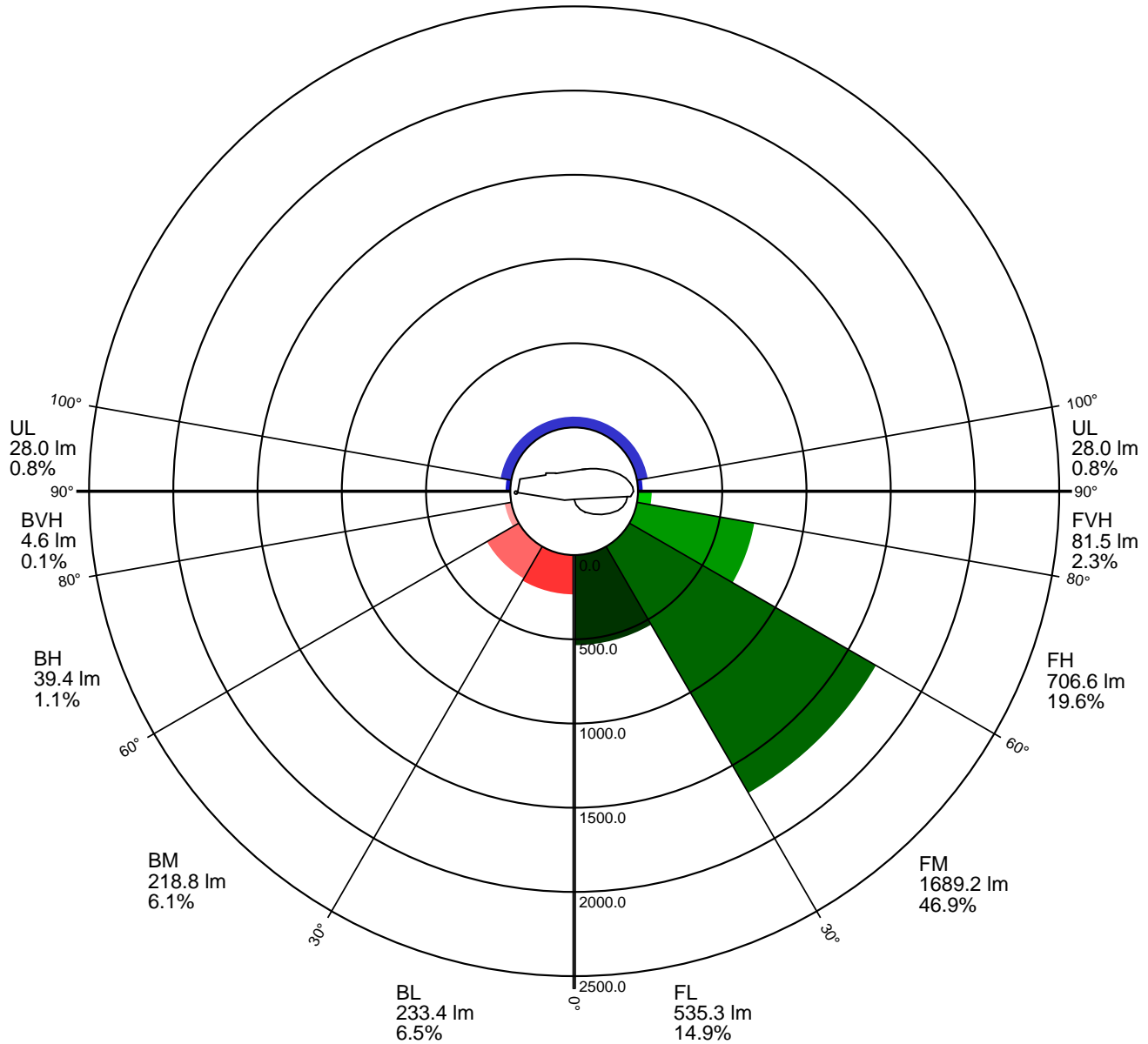
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## Zonal Lumen Summary

(Linear scale)

UH  
64.1 lm  
1.8%

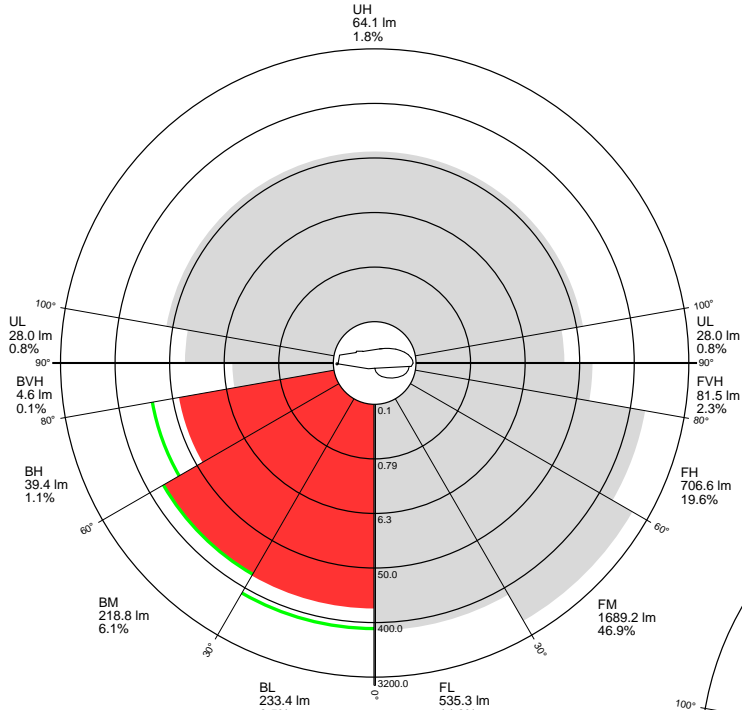


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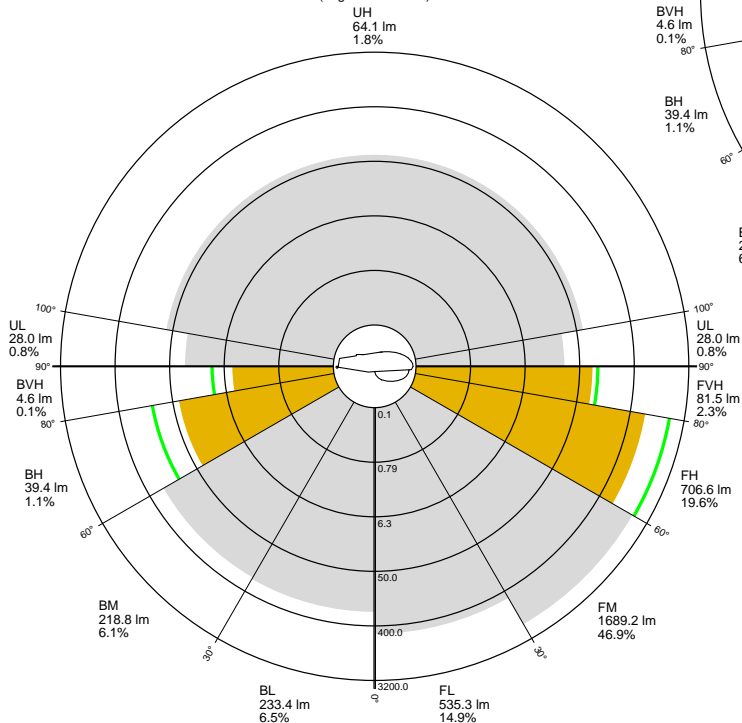
### Backlight Rating Details

(Logarithmic scale)



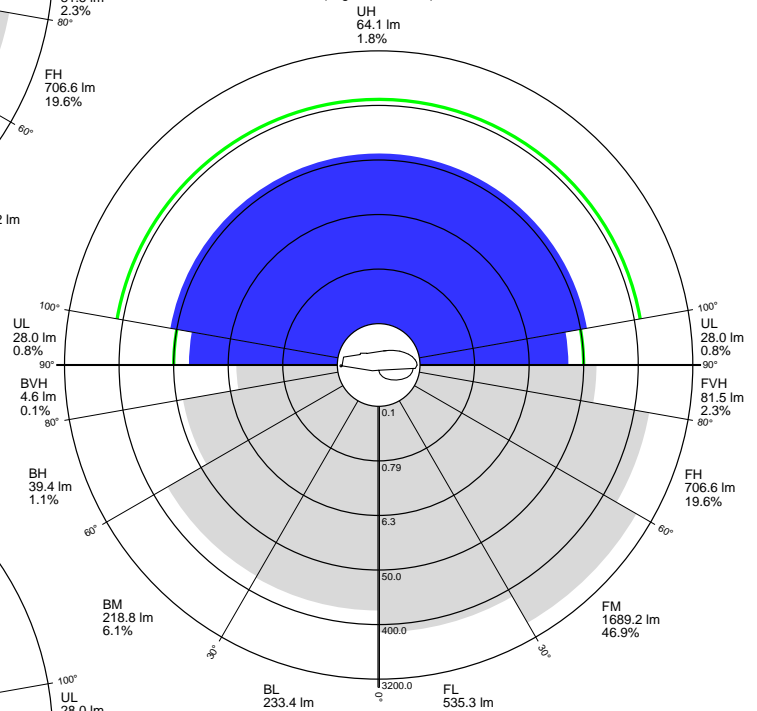
### Glare Rating Details

(Logarithmic scale)



### Uplight Rating Details

(Logarithmic scale)



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### CANDELA TABULATION

	STREET SIDE	LATERAL ANGLE									
		0.0	1.0	5.0	15.0	25.0	35.0	45.0	55.0	65.0	75.0
	180.0	2.	2.	2.	2.	2.	2.	2.	2.	2.	2.
	175.0	1.	1.	1.	1.	1.	2.	2.	3.	3.	3.
	165.0	4.	4.	4.	4.	3.	3.	3.	3.	3.	4.
	155.0	12.	12.	12.	12.	10.	8.	7.	5.	4.	4.
	145.0	32.	32.	31.	29.	25.	19.	14.	10.	7.	5.
	135.0	45.	46.	45.	42.	36.	28.	19.	12.	8.	6.
	125.0	43.	43.	43.	41.	34.	27.	21.	16.	11.	9.
	115.0	44.	43.	43.	39.	33.	27.	23.	20.	16.	11.
	105.0	45.	45.	44.	41.	35.	28.	23.	22.	19.	15.
	95.0	60.	59.	59.	58.	53.	47.	42.	42.	36.	23.
	90.0	102.	101.	101.	99.	93.	80.	84.	74.	55.	34.
	87.5	142.	139.	138.	140.	124.	122.	105.	95.	78.	51.
	85.0	167.	167.	166.	169.	166.	147.	142.	138.	116.	79.
	82.5	249.	240.	250.	256.	240.	233.	230.	189.	162.	114.
V	80.0	358.	354.	352.	352.	340.	305.	301.	280.	244.	170.
E	77.5	412.	414.	409.	393.	393.	423.	422.	387.	330.	241.
R	75.0	530.	527.	527.	554.	543.	525.	527.	526.	416.	291.
T	72.5	664.	656.	649.	653.	679.	645.	734.	626.	505.	372.
I	70.0	785.	783.	784.	811.	849.	875.	791.	736.	627.	488.
C	67.5	1105.	1102.	1059.	1033.	1029.	973.	932.	882.	733.	594.
A	65.0	1208.	1190.	1182.	1125.	1111.	1100.	1025.	1035.	821.	682.
L	62.5	1269.	1228.	1190.	1260.	1241.	1162.	1181.	1124.	936.	748.
	60.0	1449.	1426.	1365.	1330.	1311.	1373.	1362.	1204.	1042.	795.
A	57.5	1456.	1437.	1378.	1416.	1519.	1548.	1401.	1266.	1130.	825.
N	55.0	1652.	1624.	1580.	1762.	1730.	1601.	1414.	1352.	1233.	881.
G	52.5	1975.	1959.	1863.	1770.	1703.	1583.	1531.	1460.	1290.	877.
L	50.0	1878.	1864.	1799.	1770.	1701.	1723.	1572.	1561.	1316.	859.
E	47.5	1806.	1793.	1741.	1823.	1828.	1795.	1687.	1621.	1335.	852.
	45.0	1934.	1927.	1896.	2040.	1895.	1865.	1814.	1610.	1336.	881.
	42.5	1987.	1986.	1934.	1995.	1989.	2031.	1833.	1621.	1292.	861.
	40.0	2069.	2062.	2033.	2186.	2173.	2073.	1818.	1551.	1293.	861.
	37.5	2299.	2297.	2264.	2297.	2224.	2008.	1787.	1488.	1232.	888.
	36.0<<	2376.	2370.	2361.	2317.	2161.	1954.	1744.	1496.	1226.	871.
	35.0	2367.	2368.	2360.	2270.	2114.	1938.	1717.	1485.	1214.	893.
	32.5	2275.	2273.	2254.	2115.	2044.	1865.	1666.	1443.	1135.	901.
	30.0	2175.	2176.	2156.	2055.	1983.	1736.	1597.	1353.	1120.	888.
	25.0	1772.	1777.	1772.	1862.	1666.	1601.	1438.	1209.	1047.	950.
	20.0	1498.	1496.	1481.	1551.	1483.	1378.	1294.	1165.	1036.	1037.
	15.0	1243.	1204.	1186.	1356.	1320.	1085.	1183.	1105.	1014.	980.
	10.0	1111.	1139.	1133.	1046.	1013.	1186.	1149.	1069.	1102.	1033.
	5.0	1295.	1295.	1283.	1247.	1173.	1005.	911.	972.	1100.	987.
	0.0	905.	905.	905.	905.	905.	905.	905.	905.	905.	905.

||  
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	2.	2.	2.	2.	2.	2.	2.	2.	2.	2.
	175.0	3.	4.	3.	3.	3.	3.	2.	2.	2.	2.
	165.0	4.	4.	4.	4.	4.	3.	3.	3.	3.	3.
	155.0	4.	4.	4.	4.	4.	4.	4.	4.	4.	4.
	145.0	4.	4.	4.	4.	4.	4.	4.	4.	4.	5.
	135.0	5.	4.	4.	4.	4.	4.	4.	4.	4.	4.
	125.0	7.	5.	4.	4.	4.	4.	4.	4.	4.	4.
	115.0	9.	7.	5.	4.	4.	3.	3.	3.	3.	3.
	105.0	10.	9.	6.	5.	4.	3.	3.	3.	3.	3.
	95.0	11.	9.	6.	5.	4.	3.	3.	2.	2.	3.
	90.0	17.	11.	8.	6.	4.	3.	2.	2.	2.	2.
	87.5	29.	15.	10.	7.	4.	3.	2.	2.	2.	2.
	85.0	48.	27.	13.	9.	4.	3.	2.	2.	2.	2.
	82.5	78.	48.	19.	11.	5.	3.	2.	2.	2.	2.
V	80.0	102.	68.	24.	14.	5.	3.	2.	2.	1.	1.
E	77.5	128.	97.	31.	18.	6.	3.	2.	1.	1.	1.
R	75.0	159.	133.	39.	25.	8.	3.	2.	2.	1.	1.
T	72.5	211.	187.	51.	30.	9.	3.	2.	1.	1.	1.
I	70.0	253.	217.	61.	36.	11.	4.	2.	1.	1.	1.
C	67.5	289.	271.	71.	43.	14.	5.	2.	1.	1.	1.
A	65.0	315.	278.	76.	54.	21.	9.	3.	1.	1.	0.
L	62.5	330.	325.	85.	68.	30.	14.	5.	1.	1.	0.
	60.0	379.	380.	113.	87.	41.	20.	10.	5.	1.	1.
A	57.5	418.	433.	160.	107.	57.	26.	15.	11.	11.	9.
N	55.0	471.	488.	234.	126.	74.	33.	20.	16.	15.	17.
G	52.5	535.	563.	318.	144.	91.	42.	26.	20.	19.	22.
L	50.0	580.	604.	370.	168.	110.	52.	33.	25.	25.	27.
E	47.5	608.	618.	433.	202.	127.	67.	41.	33.	28.	29.
	45.0	640.	683.	483.	232.	144.	89.	50.	41.	36.	35.
	42.5	655.	674.	533.	268.	161.	110.	66.	48.	45.	46.
	40.0	682.	699.	600.	306.	180.	136.	87.	61.	51.	51.
	37.5	727.	769.	626.	353.	205.	156.	113.	82.	67.	64.
	36.0<<	744.	772.	630.	392.	219.	168.	131.	98.	76.	74.
	35.0	745.	765.	646.	414.	228.	176.	142.	109.	87.	81.
	32.5	758.	787.	674.	453.	265.	195.	170.	142.	121.	114.
	30.0	769.	761.	683.	512.	317.	211.	190.	167.	154.	148.
	25.0	765.	785.	774.	647.	479.	343.	236.	195.	193.	179.
	20.0	792.	858.	758.	621.	602.	485.	387.	350.	293.	245.
	15.0	857.	966.	895.	710.	594.	729.	687.	552.	505.	513.
	10.0	861.	937.	815.	938.	665.	831.	636.	573.	793.	893.
	5.0	866.	932.	993.	978.	823.	845.	903.	971.	966.	988.
	0.0	905.	905.	905.	905.	905.	905.	905.	905.	905.	905.

CONE OF MAXIMUM CANDELA

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### 5-DEGREE ZONAL LUMEN SUMMARY

0- 5	24
5- 10	68
10- 15	109
15- 20	149
20- 25	187
25- 30	232
30- 35	280
35- 40	320
40- 45	334
45- 50	336
50- 55	333
55- 60	305
60- 65	265
65- 70	221
70- 75	158
75- 80	101
80- 85	57
85- 90	29
90- 95	17
95-100	11
100-105	9
105-110	8
110-115	7
115-120	7
120-125	6
125-130	6
130-135	5
135-140	5
140-145	4
145-150	3
150-155	2
155-160	1
160-165	1
165-170	0
170-175	0
175-180	0

### 10-DEGREE ZONAL LUMEN SUMMARY

0- 10	92
0- 20	350
0- 30	769
0- 40	1369
0- 50	2039
0- 60	2677
0- 70	3163
0- 80	3423
0- 90	3509
0-100	3537
0-110	3554
0-120	3568
0-130	3581
0-140	3591
0-150	3597
0-160	3600
0-170	3601
0-180	3601

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CATALOG NUMBER: W34-35L

ADDRESS: 170 LUDLOW AVE, NORTHVALE, NJ 07647

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

LAMP: SEVENTY WHITE LIGHT EMITTING DIODES (LEDs)

DRIVER: RDD-SLE-035-A0700-R (-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	08/22/19

OBJECT OF TEST: Measure the Absolute Flux in lumens\*, Total Radiant Flux\*, Spectral Power Distribution (SPD), Correlated Color Temperature (CCT), Color Rendering Indices (CRI<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. 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)	3601 *
SPECTRORADIOMETRIC	
Observer	CIE 1931 2 degree
Chromaticity Ordinate x	0.3410
Chromaticity Ordinate y	0.3497
Observer	CIE 1976 2 degree
Chromaticity Ordinate u'	0.2094
Chromaticity Ordinate v'	0.4831
Correlated Color Temp CCT (K)	5153
ANSI C78.377-2008 Duv	0.001
Total Radiant Flux (milliWatts)	11259 *
ELECTRICAL	
Input Voltage (Volts AC)	120.0
Input Current (Amps AC)	0.278
Input Power (Watts)	33.1
Input Power Factor (%)	99.3
Input Current THD (%)	6.9
Input Voltage THD (%)	0.2
EFFICACY (Lumens/Watt)	
	108.8
ELECTRICAL AT MAX NONIMAL INPUT	
Input Voltage (Volts AC)	277.0
Input Current (Amps AC)	0.126
Input Power (Watts)	32.5
Input Power Factor (%)	93.2
Input Current THD (%)	5.0
Input Voltage THD (%)	0.2
Off-State Power (Watts)	
	0.0

COLOR RENDERING INDICES	CRI
Ra (Average 1-8)	83
R1 Light greyish red	81
R2 Dark greyish yellow	88
R3 Strong yellowish green	92
R4 Moderate yellowish green	83
R5 Light bluish green	83
R6 Light blue	84
R7 Light violet	86
R8 Light reddish purple	67
R9 Strong red	6
R10 Strong yellow	72
R11 Strong green	82
R12 Strong blue	64
R13 Light yellowish pink (skin)	83
R14 Moderate olive green (leaf)	96

### \*NOTE:

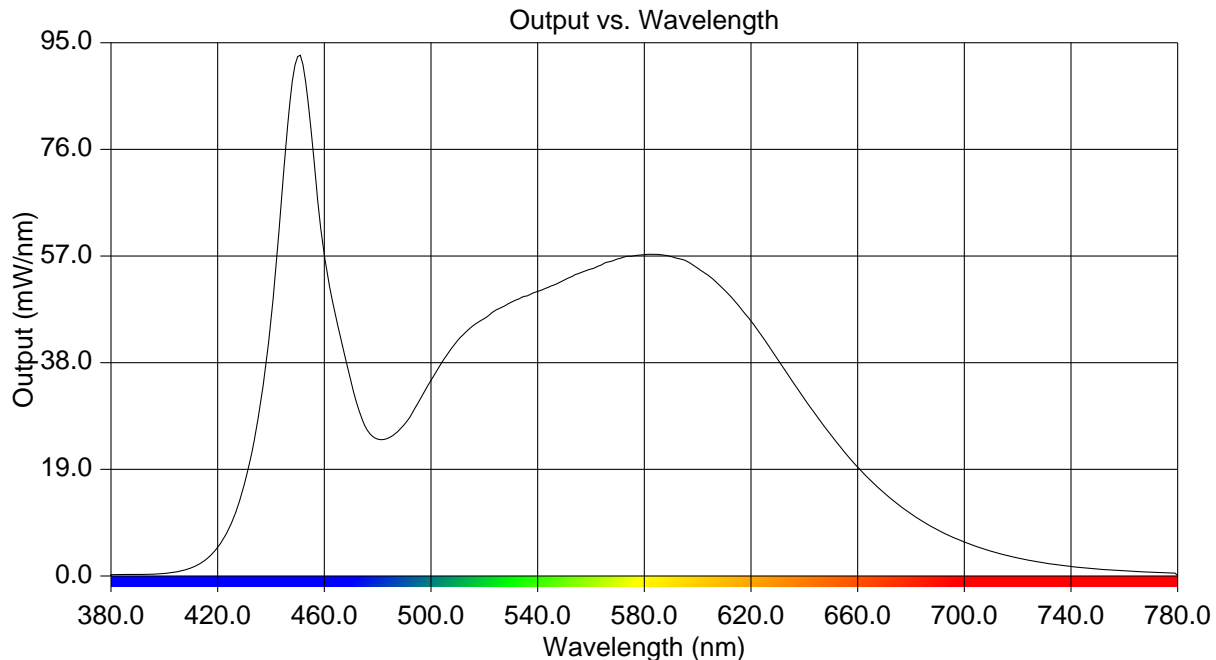
Proper calibration of integrating spheres for measuring total flux output of non-directional samples will produce reliable, repeatable results within the calibration tolerances of the equipment used. However, measurement of test samples with significant self absorption and/or directional output, even 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	0.224	515	44.252	650	25.073
385	0.250	520	45.859	655	22.103
390	0.270	525	47.530	660	19.425
395	0.320	530	48.742	665	16.977
400	0.460	535	49.813	670	14.762
405	0.764	540	50.648	675	12.818
410	1.431	545	51.658	680	11.059
415	2.712	550	52.712	685	9.531
420	5.092	555	53.818	690	8.206
425	9.279	560	54.640	695	7.047
430	16.388	565	55.731	700	6.048
435	27.650	570	56.484	705	5.152
440	45.715	575	56.939	710	4.411
445	73.385	580	57.237	715	3.757
450	92.525	585	57.296	720	3.213
455	79.554	590	56.880	725	2.743
460	57.239	595	56.279	730	2.327
465	44.703	600	54.837	735	1.982
470	34.609	605	53.192	740	1.701
475	26.977	610	50.957	745	1.449
480	24.428	615	48.366	750	1.245
485	24.864	620	45.440	755	1.061
490	27.039	625	42.207	760	0.903
495	30.699	630	38.561	765	0.773
500	34.889	635	35.052	770	0.666
505	38.695	640	31.555	775	0.572
510	41.973	645	28.223	780	0.087



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## CIE Chromaticity Diagram

