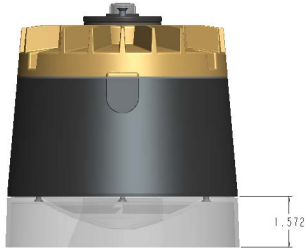


## ISOFOOTCANDLE LINES OF HORIZONTAL ILLUMINATION

Values based on 25 foot mounting height.

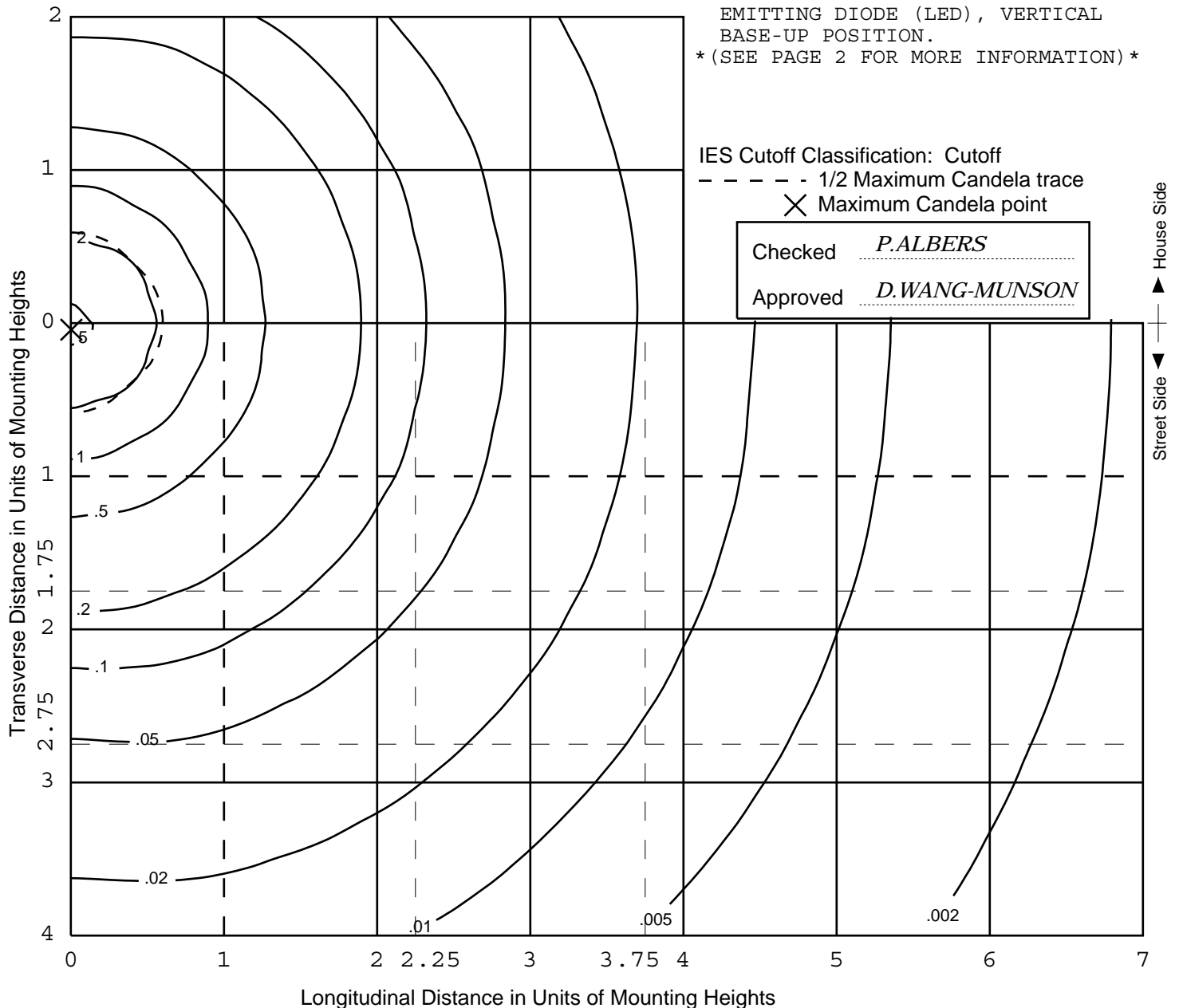


REPORT NUMBER: RAB04238  
ISSUE DATE: 04/04/18 PAGE: 1 OF 9  
DATE SAMPLE TESTED: 04/04/18  
CATALOG NUMBER:  
YBLED60/D10/PCU-YBLED60/ARM/D10/PCU  
(TYPE V)

LUMINAIRE: CAST FINNED METAL HOUSING  
WITH WHITE PAINTED INTERIOR, 1  
CIRCUIT BOARD WITH 1 LED WITH MOLDED  
WHITE PLASTIC TRIM, CLEAR INTERIOR  
FROSTED CYLINDRICAL LENS WITH  
RECESSED EXTERIOR-FROSTED CONVEX  
CENTER. CONVEX CENTER HAS CONCENTRIC  
CIRCULAR EXTERIOR PRISMS.

LAMP: ONE WHITE MULTI-CHIP LIGHT  
EMITTING DIODE (LED), VERTICAL  
BASE-UP POSITION.

\*(SEE PAGE 2 FOR MORE INFORMATION) \*



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PAGE: 2 OF 9

ISSUE DATE: 04/04/18

DATE SAMPLE TESTED: 04/04/18

CATALOG NUMBER: YBLED60/D10/PCU-YBLED60/ARM/D10/PCU (TYPE V)

ADDITIONAL INFORMATION

NOTE: 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.

NOTE: DATA SHOWN IS ABSOLUTE FOR THE SAMPLE PROVIDED.

TOTAL INPUT WATTS = 56.245 W AT 277.0 VAC.

LED DRIVER: RDD-060-A1800-095C

TEST PROCEDURE: IESNA LM-79-08

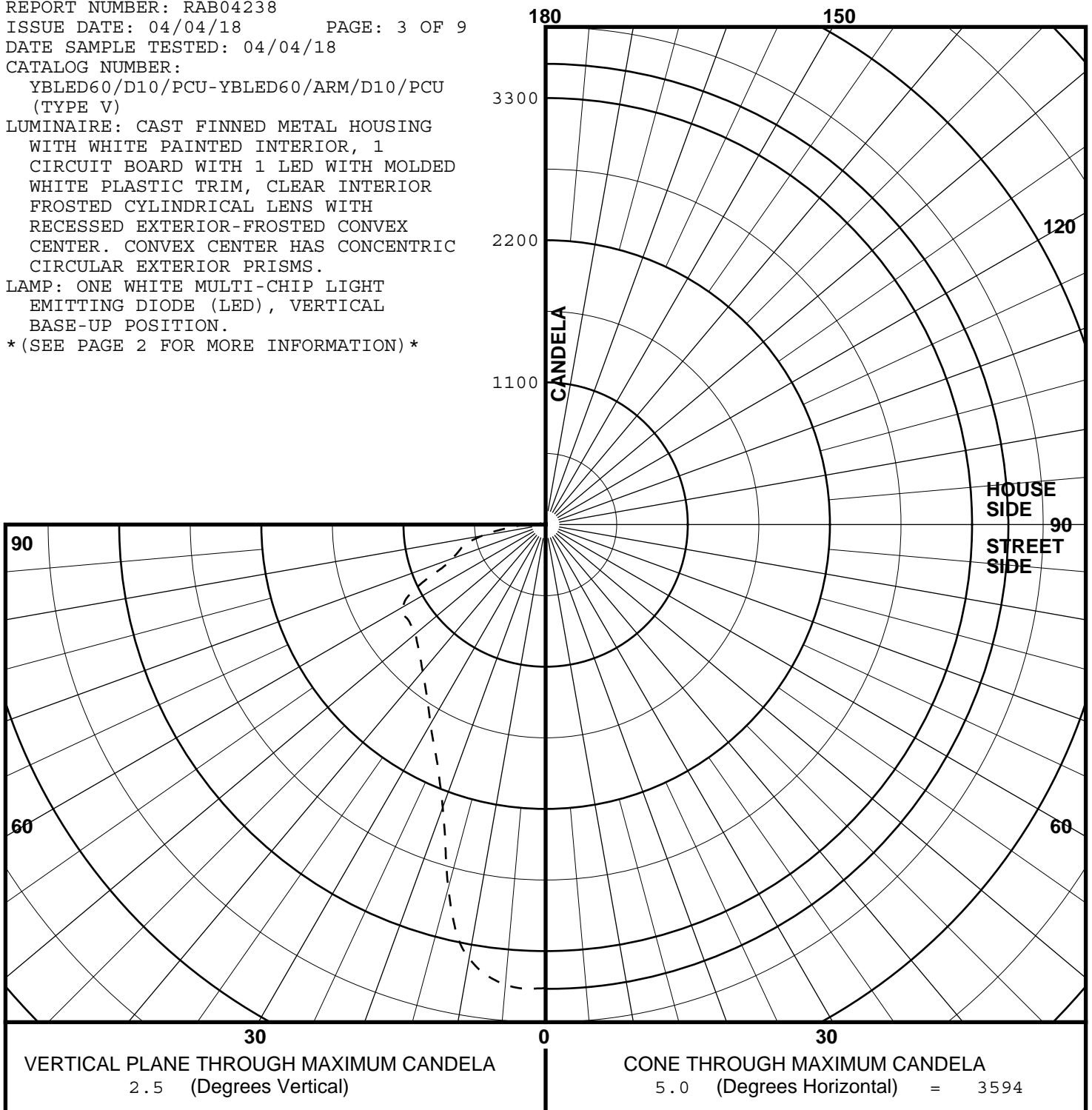
LM-80 DATA AVAILABLE FROM MANUFACTURER FOR SOLID STATE SOURCE

AMBIENT: 25.3

ACCREDITED LABORATORY CODE 201058-0

## MAXIMUM PLANE AND MAXIMUM CONE PLOTS OF CANDELA

REPORT NUMBER: RAB04238  
 ISSUE DATE: 04/04/18 PAGE: 3 OF 9  
 DATE SAMPLE TESTED: 04/04/18  
 CATALOG NUMBER:  
 YBLED60/D10/PCU-YBLED60/ARM/D10/PCU  
 (TYPE V)  
 LUMINAIRE: CAST FINNED METAL HOUSING  
 WITH WHITE PAINTED INTERIOR, 1  
 CIRCUIT BOARD WITH 1 LED WITH MOLDED  
 WHITE PLASTIC TRIM, CLEAR INTERIOR  
 FROSTED CYLINDRICAL LENS WITH  
 RECESSED EXTERIOR-FROSTED CONVEX  
 CENTER. CONVEX CENTER HAS CONCENTRIC  
 CIRCULAR EXTERIOR PRISMS.  
 LAMP: ONE WHITE MULTI-CHIP LIGHT  
 EMITTING DIODE (LED), VERTICAL  
 BASE-UP POSITION.  
 \*(SEE PAGE 2 FOR MORE INFORMATION)\*



REPORT NUMBER: RAB04238

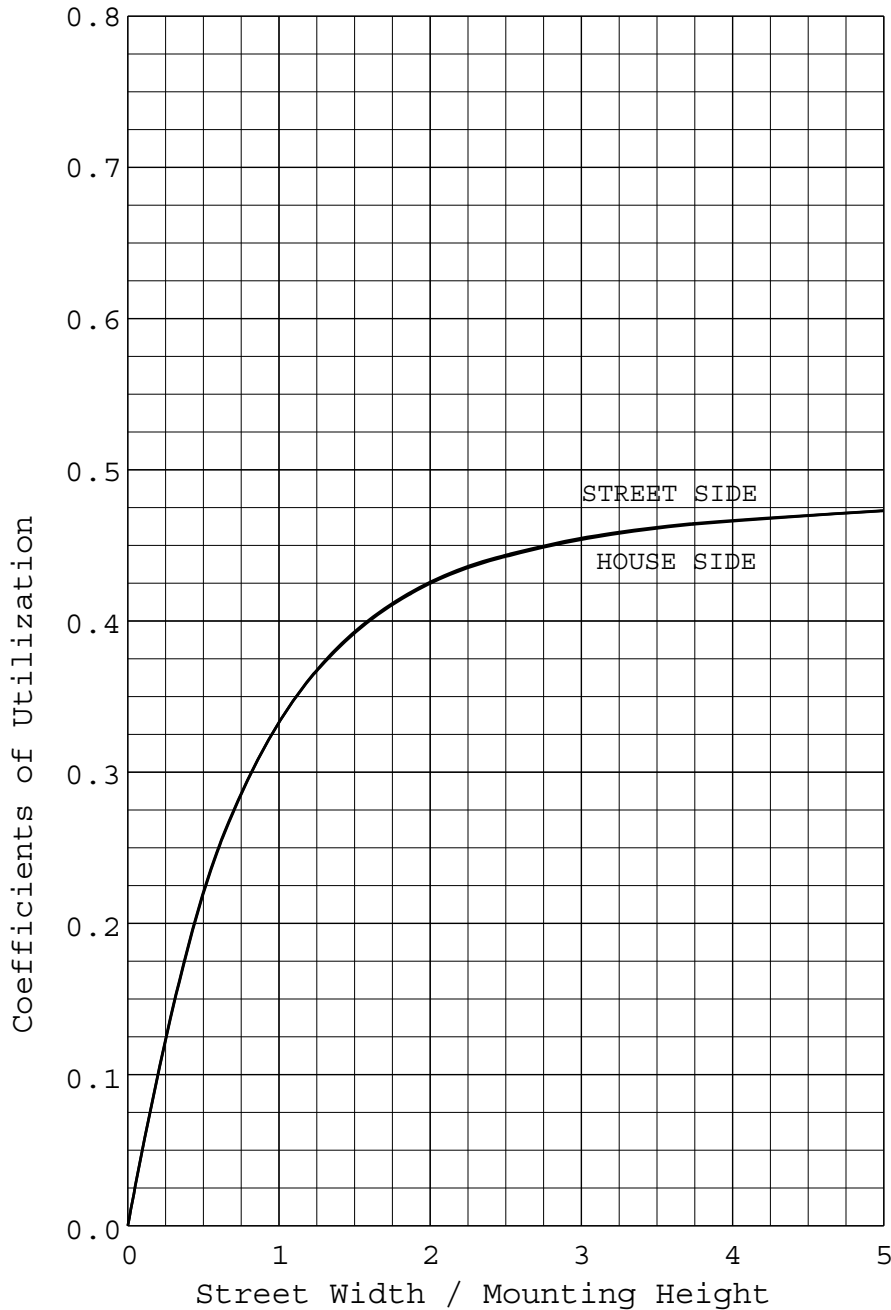
PAGE: 4 OF 9

ISSUE DATE: 04/04/18

DATE SAMPLE TESTED: 04/04/18

CATALOG NUMBER: YBLED60/D10/PCU-YBLED60/ARM/D10/PCU (TYPE V)

# COEFFICIENTS OF UTILIZATION AND FLUX DISTRIBUTION



	LUMENS	PERCENT OF FIXTURE
DOWNWARD STREET SIDE	3737.	48.8
DOWNWARD HOUSE SIDE	3736.	48.8
DOWNWARD TOTAL	7473.	97.5
UPWARD STREET SIDE	98.	1.3
UPWARD HOUSE SIDE	90.	1.2
UPWARD TOTAL	188.	2.5
TOTAL FLUX	7661.	100.0
TOTAL INPUT WATTS = 56.2		
EFFICACY = 136.3 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.

REPORT NUMBER: RAB04238

ISSUE DATE: 04/04/18

PAGE: 5 OF 9

DATE SAMPLE TESTED: 04/04/18

CATALOG NUMBER: YBLED60/D10/PCU-YBLED60/ARM/D10/PCU (TYPE V)

BUG Rating:

Zonal Summary

Lumens

% of Fixture

B3 U3 G2

Zone Ratings

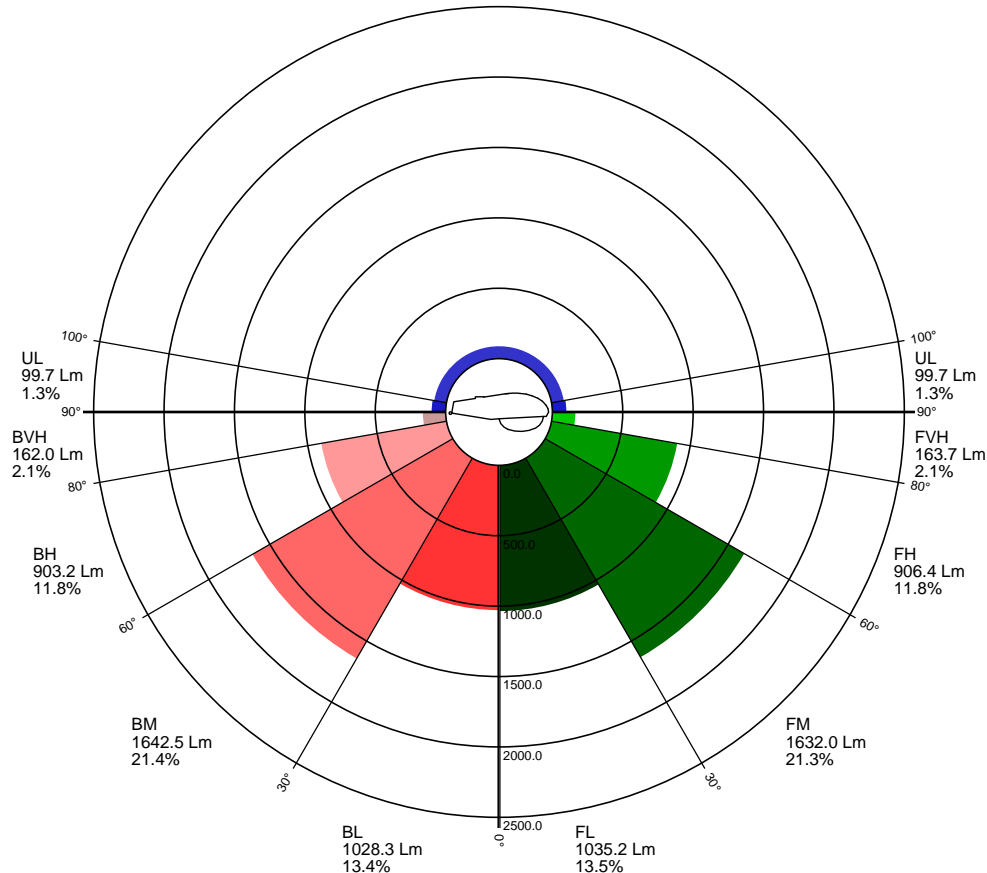
B U G

Forward			3737	48.8			
FL	(0° - 30°)		1035.2	13.5			
FM	(30° - 60°)		1632.0	21.3			
FH	(60° - 80°)		906.4	11.8			G1
FVH	(80° - 90°)		163.7	2.1			G2
Backward			3736	48.8			
BL	(0° - 30°)		1028.3	13.4	B3		
BM	(30° - 60°)		1642.5	21.4	B2		
BH	(60° - 80°)		903.2	11.8	B2		G1
BVH	(80° - 90°)		162.0	2.1			G2
Upward			188	2.5			
UL	(90° - 100°)		99.7	1.3		U3	
UH	(100° - 180°)		88.2	1.2		U3	
Trapped Light			0	0.0			
Total Flux			7661	100.0			

### Zonal Lumen Summary

(Linear scale)

UH  
88.2 Lm  
1.2%



REPORT NUMBER: RAB04238

ISSUE DATE: 04/04/18

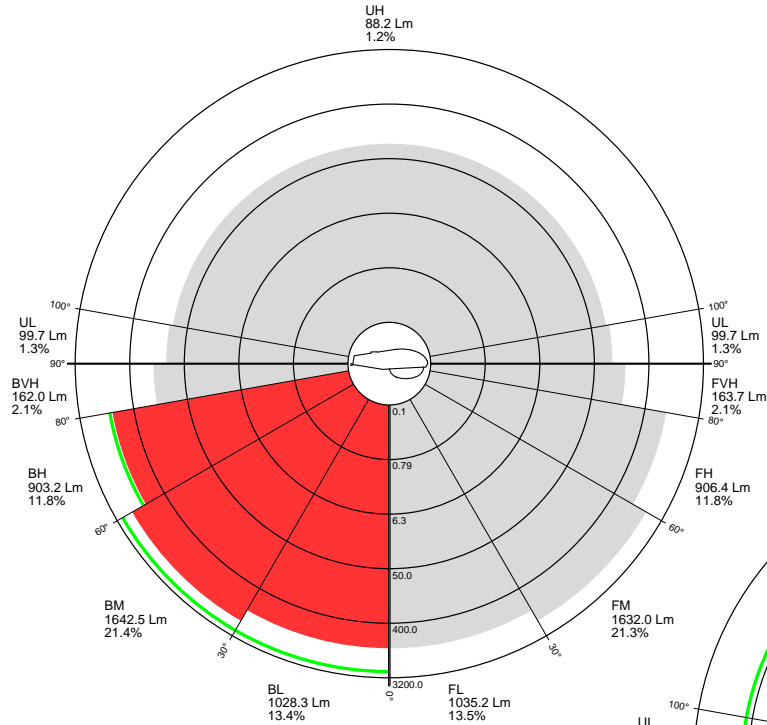
PAGE: 6 OF 9

DATE SAMPLE TESTED: 04/04/18

CATALOG NUMBER: YBLED60/D10/PCU-YBLED60/ARM/D10/PCU (TYPE V)

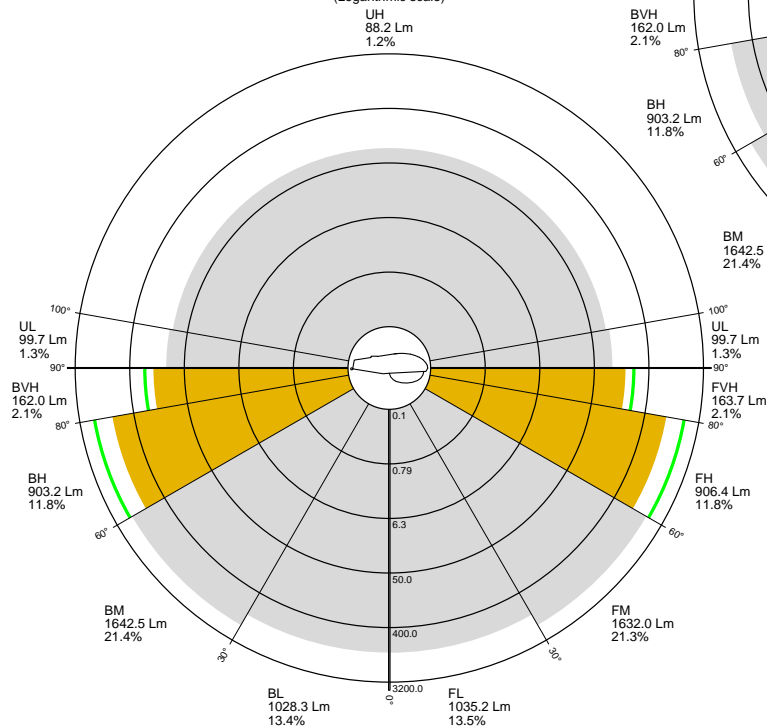
## Backlight Rating Details

(Logarithmic scale)



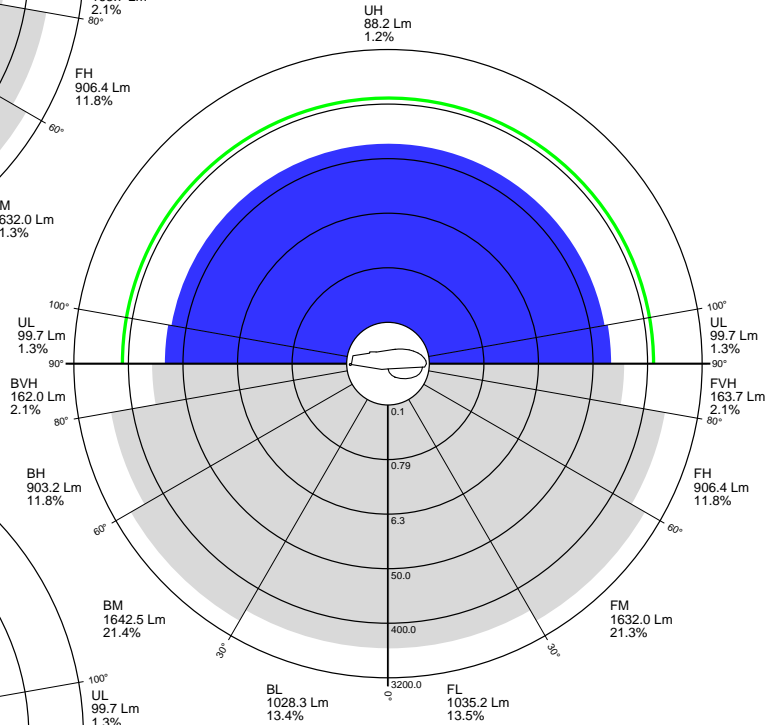
## Glare Rating Details

(Logarithmic scale)



## Uplight Rating Details

(Logarithmic scale)



REPORT NUMBER: RAB04238

PAGE: 7 OF 9

ISSUE DATE: 04/04/18

DATE SAMPLE TESTED: 04/04/18

CATALOG NUMBER: YBLED60/D10/PCU-YBLED60/ARM/D10/PCU (TYPE V)

### CANDELA TABULATION

	STREET SIDE		LATERAL ANGLE							
	0.0	5.0	15.0	25.0	35.0	45.0	55.0	65.0	75.0	85.0
180.0	1.	1.	1.	1.	1.	1.	1.	1.	1.	1.
175.0	2.	2.	2.	2.	2.	2.	2.	2.	2.	2.
165.0	3.	3.	3.	3.	3.	3.	3.	4.	4.	4.
155.0	4.	4.	4.	4.	4.	4.	4.	4.	4.	4.
145.0	6.	6.	6.	6.	6.	6.	6.	5.	5.	6.
135.0	9.	9.	9.	9.	8.	8.	8.	8.	8.	8.
125.0	15.	15.	15.	15.	15.	14.	14.	14.	14.	14.
115.0	28.	28.	30.	31.	30.	29.	29.	30.	30.	28.
105.0	34.	34.	36.	36.	37.	37.	37.	36.	37.	37.
95.0	84.	84.	86.	84.	86.	85.	85.	86.	87.	87.
90.0	154.	154.	153.	151.	152.	150.	150.	152.	154.	153.
87.5	213.	212.	211.	208.	207.	205.	204.	205.	206.	205.
85.0	293.	291.	291.	289.	286.	283.	279.	279.	279.	273.
82.5	392.	392.	396.	394.	391.	387.	381.	376.	374.	366.
V 80.0	497.	500.	515.	517.	516.	511.	505.	495.	486.	476.
E 77.5	590.	597.	630.	637.	650.	639.	635.	619.	605.	582.
R 75.0	654.	667.	717.	738.	752.	748.	749.	731.	707.	686.
T 72.5	689.	711.	777.	805.	825.	829.	835.	821.	800.	779.
I 70.0	742.	767.	835.	865.	887.	901.	910.	900.	877.	862.
C 67.5	832.	856.	930.	965.	983.	991.	996.	985.	964.	946.
A 65.0	1010.	1040.	1071.	1075.	1072.	1085.	1092.	1100.	1086.	1078.
L 62.5	1180.	1199.	1215.	1213.	1200.	1204.	1206.	1209.	1205.	1200.
60.0	1268.	1273.	1282.	1273.	1264.	1271.	1276.	1285.	1282.	1283.
A 57.5	1301.	1302.	1304.	1297.	1292.	1293.	1292.	1294.	1296.	1296.
N 55.0	1292.	1294.	1296.	1292.	1289.	1294.	1298.	1299.	1299.	1303.
G 52.5	1305.	1303.	1306.	1306.	1301.	1303.	1304.	1304.	1304.	1306.
L 50.0	1315.	1315.	1316.	1321.	1319.	1320.	1323.	1324.	1325.	1327.
E 47.5	1348.	1349.	1350.	1355.	1351.	1351.	1354.	1357.	1357.	1358.
45.0	1384.	1385.	1388.	1393.	1391.	1393.	1395.	1398.	1400.	1399.
42.5	1429.	1430.	1433.	1439.	1436.	1438.	1441.	1445.	1446.	1445.
40.0	1480.	1480.	1482.	1488.	1489.	1492.	1495.	1499.	1500.	1498.
37.5	1539.	1539.	1539.	1545.	1547.	1547.	1556.	1560.	1559.	1557.
35.0	1605.	1606.	1605.	1610.	1614.	1616.	1625.	1625.	1628.	1629.
30.0	1779.	1781.	1777.	1781.	1784.	1787.	1795.	1797.	1801.	1804.
25.0	2003.	1998.	2003.	2003.	1999.	2003.	2013.	2017.	2020.	2017.
20.0	2336.	2328.	2340.	2329.	2331.	2331.	2347.	2341.	2351.	2344.
15.0	2924.	2911.	2912.	2907.	2907.	2910.	2906.	2905.	2901.	2899.
10.0	3403.	3409.	3400.	3404.	3402.	3399.	3387.	3391.	3388.	3384.
5.0	3570.	3573.	3571.	3570.	3570.	3568.	3559.	3560.	3553.	3555.
2.5<<	3592.	3594.	3593.	3591.	3590.	3590.	3586.	3584.	3581.	3580.
0.0	3587.	3587.	3587.	3587.	3587.	3587.	3587.	3587.	3587.	3587.

||  
PLANE OF MAXIMUM CANDELA

|  
CONE OF MAXIMUM CANDELA

REPORT NUMBER: RAB04238

PAGE: 8 OF 9

ISSUE DATE: 04/04/18

DATE SAMPLE TESTED: 04/04/18

CATALOG NUMBER: YBLED60/D10/PCU-YBLED60/ARM/D10/PCU (TYPE V)

### CANDELA TABULATION

HOUSE SIDE		LATERAL ANGLE									
		90.0	95.0	105.0	115.0	125.0	135.0	145.0	155.0	165.0	175.0 180.0
	180.0	1.	1.	1.	1.	1.	1.	1.	1.	1.	1.
	175.0	2.	2.	2.	2.	2.	1.	2.	1.	1.	2.
	165.0	4.	4.	3.	3.	3.	3.	2.	2.	2.	2.
	155.0	4.	4.	4.	4.	4.	3.	3.	2.	2.	2.
	145.0	6.	6.	6.	6.	5.	4.	3.	3.	3.	2.
	135.0	8.	9.	9.	8.	8.	7.	6.	6.	4.	3.
	125.0	15.	15.	15.	15.	14.	14.	14.	13.	9.	4.
	115.0	27.	27.	27.	27.	27.	28.	27.	26.	12.	5.
	105.0	37.	37.	37.	36.	37.	36.	35.	31.	22.	13.
	95.0	88.	87.	87.	89.	87.	89.	88.	87.	81.	83.
	90.0	155.	153.	153.	158.	153.	158.	156.	156.	157.	160.
	87.5	208.	206.	207.	208.	210.	213.	209.	208.	209.	215.
	85.0	275.	277.	275.	281.	285.	289.	285.	278.	278.	281.
	82.5	365.	369.	369.	379.	385.	392.	386.	373.	369.	370.
V	80.0	476.	481.	483.	497.	507.	510.	504.	482.	470.	465.
E	77.5	593.	594.	599.	617.	634.	644.	629.	591.	576.	562.
R	75.0	693.	699.	707.	726.	746.	756.	735.	696.	671.	644.
T	72.5	778.	786.	795.	822.	833.	839.	823.	783.	748.	701.
I	70.0	859.	866.	873.	900.	899.	911.	904.	865.	824.	750.
C	67.5	950.	950.	959.	979.	986.	1000.	1002.	985.	928.	822.
A	65.0	1073.	1084.	1087.	1104.	1104.	1105.	1111.	1121.	1069.	959.
L	62.5	1198.	1203.	1209.	1218.	1219.	1224.	1243.	1259.	1221.	1132.
	60.0	1282.	1284.	1290.	1292.	1288.	1292.	1300.	1320.	1314.	1258.
A	57.5	1297.	1297.	1305.	1307.	1306.	1309.	1317.	1330.	1332.	1310.
N	55.0	1303.	1305.	1310.	1311.	1307.	1306.	1309.	1318.	1327.	1320.
G	52.5	1307.	1309.	1313.	1313.	1312.	1311.	1316.	1325.	1327.	1322.
L	50.0	1327.	1328.	1331.	1329.	1325.	1324.	1326.	1333.	1342.	1337.
E	47.5	1357.	1358.	1359.	1356.	1354.	1351.	1352.	1359.	1365.	1365.
	45.0	1397.	1396.	1397.	1394.	1392.	1388.	1388.	1396.	1398.	1400.
	42.5	1443.	1442.	1441.	1438.	1435.	1432.	1434.	1439.	1443.	1446.
	40.0	1497.	1497.	1495.	1493.	1491.	1488.	1488.	1492.	1495.	1497.
	37.5	1557.	1557.	1557.	1555.	1555.	1553.	1553.	1555.	1557.	1560.
	35.0	1628.	1630.	1629.	1629.	1629.	1629.	1628.	1627.	1627.	1628.
	30.0	1804.	1807.	1806.	1807.	1803.	1807.	1804.	1801.	1800.	1801.
	25.0	2015.	2023.	2021.	2019.	2018.	2011.	2005.	2006.	2002.	2000.
	20.0	2339.	2351.	2345.	2341.	2331.	2321.	2300.	2301.	2286.	2284.
	15.0	2895.	2904.	2899.	2877.	2879.	2863.	2830.	2835.	2815.	2801.
	10.0	3379.	3384.	3385.	3370.	3371.	3344.	3343.	3335.	3331.	3322.
	5.0	3553.	3548.	3549.	3543.	3542.	3538.	3534.	3528.	3525.	3520.
	2.5<<	3581.	3578.	3580.	3577.	3578.	3575.	3574.	3569.	3566.	3564.
	0.0	3587.	3587.	3587.	3587.	3587.	3587.	3587.	3587.	3587.	3587.

CONE OF MAXIMUM CANDELA



REPORT NUMBER: RAB04238

ISSUE DATE: 04/04/18

PREPARED FOR: RAB LIGHTING INC. RC LIGHTING

PAGE: 9 OF 9

DATE SAMPLE TESTED: 04/04/18

### 5-DEGREE

#### ZONAL LUMEN SUMMARY

0- 5	85
5- 10	248
10- 15	372
15- 20	425
20- 25	452
25- 30	480
30- 35	502
35- 40	519
40- 45	533
45- 50	549
50- 55	571
55- 60	601
60- 65	581
65- 70	488
70- 75	414
75- 80	326
80- 85	209
85- 90	117
90- 95	64
95-100	35
100-105	21
105-110	17
110-115	15
115-120	11
120-125	7
125-130	5
130-135	4
135-140	2
140-145	2
145-150	1
150-155	1
155-160	1
160-165	1
165-170	0
170-175	0
175-180	0

### 10-DEGREE

#### ZONAL LUMEN SUMMARY

0- 10	333
0- 20	1131
0- 30	2064
0- 40	3085
0- 50	4167
0- 60	5338
0- 70	6407
0- 80	7148
0- 90	7473
0-100	7573
0-110	7611
0-120	7637
0-130	7650
0-140	7656
0-150	7659
0-160	7660
0-170	7661
0-180	7661

REPORT NUMBER: RAB04239  
DATE: 4/4/2018  
PREPARED FOR: RAB LIGHTING INC. RC LIGHTING  
CATALOG NUMBER: YBLED60/D10/PCU-YBLED60/ARM/D10/PCU (TYPE V)

ADDRESS: 170 LUDLOW AVE, NORTHVALE, NJ 07647

LUMINAIRE: CAST FINNED METAL HOUSING WITH WHITE PAINTED INTERIOR, 1 CIRCUIT BOARD WITH 1 LED WITH MOLDED WHITE PLASTIC TRIM, CLEAR INTERIOR FROSTED CYLINDRICAL LENS WITH RECESSED EXTERIOR-FROSTED CONVEX CENTER. CONVEX CENTER HAS CONCENTRIC CIRCULAR EXTERIOR PRISMS.

LAMP: ONE WHITE MULTI-CHIP LIGHT EMITTING DIODE (LED), VERTICAL BASE-UP POSITION.

DRIVER: RDD-060-A1800-095C

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

INSTRUMENTS:	GWINSTEK PROGRAMMABLE AC POWER SOURCE APS-7100	Calibration Due: N/A
	CHROMA PROGRAMMABLE DIGITAL POWER METER MODEL 66202	3/08/19
	OCEAN OPTICS QE65PRO Spectroradiometer	02/22/19
	RAB 2.0 meter Diameter Integrating Sphere, 4PI Geometry	02/22/19

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 (120.0 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

REPORT NUMBER: RAB04239  
 DATE: 4/4/2018  
 PREPARED FOR: RAB LIGHTING INC. RC LIGHTING  
 CATALOG NUMBER: YBLED60/D10/PCU-YBLED60/ARM/D10/PCU (TYPE V)

Page 2 of 4

### RESULTS:

PHOTOMETRIC	
Total Integrated Flux (lumens)	7661 *
SPECTRORADIOMETRIC	
Observer	CIE 1931 2 degree
Chromaticity Ordinate x	0.3476
Chromaticity Ordinate y	0.3589
Observer	CIE 1976 2 degree
Chromaticity Ordinate u'	0.2103
Chromaticity Ordinate v'	0.4886
Correlated Color Temp CCT (K)	4932
ANSI C78.377-2008 Duv	0.003
Total Radiant Flux (milliWatts)	22896 *
ELECTRICAL	
Input Voltage (Volts AC)	277.0
Input Current (Amps AC)	0.225
Input Power (Watts)	56.2
Input Power Factor (%)	90.1
Input Current THD (%)	8.3
Input Voltage THD (%)	0.2
EFFICACY (Lumens/Watt)	
	136.3
ELECTRICAL AT MAX NONIMAL INPUT	
Input Voltage (Volts AC)	120.0
Input Current (Amps AC)	0.462
Input Power (Watts)	55.1
Input Power Factor (%)	99.6
Input Current THD (%)	8.8
Input Voltage THD (%)	0.2
Off-State Power (Watts)	0.0

COLOR RENDERING INDICES	CRI
Ra (Average 1-8)	76
R1 Light greyish red	72
R2 Dark greyish yellow	84
R3 Strong yellowish green	92
R4 Moderate yellowish green	74
R5 Light bluish green	74
R6 Light blue	77
R7 Light violet	83
R8 Light reddish purple	55
R9 Strong red	-27
R10 Strong yellow	62
R11 Strong green	71
R12 Strong blue	51
R13 Light yellowish pink (skin)	75
R14 Moderate olive green (leaf)	96

### \*NOTE:

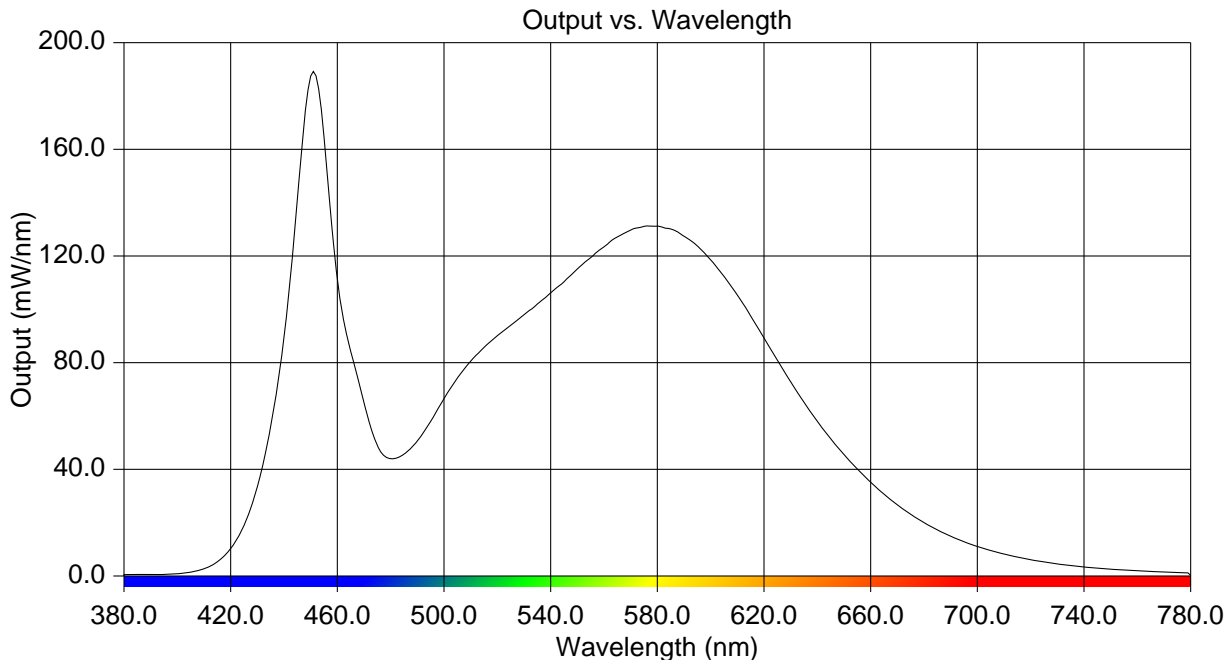
Proper calibration of integrating spheres for measuring total flux output of non-directional samples will produce reliable, repeatable results within the calibration tolerances of the equipment used. However, measurement of test samples with significant self absorption and/or directional output, even 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	0.478	515	85.729	650	45.542
385	0.524	520	90.136	655	40.128
390	0.534	525	94.079	660	35.152
395	0.632	530	97.959	665	30.646
400	0.871	535	101.990	670	26.690
405	1.400	540	106.220	675	23.127
410	2.708	545	110.308	680	20.000
415	5.330	550	115.151	685	17.286
420	10.303	555	119.380	690	14.885
425	19.006	560	123.416	695	12.851
430	33.413	565	127.243	700	11.044
435	55.918	570	129.765	705	9.517
440	89.303	575	131.106	710	8.196
445	141.094	580	131.258	715	7.096
450	187.460	585	130.139	720	6.128
455	164.675	590	127.385	725	5.252
460	111.389	595	123.741	730	4.548
465	84.288	600	118.523	735	3.920
470	65.018	605	112.329	740	3.376
475	49.036	610	105.316	745	2.939
480	43.926	615	97.495	750	2.542
485	45.725	620	89.337	755	2.226
490	50.548	625	81.089	760	1.949
495	57.970	630	72.741	765	1.697
500	66.638	635	65.028	770	1.476
505	74.022	640	57.992	775	1.300
510	80.523	645	51.452	780	0.196



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## CIE Chromaticity Diagram

