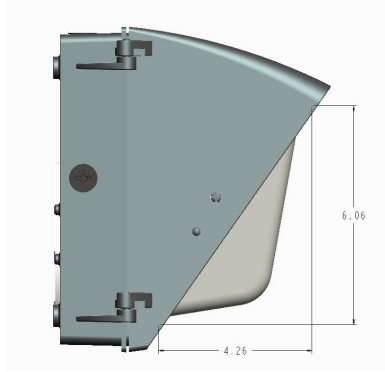


### ISOFOOTCANDLE LINES OF HORIZONTAL ILLUMINATION

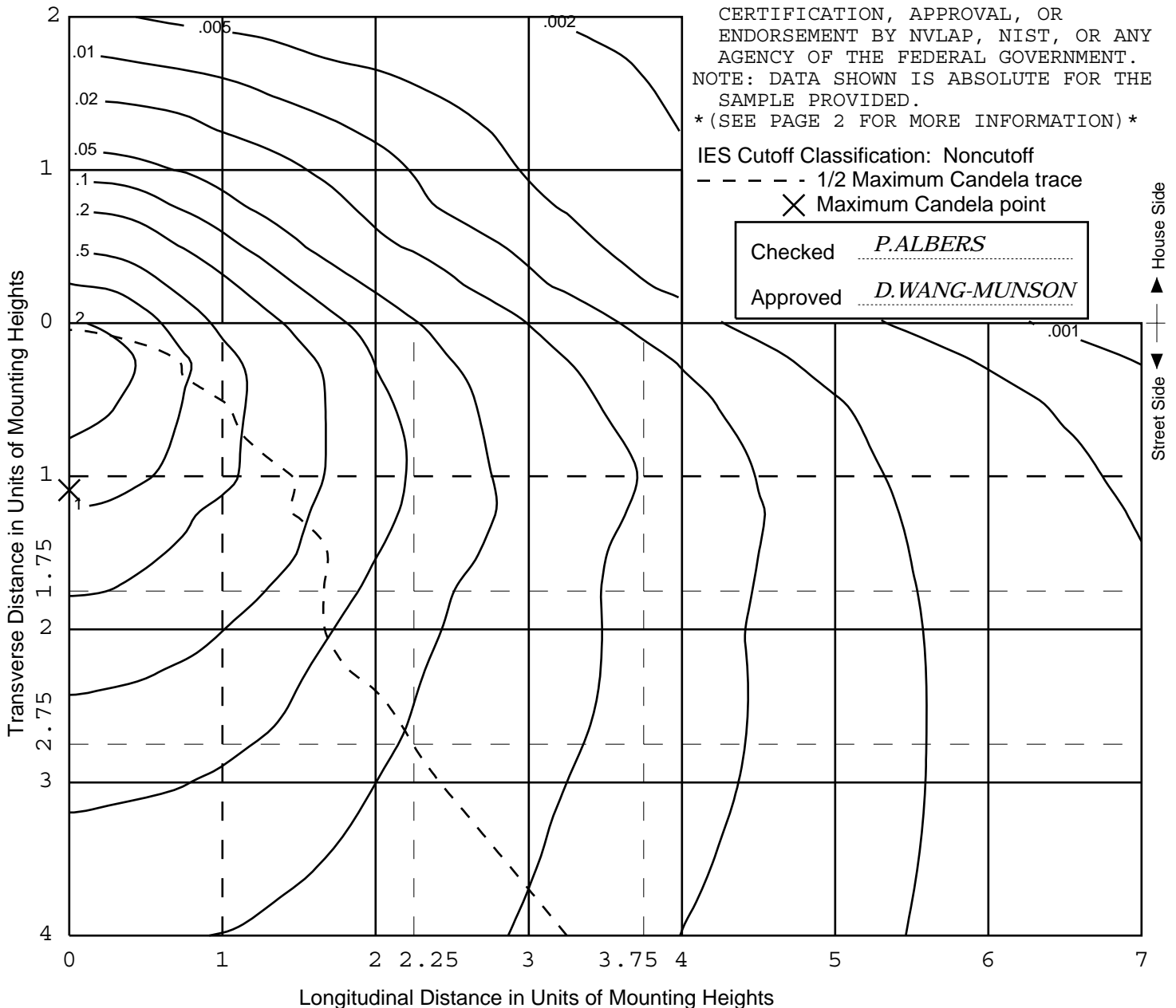
Values based on 16 foot mounting height.



REPORT NUMBER: RAB03100  
 ISSUE DATE: 03/24/17 PAGE: 1 OF 9  
 DATE SAMPLE TESTED: 03/24/17  
 CATALOG NUMBER: WP2LED24Y,  
 WP2LED24Y/D10 (STANDARD CUTOFF -  
 PRISMATIC GLASS LENS)  
 LUMINAIRE: MID SIZED WALLPACK. ALL  
 ALUMINUM PRECISION DIE CAST  
 CONSTRUCTION WITH TEMPERED GLASS  
 REFRACTOR.  
 LAMP: NINETY WHITE LIGHT EMITTING  
 DIODES (LEDs).  
 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.  
 \*(SEE PAGE 2 FOR MORE INFORMATION)\*

IES Cutoff Classification: Noncutoff

--- 1/2 Maximum Candela trace  
 X Maximum Candela point



REPORT NUMBER: RAB03100

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ISSUE DATE: 03/24/17

DATE SAMPLE TESTED: 03/24/17

CATALOG NUMBER: WP2LED24Y, WP2LED24Y/D10 (STANDARD CUTOFF - PRISMATIC GLASS L

ADDITIONAL INFORMATION

TOTAL INPUT WATTS = 25.002 W AT 277.0 VAC.

LED DRIVER: RD-026-A0450-N

TEST PROCEDURE: IESNA LM-79-08

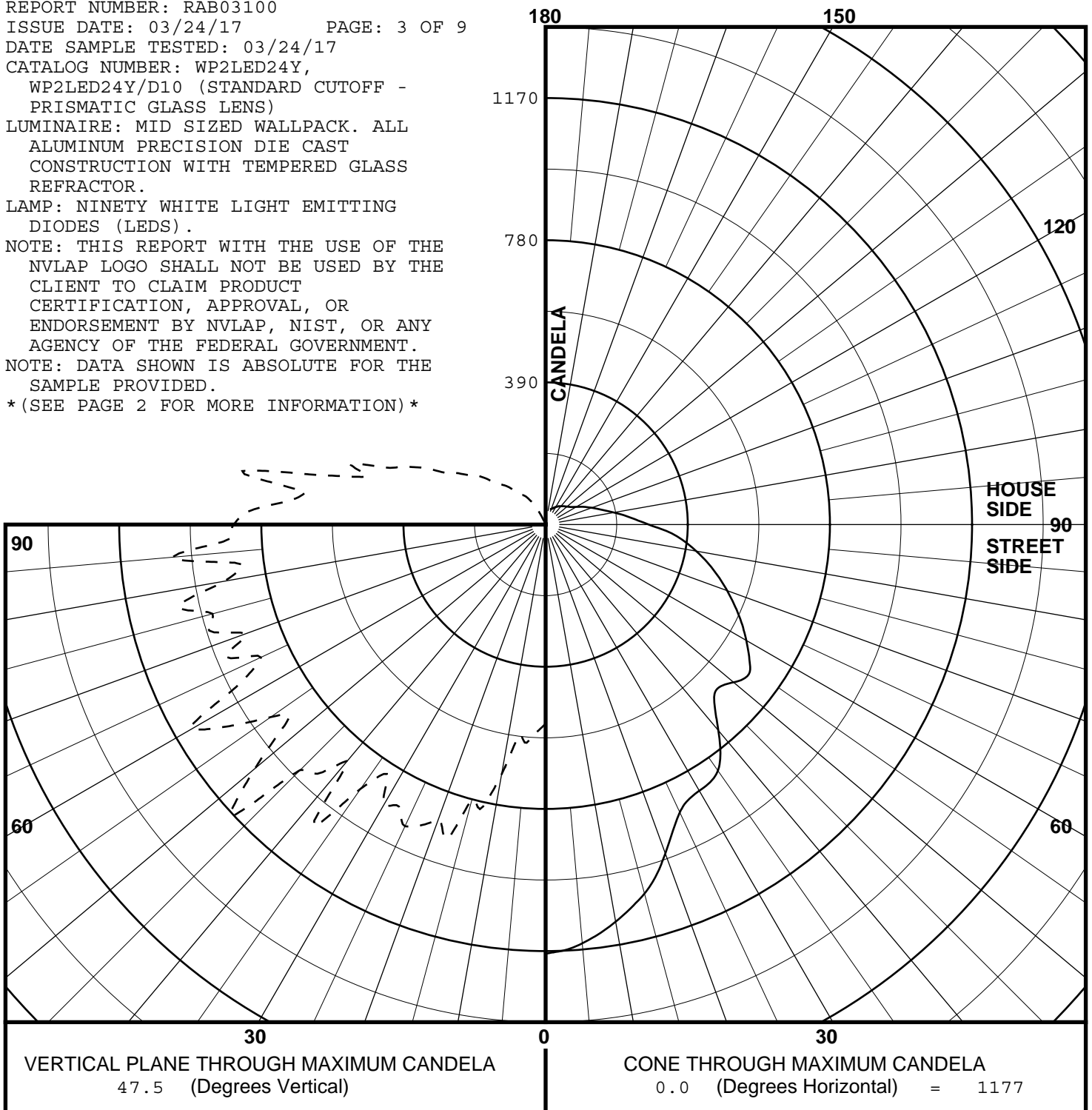
LM-80 DATA AVAILABLE FROM MANUFACTURER FOR SOLID STATE SOURCE

AMBIENT: 24.4

ACCREDITED LABORATORY CODE 201058-0

### MAXIMUM PLANE AND MAXIMUM CONE PLOTS OF CANDELA

REPORT NUMBER: RAB03100  
 ISSUE DATE: 03/24/17 PAGE: 3 OF 9  
 DATE SAMPLE TESTED: 03/24/17  
 CATALOG NUMBER: WP2LED24Y,  
 WP2LED24Y/D10 (STANDARD CUTOFF -  
 PRISMATIC GLASS LENS)  
 LUMINAIRE: MID SIZED WALLPACK. ALL  
 ALUMINUM PRECISION DIE CAST  
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 LAMP: NINETY WHITE LIGHT EMITTING  
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 CERTIFICATION, APPROVAL, OR  
 ENDORSEMENT BY NVLAP, NIST, OR ANY  
 AGENCY OF THE FEDERAL GOVERNMENT.  
 NOTE: DATA SHOWN IS ABSOLUTE FOR THE  
 SAMPLE PROVIDED.  
 \*(SEE PAGE 2 FOR MORE INFORMATION)\*



REPORT NUMBER: RAB03100

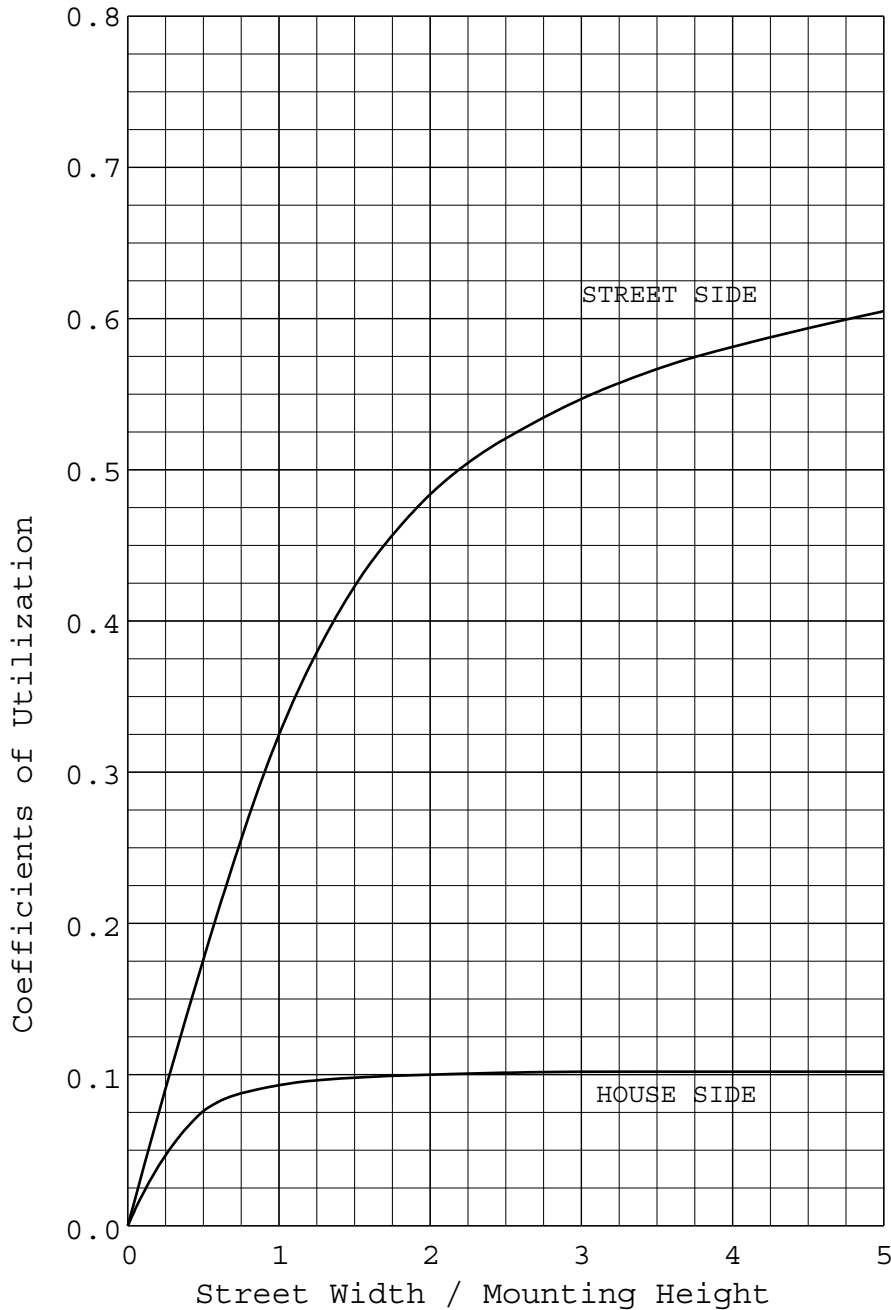
PAGE: 4 OF 9

ISSUE DATE: 03/24/17

DATE SAMPLE TESTED: 03/24/17

CATALOG NUMBER: WP2LED24Y, WP2LED24Y/D10 (STANDARD CUTOFF - PRISMATIC GLASS L

### COEFFICIENTS OF UTILIZATION AND FLUX DISTRIBUTION



	LUMENS	PERCENT OF FIXTURE
DOWNWARD STREET SIDE	1993.	69.4
DOWNWARD HOUSE SIDE	298.	10.4
DOWNWARD TOTAL	2292.	79.7
UPWARD STREET SIDE	564.	19.6
UPWARD HOUSE SIDE	19.	0.6
UPWARD TOTAL	582.	20.3
TOTAL FLUX	2874.	100.0

TOTAL INPUT WATTS = 25.0  
EFFICACY = 115.0 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: RAB03100

ISSUE DATE: 03/24/17

PAGE: 5 OF 9

DATE SAMPLE TESTED: 03/24/17

CATALOG NUMBER: WP2LED24Y, WP2LED24Y/D10 (STANDARD CUTOFF - PRISMATIC

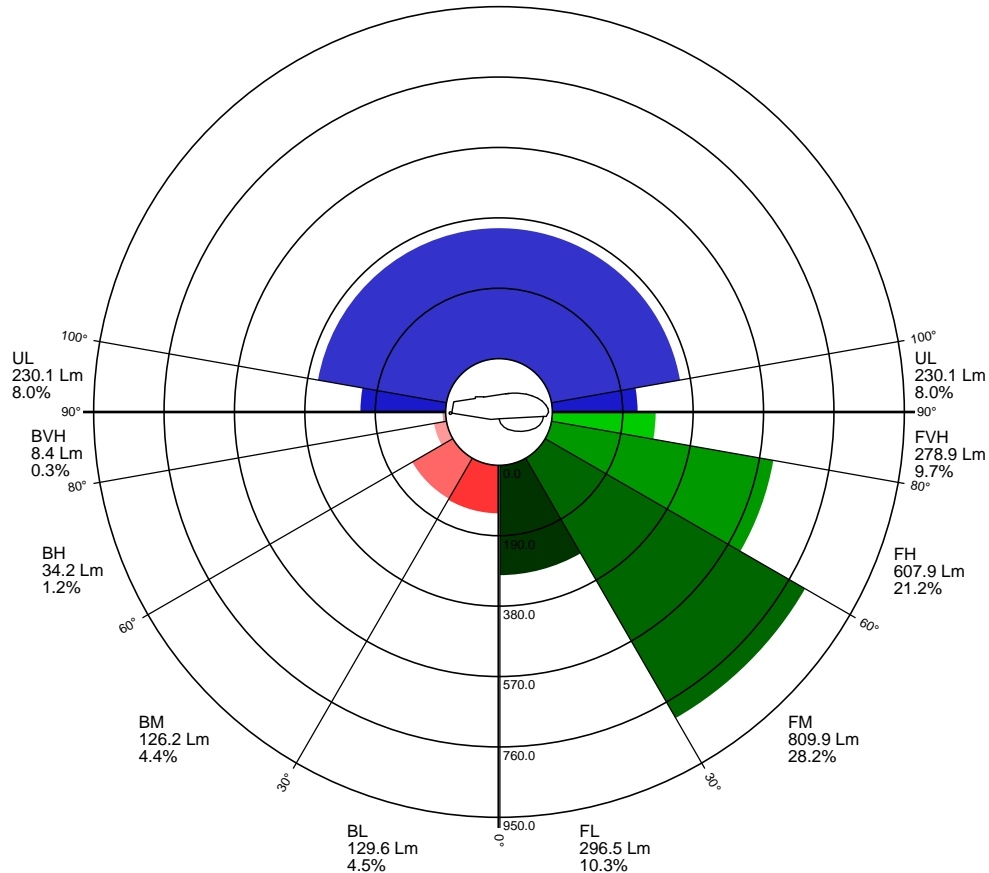
GLASS LENS)

Zonal Summary		Lumens	% of Fixture	Zone Ratings		
				B	U	G
Forward		1993	69.4			
FL	(0° - 30°)	296.5	10.3			
FM	(30° - 60°)	809.9	28.2			
FH	(60° - 80°)	607.9	21.2			G0
FVH	(80° - 90°)	278.9	9.7			G3
Backward		298	10.4			
BL	(0° - 30°)	129.6	4.5	B1		
BM	(30° - 60°)	126.2	4.4	B0		
BH	(60° - 80°)	34.2	1.2	B0		G0
BVH	(80° - 90°)	8.4	0.3			G0
Upward		582	20.3			
UL	(90° - 100°)	230.1	8.0		U3	
UH	(100° - 180°)	352.1	12.3		U3	
Trapped Light		0	0.0			
Total Flux		2874	100.0			

### Zonal Lumen Summary

(Linear scale)

UH  
352.1 Lm  
12.3%



REPORT NUMBER: RAB03100

ISSUE DATE: 03/24/17

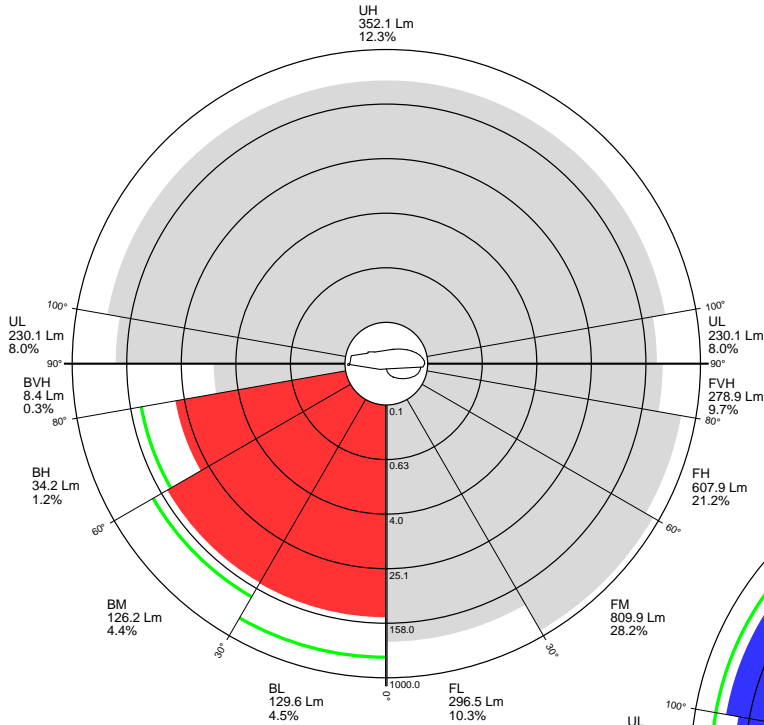
CATALOG NUMBER: WP2LED24Y, WP2LED24Y/D10 (STANDARD CUTOFF - PRISMATIC GLASS LENS)

PAGE: 6 OF 9

DATE SAMPLE TESTED: 03/24/17

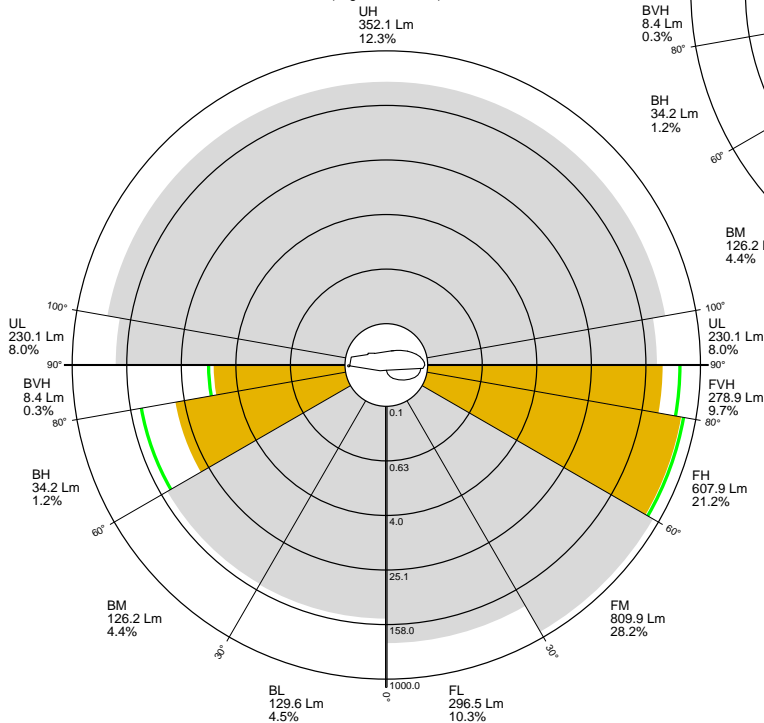
### Backlight Rating Details

(Logarithmic scale)



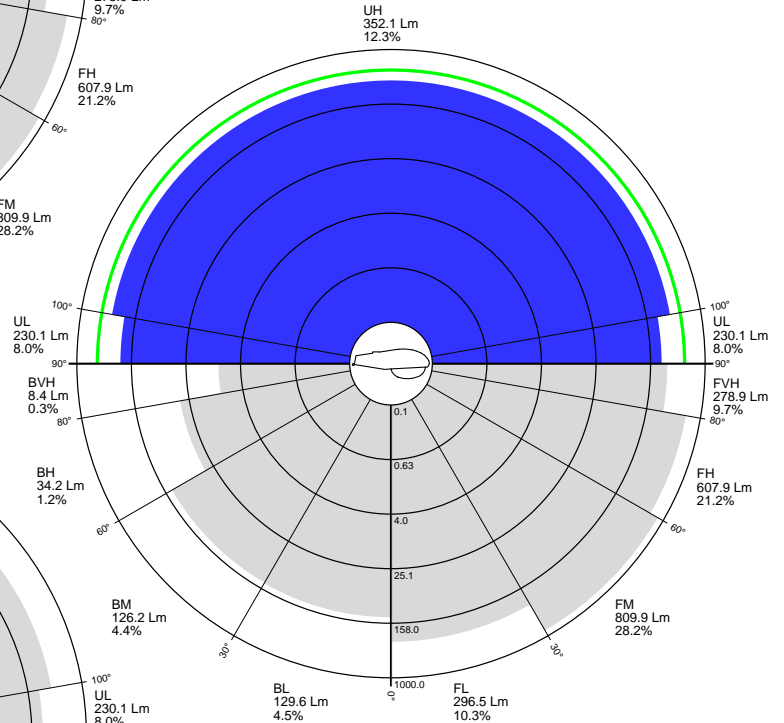
### Glare Rating Details

(Logarithmic scale)



### Uplight Rating Details

(Logarithmic scale)



REPORT NUMBER: RAB03100

PAGE: 7 OF 9

ISSUE DATE: 03/24/17

DATE SAMPLE TESTED: 03/24/17

CATALOG NUMBER: WP2LED24Y, WP2LED24Y/D10 (STANDARD CUTOFF - PRISMATIC GLASS L

### 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	2.	2.	2.	2.	2.	2.	2.	2.	2.
	175.0	0.	0.	1.	1.	2.	2.	2.	3.	3.
	165.0	0.	0.	1.	1.	2.	2.	2.	3.	3.
	155.0	14.	13.	10.	7.	4.	2.	2.	3.	3.
	145.0	93.	90.	76.	57.	38.	19.	7.	3.	3.
	135.0	147.	144.	132.	112.	82.	53.	30.	11.	6.
	125.0	239.	234.	224.	195.	149.	108.	64.	30.	15.
	115.0	368.	356.	360.	313.	244.	186.	121.	62.	27.
	105.0	509.	498.	456.	416.	422.	294.	201.	131.	47.
	95.0	717.	693.	716.	639.	535.	392.	307.	218.	119.
	90.0	856.	840.	817.	692.	634.	424.	351.	244.	163.
	87.5	865.	832.	886.	825.	595.	468.	371.	274.	185.
	85.0	1029.	997.	955.	749.	624.	489.	369.	272.	205.
V	82.5	840.	829.	812.	762.	662.	501.	397.	293.	221.
E	80.0	895.	872.	945.	848.	664.	481.	400.	321.	244.
R	77.5	1031.	1003.	977.	838.	652.	494.	417.	306.	295.
T	75.0	946.	936.	949.	830.	644.	500.	412.	314.	326.
I	72.5	968.	934.	895.	791.	670.	505.	418.	414.	296.
C	70.0	876.	859.	858.	806.	618.	519.	457.	477.	336.
A	67.5	949.	923.	871.	767.	656.	574.	518.	456.	378.
L	65.0	862.	851.	828.	777.	706.	652.	526.	454.	365.
	62.5	947.	929.	941.	916.	818.	622.	545.	452.	324.
A	60.0	1121.	1125.	1075.	938.	737.	625.	626.	489.	414.
N	57.5	1029.	1005.	941.	821.	716.	665.	623.	499.	441.
G	55.0	921.	907.	893.	812.	750.	788.	590.	510.	434.
L	52.5	900.	894.	881.	859.	898.	758.	570.	488.	410.
E	50.0	1041.	1037.	1071.	1020.	860.	676.	653.	536.	468.
	47.5<<	1177.	1153.	1048.	871.	824.	656.	685.	584.	476.
	45.0	952.	930.	922.	858.	769.	756.	633.	602.	499.
	42.5	927.	912.	880.	833.	791.	784.	602.	574.	498.
	40.0	846.	849.	917.	879.	846.	724.	680.	609.	508.
	37.5	1043.	1022.	952.	875.	799.	682.	729.	659.	549.
	35.0	884.	868.	823.	845.	733.	745.	698.	690.	588.
	30.0	888.	877.	846.	840.	827.	785.	785.	690.	579.
	25.0	913.	895.	830.	815.	851.	855.	733.	707.	543.
	20.0	862.	877.	796.	849.	873.	739.	756.	588.	558.
	15.0	782.	786.	750.	709.	800.	769.	599.	616.	540.
	10.0	696.	704.	671.	622.	559.	585.	633.	576.	551.
	5.0	601.	609.	596.	593.	577.	553.	540.	552.	543.
	0.0	546.	546.	546.	546.	546.	546.	546.	546.	546.

||  
PLANE OF MAXIMUM CANDELA

CONE OF MAXIMUM CANDELA

REPORT NUMBER: RAB03100

PAGE: 8 OF 9

ISSUE DATE: 03/24/17

DATE SAMPLE TESTED: 03/24/17

CATALOG NUMBER: WP2LED24Y, WP2LED24Y/D10 (STANDARD CUTOFF - PRISMATIC GLASS L

## 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	2.	2.	2.	2.	2.	2.	2.	2.	2.	2.
	175.0	3.	3.	3.	3.	2.	2.	2.	1.	1.	0.
	165.0	3.	3.	3.	3.	3.	2.	2.	1.	1.	1.
	155.0	3.	3.	3.	3.	3.	2.	2.	2.	1.	1.
	145.0	3.	3.	3.	3.	3.	2.	2.	2.	2.	1.
	135.0	4.	3.	4.	3.	3.	3.	2.	2.	2.	2.
	125.0	10.	9.	6.	4.	3.	2.	2.	2.	2.	2.
	115.0	18.	18.	11.	6.	4.	3.	2.	2.	2.	3.
	105.0	24.	26.	19.	12.	6.	4.	3.	3.	4.	4.
	95.0	21.	28.	30.	20.	11.	6.	4.	4.	4.	4.
	90.0	20.	26.	33.	26.	14.	7.	4.	4.	4.	4.
	87.5	24.	25.	34.	29.	17.	7.	4.	4.	4.	5.
	85.0	33.	27.	36.	31.	18.	8.	5.	4.	4.	4.
V	82.5	51.	31.	37.	32.	20.	8.	4.	3.	4.	4.
E	80.0	75.	37.	39.	33.	21.	9.	4.	3.	3.	3.
R	77.5	101.	48.	41.	36.	22.	10.	5.	3.	3.	3.
T	75.0	126.	64.	43.	38.	25.	11.	5.	3.	3.	3.
I	72.5	152.	84.	46.	40.	28.	15.	5.	2.	3.	3.
C	70.0	171.	103.	49.	43.	31.	19.	11.	5.	2.	2.
A	67.5	189.	121.	54.	46.	35.	23.	16.	11.	9.	7.
L	65.0	206.	137.	61.	50.	38.	27.	21.	15.	13.	14.
	62.5	217.	150.	71.	55.	43.	31.	26.	19.	18.	18.
A	60.0	229.	165.	85.	61.	47.	35.	29.	24.	20.	22.
N	57.5	243.	179.	102.	67.	51.	40.	32.	30.	25.	22.
G	55.0	255.	189.	117.	75.	57.	46.	38.	33.	31.	29.
L	52.5	254.	201.	129.	88.	64.	53.	45.	35.	35.	34.
E	50.0	267.	217.	147.	100.	73.	61.	52.	41.	39.	39.
	47.5<<	283.	231.	158.	115.	84.	71.	61.	50.	44.	44.
	45.0	297.	249.	171.	129.	98.	82.	70.	60.	51.	48.
	42.5	318.	266.	190.	144.	111.	94.	81.	73.	62.	57.
	40.0	331.	284.	207.	158.	127.	108.	92.	87.	77.	71.
	37.5	348.	308.	226.	176.	142.	121.	104.	99.	93.	88.
	35.0	373.	334.	257.	194.	158.	135.	117.	110.	106.	105.
	30.0	404.	382.	306.	242.	194.	169.	148.	138.	129.	126.
	25.0	442.	425.	353.	293.	242.	207.	187.	173.	160.	156.
	20.0	482.	459.	405.	362.	306.	262.	240.	221.	207.	204.
	15.0	512.	479.	459.	414.	395.	347.	318.	295.	271.	268.
	10.0	531.	508.	499.	471.	431.	427.	417.	404.	386.	379.
	5.0	528.	512.	486.	487.	511.	512.	491.	478.	461.	461.
	0.0	546.	546.	546.	546.	546.	546.	546.	546.	546.	546.

CONE OF MAXIMUM CANDELA



REPORT NUMBER: RAB03100  
ISSUE DATE: 03/24/17  
PREPARED FOR: RAB LIGHTING INC.

PAGE: 9 OF 9  
DATE SAMPLE TESTED: 03/24/17

### 5-DEGREE ZONAL LUMEN SUMMARY

0- 5	13
5- 10	37
10- 15	63
15- 20	85
20- 25	106
25- 30	122
30- 35	133
35- 40	146
40- 45	152
45- 50	167
50- 55	167
55- 60	171
60- 65	170
65- 70	160
70- 75	156
75- 80	157
80- 85	147
85- 90	141
90- 95	125
95-100	106
100-105	92
105-110	70
110-115	55
115-120	41
120-125	31
125-130	23
130-135	16
135-140	11
140-145	7
145-150	4
150-155	2
155-160	1
160-165	0
165-170	0
170-175	0
175-180	0

### 10-DEGREE ZONAL LUMEN SUMMARY

0- 10	50
0- 20	198
0- 30	426
0- 40	706
0- 50	1025
0- 60	1362
0- 70	1692
0- 80	2004
0- 90	2292
0-100	2522
0-110	2684
0-120	2780
0-130	2833
0-140	2860
0-150	2871
0-160	2873
0-170	2874
0-180	2874

REPORT NUMBER: RAB03101  
 DATE: 3/24/2017  
 PREPARED FOR: RAB LIGHTING INC.  
 CATALOG NUMBER: WP2LED24Y, WP2LED24Y/D10 (STANDARD CUTOFF - PRISMATIC GLASS LENS)

ADDRESS: 170 LUDLOW AVE, NORTHVALE, NJ 07647

LUMINAIRE: MID SIZED WALLPACK. ALL ALUMINUM PRECISION DIE CAST CONSTRUCTION WITH TEMPERED GLASS REFRACTOR.

LAMP: NINETY WHITE LIGHT EMITTING DIODES (LEDs).

DRIVER: RD-026-A0450-N

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	3/01/18
	OCEAN OPTICS QE65PRO Spectroradiometer	03/07/18
	RAB 2.0 meter Diameter Integrating Sphere, 4PI Geometry	03/07/18

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 (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: RAB03101  
 DATE: 3/24/2017  
 PREPARED FOR: RAB LIGHTING INC.  
 CATALOG NUMBER: WP2LED24Y, WP2LED24Y/D10 (STANDARD CUTOFF - PRISMATIC GLASS LENS)

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### RESULTS:

PHOTOMETRIC	
Total Integrated Flux (lumens)	2874 *
SPECTRORADIOMETRIC	
Observer	CIE 1931 2 degree
Chromaticity Ordinate x	0.4293
Chromaticity Ordinate y	0.3996
Observer	CIE 1976 2 degree
Chromaticity Ordinate u'	0.2476
Chromaticity Ordinate v'	0.5185
Correlated Color Temp CCT (K)	3095
ANSI C78.377-2008 Duv	-0.001
Total Radiant Flux (milliWatts)	8793 *
ELECTRICAL	
Input Voltage (Volts AC)	277.0
Input Current (Amps AC)	0.097
Input Power (Watts)	25.0
Input Power Factor (%)	93.2
Input Current THD (%)	12.9
Input Voltage THD (%)	0.2
EFFICACY (Lumens/Watt)	
	115.0
ELECTRICAL AT MAX NONIMAL INPUT	
Input Voltage (Volts AC)	120.0
Input Current (Amps AC)	0.206
Input Power (Watts)	24.4
Input Power Factor (%)	98.8
Input Current THD (%)	7.9
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	91
R3 Strong yellowish green	96
R4 Moderate yellowish green	81
R5 Light bluish green	82
R6 Light blue	90
R7 Light violet	83
R8 Light reddish purple	60
R9 Strong red	10
R10 Strong yellow	80
R11 Strong green	80
R12 Strong blue	73
R13 Light yellowish pink (skin)	84
R14 Moderate olive green (leaf)	99

### \*NOTE:

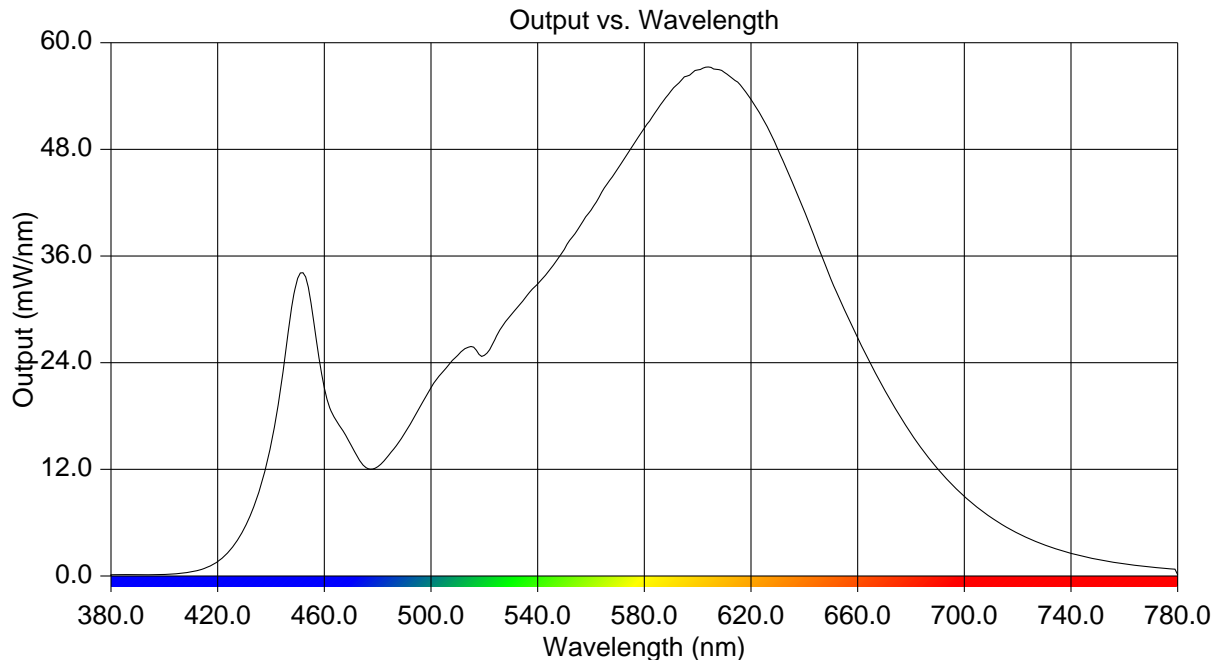
Proper calibration of integrating spheres for measuring total flux output of non-directional samples will produce reliable, repeatable results within the calibration tolerances of the equipment used. However, measurement of test samples with significant self absorption and/or directional output, even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

REPORT NUMBER: RAB03101  
 DATE: 3/24/2017  
 PREPARED FOR: RAB LIGHTING INC.  
 CATALOG NUMBER: WP2LED24Y, WP2LED24Y/D10 (STANDARD CUTOFF - PRISMATIC GLASS LENS)

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### RESULTS:

Wavelength	mW per nm	Wavelength	mW per nm	Wavelength	mW per nm
380	0.135	515	25.820	650	33.368
385	0.142	520	24.824	655	29.947
390	0.143	525	27.196	660	26.781
395	0.147	530	29.371	665	23.820
400	0.181	535	31.201	670	21.009
405	0.261	540	32.814	675	18.358
410	0.448	545	34.622	680	16.045
415	0.850	550	36.743	685	13.930
420	1.627	555	38.961	690	12.045
425	3.017	560	41.151	695	10.392
430	5.401	565	43.665	700	8.962
435	9.088	570	45.813	705	7.680
440	14.689	575	48.163	710	6.589
445	24.127	580	50.364	715	5.625
450	33.490	585	52.540	720	4.809
455	30.723	590	54.561	725	4.107
460	21.160	595	56.154	730	3.500
465	17.218	600	56.930	735	2.989
470	14.740	605	57.218	740	2.546
475	12.386	610	56.659	745	2.185
480	12.319	615	55.570	750	1.862
485	13.919	620	53.583	755	1.592
490	16.000	625	51.218	760	1.362
495	18.584	630	48.049	765	1.168
500	21.181	635	44.648	770	0.999
505	23.155	640	41.061	775	0.864
510	24.814	645	37.150	780	0.130



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## CIE Chromaticity Diagram

