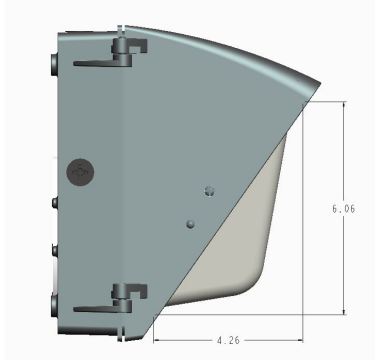


## ISOFOOTCANDLE LINES OF HORIZONTAL ILLUMINATION

Values based on 16 foot mounting height.



REPORT NUMBER: RAB03117  
 ISSUE DATE: 03/29/17 PAGE: 1 OF 9  
 DATE SAMPLE TESTED: 03/29/17  
 CATALOG NUMBER: WP2LED24, WP2LED24/D10  
 (STANDARD CUTOFF - PRISMATIC GLASS LENS)

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

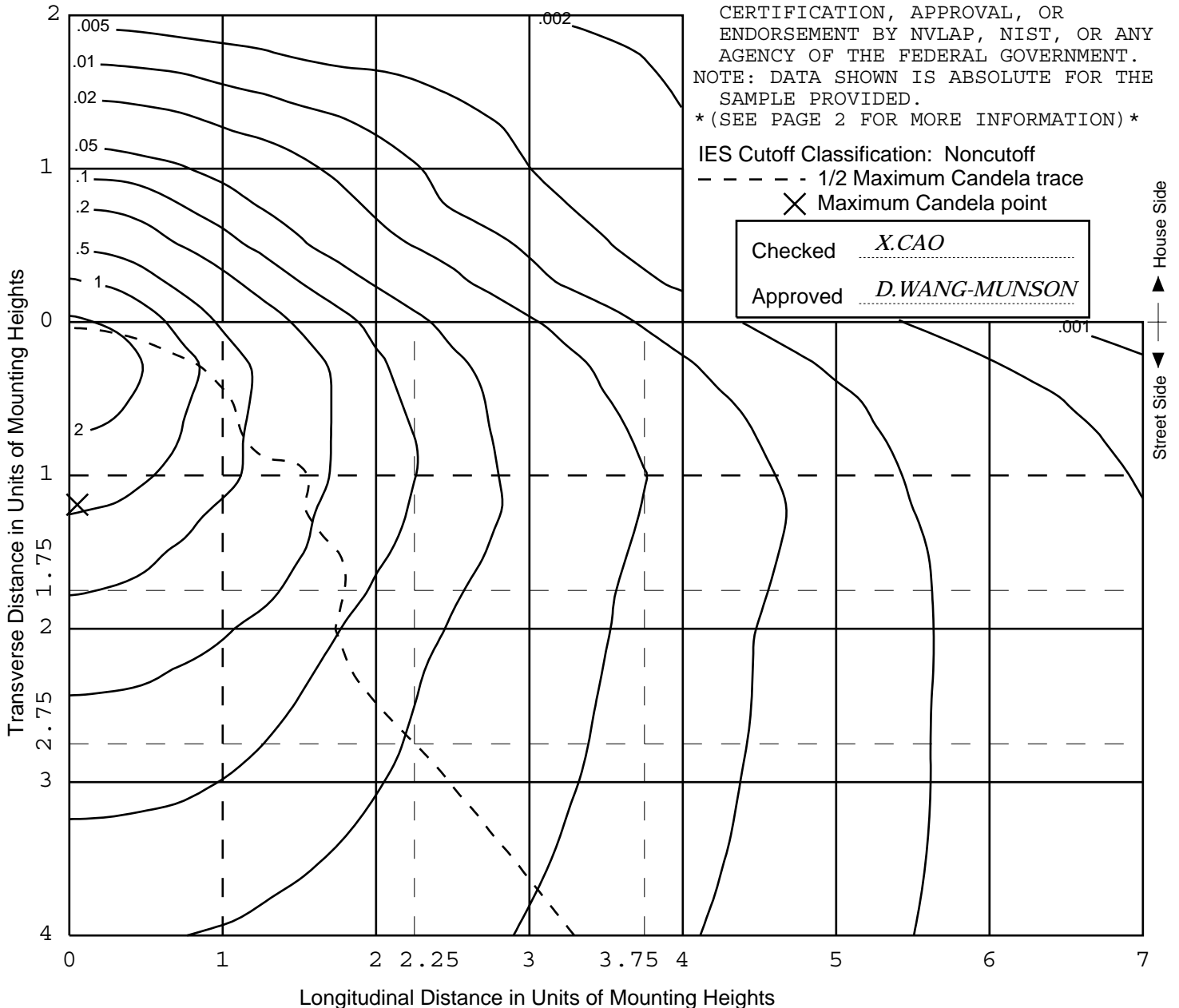
LAMP: NINETY WHITE LIGHT EMITTING DIODES (LEDs).

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



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CATALOG NUMBER: WP2LED24, WP2LED24/D10 (STANDARD CUTOFF - PRISMATIC GLASS LENS)

ADDITIONAL INFORMATION

TOTAL INPUT WATTS = 24.521 W AT 277.0 VAC.

LED DRIVER: RD-026-A0450-N

TEST PROCEDURE: IESNA LM-79-08

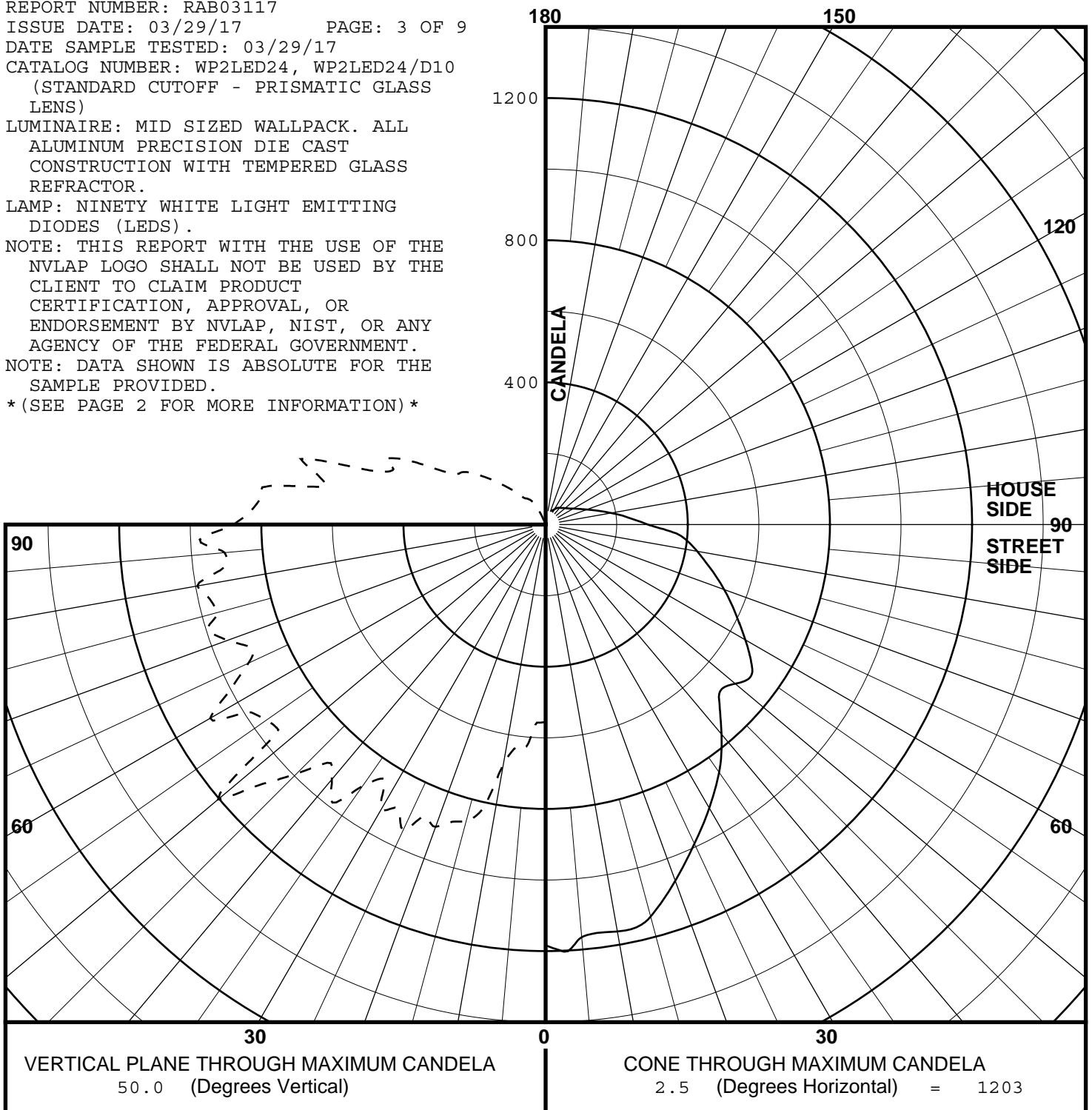
LM-80 DATA AVAILABLE FROM MANUFACTURER FOR SOLID STATE SOURCE

AMBIENT: 24.8

ACCREDITED LABORATORY CODE 201058-0

MAXIMUM PLANE AND MAXIMUM CONE PLOTS OF CANDELA

REPORT NUMBER: RAB03117  
 ISSUE DATE: 03/29/17 PAGE: 3 OF 9  
 DATE SAMPLE TESTED: 03/29/17  
 CATALOG NUMBER: WP2LED24, WP2LED24/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)\*



REPORT NUMBER: RAB03117

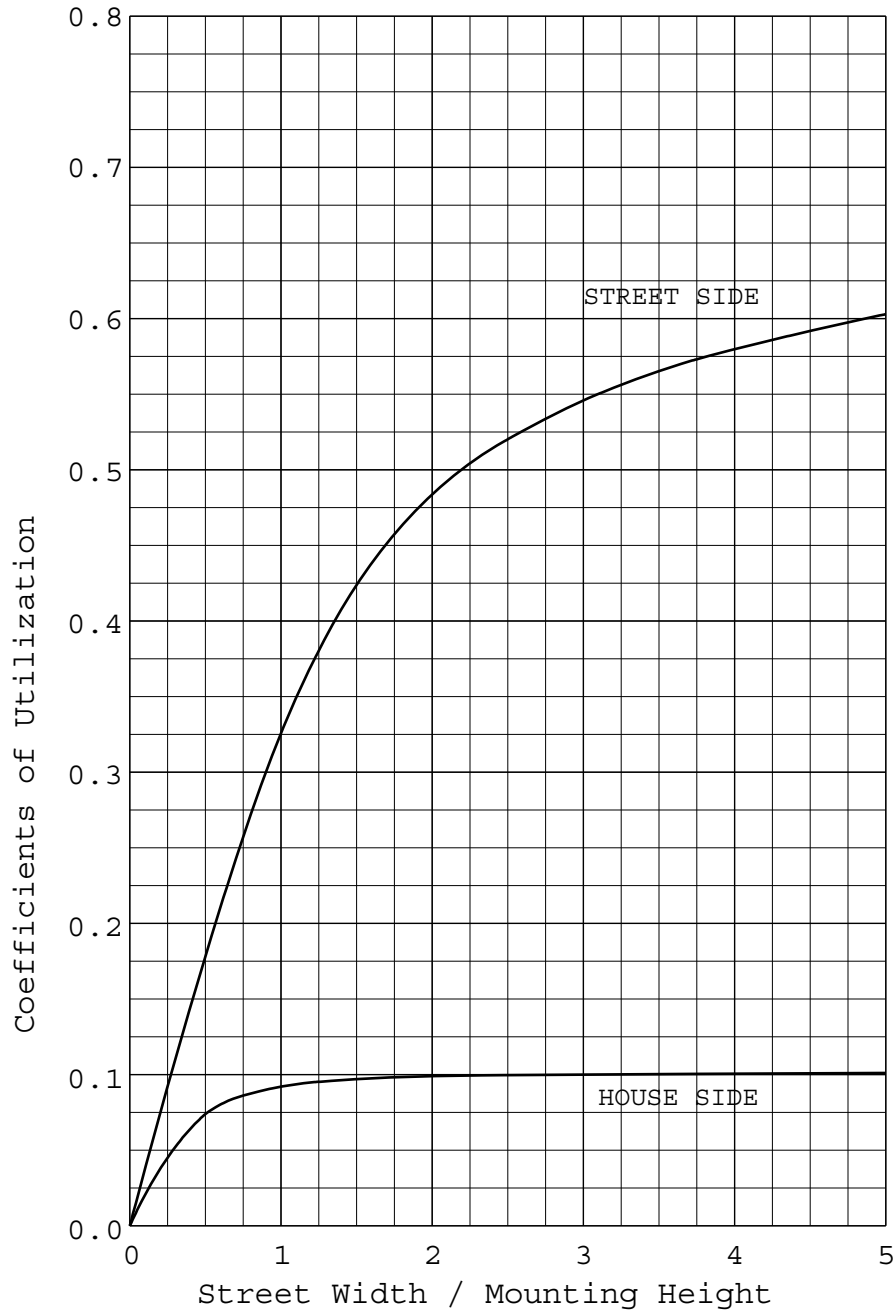
PAGE: 4 OF 9

ISSUE DATE: 03/29/17

DATE SAMPLE TESTED: 03/29/17

CATALOG NUMBER: WP2LED24, WP2LED24/D10 (STANDARD CUTOFF - PRISMATIC GLASS LENS)

## COEFFICIENTS OF UTILIZATION AND FLUX DISTRIBUTION



	LUMENS	PERCENT OF FIXTURE
DOWNWARD STREET SIDE	2068.	69.0
DOWNWARD HOUSE SIDE	307.	10.3
DOWNWARD TOTAL	2375.	79.2
UPWARD STREET SIDE	603.	20.1
UPWARD HOUSE SIDE	20.	0.7
UPWARD TOTAL	623.	20.8
TOTAL FLUX	2998.	100.0

TOTAL INPUT WATTS = 24.5  
EFFICACY = 122.4 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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DATE SAMPLE TESTED: 03/29/17

CATALOG NUMBER: WP2LED24, WP2LED24/D10 (STANDARD CUTOFF - PRISMATIC GLASS

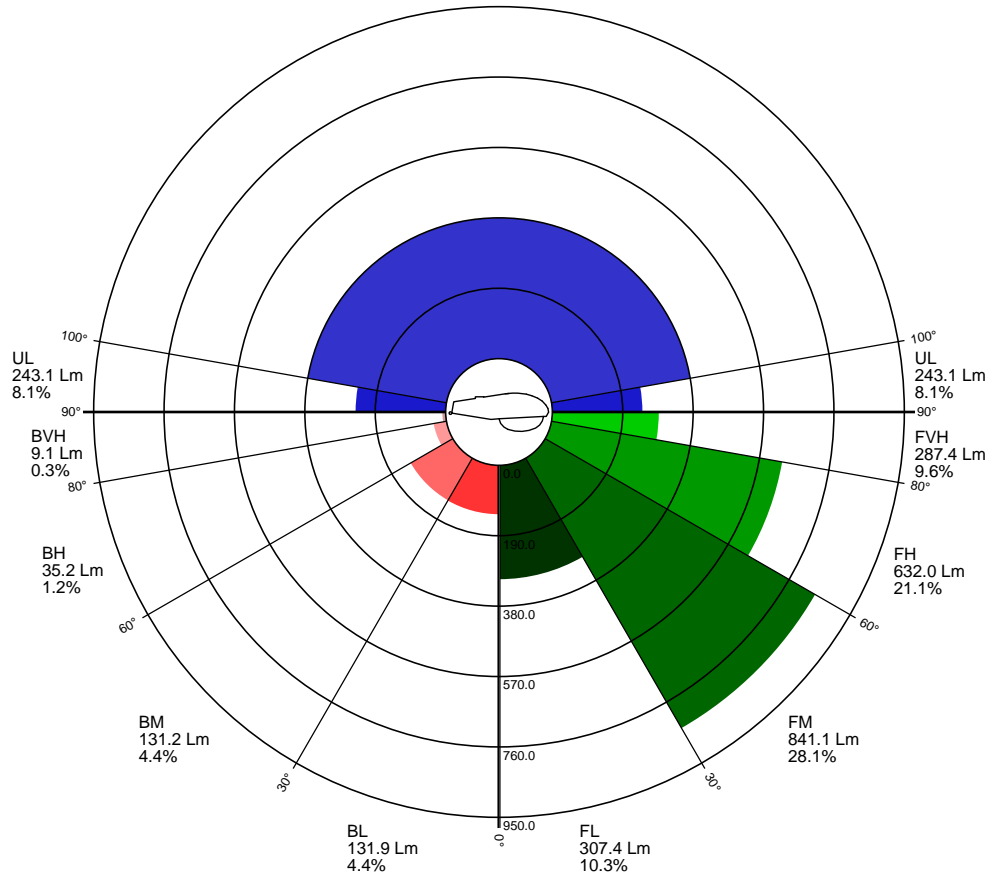
LENS BUG Rating:

Zonal Summary		Lumens	% of Fixture	Zone Ratings		
				B	U	G
Forward		2068	69.0			
FL	(0° - 30°)	307.4	10.3			
FM	(30° - 60°)	841.1	28.1			
FH	(60° - 80°)	632.0	21.1			G0
FVH	(80° - 90°)	287.4	9.6			G3
Backward		307	10.3			
BL	(0° - 30°)	131.9	4.4	B1		
BM	(30° - 60°)	131.2	4.4	B0		
BH	(60° - 80°)	35.2	1.2	B0		G0
BVH	(80° - 90°)	9.1	0.3			G0
Upward		623	20.8			
UL	(90° - 100°)	243.1	8.1		U3	
UH	(100° - 180°)	379.4	12.7		U3	
Trapped Light		0	0.0			
Total Flux		2998	100.0			

## Zonal Lumen Summary

(Linear scale)

UH  
379.4 Lm  
12.7%



REPORT NUMBER: RAB03117

ISSUE DATE: 03/29/17

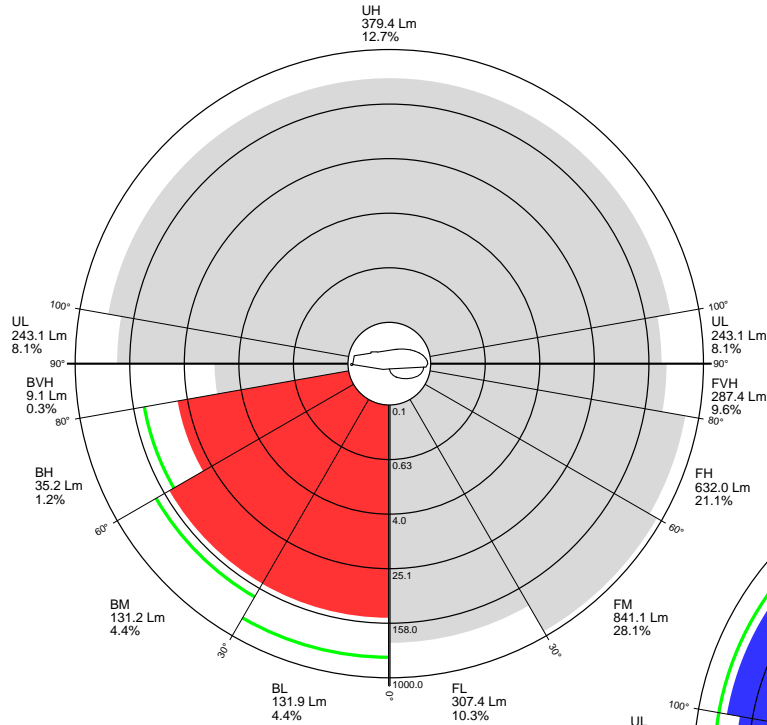
PAGE: 6 OF 9

DATE SAMPLE TESTED: 03/29/17

CATALOG NUMBER: WP2LED24, WP2LED24/D10 (STANDARD CUTOFF - PRISMATIC GLASS LENS)

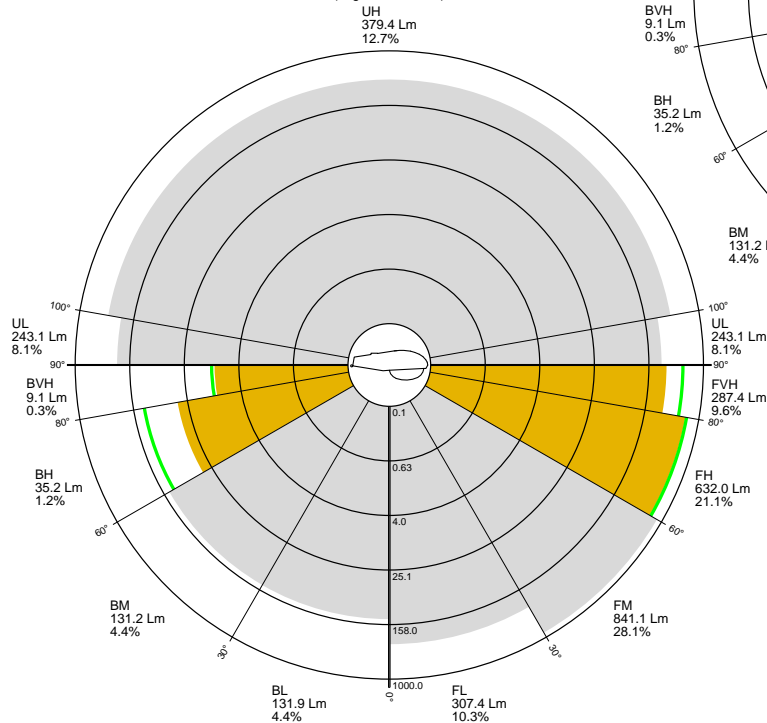
## Backlight Rating Details

(Logarithmic scale)



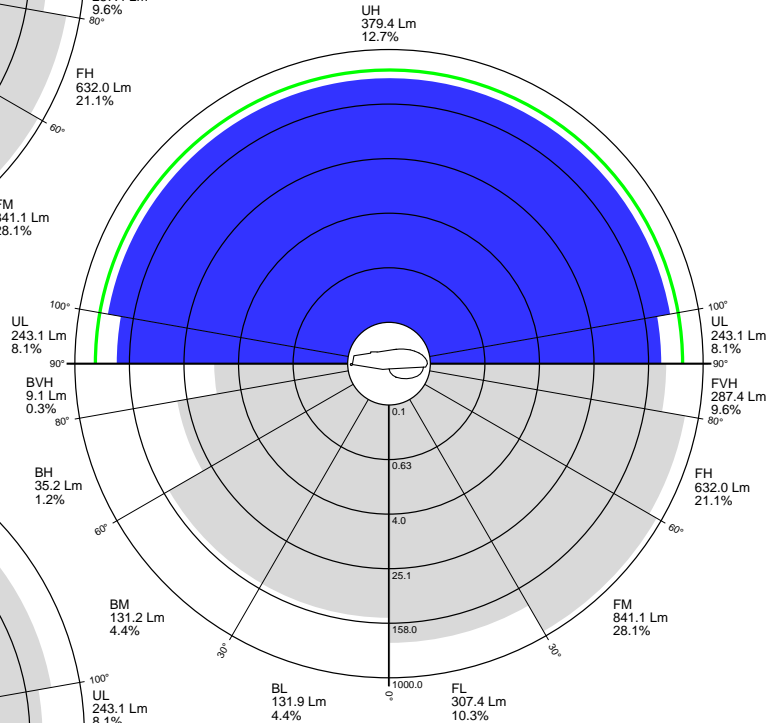
## Glare Rating Details

(Logarithmic scale)



## Uplight Rating Details

(Logarithmic scale)



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DATE SAMPLE TESTED: 03/29/17

CATALOG NUMBER: WP2LED24, WP2LED24/D10 (STANDARD CUTOFF - PRISMATIC GLASS LENS)

### CANDELA TABULATION

STREET SIDE		LATERAL ANGLE										
		0.0	2.5	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.	2.	2.
	175.0	1.	0.	0.	1.	1.	2.	2.	2.	3.	3.	3.
	165.0	0.	0.	0.	1.	1.	2.	2.	2.	3.	3.	3.
	155.0	38.	37.	35.	27.	14.	6.	3.	3.	3.	3.	3.
	145.0	88.	89.	89.	83.	68.	51.	27.	11.	4.	4.	4.
	135.0	144.	144.	142.	134.	121.	90.	62.	37.	16.	8.	5.
	125.0	257.	253.	252.	237.	206.	155.	119.	72.	36.	18.	11.
	115.0	426.	428.	426.	419.	357.	258.	197.	142.	65.	30.	20.
	105.0	714.	713.	716.	672.	522.	377.	300.	228.	142.	51.	24.
	95.0	814.	807.	818.	758.	641.	563.	408.	323.	226.	129.	26.
	90.0	882.	878.	895.	868.	760.	589.	456.	356.	268.	172.	46.
	87.5	981.	974.	981.	894.	758.	611.	468.	369.	282.	198.	72.
	85.0	920.	907.	923.	873.	773.	648.	487.	393.	288.	217.	106.
V	82.5	923.	911.	926.	918.	841.	661.	501.	408.	302.	238.	141.
E	80.0	1008.	995.	1012.	952.	830.	670.	514.	405.	321.	262.	169.
R	77.5	974.	968.	972.	931.	821.	664.	528.	408.	323.	333.	199.
T	75.0	967.	956.	965.	925.	828.	678.	510.	418.	352.	336.	220.
I	72.5	1004.	995.	1003.	968.	831.	662.	501.	431.	430.	312.	238.
C	70.0	966.	952.	962.	950.	816.	656.	534.	514.	487.	366.	262.
A	67.5	908.	900.	900.	879.	790.	679.	633.	544.	496.	415.	271.
L	65.0	937.	923.	923.	900.	824.	796.	689.	523.	468.	364.	287.
	62.5	1006.	997.	995.	1046.	972.	777.	637.	609.	481.	370.	312.
A	60.0	1106.	1090.	1079.	1029.	886.	763.	605.	662.	517.	439.	337.
N	57.5	980.	983.	974.	942.	874.	752.	737.	622.	527.	485.	339.
G	55.0	981.	959.	948.	909.	849.	829.	810.	555.	514.	457.	347.
L	52.5	946.	948.	934.	982.	962.	911.	752.	603.	519.	449.	366.
E	50.0<<	1184.	1203.	1165.	1142.	991.	851.	690.	710.	589.	481.	385.
	47.5	1084.	1080.	1068.	997.	899.	791.	732.	729.	620.	534.	398.
	45.0	994.	991.	974.	930.	851.	806.	783.	657.	633.	542.	393.
	42.5	910.	909.	884.	851.	861.	894.	778.	649.	634.	523.	393.
	40.0	930.	936.	940.	949.	993.	861.	696.	722.	685.	544.	396.
	37.5	986.	986.	976.	953.	891.	787.	774.	773.	713.	581.	413.
	35.0	895.	898.	890.	857.	858.	733.	823.	723.	734.	609.	422.
	30.0	934.	926.	921.	876.	921.	888.	808.	822.	718.	575.	461.
	25.0	951.	948.	940.	875.	826.	904.	847.	772.	715.	574.	491.
	20.0	913.	905.	882.	847.	850.	884.	811.	764.	612.	562.	515.
	15.0	865.	864.	856.	838.	790.	800.	716.	642.	632.	577.	547.
	10.0	688.	685.	676.	669.	656.	626.	639.	630.	602.	566.	557.
	5.0	629.	628.	628.	622.	611.	611.	597.	575.	564.	566.	558.
	0.0	556.	556.	556.	556.	556.	556.	556.	556.	556.	556.	556.

||  
PLANE OF MAXIMUM CANDELA

CONE OF MAXIMUM CANDELA

REPORT NUMBER: RAB03117

PAGE: 8 OF 9

ISSUE DATE: 03/29/17

DATE SAMPLE TESTED: 03/29/17

CATALOG NUMBER: WP2LED24, WP2LED24/D10 (STANDARD CUTOFF - PRISMATIC GLASS LENS)

### 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.	3.	2.	2.	1.	1.	1.
	165.0	3.	3.	3.	3.	3.	2.	2.	2.	1.	1.
	155.0	3.	3.	3.	3.	3.	3.	2.	2.	2.	1.
	145.0	3.	3.	3.	3.	3.	3.	2.	2.	2.	2.
	135.0	4.	4.	3.	3.	3.	3.	2.	2.	2.	2.
	125.0	11.	9.	7.	4.	3.	2.	2.	2.	2.	2.
	115.0	19.	18.	12.	6.	4.	3.	2.	2.	2.	2.
	105.0	26.	28.	21.	13.	6.	4.	3.	3.	4.	4.
	95.0	20.	30.	33.	23.	12.	6.	4.	4.	4.	4.
	90.0	19.	26.	36.	29.	16.	7.	4.	4.	4.	5.
	87.5	24.	25.	38.	31.	18.	8.	5.	4.	4.	5.
	85.0	35.	27.	39.	33.	20.	9.	5.	4.	4.	5.
V	82.5	53.	31.	41.	35.	21.	9.	5.	4.	4.	4.
E	80.0	81.	39.	42.	36.	22.	10.	5.	3.	4.	4.
R	77.5	111.	51.	44.	38.	22.	10.	5.	3.	3.	3.
T	75.0	140.	68.	46.	40.	24.	11.	5.	3.	3.	3.
I	72.5	165.	89.	49.	43.	28.	13.	5.	2.	2.	3.
C	70.0	186.	111.	53.	46.	32.	16.	6.	2.	2.	2.
A	67.5	207.	128.	58.	50.	36.	20.	12.	6.	2.	2.
L	65.0	226.	146.	66.	54.	41.	25.	18.	11.	9.	6.
	62.5	243.	163.	77.	60.	46.	32.	23.	16.	14.	13.
A	60.0	253.	179.	90.	66.	52.	38.	27.	23.	17.	17.
N	57.5	270.	196.	104.	73.	58.	44.	33.	28.	24.	21.
G	55.0	274.	204.	118.	81.	64.	51.	40.	32.	31.	27.
L	52.5	279.	220.	135.	92.	71.	58.	49.	37.	36.	34.
E	50.0<<	288.	232.	151.	104.	79.	66.	57.	43.	40.	40.
	47.5	303.	245.	167.	115.	89.	76.	67.	52.	46.	44.
	45.0	319.	262.	180.	128.	100.	87.	76.	64.	54.	49.
	42.5	331.	283.	195.	142.	112.	98.	87.	77.	66.	59.
	40.0	349.	298.	216.	158.	124.	108.	98.	91.	82.	73.
	37.5	368.	321.	240.	174.	139.	119.	109.	104.	98.	91.
	35.0	385.	348.	261.	197.	155.	132.	120.	115.	112.	107.
	30.0	428.	397.	316.	244.	190.	161.	145.	138.	132.	132.
	25.0	468.	431.	368.	301.	243.	202.	183.	168.	158.	156.
	20.0	494.	462.	414.	362.	308.	275.	243.	213.	199.	193.
	15.0	529.	509.	477.	429.	391.	355.	326.	306.	295.	285.
	10.0	543.	537.	511.	481.	450.	425.	420.	399.	388.	379.
	5.0	554.	554.	536.	518.	522.	511.	495.	485.	480.	477.
	0.0	556.	556.	556.	556.	556.	556.	556.	556.	556.	556.

CONE OF MAXIMUM CANDELA

REPORT NUMBER: RAB03117  
 ISSUE DATE: 03/29/17  
 PREPARED FOR: RAB LIGHTING INC.

PAGE: 9 OF 9  
 DATE SAMPLE TESTED: 03/29/17

### 5-DEGREE ZONAL LUMEN SUMMARY

0- 5	13
5- 10	39
10- 15	64
15- 20	88
20- 25	109
25- 30	126
30- 35	138
35- 40	152
40- 45	158
45- 50	172
50- 55	176
55- 60	176
60- 65	177
65- 70	168
70- 75	163
75- 80	159
80- 85	153
85- 90	144
90- 95	130
95-100	114
100-105	94
105-110	77
110-115	60
115-120	46
120-125	33
125-130	25
130-135	17
135-140	11
140-145	7
145-150	5
150-155	3
155-160	1
160-165	0
165-170	0
170-175	0
175-180	0

### 10-DEGREE ZONAL LUMEN SUMMARY

0- 10	52
0- 20	204
0- 30	439
0- 40	729
0- 50	1060
0- 60	1412
0- 70	1757
0- 80	2079
0- 90	2375
0-100	2618
0-110	2789
0-120	2895
0-130	2953
0-140	2981
0-150	2993
0-160	2997
0-170	2998
0-180	2998

REPORT NUMBER: RAB03118  
 DATE: 3/29/2017  
 PREPARED FOR: RAB LIGHTING INC.  
 CATALOG NUMBER: WP2LED24, WP2LED24/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:
	CHROMA PROGRAMMABLE DIGITAL POWER METER MODEL 66202	N/A
	OCEAN OPTICS QE65PRO Spectroradiometer	3/01/18
	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: RAB03118  
 DATE: 3/29/2017  
 PREPARED FOR: RAB LIGHTING INC.  
 CATALOG NUMBER: WP2LED24, WP2LED24/D10 (STANDARD CUTOFF - PRISMATIC GLASS LENS)

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### RESULTS:

PHOTOMETRIC	
Total Integrated Flux (lumens)	2998 *
SPECTRORADIOMETRIC	
Observer	CIE 1931 2 degree
Chromaticity Ordinate x	0.3408
Chromaticity Ordinate y	0.3489
Observer	CIE 1976 2 degree
Chromaticity Ordinate u'	0.2096
Chromaticity Ordinate v'	0.4827
Correlated Color Temp CCT (K)	5161
ANSI C78.377-2008 Duv	0.000
Total Radiant Flux (milliWatts)	9560 *
ELECTRICAL	
Input Voltage (Volts AC)	277.0
Input Current (Amps AC)	0.096
Input Power (Watts)	24.5
Input Power Factor (%)	92.6
Input Current THD (%)	14.0
Input Voltage THD (%)	0.2
EFFICACY (Lumens/Watt)	
	122.4
ELECTRICAL AT MAX NONIMAL INPUT	
Input Voltage (Volts AC)	120.0
Input Current (Amps AC)	0.203
Input Power (Watts)	23.9
Input Power Factor (%)	98.6
Input Current THD (%)	8.6
Input Voltage THD (%)	0.2
Off-State Power (Watts)	0.0

COLOR RENDERING INDICES	CRI
Ra (Average 1-8)	83
R1 Light greyish red	82
R2 Dark greyish yellow	87
R3 Strong yellowish green	90
R4 Moderate yellowish green	84
R5 Light bluish green	83
R6 Light blue	82
R7 Light violet	87
R8 Light reddish purple	71
R9 Strong red	16
R10 Strong yellow	70
R11 Strong green	83
R12 Strong blue	64
R13 Light yellowish pink (skin)	83
R14 Moderate olive green (leaf)	95

### \*NOTE:

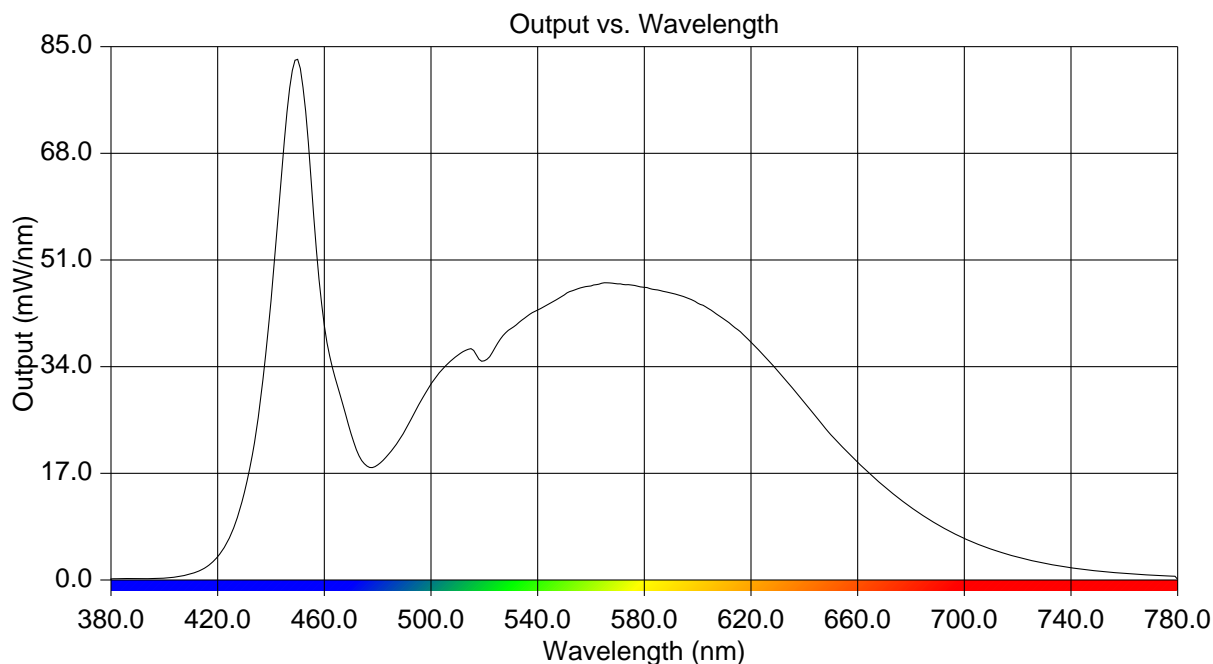
Proper calibration of integrating spheres for measuring total flux output of non-directional samples will produce reliable, repeatable results within the calibration tolerances of the equipment used. However, measurement of test samples with significant self absorption and/or directional output, even 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: RAB03118  
 DATE: 3/29/2017  
 PREPARED FOR: RAB LIGHTING INC.  
 CATALOG NUMBER: WP2LED24, WP2LED24/D10 (STANDARD CUTOFF - PRISMATIC GLASS LENS)

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### RESULTS:

Wavelength	mW per nm	Wavelength	mW per nm	Wavelength	mW per nm
380	0.174	515	36.872	650	23.119
385	0.198	520	34.934	655	20.855
390	0.207	525	37.738	660	18.746
395	0.237	530	40.069	665	16.782
400	0.325	535	41.700	670	14.919
405	0.512	540	43.009	675	13.153
410	0.947	545	44.196	680	11.566
415	1.866	550	45.436	685	10.108
420	3.703	555	46.408	690	8.808
425	7.314	560	46.862	695	7.668
430	13.916	565	47.372	700	6.636
435	25.263	570	47.193	705	5.731
440	44.454	575	47.020	710	4.936
445	69.985	580	46.644	715	4.239
450	82.980	585	46.226	720	3.644
455	63.999	590	45.739	725	3.116
460	40.547	595	45.174	730	2.671
465	30.832	600	44.128	735	2.282
470	23.342	605	43.019	740	1.951
475	18.530	610	41.545	745	1.672
480	18.337	615	39.908	750	1.432
485	20.540	620	37.864	755	1.222
490	23.611	625	35.735	760	1.057
495	27.620	630	33.323	765	0.905
500	31.245	635	30.820	770	0.777
505	33.887	640	28.317	775	0.668
510	35.806	645	25.682	780	0.101



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PREPARED FOR: RAB LIGHTING INC.  
CATALOG NUMBER: WP2LED24, WP2LED24/D10 (STANDARD CUTOFF - PRISMATIC GLASS LENS)

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## CIE Chromaticity Diagram

