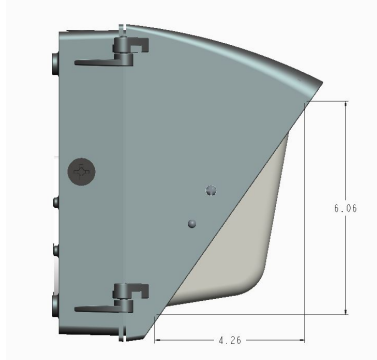


### ISOFOOTCANDLE LINES OF HORIZONTAL ILLUMINATION

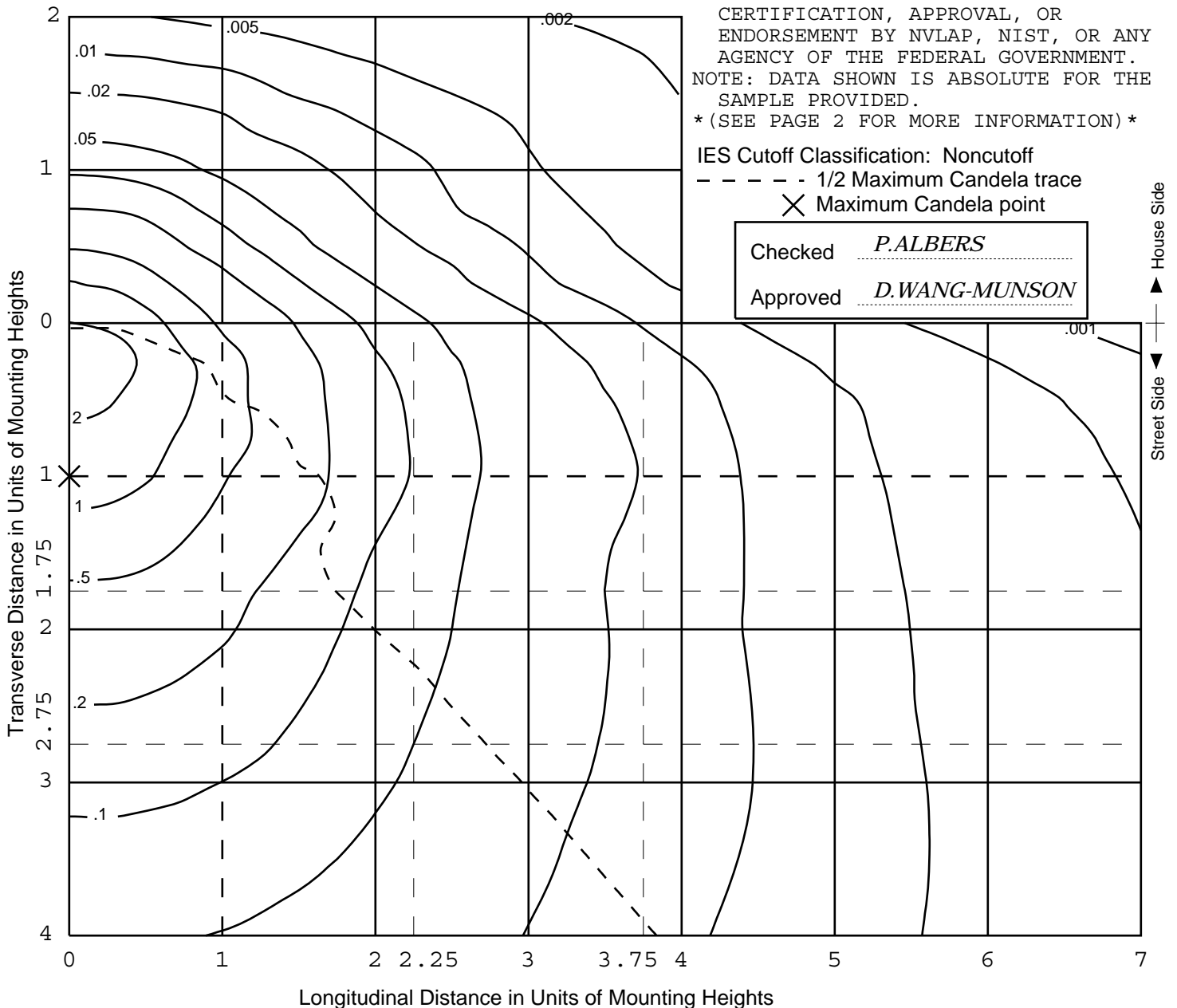
Values based on 16 foot mounting height.



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 DATE SAMPLE TESTED: 03/24/17  
 CATALOG NUMBER: WP2LED24N,  
 WP2LED24N/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: WP2LED24N, WP2LED24N/D10 (STANDARD CUTOFF - PRISMATIC GLASS L

## ADDITIONAL INFORMATION

TOTAL INPUT WATTS = 24.463 W AT 277.0 VAC.

LED DRIVER: RD-026-A0450-N

TEST PROCEDURE: IESNA LM-79-08

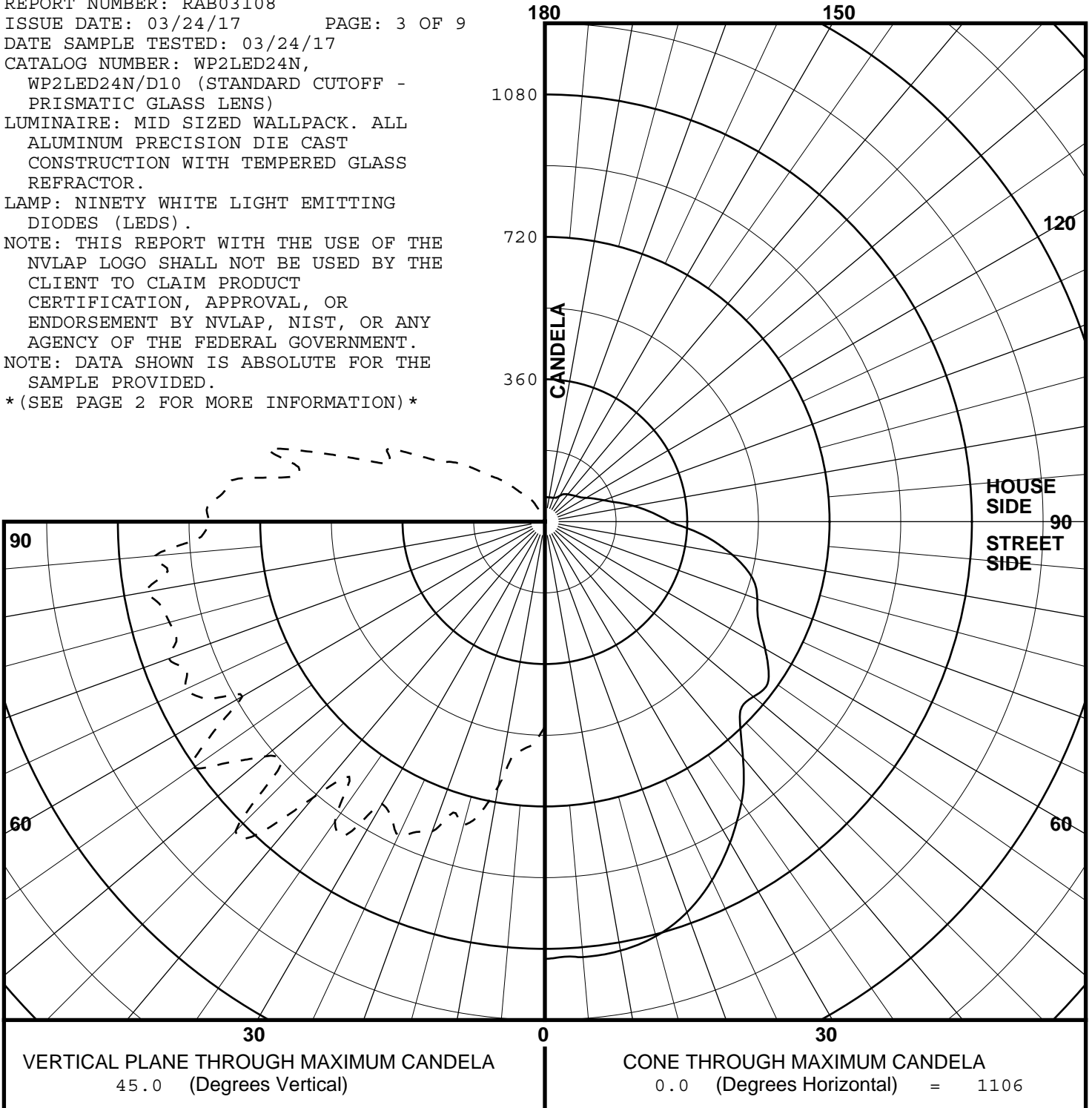
LM-80 DATA AVAILABLE FROM MANUFACTURER FOR SOLID STATE SOURCE

AMBIENT: 24.3

ACCREDITED LABORATORY CODE 201058-0

### MAXIMUM PLANE AND MAXIMUM CONE PLOTS OF CANDELA

REPORT NUMBER: RAB03108  
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 WP2LED24N/D10 (STANDARD CUTOFF -  
 PRISMATIC GLASS LENS)  
 LUMINAIRE: MID SIZED WALLPACK. ALL  
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 AGENCY OF THE FEDERAL GOVERNMENT.  
 NOTE: DATA SHOWN IS ABSOLUTE FOR THE  
 SAMPLE PROVIDED.  
 \*(SEE PAGE 2 FOR MORE INFORMATION)\*



REPORT NUMBER: RAB03108

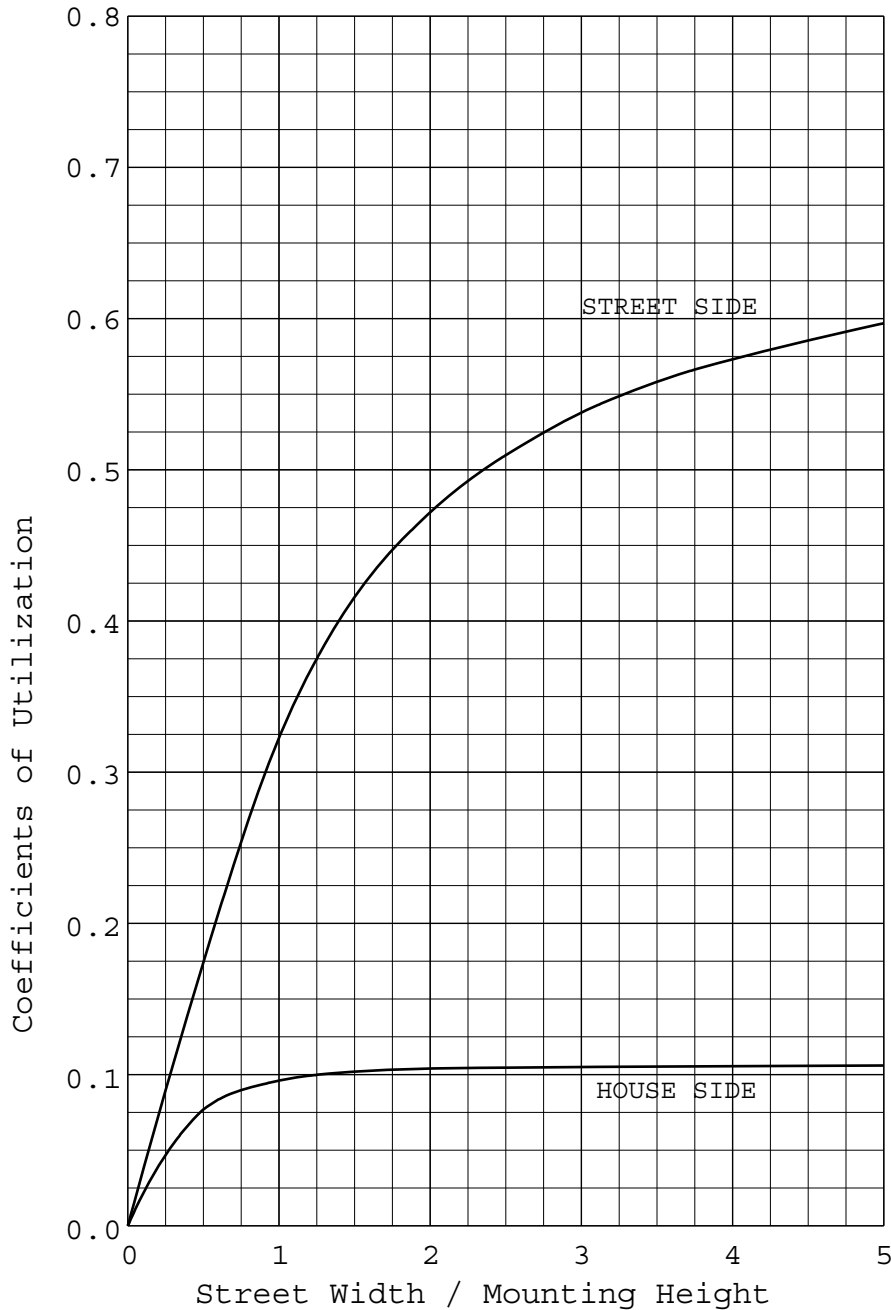
PAGE: 4 OF 9

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DATE SAMPLE TESTED: 03/24/17

CATALOG NUMBER: WP2LED24N, WP2LED24N/D10 (STANDARD CUTOFF - PRISMATIC GLASS L

### COEFFICIENTS OF UTILIZATION AND FLUX DISTRIBUTION



	LUMENS	PERCENT OF FIXTURE
DOWNWARD STREET SIDE	2045.	68.6
DOWNWARD HOUSE SIDE	321.	10.8
DOWNWARD TOTAL	2367.	79.3
UPWARD STREET SIDE	597.	20.0
UPWARD HOUSE SIDE	19.	0.6
UPWARD TOTAL	616.	20.7
TOTAL FLUX	2983.	100.0

TOTAL INPUT WATTS = 24.5  
EFFICACY = 121.8 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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DATE SAMPLE TESTED: 03/24/17

CATALOG NUMBER: WP2LED24N, WP2LED24N/D10 (STANDARD CUTOFF - PRISMATIC

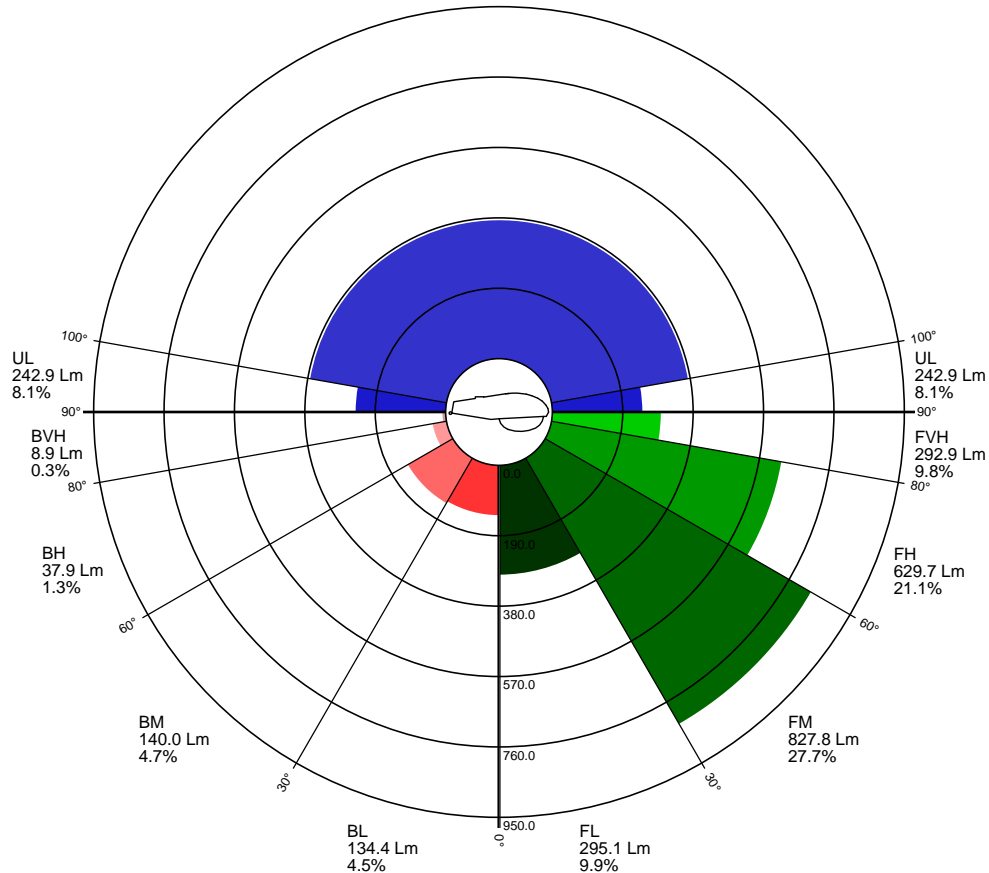
GLASS LENS)

Zonal Summary				Zone Ratings		
				B	U	G
Forward		2045	68.6			
FL	(0° - 30°)	295.1	9.9			
FM	(30° - 60°)	827.8	27.7			
FH	(60° - 80°)	629.7	21.1			G0
FVH	(80° - 90°)	292.9	9.8			G3
Backward		321	10.8			
BL	(0° - 30°)	134.4	4.5	B1		
BM	(30° - 60°)	140.0	4.7	B0		
BH	(60° - 80°)	37.9	1.3	B0		G0
BVH	(80° - 90°)	8.9	0.3			G0
Upward		616	20.7			
UL	(90° - 100°)	242.9	8.1		U3	
UH	(100° - 180°)	373.5	12.5		U3	
Trapped Light		0	0.0			
Total Flux		2983	100.0			

### Zonal Lumen Summary

(Linear scale)

UH  
373.5 Lm  
12.5%



REPORT NUMBER: RAB03108

ISSUE DATE: 03/24/17

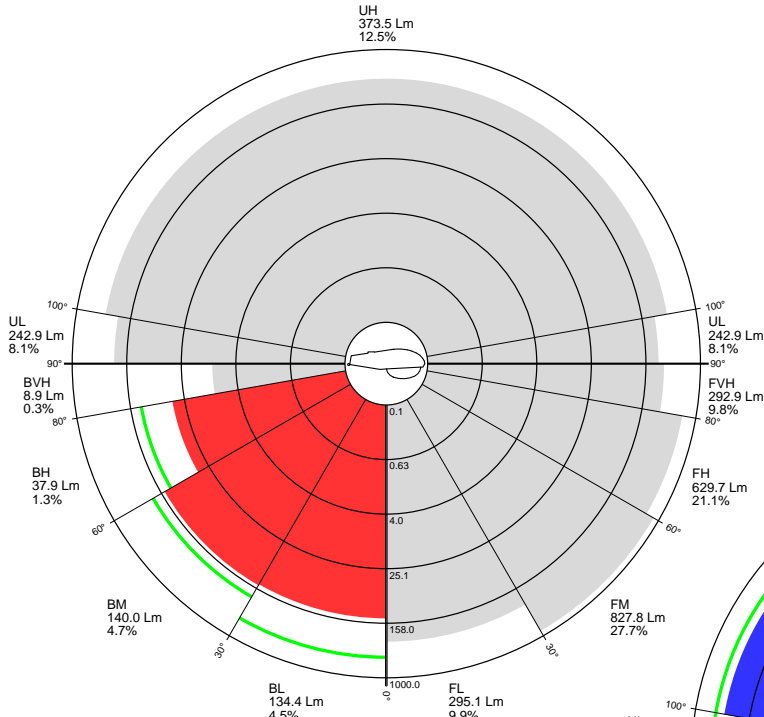
CATALOG NUMBER: WP2LED24N, WP2LED24N/D10 (STANDARD CUTOFF - PRISMATIC GLASS LENS)

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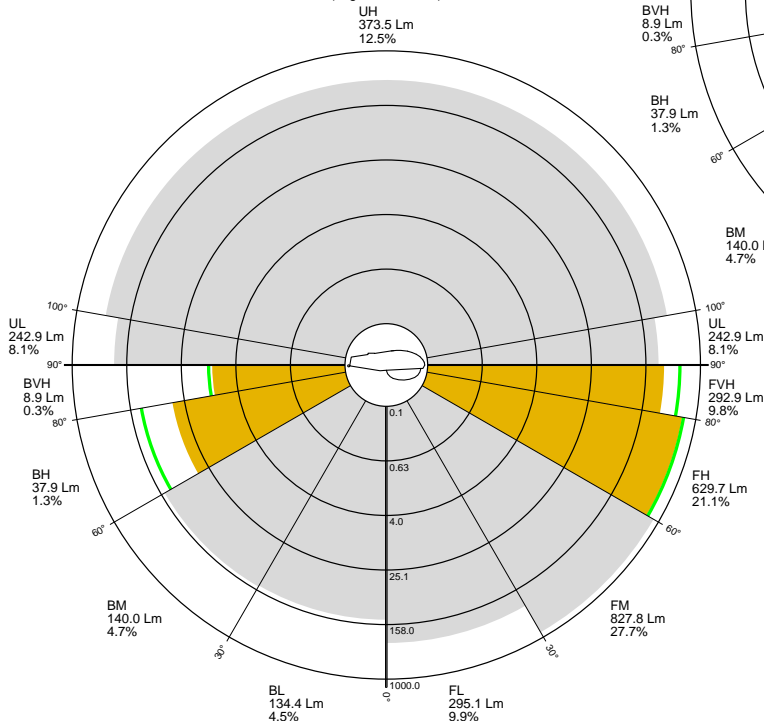
### Backlight Rating Details

(Logarithmic scale)



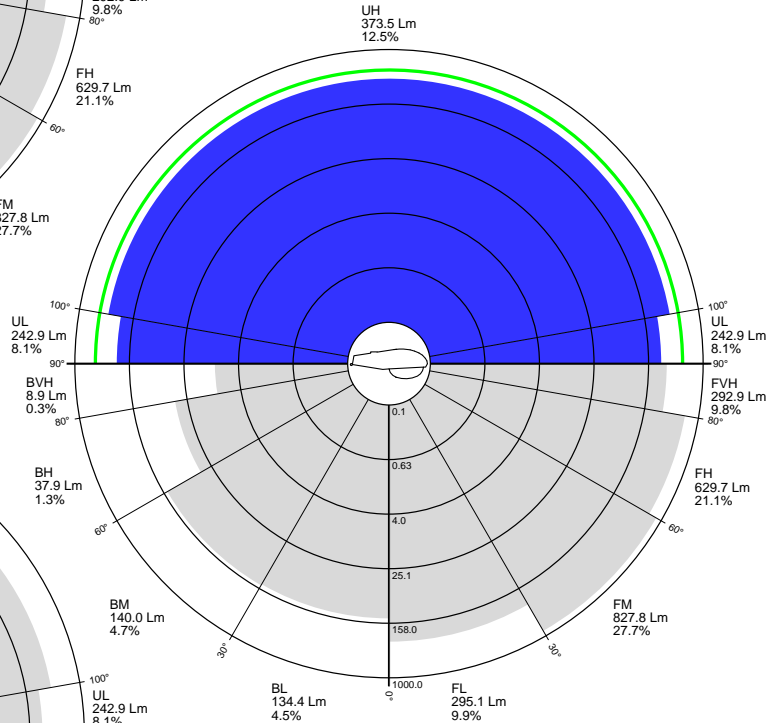
### Glare Rating Details

(Logarithmic scale)



### Uplight Rating Details

(Logarithmic scale)



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DATE SAMPLE TESTED: 03/24/17

CATALOG NUMBER: WP2LED24N, WP2LED24N/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	17.	17.	11.	7.	4.	3.	3.	3.	3.
	145.0	72.	71.	67.	59.	37.	20.	7.	3.	4.
	135.0	142.	140.	140.	118.	91.	56.	31.	13.	7.
	125.0	253.	255.	246.	207.	161.	118.	65.	32.	15.
	115.0	436.	433.	401.	337.	248.	199.	133.	66.	28.
	105.0	715.	713.	644.	523.	376.	311.	222.	136.	51.
	95.0	818.	805.	755.	689.	527.	419.	327.	214.	125.
	90.0	850.	860.	796.	742.	629.	482.	368.	252.	170.
	87.5	870.	891.	882.	819.	661.	499.	389.	264.	186.
	85.0	990.	986.	914.	815.	665.	515.	401.	279.	206.
V	82.5	962.	978.	941.	862.	679.	530.	411.	295.	220.
E	80.0	1022.	1028.	971.	869.	699.	532.	432.	304.	232.
R	77.5	993.	994.	946.	872.	688.	545.	433.	311.	258.
T	75.0	983.	1002.	955.	866.	719.	549.	439.	320.	334.
I	72.5	977.	992.	957.	874.	697.	557.	440.	335.	359.
C	70.0	1012.	1010.	957.	863.	692.	550.	435.	388.	307.
A	67.5	981.	1001.	946.	848.	682.	551.	474.	483.	341.
L	65.0	1001.	1013.	962.	841.	661.	569.	551.	537.	432.
	62.5	969.	987.	938.	821.	701.	666.	596.	474.	396.
A	60.0	884.	904.	885.	886.	763.	712.	578.	482.	369.
N	57.5	998.	1007.	1002.	923.	832.	654.	635.	532.	402.
G	55.0	1085.	1101.	1018.	885.	752.	695.	727.	547.	480.
L	52.5	997.	1001.	935.	819.	734.	750.	668.	523.	470.
E	50.0	923.	921.	858.	829.	849.	815.	632.	523.	432.
	47.5	902.	916.	946.	960.	920.	745.	634.	561.	479.
	45.0<<	1106.	1105.	1085.	1000.	867.	697.	691.	596.	542.
	42.5	1068.	1048.	998.	909.	723.	708.	685.	632.	584.
	40.0	909.	893.	864.	809.	796.	789.	692.	657.	556.
	37.5	813.	813.	805.	826.	844.	750.	708.	668.	543.
	35.0	926.	908.	904.	921.	828.	707.	759.	714.	573.
	30.0	824.	828.	844.	801.	811.	833.	734.	707.	581.
	25.0	875.	877.	867.	835.	823.	790.	765.	675.	546.
	20.0	833.	827.	849.	811.	781.	798.	723.	639.	544.
	15.0	794.	799.	796.	811.	749.	720.	653.	571.	576.
	10.0	680.	682.	682.	669.	654.	602.	577.	575.	563.
	5.0	575.	575.	575.	581.	596.	611.	591.	565.	559.
	0.0	518.	518.	518.	518.	518.	518.	518.	518.	518.

||  
PLANE OF MAXIMUM CANDELA

CONE OF MAXIMUM CANDELA

REPORT NUMBER: RAB03108

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ISSUE DATE: 03/24/17

DATE SAMPLE TESTED: 03/24/17

CATALOG NUMBER: WP2LED24N, WP2LED24N/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.	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.	2.
	145.0	3.	3.	3.	3.	3.	3.	2.	2.	2.	2.
	135.0	5.	4.	4.	3.	3.	3.	2.	2.	2.	2.
	125.0	10.	9.	6.	4.	3.	3.	2.	2.	2.	2.
	115.0	18.	18.	12.	6.	4.	3.	3.	2.	3.	3.
	105.0	23.	25.	21.	11.	6.	4.	3.	4.	4.	4.
	95.0	20.	28.	30.	22.	10.	6.	4.	4.	5.	5.
	90.0	21.	27.	34.	27.	13.	7.	5.	4.	5.	5.
	87.5	25.	26.	36.	30.	15.	8.	5.	4.	5.	5.
	85.0	36.	29.	38.	31.	17.	8.	5.	4.	4.	5.
V	82.5	56.	33.	41.	33.	18.	9.	5.	4.	4.	4.
E	80.0	83.	41.	44.	35.	19.	10.	5.	4.	4.	4.
R	77.5	112.	53.	46.	38.	20.	10.	5.	3.	3.	4.
T	75.0	142.	71.	49.	42.	24.	11.	5.	3.	3.	3.
I	72.5	171.	91.	53.	46.	27.	16.	6.	3.	3.	3.
C	70.0	193.	112.	57.	50.	32.	21.	11.	3.	2.	2.
A	67.5	209.	135.	63.	55.	37.	26.	17.	10.	8.	5.
L	65.0	224.	152.	71.	59.	43.	30.	23.	16.	14.	13.
	62.5	239.	169.	82.	65.	49.	35.	29.	21.	19.	17.
A	60.0	254.	184.	95.	71.	56.	41.	36.	27.	24.	22.
N	57.5	271.	196.	113.	79.	64.	48.	43.	33.	30.	27.
G	55.0	288.	208.	128.	87.	70.	56.	47.	41.	35.	34.
L	52.5	296.	223.	145.	97.	77.	65.	53.	50.	40.	38.
E	50.0	298.	240.	159.	110.	85.	75.	62.	53.	50.	44.
	47.5	305.	251.	174.	123.	96.	85.	73.	57.	58.	54.
	45.0<<	316.	271.	188.	138.	108.	95.	85.	67.	63.	62.
	42.5	330.	289.	205.	154.	121.	106.	97.	80.	71.	68.
	40.0	345.	308.	227.	169.	134.	119.	110.	96.	85.	77.
	37.5	370.	325.	247.	186.	148.	131.	122.	111.	101.	93.
	35.0	385.	352.	273.	207.	161.	143.	134.	126.	119.	115.
	30.0	425.	400.	325.	257.	198.	171.	156.	152.	151.	150.
	25.0	453.	432.	376.	316.	249.	206.	186.	174.	171.	169.
	20.0	480.	475.	427.	384.	324.	270.	238.	216.	208.	201.
	15.0	514.	502.	472.	441.	411.	358.	327.	304.	286.	274.
	10.0	516.	508.	495.	482.	474.	453.	438.	421.	397.	388.
	5.0	529.	523.	528.	528.	505.	496.	497.	495.	495.	493.
	0.0	518.	518.	518.	518.	518.	518.	518.	518.	518.	518.

CONE OF MAXIMUM CANDELA



REPORT NUMBER: RAB03108  
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	38
10- 15	63
15- 20	86
20- 25	106
25- 30	123
30- 35	139
35- 40	147
40- 45	162
45- 50	169
50- 55	172
55- 60	177
60- 65	172
65- 70	168
70- 75	165
75- 80	162
80- 85	157
85- 90	145
90- 95	129
95-100	114
100-105	94
105-110	79
110-115	58
115-120	46
120-125	33
125-130	24
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	51
0- 20	200
0- 30	430
0- 40	716
0- 50	1048
0- 60	1397
0- 70	1737
0- 80	2065
0- 90	2367
0-100	2609
0-110	2782
0-120	2885
0-130	2942
0-140	2969
0-150	2980
0-160	2982
0-170	2983
0-180	2983

REPORT NUMBER: RAB03109  
 DATE: 3/27/2017  
 PREPARED FOR: RAB LIGHTING INC.  
 CATALOG NUMBER: WP2LED24N, WP2LED24N/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: RAB03109  
 DATE: 3/27/2017  
 PREPARED FOR: RAB LIGHTING INC.  
 CATALOG NUMBER: WP2LED24N, WP2LED24N/D10 (STANDARD CUTOFF - PRISMATIC GLASS LENS)

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### RESULTS:

<b>PHOTOMETRIC</b>	
Total Integrated Flux (lumens)	2983 *
<b>SPECTRORADIOMETRIC</b>	
Observer	CIE 1931 2 degree
Chromaticity Ordinate x	0.3798
Chromaticity Ordinate y	0.3754
Observer	CIE 1976 2 degree
Chromaticity Ordinate u'	0.2252
Chromaticity Ordinate v'	0.5009
Correlated Color Temp CCT (K)	4008
ANSI C78.377-2008 Duv	0.000
Total Radiant Flux (milliWatts)	9192 *
<b>ELECTRICAL</b>	
Input Voltage (Volts AC)	277.0
Input Current (Amps AC)	0.096
Input Power (Watts)	24.5
Input Power Factor (%)	92.4
Input Current THD (%)	12.8
Input Voltage THD (%)	0.2
<b>EFFICACY (Lumens/Watt)</b>	
	121.8
<b>ELECTRICAL AT MAX NONIMAL INPUT</b>	
Input Voltage (Volts AC)	120.0
Input Current (Amps AC)	0.201
Input Power (Watts)	23.9
Input Power Factor (%)	99.0
Input Current THD (%)	7.4
Input Voltage THD (%)	0.2
<b>Off-State Power (Watts)</b>	
	0.0

COLOR RENDERING INDICES	CRI
Ra (Average 1-8)	85
R1 Light greyish red	83
R2 Dark greyish yellow	91
R3 Strong yellowish green	96
R4 Moderate yellowish green	83
R5 Light bluish green	84
R6 Light blue	88
R7 Light violet	86
R8 Light reddish purple	66
R9 Strong red	15
R10 Strong yellow	79
R11 Strong green	82
R12 Strong blue	67
R13 Light yellowish pink (skin)	85
R14 Moderate olive green (leaf)	98

### \*NOTE:

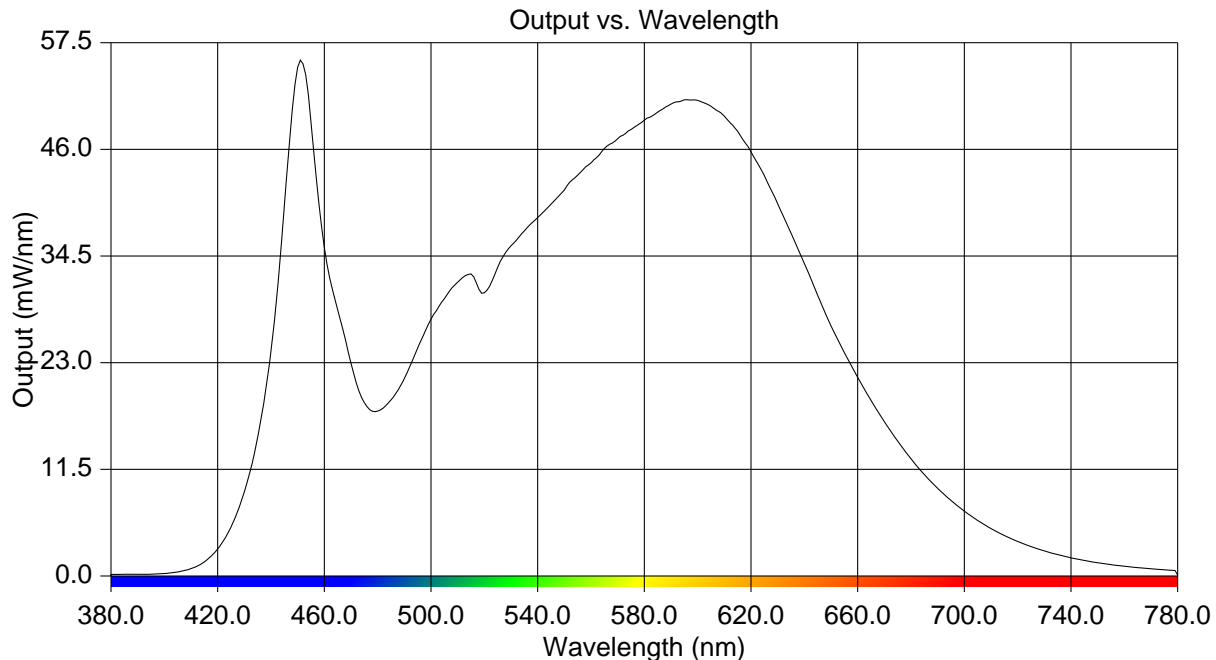
Proper calibration of integrating spheres for measuring total flux output of non-directional samples will produce reliable, repeatable results within the calibration tolerances of the equipment used. However, measurement of test samples with significant self absorption and/or directional output, even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

REPORT NUMBER: RAB03109  
 DATE: 3/27/2017  
 PREPARED FOR: RAB LIGHTING INC.  
 CATALOG NUMBER: WP2LED24N, WP2LED24N/D10 (STANDARD CUTOFF - PRISMATIC GLASS LENS)

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### RESULTS:

Wavelength	mW per nm	Wavelength	mW per nm	Wavelength	mW per nm
380	0.156	515	32.563	650	26.968
385	0.168	520	30.531	655	24.041
390	0.178	525	33.274	660	21.411
395	0.200	530	35.603	665	18.951
400	0.265	535	37.206	670	16.663
405	0.427	540	38.658	675	14.517
410	0.789	545	40.083	680	12.640
415	1.516	550	41.612	685	10.923
420	2.886	555	43.218	690	9.435
425	5.293	560	44.530	695	8.144
430	9.080	565	46.092	700	6.997
435	14.847	570	47.140	705	5.982
440	24.252	575	48.135	710	5.112
445	39.669	580	49.145	715	4.368
450	54.854	585	50.006	720	3.723
455	48.903	590	50.877	725	3.170
460	35.425	595	51.338	730	2.699
465	28.704	600	51.280	735	2.290
470	22.935	605	50.647	740	1.960
475	18.685	610	49.573	745	1.668
480	17.782	615	47.947	750	1.434
485	18.978	620	45.725	755	1.224
490	21.286	625	43.181	760	1.050
495	24.591	630	40.129	765	0.902
500	27.688	635	36.973	770	0.771
505	29.892	640	33.713	775	0.670
510	31.654	645	30.257	780	0.101



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CATALOG NUMBER: WP2LED24N, WP2LED24N/D10 (STANDARD CUTOFF - PRISMATIC GLASS LENS)

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## CIE Chromaticity Diagram

