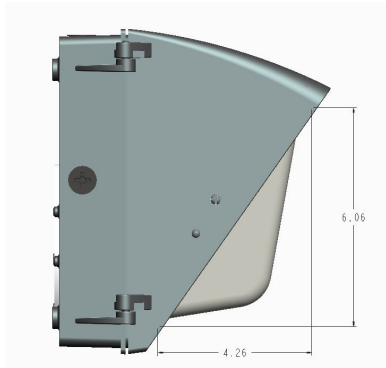


ISOFOOTCANDLE LINES OF HORIZONTAL ILLUMINATION

Values based on 16 foot mounting height.



REPORT NUMBER: RAB01023
 ISSUE DATE: 07/13/15 PAGE: 1 OF 8
 DATE SAMPLE TESTED: 07/13/15
 PREPARED FOR: RAB LIGHTING INC.
 CATALOG NUMBER: WP2LED37 (STANDARD CUTOFF - PRISMATIC GLASS LENS)
 LUMINAIRE: MID SIZED WALLPACK. ALL ALUMINUM PRECISION DIE CAST CONSTRUCTION WITH TEMPERED GLASS REFRACTOR.
 LAMP: EIGHTY WHITE LIGHT EMITTING DIODES (LEDS).
 NOTE: DATA SHOWN IS ABSOLUTE FOR THE SAMPLE PROVIDED.
 TOTAL INPUT WATTS =38.842 AT 277.0 VAC.
 TEST PROCEDURE: IESNA LM-79-08
 TEST DISTANCE: 28.25 FEET
 DRIVER:RD-042-A0700N
 ACCREDITED LABORATORY CODE 201058-0

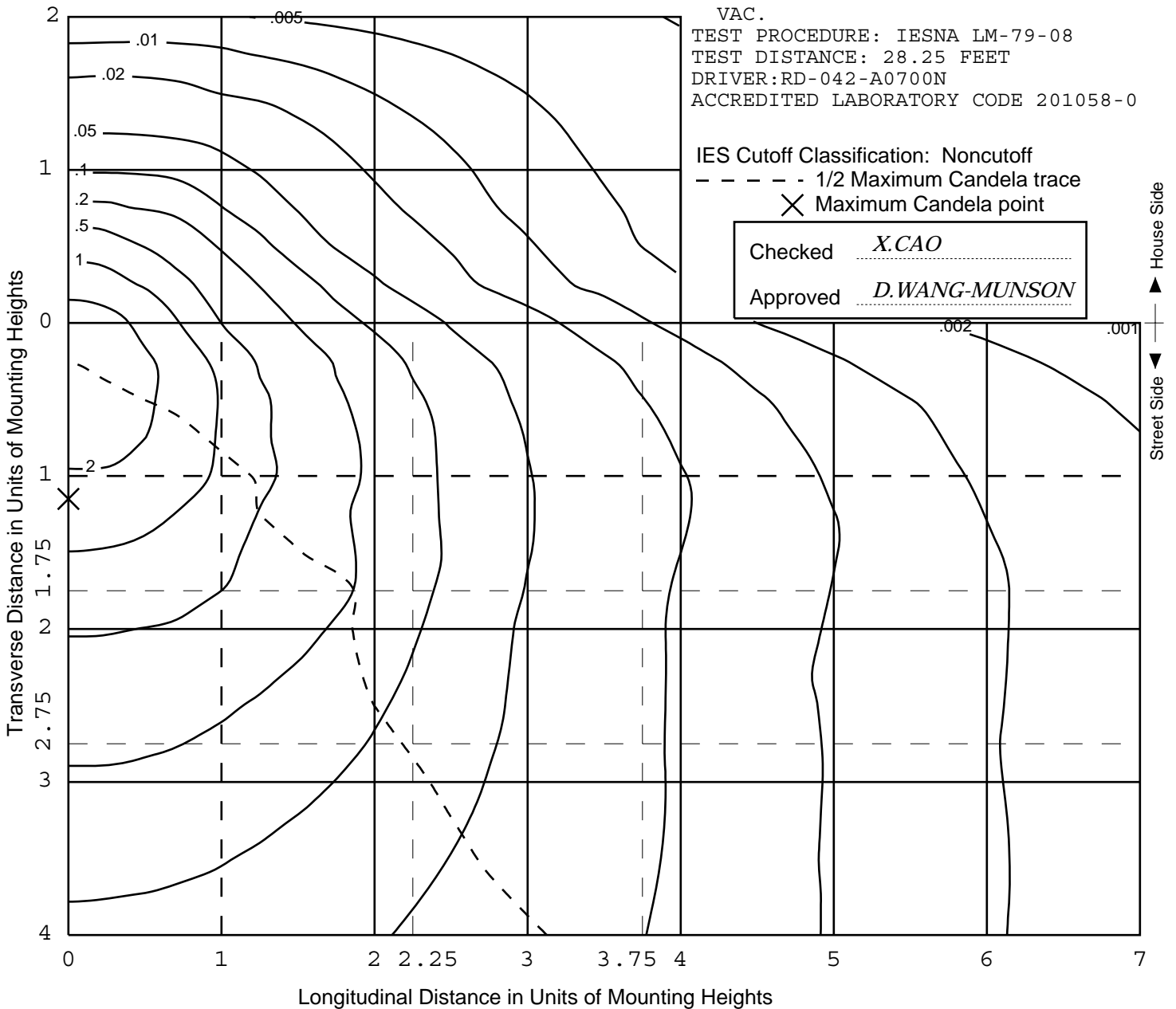
IES Cutoff Classification: Noncutoff

--- 1/2 Maximum Candela trace

X Maximum Candela point

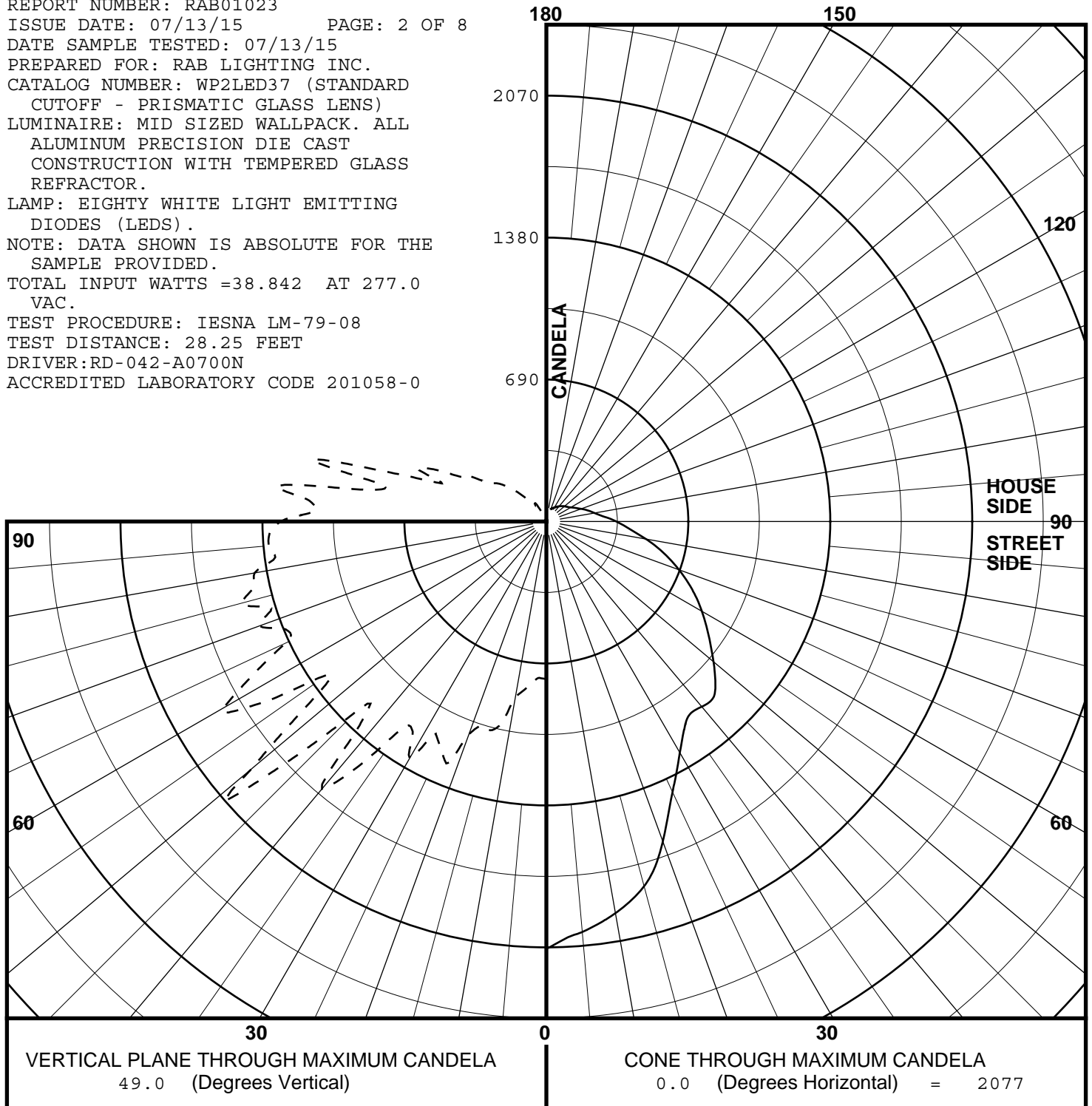
Checked X.CAO

Approved D.WANG-MUNSON



MAXIMUM PLANE AND MAXIMUM CONE PLOTS OF CANDELA

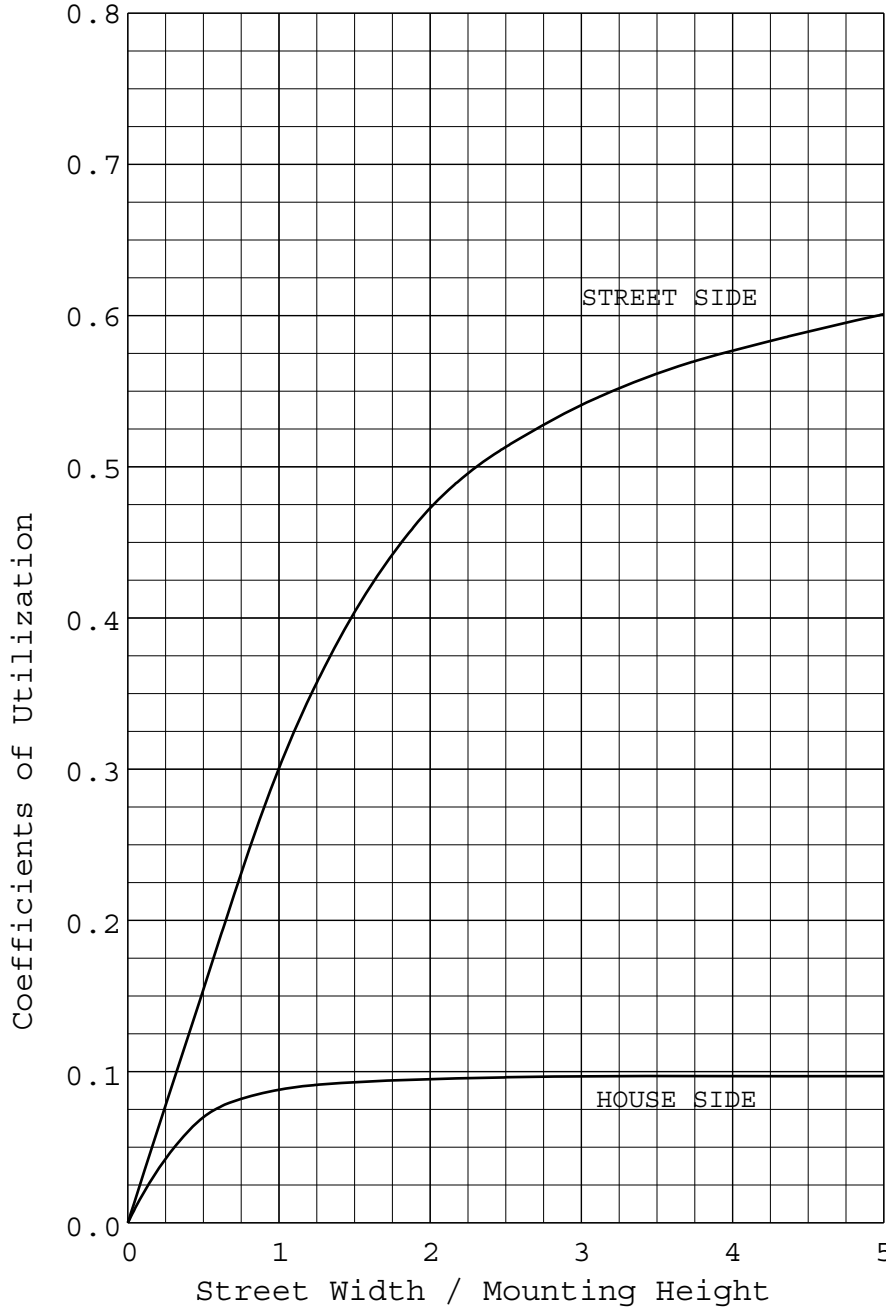
REPORT NUMBER: RAB01023
 ISSUE DATE: 07/13/15 PAGE: 2 OF 8
 DATE SAMPLE TESTED: 07/13/15
 PREPARED FOR: RAB LIGHTING INC.
 CATALOG NUMBER: WP2LED37 (STANDARD
 CUTOFF - PRISMATIC GLASS LENS)
 LUMINAIRE: MID SIZED WALLPACK. ALL
 ALUMINUM PRECISION DIE CAST
 CONSTRUCTION WITH TEMPERED GLASS
 REFRACTOR.
 LAMP: EIGHTY WHITE LIGHT EMITTING
 DIODES (LEDS).
 NOTE: DATA SHOWN IS ABSOLUTE FOR THE
 SAMPLE PROVIDED.
 TOTAL INPUT WATTS =38.842 AT 277.0
 VAC.
 TEST PROCEDURE: IESNA LM-79-08
 TEST DISTANCE: 28.25 FEET
 DRIVER:RD-042-A0700N
 ACCREDITED LABORATORY CODE 201058-0



REPORT NUMBER: RAB01023
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 PREPARED FOR: RAB LIGHTING INC.

PAGE: 3 OF 8
 DATE SAMPLE TESTED: 07/13/15

COEFFICIENTS OF UTILIZATION AND FLUX DISTRIBUTION



	LUMENS	PERCENT OF FIXTURE
DOWNWARD STREET SIDE	2992.	69.1
DOWNWARD HOUSE SIDE	429.	9.9
DOWNWARD TOTAL	3420.	79.0
UPWARD STREET SIDE	883.	20.4
UPWARD HOUSE SIDE	25.	0.6
UPWARD TOTAL	908.	21.0
TOTAL FLUX	4329.	100.0

TOTAL INPUT WATTS = 38.8
 EFFICACY = 111.6 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: RAB01023
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 PREPARED FOR: RAB LIGHTING INC.

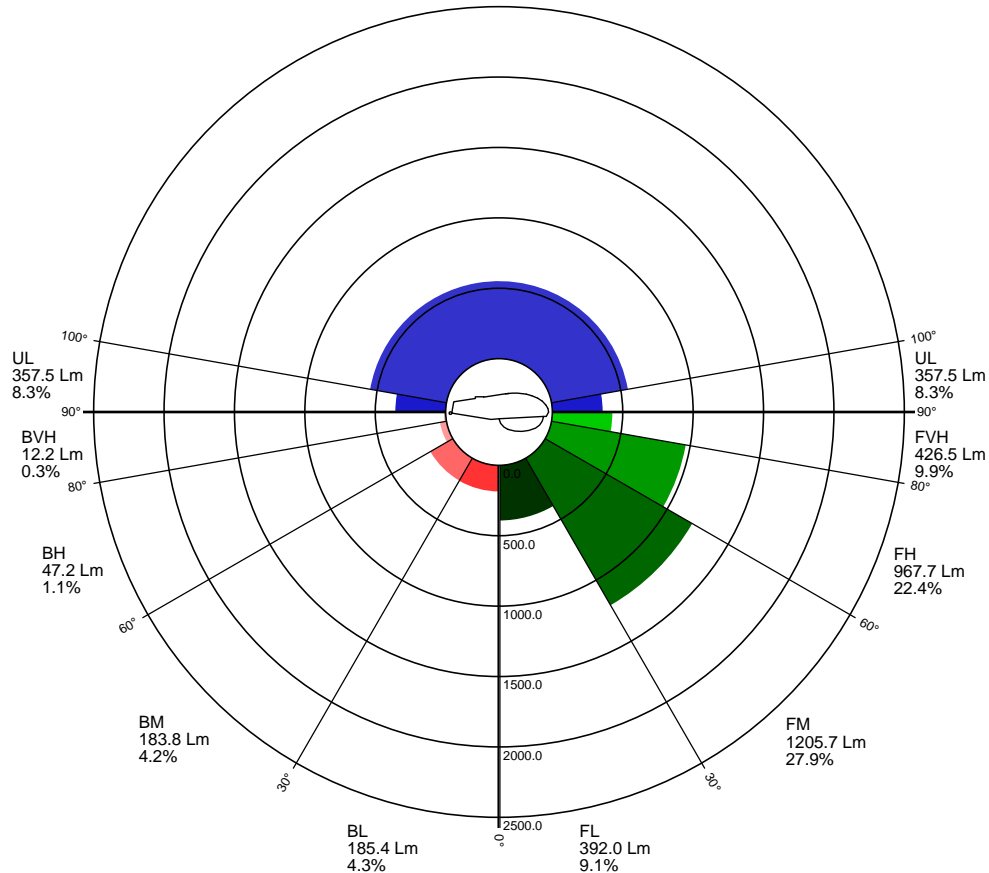
PAGE: 4 OF 8
 DATE SAMPLE TESTED: 07/13/15

BUG Rating:			B1	U4	G3
Zonal Summary		Lumens	% of Fixture		
			Zone Ratings		
			B	U	G
Forward		2992	69.1		
FL	(0° - 30°)	392.0	9.1		
FM	(30° - 60°)	1205.7	27.9		
FH	(60° - 80°)	967.7	22.4		
FVH	(80° - 90°)	426.5	9.9		
Backward		429	9.9		
BL	(0° - 30°)	185.4	4.3		
BM	(30° - 60°)	183.8	4.2		
BH	(60° - 80°)	47.2	1.1		
BVH	(80° - 90°)	12.2	0.3		
Upward		908	21.0		
UL	(90° - 100°)	357.5	8.3		
UH	(100° - 180°)	550.6	12.7		
Trapped Light		0	0.0		
Total Flux		4329	100.0		

Zonal Lumen Summary

(Linear scale)

UH
 550.6 Lm
 12.7%

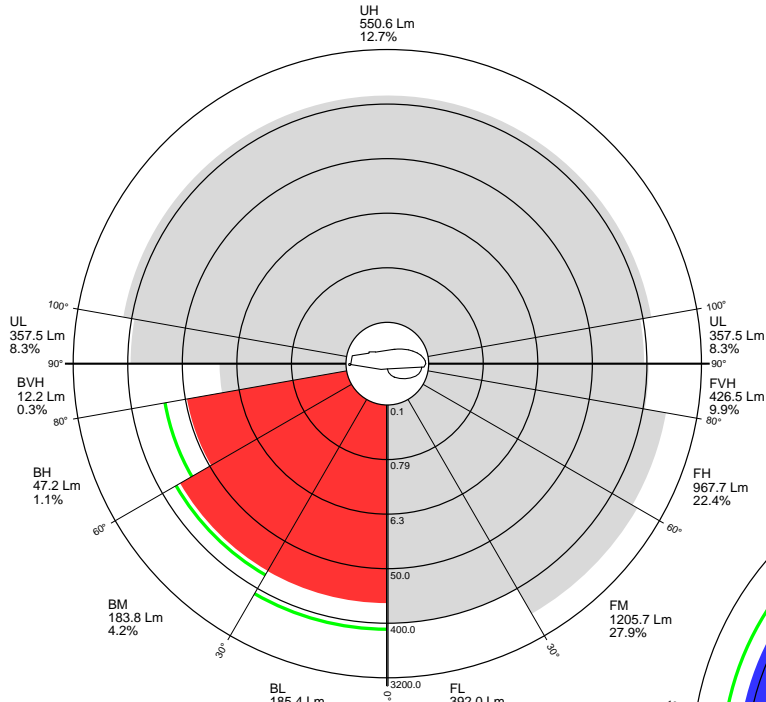


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 ISSUE DATE: 07/13/15
 PREPARED FOR: RAB LIGHTING INC.

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 DATE SAMPLE TESTED: 07/13/15

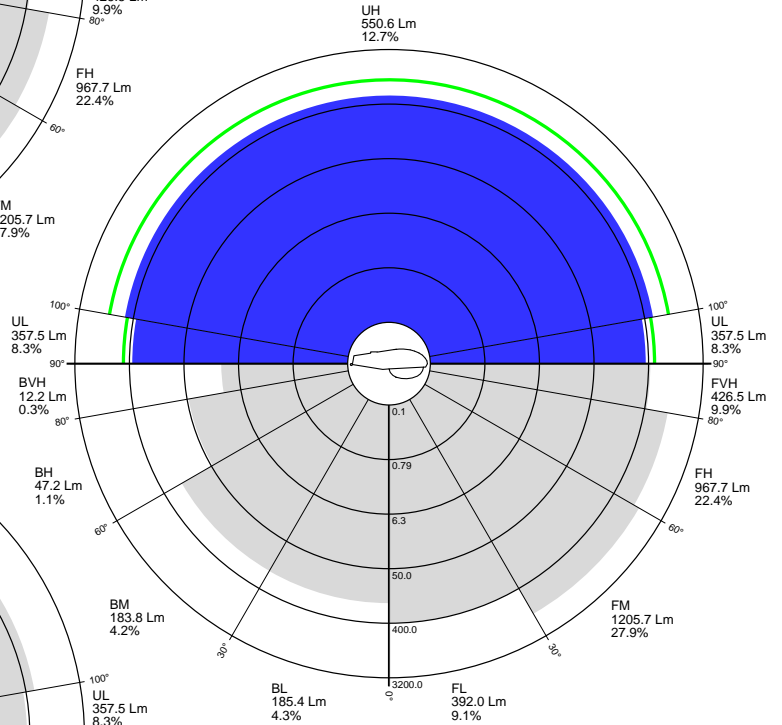
Backlight Rating Details

(Logarithmic scale)



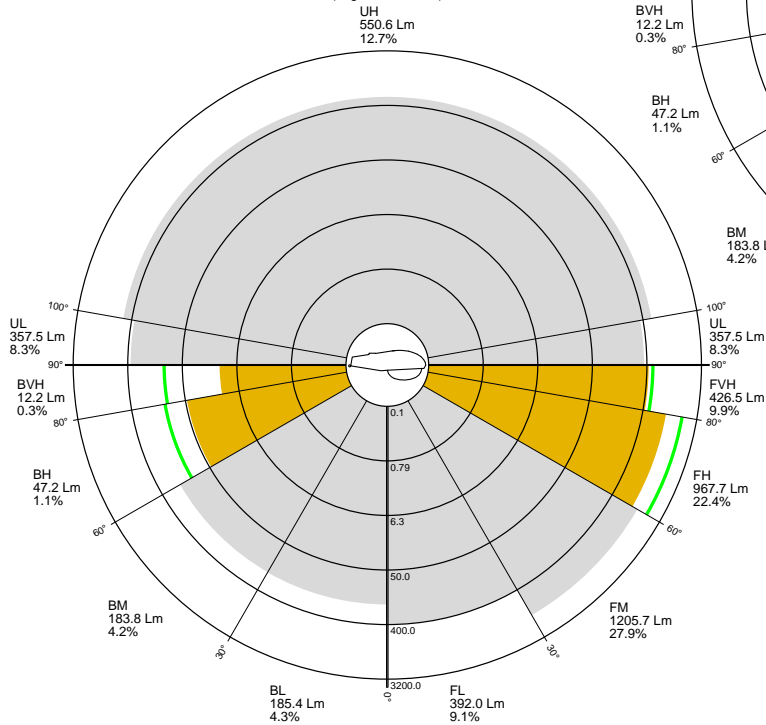
Uplight Rating Details

(Logarithmic scale)



Glare Rating Details

(Logarithmic scale)



REPORT NUMBER: RAB01023
 ISSUE DATE: 07/13/15
 PREPARED FOR: RAB LIGHTING INC.

PAGE: 6 OF 8
 DATE SAMPLE TESTED: 07/13/15

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	3.	3.	3.	3.	3.	3.	3.	3.	3.
	175.0	0.	1.	1.	2.	2.	3.	3.	4.	4.
	165.0	0.	0.	1.	2.	2.	3.	3.	4.	4.
	155.0	23.	23.	20.	15.	11.	5.	4.	4.	4.
	145.0	99.	100.	106.	98.	74.	43.	22.	10.	8.
	135.0	208.	203.	204.	181.	153.	110.	71.	31.	14.
	125.0	324.	322.	316.	302.	263.	193.	117.	67.	25.
	115.0	597.	599.	592.	522.	404.	286.	214.	102.	44.
	105.0	1174.	1176.	1072.	786.	465.	474.	294.	195.	73.
	95.0	1155.	1177.	1061.	924.	871.	647.	422.	300.	163.
	90.0	1292.	1309.	1256.	1140.	973.	712.	489.	328.	225.
	87.5	1347.	1378.	1339.	1175.	983.	773.	519.	346.	246.
	85.0	1355.	1373.	1298.	1179.	1064.	802.	519.	361.	288.
	82.5	1329.	1352.	1330.	1258.	1115.	820.	540.	390.	303.
V	80.0	1440.	1476.	1423.	1305.	1146.	846.	574.	410.	369.
E	77.5	1455.	1483.	1488.	1344.	1096.	833.	583.	414.	420.
R	75.0	1534.	1532.	1442.	1273.	1122.	871.	603.	523.	416.
T	72.5	1402.	1416.	1374.	1291.	1110.	914.	671.	558.	440.
I	70.0	1485.	1496.	1434.	1265.	1163.	987.	831.	556.	442.
C	67.5	1371.	1375.	1330.	1296.	1242.	1154.	735.	616.	478.
A	65.0	1400.	1418.	1450.	1421.	1436.	1055.	739.	638.	497.
L	62.5	1602.	1613.	1640.	1644.	1306.	1000.	895.	643.	459.
	60.0	1811.	1790.	1767.	1471.	1179.	1046.	937.	617.	509.
A	57.5	1640.	1598.	1429.	1258.	1221.	1251.	861.	663.	570.
N	55.0	1298.	1287.	1353.	1355.	1338.	1192.	868.	693.	569.
G	52.5	1457.	1425.	1412.	1569.	1482.	1084.	912.	734.	562.
L	50.0	1871.	1785.	1928.	1620.	1198.	1121.	944.	769.	585.
E	49.0<<	2077.	2003.	1836.	1451.	1185.	1161.	962.	782.	590.
	47.5	1791.	1753.	1506.	1281.	1213.	1169.	1009.	794.	594.
	45.0	1303.	1292.	1300.	1312.	1354.	1100.	1011.	814.	615.
	42.5	1344.	1320.	1380.	1453.	1239.	1113.	932.	804.	660.
	40.0	1696.	1657.	1584.	1346.	1197.	1089.	953.	803.	710.
	37.5	1499.	1464.	1363.	1221.	1196.	1007.	967.	862.	693.
	35.0	1236.	1224.	1240.	1233.	1144.	1038.	982.	905.	681.
	30.0	1329.	1327.	1257.	1112.	1088.	1134.	1040.	814.	719.
	25.0	1216.	1217.	1232.	1272.	1131.	1016.	905.	850.	755.
	20.0	1100.	1070.	1018.	989.	1054.	950.	923.	836.	750.
	15.0	1051.	1043.	1037.	1013.	983.	936.	842.	769.	755.
	10.0	866.	858.	852.	836.	819.	817.	771.	806.	749.
	5.0	787.	793.	795.	824.	846.	843.	803.	765.	773.
	0.0	766.	766.	766.	766.	766.	766.	766.	766.	766.
		PLANE OF MAXIMUM CANDELA								
		CONE OF MAXIMUM CANDELA								

REPORT NUMBER: RAB01023
 ISSUE DATE: 07/13/15
 PREPARED FOR: RAB LIGHTING INC.

PAGE: 7 OF 8
 DATE SAMPLE TESTED: 07/13/15

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	3.	3.	3.	3.	3.	3.	3.	3.	3.	3.	3.
175.0	4.	4.	4.	4.	3.	3.	2.	2.	1.	0.	0.
165.0	4.	4.	4.	4.	4.	3.	3.	2.	1.	1.	1.
155.0	4.	4.	4.	4.	4.	3.	3.	2.	2.	1.	1.
145.0	5.	4.	4.	4.	4.	3.	3.	2.	2.	2.	2.
135.0	7.	6.	5.	4.	4.	4.	3.	3.	2.	2.	2.
125.0	14.	12.	8.	6.	4.	4.	3.	3.	3.	3.	3.
115.0	24.	22.	14.	9.	6.	4.	4.	4.	4.	4.	4.
105.0	29.	30.	23.	15.	10.	7.	5.	6.	6.	6.	6.
95.0	31.	39.	37.	25.	13.	9.	7.	7.	7.	7.	7.
90.0	32.	41.	46.	33.	16.	10.	7.	7.	7.	7.	7.
87.5	39.	42.	49.	36.	19.	10.	7.	7.	7.	7.	7.
85.0	49.	46.	53.	40.	22.	11.	7.	6.	7.	7.	7.
82.5	69.	51.	56.	43.	24.	12.	7.	6.	6.	6.	7.
V 80.0	96.	58.	60.	46.	27.	13.	7.	6.	6.	6.	6.
E 77.5	124.	68.	62.	50.	29.	14.	7.	5.	5.	5.	5.
R 75.0	160.	81.	65.	55.	34.	15.	7.	5.	5.	5.	5.
T 72.5	196.	97.	70.	59.	41.	18.	7.	4.	4.	4.	4.
I 70.0	218.	118.	76.	64.	48.	29.	10.	4.	3.	3.	3.
C 67.5	242.	141.	83.	67.	55.	38.	23.	8.	3.	3.	3.
A 65.0	258.	164.	92.	72.	62.	47.	33.	25.	11.	7.	7.
L 62.5	258.	186.	105.	79.	70.	57.	41.	30.	26.	23.	23.
60.0	258.	207.	117.	89.	79.	66.	48.	42.	30.	25.	25.
A 57.5	277.	228.	133.	101.	86.	73.	59.	45.	42.	38.	35.
N 55.0	289.	236.	151.	115.	95.	82.	68.	53.	44.	44.	43.
G 52.5	310.	262.	175.	132.	103.	92.	75.	62.	52.	49.	47.
L 50.0	332.	270.	200.	147.	117.	102.	83.	69.	58.	56.	55.
E 49.0 <<	341.	280.	209.	156.	124.	106.	87.	71.	60.	57.	56.
47.5	352.	291.	222.	171.	134.	113.	94.	74.	67.	61.	59.
45.0	360.	316.	248.	198.	156.	126.	105.	83.	70.	67.	66.
42.5	394.	344.	273.	228.	181.	145.	118.	98.	79.	73.	71.
40.0	428.	369.	300.	255.	212.	169.	136.	114.	99.	89.	86.
37.5	457.	407.	329.	280.	244.	199.	159.	135.	118.	110.	106.
35.0	499.	444.	352.	307.	274.	234.	192.	162.	142.	132.	127.
30.0	561.	508.	408.	357.	327.	304.	276.	248.	217.	207.	200.
25.0	599.	562.	469.	408.	365.	347.	341.	326.	311.	301.	299.
20.0	651.	621.	553.	472.	407.	380.	360.	351.	352.	345.	345.
15.0	693.	666.	613.	565.	496.	434.	407.	388.	376.	367.	367.
10.0	736.	695.	662.	629.	592.	562.	538.	510.	484.	467.	472.
5.0	775.	751.	689.	687.	674.	644.	637.	637.	635.	626.	630.
0.0	766.	766.	766.	766.	766.	766.	766.	766.	766.	766.	766.

CONE OF MAXIMUM CANDELA

REPORT NUMBER: RAB01023
ISSUE DATE: 07/13/15
PREPARED FOR: RAB LIGHTING INC.

PAGE: 8 OF 8
DATE SAMPLE TESTED: 07/13/15

5-DEGREE
ZONAL LUMEN SUMMARY

0- 5	18
5- 10	51
10- 15	82
15- 20	112
20- 25	144
25- 30	171
30- 35	189
35- 40	210
40- 45	226
45- 50	249
50- 55	256
55- 60	259
60- 65	271
65- 70	255
70- 75	246
75- 80	242
80- 85	227
85- 90	212
90- 95	188
95-100	170
100-105	132
105-110	115
110-115	84
115-120	67
120-125	49
125-130	36
130-135	26
135-140	18
140-145	11
145-150	7
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	68
0- 20	263
0- 30	577
0- 40	977
0- 50	1452
0- 60	1967
0- 70	2494
0- 80	2982
0- 90	3420
0-100	3778
0-110	4025
0-120	4176
0-130	4262
0-140	4306
0-150	4324
0-160	4327
0-170	4328
0-180	4329

REPORT NUMBER: RAB01026
DATE: 7/13/2015
PREPARED FOR: RAB LIGHTING INC.
CATALOG NUMBER: WP2LED37 (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: EIGHTY WHITE LIGHT EMITTING DIODES (LEDS).

DRIVER: RD-042-A0700N

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: CHROMA PROGRAMMABLE AC POWER SOURCE MODEL 61602 Calibration Due: N/A
CHROMA PROGRAMMABLE DIGITAL POWER METER MODEL 66202 3/9/16
OCEAN OPTICS QE65PRO Spectroradiometer 7/9/16
RAB 2.0 meter Diameter Integrating Sphere, 4PI Geometry 7/9/16

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 (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	<u>X.CAO</u>
Approved	<u>D.WANG-MUNSON</u> Lighting Engineer

REPORT NUMBER: RAB01026
 DATE: 7/13/2015
 PREPARED FOR: RAB LIGHTING INC.
 CATALOG NUMBER: WP2LED37 (STANDARD CUTOFF - PRISMATIC GLASS LENS)

RESULTS:

PHOTOMETRIC	
Total Integrated Flux (lumens)	4329 *
SPECTRORADIOMETRIC	
Observer	CIE 1931 2 degree
Chromaticity Ordinate x	0.3428
Chromaticity Ordinate y	0.3539
Observer	CIE 1976 2 degree
Chromaticity Ordinate u'	0.2090
Chromaticity Ordinate v'	0.4855
Correlated Color Temp CCT (K)	5094
ANSI C78.377-2008 Duv	0.002
Total Radiant Flux (milliWatts)	13589 *
ELECTRICAL	
Input Voltage (Volts AC)	120.0
Input Current (Amps AC)	0.326
Input Power (Watts)	38.7
Input Power Factor (%)	98.9
Input Current THD (%)	7.9
Input Voltage THD (%)	0.2
EFFICACY (Lumens/Watt)	
	111.9
ELECTRICAL AT MAX NONIMAL INPUT	
Input Voltage (Volts AC)	277.0
Input Current (Amps AC)	0.144
Input Power (Watts)	38.8
Input Power Factor (%)	97.3
Input Current THD (%)	7.8
Input Voltage THD (%)	0.2
Off-State Power (Watts)	
	0.0

COLOR RENDERING INDICES	CRI
Ra (Average 1-8)	82
R1 Light greyish red	80
R2 Dark greyish yellow	85
R3 Strong yellowish green	90
R4 Moderate yellowish green	83
R5 Light bluish green	81
R6 Light blue	81
R7 Light violet	86
R8 Light reddish purple	67
R9 Strong red	6
R10 Strong yellow	66
R11 Strong green	83
R12 Strong blue	65
R13 Light yellowish pink (skin)	80
R14 Moderate olive green (leaf)	94

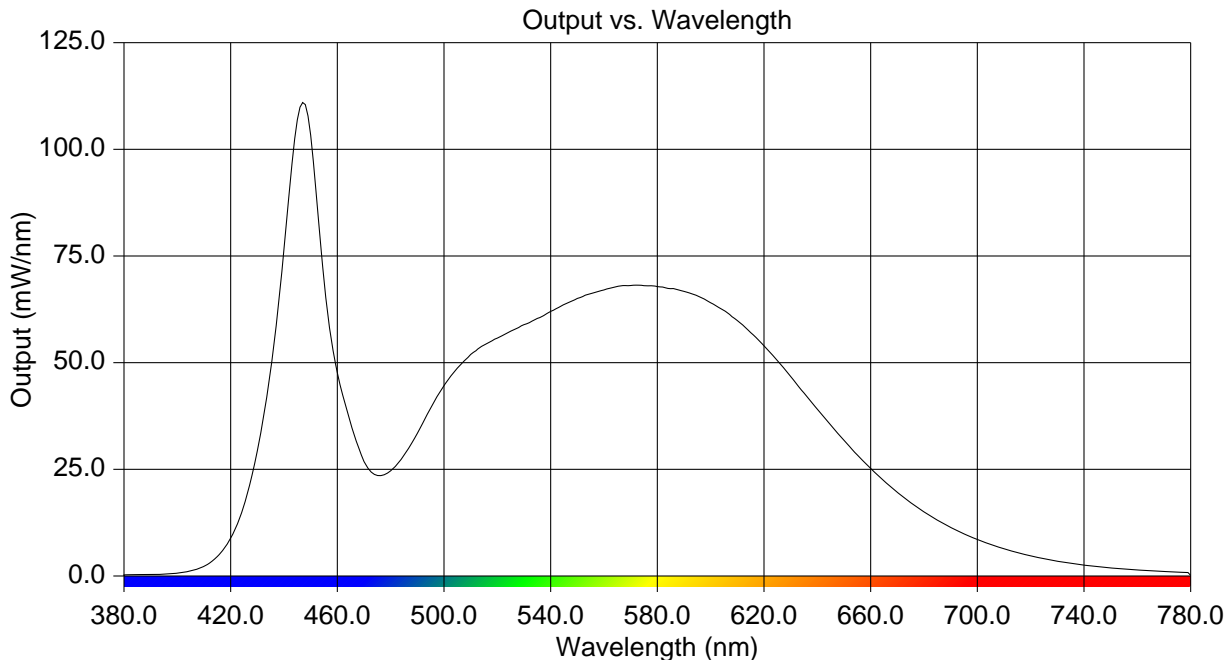
*NOTE:

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: RAB01026
 DATE: 7/13/2015
 PREPARED FOR: RAB LIGHTING INC.
 CATALOG NUMBER: WP2LED37 (STANDARD CUTOFF - PRISMATIC GLASS LENS)

RESULTS:

Wavelength	mW per nm	Wavelength	mW per nm	Wavelength	mW per nm
380	0.255	515	54.062	650	31.781
385	0.303	520	55.754	655	28.366
390	0.340	525	57.356	660	25.205
395	0.443	530	58.910	665	22.287
400	0.675	535	60.371	670	19.573
405	1.183	540	61.984	675	17.199
410	2.258	545	63.621	680	15.051
415	4.570	550	65.053	685	13.111
420	8.820	555	66.136	690	11.383
425	16.571	560	67.045	695	9.873
430	29.340	565	67.837	700	8.569
435	48.335	570	68.080	705	7.388
440	76.637	575	68.081	710	6.369
445	106.926	580	67.830	715	5.481
450	103.346	585	67.344	720	4.718
455	69.367	590	66.707	725	4.045
460	47.638	595	65.676	730	3.475
465	35.711	600	64.034	735	2.983
470	26.828	605	62.246	740	2.558
475	23.543	610	59.865	745	2.203
480	24.718	615	57.049	750	1.903
485	28.304	620	53.945	755	1.628
490	33.427	625	50.554	760	1.413
495	39.371	630	46.771	765	1.214
500	44.678	635	42.897	770	1.047
505	48.738	640	39.041	775	0.907
510	51.919	645	35.360	780	0.137



REPORT NUMBER: RAB01026
DATE: 7/13/2015
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CATALOG NUMBER: WP2LED37 (STANDARD CUTOFF - PRISMATIC GLASS LENS)

CIE Chromaticity Diagram

