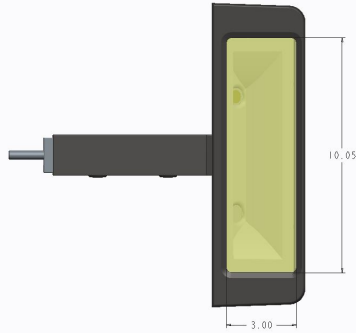


ISOFOOTCANDLE LINES OF HORIZONTAL ILLUMINATION

Values based on 20 foot mounting height.



REPORT NUMBER: RAB02597
 ISSUE DATE: 10/18/16 PAGE: 1 OF 9
 DATE SAMPLE TESTED: 10/18/16
 PREPARED FOR: RAB LIGHTING INC.
 CATALOG NUMBER: ALEDC80 / WPLEDC80
 (7.5-DEGREE UPTILT - CUTOFF)
 LUMINAIRE: CAST FINNED METAL HOUSING,
 2-PIECE EXTRUDED METAL HEAT SINK, 2
 CIRCUIT BOARDS EACH WITH 1 LED,
 MOLDED PLASTIC REFLECTOR WITH
 SPECULAR FINISH AND 1 OPTICAL
 COMPARTMENT WITH 1 APERTURE PER LED,
 CLEAR FLAT GLASS LENS IN CAST BROWN
 PAINTED METAL FRAME.
 LAMPS: TWO WHITE MULTI-CHIP LIGHT
 EMITTING DIODES (LEDs), TILTED
 37.5-DEGREES FROM VERTICAL BASE-UP
 POSITION.

NOTE: DATA SHOWN IS ABSOLUTE FOR THE
 SAMPLE PROVIDED.

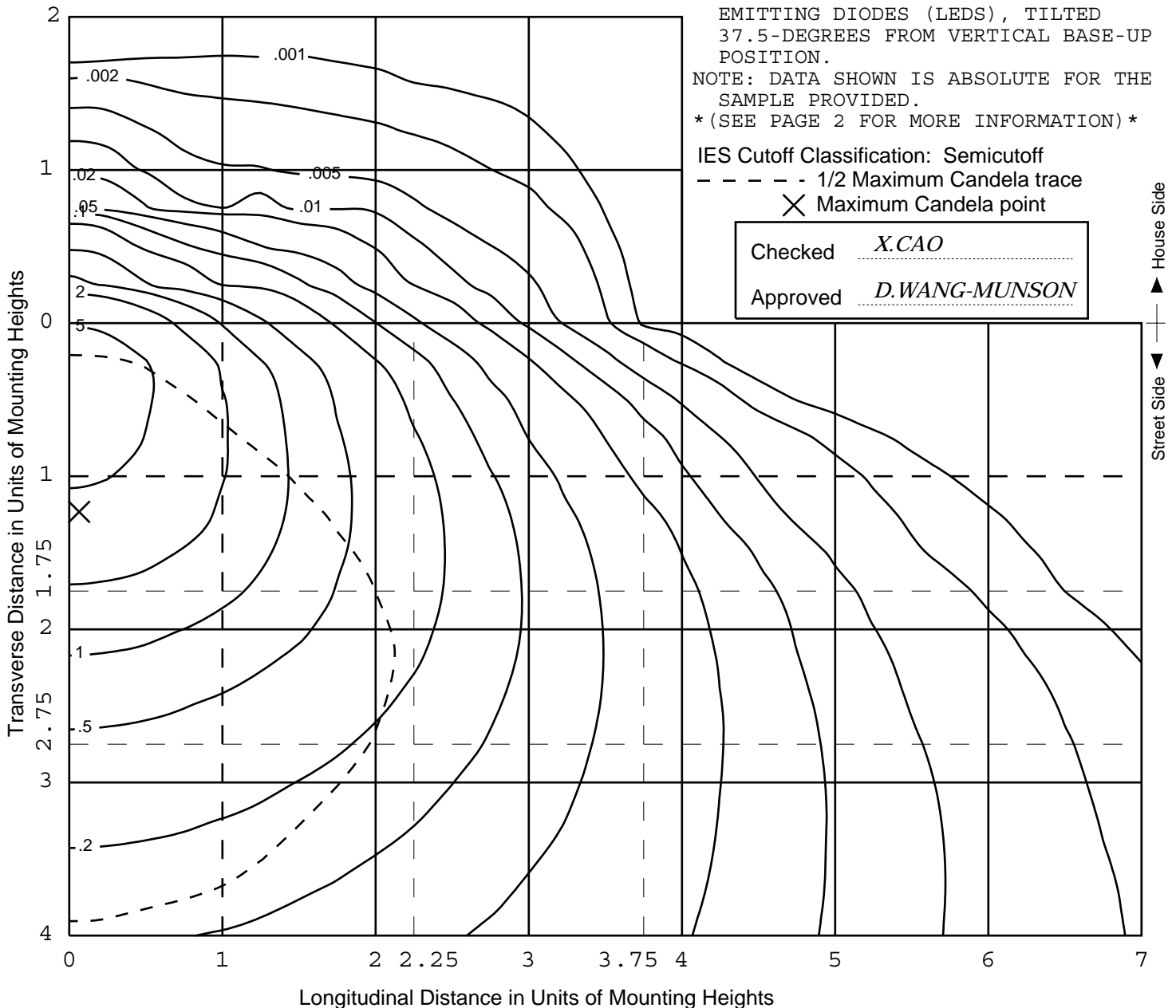
(SEE PAGE 2 FOR MORE INFORMATION)

IES Cutoff Classification: Semicutoff

--- 1/2 Maximum Candela trace

X Maximum Candela point

Checked X.CAO
 Approved D.WANG-MUNSON



REPORT NUMBER: RAB02597
ISSUE DATE: 10/18/16
PREPARED FOR: RAB LIGHTING INC.

PAGE: 2 OF 9
DATE SAMPLE TESTED: 10/18/16

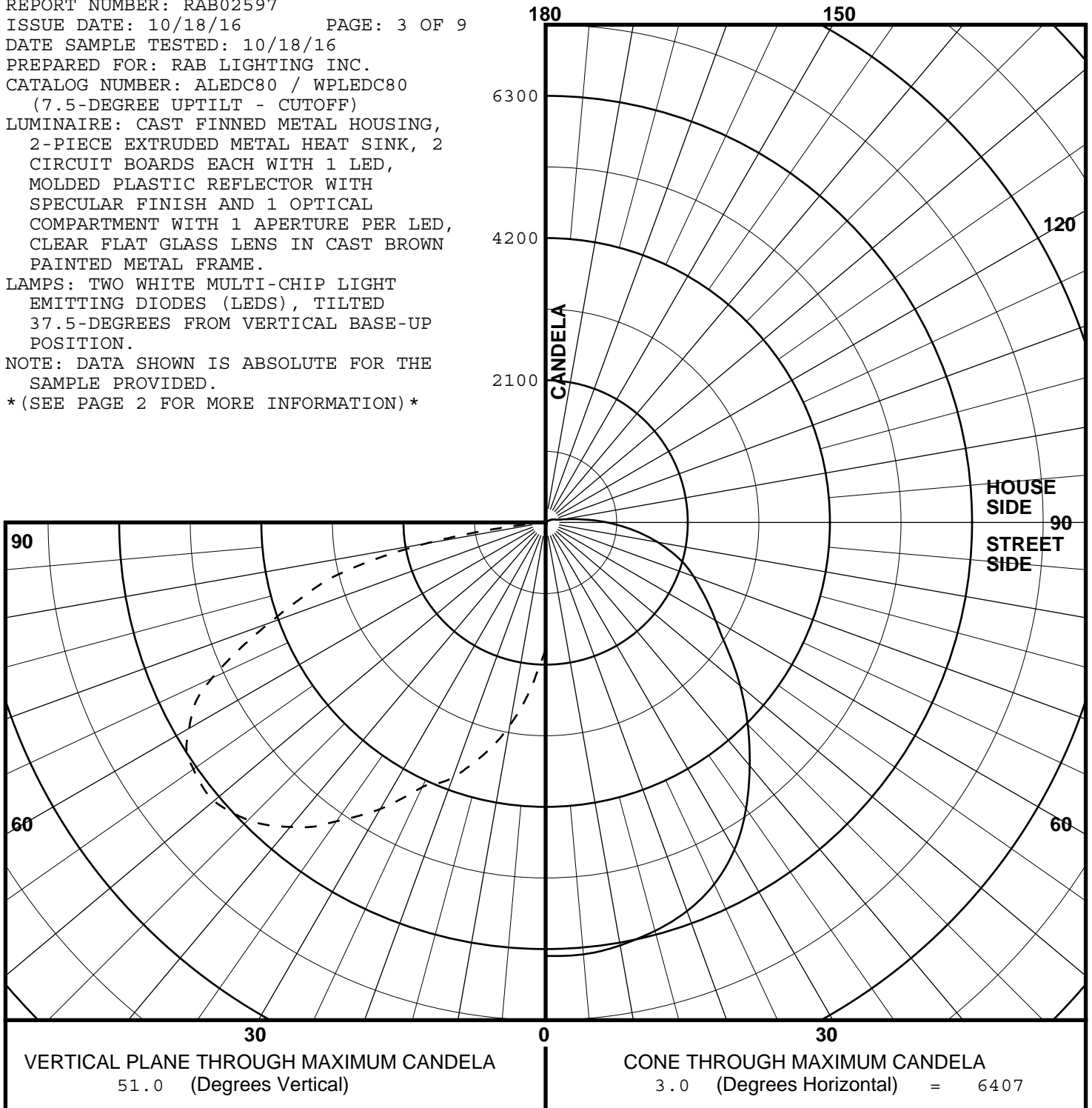
ADDITIONAL INFORMATION

TOTAL INPUT WATTS = 83.932 W AT 120.0 VAC.
LED DRIVER: RD-085-A2000
TEST PROCEDURE: IESNA LM-79-08
ACCREDITED LABORATORY CODE 201058-0

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.

MAXIMUM PLANE AND MAXIMUM CONE PLOTS OF CANDELA

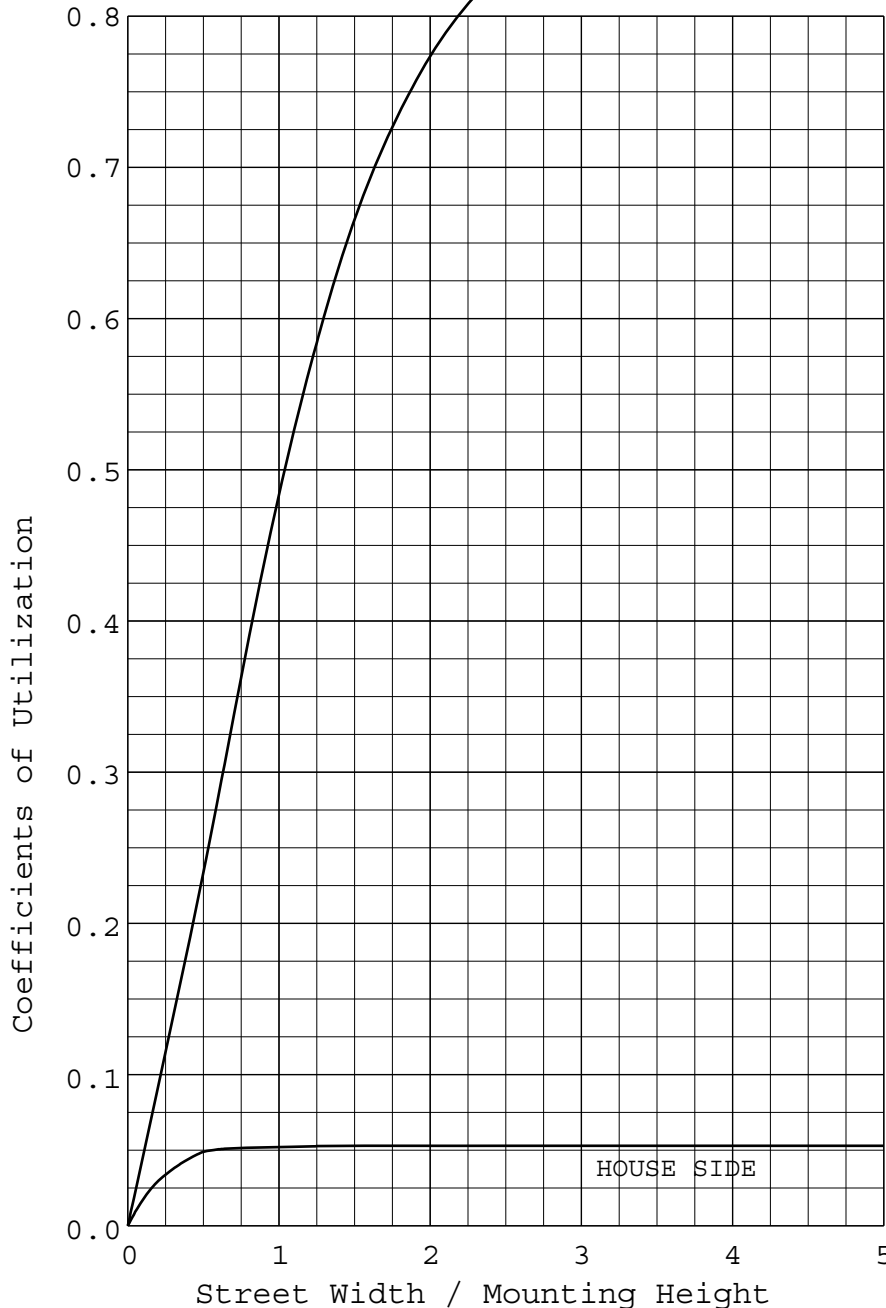
REPORT NUMBER: RAB02597
 ISSUE DATE: 10/18/16 PAGE: 3 OF 9
 DATE SAMPLE TESTED: 10/18/16
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 CATALOG NUMBER: ALEDC80 / WPLEDC80
 (7.5-DEGREE UPTILT - CUTOFF)
 LUMINAIRE: CAST FINNED METAL HOUSING,
 2-PIECE EXTRUDED METAL HEAT SINK, 2
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 PAINTED METAL FRAME.
 LAMPS: TWO WHITE MULTI-CHIP LIGHT
 EMITTING DIODES (LEDs), TILTED
 37.5-DEGREES FROM VERTICAL BASE-UP
 POSITION.
 NOTE: DATA SHOWN IS ABSOLUTE FOR THE
 SAMPLE PROVIDED.
 (SEE PAGE 2 FOR MORE INFORMATION)



REPORT NUMBER: RAB02597 STREET SIDE
ISSUE DATE: 10/18/16
PREPARED FOR: RAB LIGHTING INC.

PAGE: 4 OF 9
DATE SAMPLE TESTED: 10/18/16

COEFFICIENTS OF UTILIZATION AND FLUX DISTRIBUTION



	LUMENS	PERCENT OF FIXTURE
DOWNWARD STREET SIDE	8923.	94.6
DOWNWARD HOUSE SIDE	508.	5.4
DOWNWARD TOTAL	9431.	100.0
UPWARD STREET SIDE	1.	0.0
UPWARD HOUSE SIDE	1.	0.0
UPWARD TOTAL	2.	0.0
TOTAL FLUX	9433.	100.0
TOTAL INPUT WATTS = 83.9		
EFFICACY = 112.4 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.

REPORT NUMBER: RAB02597
 ISSUE DATE: 10/18/16
 PREPARED FOR: RAB LIGHTING INC.

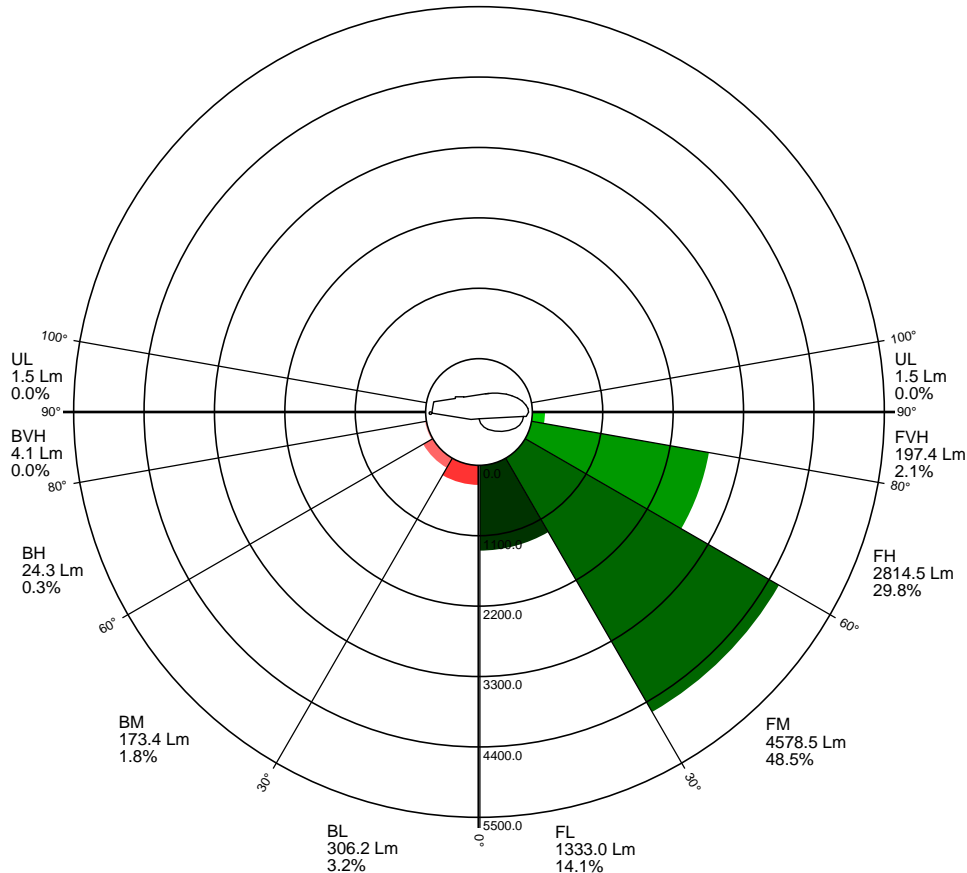
PAGE: 5 OF 9
 DATE SAMPLE TESTED: 10/18/16

BUG Rating:				B1 U1 G2		
Zonal Summary				Zone Ratings		
		Lumens	% of Fixture	B	U	G
Forward		8923	94.6			
FL	(0° - 30°)	1333.0	14.1			
FM	(30° - 60°)	4578.5	48.5			
FH	(60° - 80°)	2814.5	29.8			G2
FVH	(80° - 90°)	197.4	2.1			G2
Backward		508	5.4			
BL	(0° - 30°)	306.2	3.2	B1		
BM	(30° - 60°)	173.4	1.8	B0		
BH	(60° - 80°)	24.3	0.3	B0		G0
BVH	(80° - 90°)	4.1	0.0			G0
Upward		2	0.0			
UL	(90° - 100°)	1.5	0.0		U1	
UH	(100° - 180°)	0.0	0.0		U0	
Trapped Light		0	0.0			
Total Flux		9433	100.0			

Zonal Lumen Summary

(Linear scale)

UH
0.0 Lm
0.0%

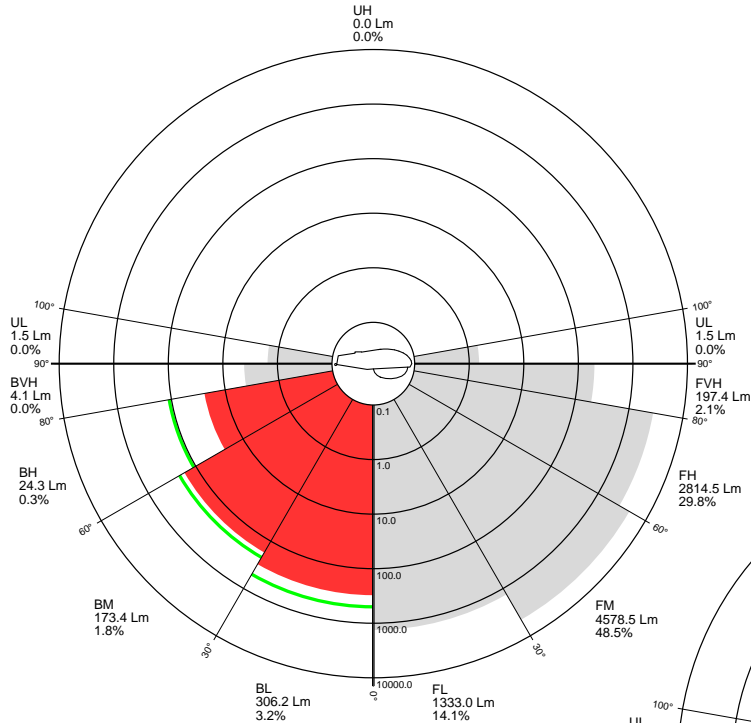


REPORT NUMBER: RAB02597
 ISSUE DATE: 10/18/16
 PREPARED FOR: RAB LIGHTING INC.

PAGE: 6 OF 9
 DATE SAMPLE TESTED: 10/18/16

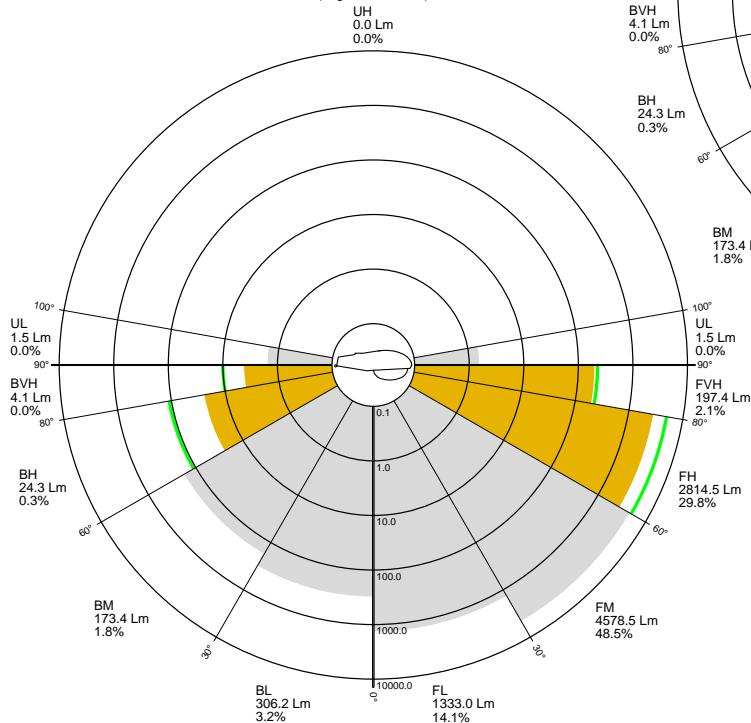
Backlight Rating Details

(Logarithmic scale)



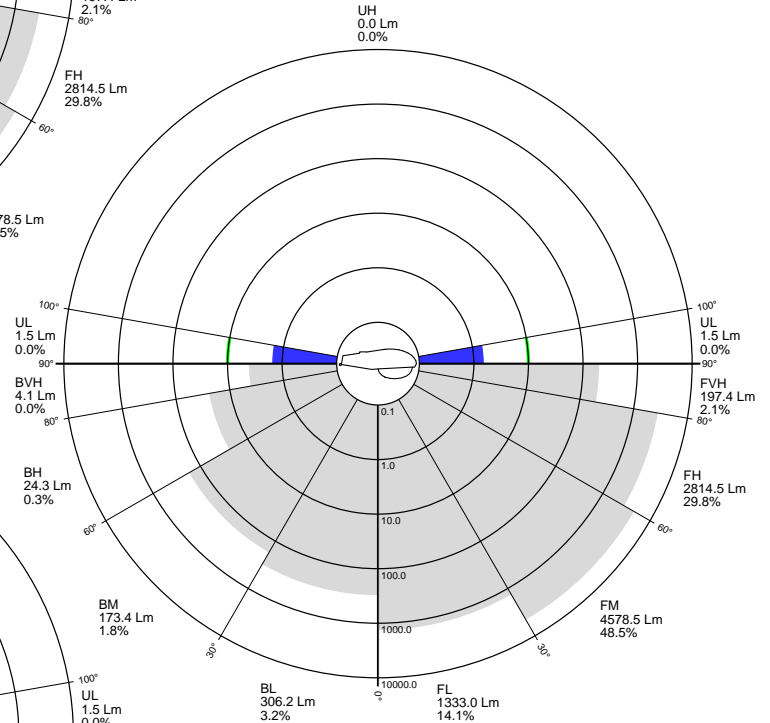
Glare Rating Details

(Logarithmic scale)



Uplight Rating Details

(Logarithmic scale)



CANDELA TABULATION		LATERAL ANGLE										
STREET	SIDE	0.0	3.0	5.0	15.0	25.0	35.0	45.0	55.0	65.0	75.0	85.0
	180.0	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
	175.0	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
	165.0	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
	155.0	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
	145.0	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
	135.0	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
	125.0	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
	115.0	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
	105.0	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
	95.0	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
	90.0	17.	17.	16.	17.	16.	16.	11.	11.	11.	11.	11.
	87.5	84.	85.	75.	83.	73.	70.	41.	40.	34.	13.	12.
	85.0	214.	216.	202.	228.	248.	317.	271.	245.	175.	42.	12.
	82.5	803.	822.	774.	870.	924.	1054.	926.	578.	306.	100.	13.
V	80.0	1787.	1808.	1746.	1831.	1822.	1821.	1593.	1006.	513.	163.	15.
E	77.5	2682.	2688.	2637.	2653.	2567.	2461.	2106.	1503.	852.	271.	26.
R	75.0	3377.	3381.	3343.	3286.	3102.	2918.	2585.	1977.	1204.	467.	90.
T	72.5	3837.	3838.	3806.	3742.	3574.	3437.	3057.	2355.	1511.	687.	216.
I	70.0	4344.	4349.	4309.	4260.	4091.	4011.	3453.	2624.	1765.	914.	386.
C	67.5	4896.	4901.	4849.	4823.	4646.	4515.	3749.	2824.	1960.	1135.	561.
A	65.0	5441.	5438.	5396.	5323.	5116.	4860.	3972.	2984.	2101.	1349.	713.
L	62.5	5857.	5850.	5816.	5719.	5467.	5086.	4132.	3117.	2205.	1539.	859.
	60.0	6092.	6081.	6054.	5937.	5731.	5232.	4239.	3197.	2299.	1692.	981.
A	57.5	6300.	6290.	6264.	6169.	5888.	5285.	4288.	3244.	2381.	1809.	1078.
N	55.0	6359.	6352.	6344.	6227.	5946.	5278.	4271.	3269.	2469.	1904.	1169.
G	52.5	6396.	6396.	6391.	6255.	5940.	5219.	4248.	3285.	2549.	1990.	1253.
L	51.0<<	6402.	6407.	6402.	6243.	5893.	5162.	4222.	3283.	2600.	2035.	1302.
E	50.0	6393.	6398.	6395.	6217.	5854.	5116.	4199.	3284.	2637.	2059.	1334.
	47.5	6319.	6320.	6317.	6118.	5720.	5020.	4138.	3321.	2735.	2116.	1407.
	45.0	6225.	6213.	6212.	5981.	5539.	4883.	4056.	3360.	2834.	2171.	1468.
	42.5	6071.	6063.	6047.	5816.	5335.	4748.	3976.	3392.	2899.	2233.	1521.
	40.0	5881.	5871.	5853.	5612.	5168.	4595.	3943.	3425.	2948.	2303.	1583.
	37.5	5670.	5667.	5636.	5388.	4977.	4499.	3929.	3472.	2981.	2363.	1655.
	35.0	5382.	5387.	5367.	5134.	4809.	4399.	3910.	3503.	2995.	2412.	1721.
	30.0	4905.	4886.	4872.	4700.	4419.	4152.	3852.	3478.	2996.	2472.	1845.
	25.0	4317.	4311.	4306.	4234.	4129.	3953.	3674.	3323.	2914.	2465.	1922.
	20.0	4010.	4007.	4012.	3966.	3846.	3669.	3414.	3117.	2779.	2403.	1963.
	15.0	3559.	3554.	3562.	3553.	3453.	3293.	3088.	2880.	2608.	2303.	1971.
	10.0	3054.	3041.	3053.	3056.	2980.	2855.	2719.	2569.	2379.	2166.	1948.
	5.0	2450.	2449.	2477.	2476.	2430.	2345.	2292.	2206.	2118.	2013.	1908.
	0.0	1874.	1874.	1874.	1874.	1874.	1874.	1874.	1874.	1874.	1874.	1874.
		PLANE OF MAXIMUM CANDELA										
		CONE OF MAXIMUM CANDELA										

REPORT NUMBER: RAB02597
 ISSUE DATE: 10/18/16
 PREPARED FOR: RAB LIGHTING INC.

PAGE: 8 OF 9
 DATE SAMPLE TESTED: 10/18/16

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	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
175.0	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
165.0	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
155.0	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
145.0	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
135.0	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
125.0	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
115.0	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
105.0	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
95.0	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
90.0	11.	11.	11.	10.	10.	9.	8.	7.	7.	6.	6.
87.5	11.	11.	10.	10.	9.	9.	7.	6.	5.	5.	5.
85.0	11.	11.	10.	10.	9.	8.	7.	5.	4.	3.	3.
82.5	12.	11.	10.	10.	8.	7.	6.	4.	3.	2.	1.
V 80.0	12.	12.	10.	10.	8.	7.	5.	4.	2.	1.	0.
E 77.5	13.	12.	11.	10.	8.	7.	5.	4.	2.	1.	0.
R 75.0	20.	13.	13.	11.	8.	6.	5.	3.	2.	0.	0.
T 72.5	79.	61.	29.	16.	8.	6.	5.	3.	1.	0.	0.
I 70.0	159.	81.	31.	19.	9.	6.	5.	3.	2.	0.	0.
C 67.5	264.	107.	43.	21.	12.	7.	5.	3.	1.	0.	0.
A 65.0	377.	147.	75.	23.	13.	8.	5.	3.	1.	0.	0.
L 62.5	497.	214.	100.	24.	14.	9.	6.	4.	2.	0.	0.
60.0	597.	282.	122.	26.	15.	10.	7.	5.	4.	2.	2.
A 57.5	689.	350.	134.	32.	16.	11.	8.	7.	6.	6.	5.
N 55.0	775.	415.	144.	53.	16.	11.	9.	9.	10.	10.	9.
G 52.5	859.	487.	153.	81.	17.	11.	9.	10.	12.	13.	13.
L 51.0<<	907.	528.	161.	94.	18.	11.	10.	11.	13.	14.	14.
E 50.0	938.	559.	166.	101.	19.	11.	10.	12.	14.	14.	14.
47.5	1010.	632.	176.	118.	35.	12.	12.	13.	15.	16.	16.
45.0	1075.	701.	190.	132.	65.	19.	14.	16.	17.	17.	17.
42.5	1134.	768.	221.	145.	94.	35.	19.	18.	19.	19.	19.
40.0	1195.	840.	268.	157.	118.	65.	28.	24.	21.	21.	21.
37.5	1267.	915.	334.	179.	138.	97.	53.	36.	33.	30.	29.
35.0	1349.	1000.	417.	204.	159.	125.	93.	64.	48.	46.	46.
30.0	1516.	1204.	640.	298.	232.	207.	191.	175.	159.	151.	151.
25.0	1644.	1384.	888.	513.	347.	315.	298.	296.	293.	290.	285.
20.0	1741.	1536.	1130.	790.	536.	430.	418.	403.	391.	388.	386.
15.0	1804.	1651.	1346.	1071.	857.	667.	555.	506.	487.	480.	479.
10.0	1838.	1739.	1542.	1361.	1187.	1046.	944.	867.	801.	790.	778.
5.0	1854.	1809.	1721.	1642.	1553.	1475.	1420.	1380.	1329.	1333.	1321.
0.0	1874.	1874.	1874.	1874.	1874.	1874.	1874.	1874.	1874.	1874.	1874.

CONE OF MAXIMUM CANDELA

REPORT NUMBER: RAB02597
 ISSUE DATE: 10/18/16
 PREPARED FOR: RAB LIGHTING INC.

PAGE: 9 OF 9
 DATE SAMPLE TESTED: 10/18/16

5-DEGREE ZONAL LUMEN SUMMARY

0- 5	45
5- 10	135
10- 15	225
15- 20	318
20- 25	413
25- 30	503
30- 35	593
35- 40	681
40- 45	768
45- 50	850
50- 55	914
55- 60	946
60- 65	922
65- 70	819
70- 75	653
75- 80	445
80- 85	178
85- 90	23
90- 95	2
95-100	0
100-105	0
105-110	0
110-115	0
115-120	0
120-125	0
125-130	0
130-135	0
135-140	0
140-145	0
145-150	0
150-155	0
155-160	0
160-165	0
165-170	0
170-175	0
175-180	0

10-DEGREE ZONAL LUMEN SUMMARY

0- 10	180
0- 20	723
0- 30	1639
0- 40	2913
0- 50	4531
0- 60	6391
0- 70	8132
0- 80	9230
0- 90	9431
0-100	9433
0-110	9433
0-120	9433
0-130	9433
0-140	9433
0-150	9433
0-160	9433
0-170	9433
0-180	9433

REPORT NUMBER: RAB02592
DATE: 10/17/2016
PREPARED FOR: RAB LIGHTING INC.
CATALOG NUMBER: ALEDC80 / WPLEDC80 (7.5-DEGREE UPTILT - CUTOFF)

Page 1 of 4

ADDRESS: 170 LUDLOW AVE, NORTHVALE, NJ 07647

LUMINAIRE: CAST FINNED METAL HOUSING, 2-PIECE EXTRUDED METAL HEAT SINK, 2
CIRCUIT BOARDS EACH WITH 1 LED, MOLDED PLASTIC REFLECTOR WITH
SPECULAR FINISH AND 1 OPTICAL COMPARTMENT WITH 1 APERTURE PER LED,
CLEAR FLAT GLASS LENS IN CAST BROWN PAINTED METAL FRAME.

LAMP: TWO WHITE MULTI-CHIP LIGHT EMITTING DIODES (LEDs), TILTED
37.5-DEGREES FROM VERTICAL BASE-UP POSITION.

DRIVER: RD-085-A2000

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:	GWINSTEK PROGRAMMABLE AC POWER SOURCE APS-7100	Calibration Due:
	CHROMA PROGRAMMABLE DIGITAL POWER METER MODEL 66202	N/A
	OCEAN OPTICS QE65PRO Spectroradiometer	2/26/17
	RAB 2.0 meter Diameter Integrating Sphere, 4PI Geometry	9/16/17

OBJECT OF TEST: Measure the Absolute Flux in lumens*, Total Radiant Flux*, Spectral
Power Distribution (SPD), Correlated Color Temperature (CCT), Color
Rendering Indices (CRI_a, 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: RAB02592
 DATE: 10/17/2016
 PREPARED FOR: RAB LIGHTING INC.
 CATALOG NUMBER: ALEDC80 / WPLEDC80 (7.5-DEGREE UPTILT - CUTOFF)

Page 2 of 4

RESULTS:

PHOTOMETRIC	
Total Integrated Flux (lumens)	9433 *
SPECTRORADIOMETRIC	
Observer	CIE 1931 2 degree
Chromaticity Ordinate x	0.3420
Chromaticity Ordinate y	0.3544
Observer	CIE 1976 2 degree
Chromaticity Ordinate u'	0.2083
Chromaticity Ordinate v'	0.4856
Correlated Color Temp CCT (K)	5127
ANSI C78.377-2008 Duv	0.003
Total Radiant Flux (milliWatts)	28305 *
ELECTRICAL	
Input Voltage (Volts AC)	120.0
Input Current (Amps AC)	0.703
Input Power (Watts)	83.9
Input Power Factor (%)	99.6
Input Current THD (%)	5.3
Input Voltage THD (%)	0.2
EFFICACY (Lumens/Watt)	
	112.4
ELECTRICAL AT MAX NONIMAL INPUT	
Input Voltage (Volts AC)	277.0
Input Current (Amps AC)	0.318
Input Power (Watts)	82.0
Input Power Factor (%)	93.2
Input Current THD (%)	12.1
Input Voltage THD (%)	0.2
Off-State Power (Watts)	0.0

COLOR RENDERING INDICES	CRI
Ra (Average 1-8)	73
R1 Light greyish red	71
R2 Dark greyish yellow	78
R3 Strong yellowish green	82
R4 Moderate yellowish green	73
R5 Light bluish green	71
R6 Light blue	69
R7 Light violet	82
R8 Light reddish purple	58
R9 Strong red	-26
R10 Strong yellow	46
R11 Strong green	70
R12 Strong blue	44
R13 Light yellowish pink (skin)	72
R14 Moderate olive green (leaf)	90

*NOTE:

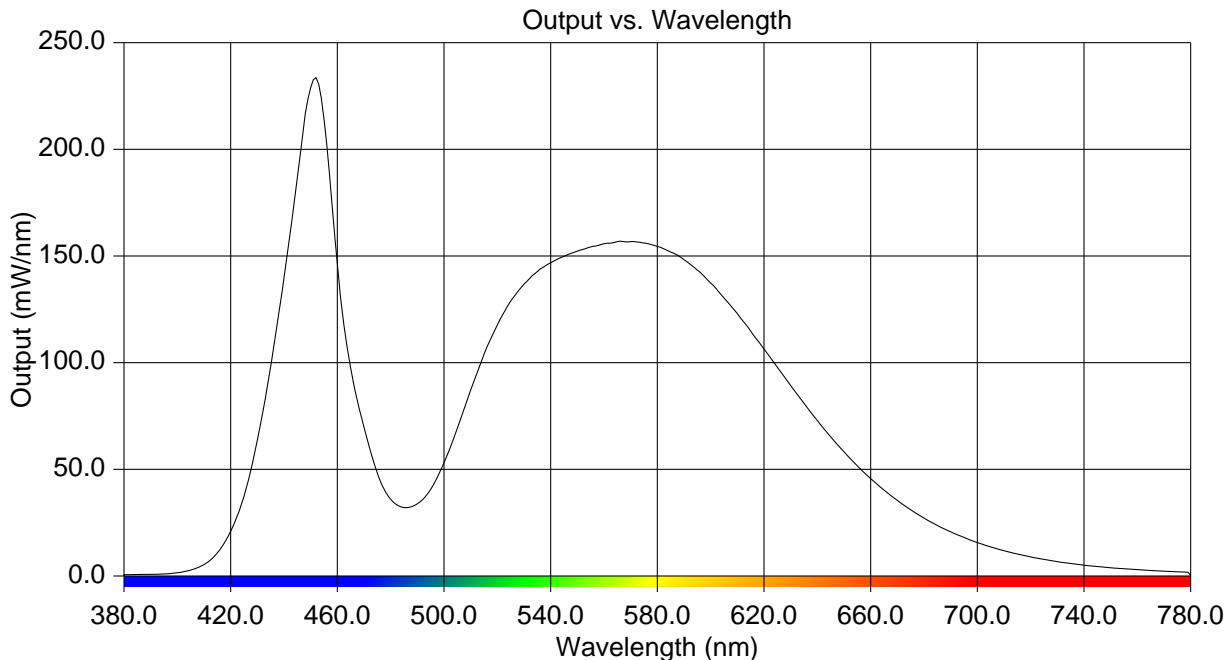
Proper calibration of integrating spheres for measuring total flux output of non-directional samples will produce reliable, repeatable results within the calibration tolerances of the equipment used. However, measurement of test samples with significant self absorption and/or directional output, even 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: RAB02592
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 CATALOG NUMBER: ALEDC80 / WPLEDC80 (7.5-DEGREE UPTILT - CUTOFF)

Page 3 of 4

RESULTS:

Wavelength	mW per nm	Wavelength	mW per nm	Wavelength	mW per nm
380	0.567	515	103.932	650	58.250
385	0.648	520	117.830	655	51.627
390	0.749	525	128.855	660	45.673
395	0.984	530	136.807	665	40.224
400	1.519	535	142.709	670	35.490
405	2.705	540	146.883	675	31.017
410	5.371	545	149.954	680	27.118
415	10.807	550	152.412	685	23.731
420	20.879	555	154.270	690	20.644
425	37.547	560	155.817	695	18.102
430	63.554	565	156.757	700	15.621
435	98.393	570	156.746	705	13.586
440	139.257	575	156.069	710	11.848
445	186.751	580	154.639	715	10.320
450	228.923	585	151.864	720	8.909
455	214.186	590	148.253	725	7.756
460	146.047	595	143.400	730	6.733
465	97.529	600	137.286	735	5.847
470	69.738	605	130.491	740	5.080
475	48.213	610	123.016	745	4.414
480	35.969	615	114.826	750	3.868
485	32.074	620	106.619	755	3.362
490	33.835	625	98.037	760	2.943
495	40.598	630	89.344	765	2.568
500	53.024	635	80.753	770	2.249
505	69.292	640	72.829	775	1.955
510	86.992	645	65.268	780	0.302



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Page 4 of 4

CIE Chromaticity Diagram

