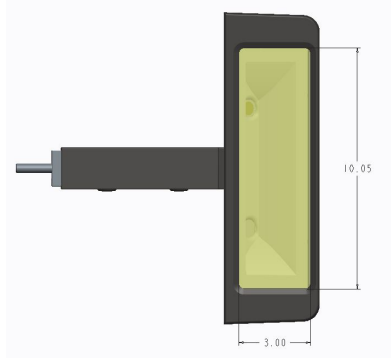


ISOFOOTCANDLE LINES OF HORIZONTAL ILLUMINATION

Values based on 20 foot mounting height.



REPORT NUMBER: RAB02588
 ISSUE DATE: 10/17/16 PAGE: 1 OF 9
 DATE SAMPLE TESTED: 10/17/16
 PREPARED FOR: RAB LIGHTING INC.
 CATALOG NUMBER: ALEDFC80Y/WPLEDFC80Y
 (0-DEGREE UPTILT - FULL 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
 40-DEGREES FROM VERTICAL BASE-UP
 POSITION.

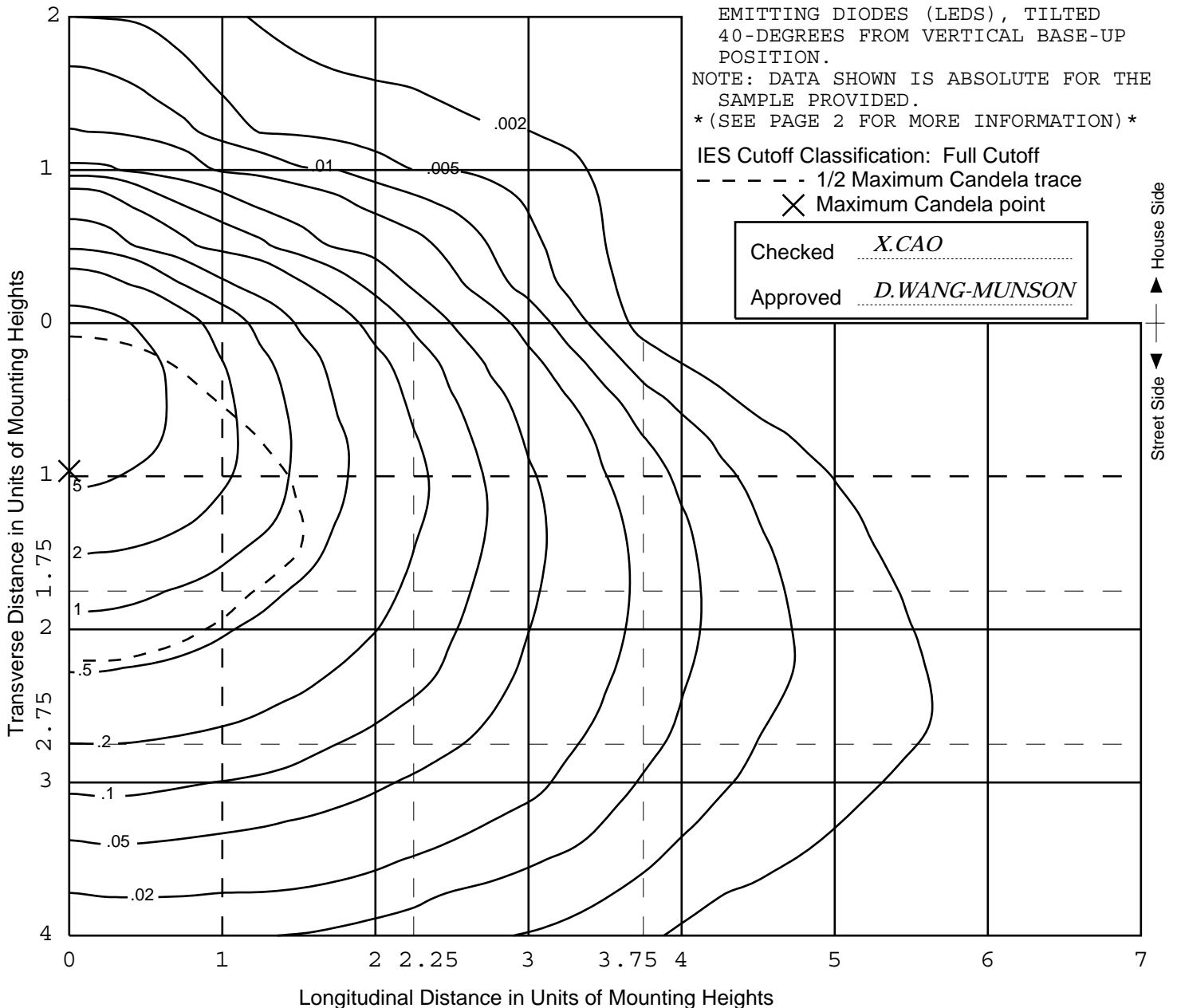
NOTE: DATA SHOWN IS ABSOLUTE FOR THE
 SAMPLE PROVIDED.

(SEE PAGE 2 FOR MORE INFORMATION)

IES Cutoff Classification: Full Cutoff

--- 1/2 Maximum Candela trace

X Maximum Candela point



REPORT NUMBER: RAB02588
ISSUE DATE: 10/17/16
PREPARED FOR: RAB LIGHTING INC.

PAGE: 2 OF 9
DATE SAMPLE TESTED: 10/17/16

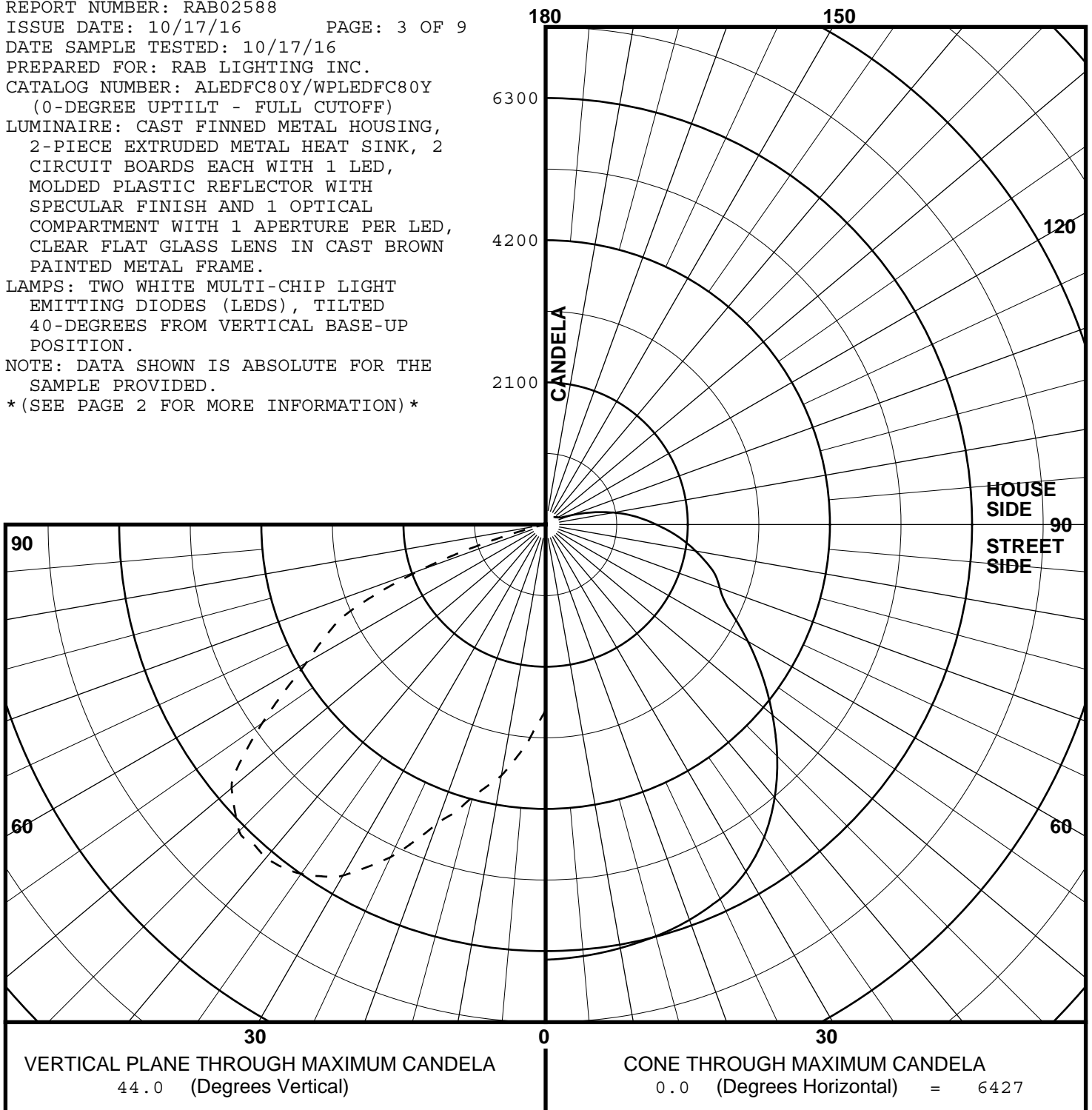
ADDITIONAL INFORMATION

TOTAL INPUT WATTS = 83.037 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: RAB02588
ISSUE DATE: 10/17/16 PAGE: 3 OF 9
DATE SAMPLE TESTED: 10/17/16
PREPARED FOR: RAB LIGHTING INC.
CATALOG NUMBER: ALEDFC80Y/WPLEDFC80Y
(0-DEGREE UPTILT - FULL 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
40-DEGREES FROM VERTICAL BASE-UP
POSITION.
NOTE: DATA SHOWN IS ABSOLUTE FOR THE
SAMPLE PROVIDED.
(SEE PAGE 2 FOR MORE INFORMATION)



REPORT NUMBER: RAB02588

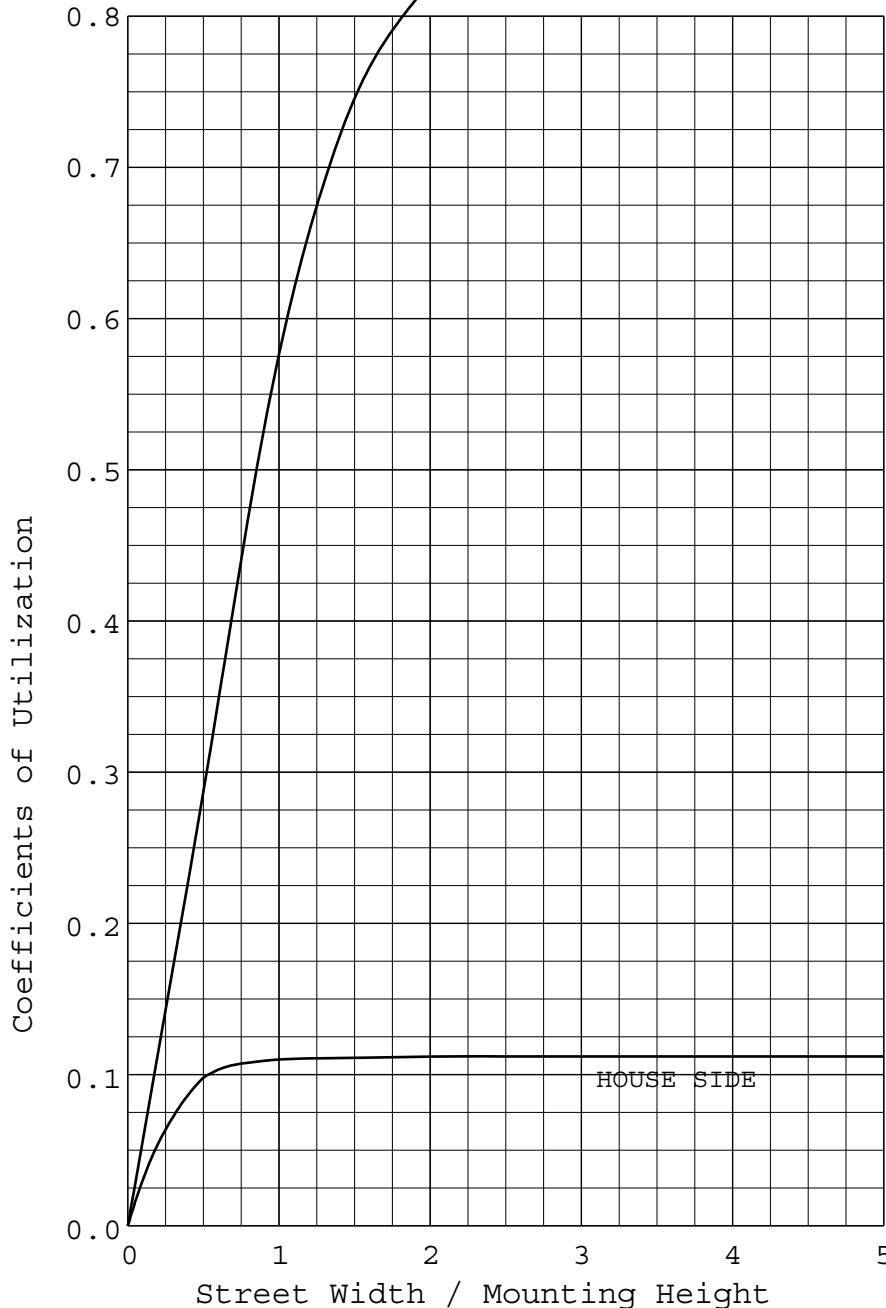
ISSUE DATE: 10/17/16

PREPARED FOR: RAB LIGHTING INC STREET SIDE

PAGE: 4 OF 9

DATE SAMPLE TESTED: 10/17/16

COEFFICIENTS OF UTILIZATION AND FLUX DISTRIBUTION



	LUMENS	PERCENT OF FIXTURE
DOWNWARD STREET SIDE	8169.	88.7
DOWNWARD HOUSE SIDE	1038.	11.3
DOWNWARD TOTAL	9207.	100.0
UPWARD STREET SIDE	0.	0.0
UPWARD HOUSE SIDE	0.	0.0
UPWARD TOTAL	0.	0.0
TOTAL FLUX	9207.	100.0

TOTAL INPUT WATTS = 83
EFFICACY = 110.9 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: RAB02588
 ISSUE DATE: 10/17/16
 PREPARED FOR: RAB LIGHTING INC.

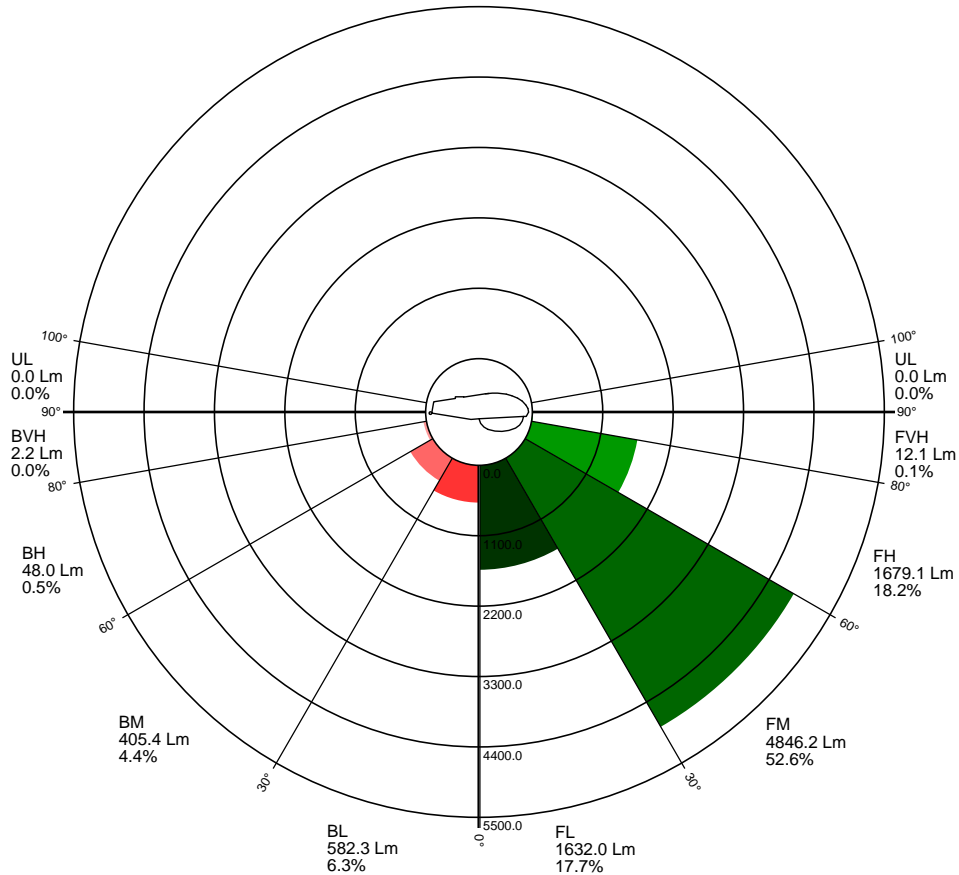
PAGE: 5 OF 9
 DATE SAMPLE TESTED: 10/17/16

BUG Rating:				B2 U0 G1		
Zonal Summary		Lumens	% of Fixture	Zone Ratings		
				B	U	G
Forward		8169	88.7			
FL	(0° - 30°)	1632.0	17.7			
FM	(30° - 60°)	4846.2	52.6			
FH	(60° - 80°)	1679.1	18.2			G1
FVH	(80° - 90°)	12.1	0.1			G1
Backward		1038	11.3			
BL	(0° - 30°)	582.3	6.3	B2		
BM	(30° - 60°)	405.4	4.4	B1		
BH	(60° - 80°)	48.0	0.5	B0		G0
BVH	(80° - 90°)	2.2	0.0			G0
Upward		0	0.0			
UL	(90° - 100°)	0.0	0.0		U0	
UH	(100° - 180°)	0.0	0.0		U0	
Trapped Light		0	0.0			
Total Flux		9207	100.0			

Zonal Lumen Summary

(Linear scale)

UH
0.0 Lm
0.0%

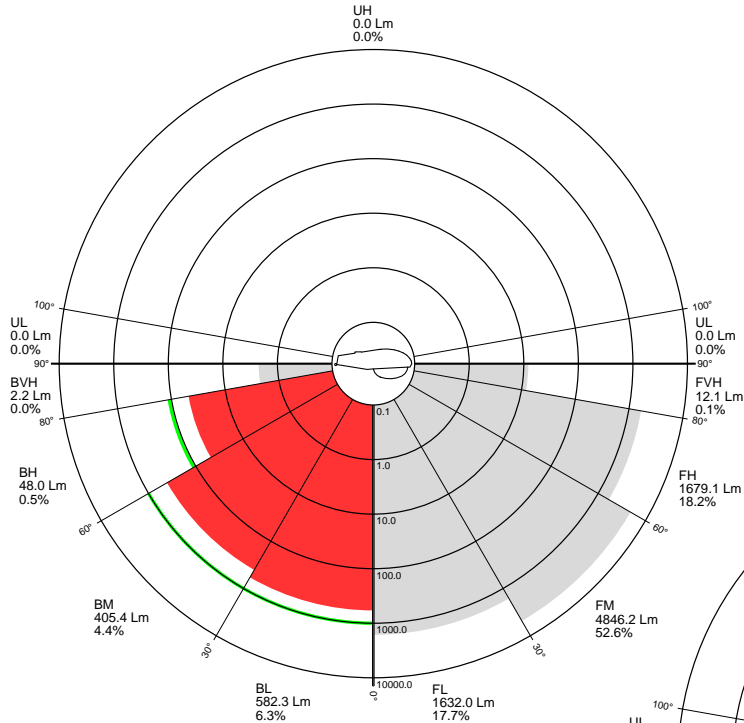


REPORT NUMBER: RAB02588
 ISSUE DATE: 10/17/16
 PREPARED FOR: RAB LIGHTING INC.

PAGE: 6 OF 9
 DATE SAMPLE TESTED: 10/17/16

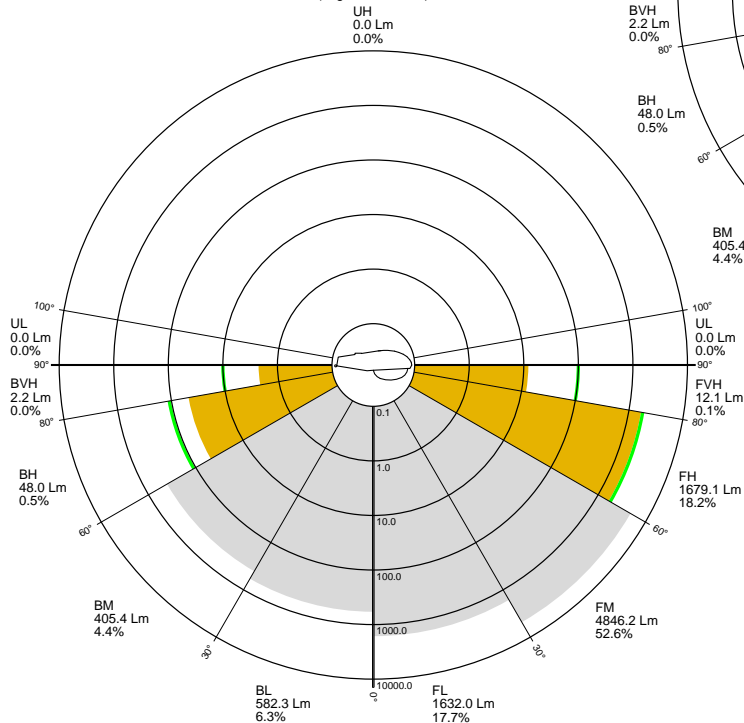
Backlight Rating Details

(Logarithmic scale)



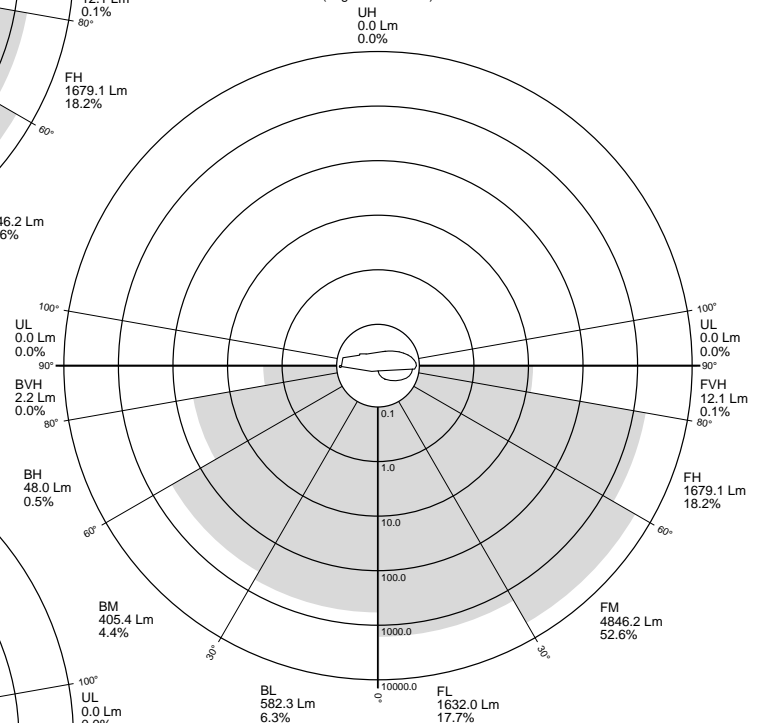
Glare Rating Details

(Logarithmic scale)



Uplight Rating Details

(Logarithmic scale)



REPORT NUMBER: RAB02588
 ISSUE DATE: 10/17/16
 PREPARED FOR: RAB LIGHTING INC.

PAGE: 7 OF 9
 DATE SAMPLE TESTED: 10/17/16

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	0.	0.	0.	0.	0.	0.	0.	0.	0.
	175.0	0.	0.	0.	0.	0.	0.	0.	0.	0.
	165.0	0.	0.	0.	0.	0.	0.	0.	0.	0.
	155.0	0.	0.	0.	0.	0.	0.	0.	0.	0.
	145.0	0.	0.	0.	0.	0.	0.	0.	0.	0.
	135.0	0.	0.	0.	0.	0.	0.	0.	0.	0.
	125.0	0.	0.	0.	0.	0.	0.	0.	0.	0.
	115.0	0.	0.	0.	0.	0.	0.	0.	0.	0.
	105.0	0.	0.	0.	0.	0.	0.	0.	0.	0.
	95.0	0.	0.	0.	0.	0.	0.	0.	0.	0.
	90.0	0.	0.	0.	0.	0.	0.	0.	0.	0.
	87.5	0.	0.	0.	0.	0.	0.	0.	0.	0.
	85.0	1.	1.	2.	4.	5.	7.	9.	12.	10. 10.
	82.5	15.	15.	15.	19.	20.	19.	30.	101.	52. 11.
V	80.0	36.	41.	44.	68.	70.	118.	208.	254.	112. 12.
E	77.5	124.	130.	134.	227.	369.	592.	542.	404.	223. 30.
R	75.0	428.	487.	569.	810.	1036.	1252.	1013.	697.	370. 90.
T	72.5	1131.	1219.	1322.	1592.	1750.	1882.	1448.	1126.	611. 241.
I	70.0	1984.	2045.	2129.	2312.	2395.	2280.	1898.	1560.	888. 440.
C	67.5	2760.	2809.	2862.	2930.	2798.	2695.	2310.	1871.	1139. 662.
A	65.0	3386.	3408.	3376.	3262.	3173.	3170.	2703.	2122.	1349. 857.
L	62.5	3728.	3749.	3684.	3635.	3617.	3651.	2984.	2322.	1530. 1049.
	60.0	4084.	4115.	4069.	4097.	4151.	4127.	3208.	2478.	1680. 1208.
A	57.5	4567.	4587.	4560.	4611.	4694.	4392.	3394.	2604.	1812. 1354.
N	55.0	5110.	5116.	5069.	5139.	5155.	4575.	3547.	2712.	1949. 1476.
G	52.5	5643.	5651.	5597.	5625.	5337.	4699.	3677.	2807.	2091. 1597.
L	50.0	6057.	6062.	5979.	5832.	5533.	4786.	3785.	2886.	2223. 1709.
E	47.5	6232.	6213.	6107.	6048.	5607.	4845.	3868.	2951.	2353. 1813.
	45.0	6406.	6387.	6293.	6094.	5631.	4848.	3911.	2991.	2485. 1913.
	44.0<<	6427.	6398.	6294.	6098.	5632.	4838.	3912.	3005.	2539. 1953.
	42.5	6396.	6384.	6305.	6091.	5612.	4825.	3905.	3043.	2623. 2019.
	40.0	6424.	6426.	6275.	6016.	5538.	4793.	3892.	3137.	2753. 2130.
	37.5	6382.	6380.	6208.	5890.	5461.	4728.	3855.	3229.	2873. 2247.
	35.0	6298.	6283.	6111.	5757.	5341.	4635.	3812.	3320.	2967. 2356.
	30.0	5986.	5967.	5751.	5410.	5015.	4394.	3868.	3469.	3070. 2530.
	25.0	5419.	5386.	5202.	4894.	4577.	4187.	3845.	3519.	3124. 2654.
	20.0	4707.	4694.	4593.	4449.	4250.	3971.	3744.	3471.	3126. 2732.
	15.0	4166.	4135.	4079.	4017.	3939.	3773.	3582.	3335.	3061. 2771.
	10.0	3763.	3773.	3774.	3700.	3623.	3454.	3320.	3143.	2961. 2776.
	5.0	3256.	3239.	3265.	3204.	3171.	3068.	3013.	2933.	2854. 2761.
	0.0	2741.	2741.	2741.	2741.	2741.	2741.	2741.	2741.	2741. 2741.
		PLANE OF MAXIMUM CANDELA								
		CONE OF MAXIMUM CANDELA								

REPORT NUMBER: RAB02588
 ISSUE DATE: 10/17/16
 PREPARED FOR: RAB LIGHTING INC.

PAGE: 8 OF 9
 DATE SAMPLE TESTED: 10/17/16

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	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
87.5	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
85.0	10.	10.	9.	9.	8.	7.	5.	4.	3.	2.	2.
82.5	11.	10.	10.	9.	8.	7.	5.	4.	3.	2.	2.
V 80.0	11.	11.	11.	11.	9.	7.	5.	4.	3.	2.	2.
E 77.5	12.	11.	16.	23.	10.	7.	6.	4.	3.	2.	2.
R 75.0	28.	25.	32.	25.	15.	8.	6.	5.	4.	3.	3.
T 72.5	126.	71.	61.	24.	18.	9.	7.	6.	7.	6.	6.
I 70.0	270.	132.	86.	26.	19.	12.	8.	8.	10.	9.	9.
C 67.5	426.	222.	112.	30.	18.	13.	11.	12.	14.	13.	13.
A 65.0	583.	349.	142.	49.	19.	14.	14.	16.	20.	20.	20.
L 62.5	743.	473.	166.	84.	23.	15.	16.	19.	23.	24.	24.
60.0	881.	602.	181.	110.	31.	16.	17.	22.	27.	28.	29.
A 57.5	1021.	729.	210.	133.	54.	23.	20.	24.	28.	30.	31.
N 55.0	1149.	855.	266.	154.	89.	34.	26.	27.	29.	31.	31.
G 52.5	1267.	977.	347.	174.	120.	56.	37.	31.	31.	32.	32.
L 50.0	1382.	1088.	445.	197.	143.	90.	50.	42.	38.	36.	36.
E 47.5	1492.	1188.	541.	210.	163.	123.	77.	54.	53.	52.	52.
45.0	1597.	1297.	644.	228.	182.	147.	115.	86.	72.	64.	64.
44.0<<	1637.	1341.	689.	243.	191.	158.	130.	106.	91.	77.	77.
42.5	1701.	1410.	762.	277.	213.	172.	153.	141.	127.	110.	111.
40.0	1819.	1528.	900.	377.	245.	206.	198.	199.	197.	184.	186.
37.5	1940.	1662.	1066.	513.	282.	256.	247.	253.	262.	259.	256.
35.0	2064.	1797.	1232.	679.	350.	319.	296.	306.	321.	324.	322.
30.0	2278.	2046.	1546.	1024.	626.	433.	417.	428.	423.	424.	423.
25.0	2441.	2244.	1824.	1390.	996.	718.	545.	496.	501.	508.	511.
20.0	2556.	2398.	2062.	1719.	1391.	1118.	917.	778.	707.	667.	667.
15.0	2636.	2515.	2262.	2020.	1774.	1567.	1387.	1248.	1160.	1120.	1126.
10.0	2684.	2605.	2449.	2288.	2140.	2001.	1879.	1797.	1734.	1691.	1706.
5.0	2714.	2679.	2610.	2543.	2483.	2407.	2343.	2306.	2287.	2240.	2272.
0.0	2741.	2741.	2741.	2741.	2741.	2741.	2741.	2741.	2741.	2741.	2741.

CONE OF MAXIMUM CANDELA

REPORT NUMBER: RAB02588
 ISSUE DATE: 10/17/16
 PREPARED FOR: RAB LIGHTING INC.

PAGE: 9 OF 9
 DATE SAMPLE TESTED: 10/17/16

5-DEGREE ZONAL LUMEN SUMMARY

0- 5	66
5- 10	196
10- 15	319
15- 20	433
20- 25	543
25- 30	658
30- 35	762
35- 40	846
40- 45	909
45- 50	947
50- 55	935
55- 60	853
60- 65	731
65- 70	571
70- 75	329
75- 80	95
80- 85	13
85- 90	1
90- 95	0
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	262
0- 20	1014
0- 30	2214
0- 40	3822
0- 50	5678
0- 60	7466
0- 70	8768
0- 80	9193
0- 90	9207
0-100	9207
0-110	9207
0-120	9207
0-130	9207
0-140	9207
0-150	9207
0-160	9207
0-170	9207
0-180	9207

REPORT NUMBER: RAB02590
DATE: 10/18/2016
PREPARED FOR: RAB LIGHTING INC.
CATALOG NUMBER: ALEDFC80Y/WPLEDFC80Y (0-DEGREE UPTILT - FULL CUTOFF)

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 40-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	10/18/17

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 X.CAO

Approved D.WANG-MUNSON
Lighting Engineer

REPORT NUMBER: RAB02590
 DATE: 10/18/2016
 PREPARED FOR: RAB LIGHTING INC.
 CATALOG NUMBER: ALEDFC80Y/WPLEDFC80Y (0-DEGREE UPTILT - FULL CUTOFF)

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RESULTS:

PHOTOMETRIC	
Total Integrated Flux (lumens)	9207 *
SPECTRORADIOMETRIC	
Observer	CIE 1931 2 degree
Chromaticity Ordinate x	0.4312
Chromaticity Ordinate y	0.4042
Observer	CIE 1976 2 degree
Chromaticity Ordinate u'	0.2469
Chromaticity Ordinate v'	0.5206
Correlated Color Temp CCT (K)	3099
ANSI C78.377-2008 Duv	0.001
Total Radiant Flux (milliWatts)	26090 *
ELECTRICAL	
Input Voltage (Volts AC)	120.0
Input Current (Amps AC)	0.695
Input Power (Watts)	83.0
Input Power Factor (%)	99.6
Input Current THD (%)	5.4
Input Voltage THD (%)	0.2
EFFICACY (Lumens/Watt)	
	110.9
ELECTRICAL AT MAX NONIMAL INPUT	
Input Voltage (Volts AC)	277.0
Input Current (Amps AC)	0.314
Input Power (Watts)	81.1
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)	71
R1 Light greyish red	67
R2 Dark greyish yellow	80
R3 Strong yellowish green	91
R4 Moderate yellowish green	67
R5 Light bluish green	66
R6 Light blue	72
R7 Light violet	79
R8 Light reddish purple	45
R9 Strong red	-33
R10 Strong yellow	53
R11 Strong green	60
R12 Strong blue	43
R13 Light yellowish pink (skin)	69
R14 Moderate olive green (leaf)	95

*NOTE:

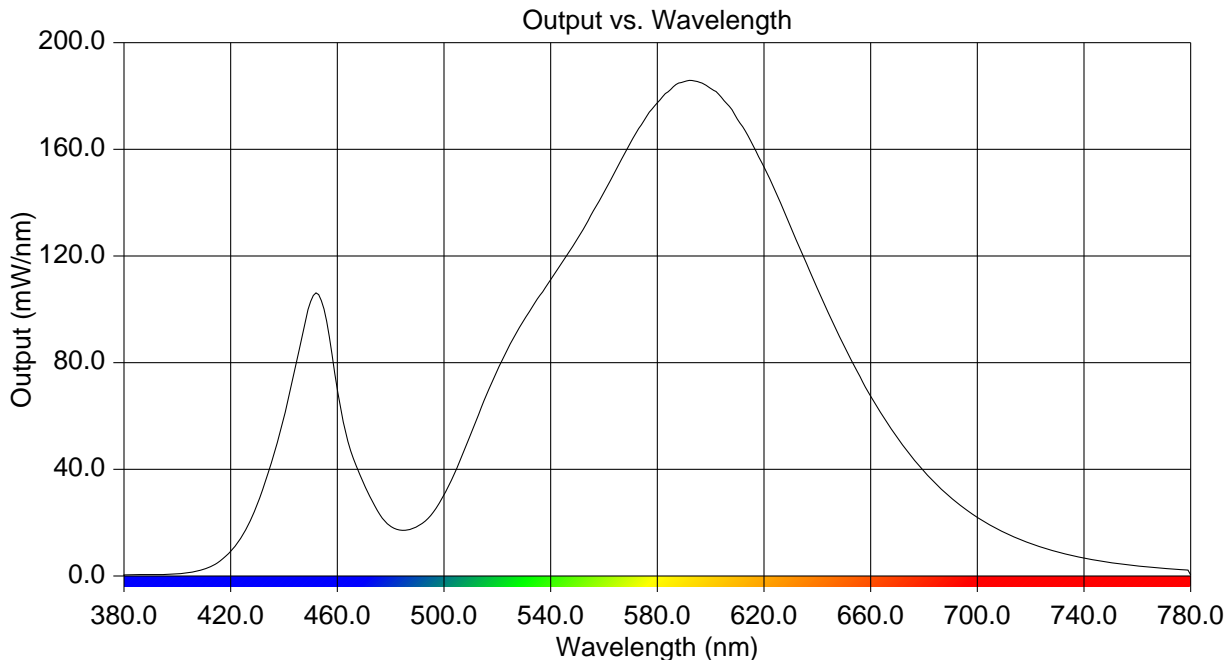
Proper calibration of integrating spheres for measuring total flux output of non-directional samples will produce reliable, repeatable results within the calibration tolerances of the equipment used. However, measurement of test samples with significant self absorption and/or directional output, even 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: RAB02590
 DATE: 10/18/2016
 PREPARED FOR: RAB LIGHTING INC.
 CATALOG NUMBER: ALEDFC80Y/WPLEDFC80Y (0-DEGREE UPTILT - FULL CUTOFF)

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RESULTS:

Wavelength	mW per nm	Wavelength	mW per nm	Wavelength	mW per nm
380	0.397	515	65.756	650	86.307
385	0.444	520	77.192	655	76.645
390	0.488	525	87.322	660	67.540
395	0.600	530	96.082	665	59.274
400	0.816	535	103.899	670	51.820
405	1.355	540	111.261	675	45.217
410	2.528	545	118.644	680	39.219
415	4.886	550	126.284	685	34.071
420	9.199	555	135.123	690	29.462
425	16.192	560	143.772	695	25.475
430	26.885	565	153.123	700	21.983
435	41.699	570	162.630	705	18.972
440	59.580	575	170.768	710	16.362
445	81.829	580	177.443	715	14.114
450	102.967	585	182.428	720	12.181
455	100.126	590	185.358	725	10.481
460	69.950	595	185.433	730	9.017
465	46.949	600	182.798	735	7.816
470	34.446	605	178.271	740	6.693
475	24.568	610	171.335	745	5.807
480	18.586	615	163.190	750	5.028
485	17.166	620	153.390	755	4.350
490	18.582	625	142.622	760	3.786
495	22.655	630	131.014	765	3.282
500	30.453	635	119.429	770	2.850
505	40.799	640	107.634	775	2.469
510	53.194	645	96.894	780	0.374



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CATALOG NUMBER: ALEDFC80Y/WPLEDFC80Y (0-DEGREE UPTILT - FULL CUTOFF)

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CIE Chromaticity Diagram

