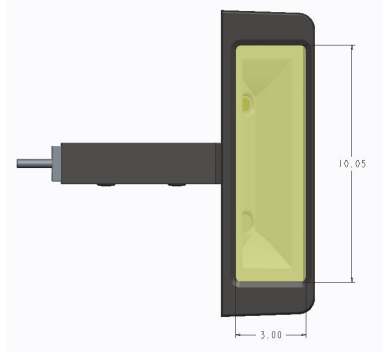


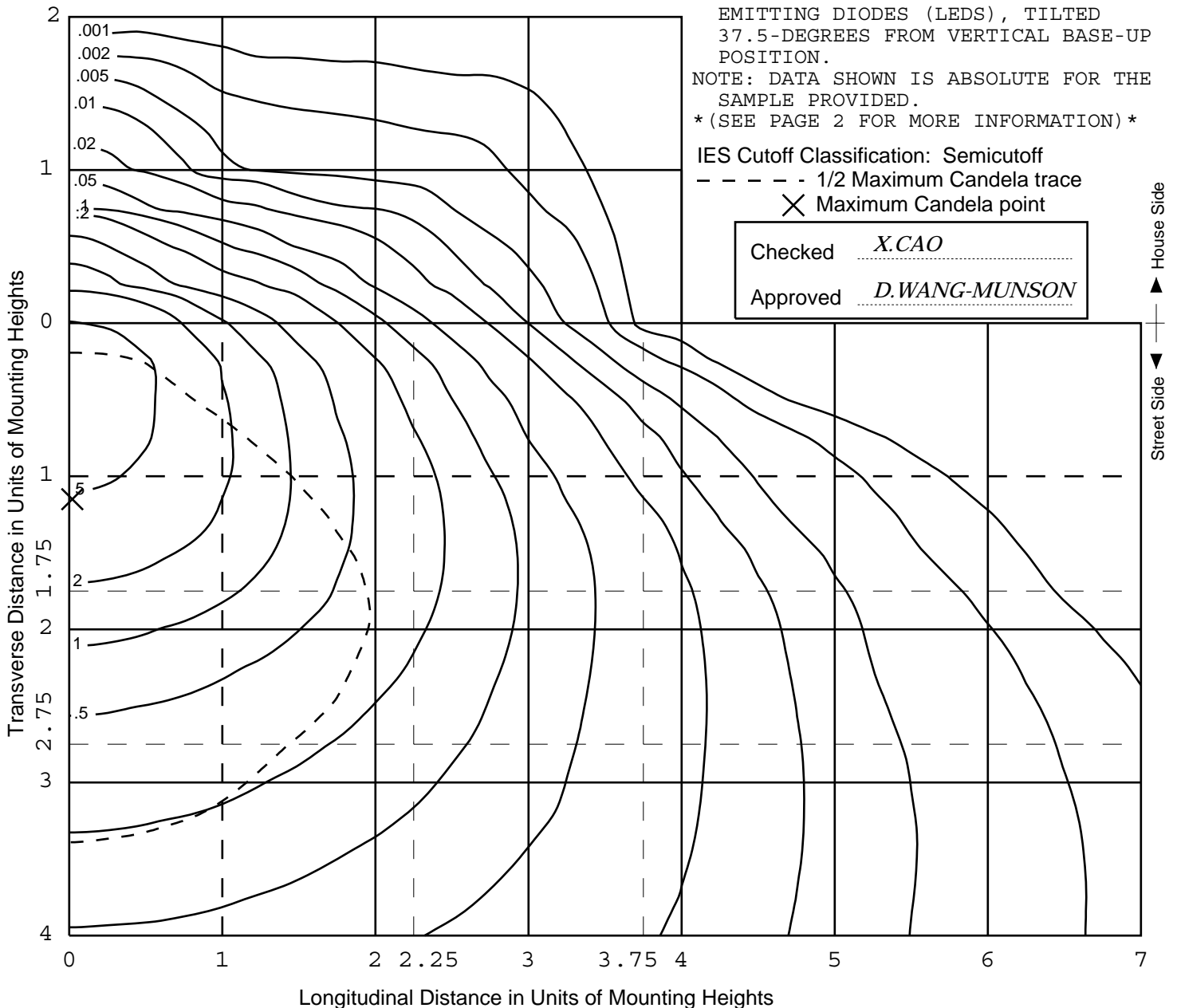
ISOFOOTCANDLE LINES OF HORIZONTAL ILLUMINATION

Values based on 20 foot mounting height.



REPORT NUMBER: RAB02596
 ISSUE DATE: 10/18/16 PAGE: 1 OF 9
 DATE SAMPLE TESTED: 10/18/16
 PREPARED FOR: RAB LIGHTING INC.
 CATALOG NUMBER: ALEDC80N / WPLEDC80N
 (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



REPORT NUMBER: RAB02596
ISSUE DATE: 10/18/16
PREPARED FOR: RAB LIGHTING INC.

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

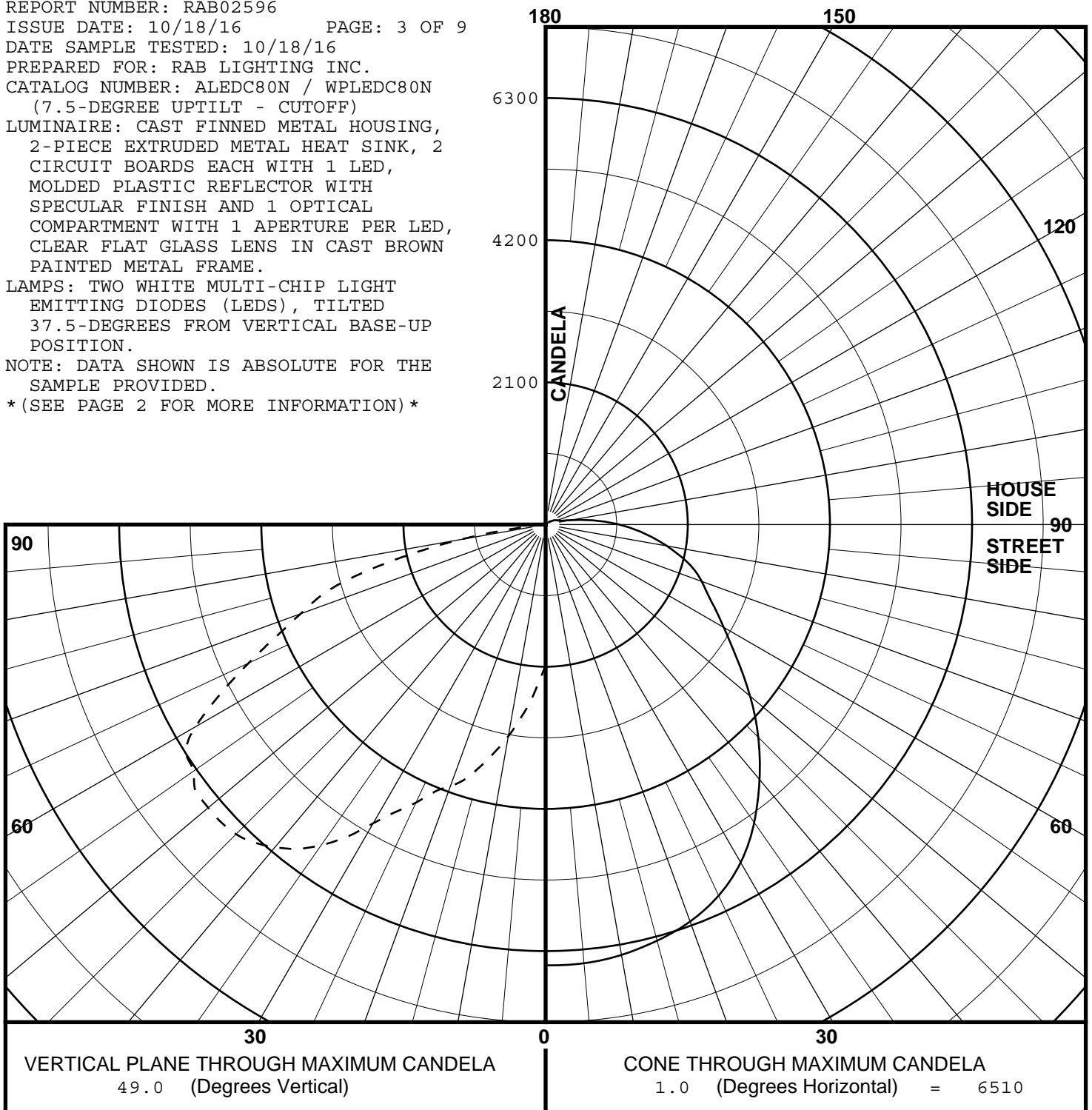
ADDITIONAL INFORMATION

TOTAL INPUT WATTS = 83.201 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.

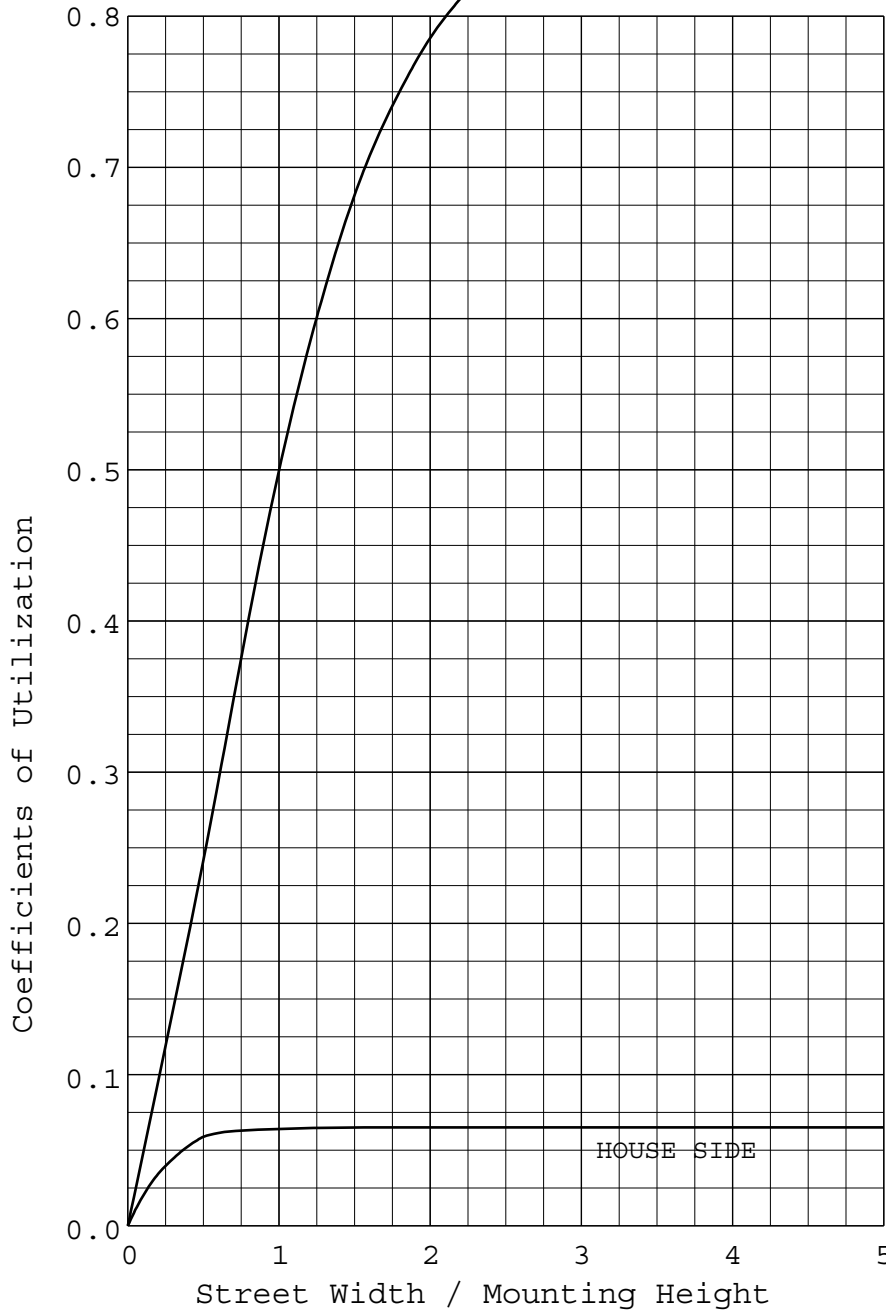
MAXIMUM PLANE AND MAXIMUM CONE PLOTS OF CANDELA

REPORT NUMBER: RAB02596
 ISSUE DATE: 10/18/16 PAGE: 3 OF 9
 DATE SAMPLE TESTED: 10/18/16
 PREPARED FOR: RAB LIGHTING INC.
 CATALOG NUMBER: ALEDC80N / WPLEDC80N
 (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)



REPORT NUMBER: RAB02596 STREET SIDE PAGE: 4 OF 9
 ISSUE DATE: 10/18/16 DATE SAMPLE TESTED: 10/18/16
 PREPARED FOR: RAB LIGHTING INC.

COEFFICIENTS OF UTILIZATION AND FLUX DISTRIBUTION



	LUMENS	PERCENT OF FIXTURE
DOWNWARD STREET SIDE	8950.	93.4
DOWNWARD HOUSE SIDE	633.	6.6
DOWNWARD TOTAL	9583.	100.0
UPWARD STREET SIDE	1.	0.0
UPWARD HOUSE SIDE	1.	0.0
UPWARD TOTAL	1.	0.0
TOTAL FLUX	9584.	100.0
TOTAL INPUT WATTS = 83.2		
EFFICACY = 115.2 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: RAB02596
 ISSUE DATE: 10/18/16
 PREPARED FOR: RAB LIGHTING INC.

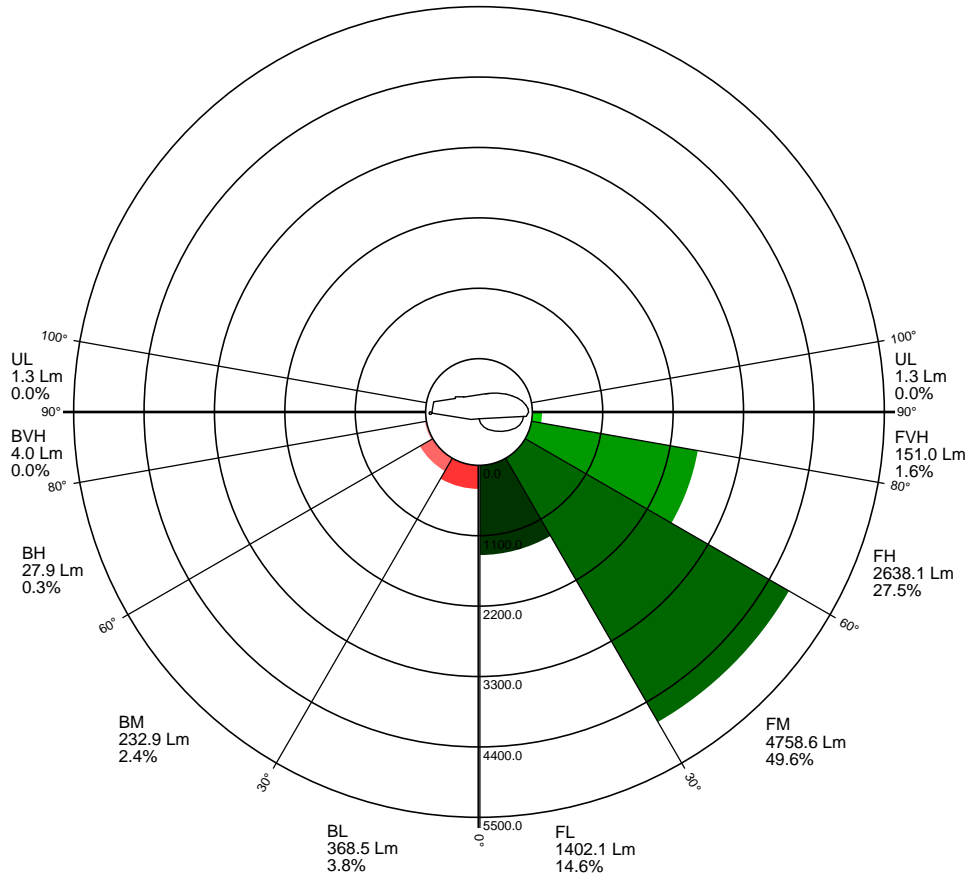
PAGE: 5 OF 9
 DATE SAMPLE TESTED: 10/18/16

BUG Rating:				B1 U1 G2		
Zonal Summary		Lumens	% of Fixture	Zone Ratings		
				B	U	G
Forward		8950	93.4			
FL	(0° - 30°)	1402.1	14.6			
FM	(30° - 60°)	4758.6	49.6			
FH	(60° - 80°)	2638.1	27.5			G2
FVH	(80° - 90°)	151.0	1.6			G2
Backward		633	6.6			
BL	(0° - 30°)	368.5	3.8	B1		
BM	(30° - 60°)	232.9	2.4	B1		
BH	(60° - 80°)	27.9	0.3	B0		G0
BVH	(80° - 90°)	4.0	0.0			G0
Upward		1	0.0			
UL	(90° - 100°)	1.3	0.0		U1	
UH	(100° - 180°)	0.0	0.0		U0	
Trapped Light		0	0.0			
Total Flux		9585	100.0			

Zonal Lumen Summary

(Linear scale)

UH
0.0 Lm
0.0%

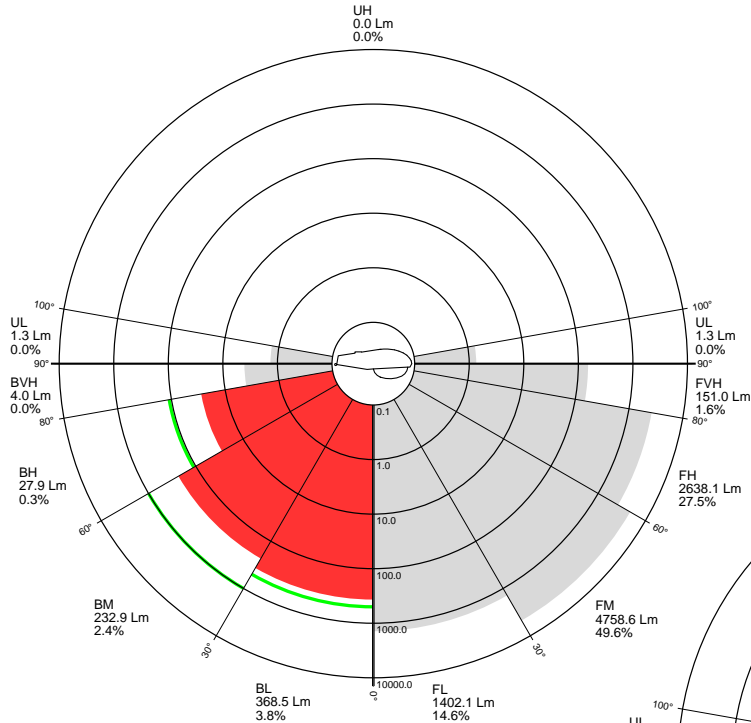


REPORT NUMBER: RAB02596
ISSUE DATE: 10/18/16
PREPARED FOR: RAB LIGHTING INC.

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DATE SAMPLE TESTED: 10/18/16

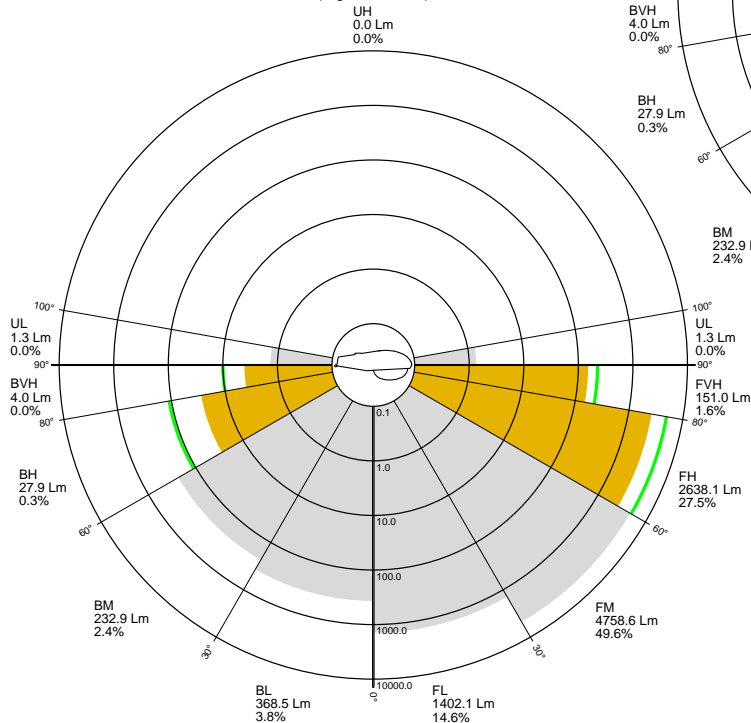
Backlight Rating Details

(Logarithmic scale)



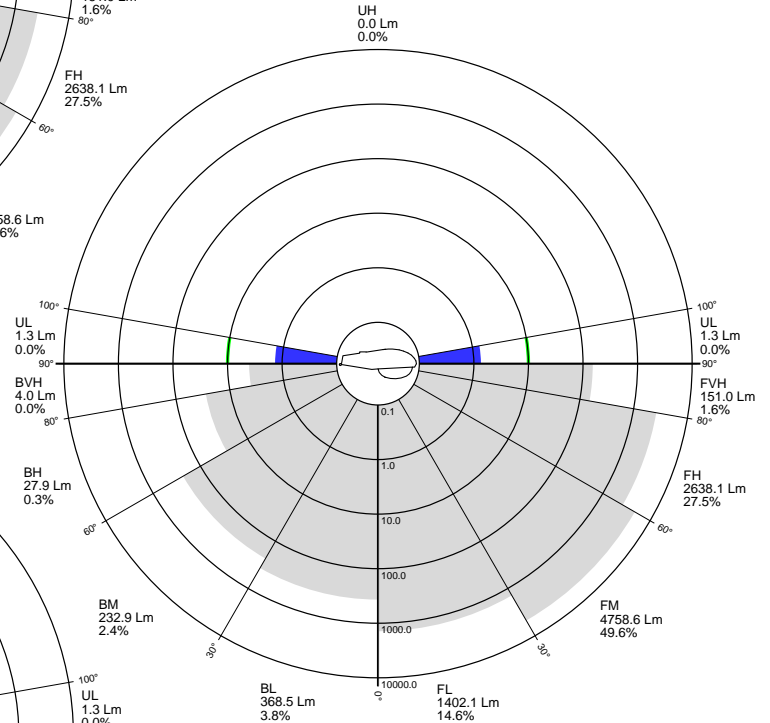
Glare Rating Details

(Logarithmic scale)



Uplight Rating Details

(Logarithmic scale)



PAGE: 7 OF 9
DATE SAMPLE TESTED: 10/18/16

LATERAL ANGLE

	0.0	1.0	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	15.	14.	15.	14.	12.	10.	9.	9.	9.	10.	11.
87.5	47.	44.	48.	50.	48.	41.	22.	21.	31.	11.	11.
85.0	131.	128.	133.	138.	164.	196.	185.	184.	141.	39.	11.
82.5	552.	538.	564.	619.	700.	796.	703.	464.	284.	84.	11.
V 80.0	1307.	1288.	1314.	1374.	1457.	1517.	1375.	882.	443.	164.	12.
E 77.5	2144.	2084.	2142.	2171.	2200.	2203.	1957.	1312.	800.	265.	22.
R 75.0	2920.	2871.	2915.	2897.	2811.	2697.	2359.	1801.	1211.	452.	80.
T 72.5	3497.	3470.	3484.	3408.	3223.	3092.	2808.	2263.	1521.	684.	214.
I 70.0	3875.	3850.	3845.	3782.	3652.	3591.	3291.	2638.	1793.	909.	396.
C 67.5	4333.	4298.	4328.	4253.	4158.	4169.	3751.	2854.	2007.	1110.	571.
A 65.0	4886.	4842.	4845.	4802.	4720.	4742.	4047.	3036.	2167.	1290.	740.
L 62.5	5469.	5420.	5419.	5374.	5287.	5139.	4251.	3189.	2285.	1493.	893.
60.0	6016.	5974.	5964.	5886.	5700.	5290.	4385.	3305.	2371.	1677.	1026.
A 57.5	6305.	6295.	6274.	6103.	5861.	5426.	4458.	3376.	2435.	1828.	1134.
N 55.0	6363.	6351.	6339.	6248.	6043.	5456.	4491.	3425.	2488.	1950.	1235.
G 52.5	6506.	6503.	6478.	6347.	6090.	5459.	4489.	3454.	2556.	2061.	1333.
L 50.0	6508.	6508.	6498.	6369.	6073.	5404.	4465.	3454.	2663.	2148.	1422.
E 49.0<<	6508.	6510.	6505.	6363.	6047.	5372.	4443.	3449.	2707.	2176.	1456.
47.5	6505.	6505.	6506.	6345.	5992.	5321.	4406.	3433.	2780.	2215.	1506.
45.0	6466.	6467.	6463.	6256.	5851.	5216.	4310.	3402.	2916.	2279.	1583.
42.5	6364.	6371.	6351.	6123.	5672.	5076.	4198.	3434.	3031.	2356.	1660.
40.0	6215.	6221.	6183.	5955.	5492.	4899.	4075.	3488.	3118.	2435.	1750.
37.5	6026.	6037.	5985.	5736.	5281.	4740.	4027.	3557.	3174.	2498.	1842.
35.0	5765.	5780.	5720.	5475.	5075.	4563.	4040.	3619.	3192.	2555.	1925.
30.0	5114.	5096.	5075.	4881.	4614.	4343.	3978.	3646.	3155.	2614.	2059.
25.0	4540.	4530.	4527.	4419.	4268.	4092.	3847.	3505.	3051.	2611.	2134.
20.0	4116.	4111.	4118.	4104.	4018.	3850.	3577.	3266.	2922.	2562.	2167.
15.0	3702.	3690.	3718.	3705.	3608.	3431.	3228.	2999.	2754.	2480.	2171.
10.0	3175.	3176.	3198.	3202.	3121.	2988.	2870.	2726.	2566.	2361.	2154.
5.0	2615.	2633.	2642.	2655.	2610.	2525.	2481.	2400.	2313.	2223.	2110.
0.0	2069.	2069.	2069.	2069.	2069.	2069.	2069.	2069.	2069.	2069.	2069.

PLANE OF MAXIMUM CANDELA

CONE OF MAXIMUM CANDELA

REPORT NUMBER: RAB02596
 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.	6.	6.	6.
87.5	11.	11.	11.	10.	9.	8.	7.	6.	5.	5.	5.
85.0	11.	11.	10.	10.	9.	8.	7.	5.	4.	3.	3.
82.5	11.	10.	10.	9.	8.	7.	6.	5.	3.	2.	2.
V 80.0	10.	10.	10.	9.	8.	7.	5.	4.	2.	1.	0.
E 77.5	11.	10.	12.	10.	7.	6.	5.	3.	2.	0.	0.
R 75.0	15.	11.	17.	15.	8.	5.	4.	3.	1.	0.	0.
T 72.5	86.	60.	25.	22.	9.	5.	4.	2.	1.	0.	0.
I 70.0	190.	96.	38.	22.	11.	6.	4.	2.	0.	0.	0.
C 67.5	308.	132.	65.	20.	13.	7.	4.	3.	1.	0.	0.
A 65.0	436.	189.	90.	20.	13.	8.	5.	4.	2.	0.	0.
L 62.5	559.	268.	114.	25.	13.	9.	6.	5.	4.	2.	2.
60.0	676.	344.	139.	35.	12.	10.	8.	8.	8.	7.	7.
A 57.5	777.	420.	160.	60.	14.	11.	11.	13.	15.	15.	14.
N 55.0	875.	504.	176.	92.	21.	12.	14.	17.	20.	20.	20.
G 52.5	969.	586.	195.	120.	32.	15.	16.	21.	25.	25.	25.
L 50.0	1057.	670.	211.	143.	58.	24.	20.	23.	27.	29.	29.
E 49.0<<	1091.	704.	216.	152.	71.	30.	22.	24.	28.	29.	30.
47.5	1139.	754.	228.	164.	93.	37.	24.	25.	28.	30.	30.
45.0	1210.	830.	258.	179.	129.	59.	37.	29.	29.	31.	31.
42.5	1283.	903.	305.	194.	153.	92.	49.	41.	33.	33.	33.
40.0	1371.	990.	374.	223.	173.	130.	80.	56.	52.	49.	48.
37.5	1468.	1095.	464.	247.	195.	162.	127.	93.	71.	64.	63.
35.0	1565.	1205.	580.	284.	228.	201.	186.	157.	132.	110.	111.
30.0	1746.	1431.	842.	426.	346.	300.	292.	287.	283.	277.	278.
25.0	1871.	1610.	1097.	679.	461.	426.	397.	395.	403.	401.	404.
20.0	1955.	1745.	1331.	974.	691.	533.	498.	499.	500.	491.	484.
15.0	2011.	1850.	1547.	1263.	1011.	828.	704.	617.	582.	577.	570.
10.0	2043.	1938.	1741.	1556.	1371.	1241.	1107.	1037.	967.	959.	944.
5.0	2054.	2004.	1910.	1831.	1742.	1670.	1599.	1566.	1510.	1517.	1503.
0.0	2069.	2069.	2069.	2069.	2069.	2069.	2069.	2069.	2069.	2069.	2069.

CONE OF MAXIMUM CANDELA

REPORT NUMBER: RAB02596
 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	50
5- 10	148
10- 15	244
15- 20	343
20- 25	444
25- 30	543
30- 35	640
35- 40	730
40- 45	817
45- 50	895
50- 55	948
55- 60	963
60- 65	907
65- 70	770
70- 75	602
75- 80	387
80- 85	139
85- 90	16
90- 95	1
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	197
0- 20	784
0- 30	1771
0- 40	3141
0- 50	4852
0- 60	6762
0- 70	8440
0- 80	9428
0- 90	9583
0-100	9584
0-110	9584
0-120	9584
0-130	9584
0-140	9584
0-150	9584
0-160	9584
0-170	9584
0-180	9584

REPORT NUMBER: RAB02591
DATE: 10/17/2016
PREPARED FOR: RAB LIGHTING INC.
CATALOG NUMBER: ALED80N / WPLEDC80N (7.5-DEGREE UPTILT - 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
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: N/A
	CHROMA PROGRAMMABLE DIGITAL POWER METER MODEL 66202	2/26/17
	OCEAN OPTICS QE65PRO Spectroradiometer	9/16/17
	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 X.CAO

Approved D.WANG-MUNSON
Lighting Engineer

REPORT NUMBER: RAB02591
 DATE: 10/17/2016
 PREPARED FOR: RAB LIGHTING INC.
 CATALOG NUMBER: ALED80N / WPLED80N (7.5-DEGREE UPTILT - CUTOFF)

Page 2 of 4

RESULTS:

PHOTOMETRIC	
Total Integrated Flux (lumens)	9584 *
SPECTRORADIOMETRIC	
Observer	CIE 1931 2 degree
Chromaticity Ordinate x	0.3821
Chromaticity Ordinate y	0.3828
Observer	CIE 1976 2 degree
Chromaticity Ordinate u'	0.2238
Chromaticity Ordinate v'	0.5044
Correlated Color Temp CCT (K)	4000
ANSI C78.377-2008 Duv	0.002
Total Radiant Flux (milliWatts)	27572 *
ELECTRICAL	
Input Voltage (Volts AC)	120.0
Input Current (Amps AC)	0.696
Input Power (Watts)	83.2
Input Power Factor (%)	99.6
Input Current THD (%)	5.5
Input Voltage THD (%)	0.2
EFFICACY (Lumens/Watt)	
	115.2
ELECTRICAL AT MAX NONIMAL INPUT	
Input Voltage (Volts AC)	277.0
Input Current (Amps AC)	0.315
Input Power (Watts)	81.2
Input Power Factor (%)	93.1
Input Current THD (%)	11.9
Input Voltage THD (%)	0.2
Off-State Power (Watts)	0.0

COLOR RENDERING INDICES	CRI
Ra (Average 1-8)	72
R1 Light greyish red	69
R2 Dark greyish yellow	78
R3 Strong yellowish green	84
R4 Moderate yellowish green	71
R5 Light bluish green	68
R6 Light blue	69
R7 Light violet	81
R8 Light reddish purple	53
R9 Strong red	-29
R10 Strong yellow	47
R11 Strong green	66
R12 Strong blue	41
R13 Light yellowish pink (skin)	70
R14 Moderate olive green (leaf)	91

*NOTE:

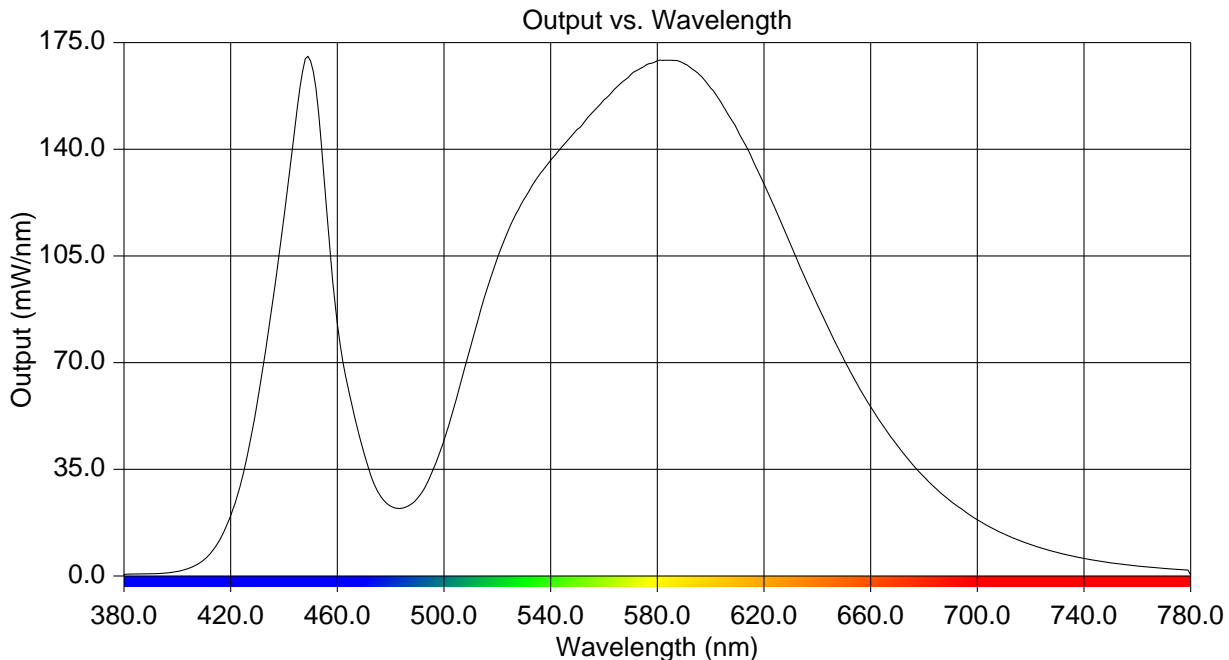
Proper calibration of integrating spheres for measuring total flux output of non-directional samples will produce reliable, repeatable results within the calibration tolerances of the equipment used. However, measurement of test samples with significant self absorption and/or directional output, even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

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 DATE: 10/17/2016
 PREPARED FOR: RAB LIGHTING INC.
 CATALOG NUMBER: ALED80N / WPLED80N (7.5-DEGREE UPTILT - CUTOFF)

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RESULTS:

Wavelength	mW per nm	Wavelength	mW per nm	Wavelength	mW per nm
380	0.517	515	91.035	650	71.085
385	0.615	520	104.271	655	62.877
390	0.692	525	115.305	660	55.534
395	0.952	530	123.626	665	48.781
400	1.483	535	130.689	670	42.854
405	2.703	540	136.439	675	37.337
410	5.354	545	141.671	680	32.512
415	10.525	550	146.580	685	28.270
420	19.745	555	151.485	690	24.544
425	34.658	560	156.264	695	21.425
430	57.053	565	160.720	700	18.376
435	85.383	570	164.484	705	15.909
440	117.396	575	167.170	710	13.816
445	153.761	580	169.101	715	11.942
450	168.912	585	169.209	720	10.293
455	130.807	590	168.118	725	8.935
460	82.914	595	165.173	730	7.683
465	57.916	600	160.120	735	6.651
470	40.344	605	153.876	740	5.755
475	27.935	610	146.405	745	5.013
480	22.933	615	138.063	750	4.344
485	22.368	620	128.850	755	3.758
490	25.473	625	118.913	760	3.288
495	32.871	630	108.774	765	2.846
500	44.598	635	98.582	770	2.474
505	59.338	640	89.017	775	2.159
510	75.281	645	79.763	780	0.329



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CIE Chromaticity Diagram

