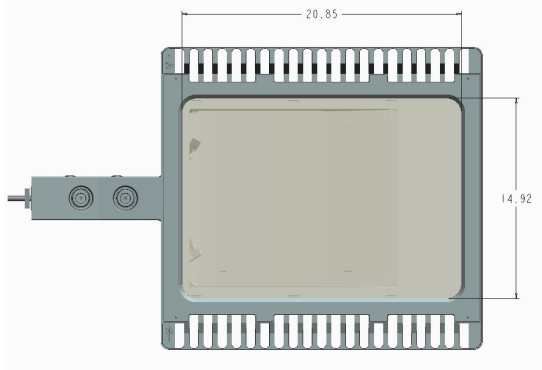


## ISOFOOTCANDLE LINES OF HORIZONTAL ILLUMINATION

Values based on 35 foot mounting height.



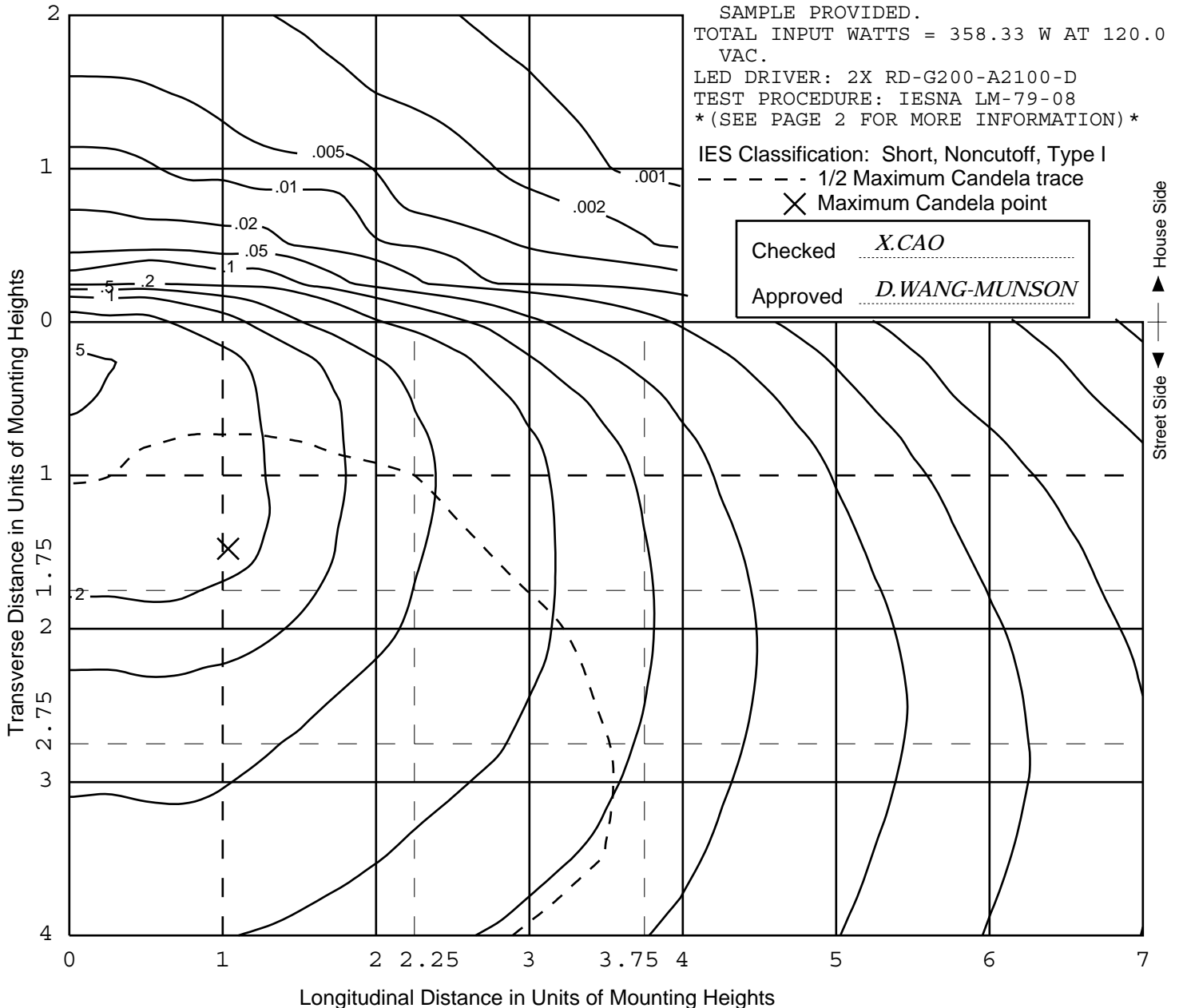
REPORT NUMBER: RAB01827  
 ISSUE DATE: 04/07/16 PAGE: 1 OF 9  
 DATE SAMPLE TESTED: 04/07/16  
 PREPARED FOR: RAB LIGHTING INC.  
 CATALOG NUMBER: ALED4T360Y/D10 -  
 ALED4T360SFY/D10 - WPLED4T360Y/D10 -  
 WPLED4T360YFX/D10 (TYPE IV)  
 LUMINAIRE: CAST FINNED METAL HOUSING, 4  
 CHIP ON BOARD LIGHT EMITTING DIODES,  
 MOLDED PLASTIC REFLECTOR WITH  
 SPECULAR FINISH, CLEAR GLASS LENS IN  
 CAST BRONZE PAINTED METAL FRAME.  
 LAMPS: FOUR WHITE LIGHT EMITTING DIODES  
 (LEDs)

NOTE: DATA SHOWN IS ABSOLUTE FOR THE  
 SAMPLE PROVIDED.  
 TOTAL INPUT WATTS = 358.33 W AT 120.0  
 VAC.

LED DRIVER: 2X RD-G200-A2100-D  
 TEST PROCEDURE: IESNA LM-79-08  
 \*(SEE PAGE 2 FOR MORE INFORMATION)\*

IES Classification: Short, Noncutoff, Type I

--- 1/2 Maximum Candela trace  
 X Maximum Candela point



REPORT NUMBER: RAB01827  
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PREPARED FOR: RAB LIGHTING INC.

PAGE: 2 OF 9  
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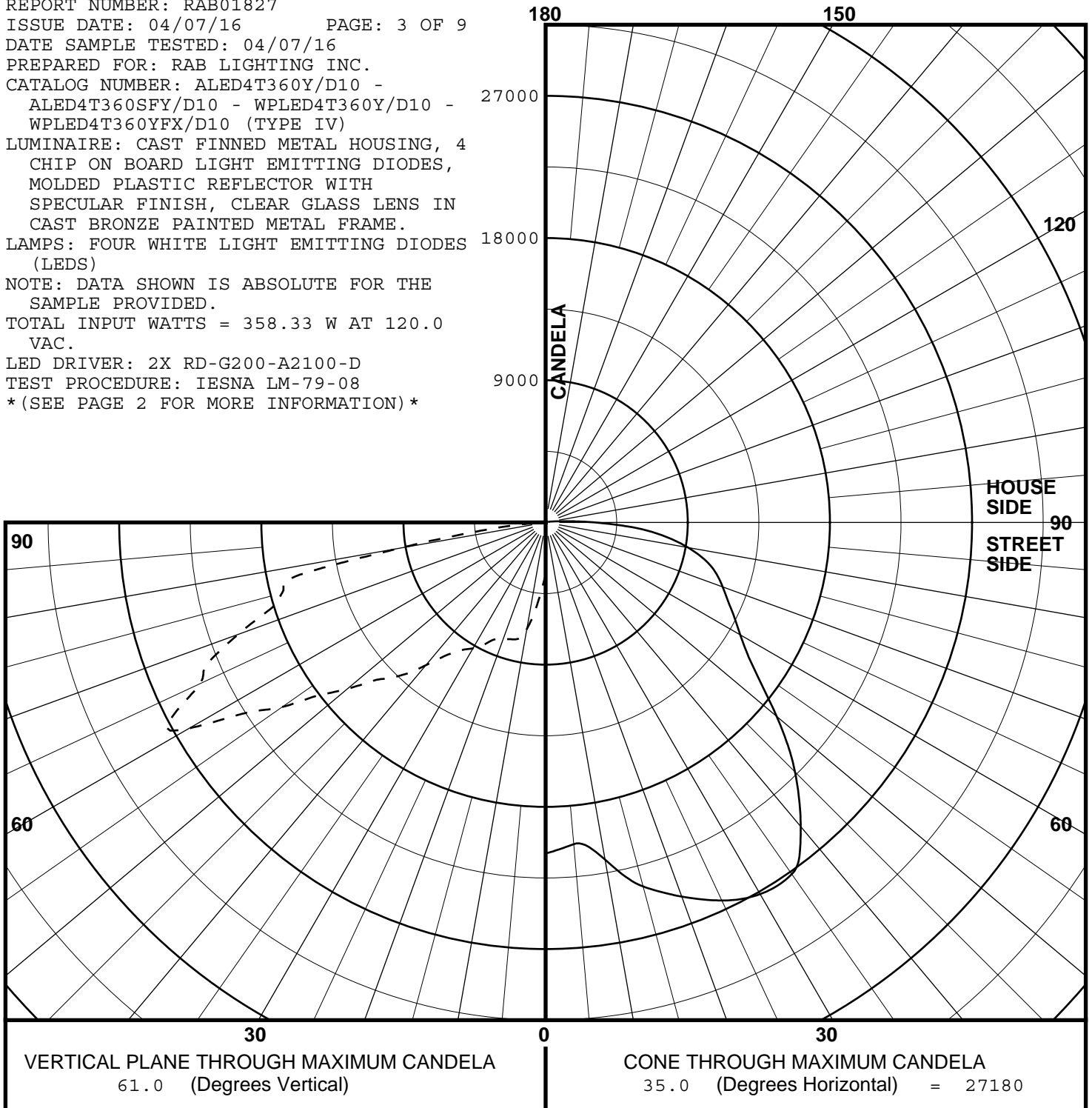
ADDITIONAL INFORMATION

ACCREDITED LABORATORY CODE 201058-0  
TEST DISTANCE : 28.25 FEET

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: RAB01827  
ISSUE DATE: 04/07/16 PAGE: 3 OF 9  
DATE SAMPLE TESTED: 04/07/16  
PREPARED FOR: RAB LIGHTING INC.  
CATALOG NUMBER: ALED4T360Y/D10 -  
ALED4T360SFY/D10 - WPLED4T360Y/D10 -  
WPLED4T360YFX/D10 (TYPE IV)  
LUMINAIRE: CAST FINNED METAL HOUSING, 4  
CHIP ON BOARD LIGHT EMITTING DIODES,  
MOLDED PLASTIC REFLECTOR WITH  
SPECULAR FINISH, CLEAR GLASS LENS IN  
CAST BRONZE PAINTED METAL FRAME.  
LAMPS: FOUR WHITE LIGHT EMITTING DIODES (LEDs)  
NOTE: DATA SHOWN IS ABSOLUTE FOR THE  
SAMPLE PROVIDED.  
TOTAL INPUT WATTS = 358.33 W AT 120.0  
VAC.  
LED DRIVER: 2X RD-G200-A2100-D  
TEST PROCEDURE: IESNA LM-79-08  
\*(SEE PAGE 2 FOR MORE INFORMATION)\*

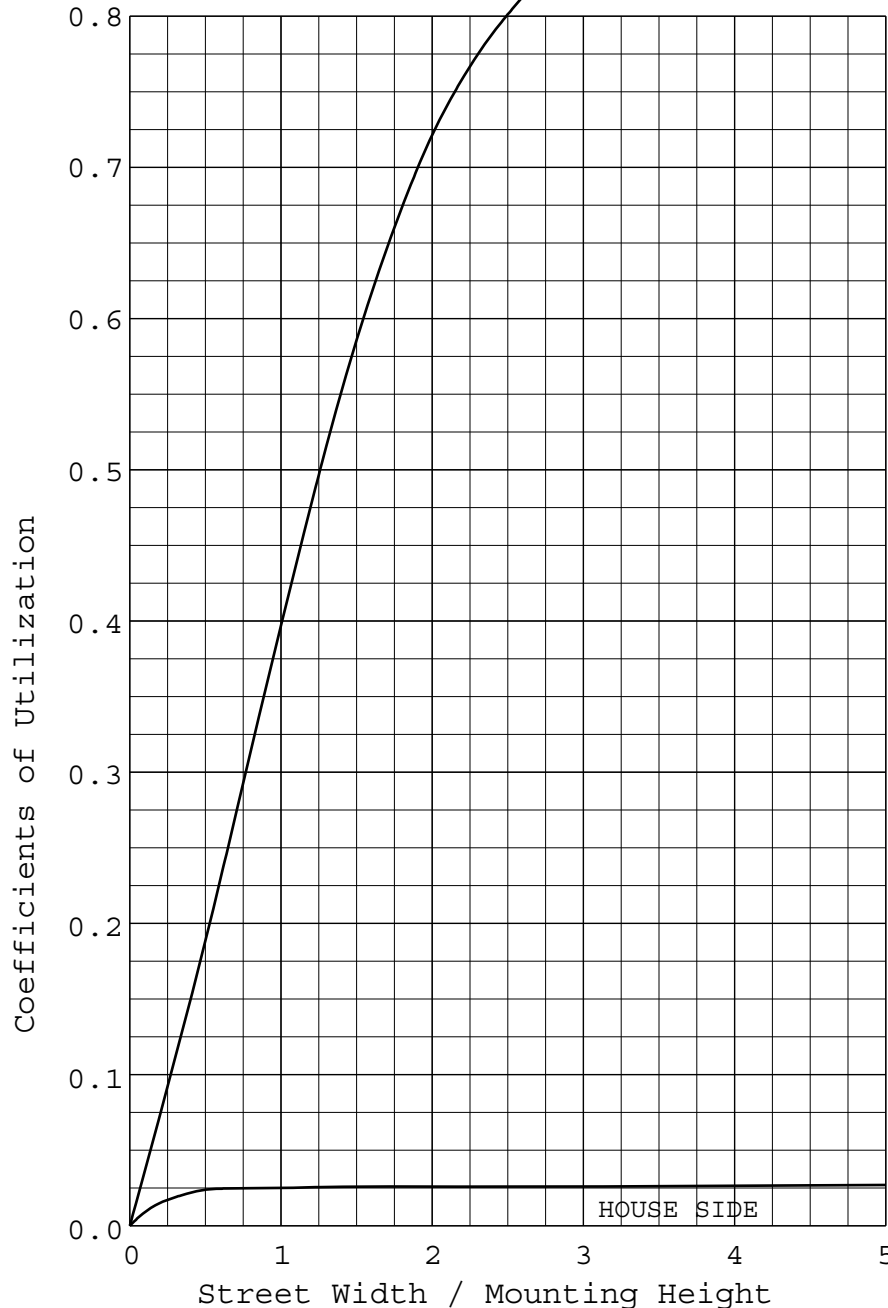


STREET SIDE

REPORT NUMBER: RAB01827  
ISSUE DATE: 04/07/16  
PREPARED FOR: RAB LIGHTING INC.

PAGE: 4 OF 9  
DATE SAMPLE TESTED: 04/07/16

COEFFICIENTS OF UTILIZATION AND FLUX DISTRIBUTION



	LUMENS	PERCENT OF FIXTURE
DOWNWARD STREET SIDE	34801.	97.2
DOWNWARD HOUSE SIDE	985.	2.8
DOWNWARD TOTAL	35786.	100.0
UPWARD STREET SIDE	0.	0.0
UPWARD HOUSE SIDE	0.	0.0
UPWARD TOTAL	0.	0.0
TOTAL FLUX	35786.	100.0
TOTAL INPUT WATTS = 358.3		
EFFICACY = 99.9 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: RAB01827  
 ISSUE DATE: 04/07/16  
 PREPARED FOR: RAB LIGHTING INC.

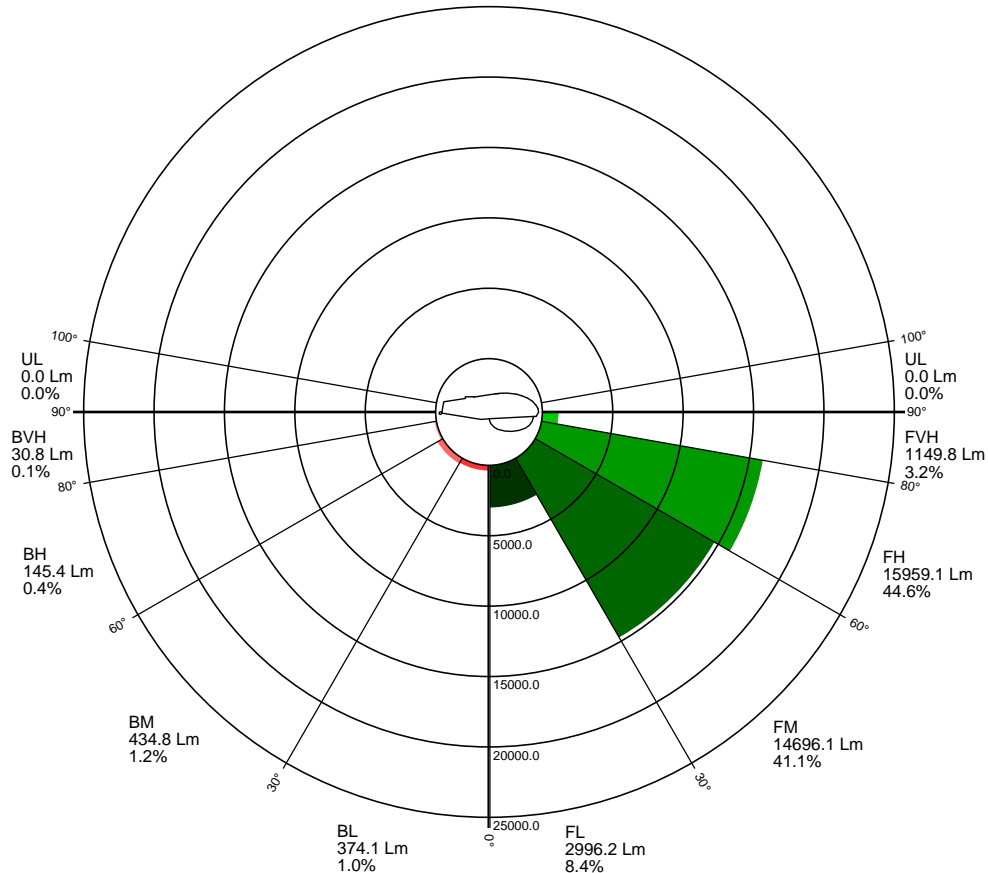
PAGE: 5 OF 9  
 DATE SAMPLE TESTED: 04/07/16

BUG Rating:				B1	U0	G5
Zonal Summary				Zone Ratings		
		Lumens	% of Fixture	B	U	G
Forward		34801	97.2			
FL	(0° - 30°)	2996.2	8.4			
FM	(30° - 60°)	14696.1	41.1			
FH	(60° - 80°)	15959.1	44.6			G5
FVH	(80° - 90°)	1149.8	3.2			G5
Backward		985	2.8			
BL	(0° - 30°)	374.1	1.0	B1		
BM	(30° - 60°)	434.8	1.2	B1		
BH	(60° - 80°)	145.4	0.4	B1		G1
BVH	(80° - 90°)	30.8	0.1			G1
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		35787	100.0			

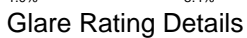
### Zonal Lumen Summary

(Linear scale)

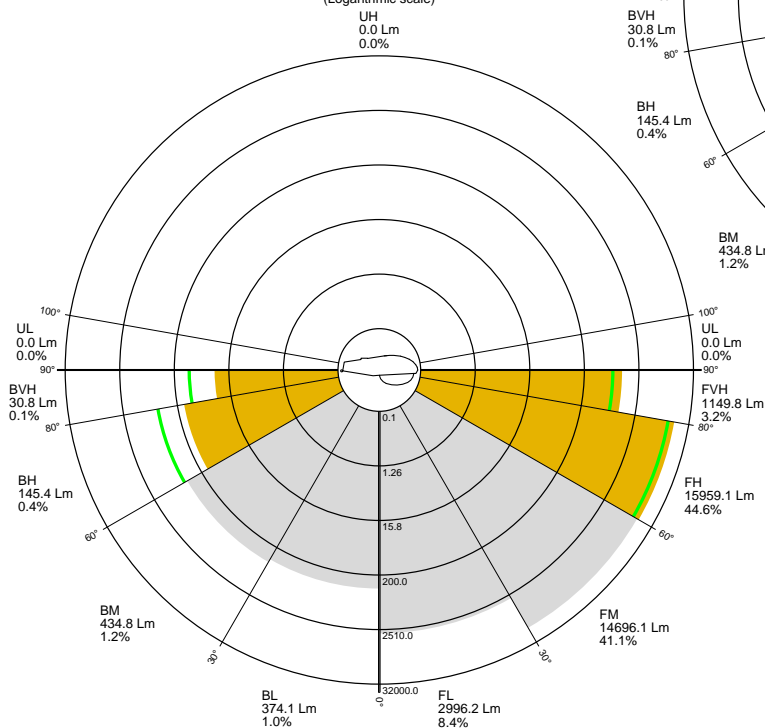
UH  
0.0 Lm  
0.0%



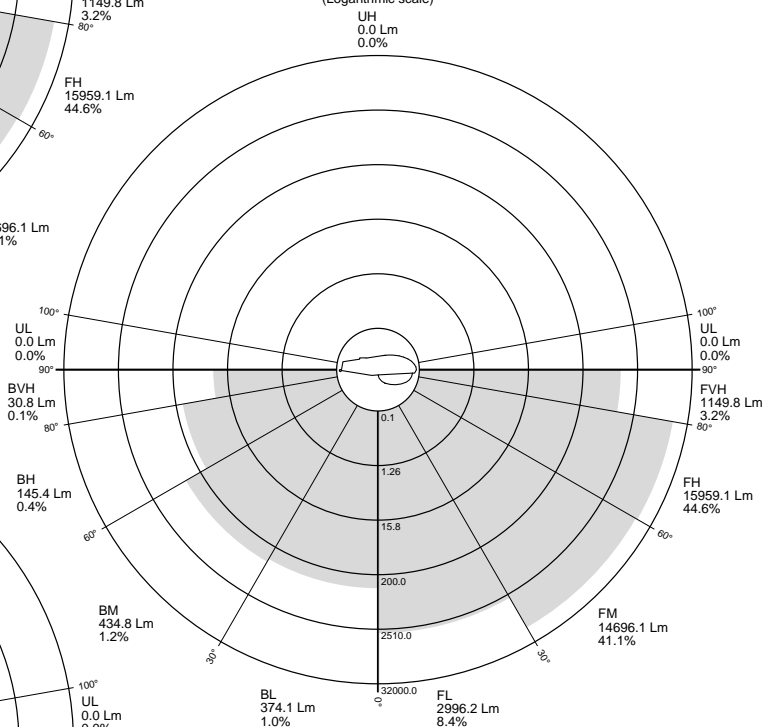
(Logarithmic scale)



(Logarithmic scale)



(Logarithmic scale)



## CONE OF MAXIMUM CANDELA

REPORT NUMBER: RAB01827  
 ISSUE DATE: 04/07/16  
 PREPARED FOR: RAB LIGHTING INC.

PAGE: 8 OF 9  
 DATE SAMPLE TESTED: 04/07/16

### 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	90.	59.	60.	63.	64.	65.	64.	64.	63.	62.	62.
85.0	110.	62.	60.	61.	61.	61.	60.	60.	59.	58.	58.
82.5	229.	70.	60.	59.	58.	58.	56.	56.	55.	54.	54.
V 80.0	765.	87.	60.	57.	54.	54.	53.	51.	50.	49.	49.
E 77.5	1326.	138.	63.	55.	52.	51.	49.	48.	47.	46.	45.
R 75.0	1726.	197.	67.	56.	49.	48.	46.	46.	45.	43.	43.
T 72.5	1987.	250.	79.	61.	48.	46.	45.	44.	43.	41.	41.
I 70.0	2541.	323.	88.	68.	48.	45.	44.	43.	42.	40.	40.
C 67.5	2759.	414.	96.	71.	48.	44.	43.	43.	42.	40.	39.
A 65.0	2771.	511.	108.	107.	49.	45.	43.	43.	42.	40.	39.
L 62.5	2971.	649.	130.	152.	50.	45.	43.	43.	42.	40.	40.
61.0<<	3123.	796.	140.	134.	52.	45.	43.	43.	42.	40.	40.
A 60.0	3293.	879.	150.	142.	53.	44.	43.	43.	42.	40.	40.
N 57.5	3586.	1133.	168.	123.	54.	45.	43.	43.	43.	41.	41.
G 55.0	3829.	1366.	197.	141.	60.	46.	43.	44.	43.	41.	41.
L 52.5	3979.	1564.	244.	103.	113.	46.	44.	44.	43.	41.	41.
E 50.0	4257.	1779.	276.	104.	65.	48.	44.	44.	44.	42.	41.
47.5	4358.	1959.	344.	105.	66.	49.	45.	44.	44.	43.	42.
45.0	4404.	2057.	370.	124.	76.	51.	45.	45.	44.	43.	43.
42.5	4370.	2202.	435.	129.	87.	52.	47.	46.	45.	44.	44.
40.0	4224.	2394.	535.	146.	108.	54.	48.	47.	46.	45.	45.
37.5	4194.	2690.	600.	161.	109.	62.	49.	48.	47.	46.	46.
35.0	4076.	2936.	615.	216.	96.	67.	51.	49.	48.	47.	46.
30.0	4349.	3790.	962.	406.	123.	82.	60.	54.	52.	50.	48.
25.0	4082.	3618.	1212.	463.	219.	96.	82.	65.	59.	54.	52.
20.0	3427.	2868.	1591.	824.	333.	218.	144.	88.	66.	57.	56.
15.0	3201.	2739.	1953.	1160.	684.	420.	305.	251.	190.	141.	138.
10.0	3284.	2975.	2457.	1931.	1318.	955.	722.	606.	495.	461.	454.
5.0	3403.	3230.	2914.	2663.	2445.	2200.	1982.	1772.	1658.	1589.	1571.
0.0	3266.	3266.	3266.	3266.	3266.	3266.	3266.	3266.	3266.	3266.	3266.

CONE OF MAXIMUM CANDELA



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### 5-DEGREE ZONAL LUMEN SUMMARY

0- 5	80
5- 10	252
10- 15	438
15- 20	629
20- 25	853
25- 30	1118
30- 35	1393
35- 40	1702
40- 45	2077
45- 50	2567
50- 55	3276
55- 60	4116
60- 65	4497
65- 70	4296
70- 75	4178
75- 80	3133
80- 85	1057
85- 90	123
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	332
0- 20	1399
0- 30	3370
0- 40	6465
0- 50	11109
0- 60	18501
0- 70	27295
0- 80	34606
0- 90	35786
0-100	35786
0-110	35786
0-120	35786
0-130	35786
0-140	35786
0-150	35786
0-160	35786
0-170	35786
0-180	35786

REPORT NUMBER: RAB01828  
 DATE: 4/6/2016  
 PREPARED FOR: RAB LIGHTING INC.  
 CATALOG NUMBER: ALED4T360Y/D10 - ALED4T360SFY/D10 - WPLED4T360Y/D10 - WPLED4T360YFX/D10 (TYPE IV)  
 ADDRESS: 170 LUDLOW AVE, NORTHVALE, NJ 07647  
 LUMINAIRE: CAST FINNED METAL HOUSING, 4 CHIP ON BOARD LIGHT EMITTING DIODES, MOLDED PLASTIC REFLECTOR WITH SPECULAR FINISH, CLEAR GLASS LENS IN CAST BRONZE PAINTED METAL FRAME.  
 LAMP: FOUR WHITE LIGHT EMITTING DIODES (LEDS)  
 DRIVER: 2X RD-G200-A2100-D  
 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 4/5/17  
 RAB 2.0 meter Diameter Integrating Sphere, 4PI Geometry 4/5/17  
 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: RAB01828  
 DATE: 4/6/2016  
 PREPARED FOR: RAB LIGHTING INC.  
 CATALOG NUMBER: ALED4T360Y/D10 - ALED4T360SFY/D10 - WPLED4T360Y/D10 - WPLED4T360YFX/D10 (TYPE IV)

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### RESULTS:

PHOTOMETRIC	
Total Integrated Flux (lumens)	35786 *
SPECTRORADIOMETRIC	
Observer	CIE 1931 2 degree
Chromaticity Ordinate x	0.4274
Chromaticity Ordinate y	0.4058
Observer	CIE 1976 2 degree
Chromaticity Ordinate u'	0.2437
Chromaticity Ordinate v'	0.5206
Correlated Color Temp CCT (K)	3181
ANSI C78.377-2008 Duv	0.002
Total Radiant Flux (milliWatts)	100144 *
ELECTRICAL	
Input Voltage (Volts AC)	120.0
Input Current (Amps AC)	3.00
Input Power (Watts)	358.3
Input Power Factor (%)	99.8
Input Current THD (%)	5.8
Input Voltage THD (%)	0.6
EFFICACY (Lumens/Watt)	
	99.9
ELECTRICAL AT MAX NONIMAL INPUT	
Input Voltage (Volts AC)	277.0
Input Current (Amps AC)	1.32
Input Power (Watts)	348.8
Input Power Factor (%)	95.6
Input Current THD (%)	8.9
Input Voltage THD (%)	0.2
Off-State Power (Watts)	
	0.0

COLOR RENDERING INDICES	CRI
Ra (Average 1-8)	70
R1 Light greyish red	66
R2 Dark greyish yellow	80
R3 Strong yellowish green	92
R4 Moderate yellowish green	65
R5 Light bluish green	65
R6 Light blue	71
R7 Light violet	79
R8 Light reddish purple	43
R9 Strong red	-38
R10 Strong yellow	53
R11 Strong green	57
R12 Strong blue	41
R13 Light yellowish pink (skin)	68
R14 Moderate olive green (leaf)	95

### \*NOTE:

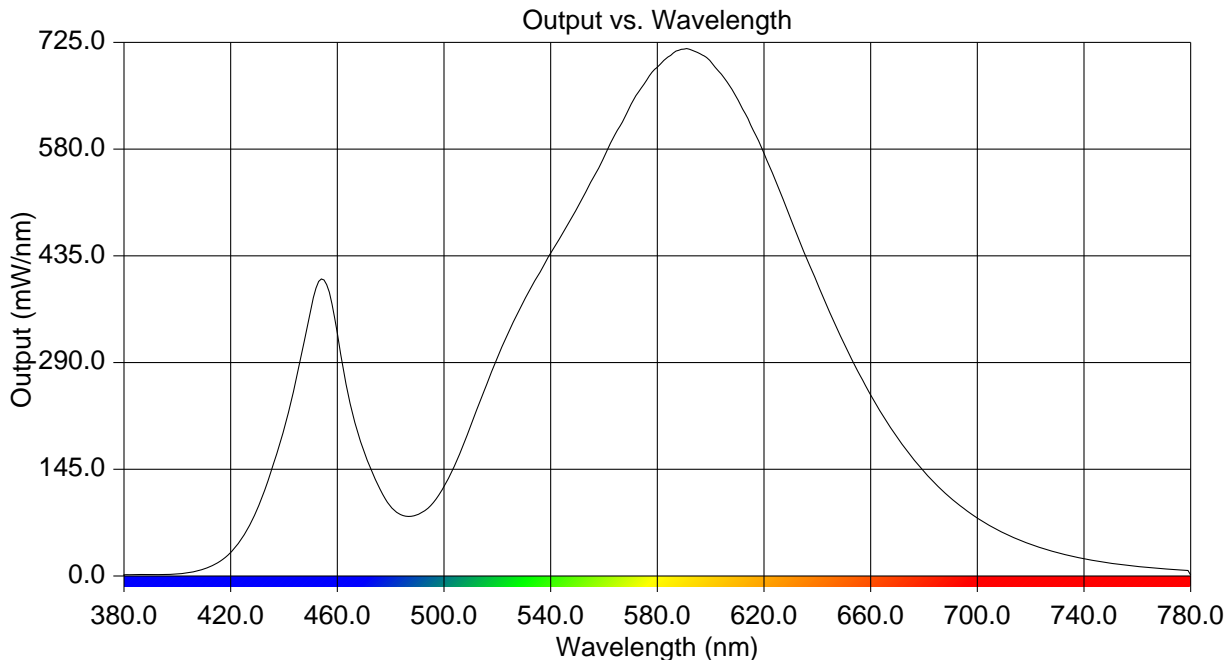
Proper calibration of integrating spheres for measuring total flux output of non-directional samples will produce reliable, repeatable results within the calibration tolerances of the equipment used. However, measurement of test samples with significant self absorption and/or directional output, even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

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 (TYPE IV)

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RESULTS:

Wavelength	mW per nm	Wavelength	mW per nm	Wavelength	mW per nm
380	1.602	515	251.189	650	316.126
385	1.669	520	296.866	655	279.509
390	1.778	525	337.795	660	246.057
395	2.116	530	374.598	665	215.372
400	3.052	535	406.994	670	188.351
405	4.998	540	438.915	675	163.625
410	9.225	545	468.690	680	142.031
415	17.730	550	499.859	685	122.770
420	31.758	555	535.215	690	105.771
425	55.889	560	569.325	695	91.643
430	91.058	565	605.868	700	78.466
435	140.557	570	639.760	705	67.706
440	199.938	575	668.533	710	58.303
445	273.735	580	691.563	715	50.216
450	362.194	585	707.663	720	43.029
455	402.413	590	716.228	725	36.905
460	330.112	595	711.786	730	31.770
465	231.004	600	699.441	735	27.257
470	169.486	605	677.381	740	23.274
475	125.278	610	648.648	745	20.155
480	94.385	615	613.094	750	17.506
485	81.735	620	574.611	755	14.956
490	83.426	625	531.950	760	12.955
495	95.645	630	485.416	765	11.249
500	121.504	635	440.274	770	9.699
505	159.151	640	397.742	775	8.423
510	203.614	645	355.757	780	1.265



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 CATALOG NUMBER: ALED4T360Y/D10 - ALED4T360SFY/D10 - WPLED4T360Y/D10 - WPLED4T360YFX/D10 (TYPE IV)

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## CIE Chromaticity Diagram

