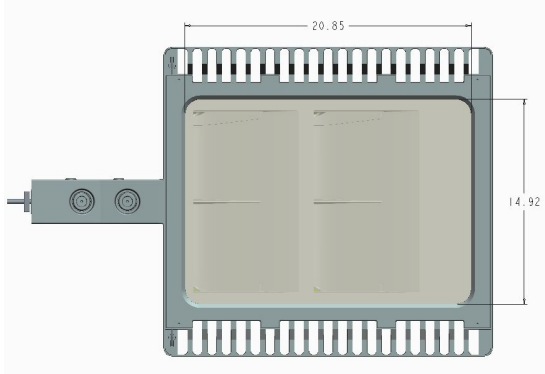


ISOFOOTCANDLE LINES OF HORIZONTAL ILLUMINATION

Values based on 35 foot mounting height.



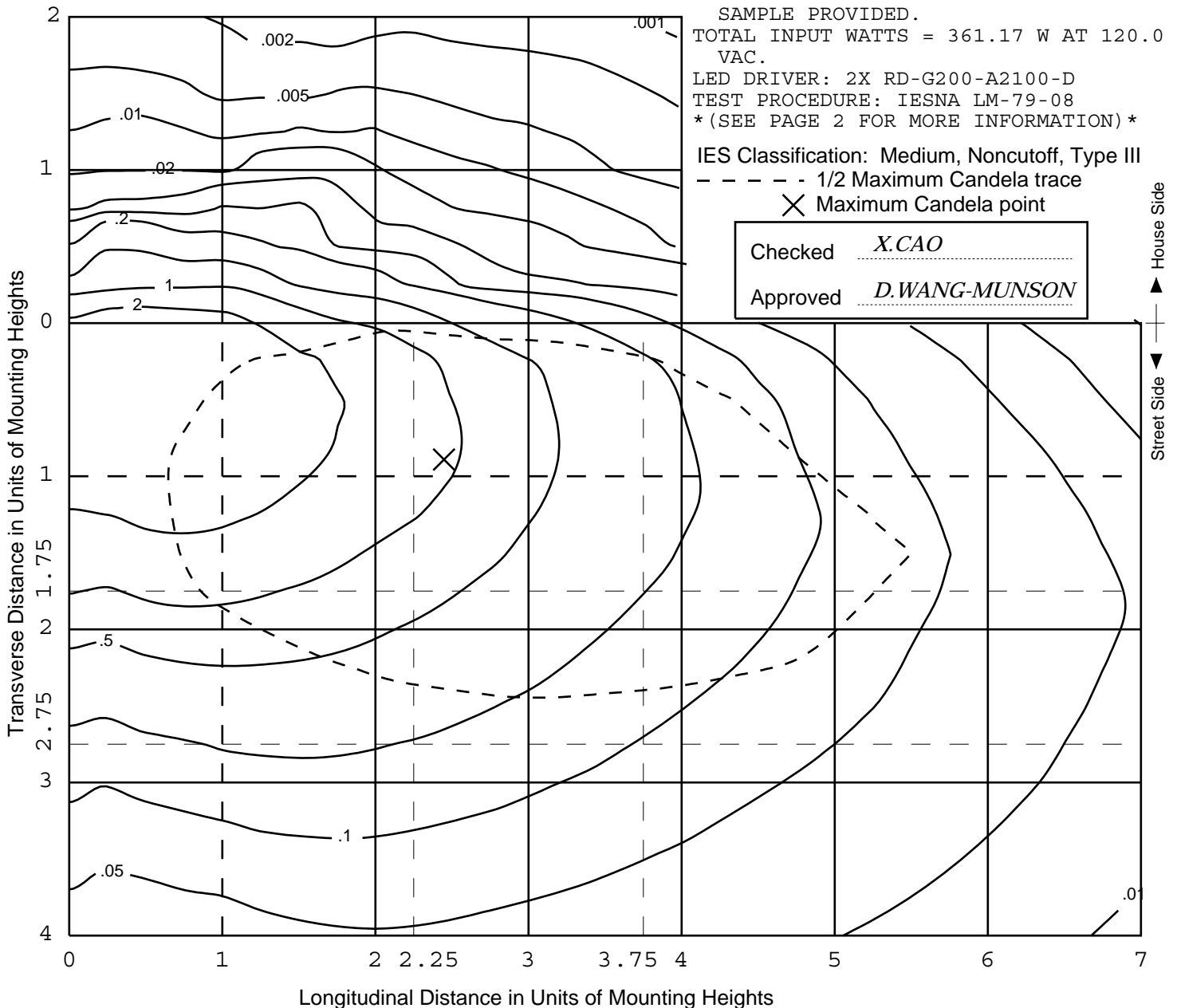
REPORT NUMBER: RAB01833
 ISSUE DATE: 04/07/16 PAGE: 1 OF 9
 DATE SAMPLE TESTED: 04/07/16
 PREPARED FOR: RAB LIGHTING INC.
 CATALOG NUMBER: ALED3T360N/D10 -
 ALED3T360SFN/D10 - WPLED3T360N/D10 -
 WPLED3T360NFX/D10 (TYPE III)
 LUMINAIRE: CAST FINNED METAL HOUSING, 4
 CHIP ON BOARD LIGHT EMITTING DIODES,
 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 = 361.17 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: Medium, Noncutoff, Type III

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



REPORT NUMBER: RAB01833
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PAGE: 2 OF 9
DATE SAMPLE TESTED: 04/07/16

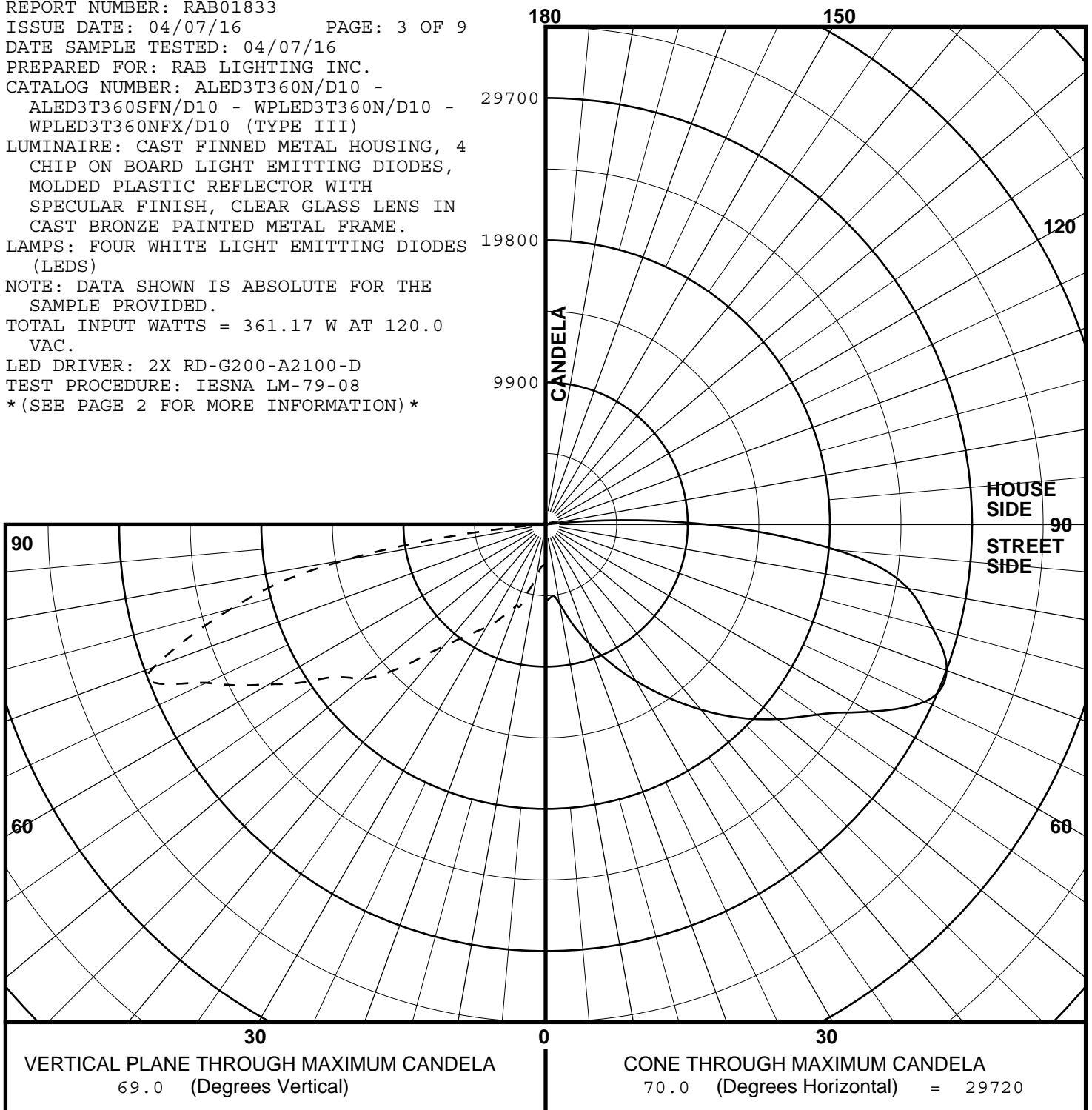
ADDITIONAL INFORMATION

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: RAB01833
 ISSUE DATE: 04/07/16 PAGE: 3 OF 9
 DATE SAMPLE TESTED: 04/07/16
 PREPARED FOR: RAB LIGHTING INC.
 CATALOG NUMBER: ALED3T360N/D10 -
 ALED3T360SFN/D10 - WPLED3T360N/D10 -
 WPLED3T360NFX/D10 (TYPE III)
 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 = 361.17 W AT 120.0
 VAC.
 LED DRIVER: 2X RD-G200-A2100-D
 TEST PROCEDURE: IESNA LM-79-08
 (SEE PAGE 2 FOR MORE INFORMATION)



REPORT NUMBER: RAB01833

ISSUE DATE: 04/07/16

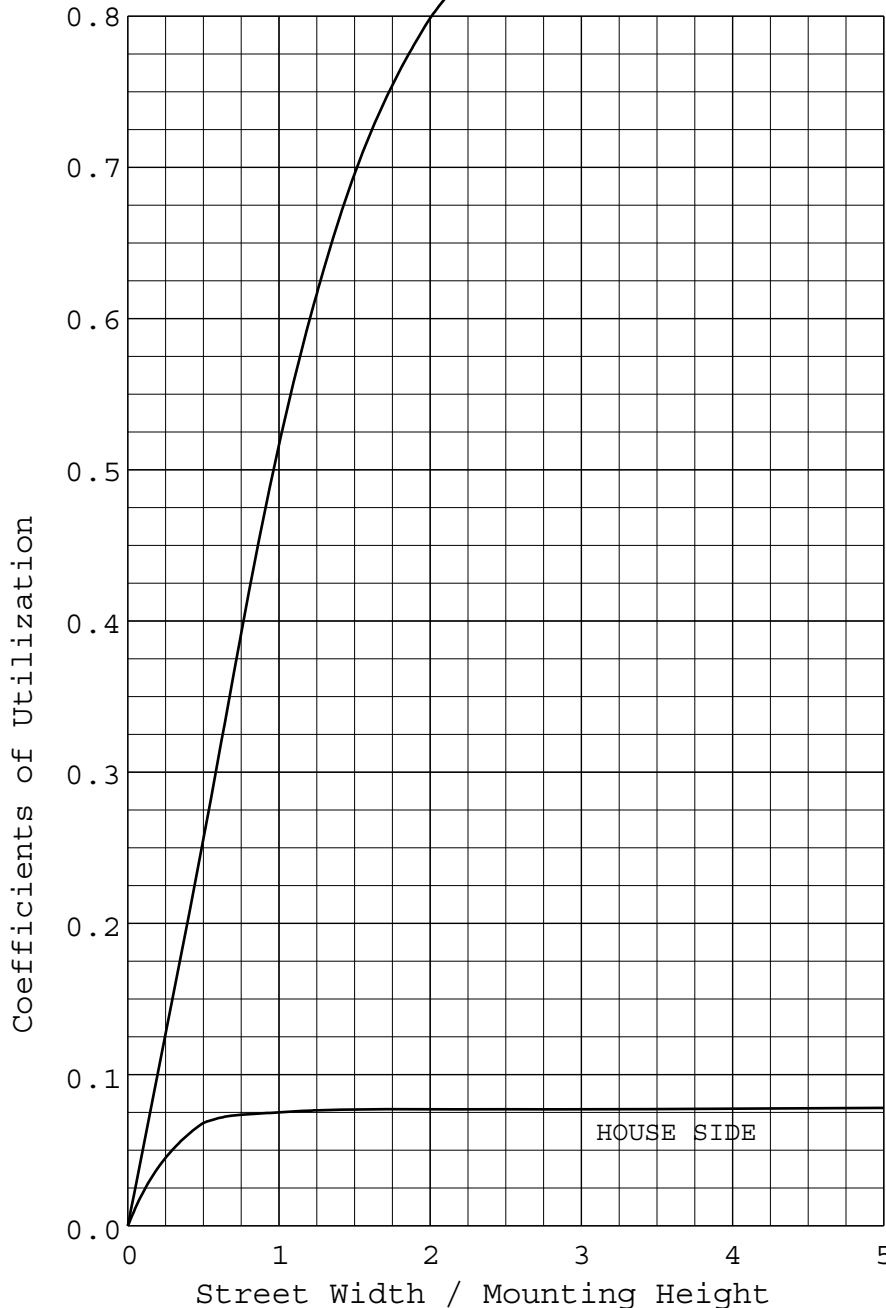
PREPARED FOR: RAB LIGHTING INC.

STREET SIDE

PAGE: 4 OF 9

DATE SAMPLE TESTED: 04/07/16

COEFFICIENTS OF UTILIZATION AND FLUX DISTRIBUTION



	LUMENS	PERCENT OF FIXTURE
DOWNWARD STREET SIDE	33485.	92.2
DOWNWARD HOUSE SIDE	2852.	7.8
DOWNWARD TOTAL	36337.	100.0
UPWARD STREET SIDE	0.	0.0
UPWARD HOUSE SIDE	0.	0.0
UPWARD TOTAL	0.	0.0
TOTAL FLUX	36337.	100.0
TOTAL INPUT WATTS = 361.2		
EFFICACY = 100.6 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: RAB01833
 ISSUE DATE: 04/07/16
 PREPARED FOR: RAB LIGHTING INC.

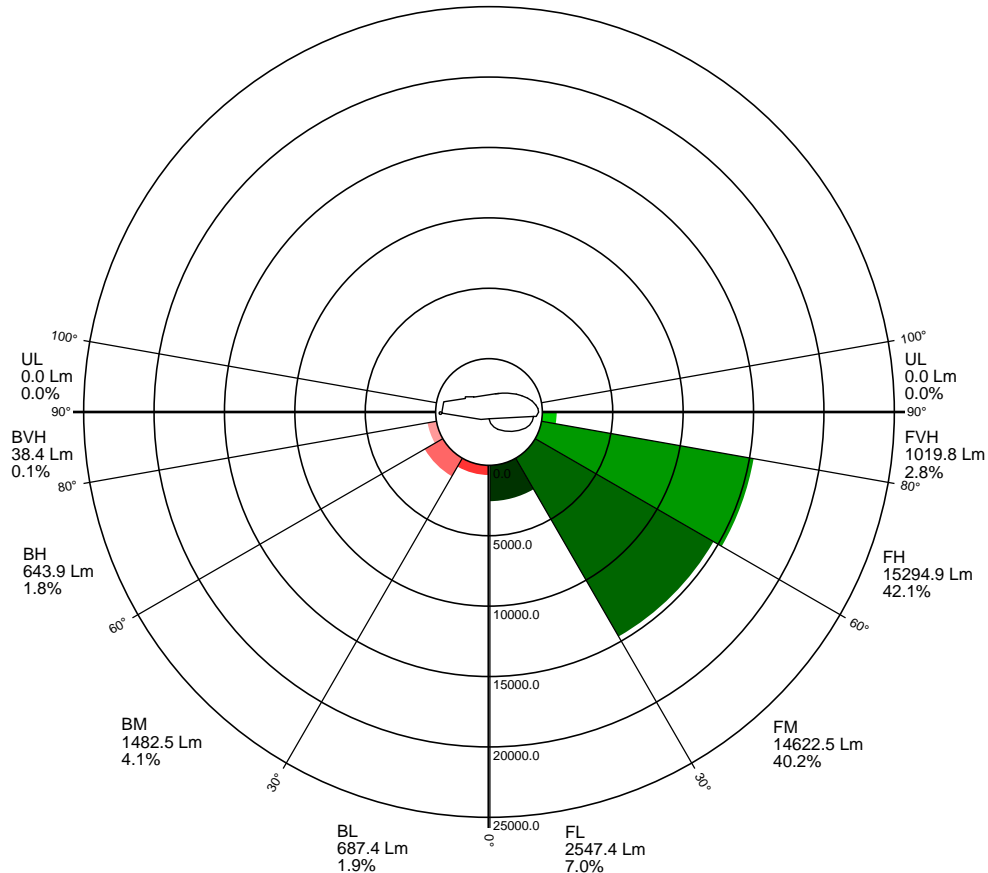
PAGE: 5 OF 9
 DATE SAMPLE TESTED: 04/07/16

BUG Rating:				B2	U0	G5
Zonal Summary		Lumens	% of Fixture	Zone Ratings		
				B	U	G
Forward		33485	92.2			
FL	(0° – 30°)	2547.4	7.0			
FM	(30° – 60°)	14622.5	40.2			
FH	(60° – 80°)	15294.9	42.1			G5
FVH	(80° – 90°)	1019.8	2.8			G5
Backward		2852	7.8			
BL	(0° – 30°)	687.4	1.9	B2		
BM	(30° – 60°)	1482.5	4.1	B2		
BH	(60° – 80°)	643.9	1.8	B2		G2
BVH	(80° – 90°)	38.4	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		36337	100.0			

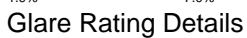
Zonal Lumen Summary

(Linear scale)

UH
0.0 Lm
0.0%



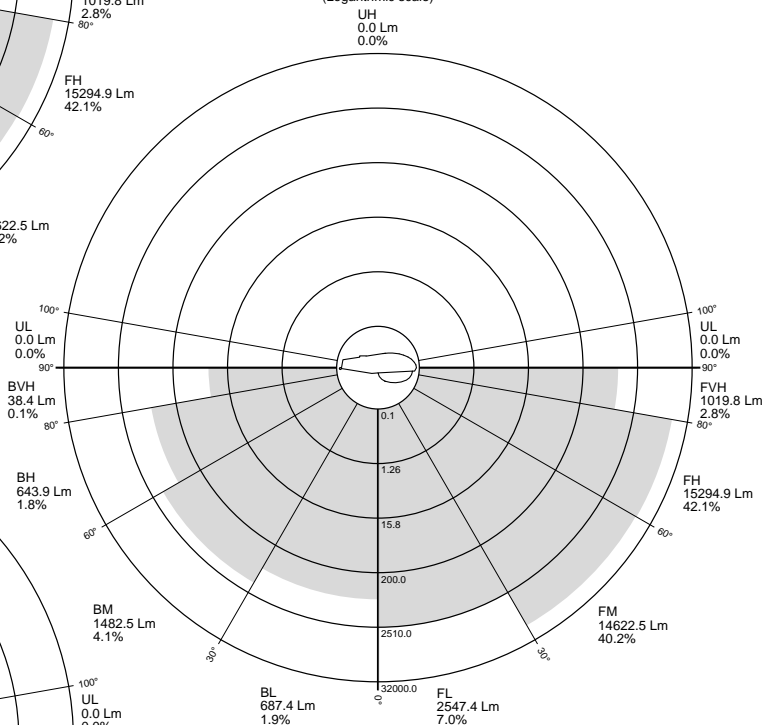
(Logarithmic scale)



(Logarithmic scale)



(Logarithmic scale)



REPORT NUMBER: RAB01833
 ISSUE DATE: 04/07/16
 PREPARED FOR: RAB LIGHTING INC.

PAGE: 7 OF 9
 DATE SAMPLE TESTED: 04/07/16

CANDELA TABULATION

	STREET SIDE	LATERAL ANGLE										
		0.0	5.0	15.0	25.0	35.0	45.0	55.0	65.0	70.0	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		0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
87.5		30.	32.	35.	48.	59.	97.	94.	290.	363.	310.	287.
85.0		42.	47.	66.	129.	226.	753.	1523.	2235.	2356.	2375.	765.
82.5		73.	93.	180.	666.	1450.	2916.	5545.	7214.	7737.	7974.	2688.
V 80.0		342.	417.	1091.	2706.	4169.	6815.	9670.	13482.	14140.	15070.	7029.
E 77.5		1751.	1695.	2732.	5167.	7308.	10116.	13633.	17747.	19271.	19671.	12947.
R 75.0		3394.	2815.	4226.	6731.	9686.	13011.	17342.	20950.	22714.	23766.	18216.
T 72.5		4168.	3655.	5391.	8305.	11904.	15852.	20567.	25350.	26015.	26255.	20631.
I 70.0		5125.	4670.	6619.	9914.	13859.	18205.	22522.	28440.	29060.	27603.	20441.
C 69.0<<		5358.	5012.	7128.	10601.	14634.	19013.	23062.	29155.	29720.	27901.	20321.
A 67.5		5895.	5525.	8038.	11961.	15671.	19884.	23389.	28283.	28989.	27857.	20985.
L 65.0		7494.	6688.	9823.	13833.	17022.	20347.	23536.	26028.	26071.	25581.	21359.
62.5		9192.	7763.	11335.	14761.	17546.	20362.	22839.	24253.	24252.	23623.	19687.
A 60.0		10435.	8944.	12181.	14845.	17363.	20121.	21973.	22677.	22262.	21571.	16676.
N 57.5		10616.	9689.	12013.	14398.	17237.	19517.	20798.	20573.	20559.	19656.	14566.
G 55.0		10392.	9764.	11286.	13904.	16849.	18496.	19417.	18694.	18612.	18480.	13747.
L 52.5		9901.	9402.	11151.	13698.	16134.	17565.	18111.	17782.	17476.	17275.	13208.
E 50.0		9432.	8919.	11000.	13387.	15119.	16404.	17115.	17092.	16744.	15793.	12266.
47.5		8924.	8510.	10503.	13046.	14324.	15468.	16144.	15901.	15481.	14865.	11428.
45.0		8476.	8022.	9672.	12136.	13687.	14616.	15009.	14407.	13910.	13270.	10218.
42.5		8061.	7513.	8906.	11252.	12990.	13562.	13646.	12919.	12276.	11661.	9085.
40.0		7438.	7065.	8302.	10509.	12202.	12416.	12346.	11587.	11097.	10488.	8228.
37.5		6963.	6703.	7861.	10025.	11407.	11444.	11215.	10534.	10125.	9576.	7678.
35.0		6788.	6517.	7558.	9857.	10451.	10534.	10192.	9688.	9366.	8875.	7084.
30.0		6890.	6395.	7125.	7787.	8689.	8742.	8868.	8691.	8259.	7678.	6095.
25.0		6522.	6148.	6513.	6818.	7479.	7623.	7789.	7457.	7079.	6679.	5402.
20.0		6094.	5991.	5938.	6348.	6509.	6753.	7343.	6369.	6015.	5664.	4738.
15.0		5632.	5618.	5490.	5553.	5750.	5627.	5505.	5146.	4900.	4683.	4162.
10.0		4954.	4898.	4719.	4503.	4417.	4265.	4213.	3940.	3733.	3591.	3223.
5.0		3773.	3775.	3660.	3579.	3456.	3306.	3154.	2959.	2908.	2817.	2640.
0.0		2731.	2731.	2731.	2731.	2731.	2731.	2731.	2731.	2731.	2731.	2731.

||
 PLANE OF MAXIMUM CANDELA

CONE OF MAXIMUM CANDELA

REPORT NUMBER: RAB01833
 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	170.	50.	47.	46.	43.	41.	40.	40.	38.	37.	37.
85.0	381.	81.	54.	46.	38.	36.	36.	38.	36.	35.	35.
82.5	1552.	173.	77.	52.	34.	32.	33.	35.	35.	34.	34.
V 80.0	3857.	347.	132.	63.	33.	29.	30.	33.	34.	33.	33.
E 77.5	6010.	698.	226.	98.	35.	27.	28.	32.	33.	34.	34.
R 75.0	8738.	1181.	344.	170.	53.	27.	26.	30.	32.	33.	33.
T 72.5	10565.	1658.	484.	201.	84.	31.	25.	29.	31.	32.	32.
I 70.0	10891.	2124.	590.	229.	129.	41.	25.	29.	31.	32.	32.
C 69.0	11315.	2496.	605.	242.	139.	46.	26.	29.	32.	32.	32.
A 67.5	12460.	3171.	666.	324.	154.	54.	29.	30.	33.	33.	33.
L 65.0	13228.	4562.	745.	485.	165.	63.	34.	35.	35.	35.	35.
62.5	12207.	4894.	903.	885.	200.	82.	40.	39.	40.	38.	38.
A 60.0	10504.	4574.	1293.	1145.	280.	94.	48.	50.	44.	42.	41.
N 57.5	9956.	4908.	1566.	1165.	352.	89.	67.	58.	51.	50.	46.
G 55.0	9460.	5347.	1692.	1017.	441.	94.	65.	84.	56.	56.	48.
L 52.5	9703.	6290.	1807.	1030.	568.	146.	72.	73.	59.	61.	50.
E 50.0	9470.	6967.	2369.	1049.	660.	212.	84.	66.	61.	56.	52.
47.5	9159.	7214.	2930.	1186.	635.	258.	121.	77.	63.	57.	55.
45.0	8516.	6912.	2993.	1231.	691.	257.	158.	114.	74.	62.	59.
42.5	7776.	6265.	2723.	1259.	730.	305.	182.	151.	106.	80.	75.
40.0	7071.	5648.	2632.	1301.	992.	532.	194.	165.	133.	102.	99.
37.5	6470.	5070.	2700.	1325.	1004.	668.	245.	175.	139.	119.	108.
35.0	5962.	4783.	2798.	1364.	1034.	1038.	380.	203.	147.	125.	104.
30.0	5218.	4292.	2788.	1623.	1017.	1346.	1285.	761.	314.	142.	129.
25.0	4705.	3977.	2756.	1805.	1483.	1234.	937.	747.	666.	535.	392.
20.0	4247.	3736.	2797.	2142.	1590.	1036.	666.	649.	677.	418.	289.
15.0	3830.	3479.	2807.	2276.	1671.	1133.	898.	771.	687.	631.	656.
10.0	3024.	2811.	2383.	1960.	1626.	1460.	1293.	1254.	1287.	1241.	1273.
5.0	2561.	2466.	2316.	2146.	2039.	1945.	1905.	1860.	1829.	1811.	1813.
0.0	2731.	2731.	2731.	2731.	2731.	2731.	2731.	2731.	2731.	2731.	2731.

CONE OF MAXIMUM CANDELA

REPORT NUMBER: RAB01833
 ISSUE DATE: 04/07/16
 PREPARED FOR: RAB LIGHTING INC.

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

5-DEGREE ZONAL LUMEN SUMMARY

0- 5	64
5- 10	198
10- 15	381
15- 20	607
20- 25	849
25- 30	1136
30- 35	1440
35- 40	1827
40- 45	2346
45- 50	2966
50- 55	3489
55- 60	4037
60- 65	4556
65- 70	4650
70- 75	4030
75- 80	2703
80- 85	968
85- 90	90
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	263
0- 20	1250
0- 30	3235
0- 40	6502
0- 50	11814
0- 60	19340
0- 70	28546
0- 80	35279
0- 90	36337
0-100	36337
0-110	36337
0-120	36337
0-130	36337
0-140	36337
0-150	36337
0-160	36337
0-170	36337
0-180	36337

REPORT NUMBER: RAB01834
 DATE: 4/7/2016
 PREPARED FOR: RAB LIGHTING INC.
 CATALOG NUMBER: ALED3T360N/D10 - ALED3T360SFN/D10 - WPLED3T360N/D10 - WPLED3T360NFX/D10 (TYPE III)
 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
 CHROMA PROGRAMMABLE DIGITAL POWER METER MODEL 66202
 OCEAN OPTICS QE65PRO Spectroradiometer
 RAB 2.0 meter Diameter Integrating Sphere, 4PI Geometry

Calibration Due: N/A
 2/26/17
 4/4/17
 4/4/17

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: RAB01834
 DATE: 4/7/2016
 PREPARED FOR: RAB LIGHTING INC.
 CATALOG NUMBER: ALED3T360N/D10 - ALED3T360SFN/D10 - WPLED3T360N/D10 - WPLED3T360NFX/D10 (TYPE III)

Page 2 of 4

RESULTS:

PHOTOMETRIC	
Total Integrated Flux (lumens)	36337 *
SPECTRORADIOMETRIC	
Observer	CIE 1931 2 degree
Chromaticity Ordinate x	0.3769
Chromaticity Ordinate y	0.3835
Observer	CIE 1976 2 degree
Chromaticity Ordinate u'	0.2201
Chromaticity Ordinate v'	0.5040
Correlated Color Temp CCT (K)	4145
ANSI C78.377-2008 Duv	0.004
Total Radiant Flux (milliWatts)	103458 *
ELECTRICAL	
Input Voltage (Volts AC)	120.0
Input Current (Amps AC)	3.02
Input Power (Watts)	361.2
Input Power Factor (%)	99.8
Input Current THD (%)	6.0
Input Voltage THD (%)	0.5
EFFICACY (Lumens/Watt)	
	100.6
ELECTRICAL AT MAX NONIMAL INPUT	
Input Voltage (Volts AC)	277.0
Input Current (Amps AC)	1.32
Input Power (Watts)	351.8
Input Power Factor (%)	96.1
Input Current THD (%)	8.8
Input Voltage THD (%)	0.2
Off-State Power (Watts)	
	0.0

COLOR RENDERING INDICES	CRI
Ra (Average 1-8)	72
R1 Light greyish red	68
R2 Dark greyish yellow	79
R3 Strong yellowish green	87
R4 Moderate yellowish green	69
R5 Light bluish green	67
R6 Light blue	70
R7 Light violet	83
R8 Light reddish purple	52
R9 Strong red	-33
R10 Strong yellow	49
R11 Strong green	62
R12 Strong blue	38
R13 Light yellowish pink (skin)	70
R14 Moderate olive green (leaf)	92

*NOTE:

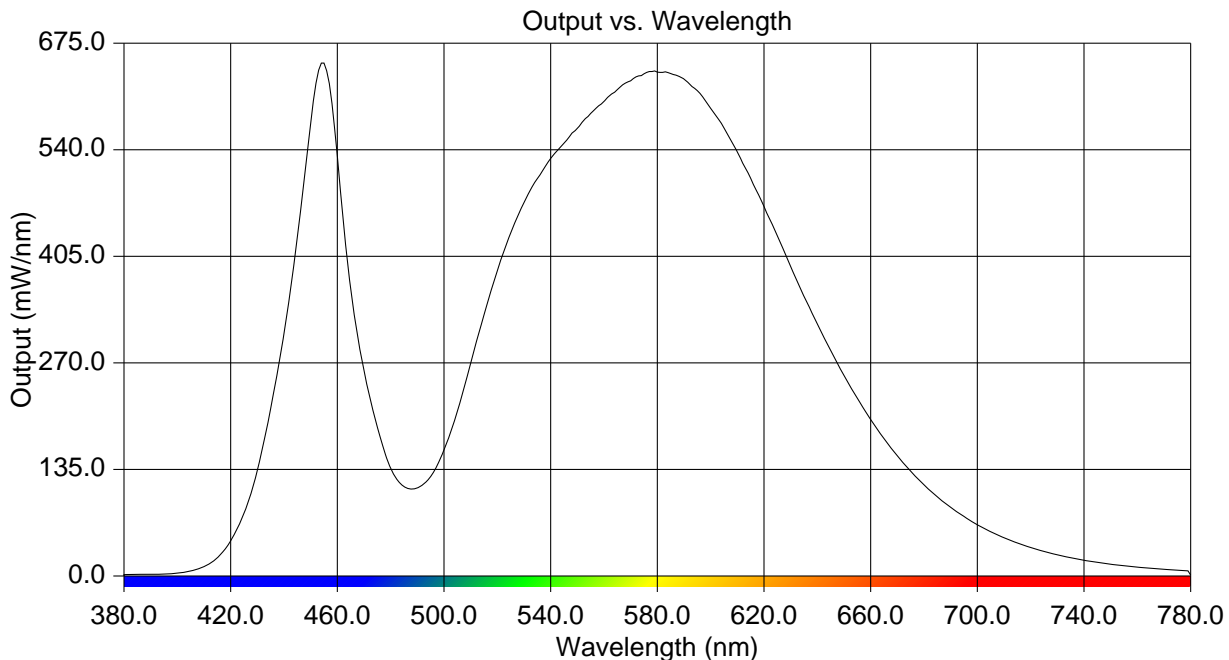
Proper calibration of integrating spheres for measuring total flux output of non-directional samples will produce reliable, repeatable results within the calibration tolerances of the equipment used. However, measurement of test samples with significant self absorption and/or directional output, even 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: RAB01834
 DATE: 4/7/2016
 PREPARED FOR: RAB LIGHTING INC.
 CATALOG NUMBER: ALED3T360N/D10 - ALED3T360SFN/D10 - WPLED3T360N/D10 - WPLED3T360NFX/D10
 (TYPE III)

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RESULTS:

Wavelength	mW per nm	Wavelength	mW per nm	Wavelength	mW per nm
380	1.658	515	330.448	650	254.010
385	1.815	520	386.203	655	225.015
390	2.087	525	434.645	660	198.001
395	2.522	530	472.297	665	173.614
400	3.754	535	502.926	670	151.976
405	6.270	540	528.525	675	132.602
410	12.021	545	547.818	680	115.345
415	23.172	550	566.406	685	100.170
420	44.105	555	585.422	690	86.704
425	79.719	560	600.428	695	75.408
430	133.974	565	615.573	700	64.802
435	211.886	570	626.711	705	56.040
440	307.712	575	635.590	710	48.431
445	427.207	580	637.696	715	41.811
450	573.769	585	635.932	720	36.074
455	649.176	590	628.904	725	30.984
460	531.721	595	614.258	730	26.727
465	363.231	600	591.744	735	23.095
470	260.052	605	567.036	740	19.853
475	188.160	610	536.605	745	17.156
480	136.563	615	503.372	750	14.939
485	113.007	620	467.704	755	12.945
490	111.592	625	431.125	760	11.212
495	125.869	630	391.341	765	9.734
500	159.067	635	354.453	770	8.454
505	209.017	640	319.134	775	7.331
510	268.708	645	285.852	780	1.103



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CIE Chromaticity Diagram

