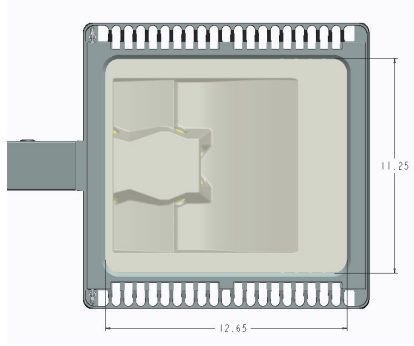
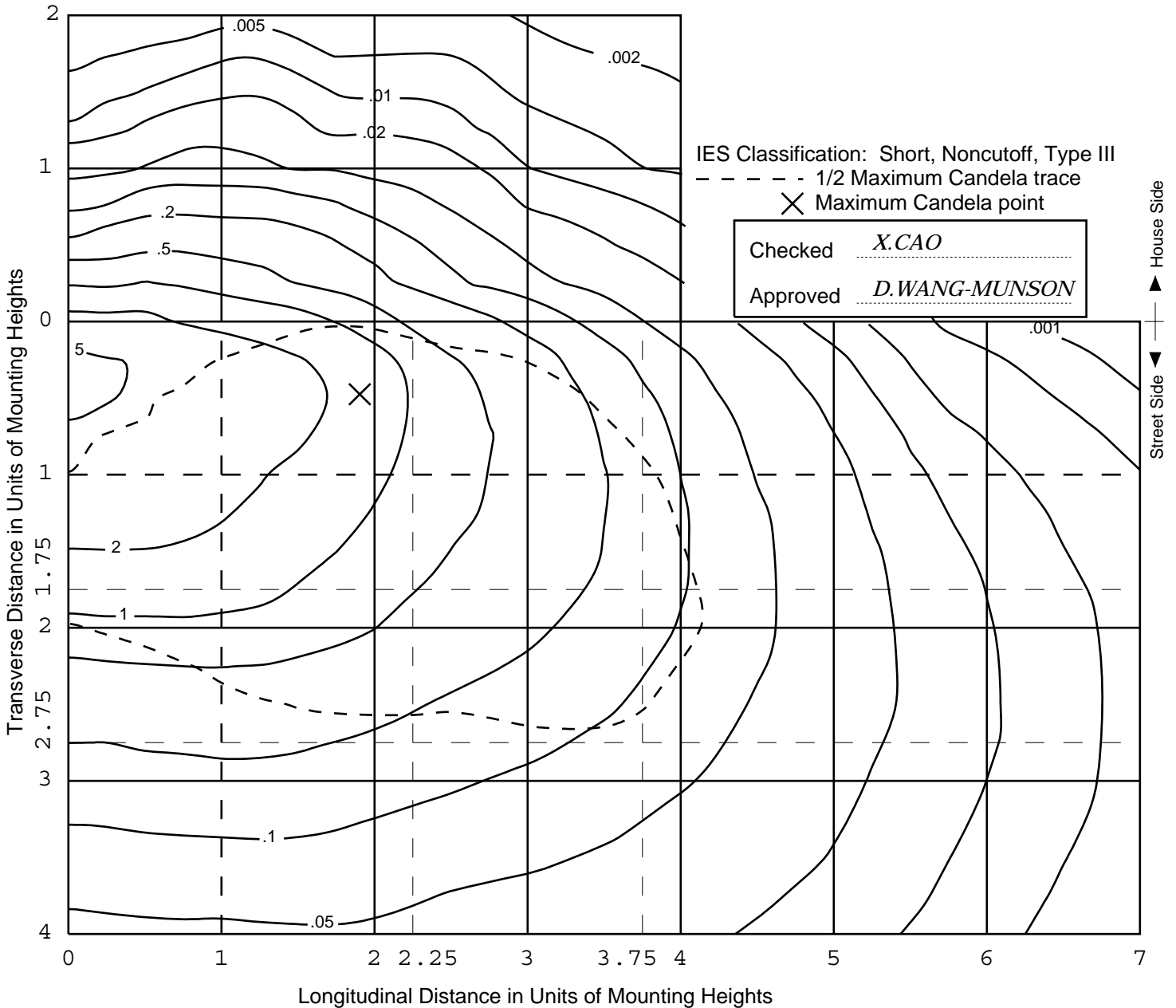


ISOFOOTCANDLE LINES OF HORIZONTAL ILLUMINATION

Values based on 25 foot mounting height.



REPORT NUMBER: RAB02130
 ISSUE DATE: 06/22/16 PAGE: 1 OF 9
 DATE SAMPLE TESTED: 06/22/16
 PREPARED FOR: RAB LIGHTING INC.
 CATALOG NUMBER: ALED3T150 - RWLED3T150
 - RWLED3T150SF - WPLED3T150 (TYPE III)
 LUMINAIRE: CAST FINNED METAL HOUSING, 6
 CIRCUIT BOARDS EACH WITH 1 LED,
 MOLDED PLASTIC REFLECTOR WITH
 SPECULAR FINISH AND 1 APERTURE PER
 LED, CLEAR FLAT GLASS LENS IN CAST
 WHITE PAINTED METAL LENS FRAME.
 (SEE PAGE 2 FOR MORE INFORMATION)



REPORT NUMBER: RAB02130
ISSUE DATE: 06/22/16
PREPARED FOR: RAB LIGHTING INC.

PAGE: 2 OF 9
DATE SAMPLE TESTED: 06/22/16

ADDITIONAL INFORMATION

LAMPS: SIX WHITE MULTI-CHIP LIGHT EMITTING DIODES (LEDS), 2 LEDES TILTED 63-DEGREES FROM VERTICAL BASE-UP POSITION AND CANTED 75-DEGREES FROM STRAIGHT AHEAD, 2 LEDES TILTED 67-DEGREES FROM VERTICAL BASE-UP POSITION AND CANTED 68-DEGREES FROM STRAIGHT AHEAD, 2 LEDES TILTED 58-DEGREES FROM VERTICAL BASE-UP POSITION AND CANTED 40-DEGREES FROM STRAIGHT AHEAD.

NOTE: DATA SHOWN IS ABSOLUTE FOR THE SAMPLE PROVIDED.

TOTAL INPUT WATTS = 155.23 W AT 120.0 VAC.

LED DRIVER: RD-085-A2000 X 2

TEST PROCEDURE: IESNA LM-79-08

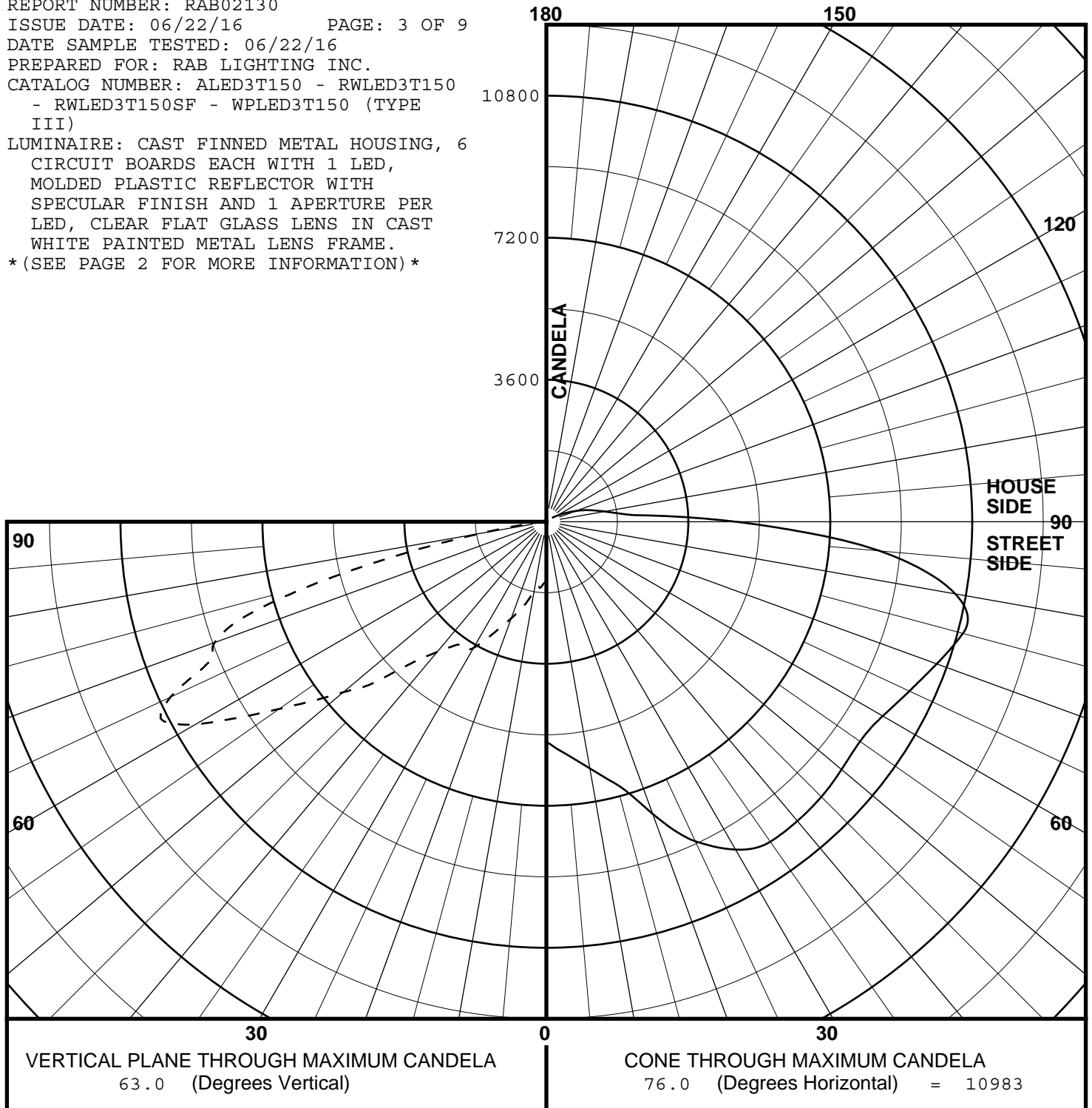
ACCREDITED LABORATORY CODE 201058-0

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: RAB02130
 ISSUE DATE: 06/22/16 PAGE: 3 OF 9
 DATE SAMPLE TESTED: 06/22/16
 PREPARED FOR: RAB LIGHTING INC.
 CATALOG NUMBER: ALED3T150 - RWLED3T150
 - RWLED3T150SF - WPLED3T150 (TYPE III)
 LUMINAIRE: CAST FINNED METAL HOUSING, 6
 CIRCUIT BOARDS EACH WITH 1 LED,
 MOLDED PLASTIC REFLECTOR WITH
 SPECULAR FINISH AND 1 APERTURE PER
 LED, CLEAR FLAT GLASS LENS IN CAST
 WHITE PAINTED METAL LENS FRAME.
 (SEE PAGE 2 FOR MORE INFORMATION)

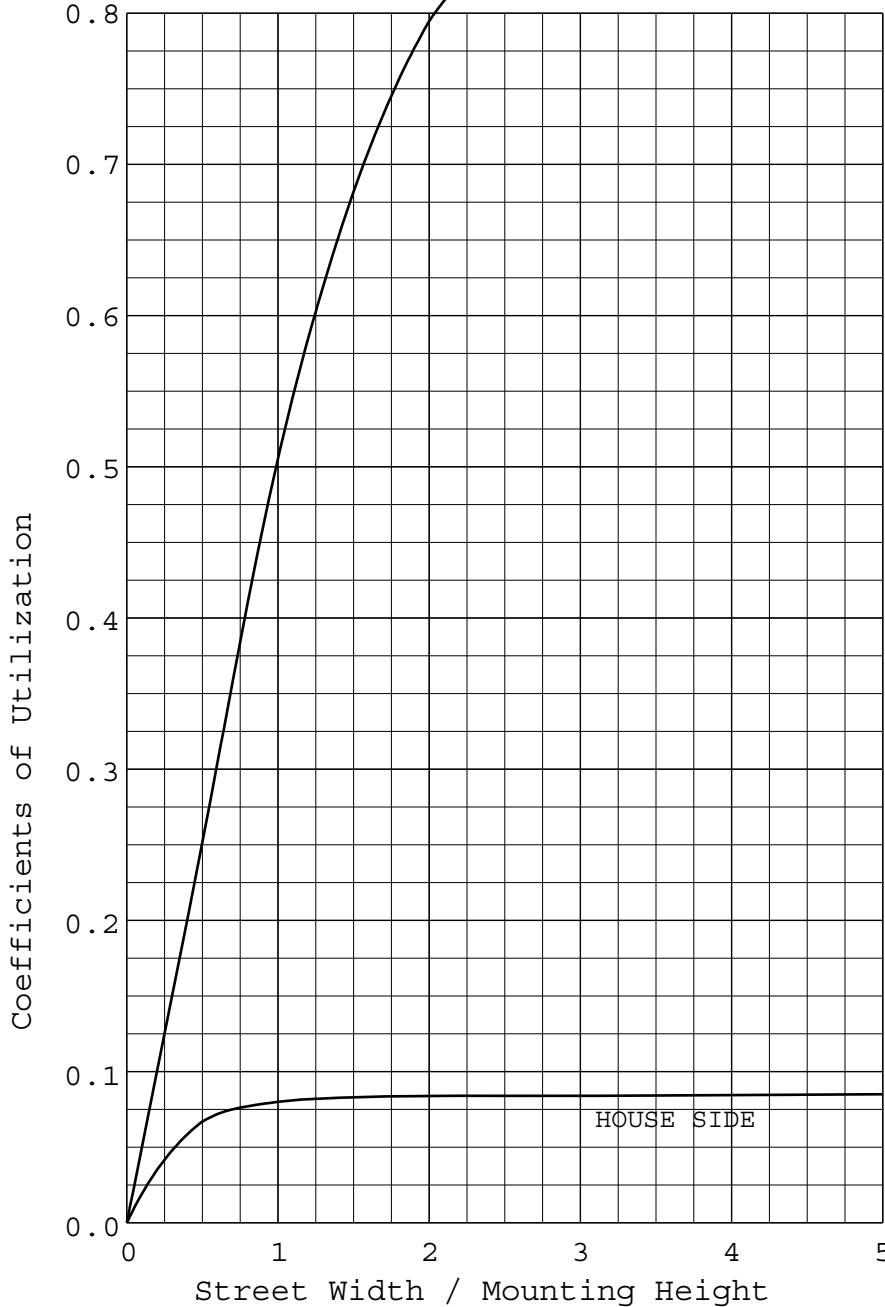


REPORT NUMBER: RAB02130
 ISSUE DATE: 06/22/16
 PREPARED FOR: RAB LIGHTING INC.

PAGE: 4 OF 9
 DATE SAMPLE TESTED: 06/22/16

STREET SIDE

COEFFICIENTS OF UTILIZATION AND FLUX DISTRIBUTION



	LUMENS	PERCENT OF FIXTURE
DOWNWARD STREET SIDE	15405.	91.5
DOWNWARD HOUSE SIDE	1434.	8.5
DOWNWARD TOTAL	16839.	100.0
UPWARD STREET SIDE	0.	0.0
UPWARD HOUSE SIDE	0.	0.0
UPWARD TOTAL	0.	0.0
TOTAL FLUX	16839.	100.0

TOTAL INPUT WATTS = 155.2
 EFFICACY = 108.5 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: RAB02130
 ISSUE DATE: 06/22/16
 PREPARED FOR: RAB LIGHTING INC.

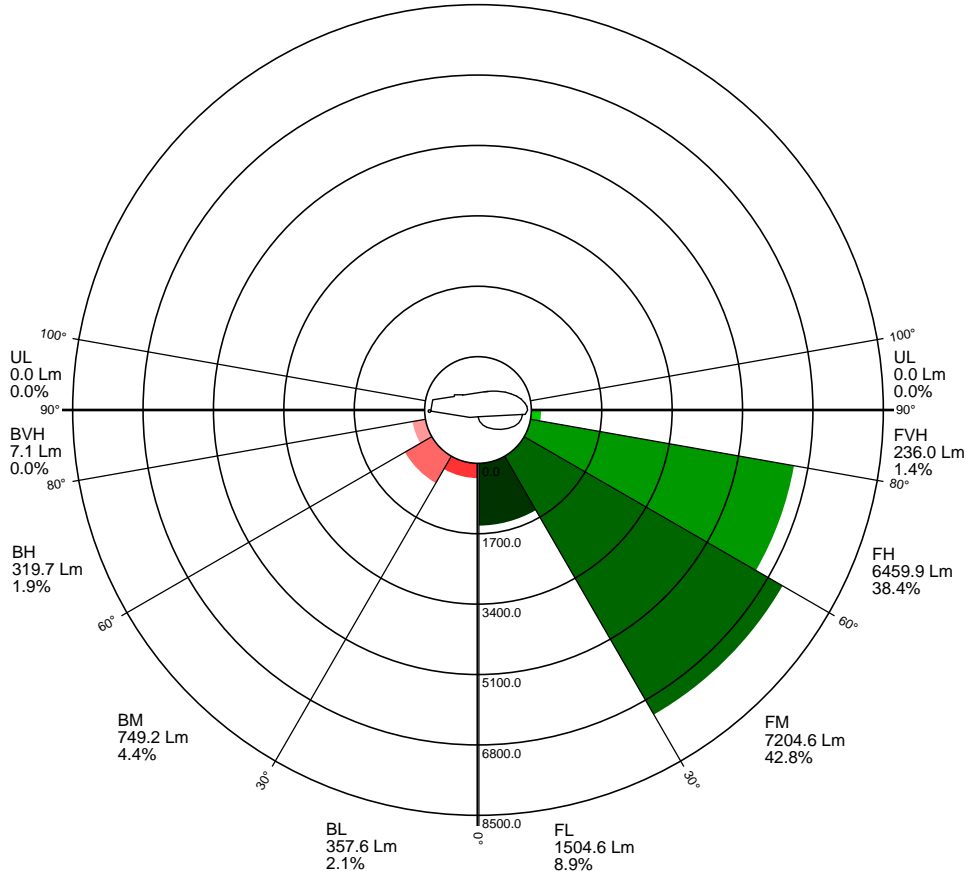
PAGE: 5 OF 9
 DATE SAMPLE TESTED: 06/22/16

BUG Rating:			B1	U0	G3	
Zonal Summary		Lumens	% of Fixture	Zone Ratings		
				B	U	G
Forward		15405	91.5			
FL	(0° - 30°)	1504.6	8.9			
FM	(30° - 60°)	7204.6	42.8			
FH	(60° - 80°)	6459.9	38.4			G3
FVH	(80° - 90°)	236.0	1.4			G3
Backward		1434	8.5			
BL	(0° - 30°)	357.6	2.1	B1		
BM	(30° - 60°)	749.2	4.4	B1		
BH	(60° - 80°)	319.7	1.9	B1		G1
BVH	(80° - 90°)	7.1	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		16839	100.0			

Zonal Lumen Summary

(Linear scale)

UH
0.0 Lm
0.0%

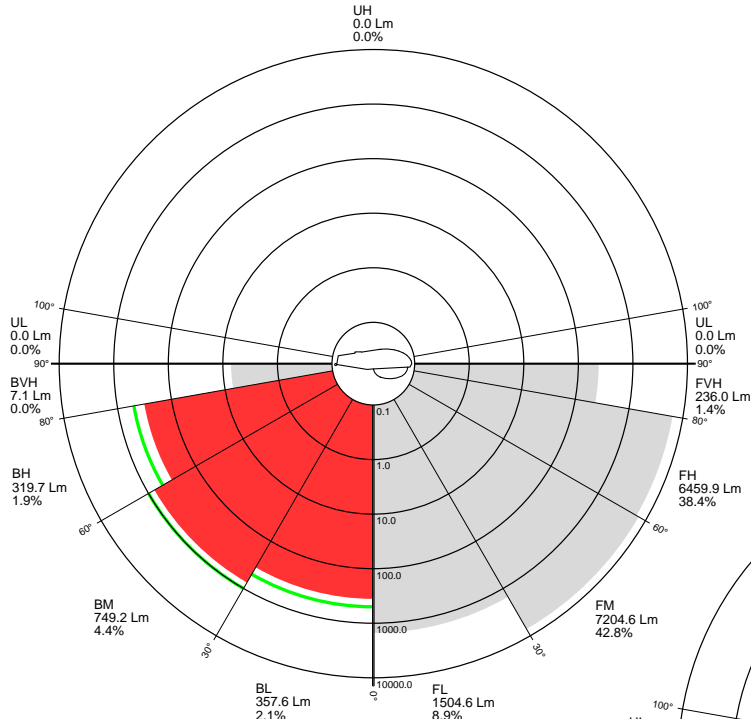


REPORT NUMBER: RAB02130
 ISSUE DATE: 06/22/16
 PREPARED FOR: RAB LIGHTING INC.

PAGE: 6 OF 9
 DATE SAMPLE TESTED: 06/22/16

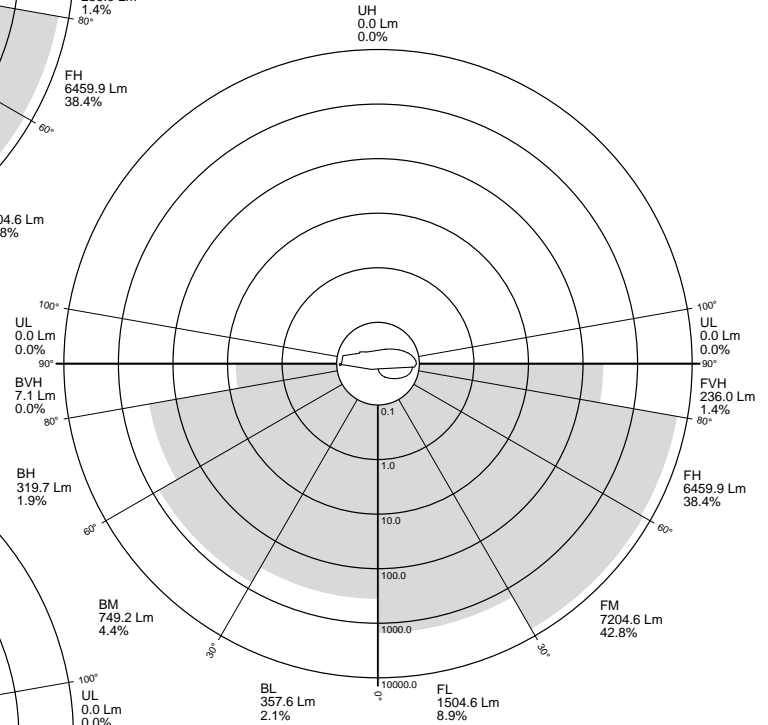
Backlight Rating Details

(Logarithmic scale)



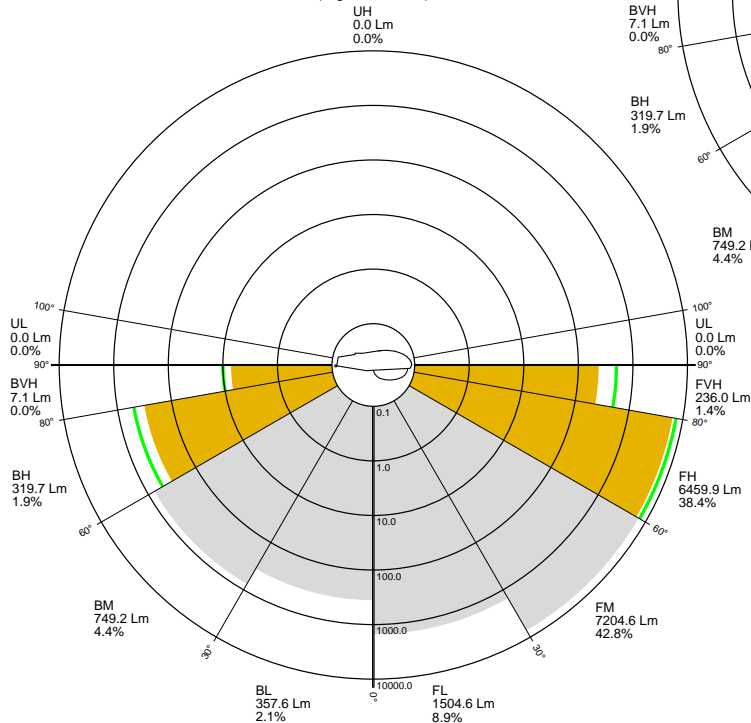
Uplight Rating Details

(Logarithmic scale)



Glare Rating Details

(Logarithmic scale)



REPORT NUMBER: RAB02130
 ISSUE DATE: 06/22/16
 PREPARED FOR: RAB LIGHTING INC.

PAGE: 7 OF 9
 DATE SAMPLE TESTED: 06/22/16

CANDELA TABULATION

	LATERAL ANGLE											
	STREET SIDE	0.0	5.0	15.0	25.0	35.0	45.0	55.0	65.0	75.0	76.0	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	3.	5.	7.	12.	28.	38.	24.	20.	17.	17.	14.
	85.0	33.	38.	78.	129.	235.	232.	232.	257.	192.	165.	49.
	82.5	119.	160.	354.	473.	812.	1041.	1167.	1127.	738.	641.	174.
V	80.0	344.	473.	777.	1350.	1802.	2855.	3478.	3154.	1846.	1659.	565.
E	77.5	1051.	1286.	1671.	2570.	3022.	4389.	5533.	5720.	4007.	3635.	1902.
R	75.0	2081.	2199.	2629.	3465.	4195.	5215.	7065.	7975.	6476.	6073.	3612.
T	72.5	2648.	2714.	3301.	4326.	5353.	6507.	8058.	9415.	8404.	8039.	5274.
I	70.0	3144.	3163.	3890.	5202.	6611.	9081.	9367.	9479.	9019.	8955.	5952.
C	67.5	3562.	3652.	4563.	6274.	8607.	9780.	10187.	9877.	9317.	9237.	6410.
A	65.0	4281.	4650.	5791.	7631.	9761.	9863.	10058.	10558.	10530.	10520.	7725.
L	63.0 <<	5573.	5924.	6893.	8935.	9902.	9862.	9709.	10158.	10938.	10983.	8494.
	62.5	5885.	6225.	7246.	9141.	9886.	9857.	9647.	10102.	10927.	10948.	8419.
A	60.0	7351.	7602.	8339.	9199.	9627.	9375.	9077.	10348.	10330.	10270.	7725.
N	57.5	7442.	7396.	7956.	8221.	8438.	8643.	8580.	9948.	9357.	9238.	7046.
G	55.0	6923.	6929.	7333.	7511.	7442.	7960.	8380.	9203.	8241.	8271.	6206.
L	52.5	6550.	6506.	6718.	6605.	6654.	7520.	8212.	8716.	7420.	7453.	5366.
E	50.0	6196.	6161.	6131.	6031.	6311.	7380.	7619.	7955.	6752.	6723.	4795.
	47.5	5787.	5769.	5709.	5736.	6052.	6844.	6883.	6879.	6219.	6141.	4277.
	45.0	5510.	5517.	5471.	5709.	5902.	6384.	6333.	6277.	5397.	5318.	3677.
	42.5	5392.	5406.	5443.	5826.	5689.	6154.	6095.	5655.	4764.	4702.	3331.
	40.0	5280.	5280.	5353.	5995.	5483.	5830.	5645.	5247.	4390.	4314.	3018.
	37.5	5199.	5192.	5393.	5807.	5634.	5639.	5192.	5078.	4135.	4004.	2825.
	35.0	5471.	5483.	5416.	5553.	5446.	5220.	5071.	4909.	3929.	3798.	2741.
	30.0	5431.	5444.	4950.	4963.	4784.	4621.	4719.	4503.	3811.	3695.	2584.
	25.0	5077.	5101.	4541.	4345.	4334.	4414.	4289.	3847.	3193.	3087.	2272.
	20.0	4776.	4787.	4532.	4224.	4106.	3913.	3632.	3234.	2663.	2606.	2005.
	15.0	4136.	4175.	4023.	3750.	3488.	3277.	3078.	2743.	2276.	2214.	1808.
	10.0	3424.	3465.	3401.	3264.	2992.	2696.	2391.	2089.	1823.	1787.	1585.
	5.0	2375.	2426.	2318.	2299.	2164.	2055.	1949.	1807.	1691.	1677.	1577.
	0.0	1492.	1492.	1492.	1492.	1492.	1492.	1492.	1492.	1492.	1492.	1492.

||
 PLANE OF MAXIMUM CANDELA

CONE OF MAXIMUM CANDELA

REPORT NUMBER: RAB02130
 ISSUE DATE: 06/22/16
 PREPARED FOR: RAB LIGHTING INC.

PAGE: 8 OF 9
 DATE SAMPLE TESTED: 06/22/16

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	14.	13.	13.	13.	12.	11.	9.	7.	6.	7.	7.
85.0	18.	16.	15.	13.	12.	10.	9.	7.	6.	7.	7.
82.5	54.	38.	25.	15.	12.	10.	9.	7.	7.	7.	7.
V 80.0	208.	117.	63.	38.	14.	10.	9.	7.	8.	8.	8.
E 77.5	938.	493.	129.	77.	16.	11.	9.	8.	9.	10.	10.
R 75.0	1888.	771.	220.	93.	37.	12.	10.	10.	11.	12.	12.
T 72.5	2852.	1072.	277.	133.	97.	30.	11.	11.	14.	14.	14.
I 70.0	3476.	1372.	630.	247.	109.	40.	17.	13.	15.	16.	15.
C 67.5	3533.	1497.	854.	340.	114.	58.	35.	19.	16.	17.	17.
A 65.0	4157.	1818.	925.	420.	134.	101.	72.	29.	19.	19.	18.
L 63.0<<	4805.	2076.	1140.	509.	175.	145.	90.	38.	24.	19.	19.
62.5	4853.	2096.	1198.	549.	185.	154.	91.	40.	26.	19.	19.
A 60.0	5045.	2154.	1282.	600.	230.	187.	104.	49.	32.	23.	21.
N 57.5	4860.	2309.	1311.	747.	266.	206.	118.	60.	34.	24.	22.
G 55.0	4233.	2306.	1274.	853.	289.	217.	136.	70.	41.	24.	23.
L 52.5	3692.	2495.	1256.	765.	346.	233.	153.	83.	48.	26.	23.
E 50.0	3394.	2576.	1240.	790.	427.	249.	160.	91.	56.	43.	35.
47.5	3104.	2429.	1288.	825.	497.	268.	178.	101.	61.	77.	81.
45.0	2796.	2212.	1313.	828.	532.	300.	199.	113.	82.	61.	66.
42.5	2575.	2051.	1316.	819.	581.	340.	224.	139.	89.	58.	56.
40.0	2383.	1962.	1320.	821.	644.	371.	228.	153.	117.	90.	90.
37.5	2310.	1962.	1377.	836.	656.	394.	260.	158.	125.	107.	108.
35.0	2306.	2007.	1443.	867.	659.	429.	306.	181.	133.	105.	89.
30.0	2165.	1946.	1484.	991.	669.	570.	376.	251.	194.	153.	145.
25.0	1967.	1779.	1474.	1191.	729.	508.	379.	273.	216.	211.	212.
20.0	1767.	1602.	1333.	1114.	904.	613.	439.	330.	284.	255.	238.
15.0	1637.	1531.	1337.	1150.	983.	850.	727.	620.	587.	599.	591.
10.0	1487.	1406.	1269.	1144.	1056.	982.	944.	896.	832.	776.	761.
5.0	1522.	1473.	1370.	1298.	1223.	1165.	1128.	1080.	1055.	1016.	1011.
0.0	1492.	1492.	1492.	1492.	1492.	1492.	1492.	1492.	1492.	1492.	1492.

CONE OF MAXIMUM CANDELA

REPORT NUMBER: RAB02130
ISSUE DATE: 06/22/16
PREPARED FOR: RAB LIGHTING INC.

PAGE: 9 OF 9
DATE SAMPLE TESTED: 06/22/16

5-DEGREE
ZONAL LUMEN SUMMARY

0- 5	37
5- 10	124
10- 15	232
15- 20	353
20- 25	484
25- 30	633
30- 35	797
35- 40	942
40- 45	1112
45- 50	1354
50- 55	1677
55- 60	2072
60- 65	2281
65- 70	2018
70- 75	1579
75- 80	901
80- 85	228
85- 90	15
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	161
0- 20	745
0- 30	1862
0- 40	3601
0- 50	6067
0- 60	9816
0- 70	14115
0- 80	16596
0- 90	16839
0-100	16839
0-110	16839
0-120	16839
0-130	16839
0-140	16839
0-150	16839
0-160	16839
0-170	16839
0-180	16839

REPORT NUMBER: RAB02131
DATE: 6/22/2016
PREPARED FOR: RAB LIGHTING INC.
CATALOG NUMBER: ALED3T150 - RWLED3T150 - RWLED3T150SF - WPLED3T150 (TYPE III)

ADDRESS: 170 LUDLOW AVE, NORTHVALE, NJ 07647

LUMINAIRE: CAST FINNED METAL HOUSING, 6 CIRCUIT BOARDS EACH WITH 1 LED, MOLDED PLASTIC REFLECTOR WITH SPECULAR FINISH AND 1 APERTURE PER LED, CLEAR FLAT GLASS LENS IN CAST WHITE PAINTED METAL LENS FRAME.

LAMP: SIX WHITE MULTI-CHIP LIGHT EMITTING DIODES (LEDS), 2 LEDES TILTED 63-DEGREES FROM VERTICAL BASE-UP POSITION AND CANTED 75-DEGREES FROM STRAIGHT AHEAD, 2 LEDES TILTED 67-DEGREES FROM VERTICAL BASE-UP POSITION AND CANTED 68-DEGREES FROM STRAIGHT AHEAD, 2 LEDES TILTED 58-DEGREES FROM VERTICAL BASE-UP POSITION AND CANTED 40-DEGREES FROM STRAIGHT AHEAD.

DRIVER: 2 X 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 5/31/17
RAB 2.0 meter Diameter Integrating Sphere, 4PI Geometry 5/31/17

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: RAB02131 Page 2 of 4
 DATE: 6/22/2016
 PREPARED FOR: RAB LIGHTING INC.
 CATALOG NUMBER: ALED3T150 - RWLED3T150 - RWLED3T150SF - WPLED3T150 (TYPE III)

RESULTS:

PHOTOMETRIC	
Total Integrated Flux (lumens)	16839 *
SPECTRORADIOMETRIC	
Observer	CIE 1931 2 degree
Chromaticity Ordinate x	0.3454
Chromaticity Ordinate y	0.3642
Observer	CIE 1976 2 degree
Chromaticity Ordinate u'	0.2068
Chromaticity Ordinate v'	0.4907
Correlated Color Temp CCT (K)	5029
ANSI C78.377-2008 Duv	0.006
Total Radiant Flux (milliWatts)	49147 *
ELECTRICAL	
Input Voltage (Volts AC)	120.0
Input Current (Amps AC)	1.30
Input Power (Watts)	155.2
Input Power Factor (%)	99.5
Input Current THD (%)	4.9
Input Voltage THD (%)	0.2
EFFICACY (Lumens/Watt)	
108.5	
ELECTRICAL AT MAX NONIMAL INPUT	
Input Voltage (Volts AC)	277.0
Input Current (Amps AC)	0.585
Input Power (Watts)	151.8
Input Power Factor (%)	93.7
Input Current THD (%)	13.8
Input Voltage THD (%)	0.2
Off-State Power (Watts)	
0.0	

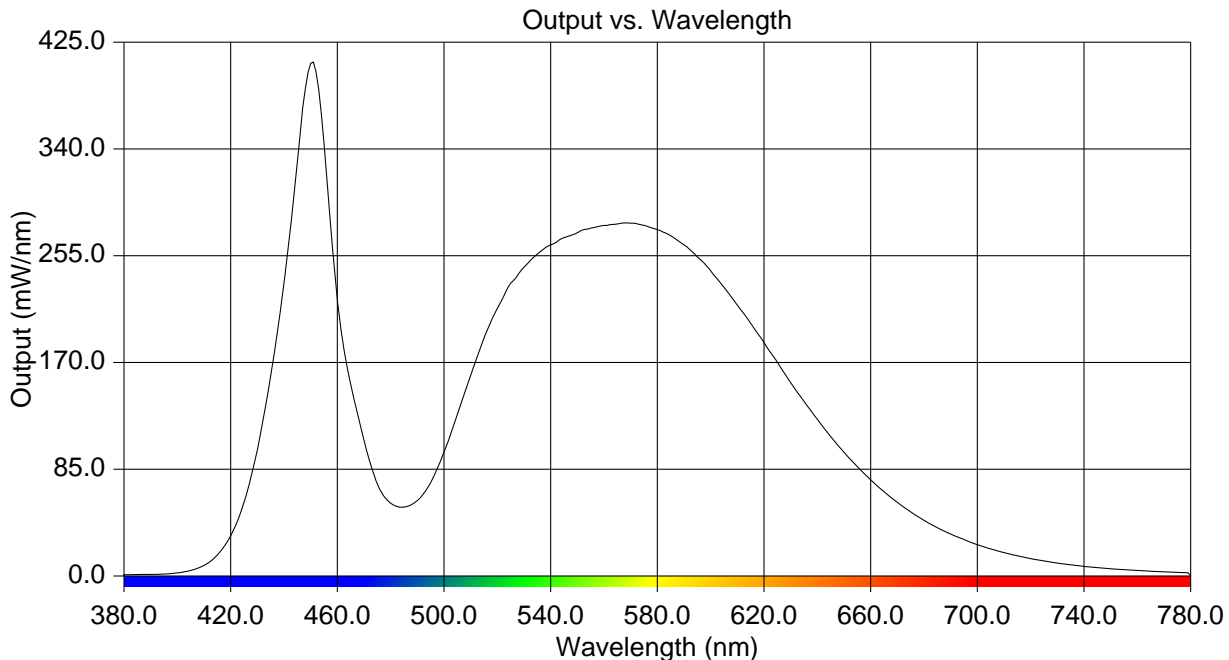
COLOR RENDERING INDICES	CRI
Ra (Average 1-8)	71
R1 Light greyish red	68
R2 Dark greyish yellow	76
R3 Strong yellowish green	82
R4 Moderate yellowish green	72
R5 Light bluish green	69
R6 Light blue	68
R7 Light violet	81
R8 Light reddish purple	55
R9 Strong red	-37
R10 Strong yellow	44
R11 Strong green	68
R12 Strong blue	41
R13 Light yellowish pink (skin)	69
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: RAB02131 Page 3 of 4
 DATE: 6/22/2016
 PREPARED FOR: RAB LIGHTING INC.
 CATALOG NUMBER: ALED3T150 - RWLED3T150 - RWLED3T150SF - WPLED3T150 (TYPE III)

RESULTS:

Wavelength	mW per nm	Wavelength	mW per nm	Wavelength	mW per nm
380	0.962	515	189.517	650	98.570
385	1.068	520	213.232	655	87.150
390	1.211	525	233.316	660	76.524
395	1.585	530	246.100	665	67.138
400	2.485	535	256.564	670	58.632
405	4.320	540	263.942	675	51.058
410	8.496	545	269.599	680	44.418
415	16.722	550	273.487	685	38.481
420	32.017	555	277.233	690	33.317
425	58.762	560	279.356	695	29.098
430	100.279	565	280.385	700	24.925
435	159.885	570	281.148	705	21.475
440	233.297	575	279.430	710	18.565
445	330.319	580	276.056	715	16.068
450	408.434	585	271.342	720	13.912
455	344.932	590	263.924	725	11.984
460	220.320	595	254.206	730	10.353
465	152.836	600	243.087	735	8.936
470	108.034	605	230.202	740	7.633
475	73.560	610	215.883	745	6.605
480	57.784	615	201.367	750	5.803
485	54.962	620	186.084	755	5.010
490	60.033	625	170.583	760	4.313
495	74.349	630	154.027	765	3.782
500	98.721	635	139.142	770	3.261
505	128.289	640	124.817	775	2.852
510	160.182	645	111.100	780	0.433



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CIE Chromaticity Diagram

