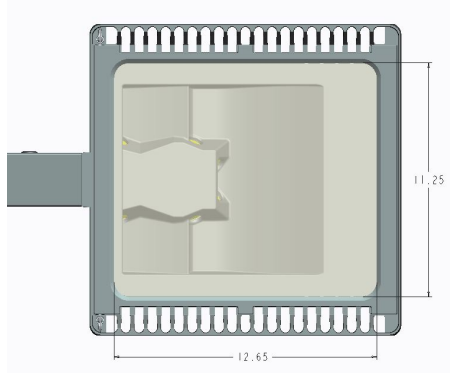


ISOFOOTCANDLE LINES OF HORIZONTAL ILLUMINATION

Values based on 25 foot mounting height.



REPORT NUMBER: RAB04302

ISSUE DATE: 04/24/18

PAGE: 1 OF 9

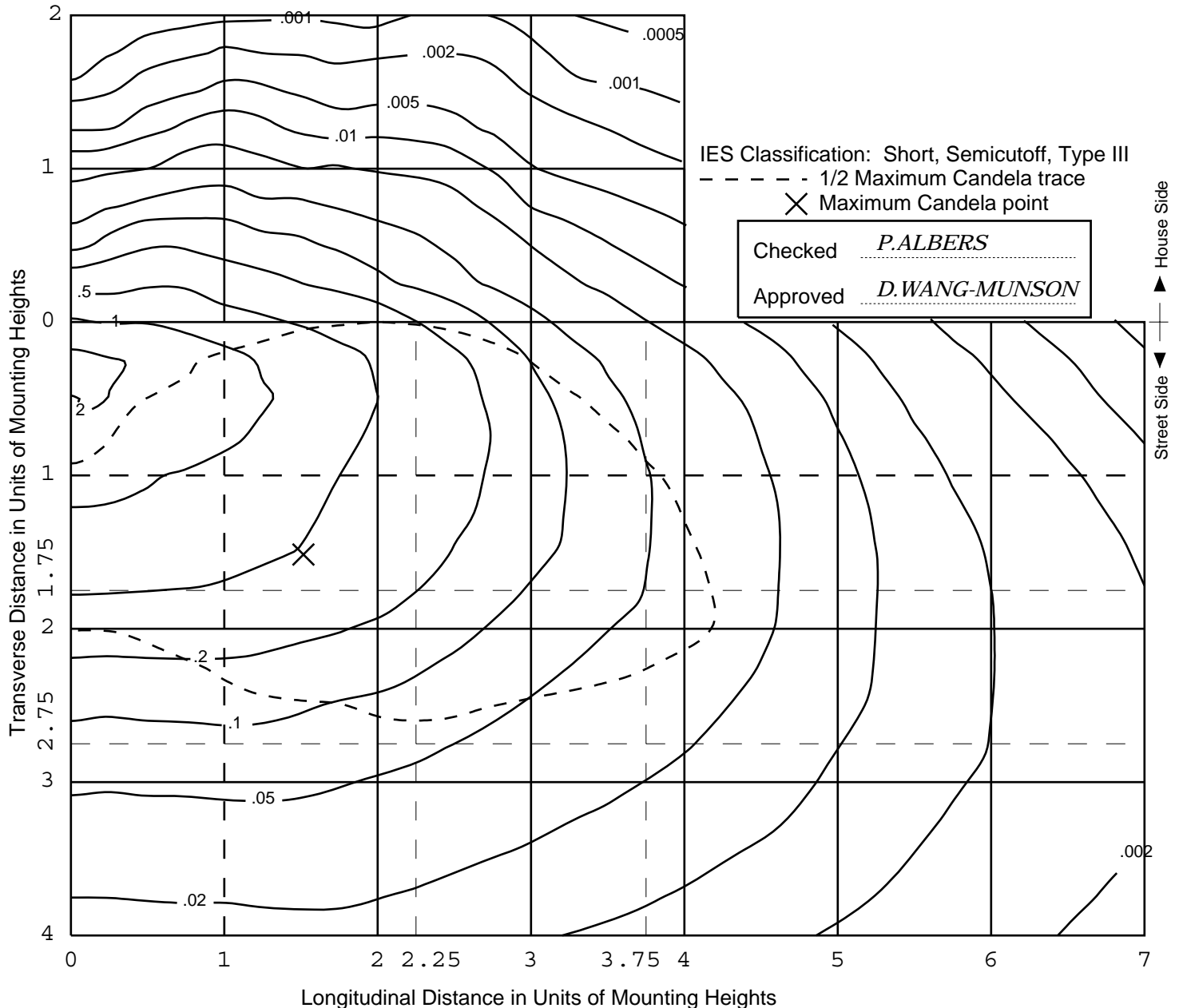
DATE SAMPLE TESTED: 04/24/18

PREPARED FOR: RAB LIGHTING INC. RC LIGHTING

CATALOG NUMBER: ALED3T50Y - RWLED3T50Y
- RWLED3T50SFY - WPLED3T50Y (TYPE III) (ALSO APPLIES TO RCL)

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 BROWN PAINTED METAL LENS FRAME.

(SEE PAGE 2 FOR MORE INFORMATION)



REPORT NUMBER: RAB04302

PAGE: 2 OF 9

ISSUE DATE: 04/24/18

DATE SAMPLE TESTED: 04/24/18

PREPARED FOR: RAB LIGHTING INC. RC LIGHTING

ADDITIONAL INFORMATION

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

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.

NOTE: DATA SHOWN IS ABSOLUTE FOR THE SAMPLE PROVIDED.

TOTAL INPUT WATTS = 53.527 W AT 277.0 VAC.

LED DRIVER: RD-052-A1400-R

TEST PROCEDURE: IESNA LM-79-08

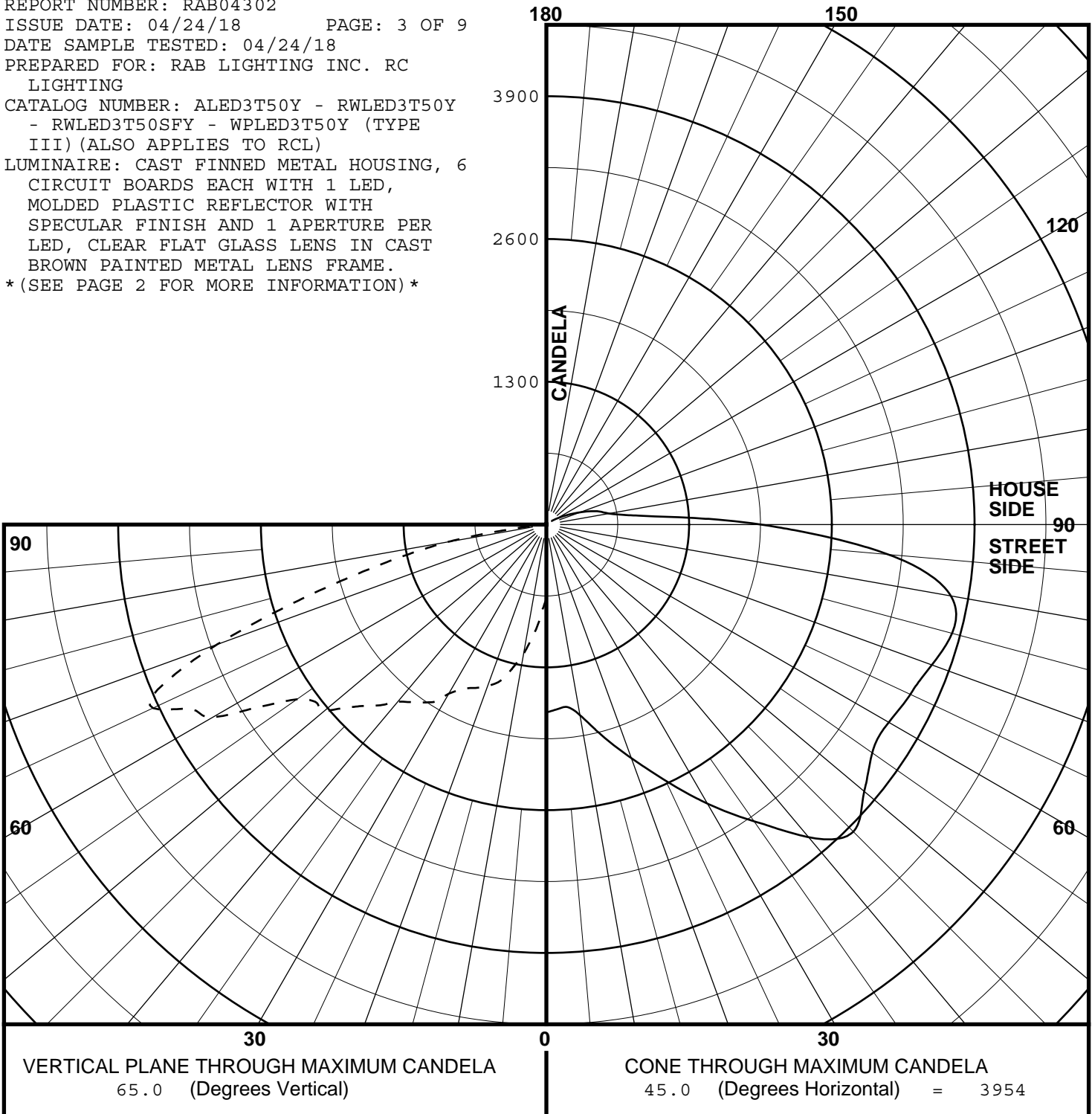
LM-80 DATA AVAILABLE FROM MANUFACTURER FOR SOLID STATE SOURCE

AMBIENT: 25.6

ACCREDITED LABORATORY CODE 201058-0

MAXIMUM PLANE AND MAXIMUM CONE PLOTS OF CANDELA

REPORT NUMBER: RAB04302
ISSUE DATE: 04/24/18 PAGE: 3 OF 9
DATE SAMPLE TESTED: 04/24/18
PREPARED FOR: RAB LIGHTING INC. RC
LIGHTING
CATALOG NUMBER: ALED3T50Y - RWLED3T50Y
- RWLED3T50SFY - WPLED3T50Y (TYPE
III) (ALSO APPLIES TO RCL)
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
BROWN PAINTED METAL LENS FRAME.
(SEE PAGE 2 FOR MORE INFORMATION)



REPORT NUMBER: RAB04302

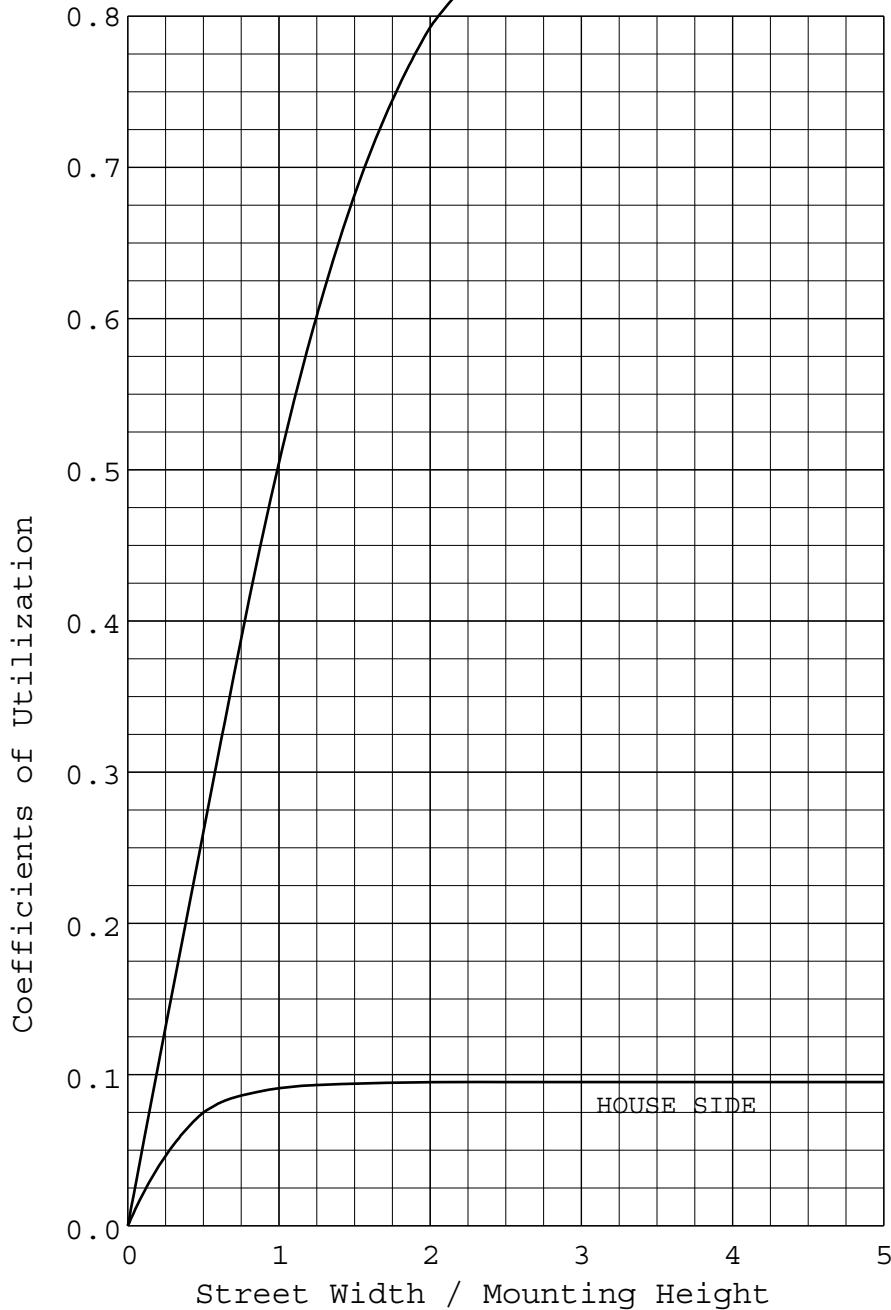
PAGE: 4 OF 9

ISSUE DATE: 04/24/18

DATE SAMPLE TESTED: 04/24/18

PREPARED FOR: RAB LIGHTING INC. ~~RC LIGHTING~~ STREET SIDE

COEFFICIENTS OF UTILIZATION AND FLUX DISTRIBUTION



	LUMENS	PERCENT OF FIXTURE
DOWNWARD STREET SIDE	5767.	90.4
DOWNWARD HOUSE SIDE	610.	9.6
DOWNWARD TOTAL	6377.	100.0
UPWARD STREET SIDE	0.	0.0
UPWARD HOUSE SIDE	0.	0.0
UPWARD TOTAL	0.	0.0
TOTAL FLUX	6377.	100.0

TOTAL INPUT WATTS = 53.5
EFFICACY = 119.2 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: RAB04302

ISSUE DATE: 04/24/18

PREPARED FOR: RAB LIGHTING INC. RC LIGHTING

PAGE: 5 OF 9

DATE SAMPLE TESTED: 04/24/18

BUG Rating:

Zonal Summary

Lumens

% of Fixture

B1 U0 G2

Zone Ratings

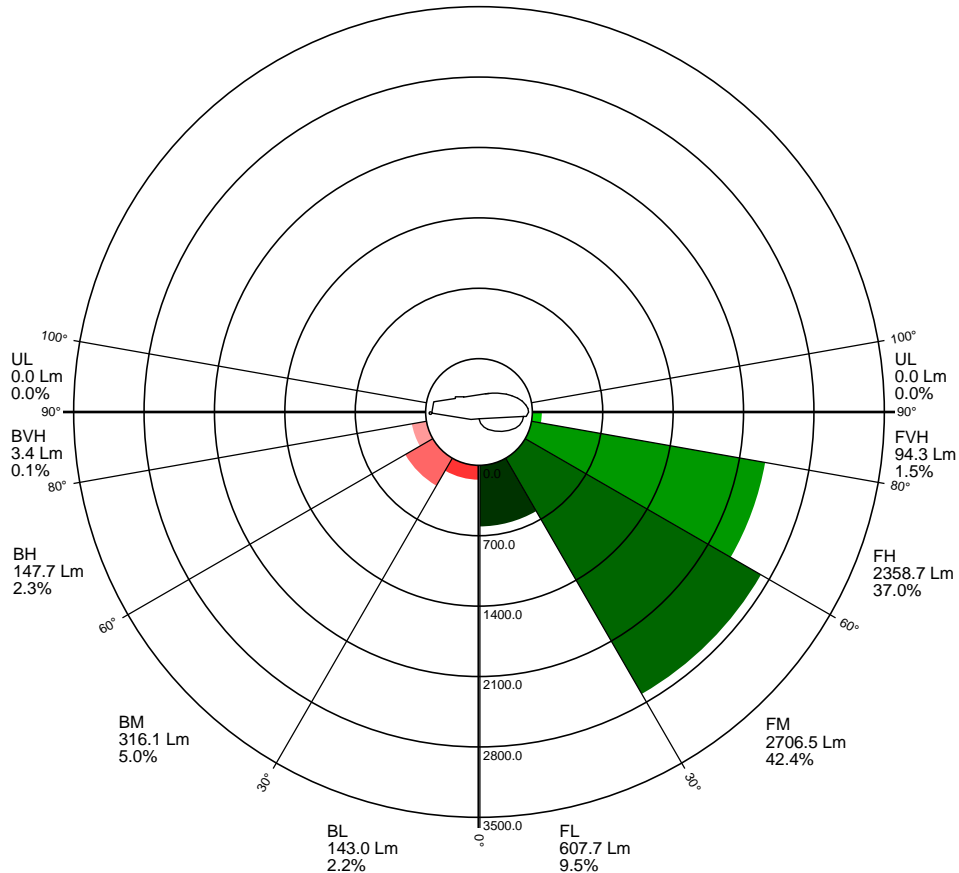
B U G

Forward			5767	90.4			
FL	(0° - 30°)		607.7	9.5			
FM	(30° - 60°)		2706.5	42.4			
FH	(60° - 80°)		2358.7	37.0			G2
FVH	(80° - 90°)		94.3	1.5			G1
Backward			610	9.6			
BL	(0° - 30°)		143.0	2.2	B1		
BM	(30° - 60°)		316.1	5.0	B1		
BH	(60° - 80°)		147.7	2.3	B1		G1
BVH	(80° - 90°)		3.4	0.1			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			6377	100.0			

Zonal Lumen Summary

(Linear scale)

UH
0.0 Lm
0.0%



REPORT NUMBER: RAB04302

ISSUE DATE: 04/24/18

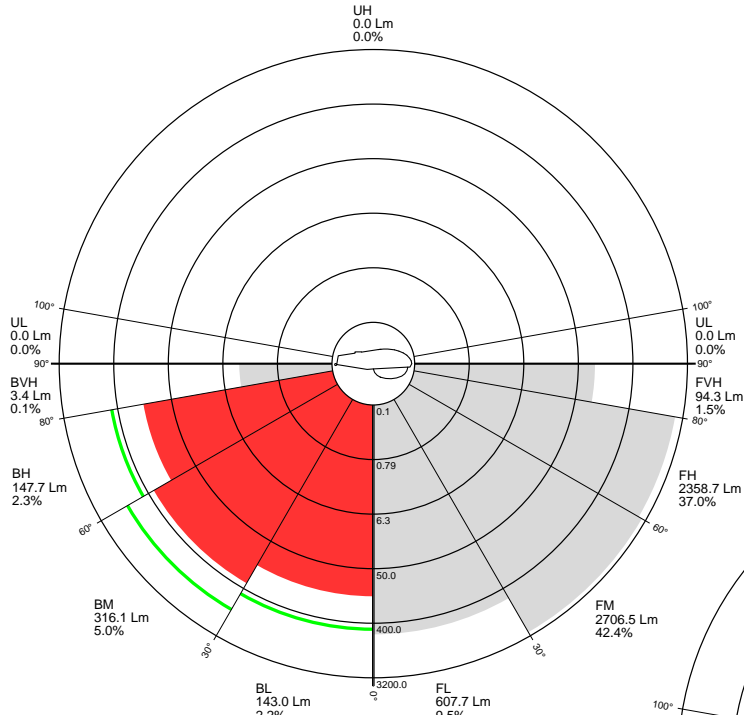
PREPARED FOR: RAB LIGHTING INC. RC LIGHTING

PAGE: 6 OF 9

DATE SAMPLE TESTED: 04/24/18

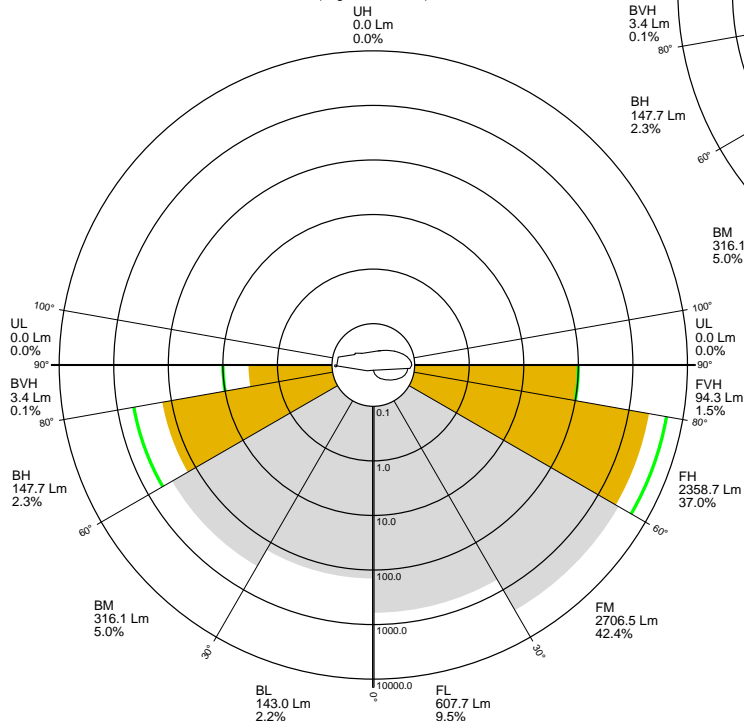
Backlight Rating Details

(Logarithmic scale)



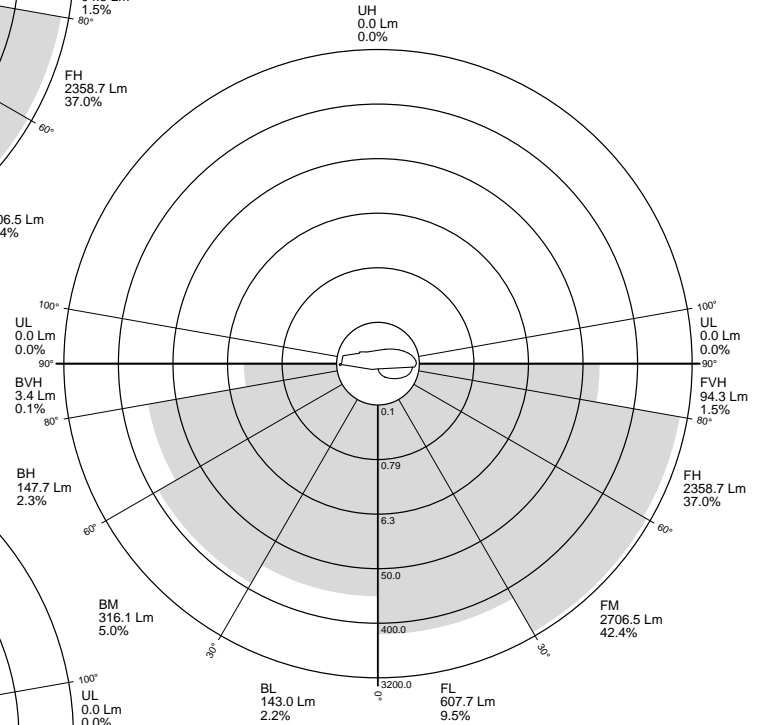
Glare Rating Details

(Logarithmic scale)



Uplight Rating Details

(Logarithmic scale)



REPORT NUMBER: RAB04302

PAGE: 7 OF 9

ISSUE DATE: 04/24/18

DATE SAMPLE TESTED: 04/24/18

PREPARED FOR: RAB LIGHTING INC. RC LIGHTING

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	2.	2.	3.	4.	6.	10.	8.	11.	9. 5.
	85.0	10.	10.	24.	44.	58.	87.	92.	110.	84. 12.
V	82.5	32.	55.	133.	176.	244.	356.	505.	647.	451. 96.
E	80.0	110.	151.	268.	436.	569.	909.	1214.	1272.	935. 408.
R	77.5	375.	417.	562.	886.	1052.	1352.	1768.	2100.	1630. 978.
T	75.0	743.	757.	920.	1253.	1509.	1862.	2252.	2740.	2206. 1330.
I	72.5	1019.	1007.	1176.	1572.	1864.	2489.	3016.	3443.	2908. 1777.
C	70.0	1220.	1200.	1409.	1876.	2222.	3191.	3871.	3723.	3539. 2387.
A	67.5	1475.	1415.	1657.	2183.	2750.	3759.	3900.	3755.	3738. 2916.
L	65.0<<	1710.	1671.	1998.	2574.	3297.	3954.	3623.	3657.	3825. 3129.
	62.5	2163.	2139.	2482.	3095.	3667.	3641.	3589.	3429.	3925. 3100.
A	60.0	2761.	2736.	3047.	3524.	3623.	3511.	3290.	3528.	3758. 2964.
N	57.5	3175.	3182.	3282.	3336.	3213.	3083.	3112.	3755.	3471. 2745.
G	55.0	3013.	3005.	2909.	2913.	2868.	2773.	2953.	3407.	3118. 2504.
L	52.5	2590.	2587.	2611.	2609.	2501.	2652.	2882.	3023.	2830. 2177.
E	50.0	2351.	2357.	2395.	2284.	2268.	2637.	2817.	2810.	2555. 1838.
	47.5	2178.	2177.	2156.	2135.	2230.	2464.	2507.	2518.	2362. 1720.
	45.0	2050.	2054.	2007.	2052.	2226.	2334.	2313.	2277.	2209. 1555.
	42.5	1936.	1950.	1959.	2129.	2172.	2231.	2171.	2111.	2056. 1408.
	40.0	1930.	1937.	1970.	2071.	2111.	2104.	2037.	1982.	1933. 1301.
	37.5	1802.	1800.	1881.	2073.	2015.	2038.	1893.	1856.	1764. 1234.
	35.0	1854.	1869.	1943.	1989.	2012.	1977.	1855.	1834.	1632. 1168.
	30.0	1948.	1927.	1878.	1886.	1879.	1779.	1736.	1766.	1603. 1116.
	25.0	2000.	1987.	1823.	1751.	1681.	1642.	1631.	1572.	1319. 969.
	20.0	1838.	1842.	1744.	1631.	1589.	1564.	1506.	1358.	1138. 844.
	15.0	1653.	1651.	1631.	1558.	1492.	1428.	1336.	1170.	958. 748.
	10.0	1466.	1456.	1451.	1371.	1307.	1195.	1079.	956.	810. 680.
	5.0	1075.	1075.	1055.	1021.	989.	924.	864.	793.	727. 670.
	0.0	670.	670.	670.	670.	670.	670.	670.	670.	670.

||

PLANE OF MAXIMUM CANDELA

CONE OF MAXIMUM CANDELA

REPORT NUMBER: RAB04302

PAGE: 8 OF 9

ISSUE DATE: 04/24/18

DATE SAMPLE TESTED: 04/24/18

PREPARED FOR: RAB LIGHTING INC. RC LIGHTING

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
V E R T I C A L A N G L E	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	5.	5.	5.	5.	5.	4.	3.	3.	2.	2.	3.
	85.0	7.	6.	5.	5.	4.	4.	3.	2.	2.	2.	2.
	82.5	43.	21.	11.	7.	5.	4.	3.	2.	2.	2.	2.
	80.0	217.	96.	28.	16.	5.	3.	3.	2.	3.	3.	3.
	77.5	532.	273.	56.	26.	7.	4.	3.	2.	3.	3.	3.
	75.0	752.	364.	108.	29.	16.	6.	3.	3.	3.	4.	3.
	72.5	1032.	515.	141.	68.	40.	10.	5.	3.	3.	3.	3.
	70.0	1494.	719.	347.	119.	44.	12.	12.	4.	5.	5.	5.
	67.5	1800.	842.	465.	163.	49.	18.	9.	5.	5.	5.	5.
	65.0<<	1957.	898.	471.	202.	57.	35.	16.	6.	5.	5.	5.
	62.5	2011.	938.	498.	248.	73.	50.	31.	11.	6.	5.	5.
	60.0	1843.	946.	554.	302.	94.	67.	40.	16.	7.	4.	4.
	57.5	1760.	937.	544.	293.	116.	87.	47.	20.	9.	5.	4.
	55.0	1657.	970.	514.	297.	139.	95.	52.	26.	11.	5.	4.
	52.5	1505.	968.	465.	320.	185.	98.	59.	31.	15.	6.	5.
	50.0	1358.	972.	453.	367.	250.	120.	62.	34.	18.	22.	22.
	47.5	1258.	895.	477.	325.	243.	132.	74.	38.	23.	29.	45.
	45.0	1203.	865.	477.	331.	229.	141.	85.	46.	32.	28.	25.
	42.5	1162.	883.	481.	330.	248.	153.	91.	75.	40.	24.	20.
	40.0	1076.	914.	563.	334.	266.	161.	99.	66.	56.	36.	28.
	37.5	1020.	901.	759.	384.	262.	171.	111.	70.	60.	45.	38.
35.0	987.	877.	741.	509.	309.	210.	127.	82.	62.	48.	41.	
30.0	906.	807.	622.	444.	309.	235.	195.	97.	69.	55.	50.	
25.0	810.	719.	542.	433.	293.	214.	158.	118.	86.	72.	73.	
20.0	730.	658.	524.	448.	337.	238.	172.	133.	129.	119.	119.	
15.0	667.	610.	529.	438.	390.	346.	286.	233.	207.	179.	175.	
10.0	626.	580.	515.	468.	422.	390.	368.	347.	325.	304.	305.	
5.0	643.	620.	575.	541.	510.	486.	474.	453.	443.	434.	441.	
0.0	670.	670.	670.	670.	670.	670.	670.	670.	670.	670.	670.	

CONE OF MAXIMUM CANDELA

REPORT NUMBER: RAB04302

PAGE: 9 OF 9

ISSUE DATE: 04/24/18

DATE SAMPLE TESTED: 04/24/18

PREPARED FOR: RAB LIGHTING INC. RC LIGHTING

5-DEGREE

ZONAL LUMEN SUMMARY

0- 5	16
5- 10	53
10- 15	97
15- 20	143
20- 25	192
25- 30	249
30- 35	309
35- 40	361
40- 45	423
45- 50	508
50- 55	632
55- 60	789
60- 65	832
65- 70	769
70- 75	580
75- 80	325
80- 85	92
85- 90	6
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	69
0- 20	309
0- 30	751
0- 40	1421
0- 50	2352
0- 60	3773
0- 70	5375
0- 80	6280
0- 90	6377
0-100	6377
0-110	6377
0-120	6377
0-130	6377
0-140	6377
0-150	6377
0-160	6377
0-170	6377
0-180	6377

REPORT NUMBER: RAB04303
DATE: 4/24/2018
PREPARED FOR: RAB LIGHTING INC. RC LIGHTING
CATALOG NUMBER: ALED3T50Y - RWLED3T50Y - RWLED3T50SFY - WPLED3T50Y (TYPE III) (ALSO APPLIES TO RCL)

Page 1 of 4

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 BROWN PAINTED METAL LENS FRAME.

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

DRIVER: RD-052-A1400-R

OBJECT OF TEST: DATA SHOWN IS ABSOLUTE FOR THE SAMPLE PROVIDED AT THE RATED INPUT VOLTAGES (277.0 AND 120.0 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	3/08/19
	OCEAN OPTICS QE65PRO Spectroradiometer	04/23/19
	RAB 2.0 meter Diameter Integrating Sphere, 4PI Geometry	04/23/19

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 (120.0 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: RAB04303
 DATE: 4/24/2018
 PREPARED FOR: RAB LIGHTING INC. RC LIGHTING
 CATALOG NUMBER: ALED3T50Y - RWLED3T50Y - RWLED3T50SFY - WPLED3T50Y (TYPE III) (ALSO APPLIES TO RCL)

Page 2 of 4

RESULTS:

PHOTOMETRIC	
Total Integrated Flux (lumens)	6377 *
SPECTRORADIOMETRIC	
Observer	CIE 1931 2 degree
Chromaticity Ordinate x	0.4334
Chromaticity Ordinate y	0.4067
Observer	CIE 1976 2 degree
Chromaticity Ordinate u'	0.2472
Chromaticity Ordinate v'	0.5219
Correlated Color Temp CCT (K)	3082
ANSI C78.377-2008 Duv	0.002
Total Radiant Flux (milliWatts)	17677 *
ELECTRICAL	
Input Voltage (Volts AC)	277.0
Input Current (Amps AC)	0.201
Input Power (Watts)	53.5
Input Power Factor (%)	96.0
Input Current THD (%)	9.7
Input Voltage THD (%)	0.2
EFFICACY (Lumens/Watt)	
	119.2
ELECTRICAL AT MAX NONIMAL INPUT	
Input Voltage (Volts AC)	120.0
Input Current (Amps AC)	0.448
Input Power (Watts)	53.5
Input Power Factor (%)	99.5
Input Current THD (%)	6.1
Input Voltage THD (%)	0.2
Off-State Power (Watts)	
	0.0

COLOR RENDERING INDICES	CRI
Ra (Average 1-8)	71
R1 Light greyish red	66
R2 Dark greyish yellow	82
R3 Strong yellowish green	95
R4 Moderate yellowish green	69
R5 Light bluish green	68
R6 Light blue	77
R7 Light violet	75
R8 Light reddish purple	38
R9 Strong red	-47
R10 Strong yellow	61
R11 Strong green	66
R12 Strong blue	59
R13 Light yellowish pink (skin)	69
R14 Moderate olive green (leaf)	97

*NOTE:

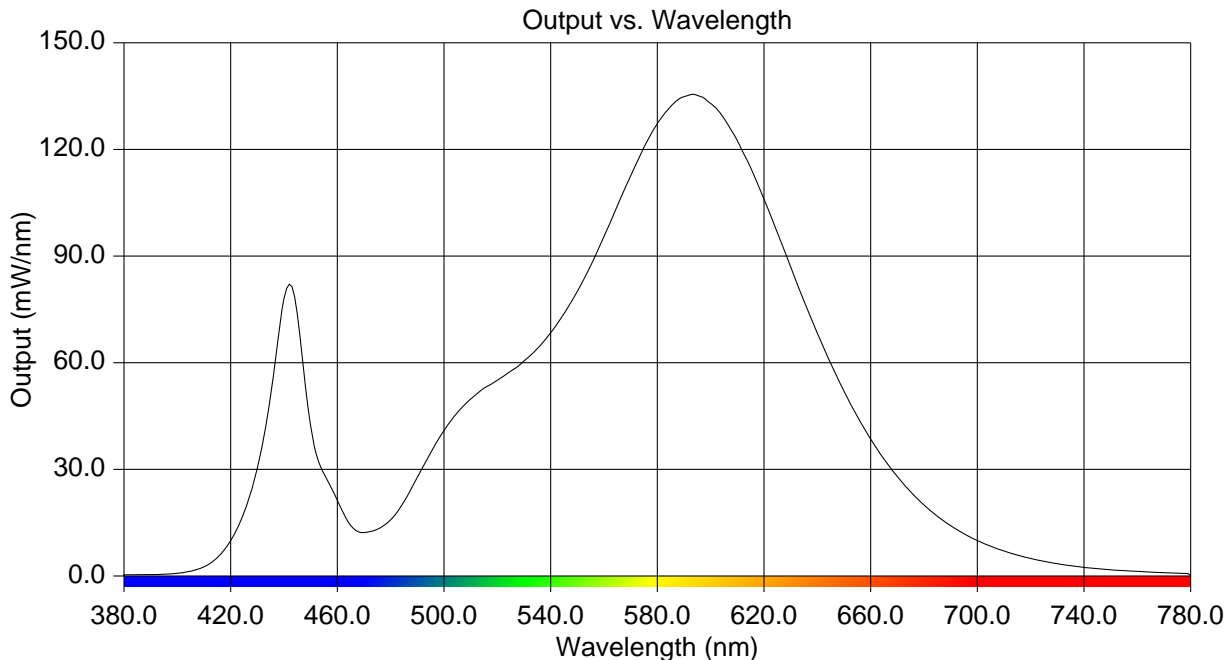
Proper calibration of integrating spheres for measuring total flux output of non-directional samples will produce reliable, repeatable results within the calibration tolerances of the equipment used. However, measurement of test samples with significant self absorption and/or directional output, even 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: RAB04303
 DATE: 4/24/2018
 PREPARED FOR: RAB LIGHTING INC. RC LIGHTING
 CATALOG NUMBER: ALED3T50Y - RWLED3T50Y - RWLED3T50SFY - WPLED3T50Y (TYPE III) (ALSO APPLIES TO RCL)

Page 3 of 4

RESULTS:

Wavelength	mW per nm	Wavelength	mW per nm	Wavelength	mW per nm
380	0.321	515	52.816	650	51.964
385	0.346	520	55.085	655	44.882
390	0.388	525	57.595	660	38.464
395	0.489	530	60.509	665	32.862
400	0.753	535	63.982	670	27.943
405	1.340	540	68.491	675	23.621
410	2.578	545	73.667	680	19.950
415	5.155	550	80.070	685	16.788
420	9.865	555	87.333	690	14.155
425	17.944	560	95.384	695	11.888
430	30.282	565	104.147	700	9.969
435	50.707	570	112.555	705	8.330
440	78.116	575	120.589	710	7.007
445	73.618	580	127.199	715	5.865
450	42.155	585	132.046	720	4.916
455	28.736	590	134.810	725	4.124
460	21.319	595	135.176	730	3.453
465	14.197	600	132.841	735	2.904
470	12.209	605	128.688	740	2.436
475	13.138	610	122.442	745	2.053
480	15.778	615	114.828	750	1.747
485	20.922	620	106.015	755	1.478
490	27.759	625	96.793	760	1.250
495	34.791	630	86.798	765	1.068
500	40.967	635	77.398	770	0.919
505	45.944	640	68.274	775	0.778
510	49.762	645	59.861	780	0.117



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DATE: 4/24/2018
PREPARED FOR: RAB LIGHTING INC. RC LIGHTING
CATALOG NUMBER: ALED3T50Y - RWLED3T50Y - RWLED3T50SFY - WPLED3T50Y (TYPE III) (ALSO APPLIES TO RCL)

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CIE Chromaticity Diagram

