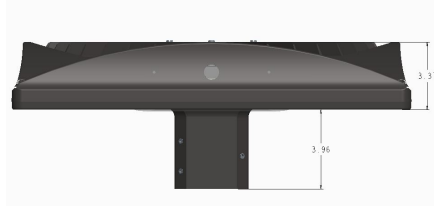


## ISOFOOTCANDLE LINES OF HORIZONTAL ILLUMINATION

Values based on 25 foot mounting height.



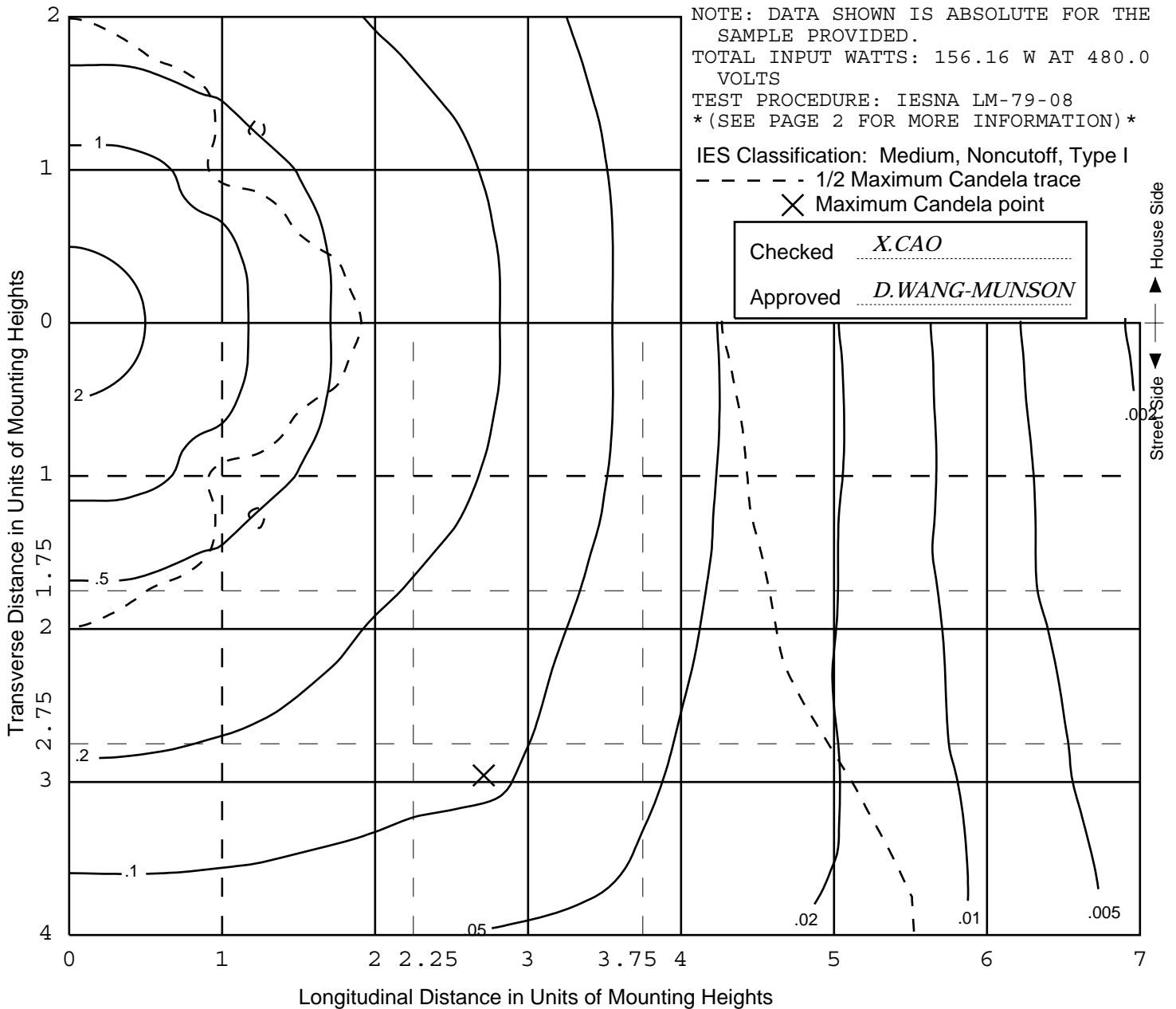
REPORT NUMBER: RAB01464  
ISSUE DATE: 12/17/15 PAGE: 1 OF 9  
DATE SAMPLE TESTED: 12/17/15  
PREPARED FOR: RAB LIGHTING INC.  
CATALOG NUMBER: ALED5S150Y/480/D10  
(TYPE V Square)  
LUMINAIRE: CAST FINNED METAL HOUSING, 4 WHITE CIRCUIT BOARD WITH 11 LEDS, MOLDED 1-PIECE PLASTIC REFLECTOR WITH SPECULAR FINISH, CLEAR POLYCARBONATE LENS IN CAST BRONZE PAINTED METAL FRAME.  
LAMP: FORTY-FOUR WHITE LIGHT EMITTING DIODES (LEDs), TILTED 80-DEGREES FROM VERTICAL BASE-UP POSITION.  
NOTE: DATA SHOWN IS ABSOLUTE FOR THE SAMPLE PROVIDED.  
TOTAL INPUT WATTS: 156.16 W AT 480.0 VOLTS  
TEST PROCEDURE: IESNA LM-79-08  
\*(SEE PAGE 2 FOR MORE INFORMATION)\*

IES Classification: Medium, Noncutoff, Type I

--- 1/2 Maximum Candela trace

X Maximum Candela point

Checked X.CAO  
Approved D.WANG-MUNSON



REPORT NUMBER: RAB01464  
ISSUE DATE: 12/17/15  
PREPARED FOR: RAB LIGHTING INC.

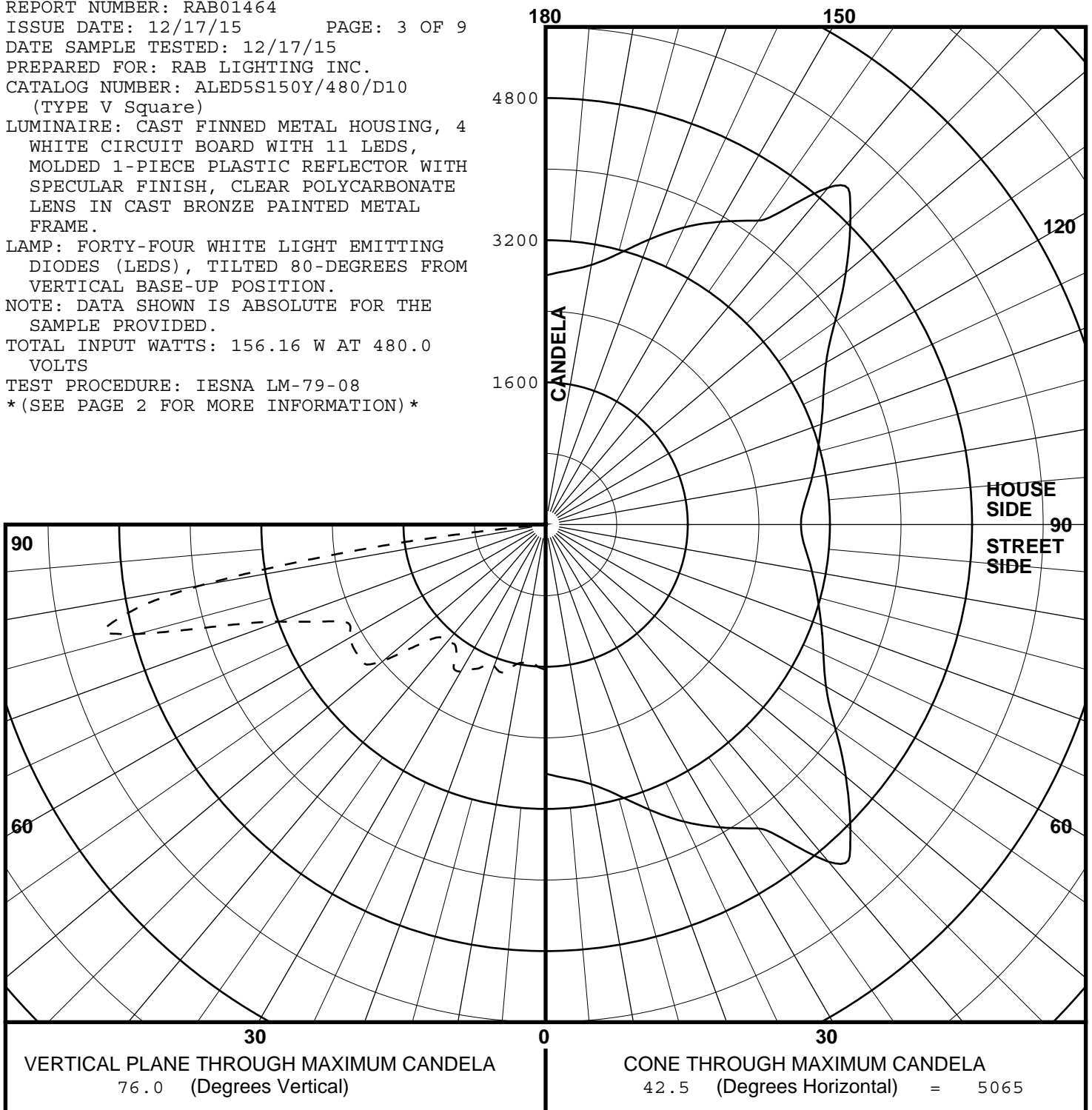
PAGE: 2 OF 9  
DATE SAMPLE TESTED: 12/17/15

ADDITIONAL INFORMATION

TEST DISTANCE: 28.25 FEET  
LED DRIVER: 2 X RDD-H100-A2000-480  
ACCREDITED LABORATORY CODE 201085-0

## MAXIMUM PLANE AND MAXIMUM CONE PLOTS OF CANDELA

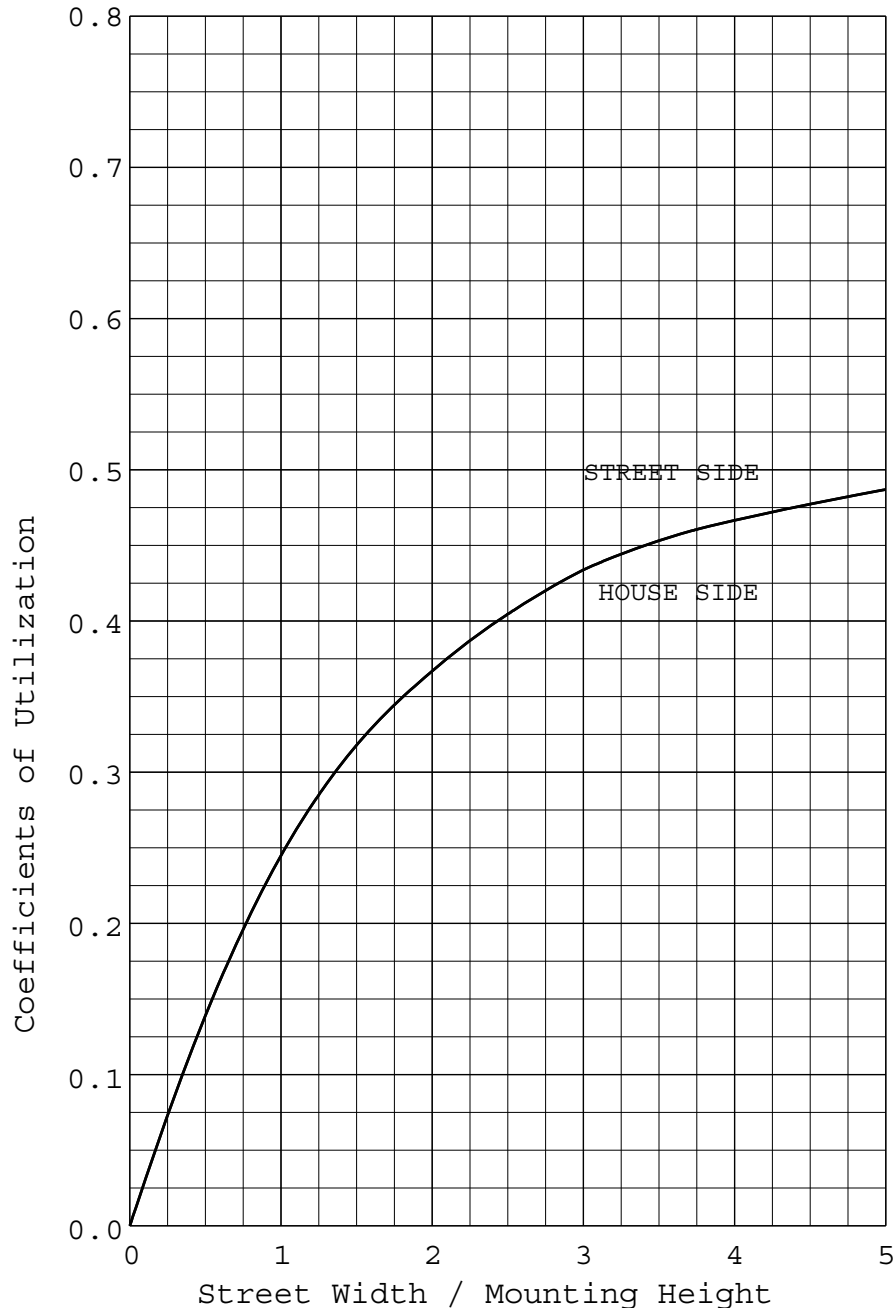
REPORT NUMBER: RAB01464  
 ISSUE DATE: 12/17/15 PAGE: 3 OF 9  
 DATE SAMPLE TESTED: 12/17/15  
 PREPARED FOR: RAB LIGHTING INC.  
 CATALOG NUMBER: ALED5S150Y/480/D10  
 (TYPE V Square)  
 LUMINAIRE: CAST FINNED METAL HOUSING, 4  
 WHITE CIRCUIT BOARD WITH 11 LEDS,  
 MOLDED 1-PIECE PLASTIC REFLECTOR WITH  
 SPECULAR FINISH, CLEAR POLYCARBONATE  
 LENS IN CAST BRONZE PAINTED METAL  
 FRAME.  
 LAMP: FORTY-FOUR WHITE LIGHT EMITTING  
 DIODES (LEDS), TILTED 80-DEGREES FROM  
 VERTICAL BASE-UP POSITION.  
 NOTE: DATA SHOWN IS ABSOLUTE FOR THE  
 SAMPLE PROVIDED.  
 TOTAL INPUT WATTS: 156.16 W AT 480.0  
 VOLTS  
 TEST PROCEDURE: IESNA LM-79-08  
 \*(SEE PAGE 2 FOR MORE INFORMATION)\*



REPORT NUMBER: RAB01464  
ISSUE DATE: 12/17/15  
PREPARED FOR: RAB LIGHTING INC.

PAGE: 4 OF 9  
DATE SAMPLE TESTED: 12/17/15

COEFFICIENTS OF UTILIZATION AND FLUX DISTRIBUTION



	LUMENS	PERCENT OF FIXTURE
DOWNWARD STREET SIDE	6669.	50.0
DOWNWARD HOUSE SIDE	6669.	50.0
DOWNWARD TOTAL	13338.	100.0
UPWARD STREET SIDE	0.	0.0
UPWARD HOUSE SIDE	0.	0.0
UPWARD TOTAL	0.	0.0
TOTAL FLUX	13338.	100.0
TOTAL INPUT WATTS = 156.2		
EFFICACY = 85.4 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: RAB01464  
 ISSUE DATE: 12/17/15  
 PREPARED FOR: RAB LIGHTING INC.

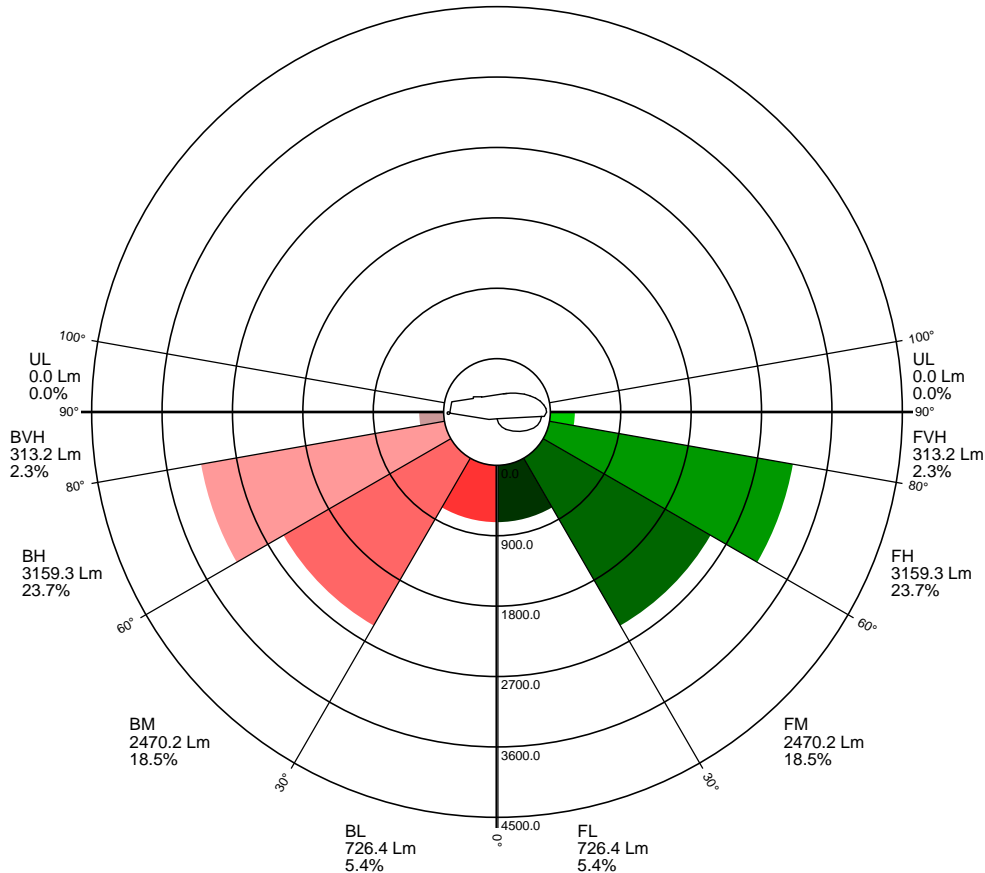
PAGE: 5 OF 9  
 DATE SAMPLE TESTED: 12/17/15

BUG Rating:				<div>B4</div> <div>U0</div> <div>G3</div>		
Zonal Summary				Zone Ratings		
		Lumens	% of Fixture	B	U	G
Forward		6669	50.0			
FL	(0° - 30°)	726.4	5.4			
FM	(30° - 60°)	2470.2	18.5			
FH	(60° - 80°)	3159.3	23.7			G2
FVH	(80° - 90°)	313.2	2.3			G3
Backward		6669	50.0			
BL	(0° - 30°)	726.4	5.4	B2		
BM	(30° - 60°)	2470.2	18.5	B2		
BH	(60° - 80°)	3159.3	23.7	B4		G2
BVH	(80° - 90°)	313.2	2.3			G3
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		13338	100.0			

### Zonal Lumen Summary

(Linear scale)

UH  
0.0 Lm  
0.0%

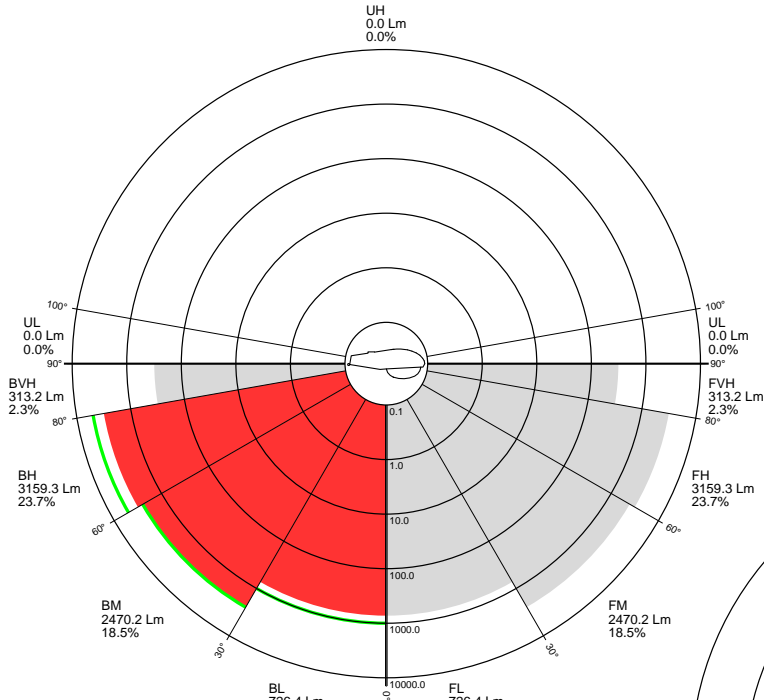


REPORT NUMBER: RAB01464  
 ISSUE DATE: 12/17/15  
 PREPARED FOR: RAB LIGHTING INC.

PAGE: 6 OF 9  
 DATE SAMPLE TESTED: 12/17/15

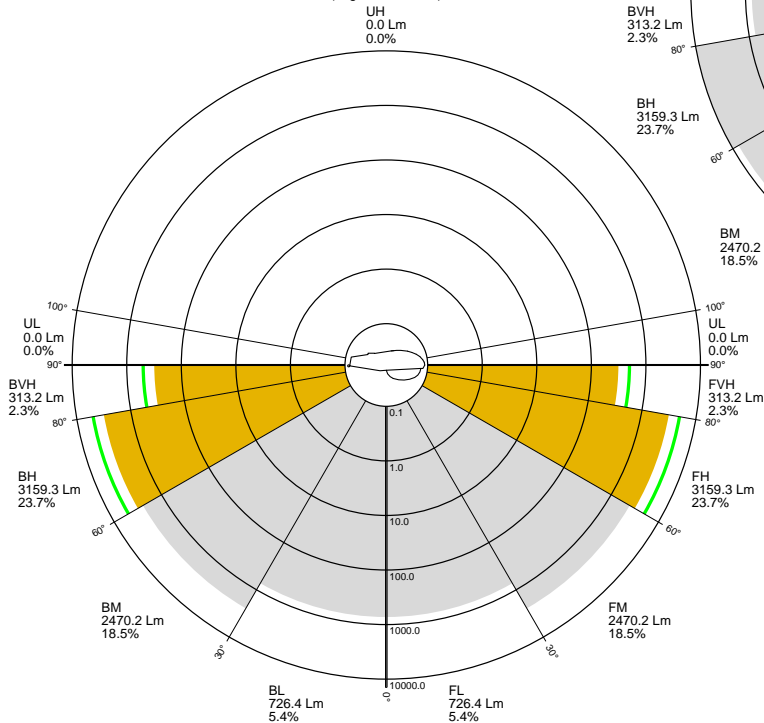
## Backlight Rating Details

(Logarithmic scale)



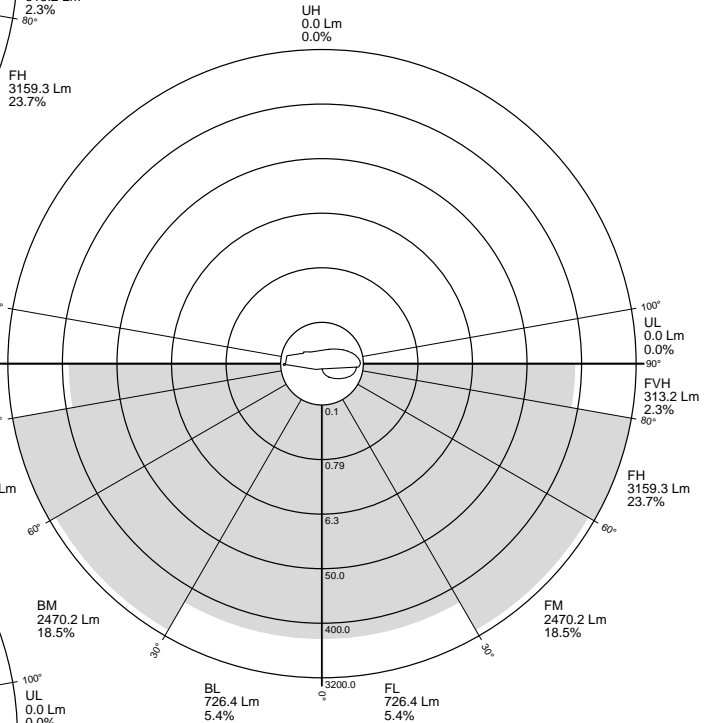
## Glare Rating Details

(Logarithmic scale)



## Uplight Rating Details

(Logarithmic scale)



REPORT NUMBER: RAB01464  
 ISSUE DATE: 12/17/15  
 PREPARED FOR: RAB LIGHTING INC.

PAGE: 7 OF 9  
 DATE SAMPLE TESTED: 12/17/15

### CANDELA TABULATION

	STREET SIDE	LATERAL ANGLE										
		0.0	5.0	15.0	25.0	35.0	42.5	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	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
	87.5	8.	8.	8.	11.	20.	24.	24.	21.	14.	9.	8.
	85.0	24.	30.	72.	271.	410.	174.	66.	394.	287.	80.	32.
	82.5	108.	142.	378.	1032.	2113.	1947.	1772.	2137.	1083.	437.	192.
V	80.0	1086.	1113.	1334.	1811.	3075.	3940.	4119.	3307.	2023.	1399.	1181.
E	77.5	1984.	2044.	2351.	3140.	4030.	4945.	4768.	3890.	3252.	2654.	2373.
R	76.0<<	2802.	2868.	3153.	3690.	4174.	5065.	4851.	3976.	3450.	3168.	2930.
T	75.0	3202.	3253.	3515.	3800.	4212.	4755.	4604.	3972.	3638.	3376.	3114.
I	72.5	3356.	3402.	3587.	3794.	3847.	3772.	3672.	3728.	3662.	3453.	3279.
C	70.0	3416.	3430.	3457.	3439.	3279.	3192.	3115.	3198.	3412.	3437.	3366.
A	67.5	3101.	3160.	3115.	3020.	2846.	2858.	2921.	2864.	3040.	3119.	3106.
L	65.0	2679.	2718.	2670.	2770.	2720.	2574.	2637.	2751.	2838.	2717.	2812.
	62.5	2457.	2471.	2533.	2654.	2655.	2478.	2507.	2726.	2720.	2544.	2516.
A	60.0	2350.	2376.	2523.	2438.	2570.	2540.	2524.	2651.	2613.	2551.	2443.
N	57.5	2261.	2254.	2348.	2289.	2551.	2569.	2553.	2632.	2448.	2538.	2448.
G	55.0	2169.	2161.	2268.	2354.	2427.	2574.	2623.	2505.	2414.	2355.	2256.
L	52.5	2183.	2184.	2221.	2347.	2350.	2570.	2595.	2380.	2389.	2325.	2244.
E	50.0	2187.	2192.	2280.	2372.	2308.	2383.	2306.	2296.	2400.	2369.	2259.
	47.5	2208.	2206.	2335.	2527.	2225.	2064.	2081.	2103.	2434.	2401.	2251.
	45.0	2241.	2251.	2487.	2513.	1988.	1825.	1820.	1918.	2300.	2341.	2222.
	42.5	2250.	2249.	2301.	2123.	1823.	1728.	1753.	1836.	2000.	2098.	2054.
	40.0	2016.	1987.	1973.	1837.	1767.	1714.	1720.	1756.	1860.	1936.	1859.
	37.5	1851.	1845.	1810.	1733.	1869.	1693.	1673.	1828.	1734.	1869.	1852.
	35.0	1766.	1740.	1720.	1786.	1815.	1750.	1721.	1824.	1726.	1753.	1757.
	30.0	1746.	1721.	1678.	1706.	1804.	1907.	1984.	1799.	1738.	1721.	1734.
	25.0	1785.	1777.	1807.	1838.	1786.	1787.	1778.	1775.	1885.	1802.	1778.
	20.0	1759.	1755.	1753.	1692.	1723.	1695.	1702.	1775.	1742.	1698.	1718.
	15.0	1676.	1675.	1661.	1686.	1689.	1714.	1685.	1702.	1674.	1640.	1672.
	10.0	1683.	1676.	1653.	1642.	1623.	1580.	1577.	1571.	1581.	1607.	1628.
	5.0	1598.	1598.	1625.	1586.	1577.	1568.	1580.	1580.	1588.	1632.	1595.
	0.0	1635.	1635.	1635.	1635.	1635.	1635.	1635.	1635.	1635.	1635.	1635.
							PLANE OF MAXIMUM CANDELA					
							CONE OF MAXIMUM CANDELA					

REPORT NUMBER: RAB01464  
 ISSUE DATE: 12/17/15  
 PREPARED FOR: RAB LIGHTING INC.

PAGE: 8 OF 9  
 DATE SAMPLE TESTED: 12/17/15

### 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	8.	8.	9.	14.	21.	24.	20.	11.	8.	8.	8.
85.0	25.	32.	80.	287.	394.	66.	410.	271.	72.	30.	24.
82.5	121.	192.	437.	1083.	2137.	1772.	2113.	1032.	378.	142.	108.
V 80.0	1126.	1181.	1399.	2023.	3307.	4119.	3075.	1811.	1334.	1113.	1086.
E 77.5	2239.	2373.	2654.	3252.	3890.	4768.	4030.	3140.	2351.	2044.	1984.
R 76.0<<	2874.	2930.	3168.	3450.	3976.	4851.	4174.	3690.	3153.	2868.	2802.
T 75.0	3093.	3114.	3376.	3638.	3972.	4604.	4212.	3800.	3515.	3253.	3202.
I 72.5	3207.	3279.	3453.	3662.	3728.	3672.	3847.	3794.	3587.	3402.	3356.
C 70.0	3329.	3366.	3437.	3412.	3198.	3115.	3279.	3439.	3457.	3430.	3416.
A 67.5	3076.	3106.	3119.	3040.	2864.	2921.	2846.	3020.	3115.	3160.	3101.
L 65.0	2799.	2812.	2717.	2838.	2751.	2637.	2720.	2770.	2670.	2718.	2679.
62.5	2488.	2516.	2544.	2720.	2726.	2507.	2655.	2654.	2533.	2471.	2457.
A 60.0	2397.	2443.	2551.	2613.	2651.	2524.	2570.	2438.	2523.	2376.	2350.
N 57.5	2477.	2448.	2538.	2448.	2632.	2553.	2551.	2289.	2348.	2254.	2261.
G 55.0	2275.	2256.	2355.	2414.	2505.	2623.	2427.	2354.	2268.	2161.	2169.
L 52.5	2254.	2244.	2325.	2389.	2380.	2595.	2350.	2347.	2221.	2184.	2183.
E 50.0	2264.	2259.	2369.	2400.	2296.	2306.	2308.	2372.	2280.	2192.	2187.
47.5	2254.	2251.	2401.	2434.	2103.	2081.	2225.	2527.	2335.	2206.	2208.
45.0	2231.	2222.	2341.	2300.	1918.	1820.	1988.	2513.	2487.	2251.	2241.
42.5	2082.	2054.	2098.	2000.	1836.	1753.	1823.	2123.	2301.	2249.	2250.
40.0	1900.	1859.	1936.	1860.	1756.	1720.	1767.	1837.	1973.	1987.	2016.
37.5	1877.	1852.	1869.	1734.	1828.	1673.	1869.	1733.	1810.	1845.	1851.
35.0	1784.	1757.	1753.	1726.	1824.	1721.	1815.	1786.	1720.	1740.	1766.
30.0	1760.	1734.	1721.	1738.	1799.	1984.	1804.	1706.	1678.	1721.	1746.
25.0	1775.	1778.	1802.	1885.	1775.	1778.	1786.	1838.	1807.	1777.	1785.
20.0	1723.	1718.	1698.	1742.	1775.	1702.	1723.	1692.	1753.	1755.	1759.
15.0	1677.	1672.	1640.	1674.	1702.	1685.	1689.	1686.	1661.	1675.	1676.
10.0	1632.	1628.	1607.	1581.	1571.	1577.	1623.	1642.	1653.	1676.	1683.
5.0	1593.	1595.	1632.	1588.	1580.	1580.	1577.	1586.	1625.	1598.	1598.
0.0	1635.	1635.	1635.	1635.	1635.	1635.	1635.	1635.	1635.	1635.	1635.

CONE OF MAXIMUM CANDELA

REPORT NUMBER: RAB01464  
 ISSUE DATE: 12/17/15  
 PREPARED FOR: RAB LIGHTING INC.

PAGE: 9 OF 9  
 DATE SAMPLE TESTED: 12/17/15

### 5-DEGREE ZONAL LUMEN SUMMARY

0- 5	39
5- 10	115
10- 15	196
15- 20	281
20- 25	371
25- 30	451
30- 35	518
35- 40	602
40- 45	751
45- 50	918
50- 55	1018
55- 60	1133
60- 65	1267
65- 70	1534
70- 75	1867
75- 80	1650
80- 85	598
85- 90	29
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	153
0- 20	630
0- 30	1453
0- 40	2573
0- 50	4242
0- 60	6393
0- 70	9195
0- 80	12712
0- 90	13338
0-100	13338
0-110	13338
0-120	13338
0-130	13338
0-140	13338
0-150	13338
0-160	13338
0-170	13338
0-180	13338

REPORT NUMBER: RAB01465  
DATE: 12/18/2015  
PREPARED FOR: RAB LIGHTING INC.  
CATALOG NUMBER: ALED5S150Y/480/D10 (TYPE V Square)

ADDRESS: 170 LUDLOW AVE, NORTHVALE, NJ 07647

LUMINAIRE: CAST FINNED METAL HOUSING, 4 WHITE CIRCUIT BOARD WITH 11 LEDS, MOLDED 1-PIECE PLASTIC REFLECTOR WITH SPECULAR FINISH, CLEAR POLYCARBONATE LENS IN CAST BRONZE PAINTED METAL FRAME.

LAMP: FORTY-FOUR WHITE LIGHT EMITTING DIODES (LEDs), TILTED 80-DEGREES FROM VERTICAL BASE-UP POSITION.

DRIVER: 2 X RDD-H100-A2000-480

OBJECT OF TEST: DATA SHOWN IS ABSOLUTE FOR THE SAMPLE PROVIDED AT THE RATED INPUT VOLTAGES (480.0 AND 347.0 VAC, 60Hz) TO THE TEST SAMPLE.

INSTRUMENTS:	CHROMA PROGRAMMABLE AC POWER SOURCE MODEL 6460	Calibration Due:
	CHROMA PROGRAMMABLE DIGITAL POWER METER MODEL 66202	N/A
	OCEAN OPTICS QE65PRO Spectroradiometer	3/9/16
	RAB 2.0 meter Diameter Integrating Sphere, 4PI Geometry	11/10/16

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 (347.0 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: RAB01465  
 DATE: 12/18/2015  
 PREPARED FOR: RAB LIGHTING INC.  
 CATALOG NUMBER: ALED5S150Y/480/D10 (TYPE V Square)

Page 2 of 4

### RESULTS:

PHOTOMETRIC	
Total Integrated Flux (lumens)	13338 *
SPECTRORADIOMETRIC	
Observer	CIE 1931 2 degree
Chromaticity Ordinate x	0.4291
Chromaticity Ordinate y	0.4079
Observer	CIE 1976 2 degree
Chromaticity Ordinate u'	0.2439
Chromaticity Ordinate v'	0.5217
Correlated Color Temp CCT (K)	3168
ANSI C78.377-2008 Duv	0.003
Total Radiant Flux (milliWatts)	38497 *
ELECTRICAL	
Input Voltage (Volts AC)	480.0
Input Current (Amps AC)	0.369
Input Power (Watts)	156.2
Input Power Factor (%)	88.2
Input Current THD (%)	15.5
Input Voltage THD (%)	0.2
EFFICACY (Lumens/Watt)	
	85.4
ELECTRICAL AT MAX NONIMAL INPUT	
Input Voltage (Volts AC)	347.0
Input Current (Amps AC)	0.460
Input Power (Watts)	153.1
Input Power Factor (%)	95.9
Input Current THD (%)	12.9
Input Voltage THD (%)	0.2
Off-State Power (Watts)	
	0.0

COLOR RENDERING INDICES	CRI
Ra (Average 1-8)	73
R1 Light greyish red	69
R2 Dark greyish yellow	79
R3 Strong yellowish green	89
R4 Moderate yellowish green	72
R5 Light bluish green	69
R6 Light blue	72
R7 Light violet	80
R8 Light reddish purple	49
R9 Strong red	-25
R10 Strong yellow	53
R11 Strong green	67
R12 Strong blue	49
R13 Light yellowish pink (skin)	70
R14 Moderate olive green (leaf)	94

### \*NOTE:

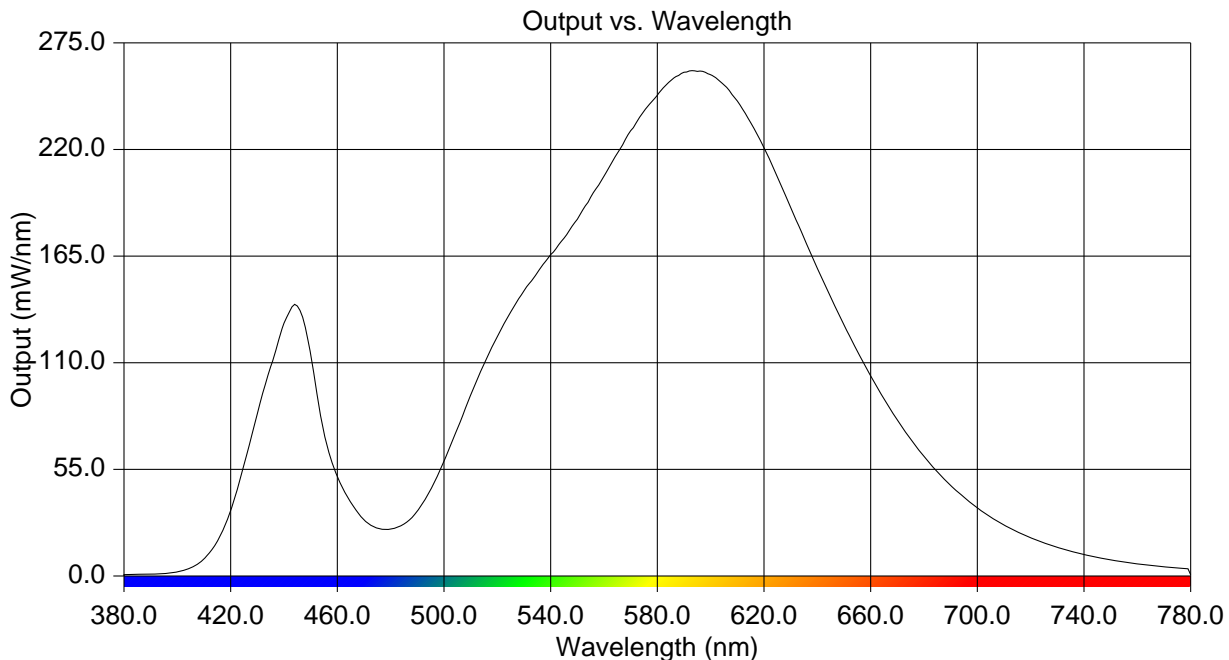
Proper calibration of integrating spheres for measuring total flux output of non-directional samples will produce reliable, repeatable results within the calibration tolerances of the equipment used. However, measurement of test samples with significant self absorption and/or directional output, even 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: RAB01465  
 DATE: 12/18/2015  
 PREPARED FOR: RAB LIGHTING INC.  
 CATALOG NUMBER: ALED5S150Y/480/D10 (TYPE V Square)

Page 3 of 4

### RESULTS:

Wavelength	mW per nm	Wavelength	mW per nm	Wavelength	mW per nm
380	0.676	515	109.348	650	129.301
385	0.808	520	123.776	655	115.810
390	0.978	525	136.090	660	103.187
395	1.289	530	147.059	665	91.423
400	2.146	535	156.421	670	80.572
405	4.170	540	165.727	675	70.509
410	8.868	545	174.164	680	61.598
415	17.790	550	183.937	685	53.765
420	33.757	555	195.305	690	46.713
425	57.214	560	206.074	695	40.645
430	83.647	565	218.008	700	35.123
435	107.951	570	229.603	705	30.371
440	130.377	575	239.769	710	26.256
445	139.207	580	247.863	715	22.740
450	113.560	585	255.471	720	19.805
455	74.177	590	259.748	725	17.016
460	51.075	595	260.185	730	14.753
465	38.121	600	258.404	735	12.780
470	28.998	605	253.149	740	10.999
475	24.617	610	244.917	745	9.605
480	24.121	615	233.777	750	8.332
485	26.803	620	220.824	755	7.215
490	33.542	625	206.010	760	6.265
495	44.582	630	190.106	765	5.455
500	59.392	635	174.174	770	4.763
505	75.810	640	158.592	775	4.146
510	93.394	645	143.693	780	0.632



REPORT NUMBER: RAB01465  
DATE: 12/18/2015  
PREPARED FOR: RAB LIGHTING INC.  
CATALOG NUMBER: ALED5S150Y/480/D10 (TYPE V Square)

Page 4 of 4

## CIE Chromaticity Diagram

