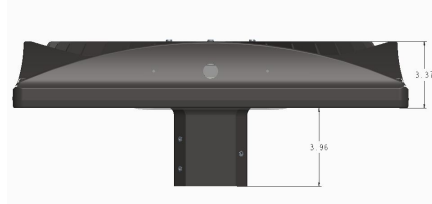


ISOFOOTCANDLE LINES OF HORIZONTAL ILLUMINATION

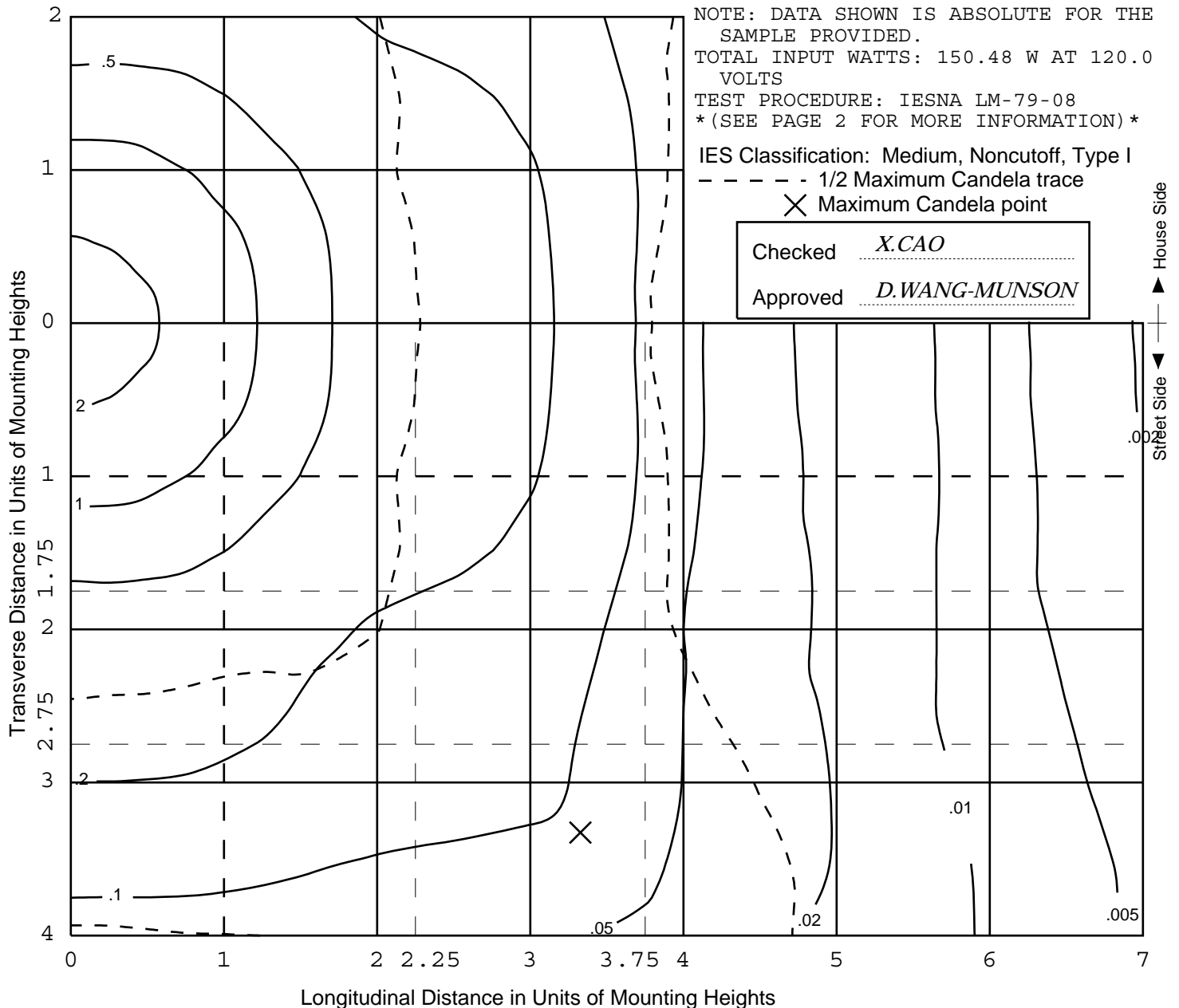
Values based on 25 foot mounting height.



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 DATE SAMPLE TESTED: 12/15/15
 PREPARED FOR: RAB LIGHTING INC.
 CATALOG NUMBER: ALED5S150/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: 150.48 W AT 120.0 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



REPORT NUMBER: RAB01414
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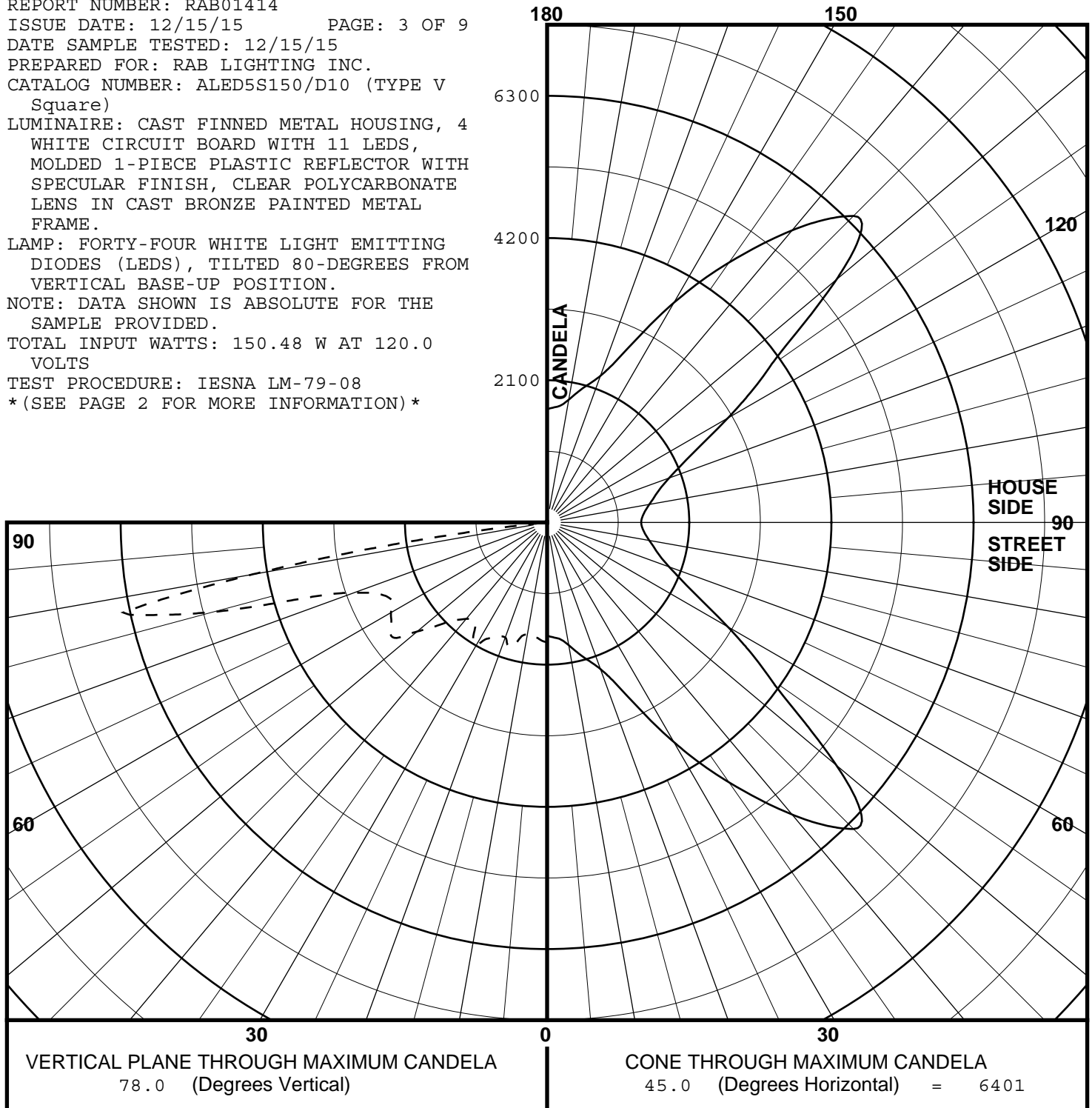
PAGE: 2 OF 9
DATE SAMPLE TESTED: 12/15/15

ADDITIONAL INFORMATION

TEST DISTANCE: 28.25 FEET
LED DRIVER: 2 x RDD-U85-A2100
ACCREDITED LABORATORY CODE 201085-0

MAXIMUM PLANE AND MAXIMUM CONE PLOTS OF CANDELA

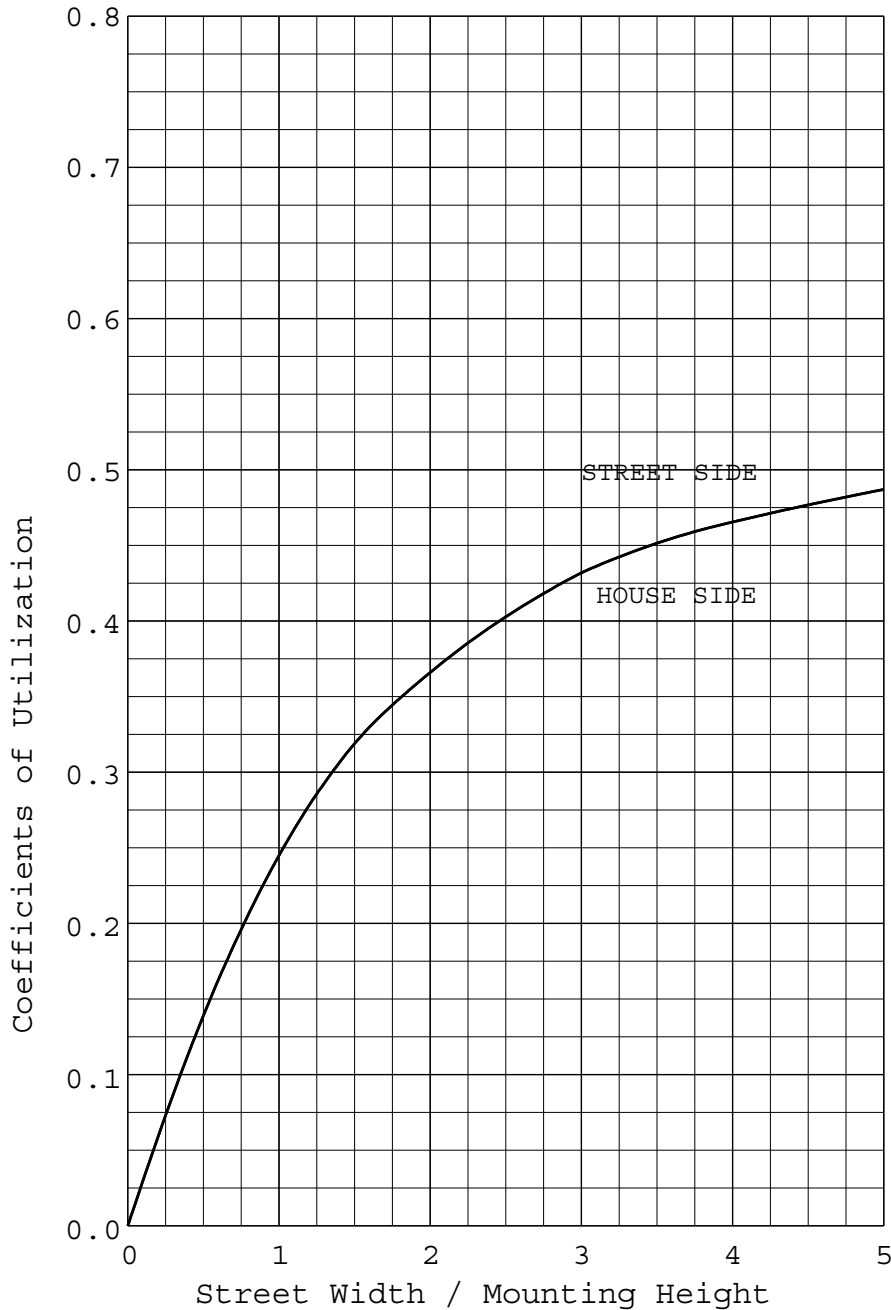
REPORT NUMBER: RAB01414
 ISSUE DATE: 12/15/15 PAGE: 3 OF 9
 DATE SAMPLE TESTED: 12/15/15
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 TEST PROCEDURE: IESNA LM-79-08
 (SEE PAGE 2 FOR MORE INFORMATION)



REPORT NUMBER: RAB01414
ISSUE DATE: 12/15/15
PREPARED FOR: RAB LIGHTING INC.

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

COEFFICIENTS OF UTILIZATION AND FLUX DISTRIBUTION



	LUMENS	PERCENT OF FIXTURE
DOWNWARD STREET SIDE	7144.	50.0
DOWNWARD HOUSE SIDE	7144.	50.0
DOWNWARD TOTAL	14288.	100.0
UPWARD STREET SIDE	0.	0.0
UPWARD HOUSE SIDE	0.	0.0
UPWARD TOTAL	0.	0.0
TOTAL FLUX	14288.	100.0
TOTAL INPUT WATTS = 150.5		
EFFICACY = 94.9 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: RAB01414
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 PREPARED FOR: RAB LIGHTING INC.

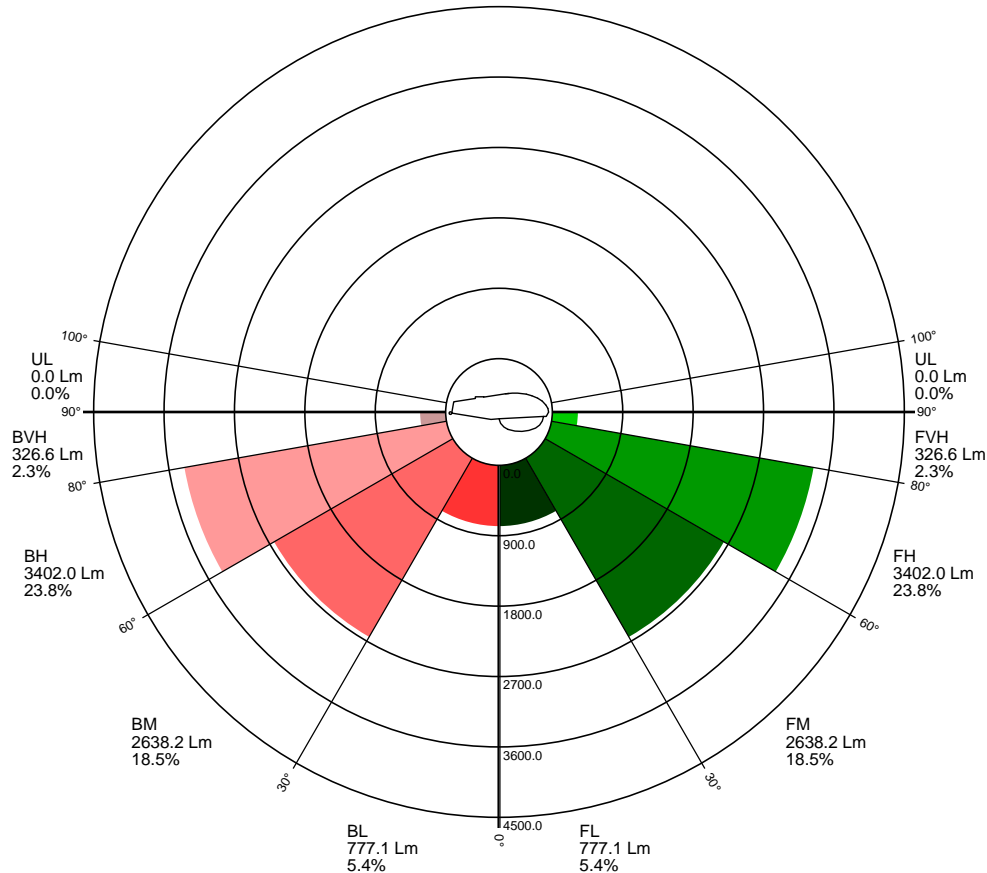
PAGE: 5 OF 9
 DATE SAMPLE TESTED: 12/15/15

BUG Rating:				B4 U0 G3		
Zonal Summary		Lumens	% of Fixture	Zone Ratings		
				B	U	G
Forward		7144	50.0			
FL	(0° - 30°)	777.1	5.4			
FM	(30° - 60°)	2638.2	18.5			
FH	(60° - 80°)	3402.0	23.8			G2
FVH	(80° - 90°)	326.6	2.3			G3
Backward		7144	50.0			
BL	(0° - 30°)	777.1	5.4	B2		
BM	(30° - 60°)	2638.2	18.5	B3		
BH	(60° - 80°)	3402.0	23.8	B4		G2
BVH	(80° - 90°)	326.6	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		14288	100.0			

Zonal Lumen Summary

(Linear scale)

UH
0.0 Lm
0.0%

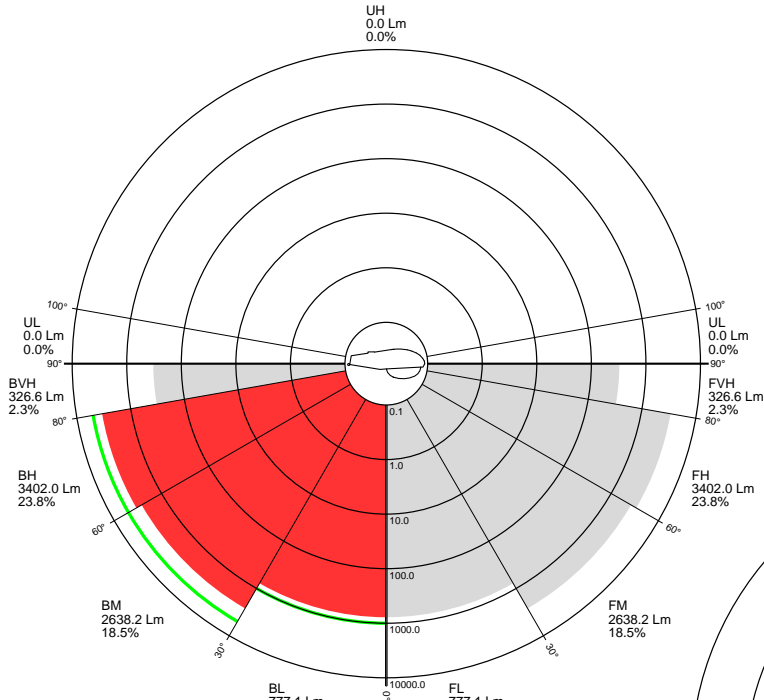


REPORT NUMBER: RAB01414
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 PREPARED FOR: RAB LIGHTING INC.

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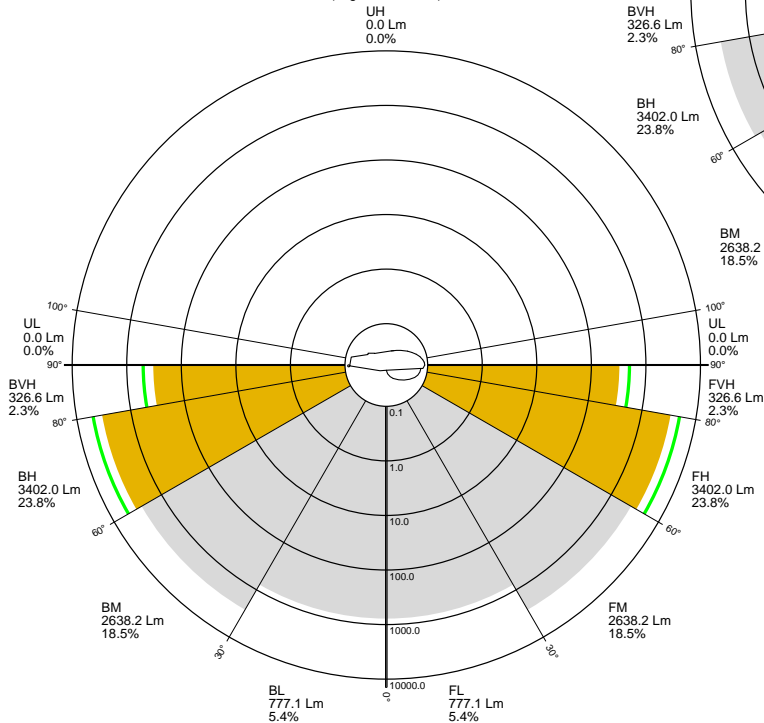
Backlight Rating Details

(Logarithmic scale)



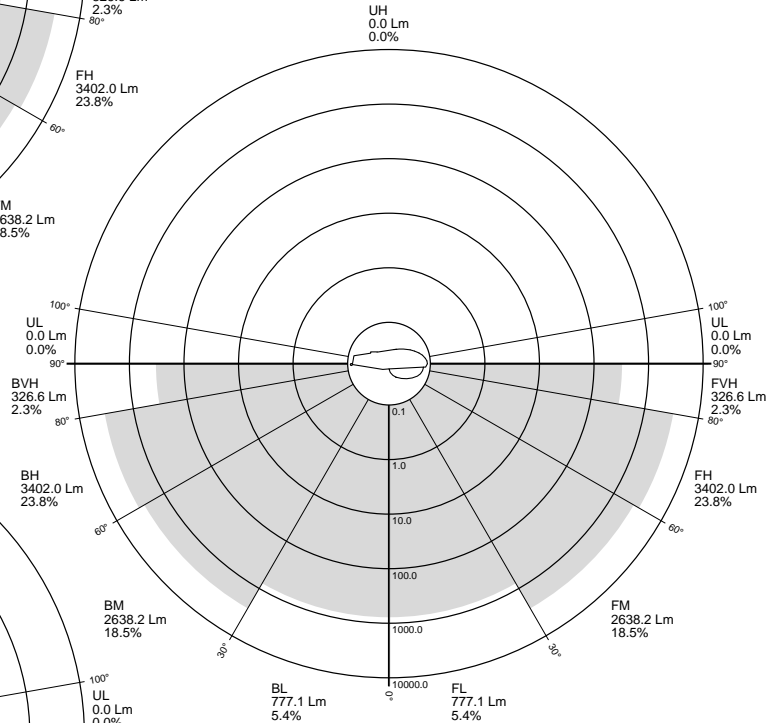
Glare Rating Details

(Logarithmic scale)



Uplight Rating Details

(Logarithmic scale)



CONE OF MAXIMUM CANDELA

REPORT NUMBER: RAB01414
 ISSUE DATE: 12/15/15
 PREPARED FOR: RAB LIGHTING INC.

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

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	9.	9.	9.	13.	23.	27.	25.	15.	10.	10.	10.
85.0	27.	35.	86.	261.	413.	81.	460.	282.	88.	40.	31.
82.5	124.	163.	404.	1221.	2257.	1612.	2037.	1381.	462.	167.	128.
V 80.0	1185.	1212.	1417.	1755.	3099.	4424.	3859.	1913.	1359.	1152.	1107.
E 78.0<<	1390.	1431.	1681.	2338.	4027.	6401.	4686.	2851.	2055.	1715.	1673.
R 77.5	1535.	1591.	1865.	2618.	4564.	6309.	5013.	3214.	2336.	1980.	1945.
T 75.0	3367.	3382.	4191.	4917.	5122.	5112.	4664.	4512.	4278.	3749.	3713.
I 72.5	4717.	4736.	4847.	4659.	4206.	3665.	3813.	4189.	4285.	4133.	4096.
C 70.0	4149.	4122.	4007.	3847.	3362.	3037.	3103.	3524.	3654.	3677.	3663.
A 67.5	3454.	3470.	3407.	3283.	2884.	2738.	2841.	3031.	3050.	3156.	3132.
L 65.0	2911.	2956.	2843.	2920.	2689.	2601.	2726.	2876.	2626.	2688.	2635.
62.5	2572.	2556.	2543.	2692.	2709.	2573.	2731.	2746.	2523.	2480.	2437.
A 60.0	2383.	2367.	2540.	2578.	2739.	2664.	2722.	2654.	2471.	2378.	2303.
N 57.5	2374.	2353.	2511.	2531.	2748.	2728.	2741.	2524.	2493.	2357.	2369.
G 55.0	2362.	2350.	2463.	2553.	2654.	2828.	2658.	2475.	2379.	2240.	2262.
L 52.5	2396.	2361.	2433.	2542.	2579.	2801.	2578.	2499.	2420.	2266.	2291.
E 50.0	2414.	2407.	2527.	2543.	2477.	2503.	2507.	2497.	2499.	2326.	2349.
47.5	2451.	2415.	2556.	2618.	2373.	2287.	2348.	2577.	2537.	2349.	2379.
45.0	2471.	2481.	2584.	2611.	2176.	2076.	2093.	2497.	2490.	2385.	2411.
42.5	2357.	2367.	2420.	2324.	2024.	1951.	1996.	2143.	2311.	2281.	2297.
40.0	2220.	2192.	2225.	2046.	1956.	1858.	1922.	2013.	2047.	1997.	2038.
37.5	2065.	2045.	2100.	1921.	2010.	1809.	1953.	1877.	1976.	1975.	2003.
35.0	1972.	1942.	1920.	1908.	1976.	1846.	1910.	1866.	1834.	1880.	1925.
30.0	1870.	1855.	1820.	1848.	1912.	2088.	1921.	1813.	1830.	1837.	1874.
25.0	1912.	1913.	1913.	2011.	1909.	1876.	1875.	1991.	1891.	1882.	1898.
20.0	1896.	1913.	1887.	1826.	1915.	1805.	1847.	1799.	1811.	1838.	1850.
15.0	1788.	1791.	1776.	1806.	1790.	1871.	1855.	1780.	1773.	1793.	1802.
10.0	1777.	1774.	1774.	1788.	1714.	1687.	1684.	1717.	1715.	1752.	1757.
5.0	1726.	1725.	1762.	1718.	1714.	1709.	1714.	1730.	1787.	1744.	1742.
0.0	1773.	1773.	1773.	1773.	1773.	1773.	1773.	1773.	1773.	1773.	1773.

CONE OF MAXIMUM CANDELA

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5-DEGREE ZONAL LUMEN SUMMARY

0- 5	42
5- 10	124
10- 15	212
15- 20	300
20- 25	396
25- 30	481
30- 35	554
35- 40	656
40- 45	817
45- 50	986
50- 55	1086
55- 60	1178
60- 65	1285
65- 70	1590
70- 75	2169
75- 80	1761
80- 85	622
85- 90	31
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	166
0- 20	677
0- 30	1554
0- 40	2764
0- 50	4567
0- 60	6831
0- 70	9705
0- 80	13635
0- 90	14288
0-100	14288
0-110	14288
0-120	14288
0-130	14288
0-140	14288
0-150	14288
0-160	14288
0-170	14288
0-180	14288

REPORT NUMBER: RAB01415
DATE: 12/14/2015
PREPARED FOR: RAB LIGHTING INC.
CATALOG NUMBER: ALED5S150/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-U85-A2100

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:	CHROMA PROGRAMMABLE AC POWER SOURCE MODEL 61602	Calibration Due: N/A
	CHROMA PROGRAMMABLE DIGITAL POWER METER MODEL 66202	3/9/16
	OCEAN OPTICS QE65PRO Spectroradiometer	11/10/16
	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 (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 X.CAO

Approved D.WANG-MUNSON
Lighting Engineer

REPORT NUMBER: RAB01415
 DATE: 12/14/2015
 PREPARED FOR: RAB LIGHTING INC.
 CATALOG NUMBER: ALED5S150/D10 (TYPE V Square)

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RESULTS:

PHOTOMETRIC	
Total Integrated Flux (lumens)	14288 *
SPECTRORADIOMETRIC	
Observer	CIE 1931 2 degree
Chromaticity Ordinate x	0.3436
Chromaticity Ordinate y	0.3543
Observer	CIE 1976 2 degree
Chromaticity Ordinate u'	0.2093
Chromaticity Ordinate v'	0.4858
Correlated Color Temp CCT (K)	5067
ANSI C78.377-2008 Duv	0.002
Total Radiant Flux (milliWatts)	43884 *
ELECTRICAL	
Input Voltage (Volts AC)	120.0
Input Current (Amps AC)	1.26
Input Power (Watts)	150.5
Input Power Factor (%)	99.6
Input Current THD (%)	6.7
Input Voltage THD (%)	0.2
EFFICACY (Lumens/Watt)	
	94.9
ELECTRICAL AT MAX NONIMAL INPUT	
Input Voltage (Volts AC)	277.0
Input Current (Amps AC)	0.574
Input Power (Watts)	147.8
Input Power Factor (%)	92.9
Input Current THD (%)	14.1
Input Voltage THD (%)	0.2
Off-State Power (Watts)	0.0

COLOR RENDERING INDICES	CRI
Ra (Average 1-8)	74
R1 Light greyish red	72
R2 Dark greyish yellow	77
R3 Strong yellowish green	81
R4 Moderate yellowish green	75
R5 Light bluish green	74
R6 Light blue	70
R7 Light violet	81
R8 Light reddish purple	60
R9 Strong red	-18
R10 Strong yellow	46
R11 Strong green	74
R12 Strong blue	51
R13 Light yellowish pink (skin)	72
R14 Moderate olive green (leaf)	89

*NOTE:

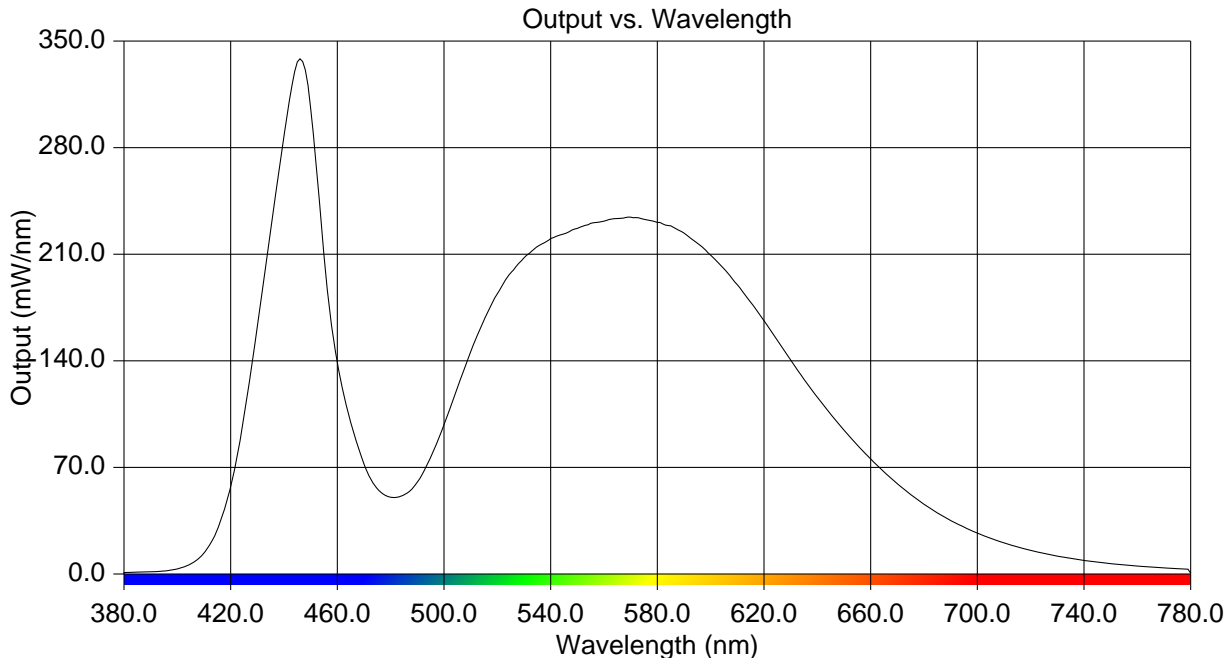
Proper calibration of integrating spheres for measuring total flux output of non-directional samples will produce reliable, repeatable results within the calibration tolerances of the equipment used. However, measurement of test samples with significant self absorption and/or directional output, even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

Wavelength	mW per nm	Wavelength	mW per nm	Wavelength	mW per nm
380	0.905	515	166.582	650	94.397
385	1.153	520	184.157	655	84.585
390	1.394	525	197.690	660	75.545
395	1.981	530	207.491	665	67.034
400	3.335	535	214.835	670	59.308
405	6.578	540	220.129	675	52.137
410	13.854	545	223.204	680	45.823
415	28.877	550	226.793	685	40.079
420	57.431	555	230.103	690	35.213
425	102.886	560	231.551	695	30.816
430	162.373	565	233.399	700	26.821
435	224.823	570	234.166	705	23.326
440	288.331	575	232.665	710	20.381
445	336.081	580	230.740	715	17.775
450	305.563	585	228.503	720	15.556
455	209.659	590	223.731	725	13.502
460	138.210	595	217.047	730	11.768
465	99.956	600	209.215	735	10.249
470	72.165	605	200.321	740	8.881
475	55.854	610	189.840	745	7.803
480	50.438	615	178.333	750	6.783
485	52.036	620	166.110	755	5.941
490	60.317	625	153.447	760	5.195
495	76.517	630	140.445	765	4.541
500	98.056	635	127.736	770	3.989
505	121.976	640	116.074	775	3.485
510	145.830	645	104.799	780	0.531



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CIE Chromaticity Diagram

