

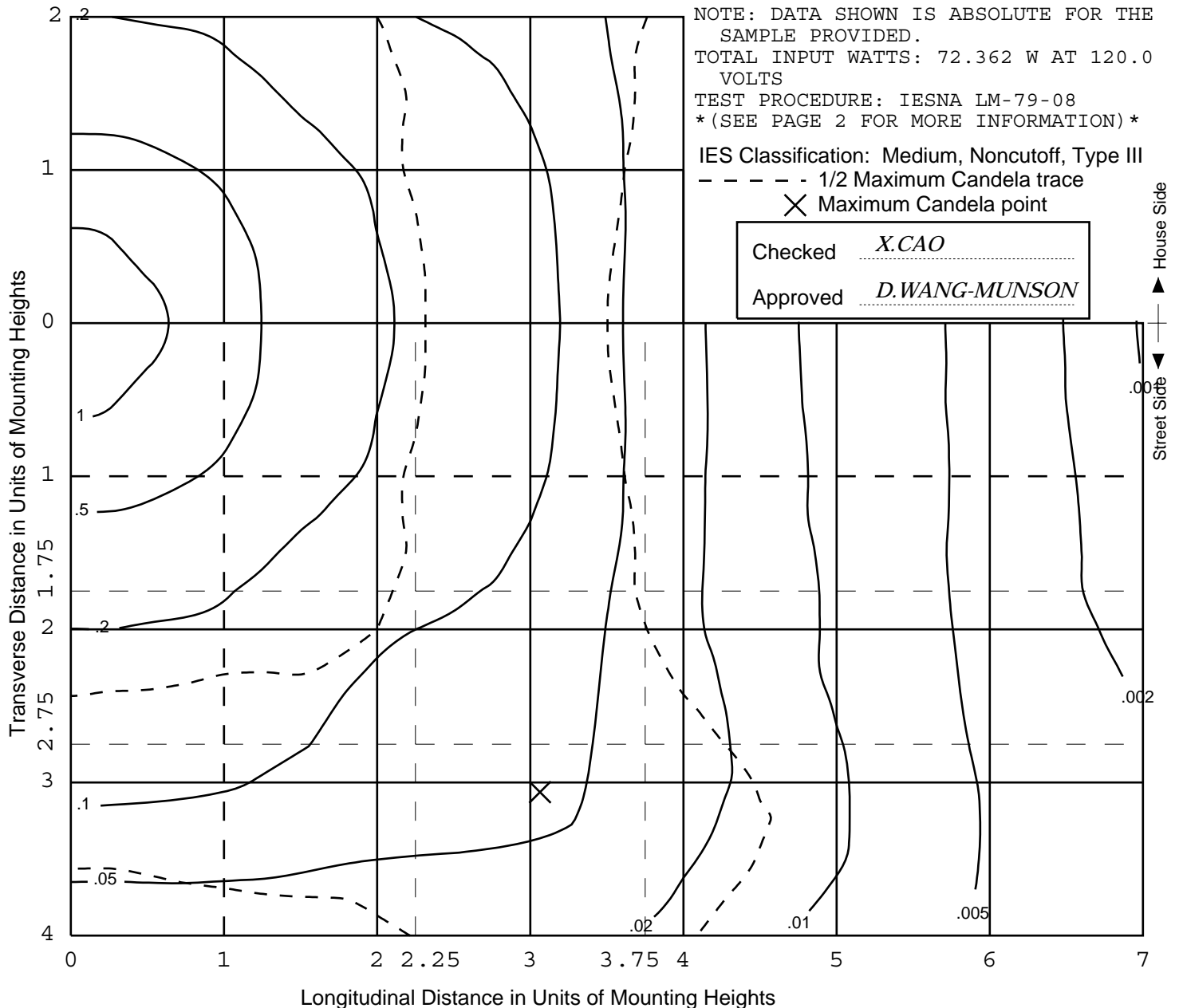
## ISOFOOTCANDLE LINES OF HORIZONTAL ILLUMINATION

Values based on 25 foot mounting height.



REPORT NUMBER: RAB01408  
 ISSUE DATE: 12/15/15 PAGE: 1 OF 9  
 DATE SAMPLE TESTED: 12/15/15  
 PREPARED FOR: RAB LIGHTING INC.  
 CATALOG NUMBER: ALED5S78Y/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: 72.362 W AT 120.0 VOLTS  
 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



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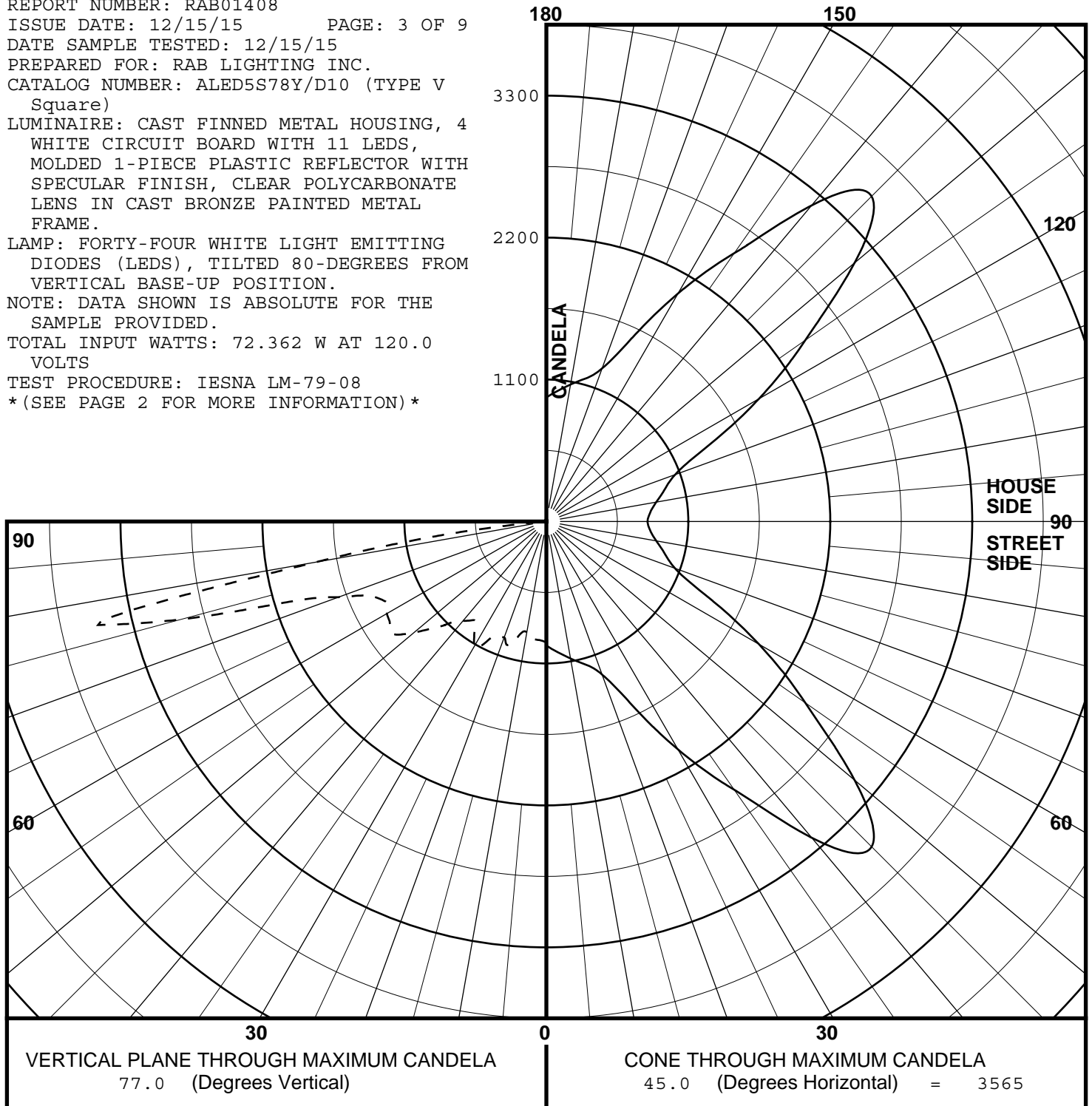
PAGE: 2 OF 9  
DATE SAMPLE TESTED: 12/15/15

ADDITIONAL INFORMATION

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

## MAXIMUM PLANE AND MAXIMUM CONE PLOTS OF CANDELA

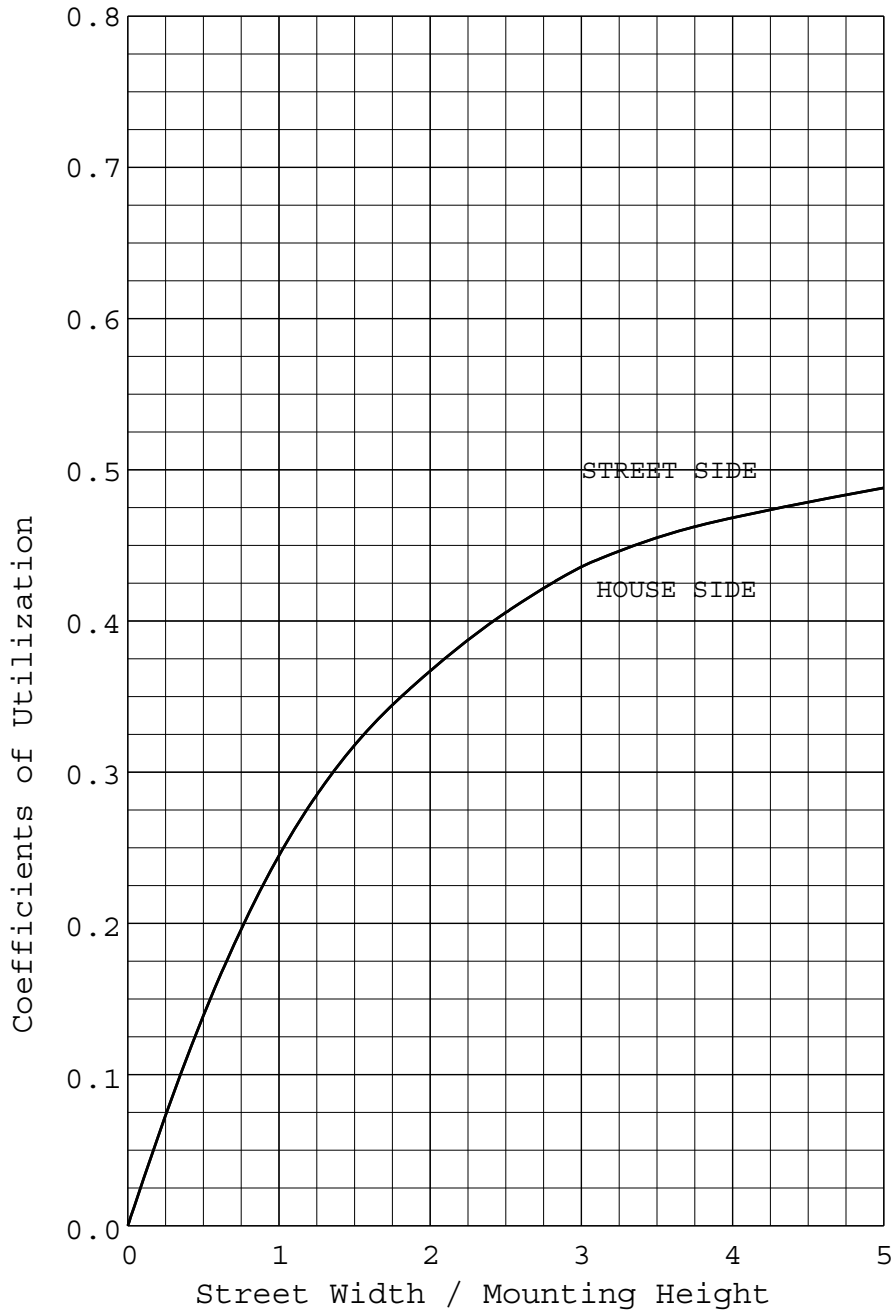
REPORT NUMBER: RAB01408  
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PAGE: 4 OF 9  
DATE SAMPLE TESTED: 12/15/15

## COEFFICIENTS OF UTILIZATION AND FLUX DISTRIBUTION



	LUMENS	PERCENT OF FIXTURE
DOWNWARD STREET SIDE	3788.	50.0
DOWNWARD HOUSE SIDE	3788.	50.0
DOWNWARD TOTAL	7575.	100.0
UPWARD STREET SIDE	0.	0.0
UPWARD HOUSE SIDE	0.	0.0
UPWARD TOTAL	0.	0.0
TOTAL FLUX	7575.	100.0
TOTAL INPUT WATTS = 72.4		
EFFICACY = 104.6 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.

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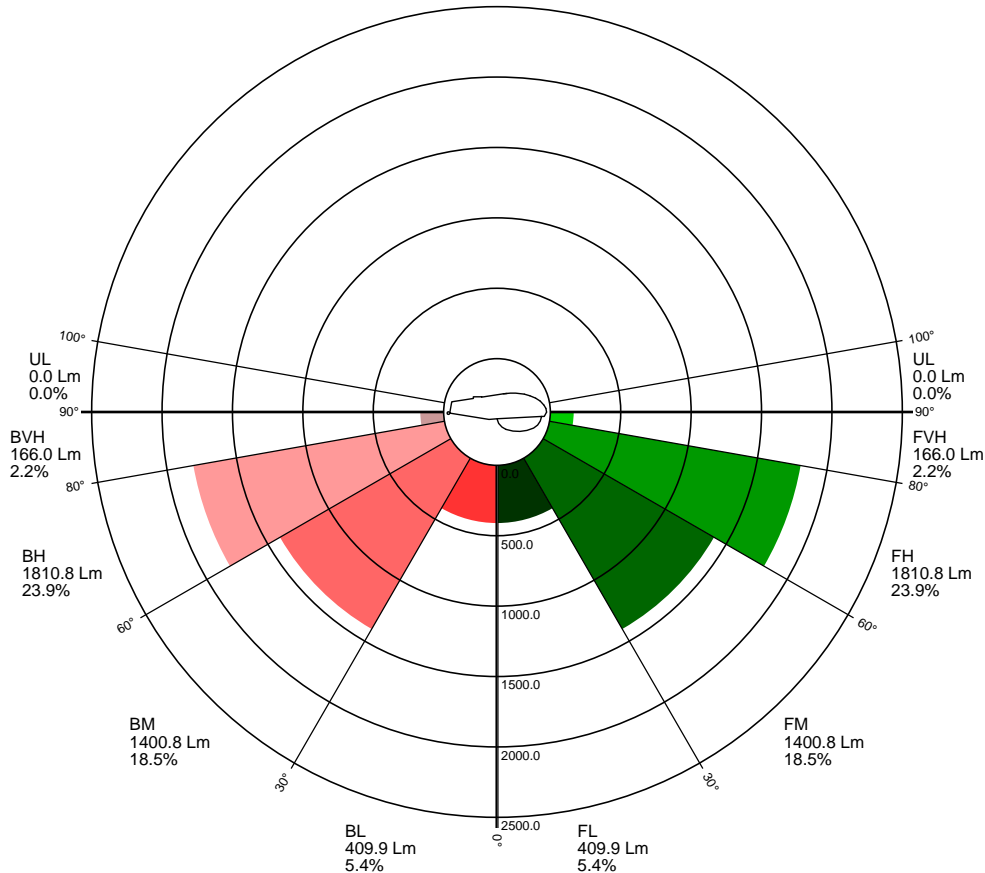
PAGE: 5 OF 9  
 DATE SAMPLE TESTED: 12/15/15

BUG Rating:				B3	U0	G2
Zonal Summary		Lumens	% of Fixture	Zone Ratings		
				B	U	G
Forward		3788	50.0			
FL	(0° – 30°)	409.9	5.4			
FM	(30° – 60°)	1400.8	18.5			
FH	(60° – 80°)	1810.8	23.9			G2
FVH	(80° – 90°)	166.0	2.2			G2
Backward		3788	50.0			
BL	(0° – 30°)	409.9	5.4	B1		
BM	(30° – 60°)	1400.8	18.5	B2		
BH	(60° – 80°)	1810.8	23.9	B3		G2
BVH	(80° – 90°)	166.0	2.2			G2
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		7575	100.0			

### Zonal Lumen Summary

(Linear scale)

UH  
0.0 Lm  
0.0%

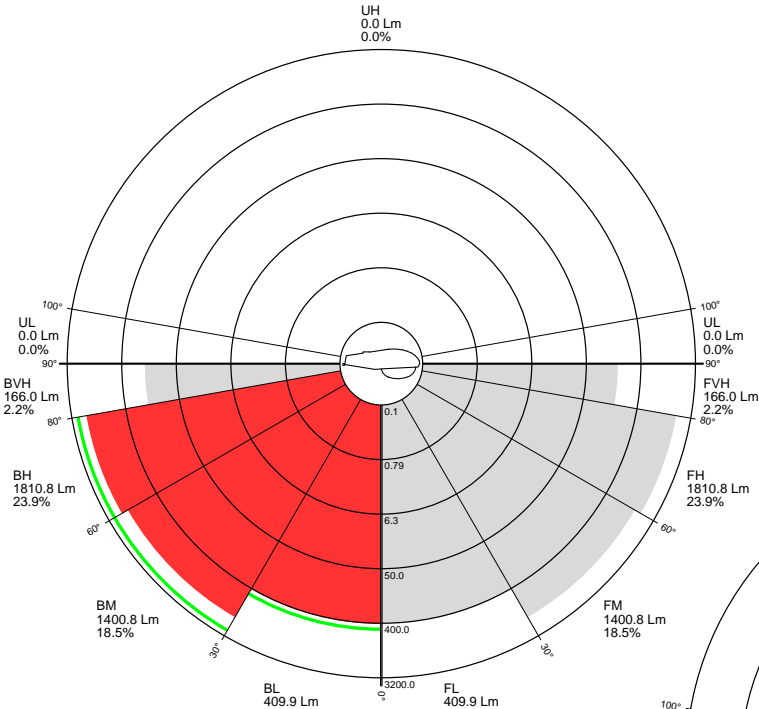


REPORT NUMBER: RAB01408  
ISSUE DATE: 12/15/15  
PREPARED FOR: RAB LIGHTING INC.

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

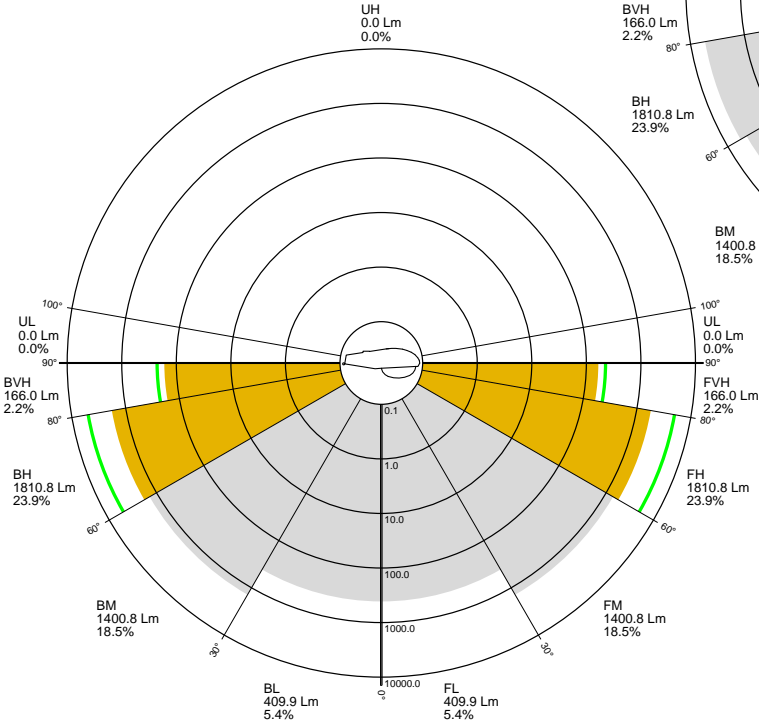
**Backlight Rating Details**

(Logarithmic scale)



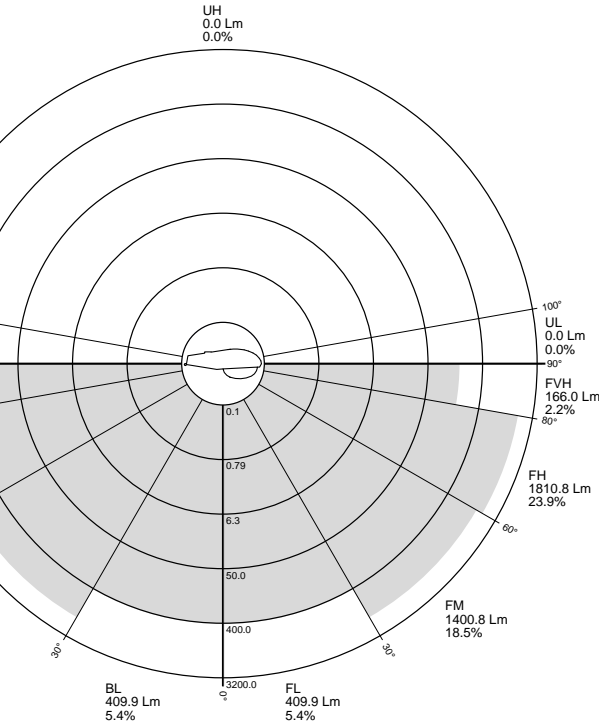
**Glare Rating Details**

(Logarithmic scale)



**Uplight Rating Details**

(Logarithmic scale)



## CONE OF MAXIMUM CANDELA

REPORT NUMBER: RAB01408  
 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	4.	5.	4.	6.	10.	11.	10.	7.	5.	5.	4.
85.0	13.	20.	47.	145.	190.	112.	200.	141.	61.	22.	15.
82.5	61.	87.	241.	768.	986.	845.	930.	698.	296.	107.	67.
V 80.0	631.	645.	758.	960.	1770.	1810.	1815.	1029.	730.	621.	600.
E 77.5	744.	758.	865.	1215.	2239.	3527.	2374.	1444.	1039.	913.	862.
R 77.0<<	784.	808.	948.	1377.	2450.	3565.	2538.	1567.	1144.	1017.	961.
T 75.0	1372.	1432.	1809.	2348.	2822.	2935.	2698.	2319.	1922.	1574.	1558.
I 72.5	2479.	2479.	2611.	2531.	2302.	2044.	2166.	2401.	2443.	2370.	2373.
C 70.0	2297.	2260.	2227.	2086.	1812.	1714.	1722.	1975.	2092.	2123.	2108.
A 67.5	1889.	1875.	1840.	1778.	1629.	1499.	1544.	1696.	1709.	1769.	1752.
L 65.0	1575.	1566.	1562.	1634.	1532.	1421.	1476.	1563.	1474.	1510.	1470.
62.5	1449.	1446.	1449.	1493.	1466.	1385.	1473.	1456.	1379.	1367.	1345.
A 60.0	1327.	1335.	1371.	1421.	1438.	1427.	1460.	1422.	1303.	1265.	1261.
N 57.5	1301.	1283.	1334.	1338.	1442.	1441.	1439.	1361.	1370.	1283.	1295.
G 55.0	1249.	1238.	1326.	1330.	1410.	1472.	1423.	1323.	1335.	1232.	1251.
L 52.5	1254.	1240.	1303.	1340.	1373.	1441.	1361.	1312.	1311.	1236.	1249.
E 50.0	1282.	1267.	1338.	1334.	1329.	1339.	1293.	1298.	1319.	1251.	1259.
47.5	1274.	1257.	1345.	1367.	1258.	1235.	1214.	1289.	1304.	1243.	1253.
45.0	1311.	1294.	1350.	1347.	1170.	1145.	1135.	1277.	1257.	1213.	1215.
42.5	1234.	1221.	1247.	1228.	1088.	1050.	1070.	1207.	1220.	1161.	1170.
40.0	1183.	1149.	1151.	1106.	1041.	1006.	1026.	1104.	1133.	1107.	1122.
37.5	1103.	1085.	1068.	1028.	1051.	967.	1031.	1029.	1078.	1061.	1067.
35.0	1044.	1025.	990.	1016.	1056.	957.	1045.	987.	1007.	1046.	1046.
30.0	1005.	995.	953.	958.	994.	1119.	998.	978.	968.	972.	982.
25.0	996.	994.	977.	1026.	1039.	988.	1028.	1055.	988.	971.	978.
20.0	1044.	1039.	996.	942.	965.	955.	1007.	962.	966.	981.	988.
15.0	965.	961.	955.	942.	950.	953.	946.	933.	936.	946.	945.
10.0	951.	949.	940.	936.	894.	872.	885.	893.	895.	901.	899.
5.0	925.	925.	945.	921.	920.	919.	922.	924.	950.	927.	922.
0.0	936.	936.	936.	936.	936.	936.	936.	936.	936.	936.	936.

CONE OF MAXIMUM CANDELA

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

### 5-DEGREE ZONAL LUMEN SUMMARY

0- 5	22
5- 10	65
10- 15	111
15- 20	158
20- 25	210
25- 30	253
30- 35	295
35- 40	350
40- 45	433
45- 50	517
50- 55	576
55- 60	631
60- 65	702
65- 70	879
70- 75	1170
75- 80	871
80- 85	316
85- 90	16
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	87
0- 20	357
0- 30	820
0- 40	1465
0- 50	2414
0- 60	3622
0- 70	5203
0- 80	7243
0- 90	7575
0-100	7575
0-110	7575
0-120	7575
0-130	7575
0-140	7575
0-150	7575
0-160	7575
0-170	7575
0-180	7575

REPORT NUMBER: RAB01409  
DATE: 12/14/2015  
PREPARED FOR: RAB LIGHTING INC.  
CATALOG NUMBER: ALED5S78Y/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: 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: RAB01409  
 DATE: 12/14/2015  
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 CATALOG NUMBER: ALED5S78Y/D10 (TYPE V Square)

Page 2 of 4

### RESULTS:

PHOTOMETRIC	
Total Integrated Flux (lumens)	7575 *
SPECTRORADIOMETRIC	
Observer	CIE 1931 2 degree
Chromaticity Ordinate x	0.4320
Chromaticity Ordinate y	0.4073
Observer	CIE 1976 2 degree
Chromaticity Ordinate u'	0.2460
Chromaticity Ordinate v'	0.5219
Correlated Color Temp CCT (K)	3112
ANSI C78.377-2008 Duv	0.002
Total Radiant Flux (milliWatts)	21844 *
ELECTRICAL	
Input Voltage (Volts AC)	120.0
Input Current (Amps AC)	0.606
Input Power (Watts)	72.4
Input Power Factor (%)	99.6
Input Current THD (%)	6.7
Input Voltage THD (%)	0.2
EFFICACY (Lumens/Watt)	
	104.6
ELECTRICAL AT MAX NONIMAL INPUT	
Input Voltage (Volts AC)	277.0
Input Current (Amps AC)	0.278
Input Power (Watts)	71.3
Input Power Factor (%)	92.6
Input Current THD (%)	14.4
Input Voltage THD (%)	0.2
Off-State Power (Watts)	0.0

COLOR RENDERING INDICES	CRI
Ra (Average 1-8)	73
R1 Light greyish red	70
R2 Dark greyish yellow	80
R3 Strong yellowish green	89
R4 Moderate yellowish green	73
R5 Light bluish green	70
R6 Light blue	73
R7 Light violet	80
R8 Light reddish purple	50
R9 Strong red	-23
R10 Strong yellow	54
R11 Strong green	70
R12 Strong blue	50
R13 Light yellowish pink (skin)	71
R14 Moderate olive green (leaf)	94

### \*NOTE:

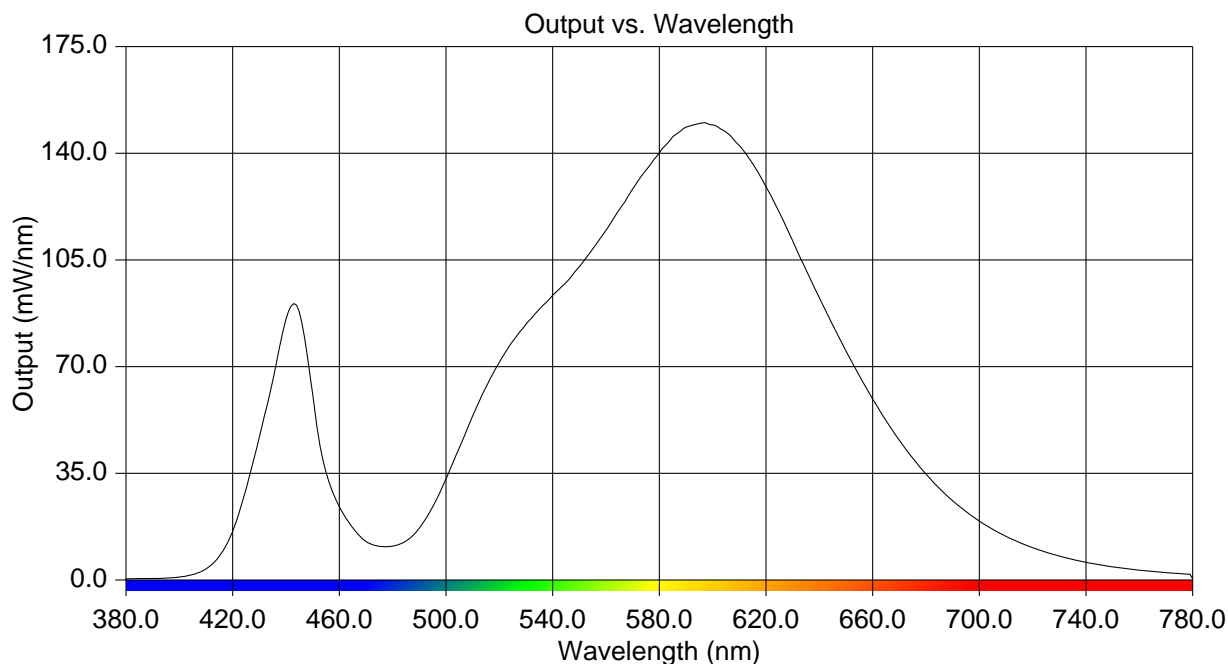
Proper calibration of integrating spheres for measuring total flux output of non-directional samples will produce reliable, repeatable results within the calibration tolerances of the equipment used. However, measurement of test samples with significant self absorption and/or directional output, even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

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Page 3 of 4

### RESULTS:

Wavelength	mW per nm	Wavelength	mW per nm	Wavelength	mW per nm
380	0.351	515	63.374	650	75.094
385	0.416	520	71.516	655	66.983
390	0.488	525	78.347	660	59.401
395	0.608	530	83.940	665	52.321
400	0.977	535	88.868	670	45.905
405	1.749	540	93.411	675	39.943
410	3.633	545	97.569	680	34.733
415	7.660	550	102.781	685	30.036
420	16.019	555	108.660	690	26.039
425	29.722	560	114.668	695	22.472
430	46.856	565	121.550	700	19.343
435	65.289	570	128.316	705	16.630
440	85.622	575	134.342	710	14.325
445	87.945	580	140.134	715	12.336
450	60.410	585	145.415	720	10.612
455	35.324	590	148.589	725	9.099
460	24.053	595	149.723	730	7.836
465	17.243	600	149.336	735	6.746
470	12.634	605	147.013	740	5.777
475	11.048	610	142.551	745	5.005
480	11.085	615	136.642	750	4.313
485	12.811	620	129.038	755	3.718
490	17.012	625	120.650	760	3.219
495	24.001	630	111.368	765	2.783
500	33.137	635	101.815	770	2.424
505	43.337	640	92.654	775	2.096
510	53.806	645	83.653	780	0.319



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Page 4 of 4

## CIE Chromaticity Diagram

