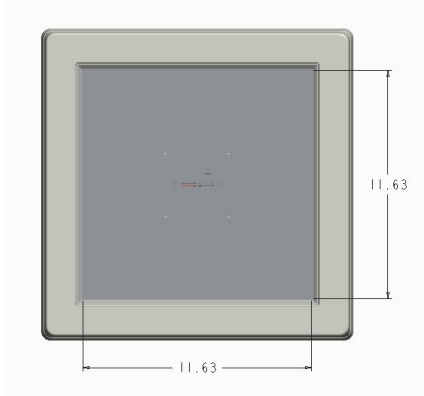


## ISOFOOTCANDLE LINES OF HORIZONTAL ILLUMINATION

Values based on 14 foot mounting height.



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PREPARED FOR: RAB LIGHTING INC.

CATALOG NUMBER: MASI16-80YW/D10

LUMINAIRE: CAST METAL HOUSING, CAST METAL HEAT SINK, 1 WHITE CIRCUIT BOARD WITH 306 LEDS, CLEAR FLAT GLASS DOOR IN CAST WHITE PAINTED METAL FRAME.

LAMPS: THREE HUNDRED AND SIX WHITE LIGHT EMITTING DIODES (LEDs), VERTICAL BASE-UP POSITION.

TOTAL INPUT WATTS = 86.22 AT 277.0 VOLTS

LED DRIVERS: PSDV151101A + 75Kohm Resistor

NOTE: DATA SHOWN IS ABSOLUTE FOR THE SAMPLE PROVIDED AT RATED INPUT VOLTAGE TO THE LED DRIVERS.

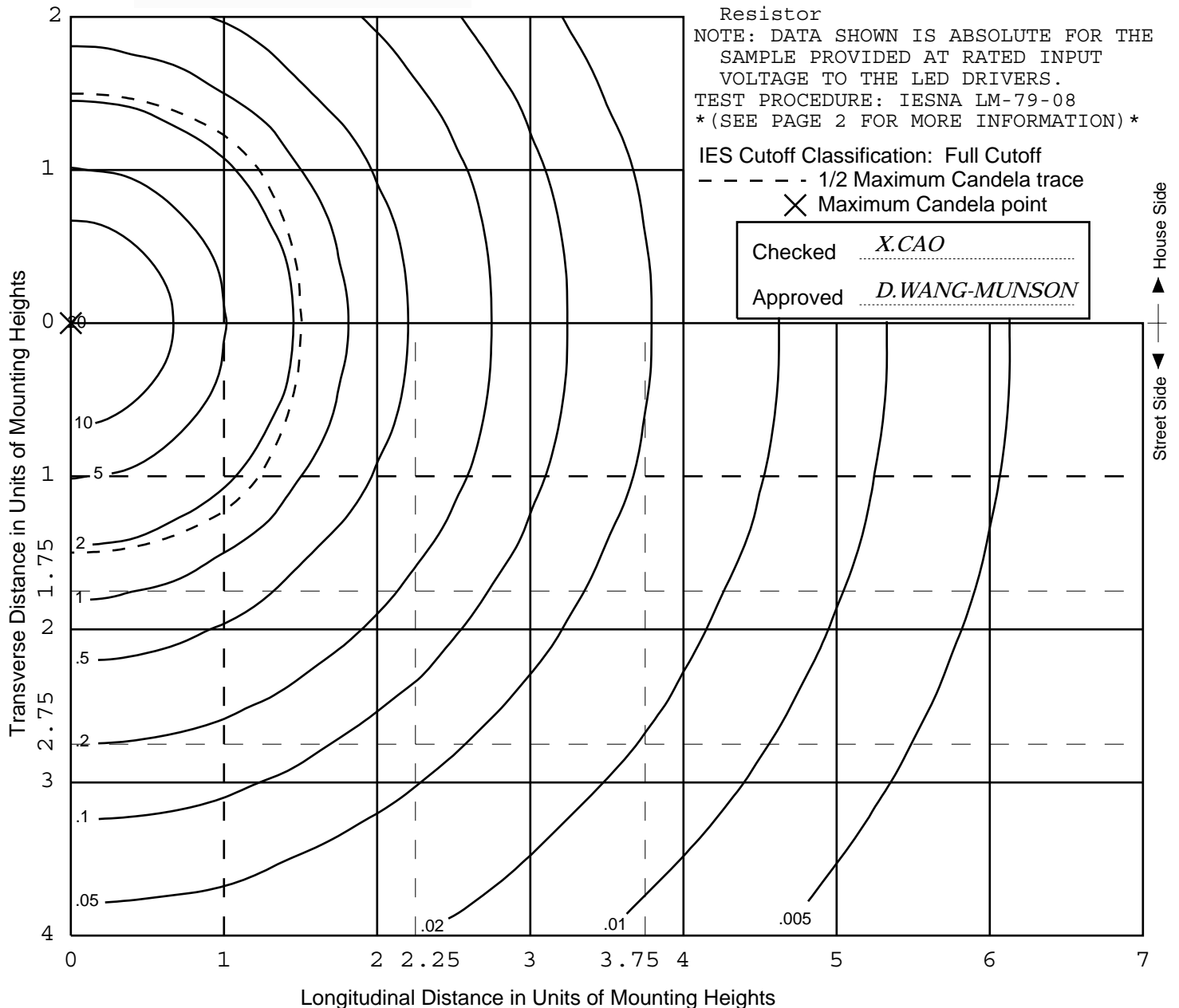
TEST PROCEDURE: IESNA LM-79-08

\*(SEE PAGE 2 FOR MORE INFORMATION) \*

IES Cutoff Classification: Full Cutoff

--- 1/2 Maximum Candela trace

× Maximum Candela point



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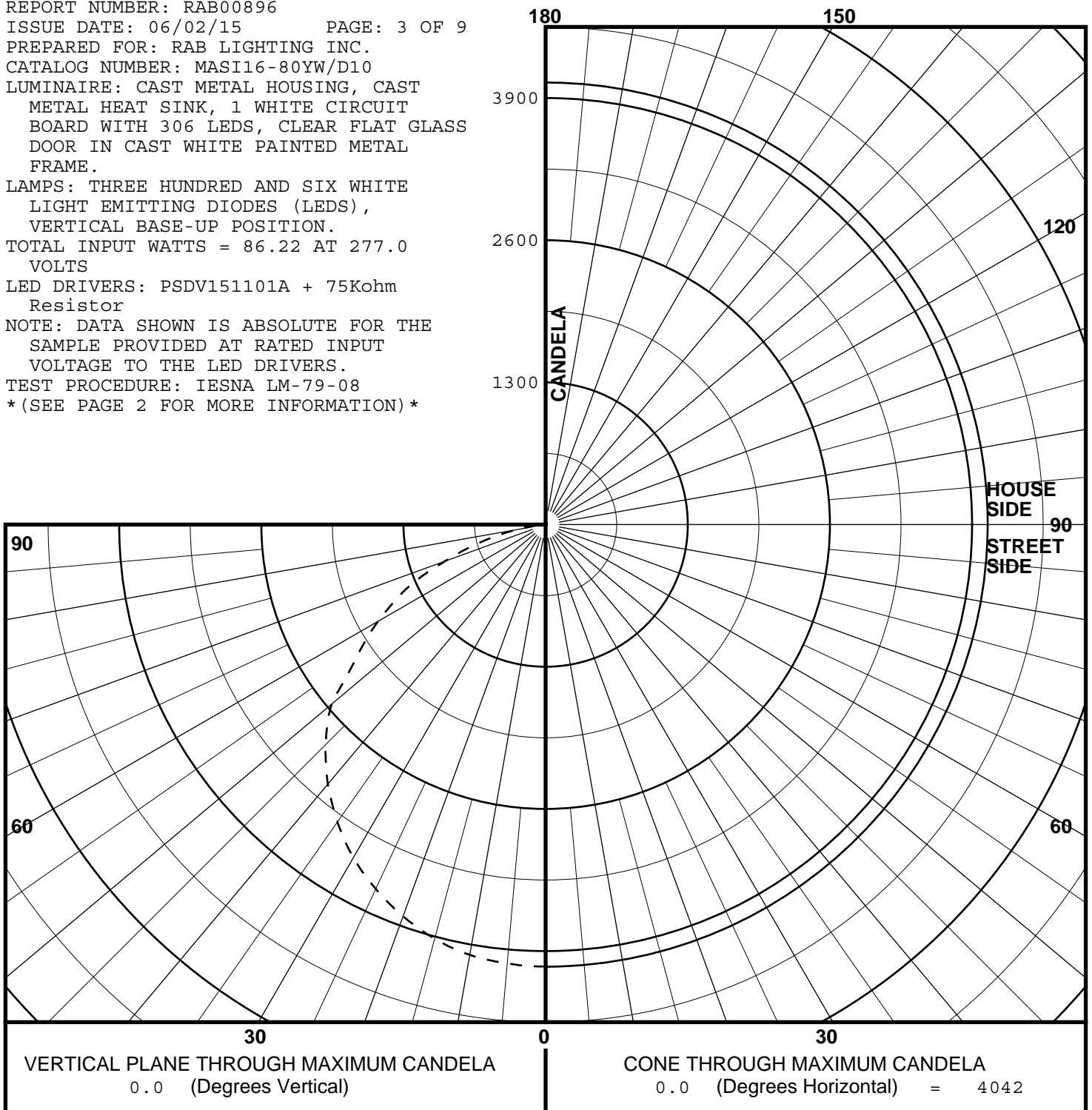
PAGE: 2 OF 9

ADDITIONAL INFORMATION

TEST DISTANCE = 28.25 FEET  
NOTE: DATA SHOWN IS ABSOLUTE FOR THE SAMPLE PROVIDED.  
ACCREDITED LABORATORY CODE 201058-0

## MAXIMUM PLANE AND MAXIMUM CONE PLOTS OF CANDELA

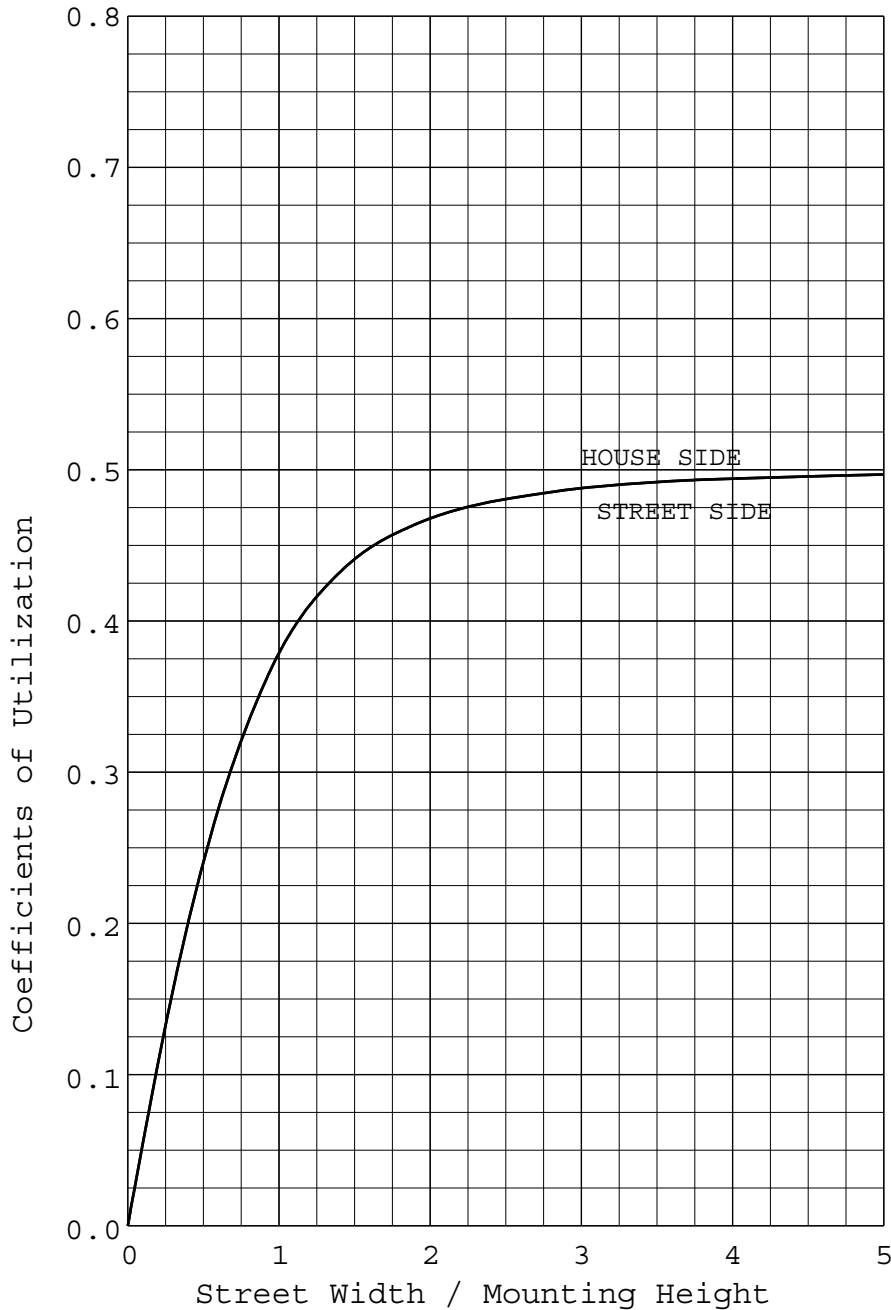
REPORT NUMBER: RAB00896  
 ISSUE DATE: 06/02/15 PAGE: 3 OF 9  
 PREPARED FOR: RAB LIGHTING INC.  
 CATALOG NUMBER: MASI16-80YW/D10  
 LUMINAIRE: CAST METAL HOUSING, CAST  
 METAL HEAT SINK, 1 WHITE CIRCUIT  
 BOARD WITH 306 LEDS, CLEAR FLAT GLASS  
 DOOR IN CAST WHITE PAINTED METAL  
 FRAME.  
 LAMPS: THREE HUNDRED AND SIX WHITE  
 LIGHT EMITTING DIODES (LEDS),  
 VERTICAL BASE-UP POSITION.  
 TOTAL INPUT WATTS = 86.22 AT 277.0  
 VOLTS  
 LED DRIVERS: PSDV151101A + 75Kohm  
 Resistor  
 NOTE: DATA SHOWN IS ABSOLUTE FOR THE  
 SAMPLE PROVIDED AT RATED INPUT  
 VOLTAGE TO THE LED DRIVERS.  
 TEST PROCEDURE: IESNA LM-79-08  
 \*(SEE PAGE 2 FOR MORE INFORMATION)\*



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COEFFICIENTS OF UTILIZATION AND FLUX DISTRIBUTION



	LUMENS	PERCENT OF FIXTURE
DOWNWARD STREET SIDE	5767.	50.0
DOWNWARD HOUSE SIDE	5767.	50.0
DOWNWARD TOTAL	11533.	100.0
UPWARD STREET SIDE	0.	0.0
UPWARD HOUSE SIDE	0.	0.0
UPWARD TOTAL	0.	0.0
TOTAL FLUX	11533.	100.0
TOTAL INPUT WATTS = 86.2		
EFFICACY = 133.8 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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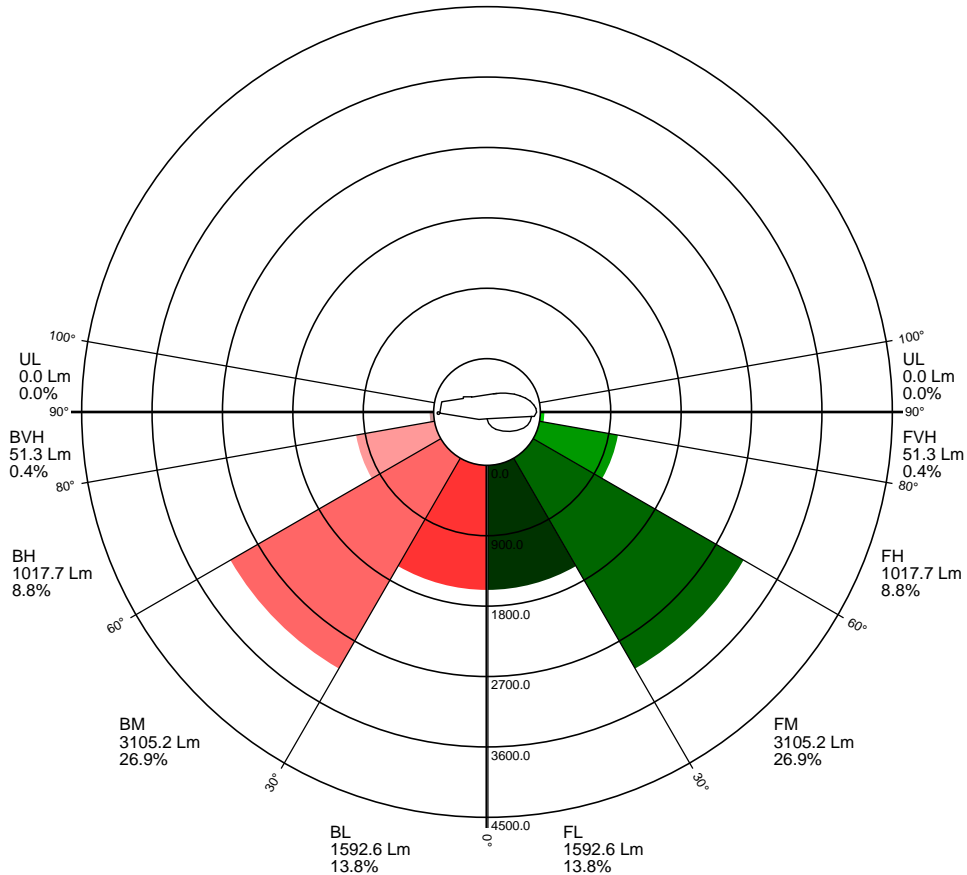
PAGE: 5 OF 9

BUG Rating:				B3 U0 G1		
Zonal Summary		Lumens	% of Fixture	Zone Ratings		
				B	U	G
Forward		5767	50.0			
FL	(0° - 30°)	1592.6	13.8			
FM	(30° - 60°)	3105.2	26.9			
FH	(60° - 80°)	1017.7	8.8			G1
FVH	(80° - 90°)	51.3	0.4			G1
Backward		5767	50.0			
BL	(0° - 30°)	1592.6	13.8	B3		
BM	(30° - 60°)	3105.2	26.9	B3		
BH	(60° - 80°)	1017.7	8.8	B3		G1
BVH	(80° - 90°)	51.3	0.4			G1
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		11533	100.0			

### Zonal Lumen Summary

(Linear scale)

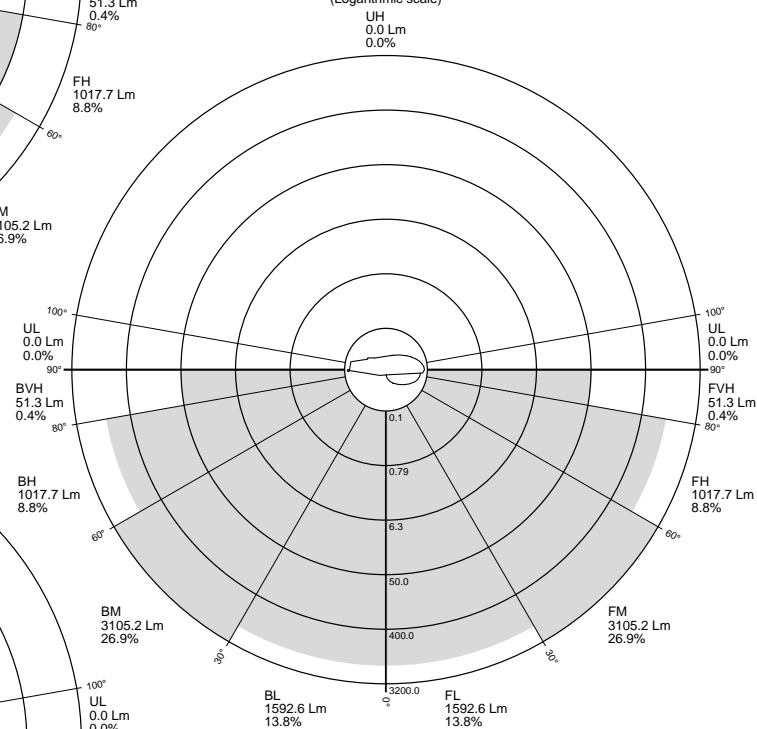
UH  
0.0 Lm  
0.0%



(Logarithmic scale)

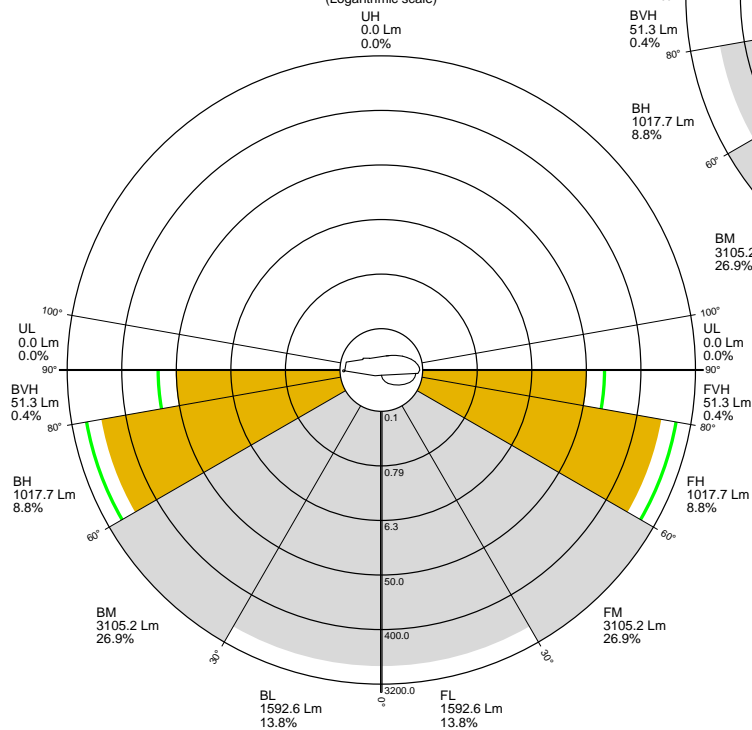


(Logarithmic scale)



### Glare Rating Details

(Logarithmic scale)



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### 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
	90.0	0.	0.	0.	0.	0.	0.	0.	0.	0.
	87.5	25.	26.	27.	28.	29.	29.	29.	28.	27. 25.
	85.0	64.	66.	66.	67.	66.	67.	67.	67.	68. 65.
	82.5	145.	147.	150.	146.	148.	148.	146.	147.	149. 147.
	80.0	270.	278.	278.	266.	268.	264.	269.	274.	276. 273.
	77.5	431.	440.	438.	418.	426.	415.	427.	422.	439. 434.
	75.0	602.	601.	615.	590.	592.	585.	597.	592.	610. 608.
	72.5	791.	793.	798.	794.	766.	798.	781.	803.	795. 797.
V	70.0	979.	983.	977.	1010.	981.	989.	984.	1015.	987. 983.
E	67.5	1212.	1228.	1229.	1233.	1200.	1170.	1200.	1232.	1226. 1208.
R	65.0	1421.	1430.	1419.	1418.	1422.	1345.	1422.	1424.	1424. 1415.
T	62.5	1591.	1609.	1607.	1600.	1610.	1596.	1615.	1603.	1609. 1600.
I	60.0	1771.	1781.	1787.	1777.	1788.	1877.	1803.	1775.	1787. 1776.
C	57.5	1941.	1945.	1953.	1943.	2029.	2066.	2032.	1953.	1955. 1947.
A	55.0	2106.	2103.	2114.	2161.	2237.	2235.	2233.	2175.	2131. 2114.
L	52.5	2302.	2299.	2352.	2394.	2403.	2398.	2397.	2391.	2357. 2333.
	50.0	2554.	2547.	2554.	2552.	2550.	2554.	2551.	2553.	2555. 2545.
A	47.5	2708.	2701.	2703.	2703.	2701.	2697.	2699.	2700.	2708. 2706.
N	45.0	2845.	2840.	2844.	2843.	2842.	2837.	2841.	2841.	2844. 2844.
G	42.5	2974.	2969.	2977.	2974.	2970.	2967.	2969.	2974.	2977. 2971.
L	40.0	3098.	3093.	3101.	3096.	3096.	3092.	3092.	3095.	3101. 3095.
E	37.5	3210.	3207.	3216.	3211.	3213.	3209.	3211.	3211.	3213. 3211.
	35.0	3319.	3318.	3324.	3323.	3323.	3320.	3324.	3322.	3322. 3318.
	30.0	3516.	3516.	3515.	3520.	3518.	3519.	3518.	3517.	3518. 3516.
	25.0	3676.	3677.	3675.	3678.	3681.	3679.	3677.	3679.	3678. 3676.
	20.0	3812.	3811.	3809.	3810.	3814.	3815.	3811.	3810.	3810. 3807.
	15.0	3921.	3920.	3918.	3916.	3918.	3916.	3916.	3918.	3918. 3916.
	10.0	3995.	3993.	3991.	3990.	3989.	3988.	3988.	3990.	3994. 3994.
	5.0	4028.	4025.	4025.	4024.	4023.	4024.	4023.	4024.	4026. 4026.
	0.0<<	4042.	4042.	4042.	4042.	4042.	4042.	4042.	4042.	4042. 4042.

||  
 PLANE OF MAXIMUM CANDELA  
 |  
 CONE OF MAXIMUM CANDELA

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### 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
	90.0	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
	87.5	25.	25.	27.	28.	29.	29.	28.	27.	26.	25.
	85.0	65.	65.	68.	67.	67.	67.	66.	67.	66.	64.
	82.5	145.	147.	149.	147.	146.	148.	148.	146.	150.	147.
	80.0	270.	273.	276.	274.	269.	264.	268.	266.	278.	278.
	77.5	430.	434.	439.	422.	427.	415.	426.	418.	438.	440.
	75.0	603.	608.	610.	592.	597.	585.	592.	590.	615.	601.
	72.5	790.	797.	795.	803.	781.	798.	766.	794.	798.	793.
V	70.0	978.	983.	987.	1015.	984.	989.	981.	1010.	977.	983.
E	67.5	1198.	1208.	1226.	1232.	1200.	1170.	1200.	1233.	1229.	1228.
R	65.0	1418.	1415.	1424.	1424.	1422.	1345.	1422.	1418.	1419.	1430.
T	62.5	1607.	1600.	1609.	1603.	1615.	1596.	1610.	1600.	1607.	1609.
I	60.0	1783.	1776.	1787.	1775.	1803.	1877.	1788.	1777.	1787.	1781.
C	57.5	1953.	1947.	1955.	1953.	2032.	2066.	2029.	1943.	1953.	1945.
A	55.0	2112.	2114.	2131.	2175.	2233.	2235.	2237.	2161.	2114.	2103.
L	52.5	2332.	2333.	2357.	2391.	2397.	2398.	2403.	2394.	2352.	2299.
	50.0	2550.	2545.	2555.	2553.	2551.	2554.	2550.	2552.	2554.	2547.
A	47.5	2711.	2706.	2708.	2700.	2699.	2697.	2701.	2703.	2703.	2701.
N	45.0	2850.	2844.	2844.	2841.	2841.	2837.	2842.	2843.	2844.	2840.
G	42.5	2972.	2971.	2977.	2974.	2969.	2967.	2970.	2974.	2977.	2969.
L	40.0	3098.	3095.	3101.	3095.	3092.	3092.	3096.	3096.	3101.	3093.
E	37.5	3212.	3211.	3213.	3211.	3211.	3209.	3213.	3211.	3216.	3207.
	35.0	3322.	3318.	3322.	3322.	3324.	3320.	3323.	3323.	3324.	3318.
	30.0	3522.	3516.	3518.	3517.	3518.	3519.	3518.	3520.	3515.	3516.
	25.0	3676.	3676.	3678.	3679.	3677.	3679.	3681.	3678.	3675.	3677.
	20.0	3805.	3807.	3810.	3810.	3811.	3815.	3814.	3810.	3809.	3811.
	15.0	3916.	3916.	3918.	3918.	3916.	3916.	3918.	3916.	3918.	3920.
	10.0	3994.	3994.	3994.	3990.	3988.	3988.	3989.	3990.	3991.	3993.
	5.0	4026.	4026.	4026.	4024.	4023.	4024.	4023.	4024.	4025.	4025.
	0.0<<	4042.	4042.	4042.	4042.	4042.	4042.	4042.	4042.	4042.	4042.

CONE OF MAXIMUM CANDELA



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5-DEGREE  
ZONAL LUMEN SUMMARY

0- 5	96
5- 10	287
10- 15	469
15- 20	637
20- 25	785
25- 30	911
30- 35	1007
35- 40	1071
40- 45	1099
45- 50	1090
50- 55	1027
55- 60	915
60- 65	780
65- 70	611
70- 75	414
75- 80	231
80- 85	86
85- 90	17

10-DEGREE  
ZONAL LUMEN SUMMARY

0- 10	383
0- 20	1489
0- 30	3185
0- 40	5263
0- 50	7453
0- 60	9395
0- 70	10786
0- 80	11431
0- 90	11533

REPORT NUMBER: RAB00929  
DATE: 6/2/2015  
PREPARED FOR: RAB LIGHTING INC.  
CATALOG NUMBER: MASI16-80YW/D10

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ADDRESS: 170 LUDLOW AVE, NORTHVALE, NJ 07647

LUMINAIRE: CAST METAL HOUSING, CAST METAL HEAT SINK, 1 WHITE CIRCUIT BOARD WITH 306 LEDS, CLEAR FLAT GLASS DOOR IN CAST WHITE PAINTED METAL FRAME.

LAMP: THREE HUNDRED AND SIX LIGHT EMITTING DIODES (LEDS), VERTICAL BASE-UP POSITION.

DRIVER: PSDV151101A + 75Kohm Resistor

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	6/2/16
	RAB 2.0 meter Diameter Integrating Sphere, 4PI Geometry	6/2/16

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	<u>X.CAO</u>
Approved	<u>D.WANG-MUNSON</u> Lighting Engineer

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### RESULTS:

PHOTOMETRIC	
Total Integrated Flux (lumens)	11533 *
SPECTRORADIOMETRIC	
Observer	CIE 1931 2 degree
Chromaticity Ordinate x	0.4339
Chromaticity Ordinate y	0.4010
Observer	CIE 1976 2 degree
Chromaticity Ordinate u'	0.2499
Chromaticity Ordinate v'	0.5197
Correlated Color Temp CCT (K)	3026
ANSI C78.377-2008 Duv	-0.001
Total Radiant Flux (milliWatts)	33296 *
ELECTRICAL	
Input Voltage (Volts AC)	120.0
Input Current (Amps AC)	0.724
Input Power (Watts)	86.1
Input Power Factor (%)	99.1
Input Current THD (%)	9.7
Input Voltage THD (%)	0.2
EFFICACY (Lumens/Watt)	
	133.9
ELECTRICAL AT MAX NONIMAL INPUT	
Input Voltage (Volts AC)	277.0
Input Current (Amps AC)	0.340
Input Power (Watts)	86.2
Input Power Factor (%)	91.5
Input Current THD (%)	20.0
Input Voltage THD (%)	0.2
Off-State Power (Watts)	0.0

COLOR RENDERING INDICES	CRI
Ra (Average 1-8)	72
R1 Light greyish red	69
R2 Dark greyish yellow	80
R3 Strong yellowish green	90
R4 Moderate yellowish green	68
R5 Light bluish green	67
R6 Light blue	72
R7 Light violet	79
R8 Light reddish purple	47
R9 Strong red	-26
R10 Strong yellow	53
R11 Strong green	62
R12 Strong blue	44
R13 Light yellowish pink (skin)	70
R14 Moderate olive green (leaf)	94

### \*NOTE:

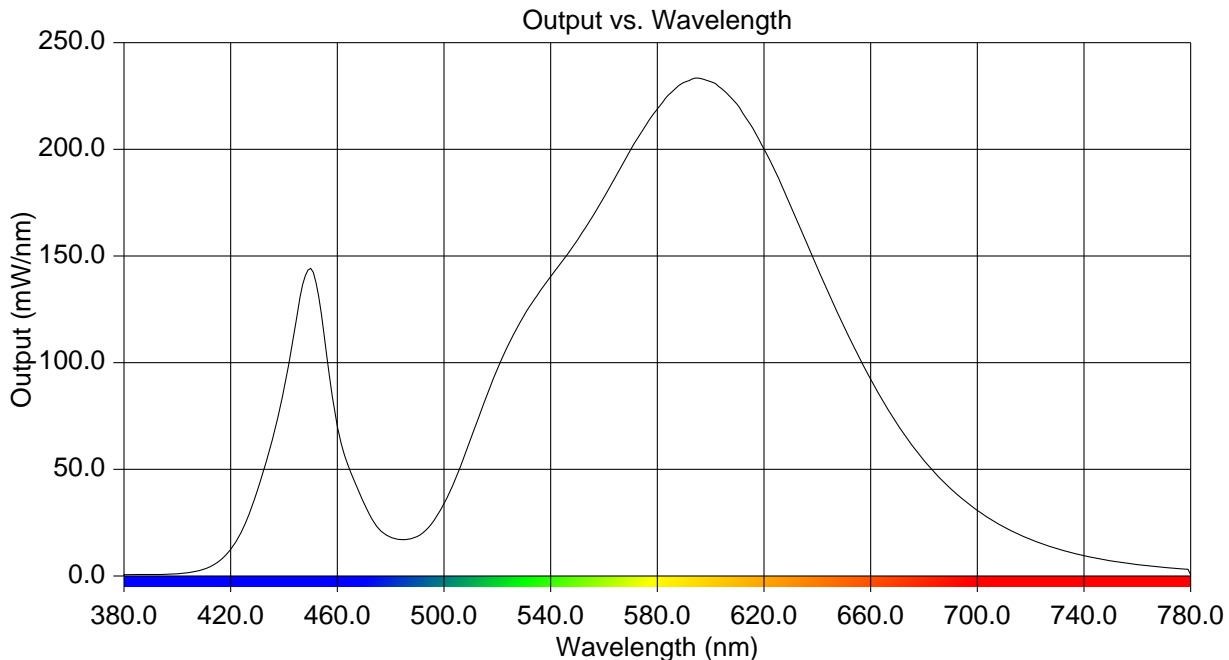
Proper calibration of integrating spheres for measuring total flux output of non-directional samples will produce reliable, repeatable results within the calibration tolerances of the equipment used. However, measurement of test samples with significant self absorption and/or directional output, even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

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### RESULTS:

Wavelength	mW per nm	Wavelength	mW per nm	Wavelength	mW per nm
380	0.610	515	80.993	650	117.001
385	0.601	520	97.167	655	104.245
390	0.644	525	110.499	660	92.265
395	0.779	530	122.048	665	81.191
400	1.054	535	131.600	670	71.159
405	1.708	540	140.430	675	62.069
410	3.130	545	148.625	680	54.233
415	6.344	550	157.586	685	47.097
420	12.485	555	167.132	690	40.896
425	23.229	560	177.427	695	35.555
430	40.011	565	188.555	700	30.703
435	61.296	570	199.836	705	26.612
440	87.287	575	209.911	710	22.988
445	123.464	580	218.919	715	19.793
450	144.207	585	226.332	720	17.147
455	113.389	590	231.372	725	14.790
460	70.304	595	233.416	730	12.718
465	48.655	600	231.777	735	11.005
470	34.132	605	227.559	740	9.535
475	23.065	610	221.001	745	8.243
480	18.134	615	211.491	750	7.141
485	17.062	620	200.014	755	6.154
490	18.521	625	187.759	760	5.358
495	23.912	630	173.542	765	4.657
500	33.921	635	159.015	770	4.032
505	47.601	640	144.644	775	3.510
510	64.155	645	130.340	780	0.533



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## CIE Chromaticity Diagram

