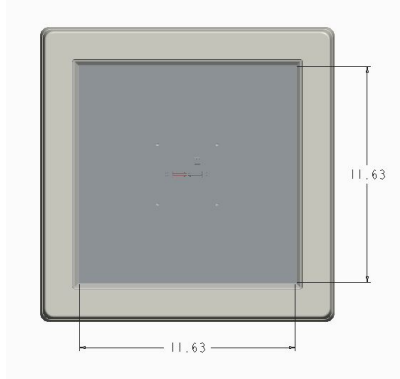


ISOFOOTCANDLE LINES OF HORIZONTAL ILLUMINATION

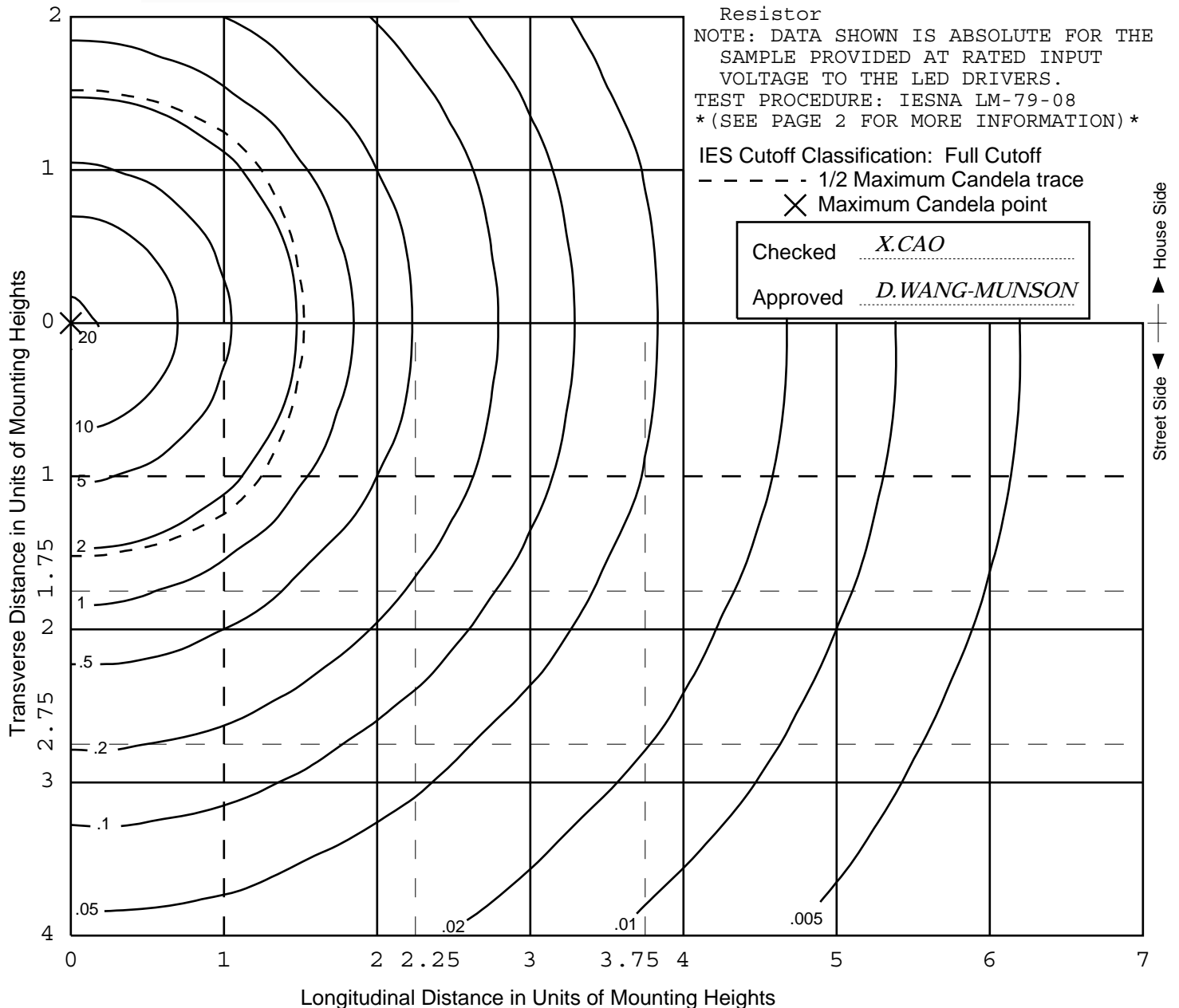
Values based on 14 foot mounting height.



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 ISSUE DATE: 06/03/15 PAGE: 1 OF 9
 PREPARED FOR: RAB LIGHTING INC.
 CATALOG NUMBER: MASI16-80NW/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 LIGHT EMITTING DIODES (LEDs), VERTICAL BASE-UP POSITION.
 TOTAL INPUT WATTS = 85.3 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
 X Maximum Candela point



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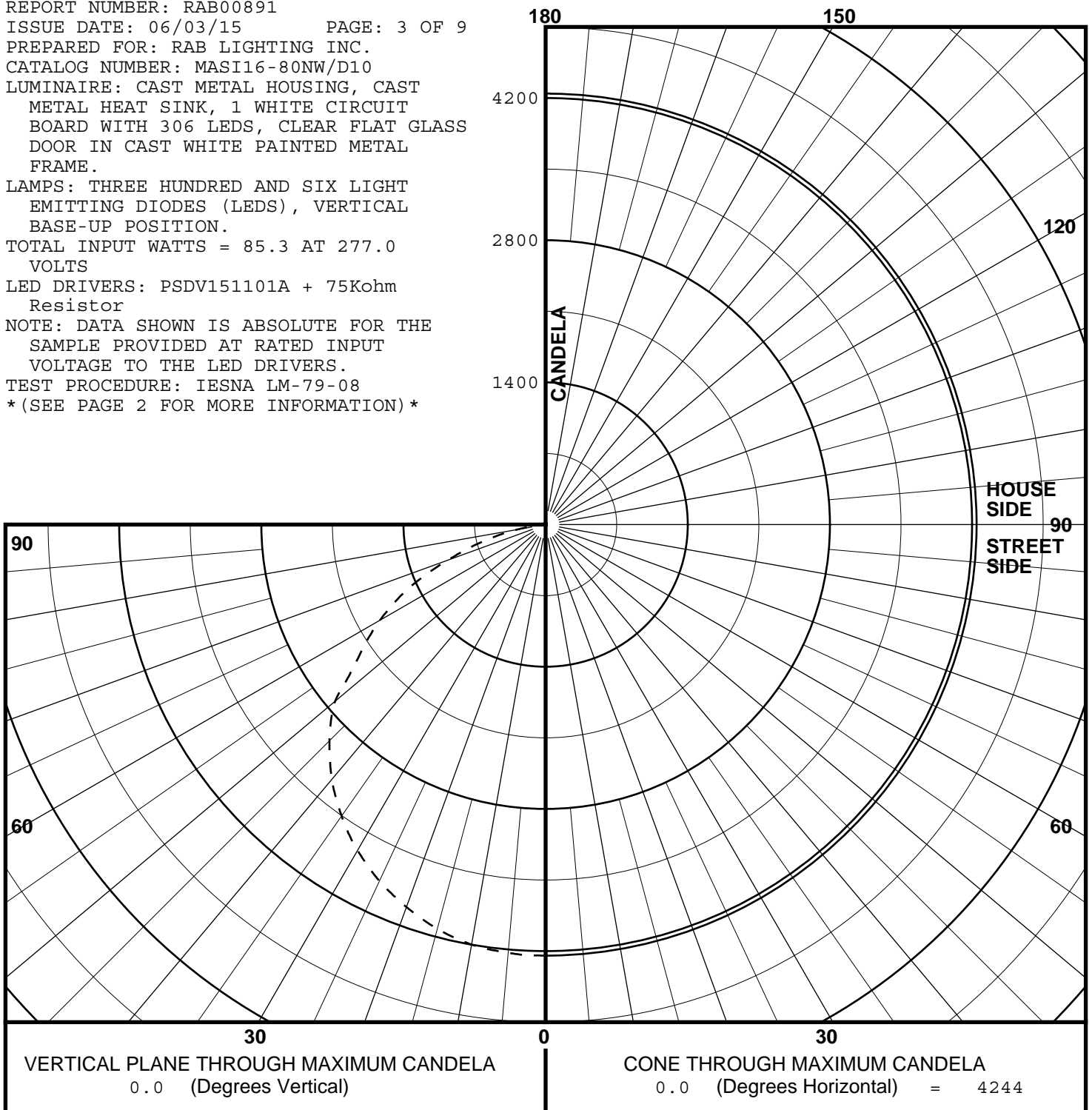
PAGE: 2 OF 9

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

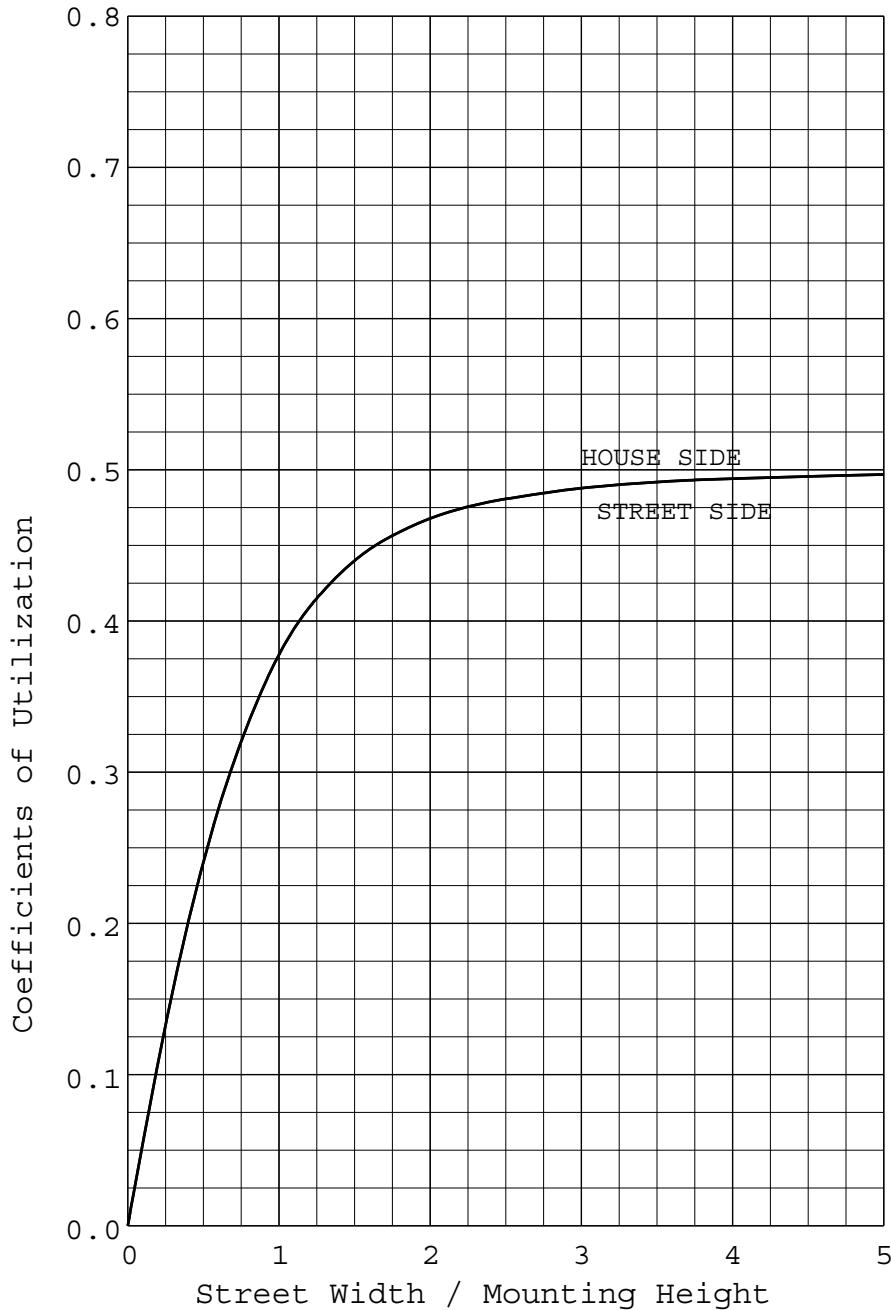
REPORT NUMBER: RAB00891
 ISSUE DATE: 06/03/15 PAGE: 3 OF 9
 PREPARED FOR: RAB LIGHTING INC.
 CATALOG NUMBER: MASI16-80NW/D10
 LUMINAIRE: CAST METAL HOUSING, CAST
 METAL HEAT SINK, 1 WHITE CIRCUIT
 BOARD WITH 306 LEDS, CLEAR FLAT GLASS
 DOOR IN CAST WHITE PAINTED METAL
 FRAME.
 LAMPS: THREE HUNDRED AND SIX LIGHT
 EMITTING DIODES (LEDS), VERTICAL
 BASE-UP POSITION.
 TOTAL INPUT WATTS = 85.3 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	6096.	50.0
DOWNWARD HOUSE SIDE	6096.	50.0
DOWNWARD TOTAL	12192.	100.0
UPWARD STREET SIDE	0.	0.0
UPWARD HOUSE SIDE	0.	0.0
UPWARD TOTAL	0.	0.0
TOTAL FLUX	12192.	100.0
TOTAL INPUT WATTS = 85.3		
EFFICACY = 142.9 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.

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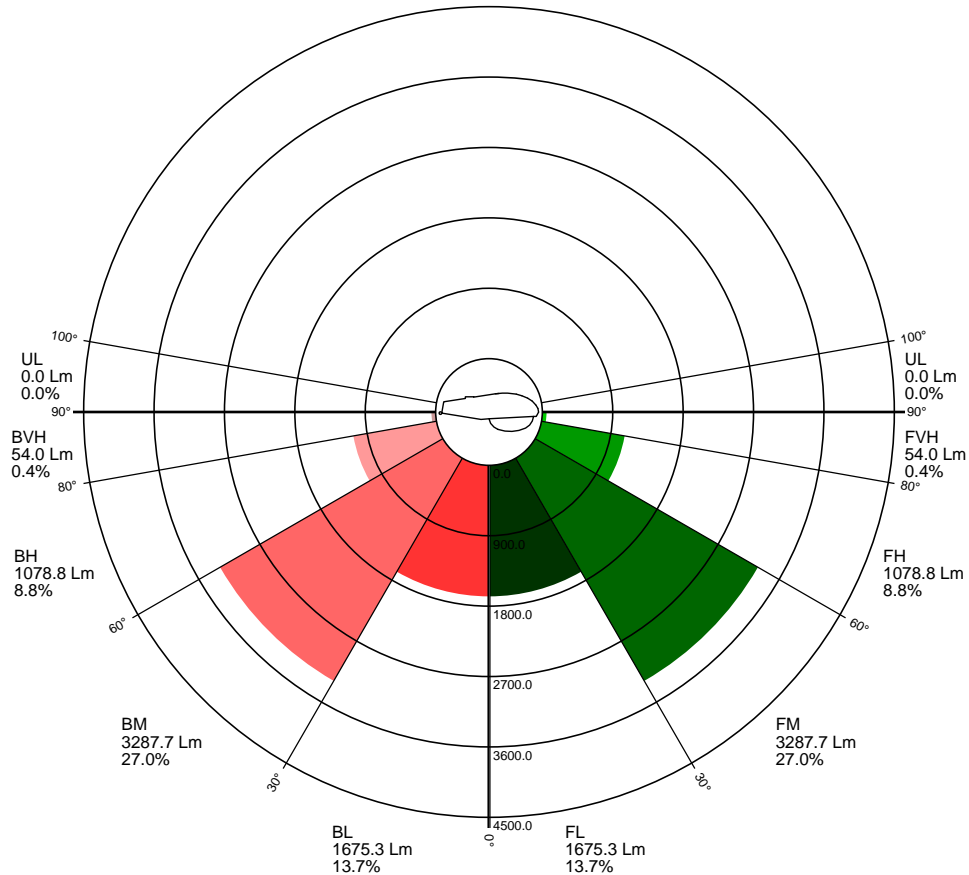
PAGE: 5 OF 9

BUG Rating:				B3 U0 G1		
Zonal Summary				Zone Ratings		
		Lumens	% of Fixture	B	U	G
Forward						
FL	(0° - 30°)	1675.3	13.7			
FM	(30° - 60°)	3287.7	27.0			
FH	(60° - 80°)	1078.8	8.8			G1
FVH	(80° - 90°)	54.0	0.4			G1
Backward						
BL	(0° - 30°)	1675.3	13.7	B3		
BM	(30° - 60°)	3287.7	27.0	B3		
BH	(60° - 80°)	1078.8	8.8	B3		G1
BVH	(80° - 90°)	54.0	0.4			G1
Upward						
UL	(90° - 100°)	0.0	0.0		U0	
UH	(100° - 180°)	0.0	0.0		U0	
Trapped Light						
Total Flux				12192 100.0		

Zonal Lumen Summary

(Linear scale)

UH
0.0 Lm
0.0%

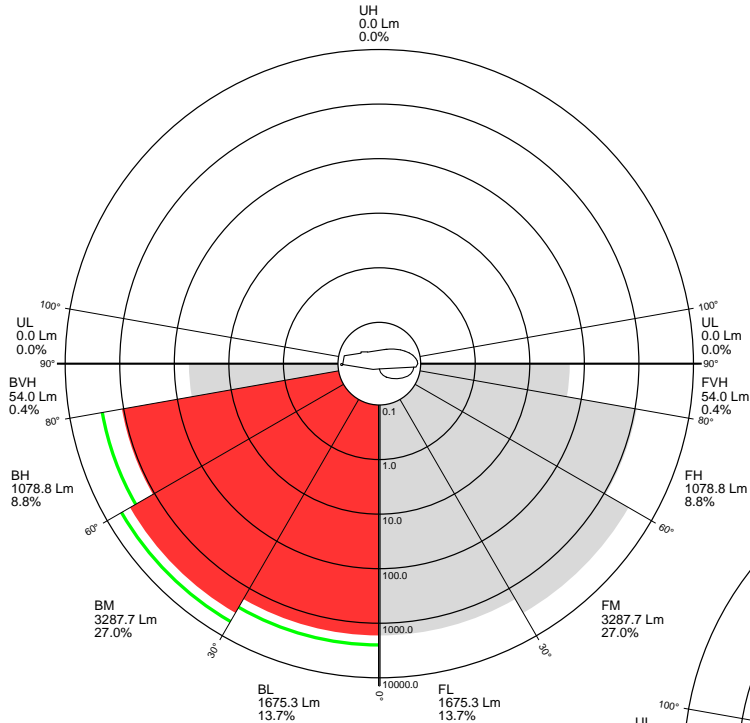


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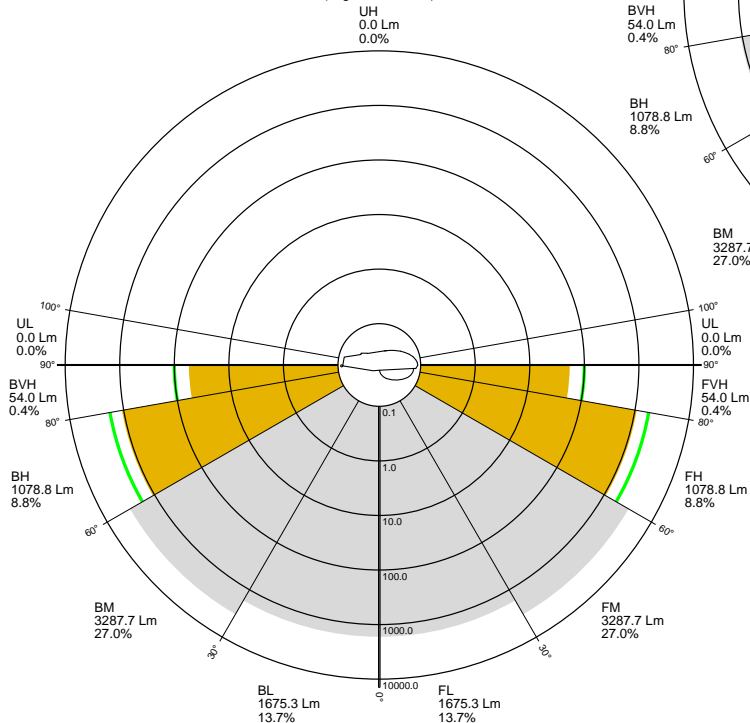
Backlight Rating Details

(Logarithmic scale)



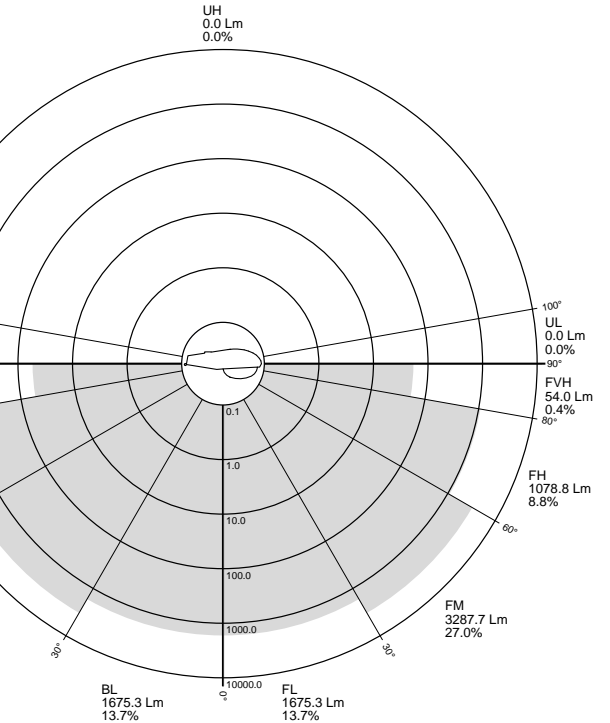
Glare Rating Details

(Logarithmic scale)



Uplight 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	26.	27.	29.	30.	30.	31.	31.	30.	28. 25.
	85.0	68.	70.	71.	71.	68.	69.	71.	72.	71. 69.
	82.5	152.	157.	159.	156.	152.	151.	156.	155.	161. 153.
	80.0	284.	295.	292.	286.	280.	272.	285.	286.	289. 290.
	77.5	458.	463.	463.	449.	460.	441.	460.	449.	462. 457.
	75.0	638.	642.	662.	626.	630.	599.	634.	628.	655. 630.
	72.5	825.	854.	845.	853.	815.	844.	820.	853.	841. 845.
V	70.0	1028.	1053.	1043.	1067.	1043.	1049.	1042.	1068.	1038. 1038.
E	67.5	1260.	1302.	1308.	1309.	1264.	1235.	1266.	1308.	1300. 1273.
R	65.0	1494.	1515.	1516.	1510.	1515.	1419.	1513.	1515.	1509. 1498.
T	62.5	1692.	1715.	1715.	1701.	1710.	1651.	1713.	1697.	1710. 1701.
I	60.0	1884.	1896.	1902.	1887.	1900.	1995.	1898.	1884.	1896. 1885.
C	57.5	2063.	2073.	2081.	2067.	2149.	2195.	2144.	2063.	2077. 2066.
A	55.0	2236.	2244.	2251.	2294.	2377.	2377.	2371.	2281.	2249. 2236.
L	52.5	2437.	2440.	2503.	2544.	2546.	2543.	2549.	2539.	2495. 2442.
	50.0	2707.	2701.	2715.	2706.	2706.	2708.	2712.	2710.	2710. 2706.
A	47.5	2869.	2866.	2867.	2863.	2864.	2860.	2867.	2866.	2870. 2869.
N	45.0	3011.	3010.	3012.	3010.	3011.	3004.	3014.	3011.	3014. 3014.
G	42.5	3145.	3144.	3149.	3147.	3144.	3140.	3147.	3151.	3150. 3148.
L	40.0	3274.	3271.	3279.	3274.	3272.	3269.	3276.	3276.	3278. 3274.
E	37.5	3393.	3390.	3397.	3397.	3395.	3391.	3395.	3399.	3396. 3393.
	35.0	3503.	3504.	3510.	3510.	3510.	3506.	3514.	3513.	3509. 3506.
	30.0	3705.	3707.	3709.	3711.	3709.	3709.	3710.	3711.	3711. 3709.
	25.0	3873.	3871.	3871.	3875.	3874.	3873.	3876.	3876.	3871. 3871.
	20.0	4008.	4008.	4005.	4005.	4010.	4012.	4009.	4004.	4006. 4005.
	15.0	4122.	4121.	4117.	4115.	4115.	4118.	4117.	4116.	4118. 4118.
	10.0	4199.	4193.	4192.	4189.	4188.	4188.	4188.	4189.	4191. 4193.
	5.0	4233.	4224.	4226.	4224.	4224.	4224.	4224.	4225.	4225. 4225.
	0.0<<	4244.	4244.	4244.	4244.	4244.	4244.	4244.	4244.	4244. 4244.

||
 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	26.	25.	28.	30.	31.	31.	30.	29.	27.	26.
	85.0	71.	69.	71.	72.	71.	69.	68.	71.	71.	68.
	82.5	156.	153.	161.	155.	156.	151.	152.	156.	159.	157.
	80.0	284.	290.	289.	286.	285.	272.	280.	286.	292.	295.
	77.5	454.	457.	462.	449.	460.	441.	460.	449.	463.	463.
	75.0	629.	630.	655.	628.	634.	599.	630.	626.	662.	642.
	72.5	840.	845.	841.	853.	820.	844.	815.	853.	845.	854.
V	70.0	1034.	1038.	1038.	1068.	1042.	1049.	1043.	1067.	1043.	1053.
E	67.5	1263.	1273.	1300.	1308.	1266.	1235.	1264.	1309.	1308.	1302.
R	65.0	1498.	1498.	1509.	1515.	1513.	1419.	1515.	1510.	1516.	1515.
T	62.5	1697.	1701.	1710.	1697.	1713.	1651.	1710.	1701.	1715.	1715.
I	60.0	1887.	1885.	1896.	1884.	1898.	1995.	1900.	1887.	1902.	1896.
C	57.5	2064.	2066.	2077.	2063.	2144.	2195.	2149.	2067.	2081.	2073.
A	55.0	2237.	2236.	2249.	2281.	2371.	2377.	2377.	2294.	2251.	2244.
L	52.5	2439.	2442.	2495.	2539.	2549.	2543.	2546.	2544.	2503.	2440.
	50.0	2704.	2706.	2710.	2710.	2712.	2708.	2706.	2706.	2715.	2701.
A	47.5	2871.	2869.	2870.	2866.	2867.	2860.	2864.	2863.	2867.	2866.
N	45.0	3017.	3014.	3014.	3011.	3014.	3004.	3011.	3010.	3012.	3010.
G	42.5	3147.	3148.	3150.	3151.	3147.	3140.	3144.	3147.	3149.	3144.
L	40.0	3277.	3274.	3278.	3276.	3276.	3269.	3272.	3274.	3279.	3271.
E	37.5	3396.	3393.	3396.	3399.	3395.	3391.	3395.	3397.	3397.	3390.
	35.0	3508.	3506.	3509.	3513.	3514.	3506.	3510.	3510.	3510.	3504.
	30.0	3710.	3709.	3711.	3711.	3710.	3709.	3709.	3711.	3709.	3707.
	25.0	3871.	3871.	3871.	3876.	3876.	3873.	3874.	3875.	3871.	3871.
	20.0	4006.	4005.	4006.	4004.	4009.	4012.	4010.	4005.	4005.	4008.
	15.0	4115.	4118.	4118.	4116.	4117.	4118.	4115.	4115.	4117.	4121.
	10.0	4191.	4193.	4191.	4189.	4188.	4188.	4188.	4189.	4192.	4193.
	5.0	4223.	4225.	4225.	4225.	4224.	4224.	4224.	4224.	4226.	4224.
	0.0<<	4244.	4244.	4244.	4244.	4244.	4244.	4244.	4244.	4244.	4244.

CONE OF MAXIMUM CANDELA

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5-DEGREE ZONAL LUMEN SUMMARY

0- 5	101
5- 10	301
10- 15	493
15- 20	669
20- 25	826
25- 30	959
30- 35	1063
35- 40	1132
40- 45	1164
45- 50	1156
50- 55	1089
55- 60	971
60- 65	827
65- 70	647
70- 75	439
75- 80	245
80- 85	91
85- 90	18

10-DEGREE ZONAL LUMEN SUMMARY

0- 10	402
0- 20	1565
0- 30	3351
0- 40	5546
0- 50	7866
0- 60	9926
0- 70	11400
0- 80	12084
0- 90	12192

REPORT NUMBER: RAB00924
DATE: 6/3/2015
PREPARED FOR: RAB LIGHTING INC.
CATALOG NUMBER: MASI16-80NW/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)	12192 *
SPECTRORADIOMETRIC	
Observer	CIE 1931 2 degree
Chromaticity Ordinate x	0.3832
Chromaticity Ordinate y	0.3822
Observer	CIE 1976 2 degree
Chromaticity Ordinate u'	0.2247
Chromaticity Ordinate v'	0.5044
Correlated Color Temp CCT (K)	3967
ANSI C78.377-2008 Duv	0.002
Total Radiant Flux (milliWatts)	35151 *
ELECTRICAL	
Input Voltage (Volts AC)	120.0
Input Current (Amps AC)	0.716
Input Power (Watts)	85.1
Input Power Factor (%)	99.0
Input Current THD (%)	10.0
Input Voltage THD (%)	0.2
EFFICACY (Lumens/Watt)	
	143.3
ELECTRICAL AT MAX NONIMAL INPUT	
Input Voltage (Volts AC)	277.0
Input Current (Amps AC)	0.337
Input Power (Watts)	85.3
Input Power Factor (%)	91.4
Input Current THD (%)	20.4
Input Voltage THD (%)	0.2
Off-State Power (Watts)	
	0.0

COLOR RENDERING INDICES	CRI
Ra (Average 1-8)	72
R1 Light greyish red	70
R2 Dark greyish yellow	78
R3 Strong yellowish green	84
R4 Moderate yellowish green	71
R5 Light bluish green	69
R6 Light blue	69
R7 Light violet	82
R8 Light reddish purple	55
R9 Strong red	-24
R10 Strong yellow	47
R11 Strong green	66
R12 Strong blue	38
R13 Light yellowish pink (skin)	71
R14 Moderate olive green (leaf)	91

*NOTE:

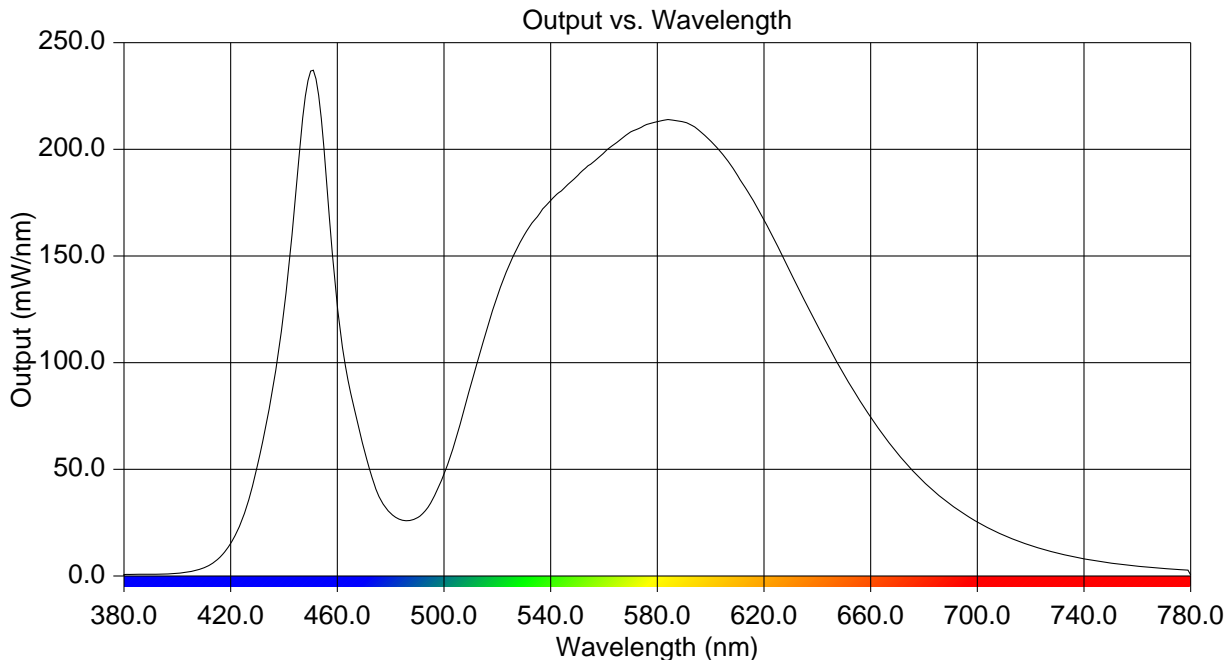
Proper calibration of integrating spheres for measuring total flux output of non-directional samples will produce reliable, repeatable results within the calibration tolerances of the equipment used. However, measurement of test samples with significant self absorption and/or directional output, even 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	0.670	515	111.166	650	94.438
385	0.736	520	131.150	655	84.117
390	0.777	525	147.536	660	74.518
395	0.932	530	159.621	665	65.633
400	1.292	535	168.388	670	57.544
405	2.057	540	175.918	675	50.356
410	3.858	545	181.723	680	43.985
415	7.672	550	187.629	685	38.373
420	15.254	555	193.022	690	33.400
425	28.853	560	198.432	695	29.183
430	51.469	565	203.421	700	25.289
435	82.839	570	208.170	705	21.997
440	124.079	575	211.082	710	19.080
445	187.847	580	212.979	715	16.507
450	236.682	585	213.841	720	14.301
455	200.351	590	212.875	725	12.398
460	126.721	595	209.633	730	10.731
465	85.767	600	203.805	735	9.284
470	59.555	605	197.004	740	8.081
475	39.242	610	187.909	745	7.017
480	29.284	615	177.964	750	6.092
485	26.043	620	166.746	755	5.292
490	27.188	625	155.032	760	4.600
495	34.202	630	142.170	765	4.007
500	47.719	635	129.614	770	3.495
505	66.785	640	117.536	775	3.048
510	89.023	645	105.690	780	0.465



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CIE Chromaticity Diagram

