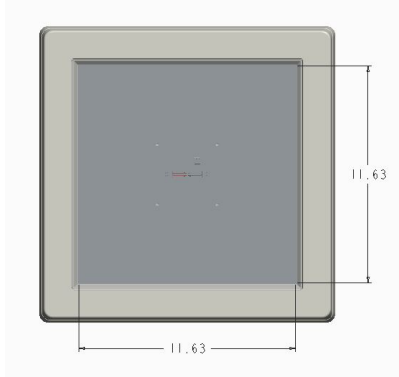


ISOFOOTCANDLE LINES OF HORIZONTAL ILLUMINATION

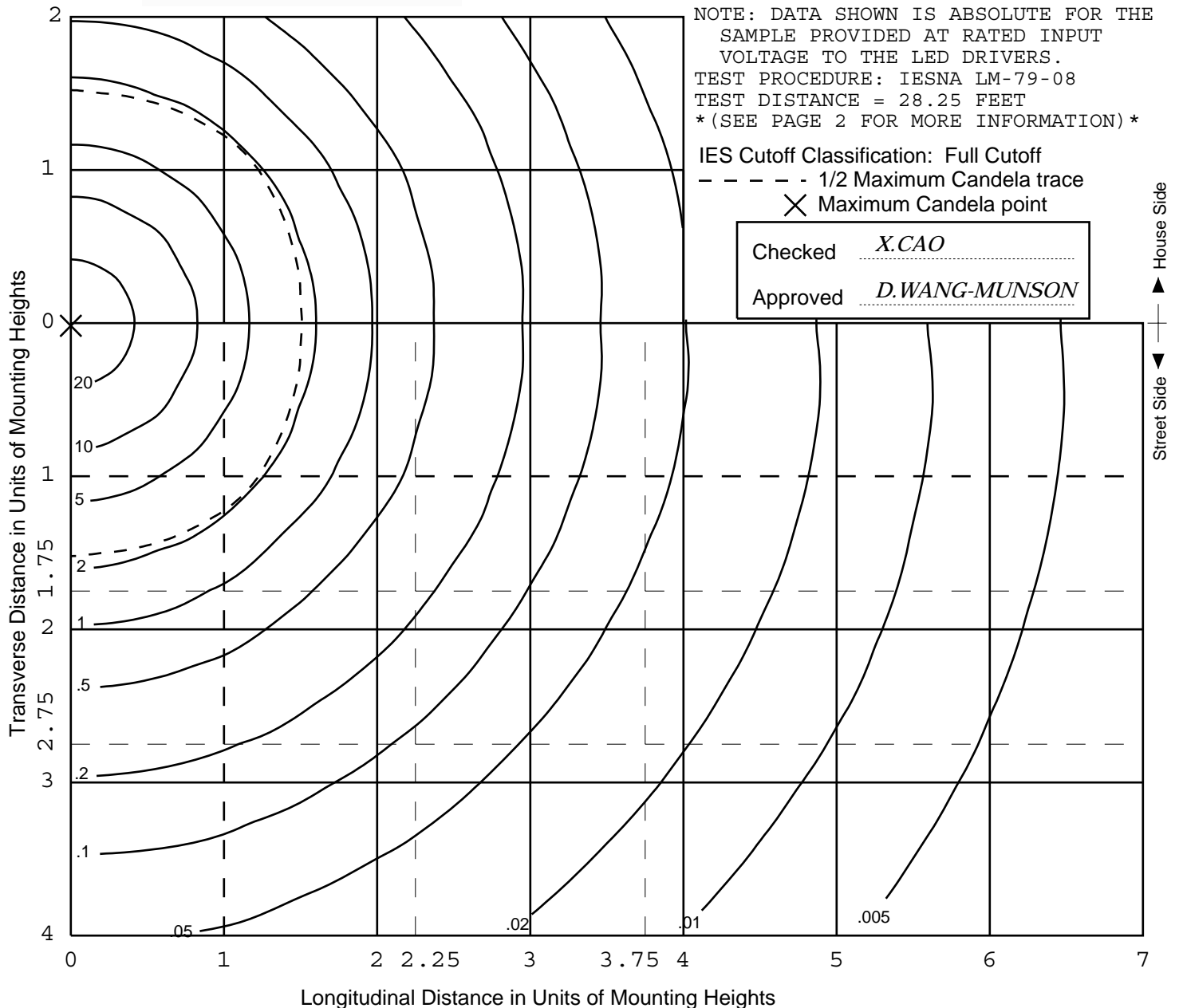
Values based on 14 foot mounting height.



REPORT NUMBER: RAB00888
 ISSUE DATE: 06/02/15 PAGE: 1 OF 9
 PREPARED FOR: RAB LIGHTING INC.
 CATALOG NUMBER: MASI16-100NW/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 = 114.6 AT 120.0 VOLTS
 LED DRIVERS: PSDV151101C
 NOTE: DATA SHOWN IS ABSOLUTE FOR THE SAMPLE PROVIDED AT RATED INPUT VOLTAGE TO THE LED DRIVERS.
 TEST PROCEDURE: IESNA LM-79-08
 TEST DISTANCE = 28.25 FEET
 *(SEE PAGE 2 FOR MORE INFORMATION) *

IES Cutoff Classification: Full Cutoff

--- 1/2 Maximum Candela trace
 X Maximum Candela point



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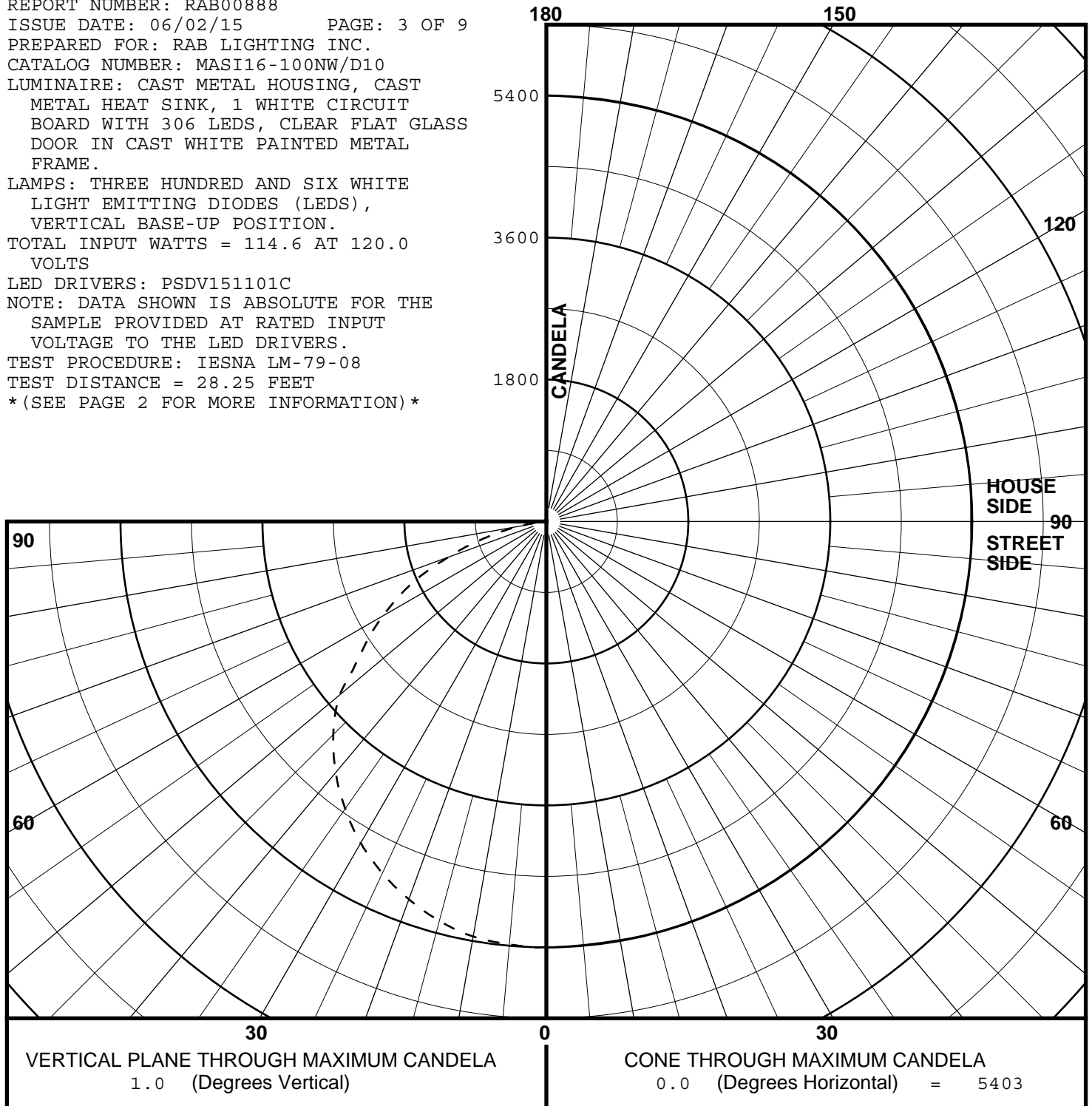
PAGE: 2 OF 9

ADDITIONAL INFORMATION

NOTE: DATA SHOWN IS ABSOLUTE FOR THE SAMPLE PROVIDED.
ACCREDITED LABORATORY CODE 201058-0

MAXIMUM PLANE AND MAXIMUM CONE PLOTS OF CANDELA

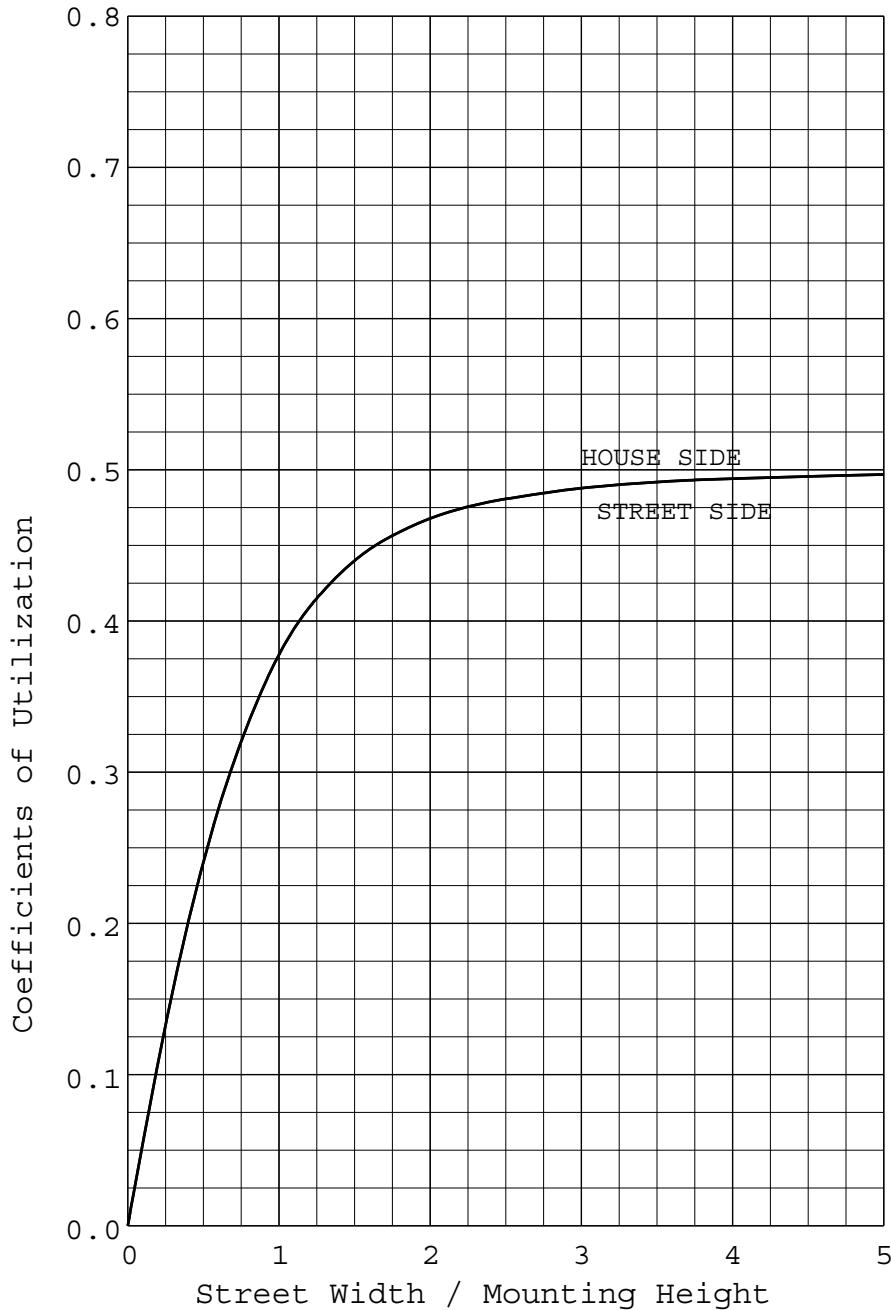
REPORT NUMBER: RAB00888
 ISSUE DATE: 06/02/15 PAGE: 3 OF 9
 PREPARED FOR: RAB LIGHTING INC.
 CATALOG NUMBER: MASI16-100NW/D10
 LUMINAIRE: CAST METAL HOUSING, CAST
 METAL HEAT SINK, 1 WHITE CIRCUIT
 BOARD WITH 306 LEDS, CLEAR FLAT GLASS
 DOOR IN CAST WHITE PAINTED METAL
 FRAME.
 LAMPS: THREE HUNDRED AND SIX WHITE
 LIGHT EMITTING DIODES (LEDS),
 VERTICAL BASE-UP POSITION.
 TOTAL INPUT WATTS = 114.6 AT 120.0
 VOLTS
 LED DRIVERS: PSDV151101C
 NOTE: DATA SHOWN IS ABSOLUTE FOR THE
 SAMPLE PROVIDED AT RATED INPUT
 VOLTAGE TO THE LED DRIVERS.
 TEST PROCEDURE: IESNA LM-79-08
 TEST DISTANCE = 28.25 FEET
 *(SEE PAGE 2 FOR MORE INFORMATION) *



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COEFFICIENTS OF UTILIZATION AND FLUX DISTRIBUTION



	LUMENS	PERCENT OF FIXTURE
DOWNWARD STREET SIDE	7727.	50.0
DOWNWARD HOUSE SIDE	7727.	50.0
DOWNWARD TOTAL	15454.	100.0
UPWARD STREET SIDE	0.	0.0
UPWARD HOUSE SIDE	0.	0.0
UPWARD TOTAL	0.	0.0
TOTAL FLUX	15454.	100.0
TOTAL INPUT WATTS = 114.6		
EFFICACY = 134.9 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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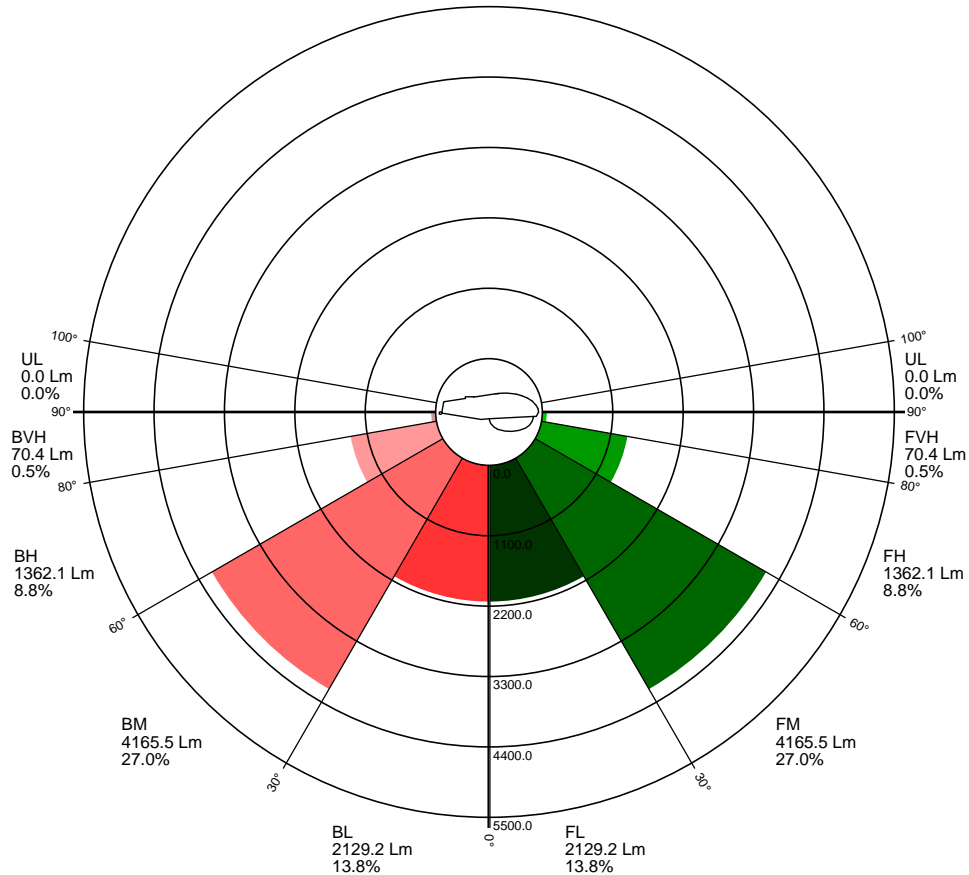
PAGE: 5 OF 9

BUG Rating:				B3 U0 G1		
Zonal Summary		Lumens	% of Fixture	Zone Ratings		
				B	U	G
Forward		7727	50.0			
FL	(0° - 30°)	2129.2	13.8			
FM	(30° - 60°)	4165.5	27.0			
FH	(60° - 80°)	1362.1	8.8			G1
FVH	(80° - 90°)	70.4	0.5			G1
Backward		7727	50.0			
BL	(0° - 30°)	2129.2	13.8	B3		
BM	(30° - 60°)	4165.5	27.0	B3		
BH	(60° - 80°)	1362.1	8.8	B3		G1
BVH	(80° - 90°)	70.4	0.5			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		15455	100.0			

Zonal Lumen Summary

(Linear scale)

UH
0.0 Lm
0.0%

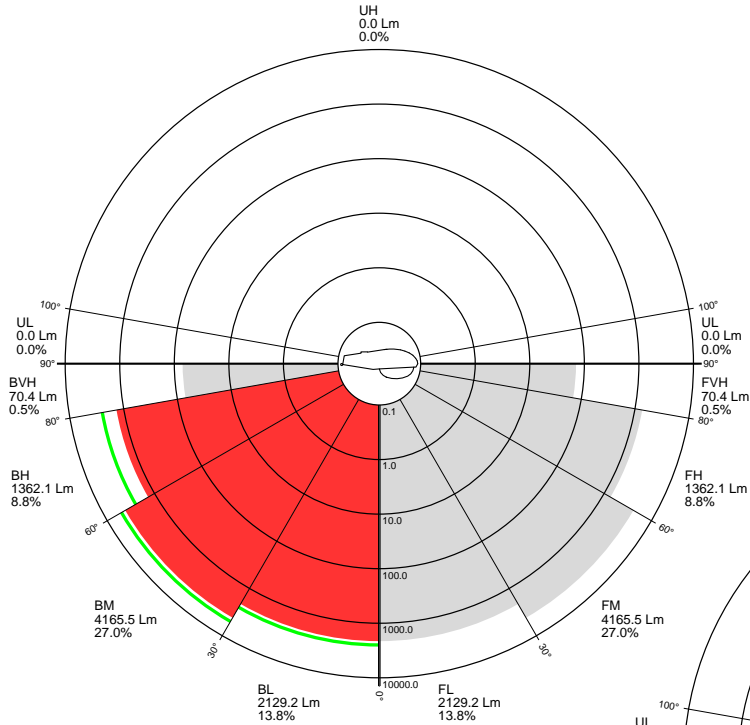


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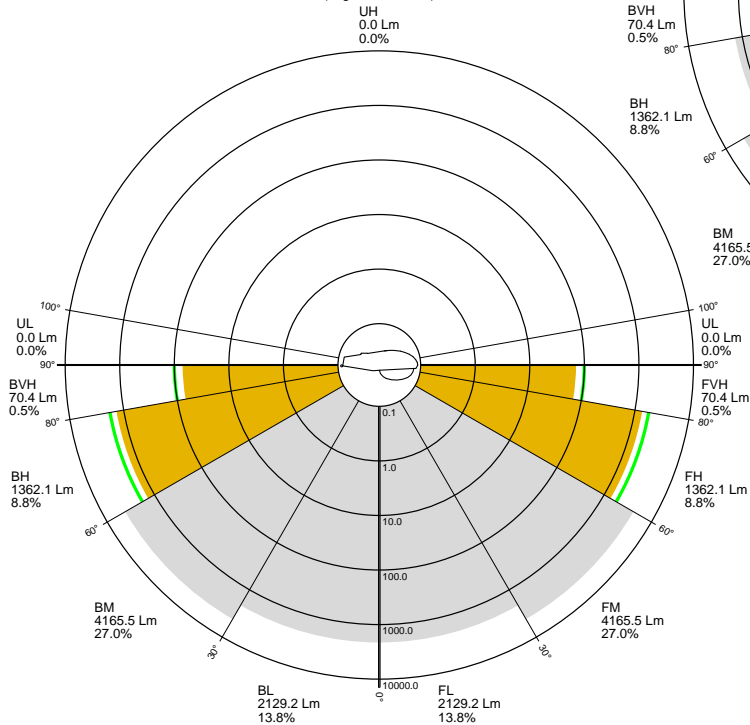
Backlight Rating Details

(Logarithmic scale)



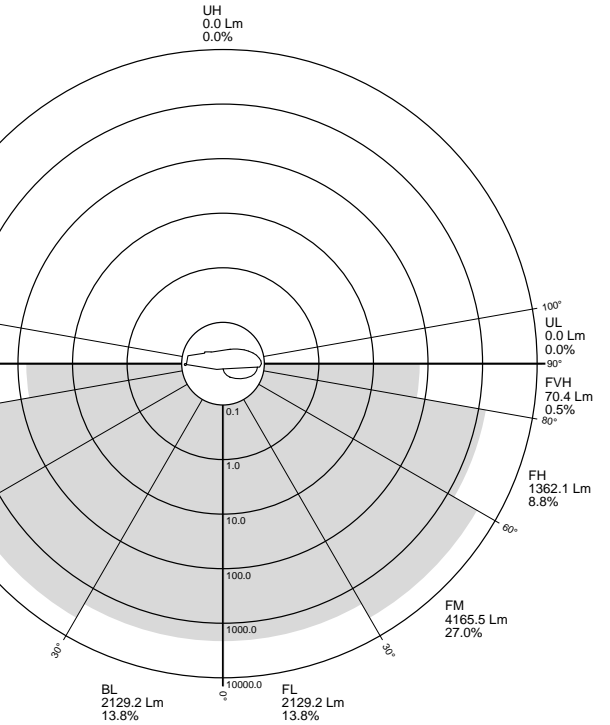
Glare Rating Details

(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	35.	36.	38.	41.	42.	41.	42.	42.	40.
	85.0	92.	92.	94.	95.	94.	91.	95.	96.	94.
	82.5	202.	202.	202.	202.	202.	201.	204.	199.	200.
	80.0	370.	375.	371.	368.	361.	360.	359.	371.	368.
	77.5	569.	581.	585.	563.	570.	553.	558.	562.	579.
	75.0	807.	806.	829.	799.	798.	782.	791.	794.	807.
	72.5	1067.	1067.	1070.	1068.	1044.	1071.	1032.	1058.	1058.
	70.0	1322.	1315.	1314.	1359.	1324.	1325.	1308.	1354.	1311.
V	67.5	1625.	1629.	1648.	1657.	1608.	1564.	1602.	1651.	1603.
E	65.0	1911.	1908.	1910.	1916.	1902.	1798.	1911.	1913.	1890.
R	62.5	2153.	2167.	2164.	2161.	2157.	2100.	2165.	2152.	2145.
T	60.0	2392.	2393.	2400.	2393.	2400.	2505.	2397.	2383.	2388.
I	57.5	2630.	2621.	2628.	2625.	2694.	2775.	2696.	2619.	2621.
C	55.0	2847.	2835.	2851.	2893.	2994.	3006.	2997.	2902.	2848.
A	52.5	3095.	3093.	3155.	3218.	3219.	3220.	3219.	3213.	3144.
L	50.0	3419.	3427.	3431.	3431.	3428.	3429.	3429.	3437.	3425.
	47.5	3634.	3631.	3634.	3629.	3623.	3626.	3628.	3634.	3631.
A	45.0	3821.	3815.	3817.	3813.	3811.	3805.	3812.	3820.	3818.
N	42.5	3994.	3985.	3992.	3992.	3983.	3985.	3985.	3994.	3999.
G	40.0	4155.	4150.	4157.	4153.	4146.	4143.	4147.	4157.	4162.
L	37.5	4308.	4302.	4310.	4308.	4304.	4302.	4307.	4312.	4317.
E	35.0	4446.	4450.	4456.	4456.	4453.	4451.	4456.	4460.	4460.
	30.0	4708.	4710.	4714.	4713.	4709.	4712.	4710.	4714.	4711.
	25.0	4919.	4918.	4921.	4923.	4922.	4919.	4922.	4922.	4914.
	20.0	5097.	5095.	5096.	5093.	5092.	5097.	5094.	5091.	5088.
	15.0	5243.	5240.	5235.	5234.	5234.	5233.	5232.	5229.	5233.
	10.0	5344.	5337.	5333.	5328.	5326.	5324.	5325.	5327.	5327.
	5.0	5383.	5374.	5374.	5370.	5369.	5372.	5370.	5370.	5370.
	1.0<<	5403.	5392.	5395.	5393.	5392.	5394.	5391.	5391.	5392.
	0.0	5394.	5394.	5394.	5394.	5394.	5394.	5394.	5394.	5394.

||
 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.	0.
87.5	39.	40.	42.	42.	42.	41.	42.	41.	38.	36.	35.
85.0	92.	94.	95.	96.	95.	91.	94.	95.	94.	92.	92.
82.5	196.	199.	200.	199.	204.	201.	202.	202.	202.	202.	202.
80.0	345.	363.	368.	371.	359.	360.	361.	368.	371.	375.	370.
77.5	550.	576.	579.	562.	558.	553.	570.	563.	585.	581.	569.
75.0	791.	819.	807.	794.	791.	782.	798.	799.	829.	806.	807.
72.5	1046.	1072.	1058.	1058.	1032.	1071.	1044.	1068.	1070.	1067.	1067.
70.0	1293.	1320.	1311.	1354.	1308.	1325.	1324.	1359.	1314.	1315.	1322.
V 67.5	1580.	1617.	1603.	1651.	1602.	1564.	1608.	1657.	1648.	1629.	1625.
E 65.0	1882.	1908.	1890.	1913.	1911.	1798.	1902.	1916.	1910.	1908.	1911.
R 62.5	2140.	2156.	2145.	2152.	2165.	2100.	2157.	2161.	2164.	2167.	2153.
T 60.0	2385.	2396.	2388.	2383.	2397.	2505.	2400.	2393.	2400.	2393.	2392.
I 57.5	2609.	2623.	2621.	2619.	2696.	2775.	2694.	2625.	2628.	2621.	2630.
C 55.0	2829.	2835.	2848.	2902.	2997.	3006.	2994.	2893.	2851.	2835.	2847.
A 52.5	3088.	3101.	3144.	3213.	3219.	3220.	3219.	3218.	3155.	3093.	3095.
L 50.0	3404.	3405.	3425.	3437.	3429.	3429.	3428.	3431.	3431.	3427.	3419.
47.5	3630.	3628.	3631.	3634.	3628.	3626.	3623.	3629.	3634.	3631.	3634.
A 45.0	3819.	3814.	3818.	3820.	3812.	3805.	3811.	3813.	3817.	3815.	3821.
N 42.5	3992.	3989.	3999.	3994.	3985.	3985.	3983.	3992.	3992.	3985.	3994.
G 40.0	4152.	4153.	4162.	4157.	4147.	4143.	4146.	4153.	4157.	4150.	4155.
L 37.5	4311.	4308.	4317.	4312.	4307.	4302.	4304.	4308.	4310.	4302.	4308.
E 35.0	4455.	4454.	4460.	4460.	4456.	4451.	4453.	4456.	4456.	4450.	4446.
30.0	4712.	4709.	4711.	4714.	4710.	4712.	4709.	4713.	4714.	4710.	4708.
25.0	4917.	4921.	4914.	4922.	4922.	4919.	4922.	4923.	4921.	4918.	4919.
20.0	5088.	5093.	5088.	5091.	5094.	5097.	5092.	5093.	5096.	5095.	5097.
15.0	5228.	5234.	5233.	5229.	5232.	5233.	5234.	5234.	5235.	5240.	5243.
10.0	5327.	5329.	5327.	5327.	5325.	5324.	5326.	5328.	5333.	5337.	5344.
5.0	5369.	5375.	5370.	5370.	5370.	5372.	5369.	5370.	5374.	5374.	5383.
1.0<<	5388.	5396.	5392.	5391.	5391.	5394.	5392.	5393.	5395.	5392.	5403.
0.0	5394.	5394.	5394.	5394.	5394.	5394.	5394.	5394.	5394.	5394.	5394.

CONE OF MAXIMUM CANDELA

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5-DEGREE

ZONAL LUMEN SUMMARY

0- 5	129
5- 10	383
10- 15	627
15- 20	851
20- 25	1050
25- 30	1219
30- 35	1350
35- 40	1436
40- 45	1475
45- 50	1464
50- 55	1378
55- 60	1227
60- 65	1045
65- 70	817
70- 75	554
75- 80	308
80- 85	117
85- 90	24

10-DEGREE

ZONAL LUMEN SUMMARY

0- 10	511
0- 20	1989
0- 30	4258
0- 40	7045
0- 50	9984
0- 60	12589
0- 70	14451
0- 80	15314
0- 90	15454

REPORT NUMBER: RAB00921
DATE: 6/1/2015
PREPARED FOR: RAB LIGHTING INC.
CATALOG NUMBER: MASI16-100NW/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

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
CHROMA PROGRAMMABLE DIGITAL POWER METER MODEL 66202
OCEAN OPTICS QE65PRO Spectroradiometer
RAB 2.0 meter Diameter Integrating Sphere, 4PI Geometry

Calibration Due: N/A
3/9/16
5/15/16
5/15/16

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

REPORT NUMBER: RAB00921
 DATE: 6/1/2015
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RESULTS:

PHOTOMETRIC	
Total Integrated Flux (lumens)	15454 *
SPECTRORADIOMETRIC	
Observer	CIE 1931 2 degree
Chromaticity Ordinate x	0.3817
Chromaticity Ordinate y	0.3798
Observer	CIE 1976 2 degree
Chromaticity Ordinate u'	0.2247
Chromaticity Ordinate v'	0.5031
Correlated Color Temp CCT (K)	3987
ANSI C78.377-2008 Duv	0.001
Total Radiant Flux (milliWatts)	44821 *
ELECTRICAL	
Input Voltage (Volts AC)	120.0
Input Current (Amps AC)	0.960
Input Power (Watts)	114.6
Input Power Factor (%)	99.5
Input Current THD (%)	7.3
Input Voltage THD (%)	0.2
EFFICACY (Lumens/Watt)	
	134.9
ELECTRICAL AT MAX NONIMAL INPUT	
Input Voltage (Volts AC)	277.0
Input Current (Amps AC)	0.436
Input Power (Watts)	113.7
Input Power Factor (%)	94.1
Input Current THD (%)	15.9
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	-23
R10 Strong yellow	47
R11 Strong green	66
R12 Strong blue	39
R13 Light yellowish pink (skin)	71
R14 Moderate olive green (leaf)	90

*NOTE:

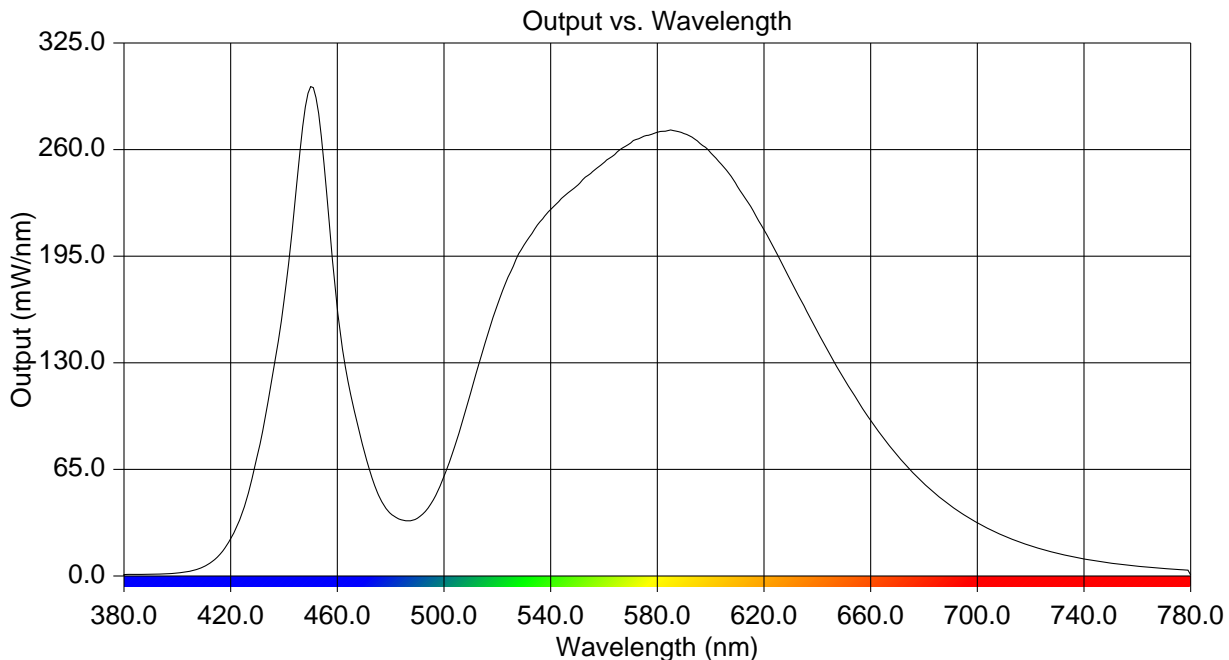
Proper calibration of integrating spheres for measuring total flux output of non-directional samples will produce reliable, repeatable results within the calibration tolerances of the equipment used. However, measurement of test samples with significant self absorption and/or directional output, even 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	0.848	515	139.659	650	120.137
385	0.920	520	165.061	655	107.209
390	1.017	525	185.333	660	94.879
395	1.289	530	201.670	665	83.633
400	1.865	535	213.843	670	73.571
405	2.994	540	223.412	675	64.284
410	5.715	545	231.393	680	56.347
415	11.488	550	237.750	685	49.148
420	22.389	555	245.274	690	42.827
425	41.907	560	251.939	695	37.265
430	72.761	565	258.498	700	32.398
435	115.459	570	263.851	705	28.079
440	167.666	575	268.019	710	24.449
445	242.593	580	270.323	715	21.238
450	298.236	585	271.808	720	18.326
455	251.327	590	269.592	725	15.920
460	162.957	595	265.147	730	13.808
465	110.608	600	257.893	735	12.005
470	76.390	605	249.107	740	10.375
475	50.970	610	237.467	745	9.051
480	37.932	615	225.257	750	7.876
485	33.844	620	210.812	755	6.862
490	35.153	625	196.240	760	6.007
495	43.759	630	179.937	765	5.200
500	60.714	635	164.689	770	4.543
505	83.819	640	148.990	775	3.951
510	111.600	645	134.178	780	0.603



REPORT NUMBER: RAB00921
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CIE Chromaticity Diagram

