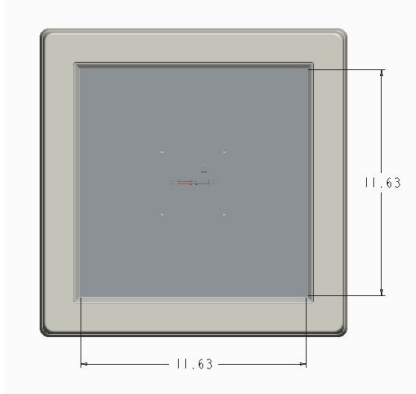


ISOFOOTCANDLE LINES OF HORIZONTAL ILLUMINATION

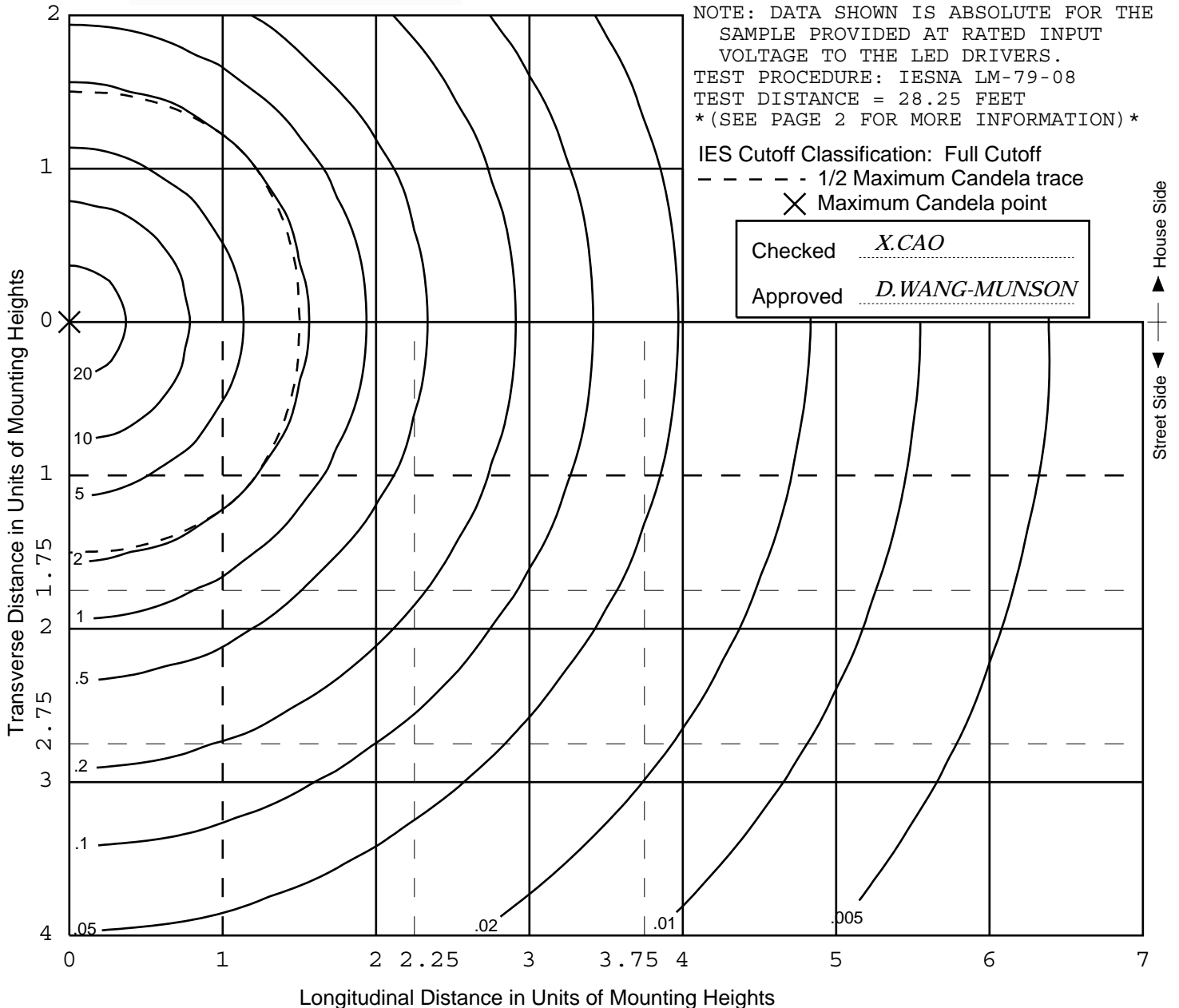
Values based on 14 foot mounting height.



REPORT NUMBER: RAB00893
 ISSUE DATE: 06/01/15 PAGE: 1 OF 9
 PREPARED FOR: RAB LIGHTING INC.
 CATALOG NUMBER: MASI16-100YW/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 = 113.65 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



REPORT NUMBER: RAB00893
ISSUE DATE: 06/01/15
PREPARED FOR: RAB LIGHTING INC.

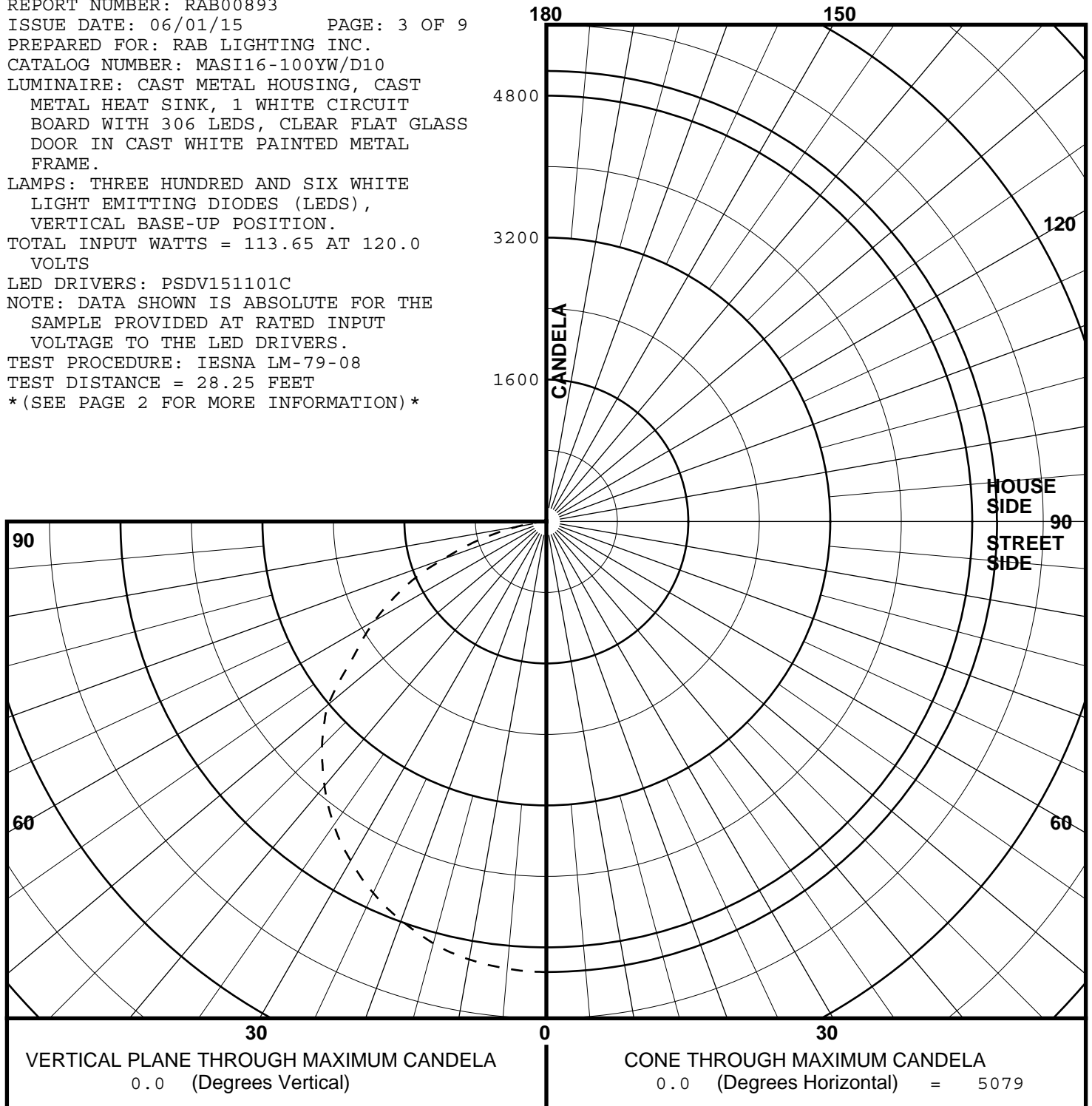
PAGE: 2 OF 9

ADDITIONAL INFORMATION

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

MAXIMUM PLANE AND MAXIMUM CONE PLOTS OF CANDELA

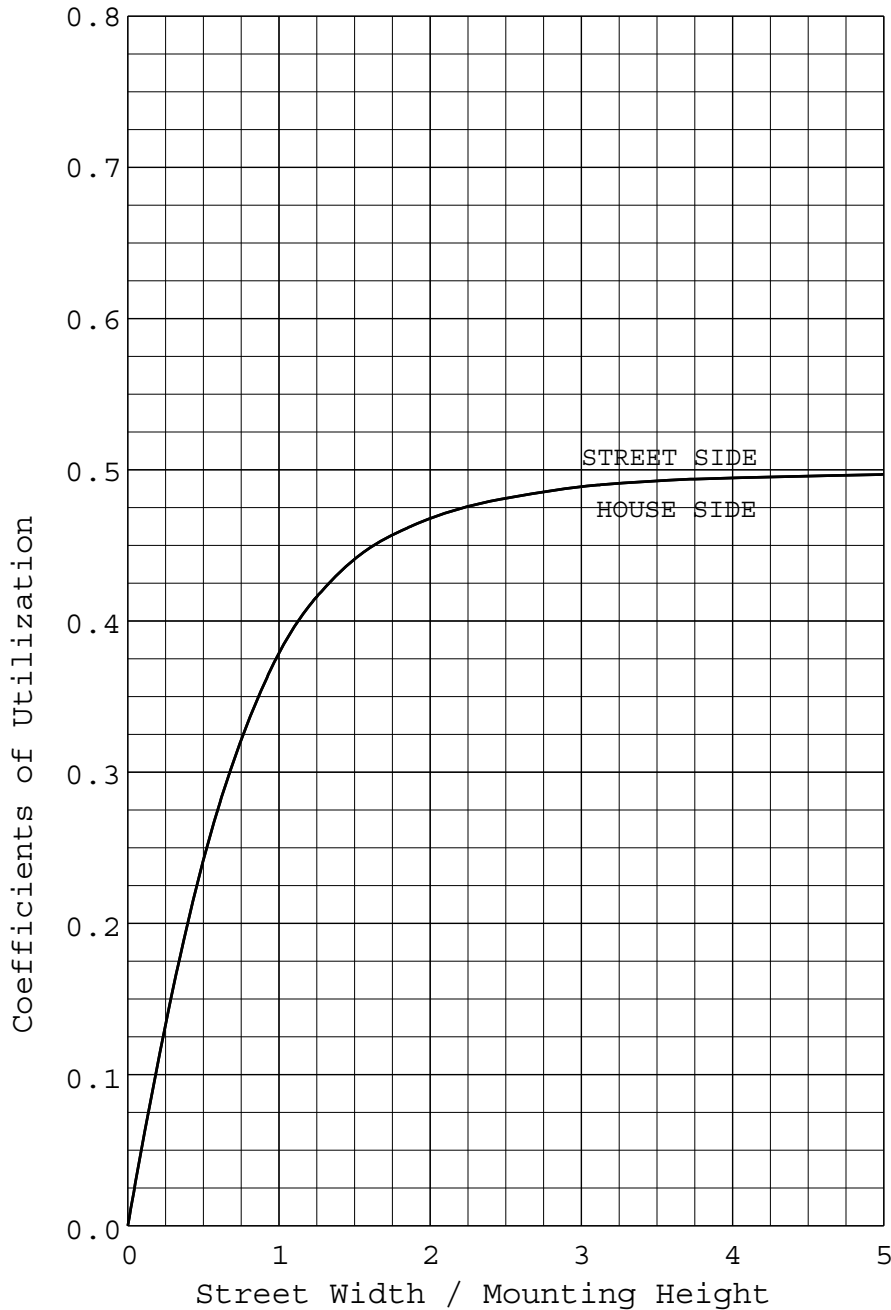
REPORT NUMBER: RAB00893
 ISSUE DATE: 06/01/15 PAGE: 3 OF 9
 PREPARED FOR: RAB LIGHTING INC.
 CATALOG NUMBER: MASI16-100YW/D10
 LUMINAIRE: CAST METAL HOUSING, CAST
 METAL HEAT SINK, 1 WHITE CIRCUIT
 BOARD WITH 306 LEDS, CLEAR FLAT GLASS
 DOOR IN CAST WHITE PAINTED METAL
 FRAME.
 LAMPS: THREE HUNDRED AND SIX WHITE
 LIGHT EMITTING DIODES (LEDS),
 VERTICAL BASE-UP POSITION.
 TOTAL INPUT WATTS = 113.65 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) *



REPORT NUMBER: RAB00893
ISSUE DATE: 06/01/15
PREPARED FOR: RAB LIGHTING INC.

PAGE: 4 OF 9

COEFFICIENTS OF UTILIZATION AND FLUX DISTRIBUTION



	LUMENS	PERCENT OF FIXTURE
DOWNWARD STREET SIDE	7239.	50.0
DOWNWARD HOUSE SIDE	7239.	50.0
DOWNWARD TOTAL	14477.	100.0
UPWARD STREET SIDE	0.	0.0
UPWARD HOUSE SIDE	0.	0.0
UPWARD TOTAL	0.	0.0
TOTAL FLUX	14477.	100.0
TOTAL INPUT WATTS = 113.7		
EFFICACY = 127.3 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: RAB00893
ISSUE DATE: 06/01/15
PREPARED FOR: RAB LIGHTING INC.

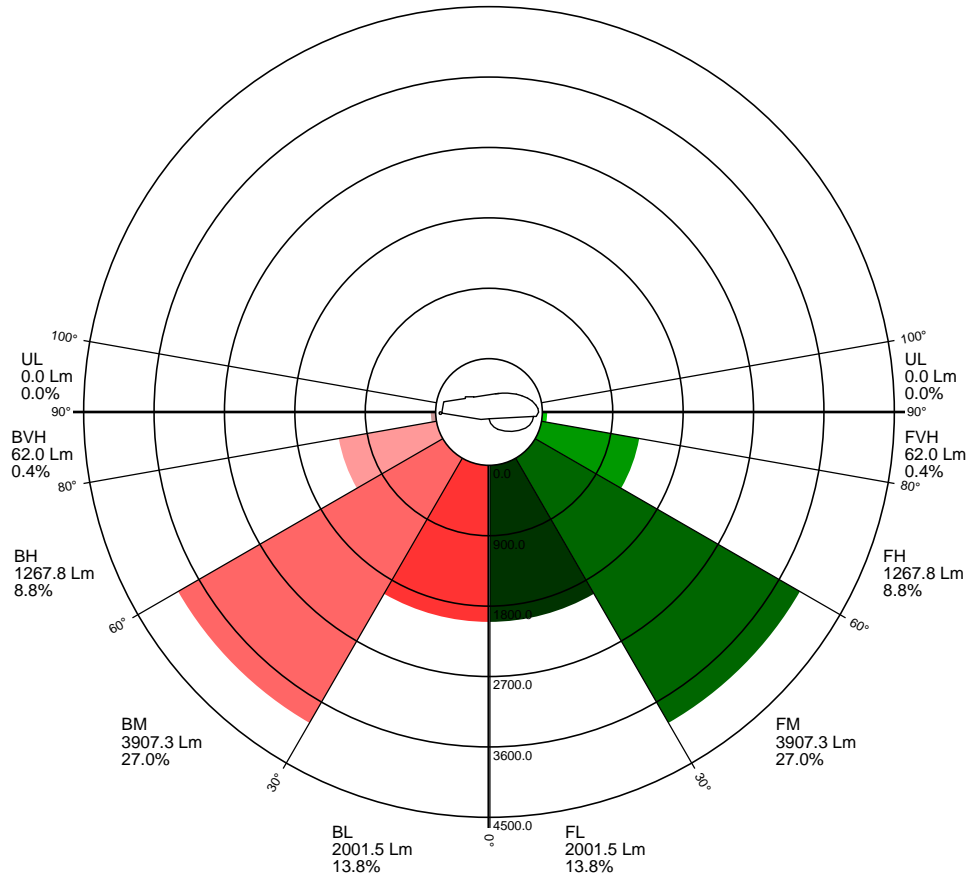
PAGE: 5 OF 9

BUG Rating:				B3 U0 G1		
Zonal Summary		Lumens	% of Fixture	Zone Ratings		
				B	U	G
Forward		7239	50.0			
FL	(0° - 30°)	2001.5	13.8			
FM	(30° - 60°)	3907.3	27.0			
FH	(60° - 80°)	1267.8	8.8			G1
FVH	(80° - 90°)	62.0	0.4			G1
Backward		7239	50.0			
BL	(0° - 30°)	2001.5	13.8	B3		
BM	(30° - 60°)	3907.3	27.0	B3		
BH	(60° - 80°)	1267.8	8.8	B3		G1
BVH	(80° - 90°)	62.0	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		14477	100.0			

Zonal Lumen Summary

(Linear scale)

UH
0.0 Lm
0.0%

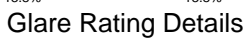


UH
0.0 Lm
0.0%



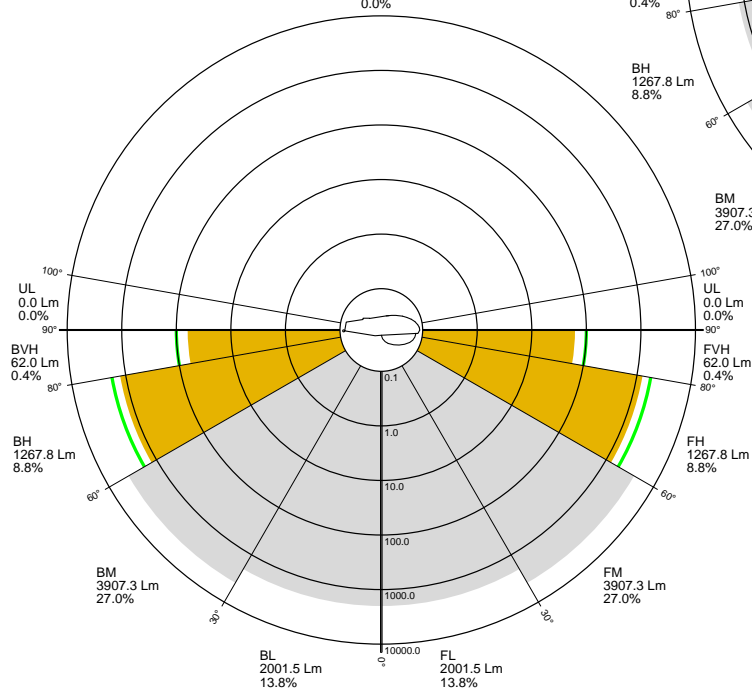
(Logarithmic scale)

0.0 Lm
0.0%



(Logarithmic scale)

UH
0.0 Lm
0.0%



REPORT NUMBER: RAB00893
 ISSUE DATE: 06/01/15
 PREPARED FOR: RAB LIGHTING INC.

PAGE: 7 OF 9

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	29.	29.	31.	32.	34.	34.	34.	35.	33. 32.
	85.0	77.	76.	78.	78.	79.	78.	81.	85.	80. 80.
	82.5	175.	176.	178.	177.	177.	177.	180.	185.	181. 184.
	80.0	336.	329.	329.	325.	326.	326.	330.	334.	332. 333.
	77.5	529.	519.	514.	508.	508.	510.	514.	514.	520. 528.
	75.0	752.	744.	759.	748.	734.	733.	736.	759.	756. 743.
	72.5	992.	983.	996.	971.	972.	993.	967.	977.	999. 988.
V	70.0	1227.	1219.	1230.	1253.	1242.	1232.	1253.	1238.	1229. 1223.
E	67.5	1531.	1521.	1531.	1536.	1498.	1463.	1504.	1532.	1525. 1504.
R	65.0	1776.	1770.	1775.	1781.	1749.	1714.	1754.	1776.	1777. 1773.
T	62.5	2009.	2010.	2014.	2012.	2014.	2009.	2013.	2010.	2015. 2011.
I	60.0	2233.	2236.	2242.	2238.	2276.	2299.	2259.	2232.	2243. 2238.
C	57.5	2446.	2452.	2459.	2469.	2538.	2596.	2532.	2458.	2454. 2448.
A	55.0	2652.	2661.	2683.	2744.	2806.	2813.	2802.	2725.	2669. 2656.
L	52.5	2926.	2924.	2983.	3012.	3019.	3026.	3022.	3005.	2951. 2911.
	50.0	3207.	3212.	3221.	3216.	3216.	3212.	3210.	3219.	3211. 3202.
A	47.5	3400.	3403.	3408.	3404.	3402.	3397.	3396.	3407.	3405. 3403.
N	45.0	3575.	3579.	3583.	3578.	3576.	3572.	3572.	3583.	3579. 3580.
G	42.5	3735.	3743.	3745.	3746.	3739.	3736.	3738.	3747.	3744. 3743.
L	40.0	3891.	3895.	3896.	3893.	3895.	3892.	3888.	3899.	3897. 3895.
E	37.5	4039.	4039.	4039.	4043.	4042.	4041.	4037.	4045.	4041. 4041.
	35.0	4175.	4174.	4177.	4180.	4184.	4182.	4178.	4183.	4179. 4179.
	30.0	4412.	4421.	4421.	4422.	4426.	4426.	4420.	4426.	4420. 4427.
	25.0	4619.	4620.	4617.	4624.	4626.	4625.	4621.	4624.	4620. 4623.
	20.0	4785.	4787.	4783.	4785.	4791.	4795.	4789.	4791.	4789. 4792.
	15.0	4923.	4922.	4922.	4921.	4921.	4922.	4923.	4927.	4925. 4928.
	10.0	5012.	5014.	5013.	5015.	5010.	5011.	5012.	5013.	5015. 5019.
	5.0	5058.	5054.	5054.	5055.	5053.	5054.	5054.	5055.	5058. 5059.
	0.0<<	5079.	5079.	5079.	5079.	5079.	5079.	5079.	5079.	5079. 5079.

||
 PLANE OF MAXIMUM CANDELA
 |
 CONE OF MAXIMUM CANDELA

REPORT NUMBER: RAB00893
 ISSUE DATE: 06/01/15
 PREPARED FOR: RAB LIGHTING INC.

PAGE: 8 OF 9

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	31.	32.	33.	35.	34.	34.	32.	31.	29.	29.
	85.0	79.	80.	80.	85.	81.	78.	79.	78.	76.	77.
	82.5	176.	184.	181.	185.	180.	177.	177.	177.	178.	176.
	80.0	332.	333.	332.	334.	330.	326.	326.	325.	329.	329.
	77.5	533.	528.	520.	514.	514.	510.	508.	508.	514.	519.
	75.0	742.	743.	756.	759.	736.	733.	734.	748.	759.	744.
	72.5	988.	988.	999.	977.	967.	993.	972.	971.	996.	983.
V	70.0	1220.	1223.	1229.	1238.	1253.	1232.	1242.	1253.	1230.	1219.
E	67.5	1501.	1504.	1525.	1532.	1504.	1463.	1498.	1536.	1531.	1521.
R	65.0	1772.	1773.	1777.	1776.	1754.	1714.	1749.	1781.	1775.	1770.
T	62.5	2008.	2011.	2015.	2010.	2013.	2009.	2014.	2012.	2014.	2010.
I	60.0	2231.	2238.	2243.	2232.	2259.	2299.	2276.	2238.	2242.	2236.
C	57.5	2446.	2448.	2454.	2458.	2532.	2596.	2538.	2469.	2459.	2452.
A	55.0	2649.	2656.	2669.	2725.	2802.	2813.	2806.	2744.	2683.	2661.
L	52.5	2891.	2911.	2951.	3005.	3022.	3026.	3019.	3012.	2983.	2924.
	50.0	3202.	3202.	3211.	3219.	3210.	3212.	3216.	3216.	3221.	3212.
A	47.5	3404.	3403.	3405.	3407.	3396.	3397.	3402.	3404.	3408.	3403.
N	45.0	3577.	3580.	3579.	3583.	3572.	3572.	3576.	3578.	3583.	3579.
G	42.5	3741.	3743.	3744.	3747.	3738.	3736.	3739.	3746.	3745.	3743.
L	40.0	3893.	3895.	3897.	3899.	3888.	3892.	3895.	3893.	3896.	3895.
E	37.5	4028.	4041.	4041.	4045.	4037.	4041.	4042.	4043.	4039.	4039.
	35.0	4169.	4179.	4179.	4183.	4178.	4182.	4184.	4180.	4177.	4174.
	30.0	4419.	4427.	4420.	4426.	4420.	4426.	4426.	4422.	4421.	4421.
	25.0	4621.	4623.	4620.	4624.	4621.	4625.	4626.	4624.	4617.	4620.
	20.0	4787.	4792.	4789.	4791.	4789.	4795.	4791.	4785.	4783.	4787.
	15.0	4927.	4928.	4925.	4927.	4923.	4922.	4921.	4921.	4922.	4922.
	10.0	5017.	5019.	5015.	5013.	5012.	5011.	5010.	5015.	5013.	5014.
	5.0	5060.	5059.	5058.	5055.	5054.	5054.	5053.	5055.	5054.	5054.
	0.0<<	5079.	5079.	5079.	5079.	5079.	5079.	5079.	5079.	5079.	5079.

CONE OF MAXIMUM CANDELA

REPORT NUMBER: RAB00893
ISSUE DATE: 06/01/15
PREPARED FOR: RAB LIGHTING INC.

PAGE: 9 OF 9

5-DEGREE

ZONAL LUMEN SUMMARY

0- 5	121
5- 10	360
10- 15	590
15- 20	800
20- 25	987
25- 30	1145
30- 35	1267
35- 40	1347
40- 45	1384
45- 50	1373
50- 55	1294
55- 60	1150
60- 65	976
65- 70	762
70- 75	516
75- 80	282
80- 85	104
85- 90	20

10-DEGREE

ZONAL LUMEN SUMMARY

0- 10	481
0- 20	1871
0- 30	4003
0- 40	6617
0- 50	9374
0- 60	11818
0- 70	13556
0- 80	14353
0- 90	14477

REPORT NUMBER: RAB00926
 DATE: 6/1/2015
 PREPARED FOR: RAB LIGHTING INC.
 CATALOG NUMBER: MASI16-100YW/D10

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	Calibration Due: N/A
	CHROMA PROGRAMMABLE DIGITAL POWER METER MODEL 66202	3/9/16
	OCEAN OPTICS QE65PRO Spectroradiometer	5/15/16
	RAB 2.0 meter Diameter Integrating Sphere, 4PI Geometry	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: RAB00926
 DATE: 6/1/2015
 PREPARED FOR: RAB LIGHTING INC.
 CATALOG NUMBER: MASI16-100YW/D10

Page 2 of 4

RESULTS:

PHOTOMETRIC	
Total Integrated Flux (lumens)	14477 *
SPECTRORADIOMETRIC	
Observer	CIE 1931 2 degree
Chromaticity Ordinate x	0.4330
Chromaticity Ordinate y	0.3994
Observer	CIE 1976 2 degree
Chromaticity Ordinate u'	0.2500
Chromaticity Ordinate v'	0.5190
Correlated Color Temp CCT (K)	3029
ANSI C78.377-2008 Duv	-0.001
Total Radiant Flux (milliWatts)	41948 *
ELECTRICAL	
Input Voltage (Volts AC)	120.0
Input Current (Amps AC)	0.952
Input Power (Watts)	113.7
Input Power Factor (%)	99.5
Input Current THD (%)	7.6
Input Voltage THD (%)	0.2
EFFICACY (Lumens/Watt)	
	127.3
ELECTRICAL AT MAX NONIMAL INPUT	
Input Voltage (Volts AC)	277.0
Input Current (Amps AC)	0.433
Input Power (Watts)	112.9
Input Power Factor (%)	94.1
Input Current THD (%)	16.3
Input Voltage THD (%)	0.2
Off-State Power (Watts)	
	0.0

COLOR RENDERING INDICES	CRI
Ra (Average 1-8)	71
R1 Light greyish red	68
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:

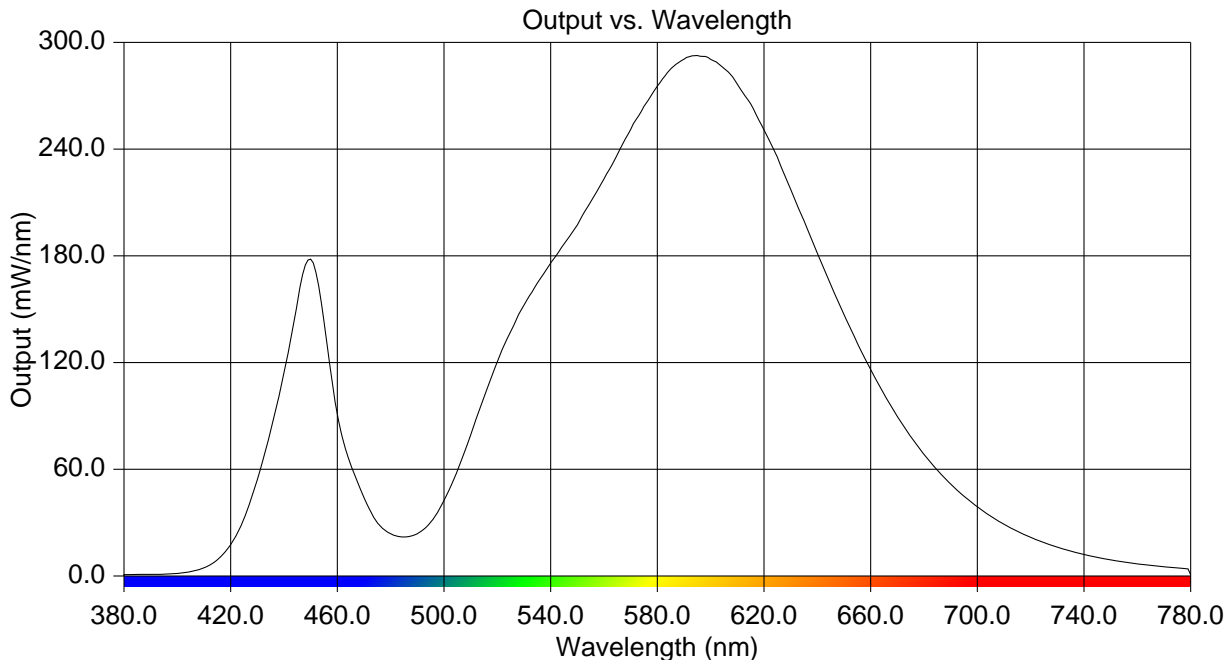
Proper calibration of integrating spheres for measuring total flux output of non-directional samples will produce reliable, repeatable results within the calibration tolerances of the equipment used. However, measurement of test samples with significant self absorption and/or directional output, even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

REPORT NUMBER: RAB00926
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 CATALOG NUMBER: MASI16-100YW/D10

Page 3 of 4

RESULTS:

Wavelength	mW per nm	Wavelength	mW per nm	Wavelength	mW per nm
380	0.746	515	100.442	650	147.054
385	0.832	520	120.525	655	130.947
390	0.873	525	137.382	660	116.258
395	1.042	530	152.372	665	102.340
400	1.455	535	164.788	670	89.881
405	2.388	540	175.947	675	78.499
410	4.560	545	186.732	680	68.321
415	9.101	550	197.431	685	59.633
420	17.681	555	210.383	690	51.627
425	32.367	560	223.370	695	44.874
430	54.188	565	237.184	700	38.870
435	82.144	570	251.156	705	33.642
440	113.829	575	264.207	710	29.131
445	154.496	580	275.429	715	25.140
450	178.239	585	285.368	720	21.766
455	143.132	590	290.693	725	18.717
460	90.976	595	292.768	730	16.163
465	62.722	600	290.605	735	14.019
470	44.067	605	285.652	740	12.096
475	30.170	610	276.655	745	10.502
480	23.658	615	265.619	750	9.051
485	22.018	620	250.844	755	7.844
490	23.777	625	235.651	760	6.838
495	30.269	630	217.448	765	5.933
500	42.526	635	199.867	770	5.167
505	59.113	640	181.498	775	4.509
510	79.292	645	163.960	780	0.679



REPORT NUMBER: RAB00926
DATE: 6/1/2015
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CATALOG NUMBER: MASI16-100YW/D10

Page 4 of 4

CIE Chromaticity Diagram

