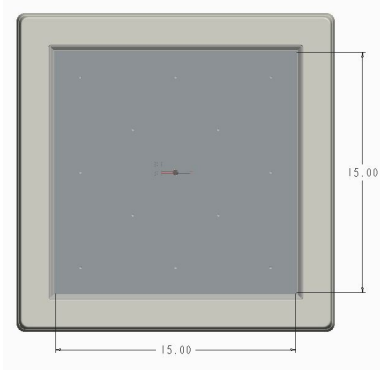


ISOFOOTCANDLE LINES OF HORIZONTAL ILLUMINATION

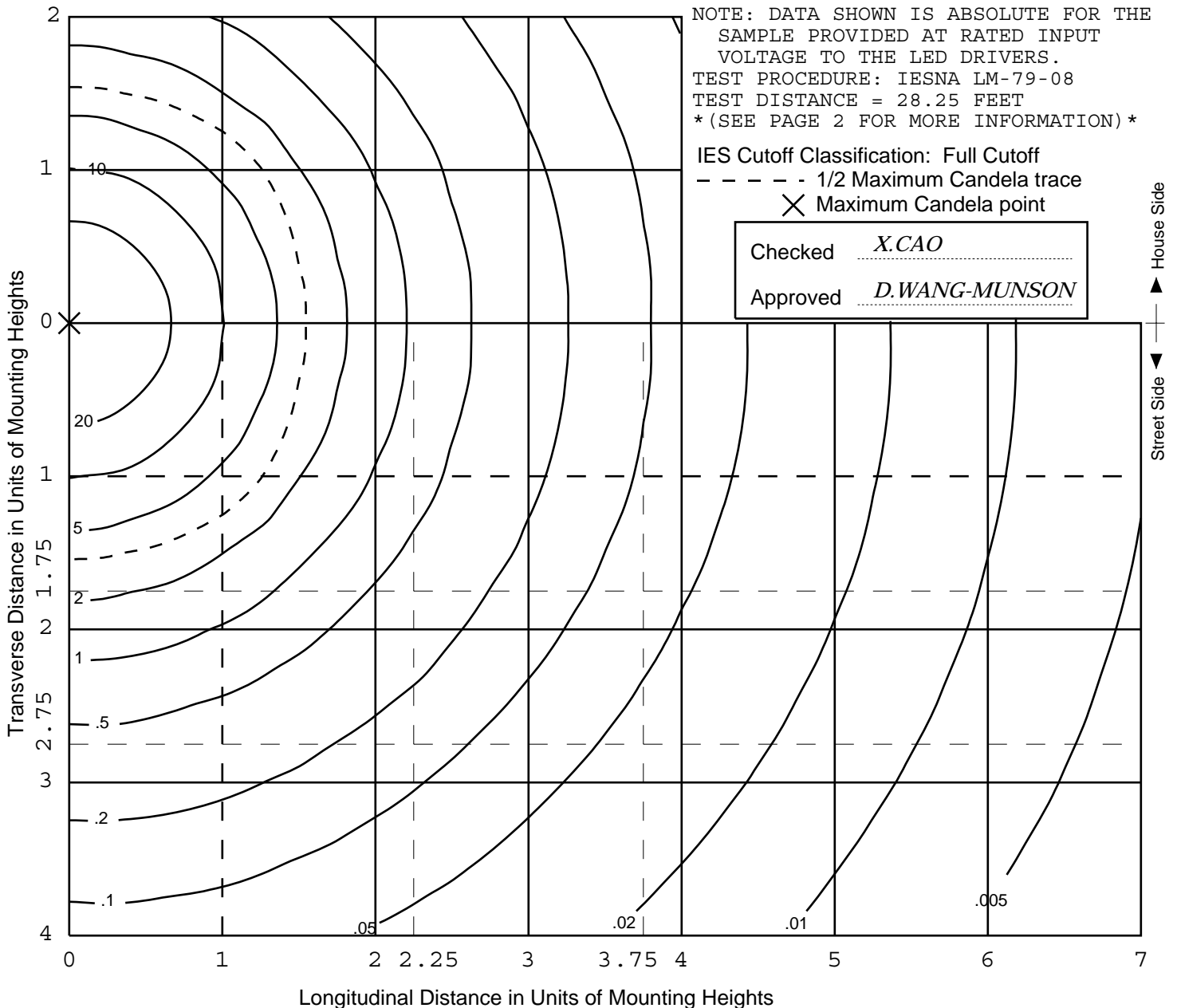
Values based on 14 foot mounting height.



REPORT NUMBER: RAB00892
 ISSUE DATE: 06/02/15 PAGE: 1 OF 9
 PREPARED FOR: RAB LIGHTING INC.
 CATALOG NUMBER: MASI20-160NW/D10
 LUMINAIRE: CAST METAL HOUSING, CAST METAL HEAT SINK, 1 WHITE CIRCUIT BOARD WITH 576 LEDS, CLEAR FLAT GLASS DOOR IN CAST WHITE PAINTED METAL FRAME.
 LAMPS: FIVE HUNDRED AND SEVENTY SIX WHITE LIGHT EMITTING DIODES (LEDs), VERTICAL BASE-UP POSITION.
 TOTAL INPUT WATTS = 159.5 AT 120.0 VOLTS
 LED DRIVERS: PSDV151101A
 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: RAB00892
ISSUE DATE: 06/02/15
PREPARED FOR: RAB LIGHTING INC.

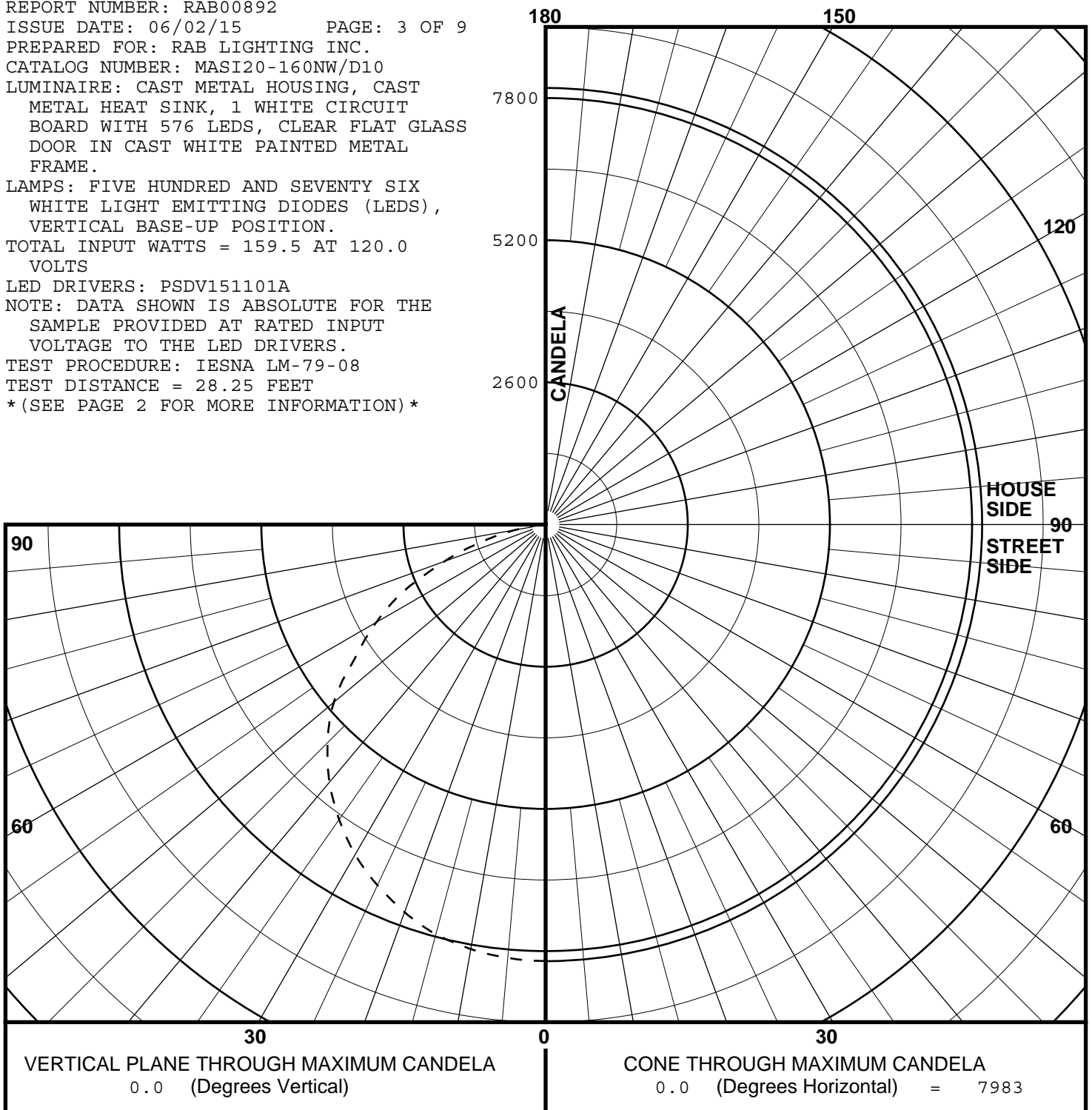
PAGE: 2 OF 9

ADDITIONAL INFORMATION

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

MAXIMUM PLANE AND MAXIMUM CONE PLOTS OF CANDELA

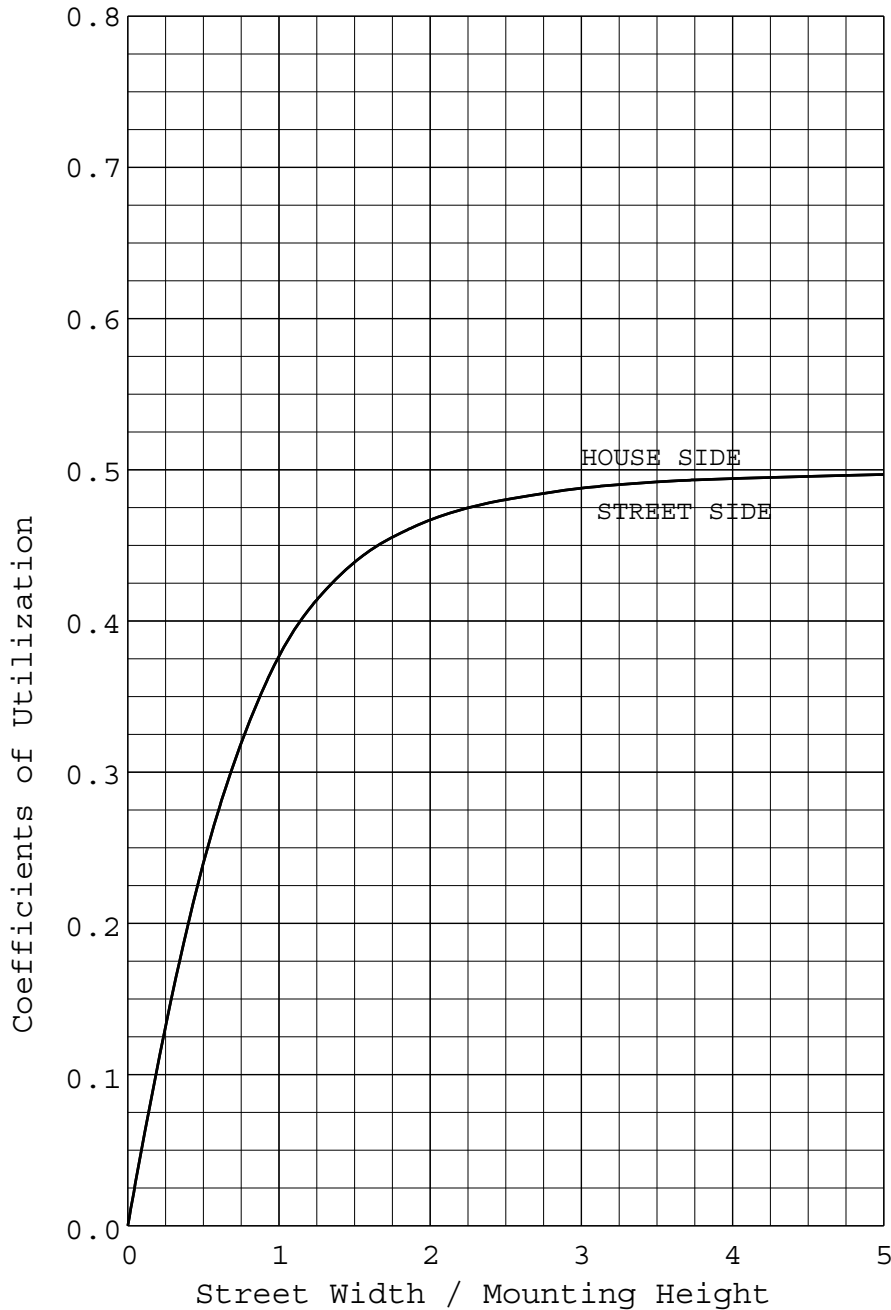
REPORT NUMBER: RAB00892
 ISSUE DATE: 06/02/15 PAGE: 3 OF 9
 PREPARED FOR: RAB LIGHTING INC.
 CATALOG NUMBER: MASI20-160NW/D10
 LUMINAIRE: CAST METAL HOUSING, CAST
 METAL HEAT SINK, 1 WHITE CIRCUIT
 BOARD WITH 576 LEDS, CLEAR FLAT GLASS
 DOOR IN CAST WHITE PAINTED METAL
 FRAME.
 LAMPS: FIVE HUNDRED AND SEVENTY SIX
 WHITE LIGHT EMITTING DIODES (LEDs),
 VERTICAL BASE-UP POSITION.
 TOTAL INPUT WATTS = 159.5 AT 120.0
 VOLTS
 LED DRIVERS: PSDV151101A
 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: RAB00892
ISSUE DATE: 06/02/15
PREPARED FOR: RAB LIGHTING INC.

PAGE: 4 OF 9

COEFFICIENTS OF UTILIZATION AND FLUX DISTRIBUTION



	LUMENS	PERCENT OF FIXTURE
DOWNWARD STREET SIDE	11508.	50.0
DOWNWARD HOUSE SIDE	11508.	50.0
DOWNWARD TOTAL	23017.	100.0
UPWARD STREET SIDE	0.	0.0
UPWARD HOUSE SIDE	0.	0.0
UPWARD TOTAL	0.	0.0
TOTAL FLUX	23017.	100.0
TOTAL INPUT WATTS = 159.5		
EFFICACY = 144.3 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: RAB00892
 ISSUE DATE: 06/02/15
 PREPARED FOR: RAB LIGHTING INC.

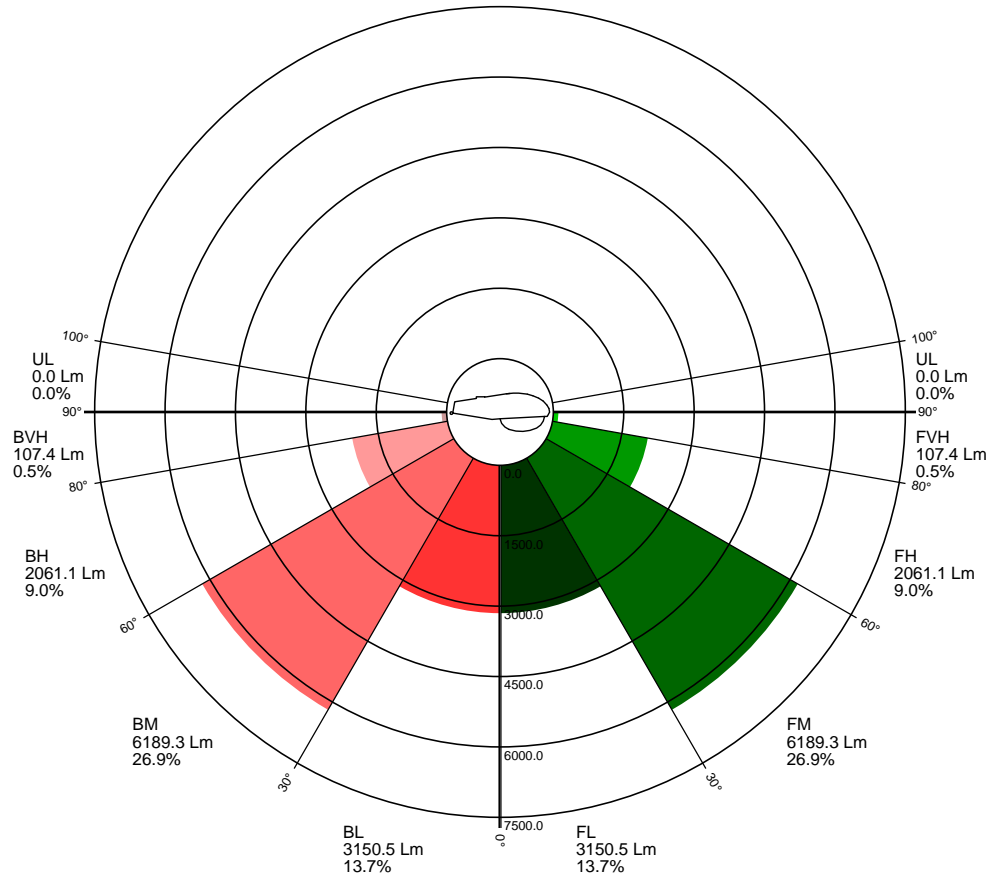
PAGE: 5 OF 9

BUG Rating:				B4	U0	G2
Zonal Summary		Lumens	% of Fixture	Zone Ratings		
				B	U	G
Forward		11508	50.0			
FL	(0° – 30°)	3150.5	13.7			
FM	(30° – 60°)	6189.3	26.9			
FH	(60° – 80°)	2061.1	9.0			G2
FVH	(80° – 90°)	107.4	0.5			G2
Backward		11508	50.0			
BL	(0° – 30°)	3150.5	13.7	B4		
BM	(30° – 60°)	6189.3	26.9	B4		
BH	(60° – 80°)	2061.1	9.0	B3		G2
BVH	(80° – 90°)	107.4	0.5			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		23017	100.0			

Zonal Lumen Summary

(Linear scale)

UH
0.0 Lm
0.0%



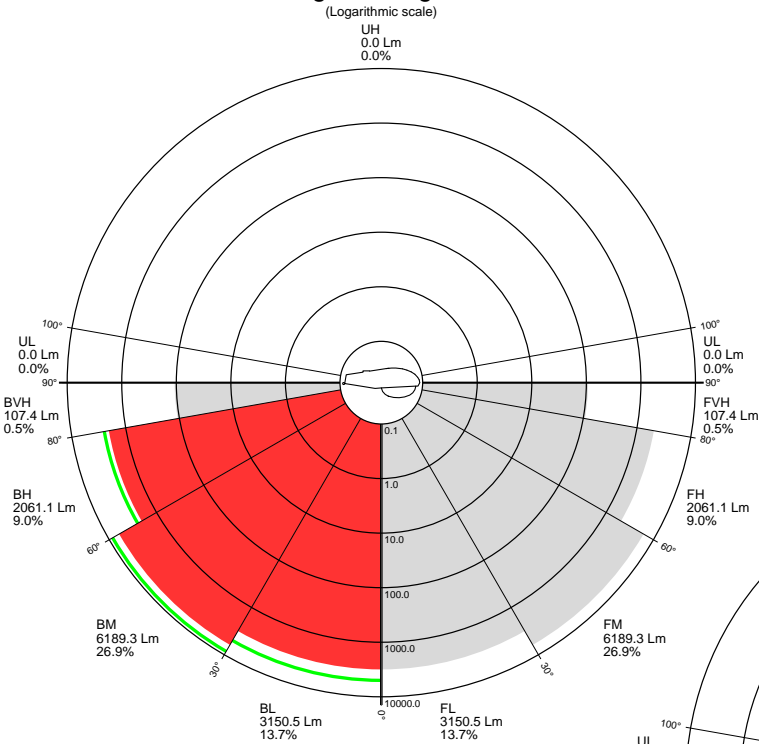
REPORT NUMBER: RAB00892

ISSUE DATE: 06/02/15

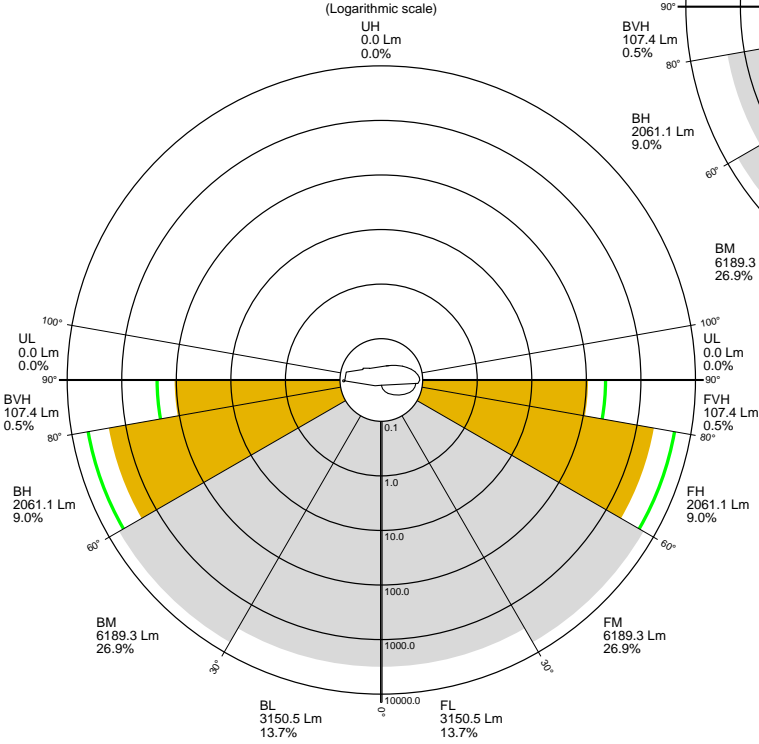
PREPARED FOR: RAB LIGHTING INC.

PAGE: 6 OF 9

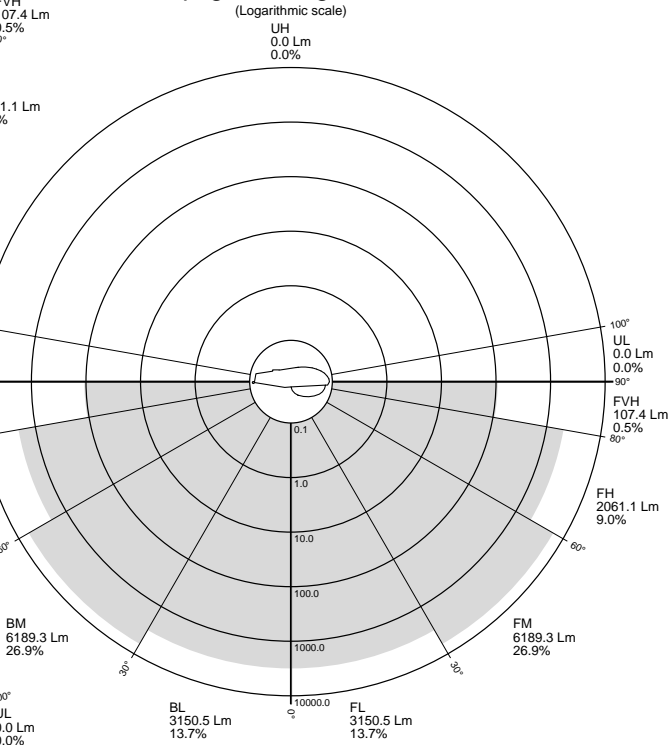
Backlight Rating Details



Glare Rating Details



Uplight Rating Details



REPORT NUMBER: RAB00892
 ISSUE DATE: 06/02/15
 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	49.	52.	54.	56.	57.	55.	55.	55.	50.
	85.0	136.	143.	143.	144.	144.	141.	138.	144.	139.
	82.5	307.	317.	318.	317.	316.	314.	306.	317.	313.
	80.0	552.	566.	580.	555.	567.	547.	552.	560.	568.
	77.5	869.	884.	891.	856.	871.	864.	866.	870.	896.
	75.0	1189.	1223.	1232.	1224.	1213.	1197.	1220.	1231.	1240.
	72.5	1599.	1640.	1626.	1618.	1578.	1634.	1584.	1625.	1614.
V	70.0	1972.	2024.	1998.	2013.	2020.	2006.	2008.	2039.	1978.
E	67.5	2376.	2439.	2450.	2473.	2469.	2391.	2450.	2483.	2453.
R	65.0	2842.	2856.	2854.	2858.	2870.	2762.	2863.	2867.	2843.
T	62.5	3224.	3224.	3233.	3236.	3246.	3296.	3249.	3240.	3219.
I	60.0	3577.	3582.	3597.	3578.	3604.	3734.	3634.	3597.	3587.
C	57.5	3921.	3925.	3950.	3932.	4074.	4108.	4105.	3968.	3940.
A	55.0	4255.	4260.	4298.	4388.	4430.	4444.	4443.	4429.	4328.
L	52.5	4683.	4691.	4759.	4755.	4765.	4770.	4769.	4753.	4773.
	50.0	5059.	5067.	5082.	5079.	5067.	5078.	5069.	5076.	5085.
A	47.5	5366.	5370.	5387.	5370.	5366.	5359.	5366.	5371.	5385.
N	45.0	5642.	5644.	5653.	5648.	5643.	5639.	5642.	5647.	5653.
G	42.5	5901.	5903.	5916.	5915.	5902.	5895.	5901.	5913.	5911.
L	40.0	6153.	6152.	6155.	6154.	6145.	6141.	6146.	6155.	6150.
E	37.5	6373.	6373.	6381.	6385.	6374.	6368.	6374.	6383.	6377.
	35.0	6585.	6590.	6596.	6598.	6593.	6585.	6590.	6598.	6593.
	30.0	6968.	6968.	6973.	6973.	6974.	6968.	6972.	6973.	6965.
	25.0	7278.	7279.	7283.	7284.	7285.	7285.	7293.	7282.	7277.
	20.0	7543.	7534.	7538.	7540.	7535.	7542.	7539.	7534.	7534.
	15.0	7757.	7747.	7747.	7743.	7738.	7740.	7742.	7743.	7744.
	10.0	7883.	7878.	7880.	7882.	7881.	7882.	7881.	7882.	7879.
	5.0	7953.	7947.	7951.	7950.	7952.	7951.	7953.	7953.	7951.
	0.0<<	7983.	7983.	7983.	7983.	7983.	7983.	7983.	7983.	7983.

||
 PLANE OF MAXIMUM CANDELA
 |
 CONE OF MAXIMUM CANDELA

REPORT NUMBER: RAB00892
 ISSUE DATE: 06/02/15
 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.	0.
87.5	48.	50.	52.	55.	55.	55.	57.	56.	54.	52.	49.
85.0	137.	139.	140.	144.	138.	141.	144.	144.	143.	143.	136.
82.5	310.	312.	313.	317.	306.	314.	316.	317.	318.	317.	307.
80.0	561.	567.	568.	560.	552.	547.	567.	555.	580.	566.	552.
77.5	880.	892.	896.	870.	866.	864.	871.	856.	891.	884.	869.
75.0	1214.	1233.	1240.	1231.	1220.	1197.	1213.	1224.	1232.	1223.	1189.
72.5	1624.	1638.	1614.	1625.	1584.	1634.	1578.	1618.	1626.	1640.	1599.
V 70.0	1980.	2010.	1978.	2039.	2008.	2006.	2020.	2013.	1998.	2024.	1972.
E 67.5	2415.	2449.	2453.	2483.	2450.	2391.	2469.	2473.	2450.	2439.	2376.
R 65.0	2835.	2860.	2843.	2867.	2863.	2762.	2870.	2858.	2854.	2856.	2842.
T 62.5	3217.	3238.	3219.	3240.	3249.	3296.	3246.	3236.	3233.	3224.	3224.
I 60.0	3581.	3603.	3587.	3597.	3634.	3734.	3604.	3578.	3597.	3582.	3577.
C 57.5	3930.	3950.	3940.	3968.	4105.	4108.	4074.	3932.	3950.	3925.	3921.
A 55.0	4272.	4278.	4328.	4429.	4443.	4444.	4430.	4388.	4298.	4260.	4255.
L 52.5	4739.	4746.	4773.	4753.	4769.	4770.	4765.	4755.	4759.	4691.	4683.
50.0	5074.	5069.	5085.	5076.	5069.	5078.	5067.	5079.	5082.	5067.	5059.
A 47.5	5370.	5374.	5385.	5371.	5366.	5359.	5366.	5370.	5387.	5370.	5366.
N 45.0	5650.	5649.	5653.	5647.	5642.	5639.	5643.	5648.	5653.	5644.	5642.
G 42.5	5911.	5911.	5911.	5913.	5901.	5895.	5902.	5915.	5916.	5903.	5901.
L 40.0	6150.	6154.	6150.	6155.	6146.	6141.	6145.	6154.	6155.	6152.	6153.
E 37.5	6381.	6381.	6377.	6383.	6374.	6368.	6374.	6385.	6381.	6373.	6373.
35.0	6594.	6598.	6593.	6598.	6590.	6585.	6593.	6598.	6596.	6590.	6585.
30.0	6963.	6970.	6965.	6973.	6972.	6968.	6974.	6973.	6973.	6968.	6968.
25.0	7274.	7278.	7277.	7282.	7293.	7285.	7285.	7284.	7283.	7279.	7278.
20.0	7527.	7533.	7534.	7534.	7539.	7542.	7535.	7540.	7538.	7534.	7543.
15.0	7739.	7740.	7744.	7743.	7742.	7740.	7738.	7743.	7747.	7747.	7757.
10.0	7874.	7877.	7879.	7882.	7881.	7882.	7881.	7882.	7880.	7878.	7883.
5.0	7949.	7950.	7951.	7953.	7953.	7951.	7952.	7950.	7951.	7947.	7953.
0.0<<	7983.	7983.	7983.	7983.	7983.	7983.	7983.	7983.	7983.	7983.	7983.

CONE OF MAXIMUM CANDELA

REPORT NUMBER: RAB00892
ISSUE DATE: 06/02/15
PREPARED FOR: RAB LIGHTING INC.

PAGE: 9 OF 9

5-DEGREE

ZONAL LUMEN SUMMARY

0- 5	190
5- 10	566
10- 15	927
15- 20	1259
20- 25	1554
25- 30	1804
30- 35	1998
35- 40	2126
40- 45	2185
45- 50	2167
50- 55	2059
55- 60	1844
60- 65	1572
65- 70	1234
70- 75	844
75- 80	473
80- 85	181
85- 90	34

10-DEGREE

ZONAL LUMEN SUMMARY

0- 10	757
0- 20	2943
0- 30	6301
0- 40	10425
0- 50	14777
0- 60	18680
0- 70	21485
0- 80	22802
0- 90	23017

REPORT NUMBER: RAB00925
DATE: 6/2/2015
PREPARED FOR: RAB LIGHTING INC.
CATALOG NUMBER: MASI20-160NW/D10

ADDRESS: 170 LUDLOW AVE, NORTHVALE, NJ 07647

LUMINAIRE: CAST METAL HOUSING, CAST METAL HEAT SINK, 1 WHITE CIRCUIT BOARD WITH 576 LEDS, CLEAR FLAT GLASS DOOR IN CAST WHITE PAINTED METAL FRAME.

LAMP: FIVE HUNDRED AND SEVENTY 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	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 X.CAO

Approved D.WANG-MUNSON
Lighting Engineer

REPORT NUMBER: RAB00925
 DATE: 6/2/2015
 PREPARED FOR: RAB LIGHTING INC.
 CATALOG NUMBER: MASI20-160NW/D10

Page 2 of 4

RESULTS:

PHOTOMETRIC	
Total Integrated Flux (lumens)	23017 *
SPECTRORADIOMETRIC	
Observer	CIE 1931 2 degree
Chromaticity Ordinate x	0.3825
Chromaticity Ordinate y	0.3817
Observer	CIE 1976 2 degree
Chromaticity Ordinate u'	0.2245
Chromaticity Ordinate v'	0.5041
Correlated Color Temp CCT (K)	3980
ANSI C78.377-2008 Duv	0.002
Total Radiant Flux (milliWatts)	66441 *
ELECTRICAL	
Input Voltage (Volts AC)	120.0
Input Current (Amps AC)	1.33
Input Power (Watts)	159.5
Input Power Factor (%)	99.9
Input Current THD (%)	5.6
Input Voltage THD (%)	0.2
EFFICACY (Lumens/Watt)	
	144.3
ELECTRICAL AT MAX NONIMAL INPUT	
Input Voltage (Volts AC)	277.0
Input Current (Amps AC)	0.586
Input Power (Watts)	156.4
Input Power Factor (%)	96.4
Input Current THD (%)	11.4
Input Voltage THD (%)	0.2
Off-State Power (Watts)	0.0

COLOR RENDERING INDICES	CRI
Ra (Average 1-8)	72
R1 Light greyish red	69
R2 Dark greyish yellow	78
R3 Strong yellowish green	84
R4 Moderate yellowish green	71
R5 Light bluish green	68
R6 Light blue	68
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)	70
R14 Moderate olive green (leaf)	90

*NOTE:

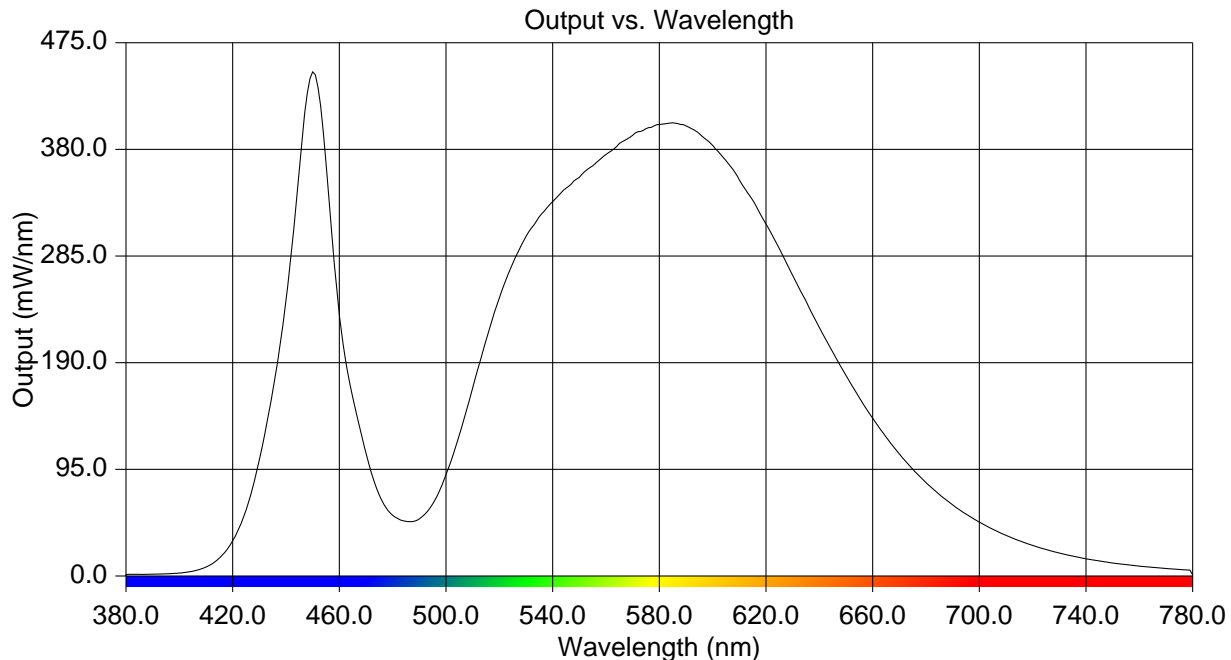
Proper calibration of integrating spheres for measuring total flux output of non-directional samples will produce reliable, repeatable results within the calibration tolerances of the equipment used. However, measurement of test samples with significant self absorption and/or directional output, even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

REPORT NUMBER: RAB00925
 DATE: 6/2/2015
 PREPARED FOR: RAB LIGHTING INC.
 CATALOG NUMBER: MASI20-160NW/D10

Page 3 of 4

RESULTS:

Wavelength	mW per nm	Wavelength	mW per nm	Wavelength	mW per nm
380	1.316	515	209.385	650	178.495
385	1.444	520	248.019	655	158.808
390	1.580	525	277.961	660	140.777
395	1.860	530	302.364	665	123.655
400	2.566	535	320.113	670	108.749
405	4.221	540	333.549	675	95.187
410	7.986	545	345.374	680	83.126
415	15.960	550	355.022	685	72.585
420	31.206	555	365.249	690	63.393
425	58.769	560	375.354	695	55.160
430	103.219	565	385.212	700	47.990
435	164.965	570	392.455	705	41.688
440	244.924	575	398.410	710	36.164
445	363.297	580	402.135	715	31.376
450	449.016	585	403.633	720	27.184
455	367.962	590	400.869	725	23.514
460	233.139	595	394.009	730	20.426
465	159.357	600	383.277	735	17.669
470	109.193	605	370.049	740	15.342
475	72.000	610	352.744	745	13.350
480	54.052	615	334.812	750	11.613
485	48.643	620	313.363	755	10.023
490	50.872	625	291.710	760	8.772
495	64.159	630	268.091	765	7.659
500	90.221	635	244.953	770	6.671
505	125.420	640	221.148	775	5.814
510	167.488	645	199.407	780	0.883



REPORT NUMBER: RAB00925
DATE: 6/2/2015
PREPARED FOR: RAB LIGHTING INC.
CATALOG NUMBER: MASI20-160NW/D10

Page 4 of 4

CIE Chromaticity Diagram

