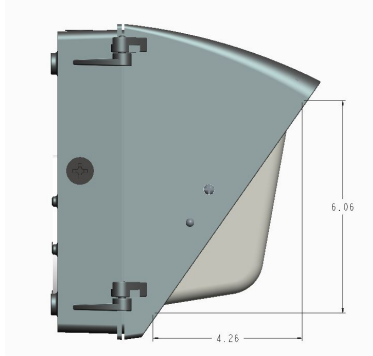


ISOFOOTCANDLE LINES OF HORIZONTAL ILLUMINATION

Values based on 16 foot mounting height.



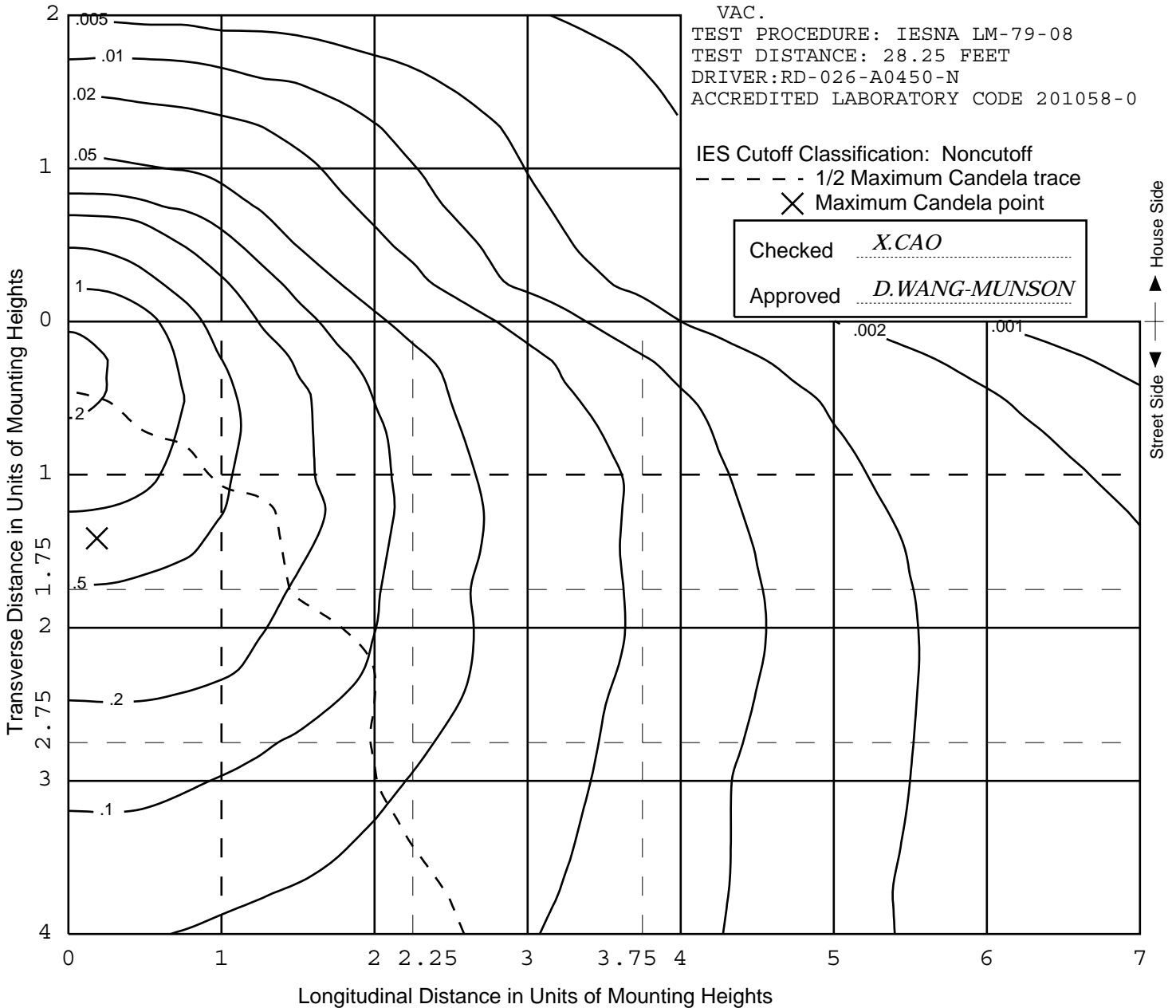
REPORT NUMBER: RAB01040
 ISSUE DATE: 07/16/15 PAGE: 1 OF 8
 DATE SAMPLE TESTED: 07/16/15
 PREPARED FOR: RAB LIGHTING INC.
 CATALOG NUMBER: WP2LED24 (STANDARD CUTOFF - PRISMATIC GLASS LENS)
 LUMINAIRE: MID SIZED WALLPACK. ALL ALUMINUM PRECISION DIE CAST CONSTRUCTION WITH TEMPERED GLASS REFRACTOR.
 LAMP: EIGHTY WHITE LIGHT EMITTING DIODES (LEDS).
 NOTE: DATA SHOWN IS ABSOLUTE FOR THE SAMPLE PROVIDED.
 TOTAL INPUT WATTS = 24.984 AT 277.0 VAC.
 TEST PROCEDURE: IESNA LM-79-08
 TEST DISTANCE: 28.25 FEET
 DRIVER: RD-026-A0450-N
 ACCREDITED LABORATORY CODE 201058-0

IES Cutoff Classification: Noncutoff

--- 1/2 Maximum Candela trace

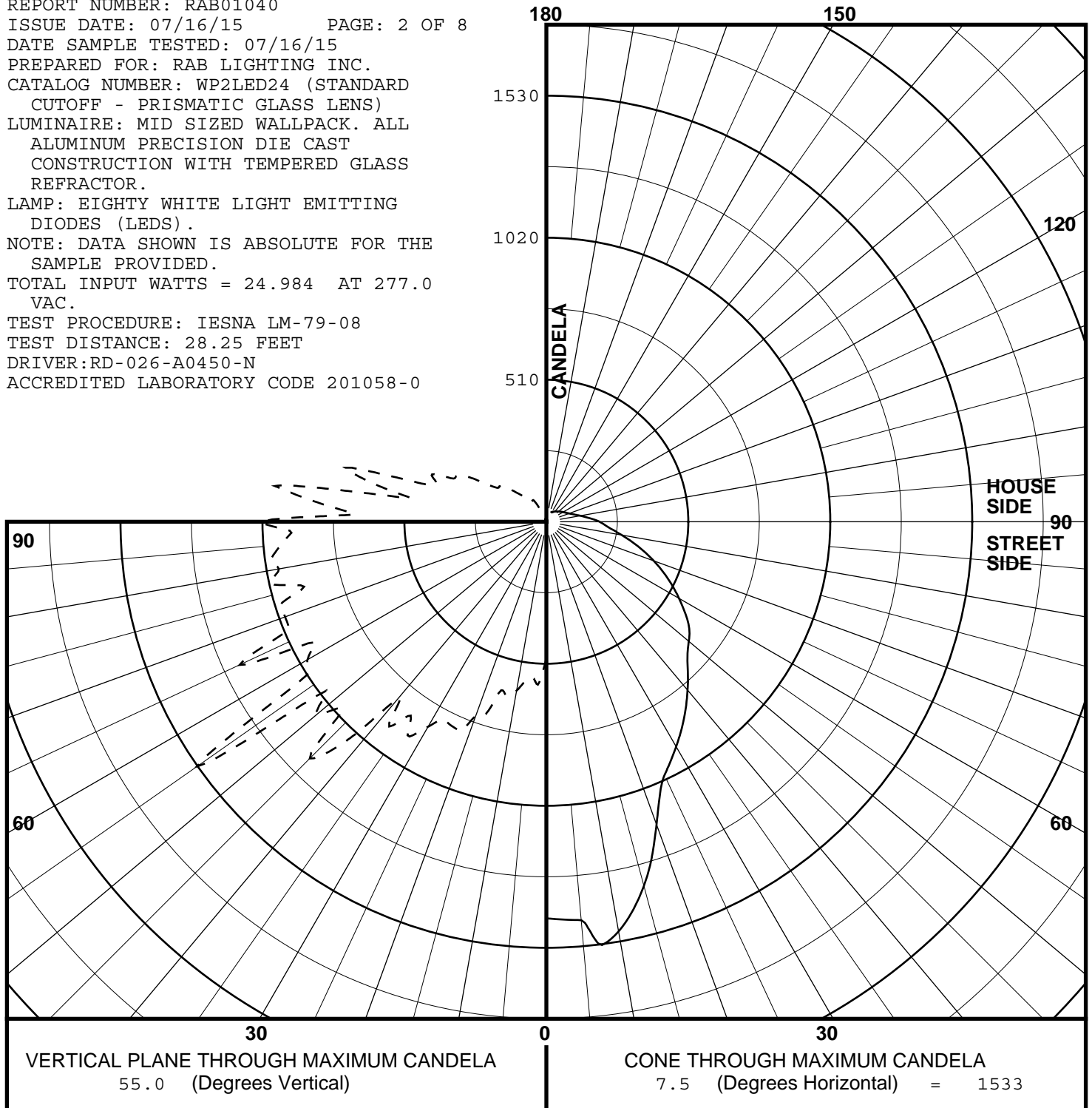
× Maximum Candela point

Checked	<i>X.CAO</i>
Approved	<i>D.WANG-MUNSON</i>



MAXIMUM PLANE AND MAXIMUM CONE PLOTS OF CANDELA

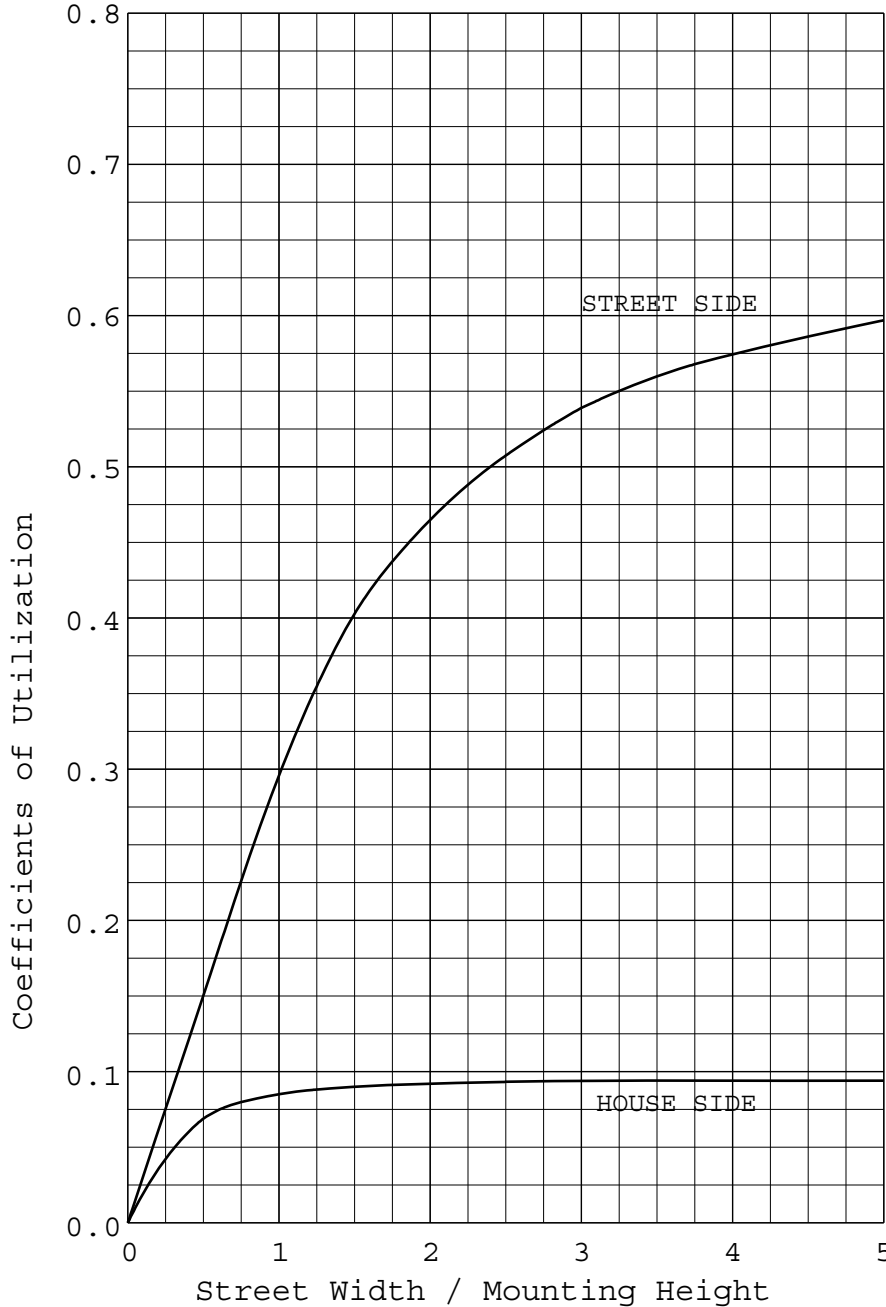
REPORT NUMBER: RAB01040
 ISSUE DATE: 07/16/15 PAGE: 2 OF 8
 DATE SAMPLE TESTED: 07/16/15
 PREPARED FOR: RAB LIGHTING INC.
 CATALOG NUMBER: WP2LED24 (STANDARD
 CUTOFF - PRISMATIC GLASS LENS)
 LUMINAIRE: MID SIZED WALLPACK. ALL
 ALUMINUM PRECISION DIE CAST
 CONSTRUCTION WITH TEMPERED GLASS
 REFRACTOR.
 LAMP: EIGHTY WHITE LIGHT EMITTING
 DIODES (LEDS).
 NOTE: DATA SHOWN IS ABSOLUTE FOR THE
 SAMPLE PROVIDED.
 TOTAL INPUT WATTS = 24.984 AT 277.0
 VAC.
 TEST PROCEDURE: IESNA LM-79-08
 TEST DISTANCE: 28.25 FEET
 DRIVER: RD-026-A0450-N
 ACCREDITED LABORATORY CODE 201058-0



REPORT NUMBER: RAB01040
 ISSUE DATE: 07/16/15
 PREPARED FOR: RAB LIGHTING INC.

PAGE: 3 OF 8
 DATE SAMPLE TESTED: 07/16/15

COEFFICIENTS OF UTILIZATION AND FLUX DISTRIBUTION



	LUMENS	PERCENT OF FIXTURE
DOWNWARD STREET SIDE	2025.	68.8
DOWNWARD HOUSE SIDE	283.	9.6
DOWNWARD TOTAL	2308.	78.5
UPWARD STREET SIDE	614.	20.9
UPWARD HOUSE SIDE	20.	0.7
UPWARD TOTAL	634.	21.5
TOTAL FLUX	2942.	100.0

TOTAL INPUT WATTS = 25.0
 EFFICACY = 117.7 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: RAB01040
 ISSUE DATE: 07/16/15
 PREPARED FOR: RAB LIGHTING INC.

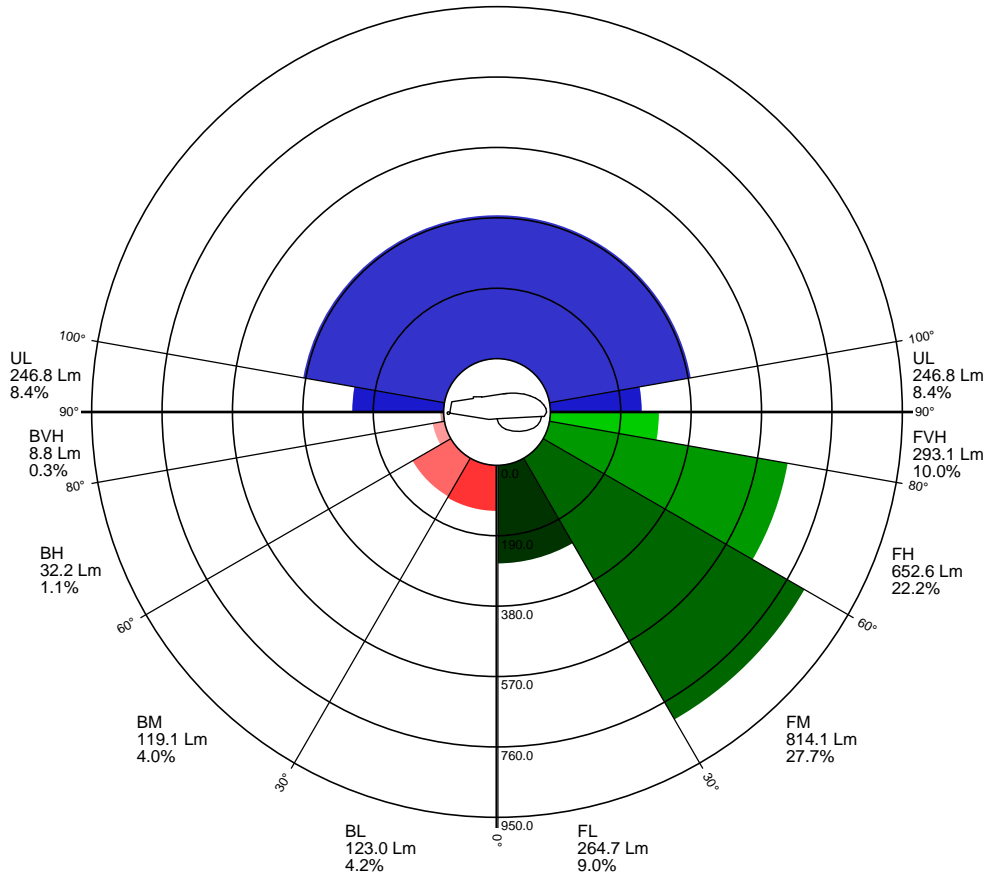
PAGE: 4 OF 8
 DATE SAMPLE TESTED: 07/16/15

BUG Rating:			B1	U3	G3	
Zonal Summary		Lumens	% of Fixture	Zone Ratings		
				B	U	G
Forward		2025	68.8			
FL	(0° - 30°)	264.7	9.0			
FM	(30° - 60°)	814.1	27.7			
FH	(60° - 80°)	652.6	22.2			G0
FVH	(80° - 90°)	293.1	10.0			G3
Backward		283	9.6			
BL	(0° - 30°)	123.0	4.2	B1		
BM	(30° - 60°)	119.1	4.0	B0		
BH	(60° - 80°)	32.2	1.1	B0		G0
BVH	(80° - 90°)	8.8	0.3			G0
Upward		634	21.5			
UL	(90° - 100°)	246.8	8.4		U3	
UH	(100° - 180°)	387.0	13.2		U3	
Trapped Light		0	0.0			
Total Flux		2942	100.0			

Zonal Lumen Summary

(Linear scale)

UH
 387.0 Lm
 13.2%

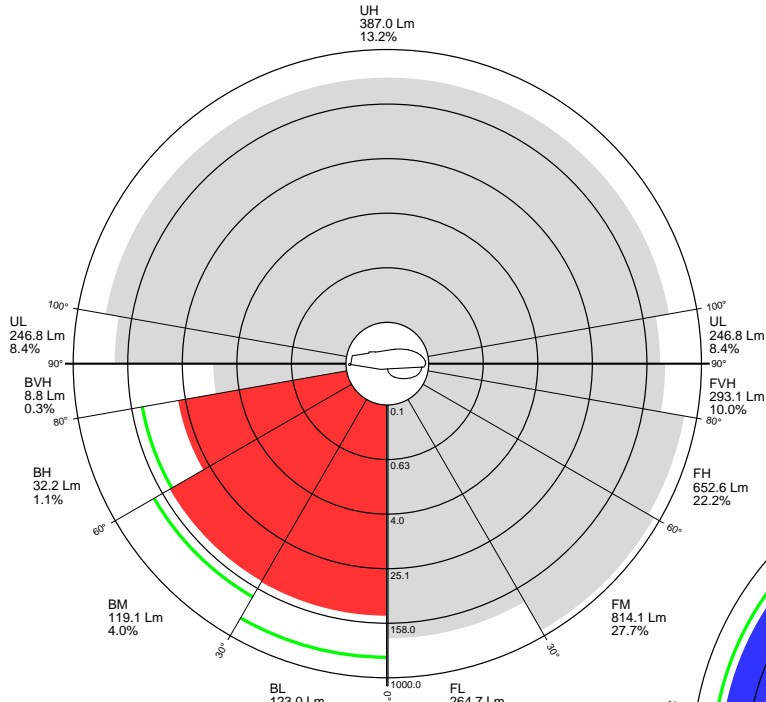


REPORT NUMBER: RAB01040
 ISSUE DATE: 07/16/15
 PREPARED FOR: RAB LIGHTING INC.

PAGE: 5 OF 8
 DATE SAMPLE TESTED: 07/16/15

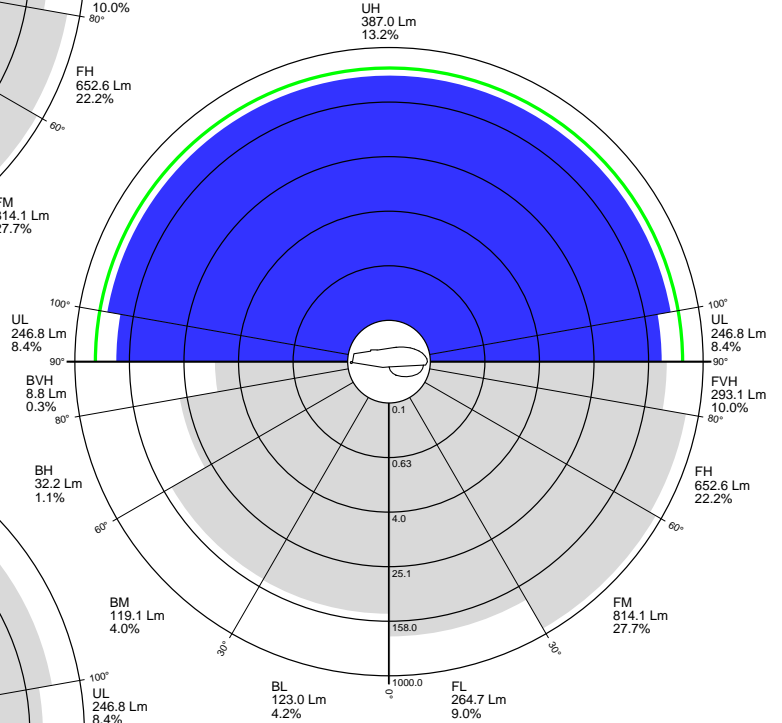
Backlight Rating Details

(Logarithmic scale)



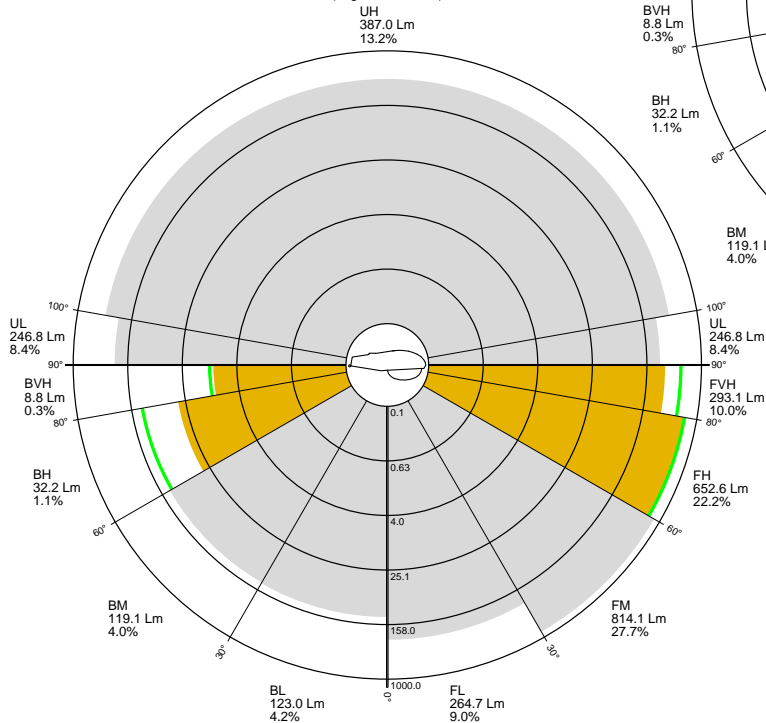
Uplight Rating Details

(Logarithmic scale)



Glare Rating Details

(Logarithmic scale)



REPORT NUMBER: RAB01040
 ISSUE DATE: 07/16/15
 PREPARED FOR: RAB LIGHTING INC.

PAGE: 6 OF 8
 DATE SAMPLE TESTED: 07/16/15

CANDELA TABULATION

	LATERAL ANGLE											
	0.0	5.0	7.5	15.0	25.0	35.0	45.0	55.0	65.0	75.0	85.0	
	180.0	2.	2.	2.	2.	2.	2.	2.	2.	2.	2.	2.
	175.0	0.	0.	0.	1.	1.	2.	2.	2.	3.	3.	3.
	165.0	0.	0.	0.	1.	1.	2.	2.	2.	3.	3.	3.
	155.0	24.	25.	24.	18.	15.	11.	6.	3.	3.	3.	3.
	145.0	91.	90.	90.	95.	85.	66.	42.	23.	10.	6.	5.
	135.0	144.	144.	144.	151.	137.	110.	84.	62.	28.	12.	7.
	125.0	207.	212.	212.	205.	213.	191.	140.	88.	52.	23.	14.
	115.0	361.	366.	367.	356.	338.	291.	205.	151.	74.	36.	20.
	105.0	741.	744.	749.	688.	569.	355.	316.	204.	137.	51.	27.
	95.0	825.	834.	836.	655.	536.	648.	442.	305.	204.	107.	29.
	90.0	987.	1011.	1024.	910.	775.	672.	499.	324.	236.	150.	42.
	87.5	878.	898.	917.	866.	802.	701.	526.	348.	242.	169.	56.
	85.0	931.	947.	958.	895.	861.	720.	523.	363.	255.	194.	76.
V	82.5	962.	979.	996.	930.	844.	730.	563.	360.	274.	253.	103.
E	80.0	935.	955.	976.	929.	865.	726.	574.	385.	313.	241.	136.
R	77.5	981.	1005.	1016.	870.	829.	755.	567.	417.	375.	251.	163.
T	75.0	867.	883.	901.	899.	878.	744.	630.	500.	339.	303.	178.
I	72.5	969.	990.	1002.	928.	864.	792.	733.	469.	406.	268.	192.
C	70.0	961.	984.	999.	930.	897.	964.	689.	476.	399.	282.	197.
A	67.5	941.	980.	1000.	1105.	1116.	815.	678.	552.	384.	299.	210.
L	65.0	1235.	1217.	1216.	1025.	894.	837.	710.	614.	428.	310.	215.
	62.5	906.	922.	937.	936.	904.	840.	840.	514.	421.	317.	208.
A	60.0	975.	984.	991.	950.	975.	987.	835.	526.	400.	328.	209.
N	57.5	999.	1004.	1013.	1022.	1187.	914.	754.	618.	437.	362.	213.
G	55.0 <<	1424.	1436.	1533.	1354.	1004.	862.	717.	620.	481.	341.	223.
L	52.5	986.	1011.	996.	977.	962.	857.	798.	581.	471.	347.	242.
E	50.0	1080.	1083.	1074.	988.	928.	880.	806.	598.	481.	365.	253.
	47.5	971.	968.	992.	1009.	1010.	874.	754.	648.	499.	385.	276.
	45.0	1168.	1164.	1202.	1205.	972.	802.	718.	674.	523.	394.	291.
	42.5	1059.	1080.	1074.	932.	838.	770.	697.	651.	519.	410.	315.
	40.0	825.	824.	828.	835.	835.	761.	746.	654.	525.	434.	344.
	37.5	925.	914.	927.	887.	817.	811.	747.	668.	552.	444.	369.
	35.0	829.	837.	850.	856.	796.	829.	686.	652.	566.	468.	391.
	30.0	843.	844.	850.	853.	755.	739.	725.	625.	541.	492.	425.
	25.0	796.	803.	808.	819.	795.	729.	717.	613.	530.	508.	456.
	20.0	738.	739.	742.	749.	728.	674.	614.	592.	555.	520.	495.
	15.0	618.	624.	626.	615.	634.	648.	602.	582.	598.	547.	498.
	10.0	612.	616.	616.	613.	605.	615.	612.	639.	540.	578.	480.
	5.0	548.	572.	562.	550.	535.	522.	524.	571.	584.	505.	480.
	0.0	491.	491.	491.	491.	491.	491.	491.	491.	491.	491.	491.

||
 PLANE OF MAXIMUM CANDELA

CONE OF MAXIMUM CANDELA

REPORT NUMBER: RAB01040
 ISSUE DATE: 07/16/15
 PREPARED FOR: RAB LIGHTING INC.

PAGE: 7 OF 8
 DATE SAMPLE TESTED: 07/16/15

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
	180.0	2.	2.	2.	2.	2.	2.	2.	2.	2.	2.
	175.0	3.	3.	3.	3.	3.	2.	2.	1.	1.	0.
	165.0	3.	3.	3.	3.	3.	2.	2.	2.	1.	1.
	155.0	3.	3.	3.	3.	3.	2.	2.	2.	2.	1.
	145.0	4.	4.	4.	3.	3.	3.	2.	2.	2.	2.
	135.0	6.	5.	4.	4.	3.	3.	2.	2.	2.	2.
	125.0	12.	10.	6.	5.	4.	3.	2.	2.	2.	2.
	115.0	19.	17.	10.	7.	5.	4.	3.	3.	3.	3.
	105.0	26.	24.	17.	11.	7.	5.	4.	4.	4.	4.
	95.0	28.	33.	29.	18.	9.	6.	5.	5.	5.	5.
	90.0	27.	34.	35.	23.	12.	7.	5.	5.	5.	5.
	87.5	29.	34.	37.	25.	13.	8.	5.	5.	5.	5.
	85.0	35.	35.	38.	28.	15.	8.	5.	5.	5.	5.
V	82.5	45.	38.	40.	31.	17.	9.	5.	4.	5.	5.
E	80.0	59.	41.	41.	34.	19.	9.	5.	4.	4.	4.
R	77.5	77.	45.	43.	36.	22.	10.	5.	4.	4.	4.
T	75.0	98.	52.	45.	39.	26.	12.	5.	3.	4.	4.
I	72.5	120.	61.	47.	43.	31.	15.	6.	3.	3.	3.
C	70.0	135.	74.	52.	46.	36.	21.	7.	3.	3.	3.
A	67.5	145.	89.	57.	49.	43.	29.	17.	5.	2.	2.
L	65.0	154.	104.	64.	52.	46.	36.	24.	14.	10.	7.
	62.5	162.	117.	70.	55.	50.	38.	26.	24.	15.	16.
A	60.0	171.	129.	78.	61.	54.	47.	37.	24.	25.	18.
N	57.5	178.	144.	89.	68.	58.	49.	36.	31.	26.	29.
G	55.0 <<	191.	154.	102.	77.	63.	52.	44.	36.	30.	26.
L	52.5	199.	167.	116.	87.	68.	57.	48.	35.	35.	37.
E	50.0	208.	183.	130.	99.	76.	62.	49.	47.	33.	31.
	47.5	231.	200.	146.	115.	86.	69.	55.	42.	46.	40.
	45.0	252.	215.	167.	132.	98.	77.	60.	50.	41.	42.
	42.5	283.	237.	186.	150.	115.	89.	68.	52.	49.	45.
	40.0	301.	253.	205.	167.	136.	105.	81.	64.	51.	48.
	37.5	320.	278.	219.	185.	157.	125.	98.	77.	64.	60.
	35.0	345.	305.	240.	201.	178.	147.	120.	97.	82.	76.
	30.0	394.	364.	274.	228.	210.	198.	172.	153.	139.	129.
	25.0	444.	415.	318.	261.	235.	221.	214.	205.	195.	186.
	20.0	482.	435.	373.	316.	262.	236.	223.	219.	212.	208.
	15.0	500.	453.	423.	381.	334.	285.	259.	253.	236.	233.
	10.0	503.	490.	443.	444.	414.	399.	372.	348.	326.	319.
	5.0	500.	519.	496.	469.	452.	435.	448.	448.	442.	437.
	0.0	491.	491.	491.	491.	491.	491.	491.	491.	491.	491.

CONE OF MAXIMUM CANDELA

REPORT NUMBER: RAB01040
ISSUE DATE: 07/16/15
PREPARED FOR: RAB LIGHTING INC.

PAGE: 8 OF 8
DATE SAMPLE TESTED: 07/16/15

5-DEGREE
ZONAL LUMEN SUMMARY

0- 5	12
5- 10	36
10- 15	56
15- 20	75
20- 25	96
25- 30	113
30- 35	128
35- 40	137
40- 45	150
45- 50	164
50- 55	172
55- 60	182
60- 65	175
65- 70	180
70- 75	169
75- 80	161
80- 85	156
85- 90	146
90- 95	129
95-100	117
100-105	91
105-110	76
110-115	59
115-120	47
120-125	35
125-130	26
130-135	20
135-140	14
140-145	9
145-150	6
150-155	3
155-160	1
160-165	0
165-170	0
170-175	0
175-180	0

10-DEGREE
ZONAL LUMEN SUMMARY

0- 10	48
0- 20	179
0- 30	388
0- 40	652
0- 50	966
0- 60	1321
0- 70	1676
0- 80	2006
0- 90	2308
0-100	2555
0-110	2721
0-120	2827
0-130	2888
0-140	2921
0-150	2937
0-160	2941
0-170	2941
0-180	2942

REPORT NUMBER: RAB01043
DATE: 7/14/2015
PREPARED FOR: RAB LIGHTING INC.
CATALOG NUMBER: WP2LED24 (STANDARD CUTOFF - PRISMATIC GLASS LENS)

ADDRESS: 170 LUDLOW AVE, NORTHVALE, NJ 07647

LUMINAIRE: MID SIZED WALLPACK. ALL ALUMINUM PRECISION DIE CAST CONSTRUCTION WITH TEMPERED GLASS REFRACTOR.

LAMP: EIGHTY WHITE LIGHT EMITTING DIODES (LEDS).

DRIVER: RD-026-A0450-N

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 7/9/16
RAB 2.0 meter Diameter Integrating Sphere, 4PI Geometry 7/9/16

OBJECT OF TEST: Measure the Absolute Flux in lumens*, Total Radiant Flux*, Spectral Power Distribution (SPD), Correlated Color Temperature (CCT), Color Rendering Indices (CRI_{a,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: RAB01043
 DATE: 7/14/2015
 PREPARED FOR: RAB LIGHTING INC.
 CATALOG NUMBER: WP2LED24 (STANDARD CUTOFF - PRISMATIC GLASS LENS)

RESULTS:

PHOTOMETRIC	
Total Integrated Flux (lumens)	2942 *
SPECTRORADIOMETRIC	
Observer	CIE 1931 2 degree
Chromaticity Ordinate x	0.3451
Chromaticity Ordinate y	0.3577
Observer	CIE 1976 2 degree
Chromaticity Ordinate u'	0.2091
Chromaticity Ordinate v'	0.4876
Correlated Color Temp CCT (K)	5018
ANSI C78.377-2008 Duv	0.003
Total Radiant Flux (milliWatts)	9157 *
ELECTRICAL	
Input Voltage (Volts AC)	120.0
Input Current (Amps AC)	0.207
Input Power (Watts)	24.4
Input Power Factor (%)	98.2
Input Current THD (%)	9.2
Input Voltage THD (%)	0.2
EFFICACY (Lumens/Watt)	
120.6	
ELECTRICAL AT MAX NONIMAL INPUT	
Input Voltage (Volts AC)	277.0
Input Current (Amps AC)	0.097
Input Power (Watts)	25.0
Input Power Factor (%)	93.0
Input Current THD (%)	14.0
Input Voltage THD (%)	0.2
Off-State Power (Watts)	
0.0	

COLOR RENDERING INDICES	CRI
Ra (Average 1-8)	81
R1 Light greyish red	79
R2 Dark greyish yellow	85
R3 Strong yellowish green	89
R4 Moderate yellowish green	82
R5 Light bluish green	81
R6 Light blue	80
R7 Light violet	85
R8 Light reddish purple	67
R9 Strong red	4
R10 Strong yellow	65
R11 Strong green	83
R12 Strong blue	65
R13 Light yellowish pink (skin)	80
R14 Moderate olive green (leaf)	94

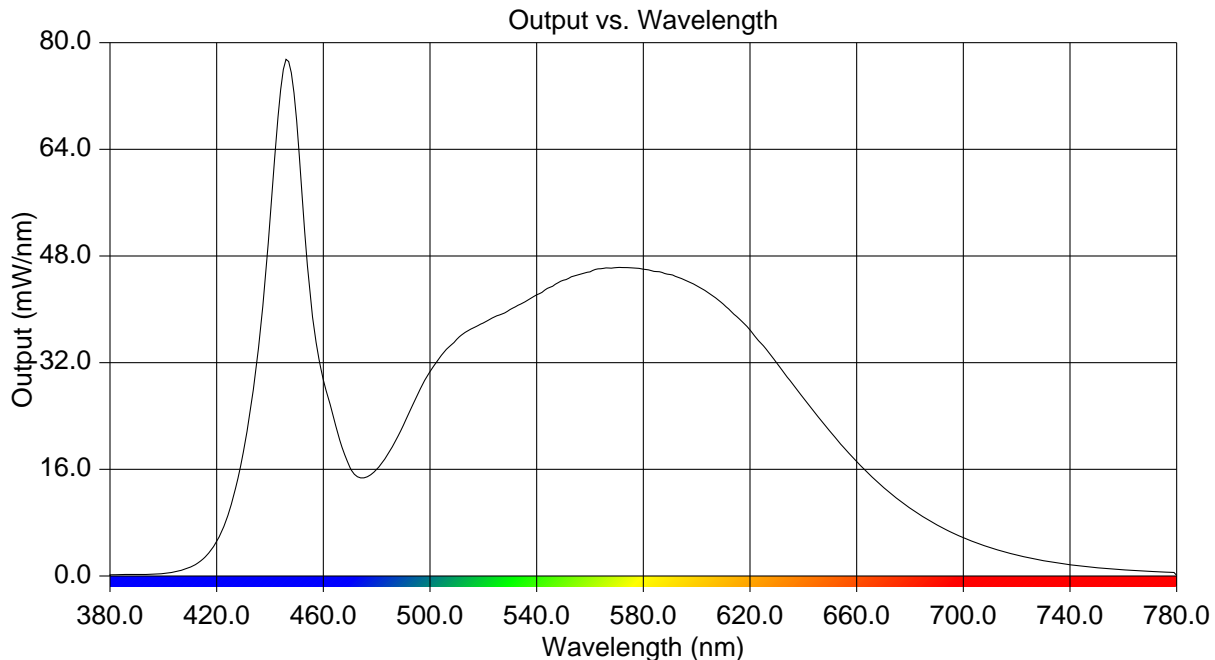
*NOTE:

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: RAB01043
 DATE: 7/14/2015
 PREPARED FOR: RAB LIGHTING INC.
 CATALOG NUMBER: WP2LED24 (STANDARD CUTOFF - PRISMATIC GLASS LENS)

RESULTS:

Wavelength	mW per nm	Wavelength	mW per nm	Wavelength	mW per nm
380	0.171	515	36.963	650	21.679
385	0.199	520	37.965	655	19.346
390	0.220	525	39.013	660	17.179
395	0.271	530	39.962	665	15.134
400	0.395	535	41.006	670	13.314
405	0.665	540	42.179	675	11.644
410	1.290	545	43.304	680	10.183
415	2.590	550	44.363	685	8.891
420	5.169	555	45.100	690	7.692
425	10.080	560	45.617	695	6.649
430	18.579	565	46.141	700	5.730
435	31.952	570	46.263	705	4.952
440	53.228	575	46.232	710	4.272
445	75.977	580	46.018	715	3.664
450	68.293	585	45.662	720	3.150
455	42.472	590	45.224	725	2.694
460	29.407	595	44.491	730	2.306
465	22.019	600	43.527	735	1.977
470	16.267	605	42.342	740	1.693
475	14.684	610	40.776	745	1.461
480	16.009	615	38.929	750	1.250
485	18.771	620	36.915	755	1.072
490	22.596	625	34.544	760	0.923
495	26.935	630	31.974	765	0.796
500	30.661	635	29.331	770	0.690
505	33.471	640	26.723	775	0.593
510	35.484	645	24.139	780	0.089



REPORT NUMBER: RAB01043
DATE: 7/14/2015
PREPARED FOR: RAB LIGHTING INC.
CATALOG NUMBER: WP2LED24 (STANDARD CUTOFF - PRISMATIC GLASS LENS)

CIE Chromaticity Diagram

