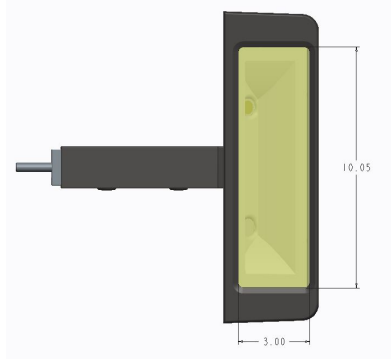


ISOFOOTCANDLE LINES OF HORIZONTAL ILLUMINATION

Values based on 20 foot mounting height.



REPORT NUMBER: RAB02640

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PAGE: 1 OF 9

DATE SAMPLE TESTED: 10/28/16

PREPARED FOR: RAB LIGHTING INC.

CATALOG NUMBER: ALEDC52Y/480,

WPLEDC52Y/480 (7.5-DEGREE UPTILT - CUTOFF)

LUMINAIRE: CAST FINNED METAL HOUSING, 2-PIECE EXTRUDED METAL HEAT SINK, 2 CIRCUIT BOARDS EACH WITH 1 LED, MOLDED PLASTIC REFLECTOR WITH SPECULAR FINISH AND 1 OPTICAL COMPARTMENT WITH 1 APERTURE PER LED, CLEAR FLAT GLASS LENS IN CAST BROWN PAINTED METAL FRAME.

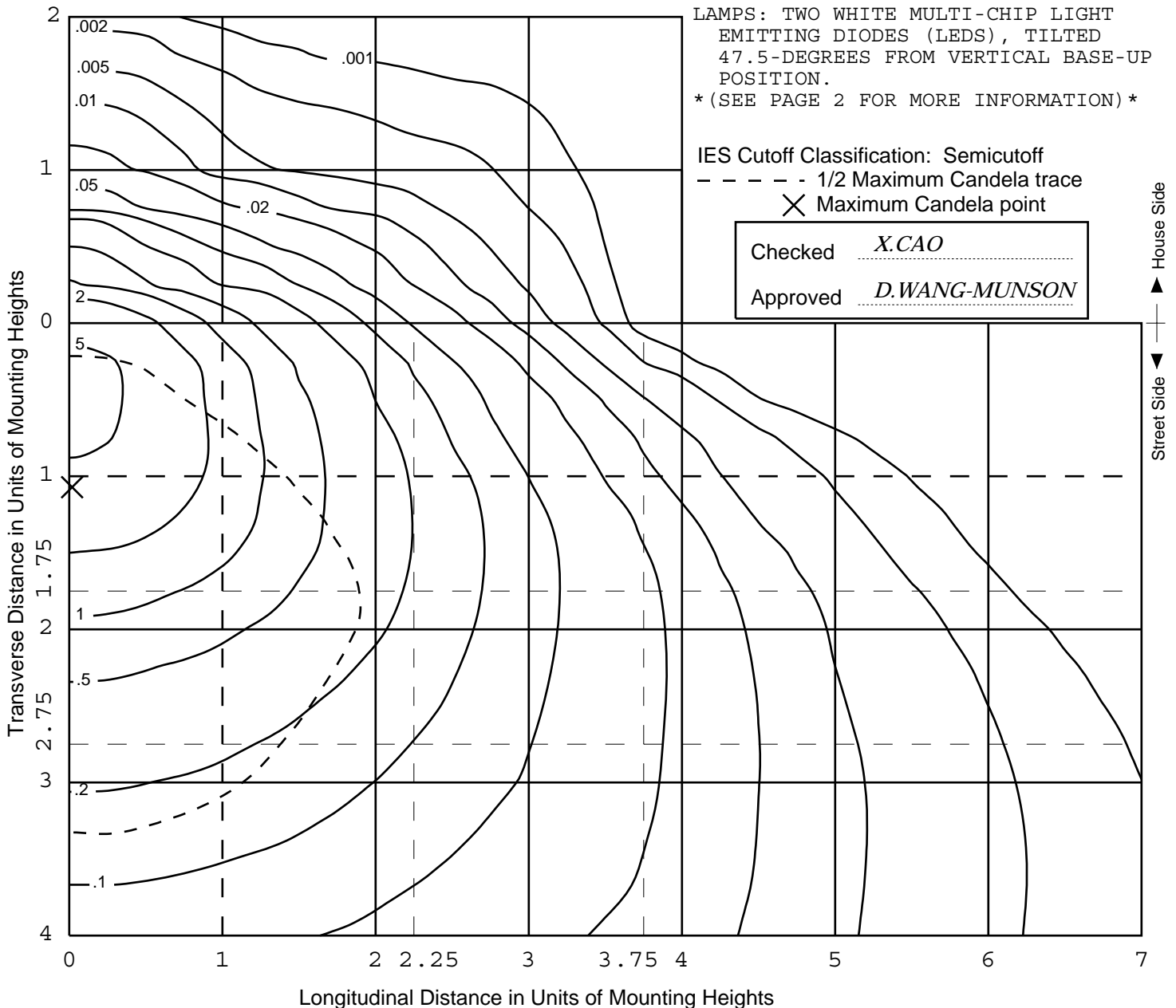
LAMPS: TWO WHITE MULTI-CHIP LIGHT EMITTING DIODES (LEDs), TILTED 47.5-DEGREES FROM VERTICAL BASE-UP POSITION.

(SEE PAGE 2 FOR MORE INFORMATION)

IES Cutoff Classification: Semicutoff

--- 1/2 Maximum Candela trace

X Maximum Candela point



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PREPARED FOR: RAB LIGHTING INC.

PAGE: 2 OF 9
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ADDITIONAL INFORMATION

NOTE: DATA SHOWN IS ABSOLUTE FOR THE SAMPLE PROVIDED.

TOTAL INPUT WATTS = 57.844 W AT 480.0 VAC.

LED DRIVER: RD-H065-A1810-480

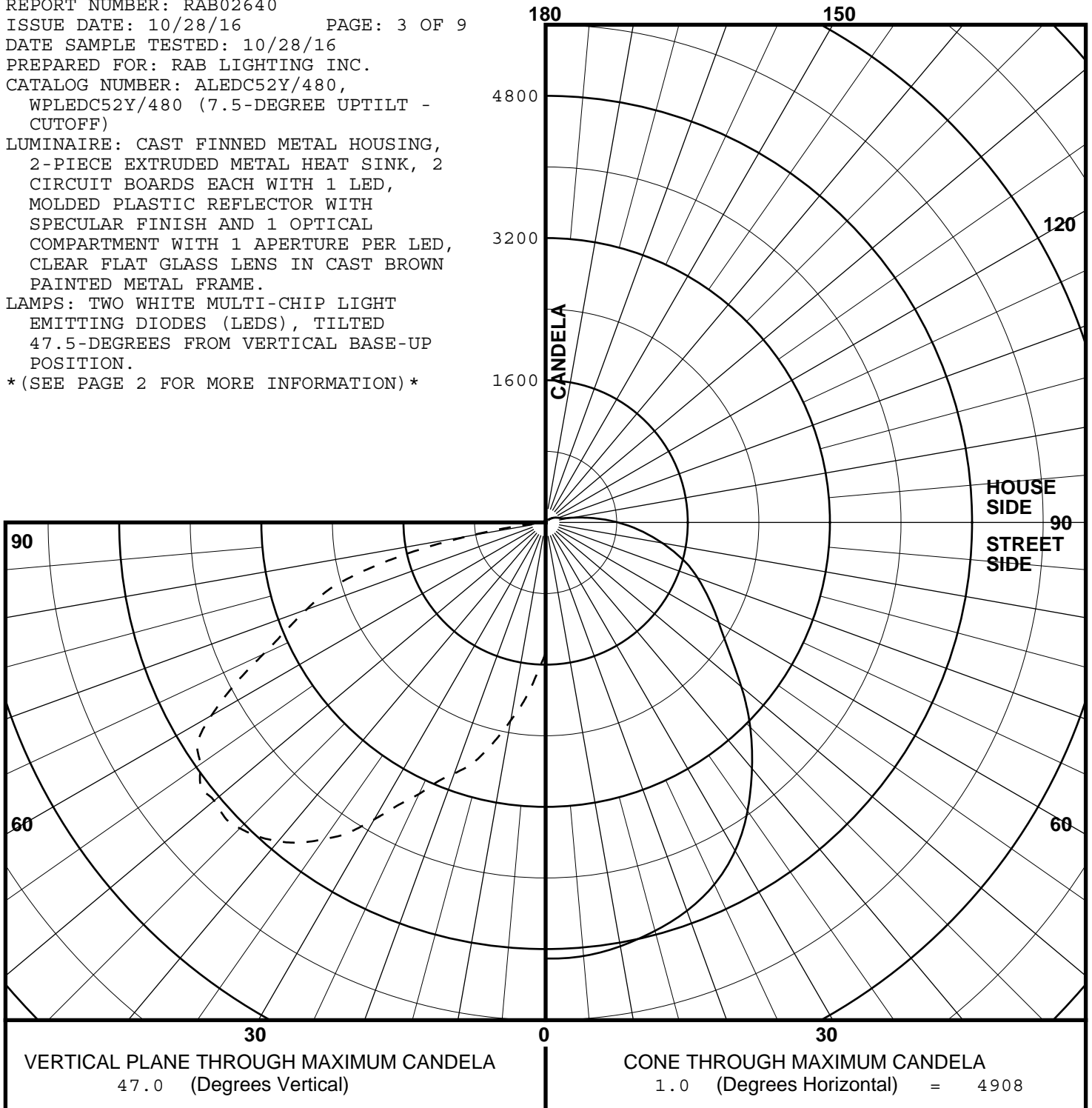
TEST PROCEDURE: IESNA LM-79-08

ACCREDITED LABORATORY CODE 201058-0

NOTE: THIS REPORT WITH THE USE OF THE NVLAP LOGO SHALL NOT BE USED BY
THE CLIENT TO CLAIM PRODUCT CERTIFICATION, APPROVAL, OR
ENDORSEMENT BY NVLAP, NIST, OR ANY AGENCY OF THE FEDERAL
GOVERNMENT.

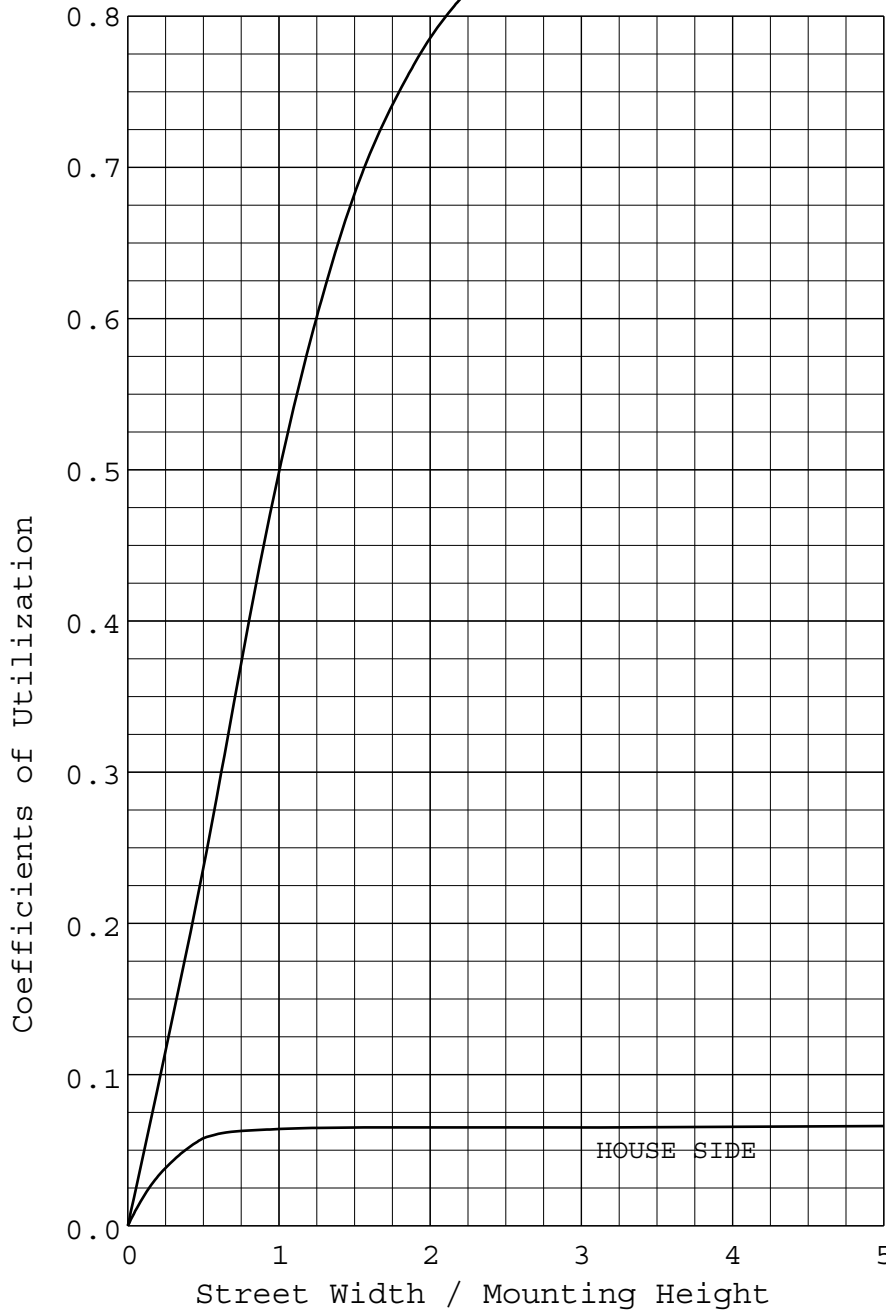
MAXIMUM PLANE AND MAXIMUM CONE PLOTS OF CANDELA

REPORT NUMBER: RAB02640
 ISSUE DATE: 10/28/16 PAGE: 3 OF 9
 DATE SAMPLE TESTED: 10/28/16
 PREPARED FOR: RAB LIGHTING INC.
 CATALOG NUMBER: ALEDC52Y/480,
 WPLEDC52Y/480 (7.5-DEGREE UPTILT -
 CUTOFF)
 LUMINAIRE: CAST FINNED METAL HOUSING,
 2-PIECE EXTRUDED METAL HEAT SINK, 2
 CIRCUIT BOARDS EACH WITH 1 LED,
 MOLDED PLASTIC REFLECTOR WITH
 SPECULAR FINISH AND 1 OPTICAL
 COMPARTMENT WITH 1 APERTURE PER LED,
 CLEAR FLAT GLASS LENS IN CAST BROWN
 PAINTED METAL FRAME.
 LAMPS: TWO WHITE MULTI-CHIP LIGHT
 EMITTING DIODES (LEDs), TILTED
 47.5-DEGREES FROM VERTICAL BASE-UP
 POSITION.
 (SEE PAGE 2 FOR MORE INFORMATION)



REPORT NUMBER: RAB02640 STREET SIDE PAGE: 4 OF 9
 ISSUE DATE: 10/28/16 DATE SAMPLE TESTED: 10/28/16
 PREPARED FOR: RAB LIGHTING INC.

COEFFICIENTS OF UTILIZATION AND FLUX DISTRIBUTION



	LUMENS	PERCENT OF FIXTURE
DOWNWARD STREET SIDE	6574.	93.4
DOWNWARD HOUSE SIDE	467.	6.6
DOWNWARD TOTAL	7041.	100.0
UPWARD STREET SIDE	0.	0.0
UPWARD HOUSE SIDE	0.	0.0
UPWARD TOTAL	1.	0.0
TOTAL FLUX	7042.	100.0

TOTAL INPUT WATTS = 57.8
 EFFICACY = 121.8 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: RAB02640
 ISSUE DATE: 10/28/16
 PREPARED FOR: RAB LIGHTING INC.

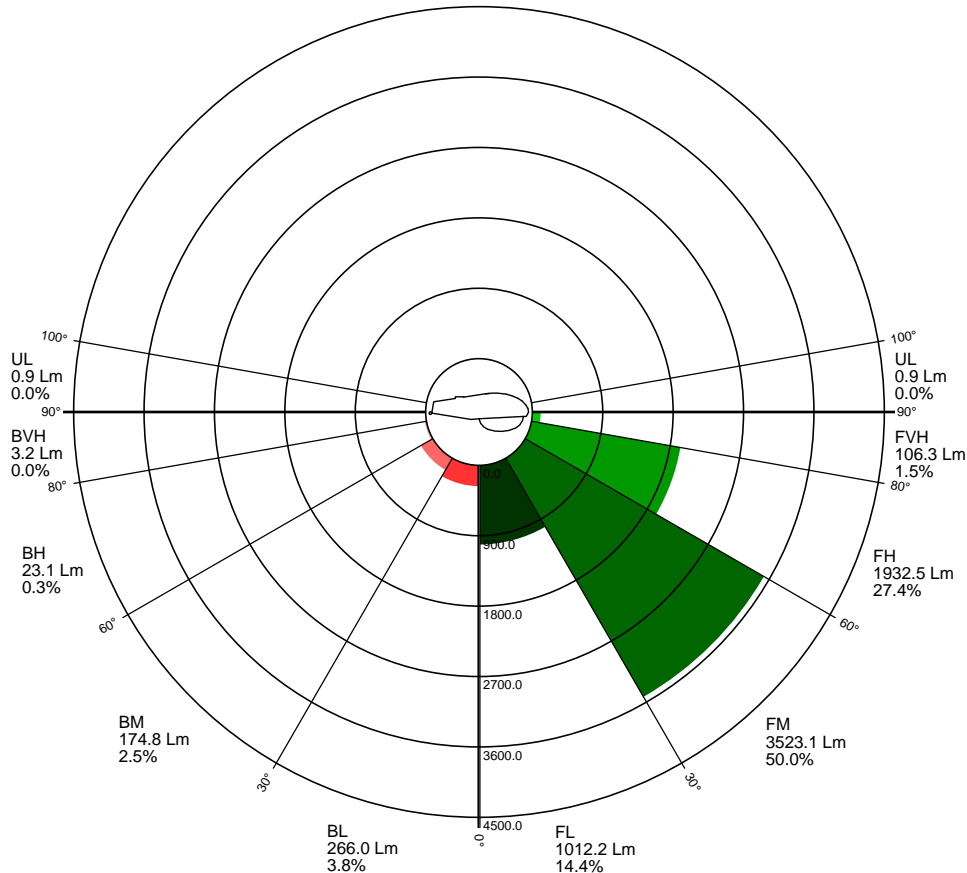
PAGE: 5 OF 9
 DATE SAMPLE TESTED: 10/28/16

BUG Rating:				B1 U1 G2		
Zonal Summary				Zone Ratings		
		Lumens	% of Fixture	B	U	G
Forward						
FL	(0° - 30°)	1012.2	14.4			
FM	(30° - 60°)	3523.1	50.0			
FH	(60° - 80°)	1932.5	27.4			G2
FVH	(80° - 90°)	106.3	1.5			G2
Backward						
BL	(0° - 30°)	266.0	3.8	B1		
BM	(30° - 60°)	174.8	2.5	B0		
BH	(60° - 80°)	23.1	0.3	B0		G0
BVH	(80° - 90°)	3.2	0.0			G0
Upward						
UL	(90° - 100°)	0.9	0.0		U1	
UH	(100° - 180°)	0.0	0.0		U0	
Trapped Light						
Total Flux						
		7042	100.0			

Zonal Lumen Summary

(Linear scale)

UH
0.0 Lm
0.0%

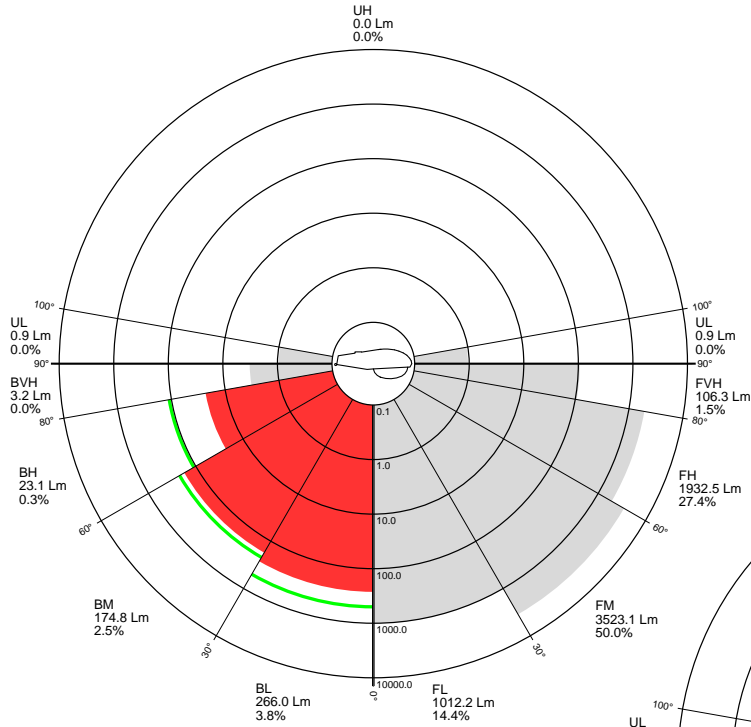


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 ISSUE DATE: 10/28/16
 PREPARED FOR: RAB LIGHTING INC.

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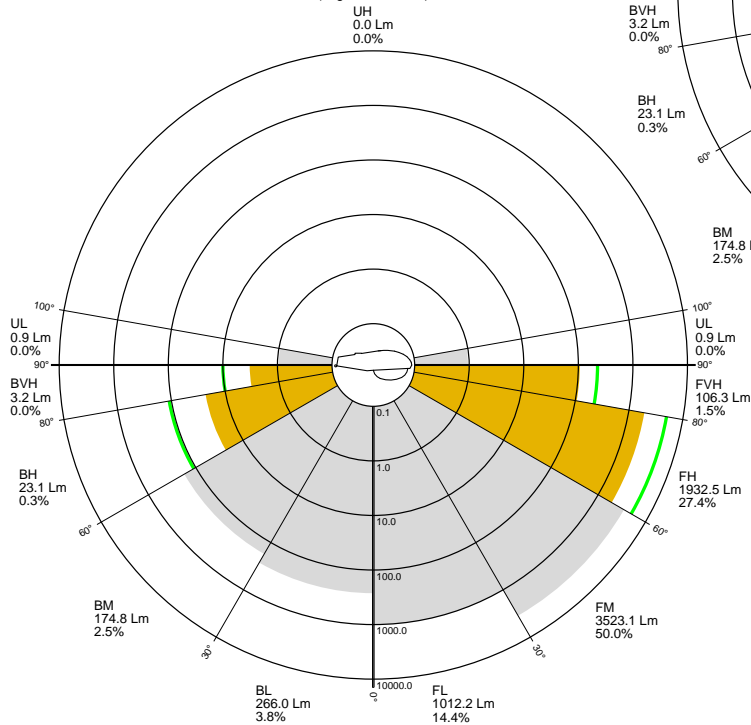
Backlight Rating Details

(Logarithmic scale)



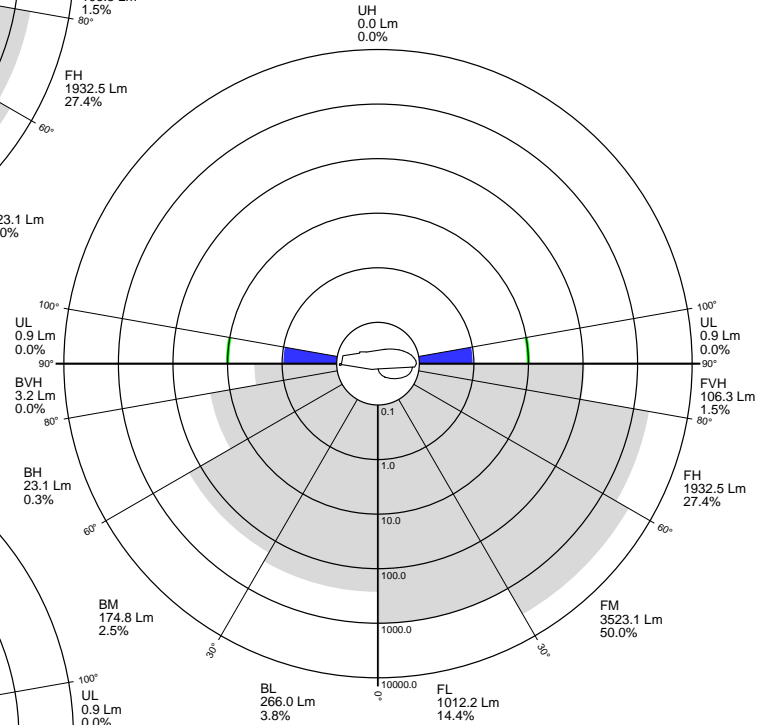
Glare Rating Details

(Logarithmic scale)



Uplight Rating Details

(Logarithmic scale)



CONE OF MAXIMUM CANDELA

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 ISSUE DATE: 10/28/16
 PREPARED FOR: RAB LIGHTING INC.

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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
180.0	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
175.0	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
165.0	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
155.0	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
145.0	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
135.0	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
125.0	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
115.0	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
105.0	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
95.0	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
90.0	8.	8.	8.	8.	8.	7.	6.	5.	5.	5.	4.
87.5	8.	8.	8.	8.	7.	7.	6.	5.	4.	4.	4.
85.0	8.	8.	8.	7.	7.	6.	5.	4.	3.	3.	3.
82.5	8.	8.	8.	7.	7.	6.	5.	4.	3.	2.	2.
V 80.0	9.	8.	8.	7.	7.	6.	5.	4.	3.	2.	2.
E 77.5	9.	8.	9.	9.	7.	5.	4.	4.	2.	1.	1.
R 75.0	13.	9.	16.	14.	7.	5.	4.	3.	2.	1.	1.
T 72.5	67.	45.	23.	19.	9.	6.	4.	3.	2.	1.	1.
I 70.0	136.	74.	35.	19.	11.	6.	5.	3.	2.	1.	1.
C 67.5	218.	103.	51.	19.	13.	7.	5.	4.	3.	2.	2.
A 65.0	308.	148.	71.	20.	14.	9.	6.	5.	5.	5.	5.
L 62.5	400.	200.	92.	24.	14.	10.	8.	7.	8.	7.	7.
60.0	479.	252.	109.	35.	14.	12.	11.	12.	12.	11.	12.
A 57.5	553.	306.	124.	54.	16.	13.	14.	15.	18.	17.	17.
N 55.0	621.	363.	136.	75.	21.	14.	16.	19.	21.	21.	21.
G 52.5	689.	419.	150.	95.	31.	18.	18.	21.	25.	26.	26.
L 50.0	750.	479.	163.	112.	51.	25.	21.	23.	26.	28.	28.
E 47.5	805.	537.	179.	127.	78.	35.	26.	26.	27.	28.	29.
47.0<<	816.	548.	182.	129.	83.	38.	27.	26.	27.	28.	29.
45.0	856.	587.	198.	139.	100.	52.	36.	29.	29.	30.	30.
42.5	909.	640.	227.	152.	118.	78.	45.	40.	34.	33.	33.
40.0	970.	703.	269.	167.	133.	102.	68.	50.	47.	46.	46.
37.5	1034.	773.	330.	186.	150.	124.	103.	77.	60.	55.	53.
35.0	1101.	850.	412.	213.	175.	153.	143.	127.	107.	93.	95.
30.0	1232.	1008.	589.	310.	259.	227.	223.	219.	217.	214.	213.
25.0	1317.	1137.	771.	483.	340.	319.	308.	302.	308.	306.	307.
20.0	1382.	1237.	945.	687.	509.	398.	383.	385.	391.	389.	391.
15.0	1423.	1312.	1097.	890.	729.	588.	505.	458.	443.	433.	436.
10.0	1446.	1371.	1238.	1099.	977.	867.	797.	734.	704.	676.	690.
5.0	1454.	1420.	1349.	1294.	1248.	1183.	1145.	1106.	1090.	1066.	1086.
0.0	1467.	1467.	1467.	1467.	1467.	1467.	1467.	1467.	1467.	1467.	1467.

CONE OF MAXIMUM CANDELA

REPORT NUMBER: RAB02640
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PAGE: 9 OF 9
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5-DEGREE ZONAL LUMEN SUMMARY

0- 5	35
5- 10	105
10- 15	174
15- 20	247
20- 25	322
25- 30	397
30- 35	471
35- 40	541
40- 45	607
45- 50	665
50- 55	704
55- 60	710
60- 65	662
65- 70	563
70- 75	445
75- 80	286
80- 85	98
85- 90	11
90- 95	1
95-100	0
100-105	0
105-110	0
110-115	0
115-120	0
120-125	0
125-130	0
130-135	0
135-140	0
140-145	0
145-150	0
150-155	0
155-160	0
160-165	0
165-170	0
170-175	0
175-180	0

10-DEGREE ZONAL LUMEN SUMMARY

0- 10	140
0- 20	560
0- 30	1278
0- 40	2290
0- 50	3562
0- 60	4976
0- 70	6201
0- 80	6932
0- 90	7041
0-100	7042
0-110	7042
0-120	7042
0-130	7042
0-140	7042
0-150	7042
0-160	7042
0-170	7042
0-180	7042

REPORT NUMBER: RAB02641
DATE: 10/27/2016
PREPARED FOR: RAB LIGHTING INC.
CATALOG NUMBER: ALEDC52Y/480, WPLEDC52Y/480 (7.5-DEGREE UPTILT - CUTOFF)

Page 1 of 4

ADDRESS: 170 LUDLOW AVE, NORTHVALE, NJ 07647

LUMINAIRE: CAST FINNED METAL HOUSING, 2-PIECE EXTRUDED METAL HEAT SINK, 2
CIRCUIT BOARDS EACH WITH 1 LED, MOLDED PLASTIC REFLECTOR WITH
SPECULAR FINISH AND 1 OPTICAL COMPARTMENT WITH 1 APERTURE PER LED,
CLEAR FLAT GLASS LENS IN CAST BROWN PAINTED METAL FRAME.

LAMP: TWO WHITE MULTI-CHIP LIGHT EMITTING DIODES (LEDs), TILTED
47.5-DEGREES FROM VERTICAL BASE-UP POSITION.

DRIVER: RD-H065-A1810-480

OBJECT OF TEST: DATA SHOWN IS ABSOLUTE FOR THE SAMPLE PROVIDED AT THE RATED INPUT
VOLTAGES (480.0 AND 347.0 VAC, 60Hz) TO THE TEST SAMPLE.

INSTRUMENTS:	GWINSTEK PROGRAMMABLE AC POWER SOURCE APS-7100	Calibration Due:
	CHROMA PROGRAMMABLE DIGITAL POWER METER MODEL 66202	N/A
	OCEAN OPTICS QE65PRO Spectroradiometer	2/26/17
	RAB 2.0 meter Diameter Integrating Sphere, 4PI Geometry	10/18/17

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
(347.0 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: RAB02641
 DATE: 10/27/2016
 PREPARED FOR: RAB LIGHTING INC.
 CATALOG NUMBER: ALEDC52Y/480, WPLEDC52Y/480 (7.5-DEGREE UPTILT - CUTOFF)

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RESULTS:

PHOTOMETRIC	
Total Integrated Flux (lumens)	7042 *
SPECTRORADIOMETRIC	
Observer	CIE 1931 2 degree
Chromaticity Ordinate x	0.4326
Chromaticity Ordinate y	0.4059
Observer	CIE 1976 2 degree
Chromaticity Ordinate u'	0.2470
Chromaticity Ordinate v'	0.5214
Correlated Color Temp CCT (K)	3089
ANSI C78.377-2008 Duv	0.001
Total Radiant Flux (milliWatts)	19860 *
ELECTRICAL	
Input Voltage (Volts AC)	480.0
Input Current (Amps AC)	0.131
Input Power (Watts)	57.8
Input Power Factor (%)	91.8
Input Current THD (%)	14.6
Input Voltage THD (%)	0.2
EFFICACY (Lumens/Watt)	
	121.8
ELECTRICAL AT MAX NONIMAL INPUT	
Input Voltage (Volts AC)	347.0
Input Current (Amps AC)	0.167
Input Power (Watts)	56.5
Input Power Factor (%)	97.5
Input Current THD (%)	8.6
Input Voltage THD (%)	0.2
Off-State Power (Watts)	0.0

COLOR RENDERING INDICES	CRI
Ra (Average 1-8)	71
R1 Light greyish red	67
R2 Dark greyish yellow	80
R3 Strong yellowish green	91
R4 Moderate yellowish green	67
R5 Light bluish green	66
R6 Light blue	72
R7 Light violet	79
R8 Light reddish purple	45
R9 Strong red	-34
R10 Strong yellow	53
R11 Strong green	61
R12 Strong blue	42
R13 Light yellowish pink (skin)	69
R14 Moderate olive green (leaf)	95

*NOTE:

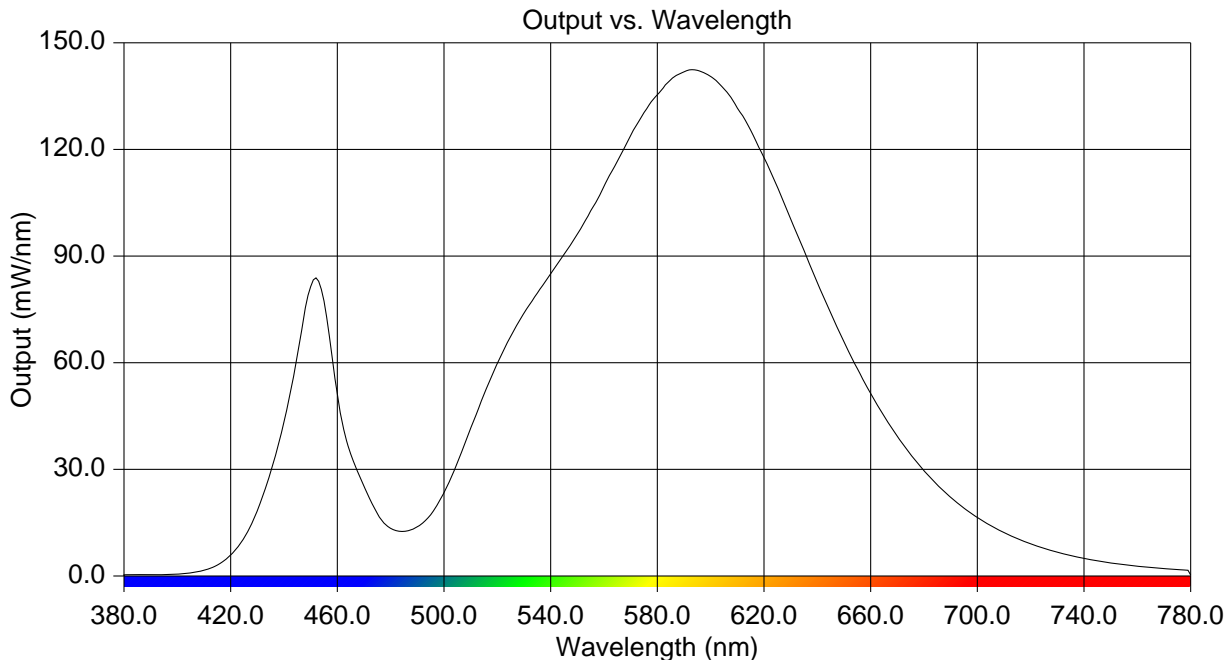
Proper calibration of integrating spheres for measuring total flux output of non-directional samples will produce reliable, repeatable results within the calibration tolerances of the equipment used. However, measurement of test samples with significant self absorption and/or directional output, even 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: RAB02641
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RESULTS:

Wavelength	mW per nm	Wavelength	mW per nm	Wavelength	mW per nm
380	0.322	515	51.128	650	65.714
385	0.334	520	59.676	655	58.347
390	0.353	525	67.387	660	51.325
395	0.413	530	73.866	665	45.008
400	0.544	535	79.558	670	39.285
405	0.869	540	85.082	675	34.219
410	1.577	545	90.499	680	29.615
415	3.071	550	96.188	685	25.647
420	5.902	555	102.694	690	22.100
425	10.643	560	109.583	695	19.080
430	18.352	565	116.656	700	16.465
435	29.289	570	123.955	705	14.192
440	43.228	575	130.327	710	12.210
445	62.157	580	135.317	715	10.494
450	81.384	585	139.552	720	9.055
455	77.355	590	141.766	725	7.759
460	51.008	595	142.221	730	6.695
465	34.335	600	140.490	735	5.735
470	25.243	605	136.956	740	4.944
475	17.582	610	131.610	745	4.252
480	13.361	615	125.375	750	3.704
485	12.579	620	117.706	755	3.193
490	13.827	625	109.450	760	2.755
495	17.209	630	100.531	765	2.374
500	23.472	635	91.584	770	2.080
505	31.846	640	82.508	775	1.803
510	41.524	645	74.068	780	0.273



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CIE Chromaticity Diagram

