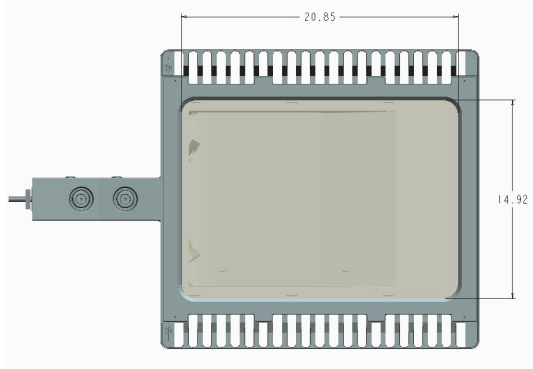


ISOFOOTCANDLE LINES OF HORIZONTAL ILLUMINATION

Values based on 35 foot mounting height.



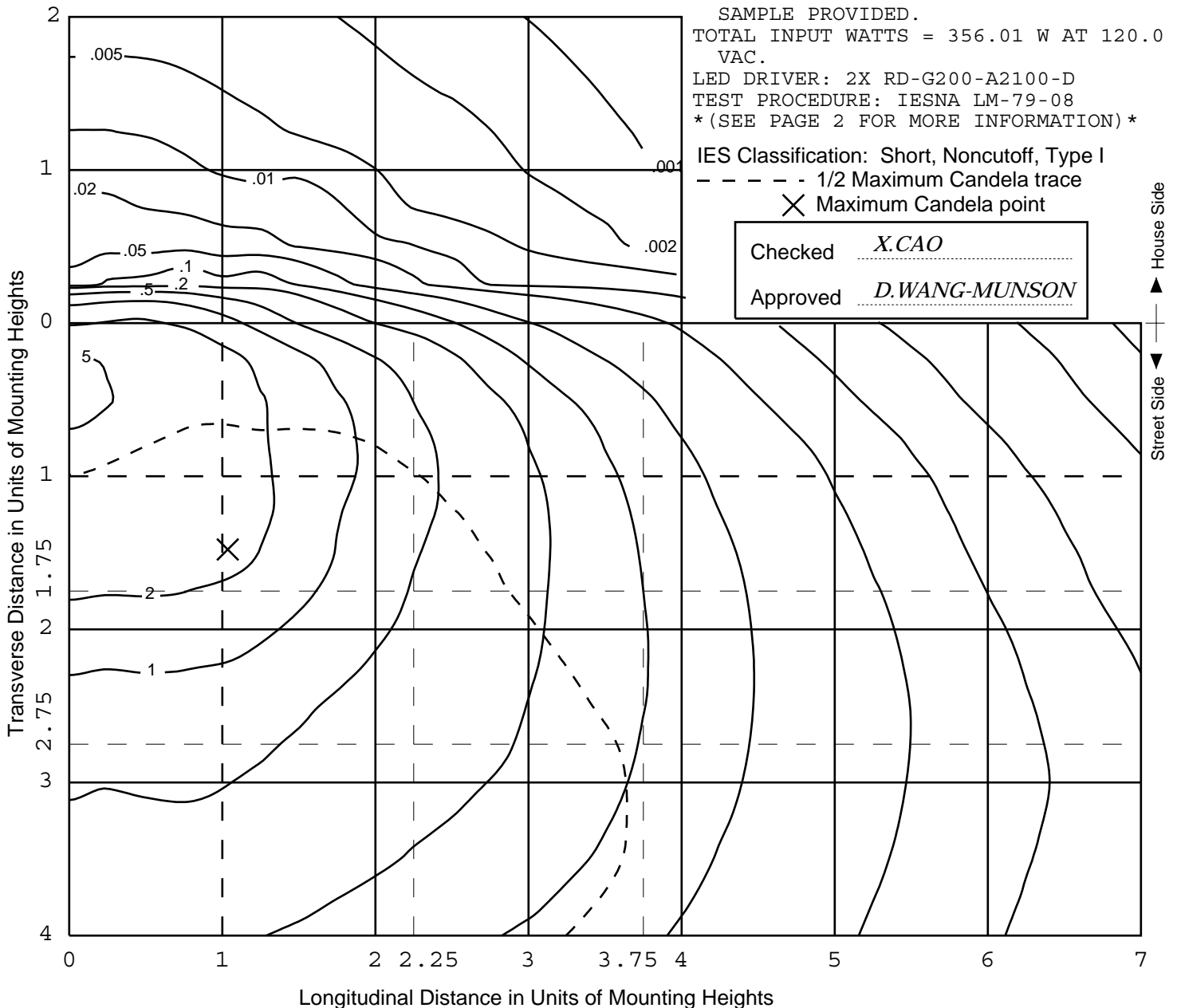
REPORT NUMBER: RAB01581
 ISSUE DATE: 01/21/16 PAGE: 1 OF 9
 DATE SAMPLE TESTED: 01/21/16
 PREPARED FOR: RAB LIGHTING INC.
 CATALOG NUMBER: ALED4T360N/D10 -
 ALED4T360SFN/D10 - WPLED4T360N/D10 -
 WPLED4T360NFX/D10 (TYPE IV)
 LUMINAIRE: CAST FINNED METAL HOUSING, 4
 CHIP ON BOARD LIGHT EMITTING DIODES,
 MOLDED PLASTIC REFLECTOR WITH
 SPECULAR FINISH, CLEAR GLASS LENS IN
 CAST BRONZE PAINTED METAL FRAME.
 LAMPS: FOUR WHITE LIGHT EMITTING DIODES
 (LEDs)

NOTE: DATA SHOWN IS ABSOLUTE FOR THE
 SAMPLE PROVIDED.
 TOTAL INPUT WATTS = 356.01 W AT 120.0
 VAC.

LED DRIVER: 2X RD-G200-A2100-D
 TEST PROCEDURE: IESNA LM-79-08
 (SEE PAGE 2 FOR MORE INFORMATION)

IES Classification: Short, Noncutoff, Type I

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



REPORT NUMBER: RAB01581
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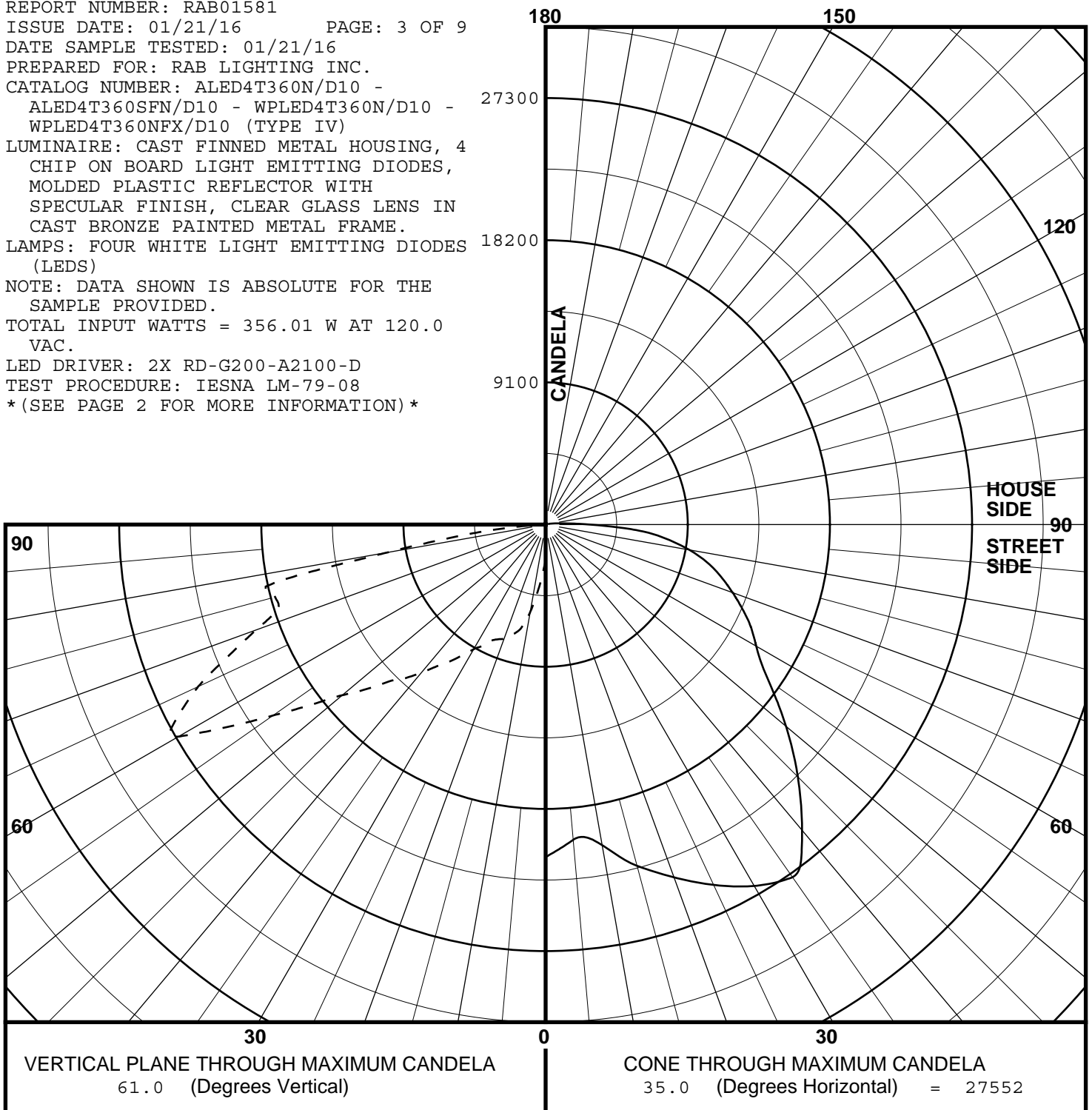
ADDITIONAL INFORMATION

TEST DISTANCE : 28.25 FEET
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: RAB01581
ISSUE DATE: 01/21/16 PAGE: 3 OF 9
DATE SAMPLE TESTED: 01/21/16
PREPARED FOR: RAB LIGHTING INC.
CATALOG NUMBER: ALED4T360N/D10 -
ALED4T360SFN/D10 - WPLED4T360N/D10 -
WPLED4T360NFX/D10 (TYPE IV)
LUMINAIRE: CAST FINNED METAL HOUSING, 4
CHIP ON BOARD LIGHT EMITTING DIODES,
MOLDED PLASTIC REFLECTOR WITH
SPECULAR FINISH, CLEAR GLASS LENS IN
CAST BRONZE PAINTED METAL FRAME.
LAMPS: FOUR WHITE LIGHT EMITTING DIODES (LEDS)
NOTE: DATA SHOWN IS ABSOLUTE FOR THE
SAMPLE PROVIDED.
TOTAL INPUT WATTS = 356.01 W AT 120.0
VAC.
LED DRIVER: 2X RD-G200-A2100-D
TEST PROCEDURE: IESNA LM-79-08
(SEE PAGE 2 FOR MORE INFORMATION)

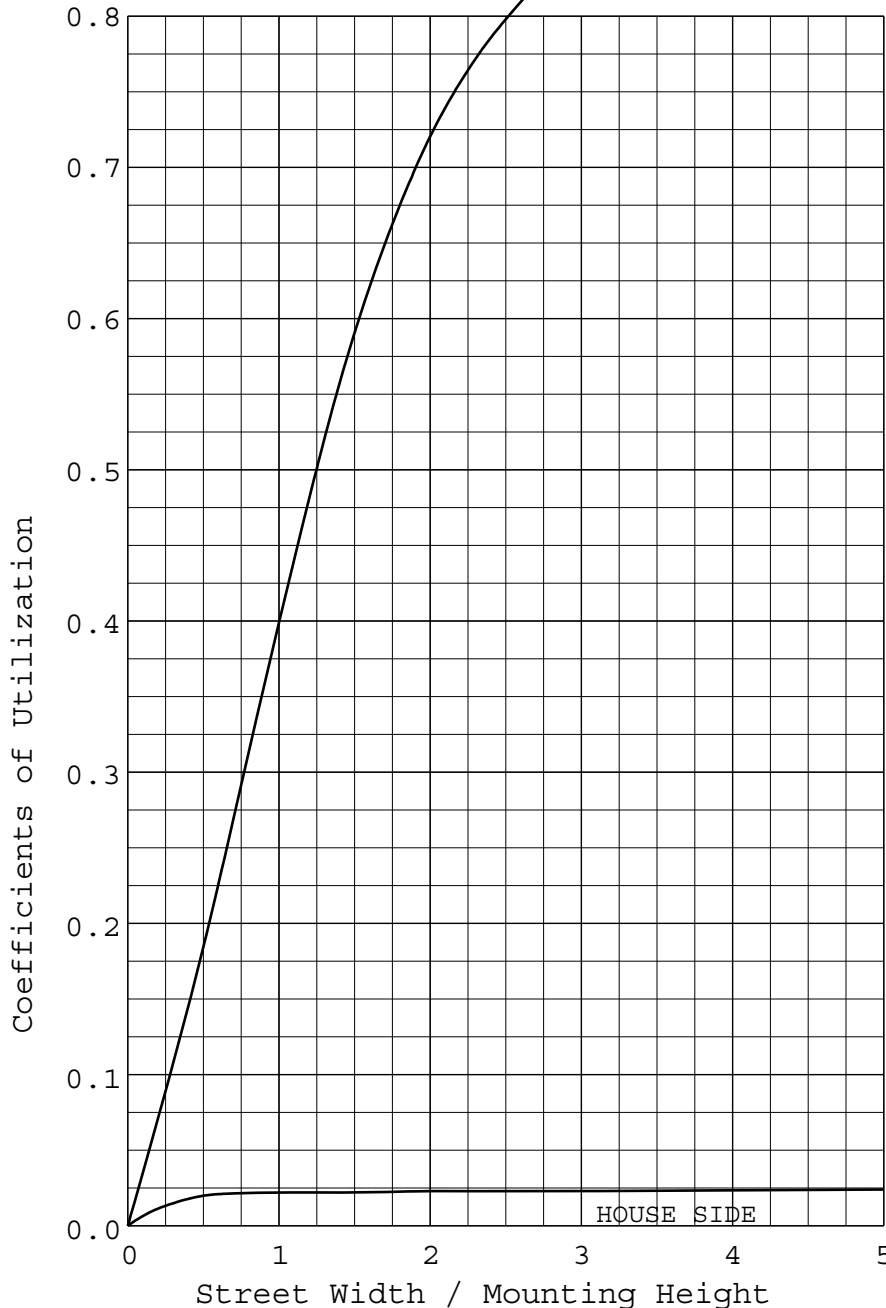


STREET SIDE

REPORT NUMBER: RAB01581
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PREPARED FOR: RAB LIGHTING INC.

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DATE SAMPLE TESTED: 01/21/16

COEFFICIENTS OF UTILIZATION AND FLUX DISTRIBUTION



	LUMENS	PERCENT OF FIXTURE
DOWNWARD STREET SIDE	35491.	97.5
DOWNWARD HOUSE SIDE	897.	2.5
DOWNWARD TOTAL	36388.	100.0
UPWARD STREET SIDE	0.	0.0
UPWARD HOUSE SIDE	0.	0.0
UPWARD TOTAL	0.	0.0
TOTAL FLUX	36388.	100.0

TOTAL INPUT WATTS = 356
EFFICACY = 102.2 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: RAB01581
 ISSUE DATE: 01/21/16
 PREPARED FOR: RAB LIGHTING INC.

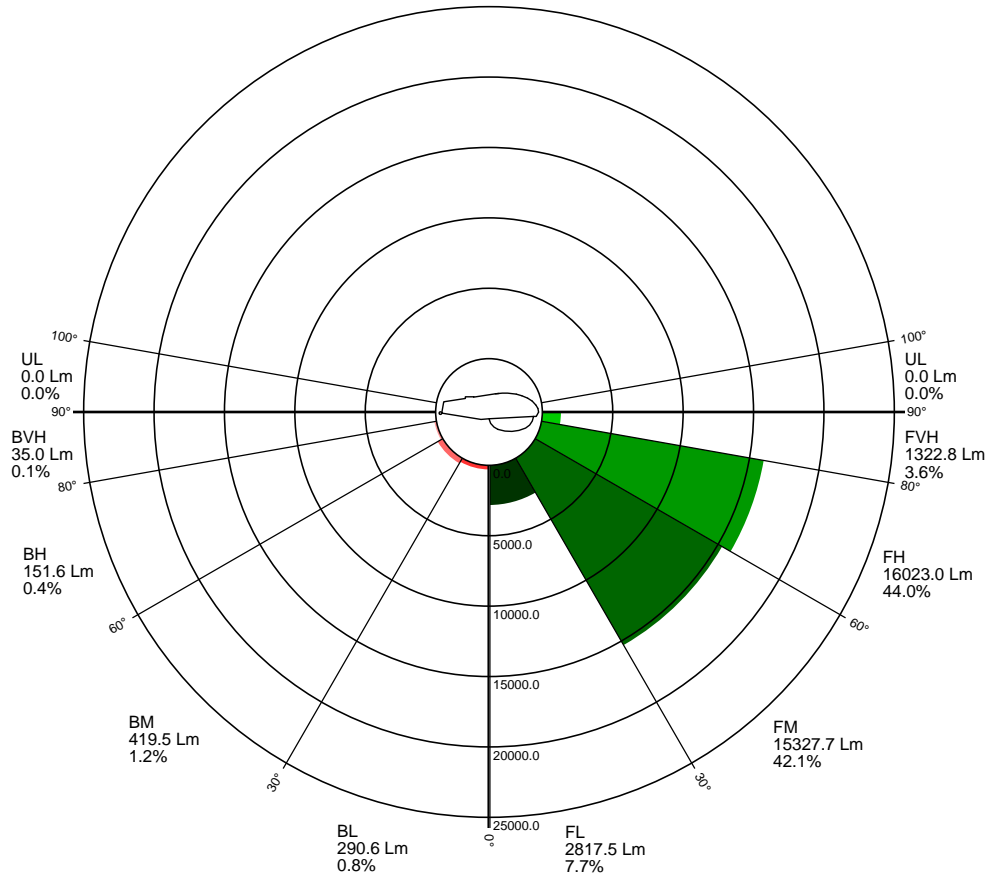
PAGE: 5 OF 9
 DATE SAMPLE TESTED: 01/21/16

BUG Rating:				B1 U0 G5		
Zonal Summary		Lumens	% of Fixture	Zone Ratings		
				B	U	G
Forward		35491	97.5			
FL	(0° - 30°)	2817.5	7.7			
FM	(30° - 60°)	15327.7	42.1			
FH	(60° - 80°)	16023.0	44.0			G5
FVH	(80° - 90°)	1322.8	3.6			G5
Backward		897	2.5			
BL	(0° - 30°)	290.6	0.8	B1		
BM	(30° - 60°)	419.5	1.2	B1		
BH	(60° - 80°)	151.6	0.4	B1		G1
BVH	(80° - 90°)	35.0	0.1			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		36388	100.0			

Zonal Lumen Summary

(Linear scale)

UH
0.0 Lm
0.0%

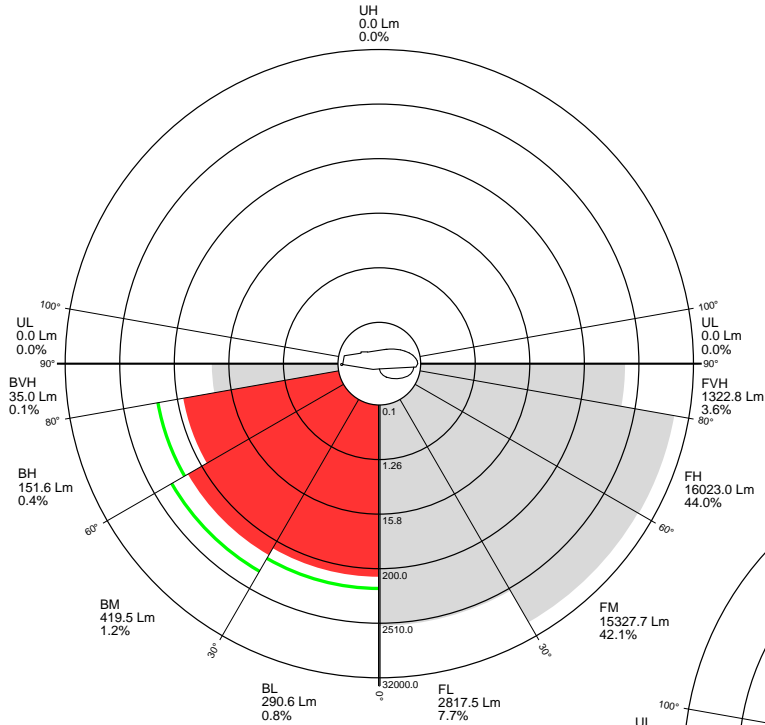


REPORT NUMBER: RAB01581
 ISSUE DATE: 01/21/16
 PREPARED FOR: RAB LIGHTING INC.

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 DATE SAMPLE TESTED: 01/21/16

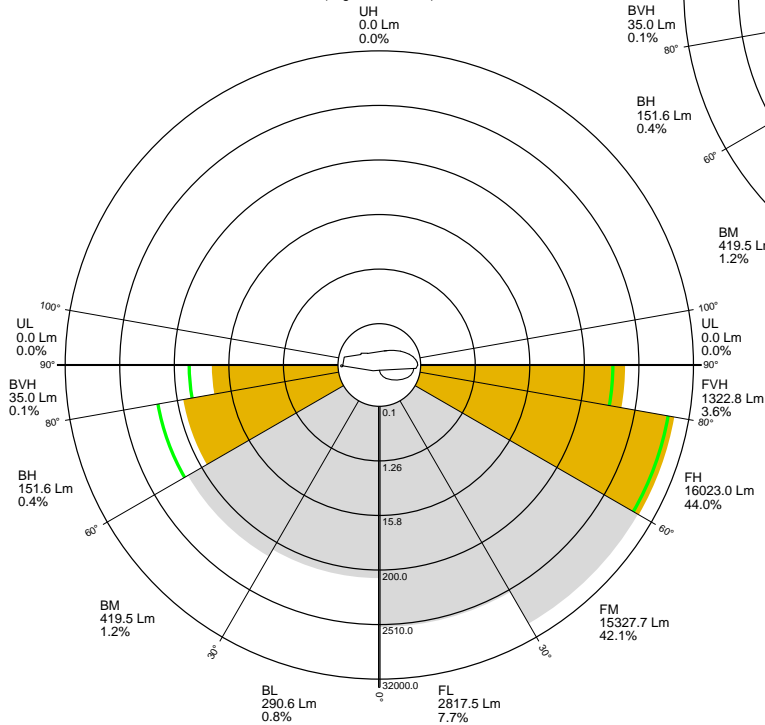
Backlight Rating Details

(Logarithmic scale)



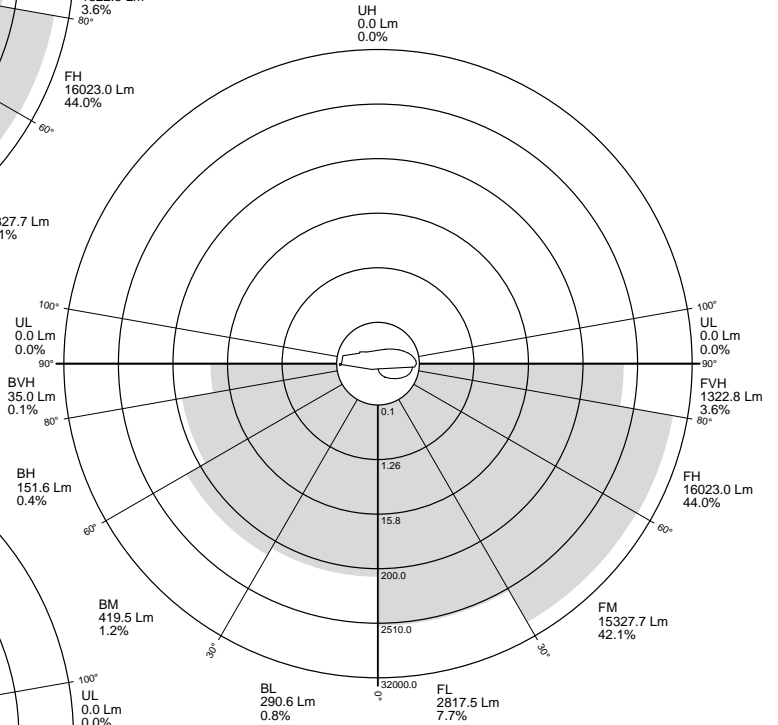
Glare Rating Details

(Logarithmic scale)



Uplight Rating Details

(Logarithmic scale)



[illegible]

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 ISSUE DATE: 01/21/16
 PREPARED FOR: RAB LIGHTING INC.

PAGE: 8 OF 9
 DATE SAMPLE TESTED: 01/21/16

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	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
87.5	114.	66.	67.	69.	70.	71.	71.	71.	69.	68.	68.
85.0	113.	73.	70.	70.	71.	70.	69.	69.	68.	67.	67.
82.5	186.	83.	72.	69.	68.	68.	66.	65.	64.	63.	63.
V 80.0	810.	94.	75.	69.	66.	65.	63.	62.	60.	59.	59.
E 77.5	1336.	113.	80.	70.	64.	62.	60.	58.	57.	56.	55.
R 75.0	1688.	150.	84.	71.	62.	59.	58.	56.	55.	54.	53.
T 72.5	1873.	232.	91.	76.	61.	58.	56.	55.	53.	51.	51.
I 70.0	2158.	316.	105.	85.	61.	57.	55.	54.	53.	50.	50.
C 67.5	2600.	403.	110.	83.	62.	57.	55.	54.	52.	50.	49.
A 65.0	2623.	542.	120.	104.	63.	57.	54.	54.	53.	50.	49.
L 62.5	2785.	698.	132.	129.	65.	58.	55.	54.	53.	50.	50.
61.0<<	2843.	826.	148.	158.	67.	58.	55.	54.	53.	50.	50.
A 60.0	2917.	891.	147.	223.	69.	58.	55.	54.	53.	50.	49.
N 57.5	3344.	1079.	161.	142.	70.	58.	55.	55.	53.	50.	50.
G 55.0	3577.	1360.	184.	127.	70.	59.	56.	55.	54.	51.	50.
L 52.5	3836.	1533.	212.	112.	74.	59.	56.	55.	54.	51.	51.
E 50.0	4092.	1649.	267.	117.	77.	62.	56.	56.	54.	51.	51.
47.5	4253.	1765.	288.	117.	84.	62.	58.	56.	55.	52.	52.
45.0	4314.	1879.	290.	119.	84.	65.	57.	57.	55.	53.	53.
42.5	4234.	1997.	326.	140.	104.	66.	59.	58.	56.	54.	54.
40.0	4200.	2111.	399.	149.	145.	66.	61.	59.	57.	55.	55.
37.5	4267.	2357.	576.	162.	174.	69.	62.	60.	58.	57.	57.
35.0	4353.	2554.	747.	163.	125.	80.	63.	61.	59.	58.	58.
30.0	4004.	3141.	888.	224.	123.	92.	72.	66.	61.	60.	60.
25.0	3455.	2615.	1066.	359.	147.	95.	83.	74.	67.	64.	64.
20.0	2984.	2449.	1243.	586.	255.	150.	102.	78.	71.	71.	71.
15.0	2818.	2431.	1581.	873.	499.	302.	186.	124.	87.	78.	79.
10.0	2675.	2436.	1984.	1386.	897.	650.	460.	357.	268.	223.	229.
5.0	2423.	2285.	2047.	1869.	1631.	1389.	1210.	1011.	946.	885.	913.
0.0	2227.	2227.	2227.	2227.	2227.	2227.	2227.	2227.	2227.	2227.	2227.

CONE OF MAXIMUM CANDELA

REPORT NUMBER: RAB01581
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 DATE SAMPLE TESTED: 01/21/16

5-DEGREE ZONAL LUMEN SUMMARY

0- 5	56
5- 10	193
10- 15	376
15- 20	577
20- 25	803
25- 30	1104
30- 35	1444
35- 40	1800
40- 45	2185
45- 50	2707
50- 55	3396
55- 60	4216
60- 65	4531
65- 70	4256
70- 75	4115
75- 80	3273
80- 85	1204
85- 90	154
90- 95	0
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	249
0- 20	1201
0- 30	3108
0- 40	6353
0- 50	11244
0- 60	18855
0- 70	27642
0- 80	35030
0- 90	36388
0-100	36388
0-110	36388
0-120	36388
0-130	36388
0-140	36388
0-150	36388
0-160	36388
0-170	36388
0-180	36388

REPORT NUMBER: RAB01584
DATE: 1/21/2016
PREPARED FOR: RAB LIGHTING INC.
CATALOG NUMBER: ALED4T360N/D10 - ALED4T360SFN/D10 - WPLED4T360N/D10 - WPLED4T360NFX/D10 (TYPE IV)
ADDRESS: 170 LUDLOW AVE, NORTHVALE, NJ 07647
LUMINAIRE: CAST FINNED METAL HOUSING, 4 CHIP ON BOARD LIGHT EMITTING DIODES, MOLDED PLASTIC REFLECTOR WITH SPECULAR FINISH, CLEAR GLASS LENS IN CAST BRONZE PAINTED METAL FRAME.
LAMP: FOUR WHITE LIGHT EMITTING DIODES (LEDs)
DRIVER: 2X RD-G200-A2100-D
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: GWINSTEK PROGRAMMABLE AC POWER SOURCE APS-7100
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
1/5/17
1/5/17
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: RAB01584
 DATE: 1/21/2016
 PREPARED FOR: RAB LIGHTING INC.
 CATALOG NUMBER: ALED4T360N/D10 - ALED4T360SFN/D10 - WPLED4T360N/D10 - WPLED4T360NFX/D10 (TYPE IV)

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RESULTS:

PHOTOMETRIC	
Total Integrated Flux (lumens)	36388 *
SPECTRORADIOMETRIC	
Observer	CIE 1931 2 degree
Chromaticity Ordinate x	0.3754
Chromaticity Ordinate y	0.3824
Observer	CIE 1976 2 degree
Chromaticity Ordinate u'	0.2196
Chromaticity Ordinate v'	0.5033
Correlated Color Temp CCT (K)	4178
ANSI C78.377-2008 Duv	0.004
Total Radiant Flux (milliWatts)	103622 *
ELECTRICAL	
Input Voltage (Volts AC)	120.0
Input Current (Amps AC)	2.97
Input Power (Watts)	356.0
Input Power Factor (%)	99.8
Input Current THD (%)	5.7
Input Voltage THD (%)	0.6
EFFICACY (Lumens/Watt)	
	102.2
ELECTRICAL AT MAX NONIMAL INPUT	
Input Voltage (Volts AC)	277.0
Input Current (Amps AC)	1.31
Input Power (Watts)	347.1
Input Power Factor (%)	95.7
Input Current THD (%)	8.7
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	76
R3 Strong yellowish green	84
R4 Moderate yellowish green	70
R5 Light bluish green	67
R6 Light blue	67
R7 Light violet	81
R8 Light reddish purple	51
R9 Strong red	-37
R10 Strong yellow	44
R11 Strong green	65
R12 Strong blue	40
R13 Light yellowish pink (skin)	68
R14 Moderate olive green (leaf)	91

*NOTE:

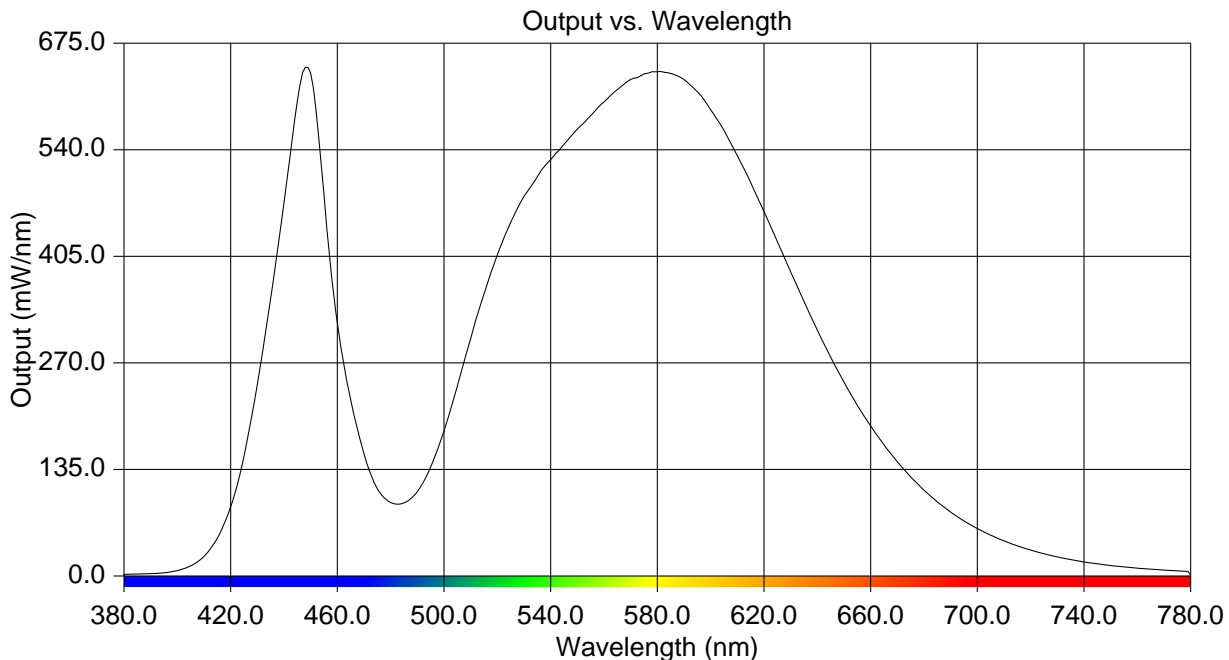
Proper calibration of integrating spheres for measuring total flux output of non-directional samples will produce reliable, repeatable results within the calibration tolerances of the equipment used. However, measurement of test samples with significant self absorption and/or directional output, even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

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RESULTS:

Wavelength	mW per nm	Wavelength	mW per nm	Wavelength	mW per nm
380	1.903	515	356.561	650	245.815
385	2.308	520	407.223	655	215.885
390	2.898	525	447.744	660	190.045
395	4.022	530	480.559	665	165.645
400	6.861	535	505.340	670	144.519
405	12.672	540	526.951	675	125.501
410	25.102	545	546.478	680	108.299
415	47.713	550	565.626	685	93.979
420	87.311	555	582.881	690	80.933
425	151.347	560	599.918	695	69.654
430	242.476	565	615.464	700	59.872
435	350.307	570	628.471	705	51.503
440	470.757	575	635.494	710	44.472
445	601.252	580	638.153	715	38.082
450	636.334	585	636.087	720	32.822
455	482.767	590	628.400	725	28.021
460	318.813	595	612.858	730	24.101
465	223.086	600	590.096	735	20.697
470	153.936	605	564.209	740	17.852
475	110.695	610	532.046	745	15.349
480	92.871	615	497.965	750	13.309
485	92.444	620	461.239	755	11.424
490	106.655	625	424.034	760	9.856
495	137.583	630	384.375	765	8.571
500	184.019	635	347.044	770	7.490
505	240.514	640	311.261	775	6.495
510	300.356	645	277.131	780	0.984



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CIE Chromaticity Diagram

