



**itl boulder**  
THE LIGHT CENTER OF THE INDUSTRY SINCE 1955

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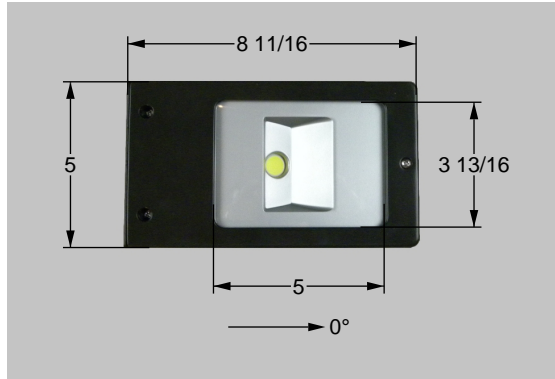
**NVLAP**  
NVLAP LAB CODE: 200925-0

INDEPENDENT TESTING LABORATORIES, INC.

4066 CAMELOT CIRCLE, LONGMONT, CO 80504 USA

## ISOFOOTCANDLE LINES OF HORIZONTAL ILLUMINATION

Values based on 15 foot mounting height.



REPORT NUMBER: ITL82637

ISSUE DATE: 09/03/14

PAGE: 1 OF 8

PREPARED FOR: RAB LIGHTING, INC.

CATALOG NUMBER: WPLED10 (WALLPACK) -  
ALED10 (AREA LIGHTER)

LUMINAIRE: CAST METAL HOUSING, ONE  
CIRCUIT BOARD WITH ONE LED, MOLDED  
PLASTIC REFLECTOR WITH SEMI-DIFFUSE  
FINISH, CLEAR FLAT GLASS LENS IN CAST  
BROWN PAINTED METAL FRAME.

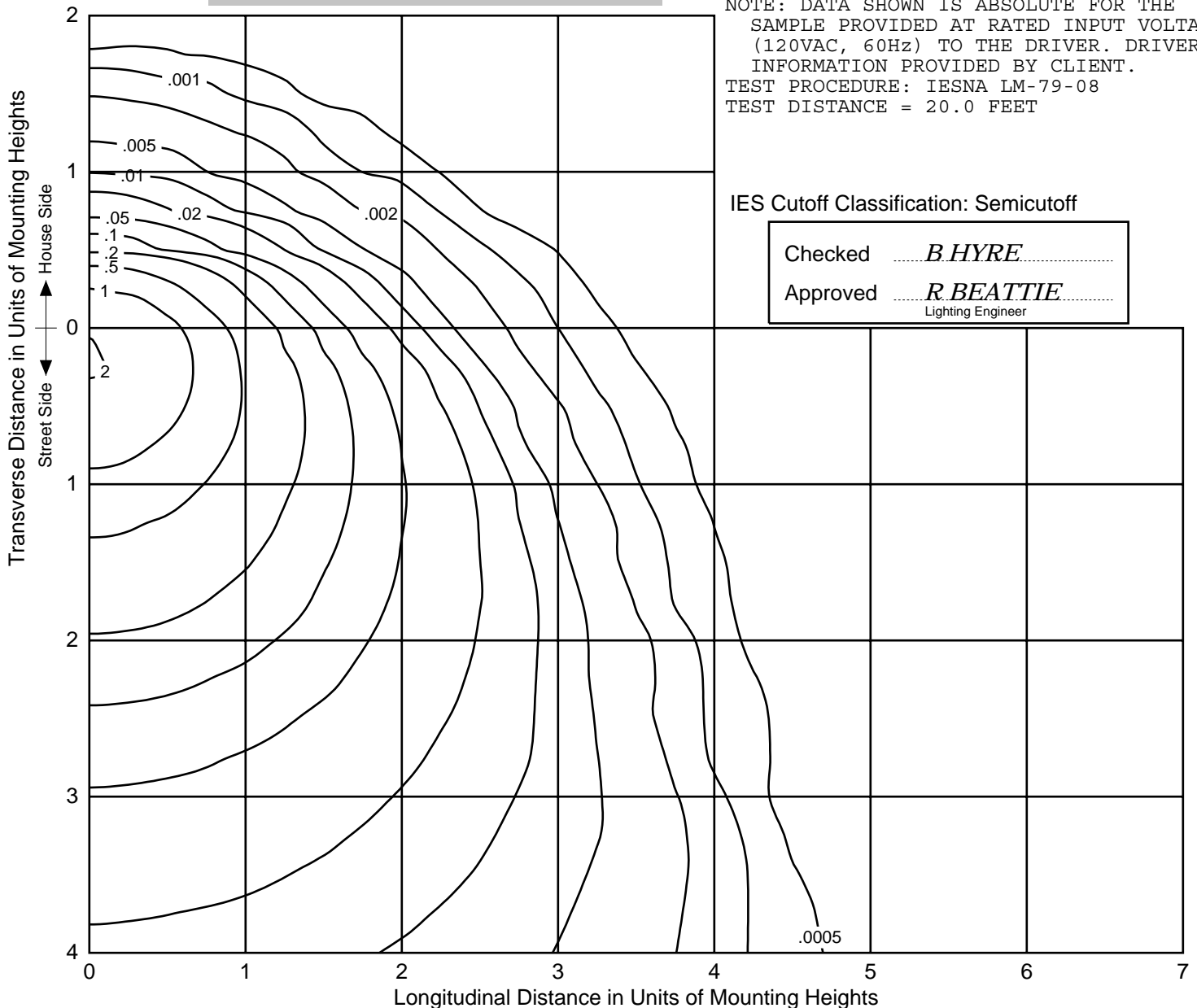
LAMP: ONE WHITE MULTI-CHIP LIGHT  
EMITTING DIODE (LED), TILTED 30-  
DEGREES FROM VERTICAL BASE-UP  
POSITION.

TOTAL INPUT WATTS = 11.8 AT 120.0 VOLTS  
LED DRIVER: RAB LIGHTING RD113-36-C0280

NOTE: DATA SHOWN IS ABSOLUTE FOR THE  
SAMPLE PROVIDED AT RATED INPUT VOLTAGE  
(120VAC, 60Hz) TO THE DRIVER. DRIVER  
INFORMATION PROVIDED BY CLIENT.

TEST PROCEDURE: IESNA LM-79-08

TEST DISTANCE = 20.0 FEET



IES Cutoff Classification: Semicutoff

Checked B. HYRE

Approved R. BEATTIE  
Lighting Engineer

REPORT NUMBER: ITL82637

ISSUE DATE: 09/03/14 PAGE: 2 OF 8

PREPARED FOR: RAB LIGHTING, INC.

CATALOG NUMBER: WPLED10 (WALLPACK) -

ALED10 (AREA LIGHTER)

LUMINAIRE: CAST METAL HOUSING, ONE  
CIRCUIT BOARD WITH ONE LED, MOLDED  
PLASTIC REFLECTOR WITH SEMI-DIFFUSE  
FINISH, CLEAR FLAT GLASS LENS IN CAST  
BROWN PAINTED METAL FRAME.

LAMP: ONE WHITE MULTI-CHIP LIGHT  
EMITTING DIODE (LED), TILTED 30-  
DEGREES FROM VERTICAL BASE-UP  
POSITION.

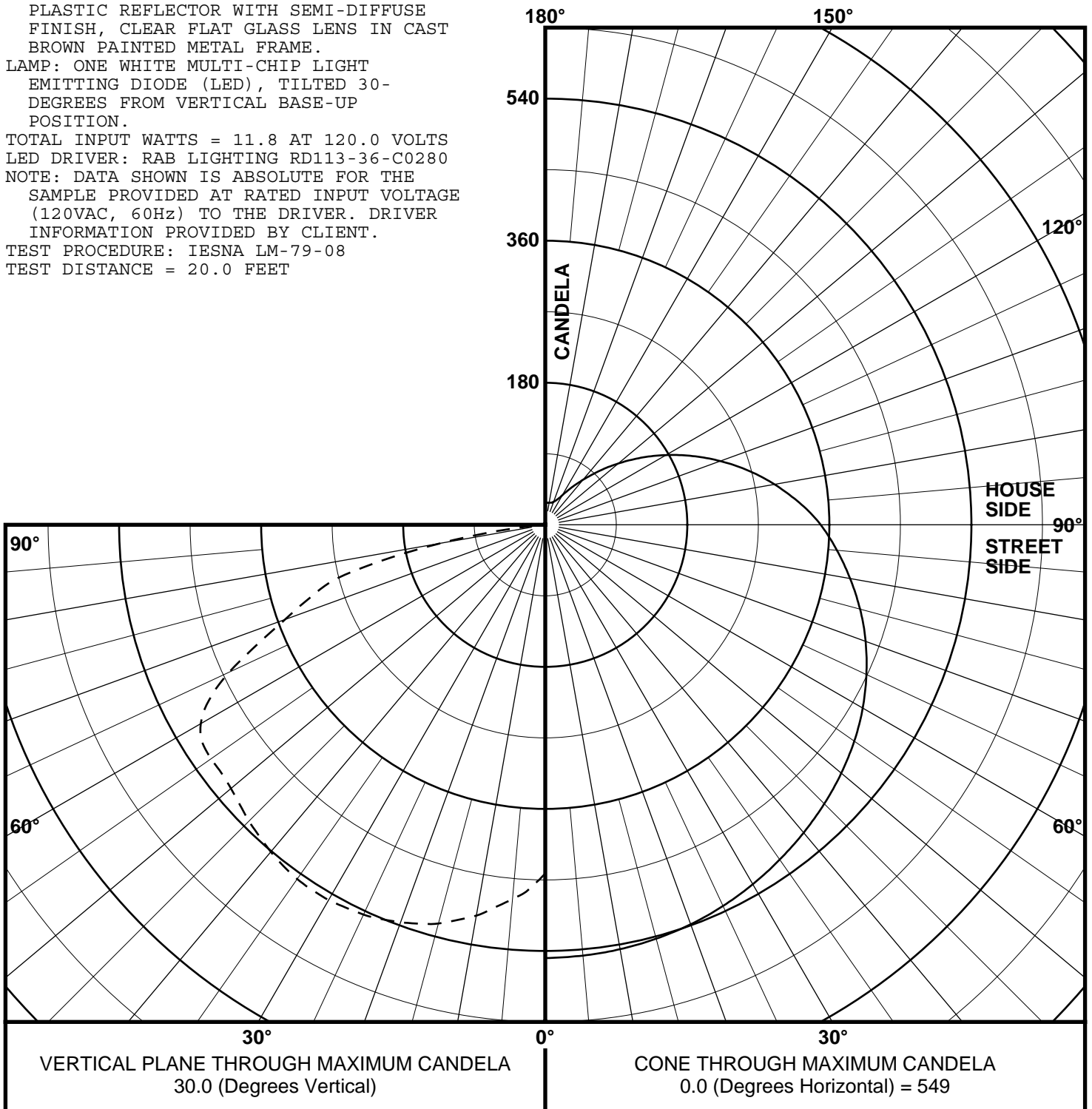
TOTAL INPUT WATTS = 11.8 AT 120.0 VOLTS  
LED DRIVER: RAB LIGHTING RD113-36-C0280

NOTE: DATA SHOWN IS ABSOLUTE FOR THE  
SAMPLE PROVIDED AT RATED INPUT VOLTAGE  
(120VAC, 60Hz) TO THE DRIVER. DRIVER  
INFORMATION PROVIDED BY CLIENT.

TEST PROCEDURE: IESNA LM-79-08

TEST DISTANCE = 20.0 FEET

MAXIMUM PLANE AND MAXIMUM CONE PLOTS OF CANDELA

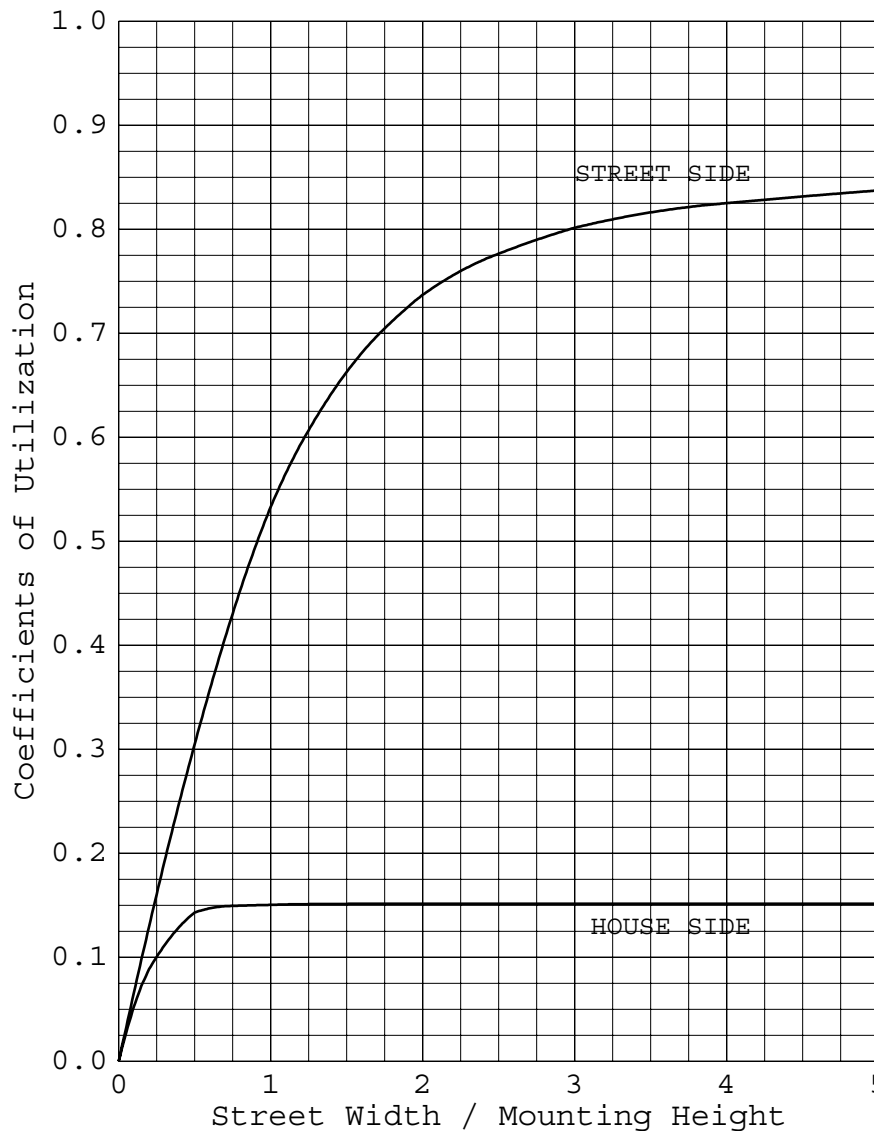




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PAGE: 3 OF 8

COEFFICIENTS OF UTILIZATION AND FLUX DISTRIBUTION



	LUMENS	PERCENT OF FIXTURE
DOWNWARD STREET SIDE	901	84.8
DOWNWARD HOUSE SIDE	162	15.2
DOWNWARD TOTAL	1063	100.0
UPWARD STREET SIDE	0	0.0
UPWARD HOUSE SIDE	0	0.0
UPWARD TOTAL	0	0.0
TOTAL FLUX	1063	100.0

EFFICACY = 90.1 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.



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INDEPENDENT TESTING LABORATORIES, INC.  
4066 CAMELOT CIRCLE, LONGMONT, CO 80504 USA

REPORT NUMBER: ITL82637  
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PAGE: 4 OF 8

# FLUX DISTRIBUTION BY SOLID ANGLE

(PER IESNA TM-15-11, LUMINAIRE CLASSIFICATION  
SYSTEM FOR OUTDOOR LUMINAIRES)

	LUMENS	PERCENT OF FIXTURE	BUG ZONE RATINGS
FORWARD LIGHT	901.	84.8	
FL ( 0- 30)	204.5	19.2	
FM ( 30- 60)	475.3	44.7	
FH ( 60- 80)	211.4	19.9	G0
FVH( 80- 90)	10.3	1.0	G1
BACK LIGHT	162.	15.2	
BL ( 0- 30)	103.7	9.7	B0
BM ( 30- 60)	55.9	5.3	B0
BH ( 60- 80)	2.2	0.2	B0 G0
BVH( 80- 90)	0.0	0.0	G0
UPLIGHT	0.	0.0	
UL ( 90-100)	0.1	0.0	U1
UH (100-180)	0.0	0.0	U0
TRAPPED LIGHT	0.	0.0	
TOTAL FLUX	1063.	100.0	

BACKLIGHT, UPLIGHT, AND GLARE (BUG) RATINGS  
(PER ADDENDUM A FOR IESNA TM-15-11)

BUG RATING: B0 U1 G1



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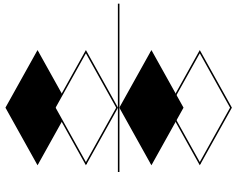
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PAGE: 5 OF 8

# 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
	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.
	92.5	1.	1.	1.	0.	0.	0.	0.	0.	0.	0.	0.
	90.0	3.	3.	2.	2.	0.	0.	0.	0.	0.	0.	0.
	87.5	9.	8.	8.	7.	4.	1.	0.	0.	0.	0.	0.
	85.0	17.	16.	16.	19.	13.	5.	2.	1.	0.	0.	0.
V	82.5	62.	60.	63.	68.	63.	13.	5.	3.	1.	0.	0.
E	80.0	134.	132.	135.	137.	130.	56.	11.	5.	3.	1.	1.
R	77.5	216.	212.	212.	204.	180.	127.	32.	11.	5.	3.	2.
T	75.0	283.	279.	270.	247.	213.	169.	85.	23.	10.	5.	3.
I	72.5	316.	312.	304.	282.	250.	202.	143.	60.	17.	8.	6.
C	70.0	351.	348.	341.	322.	296.	238.	176.	110.	39.	13.	9.
A	67.5	394.	391.	387.	369.	339.	272.	207.	145.	73.	26.	14.
L	65.0	442.	440.	433.	411.	374.	302.	236.	173.	106.	47.	25.
	62.5	480.	479.	468.	442.	398.	328.	263.	201.	133.	70.	42.
A	60.0	504.	502.	489.	460.	413.	351.	290.	229.	160.	94.	63.
N	57.5	515.	513.	498.	468.	426.	373.	315.	255.	187.	120.	86.
G	55.0	517.	515.	501.	475.	439.	393.	339.	280.	214.	146.	112.
L	52.5	517.	516.	505.	483.	453.	411.	361.	304.	240.	173.	138.
E	50.0	520.	519.	510.	492.	465.	427.	381.	327.	265.	199.	165.
	47.5	525.	524.	516.	500.	476.	442.	399.	349.	288.	224.	191.
	45.0	531.	530.	522.	508.	486.	456.	416.	369.	310.	248.	216.
	42.5	536.	535.	528.	515.	495.	467.	431.	386.	331.	272.	240.
	40.0	541.	540.	534.	521.	502.	476.	443.	403.	353.	295.	265.
	37.5	545.	544.	538.	526.	508.	484.	455.	417.	371.	316.	290.
	35.0	548.	547.	541.	529.	513.	491.	464.	430.	387.	336.	311.
	32.5	549.	548.	543.	531.	516.	496.	472.	440.	401.	355.	331.
	30.0<<	549.	548.	543.	533.	518.	500.	478.	449.	413.	371.	349.
	25.0	545.	544.	540.	531.	519.	504.	485.	461.	432.	398.	380.
	20.0	536.	536.	532.	525.	515.	503.	486.	467.	444.	418.	404.
	15.0	523.	522.	520.	514.	506.	495.	482.	468.	451.	432.	421.
	10.0	503.	502.	500.	496.	490.	483.	474.	464.	453.	440.	433.
	5.0	476.	476.	475.	473.	470.	466.	461.	456.	449.	443.	439.
	0.0	442.	442.	442.	442.	442.	442.	442.	442.	442.	442.	442.
		PLANE OF MAXIMUM CANDELA										
		CONE OF MAXIMUM CANDELA										



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PAGE: 6 OF 8

# CANDELA TABULATION

	HOUSE SIDE					LATERAL ANGLE				
	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.
175.0	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
165.0	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
155.0	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
145.0	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
135.0	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
125.0	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
115.0	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
105.0	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
95.0	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
92.5	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
90.0	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
87.5	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
85.0	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
V 82.5	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
E 80.0	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
R 77.5	1.	0.	0.	0.	0.	0.	0.	0.	0.	0.
T 75.0	2.	1.	0.	0.	0.	0.	0.	0.	0.	0.
I 72.5	4.	2.	1.	0.	0.	0.	0.	0.	0.	0.
C 70.0	7.	2.	1.	1.	0.	0.	0.	0.	0.	0.
A 67.5	10.	4.	2.	1.	1.	1.	0.	0.	0.	0.
L 65.0	14.	7.	3.	2.	1.	1.	1.	1.	1.	0.
62.5	23.	10.	3.	2.	2.	1.	1.	1.	1.	1.
A 60.0	38.	12.	5.	3.	3.	2.	2.	1.	1.	1.
N 57.5	58.	17.	8.	4.	3.	3.	2.	2.	2.	2.
G 55.0	81.	28.	11.	5.	4.	3.	3.	3.	3.	3.
L 52.5	106.	45.	14.	7.	5.	4.	4.	3.	3.	3.
E 50.0	131.	65.	19.	11.	6.	5.	5.	4.	4.	4.
47.5	159.	89.	32.	15.	8.	6.	6.	5.	5.	5.
45.0	184.	113.	50.	18.	12.	8.	7.	6.	6.	6.
42.5	209.	139.	72.	25.	17.	11.	8.	7.	7.	7.
40.0	234.	165.	97.	40.	21.	16.	11.	9.	8.	8.
37.5	258.	191.	123.	63.	26.	21.	17.	13.	12.	12.
35.0	281.	217.	150.	90.	41.	25.	22.	20.	18.	17.
32.5	303.	242.	178.	118.	66.	34.	27.	25.	24.	24.
30.0<<	323.	266.	206.	148.	96.	57.	35.	29.	28.	28.
25.0	359.	311.	259.	210.	162.	124.	94.	73.	66.	63.
20.0	387.	350.	309.	268.	231.	198.	172.	153.	147.	143.
15.0	409.	382.	352.	323.	296.	272.	255.	240.	235.	232.
10.0	425.	408.	390.	372.	355.	340.	329.	320.	314.	315.
5.0	435.	428.	419.	411.	404.	397.	392.	389.	386.	387.
0.0	442.	442.	442.	442.	442.	442.	442.	442.	442.	442.

CONE OF MAXIMUM CANDELA



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PAGE: 7 OF 8

5-DEGREE  
ZONAL LUMEN SUMMARY

0- 5	10
5- 10	31
10- 15	48
15- 20	63
20- 25	74
25- 30	81
30- 35	87
35- 40	91
40- 45	92
45- 50	91
50- 55	88
55- 60	83
60- 65	76
65- 70	63
70- 75	46
75- 80	29
80- 85	9
85- 90	1
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	41
0- 20	153
0- 30	308
0- 40	486
0- 50	668
0- 60	839
0- 70	978
0- 80	1053
0- 90	1063
0-100	1063
0-110	1063
0-120	1063
0-130	1063
0-140	1063
0-150	1063
0-160	1063
0-170	1063
0-180	1063



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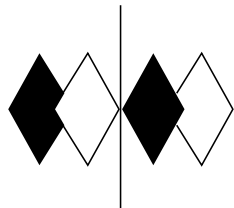
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PAGE: 8 OF 8

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NORTHVALE, NJ 07647

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Page 1 of 4

REPORT NUMBER: ITL82643  
DATE: 09/08/14  
PREPARED FOR: RAB LIGHTING, INC.  
CATALOG NUMBER: WPLED10 (WALLPACK) - ALED10 (AREA LIGHTER)

ADDRESS: 170 LUDLOW AVE  
NORTHVALE, NJ 07647

LUMINAIRE: CAST METAL HOUSING, ONE CIRCUIT BOARD WITH ONE LED, MOLDED PLASTIC REFLECTOR WITH SEMI-DIFFUSE FINISH, CLEAR FLAT GLASS LENS IN CAST BROWN PAINTED METAL FRAME.

LAMP: ONE WHITE MULTI-CHIP LIGHT EMITTING DIODE (LED), TILTED 30-DEGREES FROM VERTICAL BASE-UP POSITION.

DRIVER: RAB LIGHTING RD113-36-C0280

NOTE: DATA SHOWN IS ABSOLUTE FOR THE SAMPLE PROVIDED AT RATED INPUT VOLTAGE (120.0 AND 277.0 VAC, 60Hz) TO THE DRIVER. DRIVER INFORMATION PROVIDED BY CLIENT.

INSTRUMENTS:	Associated Power Technologies APT5010 AC Power Source	Calibration Due: N/A
	Yokogawa WT210 Digital Power Meter #6	10/31/14
	Ocean Optics QE65000 Spectroradiometer	07/14/15
	ITL 1.5m Diameter Integrating Sphere S15-2, 4PI Geometry	07/14/15

OBJECT OF TEST: Measure the Total Radiant Flux\*, Spectral Power Distribution (SPD), Correlated Color Temperature (CCT), Color Rendering Indices (CRI<sub>a</sub>,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. Report Off-State Power. Measure electrical data including Total Harmonic Distortion (THD) at maximum rated voltage.

PROCEDURE: The test sample was provided by the customer and had an unknown number of operating hours. The test sample was mounted inside the integrating sphere 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 120.0 VAC input. Electrical data was also recorded at maximum nominal rated input voltage (277.0 VAC). All testing performed in a 25 +/-1 degree Celsius free air ambient and in accordance with IESNA LM-79-08. 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)

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Checked	<u>P O'CONNOR</u>
Approved	<u>L GRABA</u> Lighting Engineer



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Page 4 of 4

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ITL82643

DATE:

09/08/14

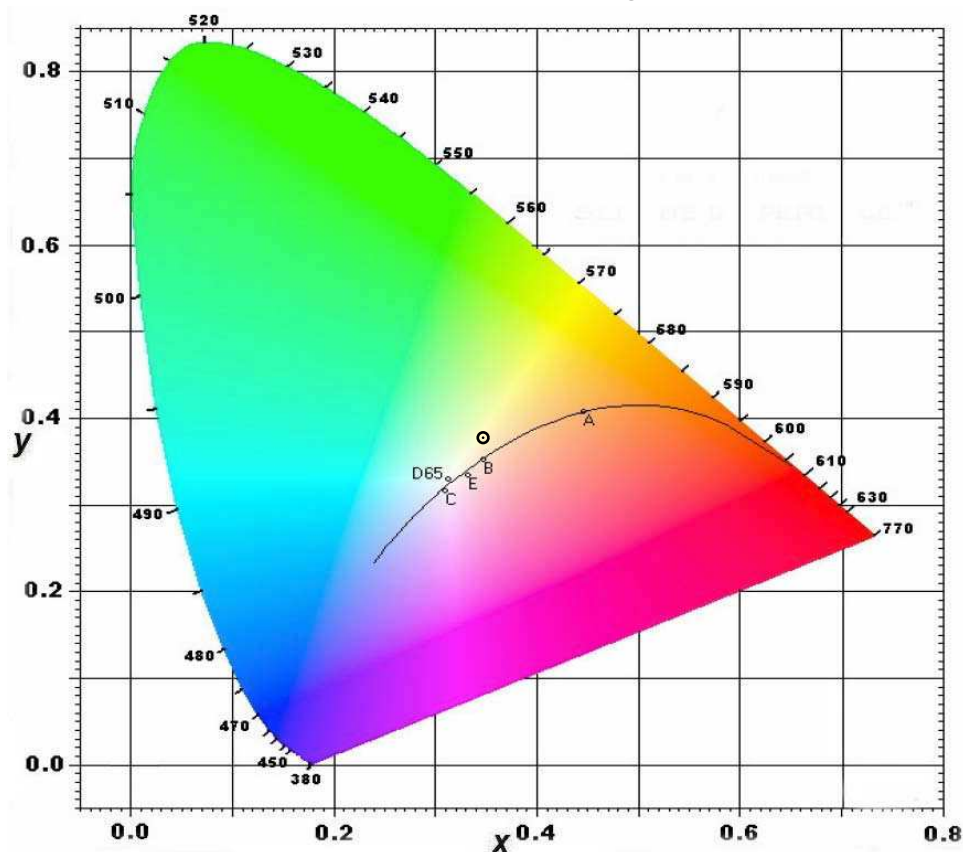
PREPARED FOR:

RAB LIGHTING, INC.

CATALOG NUMBER:

WPLED10 (WALLPACK) - ALED10 (AREA LIGHTER)

## CIE Chromaticity Diagram





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 DATE: 09/08/14  
 PREPARED FOR: RAB LIGHTING, INC.  
 CATALOG NUMBER: WPLED10 (WALLPACK) - ALED10 (AREA LIGHTER)

Page 2 of 4

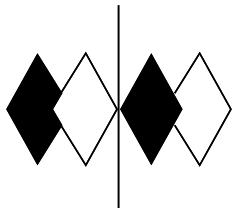
# RESULTS:

SPECTRORADIOMETRIC	
Observer	CIE 1931 2 degree
Chromaticity Ordinate x	0.3468
Chromaticity Ordinate y	0.3772
Observer	CIE 1976 2 degree
Chromaticity Ordinate u'	0.2031
Chromaticity Ordinate v'	0.4968
Correlated Color Temp CCT (K)	5018
ANSI C78.377-2008 Duv	0.012
Total Radiant Flux (milliWatts)	3084 *
ELECTRICAL	
Input Voltage (Volts AC)	120.0
Input Current (Amps AC)	0.100
Input Power (Watts)	11.8
Input Power Factor (%)	98.3
Input Current THD (%)	11.2
Input Voltage THD (%)	0.1
Off-State Power (Watts)	
	0.0
ELECTRICAL AT MAX NONIMAL INPUT	
Input Voltage (Volts AC)	277.0
Input Current (Amps AC)	0.049
Input Power (Watts)	12.9
Input Power Factor (%)	95.0
Input Current THD (%)	15.2
Input Voltage THD (%)	0.1

COLOR RENDERING INDICES	CRI
Ra (Average 1-8)	69
R1 Light greyish red	64
R2 Dark greyish yellow	74
R3 Strong yellowish green	80
R4 Moderate yellowish green	68
R5 Light bluish green	65
R6 Light blue	64
R7 Light violet	82
R8 Light reddish purple	54
R9 Strong red	-41
R10 Strong yellow	37
R11 Strong green	62
R12 Strong blue	32
R13 Light yellowish pink (skin)	65
R14 Moderate olive green (leaf)	89

## \*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.



**itl boulder**  
THE LIGHT CENTER OF THE INDUSTRY SINCE 1955

**NVLAP**  
NVLAP LAB CODE: 200925-0

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REPORT NUMBER: ITL82643  
DATE: 09/08/14

Page 3 of 4

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RESULTS:

Wavelength	mW per nm	Wavelength	mW per nm	Wavelength	mW per nm
380	0.097	515	11.559	650	6.607
385	0.107	520	13.620	655	5.984
390	0.126	525	15.240	660	5.409
395	0.155	530	16.462	665	4.881
400	0.201	535	17.276	670	4.396
405	0.337	540	17.814	675	3.948
410	0.546	545	18.138	680	3.540
415	0.933	550	18.272	685	3.168
420	1.645	555	18.259	690	2.834
425	2.830	560	18.148	695	2.535
430	4.709	565	17.961	700	2.267
435	7.510	570	17.700	705	2.019
440	11.478	575	17.328	710	1.799
445	17.601	580	16.873	715	1.601
450	23.548	585	16.350	720	1.424
455	22.480	590	15.762	725	1.268
460	15.367	595	15.088	730	1.127
465	9.944	600	14.347	735	1.006
470	6.934	605	13.577	740	0.896
475	4.760	610	12.776	745	0.796
480	3.475	615	11.948	750	0.709
485	3.033	620	11.108	755	0.631
490	3.122	625	10.284	760	0.564
495	3.763	630	9.480	765	0.504
500	5.089	635	8.709	770	0.451
505	7.022	640	7.976	775	0.403
510	9.278	645	7.271	780	0.360

