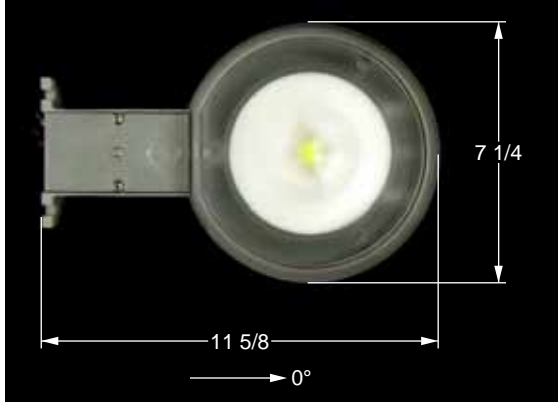


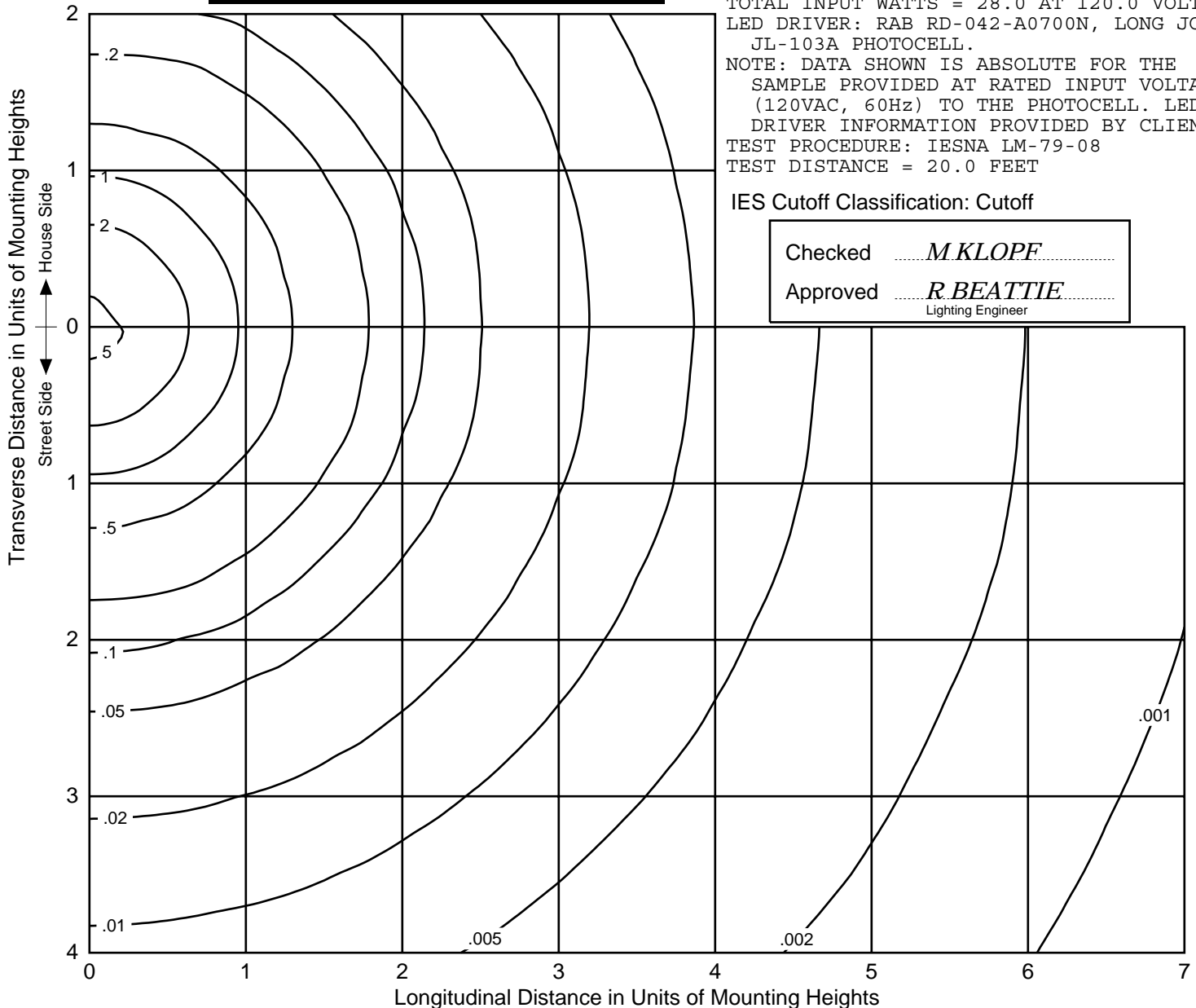
ISOFOOTCANDLE LINES OF HORIZONTAL ILLUMINATION
 Values based on 15 foot mounting height.

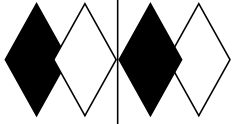


REPORT NUMBER: ITL79566
 ISSUE DATE: 10/28/13 PAGE: 1 OF 8
 PREPARED FOR: RAB LIGHTING, INC.
 CATALOG NUMBER: YBLED26 - YBLED26-ARM
 (TYPE V)
 LUMINAIRE: CAST FINNED METAL HOUSING
 WITH WHITE PAINTED INTERIOR, 1 CIRCUIT
 BOARD WITH 1 LED WITH MOLDED WHITE
 PLASTIC TRIM, CLEAR INTERIOR FROSTED
 CYLINDRICAL LENS WITH RECESSED
 EXTERIOR-FROSTED CONVEX CENTER. CONVEX
 CENTER HAS CONCENTRIC CIRCULAR
 EXTERIOR PRISMS.
 LAMP: ONE WHITE MULTI-CHIP LIGHT
 EMITTING DIODE (LED), VERTICAL BASE-UP
 POSITION.
 TOTAL INPUT WATTS = 28.0 AT 120.0 VOLTS
 LED DRIVER: RAB RD-042-A0700N, LONG JOIN
 JL-103A PHOTOCELL.
 NOTE: DATA SHOWN IS ABSOLUTE FOR THE
 SAMPLE PROVIDED AT RATED INPUT VOLTAGE
 (120VAC, 60Hz) TO THE PHOTOCELL. LED
 DRIVER INFORMATION PROVIDED BY CLIENT.
 TEST PROCEDURE: IESNA LM-79-08
 TEST DISTANCE = 20.0 FEET

IES Cutoff Classification: Cutoff

Checked	<i>M. KLOPF</i>
Approved	<i>R. BEATTIE</i> Lighting Engineer





REPORT NUMBER: ITL79566
ISSUE DATE: 10/28/13 PAGE: 2 OF 8
PREPARED FOR: RAB LIGHTING, INC.
CATALOG NUMBER: YBLED26 - YBLED26-ARM
(TYPE V)

LUMINAIRE: CAST FINNED METAL HOUSING WITH WHITE PAINTED INTERIOR, 1 CIRCUIT BOARD WITH 1 LED WITH MOLDED WHITE PLASTIC TRIM, CLEAR INTERIOR FROSTED CYLINDRICAL LENS WITH RECESSED EXTERIOR-FROSTED CONVEX CENTER. CONVEX CENTER HAS CONCENTRIC CIRCULAR EXTERIOR PRISMS.

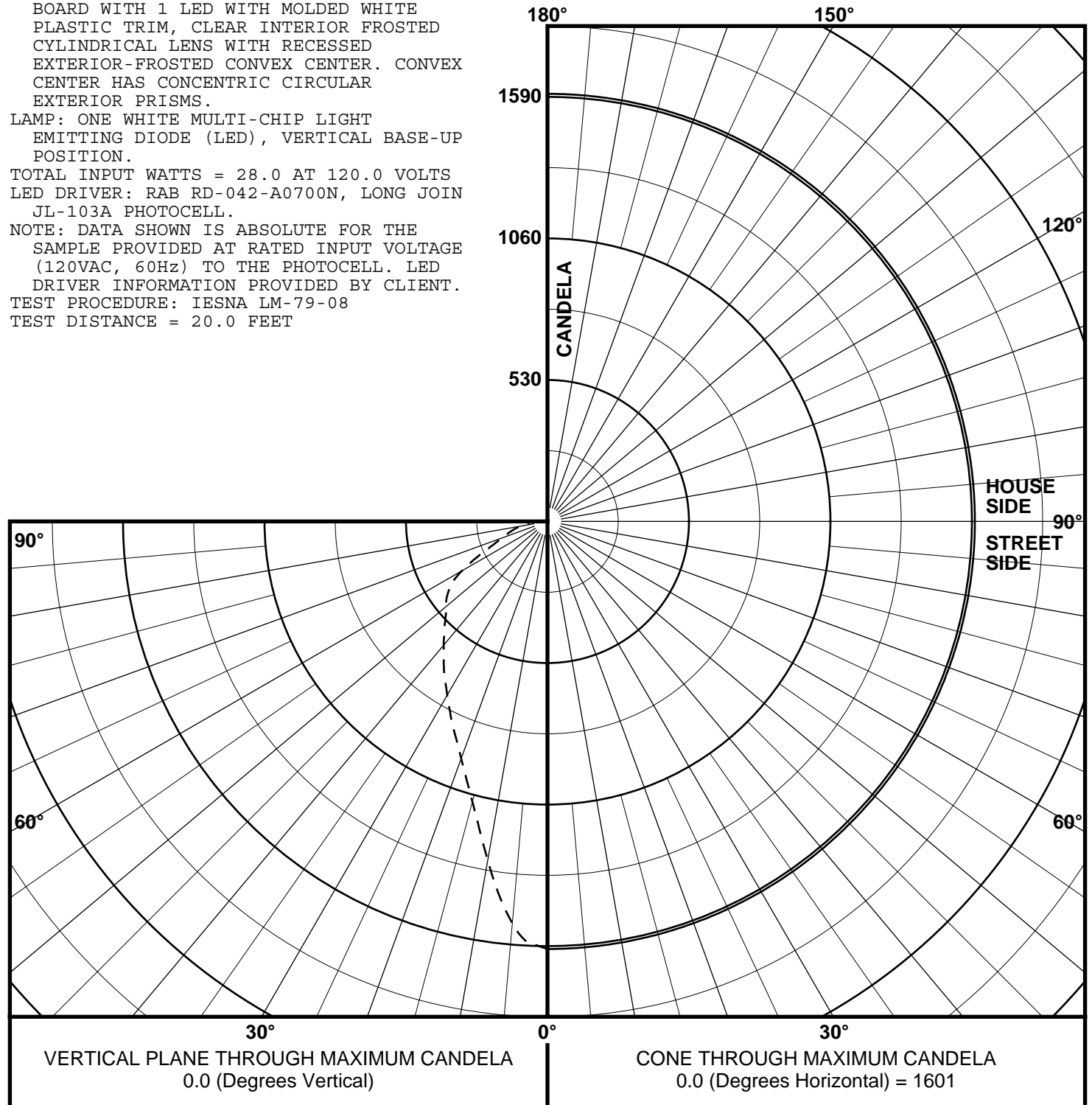
LAMP: ONE WHITE MULTI-CHIP LIGHT EMITTING DIODE (LED), VERTICAL BASE-UP POSITION.

TOTAL INPUT WATTS = 28.0 AT 120.0 VOLTS
LED DRIVER: RAB RD-042-A0700N, LONG JOIN JL-103A PHOTOCELL.

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

TEST PROCEDURE: IESNA LM-79-08
TEST DISTANCE = 20.0 FEET

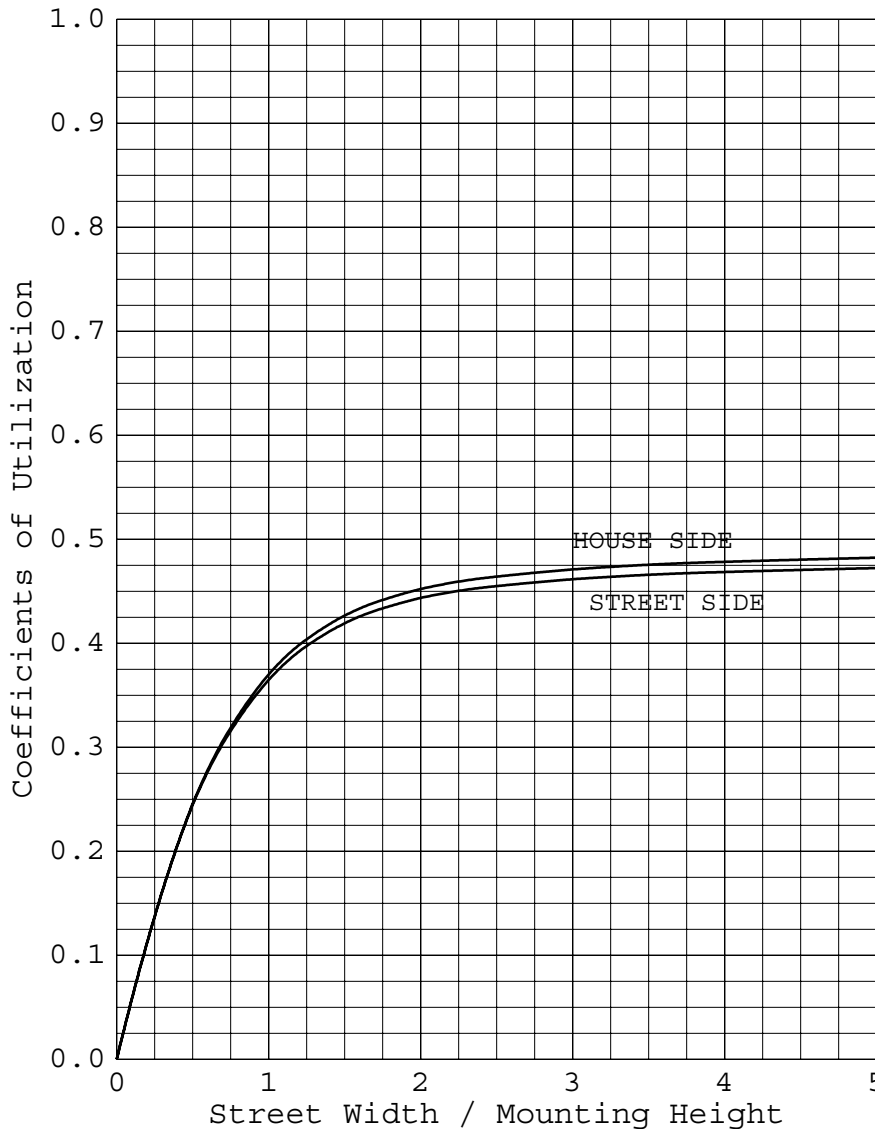
MAXIMUM PLANE AND MAXIMUM CONE PLOTS OF CANDELA



REPORT NUMBER: ITL79566
ISSUE DATE: 10/28/13
PREPARED FOR: RAB LIGHTING, INC.

PAGE: 3 OF 8

COEFFICIENTS OF UTILIZATION AND FLUX DISTRIBUTION



	LUMENS	PERCENT OF FIXTURE
DOWNWARD STREET SIDE	1299	48.3
DOWNWARD HOUSE SIDE	1327	49.4
DOWNWARD TOTAL	2626	97.6
UPWARD STREET SIDE	33	1.2
UPWARD HOUSE SIDE	31	1.1
UPWARD TOTAL	63	2.4
TOTAL FLUX	2689	100.0

EFFICACY = 96.0 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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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	1299.	48.3		
FL (0- 30)	413.4	15.4		
FM (30- 60)	633.1	23.5		
FH (60- 80)	213.0	7.9		G0
FVH(80- 90)	39.0	1.5		G1
BACK LIGHT	1327.	49.4		
BL (0- 30)	414.9	15.4	B1	
BM (30- 60)	648.4	24.1	B1	
BH (60- 80)	222.9	8.3	B1	G0
BVH(80- 90)	41.0	1.5		G1
UPLIGHT	63.	2.4		
UL (90-100)	33.3	1.2		U2
UH (100-180)	30.1	1.1		U2
TRAPPED LIGHT	0.	0.0		
TOTAL FLUX	2689.	100.0		

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

BUG RATING: B1 U2 G1



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PAGE: 5 OF 8

CANDELA TABULATION

	STREET SIDE										
	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	1.	1.	1.	1.	1.	1.	1.	0.	0.	0.	0.
155.0	1.	1.	1.	1.	1.	1.	1.	1.	1.	1.	1.
145.0	2.	2.	2.	2.	2.	2.	2.	2.	2.	2.	2.
135.0	3.	3.	3.	3.	3.	3.	3.	3.	3.	3.	3.
125.0	6.	6.	5.	5.	5.	5.	5.	5.	5.	5.	5.
115.0	9.	9.	9.	9.	8.	8.	8.	9.	9.	10.	10.
105.0	12.	12.	13.	13.	13.	13.	13.	13.	14.	14.	14.
95.0	29.	29.	30.	30.	30.	29.	29.	29.	29.	29.	29.
92.5	37.	37.	37.	37.	37.	37.	37.	36.	37.	36.	37.
90.0	46.	46.	46.	46.	46.	45.	45.	45.	45.	45.	46.
87.5	57.	57.	57.	57.	57.	56.	56.	55.	56.	55.	56.
85.0	70.	70.	70.	70.	70.	69.	70.	69.	69.	68.	70.
V	82.5	86.	86.	86.	87.	85.	86.	85.	86.	85.	86.
E	80.0	103.	103.	104.	105.	103.	105.	103.	105.	103.	104.
R	77.5	122.	122.	123.	124.	123.	125.	124.	126.	123.	125.
T	75.0	141.	141.	142.	144.	144.	145.	145.	147.	144.	146.
I	72.5	158.	158.	161.	163.	164.	164.	166.	166.	170.	166.
C	70.0	179.	179.	183.	185.	188.	188.	190.	193.	196.	194.
A	67.5	211.	212.	216.	219.	222.	221.	224.	229.	233.	233.
L	65.0	252.	253.	259.	262.	267.	266.	272.	278.	283.	285.
	62.5	311.	311.	319.	322.	327.	323.	329.	336.	341.	344.
A	60.0	370.	370.	378.	382.	379.	382.	385.	390.	394.	396.
N	57.5	420.	421.	428.	429.	426.	427.	428.	432.	435.	435.
G	55.0	451.	453.	459.	459.	456.	456.	457.	459.	461.	461.
L	52.5	477.	480.	486.	486.	483.	484.	485.	486.	488.	487.
E	50.0	497.	498.	505.	505.	506.	505.	507.	506.	507.	507.
	47.5	516.	517.	523.	526.	527.	529.	532.	530.	532.	531.
	45.0	544.	546.	553.	556.	560.	561.	562.	560.	560.	558.
	42.5	573.	574.	580.	585.	590.	592.	593.	590.	589.	588.
	40.0	605.	606.	612.	617.	622.	625.	624.	621.	620.	618.
	37.5	638.	639.	644.	649.	655.	658.	657.	653.	651.	651.
	35.0	676.	676.	678.	682.	687.	691.	690.	686.	685.	685.
	32.5	712.	711.	713.	717.	721.	724.	723.	721.	719.	721.
	30.0	751.	749.	750.	754.	756.	759.	757.	756.	755.	758.
	25.0	841.	839.	839.	837.	837.	835.	833.	834.	834.	836.
	20.0	945.	947.	944.	941.	935.	932.	929.	928.	927.	927.
	15.0	1087.	1090.	1087.	1083.	1078.	1074.	1070.	1069.	1067.	1067.
	10.0	1289.	1288.	1292.	1291.	1289.	1288.	1287.	1288.	1287.	1288.
	5.0	1510.	1513.	1513.	1512.	1512.	1512.	1512.	1513.	1513.	1513.
	0.0<<	1601.	1601.	1601.	1601.	1601.	1601.	1601.	1601.	1601.	1601.

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	1.	1.	1.	1.	1.	1.	1.	1.	1.	1.
145.0	2.	2.	2.	2.	2.	1.	1.	1.	1.	1.
135.0	3.	3.	3.	3.	3.	2.	2.	2.	1.	2.
125.0	5.	5.	5.	5.	5.	4.	4.	3.	2.	1.
115.0	10.	10.	9.	9.	8.	8.	8.	4.	2.	1.
105.0	14.	14.	13.	13.	13.	13.	11.	8.	5.	4.
95.0	29.	30.	30.	31.	31.	31.	31.	28.	27.	26.
92.5	37.	38.	38.	38.	39.	39.	40.	40.	40.	40.
90.0	45.	47.	47.	47.	48.	49.	50.	50.	50.	50.
87.5	56.	57.	57.	58.	59.	60.	61.	62.	63.	63.
85.0	69.	71.	71.	72.	73.	74.	75.	77.	78.	78.
V 82.5	85.	86.	88.	88.	90.	91.	92.	93.	95.	94.
E 80.0	103.	106.	107.	106.	109.	109.	111.	112.	112.	112.
R 77.5	124.	126.	128.	127.	129.	130.	132.	131.	130.	130.
T 75.0	145.	147.	149.	149.	150.	152.	152.	150.	147.	146.
I 72.5	168.	170.	172.	171.	172.	174.	174.	169.	163.	161.
C 70.0	196.	199.	201.	200.	201.	203.	203.	193.	181.	178.
A 67.5	233.	239.	239.	239.	240.	242.	241.	228.	208.	205.
L 65.0	286.	291.	293.	293.	294.	296.	296.	275.	253.	248.
62.5	347.	351.	351.	352.	354.	355.	355.	333.	310.	306.
A 60.0	397.	401.	401.	404.	405.	406.	407.	392.	369.	366.
N 57.5	436.	437.	440.	443.	445.	447.	447.	435.	422.	420.
G 55.0	461.	461.	464.	467.	470.	471.	471.	467.	458.	456.
L 52.5	486.	486.	489.	493.	497.	498.	499.	491.	487.	488.
E 50.0	505.	505.	507.	512.	516.	518.	519.	516.	513.	511.
47.5	530.	531.	532.	538.	543.	546.	546.	543.	545.	543.
45.0	557.	559.	560.	565.	572.	577.	578.	577.	576.	573.
42.5	588.	590.	591.	597.	604.	610.	611.	612.	612.	612.
40.0	619.	623.	625.	630.	637.	643.	648.	647.	649.	649.
37.5	654.	658.	660.	664.	671.	677.	682.	684.	684.	684.
35.0	688.	693.	697.	700.	705.	711.	717.	719.	720.	719.
32.5	724.	729.	733.	735.	740.	746.	752.	754.	755.	754.
30.0	761.	767.	770.	774.	776.	781.	785.	789.	791.	790.
25.0	838.	843.	846.	851.	851.	855.	857.	861.	863.	863.
20.0	928.	930.	935.	936.	938.	939.	940.	942.	940.	942.
15.0	1067.	1067.	1066.	1066.	1065.	1062.	1060.	1058.	1054.	1054.
10.0	1288.	1286.	1284.	1280.	1271.	1266.	1264.	1262.	1261.	1260.
5.0	1513.	1512.	1510.	1506.	1500.	1496.	1495.	1492.	1492.	1491.
0.0<<	1601.	1601.	1601.	1601.	1601.	1601.	1601.	1601.	1601.	1601.

CONE OF MAXIMUM CANDELA



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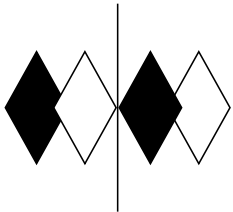
PAGE: 7 OF 8

5-DEGREE
 ZONAL LUMEN SUMMARY

0- 5	37
5- 10	99
10- 15	138
15- 20	164
20- 25	186
25- 30	203
30- 35	215
35- 40	220
40- 45	220
45- 50	216
50- 55	212
55- 60	199
60- 65	163
65- 70	117
70- 75	88
75- 80	68
80- 85	48
85- 90	32
90- 95	21
95-100	13
100-105	8
105-110	6
110-115	5
115-120	4
120-125	3
125-130	2
130-135	1
135-140	1
140-145	1
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	137
0- 20	439
0- 30	828
0- 40	1263
0- 50	1699
0- 60	2110
0- 70	2390
0- 80	2546
0- 90	2626
0-100	2659
0-110	2673
0-120	2681
0-130	2685
0-140	2688
0-150	2689
0-160	2689
0-170	2689
0-180	2689



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PAGE: 8 OF 8

ADDRESS: 170 LUDLOW AVE
NORTHVALE, NJ 07647

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Page 1 of 4

REPORT NUMBER: ITL79569
DATE: 10/29/13
PREPARED FOR: RAB LIGHTING, INC.
CATALOG NUMBER: YBLED26 YBLED26-ARM (TYPE V)

ADDRESS: 170 LUDLOW AVE
NORTHVALE, NJ 07647

LUMINAIRE: CAST FINNED METAL HOUSING WITH WHITE PAINTED INTERIOR, 1 CIRCUIT BOARD WITH 1 LED WITH MOLDED WHITE PLASTIC TRIM, CLEAR INTERIOR FROSTED CYLINDRICAL LENS WITH RECESSED EXTERIOR-FROSTED CONVEX CENTER. CONVEX CENTER HAS CONCENTRIC CIRCULAR EXTERIOR PRISMS.

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

DRIVER: RAB RD-042-A0700N, LONG JOIN JL-103A PHOTOCELL.

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

INSTRUMENTS:	Associated Power Technologies APT5010 AC Power Source	Calibration Due:
	Yokogawa WT210 Digital Power Meter #8	N/A
	Ocean Optics QE65000 Spectroradiometer	01/31/14
	ITL 1.5m Diameter Integrating Sphere S15-2, 4PI Geometry	10/17/14

OBJECT OF TEST: Measure the 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. Report Off-State Power. Measure electrical data including Total Harmonic Distortion (THD) at maximum rated voltage.

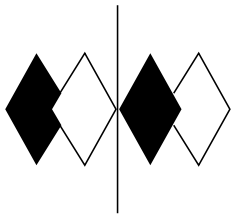
PROCEDURE: The test sample was provided by the customer and had an unknown number of operating hours. The test sample was mounted inside the integrating sphere and allowed to stabilize. After stabilization occurred, measurements were taken. In order to measure mean performance, multiple data sets were 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



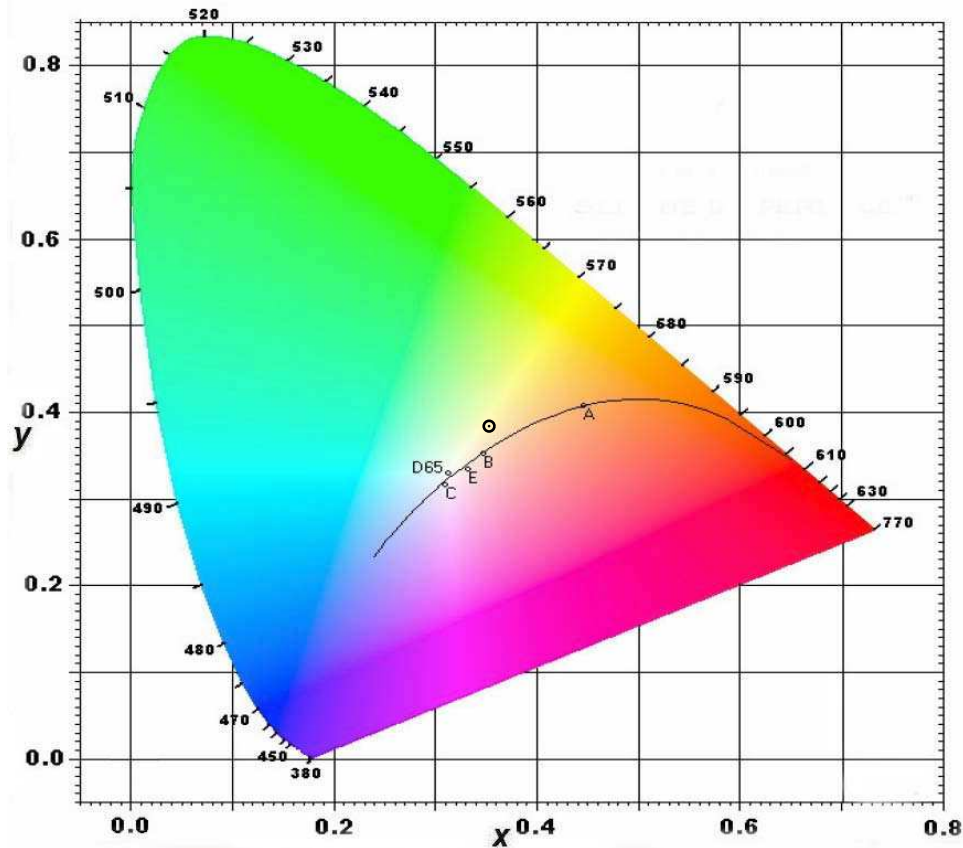
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 NVLAP LAB CODE: 200925-0

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 CATALOG NUMBER: YBLED26 - YBLED26-ARM (TYPE V)

CIE Chromaticity Diagram





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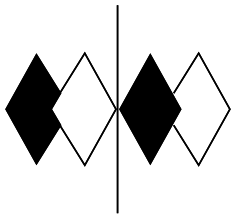
RESULTS:

SPECTRORADIOMETRIC	
Observer	CIE 1931 2 degree
Chromaticity Ordinate x	0.3527
Chromaticity Ordinate y	0.3836
Observer	CIE 1976 2 degree
Chromaticity Ordinate u'	0.2045
Chromaticity Ordinate v'	0.5005
Correlated Color Temp CCT (K)	4851
ANSI C78.377-2008 Duv	0.012
Total Radiant Flux (milliWatts)	7761 *
ELECTRICAL	
Input Voltage (Volts AC)	120.0
Input Current (Amps AC)	0.235
Input Power (Watts)	28.0
Input Power Factor (%)	99.3
Input Current THD (%)	7.0
Input Voltage THD (%)	0.2
Off-State Power (Watts)	
	1.1
ELECTRICAL AT MAX NONIMAL INPUT	
Input Voltage (Volts AC)	277.0
Input Current (Amps AC)	0.112
Input Power (Watts)	28.7
Input Power Factor (%)	92.5
Input Current THD (%)	10.0
Input Voltage THD (%)	0.2

COLOR RENDERING INDICES	CRI
Ra (Average 1-8)	67
R1 Light greyish red	63
R2 Dark greyish yellow	71
R3 Strong yellowish green	78
R4 Moderate yellowish green	68
R5 Light bluish green	63
R6 Light blue	60
R7 Light violet	81
R8 Light reddish purple	54
R9 Strong red	-42
R10 Strong yellow	31
R11 Strong green	62
R12 Strong blue	29
R13 Light yellowish pink (skin)	63
R14 Moderate olive green (leaf)	87

*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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REPORT NUMBER: ITL79569
 DATE: 10/29/13
 PREPARED FOR: RAB LIGHTING, INC.
 CATALOG NUMBER: YBLED26 YBLED26-ARM (TYPE V)

RESULTS:

Wavelength	mW per nm	Wavelength	mW per nm	Wavelength	mW per nm
380	0.277	515	29.568	650	17.163
385	0.324	520	34.813	655	15.652
390	0.395	525	38.950	660	14.225
395	0.503	530	42.006	665	12.856
400	0.684	535	44.085	670	11.545
405	1.147	540	45.374	675	10.327
410	2.052	545	46.101	680	9.258
415	3.674	550	46.425	685	8.337
420	6.710	555	46.439	690	7.546
425	11.571	560	46.168	695	6.813
430	18.571	565	45.613	700	6.130
435	27.450	570	44.872	705	5.496
440	39.334	575	43.873	710	4.916
445	53.137	580	42.707	715	4.393
450	54.705	585	41.340	720	3.930
455	38.773	590	39.846	725	3.519
460	23.740	595	38.236	730	3.147
465	15.766	600	36.469	735	2.809
470	10.475	605	34.575	740	2.510
475	7.226	610	32.582	745	2.239
480	5.891	615	30.519	750	1.999
485	5.686	620	28.430	755	1.788
490	6.550	625	26.331	760	1.606
495	8.838	630	24.282	765	1.443
500	12.633	635	22.315	770	1.293
505	17.754	640	20.483	775	1.164
510	23.651	645	18.768	780	1.043

