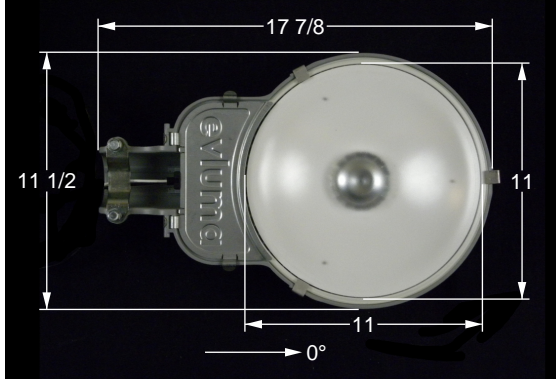


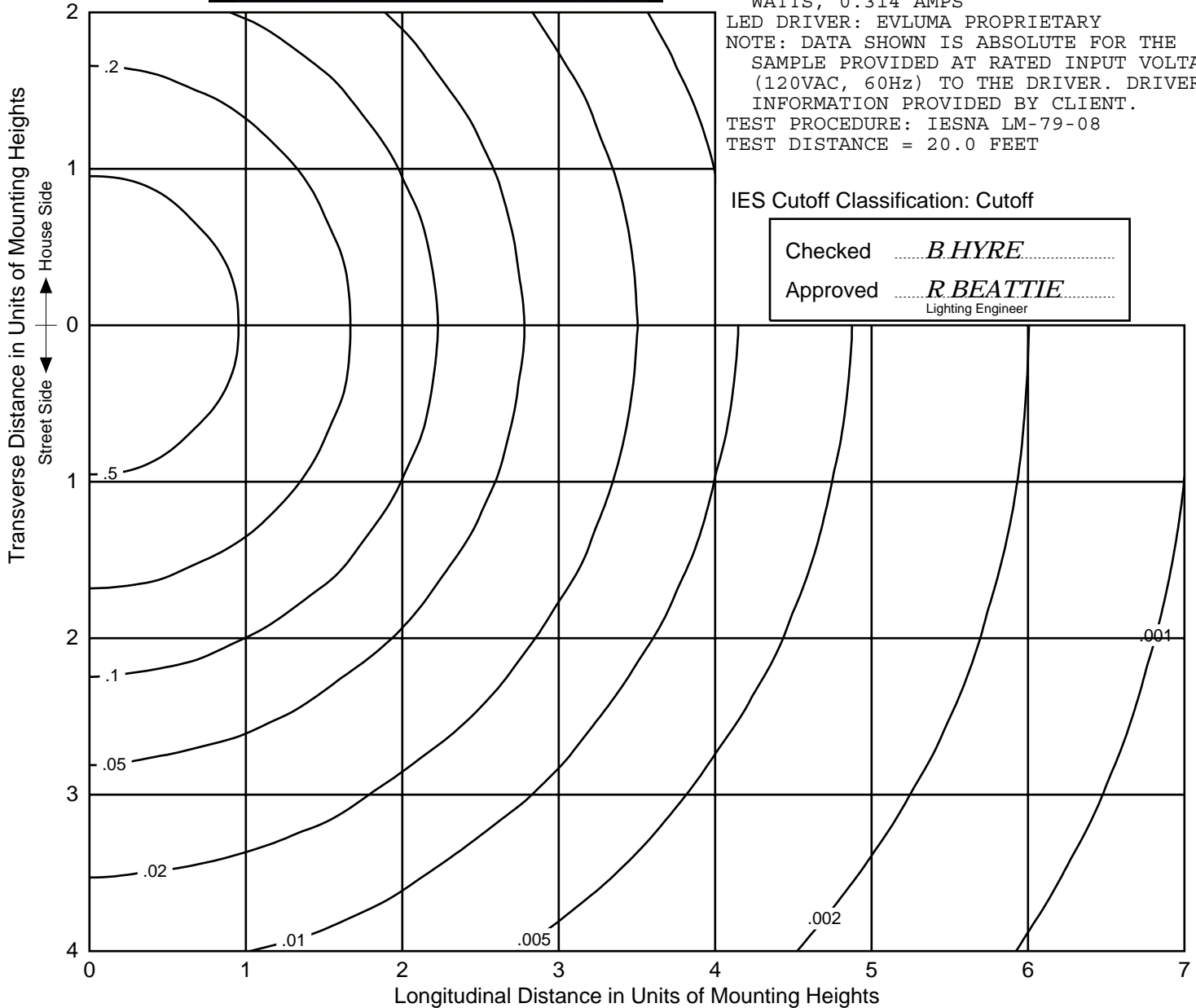
ISOFOOTCANDLE LINES OF HORIZONTAL ILLUMINATION
Values based on 25 foot mounting height.

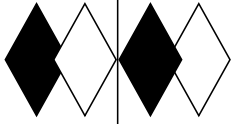


REPORT NUMBER: ITL87292-GONIOPHOTOMETRY
 ISSUE DATE: 04/26/16 PAGE: 1 OF 8
 PREPARED FOR: EVLUMA
 CATALOG NUMBER: AMAX-40-5K-6-V-D-S3-0
 LUMINAIRE: CAST FINNED METAL HOUSING WITH FORMED METAL ACCESS DOOR, 16 LEDS, WHITE FIBROUS REFLECTOR, FABRICATED MULTI-FACETED SEGMENTED METAL CENTER REFLECTOR WITH PREMIUM SPECULAR FINISH, CLEAR MICRO-PRISMATIC GLASS DROP LENS, LENS PRISMS OUT.
 LAMPS: SIXTEEN WHITE LIGHT EMITTING DIODES (LEDS) EACH WITH CLEAR HEMISPHERICAL INTEGRAL LENS, VERTICAL BASE-UP POSITION.
 INPUT ELECTRICAL: 120.0 VOLTS, 37.5 WATTS, 0.314 AMPS
 LED DRIVER: EVLUMA PROPRIETARY
 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: Cutoff

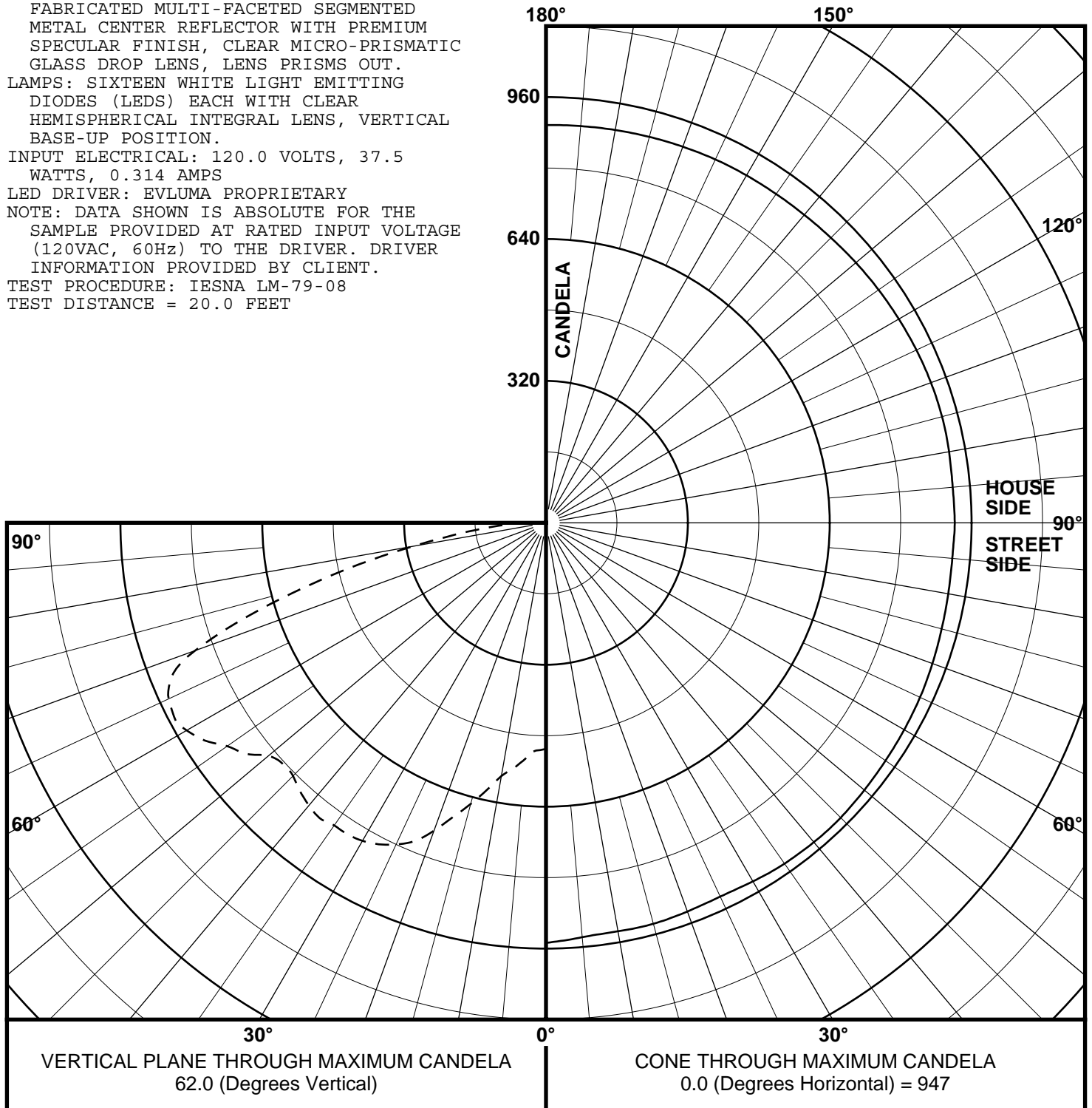
Checked *B. HYRE*
 Approved *R. BEATTIE*
 Lighting Engineer





REPORT NUMBER: ITL87292-GONIOPHOTOMETRY
 ISSUE DATE: 04/26/16 PAGE: 2 OF 8
 PREPARED FOR: EVLUMA
 CATALOG NUMBER: AMAX-40-5K-6-V-D-S3-0
 LUMINAIRE: CAST FINNED METAL HOUSING
 WITH FORMED METAL ACCESS DOOR, 16
 LEDS, WHITE FIBROUS REFLECTOR,
 FABRICATED MULTI-FACETED SEGMENTED
 METAL CENTER REFLECTOR WITH PREMIUM
 SPECULAR FINISH, CLEAR MICRO-PRISMATIC
 GLASS DROP LENS, LENS PRISMS OUT.
 LAMPS: SIXTEEN WHITE LIGHT EMITTING
 DIODES (LEDS) EACH WITH CLEAR
 HEMISPHERICAL INTEGRAL LENS, VERTICAL
 BASE-UP POSITION.
 INPUT ELECTRICAL: 120.0 VOLTS, 37.5
 WATTS, 0.314 AMPS
 LED DRIVER: EVLUMA PROPRIETARY
 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

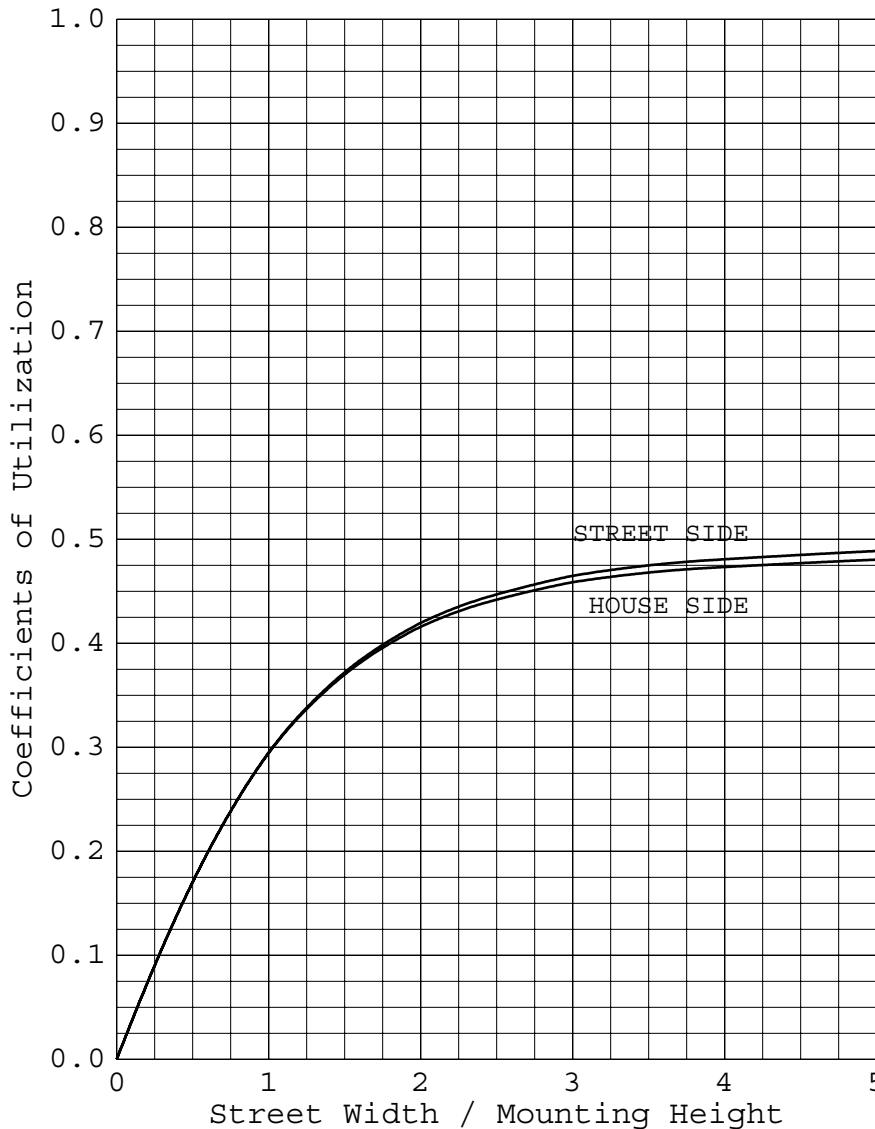
MAXIMUM PLANE AND MAXIMUM CONE PLOTS OF CANDELA



REPORT NUMBER: ITL87292-GONIOPHOTOMETRY
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PREPARED FOR: EVLUMA

PAGE: 3 OF 8

COEFFICIENTS OF UTILIZATION AND FLUX DISTRIBUTION



	LUMENS	PERCENT OF FIXTURE
DOWNWARD STREET SIDE	2109	50.3
DOWNWARD HOUSE SIDE	2061	49.2
DOWNWARD TOTAL	4170	99.5
UPWARD STREET SIDE	13	0.3
UPWARD HOUSE SIDE	9	0.2
UPWARD TOTAL	22	0.5
TOTAL FLUX	4192	100.0

EFFICACY = 111.8 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.



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REPORT NUMBER: ITL87292-GONIOPHOTOMETRY
ISSUE DATE: 04/26/16
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PAGE: 4 OF 8

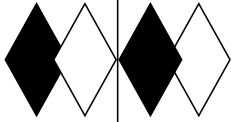
FLUX DISTRIBUTION BY SOLID ANGLE

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

	LUMENS	PERCENT OF FIXTURE	BUG ZONE RATINGS
FORWARD LIGHT	2109.	50.3	
FL (0- 30)	306.3	7.3	
FM (30- 60)	975.1	23.3	
FH (60- 80)	740.2	17.7	G1
FVH(80- 90)	87.0	2.1	G1
BACK LIGHT	2061.	49.2	
BL (0- 30)	307.2	7.3	B1
BM (30- 60)	968.1	23.1	B1
BH (60- 80)	712.7	17.0	B2 G1
BVH(80- 90)	73.4	1.8	G1
UPLIGHT	22.	0.5	
UL (90-100)	21.0	0.5	U2
UH (100-180)	1.0	0.0	U1
TRAPPED LIGHT	0.	0.0	
TOTAL FLUX	4192.	100.0	

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

BUG RATING: B2 U2 G1



REPORT NUMBER: ITL87292-GONIOPHOTOMETRY
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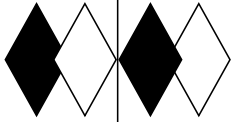
PAGE: 5 OF 8

CANDELA TABULATION

	LATERAL ANGLE										
	0.0	5.0	15.0	25.0	35.0	45.0	55.0	65.0	75.0	85.0	90.0
	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
	1.	1.	1.	1.	1.	1.	1.	1.	1.	1.	1.
	14.	15.	17.	19.	19.	18.	18.	17.	17.	17.	17.
	28.	30.	36.	38.	37.	36.	35.	34.	34.	34.	34.
	53.	55.	62.	64.	64.	62.	59.	58.	58.	58.	57.
	90.	93.	99.	102.	100.	98.	94.	92.	92.	91.	91.
	140.	144.	149.	152.	149.	149.	148.	143.	139.	136.	137.
V	209.	213.	218.	218.	217.	218.	218.	216.	209.	204.	203.
E	305.	309.	309.	309.	305.	308.	308.	311.	306.	303.	304.
R	430.	427.	421.	424.	413.	420.	415.	420.	417.	422.	427.
T	567.	560.	551.	558.	533.	547.	535.	544.	541.	548.	555.
I	711.	706.	691.	699.	672.	682.	667.	680.	670.	679.	691.
C	843.	835.	820.	833.	803.	823.	802.	819.	803.	808.	812.
A	915.	899.	889.	901.	880.	901.	880.	895.	882.	881.	889.
L	939.	929.	927.	926.	914.	935.	911.	921.	913.	909.	915.
	946.	940.	941.	931.	935.	943.	928.	930.	927.	916.	926.
A	947.	938.	936.	930.	938.	940.	935.	931.	924.	920.	922.
N	936.	933.	936.	929.	939.	936.	936.	928.	931.	923.	918.
G	913.	908.	923.	909.	922.	913.	915.	910.	918.	904.	902.
L	878.	888.	886.	881.	892.	884.	892.	884.	880.	880.	871.
E	855.	852.	857.	855.	858.	851.	856.	847.	857.	853.	847.
	817.	830.	834.	826.	839.	821.	843.	825.	829.	828.	818.
	805.	816.	819.	813.	824.	803.	828.	806.	821.	817.	807.
	807.	815.	824.	813.	820.	813.	822.	806.	824.	812.	811.
	821.	827.	823.	821.	820.	819.	823.	821.	819.	819.	812.
	832.	829.	830.	830.	823.	830.	825.	835.	825.	820.	824.
	839.	834.	830.	837.	822.	831.	832.	839.	828.	832.	826.
	833.	832.	836.	834.	829.	822.	832.	833.	835.	836.	830.
	828.	831.	823.	829.	819.	820.	823.	827.	827.	823.	824.
	800.	800.	806.	800.	807.	799.	807.	803.	806.	808.	807.
	739.	741.	740.	743.	746.	742.	748.	746.	753.	747.	746.
	656.	655.	655.	656.	657.	658.	658.	663.	660.	662.	666.
	580.	582.	583.	582.	585.	584.	589.	588.	591.	591.	592.
	534.	535.	537.	537.	538.	539.	538.	539.	540.	542.	542.
	510.	510.	510.	510.	510.	510.	510.	510.	510.	510.	510.

PLANE OF MAXIMUM CANDELA

CONE OF MAXIMUM CANDELA



REPORT NUMBER: ITL87292-GONIOPHOTOMETRY
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 PREPARED FOR: EVLUMA

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	1.	1.	1.	1.	0.	0.	0.	0.	0.	0.
95.0	17.	15.	13.	13.	12.	9.	6.	5.	5.	5.
92.5	33.	30.	26.	26.	25.	20.	17.	14.	15.	16.
90.0	57.	54.	48.	46.	45.	39.	36.	37.	34.	36.
87.5	90.	88.	81.	79.	77.	69.	65.	64.	64.	65.
85.0	137.	135.	131.	128.	121.	111.	106.	105.	104.	105.
V 82.5	202.	201.	198.	196.	187.	170.	166.	165.	165.	167.
E 80.0	301.	298.	291.	286.	281.	263.	258.	257.	259.	263.
R 77.5	424.	418.	407.	395.	404.	384.	381.	377.	375.	378.
T 75.0	550.	540.	534.	523.	533.	512.	509.	502.	501.	503.
I 72.5	682.	678.	674.	659.	668.	642.	643.	633.	633.	645.
C 70.0	803.	798.	804.	776.	791.	761.	770.	764.	765.	781.
A 67.5	879.	868.	877.	858.	868.	844.	854.	838.	847.	856.
L 65.0	908.	905.	904.	889.	899.	885.	883.	876.	876.	901.
62.5	917.	925.	918.	915.	913.	903.	903.	897.	896.	898.
A 62.0<<	921.	925.	922.	916.	909.	905.	904.	901.	898.	897.
N 60.0	927.	922.	916.	915.	904.	907.	909.	909.	906.	909.
G 57.5	904.	905.	898.	908.	890.	900.	885.	892.	894.	886.
L 55.0	877.	878.	872.	878.	862.	871.	868.	865.	865.	863.
E 52.5	846.	854.	842.	851.	843.	846.	840.	845.	837.	837.
50.0	826.	834.	820.	832.	815.	831.	821.	831.	819.	810.
47.5	812.	819.	806.	819.	803.	822.	809.	820.	804.	807.
45.0	817.	818.	814.	815.	802.	823.	810.	823.	814.	807.
42.5	827.	823.	820.	817.	810.	822.	818.	822.	818.	820.
40.0	831.	826.	829.	823.	825.	825.	829.	827.	827.	826.
37.5	831.	831.	827.	827.	837.	834.	832.	830.	832.	836.
35.0	830.	828.	827.	832.	832.	835.	829.	834.	831.	837.
30.0	826.	819.	819.	816.	828.	825.	831.	831.	829.	828.
25.0	797.	800.	799.	794.	796.	797.	804.	813.	811.	811.
20.0	747.	749.	743.	746.	738.	746.	752.	755.	760.	770.
15.0	664.	664.	669.	664.	662.	663.	665.	662.	670.	663.
10.0	592.	591.	592.	595.	591.	595.	593.	590.	591.	592.
5.0	540.	540.	542.	542.	544.	547.	545.	543.	544.	544.
0.0	510.	510.	510.	510.	510.	510.	510.	510.	510.	510.

CONE OF MAXIMUM CANDELA



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REPORT NUMBER: ITL87292-GONIOPHOTOMETRY
ISSUE DATE: 04/26/16
PREPARED FOR: EVLUMA

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5-DEGREE
ZONAL LUMEN SUMMARY

0- 5	13
5- 10	41
10- 15	74
15- 20	116
20- 25	163
25- 30	207
30- 35	244
35- 40	277
40- 45	304
45- 50	331
50- 55	370
55- 60	417
60- 65	446
65- 70	437
70- 75	349
75- 80	220
80- 85	112
85- 90	49
90- 95	17
95-100	4
100-105	1
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	53
0- 20	244
0- 30	614
0- 40	1135
0- 50	1769
0- 60	2557
0- 70	3441
0- 80	4010
0- 90	4170
0-100	4191
0-110	4192
0-120	4192
0-130	4192
0-140	4192
0-150	4192
0-160	4192
0-170	4192
0-180	4192



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PAGE: 8 OF 8

ADDRESS: 3600 LIND AVE. SW
SUITE 140
RENTON, WA 98057

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REPORT NUMBER: ITL87292-SPHERE
DATE: 05/04/16
PREPARED FOR: EVLUMA
CATALOG NUMBER: AMAX-40-5K-6-V-D-S3-0

ADDRESS: 3600 LIND AVE. SW
SUITE 140
RENTON, WA 98057

LUMINAIRE: CAST FINNED METAL HOUSING WITH FORMED METAL ACCESS DOOR, 16 LEDS, WHITE FIBROUS REFLECTOR, FABRICATED MULTI-FACETED SEGMENTED METAL CENTER REFLECTOR WITH PREMIUM SPECULAR FINISH, CLEAR MICRO-PRISMATIC GLASS DROP LENS, LENS PRISMS OUT.

LAMP: SIXTEEN WHITE LIGHT EMITTING DIODES (LEDS) EACH WITH CLEAR HEMISPHERICAL INTEGRAL LENS, VERTICAL BASE-UP POSITION.

DRIVER: EVLUMA PROPRIETARY

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

		Calibration Due:
INSTRUMENTS:	Associated Power Technologies APT5040 AC Power Source	N/A
	Yokogawa WT210 Digital Power Meter #6	12/14/16
	Ocean Optics QE65000 Spectroradiometer	04/19/17
	ITL 2.0m Diameter Integrating Sphere S20-2, 4PI Geometry	04/19/17

OBJECT OF TEST: Measure the Absolute Flux in lumens*, Spectral Power Distribution (SPD), Correlated Color Temperature (CCT), Color Rendering Index (CRIa,1-14), Chromaticity Coordinates (x,y; u',v'), ANSI C78.377 Duv, Total Radiant Flux*, Scotopic / Photopic Lumen Ratio, and electrical data including ANSI C82.77-2002 Power Factor (PF) and Total Harmonic Distortion (THD) to the test sample.

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 120VAC input 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.

RESULTS: (continued subsequent pages)

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Checked	<u>N WHITE</u>
Approved	<u>P O'CONNOR</u> Sphere Lab Supervisor



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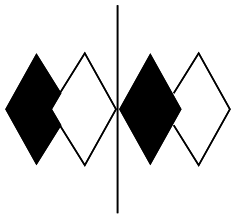
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 REPORT NUMBER: ITL87292-SPHERE
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 CATALOG NUMBER: AMAX-40-5K-6-V-D-S3-0

RESULTS:

PHOTOMETRIC	
Total Integrated Flux (lumens)	4192 *
SPECTRORADIOMETRIC	
Observer	CIE 1931 2 degree
Chromaticity Ordinate x	0.3427
Chromaticity Ordinate y	0.3551
Observer	CIE 1976 2 degree
Chromaticity Ordinate u'	0.2085
Chromaticity Ordinate v'	0.4860
Correlated Color Temp CCT (K)	5100
ANSI C78.377-2008 Duv	0.003
Total Radiant Flux (milliWatts)	12716 *
Scotopic / Photopic Lumen Ratio	1.824
ELECTRICAL	
Input Voltage (Volts AC)	120.0
Input Current (Amps AC)	0.314
Input Power (Watts)	37.6
Input Power Factor (%)	99.8
Input Current THD (%)	7.1
Input Voltage THD (%)	0.1
EFFICACY (lumens/Watt)	111.5

COLOR RENDERING INDICES		CRI
Ra (Average 1-8)		73
R1	Light greyish red	72
R2	Dark greyish yellow	76
R3	Strong yellowish green	81
R4	Moderate yellowish green	75
R5	Light bluish green	73
R6	Light blue	70
R7	Light violet	80
R8	Light reddish purple	59
R9	Strong red	-23
R10	Strong yellow	45
R11	Strong green	75
R12	Strong blue	51
R13	Light yellowish pink (skin)	71
R14	Moderate olive green (leaf)	89

*NOTE: The total lumen output shown on this report was obtained from photometric test ITL87292-GONIOPHOTOMETRY



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NVLAP LAB CODE: 200925-0

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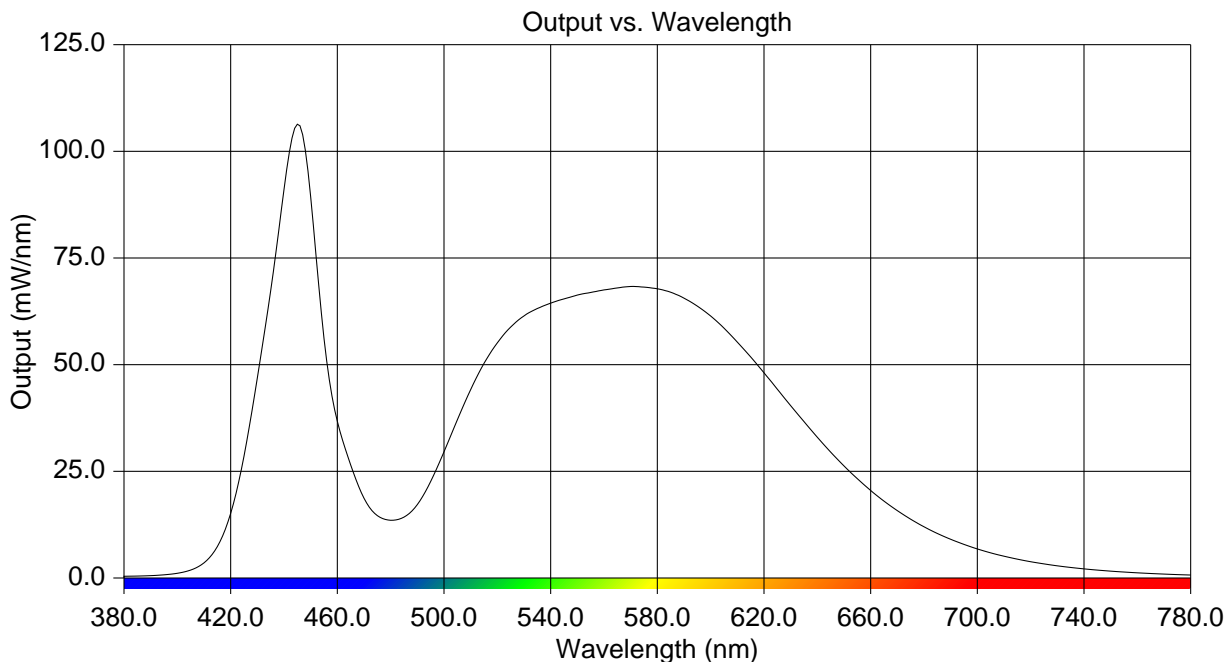
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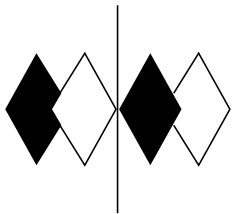
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CATALOG NUMBER: AMAX-40-5K-6-V-D-S3-0

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RESULTS:

Wavelength	mW per nm	Wavelength	mW per nm	Wavelength	mW per nm
380	0.403	515	50.304	650	26.264
385	0.453	520	55.111	655	23.276
390	0.551	525	58.809	660	20.512
395	0.743	530	61.419	665	18.017
400	1.103	535	63.163	670	15.787
405	1.858	540	64.417	675	13.780
410	3.546	545	65.412	680	12.007
415	7.358	550	66.312	685	10.435
420	15.143	555	66.919	690	9.076
425	28.546	560	67.522	695	7.873
430	46.893	565	67.981	700	6.812
435	67.297	570	68.325	705	5.891
440	91.045	575	68.178	710	5.109
445	106.352	580	67.788	715	4.417
450	89.363	585	66.978	720	3.814
455	56.146	590	65.586	725	3.306
460	36.733	595	63.722	730	2.852
465	26.503	600	61.405	735	2.470
470	18.699	605	58.558	740	2.137
475	14.619	610	55.278	745	1.854
480	13.525	615	51.820	750	1.606
485	14.271	620	48.093	755	1.399
490	17.207	625	44.244	760	1.212
495	22.623	630	40.390	765	1.054
500	29.578	635	36.659	770	0.918
505	37.063	640	32.985	775	0.795
510	44.149	645	29.505	780	0.696





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CIE Chromaticity Diagram

