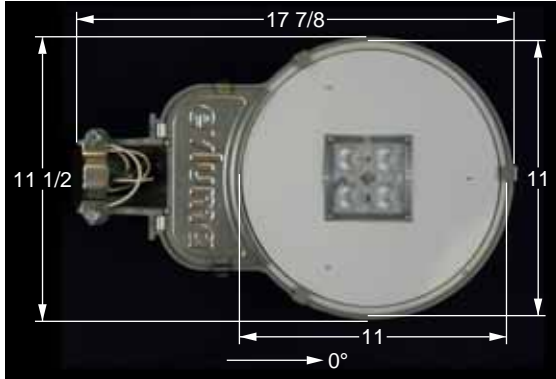




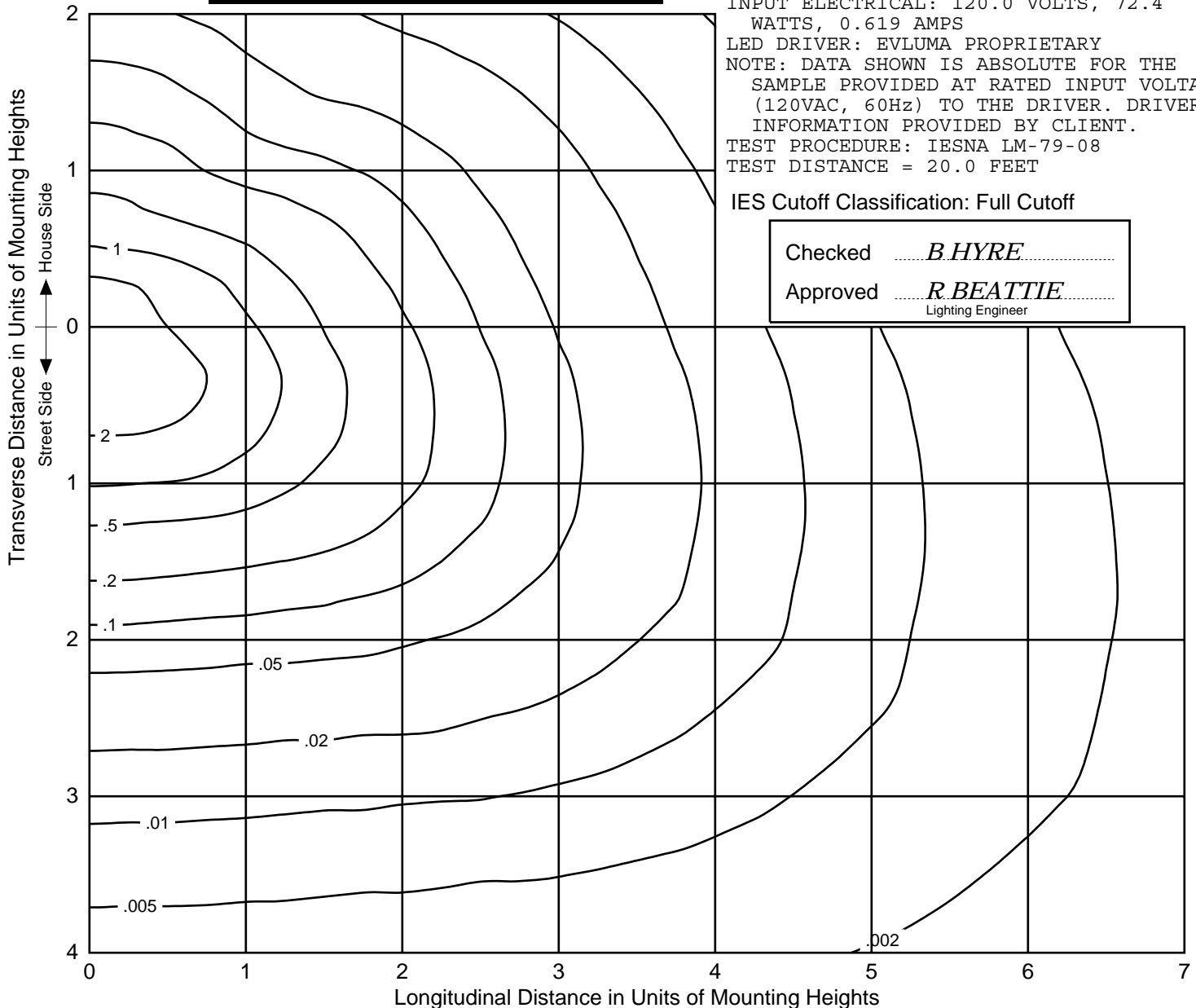
ISOFOOTCANDLE LINES OF HORIZONTAL ILLUMINATION
 Values based on 25 foot mounting height.



REPORT NUMBER: ITL87424-GONIOPHOTOMETRY
 ISSUE DATE: 05/27/16 PAGE: 1 OF 8
 PREPARED FOR: EVLUMA
 CATALOG NUMBER: AMAX-70-4K-6-3-C-S3-0
 LUMINAIRE: CAST FINNED METAL HOUSING WITH FORMED METAL ACCESS DOOR, 1 WHITE CIRCUIT BOARD WITH 4 SETS OF 4 LEDS, WHITE FIBROUS REFLECTOR, CLEAR PLASTIC INTERIOR LENS WITH ONE OPTIC BELOW EACH SET OF 4 LEDS, CLEAR MICRO-PRISMATIC FLAT GLASS 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, 72.4 WATTS, 0.619 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: Full Cutoff

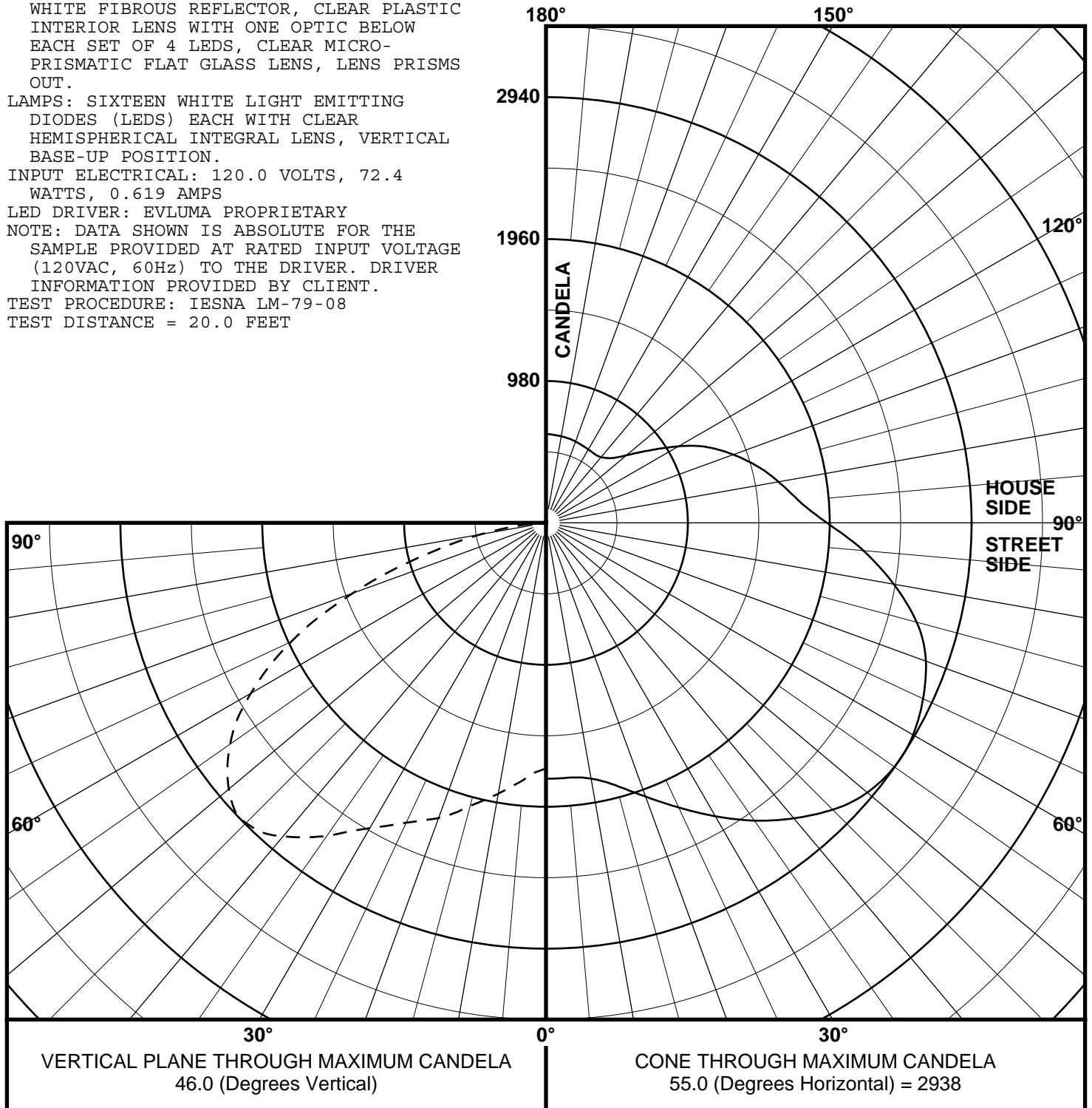
Checked *B. HYRE*
 Approved *R. BEATTIE*
 Lighting Engineer





REPORT NUMBER: ITL87424-GONIOPHOTOMETRY
 ISSUE DATE: 05/27/16 PAGE: 2 OF 8
 PREPARED FOR: EVLUMA
 CATALOG NUMBER: AMAX-70-4K-6-3-C-S3-0
 LUMINAIRE: CAST FINNED METAL HOUSING
 WITH FORMED METAL ACCESS DOOR, 1 WHITE
 CIRCUIT BOARD WITH 4 SETS OF 4 LEDS,
 WHITE FIBROUS REFLECTOR, CLEAR PLASTIC
 INTERIOR LENS WITH ONE OPTIC BELOW
 EACH SET OF 4 LEDS, CLEAR MICRO-
 PRISMATIC FLAT GLASS 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, 72.4
 WATTS, 0.619 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

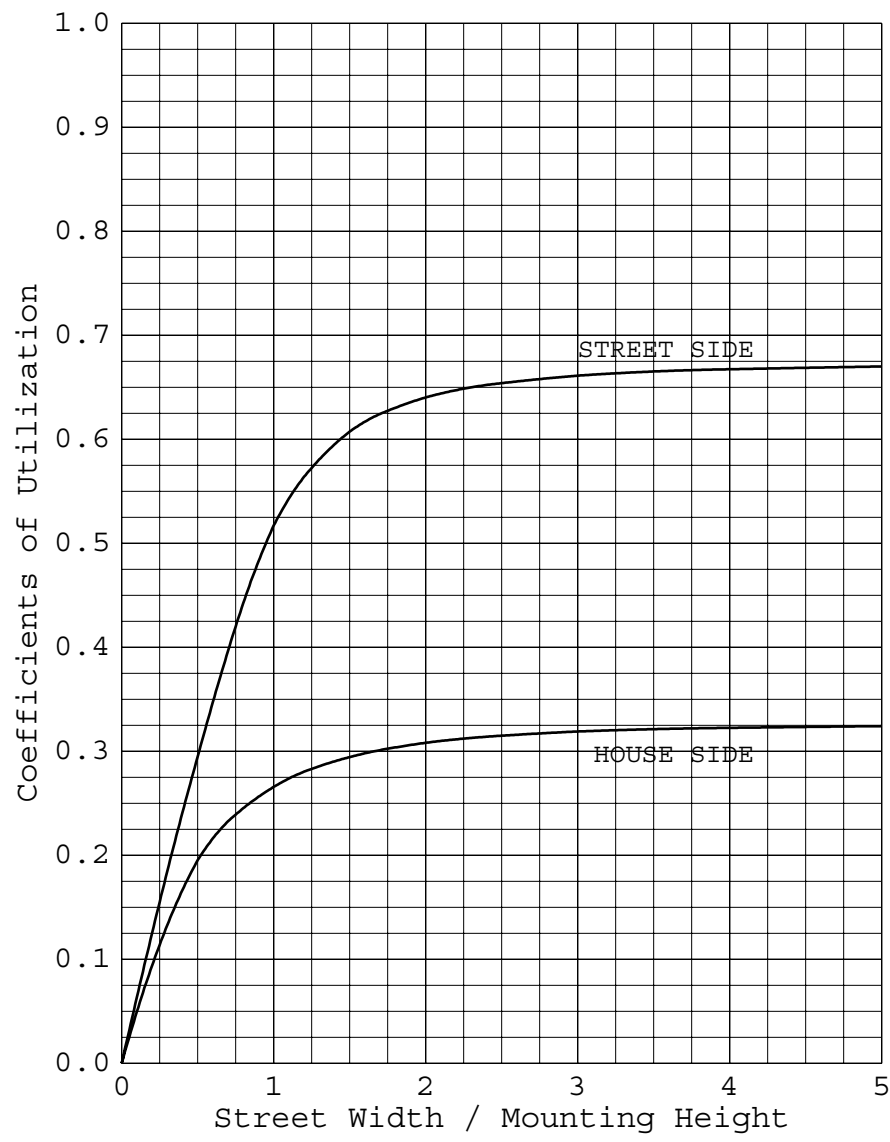




REPORT NUMBER: ITL87424-GONIOPHOTOMETRY
 ISSUE DATE: 05/27/16
 PREPARED FOR: EVLUMA

PAGE: 3 OF 8

COEFFICIENTS OF UTILIZATION AND FLUX DISTRIBUTION



	LUMENS	PERCENT OF FIXTURE
DOWNWARD STREET SIDE	4480	67.3
DOWNWARD HOUSE SIDE	2173	32.7
DOWNWARD TOTAL	6653	100.0
UPWARD STREET SIDE	0	0.0
UPWARD HOUSE SIDE	0	0.0
UPWARD TOTAL	0	0.0
TOTAL FLUX	6653	100.0

EFFICACY = 91.9 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.



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

PHONE: (303) 442-1255 • FAX: (970) 535-3114 • E-MAIL: itl@itlboulder.com • WEBSITE: www.itlboulder.com

REPORT NUMBER: ITL87424-GONIOPHOTOMETRY
ISSUE DATE: 05/27/16
PREPARED FOR: EVLUMA

PAGE: 4 OF 8

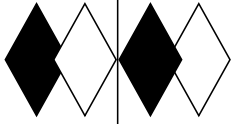
FLUX DISTRIBUTION BY SOLID ANGLE

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

	LUMENS	PERCENT OF FIXTURE	BUG ZONE RATINGS
FORWARD LIGHT	4480.	67.3	
FL (0- 30)	891.3	13.4	
FM (30- 60)	2564.6	38.5	
FH (60- 80)	958.9	14.4	G1
FVH(80- 90)	65.2	1.0	G1
BACK LIGHT	2173.	32.7	
BL (0- 30)	621.0	9.3	B2
BM (30- 60)	1071.2	16.1	B2
BH (60- 80)	448.0	6.7	B1 G1
BVH(80- 90)	33.0	0.5	G1
UPLIGHT	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	6653.	100.0	

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

BUG RATING: B2 U0 G1



REPORT NUMBER: ITL87424-GONIOPHOTOMETRY
 ISSUE DATE: 05/27/16
 PREPARED FOR: EVLUMA

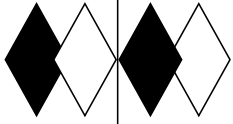
PAGE: 5 OF 8

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	
	90.0	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	
	87.5	11.	11.	13.	15.	21.	32.	47.	62.	55.	47.	36.
	85.0	31.	30.	34.	42.	59.	93.	143.	187.	176.	139.	111.
	82.5	57.	57.	63.	78.	111.	180.	281.	374.	340.	266.	219.
	80.0	90.	90.	100.	123.	176.	288.	456.	597.	529.	422.	352.
	77.5	128.	128.	143.	175.	251.	417.	660.	854.	759.	603.	506.
	75.0	174.	174.	193.	236.	341.	569.	879.	1136.	1014.	801.	678.
	72.5	227.	227.	251.	306.	447.	753.	1150.	1442.	1281.	1014.	862.
	70.0	289.	289.	320.	388.	575.	938.	1421.	1746.	1551.	1239.	1059.
	67.5	366.	366.	404.	490.	727.	1157.	1696.	2028.	1815.	1454.	1251.
	65.0	461.	461.	508.	623.	902.	1374.	1944.	2264.	2049.	1664.	1433.
	62.5	577.	585.	635.	778.	1092.	1598.	2163.	2438.	2226.	1827.	1579.
V	60.0	722.	729.	784.	951.	1292.	1831.	2354.	2562.	2363.	1939.	1674.
E	57.5	866.	878.	943.	1138.	1512.	2061.	2531.	2655.	2467.	2030.	1748.
R	55.0	1036.	1040.	1126.	1351.	1764.	2280.	2663.	2739.	2533.	2097.	1816.
T	52.5	1233.	1244.	1339.	1589.	2022.	2483.	2775.	2803.	2599.	2158.	1879.
I	50.0	1450.	1458.	1566.	1831.	2246.	2640.	2860.	2864.	2643.	2187.	1924.
C	47.5	1655.	1654.	1764.	2052.	2419.	2757.	2923.	2872.	2661.	2196.	1933.
A	46.0 <<	1767.	1767.	1879.	2169.	2510.	2801.	2938.	2874.	2651.	2201.	1941.
L	45.0	1834.	1832.	1957.	2232.	2568.	2829.	2931.	2877.	2643.	2198.	1947.
	42.5	1968.	1978.	2113.	2358.	2646.	2843.	2900.	2812.	2586.	2167.	1935.
A	40.0	2082.	2103.	2229.	2454.	2679.	2812.	2826.	2732.	2507.	2104.	1895.
N	37.5	2197.	2210.	2309.	2488.	2655.	2749.	2737.	2618.	2428.	2049.	1866.
G	35.0	2267.	2283.	2343.	2484.	2604.	2662.	2639.	2537.	2352.	2004.	1842.
L	32.5	2291.	2311.	2357.	2451.	2540.	2570.	2526.	2431.	2245.	1952.	1821.
E	30.0	2321.	2324.	2353.	2423.	2492.	2475.	2435.	2338.	2170.	1895.	1789.
	27.5	2316.	2334.	2358.	2395.	2414.	2398.	2357.	2261.	2092.	1858.	1756.
	25.0	2333.	2335.	2338.	2354.	2349.	2345.	2285.	2189.	2021.	1822.	1731.
	22.5	2314.	2312.	2302.	2318.	2302.	2271.	2224.	2113.	1965.	1802.	1720.
	20.0	2280.	2281.	2263.	2281.	2251.	2197.	2169.	2052.	1909.	1762.	1704.
	17.5	2223.	2221.	2217.	2204.	2194.	2151.	2101.	1992.	1870.	1752.	1700.
	15.0	2180.	2167.	2160.	2158.	2142.	2099.	2024.	1923.	1831.	1734.	1690.
	12.5	2125.	2113.	2114.	2088.	2066.	2020.	1960.	1882.	1798.	1722.	1686.
	10.0	2043.	2031.	2022.	2002.	1979.	1953.	1899.	1824.	1762.	1707.	1687.
	7.5	1934.	1925.	1928.	1910.	1895.	1869.	1838.	1779.	1738.	1700.	1688.
	5.0	1838.	1835.	1836.	1835.	1819.	1795.	1781.	1746.	1723.	1699.	1694.
	2.5	1738.	1734.	1734.	1740.	1739.	1728.	1725.	1714.	1709.	1694.	1691.
	0.0	1696.	1696.	1696.	1696.	1696.	1696.	1696.	1696.	1696.	1696.	1696.

PLANE OF MAXIMUM CANDELA

CONE OF MAXIMUM CANDELA



REPORT NUMBER: ITL87424-GONIOPHOTOMETRY
 ISSUE DATE: 05/27/16
 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
	90.0	0.	0.	0.	0.	0.	0.	0.	0.	0.
	87.5	33.	25.	20.	15.	10.	9.	8.	9.	8.
	85.0	105.	79.	64.	50.	35.	30.	30.	31.	31.
	82.5	200.	155.	125.	97.	67.	57.	58.	61.	61.
	80.0	316.	248.	201.	154.	106.	91.	92.	96.	97.
	77.5	451.	357.	292.	218.	149.	128.	130.	137.	137.
	75.0	596.	475.	383.	285.	194.	167.	173.	182.	181.
	72.5	753.	605.	488.	351.	239.	208.	217.	230.	230.
	70.0	916.	734.	587.	417.	285.	250.	263.	279.	281.
	67.5	1083.	858.	684.	484.	329.	289.	309.	328.	333.
	65.0	1232.	973.	777.	534.	364.	325.	349.	373.	381.
	62.5	1360.	1068.	841.	569.	392.	358.	385.	414.	427.
V	60.0	1451.	1153.	892.	598.	418.	388.	417.	449.	465.
E	57.5	1528.	1231.	944.	627.	444.	416.	447.	479.	499.
R	55.0	1591.	1306.	1001.	667.	475.	445.	474.	505.	523.
T	52.5	1659.	1370.	1064.	716.	513.	476.	502.	527.	544.
I	50.0	1710.	1431.	1132.	767.	555.	514.	532.	552.	565.
C	47.5	1735.	1485.	1197.	831.	603.	555.	567.	582.	592.
A	46.0<<	1753.	1511.	1235.	872.	632.	582.	590.	603.	610.
L	45.0	1753.	1525.	1260.	898.	654.	599.	607.	618.	624.
	42.5	1758.	1557.	1338.	970.	714.	642.	650.	660.	663.
A	40.0	1735.	1576.	1396.	1049.	775.	687.	685.	697.	701.
N	37.5	1734.	1610.	1453.	1134.	855.	735.	720.	730.	736.
G	35.0	1718.	1608.	1498.	1229.	944.	796.	761.	755.	758.
L	32.5	1708.	1617.	1527.	1313.	1048.	870.	807.	785.	778.
E	30.0	1697.	1620.	1562.	1404.	1167.	972.	866.	825.	812.
	27.5	1688.	1617.	1594.	1476.	1278.	1087.	960.	890.	863.
	25.0	1676.	1611.	1614.	1542.	1398.	1222.	1091.	995.	962.
	22.5	1670.	1623.	1635.	1591.	1507.	1370.	1252.	1153.	1115.
	20.0	1668.	1623.	1636.	1634.	1579.	1502.	1411.	1320.	1296.
	17.5	1663.	1633.	1639.	1660.	1629.	1598.	1542.	1490.	1463.
	15.0	1660.	1638.	1641.	1657.	1676.	1664.	1631.	1601.	1606.
	12.5	1659.	1639.	1638.	1665.	1686.	1686.	1690.	1675.	1677.
	10.0	1671.	1659.	1649.	1653.	1666.	1688.	1702.	1700.	1702.
	7.5	1679.	1666.	1657.	1662.	1658.	1670.	1684.	1683.	1691.
	5.0	1685.	1674.	1666.	1668.	1667.	1667.	1666.	1660.	1664.
	2.5	1689.	1686.	1684.	1688.	1685.	1681.	1675.	1661.	1665.
	0.0	1696.	1696.	1696.	1696.	1696.	1696.	1696.	1696.	1696.

CONE OF MAXIMUM CANDELA



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

PHONE: (303) 442-1255 • FAX: (970) 535-3114 • E-MAIL: itl@itlboulder.com • WEBSITE: www.itlboulder.com

REPORT NUMBER: ITL87424-GONIOPHOTOMETRY
ISSUE DATE: 05/27/16
PREPARED FOR: EVLUMA

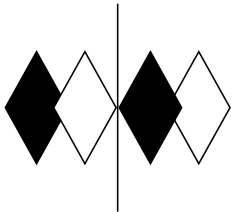
PAGE: 7 OF 8

5-DEGREE
ZONAL LUMEN SUMMARY

0- 5	41
5- 10	126
10- 15	216
15- 20	302
20- 25	379
25- 30	449
30- 35	521
35- 40	591
40- 45	643
45- 50	659
50- 55	636
55- 60	585
60- 65	516
65- 70	416
70- 75	296
75- 80	179
80- 85	81
85- 90	17

10-DEGREE
ZONAL LUMEN SUMMARY

0- 10	167
0- 20	685
0- 30	1512
0- 40	2625
0- 50	3927
0- 60	5148
0- 70	6080
0- 80	6555
0- 90	6653



itl boulder
THE LIGHT CENTER OF THE INDUSTRY SINCE 1955



NVLAP LAB CODE: 200925-0

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

PHONE: (303) 442-1255 • FAX: (970) 535-3114 • E-MAIL: itl@itlboulder.com • WEBSITE: www.itlboulder.com

REPORT NUMBER: ITL87424-GONIOPHOTOMETRY
ISSUE DATE: 05/27/16
PREPARED FOR: EVLUMA

PAGE: 8 OF 8

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

THIS ITL 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.



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

PHONE: (303)442-1255 • FAX: (970)535-3114 • E-MAIL: itl@itlboulder.com • WEBSITE: www.itlboulder.com

Page 1 of 4

REPORT NUMBER: ITL87424-SPHERE
DATE: 06/01/16
PREPARED FOR: EVLUMA
CATALOG NUMBER: AMAX-70-4K-6-3-C-S3-0

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

LUMINAIRE: CAST FINNED METAL HOUSING WITH FORMED METAL ACCESS DOOR, 1 WHITE CIRCUIT BOARD WITH 4 SETS OF 4 LEDS, WHITE FIBROUS REFLECTOR, CLEAR PLASTIC INTERIOR LENS WITH ONE OPTIC BELOW EACH SET OF 4 LEDS, CLEAR MICRO-PRISMATIC FLAT GLASS 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	12/07/16
	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)

THIS ITL 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.

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



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

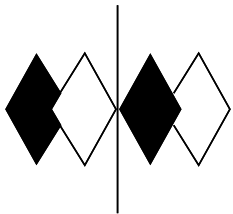
PHONE: (303)442-1255 • FAX: (970)535-3114 • E-MAIL: itl@itlboulder.com • WEBSITE: www.itlboulder.com
 REPORT NUMBER: ITL87424-SPHERE
 DATE: 06/01/16
 PREPARED FOR: EVLUMA
 CATALOG NUMBER: AMAX-70-4K-6-3-C-S3-0

RESULTS:

PHOTOMETRIC	
Total Integrated Flux (lumens)	6653 *
SPECTRORADIOMETRIC	
Observer	CIE 1931 2 degree
Chromaticity Ordinate x	0.3800
Chromaticity Ordinate y	0.3841
Observer	CIE 1976 2 degree
Chromaticity Ordinate u'	0.2219
Chromaticity Ordinate v'	0.5047
Correlated Color Temp CCT (K)	4063
ANSI C78.377-2008 Duv	0.004
Total Radiant Flux (milliWatts)	19505 *
Scotopic / Photopic Lumen Ratio	1.553
ELECTRICAL	
Input Voltage (Volts AC)	120.0
Input Current (Amps AC)	0.646
Input Power (Watts)	72.4
Input Power Factor (%)	93.4
Input Current THD (%)	10.4
Input Voltage THD (%)	1.3
EFFICACY (lumens/Watt)	91.9

COLOR RENDERING INDICES		CRI
Ra (Average 1-8)		72
R1 Light greyish red		70
R2 Dark greyish yellow		77
R3 Strong yellowish green		83
R4 Moderate yellowish green		74
R5 Light bluish green		70
R6 Light blue		69
R7 Light violet		80
R8 Light reddish purple		55
R9 Strong red		-25
R10 Strong yellow		46
R11 Strong green		72
R12 Strong blue		48
R13 Light yellowish pink (skin)		70
R14 Moderate olive green (leaf)		90

*NOTE: The total lumen output shown on this report was obtained from photometric test ITL87424-GONIOPHOTOMETRY



itl boulder

THE LIGHT CENTER OF THE INDUSTRY SINCE 1955



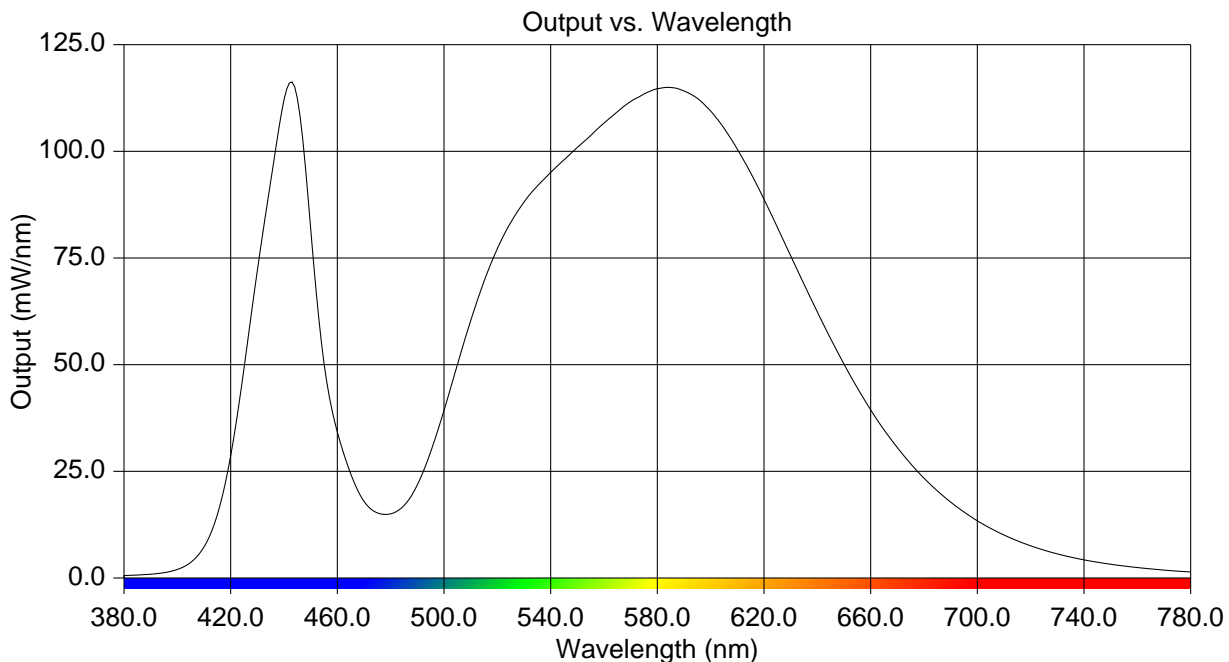
INDEPENDENT TESTING LABORATORIES, INC.
4066 CAMELOT CIRCLE, LONGMONT, CO 80504 USA

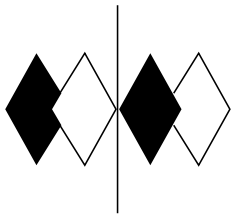
PHONE: (303)442-1255 • FAX: (970)535-3114 • E-MAIL: itl@itlboulder.com • WEBSITE: www.itlboulder.com

REPORT NUMBER: ITL87424-SPHERE
DATE: 06/01/16
PREPARED FOR: EVLUMA
CATALOG NUMBER: AMAX-70-4K-6-3-C-S3-0

RESULTS:

Wavelength	mW per nm	Wavelength	mW per nm	Wavelength	mW per nm
380	0.586	515	69.516	650	50.153
385	0.698	520	77.190	655	44.558
390	0.890	525	83.292	660	39.405
395	1.246	530	88.093	665	34.738
400	1.994	535	91.876	670	30.568
405	3.646	540	95.077	675	26.769
410	7.263	545	97.994	680	23.403
415	14.811	550	100.927	685	20.423
420	28.631	555	103.713	690	17.785
425	49.100	560	106.614	695	15.471
430	72.033	565	109.273	700	13.400
435	92.902	570	111.672	705	11.625
440	112.105	575	113.432	710	10.075
445	112.430	580	114.682	715	8.722
450	81.920	585	114.971	720	7.541
455	50.331	590	114.141	725	6.525
460	34.215	595	112.427	730	5.652
465	24.443	600	109.445	735	4.895
470	17.955	605	105.439	740	4.250
475	15.263	610	100.493	745	3.699
480	15.032	615	94.949	750	3.221
485	16.977	620	88.765	755	2.807
490	21.815	625	82.201	760	2.451
495	29.559	630	75.517	765	2.136
500	39.268	635	68.878	770	1.850
505	49.932	640	62.362	775	1.609
510	60.291	645	56.059	780	1.415





PHONE: (303)442-1255 • FAX: (970)535-3114 • E-MAIL: itl@itlboulder.com • WEBSITE: www.itlboulder.com
 REPORT NUMBER: ITL87424-SPHERE
 DATE: 06/01/16
 PREPARED FOR: EVLUMA
 CATALOG NUMBER: AMAX-70-4K-6-3-C-S3-0

CIE Chromaticity Diagram

