

Signify Classified - Internal
Cooper Lighting Solutions Photometric Lab
1121 Highway 74 South
Peachtree City, GA 30269



Scaled data based on original data using
LM-79-08 Approved Method: Electrical and Photometric Measurements of Solid-
State Lighting Products

Test Report Prepared for
Cooper Lighting Solutions
(formerly Eaton)

Brand: INVUE

Report Number: P553797

Luminaire Tested: **LXS-VA4-830-U-SYM-A**

Issue Date: 7/13/2021

Test Information

Test Method: LM-79-08
Report Number: P553797
TEST IS SCALED FROM IESNA LM-79-08 TEST DATA (G2-1803-687-4)
Test Lab: INNOVATION CENTER
Issue Date: 7/13/2021
Manufacturer: COOPER LIGHTING SOLUTIONS (FORMERLY EATON)
Product Line: INVUE
Catalog Number: LXS-VA4-830-U-SYM-A
Description: LUXESCAPE OUTDOOR ARCHITECTURAL LUMINAIRE
80 CRI, 3000K LEDS AND TYPE V OPTIC, ARM MOUNT
Light Source: -
Ballast/Driver: ELECTRONIC DRIVER

Summary

Lumens per Lamp: N/A
Luminaire Lumens: 9538 lumens
Efficiency: N/A
Efficacy: 99.4 lumens/watt
Luminous Opening: Circular (Dia: 1.62' x H: 0')
IES Classification: Type V - Short
BUG Rating: B3 - U0 - G2

Input Watts (W): 96
Input Voltage (V): NR
Input Current (Ain): NR
Voltage Rise (V): NR
Power Factor: NR
Total Harmonic Distortion (THDi): NR
Frequency (hertz): 60
Stabilization Time: NR
Operation Time: NR
Ambient Temperature (°C): NR
Test Distance: 28.75 FT

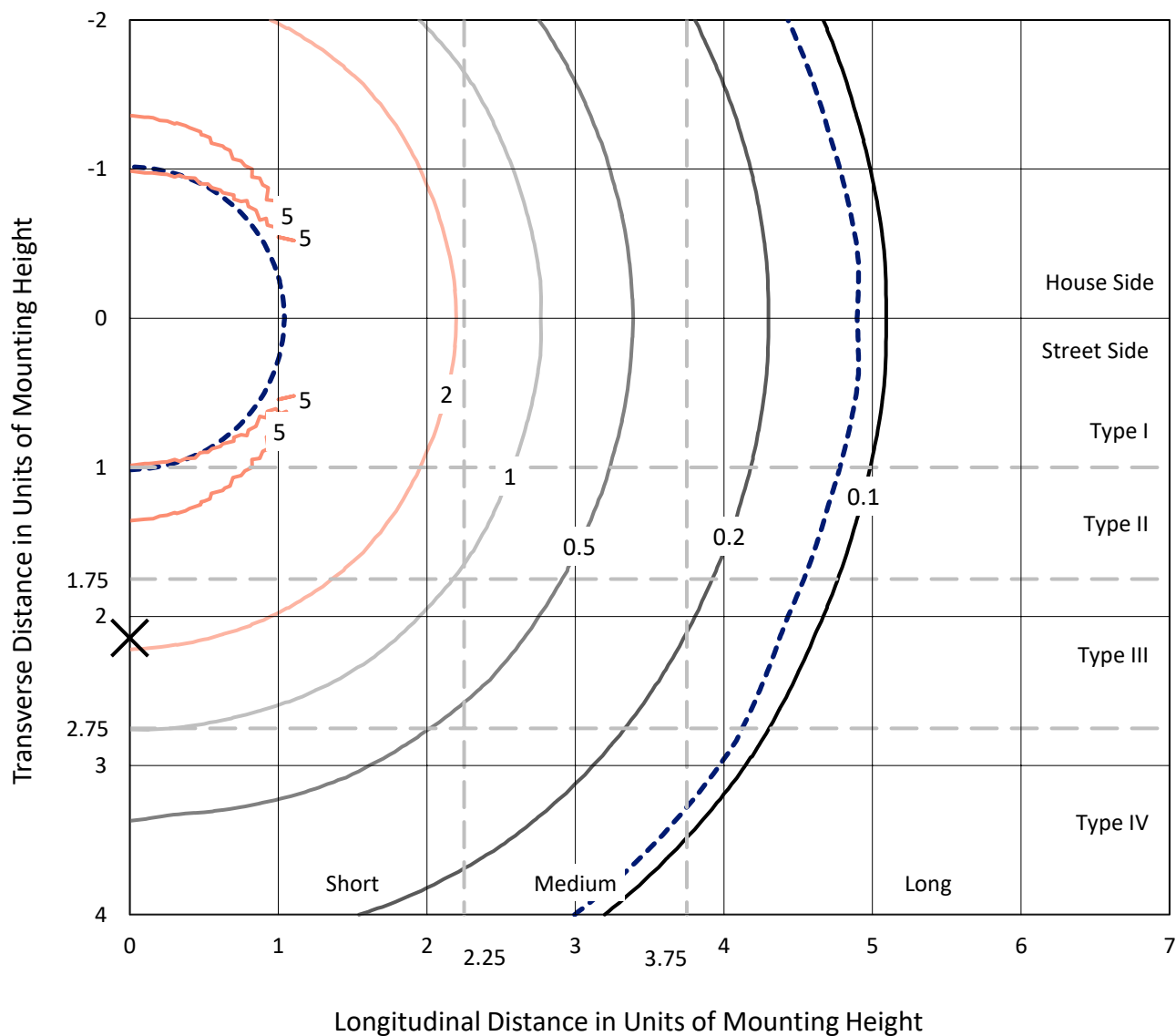


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CATALOG NUMBER: LXS-VA4-830-U-SYM-A

Iso-Footcandle Lines of Horizontal Illumination

× Max cd
 - - - 1/2 Max cd

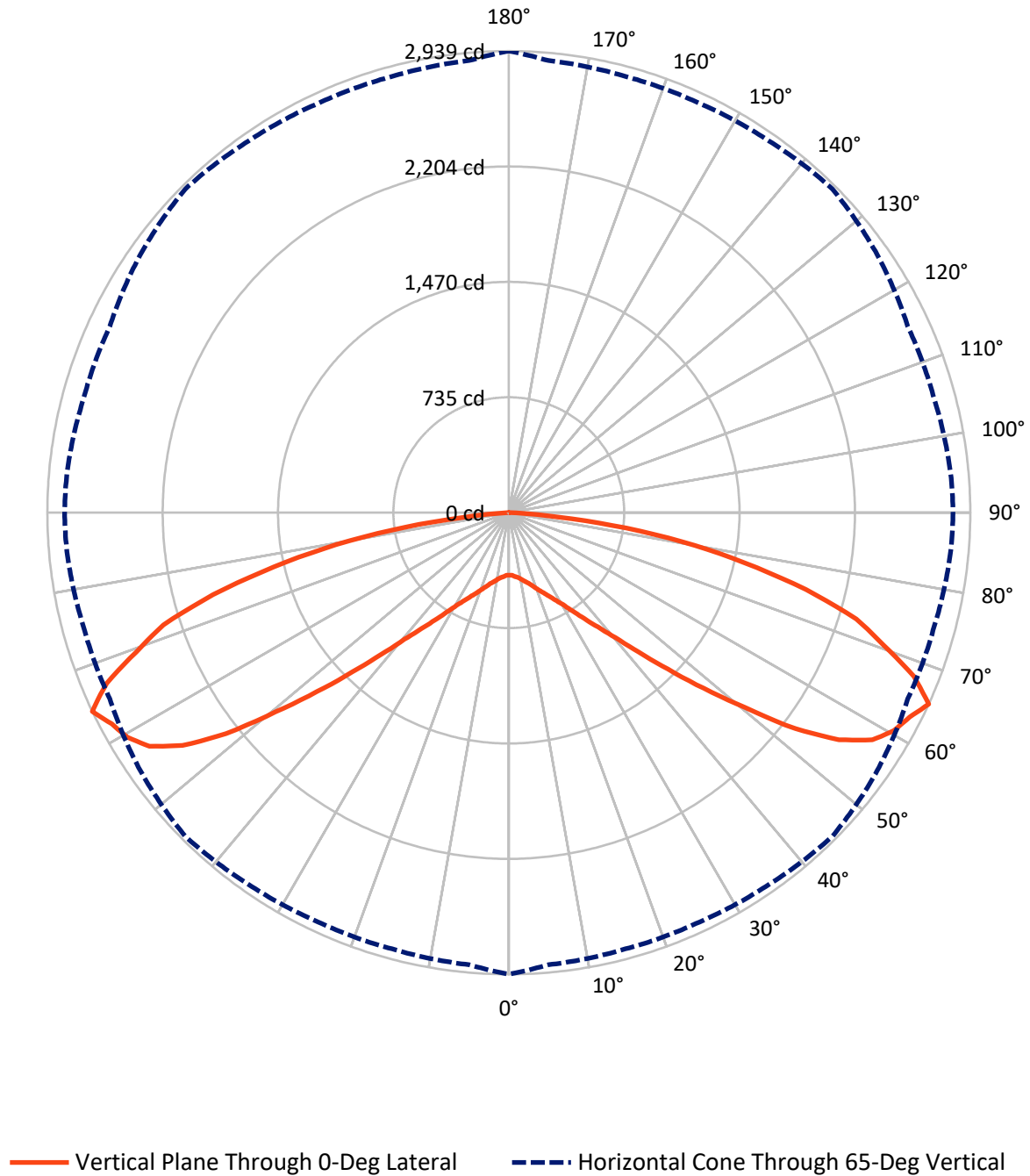


Based on 10 foot mounting height. Maximum calculated value = 5.2 fc
 Type V - Short - N/A

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Luminous Intensity Polar Plot



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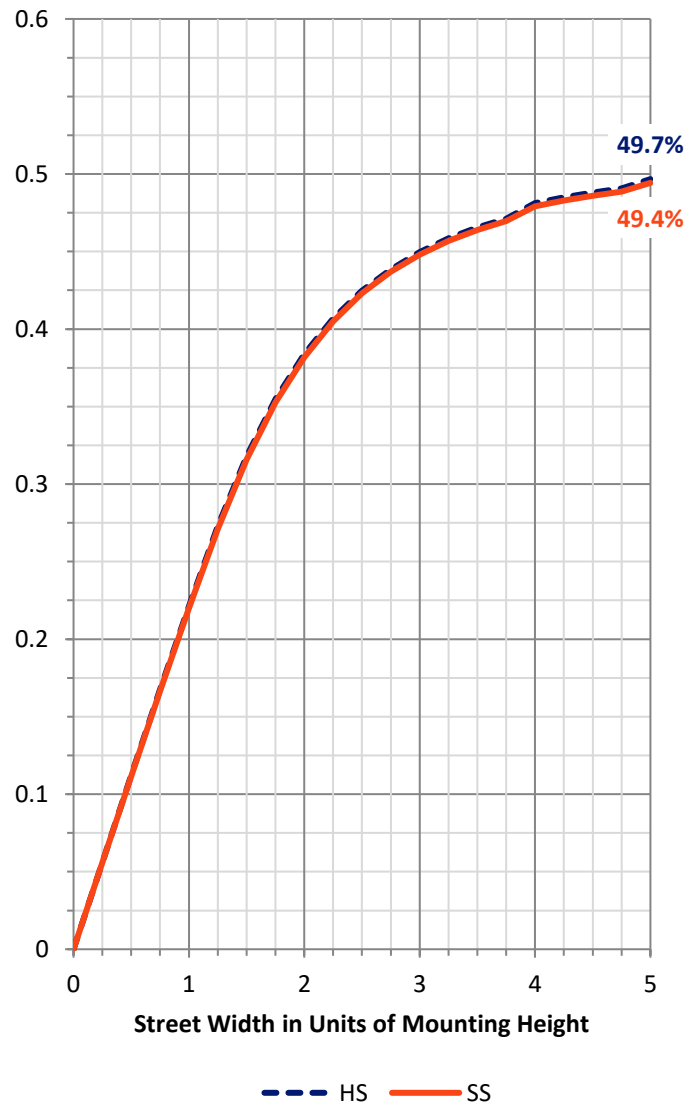
FLUX DISTRIBUTION:

		Downward	Upward	Total
House Side	Lumens	4769.0	0.0	4769.0
	% Fixture	50.0	0.0	50.0
Street Side	Lumens	4769.0	0.0	4769.0
	% Fixture	50.0	0.0	50.0
Total	Lumens	9538.0	0.0	9538.0
	% Fixture	100.0	0.0	100.0

Coefficient of Utilization

ZONAL LUMENS:

Zone	Lumens	% Fixture
0°-10°	39.4	0.4
10°-20°	133.6	1.4
20°-30°	272.4	2.9
30°-40°	520.0	5.5
40°-50°	1105.5	11.6
50°-60°	2179.6	22.9
60°-70°	2768.7	29.0
70°-80°	2076.1	21.8
80°-90°	442.8	4.6
90°-100°	0.0	0.0
100°-110°	0.0	0.0
110°-120°	0.0	0.0
120°-130°	0.0	0.0
130°-140°	0.0	0.0
140°-150°	0.0	0.0
150°-160°	0.0	0.0
160°-170°	0.0	0.0
170°-180°	0.0	0.0
0°-90°	9538.0	100.0
0°-180°	9538.0	100.0



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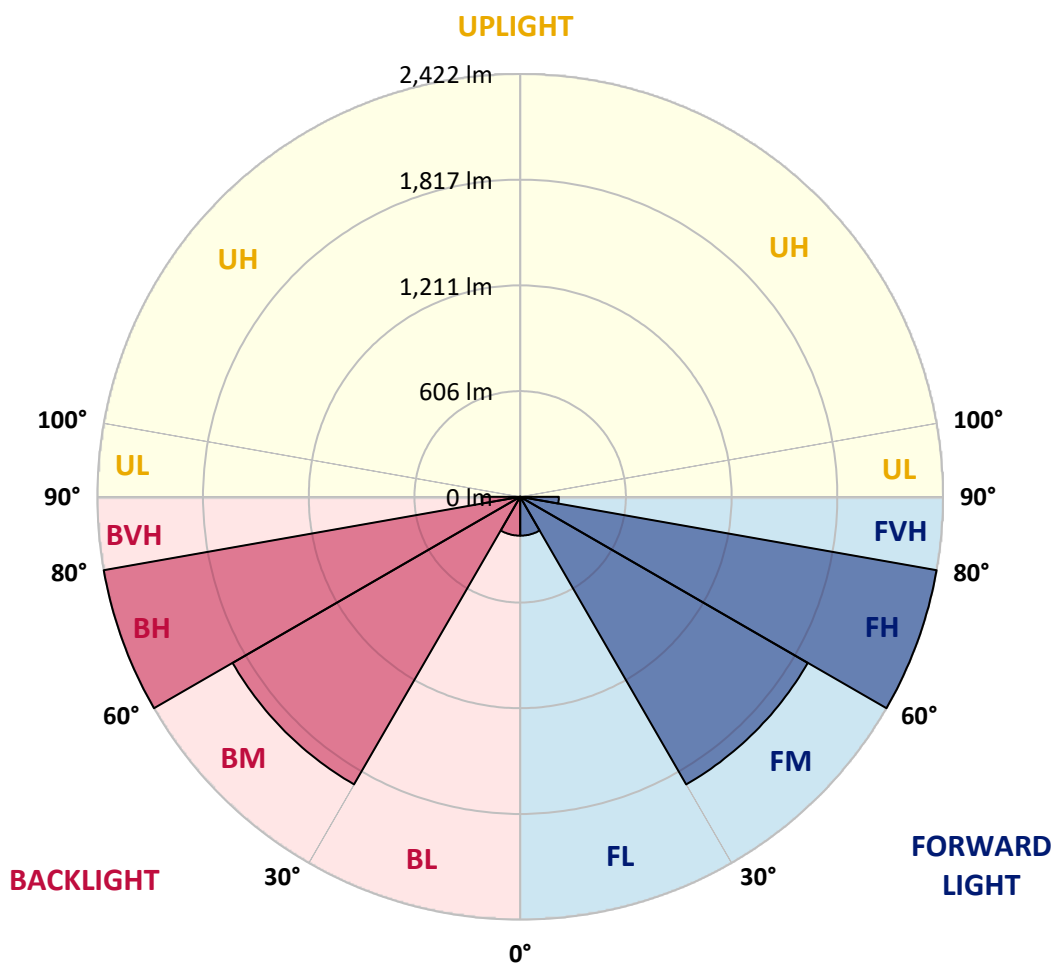
CATALOG NUMBER: LXS-VA4-830-U-SYM-A

LUMINAIRE CLASSIFICATION SYSTEM LUMEN TABLE AND BUG RATING:

Zone		Lumens	% Fixture	Zone Rating/Lumen Limit		
				B	U	G
FL	(0°-30°)	222.7	2.3			
FM	(30°-60°)	1902.6	19.9			
FH	(60°-80°)	2422.4	25.4			G2/5000
FVH	(80°-90°)	221.4	2.3			G2/225
BL	(0°-30°)	222.7	2.3	B1/500		
BM	(30°-60°)	1902.6	19.9	B2/2500		
BH	(60°-80°)	2422.4	25.4	B3/2500		G2/5000
BVH	(80°-90°)	221.4	2.3			G2/225
UL	(90°-100°)	0.0	0.0		U0/0	
UH	(100°-180°)	0.0	0.0		U0/0	

BUG Rating: B3-U0-G2

Type V Short



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CATALOG NUMBER: LXS-VA4-830-U-SYM-A

CANDELA DISTRIBUTION (FULL):

	0°	5°	15°	25°	35°	45°	55°	65°	75°	85°	90°
0°	398.0	398.0	398.0	398.0	398.0	398.0	398.0	398.0	398.0	398.0	398.0
2.5°	398.0	398.0	398.0	398.0	398.0	398.0	398.0	398.0	398.0	398.0	398.0
5°	408.7	405.2	405.2	405.2	405.2	405.2	405.2	405.2	405.2	405.2	405.2
7.5°	415.8	415.8	415.8	415.8	415.8	415.8	415.8	415.8	415.8	415.8	415.8
10°	430.0	430.0	430.0	430.0	430.0	430.0	426.5	426.5	426.5	426.5	426.5
12.5°	447.8	447.8	447.8	444.2	444.2	444.2	444.2	444.2	444.2	444.2	444.2
15°	465.6	465.6	465.6	465.6	465.6	462.0	462.0	462.0	462.0	462.0	462.0
17.5°	490.4	490.4	490.4	486.9	486.9	486.9	486.9	483.3	486.9	486.9	486.9
20°	518.9	518.9	515.3	515.3	515.3	515.3	511.8	511.8	511.8	511.8	511.8
22.5°	550.9	550.9	547.3	547.3	547.3	543.8	543.8	540.2	540.2	540.2	540.2
25°	586.4	586.4	582.8	582.8	582.8	579.3	575.7	575.7	575.7	575.7	575.7
27.5°	629.1	629.1	625.5	625.5	621.9	618.4	614.8	614.8	614.8	614.8	614.8
30°	678.8	678.8	678.8	675.3	671.7	668.1	664.6	661.0	661.0	661.0	661.0
32.5°	746.3	742.8	742.8	735.7	735.7	728.6	725.0	721.5	721.5	721.5	717.9
35°	828.1	824.5	821.0	821.0	813.9	806.7	799.6	796.1	792.5	792.5	792.5
37.5°	924.0	924.0	916.9	909.8	906.3	899.2	892.0	888.5	884.9	884.9	877.8
40°	1044.9	1044.9	1041.3	1034.2	1023.5	1016.4	1016.4	1009.3	1005.8	1002.2	998.7
42.5°	1211.9	1208.3	1201.2	1194.1	1190.6	1172.8	1169.3	1162.1	1158.6	1158.6	1151.5
45°	1421.6	1425.1	1418.0	1403.8	1400.3	1393.2	1375.4	1375.4	1364.7	1357.6	1361.2
47.5°	1670.4	1673.9	1663.3	1649.0	1634.8	1613.5	1620.6	1606.4	1602.8	1595.7	1585.1
50°	1951.1	1947.6	1936.9	1922.7	1919.1	1897.8	1890.7	1880.0	1872.9	1880.0	1865.8
52.5°	2285.2	2285.2	2271.0	2239.0	2221.2	2221.2	2203.5	2192.8	2182.1	2182.1	2171.5
55°	2551.7	2548.2	2530.4	2516.2	2502.0	2473.6	2477.1	2452.2	2430.9	2434.5	2448.7
57.5°	2729.4	2715.2	2704.6	2672.6	2669.0	2665.5	2626.4	2601.5	2601.5	2590.8	2601.5
60°	2818.3	2821.8	2800.5	2779.2	2757.9	2761.4	2718.8	2711.7	2697.5	2701.0	2711.7
62.5°	2864.5	2892.9	2889.4	2868.0	2900.0	2832.5	2860.9	2814.7	2797.0	2793.4	2786.3
65°	2939.1	2889.4	2875.2	2875.2	2889.4	2914.2	2864.5	2804.1	2804.1	2825.4	2829.0
67.5°	2782.8	2779.2	2797.0	2836.1	2811.2	2811.2	2765.0	2736.5	2722.3	2747.2	2733.0
70°	2534.0	2555.3	2558.9	2626.4	2676.1	2622.8	2629.9	2562.4	2544.6	2583.7	2555.3
72.5°	2313.6	2221.2	2288.8	2374.0	2406.0	2441.6	2384.7	2331.4	2313.6	2335.0	2342.1
75°	1954.7	1890.7	1983.1	2057.7	2057.7	2096.8	2029.3	2015.1	2011.5	2004.4	2011.5
77.5°	1535.3	1496.2	1556.6	1624.2	1681.0	1666.8	1649.0	1613.5	1620.6	1638.4	1624.2
80°	1119.5	1059.1	1098.2	1165.7	1229.7	1236.8	1243.9	1194.1	1187.0	1215.5	1211.9
82.5°	664.6	632.6	664.6	721.5	778.3	792.5	792.5	774.8	760.5	785.4	796.1
85°	227.5	252.3	234.6	252.3	295.0	305.6	316.3	305.6	316.3	334.1	312.7
87.5°	3.6	3.6	3.6	3.6	3.6	3.6	3.6	3.6	3.6	3.6	3.6
90°	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0

Signify Classified - Internal
Cooper Lighting Solutions Photometric Lab
1121 Highway 74 South
Peachtree City, GA 30269



LM-79-2019: Approved Method: Electrical and Photometric Measurements of Solid-State Lighting Products

Report Prepared for

Cooper Lighting Solutions

(formerly Eaton)

INVUE

Report Number: SP1-2205-670-2

Test Date: 07/01/2022

Luminaire Tested: LXS-VA2-830-U-SYM-C

Data in this report applies to families of products including LXS-VA2-830.

Test Information

Test Method: LM-79-2019
 Report Number: SP1-2205-670-2
 Test Lab: COOPER LIGHTING SOLUTIONS
 Photometer: SP1 - 76IN SPHERE
 Measurement Geometry: 4π
 Issue Date: 07/01/2022
 Manufacturer: COOPER LIGHTING SOLUTIONS (FORMERLY EATON)
 Product Line: INVUE
 Catalog Number: **LXS-VA2-830-U-SYM-C**
 Description: INVUE LUXESCAPE

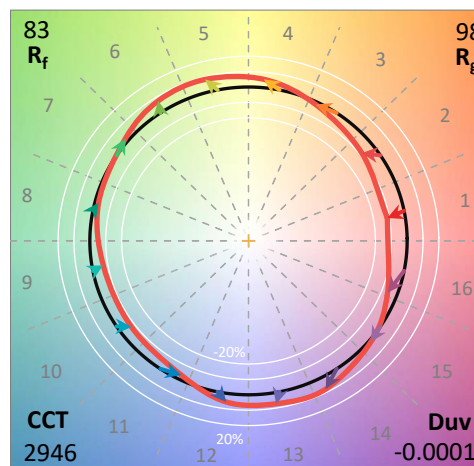
CANTILEVER MOUNT

Spectral Parameters

CCT (K): 2946
 CIE u' : 0.2525
 CIE v' : 0.5223
 Duv: -0.0001
 CIE x: 0.4406
 CIE y: 0.4050
 CIE z: 0.1544
 Peak Wavelength (nm): 605
 Dominant Wavelength (nm): 583
 Purity: 53.9
 Rf: 82.5
 Rg: 98.2

CRI (Ra): 81.3

R1:	79.2	R9:	5.4
R2:	88.2	R10:	73.5
R3:	96.1	R11:	79.6
R4:	80.2	R12:	68.9
R5:	79.2	R13:	80.9
R6:	85.2	R14:	97.9
R7:	83.2		
R8:	58.9		



Test Conditions

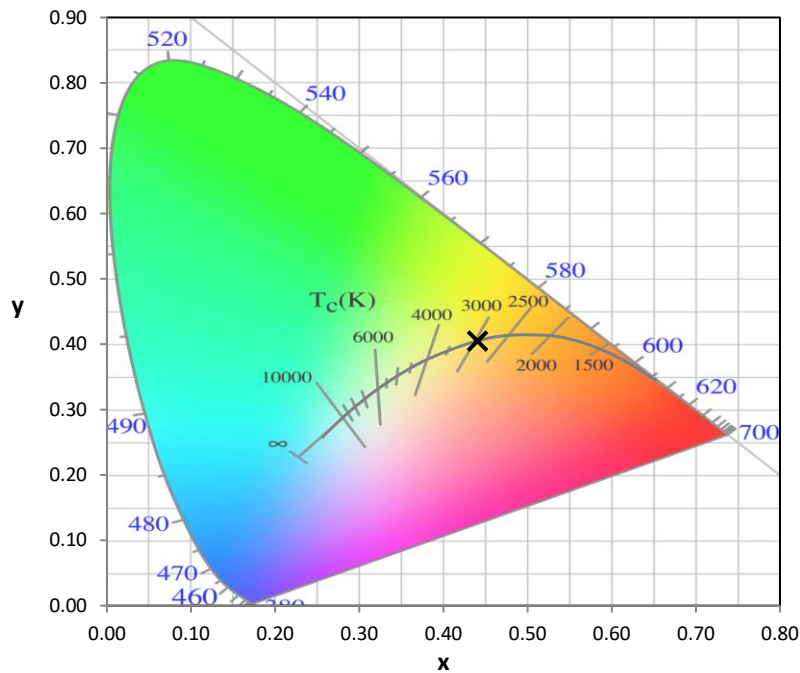
Stabilization Time: 165M
 Operation Time: 12H
 Room Temperature (°C) / RH%: 25.4/61%
 Sphere Temperature (°C): 24.8

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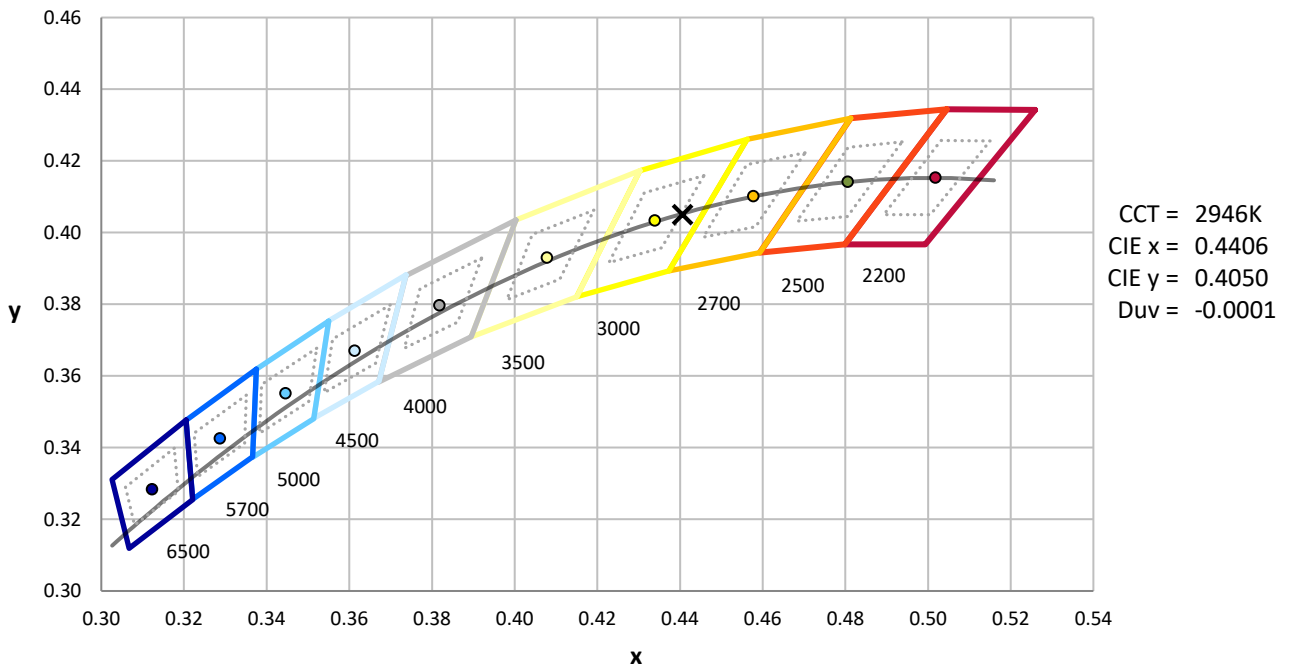
Measurement and Test Equipment			
Instrument	Identification Number	Calibration Date	Calibration Due Date
Photometer	76INCH SPHERE IN0058	2/7/2022	8/7/2022
Power Meter	XITRON 2801 IN0071	11/29/2021	11/29/2022
AC Power Source	CHROMA 61603 IN0063	11/29/2021	11/29/2022
DC Power Source	AGILENT E3634A IN0208	11/29/2021	11/29/2022
Sphere Thermometer	ONSET IN0085	11/29/2021	11/29/2022
Room Thermometer	ONSET IN0046	11/29/2021	11/29/2022

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CIE 1931 Chromaticity Diagram



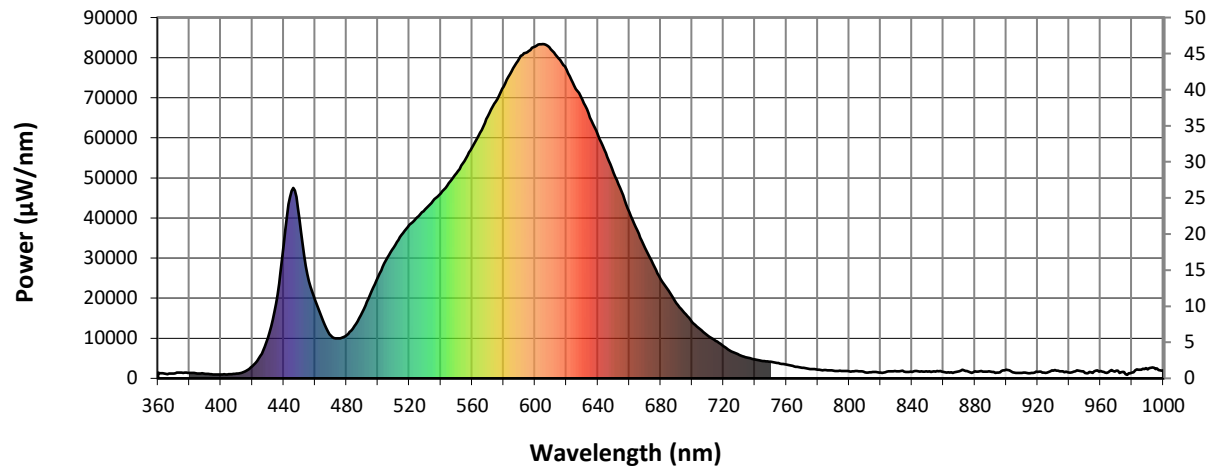
CIE 1931 Chromaticity Diagram with 2017 ANSI 7-Step and 4-Step Quadrangles



Point lies inside the ANSI 3000K 4-step quadrangle

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Photopic Flux vs. Wavelength

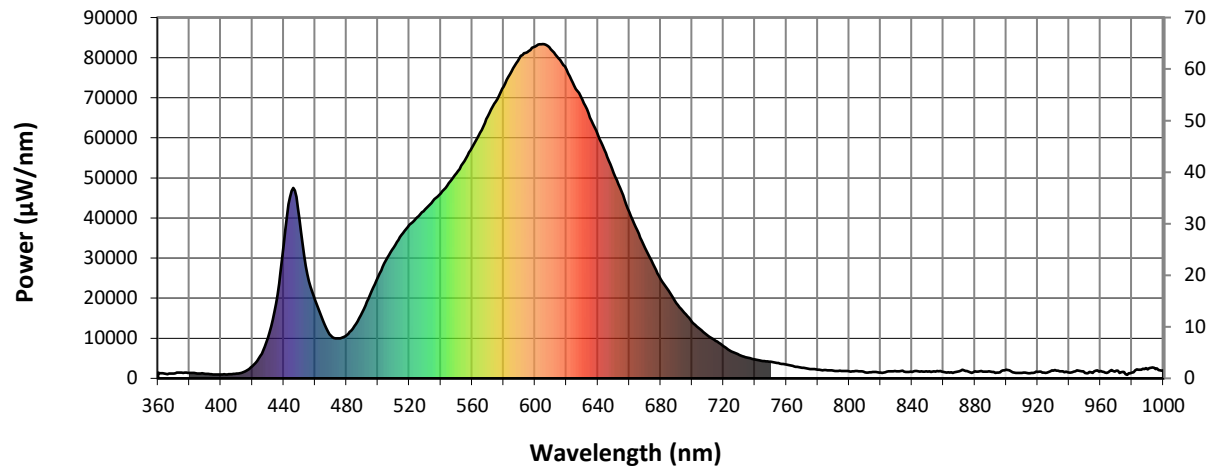


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λ (nm)	Power (μW/nm)	Lumens (Φ/nm)	λ (nm)	Power (μW/nm)	Lumens (Φ/nm)	λ (nm)	Power (μW/nm)	Lumens (Φ/nm)	λ (nm)	Power (μW/nm)	Lumens (Φ/nm)	λ (nm)	Power (μW/nm)	Lumens (Φ/nm)
360	1420	NR	490	16514	NR	620	77010	NR	750	4160	NR	880	1762	NR
365	1119	NR	495	20848	NR	625	72968	NR	755	3799	NR	885	1708	NR
370	1220	NR	500	25312	NR	630	69621	NR	760	3466	NR	890	1652	NR
375	1467	NR	505	29412	NR	635	65088	NR	765	2959	NR	895	1448	NR
380	1377	NR	510	32642	NR	640	60775	NR	770	2669	NR	900	2147	NR
385	1218	NR	515	35719	NR	645	56160	NR	775	2323	NR	905	1442	NR
390	1140	NR	520	38312	NR	650	51260	NR	780	2193	NR	910	1354	NR
395	993	NR	525	40145	NR	655	46645	NR	785	2066	NR	915	1289	NR
400	970	NR	530	42169	NR	660	41488	NR	790	1919	NR	920	1620	NR
405	1007	NR	535	44277	NR	665	36962	NR	795	1855	NR	925	1376	NR
410	1171	NR	540	46132	NR	670	32536	NR	800	1774	NR	930	1957	NR
415	1658	NR	545	48654	NR	675	28594	NR	805	1859	NR	935	1749	NR
420	3022	NR	550	51200	NR	680	24774	NR	810	1499	NR	940	1429	NR
425	5554	NR	555	54216	NR	685	21857	NR	815	1560	NR	945	1972	NR
430	10172	NR	560	57652	NR	690	18796	NR	820	1460	NR	950	1386	NR
435	18521	NR	565	61264	NR	695	16368	NR	825	1779	NR	955	1357	NR
440	33279	NR	570	65389	NR	700	14086	NR	830	1786	NR	960	1800	NR
445	46769	NR	575	69020	NR	705	12272	NR	835	1700	NR	965	1500	NR
450	39883	NR	580	72747	NR	710	10582	NR	840	1604	NR	970	1903	NR
455	25958	NR	585	76555	NR	715	9375	NR	845	1660	NR	975	1631	NR
460	19577	NR	590	79922	NR	720	7989	NR	850	1661	NR	980	1405	NR
465	14390	NR	595	81358	NR	725	6739	NR	855	1690	NR	985	2143	NR
470	10591	NR	600	82761	NR	730	5847	NR	860	1607	NR	990	2213	NR
475	9960	NR	605	83375	NR	735	5164	NR	865	1492	NR	995	2325	NR
480	10779	NR	610	82032	NR	740	4742	NR	870	1768	NR	1000	2016	NR
485	12985	NR	615	79853	NR	745	4333	NR	875	1864	NR			

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Scotopic Flux vs. Wavelength



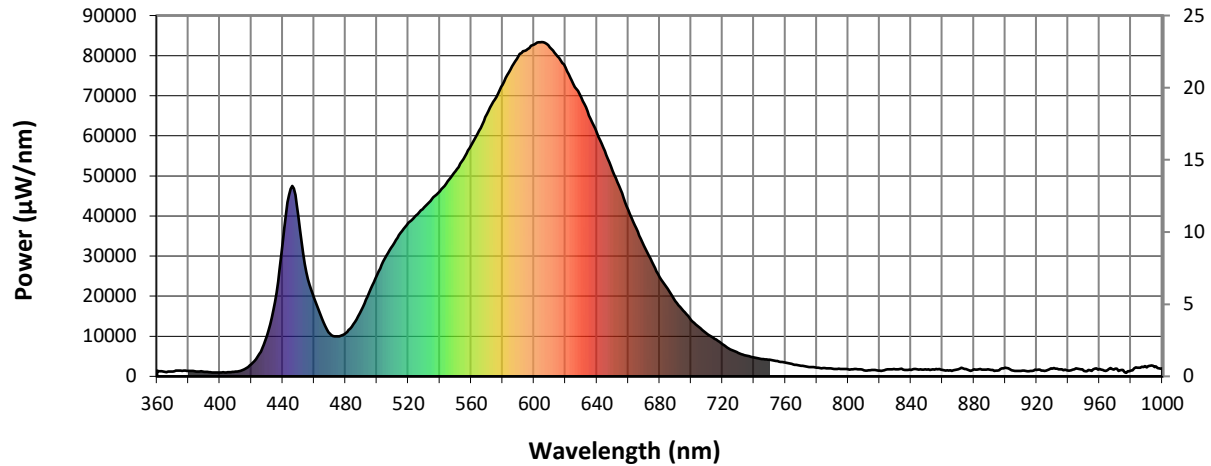
Scotopic Lumens: 5220.3

S/P: 1.28

λ (nm)	Power (μW/nm)	Lumens (Φ/nm)	λ (nm)	Power (μW/nm)	Lumens (Φ/nm)	λ (nm)	Power (μW/nm)	Lumens (Φ/nm)	λ (nm)	Power (μW/nm)	Lumens (Φ/nm)	λ (nm)	Power (μW/nm)	Lumens (Φ/nm)
360	1420	NR	490	16514	NR	620	77010	NR	750	4160	NR	880	1762	NR
365	1119	NR	495	20848	NR	625	72968	NR	755	3799	NR	885	1708	NR
370	1220	NR	500	25312	NR	630	69621	NR	760	3466	NR	890	1652	NR
375	1467	NR	505	29412	NR	635	65088	NR	765	2959	NR	895	1448	NR
380	1377	NR	510	32642	NR	640	60775	NR	770	2669	NR	900	2147	NR
385	1218	NR	515	35719	NR	645	56160	NR	775	2323	NR	905	1442	NR
390	1140	NR	520	38312	NR	650	51260	NR	780	2193	NR	910	1354	NR
395	993	NR	525	40145	NR	655	46645	NR	785	2066	NR	915	1289	NR
400	970	NR	530	42169	NR	660	41488	NR	790	1919	NR	920	1620	NR
405	1007	NR	535	44277	NR	665	36962	NR	795	1855	NR	925	1376	NR
410	1171	NR	540	46132	NR	670	32536	NR	800	1774	NR	930	1957	NR
415	1658	NR	545	48654	NR	675	28594	NR	805	1859	NR	935	1749	NR
420	3022	NR	550	51200	NR	680	24774	NR	810	1499	NR	940	1429	NR
425	5554	NR	555	54216	NR	685	21857	NR	815	1560	NR	945	1972	NR
430	10172	NR	560	57652	NR	690	18796	NR	820	1460	NR	950	1386	NR
435	18521	NR	565	61264	NR	695	16368	NR	825	1779	NR	955	1357	NR
440	33279	NR	570	65389	NR	700	14086	NR	830	1786	NR	960	1800	NR
445	46769	NR	575	69020	NR	705	12272	NR	835	1700	NR	965	1500	NR
450	39883	NR	580	72747	NR	710	10582	NR	840	1604	NR	970	1903	NR
455	25958	NR	585	76555	NR	715	9375	NR	845	1660	NR	975	1631	NR
460	19577	NR	590	79922	NR	720	7989	NR	850	1661	NR	980	1405	NR
465	14390	NR	595	81358	NR	725	6739	NR	855	1690	NR	985	2143	NR
470	10591	NR	600	82761	NR	730	5847	NR	860	1607	NR	990	2213	NR
475	9960	NR	605	83375	NR	735	5164	NR	865	1492	NR	995	2325	NR
480	10779	NR	610	82032	NR	740	4742	NR	870	1768	NR	1000	2016	NR
485	12985	NR	615	79853	NR	745	4333	NR	875	1864	NR			

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Melanopic Flux vs. Wavelength



Melanopic Lumens: 1923.7 S/P: 0.47

λ (nm)	Power (μW/nm)	Lumens (Φ/nm)	λ (nm)	Power (μW/nm)	Lumens (Φ/nm)	λ (nm)	Power (μW/nm)	Lumens (Φ/nm)	λ (nm)	Power (μW/nm)	Lumens (Φ/nm)	λ (nm)	Power (μW/nm)	Lumens (Φ/nm)
360	1420	NR	490	16514	NR	620	77010	NR	750	4160	NR	880	1762	NR
365	1119	NR	495	20848	NR	625	72968	NR	755	3799	NR	885	1708	NR
370	1220	NR	500	25312	NR	630	69621	NR	760	3466	NR	890	1652	NR
375	1467	NR	505	29412	NR	635	65088	NR	765	2959	NR	895	1448	NR
380	1377	NR	510	32642	NR	640	60775	NR	770	2669	NR	900	2147	NR
385	1218	NR	515	35719	NR	645	56160	NR	775	2323	NR	905	1442	NR
390	1140	NR	520	38312	NR	650	51260	NR	780	2193	NR	910	1354	NR
395	993	NR	525	40145	NR	655	46645	NR	785	2066	NR	915	1289	NR
400	970	NR	530	42169	NR	660	41488	NR	790	1919	NR	920	1620	NR
405	1007	NR	535	44277	NR	665	36962	NR	795	1855	NR	925	1376	NR
410	1171	NR	540	46132	NR	670	32536	NR	800	1774	NR	930	1957	NR
415	1658	NR	545	48654	NR	675	28594	NR	805	1859	NR	935	1749	NR
420	3022	NR	550	51200	NR	680	24774	NR	810	1499	NR	940	1429	NR
425	5554	NR	555	54216	NR	685	21857	NR	815	1560	NR	945	1972	NR
430	10172	NR	560	57652	NR	690	18796	NR	820	1460	NR	950	1386	NR
435	18521	NR	565	61264	NR	695	16368	NR	825	1779	NR	955	1357	NR
440	33279	NR	570	65389	NR	700	14086	NR	830	1786	NR	960	1800	NR
445	46769	NR	575	69020	NR	705	12272	NR	835	1700	NR	965	1500	NR
450	39883	NR	580	72747	NR	710	10582	NR	840	1604	NR	970	1903	NR
455	25958	NR	585	76555	NR	715	9375	NR	845	1660	NR	975	1631	NR
460	19577	NR	590	79922	NR	720	7989	NR	850	1661	NR	980	1405	NR
465	14390	NR	595	81358	NR	725	6739	NR	855	1690	NR	985	2143	NR
470	10591	NR	600	82761	NR	730	5847	NR	860	1607	NR	990	2213	NR
475	9960	NR	605	83375	NR	735	5164	NR	865	1492	NR	995	2325	NR
480	10779	NR	610	82032	NR	740	4742	NR	870	1768	NR	1000	2016	NR
485	12985	NR	615	79853	NR	745	4333	NR	875	1864	NR			

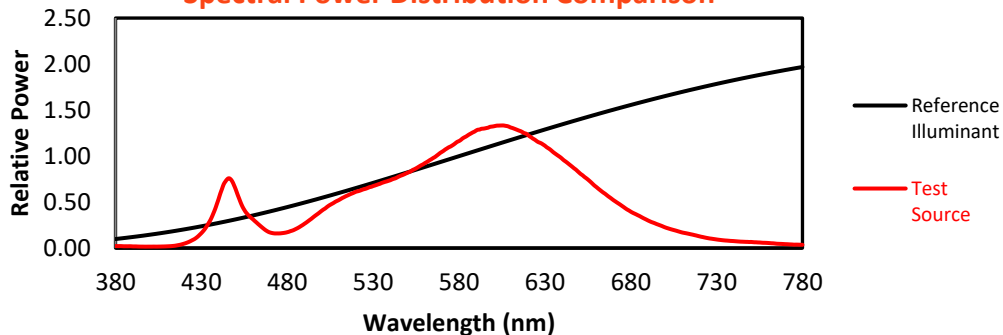
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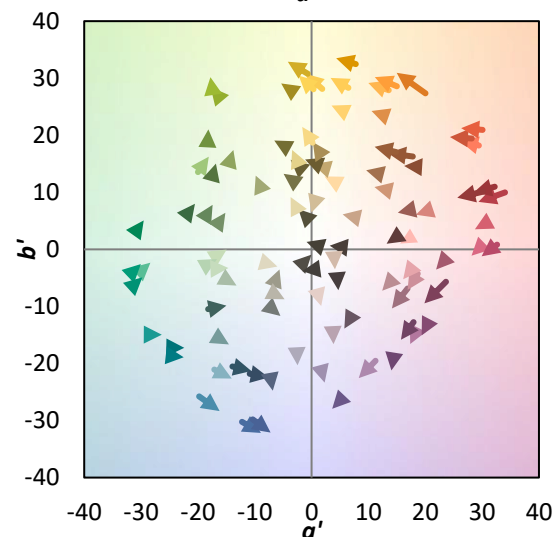
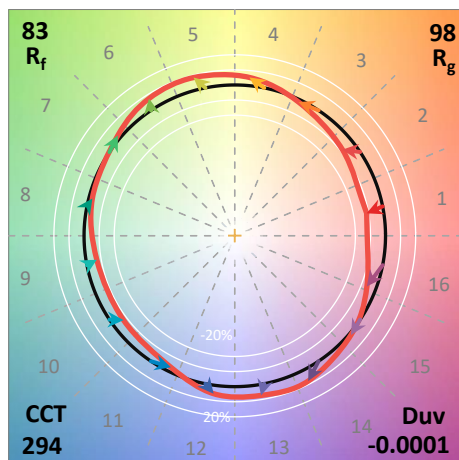
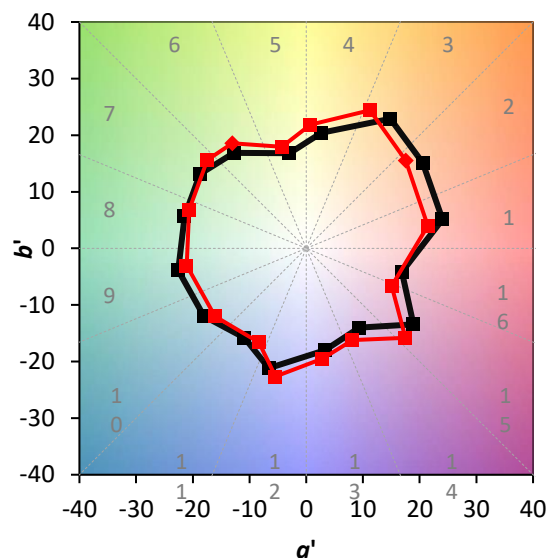
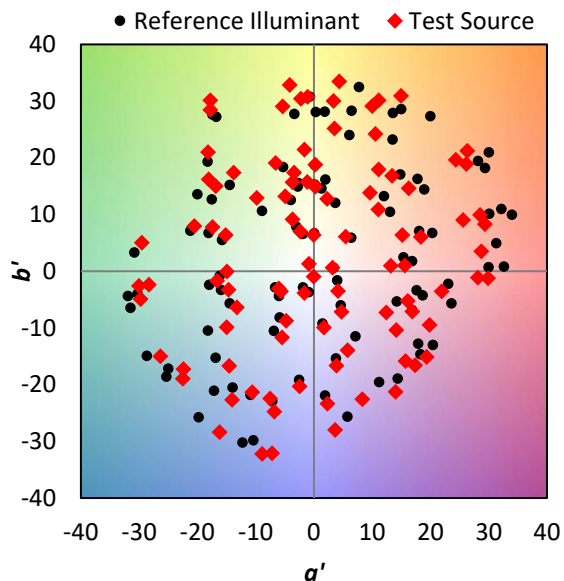
Summary

$R_f = 82.5$
 $R_g = 98.2$
 CIE $R_a = 81.3$
 $R_g = 5.4$

Spectral Power Distribution Comparison



Color Vector Graphics

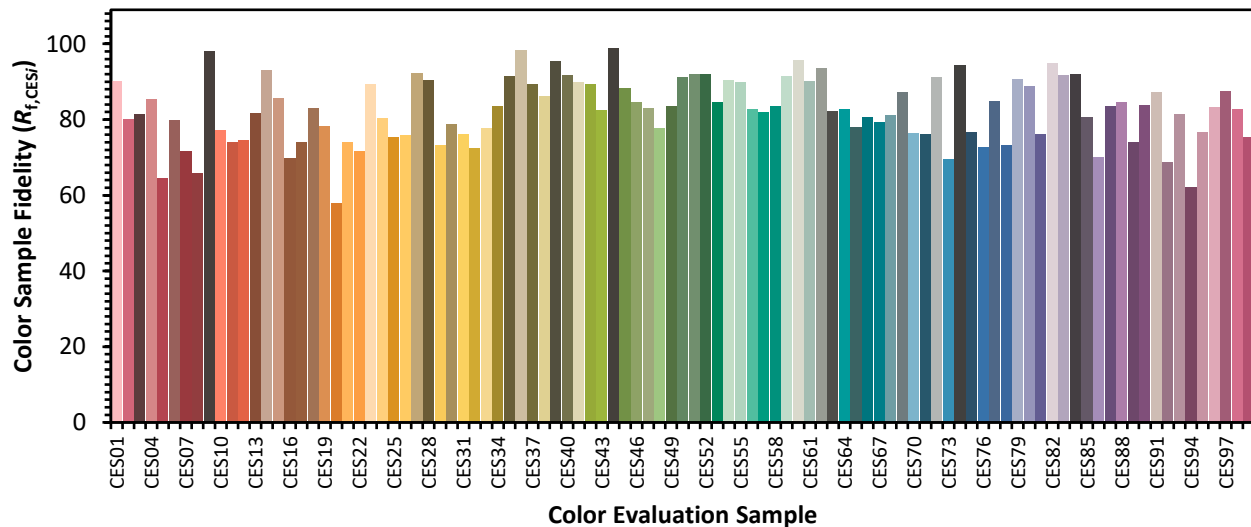


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Individual Sample Fidelity Index ($R_{f,i}$)

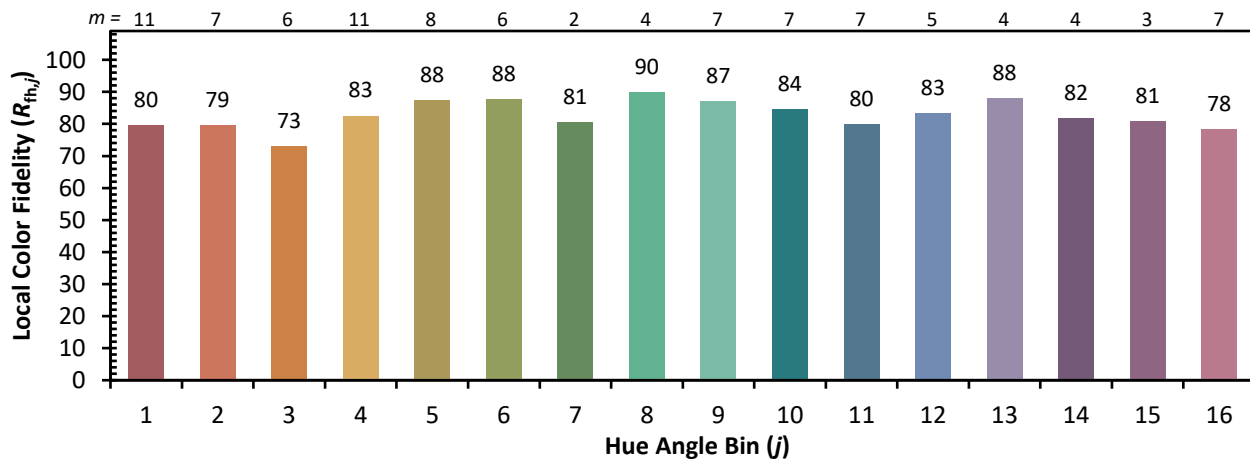
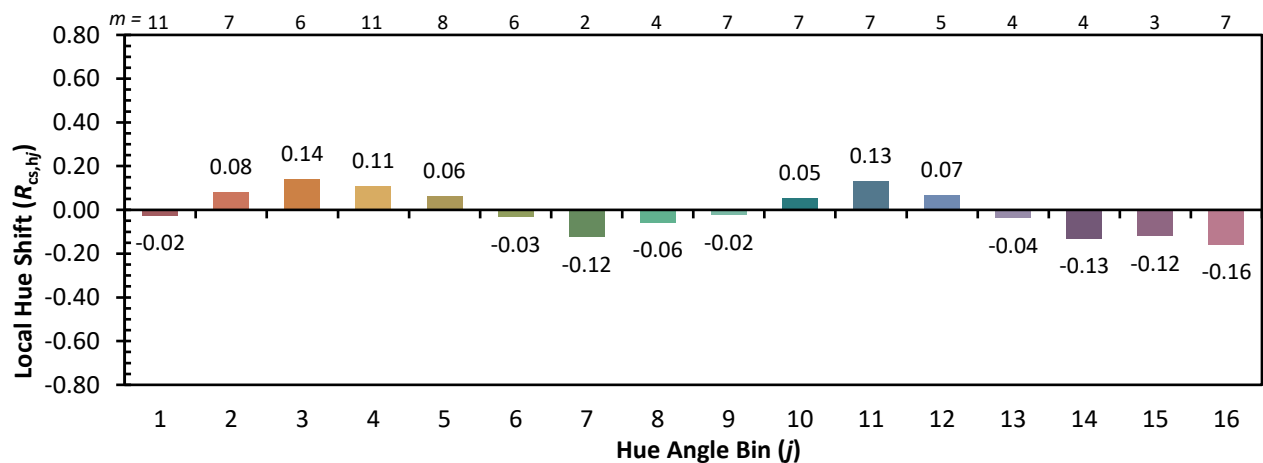
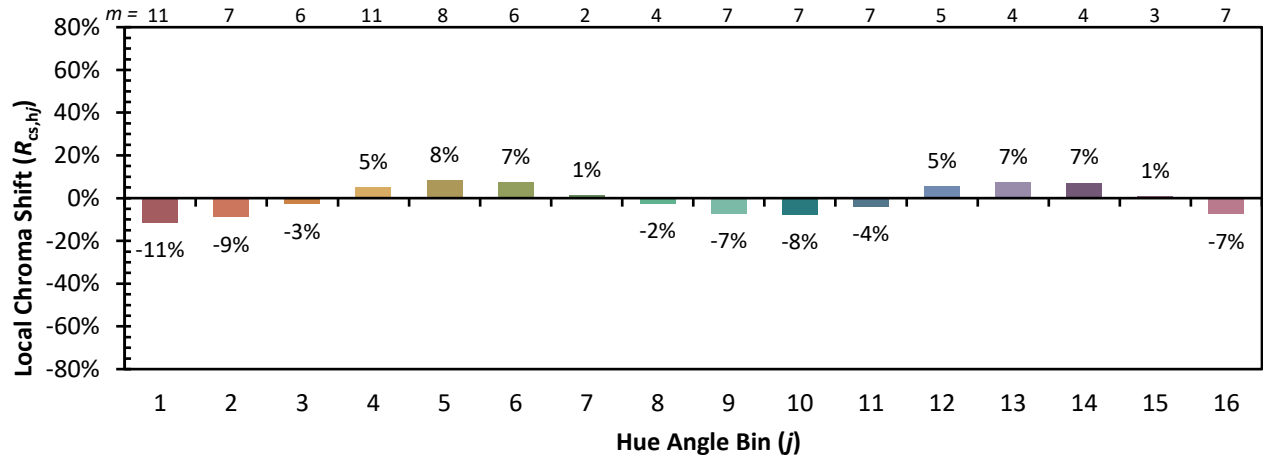
CES01 = 86	CES26 = 76	CES51 = 92	CES76 = 73
CES02 = 63	CES27 = 92	CES52 = 92	CES77 = 85
CES03 = 31	CES28 = 90	CES53 = 85	CES78 = 73
CES04 = 71	CES29 = 73	CES54 = 90	CES79 = 91
CES05 = 50	CES30 = 79	CES55 = 90	CES80 = 89
CES06 = 51	CES31 = 76	CES56 = 83	CES81 = 76
CES07 = 42	CES32 = 73	CES57 = 82	CES82 = 95
CES08 = 41	CES33 = 78	CES58 = 84	CES83 = 92
CES09 = 29	CES34 = 83	CES59 = 91	CES84 = 92
CES10 = 76	CES35 = 92	CES60 = 96	CES85 = 81
CES11 = 59	CES36 = 98	CES61 = 90	CES86 = 70
CES12 = 65	CES37 = 89	CES62 = 93	CES87 = 84
CES13 = 44	CES38 = 86	CES63 = 82	CES88 = 85
CES14 = 74	CES39 = 95	CES64 = 83	CES89 = 74
CES15 = 72	CES40 = 92	CES65 = 78	CES90 = 84
CES16 = 48	CES41 = 90	CES66 = 81	CES91 = 87
CES17 = 50	CES42 = 89	CES67 = 79	CES92 = 69
CES18 = 57	CES43 = 82	CES68 = 81	CES93 = 81
CES19 = 72	CES44 = 99	CES69 = 87	CES94 = 62
CES20 = 67	CES45 = 88	CES70 = 76	CES95 = 77
CES21 = 87	CES46 = 85	CES71 = 76	CES96 = 83
CES22 = 79	CES47 = 83	CES72 = 91	CES97 = 88
CES23 = 92	CES48 = 78	CES73 = 70	CES98 = 83
CES24 = 91	CES49 = 84	CES74 = 94	CES99 = 75
CES25 = 72	CES50 = 91	CES75 = 77	



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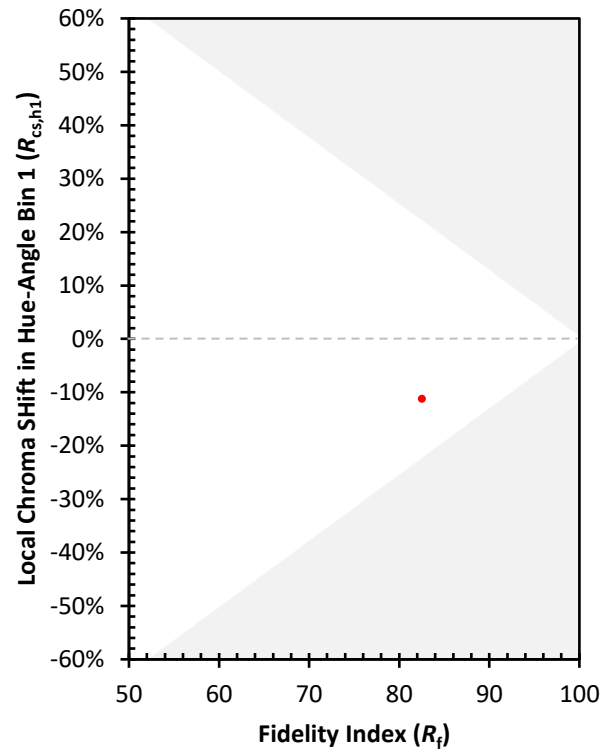
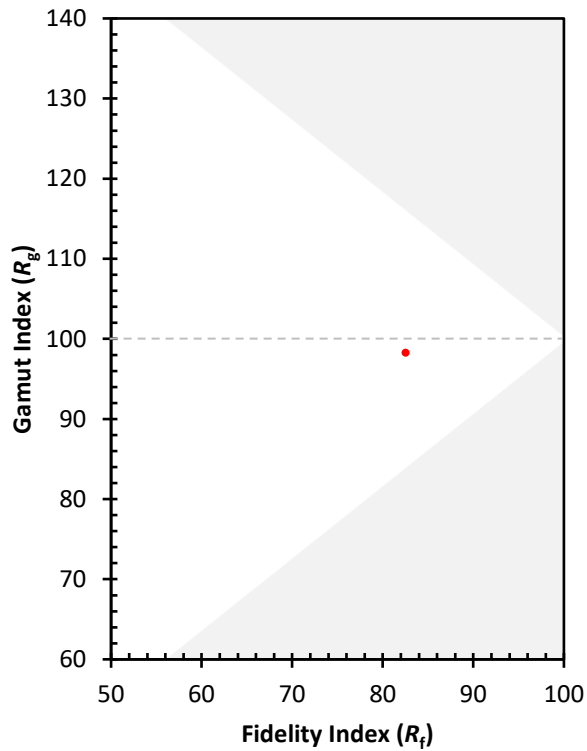
Color Rendition by Hue-Angle Bin



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Measure Comparisons



(END OF REPORT)