

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: P868728

Luminaire Tested: **EMM2-HTN-SA2B-722-U-T5W**

Issue Date: 08/22/2024



Test Information

Test Method: LM-79-08
Report Number: P868728
Test Lab: INNOVATION CENTER(G3)
Issue Date: 08/22/2024
Manufacturer: COOPER LIGHTING SOLUTIONS (FORMERLY EATON)
Product Line: INVUE
Catalog Number: EMM2-HTN-SA2B-722-U-T5W
Description: EPIC MODERN TALL HOUSING DISCRETE LED ARRAYS 100W 70CRI 2200K
FIXTURE w/ TYPE V SQUARE WIDE DISTRIBUTION OPTIC
Light Source: (20) 2200K CCT, 70 CRI LEDS
Ballast/Driver: ELECTRONIC DRIVER

Summary

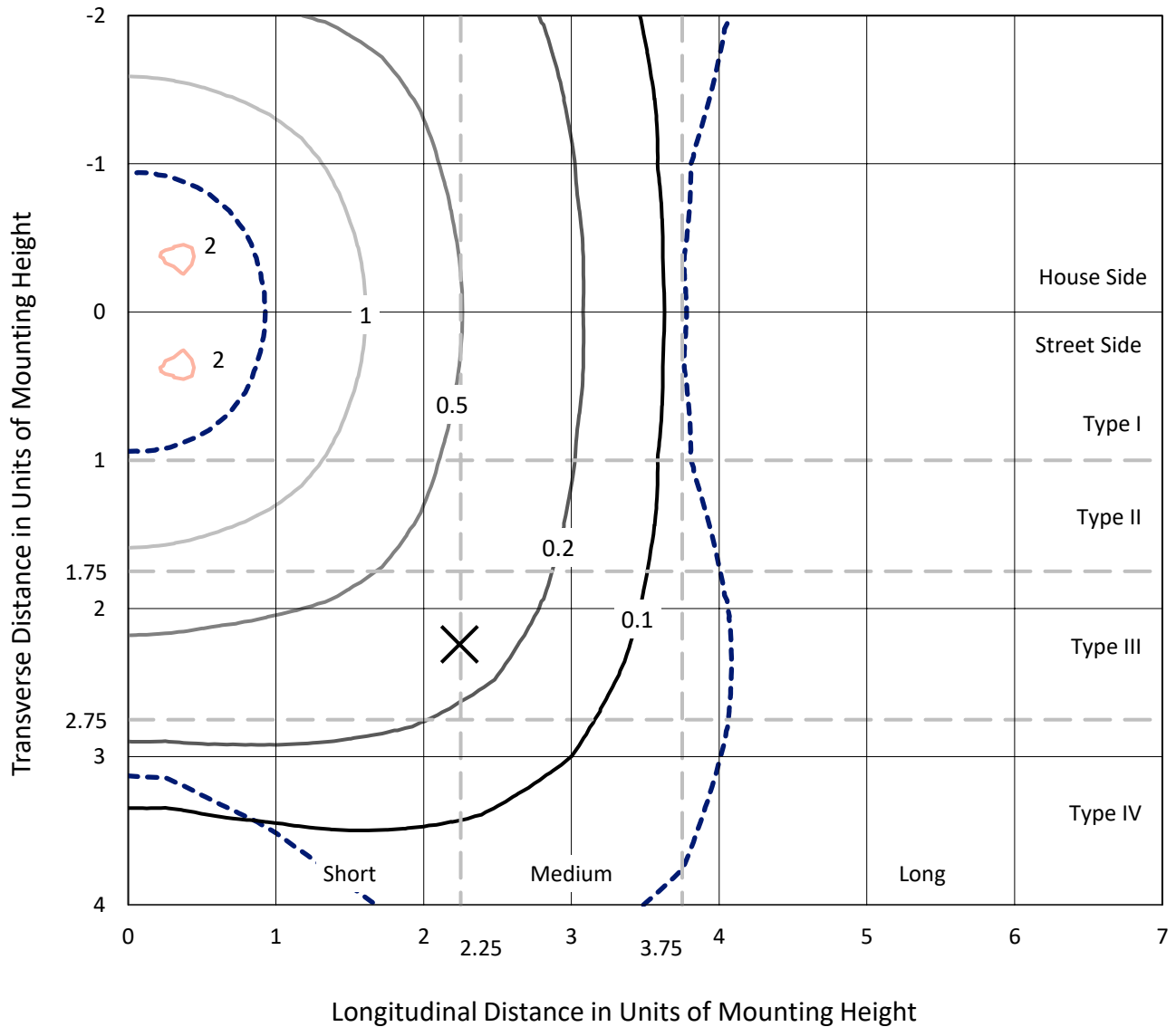
Lumens per Lamp: N/A
Luminaire Lumens: 11410.1 lumens
Efficiency: N/A
Efficacy: 126.8 lumens/watt
Luminous Opening: Rectangular (W 0.67' x L: 0.33' x H: 0')
IES Classification: Type V - Short
BUG Rating: B4 - U0 - G2

Input Watts (W): 90
Input Voltage (V): 120
Input Current (A_{in}): NR
Voltage Rise (V): NR
Power Factor: 0.99
Total Harmonic Distortion (THDi): 6.20%
Frequency (hertz): 60
Stabilization Time: NR
Operation Time: NR
Ambient Temperature (°C): NR
Test Distance: 24 FT

REPORT NUMBER: P868728
 CATALOG NUMBER: EMM2-HTN-SA2B-722-U-T5W

Iso-Footcandle Lines of Horizontal Illumination

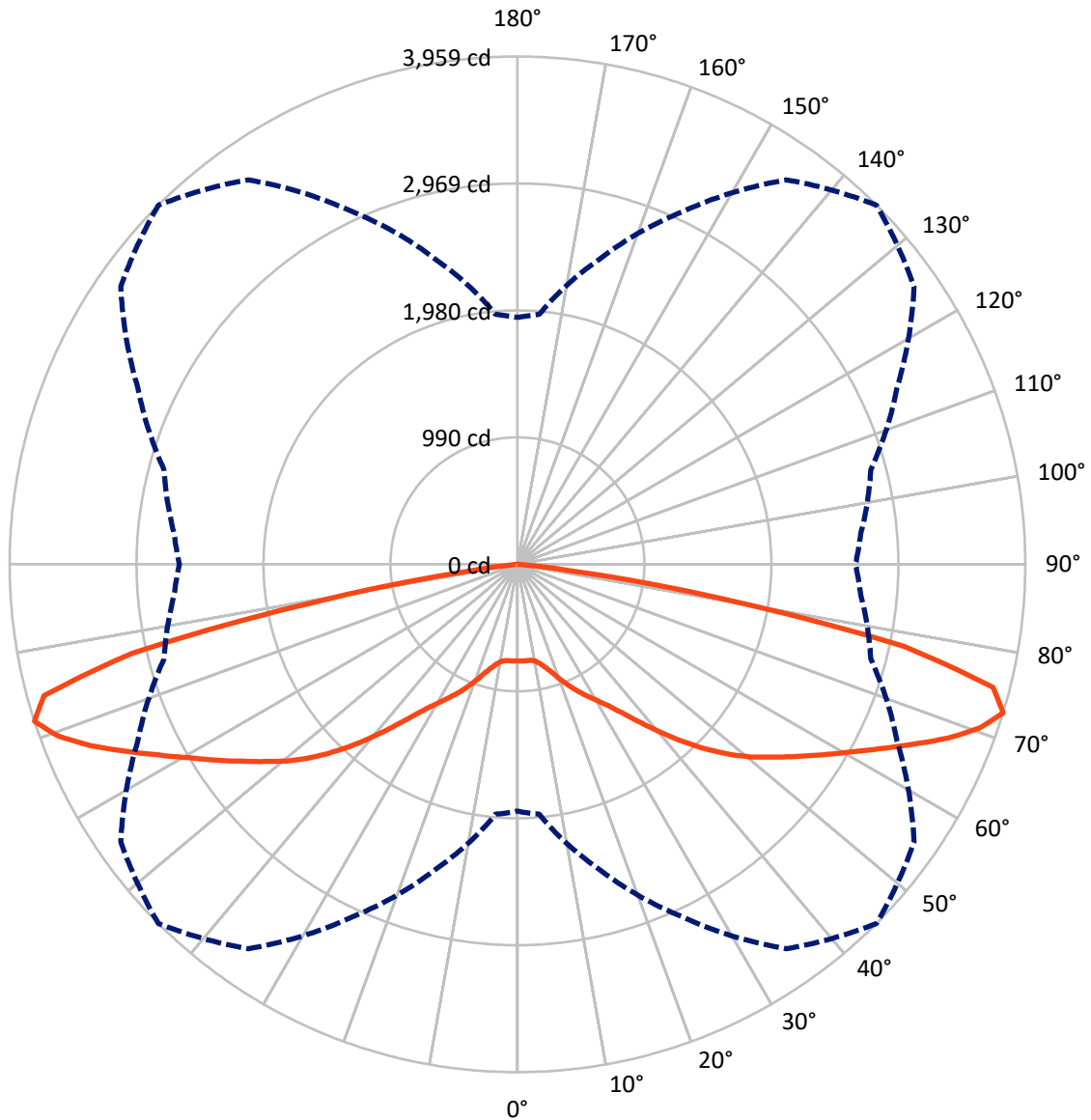
× Max cd
 - - - 1/2 Max cd



Based on 20 foot mounting height. Maximum calculated value = 2 fc
 Type V - Short - N/A

REPORT NUMBER: P868728
CATALOG NUMBER: EMM2-HTN-SA2B-722-U-T5W

Luminous Intensity Polar Plot



— Vertical Plane Through 45-Deg Lateral - - - Horizontal Cone Through 72.5-Deg Vertical

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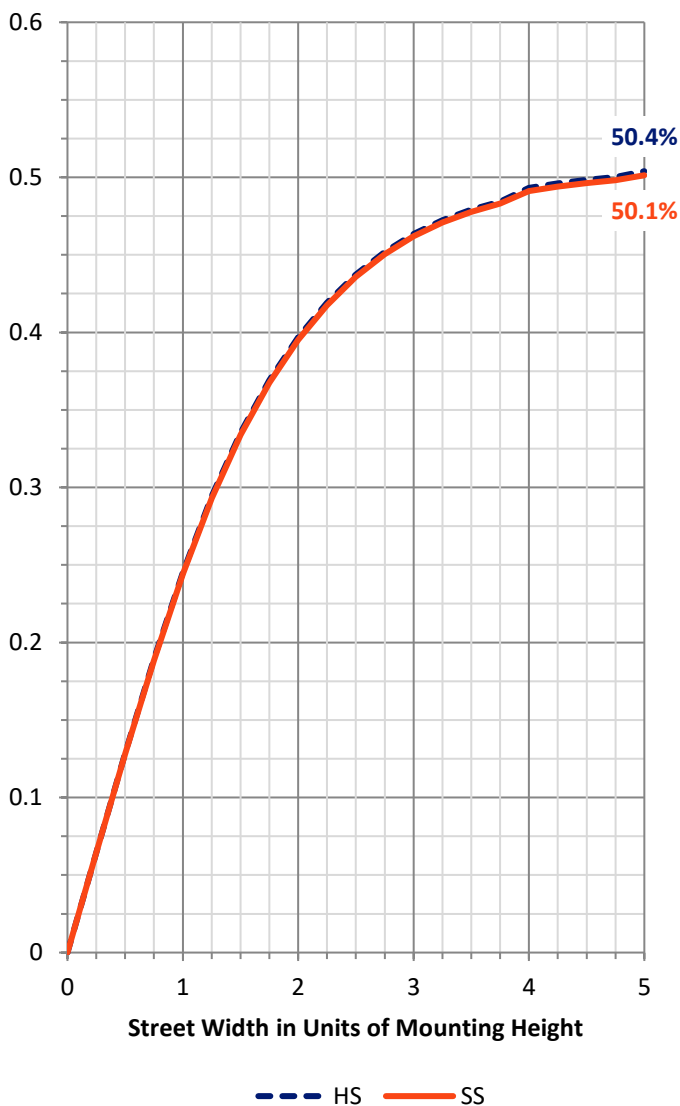
FLUX DISTRIBUTION:

		Downward	Upward	Total
House Side	Lumens	5705.1	0.0	5705.1
	% Fixture	50.0	0.0	50.0
Street Side	Lumens	5705.1	0.0	5705.1
	% Fixture	50.0	0.0	50.0
Total	Lumens	11410.1	0.0	11410.1
	% Fixture	100.0	0.0	100.0

ZONAL LUMENS:

Zone	Lumens	% Fixture
0°-10°	72.2	0.6
10°-20°	241.0	2.1
20°-30°	497.1	4.4
30°-40°	915.2	8.0
40°-50°	1609.2	14.1
50°-60°	2333.9	20.5
60°-70°	3042.6	26.7
70°-80°	2529.1	22.2
80°-90°	169.8	1.5
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°	11410.1	100.0
0°-180°	11410.1	100.0

Coefficient of Utilization



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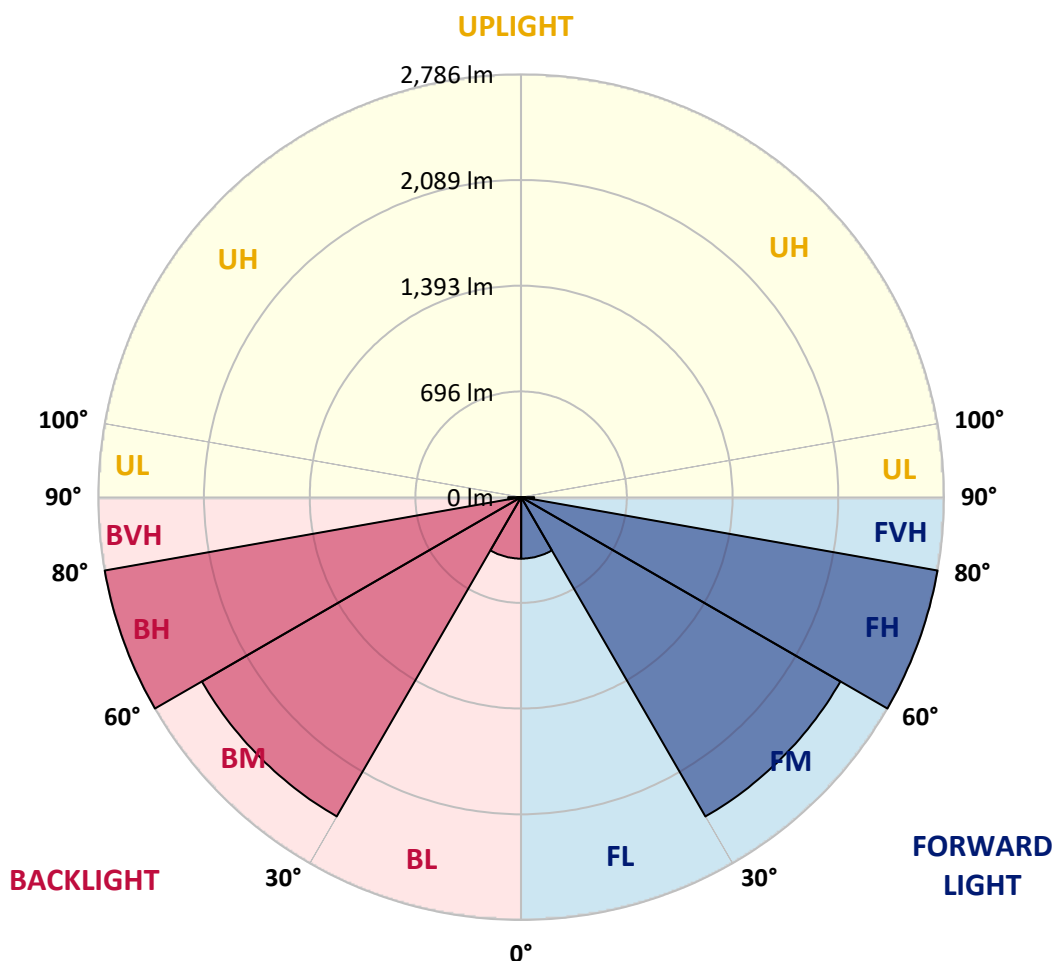
CATALOG NUMBER: EMM2-HTN-SA2B-722-U-T5W

LUMINAIRE CLASSIFICATION SYSTEM LUMEN TABLE AND BUG RATING:

Zone		Lumens	% Fixture	Zone Rating/Lumen Limit		
				B	U	G
FL	(0°-30°)	405.1	3.6			
FM	(30°-60°)	2429.2	21.3			
FH	(60°-80°)	2785.8	24.4			G2/5000
FVH	(80°-90°)	84.9	0.7			G1/100
BL	(0°-30°)	405.1	3.6	B1/500		
BM	(30°-60°)	2429.2	21.3	B2/2500		
BH	(60°-80°)	2785.8	24.4	B4/5000		G2/5000
BVH	(80°-90°)	84.9	0.7			G1/100
UL	(90°-100°)	0.0	0.0		U0/0	
UH	(100°-180°)	0.0	0.0		U0/0	

BUG Rating: B4-U0-G2

Type V Short





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CANDELA DISTRIBUTION (FULL):

	0°	5°	15°	25°	35°	45°	55°	65°	75°	85°	90°
0°	753.3	753.3	753.3	753.3	753.3	753.3	753.3	753.3	753.3	753.3	753.3
2.5°	750.9	752.1	752.1	752.1	753.3	754.4	755.6	756.8	759.2	760.4	760.4
5°	754.4	753.3	752.1	754.4	754.4	754.4	755.6	756.8	756.8	756.8	758.0
7.5°	750.9	752.1	750.9	750.9	754.4	755.6	754.4	753.3	753.3	754.4	754.4
10°	763.9	762.7	761.5	761.5	765.1	766.3	765.1	763.9	763.9	766.3	766.3
12.5°	793.5	795.8	788.7	788.7	793.5	795.8	792.3	791.1	792.3	794.7	794.7
15°	839.6	838.4	833.7	828.9	833.7	837.2	832.5	830.1	831.3	837.2	832.5
17.5°	890.4	891.6	886.9	882.2	885.7	890.4	883.3	877.4	878.6	881.0	878.6
20°	947.2	946.0	944.8	944.8	951.9	957.8	947.2	933.0	929.5	927.1	927.1
22.5°	988.6	992.1	993.3	1004.0	1020.5	1026.4	1012.2	993.3	979.1	972.0	967.3
25°	1053.6	1050.1	1047.7	1059.5	1084.4	1095.0	1077.3	1051.3	1037.1	1035.9	1039.4
27.5°	1112.8	1112.8	1117.5	1129.3	1153.0	1163.6	1148.2	1122.2	1115.1	1115.1	1111.6
30°	1189.6	1186.1	1190.8	1210.9	1228.6	1235.7	1222.7	1205.0	1199.1	1199.1	1193.2
32.5°	1279.5	1280.7	1287.8	1300.8	1318.5	1319.7	1315.0	1306.7	1303.1	1299.6	1305.5
35°	1416.7	1416.7	1414.3	1423.8	1428.5	1430.9	1433.2	1429.7	1429.7	1429.7	1424.9
37.5°	1586.9	1577.5	1576.3	1568.0	1562.1	1568.0	1578.7	1590.5	1600.0	1594.0	1591.7
40°	1756.0	1751.3	1737.1	1724.1	1719.4	1721.8	1734.8	1759.6	1770.2	1770.2	1779.7
42.5°	1938.2	1928.7	1911.0	1895.6	1882.6	1886.1	1897.9	1928.7	1952.3	1963.0	1958.3
45°	2101.3	2093.1	2075.3	2061.1	2051.7	2050.5	2065.9	2086.0	2117.9	2127.4	2134.5
47.5°	2240.9	2235.0	2219.6	2205.4	2209.0	2210.1	2214.9	2232.6	2258.6	2271.6	2270.4
50°	2354.4	2349.7	2335.5	2341.4	2350.9	2360.3	2354.4	2366.2	2382.8	2388.7	2393.4
52.5°	2458.5	2451.4	2441.9	2452.6	2477.4	2496.3	2499.9	2491.6	2496.3	2499.9	2496.3
55°	2561.3	2553.1	2550.7	2569.6	2607.5	2642.9	2639.4	2615.7	2609.8	2602.7	2599.2
57.5°	2645.3	2639.4	2648.9	2680.8	2754.1	2801.4	2786.0	2731.6	2708.0	2691.4	2686.7
60°	2698.5	2697.3	2718.6	2793.1	2904.3	2970.5	2945.7	2852.2	2799.0	2783.7	2776.6
62.5°	2726.9	2728.1	2765.9	2898.4	3075.7	3165.6	3121.9	2978.8	2896.0	2880.6	2883.0
65°	2752.9	2749.4	2799.0	2987.1	3261.4	3383.2	3324.1	3131.3	3010.7	2980.0	2980.0
67.5°	2771.8	2775.4	2849.9	3075.7	3442.3	3616.2	3529.8	3293.3	3133.7	3087.6	3081.7
70°	2533.0	2567.3	2800.2	3134.9	3585.4	3821.9	3708.4	3392.7	3138.4	3007.2	2994.1
72.5°	1924.0	1955.9	2459.6	3029.6	3658.7	3959.1	3774.6	3266.1	2852.2	2685.5	2635.8
75°	1268.8	1291.3	1832.9	2646.5	3455.3	3829.0	3437.6	2813.2	2245.6	2029.2	2042.2
77.5°	565.2	637.4	1168.3	2064.7	2846.3	3081.7	2621.7	1919.2	1371.7	1161.2	1138.8
80°	236.5	259.0	441.1	1100.9	1649.6	1578.7	1116.3	643.3	409.2	318.1	307.5
82.5°	68.6	71.0	87.5	190.4	335.8	395.0	237.7	120.6	114.7	91.1	84.0
85°	4.7	4.7	7.1	11.8	16.6	27.2	30.7	35.5	40.2	34.3	34.3
87.5°	2.4	2.4	2.4	3.5	3.5	4.7	3.5	3.5	3.5	3.5	3.5
90°	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0

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

Report Prepared for

Cooper Lighting Solutions

Streetworks

Report Number: SP1-2407-157-2

Test Date: 08/07/2024

Luminaire Tested: MEM2-HTN-SA-40-722-U-5WQ-2

Data in this report applies to families of products including MEM2-HTN-SA-40-722-U-5WQ-2

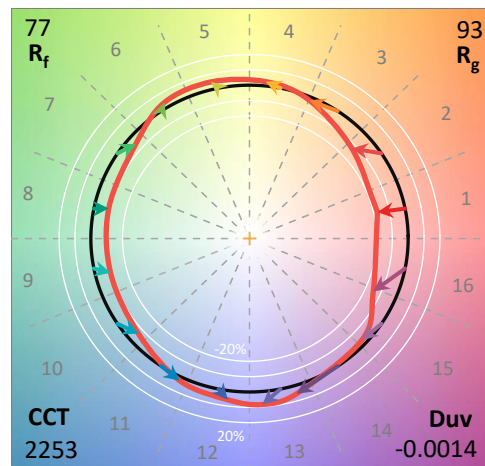
Test Information

Test Method: LM-79-2019
 Report Number: SP1-2407-157-2
 Test Lab: COOPER LIGHTING SOLUTIONS
 Photometer: SP1 - 76IN SPHERE
 Measurement Geometry: 4π
 Issue Date: 08/20/2024
 Manufacturer: COOPER LIGHTING SOLUTIONS
 Product Line: Streetworks
 Catalog Number: **MEM2-HTN-SA-40-722-U-5WQ-2**
 Description: Epic Modern Light Square 40W 5WQ Optic and Flare Trim

Spectral Parameters

CCT (K): 2253
 CIE u': 0.2868
 CIE v': 0.5332
 Duv: -0.0014
 CIE x: 0.4974
 CIE y: 0.4110
 CIE z: 0.0915
 Peak Wavelength (nm): 603
 Dominant Wavelength (nm): 587
 Purity: 72.69432
 Rf: 76.9
 Rg: 92.7

CRI (Ra):	70.6		
R1:	68.4	R9:	-36.0
R2:	88.7	R10:	78.2
R3:	85.4	R11:	61.0
R4:	63.5	R12:	74.2
R5:	69.0	R13:	72.8
R6:	88.9	R14:	92.2
R7:	68.5	R15:	58.0
R8:	32.0		



Test Conditions

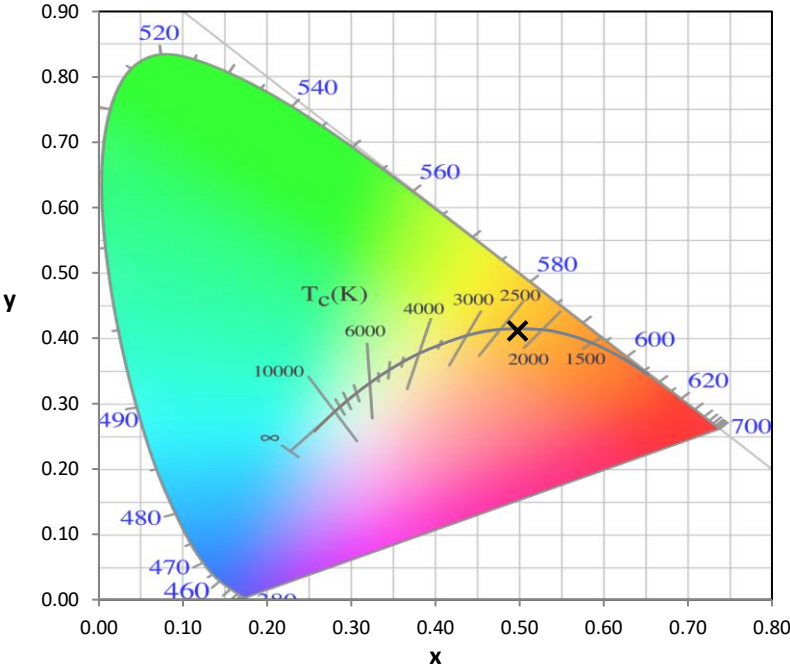
Stabilization Time: 29M
 Operation Time: 1H 29M
 Sphere Temperature (°C): 24.1

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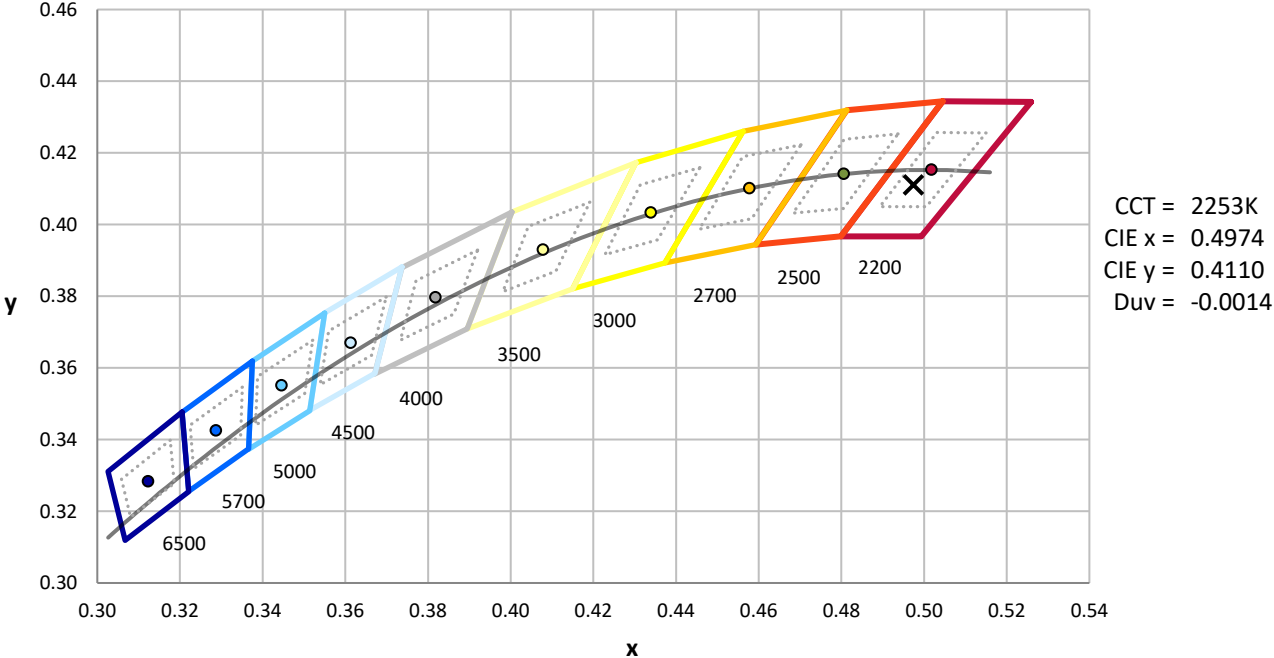
Measurement and Test Equipment			
Instrument	Identification Number	Calibration Date	Calibration Due Date
Photometer	IN0058	6/18/2024	12/18/2024
Power Meter	INXT2011004	2/8/2024	2/8/2025
AC Power Source	IN0063	10/24/2023	10/24/2024
DC Power Source	IN0208	10/24/2023	10/24/2024
Sphere Thermometer	IN0085	10/24/2023	10/24/2024
Room Thermometer	IN0046	10/24/2023	10/24/2024

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CIE 1931 Chromaticity Diagram



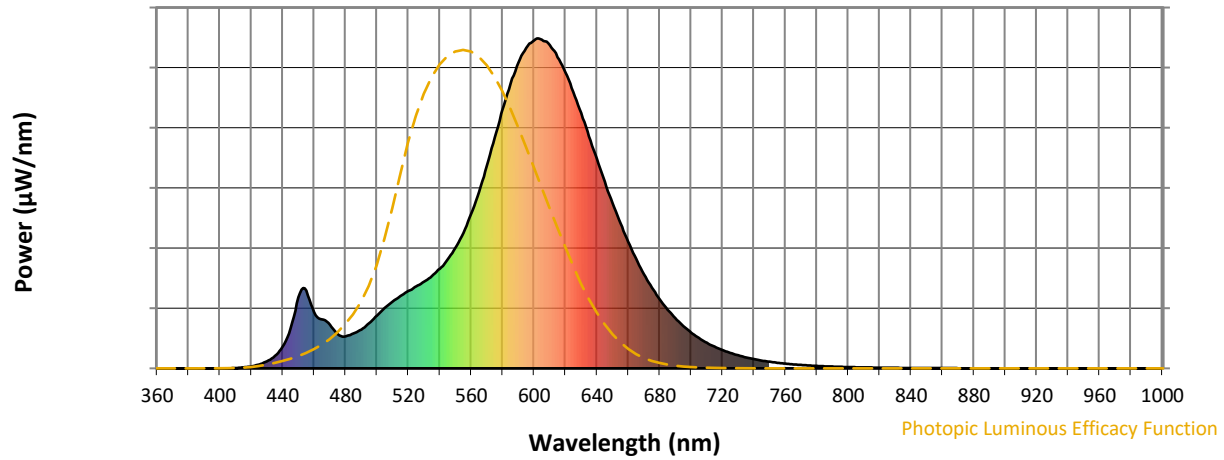
CIE 1931 Chromaticity Diagram with 2017 ANSI 7-Step and 4-Step Quadrangles



Point lies inside the ANSI 2200K 4-step quadrangle

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Photopic Flux vs. Wavelength

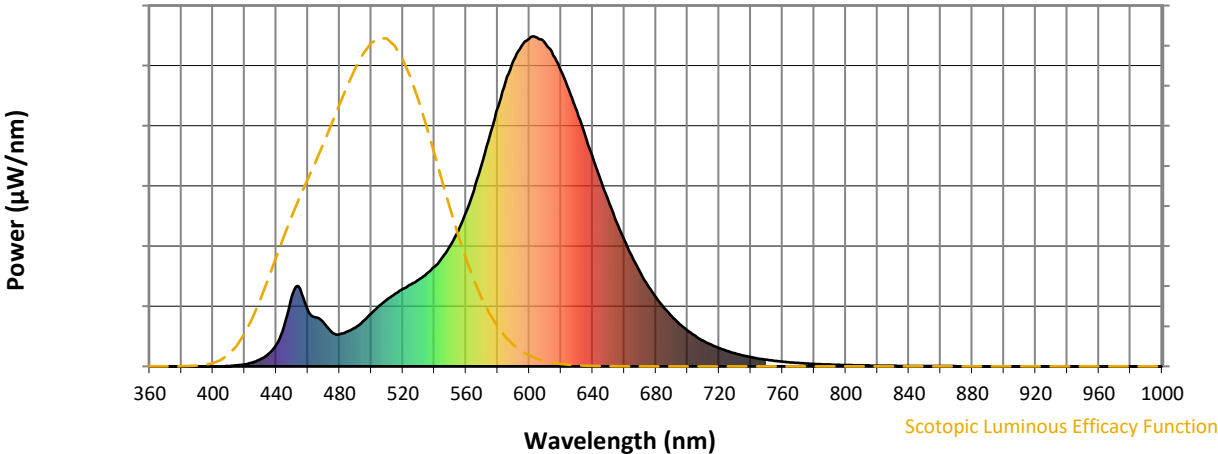


Photopic Lumens: NR

λ (nm)	Power W [^] /nm	Lumens (ϕ /nm)	λ (nm)	Power W [^] /nm	Lumens (ϕ /nm)	λ (nm)	Power W [^] /nm	Lumens (ϕ /nm)	λ (nm)	Power W [^] /nm	Lumens (ϕ /nm)	λ (nm)	Power W [^] /nm	Lumens (ϕ /nm)
360	0	NR	490	117	NR	620	896	NR	750	20	NR	880	0	NR
365	0	NR	495	137	NR	625	838	NR	755	17	NR	885	0	NR
370	0	NR	500	160	NR	630	774	NR	760	14	NR	890	0	NR
375	0	NR	505	183	NR	635	704	NR	765	12	NR	895	0	NR
380	0	NR	510	202	NR	640	635	NR	770	10	NR	900	0	NR
385	0	NR	515	219	NR	645	565	NR	775	9	NR	905	0	NR
390	0	NR	520	235	NR	650	501	NR	780	7	NR	910	0	NR
395	0	NR	525	249	NR	655	440	NR	785	6	NR	915	0	NR
400	0	NR	530	263	NR	660	383	NR	790	5	NR	920	0	NR
405	0	NR	535	281	NR	665	332	NR	795	5	NR	925	0	NR
410	1	NR	540	302	NR	670	286	NR	800	4	NR	930	0	NR
415	3	NR	545	331	NR	675	245	NR	805	3	NR	935	0	NR
420	6	NR	550	366	NR	680	210	NR	810	3	NR	940	0	NR
425	12	NR	555	411	NR	685	178	NR	815	3	NR	945	0	NR
430	21	NR	560	469	NR	690	152	NR	820	2	NR	950	0	NR
435	38	NR	565	536	NR	695	129	NR	825	2	NR	955	0	NR
440	66	NR	570	614	NR	700	109	NR	830	2	NR	960	0	NR
445	122	NR	575	701	NR	705	92	NR	835	1	NR	965	0	NR
450	215	NR	580	785	NR	710	77	NR	840	1	NR	970	0	NR
455	236	NR	585	863	NR	715	66	NR	845	1	NR	975	0	NR
460	170	NR	590	928	NR	720	55	NR	850	1	NR	980	0	NR
465	148	NR	595	971	NR	725	47	NR	855	1	NR	985	0	NR
470	132	NR	600	994	NR	730	40	NR	860	1	NR	990	0	NR
475	104	NR	605	996	NR	735	33	NR	865	1	NR	995	0	NR
480	97	NR	610	979	NR	740	28	NR	870	1	NR	1000	0	NR
485	105	NR	615	943	NR	745	24	NR	875	0	NR			

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Scotopic Flux vs. Wavelength

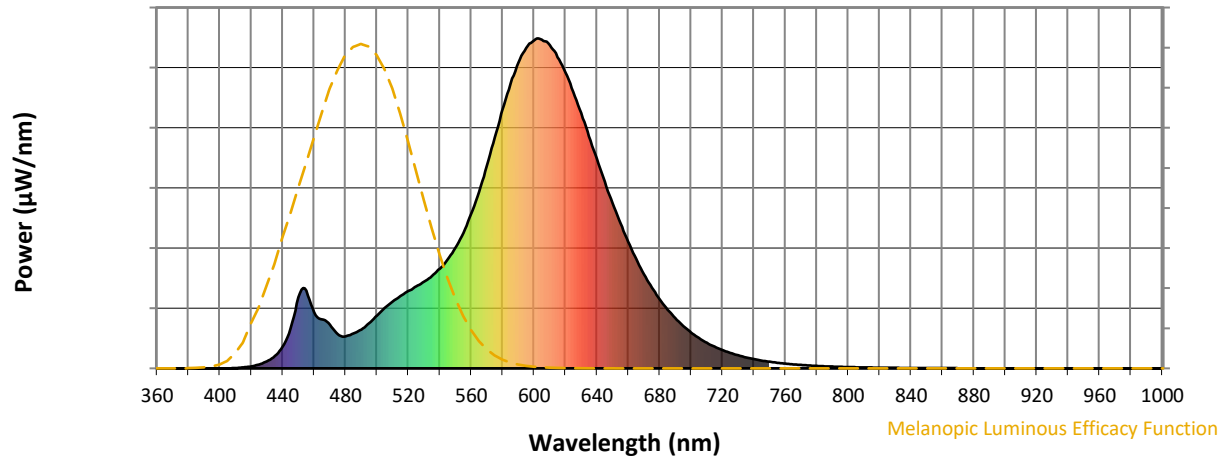


Scotopic Lumens: NR S/P: 0.96

λ (nm)	Power W [^] /nm	Lumens (φ/nm)	λ (nm)	Power W [^] /nm	Lumens (φ/nm)	λ (nm)	Power W [^] /nm	Lumens (φ/nm)	λ (nm)	Power W [^] /nm	Lumens (φ/nm)	λ (nm)	Power W [^] /nm	Lumens (φ/nm)
360	0	NR	490	117	NR	620	896	NR	750	20	NR	880	0	NR
365	0	NR	495	137	NR	625	838	NR	755	17	NR	885	0	NR
370	0	NR	500	160	NR	630	774	NR	760	14	NR	890	0	NR
375	0	NR	505	183	NR	635	704	NR	765	12	NR	895	0	NR
380	0	NR	510	202	NR	640	635	NR	770	10	NR	900	0	NR
385	0	NR	515	219	NR	645	565	NR	775	9	NR	905	0	NR
390	0	NR	520	235	NR	650	501	NR	780	7	NR	910	0	NR
395	0	NR	525	249	NR	655	440	NR	785	6	NR	915	0	NR
400	0	NR	530	263	NR	660	383	NR	790	5	NR	920	0	NR
405	0	NR	535	281	NR	665	332	NR	795	5	NR	925	0	NR
410	1	NR	540	302	NR	670	286	NR	800	4	NR	930	0	NR
415	3	NR	545	331	NR	675	245	NR	805	3	NR	935	0	NR
420	6	NR	550	366	NR	680	210	NR	810	3	NR	940	0	NR
425	12	NR	555	411	NR	685	178	NR	815	3	NR	945	0	NR
430	21	NR	560	469	NR	690	152	NR	820	2	NR	950	0	NR
435	38	NR	565	536	NR	695	129	NR	825	2	NR	955	0	NR
440	66	NR	570	614	NR	700	109	NR	830	2	NR	960	0	NR
445	122	NR	575	701	NR	705	92	NR	835	1	NR	965	0	NR
450	215	NR	580	785	NR	710	77	NR	840	1	NR	970	0	NR
455	236	NR	585	863	NR	715	66	NR	845	1	NR	975	0	NR
460	170	NR	590	928	NR	720	55	NR	850	1	NR	980	0	NR
465	148	NR	595	971	NR	725	47	NR	855	1	NR	985	0	NR
470	132	NR	600	994	NR	730	40	NR	860	1	NR	990	0	NR
475	104	NR	605	996	NR	735	33	NR	865	1	NR	995	0	NR
480	97	NR	610	979	NR	740	28	NR	870	1	NR	1000	0	NR
485	105	NR	615	943	NR	745	24	NR	875	0	NR			

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Melanopic Flux vs. Wavelength



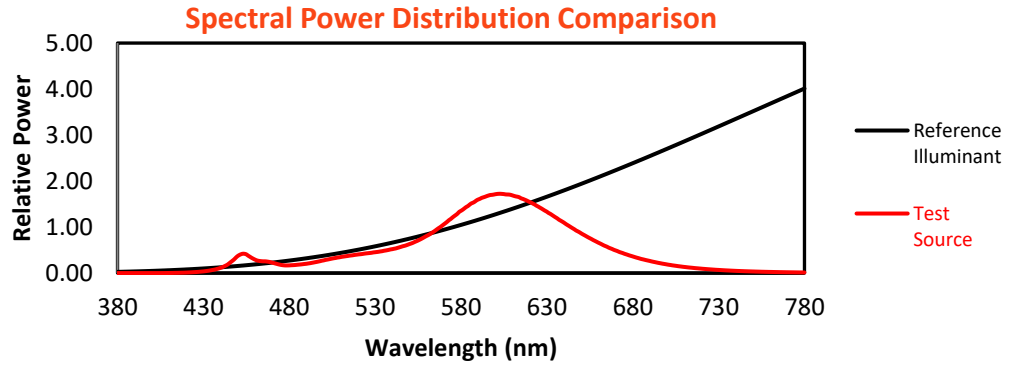
Melanopic Lumens: NR

M/P: 1.71

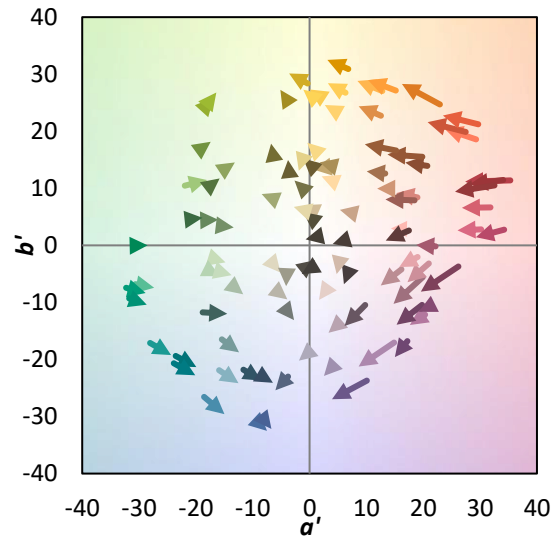
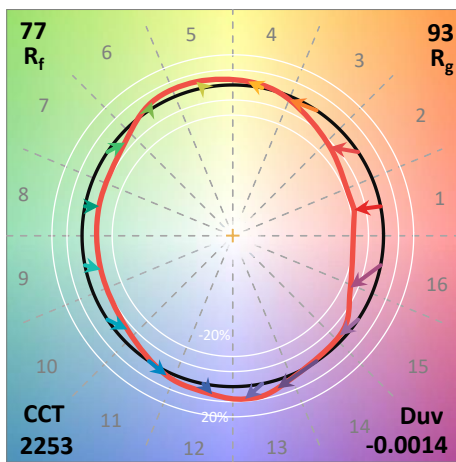
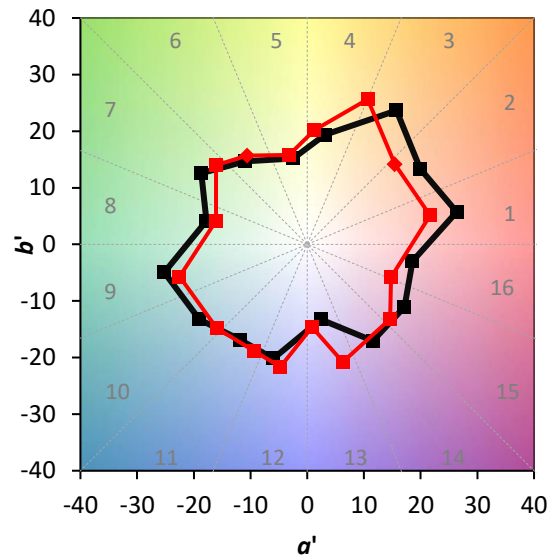
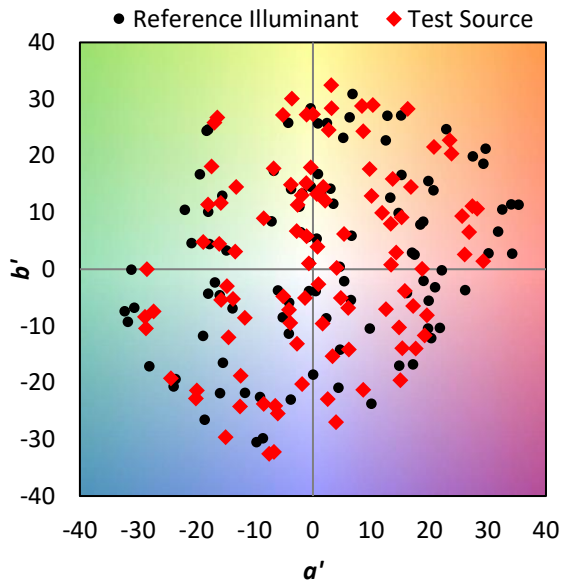
λ (nm)	Power W ² /nm	Lumens (φ/nm)	λ (nm)	Power W ² /nm	Lumens (φ/nm)	λ (nm)	Power W ² /nm	Lumens (φ/nm)	λ (nm)	Power W ² /nm	Lumens (φ/nm)	λ (nm)	Power W ² /nm	Lumens (φ/nm)
360	0	NR	490	117	NR	620	896	NR	750	20	NR	880	0	NR
365	0	NR	495	137	NR	625	838	NR	755	17	NR	885	0	NR
370	0	NR	500	160	NR	630	774	NR	760	14	NR	890	0	NR
375	0	NR	505	183	NR	635	704	NR	765	12	NR	895	0	NR
380	0	NR	510	202	NR	640	635	NR	770	10	NR	900	0	NR
385	0	NR	515	219	NR	645	565	NR	775	9	NR	905	0	NR
390	0	NR	520	235	NR	650	501	NR	780	7	NR	910	0	NR
395	0	NR	525	249	NR	655	440	NR	785	6	NR	915	0	NR
400	0	NR	530	263	NR	660	383	NR	790	5	NR	920	0	NR
405	0	NR	535	281	NR	665	332	NR	795	5	NR	925	0	NR
410	1	NR	540	302	NR	670	286	NR	800	4	NR	930	0	NR
415	3	NR	545	331	NR	675	245	NR	805	3	NR	935	0	NR
420	6	NR	550	366	NR	680	210	NR	810	3	NR	940	0	NR
425	12	NR	555	411	NR	685	178	NR	815	3	NR	945	0	NR
430	21	NR	560	469	NR	690	152	NR	820	2	NR	950	0	NR
435	38	NR	565	536	NR	695	129	NR	825	2	NR	955	0	NR
440	66	NR	570	614	NR	700	109	NR	830	2	NR	960	0	NR
445	122	NR	575	701	NR	705	92	NR	835	1	NR	965	0	NR
450	215	NR	580	785	NR	710	77	NR	840	1	NR	970	0	NR
455	236	NR	585	863	NR	715	66	NR	845	1	NR	975	0	NR
460	170	NR	590	928	NR	720	55	NR	850	1	NR	980	0	NR
465	148	NR	595	971	NR	725	47	NR	855	1	NR	985	0	NR
470	132	NR	600	994	NR	730	40	NR	860	1	NR	990	0	NR
475	104	NR	605	996	NR	735	33	NR	865	1	NR	995	0	NR
480	97	NR	610	979	NR	740	28	NR	870	1	NR	1000	0	NR
485	105	NR	615	943	NR	745	24	NR	875	0	NR			

Summary

$R_f = 76.9$
 $R_g = 92.7$
 $CIE R_a = 70.6$
 $R_g = -36.0$

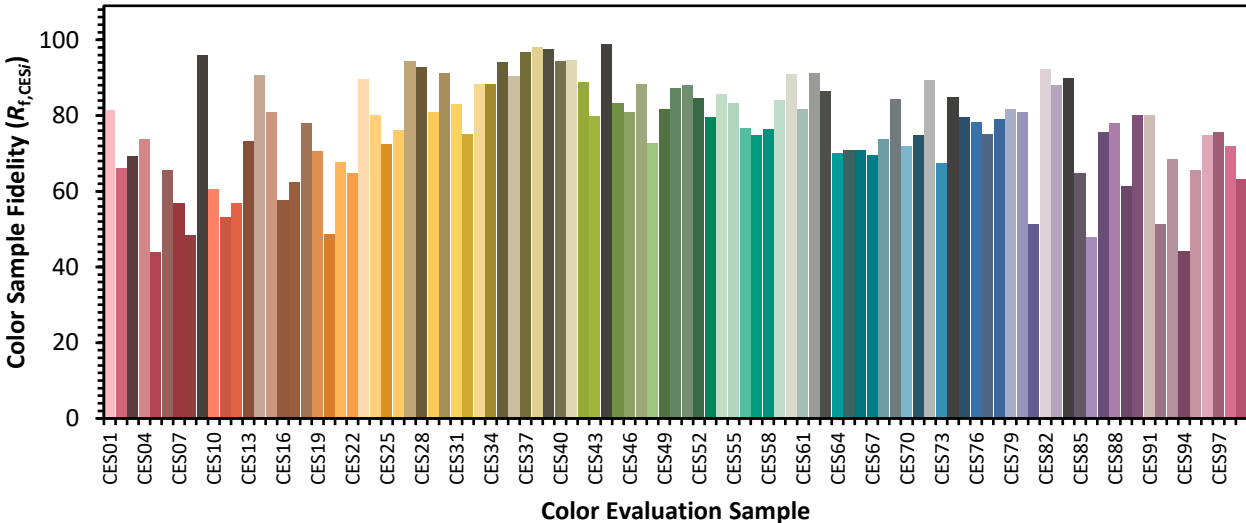


Color Vector Graphics

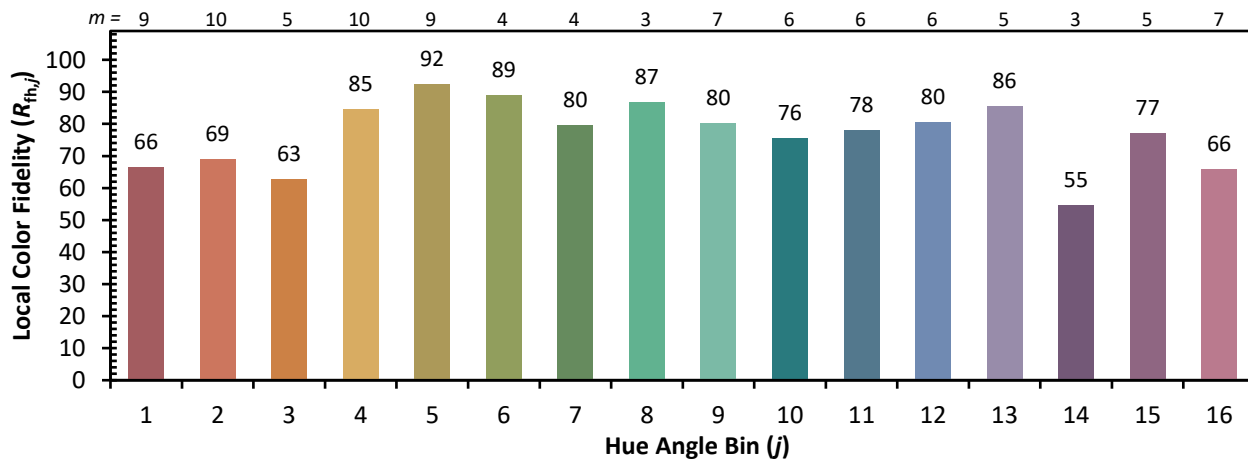
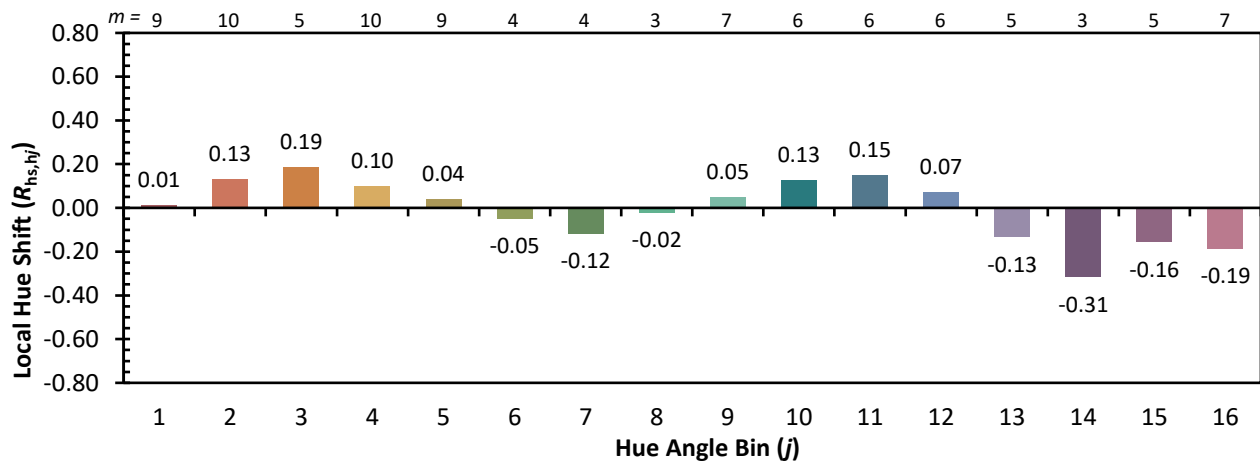
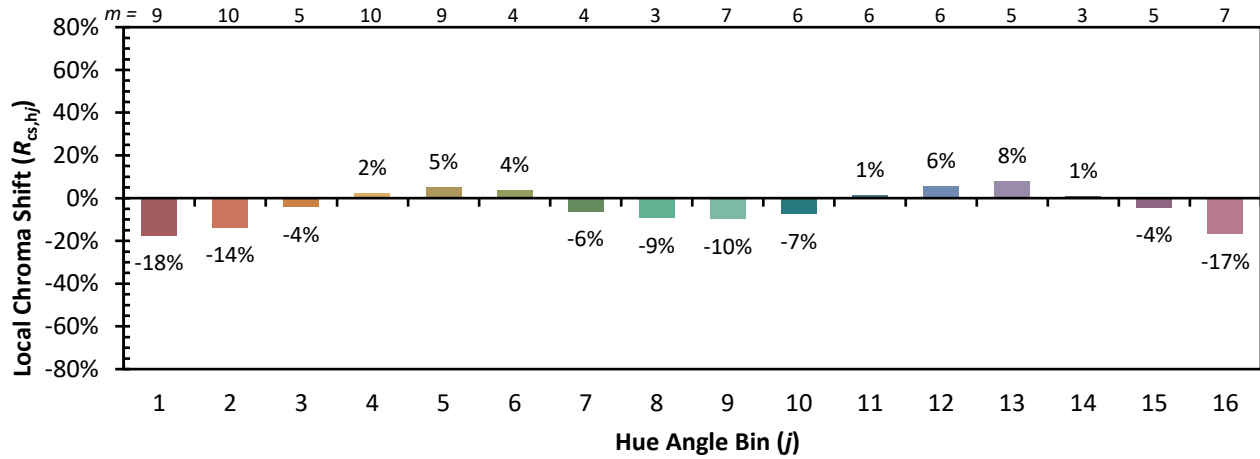


Individual Sample Fidelity Index ($R_{f,i}$)

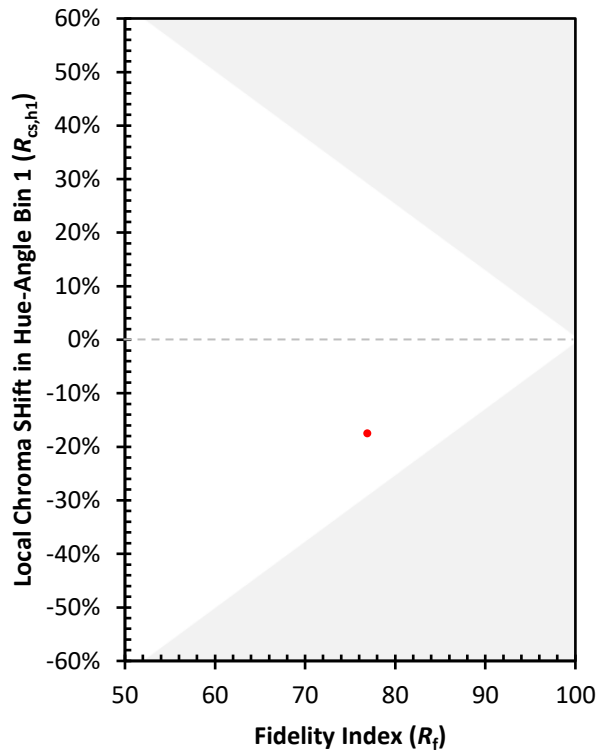
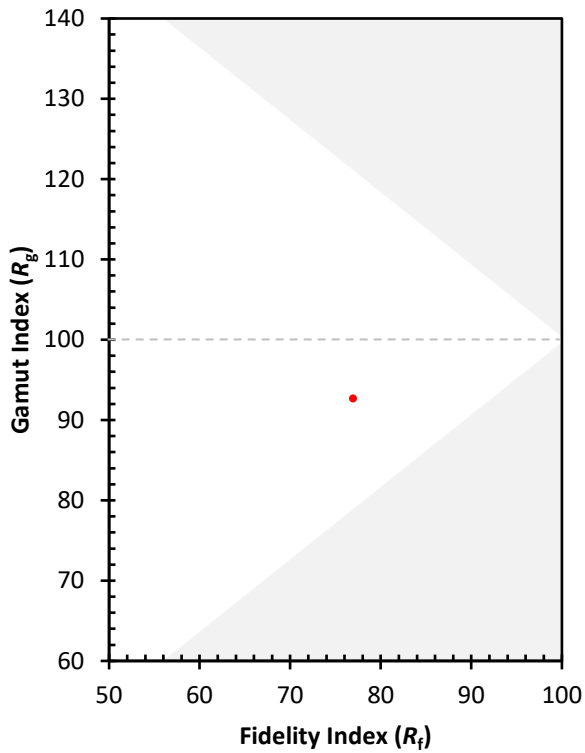
CES01 = 87	CES26 = 76	CES51 = 88	CES76 = 78
CES02 = 65	CES27 = 94	CES52 = 85	CES77 = 75
CES03 = 32	CES28 = 93	CES53 = 80	CES78 = 79
CES04 = 72	CES29 = 81	CES54 = 86	CES79 = 82
CES05 = 51	CES30 = 91	CES55 = 83	CES80 = 81
CES06 = 52	CES31 = 83	CES56 = 77	CES81 = 51
CES07 = 44	CES32 = 75	CES57 = 75	CES82 = 92
CES08 = 42	CES33 = 88	CES58 = 76	CES83 = 88
CES09 = 29	CES34 = 88	CES59 = 84	CES84 = 90
CES10 = 79	CES35 = 94	CES60 = 91	CES85 = 65
CES11 = 62	CES36 = 90	CES61 = 82	CES86 = 48
CES12 = 68	CES37 = 97	CES62 = 91	CES87 = 76
CES13 = 45	CES38 = 98	CES63 = 86	CES88 = 78
CES14 = 75	CES39 = 97	CES64 = 70	CES89 = 61
CES15 = 72	CES40 = 94	CES65 = 71	CES90 = 80
CES16 = 48	CES41 = 95	CES66 = 71	CES91 = 80
CES17 = 51	CES42 = 89	CES67 = 70	CES92 = 51
CES18 = 57	CES43 = 80	CES68 = 74	CES93 = 68
CES19 = 74	CES44 = 99	CES69 = 84	CES94 = 44
CES20 = 68	CES45 = 83	CES70 = 72	CES95 = 66
CES21 = 88	CES46 = 81	CES71 = 75	CES96 = 75
CES22 = 81	CES47 = 88	CES72 = 89	CES97 = 76
CES23 = 92	CES48 = 73	CES73 = 68	CES98 = 72
CES24 = 92	CES49 = 82	CES74 = 85	CES99 = 63
CES25 = 73	CES50 = 87	CES75 = 80	



Color Rendition by Hue-Angle Bin



Measure Comparisons



(END OF REPORT)