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: STREETWORKS

Report Number: P868165

Luminaire Tested: **MEM2-HSN-SA-70-722-U-T5R**

Issue Date: 08/21/2024

Report Generated By 670245763

Cooper Lighting Solutions Photometric Lab
1121 Highway 74 South
Peachtree City, GA 30269

Scaled Data Report

Test Information

Test Method:	LM-79-08
Report Number:	P868165
Test Lab:	INNOVATION CENTER(G3)
Issue Date:	08/21/2024
Manufacturer:	COOPER LIGHTING SOLUTIONS (FORMERLY EATON)
Product Line:	STREETWORKS
Catalog Number:	MEM2-HSN-SA-70-722-U-T5R
Description:	EPIC MODERN SHORT HOUSING DISCRETE LED ARRAYS 70W 70CRI 2200K FIXTURE w/ TYPE V ROUND DISTRIBUTION OPTIC
Light Source:	(20) 2200K CCT, 70 CRI LEDS
Ballast/Driver:	ELECTRONIC DRIVER

Summary

Lumens per Lamp:	N/A
Luminaire Lumens:	8232.3 lumens
Efficiency:	N/A
Efficacy:	135.0 lumens/watt
Luminous Opening:	Rectangular (W 0.67' x L: 0.33' x H: 0')
IES Classification:	Type V - Short
BUG Rating:	B3 - U0 - G2

Input Watts (W):	61
Input Voltage (V):	120
Input Current (Ain):	NR
Voltage Rise (V):	NR
Power Factor:	0.99
Total Harmonic Distortion (THDi):	9.89%
Frequency (hertz):	60
Stabilization Time:	NR
Operation Time:	NR
Ambient Temperature (°C):	NR
Test Distance:	24 FT

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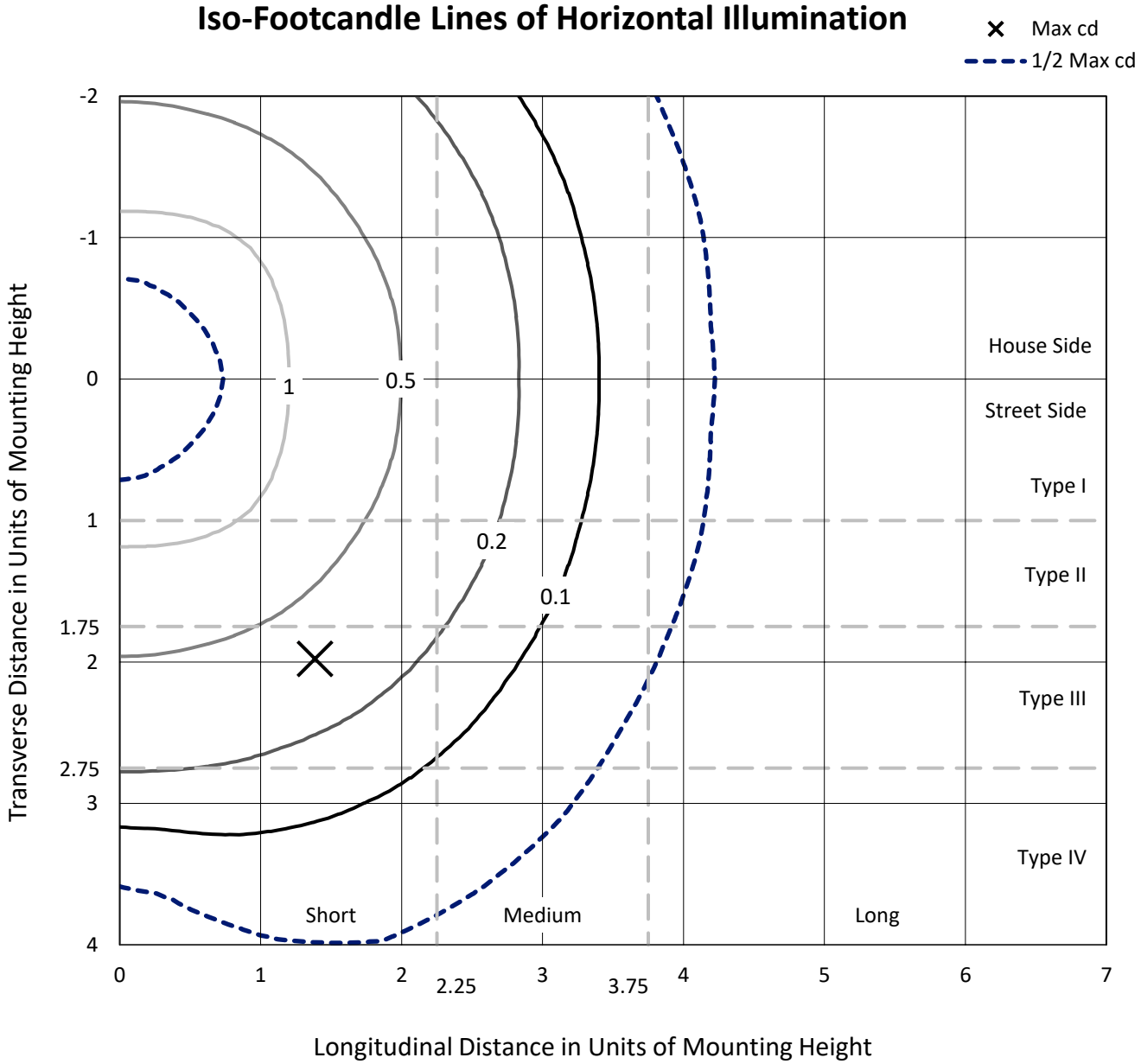
REPORT NUMBER: P868165
CATALOG NUMBER: MEM2-HSN-SA-70-722-U-T5R

Iso-Footcandle Lines of Horizontal Illumination



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

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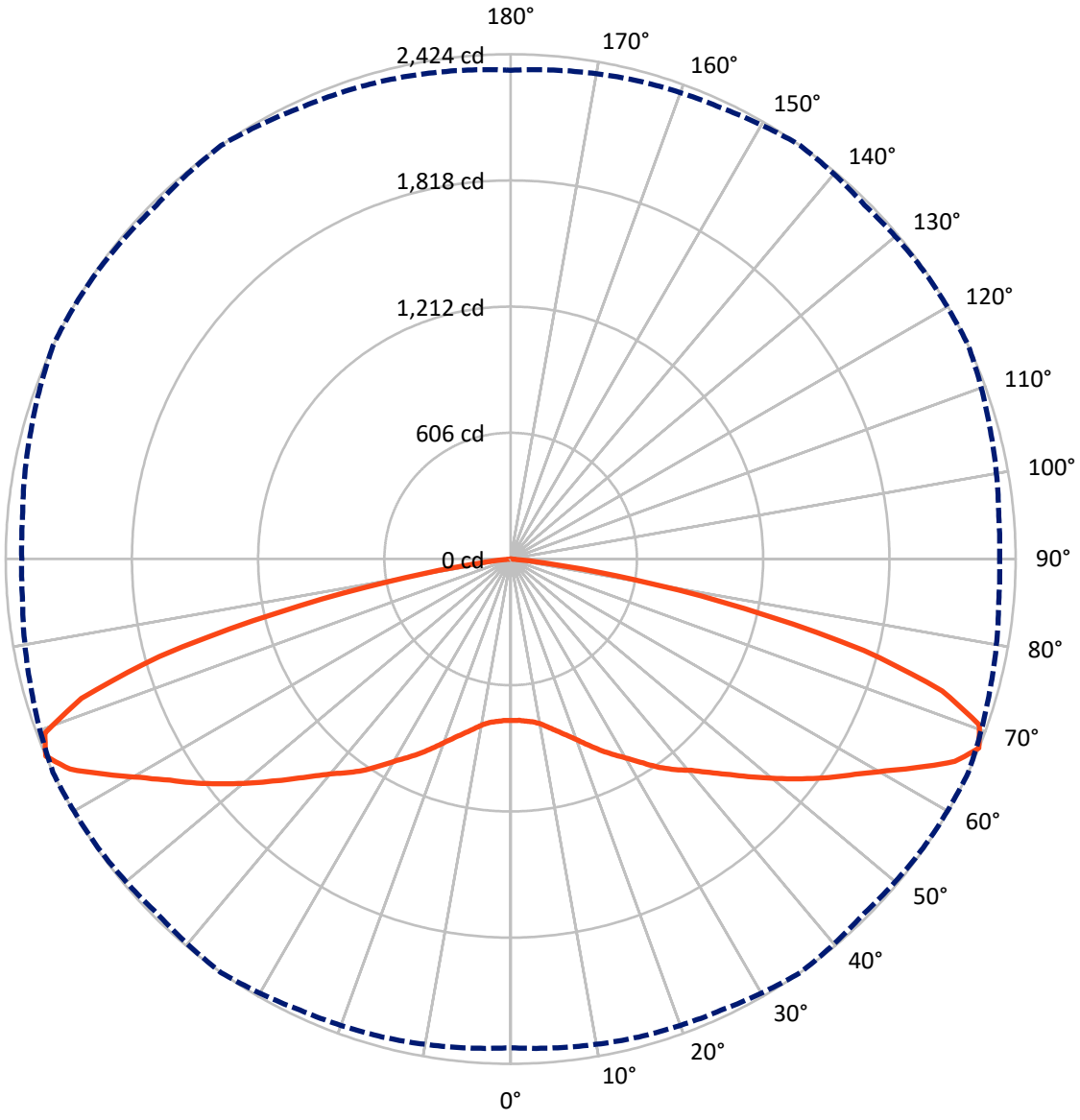
Luminous Intensity Polar Plot



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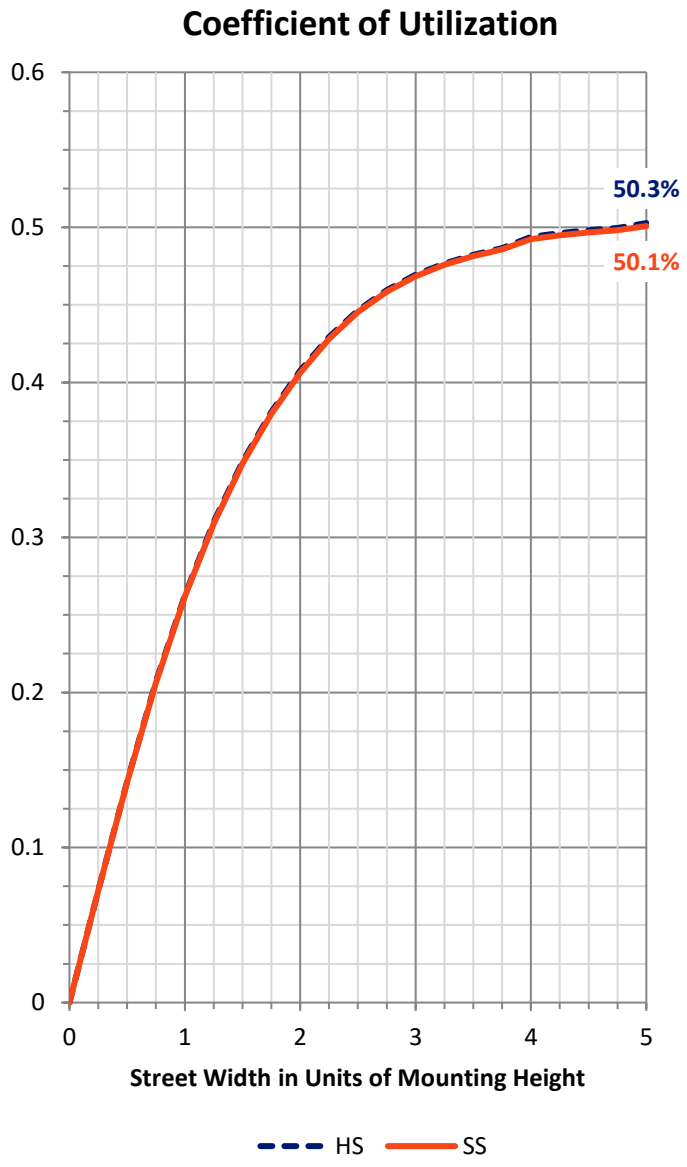
FLUX DISTRIBUTION:

		Downward	Upward	Total
House Side	Lumens	4116.2	0.0	4116.2
	% Fixture	50.0	0.0	50.0
Street Side	Lumens	4116.2	0.0	4116.2
	% Fixture	50.0	0.0	50.0
Total	Lumens	8232.3	0.0	8232.3
	% Fixture	100.0	0.0	100.0

ZONAL LUMENS:

Zone	Lumens	% Fixture
0°-10°	75.4	0.9
10°-20°	247.1	3.0
20°-30°	472.4	5.7
30°-40°	763.3	9.3
40°-50°	1117.3	13.6
50°-60°	1602.1	19.5
60°-70°	2245.5	27.3
70°-80°	1584.4	19.2
80°-90°	124.7	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°	8232.3	100.0
0°-180°	8232.3	100.0



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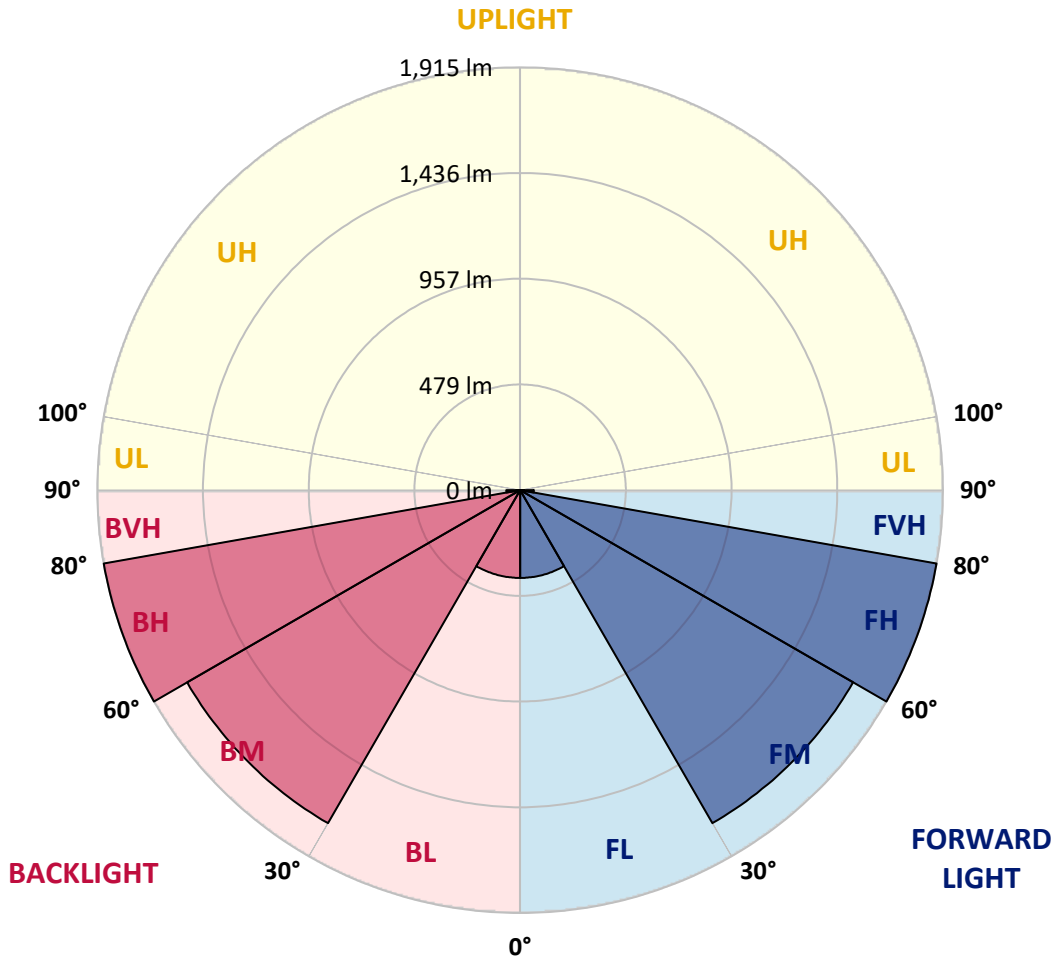
REPORT NUMBER: P868165
CATALOG NUMBER: MEM2-HSN-SA-70-722-U-T5R

LUMINAIRE CLASSIFICATION SYSTEM LUMEN TABLE AND BUG RATING:

Zone		Lumens	% Fixture	Zone Rating/Lumen Limit B	U	G
FL	(0°-30°)	397.5	4.8			
FM	(30°-60°)	1741.4	21.2			
FH	(60°-80°)	1915.0	23.3			G2/5000
FVH	(80°-90°)	62.4	0.8			G1/100
BL	(0°-30°)	397.5	4.8	B1/500		
BM	(30°-60°)	1741.4	21.2	B2/2500		
BH	(60°-80°)	1915.0	23.3	B3/2500		G2/5000
BVH	(80°-90°)	62.4	0.8			G1/100
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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REPORT NUMBER: P868165
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CANDELA DISTRIBUTION (FULL):

	0°	5°	15°	25°	35°	45°	55°	65°	75°	85°	90°
0°	775.5	775.5	775.5	775.5	*775.5*	775.5	775.5	775.5	775.5	775.5	775.5
2.5°	780.3	778.7	777.1	777.1	*775.5*	777.1	775.5	777.1	775.5	775.5	775.5
5°	785.1	783.5	783.5	783.5	*781.9*	781.9	781.9	781.9	780.3	778.7	780.3
7.5°	789.9	789.9	788.3	791.5	*789.9*	791.5	791.5	793.1	789.9	788.3	789.9
10°	802.7	802.7	802.7	805.9	*805.9*	810.7	810.7	812.3	810.7	807.5	807.5
12.5°	829.9	828.3	828.3	828.3	*831.5*	834.7	838.0	838.0	836.4	831.5	831.5
15°	860.4	863.6	860.4	858.8	*860.4*	863.6	866.8	866.8	865.2	863.6	863.6
17.5°	897.2	898.8	895.6	892.4	*892.4*	897.2	898.8	898.8	897.2	894.0	894.0
20°	929.3	930.9	930.9	929.3	*930.9*	934.1	935.7	937.3	932.5	927.7	927.7
22.5°	956.5	958.1	961.3	967.7	*974.1*	977.3	975.7	975.7	967.7	962.9	961.3
25°	990.2	995.0	1001.4	1009.4	*1020.6*	1028.6	1025.4	1019.0	1012.6	1003.0	1001.4
27.5°	1055.9	1055.9	1049.4	1052.6	*1065.5*	1073.5	1070.3	1065.5	1052.6	1046.2	1044.6
30°	1107.1	1107.1	1107.1	1103.9	*1111.9*	1121.5	1118.3	1110.3	1103.9	1100.7	1100.7
32.5°	1156.8	1153.6	1158.4	1164.8	*1168.0*	1171.2	1171.2	1164.8	1153.6	1148.8	1148.8
35°	1203.3	1206.5	1211.3	1220.9	*1228.9*	1224.1	1216.1	1211.3	1200.1	1190.4	1190.4
37.5°	1248.1	1251.3	1256.1	1270.5	*1283.4*	1281.8	1272.2	1259.3	1244.9	1236.9	1232.1
40°	1280.2	1281.8	1294.6	1317.0	*1334.6*	1341.0	1333.0	1315.4	1293.0	1277.0	1278.6
42.5°	1318.6	1321.8	1342.6	1374.7	*1400.3*	1409.9	1398.7	1374.7	1342.6	1321.8	1321.8
45°	1374.7	1376.3	1403.5	1443.6	*1477.2*	1493.3	1477.2	1443.6	1401.9	1381.1	1379.5
47.5°	1430.8	1435.6	1466.0	1514.1	*1563.8*	1583.0	1565.4	1522.1	1472.4	1446.8	1443.6
50°	1494.9	1498.1	1534.9	1600.6	*1656.7*	1682.3	1659.9	1605.4	1550.9	1518.9	1520.5
52.5°	1557.3	1567.0	1616.6	1685.5	*1752.8*	1781.7	1749.6	1690.3	1632.6	1602.2	1600.6
55°	1650.3	1661.5	1704.7	1781.7	*1852.2*	1884.2	1853.8	1788.1	1725.6	1691.9	1685.5
57.5°	1767.2	1773.6	1812.1	1890.6	*1949.9*	1980.3	1962.7	1901.8	1842.5	1800.9	1792.9
60°	1900.2	1906.6	1937.1	2017.2	*2065.2*	2087.7	2081.3	2046.0	2006.0	1986.7	1981.9
62.5°	2089.3	2090.9	2106.9	2153.4	*2201.4*	2211.0	2195.0	2187.0	2199.8	2179.0	2183.8
65°	2305.6	2305.6	2300.8	2307.2	*2344.0*	2332.8	2321.6	2356.8	2350.4	2315.2	2308.8
67.5°	*2347.2*	*2356.8*	*2376.1*	*2390.5*	*2424.1*	*2403.3*	*2417.7*	*2424.1*	*2384.1*	*2352.0*	*2347.2*
70°	2100.5	2111.7	2219.1	2284.7	*2387.3*	2406.5	2360.0	2336.0	2291.2	2231.9	2215.9
72.5°	1432.4	1488.4	1797.7	2009.2	*2166.2*	2190.2	2164.6	2134.1	2044.4	1998.0	1965.9
75°	1144.0	1174.4	1450.0	1658.3	*1751.2*	1749.6	1647.1	1613.4	1542.9	1536.5	1542.9
77.5°	698.6	705.0	975.7	1139.2	*1150.4*	1144.0	1102.3	1076.7	1086.3	1038.2	1046.2
80°	213.1	232.3	368.5	556.0	*597.6*	578.4	570.4	580.0	589.6	604.0	626.5
82.5°	43.3	54.5	73.7	160.2	*182.7*	181.0	179.4	198.7	216.3	224.3	272.4
85°	4.8	4.8	6.4	12.8	*27.2*	43.3	44.9	40.1	60.9	59.3	41.7
87.5°	1.6	1.6	1.6	1.6	*1.6*	3.2	3.2	3.2	3.2	3.2	3.2
90°	0.0	0.0	0.0	0.0	*0.0*	0.0	0.0	0.0	0.0	0.0	0.0

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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

Report Generated By FNC07603 / LDUCLS01DT446
Version: v7.04

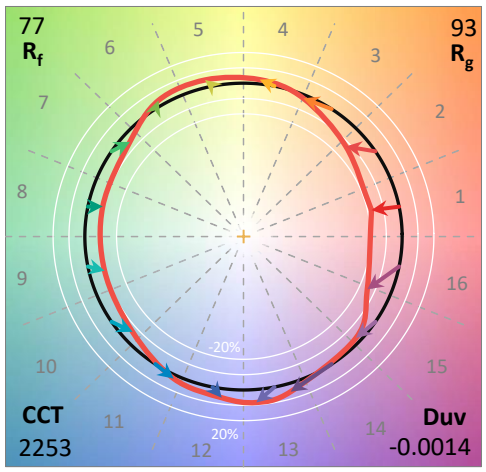
Test Information

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	CRI (Ra):	70.6		
CIE u':	0.2868	R1:	68.4	R9:	-36.0
CIE v':	0.5332	R2:	88.7	R10:	78.2
Duv:	-0.0014	R3:	85.4	R11:	61.0
CIE x:	0.4974	R4:	63.5	R12:	74.2
CIE y:	0.4110	R5:	69.0	R13:	72.8
CIE z:	0.0915	R6:	88.9	R14:	92.2
Peak Wavelength (nm):	603	R7:	68.5	R15:	58.0
Dominant Wavelength (nm):	587	R8:	32.0		
Purity:	72.69432				

Rf:	76.9
Rg:	92.7



Test Conditions

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

REPORT NUMBER: SP1-2407-157-2

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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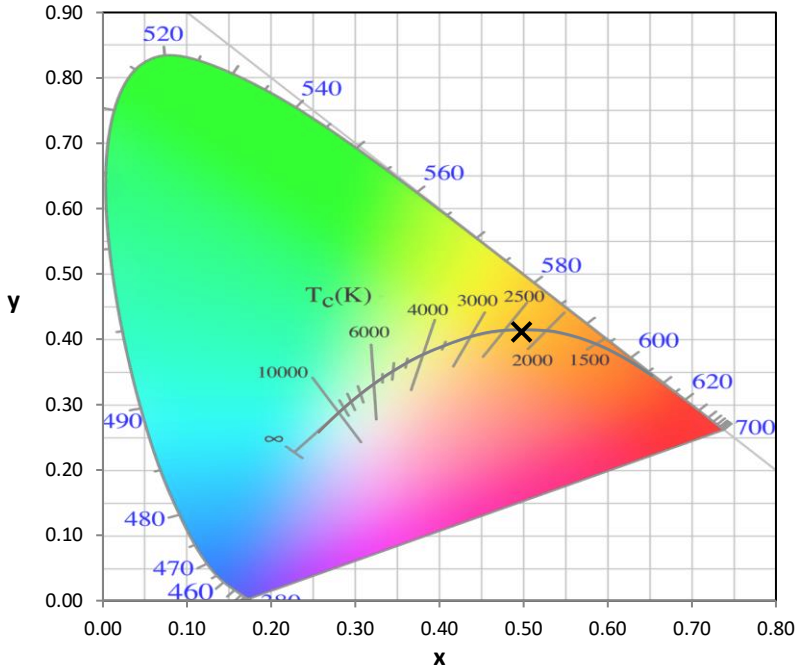
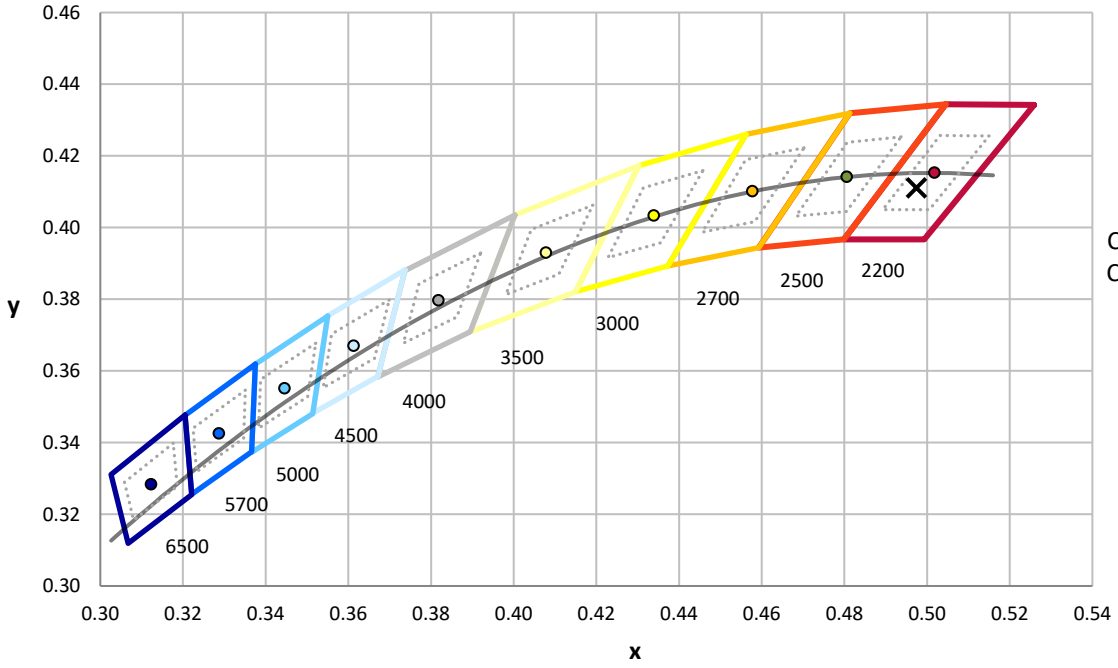
CIE 1931 Chromaticity Diagram



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



CCT = 2253K
CIE x = 0.4974
CIE y = 0.4110
Duv = -0.0014

Point lies inside the ANSI 2200K 4-step quadrangle

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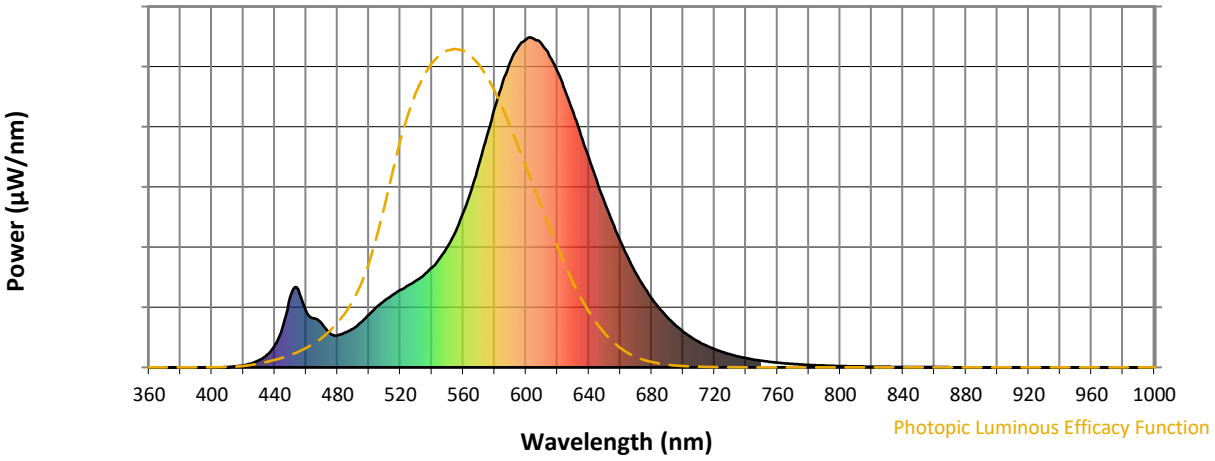
Photopic Flux vs. Wavelength



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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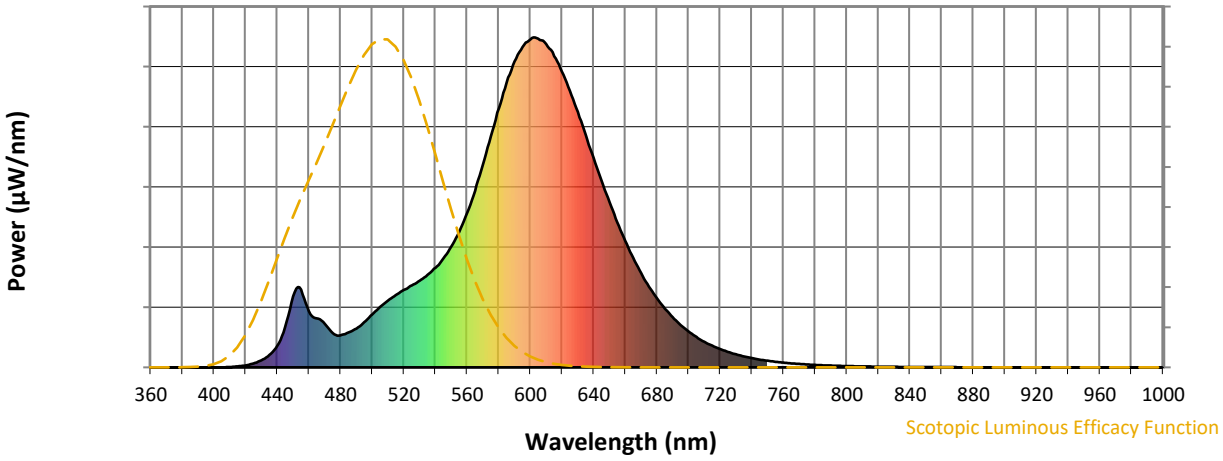
Scotopic Flux vs. Wavelength

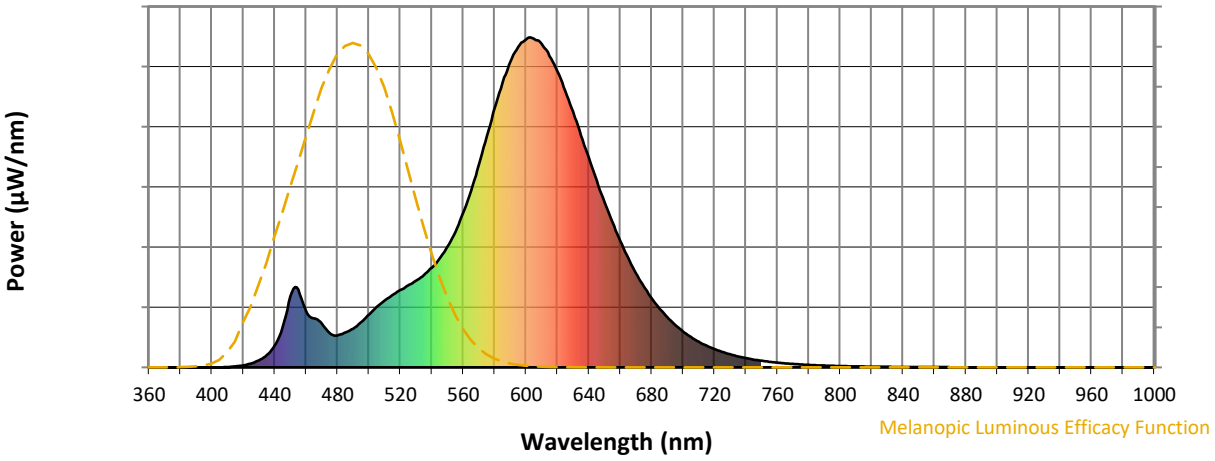


Scotopic Lumens: NR **S/P: 0.96**

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			

REPORT NUMBER: SP1-2407-157-2

Melanopic Flux vs. Wavelength



Melanopic Lumens: NR **M/P: 1.71**

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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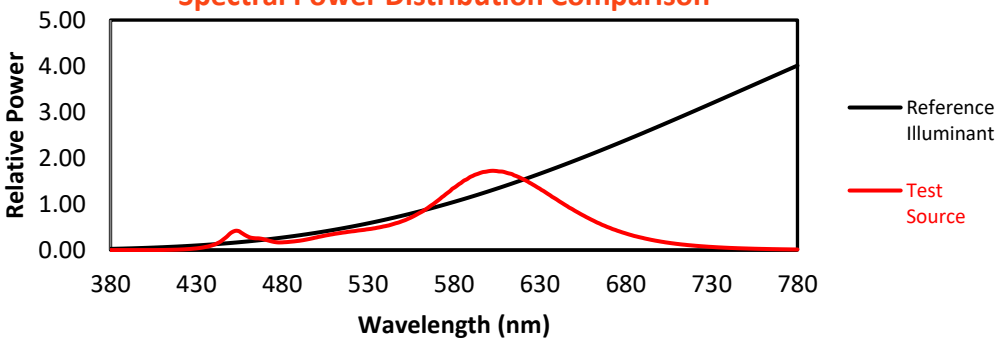
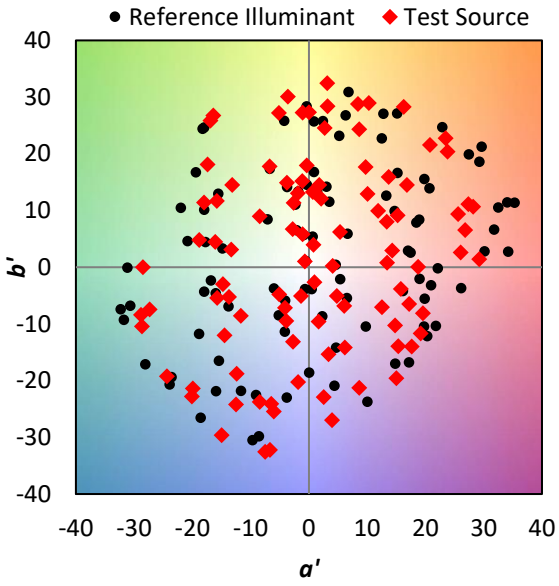
Summary

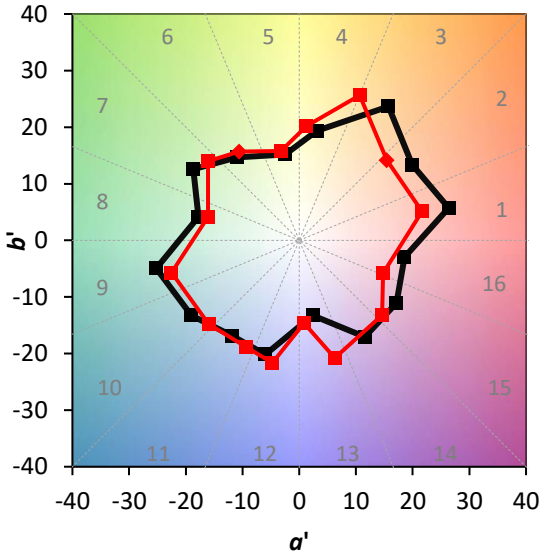
R_f = 76.9
R_g = 92.7
CIE R_a = 70.6
R_9 = -36.0

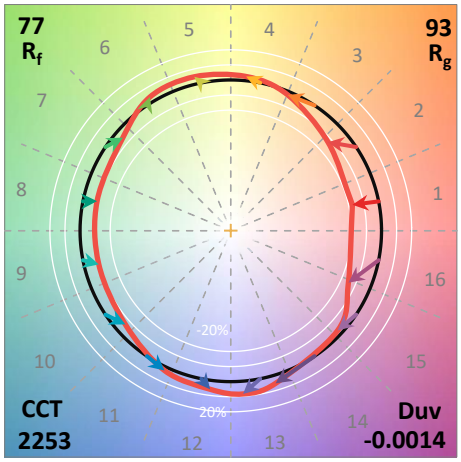
Spectral Power Distribution Comparison

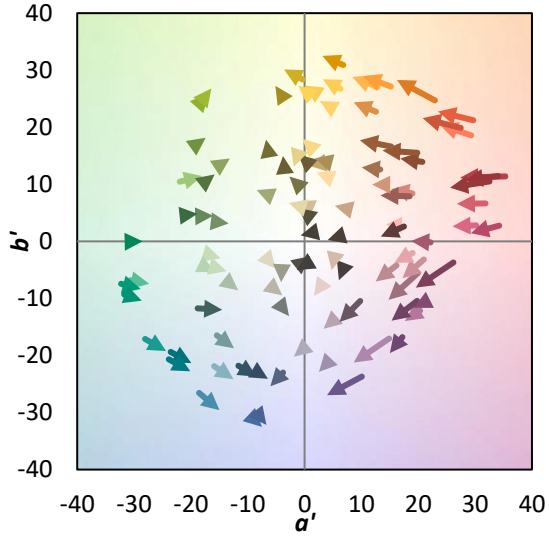


Color Vector Graphics









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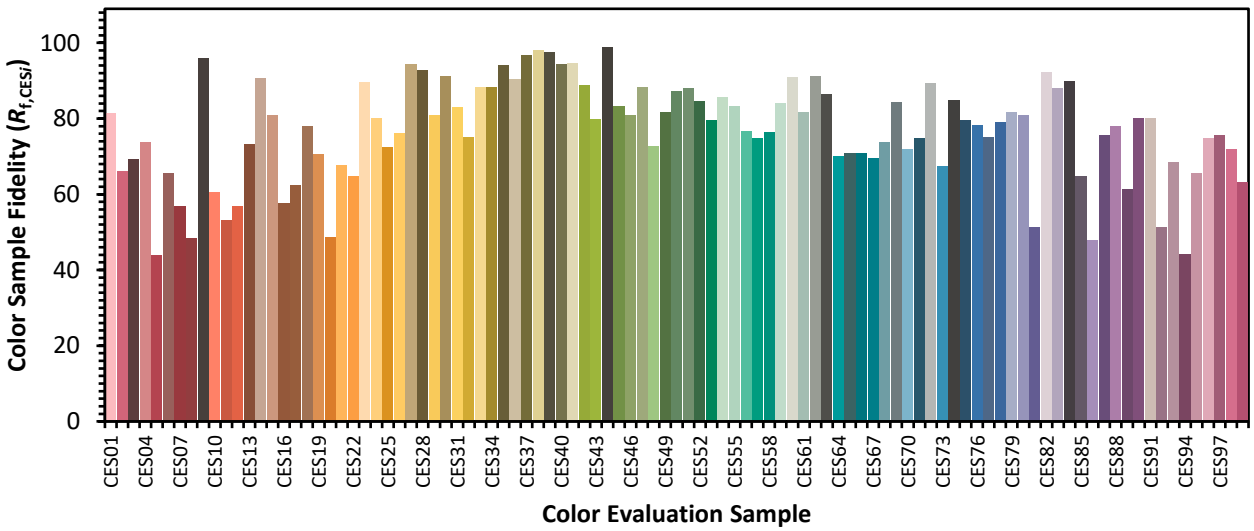
Individual Sample Fidelity Index ($R_{f,i}$)

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	



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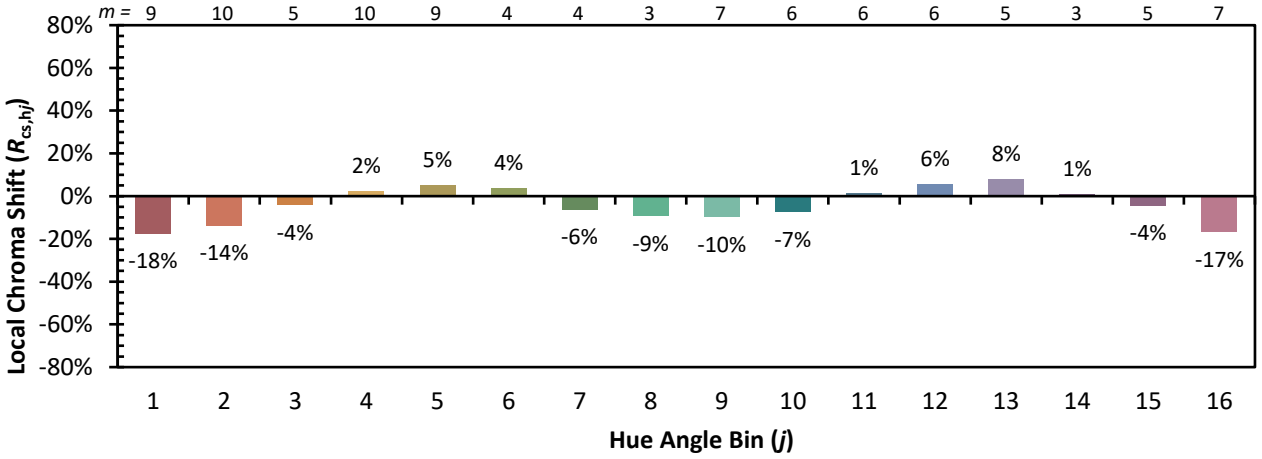
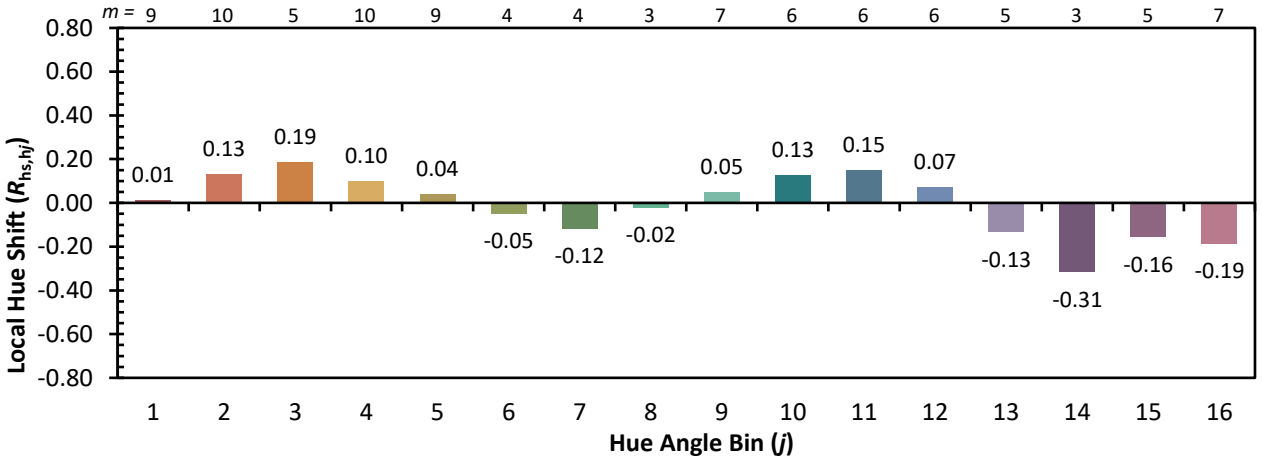
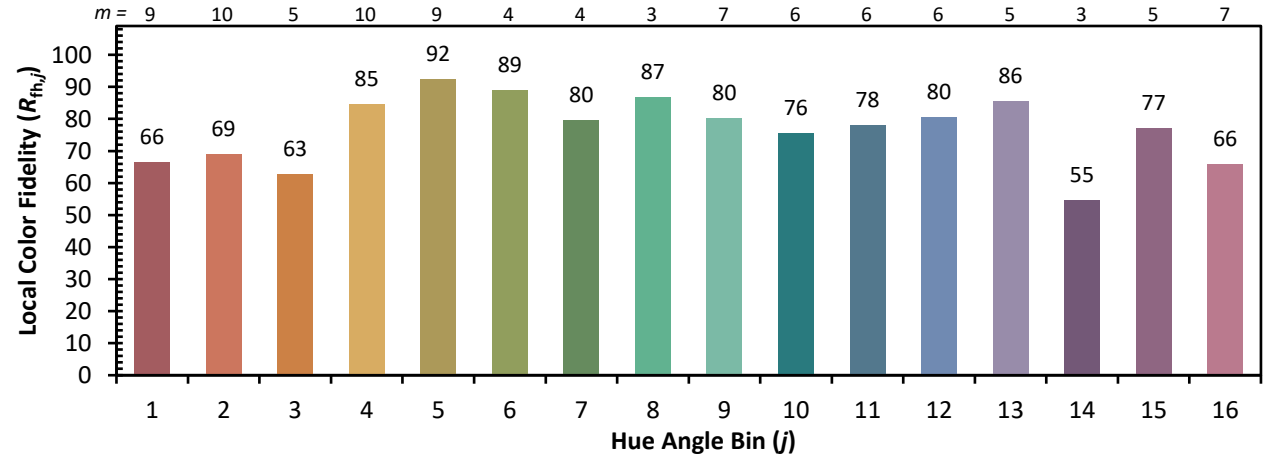
Color Rendition by Hue-Angle Bin







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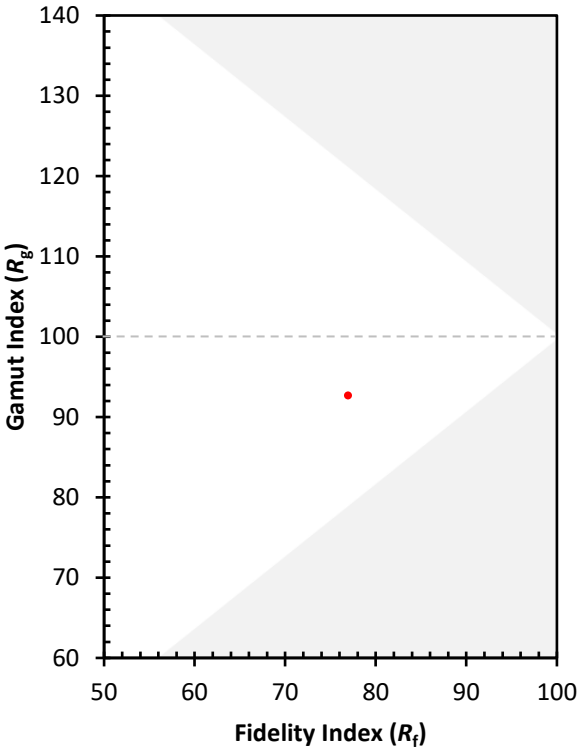
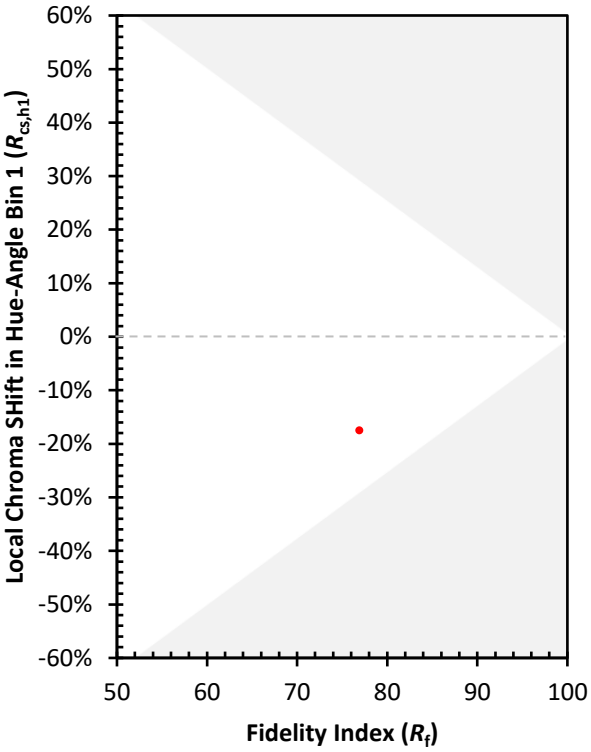
Measure Comparisons





(END OF REPORT)