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: P880351

Luminaire Tested: **EMM2-HSN-VA6-750-U-WQ**

Issue Date: 10/01/2024

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:	P880351
Test Lab:	INNOVATION CENTER(G3)
Issue Date:	10/01/2024
Manufacturer:	COOPER LIGHTING SOLUTIONS (FORMERLY EATON)
Product Line:	INVUE
Catalog Number:	EMM2-HSN-VA6-750-U-WQ
Description:	EPIC MODERN SHORT HOUSING 6W 70CRI 5000K VISUAL COMFORT FIXTURE w/ TYPE V WIDE DISTRIBUTION OPTIC
Light Source:	(1) 5000K CCT, 70 CRI LEDS
Ballast/Driver:	ELECTRONIC DRIVER

Summary

Lumens per Lamp:	N/A
Luminaire Lumens:	10569.3 lumens
Efficiency:	N/A
Efficacy:	99.7 lumens/watt
Luminous Opening:	Circular (Dia: 1.12' x H: 0')
IES Classification:	Type V - Short
BUG Rating:	B3 - U0 - G3

Input Watts (W):	106
Input Voltage (V):	120
Input Current (Ain):	NR
Voltage Rise (V):	NR
Power Factor:	0.99
Total Harmonic Distortion (THDi):	5%
Frequency (hertz):	60
Stabilization Time:	NR
Operation Time:	NR
Ambient Temperature (°C):	NR
Test Distance:	24 FT

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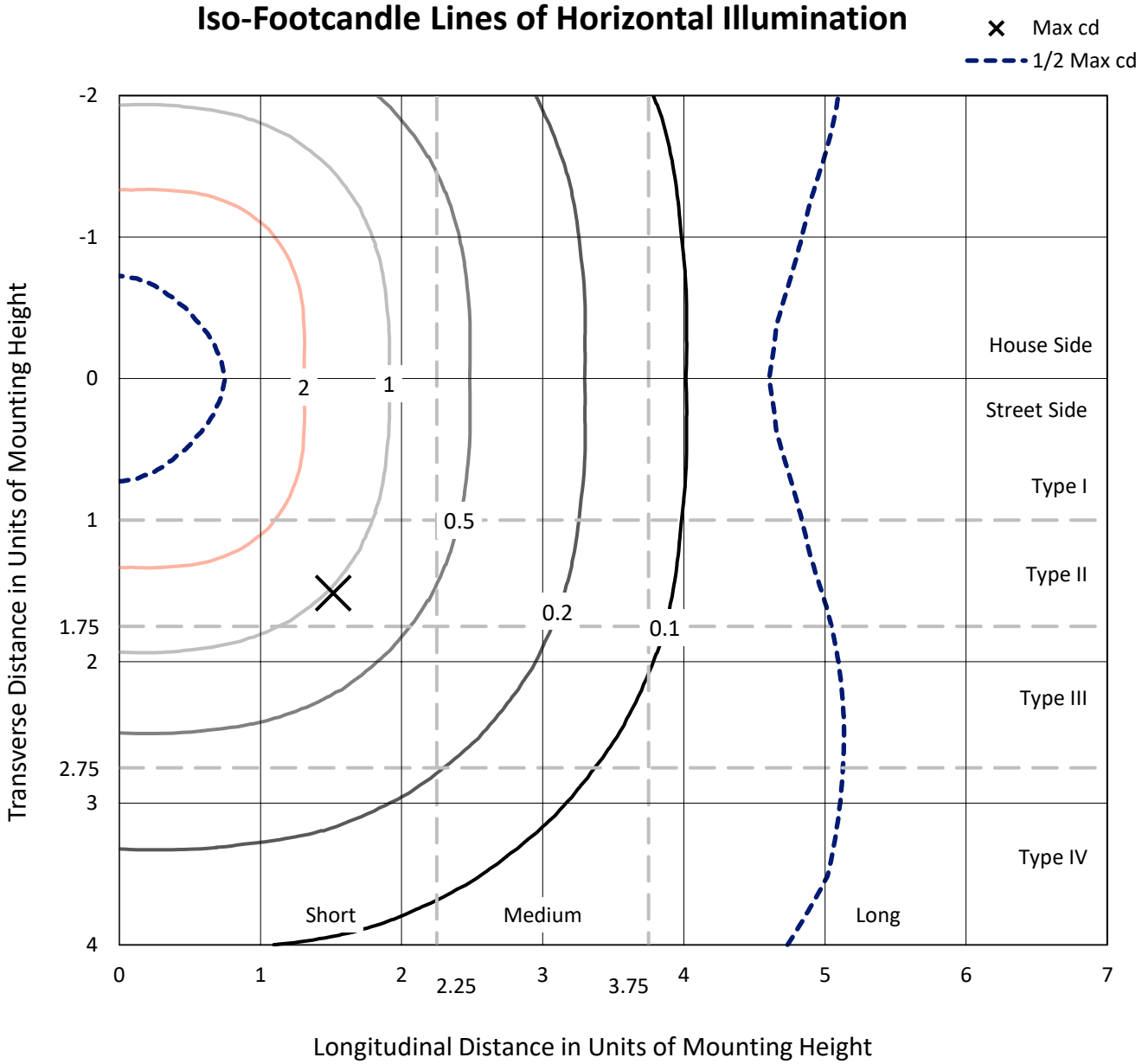
Scaled Data Report

REPORT NUMBER: P880351
CATALOG NUMBER: EMM2-HSN-VA6-750-U-WQ

Iso-Footcandle Lines of Horizontal Illumination



Based on 15 foot mounting height. Maximum calculated value = 3.8 fc
Type V - Short - N/A

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REPORT NUMBER: P880351
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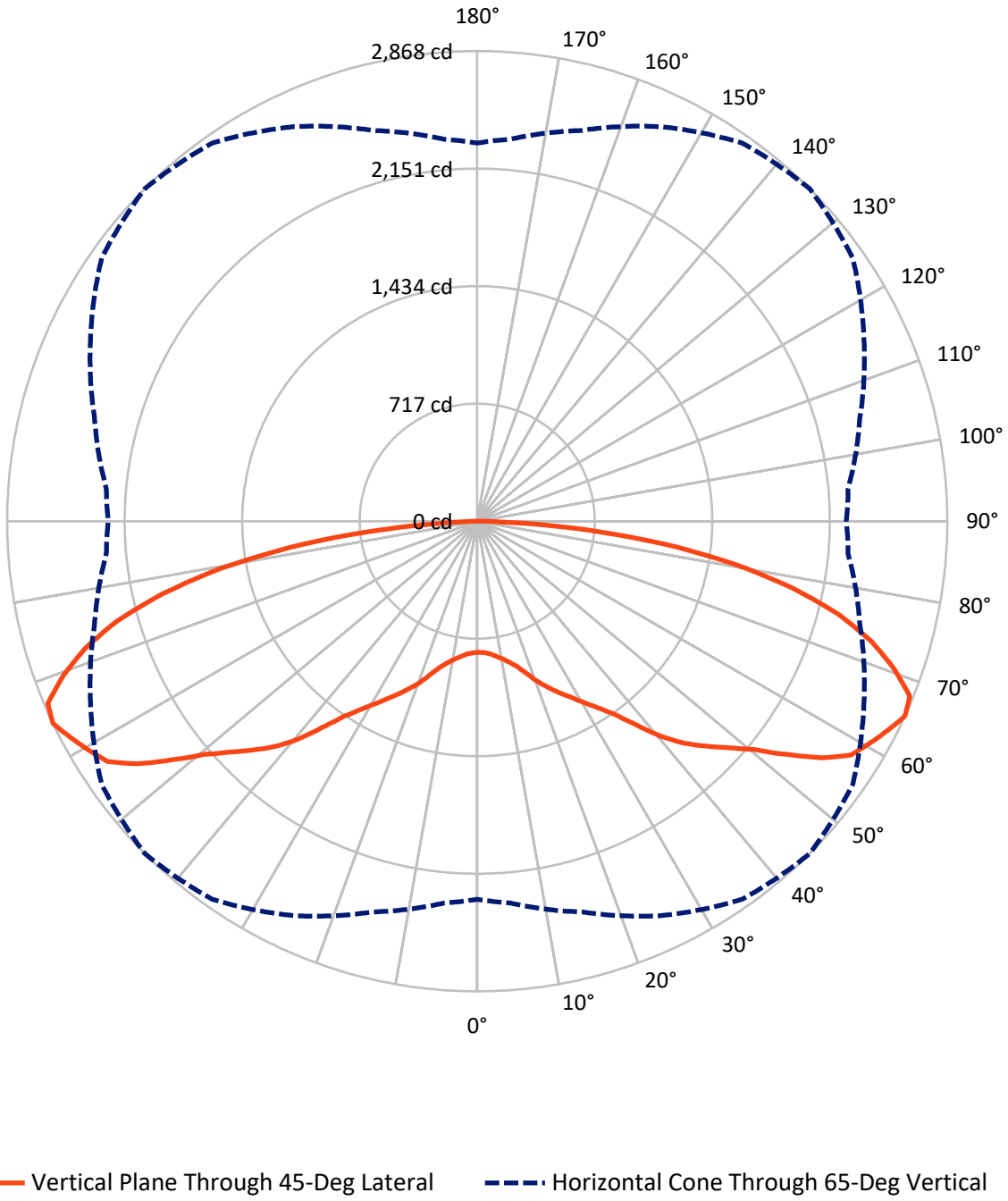
Luminous Intensity Polar Plot



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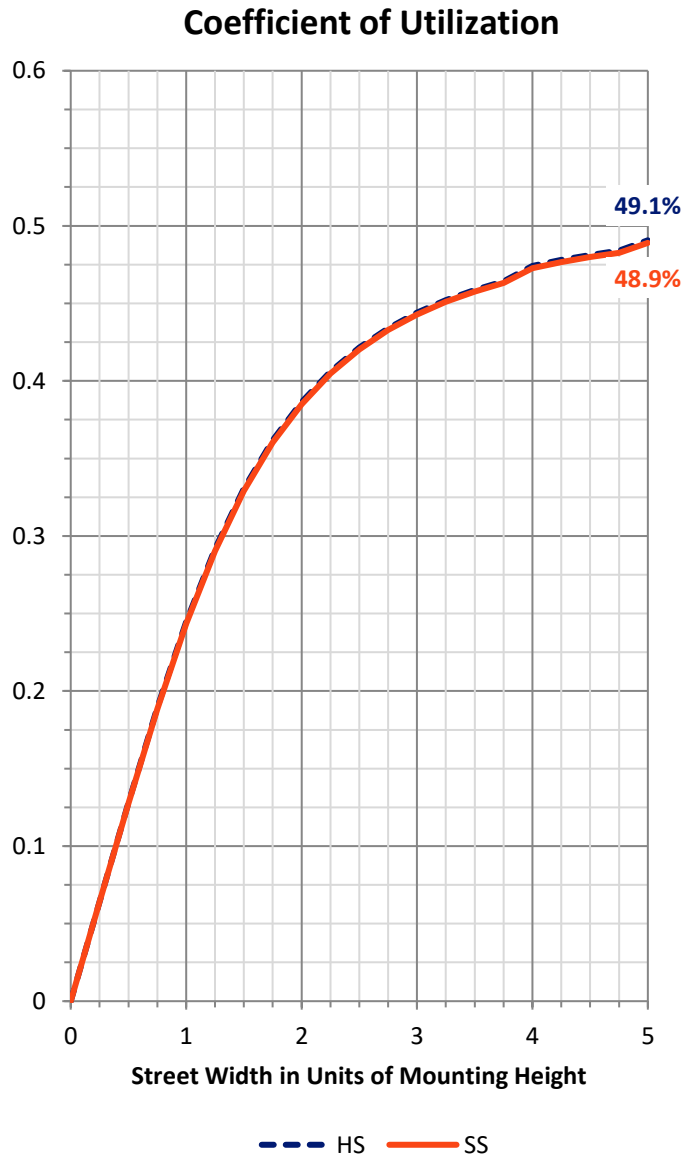
REPORT NUMBER: P880351
CATALOG NUMBER: EMM2-HSN-VA6-750-U-WQ

FLUX DISTRIBUTION:

		Downward	Upward	Total
House Side	Lumens	5284.6	0.0	5284.6
	% Fixture	50.0	0.0	50.0
Street Side	Lumens	5284.6	0.0	5284.6
	% Fixture	50.0	0.0	50.0
Total	Lumens	10569.3	0.0	10569.3
	% Fixture	100.0	0.0	100.0

ZONAL LUMENS:

Zone	Lumens	% Fixture
0°-10°	79.0	0.7
10°-20°	265.9	2.5
20°-30°	534.3	5.1
30°-40°	904.4	8.6
40°-50°	1445.8	13.7
50°-60°	2088.2	19.8
60°-70°	2514.6	23.8
70°-80°	2083.2	19.7
80°-90°	653.7	6.2
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°	10569.3	100.0
0°-180°	10569.3	100.0



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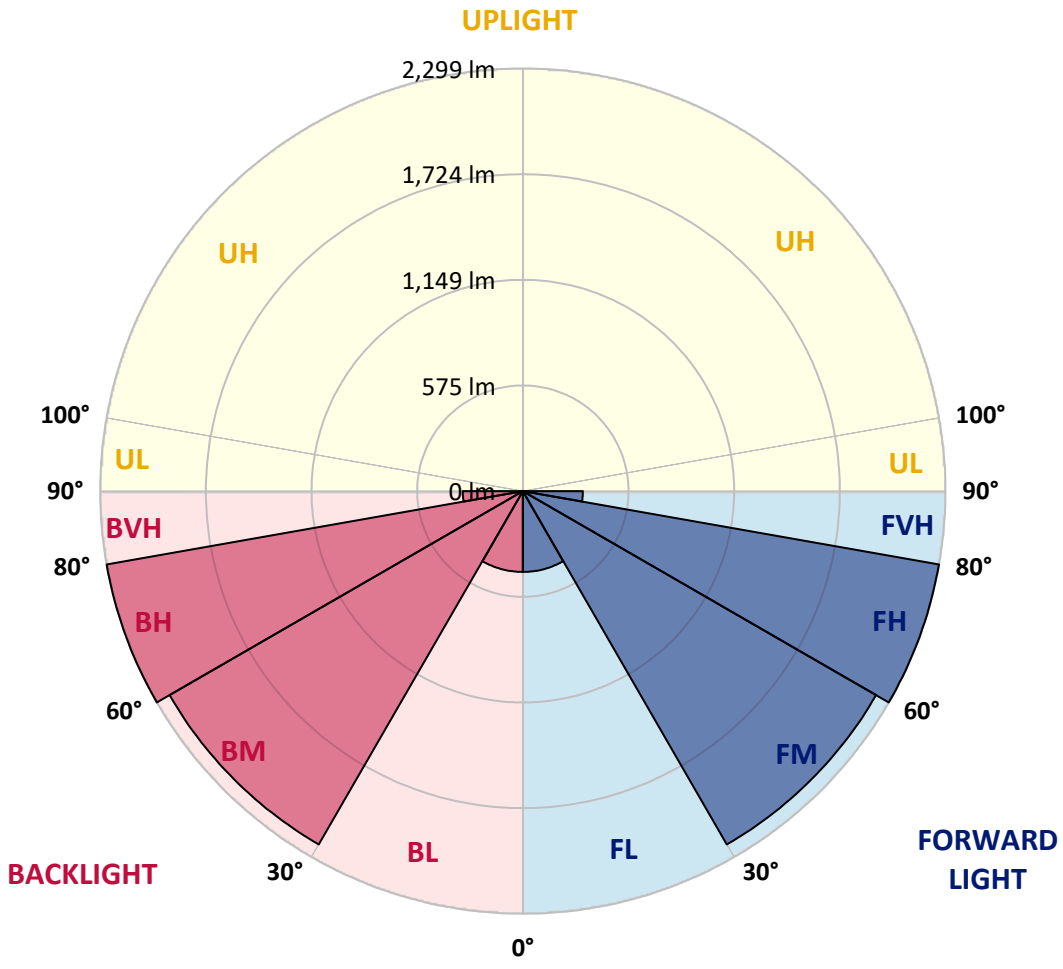
Scaled Data Report

REPORT NUMBER: P880351
CATALOG NUMBER: EMM2-HSN-VA6-750-U-WQ

LUMINAIRE CLASSIFICATION SYSTEM LUMEN TABLE AND BUG RATING:

Zone		Lumens	% Fixture	Zone Rating/Lumen Limit B	U	G
FL	(0°-30°)	439.6	4.2			
FM	(30°-60°)	2219.2	21.0			
FH	(60°-80°)	2298.9	21.8			G2/5000
FVH	(80°-90°)	326.8	3.1			G3/500
BL	(0°-30°)	439.6	4.2	B1/500		
BM	(30°-60°)	2219.2	21.0	B2/2500		
BH	(60°-80°)	2298.9	21.8	B3/2500		G2/5000
BVH	(80°-90°)	326.8	3.1			G3/500
UL	(90°-100°)	0.0	0.0		U0/0	
UH	(100°-180°)	0.0	0.0		U0/0	

BUG Rating: B3-U0-G3
Type V Short



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REPORT NUMBER: P880351
CATALOG NUMBER: EMM2-HSN-VA6-750-U-WQ

CANDELA DISTRIBUTION (FULL):

	0°	5°	15°	25°	35°	45°	55°	65°	75°	85°	90°
0°	799.9	799.9	799.9	799.9	799.9	*799.9*	799.9	799.9	799.9	799.9	799.9
2.5°	803.2	803.2	803.2	803.2	803.2	*803.2*	803.2	803.2	803.2	803.2	803.2
5°	816.1	816.1	816.1	812.8	812.8	*812.8*	816.1	816.1	816.1	816.1	816.1
7.5°	832.2	832.2	832.2	832.2	832.2	*832.2*	829.0	829.0	829.0	829.0	832.2
10°	854.8	858.0	858.0	854.8	854.8	*854.8*	851.6	851.6	854.8	854.8	851.6
12.5°	887.0	887.0	887.0	887.0	883.8	*883.8*	883.8	883.8	883.8	883.8	883.8
15°	922.5	922.5	922.5	922.5	922.5	*922.5*	922.5	922.5	919.3	916.1	916.1
17.5°	967.7	964.4	970.9	967.7	974.1	*977.4*	970.9	967.7	964.4	961.2	958.0
20°	1022.5	1025.7	1032.2	1035.4	1038.6	*1041.9*	1032.2	1029.0	1022.5	1019.3	1016.1
22.5°	1087.0	1087.0	1093.5	1093.5	1099.9	*1099.9*	1096.7	1087.0	1080.6	1080.6	1077.3
25°	1141.9	1145.1	1151.5	1151.5	1158.0	*1158.0*	1154.8	1148.3	1138.6	1132.2	1129.0
27.5°	1199.9	1199.9	1203.1	1212.8	1216.0	*1216.0*	1212.8	1203.1	1190.2	1183.8	1183.8
30°	1254.8	1258.0	1261.2	1274.1	1280.6	*1283.8*	1270.9	1261.2	1245.1	1238.6	1238.6
32.5°	1319.3	1319.3	1325.7	1345.1	1354.7	*1358.0*	1345.1	1328.9	1309.6	1296.7	1296.7
35°	1390.2	1387.0	1406.4	1425.7	1448.3	*1448.3*	1438.6	1412.8	1383.8	1367.6	1364.4
37.5°	1483.8	1487.0	1506.3	1541.8	1577.3	*1577.3*	1567.6	1522.5	1490.2	1461.2	1454.7
40°	1593.4	1596.7	1632.1	1674.1	1712.8	*1725.7*	1706.3	1661.2	1606.3	1564.4	1561.2
42.5°	1687.0	1699.9	1735.4	1793.4	1832.1	*1851.5*	1822.5	1770.8	1709.6	1661.2	1651.5
45°	1777.3	1790.2	1835.4	1896.6	1945.0	*1957.9*	1932.1	1870.8	1799.9	1748.3	1741.8
47.5°	1861.2	1874.1	1919.2	1999.9	2051.5	*2064.4*	2041.8	1970.8	1883.7	1832.1	1825.7
50°	1938.6	1967.6	2022.4	2109.5	2183.7	*2190.2*	2157.9	2074.0	1983.7	1912.8	1903.1
52.5°	2045.0	2057.9	2135.3	2251.5	2335.3	*2364.4*	2312.7	2222.4	2090.2	2006.3	1990.2
55°	2174.0	2180.5	2264.4	2399.8	2509.5	*2548.2*	2483.7	2367.6	2216.0	2132.1	2119.2
57.5°	2248.2	2277.3	2374.0	2519.2	2638.5	*2690.1*	2628.8	2477.2	2328.9	2222.4	2193.4
60°	2280.5	2309.5	2416.0	2590.1	2719.2	*2751.4*	2706.3	2557.9	2364.4	2245.0	2225.7
62.5°	2312.7	2341.8	2448.2	2638.5	2764.3	*2809.5*	2738.5	2606.3	2396.6	2280.5	2254.7
65°	*2306.3*	*2338.5*	*2467.6*	*2654.7*	*2815.9*	*2867.5*	*2796.6*	*2603.0*	*2416.0*	*2270.8*	*2251.5*
67.5°	2241.8	2270.8	2406.3	2612.7	2790.1	*2845.0*	2767.5	2567.6	2357.9	2209.5	2186.9
70°	2112.8	2148.2	2280.5	2506.3	2670.8	*2696.6*	2638.5	2457.9	2238.6	2080.5	2051.5
72.5°	1938.6	1974.1	2109.5	2341.8	2470.8	*2516.0*	2451.4	2296.6	2074.0	1912.8	1887.0
75°	1732.1	1754.7	1880.5	2099.9	2238.6	*2280.5*	2232.1	2064.4	1838.6	1709.6	1680.5
77.5°	1490.2	1522.5	1635.4	1819.2	1928.9	*1967.6*	1922.4	1803.1	1593.4	1483.8	1461.2
80°	1170.9	1209.6	1312.8	1451.5	1567.6	*1596.7*	1558.0	1428.9	1296.7	1177.3	1151.5
82.5°	845.1	854.8	948.3	1048.3	1135.4	*1151.5*	1122.5	1051.5	912.8	832.2	796.7
85°	441.9	454.8	522.5	596.7	651.6	*661.2*	648.3	570.9	525.8	451.6	422.6
87.5°	100.0	103.2	122.6	135.5	164.5	*161.3*	171.0	135.5	129.0	106.4	93.5
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: SP1-2407-176-6

Test Date: 09/26/2024

Luminaire Tested: MEM2-HTN-VA-30-750-U-WQ

Data in this report applies to families of products including MEM2-HTN-VA-30-750-U-WQ

Report Generated By FNC07603 / LDUCLS01DT446
Version: v7.04

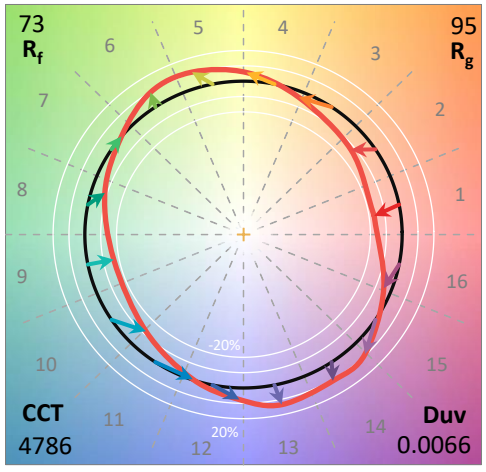
Test Information

Test Method:	LM-79-2019
Report Number:	SP1-2407-176-6
Test Lab:	COOPER LIGHTING SOLUTIONS
Photometer:	SP1 - 76IN SPHERE
Measurement Geometry:	4π
Issue Date:	09/27/2024
Manufacturer:	COOPER LIGHTING SOLUTIONS
Product Line:	Streetworks
Catalog Number:	**MEM2-HTN-VA-30-750-U-WQ**
Description:	EPIC MODERN VISUAL COMFORT 30W WAVESTREAM WIDE

Spectral Parameters

CCT (K):	4786
CIE u':	0.2093
CIE v':	0.4953
Duv:	0.0066
CIE x:	0.3533
CIE y:	0.3716
CIE z:	0.2751
Peak Wavelength (nm):	449
Dominant Wavelength (nm):	570
Purity:	17.53512
Rf:	73
Rg:	94.6

CRI (Ra):	70.9				
R1:	67.8	R9:	-29.8		
R2:	75.1	R10:	40.9		
R3:	80.6	R11:	67.4		
R4:	71.6	R12:	35.3		
R5:	67.8	R13:	68.5		
R6:	65.4	R14:	89.0		
R7:	82.0	R15:	60.9		
R8:	57.0				



Test Conditions

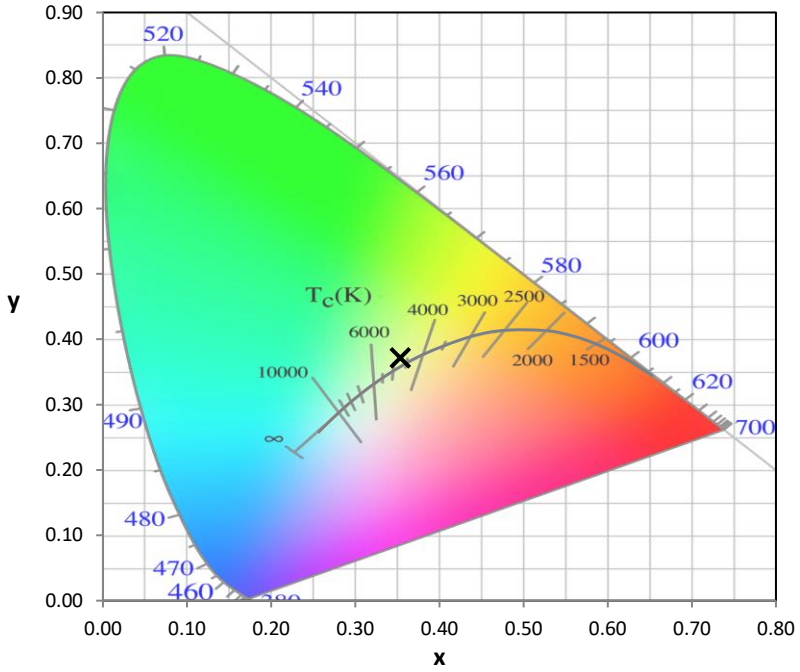
Stabilization Time:	45M
Operation Time:	1H 45M
Sphere Temperature (°C):	25.2

REPORT NUMBER: SP1-2407-176-6

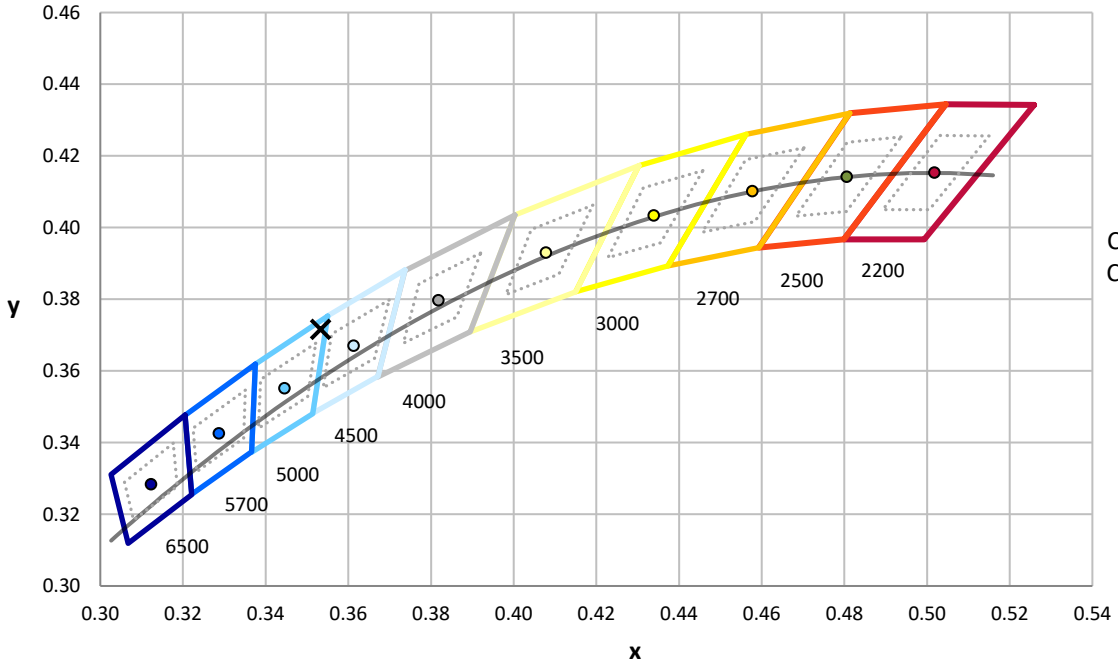
Measurement and Test Equipment			
Instrument	Identification Number	Calibration Date	Calibration Due Date
Photometer	IN0058	6/18/2024	12/18/2024
Power Meter	INXT2011004	2/8/2024	2/8/2025
AC Power Source	IN0063	10/24/2023	10/24/2024
DC Power Source	IN0208	10/24/2023	10/24/2024
Sphere Thermometer	IN0085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

REPORT NUMBER: SP1-2407-176-6

CIE 1931 Chromaticity Diagram



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

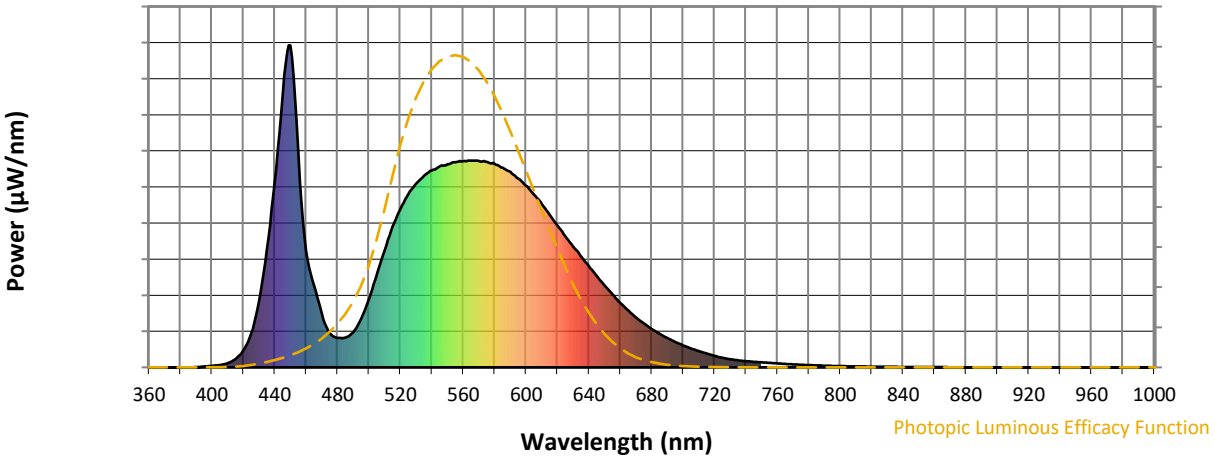


CCT = 4786K
CIE x = 0.3533
CIE y = 0.3716
Duv = 0.0066

Point lies inside the ANSI 5000K 7-step quadrangle

REPORT NUMBER: SP1-2407-176-6

Photopic Flux vs. Wavelength

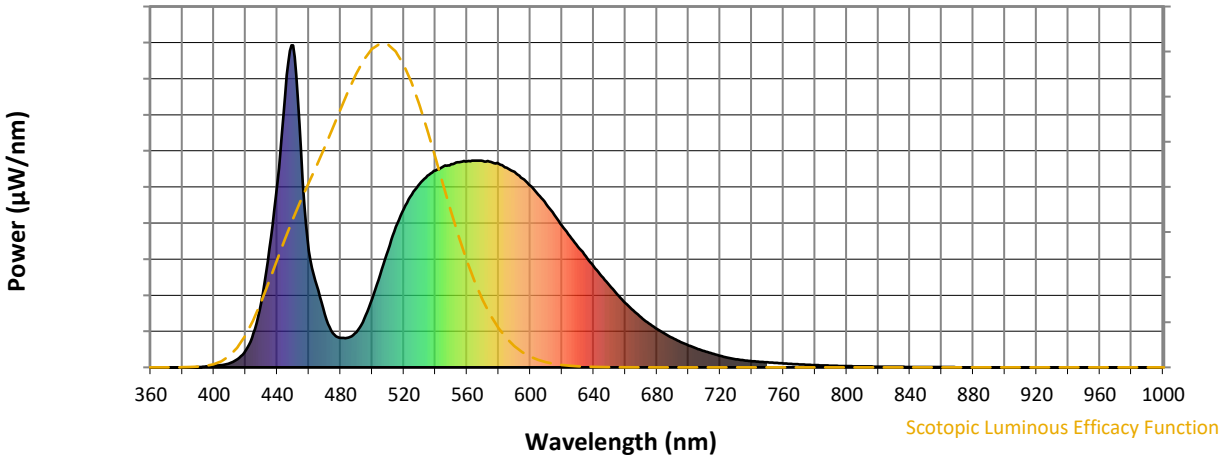


Photopic Lumens: NR

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	110	NR	620	440	NR	750	16	NR	880	0	NR
365	0	NR	495	150	NR	625	407	NR	755	14	NR	885	0	NR
370	0	NR	500	213	NR	630	375	NR	760	12	NR	890	0	NR
375	0	NR	505	288	NR	635	345	NR	765	11	NR	895	0	NR
380	0	NR	510	364	NR	640	314	NR	770	9	NR	900	0	NR
385	0	NR	515	436	NR	645	283	NR	775	8	NR	905	0	NR
390	1	NR	520	492	NR	650	254	NR	780	7	NR	910	0	NR
395	3	NR	525	537	NR	655	227	NR	785	6	NR	915	0	NR
400	5	NR	530	570	NR	660	200	NR	790	5	NR	920	0	NR
405	7	NR	535	595	NR	665	177	NR	795	4	NR	925	0	NR
410	13	NR	540	611	NR	670	155	NR	800	4	NR	930	0	NR
415	25	NR	545	624	NR	675	136	NR	805	3	NR	935	0	NR
420	52	NR	550	631	NR	680	119	NR	810	3	NR	940	0	NR
425	106	NR	555	637	NR	685	104	NR	815	3	NR	945	0	NR
430	204	NR	560	640	NR	690	91	NR	820	2	NR	950	0	NR
435	369	NR	565	642	NR	695	79	NR	825	2	NR	955	0	NR
440	573	NR	570	641	NR	700	68	NR	830	2	NR	960	0	NR
445	844	NR	575	638	NR	705	59	NR	835	2	NR	965	0	NR
450	999	NR	580	632	NR	710	50	NR	840	1	NR	970	0	NR
455	668	NR	585	620	NR	715	43	NR	845	1	NR	975	0	NR
460	361	NR	590	607	NR	720	36	NR	850	1	NR	980	0	NR
465	255	NR	595	586	NR	725	30	NR	855	1	NR	985	0	NR
470	165	NR	600	564	NR	730	25	NR	860	1	NR	990	0	NR
475	106	NR	605	537	NR	735	22	NR	865	1	NR	995	0	NR
480	91	NR	610	507	NR	740	19	NR	870	0	NR	1000	0	NR
485	93	NR	615	474	NR	745	17	NR	875	0	NR			

REPORT NUMBER: SP1-2407-176-6

Scotopic Flux vs. Wavelength

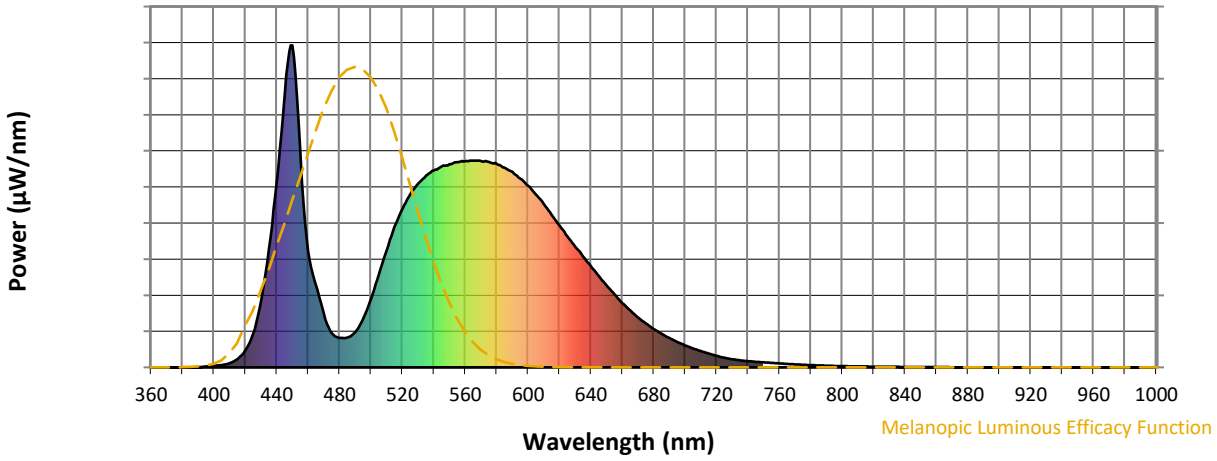


Scotopic Lumens: NR **S/P: 1.69**

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	110	NR	620	440	NR	750	16	NR	880	0	NR
365	0	NR	495	150	NR	625	407	NR	755	14	NR	885	0	NR
370	0	NR	500	213	NR	630	375	NR	760	12	NR	890	0	NR
375	0	NR	505	288	NR	635	345	NR	765	11	NR	895	0	NR
380	0	NR	510	364	NR	640	314	NR	770	9	NR	900	0	NR
385	0	NR	515	436	NR	645	283	NR	775	8	NR	905	0	NR
390	1	NR	520	492	NR	650	254	NR	780	7	NR	910	0	NR
395	3	NR	525	537	NR	655	227	NR	785	6	NR	915	0	NR
400	5	NR	530	570	NR	660	200	NR	790	5	NR	920	0	NR
405	7	NR	535	595	NR	665	177	NR	795	4	NR	925	0	NR
410	13	NR	540	611	NR	670	155	NR	800	4	NR	930	0	NR
415	25	NR	545	624	NR	675	136	NR	805	3	NR	935	0	NR
420	52	NR	550	631	NR	680	119	NR	810	3	NR	940	0	NR
425	106	NR	555	637	NR	685	104	NR	815	3	NR	945	0	NR
430	204	NR	560	640	NR	690	91	NR	820	2	NR	950	0	NR
435	369	NR	565	642	NR	695	79	NR	825	2	NR	955	0	NR
440	573	NR	570	641	NR	700	68	NR	830	2	NR	960	0	NR
445	844	NR	575	638	NR	705	59	NR	835	2	NR	965	0	NR
450	999	NR	580	632	NR	710	50	NR	840	1	NR	970	0	NR
455	668	NR	585	620	NR	715	43	NR	845	1	NR	975	0	NR
460	361	NR	590	607	NR	720	36	NR	850	1	NR	980	0	NR
465	255	NR	595	586	NR	725	30	NR	855	1	NR	985	0	NR
470	165	NR	600	564	NR	730	25	NR	860	1	NR	990	0	NR
475	106	NR	605	537	NR	735	22	NR	865	1	NR	995	0	NR
480	91	NR	610	507	NR	740	19	NR	870	0	NR	1000	0	NR
485	93	NR	615	474	NR	745	17	NR	875	0	NR			

REPORT NUMBER: SP1-2407-176-6

Melanopic Flux vs. Wavelength



Melanopic Lumens: NR **M/P: 3.36**

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	110	NR	620	440	NR	750	16	NR	880	0	NR
365	0	NR	495	150	NR	625	407	NR	755	14	NR	885	0	NR
370	0	NR	500	213	NR	630	375	NR	760	12	NR	890	0	NR
375	0	NR	505	288	NR	635	345	NR	765	11	NR	895	0	NR
380	0	NR	510	364	NR	640	314	NR	770	9	NR	900	0	NR
385	0	NR	515	436	NR	645	283	NR	775	8	NR	905	0	NR
390	1	NR	520	492	NR	650	254	NR	780	7	NR	910	0	NR
395	3	NR	525	537	NR	655	227	NR	785	6	NR	915	0	NR
400	5	NR	530	570	NR	660	200	NR	790	5	NR	920	0	NR
405	7	NR	535	595	NR	665	177	NR	795	4	NR	925	0	NR
410	13	NR	540	611	NR	670	155	NR	800	4	NR	930	0	NR
415	25	NR	545	624	NR	675	136	NR	805	3	NR	935	0	NR
420	52	NR	550	631	NR	680	119	NR	810	3	NR	940	0	NR
425	106	NR	555	637	NR	685	104	NR	815	3	NR	945	0	NR
430	204	NR	560	640	NR	690	91	NR	820	2	NR	950	0	NR
435	369	NR	565	642	NR	695	79	NR	825	2	NR	955	0	NR
440	573	NR	570	641	NR	700	68	NR	830	2	NR	960	0	NR
445	844	NR	575	638	NR	705	59	NR	835	2	NR	965	0	NR
450	999	NR	580	632	NR	710	50	NR	840	1	NR	970	0	NR
455	668	NR	585	620	NR	715	43	NR	845	1	NR	975	0	NR
460	361	NR	590	607	NR	720	36	NR	850	1	NR	980	0	NR
465	255	NR	595	586	NR	725	30	NR	855	1	NR	985	0	NR
470	165	NR	600	564	NR	730	25	NR	860	1	NR	990	0	NR
475	106	NR	605	537	NR	735	22	NR	865	1	NR	995	0	NR
480	91	NR	610	507	NR	740	19	NR	870	0	NR	1000	0	NR
485	93	NR	615	474	NR	745	17	NR	875	0	NR			

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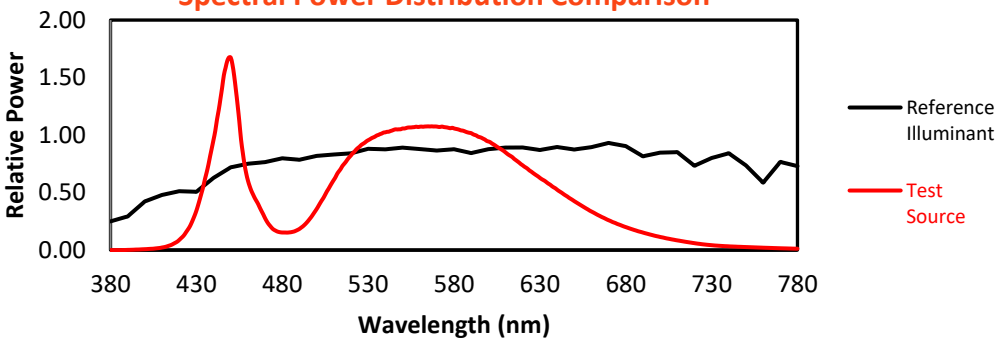
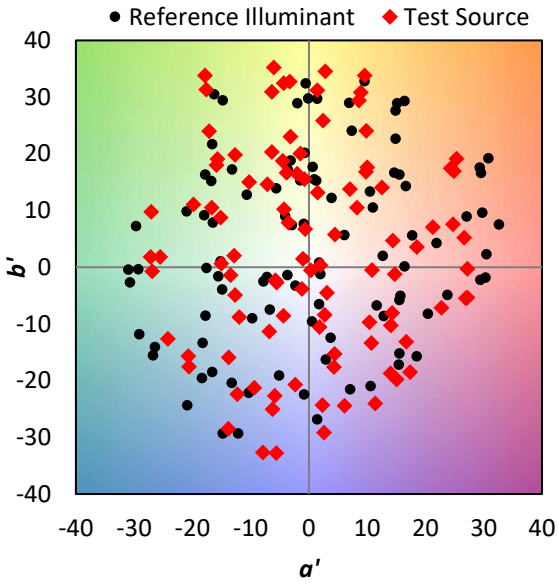
Summary

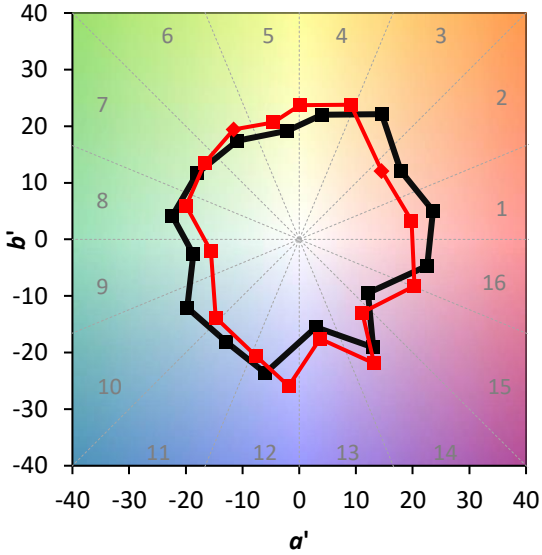
R_f = 73
R_g = 94.6
CIE R_a = 70.9
R_9 = -29.8

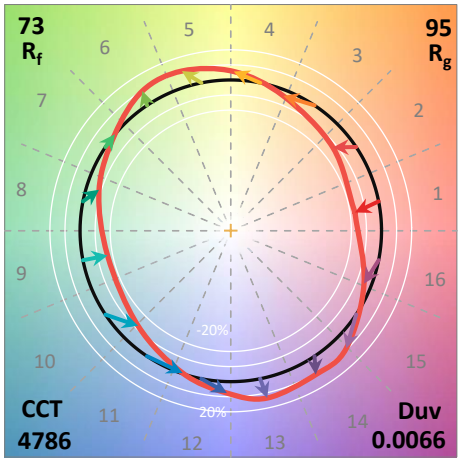
Spectral Power Distribution Comparison

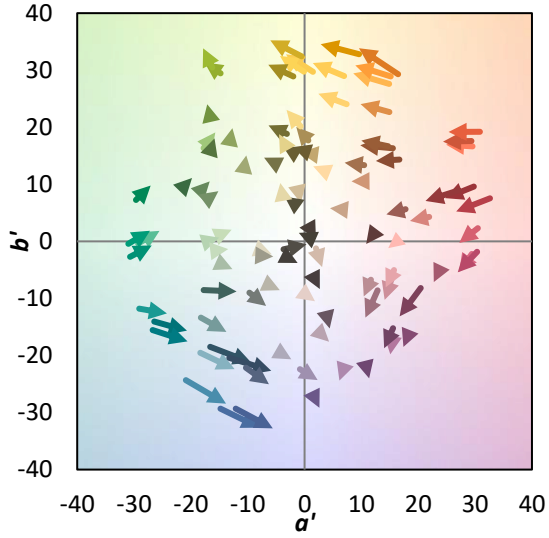


Color Vector Graphics









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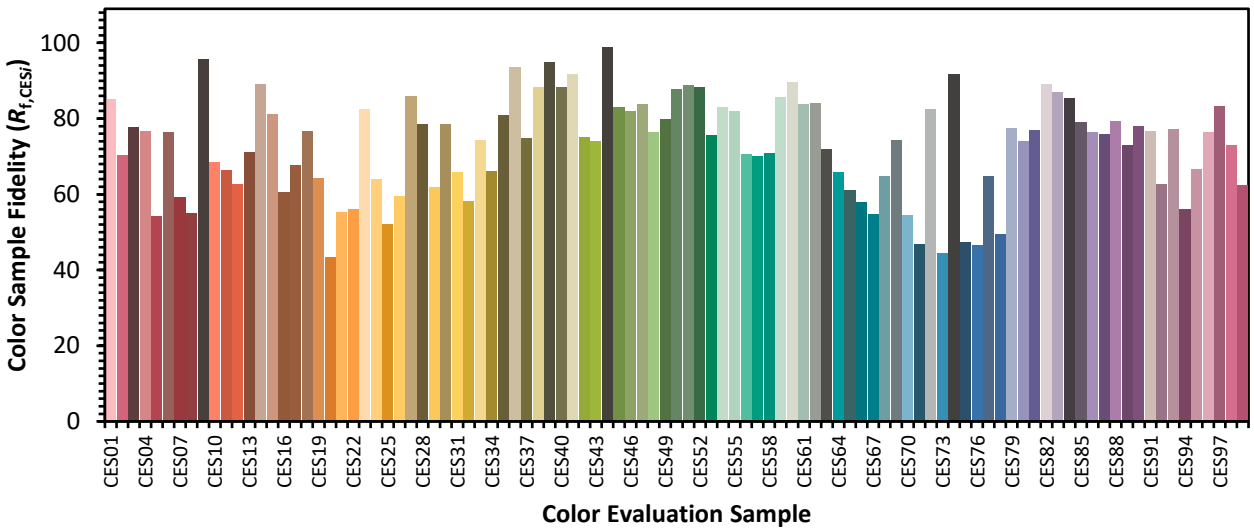
Individual Sample Fidelity Index ($R_{f,i}$)

CES01 = 85	CES26 = 60	CES51 = 89	CES76 = 46
CES02 = 59	CES27 = 86	CES52 = 88	CES77 = 65
CES03 = 30	CES28 = 78	CES53 = 76	CES78 = 49
CES04 = 69	CES29 = 62	CES54 = 83	CES79 = 78
CES05 = 46	CES30 = 79	CES55 = 82	CES80 = 74
CES06 = 50	CES31 = 66	CES56 = 71	CES81 = 77
CES07 = 39	CES32 = 58	CES57 = 70	CES82 = 89
CES08 = 38	CES33 = 74	CES58 = 71	CES83 = 87
CES09 = 29	CES34 = 66	CES59 = 86	CES84 = 86
CES10 = 72	CES35 = 81	CES60 = 90	CES85 = 79
CES11 = 56	CES36 = 94	CES61 = 84	CES86 = 76
CES12 = 61	CES37 = 75	CES62 = 84	CES87 = 76
CES13 = 41	CES38 = 88	CES63 = 72	CES88 = 79
CES14 = 74	CES39 = 95	CES64 = 66	CES89 = 73
CES15 = 70	CES40 = 88	CES65 = 61	CES90 = 78
CES16 = 46	CES41 = 92	CES66 = 58	CES91 = 77
CES17 = 49	CES42 = 75	CES67 = 55	CES92 = 63
CES18 = 55	CES43 = 74	CES68 = 65	CES93 = 77
CES19 = 71	CES44 = 99	CES69 = 74	CES94 = 56
CES20 = 64	CES45 = 83	CES70 = 55	CES95 = 67
CES21 = 85	CES46 = 82	CES71 = 47	CES96 = 76
CES22 = 77	CES47 = 84	CES72 = 82	CES97 = 83
CES23 = 91	CES48 = 76	CES73 = 44	CES98 = 73
CES24 = 90	CES49 = 80	CES74 = 92	CES99 = 62
CES25 = 71	CES50 = 88	CES75 = 47	



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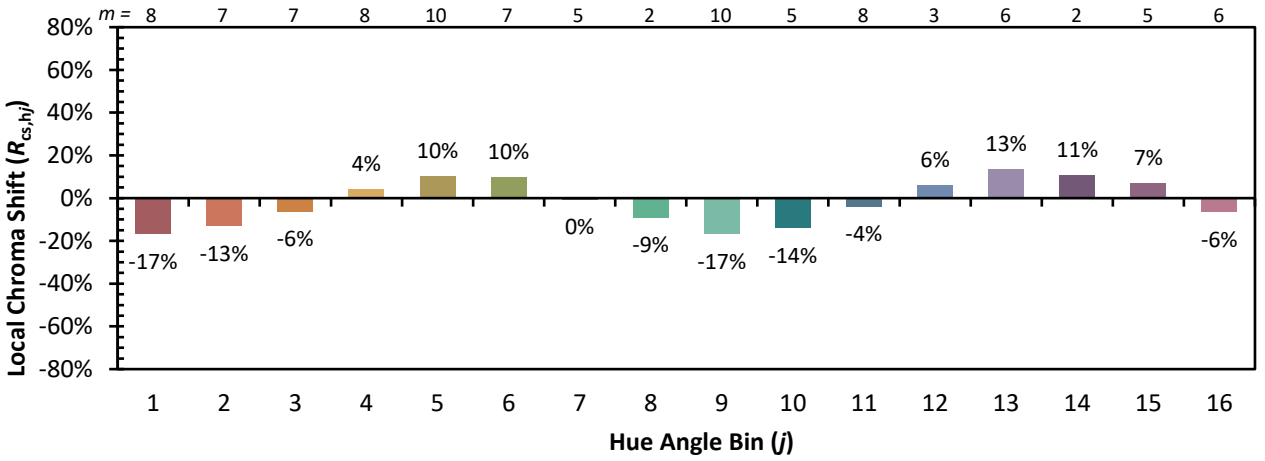
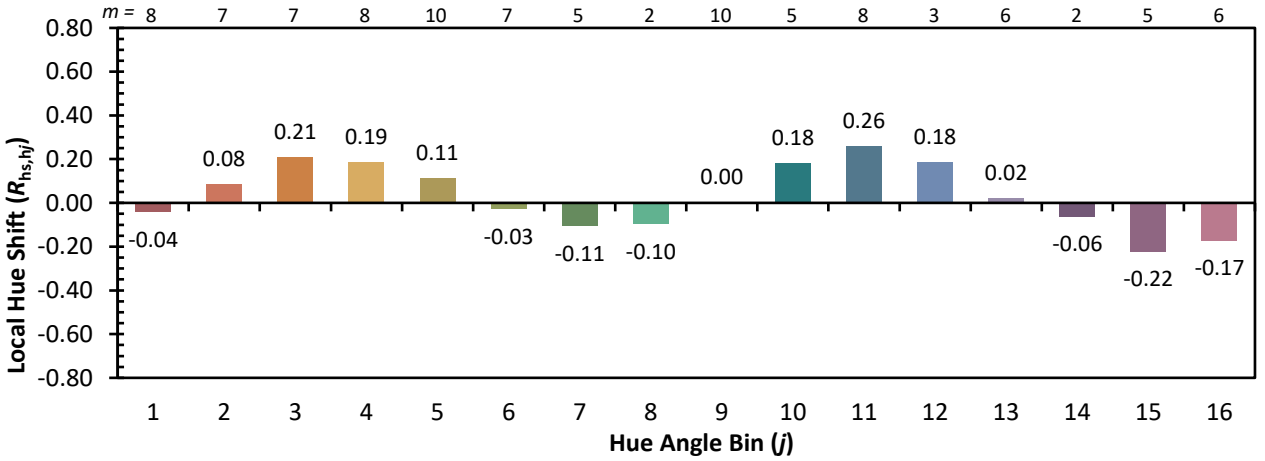
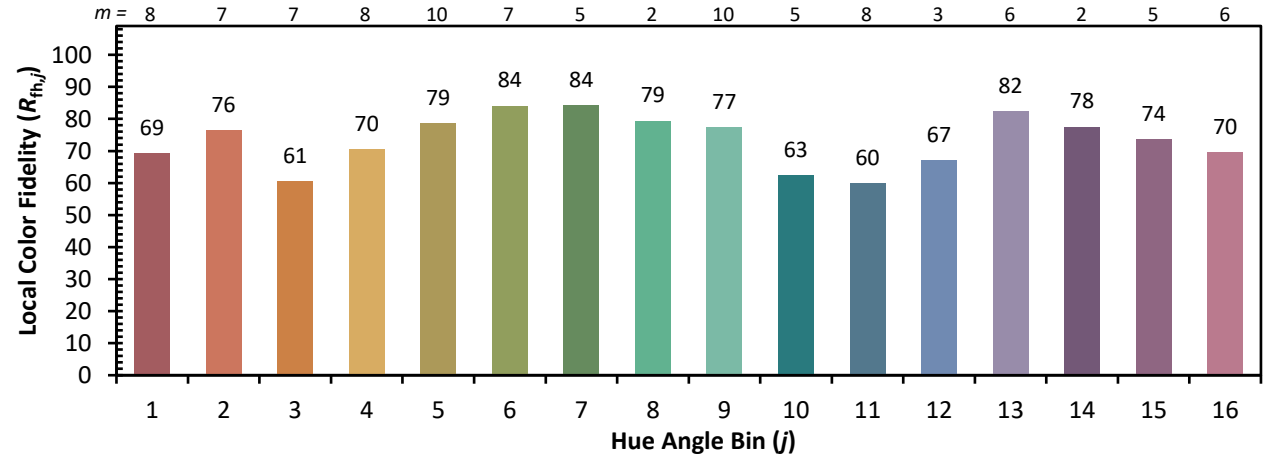
Color Rendition by Hue-Angle Bin







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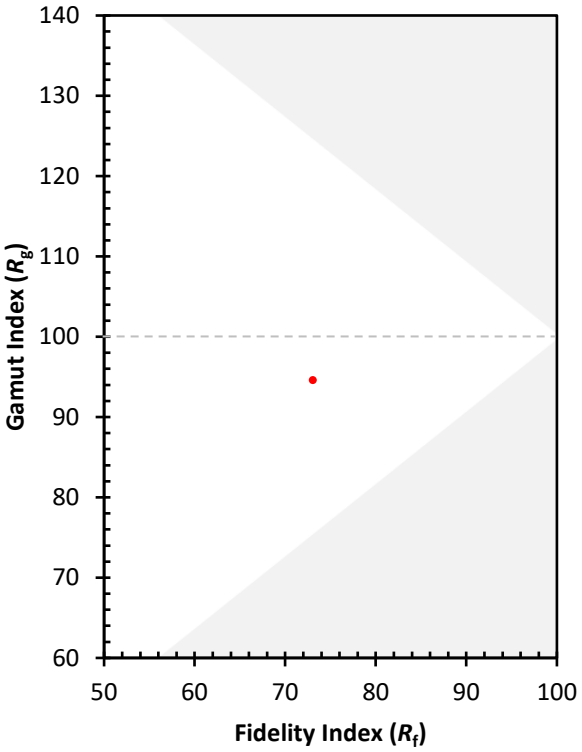
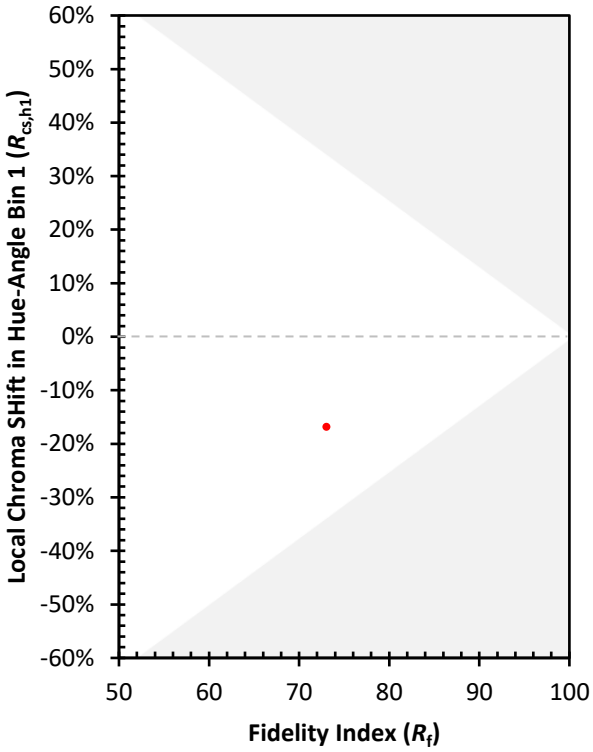
Measure Comparisons





(END OF REPORT)