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: P880205

Luminaire Tested: **EMM2-HSN-VA4-750-U-RW**

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:	P880205
Test Lab:	INNOVATION CENTER(G3)
Issue Date:	10/01/2024
Manufacturer:	COOPER LIGHTING SOLUTIONS (FORMERLY EATON)
Product Line:	INVUE
Catalog Number:	EMM2-HSN-VA4-750-U-RW
Description:	EPIC MODERN SHORT HOUSING 4W 70CRI 5000K VISUAL COMFORT FIXTURE w/ RECTANGULAR WIDE DISTRIBUTION OPTIC
Light Source:	(1) 5000K CCT, 70 CRI LEDS
Ballast/Driver:	ELECTRONIC DRIVER

Summary

Lumens per Lamp:	N/A
Luminaire Lumens:	4939.9 lumens
Efficiency:	N/A
Efficacy:	83.7 lumens/watt
Luminous Opening:	Circular (Dia: 1.12' x H: 0')
IES Classification:	Type III - Short
BUG Rating:	B3 - U0 - G3

Input Watts (W):	59
Input Voltage (V):	120
Input Current (Ain):	NR
Voltage Rise (V):	NR
Power Factor:	0.99
Total Harmonic Distortion (THDi):	8%
Frequency (hertz):	60
Stabilization Time:	NR
Operation Time:	NR
Ambient Temperature (°C):	NR
Test Distance:	24 FT

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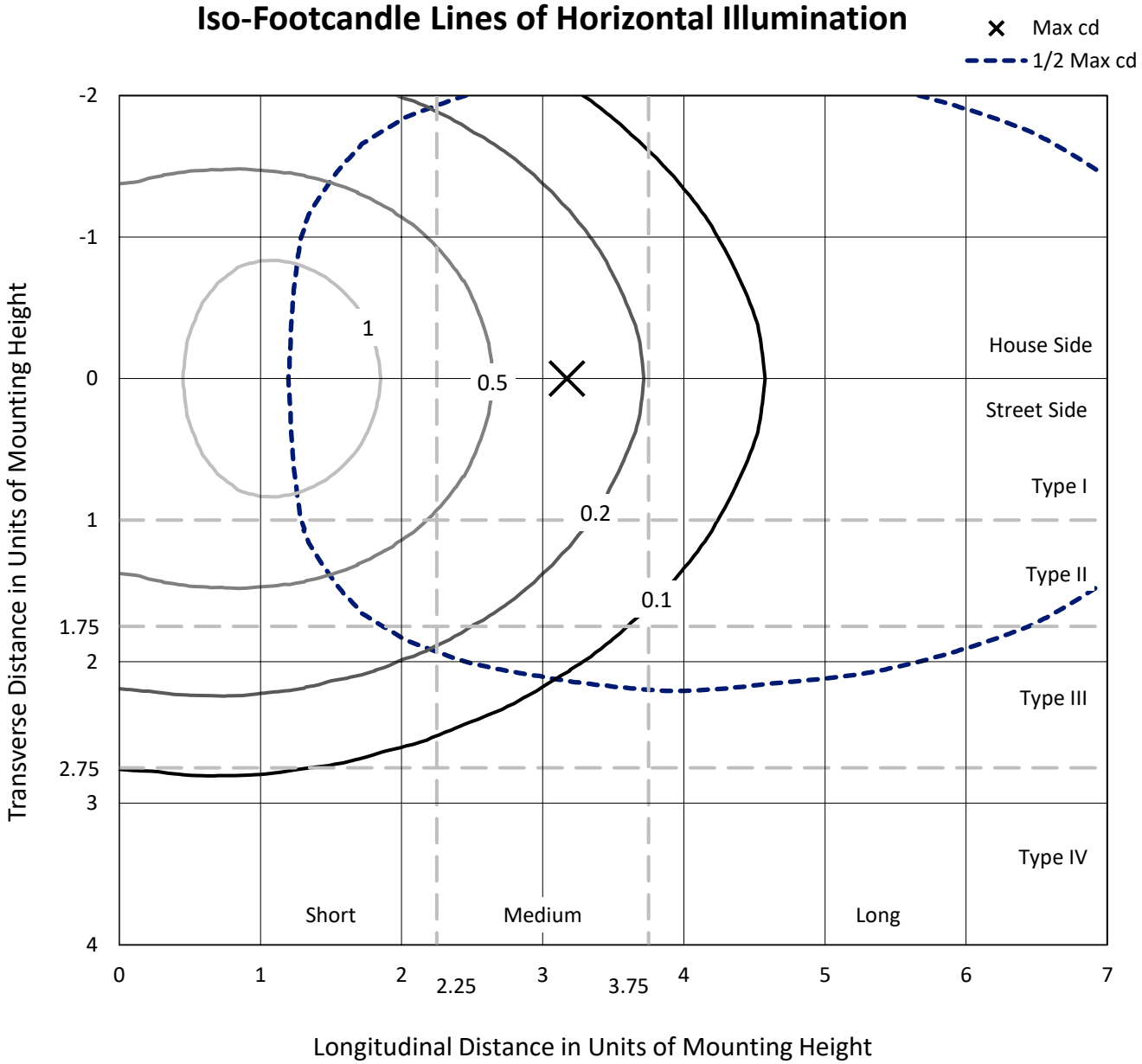
Scaled Data Report

REPORT NUMBER: P880205
CATALOG NUMBER: EMM2-HSN-VA4-750-U-RW

Iso-Footcandle Lines of Horizontal Illumination



Based on 15 foot mounting height. Maximum calculated value = 1.6 fc
Type III - Short - N/A

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REPORT NUMBER: P880205
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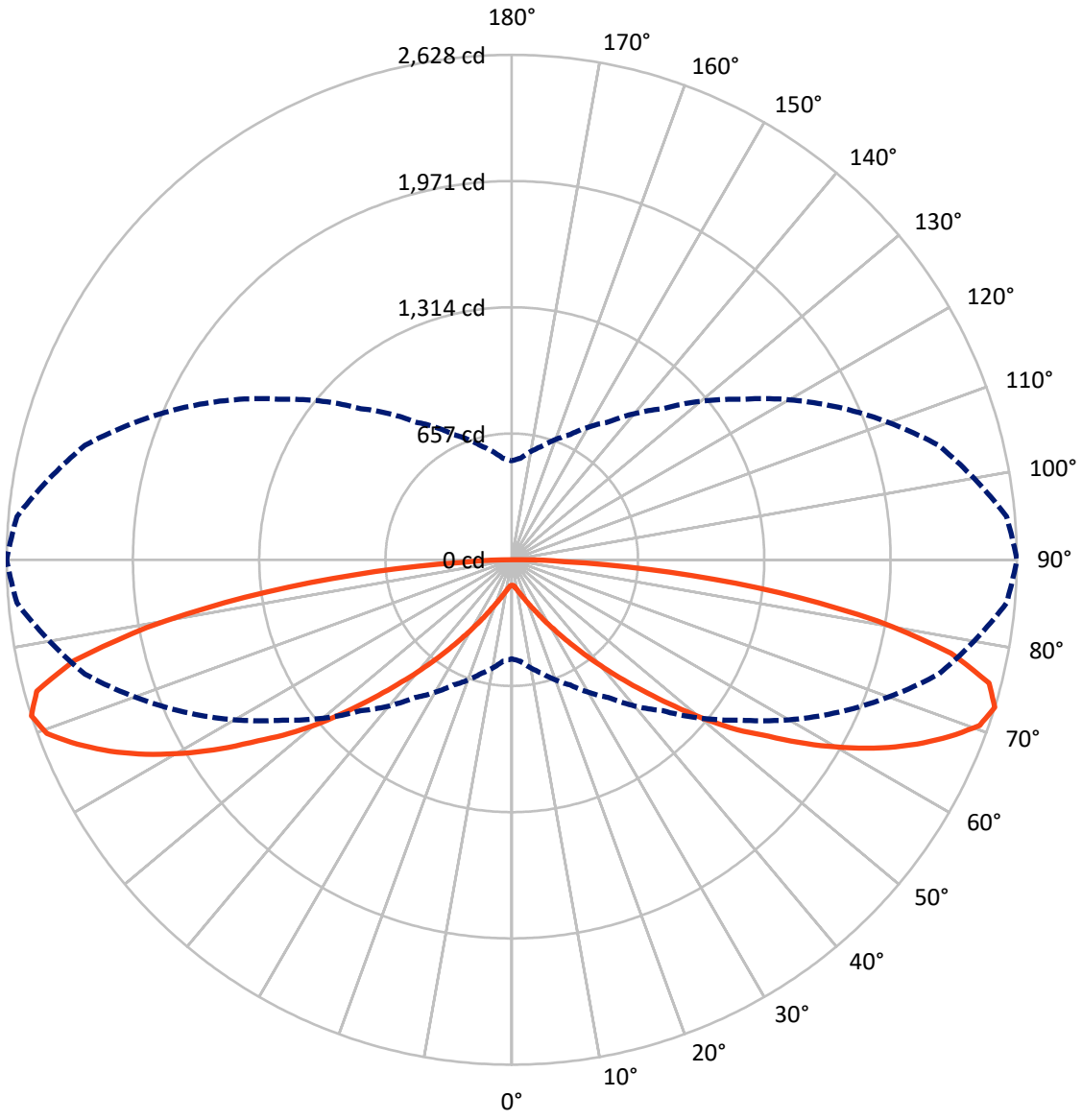
Luminous Intensity Polar Plot



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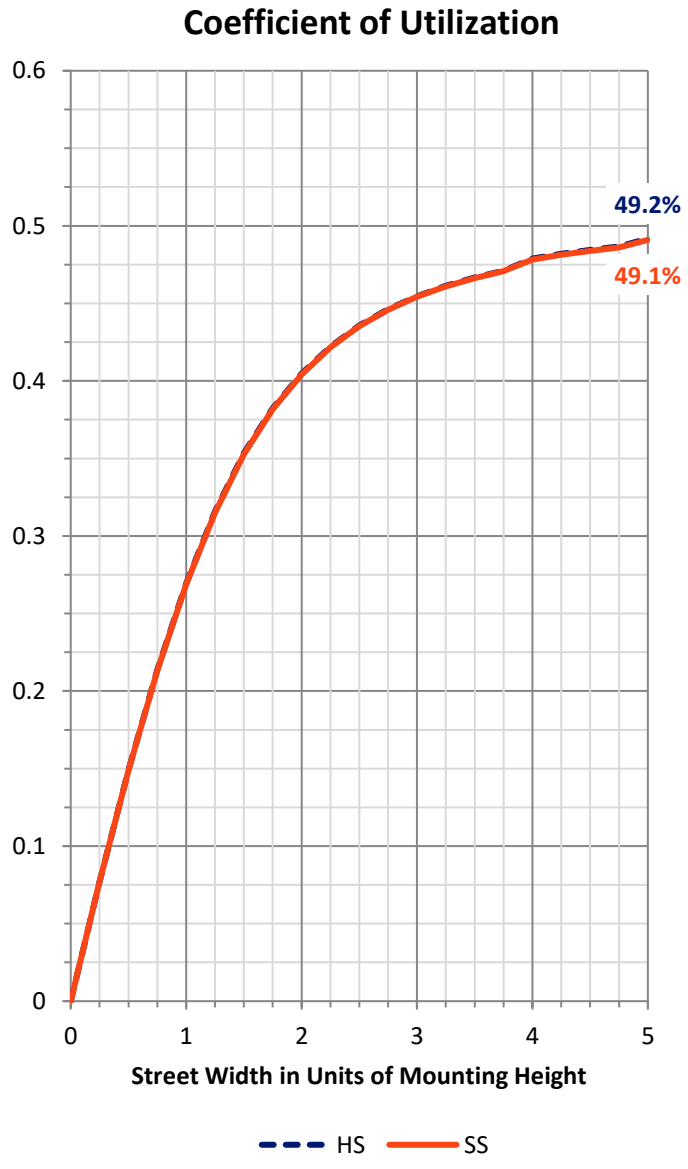
REPORT NUMBER: P880205
CATALOG NUMBER: EMM2-HSN-VA4-750-U-RW

FLUX DISTRIBUTION:

		Downward	Upward	Total
House Side	Lumens	2469.9	0.0	2469.9
	% Fixture	50.0	0.0	50.0
Street Side	Lumens	2469.9	0.0	2469.9
	% Fixture	50.0	0.0	50.0
Total	Lumens	4939.9	0.0	4939.9
	% Fixture	100.0	0.0	100.0

ZONAL LUMENS:

Zone	Lumens	% Fixture
0°-10°	13.6	0.3
10°-20°	50.6	1.0
20°-30°	116.8	2.4
30°-40°	250.3	5.1
40°-50°	516.9	10.5
50°-60°	949.4	19.2
60°-70°	1353.7	27.4
70°-80°	1259.2	25.5
80°-90°	429.3	8.7
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°	4939.9	100.0
0°-180°	4939.9	100.0



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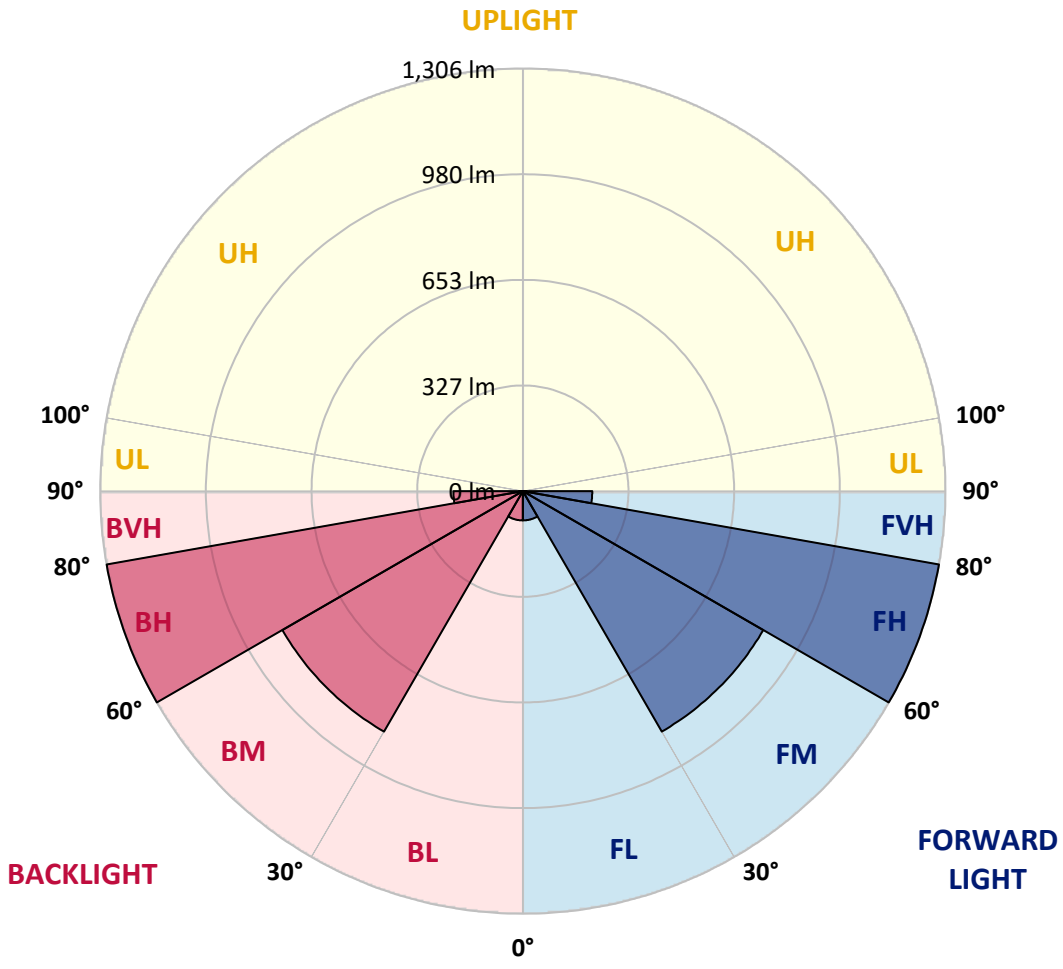
Scaled Data Report

REPORT NUMBER: P880205
CATALOG NUMBER: EMM2-HSN-VA4-750-U-RW

LUMINAIRE CLASSIFICATION SYSTEM LUMEN TABLE AND BUG RATING:

Zone		Lumens	% Fixture	Zone Rating/Lumen Limit B	U	G
FL	(0°-30°)	90.5	1.8			
FM	(30°-60°)	858.3	17.4			
FH	(60°-80°)	1306.4	26.4			G1/1800
FVH	(80°-90°)	214.7	4.3			G2/225
BL	(0°-30°)	90.5	1.8	B0/110		
BM	(30°-60°)	858.3	17.4	B1/1000		
BH	(60°-80°)	1306.4	26.4	B3/2500		G3/2500
BVH	(80°-90°)	214.7	4.3			G2/225
UL	(90°-100°)	0.0	0.0		U0/0	
UH	(100°-180°)	0.0	0.0		U0/0	

BUG Rating: B3-U0-G3
Type III Short



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Scaled Data Report

REPORT NUMBER: P880205
CATALOG NUMBER: EMM2-HSN-VA4-750-U-RW

CANDELA DISTRIBUTION (FULL):

	0°	5°	15°	25°	35°	45°	55°	65°	75°	85°	90°
0°	133.0	133.0	133.0	133.0	133.0	133.0	133.0	133.0	133.0	133.0	*133.0*
2.5°	133.6	133.6	133.6	133.6	134.2	134.2	134.2	134.2	134.2	134.2	*134.2*
5°	135.5	135.5	135.5	136.1	137.3	138.0	138.6	138.6	139.2	139.2	*139.2*
7.5°	138.6	138.6	139.2	141.1	142.4	144.2	146.1	146.8	148.6	148.6	*148.6*
10°	143.0	143.0	144.2	146.1	149.3	153.0	156.2	158.7	159.9	160.5	*161.2*
12.5°	148.6	148.6	150.5	153.6	158.7	163.1	168.1	171.2	174.3	175.6	*175.6*
15°	155.5	155.5	158.0	162.4	168.1	174.3	181.2	186.9	191.3	193.2	*193.8*
17.5°	162.4	163.1	166.2	171.8	179.4	187.5	196.3	203.8	210.7	213.2	*214.5*
20°	171.2	171.2	175.0	182.5	191.9	203.2	215.1	225.1	233.9	238.9	*239.6*
22.5°	181.2	181.9	185.6	195.0	207.0	221.4	237.1	250.9	263.4	269.7	*269.0*
25°	191.3	191.9	197.5	208.8	223.9	244.0	264.0	282.2	299.1	306.7	*306.7*
27.5°	203.2	203.8	210.7	223.9	244.0	269.0	295.4	321.7	338.7	349.9	*353.7*
30°	217.6	218.2	226.4	243.3	266.5	297.9	333.0	366.9	389.5	405.8	*406.4*
32.5°	233.3	234.6	244.6	264.0	294.1	333.6	377.5	419.6	450.9	471.6	*471.0*
35°	254.6	255.9	269.7	291.6	328.0	375.0	428.3	485.4	521.8	545.6	*548.1*
37.5°	276.6	279.1	294.8	323.6	367.5	423.9	491.1	555.0	609.0	630.9	*637.2*
40°	302.3	304.8	324.2	359.4	410.2	482.3	565.1	643.4	705.5	735.6	*740.0*
42.5°	331.8	336.1	358.7	399.5	463.5	546.9	643.4	740.0	818.4	857.9	*855.4*
45°	373.8	377.5	406.4	452.2	524.3	620.2	737.5	858.6	943.2	989.0	*988.4*
47.5°	413.9	418.9	453.4	511.1	594.5	706.2	844.1	982.1	1079.3	1130.1	*1138.9*
50°	455.3	462.2	506.1	570.7	669.8	806.5	961.4	1109.4	1227.3	1290.0	*1305.1*
52.5°	525.5	531.8	578.2	646.0	751.9	903.1	1081.2	1247.4	1377.8	1444.3	*1468.8*
55°	573.2	583.2	642.2	726.9	847.3	1007.2	1202.9	1394.8	1542.1	1607.4	*1621.2*
57.5°	588.9	599.5	670.4	775.1	924.4	1116.9	1330.2	1535.9	1695.8	1784.2	*1806.2*
60°	589.5	602.7	679.2	792.7	962.0	1194.1	1443.7	1687.6	1868.9	1966.1	*1984.9*
62.5°	609.6	624.6	706.2	812.1	980.9	1229.8	1520.8	1816.2	2038.2	2136.7	*2157.4*
65°	632.2	649.7	736.3	854.2	1023.5	1268.1	1569.7	1909.0	2190.6	2305.4	*2315.4*
67.5°	609.0	624.0	714.9	837.2	1013.5	1275.6	1604.2	1966.7	2282.2	2448.4	*2456.5*
70°	570.7	586.4	672.9	784.6	957.6	1218.5	1564.7	1966.7	2336.1	2544.9	*2582.6*
72.5°	*514.9*	*530.6*	*612.7*	*719.3*	*874.9*	*1111.3*	*1455.0*	*1876.4*	*2299.1*	*2583.8*	*2627.7*
75°	446.5	460.9	536.8	634.0	770.1	984.0	1295.7	1704.6	2154.9	2511.7	*2564.4*
77.5°	372.5	385.7	450.3	528.7	644.1	834.1	1101.3	1471.3	1902.7	2268.4	*2336.7*
80°	292.9	306.0	355.6	417.0	509.9	655.4	876.7	1183.4	1556.6	1862.6	*1929.7*
82.5°	219.5	225.8	260.9	305.4	365.0	472.9	635.9	874.9	1153.9	1373.4	*1403.5*
85°	138.0	143.6	167.4	198.2	233.9	290.4	392.0	535.6	697.4	820.9	*822.8*
87.5°	42.6	49.5	57.1	75.3	85.9	103.5	124.2	175.0	230.2	290.4	*272.8*
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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Peachtree City, GA 30269

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

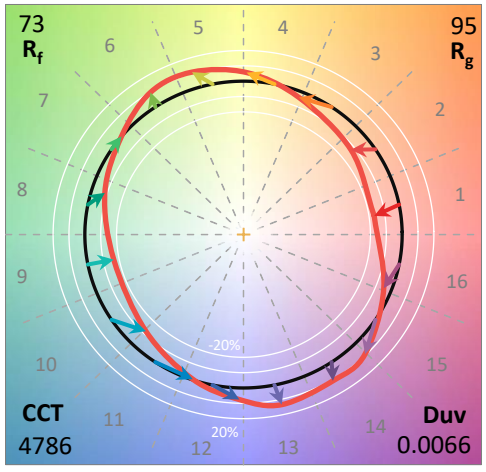
Test Information

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

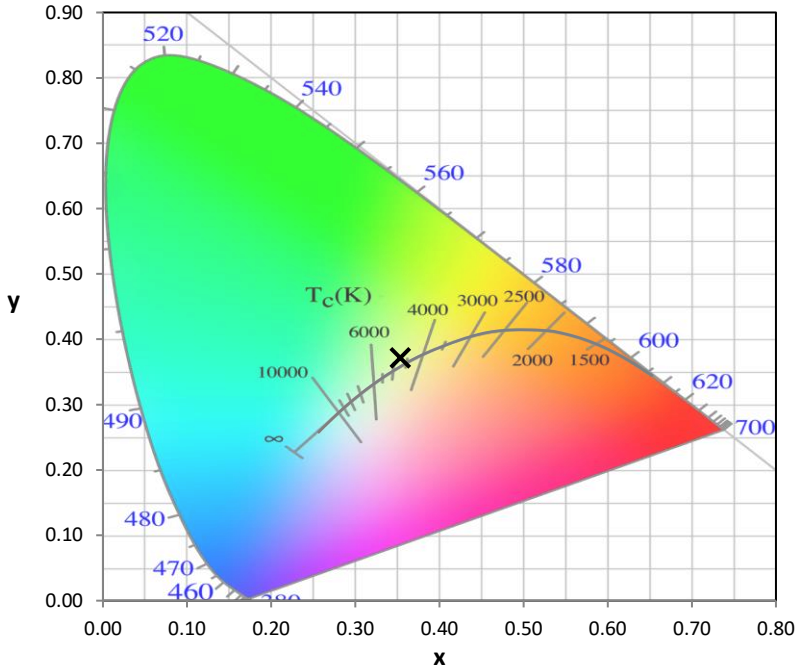
Stabilization Time:	45M
Operation Time:	1H 45M
Sphere Temperature (°C):	25.2

REPORT NUMBER: SP1-2407-176-6

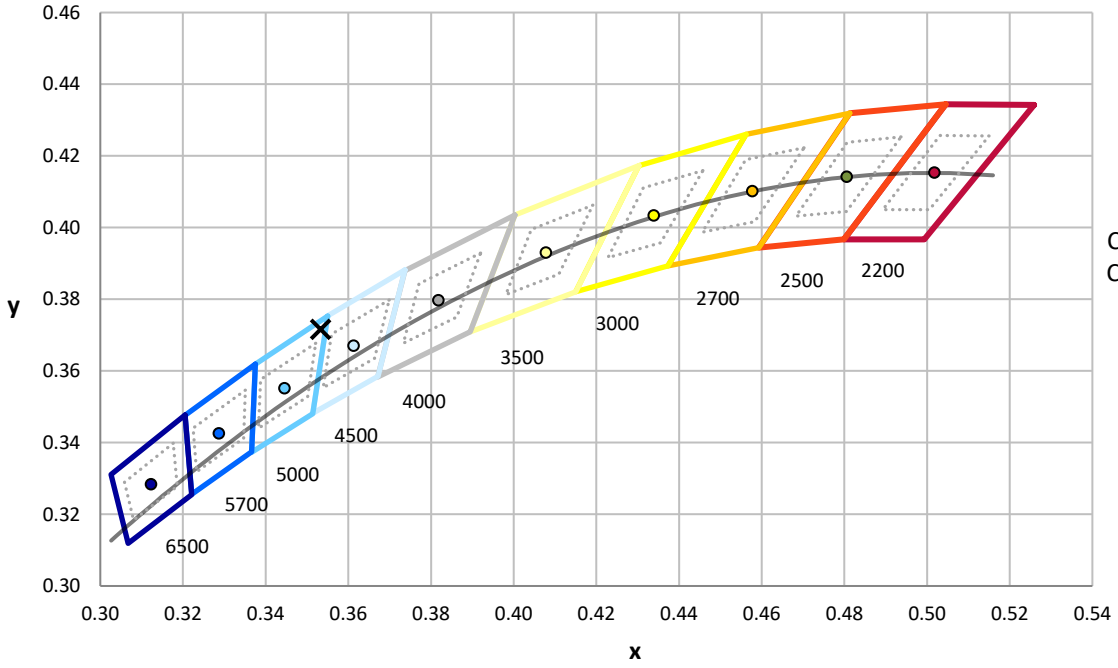
Measurement and Test Equipment			
Instrument	Identification Number	Calibration Date	Calibration Due Date
Photometer	IN0058	6/18/2024	12/18/2024
Power Meter	INXT2011004	2/8/2024	2/8/2025
AC Power Source	IN0063	10/24/2023	10/24/2024
DC Power Source	IN0208	10/24/2023	10/24/2024
Sphere Thermometer	IN0085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

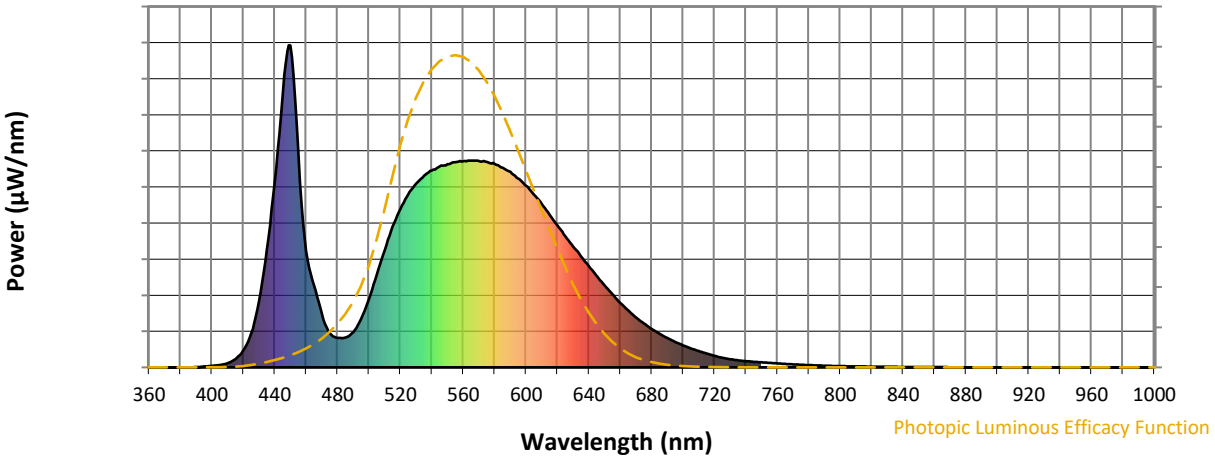


CCT = 4786K
CIE x = 0.3533
CIE y = 0.3716
Duv = 0.0066

Point lies inside the ANSI 5000K 7-step quadrangle

REPORT NUMBER: SP1-2407-176-6

Photopic Flux vs. Wavelength

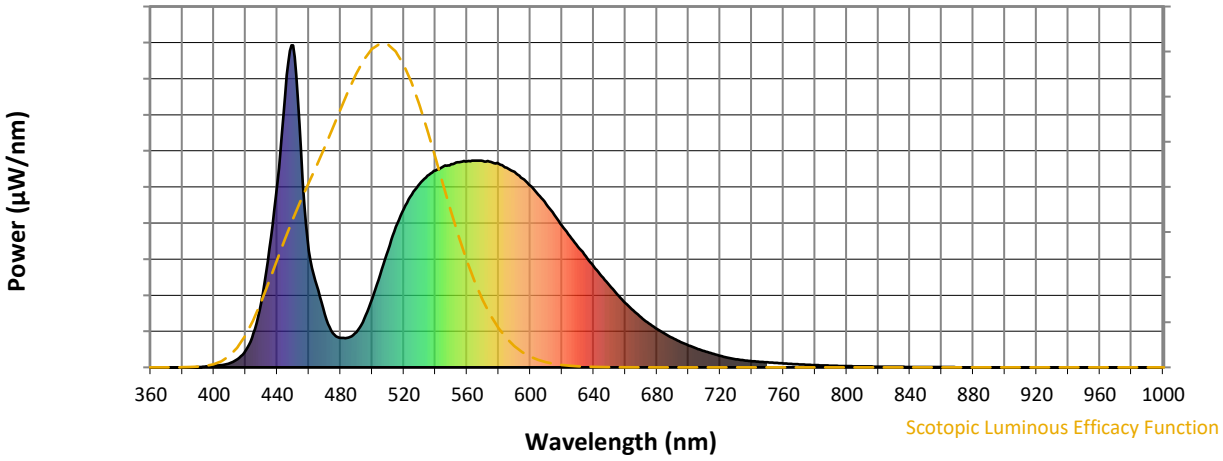


Photopic Lumens: NR

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

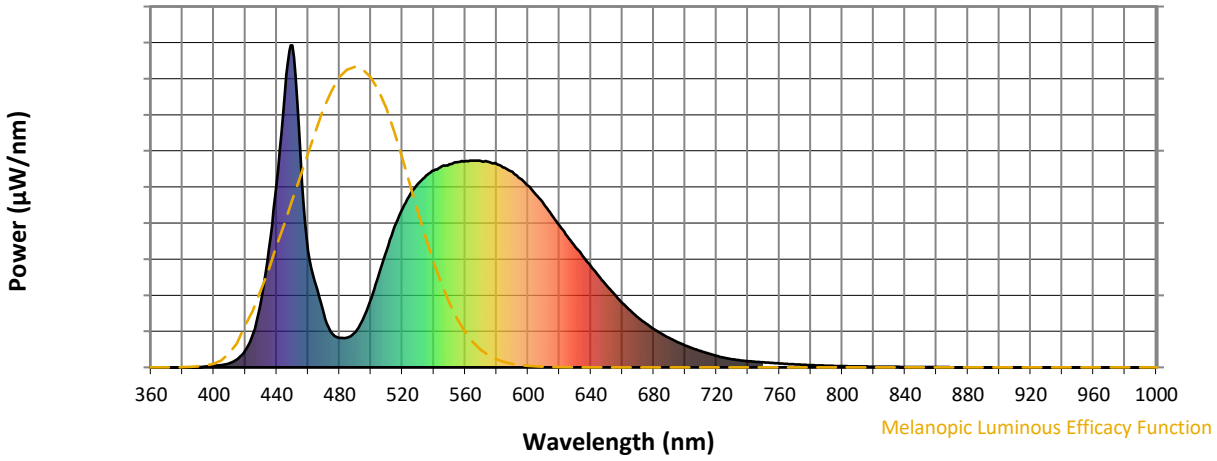


Scotopic Lumens: NR **S/P: 1.69**

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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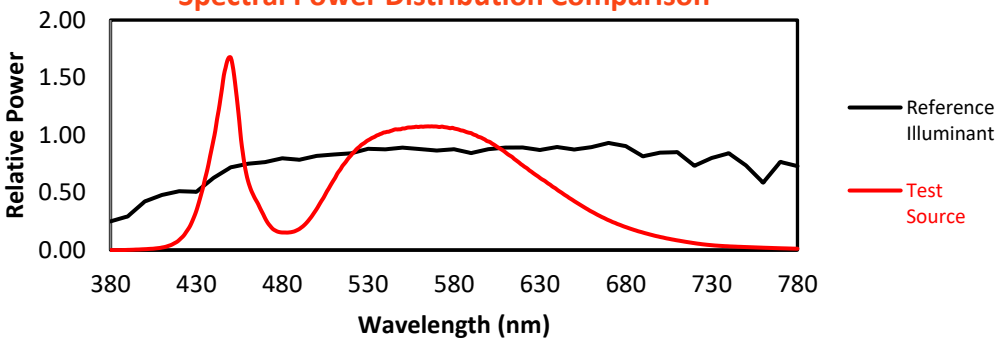
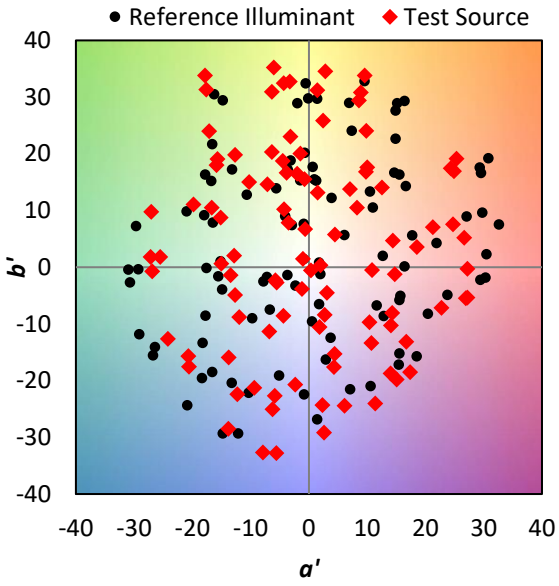
Summary

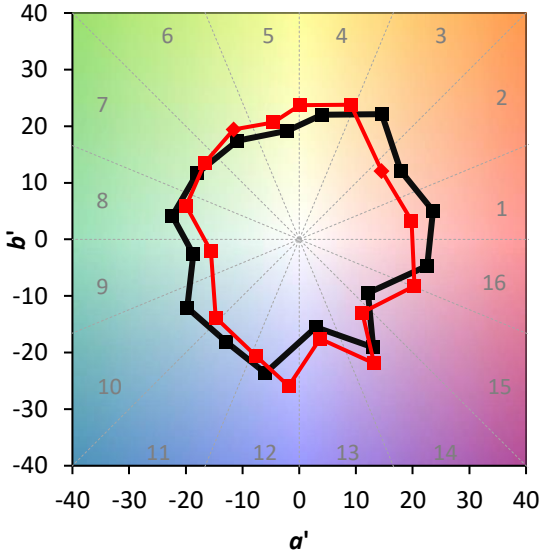
R_f = 73
R_g = 94.6
CIE R_a = 70.9
R_9 = -29.8

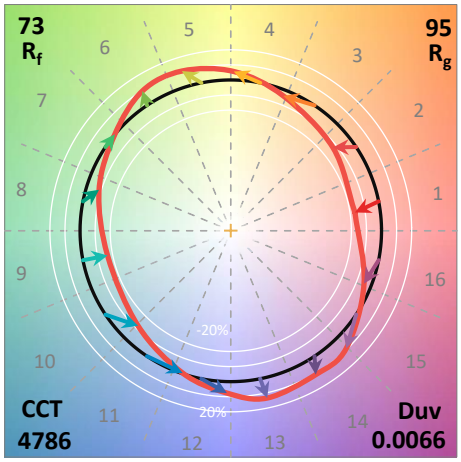
Spectral Power Distribution Comparison

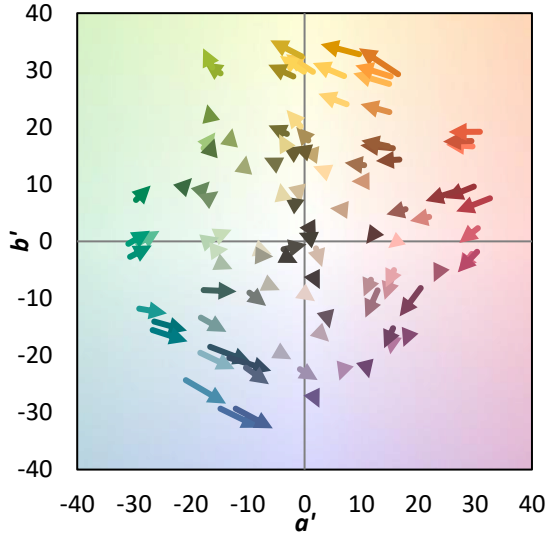


Color Vector Graphics









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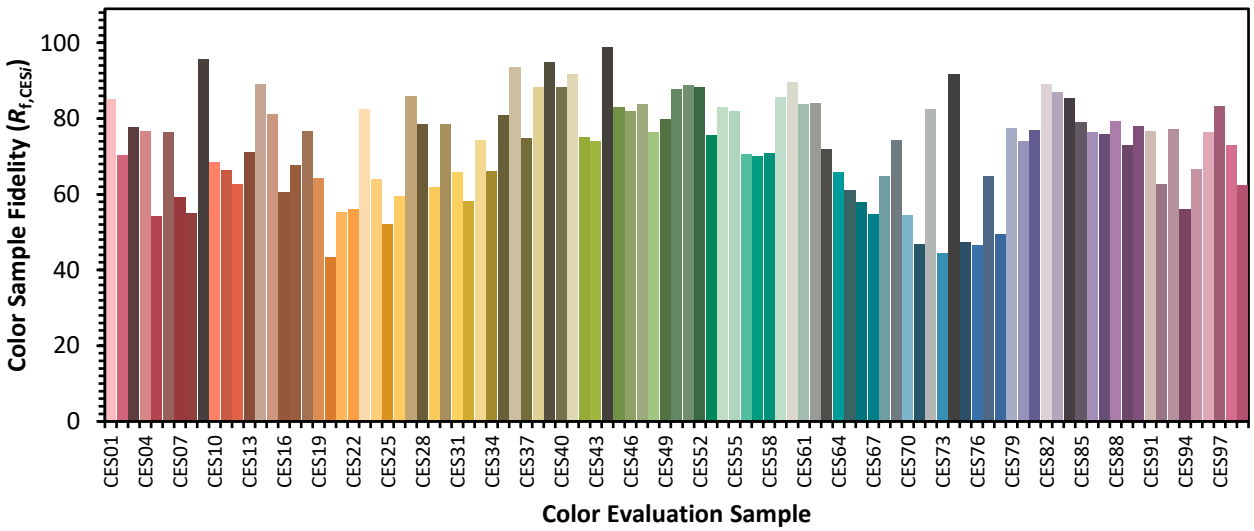
Individual Sample Fidelity Index ($R_{f,i}$)

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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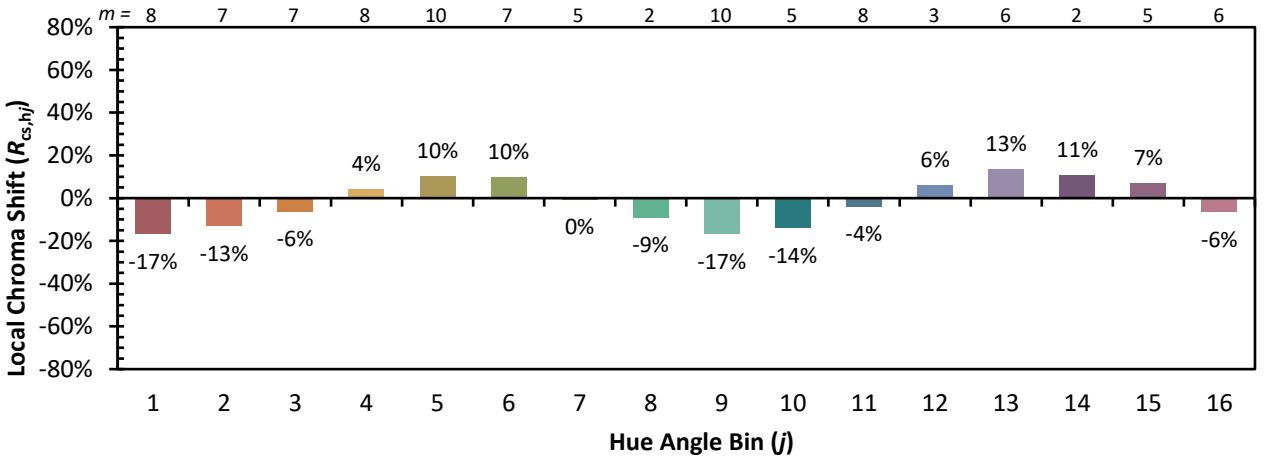
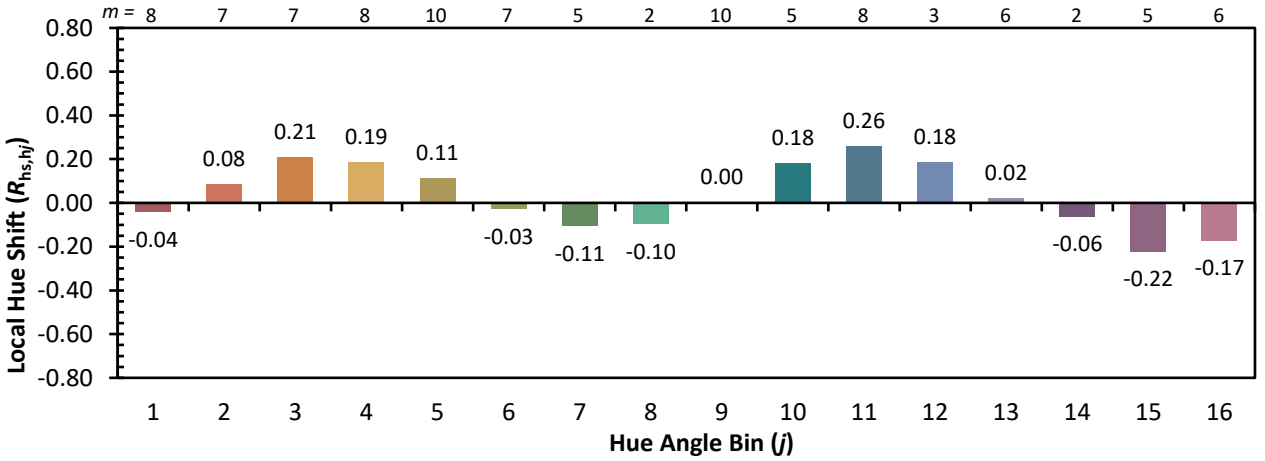
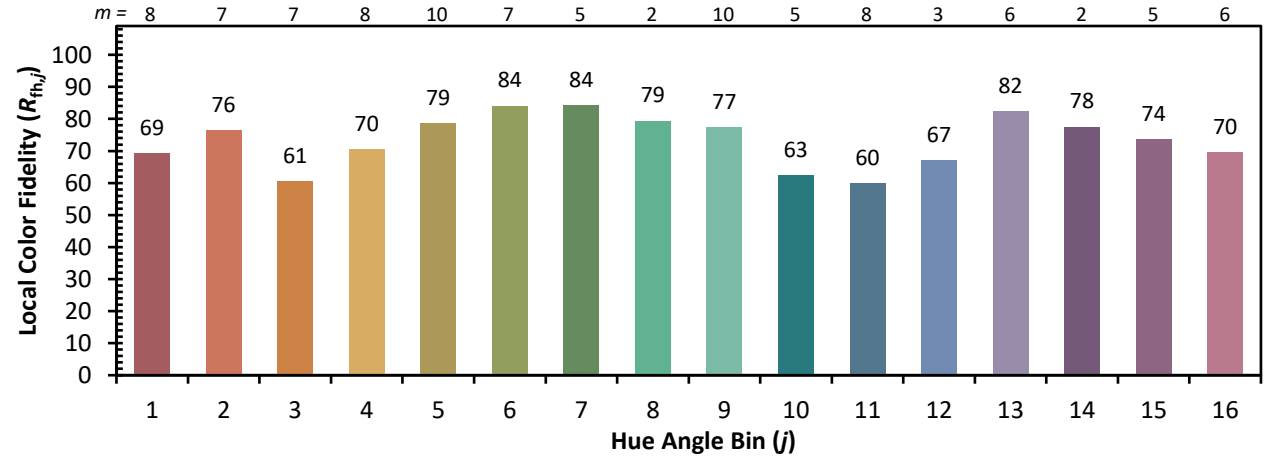
Color Rendition by Hue-Angle Bin







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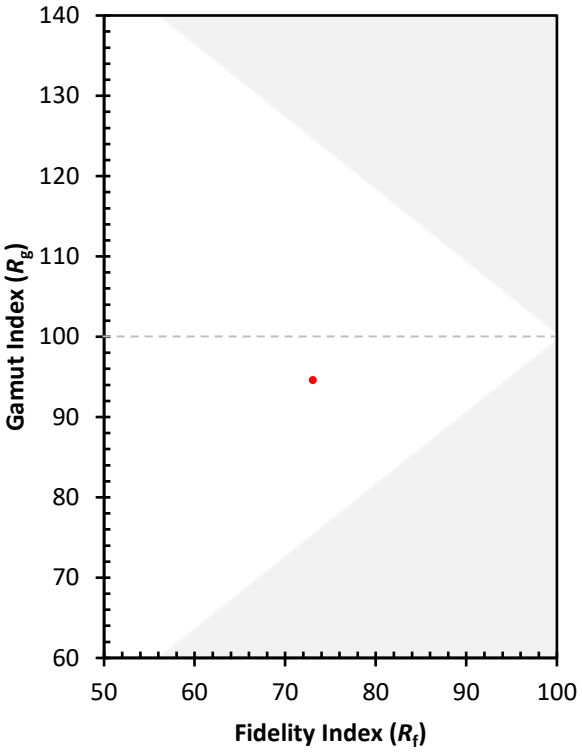
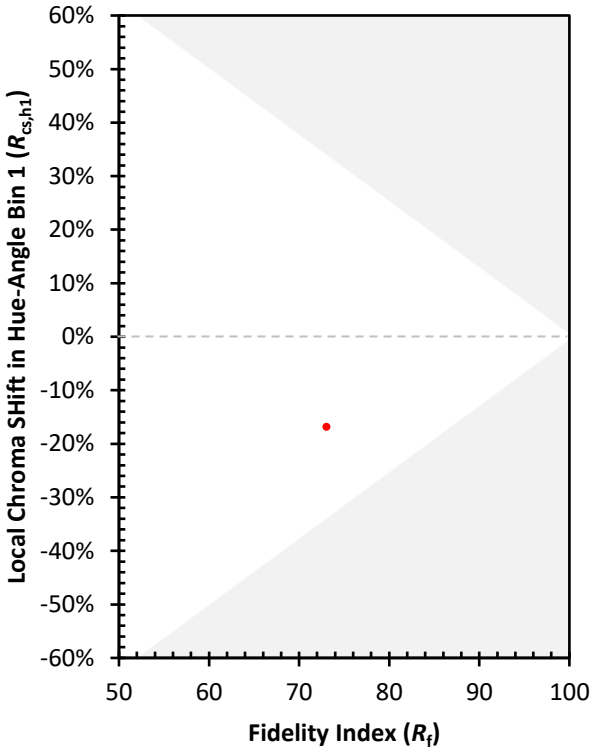
Measure Comparisons





(END OF REPORT)