

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: P869218

Luminaire Tested: **EMM2-HSN-SA3A-AMB-U-T1**

Issue Date: 08/22/2024



**Test Information**

Test Method: LM-79-08  
Report Number: P869218  
Test Lab: INNOVATION CENTER(G3)  
Issue Date: 08/22/2024  
Manufacturer: COOPER LIGHTING SOLUTIONS (FORMERLY EATON)  
Product Line: INVUE  
Catalog Number: EMM2-HSN-SA3A-AMB-U-T1  
Description: EPIC MODERN SHORT HOUSING DISCRETE LED ARRAYS 46W OCRI 1540K  
FITXURE w/ TYPE 1 DISTRIBUTION OPTIC  
Light Source: (30) 1540K CCT, 0 CRI LEDS  
Ballast/Driver: ELECTRONIC DRIVER

**Summary**

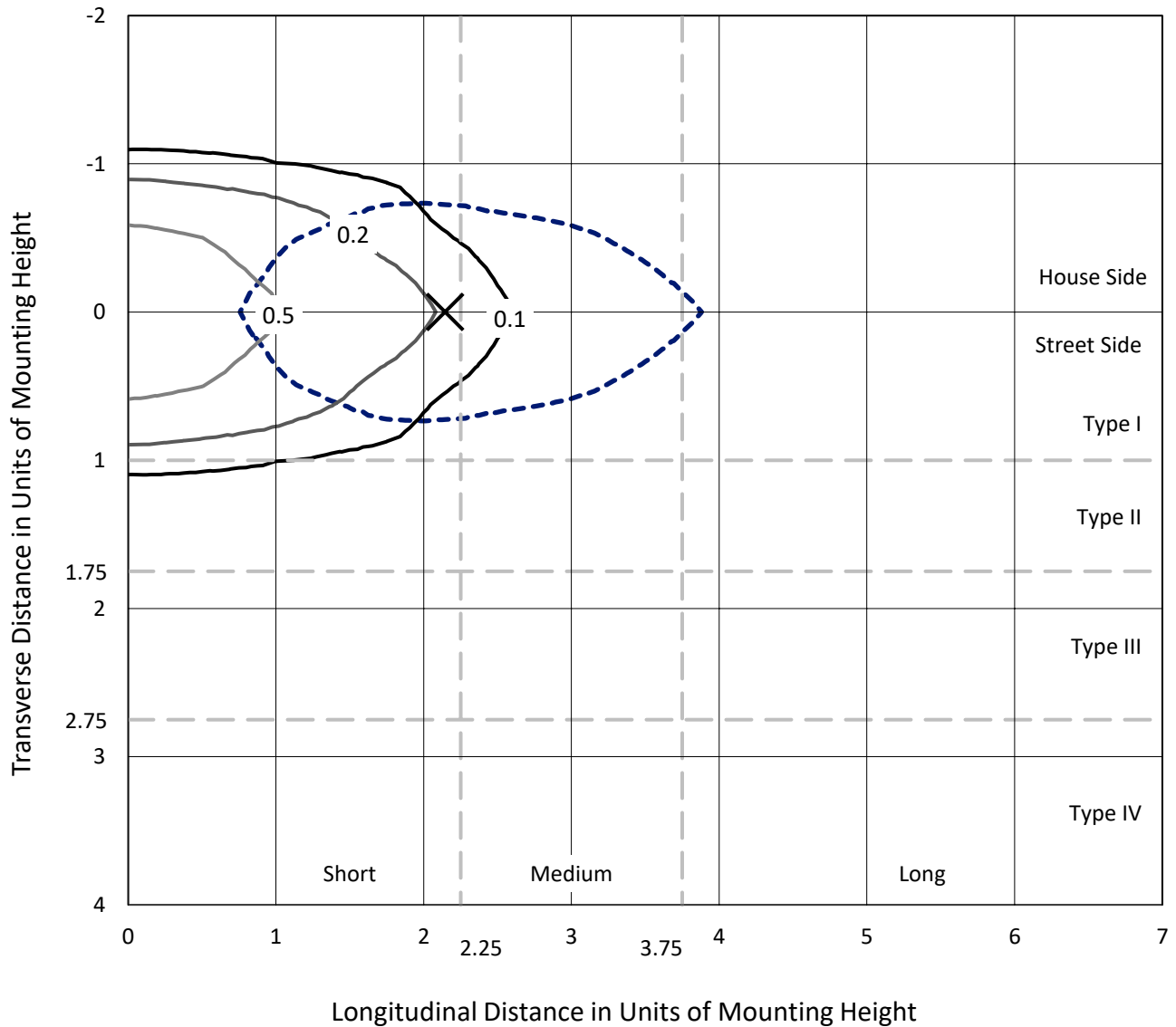
Lumens per Lamp: N/A  
Luminaire Lumens: 1491 lumens  
Efficiency: N/A  
Efficacy: 32.4 lumens/watt  
Luminous Opening: Rectangular (W 1' x L: 0.33' x H: 0')  
IES Classification: Type I - Short  
BUG Rating: B1 - U0 - G1

Input Watts (W): 46  
Input Voltage (V): 120  
Input Current (A<sub>in</sub>): NR  
Voltage Rise (V): NR  
Power Factor: 0.98  
Total Harmonic Distortion (THDi): 6.75%  
Frequency (hertz): 60  
Stabilization Time: NR  
Operation Time: NR  
Ambient Temperature (°C): NR  
Test Distance: 24 FT

REPORT NUMBER: P869218  
 CATALOG NUMBER: EMM2-HSN-SA3A-AMB-U-T1

### Iso-Footcandle Lines of Horizontal Illumination

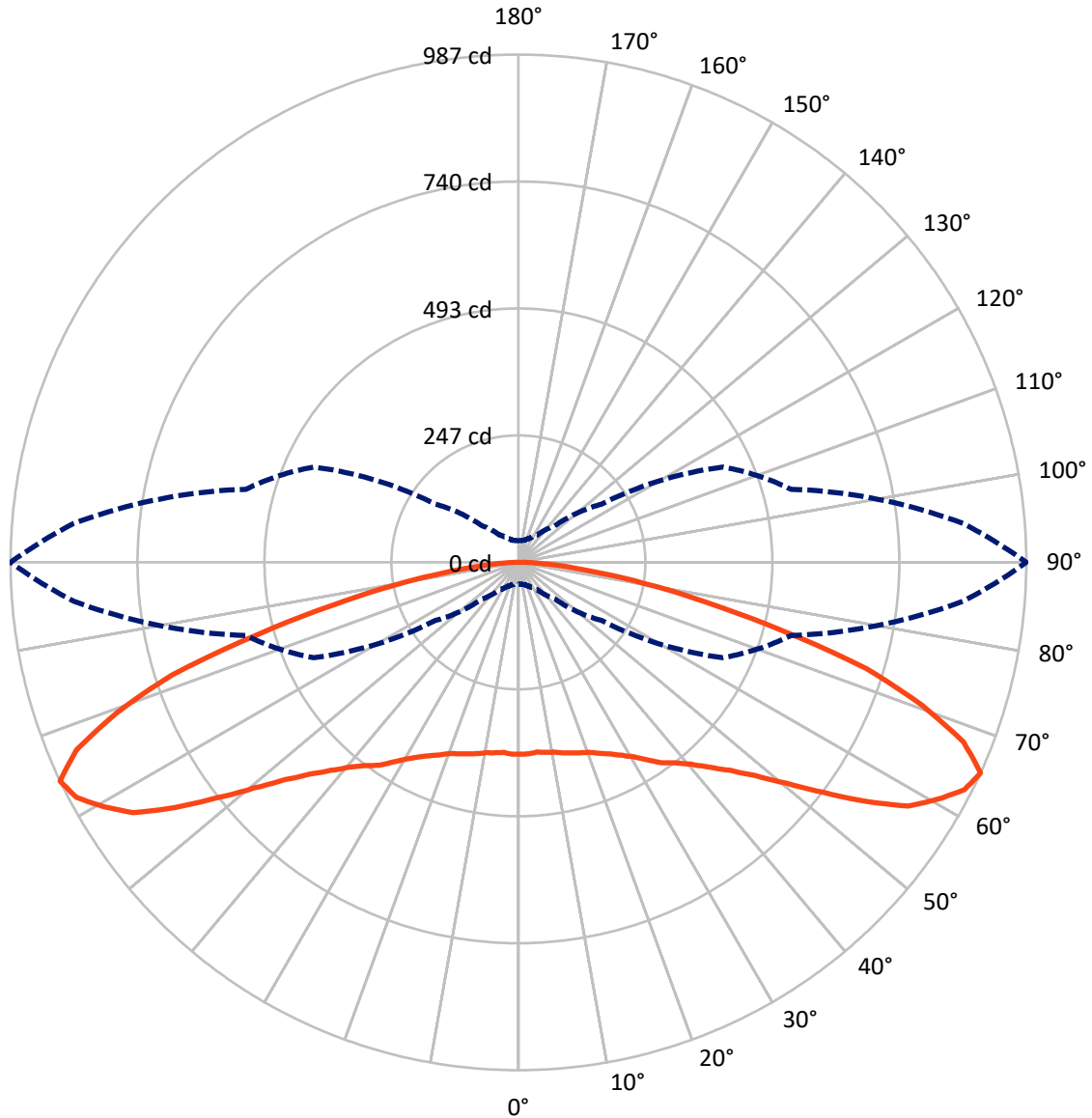
× Max cd  
 - - - 1/2 Max cd



Based on 20 foot mounting height. Maximum calculated value = 0.9 fc  
 Type I - Short - N/A

REPORT NUMBER: P869218  
CATALOG NUMBER: EMM2-HSN-SA3A-AMB-U-T1

### Luminous Intensity Polar Plot



— Vertical Plane Through 90-Deg Lateral      - - - Horizontal Cone Through 65-Deg Vertical

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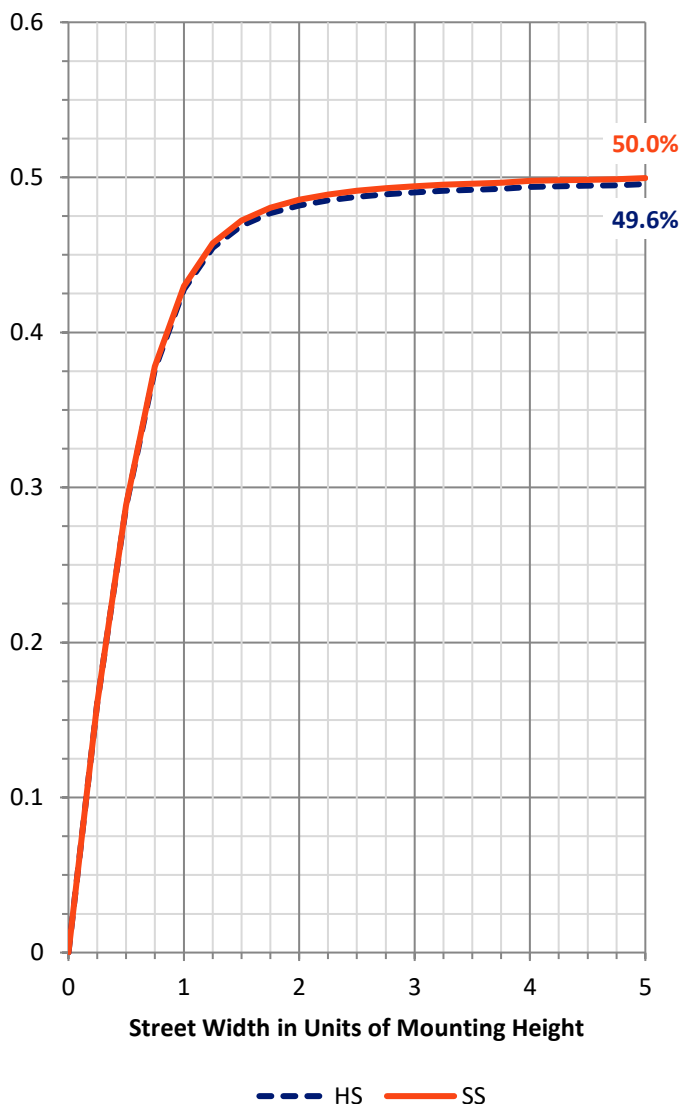
**FLUX DISTRIBUTION:**

		Downward	Upward	Total
<b>House Side</b>	Lumens	745.5	0.0	745.5
	% Fixture	50.0	0.0	50.0
<b>Street Side</b>	Lumens	745.5	0.0	745.5
	% Fixture	50.0	0.0	50.0
<b>Total</b>	Lumens	1491.0	0.0	1491.0
	% Fixture	100.0	0.0	100.0

**ZONAL LUMENS:**

Zone	Lumens	% Fixture
0°-10°	35.2	2.4
10°-20°	102.9	6.9
20°-30°	168.4	11.3
30°-40°	224.7	15.1
40°-50°	258.7	17.3
50°-60°	277.2	18.6
60°-70°	255.9	17.2
70°-80°	137.6	9.2
80°-90°	30.5	2.0
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°	1491.0	100.0
0°-180°	1491.0	100.0

**Coefficient of Utilization**



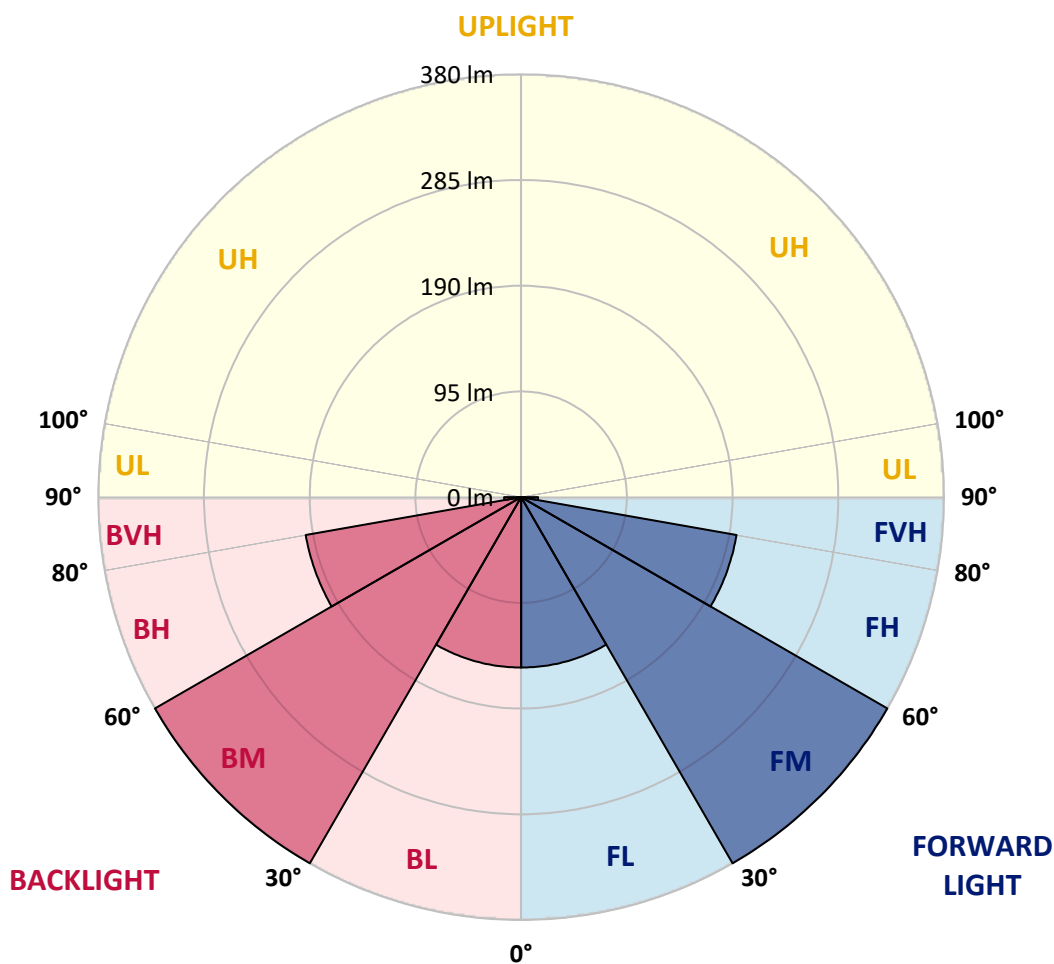
REPORT NUMBER: P869218  
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**LUMINAIRE CLASSIFICATION SYSTEM LUMEN TABLE AND BUG RATING:**

Zone	Lumens	% Fixture	Zone Rating/Lumen Limit		
			B	U	G
FL (0°-30°)	153.2	10.3			
FM (30°-60°)	380.3	25.5			
FH (60°-80°)	196.7	13.2			G0/660
FVH (80°-90°)	15.3	1.0			G1/100
BL (0°-30°)	153.2	10.3	B1/500		
BM (30°-60°)	380.3	25.5	B1/1000		
BH (60°-80°)	196.7	13.2	B1/500		G1/500
BVH (80°-90°)	15.3	1.0			G1/100
UL (90°-100°)	0.0	0.0		U0/0	
UH (100°-180°)	0.0	0.0		U0/0	

**BUG Rating: B1-U0-G1**

Type I Short





REPORT NUMBER: P869218

CATALOG NUMBER: EMM2-HSN-SA3A-AMB-U-T1

**CANDELA DISTRIBUTION (FULL):**

	0°	5°	15°	25°	35°	45°	55°	65°	75°	85°	90°
0°	372.6	372.6	372.6	372.6	372.6	372.6	372.6	372.6	372.6	372.6	372.6
2.5°	370.2	370.2	370.2	370.2	370.2	370.2	370.2	372.6	372.6	372.6	372.6
5°	367.9	367.9	367.9	367.9	367.9	367.9	370.2	370.2	370.2	370.2	370.2
7.5°	363.2	363.2	363.2	365.5	365.5	367.9	370.2	372.6	372.6	372.6	372.6
10°	358.5	358.5	358.5	360.9	363.2	367.9	370.2	372.6	372.6	374.9	374.9
12.5°	356.2	353.8	356.2	356.2	358.5	363.2	367.9	372.6	374.9	379.6	379.6
15°	349.1	349.1	349.1	351.5	353.8	358.5	365.5	374.9	379.6	381.9	384.3
17.5°	346.8	344.5	346.8	346.8	349.1	356.2	363.2	374.9	381.9	386.6	389.0
20°	344.5	344.5	344.5	346.8	346.8	353.8	363.2	377.3	386.6	393.7	393.7
22.5°	344.5	344.5	344.5	344.5	346.8	353.8	360.9	377.3	393.7	403.0	403.0
25°	342.1	342.1	339.8	344.5	349.1	353.8	360.9	377.3	398.3	412.4	412.4
27.5°	332.7	332.7	332.7	339.8	349.1	358.5	363.2	379.6	405.4	421.8	424.1
30°	314.0	314.0	318.7	330.4	349.1	363.2	367.9	381.9	412.4	435.8	438.2
32.5°	295.2	295.2	299.9	316.3	342.1	367.9	377.3	391.3	424.1	452.2	456.9
35°	267.1	267.1	274.2	295.2	328.1	370.2	389.0	398.3	435.8	471.0	478.0
37.5°	241.4	241.4	250.7	271.8	309.3	363.2	400.7	410.1	449.9	489.7	494.4
40°	213.2	213.2	224.9	246.0	288.2	349.1	407.7	424.1	464.0	510.8	515.5
42.5°	182.8	185.1	196.8	222.6	264.8	332.7	410.1	438.2	480.4	536.6	543.6
45°	154.7	157.0	168.7	194.5	239.0	311.6	403.0	456.9	501.4	571.7	576.4
47.5°	128.9	131.2	142.9	168.7	215.6	290.6	393.7	471.0	524.9	611.6	618.6
50°	107.8	110.1	119.5	145.3	189.8	264.8	377.3	478.0	548.3	660.8	674.8
52.5°	89.0	91.4	98.4	121.8	164.0	239.0	358.5	480.4	569.4	717.0	742.8
55°	75.0	75.0	82.0	100.8	138.2	208.5	335.1	478.0	583.5	775.6	820.1
57.5°	63.3	63.3	68.0	84.4	114.8	180.4	309.3	475.7	588.1	829.5	892.8
60°	53.9	53.9	58.6	70.3	96.1	150.0	274.2	475.7	583.5	860.0	934.9
62.5°	49.2	49.2	51.6	58.6	79.7	124.2	236.7	464.0	569.4	869.3	972.4
65°	42.2	42.2	44.5	51.6	65.6	100.8	196.8	438.2	548.3	867.0	986.5
67.5°	35.1	35.1	39.8	44.5	53.9	79.7	154.7	398.3	520.2	792.0	932.6
70°	28.1	28.1	32.8	37.5	44.5	63.3	117.2	316.3	461.6	686.6	831.8
72.5°	25.8	25.8	28.1	32.8	37.5	51.6	86.7	232.0	403.0	578.8	707.7
75°	21.1	21.1	23.4	28.1	30.5	39.8	60.9	154.7	325.7	454.6	527.2
77.5°	21.1	21.1	21.1	23.4	25.8	30.5	42.2	93.7	236.7	332.7	370.2
80°	21.1	21.1	18.7	18.7	21.1	23.4	28.1	53.9	154.7	232.0	248.4
82.5°	18.7	18.7	16.4	16.4	16.4	18.7	21.1	32.8	93.7	145.3	142.9
85°	11.7	11.7	14.1	11.7	11.7	14.1	14.1	18.7	51.6	86.7	77.3
87.5°	4.7	7.0	7.0	7.0	7.0	7.0	7.0	9.4	25.8	35.1	30.5
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: SP1-2407-157-1

Test Date: 08/06/2024

Luminaire Tested: MEM2-HTN-SA-45-AMB-U-5WQ-2

Data in this report applies to families of products including MEM2-HTN-SA-45-AMB-U-5WQ-2



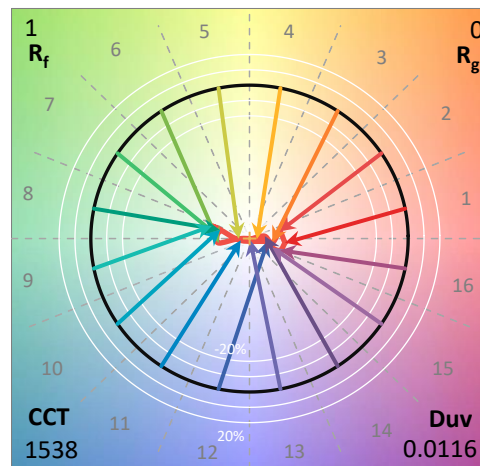
**Test Information**

Test Method: LM-79-2019  
 Report Number: SP1-2407-157-1  
 Test Lab: COOPER LIGHTING SOLUTIONS  
 Photometer: SP1 - 76IN SPHERE  
 Measurement Geometry:  $4\pi$   
 Issue Date: 08/20/2024  
 Manufacturer: COOPER LIGHTING SOLUTIONS  
 Product Line: Streetworks  
 Catalog Number: **MEM2-HTN-SA-45-AMB-U-5WQ-2**  
 Description: Epic Modern Light Square 45W 5WQ Optic and Flare Trim AMBER LED

**Spectral Parameters**

CCT (K): 1538  
 CIE u': 0.3530  
 CIE v': 0.5469  
 Duv: 0.0116  
 CIE x: 0.5918  
 CIE y: 0.4076  
 CIE z: 0.0006  
 Peak Wavelength (nm): 597  
 Dominant Wavelength (nm): 592  
 Purity: 99.98881  
 R<sub>f</sub>: 1.1  
 R<sub>g</sub>: 0

CRI (Ra):	-21.8		
R1:	-34.3	R9:	-386.6
R2:	52.3	R10:	28.9
R3:	17.0	R11:	-95.5
R4:	-68.4	R12:	-10.5
R5:	-40.8	R13:	-15.5
R6:	41.5	R14:	45.9
R7:	-7.2	R15:	-67.7
R8:	-134.5		



**Test Conditions**

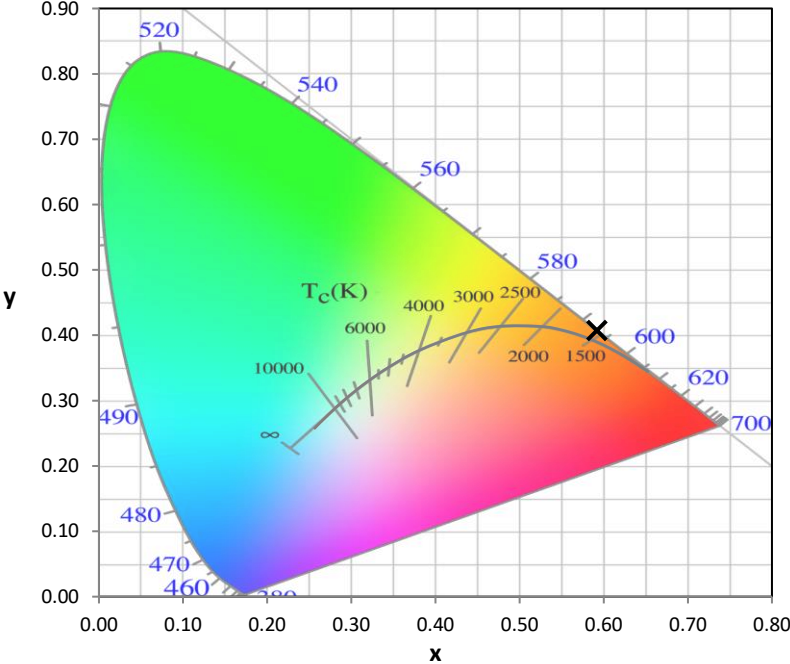
Stabilization Time: 20M  
 Operation Time: 1H 20M  
 Sphere Temperature (°C): 24.2

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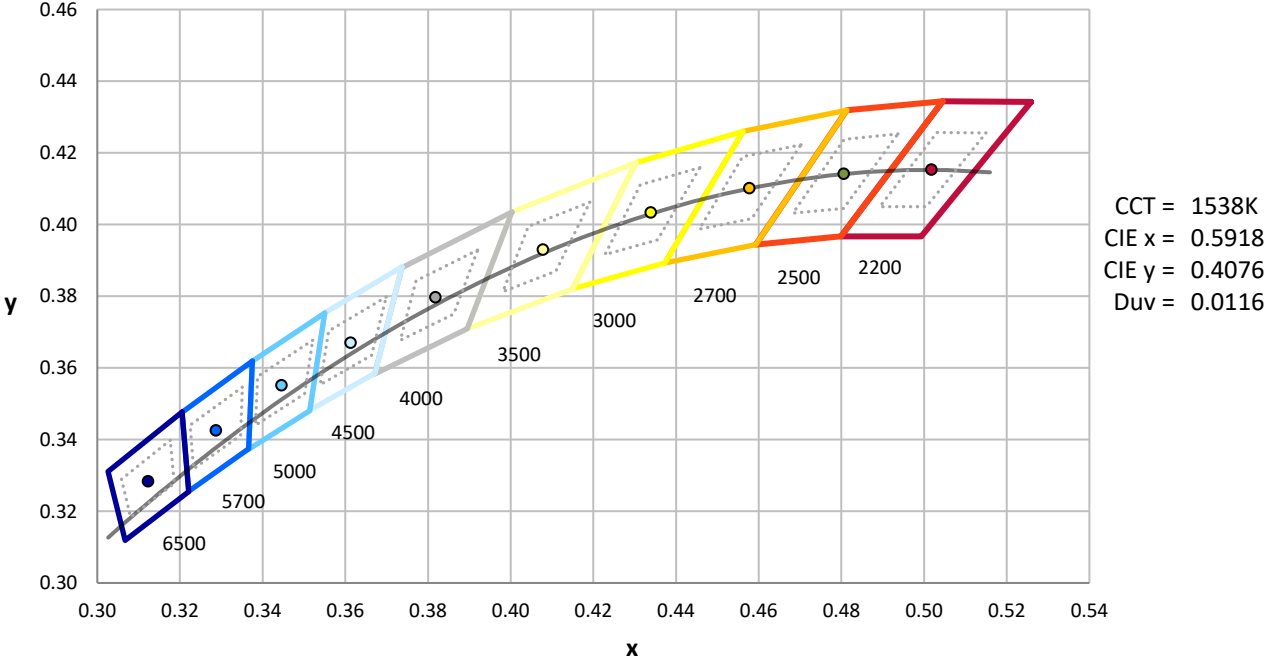
Measurement and Test Equipment			
Instrument	Identification Number	Calibration Date	Calibration Due Date
Photometer	IN0058	6/18/2024	12/18/2024
Power Meter	INXT2011004	2/8/2024	2/8/2025
AC Power Source	IN0063	10/24/2023	10/24/2024
DC Power Source	IN0208	10/24/2023	10/24/2024
Sphere Thermometer	IN0085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

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CIE 1931 Chromaticity Diagram



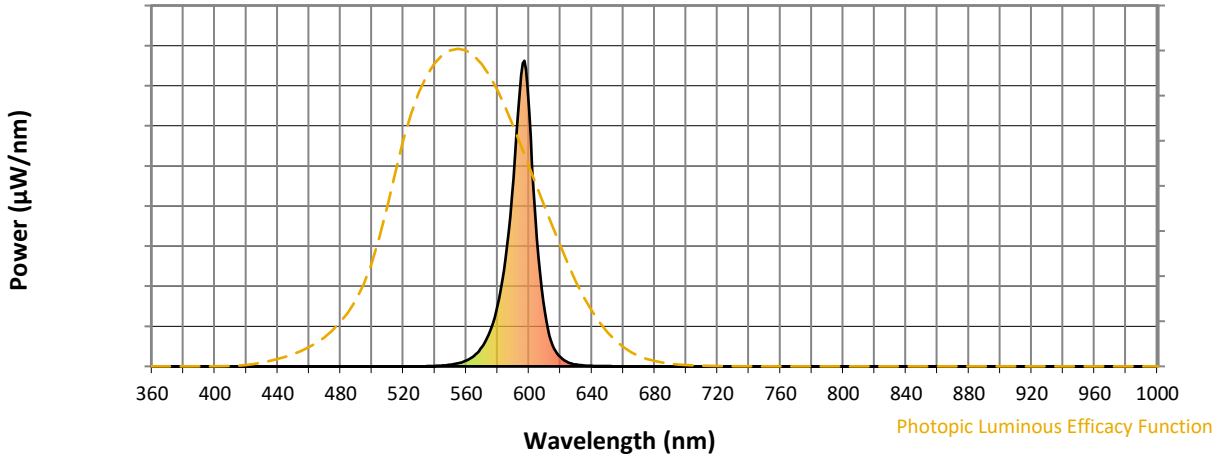
CIE 1931 Chromaticity Diagram with 2017 ANSI 7-Step and 4-Step Quadrangles



Point lies outside the range

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**Photopic Flux vs. Wavelength**

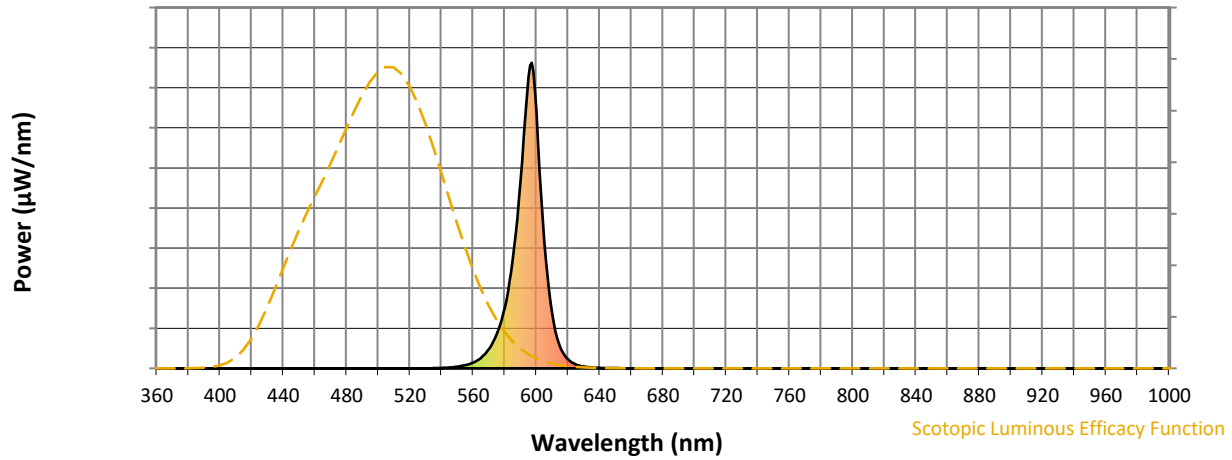


**Photopic Lumens: NR**

λ (nm)	Power W <sup>^</sup> /nm	Lumens (φ/nm)	λ (nm)	Power W <sup>^</sup> /nm	Lumens (φ/nm)	λ (nm)	Power W <sup>^</sup> /nm	Lumens (φ/nm)	λ (nm)	Power W <sup>^</sup> /nm	Lumens (φ/nm)	λ (nm)	Power W <sup>^</sup> /nm	Lumens (φ/nm)
360	0	NR	490	0	NR	620	30	NR	750	0	NR	880	0	NR
365	0	NR	495	0	NR	625	13	NR	755	0	NR	885	0	NR
370	0	NR	500	0	NR	630	6	NR	760	0	NR	890	0	NR
375	0	NR	505	0	NR	635	3	NR	765	0	NR	895	0	NR
380	0	NR	510	0	NR	640	2	NR	770	0	NR	900	0	NR
385	0	NR	515	0	NR	645	1	NR	775	0	NR	905	0	NR
390	0	NR	520	0	NR	650	1	NR	780	0	NR	910	0	NR
395	0	NR	525	0	NR	655	0	NR	785	0	NR	915	0	NR
400	0	NR	530	0	NR	660	0	NR	790	0	NR	920	0	NR
405	0	NR	535	1	NR	665	0	NR	795	0	NR	925	0	NR
410	0	NR	540	1	NR	670	0	NR	800	0	NR	930	0	NR
415	0	NR	545	3	NR	675	0	NR	805	0	NR	935	0	NR
420	0	NR	550	5	NR	680	0	NR	810	0	NR	940	0	NR
425	0	NR	555	10	NR	685	0	NR	815	0	NR	945	0	NR
430	0	NR	560	19	NR	690	0	NR	820	0	NR	950	0	NR
435	0	NR	565	34	NR	695	0	NR	825	0	NR	955	0	NR
440	0	NR	570	63	NR	700	0	NR	830	0	NR	960	0	NR
445	0	NR	575	113	NR	705	0	NR	835	0	NR	965	0	NR
450	0	NR	580	199	NR	710	0	NR	840	0	NR	970	0	NR
455	0	NR	585	352	NR	715	0	NR	845	0	NR	975	0	NR
460	0	NR	590	614	NR	720	0	NR	850	0	NR	980	0	NR
465	0	NR	595	954	NR	725	0	NR	855	0	NR	985	0	NR
470	0	NR	600	837	NR	730	0	NR	860	0	NR	990	0	NR
475	0	NR	605	417	NR	735	0	NR	865	0	NR	995	0	NR
480	0	NR	610	179	NR	740	0	NR	870	0	NR	1000	0	NR
485	0	NR	615	69	NR	745	0	NR	875	0	NR			

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**Scotopic Flux vs. Wavelength**



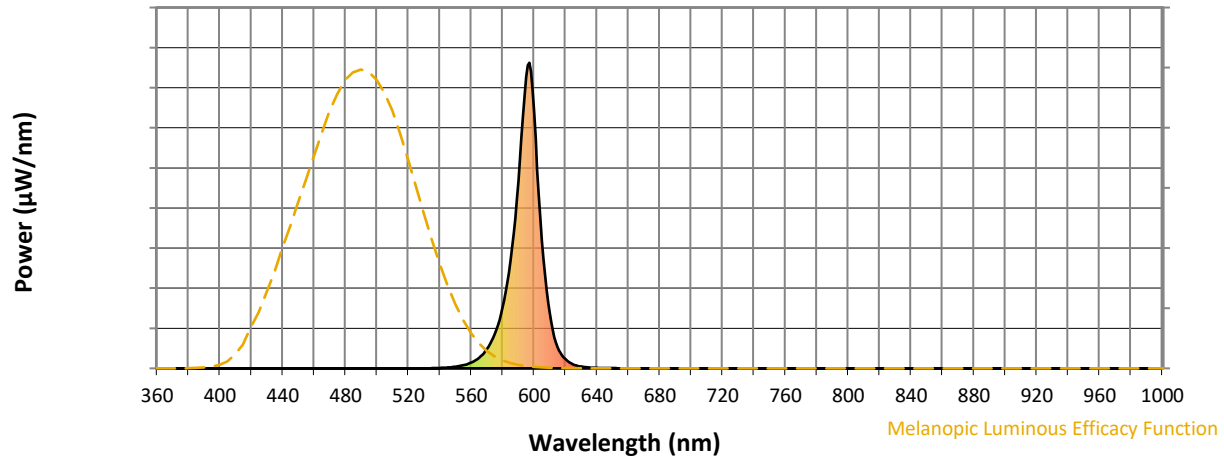
**Scotopic Lumens: NR**

**S/P: 0.22**

λ (nm)	Power W <sup>^</sup> /nm	Lumens (φ/nm)	λ (nm)	Power W <sup>^</sup> /nm	Lumens (φ/nm)	λ (nm)	Power W <sup>^</sup> /nm	Lumens (φ/nm)	λ (nm)	Power W <sup>^</sup> /nm	Lumens (φ/nm)	λ (nm)	Power W <sup>^</sup> /nm	Lumens (φ/nm)
360	0	NR	490	0	NR	620	30	NR	750	0	NR	880	0	NR
365	0	NR	495	0	NR	625	13	NR	755	0	NR	885	0	NR
370	0	NR	500	0	NR	630	6	NR	760	0	NR	890	0	NR
375	0	NR	505	0	NR	635	3	NR	765	0	NR	895	0	NR
380	0	NR	510	0	NR	640	2	NR	770	0	NR	900	0	NR
385	0	NR	515	0	NR	645	1	NR	775	0	NR	905	0	NR
390	0	NR	520	0	NR	650	1	NR	780	0	NR	910	0	NR
395	0	NR	525	0	NR	655	0	NR	785	0	NR	915	0	NR
400	0	NR	530	0	NR	660	0	NR	790	0	NR	920	0	NR
405	0	NR	535	1	NR	665	0	NR	795	0	NR	925	0	NR
410	0	NR	540	1	NR	670	0	NR	800	0	NR	930	0	NR
415	0	NR	545	3	NR	675	0	NR	805	0	NR	935	0	NR
420	0	NR	550	5	NR	680	0	NR	810	0	NR	940	0	NR
425	0	NR	555	10	NR	685	0	NR	815	0	NR	945	0	NR
430	0	NR	560	19	NR	690	0	NR	820	0	NR	950	0	NR
435	0	NR	565	34	NR	695	0	NR	825	0	NR	955	0	NR
440	0	NR	570	63	NR	700	0	NR	830	0	NR	960	0	NR
445	0	NR	575	113	NR	705	0	NR	835	0	NR	965	0	NR
450	0	NR	580	199	NR	710	0	NR	840	0	NR	970	0	NR
455	0	NR	585	352	NR	715	0	NR	845	0	NR	975	0	NR
460	0	NR	590	614	NR	720	0	NR	850	0	NR	980	0	NR
465	0	NR	595	954	NR	725	0	NR	855	0	NR	985	0	NR
470	0	NR	600	837	NR	730	0	NR	860	0	NR	990	0	NR
475	0	NR	605	417	NR	735	0	NR	865	0	NR	995	0	NR
480	0	NR	610	179	NR	740	0	NR	870	0	NR	1000	0	NR
485	0	NR	615	69	NR	745	0	NR	875	0	NR			

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**Melanopic Flux vs. Wavelength**



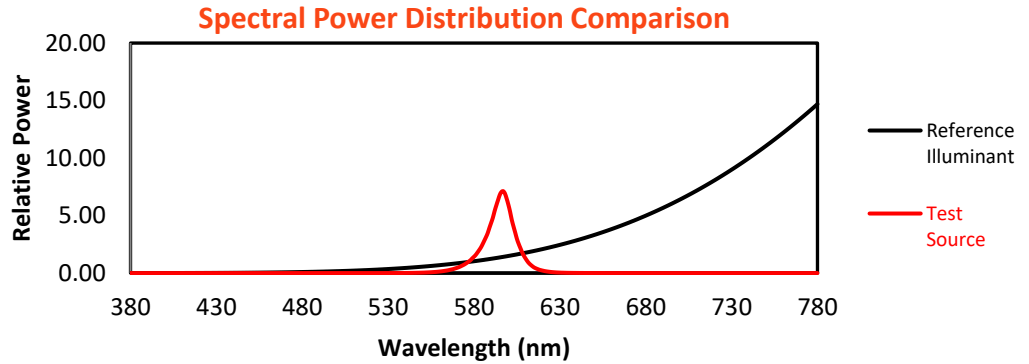
**Melanopic Lumens: NR**

**M/P: 0.12**

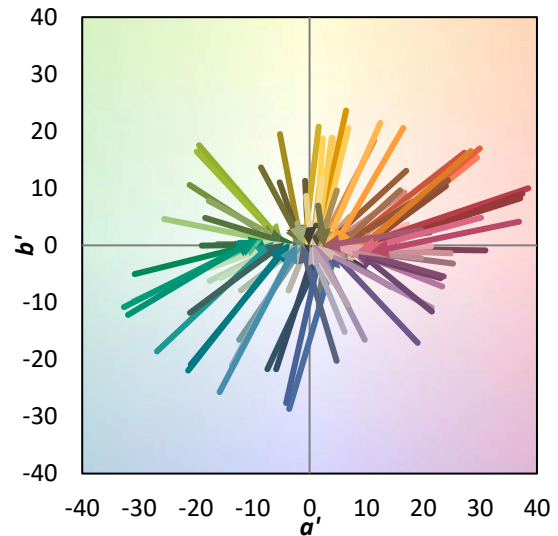
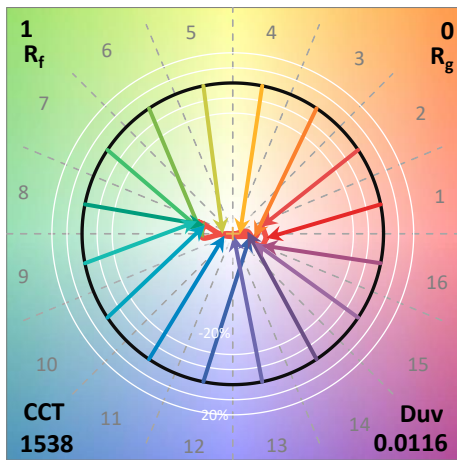
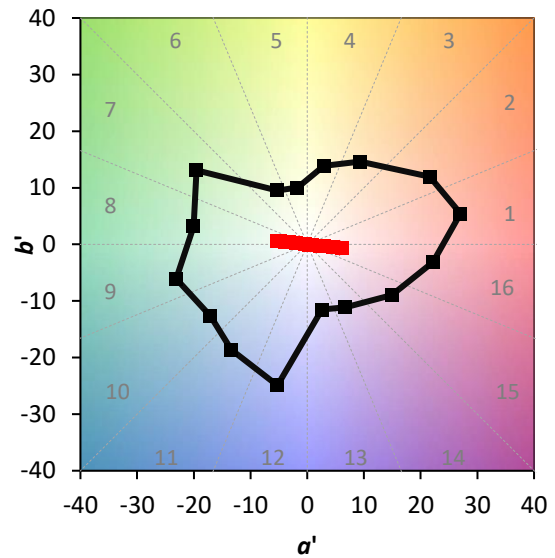
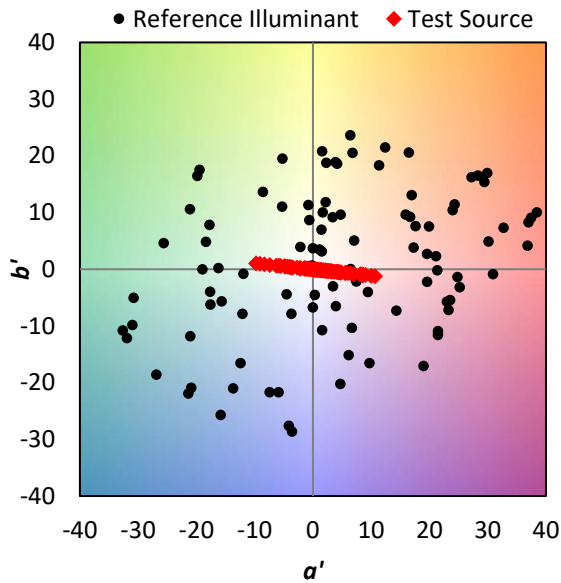
λ (nm)	Power W <sup>^</sup> /nm	Lumens (φ/nm)	λ (nm)	Power W <sup>^</sup> /nm	Lumens (φ/nm)	λ (nm)	Power W <sup>^</sup> /nm	Lumens (φ/nm)	λ (nm)	Power W <sup>^</sup> /nm	Lumens (φ/nm)	λ (nm)	Power W <sup>^</sup> /nm	Lumens (φ/nm)
360	0	NR	490	0	NR	620	30	NR	750	0	NR	880	0	NR
365	0	NR	495	0	NR	625	13	NR	755	0	NR	885	0	NR
370	0	NR	500	0	NR	630	6	NR	760	0	NR	890	0	NR
375	0	NR	505	0	NR	635	3	NR	765	0	NR	895	0	NR
380	0	NR	510	0	NR	640	2	NR	770	0	NR	900	0	NR
385	0	NR	515	0	NR	645	1	NR	775	0	NR	905	0	NR
390	0	NR	520	0	NR	650	1	NR	780	0	NR	910	0	NR
395	0	NR	525	0	NR	655	0	NR	785	0	NR	915	0	NR
400	0	NR	530	0	NR	660	0	NR	790	0	NR	920	0	NR
405	0	NR	535	1	NR	665	0	NR	795	0	NR	925	0	NR
410	0	NR	540	1	NR	670	0	NR	800	0	NR	930	0	NR
415	0	NR	545	3	NR	675	0	NR	805	0	NR	935	0	NR
420	0	NR	550	5	NR	680	0	NR	810	0	NR	940	0	NR
425	0	NR	555	10	NR	685	0	NR	815	0	NR	945	0	NR
430	0	NR	560	19	NR	690	0	NR	820	0	NR	950	0	NR
435	0	NR	565	34	NR	695	0	NR	825	0	NR	955	0	NR
440	0	NR	570	63	NR	700	0	NR	830	0	NR	960	0	NR
445	0	NR	575	113	NR	705	0	NR	835	0	NR	965	0	NR
450	0	NR	580	199	NR	710	0	NR	840	0	NR	970	0	NR
455	0	NR	585	352	NR	715	0	NR	845	0	NR	975	0	NR
460	0	NR	590	614	NR	720	0	NR	850	0	NR	980	0	NR
465	0	NR	595	954	NR	725	0	NR	855	0	NR	985	0	NR
470	0	NR	600	837	NR	730	0	NR	860	0	NR	990	0	NR
475	0	NR	605	417	NR	735	0	NR	865	0	NR	995	0	NR
480	0	NR	610	179	NR	740	0	NR	870	0	NR	1000	0	NR
485	0	NR	615	69	NR	745	0	NR	875	0	NR			

**Summary**

$R_f = 1.1$   
 $R_g = 0$   
 $CIE R_a = -21.8$   
 $R_g = -386.6$

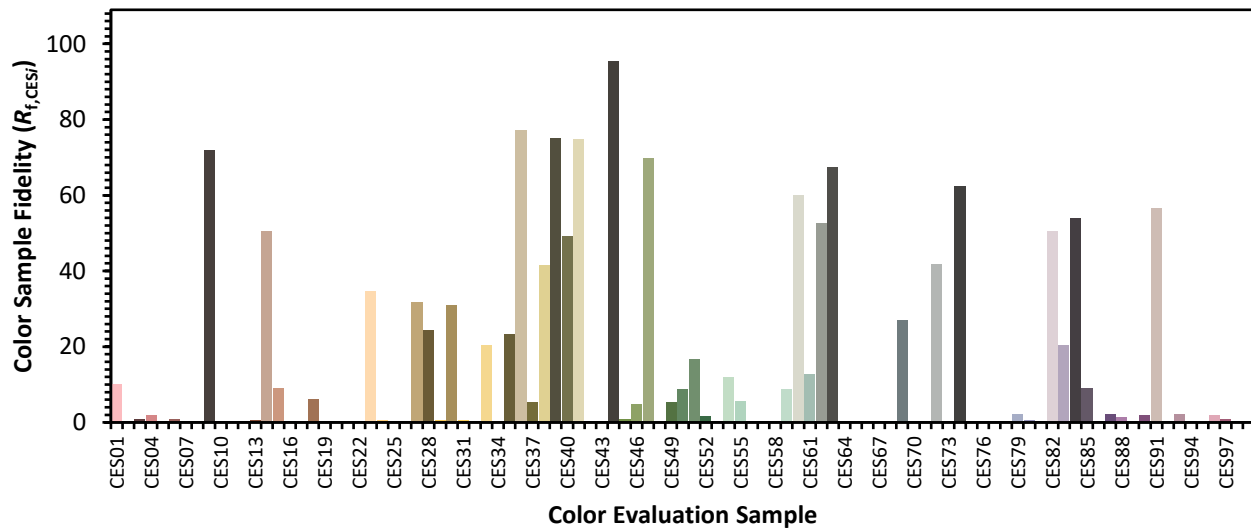


**Color Vector Graphics**



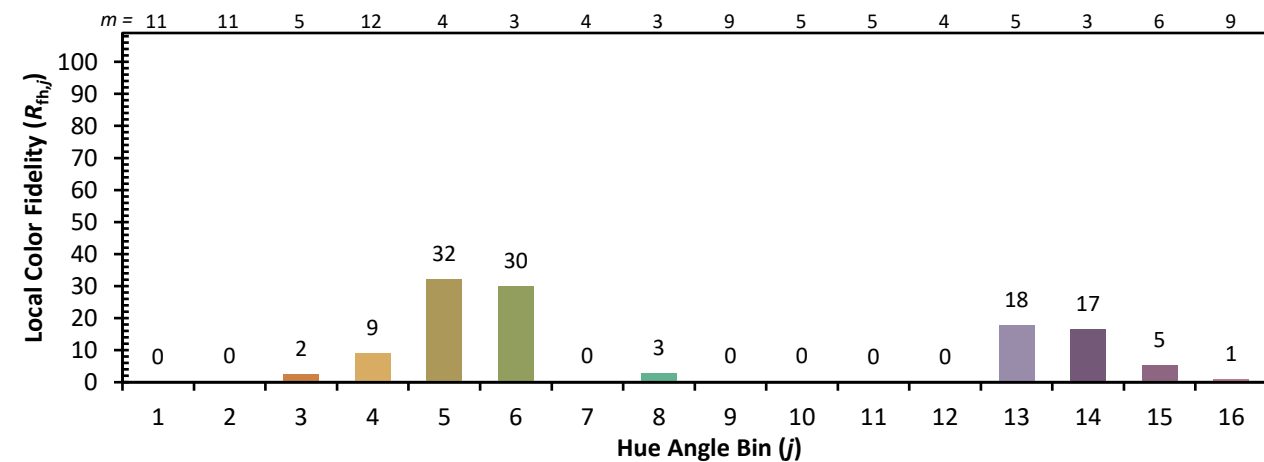
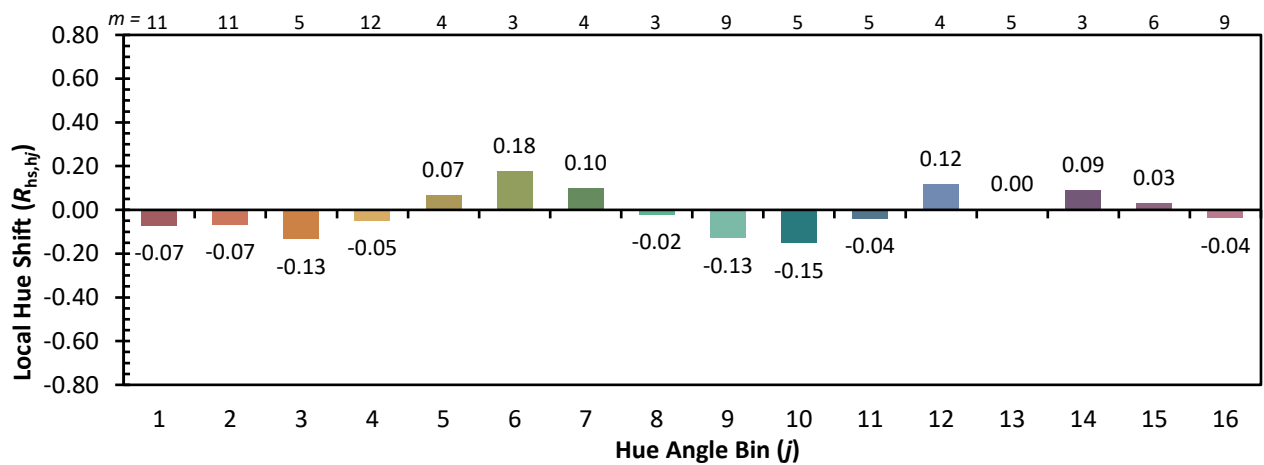
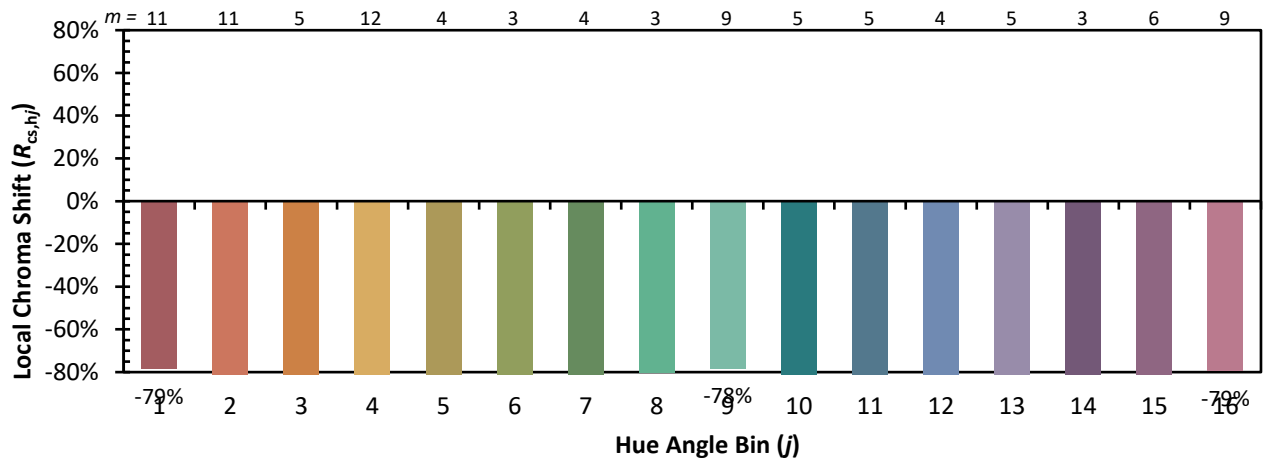
**Individual Sample Fidelity Index ( $R_{f,i}$ )**

CES01 = 90	CES26 = 0	CES51 = 17	CES76 = 0
CES02 = 70	CES27 = 32	CES52 = 2	CES77 = 0
CES03 = 31	CES28 = 24	CES53 = 0	CES78 = 0
CES04 = 77	CES29 = 1	CES54 = 12	CES79 = 2
CES05 = 52	CES30 = 31	CES55 = 6	CES80 = 1
CES06 = 56	CES31 = 1	CES56 = 0	CES81 = 0
CES07 = 41	CES32 = 0	CES57 = 0	CES82 = 50
CES08 = 38	CES33 = 21	CES58 = 0	CES83 = 21
CES09 = 29	CES34 = 0	CES59 = 9	CES84 = 54
CES10 = 87	CES35 = 23	CES60 = 60	CES85 = 9
CES11 = 70	CES36 = 77	CES61 = 13	CES86 = 0
CES12 = 76	CES37 = 5	CES62 = 53	CES87 = 2
CES13 = 47	CES38 = 41	CES63 = 68	CES88 = 1
CES14 = 77	CES39 = 75	CES64 = 0	CES89 = 0
CES15 = 74	CES40 = 49	CES65 = 0	CES90 = 2
CES16 = 49	CES41 = 75	CES66 = 0	CES91 = 57
CES17 = 56	CES42 = 0	CES67 = 0	CES92 = 0
CES18 = 60	CES43 = 0	CES68 = 0	CES93 = 2
CES19 = 80	CES44 = 95	CES69 = 27	CES94 = 0
CES20 = 71	CES45 = 1	CES70 = 0	CES95 = 0
CES21 = 94	CES46 = 5	CES71 = 0	CES96 = 2
CES22 = 87	CES47 = 70	CES72 = 42	CES97 = 1
CES23 = 94	CES48 = 0	CES73 = 0	CES98 = 0
CES24 = 95	CES49 = 5	CES74 = 62	CES99 = 0
CES25 = 79	CES50 = 9	CES75 = 0	

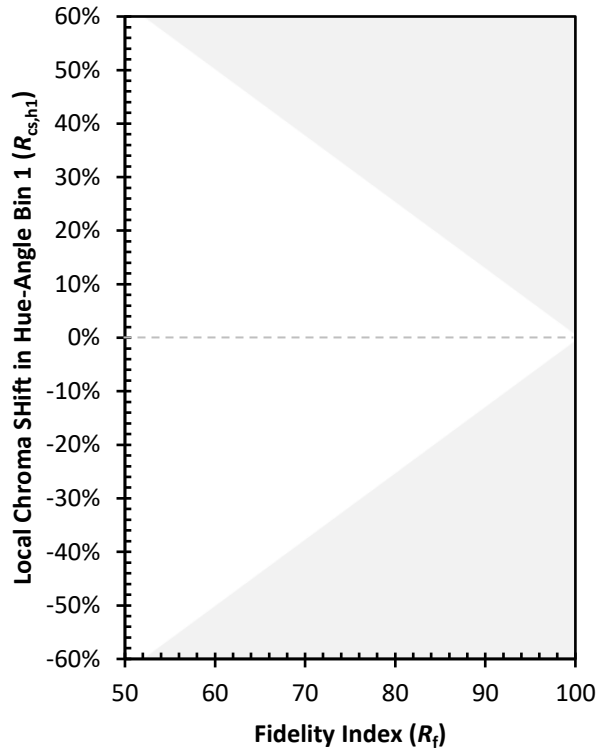
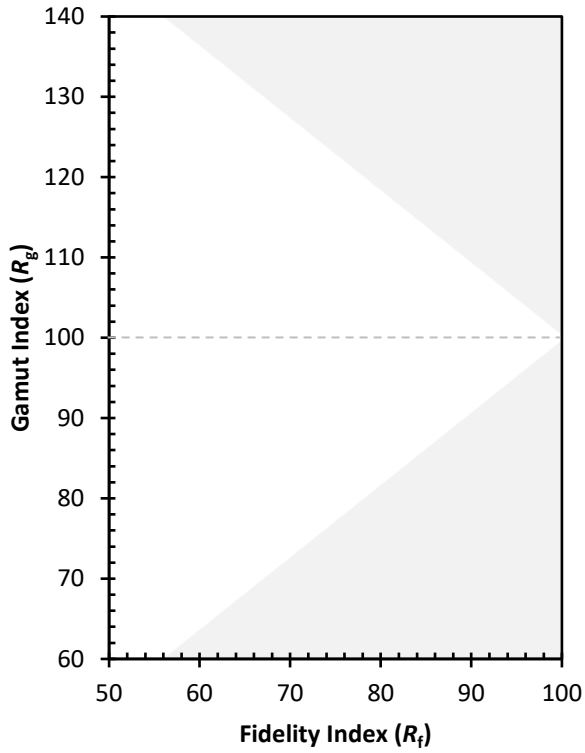




Color Rendition by Hue-Angle Bin



Measure Comparisons



(END OF REPORT)