

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: P869128

Luminaire Tested: **EMM2-HSN-SA2C-730-U-T5M**

Issue Date: 08/22/2024



**Test Information**

Test Method: LM-79-08  
Report Number: P869128  
Test Lab: INNOVATION CENTER(G3)  
Issue Date: 08/22/2024  
Manufacturer: COOPER LIGHTING SOLUTIONS (FORMERLY EATON)  
Product Line: INVUE  
Catalog Number: EMM2-HSN-SA2C-730-U-T5M  
Description: EPIC MODERN SHORT HOUSING DISCRETE LED ARRAYS 120W 70CRI 3000K  
FIXTURE w/ TYPE V SQUARE MEDIUM DISTRIBUTION OPTIC  
Light Source: (20) 3000K CCT, 70 CRI LEDS  
Ballast/Driver: ELECTRONIC DRIVER

**Summary**

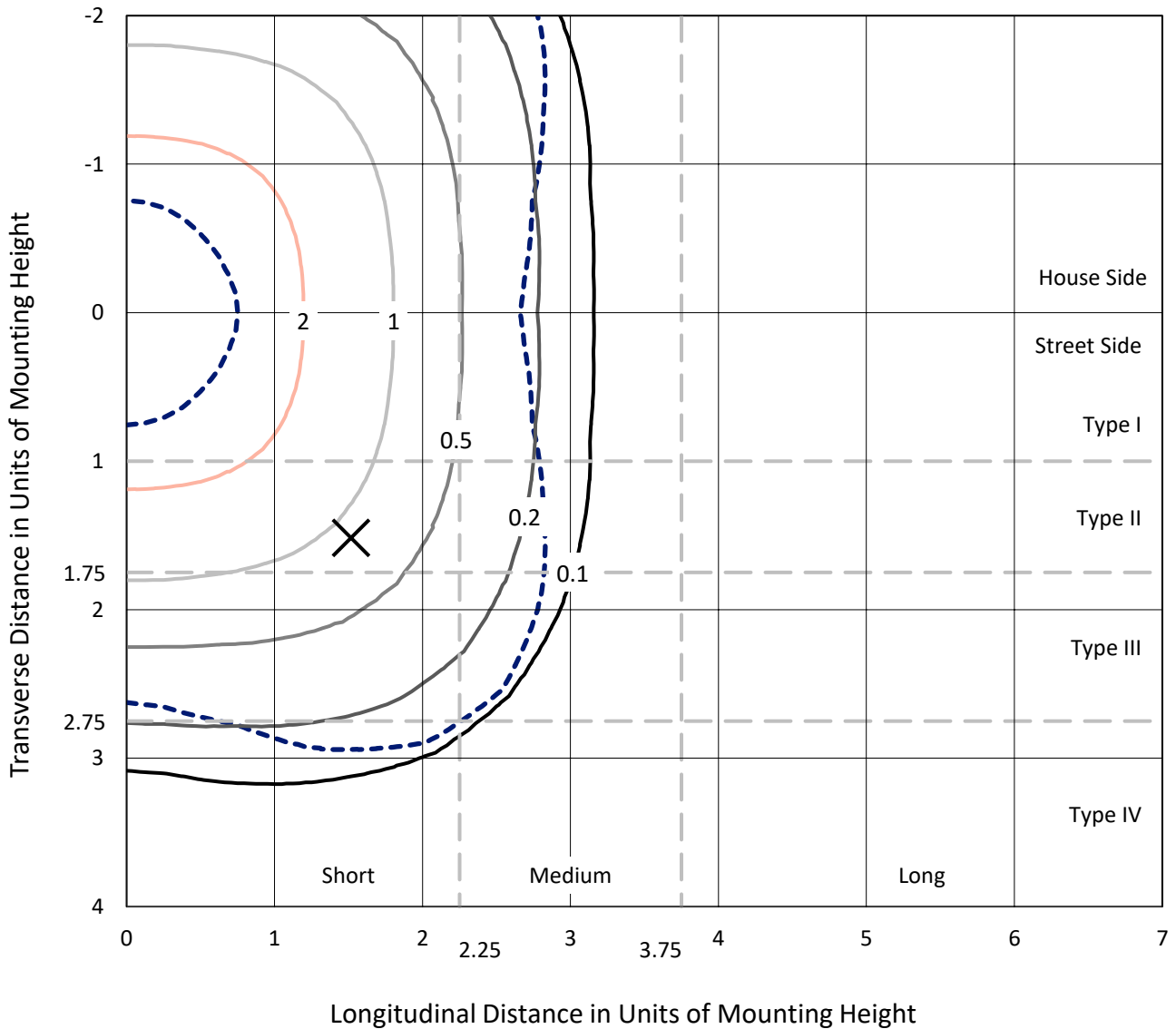
Lumens per Lamp: N/A  
Luminaire Lumens: 13466.6 lumens  
Efficiency: N/A  
Efficacy: 133.3 lumens/watt  
Luminous Opening: Rectangular (W 0.67' x L: 0.33' x H: 0')  
IES Classification: Type V - Short  
BUG Rating: B4 - U0 - G2

Input Watts (W): 101  
Input Voltage (V): 120  
Input Current (A<sub>in</sub>): NR  
Voltage Rise (V): NR  
Power Factor: 0.99  
Total Harmonic Distortion (THDi): 9.45%  
Frequency (hertz): 60  
Stabilization Time: NR  
Operation Time: NR  
Ambient Temperature (°C): NR  
Test Distance: 24 FT

REPORT NUMBER: P869128  
 CATALOG NUMBER: EMM2-HSN-SA2C-730-U-T5M

### Iso-Footcandle Lines of Horizontal Illumination

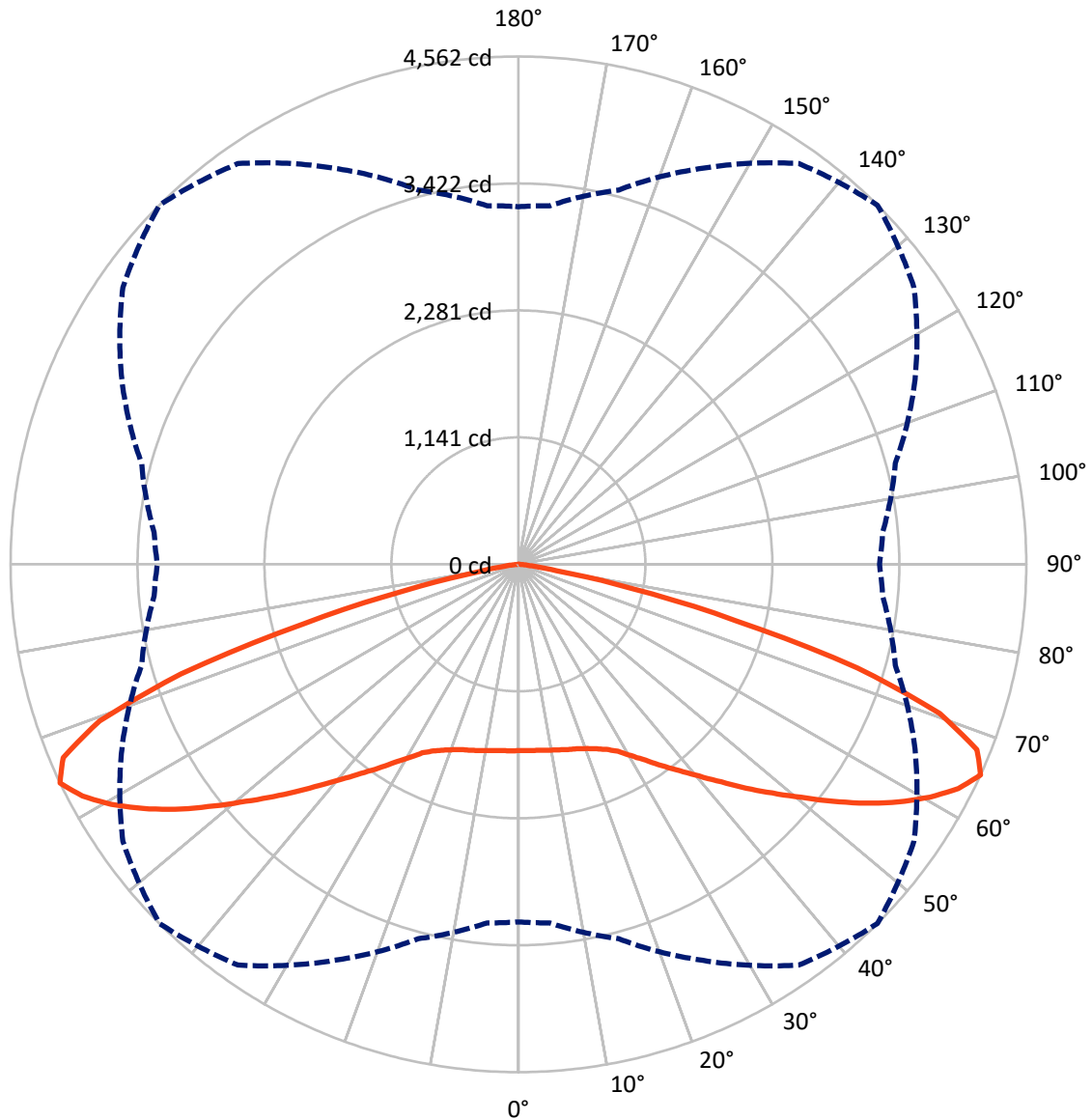
× Max cd  
 - - - 1/2 Max cd



Based on 20 foot mounting height. Maximum calculated value = 4.2 fc  
 Type V - Short - N/A

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### Luminous Intensity Polar Plot



— Vertical Plane Through 45-Deg Lateral      - - - Horizontal Cone Through 65-Deg Vertical

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**FLUX DISTRIBUTION:**

		Downward	Upward	Total
<b>House Side</b>	Lumens	6733.3	0.0	6733.3
	% Fixture	50.0	0.0	50.0
<b>Street Side</b>	Lumens	6733.3	0.0	6733.3
	% Fixture	50.0	0.0	50.0
<b>Total</b>	Lumens	13466.6	0.0	13466.6
	% Fixture	100.0	0.0	100.0

**Coefficient of Utilization**

**ZONAL LUMENS:**

Zone	Lumens	% Fixture
0°-10°	160.9	1.2
10°-20°	489.8	3.6
20°-30°	861.5	6.4
30°-40°	1393.2	10.3
40°-50°	2170.1	16.1
50°-60°	3173.2	23.6
60°-70°	3654.1	27.1
70°-80°	1492.4	11.1
80°-90°	71.4	0.5
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°	13466.6	100.0
0°-180°	13466.6	100.0



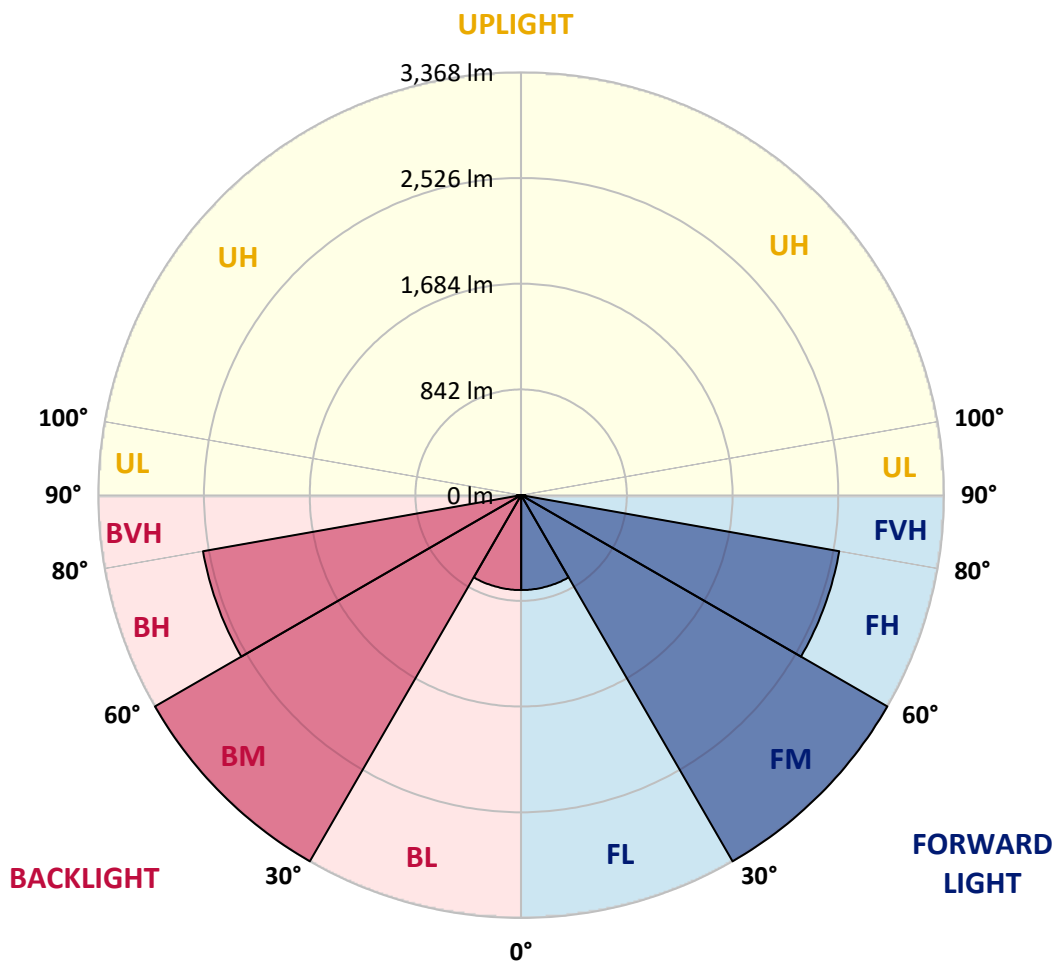
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**LUMINAIRE CLASSIFICATION SYSTEM LUMEN TABLE AND BUG RATING:**

Zone		Lumens	% Fixture	Zone Rating/Lumen Limit		
				B	U	G
FL	(0°-30°)	756.0	5.6			
FM	(30°-60°)	3368.3	25.0			
FH	(60°-80°)	2573.3	19.1			G2/5000
FVH	(80°-90°)	35.7	0.3			G1/100
BL	(0°-30°)	756.0	5.6	B2/1000		
BM	(30°-60°)	3368.3	25.0	B3/5000		
BH	(60°-80°)	2573.3	19.1	B4/5000		G2/5000
BVH	(80°-90°)	35.7	0.3			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





REPORT NUMBER: P869128

CATALOG NUMBER: EMM2-HSN-SA2C-730-U-T5M

**CANDELA DISTRIBUTION (FULL):**

	0°	5°	15°	25°	35°	45°	55°	65°	75°	85°	90°
0°	1673.3	1673.3	1673.3	1673.3	1673.3	1673.3	1673.3	1673.3	1673.3	1673.3	1673.3
2.5°	1678.5	1678.5	1675.9	1675.9	1670.7	1675.9	1673.3	1675.9	1673.3	1673.3	1675.9
5°	1683.6	1683.6	1678.5	1681.1	1675.9	1678.5	1675.9	1681.1	1678.5	1675.9	1681.1
7.5°	1691.4	1691.4	1686.2	1688.8	1683.6	1686.2	1683.6	1688.8	1686.2	1686.2	1688.8
10°	1699.2	1701.7	1696.6	1694.0	1694.0	1696.6	1699.2	1701.7	1699.2	1699.2	1704.3
12.5°	1712.1	1714.7	1709.5	1706.9	1706.9	1709.5	1712.1	1717.3	1709.5	1709.5	1709.5
15°	1725.0	1725.0	1722.4	1719.9	1722.4	1725.0	1725.0	1730.2	1725.0	1719.9	1719.9
17.5°	1730.2	1732.8	1730.2	1735.4	1738.0	1740.5	1743.1	1743.1	1735.4	1732.8	1732.8
20°	1748.3	1750.9	1745.7	1748.3	1756.1	1766.4	1766.4	1766.4	1766.4	1758.6	1758.6
22.5°	1779.3	1781.9	1779.3	1779.3	1789.7	1800.0	1800.0	1807.8	1797.4	1792.3	1792.3
25°	1831.1	1831.1	1828.5	1831.1	1836.2	1841.4	1851.7	1856.9	1856.9	1854.3	1856.9
27.5°	1893.1	1895.7	1893.1	1893.1	1890.5	1900.9	1916.4	1924.2	1926.8	1929.3	1929.3
30°	1975.9	1981.1	1978.5	1981.1	1986.2	1994.0	1999.2	2001.8	2001.8	1996.6	1996.6
32.5°	2066.4	2071.6	2066.4	2079.3	2097.4	2097.4	2092.3	2102.6	2094.9	2089.7	2084.5
35°	2172.4	2172.4	2177.6	2182.8	2208.7	2221.6	2221.6	2216.4	2200.9	2193.1	2198.3
37.5°	2294.0	2296.6	2301.8	2304.3	2327.6	2350.9	2348.3	2335.4	2317.3	2296.6	2296.6
40°	2438.8	2433.7	2436.2	2454.3	2472.4	2500.9	2503.5	2485.4	2454.3	2433.7	2433.7
42.5°	2570.7	2573.3	2583.7	2606.9	2648.3	2671.6	2658.7	2627.6	2594.0	2568.1	2565.6
45°	2710.4	2707.8	2736.2	2785.4	2839.7	2868.1	2847.5	2803.5	2751.8	2718.1	2718.1
47.5°	2852.6	2850.0	2896.6	2976.8	3046.6	3069.9	3049.2	2992.3	2922.5	2873.3	2865.6
50°	3000.0	3010.4	3059.5	3173.3	3263.8	3289.7	3263.8	3188.8	3095.7	3031.1	3020.7
52.5°	3168.1	3175.9	3240.6	3364.7	3475.9	3535.4	3496.6	3385.4	3266.4	3188.8	3178.5
55°	3323.3	3328.5	3421.6	3571.6	3708.7	3788.8	3726.8	3584.5	3434.5	3336.3	3325.9
57.5°	3431.9	3444.9	3563.8	3757.8	3933.7	4026.8	3933.7	3781.1	3581.9	3460.4	3452.6
60°	3501.8	3522.5	3659.5	3902.6	4145.7	4246.6	4150.9	3938.8	3693.2	3535.4	3527.6
62.5°	3465.6	3494.0	3669.9	3988.0	4326.8	4435.4	4311.3	4013.8	3680.2	3481.1	3460.4
65°	3212.1	3232.8	3481.1	3925.9	4394.0	4562.1	4337.1	3931.1	3504.4	3284.5	3243.1
67.5°	2687.1	2723.3	3051.8	3625.9	4249.2	4443.2	4158.7	3633.7	3119.0	2850.0	2803.5
70°	2063.8	2128.5	2488.0	3111.2	3796.6	4016.4	3703.5	3067.3	2462.1	2188.0	2102.6
72.5°	1192.3	1293.1	1820.7	2428.5	3020.7	3186.3	2746.6	2144.0	1634.5	1440.5	1417.3
75°	395.7	431.9	866.4	1399.2	1926.8	2009.5	1717.3	1352.6	1075.9	920.7	928.5
77.5°	194.0	194.0	261.2	512.1	876.7	1034.5	938.8	654.3	470.7	356.9	346.6
80°	155.2	155.2	181.0	250.9	294.8	346.6	294.8	214.7	175.9	160.3	168.1
82.5°	75.0	72.4	85.3	121.6	124.1	119.0	111.2	111.2	106.0	98.3	95.7
85°	5.2	5.2	10.3	23.3	38.8	51.7	59.5	56.9	54.3	46.6	51.7
87.5°	2.6	2.6	2.6	2.6	2.6	2.6	2.6	5.2	5.2	5.2	5.2
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: SP1-2407-157-4

Test Date: 08/07/2024

Luminaire Tested: MEM2-HTN-SA-40-730-U-5WQ-2

Data in this report applies to families of products including MEM2-HTN-SA-40-730-U-5WQ-2



**Test Information**

Test Method: LM-79-2019  
 Report Number: SP1-2407-157-4  
 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-40-730-U-5WQ-2**  
 Description: Epic Modern Light Square 40W 5WQ Optic and Flare Trim

**Spectral Parameters**

CCT (K): 3057  
 CIE u': 0.2487  
 CIE v': 0.5199  
 Duv: -0.0002  
 CIE x: 0.4326  
 CIE y: 0.4020  
 CIE z: 0.1654  
 Peak Wavelength (nm): 593  
 Dominant Wavelength (nm): 582  
 Purity: 50.50735  
 Rf: 74.6  
 Rg: 94

CRI (Ra):	71.7		
R1:	68.1	R9:	-34.8
R2:	82.0	R10:	58.5
R3:	93.5	R11:	62.5
R4:	67.5	R12:	47.5
R5:	67.2	R13:	70.7
R6:	74.9	R14:	96.4
R7:	77.4	R15:	60.0
R8:	43.1		



**Test Conditions**

Stabilization Time: 21M  
 Operation Time: 1H 21M  
 Sphere Temperature (°C): 24.2

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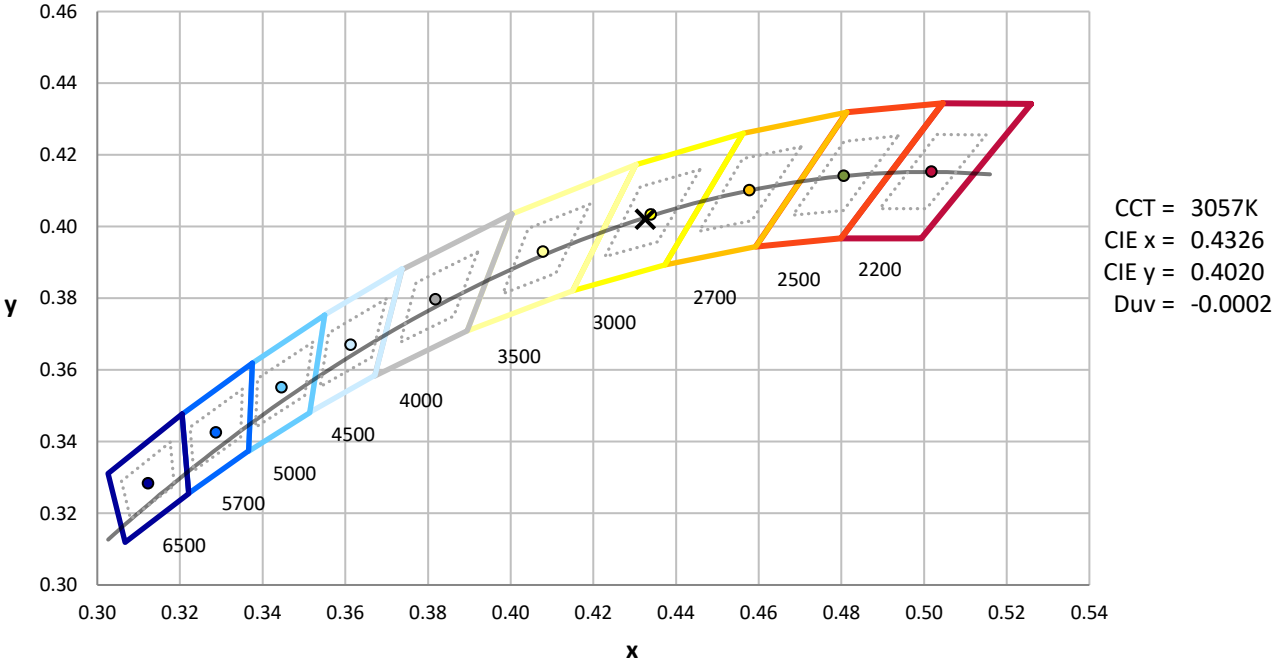
Measurement and Test Equipment			
Instrument	Identification Number	Calibration Date	Calibration Due Date
Photometer	IN0058	6/18/2024	12/18/2024
Power Meter	INXT2011004	2/8/2024	2/8/2025
AC Power Source	IN0063	10/24/2023	10/24/2024
DC Power Source	IN0208	10/24/2023	10/24/2024
Sphere Thermometer	IN0085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

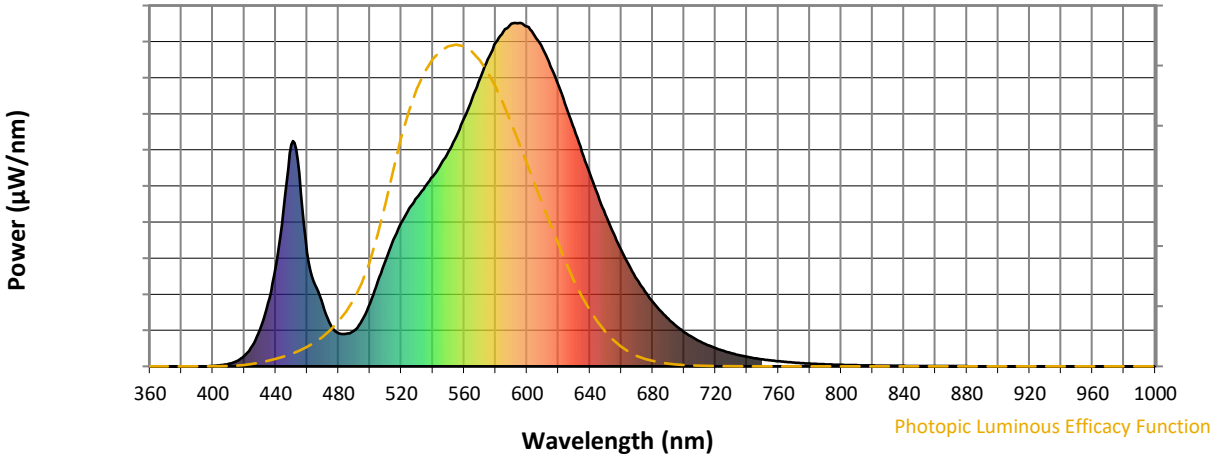


CCT = 3057K  
 CIE x = 0.4326  
 CIE y = 0.4020  
 Duv = -0.0002

Point lies inside the ANSI 3000K 4-step quadrangle

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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	104	NR	620	818	NR	750	20	NR	880	1	NR
365	0	NR	495	135	NR	625	755	NR	755	17	NR	885	0	NR
370	0	NR	500	184	NR	630	691	NR	760	15	NR	890	0	NR
375	0	NR	505	247	NR	635	625	NR	765	13	NR	895	0	NR
380	0	NR	510	309	NR	640	561	NR	770	11	NR	900	0	NR
385	0	NR	515	369	NR	645	499	NR	775	9	NR	905	0	NR
390	0	NR	520	419	NR	650	441	NR	780	8	NR	910	0	NR
395	0	NR	525	460	NR	655	388	NR	785	7	NR	915	0	NR
400	1	NR	530	492	NR	660	338	NR	790	6	NR	920	0	NR
405	3	NR	535	524	NR	665	294	NR	795	5	NR	925	0	NR
410	7	NR	540	553	NR	670	253	NR	800	4	NR	930	0	NR
415	15	NR	545	588	NR	675	218	NR	805	4	NR	935	0	NR
420	31	NR	550	625	NR	680	188	NR	810	3	NR	940	0	NR
425	60	NR	555	670	NR	685	161	NR	815	3	NR	945	0	NR
430	107	NR	560	723	NR	690	139	NR	820	3	NR	950	0	NR
435	183	NR	565	780	NR	695	118	NR	825	2	NR	955	0	NR
440	289	NR	570	837	NR	700	100	NR	830	2	NR	960	0	NR
445	460	NR	575	894	NR	705	85	NR	835	2	NR	965	0	NR
450	646	NR	580	942	NR	710	73	NR	840	1	NR	970	0	NR
455	561	NR	585	976	NR	715	62	NR	845	1	NR	975	0	NR
460	331	NR	590	998	NR	720	53	NR	850	1	NR	980	0	NR
465	238	NR	595	1000	NR	725	45	NR	855	1	NR	985	0	NR
470	178	NR	600	990	NR	730	39	NR	860	1	NR	990	0	NR
475	120	NR	605	962	NR	735	33	NR	865	1	NR	995	0	NR
480	96	NR	610	925	NR	740	28	NR	870	1	NR	1000	0	NR
485	95	NR	615	873	NR	745	24	NR	875	1	NR			

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**Scotopic Flux vs. Wavelength**



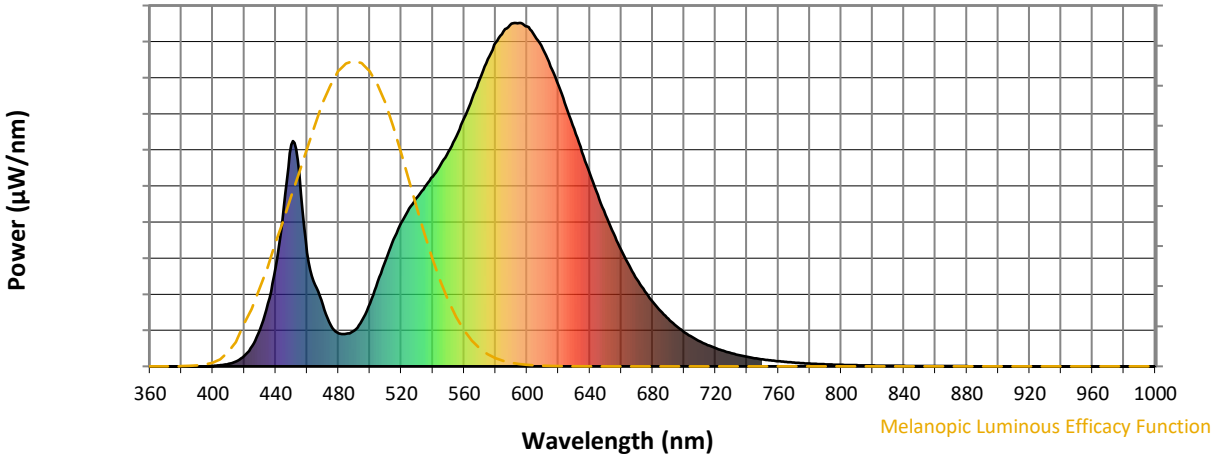
**Scotopic Lumens: NR**

**S/P: 1.23**

$\lambda$ (nm)	Power W <sup>^</sup> /nm	Lumens ( $\phi$ /nm)	$\lambda$ (nm)	Power W <sup>^</sup> /nm	Lumens ( $\phi$ /nm)	$\lambda$ (nm)	Power W <sup>^</sup> /nm	Lumens ( $\phi$ /nm)	$\lambda$ (nm)	Power W <sup>^</sup> /nm	Lumens ( $\phi$ /nm)	$\lambda$ (nm)	Power W <sup>^</sup> /nm	Lumens ( $\phi$ /nm)
360	0	NR	490	104	NR	620	818	NR	750	20	NR	880	1	NR
365	0	NR	495	135	NR	625	755	NR	755	17	NR	885	0	NR
370	0	NR	500	184	NR	630	691	NR	760	15	NR	890	0	NR
375	0	NR	505	247	NR	635	625	NR	765	13	NR	895	0	NR
380	0	NR	510	309	NR	640	561	NR	770	11	NR	900	0	NR
385	0	NR	515	369	NR	645	499	NR	775	9	NR	905	0	NR
390	0	NR	520	419	NR	650	441	NR	780	8	NR	910	0	NR
395	0	NR	525	460	NR	655	388	NR	785	7	NR	915	0	NR
400	1	NR	530	492	NR	660	338	NR	790	6	NR	920	0	NR
405	3	NR	535	524	NR	665	294	NR	795	5	NR	925	0	NR
410	7	NR	540	553	NR	670	253	NR	800	4	NR	930	0	NR
415	15	NR	545	588	NR	675	218	NR	805	4	NR	935	0	NR
420	31	NR	550	625	NR	680	188	NR	810	3	NR	940	0	NR
425	60	NR	555	670	NR	685	161	NR	815	3	NR	945	0	NR
430	107	NR	560	723	NR	690	139	NR	820	3	NR	950	0	NR
435	183	NR	565	780	NR	695	118	NR	825	2	NR	955	0	NR
440	289	NR	570	837	NR	700	100	NR	830	2	NR	960	0	NR
445	460	NR	575	894	NR	705	85	NR	835	2	NR	965	0	NR
450	646	NR	580	942	NR	710	73	NR	840	1	NR	970	0	NR
455	561	NR	585	976	NR	715	62	NR	845	1	NR	975	0	NR
460	331	NR	590	998	NR	720	53	NR	850	1	NR	980	0	NR
465	238	NR	595	1000	NR	725	45	NR	855	1	NR	985	0	NR
470	178	NR	600	990	NR	730	39	NR	860	1	NR	990	0	NR
475	120	NR	605	962	NR	735	33	NR	865	1	NR	995	0	NR
480	96	NR	610	925	NR	740	28	NR	870	1	NR	1000	0	NR
485	95	NR	615	873	NR	745	24	NR	875	1	NR			

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Melanopic Flux vs. Wavelength



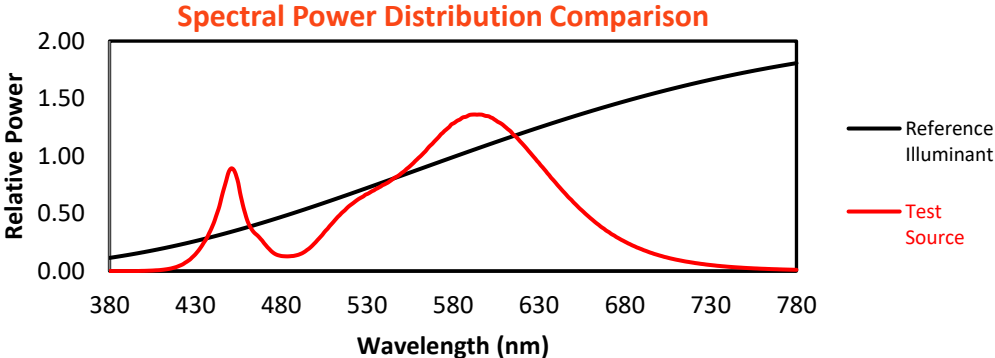
Melanopic Lumens: NR

M/P: 2.27

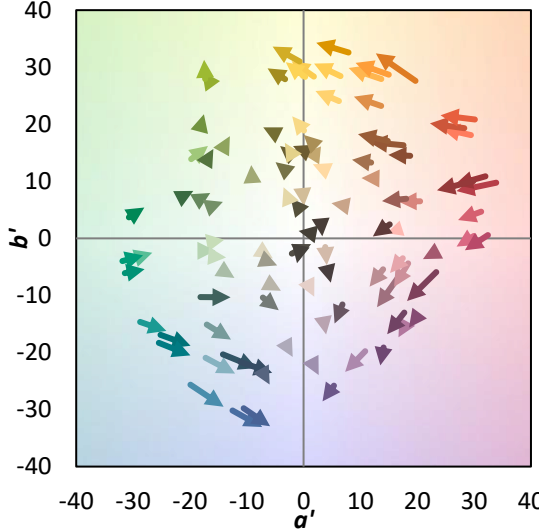
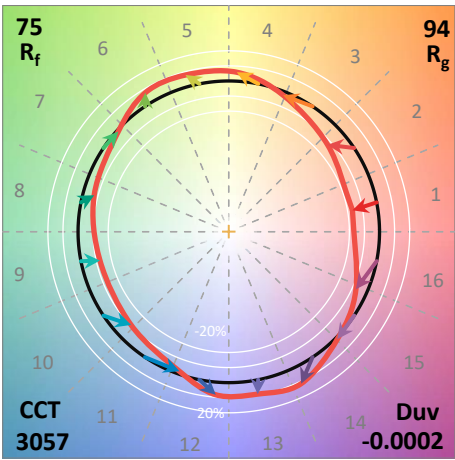
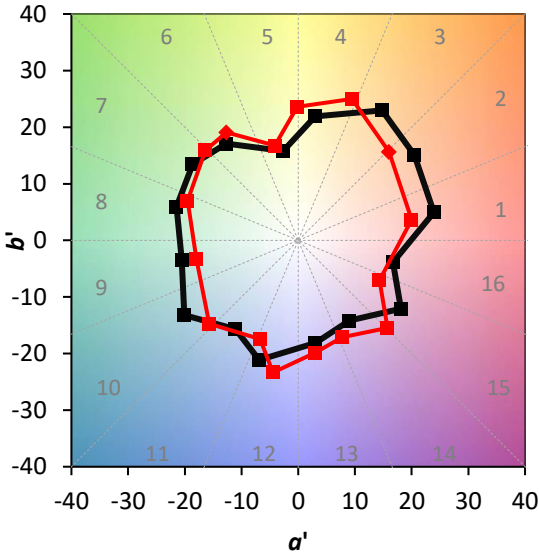
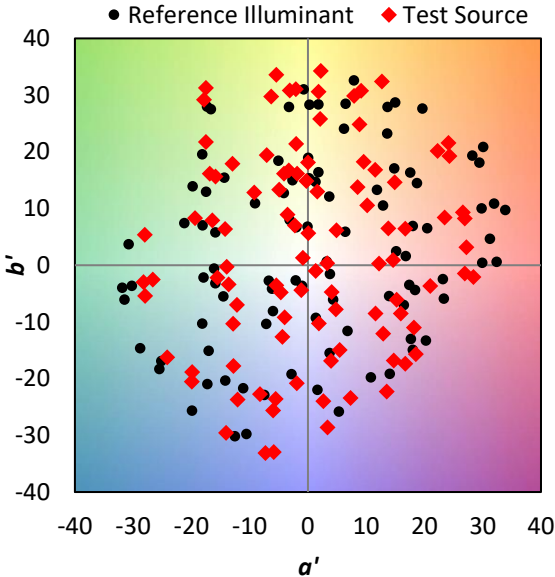
λ (nm)	Power W <sup>^</sup> /nm	Lumens (φ/nm)	λ (nm)	Power W <sup>^</sup> /nm	Lumens (φ/nm)	λ (nm)	Power W <sup>^</sup> /nm	Lumens (φ/nm)	λ (nm)	Power W <sup>^</sup> /nm	Lumens (φ/nm)	λ (nm)	Power W <sup>^</sup> /nm	Lumens (φ/nm)
360	0	NR	490	104	NR	620	818	NR	750	20	NR	880	1	NR
365	0	NR	495	135	NR	625	755	NR	755	17	NR	885	0	NR
370	0	NR	500	184	NR	630	691	NR	760	15	NR	890	0	NR
375	0	NR	505	247	NR	635	625	NR	765	13	NR	895	0	NR
380	0	NR	510	309	NR	640	561	NR	770	11	NR	900	0	NR
385	0	NR	515	369	NR	645	499	NR	775	9	NR	905	0	NR
390	0	NR	520	419	NR	650	441	NR	780	8	NR	910	0	NR
395	0	NR	525	460	NR	655	388	NR	785	7	NR	915	0	NR
400	1	NR	530	492	NR	660	338	NR	790	6	NR	920	0	NR
405	3	NR	535	524	NR	665	294	NR	795	5	NR	925	0	NR
410	7	NR	540	553	NR	670	253	NR	800	4	NR	930	0	NR
415	15	NR	545	588	NR	675	218	NR	805	4	NR	935	0	NR
420	31	NR	550	625	NR	680	188	NR	810	3	NR	940	0	NR
425	60	NR	555	670	NR	685	161	NR	815	3	NR	945	0	NR
430	107	NR	560	723	NR	690	139	NR	820	3	NR	950	0	NR
435	183	NR	565	780	NR	695	118	NR	825	2	NR	955	0	NR
440	289	NR	570	837	NR	700	100	NR	830	2	NR	960	0	NR
445	460	NR	575	894	NR	705	85	NR	835	2	NR	965	0	NR
450	646	NR	580	942	NR	710	73	NR	840	1	NR	970	0	NR
455	561	NR	585	976	NR	715	62	NR	845	1	NR	975	0	NR
460	331	NR	590	998	NR	720	53	NR	850	1	NR	980	0	NR
465	238	NR	595	1000	NR	725	45	NR	855	1	NR	985	0	NR
470	178	NR	600	990	NR	730	39	NR	860	1	NR	990	0	NR
475	120	NR	605	962	NR	735	33	NR	865	1	NR	995	0	NR
480	96	NR	610	925	NR	740	28	NR	870	1	NR	1000	0	NR
485	95	NR	615	873	NR	745	24	NR	875	1	NR			

**Summary**

$R_f = 74.6$   
 $R_g = 94$   
 $CIE R_a = 71.7$   
 $R_9 = -34.8$

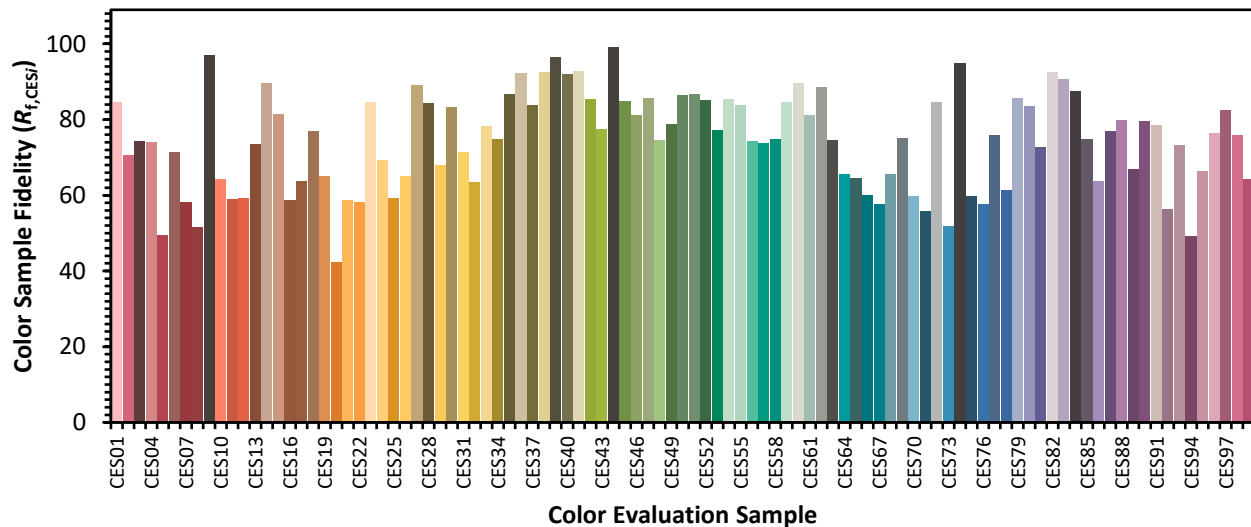


**Color Vector Graphics**



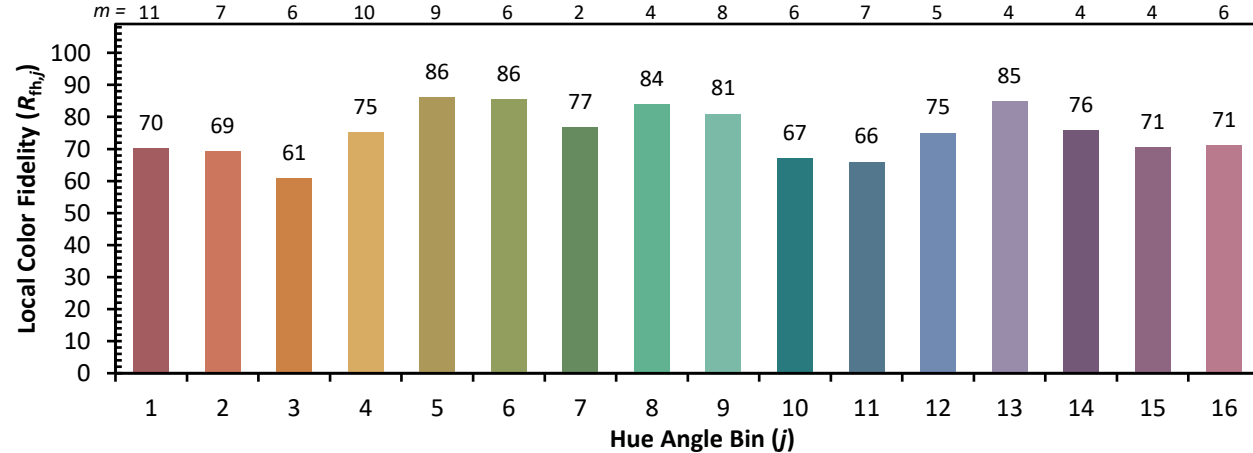
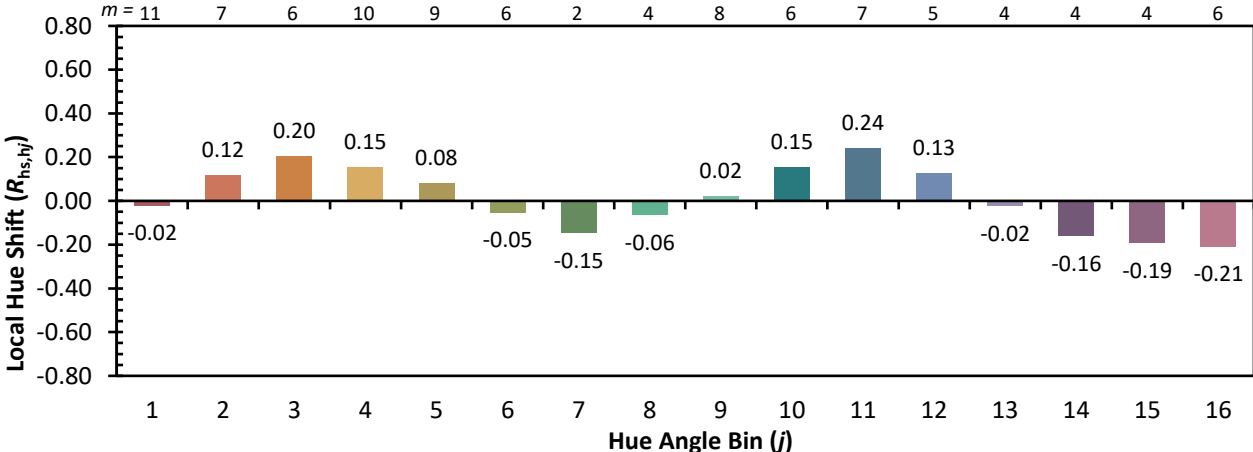
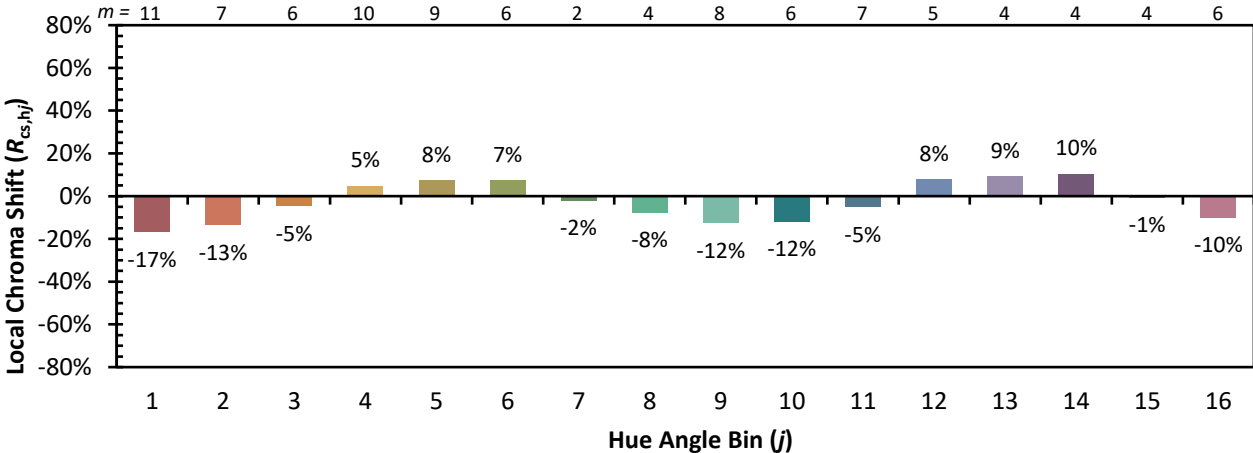
**Individual Sample Fidelity Index ( $R_{f,i}$ )**

CES01 = 86	CES26 = 65	CES51 = 87	CES76 = 58
CES02 = 62	CES27 = 89	CES52 = 85	CES77 = 76
CES03 = 31	CES28 = 84	CES53 = 77	CES78 = 61
CES04 = 71	CES29 = 68	CES54 = 85	CES79 = 86
CES05 = 49	CES30 = 83	CES55 = 84	CES80 = 83
CES06 = 51	CES31 = 71	CES56 = 74	CES81 = 73
CES07 = 41	CES32 = 64	CES57 = 74	CES82 = 93
CES08 = 40	CES33 = 78	CES58 = 75	CES83 = 91
CES09 = 29	CES34 = 75	CES59 = 85	CES84 = 88
CES10 = 76	CES35 = 87	CES60 = 90	CES85 = 75
CES11 = 59	CES36 = 92	CES61 = 81	CES86 = 64
CES12 = 65	CES37 = 84	CES62 = 89	CES87 = 77
CES13 = 43	CES38 = 92	CES63 = 75	CES88 = 80
CES14 = 74	CES39 = 96	CES64 = 65	CES89 = 67
CES15 = 71	CES40 = 92	CES65 = 64	CES90 = 80
CES16 = 47	CES41 = 93	CES66 = 60	CES91 = 78
CES17 = 50	CES42 = 86	CES67 = 58	CES92 = 56
CES18 = 56	CES43 = 77	CES68 = 66	CES93 = 73
CES19 = 73	CES44 = 99	CES69 = 75	CES94 = 49
CES20 = 66	CES45 = 85	CES70 = 60	CES95 = 66
CES21 = 87	CES46 = 81	CES71 = 56	CES96 = 76
CES22 = 79	CES47 = 86	CES72 = 85	CES97 = 82
CES23 = 92	CES48 = 75	CES73 = 52	CES98 = 76
CES24 = 91	CES49 = 79	CES74 = 95	CES99 = 64
CES25 = 73	CES50 = 86	CES75 = 60	





Color Rendition by Hue-Angle Bin



Measure Comparisons



(END OF REPORT)