

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: P879755

Luminaire Tested: **EMM2-HSN-VA7-830-U-CQ**

Issue Date: 10/01/2024



Test Information

Test Method: LM-79-08
Report Number: P879755
Test Lab: INNOVATION CENTER(G3)
Issue Date: 10/01/2024
Manufacturer: COOPER LIGHTING SOLUTIONS (FORMERLY EATON)
Product Line: INVUE
Catalog Number: EMM2-HSN-VA7-830-U-CQ
Description: EPIC MODERN SHORT HOUSING 7W 80CRI 3000K WAVESTREAM FIXTURE w/
TYPE V CONCENTRATED DISTRIBUTION OPTIC
Light Source: (1) 3000K CCT, 80 CRI LEDS
Ballast/Driver: ELECTRONIC DRIVER

Summary

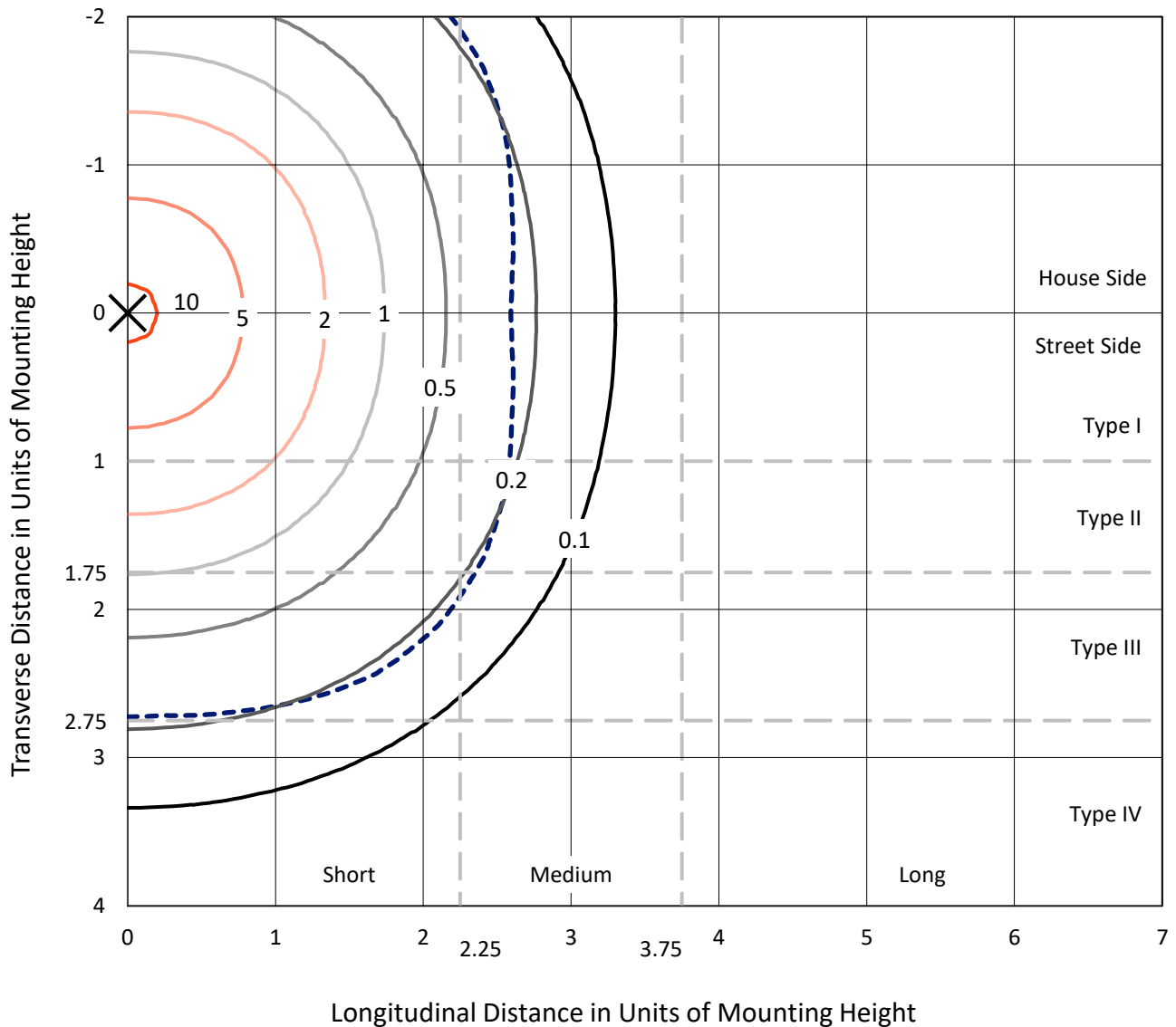
Lumens per Lamp: N/A
Luminaire Lumens: 9869.5 lumens
Efficiency: N/A
Efficacy: 75.9 lumens/watt
Luminous Opening: Circular (Dia: 1.12' x H: 0')
IES Classification: Type V - Short
BUG Rating: B3 - U0 - G1

Input Watts (W): 130
Input Voltage (V): 120
Input Current (Ain): NR
Voltage Rise (V): NR
Power Factor: 0.995
Total Harmonic Distortion (THDi): 8.1%
Frequency (hertz): 60
Stabilization Time: NR
Operation Time: NR
Ambient Temperature (°C): NR
Test Distance: 24 FT

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Iso-Footcandle Lines of Horizontal Illumination

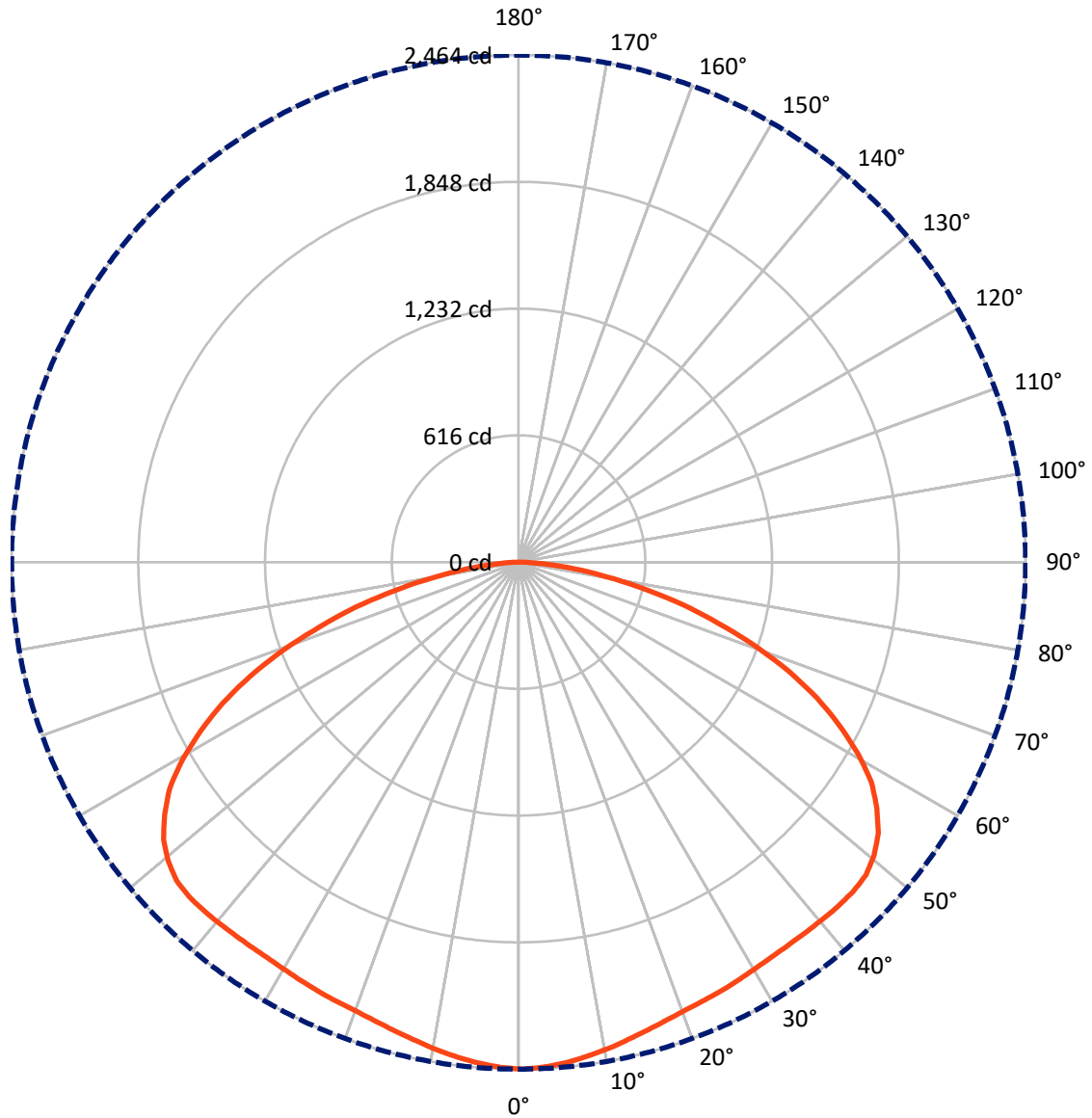
× Max cd
 - - - 1/2 Max cd



Based on 15 foot mounting height. Maximum calculated value = 10.9 fc
 Type V - Short - N/A

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Luminous Intensity Polar Plot



— Vertical Plane Through 0-Deg Lateral - - - Horizontal Cone Through 0-Deg Vertical

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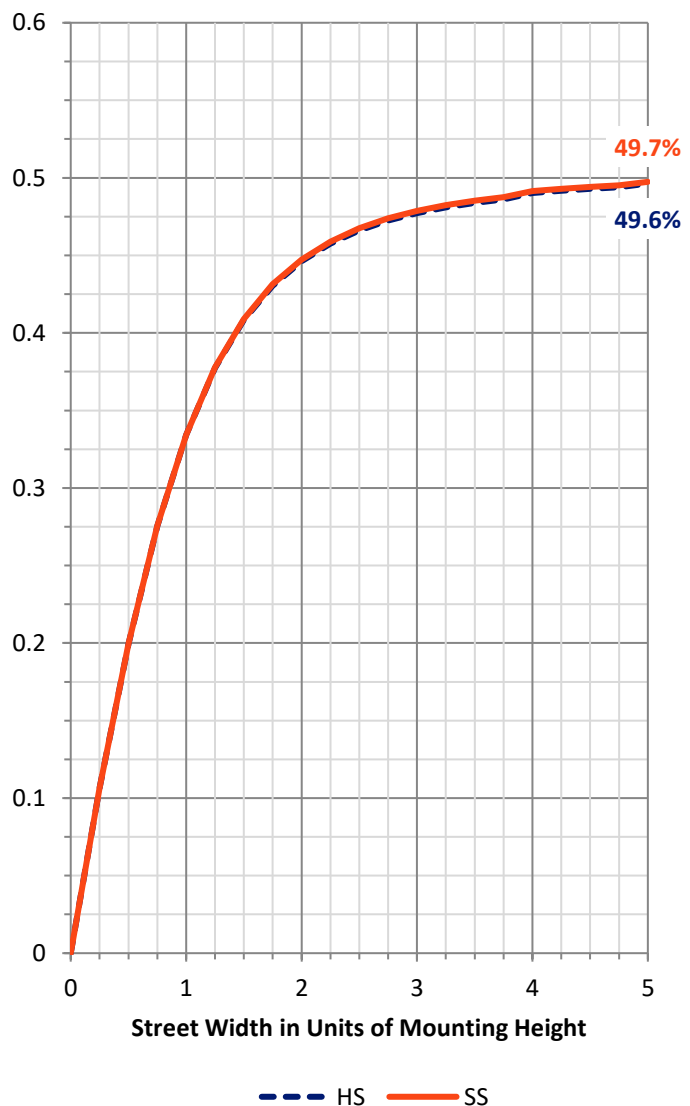
FLUX DISTRIBUTION:

		Downward	Upward	Total
House Side	Lumens	4934.8	0.0	4934.8
	% Fixture	50.0	0.0	50.0
Street Side	Lumens	4934.8	0.0	4934.8
	% Fixture	50.0	0.0	50.0
Total	Lumens	9869.5	0.0	9869.5
	% Fixture	100.0	0.0	100.0

Coefficient of Utilization

ZONAL LUMENS:

Zone	Lumens	% Fixture
0°-10°	232.2	2.4
10°-20°	669.8	6.8
20°-30°	1072.5	10.9
30°-40°	1452.8	14.7
40°-50°	1794.1	18.2
50°-60°	1927.6	19.5
60°-70°	1621.0	16.4
70°-80°	905.1	9.2
80°-90°	194.5	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°	9869.5	100.0
0°-180°	9869.5	100.0



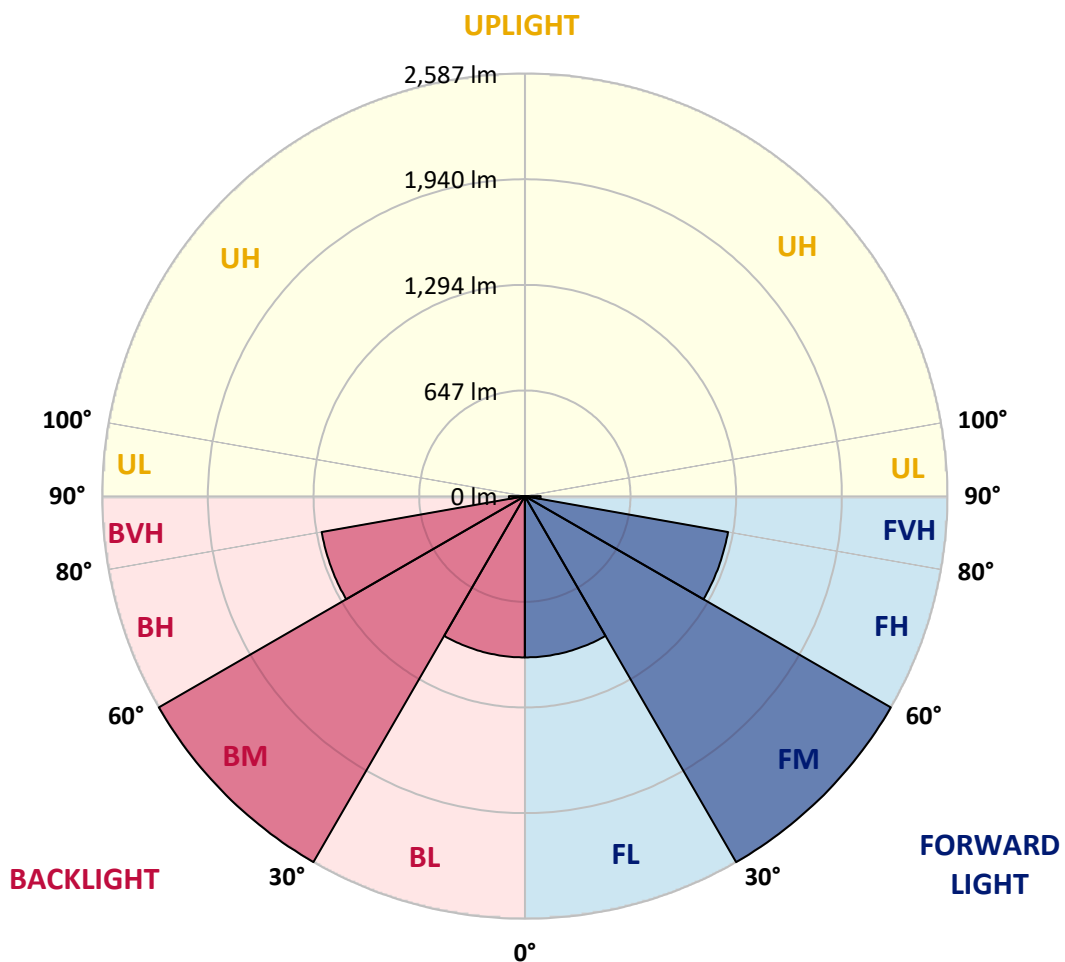
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LUMINAIRE CLASSIFICATION SYSTEM LUMEN TABLE AND BUG RATING:

Zone	Lumens	% Fixture	Zone Rating/Lumen Limit		
			B	U	G
FL (0°-30°)	987.2	10.0			
FM (30°-60°)	2587.2	26.2			
FH (60°-80°)	1263.1	12.8			G1/1800
FVH (80°-90°)	97.2	1.0			G1/100
BL (0°-30°)	987.2	10.0	B2/1000		
BM (30°-60°)	2587.2	26.2	B3/5000		
BH (60°-80°)	1263.1	12.8	B3/2500		G1/1800
BVH (80°-90°)	97.2	1.0			G1/100
UL (90°-100°)	0.0	0.0		U0/0	
UH (100°-180°)	0.0	0.0		U0/0	

BUG Rating: B3-U0-G1

Type V Short





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CATALOG NUMBER: EMM2-HSN-VA7-830-U-CQ

CANDELA DISTRIBUTION (FULL):

	0°	5°	15°	25°	35°	45°	55°	65°	75°	85°	90°
0°	2463.6	2463.6	2463.6	2463.6	2463.6	2463.6	2463.6	2463.6	2463.6	2463.6	2463.6
2.5°	2456.2	2458.7	2458.0	2458.0	2458.0	2459.3	2459.3	2459.3	2459.9	2459.9	2460.5
5°	2442.1	2444.0	2444.0	2444.0	2445.2	2445.8	2445.8	2446.4	2447.6	2447.0	2446.4
7.5°	2423.2	2425.0	2425.0	2425.0	2426.2	2427.5	2427.5	2426.8	2428.7	2428.7	2428.1
10°	2403.0	2403.6	2404.2	2405.4	2407.3	2407.9	2407.3	2407.3	2406.6	2407.3	2407.3
12.5°	2379.1	2382.2	2382.8	2384.0	2387.1	2387.7	2387.7	2387.1	2386.5	2386.5	2385.8
15°	2357.7	2358.9	2360.8	2363.2	2366.9	2368.1	2368.7	2366.9	2365.0	2364.4	2365.0
17.5°	2338.1	2339.9	2342.4	2344.8	2349.7	2352.2	2352.2	2349.7	2347.3	2346.1	2346.1
20°	2322.2	2324.0	2327.1	2330.8	2337.5	2340.6	2339.3	2336.9	2332.6	2330.8	2331.4
22.5°	2311.8	2314.2	2316.7	2322.2	2329.5	2333.2	2332.0	2327.7	2322.8	2319.8	2319.8
25°	2303.2	2305.1	2308.7	2316.1	2324.0	2328.3	2326.5	2321.0	2314.2	2310.6	2310.0
27.5°	2293.4	2295.9	2300.8	2310.6	2320.4	2324.0	2322.8	2314.9	2306.9	2302.0	2300.8
30°	2284.3	2286.7	2293.4	2304.5	2316.7	2322.2	2319.1	2310.6	2300.8	2294.7	2294.1
32.5°	2278.1	2281.2	2289.2	2303.2	2317.9	2325.9	2322.8	2312.4	2299.6	2291.6	2291.0
35°	2275.7	2278.8	2290.4	2307.5	2325.9	2336.9	2332.6	2319.8	2303.8	2294.1	2292.8
37.5°	2276.3	2280.0	2294.7	2317.3	2340.6	2352.2	2346.7	2330.2	2310.0	2296.5	2294.7
40°	2278.8	2283.0	2302.0	2330.2	2357.7	2368.7	2360.1	2335.7	2308.1	2289.2	2285.5
42.5°	2281.8	2288.5	2311.8	2344.8	2373.6	2382.8	2367.5	2331.4	2292.8	2268.4	2265.3
45°	2281.2	2286.7	2313.6	2352.8	2383.4	2388.3	2363.2	2317.9	2272.6	2240.8	2238.4
47.5°	2270.8	2276.3	2306.9	2350.4	2380.3	2381.6	2351.6	2299.6	2246.3	2209.6	2205.9
50°	2238.4	2245.7	2280.0	2327.7	2361.4	2362.0	2328.9	2271.4	2209.6	2166.8	2160.7
52.5°	2188.8	2194.3	2234.1	2285.5	2323.4	2328.3	2292.2	2225.5	2155.2	2109.3	2105.0
55°	2111.7	2122.7	2164.9	2218.8	2260.4	2265.9	2229.8	2157.6	2085.4	2032.8	2027.9
57.5°	2022.4	2024.2	2068.9	2127.6	2171.1	2177.2	2138.0	2064.6	1989.3	1940.4	1928.1
60°	1896.3	1903.7	1945.9	2003.4	2049.3	2057.2	2019.9	1948.9	1870.6	1814.9	1814.3
62.5°	1750.7	1759.2	1802.1	1863.3	1909.8	1917.7	1878.0	1808.8	1730.5	1682.8	1665.6
65°	1592.8	1595.3	1638.1	1698.7	1740.9	1745.2	1714.0	1648.5	1567.7	1518.8	1507.7
67.5°	1415.4	1417.8	1450.8	1507.7	1553.0	1559.1	1527.3	1467.4	1394.5	1343.1	1337.6
70°	1218.9	1219.5	1252.0	1298.5	1343.8	1356.6	1327.8	1270.3	1200.6	1159.6	1148.6
72.5°	1012.1	1017.6	1046.4	1094.7	1133.3	1136.3	1113.1	1063.5	1006.6	972.9	966.8
75°	823.0	819.3	843.8	873.2	903.2	913.0	894.0	860.3	807.7	778.4	784.5
77.5°	618.0	619.3	638.2	665.1	684.1	701.3	679.8	663.9	621.7	588.0	589.3
80°	436.9	435.7	453.4	466.3	487.7	490.1	478.5	457.1	430.2	416.1	414.9
82.5°	276.6	271.1	284.5	301.1	310.2	306.0	308.4	294.3	272.9	265.6	258.8
85°	141.4	140.1	147.5	153.6	160.3	160.3	156.6	145.6	141.4	132.8	130.3
87.5°	48.3	50.2	52.6	50.8	53.8	52.6	51.4	43.4	38.6	36.1	33.7
90°	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0

Cooper Lighting Solutions Photometric Lab
1121 Highway 74 South
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: SP1-2407-176-11

Test Date: 09/26/2024

Luminaire Tested: MEM2-HTN-VA-130-830-U-RW

Data in this report applies to families of products including MEM2-HTN-VA-130-830-U-RW

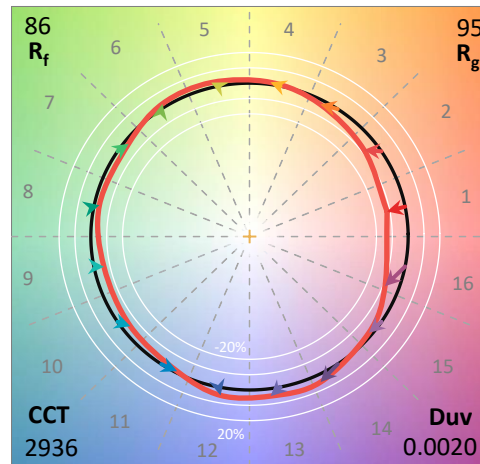
Test Information

Test Method: LM-79-2019
 Report Number: SP1-2407-176-11
 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-130-830-U-RW**
 Description: EPIC MODERN VISUAL COMFORT 130W WAVESTREAM RECTANGULAR WIDE

Spectral Parameters

CCT (K): 2936
 CIE u': 0.2522
 CIE v': 0.5255
 Duv: 0.0020
 CIE x: 0.4446
 CIE y: 0.4117
 CIE z: 0.1436
 Peak Wavelength (nm): 601
 Dominant Wavelength (nm): 582
 Purity: 57.05514
 Rf: 85.6
 Rg: 95.3

CRI (Ra):	82.0		
R1:	79.9	R9:	1.5
R2:	90.0	R10:	78.0
R3:	96.9	R11:	80.9
R4:	80.9	R12:	73.9
R5:	80.4	R13:	82.1
R6:	88.8	R14:	98.8
R7:	82.7	R15:	71.1
R8:	56.8		



Test Conditions

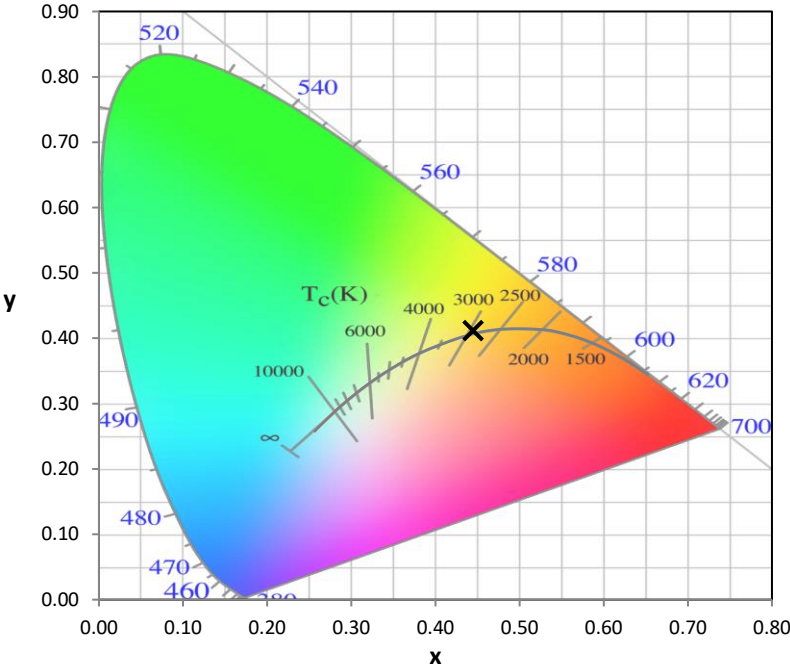
Stabilization Time: 54M
 Operation Time: 1H 54M
 Sphere Temperature (°C): 25.2

REPORT NUMBER: SP1-2407-176-11

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 inside the ANSI 3000K 7-step quadrangle

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Photopic Flux vs. Wavelength

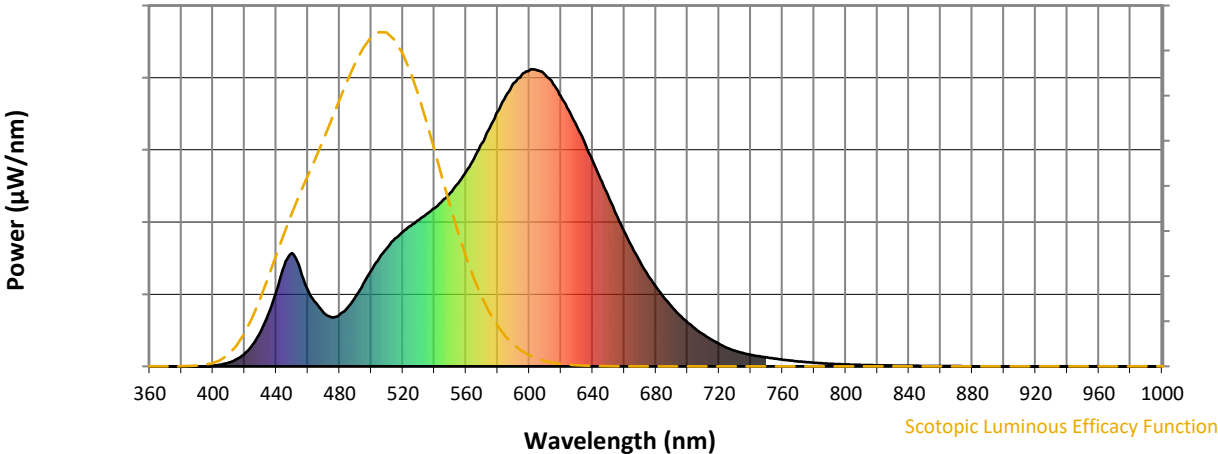


Photopic Lumens: NR

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	234	NR	620	908	NR	750	30	NR	880	0	NR
365	0	NR	495	276	NR	625	861	NR	755	26	NR	885	0	NR
370	0	NR	500	322	NR	630	808	NR	760	23	NR	890	0	NR
375	0	NR	505	363	NR	635	751	NR	765	20	NR	895	0	NR
380	0	NR	510	398	NR	640	692	NR	770	17	NR	900	0	NR
385	0	NR	515	429	NR	645	630	NR	775	14	NR	905	0	NR
390	0	NR	520	453	NR	650	570	NR	780	12	NR	910	0	NR
395	0	NR	525	473	NR	655	511	NR	785	10	NR	915	0	NR
400	2	NR	530	492	NR	660	453	NR	790	9	NR	920	0	NR
405	6	NR	535	512	NR	665	401	NR	795	8	NR	925	0	NR
410	13	NR	540	532	NR	670	351	NR	800	6	NR	930	0	NR
415	24	NR	545	557	NR	675	306	NR	805	5	NR	935	0	NR
420	43	NR	550	583	NR	680	268	NR	810	5	NR	940	0	NR
425	73	NR	555	616	NR	685	232	NR	815	4	NR	945	0	NR
430	115	NR	560	656	NR	690	201	NR	820	4	NR	950	0	NR
435	176	NR	565	700	NR	695	173	NR	825	3	NR	955	0	NR
440	254	NR	570	750	NR	700	148	NR	830	3	NR	960	0	NR
445	337	NR	575	803	NR	705	126	NR	835	2	NR	965	0	NR
450	381	NR	580	859	NR	710	107	NR	840	2	NR	970	0	NR
455	328	NR	585	907	NR	715	90	NR	845	2	NR	975	0	NR
460	257	NR	590	953	NR	720	76	NR	850	1	NR	980	0	NR
465	214	NR	595	980	NR	725	62	NR	855	1	NR	985	0	NR
470	180	NR	600	996	NR	730	53	NR	860	1	NR	990	0	NR
475	165	NR	605	995	NR	735	45	NR	865	1	NR	995	0	NR
480	173	NR	610	981	NR	740	39	NR	870	1	NR	1000	0	NR
485	197	NR	615	950	NR	745	34	NR	875	1	NR			

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Scotopic Flux vs. Wavelength



Scotopic Lumens: NR

S/P: 1.3

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	234	NR	620	908	NR	750	30	NR	880	0	NR
365	0	NR	495	276	NR	625	861	NR	755	26	NR	885	0	NR
370	0	NR	500	322	NR	630	808	NR	760	23	NR	890	0	NR
375	0	NR	505	363	NR	635	751	NR	765	20	NR	895	0	NR
380	0	NR	510	398	NR	640	692	NR	770	17	NR	900	0	NR
385	0	NR	515	429	NR	645	630	NR	775	14	NR	905	0	NR
390	0	NR	520	453	NR	650	570	NR	780	12	NR	910	0	NR
395	0	NR	525	473	NR	655	511	NR	785	10	NR	915	0	NR
400	2	NR	530	492	NR	660	453	NR	790	9	NR	920	0	NR
405	6	NR	535	512	NR	665	401	NR	795	8	NR	925	0	NR
410	13	NR	540	532	NR	670	351	NR	800	6	NR	930	0	NR
415	24	NR	545	557	NR	675	306	NR	805	5	NR	935	0	NR
420	43	NR	550	583	NR	680	268	NR	810	5	NR	940	0	NR
425	73	NR	555	616	NR	685	232	NR	815	4	NR	945	0	NR
430	115	NR	560	656	NR	690	201	NR	820	4	NR	950	0	NR
435	176	NR	565	700	NR	695	173	NR	825	3	NR	955	0	NR
440	254	NR	570	750	NR	700	148	NR	830	3	NR	960	0	NR
445	337	NR	575	803	NR	705	126	NR	835	2	NR	965	0	NR
450	381	NR	580	859	NR	710	107	NR	840	2	NR	970	0	NR
455	328	NR	585	907	NR	715	90	NR	845	2	NR	975	0	NR
460	257	NR	590	953	NR	720	76	NR	850	1	NR	980	0	NR
465	214	NR	595	980	NR	725	62	NR	855	1	NR	985	0	NR
470	180	NR	600	996	NR	730	53	NR	860	1	NR	990	0	NR
475	165	NR	605	995	NR	735	45	NR	865	1	NR	995	0	NR
480	173	NR	610	981	NR	740	39	NR	870	1	NR	1000	0	NR
485	197	NR	615	950	NR	745	34	NR	875	1	NR			

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Melanopic Flux vs. Wavelength



Melanopic Lumens: NR

M/P: 2.46

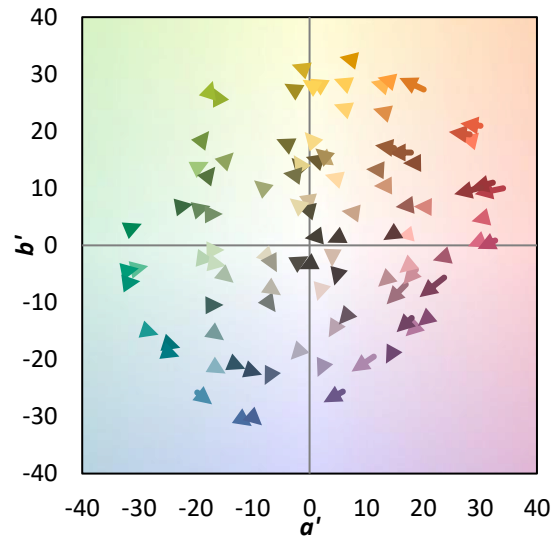
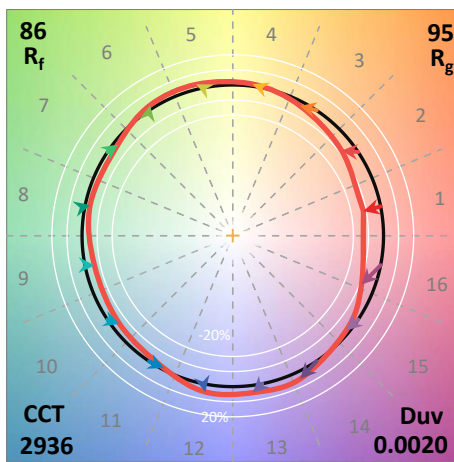
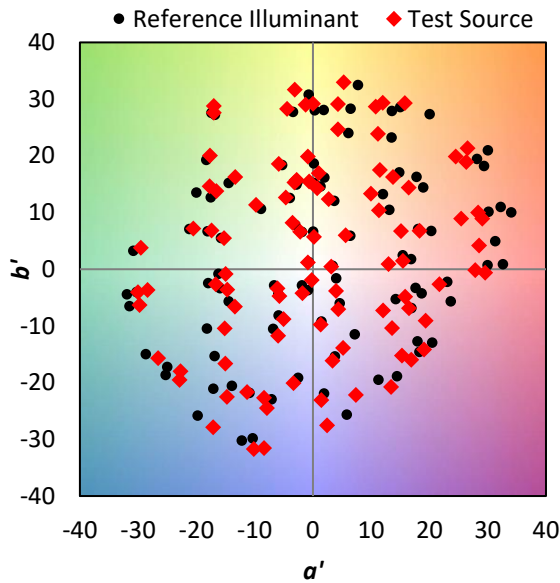
λ (nm)	Power W [^] /nm	Lumens (φ/nm)	λ (nm)	Power W [^] /nm	Lumens (φ/nm)	λ (nm)	Power W [^] /nm	Lumens (φ/nm)	λ (nm)	Power W [^] /nm	Lumens (φ/nm)	λ (nm)	Power W [^] /nm	Lumens (φ/nm)
360	0	NR	490	234	NR	620	908	NR	750	30	NR	880	0	NR
365	0	NR	495	276	NR	625	861	NR	755	26	NR	885	0	NR
370	0	NR	500	322	NR	630	808	NR	760	23	NR	890	0	NR
375	0	NR	505	363	NR	635	751	NR	765	20	NR	895	0	NR
380	0	NR	510	398	NR	640	692	NR	770	17	NR	900	0	NR
385	0	NR	515	429	NR	645	630	NR	775	14	NR	905	0	NR
390	0	NR	520	453	NR	650	570	NR	780	12	NR	910	0	NR
395	0	NR	525	473	NR	655	511	NR	785	10	NR	915	0	NR
400	2	NR	530	492	NR	660	453	NR	790	9	NR	920	0	NR
405	6	NR	535	512	NR	665	401	NR	795	8	NR	925	0	NR
410	13	NR	540	532	NR	670	351	NR	800	6	NR	930	0	NR
415	24	NR	545	557	NR	675	306	NR	805	5	NR	935	0	NR
420	43	NR	550	583	NR	680	268	NR	810	5	NR	940	0	NR
425	73	NR	555	616	NR	685	232	NR	815	4	NR	945	0	NR
430	115	NR	560	656	NR	690	201	NR	820	4	NR	950	0	NR
435	176	NR	565	700	NR	695	173	NR	825	3	NR	955	0	NR
440	254	NR	570	750	NR	700	148	NR	830	3	NR	960	0	NR
445	337	NR	575	803	NR	705	126	NR	835	2	NR	965	0	NR
450	381	NR	580	859	NR	710	107	NR	840	2	NR	970	0	NR
455	328	NR	585	907	NR	715	90	NR	845	2	NR	975	0	NR
460	257	NR	590	953	NR	720	76	NR	850	1	NR	980	0	NR
465	214	NR	595	980	NR	725	62	NR	855	1	NR	985	0	NR
470	180	NR	600	996	NR	730	53	NR	860	1	NR	990	0	NR
475	165	NR	605	995	NR	735	45	NR	865	1	NR	995	0	NR
480	173	NR	610	981	NR	740	39	NR	870	1	NR	1000	0	NR
485	197	NR	615	950	NR	745	34	NR	875	1	NR			

Summary

$R_f = 85.6$
 $R_g = 95.3$
 CIE $R_a = 82.0$
 $R_9 = 1.5$

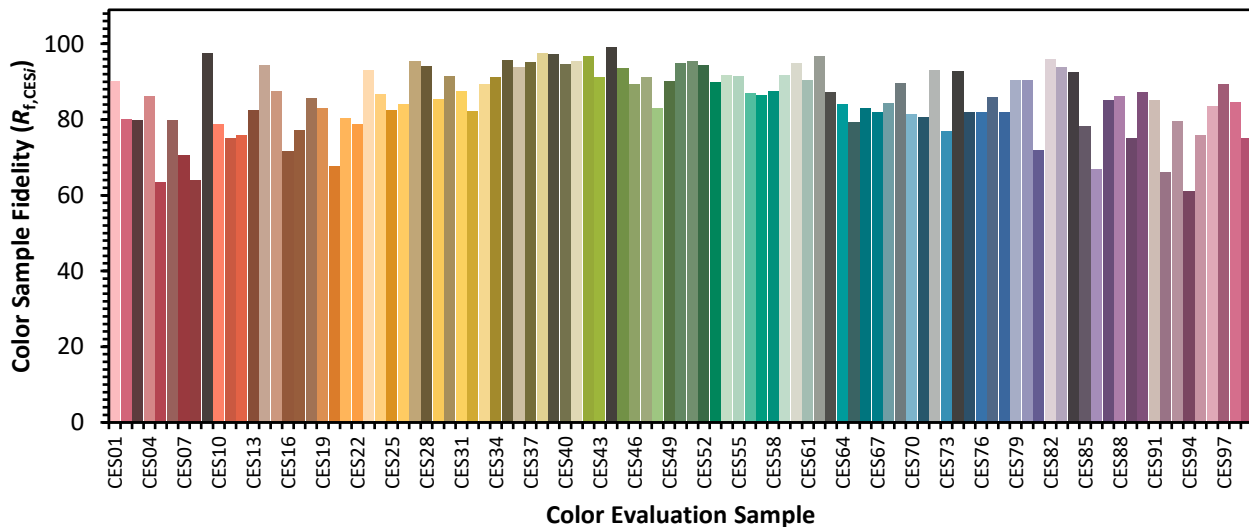


Color Vector Graphics

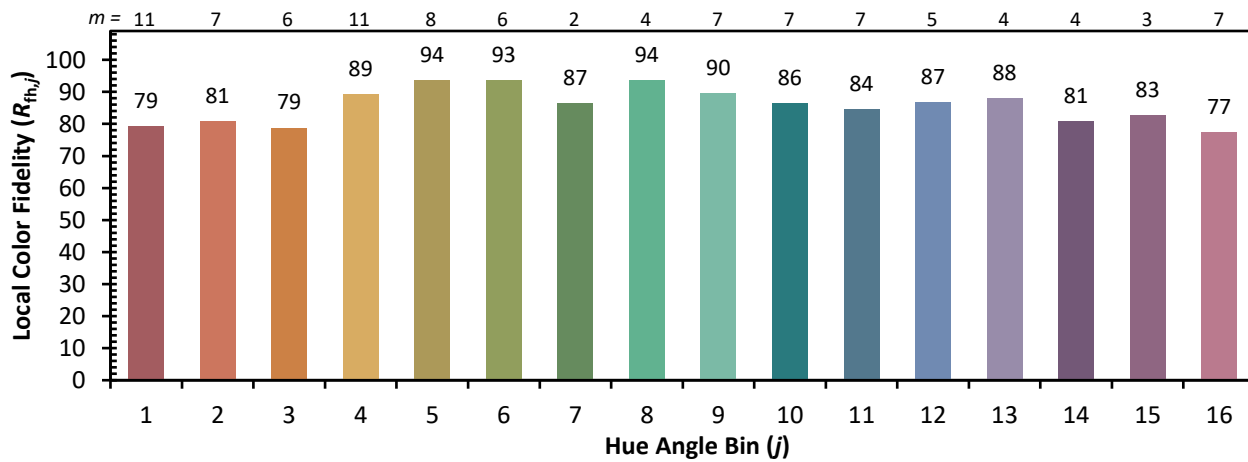
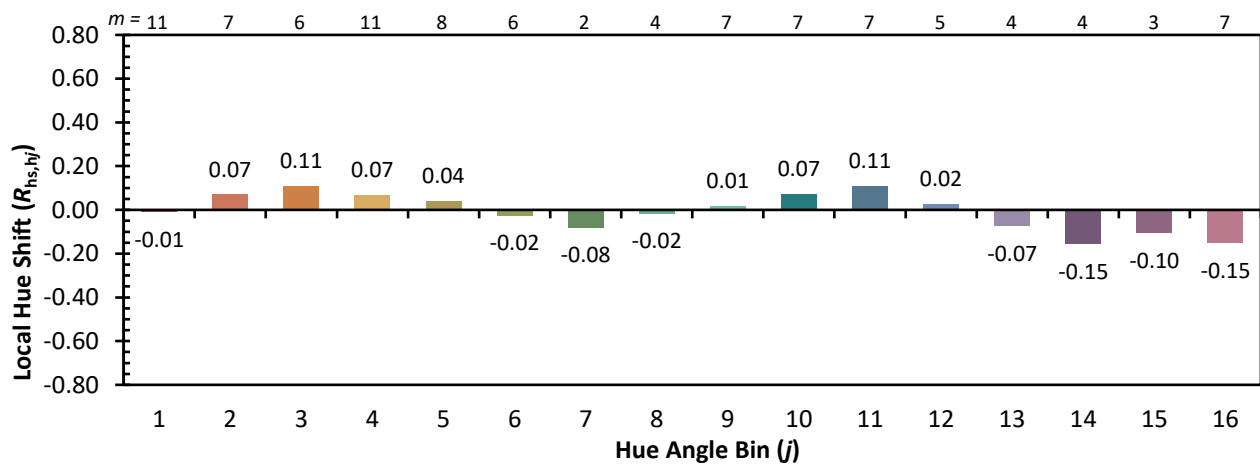
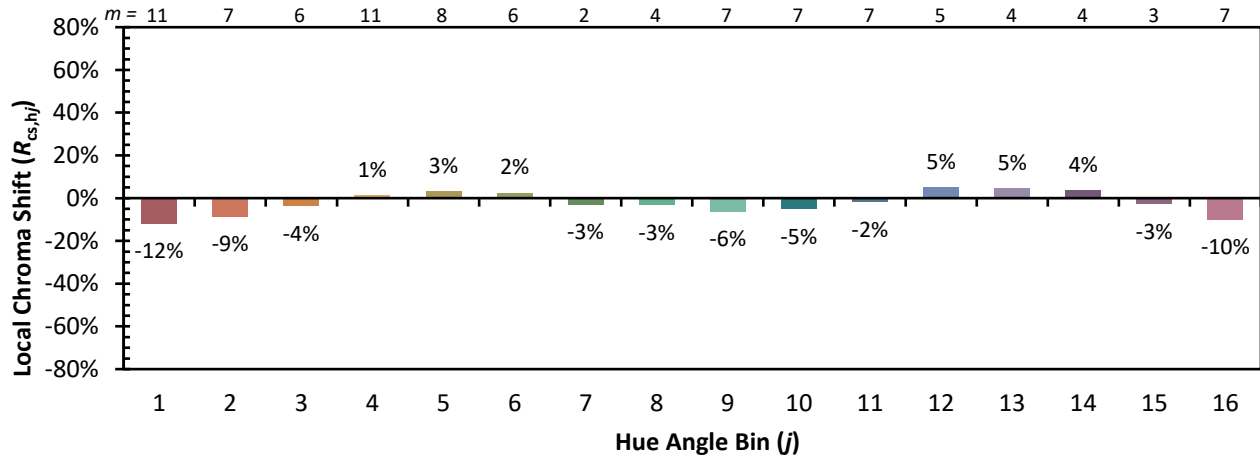


Individual Sample Fidelity Index ($R_{f,i}$)

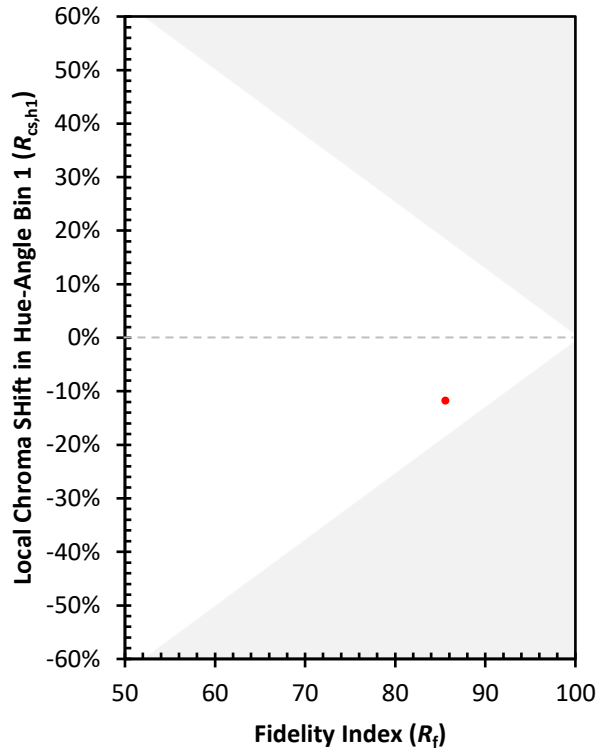
CES01 = 86	CES26 = 84	CES51 = 95	CES76 = 82
CES02 = 63	CES27 = 95	CES52 = 94	CES77 = 86
CES03 = 31	CES28 = 94	CES53 = 90	CES78 = 82
CES04 = 71	CES29 = 85	CES54 = 92	CES79 = 90
CES05 = 50	CES30 = 91	CES55 = 92	CES80 = 90
CES06 = 51	CES31 = 87	CES56 = 87	CES81 = 72
CES07 = 42	CES32 = 82	CES57 = 87	CES82 = 96
CES08 = 41	CES33 = 89	CES58 = 88	CES83 = 94
CES09 = 29	CES34 = 91	CES59 = 92	CES84 = 93
CES10 = 76	CES35 = 96	CES60 = 95	CES85 = 78
CES11 = 59	CES36 = 94	CES61 = 90	CES86 = 67
CES12 = 65	CES37 = 95	CES62 = 97	CES87 = 85
CES13 = 44	CES38 = 98	CES63 = 87	CES88 = 86
CES14 = 74	CES39 = 97	CES64 = 84	CES89 = 75
CES15 = 72	CES40 = 95	CES65 = 79	CES90 = 87
CES16 = 48	CES41 = 95	CES66 = 83	CES91 = 85
CES17 = 50	CES42 = 97	CES67 = 82	CES92 = 66
CES18 = 57	CES43 = 91	CES68 = 84	CES93 = 80
CES19 = 72	CES44 = 99	CES69 = 90	CES94 = 61
CES20 = 67	CES45 = 93	CES70 = 81	CES95 = 76
CES21 = 87	CES46 = 89	CES71 = 81	CES96 = 84
CES22 = 79	CES47 = 91	CES72 = 93	CES97 = 89
CES23 = 92	CES48 = 83	CES73 = 77	CES98 = 85
CES24 = 91	CES49 = 90	CES74 = 93	CES99 = 75
CES25 = 72	CES50 = 95	CES75 = 82	



Color Rendition by Hue-Angle Bin



Measure Comparisons



(END OF REPORT)