

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: P879685

Luminaire Tested: **EMM2-HSN-VA9-830-U-WQ**

Issue Date: 10/01/2024



Test Information

Test Method: LM-79-08
Report Number: P879685
Test Lab: INNOVATION CENTER(G3)
Issue Date: 10/01/2024
Manufacturer: COOPER LIGHTING SOLUTIONS (FORMERLY EATON)
Product Line: INVUE
Catalog Number: EMM2-HSN-VA9-830-U-WQ
Description: EPIC MODERN SHORT HOUSING 9W 80CRI 3000K WAVESTREAM FIXTURE w/
TYPE V WIDE DISTRIBUTION OPTIC
Light Source: (1) 3000K CCT, 80 CRI LEDS
Ballast/Driver: ELECTRONIC DRIVER

Summary

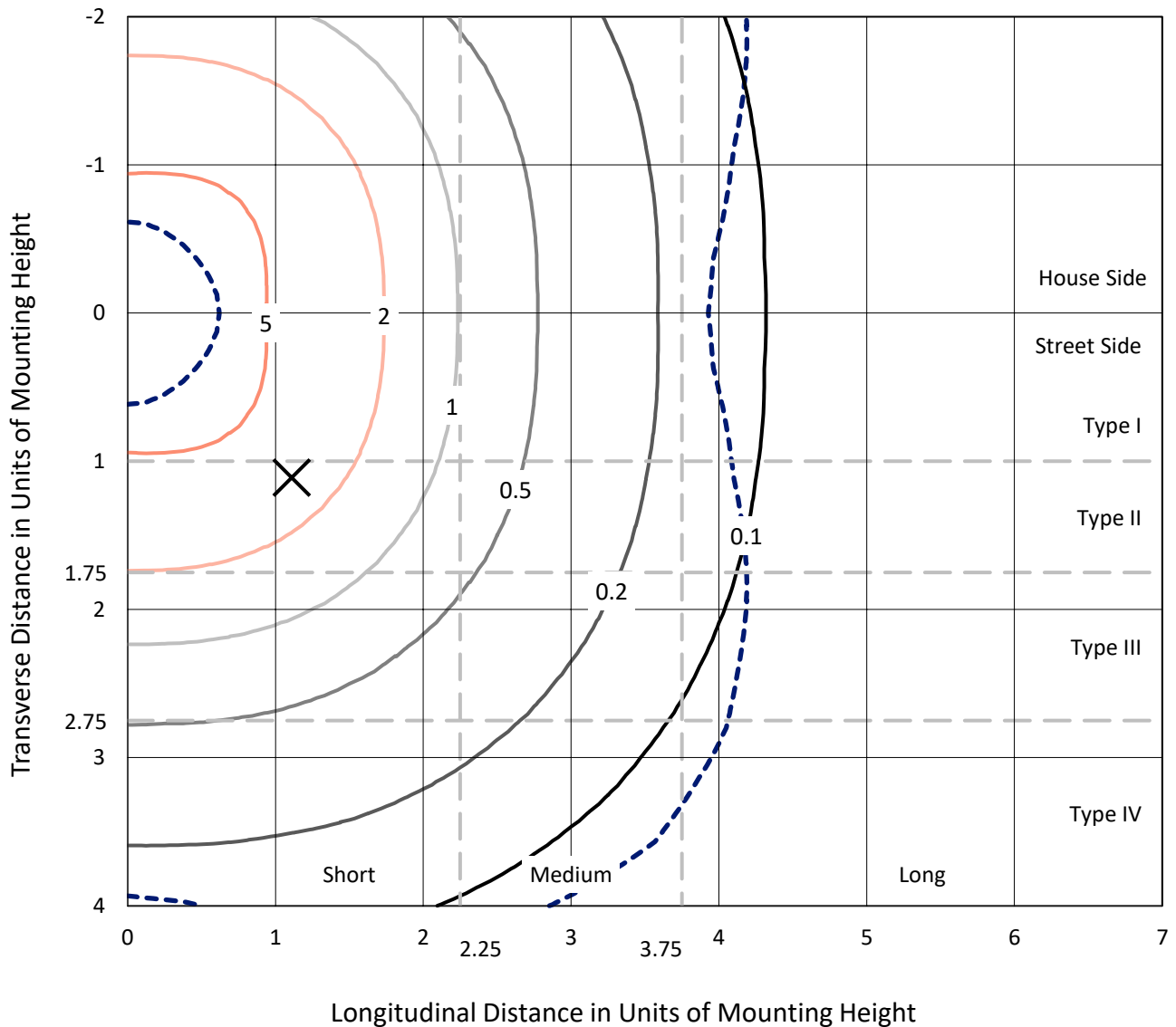
Lumens per Lamp: N/A
Luminaire Lumens: 15989.5 lumens
Efficiency: N/A
Efficacy: 94.1 lumens/watt
Luminous Opening: Circular (Dia: 1.12' x H: 0')
IES Classification: Type V - Short
BUG Rating: B4 - U0 - G3

Input Watts (W): 170
Input Voltage (V): 120
Input Current (Ain): NR
Voltage Rise (V): NR
Power Factor: 0.995
Total Harmonic Distortion (THDi): 5.9%
Frequency (hertz): 60
Stabilization Time: NR
Operation Time: NR
Ambient Temperature (°C): NR
Test Distance: 24 FT

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 CATALOG NUMBER: EMM2-HSN-VA9-830-U-WQ

Iso-Footcandle Lines of Horizontal Illumination

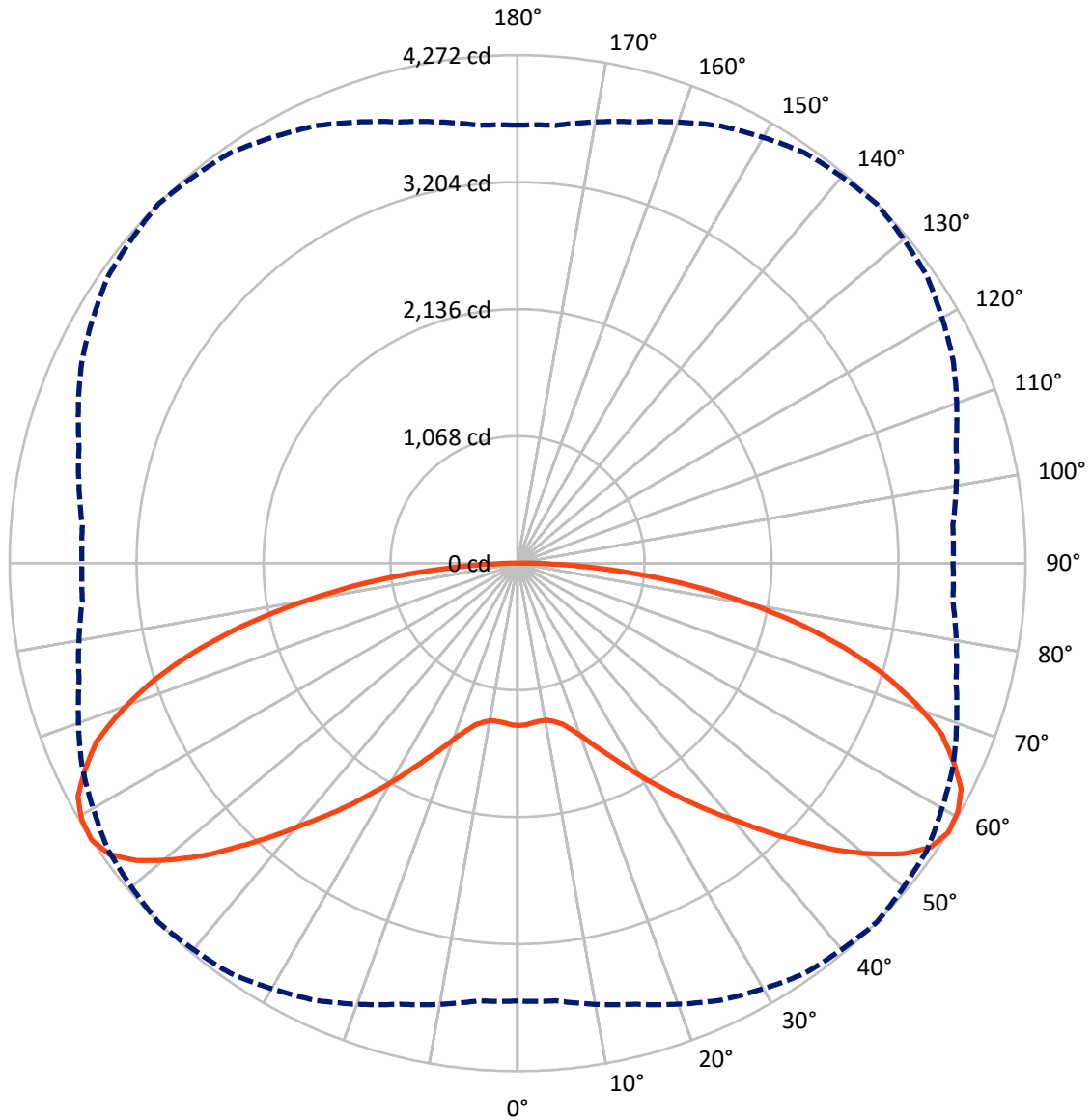
× Max cd
 - - - 1/2 Max cd



Based on 15 foot mounting height. Maximum calculated value = 6.1 fc
 Type V - Short - N/A

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Luminous Intensity Polar Plot



— Vertical Plane Through 45-Deg Lateral - - - Horizontal Cone Through 57.5-Deg Vertical

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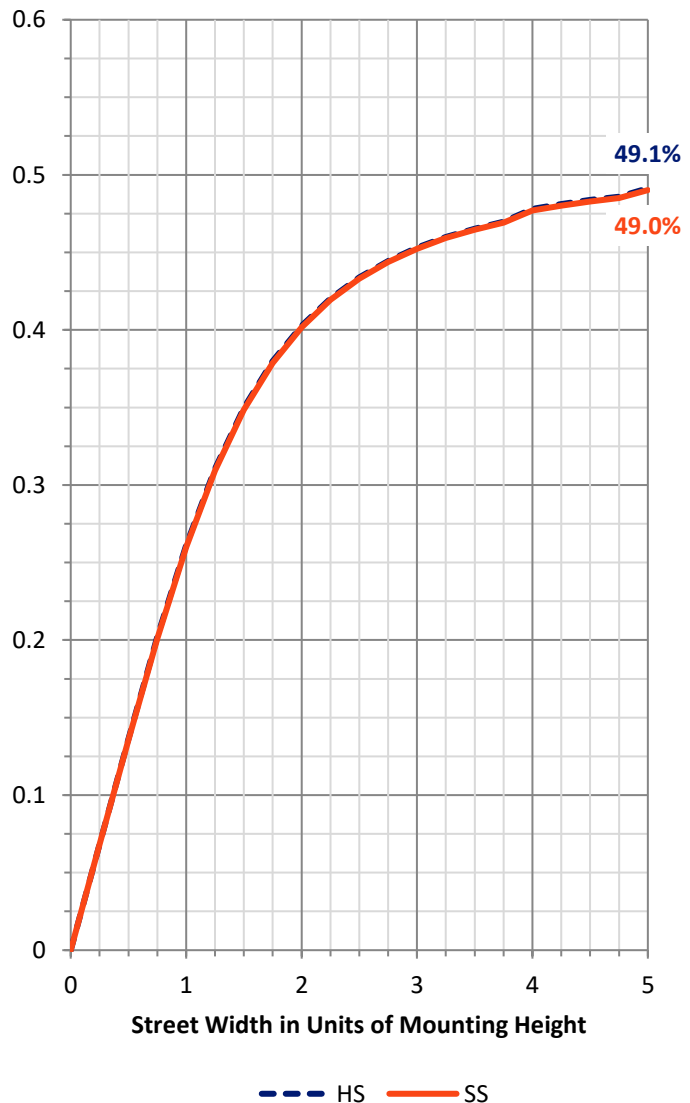
FLUX DISTRIBUTION:

		Downward	Upward	Total
House Side	Lumens	7994.8	0.0	7994.8
	% Fixture	50.0	0.0	50.0
Street Side	Lumens	7994.8	0.0	7994.8
	% Fixture	50.0	0.0	50.0
Total	Lumens	15989.5	0.0	15989.5
	% Fixture	100.0	0.0	100.0

Coefficient of Utilization

ZONAL LUMENS:

Zone	Lumens	% Fixture
0°-10°	128.6	0.8
10°-20°	404.2	2.5
20°-30°	830.8	5.2
30°-40°	1516.0	9.5
40°-50°	2486.1	15.5
50°-60°	3483.6	21.8
60°-70°	3644.3	22.8
70°-80°	2662.6	16.7
80°-90°	833.4	5.2
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°	15989.5	100.0
0°-180°	15989.5	100.0



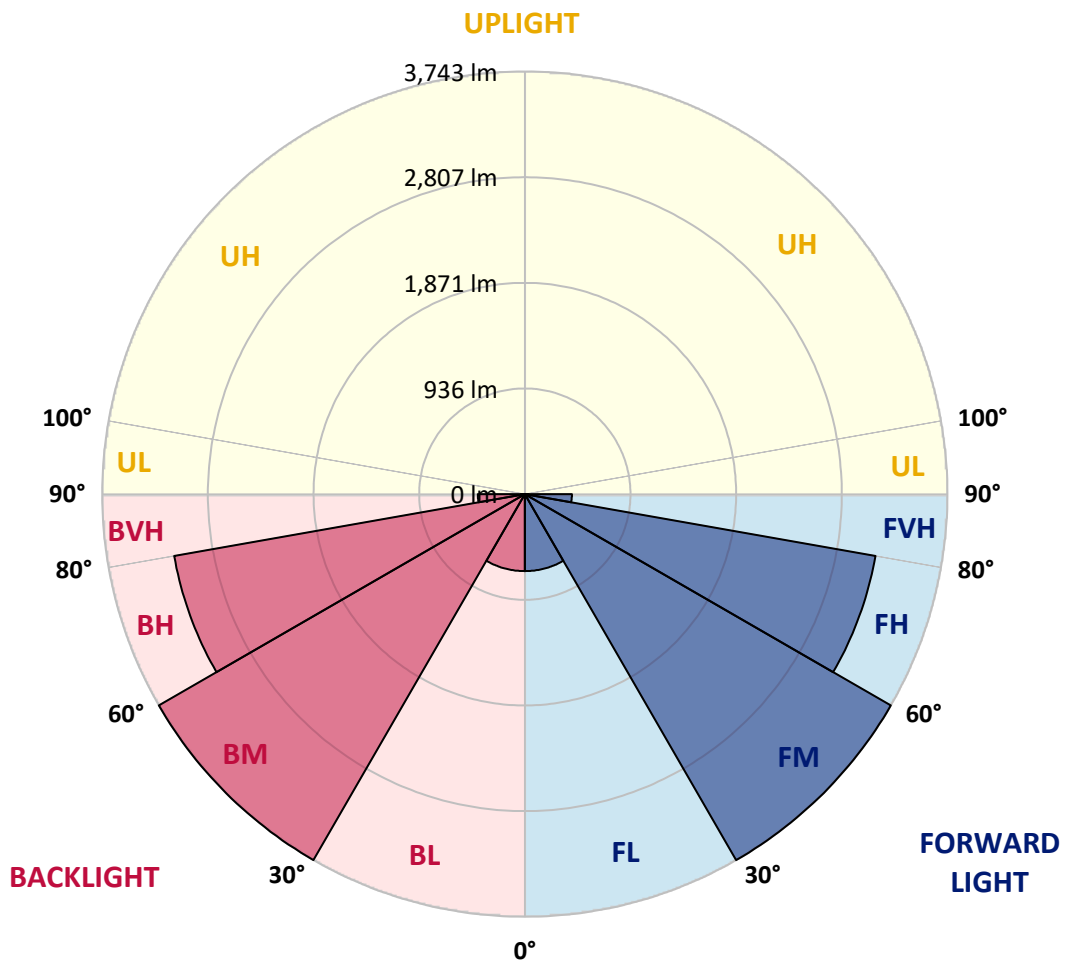
REPORT NUMBER: P879685
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LUMINAIRE CLASSIFICATION SYSTEM LUMEN TABLE AND BUG RATING:

Zone	Lumens	% Fixture	Zone Rating/Lumen Limit		
			B	U	G
FL (0°-30°)	681.8	4.3			
FM (30°-60°)	3742.8	23.4			
FH (60°-80°)	3153.4	19.7			G2/5000
FVH (80°-90°)	416.7	2.6			G3/500
BL (0°-30°)	681.8	4.3	B2/1000		
BM (30°-60°)	3742.8	23.4	B3/5000		
BH (60°-80°)	3153.4	19.7	B4/5000		G2/5000
BVH (80°-90°)	416.7	2.6			G3/500
UL (90°-100°)	0.0	0.0		U0/0	
UH (100°-180°)	0.0	0.0		U0/0	

BUG Rating: B4-U0-G3

Type V Short





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CATALOG NUMBER: EMM2-HSN-VA9-830-U-WQ

CANDELA DISTRIBUTION (FULL):

	0°	5°	15°	25°	35°	45°	55°	65°	75°	85°	90°
0°	1365.2	1365.2	1365.2	1365.2	1365.2	1365.2	1365.2	1365.2	1365.2	1365.2	1365.2
2.5°	1360.2	1362.2	1361.2	1361.2	1360.2	1361.2	1363.2	1364.2	1363.2	1364.2	1363.2
5°	1351.2	1351.2	1350.2	1349.2	1349.2	1349.2	1349.2	1349.2	1350.2	1350.2	1351.2
7.5°	1340.1	1340.1	1340.1	1342.1	1341.1	1342.1	1342.1	1341.1	1340.1	1340.1	1341.1
10°	1342.1	1341.1	1340.1	1342.1	1341.1	1342.1	1342.1	1340.1	1341.1	1342.1	1343.2
12.5°	1359.2	1357.2	1360.2	1363.2	1365.2	1367.2	1366.2	1365.2	1362.2	1359.2	1359.2
15°	1396.2	1394.2	1397.2	1401.2	1402.2	1403.2	1406.3	1402.2	1401.2	1396.2	1395.2
17.5°	1449.3	1448.3	1454.3	1462.3	1466.3	1471.4	1466.3	1462.3	1451.3	1449.3	1452.3
20°	1525.4	1522.4	1534.5	1547.5	1551.5	1557.5	1553.5	1545.5	1534.5	1522.4	1522.4
22.5°	1622.6	1629.6	1635.6	1645.6	1661.7	1671.7	1658.7	1644.6	1628.6	1621.6	1616.6
25°	1748.8	1747.8	1753.8	1773.8	1783.9	1790.9	1788.9	1769.8	1755.8	1745.8	1744.8
27.5°	1870.0	1882.0	1894.0	1907.1	1932.1	1935.1	1932.1	1909.1	1887.0	1879.0	1876.0
30°	2031.3	2029.2	2040.3	2071.3	2096.4	2098.4	2090.3	2062.3	2037.3	2022.2	2024.2
32.5°	2188.5	2172.5	2201.5	2222.6	2243.6	2265.6	2244.6	2222.6	2201.5	2169.5	2179.5
35°	2331.7	2344.8	2360.8	2403.8	2446.9	2455.9	2441.9	2396.8	2355.8	2340.7	2323.7
37.5°	2507.0	2507.0	2534.1	2597.2	2636.2	2650.2	2630.2	2585.1	2528.0	2506.0	2498.0
40°	2683.3	2683.3	2724.4	2777.4	2835.5	2855.6	2833.5	2774.4	2727.4	2670.3	2679.3
42.5°	2854.6	2868.6	2922.7	2987.8	3068.9	3096.0	3064.9	2985.8	2917.7	2863.6	2855.6
45°	3043.9	3065.9	3125.0	3232.2	3301.3	3340.3	3297.3	3229.2	3109.0	3056.9	3028.8
47.5°	3250.2	3265.2	3350.4	3452.5	3564.7	3605.8	3554.7	3443.5	3341.3	3249.2	3245.2
50°	3429.5	3426.5	3535.7	3676.9	3804.1	3843.2	3802.1	3681.9	3515.6	3413.5	3423.5
52.5°	3563.7	3580.7	3695.9	3870.2	4005.4	4062.5	3995.4	3851.2	3677.9	3571.7	3539.7
55°	3650.8	3678.9	3813.1	4001.4	4155.7	4216.8	4150.6	3984.4	3795.1	3657.9	3638.8
57.5°	3682.9	3694.9	3841.1	4054.5	4211.7	4271.8	4203.7	4041.5	3818.1	3674.9	3662.9
60°	3633.8	3645.8	3804.1	4022.4	4202.7	4253.8	4199.7	4009.4	3782.1	3635.8	3615.8
62.5°	3513.6	3546.7	3722.0	3938.3	4144.6	4187.7	4131.6	3923.3	3712.9	3536.7	3507.6
65°	3369.4	3404.5	3553.7	3795.1	3982.4	4028.4	3984.4	3784.1	3554.7	3385.4	3357.4
67.5°	3168.1	3174.1	3349.4	3593.8	3792.1	3848.2	3772.0	3589.7	3340.3	3180.1	3158.1
70°	2916.7	2920.7	3107.0	3333.3	3515.6	3561.7	3511.6	3317.3	3094.0	2919.7	2904.7
72.5°	2594.2	2631.2	2785.5	3009.8	3180.1	3234.2	3169.1	3003.8	2797.5	2625.2	2591.1
75°	2251.6	2274.6	2408.9	2626.2	2772.4	2839.5	2786.5	2626.2	2408.9	2266.6	2236.6
77.5°	1851.0	1882.0	2013.2	2196.5	2317.7	2389.8	2331.7	2189.5	2013.2	1883.0	1882.0
80°	1462.3	1454.3	1573.5	1731.8	1852.0	1894.0	1858.0	1719.8	1561.5	1460.3	1446.3
82.5°	1014.6	1012.6	1141.8	1248.0	1349.2	1397.2	1342.1	1253.0	1130.8	1040.7	1011.6
85°	576.9	589.9	675.1	741.2	827.3	856.4	837.3	753.2	644.0	564.9	559.9
87.5°	200.3	218.3	234.4	282.5	338.5	363.6	336.5	323.5	287.5	249.4	251.4
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

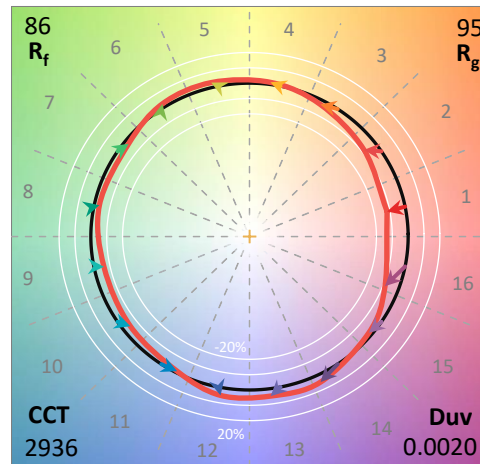
Test Information

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

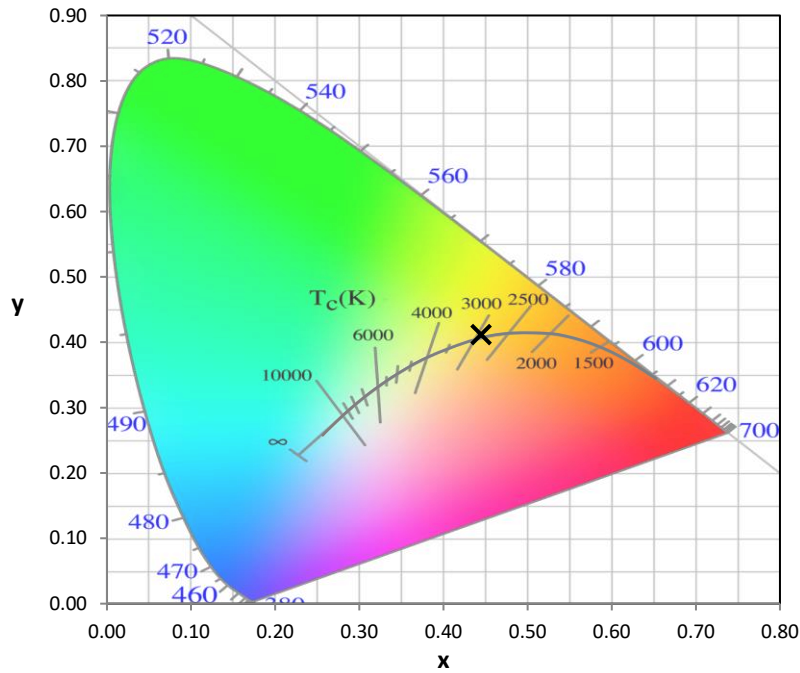
Stabilization Time: 54M
 Operation Time: 1H 54M
 Sphere Temperature (°C): 25.2

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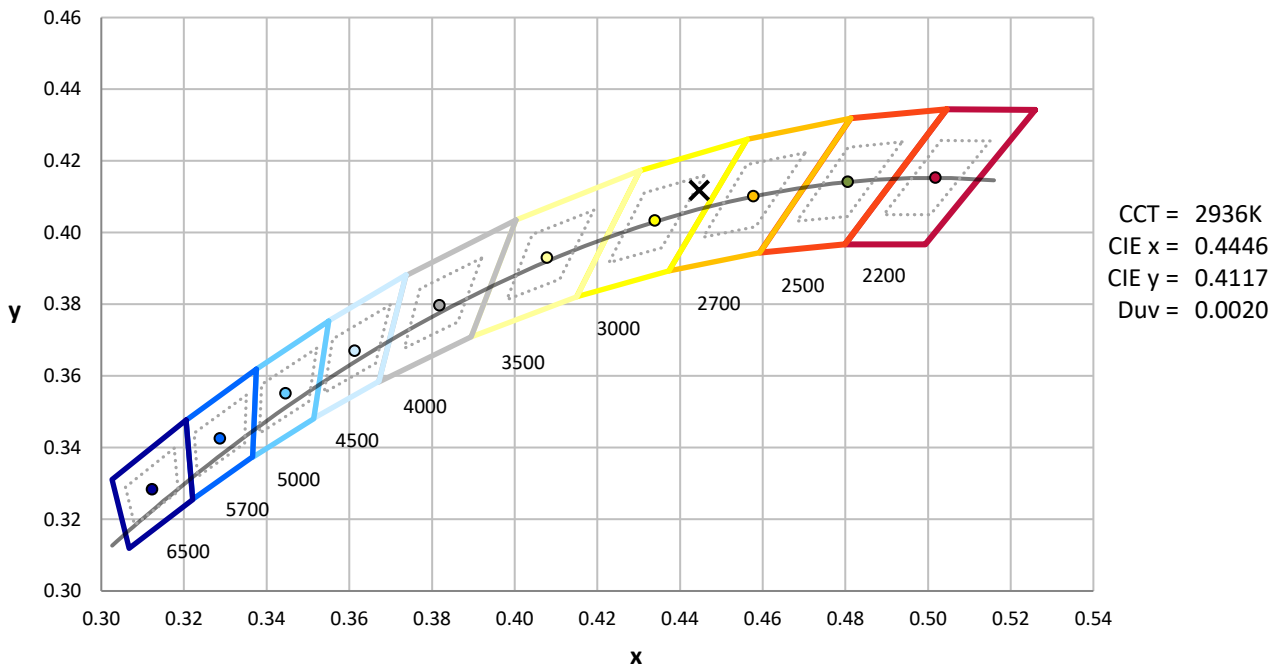
Measurement and Test Equipment			
Instrument	Identification Number	Calibration Date	Calibration Due Date
Photometer	IN0058	6/18/2024	12/18/2024
Power Meter	INXT2011004	2/8/2024	2/8/2025
AC Power Source	IN0063	10/24/2023	10/24/2024
DC Power Source	IN0208	10/24/2023	10/24/2024
Sphere Thermometer	IN0085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

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CIE 1931 Chromaticity Diagram



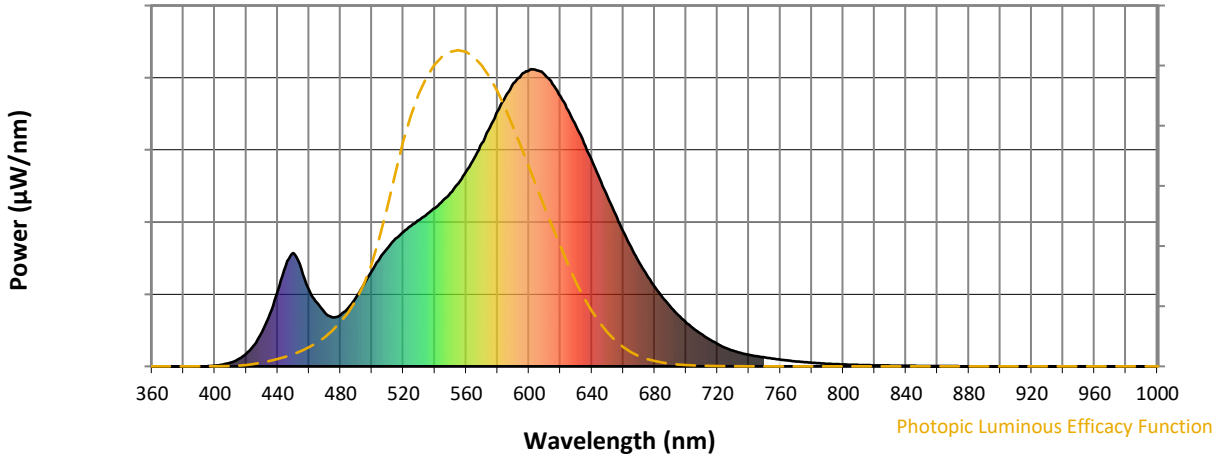
CIE 1931 Chromaticity Diagram with 2017 ANSI 7-Step and 4-Step Quadrangles



Point lies inside the ANSI 3000K 7-step quadrangle

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Photopic Flux vs. Wavelength

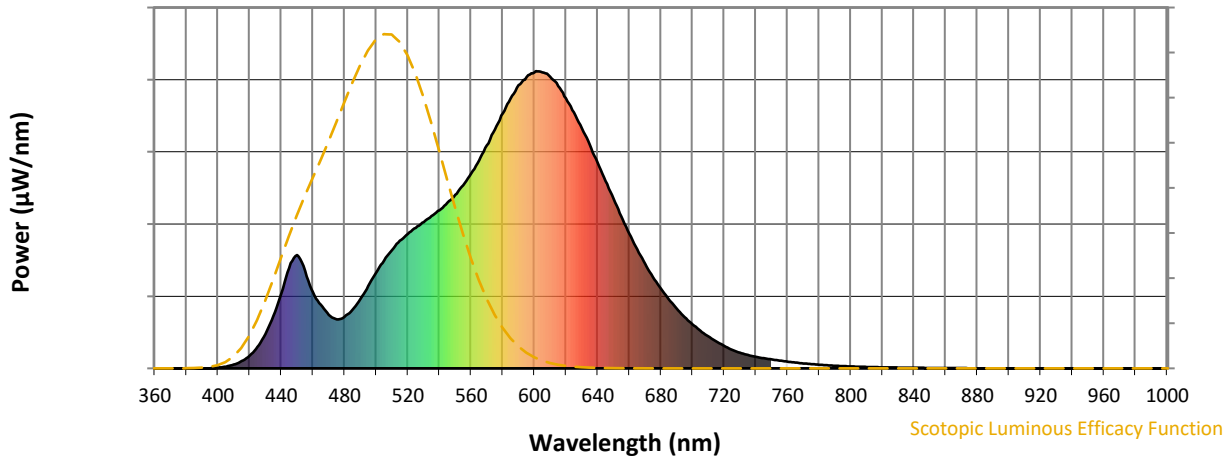


Photopic Lumens: NR

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



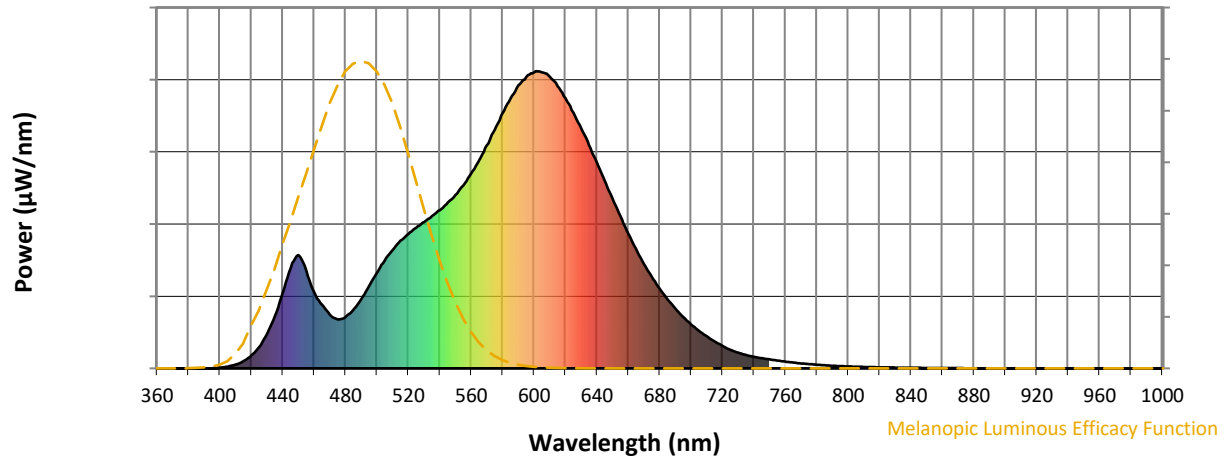
Scotopic Lumens: NR

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



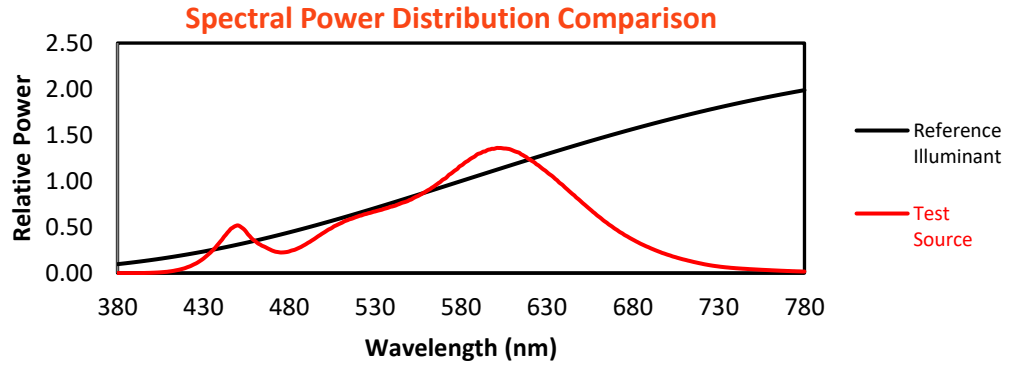
Melanopic Lumens: NR

M/P: 2.46

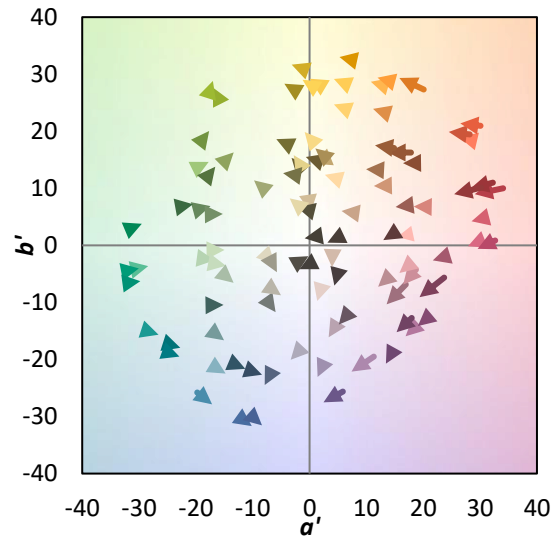
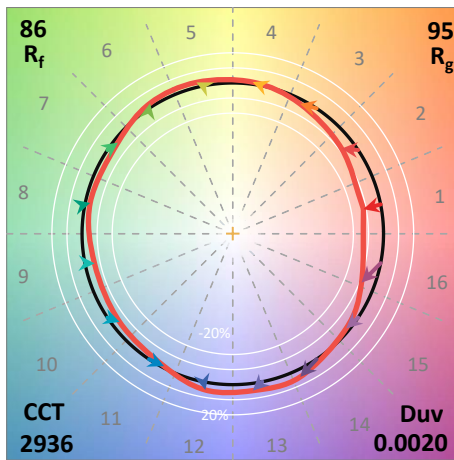
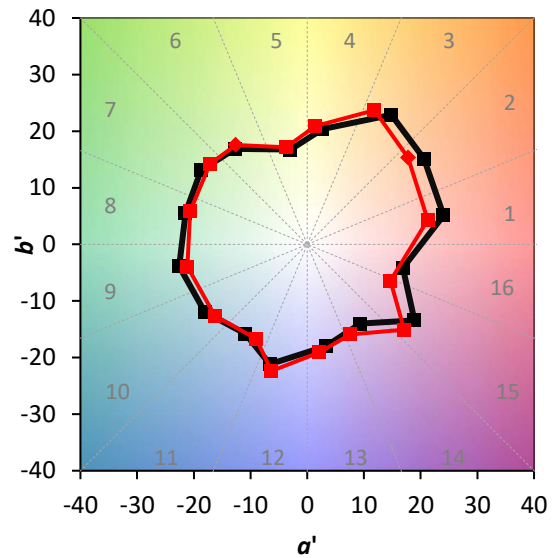
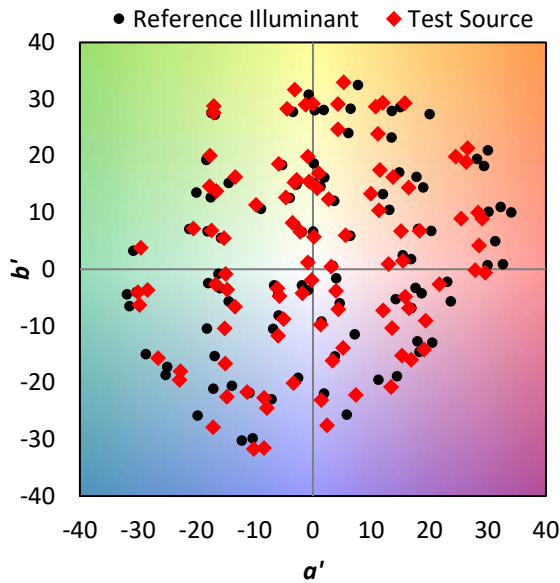
λ (nm)	Power W [^] /nm	Lumens (φ/nm)	λ (nm)	Power W [^] /nm	Lumens (φ/nm)	λ (nm)	Power W [^] /nm	Lumens (φ/nm)	λ (nm)	Power W [^] /nm	Lumens (φ/nm)	λ (nm)	Power W [^] /nm	Lumens (φ/nm)
360	0	NR	490	234	NR	620	908	NR	750	30	NR	880	0	NR
365	0	NR	495	276	NR	625	861	NR	755	26	NR	885	0	NR
370	0	NR	500	322	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 $R_a = 82.0$
 $R_9 = 1.5$

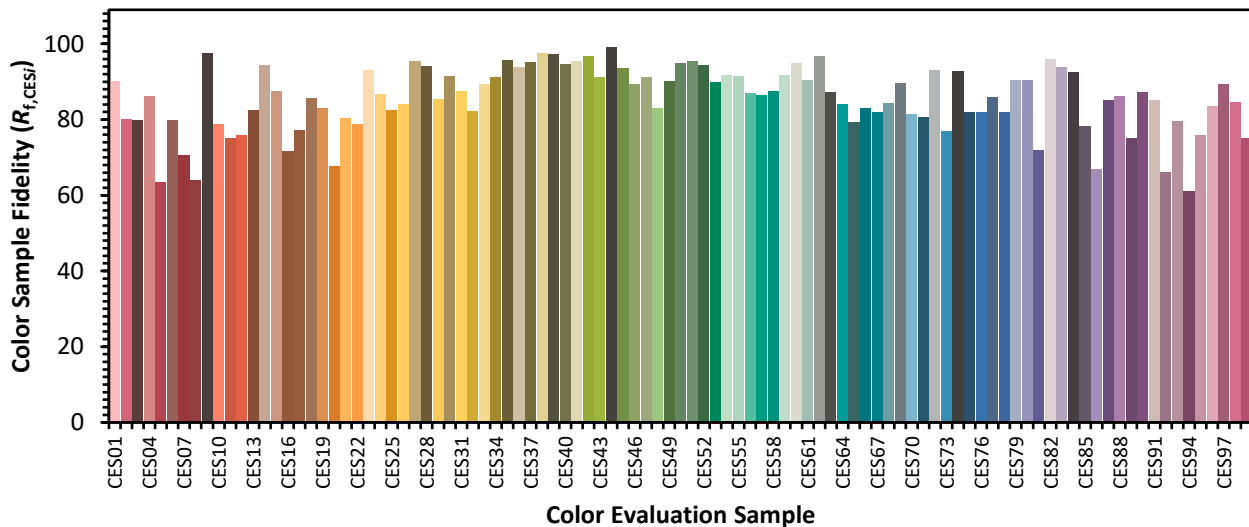


Color Vector Graphics

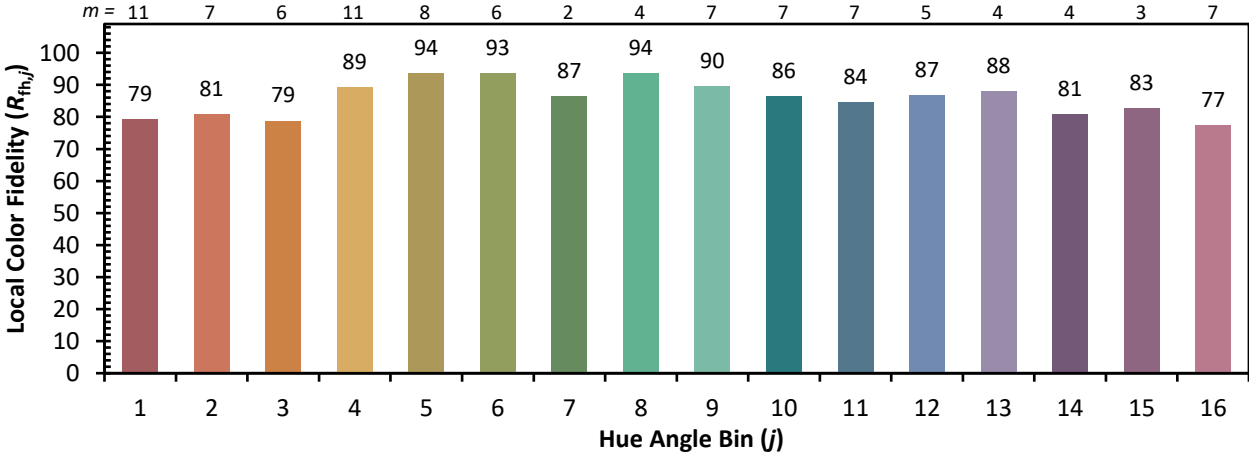
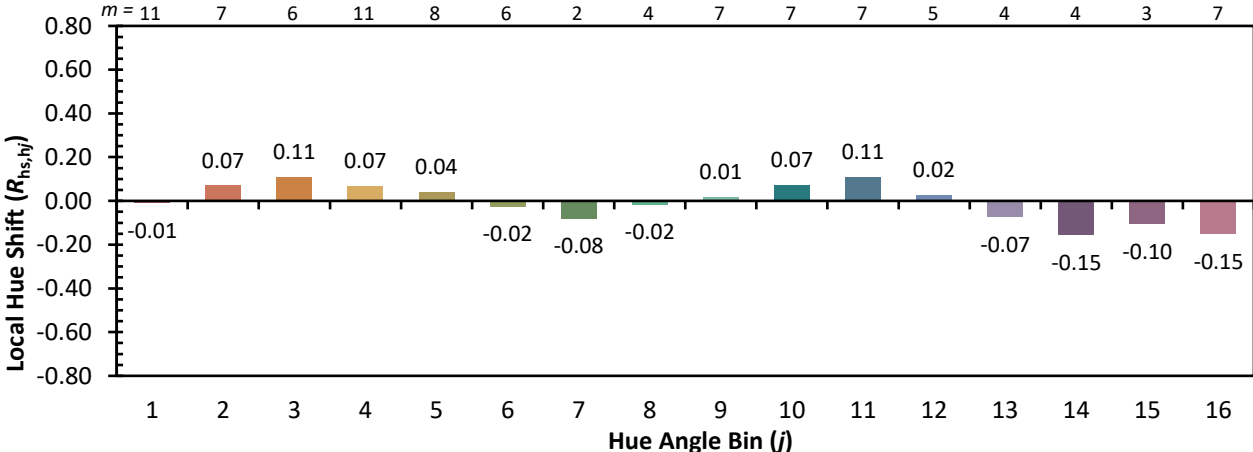
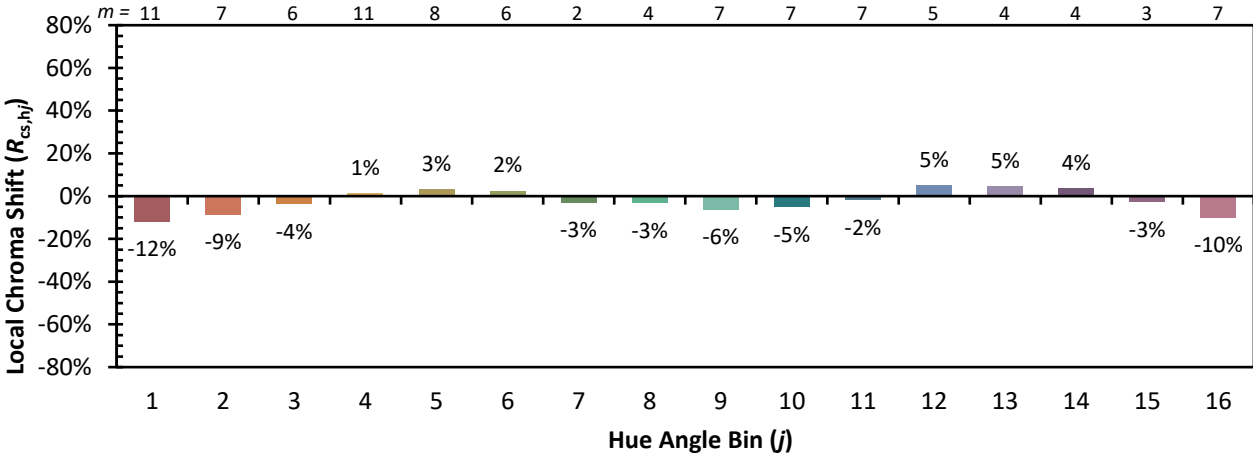


Individual Sample Fidelity Index ($R_{f,i}$)

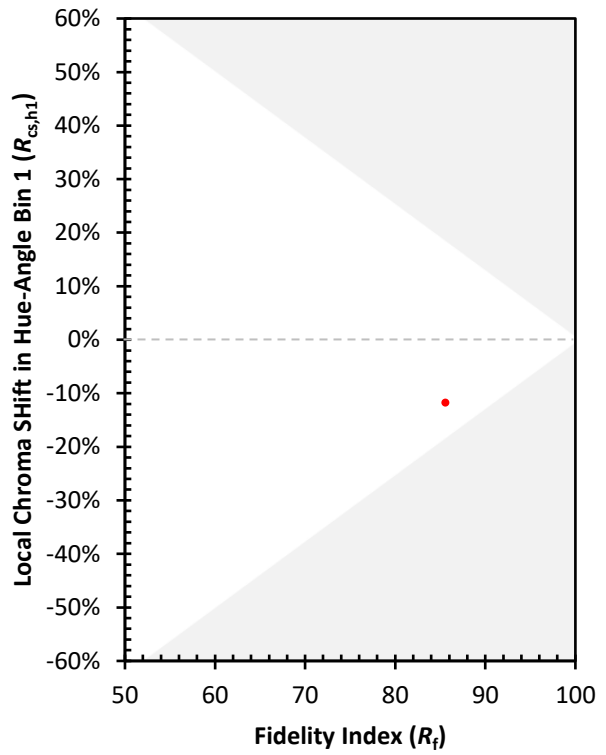
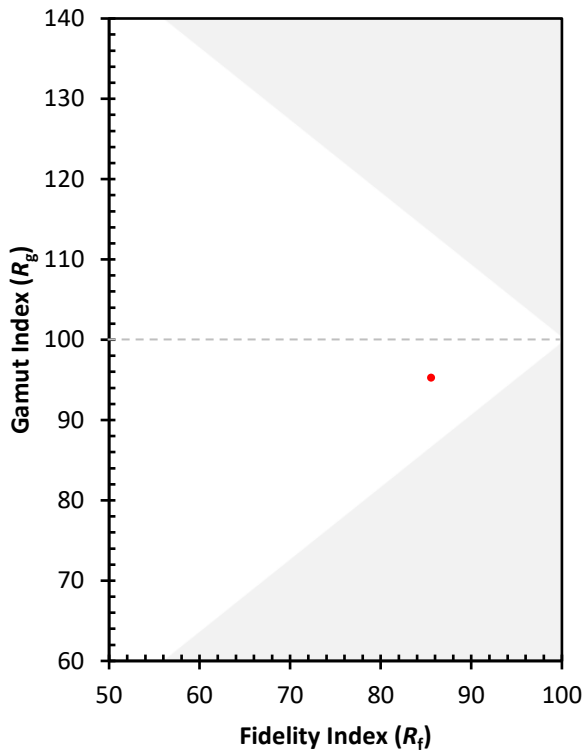
CES01 = 86	CES26 = 84	CES51 = 95	CES76 = 82
CES02 = 63	CES27 = 95	CES52 = 94	CES77 = 86
CES03 = 31	CES28 = 94	CES53 = 90	CES78 = 82
CES04 = 71	CES29 = 85	CES54 = 92	CES79 = 90
CES05 = 50	CES30 = 91	CES55 = 92	CES80 = 90
CES06 = 51	CES31 = 87	CES56 = 87	CES81 = 72
CES07 = 42	CES32 = 82	CES57 = 87	CES82 = 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)