

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: P879754

Luminaire Tested: **EMM2-HSN-VA9-750-U-CQ**

Issue Date: 10/01/2024



**Test Information**

Test Method: LM-79-08  
Report Number: P879754  
Test Lab: INNOVATION CENTER(G3)  
Issue Date: 10/01/2024  
Manufacturer: COOPER LIGHTING SOLUTIONS (FORMERLY EATON)  
Product Line: INVUE  
Catalog Number: EMM2-HSN-VA9-750-U-CQ  
Description: EPIC MODERN SHORT HOUSING 9W 70CRI 5000K WAVESTREAM FIXTURE w/  
TYPE V CONCENTRATED DISTRIBUTION OPTIC  
Light Source: (1) 5000K CCT, 70 CRI LEDS  
Ballast/Driver: ELECTRONIC DRIVER

**Summary**

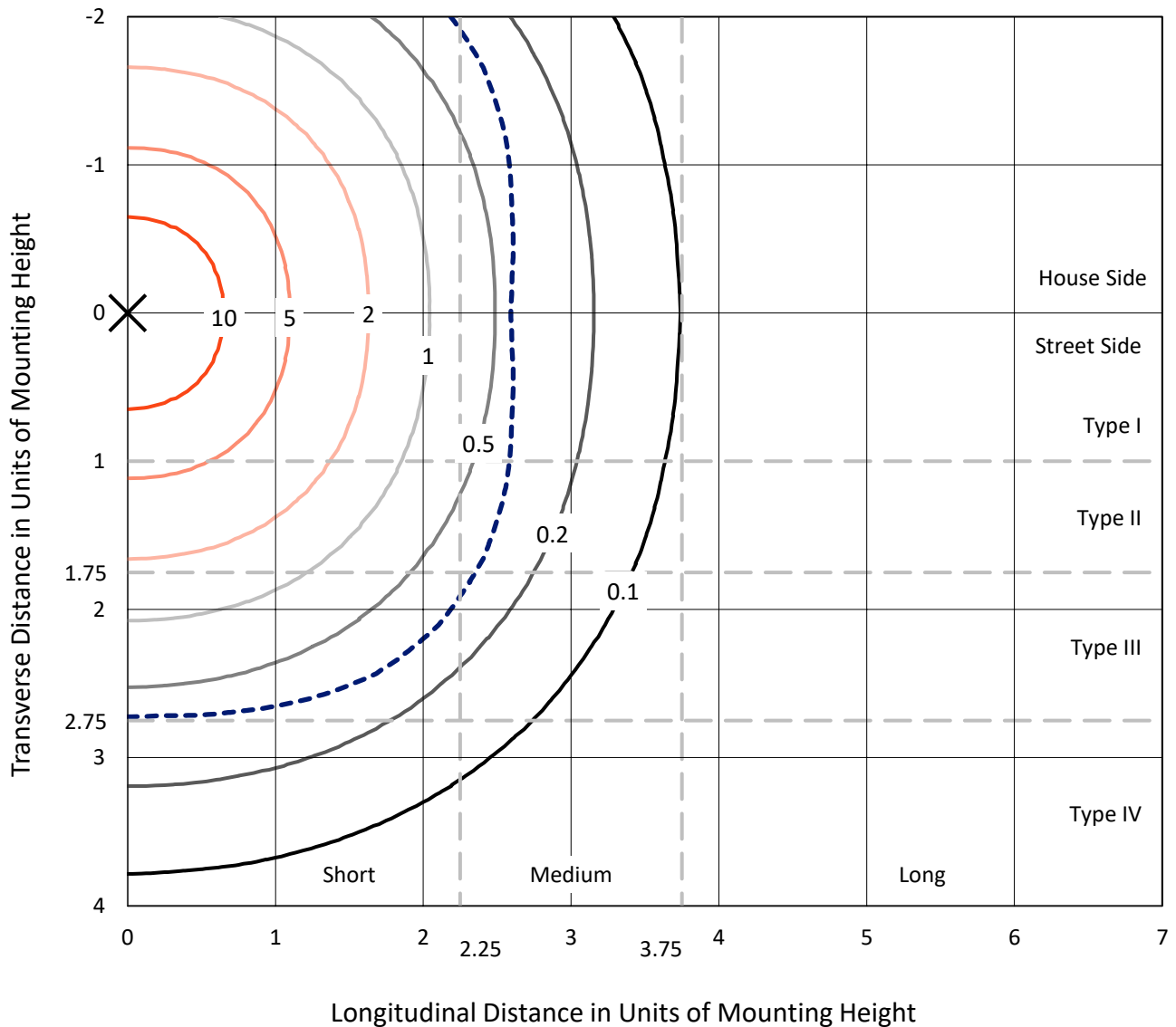
Lumens per Lamp: N/A  
Luminaire Lumens: 16479.1 lumens  
Efficiency: N/A  
Efficacy: 96.9 lumens/watt  
Luminous Opening: Circular (Dia: 1.12' x H: 0')  
IES Classification: Type V - Short  
BUG Rating: B3 - U0 - G2

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

REPORT NUMBER: P879754  
 CATALOG NUMBER: EMM2-HSN-VA9-750-U-CQ

### Iso-Footcandle Lines of Horizontal Illumination

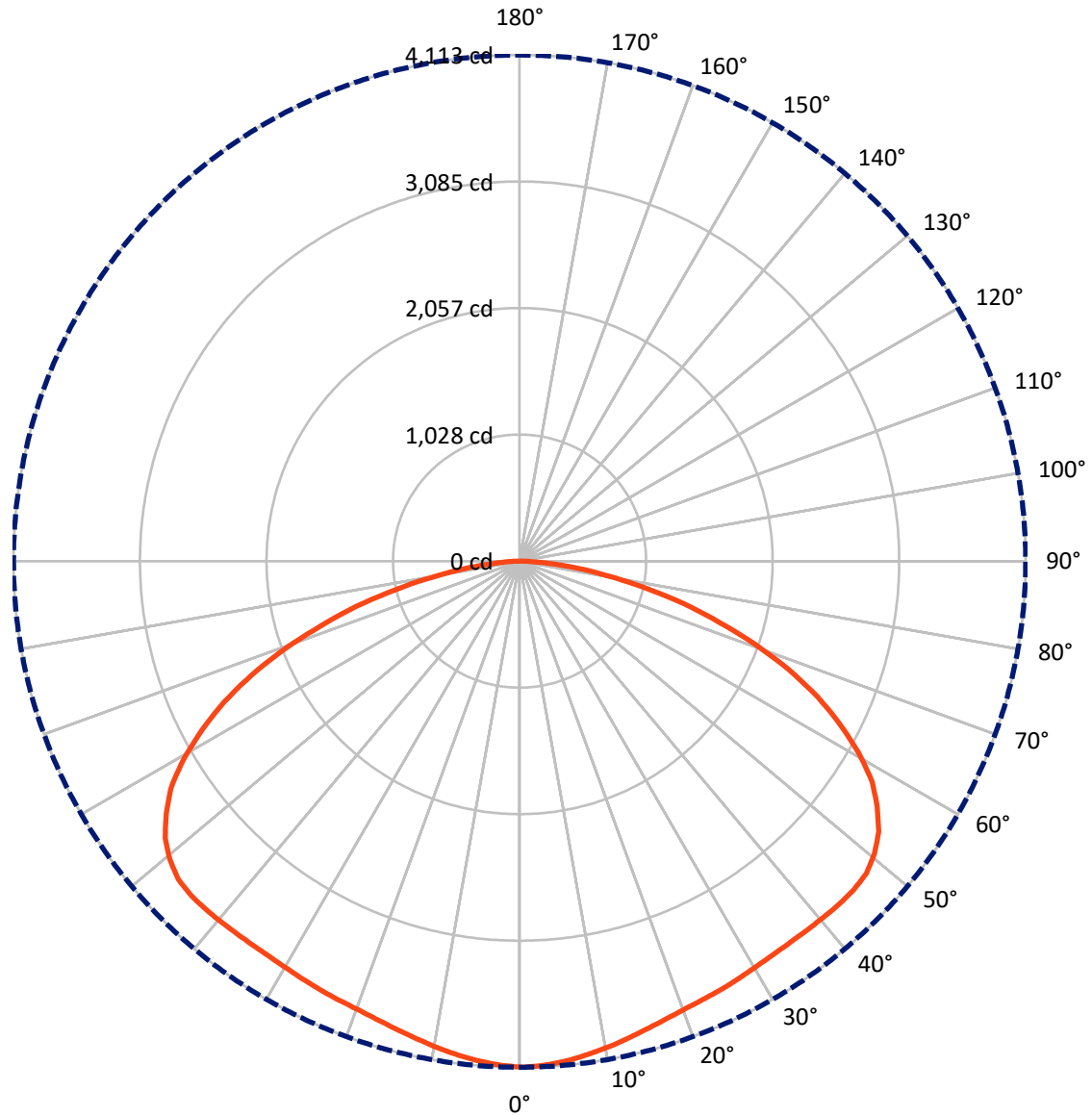
✕ Max cd  
 - - - 1/2 Max cd



Based on 15 foot mounting height. Maximum calculated value = 18.3 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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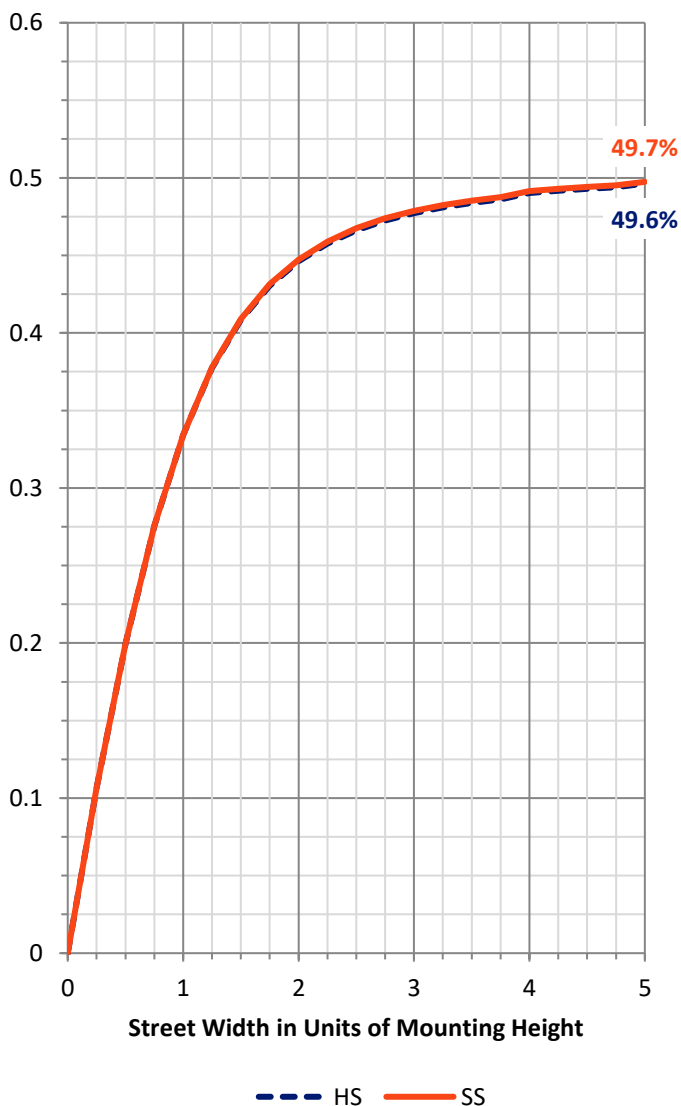
**FLUX DISTRIBUTION:**

		Downward	Upward	Total
<b>House Side</b>	Lumens	8239.5	0.0	8239.5
	% Fixture	50.0	0.0	50.0
<b>Street Side</b>	Lumens	8239.5	0.0	8239.5
	% Fixture	50.0	0.0	50.0
<b>Total</b>	Lumens	16479.1	0.0	16479.1
	% Fixture	100.0	0.0	100.0

**Coefficient of Utilization**

**ZONAL LUMENS:**

Zone	Lumens	% Fixture
0°-10°	387.6	2.4
10°-20°	1118.4	6.8
20°-30°	1790.7	10.9
30°-40°	2425.7	14.7
40°-50°	2995.6	18.2
50°-60°	3218.5	19.5
60°-70°	2706.5	16.4
70°-80°	1511.3	9.2
80°-90°	324.7	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°	16479.1	100.0
0°-180°	16479.1	100.0



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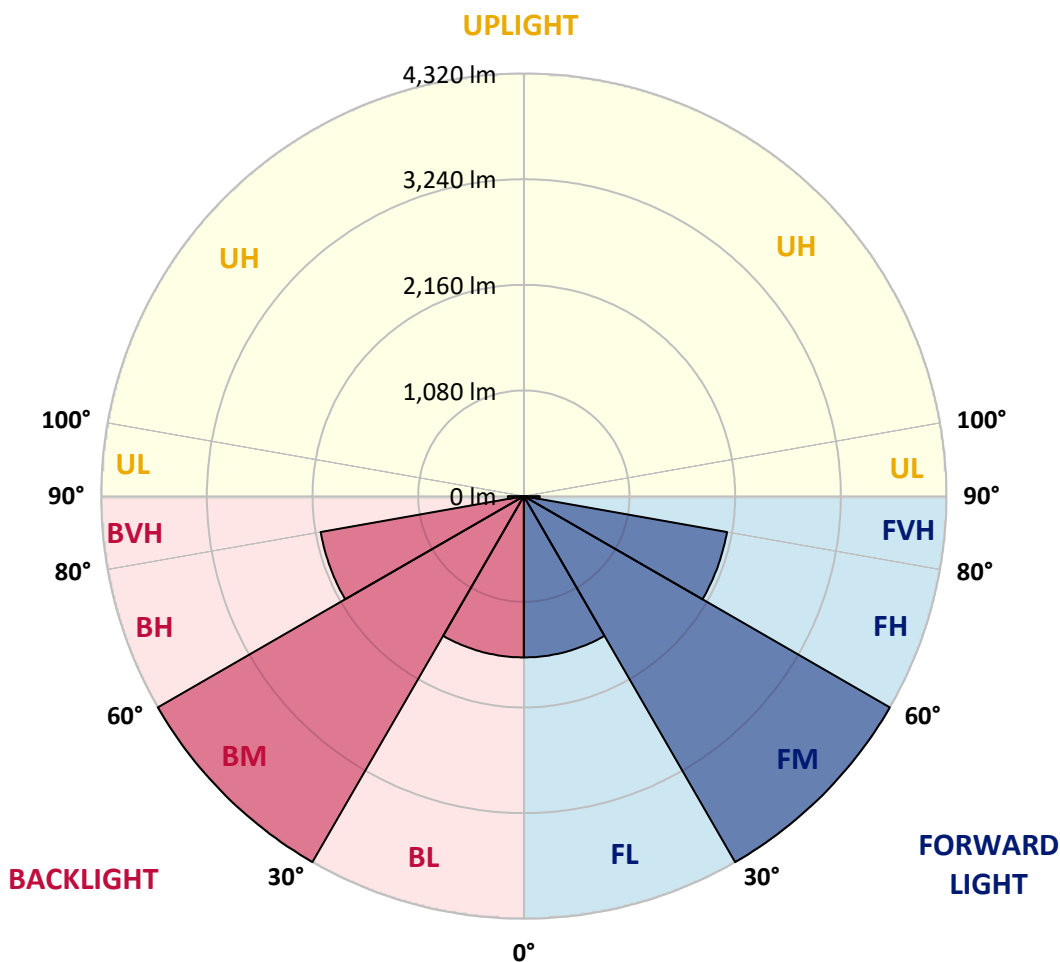
CATALOG NUMBER: EMM2-HSN-VA9-750-U-CQ

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

Zone	Lumens	% Fixture	Zone Rating/Lumen Limit		
			B	U	G
FL (0°-30°)	1648.4	10.0			
FM (30°-60°)	4319.9	26.2			
FH (60°-80°)	2108.9	12.8			G2/5000
FVH (80°-90°)	162.4	1.0			G2/225
BL (0°-30°)	1648.4	10.0	B3/2500		
BM (30°-60°)	4319.9	26.2	B3/5000		
BH (60°-80°)	2108.9	12.8	B3/2500		G2/5000
BVH (80°-90°)	162.4	1.0			G2/225
UL (90°-100°)	0.0	0.0		U0/0	
UH (100°-180°)	0.0	0.0		U0/0	

**BUG Rating: B3-U0-G2**

Type V Short





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**CANDELA DISTRIBUTION (FULL):**

	0°	5°	15°	25°	35°	45°	55°	65°	75°	85°	90°
0°	4113.4	4113.4	4113.4	4113.4	4113.4	4113.4	4113.4	4113.4	4113.4	4113.4	4113.4
2.5°	4101.1	4105.2	4104.2	4104.2	4104.2	4106.2	4106.2	4106.2	4107.2	4107.2	4108.3
5°	4077.6	4080.7	4080.7	4080.7	4082.7	4083.7	4083.7	4084.8	4086.8	4085.8	4084.8
7.5°	4045.9	4049.0	4049.0	4049.0	4051.0	4053.1	4053.1	4052.1	4055.1	4055.1	4054.1
10°	4012.2	4013.2	4014.3	4016.3	4019.4	4020.4	4019.4	4019.4	4018.4	4019.4	4019.4
12.5°	3972.4	3977.5	3978.5	3980.5	3985.7	3986.7	3986.7	3985.7	3984.6	3984.6	3983.6
15°	3936.6	3938.7	3941.7	3945.8	3951.9	3954.0	3955.0	3951.9	3948.9	3947.9	3948.9
17.5°	3903.9	3907.0	3911.1	3915.2	3923.3	3927.4	3927.4	3923.3	3919.2	3917.2	3917.2
20°	3877.4	3880.4	3885.5	3891.7	3902.9	3908.0	3906.0	3901.9	3894.7	3891.7	3892.7
22.5°	3860.0	3864.1	3868.2	3877.4	3889.6	3895.7	3893.7	3886.6	3878.4	3873.3	3873.3
25°	3845.7	3848.7	3854.9	3867.1	3880.4	3887.6	3884.5	3875.3	3864.1	3857.9	3856.9
27.5°	3829.3	3833.4	3841.6	3857.9	3874.3	3880.4	3878.4	3865.1	3851.8	3843.6	3841.6
30°	3814.0	3818.1	3829.3	3847.7	3868.2	3877.4	3872.2	3857.9	3841.6	3831.4	3830.4
32.5°	3803.8	3808.9	3822.2	3845.7	3870.2	3883.5	3878.4	3861.0	3839.6	3826.3	3825.2
35°	3799.7	3804.8	3824.2	3852.8	3883.5	3901.9	3894.7	3873.3	3846.7	3830.4	3828.3
37.5°	3800.7	3806.9	3831.4	3869.2	3908.0	3927.4	3918.2	3890.6	3856.9	3834.4	3831.4
40°	3804.8	3812.0	3843.6	3890.6	3936.6	3955.0	3940.7	3899.8	3853.9	3822.2	3816.1
42.5°	3809.9	3821.2	3860.0	3915.2	3963.2	3978.5	3953.0	3892.7	3828.3	3787.4	3782.3
45°	3808.9	3818.1	3863.1	3928.4	3979.5	3987.7	3945.8	3870.2	3794.6	3741.5	3737.4
47.5°	3791.5	3800.7	3851.8	3924.4	3974.4	3976.5	3926.4	3839.6	3750.7	3689.4	3683.2
50°	3737.4	3749.6	3806.9	3886.6	3942.7	3943.8	3888.6	3792.6	3689.4	3617.8	3607.6
52.5°	3654.6	3663.8	3730.2	3816.1	3879.4	3887.6	3827.3	3715.9	3598.4	3521.8	3514.7
55°	3525.9	3544.3	3614.8	3704.7	3774.2	3783.4	3723.1	3602.5	3482.0	3394.1	3385.9
57.5°	3376.7	3379.8	3454.4	3552.5	3625.0	3635.2	3569.8	3447.2	3321.6	3239.8	3219.4
60°	3166.3	3178.5	3249.0	3345.0	3421.7	3435.0	3372.6	3254.1	3123.3	3030.4	3029.3
62.5°	2923.1	2937.4	3008.9	3111.1	3188.7	3202.0	3135.6	3020.1	2889.4	2809.7	2781.1
65°	2659.5	2663.6	2735.1	2836.2	2906.7	2913.9	2861.8	2752.5	2617.6	2535.9	2517.5
67.5°	2363.2	2367.3	2422.5	2517.5	2593.1	2603.3	2550.2	2450.0	2328.5	2242.6	2233.4
70°	2035.2	2036.3	2090.4	2168.0	2243.7	2265.1	2217.1	2121.1	2004.6	1936.1	1917.7
72.5°	1689.9	1699.1	1747.1	1827.8	1892.2	1897.3	1858.5	1775.7	1680.7	1624.5	1614.3
75°	1374.2	1368.1	1408.9	1458.0	1508.0	1524.4	1492.7	1436.5	1348.6	1299.6	1309.8
77.5°	1031.9	1034.0	1065.6	1110.6	1142.3	1170.9	1135.1	1108.5	1038.0	981.9	983.9
80°	729.5	727.5	757.1	778.5	814.3	818.4	799.0	763.2	718.3	694.8	692.7
82.5°	461.8	452.6	475.1	502.7	518.0	510.9	514.9	491.4	455.7	443.4	432.2
85°	236.0	234.0	246.2	256.4	267.7	267.7	261.6	243.2	236.0	221.7	217.6
87.5°	80.7	83.8	87.9	84.8	89.9	87.9	85.8	72.5	64.4	60.3	56.2
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: SP1-2407-176-10

Test Date: 09/25/2024

Luminaire Tested: MEM2-HTN-VA-130-750-U-RW

Data in this report applies to families of products including MEM2-HTN-VA-130-750-U-RW



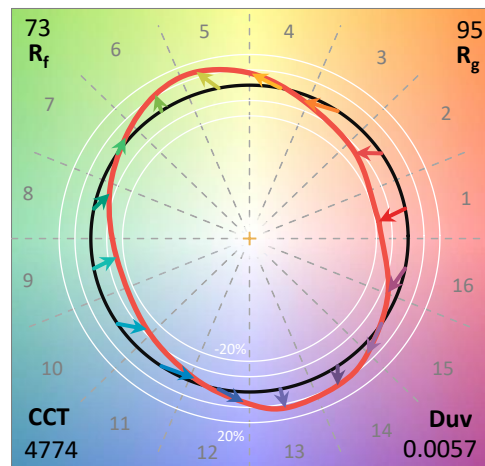
**Test Information**

Test Method: LM-79-2019  
 Report Number: SP1-2407-176-10  
 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-130-750-U-RW**  
 Description: EPIC MODERN VISUAL COMFORT 130W WAVESTREAM RECTANGULAR WIDE

**Spectral Parameters**

CCT (K): 4774  
 CIE u': 0.2100  
 CIE v': 0.4945  
 Duv: 0.0057  
 CIE x: 0.3535  
 CIE y: 0.3699  
 CIE z: 0.2766  
 Peak Wavelength (nm): 444  
 Dominant Wavelength (nm): 571  
 Purity: 17.0787  
 R<sub>f</sub>: 73.1  
 R<sub>g</sub>: 94.9

CRI (Ra):	70.8		
R1:	67.0	R9:	-40.0
R2:	75.4	R10:	43.4
R3:	83.5	R11:	69.3
R4:	71.8	R12:	45.5
R5:	68.4	R13:	67.9
R6:	67.5	R14:	90.8
R7:	80.0	R15:	58.2
R8:	53.1		



**Test Conditions**

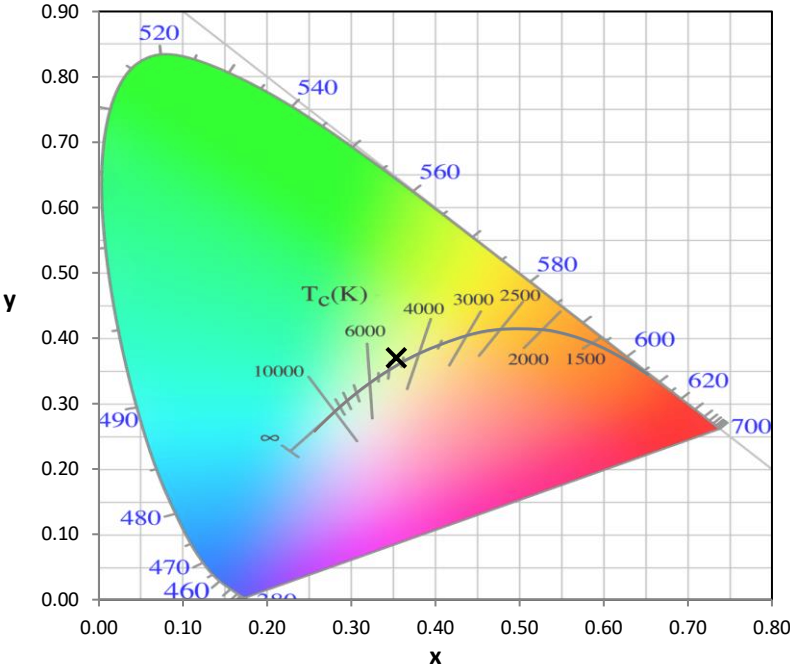
Stabilization Time: 37M  
 Operation Time: 1H 37M  
 Sphere Temperature (°C): 25.2

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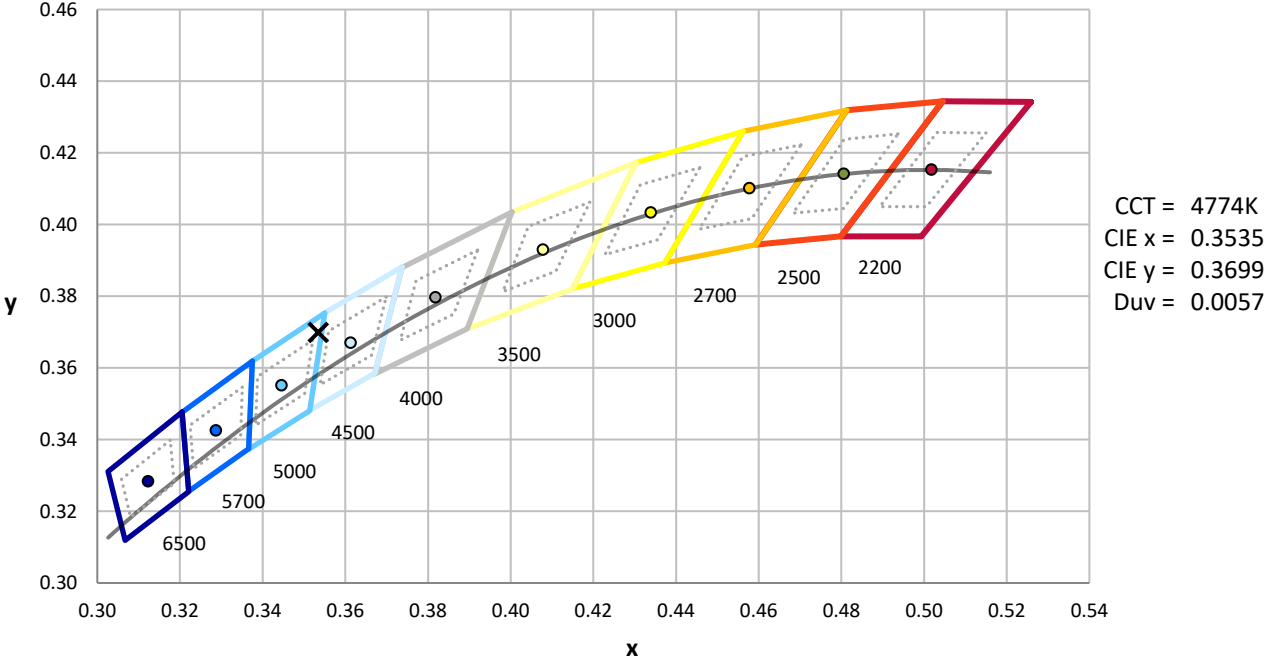
Measurement and Test Equipment			
Instrument	Identification Number	Calibration Date	Calibration Due Date
Photometer	IN0058	6/18/2024	12/18/2024
Power Meter	INXT2011004	2/8/2024	2/8/2025
AC Power Source	IN0063	10/24/2023	10/24/2024
DC Power Source	IN0208	10/24/2023	10/24/2024
Sphere Thermometer	IN0085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

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**CIE 1931 Chromaticity Diagram**



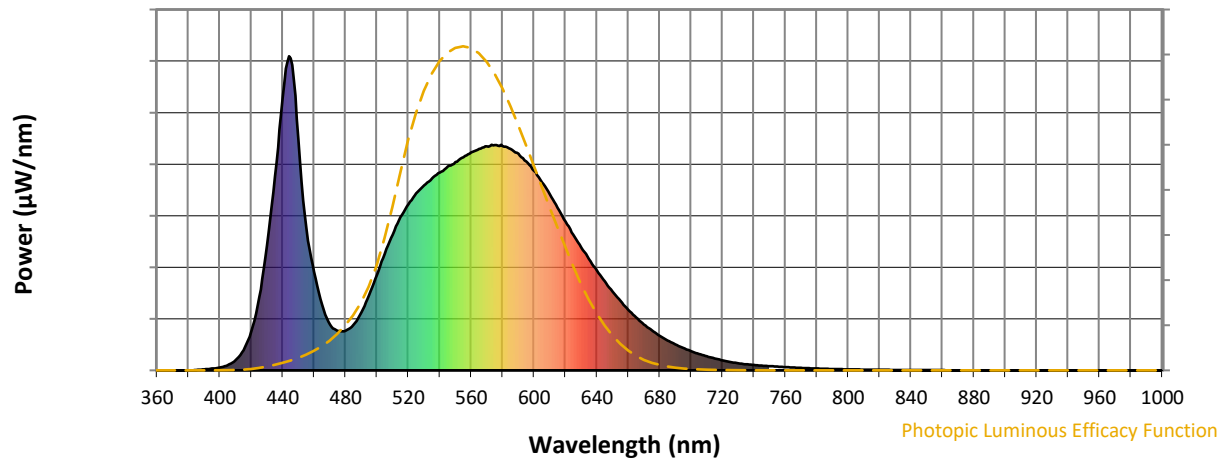
**CIE 1931 Chromaticity Diagram with 2017 ANSI 7-Step and 4-Step Quadrangles**



Point lies inside the ANSI 5000K 7-step quadrangle

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**Photopic Flux vs. Wavelength**

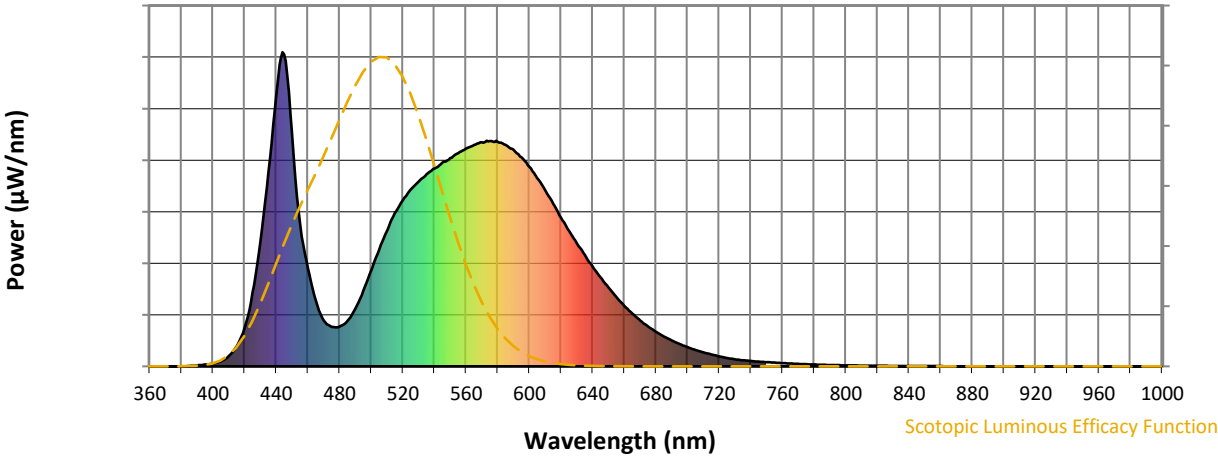


**Photopic Lumens: NR**

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	184	NR	620	474	NR	750	13	NR	880	0	NR
365	0	NR	495	239	NR	625	432	NR	755	12	NR	885	0	NR
370	0	NR	500	305	NR	630	392	NR	760	10	NR	890	0	NR
375	0	NR	505	371	NR	635	354	NR	765	9	NR	895	0	NR
380	0	NR	510	432	NR	640	318	NR	770	8	NR	900	0	NR
385	1	NR	515	488	NR	645	283	NR	775	7	NR	905	0	NR
390	3	NR	520	529	NR	650	251	NR	780	6	NR	910	0	NR
395	6	NR	525	563	NR	655	221	NR	785	5	NR	915	0	NR
400	9	NR	530	589	NR	660	193	NR	790	4	NR	920	0	NR
405	16	NR	535	611	NR	665	169	NR	795	4	NR	925	0	NR
410	33	NR	540	629	NR	670	146	NR	800	3	NR	930	0	NR
415	64	NR	545	649	NR	675	127	NR	805	3	NR	935	0	NR
420	124	NR	550	663	NR	680	110	NR	810	2	NR	940	0	NR
425	233	NR	555	678	NR	685	95	NR	815	2	NR	945	0	NR
430	397	NR	560	693	NR	690	83	NR	820	2	NR	950	0	NR
435	617	NR	565	705	NR	695	71	NR	825	2	NR	955	0	NR
440	868	NR	570	713	NR	700	61	NR	830	1	NR	960	0	NR
445	994	NR	575	717	NR	705	52	NR	835	1	NR	965	0	NR
450	736	NR	580	715	NR	710	45	NR	840	1	NR	970	0	NR
455	454	NR	585	705	NR	715	38	NR	845	1	NR	975	0	NR
460	314	NR	590	689	NR	720	32	NR	850	1	NR	980	0	NR
465	210	NR	595	665	NR	725	27	NR	855	1	NR	985	0	NR
470	146	NR	600	635	NR	730	23	NR	860	1	NR	990	0	NR
475	126	NR	605	599	NR	735	19	NR	865	0	NR	995	0	NR
480	126	NR	610	561	NR	740	17	NR	870	0	NR	1000	0	NR
485	144	NR	615	517	NR	745	15	NR	875	0	NR			

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**Scotopic Flux vs. Wavelength**



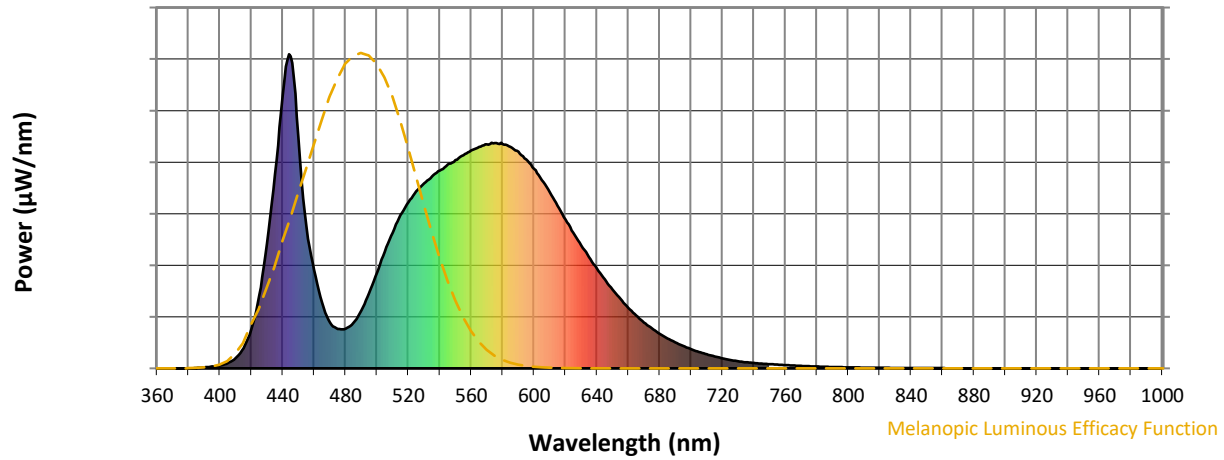
**Scotopic Lumens: NR**

**S/P: 1.71**

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	184	NR	620	474	NR	750	13	NR	880	0	NR
365	0	NR	495	239	NR	625	432	NR	755	12	NR	885	0	NR
370	0	NR	500	305	NR	630	392	NR	760	10	NR	890	0	NR
375	0	NR	505	371	NR	635	354	NR	765	9	NR	895	0	NR
380	0	NR	510	432	NR	640	318	NR	770	8	NR	900	0	NR
385	1	NR	515	488	NR	645	283	NR	775	7	NR	905	0	NR
390	3	NR	520	529	NR	650	251	NR	780	6	NR	910	0	NR
395	6	NR	525	563	NR	655	221	NR	785	5	NR	915	0	NR
400	9	NR	530	589	NR	660	193	NR	790	4	NR	920	0	NR
405	16	NR	535	611	NR	665	169	NR	795	4	NR	925	0	NR
410	33	NR	540	629	NR	670	146	NR	800	3	NR	930	0	NR
415	64	NR	545	649	NR	675	127	NR	805	3	NR	935	0	NR
420	124	NR	550	663	NR	680	110	NR	810	2	NR	940	0	NR
425	233	NR	555	678	NR	685	95	NR	815	2	NR	945	0	NR
430	397	NR	560	693	NR	690	83	NR	820	2	NR	950	0	NR
435	617	NR	565	705	NR	695	71	NR	825	2	NR	955	0	NR
440	868	NR	570	713	NR	700	61	NR	830	1	NR	960	0	NR
445	994	NR	575	717	NR	705	52	NR	835	1	NR	965	0	NR
450	736	NR	580	715	NR	710	45	NR	840	1	NR	970	0	NR
455	454	NR	585	705	NR	715	38	NR	845	1	NR	975	0	NR
460	314	NR	590	689	NR	720	32	NR	850	1	NR	980	0	NR
465	210	NR	595	665	NR	725	27	NR	855	1	NR	985	0	NR
470	146	NR	600	635	NR	730	23	NR	860	1	NR	990	0	NR
475	126	NR	605	599	NR	735	19	NR	865	0	NR	995	0	NR
480	126	NR	610	561	NR	740	17	NR	870	0	NR	1000	0	NR
485	144	NR	615	517	NR	745	15	NR	875	0	NR			

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Melanopic Flux vs. Wavelength



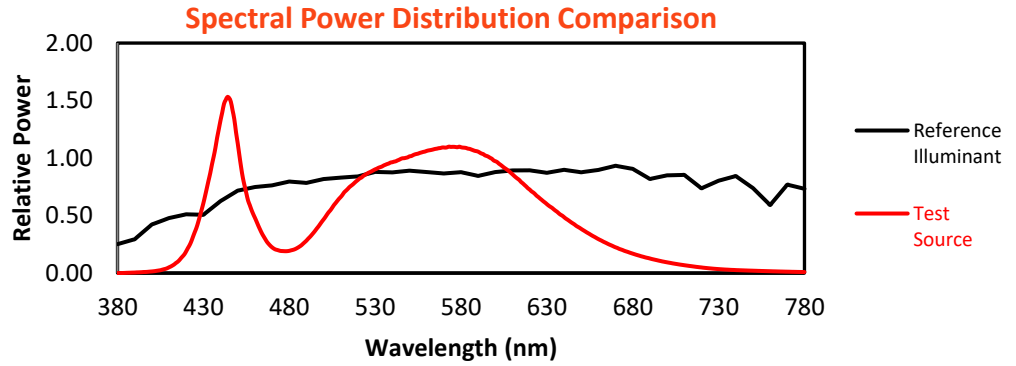
Melanopic Lumens: NR

M/P: 3.39

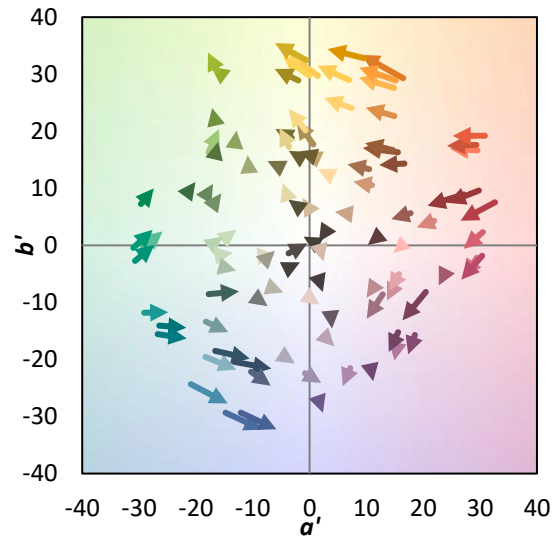
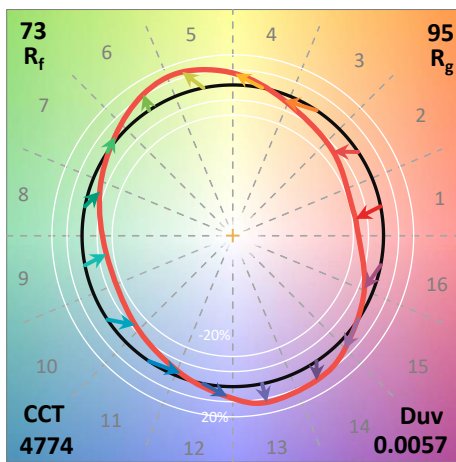
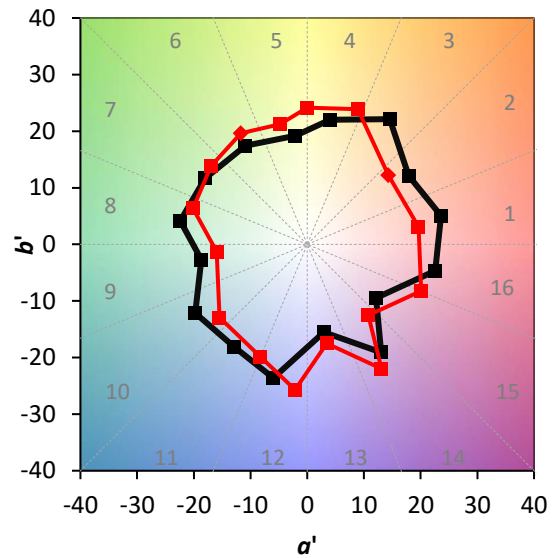
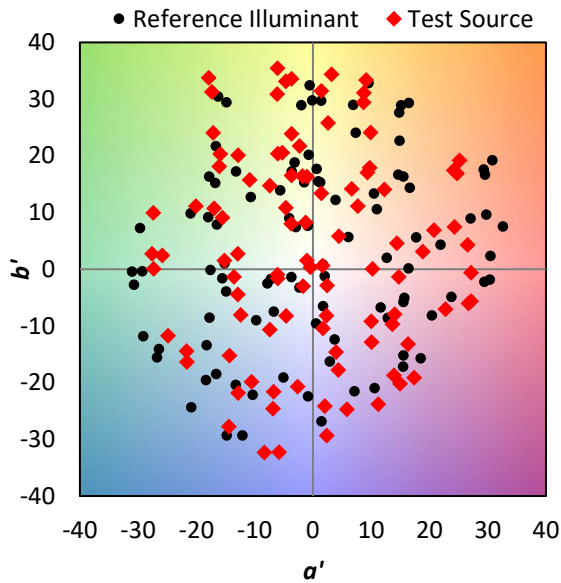
λ (nm)	Power W <sup>^</sup> /nm	Lumens (φ/nm)	λ (nm)	Power W <sup>^</sup> /nm	Lumens (φ/nm)	λ (nm)	Power W <sup>^</sup> /nm	Lumens (φ/nm)	λ (nm)	Power W <sup>^</sup> /nm	Lumens (φ/nm)	λ (nm)	Power W <sup>^</sup> /nm	Lumens (φ/nm)
360	0	NR	490	184	NR	620	474	NR	750	13	NR	880	0	NR
365	0	NR	495	239	NR	625	432	NR	755	12	NR	885	0	NR
370	0	NR	500	305	NR	630	392	NR	760	10	NR	890	0	NR
375	0	NR	505	371	NR	635	354	NR	765	9	NR	895	0	NR
380	0	NR	510	432	NR	640	318	NR	770	8	NR	900	0	NR
385	1	NR	515	488	NR	645	283	NR	775	7	NR	905	0	NR
390	3	NR	520	529	NR	650	251	NR	780	6	NR	910	0	NR
395	6	NR	525	563	NR	655	221	NR	785	5	NR	915	0	NR
400	9	NR	530	589	NR	660	193	NR	790	4	NR	920	0	NR
405	16	NR	535	611	NR	665	169	NR	795	4	NR	925	0	NR
410	33	NR	540	629	NR	670	146	NR	800	3	NR	930	0	NR
415	64	NR	545	649	NR	675	127	NR	805	3	NR	935	0	NR
420	124	NR	550	663	NR	680	110	NR	810	2	NR	940	0	NR
425	233	NR	555	678	NR	685	95	NR	815	2	NR	945	0	NR
430	397	NR	560	693	NR	690	83	NR	820	2	NR	950	0	NR
435	617	NR	565	705	NR	695	71	NR	825	2	NR	955	0	NR
440	868	NR	570	713	NR	700	61	NR	830	1	NR	960	0	NR
445	994	NR	575	717	NR	705	52	NR	835	1	NR	965	0	NR
450	736	NR	580	715	NR	710	45	NR	840	1	NR	970	0	NR
455	454	NR	585	705	NR	715	38	NR	845	1	NR	975	0	NR
460	314	NR	590	689	NR	720	32	NR	850	1	NR	980	0	NR
465	210	NR	595	665	NR	725	27	NR	855	1	NR	985	0	NR
470	146	NR	600	635	NR	730	23	NR	860	1	NR	990	0	NR
475	126	NR	605	599	NR	735	19	NR	865	0	NR	995	0	NR
480	126	NR	610	561	NR	740	17	NR	870	0	NR	1000	0	NR
485	144	NR	615	517	NR	745	15	NR	875	0	NR			

**Summary**

$R_f = 73.1$   
 $R_g = 94.9$   
 $CIE R_a = 70.8$   
 $R_9 = -40.0$

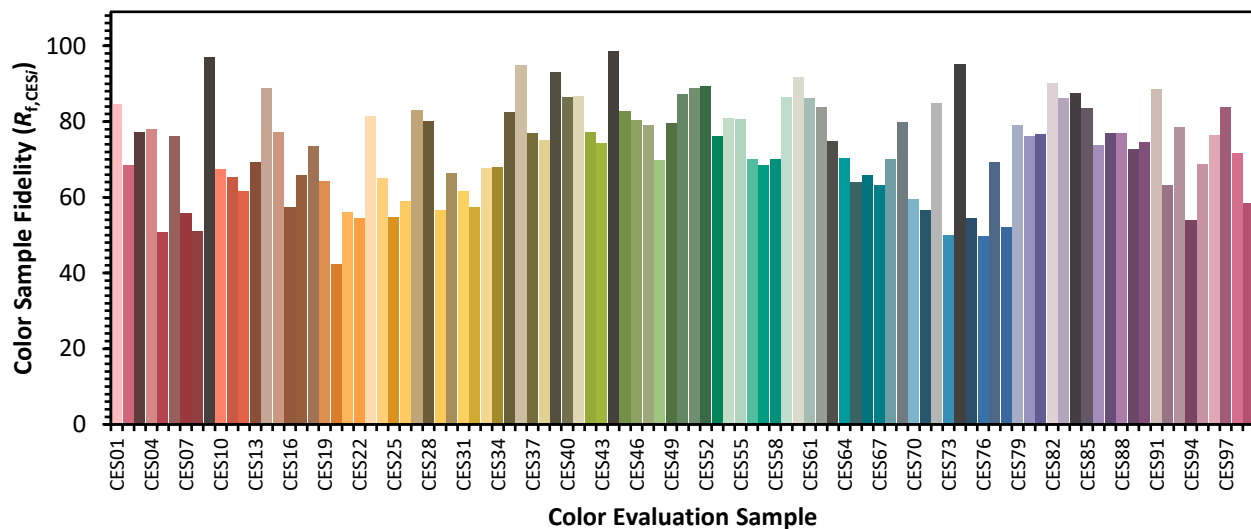


**Color Vector Graphics**



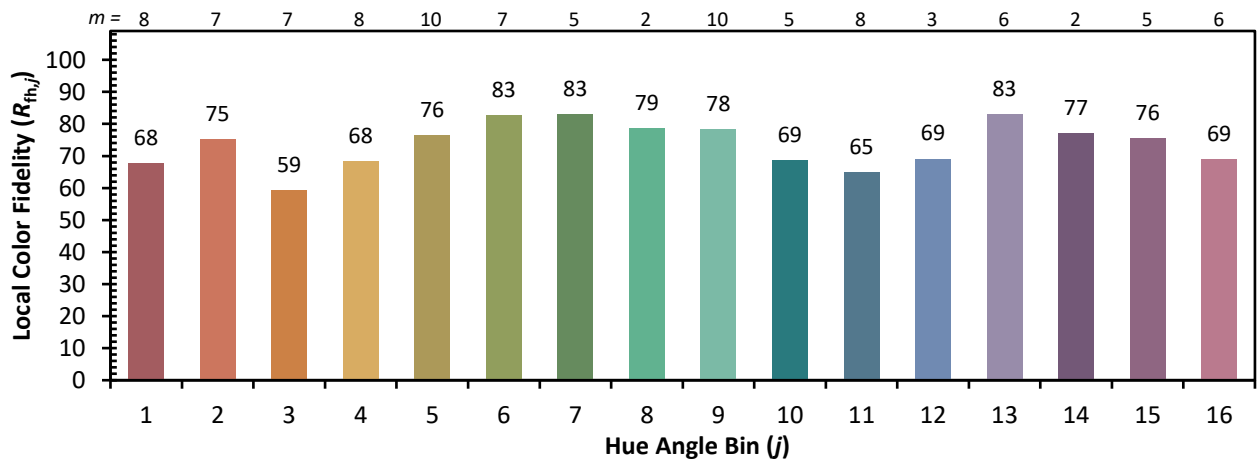
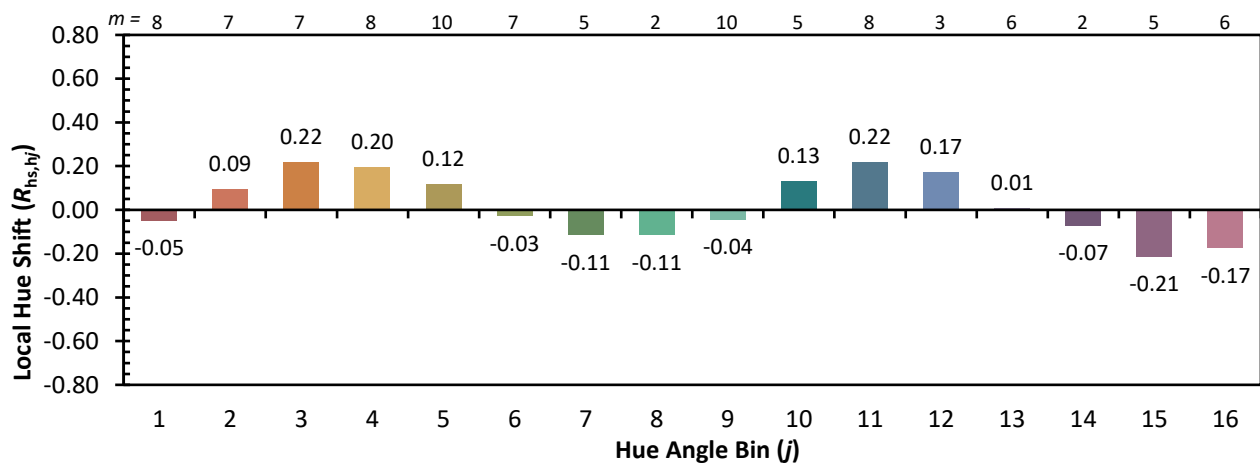
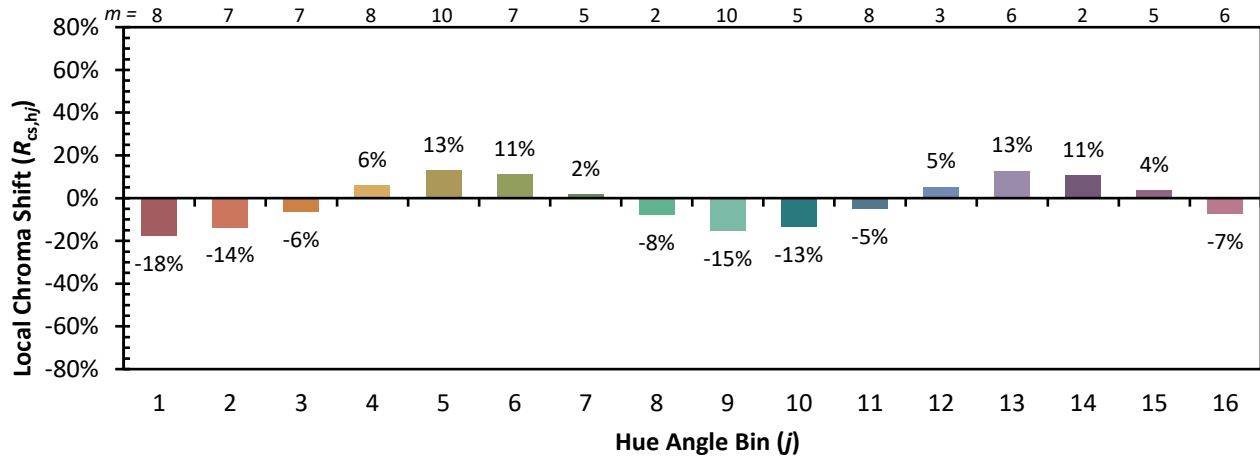
**Individual Sample Fidelity Index ( $R_{f,i}$ )**

CES01 = 85	CES26 = 59	CES51 = 89	CES76 = 50
CES02 = 59	CES27 = 83	CES52 = 89	CES77 = 69
CES03 = 30	CES28 = 80	CES53 = 76	CES78 = 52
CES04 = 69	CES29 = 57	CES54 = 81	CES79 = 79
CES05 = 46	CES30 = 66	CES55 = 81	CES80 = 76
CES06 = 50	CES31 = 62	CES56 = 70	CES81 = 77
CES07 = 39	CES32 = 57	CES57 = 69	CES82 = 90
CES08 = 38	CES33 = 68	CES58 = 70	CES83 = 86
CES09 = 29	CES34 = 68	CES59 = 86	CES84 = 88
CES10 = 73	CES35 = 83	CES60 = 92	CES85 = 84
CES11 = 56	CES36 = 95	CES61 = 86	CES86 = 74
CES12 = 61	CES37 = 77	CES62 = 84	CES87 = 77
CES13 = 41	CES38 = 75	CES63 = 75	CES88 = 77
CES14 = 74	CES39 = 93	CES64 = 70	CES89 = 73
CES15 = 70	CES40 = 86	CES65 = 64	CES90 = 75
CES16 = 46	CES41 = 87	CES66 = 66	CES91 = 89
CES17 = 49	CES42 = 77	CES67 = 63	CES92 = 63
CES18 = 55	CES43 = 74	CES68 = 70	CES93 = 78
CES19 = 71	CES44 = 99	CES69 = 80	CES94 = 54
CES20 = 64	CES45 = 83	CES70 = 60	CES95 = 69
CES21 = 85	CES46 = 80	CES71 = 57	CES96 = 76
CES22 = 77	CES47 = 79	CES72 = 85	CES97 = 84
CES23 = 91	CES48 = 70	CES73 = 50	CES98 = 72
CES24 = 90	CES49 = 80	CES74 = 95	CES99 = 58
CES25 = 71	CES50 = 87	CES75 = 55	

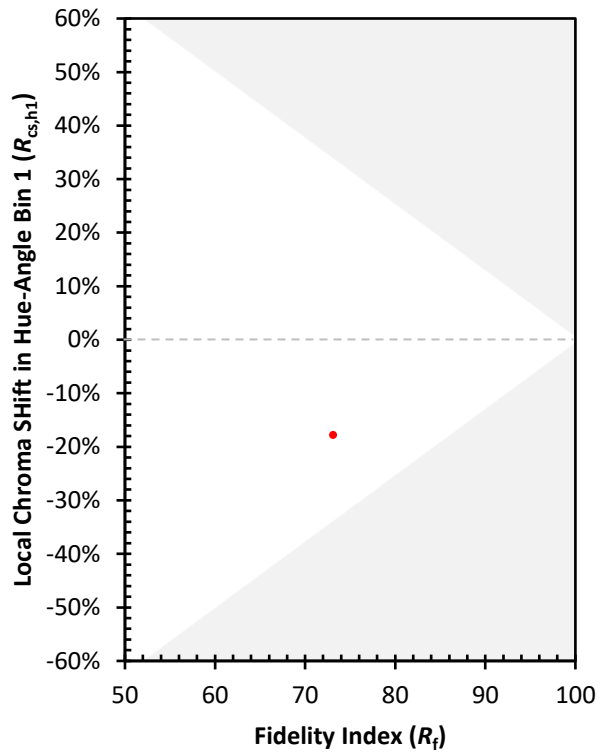
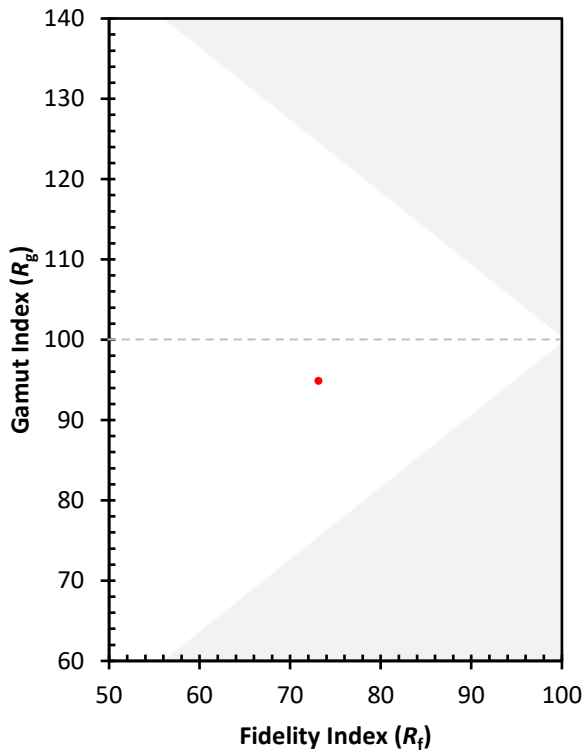




Color Rendition by Hue-Angle Bin



Measure Comparisons



(END OF REPORT)