

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: P879735

Luminaire Tested: **EMM2-HTN-VA8-750-U-CQ**

Issue Date: 10/01/2024



Test Information

Test Method: LM-79-08
Report Number: P879735
Test Lab: INNOVATION CENTER(G3)
Issue Date: 10/01/2024
Manufacturer: COOPER LIGHTING SOLUTIONS (FORMERLY EATON)
Product Line: INVUE
Catalog Number: EMM2-HTN-VA8-750-U-CQ
Description: EPIC MODERN TALL HOUSING 8W 70CRI 5000K WAVESTREAM FIXTURE w/ TYPE V CONCENTRATED DISTRIBUTION OPTIC
Light Source: (1) 5000K CCT, 70 CRI LEDS
Ballast/Driver: ELECTRONIC DRIVER

Summary

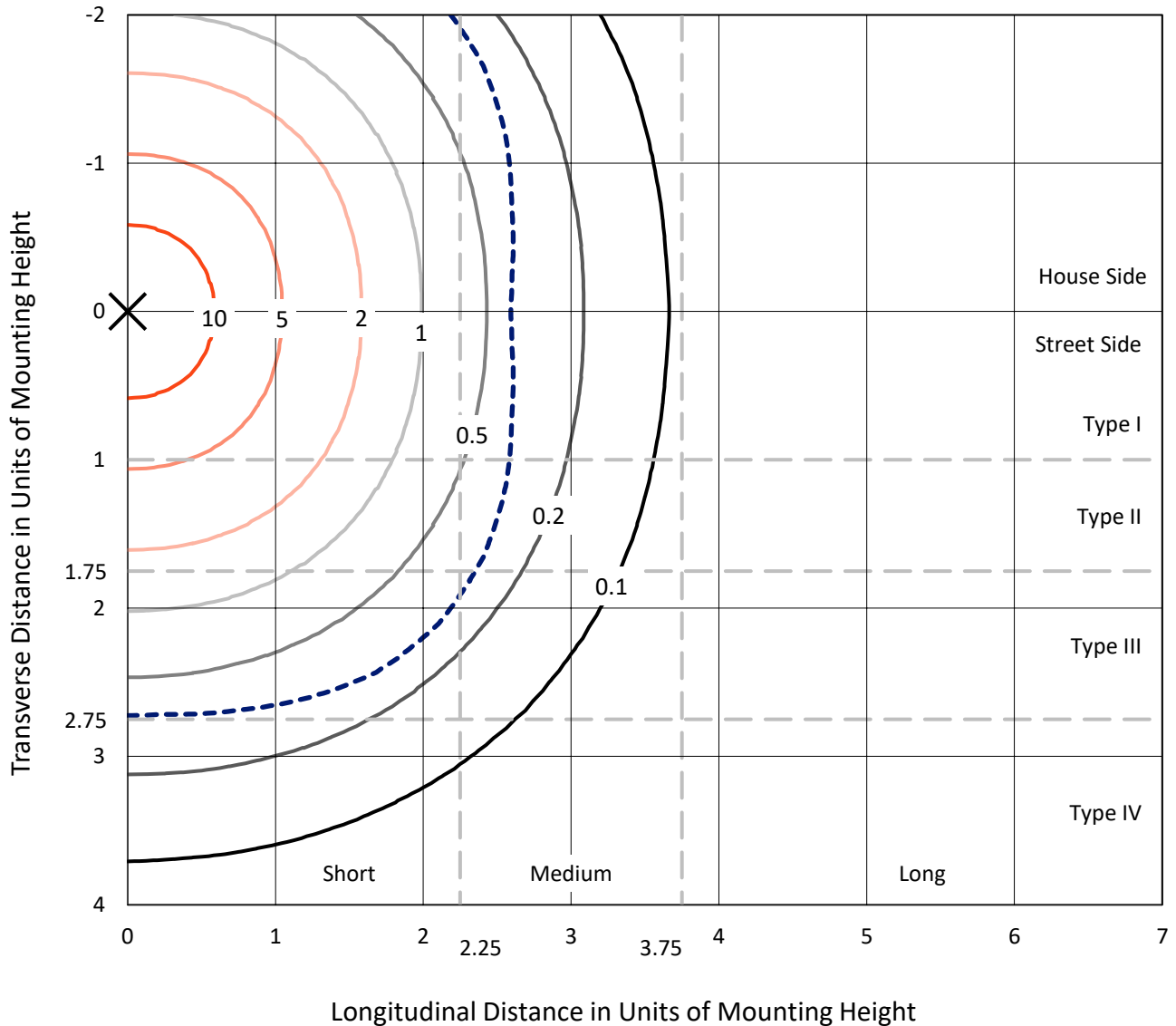
Lumens per Lamp: N/A
Luminaire Lumens: 15107.2 lumens
Efficiency: N/A
Efficacy: 96.8 lumens/watt
Luminous Opening: Circular (Dia: 1.12' x H: 0')
IES Classification: Type V - Short
BUG Rating: B3 - U0 - G2

Input Watts (W): 156
Input Voltage (V): 120
Input Current (Ain): NR
Voltage Rise (V): NR
Power Factor: 0.995
Total Harmonic Distortion (THDi): 6.6%
Frequency (hertz): 60
Stabilization Time: NR
Operation Time: NR
Ambient Temperature (°C): NR
Test Distance: 24 FT

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 CATALOG NUMBER: EMM2-HTN-VA8-750-U-CQ

Iso-Footcandle Lines of Horizontal Illumination

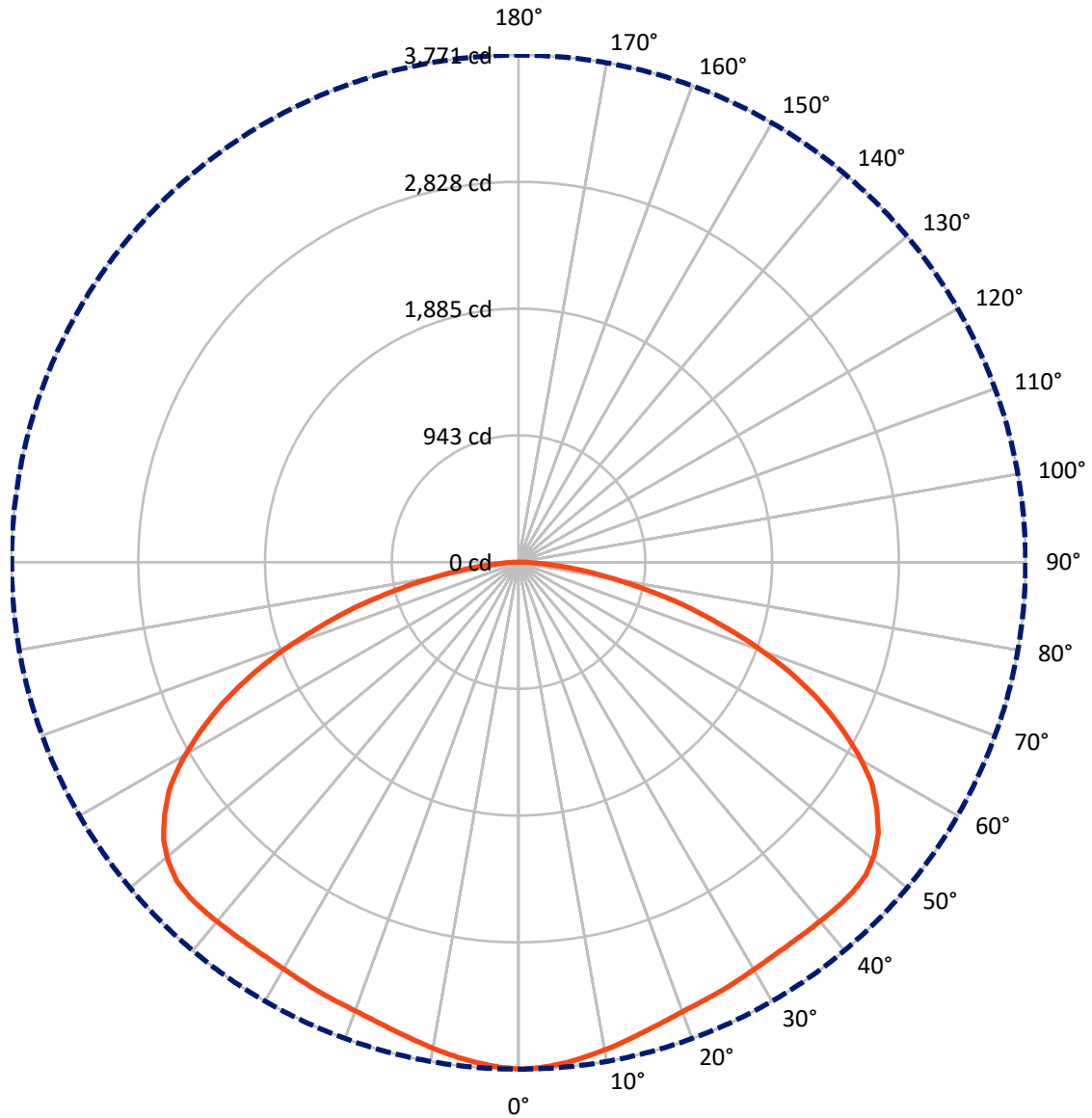
✕ Max cd
 - - - 1/2 Max cd



Based on 15 foot mounting height. Maximum calculated value = 16.8 fc
 Type V - Short - N/A

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CATALOG NUMBER: EMM2-HTN-VA8-750-U-CQ

Luminous Intensity Polar Plot



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

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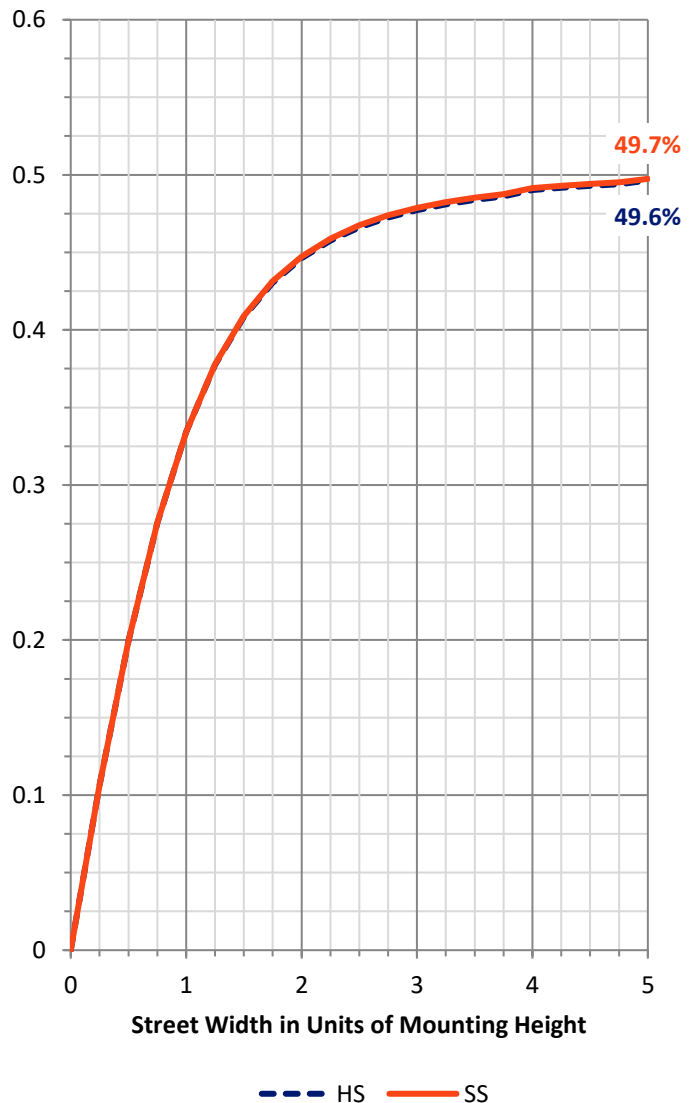
FLUX DISTRIBUTION:

		Downward	Upward	Total
House Side	Lumens	7553.6	0.0	7553.6
	% Fixture	50.0	0.0	50.0
Street Side	Lumens	7553.6	0.0	7553.6
	% Fixture	50.0	0.0	50.0
Total	Lumens	15107.2	0.0	15107.2
	% Fixture	100.0	0.0	100.0

Coefficient of Utilization

ZONAL LUMENS:

Zone	Lumens	% Fixture
0°-10°	355.4	2.4
10°-20°	1025.3	6.8
20°-30°	1641.6	10.9
30°-40°	2223.8	14.7
40°-50°	2746.2	18.2
50°-60°	2950.5	19.5
60°-70°	2481.2	16.4
70°-80°	1385.5	9.2
80°-90°	297.7	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°	15107.2	100.0
0°-180°	15107.2	100.0



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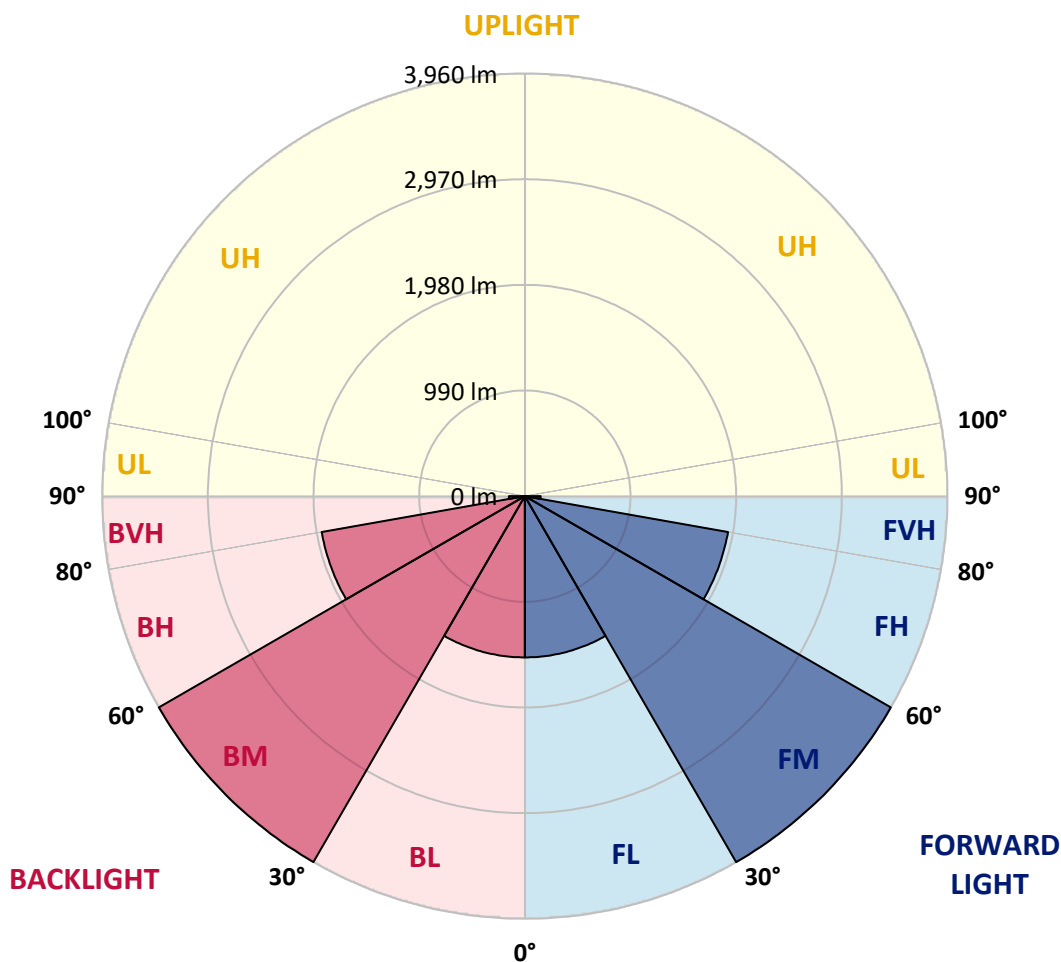
CATALOG NUMBER: EMM2-HTN-VA8-750-U-CQ

LUMINAIRE CLASSIFICATION SYSTEM LUMEN TABLE AND BUG RATING:

Zone	Lumens	% Fixture	Zone Rating/Lumen Limit		
			B	U	G
FL (0°-30°)	1511.1	10.0			
FM (30°-60°)	3960.2	26.2			
FH (60°-80°)	1933.3	12.8			G2/5000
FVH (80°-90°)	148.8	1.0			G2/225
BL (0°-30°)	1511.1	10.0	B3/2500		
BM (30°-60°)	3960.2	26.2	B3/5000		
BH (60°-80°)	1933.3	12.8	B3/2500		G2/5000
BVH (80°-90°)	148.8	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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CATALOG NUMBER: EMM2-HTN-VA8-750-U-CQ

CANDELA DISTRIBUTION (FULL):

	0°	5°	15°	25°	35°	45°	55°	65°	75°	85°	90°
0°	3770.9	3770.9	3770.9	3770.9	3770.9	3770.9	3770.9	3770.9	3770.9	3770.9	3770.9
2.5°	3759.7	3763.4	3762.5	3762.5	3762.5	3764.4	3764.4	3764.4	3765.3	3765.3	3766.2
5°	3738.1	3741.0	3741.0	3741.0	3742.8	3743.8	3743.8	3744.7	3746.6	3745.6	3744.7
7.5°	3709.1	3711.9	3711.9	3711.9	3713.8	3715.7	3715.7	3714.7	3717.5	3717.5	3716.6
10°	3678.2	3679.1	3680.1	3681.9	3684.8	3685.7	3684.8	3684.8	3683.8	3684.8	3684.8
12.5°	3641.7	3646.4	3647.3	3649.2	3653.8	3654.8	3654.8	3653.8	3652.9	3652.9	3652.0
15°	3608.9	3610.8	3613.6	3617.3	3622.9	3624.8	3625.7	3622.9	3620.1	3619.2	3620.1
17.5°	3578.9	3581.7	3585.5	3589.2	3596.7	3600.5	3600.5	3596.7	3593.0	3591.1	3591.1
20°	3554.6	3557.4	3562.1	3567.7	3578.0	3582.7	3580.8	3577.0	3570.5	3567.7	3568.6
22.5°	3538.6	3542.4	3546.1	3554.6	3565.8	3571.4	3569.5	3563.0	3555.5	3550.8	3550.8
25°	3525.5	3528.3	3534.0	3545.2	3557.4	3563.9	3561.1	3552.7	3542.4	3536.8	3535.8
27.5°	3510.5	3514.3	3521.8	3536.8	3551.8	3557.4	3555.5	3543.3	3531.1	3523.7	3521.8
30°	3496.5	3500.2	3510.5	3527.4	3546.1	3554.6	3549.9	3536.8	3521.8	3512.4	3511.5
32.5°	3487.1	3491.8	3504.0	3525.5	3548.0	3560.2	3555.5	3539.6	3519.9	3507.7	3506.8
35°	3483.4	3488.1	3505.9	3532.1	3560.2	3577.0	3570.5	3550.8	3526.5	3511.5	3509.6
37.5°	3484.3	3489.9	3512.4	3547.1	3582.7	3600.5	3592.0	3566.7	3535.8	3515.2	3512.4
40°	3488.1	3494.6	3523.7	3566.7	3608.9	3625.7	3612.6	3575.2	3533.0	3504.0	3498.4
42.5°	3492.7	3503.0	3538.6	3589.2	3633.2	3647.3	3623.9	3568.6	3509.6	3472.1	3467.5
45°	3491.8	3500.2	3541.4	3601.4	3648.2	3655.7	3617.3	3548.0	3478.7	3430.0	3426.2
47.5°	3475.9	3484.3	3531.1	3597.6	3643.5	3645.4	3599.5	3519.9	3438.4	3382.2	3376.6
50°	3426.2	3437.5	3489.9	3563.0	3614.5	3615.4	3564.9	3476.8	3382.2	3316.7	3307.3
52.5°	3350.4	3358.8	3419.7	3498.4	3556.4	3563.9	3508.7	3406.6	3298.9	3228.6	3222.1
55°	3232.4	3249.2	3313.8	3396.3	3460.0	3468.4	3413.1	3302.6	3192.1	3111.5	3104.0
57.5°	3095.6	3098.4	3166.8	3256.7	3323.2	3332.6	3272.6	3160.2	3045.0	2970.1	2951.4
60°	2902.7	2913.9	2978.5	3066.6	3136.8	3149.0	3091.9	2983.2	2863.3	2778.1	2777.1
62.5°	2679.7	2692.9	2758.4	2852.1	2923.3	2935.4	2874.6	2768.7	2648.8	2575.8	2549.5
65°	2438.1	2441.8	2507.4	2600.1	2664.8	2671.3	2623.5	2523.3	2399.7	2324.7	2307.9
67.5°	2166.5	2170.2	2220.8	2307.9	2377.2	2386.6	2337.9	2246.1	2134.6	2055.9	2047.5
70°	1865.8	1866.7	1916.4	1987.6	2056.9	2076.5	2032.5	1944.5	1837.7	1774.9	1758.1
72.5°	1549.2	1557.6	1601.7	1675.7	1734.7	1739.3	1703.8	1627.9	1540.8	1489.3	1479.9
75°	1259.8	1254.2	1291.6	1336.6	1382.5	1397.5	1368.4	1316.9	1236.4	1191.4	1200.8
77.5°	946.0	947.9	976.9	1018.1	1047.2	1073.4	1040.6	1016.3	951.6	900.1	902.0
80°	668.8	666.9	694.1	713.7	746.5	750.3	732.5	699.7	658.5	636.9	635.0
82.5°	423.4	414.9	435.5	460.8	474.9	468.3	472.1	450.5	417.7	406.5	396.2
85°	216.4	214.5	225.7	235.1	245.4	245.4	239.8	222.9	216.4	203.3	199.5
87.5°	74.0	76.8	80.6	77.7	82.4	80.6	78.7	66.5	59.0	55.3	51.5
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

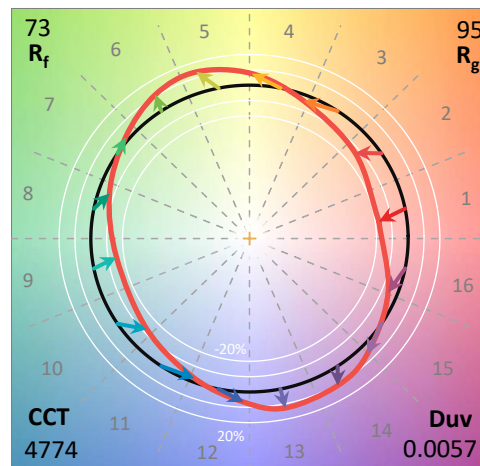
Test Information

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
 Rf: 73.1
 Rg: 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

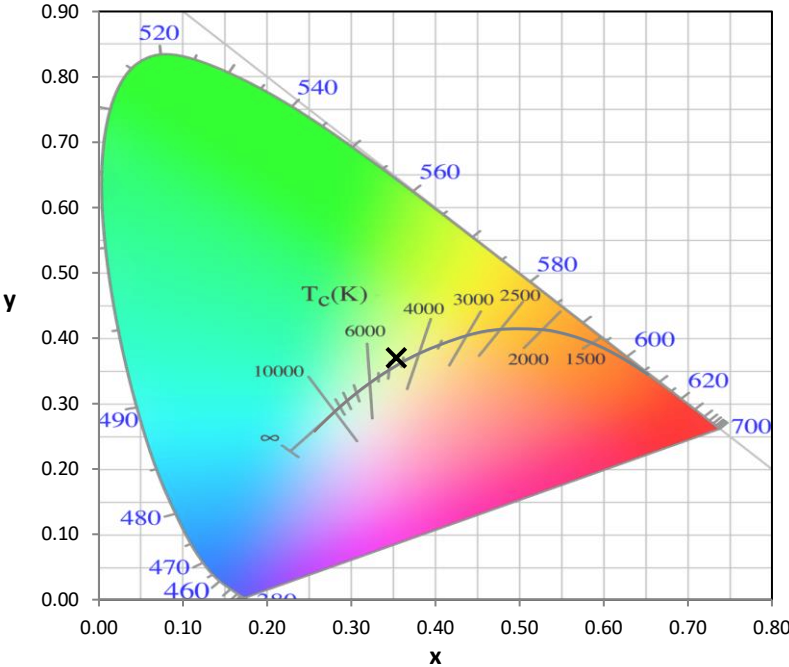
Stabilization Time: 37M
 Operation Time: 1H 37M
 Sphere Temperature (°C): 25.2

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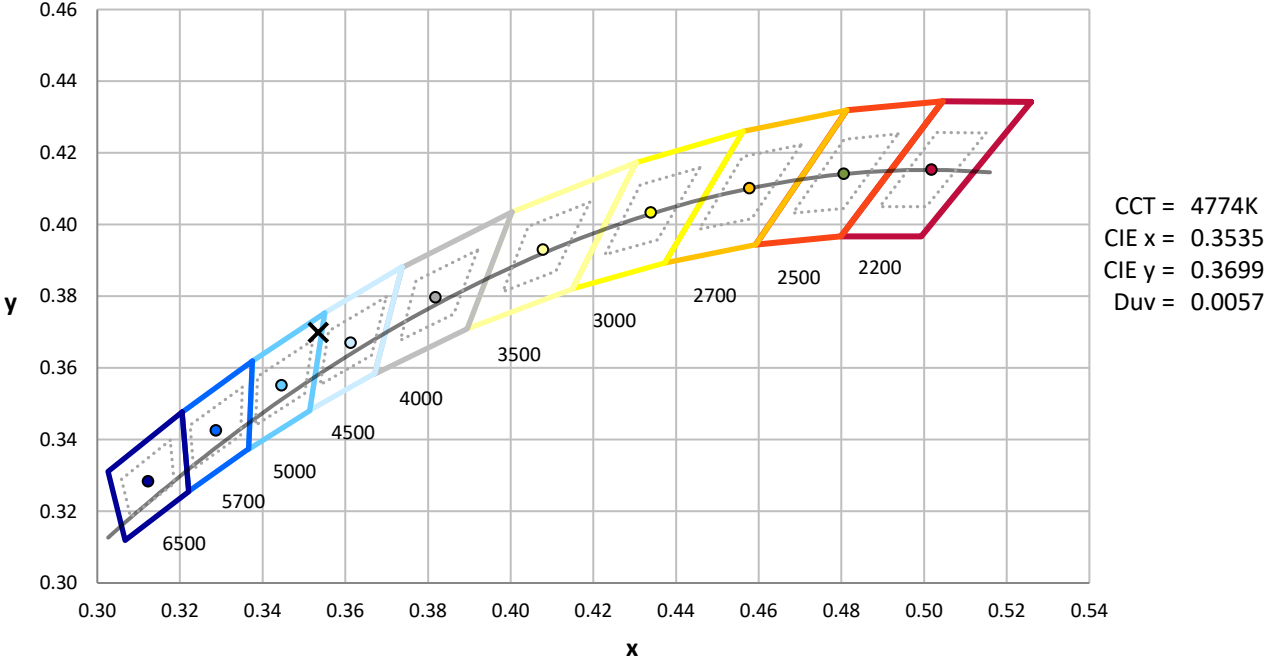
Measurement and Test Equipment			
Instrument	Identification Number	Calibration Date	Calibration Due Date
Photometer	IN0058	6/18/2024	12/18/2024
Power Meter	INXT2011004	2/8/2024	2/8/2025
AC Power Source	IN0063	10/24/2023	10/24/2024
DC Power Source	IN0208	10/24/2023	10/24/2024
Sphere Thermometer	IN0085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

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CIE 1931 Chromaticity Diagram



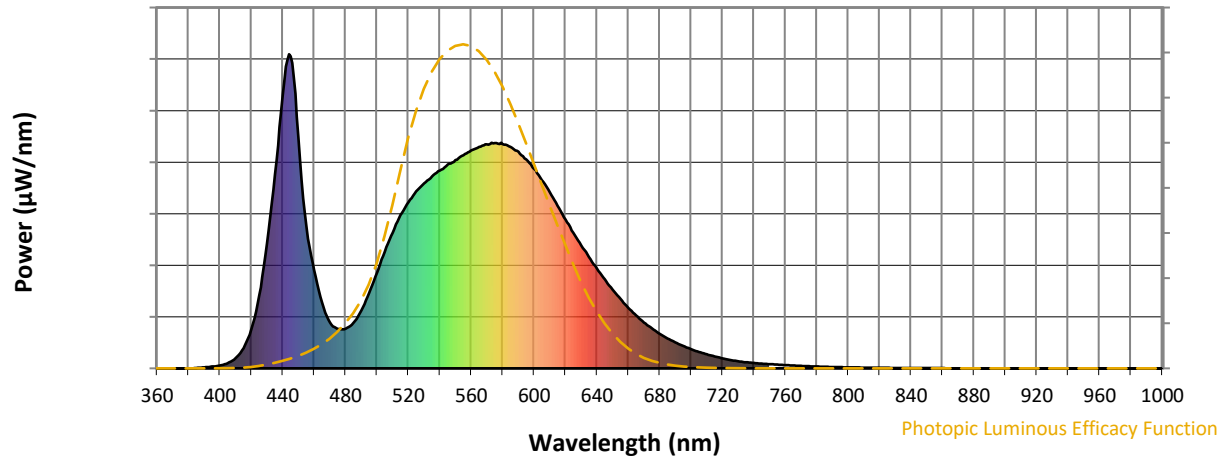
CIE 1931 Chromaticity Diagram with 2017 ANSI 7-Step and 4-Step Quadrangles



Point lies inside the ANSI 5000K 7-step quadrangle

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Photopic Flux vs. Wavelength

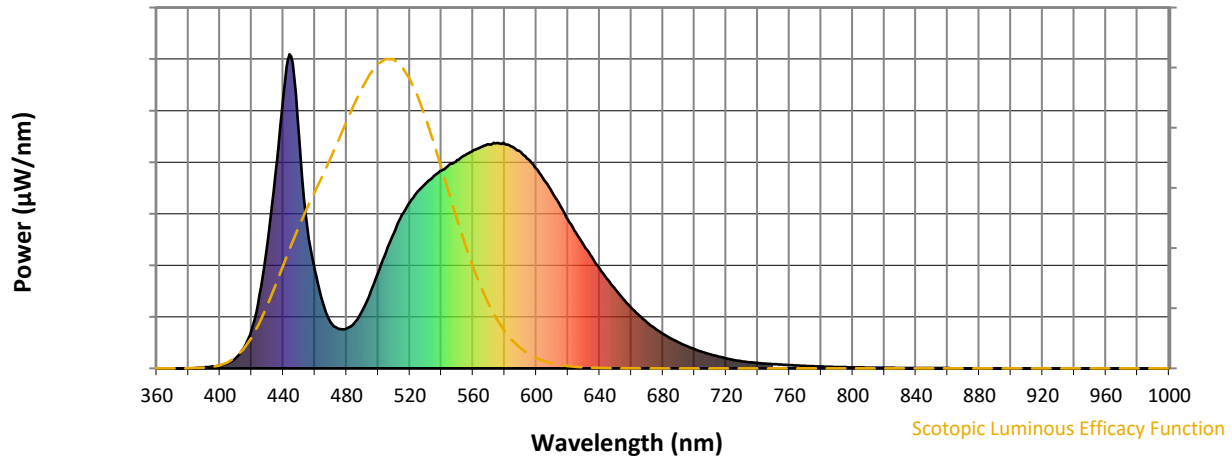


Photopic Lumens: NR

λ (nm)	Power W [^] /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	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



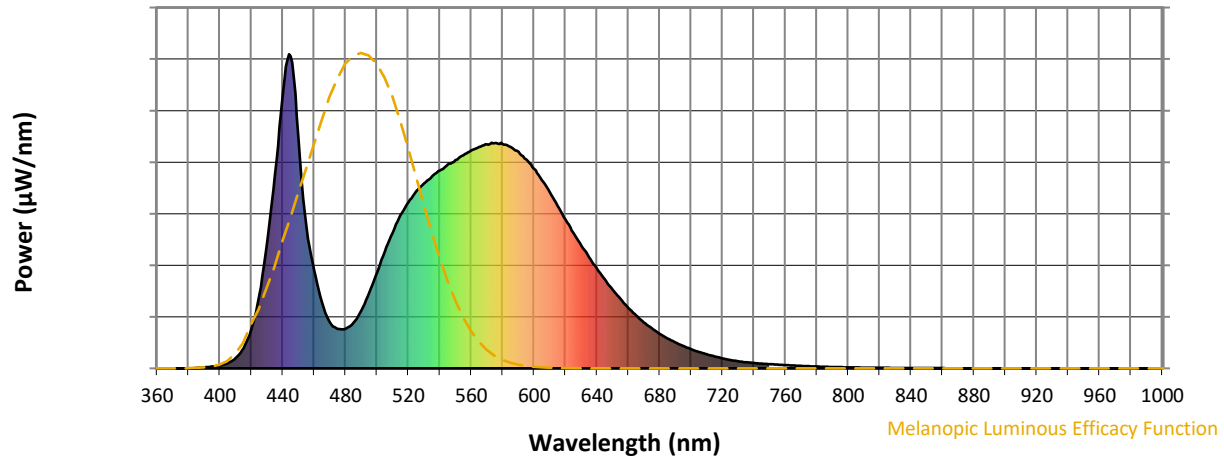
Scotopic Lumens: NR

S/P: 1.71

λ (nm)	Power W [^] /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	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



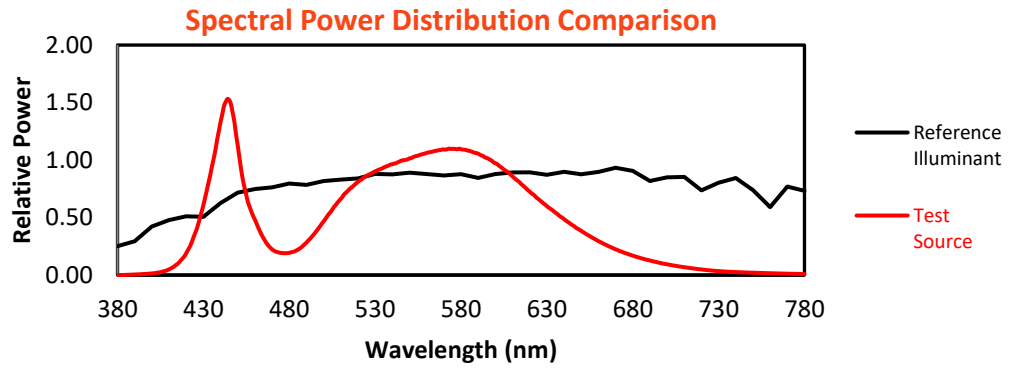
Melanopic Lumens: NR

M/P: 3.39

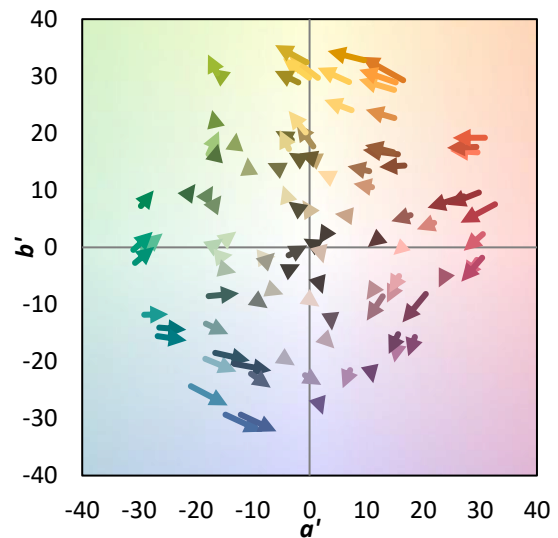
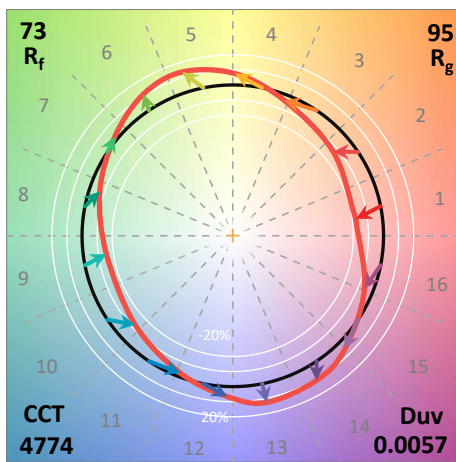
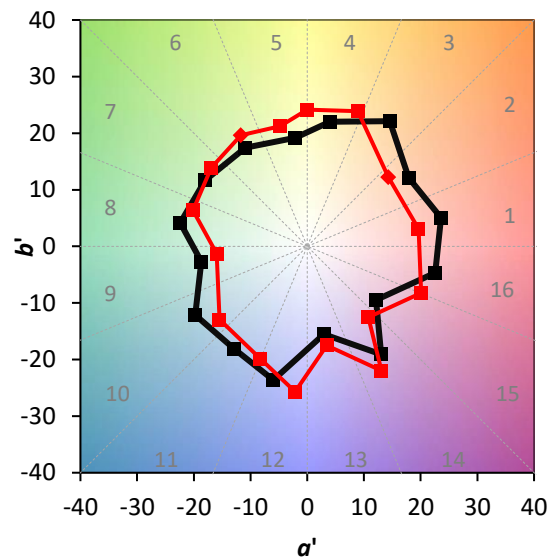
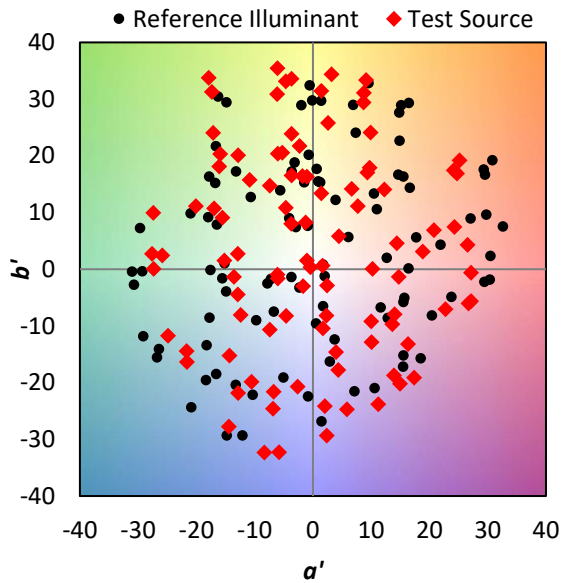
λ (nm)	Power W [^] /nm	Lumens (φ/nm)	λ (nm)	Power W [^] /nm	Lumens (φ/nm)	λ (nm)	Power W [^] /nm	Lumens (φ/nm)	λ (nm)	Power W [^] /nm	Lumens (φ/nm)	λ (nm)	Power W [^] /nm	Lumens (φ/nm)
360	0	NR	490	184	NR	620	474	NR	750	13	NR	880	0	NR
365	0	NR	495	239	NR	625	432	NR	755	12	NR	885	0	NR
370	0	NR	500	305	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

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

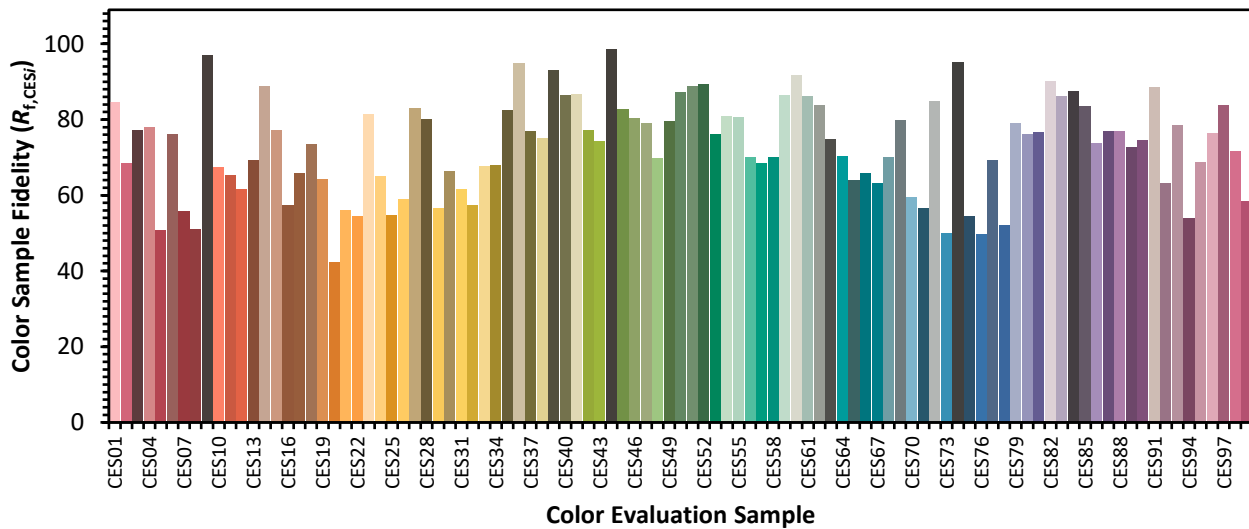


Color Vector Graphics

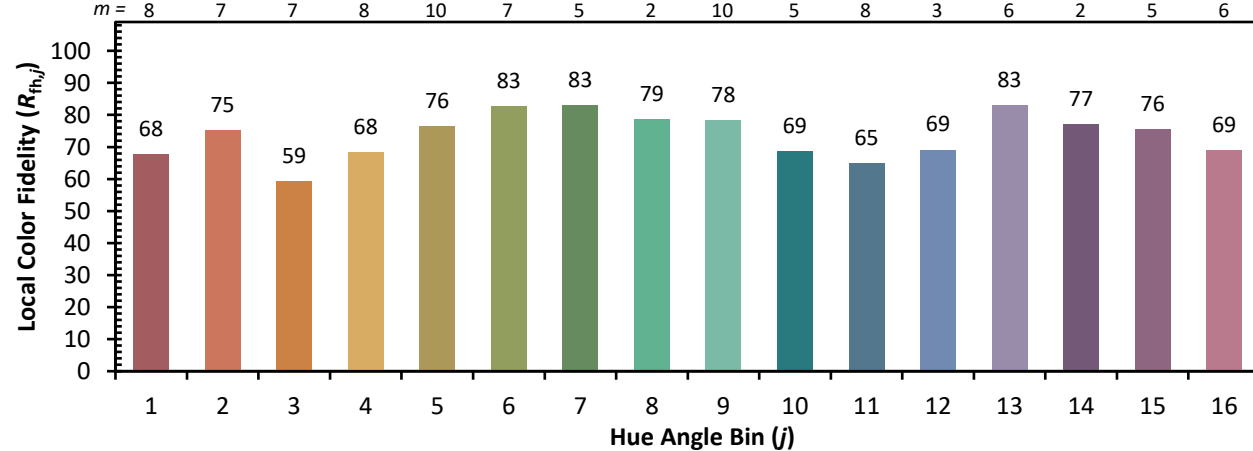
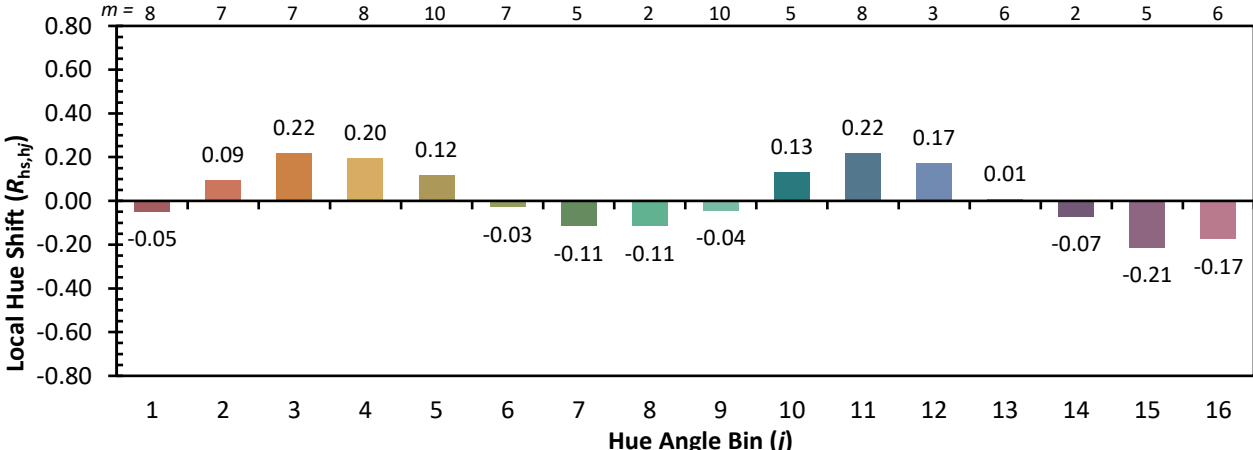
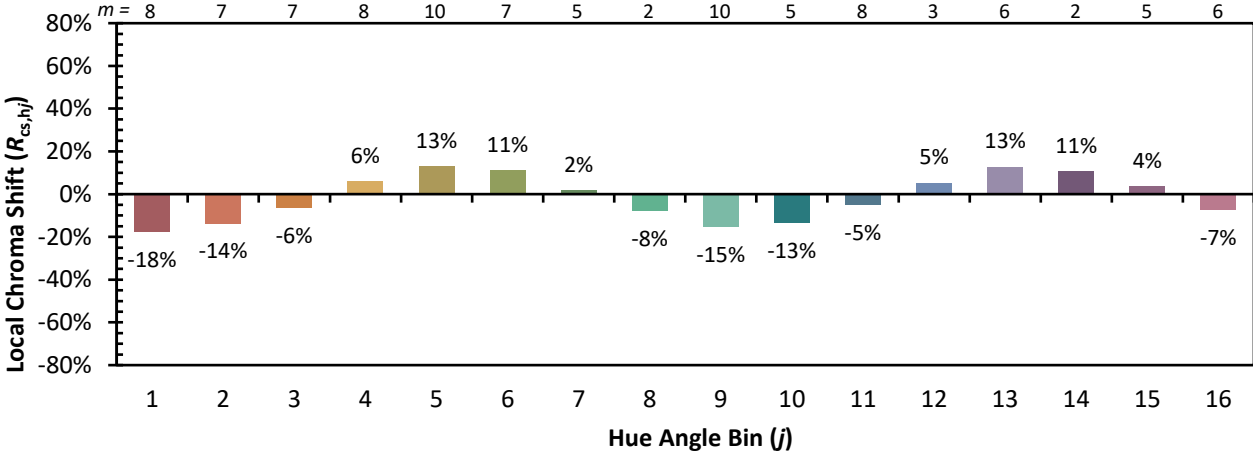


Individual Sample Fidelity Index ($R_{f,i}$)

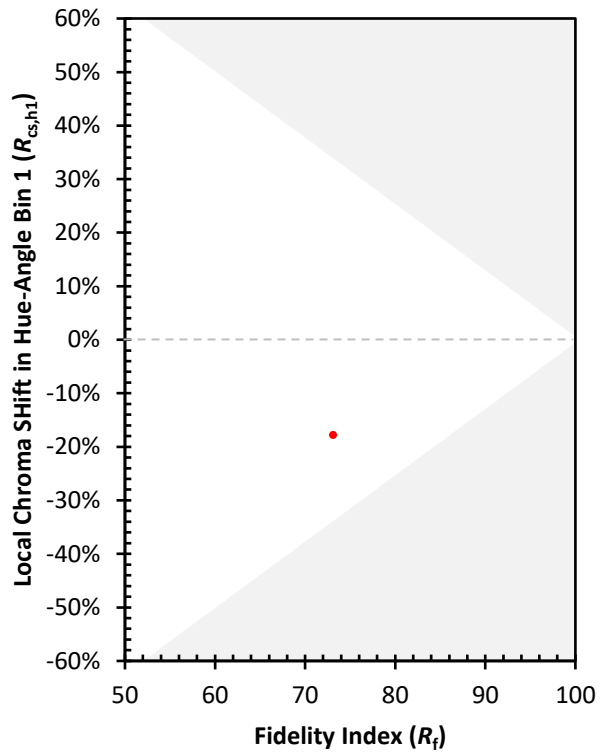
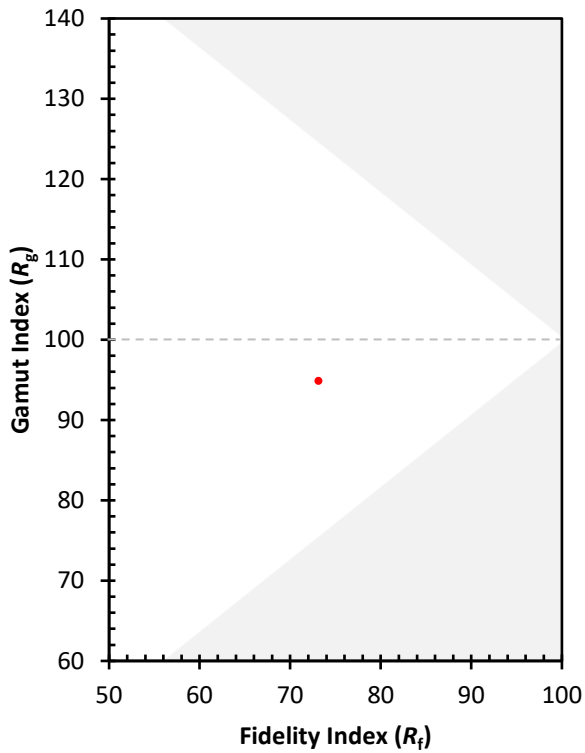
CES01 = 85	CES26 = 59	CES51 = 89	CES76 = 50
CES02 = 59	CES27 = 83	CES52 = 89	CES77 = 69
CES03 = 30	CES28 = 80	CES53 = 76	CES78 = 52
CES04 = 69	CES29 = 57	CES54 = 81	CES79 = 79
CES05 = 46	CES30 = 66	CES55 = 81	CES80 = 76
CES06 = 50	CES31 = 62	CES56 = 70	CES81 = 77
CES07 = 39	CES32 = 57	CES57 = 69	CES82 = 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)