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: P879752

Luminaire Tested: **EMM2-HSN-VA7-750-U-CQ**

Issue Date: 10/01/2024

Report Generated By 670245763

Cooper Lighting Solutions Photometric Lab
1121 Highway 74 South
Peachtree City, GA 30269

Scaled Data Report

Test Information

Test Method:	LM-79-08
Report Number:	P879752
Test Lab:	INNOVATION CENTER(G3)
Issue Date:	10/01/2024
Manufacturer:	COOPER LIGHTING SOLUTIONS (FORMERLY EATON)
Product Line:	INVUE
Catalog Number:	EMM2-HSN-VA7-750-U-CQ
Description:	EPIC MODERN SHORT HOUSING 7W 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:	12880.4 lumens
Efficiency:	N/A
Efficacy:	99.1 lumens/watt
Luminous Opening:	Circular (Dia: 1.12' x H: 0')
IES Classification:	Type V - Short
BUG Rating:	B3 - U0 - G2

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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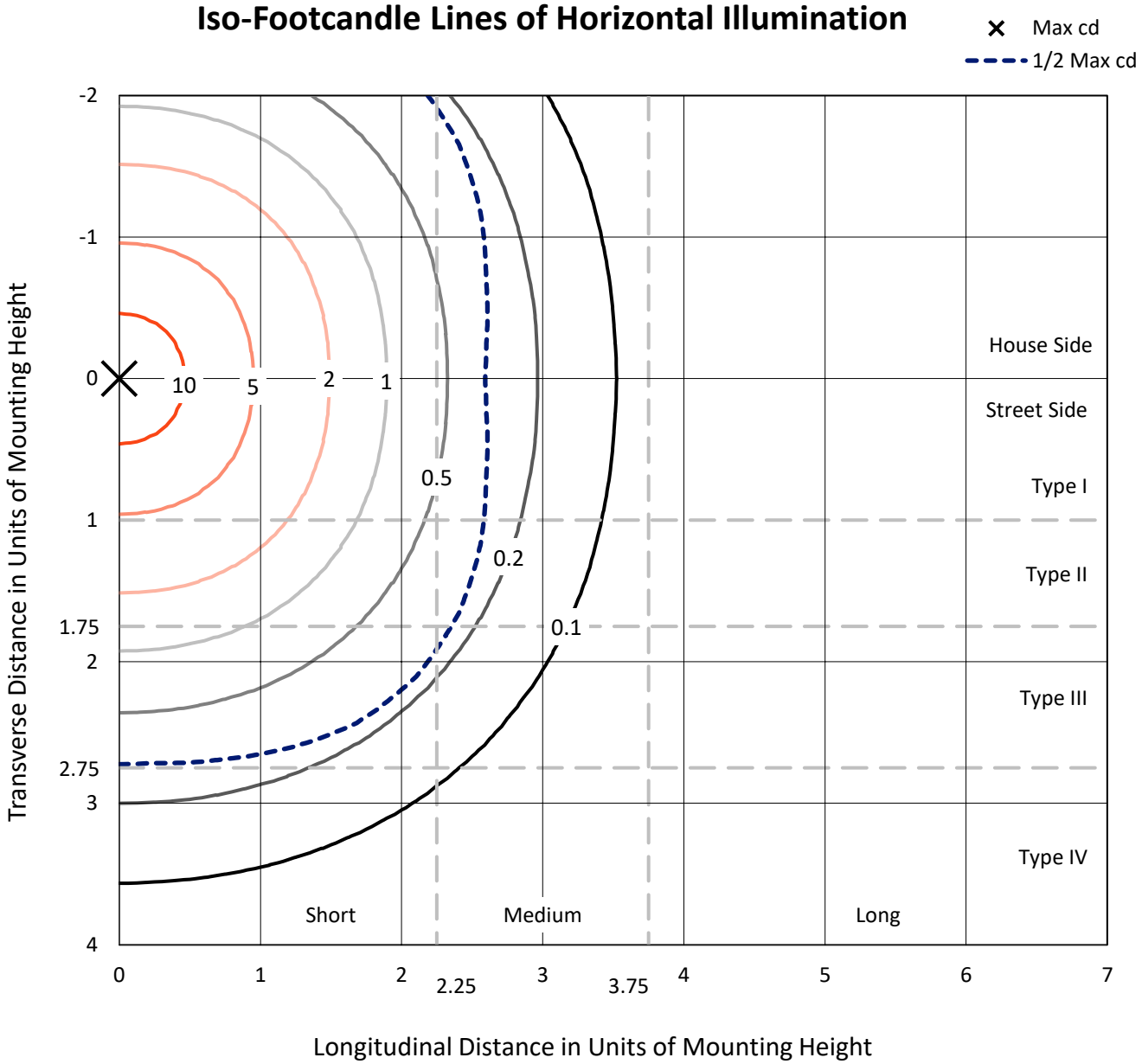
Scaled Data Report

REPORT NUMBER: P879752
CATALOG NUMBER: EMM2-HSN-VA7-750-U-CQ

Iso-Footcandle Lines of Horizontal Illumination



Based on 15 foot mounting height. Maximum calculated value = 14.3 fc
Type V - Short - N/A

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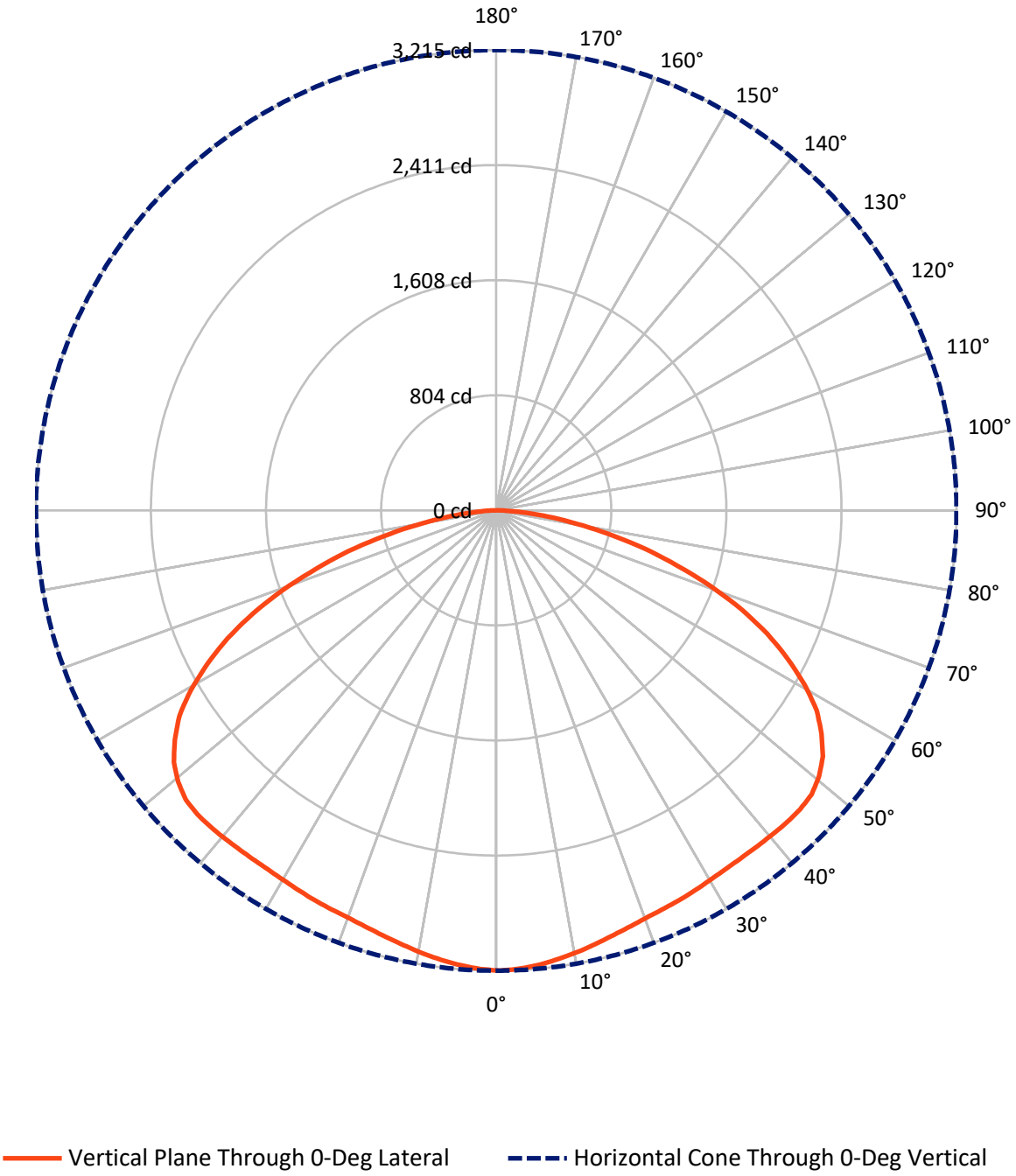
Luminous Intensity Polar Plot



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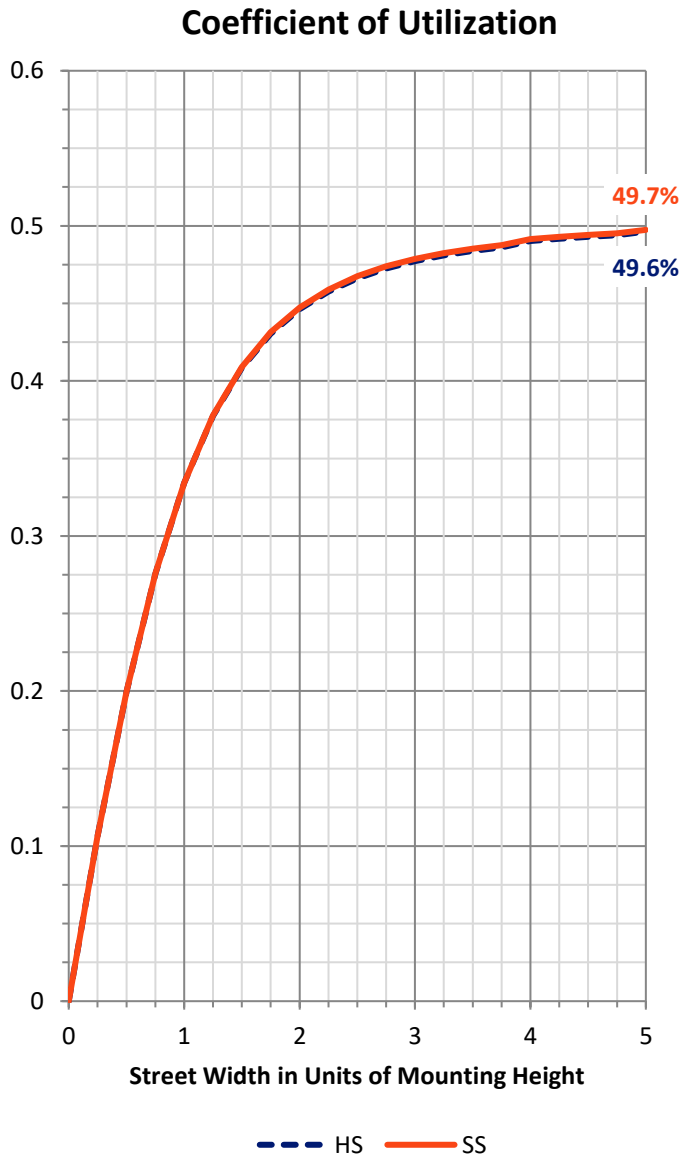
REPORT NUMBER: P879752
CATALOG NUMBER: EMM2-HSN-VA7-750-U-CQ

FLUX DISTRIBUTION:

		Downward	Upward	Total
House Side	Lumens	6440.2	0.0	6440.2
	% Fixture	50.0	0.0	50.0
Street Side	Lumens	6440.2	0.0	6440.2
	% Fixture	50.0	0.0	50.0
Total	Lumens	12880.4	0.0	12880.4
	% Fixture	100.0	0.0	100.0

ZONAL LUMENS:

Zone	Lumens	% Fixture
0°-10°	303.0	2.4
10°-20°	874.2	6.8
20°-30°	1399.6	10.9
30°-40°	1896.0	14.7
40°-50°	2341.4	18.2
50°-60°	2515.6	19.5
60°-70°	2115.5	16.4
70°-80°	1181.3	9.2
80°-90°	253.8	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°	12880.4	100.0
0°-180°	12880.4	100.0



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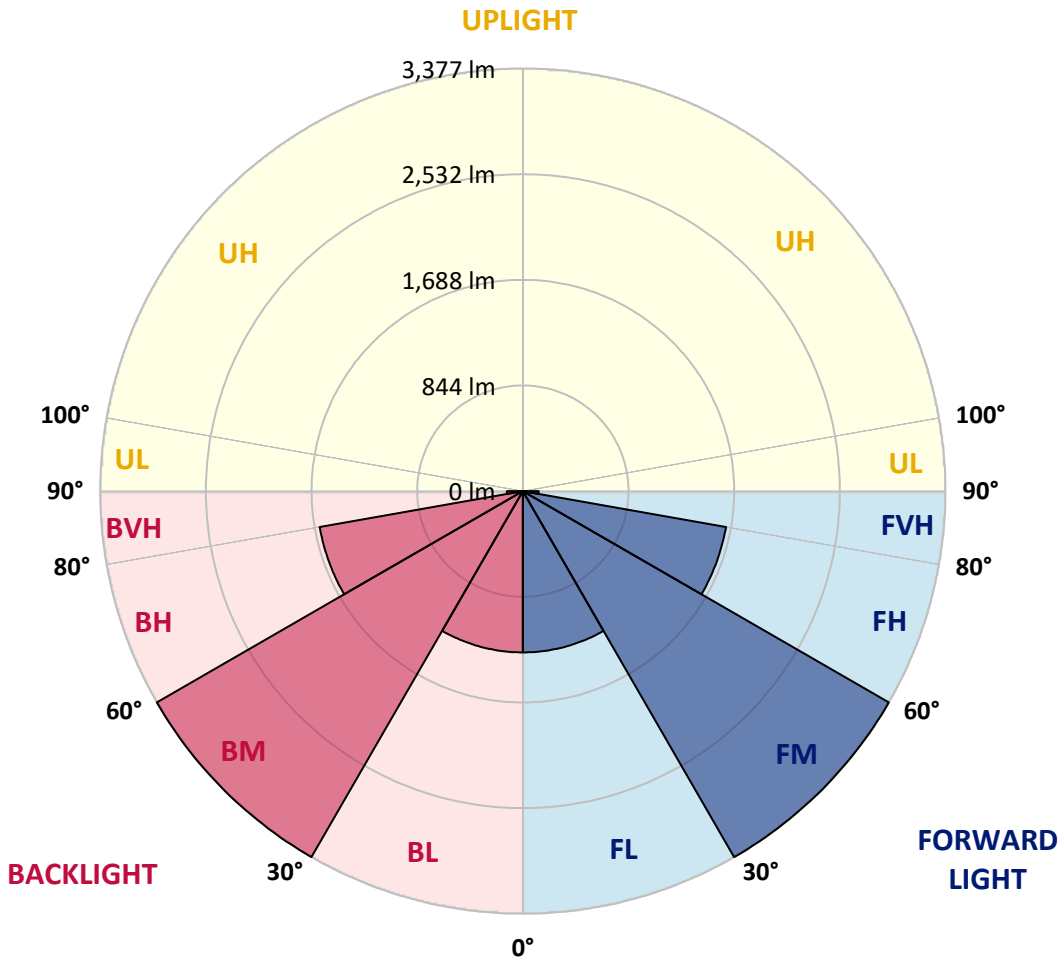
Scaled Data Report

REPORT NUMBER: P879752
CATALOG NUMBER: EMM2-HSN-VA7-750-U-CQ

LUMINAIRE CLASSIFICATION SYSTEM LUMEN TABLE AND BUG RATING:

Zone		Lumens	% Fixture	Zone Rating/Lumen Limit B	U	G
FL	(0°-30°)	1288.4	10.0			
FM	(30°-60°)	3376.5	26.2			
FH	(60°-80°)	1648.4	12.8			G1/1800
FVH	(80°-90°)	126.9	1.0			G2/225
BL	(0°-30°)	1288.4	10.0	B3/2500		
BM	(30°-60°)	3376.5	26.2	B3/5000		
BH	(60°-80°)	1648.4	12.8	B3/2500		G1/1800
BVH	(80°-90°)	126.9	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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REPORT NUMBER: P879752
CATALOG NUMBER: EMM2-HSN-VA7-750-U-CQ

CANDELA DISTRIBUTION (FULL):

	0°	5°	15°	25°	35°	45°	55°	65°	75°	85°	90°
0°	*3215.1*	*3215.1*	*3215.1*	*3215.1*	*3215.1*	*3215.1*	*3215.1*	*3215.1*	*3215.1*	*3215.1*	*3215.1*
2.5°	*3205.5*	3208.7	3207.9	3207.9	3207.9	3209.5	3209.5	3209.5	3210.3	3210.3	3211.1
5°	*3187.1*	3189.5	3189.5	3189.5	3191.1	3191.9	3191.9	3192.7	3194.3	3193.5	3192.7
7.5°	*3162.4*	3164.8	3164.8	3164.8	3166.4	3168.0	3168.0	3167.2	3169.6	3169.6	3168.8
10°	*3136.0*	3136.8	3137.6	3139.2	3141.6	3142.4	3141.6	3141.6	3140.8	3141.6	3141.6
12.5°	*3104.9*	3108.9	3109.7	3111.3	3115.3	3116.1	3116.1	3115.3	3114.5	3114.5	3113.7
15°	*3076.9*	3078.5	3080.9	3084.1	3088.9	3090.5	3091.3	3088.9	3086.5	3085.7	3086.5
17.5°	*3051.4*	3053.8	3057.0	3060.2	3066.6	3069.8	3069.8	3066.6	3063.4	3061.8	3061.8
20°	*3030.6*	3033.0	3037.0	3041.8	3050.6	3054.6	3053.0	3049.8	3044.2	3041.8	3042.6
22.5°	*3017.0*	3020.2	3023.4	3030.6	3040.2	3045.0	3043.4	3037.8	3031.4	3027.4	3027.4
25°	*3005.9*	3008.3	3013.1	3022.6	3033.0	3038.6	3036.2	3029.0	3020.2	3015.4	3014.6
27.5°	*2993.1*	2996.3	3002.7	3015.4	3028.2	3033.0	3031.4	3021.0	3010.7	3004.3	3002.7
30°	*2981.1*	2984.3	2993.1	3007.5	3023.4	3030.6	3026.6	3015.4	3002.7	2994.7	2993.9
32.5°	*2973.1*	2977.1	2987.5	3005.9	3025.0	3035.4	3031.4	3017.8	3001.1	2990.7	2989.9
35°	*2969.9*	2973.9	2989.1	3011.5	3035.4	3049.8	3044.2	3027.4	3006.7	2993.9	2992.3
37.5°	*2970.7*	2975.5	2994.7	3024.2	3054.6	3069.8	3062.6	3041.0	3014.6	2997.1	2994.7
40°	*2973.9*	2979.5	3004.3	3041.0	3076.9	3091.3	3080.1	3048.2	3012.3	2987.5	2982.7
42.5°	*2977.9*	2986.7	3017.0	3060.2	3097.7	3109.7	3089.7	3042.6	2992.3	2960.3	2956.4
45°	*2977.1*	2984.3	3019.4	3070.6	3110.5	3116.9	3084.1	3025.0	2965.9	2924.4	2921.2
47.5°	*2963.5*	2970.7	3010.7	3067.4	3106.5	3108.1	3069.0	3001.1	2931.6	2883.7	2878.9
50°	*2921.2*	2930.8	2975.5	3037.8	3081.7	3082.5	3039.4	2964.3	2883.7	2827.8	2819.8
52.5°	*2856.5*	2863.7	2915.6	2982.7	3032.2	3038.6	2991.5	2904.4	2812.6	2752.7	2747.1
55°	*2755.9*	2770.3	2825.4	2895.7	2950.0	2957.2	2910.0	2815.8	2721.6	2652.9	2646.5
57.5°	*2639.3*	2641.7	2700.0	2776.7	2833.4	2841.4	2790.2	2694.4	2596.2	2532.3	2516.3
60°	*2474.8*	2484.4	2539.5	2614.6	2674.5	2684.8	2636.1	2543.5	2441.3	2368.6	2367.8
62.5°	*2284.7*	2295.9	2351.8	2431.7	2492.4	2502.8	2450.8	2360.6	2258.4	2196.1	2173.7
65°	*2078.7*	2081.9	2137.8	2216.9	2272.0	2277.6	2236.8	2151.4	2046.0	1982.1	1967.7
67.5°	*1847.1*	1850.3	1893.4	1967.7	2026.8	2034.8	1993.3	1915.0	1820.0	1752.9	1745.7
70°	*1590.8*	1591.6	1633.9	1694.6	1753.7	1770.5	1732.9	1657.9	1566.8	1513.3	1498.9
72.5°	*1320.9*	1328.0	1365.6	1428.7	1479.0	1483.0	1452.6	1387.9	1313.7	1269.7	1261.8
75°	*1074.1*	1069.3	1101.2	1139.6	1178.7	1191.5	1166.7	1122.8	1054.1	1015.8	1023.8
77.5°	*806.6*	808.2	832.9	868.1	892.8	915.2	887.2	866.5	811.4	767.4	769.0
80°	*570.2*	568.6	591.7	608.5	636.5	639.7	624.5	596.5	561.4	543.0	541.4
82.5°	*361.0*	353.8	371.3	392.9	404.9	399.3	402.5	384.1	356.2	346.6	337.8
85°	*184.5*	182.9	192.5	200.4	209.2	209.2	204.4	190.1	184.5	173.3	170.1
87.5°	*63.1*	65.5	68.7	66.3	70.3	68.7	67.1	56.7	50.3	47.1	43.9
90°	*0.0*	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0

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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

Report Generated By FNC07603 / LDUCLS01DT446
Version: v7.04

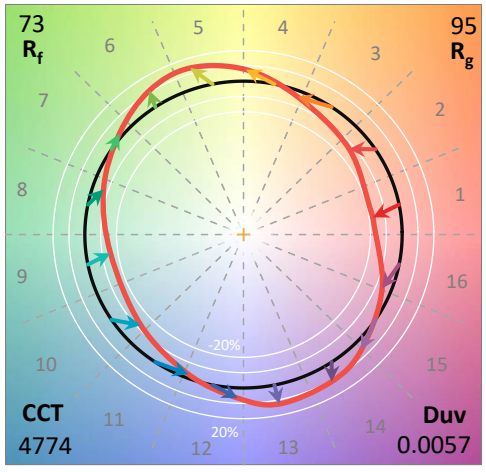
Test Information

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

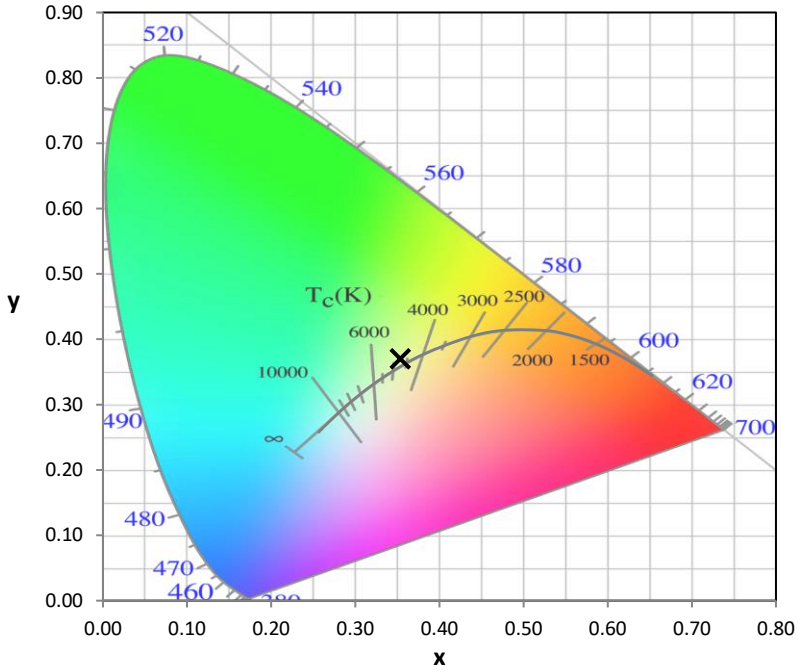
Stabilization Time:	37M
Operation Time:	1H 37M
Sphere Temperature (°C):	25.2

REPORT NUMBER: SP1-2407-176-10

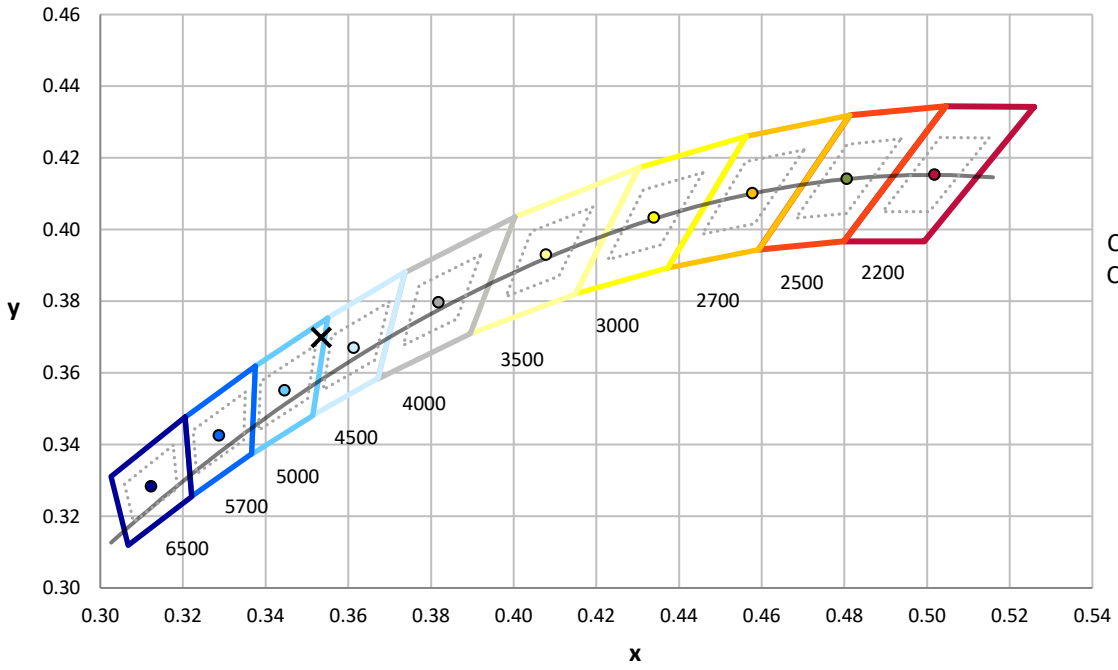
Measurement and Test Equipment			
Instrument	Identification Number	Calibration Date	Calibration Due Date
Photometer	IN0058	6/18/2024	12/18/2024
Power Meter	INXT2011004	2/8/2024	2/8/2025
AC Power Source	IN0063	10/24/2023	10/24/2024
DC Power Source	IN0208	10/24/2023	10/24/2024
Sphere Thermometer	IN0085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

REPORT NUMBER: SP1-2407-176-10

CIE 1931 Chromaticity Diagram



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

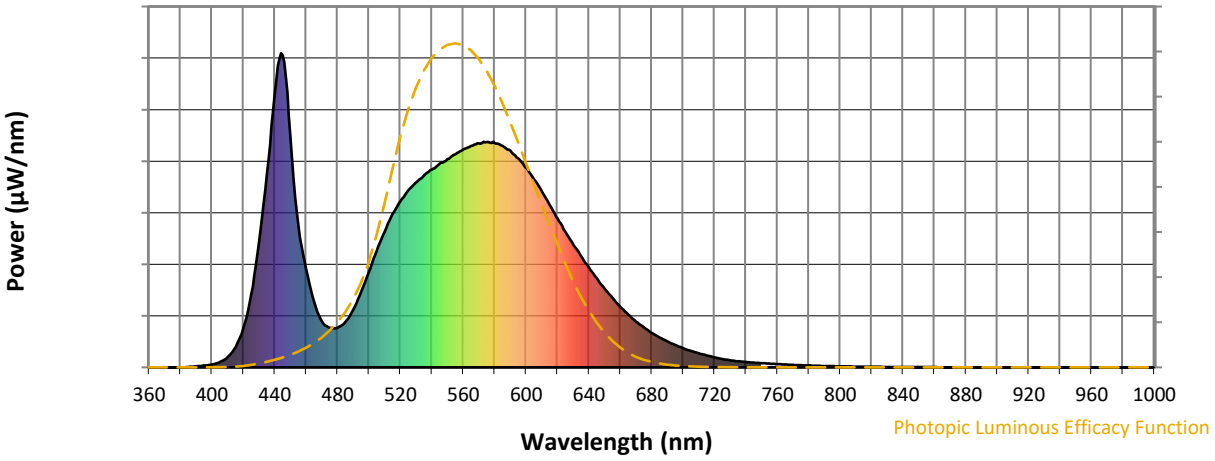


CCT = 4774K
CIE x = 0.3535
CIE y = 0.3699
Duv = 0.0057

Point lies inside the ANSI 5000K 7-step quadrangle

REPORT NUMBER: SP1-2407-176-10

Photopic Flux vs. Wavelength

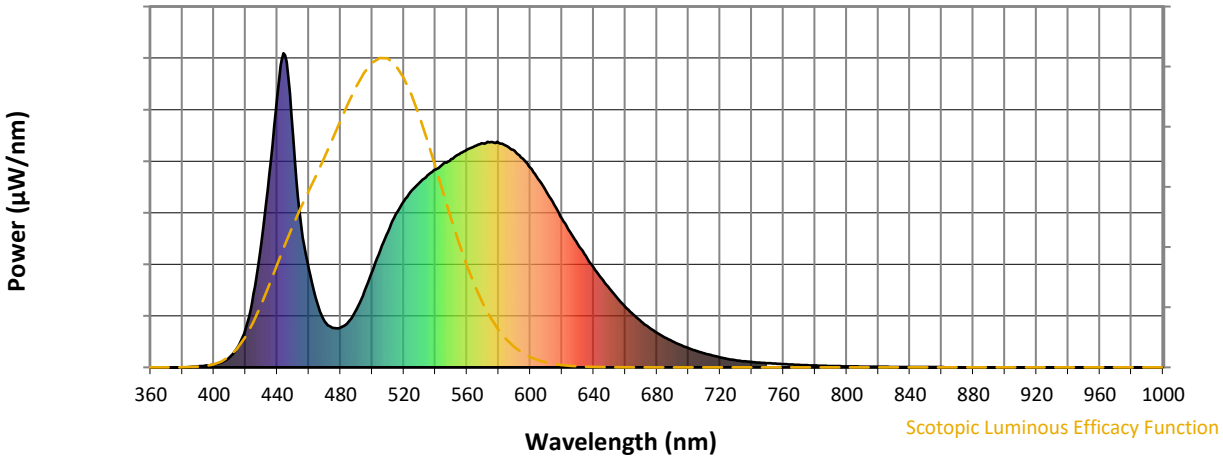


Photopic Lumens: NR

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			

REPORT NUMBER: SP1-2407-176-10

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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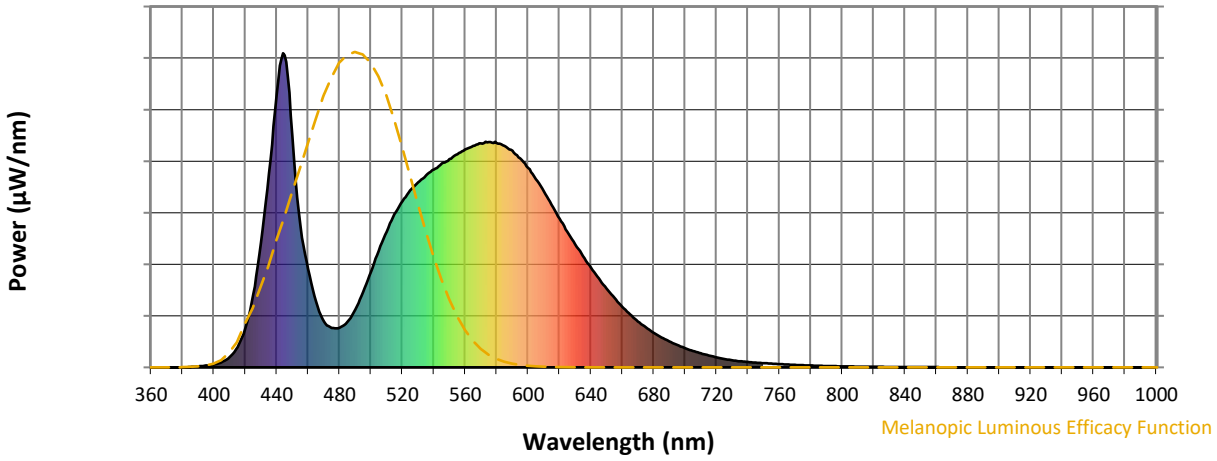
Melanopic Flux vs. Wavelength



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			

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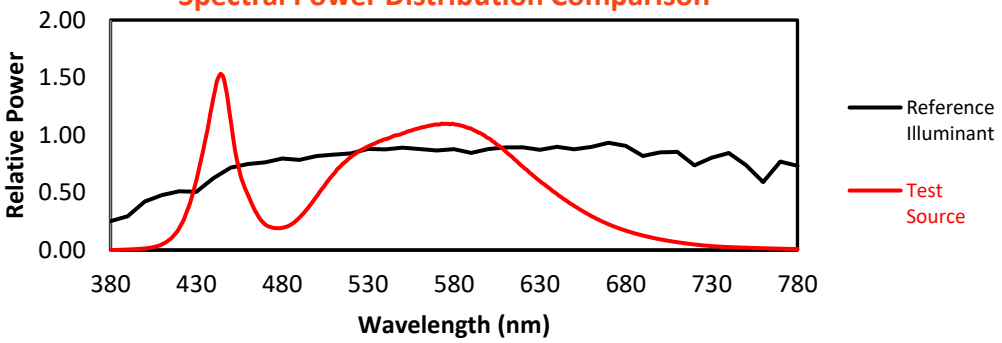
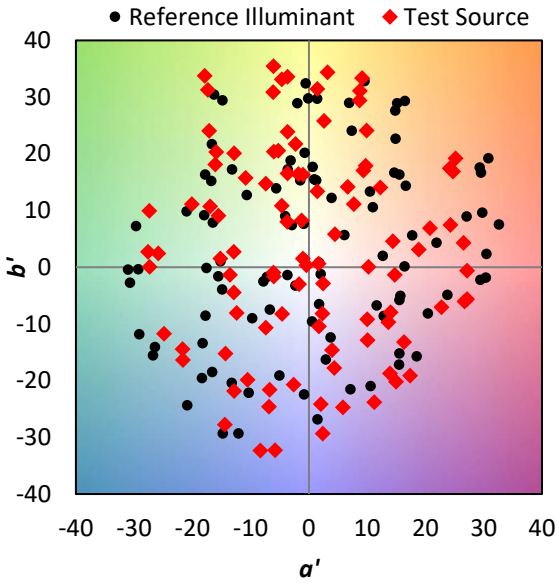
Summary

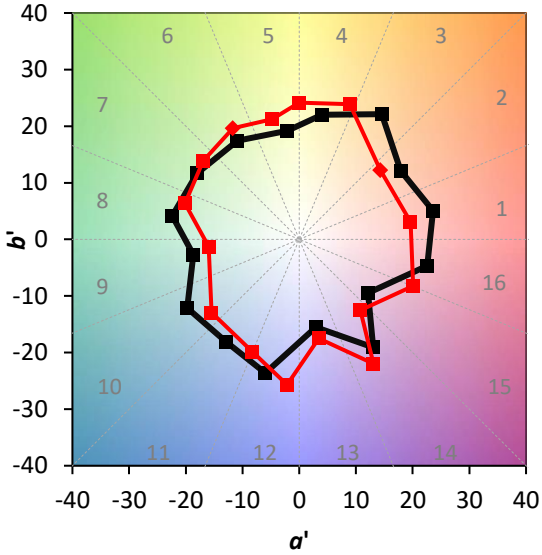
R_f = 73.1
R_g = 94.9
CIE R_a = 70.8
R_9 = -40.0

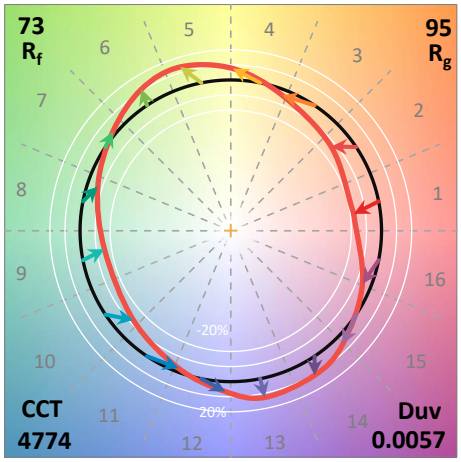
Spectral Power Distribution Comparison

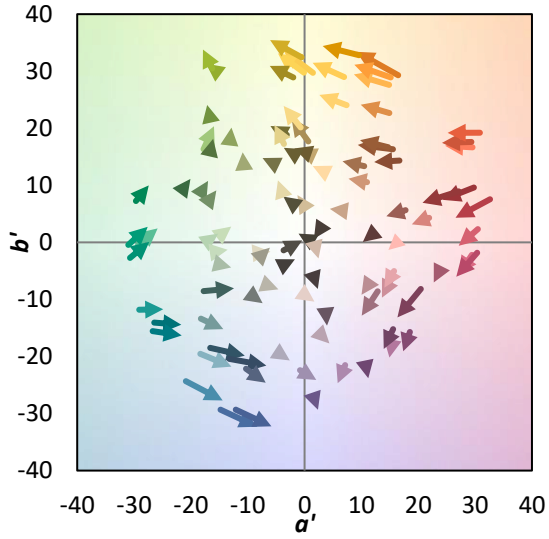


Color Vector Graphics









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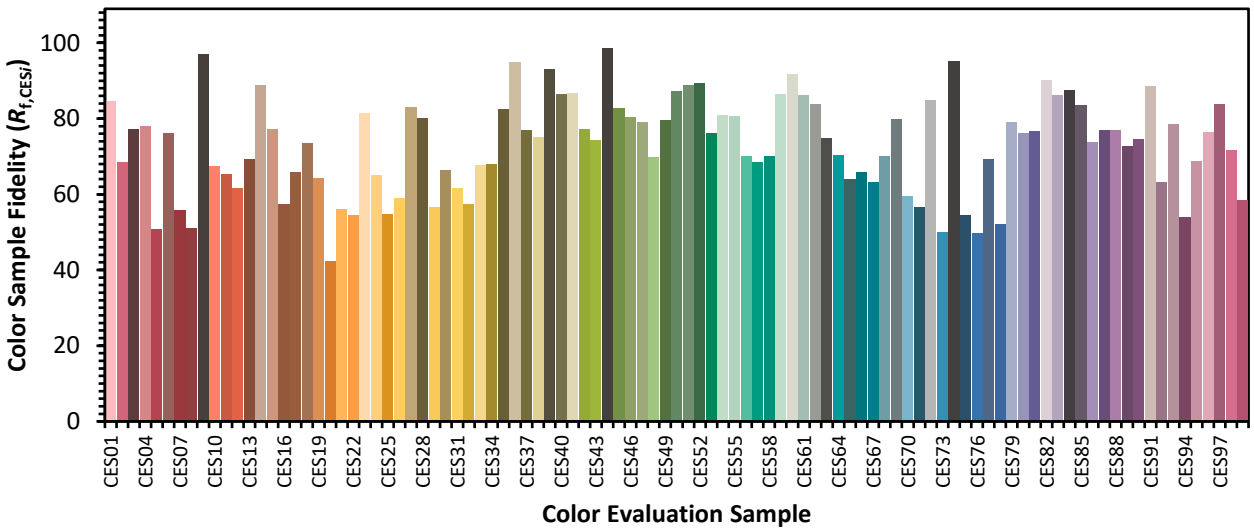
Individual Sample Fidelity Index ($R_{f,i}$)

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	



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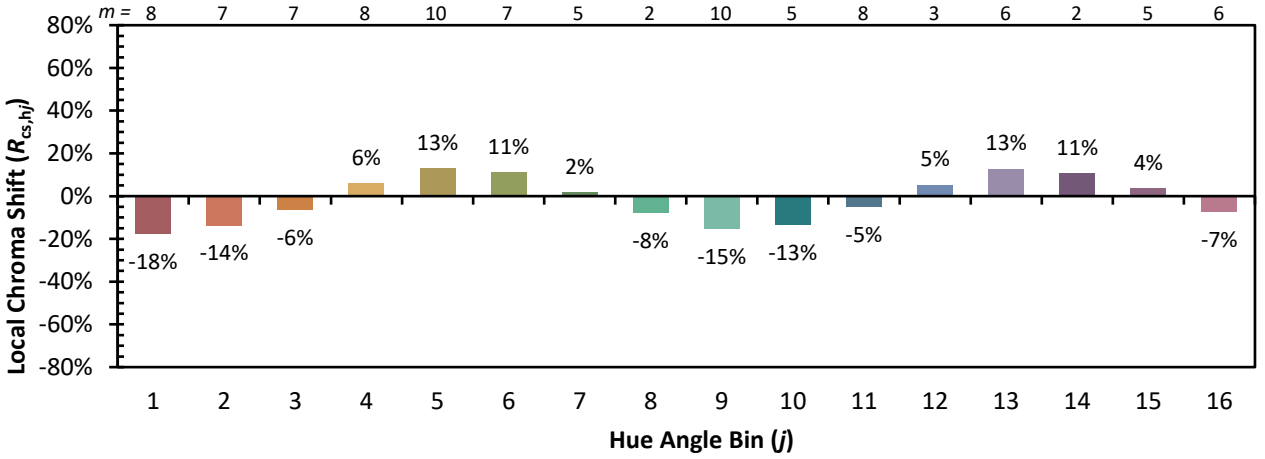
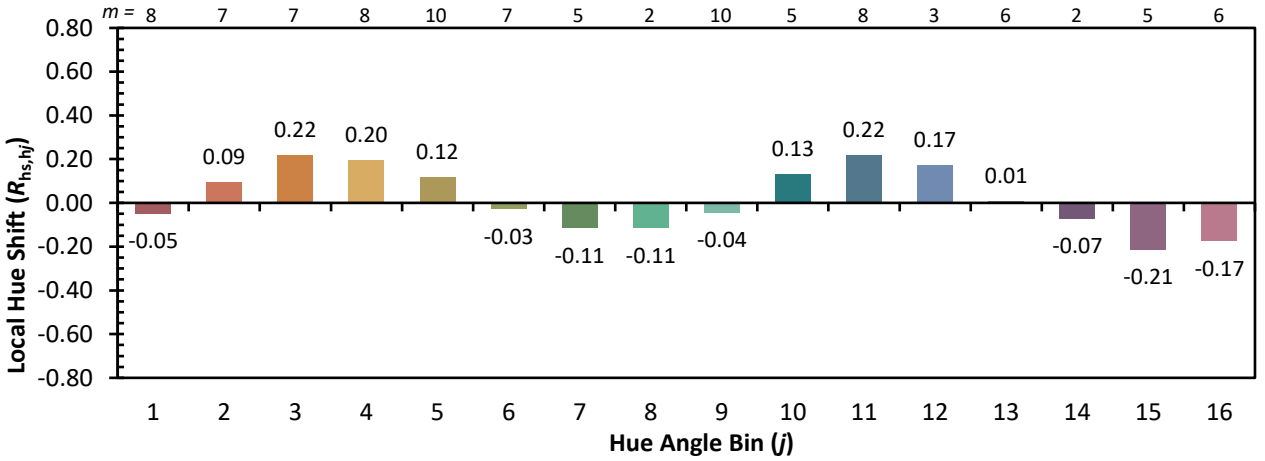
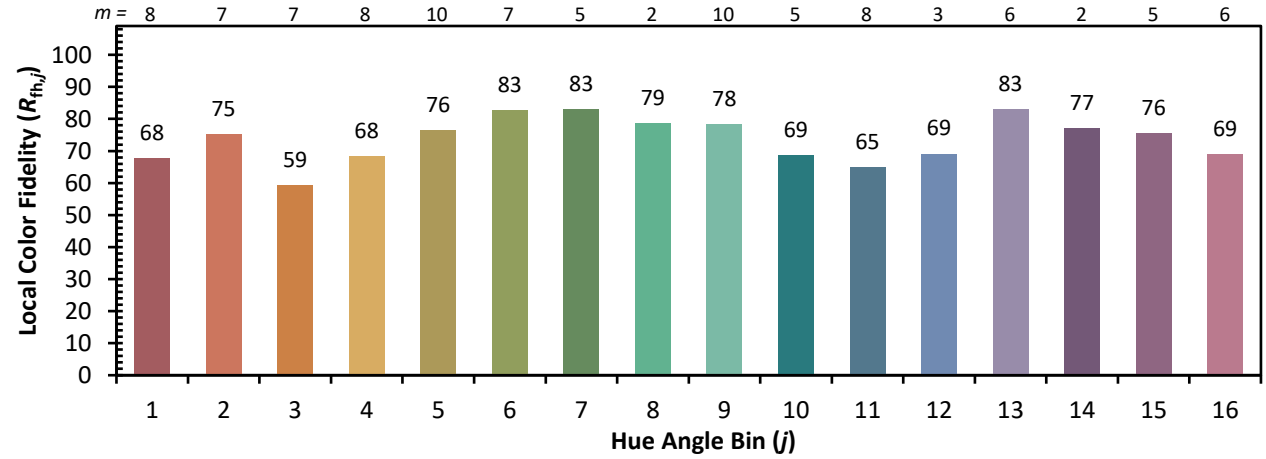
Color Rendition by Hue-Angle Bin







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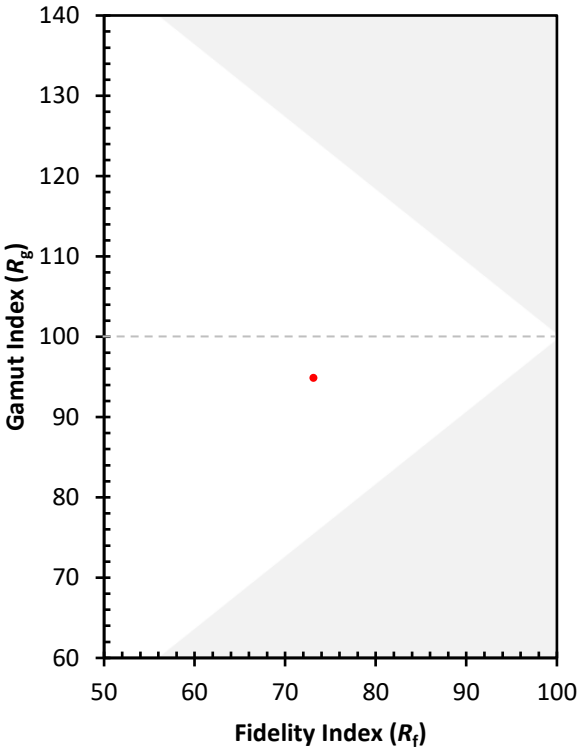
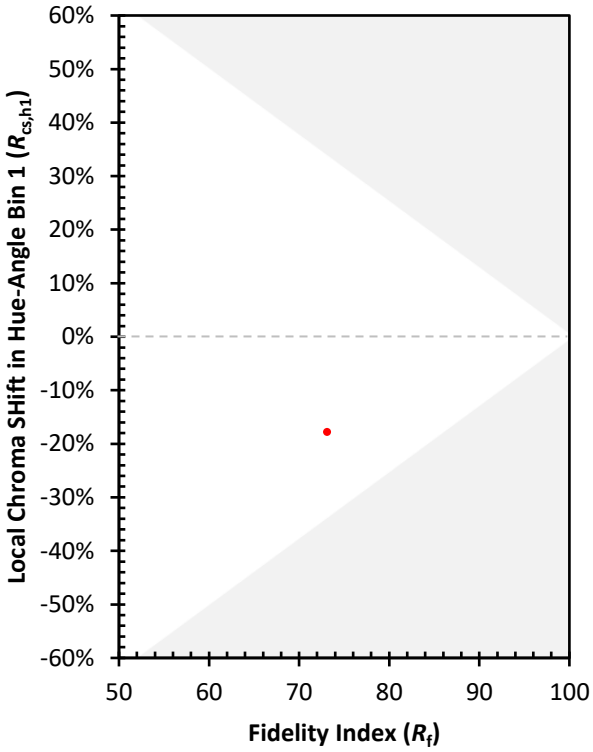
Measure Comparisons





(END OF REPORT)