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: P879661

Luminaire Tested: **EMM2-HTN-VA9-740-U-WQ**

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:	P879661
Test Lab:	INNOVATION CENTER(G3)
Issue Date:	10/01/2024
Manufacturer:	COOPER LIGHTING SOLUTIONS (FORMERLY EATON)
Product Line:	INVUE
Catalog Number:	EMM2-HTN-VA9-740-U-WQ
Description:	EPIC MODERN TALL HOUSING 9W 70CRI 4000K WAVESTREAM FIXTURE w/ TYPE V WIDE DISTRIBUTION OPTIC
Light Source:	(1) 4000K CCT, 70 CRI LEDS
Ballast/Driver:	ELECTRONIC DRIVER

Summary

Lumens per Lamp:	N/A
Luminaire Lumens:	20239.9 lumens
Efficiency:	N/A
Efficacy:	119.1 lumens/watt
Luminous Opening:	Circular (Dia: 1.12' x H: 0')
IES Classification:	Type V - Short
BUG Rating:	B4 - U0 - G4

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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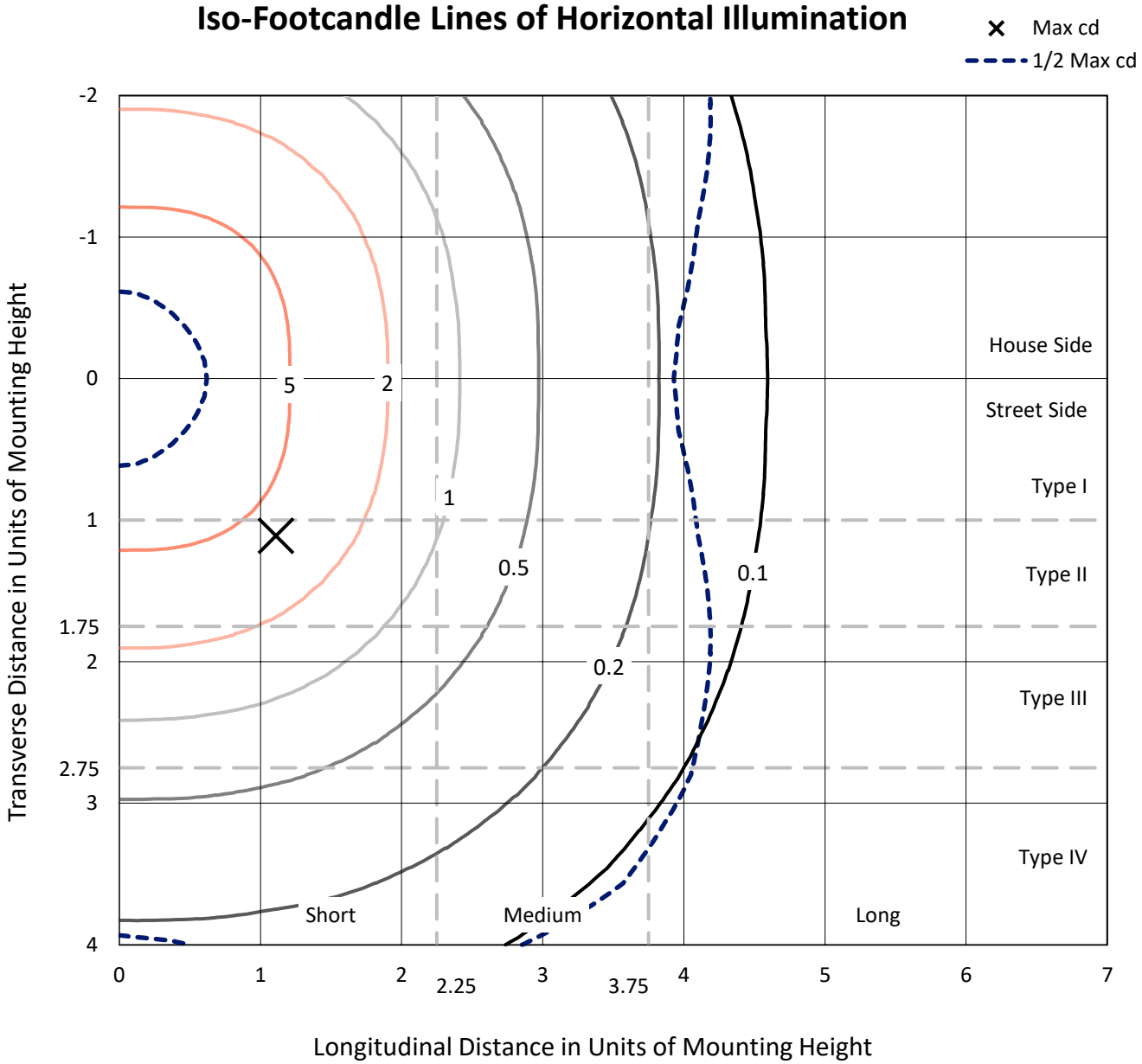
Scaled Data Report

REPORT NUMBER: P879661
CATALOG NUMBER: EMM2-HTN-VA9-740-U-WQ

Iso-Footcandle Lines of Horizontal Illumination



Based on 15 foot mounting height. Maximum calculated value = 7.7 fc
Type V - Short - N/A

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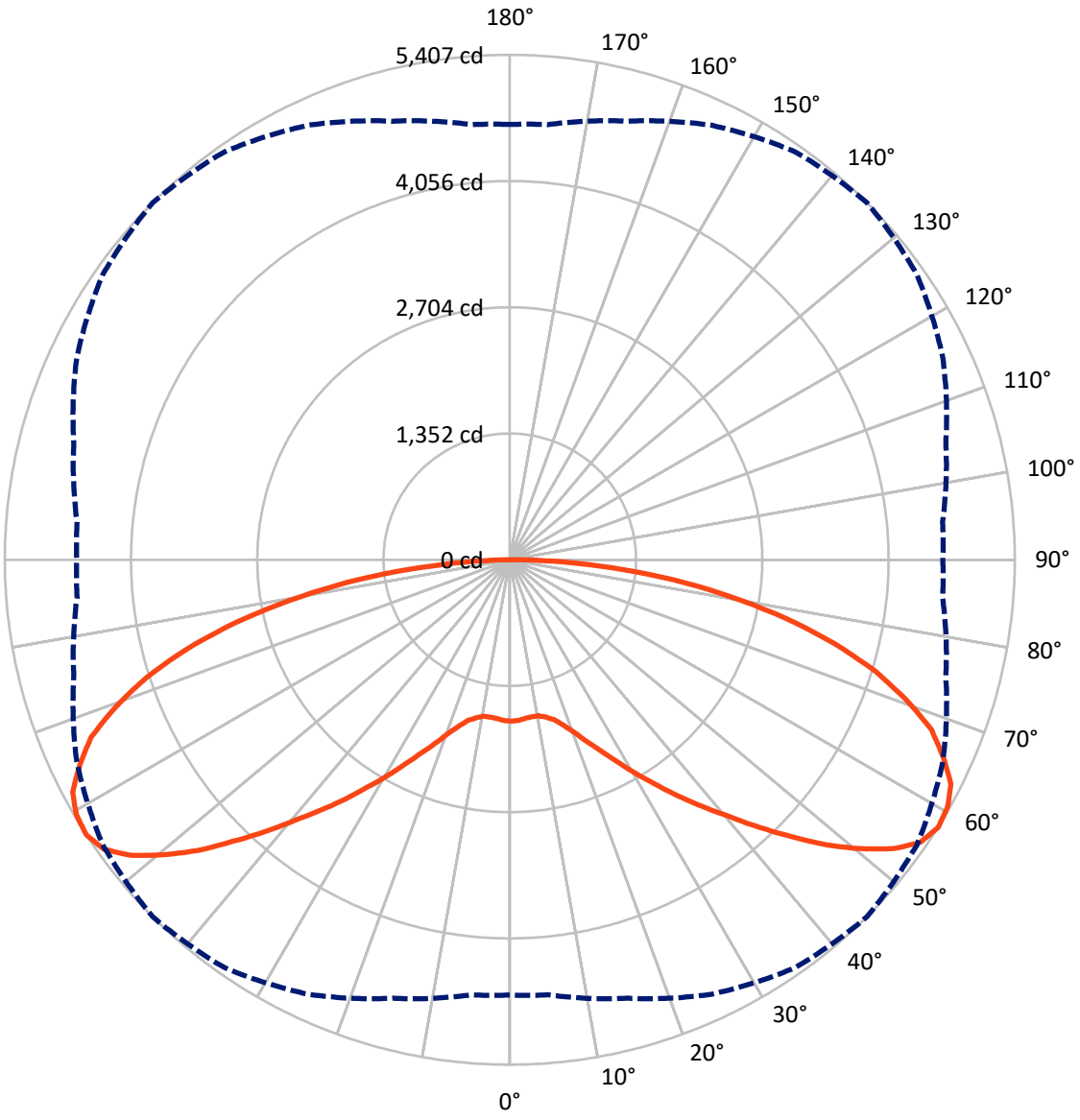
Luminous Intensity Polar Plot



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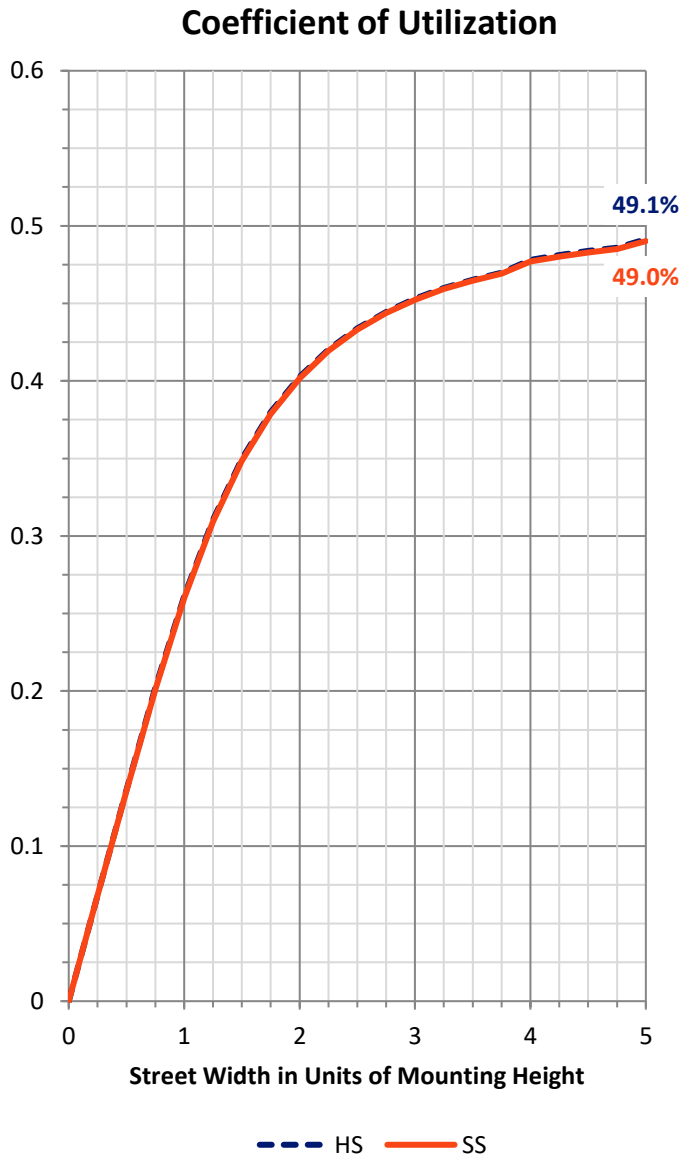
CATALOG NUMBER: EMM2-HTN-VA9-740-U-WQ

FLUX DISTRIBUTION:

		Downward	Upward	Total
House Side	Lumens	10120.0	0.0	10120.0
	% Fixture	50.0	0.0	50.0
Street Side	Lumens	10120.0	0.0	10120.0
	% Fixture	50.0	0.0	50.0
Total	Lumens	20239.9	0.0	20239.9
	% Fixture	100.0	0.0	100.0

ZONAL LUMENS:

Zone	Lumens	% Fixture
0°-10°	162.7	0.8
10°-20°	511.7	2.5
20°-30°	1051.7	5.2
30°-40°	1919.0	9.5
40°-50°	3146.9	15.5
50°-60°	4409.6	21.8
60°-70°	4613.0	22.8
70°-80°	3370.4	16.7
80°-90°	1055.0	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°	20239.9	100.0
0°-180°	20239.9	100.0



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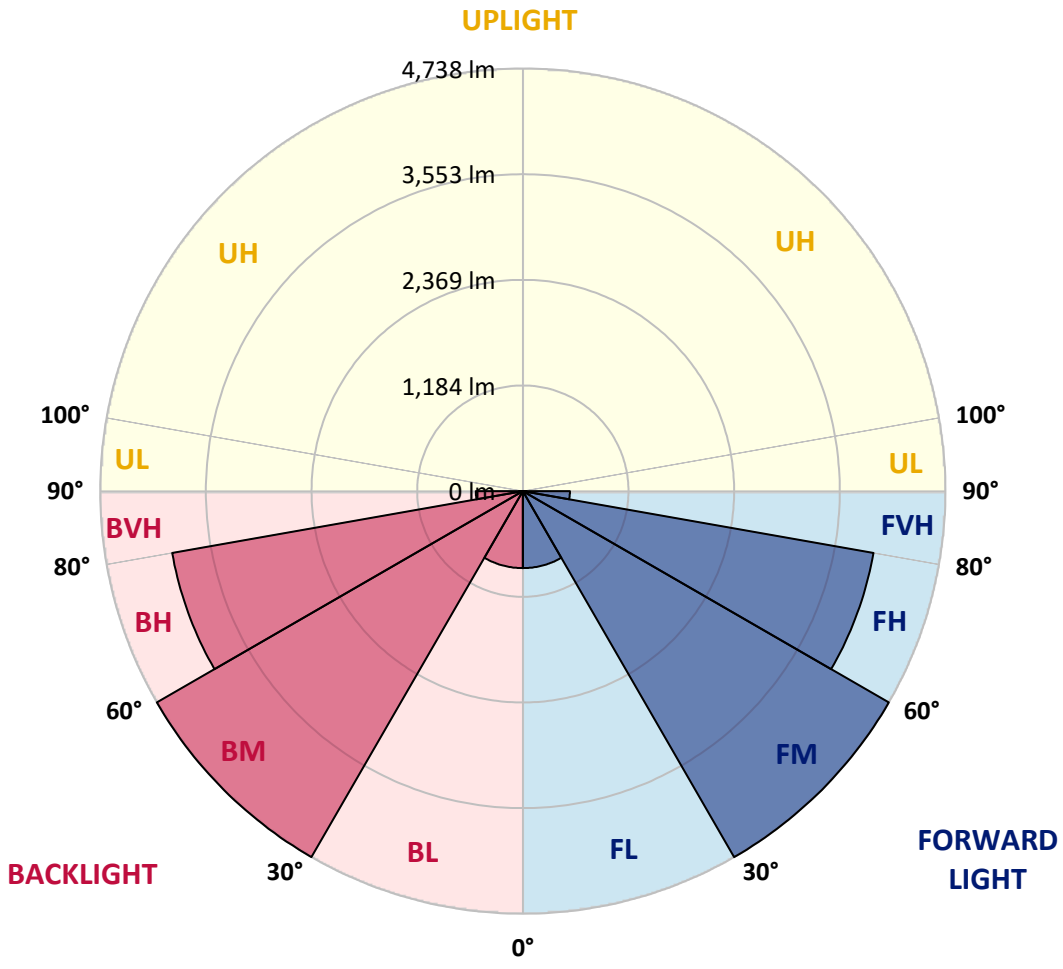
Scaled Data Report

REPORT NUMBER: P879661
CATALOG NUMBER: EMM2-HTN-VA9-740-U-WQ

LUMINAIRE CLASSIFICATION SYSTEM LUMEN TABLE AND BUG RATING:

Zone		Lumens	% Fixture	Zone Rating/Lumen Limit B	U	G
FL	(0°-30°)	863.0	4.3			
FM	(30°-60°)	4737.7	23.4			
FH	(60°-80°)	3991.7	19.7			G2/5000
FVH	(80°-90°)	527.5	2.6			G4/750
BL	(0°-30°)	863.0	4.3	B2/1000		
BM	(30°-60°)	4737.7	23.4	B3/5000		
BH	(60°-80°)	3991.7	19.7	B4/5000		G2/5000
BVH	(80°-90°)	527.5	2.6			G4/750
UL	(90°-100°)	0.0	0.0		U0/0	
UH	(100°-180°)	0.0	0.0		U0/0	

BUG Rating: B4-U0-G4
Type V Short



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REPORT NUMBER: P879661
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CANDELA DISTRIBUTION (FULL):

	0°	5°	15°	25°	35°	45°	55°	65°	75°	85°	90°
0°	1728.1	1728.1	1728.1	1728.1	1728.1	*1728.1*	1728.1	1728.1	1728.1	1728.1	1728.1
2.5°	1721.7	1724.3	1723.0	1723.0	1721.7	*1723.0*	1725.5	1726.8	1725.5	1726.8	1725.5
5°	1710.3	1710.3	1709.1	1707.8	1707.8	*1707.8*	1707.8	1707.8	1709.1	1709.1	1710.3
7.5°	1696.4	1696.4	1696.4	1698.9	1697.7	*1698.9*	1698.9	1697.7	1696.4	1696.4	1697.7
10°	1698.9	1697.7	1696.4	1698.9	1697.7	*1698.9*	1698.9	1696.4	1697.7	1698.9	1700.2
12.5°	1720.5	1717.9	1721.7	1725.5	1728.1	*1730.6*	1729.4	1728.1	1724.3	1720.5	1720.5
15°	1767.4	1764.9	1768.7	1773.7	1775.0	*1776.3*	1780.1	1775.0	1773.7	1767.4	1766.1
17.5°	1834.6	1833.3	1840.9	1851.1	1856.1	*1862.5*	1856.1	1851.1	1837.1	1834.6	1838.4
20°	1930.9	1927.1	1942.4	1958.8	1963.9	*1971.5*	1966.4	1956.3	1942.4	1927.1	1927.1
22.5°	2053.9	2062.8	2070.4	2083.1	2103.4	*2116.0*	2099.6	2081.8	2061.5	2052.7	2046.3
25°	2213.7	2212.4	2220.0	2245.4	2258.0	*2266.9*	2264.4	2240.3	2222.5	2209.9	2208.6
27.5°	2367.1	2382.3	2397.5	2414.0	2445.7	*2449.5*	2445.7	2416.5	2388.6	2378.5	2374.7
30°	2571.2	2568.7	2582.6	2621.9	2653.6	*2656.2*	2646.0	2610.5	2578.8	2559.8	2562.3
32.5°	2770.3	2750.0	2786.7	2813.4	2840.0	*2867.9*	2841.3	2813.4	2786.7	2746.2	2758.8
35°	2951.6	2968.0	2988.3	3042.8	3097.4	*3108.8*	3091.0	3034.0	2982.0	2963.0	2941.4
37.5°	3173.4	3173.4	3207.7	3287.5	3337.0	*3354.7*	3329.4	3272.3	3200.1	3172.2	3162.0
40°	3396.6	3396.6	3448.6	3515.8	3589.3	*3614.6*	3586.8	3512.0	3452.4	3380.1	3391.5
42.5°	3613.4	3631.1	3699.6	3782.0	3884.7	*3918.9*	3879.6	3779.5	3693.3	3624.8	3614.6
45°	3853.0	3880.9	3955.7	4091.4	4178.8	*4228.3*	4173.8	4087.6	3935.4	3869.5	3834.0
47.5°	4114.2	4133.2	4241.0	4370.3	4512.3	*4564.3*	4499.6	4358.9	4229.6	4112.9	4107.8
50°	4341.1	4337.3	4475.5	4654.3	4815.3	*4864.8*	4812.8	4660.6	4450.2	4320.8	4333.5
52.5°	4511.0	4532.6	4678.4	4899.0	5070.1	*5142.4*	5057.5	4874.9	4655.6	4521.2	4480.6
55°	4621.3	4656.8	4826.7	5065.1	5260.3	*5337.7*	5254.0	5043.5	4803.9	4630.2	4606.1
57.5°	*4661.9*	*4677.1*	*4862.2*	*5132.3*	*5331.3*	*5407.4*	*5321.2*	*5115.8*	*4833.1*	*4651.8*	*4636.5*
60°	4599.8	4615.0	4815.3	5091.7	5319.9	*5384.6*	5316.1	5075.2	4787.4	4602.3	4576.9
62.5°	4447.6	4489.5	4711.3	4985.2	5246.4	*5300.9*	5229.9	4966.2	4699.9	4476.8	4440.0
65°	4265.1	4309.4	4498.3	4803.9	5041.0	*5099.3*	5043.5	4789.9	4499.6	4285.3	4249.8
67.5°	4010.2	4017.8	4239.7	4549.1	4800.1	*4871.1*	4774.7	4544.0	4228.3	4025.4	3997.5
70°	3692.0	3697.1	3932.9	4219.4	4450.2	*4508.5*	4445.1	4199.1	3916.4	3695.8	3676.8
72.5°	3283.7	3330.6	3525.9	3809.9	4025.4	*4093.9*	4011.5	3802.3	3541.1	3323.0	3279.9
75°	2850.1	2879.3	3049.2	3324.3	3509.4	*3594.4*	3527.2	3324.3	3049.2	2869.2	2831.1
77.5°	2343.0	2382.3	2548.4	2780.4	2933.8	*3025.1*	2951.6	2771.5	2548.4	2383.6	2382.3
80°	1851.1	1840.9	1991.8	2192.1	2344.3	*2397.5*	2351.9	2176.9	1976.6	1848.5	1830.8
82.5°	1284.3	1281.8	1445.4	1579.7	1707.8	*1768.7*	1698.9	1586.1	1431.4	1317.3	1280.5
85°	730.3	746.8	854.5	938.2	1047.2	*1084.0*	1059.9	953.4	815.2	715.1	708.7
87.5°	253.6	276.4	296.7	357.5	428.5	*460.2*	426.0	409.5	363.9	315.7	318.2
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: SP1-2407-176-9

Test Date: 09/25/2024

Luminaire Tested: MEM2-HTN-VA-130-740-U-RW

Data in this report applies to families of products including MEM2-HTN-VA-130-740-U-RW

Report Generated By FNC07603 / LDUCLS01DT446
Version: v7.04

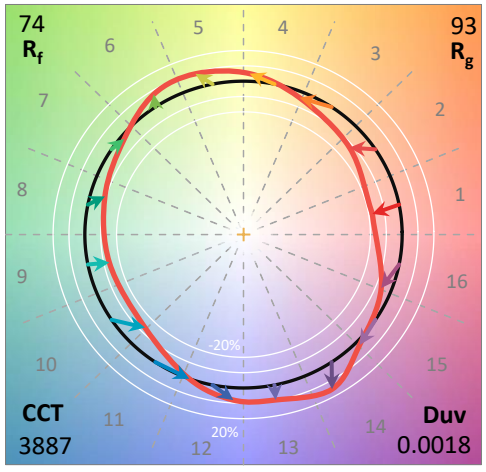
Test Information

Test Method:	LM-79-2019
Report Number:	SP1-2407-176-9
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-130-740-U-RW**
Description:	EPIC MODERN VISUAL COMFORT 130W WAVESTREAM RECTANGULAR WIDE

Spectral Parameters

CCT (K):	3887	CRI (Ra):	71.4		
CIE u':	0.2262	R1:	67.6	R9:	-36.8
CIE v':	0.5060	R2:	78.8	R10:	50.4
Duv:	0.0018	R3:	88.2	R11:	65.0
CIE x:	0.3870	R4:	69.8	R12:	44.4
CIE y:	0.3847	R5:	67.7	R13:	69.4
CIE z:	0.2283	R6:	70.3	R14:	93.3
Peak Wavelength (nm):	583	R7:	80.1	R15:	59.9
Dominant Wavelength (nm):	578	R8:	49.0		
Purity:	31.59626				

Rf:	74.5
Rg:	93.5



Test Conditions

Stabilization Time:	50M
Operation Time:	1H 50M
Sphere Temperature (°C):	25.2

REPORT NUMBER: SP1-2407-176-9

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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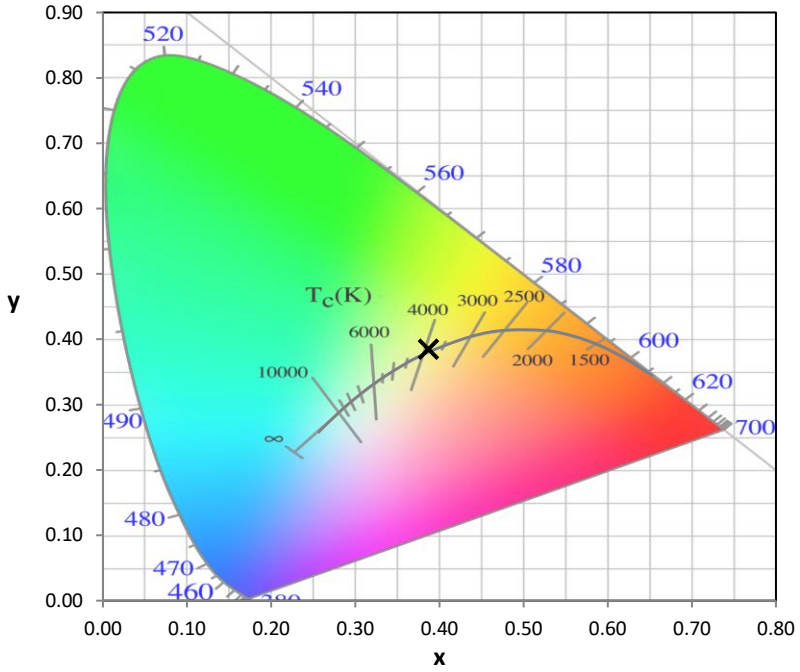
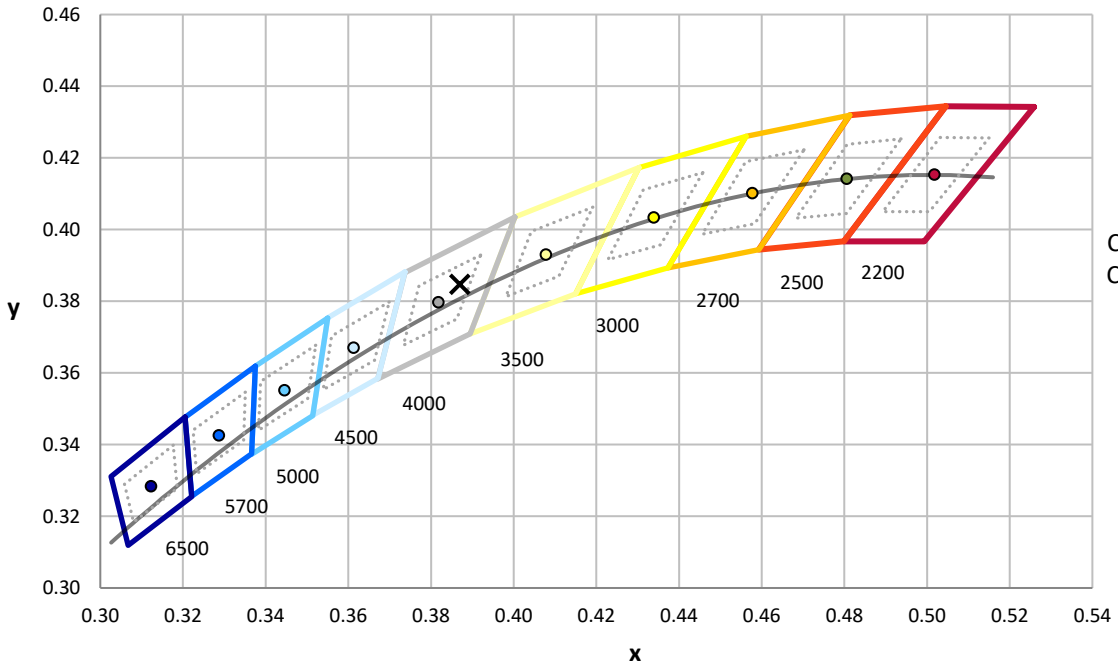
CIE 1931 Chromaticity Diagram



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



CCT = 3887K
CIE x = 0.3870
CIE y = 0.3847
Duv = 0.0018

Point lies inside the ANSI 4000K 4-step quadrangle

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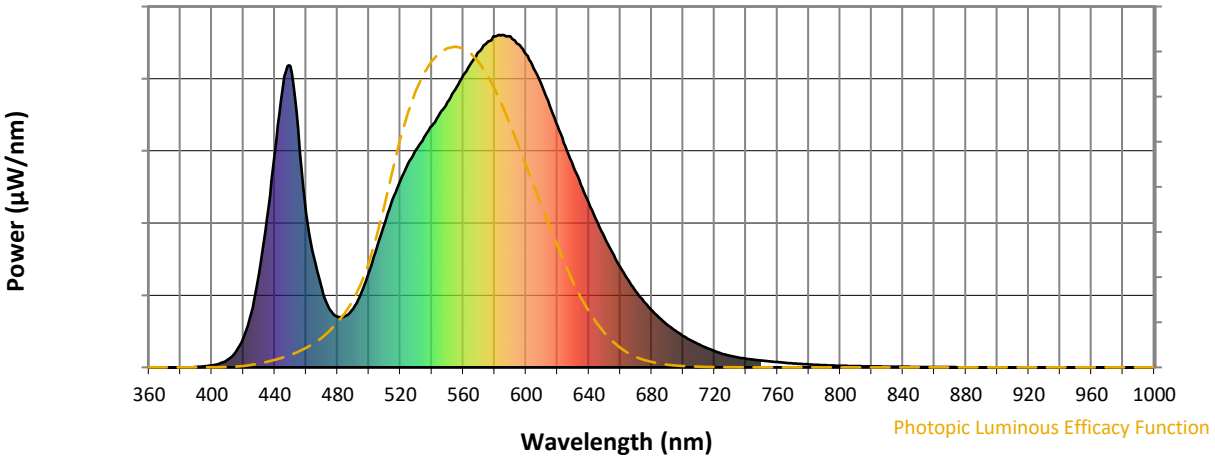
Photopic Flux vs. Wavelength

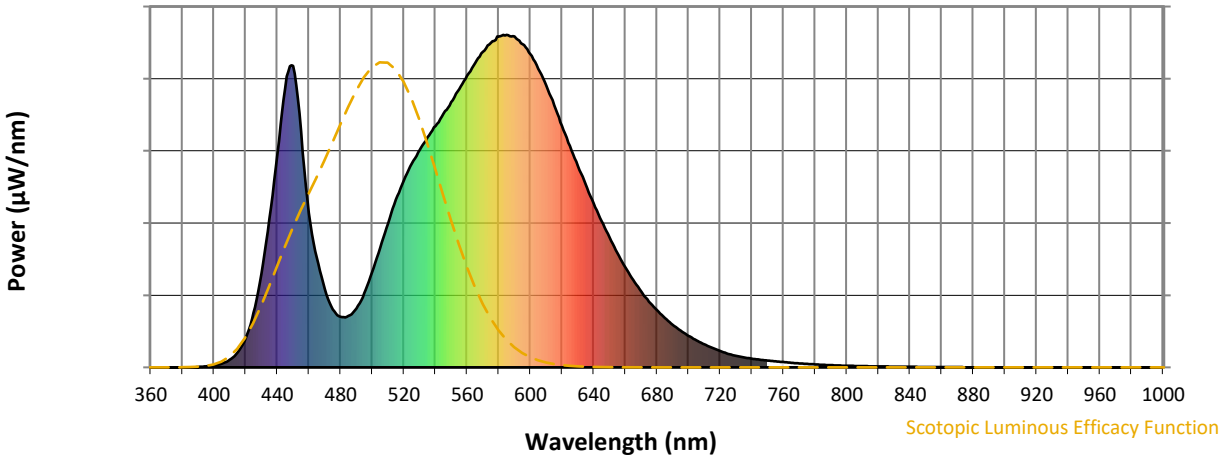


Photopic Lumens: NR

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	177	NR	620	727	NR	750	21	NR	880	0	NR
365	0	NR	495	222	NR	625	666	NR	755	18	NR	885	0	NR
370	0	NR	500	286	NR	630	606	NR	760	16	NR	890	0	NR
375	0	NR	505	359	NR	635	549	NR	765	14	NR	895	0	NR
380	0	NR	510	433	NR	640	493	NR	770	12	NR	900	0	NR
385	0	NR	515	505	NR	645	440	NR	775	10	NR	905	0	NR
390	1	NR	520	562	NR	650	390	NR	780	9	NR	910	0	NR
395	3	NR	525	613	NR	655	344	NR	785	8	NR	915	0	NR
400	6	NR	530	654	NR	660	301	NR	790	7	NR	920	0	NR
405	11	NR	535	692	NR	665	263	NR	795	6	NR	925	0	NR
410	23	NR	540	726	NR	670	228	NR	800	5	NR	930	0	NR
415	45	NR	545	763	NR	675	198	NR	805	4	NR	935	0	NR
420	88	NR	550	798	NR	680	172	NR	810	4	NR	940	0	NR
425	164	NR	555	837	NR	685	148	NR	815	3	NR	945	0	NR
430	281	NR	560	878	NR	690	128	NR	820	3	NR	950	0	NR
435	447	NR	565	915	NR	695	110	NR	825	2	NR	955	0	NR
440	642	NR	570	948	NR	700	95	NR	830	2	NR	960	0	NR
445	838	NR	575	976	NR	705	81	NR	835	2	NR	965	0	NR
450	907	NR	580	995	NR	710	69	NR	840	2	NR	970	0	NR
455	710	NR	585	1000	NR	715	58	NR	845	1	NR	975	0	NR
460	465	NR	590	995	NR	720	49	NR	850	1	NR	980	0	NR
465	330	NR	595	972	NR	725	41	NR	855	1	NR	985	0	NR
470	236	NR	600	941	NR	730	35	NR	860	1	NR	990	0	NR
475	174	NR	605	898	NR	735	30	NR	865	1	NR	995	0	NR
480	152	NR	610	848	NR	740	26	NR	870	1	NR	1000	0	NR
485	155	NR	615	788	NR	745	23	NR	875	0	NR			

REPORT NUMBER: SP1-2407-176-9

Scotopic Flux vs. Wavelength



Scotopic Lumens: NR **S/P: 1.49**

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	177	NR	620	727	NR	750	21	NR	880	0	NR
365	0	NR	495	222	NR	625	666	NR	755	18	NR	885	0	NR
370	0	NR	500	286	NR	630	606	NR	760	16	NR	890	0	NR
375	0	NR	505	359	NR	635	549	NR	765	14	NR	895	0	NR
380	0	NR	510	433	NR	640	493	NR	770	12	NR	900	0	NR
385	0	NR	515	505	NR	645	440	NR	775	10	NR	905	0	NR
390	1	NR	520	562	NR	650	390	NR	780	9	NR	910	0	NR
395	3	NR	525	613	NR	655	344	NR	785	8	NR	915	0	NR
400	6	NR	530	654	NR	660	301	NR	790	7	NR	920	0	NR
405	11	NR	535	692	NR	665	263	NR	795	6	NR	925	0	NR
410	23	NR	540	726	NR	670	228	NR	800	5	NR	930	0	NR
415	45	NR	545	763	NR	675	198	NR	805	4	NR	935	0	NR
420	88	NR	550	798	NR	680	172	NR	810	4	NR	940	0	NR
425	164	NR	555	837	NR	685	148	NR	815	3	NR	945	0	NR
430	281	NR	560	878	NR	690	128	NR	820	3	NR	950	0	NR
435	447	NR	565	915	NR	695	110	NR	825	2	NR	955	0	NR
440	642	NR	570	948	NR	700	95	NR	830	2	NR	960	0	NR
445	838	NR	575	976	NR	705	81	NR	835	2	NR	965	0	NR
450	907	NR	580	995	NR	710	69	NR	840	2	NR	970	0	NR
455	710	NR	585	1000	NR	715	58	NR	845	1	NR	975	0	NR
460	465	NR	590	995	NR	720	49	NR	850	1	NR	980	0	NR
465	330	NR	595	972	NR	725	41	NR	855	1	NR	985	0	NR
470	236	NR	600	941	NR	730	35	NR	860	1	NR	990	0	NR
475	174	NR	605	898	NR	735	30	NR	865	1	NR	995	0	NR
480	152	NR	610	848	NR	740	26	NR	870	1	NR	1000	0	NR
485	155	NR	615	788	NR	745	23	NR	875	0	NR			

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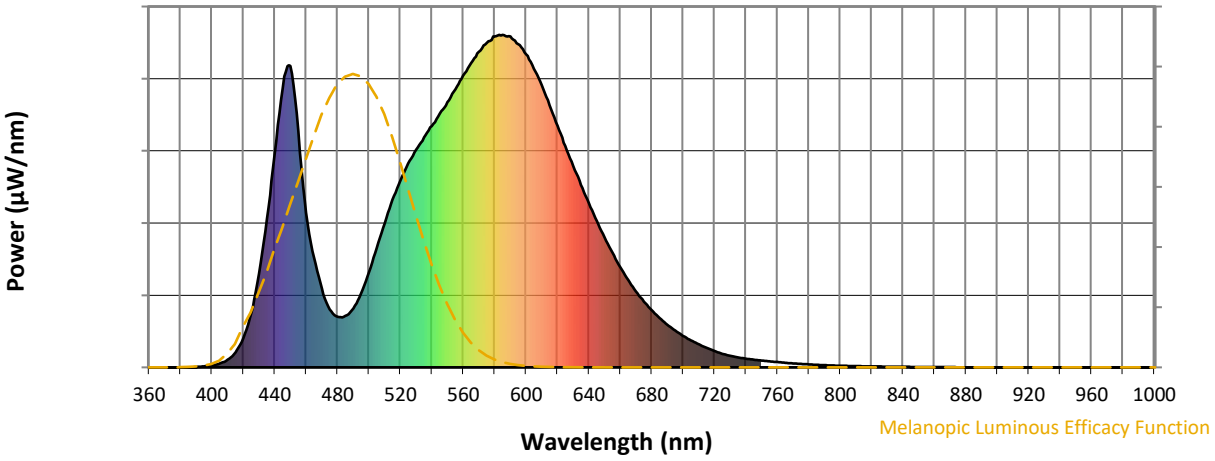
Melanopic Flux vs. Wavelength



Melanopic Lumens: NR **M/P: 2.89**

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	177	NR	620	727	NR	750	21	NR	880	0	NR
365	0	NR	495	222	NR	625	666	NR	755	18	NR	885	0	NR
370	0	NR	500	286	NR	630	606	NR	760	16	NR	890	0	NR
375	0	NR	505	359	NR	635	549	NR	765	14	NR	895	0	NR
380	0	NR	510	433	NR	640	493	NR	770	12	NR	900	0	NR
385	0	NR	515	505	NR	645	440	NR	775	10	NR	905	0	NR
390	1	NR	520	562	NR	650	390	NR	780	9	NR	910	0	NR
395	3	NR	525	613	NR	655	344	NR	785	8	NR	915	0	NR
400	6	NR	530	654	NR	660	301	NR	790	7	NR	920	0	NR
405	11	NR	535	692	NR	665	263	NR	795	6	NR	925	0	NR
410	23	NR	540	726	NR	670	228	NR	800	5	NR	930	0	NR
415	45	NR	545	763	NR	675	198	NR	805	4	NR	935	0	NR
420	88	NR	550	798	NR	680	172	NR	810	4	NR	940	0	NR
425	164	NR	555	837	NR	685	148	NR	815	3	NR	945	0	NR
430	281	NR	560	878	NR	690	128	NR	820	3	NR	950	0	NR
435	447	NR	565	915	NR	695	110	NR	825	2	NR	955	0	NR
440	642	NR	570	948	NR	700	95	NR	830	2	NR	960	0	NR
445	838	NR	575	976	NR	705	81	NR	835	2	NR	965	0	NR
450	907	NR	580	995	NR	710	69	NR	840	2	NR	970	0	NR
455	710	NR	585	1000	NR	715	58	NR	845	1	NR	975	0	NR
460	465	NR	590	995	NR	720	49	NR	850	1	NR	980	0	NR
465	330	NR	595	972	NR	725	41	NR	855	1	NR	985	0	NR
470	236	NR	600	941	NR	730	35	NR	860	1	NR	990	0	NR
475	174	NR	605	898	NR	735	30	NR	865	1	NR	995	0	NR
480	152	NR	610	848	NR	740	26	NR	870	1	NR	1000	0	NR
485	155	NR	615	788	NR	745	23	NR	875	0	NR			

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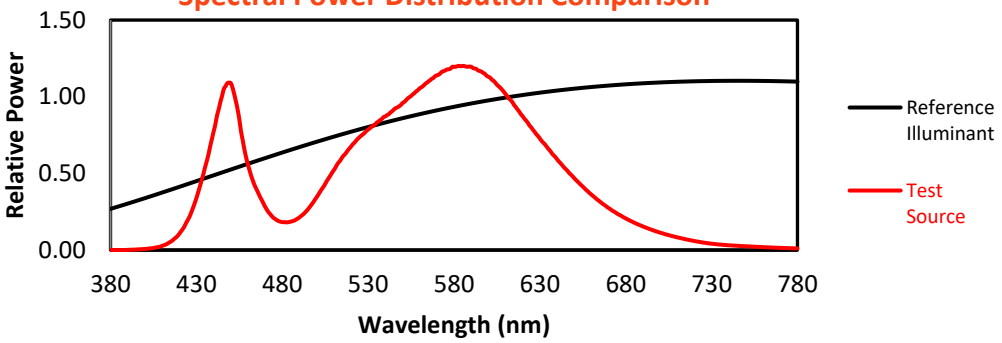
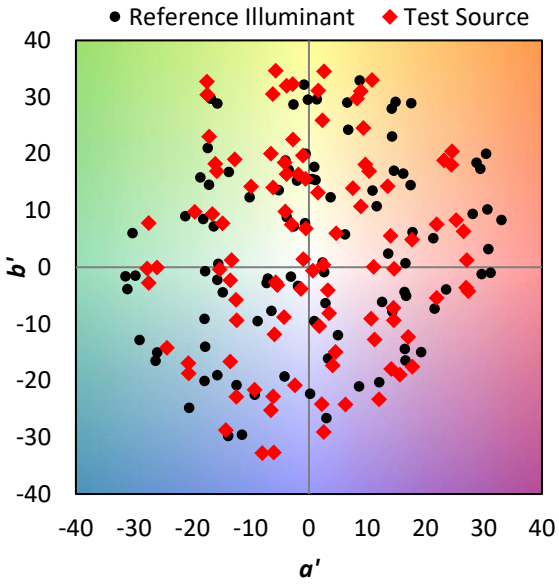
Summary

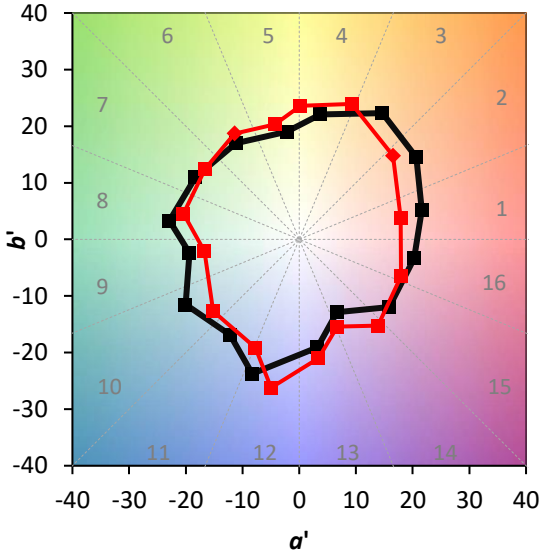
R_f = 74.5
R_g = 93.5
CIE R_a = 71.4
R_9 = -36.8

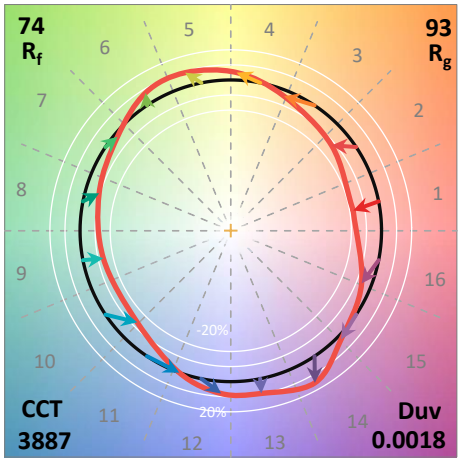
Spectral Power Distribution Comparison

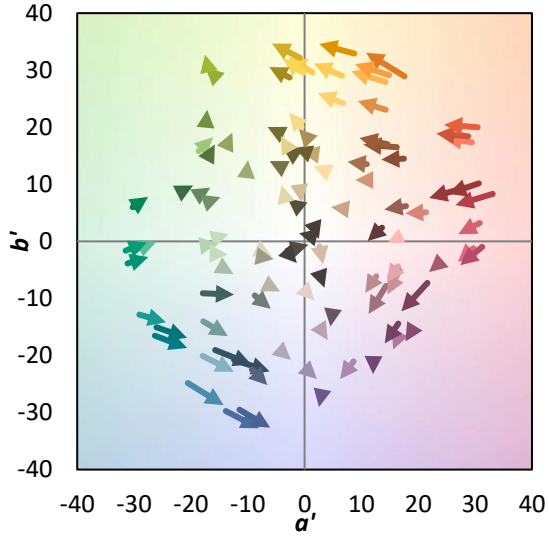


Color Vector Graphics









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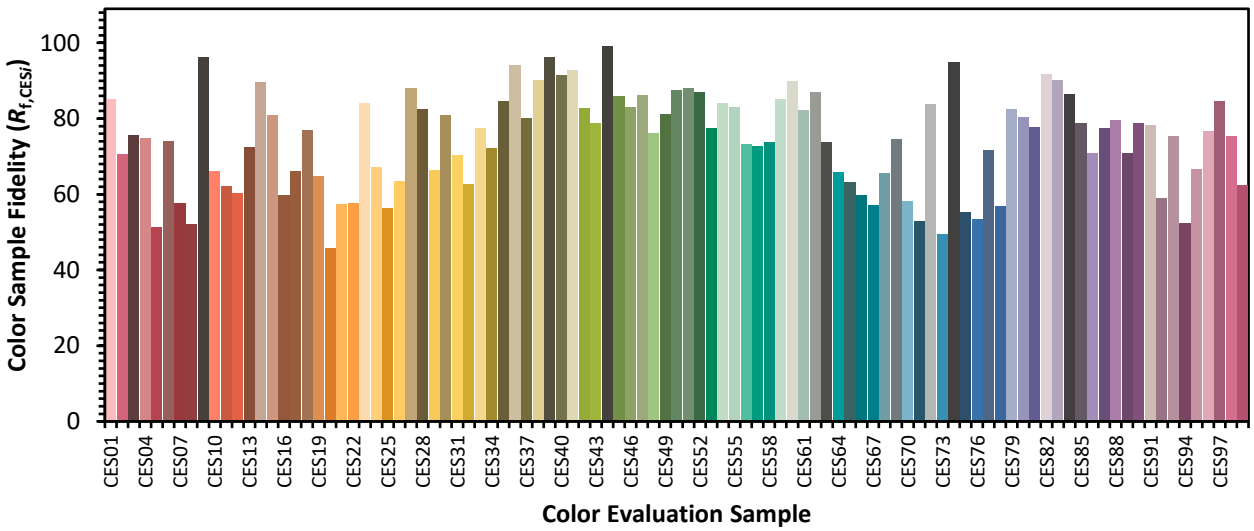
Individual Sample Fidelity Index ($R_{f,i}$)

CES01 = 85	CES26 = 63	CES51 = 88	CES76 = 54
CES02 = 61	CES27 = 88	CES52 = 87	CES77 = 72
CES03 = 30	CES28 = 82	CES53 = 77	CES78 = 57
CES04 = 70	CES29 = 66	CES54 = 84	CES79 = 83
CES05 = 47	CES30 = 81	CES55 = 83	CES80 = 80
CES06 = 50	CES31 = 70	CES56 = 73	CES81 = 78
CES07 = 40	CES32 = 63	CES57 = 73	CES82 = 92
CES08 = 39	CES33 = 77	CES58 = 74	CES83 = 90
CES09 = 29	CES34 = 72	CES59 = 85	CES84 = 87
CES10 = 74	CES35 = 85	CES60 = 90	CES85 = 79
CES11 = 57	CES36 = 94	CES61 = 82	CES86 = 71
CES12 = 63	CES37 = 80	CES62 = 87	CES87 = 77
CES13 = 42	CES38 = 90	CES63 = 74	CES88 = 80
CES14 = 74	CES39 = 96	CES64 = 66	CES89 = 71
CES15 = 71	CES40 = 92	CES65 = 63	CES90 = 79
CES16 = 46	CES41 = 93	CES66 = 60	CES91 = 78
CES17 = 49	CES42 = 83	CES67 = 57	CES92 = 59
CES18 = 56	CES43 = 79	CES68 = 65	CES93 = 75
CES19 = 72	CES44 = 99	CES69 = 74	CES94 = 52
CES20 = 65	CES45 = 86	CES70 = 58	CES95 = 67
CES21 = 86	CES46 = 83	CES71 = 53	CES96 = 77
CES22 = 78	CES47 = 86	CES72 = 84	CES97 = 85
CES23 = 92	CES48 = 76	CES73 = 49	CES98 = 75
CES24 = 91	CES49 = 81	CES74 = 95	CES99 = 62
CES25 = 72	CES50 = 88	CES75 = 55	



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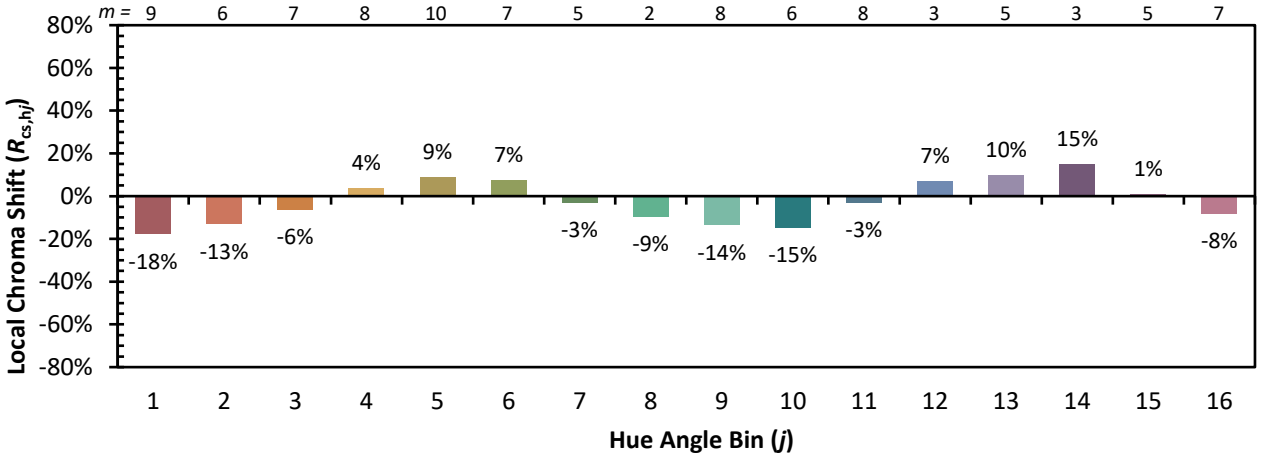
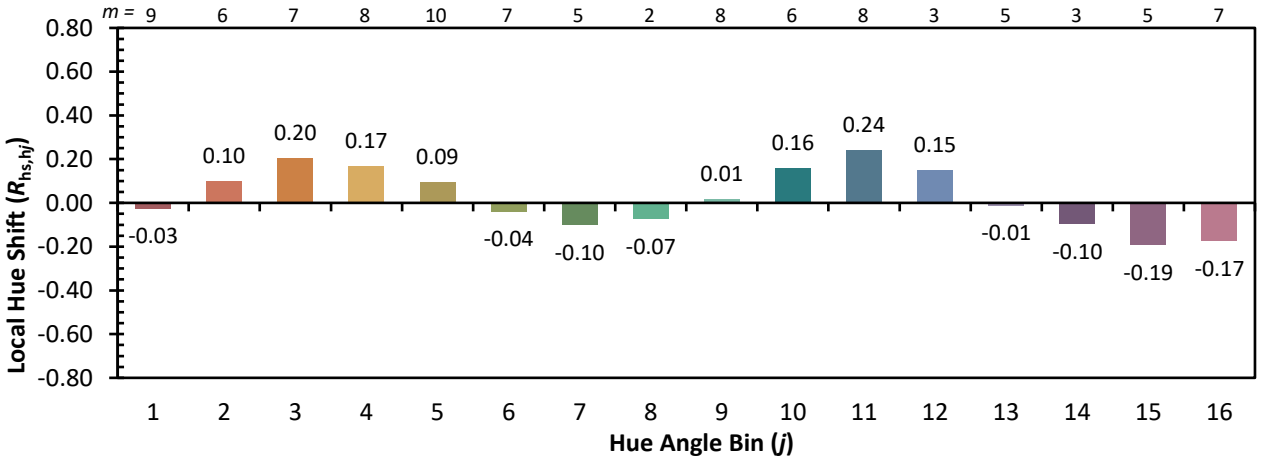
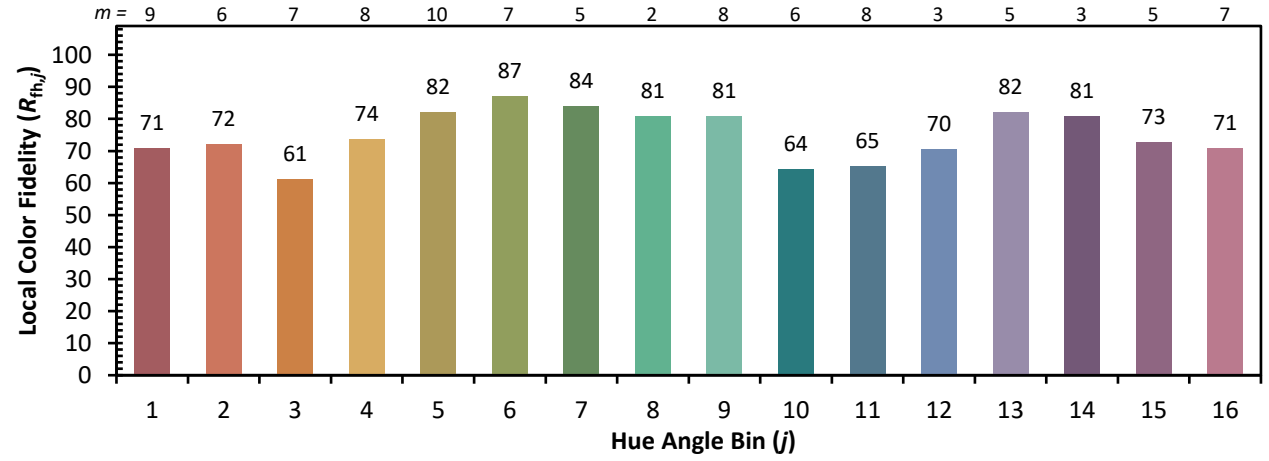
Color Rendition by Hue-Angle Bin







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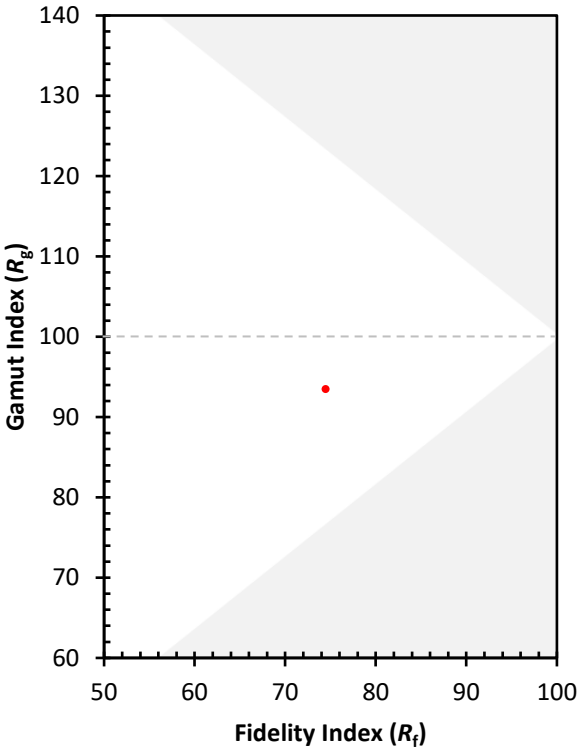
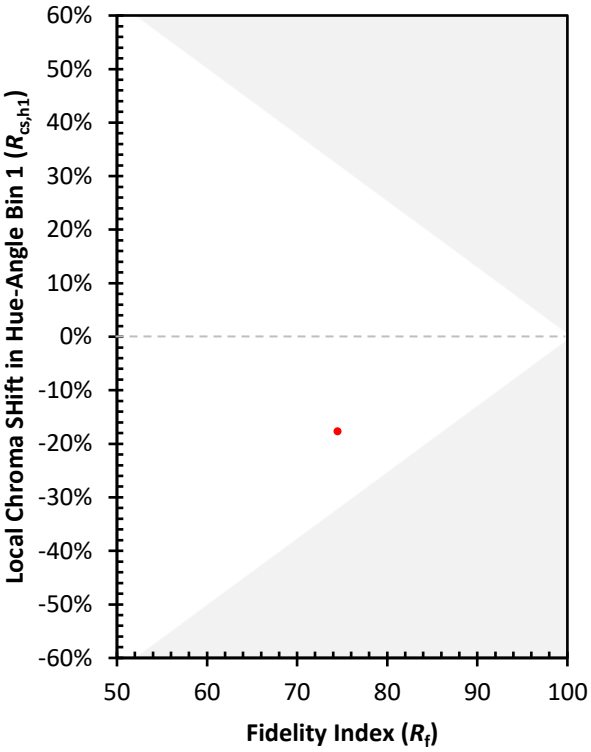
Measure Comparisons





(END OF REPORT)