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: P879697

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

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:	P879697
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-MQ
Description:	EPIC MODERN TALL HOUSING 9W 70CRI 4000K WAVESTREAM FIXTURE w/ TYPE V MEDIUM DISTRIBUTION OPTIC
Light Source:	(1) 4000K CCT, 70 CRI LEDS
Ballast/Driver:	ELECTRONIC DRIVER

Summary

Lumens per Lamp:	N/A
Luminaire Lumens:	19907.6 lumens
Efficiency:	N/A
Efficacy:	117.1 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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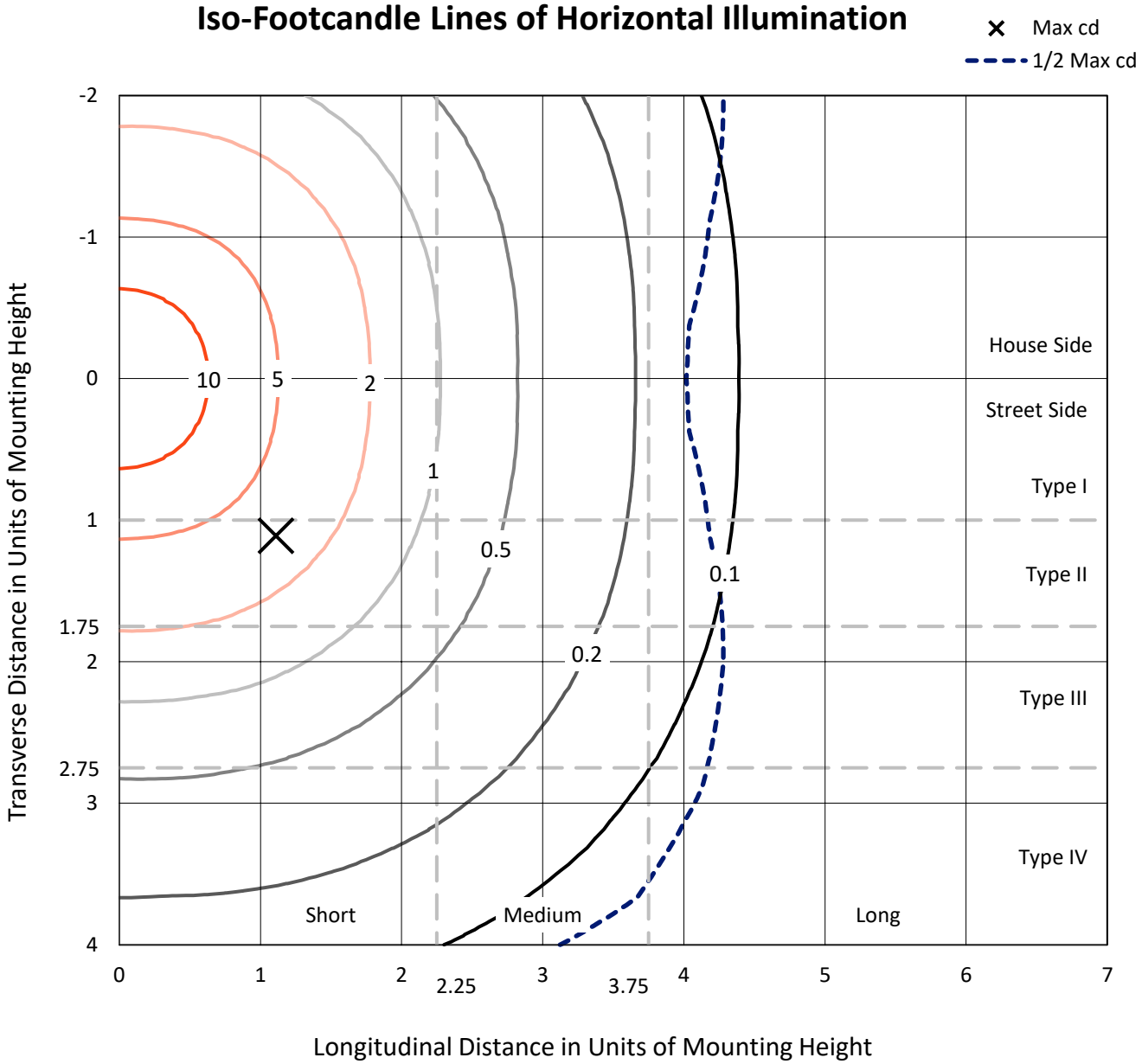
Scaled Data Report

REPORT NUMBER: P879697
CATALOG NUMBER: EMM2-HTN-VA9-740-U-MQ

Iso-Footcandle Lines of Horizontal Illumination



Based on 15 foot mounting height. Maximum calculated value = 17.9 fc
Type V - Short - N/A

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REPORT NUMBER: P879697
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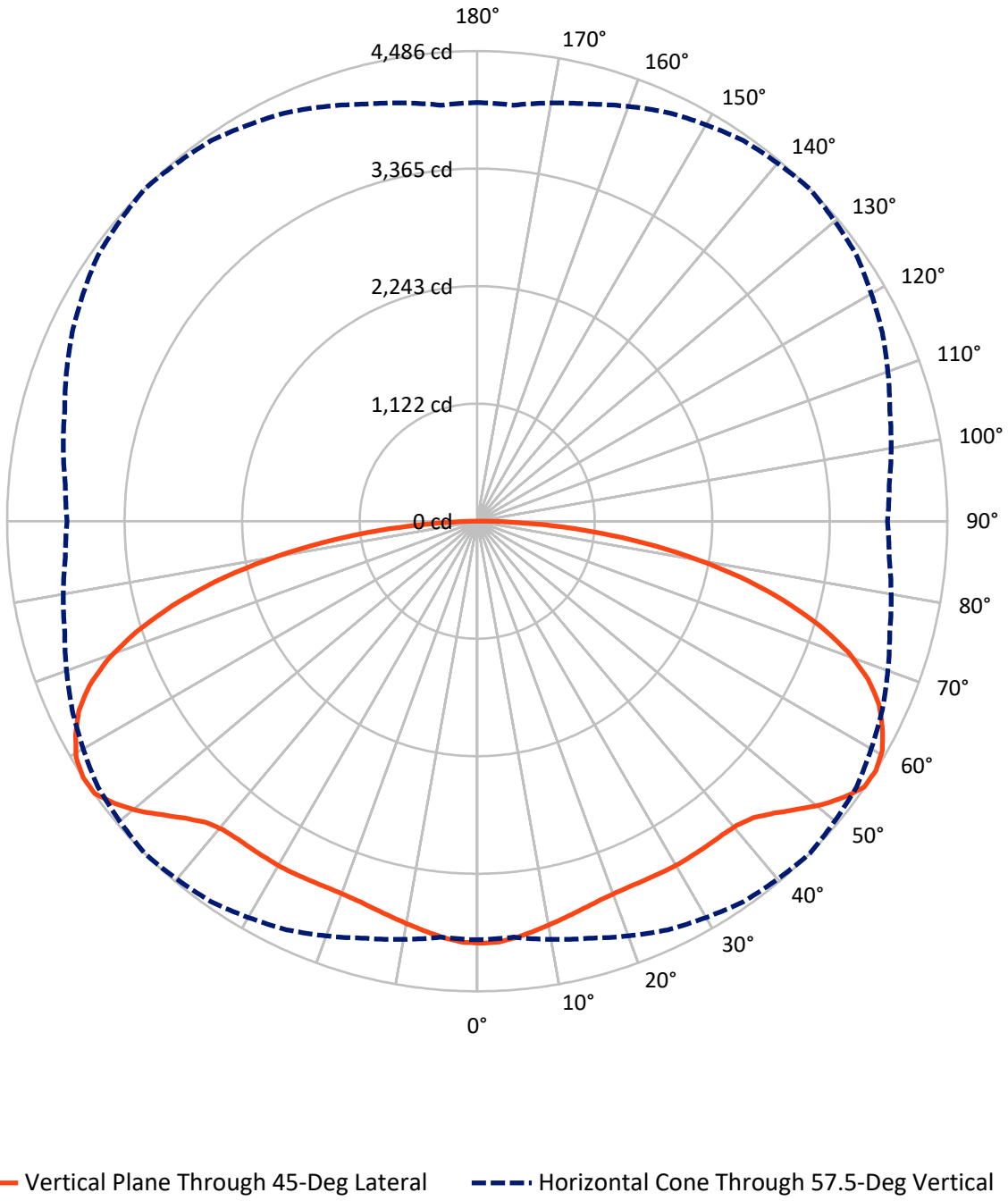
Luminous Intensity Polar Plot



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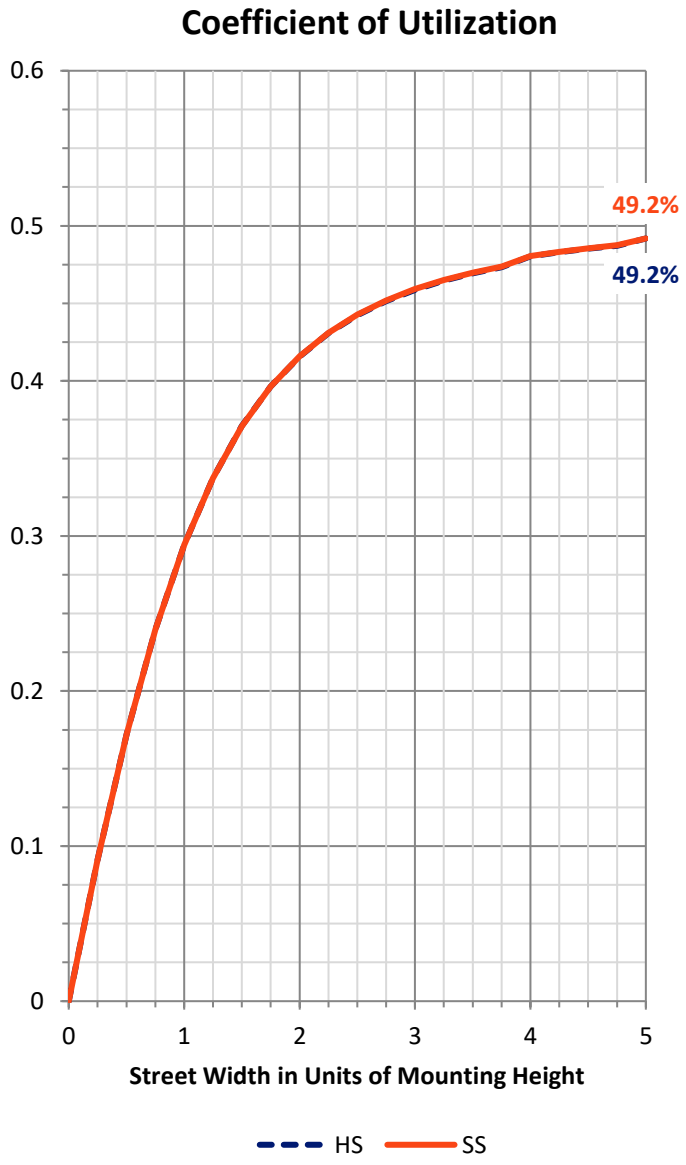
REPORT NUMBER: P879697
CATALOG NUMBER: EMM2-HTN-VA9-740-U-MQ

FLUX DISTRIBUTION:

		Downward	Upward	Total
House Side	Lumens	9953.8	0.0	9953.8
	% Fixture	50.0	0.0	50.0
Street Side	Lumens	9953.8	0.0	9953.8
	% Fixture	50.0	0.0	50.0
Total	Lumens	19907.6	0.0	19907.6
	% Fixture	100.0	0.0	100.0

ZONAL LUMENS:

Zone	Lumens	% Fixture
0°-10°	378.1	1.9
10°-20°	1083.7	5.4
20°-30°	1741.5	8.7
30°-40°	2360.6	11.9
40°-50°	3014.8	15.1
50°-60°	3757.9	18.9
60°-70°	3829.1	19.2
70°-80°	2837.2	14.3
80°-90°	904.7	4.5
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°	19907.6	100.0
0°-180°	19907.6	100.0



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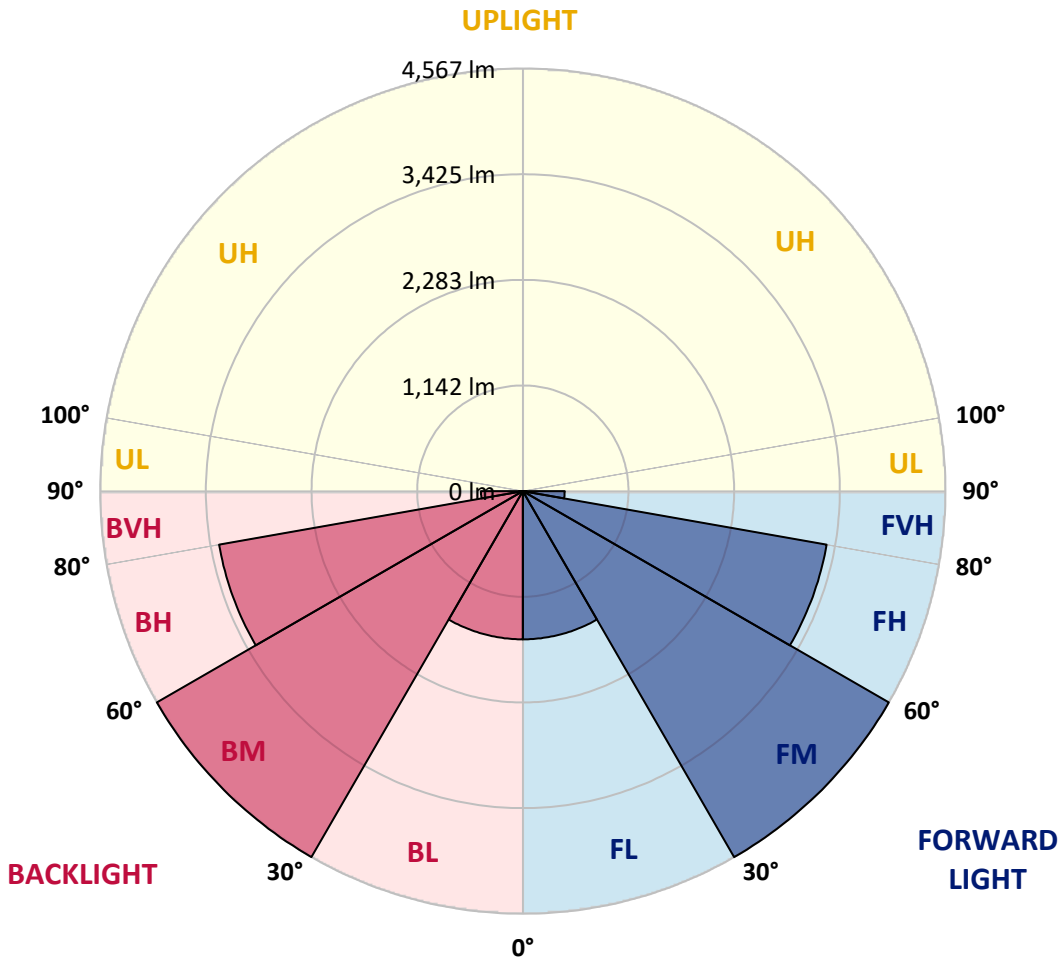
Scaled Data Report

REPORT NUMBER: P879697
CATALOG NUMBER: EMM2-HTN-VA9-740-U-MQ

LUMINAIRE CLASSIFICATION SYSTEM LUMEN TABLE AND BUG RATING:

Zone		Lumens	% Fixture	Zone Rating/Lumen Limit B	U	G
FL	(0°-30°)	1601.6	8.0			
FM	(30°-60°)	4566.7	22.9			
FH	(60°-80°)	3333.2	16.7			G2/5000
FVH	(80°-90°)	452.4	2.3			G3/500
BL	(0°-30°)	1601.6	8.0	B3/2500		
BM	(30°-60°)	4566.7	22.9	B3/5000		
BH	(60°-80°)	3333.2	16.7	B4/5000		G2/5000
BVH	(80°-90°)	452.4	2.3			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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CANDELA DISTRIBUTION (FULL):

	0°	5°	15°	25°	35°	45°	55°	65°	75°	85°	90°
0°	4027.2	4027.2	4027.2	4027.2	4027.2	4027.2	4027.2	4027.2	4027.2	4027.2	4027.2
2.5°	4020.3	4020.3	4019.3	4019.3	4018.3	4019.3	4020.3	4020.3	4019.3	4018.3	4017.3
5°	3991.5	3992.5	3992.5	3990.5	3988.5	3988.5	3988.5	3989.5	3987.6	3988.5	3987.6
7.5°	3949.9	3946.9	3949.9	3948.9	3949.9	3946.9	3951.9	3949.9	3946.9	3948.9	3948.9
10°	3903.3	3904.3	3905.3	3904.3	3907.3	3906.3	3905.3	3904.3	3902.3	3904.3	3901.3
12.5°	3859.7	3860.7	3863.7	3864.7	3867.7	3866.7	3867.7	3865.7	3864.7	3860.7	3859.7
15°	3818.1	3820.1	3824.1	3827.0	3830.0	3831.0	3829.0	3828.0	3823.1	3820.1	3818.1
17.5°	3783.4	3783.4	3789.4	3794.3	3799.3	3800.3	3799.3	3794.3	3787.4	3780.5	3781.4
20°	3759.6	3759.6	3766.6	3774.5	3781.4	3783.4	3780.5	3771.5	3760.6	3755.7	3754.7
22.5°	3748.7	3749.7	3756.7	3765.6	3775.5	3777.5	3771.5	3760.6	3748.7	3739.8	3738.8
25°	3749.7	3747.8	3753.7	3767.6	3778.5	3780.5	3775.5	3760.6	3746.8	3738.8	3735.9
27.5°	3746.8	3747.8	3754.7	3768.6	3782.4	3786.4	3778.5	3760.6	3741.8	3734.9	3732.9
30°	3745.8	3746.8	3748.7	3771.5	3787.4	3794.3	3782.4	3758.7	3742.8	3731.9	3730.9
32.5°	3741.8	3736.8	3750.7	3764.6	3784.4	3793.3	3781.4	3759.6	3733.9	3725.9	3722.0
35°	3725.9	3730.9	3742.8	3766.6	3789.4	3795.3	3781.4	3754.7	3731.9	3716.0	3715.0
37.5°	3723.0	3723.0	3741.8	3766.6	3789.4	3798.3	3786.4	3756.7	3725.0	3705.1	3705.1
40°	3719.0	3718.0	3742.8	3773.5	3803.2	3815.1	3799.3	3762.6	3724.0	3705.1	3695.2
42.5°	3729.9	3735.9	3764.6	3809.2	3846.8	3866.7	3843.9	3803.2	3757.7	3722.0	3721.0
45°	3781.4	3794.3	3824.1	3899.4	3949.9	3973.7	3946.9	3876.6	3805.2	3757.7	3754.7
47.5°	3861.7	3857.7	3928.1	4007.4	4081.7	4107.5	4068.8	3986.6	3883.5	3826.0	3811.2
50°	3917.2	3927.1	3999.4	4114.4	4225.4	4255.1	4198.6	4092.6	3980.6	3901.3	3887.5
52.5°	3992.5	3994.5	4086.7	4232.3	4346.3	4379.0	4324.5	4192.7	4042.1	3943.0	3936.0
55°	4001.4	4034.1	4146.1	4304.7	4441.4	4480.1	4412.7	4272.0	4096.6	3973.7	3961.8
57.5°	3994.5	3984.6	4120.3	4302.7	4431.5	4486.0	4419.6	4264.0	4075.8	3945.9	3914.2
60°	3851.8	3893.4	4043.1	4221.4	4386.9	4441.4	4364.1	4205.6	3999.4	3856.8	3843.9
62.5°	3754.7	3772.5	3909.3	4149.1	4284.8	4339.3	4279.9	4093.6	3873.6	3725.0	3707.1
65°	3603.1	3616.9	3777.5	3974.7	4163.9	4212.5	4136.2	3979.6	3743.8	3580.3	3547.6
67.5°	3361.3	3398.9	3557.5	3808.2	3939.0	4022.2	3953.9	3733.9	3519.8	3359.3	3335.5
70°	3079.9	3130.4	3293.9	3499.0	3717.0	3758.7	3664.5	3514.9	3275.1	3103.6	3062.0
72.5°	2808.3	2812.3	2964.9	3205.7	3343.4	3420.7	3367.2	3170.0	2935.2	2789.5	2763.7
75°	2428.8	2429.8	2597.3	2794.5	2968.9	3019.4	2934.2	2795.5	2586.4	2422.9	2407.0
77.5°	1988.8	2015.6	2164.2	2354.5	2492.2	2565.6	2505.1	2348.5	2153.3	2013.6	1997.7
80°	1559.7	1593.4	1698.5	1868.9	1987.8	2052.2	1986.8	1850.1	1701.5	1564.7	1566.7
82.5°	1100.9	1125.7	1224.8	1340.7	1456.7	1504.3	1476.5	1375.4	1239.7	1119.8	1087.1
85°	614.4	646.1	712.5	814.6	891.8	953.3	918.6	839.3	721.4	646.1	644.1
87.5°	180.4	195.2	222.0	290.3	363.7	390.4	382.5	362.7	318.1	285.4	264.6
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

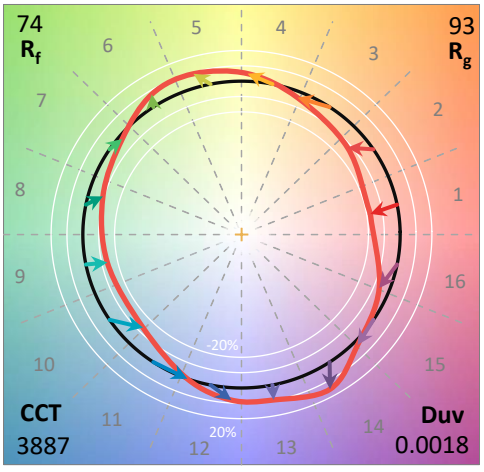
Test Information

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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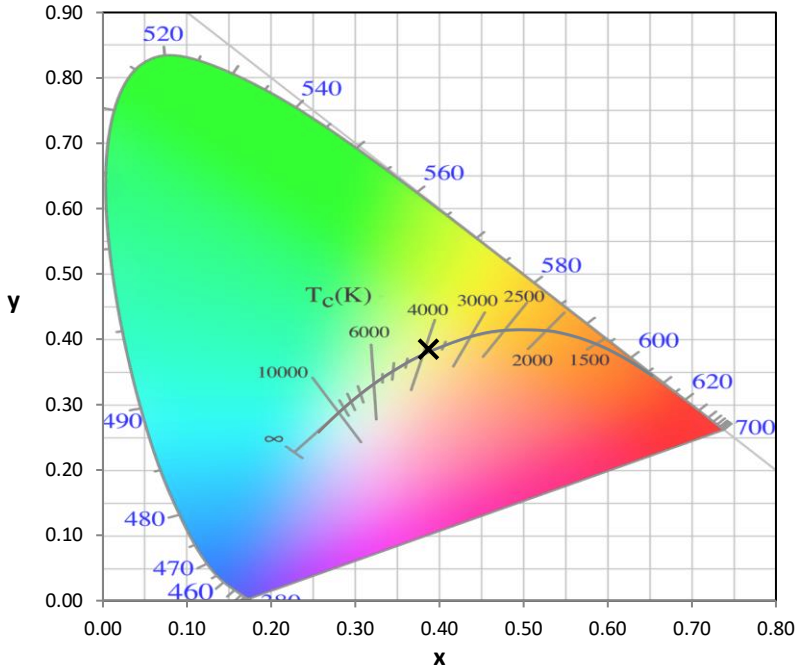
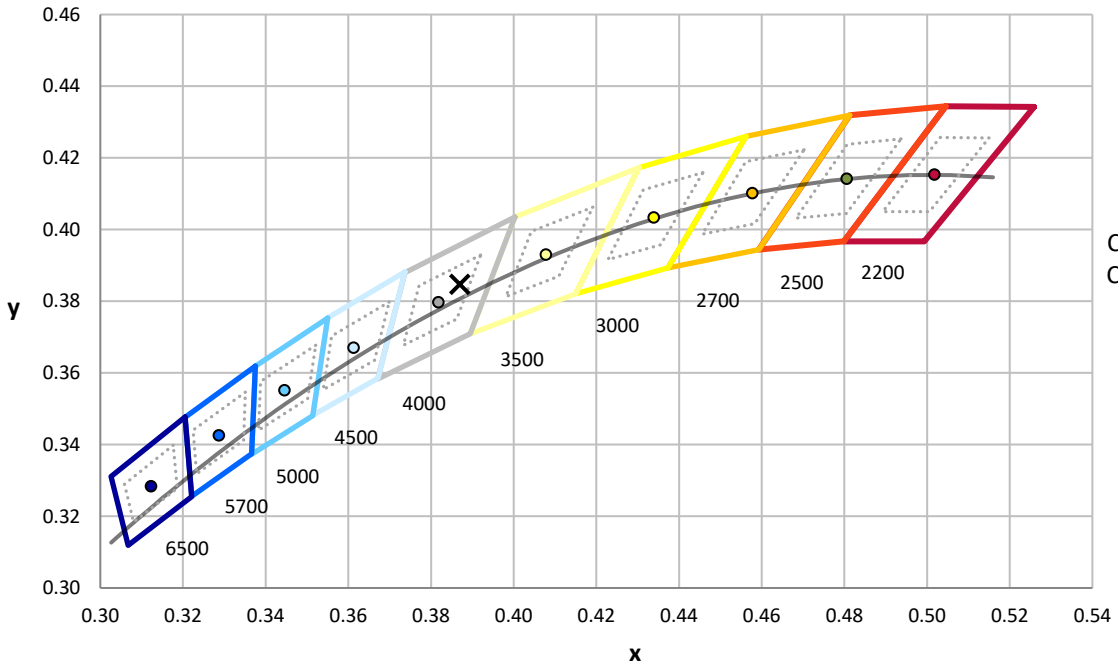
CIE 1931 Chromaticity Diagram



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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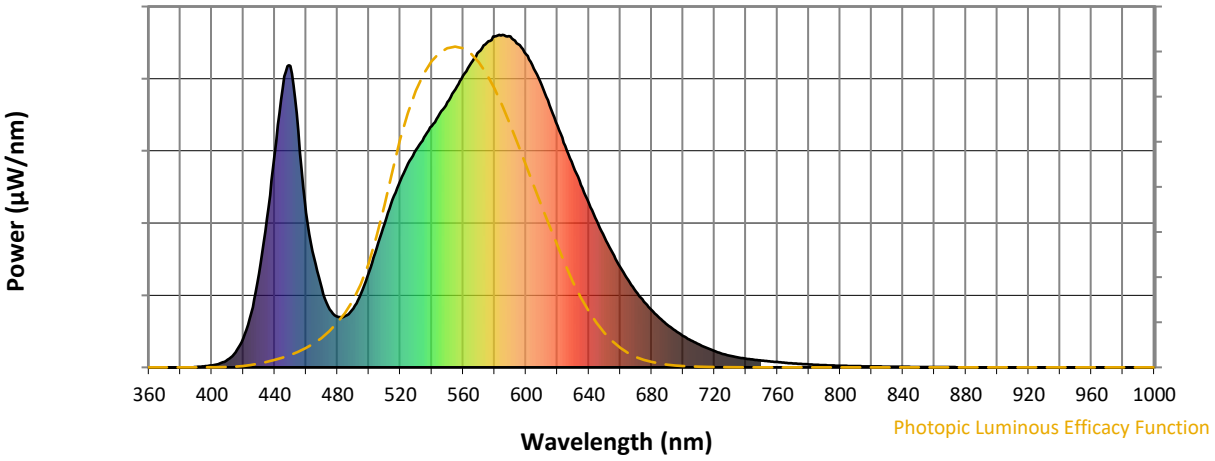
Photopic Flux vs. Wavelength

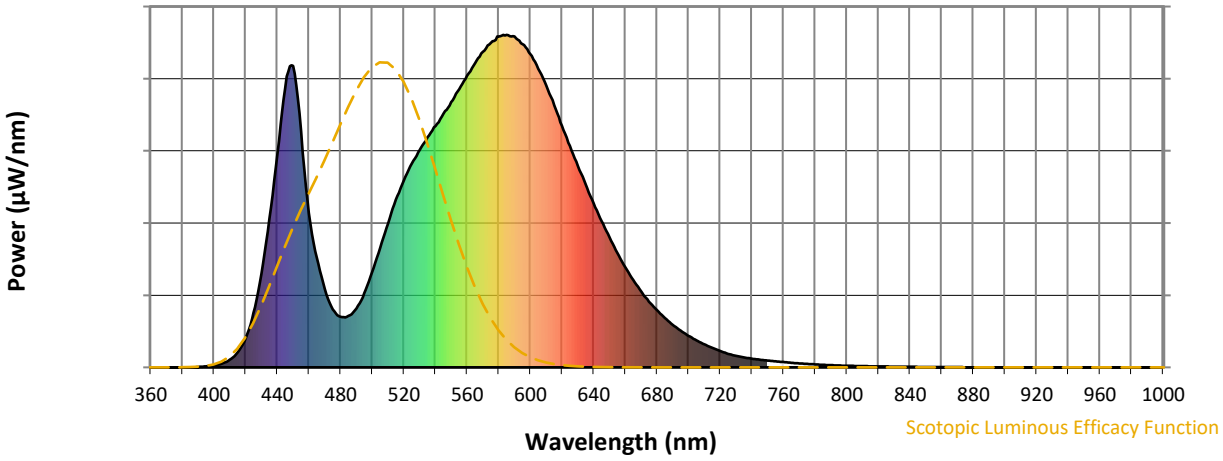


Photopic Lumens: NR

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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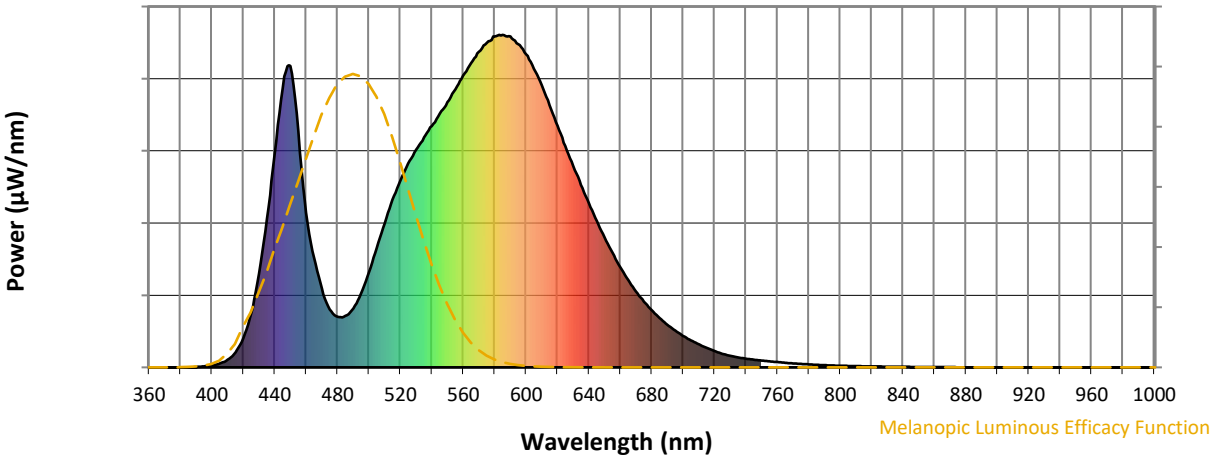
Melanopic Flux vs. Wavelength



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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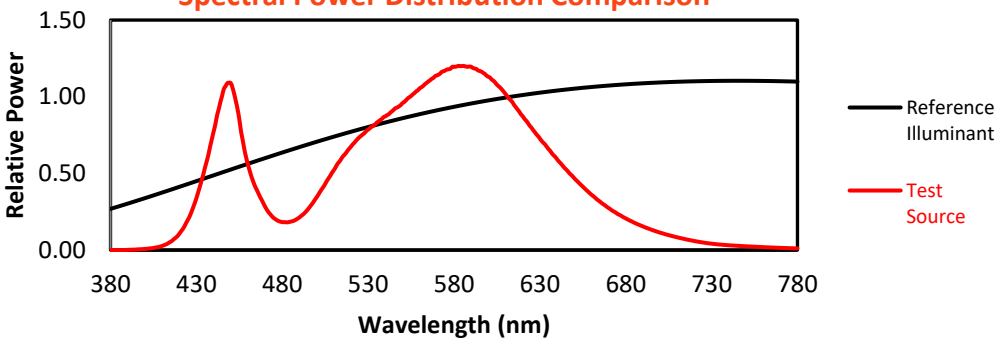
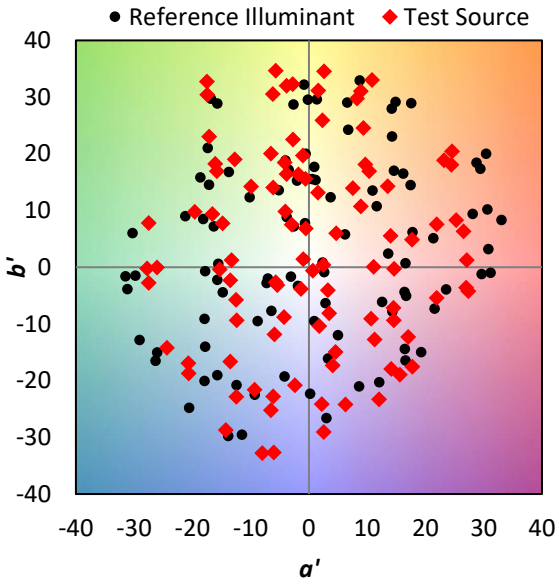
Summary

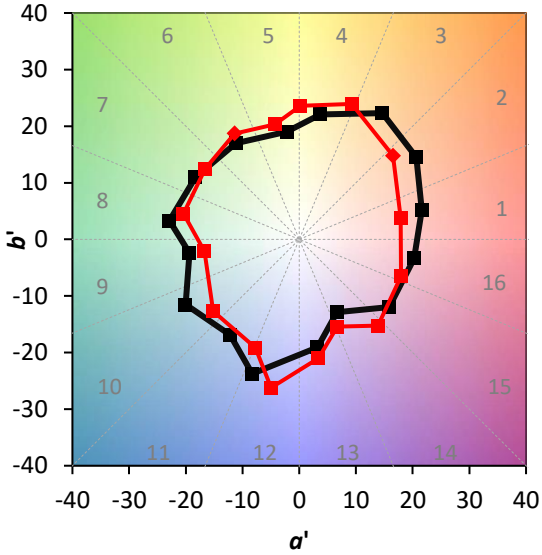
R_f = 74.5
R_g = 93.5
CIE R_a = 71.4
R_9 = -36.8

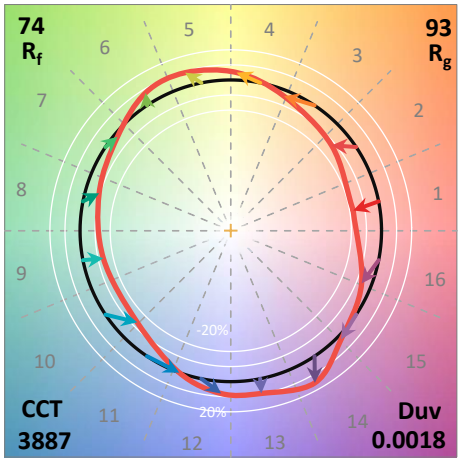
Spectral Power Distribution Comparison

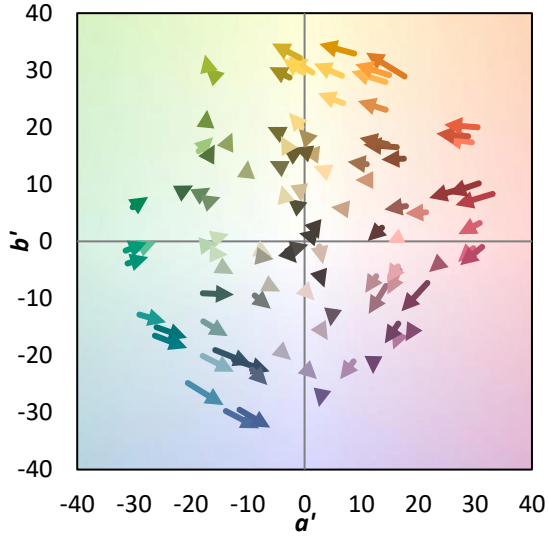


Color Vector Graphics









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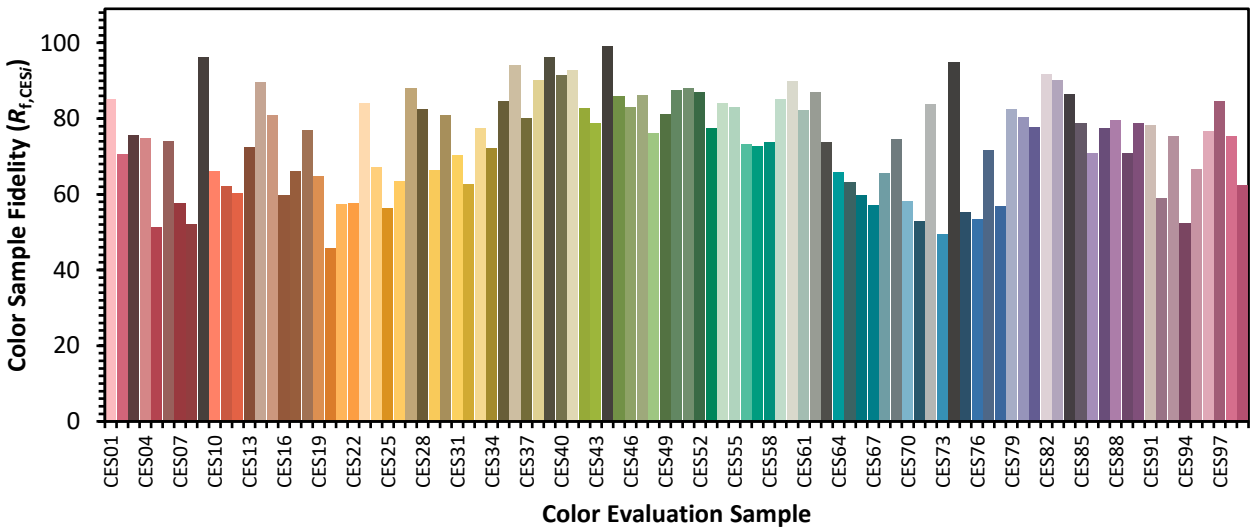
Individual Sample Fidelity Index ($R_{f,i}$)

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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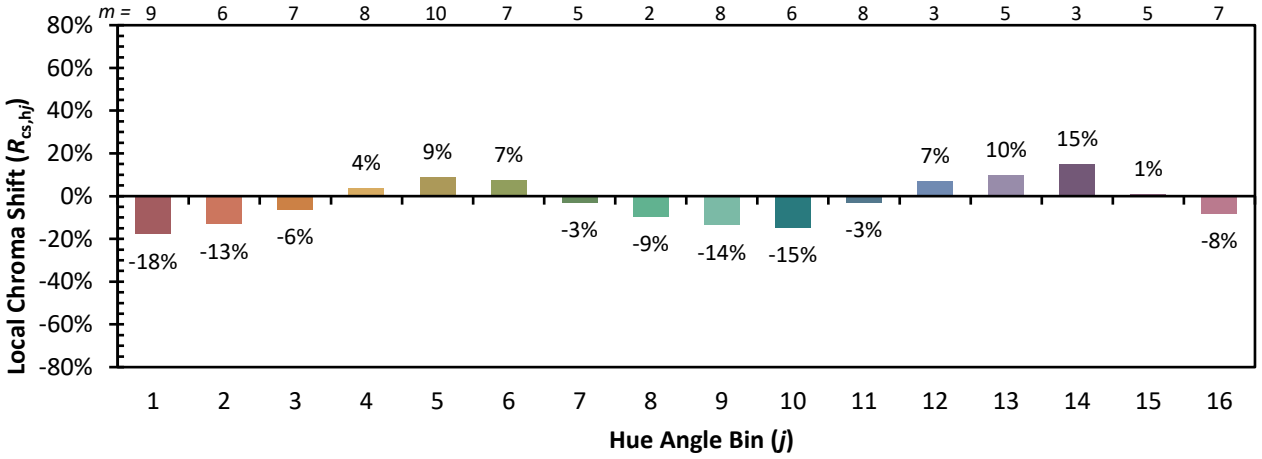
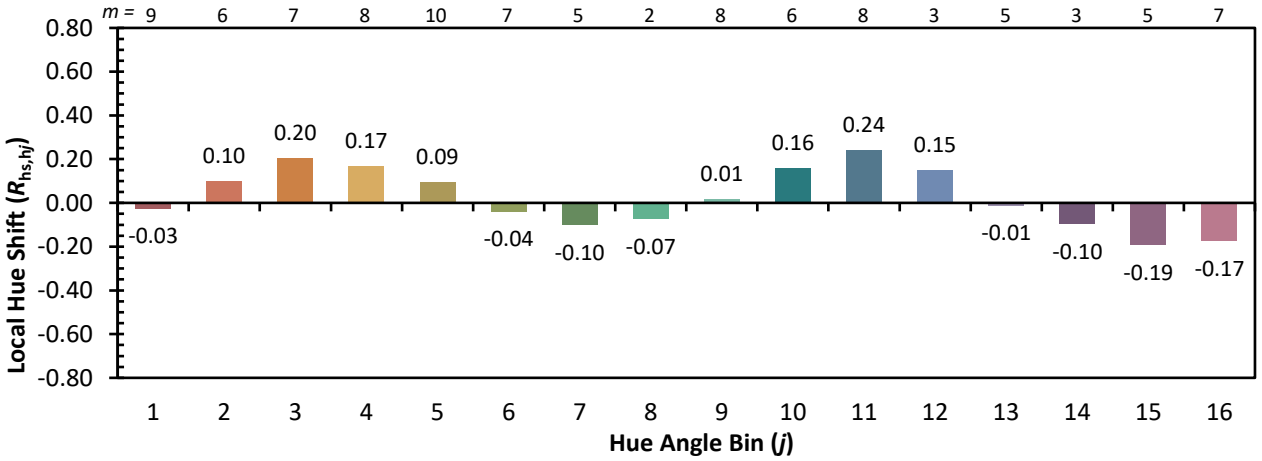
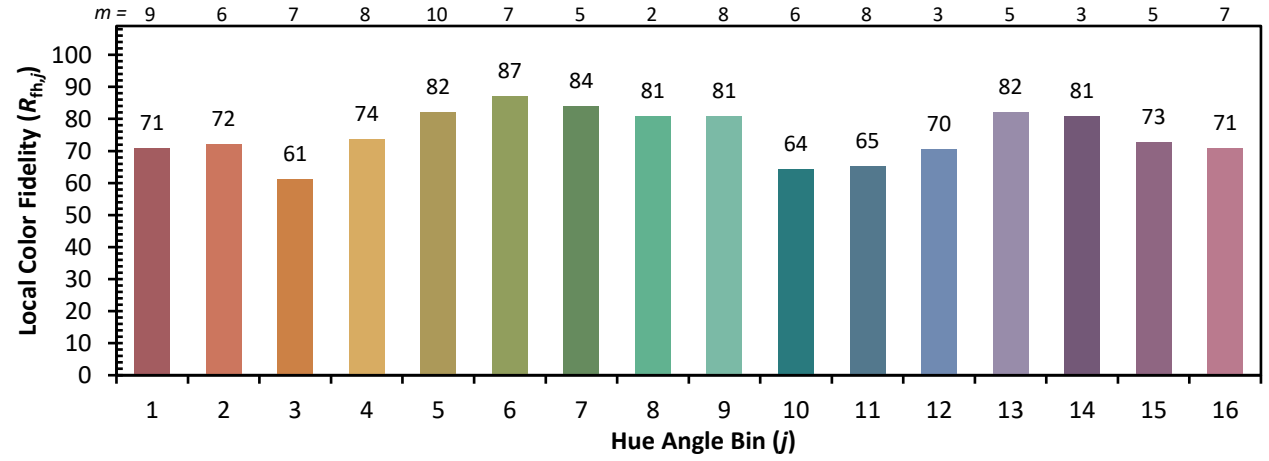
Color Rendition by Hue-Angle Bin







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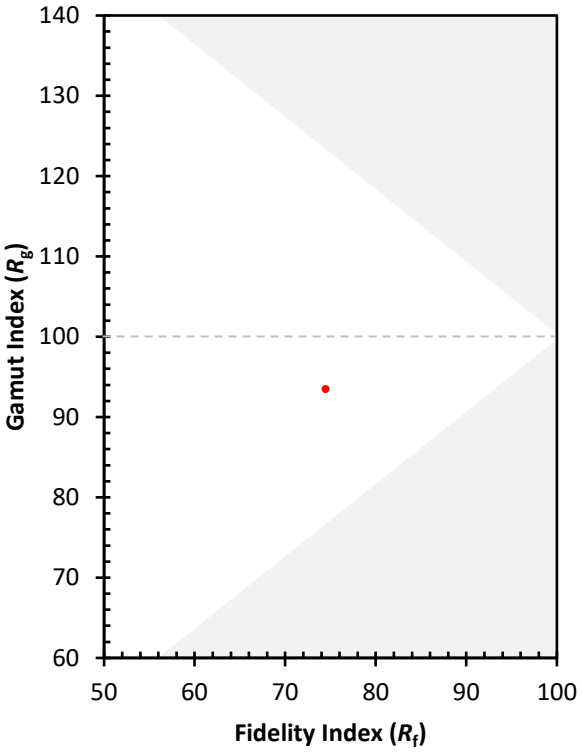
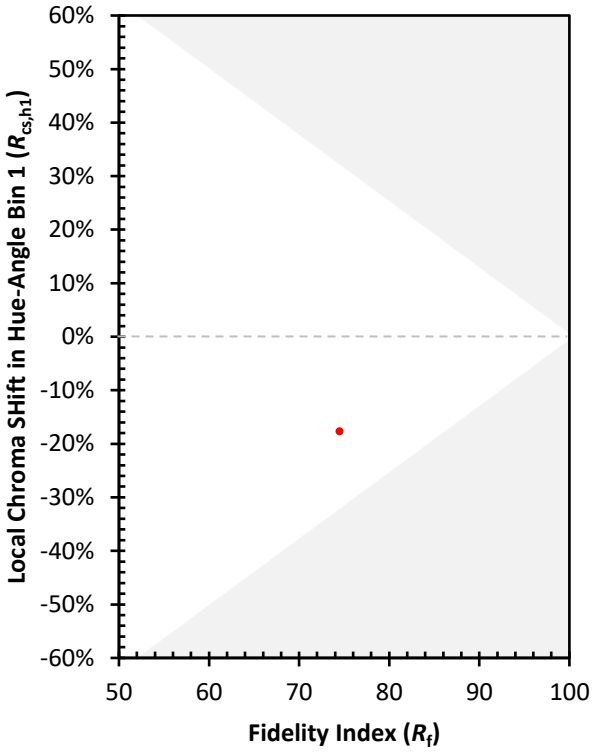
Measure Comparisons





(END OF REPORT)