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: P879676

Luminaire Tested: **EMM2-HSN-VA9-735-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:	P879676
Test Lab:	INNOVATION CENTER(G3)
Issue Date:	10/01/2024
Manufacturer:	COOPER LIGHTING SOLUTIONS (FORMERLY EATON)
Product Line:	INVUE
Catalog Number:	EMM2-HSN-VA9-735-U-WQ
Description:	EPIC MODERN SHORT HOUSING 9W 70CRI 3500K WAVESTREAM FIXTURE w/ TYPE V WIDE DISTRIBUTION OPTIC
Light Source:	(1) 3500K CCT, 70 CRI LEDS
Ballast/Driver:	ELECTRONIC DRIVER

Summary

Lumens per Lamp:	N/A
Luminaire Lumens:	19138.9 lumens
Efficiency:	N/A
Efficacy:	112.6 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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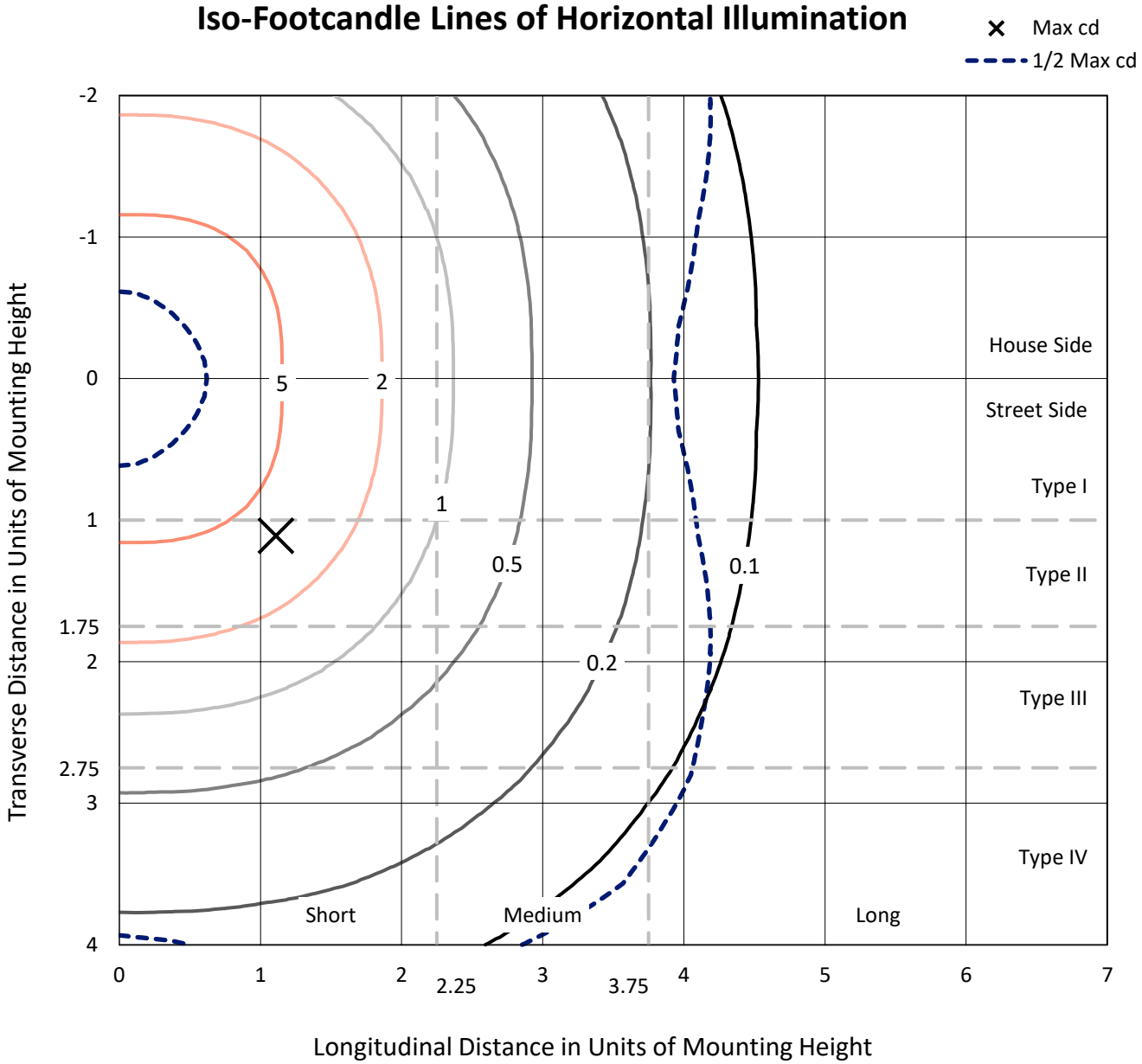
Scaled Data Report

REPORT NUMBER: P879676
CATALOG NUMBER: EMM2-HSN-VA9-735-U-WQ

Iso-Footcandle Lines of Horizontal Illumination



Based on 15 foot mounting height. Maximum calculated value = 7.3 fc
Type V - Short - N/A

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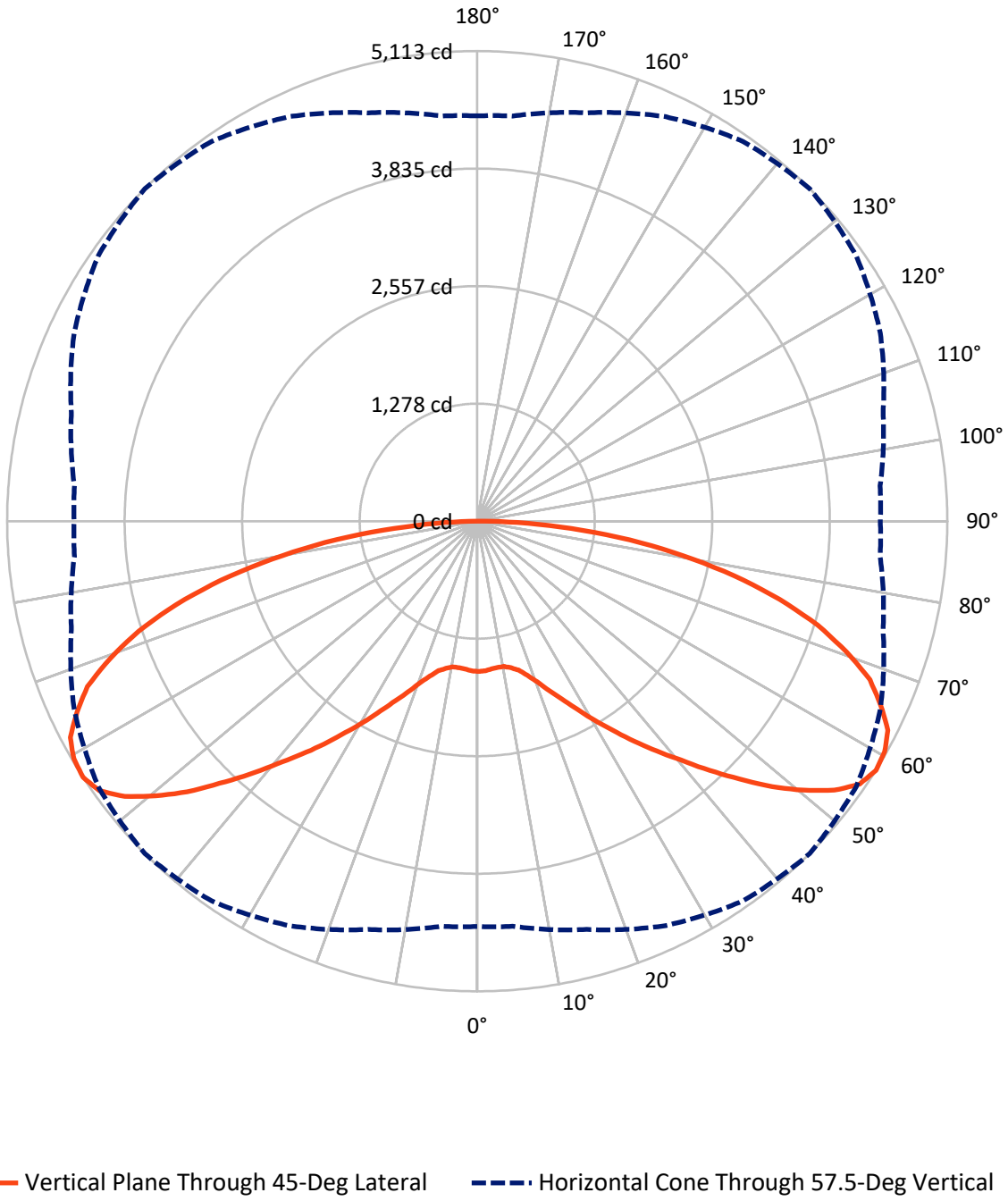
Luminous Intensity Polar Plot



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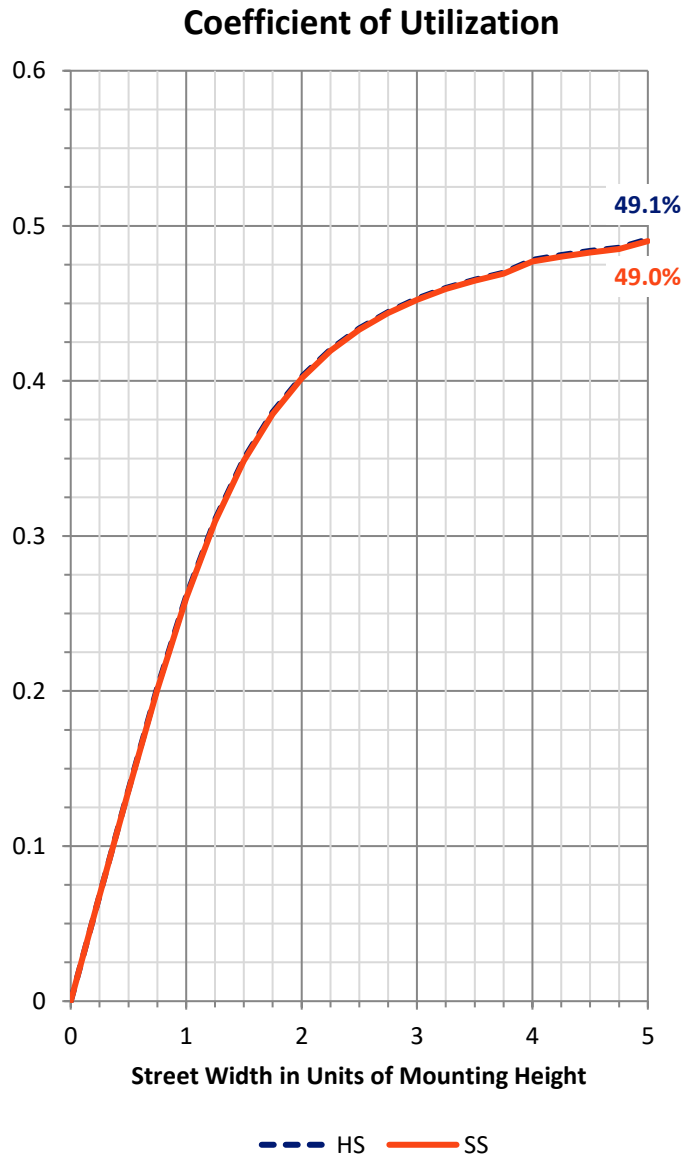
REPORT NUMBER: P879676
CATALOG NUMBER: EMM2-HSN-VA9-735-U-WQ

FLUX DISTRIBUTION:

		Downward	Upward	Total
House Side	Lumens	9569.4	0.0	9569.4
	% Fixture	50.0	0.0	50.0
Street Side	Lumens	9569.4	0.0	9569.4
	% Fixture	50.0	0.0	50.0
Total	Lumens	19138.9	0.0	19138.9
	% Fixture	100.0	0.0	100.0

ZONAL LUMENS:

Zone	Lumens	% Fixture
0°-10°	153.9	0.8
10°-20°	483.8	2.5
20°-30°	994.4	5.2
30°-40°	1814.6	9.5
40°-50°	2975.7	15.5
50°-60°	4169.7	21.8
60°-70°	4362.1	22.8
70°-80°	3187.0	16.7
80°-90°	997.6	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°	19138.9	100.0
0°-180°	19138.9	100.0



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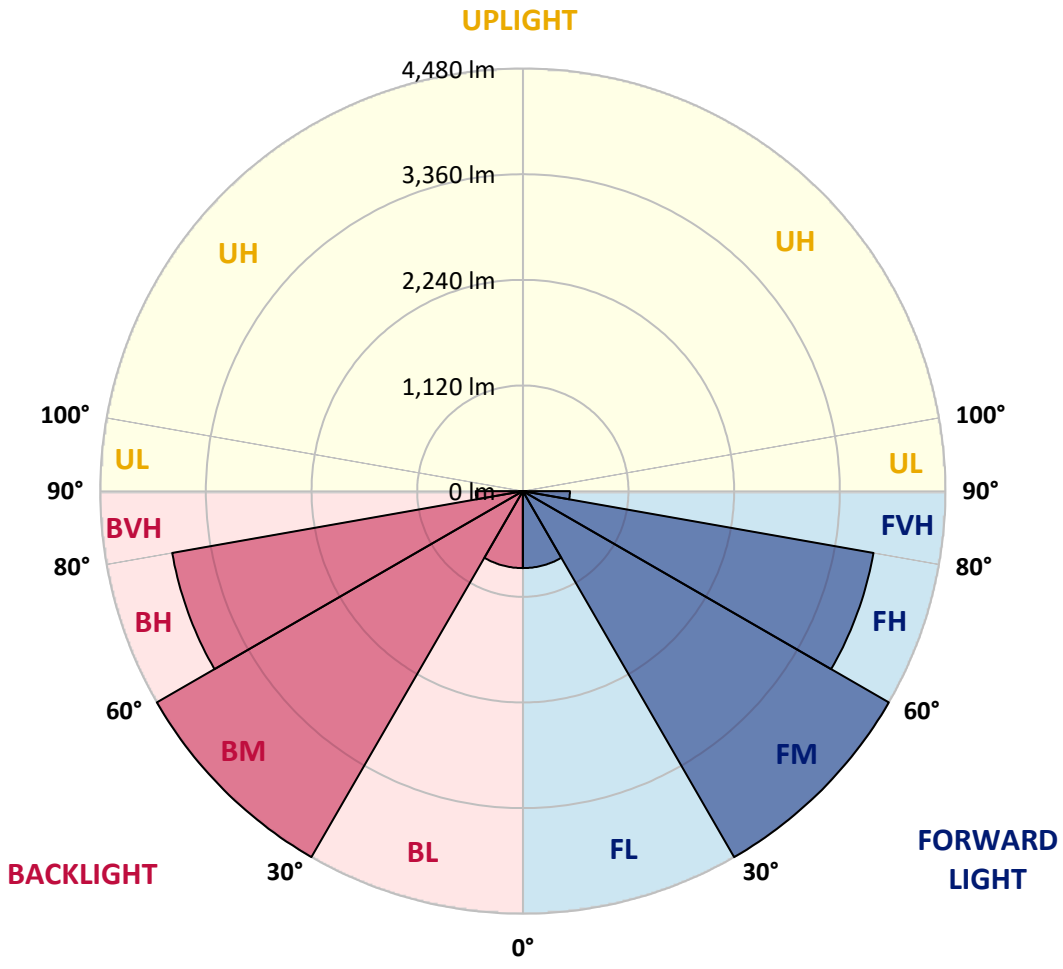
REPORT NUMBER: P879676
CATALOG NUMBER: EMM2-HSN-VA9-735-U-WQ

LUMINAIRE CLASSIFICATION SYSTEM LUMEN TABLE AND BUG RATING:

Zone		Lumens	% Fixture	Zone Rating/Lumen Limit B	U	G
FL	(0°-30°)	816.1	4.3			
FM	(30°-60°)	4480.0	23.4			
FH	(60°-80°)	3774.5	19.7			G2/5000
FVH	(80°-90°)	498.8	2.6			G3/500
BL	(0°-30°)	816.1	4.3	B2/1000		
BM	(30°-60°)	4480.0	23.4	B3/5000		
BH	(60°-80°)	3774.5	19.7	B4/5000		G2/5000
BVH	(80°-90°)	498.8	2.6			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°	1634.1	1634.1	1634.1	1634.1	1634.1	*1634.1*	1634.1	1634.1	1634.1	1634.1	1634.1
2.5°	1628.1	1630.5	1629.3	1629.3	1628.1	*1629.3*	1631.7	1632.9	1631.7	1632.9	1631.7
5°	1617.3	1617.3	1616.1	1614.9	1614.9	*1614.9*	1614.9	1614.9	1616.1	1616.1	1617.3
7.5°	1604.1	1604.1	1604.1	1606.5	1605.3	*1606.5*	1606.5	1605.3	1604.1	1604.1	1605.3
10°	1606.5	1605.3	1604.1	1606.5	1605.3	*1606.5*	1606.5	1604.1	1605.3	1606.5	1607.7
12.5°	1626.9	1624.5	1628.1	1631.7	1634.1	*1636.5*	1635.3	1634.1	1630.5	1626.9	1626.9
15°	1671.2	1668.8	1672.4	1677.2	1678.4	*1679.6*	1683.2	1678.4	1677.2	1671.2	1670.0
17.5°	1734.8	1733.6	1740.8	1750.4	1755.2	*1761.2*	1755.2	1750.4	1737.2	1734.8	1738.4
20°	1825.9	1822.3	1836.7	1852.3	1857.1	*1864.3*	1859.5	1849.9	1836.7	1822.3	1822.3
22.5°	1942.2	1950.6	1957.8	1969.8	1988.9	*2000.9*	1985.3	1968.6	1949.4	1941.0	1935.0
25°	2093.2	2092.0	2099.2	2123.2	2135.2	*2143.6*	2141.2	2118.4	2101.6	2089.7	2088.5
27.5°	2238.3	2252.7	2267.1	2282.7	2312.6	*2316.2*	2312.6	2285.1	2258.7	2249.1	2245.5
30°	2431.3	2428.9	2442.1	2479.3	2509.3	*2511.7*	2502.1	2468.5	2438.5	2420.5	2422.9
32.5°	2619.6	2600.4	2635.1	2660.3	2685.5	*2711.9*	2686.7	2660.3	2635.1	2596.8	2608.8
35°	2791.0	2806.6	2825.8	2877.3	2928.9	*2939.7*	2922.9	2868.9	2819.8	2801.8	2781.4
37.5°	3000.8	3000.8	3033.2	3108.7	3155.5	*3172.2*	3148.3	3094.3	3026.0	2999.6	2990.0
40°	3211.8	3211.8	3261.0	3324.5	3394.0	*3418.0*	3391.6	3320.9	3264.6	3196.2	3207.0
42.5°	3416.8	3433.6	3498.3	3576.3	3673.4	*3705.7*	3668.6	3573.9	3492.3	3427.6	3418.0
45°	3643.4	3669.8	3740.5	3868.8	3951.5	*3998.3*	3946.7	3865.2	3721.3	3659.0	3625.4
47.5°	3890.4	3908.4	4010.3	4132.5	4266.8	*4316.0*	4254.8	4121.8	3999.5	3889.2	3884.4
50°	4105.0	4101.4	4232.1	4401.1	4553.4	*4600.1*	4551.0	4407.1	4208.1	4085.8	4097.8
52.5°	4265.6	4286.0	4423.9	4632.5	4794.3	*4862.7*	4782.3	4609.7	4402.3	4275.2	4236.8
55°	4369.9	4403.5	4564.1	4789.5	4974.2	*5047.3*	4968.2	4769.2	4542.6	4378.3	4355.5
57.5°	*4408.3*	*4422.7*	*4597.7*	*4853.1*	*5041.3*	*5113.2*	*5031.7*	*4837.5*	*4570.1*	*4398.7*	*4384.3*
60°	4349.5	4363.9	4553.4	4814.7	5030.5	*5091.6*	5026.9	4799.1	4527.0	4351.9	4328.0
62.5°	4205.7	4245.2	4455.0	4714.0	4961.0	*5012.5*	4945.4	4696.0	4444.3	4233.3	4198.5
65°	4033.0	4075.0	4253.6	4542.6	4766.8	*4821.9*	4769.2	4529.4	4254.8	4052.2	4018.7
67.5°	3792.1	3799.3	4009.1	4301.6	4539.0	*4606.1*	4515.0	4296.8	3998.3	3806.4	3780.1
70°	3491.1	3495.9	3718.9	3989.9	4208.1	*4263.2*	4203.3	3970.7	3703.3	3494.7	3476.8
72.5°	3105.1	3149.5	3334.1	3602.6	3806.4	*3871.2*	3793.3	3595.4	3348.5	3142.3	3101.5
75°	2695.1	2722.7	2883.3	3143.5	3318.5	*3398.8*	3335.3	3143.5	2883.3	2713.1	2677.1
77.5°	2215.5	2252.7	2409.8	2629.1	2774.2	*2860.5*	2791.0	2620.8	2409.8	2253.9	2252.7
80°	1750.4	1740.8	1883.4	2072.9	2216.7	*2267.1*	2223.9	2058.5	1869.1	1748.0	1731.2
82.5°	1214.5	1212.1	1366.7	1493.8	1614.9	*1672.4*	1606.5	1499.8	1353.5	1245.6	1210.9
85°	690.6	706.1	808.0	887.2	990.3	*1025.0*	1002.3	901.6	770.9	676.2	670.2
87.5°	239.8	261.4	280.5	338.1	405.2	*435.2*	402.8	387.2	344.1	298.5	300.9
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: SP1-2407-176-8

Test Date: 09/25/2024

Luminaire Tested: MEM2-HTN-VA-130-735-U-RW

Data in this report applies to families of products including MEM2-HTN-VA-130-735-U-RW

Report Generated By FNC07603 / LDUCLS01DT446
Version: v7.04

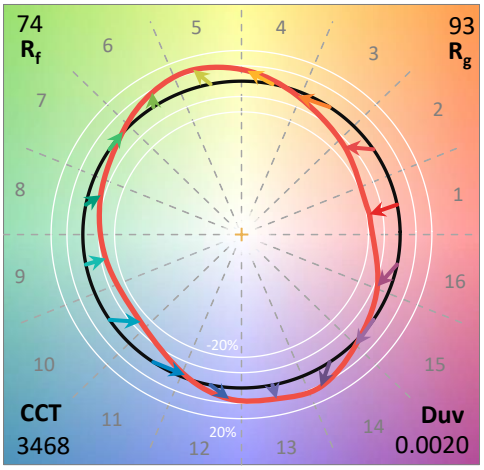
Test Information

Test Method:	LM-79-2019
Report Number:	SP1-2407-176-8
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-130-735-U-RW**
Description:	EPIC MODERN VISUAL COMFORT 130W WAVESTREAM RECTANGULAR WIDE

Spectral Parameters

CCT (K):	3468	CRI (Ra):	70.6		
CIE u':	0.2356	R1:	66.2	R9:	-41.3
CIE v':	0.5145	R2:	79.1	R10:	52.2
Duv:	0.0020	R3:	90.8	R11:	63.6
CIE x:	0.4092	R4:	68.4	R12:	47.5
CIE y:	0.3972	R5:	66.3	R13:	68.3
CIE z:	0.1936	R6:	71.1	R14:	94.8
Peak Wavelength (nm):	590	R7:	78.4	R15:	57.6
Dominant Wavelength (nm):	580	R8:	44.5		
Purity:	42.03411				

Rf:	74.1
Rg:	93.4



Test Conditions

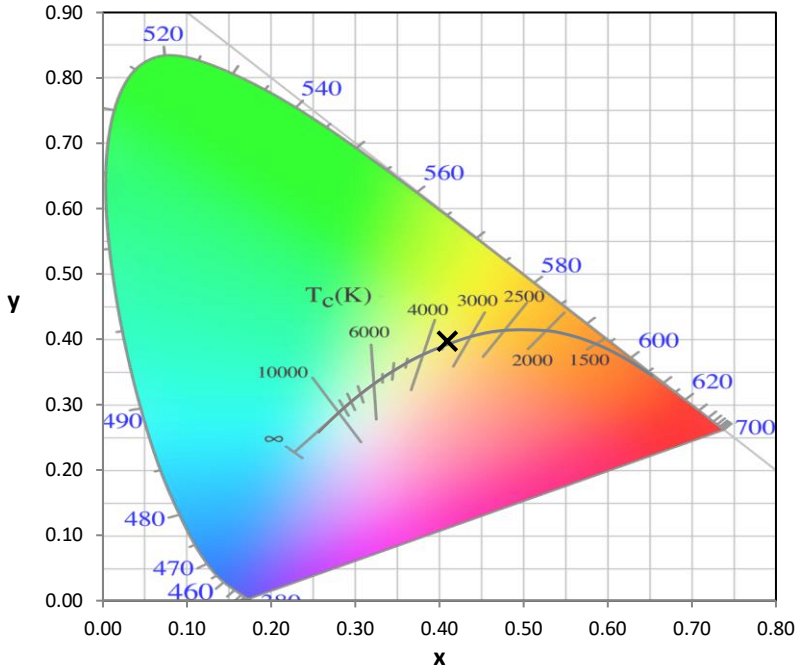
Stabilization Time:	46M
Operation Time:	1H 46M
Sphere Temperature (°C):	25.2

REPORT NUMBER: SP1-2407-176-8

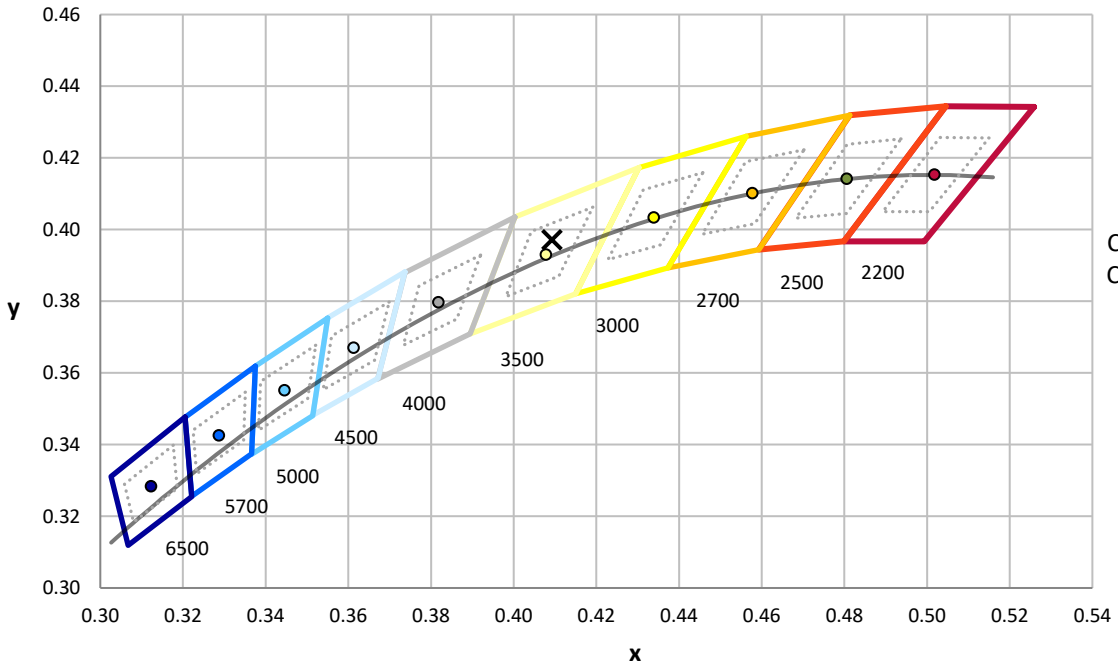
Measurement and Test Equipment			
Instrument	Identification Number	Calibration Date	Calibration Due Date
Photometer	IN0058	6/18/2024	12/18/2024
Power Meter	INXT2011004	2/8/2024	2/8/2025
AC Power Source	IN0063	10/24/2023	10/24/2024
DC Power Source	IN0208	10/24/2023	10/24/2024
Sphere Thermometer	IN0085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

REPORT NUMBER: SP1-2407-176-8

CIE 1931 Chromaticity Diagram



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

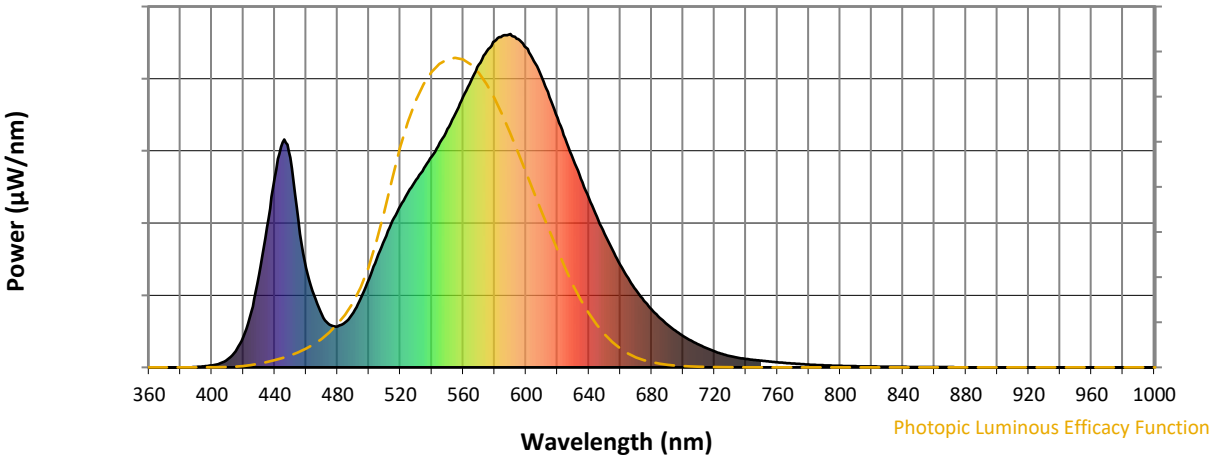


CCT = 3468K
CIE x = 0.4092
CIE y = 0.3972
Duv = 0.0020

Point lies inside the ANSI 3500K 4-step quadrangle

REPORT NUMBER: SP1-2407-176-8

Photopic Flux vs. Wavelength

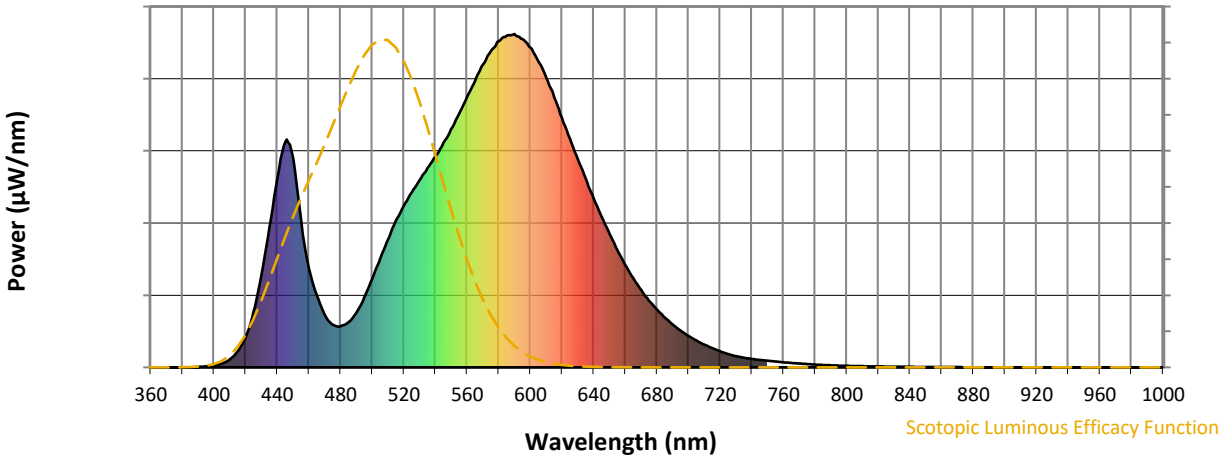


Photopic Lumens: NR

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	164	NR	620	749	NR	750	20	NR	880	0	NR
365	0	NR	495	209	NR	625	686	NR	755	17	NR	885	0	NR
370	0	NR	500	265	NR	630	624	NR	760	15	NR	890	0	NR
375	0	NR	505	325	NR	635	566	NR	765	13	NR	895	0	NR
380	0	NR	510	384	NR	640	508	NR	770	11	NR	900	0	NR
385	0	NR	515	439	NR	645	452	NR	775	10	NR	905	0	NR
390	1	NR	520	485	NR	650	401	NR	780	8	NR	910	0	NR
395	3	NR	525	526	NR	655	353	NR	785	7	NR	915	0	NR
400	6	NR	530	562	NR	660	308	NR	790	6	NR	920	0	NR
405	11	NR	535	598	NR	665	268	NR	795	5	NR	925	0	NR
410	24	NR	540	633	NR	670	232	NR	800	5	NR	930	0	NR
415	48	NR	545	674	NR	675	200	NR	805	4	NR	935	0	NR
420	91	NR	550	715	NR	680	174	NR	810	3	NR	940	0	NR
425	166	NR	555	761	NR	685	149	NR	815	3	NR	945	0	NR
430	276	NR	560	812	NR	690	129	NR	820	3	NR	950	0	NR
435	420	NR	565	860	NR	695	110	NR	825	2	NR	955	0	NR
440	568	NR	570	908	NR	700	94	NR	830	2	NR	960	0	NR
445	675	NR	575	948	NR	705	80	NR	835	2	NR	965	0	NR
450	629	NR	580	978	NR	710	68	NR	840	2	NR	970	0	NR
455	443	NR	585	994	NR	715	58	NR	845	1	NR	975	0	NR
460	299	NR	590	1000	NR	720	48	NR	850	1	NR	980	0	NR
465	217	NR	595	985	NR	725	40	NR	855	1	NR	985	0	NR
470	157	NR	600	959	NR	730	34	NR	860	1	NR	990	0	NR
475	127	NR	605	918	NR	735	29	NR	865	1	NR	995	0	NR
480	123	NR	610	869	NR	740	25	NR	870	1	NR	1000	0	NR
485	135	NR	615	810	NR	745	22	NR	875	0	NR			

REPORT NUMBER: SP1-2407-176-8

Scotopic Flux vs. Wavelength

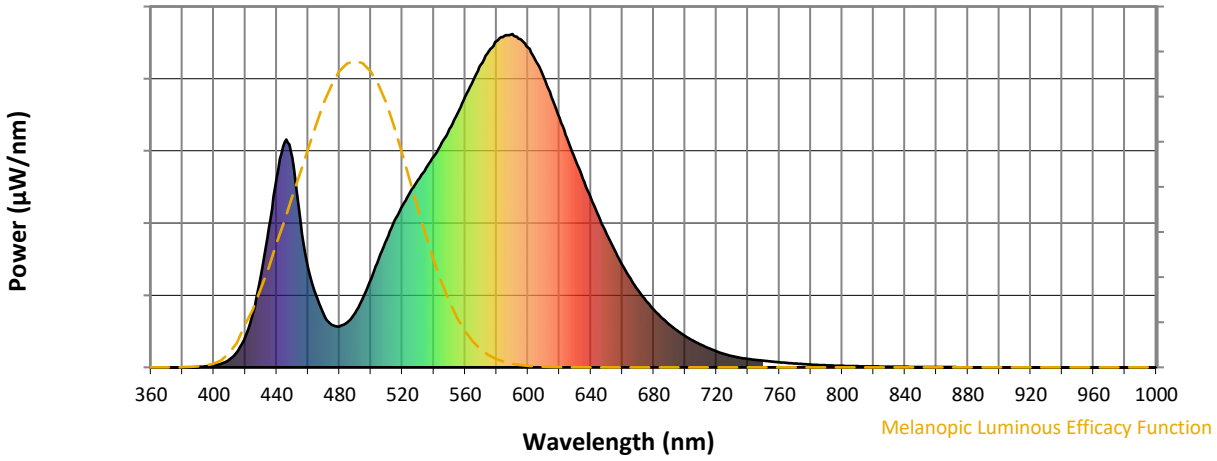


Scotopic Lumens: NR **S/P: 1.35**

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	164	NR	620	749	NR	750	20	NR	880	0	NR
365	0	NR	495	209	NR	625	686	NR	755	17	NR	885	0	NR
370	0	NR	500	265	NR	630	624	NR	760	15	NR	890	0	NR
375	0	NR	505	325	NR	635	566	NR	765	13	NR	895	0	NR
380	0	NR	510	384	NR	640	508	NR	770	11	NR	900	0	NR
385	0	NR	515	439	NR	645	452	NR	775	10	NR	905	0	NR
390	1	NR	520	485	NR	650	401	NR	780	8	NR	910	0	NR
395	3	NR	525	526	NR	655	353	NR	785	7	NR	915	0	NR
400	6	NR	530	562	NR	660	308	NR	790	6	NR	920	0	NR
405	11	NR	535	598	NR	665	268	NR	795	5	NR	925	0	NR
410	24	NR	540	633	NR	670	232	NR	800	5	NR	930	0	NR
415	48	NR	545	674	NR	675	200	NR	805	4	NR	935	0	NR
420	91	NR	550	715	NR	680	174	NR	810	3	NR	940	0	NR
425	166	NR	555	761	NR	685	149	NR	815	3	NR	945	0	NR
430	276	NR	560	812	NR	690	129	NR	820	3	NR	950	0	NR
435	420	NR	565	860	NR	695	110	NR	825	2	NR	955	0	NR
440	568	NR	570	908	NR	700	94	NR	830	2	NR	960	0	NR
445	675	NR	575	948	NR	705	80	NR	835	2	NR	965	0	NR
450	629	NR	580	978	NR	710	68	NR	840	2	NR	970	0	NR
455	443	NR	585	994	NR	715	58	NR	845	1	NR	975	0	NR
460	299	NR	590	1000	NR	720	48	NR	850	1	NR	980	0	NR
465	217	NR	595	985	NR	725	40	NR	855	1	NR	985	0	NR
470	157	NR	600	959	NR	730	34	NR	860	1	NR	990	0	NR
475	127	NR	605	918	NR	735	29	NR	865	1	NR	995	0	NR
480	123	NR	610	869	NR	740	25	NR	870	1	NR	1000	0	NR
485	135	NR	615	810	NR	745	22	NR	875	0	NR			

REPORT NUMBER: SP1-2407-176-8

Melanopic Flux vs. Wavelength



Melanopic Lumens: NR **M/P: 2.54**

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	164	NR	620	749	NR	750	20	NR	880	0	NR
365	0	NR	495	209	NR	625	686	NR	755	17	NR	885	0	NR
370	0	NR	500	265	NR	630	624	NR	760	15	NR	890	0	NR
375	0	NR	505	325	NR	635	566	NR	765	13	NR	895	0	NR
380	0	NR	510	384	NR	640	508	NR	770	11	NR	900	0	NR
385	0	NR	515	439	NR	645	452	NR	775	10	NR	905	0	NR
390	1	NR	520	485	NR	650	401	NR	780	8	NR	910	0	NR
395	3	NR	525	526	NR	655	353	NR	785	7	NR	915	0	NR
400	6	NR	530	562	NR	660	308	NR	790	6	NR	920	0	NR
405	11	NR	535	598	NR	665	268	NR	795	5	NR	925	0	NR
410	24	NR	540	633	NR	670	232	NR	800	5	NR	930	0	NR
415	48	NR	545	674	NR	675	200	NR	805	4	NR	935	0	NR
420	91	NR	550	715	NR	680	174	NR	810	3	NR	940	0	NR
425	166	NR	555	761	NR	685	149	NR	815	3	NR	945	0	NR
430	276	NR	560	812	NR	690	129	NR	820	3	NR	950	0	NR
435	420	NR	565	860	NR	695	110	NR	825	2	NR	955	0	NR
440	568	NR	570	908	NR	700	94	NR	830	2	NR	960	0	NR
445	675	NR	575	948	NR	705	80	NR	835	2	NR	965	0	NR
450	629	NR	580	978	NR	710	68	NR	840	2	NR	970	0	NR
455	443	NR	585	994	NR	715	58	NR	845	1	NR	975	0	NR
460	299	NR	590	1000	NR	720	48	NR	850	1	NR	980	0	NR
465	217	NR	595	985	NR	725	40	NR	855	1	NR	985	0	NR
470	157	NR	600	959	NR	730	34	NR	860	1	NR	990	0	NR
475	127	NR	605	918	NR	735	29	NR	865	1	NR	995	0	NR
480	123	NR	610	869	NR	740	25	NR	870	1	NR	1000	0	NR
485	135	NR	615	810	NR	745	22	NR	875	0	NR			

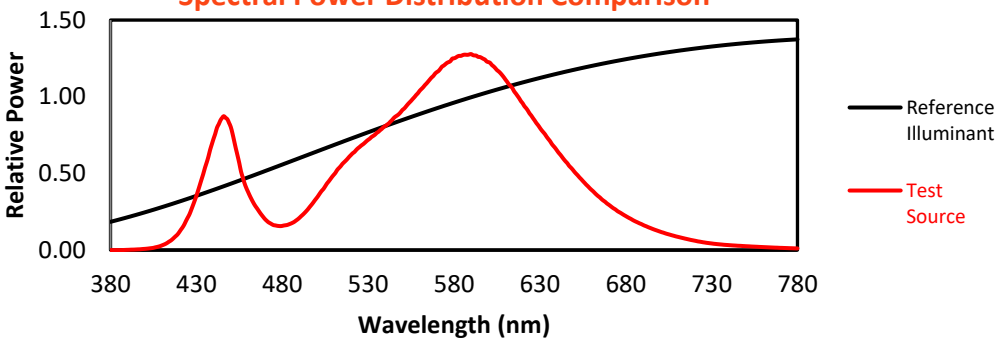
REPORT NUMBER: SP1-2407-176-8

TM-30-18

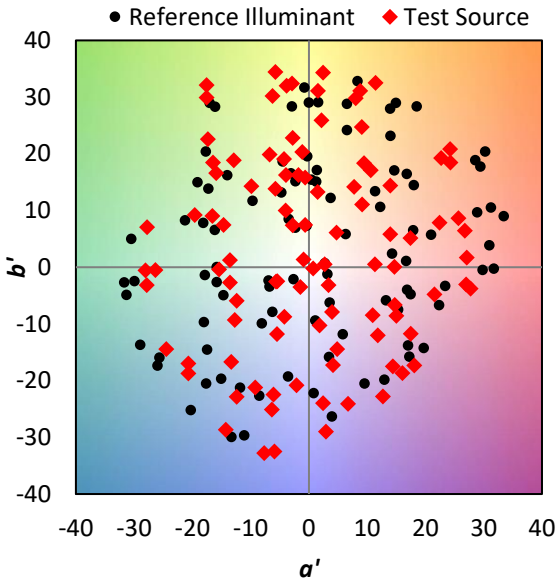
Summary

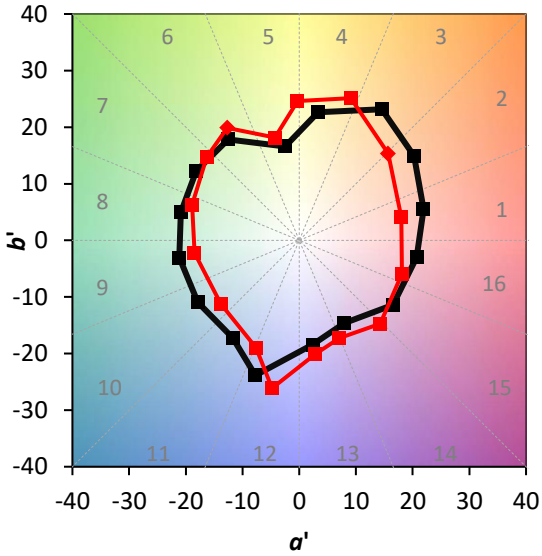
R_f = 74.1
R_g = 93.4
CIE R_a = 70.6
R_9 = -41.3

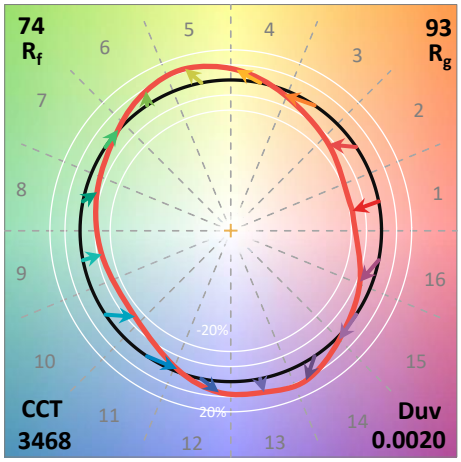
Spectral Power Distribution Comparison

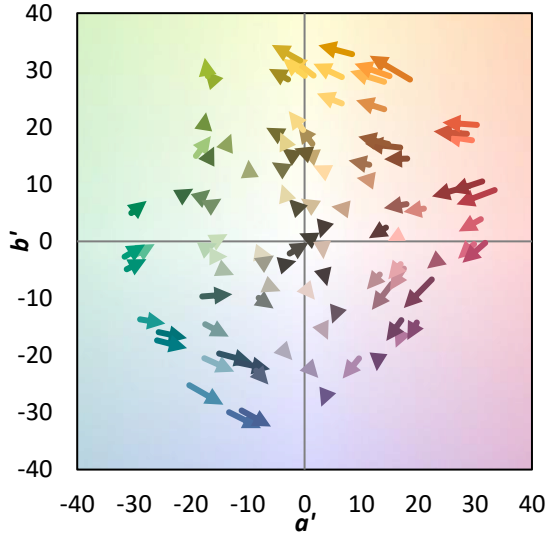


Color Vector Graphics







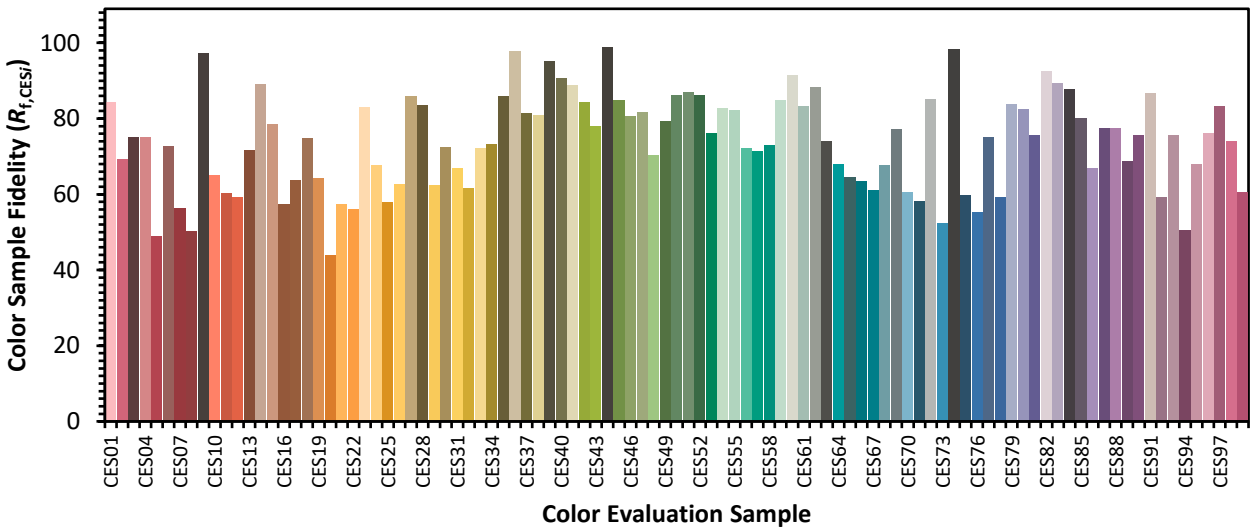


REPORT NUMBER: SP1-2407-176-8

TM-30-18

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

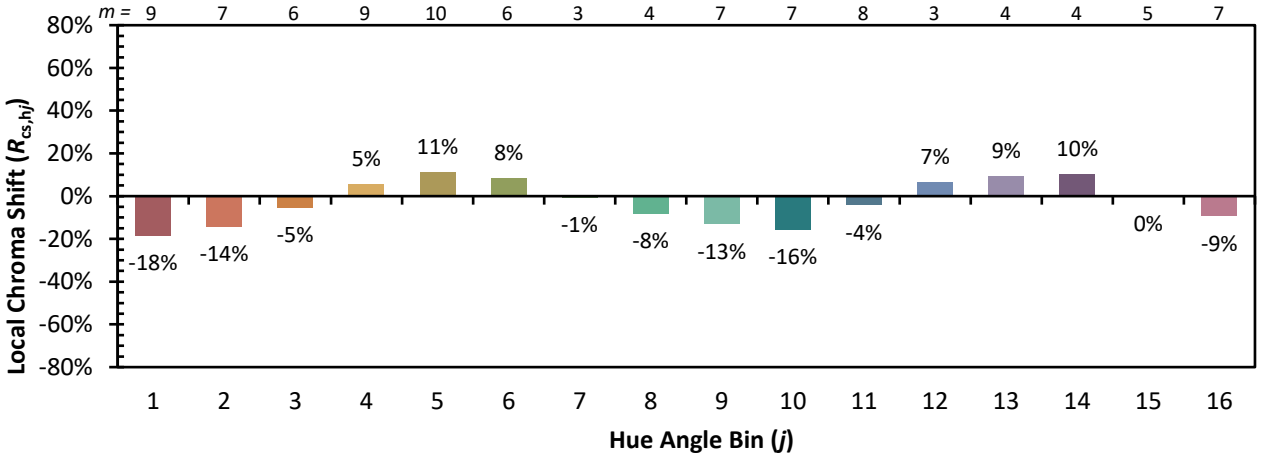
CES01 = 86	CES26 = 63	CES51 = 87	CES76 = 55
CES02 = 61	CES27 = 86	CES52 = 86	CES77 = 75
CES03 = 31	CES28 = 84	CES53 = 76	CES78 = 59
CES04 = 70	CES29 = 62	CES54 = 83	CES79 = 84
CES05 = 48	CES30 = 72	CES55 = 82	CES80 = 82
CES06 = 51	CES31 = 67	CES56 = 72	CES81 = 76
CES07 = 40	CES32 = 62	CES57 = 71	CES82 = 93
CES08 = 39	CES33 = 72	CES58 = 73	CES83 = 89
CES09 = 29	CES34 = 73	CES59 = 85	CES84 = 88
CES10 = 75	CES35 = 86	CES60 = 92	CES85 = 80
CES11 = 58	CES36 = 98	CES61 = 83	CES86 = 67
CES12 = 64	CES37 = 82	CES62 = 88	CES87 = 78
CES13 = 42	CES38 = 81	CES63 = 74	CES88 = 77
CES14 = 74	CES39 = 95	CES64 = 68	CES89 = 69
CES15 = 71	CES40 = 91	CES65 = 64	CES90 = 76
CES16 = 47	CES41 = 89	CES66 = 63	CES91 = 87
CES17 = 50	CES42 = 84	CES67 = 61	CES92 = 59
CES18 = 56	CES43 = 78	CES68 = 68	CES93 = 76
CES19 = 72	CES44 = 99	CES69 = 77	CES94 = 50
CES20 = 65	CES45 = 85	CES70 = 61	CES95 = 68
CES21 = 87	CES46 = 81	CES71 = 58	CES96 = 76
CES22 = 79	CES47 = 82	CES72 = 85	CES97 = 83
CES23 = 92	CES48 = 70	CES73 = 52	CES98 = 74
CES24 = 91	CES49 = 79	CES74 = 98	CES99 = 61
CES25 = 72	CES50 = 86	CES75 = 60	

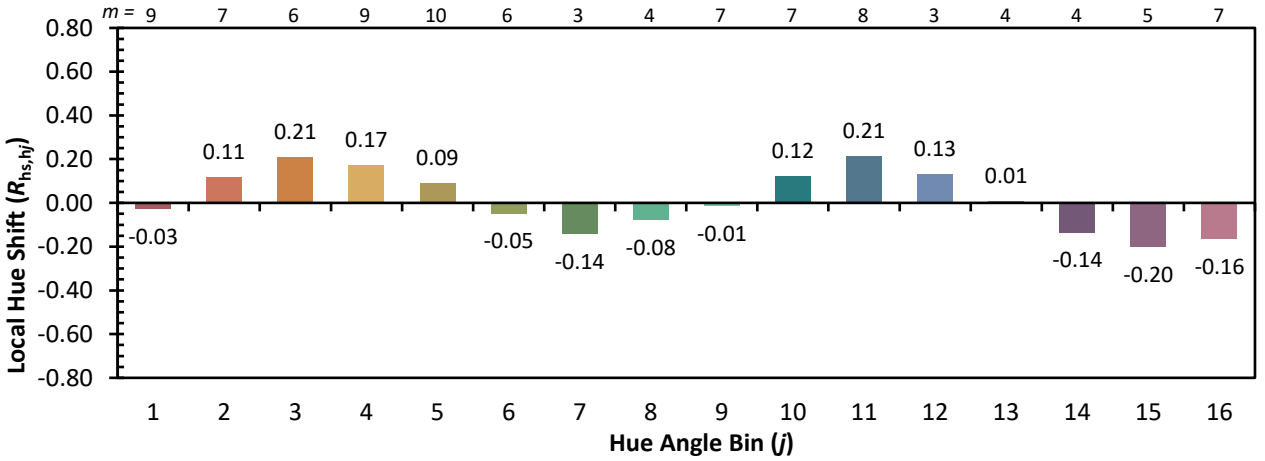


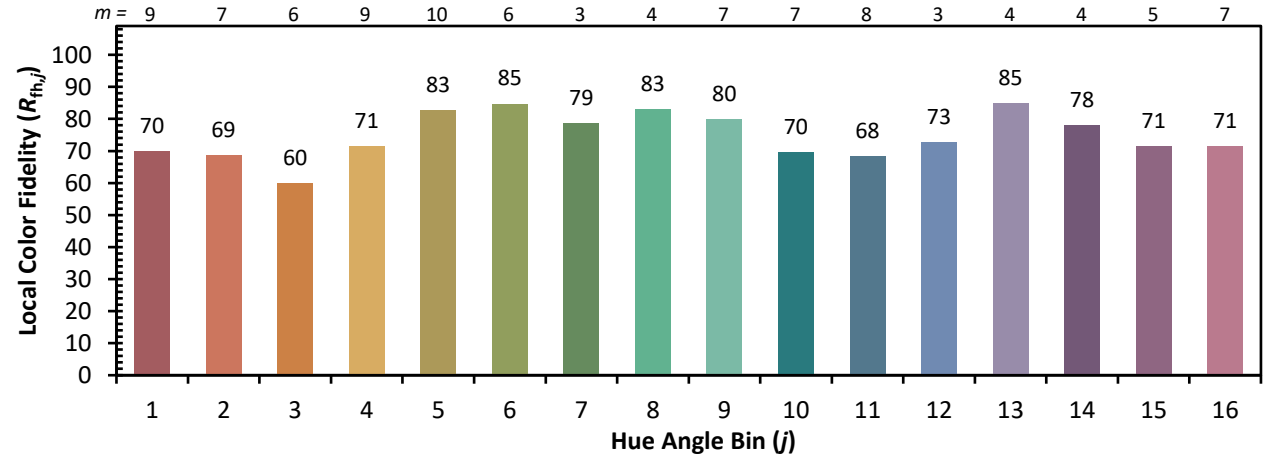
REPORT NUMBER: SP1-2407-176-8

TM-30-18

Color Rendition by Hue-Angle Bin



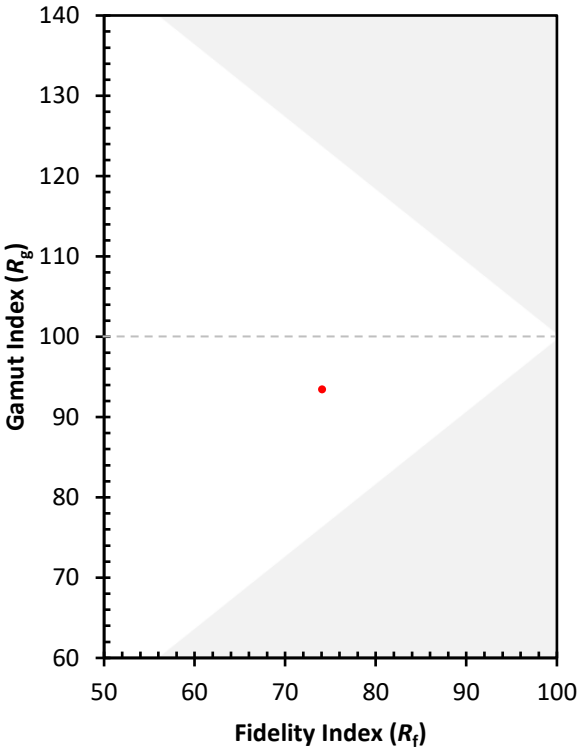


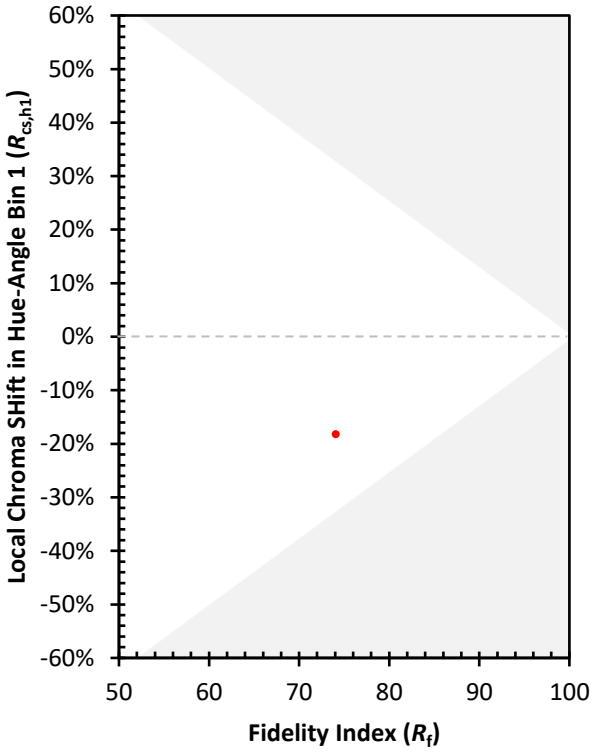


REPORT NUMBER: SP1-2407-176-8

TM-30-18

Measure Comparisons





(END OF REPORT)