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: P869122

Luminaire Tested: **EMM2-HSN-SA3A-727-U-T5M**

Issue Date: 08/22/2024

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:	P869122
Test Lab:	INNOVATION CENTER(G3)
Issue Date:	08/22/2024
Manufacturer:	COOPER LIGHTING SOLUTIONS (FORMERLY EATON)
Product Line:	INVUE
Catalog Number:	EMM2-HSN-SA3A-727-U-T5M
Description:	EPIC MODERN SHORT HOUSING DISCRETE LED ARRAYS 130W 70CRI 2700K FIXTURE w/ TYPE V SQUARE MEDIUM DISTRIBUTION OPTIC
Light Source:	(30) 2700K CCT, 70 CRI LEDS
Ballast/Driver:	ELECTRONIC DRIVER

Summary

Lumens per Lamp:	N/A
Luminaire Lumens:	16174.7 lumens
Efficiency:	N/A
Efficacy:	143.1 lumens/watt
Luminous Opening:	Rectangular (W 1' x L: 0.33' x H: 0')
IES Classification:	Type V - Short
BUG Rating:	B4 - U0 - G2

Input Watts (W):	113
Input Voltage (V):	120
Input Current (Ain):	NR
Voltage Rise (V):	NR
Power Factor:	0.99
Total Harmonic Distortion (THDi):	7.77%
Frequency (hertz):	60
Stabilization Time:	NR
Operation Time:	NR
Ambient Temperature (°C):	NR
Test Distance:	24 FT

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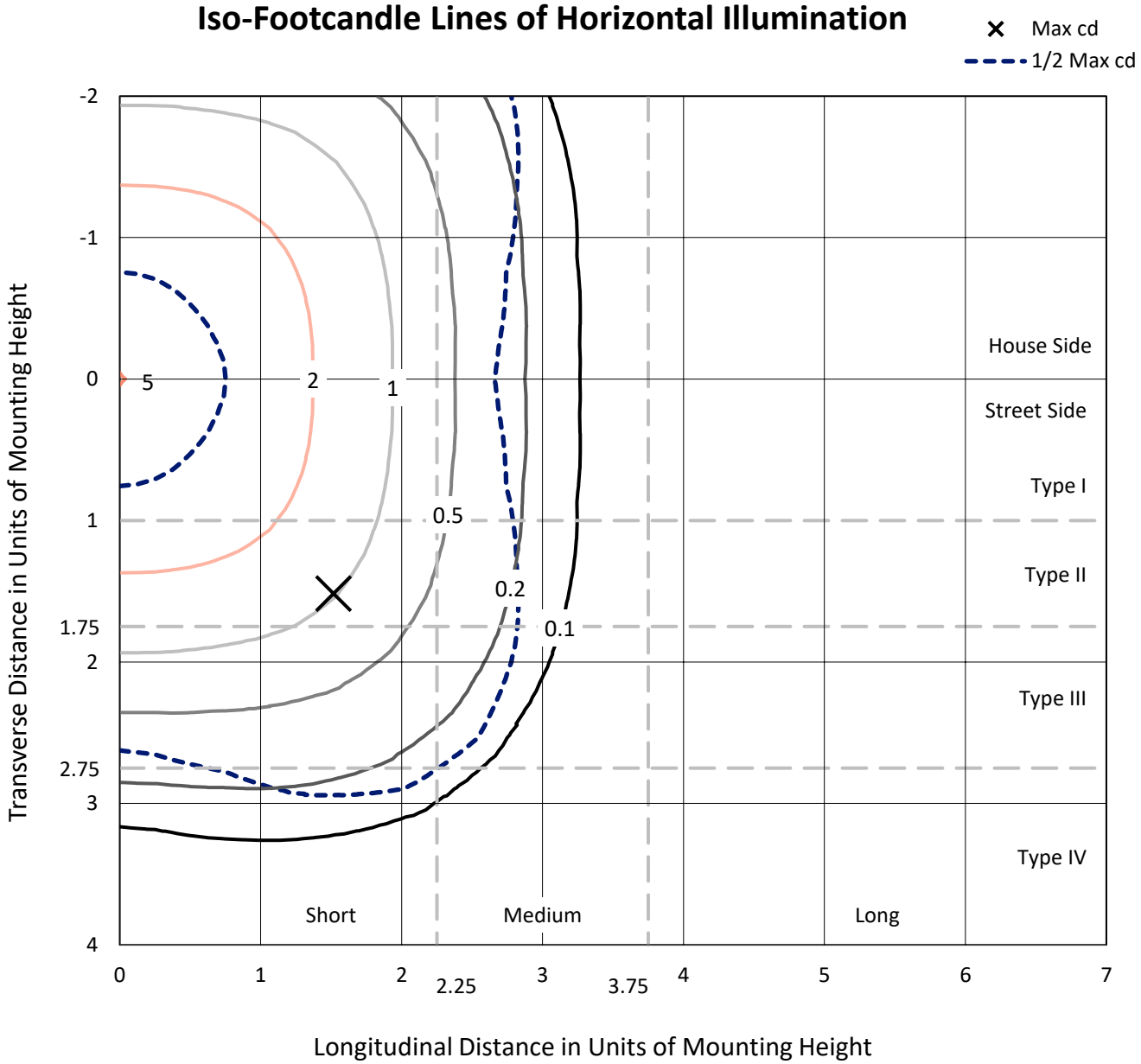
REPORT NUMBER: P869122
CATALOG NUMBER: EMM2-HSN-SA3A-727-U-T5M

Iso-Footcandle Lines of Horizontal Illumination



Based on 20 foot mounting height. Maximum calculated value = 5 fc
Type V - Short - N/A

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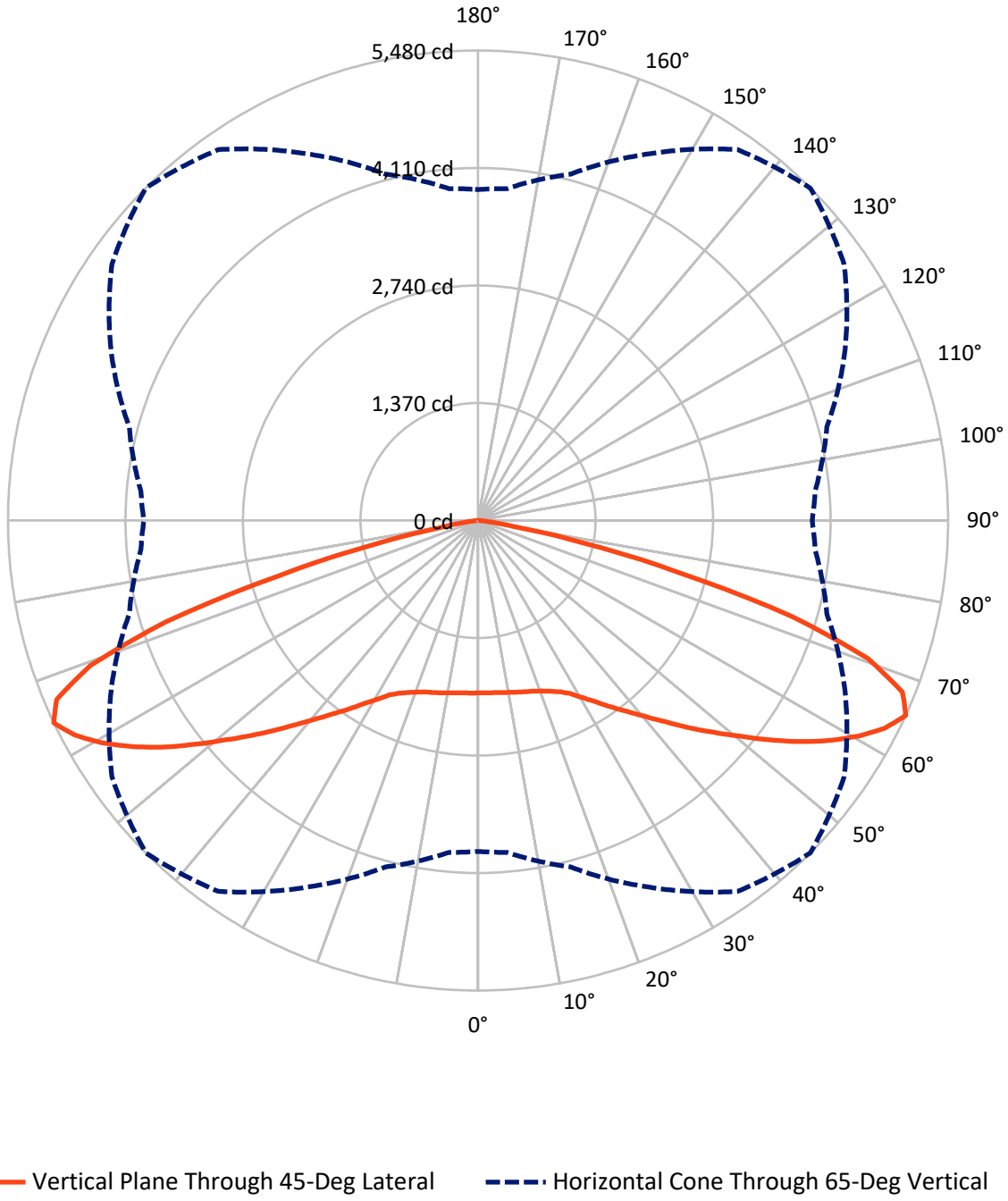
Luminous Intensity Polar Plot



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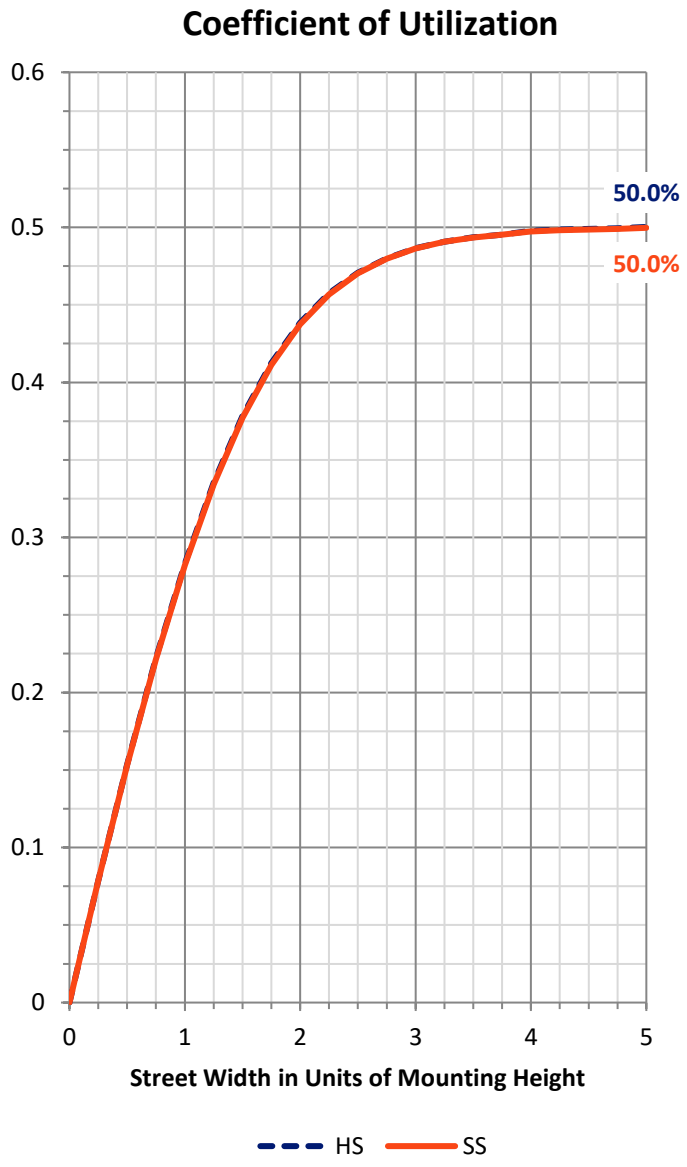
CATALOG NUMBER: EMM2-HSN-SA3A-727-U-T5M

FLUX DISTRIBUTION:

		Downward	Upward	Total
House Side	Lumens	8087.4	0.0	8087.4
	% Fixture	50.0	0.0	50.0
Street Side	Lumens	8087.4	0.0	8087.4
	% Fixture	50.0	0.0	50.0
Total	Lumens	16174.7	0.0	16174.7
	% Fixture	100.0	0.0	100.0

ZONAL LUMENS:

Zone	Lumens	% Fixture
0°-10°	193.2	1.2
10°-20°	588.3	3.6
20°-30°	1034.7	6.4
30°-40°	1673.4	10.3
40°-50°	2606.6	16.1
50°-60°	3811.4	23.6
60°-70°	4389.0	27.1
70°-80°	1792.5	11.1
80°-90°	85.8	0.5
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°	16174.7	100.0
0°-180°	16174.7	100.0



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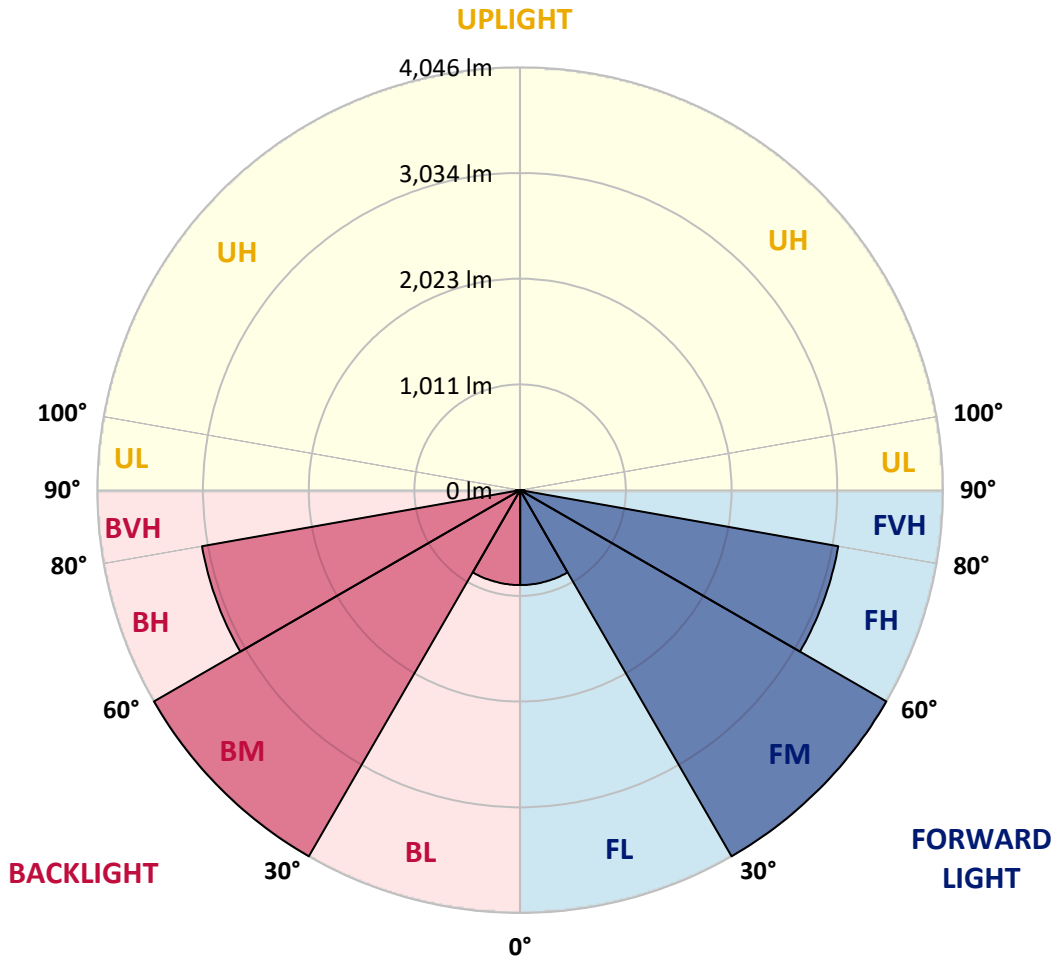
REPORT NUMBER: P869122
CATALOG NUMBER: EMM2-HSN-SA3A-727-U-T5M

LUMINAIRE CLASSIFICATION SYSTEM LUMEN TABLE AND BUG RATING:

Zone		Lumens	% Fixture	Zone Rating/Lumen Limit B	U	G
FL	(0°-30°)	908.1	5.6			
FM	(30°-60°)	4045.7	25.0			
FH	(60°-80°)	3090.7	19.1			G2/5000
FVH	(80°-90°)	42.9	0.3			G1/100
BL	(0°-30°)	908.1	5.6	B2/1000		
BM	(30°-60°)	4045.7	25.0	B3/5000		
BH	(60°-80°)	3090.7	19.1	B4/5000		G2/5000
BVH	(80°-90°)	42.9	0.3			G1/100
UL	(90°-100°)	0.0	0.0		U0/0	
UH	(100°-180°)	0.0	0.0		U0/0	

BUG Rating: B4-U0-G2
Type V Short



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REPORT NUMBER: P869122
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CANDELA DISTRIBUTION (FULL):

	0°	5°	15°	25°	35°	45°	55°	65°	75°	85°	90°
0°	2009.8	2009.8	2009.8	2009.8	2009.8	2009.8	2009.8	2009.8	2009.8	2009.8	2009.8
2.5°	2016.0	2016.0	2012.9	2012.9	2006.7	2012.9	2009.8	2012.9	2009.8	2009.8	2012.9
5°	2022.2	2022.2	2016.0	2019.1	2012.9	2016.0	2012.9	2019.1	2016.0	2012.9	2019.1
7.5°	2031.5	2031.5	2025.3	2028.4	2022.2	2025.3	2022.2	2028.4	2025.3	2025.3	2028.4
10°	2040.9	2044.0	2037.8	2034.7	2034.7	2037.8	2040.9	2044.0	2040.9	2040.9	2047.1
12.5°	2056.4	2059.5	2053.3	2050.2	2050.2	2053.3	2056.4	2062.6	2053.3	2053.3	2053.3
15°	2071.9	2071.9	2068.8	2065.7	2068.8	2071.9	2071.9	2078.1	2071.9	2065.7	2065.7
17.5°	2078.1	2081.2	2078.1	2084.4	2087.5	2090.6	2093.7	2093.7	2084.4	2081.2	2081.2
20°	2099.9	2103.0	2096.8	2099.9	2109.2	2121.6	2121.6	2121.6	2121.6	2112.3	2112.3
22.5°	2137.2	2140.3	2137.2	2137.2	2149.6	2162.0	2162.0	2171.3	2158.9	2152.7	2152.7
25°	2199.3	2199.3	2196.2	2199.3	2205.5	2211.7	2224.1	2230.4	2230.4	2227.2	2230.4
27.5°	2273.8	2276.9	2273.8	2273.8	2270.7	2283.2	2301.8	2311.1	2314.2	2317.3	2317.3
30°	2373.2	2379.5	2376.4	2379.5	2385.7	2395.0	2401.2	2404.3	2404.3	2398.1	2398.1
32.5°	2482.0	2488.2	2482.0	2497.5	2519.2	2519.2	2513.0	2525.5	2516.1	2509.9	2503.7
35°	2609.3	2609.3	2615.5	2621.8	2652.8	2668.3	2668.3	2662.1	2643.5	2634.2	2640.4
37.5°	2755.3	2758.4	2764.6	2767.8	2795.7	2823.7	2820.6	2805.0	2783.3	2758.4	2758.4
40°	2929.3	2923.1	2926.2	2947.9	2969.7	3003.8	3006.9	2985.2	2947.9	2923.1	2923.1
42.5°	3087.7	3090.8	3103.2	3131.2	3180.9	3208.9	3193.3	3156.0	3115.7	3084.6	3081.5
45°	3255.4	3252.3	3286.5	3345.5	3410.8	3444.9	3420.1	3367.3	3305.1	3264.8	3264.8
47.5°	3426.3	3423.2	3479.1	3575.4	3659.3	3687.2	3662.4	3594.0	3510.2	3451.1	3441.8
50°	3603.4	3615.8	3674.8	3811.5	3920.2	3951.3	3920.2	3830.1	3718.3	3640.6	3628.2
52.5°	3805.3	3814.6	3892.2	4041.4	4174.9	4246.4	4199.8	4066.2	3923.3	3830.1	3817.7
55°	3991.6	3997.9	4109.7	4289.9	4454.5	4550.8	4476.2	4305.4	4125.2	4007.2	3994.8
57.5°	4122.1	4137.6	4280.5	4513.5	4724.7	4836.6	4724.7	4541.5	4302.3	4156.3	4147.0
60°	4206.0	4230.8	4395.5	4687.5	4979.5	5100.6	4985.7	4731.0	4435.9	4246.4	4237.0
62.5°	4162.5	4196.7	4407.9	4790.0	5196.9	5327.4	5178.3	4821.0	4420.3	4181.1	4156.3
65°	3858.1	3882.9	4181.1	4715.4	5277.7	5479.6	5209.3	4721.6	4209.1	3945.1	3895.4
67.5°	3227.5	3271.0	3665.5	4355.1	5103.7	5336.7	4995.0	4364.4	3746.2	3423.2	3367.3
70°	2478.9	2556.5	2988.3	3736.9	4560.1	4824.1	4448.3	3684.1	2957.2	2628.0	2525.5
72.5°	1432.0	1553.2	2186.9	2916.9	3628.2	3827.0	3298.9	2575.2	1963.2	1730.2	1702.3
75°	475.3	518.8	1040.6	1680.5	2314.2	2413.6	2062.6	1624.6	1292.2	1105.9	1115.2
77.5°	233.0	233.0	313.7	615.1	1053.0	1242.5	1127.6	785.9	565.4	428.7	416.2
80°	186.4	186.4	217.4	301.3	354.1	416.2	354.1	257.8	211.2	192.6	201.9
82.5°	90.1	87.0	102.5	146.0	149.1	142.9	133.6	133.6	127.4	118.0	114.9
85°	6.2	6.2	12.4	28.0	46.6	62.1	71.4	68.3	65.2	55.9	62.1
87.5°	3.1	3.1	3.1	3.1	3.1	3.1	3.1	6.2	6.2	6.2	6.2
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: SP1-2407-157-3

Test Date: 08/07/2024

Luminaire Tested: MEM2-HTN-SA-40-727-U-5WQ-2

Data in this report applies to families of products including MEM2-HTN-SA-40-727-U-5WQ-2

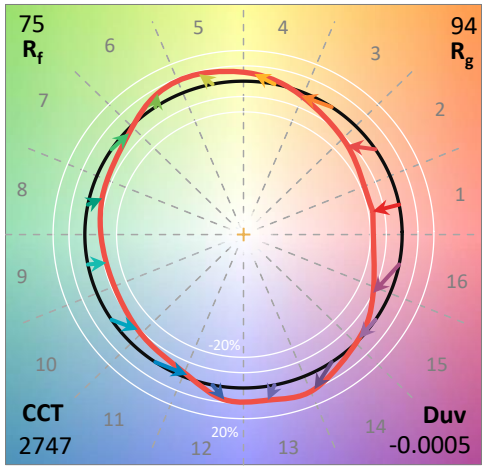
Report Generated By FNC07603 / LDUCLS01DT446
Version: v7.04

Test Information

Test Method:	LM-79-2019
Report Number:	SP1-2407-157-3
Test Lab:	COOPER LIGHTING SOLUTIONS
Photometer:	SP1 - 76IN SPHERE
Measurement Geometry:	4π
Issue Date:	08/20/2024
Manufacturer:	COOPER LIGHTING SOLUTIONS
Product Line:	Streetworks
Catalog Number:	**MEM2-HTN-SA-40-727-U-5WQ-2**
Description:	Epic Modern Light Square 40W 5WQ Optic and Flare Trim

Spectral Parameters

CCT (K):	2747	CRI (Ra):	71.7		
CIE u':	0.2606	R1:	68.1	R9:	-35.3
CIE v':	0.5257	R2:	83.9	R10:	64.2
Duv:	-0.0005	R3:	94.7	R11:	61.7
CIE x:	0.4552	R4:	66.3	R12:	53.9
CIE y:	0.4082	R5:	67.4	R13:	71.2
CIE z:	0.1366	R6:	78.7	R14:	97.6
Peak Wavelength (nm):	597	R7:	75.0	R15:	59.3
Dominant Wavelength (nm):	584	R8:	39.4		
Purity:	59.16856				
Rf:	75.5				
Rg:	93.6				



Test Conditions

Stabilization Time:	22M
Operation Time:	1H 22M
Sphere Temperature (°C):	24.2

REPORT NUMBER: SP1-2407-157-3

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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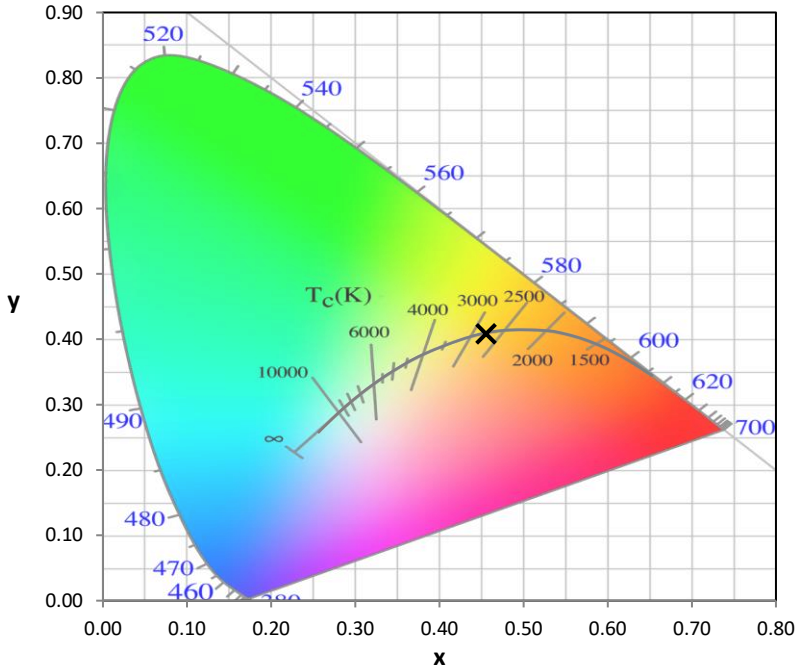
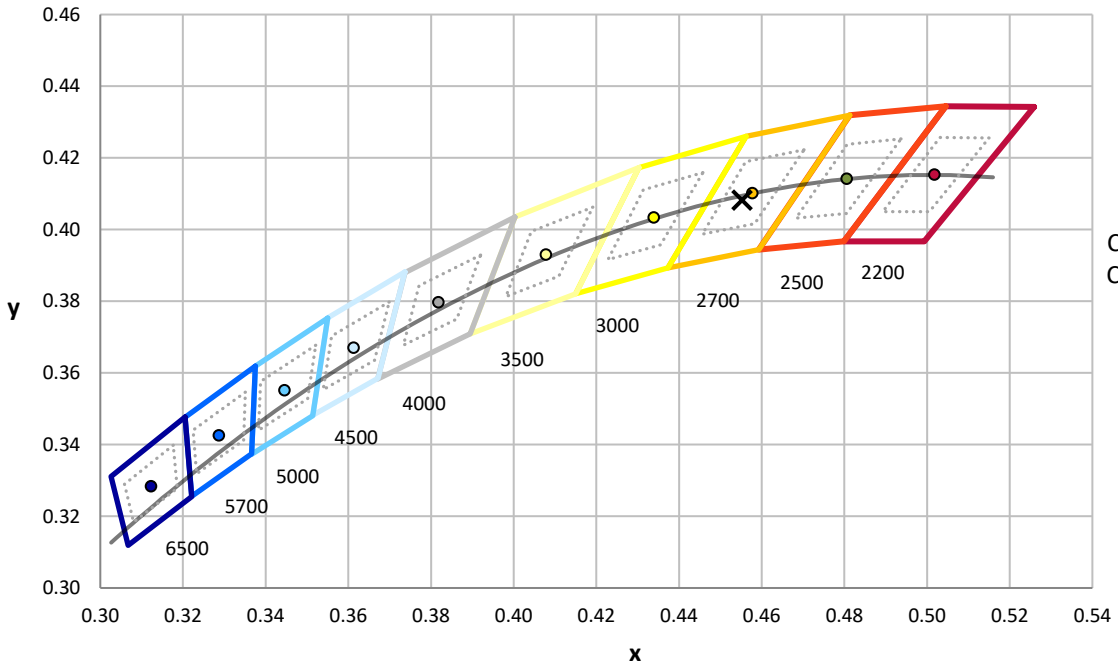
CIE 1931 Chromaticity Diagram



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



CCT = 2747K
CIE x = 0.4552
CIE y = 0.4082
Duv = -0.0005

Point lies inside the ANSI 2700K 4-step quadrangle

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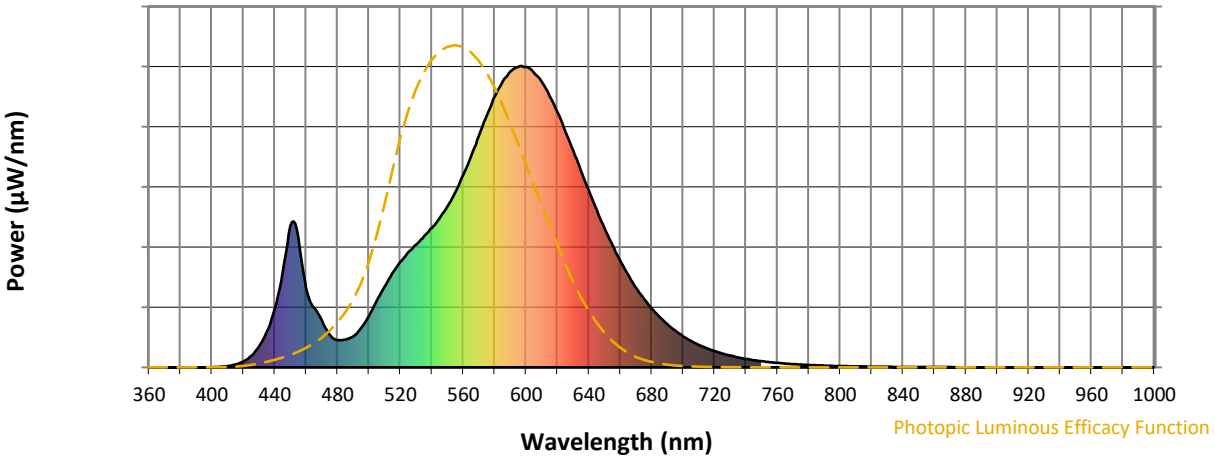
Photopic Flux vs. Wavelength

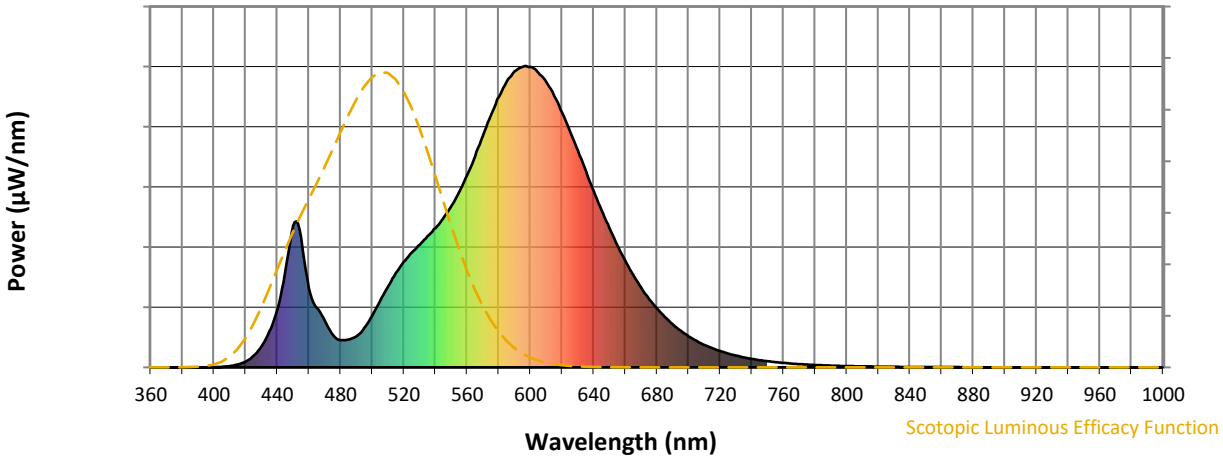


Photopic Lumens: NR

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	103	NR	620	846	NR	750	20	NR	880	0	NR
365	0	NR	495	130	NR	625	784	NR	755	17	NR	885	1	NR
370	0	NR	500	171	NR	630	720	NR	760	15	NR	890	0	NR
375	0	NR	505	221	NR	635	652	NR	765	13	NR	895	0	NR
380	0	NR	510	268	NR	640	587	NR	770	11	NR	900	0	NR
385	0	NR	515	313	NR	645	521	NR	775	9	NR	905	0	NR
390	0	NR	520	350	NR	650	461	NR	780	8	NR	910	0	NR
395	0	NR	525	381	NR	655	406	NR	785	7	NR	915	0	NR
400	0	NR	530	407	NR	660	353	NR	790	6	NR	920	0	NR
405	2	NR	535	435	NR	665	307	NR	795	5	NR	925	0	NR
410	4	NR	540	462	NR	670	264	NR	800	4	NR	930	0	NR
415	9	NR	545	496	NR	675	227	NR	805	4	NR	935	0	NR
420	20	NR	550	534	NR	680	196	NR	810	3	NR	940	0	NR
425	38	NR	555	582	NR	685	167	NR	815	3	NR	945	0	NR
430	69	NR	560	638	NR	690	144	NR	820	2	NR	950	0	NR
435	120	NR	565	700	NR	695	122	NR	825	2	NR	955	0	NR
440	193	NR	570	767	NR	700	103	NR	830	2	NR	960	0	NR
445	316	NR	575	836	NR	705	88	NR	835	2	NR	965	0	NR
450	469	NR	580	898	NR	710	74	NR	840	1	NR	970	0	NR
455	431	NR	585	947	NR	715	63	NR	845	1	NR	975	0	NR
460	264	NR	590	982	NR	720	54	NR	850	1	NR	980	0	NR
465	197	NR	595	997	NR	725	46	NR	855	1	NR	985	0	NR
470	155	NR	600	997	NR	730	39	NR	860	1	NR	990	0	NR
475	108	NR	605	978	NR	735	33	NR	865	1	NR	995	0	NR
480	90	NR	610	947	NR	740	28	NR	870	1	NR	1000	0	NR
485	92	NR	615	900	NR	745	24	NR	875	1	NR			

REPORT NUMBER: SP1-2407-157-3

Scotopic Flux vs. Wavelength

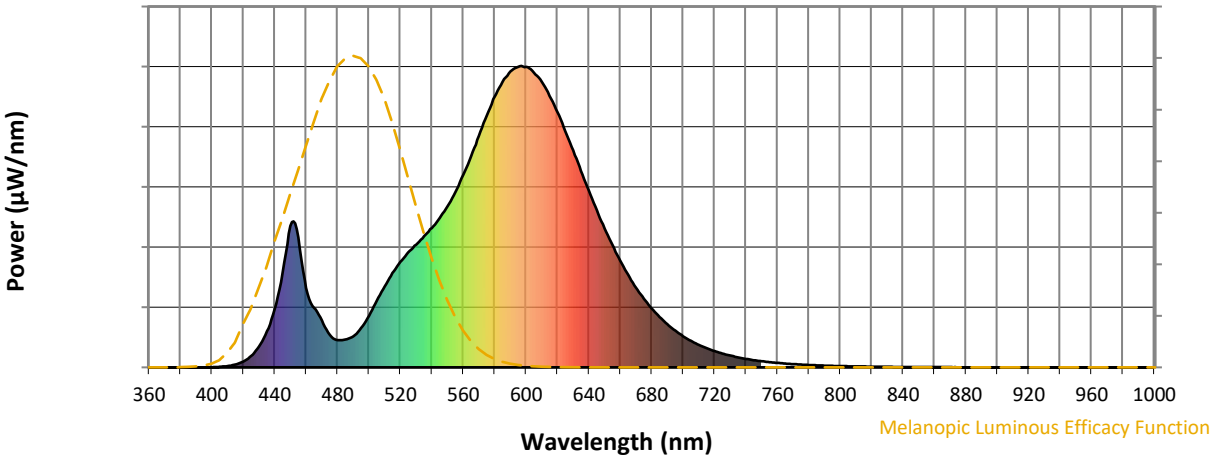


Scotopic Lumens: NR **S/P: 1.13**

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	103	NR	620	846	NR	750	20	NR	880	0	NR
365	0	NR	495	130	NR	625	784	NR	755	17	NR	885	1	NR
370	0	NR	500	171	NR	630	720	NR	760	15	NR	890	0	NR
375	0	NR	505	221	NR	635	652	NR	765	13	NR	895	0	NR
380	0	NR	510	268	NR	640	587	NR	770	11	NR	900	0	NR
385	0	NR	515	313	NR	645	521	NR	775	9	NR	905	0	NR
390	0	NR	520	350	NR	650	461	NR	780	8	NR	910	0	NR
395	0	NR	525	381	NR	655	406	NR	785	7	NR	915	0	NR
400	0	NR	530	407	NR	660	353	NR	790	6	NR	920	0	NR
405	2	NR	535	435	NR	665	307	NR	795	5	NR	925	0	NR
410	4	NR	540	462	NR	670	264	NR	800	4	NR	930	0	NR
415	9	NR	545	496	NR	675	227	NR	805	4	NR	935	0	NR
420	20	NR	550	534	NR	680	196	NR	810	3	NR	940	0	NR
425	38	NR	555	582	NR	685	167	NR	815	3	NR	945	0	NR
430	69	NR	560	638	NR	690	144	NR	820	2	NR	950	0	NR
435	120	NR	565	700	NR	695	122	NR	825	2	NR	955	0	NR
440	193	NR	570	767	NR	700	103	NR	830	2	NR	960	0	NR
445	316	NR	575	836	NR	705	88	NR	835	2	NR	965	0	NR
450	469	NR	580	898	NR	710	74	NR	840	1	NR	970	0	NR
455	431	NR	585	947	NR	715	63	NR	845	1	NR	975	0	NR
460	264	NR	590	982	NR	720	54	NR	850	1	NR	980	0	NR
465	197	NR	595	997	NR	725	46	NR	855	1	NR	985	0	NR
470	155	NR	600	997	NR	730	39	NR	860	1	NR	990	0	NR
475	108	NR	605	978	NR	735	33	NR	865	1	NR	995	0	NR
480	90	NR	610	947	NR	740	28	NR	870	1	NR	1000	0	NR
485	92	NR	615	900	NR	745	24	NR	875	1	NR			

REPORT NUMBER: SP1-2407-157-3

Melanopic Flux vs. Wavelength



Melanopic Lumens: NR **M/P: 2.04**

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	103	NR	620	846	NR	750	20	NR	880	0	NR
365	0	NR	495	130	NR	625	784	NR	755	17	NR	885	1	NR
370	0	NR	500	171	NR	630	720	NR	760	15	NR	890	0	NR
375	0	NR	505	221	NR	635	652	NR	765	13	NR	895	0	NR
380	0	NR	510	268	NR	640	587	NR	770	11	NR	900	0	NR
385	0	NR	515	313	NR	645	521	NR	775	9	NR	905	0	NR
390	0	NR	520	350	NR	650	461	NR	780	8	NR	910	0	NR
395	0	NR	525	381	NR	655	406	NR	785	7	NR	915	0	NR
400	0	NR	530	407	NR	660	353	NR	790	6	NR	920	0	NR
405	2	NR	535	435	NR	665	307	NR	795	5	NR	925	0	NR
410	4	NR	540	462	NR	670	264	NR	800	4	NR	930	0	NR
415	9	NR	545	496	NR	675	227	NR	805	4	NR	935	0	NR
420	20	NR	550	534	NR	680	196	NR	810	3	NR	940	0	NR
425	38	NR	555	582	NR	685	167	NR	815	3	NR	945	0	NR
430	69	NR	560	638	NR	690	144	NR	820	2	NR	950	0	NR
435	120	NR	565	700	NR	695	122	NR	825	2	NR	955	0	NR
440	193	NR	570	767	NR	700	103	NR	830	2	NR	960	0	NR
445	316	NR	575	836	NR	705	88	NR	835	2	NR	965	0	NR
450	469	NR	580	898	NR	710	74	NR	840	1	NR	970	0	NR
455	431	NR	585	947	NR	715	63	NR	845	1	NR	975	0	NR
460	264	NR	590	982	NR	720	54	NR	850	1	NR	980	0	NR
465	197	NR	595	997	NR	725	46	NR	855	1	NR	985	0	NR
470	155	NR	600	997	NR	730	39	NR	860	1	NR	990	0	NR
475	108	NR	605	978	NR	735	33	NR	865	1	NR	995	0	NR
480	90	NR	610	947	NR	740	28	NR	870	1	NR	1000	0	NR
485	92	NR	615	900	NR	745	24	NR	875	1	NR			

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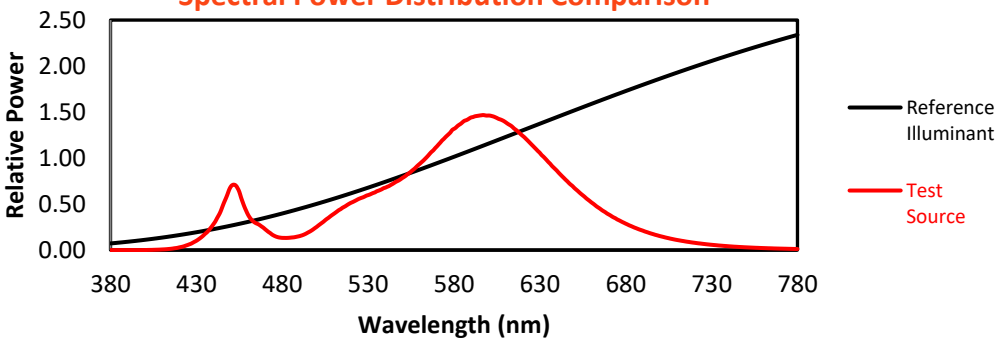
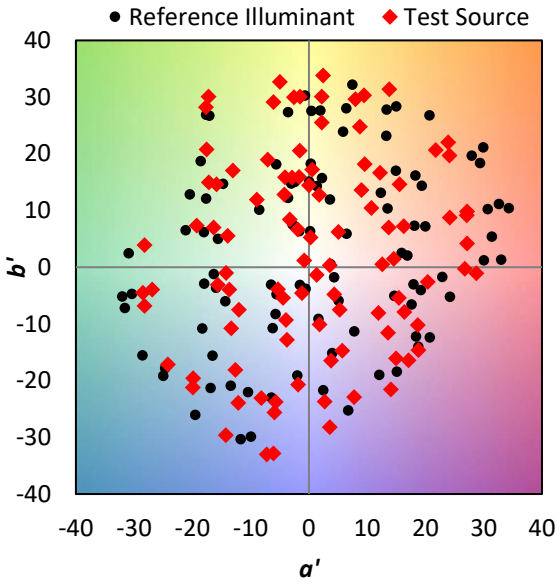
Summary

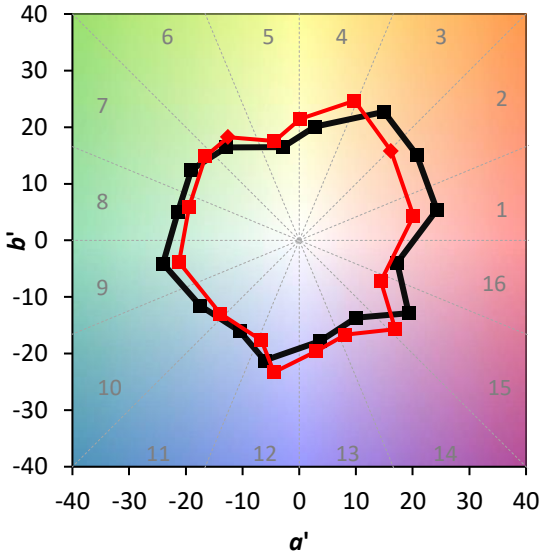
R_f = 75.5
R_g = 93.6
CIE R_a = 71.7
R_9 = -35.3

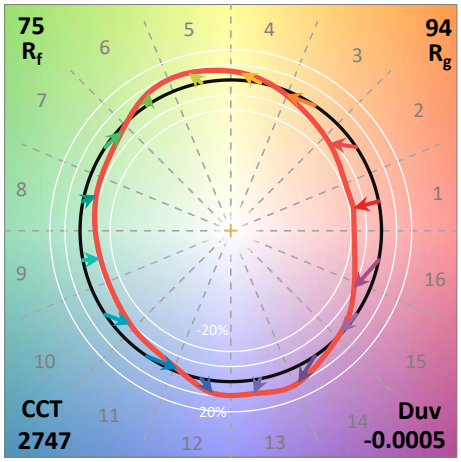
Spectral Power Distribution Comparison

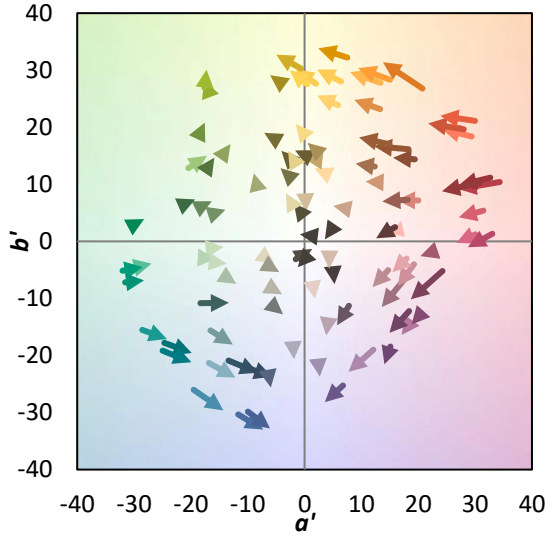


Color Vector Graphics









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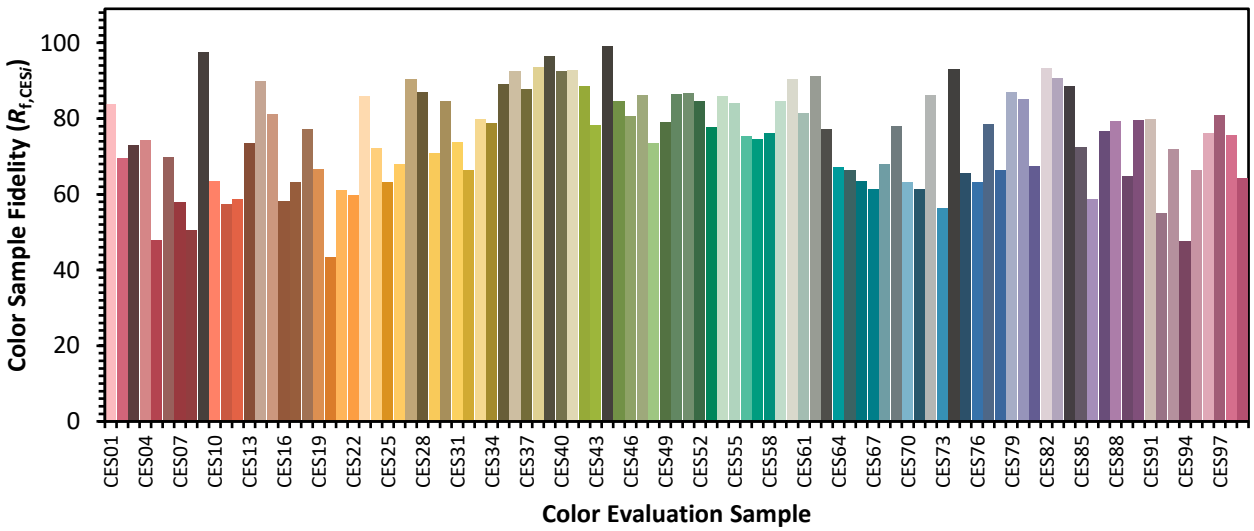
Individual Sample Fidelity Index ($R_{f,i}$)

CES01 = 86	CES26 = 68	CES51 = 87	CES76 = 63
CES02 = 63	CES27 = 90	CES52 = 85	CES77 = 79
CES03 = 31	CES28 = 87	CES53 = 78	CES78 = 66
CES04 = 71	CES29 = 71	CES54 = 86	CES79 = 87
CES05 = 50	CES30 = 85	CES55 = 84	CES80 = 85
CES06 = 52	CES31 = 74	CES56 = 75	CES81 = 67
CES07 = 42	CES32 = 66	CES57 = 75	CES82 = 93
CES08 = 41	CES33 = 80	CES58 = 76	CES83 = 91
CES09 = 29	CES34 = 79	CES59 = 85	CES84 = 89
CES10 = 77	CES35 = 89	CES60 = 90	CES85 = 72
CES11 = 60	CES36 = 93	CES61 = 81	CES86 = 59
CES12 = 66	CES37 = 88	CES62 = 91	CES87 = 77
CES13 = 43	CES38 = 93	CES63 = 77	CES88 = 79
CES14 = 74	CES39 = 97	CES64 = 67	CES89 = 65
CES15 = 72	CES40 = 93	CES65 = 66	CES90 = 80
CES16 = 48	CES41 = 93	CES66 = 63	CES91 = 80
CES17 = 51	CES42 = 89	CES67 = 61	CES92 = 55
CES18 = 57	CES43 = 78	CES68 = 68	CES93 = 72
CES19 = 73	CES44 = 99	CES69 = 78	CES94 = 48
CES20 = 67	CES45 = 85	CES70 = 63	CES95 = 66
CES21 = 88	CES46 = 81	CES71 = 61	CES96 = 76
CES22 = 80	CES47 = 86	CES72 = 86	CES97 = 81
CES23 = 92	CES48 = 74	CES73 = 56	CES98 = 76
CES24 = 91	CES49 = 79	CES74 = 93	CES99 = 64
CES25 = 73	CES50 = 86	CES75 = 66	



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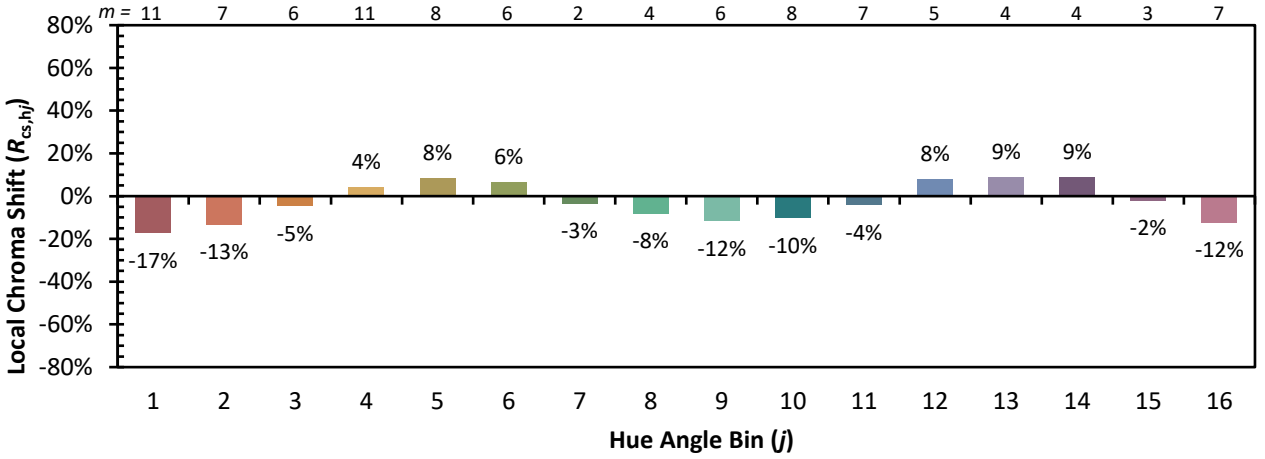
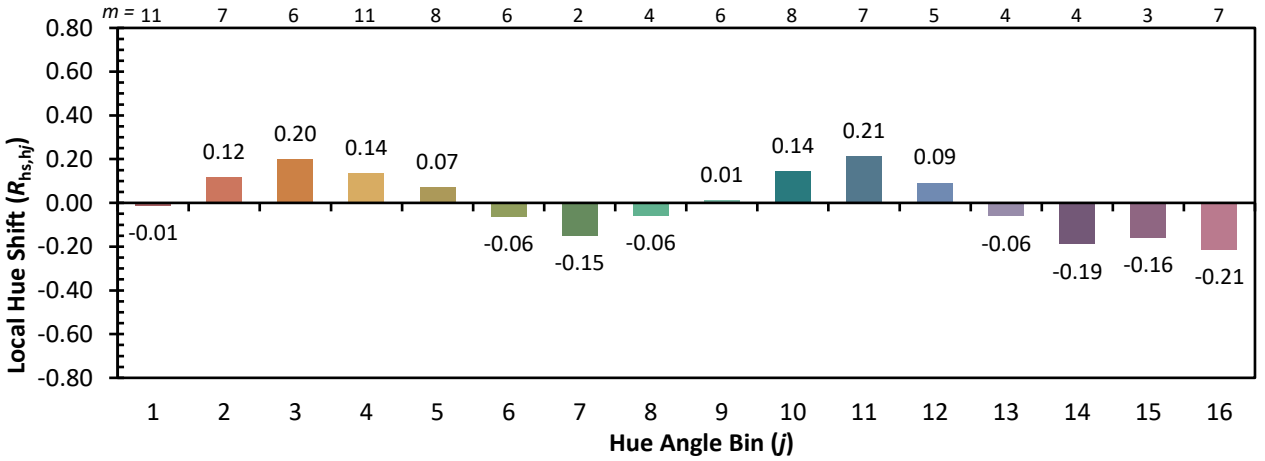
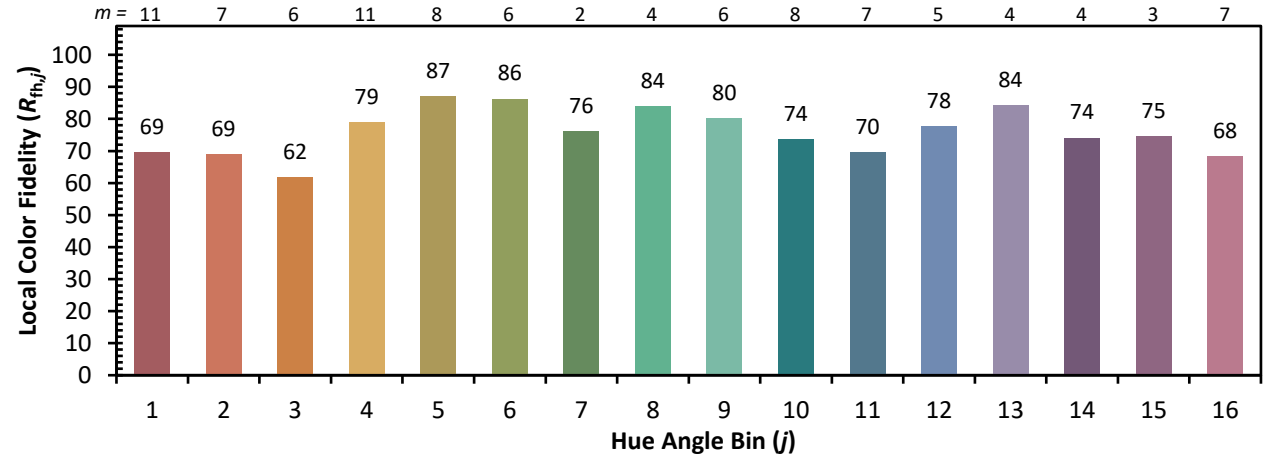
Color Rendition by Hue-Angle Bin







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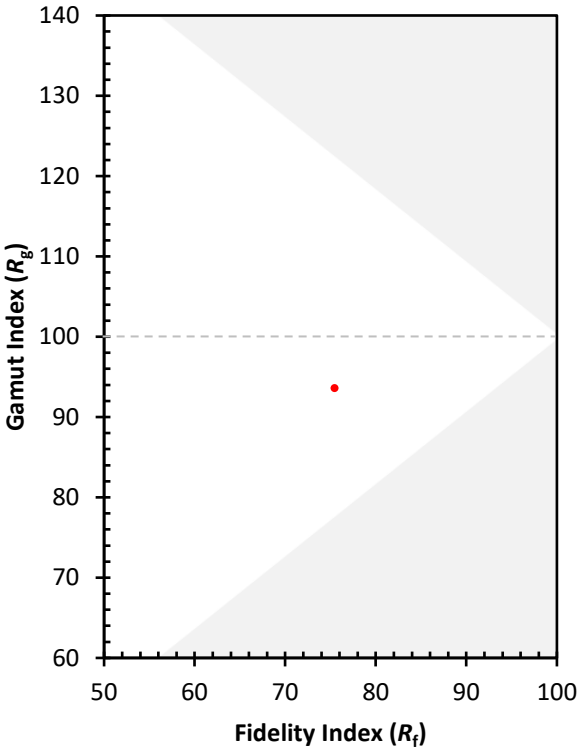
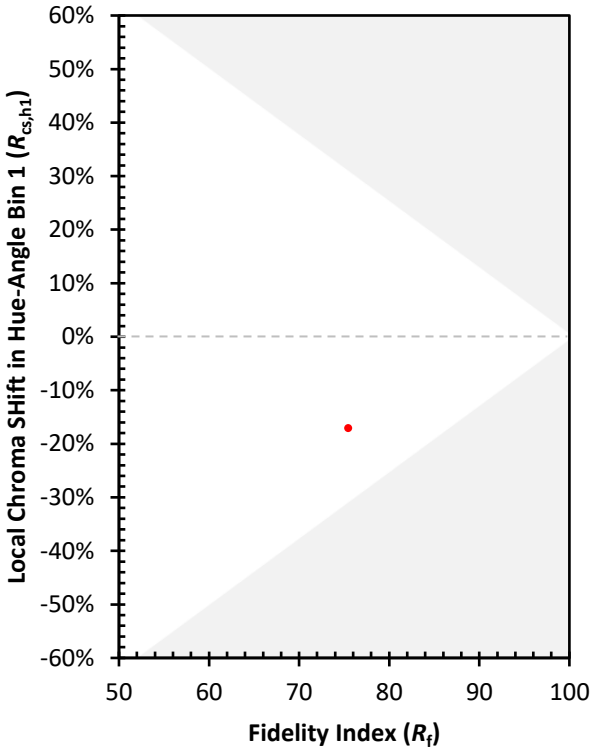
Measure Comparisons





(END OF REPORT)