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: P870954

Luminaire Tested: **EMM2-HTN-SA2C-830-U-T5M**

Issue Date: 09/05/2024

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:	P870954
Test Lab:	INNOVATION CENTER(G3)
Issue Date:	09/05/2024
Manufacturer:	COOPER LIGHTING SOLUTIONS (FORMERLY EATON)
Product Line:	INVUE
Catalog Number:	EMM2-HTN-SA2C-830-U-T5M
Description:	EPIC MODERN TALL HOUSING DISCRETE LED ARRAYS 120W 80CRI 3000K FIXTURE w/ TYPE V SQUARE MEDIUM DISTRIBUTION OPTIC
Light Source:	(20) 3000K CCT, 80 CRI LEDS
Ballast/Driver:	ELECTRONIC DRIVER

Summary

Lumens per Lamp:	N/A
Luminaire Lumens:	12471.4 lumens
Efficiency:	N/A
Efficacy:	123.5 lumens/watt
Luminous Opening:	Rectangular (W 0.67' x L: 0.33' x H: 0')
IES Classification:	Type V - Short
BUG Rating:	B3 - U0 - G2

Input Watts (W):	101
Input Voltage (V):	120
Input Current (Ain):	NR
Voltage Rise (V):	NR
Power Factor:	0.99
Total Harmonic Distortion (THDi):	9.45%
Frequency (hertz):	60
Stabilization Time:	NR
Operation Time:	NR
Ambient Temperature (°C):	NR
Test Distance:	24 FT

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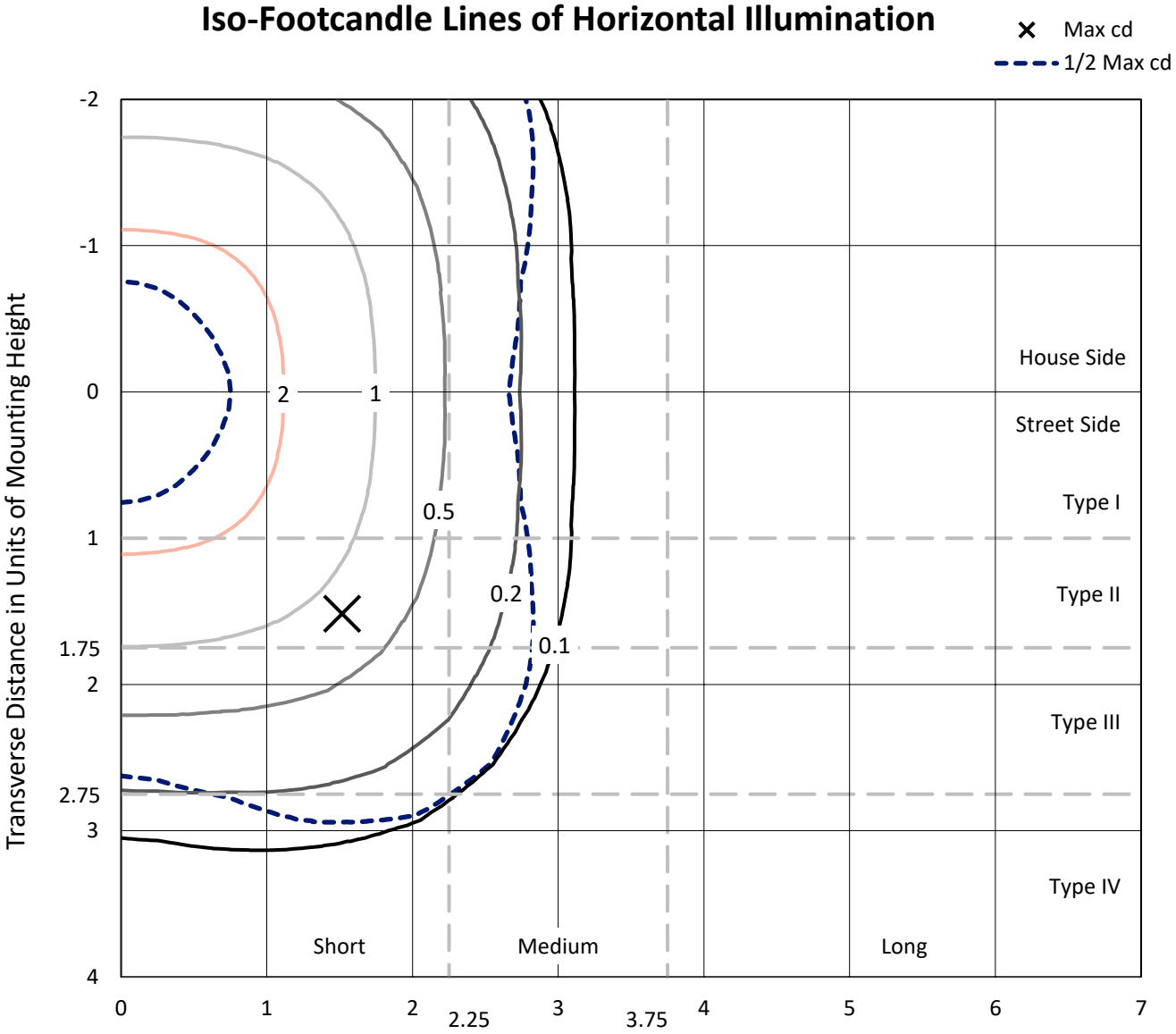
REPORT NUMBER: P870954
CATALOG NUMBER: EMM2-HTN-SA2C-830-U-T5M

Iso-Footcandle Lines of Horizontal Illumination



Based on 20 foot mounting height. Maximum calculated value = 3.9 fc
Type V - Short - N/A

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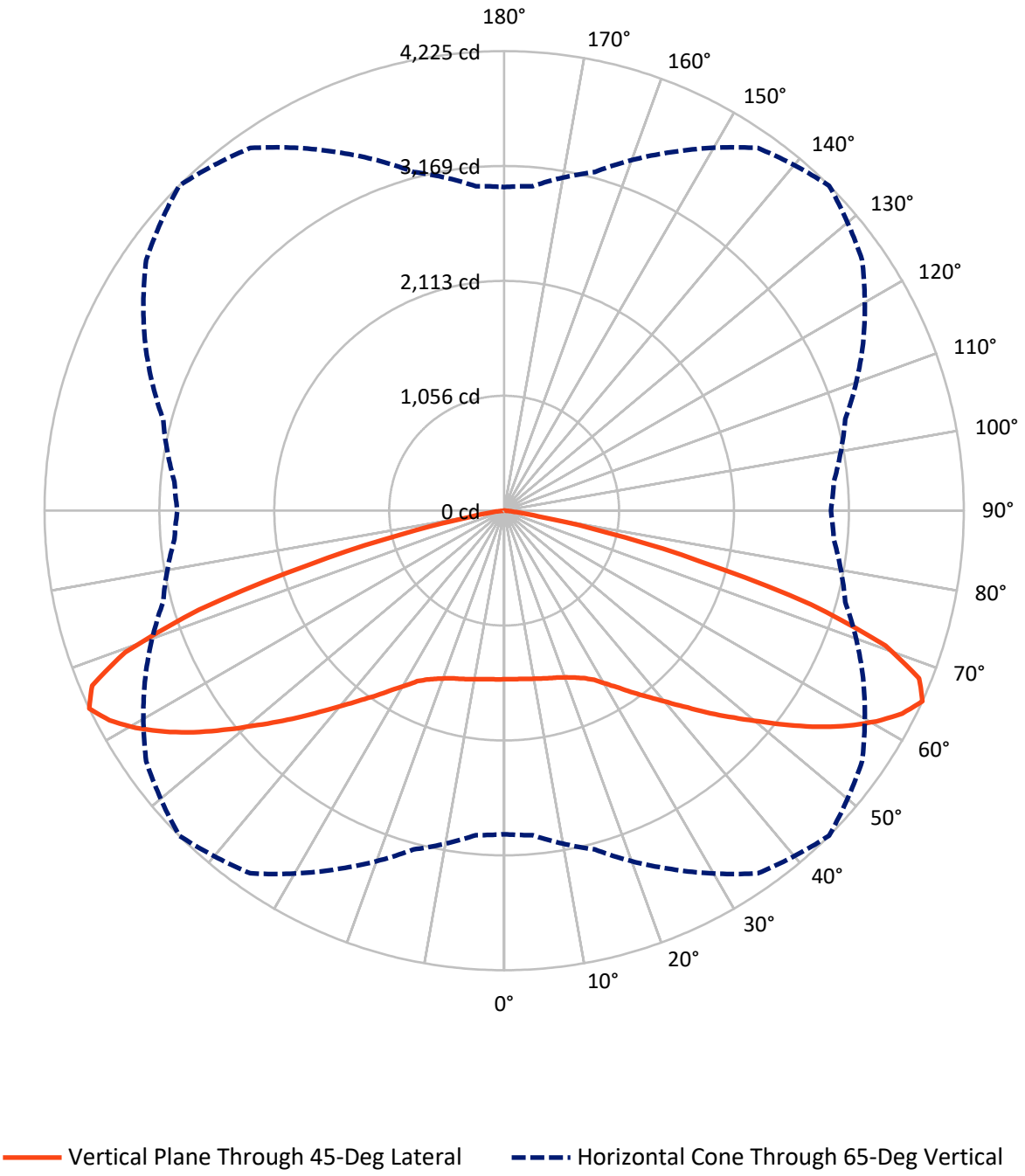
Luminous Intensity Polar Plot



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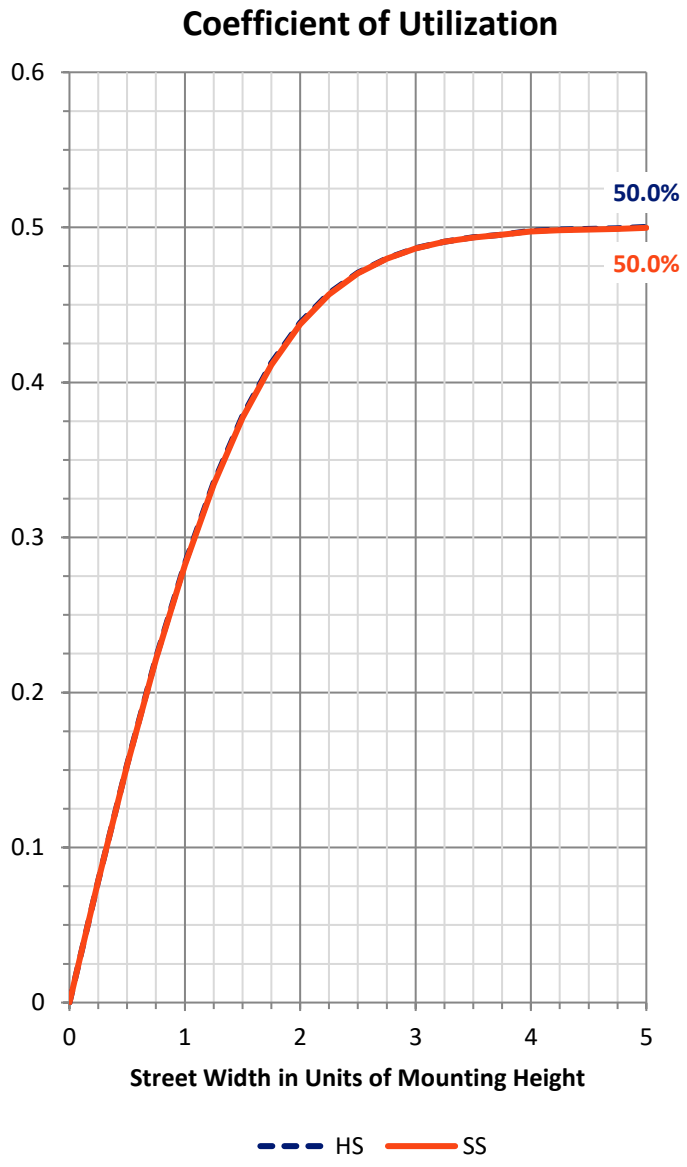
REPORT NUMBER: P870954
CATALOG NUMBER: EMM2-HTN-SA2C-830-U-T5M

FLUX DISTRIBUTION:

		Downward	Upward	Total
House Side	Lumens	6235.7	0.0	6235.7
	% Fixture	50.0	0.0	50.0
Street Side	Lumens	6235.7	0.0	6235.7
	% Fixture	50.0	0.0	50.0
Total	Lumens	12471.4	0.0	12471.4
	% Fixture	100.0	0.0	100.0

ZONAL LUMENS:

Zone	Lumens	% Fixture
0°-10°	149.0	1.2
10°-20°	453.6	3.6
20°-30°	797.8	6.4
30°-40°	1290.2	10.3
40°-50°	2009.8	16.1
50°-60°	2938.7	23.6
60°-70°	3384.1	27.1
70°-80°	1382.1	11.1
80°-90°	66.1	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°	12471.4	100.0
0°-180°	12471.4	100.0



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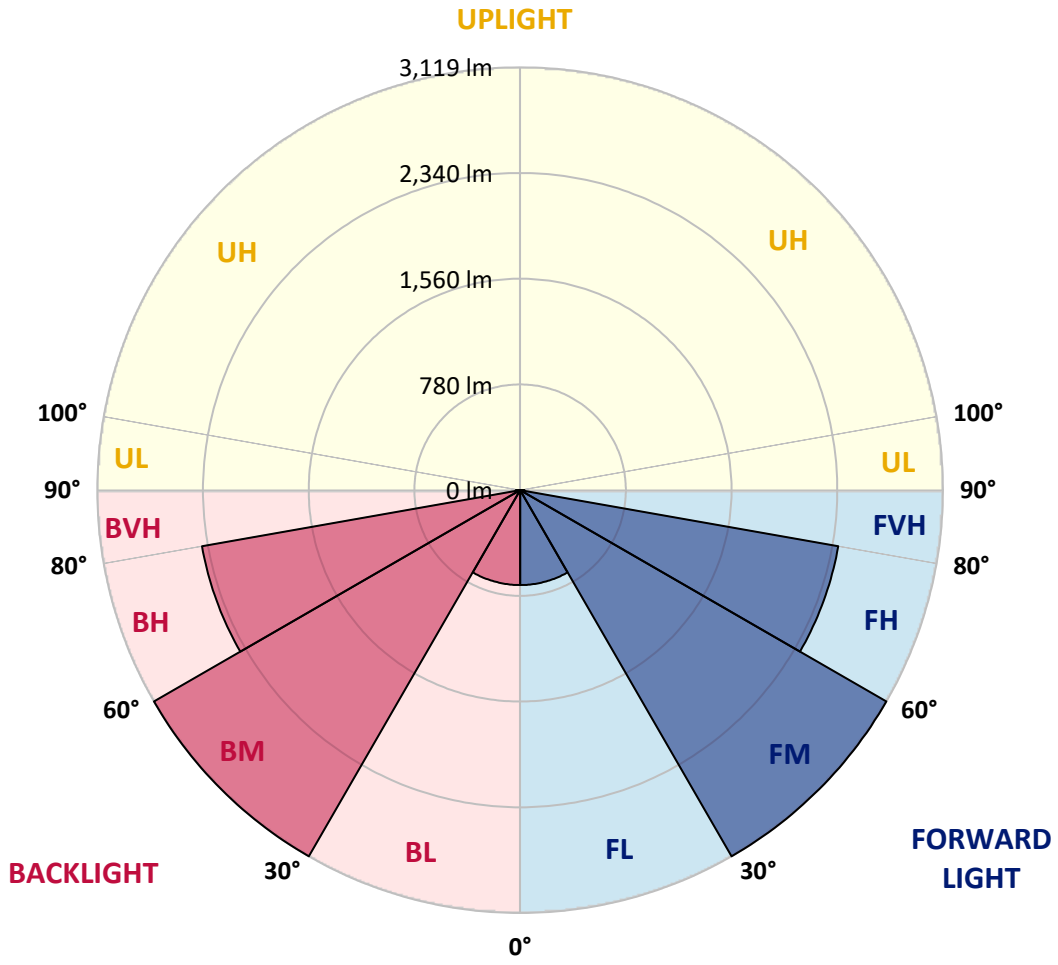
REPORT NUMBER: P870954
CATALOG NUMBER: EMM2-HTN-SA2C-830-U-T5M

LUMINAIRE CLASSIFICATION SYSTEM LUMEN TABLE AND BUG RATING:

Zone		Lumens	% Fixture	Zone Rating/Lumen Limit B	U	G
FL	(0°-30°)	700.2	5.6			
FM	(30°-60°)	3119.4	25.0			
FH	(60°-80°)	2383.1	19.1			G2/5000
FVH	(80°-90°)	33.1	0.3			G1/100
BL	(0°-30°)	700.2	5.6	B2/1000		
BM	(30°-60°)	3119.4	25.0	B3/5000		
BH	(60°-80°)	2383.1	19.1	B3/2500		G2/5000
BVH	(80°-90°)	33.1	0.3			G1/100
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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CANDELA DISTRIBUTION (FULL):

	0°	5°	15°	25°	35°	45°	55°	65°	75°	85°	90°
0°	1549.6	1549.6	1549.6	1549.6	1549.6	1549.6	1549.6	1549.6	1549.6	1549.6	1549.6
2.5°	1554.4	1554.4	1552.0	1552.0	1547.2	1552.0	1549.6	1552.0	1549.6	1549.6	1552.0
5°	1559.2	1559.2	1554.4	1556.8	1552.0	1554.4	1552.0	1556.8	1554.4	1552.0	1556.8
7.5°	1566.4	1566.4	1561.6	1564.0	1559.2	1561.6	1559.2	1564.0	1561.6	1561.6	1564.0
10°	1573.6	1576.0	1571.2	1568.8	1568.8	1571.2	1573.6	1576.0	1573.6	1573.6	1578.4
12.5°	1585.6	1588.0	1583.2	1580.8	1580.8	1583.2	1585.6	1590.3	1583.2	1583.2	1583.2
15°	1597.5	1597.5	1595.1	1592.7	1595.1	1597.5	1597.5	1602.3	1597.5	1592.7	1592.7
17.5°	1602.3	1604.7	1602.3	1607.1	1609.5	1611.9	1614.3	1614.3	1607.1	1604.7	1604.7
20°	1619.1	1621.5	1616.7	1619.1	1626.3	1635.9	1635.9	1635.9	1635.9	1628.7	1628.7
22.5°	1647.8	1650.2	1647.8	1647.8	1657.4	1667.0	1667.0	1674.2	1664.6	1659.8	1659.8
25°	1695.7	1695.7	1693.3	1695.7	1700.5	1705.3	1714.9	1719.7	1719.7	1717.3	1719.7
27.5°	1753.2	1755.6	1753.2	1753.2	1750.8	1760.4	1774.8	1782.0	1784.4	1786.7	1786.7
30°	1829.9	1834.7	1832.3	1834.7	1839.4	1846.6	1851.4	1853.8	1853.8	1849.0	1849.0
32.5°	1913.7	1918.5	1913.7	1925.7	1942.4	1942.4	1937.6	1947.2	1940.0	1935.2	1930.5
35°	2011.9	2011.9	2016.7	2021.5	2045.4	2057.4	2057.4	2052.6	2038.2	2031.0	2035.8
37.5°	2124.5	2126.9	2131.6	2134.0	2155.6	2177.2	2174.8	2162.8	2146.0	2126.9	2126.9
40°	2258.6	2253.8	2256.2	2273.0	2289.7	2316.1	2318.5	2301.7	2273.0	2253.8	2253.8
42.5°	2380.7	2383.1	2392.7	2414.3	2452.6	2474.1	2462.2	2433.4	2402.3	2378.3	2375.9
45°	2510.1	2507.7	2534.0	2579.5	2629.8	2656.2	2637.0	2596.3	2548.4	2517.3	2517.3
47.5°	2641.8	2639.4	2682.5	2756.8	2821.4	2843.0	2823.8	2771.1	2706.5	2661.0	2653.8
50°	2778.3	2787.9	2833.4	2938.8	3022.6	3046.6	3022.6	2953.2	2866.9	2807.1	2797.5
52.5°	2934.0	2941.2	3001.1	3116.0	3219.0	3274.1	3238.2	3135.2	3025.0	2953.2	2943.6
55°	3077.7	3082.5	3168.7	3307.6	3434.6	3508.8	3451.3	3319.6	3180.7	3089.7	3080.1
57.5°	3178.3	3190.3	3300.5	3480.1	3643.0	3729.2	3643.0	3501.6	3317.2	3204.7	3197.5
60°	3243.0	3262.1	3389.1	3614.2	3839.4	3932.8	3844.1	3647.7	3420.2	3274.1	3266.9
62.5°	3209.4	3235.8	3398.7	3693.3	4007.0	4107.6	3992.6	3717.2	3408.2	3223.8	3204.7
65°	2974.7	2993.9	3223.8	3635.8	4069.3	4225.0	4016.6	3640.6	3245.4	3041.8	3003.5
67.5°	2488.5	2522.0	2826.2	3357.9	3935.2	4114.8	3851.3	3365.1	2888.5	2639.4	2596.3
70°	1911.3	1971.2	2304.1	2881.3	3516.0	3719.6	3429.8	2840.6	2280.1	2026.3	1947.2
72.5°	1104.1	1197.6	1686.2	2249.0	2797.5	2950.8	2543.6	1985.5	1513.7	1334.1	1312.5
75°	366.5	400.0	802.4	1295.8	1784.4	1861.0	1590.3	1252.6	996.4	852.7	859.8
77.5°	179.6	179.6	241.9	474.2	811.9	958.0	869.4	606.0	435.9	330.5	320.9
80°	143.7	143.7	167.7	232.3	273.0	320.9	273.0	198.8	162.9	148.5	155.7
82.5°	69.5	67.1	79.0	112.6	115.0	110.2	103.0	103.0	98.2	91.0	88.6
85°	4.8	4.8	9.6	21.6	35.9	47.9	55.1	52.7	50.3	43.1	47.9
87.5°	2.4	2.4	2.4	2.4	2.4	2.4	2.4	4.8	4.8	4.8	4.8
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: SP1-2407-157-7

Test Date: 09/05/2024

Luminaire Tested: MEM2-HTN-SA-40-830-U-5WQ

Data in this report applies to families of products including MEM2-HTN-SA-40-830-U-5WQ

Report Generated By FNC07603 / LDUCLS01DT446
Version: v7.04

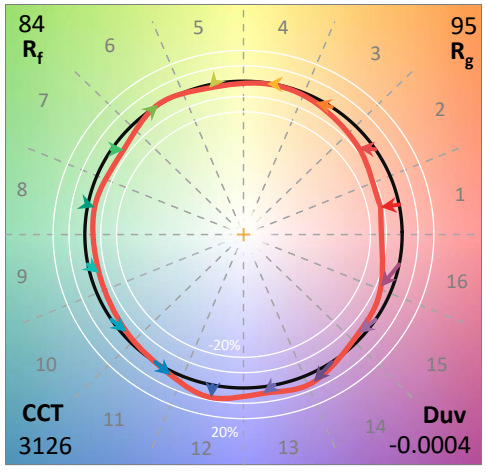
Test Information

Test Method:	LM-79-2019
Report Number:	SP1-2407-157-7
Test Lab:	COOPER LIGHTING SOLUTIONS
Photometer:	SP1 - 76IN SPHERE
Measurement Geometry:	4π
Issue Date:	09/05/2024
Manufacturer:	COOPER LIGHTING SOLUTIONS
Product Line:	Streetworks
Catalog Number:	**MEM2-HTN-SA-40-830-U-5WQ**
Description:	Epic Modern Light Square 40W 5WQ Optic

Spectral Parameters

CCT (K):	3126
CIE u':	0.2465
CIE v':	0.5182
Duv:	-0.0004
CIE x:	0.4277
CIE y:	0.3997
CIE z:	0.1727
Peak Wavelength (nm):	601
Dominant Wavelength (nm):	582
Purity:	48.31913
Rf:	84.4
Rg:	94.7

CRI (Ra):	82.6
R1:	81.4
R2:	92.2
R3:	94.9
R4:	80.1
R5:	81.8
R6:	90.5
R7:	81.8
R8:	58.0
R9:	5.1
R10:	82.2
R11:	79.8
R12:	70.4
R13:	84.2
R14:	97.9
R15:	73.6



Test Conditions

Stabilization Time:	22M
Operation Time:	1H 22M
Sphere Temperature (°C):	24.3

REPORT NUMBER: SP1-2407-157-7

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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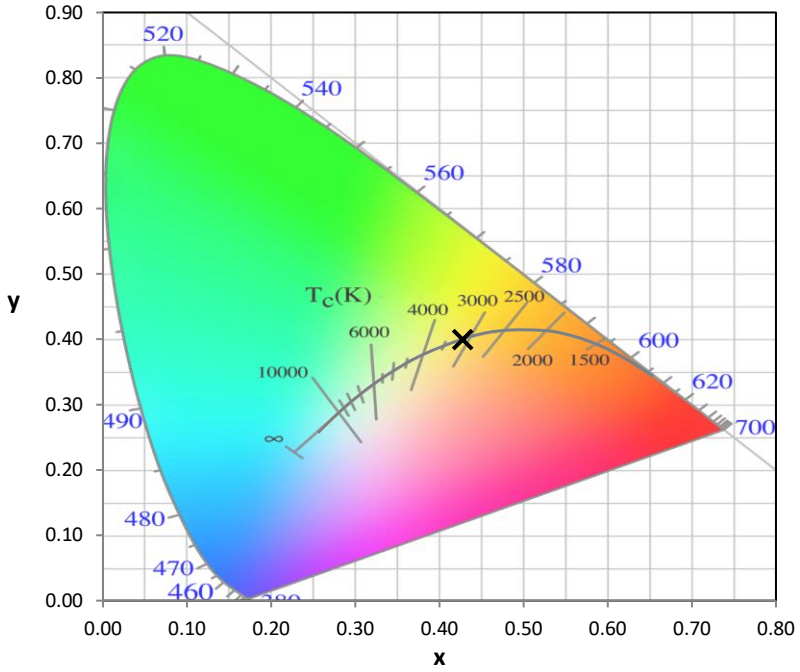
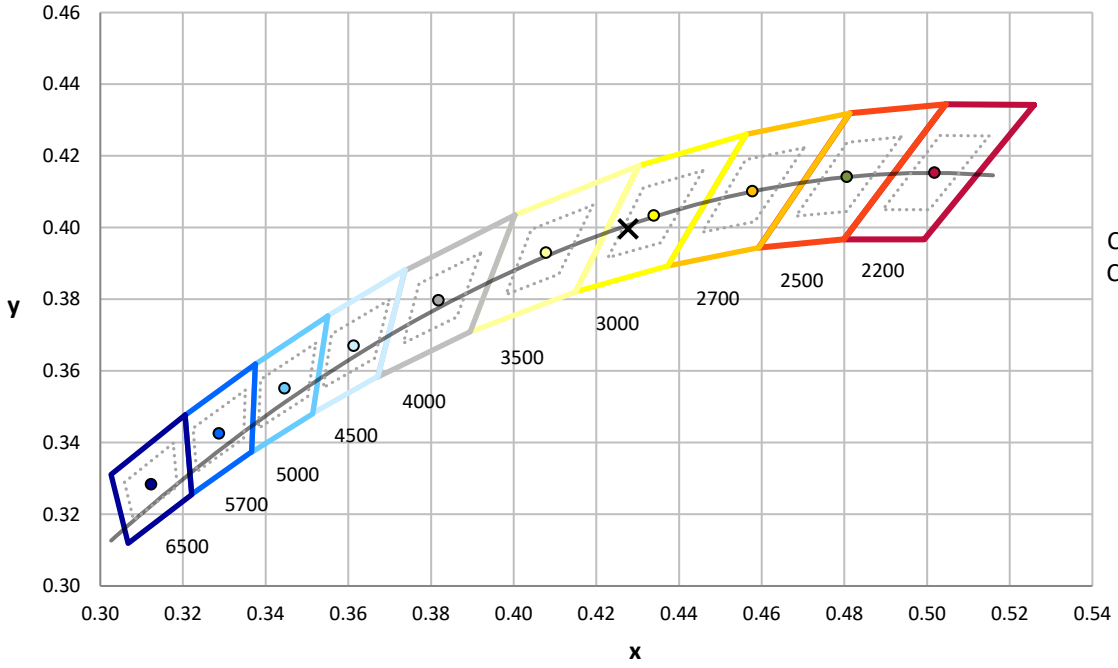
CIE 1931 Chromaticity Diagram



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



CCT = 3126K
CIE x = 0.4277
CIE y = 0.3997
Duv = -0.0004

Point lies inside the ANSI 3000K 4-step quadrangle

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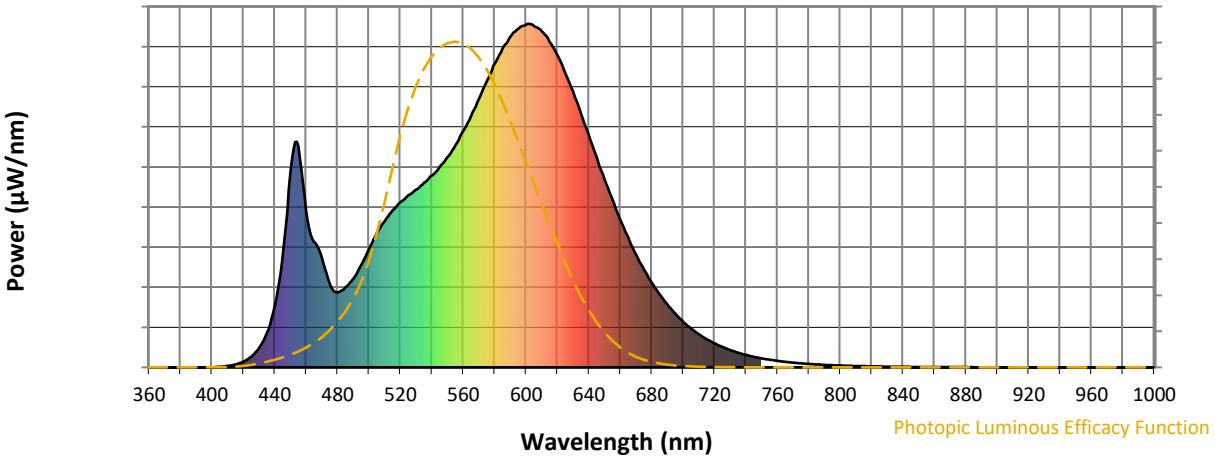
Photopic Flux vs. Wavelength

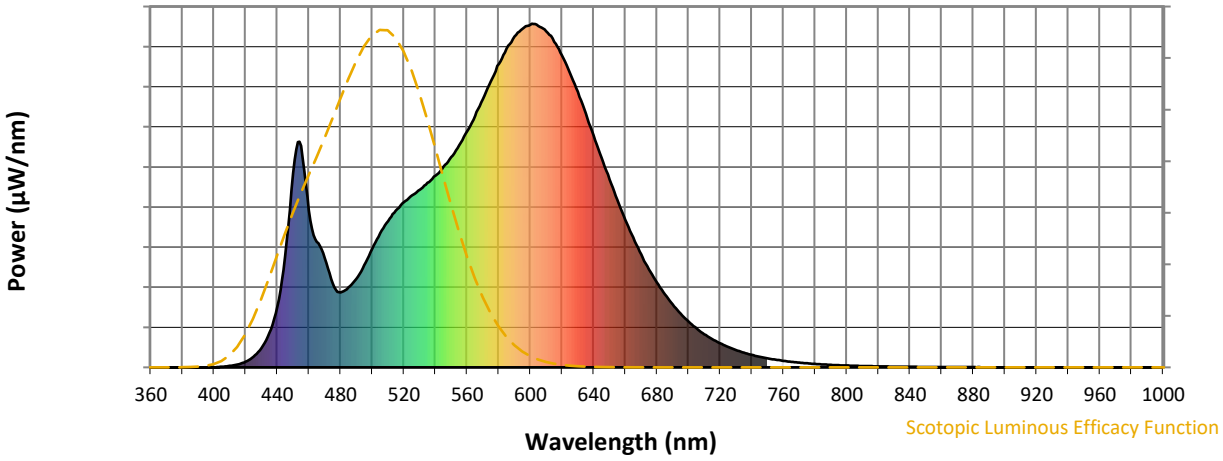


Photopic Lumens: NR

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	258	NR	620	908	NR	750	26	NR	880	1	NR
365	0	NR	495	297	NR	625	857	NR	755	22	NR	885	0	NR
370	0	NR	500	345	NR	630	801	NR	760	19	NR	890	0	NR
375	0	NR	505	391	NR	635	738	NR	765	16	NR	895	0	NR
380	0	NR	510	426	NR	640	675	NR	770	14	NR	900	0	NR
385	0	NR	515	456	NR	645	610	NR	775	12	NR	905	0	NR
390	0	NR	520	480	NR	650	547	NR	780	10	NR	910	0	NR
395	0	NR	525	500	NR	655	488	NR	785	9	NR	915	0	NR
400	0	NR	530	517	NR	660	429	NR	790	7	NR	920	0	NR
405	2	NR	535	538	NR	665	378	NR	795	6	NR	925	0	NR
410	4	NR	540	558	NR	670	328	NR	800	5	NR	930	0	NR
415	9	NR	545	584	NR	675	285	NR	805	5	NR	935	0	NR
420	16	NR	550	611	NR	680	247	NR	810	4	NR	940	0	NR
425	31	NR	555	646	NR	685	212	NR	815	3	NR	945	0	NR
430	56	NR	560	687	NR	690	183	NR	820	3	NR	950	0	NR
435	101	NR	565	731	NR	695	156	NR	825	3	NR	955	0	NR
440	178	NR	570	780	NR	700	133	NR	830	2	NR	960	0	NR
445	323	NR	575	832	NR	705	114	NR	835	2	NR	965	0	NR
450	566	NR	580	883	NR	710	96	NR	840	2	NR	970	0	NR
455	645	NR	585	927	NR	715	82	NR	845	1	NR	975	0	NR
460	457	NR	590	963	NR	720	70	NR	850	1	NR	980	0	NR
465	365	NR	595	985	NR	725	59	NR	855	1	NR	985	0	NR
470	317	NR	600	998	NR	730	50	NR	860	1	NR	990	0	NR
475	244	NR	605	994	NR	735	43	NR	865	1	NR	995	0	NR
480	218	NR	610	978	NR	740	36	NR	870	1	NR	1000	0	NR
485	233	NR	615	947	NR	745	31	NR	875	1	NR			

REPORT NUMBER: SP1-2407-157-7

Scotopic Flux vs. Wavelength

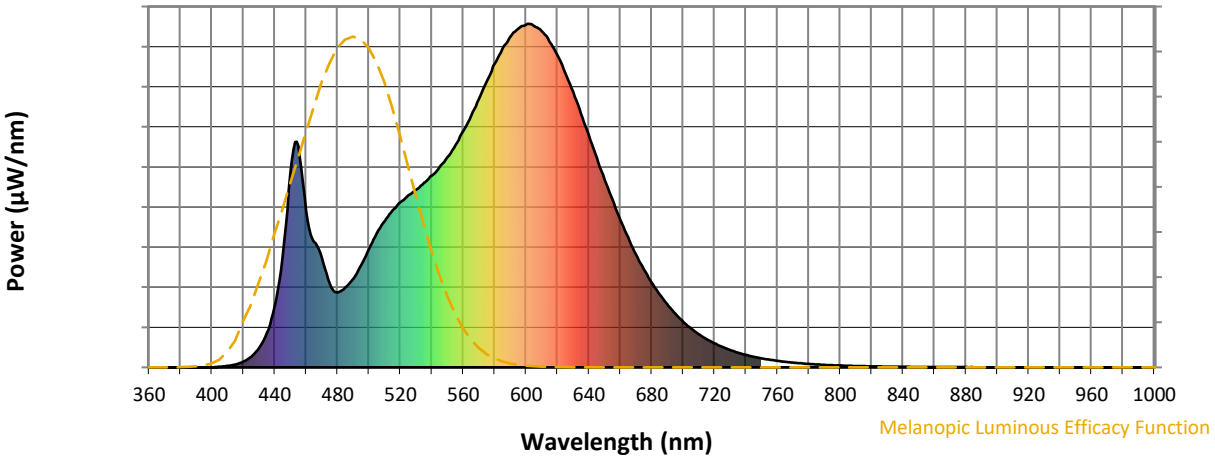


Scotopic Lumens: NR **S/P: 1.42**

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	258	NR	620	908	NR	750	26	NR	880	1	NR
365	0	NR	495	297	NR	625	857	NR	755	22	NR	885	0	NR
370	0	NR	500	345	NR	630	801	NR	760	19	NR	890	0	NR
375	0	NR	505	391	NR	635	738	NR	765	16	NR	895	0	NR
380	0	NR	510	426	NR	640	675	NR	770	14	NR	900	0	NR
385	0	NR	515	456	NR	645	610	NR	775	12	NR	905	0	NR
390	0	NR	520	480	NR	650	547	NR	780	10	NR	910	0	NR
395	0	NR	525	500	NR	655	488	NR	785	9	NR	915	0	NR
400	0	NR	530	517	NR	660	429	NR	790	7	NR	920	0	NR
405	2	NR	535	538	NR	665	378	NR	795	6	NR	925	0	NR
410	4	NR	540	558	NR	670	328	NR	800	5	NR	930	0	NR
415	9	NR	545	584	NR	675	285	NR	805	5	NR	935	0	NR
420	16	NR	550	611	NR	680	247	NR	810	4	NR	940	0	NR
425	31	NR	555	646	NR	685	212	NR	815	3	NR	945	0	NR
430	56	NR	560	687	NR	690	183	NR	820	3	NR	950	0	NR
435	101	NR	565	731	NR	695	156	NR	825	3	NR	955	0	NR
440	178	NR	570	780	NR	700	133	NR	830	2	NR	960	0	NR
445	323	NR	575	832	NR	705	114	NR	835	2	NR	965	0	NR
450	566	NR	580	883	NR	710	96	NR	840	2	NR	970	0	NR
455	645	NR	585	927	NR	715	82	NR	845	1	NR	975	0	NR
460	457	NR	590	963	NR	720	70	NR	850	1	NR	980	0	NR
465	365	NR	595	985	NR	725	59	NR	855	1	NR	985	0	NR
470	317	NR	600	998	NR	730	50	NR	860	1	NR	990	0	NR
475	244	NR	605	994	NR	735	43	NR	865	1	NR	995	0	NR
480	218	NR	610	978	NR	740	36	NR	870	1	NR	1000	0	NR
485	233	NR	615	947	NR	745	31	NR	875	1	NR			

REPORT NUMBER: SP1-2407-157-7

Melanopic Flux vs. Wavelength



Melanopic Lumens: NR **M/P: 2.79**

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	258	NR	620	908	NR	750	26	NR	880	1	NR
365	0	NR	495	297	NR	625	857	NR	755	22	NR	885	0	NR
370	0	NR	500	345	NR	630	801	NR	760	19	NR	890	0	NR
375	0	NR	505	391	NR	635	738	NR	765	16	NR	895	0	NR
380	0	NR	510	426	NR	640	675	NR	770	14	NR	900	0	NR
385	0	NR	515	456	NR	645	610	NR	775	12	NR	905	0	NR
390	0	NR	520	480	NR	650	547	NR	780	10	NR	910	0	NR
395	0	NR	525	500	NR	655	488	NR	785	9	NR	915	0	NR
400	0	NR	530	517	NR	660	429	NR	790	7	NR	920	0	NR
405	2	NR	535	538	NR	665	378	NR	795	6	NR	925	0	NR
410	4	NR	540	558	NR	670	328	NR	800	5	NR	930	0	NR
415	9	NR	545	584	NR	675	285	NR	805	5	NR	935	0	NR
420	16	NR	550	611	NR	680	247	NR	810	4	NR	940	0	NR
425	31	NR	555	646	NR	685	212	NR	815	3	NR	945	0	NR
430	56	NR	560	687	NR	690	183	NR	820	3	NR	950	0	NR
435	101	NR	565	731	NR	695	156	NR	825	3	NR	955	0	NR
440	178	NR	570	780	NR	700	133	NR	830	2	NR	960	0	NR
445	323	NR	575	832	NR	705	114	NR	835	2	NR	965	0	NR
450	566	NR	580	883	NR	710	96	NR	840	2	NR	970	0	NR
455	645	NR	585	927	NR	715	82	NR	845	1	NR	975	0	NR
460	457	NR	590	963	NR	720	70	NR	850	1	NR	980	0	NR
465	365	NR	595	985	NR	725	59	NR	855	1	NR	985	0	NR
470	317	NR	600	998	NR	730	50	NR	860	1	NR	990	0	NR
475	244	NR	605	994	NR	735	43	NR	865	1	NR	995	0	NR
480	218	NR	610	978	NR	740	36	NR	870	1	NR	1000	0	NR
485	233	NR	615	947	NR	745	31	NR	875	1	NR			

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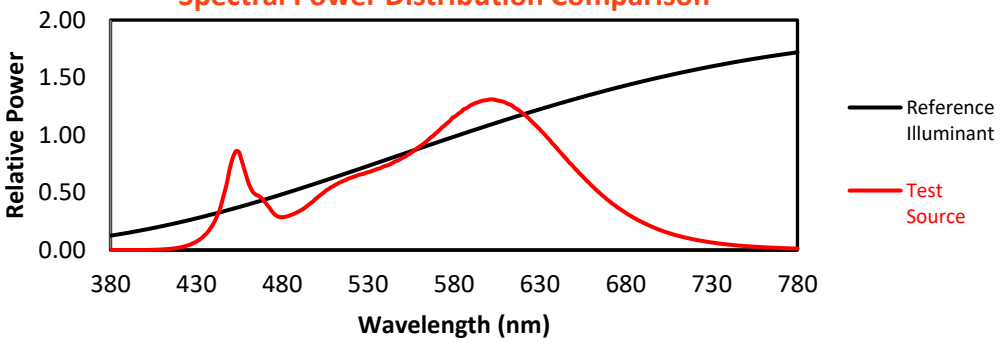
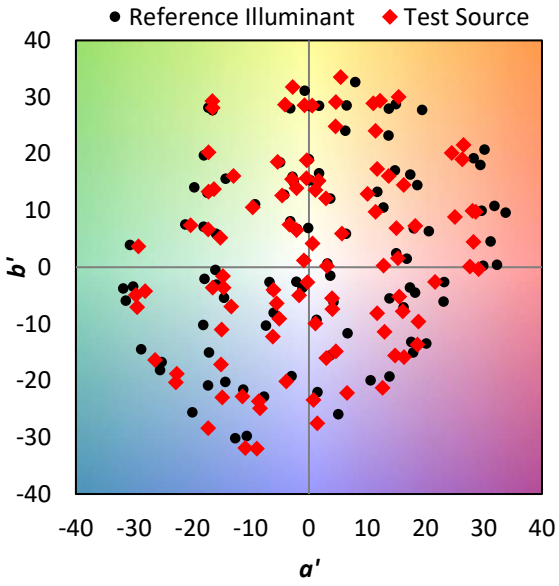
Summary

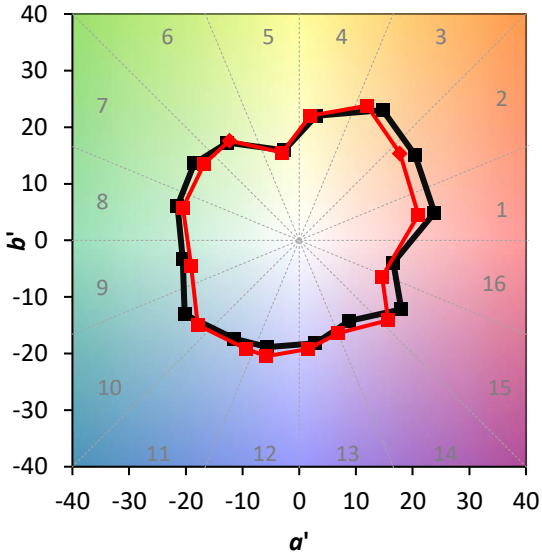
R_f = 84.4
R_g = 94.7
CIE R_a = 82.6
R_9 = 5.1

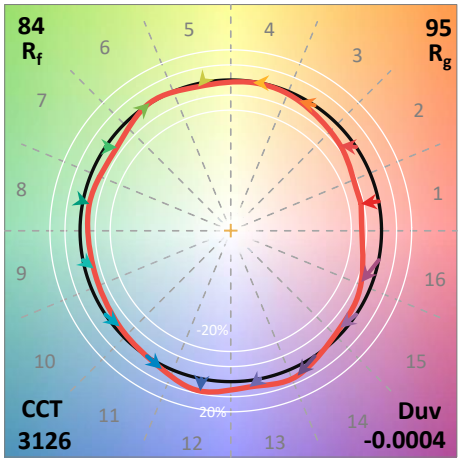
Spectral Power Distribution Comparison

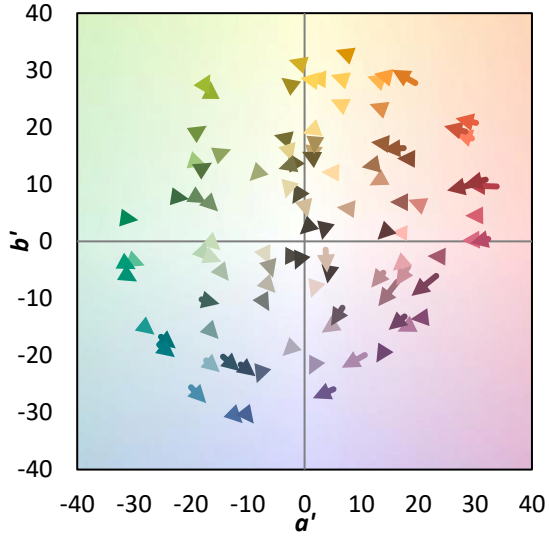


Color Vector Graphics









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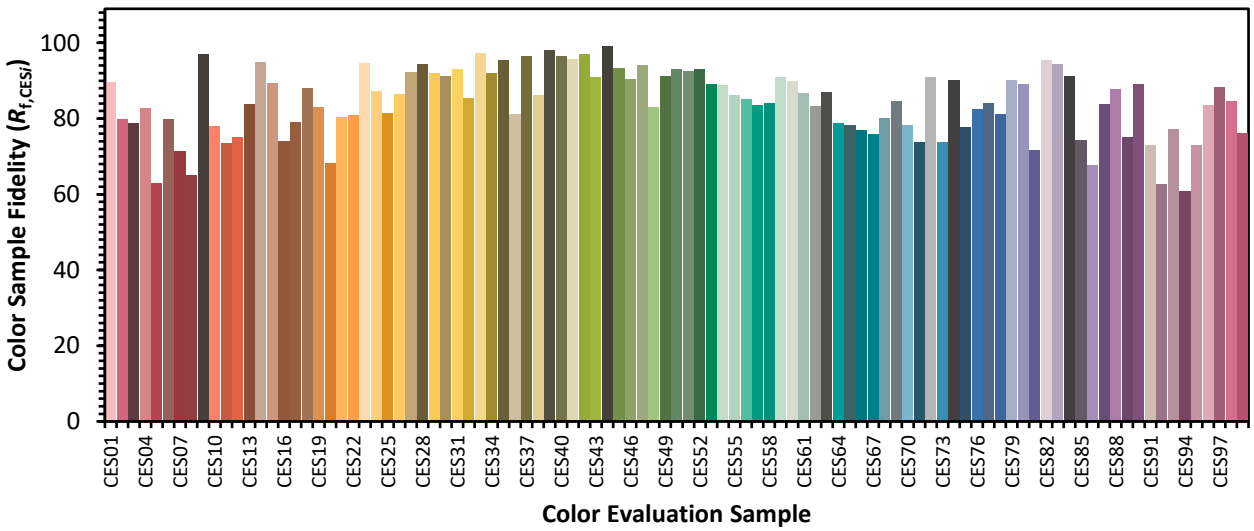
Individual Sample Fidelity Index ($R_{f,i}$)

CES01 = 86	CES26 = 86	CES51 = 93	CES76 = 82
CES02 = 63	CES27 = 92	CES52 = 93	CES77 = 84
CES03 = 31	CES28 = 94	CES53 = 89	CES78 = 81
CES04 = 70	CES29 = 92	CES54 = 89	CES79 = 90
CES05 = 49	CES30 = 91	CES55 = 86	CES80 = 89
CES06 = 51	CES31 = 93	CES56 = 85	CES81 = 72
CES07 = 42	CES32 = 85	CES57 = 83	CES82 = 95
CES08 = 41	CES33 = 97	CES58 = 84	CES83 = 94
CES09 = 29	CES34 = 92	CES59 = 91	CES84 = 91
CES10 = 76	CES35 = 96	CES60 = 90	CES85 = 74
CES11 = 59	CES36 = 81	CES61 = 87	CES86 = 68
CES12 = 65	CES37 = 96	CES62 = 83	CES87 = 84
CES13 = 43	CES38 = 86	CES63 = 87	CES88 = 88
CES14 = 74	CES39 = 98	CES64 = 79	CES89 = 75
CES15 = 71	CES40 = 96	CES65 = 78	CES90 = 89
CES16 = 47	CES41 = 96	CES66 = 77	CES91 = 73
CES17 = 50	CES42 = 97	CES67 = 76	CES92 = 63
CES18 = 56	CES43 = 91	CES68 = 80	CES93 = 77
CES19 = 72	CES44 = 99	CES69 = 85	CES94 = 61
CES20 = 66	CES45 = 93	CES70 = 78	CES95 = 73
CES21 = 87	CES46 = 90	CES71 = 74	CES96 = 84
CES22 = 79	CES47 = 94	CES72 = 91	CES97 = 88
CES23 = 92	CES48 = 83	CES73 = 74	CES98 = 85
CES24 = 91	CES49 = 91	CES74 = 90	CES99 = 76
CES25 = 72	CES50 = 93	CES75 = 78	



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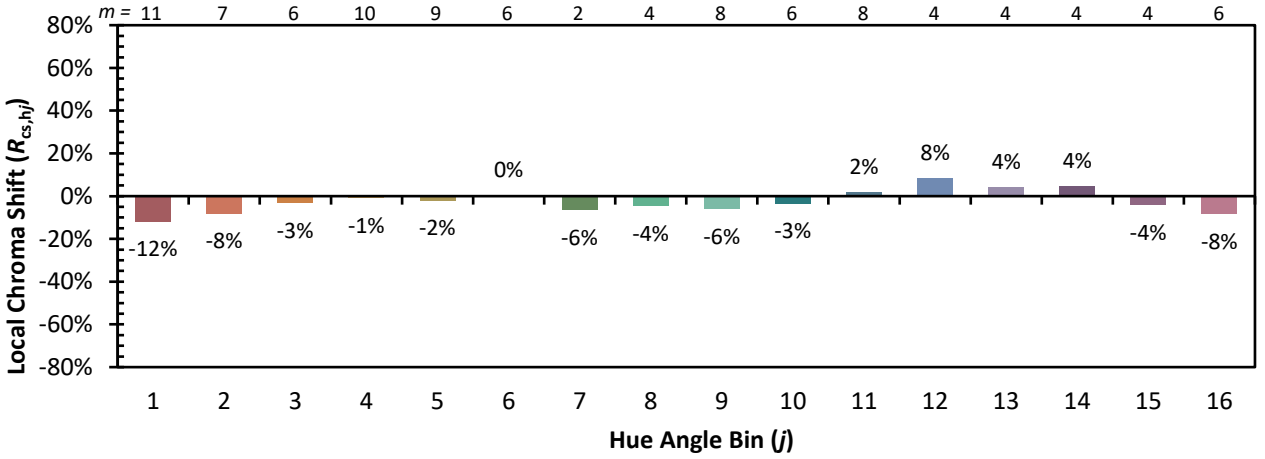
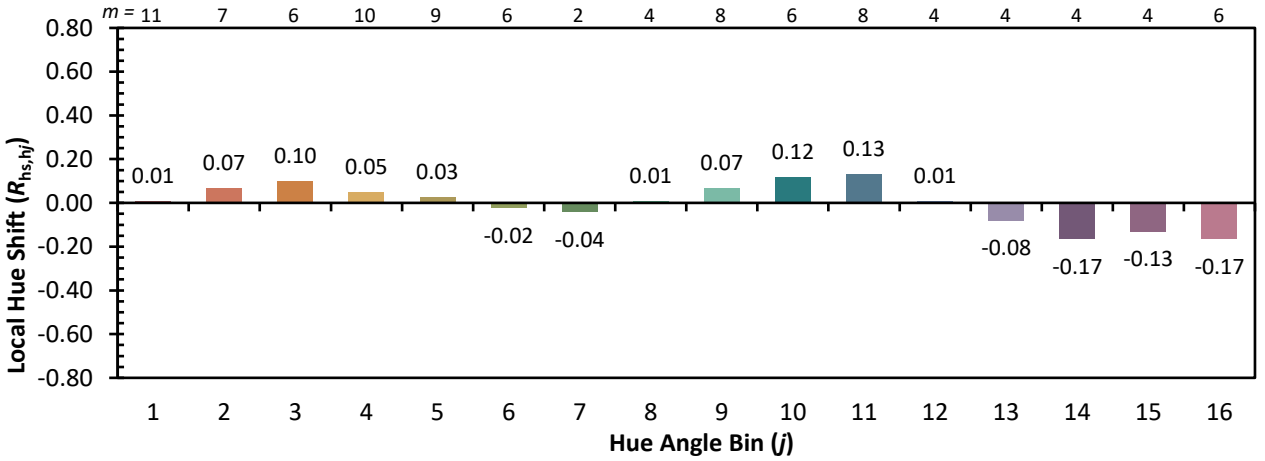
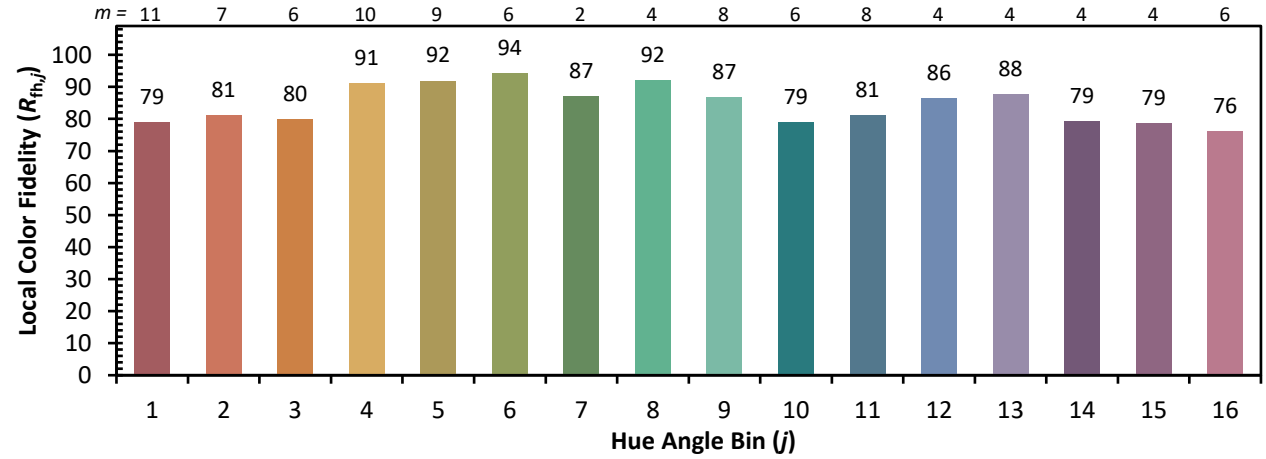
Color Rendition by Hue-Angle Bin







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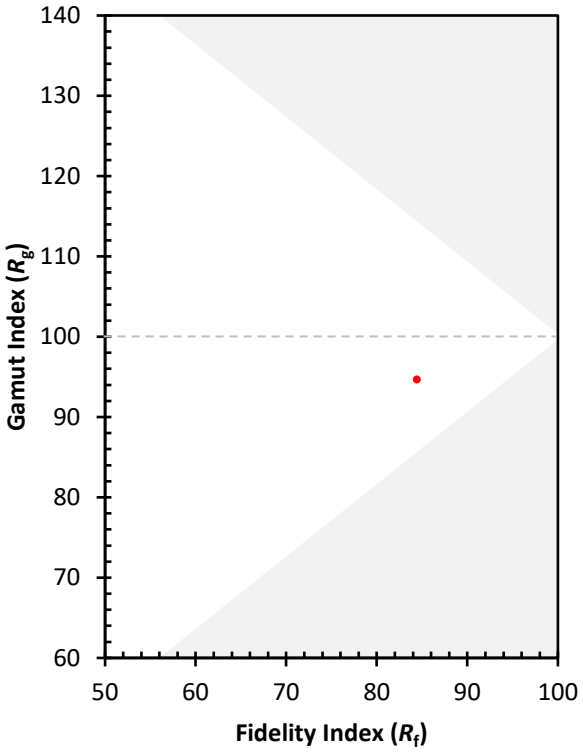
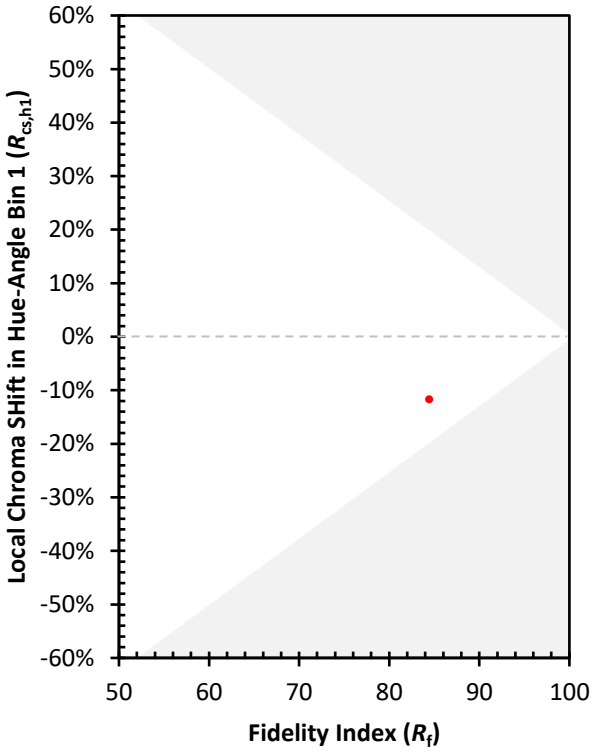
Measure Comparisons





(END OF REPORT)