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: P869217

Luminaire Tested: **EMM2-HSN-SA2A-AMB-U-T1**

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:	P869217
Test Lab:	INNOVATION CENTER(G3)
Issue Date:	08/22/2024
Manufacturer:	COOPER LIGHTING SOLUTIONS (FORMERLY EATON)
Product Line:	INVUE
Catalog Number:	EMM2-HSN-SA2A-AMB-U-T1
Description:	EPIC MODERN SHORT HOUSING DISCRETE LED ARRAYS 30W 0CRI 1540K FIXTURE w/ TYPE 1 DISTRIBUTION OPTIC
Light Source:	(20) 1540K CCT, 0 CRI LEDS
Ballast/Driver:	ELECTRONIC DRIVER

Summary

Lumens per Lamp:	N/A
Luminaire Lumens:	1128.4 lumens
Efficiency:	N/A
Efficacy:	37.6 lumens/watt
Luminous Opening:	Rectangular (W 0.67' x L: 0.33' x H: 0')
IES Classification:	Type I - Short
BUG Rating:	B1 - U0 - G1

Input Watts (W):	30
Input Voltage (V):	120
Input Current (Ain):	NR
Voltage Rise (V):	NR
Power Factor:	0.98
Total Harmonic Distortion (THDi):	9.04%
Frequency (hertz):	60
Stabilization Time:	NR
Operation Time:	NR
Ambient Temperature (°C):	NR
Test Distance:	24 FT

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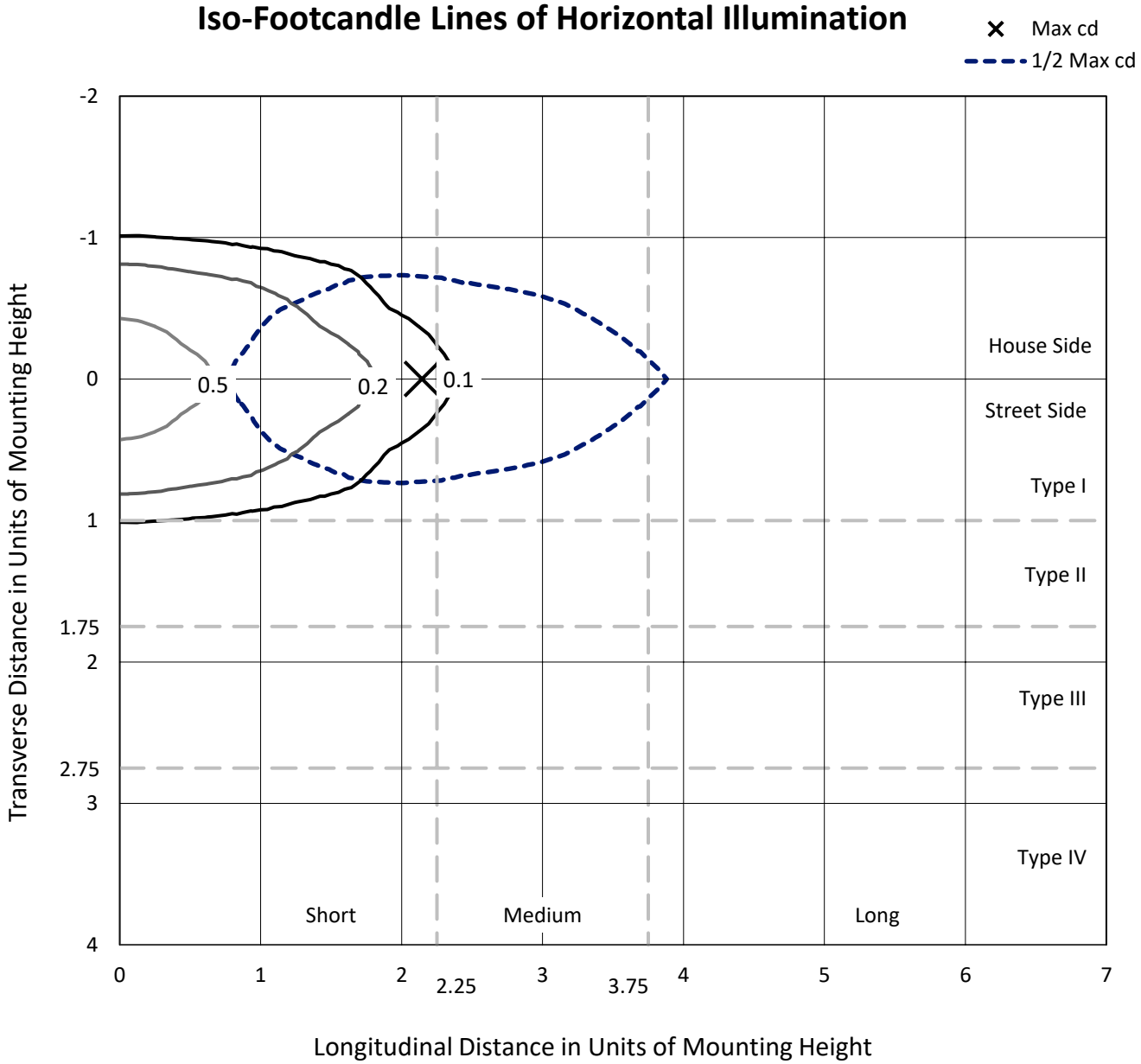
REPORT NUMBER: P869217
CATALOG NUMBER: EMM2-HSN-SA2A-AMB-U-T1

Iso-Footcandle Lines of Horizontal Illumination



Based on 20 foot mounting height. Maximum calculated value = 0.7 fc
Type I - Short - N/A

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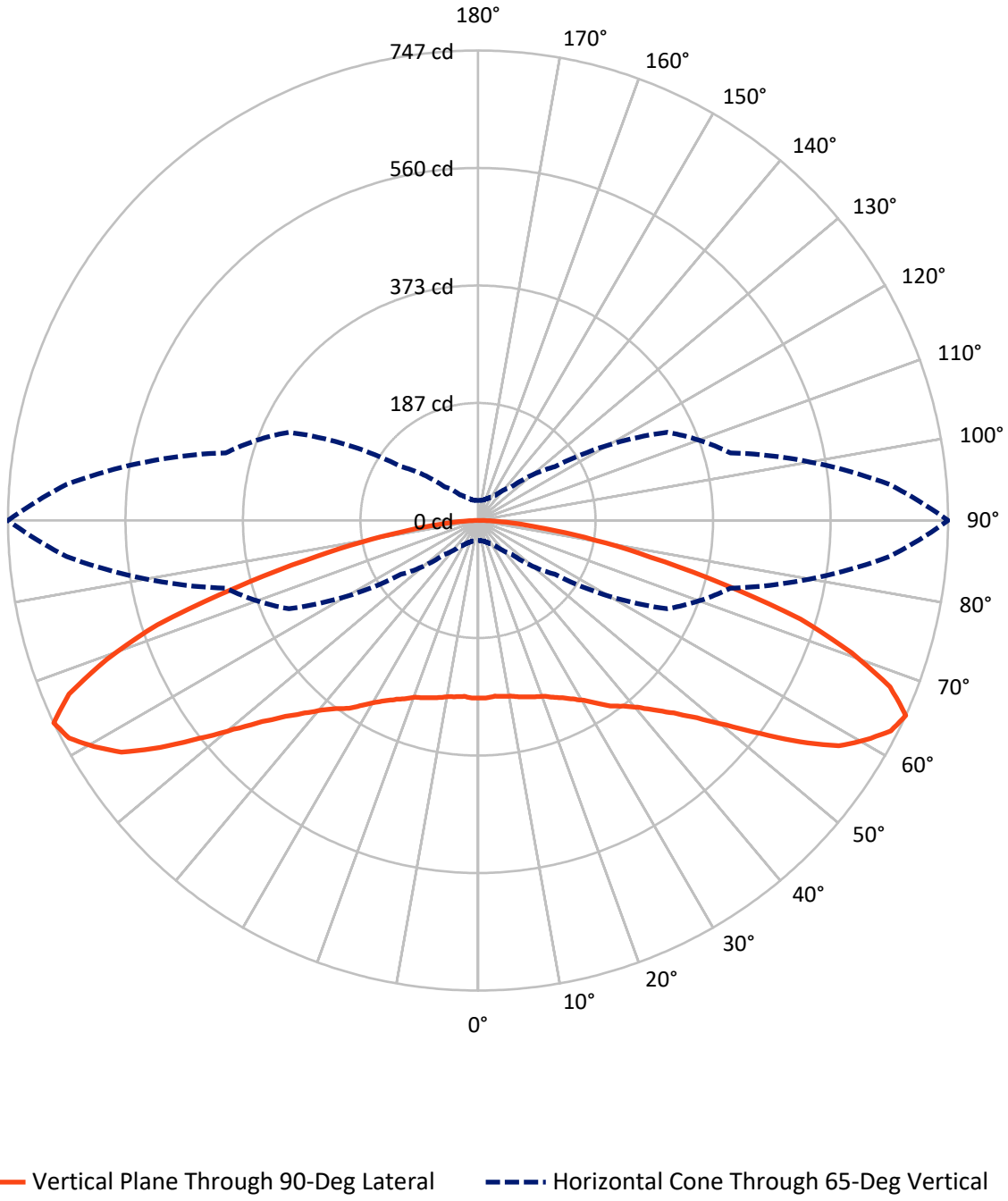
Luminous Intensity Polar Plot



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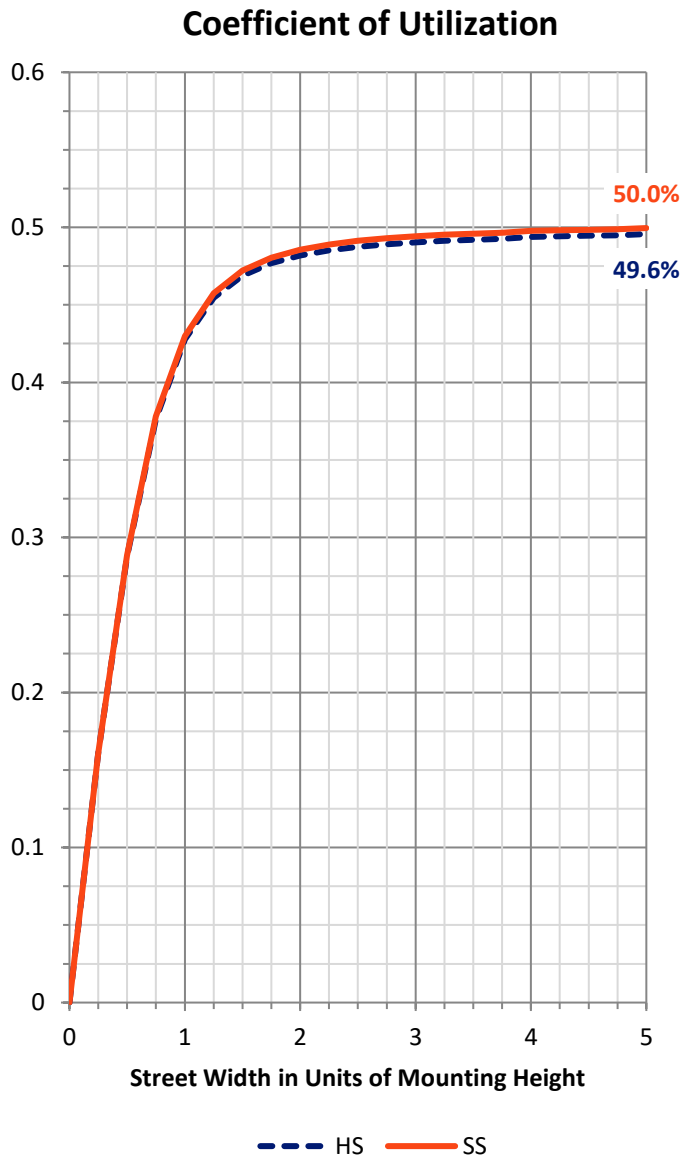
FLUX DISTRIBUTION:

		Downward	Upward	Total
House Side	Lumens	564.2	0.0	564.2
	% Fixture	50.0	0.0	50.0
Street Side	Lumens	564.2	0.0	564.2
	% Fixture	50.0	0.0	50.0
Total	Lumens	1128.4	0.0	1128.4
	% Fixture	100.0	0.0	100.0

ZONAL LUMENS:

Zone	Lumens	% Fixture
0°-10°	26.6	2.4
10°-20°	77.9	6.9
20°-30°	127.5	11.3
30°-40°	170.0	15.1
40°-50°	195.8	17.3
50°-60°	209.8	18.6
60°-70°	193.6	17.2
70°-80°	104.2	9.2
80°-90°	23.1	2.0
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°	1128.4	100.0
0°-180°	1128.4	100.0



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REPORT NUMBER: P869217
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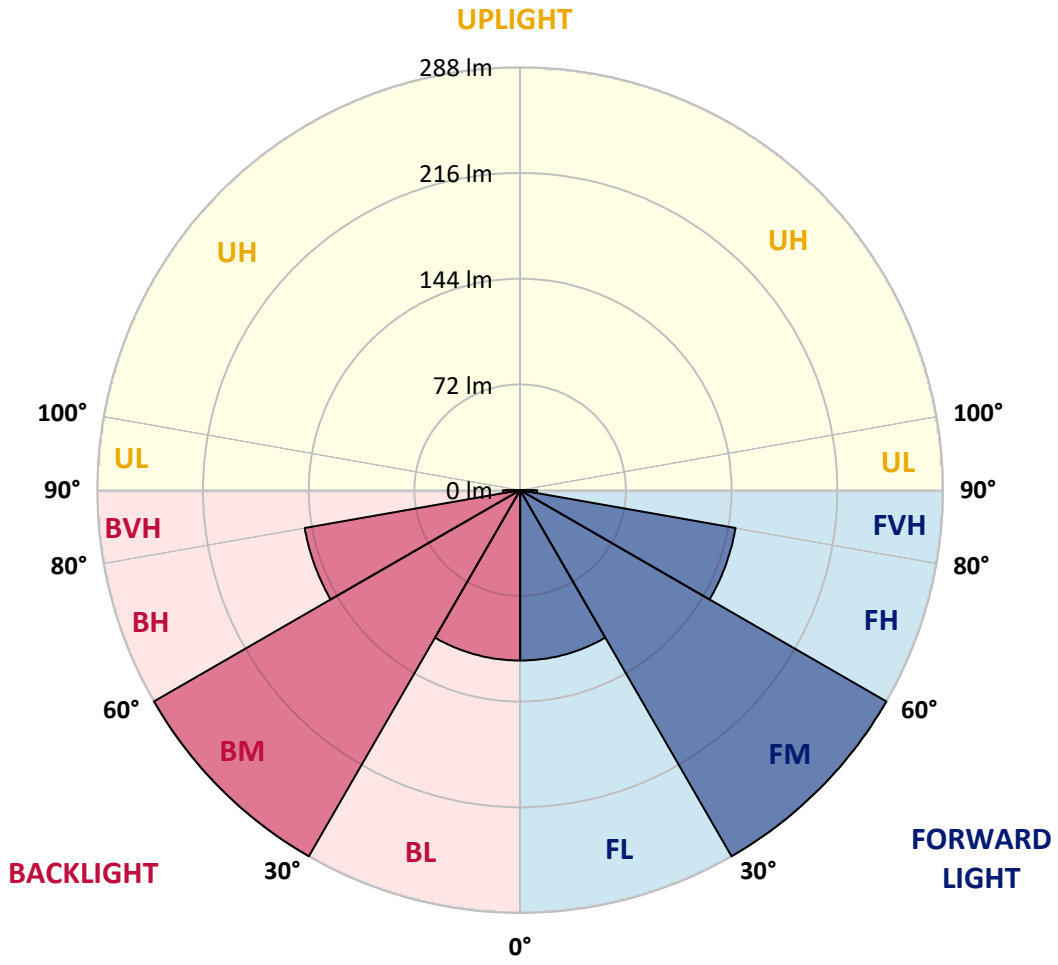
LUMINAIRE CLASSIFICATION SYSTEM LUMEN TABLE AND BUG RATING:

Zone		Lumens	% Fixture	Zone Rating/Lumen Limit B	U	G
FL	(0°-30°)	116.0	10.3			
FM	(30°-60°)	287.8	25.5			
FH	(60°-80°)	148.9	13.2			G0/660
FVH	(80°-90°)	11.5	1.0			G1/100
BL	(0°-30°)	116.0	10.3	B1/500		
BM	(30°-60°)	287.8	25.5	B1/1000		
BH	(60°-80°)	148.9	13.2	B1/500		G1/500
BVH	(80°-90°)	11.5	1.0			G1/100
UL	(90°-100°)	0.0	0.0		U0/0	
UH	(100°-180°)	0.0	0.0		U0/0	

BUG Rating: B1-U0-G1
Type I Short



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CANDELA DISTRIBUTION (FULL):

	0°	5°	15°	25°	35°	45°	55°	65°	75°	85°	90°
0°	282.0	282.0	282.0	282.0	282.0	282.0	282.0	282.0	282.0	282.0	282.0
2.5°	280.2	280.2	280.2	280.2	280.2	280.2	280.2	282.0	282.0	282.0	282.0
5°	278.4	278.4	278.4	278.4	278.4	278.4	280.2	280.2	280.2	280.2	280.2
7.5°	274.9	274.9	274.9	276.6	276.6	278.4	280.2	282.0	282.0	282.0	282.0
10°	271.3	271.3	271.3	273.1	274.9	278.4	280.2	282.0	282.0	283.7	283.7
12.5°	269.5	267.8	269.5	269.5	271.3	274.9	278.4	282.0	283.7	287.3	287.3
15°	264.2	264.2	264.2	266.0	267.8	271.3	276.6	283.7	287.3	289.1	290.8
17.5°	262.5	260.7	262.5	262.5	264.2	269.5	274.9	283.7	289.1	292.6	294.4
20°	260.7	260.7	260.7	262.5	262.5	267.8	274.9	285.5	292.6	297.9	297.9
22.5°	260.7	260.7	260.7	260.7	262.5	267.8	273.1	285.5	297.9	305.0	305.0
25°	258.9	258.9	257.1	260.7	264.2	267.8	273.1	285.5	301.5	312.1	312.1
27.5°	251.8	251.8	251.8	257.1	264.2	271.3	274.9	287.3	306.8	319.2	321.0
30°	237.6	237.6	241.2	250.0	264.2	274.9	278.4	289.1	312.1	329.8	331.6
32.5°	223.4	223.4	227.0	239.4	258.9	278.4	285.5	296.1	321.0	342.3	345.8
35°	202.2	202.2	207.5	223.4	248.3	280.2	294.4	301.5	329.8	356.4	361.8
37.5°	182.7	182.7	189.7	205.7	234.1	274.9	303.2	310.3	340.5	370.6	374.2
40°	161.4	161.4	170.2	186.2	218.1	264.2	308.6	321.0	351.1	386.6	390.1
42.5°	138.3	140.1	149.0	168.5	200.4	251.8	310.3	331.6	363.5	406.1	411.4
45°	117.0	118.8	127.7	147.2	180.9	235.9	305.0	345.8	379.5	432.7	436.2
47.5°	97.5	99.3	108.2	127.7	163.1	219.9	297.9	356.4	397.2	462.8	468.2
50°	81.6	83.3	90.4	109.9	143.6	200.4	285.5	361.8	415.0	500.1	510.7
52.5°	67.4	69.2	74.5	92.2	124.1	180.9	271.3	363.5	430.9	542.6	562.1
55°	56.7	56.7	62.1	76.3	104.6	157.8	253.6	361.8	441.6	587.0	620.7
57.5°	47.9	47.9	51.4	63.8	86.9	136.5	234.1	360.0	445.1	627.8	675.6
60°	40.8	40.8	44.3	53.2	72.7	113.5	207.5	360.0	441.6	650.8	707.6
62.5°	37.2	37.2	39.0	44.3	60.3	94.0	179.1	351.1	430.9	657.9	735.9
65°	31.9	31.9	33.7	39.0	49.7	76.3	149.0	331.6	415.0	656.1	746.6
67.5°	26.6	26.6	30.1	33.7	40.8	60.3	117.0	301.5	393.7	599.4	705.8
70°	21.3	21.3	24.8	28.4	33.7	47.9	88.7	239.4	349.3	519.6	629.5
72.5°	19.5	19.5	21.3	24.8	28.4	39.0	65.6	175.6	305.0	438.0	535.5
75°	16.0	16.0	17.7	21.3	23.1	30.1	46.1	117.0	246.5	344.0	399.0
77.5°	16.0	16.0	16.0	17.7	19.5	23.1	31.9	70.9	179.1	251.8	280.2
80°	16.0	16.0	14.2	14.2	16.0	17.7	21.3	40.8	117.0	175.6	188.0
82.5°	14.2	14.2	12.4	12.4	12.4	14.2	16.0	24.8	70.9	109.9	108.2
85°	8.9	8.9	10.6	8.9	8.9	10.6	10.6	14.2	39.0	65.6	58.5
87.5°	3.5	5.3	5.3	5.3	5.3	5.3	5.3	7.1	19.5	26.6	23.1
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: SP1-2407-157-1

Test Date: 08/06/2024

Luminaire Tested: MEM2-HTN-SA-45-AMB-U-5WQ-2

Data in this report applies to families of products including MEM2-HTN-SA-45-AMB-U-5WQ-2

Report Generated By FNC07603 / LDUCLS01DT446
Version: v7.04

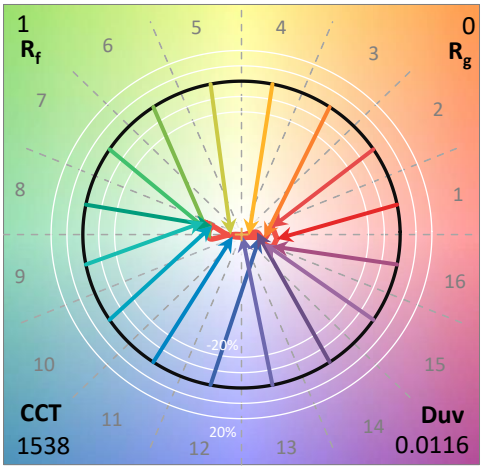
Test Information

Test Method:	LM-79-2019
Report Number:	SP1-2407-157-1
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-45-AMB-U-5WQ-2**
Description:	Epic Modern Light Square 45W 5WQ Optic and Flare Trim AMBER LED

Spectral Parameters

CCT (K):	1538
CIE u':	0.3530
CIE v':	0.5469
Duv:	0.0116
CIE x:	0.5918
CIE y:	0.4076
CIE z:	0.0006
Peak Wavelength (nm):	597
Dominant Wavelength (nm):	592
Purity:	99.98881
Rf:	1.1
Rg:	0

CRI (Ra):	-21.8				
R1:	-34.3	R9:	-386.6		
R2:	52.3	R10:	28.9		
R3:	17.0	R11:	-95.5		
R4:	-68.4	R12:	-10.5		
R5:	-40.8	R13:	-15.5		
R6:	41.5	R14:	45.9		
R7:	-7.2	R15:	-67.7		
R8:	-134.5				



Test Conditions

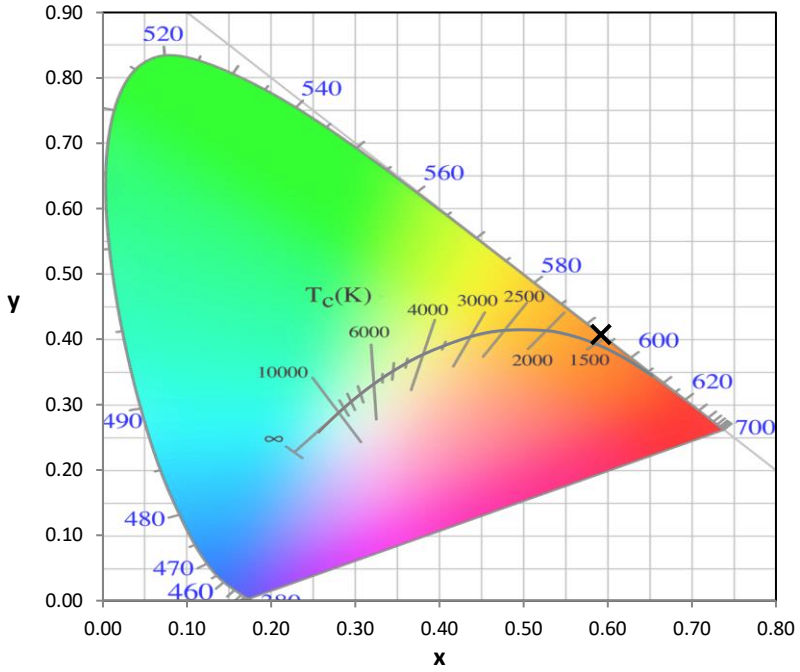
Stabilization Time:	20M
Operation Time:	1H 20M
Sphere Temperature (°C):	24.2

REPORT NUMBER: SP1-2407-157-1

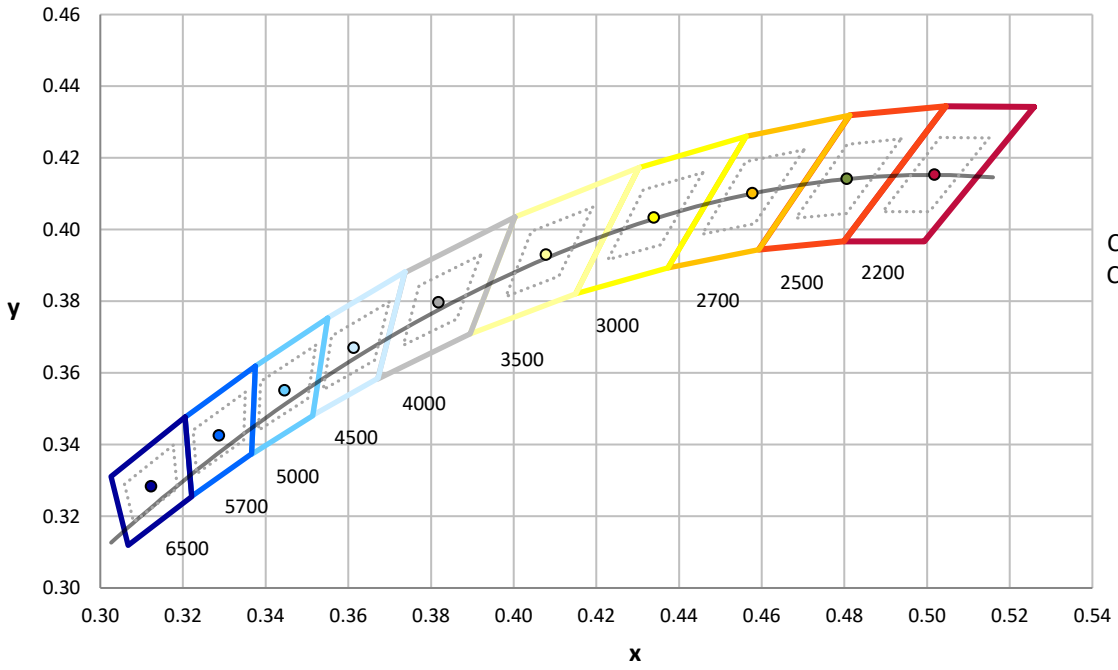
Measurement and Test Equipment			
Instrument	Identification Number	Calibration Date	Calibration Due Date
Photometer	IN0058	6/18/2024	12/18/2024
Power Meter	INXT2011004	2/8/2024	2/8/2025
AC Power Source	IN0063	10/24/2023	10/24/2024
DC Power Source	IN0208	10/24/2023	10/24/2024
Sphere Thermometer	IN0085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

REPORT NUMBER: SP1-2407-157-1

CIE 1931 Chromaticity Diagram



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

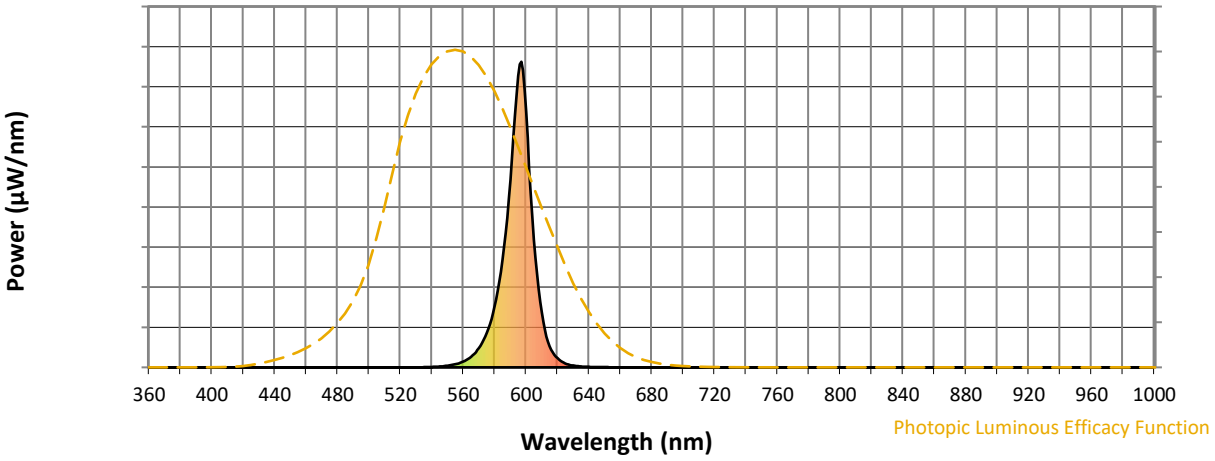


CCT = 1538K
CIE x = 0.5918
CIE y = 0.4076
Duv = 0.0116

Point lies outside the range

REPORT NUMBER: SP1-2407-157-1

Photopic Flux vs. Wavelength

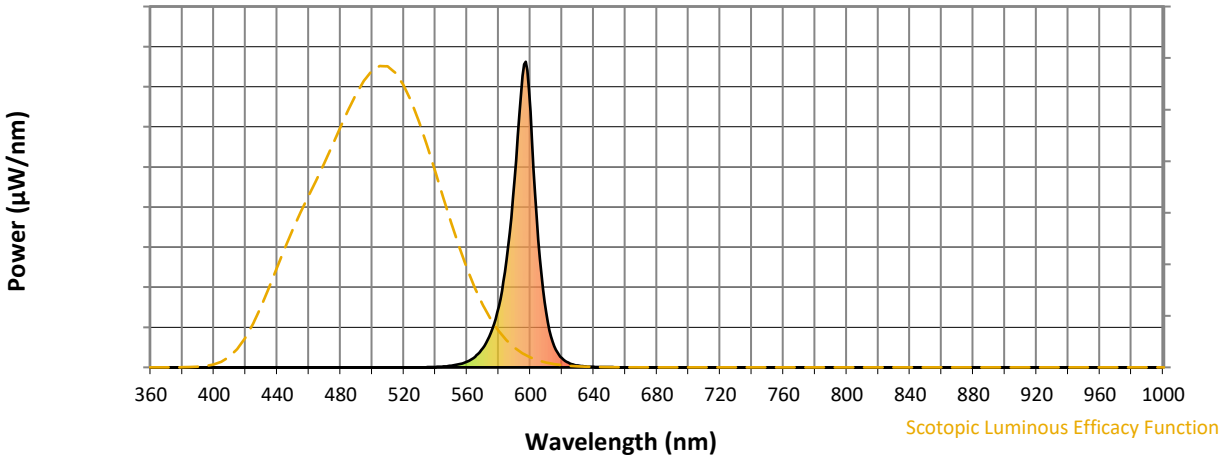


Photopic Lumens: NR

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	0	NR	620	30	NR	750	0	NR	880	0	NR
365	0	NR	495	0	NR	625	13	NR	755	0	NR	885	0	NR
370	0	NR	500	0	NR	630	6	NR	760	0	NR	890	0	NR
375	0	NR	505	0	NR	635	3	NR	765	0	NR	895	0	NR
380	0	NR	510	0	NR	640	2	NR	770	0	NR	900	0	NR
385	0	NR	515	0	NR	645	1	NR	775	0	NR	905	0	NR
390	0	NR	520	0	NR	650	1	NR	780	0	NR	910	0	NR
395	0	NR	525	0	NR	655	0	NR	785	0	NR	915	0	NR
400	0	NR	530	0	NR	660	0	NR	790	0	NR	920	0	NR
405	0	NR	535	1	NR	665	0	NR	795	0	NR	925	0	NR
410	0	NR	540	1	NR	670	0	NR	800	0	NR	930	0	NR
415	0	NR	545	3	NR	675	0	NR	805	0	NR	935	0	NR
420	0	NR	550	5	NR	680	0	NR	810	0	NR	940	0	NR
425	0	NR	555	10	NR	685	0	NR	815	0	NR	945	0	NR
430	0	NR	560	19	NR	690	0	NR	820	0	NR	950	0	NR
435	0	NR	565	34	NR	695	0	NR	825	0	NR	955	0	NR
440	0	NR	570	63	NR	700	0	NR	830	0	NR	960	0	NR
445	0	NR	575	113	NR	705	0	NR	835	0	NR	965	0	NR
450	0	NR	580	199	NR	710	0	NR	840	0	NR	970	0	NR
455	0	NR	585	352	NR	715	0	NR	845	0	NR	975	0	NR
460	0	NR	590	614	NR	720	0	NR	850	0	NR	980	0	NR
465	0	NR	595	954	NR	725	0	NR	855	0	NR	985	0	NR
470	0	NR	600	837	NR	730	0	NR	860	0	NR	990	0	NR
475	0	NR	605	417	NR	735	0	NR	865	0	NR	995	0	NR
480	0	NR	610	179	NR	740	0	NR	870	0	NR	1000	0	NR
485	0	NR	615	69	NR	745	0	NR	875	0	NR			

REPORT NUMBER: SP1-2407-157-1

Scotopic Flux vs. Wavelength

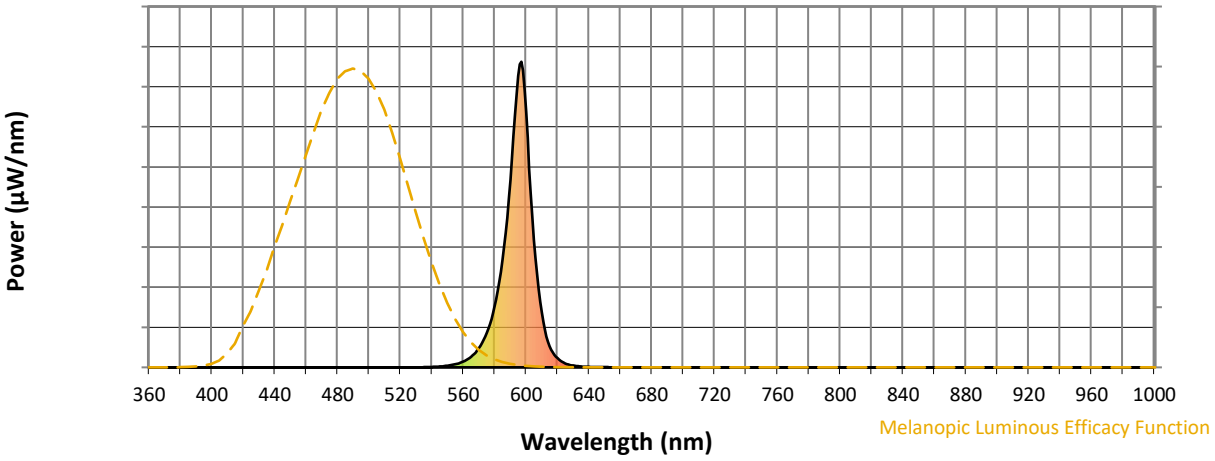


Scotopic Lumens: NR **S/P: 0.22**

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	0	NR	620	30	NR	750	0	NR	880	0	NR
365	0	NR	495	0	NR	625	13	NR	755	0	NR	885	0	NR
370	0	NR	500	0	NR	630	6	NR	760	0	NR	890	0	NR
375	0	NR	505	0	NR	635	3	NR	765	0	NR	895	0	NR
380	0	NR	510	0	NR	640	2	NR	770	0	NR	900	0	NR
385	0	NR	515	0	NR	645	1	NR	775	0	NR	905	0	NR
390	0	NR	520	0	NR	650	1	NR	780	0	NR	910	0	NR
395	0	NR	525	0	NR	655	0	NR	785	0	NR	915	0	NR
400	0	NR	530	0	NR	660	0	NR	790	0	NR	920	0	NR
405	0	NR	535	1	NR	665	0	NR	795	0	NR	925	0	NR
410	0	NR	540	1	NR	670	0	NR	800	0	NR	930	0	NR
415	0	NR	545	3	NR	675	0	NR	805	0	NR	935	0	NR
420	0	NR	550	5	NR	680	0	NR	810	0	NR	940	0	NR
425	0	NR	555	10	NR	685	0	NR	815	0	NR	945	0	NR
430	0	NR	560	19	NR	690	0	NR	820	0	NR	950	0	NR
435	0	NR	565	34	NR	695	0	NR	825	0	NR	955	0	NR
440	0	NR	570	63	NR	700	0	NR	830	0	NR	960	0	NR
445	0	NR	575	113	NR	705	0	NR	835	0	NR	965	0	NR
450	0	NR	580	199	NR	710	0	NR	840	0	NR	970	0	NR
455	0	NR	585	352	NR	715	0	NR	845	0	NR	975	0	NR
460	0	NR	590	614	NR	720	0	NR	850	0	NR	980	0	NR
465	0	NR	595	954	NR	725	0	NR	855	0	NR	985	0	NR
470	0	NR	600	837	NR	730	0	NR	860	0	NR	990	0	NR
475	0	NR	605	417	NR	735	0	NR	865	0	NR	995	0	NR
480	0	NR	610	179	NR	740	0	NR	870	0	NR	1000	0	NR
485	0	NR	615	69	NR	745	0	NR	875	0	NR			

REPORT NUMBER: SP1-2407-157-1

Melanopic Flux vs. Wavelength



Melanopic Lumens: NR **M/P: 0.12**

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	0	NR	620	30	NR	750	0	NR	880	0	NR
365	0	NR	495	0	NR	625	13	NR	755	0	NR	885	0	NR
370	0	NR	500	0	NR	630	6	NR	760	0	NR	890	0	NR
375	0	NR	505	0	NR	635	3	NR	765	0	NR	895	0	NR
380	0	NR	510	0	NR	640	2	NR	770	0	NR	900	0	NR
385	0	NR	515	0	NR	645	1	NR	775	0	NR	905	0	NR
390	0	NR	520	0	NR	650	1	NR	780	0	NR	910	0	NR
395	0	NR	525	0	NR	655	0	NR	785	0	NR	915	0	NR
400	0	NR	530	0	NR	660	0	NR	790	0	NR	920	0	NR
405	0	NR	535	1	NR	665	0	NR	795	0	NR	925	0	NR
410	0	NR	540	1	NR	670	0	NR	800	0	NR	930	0	NR
415	0	NR	545	3	NR	675	0	NR	805	0	NR	935	0	NR
420	0	NR	550	5	NR	680	0	NR	810	0	NR	940	0	NR
425	0	NR	555	10	NR	685	0	NR	815	0	NR	945	0	NR
430	0	NR	560	19	NR	690	0	NR	820	0	NR	950	0	NR
435	0	NR	565	34	NR	695	0	NR	825	0	NR	955	0	NR
440	0	NR	570	63	NR	700	0	NR	830	0	NR	960	0	NR
445	0	NR	575	113	NR	705	0	NR	835	0	NR	965	0	NR
450	0	NR	580	199	NR	710	0	NR	840	0	NR	970	0	NR
455	0	NR	585	352	NR	715	0	NR	845	0	NR	975	0	NR
460	0	NR	590	614	NR	720	0	NR	850	0	NR	980	0	NR
465	0	NR	595	954	NR	725	0	NR	855	0	NR	985	0	NR
470	0	NR	600	837	NR	730	0	NR	860	0	NR	990	0	NR
475	0	NR	605	417	NR	735	0	NR	865	0	NR	995	0	NR
480	0	NR	610	179	NR	740	0	NR	870	0	NR	1000	0	NR
485	0	NR	615	69	NR	745	0	NR	875	0	NR			

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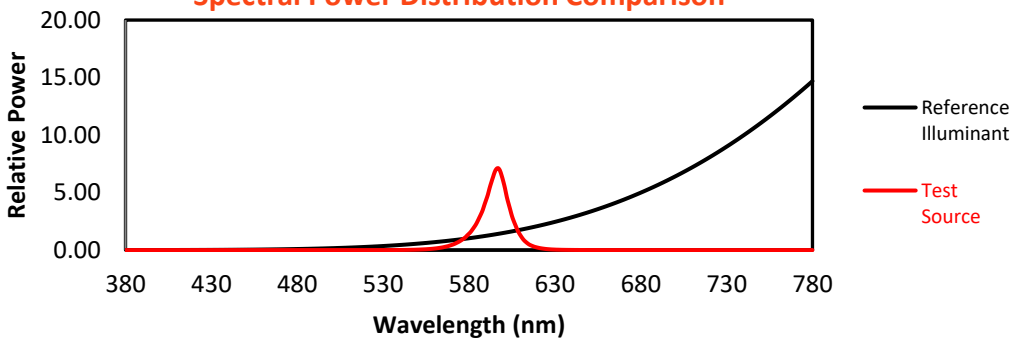
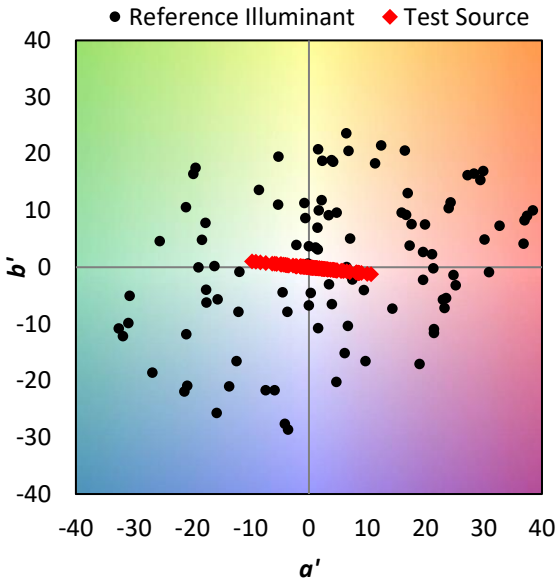
Summary

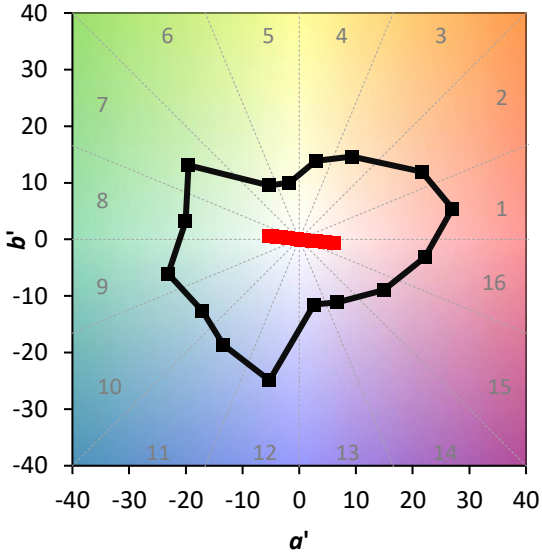
R_f = 1.1
R_g = 0
CIE R_a = -21.8
R_9 = -386.6

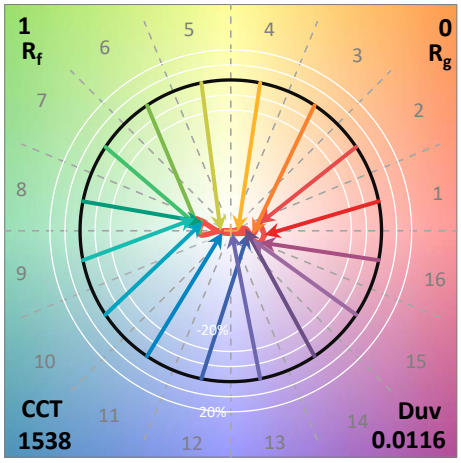
Spectral Power Distribution Comparison

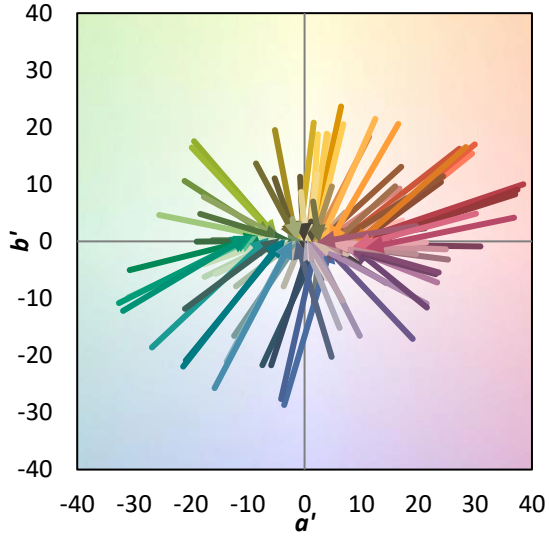


Color Vector Graphics









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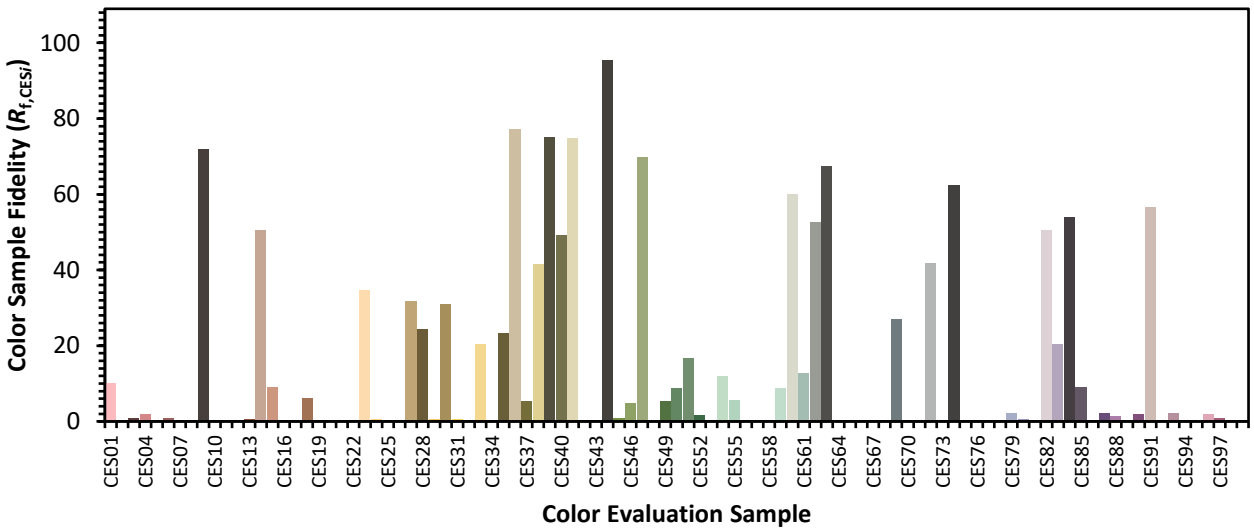
Individual Sample Fidelity Index ($R_{f,i}$)

CES01 = 90	CES26 = 0	CES51 = 17	CES76 = 0
CES02 = 70	CES27 = 32	CES52 = 2	CES77 = 0
CES03 = 31	CES28 = 24	CES53 = 0	CES78 = 0
CES04 = 77	CES29 = 1	CES54 = 12	CES79 = 2
CES05 = 52	CES30 = 31	CES55 = 6	CES80 = 1
CES06 = 56	CES31 = 1	CES56 = 0	CES81 = 0
CES07 = 41	CES32 = 0	CES57 = 0	CES82 = 50
CES08 = 38	CES33 = 21	CES58 = 0	CES83 = 21
CES09 = 29	CES34 = 0	CES59 = 9	CES84 = 54
CES10 = 87	CES35 = 23	CES60 = 60	CES85 = 9
CES11 = 70	CES36 = 77	CES61 = 13	CES86 = 0
CES12 = 76	CES37 = 5	CES62 = 53	CES87 = 2
CES13 = 47	CES38 = 41	CES63 = 68	CES88 = 1
CES14 = 77	CES39 = 75	CES64 = 0	CES89 = 0
CES15 = 74	CES40 = 49	CES65 = 0	CES90 = 2
CES16 = 49	CES41 = 75	CES66 = 0	CES91 = 57
CES17 = 56	CES42 = 0	CES67 = 0	CES92 = 0
CES18 = 60	CES43 = 0	CES68 = 0	CES93 = 2
CES19 = 80	CES44 = 95	CES69 = 27	CES94 = 0
CES20 = 71	CES45 = 1	CES70 = 0	CES95 = 0
CES21 = 94	CES46 = 5	CES71 = 0	CES96 = 2
CES22 = 87	CES47 = 70	CES72 = 42	CES97 = 1
CES23 = 94	CES48 = 0	CES73 = 0	CES98 = 0
CES24 = 95	CES49 = 5	CES74 = 62	CES99 = 0
CES25 = 79	CES50 = 9	CES75 = 0	



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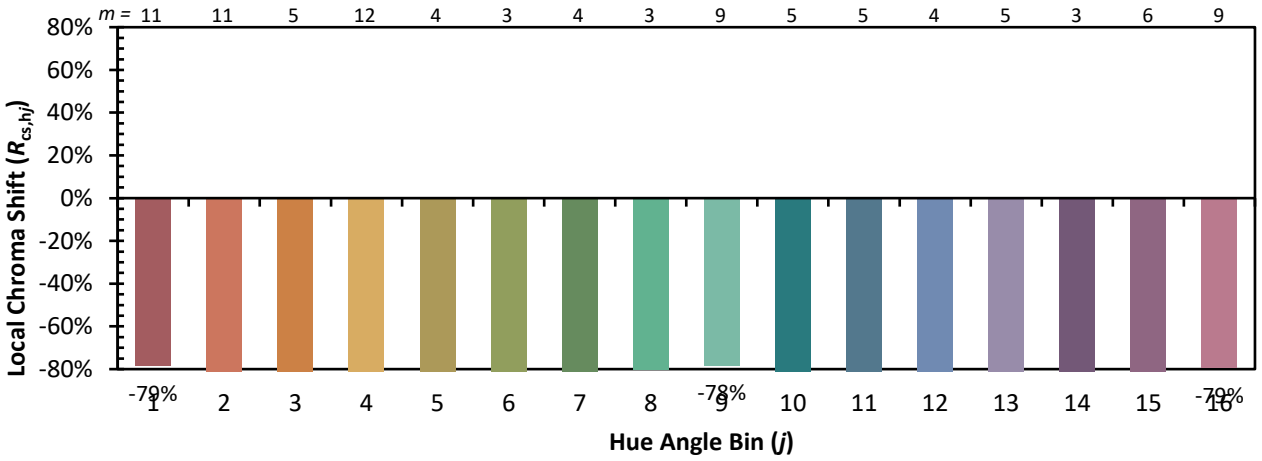
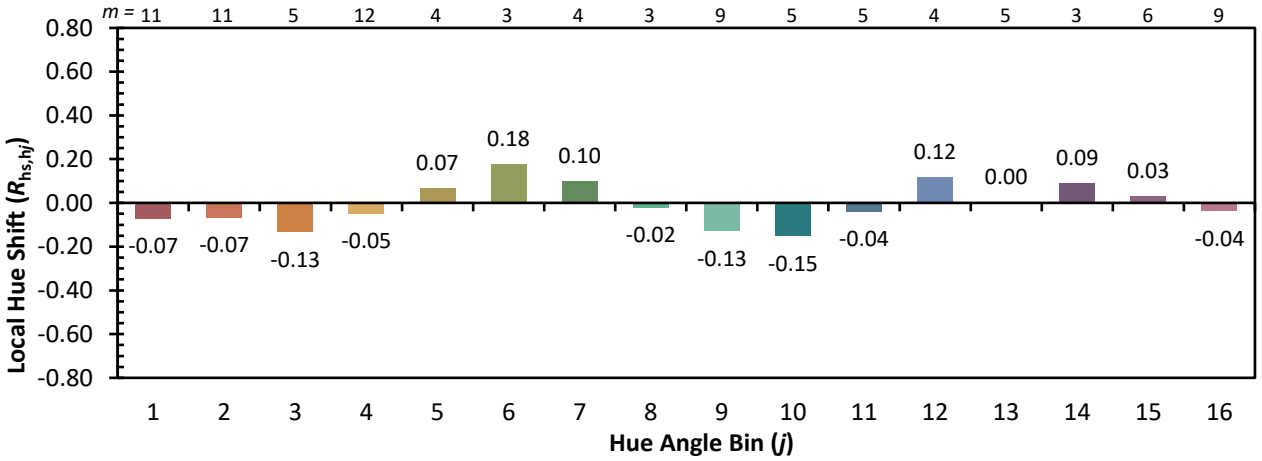
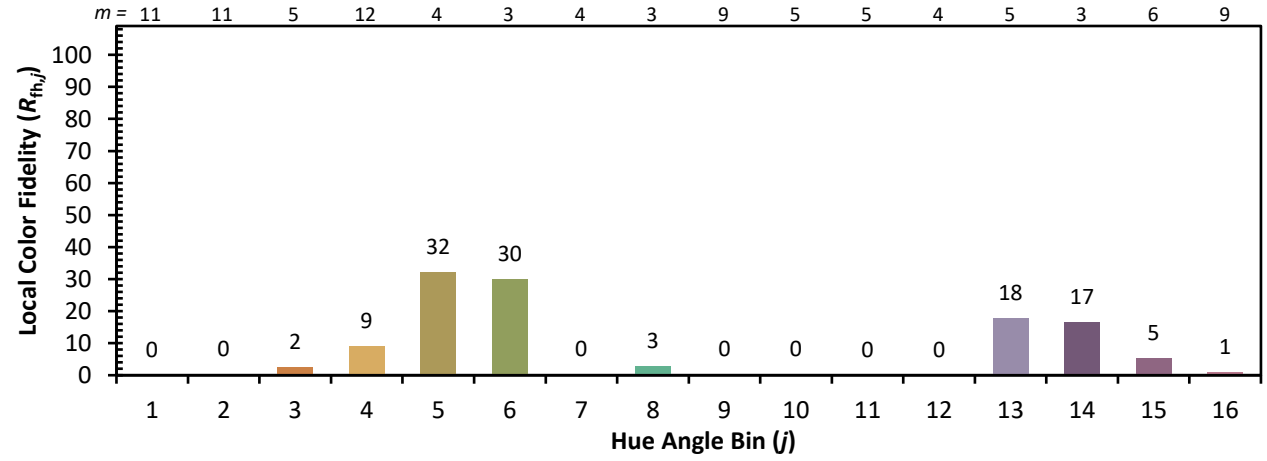
Color Rendition by Hue-Angle Bin







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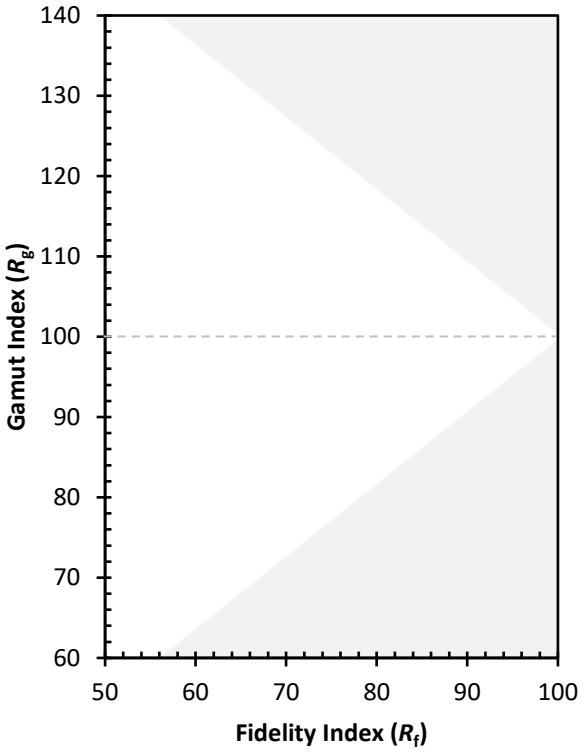
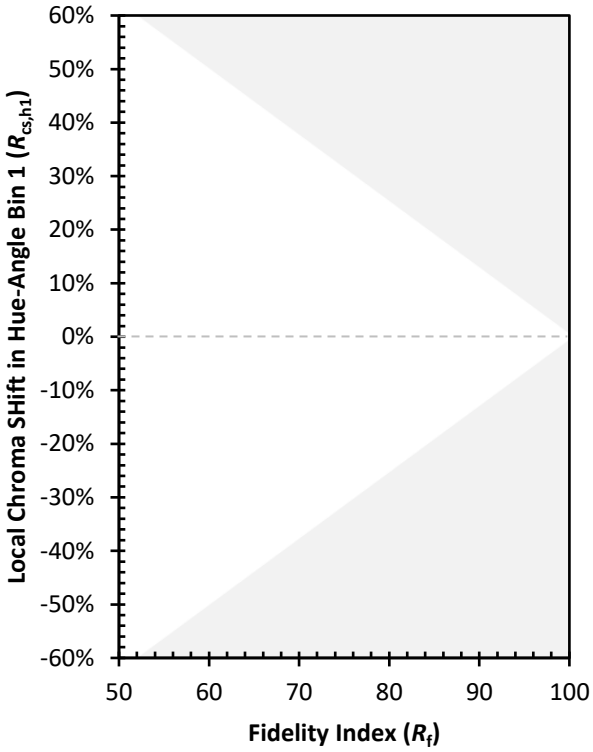
Measure Comparisons





(END OF REPORT)