Cooper Lighting Solutions Photometric Lab
1121 Highway 74 South
Peachtree City, GA 30269

Scaled data based on original data using

LM-79-2024 Approved Method: Electrical and Photometric Measurements of Solid-State Lighting Products

Test Report Prepared for

Cooper Lighting Solutions

Brand: INVUE

Report Number: P868730

Luminaire Tested: EMM2-HTN-SA3A-722-U-5WQ

Issue Date: 08/22/2024

Cooper Lighting Solutions Photometric Lab
1121 Highway 74 South
Peachtree City, GA 30269

Scaled Data Report

Test Information

Test Method:	LM-79-2024
Report Number:	P868730
Test Lab:	INNOVATION CENTER(G3)
Issue Date:	5/20/2026
Manufacturer:	COOPER LIGHTING SOLUTIONS
Product Line:	INVUE
Catalog Number:	EMM2-HTN-SA3A-722-U-5WQ
Description:	EPIC MODERN TALL HOUSING DISCRETE LED ARRAYS 130W 70CRI 2200K FIXTURE w/ TYPE V SQUARE WIDE DISTRIBUTION OPTIC
Light Source:	(30) 2200K CCT, 70 CRI LEDS
Ballast/Driver:	-

Summary

Lumens per Lamp:	N/A
Luminaire Lumens:	14999.3 lumens
Efficiency:	N/A
Efficacy:	132.7 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:	28.75 FT

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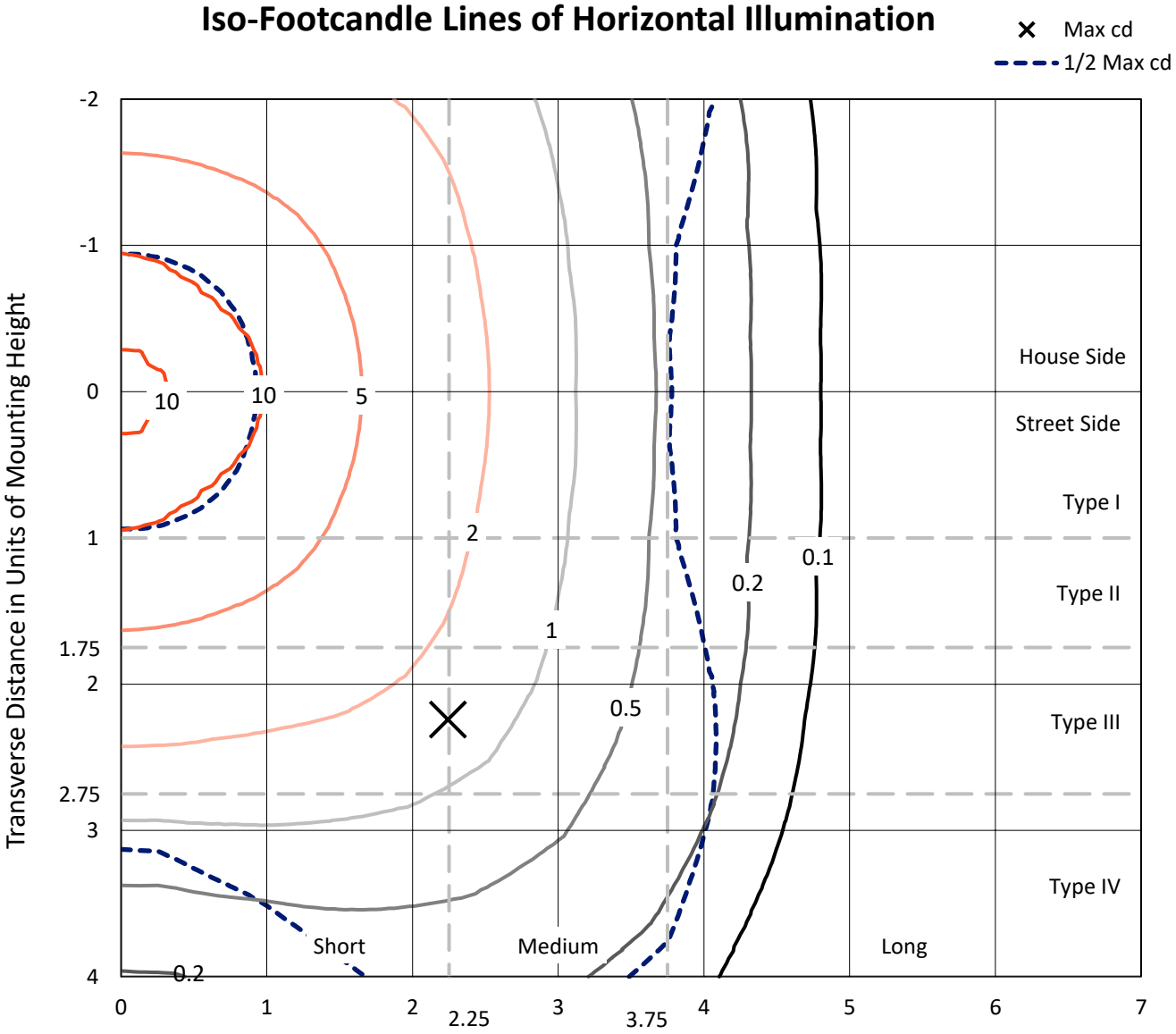
Iso-Footcandle Lines of Horizontal Illumination



Based on 10 foot mounting height. Maximum calculated value = 10.7 fc
Type V - Short - N/A

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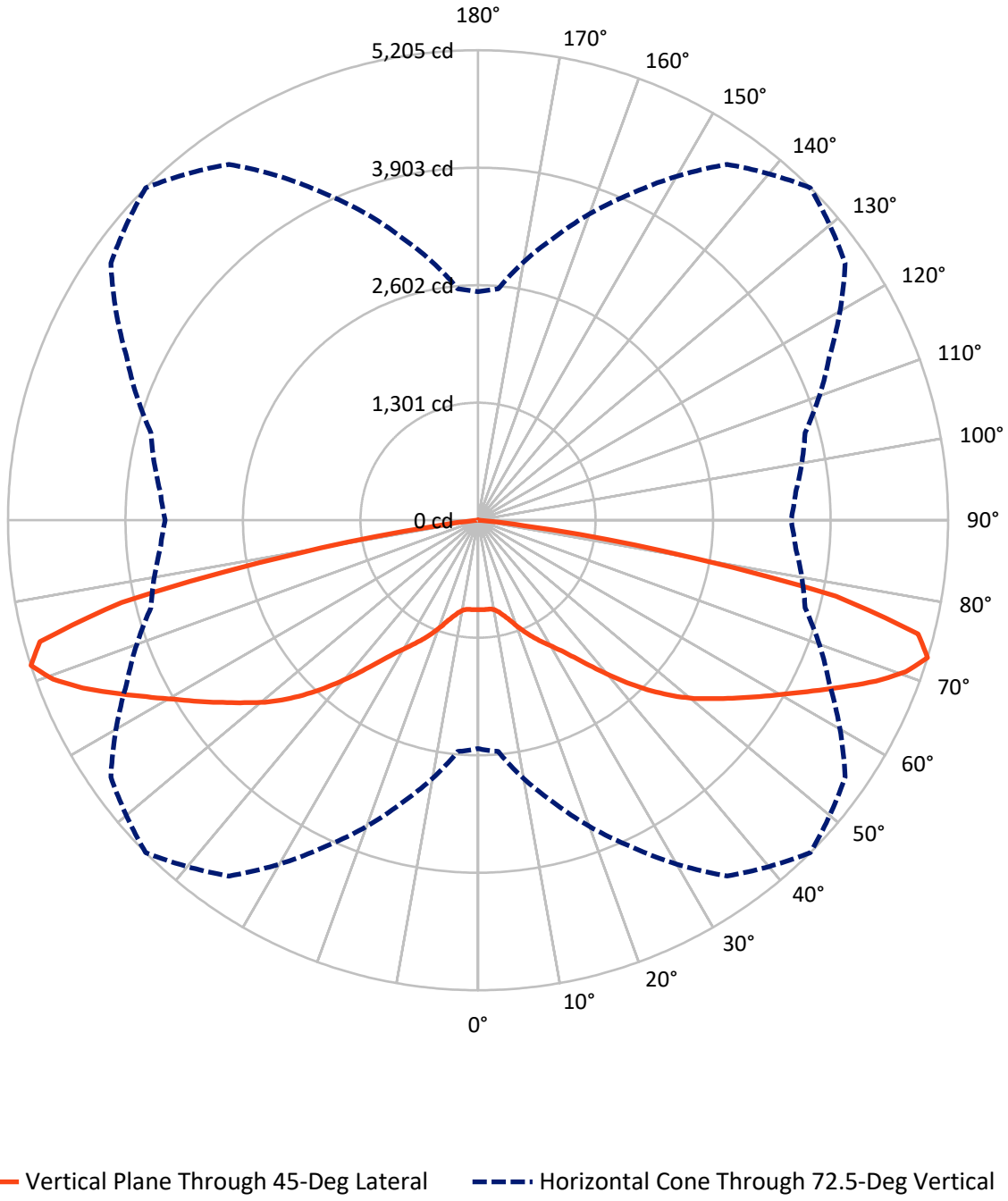
Luminous Intensity Polar Plot



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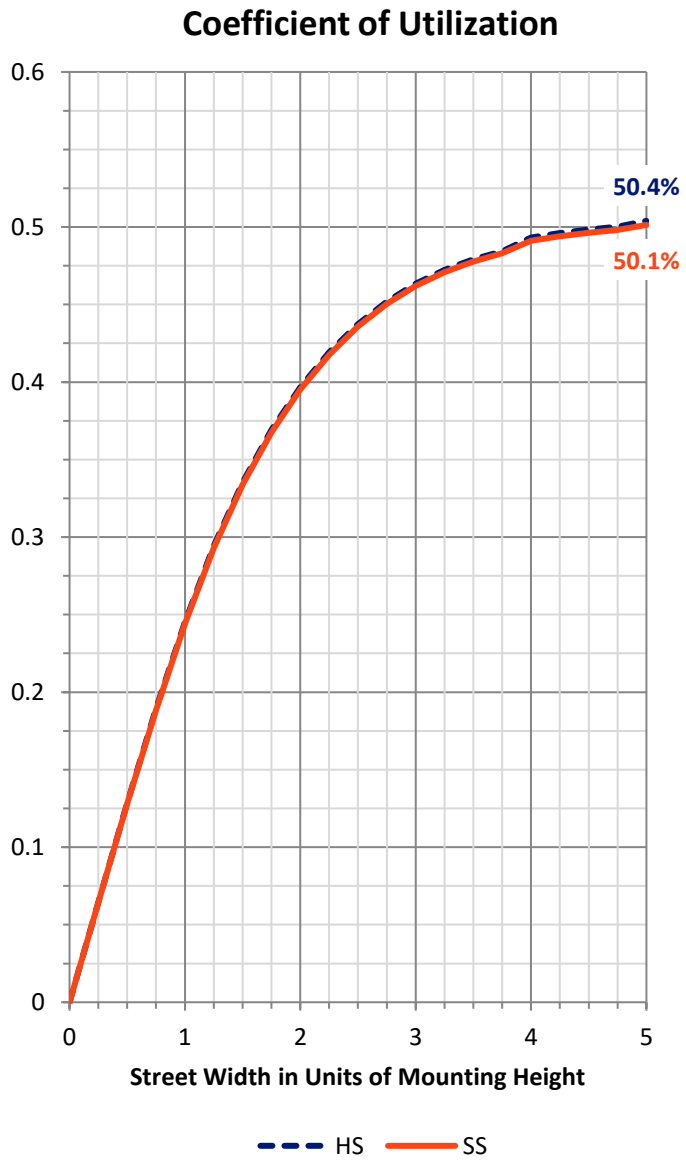
FLUX DISTRIBUTION:

		Downward	Upward	Total
House Side	Lumens	7499.6	0.0	7499.6
	% Fixture	50.0	0.0	50.0
Street Side	Lumens	7499.6	0.0	7499.6
	% Fixture	50.0	0.0	50.0
Total	Lumens	14999.3	0.0	14999.3
	% Fixture	100.0	0.0	100.0

ZONAL LUMENS:

Zone	Lumens	% Fixture
0°-10°	94.9	0.6
10°-20°	316.7	2.1
20°-30°	653.5	4.4
30°-40°	1203.1	8.0
40°-50°	2115.4	14.1
50°-60°	3068.1	20.5
60°-70°	3999.6	26.7
70°-80°	3324.6	22.2
80°-90°	223.2	1.5
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°	14999.3	100.0
0°-180°	14999.3	100.0



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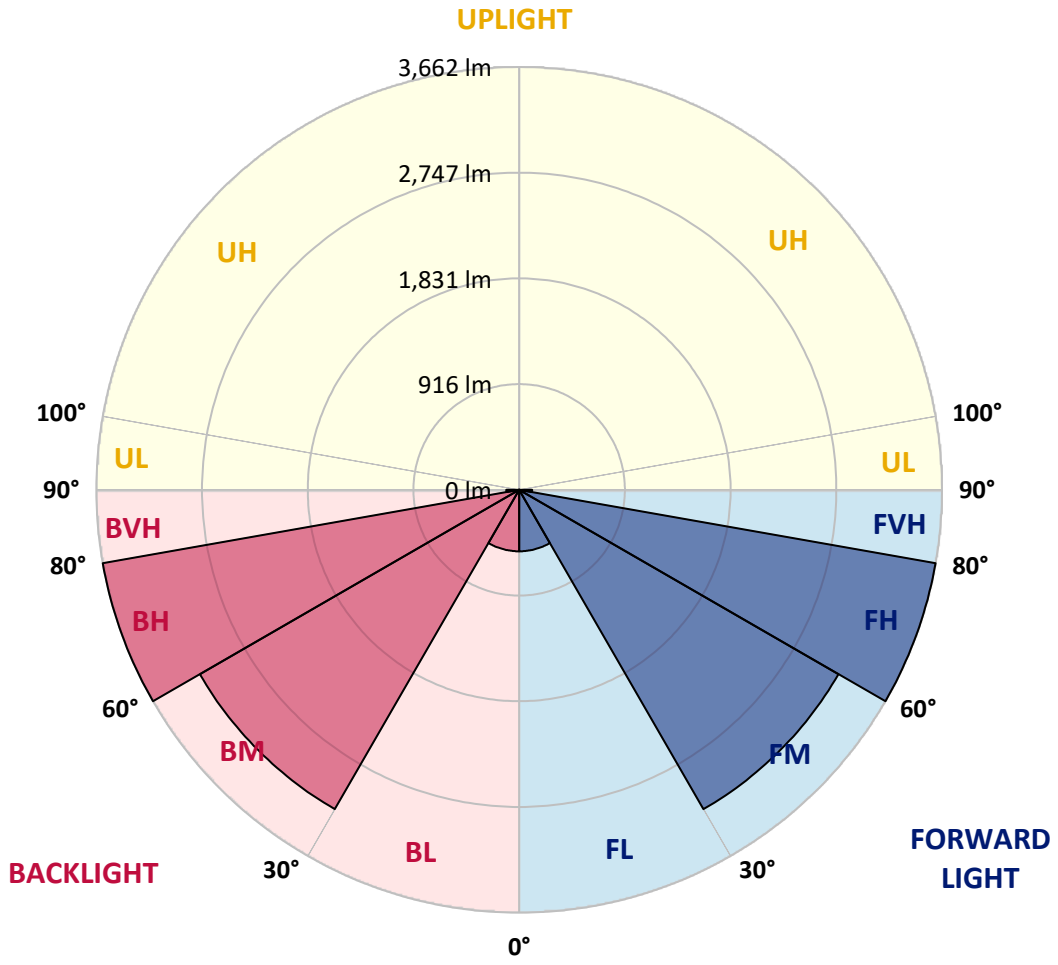
LUMINAIRE CLASSIFICATION SYSTEM LUMEN TABLE AND BUG RATING:

Zone		Lumens	% Fixture	Zone Rating/Lumen Limit B	U	G
FL	(0°-30°)	532.6	3.6			
FM	(30°-60°)	3193.3	21.3			
FH	(60°-80°)	3662.1	24.4			G2/5000
FVH	(80°-90°)	111.6	0.7			G2/225
BL	(0°-30°)	532.6	3.6	B2/1000		
BM	(30°-60°)	3193.3	21.3	B3/5000		
BH	(60°-80°)	3662.1	24.4	B4/5000		G2/5000
BVH	(80°-90°)	111.6	0.7			G2/225
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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CANDELA DISTRIBUTION (FULL):

	0°	5°	15°	25°	35°	45°	55°	65°	75°	85°	90°
0°	990.2	990.2	990.2	990.2	990.2	*990.2*	990.2	990.2	990.2	990.2	990.2
2.5°	987.1	988.7	988.7	988.7	990.2	*991.8*	993.3	994.9	998.0	999.5	999.5
5°	991.8	990.2	988.7	991.8	991.8	*991.8*	993.3	994.9	994.9	994.9	996.4
7.5°	987.1	988.7	987.1	987.1	991.8	*993.3*	991.8	990.2	990.2	991.8	991.8
10°	1004.2	1002.6	1001.1	1001.1	1005.8	*1007.3*	1005.8	1004.2	1004.2	1007.3	1007.3
12.5°	1043.1	1046.2	1036.8	1036.8	1043.1	*1046.2*	1041.5	1040.0	1041.5	1044.6	1044.6
15°	1103.7	1102.1	1095.9	1089.7	1095.9	*1100.6*	1094.4	1091.3	1092.8	1100.6	1094.4
17.5°	1170.5	1172.1	1165.9	1159.7	1164.3	*1170.5*	1161.2	1153.4	1155.0	1158.1	1155.0
20°	1245.2	1243.6	1242.0	1242.0	1251.4	*1259.1*	1245.2	1226.5	1221.8	1218.7	1218.7
22.5°	1299.6	1304.2	1305.8	1319.8	1341.5	*1349.3*	1330.6	1305.8	1287.1	1277.8	1271.6
25°	1385.1	1380.4	1377.3	1392.8	1425.5	*1439.5*	1416.1	1381.9	1363.3	1361.7	1366.4
27.5°	1462.8	1462.8	1469.0	1484.5	1515.6	*1529.6*	1509.4	1475.2	1465.9	1465.9	1461.2
30°	1563.8	1559.2	1565.4	1591.8	1615.1	*1624.4*	1607.3	1584.0	1576.3	1576.3	1568.5
32.5°	1682.0	1683.5	1692.8	1709.9	1733.3	*1734.8*	1728.6	1717.7	1713.1	1708.4	1716.2
35°	1862.3	1862.3	1859.2	1871.6	1877.8	*1880.9*	1884.0	1879.4	1879.4	1879.4	1873.2
37.5°	2086.1	2073.7	2072.1	2061.3	2053.5	*2061.3*	2075.3	2090.8	2103.2	2095.5	2092.4
40°	2308.4	2302.2	2283.6	2266.5	2260.2	*2263.3*	2280.4	2313.1	2327.1	2327.1	2339.5
42.5°	2547.8	2535.4	2512.1	2491.9	2474.8	*2479.4*	2495.0	2535.4	2566.5	2580.5	2574.2
45°	2762.3	2751.5	2728.1	2709.5	2697.1	*2695.5*	2715.7	2742.1	2784.1	2796.5	2805.9
47.5°	2945.8	2938.0	2917.8	2899.1	2903.8	*2905.4*	2911.6	2934.9	2969.1	2986.2	2984.6
50°	3095.0	3088.8	3070.1	3077.9	3090.3	*3102.8*	3095.0	3110.5	3132.3	3140.1	3146.3
52.5°	3231.8	3222.5	3210.0	3224.0	3256.7	*3281.5*	3286.2	3275.3	3281.5	3286.2	3281.5
55°	3367.0	3356.2	3353.0	3377.9	3427.7	*3474.3*	3469.6	3438.5	3430.8	3421.4	3416.8
57.5°	3477.4	3469.6	3482.1	3524.0	3620.4	*3682.6*	3662.4	3590.9	3559.8	3538.0	3531.8
60°	3547.4	3545.8	3573.8	3671.7	3817.8	*3904.9*	3872.2	3749.4	3679.5	3659.3	3650.0
62.5°	3584.7	3586.2	3636.0	3810.1	4043.2	*4161.4*	4103.9	3915.8	3807.0	3786.8	3789.9
65°	3618.9	3614.2	3679.5	3926.7	4287.3	*4447.4*	4369.7	4116.3	3957.7	3917.3	3917.3
67.5°	3643.7	3648.4	3746.3	4043.2	4525.1	*4753.6*	4640.2	4329.3	4119.4	4058.8	4051.0
70°	3329.7	3374.8	3681.0	4121.0	4713.2	*5024.1*	4874.9	4459.8	4125.6	3953.1	3936.0
72.5°	*2529.2*	*2571.1*	*3233.4*	*3982.6*	*4809.6*	*5204.5*	*4962.0*	*4293.5*	*3749.4*	*3530.3*	*3465.0*
75°	1668.0	1697.5	2409.5	3479.0	4542.2	*5033.5*	4518.9	3698.1	2952.0	2667.5	2684.6
77.5°	743.0	837.9	1535.8	2714.1	3741.7	*4051.0*	3446.3	2522.9	1803.2	1526.5	1497.0
80°	310.9	340.4	579.8	1447.2	2168.5	*2075.3*	1467.4	845.6	537.9	418.2	404.2
82.5°	90.2	93.3	115.0	250.3	441.5	*519.2*	312.5	158.6	150.8	119.7	110.4
85°	6.2	6.2	9.3	15.5	21.8	*35.8*	40.4	46.6	52.9	45.1	45.1
87.5°	3.1	3.1	3.1	4.7	4.7	*6.2*	4.7	4.7	4.7	4.7	4.7
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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Version: v6.13

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Test Information

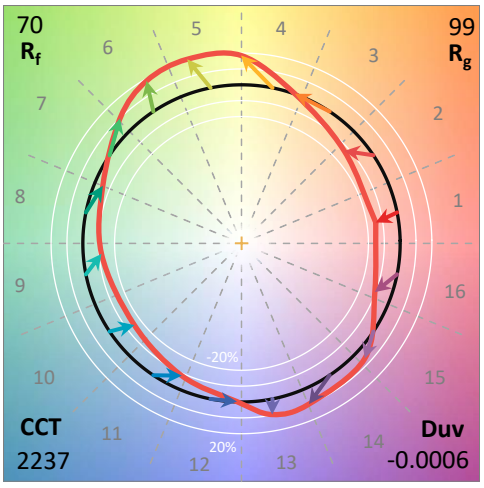
Test Method:	LM-79-2008 Report
Number:	SP1-1908-441-10-R4
Test Lab:	COOPER LIGHTING SOLUTIONS
Photometer:	SP1 - 76IN SPHERE
Measurement Geometry:	4π
Issue Date:	10/28/2024
Manufacturer:	COOPER LIGHTING SOLUTIONS
Product Line:	McGRAW-EDISON
Catalog Number:	**SA1C-722-U-5WQ**
Description:	McGRAW EDISON ROADWAY AND AREA LUMINAIRE

THIS IS A REVISION OF SP1-1908-441-4-R3. TO UPDATE THE CATALOG INFORMATION.TESTED IN SITU. ROADWAY AND AREA LUMINAIRE. (1) 70 CRI, 5000K, 1050MA LIGHTSQUARE WITH 16 LEDS AND TYPE V WIDE OPTICS.

Spectral Parameters

CCT (K):	2237	CRI (Ra):	72.0		
CIE u':	0.2876	R1:	68.9	R9:	-17.4
CIE v':	0.5346	R2:	83.0	R10:	61.3
Duv:	-0.0006	R3:	95.2	R11:	59.8
CIE x:	0.5005	R4:	66.2	R12:	50.5
CIE y:	0.4134	R5:	65.9	R13:	71.1
CIE z:	0.0860	R6:	76.3	R14:	96.9
Peak Wavelength (nm):	603	R7:	76.7		
Dominant Wavelength (nm):	587	R8:	43.8		
Purity:	74.5				

Rf:	69.8
Rg:	99.2



Test Conditions

Stabilization Time:	71M
Operation Time:	12H
Room Temperature (°C) / RH%:	24.7/41%
Sphere Temperature (°C):	25.6

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Measurement and Test Equipment			
Instrument	Identification Number	Calibration Date	Calibration Due Date
Photometer	IN0058	6/28/2019	12/28/2019
Power Meter	IN0071	12/5/2018	12/5/2019
AC Power Source	IN0063	12/5/2018	12/5/2019
DC Power Source	IN0208	12/5/2018	12/5/2019
Sphere Thermometer	IN0085	12/5/2018	12/5/2019
Room Thermometer	IN0046	12/5/2018	12/5/2019

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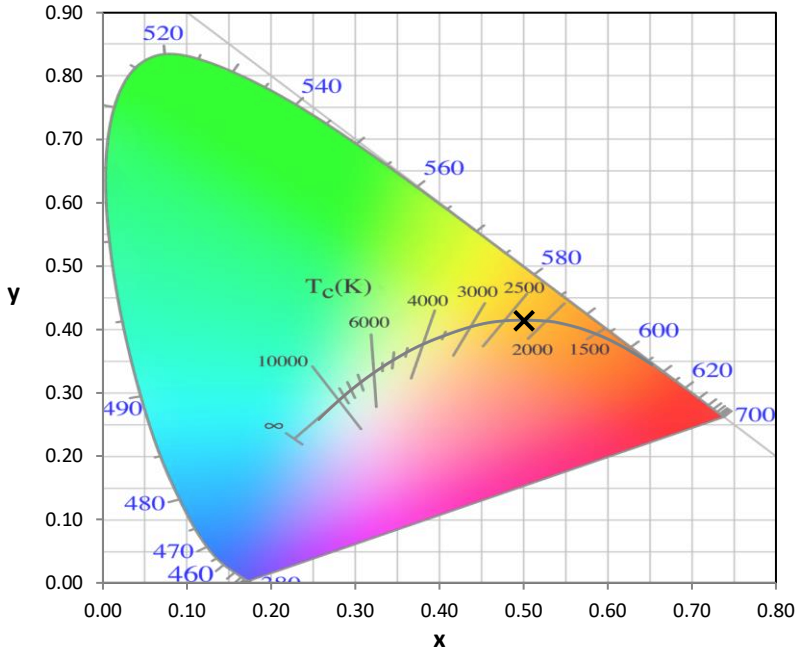
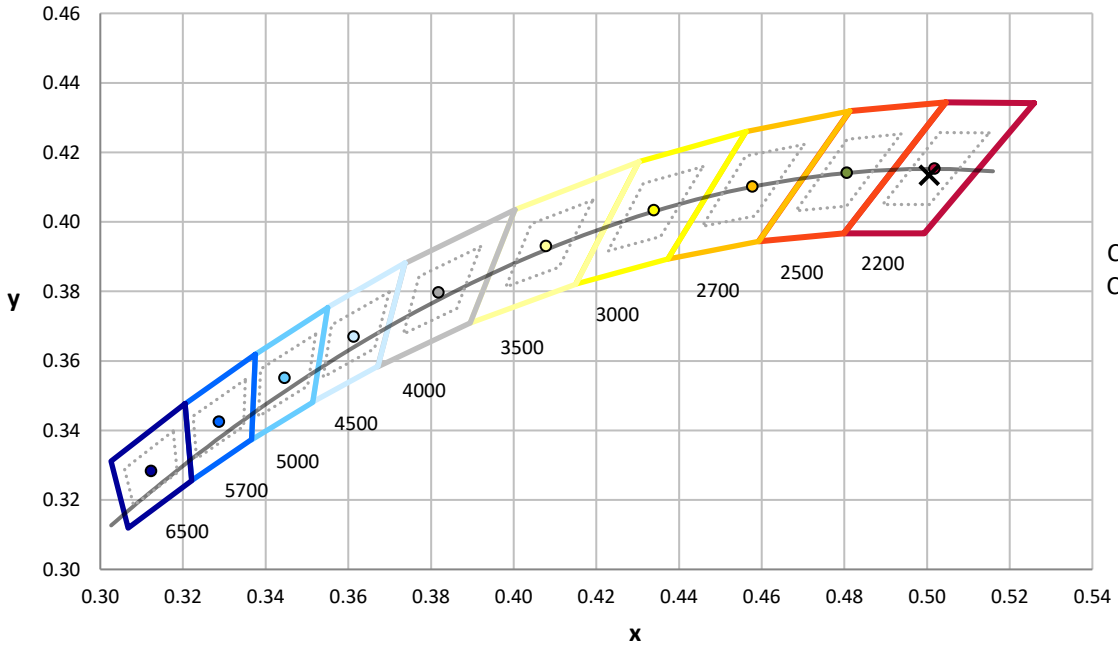
CIE 1931 Chromaticity Diagram



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



CCT = 2237K
CIE x = 0.5005
CIE y = 0.4134
Duv = -0.0006

Point lies inside the ANSI 2200K 4-step quadrangle

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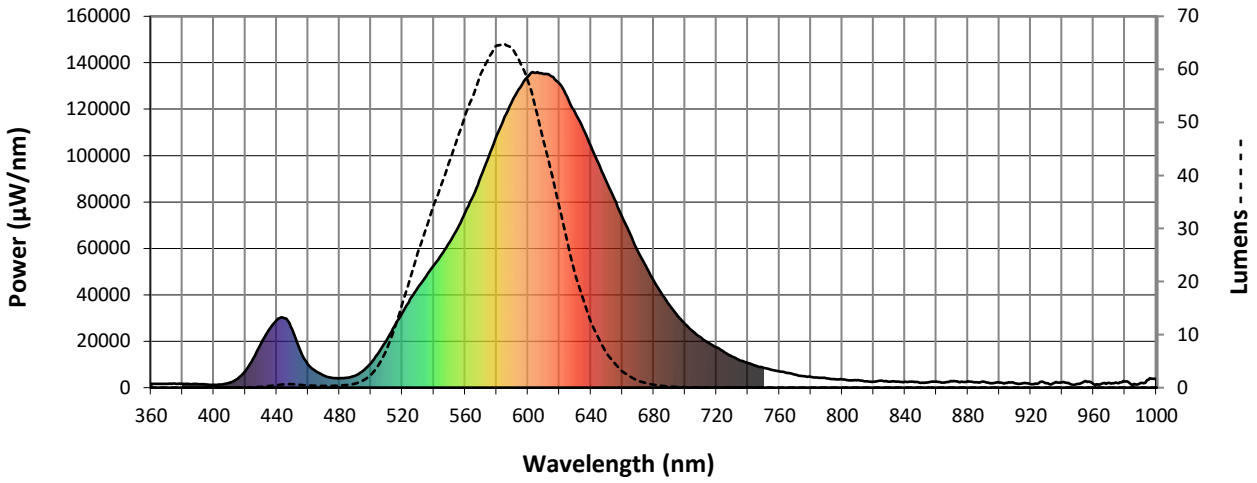
Photopic Flux vs. Wavelength



Photopic Lumens: 5530.5

λ (nm)	Power (µW/nm)	Lumens (ϕ/nm)	λ (nm)	Power (µW/nm)	Lumens (ϕ/nm)	λ (nm)	Power (µW/nm)	Lumens (ϕ/nm)	λ (nm)	Power (µW/nm)	Lumens (ϕ/nm)	λ (nm)	Power (µW/nm)	Lumens (ϕ/nm)
360	1768	0.0	490	5206	0.7	620	130919	34.1	750	8553	0.0	880	2713	0.0
365	1569	0.0	495	7286	1.3	625	125335	27.7	755	7696	0.0	885	2316	0.0
370	1594	0.0	500	10654	2.4	630	118388	21.4	760	6978	0.0	890	2539	0.0
375	1744	0.0	505	15189	4.2	635	111855	16.8	765	6377	0.0	895	1933	0.0
380	1659	0.0	510	20541	7.1	640	104062	12.4	770	5600	0.0	900	2216	0.0
385	1504	0.0	515	26492	11.0	645	96365	9.3	775	5000	0.0	905	2067	0.0
390	1541	0.0	520	32294	15.7	650	88651	6.5	780	4709	0.0	910	1959	0.0
395	1355	0.0	525	38123	20.5	655	81152	4.7	785	4305	0.0	915	1874	0.0
400	1243	0.0	530	43232	25.5	660	73523	3.1	790	4040	0.0	920	1484	0.0
405	1417	0.0	535	48012	29.8	665	66123	2.1	795	3642	0.0	925	1914	0.0
410	2147	0.0	540	52623	34.3	670	58677	1.3	800	3594	0.0	930	1948	0.0
415	3837	0.0	545	57516	38.3	675	52349	0.9	805	3190	0.0	935	2079	0.0
420	7159	0.0	550	62613	42.5	680	46159	0.5	810	3241	0.0	940	2263	0.0
425	12599	0.1	555	68554	46.8	685	40525	0.3	815	2732	0.0	945	1688	0.0
430	19019	0.2	560	75325	51.2	690	35615	0.2	820	2612	0.0	950	1560	0.0
435	24875	0.3	565	82533	54.9	695	31158	0.1	825	2966	0.0	955	2826	0.0
440	29103	0.5	570	90909	59.1	700	27409	0.1	830	2574	0.0	960	1477	0.0
445	29901	0.6	575	99621	62.0	705	24204	0.1	835	2633	0.0	965	1568	0.0
450	24862	0.6	580	108484	64.5	710	21558	0.0	840	2526	0.0	970	2030	0.0
455	15942	0.5	585	116679	64.8	715	19222	0.0	845	2631	0.0	975	1986	0.0
460	9916	0.4	590	123752	64.0	720	17310	0.0	850	2079	0.0	980	2540	0.0
465	7051	0.4	595	129324	61.3	725	15280	0.0	855	2309	0.0	985	1139	0.0
470	5227	0.3	600	134082	57.8	730	13282	0.0	860	2528	0.0	990	2018	0.0
475	4257	0.3	605	135698	52.6	735	11753	0.0	865	2121	0.0	995	3445	0.0
480	4052	0.4	610	135144	46.4	740	10654	0.0	870	2751	0.0	1000	3704	0.0
485	4298	0.5	615	134180	40.5	745	9451	0.0	875	2317	0.0			

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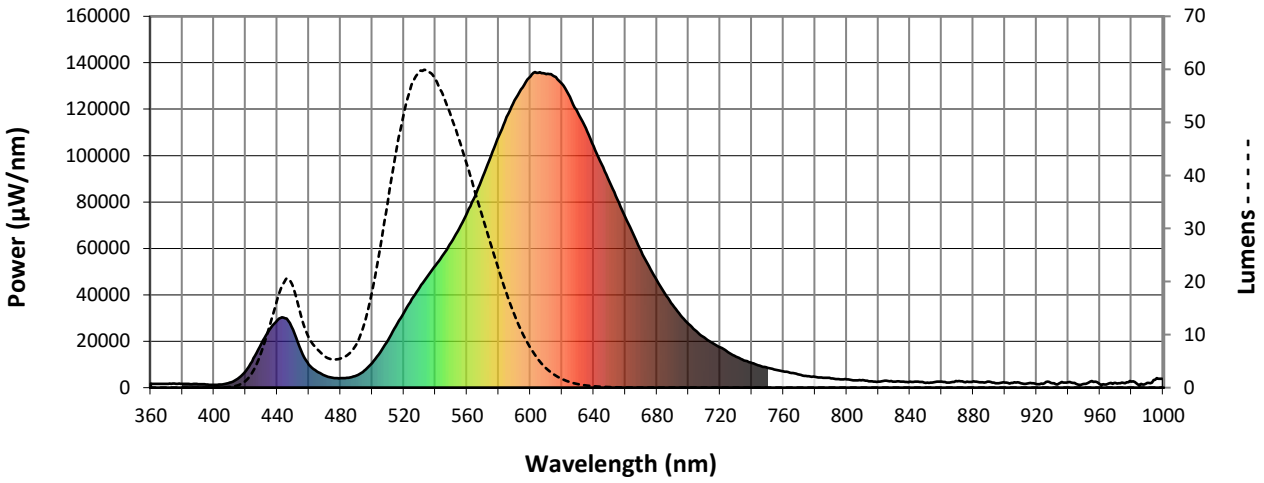
Scotopic Flux vs. Wavelength



Scotopic Lumens: 4696.9 **S/P: 0.85**

λ (nm)	Power (µW/nm)	Lumens (ϕ/nm)	λ (nm)	Power (µW/nm)	Lumens (ϕ/nm)	λ (nm)	Power (µW/nm)	Lumens (ϕ/nm)	λ (nm)	Power (µW/nm)	Lumens (ϕ/nm)	λ (nm)	Power (µW/nm)	Lumens (ϕ/nm)
360	1768	0.0	490	5206	4.3	620	130919	0.1	750	8553	0.0	880	2713	0.0
365	1569	0.0	495	7286	6.0	625	125335	0.1	755	7696	0.0	885	2316	0.0
370	1594	0.0	500	10654	8.6	630	118388	0.0	760	6978	0.0	890	2539	0.0
375	1744	0.0	505	15189	11.7	635	111855	0.0	765	6377	0.0	895	1933	0.0
380	1659	0.0	510	20541	14.7	640	104062	0.0	770	5600	0.0	900	2216	0.0
385	1504	0.0	515	26492	17.3	645	96365	0.0	775	5000	0.0	905	2067	0.0
390	1541	0.0	520	32294	18.8	650	88651	0.0	780	4709	0.0	910	1959	0.0
395	1355	0.0	525	38123	19.3	655	81152	0.0	785	4305	0.0	915	1874	0.0
400	1243	0.0	530	43232	18.7	660	73523	0.0	790	4040	0.0	920	1484	0.0
405	1417	0.0	535	48012	17.3	665	66123	0.0	795	3642	0.0	925	1914	0.0
410	2147	0.1	540	52623	15.4	670	58677	0.0	800	3594	0.0	930	1948	0.0
415	3837	0.3	545	57516	13.4	675	52349	0.0	805	3190	0.0	935	2079	0.0
420	7159	0.8	550	62613	11.2	680	46159	0.0	810	3241	0.0	940	2263	0.0
425	12599	2.0	555	68554	9.2	685	40525	0.0	815	2732	0.0	945	1688	0.0
430	19019	4.0	560	75325	7.4	690	35615	0.0	820	2612	0.0	950	1560	0.0
435	24875	6.6	565	82533	5.8	695	31158	0.0	825	2966	0.0	955	2826	0.0
440	29103	9.7	570	90909	4.4	700	27409	0.0	830	2574	0.0	960	1477	0.0
445	29901	11.8	575	99621	3.3	705	24204	0.0	835	2633	0.0	965	1568	0.0
450	24862	11.5	580	108484	2.4	710	21558	0.0	840	2526	0.0	970	2030	0.0
455	15942	8.4	585	116679	1.7	715	19222	0.0	845	2631	0.0	975	1986	0.0
460	9916	5.8	590	123752	1.2	720	17310	0.0	850	2079	0.0	980	2540	0.0
465	7051	4.6	595	129324	0.8	725	15280	0.0	855	2309	0.0	985	1139	0.0
470	5227	3.7	600	134082	0.6	730	13282	0.0	860	2528	0.0	990	2018	0.0
475	4257	3.3	605	135698	0.4	735	11753	0.0	865	2121	0.0	995	3445	0.0
480	4052	3.3	610	135144	0.2	740	10654	0.0	870	2751	0.0	1000	3704	0.0
485	4298	3.5	615	134180	0.2	745	9451	0.0	875	2317	0.0			

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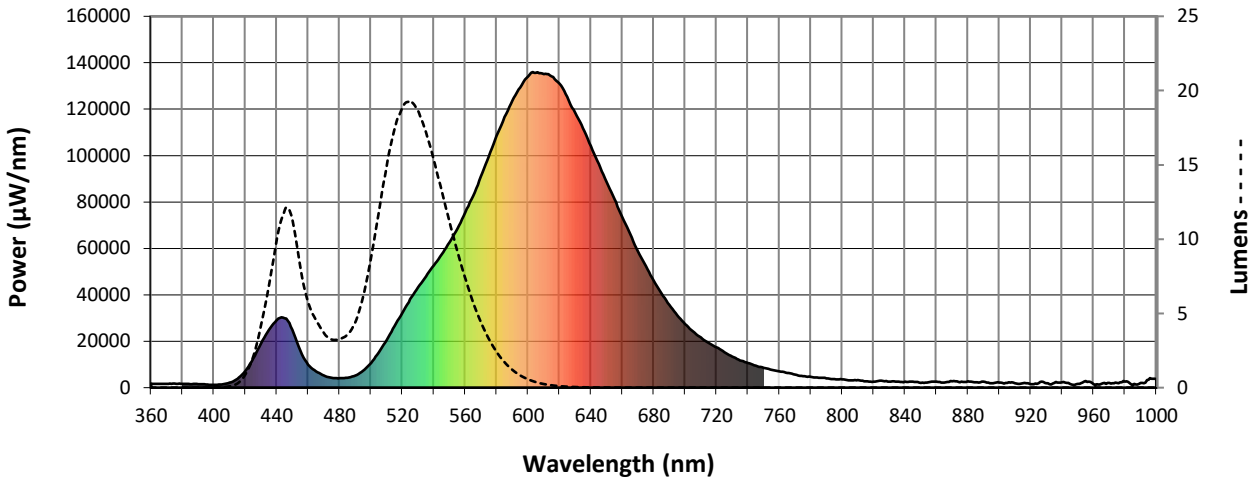
Melanopic Flux vs. Wavelength



Melanopic Lumens: 1470.8 **M/P: 0.27**

λ (nm)	Power (µW/nm)	Lumens (ϕ/nm)	λ (nm)	Power (µW/nm)	Lumens (ϕ/nm)	λ (nm)	Power (µW/nm)	Lumens (ϕ/nm)	λ (nm)	Power (µW/nm)	Lumens (ϕ/nm)	λ (nm)	Power (µW/nm)	Lumens (ϕ/nm)
360	1768	0.0	490	5206	8.0	620	130919	1.6	750	8553	0.0	880	2713	0.0
365	1569	0.0	495	7286	11.8	625	125335	1.1	755	7696	0.0	885	2316	0.0
370	1594	0.0	500	10654	17.8	630	118388	0.7	760	6978	0.0	890	2539	0.0
375	1744	0.0	505	15189	25.8	635	111855	0.4	765	6377	0.0	895	1933	0.0
380	1659	0.0	510	20541	34.8	640	104062	0.3	770	5600	0.0	900	2216	0.0
385	1504	0.0	515	26492	43.9	645	96365	0.2	775	5000	0.0	905	2067	0.0
390	1541	0.0	520	32294	51.3	650	88651	0.1	780	4709	0.0	910	1959	0.0
395	1355	0.0	525	38123	57.0	655	81152	0.1	785	4305	0.0	915	1874	0.0
400	1243	0.0	530	43232	59.6	660	73523	0.0	790	4040	0.0	920	1484	0.0
405	1417	0.0	535	48012	59.8	665	66123	0.0	795	3642	0.0	925	1914	0.0
410	2147	0.1	540	52623	58.1	670	58677	0.0	800	3594	0.0	930	1948	0.0
415	3837	0.4	545	57516	55.1	675	52349	0.0	805	3190	0.0	935	2079	0.0
420	7159	1.2	550	62613	51.2	680	46159	0.0	810	3241	0.0	940	2263	0.0
425	12599	3.1	555	68554	46.9	685	40525	0.0	815	2732	0.0	945	1688	0.0
430	19019	6.5	560	75325	42.1	690	35615	0.0	820	2612	0.0	950	1560	0.0
435	24875	11.1	565	82533	37.0	695	31158	0.0	825	2966	0.0	955	2826	0.0
440	29103	16.3	570	90909	32.1	700	27409	0.0	830	2574	0.0	960	1477	0.0
445	29901	20.0	575	99621	27.1	705	24204	0.0	835	2633	0.0	965	1568	0.0
450	24862	19.3	580	108484	22.4	710	21558	0.0	840	2526	0.0	970	2030	0.0
455	15942	13.9	585	116679	17.8	715	19222	0.0	845	2631	0.0	975	1986	0.0
460	9916	9.6	590	123752	13.8	720	17310	0.0	850	2079	0.0	980	2540	0.0
465	7051	7.4	595	129324	10.3	725	15280	0.0	855	2309	0.0	985	1139	0.0
470	5227	6.0	600	134082	7.6	730	13282	0.0	860	2528	0.0	990	2018	0.0
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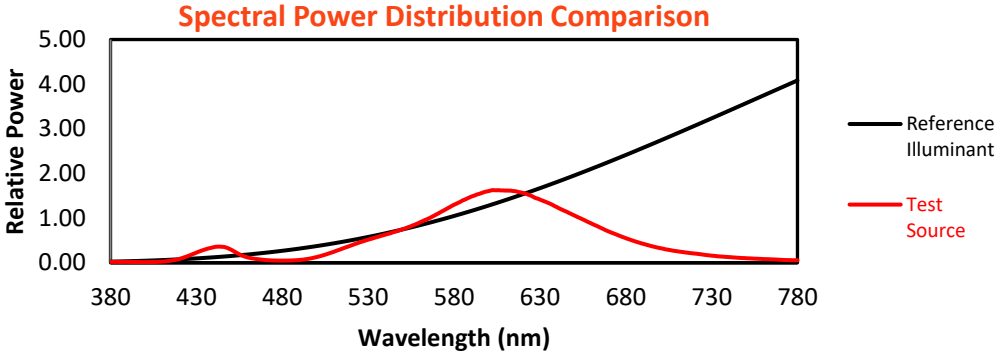
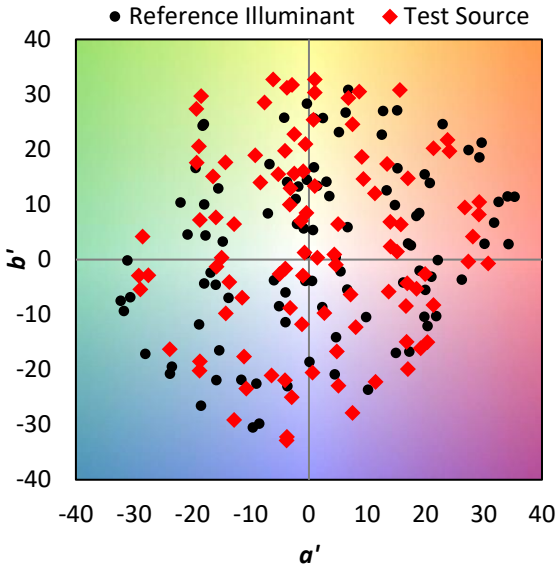
Summary

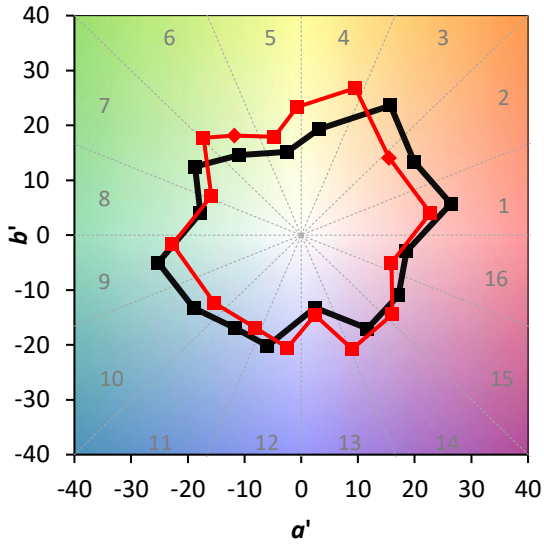
R_f = 69.8
R_g = 99.2
CIE R_a = 72.0
R_9 = -17.4

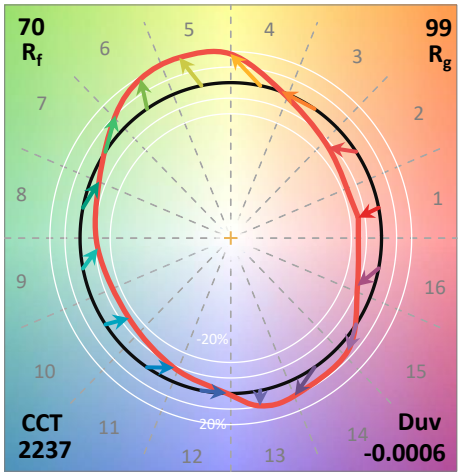
Spectral Power Distribution Comparison

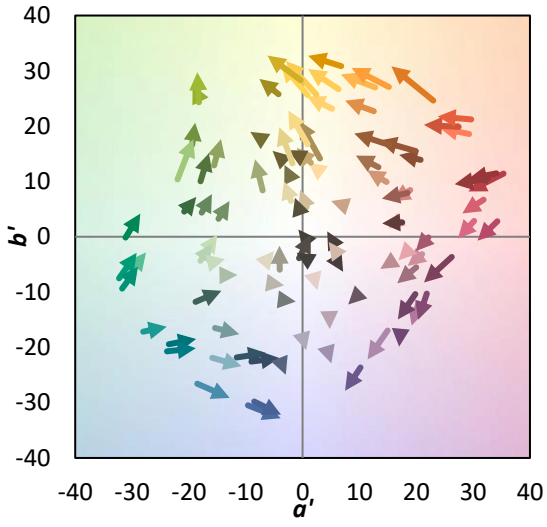


Color Vector Graphics









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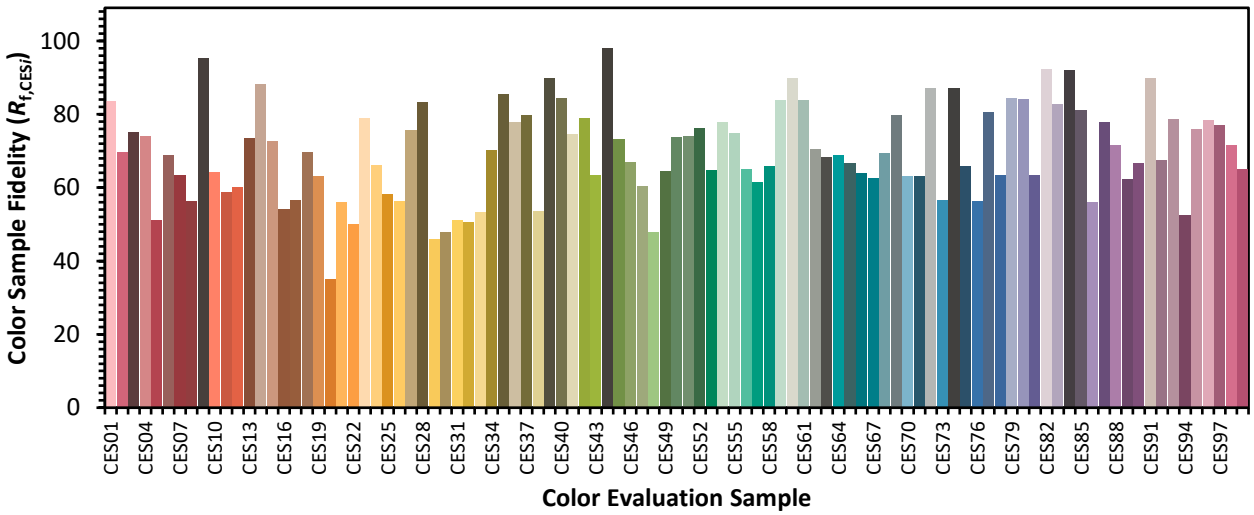
Individual Sample Fidelity Index ($R_{f,i}$)

CES01 = 87	CES26 = 56	CES51 = 74	CES76 = 56
CES02 = 65	CES27 = 76	CES52 = 76	CES77 = 81
CES03 = 32	CES28 = 83	CES53 = 65	CES78 = 63
CES04 = 72	CES29 = 46	CES54 = 78	CES79 = 84
CES05 = 52	CES30 = 48	CES55 = 75	CES80 = 84
CES06 = 52	CES31 = 51	CES56 = 65	CES81 = 63
CES07 = 44	CES32 = 51	CES57 = 62	CES82 = 92
CES08 = 42	CES33 = 53	CES58 = 66	CES83 = 83
CES09 = 29	CES34 = 70	CES59 = 84	CES84 = 92
CES10 = 78	CES35 = 85	CES60 = 90	CES85 = 81
CES11 = 61	CES36 = 78	CES61 = 84	CES86 = 56
CES12 = 68	CES37 = 80	CES62 = 70	CES87 = 78
CES13 = 45	CES38 = 53	CES63 = 68	CES88 = 72
CES14 = 75	CES39 = 90	CES64 = 69	CES89 = 62
CES15 = 72	CES40 = 84	CES65 = 67	CES90 = 67
CES16 = 49	CES41 = 75	CES66 = 64	CES91 = 90
CES17 = 51	CES42 = 79	CES67 = 63	CES92 = 67
CES18 = 57	CES43 = 64	CES68 = 69	CES93 = 79
CES19 = 74	CES44 = 98	CES69 = 80	CES94 = 52
CES20 = 68	CES45 = 73	CES70 = 63	CES95 = 76
CES21 = 89	CES46 = 67	CES71 = 63	CES96 = 78
CES22 = 81	CES47 = 60	CES72 = 87	CES97 = 77
CES23 = 92	CES48 = 48	CES73 = 56	CES98 = 71
CES24 = 92	CES49 = 64	CES74 = 87	CES99 = 65
CES25 = 74	CES50 = 74	CES75 = 66	



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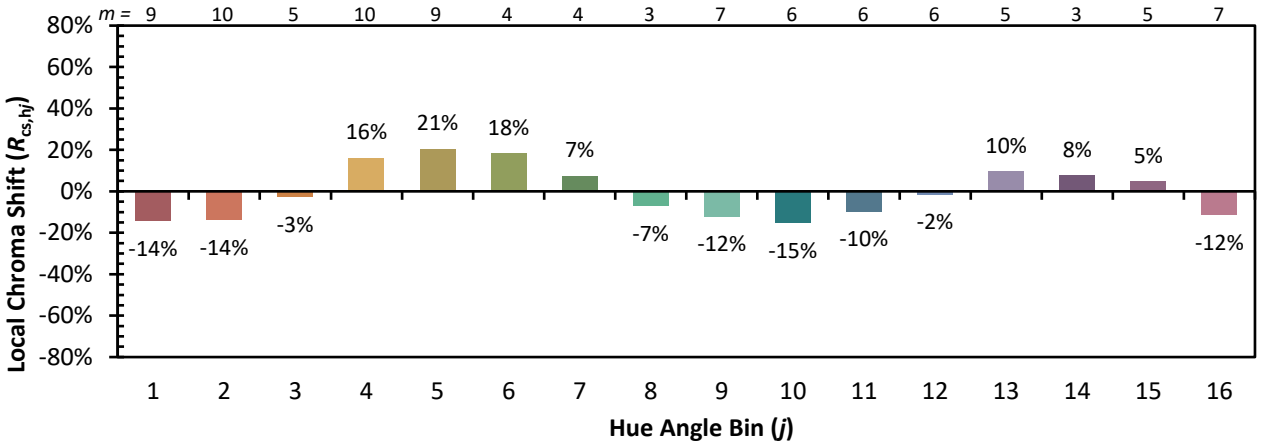
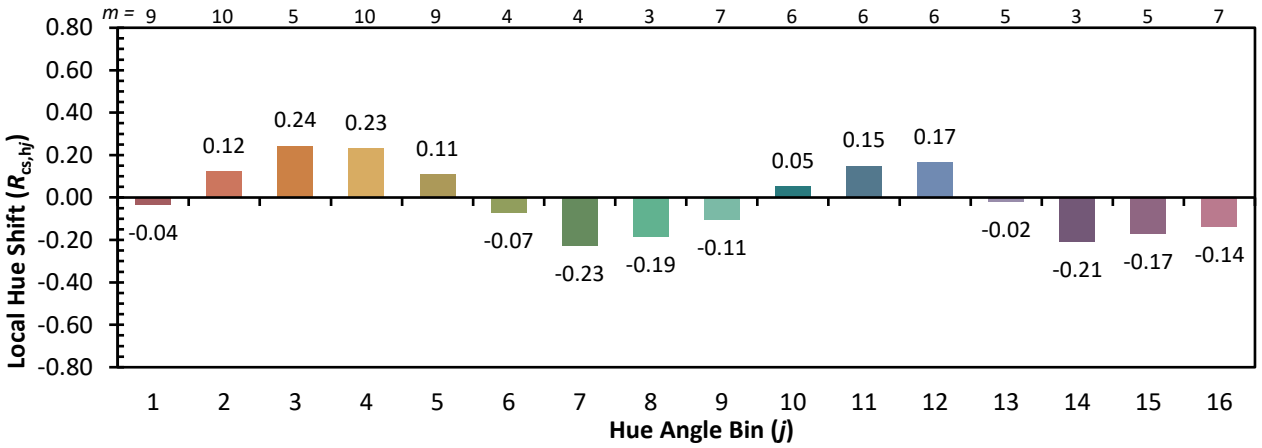
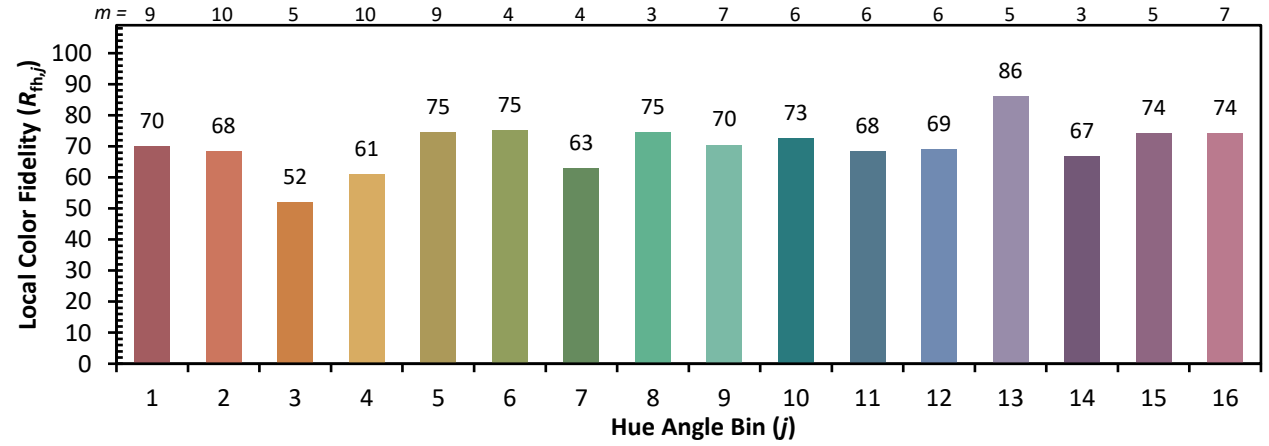
Color Rendition by Hue-Angle Bin







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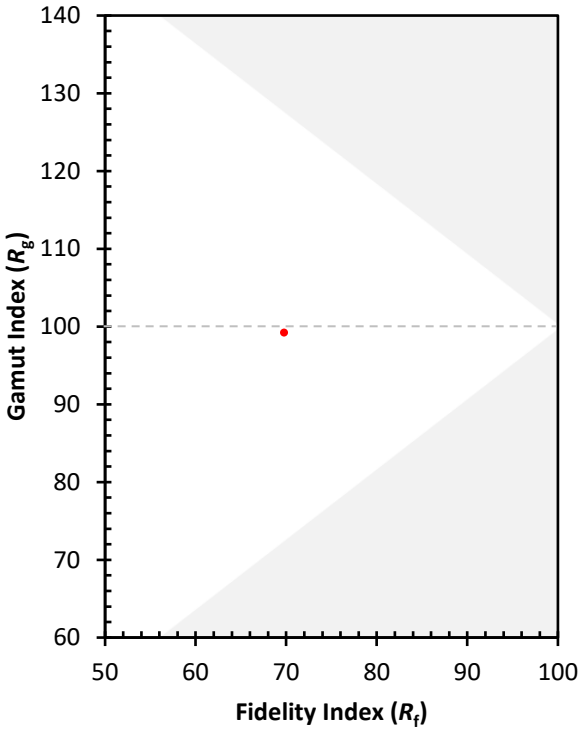
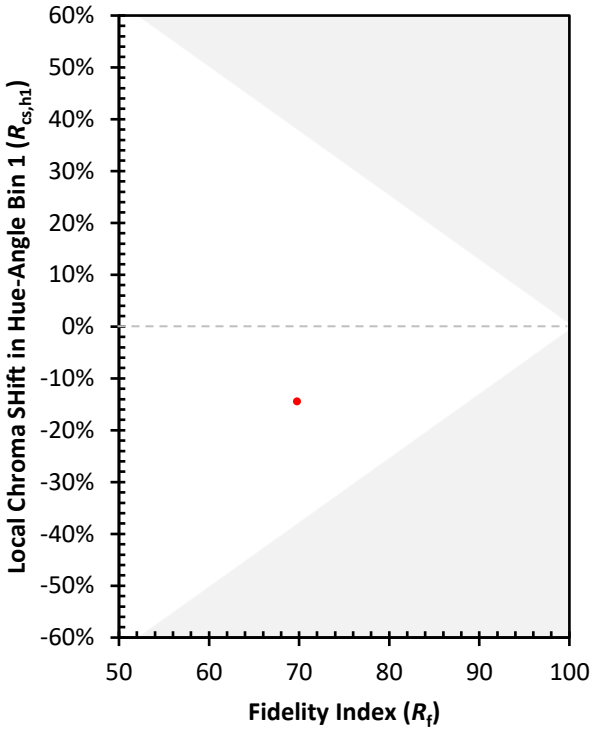
Measure Comparisons





(END OF REPORT)