

Classified  
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: io LED

Report Number: P895801

Luminaire Tested: **GRZ-10L-940-10x10-X-UNV-STD-1F**

Issue Date: 11/20/2024



**Test Information**

Test Method: LM-79-08  
Report Number: P895801  
Test Lab: INNOVATION CENTER(G3)  
Issue Date: 11/20/2024  
Manufacturer: COOPER LIGHTING SOLUTIONS (FORMERLY EATON)  
Product Line: io LED  
Catalog Number: GRZ-10L-940-10x10-X-UNV-STD-1F  
Description: iO LED 90CRI 4000K GRAZER 1000 lumens per ft WITH 10 deg x 10 deg OPTIC  
Light Source: 4000K CCT, 90 CRI LEDS  
Ballast/Driver: ELECTRONIC DRIVER

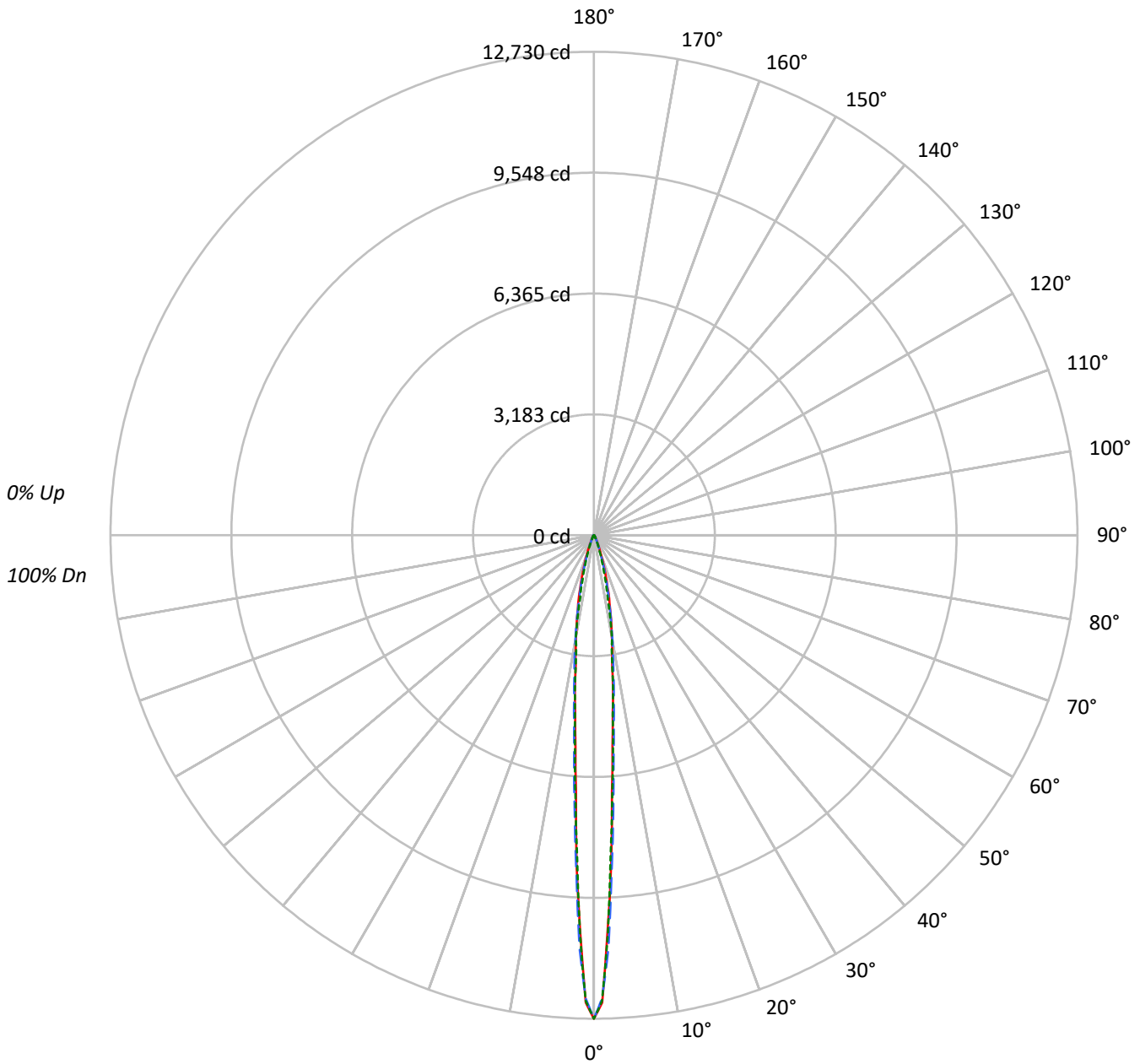
**Summary**

Lumens per Lamp: N/A  
Luminaire Lumens: 1018.7 lumens  
Efficiency: N/A  
Efficacy: 101.9 lumens/watt  
Spacing Criteria (0/90/45): 0.15 / 0.16 / 0.22  
Luminous Opening: Rectangular (W 1' x L: 0.17' x H: 0')  
CIE Type: Direct

Input Watts (W): 10  
Input Voltage (V): 120  
Input Current (Ain): NR  
Voltage Rise (V): NR  
Power Factor: NR  
Total Harmonic Distortion (THDi): NR  
Frequency (hertz): 60  
Stabilization Time: NR  
Operation Time: NR  
Ambient Temperature (°C): NR  
Test Distance: 25 FT

TEST NUMBER: P895801  
CATALOG NUMBER: GRZ-10L-940-10x10-X-UNV-STD-1F

### Luminous Intensity Polar Plot



— 0°-180°    - - - 45°-225°    - · - · - 90°-270°



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**COEFFICIENT OF UTILIZATION - ZONAL CAVITY METHOD:**

RF	20				20				20				20				20				
RC	80				70				50				30				10			0	
RW	70	50	30	10	70	50	30	10	50	30	10	50	30	10	50	30	10	50	30	10	0
RCR																					
0	119	119	119	119	116	116	116	116	111	111	111	106	106	106	102	102	102	100	99	98	96
1	115	113	111	109	113	111	109	107	107	105	104	103	102	101	100	99	98	97	96	95	93
2	111	107	104	102	109	106	103	101	103	100	99	100	98	96	97	96	95	95	93	91	90
3	108	103	99	96	106	102	98	96	99	96	94	97	95	93	95	93	91	93	90	89	87
4	104	99	95	92	103	98	94	92	96	93	91	94	92	90	93	90	89	90	88	86	85
5	102	96	92	89	100	95	91	88	93	90	88	92	89	87	90	88	86	88	86	84	83
6	99	93	89	86	98	92	88	86	91	88	85	90	87	85	88	86	84	87	84	82	81
7	96	90	86	83	95	90	86	83	89	85	83	88	85	82	87	84	82	85	82	80	79
8	94	88	84	81	93	87	84	81	86	83	81	86	83	80	85	82	80	83	80	78	78
9	92	86	82	79	91	85	82	79	85	81	79	84	81	79	83	80	78	82	79	77	76
10	90	84	80	77	89	83	80	77	83	79	77	82	79	77	82	79	77	82	79	77	76

**AVERAGE LUMINANCE (cd/sqm):**

	0°	45°	90°
0°	821990	821990	821990
5°	361978	386401	373198
10°	178394	183646	179961
15°	89991	82919	71454
20°	37759	31987	27156
25°	15304	12810	10794
30°	7307	6517	5771
35°	4603	4036	3200
40°	3287	3009	2251
45°	2950	2593	1872
50°	2803	2471	1457
55°	2510	2195	1250
60°	2015	1718	1214
65°	1940	1696	1283
70°	2001	1680	1152
75°	1796	1672	1123
80°	1673	1450	1041
85°	1259	1259	815



TEST NUMBER: P895801  
 CATALOG NUMBER: GRZ-10L-940-10x10-X-UNV-STD-1F

**ZONAL LUMENS:**

Zone	Lumens	% Fixture
0°-10°	478.4	47.0
10°-20°	353.8	34.7
20°-30°	96.5	9.5
30°-40°	34.1	3.3
40°-50°	21.5	2.1
50°-60°	16.0	1.6
60°-70°	10.5	1.0
70°-80°	6.3	0.6
80°-90°	1.7	0.2
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°-30°	928.7	91.2
0°-40°	962.8	94.5
0°-60°	1000.3	98.2
0°-90°	1018.7	100.0
90°-120°	0.0	0.0
90°-150°	0.0	0.0
90°-180°	0.0	0.0
0°-180°	1018.7	100.0

**CANDELA DISTRIBUTION:**

	0°	22.5°	45°	67.5°	90°	Flux
0°	12730	12730	12730	12730	12730	
5°	5585	5831	5961	5740	5758	464
15°	1346	1329	1240	1098	1069	382
25°	215	211	180	159	152	113
35°	58	57	51	47	41	38
45°	32	31	28	24	20	25
55°	22	21	20	14	11	20
65°	13	11	11	9	8	13
75°	7	6	7	6	4	8
85°	2	1	2	1	1	2
90°	0	0	0	0	0	



TEST NUMBER: P895801

CATALOG NUMBER: GRZ-10L-940-10x10-X-UNV-STD-1F

**CANDELA DISTRIBUTION (FULL):**

	0°	22.5°	45°	67.5°	90°
0°	12730.1	12730.1	12730.1	12730.1	12730.1
1°	12304.2	12058.2	12201.3	12195.7	12266.9
2°	10409.7	11180.2	10880.1	10847.3	10505.4
3°	8708.8	9049.6	8859.2	8971.1	8435.6
4°	6780.9	7206.3	7271.4	7125.0	6936.2
5°	5584.6	5831.2	5961.4	5740.4	5757.7
6°	4703.8	5016.1	4996.6	5002.7	4755.0
7°	4120.9	4283.5	4306.8	4165.4	4098.0
8°	3454.0	3734.0	3712.2	3605.9	3455.0
9°	3078.7	3250.7	3223.4	3033.6	2978.5
10°	2720.8	2815.3	2800.9	2592.1	2744.7
12.5°	1959.1	1968.1	1872.2	1758.7	1668.0
15°	1346.2	1328.9	1240.4	1097.8	1068.9
17.5°	884.1	886.3	766.6	659.2	642.4
20°	549.5	552.8	465.5	405.8	395.2
22.5°	345.8	330.7	276.7	251.7	244.9
25°	214.8	211.0	179.8	159.2	151.5
27.5°	145.3	142.5	116.9	107.4	106.8
30°	98.0	101.9	87.4	79.6	77.4
32.5°	74.0	74.0	67.9	62.3	56.2
35°	58.4	57.4	51.2	46.7	40.6
37.5°	44.5	46.7	41.2	37.9	31.8
40°	39.0	39.0	35.7	31.2	26.7
42.5°	34.5	35.7	31.2	26.7	22.3
45°	32.3	31.2	28.4	24.0	20.5
47.5°	29.5	28.9	26.2	21.1	17.8
50°	27.9	26.7	24.6	18.9	14.5
52.5°	26.2	24.6	22.3	16.6	12.3
55°	22.3	21.1	19.5	14.5	11.1
57.5°	19.5	17.2	16.2	12.3	10.0
60°	15.6	13.9	13.3	11.1	9.4
62.5°	13.9	12.7	12.3	10.6	8.9
65°	12.7	11.1	11.1	9.4	8.4
67.5°	11.7	10.0	10.0	8.4	7.2
70°	10.6	8.9	8.9	7.2	6.1
72.5°	8.9	7.2	7.8	6.1	5.5
75°	7.2	6.1	6.7	5.5	4.5
77.5°	6.1	5.0	5.0	4.5	3.3
80°	4.5	3.9	3.9	3.3	2.8
82.5°	2.8	2.2	2.8	2.2	1.7
85°	1.7	1.1	1.7	1.1	1.1
87.5°	0.6	0.6	0.6	0.6	0.6
90°	0.0	0.0	0.0	0.0	0.0

Cooper Lighting Solutions Photometric Lab  
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Report Prepared for

Cooper Lighting Solutions

(formerly Eaton)

iO LED

Report Number: SP1-2101-124-4

Luminaire Tested: GRZ-05L-940-10X10-X-UNV-STD-2F

Test Date: 02/11/2021

**Test Information**

Test Method: LM-79-08  
 Report Number: SP1-2101-124-4  
 Test Lab: COOPER LIGHTING SOLUTIONS  
 Photometer: SP1  
 Measurement Geometry: 4π  
 Issue Date: 02/11/2021  
 Manufacturer: COOPER LIGHTING SOLUTIONS (FORMERLY EATON)  
 Product Line: iO LED  
 Catalog Number: **GRZ-05L-940-10X10-X-UNV-STD-2F**  
 Description: IO LED Wall Grazer GRZ

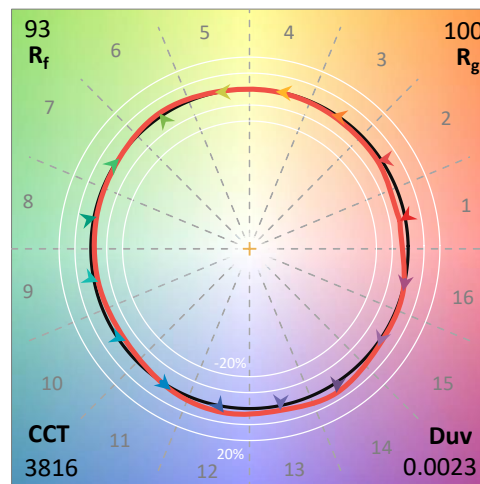
**Spectral Parameters**

CCT (K): 3816  
 CIE u': 0.2273  
 CIE v': 0.5079  
 Duv: 0.0023  
 CIE x: 0.3907  
 CIE y: 0.3879  
 CIE z: 0.2214  
 Peak Wavelength (nm): 614  
 Dominant Wavelength (nm): 578  
 Purity: 33.8  
  
 Rf: 93.1  
 Rg: 100.2

CRI (Ra):	93.3		
R1:	93.7	R9:	69.2
R2:	94.3	R10:	85.8
R3:	93.9	R11:	94.6
R4:	94.7	R12:	78.9
R5:	92.9	R13:	93.7
R6:	92.1	R14:	96.1
R7:	95.7		
R8:	88.8		

**Test Conditions**

Stabilization Time: 162M  
 Operation Time: 12H  
 Room Temperature (°C) / RH%: 25.1/41%  
 Sphere Temperature (°C): 24.1



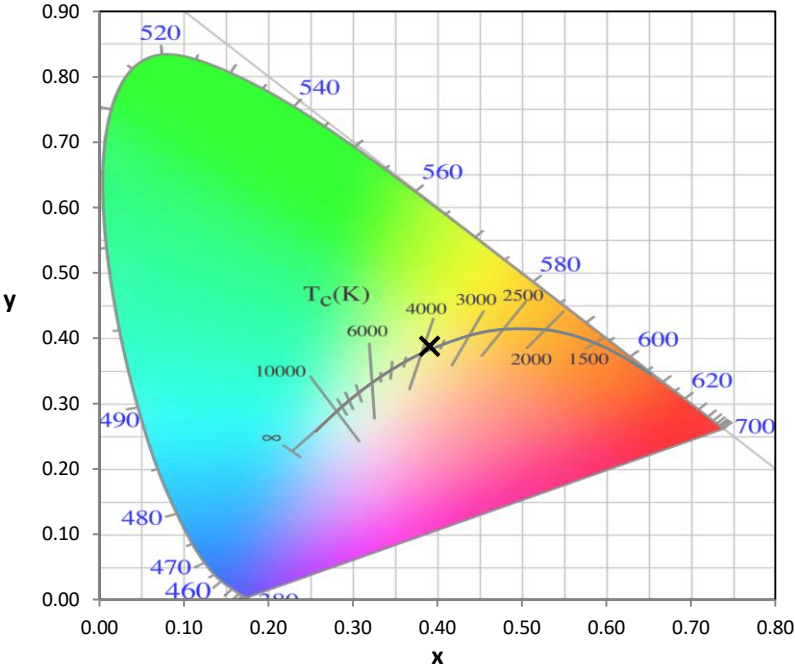


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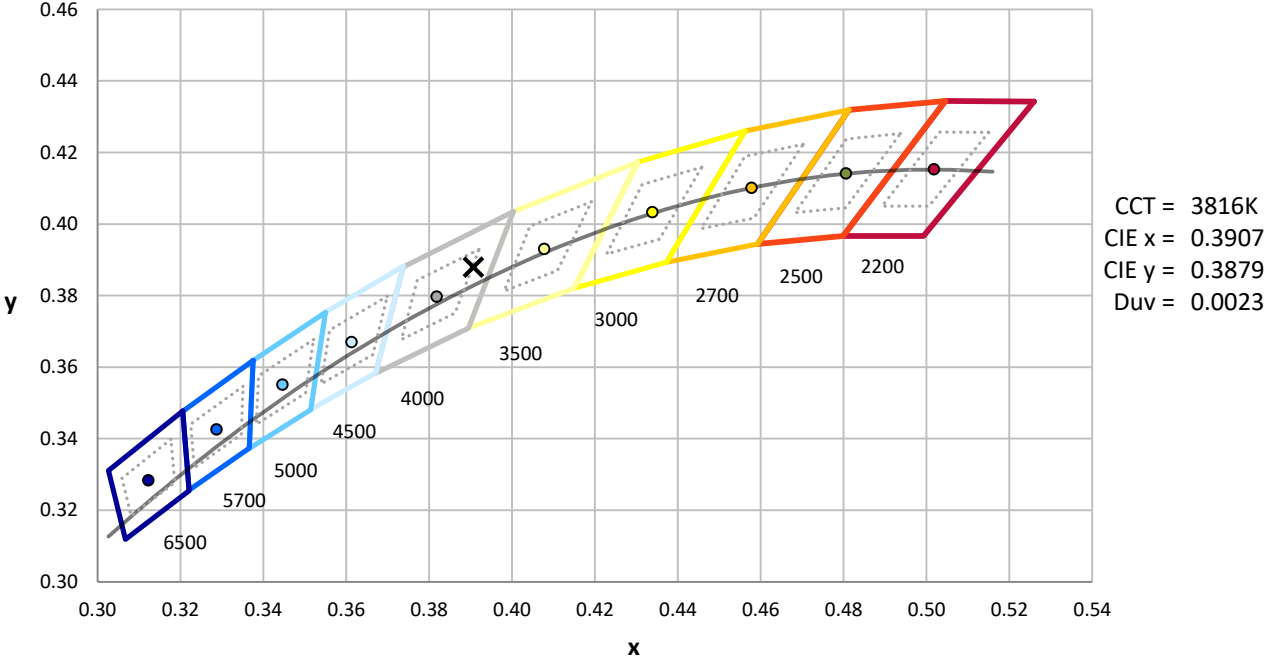
Measurement and Test Equipment			
Instrument	Identification Number	Calibration Date	Calibration Due Date
Photometer	IN0058	1/31/2021	7/31/2021
Power Meter	IN0071	12/1/2020	12/1/2021
AC Power Source	IN0063	12/1/2020	12/1/2021
DC Power Source	IN0208	12/1/2020	12/1/2021
Sphere Thermometer	IN0085	12/1/2020	12/1/2021
Room Thermometer	IN0046	12/1/2020	12/1/2021

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CIE 1931 Chromaticity Diagram



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

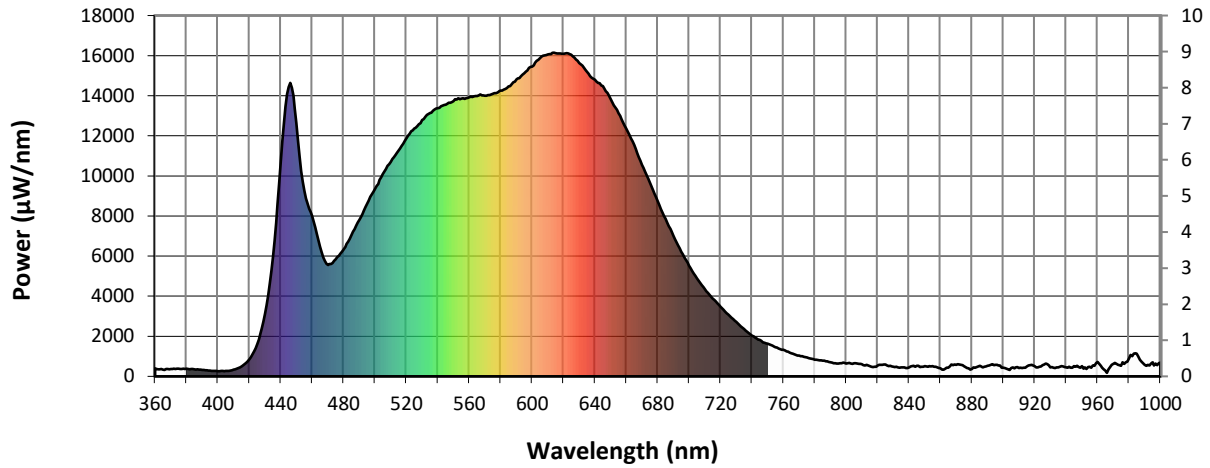


CCT = 3816K  
 CIE x = 0.3907  
 CIE y = 0.3879  
 Duv = 0.0023

Point lies inside the ANSI 4000K 7-step quadrangle

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**Photopic Flux vs. Wavelength**

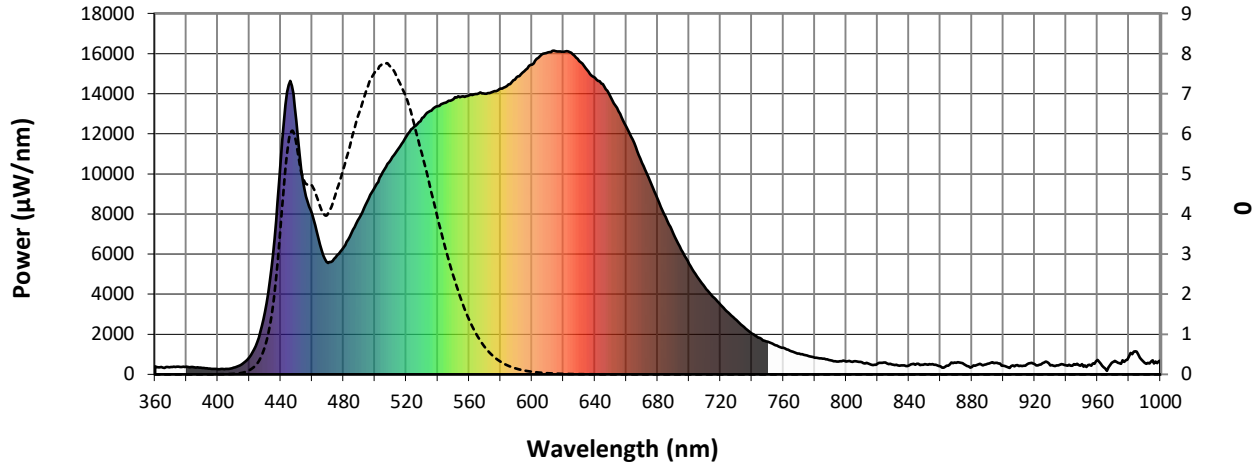


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λ (nm)	Power (µW/nm)	Lumens (φ/nm)	λ (nm)	Power (µW/nm)	Lumens (φ/nm)	λ (nm)	Power (µW/nm)	Lumens (φ/nm)	λ (nm)	Power (µW/nm)	Lumens (φ/nm)	λ (nm)	Power (µW/nm)	Lumens (φ/nm)
360	405	0.0	490	7814	1.1	620	16090	4.2	750	1625	0.0	880	367	0.0
365	335	0.0	495	8606	1.6	625	16048	3.5	755	1453	0.0	885	533	0.0
370	363	0.0	500	9360	2.1	630	15632	2.8	760	1318	0.0	890	535	0.0
375	388	0.0	505	10093	2.8	635	15196	2.3	765	1153	0.0	895	583	0.0
380	378	0.0	510	10690	3.7	640	14791	1.8	770	1033	0.0	900	438	0.0
385	344	0.0	515	11247	4.7	645	14481	1.4	775	948	0.0	905	410	0.0
390	323	0.0	520	11881	5.8	650	13840	1.0	780	831	0.0	910	413	0.0
395	292	0.0	525	12359	6.6	655	13125	0.8	785	778	0.0	915	489	0.0
400	261	0.0	530	12780	7.5	660	12353	0.5	790	708	0.0	920	518	0.0
405	272	0.0	535	13137	8.1	665	11536	0.4	795	643	0.0	925	563	0.0
410	331	0.0	540	13369	8.7	670	10559	0.2	800	645	0.0	930	452	0.0
415	497	0.0	545	13551	9.0	675	9658	0.2	805	648	0.0	935	454	0.0
420	847	0.0	550	13731	9.3	680	8746	0.1	810	610	0.0	940	446	0.0
425	1620	0.0	555	13860	9.5	685	7852	0.1	815	505	0.0	945	516	0.0
430	3114	0.0	560	13921	9.5	690	7031	0.0	820	544	0.0	950	514	0.0
435	5958	0.1	565	13987	9.3	695	6210	0.0	825	591	0.0	955	487	0.0
440	10649	0.2	570	14001	9.1	700	5517	0.0	830	484	0.0	960	723	0.0
445	14435	0.3	575	14097	8.8	705	4890	0.0	835	440	0.0	965	281	0.0
450	12623	0.3	580	14256	8.5	710	4342	0.0	840	452	0.0	970	627	0.0
455	9257	0.3	585	14467	8.0	715	3886	0.0	845	527	0.0	975	532	0.0
460	8011	0.3	590	14814	7.7	720	3470	0.0	850	515	0.0	980	902	0.0
465	6473	0.3	595	15120	7.2	725	3080	0.0	855	517	0.0	985	1126	0.0
470	5561	0.3	600	15449	6.7	730	2713	0.0	860	406	0.0	990	578	0.0
475	5845	0.5	605	15859	6.1	735	2357	0.0	865	434	0.0	995	699	0.0
480	6344	0.6	610	16059	5.5	740	2032	0.0	870	578	0.0	1000	687	0.0
485	7040	0.8	615	16120	4.9	745	1812	0.0	875	517	0.0			

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**Scotopic Flux vs. Wavelength**



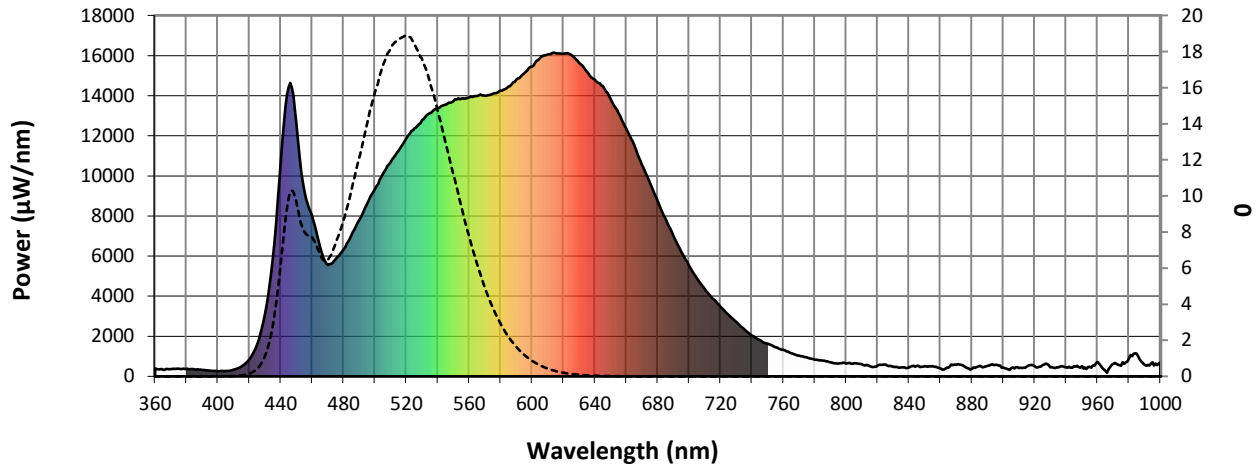
**Scotopic Lumens: 1669.3**

**S/P: 1.71**

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	405	0.0	490	7814	12.0	620	16090	0.2	750	1625	0.0	880	367	0.0
365	335	0.0	495	8606	13.9	625	16048	0.1	755	1453	0.0	885	533	0.0
370	363	0.0	500	9360	15.7	630	15632	0.1	760	1318	0.0	890	535	0.0
375	388	0.0	505	10093	17.2	635	15196	0.1	765	1153	0.0	895	583	0.0
380	378	0.0	510	10690	18.1	640	14791	0.0	770	1033	0.0	900	438	0.0
385	344	0.0	515	11247	18.6	645	14481	0.0	775	948	0.0	905	410	0.0
390	323	0.0	520	11881	18.9	650	13840	0.0	780	831	0.0	910	413	0.0
395	292	0.0	525	12359	18.5	655	13125	0.0	785	778	0.0	915	489	0.0
400	261	0.0	530	12780	17.6	660	12353	0.0	790	708	0.0	920	518	0.0
405	272	0.0	535	13137	16.4	665	11536	0.0	795	643	0.0	925	563	0.0
410	331	0.0	540	13369	14.8	670	10559	0.0	800	645	0.0	930	452	0.0
415	497	0.1	545	13551	13.0	675	9658	0.0	805	648	0.0	935	454	0.0
420	847	0.1	550	13731	11.2	680	8746	0.0	810	610	0.0	940	446	0.0
425	1620	0.4	555	13860	9.5	685	7852	0.0	815	505	0.0	945	516	0.0
430	3114	1.1	560	13921	7.8	690	7031	0.0	820	544	0.0	950	514	0.0
435	5958	2.7	565	13987	6.3	695	6210	0.0	825	591	0.0	955	487	0.0
440	10649	6.0	570	14001	4.9	700	5517	0.0	830	484	0.0	960	723	0.0
445	14435	9.7	575	14097	3.8	705	4890	0.0	835	440	0.0	965	281	0.0
450	12623	9.8	580	14256	2.9	710	4342	0.0	840	452	0.0	970	627	0.0
455	9257	8.1	585	14467	2.2	715	3886	0.0	845	527	0.0	975	532	0.0
460	8011	7.7	590	14814	1.6	720	3470	0.0	850	515	0.0	980	902	0.0
465	6473	6.8	595	15120	1.2	725	3080	0.0	855	517	0.0	985	1126	0.0
470	5561	6.4	600	15449	0.9	730	2713	0.0	860	406	0.0	990	578	0.0
475	5845	7.3	605	15859	0.6	735	2357	0.0	865	434	0.0	995	699	0.0
480	6344	8.6	610	16059	0.4	740	2032	0.0	870	578	0.0	1000	687	0.0
485	7040	10.2	615	16120	0.3	745	1812	0.0	875	517	0.0			

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**Melanopic Flux vs. Wavelength**



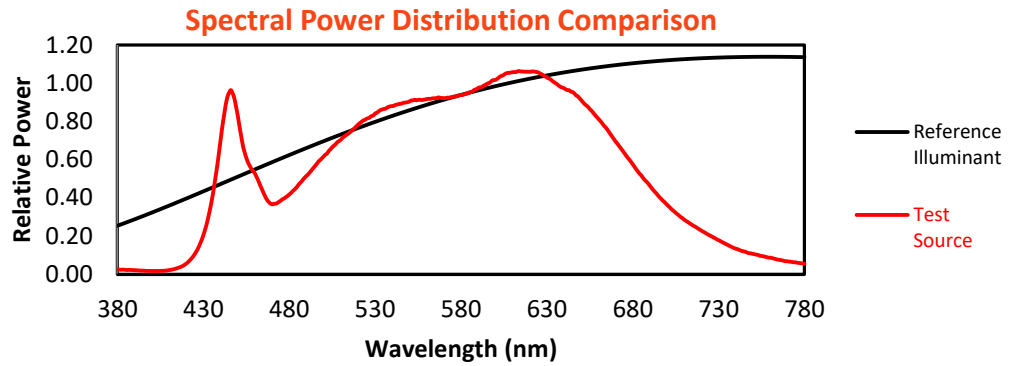
**Melanopic Lumens: 670.2**

**M/P: 0.69**

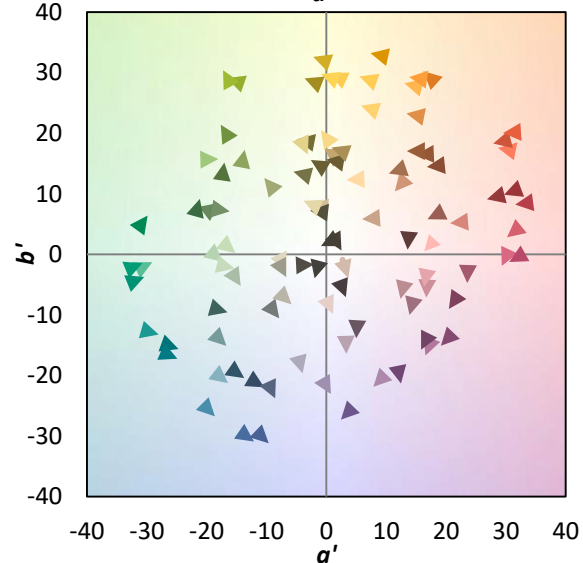
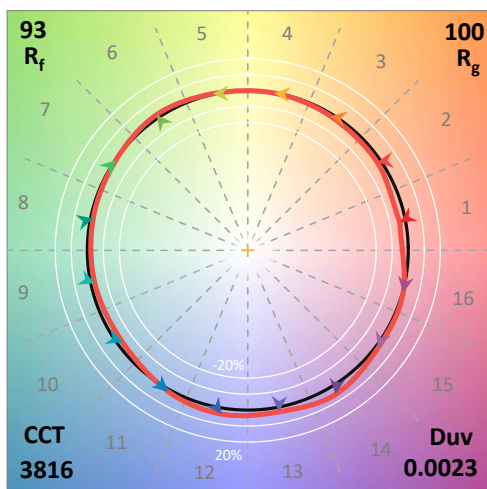
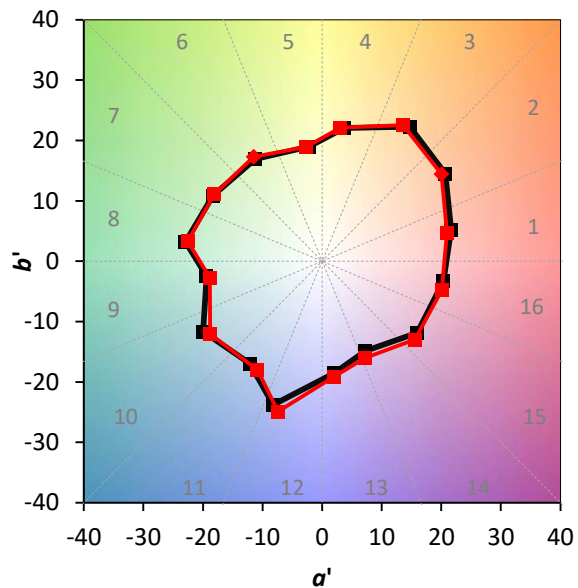
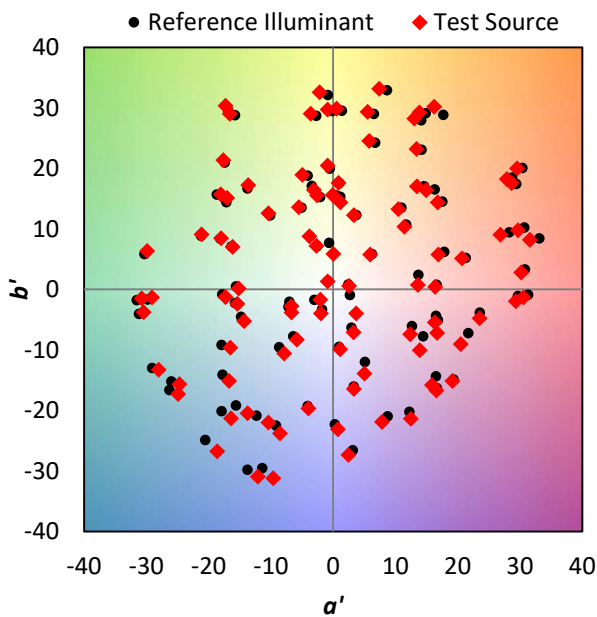
λ (nm)	Power (µW/nm)	Lumens (φ/nm)	λ (nm)	Power (µW/nm)	Lumens (φ/nm)	λ (nm)	Power (µW/nm)	Lumens (φ/nm)	λ (nm)	Power (µW/nm)	Lumens (φ/nm)	λ (nm)	Power (µW/nm)	Lumens (φ/nm)
360	405	0.0	490	7814	6.5	620	16090	0.0	750	1625	0.0	880	367	0.0
365	335	0.0	495	8606	7.1	625	16048	0.0	755	1453	0.0	885	533	0.0
370	363	0.0	500	9360	7.5	630	15632	0.0	760	1318	0.0	890	535	0.0
375	388	0.0	505	10093	7.7	635	15196	0.0	765	1153	0.0	895	583	0.0
380	378	0.0	510	10690	7.7	640	14791	0.0	770	1033	0.0	900	438	0.0
385	344	0.0	515	11247	7.3	645	14481	0.0	775	948	0.0	905	410	0.0
390	323	0.0	520	11881	6.9	650	13840	0.0	780	831	0.0	910	413	0.0
395	292	0.0	525	12359	6.3	655	13125	0.0	785	778	0.0	915	489	0.0
400	261	0.0	530	12780	5.5	660	12353	0.0	790	708	0.0	920	518	0.0
405	272	0.0	535	13137	4.7	665	11536	0.0	795	643	0.0	925	563	0.0
410	331	0.0	540	13369	3.9	670	10559	0.0	800	645	0.0	930	452	0.0
415	497	0.0	545	13551	3.1	675	9658	0.0	805	648	0.0	935	454	0.0
420	847	0.1	550	13731	2.5	680	8746	0.0	810	610	0.0	940	446	0.0
425	1620	0.3	555	13860	1.9	685	7852	0.0	815	505	0.0	945	516	0.0
430	3114	0.7	560	13921	1.4	690	7031	0.0	820	544	0.0	950	514	0.0
435	5958	1.6	565	13987	1.0	695	6210	0.0	825	591	0.0	955	487	0.0
440	10649	3.6	570	14001	0.7	700	5517	0.0	830	484	0.0	960	723	0.0
445	14435	5.7	575	14097	0.5	705	4890	0.0	835	440	0.0	965	281	0.0
450	12623	5.8	580	14256	0.3	710	4342	0.0	840	452	0.0	970	627	0.0
455	9257	4.9	585	14467	0.2	715	3886	0.0	845	527	0.0	975	532	0.0
460	8011	4.7	590	14814	0.1	720	3470	0.0	850	515	0.0	980	902	0.0
465	6473	4.2	595	15120	0.1	725	3080	0.0	855	517	0.0	985	1126	0.0
470	5561	4.0	600	15449	0.1	730	2713	0.0	860	406	0.0	990	578	0.0
475	5845	4.5	605	15859	0.0	735	2357	0.0	865	434	0.0	995	699	0.0
480	6344	5.1	610	16059	0.0	740	2032	0.0	870	578	0.0	1000	687	0.0
485	7040	5.8	615	16120	0.0	745	1812	0.0	875	517	0.0			

**Summary**

$R_f = 93.1$   
 $R_g = 100.2$   
 CIE  $R_a = 93.3$   
 $R_9 = 69.2$

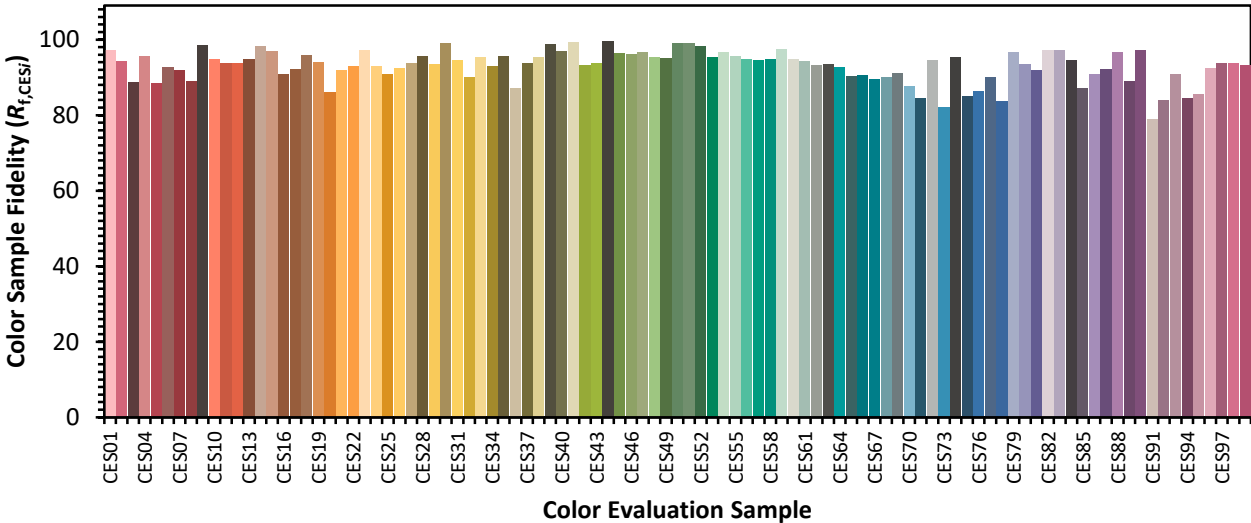


**Color Vector Graphics**

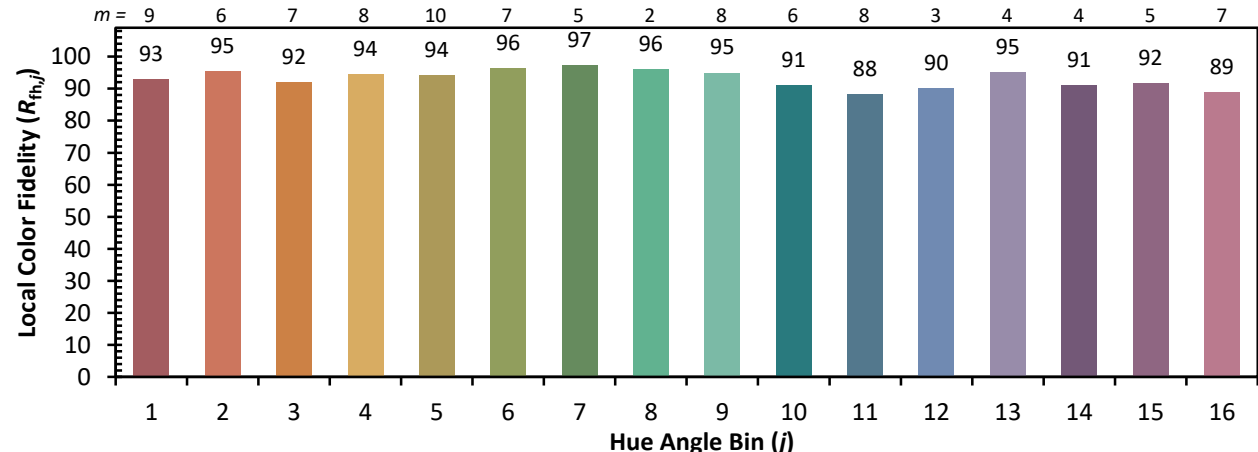
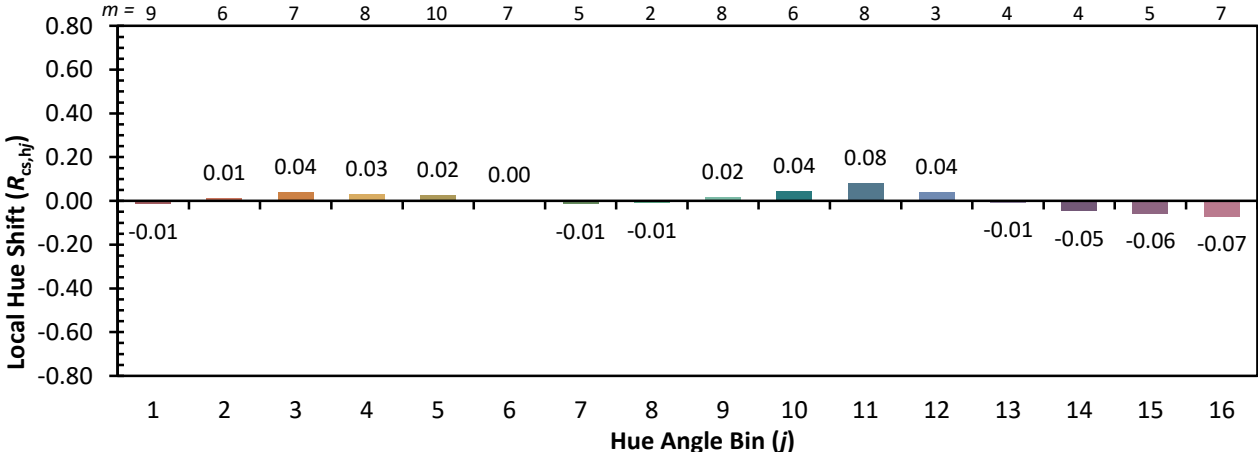
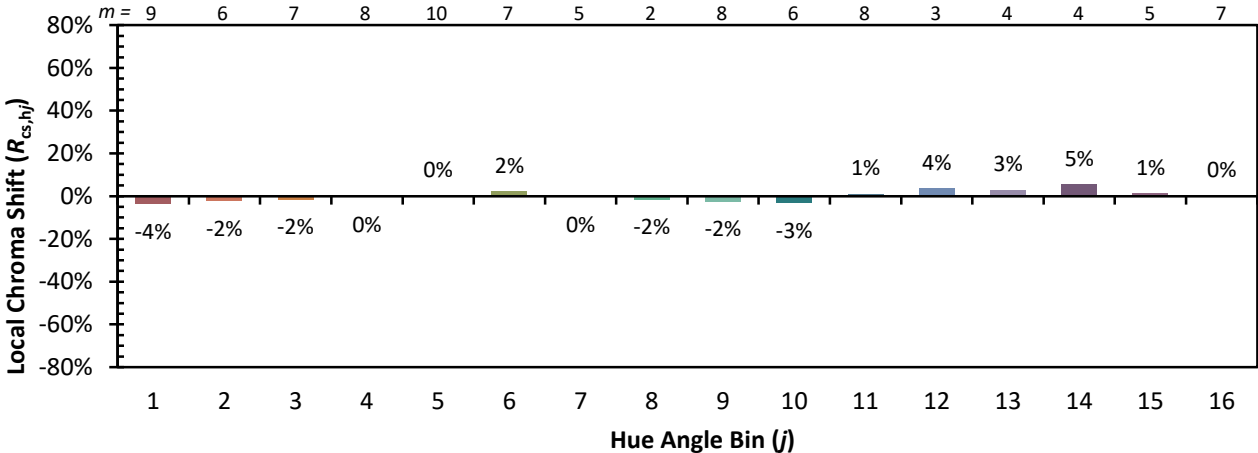


**Individual Sample Fidelity Index ( $R_{f,i}$ )**

CES01 = 86	CES26 = 93	CES51 = 99	CES76 = 86
CES02 = 62	CES27 = 94	CES52 = 98	CES77 = 90
CES03 = 31	CES28 = 96	CES53 = 95	CES78 = 84
CES04 = 69	CES29 = 94	CES54 = 97	CES79 = 97
CES05 = 49	CES30 = 99	CES55 = 96	CES80 = 94
CES06 = 51	CES31 = 95	CES56 = 95	CES81 = 92
CES07 = 42	CES32 = 90	CES57 = 94	CES82 = 97
CES08 = 41	CES33 = 96	CES58 = 95	CES83 = 97
CES09 = 29	CES34 = 93	CES59 = 97	CES84 = 95
CES10 = 74	CES35 = 96	CES60 = 95	CES85 = 87
CES11 = 57	CES36 = 87	CES61 = 94	CES86 = 91
CES12 = 63	CES37 = 94	CES62 = 93	CES87 = 92
CES13 = 43	CES38 = 95	CES63 = 94	CES88 = 97
CES14 = 74	CES39 = 99	CES64 = 93	CES89 = 89
CES15 = 71	CES40 = 97	CES65 = 90	CES90 = 97
CES16 = 47	CES41 = 99	CES66 = 91	CES91 = 79
CES17 = 49	CES42 = 93	CES67 = 90	CES92 = 84
CES18 = 56	CES43 = 94	CES68 = 90	CES93 = 91
CES19 = 71	CES44 = 100	CES69 = 91	CES94 = 85
CES20 = 66	CES45 = 96	CES70 = 88	CES95 = 86
CES21 = 85	CES46 = 96	CES71 = 85	CES96 = 93
CES22 = 78	CES47 = 97	CES72 = 95	CES97 = 94
CES23 = 91	CES48 = 96	CES73 = 82	CES98 = 94
CES24 = 90	CES49 = 95	CES74 = 95	CES99 = 93
CES25 = 71	CES50 = 99	CES75 = 85	

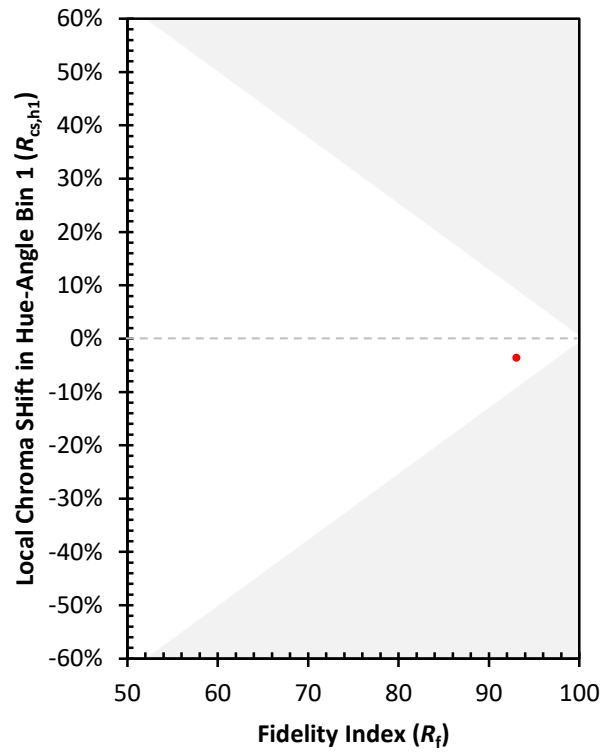
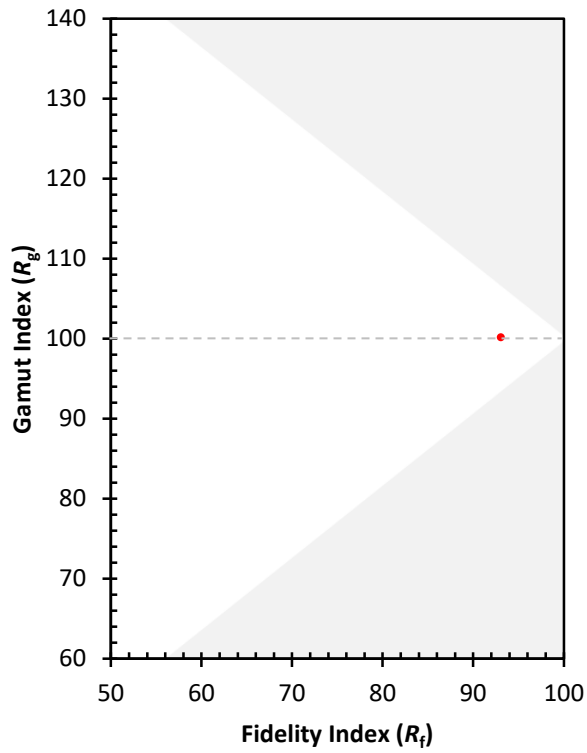


Color Rendition by Hue-Angle Bin





Measure Comparisons



(END OF REPORT)