

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: P895798

Luminaire Tested: **GRZ-10L-935-10x10-X-UNV-STD-1F**

Issue Date: 11/20/2024



**Test Information**

Test Method: LM-79-08  
Report Number: P895798  
Test Lab: INNOVATION CENTER(G3)  
Issue Date: 11/20/2024  
Manufacturer: COOPER LIGHTING SOLUTIONS (FORMERLY EATON)  
Product Line: io LED  
Catalog Number: GRZ-10L-935-10x10-X-UNV-STD-1F  
Description: iO LED 90CRI 3500K GRAZER 1000 lumens per ft WITH 10 deg x 10 deg OPTIC  
Light Source: 3500K CCT, 90 CRI LEDS  
Ballast/Driver: ELECTRONIC DRIVER

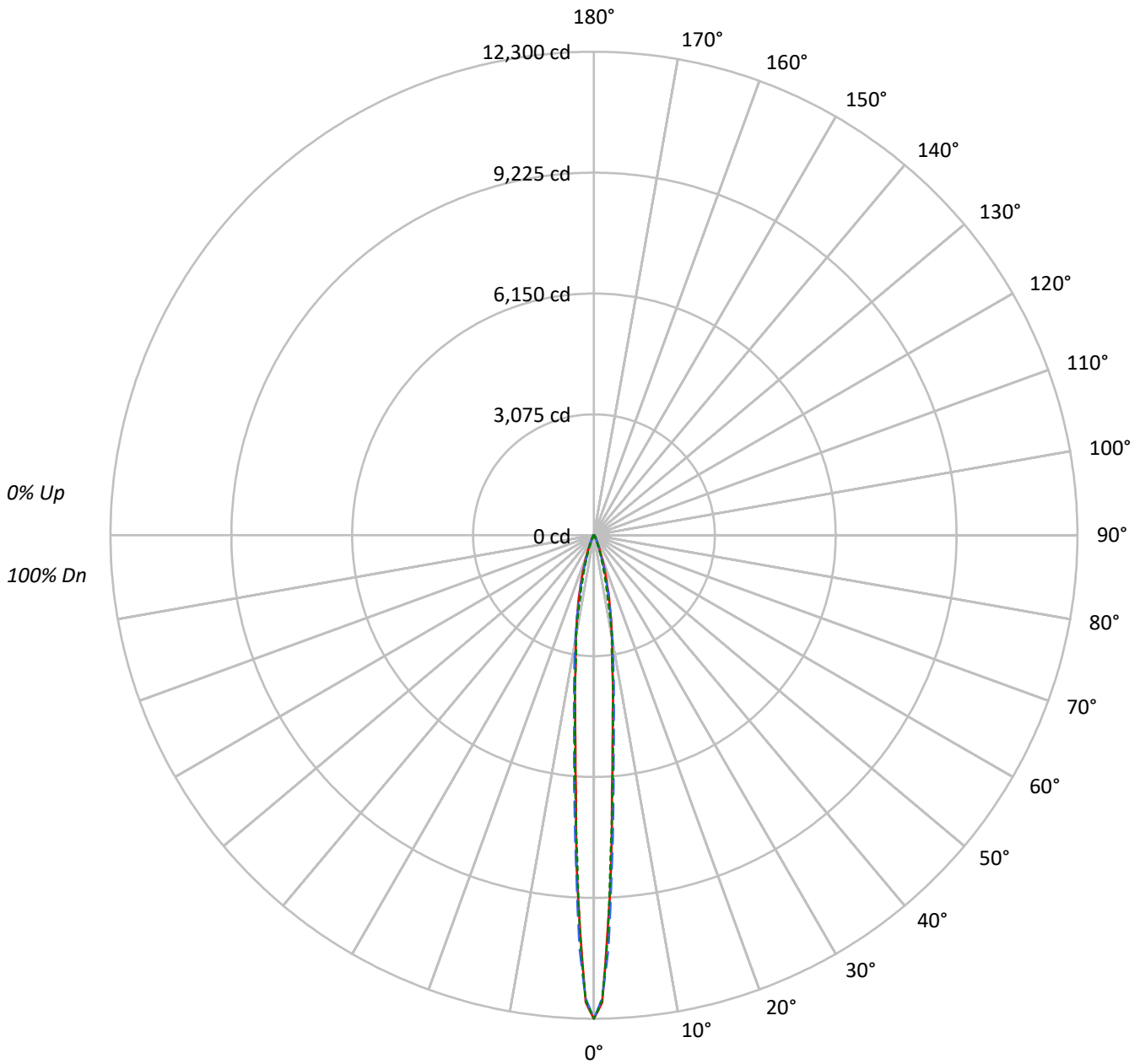
**Summary**

Lumens per Lamp: N/A  
Luminaire Lumens: 984.3 lumens  
Efficiency: N/A  
Efficacy: 98.4 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: P895798  
CATALOG NUMBER: GRZ-10L-935-10x10-X-UNV-STD-1F

### Luminous Intensity Polar Plot



0% Up  
100% Dn

— 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	100	100	100
1	115	113	111	109	113	111	109	107	107	105	104	103	102	101	100	99	98	96	96	96	96
2	111	107	104	102	109	106	103	101	103	100	99	100	98	96	97	96	95	93	93	93	93
3	108	103	99	96	106	102	98	96	99	96	94	97	95	93	95	93	91	90	90	90	90
4	104	99	95	92	103	98	94	92	96	93	91	94	92	90	93	90	89	87	87	87	87
5	102	96	92	89	100	95	91	88	93	90	88	92	89	87	90	88	86	85	85	85	85
6	99	93	89	86	98	92	88	86	91	88	85	90	87	85	88	86	84	83	83	83	83
7	96	90	86	83	95	90	86	83	89	85	83	88	85	82	87	84	82	81	81	81	81
8	94	88	84	81	93	87	84	81	86	83	81	86	83	80	85	82	80	79	79	79	79
9	92	86	82	79	91	85	82	79	85	81	79	84	81	79	83	80	78	78	78	78	78
10	90	84	80	77	89	83	80	77	83	79	77	82	79	77	82	79	77	76	76	76	76

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

	0°	45°	90°
0°	794192	794192	794192
5°	349734	373334	360572
10°	172362	177437	173876
15°	86950	80118	69041
20°	36481	30901	26242
25°	14791	12375	10423
30°	7061	6293	5577
35°	4454	3902	3090
40°	3169	2900	2175
45°	2858	2511	1808
50°	2702	2381	1406
55°	2432	2116	1205
60°	1950	1666	1175
65°	1879	1635	1238
70°	1945	1624	1114
75°	1746	1622	1073
80°	1599	1413	1004
85°	1185	1185	741



TEST NUMBER: P895798  
 CATALOG NUMBER: GRZ-10L-935-10x10-X-UNV-STD-1F

**ZONAL LUMENS:**

Zone	Lumens	% Fixture
0°-10°	462.2	47.0
10°-20°	341.8	34.7
20°-30°	93.3	9.5
30°-40°	33.0	3.3
40°-50°	20.8	2.1
50°-60°	15.4	1.6
60°-70°	10.1	1.0
70°-80°	6.1	0.6
80°-90°	1.6	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°	897.3	91.2
0°-40°	930.3	94.5
0°-60°	966.4	98.2
0°-90°	984.3	100.0
90°-120°	0.0	0.0
90°-150°	0.0	0.0
90°-180°	0.0	0.0
0°-180°	984.3	100.0

**CANDELA DISTRIBUTION:**

	0°	22.5°	45°	67.5°	90°	Flux
0°	12300	12300	12300	12300	12300	
5°	5396	5634	5760	5546	5563	448
15°	1301	1284	1198	1061	1033	369
25°	208	204	174	154	146	109
35°	56	55	50	45	39	37
45°	31	30	28	23	20	24
55°	22	20	19	14	11	19
65°	12	11	11	9	8	12
75°	7	6	6	5	4	8
85°	2	1	2	1	1	2
90°	0	0	0	0	0	



TEST NUMBER: P895798

CATALOG NUMBER: GRZ-10L-935-10x10-X-UNV-STD-1F

**CANDELA DISTRIBUTION (FULL):**

	0°	22.5°	45°	67.5°	90°
0°	12299.6	12299.6	12299.6	12299.6	12299.6
1°	11888.1	11650.4	11788.7	11783.3	11852.1
2°	10057.7	10802.1	10512.2	10480.5	10150.2
3°	8414.3	8743.6	8559.6	8667.8	8150.3
4°	6551.6	6962.6	7025.5	6884.1	6701.7
5°	5395.7	5634.0	5759.8	5546.3	5562.9
6°	4544.8	4846.5	4827.6	4833.6	4594.2
7°	3981.6	4138.6	4161.2	4024.6	3959.4
8°	3337.2	3607.7	3586.7	3483.9	3338.2
9°	2974.6	3140.7	3114.4	2931.0	2877.7
10°	2628.8	2720.1	2706.2	2504.4	2651.9
12.5°	1892.9	1901.5	1808.9	1699.2	1611.6
15°	1300.7	1283.9	1198.5	1060.7	1032.8
17.5°	854.2	856.3	740.7	636.9	620.7
20°	530.9	534.1	449.7	392.1	381.9
22.5°	334.1	319.5	267.3	243.2	236.7
25°	207.6	203.8	173.7	153.9	146.3
27.5°	140.4	137.7	112.9	103.8	103.2
30°	94.7	98.4	84.4	76.9	74.8
32.5°	71.5	71.5	65.6	60.2	54.3
35°	56.5	55.4	49.5	45.2	39.2
37.5°	43.0	45.2	39.8	36.6	30.7
40°	37.6	37.6	34.4	30.1	25.8
42.5°	33.3	34.4	30.1	25.8	21.6
45°	31.3	30.1	27.5	23.2	19.8
47.5°	28.5	27.9	25.3	20.4	17.2
50°	26.9	25.8	23.7	18.2	14.0
52.5°	25.3	23.7	21.6	16.1	11.9
55°	21.6	20.4	18.8	14.0	10.7
57.5°	18.8	16.7	15.6	11.9	9.7
60°	15.1	13.5	12.9	10.7	9.1
62.5°	13.5	12.3	11.9	10.3	8.6
65°	12.3	10.7	10.7	9.1	8.1
67.5°	11.3	9.7	9.7	8.1	7.0
70°	10.3	8.6	8.6	7.0	5.9
72.5°	8.6	7.0	7.5	5.9	5.4
75°	7.0	5.9	6.5	5.4	4.3
77.5°	5.9	4.8	4.8	4.3	3.2
80°	4.3	3.8	3.8	3.2	2.7
82.5°	2.7	2.2	2.7	2.2	1.6
85°	1.6	1.0	1.6	1.0	1.0
87.5°	0.6	0.6	0.6	0.6	0.6
90°	0.0	0.0	0.0	0.0	0.0

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Report Prepared for

Cooper Lighting Solutions

(formerly Eaton)

iO LED

Report Number: SP1-2101-124-3

Luminaire Tested: GRZ-05L-935-10X10-X-UNV-STD-2F

Test Date: 02/10/2021

**Test Information**

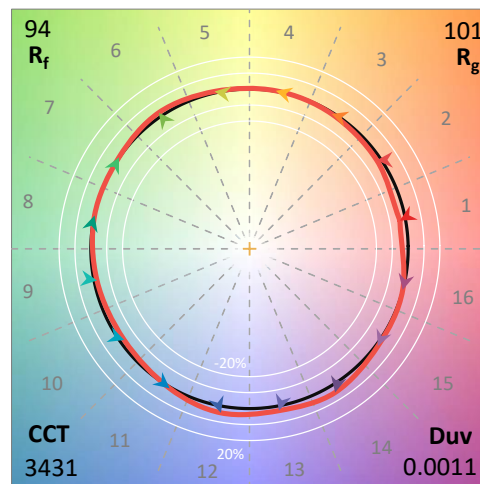
Test Method: LM-79-08  
 Report Number: SP1-2101-124-3  
 Test Lab: COOPER LIGHTING SOLUTIONS  
 Photometer: SP1  
 Measurement Geometry: 4π  
 Issue Date: 02/10/2021  
 Manufacturer: COOPER LIGHTING SOLUTIONS (FORMERLY EATON)  
 Product Line: iO LED  
 Catalog Number: **GRZ-05L-935-10X10-X-UNV-STD-2F**  
 Description: IO LED Wall Grazer GRZ

**Spectral Parameters**

CCT (K):	3431	CRI (Ra):	94.0	R9:	69.9
CIE u':	0.2369	R1:	94.7	R10:	88.4
CIE v':	0.5141	R2:	95.5	R11:	95.7
Duv:	0.0011	R3:	95.0	R12:	83.2
CIE x:	0.4104	R4:	95.4	R13:	94.8
CIE y:	0.3958	R5:	94.1	R14:	96.6
CIE z:	0.1938	R6:	94.0		
Peak Wavelength (nm):	624	R7:	95.4		
Dominant Wavelength (nm):	580	R8:	88.3		
Purity:	42.2				
Rf:	93.6				
Rg:	100.6				

**Test Conditions**

Stabilization Time: 57M  
 Operation Time: 12H  
 Room Temperature (°C) / RH%: 25.5/38%  
 Sphere Temperature (°C): 24.4



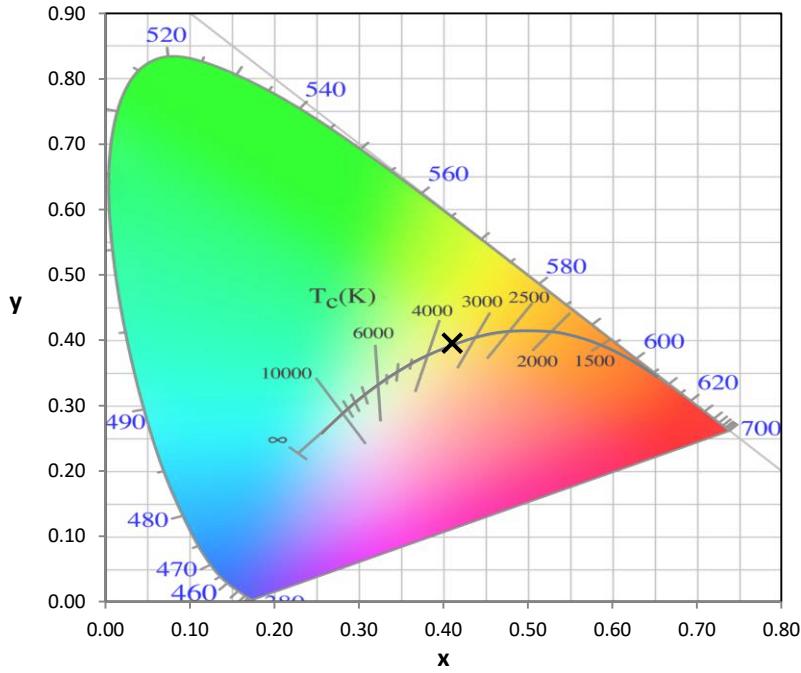


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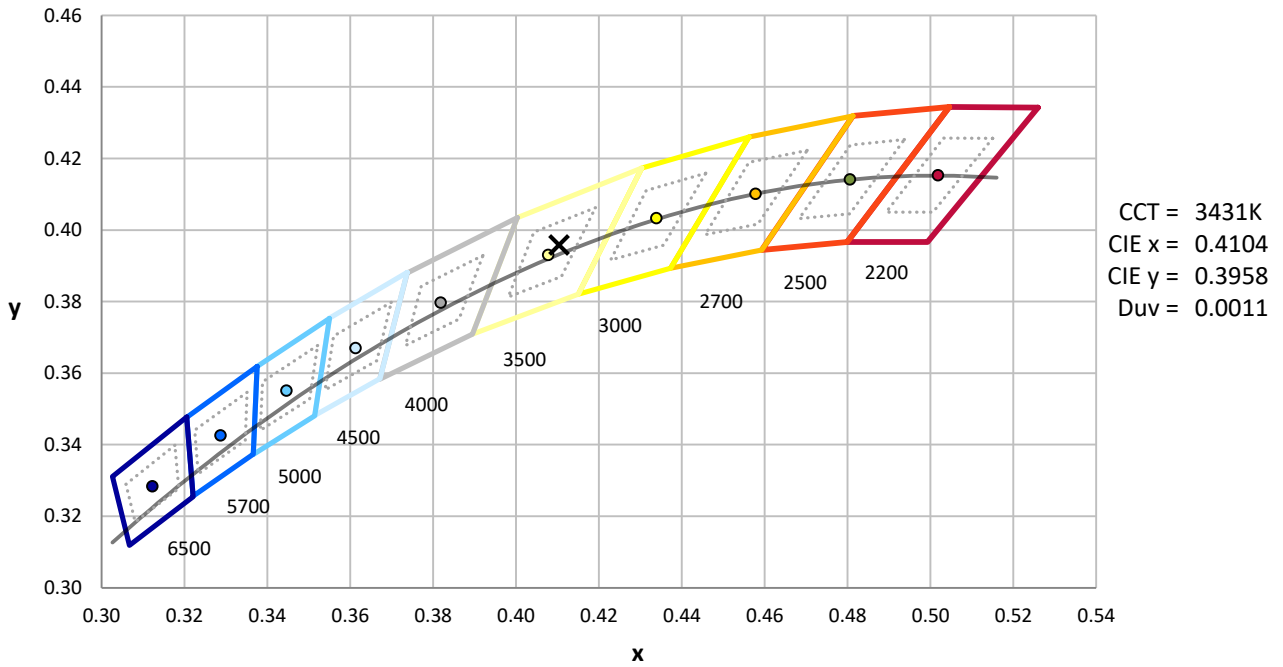
Measurement and Test Equipment			
Instrument	Identification Number	Calibration Date	Calibration Due Date
Photometer	IN0058	1/31/2021	7/31/2021
Power Meter	IN0071	12/1/2020	12/1/2021
AC Power Source	IN0063	12/1/2020	12/1/2021
DC Power Source	IN0208	12/1/2020	12/1/2021
Sphere Thermometer	IN0085	12/1/2020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

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**CIE 1931 Chromaticity Diagram**



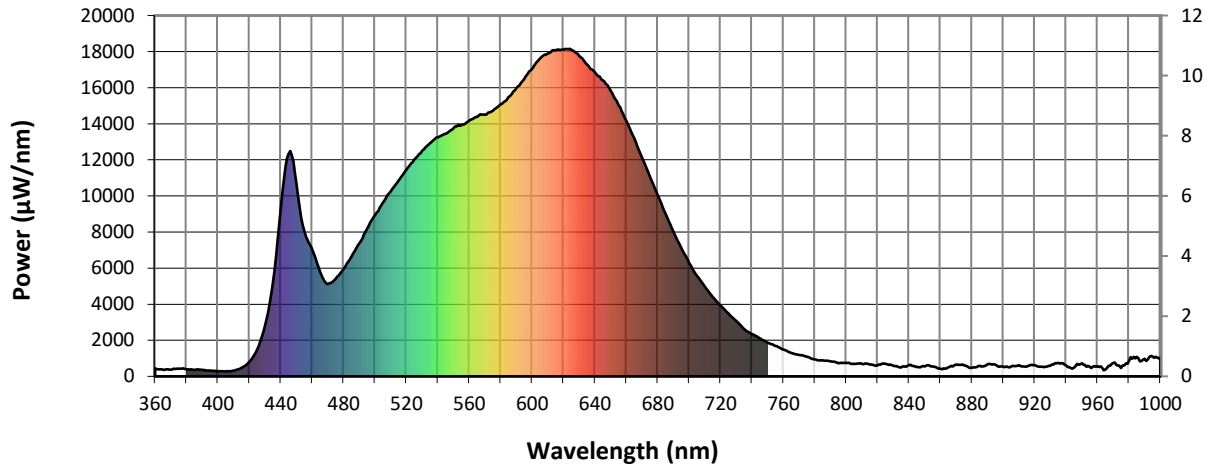
**CIE 1931 Chromaticity Diagram with 2017 ANSI 7-Step and 4-Step Quadrangles**



Point lies inside the ANSI 3500K 4-step quadrangle

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**Photopic Flux vs. Wavelength**

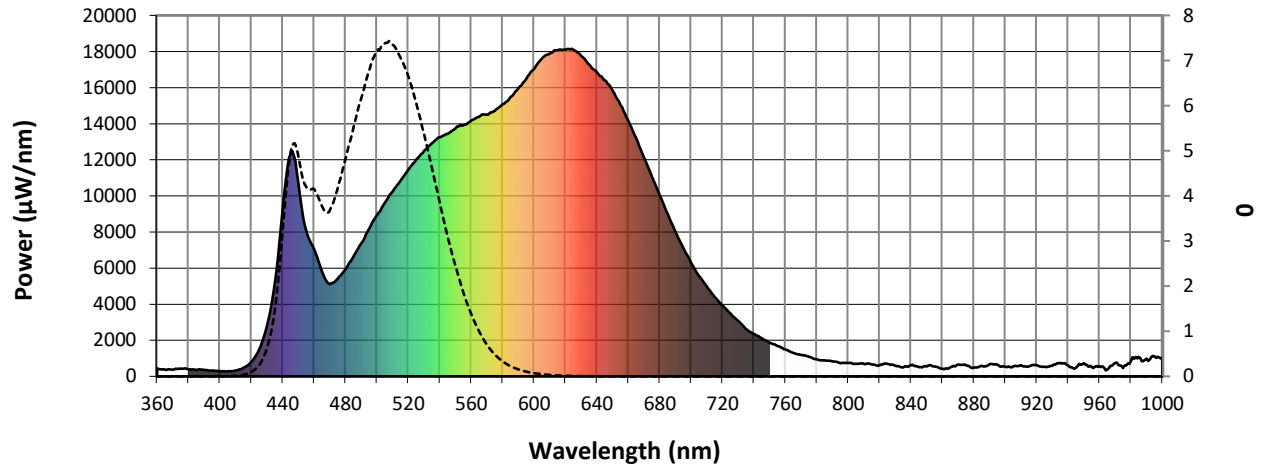


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λ (nm)	Power (µW/nm)	Lumens (φ/nm)	λ (nm)	Power (µW/nm)	Lumens (φ/nm)	λ (nm)	Power (µW/nm)	Lumens (φ/nm)	λ (nm)	Power (µW/nm)	Lumens (φ/nm)	λ (nm)	Power (µW/nm)	Lumens (φ/nm)
360	436	0.0	490	7373	1.0	620	18112	4.7	750	1864	0.0	880	485	0.0
365	370	0.0	495	8181	1.5	625	18107	4.0	755	1693	0.0	885	593	0.0
370	381	0.0	500	8943	2.0	630	17758	3.2	760	1498	0.0	890	677	0.0
375	432	0.0	505	9613	2.7	635	17291	2.6	765	1302	0.0	895	646	0.0
380	398	0.0	510	10245	3.5	640	16854	2.0	770	1180	0.0	900	526	0.0
385	359	0.0	515	10835	4.5	645	16410	1.6	775	1079	0.0	905	557	0.0
390	355	0.0	520	11465	5.6	650	15843	1.2	780	946	0.0	910	613	0.0
395	320	0.0	525	12004	6.4	655	15029	0.9	785	883	0.0	915	556	0.0
400	290	0.0	530	12512	7.4	660	14175	0.6	790	832	0.0	920	623	0.0
405	278	0.0	535	12925	8.0	665	13195	0.4	795	731	0.0	925	528	0.0
410	327	0.0	540	13254	8.6	670	12132	0.3	800	744	0.0	930	586	0.0
415	471	0.0	545	13437	8.9	675	11067	0.2	805	688	0.0	935	744	0.0
420	803	0.0	550	13744	9.3	680	10056	0.1	810	699	0.0	940	610	0.0
425	1501	0.0	555	13925	9.5	685	9011	0.1	815	651	0.0	945	486	0.0
430	2800	0.0	560	14164	9.6	690	8032	0.0	820	620	0.0	950	719	0.0
435	5221	0.1	565	14379	9.6	695	7112	0.0	825	686	0.0	955	527	0.0
440	9255	0.1	570	14511	9.4	700	6301	0.0	830	578	0.0	960	561	0.0
445	12350	0.3	575	14729	9.2	705	5570	0.0	835	502	0.0	965	364	0.0
450	10708	0.3	580	15069	9.0	710	4970	0.0	840	624	0.0	970	739	0.0
455	8053	0.3	585	15482	8.6	715	4396	0.0	845	523	0.0	975	457	0.0
460	7058	0.3	590	15975	8.3	720	3921	0.0	850	555	0.0	980	848	0.0
465	5809	0.3	595	16476	7.8	725	3489	0.0	855	553	0.0	985	1084	0.0
470	5111	0.3	600	17051	7.3	730	3068	0.0	860	424	0.0	990	980	0.0
475	5409	0.4	605	17607	6.8	735	2631	0.0	865	489	0.0	995	1093	0.0
480	5958	0.6	610	17893	6.1	740	2336	0.0	870	652	0.0	1000	1033	0.0
485	6631	0.8	615	18072	5.5	745	2108	0.0	875	622	0.0			

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**Scotopic Flux vs. Wavelength**



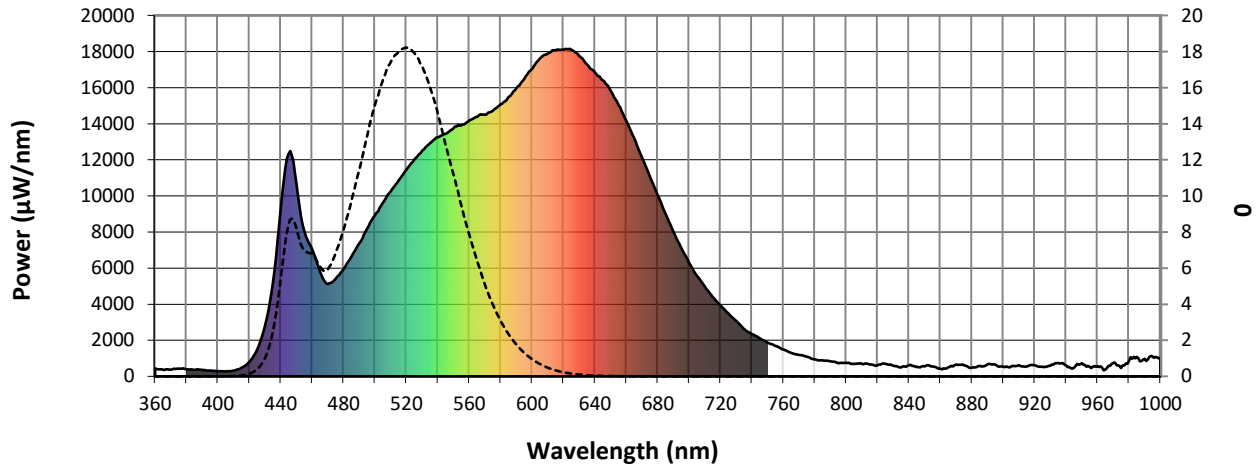
**Scotopic Lumens: 1600.8**

**S/P: 1.59**

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	436	0.0	490	7373	11.4	620	18112	0.2	750	1864	0.0	880	485	0.0
365	370	0.0	495	8181	13.2	625	18107	0.2	755	1693	0.0	885	593	0.0
370	381	0.0	500	8943	15.0	630	17758	0.1	760	1498	0.0	890	677	0.0
375	432	0.0	505	9613	16.3	635	17291	0.1	765	1302	0.0	895	646	0.0
380	398	0.0	510	10245	17.4	640	16854	0.0	770	1180	0.0	900	526	0.0
385	359	0.0	515	10835	18.0	645	16410	0.0	775	1079	0.0	905	557	0.0
390	355	0.0	520	11465	18.2	650	15843	0.0	780	946	0.0	910	613	0.0
395	320	0.0	525	12004	18.0	655	15029	0.0	785	883	0.0	915	556	0.0
400	290	0.0	530	12512	17.3	660	14175	0.0	790	832	0.0	920	623	0.0
405	278	0.0	535	12925	16.1	665	13195	0.0	795	731	0.0	925	528	0.0
410	327	0.0	540	13254	14.6	670	12132	0.0	800	744	0.0	930	586	0.0
415	471	0.0	545	13437	12.9	675	11067	0.0	805	688	0.0	935	744	0.0
420	803	0.1	550	13744	11.2	680	10056	0.0	810	699	0.0	940	610	0.0
425	1501	0.4	555	13925	9.5	685	9011	0.0	815	651	0.0	945	486	0.0
430	2800	1.0	560	14164	7.9	690	8032	0.0	820	620	0.0	950	719	0.0
435	5221	2.3	565	14379	6.5	695	7112	0.0	825	686	0.0	955	527	0.0
440	9255	5.2	570	14511	5.1	700	6301	0.0	830	578	0.0	960	561	0.0
445	12350	8.3	575	14729	4.0	705	5570	0.0	835	502	0.0	965	364	0.0
450	10708	8.3	580	15069	3.1	710	4970	0.0	840	624	0.0	970	739	0.0
455	8053	7.0	585	15482	2.4	715	4396	0.0	845	523	0.0	975	457	0.0
460	7058	6.8	590	15975	1.8	720	3921	0.0	850	555	0.0	980	848	0.0
465	5809	6.1	595	16476	1.3	725	3489	0.0	855	553	0.0	985	1084	0.0
470	5111	5.9	600	17051	1.0	730	3068	0.0	860	424	0.0	990	980	0.0
475	5409	6.8	605	17607	0.7	735	2631	0.0	865	489	0.0	995	1093	0.0
480	5958	8.0	610	17893	0.5	740	2336	0.0	870	652	0.0	1000	1033	0.0
485	6631	9.6	615	18072	0.3	745	2108	0.0	875	622	0.0			

REPORT NUMBER: SP1-2101-124-3

**Melanopic Flux vs. Wavelength**



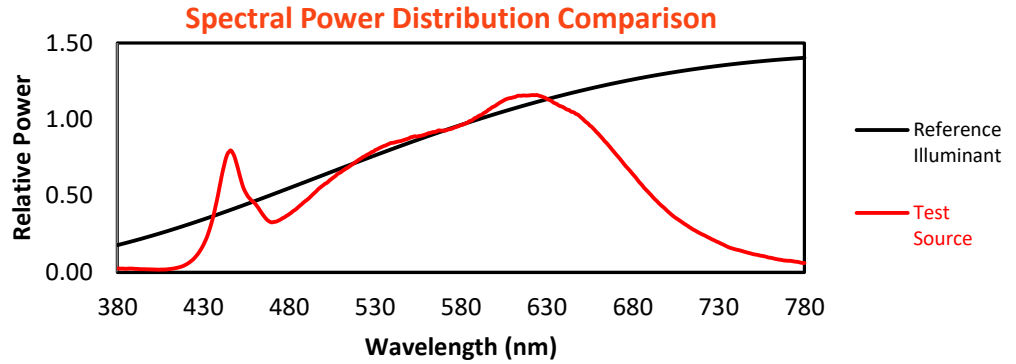
**Melanopic Lumens: 631**

**M/P: 0.63**

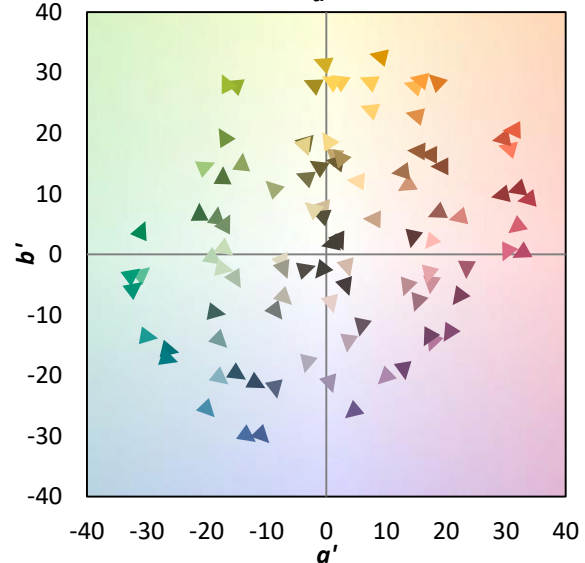
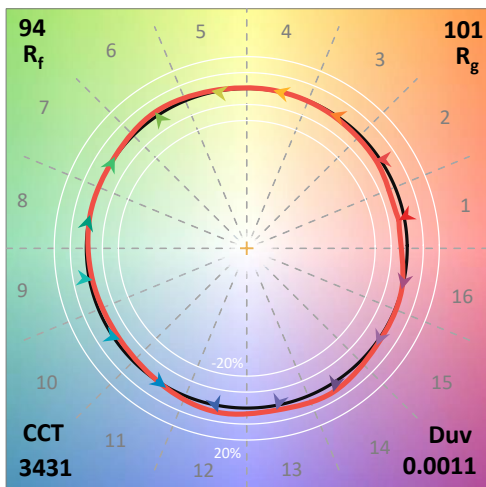
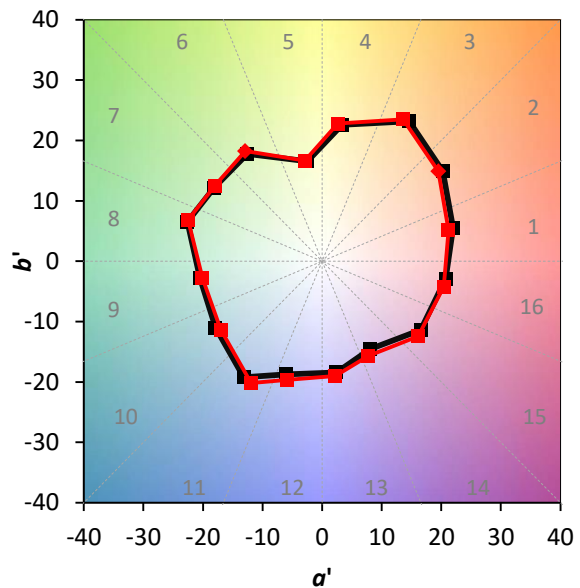
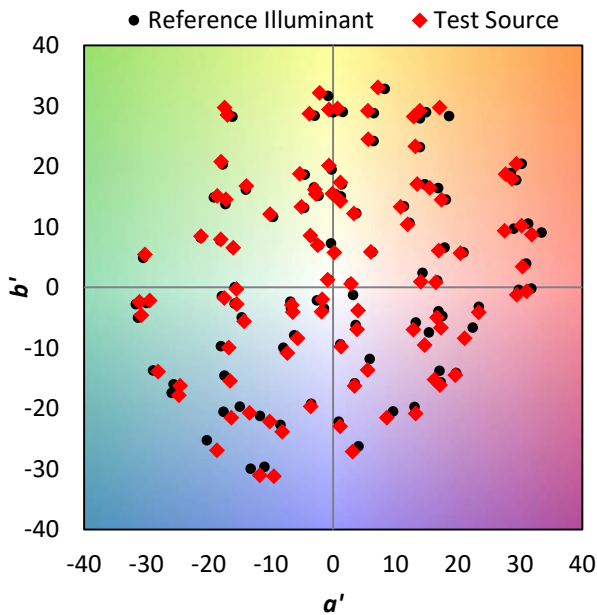
λ (nm)	Power (µW/nm)	Lumens (φ/nm)	λ (nm)	Power (µW/nm)	Lumens (φ/nm)	λ (nm)	Power (µW/nm)	Lumens (φ/nm)	λ (nm)	Power (µW/nm)	Lumens (φ/nm)	λ (nm)	Power (µW/nm)	Lumens (φ/nm)
360	436	0.0	490	7373	6.1	620	18112	0.0	750	1864	0.0	880	485	0.0
365	370	0.0	495	8181	6.8	625	18107	0.0	755	1693	0.0	885	593	0.0
370	381	0.0	500	8943	7.2	630	17758	0.0	760	1498	0.0	890	677	0.0
375	432	0.0	505	9613	7.4	635	17291	0.0	765	1302	0.0	895	646	0.0
380	398	0.0	510	10245	7.4	640	16854	0.0	770	1180	0.0	900	526	0.0
385	359	0.0	515	10835	7.1	645	16410	0.0	775	1079	0.0	905	557	0.0
390	355	0.0	520	11465	6.7	650	15843	0.0	780	946	0.0	910	613	0.0
395	320	0.0	525	12004	6.1	655	15029	0.0	785	883	0.0	915	556	0.0
400	290	0.0	530	12512	5.4	660	14175	0.0	790	832	0.0	920	623	0.0
405	278	0.0	535	12925	4.7	665	13195	0.0	795	731	0.0	925	528	0.0
410	327	0.0	540	13254	3.9	670	12132	0.0	800	744	0.0	930	586	0.0
415	471	0.0	545	13437	3.1	675	11067	0.0	805	688	0.0	935	744	0.0
420	803	0.1	550	13744	2.5	680	10056	0.0	810	699	0.0	940	610	0.0
425	1501	0.2	555	13925	1.9	685	9011	0.0	815	651	0.0	945	486	0.0
430	2800	0.6	560	14164	1.4	690	8032	0.0	820	620	0.0	950	719	0.0
435	5221	1.4	565	14379	1.0	695	7112	0.0	825	686	0.0	955	527	0.0
440	9255	3.1	570	14511	0.7	700	6301	0.0	830	578	0.0	960	561	0.0
445	12350	4.9	575	14729	0.5	705	5570	0.0	835	502	0.0	965	364	0.0
450	10708	4.9	580	15069	0.3	710	4970	0.0	840	624	0.0	970	739	0.0
455	8053	4.2	585	15482	0.2	715	4396	0.0	845	523	0.0	975	457	0.0
460	7058	4.2	590	15975	0.2	720	3921	0.0	850	555	0.0	980	848	0.0
465	5809	3.8	595	16476	0.1	725	3489	0.0	855	553	0.0	985	1084	0.0
470	5111	3.7	600	17051	0.1	730	3068	0.0	860	424	0.0	990	980	0.0
475	5409	4.1	605	17607	0.0	735	2631	0.0	865	489	0.0	995	1093	0.0
480	5958	4.8	610	17893	0.0	740	2336	0.0	870	652	0.0	1000	1033	0.0
485	6631	5.5	615	18072	0.0	745	2108	0.0	875	622	0.0			

**Summary**

$R_f = 93.6$   
 $R_g = 100.6$   
 CIE  $R_a = 94.0$   
 $R_9 = 69.9$

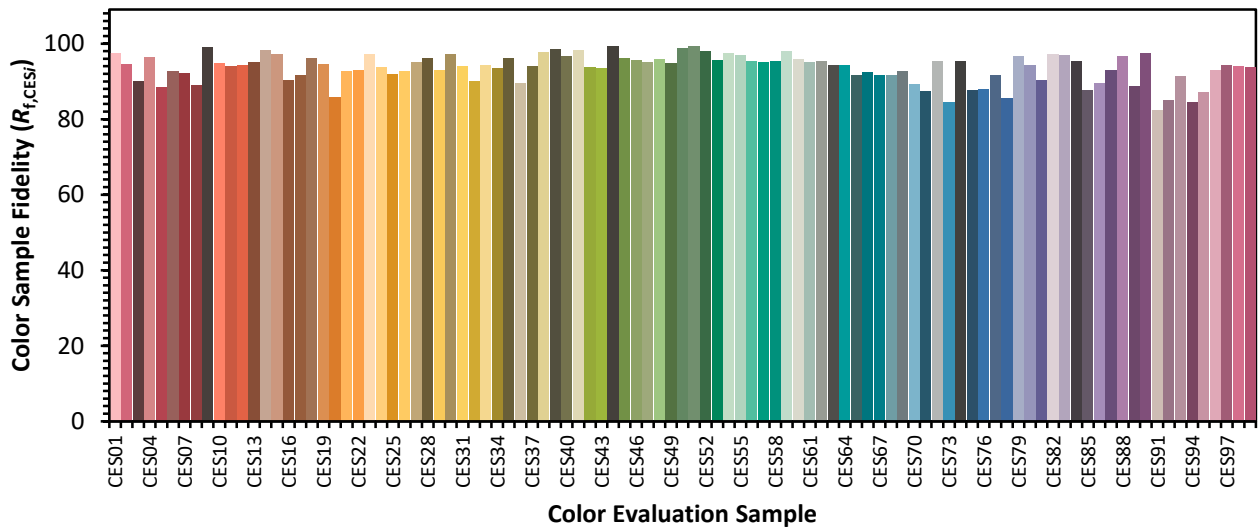


**Color Vector Graphics**

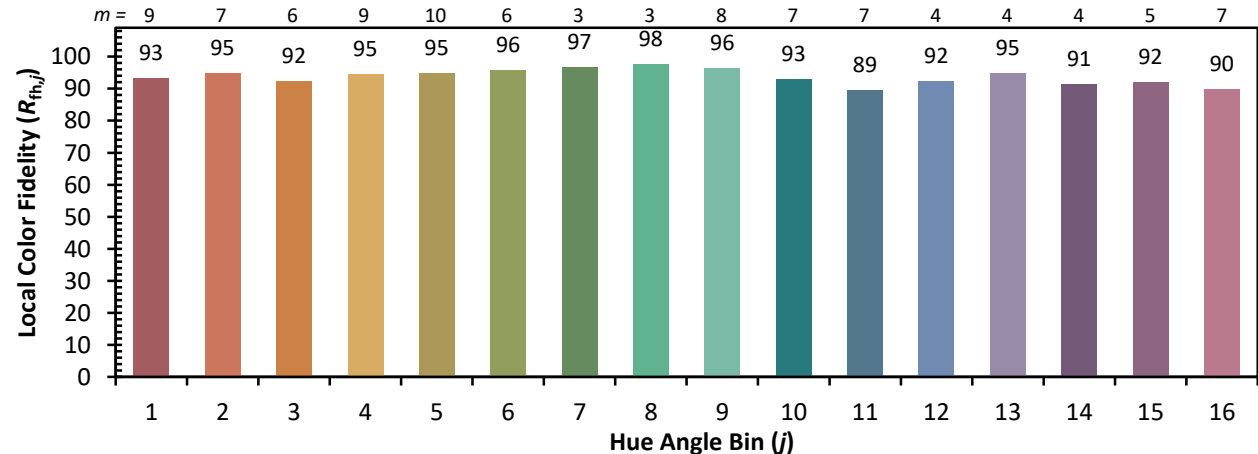
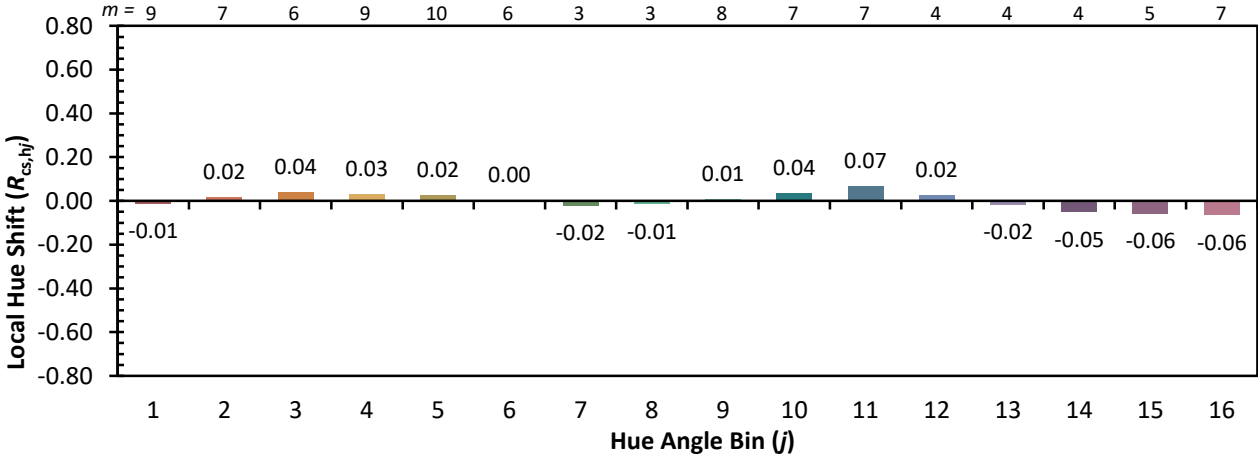
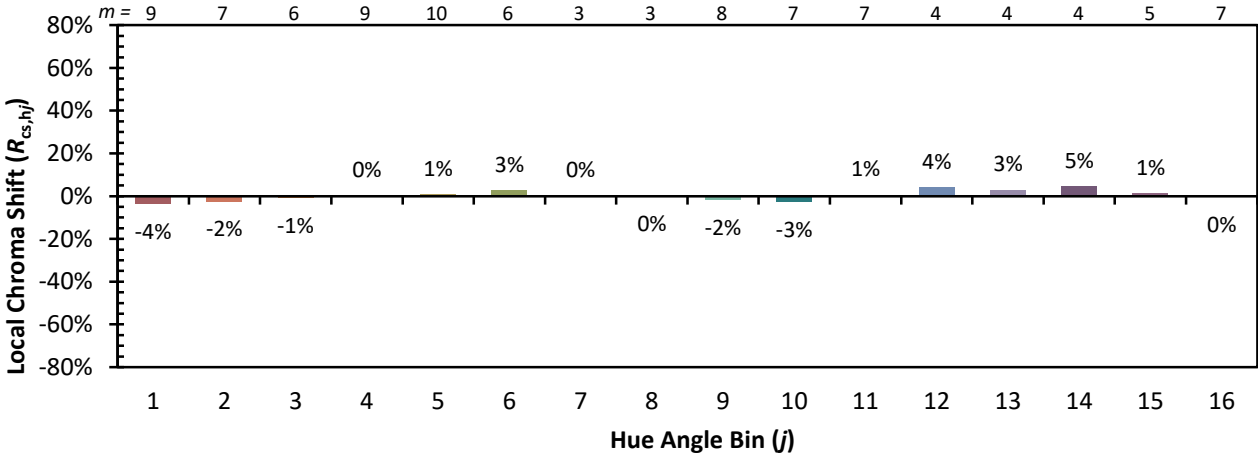


**Individual Sample Fidelity Index ( $R_{f,i}$ )**

CES01 = 86	CES26 = 93	CES51 = 99	CES76 = 88
CES02 = 62	CES27 = 95	CES52 = 98	CES77 = 92
CES03 = 31	CES28 = 96	CES53 = 96	CES78 = 86
CES04 = 70	CES29 = 93	CES54 = 98	CES79 = 97
CES05 = 50	CES30 = 97	CES55 = 97	CES80 = 94
CES06 = 51	CES31 = 94	CES56 = 95	CES81 = 90
CES07 = 43	CES32 = 90	CES57 = 95	CES82 = 97
CES08 = 42	CES33 = 94	CES58 = 96	CES83 = 97
CES09 = 29	CES34 = 93	CES59 = 98	CES84 = 95
CES10 = 75	CES35 = 96	CES60 = 96	CES85 = 88
CES11 = 58	CES36 = 90	CES61 = 95	CES86 = 90
CES12 = 64	CES37 = 94	CES62 = 95	CES87 = 93
CES13 = 43	CES38 = 98	CES63 = 94	CES88 = 97
CES14 = 74	CES39 = 99	CES64 = 94	CES89 = 89
CES15 = 71	CES40 = 97	CES65 = 92	CES90 = 97
CES16 = 48	CES41 = 98	CES66 = 92	CES91 = 82
CES17 = 49	CES42 = 94	CES67 = 92	CES92 = 85
CES18 = 56	CES43 = 94	CES68 = 92	CES93 = 91
CES19 = 71	CES44 = 99	CES69 = 93	CES94 = 84
CES20 = 66	CES45 = 96	CES70 = 89	CES95 = 87
CES21 = 86	CES46 = 96	CES71 = 88	CES96 = 93
CES22 = 78	CES47 = 95	CES72 = 95	CES97 = 94
CES23 = 91	CES48 = 96	CES73 = 85	CES98 = 94
CES24 = 90	CES49 = 95	CES74 = 95	CES99 = 94
CES25 = 71	CES50 = 99	CES75 = 88	

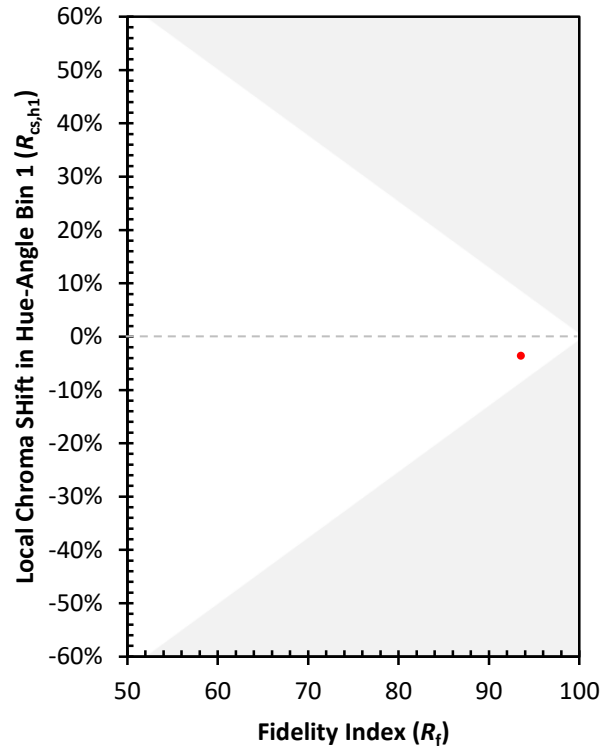
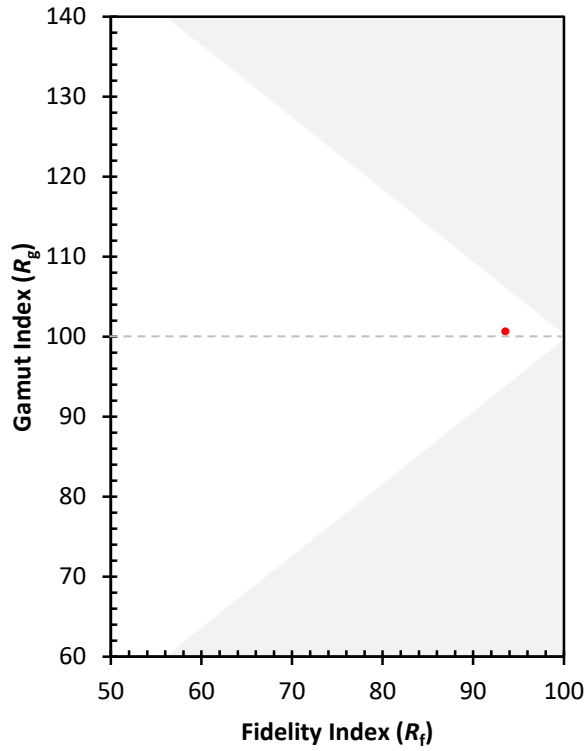


Color Rendition by Hue-Angle Bin





Measure Comparisons



(END OF REPORT)