

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



Scaled data based on original data using  
LM-79-2019 Approved Method: Electrical and Photometric Measurements of Solid-  
State Lighting Products

Test Report Prepared for  
Cooper Lighting Solutions

Brand: iO LED

Report Number: P861232

Luminaire Tested: CS-SL-9SCT-120-ID-UNV-W-SA-STD-4F (Low-3000K)

Issue Date: 8/14/2024

**Test Information**

Test Method: LM-79-2019  
Report Number: P861232  
TEST IS SCALED FROM IESNA LM-79-08 TEST DATA (G2-2312-259-3)  
Test Lab: COOPER LIGHTING SOLUTIONS  
Issue Date: 8/14/2024  
Manufacturer: COOPER LIGHTING SOLUTIONS  
Product Line: iO LED  
Catalog Number: CS-SL-9SCT-120-ID-UNV-W-SA-STD-4F (Low-3000K)  
Description: iO CovSelect LED LINEAR LUMINAIRE, 4 FOOT, HIGH OUTPUT  
ADJUSTED TO 3000K  
Light Source: 3000 CCT, 90 CRI LEDS  
Ballast/Driver: -

**Summary**

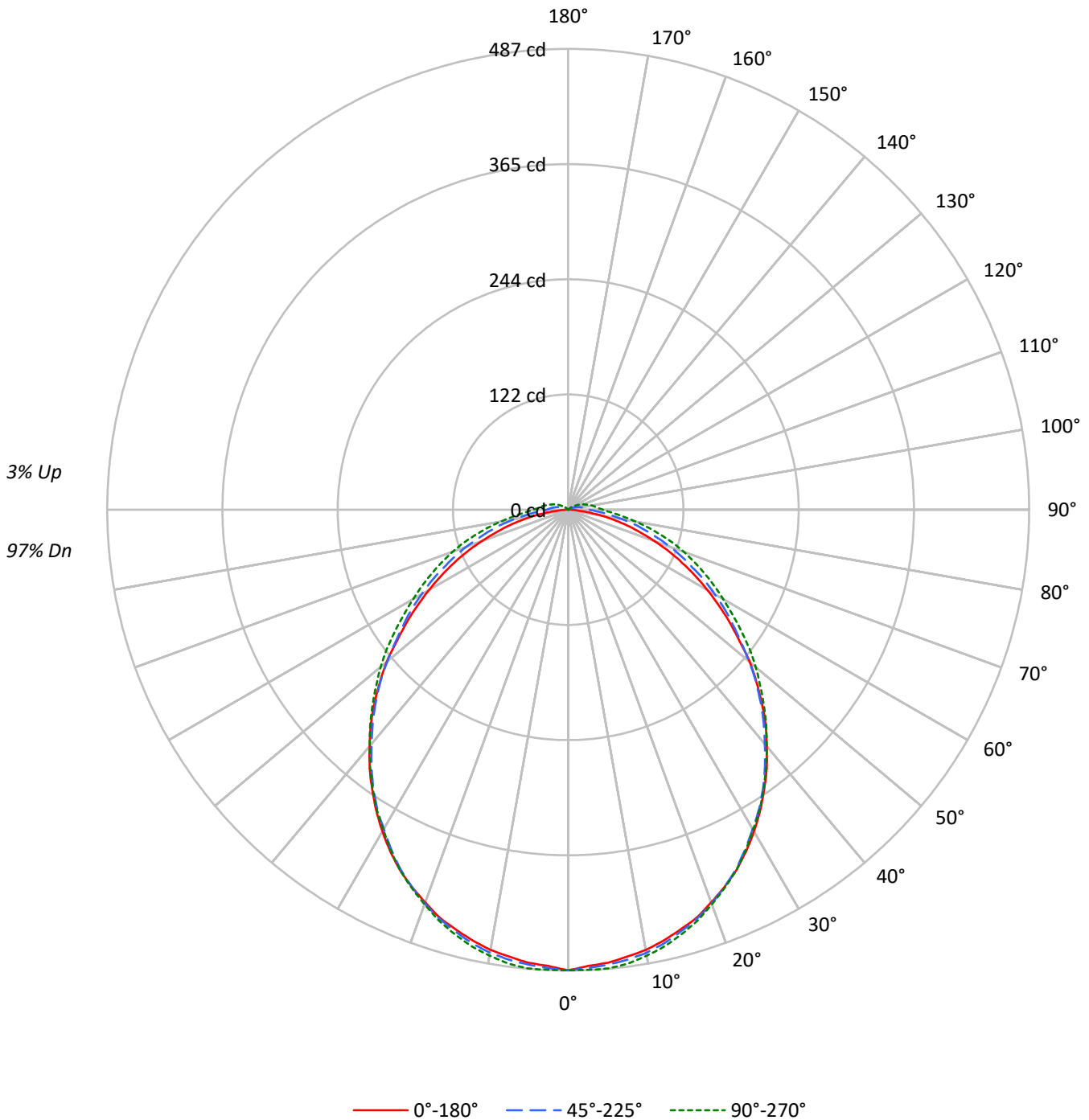
Lumens per Lamp: N/A  
Luminaire Lumens: 1318.6 lumens  
Efficiency: N/A  
Efficacy: 125.6 lumens/watt  
Spacing Criteria (0/90/45): 1.2 / 1.2 / 1.3  
Luminous Opening: Rectangular w/ Sides (W: 0.08' x L: 4' x H: 0.02')  
CIE Type: Direct  
  
Input Watts (W): 10.5  
Input Voltage (V): 120  
Input Current (A<sub>in</sub>): NR  
Voltage Rise (V): NR  
Power Factor: 0.9842  
Total Harmonic Distortion (THDi): 0.0825  
Frequency (hertz): 60  
Stabilization Time: 0.333 HR  
Operation Time: 3 HR  
Ambient Temperature (°C): NR  
Test Distance: 24 FT



TEST NUMBER: P861232

CATALOG NUMBER: CS-SL-9SCT-120-ID-UNV-W-SA-STD-4F (Low-3000K)

### Luminous Intensity Polar Plot



TEST NUMBER: P861232

CATALOG NUMBER: CS-SL-9SCT-120-ID-UNV-W-SA-STD-4F (Low-3000K)

**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	0
RCR																		
0	118	118	118	118	115	115	115	115	110	110	110	104	104	104	100	100	100	97
1	108	103	99	95	105	100	96	93	96	92	89	91	89	86	87	85	83	81
2	98	90	83	77	95	88	81	76	84	79	74	80	76	72	77	73	70	68
3	90	79	71	65	87	77	70	64	74	68	62	71	65	61	68	63	59	57
4	82	70	62	55	80	69	61	54	66	59	53	63	57	52	61	56	51	49
5	76	63	54	47	73	62	53	47	59	52	46	57	51	46	55	49	45	43
6	70	57	48	42	68	56	47	41	54	46	41	52	45	40	50	44	40	37
7	65	52	43	37	63	51	42	37	49	41	36	47	41	36	46	40	35	33
8	61	47	39	33	59	46	38	33	45	38	32	43	37	32	42	36	32	30
9	57	43	35	30	55	43	35	30	41	34	29	40	34	29	39	33	29	27
10	53	40	32	27	52	39	32	27	38	31	27	37	31	26	36	30	26	24

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

	0°	45°	90°
0°	15716	15716	15716
5°	15572	15400	15439
10°	15476	15111	15028
15°	15327	14707	14544
20°	15150	14279	13979
25°	14939	13777	13412
30°	14595	13156	12727
35°	14175	12561	12074
40°	13691	11829	11366
45°	13148	11115	10683
50°	12507	10316	10013
55°	11657	9521	9247
60°	10862	8803	8527
65°	10043	7999	7884
70°	9038	7227	7271
75°	7882	6330	6467
80°	6286	5358	5584
85°	3917	4331	4812

**MAXIMUM LUMINANCE 45°-90°:**

Horizontal Angle: 0°  
 Vertical Angle: 45°  
 Luminance: 13148 cd/sqm



TEST NUMBER: P861232

CATALOG NUMBER: CS-SL-9SCT-120-ID-UNV-W-SA-STD-4F (Low-3000K)

**ZONAL LUMENS:**

Zone	Lumens	% Fixture
0°-10°	46.0	3.5
10°-20°	130.5	9.9
20°-30°	193.4	14.7
30°-40°	225.2	17.1
40°-50°	223.3	16.9
50°-60°	192.4	14.6
60°-70°	144.5	11.0
70°-80°	88.9	6.7
80°-90°	38.4	2.9
90°-100°	18.1	1.4
100°-110°	10.8	0.8
110°-120°	5.2	0.4
120°-130°	1.8	0.1
130°-140°	0.1	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°	370.0	28.1
0°-40°	595.1	45.1
0°-60°	1010.8	76.7
0°-90°	1282.7	97.3
90°-120°	34.0	2.6
90°-150°	35.9	2.7
90°-180°	36.0	2.7
0°-180°	1318.6	100.0

**CANDELA DISTRIBUTION:**

	0°	22.5°	45°	67.5°	90°	Flux
0°	487	487	487	487	487	
5°	481	489	483	483	487	46
15°	459	467	461	462	464	130
25°	420	425	419	417	420	193
35°	361	364	359	358	360	226
45°	289	290	287	289	292	223
55°	209	211	213	220	223	187
65°	133	137	145	154	158	132
75°	64	72	85	96	100	68
85°	11	22	36	46	50	14
90°	0	9	22	33	37	0
95°	0	5	18	27	30	0
105°	0	1	10	18	20	0
115°	0	0	4	10	12	0
125°	0	0	1	4	5	0
135°	0	0	0	0	0	0
145°	0	0	0	0	0	0
155°	0	0	0	0	0	0
165°	0	0	0	0	0	0
175°	0	0	0	0	0	0
180°	0	0	0	0	0	0



TEST NUMBER: P861232

CATALOG NUMBER: CS-SL-9SCT-120-ID-UNV-W-SA-STD-4F (Low-3000K)

**CANDELA DISTRIBUTION (FULL):**

	0°	22.5°	45°	67.5°	90°
0°	486.7	486.7	486.7	486.7	486.7
2.5°	482.6	490.8	484.7	484.7	486.7
5°	480.6	488.8	482.6	482.6	486.7
7.5°	476.5	485.7	479.6	479.6	483.7
10°	472.4	480.6	475.5	475.5	478.5
12.5°	466.3	474.4	469.3	469.3	472.4
15°	459.1	467.3	461.2	462.2	464.2
17.5°	452.0	459.1	453.0	453.0	455.0
20°	441.7	448.9	442.8	441.7	443.8
22.5°	431.5	437.6	431.5	430.5	432.5
25°	420.3	425.4	419.2	417.2	420.3
27.5°	407.0	411.1	404.9	403.9	405.9
30°	392.6	395.7	389.6	388.6	390.6
32.5°	377.3	380.4	375.3	374.2	376.3
35°	360.9	364.0	358.9	357.9	359.9
37.5°	344.6	346.6	341.5	341.5	343.6
40°	326.2	328.2	323.1	324.1	326.2
42.5°	308.8	309.8	305.7	306.8	309.8
45°	289.4	290.4	287.3	289.4	292.4
47.5°	269.9	271.0	268.9	272.0	275.1
50°	250.5	251.5	249.5	254.6	258.7
52.5°	228.0	230.1	230.1	237.2	241.3
55°	208.6	210.6	212.7	219.8	222.9
57.5°	189.2	191.2	196.3	202.5	205.5
60°	169.7	172.8	178.9	186.1	189.2
62.5°	151.3	154.4	162.6	169.7	173.8
65°	132.9	137.0	145.2	154.4	158.5
67.5°	115.5	119.6	129.9	139.1	144.2
70°	97.1	103.3	114.5	124.7	129.9
72.5°	79.8	86.9	99.2	111.5	115.5
75°	64.4	71.6	84.9	96.1	100.2
77.5°	49.1	57.3	71.6	81.8	85.9
80°	34.8	44.0	58.3	68.5	72.6
82.5°	21.5	31.7	46.0	56.2	60.3
85°	11.2	21.5	35.8	46.0	50.1
87.5°	3.1	13.3	27.6	37.8	41.9
90°	0.0	9.2	22.5	32.7	36.8
92.5°	0.0	7.2	20.5	29.7	32.7
95°	0.0	5.1	18.4	26.6	29.7
97.5°	0.0	4.1	16.4	24.5	27.6
100°	0.0	3.1	14.3	22.5	25.6
102.5°	0.0	2.0	12.3	20.5	22.5
105°	0.0	1.0	10.2	18.4	20.5
107.5°	0.0	1.0	8.2	16.4	18.4
110°	0.0	1.0	7.2	14.3	16.4



TEST NUMBER: P861232

CATALOG NUMBER: CS-SL-9SCT-120-ID-UNV-W-SA-STD-4F (Low-3000K)

**CANDELA DISTRIBUTION (continued):**

	0°	22.5°	45°	67.5°	90°
112.5°	0.0	0.0	5.1	12.3	14.3
115°	0.0	0.0	4.1	10.2	12.3
117.5°	0.0	0.0	3.1	8.2	10.2
120°	0.0	0.0	2.0	6.1	8.2
122.5°	0.0	0.0	2.0	5.1	7.2
125°	0.0	0.0	1.0	4.1	5.1
127.5°	0.0	0.0	1.0	3.1	4.1
130°	0.0	0.0	0.0	2.0	3.1
132.5°	0.0	0.0	0.0	0.0	0.0
135°	0.0	0.0	0.0	0.0	0.0
137.5°	0.0	0.0	0.0	0.0	0.0
140°	0.0	0.0	0.0	0.0	0.0
142.5°	0.0	0.0	0.0	0.0	0.0
145°	0.0	0.0	0.0	0.0	0.0
147.5°	0.0	0.0	0.0	0.0	0.0
150°	0.0	0.0	0.0	0.0	0.0
152.5°	0.0	0.0	0.0	0.0	0.0
155°	0.0	0.0	0.0	0.0	0.0
157.5°	0.0	0.0	0.0	0.0	0.0
160°	0.0	0.0	0.0	0.0	0.0
162.5°	0.0	0.0	0.0	0.0	0.0
165°	0.0	0.0	0.0	0.0	0.0
167.5°	0.0	0.0	0.0	0.0	0.0
170°	0.0	0.0	0.0	0.0	0.0
172.5°	0.0	0.0	0.0	0.0	0.0
175°	0.0	0.0	0.0	0.0	0.0
177.5°	0.0	0.0	0.0	0.0	0.0
180°	0.0	0.0	0.0	0.0	0.0

LM-79-2019: Approved Method: Electrical and Photometric Measurements of Solid-  
State Lighting Products

Report Prepared for

Cooper Lighting Solutions

iO LED

Report Number: SP1-2312-259-8

Test Date: 02/01/2024

Luminaire Tested: CS-SL-8SCT-120-ID-UNV-W-SA-STD-1F (HIGH-3000K)

Data in this report applies to families of CS-SL-8SCT products.



**Test Information**

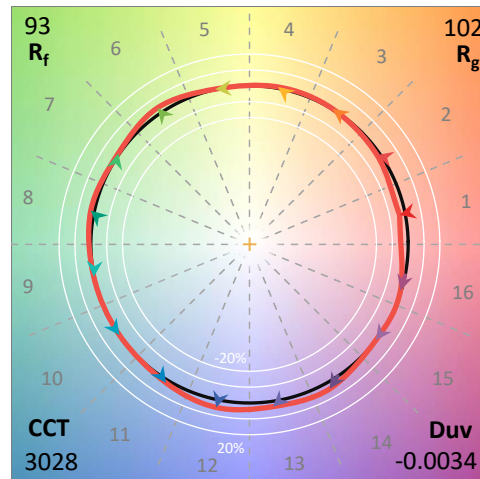
Test Method: LM-79-2019  
 Report Number: SP1-2312-259-8  
 Test Lab: COOPER LIGHTING SOLUTIONS  
 Photometer: SP1 - 76IN SPHERE  
 Measurement Geometry: 4π  
 Issue Date: 02/08/2024  
 Manufacturer: COOPER LIGHTING SOLUTIONS  
 Product Line: iO LED  
 Catalog Number: **CS-SL-9SCT-120-ID-UNV-W-SA-STD-1F (HIGH-3000K)**  
 Description: IO LED COVSELECT ARCHITECTURAL COVE

**Spectral Parameters**

CCT (K): 3028  
 CIE u': 0.2508  
 CIE v': 0.5161  
 Duv: -0.0034  
 CIE x: 0.4301  
 CIE y: 0.3934  
 CIE z: 0.1765  
 Peak Wavelength (nm): 619  
 Dominant Wavelength (nm): 583  
 Purity: 47.7

CRI (Ra):	95.5		
R1:	98.3	R9:	67.6
R2:	98.9	R10:	98.4
R3:	98.3	R11:	94.9
R4:	97.2	R12:	89.1
R5:	99.0	R13:	99.1
R6:	95.2	R14:	99.2
R7:	91.9		
R8:	85.1		

Rf: 93.4  
 Rg: 101.8



**Test Conditions**

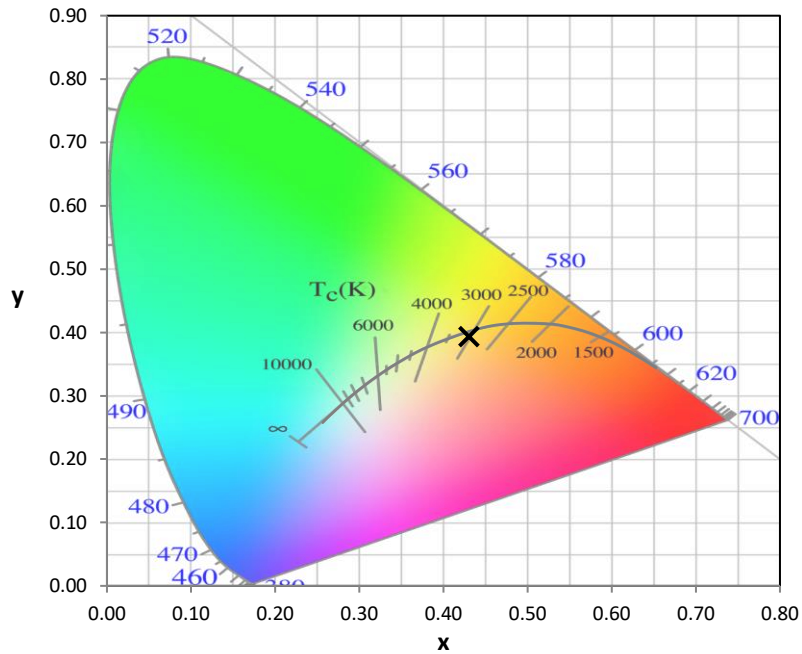
Stabilization Time: 11M  
 Operation Time: 12H  
 Room Temperature (°C) / RH%: 25.4/24%  
 Sphere Temperature (°C): 25.1

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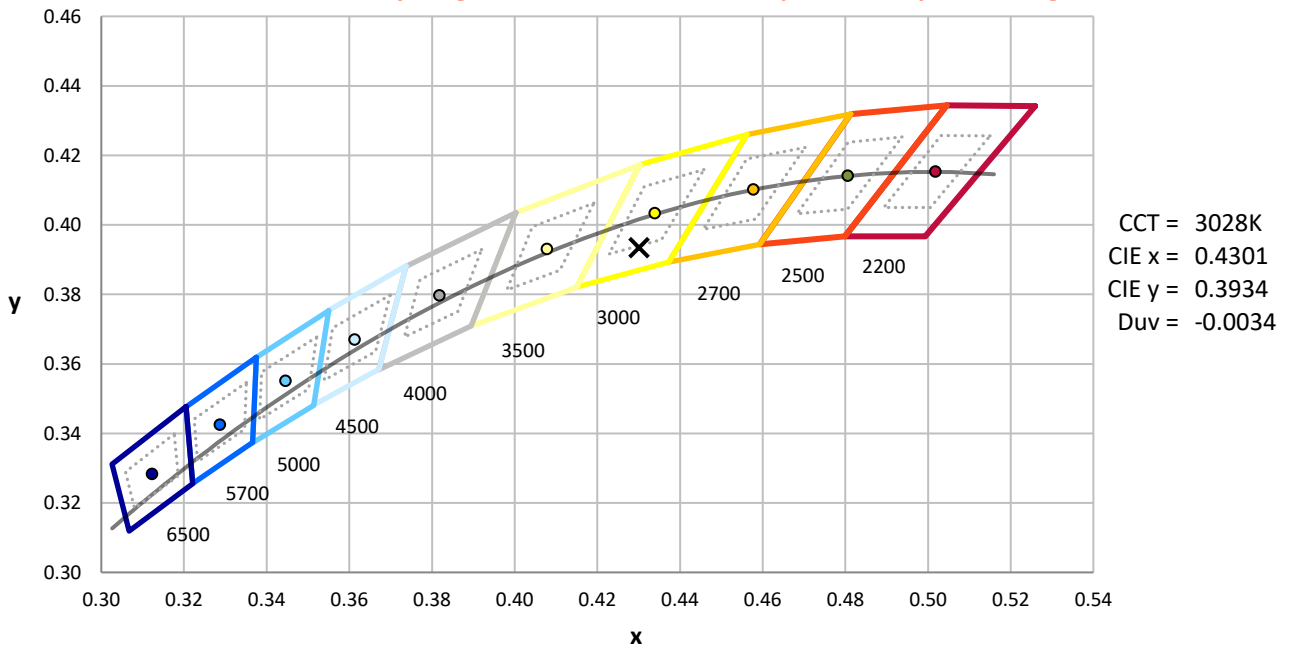
Measurement and Test Equipment			
Instrument	Identification Number	Calibration Date	Calibration Due Date
Photometer	76INCH SPHERE IN0058	8/9/2023	2/9/2024
Power Meter	XITRON 2801 IN0071	10/23/2023	10/23/2024
AC Power Source	CHROMA 61603 IN0063	10/24/2023	10/24/2024
DC Power Source	AGILENT E3634A IN0208	10/24/2023	10/24/2024
Sphere Thermometer	ONSET IN0085	10/24/2023	10/24/2024
Room Thermometer	ONSET IN0046	10/24/2023	10/24/2024

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CIE 1931 Chromaticity Diagram



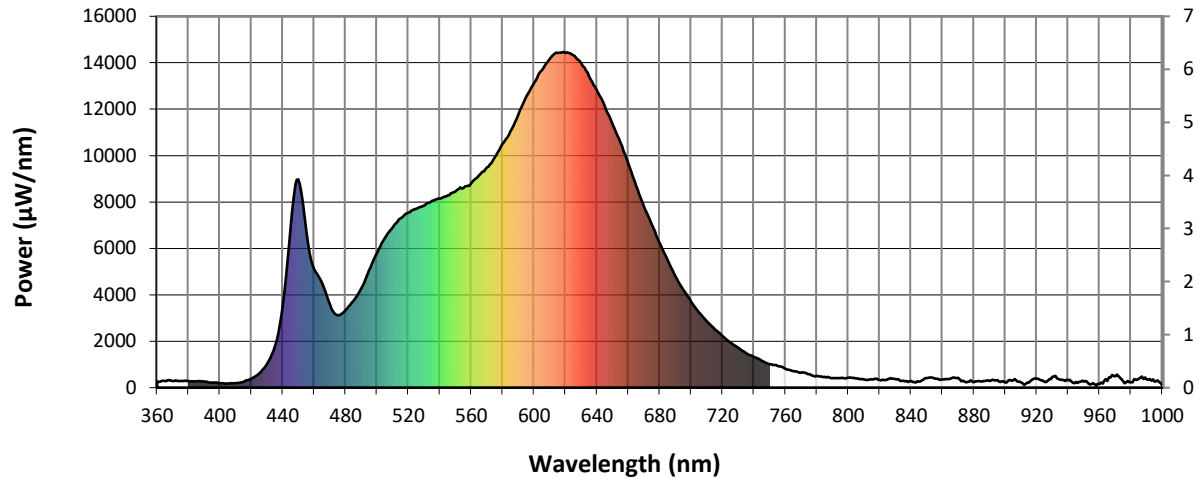
CIE 1931 Chromaticity Diagram with 2017 ANSI 7-Step and 4-Step Quadrangles



Point lies inside the ANSI 3000K 7-step quadrangle

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**Photopic Flux vs. Wavelength**

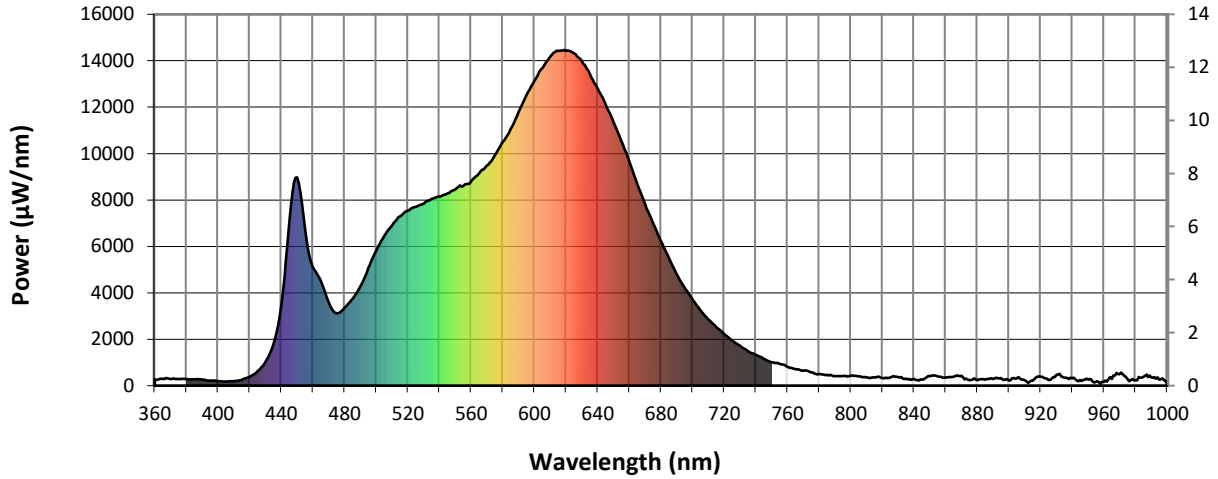


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λ (nm)	Power (µW/nm)	Lumens (φ/nm)	λ (nm)	Power (µW/nm)	Lumens (φ/nm)	λ (nm)	Power (µW/nm)	Lumens (φ/nm)	λ (nm)	Power (µW/nm)	Lumens (φ/nm)	λ (nm)	Power (µW/nm)	Lumens (φ/nm)
360	277	NR	490	4288	NR	620	14425	NR	750	998	NR	880	232	NR
365	287	NR	495	5056	NR	625	14329	NR	755	940	NR	885	263	NR
370	283	NR	500	5807	NR	630	13984	NR	760	804	NR	890	293	NR
375	285	NR	505	6436	NR	635	13427	NR	765	711	NR	895	324	NR
380	292	NR	510	6908	NR	640	12811	NR	770	650	NR	900	224	NR
385	268	NR	515	7295	NR	645	12113	NR	775	579	NR	905	314	NR
390	261	NR	520	7536	NR	650	11344	NR	780	514	NR	910	231	NR
395	222	NR	525	7703	NR	655	10540	NR	785	462	NR	915	218	NR
400	196	NR	530	7843	NR	660	9666	NR	790	417	NR	920	383	NR
405	176	NR	535	8047	NR	665	8688	NR	795	411	NR	925	242	NR
410	193	NR	540	8148	NR	670	7806	NR	800	419	NR	930	462	NR
415	252	NR	545	8280	NR	675	7018	NR	805	397	NR	935	345	NR
420	387	NR	550	8448	NR	680	6235	NR	810	360	NR	940	319	NR
425	619	NR	555	8602	NR	685	5504	NR	815	355	NR	945	242	NR
430	1021	NR	560	8811	NR	690	4806	NR	820	326	NR	950	263	NR
435	1786	NR	565	9153	NR	695	4221	NR	825	351	NR	955	160	NR
440	3502	NR	570	9478	NR	700	3707	NR	830	372	NR	960	157	NR
445	6934	NR	575	9924	NR	705	3243	NR	835	298	NR	965	289	NR
450	8980	NR	580	10508	NR	710	2856	NR	840	284	NR	970	492	NR
455	6738	NR	585	11056	NR	715	2527	NR	845	262	NR	975	288	NR
460	5107	NR	590	11792	NR	720	2222	NR	850	412	NR	980	231	NR
465	4518	NR	595	12528	NR	725	1947	NR	855	396	NR	985	381	NR
470	3577	NR	600	13143	NR	730	1714	NR	860	356	NR	990	362	NR
475	3118	NR	605	13681	NR	735	1487	NR	865	380	NR	995	264	NR
480	3349	NR	610	14165	NR	740	1322	NR	870	424	NR	1000	88	NR
485	3741	NR	615	14418	NR	745	1150	NR	875	235	NR			

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Scotopic Flux vs. Wavelength



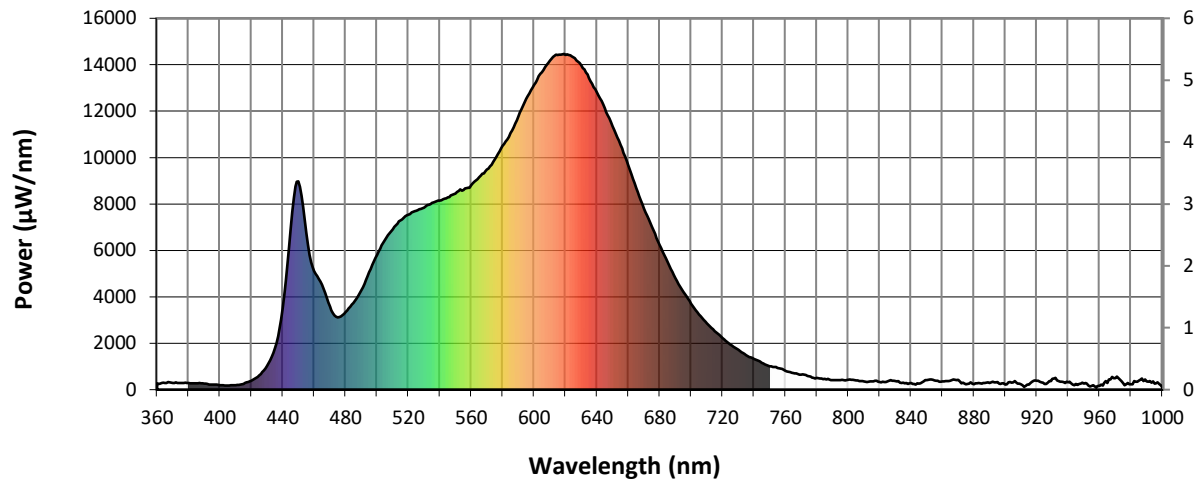
Scotopic Lumens: 1027.8

S/P: 1.49

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	277	NR	490	4288	NR	620	14425	NR	750	998	NR	880	232	NR
365	287	NR	495	5056	NR	625	14329	NR	755	940	NR	885	263	NR
370	283	NR	500	5807	NR	630	13984	NR	760	804	NR	890	293	NR
375	285	NR	505	6436	NR	635	13427	NR	765	711	NR	895	324	NR
380	292	NR	510	6908	NR	640	12811	NR	770	650	NR	900	224	NR
385	268	NR	515	7295	NR	645	12113	NR	775	579	NR	905	314	NR
390	261	NR	520	7536	NR	650	11344	NR	780	514	NR	910	231	NR
395	222	NR	525	7703	NR	655	10540	NR	785	462	NR	915	218	NR
400	196	NR	530	7843	NR	660	9666	NR	790	417	NR	920	383	NR
405	176	NR	535	8047	NR	665	8688	NR	795	411	NR	925	242	NR
410	193	NR	540	8148	NR	670	7806	NR	800	419	NR	930	462	NR
415	252	NR	545	8280	NR	675	7018	NR	805	397	NR	935	345	NR
420	387	NR	550	8448	NR	680	6235	NR	810	360	NR	940	319	NR
425	619	NR	555	8602	NR	685	5504	NR	815	355	NR	945	242	NR
430	1021	NR	560	8811	NR	690	4806	NR	820	326	NR	950	263	NR
435	1786	NR	565	9153	NR	695	4221	NR	825	351	NR	955	160	NR
440	3502	NR	570	9478	NR	700	3707	NR	830	372	NR	960	157	NR
445	6934	NR	575	9924	NR	705	3243	NR	835	298	NR	965	289	NR
450	8980	NR	580	10508	NR	710	2856	NR	840	284	NR	970	492	NR
455	6738	NR	585	11056	NR	715	2527	NR	845	262	NR	975	288	NR
460	5107	NR	590	11792	NR	720	2222	NR	850	412	NR	980	231	NR
465	4518	NR	595	12528	NR	725	1947	NR	855	396	NR	985	381	NR
470	3577	NR	600	13143	NR	730	1714	NR	860	356	NR	990	362	NR
475	3118	NR	605	13681	NR	735	1487	NR	865	380	NR	995	264	NR
480	3349	NR	610	14165	NR	740	1322	NR	870	424	NR	1000	88	NR
485	3741	NR	615	14418	NR	745	1150	NR	875	235	NR			

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**Melanopic Flux vs. Wavelength**



**Melanopic Lumens: 404.1 M/P: 0.59**

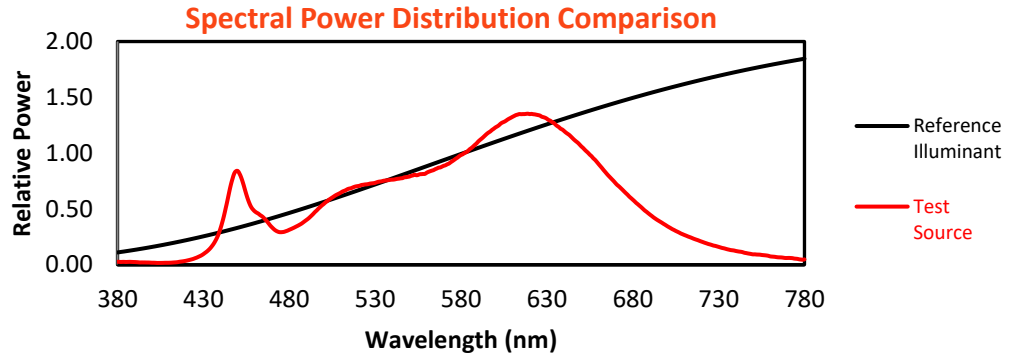
λ (nm)	Power (µW/nm)	Lumens (φ/nm)	λ (nm)	Power (µW/nm)	Lumens (φ/nm)	λ (nm)	Power (µW/nm)	Lumens (φ/nm)	λ (nm)	Power (µW/nm)	Lumens (φ/nm)	λ (nm)	Power (µW/nm)	Lumens (φ/nm)
360	277	NR	490	4288	NR	620	14425	NR	750	998	NR	880	232	NR
365	287	NR	495	5056	NR	625	14329	NR	755	940	NR	885	263	NR
370	283	NR	500	5807	NR	630	13984	NR	760	804	NR	890	293	NR
375	285	NR	505	6436	NR	635	13427	NR	765	711	NR	895	324	NR
380	292	NR	510	6908	NR	640	12811	NR	770	650	NR	900	224	NR
385	268	NR	515	7295	NR	645	12113	NR	775	579	NR	905	314	NR
390	261	NR	520	7536	NR	650	11344	NR	780	514	NR	910	231	NR
395	222	NR	525	7703	NR	655	10540	NR	785	462	NR	915	218	NR
400	196	NR	530	7843	NR	660	9666	NR	790	417	NR	920	383	NR
405	176	NR	535	8047	NR	665	8688	NR	795	411	NR	925	242	NR
410	193	NR	540	8148	NR	670	7806	NR	800	419	NR	930	462	NR
415	252	NR	545	8280	NR	675	7018	NR	805	397	NR	935	345	NR
420	387	NR	550	8448	NR	680	6235	NR	810	360	NR	940	319	NR
425	619	NR	555	8602	NR	685	5504	NR	815	355	NR	945	242	NR
430	1021	NR	560	8811	NR	690	4806	NR	820	326	NR	950	263	NR
435	1786	NR	565	9153	NR	695	4221	NR	825	351	NR	955	160	NR
440	3502	NR	570	9478	NR	700	3707	NR	830	372	NR	960	157	NR
445	6934	NR	575	9924	NR	705	3243	NR	835	298	NR	965	289	NR
450	8980	NR	580	10508	NR	710	2856	NR	840	284	NR	970	492	NR
455	6738	NR	585	11056	NR	715	2527	NR	845	262	NR	975	288	NR
460	5107	NR	590	11792	NR	720	2222	NR	850	412	NR	980	231	NR
465	4518	NR	595	12528	NR	725	1947	NR	855	396	NR	985	381	NR
470	3577	NR	600	13143	NR	730	1714	NR	860	356	NR	990	362	NR
475	3118	NR	605	13681	NR	735	1487	NR	865	380	NR	995	264	NR
480	3349	NR	610	14165	NR	740	1322	NR	870	424	NR	1000	88	NR
485	3741	NR	615	14418	NR	745	1150	NR	875	235	NR			

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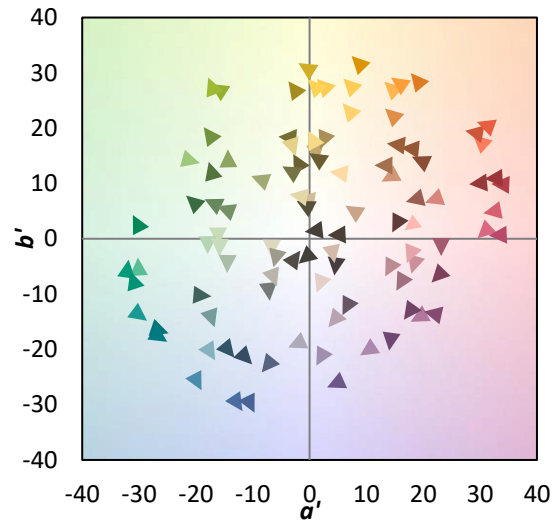
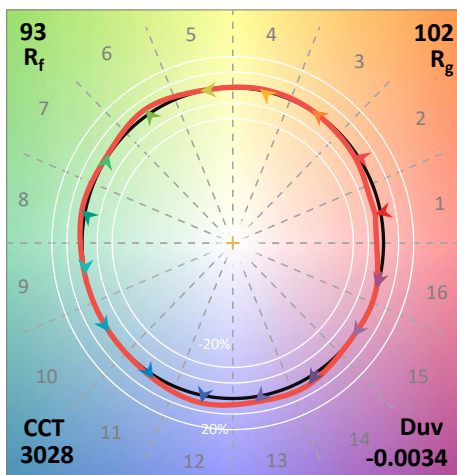
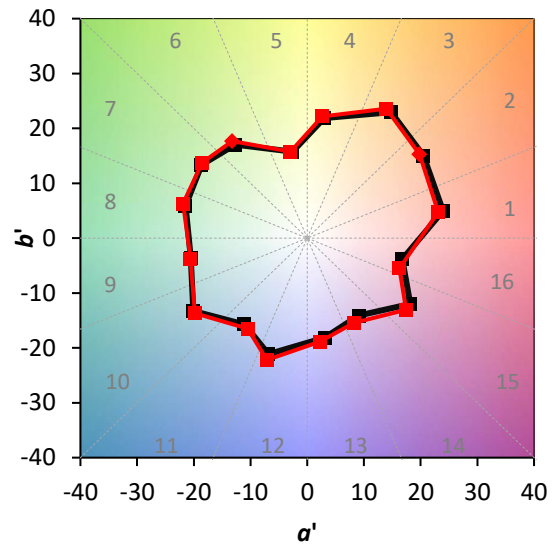
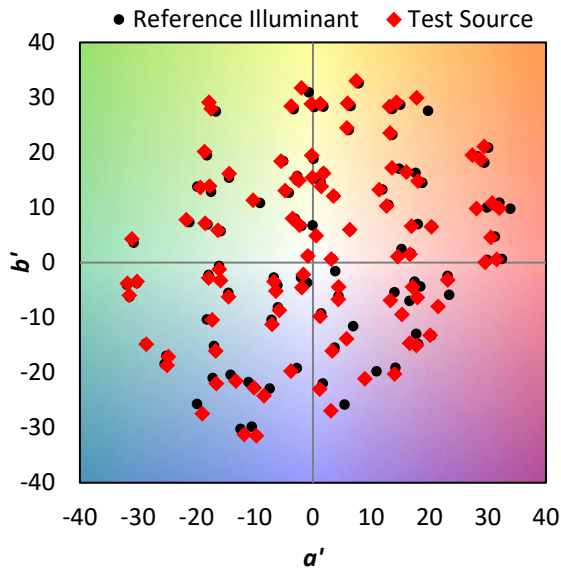
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**Summary**

$R_f = 93.4$   
 $R_g = 101.8$   
 CIE  $R_a = 95.5$   
 $R_9 = 67.6$



**Color Vector Graphics**

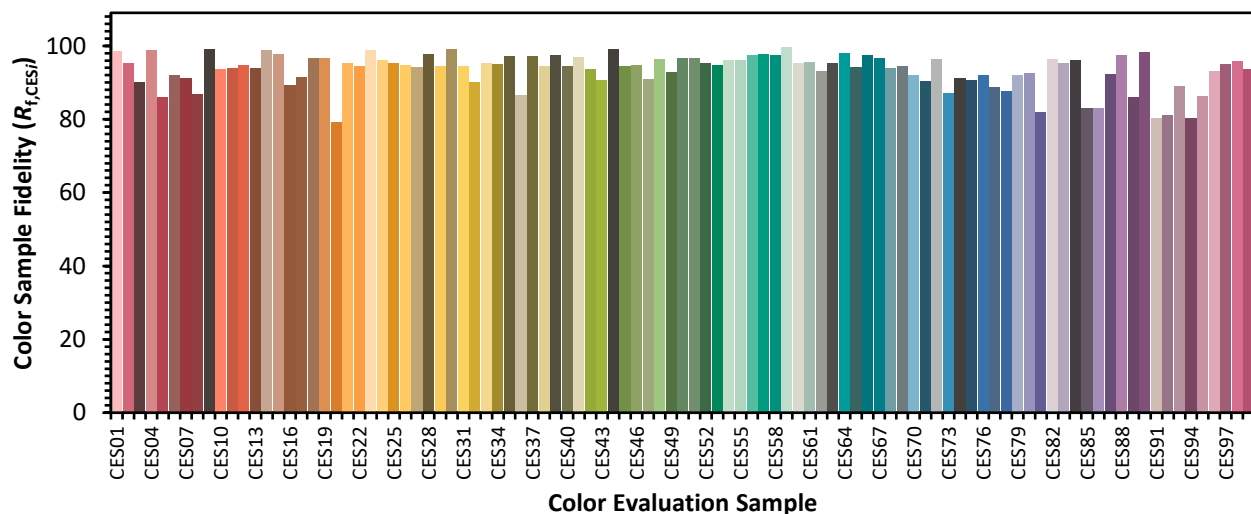


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**Individual Sample Fidelity Index ( $R_{f,i}$ )**

CES01 = 86	CES26 = 95	CES51 = 97	CES76 = 92
CES02 = 63	CES27 = 94	CES52 = 95	CES77 = 89
CES03 = 32	CES28 = 98	CES53 = 95	CES78 = 88
CES04 = 70	CES29 = 95	CES54 = 96	CES79 = 92
CES05 = 51	CES30 = 99	CES55 = 96	CES80 = 92
CES06 = 51	CES31 = 95	CES56 = 97	CES81 = 82
CES07 = 44	CES32 = 90	CES57 = 98	CES82 = 96
CES08 = 42	CES33 = 95	CES58 = 97	CES83 = 95
CES09 = 29	CES34 = 95	CES59 = 100	CES84 = 96
CES10 = 76	CES35 = 97	CES60 = 95	CES85 = 83
CES11 = 59	CES36 = 87	CES61 = 96	CES86 = 83
CES12 = 65	CES37 = 97	CES62 = 93	CES87 = 92
CES13 = 44	CES38 = 94	CES63 = 95	CES88 = 97
CES14 = 74	CES39 = 97	CES64 = 98	CES89 = 86
CES15 = 72	CES40 = 95	CES65 = 94	CES90 = 98
CES16 = 48	CES41 = 97	CES66 = 97	CES91 = 80
CES17 = 50	CES42 = 94	CES67 = 97	CES92 = 81
CES18 = 57	CES43 = 91	CES68 = 94	CES93 = 89
CES19 = 72	CES44 = 99	CES69 = 95	CES94 = 80
CES20 = 67	CES45 = 95	CES70 = 92	CES95 = 86
CES21 = 86	CES46 = 95	CES71 = 90	CES96 = 93
CES22 = 79	CES47 = 91	CES72 = 96	CES97 = 95
CES23 = 92	CES48 = 96	CES73 = 87	CES98 = 96
CES24 = 90	CES49 = 93	CES74 = 91	CES99 = 94
CES25 = 72	CES50 = 97	CES75 = 91	

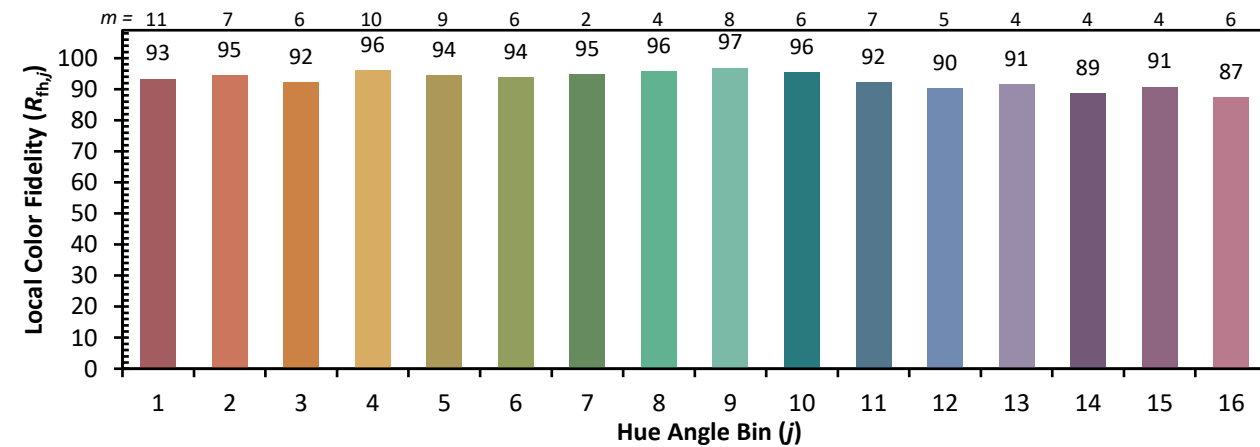
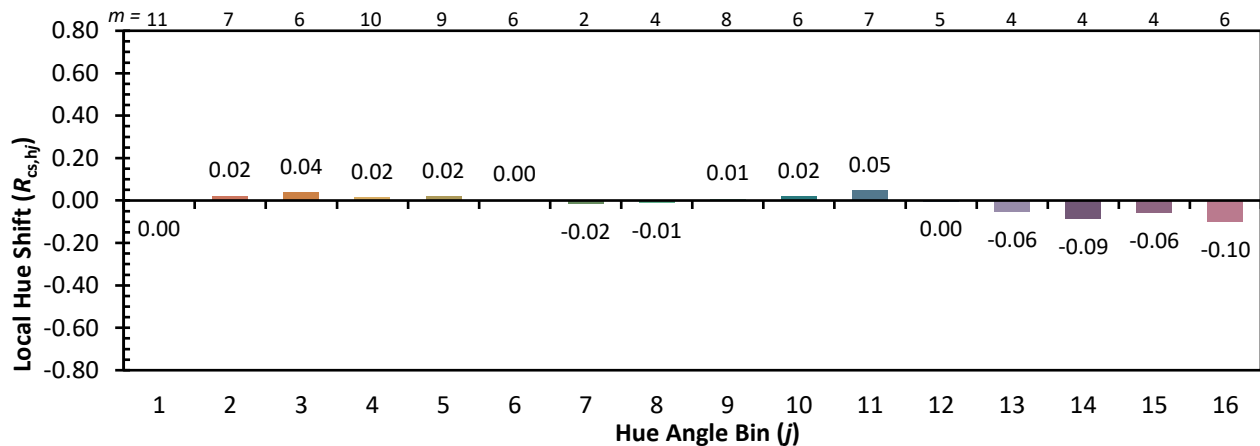
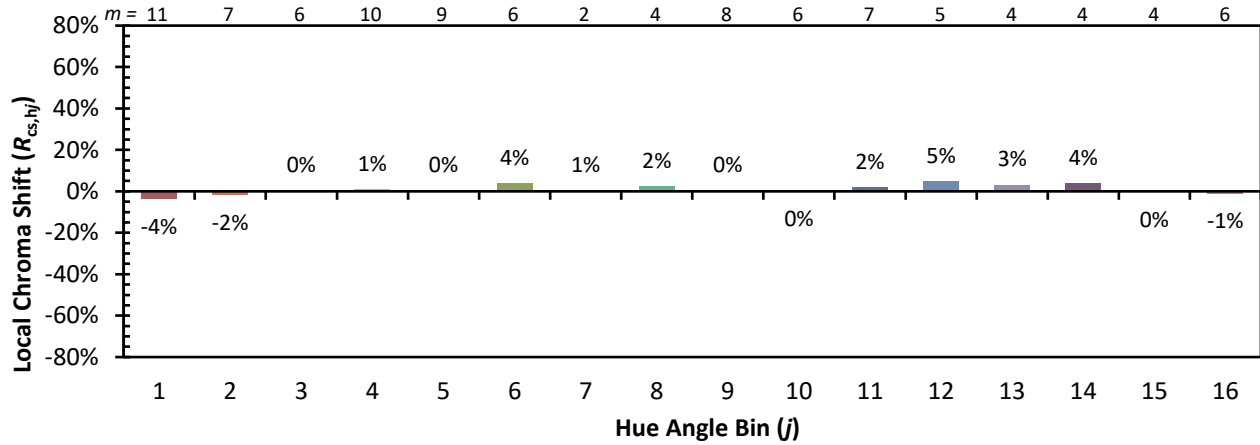




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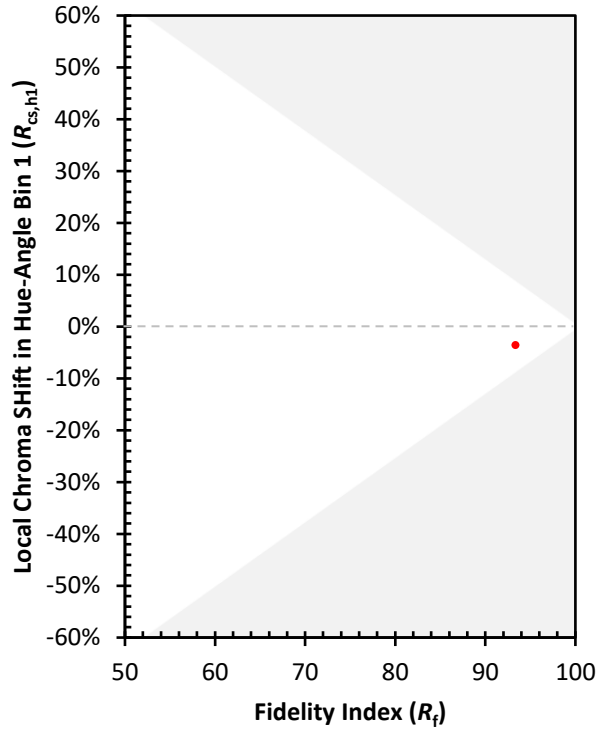
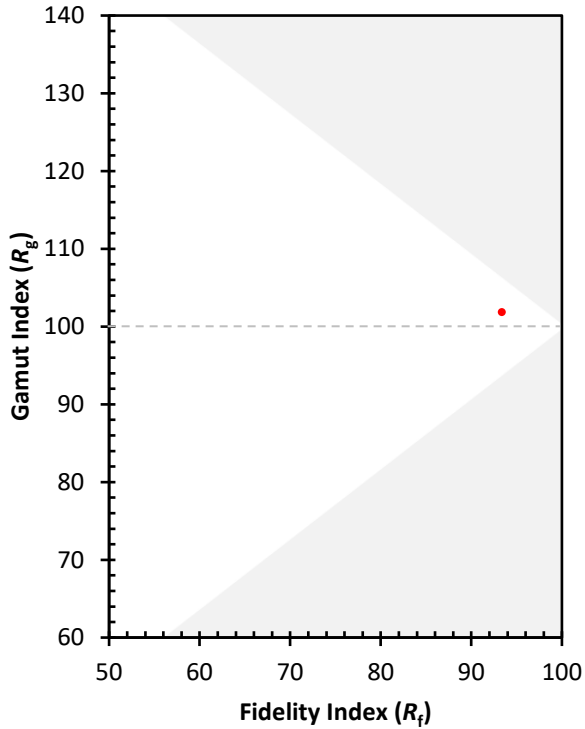
Color Rendition by Hue-Angle Bin



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Measure Comparisons



(END OF REPORT)