

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: P861224

Luminaire Tested: CS-SL-9SCT-120-ID-UNV-W-SA-STD-1F-(Low-3000K)

Issue Date: 8/14/2024

Test Information

Test Method: LM-79-2019
Report Number: P861224
TEST IS SCALED FROM IESNA LM-79-08 TEST DATA (G2-2312-259-1)
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-1F-(Low-3000K)
Description: iO CovSelect LED LINEAR LUMINAIRE, 1 FOOT, HIGH OUTPUT
ADJUSTED TO 3000K
Light Source: 3000 CCT, 90 CRI LEDS
Ballast/Driver: ELECTRONIC DRIVER

Summary

Lumens per Lamp: N/A
Luminaire Lumens: 359.0 lumens
Efficiency: N/A
Efficacy: 102.6 lumens/watt
Spacing Criteria (0/90/45): 1.2 / 1.19 / 1.3
Luminous Opening: Rectangular w/ Sides (W: 0.08' x L: 1' x H: 0.02')
CIE Type: Direct

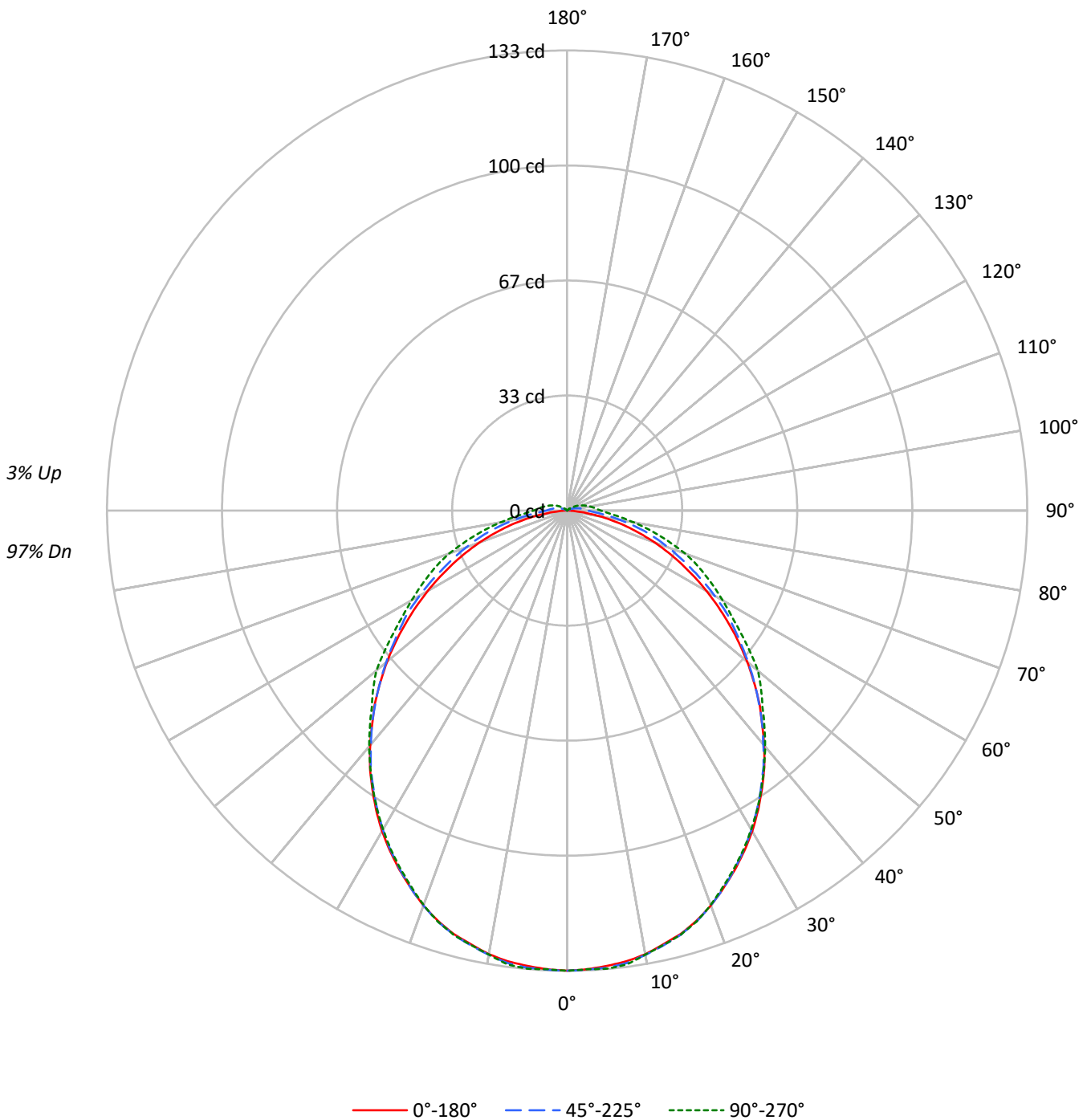
Input Watts (W): 3.5
Input Voltage (V): 120
Input Current (A_{in}): NR
Voltage Rise (V): NR
Power Factor: 0.9418
Total Harmonic Distortion (THDi): 0.076
Frequency (hertz): 60
Stabilization Time: 0.333 HR
Operation Time: 3 HR
Ambient Temperature (°C): NR
Test Distance: 24 FT



TEST NUMBER: P861224

CATALOG NUMBER: CS-SL-9SCT-120-ID-UNV-W-SA-STD-1F-(Low-3000K)

Luminous Intensity Polar Plot





TEST NUMBER: P861224

CATALOG NUMBER: CS-SL-9SCT-120-ID-UNV-W-SA-STD-1F-(Low-3000K)

COEFFICIENT OF UTILIZATION - ZONAL CAVITY METHOD:

RF	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	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	101	97	93	96	93	90	91	89	86	87	85	83	81																												
2	98	90	83	77	95	88	82	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	60	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°	17179	17179	17179
5°	17097	16910	16863
10°	17015	16545	16369
15°	16849	16141	15904
20°	16575	15613	15283
25°	16176	14968	14564
30°	15769	14303	13868
35°	15262	13584	13138
40°	14683	12813	12405
45°	14047	12004	11662
50°	13314	11174	11147
55°	12487	10380	10123
60°	11619	9544	9356
65°	10649	8558	8755
70°	9573	7671	8127
75°	8243	6781	7074
80°	6386	5527	5968
85°	3711	4369	5071

MAXIMUM LUMINANCE 45°-90°:

Horizontal Angle: 0°
 Vertical Angle: 45°
 Luminance: 14047 cd/sqm



TEST NUMBER: P861224

CATALOG NUMBER: CS-SL-9SCT-120-ID-UNV-W-SA-STD-1F-(Low-3000K)

ZONAL LUMENS:

Zone	Lumens	% Fixture
0°-10°	12.6	3.5
10°-20°	35.7	9.9
20°-30°	52.6	14.7
30°-40°	61.1	17.0
40°-50°	60.8	16.9
50°-60°	52.8	14.7
60°-70°	39.6	11.0
70°-80°	24.3	6.8
80°-90°	10.2	2.8
90°-100°	4.8	1.3
100°-110°	2.8	0.8
110°-120°	1.3	0.4
120°-130°	0.4	0.1
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°	100.9	28.1
0°-40°	162.0	45.1
0°-60°	275.6	76.8
0°-90°	349.7	97.4
90°-120°	8.9	2.5
90°-150°	9.3	2.6
90°-180°	9.0	2.5
0°-180°	359.0	100.0

CANDELA DISTRIBUTION:

	0°	22.5°	45°	67.5°	90°	Flux
0°	133	133	133	133	133	
5°	132	132	133	133	133	13
15°	127	126	127	127	127	36
25°	115	114	114	114	114	53
35°	98	97	98	98	98	61
45°	78	78	78	80	80	60
55°	57	57	59	61	61	51
65°	36	37	40	43	44	36
75°	18	19	23	26	27	19
85°	3	6	9	12	13	4
90°	0	2	6	9	10	0
95°	0	1	5	7	8	0
105°	0	0	3	5	6	0
115°	0	0	1	3	3	0
125°	0	0	0	1	1	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: P861224

CATALOG NUMBER: CS-SL-9SCT-120-ID-UNV-W-SA-STD-1F-(Low-3000K)

CANDELA DISTRIBUTION (FULL):

	0°	22.5°	45°	67.5°	90°
0°	133.0	133.0	133.0	133.0	133.0
2.5°	132.7	132.3	132.8	132.6	132.7
5°	132.1	132.0	132.6	132.7	132.9
7.5°	131.4	131.2	131.9	132.0	132.3
10°	130.2	129.9	130.4	130.3	130.3
12.5°	128.4	128.2	128.7	128.5	128.6
15°	126.7	126.3	126.9	126.8	126.9
17.5°	124.3	124.0	124.5	124.3	124.5
20°	121.5	121.1	121.5	121.3	121.3
22.5°	118.1	117.8	118.1	117.8	117.7
25°	114.6	114.2	114.4	114.2	114.1
27.5°	110.9	110.4	110.6	110.5	110.4
30°	107.0	106.3	106.5	106.5	106.4
32.5°	102.7	101.9	102.2	102.4	102.3
35°	98.2	97.3	97.7	98.0	97.9
37.5°	93.6	92.8	93.2	93.4	93.5
40°	88.6	88.0	88.2	88.9	89.0
42.5°	83.4	83.0	83.4	84.3	84.4
45°	78.5	77.9	78.3	79.5	79.8
47.5°	73.2	72.7	73.3	74.8	76.0
50°	67.9	67.5	68.3	71.0	72.0
52.5°	62.5	62.2	63.3	66.6	66.4
55°	57.1	56.9	58.7	60.9	61.0
57.5°	51.8	51.7	54.4	55.7	56.1
60°	46.6	46.7	49.2	50.9	51.9
62.5°	41.4	41.7	44.3	46.6	47.9
65°	36.4	36.9	39.5	42.6	44.0
67.5°	31.6	32.4	35.1	38.9	40.3
70°	26.8	28.0	31.0	35.1	36.3
72.5°	22.2	23.6	27.1	30.8	31.6
75°	17.8	19.3	23.3	26.4	27.4
77.5°	13.6	15.3	19.3	22.5	23.3
80°	9.6	11.8	15.5	18.6	19.4
82.5°	6.0	8.5	12.3	15.2	16.1
85°	3.1	5.6	9.4	12.3	13.2
87.5°	0.9	3.4	7.2	10.0	11.1
90°	0.0	2.2	6.0	8.7	9.7
92.5°	0.0	1.8	5.3	7.9	8.8
95°	0.0	1.4	4.7	7.2	8.1
97.5°	0.0	1.1	4.2	6.5	7.4
100°	0.0	0.8	3.7	5.9	6.7
102.5°	0.0	0.5	3.2	5.3	6.1
105°	0.0	0.3	2.7	4.7	5.5
107.5°	0.0	0.2	2.1	4.2	4.9
110°	0.0	0.1	1.7	3.6	4.4



TEST NUMBER: P861224

CATALOG NUMBER: CS-SL-9SCT-120-ID-UNV-W-SA-STD-1F-(Low-3000K)

CANDELA DISTRIBUTION (continued):

	0°	22.5°	45°	67.5°	90°
112.5°	0.0	0.0	1.3	3.1	3.8
115°	0.0	0.0	1.0	2.6	3.3
117.5°	0.0	0.0	0.7	2.0	2.8
120°	0.0	0.0	0.5	1.6	2.1
122.5°	0.0	0.0	0.3	1.2	1.7
125°	0.0	0.0	0.2	0.9	1.3
127.5°	0.0	0.0	0.1	0.7	1.0
130°	0.0	0.0	0.0	0.4	0.7
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

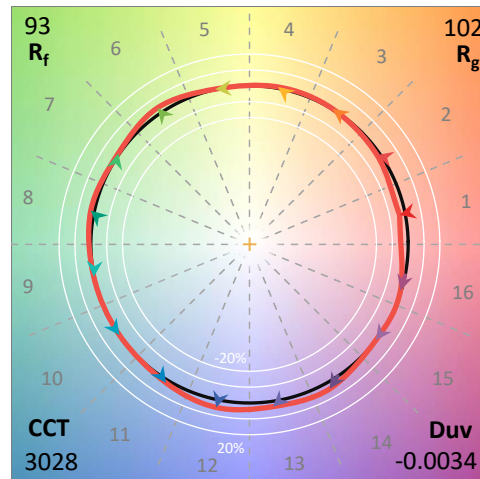
Test Method: LM-79-2019
 Report Number: SP1-2312-259-8
 Test Lab: COOPER LIGHTING SOLUTIONS
 Photometer: SP1 - 76IN SPHERE
 Measurement Geometry: 4π
 Issue Date: 02/08/2024
 Manufacturer: COOPER LIGHTING SOLUTIONS
 Product Line: iO LED
 Catalog Number: **CS-SL-9SCT-120-ID-UNV-W-SA-STD-1F (HIGH-3000K)**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

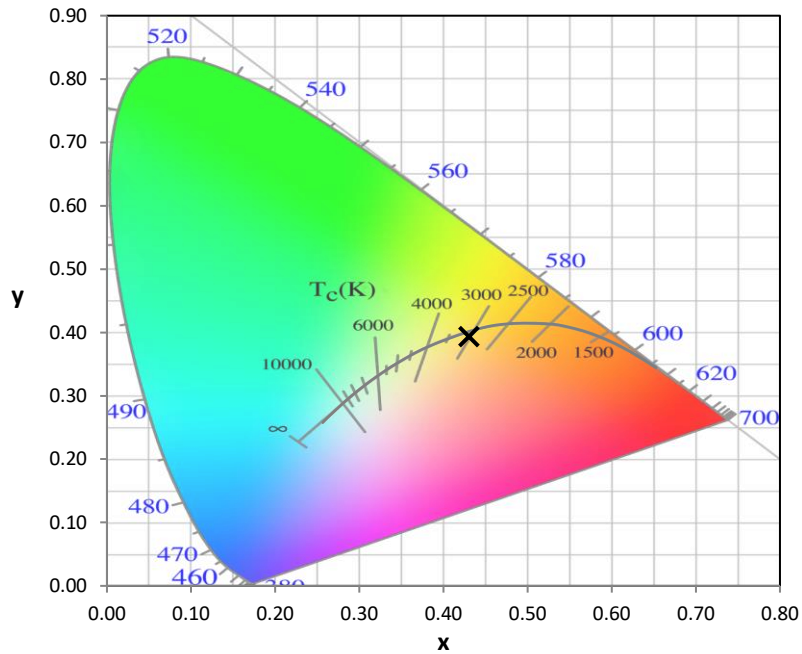


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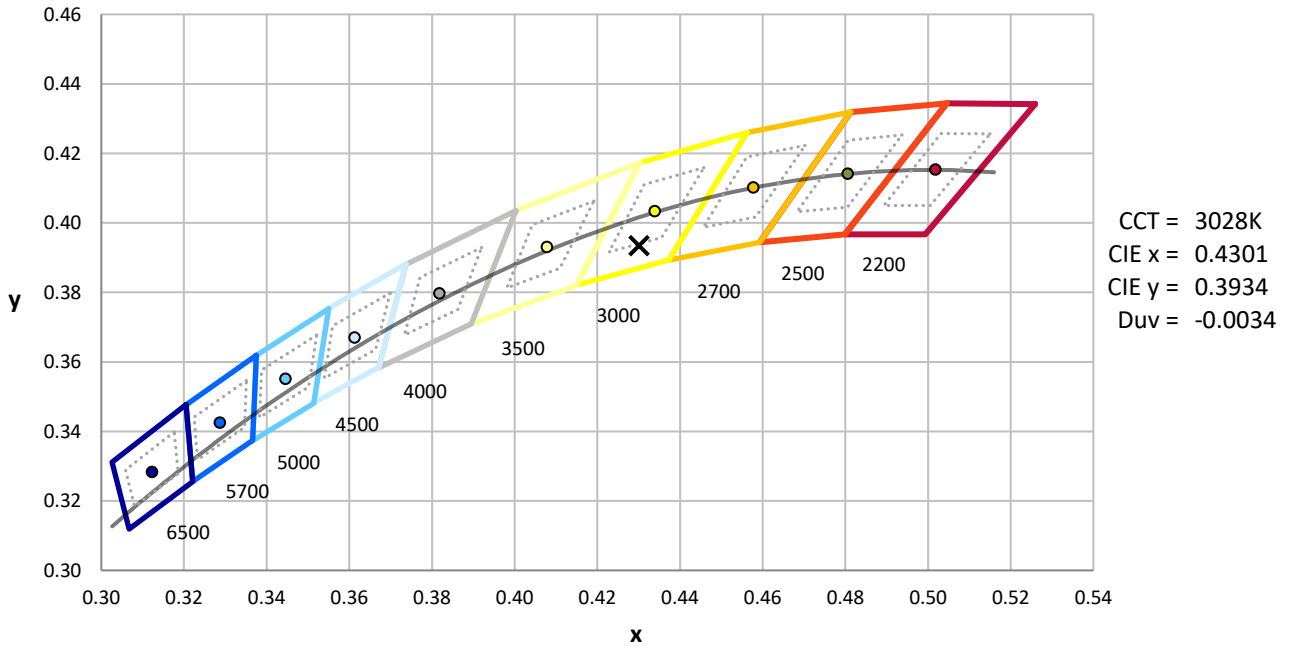
Measurement and Test Equipment			
Instrument	Identification Number	Calibration Date	Calibration Due Date
Photometer	76INCH SPHERE IN0058	8/9/2023	2/9/2024
Power Meter	XITRON 2801 IN0071	10/23/2023	10/23/2024
AC Power Source	CHROMA 61603 IN0063	10/24/2023	10/24/2024
DC Power Source	AGILENT E3634A IN0208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



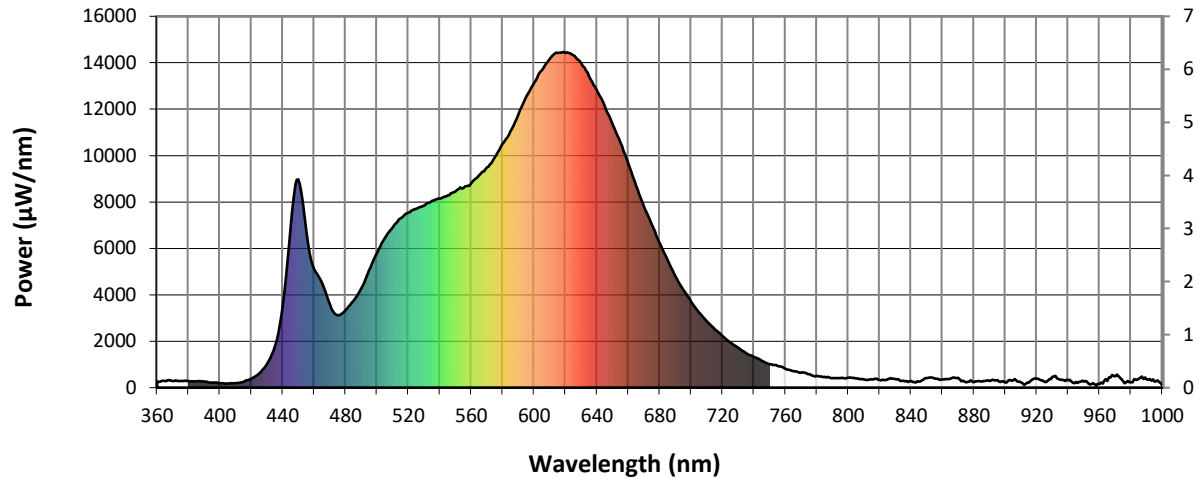
CIE 1931 Chromaticity Diagram with 2017 ANSI 7-Step and 4-Step Quadrangles



Point lies inside the ANSI 3000K 7-step quadrangle

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Photopic Flux vs. Wavelength

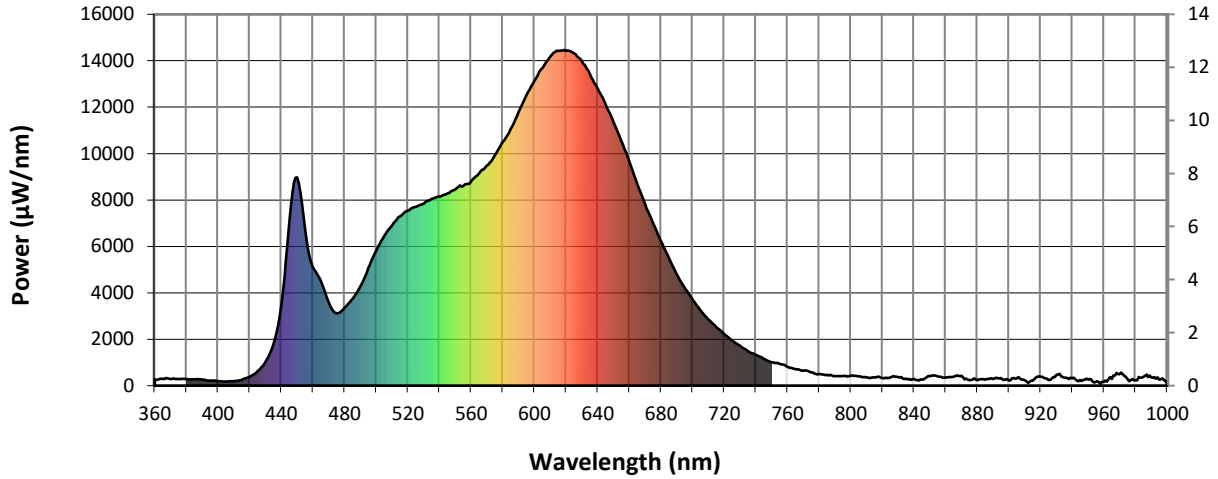


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λ (nm)	Power (µW/nm)	Lumens (φ/nm)	λ (nm)	Power (µW/nm)	Lumens (φ/nm)	λ (nm)	Power (µW/nm)	Lumens (φ/nm)	λ (nm)	Power (µW/nm)	Lumens (φ/nm)	λ (nm)	Power (µW/nm)	Lumens (φ/nm)
360	277	NR	490	4288	NR	620	14425	NR	750	998	NR	880	232	NR
365	287	NR	495	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



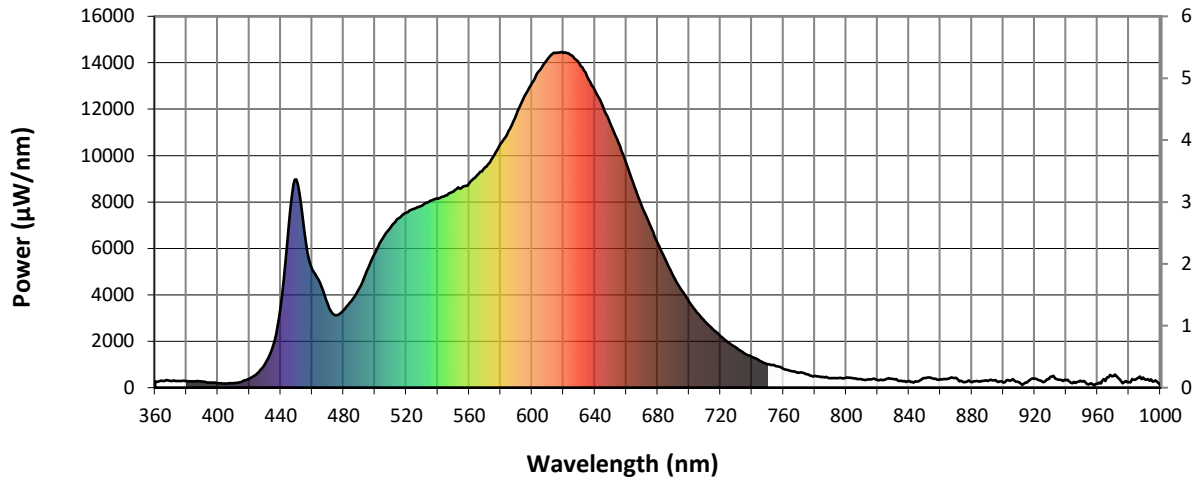
Scotopic Lumens: 1027.8

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

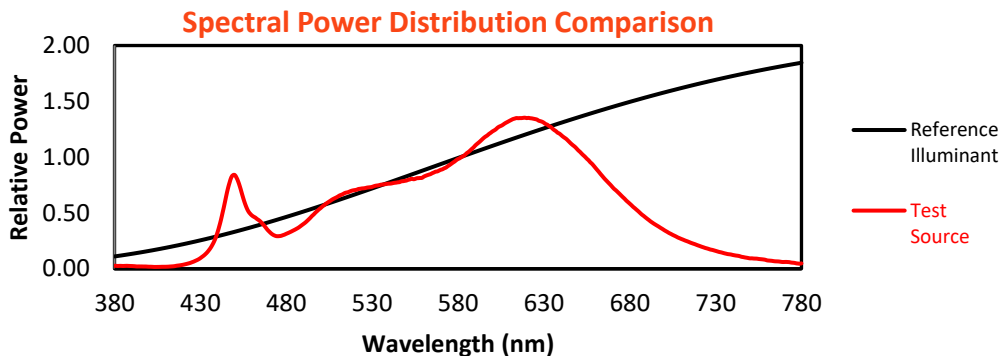
λ (nm)	Power (µW/nm)	Lumens (φ/nm)	λ (nm)	Power (µW/nm)	Lumens (φ/nm)	λ (nm)	Power (µW/nm)	Lumens (φ/nm)	λ (nm)	Power (µW/nm)	Lumens (φ/nm)	λ (nm)	Power (µW/nm)	Lumens (φ/nm)
360	277	NR	490	4288	NR	620	14425	NR	750	998	NR	880	232	NR
365	287	NR	495	5056	NR	625	14329	NR	755	940	NR	885	263	NR
370	283	NR	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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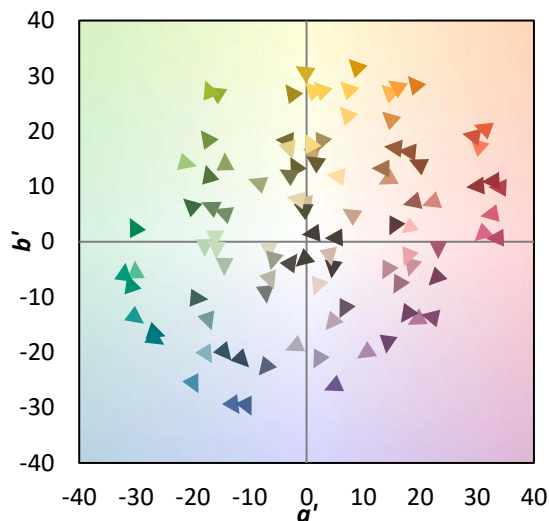
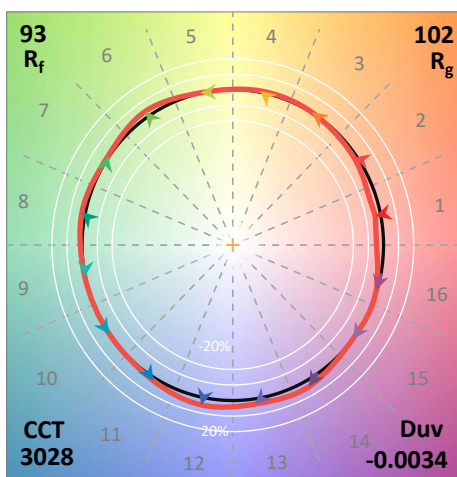
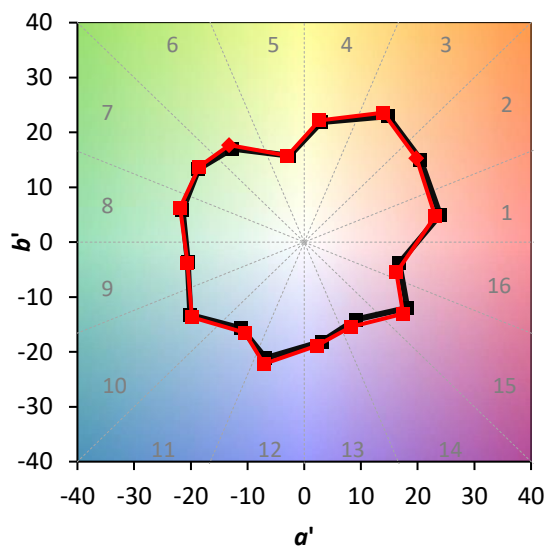
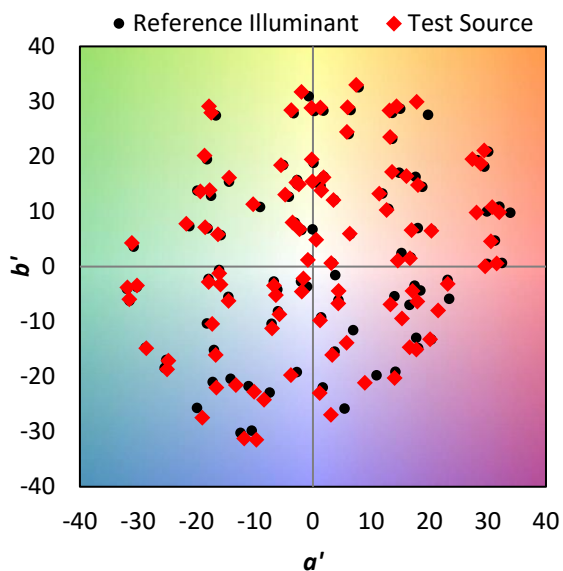
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Summary

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



Color Vector Graphics

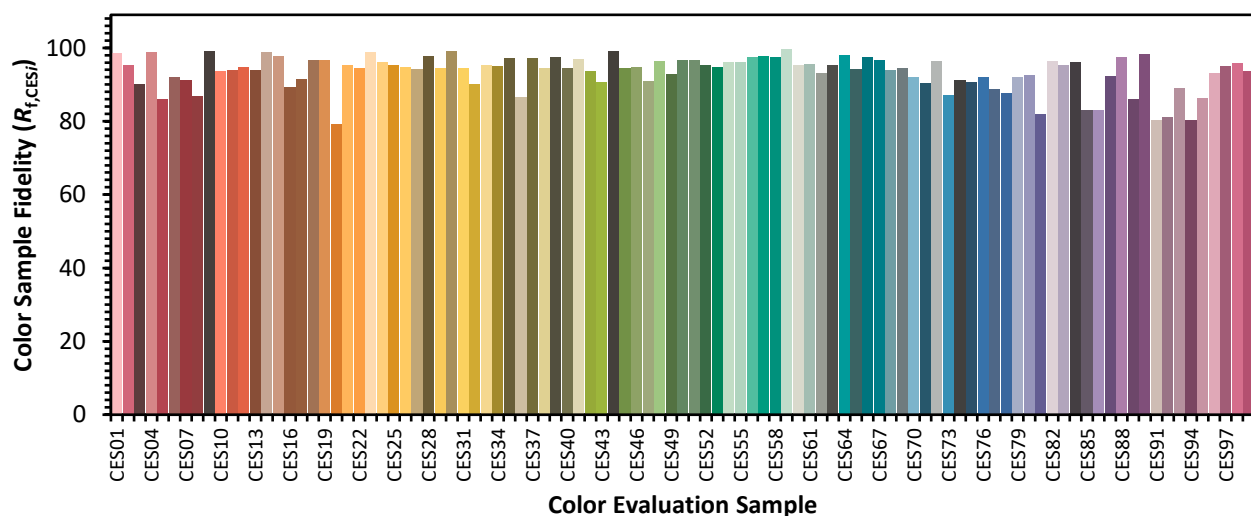


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Individual Sample Fidelity Index ($R_{f,i}$)

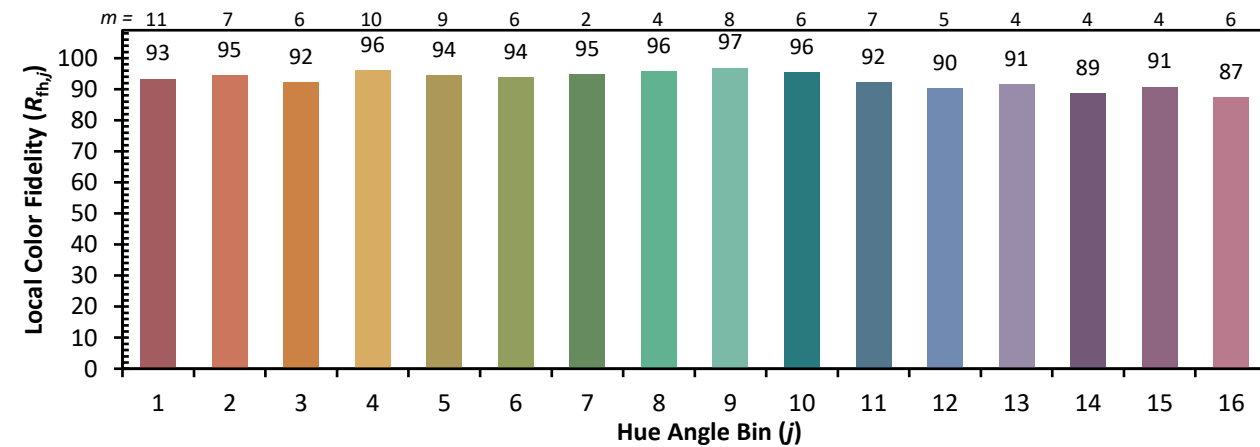
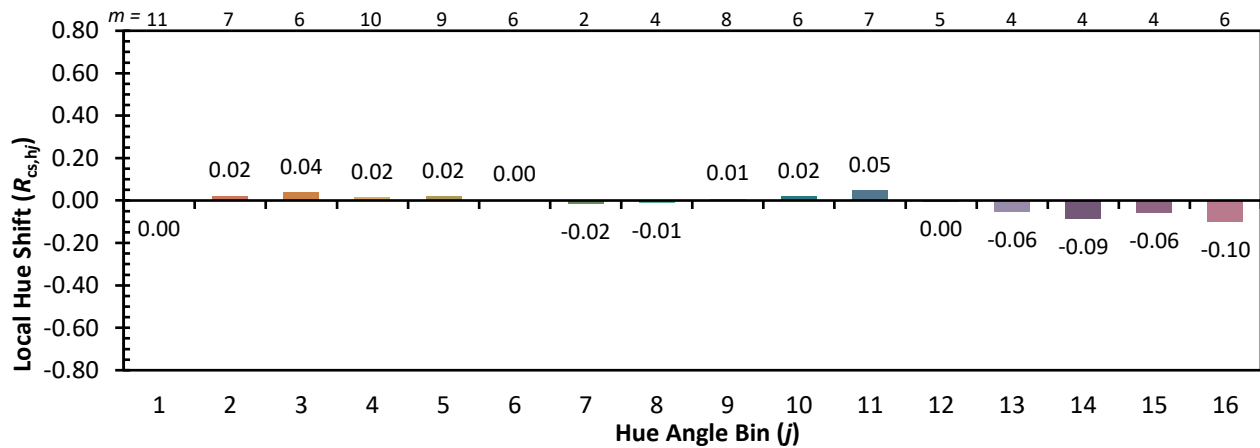
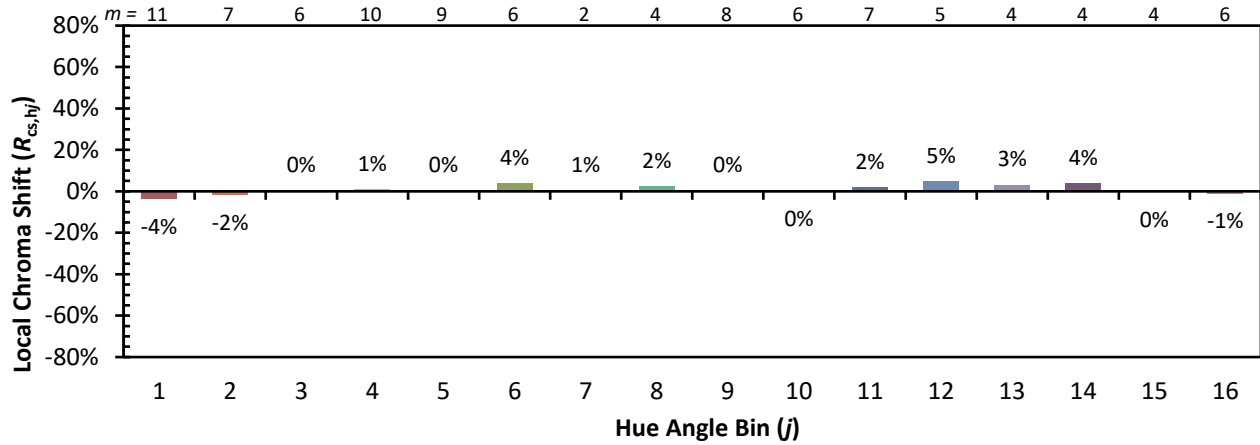
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CES02 = 63	CES27 = 94	CES52 = 95	CES77 = 89
CES03 = 32	CES28 = 98	CES53 = 95	CES78 = 88
CES04 = 70	CES29 = 95	CES54 = 96	CES79 = 92
CES05 = 51	CES30 = 99	CES55 = 96	CES80 = 92
CES06 = 51	CES31 = 95	CES56 = 97	CES81 = 82
CES07 = 44	CES32 = 90	CES57 = 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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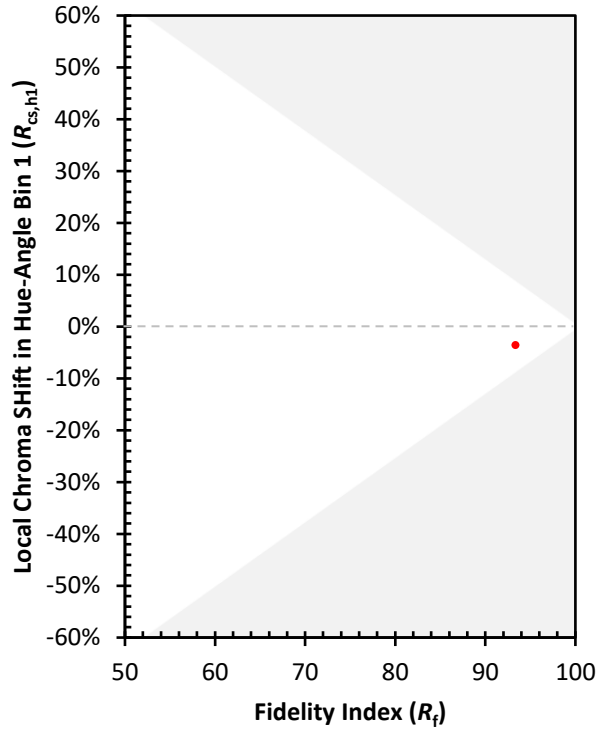
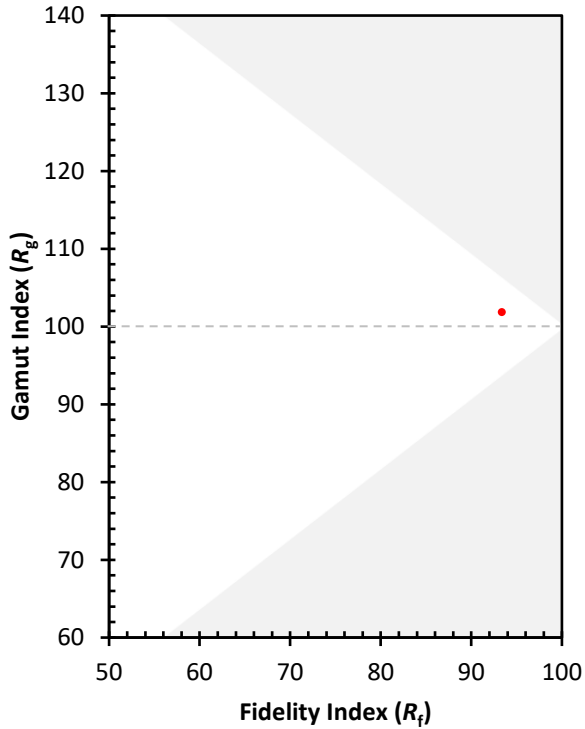
Color Rendition by Hue-Angle Bin



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Measure Comparisons



(END OF REPORT)