

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: FAIL-SAFE

Report Number: P1357267

Luminaire Tested: 4ASL4-5HE-2-A59-UNV

Issue Date: 2/17/2026

**Test Information**

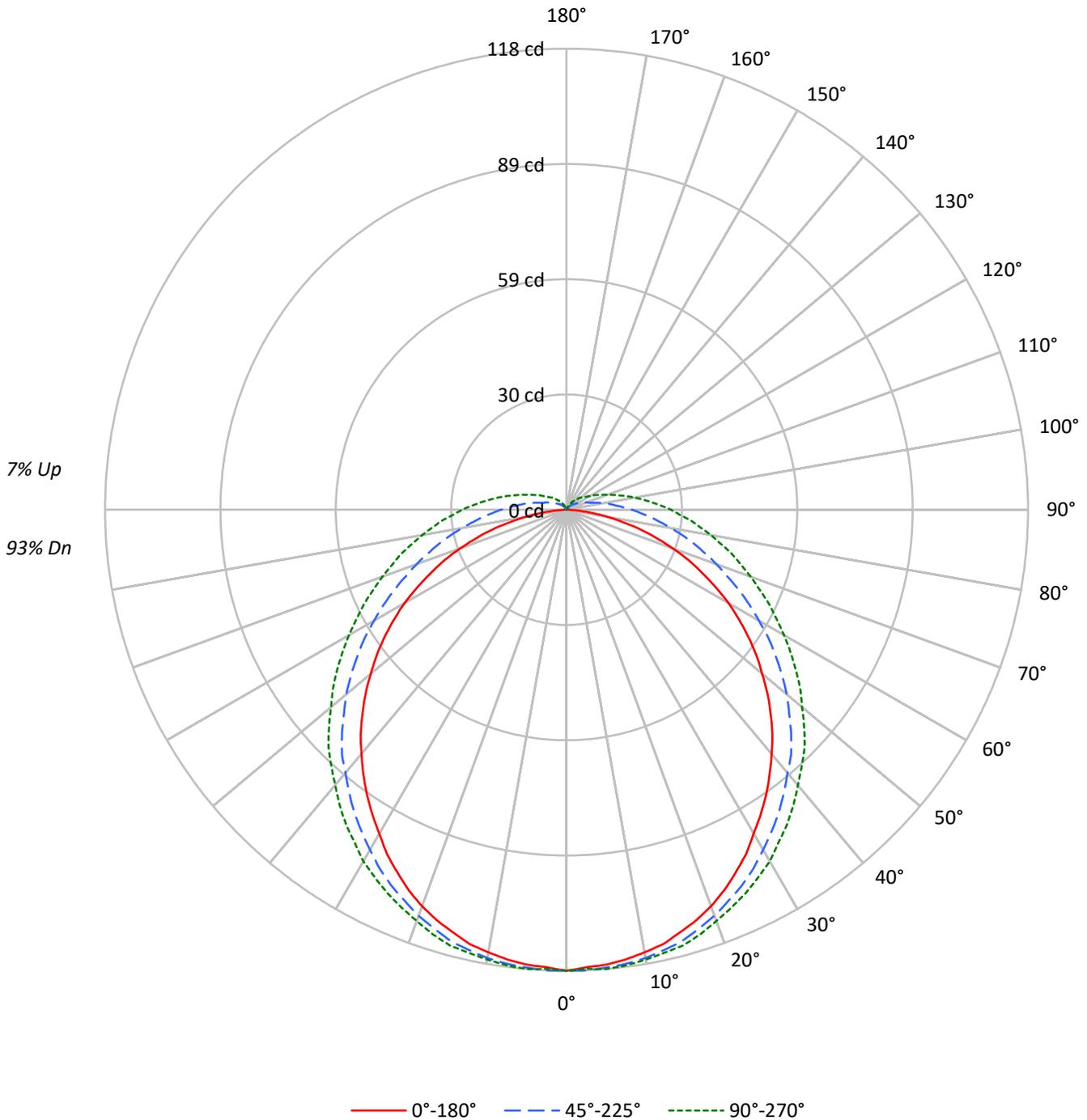
Test Method: LM-79-2019  
Report Number: P1357267  
TEST IS SCALED FROM IESNA LM-79-08 TEST DATA (G2-2511-597-7)  
Test Lab: INNOVATION CENTER  
Issue Date: 2/17/2026  
Manufacturer: COOPER LIGHTING SOLUTIONS  
Product Line: FAIL-SAFE  
Catalog Number: 4ASL4-5HE-2-A59-UNV  
Description: 4FT 500 LUMEN PER FOOT 4ASL LED LUMINAIRE WITH OPL LENS AND A59 LEDS 2 ROW  
Light Source: -  
Ballast/Driver: -

**Summary**

Lumens per Lamp: N/A  
Luminaire Lumens: 405.0 lumens  
Efficiency: N/A  
Efficacy: 37.5 lumens/watt  
Spacing Criteria (0/90/45): 1.21 / 1.3 / 1.4  
Luminous Opening: Rectangular w/ Sides (W: 0.33' x L: 3.98' x H: 0.1')  
CIE Type: Direct  
  
Input Watts (W): 10.8  
Input Voltage (V): NR  
Input Current (A<sub>in</sub>): 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: 24 FT

TEST NUMBER: P1357267  
CATALOG NUMBER: 4ASL4-5HE-2-A59-UNV

### Luminous Intensity Polar Plot





TEST NUMBER: P1357267

CATALOG NUMBER: 4ASL4-5HE-2-A59-UNV

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

RF	20				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	117	117	117	117	114	114	114	114	107	107	107	101	101	101	95	95	95	95	95	95	93
1	105	100	95	90	102	97	92	88	91	87	84	86	83	80	81	79	77	77	77	77	74
2	95	86	79	72	92	84	77	71	79	73	68	74	70	65	70	66	63	63	63	63	60
3	86	75	66	59	83	73	65	58	69	62	56	65	59	55	62	57	53	53	53	53	50
4	79	66	57	50	76	64	56	49	61	54	48	58	51	46	55	49	45	45	45	45	42
5	72	59	50	43	70	57	49	42	54	47	41	52	45	40	49	43	39	39	39	39	36
6	67	53	44	37	64	52	43	37	49	41	36	47	40	35	44	39	34	34	34	34	32
7	62	48	39	33	60	47	38	32	45	37	32	43	36	31	41	35	30	30	30	30	28
8	58	44	35	29	56	43	34	29	41	33	28	39	32	28	37	31	27	27	27	27	25
9	54	40	32	26	52	39	31	26	37	30	25	36	29	25	34	29	24	24	24	24	22
10	50	37	29	24	49	36	28	23	35	28	23	33	27	22	32	26	22	22	22	22	20

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

	0°	45°	90°
0°	958	958	958
5°	950	938	936
10°	943	921	913
15°	934	902	895
20°	924	879	868
25°	906	855	846
30°	883	827	825
35°	866	803	799
40°	846	775	772
45°	825	752	753
50°	799	722	723
55°	775	688	700
60°	744	652	676
65°	695	617	656
70°	640	584	640
75°	563	560	634
80°	439	537	632
85°	265	536	650

**MAXIMUM LUMINANCE 45°-90°:**

Horizontal Angle: 0°  
 Vertical Angle: 45°  
 Luminance: 825 cd/sqm



TEST NUMBER: P1357267  
 CATALOG NUMBER: 4ASL4-5HE-2-A59-UNV

**ZONAL LUMENS:**

Zone	Lumens	% Fixture
0°-10°	11.2	2.8
10°-20°	32.2	7.9
20°-30°	48.7	12.0
30°-40°	58.9	14.6
40°-50°	62.1	15.3
50°-60°	58.0	14.3
60°-70°	47.9	11.8
70°-80°	34.7	8.6
80°-90°	21.9	5.4
90°-100°	13.1	3.2
100°-110°	7.5	1.9
110°-120°	4.3	1.0
120°-130°	2.4	0.6
130°-140°	1.3	0.3
140°-150°	0.6	0.1
150°-160°	0.1	0.0
160°-170°	0.0	0.0
170°-180°	0.0	0.0
<b>0°-30°</b>	<b>92.1</b>	<b>22.7</b>
<b>0°-40°</b>	<b>151.0</b>	<b>37.3</b>
<b>0°-60°</b>	<b>271.1</b>	<b>67.0</b>
<b>0°-90°</b>	<b>375.7</b>	<b>92.8</b>
<b>90°-120°</b>	<b>24.9</b>	<b>6.1</b>
<b>90°-150°</b>	<b>29.2</b>	<b>7.2</b>
<b>90°-180°</b>	<b>29.0</b>	<b>7.2</b>
<b>0°-180°</b>	<b>405.0</b>	<b>100.0</b>

**CANDELA DISTRIBUTION:**

	0°	22.5°	45°	67.5°	90°	Flux
0°	118	118	118	118	118	
5°	117	118	118	118	118	11
15°	112	114	114	115	115	32
25°	102	104	106	108	108	47
35°	89	91	95	97	98	56
45°	74	77	81	85	86	57
55°	57	60	65	70	72	51
65°	38	42	49	54	57	38
75°	20	25	34	41	44	21
85°	4	12	22	29	32	5
90°	0	7	17	24	27	0
95°	0	4	13	19	22	0
105°	0	2	7	12	14	0
115°	0	1	4	7	9	0
125°	0	0	3	5	6	0
135°	0	0	2	3	4	0
145°	0	0	1	2	2	0
155°	0	0	0	0	1	0
165°	0	0	0	0	0	0
175°	0	0	0	0	0	0
180°	0	0	0	0	0	0



TEST NUMBER: P1357267  
 CATALOG NUMBER: 4ASL4-5HE-2-A59-UNV

**CANDELA DISTRIBUTION (FULL):**

	0°	22.5°	45°	67.5°	90°
0°	118.0	118.0	118.0	118.0	118.0
2.5°	117.2	118.3	118.0	117.6	117.6
5°	116.9	118.0	117.6	117.6	118.0
7.5°	116.1	117.2	117.2	117.2	117.6
10°	115.0	116.5	116.5	116.5	116.9
12.5°	113.9	115.0	115.4	115.7	116.1
15°	112.0	113.5	114.3	114.6	115.4
17.5°	110.2	111.3	112.4	113.5	113.9
20°	108.0	109.4	110.6	111.7	112.0
22.5°	105.4	106.8	108.3	109.4	110.2
25°	102.4	103.9	106.1	107.6	108.3
27.5°	99.4	100.9	103.5	105.4	106.1
30°	95.7	97.9	100.5	102.8	103.9
32.5°	92.4	94.6	97.6	100.2	100.9
35°	89.0	91.3	94.6	97.2	98.3
37.5°	85.3	87.9	91.3	94.2	95.3
40°	81.6	84.2	87.9	91.3	92.0
42.5°	77.9	80.5	85.0	87.9	89.0
45°	73.8	76.8	81.2	84.6	86.1
47.5°	69.7	72.7	77.2	80.9	82.4
50°	65.3	68.6	73.5	77.2	78.6
52.5°	61.2	64.6	69.4	73.5	75.3
55°	56.8	60.1	65.3	69.7	71.6
57.5°	52.3	55.6	61.2	66.0	67.9
60°	47.9	51.2	56.8	62.3	64.2
62.5°	43.0	46.7	52.7	58.2	60.5
65°	38.2	42.3	48.6	54.5	57.1
67.5°	33.8	37.8	44.5	51.2	53.4
70°	28.9	33.4	40.8	47.5	50.1
72.5°	24.1	28.9	37.1	44.1	46.7
75°	19.7	24.9	33.8	40.8	43.8
77.5°	14.8	21.1	30.4	37.8	40.4
80°	10.8	17.4	27.1	34.9	37.5
82.5°	7.0	14.1	24.1	31.9	34.5
85°	3.7	11.5	21.5	28.9	31.9
87.5°	1.1	8.9	18.9	26.3	28.9
90°	0.0	7.0	16.7	23.7	26.7
92.5°	0.0	5.6	14.5	21.5	24.1
95°	0.0	4.5	12.6	19.3	21.9
97.5°	0.0	3.7	11.1	17.4	19.7
100°	0.0	3.0	9.6	15.6	17.8
102.5°	0.0	2.2	8.2	13.7	16.0
105°	0.0	1.5	7.0	12.2	14.1
107.5°	0.0	1.1	5.9	10.8	12.6
110°	0.0	1.1	5.6	9.3	11.1



TEST NUMBER: P1357267  
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**CANDELA DISTRIBUTION (continued):**

	0°	22.5°	45°	67.5°	90°
112.5°	0.0	0.7	4.8	8.5	10.0
115°	0.0	0.7	4.1	7.4	8.9
117.5°	0.0	0.7	3.7	6.7	8.2
120°	0.0	0.7	3.3	5.9	7.0
122.5°	0.0	0.4	3.0	5.2	6.3
125°	0.0	0.4	2.6	4.8	5.6
127.5°	0.0	0.4	2.2	4.5	5.2
130°	0.0	0.4	2.2	4.1	4.8
132.5°	0.0	0.0	1.9	3.7	4.5
135°	0.0	0.0	1.5	3.0	3.7
137.5°	0.0	0.0	1.5	2.6	3.3
140°	0.0	0.0	1.1	2.6	3.0
142.5°	0.0	0.0	0.7	2.2	2.6
145°	0.0	0.0	0.7	1.9	2.2
147.5°	0.0	0.0	0.4	1.5	1.9
150°	0.0	0.0	0.4	1.1	1.5
152.5°	0.0	0.0	0.0	0.7	1.1
155°	0.0	0.0	0.0	0.4	0.7
157.5°	0.0	0.0	0.0	0.0	0.4
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



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**CIE UGR TABLE:**

Reflectances:											
Ceiling		0.7	0.7	0.5	0.5	0.3	0.7	0.7	0.5	0.5	0.3
Wall		0.5	0.3	0.5	0.3	0.3	0.5	0.3	0.5	0.3	0.3
Reference plane		0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2
Room dimensions		Viewed crosswise					Viewed endwise				
X=2H	Y=2H	9.16	10.69	9.63	11.15	11.64	11.22	12.75	11.69	13.21	13.70
	3H	10.66	12.06	11.15	12.53	13.06	13.67	15.07	14.16	15.54	16.07
	4H	11.14	12.47	11.65	12.96	13.50	14.88	16.21	15.39	16.70	17.24
	6H	11.42	12.65	11.94	13.15	13.71	16.15	17.39	16.67	17.89	18.45
	8H	11.47	12.65	12.00	13.18	13.75	16.81	18.00	17.34	18.52	19.09
	12H	11.48	12.62	12.02	13.14	13.74	17.54	18.68	18.08	19.19	19.79
4H	2H	10.04	11.37	10.54	11.85	12.40	11.65	12.98	12.16	13.46	14.01
	3H	11.78	12.91	12.30	13.44	14.01	14.33	15.46	14.85	15.99	16.56
	4H	12.39	13.43	12.93	13.97	14.57	15.72	16.75	16.25	17.29	17.89
	6H	12.79	13.71	13.35	14.27	14.89	17.18	18.10	17.74	18.67	19.28
	8H	12.89	13.75	13.45	14.32	14.94	17.95	18.81	18.52	19.38	20.01
	12H	12.94	13.72	13.52	14.31	14.94	18.81	19.59	19.39	20.18	20.81
8H	4H	13.09	13.95	13.65	14.51	15.14	15.94	16.80	16.50	17.36	17.99
	6H	13.67	14.40	14.27	15.01	15.64	17.58	18.31	18.18	18.92	19.55
	8H	13.86	14.52	14.47	15.14	15.78	18.49	19.15	19.10	19.77	20.41
	12H	13.98	14.57	14.59	15.18	15.89	19.53	20.12	20.14	20.73	21.44
12H	4H	13.29	14.07	13.87	14.67	15.30	15.94	16.73	16.53	17.32	17.95
	6H	13.98	14.64	14.58	15.26	15.90	17.62	18.28	18.23	18.90	19.54
	8H	14.26	14.85	14.87	15.46	16.17	18.60	19.19	19.21	19.80	20.51

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

Report Prepared for

Cooper Lighting Solutions

Fail-Safe

Report Number: SP1-2511-597-9

Test Date: 01/22/2026

Luminaire Tested: 4ASL-2-A590-UNV-OPL-1\_600mA

Data in this report applies to families of products including 4ASL

**Test Information**

Test Method: LM-79-2019  
 Report Number: SP1-2511-597-9  
 Test Lab: COOPER LIGHTING SOLUTIONS  
 Photometer: SP1 - 76IN SPHERE  
 Measurement Geometry: 4π  
 Issue Date: 01/29/2026  
 Manufacturer: COOPER LIGHTING SOLUTIONS  
 Product Line: Fail-Safe  
 Catalog Number: **4ASL-2-A590-UNV-OPL-1\_600mA**  
 Description: 2foot 4ASL LED LUMINAIRE WITH OPL LENS AND AMBER 590 LEDS with 1 rows at 600mA

**Spectral Parameters**

CCT (K): 1535  
 CIE u': 0.3534  
 CIE v': 0.5468  
 Duv: 0.0117  
 CIE x: 0.5921  
 CIE y: 0.4072  
 CIE z: 0.0007  
 Peak Wavelength (nm): 598  
 Dominant Wavelength (nm): 592  
 Purity: 99.97894  
 R<sub>f</sub>: 1.3  
 R<sub>g</sub>: 0.1

CRI (Ra):	-20.0		
R1:	-32.1	R9:	-380.5
R2:	53.1	R10:	29.9
R3:	18.5	R11:	-92.0
R4:	-65.7	R12:	-8.5
R5:	-38.6	R13:	-13.5
R6:	42.8	R14:	47.1
R7:	-6.2	R15:	-65.4
R8:	-132.3		



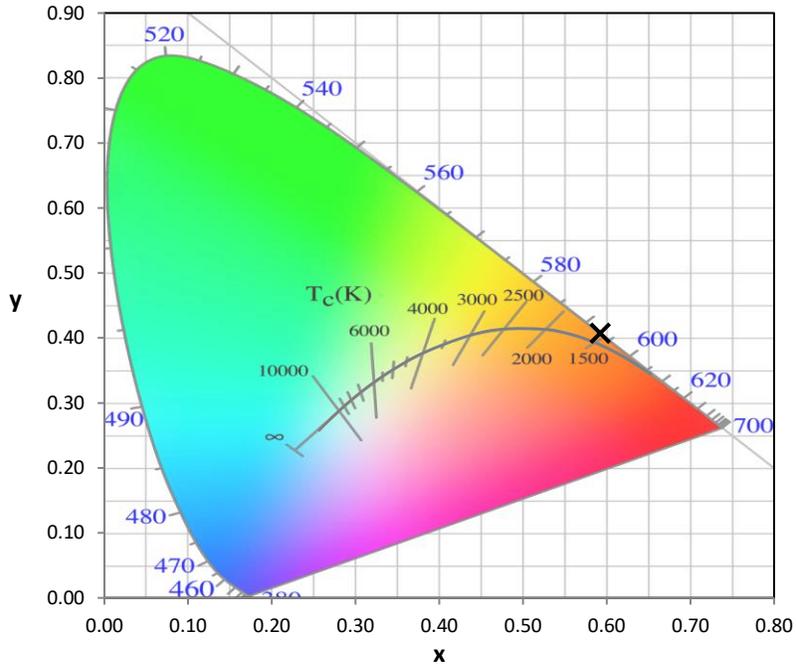
**Test Conditions**  
 Stabilization Time: 77M  
 Operation Time: 2H 17M  
 Sphere Temperature (°C): 25.1

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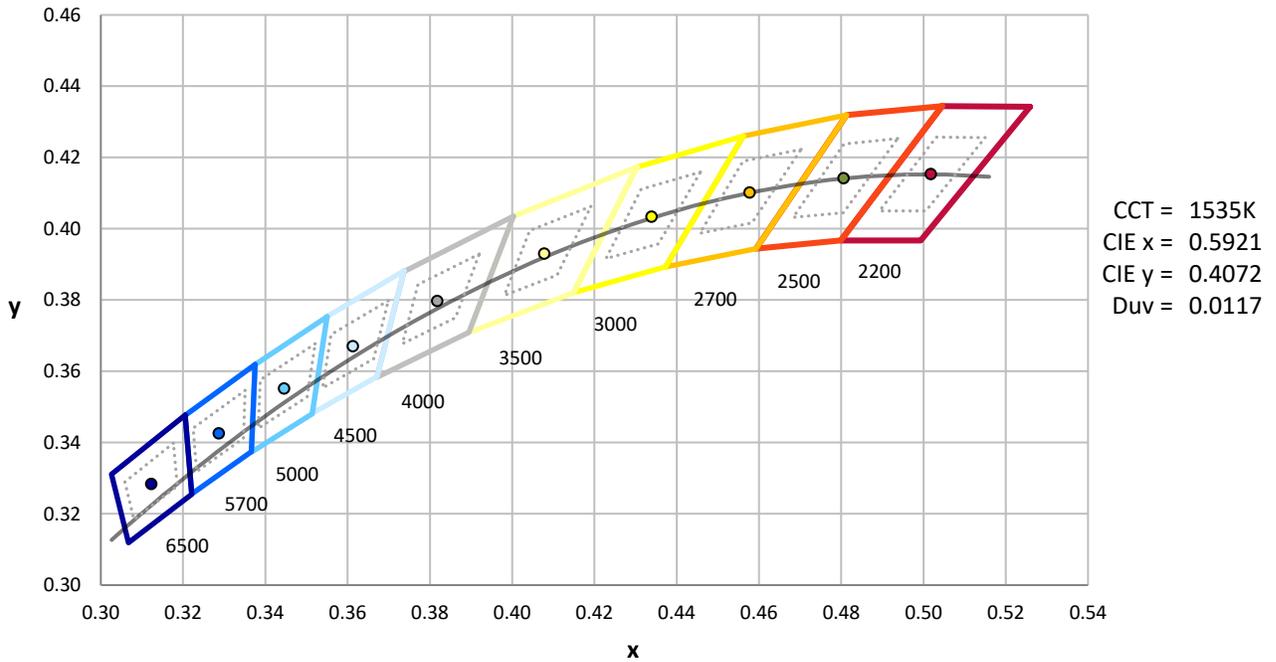
Measurement and Test Equipment			
Instrument	Identification Number	Calibration Date	Calibration Due Date
Photometer	76INCH SPHERE IN0058	12/16/2025	6/16/2026
Power Meter	XITRON INXT2011004	10/21/2025	10/21/2026
AC Power Source	CHROMA 61603 IN0063	10/21/2025	10/21/2026
DC Power Source	AGILENT E3634A IN0208	10/21/2025	10/21/2026
Sphere Thermometer	ONSET IN0085	10/21/2025	10/21/2026
Room Thermometer	ONSET IN0046	10/21/2025	10/21/2026

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**CIE 1931 Chromaticity Diagram**



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



Point lies outside the range

REPORT NUMBER: SP1-2511-597-9

**Photopic Flux vs. Wavelength**

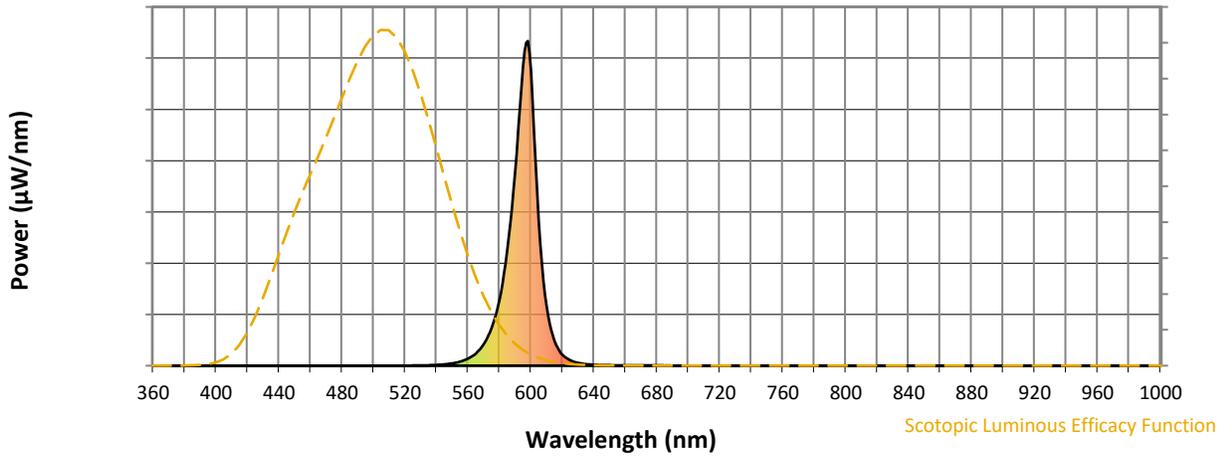


**Photopic Lumens: NR**

λ (nm)	Power W <sup>^</sup> /nm	Lumens (φ/nm)	λ (nm)	Power W <sup>^</sup> /nm	Lumens (φ/nm)	λ (nm)	Power W <sup>^</sup> /nm	Lumens (φ/nm)	λ (nm)	Power W <sup>^</sup> /nm	Lumens (φ/nm)	λ (nm)	Power W <sup>^</sup> /nm	Lumens (φ/nm)
360	0	NR	490	0	NR	620	35	NR	750	0	NR	880	0	NR
365	0	NR	495	0	NR	625	17	NR	755	0	NR	885	0	NR
370	0	NR	500	0	NR	630	9	NR	760	0	NR	890	0	NR
375	0	NR	505	0	NR	635	5	NR	765	0	NR	895	0	NR
380	0	NR	510	0	NR	640	3	NR	770	0	NR	900	0	NR
385	0	NR	515	0	NR	645	2	NR	775	0	NR	905	0	NR
390	0	NR	520	0	NR	650	2	NR	780	0	NR	910	0	NR
395	0	NR	525	1	NR	655	1	NR	785	0	NR	915	0	NR
400	0	NR	530	1	NR	660	1	NR	790	0	NR	920	0	NR
405	0	NR	535	1	NR	665	1	NR	795	0	NR	925	0	NR
410	0	NR	540	2	NR	670	1	NR	800	0	NR	930	0	NR
415	0	NR	545	4	NR	675	1	NR	805	0	NR	935	0	NR
420	0	NR	550	7	NR	680	1	NR	810	0	NR	940	0	NR
425	0	NR	555	12	NR	685	0	NR	815	0	NR	945	0	NR
430	0	NR	560	22	NR	690	0	NR	820	0	NR	950	0	NR
435	0	NR	565	38	NR	695	0	NR	825	0	NR	955	0	NR
440	0	NR	570	66	NR	700	0	NR	830	0	NR	960	0	NR
445	0	NR	575	115	NR	705	0	NR	835	0	NR	965	0	NR
450	0	NR	580	203	NR	710	0	NR	840	0	NR	970	0	NR
455	0	NR	585	354	NR	715	0	NR	845	0	NR	975	0	NR
460	0	NR	590	596	NR	720	0	NR	850	0	NR	980	0	NR
465	0	NR	595	923	NR	725	0	NR	855	0	NR	985	0	NR
470	0	NR	600	909	NR	730	0	NR	860	0	NR	990	0	NR
475	0	NR	605	447	NR	735	0	NR	865	0	NR	995	0	NR
480	0	NR	610	183	NR	740	0	NR	870	0	NR	1000	0	NR
485	0	NR	615	75	NR	745	0	NR	875	0	NR			

REPORT NUMBER: SP1-2511-597-9

**Scotopic Flux vs. Wavelength**



**Scotopic Lumens: NR**

**S/P: 0.22**

$\lambda$ (nm)	Power W <sup>^</sup> /nm	Lumens ( $\phi$ /nm)	$\lambda$ (nm)	Power W <sup>^</sup> /nm	Lumens ( $\phi$ /nm)	$\lambda$ (nm)	Power W <sup>^</sup> /nm	Lumens ( $\phi$ /nm)	$\lambda$ (nm)	Power W <sup>^</sup> /nm	Lumens ( $\phi$ /nm)	$\lambda$ (nm)	Power W <sup>^</sup> /nm	Lumens ( $\phi$ /nm)
360	0	NR	490	0	NR	620	35	NR	750	0	NR	880	0	NR
365	0	NR	495	0	NR	625	17	NR	755	0	NR	885	0	NR
370	0	NR	500	0	NR	630	9	NR	760	0	NR	890	0	NR
375	0	NR	505	0	NR	635	5	NR	765	0	NR	895	0	NR
380	0	NR	510	0	NR	640	3	NR	770	0	NR	900	0	NR
385	0	NR	515	0	NR	645	2	NR	775	0	NR	905	0	NR
390	0	NR	520	0	NR	650	2	NR	780	0	NR	910	0	NR
395	0	NR	525	1	NR	655	1	NR	785	0	NR	915	0	NR
400	0	NR	530	1	NR	660	1	NR	790	0	NR	920	0	NR
405	0	NR	535	1	NR	665	1	NR	795	0	NR	925	0	NR
410	0	NR	540	2	NR	670	1	NR	800	0	NR	930	0	NR
415	0	NR	545	4	NR	675	1	NR	805	0	NR	935	0	NR
420	0	NR	550	7	NR	680	1	NR	810	0	NR	940	0	NR
425	0	NR	555	12	NR	685	0	NR	815	0	NR	945	0	NR
430	0	NR	560	22	NR	690	0	NR	820	0	NR	950	0	NR
435	0	NR	565	38	NR	695	0	NR	825	0	NR	955	0	NR
440	0	NR	570	66	NR	700	0	NR	830	0	NR	960	0	NR
445	0	NR	575	115	NR	705	0	NR	835	0	NR	965	0	NR
450	0	NR	580	203	NR	710	0	NR	840	0	NR	970	0	NR
455	0	NR	585	354	NR	715	0	NR	845	0	NR	975	0	NR
460	0	NR	590	596	NR	720	0	NR	850	0	NR	980	0	NR
465	0	NR	595	923	NR	725	0	NR	855	0	NR	985	0	NR
470	0	NR	600	909	NR	730	0	NR	860	0	NR	990	0	NR
475	0	NR	605	447	NR	735	0	NR	865	0	NR	995	0	NR
480	0	NR	610	183	NR	740	0	NR	870	0	NR	1000	0	NR
485	0	NR	615	75	NR	745	0	NR	875	0	NR			

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**Melanopic Flux vs. Wavelength**



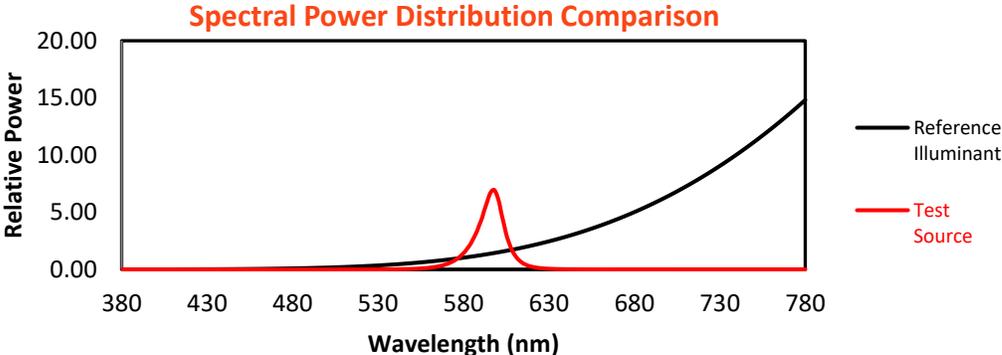
**Melanopic Lumens: NR**

**M/P: 0.12**

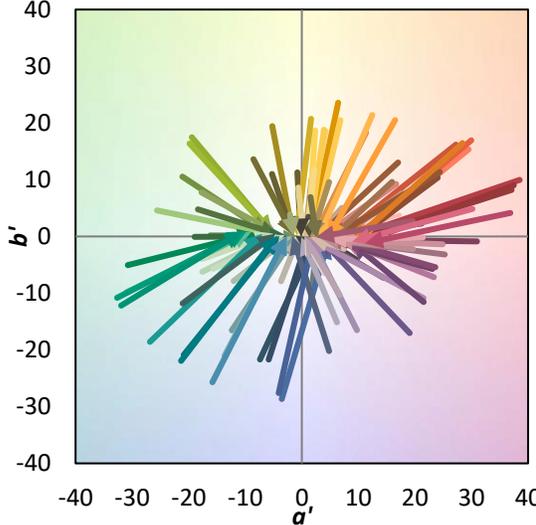
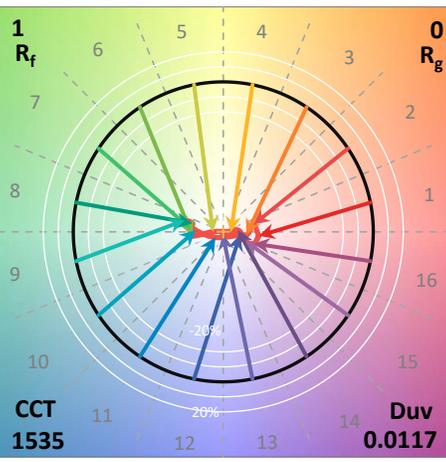
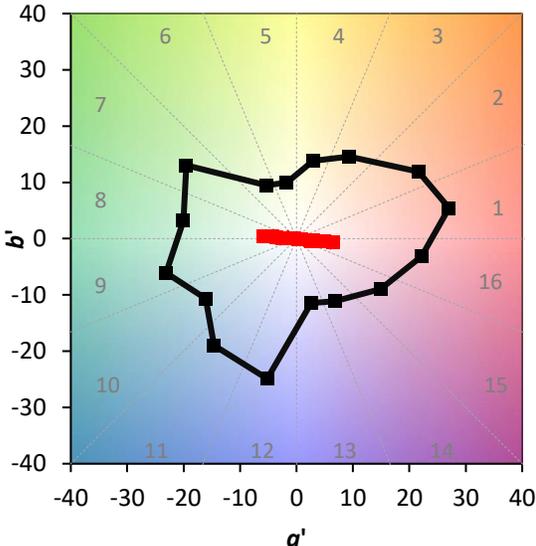
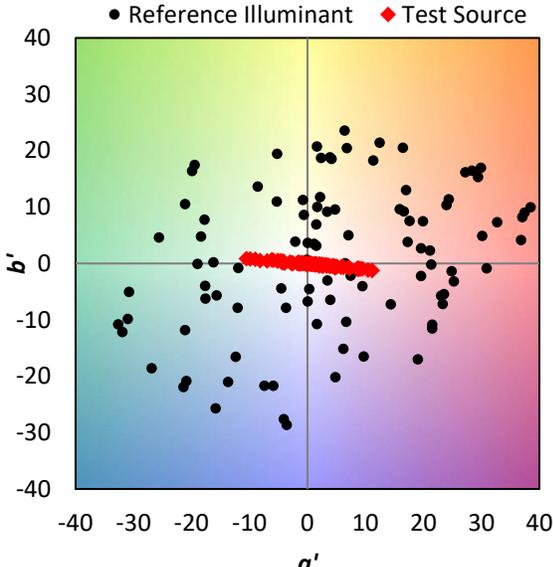
λ (nm)	Power W <sup>^</sup> /nm	Lumens (φ/nm)	λ (nm)	Power W <sup>^</sup> /nm	Lumens (φ/nm)	λ (nm)	Power W <sup>^</sup> /nm	Lumens (φ/nm)	λ (nm)	Power W <sup>^</sup> /nm	Lumens (φ/nm)	λ (nm)	Power W <sup>^</sup> /nm	Lumens (φ/nm)
360	0	NR	490	0	NR	620	35	NR	750	0	NR	880	0	NR
365	0	NR	495	0	NR	625	17	NR	755	0	NR	885	0	NR
370	0	NR	500	0	NR	630	9	NR	760	0	NR	890	0	NR
375	0	NR	505	0	NR	635	5	NR	765	0	NR	895	0	NR
380	0	NR	510	0	NR	640	3	NR	770	0	NR	900	0	NR
385	0	NR	515	0	NR	645	2	NR	775	0	NR	905	0	NR
390	0	NR	520	0	NR	650	2	NR	780	0	NR	910	0	NR
395	0	NR	525	1	NR	655	1	NR	785	0	NR	915	0	NR
400	0	NR	530	1	NR	660	1	NR	790	0	NR	920	0	NR
405	0	NR	535	1	NR	665	1	NR	795	0	NR	925	0	NR
410	0	NR	540	2	NR	670	1	NR	800	0	NR	930	0	NR
415	0	NR	545	4	NR	675	1	NR	805	0	NR	935	0	NR
420	0	NR	550	7	NR	680	1	NR	810	0	NR	940	0	NR
425	0	NR	555	12	NR	685	0	NR	815	0	NR	945	0	NR
430	0	NR	560	22	NR	690	0	NR	820	0	NR	950	0	NR
435	0	NR	565	38	NR	695	0	NR	825	0	NR	955	0	NR
440	0	NR	570	66	NR	700	0	NR	830	0	NR	960	0	NR
445	0	NR	575	115	NR	705	0	NR	835	0	NR	965	0	NR
450	0	NR	580	203	NR	710	0	NR	840	0	NR	970	0	NR
455	0	NR	585	354	NR	715	0	NR	845	0	NR	975	0	NR
460	0	NR	590	596	NR	720	0	NR	850	0	NR	980	0	NR
465	0	NR	595	923	NR	725	0	NR	855	0	NR	985	0	NR
470	0	NR	600	909	NR	730	0	NR	860	0	NR	990	0	NR
475	0	NR	605	447	NR	735	0	NR	865	0	NR	995	0	NR
480	0	NR	610	183	NR	740	0	NR	870	0	NR	1000	0	NR
485	0	NR	615	75	NR	745	0	NR	875	0	NR			

**Summary**

$R_f = 1.3$   
 $R_g = 0.1$   
 CIE  $R_a = -20.0$   
 $R_9 = -380.5$

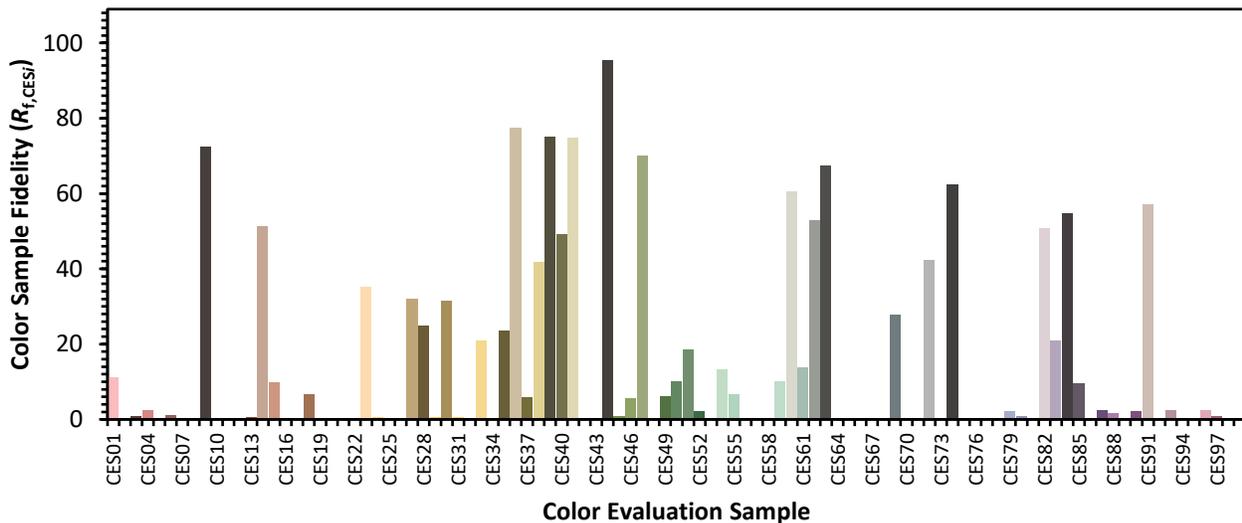


**Color Vector Graphics**

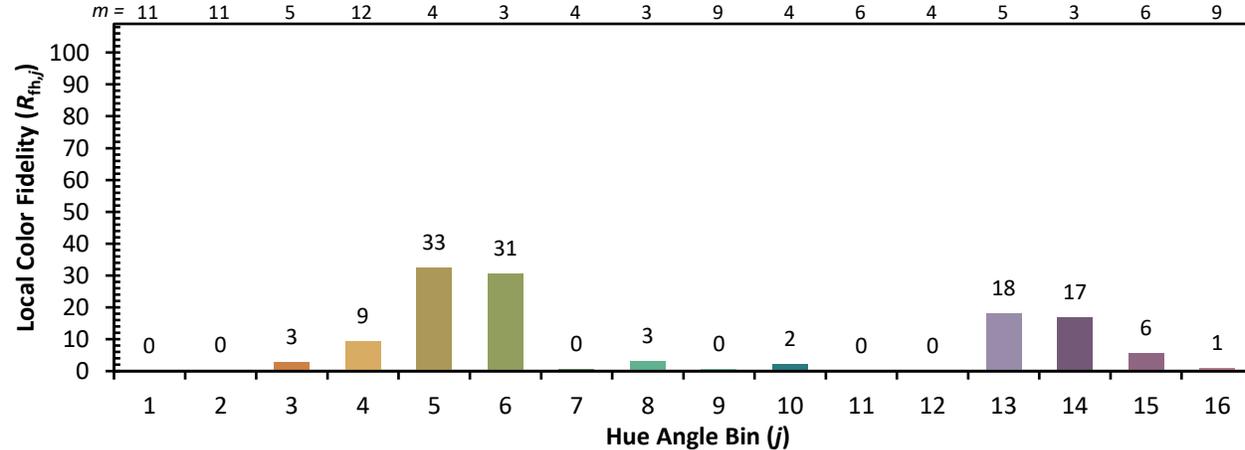
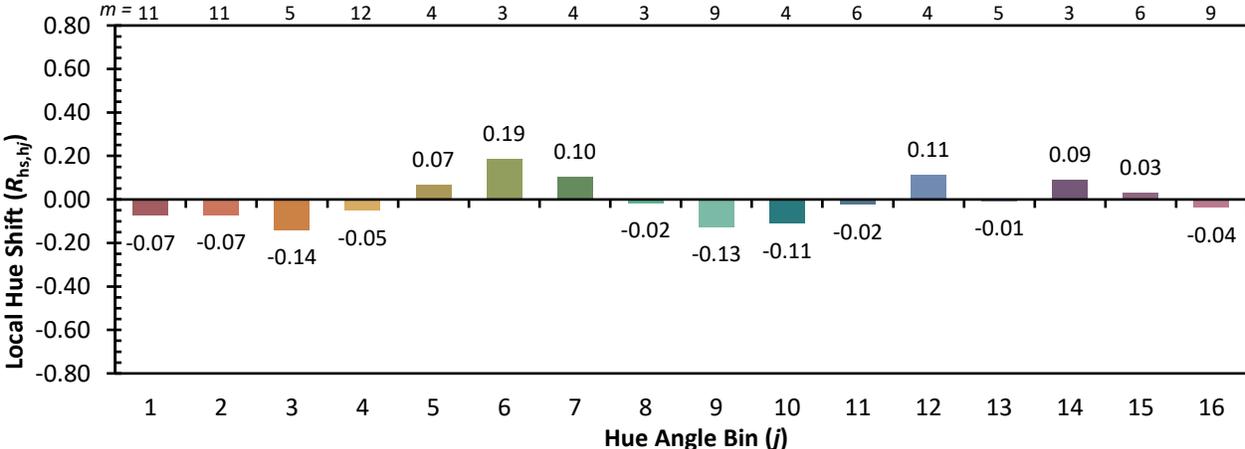
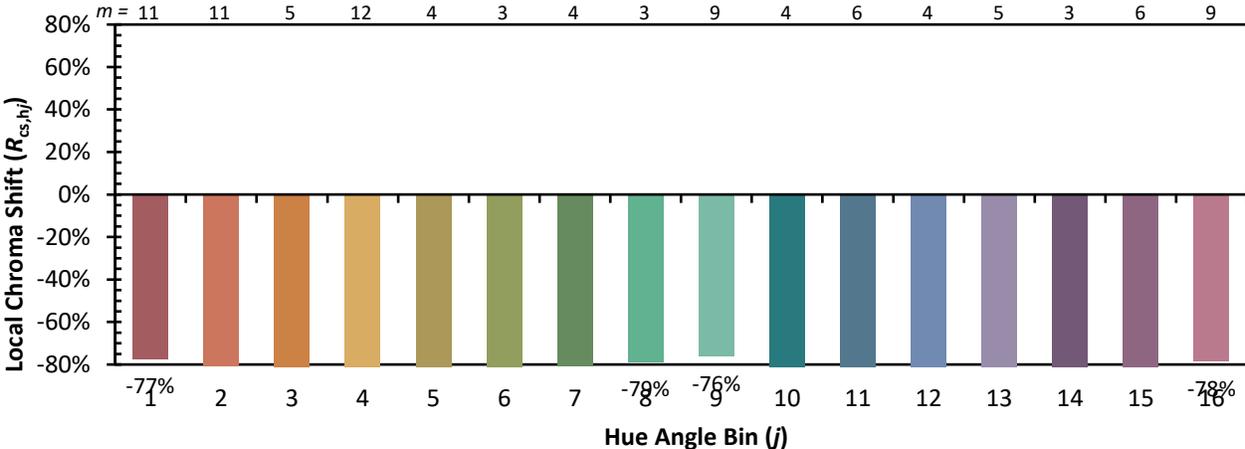


**Individual Sample Fidelity Index ( $R_{f,i}$ )**

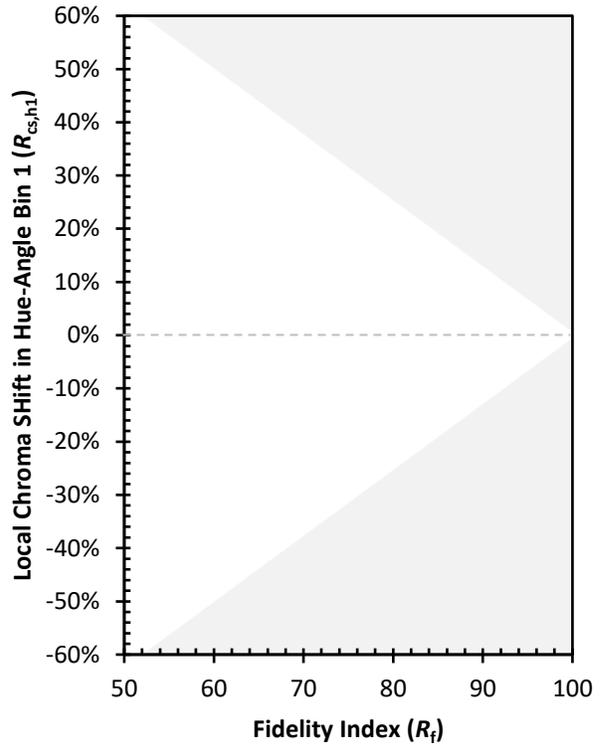
CES01 = 90	CES26 = 0	CES51 = 19	CES76 = 0
CES02 = 70	CES27 = 32	CES52 = 2	CES77 = 0
CES03 = 31	CES28 = 25	CES53 = 0	CES78 = 0
CES04 = 77	CES29 = 1	CES54 = 13	CES79 = 2
CES05 = 52	CES30 = 31	CES55 = 7	CES80 = 1
CES06 = 56	CES31 = 1	CES56 = 0	CES81 = 0
CES07 = 41	CES32 = 0	CES57 = 0	CES82 = 51
CES08 = 39	CES33 = 21	CES58 = 0	CES83 = 21
CES09 = 29	CES34 = 0	CES59 = 10	CES84 = 55
CES10 = 87	CES35 = 24	CES60 = 60	CES85 = 10
CES11 = 70	CES36 = 77	CES61 = 14	CES86 = 0
CES12 = 76	CES37 = 6	CES62 = 53	CES87 = 2
CES13 = 47	CES38 = 42	CES63 = 68	CES88 = 2
CES14 = 77	CES39 = 75	CES64 = 0	CES89 = 0
CES15 = 74	CES40 = 49	CES65 = 0	CES90 = 2
CES16 = 49	CES41 = 75	CES66 = 0	CES91 = 57
CES17 = 56	CES42 = 0	CES67 = 0	CES92 = 0
CES18 = 60	CES43 = 0	CES68 = 0	CES93 = 3
CES19 = 80	CES44 = 95	CES69 = 28	CES94 = 0
CES20 = 71	CES45 = 1	CES70 = 0	CES95 = 0
CES21 = 94	CES46 = 6	CES71 = 0	CES96 = 2
CES22 = 87	CES47 = 70	CES72 = 42	CES97 = 1
CES23 = 94	CES48 = 0	CES73 = 0	CES98 = 0
CES24 = 95	CES49 = 6	CES74 = 62	CES99 = 0
CES25 = 79	CES50 = 10	CES75 = 0	



Color Rendition by Hue-Angle Bin



Measure Comparisons



(END OF REPORT)