

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: P1357481

Luminaire Tested: 8ASL4-20HE-2-50-UNV

Issue Date: 2/17/2026

**Test Information**

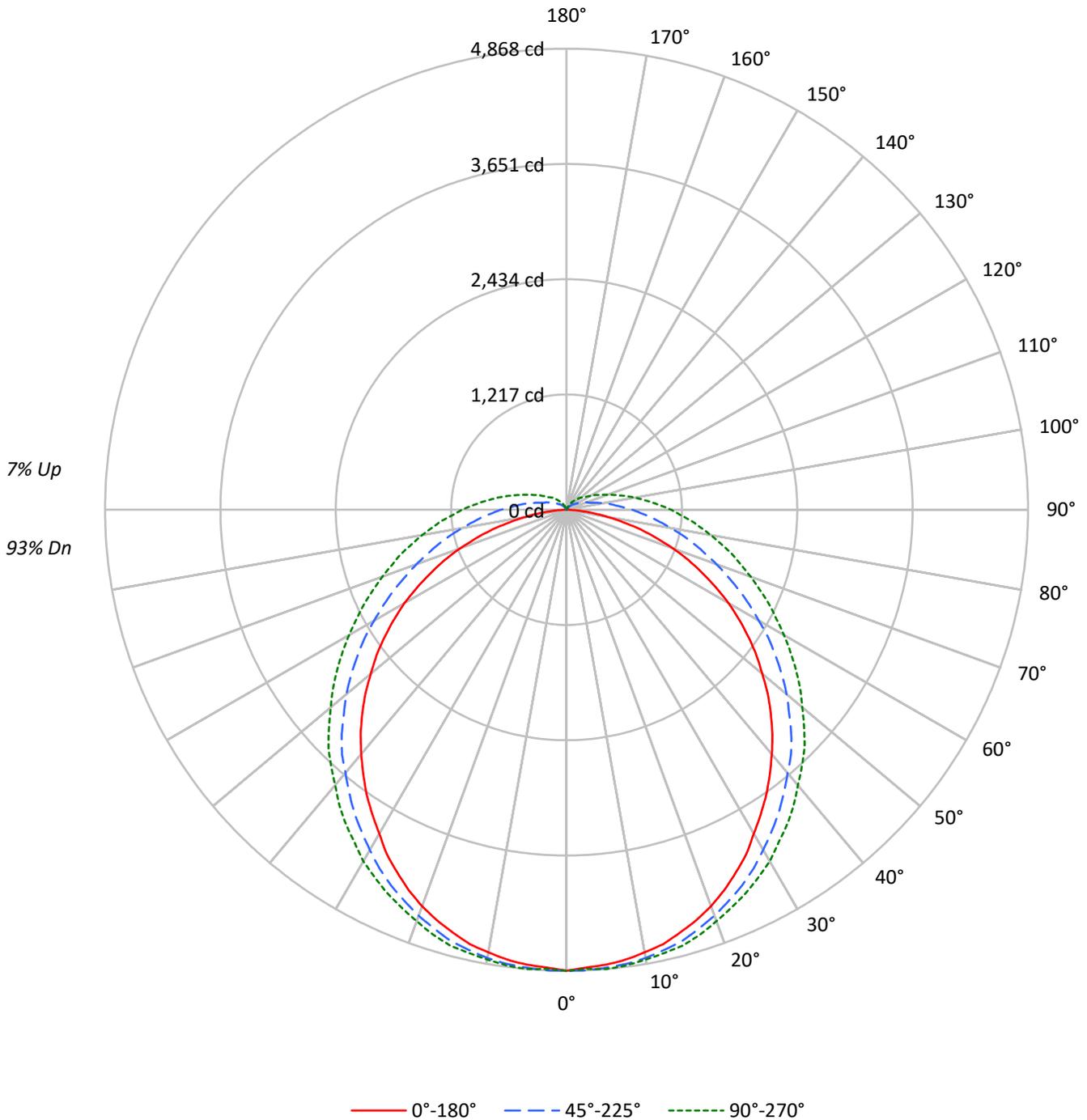
Test Method: LM-79-2019  
Report Number: P1357481  
TEST IS SCALED FROM IESNA LM-79-08 TEST DATA (G2-2511-597-7)  
Test Lab: INNOVATION CENTER  
Issue Date: 2/17/2026  
Manufacturer: COOPER LIGHTING SOLUTIONS  
Product Line: FAIL-SAFE  
Catalog Number: 8ASL4-20HE-2-50-UNV  
Description: 8FT 2000 LUMEN PER FOOT 4ASL LED LUMINAIRE WITH OPL LENS AND 5000K LEDS 2 ROW  
Light Source: -  
Ballast/Driver: -

**Summary**

Lumens per Lamp: N/A  
Luminaire Lumens: 16711.9 lumens  
Efficiency: N/A  
Efficacy: 116.7 lumens/watt  
Spacing Criteria (0/90/45): 1.21 / 1.3 / 1.4  
Luminous Opening: Rectangular w/ Sides (W: 0.33' x L: 7.98' x H: 0.1')  
CIE Type: Direct  
  
Input Watts (W): 143.2  
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

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CATALOG NUMBER: 8ASL4-20HE-2-50-UNV

### Luminous Intensity Polar Plot





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

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

	0°	45°	90°
0°	19701	19701	19701
5°	19567	19325	19250
10°	19457	18983	18781
15°	19302	18607	18406
20°	19095	18128	17877
25°	18753	17655	17422
30°	18318	17112	16969
35°	17987	16609	16444
40°	17599	16064	15890
45°	17210	15597	15487
50°	16704	14975	14888
55°	16224	14307	14414
60°	15631	13554	13908
65°	14688	12857	13517
70°	13639	12205	13157
75°	12097	11717	13039
80°	9632	11296	12998
85°	6186	11354	13371

**MAXIMUM LUMINANCE 45°-90°:**

Horizontal Angle: 0°  
 Vertical Angle: 45°  
 Luminance: 17210 cd/sqm



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**ZONAL LUMENS:**

Zone	Lumens	% Fixture
0°-10°	461.7	2.8
10°-20°	1327.0	7.9
20°-30°	2010.8	12.0
30°-40°	2432.0	14.6
40°-50°	2563.9	15.3
50°-60°	2393.0	14.3
60°-70°	1975.7	11.8
70°-80°	1433.2	8.6
80°-90°	905.5	5.4
90°-100°	540.5	3.2
100°-110°	309.8	1.9
110°-120°	176.0	1.1
120°-130°	100.4	0.6
130°-140°	54.3	0.3
140°-150°	23.8	0.1
150°-160°	4.3	0.0
160°-170°	0.0	0.0
170°-180°	0.0	0.0
0°-30°	3799.5	22.7
0°-40°	6231.5	37.3
0°-60°	11188.4	66.9
0°-90°	15502.8	92.8
90°-120°	1026.3	6.1
90°-150°	1204.8	7.2
90°-180°	1209.0	7.2
0°-180°	16711.9	100.0

**CANDELA DISTRIBUTION:**

	0°	22.5°	45°	67.5°	90°	Flux
0°	4868	4868	4868	4868	4868	
5°	4822	4868	4853	4853	4868	458
15°	4623	4684	4715	4730	4761	1305
25°	4225	4286	4378	4439	4470	1946
35°	3674	3766	3904	4011	4057	2296
45°	3046	3169	3352	3490	3552	2349
55°	2342	2480	2694	2878	2954	2093
65°	1577	1745	2005	2250	2358	1566
75°	811	1026	1393	1684	1806	853
85°	153	475	888	1194	1316	187
90°	0	291	689	980	1102	6
95°	0	184	520	796	903	0
105°	0	61	291	505	582	0
115°	0	31	168	306	367	0
125°	0	15	107	199	230	0
135°	0	0	61	122	153	0
145°	0	0	31	76	92	0
155°	0	0	0	15	31	0
165°	0	0	0	0	0	0
175°	0	0	0	0	0	0
180°	0	0	0	0	0	0



TEST NUMBER: P1357481

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**CANDELA DISTRIBUTION (FULL):**

	0°	22.5°	45°	67.5°	90°
0°	4868.0	4868.0	4868.0	4868.0	4868.0
2.5°	4837.4	4883.3	4868.0	4852.7	4852.7
5°	4822.1	4868.0	4852.7	4852.7	4868.0
7.5°	4791.5	4837.4	4837.4	4837.4	4852.7
10°	4745.6	4806.8	4806.8	4806.8	4822.1
12.5°	4699.6	4745.6	4760.9	4776.2	4791.5
15°	4623.1	4684.3	4714.9	4730.3	4760.9
17.5°	4546.6	4592.5	4638.4	4684.3	4699.6
20°	4454.7	4515.9	4561.9	4607.8	4623.1
22.5°	4347.6	4408.8	4470.0	4515.9	4546.6
25°	4225.1	4286.3	4378.2	4439.4	4470.0
27.5°	4102.6	4163.9	4271.0	4347.6	4378.2
30°	3949.5	4041.4	4148.5	4240.4	4286.3
32.5°	3811.8	3903.6	4026.1	4133.2	4163.9
35°	3674.0	3765.8	3903.6	4010.8	4056.7
37.5°	3520.9	3628.1	3765.8	3888.3	3934.2
40°	3367.8	3475.0	3628.1	3765.8	3796.5
42.5°	3214.7	3321.9	3505.6	3628.1	3674.0
45°	3046.3	3168.8	3352.5	3490.3	3551.5
47.5°	2878.0	3000.4	3184.1	3337.2	3398.4
50°	2694.3	2832.0	3031.0	3184.1	3245.4
52.5°	2525.9	2663.6	2862.6	3031.0	3107.6
55°	2342.2	2479.9	2694.3	2878.0	2954.5
57.5°	2158.5	2296.2	2525.9	2724.9	2801.4
60°	1974.8	2112.5	2342.2	2571.8	2648.3
62.5°	1775.8	1928.8	2173.8	2403.4	2495.2
65°	1576.8	1745.1	2005.4	2250.3	2357.5
67.5°	1393.1	1561.4	1837.0	2112.5	2204.4
70°	1194.0	1377.7	1683.9	1959.5	2066.6
72.5°	995.0	1194.0	1530.8	1821.7	1928.8
75°	811.3	1025.7	1393.1	1683.9	1806.4
77.5°	612.3	872.6	1255.3	1561.4	1668.6
80°	443.9	719.5	1117.5	1439.0	1546.1
82.5°	290.9	581.7	995.0	1316.5	1423.7
85°	153.1	474.6	887.9	1194.0	1316.5
87.5°	45.9	367.4	780.7	1086.9	1194.0
90°	0.0	290.9	688.9	979.7	1102.2
92.5°	0.0	229.6	597.0	887.9	995.0
95°	0.0	183.7	520.5	796.0	903.2
97.5°	0.0	153.1	459.2	719.5	811.3
100°	0.0	122.5	398.0	642.9	734.8
102.5°	0.0	91.8	336.8	566.4	658.3
105°	0.0	61.2	290.9	505.2	581.7
107.5°	0.0	45.9	244.9	443.9	520.5
110°	0.0	45.9	229.6	382.7	459.2



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**CANDELA DISTRIBUTION (continued):**

	0°	22.5°	45°	67.5°	90°
112.5°	0.0	30.6	199.0	352.1	413.3
115°	0.0	30.6	168.4	306.2	367.4
117.5°	0.0	30.6	153.1	275.5	336.8
120°	0.0	30.6	137.8	244.9	290.9
122.5°	0.0	15.3	122.5	214.3	260.2
125°	0.0	15.3	107.2	199.0	229.6
127.5°	0.0	15.3	91.8	183.7	214.3
130°	0.0	15.3	91.8	168.4	199.0
132.5°	0.0	0.0	76.5	153.1	183.7
135°	0.0	0.0	61.2	122.5	153.1
137.5°	0.0	0.0	61.2	107.2	137.8
140°	0.0	0.0	45.9	107.2	122.5
142.5°	0.0	0.0	30.6	91.8	107.2
145°	0.0	0.0	30.6	76.5	91.8
147.5°	0.0	0.0	15.3	61.2	76.5
150°	0.0	0.0	15.3	45.9	61.2
152.5°	0.0	0.0	0.0	30.6	45.9
155°	0.0	0.0	0.0	15.3	30.6
157.5°	0.0	0.0	0.0	0.0	15.3
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	19.68	21.22	20.16	21.68	22.17	21.78	23.32	22.26	23.78	24.27
	3H	21.18	22.59	21.67	23.06	23.59	24.26	25.66	24.74	26.13	26.66
	4H	21.66	22.99	22.17	23.48	24.02	25.48	26.81	25.99	27.30	27.84
	6H	21.94	23.18	22.46	23.68	24.24	26.78	28.02	27.30	28.52	29.08
	8H	21.99	23.18	22.52	23.70	24.27	27.46	28.65	27.99	29.17	29.74
	12H	22.01	23.14	22.55	23.66	24.26	28.23	29.37	28.77	29.88	30.48
4H	2H	20.57	21.90	21.08	22.39	22.93	22.21	23.54	22.72	24.03	24.57
	3H	22.31	23.45	22.83	23.98	24.54	24.91	26.05	25.43	26.58	27.14
	4H	22.92	23.96	23.46	24.50	25.10	26.31	27.35	26.85	27.89	28.49
	6H	23.32	24.24	23.88	24.80	25.42	27.81	28.73	28.37	29.29	29.91
	8H	23.42	24.28	23.98	24.85	25.47	28.60	29.46	29.16	30.03	30.65
	12H	23.47	24.25	24.05	24.84	25.48	29.49	30.28	30.08	30.87	31.50
8H	4H	23.63	24.49	24.19	25.05	25.68	26.53	27.39	27.10	27.96	28.59
	6H	24.21	24.94	24.81	25.55	26.18	28.20	28.93	28.80	29.54	30.17
	8H	24.40	25.06	25.01	25.68	26.32	29.14	29.80	29.75	30.42	31.06
	12H	24.52	25.11	25.13	25.72	26.43	30.21	30.80	30.82	31.41	32.12
12H	4H	23.83	24.62	24.42	25.21	25.84	26.54	27.32	27.13	27.92	28.55
	6H	24.52	25.18	25.13	25.80	26.45	28.24	28.90	28.85	29.52	30.16
	8H	24.81	25.40	25.42	26.01	26.72	29.24	29.83	29.85	30.44	31.15

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

Report Prepared for

Cooper Lighting Solutions

Fail-Safe

Report Number: SP1-2511-597-5

Test Date: 11/18/2025

Luminaire Tested: 4ASL-2-50-UNV-OPL-1\_600mA

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

**Test Information**

Test Method: LM-79-2019  
 Report Number: SP1-2511-597-5  
 Test Lab: COOPER LIGHTING SOLUTIONS  
 Photometer: SP1 - 76IN SPHERE  
 Measurement Geometry: 4π  
 Issue Date: 11/18/2025  
 Manufacturer: COOPER LIGHTING SOLUTIONS  
 Product Line: Fail-Safe  
 Catalog Number: **4ASL-2-50-UNV-OPL-1\_600mA**  
 Description: 2foot 4ASL LED LUMINAIRE WITH OPL LENS AND 5000K LEDs with 1 rows at 600mA

**Spectral Parameters**

CCT (K): 5076  
 CIE u': 0.2110  
 CIE v': 0.4830  
 Duv: -0.0005  
 CIE x: 0.3429  
 CIE y: 0.3489  
 CIE z: 0.3082  
 Peak Wavelength (nm): 630  
 Dominant Wavelength (nm): 572  
 Purity: 7.553016  
 Rf: 90.4  
 Rg: 99

CRI (Ra):	94.9		
R1:	96.7	R9:	74.0
R2:	98.2	R10:	93.9
R3:	96.6	R11:	96.2
R4:	95.6	R12:	72.4
R5:	95.1	R13:	98.1
R6:	93.6	R14:	97.8
R7:	94.0	R15:	95.6
R8:	89.6		



**Test Conditions**

Stabilization Time: 24M  
 Operation Time: 1H 24M  
 Sphere Temperature (°C): 24.1

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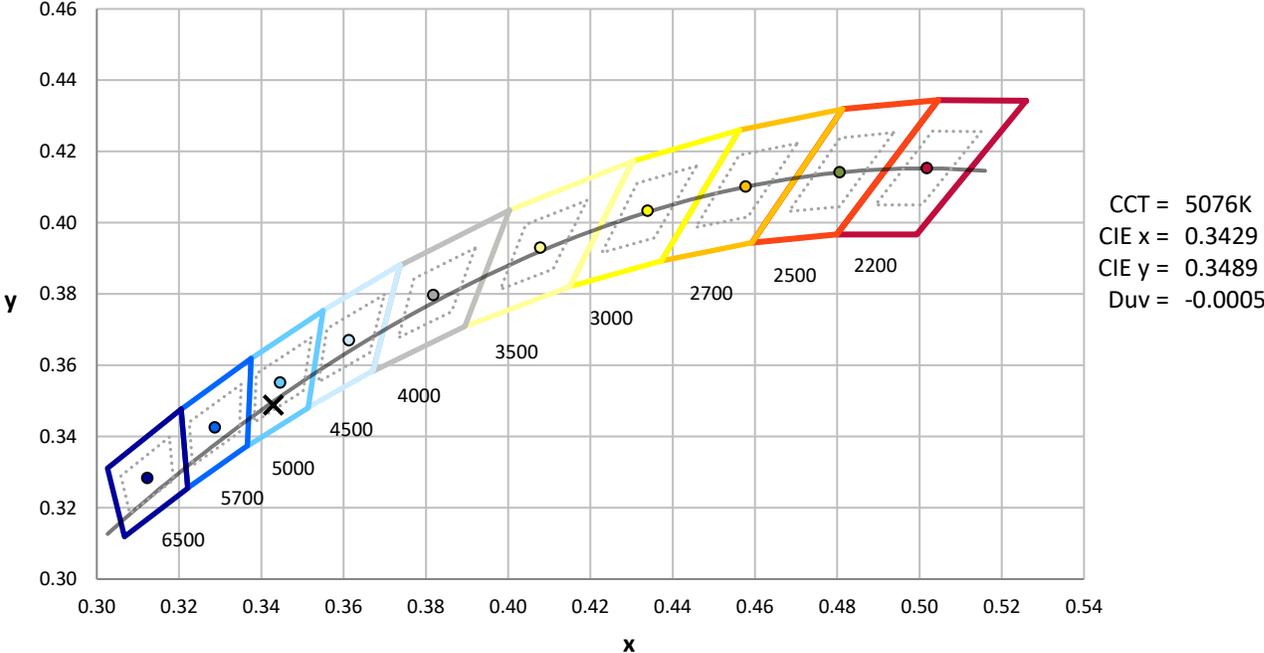
Measurement and Test Equipment			
Instrument	Identification Number	Calibration Date	Calibration Due Date
Photometer	76INCH SPHERE IN0058	6/16/2025	12/16/2025
Power Meter	XITRON INXT2011004	10/21/2025	10/21/2026
AC Power Source	CHROMA 61603 IN0063	10/21/2025	10/21/2026
DC Power Source	AGILENT E3634A IN0208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



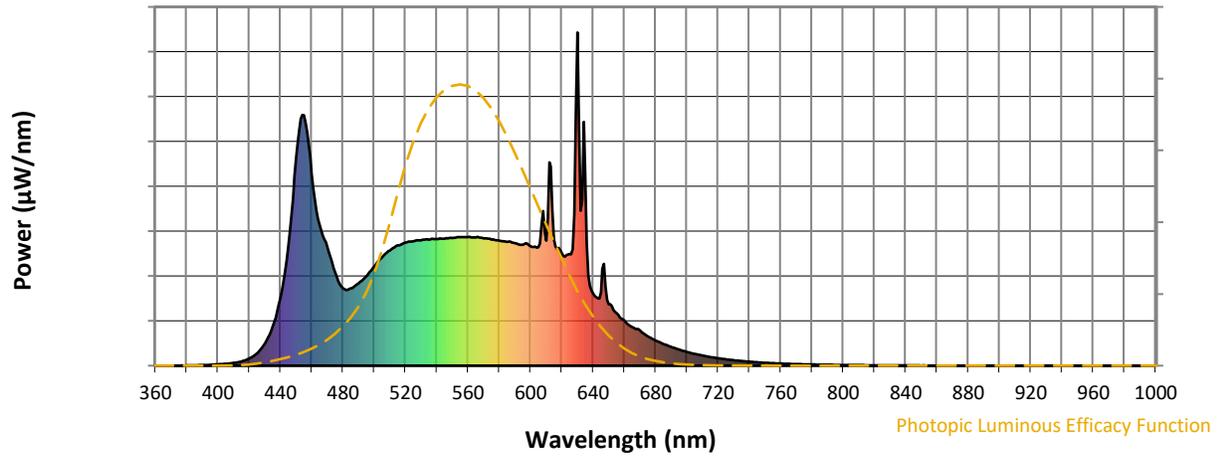
**CIE 1931 Chromaticity Diagram with 2017 ANSI 7-Step and 4-Step Quadrangles**



Point lies inside the ANSI 5000K 4-step quadrangle

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**Photopic Flux vs. Wavelength**

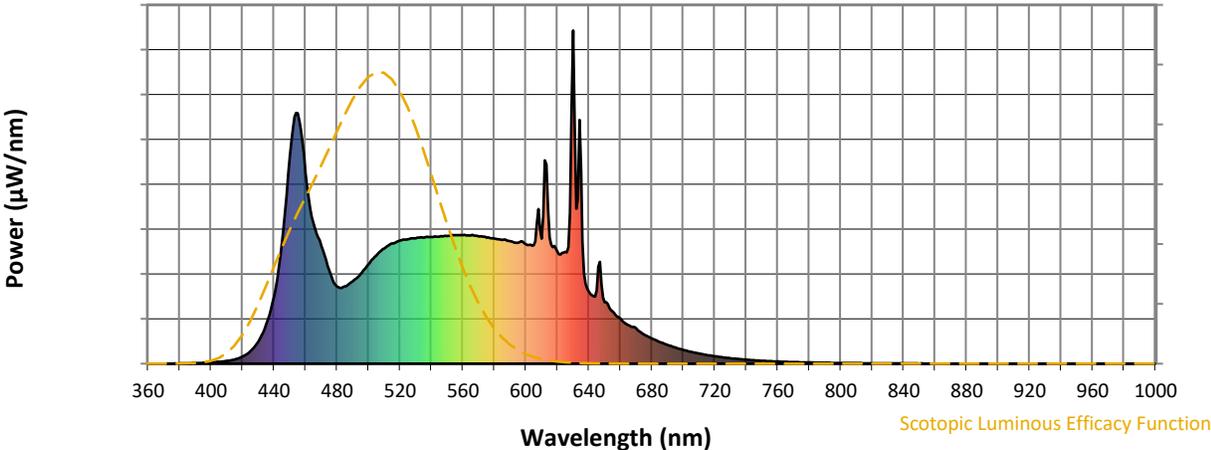


**Photopic Lumens: NR**

$\lambda$ (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	248	NR	620	337	NR	750	9	NR	880	0	NR
365	0	NR	495	269	NR	625	335	NR	755	8	NR	885	0	NR
370	0	NR	500	298	NR	630	1000	NR	760	6	NR	890	0	NR
375	0	NR	505	325	NR	635	580	NR	765	6	NR	895	0	NR
380	1	NR	510	346	NR	640	216	NR	770	5	NR	900	0	NR
385	1	NR	515	361	NR	645	221	NR	775	4	NR	905	0	NR
390	2	NR	520	369	NR	650	185	NR	780	4	NR	910	0	NR
395	3	NR	525	374	NR	655	158	NR	785	3	NR	915	0	NR
400	4	NR	530	376	NR	660	136	NR	790	3	NR	920	0	NR
405	6	NR	535	379	NR	665	116	NR	795	2	NR	925	0	NR
410	8	NR	540	381	NR	670	106	NR	800	2	NR	930	0	NR
415	13	NR	545	381	NR	675	88	NR	805	2	NR	935	0	NR
420	22	NR	550	383	NR	680	76	NR	810	2	NR	940	0	NR
425	37	NR	555	386	NR	685	65	NR	815	1	NR	945	0	NR
430	66	NR	560	386	NR	690	56	NR	820	1	NR	950	0	NR
435	119	NR	565	385	NR	695	48	NR	825	1	NR	955	0	NR
440	203	NR	570	382	NR	700	41	NR	830	1	NR	960	0	NR
445	359	NR	575	379	NR	705	35	NR	835	1	NR	965	0	NR
450	620	NR	580	376	NR	710	30	NR	840	1	NR	970	0	NR
455	752	NR	585	372	NR	715	26	NR	845	1	NR	975	0	NR
460	576	NR	590	368	NR	720	22	NR	850	1	NR	980	0	NR
465	423	NR	595	363	NR	725	19	NR	855	0	NR	985	0	NR
470	354	NR	600	358	NR	730	16	NR	860	0	NR	990	0	NR
475	280	NR	605	355	NR	735	14	NR	865	0	NR	995	0	NR
480	232	NR	610	375	NR	740	12	NR	870	0	NR	1000	0	NR
485	232	NR	615	379	NR	745	10	NR	875	0	NR			

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**Scotopic Flux vs. Wavelength**



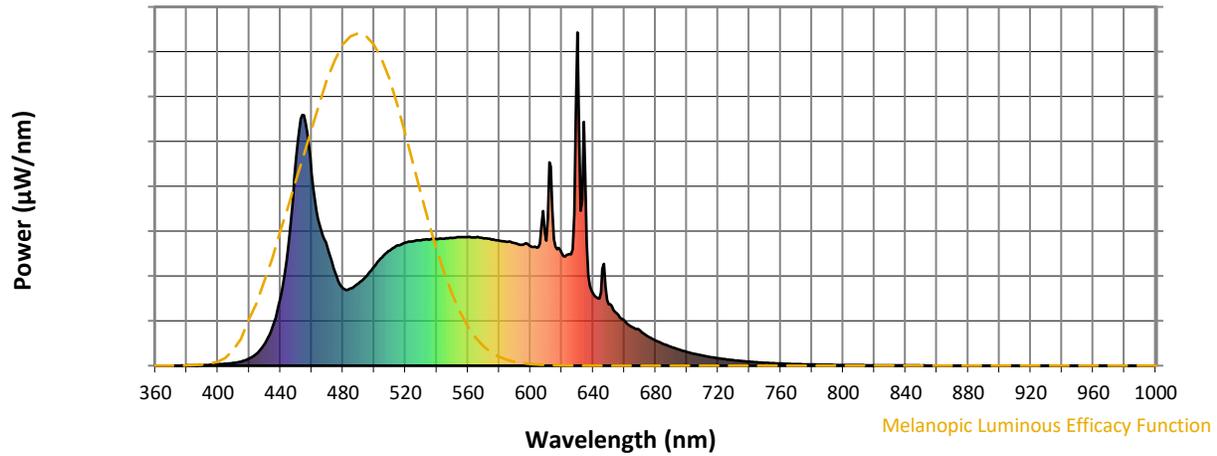
**Scotopic Lumens: NR**

**S/P: 2.12**

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	248	NR	620	337	NR	750	9	NR	880	0	NR
365	0	NR	495	269	NR	625	335	NR	755	8	NR	885	0	NR
370	0	NR	500	298	NR	630	1000	NR	760	6	NR	890	0	NR
375	0	NR	505	325	NR	635	580	NR	765	6	NR	895	0	NR
380	1	NR	510	346	NR	640	216	NR	770	5	NR	900	0	NR
385	1	NR	515	361	NR	645	221	NR	775	4	NR	905	0	NR
390	2	NR	520	369	NR	650	185	NR	780	4	NR	910	0	NR
395	3	NR	525	374	NR	655	158	NR	785	3	NR	915	0	NR
400	4	NR	530	376	NR	660	136	NR	790	3	NR	920	0	NR
405	6	NR	535	379	NR	665	116	NR	795	2	NR	925	0	NR
410	8	NR	540	381	NR	670	106	NR	800	2	NR	930	0	NR
415	13	NR	545	381	NR	675	88	NR	805	2	NR	935	0	NR
420	22	NR	550	383	NR	680	76	NR	810	2	NR	940	0	NR
425	37	NR	555	386	NR	685	65	NR	815	1	NR	945	0	NR
430	66	NR	560	386	NR	690	56	NR	820	1	NR	950	0	NR
435	119	NR	565	385	NR	695	48	NR	825	1	NR	955	0	NR
440	203	NR	570	382	NR	700	41	NR	830	1	NR	960	0	NR
445	359	NR	575	379	NR	705	35	NR	835	1	NR	965	0	NR
450	620	NR	580	376	NR	710	30	NR	840	1	NR	970	0	NR
455	752	NR	585	372	NR	715	26	NR	845	1	NR	975	0	NR
460	576	NR	590	368	NR	720	22	NR	850	1	NR	980	0	NR
465	423	NR	595	363	NR	725	19	NR	855	0	NR	985	0	NR
470	354	NR	600	358	NR	730	16	NR	860	0	NR	990	0	NR
475	280	NR	605	355	NR	735	14	NR	865	0	NR	995	0	NR
480	232	NR	610	375	NR	740	12	NR	870	0	NR	1000	0	NR
485	232	NR	615	379	NR	745	10	NR	875	0	NR			

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**Melanopic Flux vs. Wavelength**



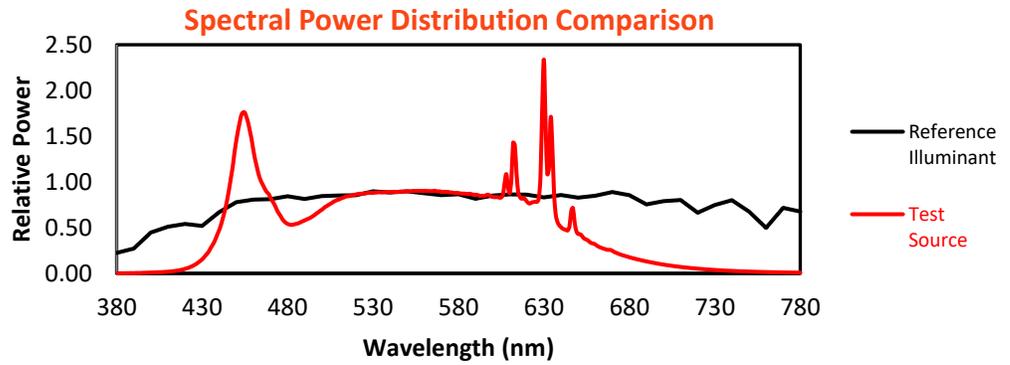
**Melanopic Lumens: NR**

**M/P: 4.65**

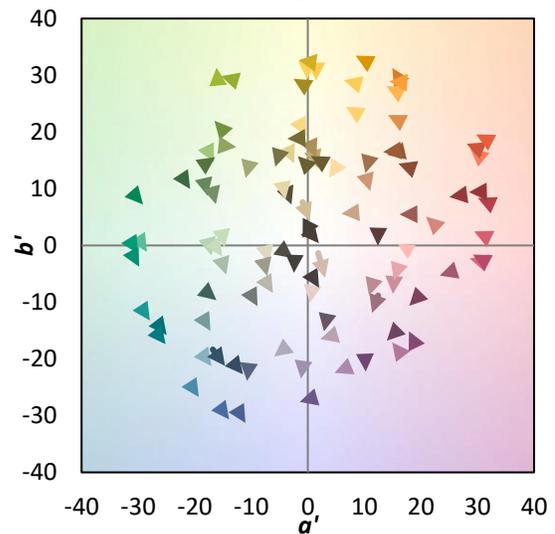
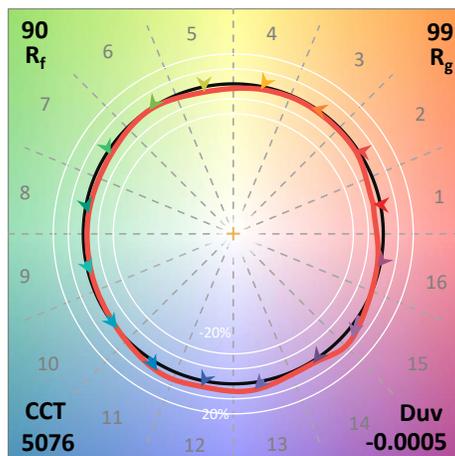
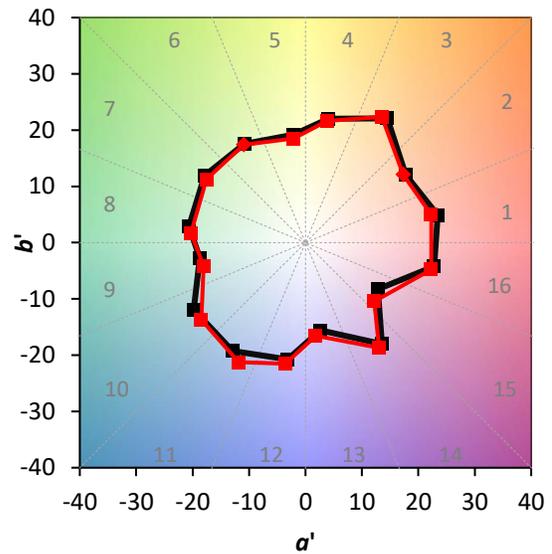
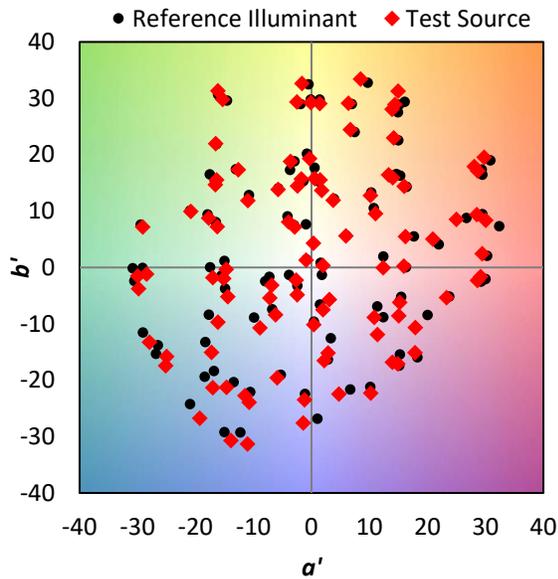
λ (nm)	Power W <sup>^</sup> /nm	Lumens (φ/nm)	λ (nm)	Power W <sup>^</sup> /nm	Lumens (φ/nm)	λ (nm)	Power W <sup>^</sup> /nm	Lumens (φ/nm)	λ (nm)	Power W <sup>^</sup> /nm	Lumens (φ/nm)	λ (nm)	Power W <sup>^</sup> /nm	Lumens (φ/nm)
360	0	NR	490	248	NR	620	337	NR	750	9	NR	880	0	NR
365	0	NR	495	269	NR	625	335	NR	755	8	NR	885	0	NR
370	0	NR	500	298	NR	630	1000	NR	760	6	NR	890	0	NR
375	0	NR	505	325	NR	635	580	NR	765	6	NR	895	0	NR
380	1	NR	510	346	NR	640	216	NR	770	5	NR	900	0	NR
385	1	NR	515	361	NR	645	221	NR	775	4	NR	905	0	NR
390	2	NR	520	369	NR	650	185	NR	780	4	NR	910	0	NR
395	3	NR	525	374	NR	655	158	NR	785	3	NR	915	0	NR
400	4	NR	530	376	NR	660	136	NR	790	3	NR	920	0	NR
405	6	NR	535	379	NR	665	116	NR	795	2	NR	925	0	NR
410	8	NR	540	381	NR	670	106	NR	800	2	NR	930	0	NR
415	13	NR	545	381	NR	675	88	NR	805	2	NR	935	0	NR
420	22	NR	550	383	NR	680	76	NR	810	2	NR	940	0	NR
425	37	NR	555	386	NR	685	65	NR	815	1	NR	945	0	NR
430	66	NR	560	386	NR	690	56	NR	820	1	NR	950	0	NR
435	119	NR	565	385	NR	695	48	NR	825	1	NR	955	0	NR
440	203	NR	570	382	NR	700	41	NR	830	1	NR	960	0	NR
445	359	NR	575	379	NR	705	35	NR	835	1	NR	965	0	NR
450	620	NR	580	376	NR	710	30	NR	840	1	NR	970	0	NR
455	752	NR	585	372	NR	715	26	NR	845	1	NR	975	0	NR
460	576	NR	590	368	NR	720	22	NR	850	1	NR	980	0	NR
465	423	NR	595	363	NR	725	19	NR	855	0	NR	985	0	NR
470	354	NR	600	358	NR	730	16	NR	860	0	NR	990	0	NR
475	280	NR	605	355	NR	735	14	NR	865	0	NR	995	0	NR
480	232	NR	610	375	NR	740	12	NR	870	0	NR	1000	0	NR
485	232	NR	615	379	NR	745	10	NR	875	0	NR			

**Summary**

$R_f = 90.4$   
 $R_g = 99$   
 CIE  $R_a = 94.9$   
 $R_9 = 74.0$

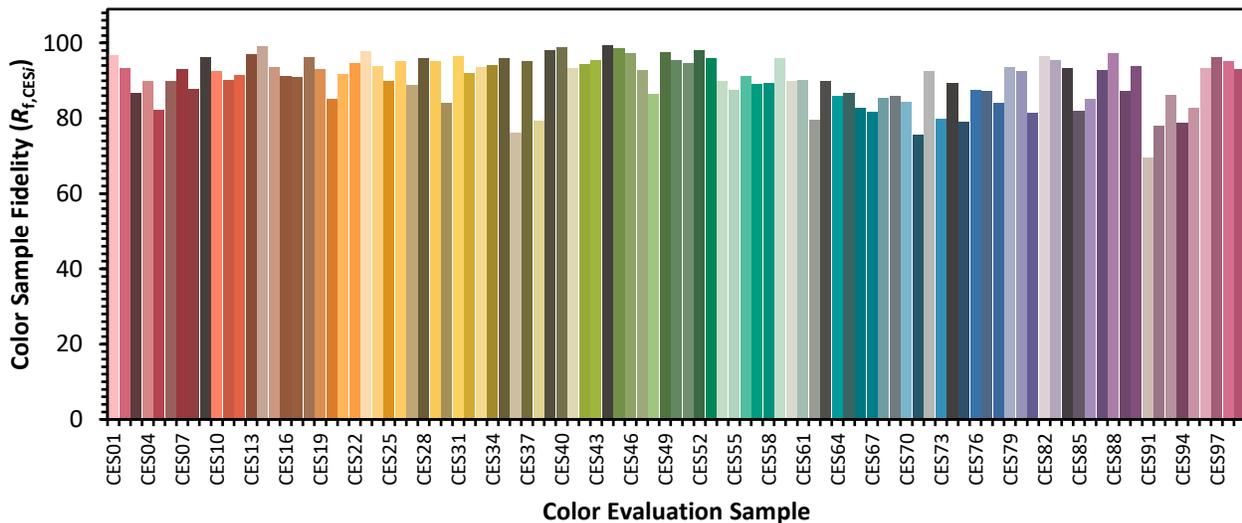


**Color Vector Graphics**

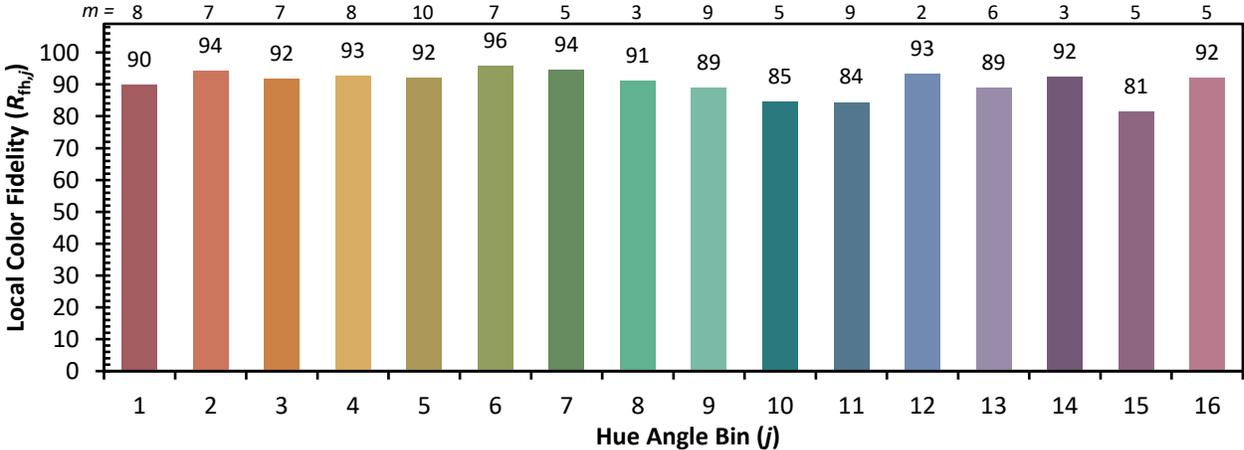
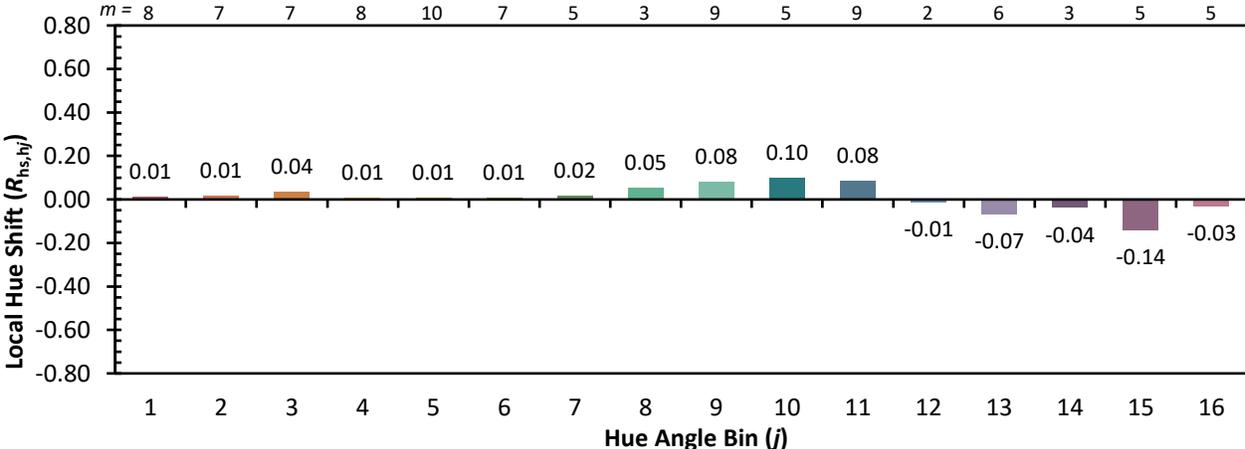
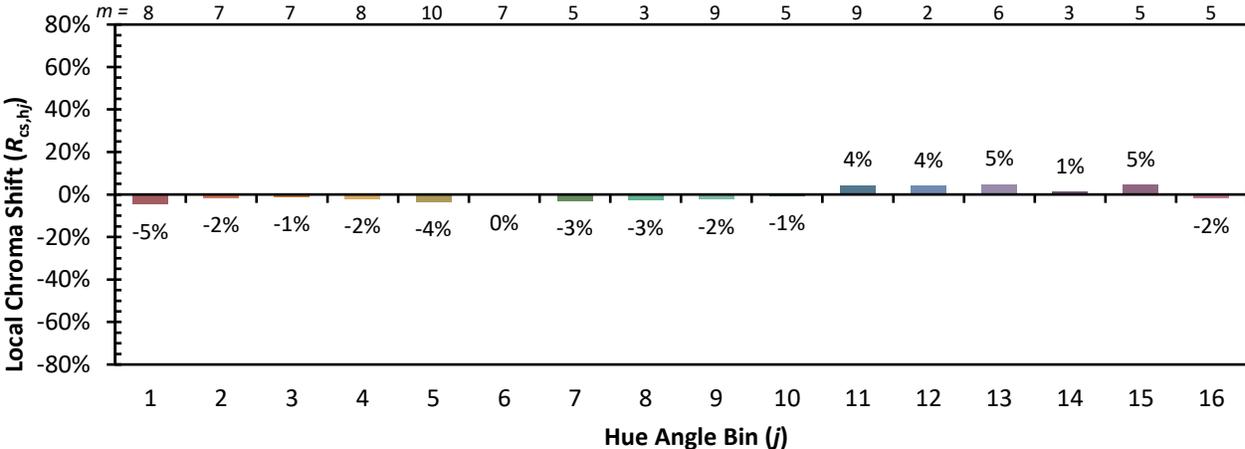


**Individual Sample Fidelity Index ( $R_{f,i}$ )**

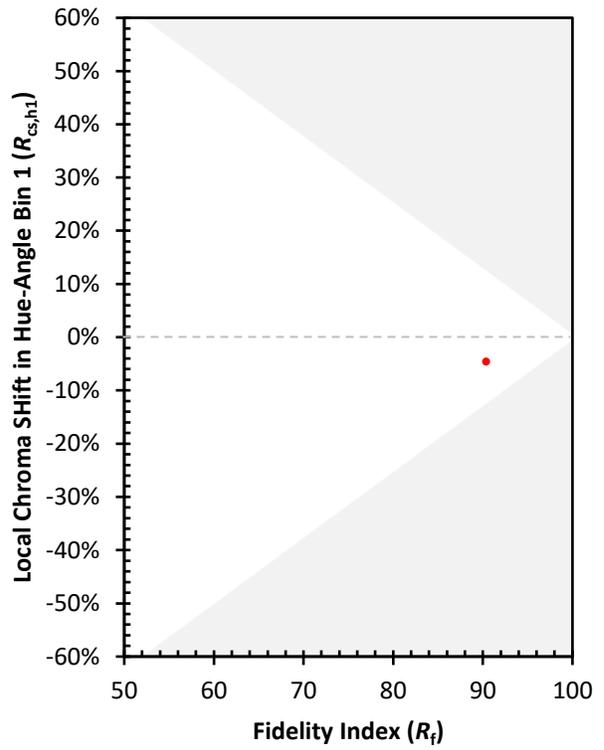
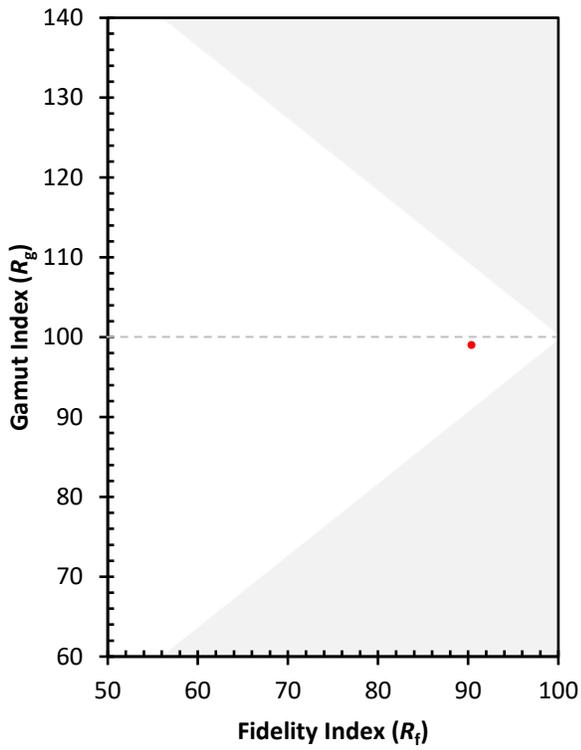
CES01 = 85	CES26 = 95	CES51 = 95	CES76 = 87
CES02 = 61	CES27 = 89	CES52 = 98	CES77 = 87
CES03 = 31	CES28 = 96	CES53 = 96	CES78 = 84
CES04 = 69	CES29 = 95	CES54 = 90	CES79 = 94
CES05 = 48	CES30 = 84	CES55 = 88	CES80 = 93
CES06 = 50	CES31 = 96	CES56 = 91	CES81 = 81
CES07 = 41	CES32 = 92	CES57 = 89	CES82 = 97
CES08 = 40	CES33 = 94	CES58 = 89	CES83 = 95
CES09 = 29	CES34 = 94	CES59 = 96	CES84 = 93
CES10 = 73	CES35 = 96	CES60 = 90	CES85 = 82
CES11 = 56	CES36 = 76	CES61 = 90	CES86 = 85
CES12 = 62	CES37 = 95	CES62 = 80	CES87 = 93
CES13 = 42	CES38 = 79	CES63 = 90	CES88 = 97
CES14 = 74	CES39 = 98	CES64 = 86	CES89 = 87
CES15 = 71	CES40 = 99	CES65 = 87	CES90 = 94
CES16 = 47	CES41 = 93	CES66 = 83	CES91 = 70
CES17 = 48	CES42 = 94	CES67 = 82	CES92 = 78
CES18 = 56	CES43 = 95	CES68 = 85	CES93 = 86
CES19 = 70	CES44 = 99	CES69 = 86	CES94 = 79
CES20 = 65	CES45 = 99	CES70 = 84	CES95 = 83
CES21 = 85	CES46 = 97	CES71 = 76	CES96 = 93
CES22 = 77	CES47 = 93	CES72 = 92	CES97 = 96
CES23 = 91	CES48 = 86	CES73 = 80	CES98 = 95
CES24 = 90	CES49 = 98	CES74 = 89	CES99 = 93
CES25 = 70	CES50 = 96	CES75 = 79	



Color Rendition by Hue-Angle Bin



Measure Comparisons



(END OF REPORT)