

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: P1357175

Luminaire Tested: 4ASL4-20HE-2-50-UNV

Issue Date: 2/17/2026

**Test Information**

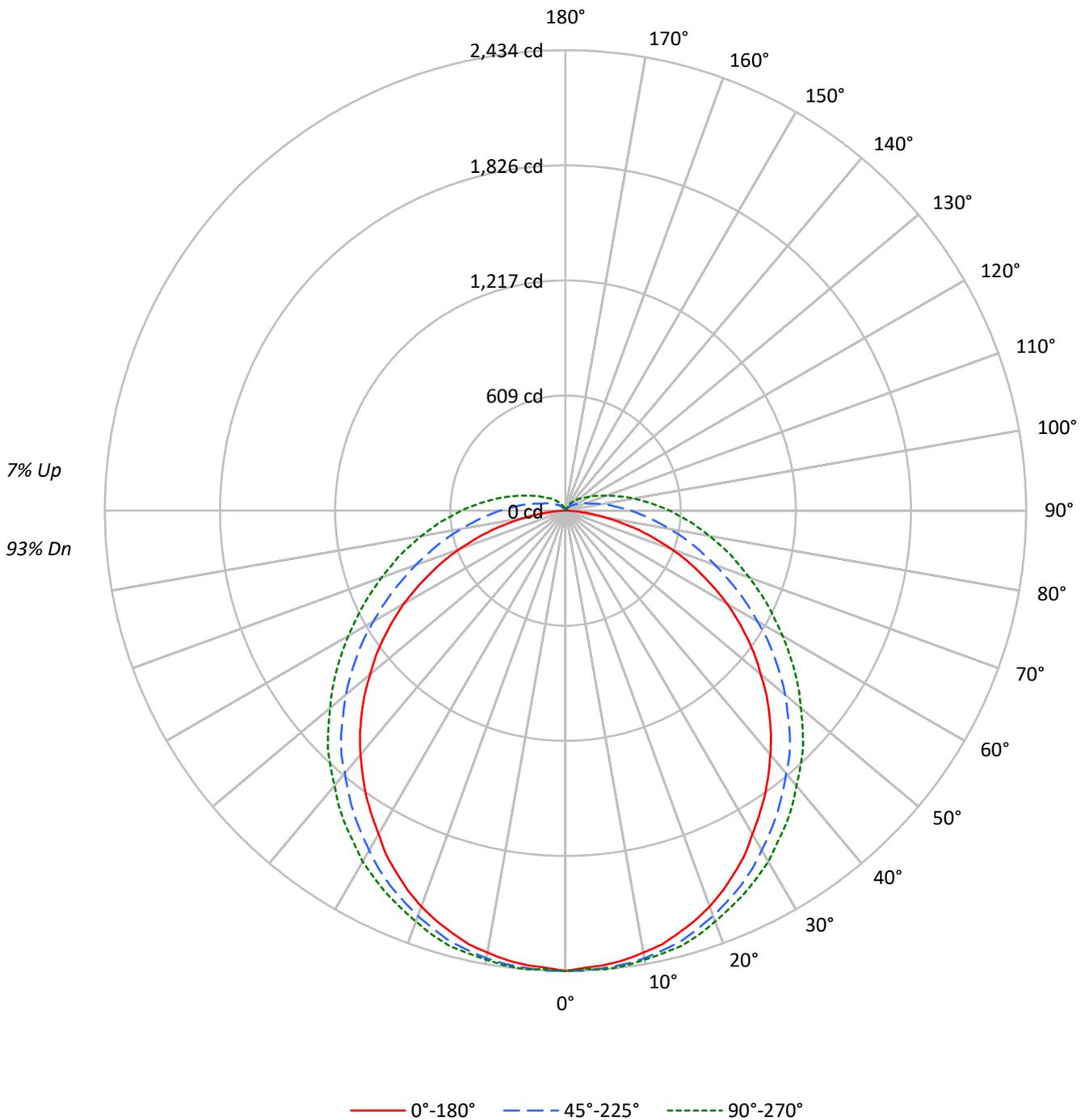
Test Method: LM-79-2019  
Report Number: P1357175  
TEST IS SCALED FROM IESNA LM-79-08 TEST DATA (G2-2511-597-7)  
Test Lab: INNOVATION CENTER  
Issue Date: 2/17/2026  
Manufacturer: COOPER LIGHTING SOLUTIONS  
Product Line: FAIL-SAFE  
Catalog Number: 4ASL4-20HE-2-50-UNV  
Description: 4FT 2000 LUMEN 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: 8356.0 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: 3.98' x H: 0.1')  
CIE Type: Direct  
  
Input Watts (W): 71.6  
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: P1357175  
CATALOG NUMBER: 4ASL4-20HE-2-50-UNV

### Luminous Intensity Polar Plot





TEST NUMBER: P1357175  
 CATALOG NUMBER: 4ASL4-20HE-2-50-UNV

**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	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°	19753	19753	19753
5°	19597	19360	19300
10°	19463	19003	18831
15°	19285	18612	18454
20°	19054	18119	17924
25°	18688	17633	17467
30°	18230	17077	17014
35°	17871	16559	16487
40°	17455	16002	15931
45°	17035	15521	15528
50°	16493	14885	14927
55°	15972	14202	14451
60°	15331	13435	13945
65°	14334	12721	13552
70°	13215	12050	13191
75°	11589	11532	13073
80°	9034	11074	13033
85°	5483	11059	13407

**MAXIMUM LUMINANCE 45°-90°:**

Horizontal Angle: 0°  
 Vertical Angle: 45°  
 Luminance: 17035 cd/sqm



TEST NUMBER: P1357175  
 CATALOG NUMBER: 4ASL4-20HE-2-50-UNV

**ZONAL LUMENS:**

Zone	Lumens	% Fixture
0°-10°	230.8	2.8
10°-20°	663.5	7.9
20°-30°	1005.4	12.0
30°-40°	1216.0	14.6
40°-50°	1282.0	15.3
50°-60°	1196.5	14.3
60°-70°	987.8	11.8
70°-80°	716.6	8.6
80°-90°	452.8	5.4
90°-100°	270.2	3.2
100°-110°	154.9	1.9
110°-120°	88.0	1.1
120°-130°	50.2	0.6
130°-140°	27.2	0.3
140°-150°	11.9	0.1
150°-160°	2.2	0.0
160°-170°	0.0	0.0
170°-180°	0.0	0.0
0°-30°	1899.8	22.7
0°-40°	3115.8	37.3
0°-60°	5594.2	66.9
0°-90°	7751.4	92.8
90°-120°	513.2	6.1
90°-150°	602.4	7.2
90°-180°	605.0	7.2
0°-180°	8356.0	100.0

**CANDELA DISTRIBUTION:**

	0°	22.5°	45°	67.5°	90°	Flux
0°	2434	2434	2434	2434	2434	
5°	2411	2434	2426	2426	2434	229
15°	2312	2342	2358	2365	2380	652
25°	2112	2143	2189	2220	2235	973
35°	1837	1883	1952	2005	2028	1148
45°	1523	1584	1676	1745	1776	1175
55°	1171	1240	1347	1439	1477	1047
65°	788	873	1003	1125	1179	783
75°	406	513	696	842	903	427
85°	76	237	444	597	658	94
90°	0	145	344	490	551	3
95°	0	92	260	398	452	0
105°	0	31	145	253	291	0
115°	0	15	84	153	184	0
125°	0	8	54	100	115	0
135°	0	0	31	61	76	0
145°	0	0	15	38	46	0
155°	0	0	0	8	15	0
165°	0	0	0	0	0	0
175°	0	0	0	0	0	0
180°	0	0	0	0	0	0



TEST NUMBER: P1357175  
 CATALOG NUMBER: 4ASL4-20HE-2-50-UNV

**CANDELA DISTRIBUTION (FULL):**

	0°	22.5°	45°	67.5°	90°
0°	2434.0	2434.0	2434.0	2434.0	2434.0
2.5°	2418.7	2441.7	2434.0	2426.4	2426.4
5°	2411.1	2434.0	2426.4	2426.4	2434.0
7.5°	2395.7	2418.7	2418.7	2418.7	2426.4
10°	2372.8	2403.4	2403.4	2403.4	2411.1
12.5°	2349.8	2372.8	2380.4	2388.1	2395.7
15°	2311.5	2342.2	2357.5	2365.1	2380.4
17.5°	2273.3	2296.2	2319.2	2342.2	2349.8
20°	2227.4	2258.0	2280.9	2303.9	2311.5
22.5°	2173.8	2204.4	2235.0	2258.0	2273.3
25°	2112.5	2143.2	2189.1	2219.7	2235.0
27.5°	2051.3	2081.9	2135.5	2173.8	2189.1
30°	1974.8	2020.7	2074.3	2120.2	2143.2
32.5°	1905.9	1951.8	2013.0	2066.6	2081.9
35°	1837.0	1882.9	1951.8	2005.4	2028.3
37.5°	1760.5	1814.0	1882.9	1944.2	1967.1
40°	1683.9	1737.5	1814.0	1882.9	1898.2
42.5°	1607.4	1660.9	1752.8	1814.0	1837.0
45°	1523.2	1584.4	1676.3	1745.1	1775.8
47.5°	1439.0	1500.2	1592.1	1668.6	1699.2
50°	1347.1	1416.0	1515.5	1592.1	1622.7
52.5°	1262.9	1331.8	1431.3	1515.5	1553.8
55°	1171.1	1240.0	1347.1	1439.0	1477.2
57.5°	1079.2	1148.1	1262.9	1362.4	1400.7
60°	987.4	1056.3	1171.1	1285.9	1324.2
62.5°	887.9	964.4	1086.9	1201.7	1247.6
65°	788.4	872.6	1002.7	1125.2	1178.7
67.5°	696.5	780.7	918.5	1056.3	1102.2
70°	597.0	688.9	842.0	979.7	1033.3
72.5°	497.5	597.0	765.4	910.8	964.4
75°	405.7	512.8	696.5	842.0	903.2
77.5°	306.2	436.3	627.6	780.7	834.3
80°	222.0	359.7	558.8	719.5	773.1
82.5°	145.4	290.9	497.5	658.3	711.8
85°	76.5	237.3	443.9	597.0	658.3
87.5°	23.0	183.7	390.4	543.4	597.0
90°	0.0	145.4	344.4	489.9	551.1
92.5°	0.0	114.8	298.5	443.9	497.5
95°	0.0	91.8	260.2	398.0	451.6
97.5°	0.0	76.5	229.6	359.7	405.7
100°	0.0	61.2	199.0	321.5	367.4
102.5°	0.0	45.9	168.4	283.2	329.1
105°	0.0	30.6	145.4	252.6	290.9
107.5°	0.0	23.0	122.5	222.0	260.2
110°	0.0	23.0	114.8	191.4	229.6



TEST NUMBER: P1357175  
 CATALOG NUMBER: 4ASL4-20HE-2-50-UNV

**CANDELA DISTRIBUTION (continued):**

	0°	22.5°	45°	67.5°	90°
112.5°	0.0	15.3	99.5	176.0	206.7
115°	0.0	15.3	84.2	153.1	183.7
117.5°	0.0	15.3	76.5	137.8	168.4
120°	0.0	15.3	68.9	122.5	145.4
122.5°	0.0	7.7	61.2	107.2	130.1
125°	0.0	7.7	53.6	99.5	114.8
127.5°	0.0	7.7	45.9	91.8	107.2
130°	0.0	7.7	45.9	84.2	99.5
132.5°	0.0	0.0	38.3	76.5	91.8
135°	0.0	0.0	30.6	61.2	76.5
137.5°	0.0	0.0	30.6	53.6	68.9
140°	0.0	0.0	23.0	53.6	61.2
142.5°	0.0	0.0	15.3	45.9	53.6
145°	0.0	0.0	15.3	38.3	45.9
147.5°	0.0	0.0	7.7	30.6	38.3
150°	0.0	0.0	7.7	23.0	30.6
152.5°	0.0	0.0	0.0	15.3	23.0
155°	0.0	0.0	0.0	7.7	15.3
157.5°	0.0	0.0	0.0	0.0	7.7
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



TEST NUMBER: P1357175  
 CATALOG NUMBER: 4ASL4-20HE-2-50-UNV

**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	21.21	20.15	21.67	22.16	21.74	23.27	22.21	23.73	24.22
	3H	21.18	22.58	21.66	23.05	23.58	24.19	25.59	24.67	26.06	26.59
	4H	21.66	22.99	22.17	23.47	24.02	25.40	26.73	25.90	27.21	27.76
	6H	21.93	23.17	22.45	23.67	24.23	26.67	27.91	27.19	28.41	28.97
	8H	21.99	23.17	22.52	23.70	24.26	27.33	28.51	27.86	29.04	29.60
	12H	22.00	23.14	22.54	23.66	24.26	28.06	29.19	28.59	29.71	30.31
4H	2H	20.56	21.88	21.06	22.37	22.92	22.17	23.49	22.67	23.98	24.53
	3H	22.30	23.43	22.82	23.96	24.53	24.85	25.98	25.37	26.51	27.08
	4H	22.91	23.94	23.45	24.49	25.08	26.23	27.27	26.77	27.81	28.41
	6H	23.31	24.23	23.87	24.79	25.40	27.70	28.62	28.26	29.18	29.80
	8H	23.41	24.27	23.97	24.84	25.46	28.47	29.33	29.03	29.90	30.52
	12H	23.45	24.24	24.04	24.83	25.46	29.32	30.11	29.91	30.70	31.33
8H	4H	23.60	24.46	24.17	25.03	25.66	26.45	27.31	27.02	27.88	28.51
	6H	24.19	24.92	24.79	25.53	26.16	28.10	28.83	28.69	29.44	30.07
	8H	24.38	25.04	24.99	25.66	26.30	29.01	29.67	29.62	30.29	30.93
	12H	24.50	25.09	25.11	25.70	26.41	30.05	30.64	30.66	31.25	31.96
12H	4H	23.80	24.59	24.39	25.18	25.81	26.46	27.24	27.05	27.84	28.47
	6H	24.49	25.15	25.10	25.77	26.42	28.14	28.80	28.74	29.42	30.06
	8H	24.78	25.37	25.39	25.98	26.69	29.12	29.71	29.73	30.31	31.02

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:  $4\pi$   
 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  
 R<sub>f</sub>: 90.4  
 R<sub>g</sub>: 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

REPORT NUMBER: SP1-2511-597-5

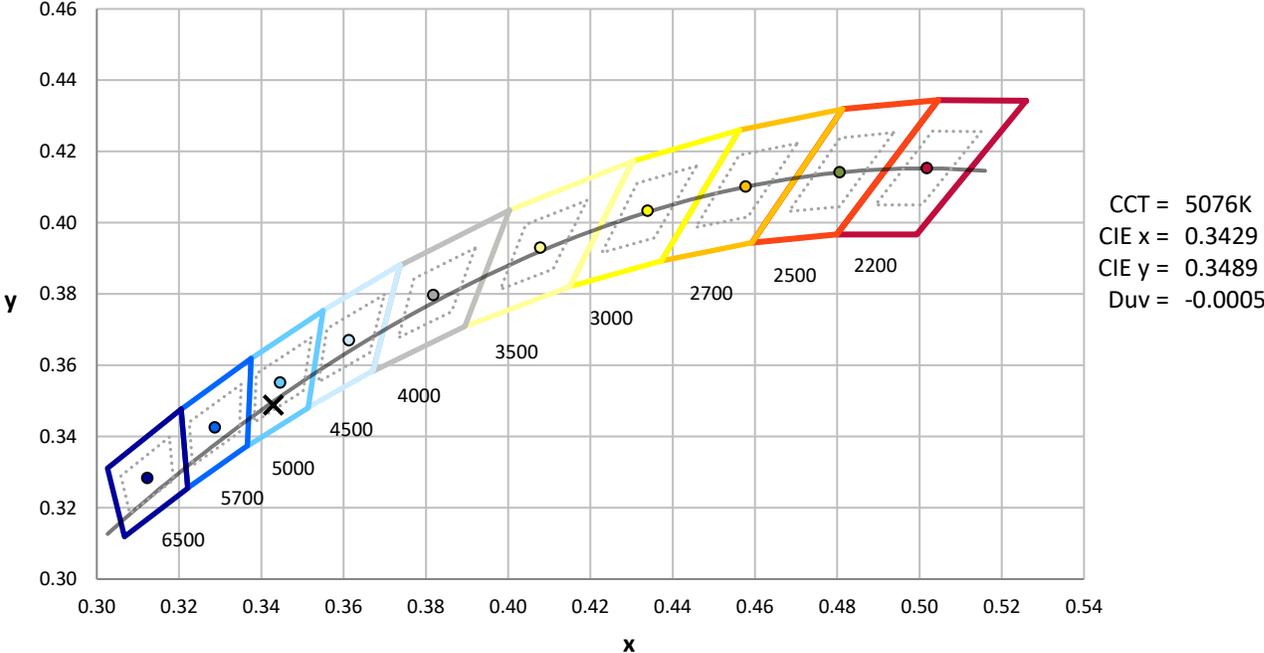
Measurement and Test Equipment			
Instrument	Identification Number	Calibration Date	Calibration Due Date
Photometer	76INCH SPHERE IN0058	6/16/2025	12/16/2025
Power Meter	XITRON INXT2011004	10/21/2025	10/21/2026
AC Power Source	CHROMA 61603 IN0063	10/21/2025	10/21/2026
DC Power Source	AGILENT E3634A IN0208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

REPORT NUMBER: SP1-2511-597-5

**CIE 1931 Chromaticity Diagram**



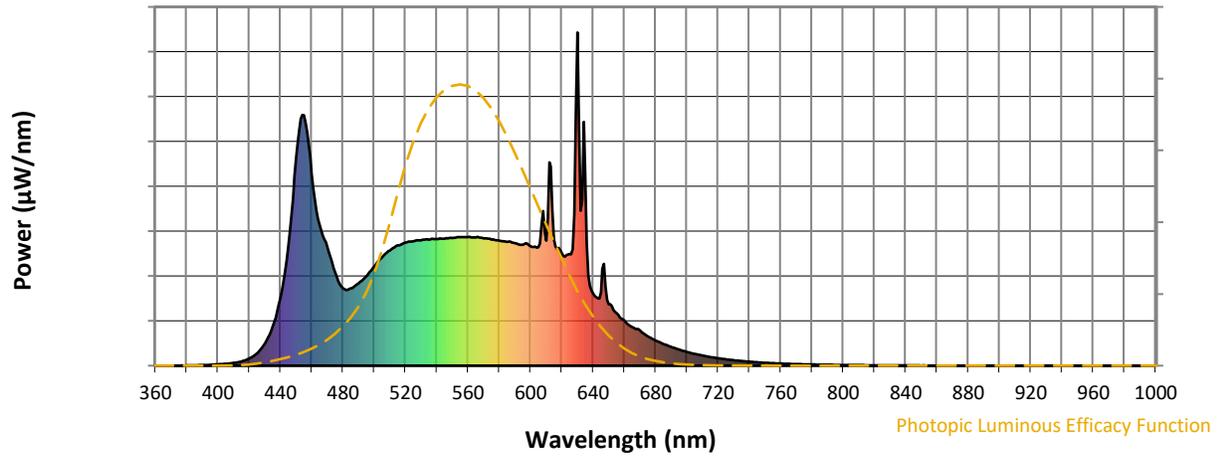
**CIE 1931 Chromaticity Diagram with 2017 ANSI 7-Step and 4-Step Quadrangles**



Point lies inside the ANSI 5000K 4-step quadrangle

REPORT NUMBER: SP1-2511-597-5

**Photopic Flux vs. Wavelength**

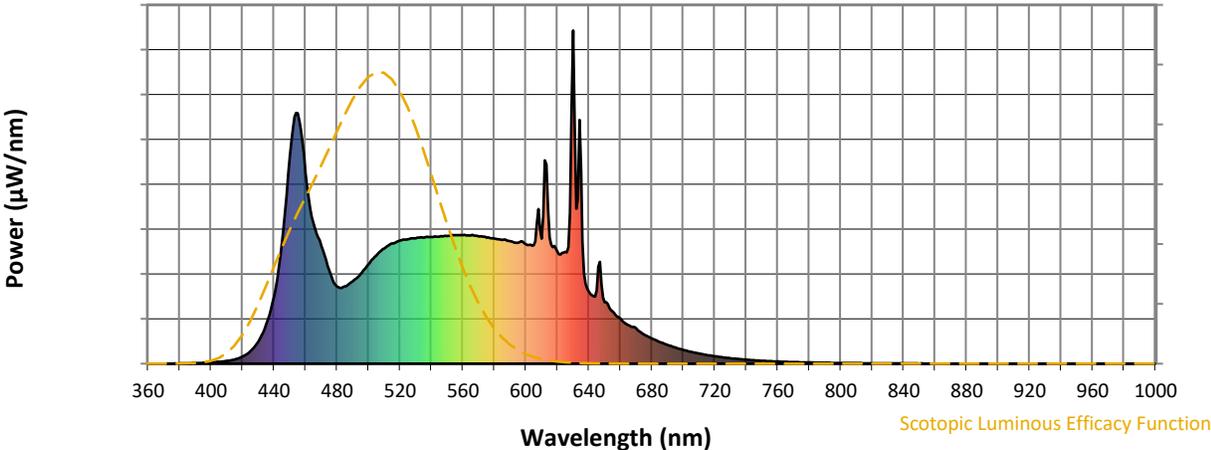


**Photopic Lumens: NR**

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	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			

REPORT NUMBER: SP1-2511-597-5

Scotopic Flux vs. Wavelength



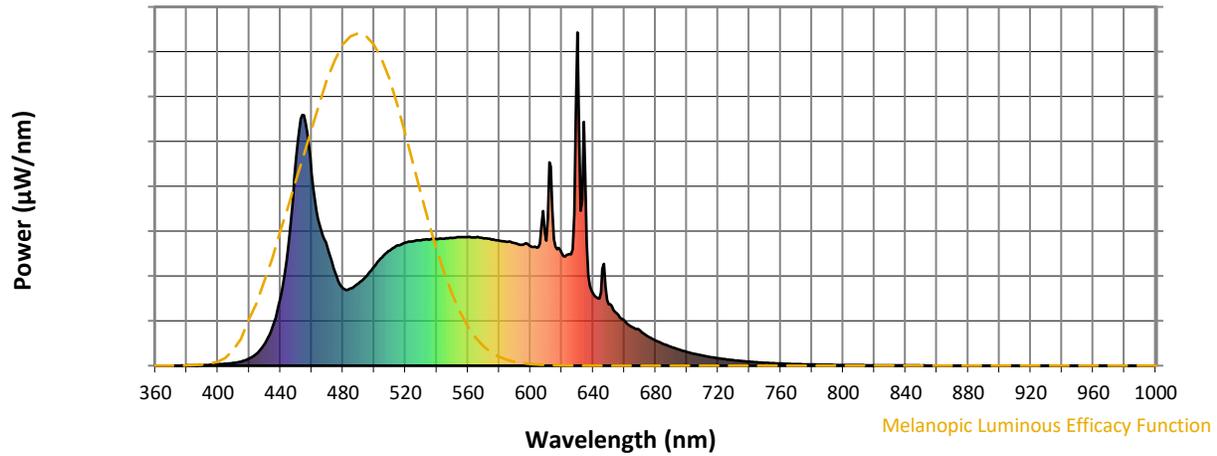
Scotopic Lumens: NR

S/P: 2.12

$\lambda$ (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			

REPORT NUMBER: SP1-2511-597-5

**Melanopic Flux vs. Wavelength**



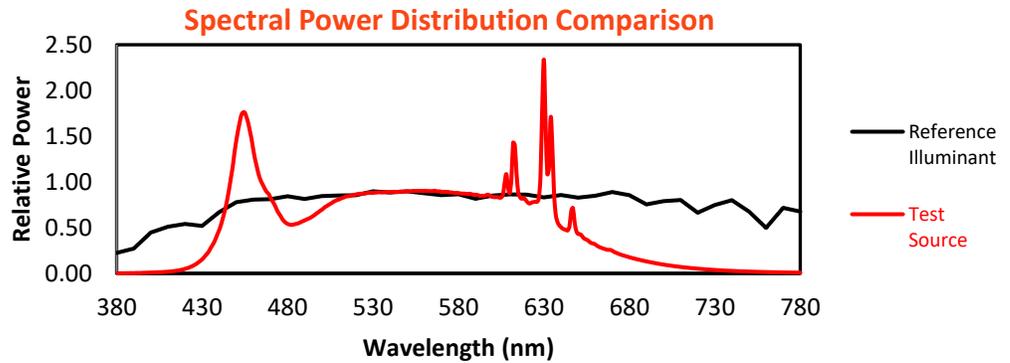
**Melanopic Lumens: NR**

**M/P: 4.65**

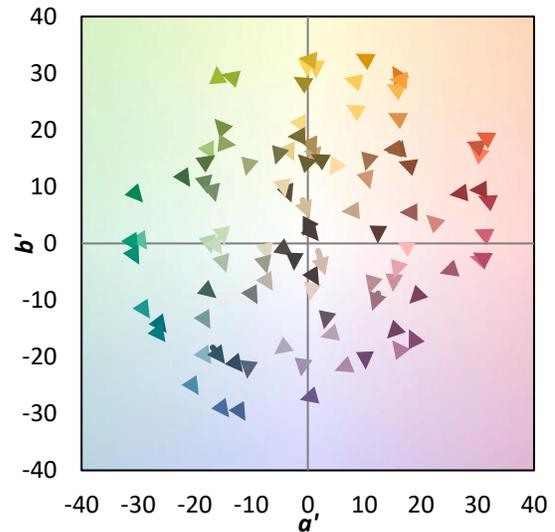
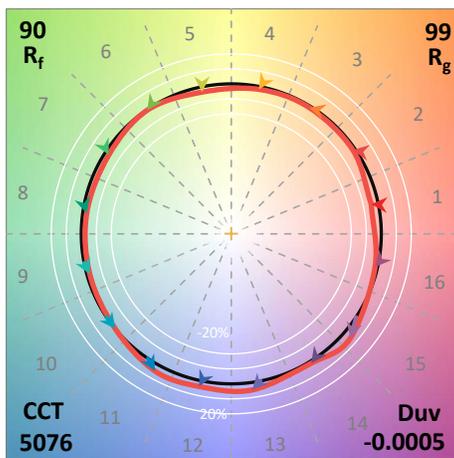
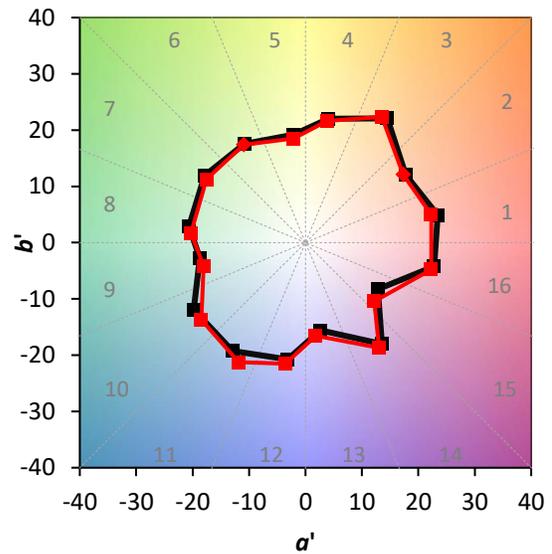
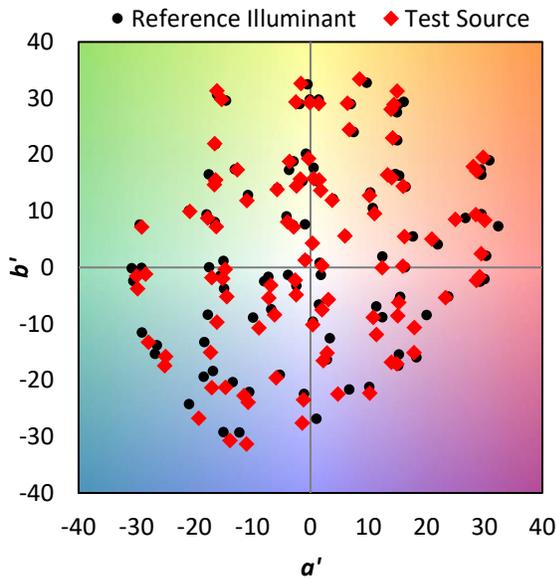
λ (nm)	Power W <sup>^</sup> /nm	Lumens (φ/nm)	λ (nm)	Power W <sup>^</sup> /nm	Lumens (φ/nm)	λ (nm)	Power W <sup>^</sup> /nm	Lumens (φ/nm)	λ (nm)	Power W <sup>^</sup> /nm	Lumens (φ/nm)	λ (nm)	Power W <sup>^</sup> /nm	Lumens (φ/nm)
360	0	NR	490	248	NR	620	337	NR	750	9	NR	880	0	NR
365	0	NR	495	269	NR	625	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  $R_a = 94.9$   
 $R_9 = 74.0$

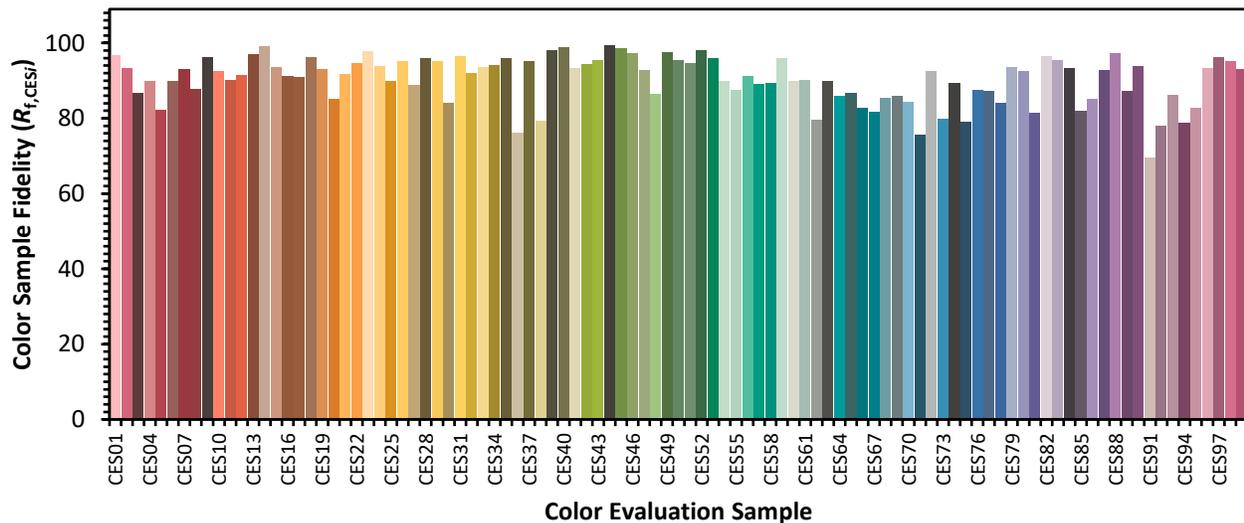


**Color Vector Graphics**

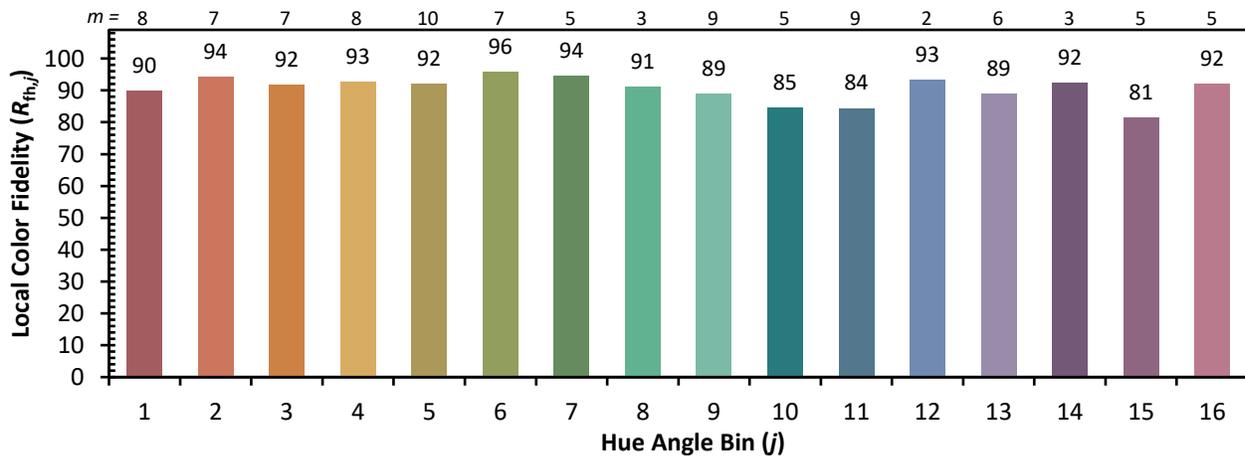
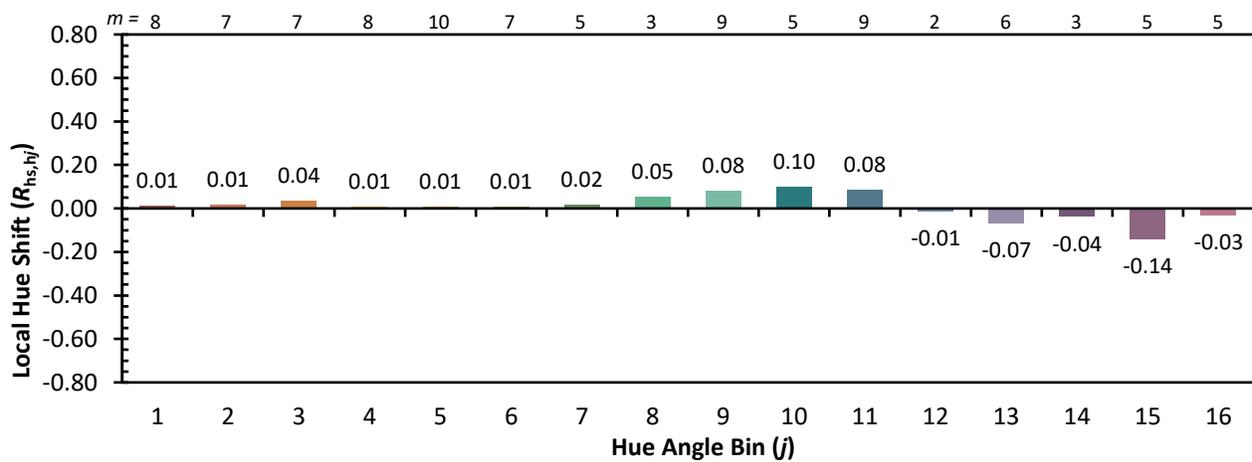
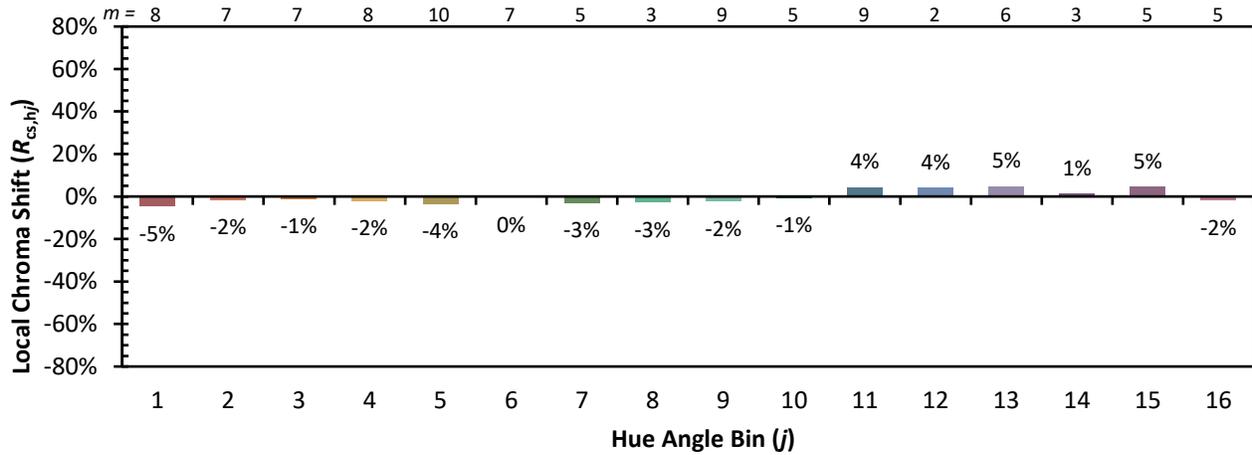


**Individual Sample Fidelity Index ( $R_{f,i}$ )**

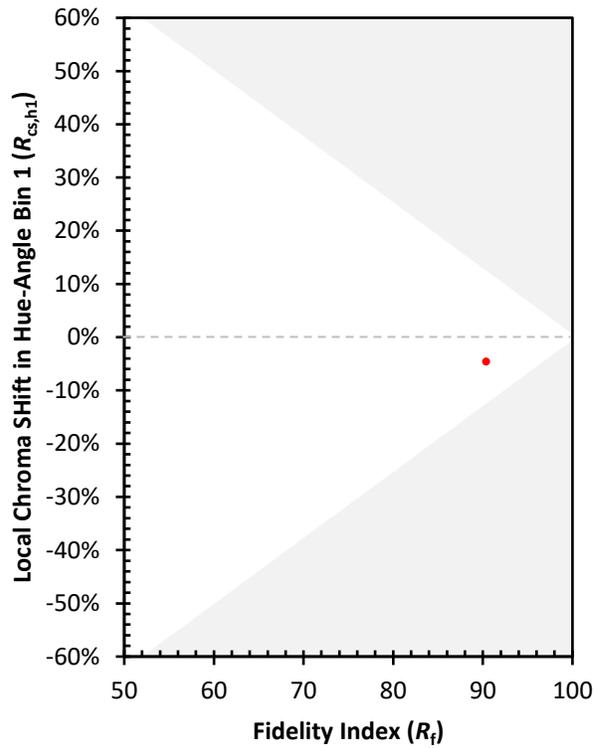
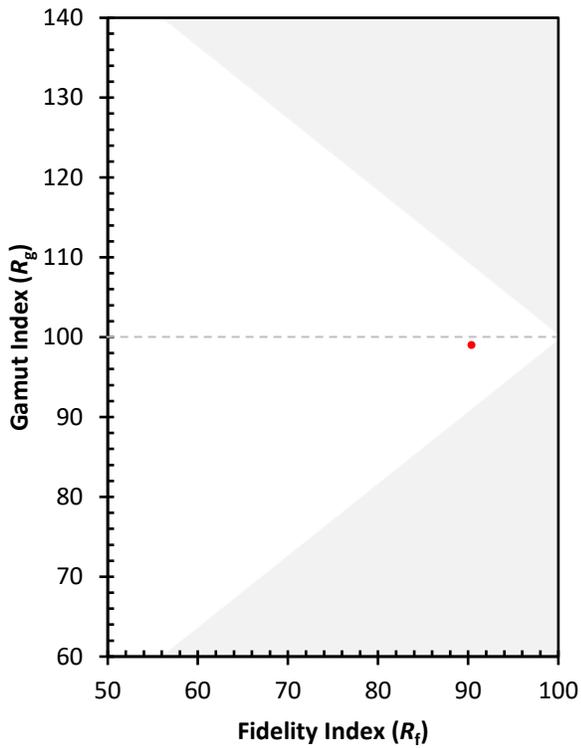
CES01 = 85	CES26 = 95	CES51 = 95	CES76 = 87
CES02 = 61	CES27 = 89	CES52 = 98	CES77 = 87
CES03 = 31	CES28 = 96	CES53 = 96	CES78 = 84
CES04 = 69	CES29 = 95	CES54 = 90	CES79 = 94
CES05 = 48	CES30 = 84	CES55 = 88	CES80 = 93
CES06 = 50	CES31 = 96	CES56 = 91	CES81 = 81
CES07 = 41	CES32 = 92	CES57 = 89	CES82 = 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)