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: METALUX

Report Number: P975517

Luminaire Tested: 24ENA-LD2-70-UNV-L840-CD1

Issue Date: 03/13/2025

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

Scaled Data Report

Test Information

Test Method:	LM-79-2019
Report Number:	P975517
Test Lab:	INNOVATION CENTER(P3)
Issue Date:	03/13/2025
Manufacturer:	COOPER LIGHTING SOLUTIONS
Product Line:	METALUX
Catalog Number:	24ENA-LD2-70-UNV-L840-CD1
Description:	METALUX ENCOUNTER 2x4 7000LM PACKAGE 80CRI 4000K AIR VENTED TROFFER
Light Source:	4000K CCT, 80+ CRI LEDS
Ballast/Driver:	-

Summary

Lumens per Lamp:	N/A
Luminaire Lumens:	6914.7 lumens
Efficiency:	N/A
Efficacy:	114.9 lumens/watt
Spacing Criteria (0/90/45):	1.29 / 1.29 / 1.4
Luminous Opening:	Rectangular (W 1.83' x L: 3.83' x H: 0')
CIE Type:	Direct

Input Watts (W):	60.2
Input Voltage (V):	120
Input Current (Ain):	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:	25 FT

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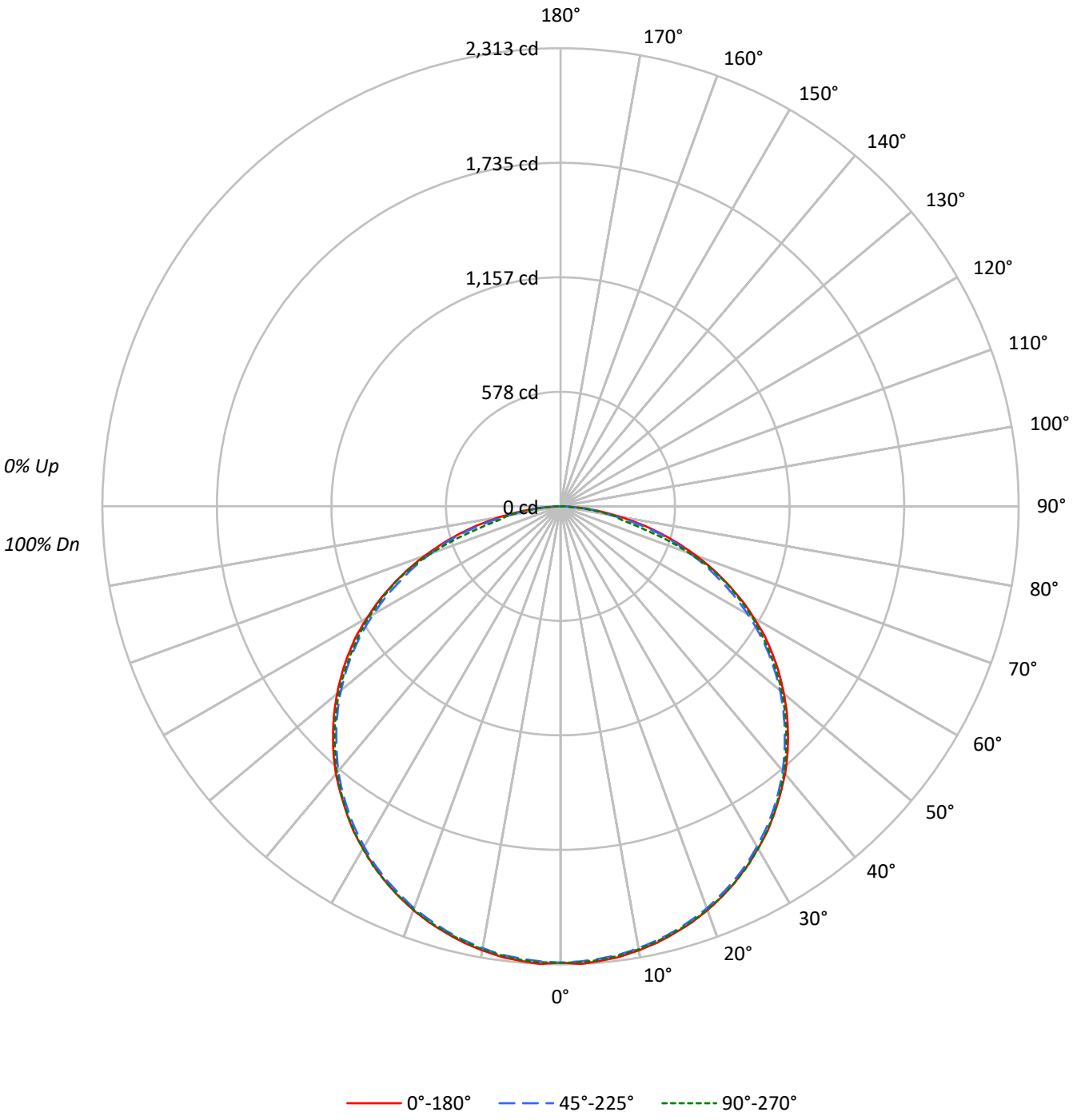
Scaled Data Report

TEST NUMBER: P975517
CATALOG NUMBER: 24ENA-LD2-70-UNV-L840-CD1

Luminous Intensity Polar Plot



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Scaled Data Report

TEST NUMBER: P975517
CATALOG NUMBER: 24ENA-LD2-70-UNV-L840-CD1

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	0
RCR																		
0	119	119	119	119	116	116	116	116	111	111	111	106	106	106	102	102	102	100
1	109	104	99	95	106	101	97	94	97	94	91	93	90	88	90	87	85	83
2	98	90	83	77	96	88	82	76	84	79	74	81	77	73	78	74	71	69
3	90	79	70	64	87	77	69	63	74	67	62	71	66	61	69	64	60	58
4	82	70	61	54	79	68	60	53	66	58	53	63	57	52	61	56	51	49
5	75	62	53	46	73	61	52	46	59	51	45	57	50	45	55	49	44	42
6	69	56	47	40	67	55	46	40	53	45	40	51	44	39	50	44	39	37
7	64	50	42	35	62	50	41	35	48	40	35	47	40	35	45	39	34	32
8	60	46	37	31	58	45	37	31	44	36	31	43	36	31	41	35	31	29
9	56	42	34	28	54	42	34	28	40	33	28	39	33	28	38	32	28	26
10	52	39	31	26	51	38	31	25	37	30	25	36	30	25	35	29	25	23

AVERAGE LUMINANCE (cd/sqm):

	0°	45°	90°
0°	3529	3529	3529
5°	3543	3525	3534
10°	3541	3523	3532
15°	3537	3521	3530
20°	3537	3520	3532
25°	3533	3516	3533
30°	3529	3508	3529
35°	3525	3501	3520
40°	3527	3489	3510
45°	3518	3467	3493
50°	3508	3446	3477
55°	3496	3411	3445
60°	3452	3346	3417
65°	3383	3241	3361
70°	3261	3125	3118
75°	3069	2933	2479
80°	2702	2294	2359
85°	2132	2007	1856

MAXIMUM LUMINANCE 45°-90°:

Horizontal Angle: 0°
Vertical Angle: 45°
Luminance: 3518 cd/sqm

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TEST NUMBER: P975517
CATALOG NUMBER: 24ENA-LD2-70-UNV-L840-CD1

ZONAL LUMENS:

Zone	Lumens	% Fixture
0°-10°	218.3	3.2
10°-20°	627.7	9.1
20°-30°	960.5	13.9
30°-40°	1174.1	17.0
40°-50°	1240.7	17.9
50°-60°	1149.5	16.6
60°-70°	900.6	13.0
70°-80°	509.2	7.4
80°-90°	134.1	1.9
90°-100°	0.0	0.0
100°-110°	0.0	0.0
110°-120°	0.0	0.0
120°-130°	0.0	0.0
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°	1806.5	26.1
0°-40°	2980.6	43.1
0°-60°	5370.9	77.7
0°-90°	6914.7	100.0
90°-120°	0.0	0.0
90°-150°	0.0	0.0
90°-180°	0.0	0.0
0°-180°	6914.7	100.0

CANDELA DISTRIBUTION:

	0°	22.5°	45°	67.5°	90°	Flux
0°	2304	2304	2304	2304	2304	
5°	2304	2297	2293	2291	2299	219
15°	2231	2222	2221	2219	2226	630
25°	2091	2082	2080	2080	2091	964
35°	1885	1877	1872	1872	1882	1180
45°	1624	1612	1601	1601	1612	1253
55°	1309	1294	1277	1280	1290	1169
65°	933	916	894	906	928	923
75°	519	504	496	442	419	546
85°	121	114	114	108	106	143
90°	0	0	0	0	0	

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TEST NUMBER: P975517
CATALOG NUMBER: 24ENA-LD2-70-UNV-L840-CD1

CANDELA DISTRIBUTION (FULL):

	0°	22.5°	45°	67.5°	90°
0°	*2304.3*	2304.3	2304.3	2304.3	2304.3
2.5°	*2313.0*	*2303.0*	*2300.0*	*2297.3*	*2304.3*
5°	*2304.3*	2297.3	2292.7	2291.3	2298.6
7.5°	*2294.3*	2285.7	2282.7	2279.7	2287.0
10°	*2277.0*	2268.4	2265.4	2263.8	2271.1
12.5°	*2256.8*	2246.5	2245.2	2243.8	2250.8
15°	*2230.6*	2221.9	2220.6	2219.2	2226.3
17.5°	*2203.3*	2194.6	2191.7	2190.3	2200.3
20°	*2170.1*	2161.4	2159.8	2158.5	2167.1
22.5°	*2132.5*	2123.9	2120.9	2122.3	2130.9
25°	*2090.7*	2081.8	2080.4	2080.4	2090.7
27.5°	*2044.2*	2035.6	2035.6	2035.6	2047.2
30°	*1995.3*	1988.0	1983.7	1985.1	1995.3
32.5°	*1944.6*	1933.0	1930.2	1931.6	1941.8
35°	*1885.4*	1876.8	1872.4	1872.4	1882.5
37.5°	*1824.7*	1816.0	1810.3	1810.3	1820.3
40°	*1764.1*	1750.9	1745.2	1742.3	1755.5
42.5°	*1696.1*	1686.1	1673.1	1673.1	1684.5
45°	*1624.0*	1612.4	1600.8	1600.8	1612.4
47.5°	*1550.2*	1538.6	1525.7	1525.7	1537.3
50°	*1472.2*	1460.6	1446.3	1446.3	1459.2
52.5°	*1392.8*	1379.8	1363.9	1362.3	1375.5
55°	*1309.0*	1294.5	1277.2	1280.2	1290.2
57.5°	*1223.7*	1204.8	1187.5	1187.5	1203.5
60°	*1127.0*	1111.1	1092.2	1095.2	1115.4
62.5°	*1034.4*	1014.2	995.5	1002.5	1020.1
65°	*933.4*	916.1	894.2	905.8	927.5
67.5°	*833.7*	814.8	797.5	811.9	822.1
70°	*728.1*	710.8	697.9	697.9	696.3
72.5°	*622.8*	606.9	603.9	576.4	559.1
75°	*518.6*	504.2	495.6	442.1	418.9
77.5°	*410.3*	405.9	378.6	322.2	314.9
80°	*306.3*	309.2	260.1	261.4	267.4
82.5°	*210.9*	206.6	195.0	186.4	183.4
85°	*121.3*	114.2	114.2	108.3	105.6
87.5°	*40.5*	44.8	44.8	44.8	46.2
90°	*0.0*	0.0	0.0	0.0	0.0

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

Report Prepared for

Cooper Lighting Solutions

Metalux

Report Number: SP1-2506-457-3

Test Date: 07/15/2025

Luminaire Tested: 14EN-LD2-51-UNV-L940-CD1-U

Data in this report applies to families of products including 14EN-LD2-51-UNV-L940-CD1-U

Report Generated By FNC07603 / LDUCLS01DT446
Version: v7.04

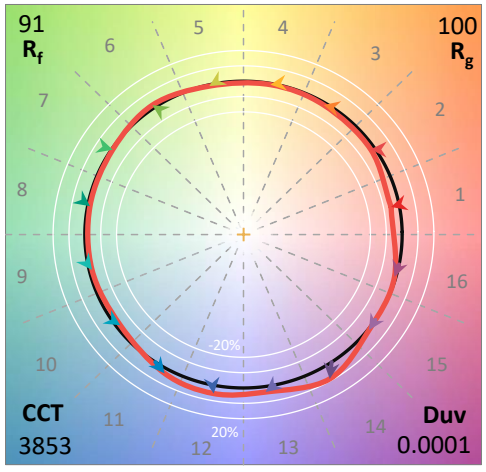
Test Information

Test Method:	LM-79-2019
Report Number:	SP1-2506-457-3
Test Lab:	COOPER LIGHTING SOLUTIONS
Photometer:	SP1 - 76IN SPHERE
Measurement Geometry:	4π
Issue Date:	07/15/2025
Manufacturer:	COOPER LIGHTING SOLUTIONS
Product Line:	Metalux
Catalog Number:	**14EN-LD2-51-UNV-L940-CD1-U**
Description:	1x4 ENCOUNTER 5100LM WITH LIGHTNING BOARDS

Spectral Parameters

CCT (K):	3853
CIE u':	0.2278
CIE v':	0.5044
Duv:	0.0001
CIE x:	0.3872
CIE y:	0.3810
CIE z:	0.2318
Peak Wavelength (nm):	630
Dominant Wavelength (nm):	579
Purity:	30.54407
Rf:	91.2
Rg:	99.8

CRI (Ra):	93.4
R1:	94.4
R2:	95.6
R3:	95.4
R4:	94.7
R5:	93.7
R6:	93.8
R7:	93.9
R8:	85.8
R9:	62.8
R10:	88.3
R11:	95.1
R12:	75.5
R13:	94.6
R14:	96.8
R15:	91.2



Test Conditions

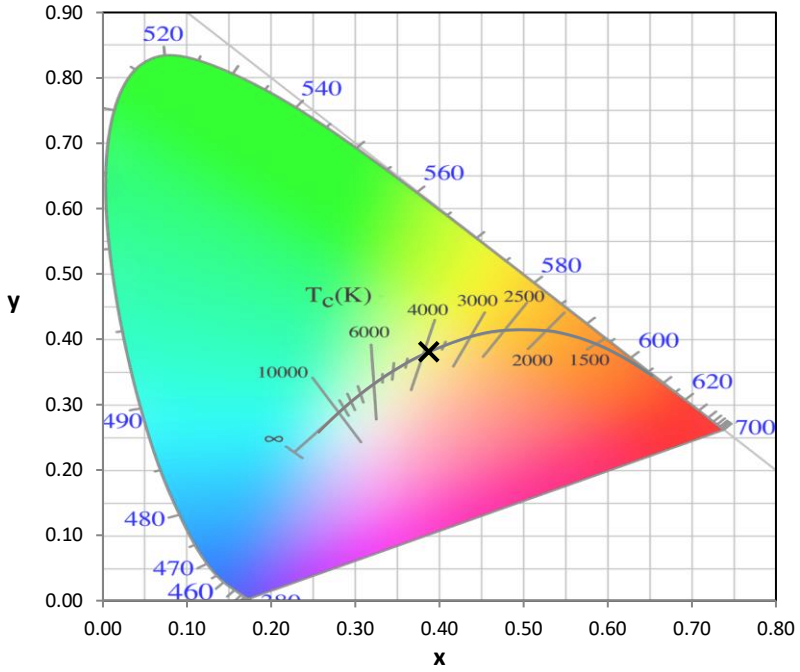
Stabilization Time:	35M
Operation Time:	1H 35M
Sphere Temperature (°C):	25.0

REPORT NUMBER: SP1-2506-457-3

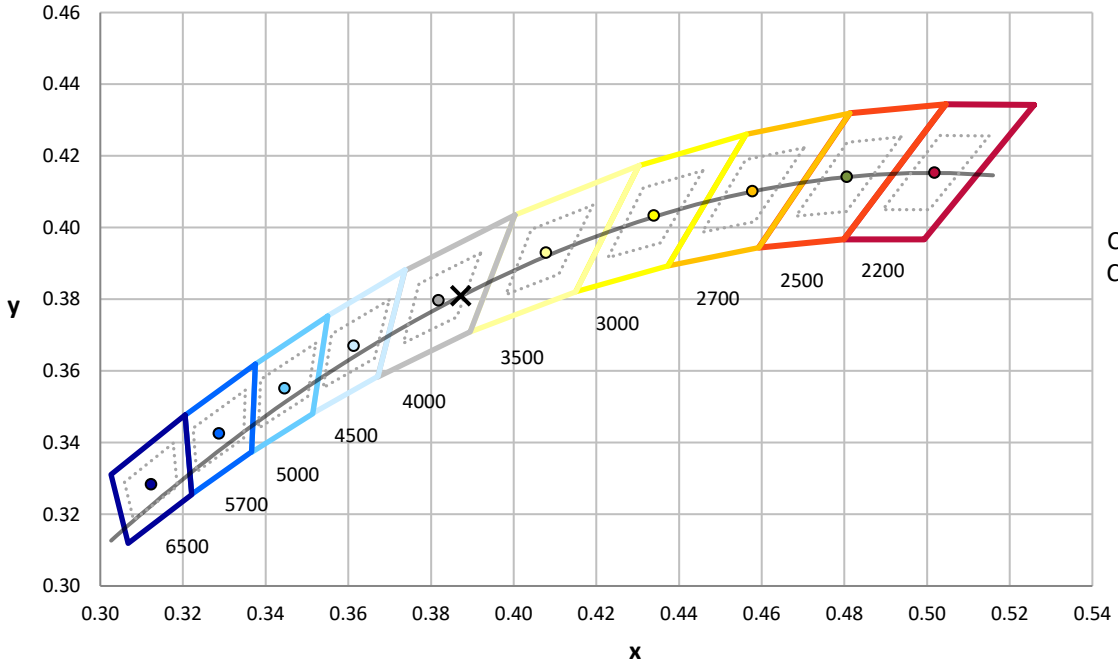
Measurement and Test Equipment			
Instrument	Identification Number	Calibration Date	Calibration Due Date
Photometer	76INCH SPHERE IN0058	6/16/2025	12/16/2025
Power Meter	XITRON INXT2011004	1/21/2025	1/21/2026
AC Power Source	CHROMA 61603 IN0063	10/22/2024	10/22/2025
DC Power Source	AGILENT E3634A IN0208	10/22/2024	10/22/2025
Sphere Thermometer	ONSET IN0085	10/22/2024	10/22/2025
Room Thermometer	ONSET IN0046	10/22/2024	10/22/2025

REPORT NUMBER: SP1-2506-457-3

CIE 1931 Chromaticity Diagram



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

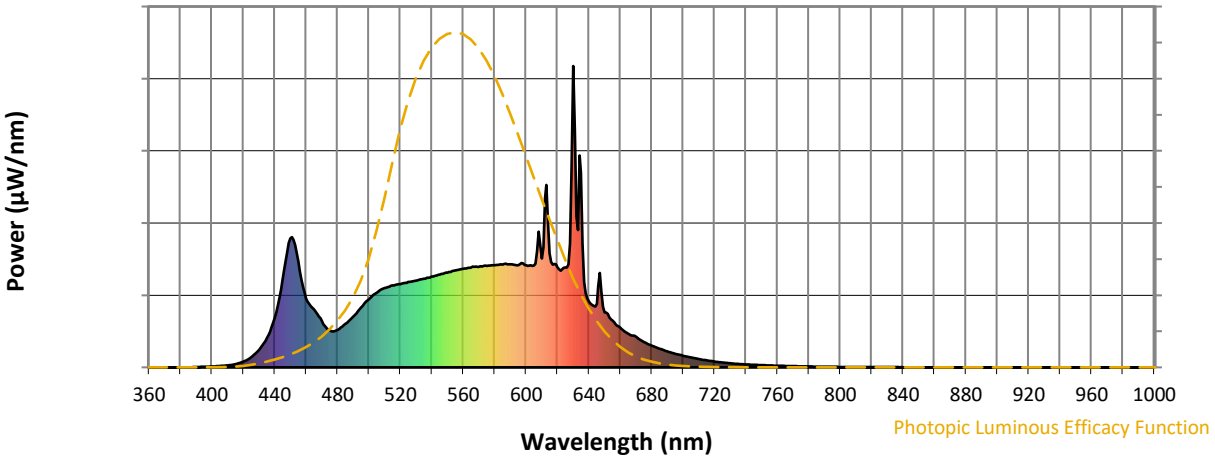


CCT = 3853K
CIE x = 0.3872
CIE y = 0.3810
Duv = 0.0001

Point lies inside the ANSI 4000K 4-step quadrangle

REPORT NUMBER: SP1-2506-457-3

Photopic Flux vs. Wavelength

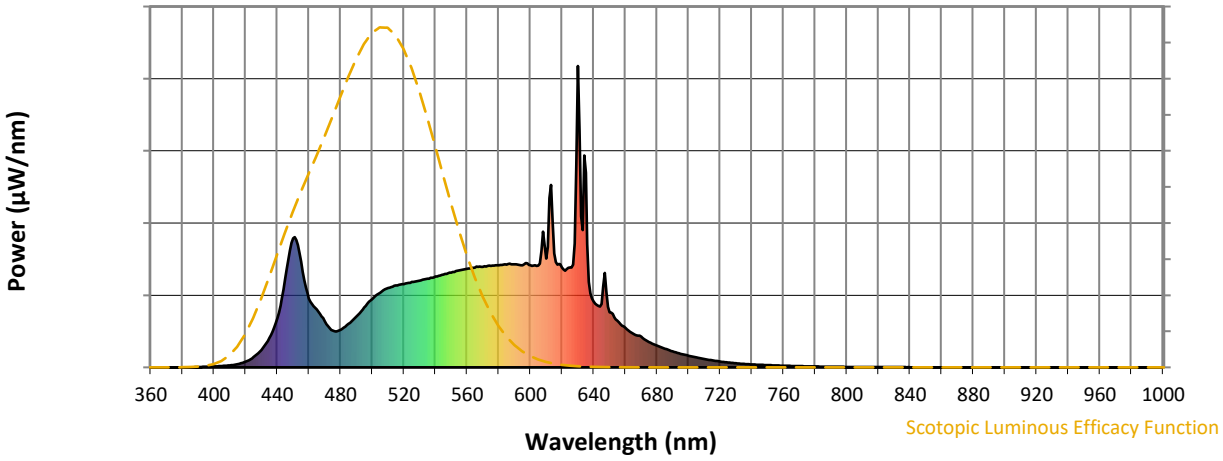


Photopic Lumens: NR

λ (nm)	Power W^/nm	Lumens (ϕ/nm)	λ (nm)	Power W^/nm	Lumens (ϕ/nm)	λ (nm)	Power W^/nm	Lumens (ϕ/nm)	λ (nm)	Power W^/nm	Lumens (ϕ/nm)	λ (nm)	Power W^/nm	Lumens (ϕ/nm)
360	0	NR	490	168	NR	620	331	NR	750	8	NR	880	0	NR
365	0	NR	495	199	NR	625	331	NR	755	6	NR	885	0	NR
370	0	NR	500	227	NR	630	1000	NR	760	6	NR	890	0	NR
375	0	NR	505	248	NR	635	646	NR	765	5	NR	895	0	NR
380	0	NR	510	263	NR	640	219	NR	770	4	NR	900	0	NR
385	0	NR	515	272	NR	645	210	NR	775	3	NR	905	0	NR
390	1	NR	520	277	NR	650	183	NR	780	3	NR	910	0	NR
395	2	NR	525	283	NR	655	155	NR	785	3	NR	915	0	NR
400	3	NR	530	288	NR	660	132	NR	790	2	NR	920	0	NR
405	5	NR	535	294	NR	665	111	NR	795	2	NR	925	0	NR
410	7	NR	540	301	NR	670	102	NR	800	2	NR	930	0	NR
415	11	NR	545	308	NR	675	84	NR	805	1	NR	935	0	NR
420	19	NR	550	315	NR	680	72	NR	810	1	NR	940	0	NR
425	34	NR	555	322	NR	685	61	NR	815	1	NR	945	0	NR
430	57	NR	560	327	NR	690	53	NR	820	1	NR	950	0	NR
435	97	NR	565	331	NR	695	45	NR	825	1	NR	955	0	NR
440	163	NR	570	334	NR	700	39	NR	830	1	NR	960	0	NR
445	293	NR	575	337	NR	705	33	NR	835	1	NR	965	0	NR
450	428	NR	580	339	NR	710	28	NR	840	1	NR	970	0	NR
455	351	NR	585	341	NR	715	23	NR	845	0	NR	975	0	NR
460	229	NR	590	342	NR	720	19	NR	850	0	NR	980	0	NR
465	192	NR	595	339	NR	725	16	NR	855	0	NR	985	0	NR
470	152	NR	600	338	NR	730	13	NR	860	0	NR	990	0	NR
475	122	NR	605	337	NR	735	11	NR	865	0	NR	995	0	NR
480	125	NR	610	361	NR	740	10	NR	870	0	NR	1000	0	NR
485	144	NR	615	378	NR	745	9	NR	875	0	NR			

REPORT NUMBER: SP1-2506-457-3

Scotopic Flux vs. Wavelength

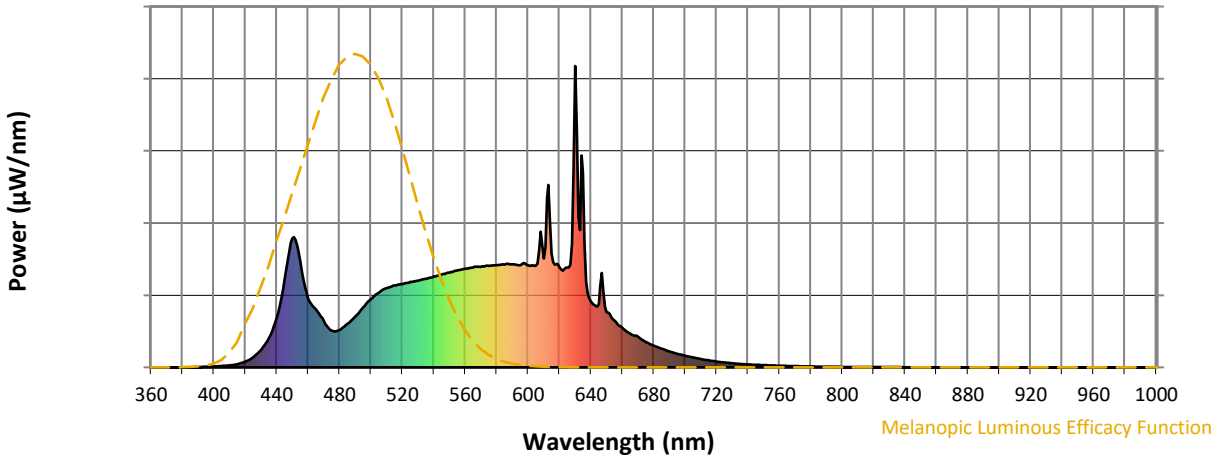


Scotopic Lumens: NR **S/P: 1.74**

λ (nm)	Power W^/nm	Lumens (ϕ/nm)	λ (nm)	Power W^/nm	Lumens (ϕ/nm)	λ (nm)	Power W^/nm	Lumens (ϕ/nm)	λ (nm)	Power W^/nm	Lumens (ϕ/nm)	λ (nm)	Power W^/nm	Lumens (ϕ/nm)
360	0	NR	490	168	NR	620	331	NR	750	8	NR	880	0	NR
365	0	NR	495	199	NR	625	331	NR	755	6	NR	885	0	NR
370	0	NR	500	227	NR	630	1000	NR	760	6	NR	890	0	NR
375	0	NR	505	248	NR	635	646	NR	765	5	NR	895	0	NR
380	0	NR	510	263	NR	640	219	NR	770	4	NR	900	0	NR
385	0	NR	515	272	NR	645	210	NR	775	3	NR	905	0	NR
390	1	NR	520	277	NR	650	183	NR	780	3	NR	910	0	NR
395	2	NR	525	283	NR	655	155	NR	785	3	NR	915	0	NR
400	3	NR	530	288	NR	660	132	NR	790	2	NR	920	0	NR
405	5	NR	535	294	NR	665	111	NR	795	2	NR	925	0	NR
410	7	NR	540	301	NR	670	102	NR	800	2	NR	930	0	NR
415	11	NR	545	308	NR	675	84	NR	805	1	NR	935	0	NR
420	19	NR	550	315	NR	680	72	NR	810	1	NR	940	0	NR
425	34	NR	555	322	NR	685	61	NR	815	1	NR	945	0	NR
430	57	NR	560	327	NR	690	53	NR	820	1	NR	950	0	NR
435	97	NR	565	331	NR	695	45	NR	825	1	NR	955	0	NR
440	163	NR	570	334	NR	700	39	NR	830	1	NR	960	0	NR
445	293	NR	575	337	NR	705	33	NR	835	1	NR	965	0	NR
450	428	NR	580	339	NR	710	28	NR	840	1	NR	970	0	NR
455	351	NR	585	341	NR	715	23	NR	845	0	NR	975	0	NR
460	229	NR	590	342	NR	720	19	NR	850	0	NR	980	0	NR
465	192	NR	595	339	NR	725	16	NR	855	0	NR	985	0	NR
470	152	NR	600	338	NR	730	13	NR	860	0	NR	990	0	NR
475	122	NR	605	337	NR	735	11	NR	865	0	NR	995	0	NR
480	125	NR	610	361	NR	740	10	NR	870	0	NR	1000	0	NR
485	144	NR	615	378	NR	745	9	NR	875	0	NR			

REPORT NUMBER: SP1-2506-457-3

Melanopic Flux vs. Wavelength



Melanopic Lumens: NR **M/P: 3.58**

λ (nm)	Power W^/nm	Lumens (ϕ/nm)	λ (nm)	Power W^/nm	Lumens (ϕ/nm)	λ (nm)	Power W^/nm	Lumens (ϕ/nm)	λ (nm)	Power W^/nm	Lumens (ϕ/nm)	λ (nm)	Power W^/nm	Lumens (ϕ/nm)
360	0	NR	490	168	NR	620	331	NR	750	8	NR	880	0	NR
365	0	NR	495	199	NR	625	331	NR	755	6	NR	885	0	NR
370	0	NR	500	227	NR	630	1000	NR	760	6	NR	890	0	NR
375	0	NR	505	248	NR	635	646	NR	765	5	NR	895	0	NR
380	0	NR	510	263	NR	640	219	NR	770	4	NR	900	0	NR
385	0	NR	515	272	NR	645	210	NR	775	3	NR	905	0	NR
390	1	NR	520	277	NR	650	183	NR	780	3	NR	910	0	NR
395	2	NR	525	283	NR	655	155	NR	785	3	NR	915	0	NR
400	3	NR	530	288	NR	660	132	NR	790	2	NR	920	0	NR
405	5	NR	535	294	NR	665	111	NR	795	2	NR	925	0	NR
410	7	NR	540	301	NR	670	102	NR	800	2	NR	930	0	NR
415	11	NR	545	308	NR	675	84	NR	805	1	NR	935	0	NR
420	19	NR	550	315	NR	680	72	NR	810	1	NR	940	0	NR
425	34	NR	555	322	NR	685	61	NR	815	1	NR	945	0	NR
430	57	NR	560	327	NR	690	53	NR	820	1	NR	950	0	NR
435	97	NR	565	331	NR	695	45	NR	825	1	NR	955	0	NR
440	163	NR	570	334	NR	700	39	NR	830	1	NR	960	0	NR
445	293	NR	575	337	NR	705	33	NR	835	1	NR	965	0	NR
450	428	NR	580	339	NR	710	28	NR	840	1	NR	970	0	NR
455	351	NR	585	341	NR	715	23	NR	845	0	NR	975	0	NR
460	229	NR	590	342	NR	720	19	NR	850	0	NR	980	0	NR
465	192	NR	595	339	NR	725	16	NR	855	0	NR	985	0	NR
470	152	NR	600	338	NR	730	13	NR	860	0	NR	990	0	NR
475	122	NR	605	337	NR	735	11	NR	865	0	NR	995	0	NR
480	125	NR	610	361	NR	740	10	NR	870	0	NR	1000	0	NR
485	144	NR	615	378	NR	745	9	NR	875	0	NR			

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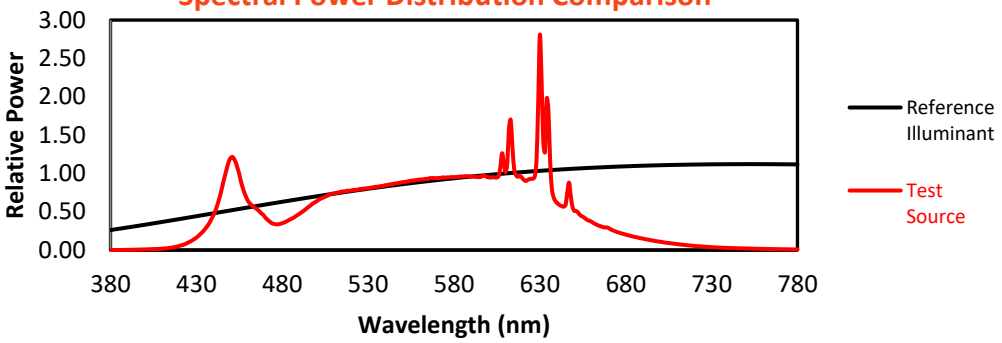
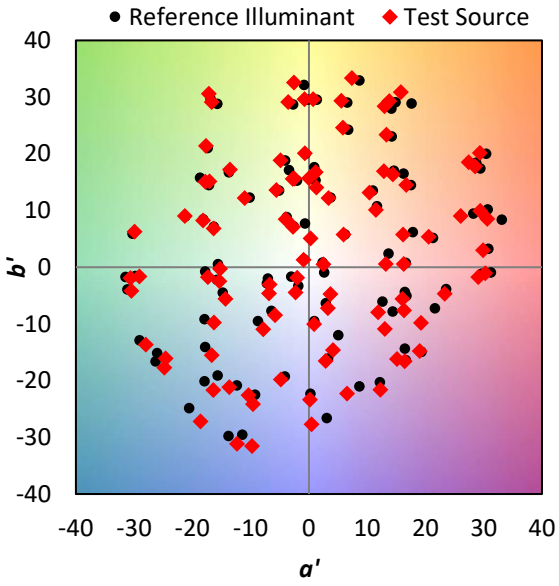
Summary

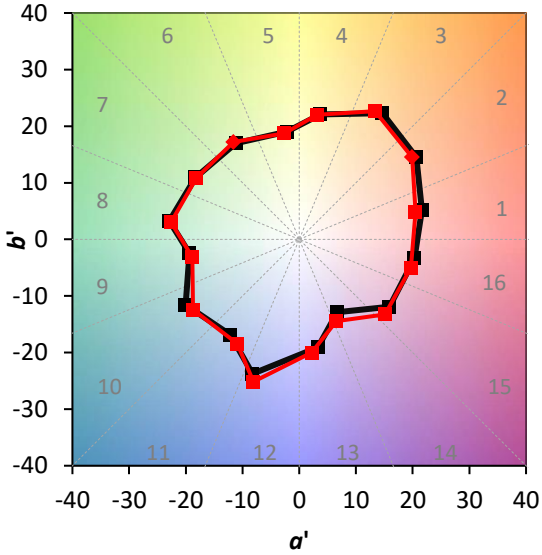
R_f = 91.2
R_g = 99.8
CIE R_a = 93.4
R_9 = 62.8

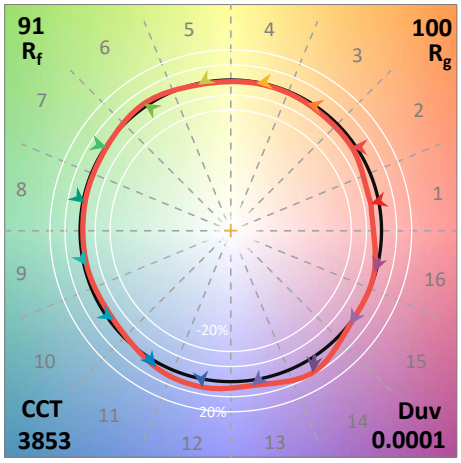
Spectral Power Distribution Comparison

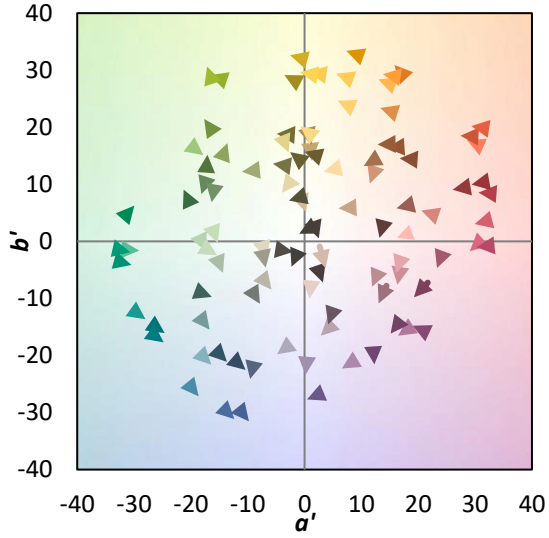


Color Vector Graphics









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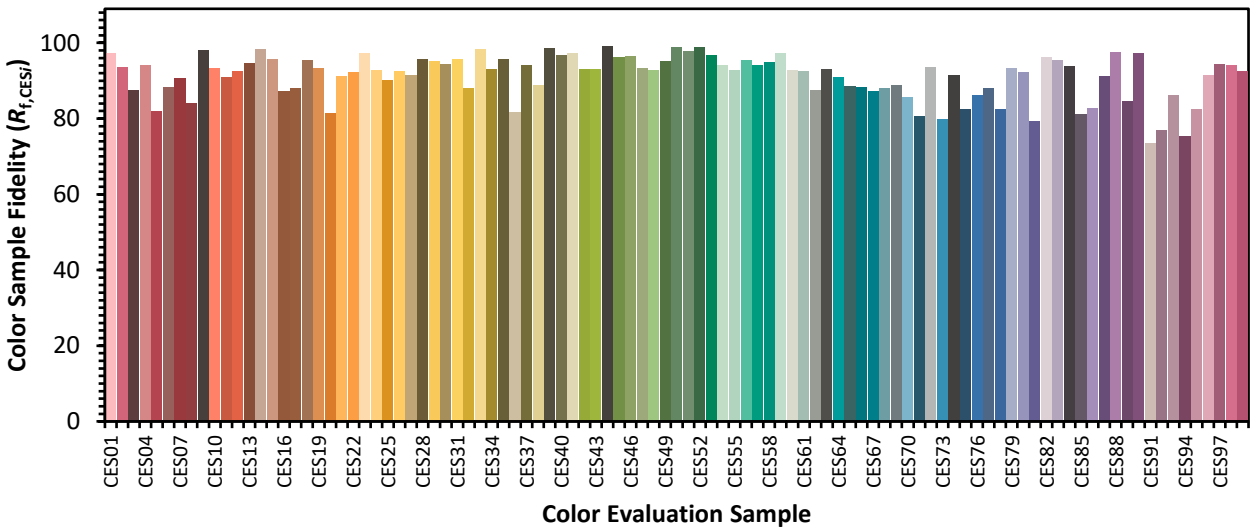
Individual Sample Fidelity Index ($R_{f,i}$)

CES01 = 86	CES26 = 93	CES51 = 98	CES76 = 86
CES02 = 62	CES27 = 92	CES52 = 99	CES77 = 88
CES03 = 31	CES28 = 96	CES53 = 97	CES78 = 82
CES04 = 69	CES29 = 95	CES54 = 94	CES79 = 93
CES05 = 49	CES30 = 94	CES55 = 93	CES80 = 92
CES06 = 50	CES31 = 96	CES56 = 95	CES81 = 79
CES07 = 42	CES32 = 88	CES57 = 94	CES82 = 96
CES08 = 41	CES33 = 98	CES58 = 95	CES83 = 95
CES09 = 29	CES34 = 93	CES59 = 97	CES84 = 94
CES10 = 74	CES35 = 96	CES60 = 93	CES85 = 81
CES11 = 57	CES36 = 82	CES61 = 92	CES86 = 83
CES12 = 63	CES37 = 94	CES62 = 88	CES87 = 91
CES13 = 43	CES38 = 89	CES63 = 93	CES88 = 97
CES14 = 74	CES39 = 99	CES64 = 91	CES89 = 85
CES15 = 71	CES40 = 97	CES65 = 89	CES90 = 97
CES16 = 47	CES41 = 97	CES66 = 88	CES91 = 73
CES17 = 49	CES42 = 93	CES67 = 87	CES92 = 77
CES18 = 56	CES43 = 93	CES68 = 88	CES93 = 86
CES19 = 71	CES44 = 99	CES69 = 89	CES94 = 75
CES20 = 66	CES45 = 96	CES70 = 86	CES95 = 82
CES21 = 85	CES46 = 96	CES71 = 81	CES96 = 92
CES22 = 78	CES47 = 93	CES72 = 94	CES97 = 94
CES23 = 91	CES48 = 93	CES73 = 80	CES98 = 94
CES24 = 90	CES49 = 95	CES74 = 92	CES99 = 93
CES25 = 71	CES50 = 99	CES75 = 82	



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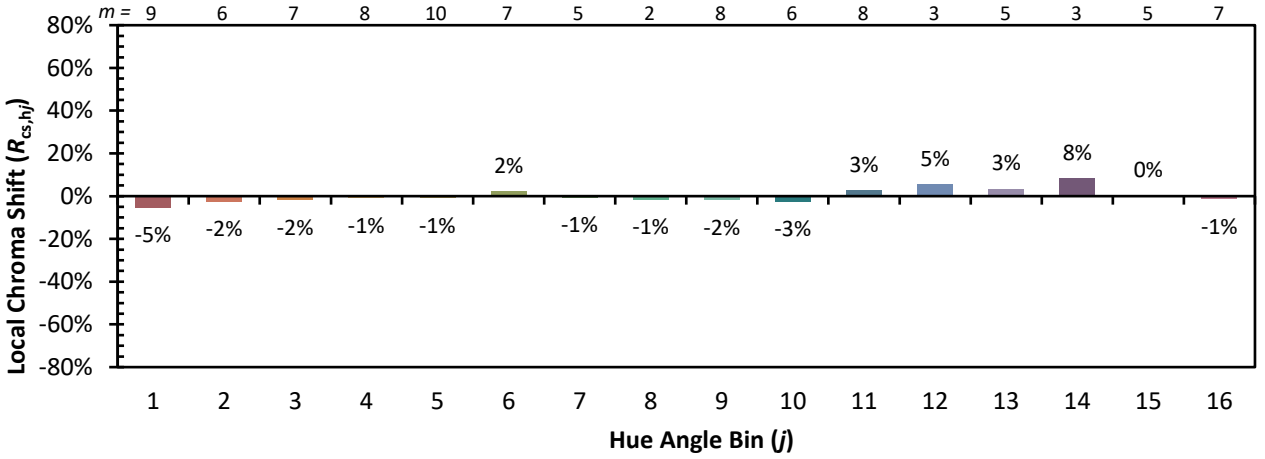
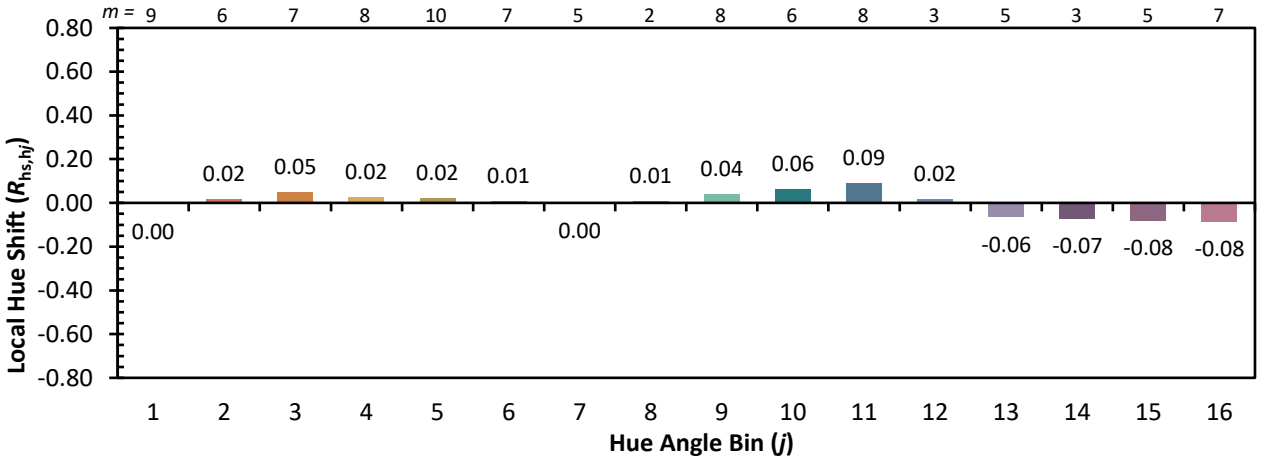
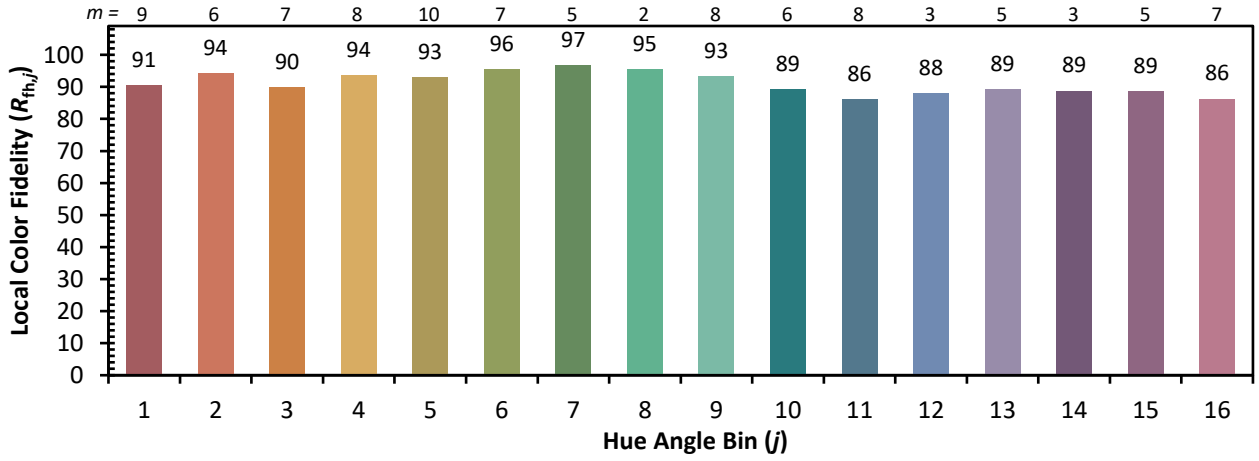
Color Rendition by Hue-Angle Bin







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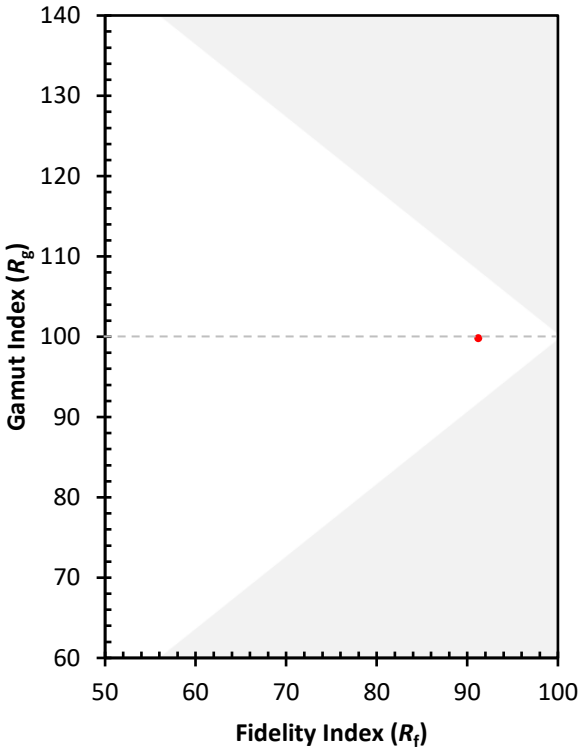
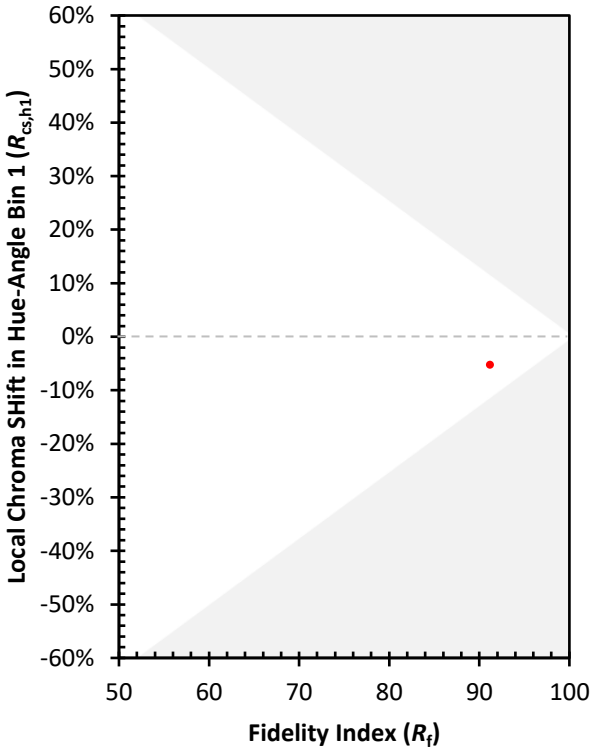
Measure Comparisons





(END OF REPORT)