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: P983152

Luminaire Tested: 24CZ-LD5-70-UNV-L830-SQP-CD1-U

Issue Date: 04/23/2025

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:	P983152
Test Lab:	INNOVATION CENTER(P3)
Issue Date:	04/23/2025
Manufacturer:	COOPER LIGHTING SOLUTIONS
Product Line:	METALUX
Catalog Number:	24CZ-LD5-70-UNV-L830-SQP-CD1-U
Description:	METALUX CRUZE 2x4 7000LM PACKAGE 80CRI 3000K TROFFER LENS WITH SQUARE PATTERN
Light Source:	3000K CCT, 80 CRI LEDS
Ballast/Driver:	-

Summary

Lumens per Lamp:	N/A
Luminaire Lumens:	5168.9 lumens
Efficiency:	N/A
Efficacy:	104.8 lumens/watt
Spacing Criteria (0/90/45):	1.25 / 1.31 / 1.41
Luminous Opening:	Rectangular (W 2' x L: 4' x H: 0')
CIE Type:	Direct

Input Watts (W):	49.3
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:	28.75 FT

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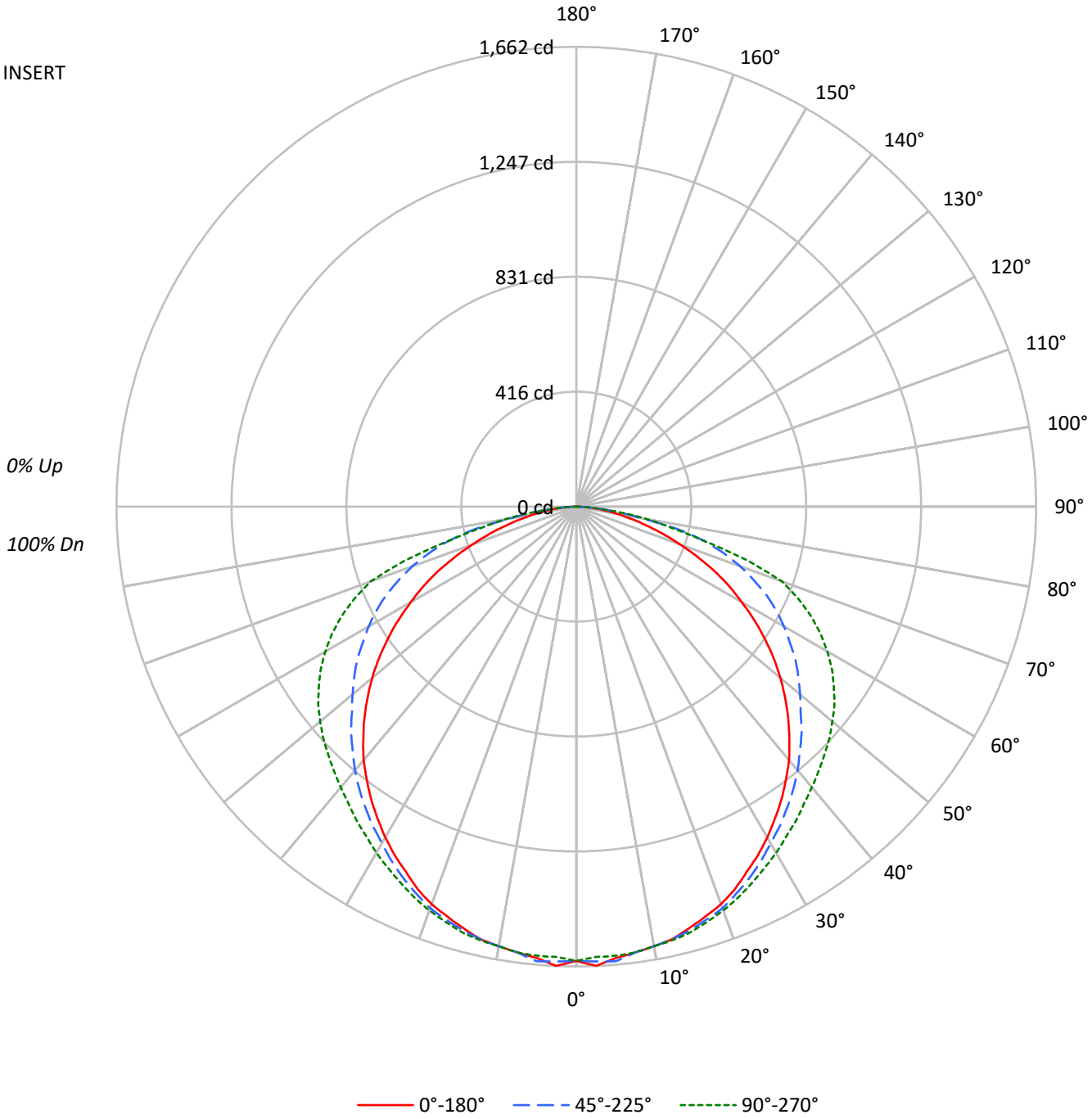
TEST NUMBER: P983152
CATALOG NUMBER: 24CZ-LD5-70-UNV-L830-SQP-CD1-U

Luminous Intensity Polar Plot

INSERT



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TEST NUMBER: P983152
CATALOG NUMBER: 24CZ-LD5-70-UNV-L830-SQP-CD1-U

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	108	103	99	95	105	101	97	93	97	93	90	93	90	87	89	87	85	83
2	98	89	82	76	95	87	81	75	84	78	73	80	76	71	77	73	70	68
3	89	78	69	62	86	76	68	62	73	66	61	70	64	59	68	63	58	56
4	81	68	59	52	79	67	58	52	64	57	51	62	56	50	60	54	50	47
5	74	61	52	45	72	60	51	44	58	50	44	56	49	43	54	48	43	41
6	68	55	45	39	66	54	45	39	52	44	38	50	43	38	48	42	37	35
7	63	49	40	34	62	49	40	34	47	39	34	45	39	33	44	38	33	31
8	59	45	36	30	57	44	36	30	43	35	30	42	35	30	40	34	29	28
9	55	41	33	27	54	41	33	27	39	32	27	38	32	27	37	31	27	25
10	51	38	30	24	50	37	30	24	36	29	24	35	29	24	35	28	24	22

AVERAGE LUMINANCE (cd/sqm):

	0°	45°	90°
0°	2209	2209	2209
5°	2212	2228	2201
10°	2205	2205	2205
15°	2198	2209	2220
20°	2190	2213	2224
25°	2163	2199	2229
30°	2145	2183	2245
35°	2123	2182	2275
40°	2101	2186	2327
45°	2062	2192	2414
50°	2017	2210	2529
55°	1949	2269	2665
60°	1858	2333	2819
65°	1751	2415	2978
70°	1563	2480	3111
75°	1356	2483	2463
80°	1151	1835	1991
85°	991	1240	1115

MAXIMUM LUMINANCE 45°-90°:

Horizontal Angle: 90°
Vertical Angle: 70°
Luminance: 3111 cd/sqm

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TEST NUMBER: P983152
CATALOG NUMBER: 24CZ-LD5-70-UNV-L830-SQP-CD1-U

ZONAL LUMENS:

Zone	Lumens	% Fixture
0°-10°	155.9	3.0
10°-20°	447.7	8.7
20°-30°	682.2	13.2
30°-40°	834.7	16.1
40°-50°	898.1	17.4
50°-60°	870.0	16.8
60°-70°	737.0	14.3
70°-80°	445.5	8.6
80°-90°	97.9	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°	1285.7	24.9
0°-40°	2120.5	41.0
0°-60°	3888.6	75.2
0°-90°	5168.9	100.0
90°-120°	0.0	0.0
90°-150°	0.0	0.0
90°-180°	0.0	0.0
0°-180°	5168.9	100.0

CANDELA DISTRIBUTION:

	0°	22.5°	45°	67.5°	90°	Flux
0°	1642	1642	1642	1642	1642	
5°	1638	1638	1650	1642	1630	156
15°	1578	1582	1586	1590	1594	445
25°	1457	1465	1481	1493	1501	673
35°	1293	1301	1329	1365	1385	808
45°	1084	1104	1152	1224	1268	835
55°	831	867	967	1080	1136	742
65°	550	610	759	879	935	542
75°	261	353	478	486	474	280
85°	64	76	80	76	72	73
90°	0	0	0	0	0	

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TEST NUMBER: P983152
CATALOG NUMBER: 24CZ-LD5-70-UNV-L830-SQP-CD1-U

CANDELA DISTRIBUTION (FULL):

	0°	22.5°	45°	67.5°	90°
0°	*1641.8*	1641.8	1641.8	1641.8	1641.8
2.5°	*1661.9*	*1657.9*	*1645.8*	*1637.8*	*1629.7*
5°	*1637.8*	1637.8	1649.8	1641.8	1629.7
7.5°	*1625.7*	1625.7	1625.7	1645.8	1625.7
10°	*1613.7*	1617.7	1613.7	1629.7	1613.7
12.5°	*1601.6*	1601.6	1601.6	1605.6	1605.6
15°	*1577.6*	1581.6	1585.6	1589.6	1593.7
17.5°	*1553.5*	1557.5	1565.5	1569.6	1573.6
20°	*1529.4*	1533.4	1545.4	1545.4	1553.5
22.5°	*1497.3*	1497.3	1513.3	1517.3	1529.4
25°	*1457.1*	1465.2	1481.2	1493.3	1501.3
27.5°	*1421.1*	1429.0	1445.1	1461.1	1473.2
30°	*1380.9*	1388.9	1405.0	1429.0	1445.1
32.5°	*1336.7*	1344.7	1368.8	1396.9	1413.0
35°	*1292.6*	1300.6	1328.7	1364.8	1384.9
37.5°	*1244.4*	1256.4	1288.5	1328.7	1352.7
40°	*1196.2*	1208.3	1244.4	1288.5	1324.7
42.5°	*1140.0*	1156.1	1196.2	1256.4	1296.6
45°	*1083.8*	1103.9	1152.1	1224.3	1268.4
47.5°	*1023.6*	1043.7	1099.9	1192.2	1240.4
50°	*963.4*	987.5	1055.7	1156.1	1208.3
52.5°	*899.2*	923.2	1011.5	1119.9	1176.1
55°	*830.9*	867.1	967.4	1079.8	1136.0
57.5°	*762.7*	802.9	915.2	1035.7	1095.8
60°	*690.4*	738.6	867.1	987.5	1047.7
62.5°	*622.2*	674.4	814.9	935.3	995.5
65°	*550.0*	610.2	758.7	879.1	935.3
67.5°	*473.7*	550.0	694.5	810.9	867.1
70°	*397.4*	485.7	630.3	738.6	790.8
72.5°	*329.1*	421.5	558.0	650.2	650.2
75°	*260.9*	353.3	477.6	485.7	473.7
77.5°	*200.7*	289.1	373.3	341.2	349.2
80°	*148.5*	220.7	236.8	248.9	256.9
82.5°	*100.4*	148.5	152.5	160.6	160.6
85°	*64.2*	76.3	80.3	76.3	72.2
87.5°	*28.1*	32.2	24.1	16.1	12.1
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: SP3-2508-516-5

Test Date: 09/03/2025

Luminaire Tested: 24CZ-LD5-65-S-UNV-L930-CD1-U

Data in this report applies to families of products including 24CZ-LD5-65-S-UNV-L930-CD1-U

Report Generated By FNC07603 / LDUCLS01DT01661
Version: v7.05

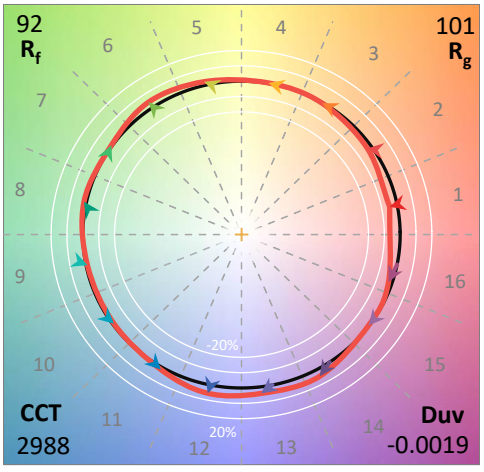
Test Information

Test Method:	LM-79-2019
Report Number:	SP3-2508-516-5
Test Lab:	COOPER LIGHTING SOLUTIONS
Photometer:	SP3 - 3M SPHERE
Measurement Geometry:	4π
Issue Date:	09/05/2025
Manufacturer:	COOPER LIGHTING SOLUTIONS
Product Line:	Metalux
Catalog Number:	**24CZ-LD5-65-S-UNV-L930-CD1-U**
Description:	2X4 CRUZE SB 6500LM 930 SMOOTH LENS

Spectral Parameters

CCT (K):	2988	CRI (Ra):	94.3		
CIE u':	0.2517	R1:	96.3	R9:	61.9
CIE v':	0.5189	R2:	97.6	R10:	93.0
Duv:	-0.0019	R3:	97.5	R11:	96.3
CIE x:	0.4350	R4:	95.8	R12:	85.8
CIE y:	0.3986	R5:	96.1	R13:	96.7
CIE z:	0.1665	R6:	96.2	R14:	97.5
Peak Wavelength (nm):	630	R7:	91.6	R15:	91.8
Dominant Wavelength (nm):	583	R8:	83.5		
Purity:	50.17903				

Rf:	91.6
Rg:	101.1



Test Conditions

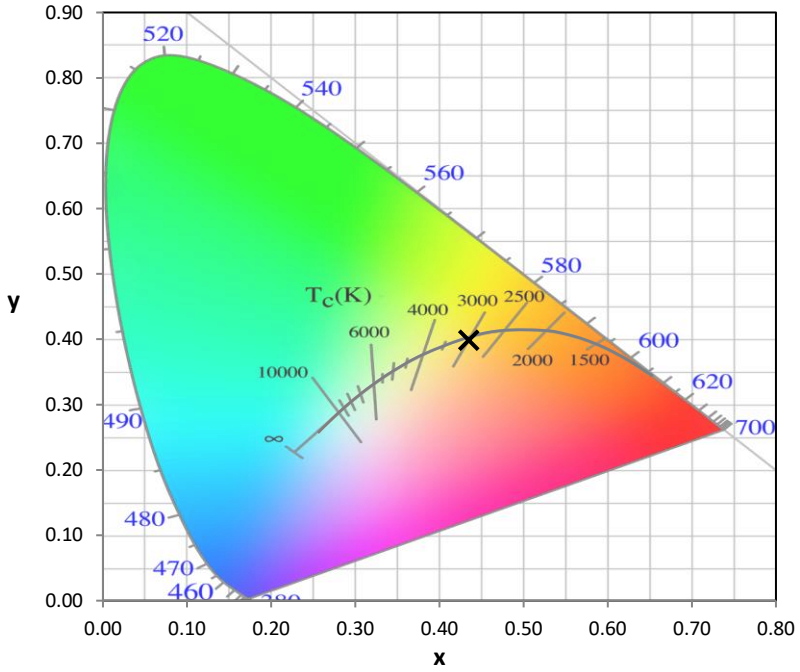
Stabilization Time:	21M
Operation Time:	1H 21M
Sphere Temperature (°C):	25.0

REPORT NUMBER: SP3-2508-516-5

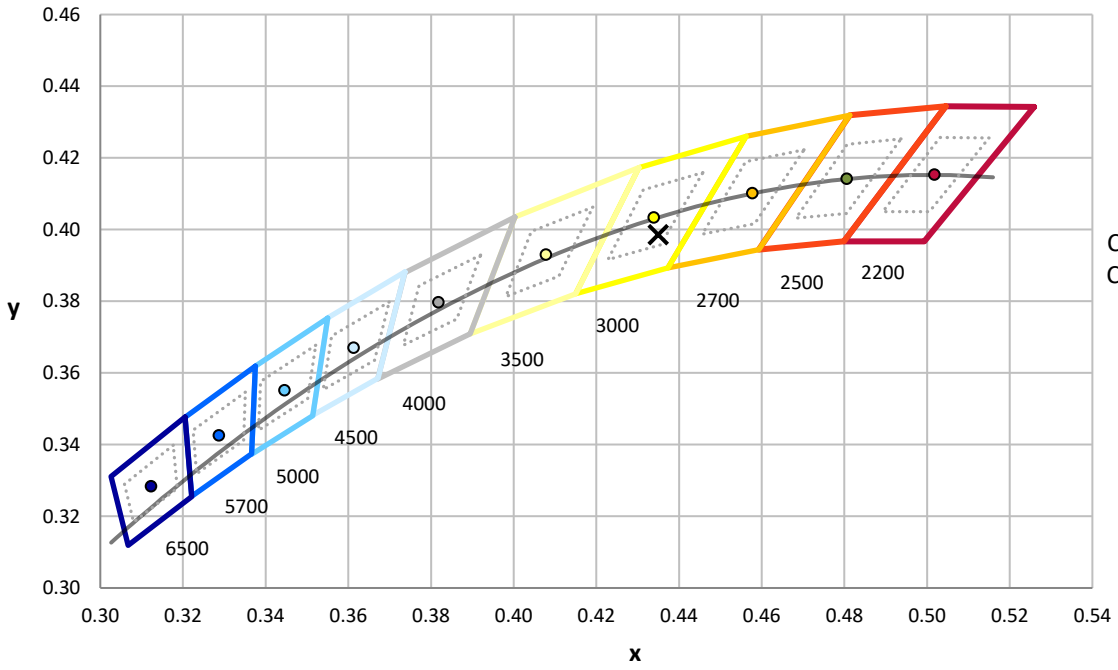
Measurement and Test Equipment			
Instrument	Identification Number	Calibration Date	Calibration Due Date
Photometer	3M SPHERE IN02505	7/1/2025	1/1/2026
Power Meter	XITRON INXT2011006	1/20/2025	1/20/2026
AC Power Source	CHROMA 61604 IN6064A	10/22/2024	10/22/2025
DC Power Source	EYSIGHT N5770A IN0534	10/22/2024	10/22/2025
Sphere Thermometer	TANDD IN4036E	10/22/2024	10/22/2025

REPORT NUMBER: SP3-2508-516-5

CIE 1931 Chromaticity Diagram



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

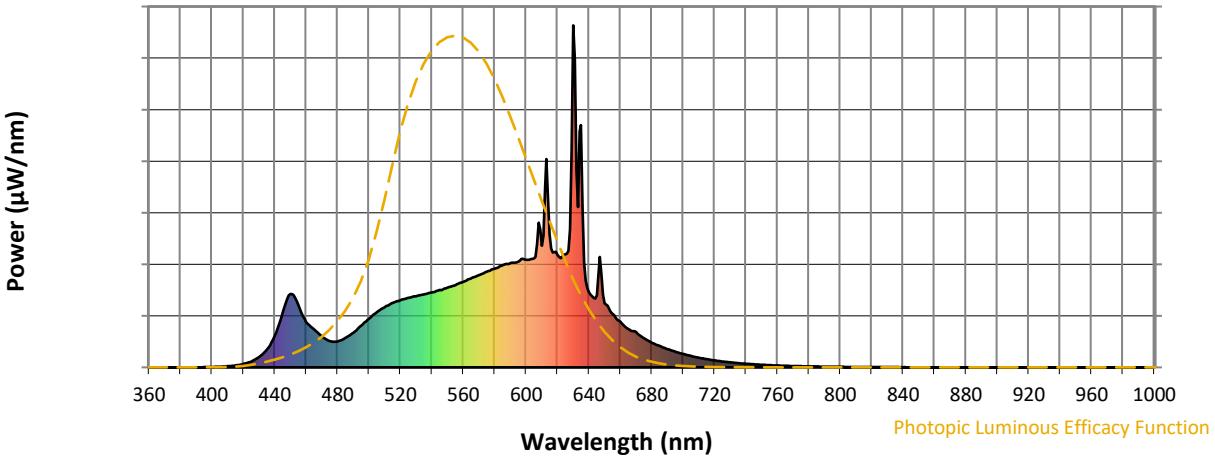


CCT = 2988K
CIE x = 0.4350
CIE y = 0.3986
Duv = -0.0019

Point lies inside the ANSI 3000K 4-step quadrangle

REPORT NUMBER: SP3-2508-516-5

Photopic Flux vs. Wavelength

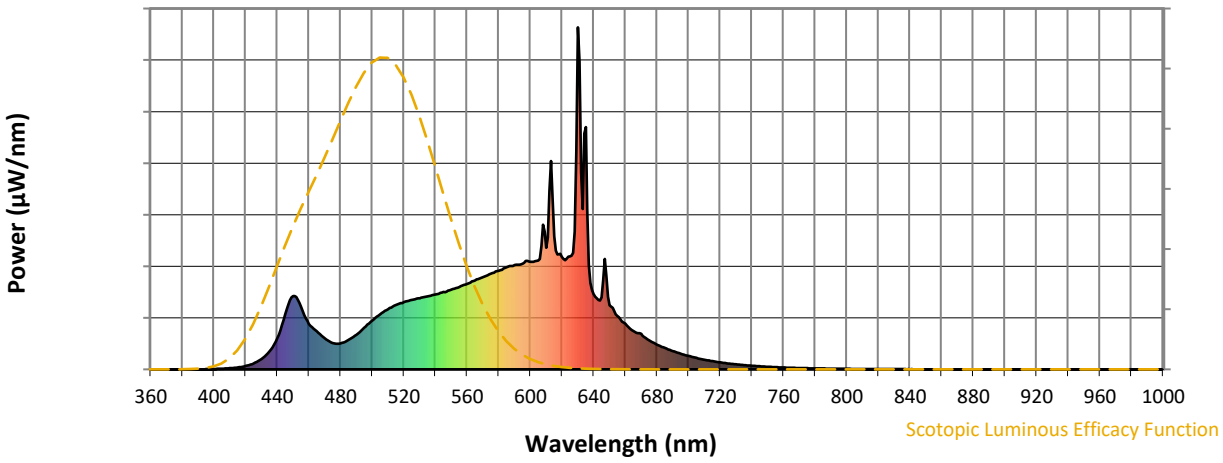


Photopic Lumens: NR

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	101	NR	620	329	NR	750	8	NR	880	0	NR
365	0	NR	495	121	NR	625	331	NR	755	7	NR	885	0	NR
370	0	NR	500	143	NR	630	1000	NR	760	6	NR	890	0	NR
375	0	NR	505	161	NR	635	709	NR	765	5	NR	895	0	NR
380	0	NR	510	176	NR	640	220	NR	770	4	NR	900	0	NR
385	0	NR	515	189	NR	645	210	NR	775	3	NR	905	0	NR
390	0	NR	520	196	NR	650	188	NR	780	3	NR	910	0	NR
395	1	NR	525	203	NR	655	156	NR	785	2	NR	915	0	NR
400	1	NR	530	208	NR	660	134	NR	790	2	NR	920	0	NR
405	2	NR	535	213	NR	665	112	NR	795	2	NR	925	0	NR
410	3	NR	540	219	NR	670	104	NR	800	1	NR	930	0	NR
415	6	NR	545	226	NR	675	85	NR	805	1	NR	935	0	NR
420	10	NR	550	233	NR	680	72	NR	810	1	NR	940	0	NR
425	17	NR	555	241	NR	685	63	NR	815	1	NR	945	0	NR
430	30	NR	560	250	NR	690	53	NR	820	1	NR	950	0	NR
435	53	NR	565	260	NR	695	46	NR	825	1	NR	955	0	NR
440	92	NR	570	270	NR	700	39	NR	830	1	NR	960	0	NR
445	160	NR	575	280	NR	705	33	NR	835	1	NR	965	0	NR
450	214	NR	580	289	NR	710	28	NR	840	0	NR	970	0	NR
455	183	NR	585	298	NR	715	24	NR	845	0	NR	975	0	NR
460	133	NR	590	305	NR	720	20	NR	850	0	NR	980	0	NR
465	111	NR	595	309	NR	725	17	NR	855	0	NR	985	0	NR
470	91	NR	600	314	NR	730	15	NR	860	0	NR	990	0	NR
475	77	NR	605	318	NR	735	13	NR	865	0	NR	995	0	NR
480	76	NR	610	356	NR	740	11	NR	870	0	NR	1000	0	NR
485	86	NR	615	390	NR	745	9	NR	875	0	NR			

REPORT NUMBER: SP3-2508-516-5

Scotopic Flux vs. Wavelength

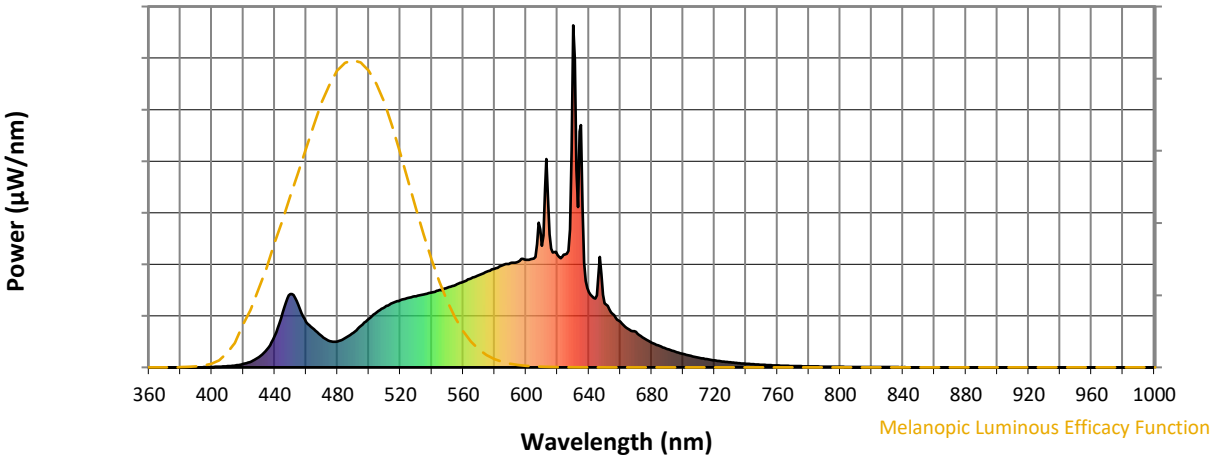


Scotopic Lumens: NR **S/P: 1.43**

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	101	NR	620	329	NR	750	8	NR	880	0	NR
365	0	NR	495	121	NR	625	331	NR	755	7	NR	885	0	NR
370	0	NR	500	143	NR	630	1000	NR	760	6	NR	890	0	NR
375	0	NR	505	161	NR	635	709	NR	765	5	NR	895	0	NR
380	0	NR	510	176	NR	640	220	NR	770	4	NR	900	0	NR
385	0	NR	515	189	NR	645	210	NR	775	3	NR	905	0	NR
390	0	NR	520	196	NR	650	188	NR	780	3	NR	910	0	NR
395	1	NR	525	203	NR	655	156	NR	785	2	NR	915	0	NR
400	1	NR	530	208	NR	660	134	NR	790	2	NR	920	0	NR
405	2	NR	535	213	NR	665	112	NR	795	2	NR	925	0	NR
410	3	NR	540	219	NR	670	104	NR	800	1	NR	930	0	NR
415	6	NR	545	226	NR	675	85	NR	805	1	NR	935	0	NR
420	10	NR	550	233	NR	680	72	NR	810	1	NR	940	0	NR
425	17	NR	555	241	NR	685	63	NR	815	1	NR	945	0	NR
430	30	NR	560	250	NR	690	53	NR	820	1	NR	950	0	NR
435	53	NR	565	260	NR	695	46	NR	825	1	NR	955	0	NR
440	92	NR	570	270	NR	700	39	NR	830	1	NR	960	0	NR
445	160	NR	575	280	NR	705	33	NR	835	1	NR	965	0	NR
450	214	NR	580	289	NR	710	28	NR	840	0	NR	970	0	NR
455	183	NR	585	298	NR	715	24	NR	845	0	NR	975	0	NR
460	133	NR	590	305	NR	720	20	NR	850	0	NR	980	0	NR
465	111	NR	595	309	NR	725	17	NR	855	0	NR	985	0	NR
470	91	NR	600	314	NR	730	15	NR	860	0	NR	990	0	NR
475	77	NR	605	318	NR	735	13	NR	865	0	NR	995	0	NR
480	76	NR	610	356	NR	740	11	NR	870	0	NR	1000	0	NR
485	86	NR	615	390	NR	745	9	NR	875	0	NR			

REPORT NUMBER: SP3-2508-516-5

Melanopic Flux vs. Wavelength



Melanopic Lumens: NR **M/P: 2.8**

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	101	NR	620	329	NR	750	8	NR	880	0	NR
365	0	NR	495	121	NR	625	331	NR	755	7	NR	885	0	NR
370	0	NR	500	143	NR	630	1000	NR	760	6	NR	890	0	NR
375	0	NR	505	161	NR	635	709	NR	765	5	NR	895	0	NR
380	0	NR	510	176	NR	640	220	NR	770	4	NR	900	0	NR
385	0	NR	515	189	NR	645	210	NR	775	3	NR	905	0	NR
390	0	NR	520	196	NR	650	188	NR	780	3	NR	910	0	NR
395	1	NR	525	203	NR	655	156	NR	785	2	NR	915	0	NR
400	1	NR	530	208	NR	660	134	NR	790	2	NR	920	0	NR
405	2	NR	535	213	NR	665	112	NR	795	2	NR	925	0	NR
410	3	NR	540	219	NR	670	104	NR	800	1	NR	930	0	NR
415	6	NR	545	226	NR	675	85	NR	805	1	NR	935	0	NR
420	10	NR	550	233	NR	680	72	NR	810	1	NR	940	0	NR
425	17	NR	555	241	NR	685	63	NR	815	1	NR	945	0	NR
430	30	NR	560	250	NR	690	53	NR	820	1	NR	950	0	NR
435	53	NR	565	260	NR	695	46	NR	825	1	NR	955	0	NR
440	92	NR	570	270	NR	700	39	NR	830	1	NR	960	0	NR
445	160	NR	575	280	NR	705	33	NR	835	1	NR	965	0	NR
450	214	NR	580	289	NR	710	28	NR	840	0	NR	970	0	NR
455	183	NR	585	298	NR	715	24	NR	845	0	NR	975	0	NR
460	133	NR	590	305	NR	720	20	NR	850	0	NR	980	0	NR
465	111	NR	595	309	NR	725	17	NR	855	0	NR	985	0	NR
470	91	NR	600	314	NR	730	15	NR	860	0	NR	990	0	NR
475	77	NR	605	318	NR	735	13	NR	865	0	NR	995	0	NR
480	76	NR	610	356	NR	740	11	NR	870	0	NR	1000	0	NR
485	86	NR	615	390	NR	745	9	NR	875	0	NR			

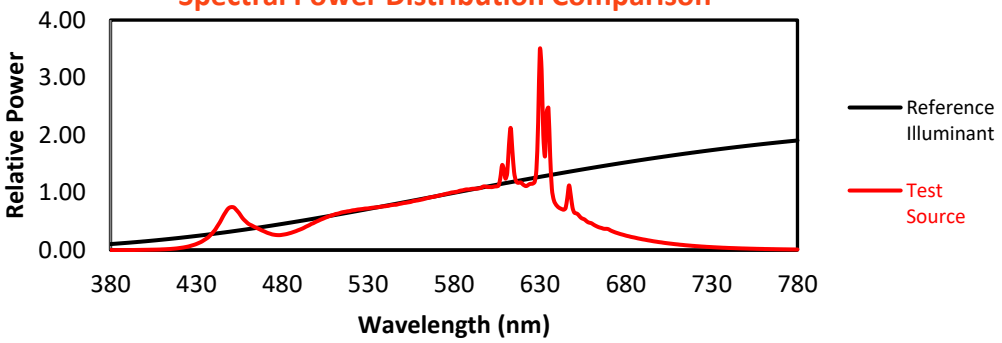
REPORT NUMBER: SP3-2508-516-5

TM-30-18

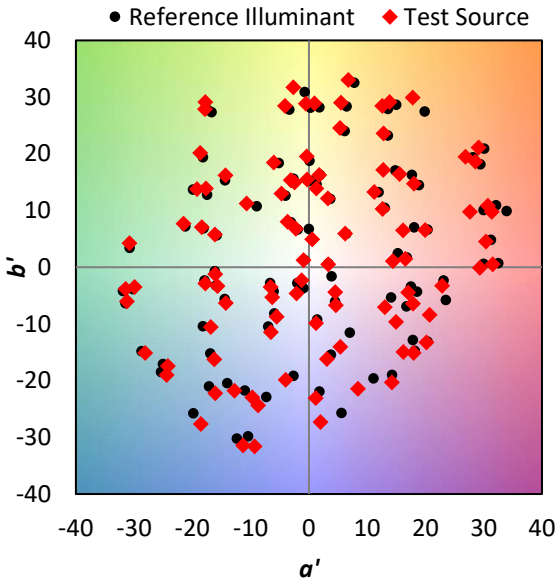
Summary

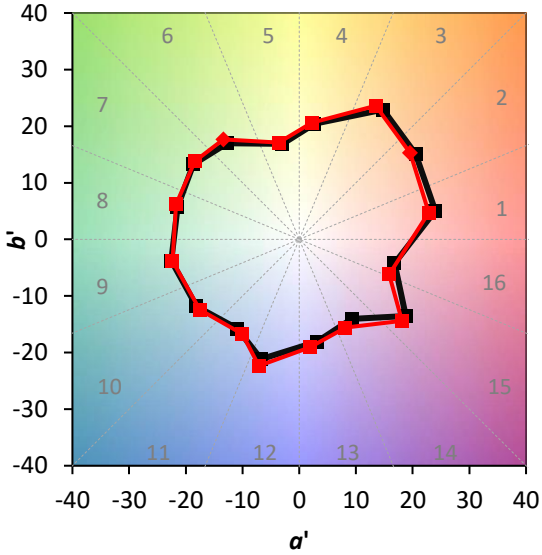
R_f = 91.6
R_g = 101.1
CIE R_a = 94.3
R_9 = 61.9

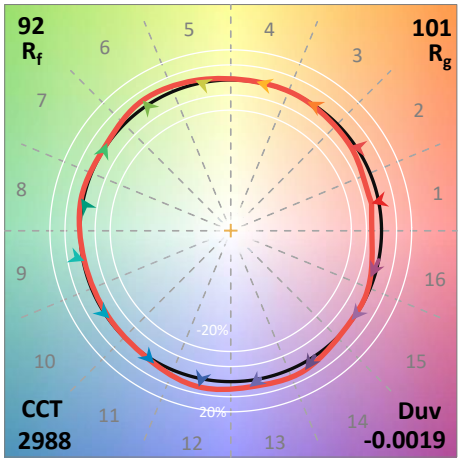
Spectral Power Distribution Comparison

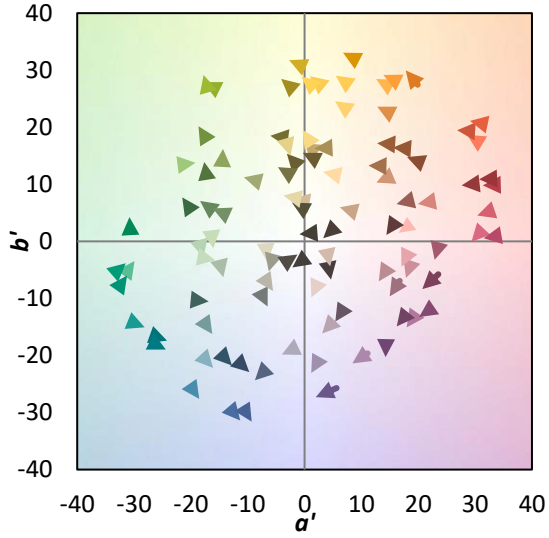


Color Vector Graphics







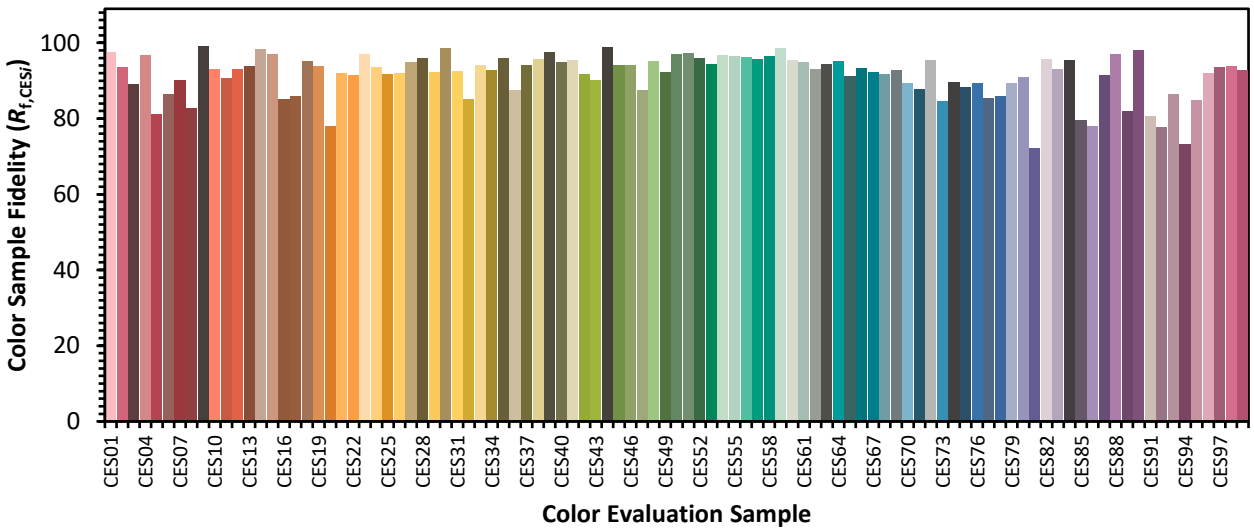


REPORT NUMBER: SP3-2508-516-5

TM-30-18

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

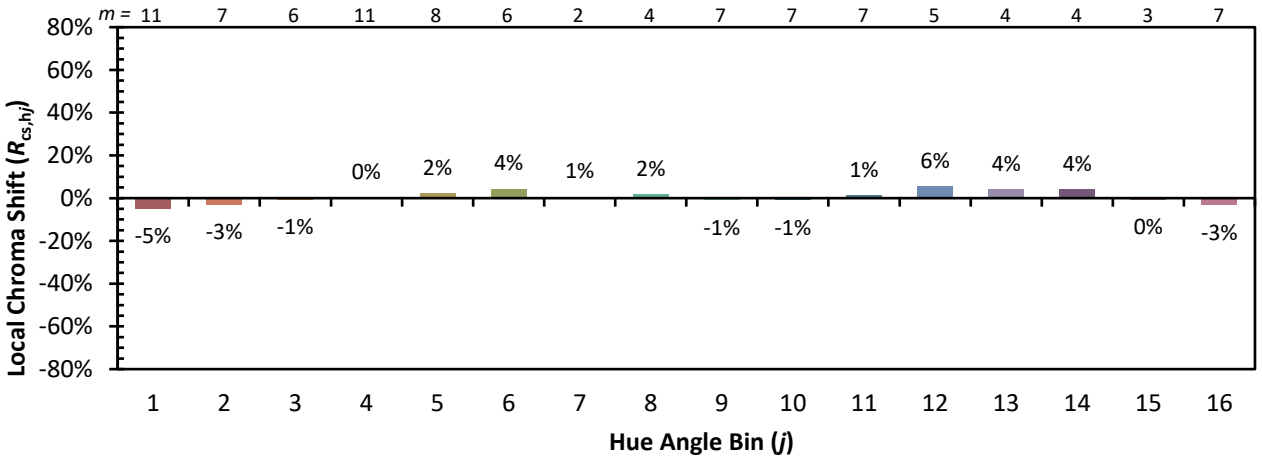
CES01 = 86	CES26 = 92	CES51 = 97	CES76 = 89
CES02 = 63	CES27 = 95	CES52 = 96	CES77 = 85
CES03 = 32	CES28 = 96	CES53 = 94	CES78 = 86
CES04 = 70	CES29 = 92	CES54 = 97	CES79 = 89
CES05 = 51	CES30 = 99	CES55 = 96	CES80 = 91
CES06 = 51	CES31 = 93	CES56 = 96	CES81 = 72
CES07 = 44	CES32 = 85	CES57 = 96	CES82 = 96
CES08 = 42	CES33 = 94	CES58 = 96	CES83 = 93
CES09 = 29	CES34 = 93	CES59 = 99	CES84 = 96
CES10 = 76	CES35 = 96	CES60 = 95	CES85 = 80
CES11 = 59	CES36 = 87	CES61 = 95	CES86 = 78
CES12 = 65	CES37 = 94	CES62 = 93	CES87 = 91
CES13 = 44	CES38 = 96	CES63 = 94	CES88 = 97
CES14 = 74	CES39 = 98	CES64 = 95	CES89 = 82
CES15 = 72	CES40 = 95	CES65 = 91	CES90 = 98
CES16 = 48	CES41 = 96	CES66 = 93	CES91 = 81
CES17 = 50	CES42 = 92	CES67 = 92	CES92 = 78
CES18 = 57	CES43 = 90	CES68 = 92	CES93 = 87
CES19 = 72	CES44 = 99	CES69 = 93	CES94 = 73
CES20 = 67	CES45 = 94	CES70 = 89	CES95 = 85
CES21 = 86	CES46 = 94	CES71 = 88	CES96 = 92
CES22 = 79	CES47 = 88	CES72 = 95	CES97 = 94
CES23 = 92	CES48 = 95	CES73 = 85	CES98 = 94
CES24 = 91	CES49 = 92	CES74 = 90	CES99 = 93
CES25 = 72	CES50 = 97	CES75 = 88	

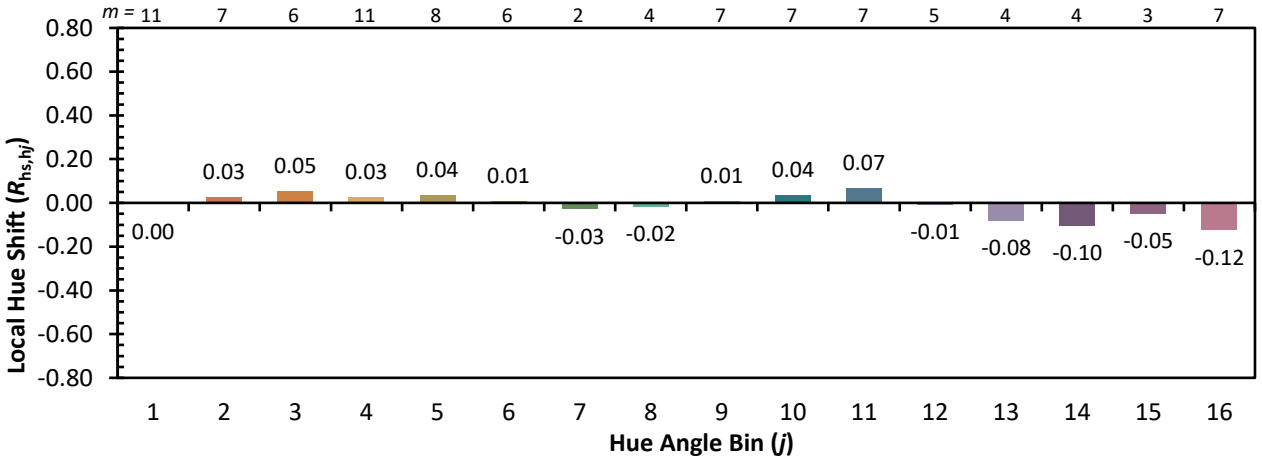


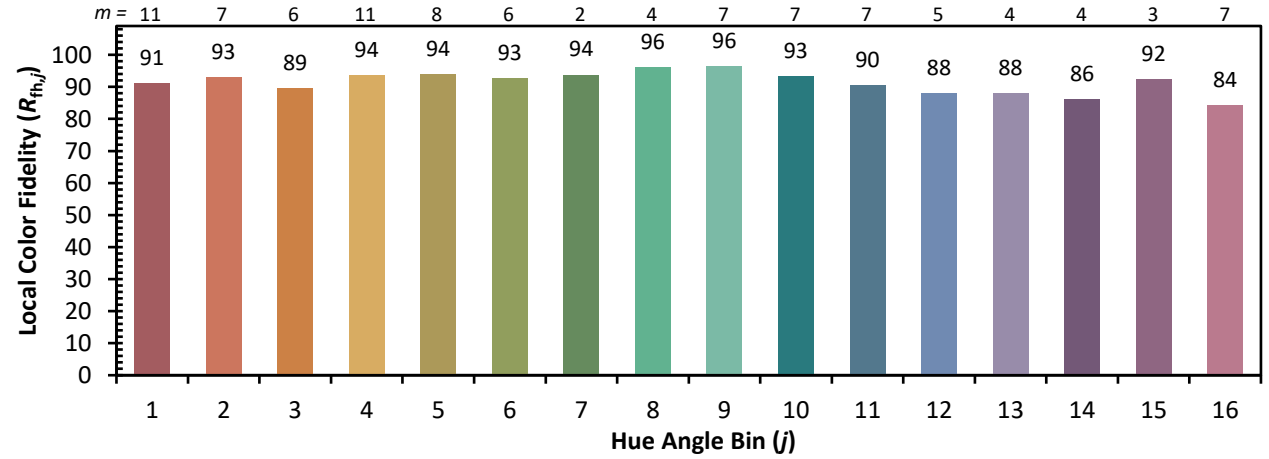
REPORT NUMBER: SP3-2508-516-5

TM-30-18

Color Rendition by Hue-Angle Bin



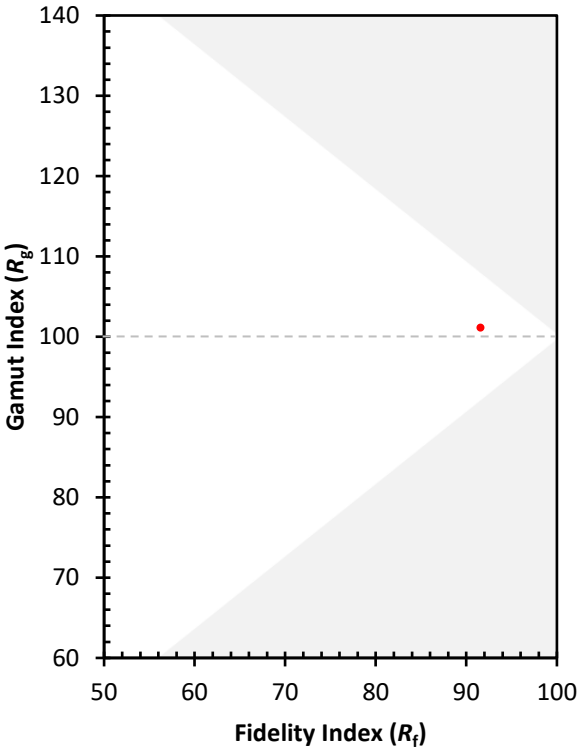


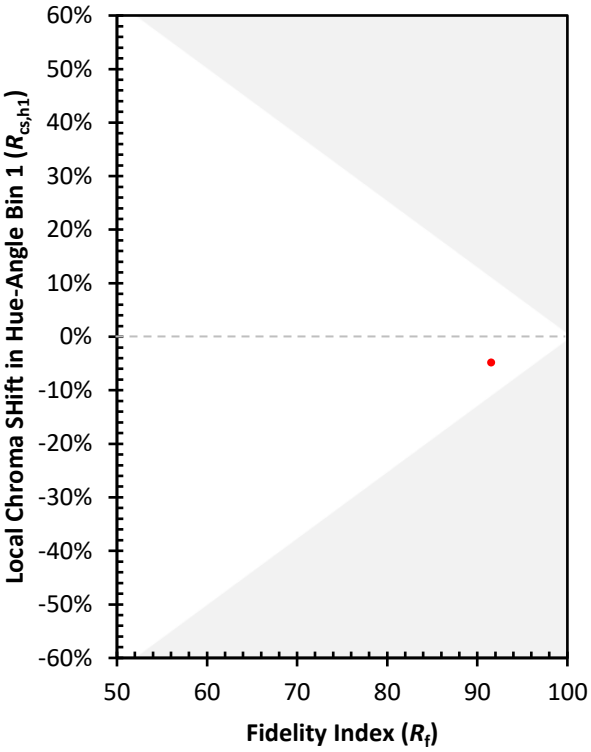


REPORT NUMBER: SP3-2508-516-5

TM-30-18

Measure Comparisons





(END OF REPORT)