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

Scaled data based on original data using

LM-79-08 Approved Method: Electrical and Photometric Measurements of Solid-State Lighting Products

Test Report Prepared for

Cooper Lighting Solutions

(formerly Eaton)

Brand: FAIL-SAFE

Report Number: P732553

Luminaire Tested: **14FCZ2-25-B2750-W2D-CP250-3500K**

Issue Date: 1/5/2024

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

Test Information

Test Method:	LM-79-08
Report Number:	P732553
	TEST IS SCALED FROM IESNA LM-79-08 TEST DATA (P275502)
Test Lab:	INNOVATION CENTER(G3)
Issue Date:	1/5/2024
Manufacturer:	COOPER LIGHTING SOLUTIONS (FORMERLY EATON)
Product Line:	FAIL-SAFE
Catalog Number:	14FCZ2-25-B2750-W2D-CP250-3500K
Description:	1X4 2500 LUMEN SEALED CRUZE TROFFER WITH BIO UP LEDS AT 3500K CCT AND RIBBED LENS, WITH, CP250 BOTTOM LENS
Light Source:	-
Ballast/Driver:	-

Summary

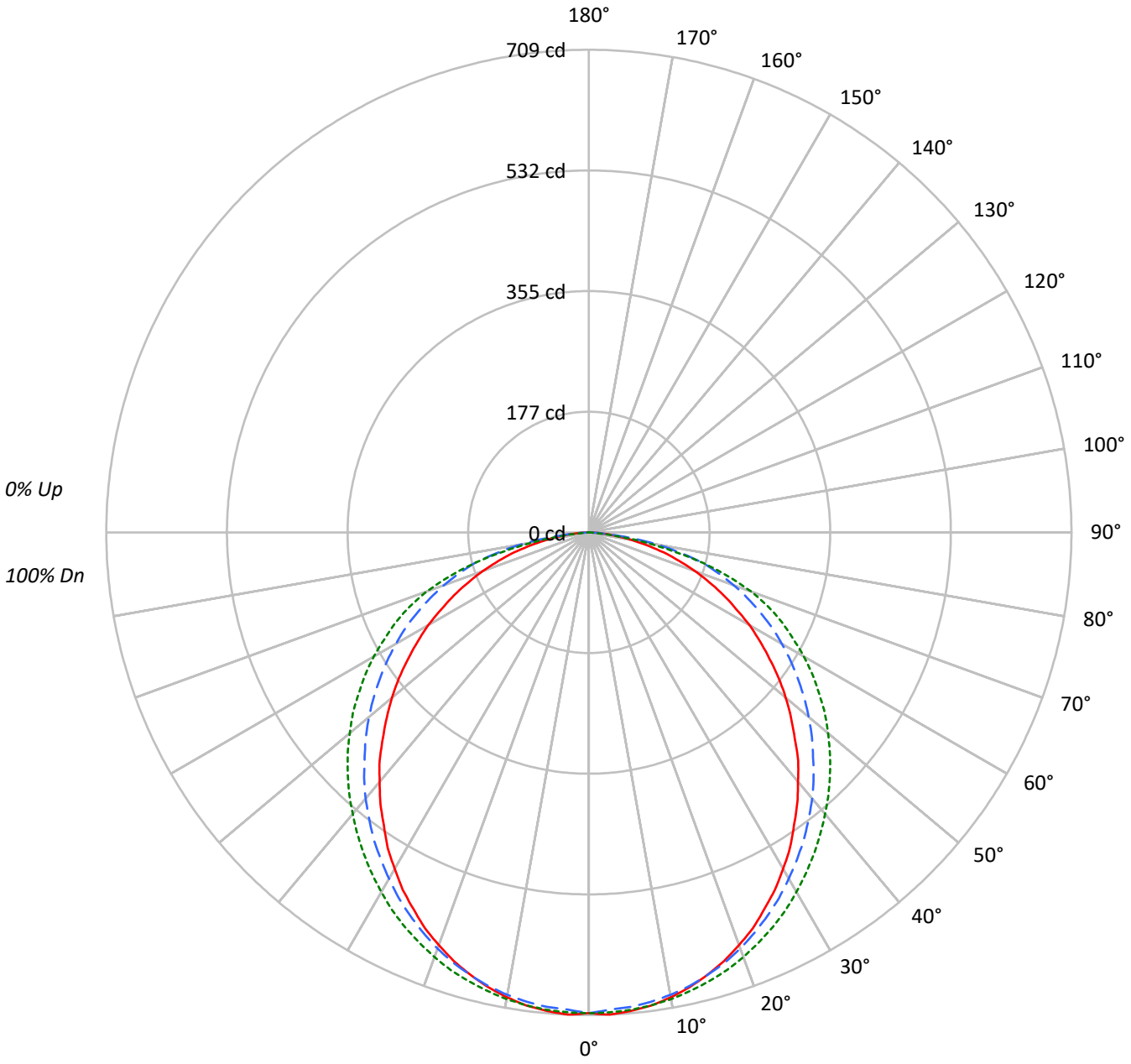
Lumens per Lamp:	N/A
Luminaire Lumens:	2050.0 lumens
Efficiency:	N/A
Efficacy:	107.9 lumens/watt
Spacing Criteria (0/90/45):	1.2 / 1.28 / 1.37
Luminous Opening:	Rectangular (W 0.96' x L: 3.98' x H: 0')
CIE Type:	Direct
Input Watts (W):	19
Input Voltage (V):	NR
Input Current (Ain):	NR
Voltage Rise (V):	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

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

Scaled Data Report

TEST NUMBER: P732553
CATALOG NUMBER: 14FCZ2-25-B2750-W2D-CP250-3500K

Luminous Intensity Polar Plot



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

Scaled Data Report

TEST NUMBER: P732553
CATALOG NUMBER: 14FCZ2-25-B2750-W2D-CP250-3500K

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	89	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	51	42	35	63	50	41	35	48	41	35	47	40	35	45	39	34	32
8	60	46	37	32	58	45	37	31	44	37	31	43	36	31	42	35	31	29
9	56	42	34	28	54	42	34	28	41	33	28	39	33	28	38	32	28	26
10	52	39	31	26	51	39	31	26	37	30	26	37	30	25	36	30	25	24

AVERAGE LUMINANCE (cd/sqm):

	0°	45°	90°
0°	1993	1993	1993
5°	2000	1983	1995
10°	1987	1977	1995
15°	1966	1968	1994
20°	1937	1954	1994
25°	1900	1935	1992
30°	1859	1915	1988
35°	1810	1898	1986
40°	1762	1880	1989
45°	1708	1859	2000
50°	1658	1851	2013
55°	1595	1845	2031
60°	1538	1848	2059
65°	1459	1853	2091
70°	1370	1868	2090
75°	1241	1885	1890
80°	1019	1626	1344
85°	755	771	311

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

Scaled Data Report

TEST NUMBER: P732553
CATALOG NUMBER: 14FCZ2-25-B2750-W2D-CP250-3500K

ZONAL LUMENS:

Zone	Lumens	% Fixture
0°-10°	66.8	3.3
10°-20°	190.9	9.3
20°-30°	287.6	14.0
30°-40°	345.1	16.8
40°-50°	359.7	17.5
50°-60°	333.0	16.2
60°-70°	269.0	13.1
70°-80°	164.0	8.0
80°-90°	33.9	1.7
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°	545.3	26.6
0°-40°	890.4	43.4
0°-60°	1583.1	77.2
0°-90°	2050.0	100.0
90°-120°	0.0	0.0
90°-150°	0.0	0.0
90°-180°	0.0	0.0
0°-180°	2050.0	100.0

CANDELA DISTRIBUTION:

	0°	22.5°	45°	67.5°	90°	Flux
0°	706	706	706	706	706	
5°	706	704	700	705	704	67
15°	673	673	673	682	682	190
25°	610	614	621	637	640	281
35°	525	534	551	571	576	329
45°	428	441	466	492	501	331
55°	324	341	375	404	413	290
65°	218	240	278	305	313	216
75°	114	139	173	176	173	120
85°	23	35	24	13	10	29
90°	0	0	0	0	0	

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

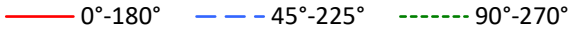
Scaled Data Report

TEST NUMBER: P732553
CATALOG NUMBER: 14FCZ2-25-B2750-W2D-CP250-3500K

CANDELA DISTRIBUTION (FULL):

	0°	22.5°	45°	67.5°	90°
0°	*706.2*	706.2	706.2	706.2	706.2
2.5°	*709.0*	*706.7*	*701.7*	*706.7*	*705.7*
5°	*705.7*	704.0	699.8	704.9	704.0
7.5°	*701.2*	699.3	695.7	701.7	700.7
10°	*693.4*	692.5	689.8	696.7	696.2
12.5°	*684.3*	683.8	682.5	690.3	689.8
15°	*672.9*	673.3	673.3	682.5	682.5
17.5°	*660.1*	660.9	662.8	672.9	674.3
20°	*645.0*	646.8	650.5	661.9	663.7
22.5°	*629.5*	630.9	636.3	650.0	651.9
25°	*610.2*	613.9	621.2	636.8	639.5
27.5°	*592.0*	595.1	605.2	621.2	625.8
30°	*570.5*	575.5	587.4	604.8	609.8
32.5°	*549.9*	555.4	569.1	589.2	593.7
35°	*525.3*	533.5	550.8	571.0	576.4
37.5°	*502.9*	510.6	530.3	552.2	558.6
40°	*478.1*	487.8	510.2	533.5	539.9
42.5°	*455.3*	464.4	488.7	512.4	521.1
45°	*427.9*	440.7	465.8	491.8	501.0
47.5°	*402.7*	415.5	444.4	472.2	480.5
50°	*377.5*	391.3	421.5	450.3	458.5
52.5°	*351.5*	366.2	398.6	427.4	437.1
55°	*324.1*	341.0	374.9	404.1	412.8
57.5°	*298.0*	315.4	351.5	381.2	389.9
60°	*272.5*	290.3	327.3	355.6	364.8
62.5°	*244.1*	265.2	303.5	331.4	338.3
65°	*218.5*	240.0	277.5	305.3	313.1
67.5°	*191.5*	214.8	252.3	277.9	285.3
70°	*166.0*	190.2	226.3	250.1	253.2
72.5°	*138.6*	163.2	199.7	214.8	214.8
75°	*113.8*	138.9	172.8	175.6	173.3
77.5°	*86.8*	114.8	136.7	131.1	125.7
80°	*62.7*	90.1	100.0	90.1	82.7
82.5°	*42.0*	65.3	60.3	47.9	42.5
85°	*23.3*	34.7	23.8	13.2	9.6
87.5°	*8.7*	7.8	2.3	2.3	2.3
90°	*0.0*	0.0	0.0	0.0	0.0

Report Generated By 670246072 / DESKTOP-50001EG


0°-180°
45°-225°
90°-270°

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

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

Report Prepared for

Cooper Lighting Solutions

(formerly Eaton)

METALUX

Report Number: SP1-2210-795-3

Test Date: 10/06/2022

Luminaire Tested: 9WP217084MDER4AM-3500K-315MA
Data in this report applies to families of products including 9WP217084MDER4AM-3500K.

Report Generated By FNC07603 / LDUCLS01DT446
Version: v6.10

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

Test Information

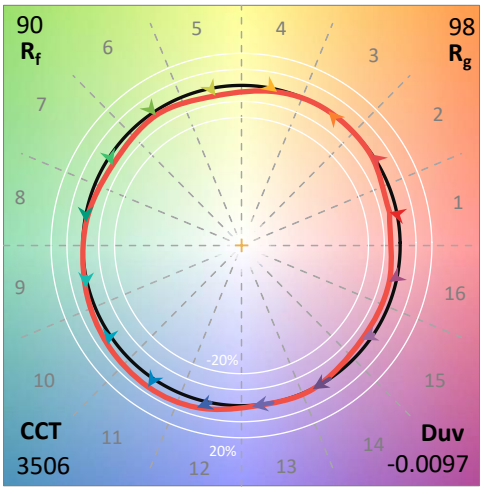
Test Method:	LM-79-2019
Report Number:	SP1-2210-795-3
Test Lab:	COOPER LIGHTING SOLUTIONS
Photometer:	SP1 - 76IN SPHERE
Measurement Geometry:	4π
Issue Date:	10/06/2022
Manufacturer:	COOPER LIGHTING SOLUTIONS (FORMERLY EATON)
Product Line:	METALUX
Catalog Number:	**9WP217084MDER4AM-3500K-315MA**
Description:	METALUX

TUNABLE BOARD, 3500K-315MA, PROGRAMMED @ 4.0Vdc.

Spectral Parameters

CCT (K):	3506	CRI (Ra):	90.1		
CIE u':	0.2401	R1:	96.2	R9:	75.4
CIE v':	0.4983	R2:	91.5	R10:	83.5
Duv:	-0.0097	R3:	88.2	R11:	96.0
CIE x:	0.3952	R4:	94.5	R12:	76.6
CIE y:	0.3646	R5:	94.6	R13:	94.5
CIE z:	0.2402	R6:	84.9	R14:	94.8
Peak Wavelength (nm):	632	R7:	86.1		
Dominant Wavelength (nm):	586	R8:	84.7		
Purity:	28.3				

Rf:	90.4
Rg:	97.8



Test Conditions

Stabilization Time:	42M
Operation Time:	12H
Room Temperature (°C) / RH%:	24.0/38%
Sphere Temperature (°C):	24.4

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

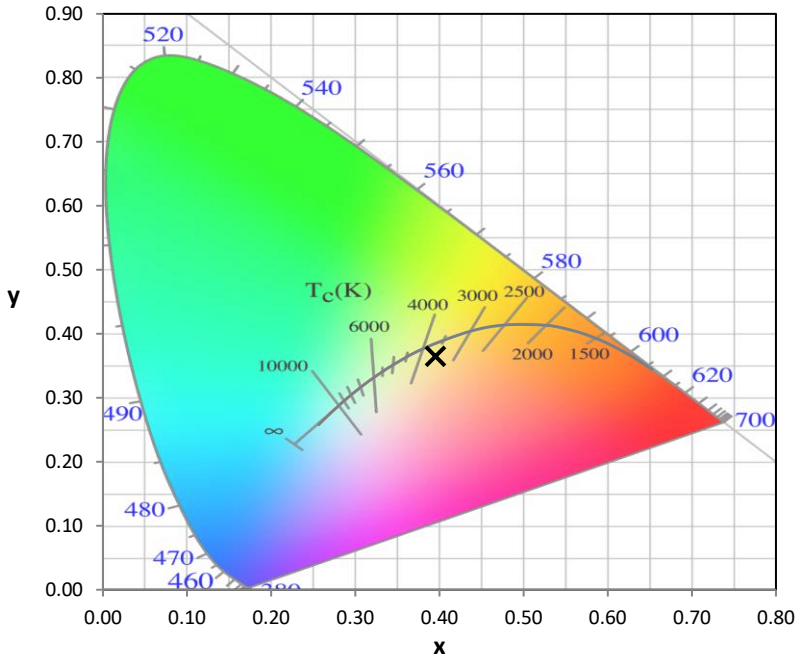
REPORT NUMBER: SP1-2210-795-3

Measurement and Test Equipment			
Instrument	Identification Number	Calibration Date	Calibration Due Date
Photometer	76INCH SPHERE IN0058	8/8/2022	2/8/2023
Power Meter	XITRON 2801 IN0071	11/29/2021	11/29/2022
AC Power Source	CHROMA 61603 IN0063	11/29/2021	11/29/2022
DC Power Source	AGILENT E3634A IN0208	11/29/2021	11/29/2022
Sphere Thermometer	ONSET IN0085	11/29/2021	11/29/2022
Room Thermometer	ONSET IN0046	11/29/2021	11/29/2022

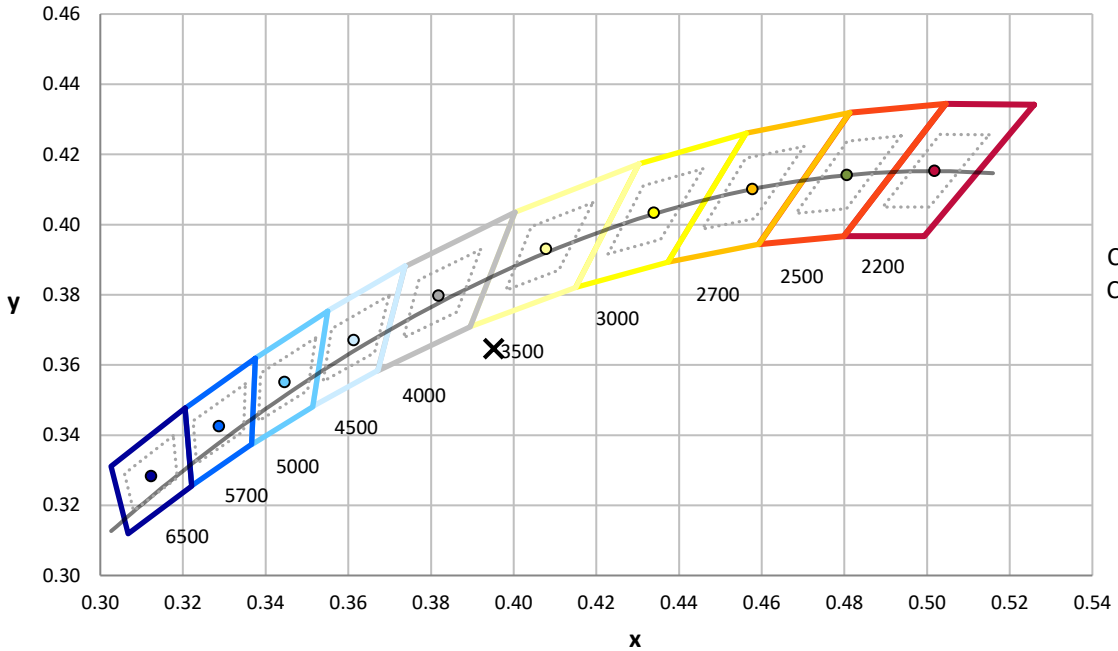
Cooper Lighting Solutions Photometric Lab
1121 Highway 74 South
Peachtree City, GA 30269

REPORT NUMBER: SP1-2210-795-3

CIE 1931 Chromaticity Diagram



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



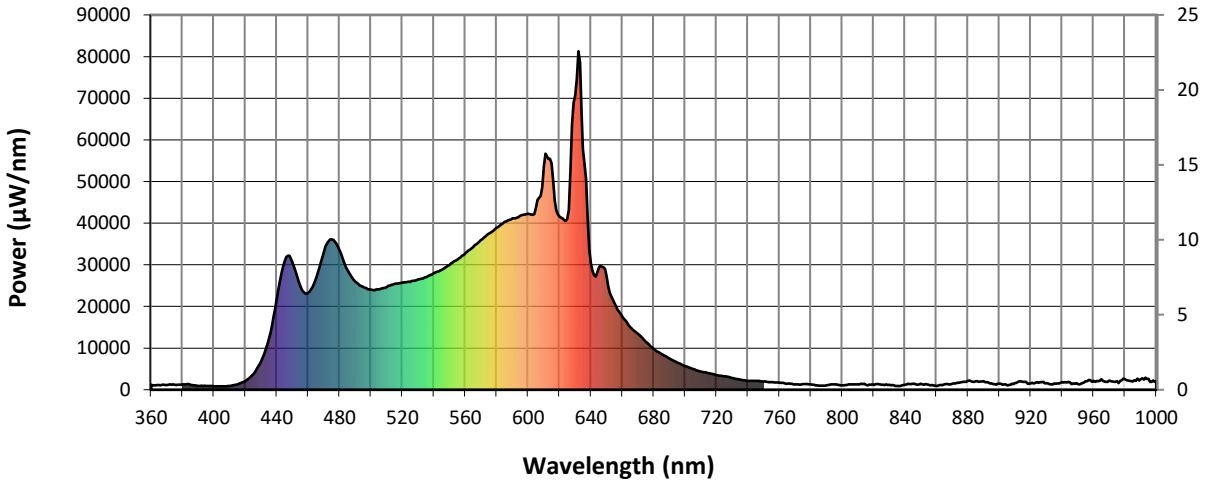
CCT = 3506K
CIE x = 0.3952
CIE y = 0.3646
Duv = -0.0097

Point lies outside the range

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

REPORT NUMBER: SP1-2210-795-3

Photopic Flux vs. Wavelength



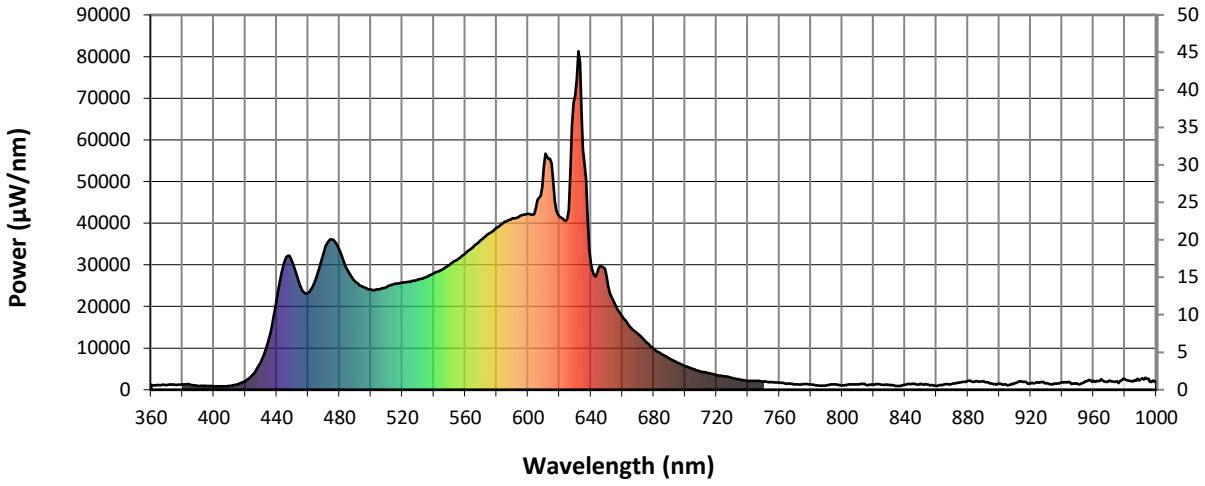
######

λ (nm)	Power (µW/nm)	Lumens (ϕ/nm)	λ (nm)	Power (µW/nm)	Lumens (ϕ/nm)	λ (nm)	Power (µW/nm)	Lumens (ϕ/nm)	λ (nm)	Power (µW/nm)	Lumens (ϕ/nm)	λ (nm)	Power (µW/nm)	Lumens (ϕ/nm)
360	1172	NR	490	25948	NR	620	41537	NR	750	1967	NR	880	2125	NR
365	1124	NR	495	24688	NR	625	40984	NR	755	1800	NR	885	2057	NR
370	1161	NR	500	24010	NR	630	70640	NR	760	1684	NR	890	2080	NR
375	1195	NR	505	24099	NR	635	57718	NR	765	1458	NR	895	1496	NR
380	1247	NR	510	24608	NR	640	30257	NR	770	1312	NR	900	1417	NR
385	1197	NR	515	25386	NR	645	29336	NR	775	1355	NR	905	1054	NR
390	930	NR	520	25689	NR	650	27279	NR	780	1313	NR	910	1583	NR
395	934	NR	525	25906	NR	655	20755	NR	785	1001	NR	915	1866	NR
400	841	NR	530	26477	NR	660	17587	NR	790	1065	NR	920	1529	NR
405	808	NR	535	27006	NR	665	15073	NR	795	1315	NR	925	1671	NR
410	914	NR	540	27913	NR	670	13454	NR	800	1029	NR	930	1617	NR
415	1302	NR	545	28798	NR	675	11513	NR	805	1267	NR	935	1522	NR
420	2088	NR	550	29982	NR	680	9839	NR	810	1312	NR	940	1792	NR
425	3768	NR	555	31264	NR	685	8568	NR	815	1239	NR	945	1727	NR
430	6771	NR	560	32729	NR	690	7487	NR	820	1107	NR	950	1375	NR
435	12240	NR	565	34271	NR	695	6502	NR	825	1209	NR	955	2031	NR
440	21697	NR	570	35931	NR	700	5703	NR	830	1175	NR	960	2155	NR
445	30873	NR	575	37457	NR	705	4977	NR	835	916	NR	965	2519	NR
450	30626	NR	580	38827	NR	710	4394	NR	840	1171	NR	970	2234	NR
455	24859	NR	585	40347	NR	715	3979	NR	845	1406	NR	975	2064	NR
460	23253	NR	590	41126	NR	720	3528	NR	850	1407	NR	980	2541	NR
465	26717	NR	595	41803	NR	725	3206	NR	855	1173	NR	985	1959	NR
470	33149	NR	600	42231	NR	730	2798	NR	860	928	NR	990	2532	NR
475	36075	NR	605	43629	NR	735	2417	NR	865	1256	NR	995	2564	NR
480	33381	NR	610	53581	NR	740	2135	NR	870	1460	NR	1000	2056	NR
485	28773	NR	615	54375	NR	745	2151	NR	875	1741	NR			

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

REPORT NUMBER: SP1-2210-795-3

Scotopic Flux vs. Wavelength



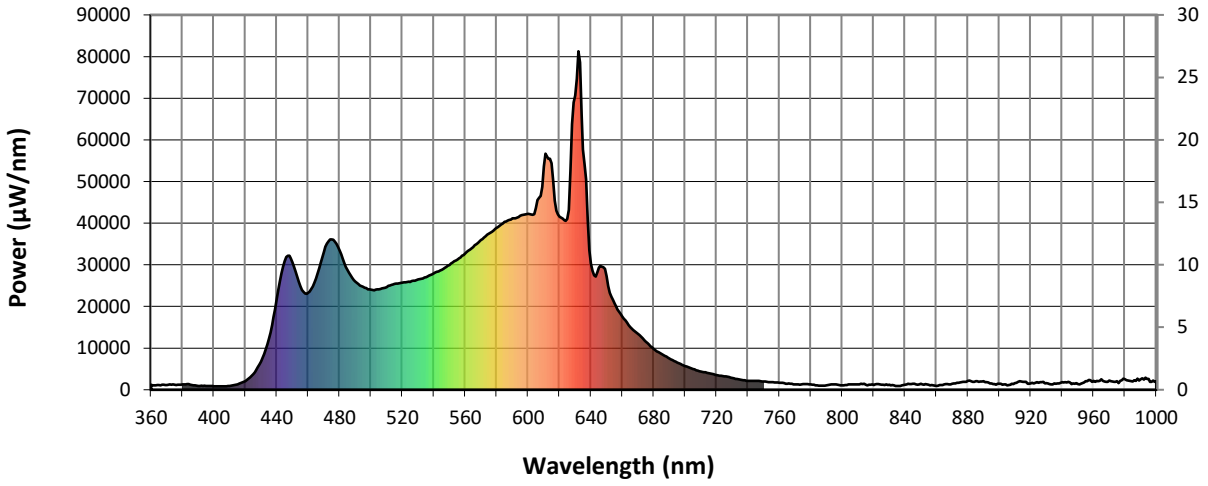
Scotopic Lumens: 4472.9 **S/P: 1.81**

λ (nm)	Power (µW/nm)	Lumens (ϕ/nm)	λ (nm)	Power (µW/nm)	Lumens (ϕ/nm)	λ (nm)	Power (µW/nm)	Lumens (ϕ/nm)	λ (nm)	Power (µW/nm)	Lumens (ϕ/nm)	λ (nm)	Power (µW/nm)	Lumens (ϕ/nm)
360	1172	NR	490	25948	NR	620	41537	NR	750	1967	NR	880	2125	NR
365	1124	NR	495	24688	NR	625	40984	NR	755	1800	NR	885	2057	NR
370	1161	NR	500	24010	NR	630	70640	NR	760	1684	NR	890	2080	NR
375	1195	NR	505	24099	NR	635	57718	NR	765	1458	NR	895	1496	NR
380	1247	NR	510	24608	NR	640	30257	NR	770	1312	NR	900	1417	NR
385	1197	NR	515	25386	NR	645	29336	NR	775	1355	NR	905	1054	NR
390	930	NR	520	25689	NR	650	27279	NR	780	1313	NR	910	1583	NR
395	934	NR	525	25906	NR	655	20755	NR	785	1001	NR	915	1866	NR
400	841	NR	530	26477	NR	660	17587	NR	790	1065	NR	920	1529	NR
405	808	NR	535	27006	NR	665	15073	NR	795	1315	NR	925	1671	NR
410	914	NR	540	27913	NR	670	13454	NR	800	1029	NR	930	1617	NR
415	1302	NR	545	28798	NR	675	11513	NR	805	1267	NR	935	1522	NR
420	2088	NR	550	29982	NR	680	9839	NR	810	1312	NR	940	1792	NR
425	3768	NR	555	31264	NR	685	8568	NR	815	1239	NR	945	1727	NR
430	6771	NR	560	32729	NR	690	7487	NR	820	1107	NR	950	1375	NR
435	12240	NR	565	34271	NR	695	6502	NR	825	1209	NR	955	2031	NR
440	21697	NR	570	35931	NR	700	5703	NR	830	1175	NR	960	2155	NR
445	30873	NR	575	37457	NR	705	4977	NR	835	916	NR	965	2519	NR
450	30626	NR	580	38827	NR	710	4394	NR	840	1171	NR	970	2234	NR
455	24859	NR	585	40347	NR	715	3979	NR	845	1406	NR	975	2064	NR
460	23253	NR	590	41126	NR	720	3528	NR	850	1407	NR	980	2541	NR
465	26717	NR	595	41803	NR	725	3206	NR	855	1173	NR	985	1959	NR
470	33149	NR	600	42231	NR	730	2798	NR	860	928	NR	990	2532	NR
475	36075	NR	605	43629	NR	735	2417	NR	865	1256	NR	995	2564	NR
480	33381	NR	610	53581	NR	740	2135	NR	870	1460	NR	1000	2056	NR
485	28773	NR	615	54375	NR	745	2151	NR	875	1741	NR			

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

REPORT NUMBER: SP1-2210-795-3

Melanopic Flux vs. Wavelength



Melanopic Lumens: 1922.8 **S/P: 0.78**

λ (nm)	Power (µW/nm)	Lumens (ϕ/nm)	λ (nm)	Power (µW/nm)	Lumens (ϕ/nm)	λ (nm)	Power (µW/nm)	Lumens (ϕ/nm)	λ (nm)	Power (µW/nm)	Lumens (ϕ/nm)	λ (nm)	Power (µW/nm)	Lumens (ϕ/nm)
360	1172	NR	490	25948	NR	620	41537	NR	750	1967	NR	880	2125	NR
365	1124	NR	495	24688	NR	625	40984	NR	755	1800	NR	885	2057	NR
370	1161	NR	500	24010	NR	630	70640	NR	760	1684	NR	890	2080	NR
375	1195	NR	505	24099	NR	635	57718	NR	765	1458	NR	895	1496	NR
380	1247	NR	510	24608	NR	640	30257	NR	770	1312	NR	900	1417	NR
385	1197	NR	515	25386	NR	645	29336	NR	775	1355	NR	905	1054	NR
390	930	NR	520	25689	NR	650	27279	NR	780	1313	NR	910	1583	NR
395	934	NR	525	25906	NR	655	20755	NR	785	1001	NR	915	1866	NR
400	841	NR	530	26477	NR	660	17587	NR	790	1065	NR	920	1529	NR
405	808	NR	535	27006	NR	665	15073	NR	795	1315	NR	925	1671	NR
410	914	NR	540	27913	NR	670	13454	NR	800	1029	NR	930	1617	NR
415	1302	NR	545	28798	NR	675	11513	NR	805	1267	NR	935	1522	NR
420	2088	NR	550	29982	NR	680	9839	NR	810	1312	NR	940	1792	NR
425	3768	NR	555	31264	NR	685	8568	NR	815	1239	NR	945	1727	NR
430	6771	NR	560	32729	NR	690	7487	NR	820	1107	NR	950	1375	NR
435	12240	NR	565	34271	NR	695	6502	NR	825	1209	NR	955	2031	NR
440	21697	NR	570	35931	NR	700	5703	NR	830	1175	NR	960	2155	NR
445	30873	NR	575	37457	NR	705	4977	NR	835	916	NR	965	2519	NR
450	30626	NR	580	38827	NR	710	4394	NR	840	1171	NR	970	2234	NR
455	24859	NR	585	40347	NR	715	3979	NR	845	1406	NR	975	2064	NR
460	23253	NR	590	41126	NR	720	3528	NR	850	1407	NR	980	2541	NR
465	26717	NR	595	41803	NR	725	3206	NR	855	1173	NR	985	1959	NR
470	33149	NR	600	42231	NR	730	2798	NR	860	928	NR	990	2532	NR
475	36075	NR	605	43629	NR	735	2417	NR	865	1256	NR	995	2564	NR
480	33381	NR	610	53581	NR	740	2135	NR	870	1460	NR	1000	2056	NR
485	28773	NR	615	54375	NR	745	2151	NR	875	1741	NR			

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

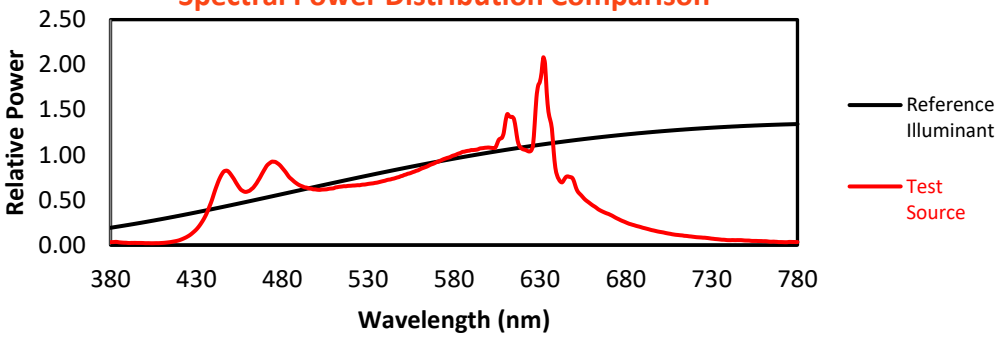
REPORT NUMBER: SP1-2210-795-3

TM-30-18

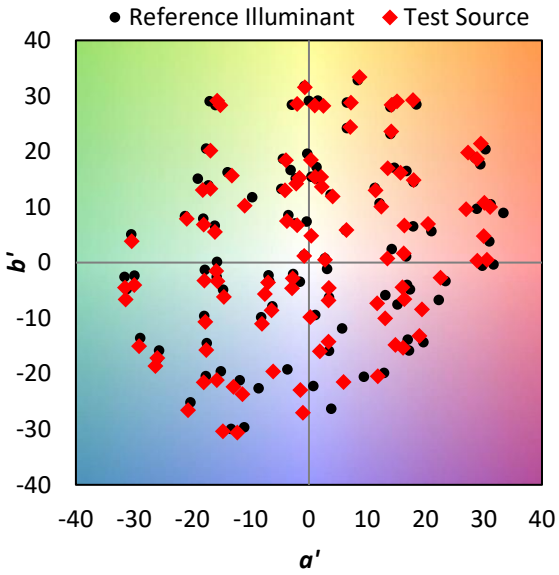
Summary

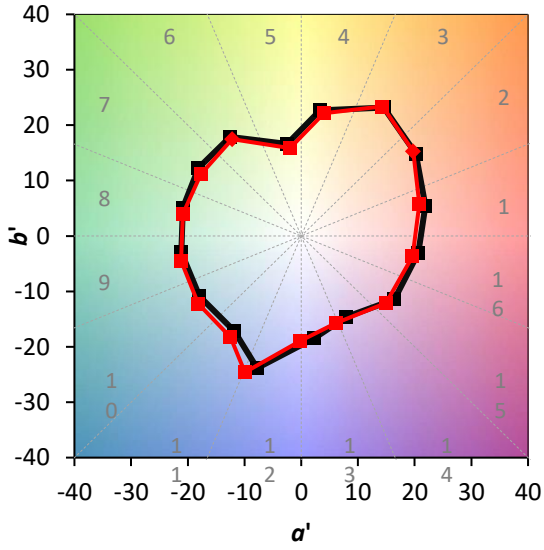
R_f = 90.4
R_g = 97.8
CIE R_a = 90.1
R_9 = 75.4

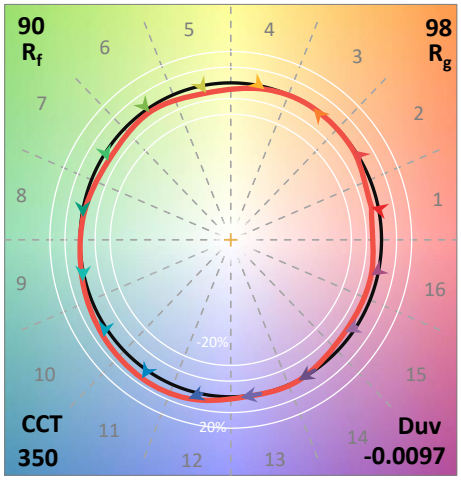
Spectral Power Distribution Comparison

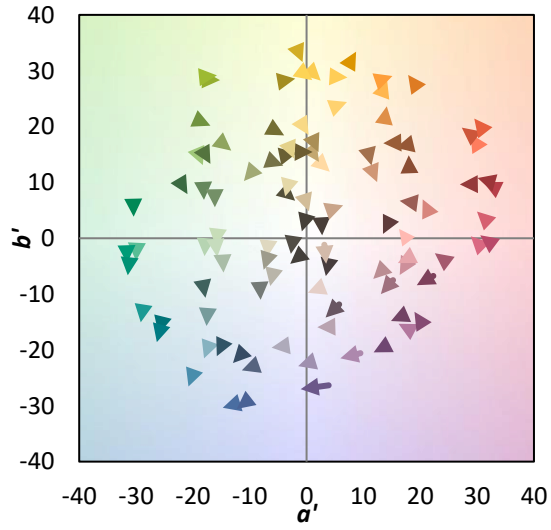


Color Vector Graphics









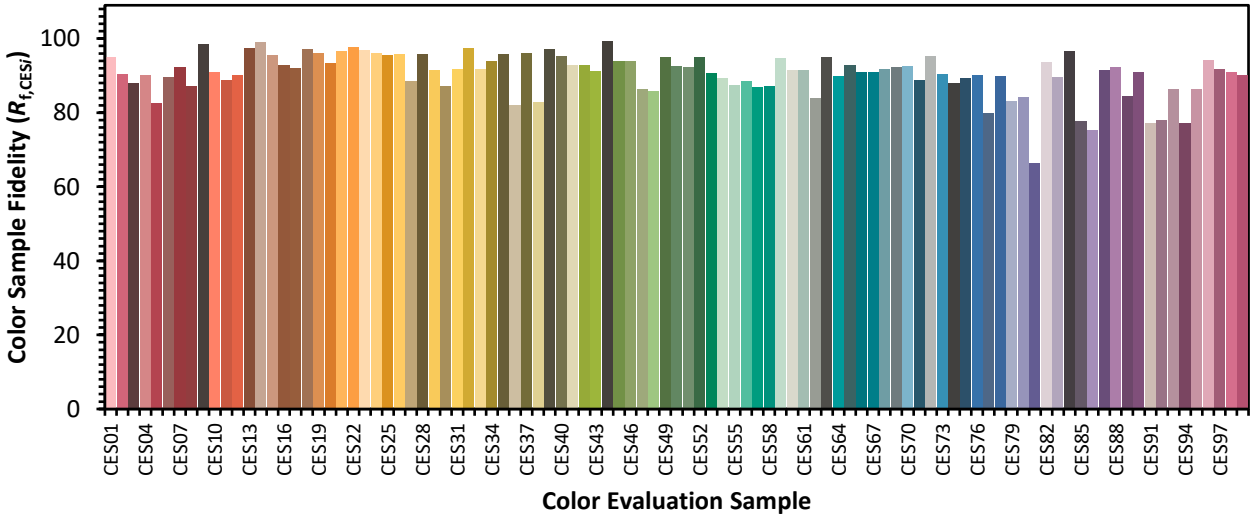
Cooper Lighting Solutions Photometric Lab
1121 Highway 74 South
Peachtree City, GA 30269

REPORT NUMBER: SP1-2210-795-3

TM-30-18

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

CES01 = 86	CES26 = 96	CES51 = 92	CES76 = 90
CES02 = 63	CES27 = 88	CES52 = 95	CES77 = 80
CES03 = 32	CES28 = 96	CES53 = 91	CES78 = 90
CES04 = 70	CES29 = 91	CES54 = 89	CES79 = 83
CES05 = 50	CES30 = 87	CES55 = 87	CES80 = 84
CES06 = 51	CES31 = 92	CES56 = 88	CES81 = 66
CES07 = 43	CES32 = 97	CES57 = 87	CES82 = 94
CES08 = 42	CES33 = 92	CES58 = 87	CES83 = 89
CES09 = 29	CES34 = 94	CES59 = 95	CES84 = 96
CES10 = 76	CES35 = 96	CES60 = 91	CES85 = 77
CES11 = 58	CES36 = 82	CES61 = 91	CES86 = 75
CES12 = 64	CES37 = 96	CES62 = 84	CES87 = 91
CES13 = 44	CES38 = 83	CES63 = 95	CES88 = 92
CES14 = 74	CES39 = 97	CES64 = 90	CES89 = 84
CES15 = 72	CES40 = 95	CES65 = 93	CES90 = 91
CES16 = 48	CES41 = 93	CES66 = 91	CES91 = 77
CES17 = 49	CES42 = 93	CES67 = 91	CES92 = 78
CES18 = 56	CES43 = 91	CES68 = 92	CES93 = 86
CES19 = 71	CES44 = 99	CES69 = 92	CES94 = 77
CES20 = 67	CES45 = 94	CES70 = 92	CES95 = 86
CES21 = 86	CES46 = 94	CES71 = 89	CES96 = 94
CES22 = 78	CES47 = 86	CES72 = 95	CES97 = 92
CES23 = 91	CES48 = 86	CES73 = 90	CES98 = 91
CES24 = 90	CES49 = 95	CES74 = 88	CES99 = 90
CES25 = 71	CES50 = 92	CES75 = 89	

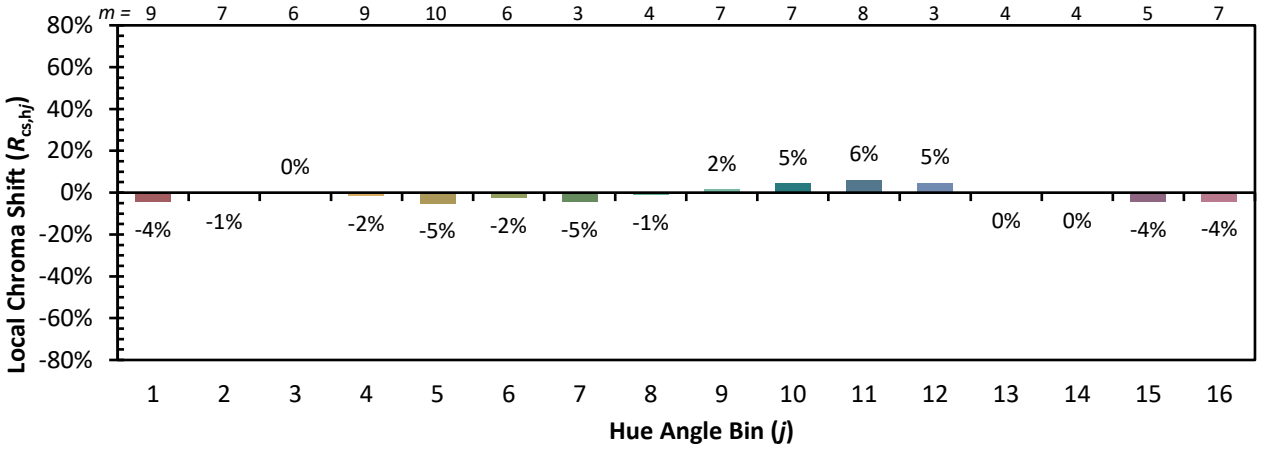


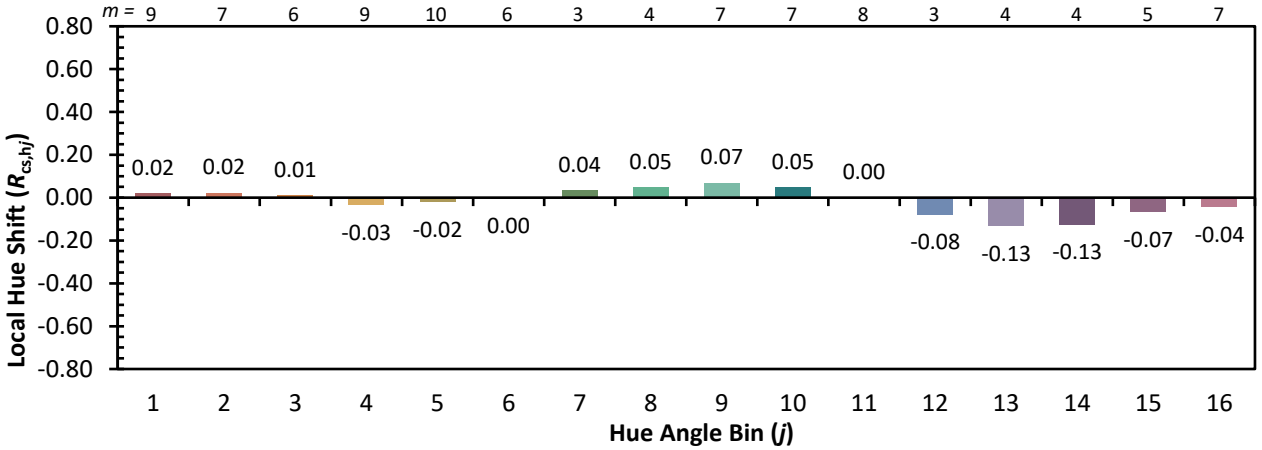
Cooper Lighting Solutions Photometric Lab
1121 Highway 74 South
Peachtree City, GA 30269

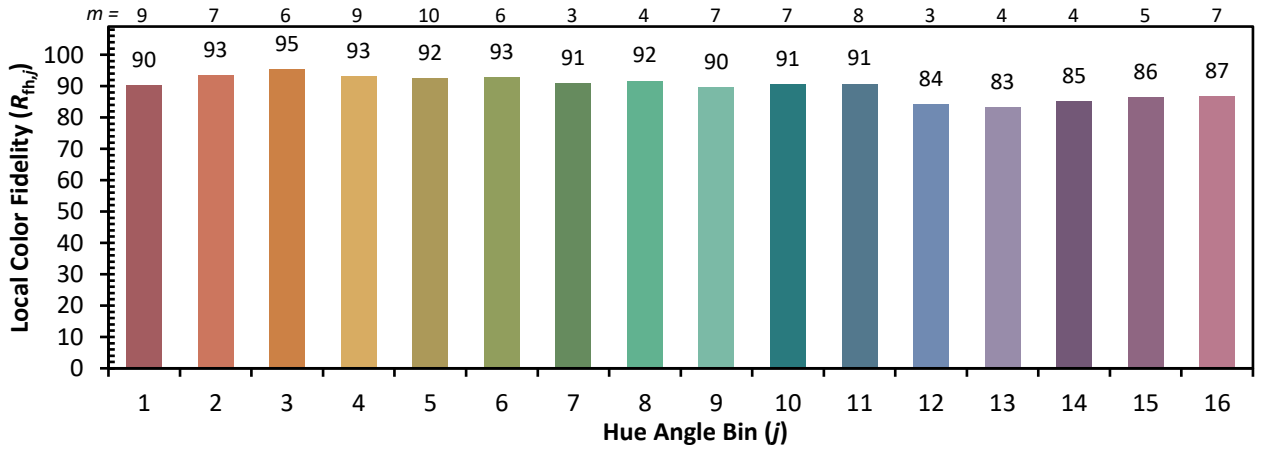
REPORT NUMBER: SP1-2210-795-3

TM-30-18

Color Rendition by Hue-Angle Bin





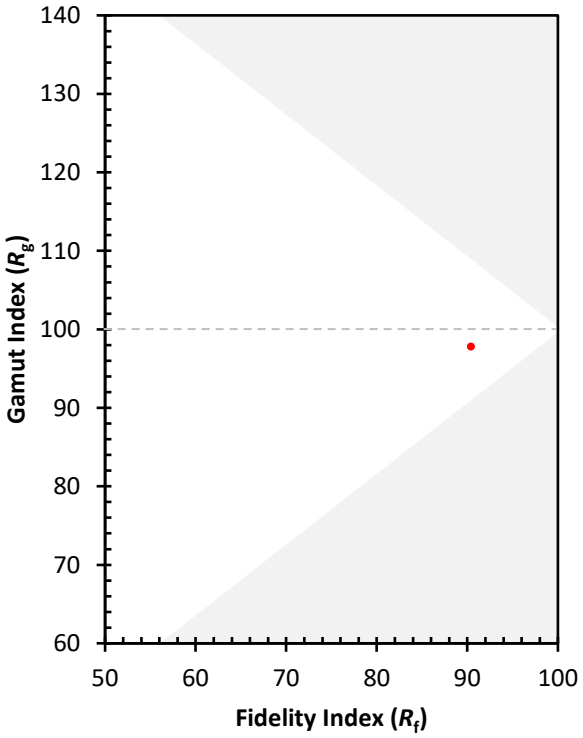


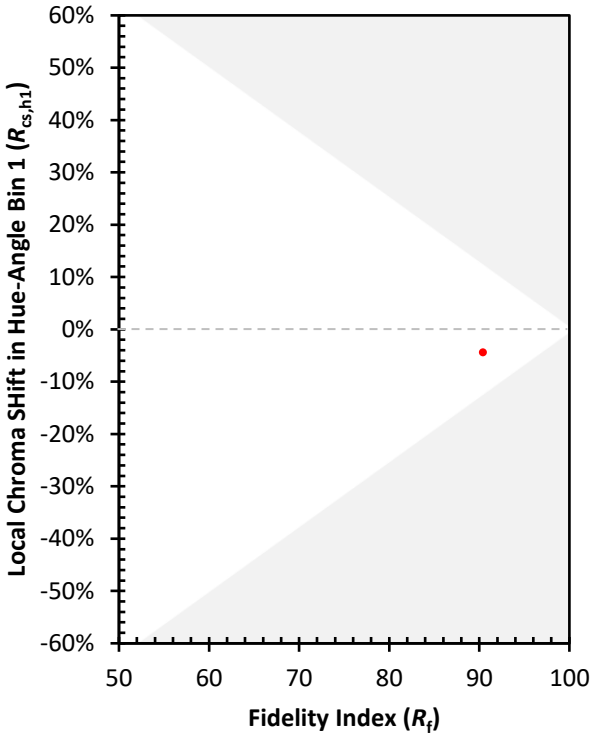
Cooper Lighting Solutions Photometric Lab
1121 Highway 74 South
Peachtree City, GA 30269

REPORT NUMBER: SP1-2210-795-3

TM-30-18

Measure Comparisons





(END OF REPORT)