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: P735699

Luminaire Tested: **22APR-38-B2750-W2D-CP250-3000K**

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:	P735699
	TEST IS SCALED FROM IESNA LM-79-08 TEST DATA (P708781)
Test Lab:	INNOVATION CENTER(G2)
Issue Date:	1/5/2024
Manufacturer:	COOPER LIGHTING SOLUTIONS (FORMERLY EATON)
Product Line:	FAIL-SAFE
Catalog Number:	22APR-38-B2750-W2D-CP250-3000K
Description:	2X2 3800 AMBIENT LUMEN OUTPUT APR TROFFER WITH BIO UP LEDS AT 3000K CCT, AND CP250 LENS
Light Source:	-
Ballast/Driver:	-

Summary

Lumens per Lamp:	N/A
Luminaire Lumens:	3147.0 lumens
Efficiency:	N/A
Efficacy:	73.2 lumens/watt
Spacing Criteria (0/90/45):	1.18 / 1.17 / 1.29
Luminous Opening:	Rectangular (W 2' x L: 2' x H: 0')
CIE Type:	Direct
Input Watts (W):	43
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

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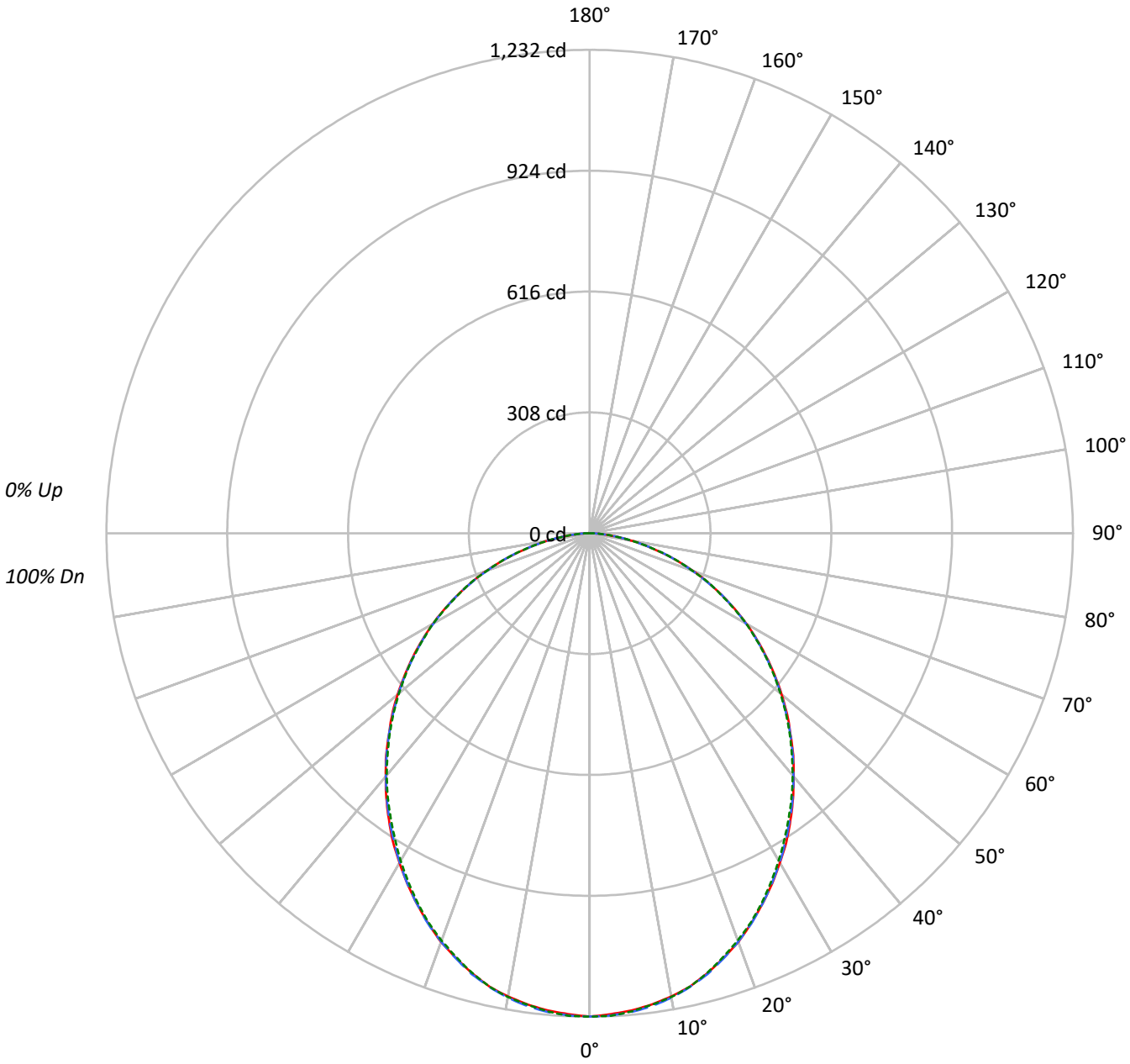
TEST NUMBER: P735699
CATALOG NUMBER: 22APR-38-B2750-W2D-CP250-3000K

Luminous Intensity Polar Plot



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Scaled Data Report

TEST NUMBER: P735699
CATALOG NUMBER: 22APR-38-B2750-W2D-CP250-3000K

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	100	96	106	102	98	95	98	95	92	94	91	89	90	88	86	84
2	99	91	85	79	97	89	83	78	86	81	76	83	78	74	80	76	73	71
3	91	80	72	66	88	79	71	65	76	69	64	73	68	63	71	66	62	60
4	83	71	63	56	81	70	62	56	68	61	55	65	59	54	63	58	53	51
5	77	64	55	49	75	63	54	48	61	53	48	59	52	47	57	51	47	45
6	71	58	49	43	69	57	48	42	55	47	42	53	47	42	52	46	41	39
7	66	52	44	38	64	52	43	38	50	43	37	49	42	37	47	41	37	35
8	61	48	39	34	60	47	39	34	46	39	33	45	38	33	43	37	33	31
9	57	44	36	30	56	43	36	30	42	35	30	41	35	30	40	34	30	28
10	54	41	33	28	53	40	33	28	39	32	27	38	32	27	37	31	27	25

AVERAGE LUMINANCE (cd/sqm):

	0°	45°	90°
0°	3315	3315	3315
5°	3298	3309	3304
10°	3275	3285	3280
15°	3233	3240	3230
20°	3174	3172	3162
25°	3094	3094	3084
30°	3013	3011	2995
35°	2932	2923	2906
40°	2842	2839	2827
45°	2755	2752	2742
50°	2675	2664	2657
55°	2582	2570	2570
60°	2486	2477	2482
65°	2356	2362	2346
70°	2202	2189	2189
75°	1963	1972	1972
80°	1661	1661	1674
85°	1260	1260	1288

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Scaled Data Report

TEST NUMBER: P735699
CATALOG NUMBER: 22APR-38-B2750-W2D-CP250-3000K

ZONAL LUMENS:

Zone	Lumens	% Fixture
0°-10°	116.1	3.7
10°-20°	327.3	10.4
20°-30°	479.9	15.2
30°-40°	556.7	17.7
40°-50°	558.2	17.7
50°-60°	490.9	15.6
60°-70°	366.3	11.6
70°-80°	201.6	6.4
80°-90°	49.9	1.6
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°	923.3	29.3
0°-40°	1480.1	47.0
0°-60°	2529.2	80.4
0°-90°	3147.0	100.0
90°-120°	0.0	0.0
90°-150°	0.0	0.0
90°-180°	0.0	0.0
0°-180°	3147.0	100.0

CANDELA DISTRIBUTION:

	0°	22.5°	45°	67.5°	90°	Flux
0°	1232	1232	1232	1232	1232	
5°	1221	1225	1225	1225	1223	116
15°	1160	1165	1163	1161	1160	327
25°	1042	1046	1042	1041	1039	480
35°	892	893	890	887	885	558
45°	724	726	723	722	720	560
55°	550	551	548	549	548	492
65°	370	370	371	369	368	367
75°	189	190	190	188	190	201
85°	41	42	41	41	42	49
90°	0	0	0	0	0	

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TEST NUMBER: P735699
CATALOG NUMBER: 22APR-38-B2750-W2D-CP250-3000K

CANDELA DISTRIBUTION (FULL):

	0°	22.5°	45°	67.5°	90°
0°	1231.8	1231.8	1231.8	*1231.8*	1231.8
2.5°	*1226.6*	*1230.9*	*1230.0*	*1232.7*	*1230.9*
5°	1220.8	1225.0	1225.0	*1225.0*	1223.3
7.5°	1211.3	1215.6	1215.6	*1215.6*	1212.2
10°	1198.7	1203.0	1202.1	*1202.1*	1200.3
12.5°	1183.4	1185.9	1184.1	*1184.1*	1183.4
15°	1160.4	1165.4	1162.9	*1161.1*	1159.5
17.5°	1134.8	1140.0	1135.7	*1134.8*	1132.3
20°	1108.5	1111.8	1107.6	*1107.6*	1104.2
22.5°	1076.1	1079.5	1077.0	*1075.3*	1073.6
25°	1042.1	1046.3	1042.1	*1041.2*	1038.7
27.5°	1007.2	1010.6	1006.3	*1002.9*	1001.3
30°	969.8	972.3	968.9	*966.4*	963.8
32.5°	933.2	933.2	929.8	*927.3*	923.9
35°	892.4	893.3	889.9	*887.2*	884.7
37.5°	851.6	853.2	849.9	*847.3*	845.6
40°	809.1	810.7	808.2	*805.5*	804.8
42.5°	768.2	768.2	766.5	*763.9*	762.3
45°	724.0	726.5	723.1	*722.2*	720.5
47.5°	683.1	683.1	679.7	*677.9*	677.9
50°	638.9	640.6	636.3	*635.4*	634.7
52.5°	594.6	593.7	592.9	*592.1*	591.2
55°	550.3	551.2	547.8	*548.7*	547.8
57.5°	506.2	505.3	504.4	*503.7*	502.8
60°	461.9	461.1	460.3	*459.4*	461.1
62.5°	415.9	416.8	414.3	*416.8*	413.4
65°	370.0	370.0	370.9	*369.1*	368.4
67.5°	325.9	325.9	324.1	*324.1*	327.5
70°	279.9	280.7	278.2	*281.6*	278.2
72.5°	234.8	235.6	234.8	*233.9*	235.6
75°	188.8	189.7	189.7	*188.0*	189.7
77.5°	147.2	148.1	147.2	*146.3*	147.2
80°	107.2	108.0	107.2	*106.3*	108.0
82.5°	71.4	72.3	71.4	*71.4*	72.3
85°	40.8	41.7	40.8	*40.8*	41.7
87.5°	16.2	17.1	17.1	*17.1*	17.1
90°	0.0	0.0	0.0	*0.0*	0.0

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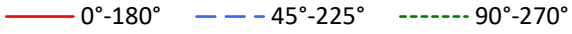
Report Generated By 670246072 / DESKTOP-50001EG


0°-180°
45°-225°
90°-270°

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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: SP1-2210-795-2

Test Date: 10/06/2022

Luminaire Tested: 9WP217084MDER4AM-3000K-315MA
Data in this report applies to families of products including 9WP217084MDER4AM-3000K.

Report Generated By FNC07603 / LDUCLS01DT446
Version: v6.10

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

Test Information

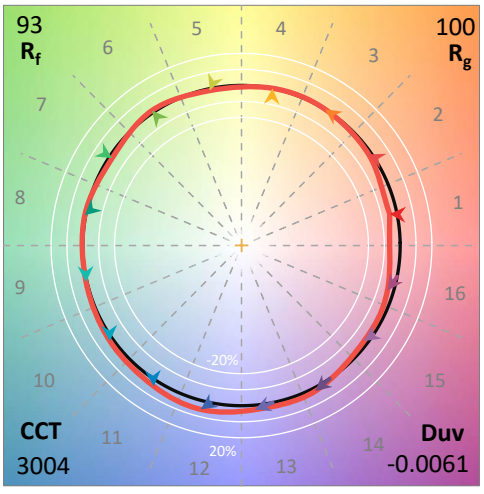
Test Method:	LM-79-2019
Report Number:	SP1-2210-795-2
Test Lab:	COOPER LIGHTING SOLUTIONS
Photometer:	SP1 - 76IN SPHERE
Measurement Geometry:	4π
Issue Date:	10/06/2022
Manufacturer:	COOPER LIGHTING SOLUTIONS (FORMERLY EATON)
Product Line:	METALUX
Catalog Number:	**9WP217084MDER4AM-3000K-315MA**
Description:	METALUX

TUNABLE BOARD, 3000K-315MA, PROGRAMMED @ 2.6Vdc.

Spectral Parameters

CCT (K):	3004	CRI (Ra):	93.2		
CIE u':	0.2526	R1:	98.5	R9:	67.1
CIE v':	0.5127	R2:	96.3	R10:	94.0
Duv:	-0.0061	R3:	94.1	R11:	97.7
CIE x:	0.4279	R4:	96.5	R12:	86.0
CIE y:	0.3860	R5:	98.5	R13:	98.4
CIE z:	0.1861	R6:	90.3	R14:	98.1
Peak Wavelength (nm):	632	R7:	88.3		
Dominant Wavelength (nm):	585	R8:	83.1		
Purity:	44.5				

Rf:	92.5
Rg:	99.9



Test Conditions

Stabilization Time:	53M
Operation Time:	12H
Room Temperature (°C) / RH%:	24.0/38%
Sphere Temperature (°C):	24.4

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REPORT NUMBER: SP1-2210-795-2

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

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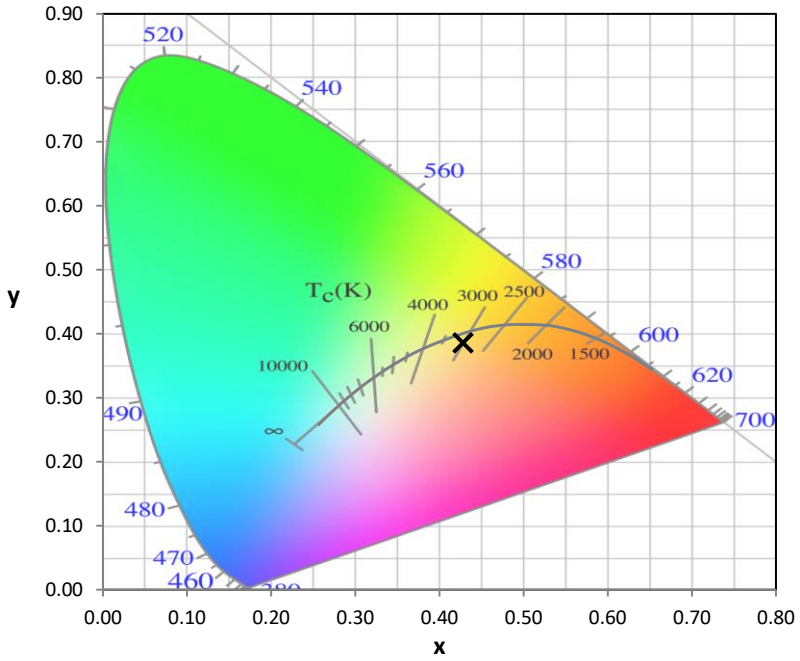
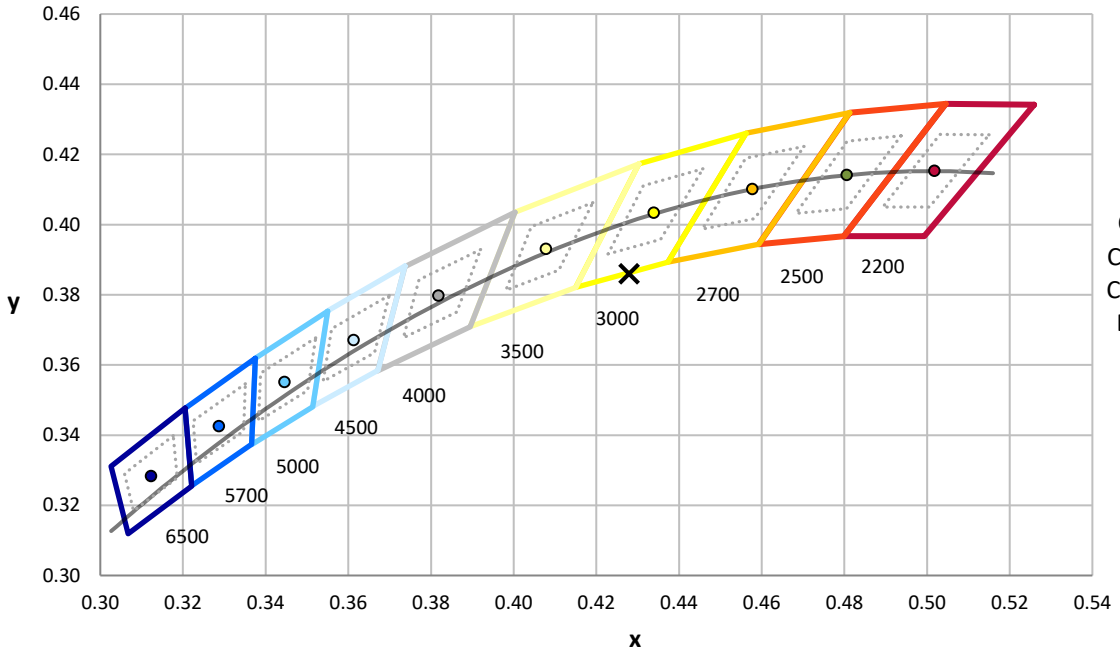
CIE 1931 Chromaticity Diagram



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



CCT = 3004K
CIE x = 0.4279
CIE y = 0.3860
Duv = -0.0061

Point lies outside the range

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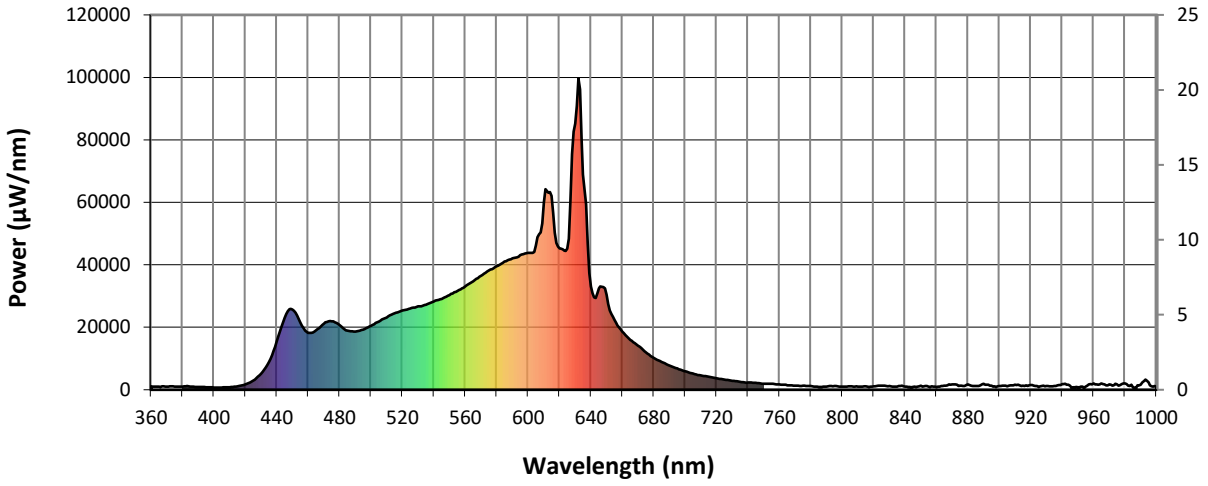
Photopic Flux vs. Wavelength



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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	1141	NR	490	18648	NR	620	45240	NR	750	1949	NR	880	1696	NR
365	981	NR	495	19266	NR	625	45103	NR	755	1928	NR	885	1176	NR
370	993	NR	500	20501	NR	630	85243	NR	760	1686	NR	890	1892	NR
375	1026	NR	505	21835	NR	635	68928	NR	765	1435	NR	895	1303	NR
380	1011	NR	510	23128	NR	640	33096	NR	770	1270	NR	900	1197	NR
385	1002	NR	515	24473	NR	645	32437	NR	775	1334	NR	905	1148	NR
390	868	NR	520	25336	NR	650	30398	NR	780	1218	NR	910	1595	NR
395	834	NR	525	26013	NR	655	22347	NR	785	928	NR	915	1266	NR
400	731	NR	530	26667	NR	660	18602	NR	790	989	NR	920	1495	NR
405	725	NR	535	27195	NR	665	15938	NR	795	1224	NR	925	855	NR
410	825	NR	540	28268	NR	670	14142	NR	800	1005	NR	930	1185	NR
415	1102	NR	545	29091	NR	675	11970	NR	805	1076	NR	935	1186	NR
420	1695	NR	550	30262	NR	680	10212	NR	810	1018	NR	940	1843	NR
425	2899	NR	555	31582	NR	685	8911	NR	815	1059	NR	945	1344	NR
430	5092	NR	560	33069	NR	690	7775	NR	820	1047	NR	950	827	NR
435	8866	NR	565	34747	NR	695	6796	NR	825	1259	NR	955	984	NR
440	15398	NR	570	36451	NR	700	5894	NR	830	1151	NR	960	1985	NR
445	23004	NR	575	38145	NR	705	5150	NR	835	1045	NR	965	2009	NR
450	25734	NR	580	39543	NR	710	4545	NR	840	1037	NR	970	1686	NR
455	21534	NR	585	41063	NR	715	4197	NR	845	888	NR	975	1733	NR
460	18246	NR	590	42070	NR	720	3650	NR	850	1271	NR	980	2039	NR
465	18978	NR	595	43067	NR	725	3265	NR	855	1028	NR	985	919	NR
470	21128	NR	600	43863	NR	730	2885	NR	860	867	NR	990	1621	NR
475	21866	NR	605	46127	NR	735	2521	NR	865	1316	NR	995	2360	NR
480	20628	NR	610	59905	NR	740	2317	NR	870	1674	NR	1000	905	NR
485	18888	NR	615	62018	NR	745	2212	NR	875	1299	NR			

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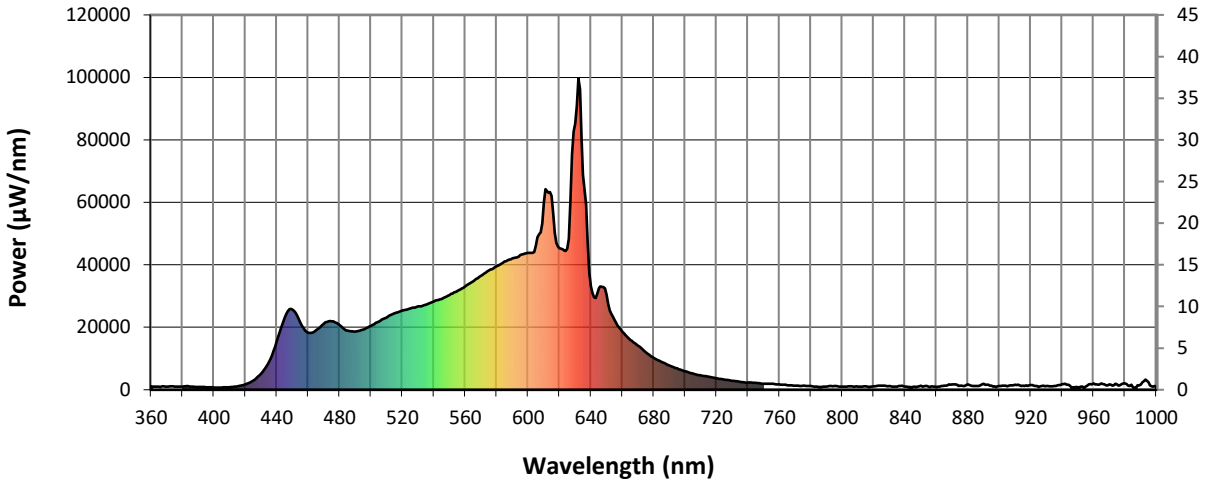
Scotopic Flux vs. Wavelength



Scotopic Lumens: 3849.1 **S/P: 1.53**

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	1141	NR	490	18648	NR	620	45240	NR	750	1949	NR	880	1696	NR
365	981	NR	495	19266	NR	625	45103	NR	755	1928	NR	885	1176	NR
370	993	NR	500	20501	NR	630	85243	NR	760	1686	NR	890	1892	NR
375	1026	NR	505	21835	NR	635	68928	NR	765	1435	NR	895	1303	NR
380	1011	NR	510	23128	NR	640	33096	NR	770	1270	NR	900	1197	NR
385	1002	NR	515	24473	NR	645	32437	NR	775	1334	NR	905	1148	NR
390	868	NR	520	25336	NR	650	30398	NR	780	1218	NR	910	1595	NR
395	834	NR	525	26013	NR	655	22347	NR	785	928	NR	915	1266	NR
400	731	NR	530	26667	NR	660	18602	NR	790	989	NR	920	1495	NR
405	725	NR	535	27195	NR	665	15938	NR	795	1224	NR	925	855	NR
410	825	NR	540	28268	NR	670	14142	NR	800	1005	NR	930	1185	NR
415	1102	NR	545	29091	NR	675	11970	NR	805	1076	NR	935	1186	NR
420	1695	NR	550	30262	NR	680	10212	NR	810	1018	NR	940	1843	NR
425	2899	NR	555	31582	NR	685	8911	NR	815	1059	NR	945	1344	NR
430	5092	NR	560	33069	NR	690	7775	NR	820	1047	NR	950	827	NR
435	8866	NR	565	34747	NR	695	6796	NR	825	1259	NR	955	984	NR
440	15398	NR	570	36451	NR	700	5894	NR	830	1151	NR	960	1985	NR
445	23004	NR	575	38145	NR	705	5150	NR	835	1045	NR	965	2009	NR
450	25734	NR	580	39543	NR	710	4545	NR	840	1037	NR	970	1686	NR
455	21534	NR	585	41063	NR	715	4197	NR	845	888	NR	975	1733	NR
460	18246	NR	590	42070	NR	720	3650	NR	850	1271	NR	980	2039	NR
465	18978	NR	595	43067	NR	725	3265	NR	855	1028	NR	985	919	NR
470	21128	NR	600	43863	NR	730	2885	NR	860	867	NR	990	1621	NR
475	21866	NR	605	46127	NR	735	2521	NR	865	1316	NR	995	2360	NR
480	20628	NR	610	59905	NR	740	2317	NR	870	1674	NR	1000	905	NR
485	18888	NR	615	62018	NR	745	2212	NR	875	1299	NR			

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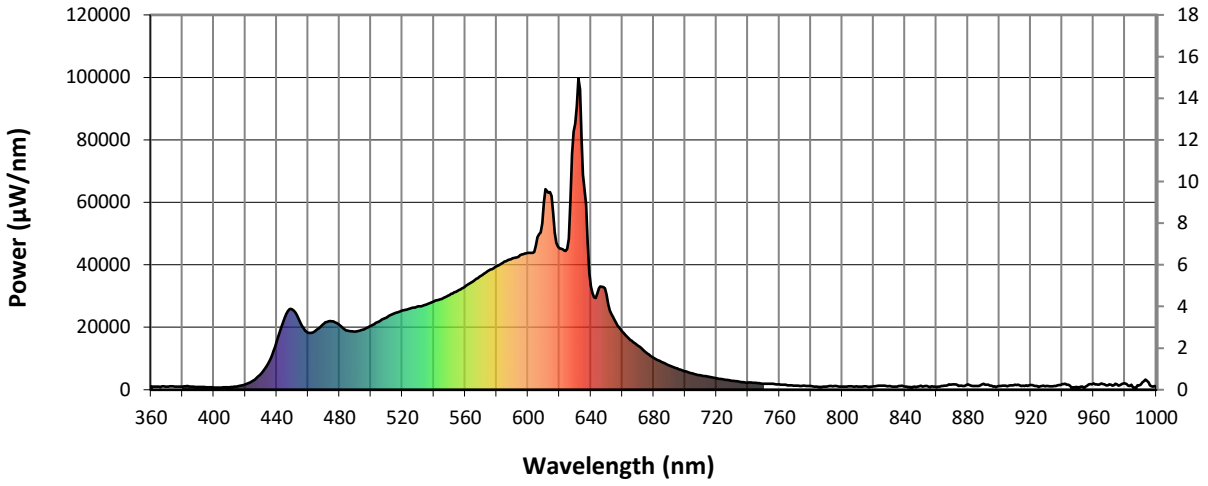
Melanopic Flux vs. Wavelength



Melanopic Lumens: 1558.5 **S/P: 0.62**

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	1141	NR	490	18648	NR	620	45240	NR	750	1949	NR	880	1696	NR
365	981	NR	495	19266	NR	625	45103	NR	755	1928	NR	885	1176	NR
370	993	NR	500	20501	NR	630	85243	NR	760	1686	NR	890	1892	NR
375	1026	NR	505	21835	NR	635	68928	NR	765	1435	NR	895	1303	NR
380	1011	NR	510	23128	NR	640	33096	NR	770	1270	NR	900	1197	NR
385	1002	NR	515	24473	NR	645	32437	NR	775	1334	NR	905	1148	NR
390	868	NR	520	25336	NR	650	30398	NR	780	1218	NR	910	1595	NR
395	834	NR	525	26013	NR	655	22347	NR	785	928	NR	915	1266	NR
400	731	NR	530	26667	NR	660	18602	NR	790	989	NR	920	1495	NR
405	725	NR	535	27195	NR	665	15938	NR	795	1224	NR	925	855	NR
410	825	NR	540	28268	NR	670	14142	NR	800	1005	NR	930	1185	NR
415	1102	NR	545	29091	NR	675	11970	NR	805	1076	NR	935	1186	NR
420	1695	NR	550	30262	NR	680	10212	NR	810	1018	NR	940	1843	NR
425	2899	NR	555	31582	NR	685	8911	NR	815	1059	NR	945	1344	NR
430	5092	NR	560	33069	NR	690	7775	NR	820	1047	NR	950	827	NR
435	8866	NR	565	34747	NR	695	6796	NR	825	1259	NR	955	984	NR
440	15398	NR	570	36451	NR	700	5894	NR	830	1151	NR	960	1985	NR
445	23004	NR	575	38145	NR	705	5150	NR	835	1045	NR	965	2009	NR
450	25734	NR	580	39543	NR	710	4545	NR	840	1037	NR	970	1686	NR
455	21534	NR	585	41063	NR	715	4197	NR	845	888	NR	975	1733	NR
460	18246	NR	590	42070	NR	720	3650	NR	850	1271	NR	980	2039	NR
465	18978	NR	595	43067	NR	725	3265	NR	855	1028	NR	985	919	NR
470	21128	NR	600	43863	NR	730	2885	NR	860	867	NR	990	1621	NR
475	21866	NR	605	46127	NR	735	2521	NR	865	1316	NR	995	2360	NR
480	20628	NR	610	59905	NR	740	2317	NR	870	1674	NR	1000	905	NR
485	18888	NR	615	62018	NR	745	2212	NR	875	1299	NR			

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

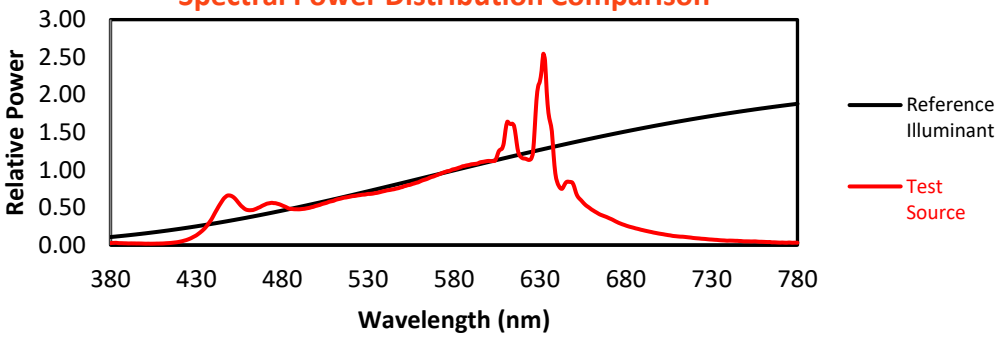
REPORT NUMBER: SP1-2210-795-2

TM-30-18

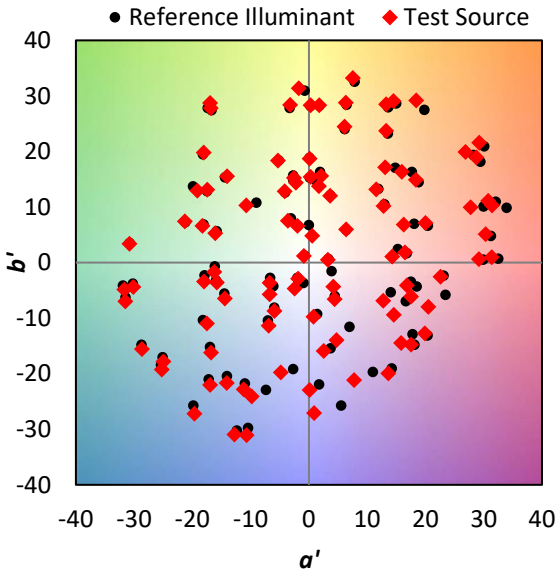
Summary

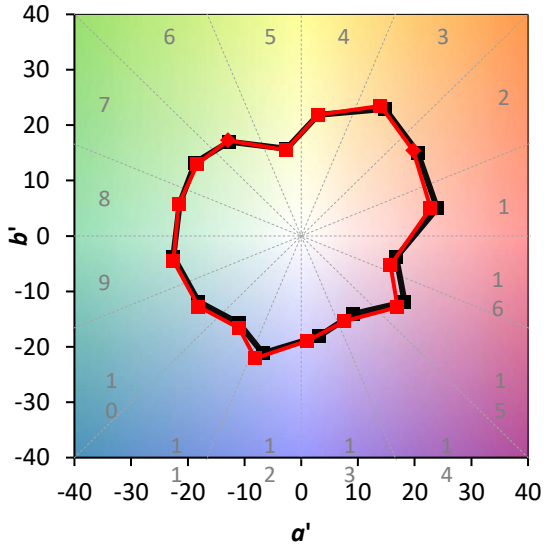
R_f = 92.5
R_g = 99.9
CIE R_a = 93.2
R_9 = 67.1

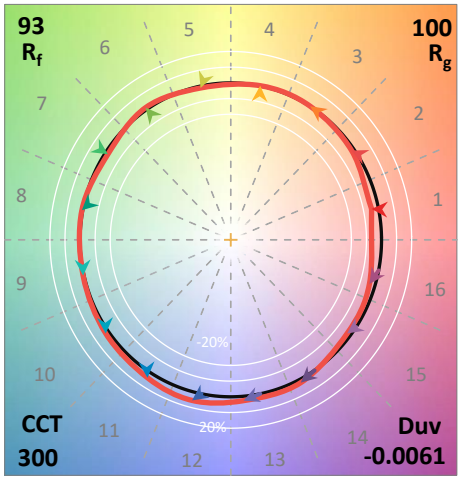
Spectral Power Distribution Comparison

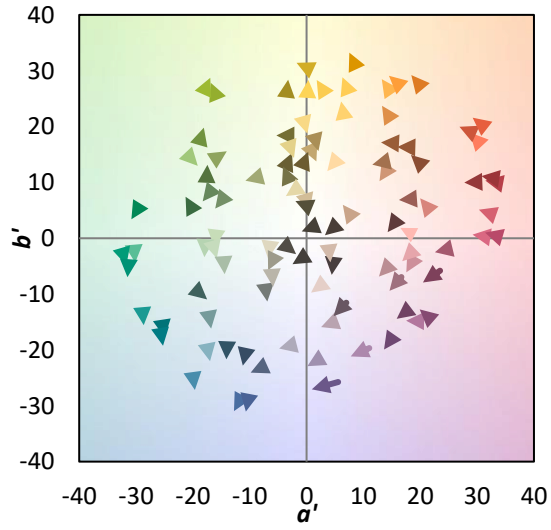


Color Vector Graphics









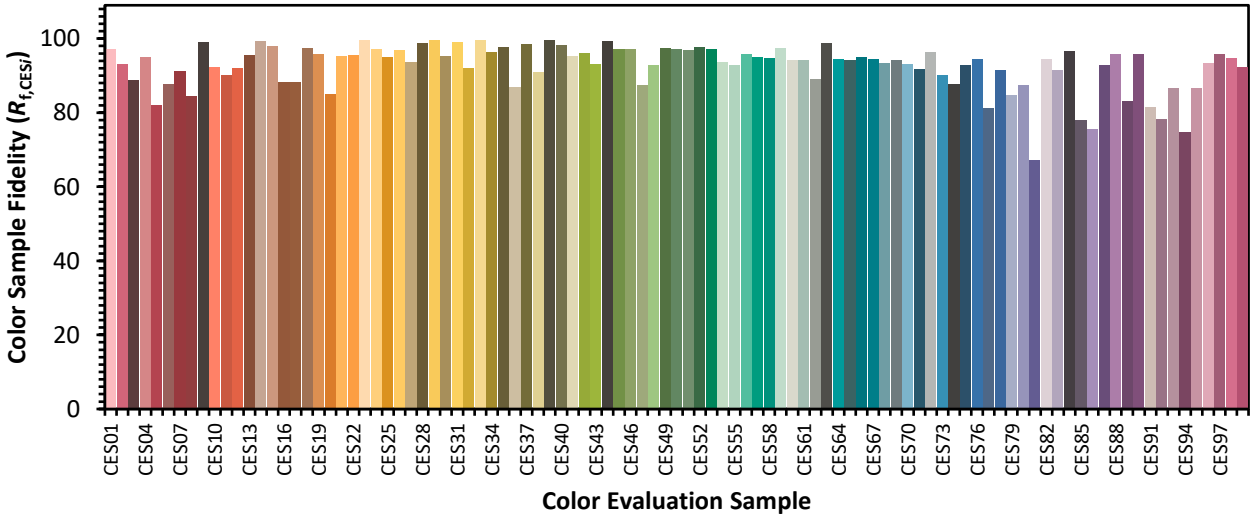
Cooper Lighting Solutions Photometric Lab
1121 Highway 74 South
Peachtree City, GA 30269

REPORT NUMBER: SP1-2210-795-2

TM-30-18

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

CES01 = 86	CES26 = 97	CES51 = 97	CES76 = 94
CES02 = 63	CES27 = 93	CES52 = 98	CES77 = 81
CES03 = 32	CES28 = 99	CES53 = 97	CES78 = 91
CES04 = 70	CES29 = 99	CES54 = 93	CES79 = 85
CES05 = 51	CES30 = 95	CES55 = 93	CES80 = 87
CES06 = 51	CES31 = 99	CES56 = 96	CES81 = 67
CES07 = 44	CES32 = 92	CES57 = 95	CES82 = 94
CES08 = 42	CES33 = 99	CES58 = 95	CES83 = 91
CES09 = 29	CES34 = 96	CES59 = 97	CES84 = 97
CES10 = 76	CES35 = 98	CES60 = 94	CES85 = 78
CES11 = 59	CES36 = 87	CES61 = 94	CES86 = 76
CES12 = 65	CES37 = 98	CES62 = 89	CES87 = 93
CES13 = 44	CES38 = 91	CES63 = 99	CES88 = 96
CES14 = 74	CES39 = 100	CES64 = 94	CES89 = 83
CES15 = 72	CES40 = 98	CES65 = 94	CES90 = 96
CES16 = 48	CES41 = 95	CES66 = 95	CES91 = 81
CES17 = 50	CES42 = 96	CES67 = 94	CES92 = 78
CES18 = 57	CES43 = 93	CES68 = 93	CES93 = 86
CES19 = 72	CES44 = 99	CES69 = 94	CES94 = 75
CES20 = 67	CES45 = 97	CES70 = 93	CES95 = 86
CES21 = 86	CES46 = 97	CES71 = 92	CES96 = 93
CES22 = 79	CES47 = 87	CES72 = 96	CES97 = 96
CES23 = 92	CES48 = 93	CES73 = 90	CES98 = 95
CES24 = 90	CES49 = 97	CES74 = 88	CES99 = 92
CES25 = 72	CES50 = 97	CES75 = 93	

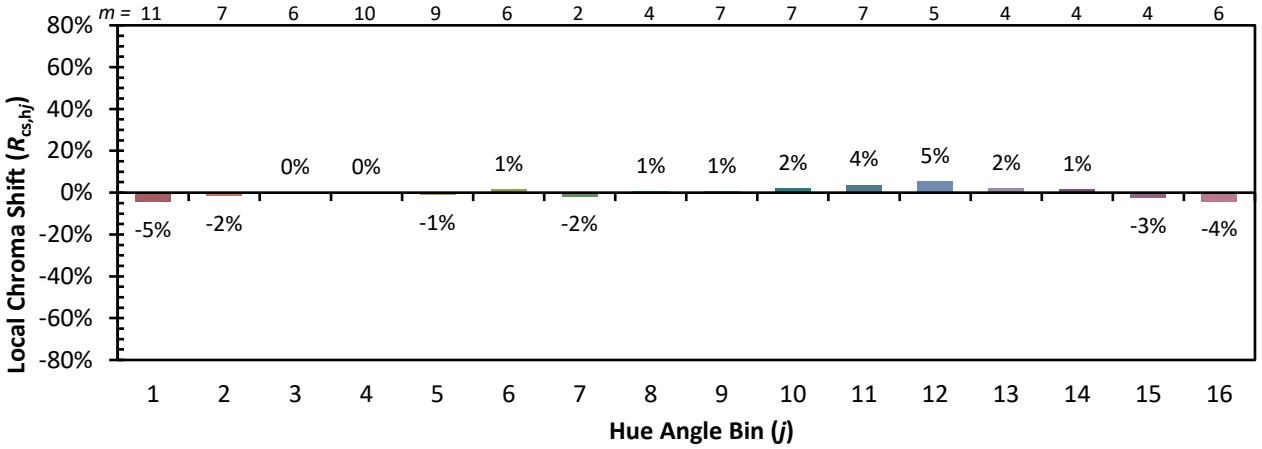


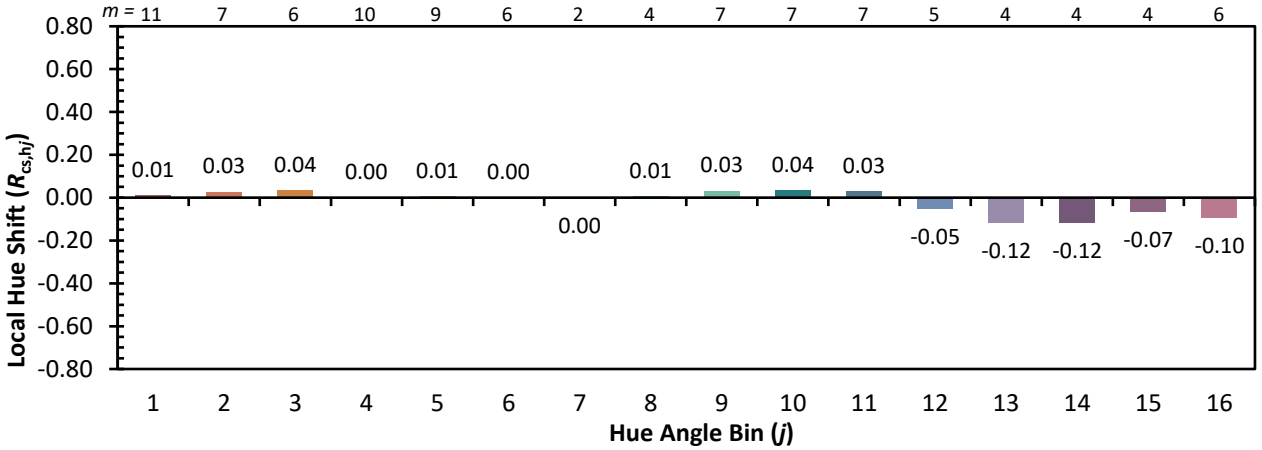
Cooper Lighting Solutions Photometric Lab
1121 Highway 74 South
Peachtree City, GA 30269

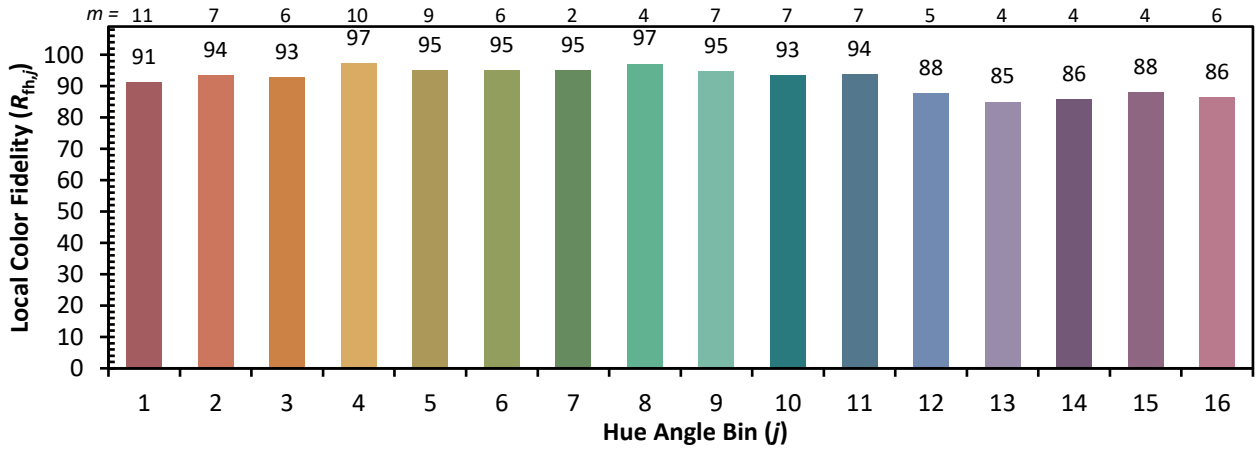
REPORT NUMBER: SP1-2210-795-2

TM-30-18

Color Rendition by Hue-Angle Bin





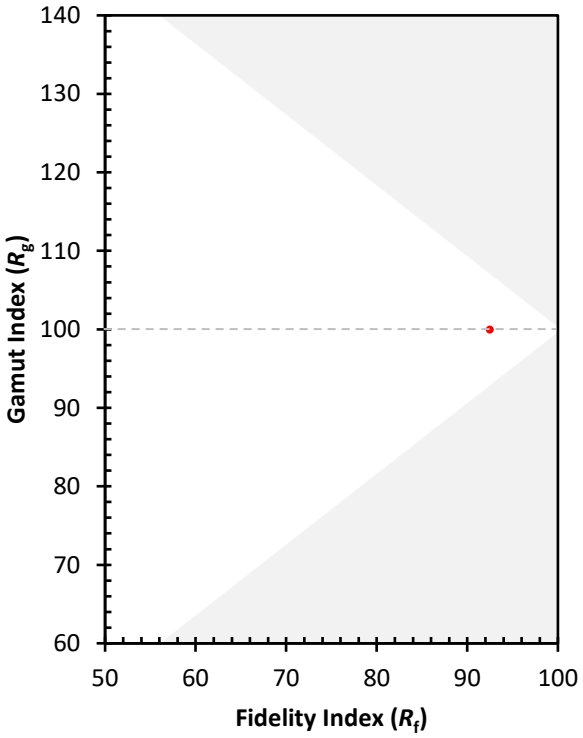


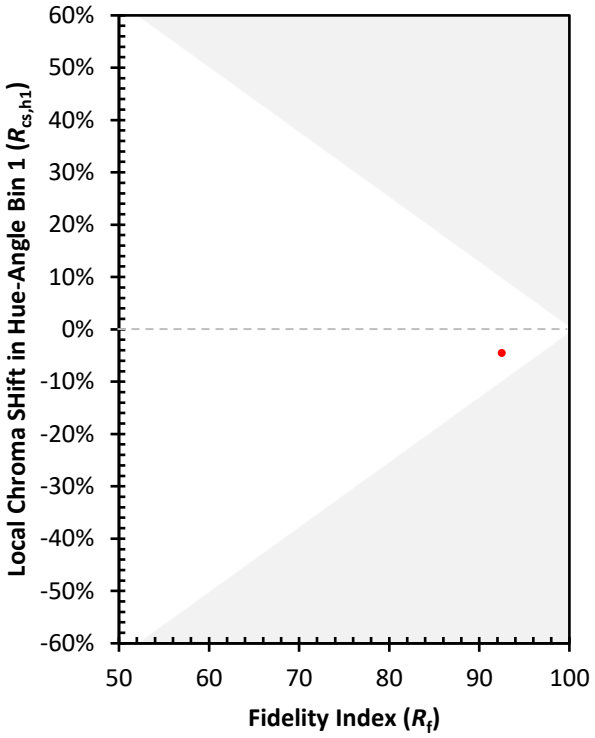
Cooper Lighting Solutions Photometric Lab
1121 Highway 74 South
Peachtree City, GA 30269

REPORT NUMBER: SP1-2210-795-2

TM-30-18

Measure Comparisons





(END OF REPORT)