

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: P861187

Luminaire Tested: **4APVTLD-SL3C3 HI POWER 5000K 120V**

Issue Date: 1/31/2023



Test Information

Test Method: LM-79-08
Report Number: P861187
TEST IS SCALED FROM IESNA LM-79-08 TEST DATA (G2-2210-820-19)
Test Lab: INNOVATION CENTER
Issue Date: 1/31/2023
Manufacturer: COOPER LIGHTING SOLUTIONS (FORMERLY EATON)
Product Line: FAIL-SAFE
Catalog Number: 4APVTLD-SL3C3 HI POWER 5000K 120V
Description: HI POWER
Light Source: -
Ballast/Driver: ELECTRONIC DRIVER
Luminaire Equipment: Sample No. Condition Description

Summary

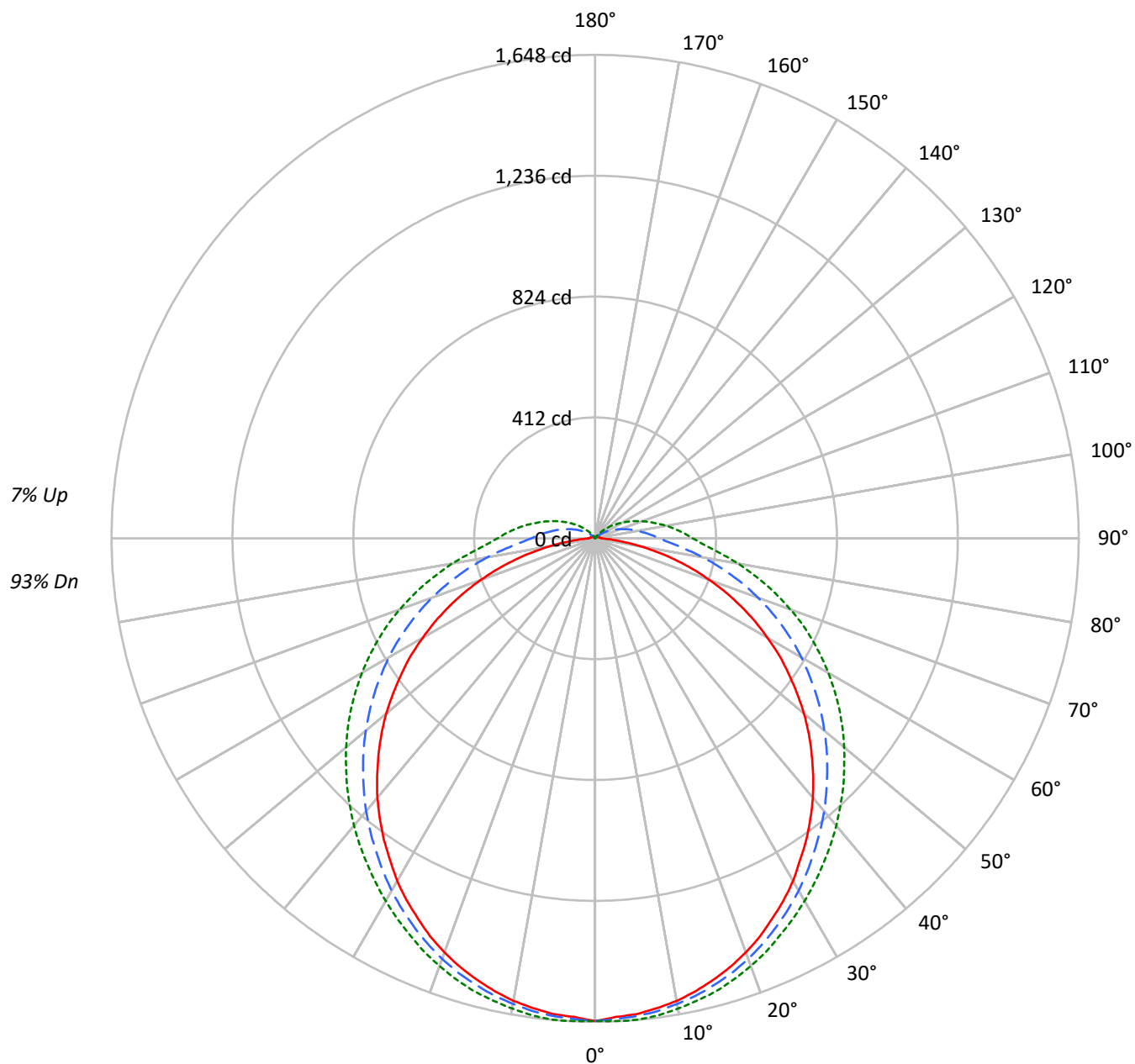
Lumens per Lamp: N/A
Luminaire Lumens: 5667.4 lumens
Efficiency: N/A
Efficacy: 120.1 lumens/watt
Spacing Criteria (0/90/45): 1.22 / 1.29 / 1.39
Luminous Opening: Rectangular w/ Sides (W: 0.33' x L: 4' x H: 0.08')
CIE Type: Direct

Input Watts (W): 47.2
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

TEST NUMBER: P861187

CATALOG NUMBER: 4APVTLD-SL3C3 HI POWER 5000K 120V

Luminous Intensity Polar Plot





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CATALOG NUMBER: 4APVTLD-SL3C3 HI POWER 5000K 120V

COEFFICIENT OF UTILIZATION - ZONAL CAVITY METHOD:

RF	20				20				20				20				20
RC	80				70				50				30				10
RW	70	50	30	10	70	50	30	10	50	30	10		50	30	10		50
RCR																	
0	117	117	117	117	114	114	114	114	107	107	107		101	101	101		95
1	105	100	95	90	102	97	92	88	91	87	84		86	83	80		81
2	95	86	79	72	92	83	77	71	79	73	68		74	70	65		70
3	86	75	66	59	83	73	65	58	69	62	56		65	59	54		61
4	79	66	57	50	76	64	56	49	61	53	48		58	51	46		55
5	72	59	50	43	70	57	49	42	54	47	41		52	45	40		49
6	67	53	44	37	64	52	43	37	49	41	36		47	40	35		44
7	62	48	39	33	60	47	38	32	44	37	31		42	36	31		40
8	57	44	35	29	55	43	34	29	41	33	28		39	32	27		37
9	54	40	32	26	52	39	31	26	37	30	25		36	29	25		34
10	50	37	29	23	49	36	28	23	35	28	23		33	27	22		32

AVERAGE LUMINANCE (cd/sqm):

	0°	45°	90°
0°	13286	13286	13286
5°	13170	13034	13068
10°	13078	12779	12783
15°	12947	12523	12518
20°	12806	12253	12218
25°	12611	11952	11907
30°	12424	11643	11628
35°	12188	11317	11364
40°	11957	11026	11137
45°	11673	10714	10921
50°	11384	10429	10719
55°	10999	10140	10536
60°	10573	9845	10338
65°	10024	9496	10136
70°	9236	9119	9900
75°	8141	8711	9664
80°	6494	8299	9506
85°	4564	8113	9514



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ZONAL LUMENS:

Zone	Lumens	% Fixture
0°-10°	155.7	2.7
10°-20°	445.7	7.9
20°-30°	675.0	11.9
30°-40°	817.8	14.4
40°-50°	865.8	15.3
50°-60°	819.1	14.5
60°-70°	686.9	12.1
70°-80°	490.1	8.6
80°-90°	289.2	5.1
90°-100°	183.2	3.2
100°-110°	118.8	2.1
110°-120°	68.7	1.2
120°-130°	33.9	0.6
130°-140°	12.2	0.2
140°-150°	3.3	0.1
150°-160°	1.6	0.0
160°-170°	0.1	0.0
170°-180°	0.0	0.0
0°-30°	1276.4	22.5
0°-40°	2094.2	37.0
0°-60°	3779.1	66.7
0°-90°	5245.4	92.6
90°-120°	370.8	6.5
90°-150°	420.3	7.4
90°-180°	422.0	7.4
0°-180°	5667.4	100.0

CANDELA DISTRIBUTION:

	0°	22.5°	45°	67.5°	90°	Flux
0°	1646	1646	1646	1646	1646	
5°	1628	1647	1635	1635	1648	155
15°	1558	1580	1575	1585	1598	440
25°	1430	1454	1462	1477	1493	659
35°	1255	1282	1302	1335	1355	785
45°	1044	1079	1118	1169	1196	805
55°	805	850	918	985	1016	720
65°	548	607	701	783	815	542
75°	281	365	479	569	599	298
85°	61	158	279	367	396	70
90°	21	104	217	303	332	13
95°	18	76	180	260	288	14
105°	14	39	117	181	205	15
115°	11	16	68	117	136	11
125°	7	8	31	65	81	6
135°	4	5	7	26	36	4
145°	4	3	4	6	6	2
155°	3	3	3	4	4	1
165°	0	0	0	0	0	0
175°	0	0	0	0	0	0
180°	0	0	0	0	0	



TEST NUMBER: P861187

CATALOG NUMBER: 4APVTLD-SL3C3 HI POWER 5000K 120V

CANDELA DISTRIBUTION (FULL):

	0°	22.5°	45°	67.5°	90°
0°	1645.7	1645.7	1645.7	1645.7	1645.7
2.5°	1633.3	1654.0	1640.5	1641.5	1647.8
5°	1628.1	1646.7	1635.3	1635.3	1647.8
7.5°	1615.7	1637.4	1626.0	1627.1	1640.5
10°	1601.2	1621.9	1611.5	1615.7	1628.1
12.5°	1581.6	1603.3	1596.0	1600.2	1613.6
15°	1557.8	1579.5	1575.3	1584.7	1598.1
17.5°	1531.9	1553.6	1552.6	1564.0	1576.4
20°	1501.9	1524.7	1525.7	1538.1	1551.6
22.5°	1468.8	1490.5	1494.7	1508.1	1524.7
25°	1429.5	1454.3	1461.6	1477.1	1492.6
27.5°	1391.2	1416.1	1425.4	1447.1	1461.6
30°	1348.8	1372.6	1387.1	1410.9	1427.4
32.5°	1300.2	1328.1	1345.7	1374.7	1392.3
35°	1254.7	1281.6	1302.3	1335.4	1355.0
37.5°	1205.0	1234.0	1258.8	1296.1	1317.8
40°	1154.4	1182.3	1214.4	1254.7	1278.5
42.5°	1099.5	1131.6	1166.8	1213.3	1237.1
45°	1043.7	1078.8	1118.2	1168.8	1195.7
47.5°	987.8	1023.0	1070.6	1124.4	1151.3
50°	928.9	967.1	1019.9	1079.9	1107.8
52.5°	866.8	909.2	969.2	1033.3	1062.3
55°	804.7	850.3	917.5	984.7	1015.8
57.5°	744.7	790.3	863.7	937.1	967.1
60°	678.5	730.3	812.0	885.4	917.5
62.5°	614.4	671.3	758.2	836.8	866.8
65°	548.2	607.2	701.3	783.0	815.1
67.5°	482.0	547.2	646.5	730.3	763.4
70°	413.7	485.1	589.6	676.5	707.5
72.5°	347.5	426.2	533.7	622.7	652.7
75°	281.3	365.1	478.9	568.9	598.9
77.5°	216.2	309.3	424.1	514.1	544.1
80°	156.2	253.4	372.4	462.4	494.4
82.5°	104.5	202.7	322.7	412.7	441.7
85°	61.0	158.3	279.3	367.2	396.2
87.5°	31.0	125.2	243.1	328.9	360.0
90°	20.7	104.5	217.2	303.1	332.0
92.5°	19.7	90.0	198.6	281.3	310.3
95°	17.6	76.5	180.0	259.6	287.6
97.5°	16.5	65.2	162.4	237.9	266.9
100°	15.5	55.9	145.8	217.2	245.1
102.5°	14.5	46.5	131.4	198.6	225.5
105°	14.5	39.3	116.9	181.0	204.8



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CATALOG NUMBER: 4APVTLD-SL3C3 HI POWER 5000K 120V

CANDELA DISTRIBUTION (continued):

	0°	22.5°	45°	67.5°	90°
112.5°	11.4	19.7	78.6	131.4	152.1
115°	11.4	15.5	68.3	116.9	136.5
117.5°	10.3	11.4	57.9	102.4	121.0
120°	9.3	10.3	48.6	90.0	106.5
122.5°	8.3	9.3	39.3	77.6	93.1
125°	7.2	8.3	31.0	65.2	80.7
127.5°	5.2	7.2	23.8	54.8	68.3
130°	5.2	7.2	16.5	44.5	56.9
132.5°	5.2	6.2	11.4	35.2	45.5
135°	4.1	5.2	7.2	25.9	36.2
137.5°	4.1	5.2	6.2	18.6	26.9
140°	4.1	4.1	6.2	11.4	18.6
142.5°	4.1	4.1	5.2	7.2	10.3
145°	4.1	3.1	4.1	6.2	6.2
147.5°	3.1	3.1	4.1	5.2	6.2
150°	3.1	3.1	4.1	5.2	5.2
152.5°	3.1	3.1	3.1	4.1	5.2
155°	3.1	3.1	3.1	4.1	4.1
157.5°	3.1	3.1	3.1	3.1	4.1
160°	3.1	3.1	3.1	3.1	3.1
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



Report Generated By 670246072 / DESKTOP-50001EG





— 0°-180° - - 45°-225° - - - 90°-270°







107.5°	13.4	32.1	103.4	163.4	187.2
110°	12.4	25.9	91.0	146.9	169.6



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: SP1-2210-820-18

Test Date: 11/11/2022

Luminaire Tested: 4APVTLD-SL3C3

Data in this report applies to families of products including 4APVTLD-SL3C3.

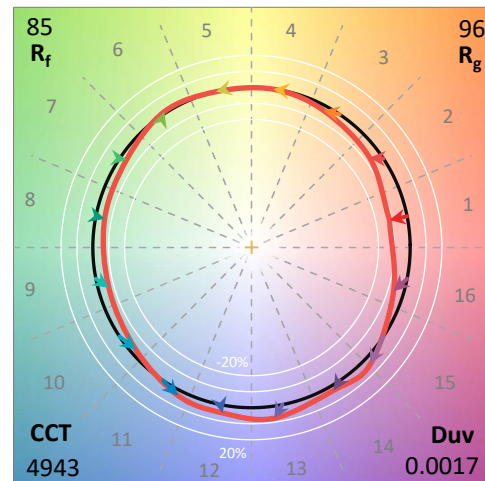
Test Information

Test Method: LM-79-2019
 Report Number: SP1-2210-820-18
 Test Lab: COOPER LIGHTING SOLUTIONS
 Photometer: SP1 - 76IN SPHERE
 Measurement Geometry: 4π
 Issue Date: 11/11/2022
 Manufacturer: COOPER LIGHTING SOLUTIONS (FORMERLY EATON)
 Product Line: METALUX
 Catalog Number: **4APVTLD-SL3C3**
 Description: METALUX

0.1699(@277V) [AT MAX POWER AND 5000K]

Spectral Parameters

CCT (K):	4943	CRI (Ra):	85.1		
CIE u':	0.2108	R1:	83.6	R9:	16.8
CIE v':	0.4873	R2:	91.2	R10:	78.4
Duv:	0.0017	R3:	95.3	R11:	82.6
CIE x:	0.3470	R4:	83.2	R12:	60.5
CIE y:	0.3564	R5:	83.4	R13:	86.0
CIE z:	0.2966	R6:	86.5	R14:	97.8
Peak Wavelength (nm):	452	R7:	88.0		
Dominant Wavelength (nm):	571	R8:	69.5		
Purity:	11.1				
Rf:	85.4				
Rg:	95.7				



Test Conditions

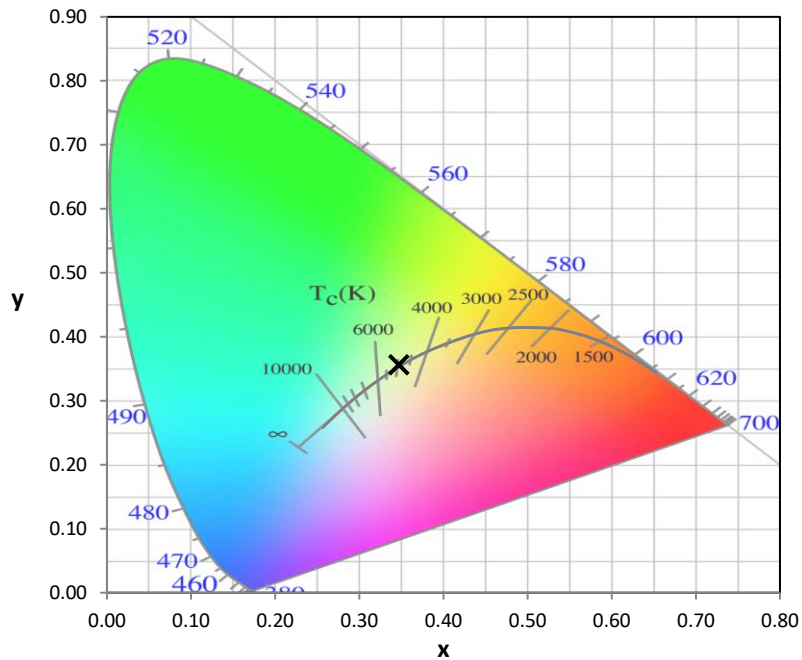
Stabilization Time: 70M
 Operation Time: 12H
 Room Temperature (°C) / RH%: 24.0/52%
 Sphere Temperature (°C): 24.0

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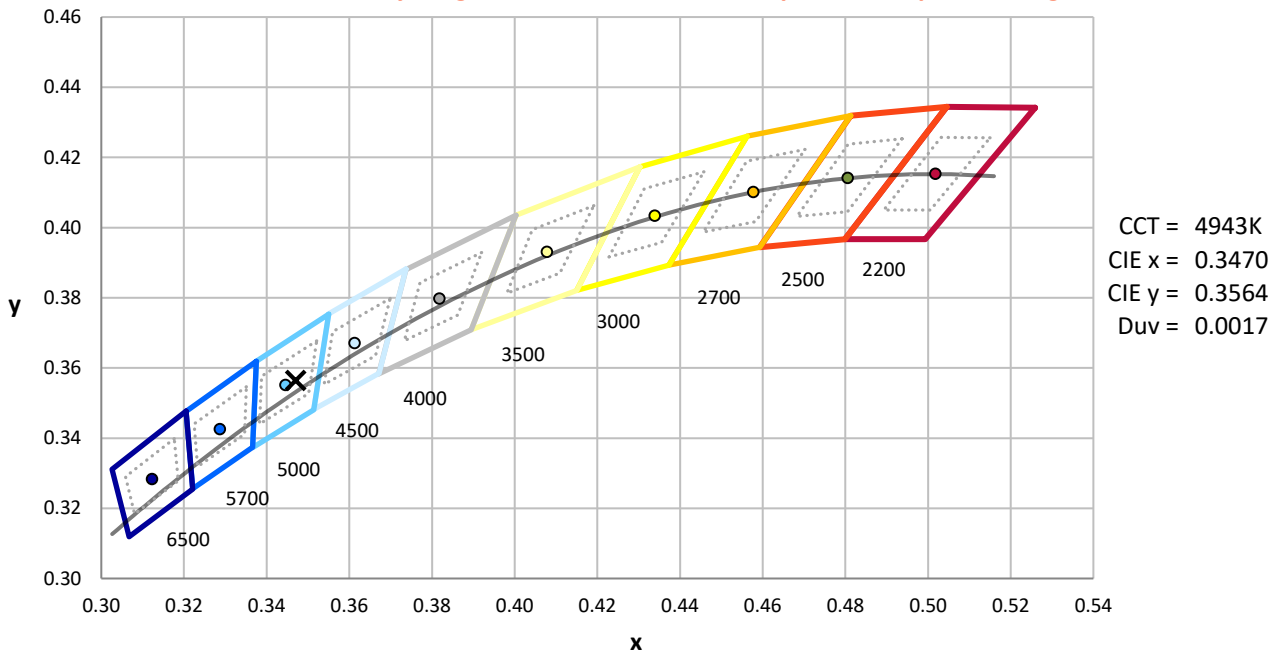
Measurement and Test Equipment			
Instrument	Identification Number	Calibration Date	Calibration Due Date
Photometer	76INCH SPHERE IN0058	8/8/2022	2/8/2023
Power Meter	XITRON 2801 IN0071	11/29/2021	11/29/2022
AC Power Source	CHROMA 61603 IN0063	11/29/2021	11/29/2022
DC Power Source	AGILENT E3634A IN0208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



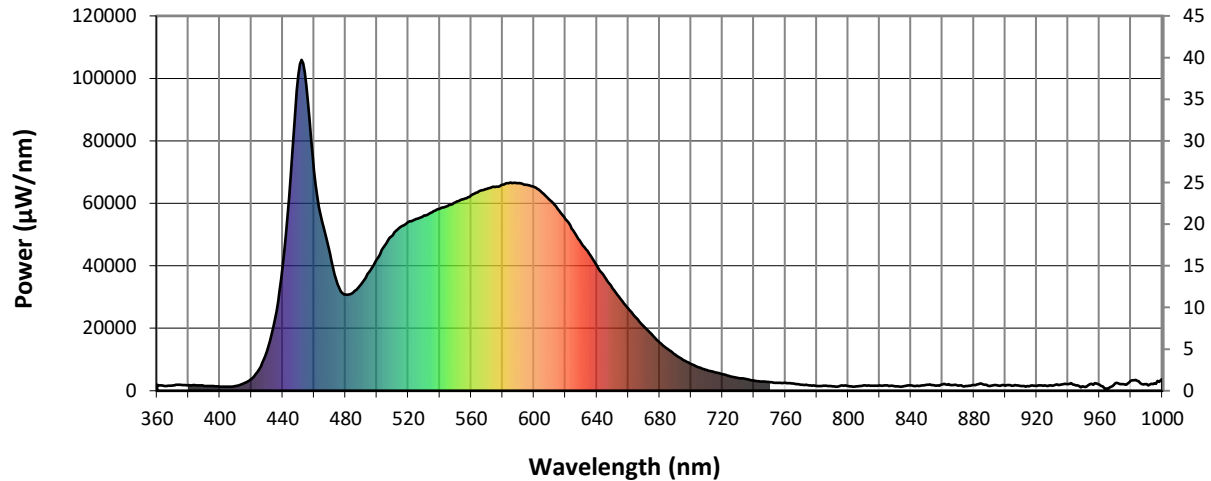
CIE 1931 Chromaticity Diagram with 2017 ANSI 7-Step and 4-Step Quadrangles



Point lies inside the ANSI 5000K 4-step quadrangle

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Photopic Flux vs. Wavelength

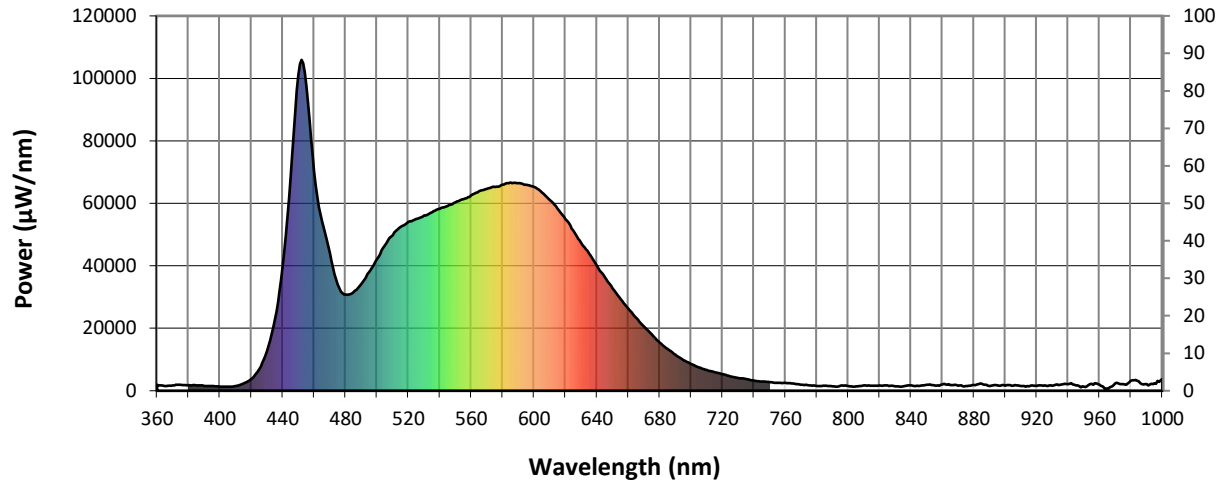


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λ (nm)	Power (μW/nm)	Lumens (φ/nm)	λ (nm)	Power (μW/nm)	Lumens (φ/nm)	λ (nm)	Power (μW/nm)	Lumens (φ/nm)	λ (nm)	Power (μW/nm)	Lumens (φ/nm)	λ (nm)	Power (μW/nm)	Lumens (φ/nm)
360	1893	NR	490	34177	NR	620	54916	NR	750	2782	NR	880	1820	NR
365	1545	NR	495	38010	NR	625	51257	NR	755	2500	NR	885	2271	NR
370	1699	NR	500	42146	NR	630	47308	NR	760	2486	NR	890	1534	NR
375	1869	NR	505	46431	NR	635	44039	NR	765	2313	NR	895	1734	NR
380	1777	NR	510	49788	NR	640	39981	NR	770	1952	NR	900	1568	NR
385	1753	NR	515	52380	NR	645	36389	NR	775	1752	NR	905	1643	NR
390	1511	NR	520	54014	NR	650	32774	NR	780	1548	NR	910	1551	NR
395	1483	NR	525	54953	NR	655	29367	NR	785	1620	NR	915	1428	NR
400	1318	NR	530	56065	NR	660	26307	NR	790	1393	NR	920	1468	NR
405	1342	NR	535	57107	NR	665	23364	NR	795	1627	NR	925	1750	NR
410	1469	NR	540	58306	NR	670	20576	NR	800	1553	NR	930	1641	NR
415	2297	NR	545	59230	NR	675	17969	NR	805	1356	NR	935	1881	NR
420	3731	NR	550	60272	NR	680	15411	NR	810	1669	NR	940	2088	NR
425	6912	NR	555	61298	NR	685	13354	NR	815	1647	NR	945	1721	NR
430	12723	NR	560	62528	NR	690	11535	NR	820	1702	NR	950	1281	NR
435	22892	NR	565	63874	NR	695	9837	NR	825	1689	NR	955	2199	NR
440	39880	NR	570	64630	NR	700	8571	NR	830	1456	NR	960	1889	NR
445	68496	NR	575	65183	NR	705	7495	NR	835	1385	NR	965	707	NR
450	101099	NR	580	65979	NR	710	6588	NR	840	1748	NR	970	2458	NR
455	97717	NR	585	66701	NR	715	5938	NR	845	1548	NR	975	2097	NR
460	70276	NR	590	66508	NR	720	5289	NR	850	1920	NR	980	3285	NR
465	54311	NR	595	65934	NR	725	4630	NR	855	1663	NR	985	3054	NR
470	43940	NR	600	65218	NR	730	4073	NR	860	2052	NR	990	2145	NR
475	34008	NR	605	63482	NR	735	3717	NR	865	1849	NR	995	2463	NR
480	30758	NR	610	61041	NR	740	3235	NR	870	1628	NR	1000	3802	NR
485	31504	NR	615	58238	NR	745	2924	NR	875	1526	NR			

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Scotopic Flux vs. Wavelength



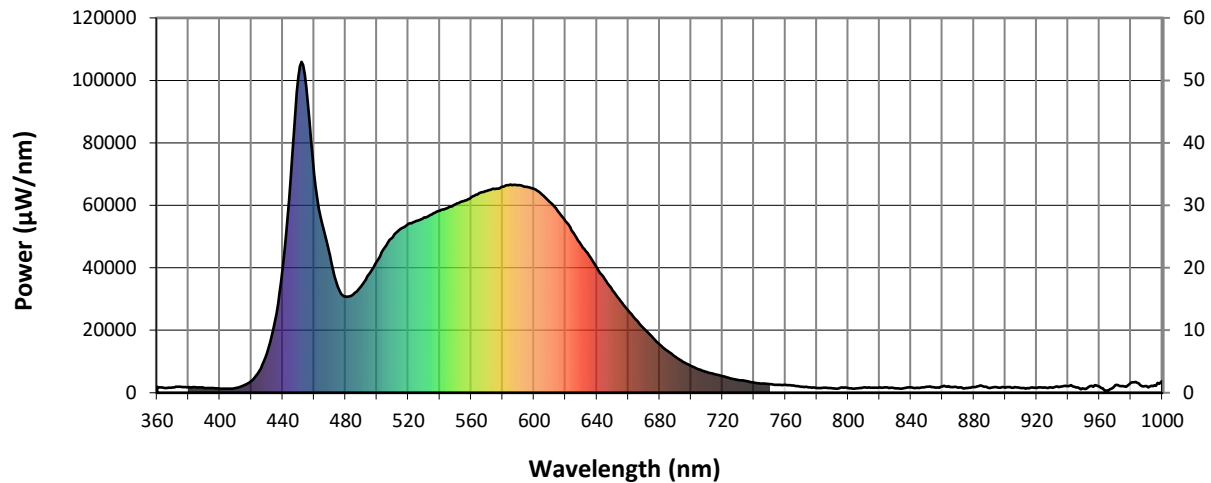
Scotopic Lumens: 8348.9

S/P: 1.99

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	1893	NR	490	34177	NR	620	54916	NR	750	2782	NR	880	1820	NR
365	1545	NR	495	38010	NR	625	51257	NR	755	2500	NR	885	2271	NR
370	1699	NR	500	42146	NR	630	47308	NR	760	2486	NR	890	1534	NR
375	1869	NR	505	46431	NR	635	44039	NR	765	2313	NR	895	1734	NR
380	1777	NR	510	49788	NR	640	39981	NR	770	1952	NR	900	1568	NR
385	1753	NR	515	52380	NR	645	36389	NR	775	1752	NR	905	1643	NR
390	1511	NR	520	54014	NR	650	32774	NR	780	1548	NR	910	1551	NR
395	1483	NR	525	54953	NR	655	29367	NR	785	1620	NR	915	1428	NR
400	1318	NR	530	56065	NR	660	26307	NR	790	1393	NR	920	1468	NR
405	1342	NR	535	57107	NR	665	23364	NR	795	1627	NR	925	1750	NR
410	1469	NR	540	58306	NR	670	20576	NR	800	1553	NR	930	1641	NR
415	2297	NR	545	59230	NR	675	17969	NR	805	1356	NR	935	1881	NR
420	3731	NR	550	60272	NR	680	15411	NR	810	1669	NR	940	2088	NR
425	6912	NR	555	61298	NR	685	13354	NR	815	1647	NR	945	1721	NR
430	12723	NR	560	62528	NR	690	11535	NR	820	1702	NR	950	1281	NR
435	22892	NR	565	63874	NR	695	9837	NR	825	1689	NR	955	2199	NR
440	39880	NR	570	64630	NR	700	8571	NR	830	1456	NR	960	1889	NR
445	68496	NR	575	65183	NR	705	7495	NR	835	1385	NR	965	707	NR
450	101099	NR	580	65979	NR	710	6588	NR	840	1748	NR	970	2458	NR
455	97717	NR	585	66701	NR	715	5938	NR	845	1548	NR	975	2097	NR
460	70276	NR	590	66508	NR	720	5289	NR	850	1920	NR	980	3285	NR
465	54311	NR	595	65934	NR	725	4630	NR	855	1663	NR	985	3054	NR
470	43940	NR	600	65218	NR	730	4073	NR	860	2052	NR	990	2145	NR
475	34008	NR	605	63482	NR	735	3717	NR	865	1849	NR	995	2463	NR
480	30758	NR	610	61041	NR	740	3235	NR	870	1628	NR	1000	3802	NR
485	31504	NR	615	58238	NR	745	2924	NR	875	1526	NR			

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Melanopic Flux vs. Wavelength



Melanopic Lumens: 3536.5 S/P: 0.84

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	1893	NR	490	34177	NR	620	54916	NR	750	2782	NR	880	1820	NR
365	1545	NR	495	38010	NR	625	51257	NR	755	2500	NR	885	2271	NR
370	1699	NR	500	42146	NR	630	47308	NR	760	2486	NR	890	1534	NR
375	1869	NR	505	46431	NR	635	44039	NR	765	2313	NR	895	1734	NR
380	1777	NR	510	49788	NR	640	39981	NR	770	1952	NR	900	1568	NR
385	1753	NR	515	52380	NR	645	36389	NR	775	1752	NR	905	1643	NR
390	1511	NR	520	54014	NR	650	32774	NR	780	1548	NR	910	1551	NR
395	1483	NR	525	54953	NR	655	29367	NR	785	1620	NR	915	1428	NR
400	1318	NR	530	56065	NR	660	26307	NR	790	1393	NR	920	1468	NR
405	1342	NR	535	57107	NR	665	23364	NR	795	1627	NR	925	1750	NR
410	1469	NR	540	58306	NR	670	20576	NR	800	1553	NR	930	1641	NR
415	2297	NR	545	59230	NR	675	17969	NR	805	1356	NR	935	1881	NR
420	3731	NR	550	60272	NR	680	15411	NR	810	1669	NR	940	2088	NR
425	6912	NR	555	61298	NR	685	13354	NR	815	1647	NR	945	1721	NR
430	12723	NR	560	62528	NR	690	11535	NR	820	1702	NR	950	1281	NR
435	22892	NR	565	63874	NR	695	9837	NR	825	1689	NR	955	2199	NR
440	39880	NR	570	64630	NR	700	8571	NR	830	1456	NR	960	1889	NR
445	68496	NR	575	65183	NR	705	7495	NR	835	1385	NR	965	707	NR
450	101099	NR	580	65979	NR	710	6588	NR	840	1748	NR	970	2458	NR
455	97717	NR	585	66701	NR	715	5938	NR	845	1548	NR	975	2097	NR
460	70276	NR	590	66508	NR	720	5289	NR	850	1920	NR	980	3285	NR
465	54311	NR	595	65934	NR	725	4630	NR	855	1663	NR	985	3054	NR
470	43940	NR	600	65218	NR	730	4073	NR	860	2052	NR	990	2145	NR
475	34008	NR	605	63482	NR	735	3717	NR	865	1849	NR	995	2463	NR
480	30758	NR	610	61041	NR	740	3235	NR	870	1628	NR	1000	3802	NR
485	31504	NR	615	58238	NR	745	2924	NR	875	1526	NR			

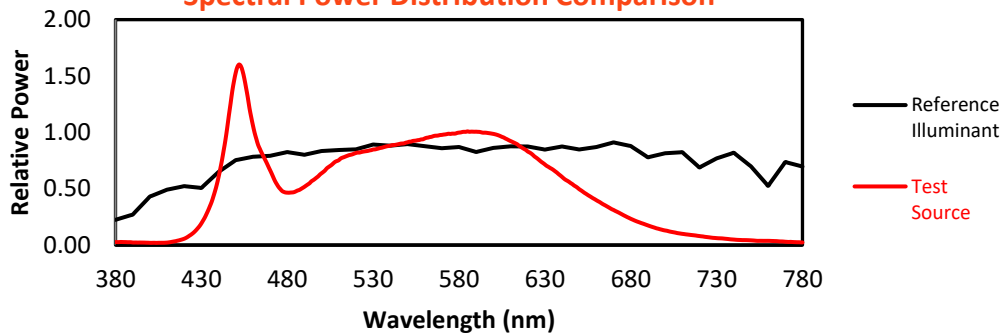
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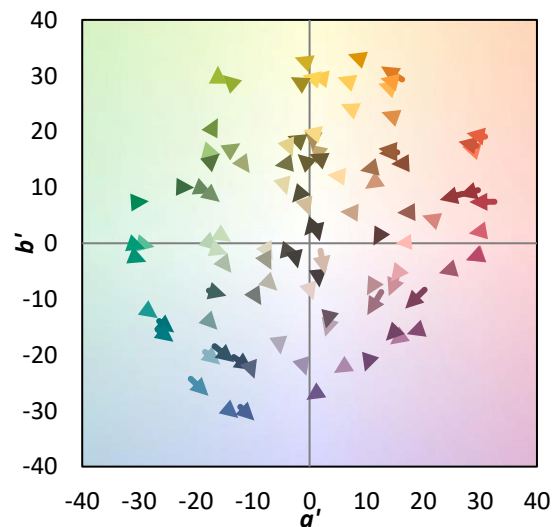
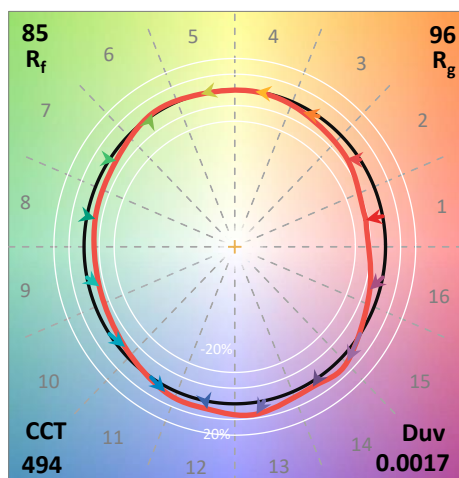
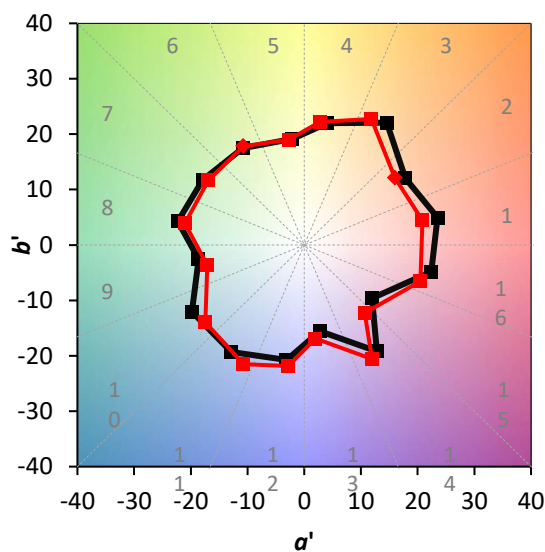
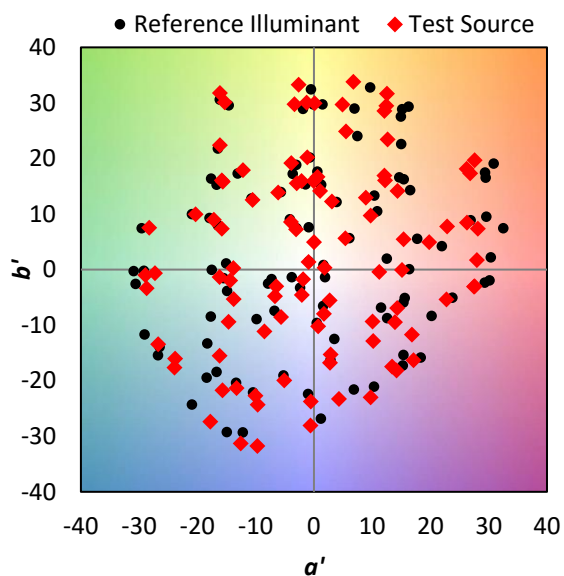
Summary

$R_f = 85.4$
 $R_g = 95.7$
 CIE $R_a = 85.1$
 $R_g = 16.8$

Spectral Power Distribution Comparison



Color Vector Graphics

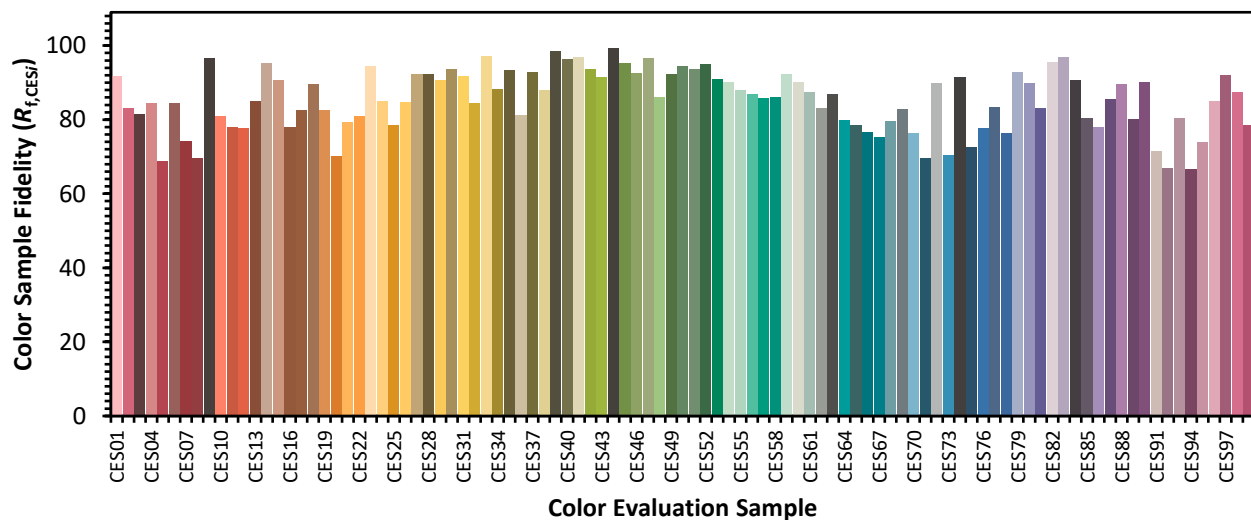


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Individual Sample Fidelity Index ($R_{f,i}$)

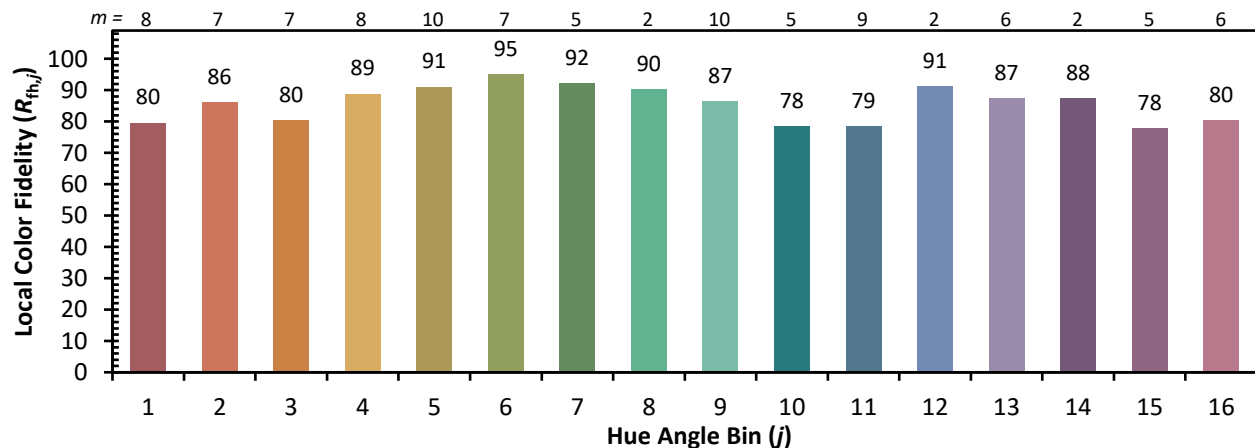
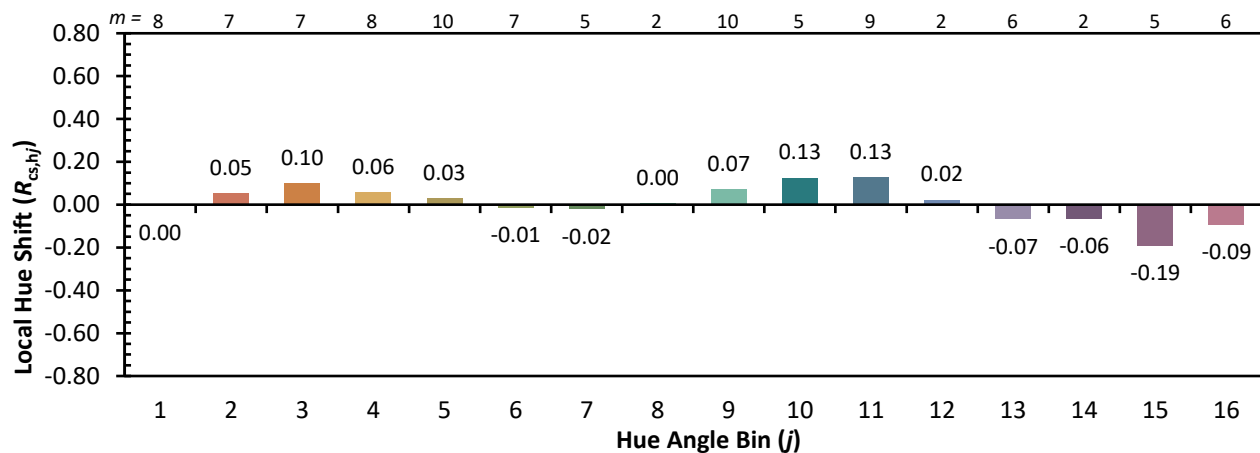
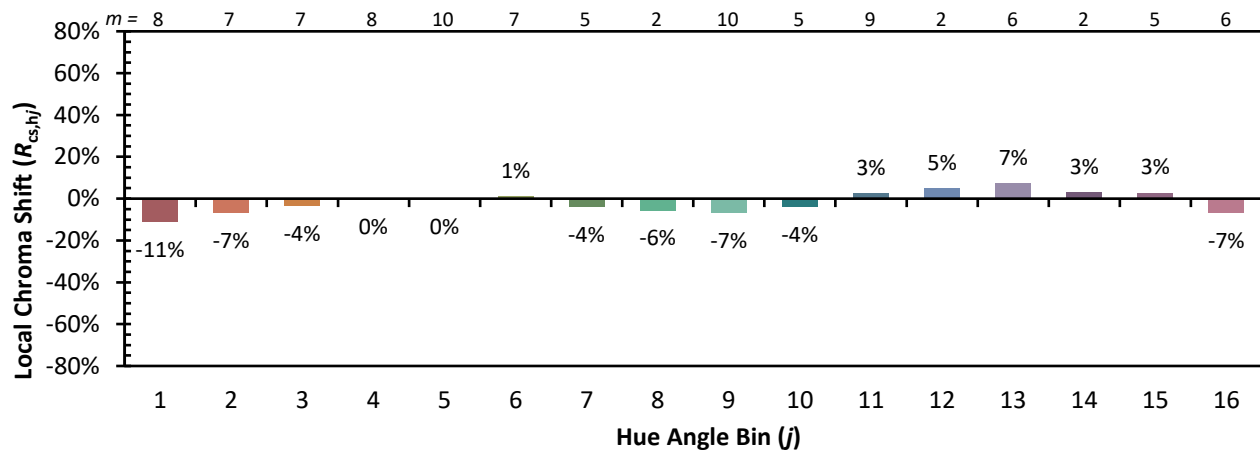
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CES02 = 60	CES27 = 92	CES52 = 95	CES77 = 83
CES03 = 31	CES28 = 92	CES53 = 91	CES78 = 76
CES04 = 69	CES29 = 91	CES54 = 90	CES79 = 93
CES05 = 47	CES30 = 93	CES55 = 88	CES80 = 90
CES06 = 50	CES31 = 92	CES56 = 87	CES81 = 83
CES07 = 40	CES32 = 84	CES57 = 86	CES82 = 96
CES08 = 39	CES33 = 97	CES58 = 86	CES83 = 97
CES09 = 29	CES34 = 88	CES59 = 92	CES84 = 91
CES10 = 73	CES35 = 93	CES60 = 90	CES85 = 80
CES11 = 56	CES36 = 81	CES61 = 87	CES86 = 78
CES12 = 62	CES37 = 93	CES62 = 83	CES87 = 86
CES13 = 42	CES38 = 88	CES63 = 87	CES88 = 90
CES14 = 74	CES39 = 98	CES64 = 80	CES89 = 80
CES15 = 71	CES40 = 96	CES65 = 78	CES90 = 90
CES16 = 46	CES41 = 97	CES66 = 77	CES91 = 71
CES17 = 49	CES42 = 93	CES67 = 75	CES92 = 67
CES18 = 56	CES43 = 92	CES68 = 79	CES93 = 80
CES19 = 70	CES44 = 99	CES69 = 83	CES94 = 66
CES20 = 64	CES45 = 95	CES70 = 76	CES95 = 74
CES21 = 85	CES46 = 93	CES71 = 70	CES96 = 85
CES22 = 77	CES47 = 97	CES72 = 90	CES97 = 92
CES23 = 91	CES48 = 86	CES73 = 70	CES98 = 87
CES24 = 90	CES49 = 92	CES74 = 91	CES99 = 78
CES25 = 71	CES50 = 94	CES75 = 73	



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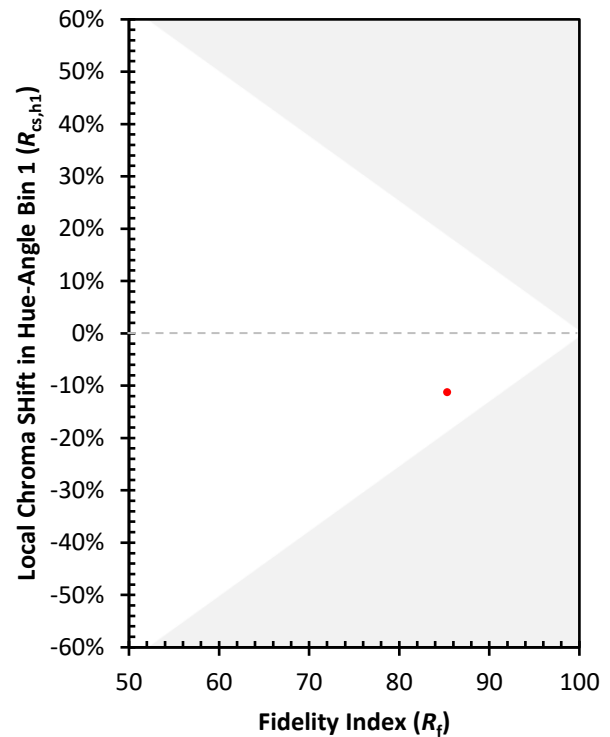
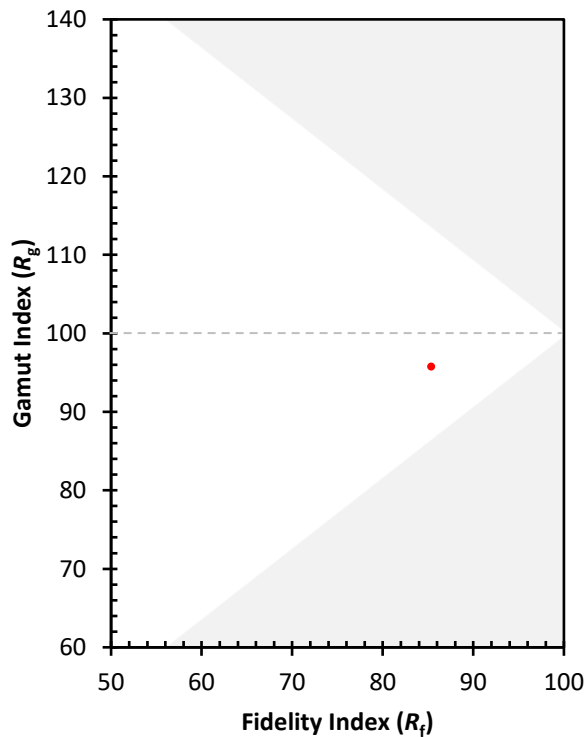
Color Rendition by Hue-Angle Bin



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Measure Comparisons



(END OF REPORT)