

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: HALO

Report Number: P995460

Luminaire Tested: **LTT409FSMB-930**

Issue Date: 06/09/2025



Test Information

Test Method: LM-79-08
Report Number: P995460
Test Lab: INNOVATION CENTER (G1)
Issue Date: 06/09/2025
Manufacturer: COOPER LIGHTING SOLUTIONS (FORMERLY EATON)
Product Line: HALO
Catalog Number: LTT409FSMB-930
Description: HALO LT BLACK TRIM HIGH LUMENS 4 inch 90 CRI COLOR SELECTABLE
FIXTURE
Light Source: 3000K CCT, 90 CRI LEDS
Ballast/Driver: ELECTRONIC DRIVER

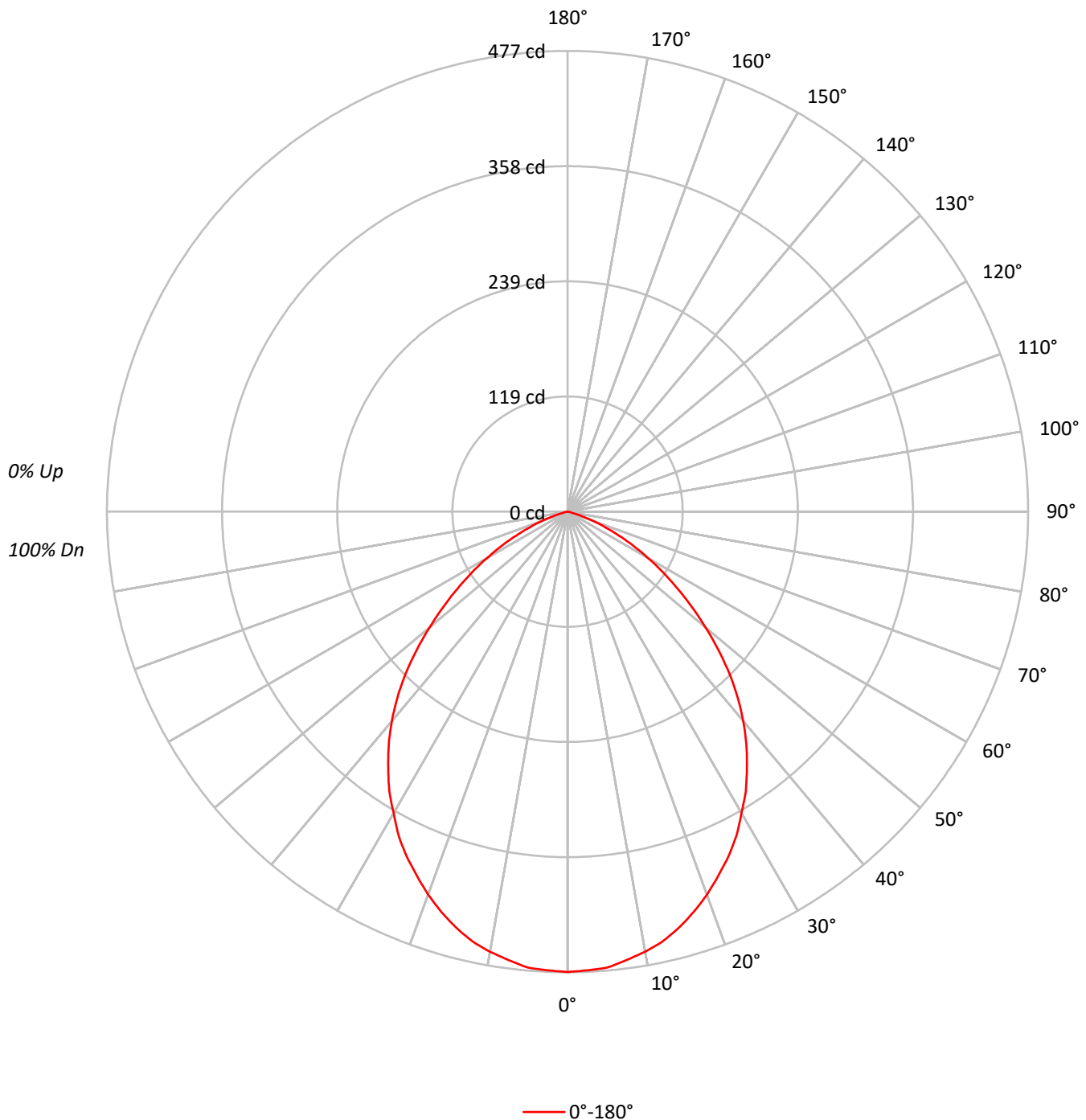
Summary

Lumens per Lamp: N/A
Luminaire Lumens: 929.5 lumens
Efficiency: N/A
Efficacy: 97.8 lumens/watt
Spacing Criteria (0/90/45): 1.14 / 1.14 / 1.22
Luminous Opening: Circular (Dia: 0.3' x H: 0')
CIE Type: Direct

Input Watts (W): 9.5
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: P995460
CATALOG NUMBER: LTT409FSMB-930

Luminous Intensity Polar Plot





TEST NUMBER: P995460

CATALOG NUMBER: LTT409FSMB-930

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	30	10
RCR																					
0	119	119	119	119		116	116	116	116		111	111	111		106	106	106		102	102	102
1	111	108	104	101		109	105	102	100		101	99	97		97	96	94		94	92	91
2	103	96	91	86		101	95	90	85		91	87	83		88	85	82		85	82	80
3	95	87	80	74		93	85	79	74		82	77	72		80	75	71		77	73	70
4	88	78	70	65		86	77	70	64		74	68	63		72	67	63		70	66	62
5	82	71	63	57		80	70	62	57		68	61	56		66	60	56		64	59	55
6	76	64	56	51		74	63	56	50		62	55	50		60	54	50		59	53	49
7	71	59	51	45		69	58	50	45		56	50	45		55	49	45		54	48	44
8	66	54	46	41		65	53	46	41		52	45	41		51	45	40		50	44	40
9	62	50	42	37		61	49	42	37		48	42	37		47	41	37		46	41	37
10	58	46	39	34		57	46	39	34		45	38	34		44	38	34		43	37	33

AVERAGE LUMINANCE (cd/sqm):

	0°
0°	72591
5°	72440
10°	71546
15°	70296
20°	68386
25°	66200
30°	63354
35°	60212
40°	56296
45°	51039
50°	44182
55°	36850
60°	29451
65°	21223
70°	12466
75°	4119
80°	0
85°	0



TEST NUMBER: P995460
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ZONAL LUMENS:

Zone	Lumens	% Fixture
0°-10°	44.8	4.8
10°-20°	125.4	13.5
20°-30°	181.1	19.5
30°-40°	202.2	21.8
40°-50°	181.8	19.6
50°-60°	125.0	13.5
60°-70°	59.2	6.4
70°-80°	9.9	1.1
80°-90°	0.0	0.0
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°	351.3	37.8
0°-40°	553.5	59.6
0°-60°	860.3	92.6
0°-90°	929.5	100.0
90°-120°	0.0	0.0
90°-150°	0.0	0.0
90°-180°	0.0	0.0
0°-180°	929.5	100.0

CANDELA DISTRIBUTION:

	0°	Flux
0°	477	
5°	474	45
15°	446	125
25°	394	181
35°	324	202
45°	237	182
55°	139	125
65°	59	59
75°	7	10
85°	0	0
90°	0	

TEST NUMBER: P995460
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CANDELA DISTRIBUTION (FULL):

0°	
0°	476.7
2.5°	475.3
5°	473.9
7.5°	468.3
10°	462.7
12.5°	455.7
15°	445.9
17.5°	434.6
20°	422.0
22.5°	408.0
25°	394.0
27.5°	378.6
30°	360.3
32.5°	343.5
35°	323.9
37.5°	304.3
40°	283.2
42.5°	260.8
45°	237.0
47.5°	211.7
50°	186.5
52.5°	162.6
55°	138.8
57.5°	117.8
60°	96.7
62.5°	77.1
65°	58.9
67.5°	42.1
70°	28.0
72.5°	15.4
75°	7.0
77.5°	1.4
80°	0.0
82.5°	0.0
85°	0.0
87.5°	0.0
90°	0.0

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CIE UGR TABLE:

Reflectances:											
Ceiling		0.7	0.7	0.5	0.5	0.3	0.7	0.7	0.5	0.5	0.3
Wall		0.5	0.3	0.5	0.3	0.3	0.5	0.3	0.5	0.3	0.3
Reference plane		0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2
Room dimensions		Viewed crosswise					Viewed endwise				
X=2H	Y=2H	23.66	25.08	24.02	25.40	25.71	23.66	25.08	24.02	25.40	25.71
	3H	24.12	25.38	24.49	25.71	26.07	24.12	25.38	24.49	25.71	26.07
	4H	24.09	25.27	24.49	25.62	26.00	24.09	25.27	24.49	25.62	26.00
	6H	24.02	25.10	24.43	25.47	25.86	24.02	25.10	24.43	25.47	25.86
	8H	23.98	25.01	24.41	25.40	25.80	23.98	25.01	24.41	25.40	25.80
	12H	23.94	24.92	24.38	25.31	25.74	23.94	24.92	24.38	25.31	25.74
4H	2H	23.88	25.06	24.28	25.41	25.79	23.88	25.06	24.28	25.41	25.79
	3H	24.40	25.35	24.81	25.76	26.16	24.40	25.35	24.81	25.76	26.16
	4H	24.37	25.22	24.80	25.64	26.08	24.37	25.22	24.80	25.64	26.08
	6H	24.30	25.03	24.76	25.48	25.94	24.30	25.03	24.76	25.48	25.94
	8H	24.25	24.93	24.71	25.38	25.85	24.25	24.93	24.71	25.38	25.85
	12H	24.21	24.81	24.69	25.29	25.77	24.21	24.81	24.69	25.29	25.77
8H	4H	24.28	24.96	24.74	25.41	25.88	24.28	24.96	24.74	25.41	25.88
	6H	24.19	24.75	24.69	25.24	25.72	24.19	24.75	24.69	25.24	25.72
	8H	24.13	24.63	24.65	25.14	25.63	24.13	24.63	24.65	25.14	25.63
	12H	24.09	24.53	24.60	25.02	25.59	24.09	24.53	24.60	25.02	25.59
12H	4H	24.24	24.84	24.72	25.33	25.80	24.24	24.84	24.72	25.33	25.80
	6H	24.13	24.63	24.65	25.14	25.63	24.13	24.63	24.65	25.14	25.63
	8H	24.09	24.53	24.60	25.02	25.59	24.09	24.53	24.60	25.02	25.59

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

Report Prepared for

Cooper Lighting Solutions

Halo Recessed

Report Number: SP2-2504-410-2

Test Date: 05/22/2025

Luminaire Tested: LTT5607FSMBSS-3000K

Data in this report applies to families of products including LTT5607FSMBSS-3000K

The results of this test have not been influenced by sources from within Eaton or from external interests.

Report Generated By FNC07603 / LDUCLS01DT447
Version: v7.04

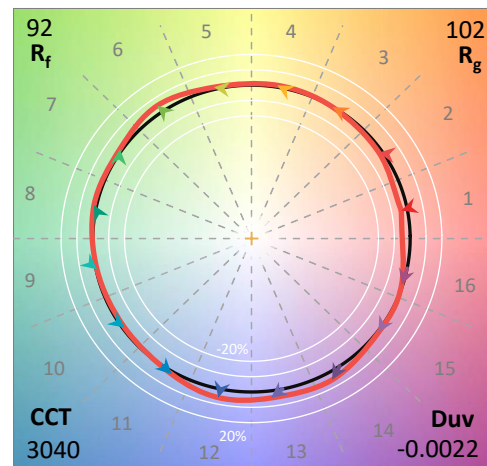
Test Information

Test Method: LM-79-2019
 Report Number: SP2-2504-410-2
 Test Lab: COOPER LIGHTING SOLUTIONS
 Photometer: SP2 - 165CM SPHERE
 Measurement Geometry: 4π
 Issue Date: 05/22/2025
 Manufacturer: COOPER LIGHTING SOLUTIONS
 Product Line: Halo Recessed
 Catalog Number: **LTT5607FSMBSS-3000K**
 Description: HALO LT BLACK LED TRIM 6 INCH SMOOTH

Spectral Parameters

CCT (K): 3040
 CIE u' : 0.2500
 CIE v' : 0.5175
 Duv: -0.0022
 CIE x: 0.4310
 CIE y: 0.3966
 CIE z: 0.1724
 Peak Wavelength (nm): 630
 Dominant Wavelength (nm): 583
 Purity: 48.39354
 R_f: 91.6
 R_g: 102.1

CRI (Ra): 95.5
 R1: 98.4
 R2: 97.7
 R3: 94.8
 R4: 96.3
 R5: 97.4
 R6: 96.1
 R7: 94.0
 R8: 89.3
 R9: 73.2
 R10: 91.8
 R11: 95.6
 R12: 84.4
 R13: 98.0
 R14: 95.5
 R15: 95.6



Test Conditions

Stabilization Time: 20M
 Operation Time: 1H 20M
 Sphere Temperature (°C): 24.7

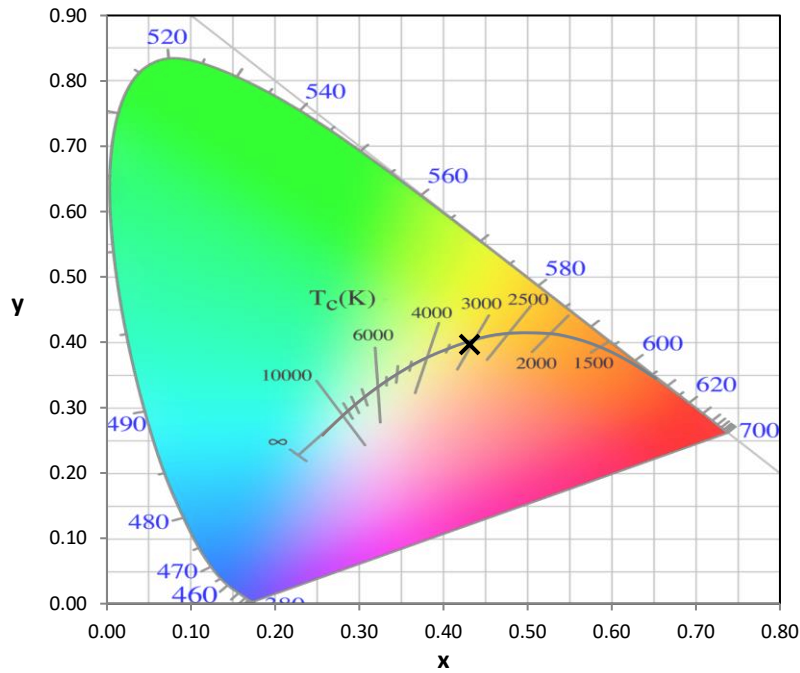
REPORT NUMBER: SP2-2504-410-2

Measurement and Test Equipment			
Instrument	Identification Number	Calibration Date	Calibration Due Date
Photometer	IN2187	1/6/2025	7/6/2025
Power Meter	INXT2011002	1/21/2025	1/21/2026
AC Power Source	IN0458	10/22/2024	10/22/2025
DC Power Source	IN0212	10/22/2024	10/22/2025
Sphere Thermometer	IN4036B	10/22/2024	10/22/2025
Room Thermometer	IN0046	10/22/2024	10/22/2025

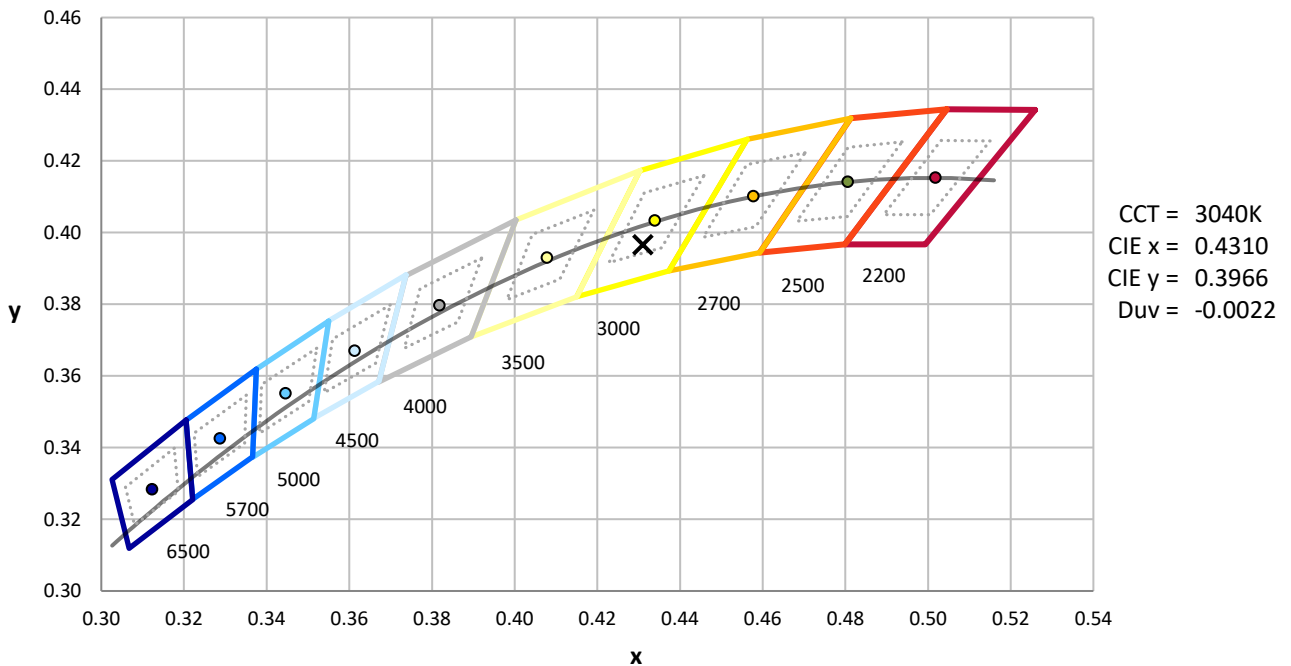
Sample Number	Condition	Description
P2504-410-LM.1	Good	HALO LT BLACK LED TRIM 6 INCH SMOOTH

REPORT NUMBER: SP2-2504-410-2

CIE 1931 Chromaticity Diagram



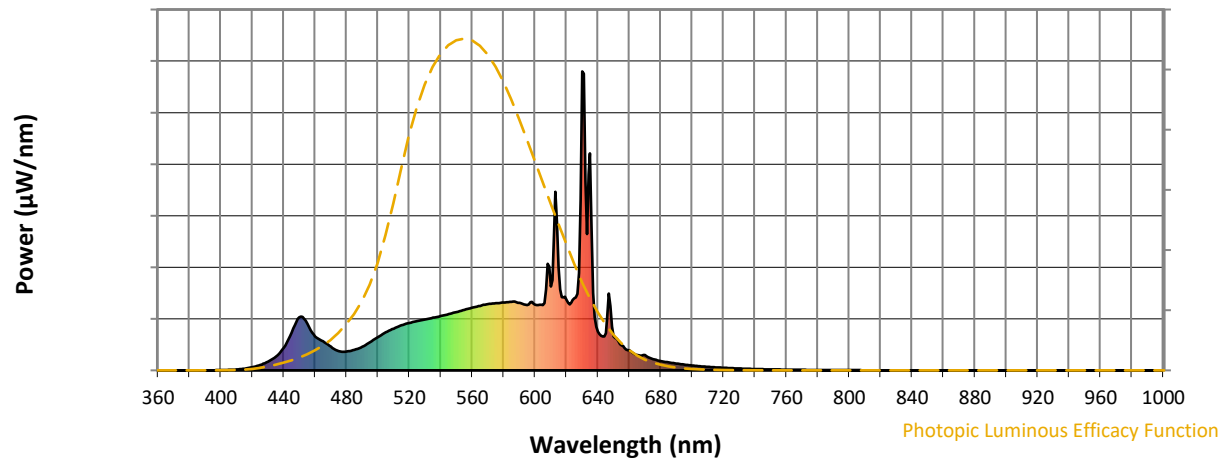
CIE 1931 Chromaticity Diagram with 2017 ANSI 7-Step and 4-Step Quadrangles



Point lies inside the ANSI 3000K 4-step quadrangle

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Photopic Flux vs. Wavelength

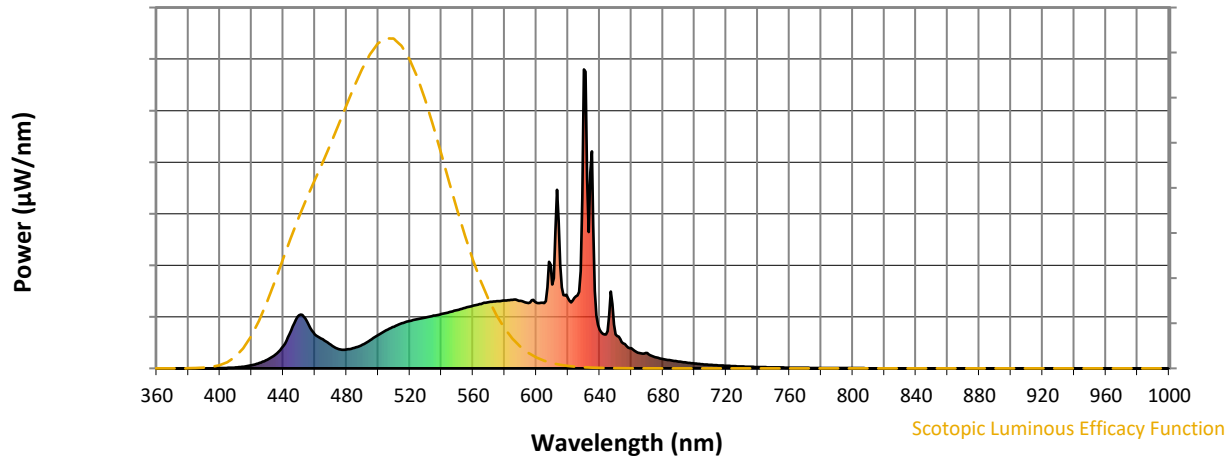


Photopic Lumens: NR

λ (nm)	Power W ^λ /nm	Lumens (φ/nm)	λ (nm)	Power W ^λ /nm	Lumens (φ/nm)	λ (nm)	Power W ^λ /nm	Lumens (φ/nm)	λ (nm)	Power W ^λ /nm	Lumens (φ/nm)	λ (nm)	Power W ^λ /nm	Lumens (φ/nm)
360	0	NR	490	79	NR	620	236	NR	750	3	NR	880	0	NR
365	0	NR	495	94	NR	625	241	NR	755	3	NR	885	0	NR
370	0	NR	500	111	NR	630	1000	NR	760	2	NR	890	0	NR
375	0	NR	505	127	NR	635	725	NR	765	2	NR	895	0	NR
380	0	NR	510	140	NR	640	130	NR	770	2	NR	900	0	NR
385	0	NR	515	151	NR	645	124	NR	775	2	NR	905	0	NR
390	0	NR	520	159	NR	650	114	NR	780	1	NR	910	0	NR
395	1	NR	525	165	NR	655	84	NR	785	1	NR	915	0	NR
400	1	NR	530	171	NR	660	67	NR	790	1	NR	920	0	NR
405	2	NR	535	176	NR	665	52	NR	795	1	NR	925	0	NR
410	3	NR	540	182	NR	670	51	NR	800	1	NR	930	0	NR
415	6	NR	545	188	NR	675	38	NR	805	1	NR	935	0	NR
420	10	NR	550	195	NR	680	31	NR	810	0	NR	940	0	NR
425	18	NR	555	202	NR	685	27	NR	815	0	NR	945	0	NR
430	29	NR	560	209	NR	690	23	NR	820	0	NR	950	0	NR
435	46	NR	565	216	NR	695	19	NR	825	0	NR	955	0	NR
440	75	NR	570	221	NR	700	16	NR	830	0	NR	960	0	NR
445	126	NR	575	224	NR	705	14	NR	835	0	NR	965	0	NR
450	177	NR	580	227	NR	710	12	NR	840	0	NR	970	0	NR
455	156	NR	585	230	NR	715	10	NR	845	0	NR	975	0	NR
460	114	NR	590	225	NR	720	9	NR	850	0	NR	980	0	NR
465	97	NR	595	219	NR	725	7	NR	855	0	NR	985	0	NR
470	79	NR	600	220	NR	730	6	NR	860	0	NR	990	0	NR
475	64	NR	605	219	NR	735	5	NR	865	0	NR	995	0	NR
480	63	NR	610	281	NR	740	5	NR	870	0	NR	1000	0	NR
485	69	NR	615	345	NR	745	4	NR	875	0	NR			

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Scotopic Flux vs. Wavelength



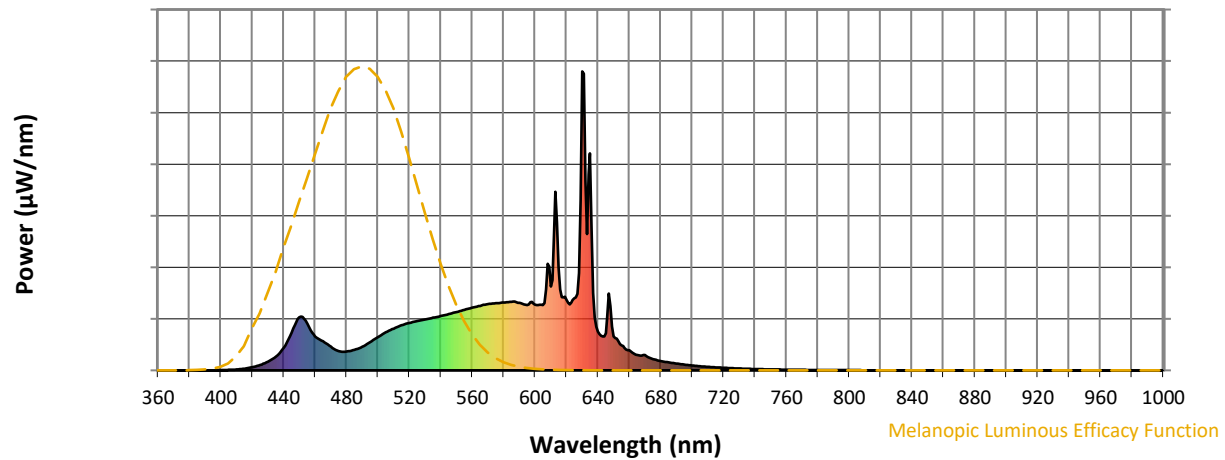
Scotopic Lumens: NR

S/P: 1.45

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	79	NR	620	236	NR	750	3	NR	880	0	NR
365	0	NR	495	94	NR	625	241	NR	755	3	NR	885	0	NR
370	0	NR	500	111	NR	630	1000	NR	760	2	NR	890	0	NR
375	0	NR	505	127	NR	635	725	NR	765	2	NR	895	0	NR
380	0	NR	510	140	NR	640	130	NR	770	2	NR	900	0	NR
385	0	NR	515	151	NR	645	124	NR	775	2	NR	905	0	NR
390	0	NR	520	159	NR	650	114	NR	780	1	NR	910	0	NR
395	1	NR	525	165	NR	655	84	NR	785	1	NR	915	0	NR
400	1	NR	530	171	NR	660	67	NR	790	1	NR	920	0	NR
405	2	NR	535	176	NR	665	52	NR	795	1	NR	925	0	NR
410	3	NR	540	182	NR	670	51	NR	800	1	NR	930	0	NR
415	6	NR	545	188	NR	675	38	NR	805	1	NR	935	0	NR
420	10	NR	550	195	NR	680	31	NR	810	0	NR	940	0	NR
425	18	NR	555	202	NR	685	27	NR	815	0	NR	945	0	NR
430	29	NR	560	209	NR	690	23	NR	820	0	NR	950	0	NR
435	46	NR	565	216	NR	695	19	NR	825	0	NR	955	0	NR
440	75	NR	570	221	NR	700	16	NR	830	0	NR	960	0	NR
445	126	NR	575	224	NR	705	14	NR	835	0	NR	965	0	NR
450	177	NR	580	227	NR	710	12	NR	840	0	NR	970	0	NR
455	156	NR	585	230	NR	715	10	NR	845	0	NR	975	0	NR
460	114	NR	590	225	NR	720	9	NR	850	0	NR	980	0	NR
465	97	NR	595	219	NR	725	7	NR	855	0	NR	985	0	NR
470	79	NR	600	220	NR	730	6	NR	860	0	NR	990	0	NR
475	64	NR	605	219	NR	735	5	NR	865	0	NR	995	0	NR
480	63	NR	610	281	NR	740	5	NR	870	0	NR	1000	0	NR
485	69	NR	615	345	NR	745	4	NR	875	0	NR			

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Melanopic Flux vs. Wavelength



Melanopic Lumens: NR

M/P: 2.84

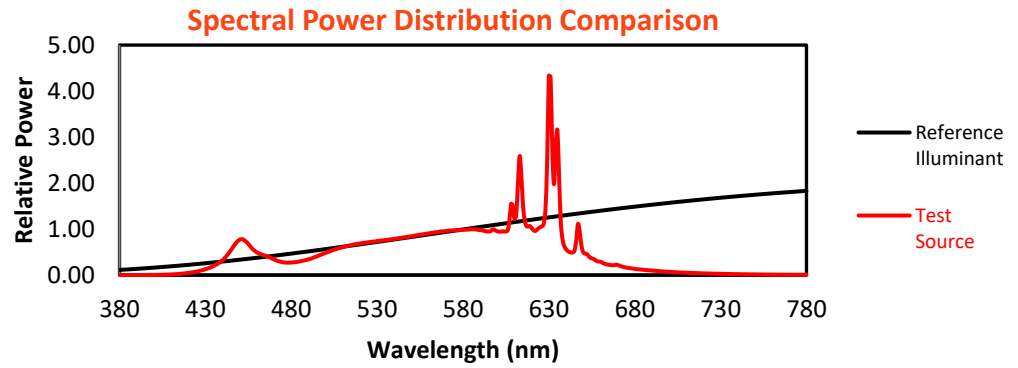
λ (nm)	Power W ^λ /nm	Lumens (φ/nm)	λ (nm)	Power W ^λ /nm	Lumens (φ/nm)	λ (nm)	Power W ^λ /nm	Lumens (φ/nm)	λ (nm)	Power W ^λ /nm	Lumens (φ/nm)	λ (nm)	Power W ^λ /nm	Lumens (φ/nm)
360	0	NR	490	79	NR	620	236	NR	750	3	NR	880	0	NR
365	0	NR	495	94	NR	625	241	NR	755	3	NR	885	0	NR
370	0	NR	500	111	NR	630	1000	NR	760	2	NR	890	0	NR
375	0	NR	505	127	NR	635	725	NR	765	2	NR	895	0	NR
380	0	NR	510	140	NR	640	130	NR	770	2	NR	900	0	NR
385	0	NR	515	151	NR	645	124	NR	775	2	NR	905	0	NR
390	0	NR	520	159	NR	650	114	NR	780	1	NR	910	0	NR
395	1	NR	525	165	NR	655	84	NR	785	1	NR	915	0	NR
400	1	NR	530	171	NR	660	67	NR	790	1	NR	920	0	NR
405	2	NR	535	176	NR	665	52	NR	795	1	NR	925	0	NR
410	3	NR	540	182	NR	670	51	NR	800	1	NR	930	0	NR
415	6	NR	545	188	NR	675	38	NR	805	1	NR	935	0	NR
420	10	NR	550	195	NR	680	31	NR	810	0	NR	940	0	NR
425	18	NR	555	202	NR	685	27	NR	815	0	NR	945	0	NR
430	29	NR	560	209	NR	690	23	NR	820	0	NR	950	0	NR
435	46	NR	565	216	NR	695	19	NR	825	0	NR	955	0	NR
440	75	NR	570	221	NR	700	16	NR	830	0	NR	960	0	NR
445	126	NR	575	224	NR	705	14	NR	835	0	NR	965	0	NR
450	177	NR	580	227	NR	710	12	NR	840	0	NR	970	0	NR
455	156	NR	585	230	NR	715	10	NR	845	0	NR	975	0	NR
460	114	NR	590	225	NR	720	9	NR	850	0	NR	980	0	NR
465	97	NR	595	219	NR	725	7	NR	855	0	NR	985	0	NR
470	79	NR	600	220	NR	730	6	NR	860	0	NR	990	0	NR
475	64	NR	605	219	NR	735	5	NR	865	0	NR	995	0	NR
480	63	NR	610	281	NR	740	5	NR	870	0	NR	1000	0	NR
485	69	NR	615	345	NR	745	4	NR	875	0	NR			

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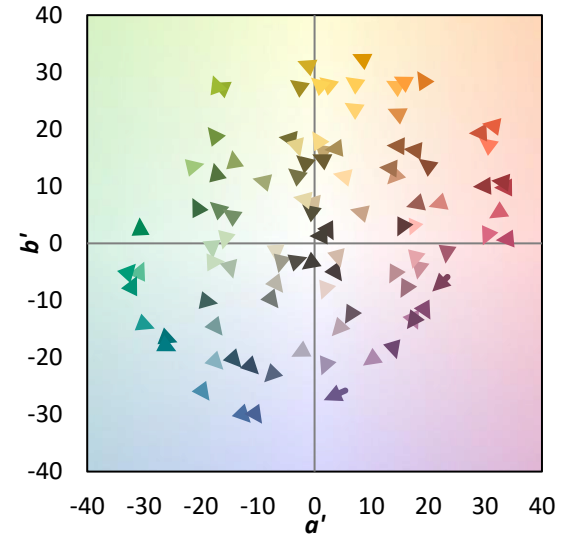
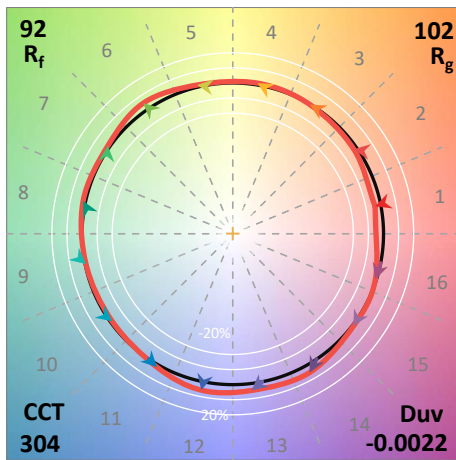
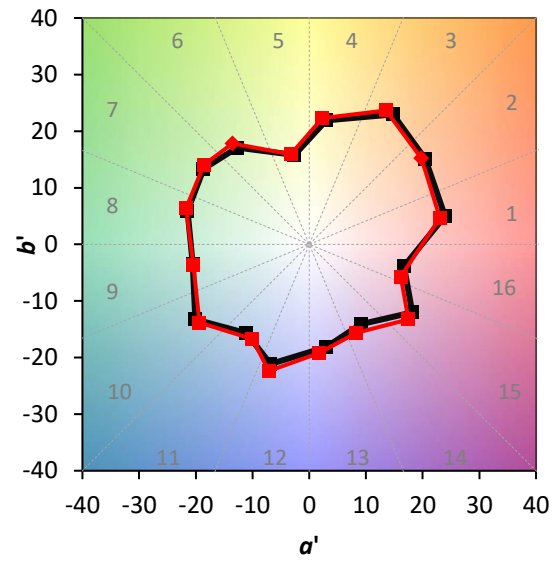
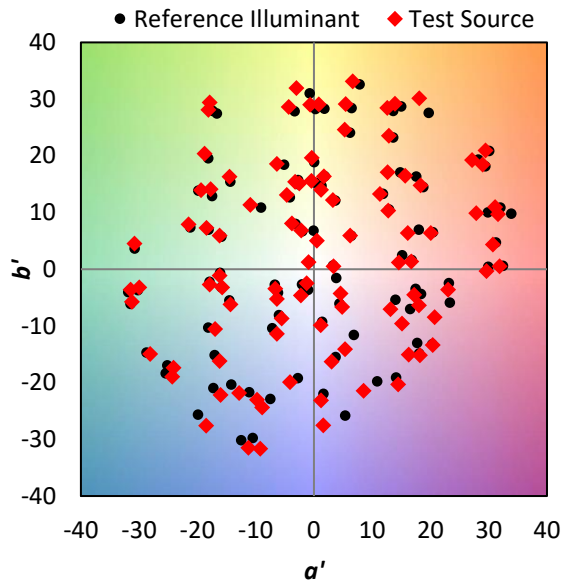
TM-30-18

Summary

$R_f = 91.6$
 $R_g = 102.1$
 $CIE R_a = 95.5$
 $R_9 = 73.2$

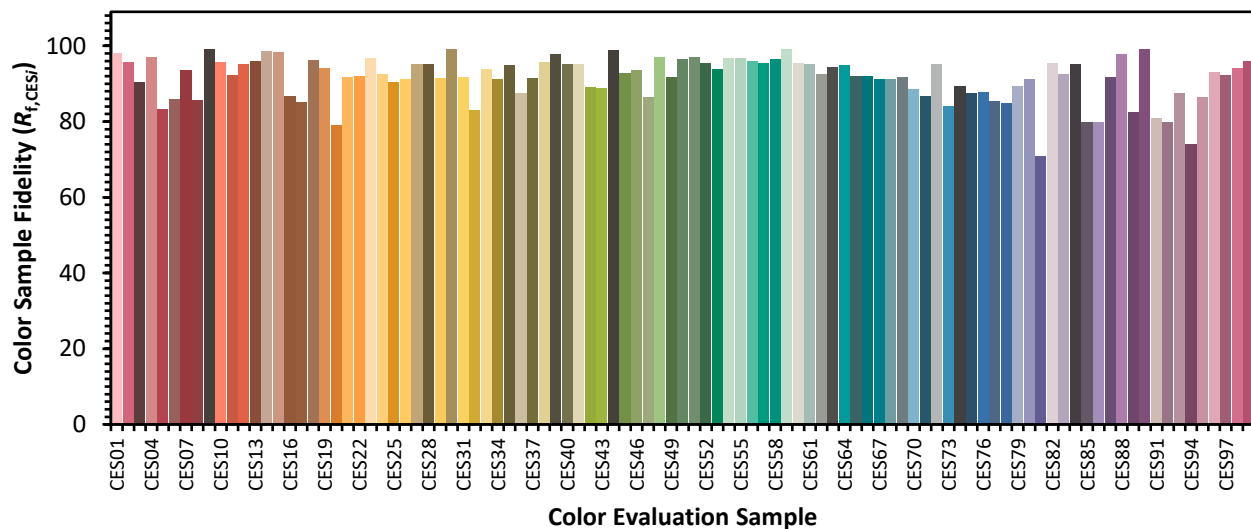


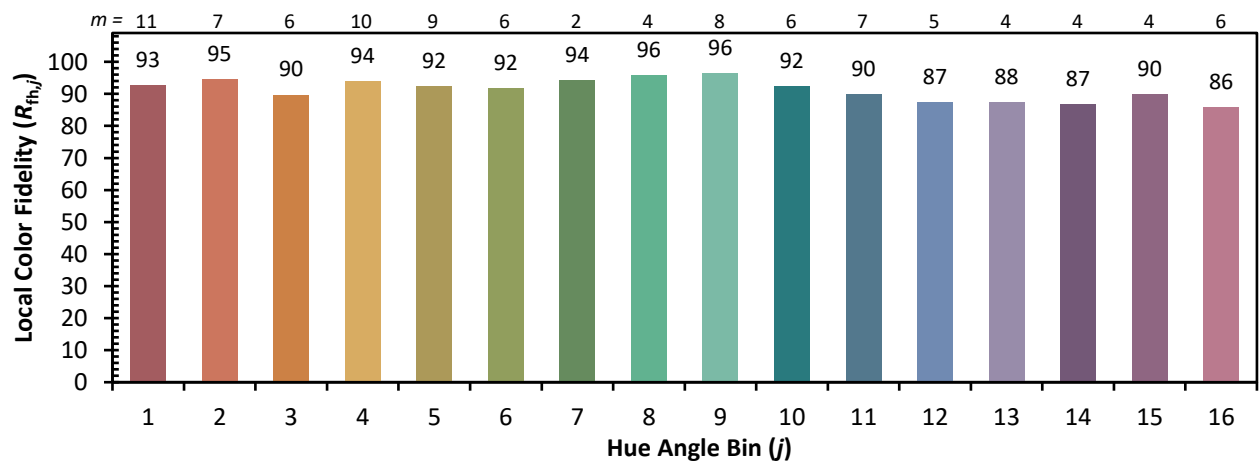
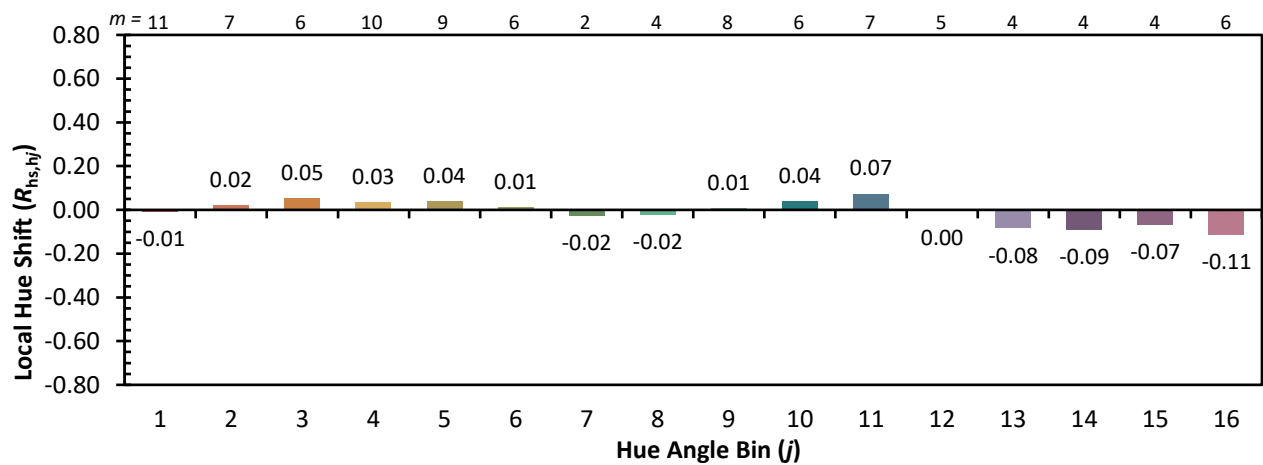
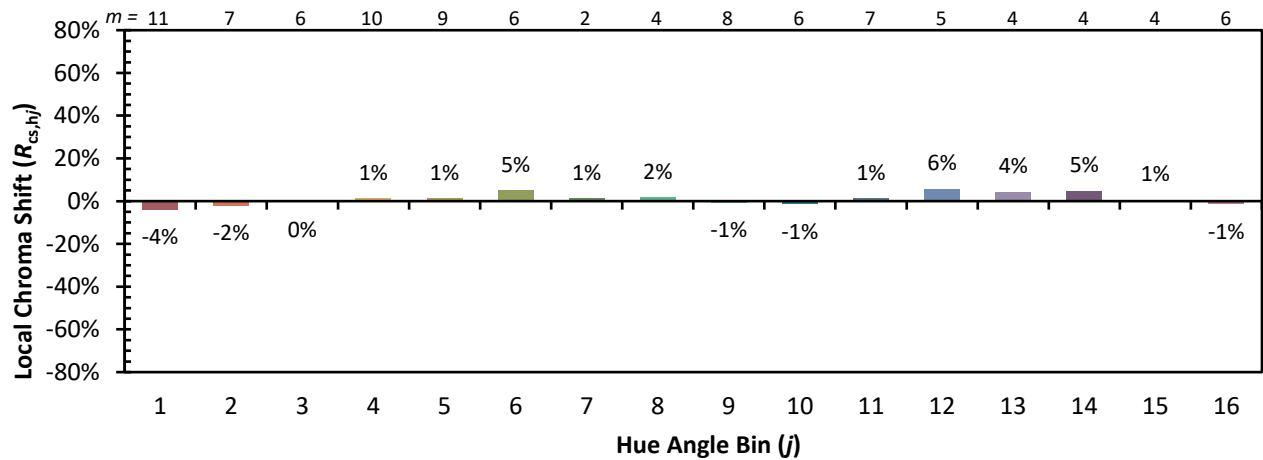
Color Vector Graphics



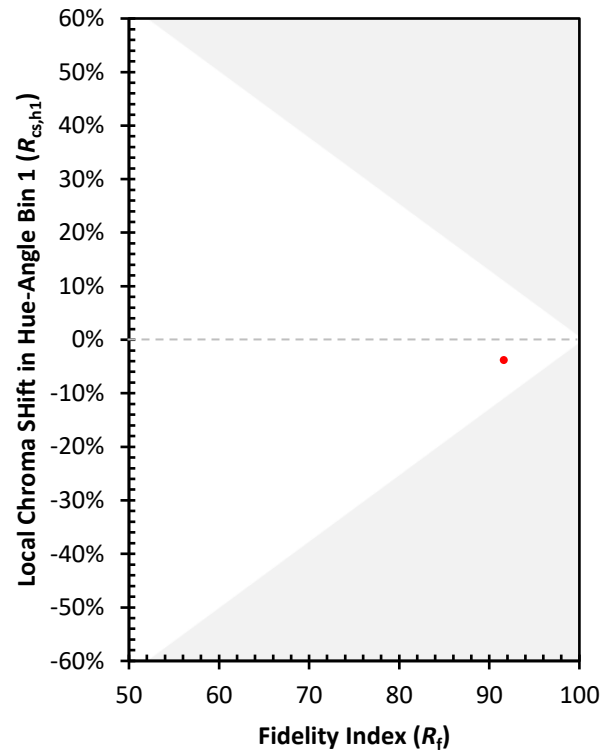
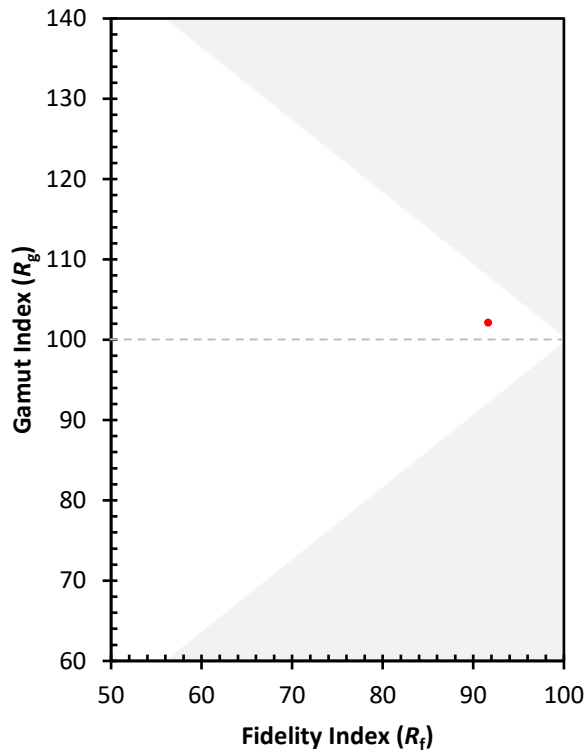
Individual Sample Fidelity Index ($R_{f,i}$)

CES01 = 86	CES26 = 91	CES51 = 97	CES76 = 88
CES02 = 63	CES27 = 95	CES52 = 96	CES77 = 85
CES03 = 32	CES28 = 95	CES53 = 94	CES78 = 85
CES04 = 70	CES29 = 92	CES54 = 97	CES79 = 89
CES05 = 51	CES30 = 99	CES55 = 97	CES80 = 91
CES06 = 51	CES31 = 92	CES56 = 96	CES81 = 71
CES07 = 44	CES32 = 83	CES57 = 96	CES82 = 95
CES08 = 42	CES33 = 94	CES58 = 96	CES83 = 93
CES09 = 29	CES34 = 91	CES59 = 99	CES84 = 95
CES10 = 76	CES35 = 95	CES60 = 95	CES85 = 80
CES11 = 58	CES36 = 88	CES61 = 95	CES86 = 80
CES12 = 65	CES37 = 91	CES62 = 93	CES87 = 92
CES13 = 44	CES38 = 96	CES63 = 94	CES88 = 98
CES14 = 74	CES39 = 98	CES64 = 95	CES89 = 83
CES15 = 72	CES40 = 95	CES65 = 92	CES90 = 99
CES16 = 48	CES41 = 95	CES66 = 92	CES91 = 81
CES17 = 50	CES42 = 89	CES67 = 91	CES92 = 80
CES18 = 57	CES43 = 89	CES68 = 91	CES93 = 87
CES19 = 72	CES44 = 99	CES69 = 92	CES94 = 74
CES20 = 67	CES45 = 93	CES70 = 89	CES95 = 86
CES21 = 86	CES46 = 94	CES71 = 87	CES96 = 93
CES22 = 79	CES47 = 87	CES72 = 95	CES97 = 92
CES23 = 92	CES48 = 97	CES73 = 84	CES98 = 94
CES24 = 90	CES49 = 92	CES74 = 89	CES99 = 96
CES25 = 72	CES50 = 97	CES75 = 88	



Color Rendition by Hue-Angle Bin


Measure Comparisons



(END OF REPORT)