

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

Test Report Prepared for

Cooper Lighting Solutions

Brand: HALO

Report Number: P1046657

Luminaire Tested: FMNL809FS5-(black trim)-927

Issue Date: 07/03/2025

Tested By:

Approved By:



NVLAP Lab Code: 200050-0

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Test Information

Test Method: LM-79-2019
Report Number: P1046657
Test Lab: Cooper lighting solutions
Issue Date: 07/03/2025
Manufacturer: COOPER LIGHTING SOLUTIONS
Product Line: HALO
Catalog Number: FMNL809FS5-(black trim)-927
Description: HALO 8 inch 90 CRI COLOR SELECTABLE flush mount Black Trim FIXTURE with night light
Light Source: 2700K CCT, 90 CRI LEDS
Ballast/Driver: -

Summary

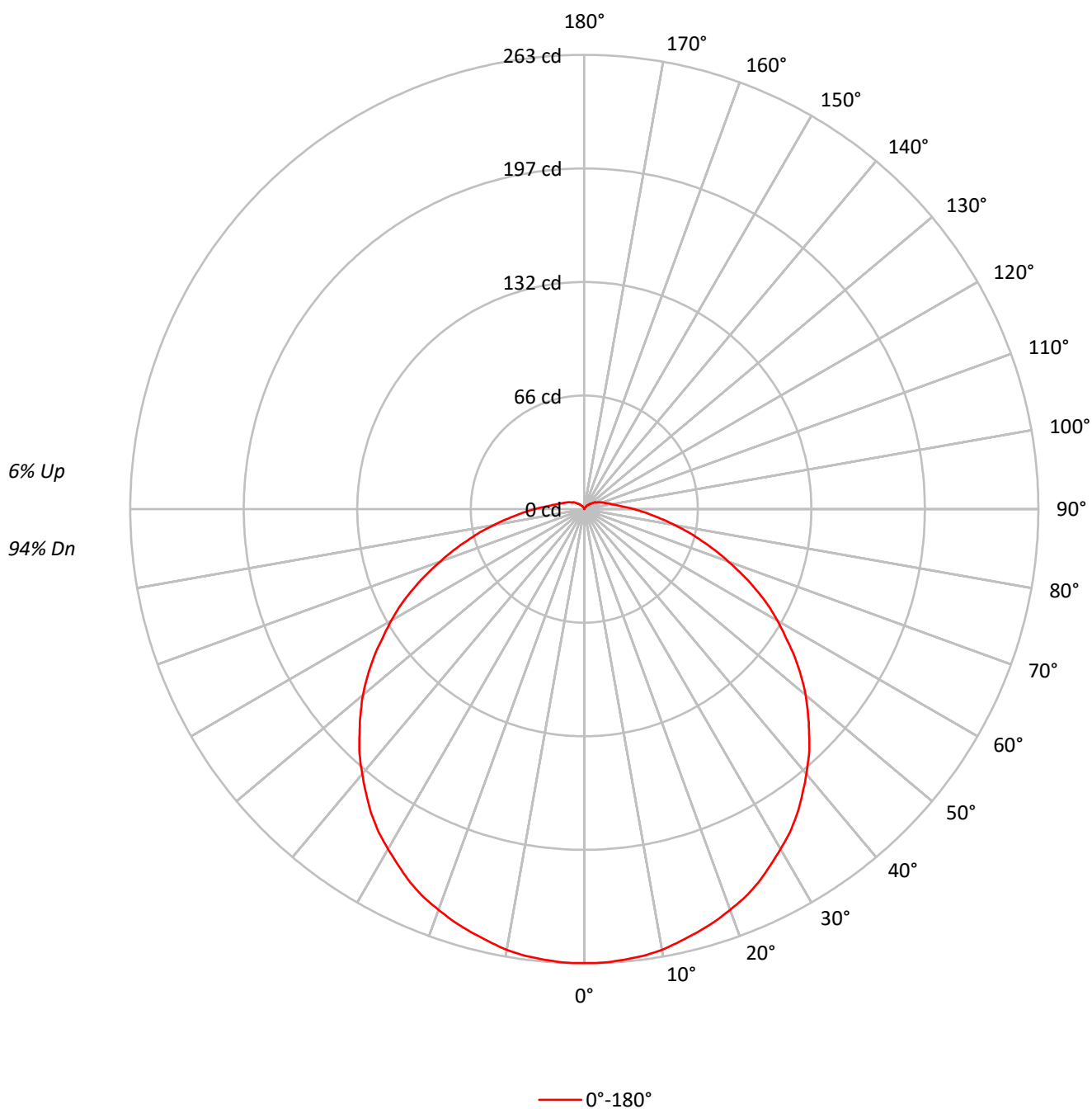
Lumens per Lamp: N/A
Luminaire Lumens: 899.9 lumens
Efficiency: N/A
Efficacy: 86.5 lumens/watt
Spacing Criteria (0/90/45): 1.29 / 1.29 / 1.41
Luminous Opening: Circular (Dia: 0.7' x H: 0')
CIE Type: Direct

Input Watts (W): 10.4
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: 24 FT

Measurement and Test Equipment			
Instrument	Identification Number	Calibration Date	Calibration Due Date
Photometer	P3	10/30/2015	4/30/2016
Power Meter	IN0214	1/12/2016	1/12/2017
AC Power Source	IN0062	1/12/2016	1/12/2017
DC Power Supply	--	--	--
Room Thermometer	IN0145	1/13/2016	1/13/2017

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CATALOG NUMBER: FMNL809FS5-(black trim)-927

Luminous Intensity Polar Plot



TEST NUMBER: P1046657

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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	0		
RCR																				
0	118	118	118	118	114	114	114	114	108	108	108	102	102	102	96	96	96	94		
1	106	100	95	91	102	97	93	89	92	88	85	87	84	81	82	80	78	75		
2	96	87	79	73	92	84	77	72	79	74	69	75	71	66	71	67	64	61		
3	87	76	67	60	84	73	66	59	70	63	57	66	60	55	62	58	54	51		
4	79	67	57	50	76	65	56	50	62	54	48	58	52	47	55	50	46	43		
5	73	59	50	43	70	58	49	43	55	47	42	52	46	41	50	44	39	37		
6	67	53	44	37	65	52	43	37	50	42	36	47	41	35	45	39	35	32		
7	62	48	39	33	60	47	39	33	45	37	32	43	36	31	41	35	31	28		
8	58	44	35	29	56	43	35	29	41	34	28	39	33	28	38	32	27	25		
9	54	40	32	26	52	39	31	26	38	31	26	36	30	25	35	29	25	23		
10	50	37	29	24	49	36	29	24	35	28	23	34	27	23	32	26	22	20		

AVERAGE LUMINANCE (cd/sqm):

	0°
0°	7350
5°	7353
10°	7359
15°	7340
20°	7349
25°	7360
30°	7341
35°	7344
40°	7306
45°	7286
50°	7284
55°	7251
60°	7222
65°	7240
70°	7262
75°	7575
80°	8585
85°	12612

MAXIMUM LUMINANCE 45°-90°:

Horizontal Angle: 0°

Vertical Angle: 87.5°

Luminance: 21609 cd/sqm

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ZONAL LUMENS:

Zone	Lumens	% Fixture
0°-10°	24.9	2.8
10°-20°	71.6	8.0
20°-30°	109.9	12.2
30°-40°	134.4	14.9
40°-50°	142.2	15.8
50°-60°	132.8	14.8
60°-70°	108.2	12.0
70°-80°	74.5	8.3
80°-90°	43.6	4.8
90°-100°	23.5	2.6
100°-110°	14.3	1.6
110°-120°	9.3	1.0
120°-130°	5.8	0.6
130°-140°	3.1	0.3
140°-150°	1.3	0.2
150°-160°	0.4	0.0
160°-170°	0.0	0.0
170°-180°	0.0	0.0
0°-30°	206.4	22.9
0°-40°	340.8	37.9
0°-60°	615.9	68.4
0°-90°	842.2	93.6
90°-120°	47.1	5.2
90°-150°	57.3	6.4
90°-180°	58.0	6.4
0°-180°	899.9	100.0

CANDELA DISTRIBUTION:

	0°	Flux
0°	263	
5°	262	25
15°	254	72
25°	238	110
35°	215	134
45°	184	142
55°	149	133
65°	109	108
75°	70	75
85°	39	35
90°	29	16
95°	21	16
105°	13	14
115°	9	9
125°	6	6
135°	4	3
145°	2	1
155°	1	0
165°	0	0
175°	0	0
180°	0	

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CANDELA DISTRIBUTION (FULL):

0°	
0°	262.8
2.5°	262.8
5°	261.9
7.5°	260.9
10°	259.1
12.5°	256.3
15°	253.5
17.5°	250.6
20°	246.9
22.5°	243.2
25°	238.5
27.5°	232.9
30°	227.3
32.5°	221.7
35°	215.1
37.5°	207.6
40°	200.1
42.5°	192.7
45°	184.2
47.5°	175.8
50°	167.4
52.5°	158.1
55°	148.7
57.5°	138.4
60°	129.1
62.5°	119.7
65°	109.4
67.5°	99.1
70°	88.8
72.5°	79.5
75°	70.1
77.5°	61.7
80°	53.3
82.5°	45.8
85°	39.3
87.5°	33.7
90°	29.0
92.5°	24.3
95°	20.6
97.5°	18.7
100°	15.9
102.5°	15.0
105°	13.1
107.5°	12.2
110°	11.2

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CANDELA DISTRIBUTION (continued):

	0°
112.5°	10.3
115°	9.4
117.5°	8.4
120°	7.5
122.5°	7.5
125°	6.5
127.5°	5.6
130°	4.7
132.5°	4.7
135°	3.7
137.5°	3.7
140°	2.8
142.5°	2.8
145°	1.9
147.5°	1.9
150°	0.9
152.5°	0.9
155°	0.9
157.5°	0.9
160°	0.0
162.5°	0.0
165°	0.0
167.5°	0.0
170°	0.0
172.5°	0.0
175°	0.0
177.5°	0.0
180°	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	18.5	20.0	19.0	20.5	21.0	18.5	20.0	19.0	20.5	21.0
	3H	20.6	22.0	21.1	22.5	23.0	20.6	22.0	21.1	22.5	23.0
	4H	21.5	22.9	22.0	23.3	23.9	21.5	22.9	22.0	23.3	23.9
	6H	22.4	23.7	22.9	24.2	24.7	22.4	23.7	22.9	24.2	24.7
	8H	22.9	24.0	23.4	24.6	25.1	22.9	24.0	23.4	24.6	25.1
	12H	23.3	24.5	23.9	25.0	25.6	23.3	24.5	23.9	25.0	25.6
4H	2H	19.2	20.5	19.7	21.0	21.5	19.2	20.5	19.7	21.0	21.5
	3H	21.5	22.7	22.1	23.2	23.7	21.5	22.7	22.1	23.2	23.7
	4H	22.6	23.7	23.2	24.2	24.8	22.6	23.7	23.2	24.2	24.8
	6H	23.7	24.6	24.3	25.2	25.8	23.7	24.6	24.3	25.2	25.8
	8H	24.2	25.1	24.8	25.7	26.3	24.2	25.1	24.8	25.7	26.3
	12H	24.8	25.6	25.4	26.2	26.8	24.8	25.6	25.4	26.2	26.8
8H	4H	23.1	23.9	23.6	24.5	25.1	23.1	23.9	23.6	24.5	25.1
	6H	24.4	25.1	25.0	25.7	26.3	24.4	25.1	25.0	25.7	26.3
	8H	25.0	25.7	25.6	26.3	26.9	25.0	25.7	25.6	26.3	26.9
	12H	25.8	26.4	26.4	27.0	27.7	25.8	26.4	26.4	27.0	27.7
12H	4H	23.2	24.0	23.7	24.5	25.2	23.2	24.0	23.7	24.5	25.2
	6H	24.5	25.2	25.1	25.8	26.4	24.5	25.2	25.1	25.8	26.4
	8H	25.3	25.9	25.9	26.5	27.2	25.3	25.9	25.9	26.5	27.2

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

Report Prepared for

Cooper Lighting Solutions

Halo Home

Report Number: SP1-2506-468-1

Test Date: 07/08/2025

Luminaire Tested: FMNL809FS5-2700K

Data in this report applies to families of products including FMNL809FS5-2700K

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

Report Generated By FNC07603 / LDUCLS01DT446
Version: v7.04

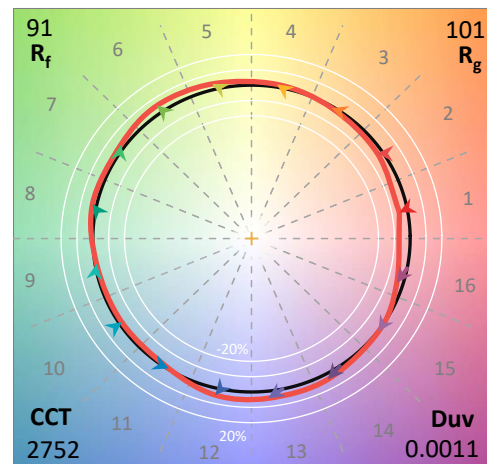
Test Information

Test Method: LM-79-2019
 Report Number: SP1-2506-468-1
 Test Lab: COOPER LIGHTING SOLUTIONS
 Photometer: SP1 - 76IN SPHERE
 Measurement Geometry: 4π
 Issue Date: 07/10/2025
 Manufacturer: COOPER LIGHTING SOLUTIONS
 Product Line: Halo Home
 Catalog Number: **FMNL809F55-2700K**
 Description: HALO FLUSH MOUNT NIGHT LIGHT 8 INCH

Spectral Parameters

CCT (K): 2752
 CIE u' : 0.2599
 CIE v' : 0.5280
 Duv: 0.0011
 CIE x: 0.4576
 CIE y: 0.4131
 CIE z: 0.1293
 Peak Wavelength (nm): 630
 Dominant Wavelength (nm): 583
 Purity: 61.35604
 R_f: 91.2
 R_g: 101.1

CRI (Ra): 93.9
 R1: 95.5
 R2: 96.0
 R3: 96.0
 R4: 96.1
 R5: 95.1
 R6: 97.4
 R7: 92.3
 R8: 82.8
 R9: 58.8
 R10: 89.6
 R11: 96.3
 R12: 88.3
 R13: 95.2
 R14: 96.3
 R15: 89.8



Test Conditions

Stabilization Time: 28M
 Operation Time: 1H 28M
 Sphere Temperature (°C): 24.0

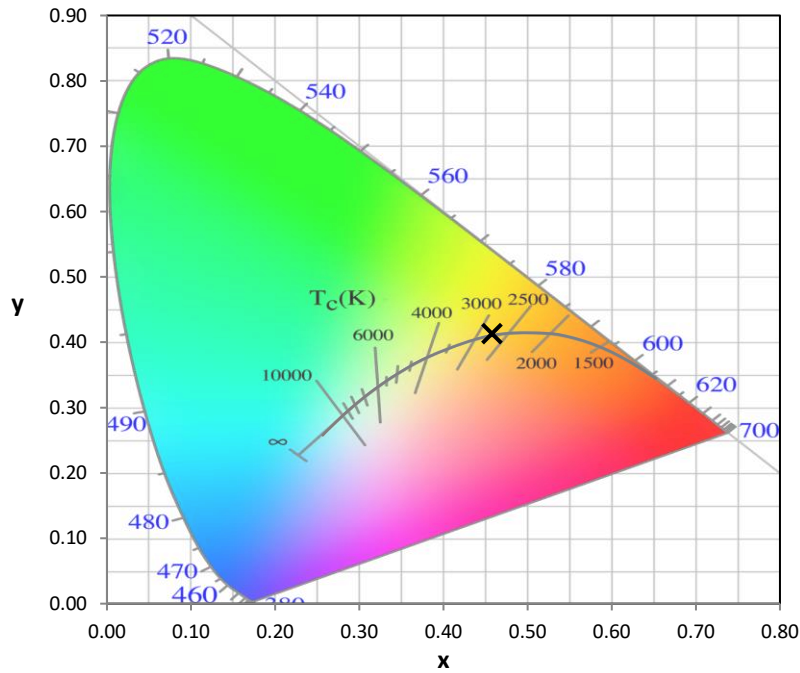
REPORT NUMBER: SP1-2506-468-1

Measurement and Test Equipment			
Instrument	Identification Number	Calibration Date	Calibration Due Date
Photometer	76INCH SPHERE IN0058	6/16/2025	12/16/2025
Power Meter	XITRON INXT2011004	1/21/2025	1/21/2026
AC Power Source	CHROMA 61603 IN0063	10/22/2024	10/22/2025
DC Power Source	AGILENT E3634A IN0208	10/22/2024	10/22/2025
Sphere Thermometer	ONSET IN0085	10/22/2024	10/22/2025
Room Thermometer	ONSET IN0046	10/22/2024	10/22/2025

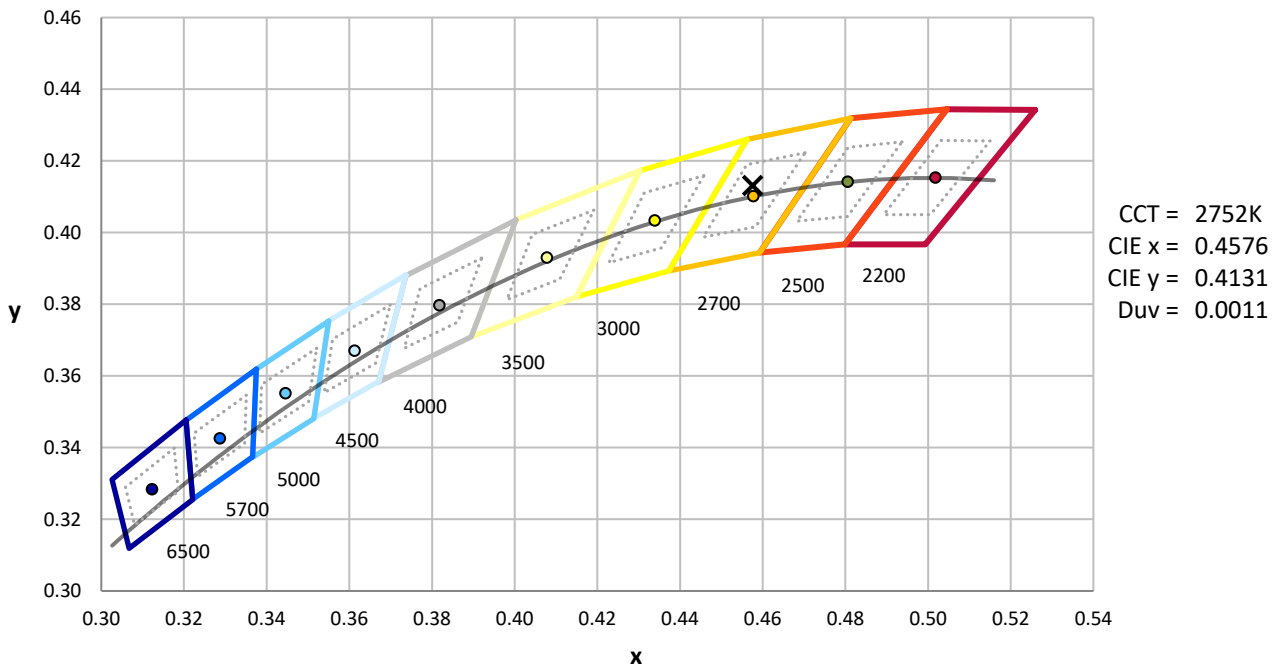
Sample Number	Condition	Description
P2506-468-LM.1	Good	HALO FLUSH MOUNT NIGHT LIGHT 8 INCH

REPORT NUMBER: SP1-2506-468-1

CIE 1931 Chromaticity Diagram



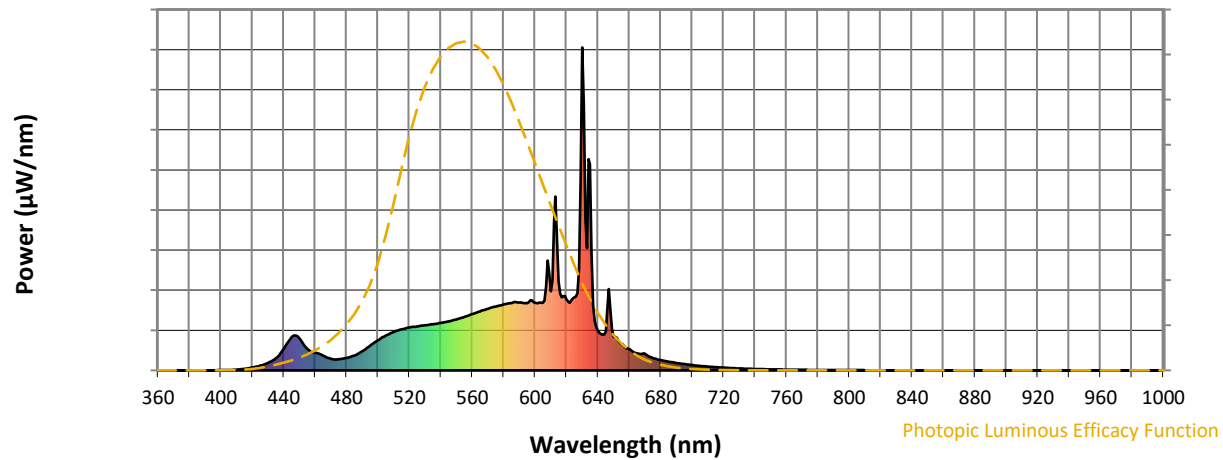
CIE 1931 Chromaticity Diagram with 2017 ANSI 7-Step and 4-Step Quadrangles



Point lies inside the ANSI 2700K 4-step quadrangle

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Photopic Flux vs. Wavelength

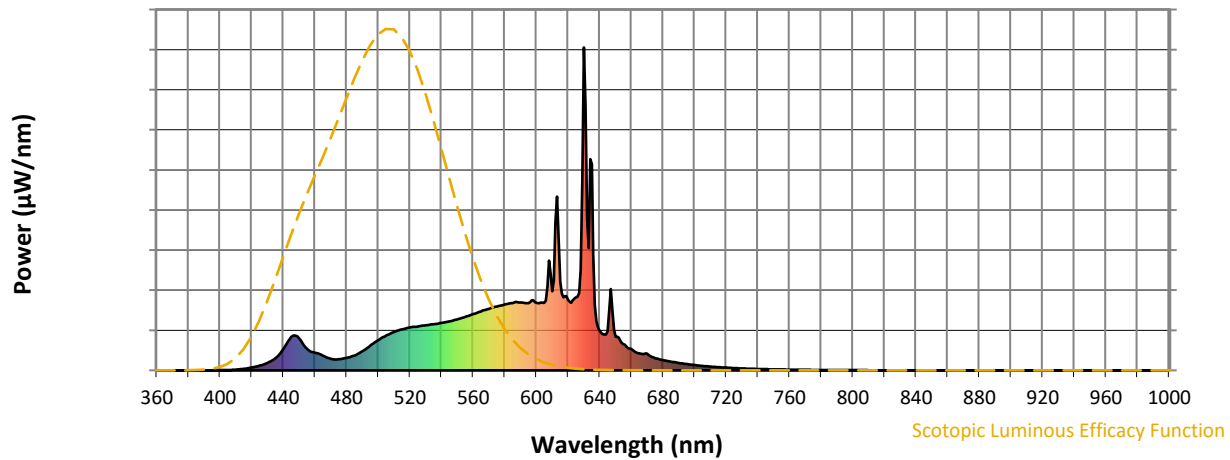


Photopic Lumens: NR

λ (nm)	Power $\text{W}^{\wedge}/\text{nm}$	Lumens (ϕ/nm)	λ (nm)	Power $\text{W}^{\wedge}/\text{nm}$	Lumens (ϕ/nm)	λ (nm)	Power $\text{W}^{\wedge}/\text{nm}$	Lumens (ϕ/nm)	λ (nm)	Power $\text{W}^{\wedge}/\text{nm}$	Lumens (ϕ/nm)	λ (nm)	Power $\text{W}^{\wedge}/\text{nm}$	Lumens (ϕ/nm)
360	0	NR	490	59	NR	620	219	NR	750	3	NR	880	0	NR
365	0	NR	495	76	NR	625	226	NR	755	3	NR	885	0	NR
370	0	NR	500	93	NR	630	1000	NR	760	2	NR	890	0	NR
375	0	NR	505	108	NR	635	639	NR	765	2	NR	895	0	NR
380	0	NR	510	119	NR	640	123	NR	770	2	NR	900	0	NR
385	0	NR	515	127	NR	645	121	NR	775	1	NR	905	0	NR
390	0	NR	520	133	NR	650	104	NR	780	1	NR	910	0	NR
395	0	NR	525	136	NR	655	82	NR	785	1	NR	915	0	NR
400	1	NR	530	139	NR	660	66	NR	790	1	NR	920	0	NR
405	1	NR	535	143	NR	665	52	NR	795	1	NR	925	0	NR
410	2	NR	540	147	NR	670	51	NR	800	1	NR	930	0	NR
415	5	NR	545	151	NR	675	38	NR	805	1	NR	935	0	NR
420	9	NR	550	158	NR	680	32	NR	810	1	NR	940	0	NR
425	14	NR	555	166	NR	685	27	NR	815	0	NR	945	0	NR
430	23	NR	560	174	NR	690	23	NR	820	0	NR	950	0	NR
435	38	NR	565	183	NR	695	20	NR	825	0	NR	955	0	NR
440	66	NR	570	191	NR	700	16	NR	830	0	NR	960	0	NR
445	103	NR	575	198	NR	705	14	NR	835	0	NR	965	0	NR
450	99	NR	580	204	NR	710	12	NR	840	0	NR	970	0	NR
455	66	NR	585	208	NR	715	10	NR	845	0	NR	975	0	NR
460	55	NR	590	210	NR	720	8	NR	850	0	NR	980	0	NR
465	46	NR	595	208	NR	725	7	NR	855	0	NR	985	0	NR
470	36	NR	600	209	NR	730	6	NR	860	0	NR	990	0	NR
475	34	NR	605	209	NR	735	5	NR	865	0	NR	995	0	NR
480	38	NR	610	245	NR	740	4	NR	870	0	NR	1000	0	NR
485	46	NR	615	276	NR	745	4	NR	875	0	NR			

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Scotopic Flux vs. Wavelength



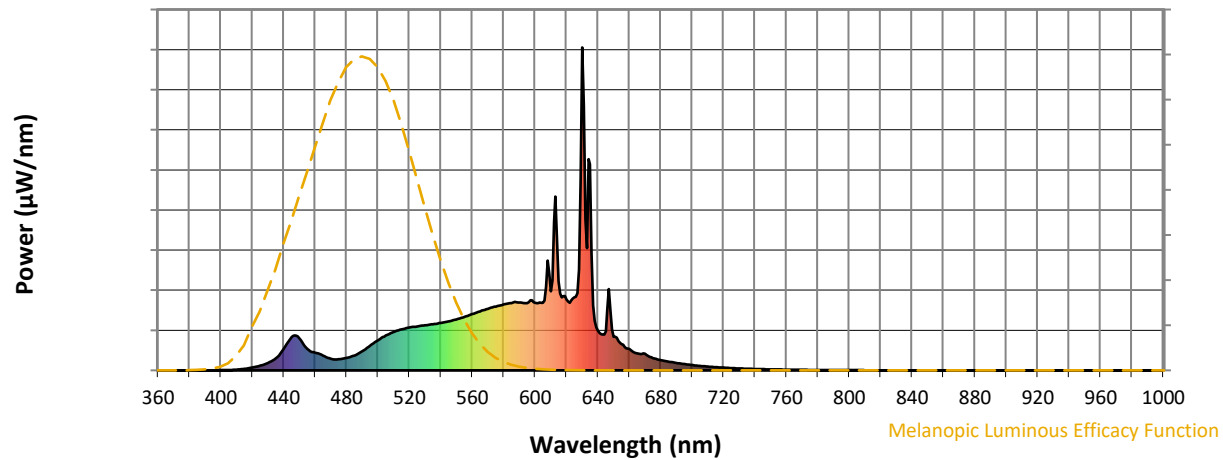
Scotopic Lumens: NR

S/P: 1.29

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	59	NR	620	219	NR	750	3	NR	880	0	NR
365	0	NR	495	76	NR	625	226	NR	755	3	NR	885	0	NR
370	0	NR	500	93	NR	630	1000	NR	760	2	NR	890	0	NR
375	0	NR	505	108	NR	635	639	NR	765	2	NR	895	0	NR
380	0	NR	510	119	NR	640	123	NR	770	2	NR	900	0	NR
385	0	NR	515	127	NR	645	121	NR	775	1	NR	905	0	NR
390	0	NR	520	133	NR	650	104	NR	780	1	NR	910	0	NR
395	0	NR	525	136	NR	655	82	NR	785	1	NR	915	0	NR
400	1	NR	530	139	NR	660	66	NR	790	1	NR	920	0	NR
405	1	NR	535	143	NR	665	52	NR	795	1	NR	925	0	NR
410	2	NR	540	147	NR	670	51	NR	800	1	NR	930	0	NR
415	5	NR	545	151	NR	675	38	NR	805	1	NR	935	0	NR
420	9	NR	550	158	NR	680	32	NR	810	1	NR	940	0	NR
425	14	NR	555	166	NR	685	27	NR	815	0	NR	945	0	NR
430	23	NR	560	174	NR	690	23	NR	820	0	NR	950	0	NR
435	38	NR	565	183	NR	695	20	NR	825	0	NR	955	0	NR
440	66	NR	570	191	NR	700	16	NR	830	0	NR	960	0	NR
445	103	NR	575	198	NR	705	14	NR	835	0	NR	965	0	NR
450	99	NR	580	204	NR	710	12	NR	840	0	NR	970	0	NR
455	66	NR	585	208	NR	715	10	NR	845	0	NR	975	0	NR
460	55	NR	590	210	NR	720	8	NR	850	0	NR	980	0	NR
465	46	NR	595	208	NR	725	7	NR	855	0	NR	985	0	NR
470	36	NR	600	209	NR	730	6	NR	860	0	NR	990	0	NR
475	34	NR	605	209	NR	735	5	NR	865	0	NR	995	0	NR
480	38	NR	610	245	NR	740	4	NR	870	0	NR	1000	0	NR
485	46	NR	615	276	NR	745	4	NR	875	0	NR			

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Melanopic Flux vs. Wavelength



Melanopic Lumens: NR

M/P: 2.41

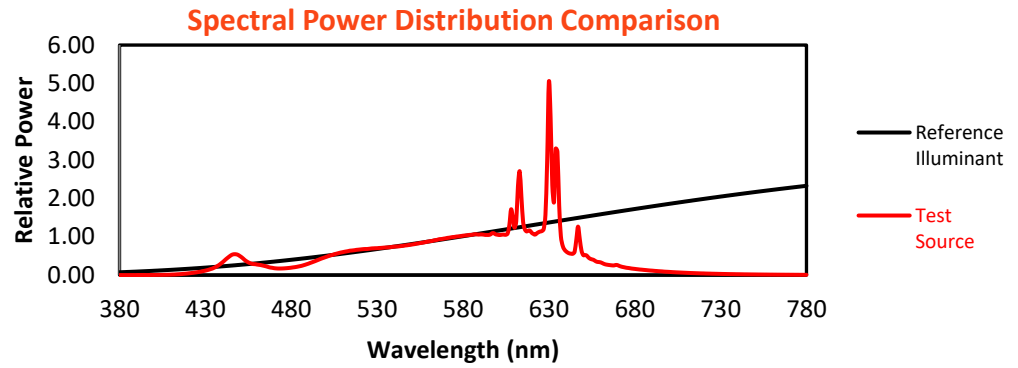
λ (nm)	Power W [^] /nm	Lumens (φ/nm)	λ (nm)	Power W [^] /nm	Lumens (φ/nm)	λ (nm)	Power W [^] /nm	Lumens (φ/nm)	λ (nm)	Power W [^] /nm	Lumens (φ/nm)	λ (nm)	Power W [^] /nm	Lumens (φ/nm)
360	0	NR	490	59	NR	620	219	NR	750	3	NR	880	0	NR
365	0	NR	495	76	NR	625	226	NR	755	3	NR	885	0	NR
370	0	NR	500	93	NR	630	1000	NR	760	2	NR	890	0	NR
375	0	NR	505	108	NR	635	639	NR	765	2	NR	895	0	NR
380	0	NR	510	119	NR	640	123	NR	770	2	NR	900	0	NR
385	0	NR	515	127	NR	645	121	NR	775	1	NR	905	0	NR
390	0	NR	520	133	NR	650	104	NR	780	1	NR	910	0	NR
395	0	NR	525	136	NR	655	82	NR	785	1	NR	915	0	NR
400	1	NR	530	139	NR	660	66	NR	790	1	NR	920	0	NR
405	1	NR	535	143	NR	665	52	NR	795	1	NR	925	0	NR
410	2	NR	540	147	NR	670	51	NR	800	1	NR	930	0	NR
415	5	NR	545	151	NR	675	38	NR	805	1	NR	935	0	NR
420	9	NR	550	158	NR	680	32	NR	810	1	NR	940	0	NR
425	14	NR	555	166	NR	685	27	NR	815	0	NR	945	0	NR
430	23	NR	560	174	NR	690	23	NR	820	0	NR	950	0	NR
435	38	NR	565	183	NR	695	20	NR	825	0	NR	955	0	NR
440	66	NR	570	191	NR	700	16	NR	830	0	NR	960	0	NR
445	103	NR	575	198	NR	705	14	NR	835	0	NR	965	0	NR
450	99	NR	580	204	NR	710	12	NR	840	0	NR	970	0	NR
455	66	NR	585	208	NR	715	10	NR	845	0	NR	975	0	NR
460	55	NR	590	210	NR	720	8	NR	850	0	NR	980	0	NR
465	46	NR	595	208	NR	725	7	NR	855	0	NR	985	0	NR
470	36	NR	600	209	NR	730	6	NR	860	0	NR	990	0	NR
475	34	NR	605	209	NR	735	5	NR	865	0	NR	995	0	NR
480	38	NR	610	245	NR	740	4	NR	870	0	NR	1000	0	NR
485	46	NR	615	276	NR	745	4	NR	875	0	NR			

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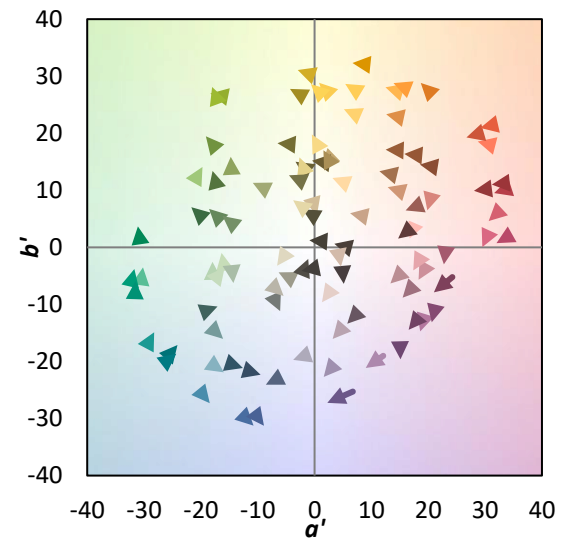
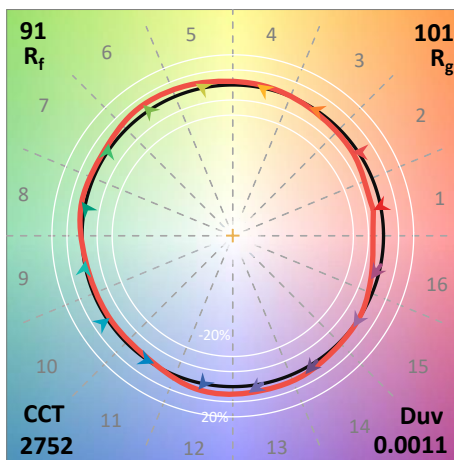
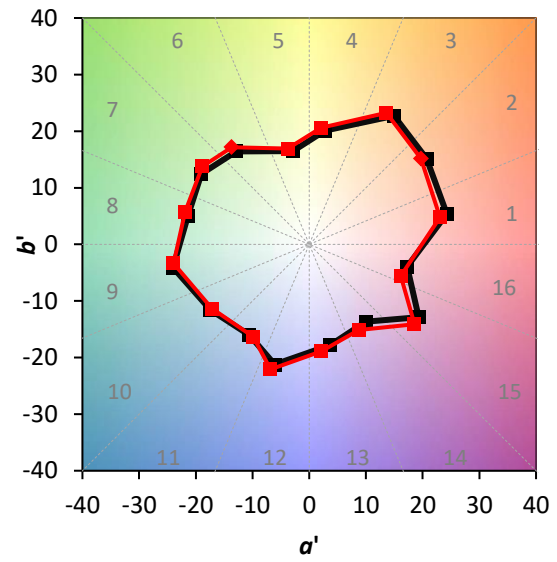
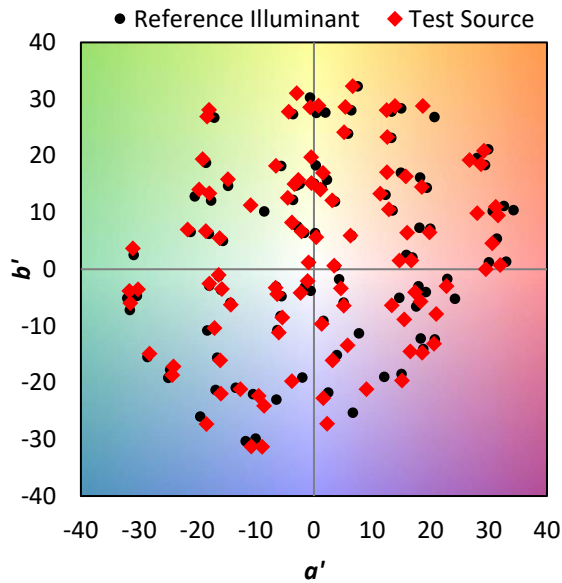
TM-30-18

Summary

$R_f = 91.2$
 $R_g = 101.1$
 $CIE\ R_a = 93.9$
 $R_9 = 58.8$

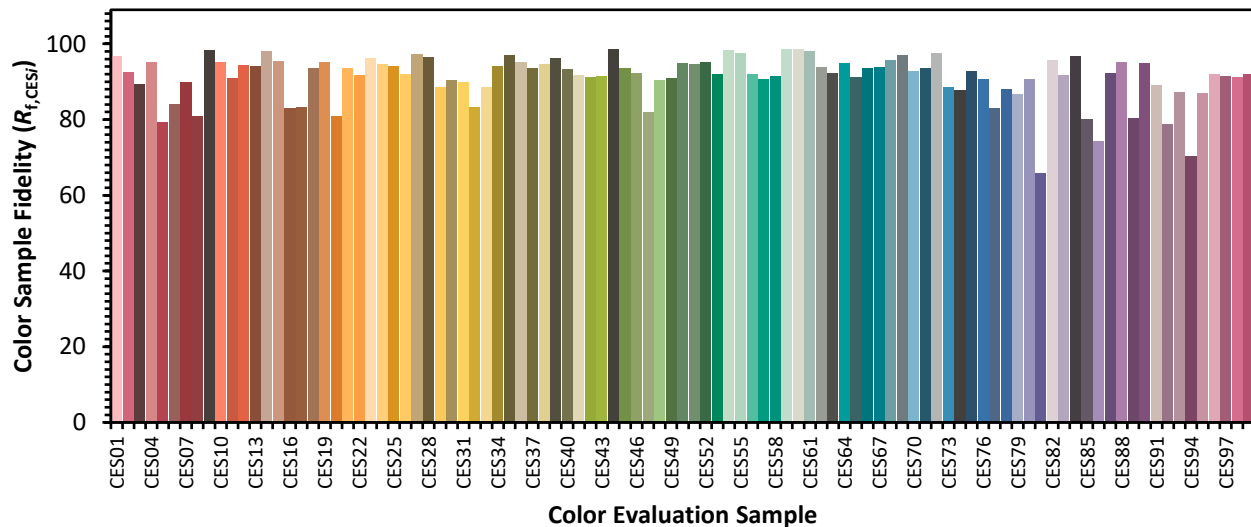


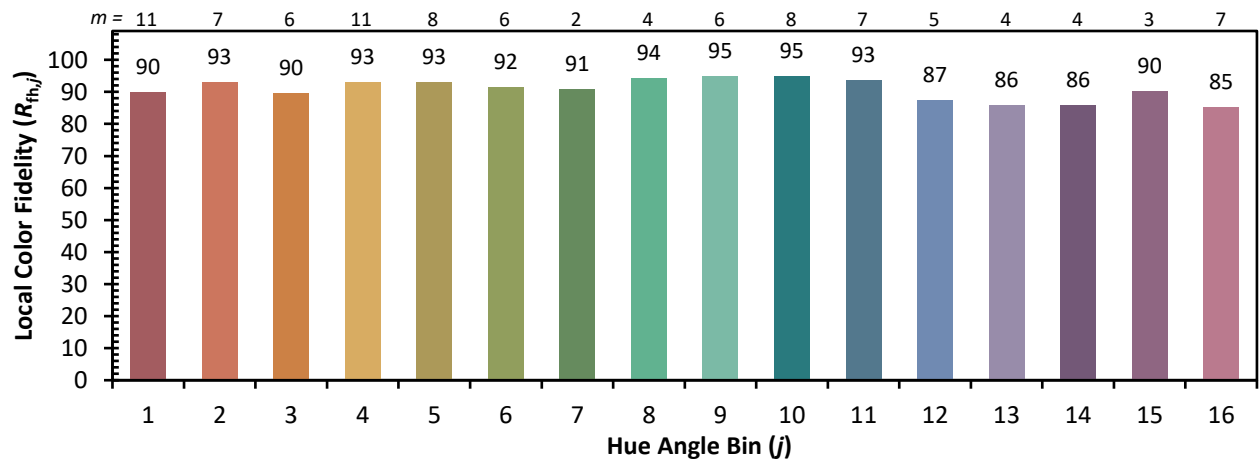
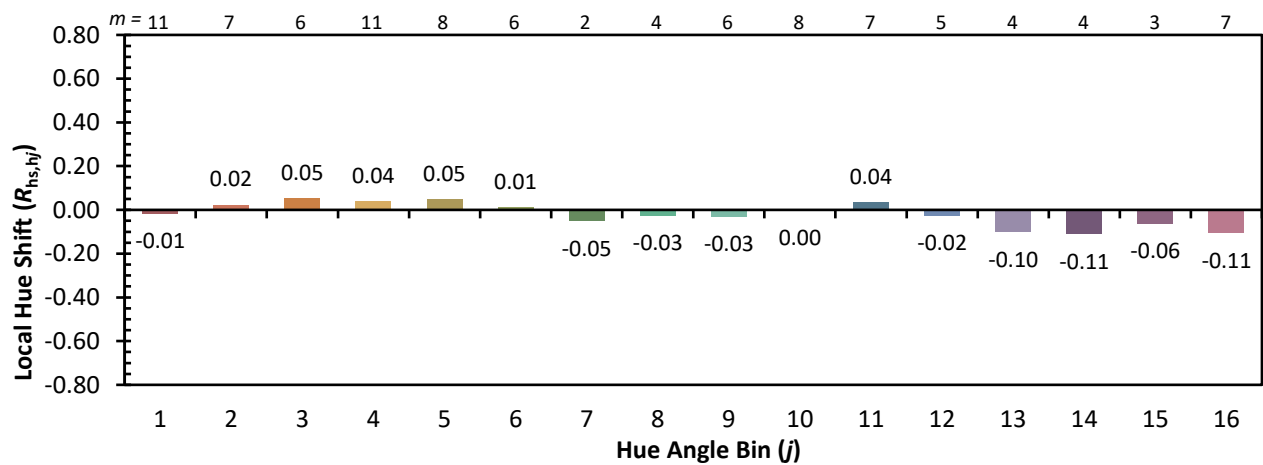
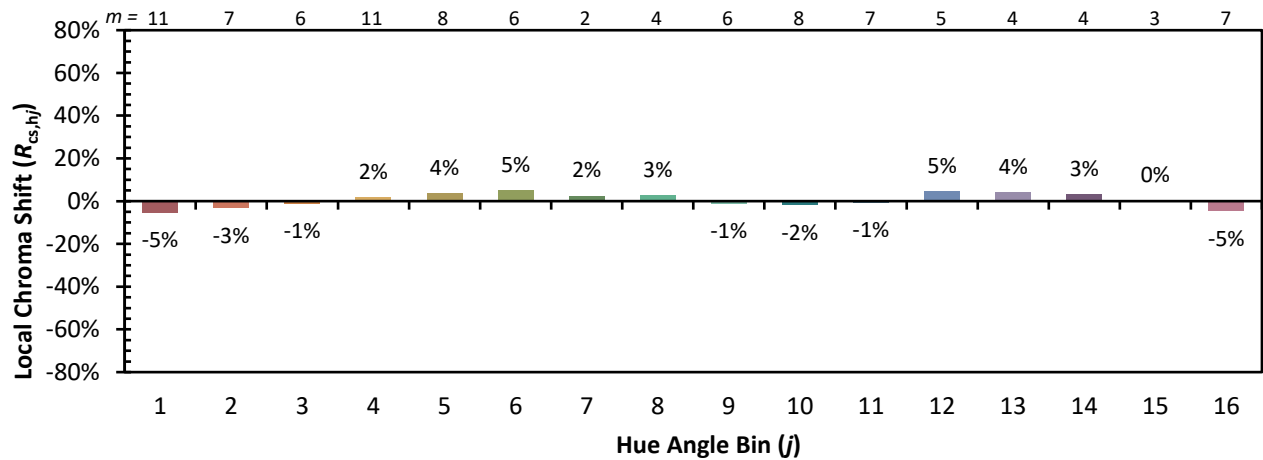
Color Vector Graphics

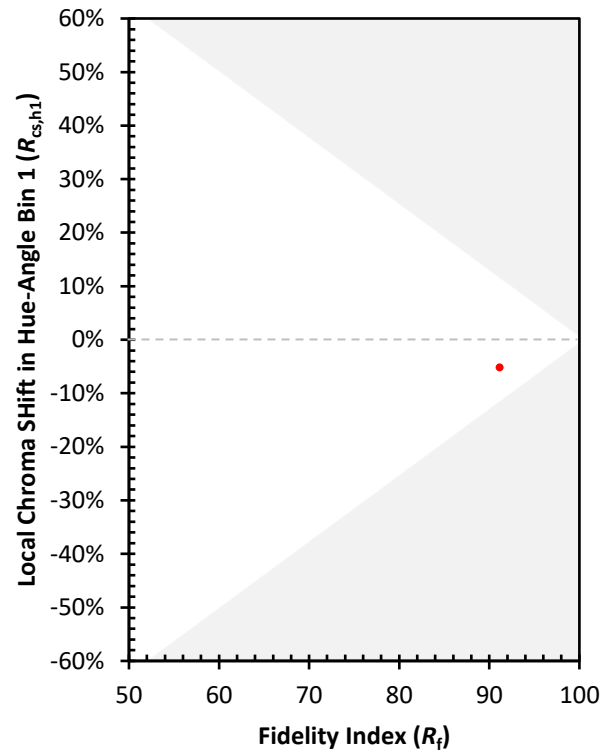
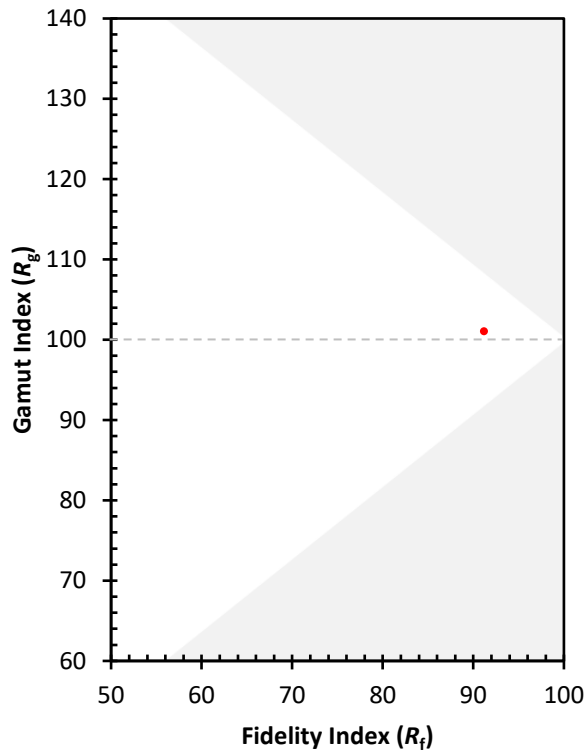


Individual Sample Fidelity Index ($R_{f,i}$)

CES01 = 86	CES26 = 92	CES51 = 95	CES76 = 91
CES02 = 64	CES27 = 97	CES52 = 95	CES77 = 83
CES03 = 32	CES28 = 97	CES53 = 92	CES78 = 88
CES04 = 70	CES29 = 89	CES54 = 98	CES79 = 87
CES05 = 51	CES30 = 90	CES55 = 97	CES80 = 91
CES06 = 51	CES31 = 90	CES56 = 92	CES81 = 66
CES07 = 44	CES32 = 83	CES57 = 91	CES82 = 96
CES08 = 43	CES33 = 89	CES58 = 91	CES83 = 92
CES09 = 29	CES34 = 94	CES59 = 99	CES84 = 97
CES10 = 77	CES35 = 97	CES60 = 99	CES85 = 80
CES11 = 59	CES36 = 95	CES61 = 98	CES86 = 74
CES12 = 66	CES37 = 94	CES62 = 94	CES87 = 92
CES13 = 44	CES38 = 95	CES63 = 92	CES88 = 95
CES14 = 74	CES39 = 96	CES64 = 95	CES89 = 80
CES15 = 72	CES40 = 93	CES65 = 91	CES90 = 95
CES16 = 48	CES41 = 92	CES66 = 94	CES91 = 89
CES17 = 50	CES42 = 91	CES67 = 94	CES92 = 79
CES18 = 57	CES43 = 91	CES68 = 96	CES93 = 87
CES19 = 72	CES44 = 98	CES69 = 97	CES94 = 70
CES20 = 68	CES45 = 94	CES70 = 93	CES95 = 87
CES21 = 87	CES46 = 92	CES71 = 94	CES96 = 92
CES22 = 79	CES47 = 82	CES72 = 98	CES97 = 92
CES23 = 92	CES48 = 90	CES73 = 89	CES98 = 91
CES24 = 91	CES49 = 91	CES74 = 88	CES99 = 92
CES25 = 72	CES50 = 95	CES75 = 93	



Color Rendition by Hue-Angle Bin


Measure Comparisons


(END OF REPORT)