

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: P1046643

Luminaire Tested: FMNL1515FS5-(black trim)-930

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: P1046643
Test Lab: Cooper lighting solutions
Issue Date: 07/03/2025
Manufacturer: COOPER LIGHTING SOLUTIONS
Product Line: HALO
Catalog Number: FMNL1515FS5-(black trim)-930
Description: HALO 15 inch 90 CRI COLOR SELECTABLE flush mount Black Trim FIXTURE with night light
Light Source: 3000K CCT, 90 CRI LEDS
Ballast/Driver: -

Summary

Lumens per Lamp: N/A
Luminaire Lumens: 1470.8 lumens
Efficiency: N/A
Efficacy: 88.1 lumens/watt
Spacing Criteria (0/90/45): 1.29 / 1.29 / 1.42
Luminous Opening: Circular (Dia: 1.2' x H: 0')
CIE Type: Direct

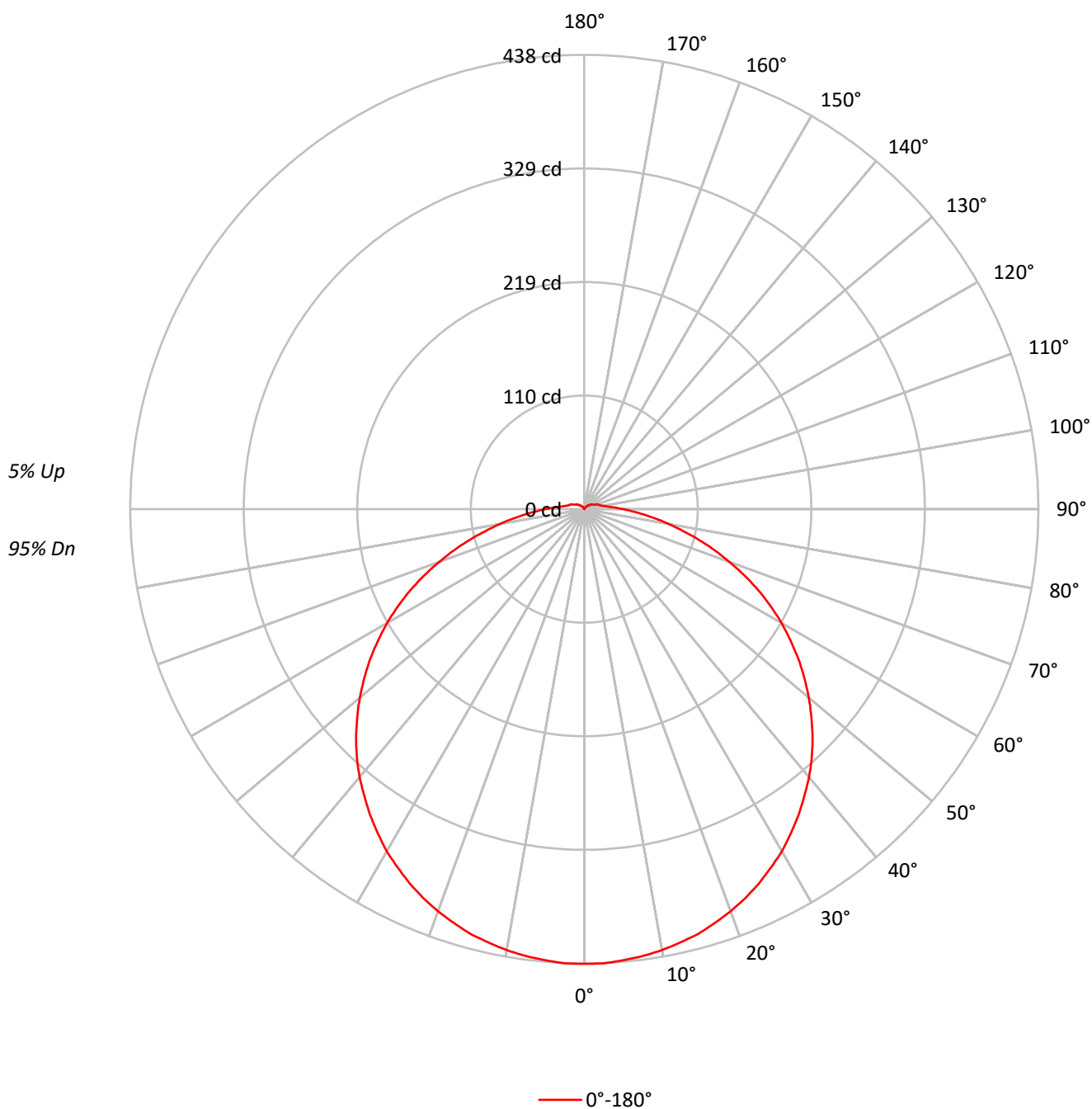
Input Watts (W): 16.7
Input Voltage (V): 120
Input Current (Ain): NR
Voltage Rise (V): NR
Power Factor: NR
Total Harmonic Distortion (THDi): NR
Frequency (hertz): 60
Stabilization Time: NR
Operation Time: NR
Ambient Temperature (°C): NR
Test Distance: 24 FT

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

TEST NUMBER: P1046643

CATALOG NUMBER: FMNL1515FS5-(black trim)-930

Luminous Intensity Polar Plot



TEST NUMBER: P1046643

CATALOG NUMBER: FMNL1515FS5-(black trim)-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		0
RCR																	
0	118	118	118	118	115	115	115	115	109	109	109		103	103	103		95
1	106	101	96	92	103	98	94	90	93	90	86		88	85	83		77
2	96	87	80	74	93	85	78	72	81	75	70		77	72	68		63
3	87	76	68	61	84	74	66	60	70	64	58		67	61	56		52
4	80	67	58	51	77	65	57	50	62	55	49		59	53	48		44
5	73	60	50	44	71	58	50	43	56	48	42		53	47	41		38
6	67	54	44	38	65	52	44	37	50	42	37		48	41	36		33
7	62	49	40	33	60	48	39	33	46	38	32		44	37	32		29
8	58	44	36	30	56	43	35	29	42	34	29		40	33	28		26
9	54	41	32	26	53	40	32	26	38	31	26		37	30	26		23
10	51	37	29	24	49	37	29	24	35	28	23		34	28	23		21

AVERAGE LUMINANCE (cd/sqm):

	0°
0°	4172
5°	4170
10°	4172
15°	4179
20°	4179
25°	4183
30°	4188
35°	4184
40°	4189
45°	4191
50°	4186
55°	4185
60°	4182
65°	4173
70°	4146
75°	4214
80°	4555
85°	6159

MAXIMUM LUMINANCE 45°-90°:

Horizontal Angle: 0°

Vertical Angle: 87.5°

Luminance: 9993 cd/sqm

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ZONAL LUMENS:

Zone	Lumens	% Fixture
0°-10°	41.5	2.8
10°-20°	119.7	8.1
20°-30°	183.6	12.5
30°-40°	225.4	15.3
40°-50°	240.1	16.3
50°-60°	225.3	15.3
60°-70°	183.0	12.4
70°-80°	121.4	8.3
80°-90°	63.0	4.3
90°-100°	28.4	1.9
100°-110°	16.3	1.1
110°-120°	10.6	0.7
120°-130°	6.8	0.5
130°-140°	3.5	0.2
140°-150°	1.7	0.1
150°-160°	0.5	0.0
160°-170°	0.0	0.0
170°-180°	0.0	0.0
0°-30°	344.8	23.4
0°-40°	570.2	38.8
0°-60°	1035.6	70.4
0°-90°	1403.0	95.4
90°-120°	55.3	3.8
90°-150°	67.3	4.6
90°-180°	68.0	4.6
0°-180°	1470.8	100.0

CANDELA DISTRIBUTION:

	0°	Flux
0°	438	
5°	436	42
15°	424	120
25°	398	184
35°	360	225
45°	311	240
55°	252	225
65°	185	183
75°	115	121
85°	56	52
90°	37	21
95°	25	19
105°	15	16
115°	10	11
125°	8	7
135°	5	4
145°	3	2
155°	1	0
165°	0	0
175°	0	0
180°	0	

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CANDELA DISTRIBUTION (FULL):

0°	
0°	438.4
2.5°	438.4
5°	436.5
7.5°	434.6
10°	431.7
12.5°	427.9
15°	424.1
17.5°	418.4
20°	412.6
22.5°	405.9
25°	398.3
27.5°	389.7
30°	381.1
32.5°	370.6
35°	360.1
37.5°	348.6
40°	337.2
42.5°	324.8
45°	311.4
47.5°	297.1
50°	282.7
52.5°	267.4
55°	252.2
57.5°	235.9
60°	219.7
62.5°	202.5
65°	185.3
67.5°	167.2
70°	149.0
72.5°	131.8
75°	114.6
77.5°	97.4
80°	83.1
82.5°	68.8
85°	56.4
87.5°	45.8
90°	37.3
92.5°	30.6
95°	24.8
97.5°	21.0
100°	18.1
102.5°	16.2
105°	15.3
107.5°	14.3
110°	13.4

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CANDELA DISTRIBUTION (continued):

	0°
112.5°	11.5
115°	10.5
117.5°	9.6
120°	8.6
122.5°	8.6
125°	7.6
127.5°	6.7
130°	5.7
132.5°	4.8
135°	4.8
137.5°	3.8
140°	3.8
142.5°	2.9
145°	2.9
147.5°	1.9
150°	1.9
152.5°	1.0
155°	1.0
157.5°	1.0
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	16.8	18.4	17.2	18.8	19.2	16.8	18.4	17.2	18.8	19.2
	3H	18.9	20.3	19.3	20.7	21.2	18.9	20.3	19.3	20.7	21.2
	4H	19.8	21.1	20.2	21.6	22.0	19.8	21.1	20.2	21.6	22.0
	6H	20.5	21.8	21.0	22.3	22.8	20.5	21.8	21.0	22.3	22.8
	8H	20.9	22.1	21.4	22.6	23.1	20.9	22.1	21.4	22.6	23.1
	12H	21.3	22.5	21.8	22.9	23.5	21.3	22.5	21.8	22.9	23.5
4H	2H	17.5	18.9	18.0	19.3	19.8	17.5	18.9	18.0	19.3	19.8
	3H	19.8	21.0	20.3	21.5	22.0	19.8	21.0	20.3	21.5	22.0
	4H	20.8	21.9	21.3	22.4	22.9	20.8	21.9	21.3	22.4	22.9
	6H	21.8	22.7	22.3	23.3	23.8	21.8	22.7	22.3	23.3	23.8
	8H	22.2	23.1	22.8	23.6	24.2	22.2	23.1	22.8	23.6	24.2
	12H	22.7	23.5	23.3	24.1	24.6	22.7	23.5	23.3	24.1	24.6
8H	4H	21.3	22.1	21.8	22.7	23.2	21.3	22.1	21.8	22.7	23.2
	6H	22.4	23.1	23.0	23.7	24.3	22.4	23.1	23.0	23.7	24.3
	8H	23.0	23.7	23.6	24.2	24.8	23.0	23.7	23.6	24.2	24.8
	12H	23.6	24.2	24.2	24.8	25.5	23.6	24.2	24.2	24.8	25.5
12H	4H	21.3	22.1	21.9	22.7	23.3	21.3	22.1	21.9	22.7	23.3
	6H	22.6	23.2	23.1	23.8	24.4	22.6	23.2	23.1	23.8	24.4
	8H	23.2	23.8	23.8	24.4	25.0	23.2	23.8	23.8	24.4	25.0

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

Report Prepared for

Cooper Lighting Solutions

Halo Home

Report Number: SP1-2506-468-14

Test Date: 07/09/2025

Luminaire Tested: FMNL1515FS5-3000K

Data in this report applies to families of products including FMNL1515FS5-3000K

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

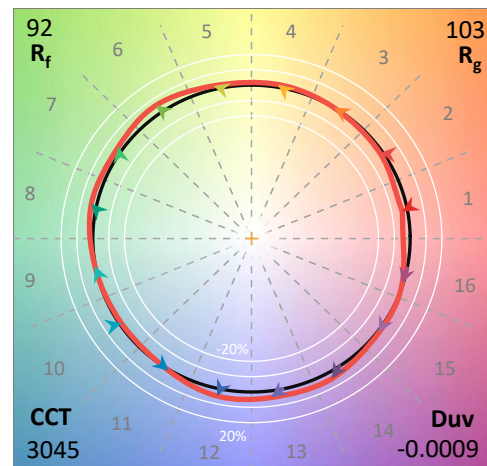
Test Information

Test Method: LM-79-2019
 Report Number: SP1-2506-468-14
 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: **FMNL1515FS5-3000K**
 Description: HALO FLUSH MOUNT NIGHT LIGHT 15 INCH

Spectral Parameters

CCT (K): 3045
 CIE u' : 0.2493
 CIE v' : 0.5192
 Duv: -0.0009
 CIE x: 0.4324
 CIE y: 0.4002
 CIE z: 0.1673
 Peak Wavelength (nm): 630
 Dominant Wavelength (nm): 582
 Purity: 49.92453
 R_f: 92.3
 R_g: 102.8

CRI (Ra): 96.0
 R1: 99.4
 R2: 97.8
 R3: 95.0
 R4: 95.4
 R5: 98.5
 R6: 96.8
 R7: 94.6
 R8: 90.3
 R9: 74.8
 R10: 93.3
 R11: 92.8
 R12: 89.1
 R13: 98.8
 R14: 95.7
 R15: 95.5



Test Conditions

Stabilization Time: M
 Operation Time: 1H 0M
 Sphere Temperature (°C): 24.0

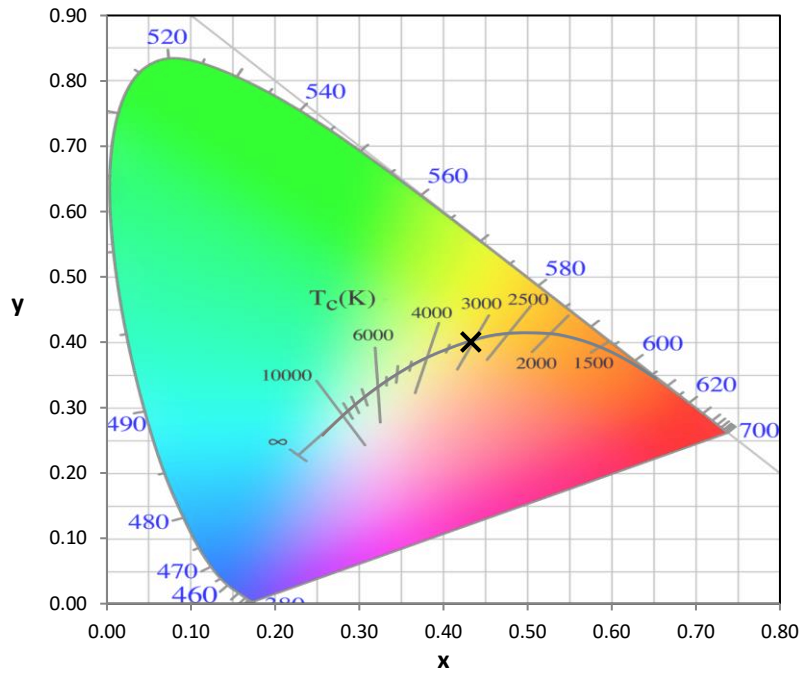
REPORT NUMBER: SP1-2506-468-14

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

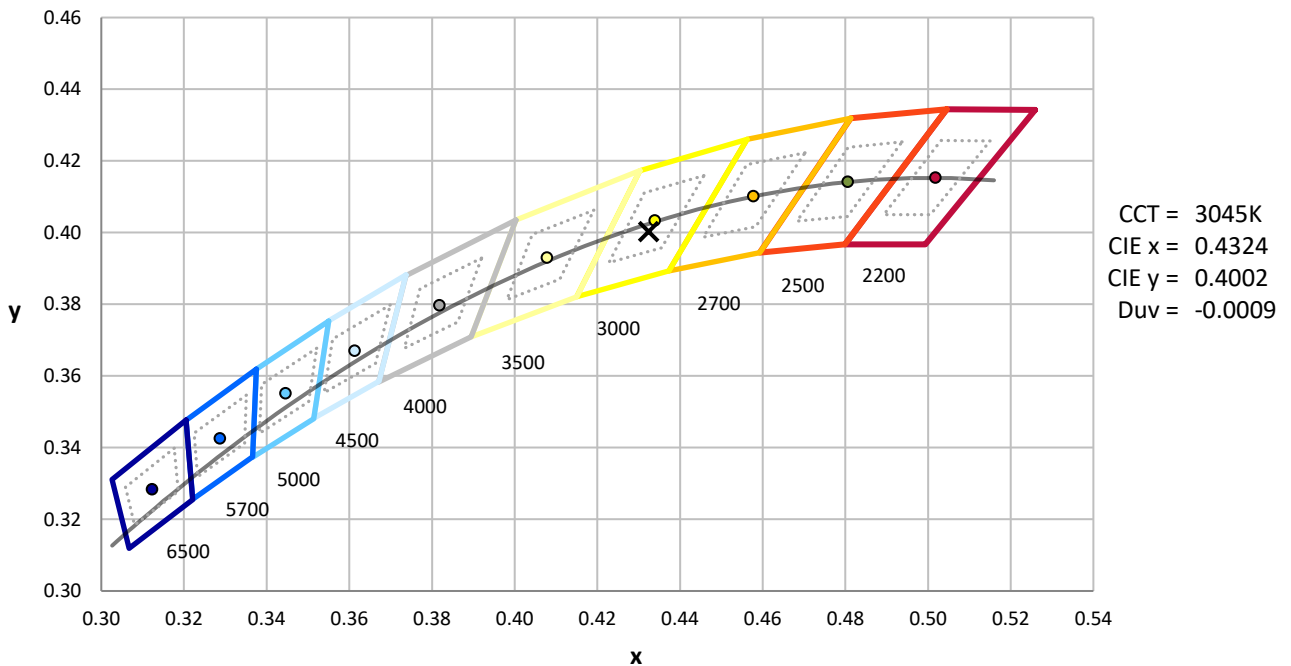
Sample Number	Condition	Description
P2506-468-LM.3	Good	HALO FLUSH MOUNT NIGHT LIGHT 15 INCH

REPORT NUMBER: SP1-2506-468-14

CIE 1931 Chromaticity Diagram



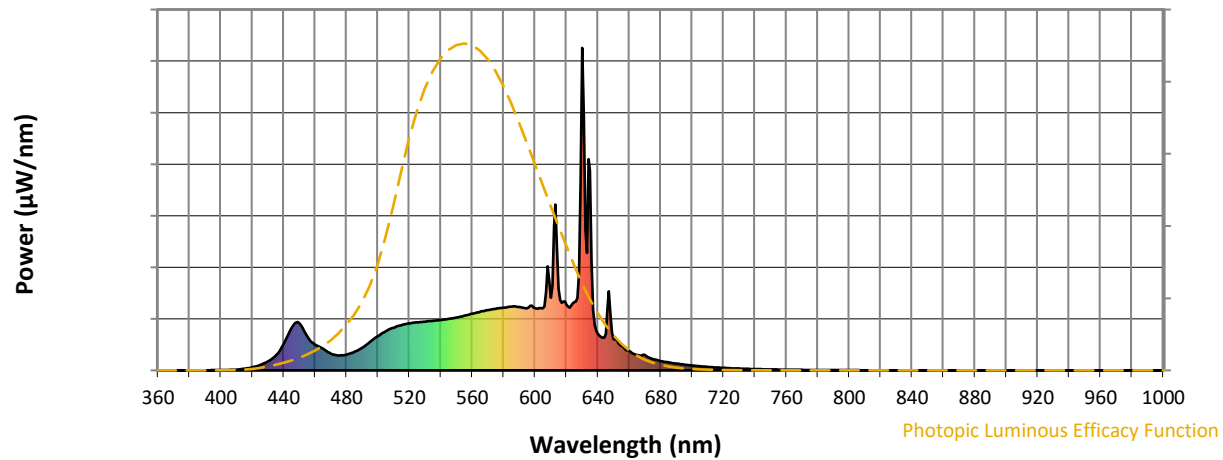
CIE 1931 Chromaticity Diagram with 2017 ANSI 7-Step and 4-Step Quadrangles



Point lies inside the ANSI 3000K 4-step quadrangle

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Photopic Flux vs. Wavelength

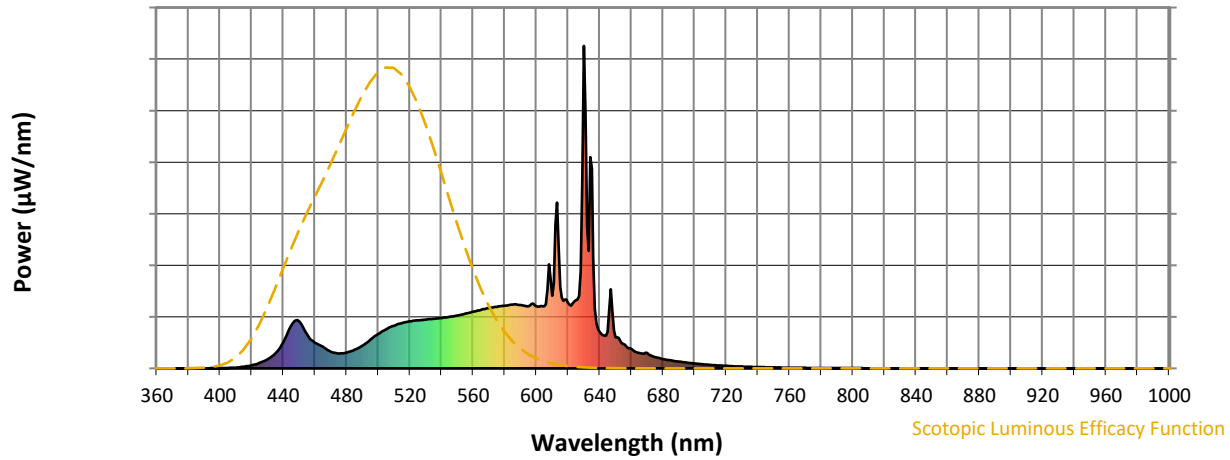


Photopic Lumens: NR

λ (nm)	Power $\text{W}^{\wedge}/\text{nm}$	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	71	NR	620	203	NR	750	3	NR	880	0	NR
365	0	NR	495	89	NR	625	212	NR	755	2	NR	885	0	NR
370	0	NR	500	106	NR	630	1000	NR	760	2	NR	890	0	NR
375	0	NR	505	121	NR	635	620	NR	765	2	NR	895	0	NR
380	0	NR	510	132	NR	640	113	NR	770	2	NR	900	0	NR
385	0	NR	515	140	NR	645	113	NR	775	1	NR	905	0	NR
390	0	NR	520	146	NR	650	96	NR	780	1	NR	910	0	NR
395	1	NR	525	148	NR	655	75	NR	785	1	NR	915	0	NR
400	1	NR	530	151	NR	660	61	NR	790	1	NR	920	0	NR
405	2	NR	535	154	NR	665	48	NR	795	1	NR	925	0	NR
410	2	NR	540	156	NR	670	47	NR	800	1	NR	930	0	NR
415	5	NR	545	159	NR	675	35	NR	805	1	NR	935	0	NR
420	10	NR	550	164	NR	680	29	NR	810	0	NR	940	0	NR
425	17	NR	555	169	NR	685	25	NR	815	0	NR	945	0	NR
430	28	NR	560	176	NR	690	21	NR	820	0	NR	950	0	NR
435	47	NR	565	181	NR	695	18	NR	825	0	NR	955	0	NR
440	82	NR	570	186	NR	700	15	NR	830	0	NR	960	0	NR
445	132	NR	575	191	NR	705	13	NR	835	0	NR	965	0	NR
450	146	NR	580	195	NR	710	11	NR	840	0	NR	970	0	NR
455	105	NR	585	197	NR	715	9	NR	845	0	NR	975	0	NR
460	79	NR	590	196	NR	720	8	NR	850	0	NR	980	0	NR
465	67	NR	595	193	NR	725	6	NR	855	0	NR	985	0	NR
470	52	NR	600	192	NR	730	6	NR	860	0	NR	990	0	NR
475	46	NR	605	192	NR	735	5	NR	865	0	NR	995	0	NR
480	49	NR	610	225	NR	740	4	NR	870	0	NR	1000	0	NR
485	57	NR	615	253	NR	745	3	NR	875	0	NR			

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Scotopic Flux vs. Wavelength



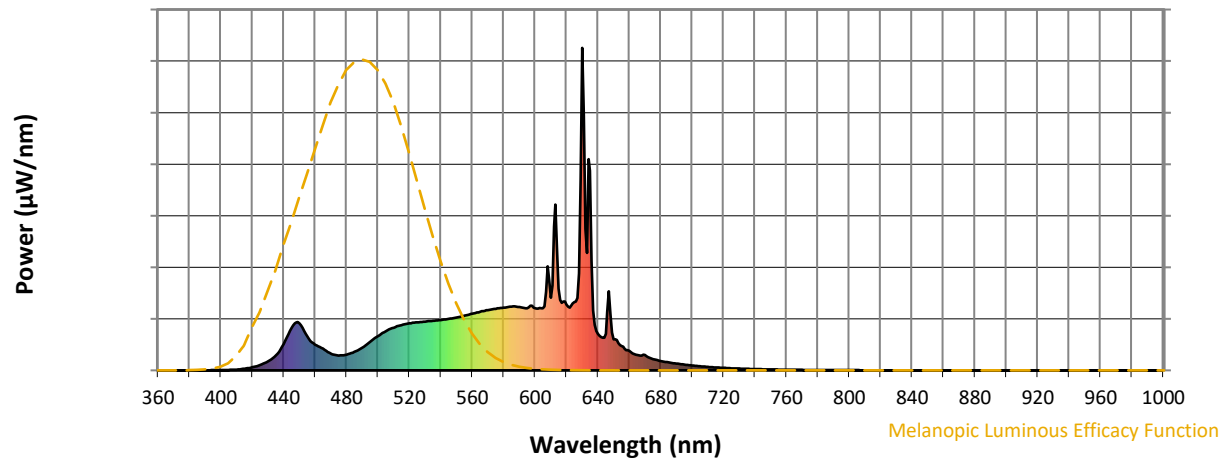
Scotopic Lumens: NR

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	71	NR	620	203	NR	750	3	NR	880	0	NR
365	0	NR	495	89	NR	625	212	NR	755	2	NR	885	0	NR
370	0	NR	500	106	NR	630	1000	NR	760	2	NR	890	0	NR
375	0	NR	505	121	NR	635	620	NR	765	2	NR	895	0	NR
380	0	NR	510	132	NR	640	113	NR	770	2	NR	900	0	NR
385	0	NR	515	140	NR	645	113	NR	775	1	NR	905	0	NR
390	0	NR	520	146	NR	650	96	NR	780	1	NR	910	0	NR
395	1	NR	525	148	NR	655	75	NR	785	1	NR	915	0	NR
400	1	NR	530	151	NR	660	61	NR	790	1	NR	920	0	NR
405	2	NR	535	154	NR	665	48	NR	795	1	NR	925	0	NR
410	2	NR	540	156	NR	670	47	NR	800	1	NR	930	0	NR
415	5	NR	545	159	NR	675	35	NR	805	1	NR	935	0	NR
420	10	NR	550	164	NR	680	29	NR	810	0	NR	940	0	NR
425	17	NR	555	169	NR	685	25	NR	815	0	NR	945	0	NR
430	28	NR	560	176	NR	690	21	NR	820	0	NR	950	0	NR
435	47	NR	565	181	NR	695	18	NR	825	0	NR	955	0	NR
440	82	NR	570	186	NR	700	15	NR	830	0	NR	960	0	NR
445	132	NR	575	191	NR	705	13	NR	835	0	NR	965	0	NR
450	146	NR	580	195	NR	710	11	NR	840	0	NR	970	0	NR
455	105	NR	585	197	NR	715	9	NR	845	0	NR	975	0	NR
460	79	NR	590	196	NR	720	8	NR	850	0	NR	980	0	NR
465	67	NR	595	193	NR	725	6	NR	855	0	NR	985	0	NR
470	52	NR	600	192	NR	730	6	NR	860	0	NR	990	0	NR
475	46	NR	605	192	NR	735	5	NR	865	0	NR	995	0	NR
480	49	NR	610	225	NR	740	4	NR	870	0	NR	1000	0	NR
485	57	NR	615	253	NR	745	3	NR	875	0	NR			

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Melanopic Flux vs. Wavelength



Melanopic Lumens: NR

M/P: 2.83

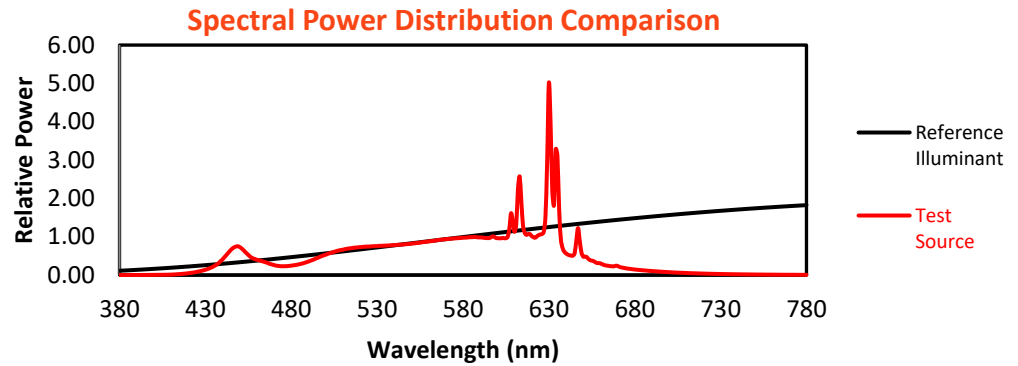
λ (nm)	Power W [^] /nm	Lumens (φ/nm)	λ (nm)	Power W [^] /nm	Lumens (φ/nm)	λ (nm)	Power W [^] /nm	Lumens (φ/nm)	λ (nm)	Power W [^] /nm	Lumens (φ/nm)	λ (nm)	Power W [^] /nm	Lumens (φ/nm)
360	0	NR	490	71	NR	620	203	NR	750	3	NR	880	0	NR
365	0	NR	495	89	NR	625	212	NR	755	2	NR	885	0	NR
370	0	NR	500	106	NR	630	1000	NR	760	2	NR	890	0	NR
375	0	NR	505	121	NR	635	620	NR	765	2	NR	895	0	NR
380	0	NR	510	132	NR	640	113	NR	770	2	NR	900	0	NR
385	0	NR	515	140	NR	645	113	NR	775	1	NR	905	0	NR
390	0	NR	520	146	NR	650	96	NR	780	1	NR	910	0	NR
395	1	NR	525	148	NR	655	75	NR	785	1	NR	915	0	NR
400	1	NR	530	151	NR	660	61	NR	790	1	NR	920	0	NR
405	2	NR	535	154	NR	665	48	NR	795	1	NR	925	0	NR
410	2	NR	540	156	NR	670	47	NR	800	1	NR	930	0	NR
415	5	NR	545	159	NR	675	35	NR	805	1	NR	935	0	NR
420	10	NR	550	164	NR	680	29	NR	810	0	NR	940	0	NR
425	17	NR	555	169	NR	685	25	NR	815	0	NR	945	0	NR
430	28	NR	560	176	NR	690	21	NR	820	0	NR	950	0	NR
435	47	NR	565	181	NR	695	18	NR	825	0	NR	955	0	NR
440	82	NR	570	186	NR	700	15	NR	830	0	NR	960	0	NR
445	132	NR	575	191	NR	705	13	NR	835	0	NR	965	0	NR
450	146	NR	580	195	NR	710	11	NR	840	0	NR	970	0	NR
455	105	NR	585	197	NR	715	9	NR	845	0	NR	975	0	NR
460	79	NR	590	196	NR	720	8	NR	850	0	NR	980	0	NR
465	67	NR	595	193	NR	725	6	NR	855	0	NR	985	0	NR
470	52	NR	600	192	NR	730	6	NR	860	0	NR	990	0	NR
475	46	NR	605	192	NR	735	5	NR	865	0	NR	995	0	NR
480	49	NR	610	225	NR	740	4	NR	870	0	NR	1000	0	NR
485	57	NR	615	253	NR	745	3	NR	875	0	NR			

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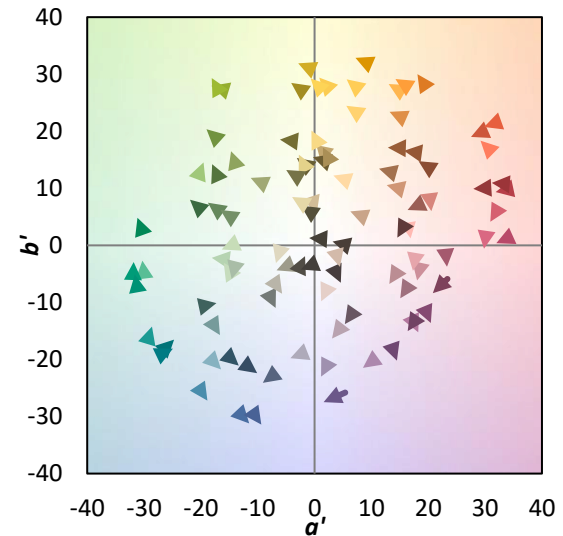
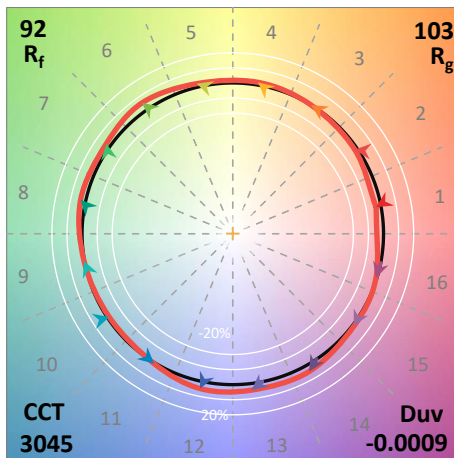
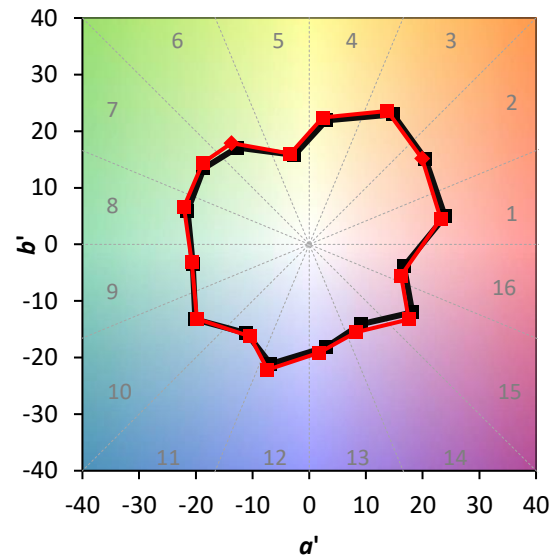
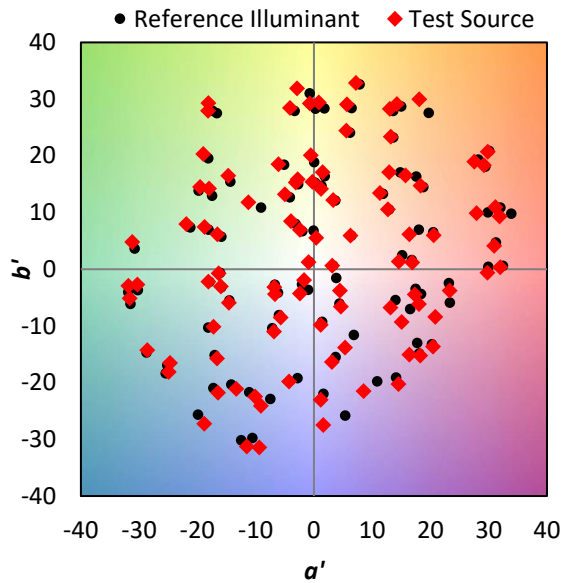
TM-30-18

Summary

$R_f = 92.3$
 $R_g = 102.8$
 $CIE R_a = 96.0$
 $R_9 = 74.8$

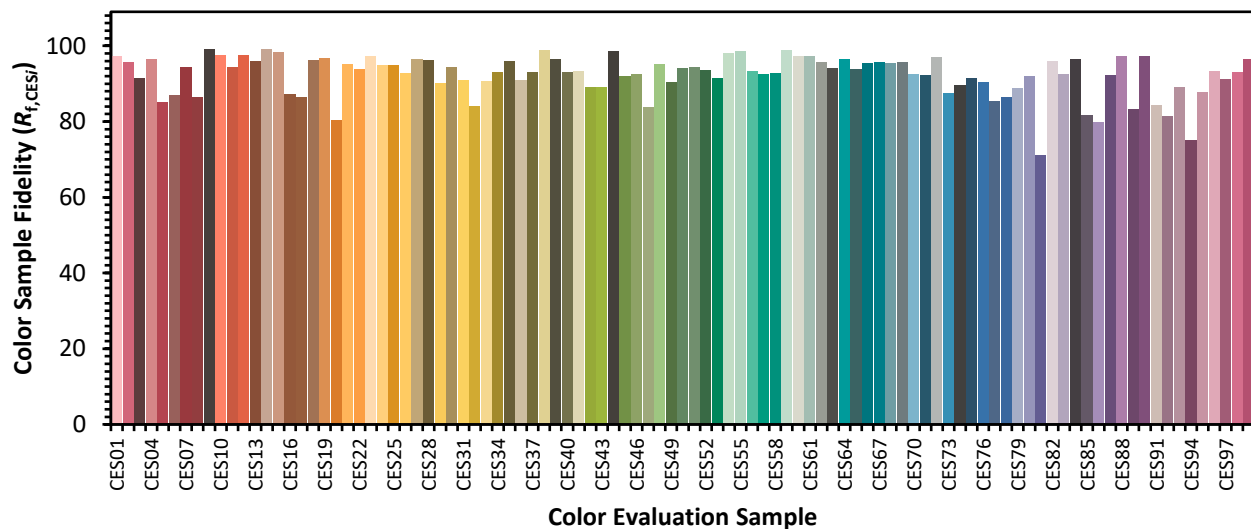


Color Vector Graphics

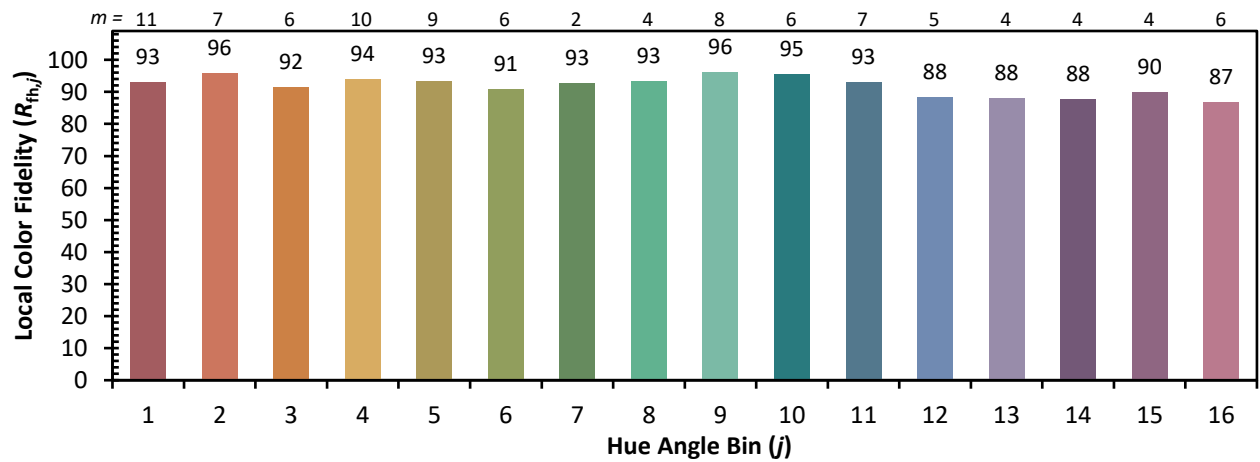
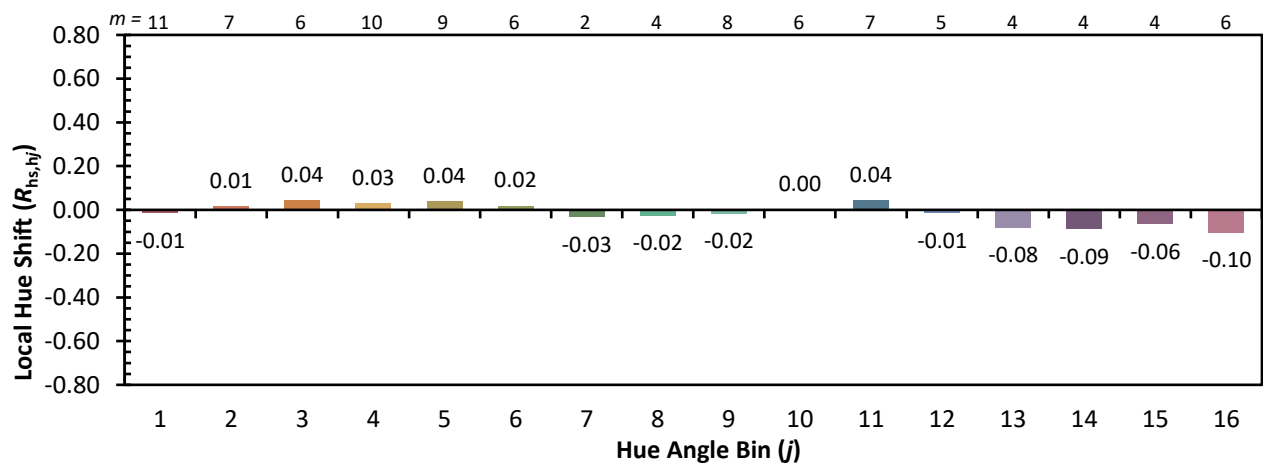
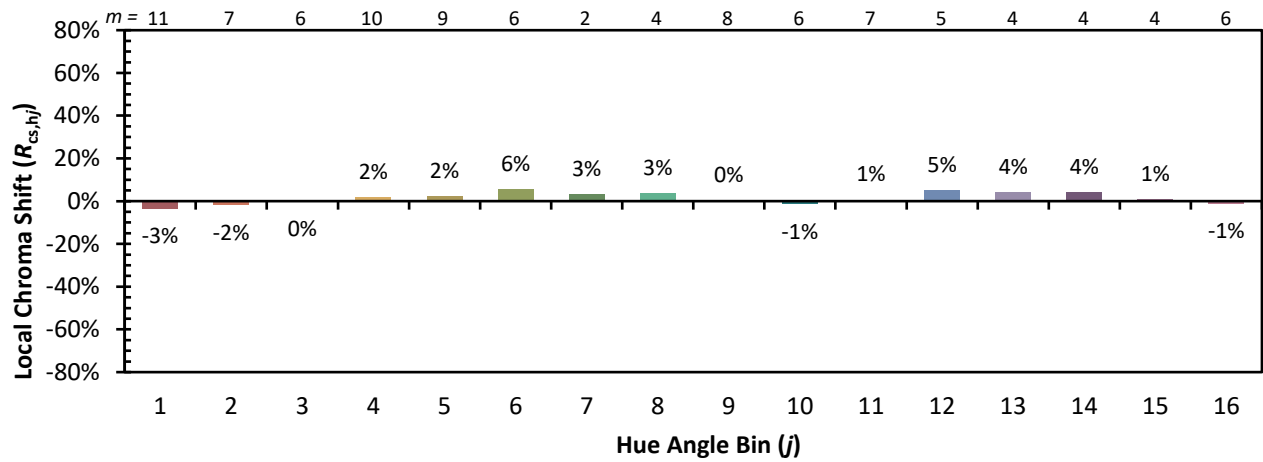


Individual Sample Fidelity Index ($R_{f,i}$)

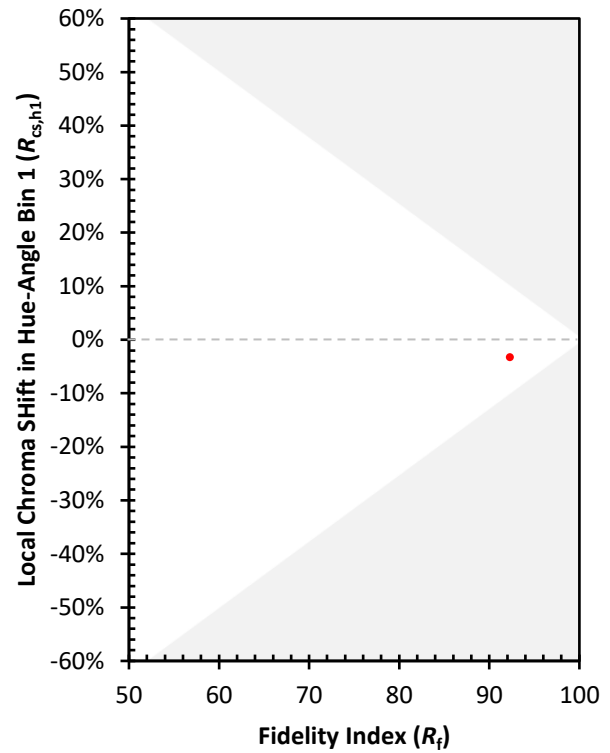
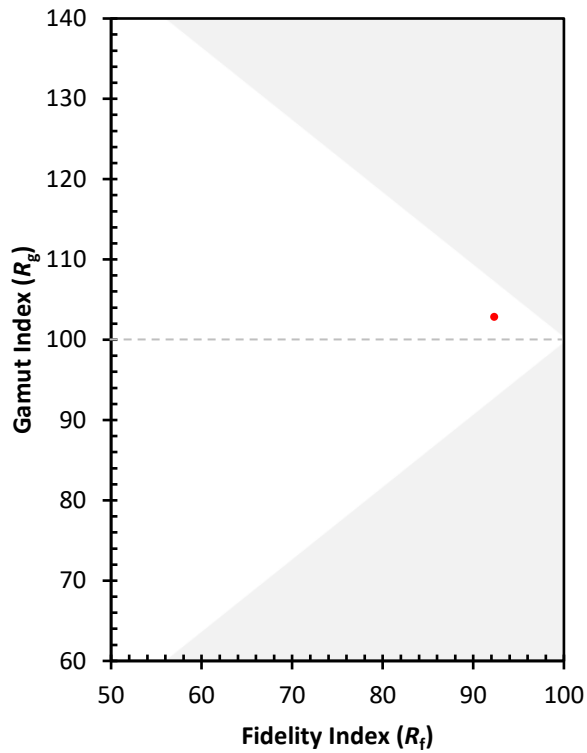
CES01 = 86	CES26 = 93	CES51 = 94	CES76 = 90
CES02 = 63	CES27 = 96	CES52 = 94	CES77 = 85
CES03 = 32	CES28 = 96	CES53 = 92	CES78 = 87
CES04 = 70	CES29 = 90	CES54 = 98	CES79 = 89
CES05 = 51	CES30 = 94	CES55 = 99	CES80 = 92
CES06 = 51	CES31 = 91	CES56 = 93	CES81 = 71
CES07 = 44	CES32 = 84	CES57 = 93	CES82 = 96
CES08 = 42	CES33 = 91	CES58 = 93	CES83 = 93
CES09 = 29	CES34 = 93	CES59 = 99	CES84 = 96
CES10 = 76	CES35 = 96	CES60 = 97	CES85 = 82
CES11 = 58	CES36 = 91	CES61 = 97	CES86 = 80
CES12 = 65	CES37 = 93	CES62 = 96	CES87 = 92
CES13 = 44	CES38 = 99	CES63 = 94	CES88 = 97
CES14 = 74	CES39 = 96	CES64 = 97	CES89 = 83
CES15 = 72	CES40 = 93	CES65 = 94	CES90 = 97
CES16 = 48	CES41 = 93	CES66 = 96	CES91 = 84
CES17 = 50	CES42 = 89	CES67 = 96	CES92 = 81
CES18 = 57	CES43 = 89	CES68 = 95	CES93 = 89
CES19 = 72	CES44 = 99	CES69 = 96	CES94 = 75
CES20 = 67	CES45 = 92	CES70 = 93	CES95 = 88
CES21 = 86	CES46 = 92	CES71 = 92	CES96 = 93
CES22 = 79	CES47 = 84	CES72 = 97	CES97 = 91
CES23 = 91	CES48 = 95	CES73 = 87	CES98 = 93
CES24 = 90	CES49 = 90	CES74 = 90	CES99 = 97
CES25 = 72	CES50 = 94	CES75 = 91	



Color Rendition by Hue-Angle Bin



Measure Comparisons



(END OF REPORT)