

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: P1046653

Luminaire Tested: FMNL1112FS5-(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: P1046653
Test Lab: Cooper lighting solutions
Issue Date: 07/03/2025
Manufacturer: COOPER LIGHTING SOLUTIONS
Product Line: HALO
Catalog Number: FMNL1112FS5-(black trim)-930
Description: HALO 11 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: 1119.4 lumens
Efficiency: N/A
Efficacy: 89.6 lumens/watt
Spacing Criteria (0/90/45): 1.3 / 1.3 / 1.43
Luminous Opening: Circular (Dia: 0.9' x H: 0')
CIE Type: Direct

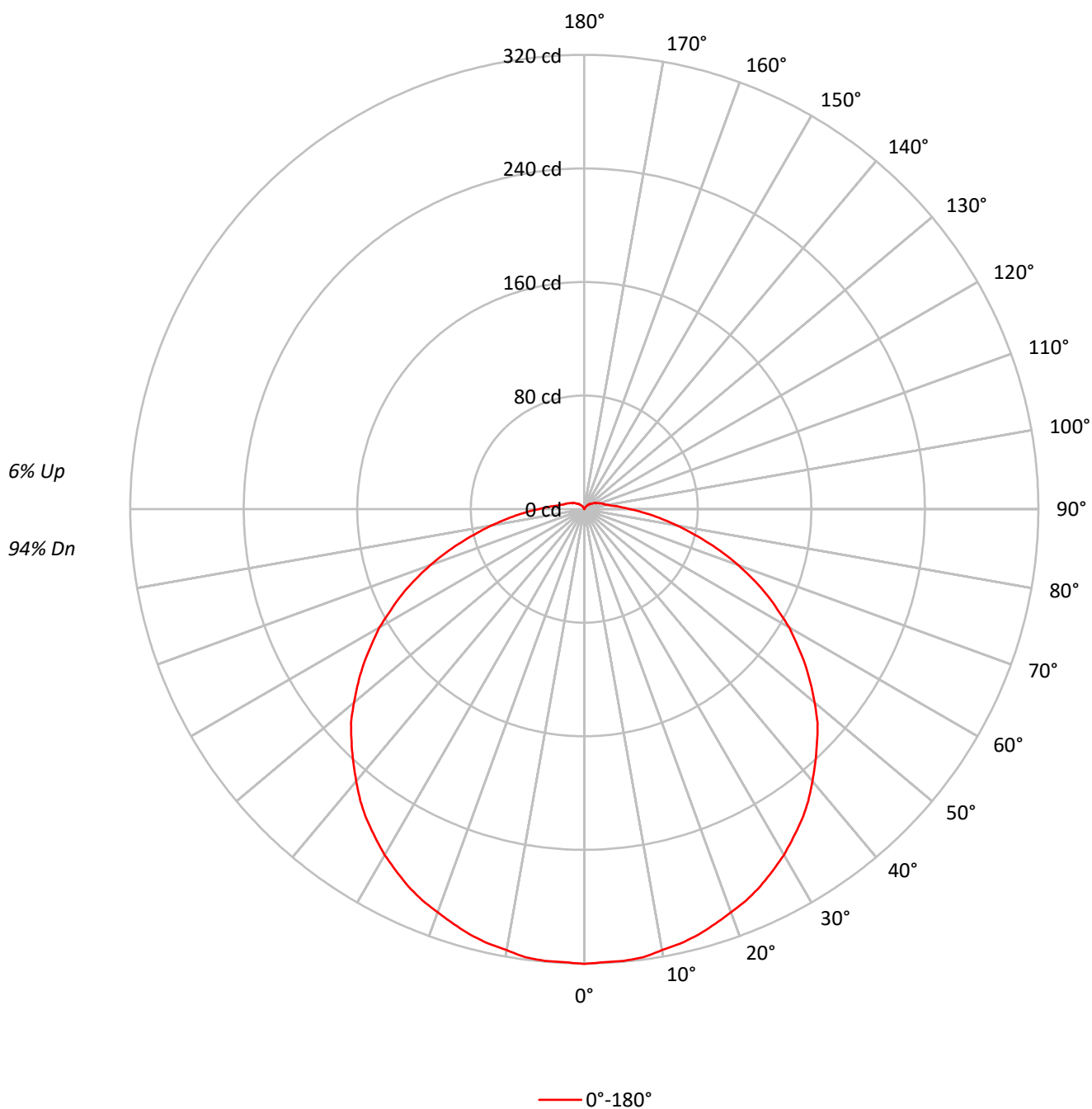
Input Watts (W): 12.5
Input Voltage (V): 120
Input Current (Ain): NR
Voltage Rise (V): NR
Power Factor: NR
Total Harmonic Distortion (THDi): NR
Frequency (hertz): 60
Stabilization Time: NR
Operation Time: NR
Ambient Temperature (°C): NR
Test Distance: 24 FT

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: P1046653

CATALOG NUMBER: FMNL1112FS5-(black trim)-930

Luminous Intensity Polar Plot



TEST NUMBER: P1046653

CATALOG NUMBER: FMNL1112F55-(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	114	114	114	114	108	108	108		102	102	102		97
1	106	100	96	91	102	98	93	89	92	89	85		87	84	82		83
2	96	87	79	73	92	84	77	72	80	74	69		75	71	67		72
3	87	76	67	60	84	73	65	59	70	63	57		66	60	55		63
4	79	67	57	50	76	65	56	50	62	54	48		58	52	47		56
5	73	59	50	43	70	58	49	42	55	47	41		52	46	40		50
6	67	53	44	37	65	52	43	37	49	42	36		47	40	35		45
7	62	48	39	33	60	47	38	32	45	37	32		43	36	31		41
8	58	44	35	29	56	43	34	29	41	33	28		39	33	28		38
9	54	40	32	26	52	39	31	26	38	30	25		36	30	25		35
10	50	37	29	23	49	36	28	23	35	28	23		33	27	22		32

AVERAGE LUMINANCE (cd/sqm):

	0°
0°	5421
5°	5425
10°	5419
15°	5437
20°	5443
25°	5476
30°	5496
35°	5519
40°	5524
45°	5551
50°	5578
55°	5599
60°	5641
65°	5669
70°	5714
75°	5844
80°	6460
85°	9163

MAXIMUM LUMINANCE 45°-90°:

Horizontal Angle: 0°

Vertical Angle: 87.5°

Luminance: 15206 cd/sqm

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CATALOG NUMBER: FMNL1112FS5-(black trim)-930

ZONAL LUMENS:

Zone	Lumens	% Fixture
0°-10°	30.4	2.7
10°-20°	87.6	7.8
20°-30°	135.2	12.1
30°-40°	167.1	14.9
40°-50°	179.1	16.0
50°-60°	169.6	15.1
60°-70°	139.9	12.5
70°-80°	95.0	8.5
80°-90°	52.3	4.7
90°-100°	25.6	2.3
100°-110°	15.1	1.3
110°-120°	10.1	0.9
120°-130°	6.4	0.6
130°-140°	3.7	0.3
140°-150°	1.8	0.2
150°-160°	0.5	0.0
160°-170°	0.0	0.0
170°-180°	0.0	0.0
0°-30°	253.2	22.6
0°-40°	420.3	37.5
0°-60°	768.9	68.7
0°-90°	1056.2	94.4
90°-120°	50.8	4.5
90°-150°	62.7	5.6
90°-180°	63.0	5.6
0°-180°	1119.4	100.0

CANDELA DISTRIBUTION:

	0°	Flux
0°	320	
5°	319	30
15°	310	88
25°	293	135
35°	267	167
45°	232	179
55°	190	170
65°	142	140
75°	89	95
85°	47	43
90°	32	18
95°	23	18
105°	14	15
115°	10	10
125°	7	6
135°	5	4
145°	3	2
155°	1	1
165°	0	0
175°	0	0
180°	0	

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CANDELA DISTRIBUTION (FULL):

0°	
0°	320.4
2.5°	319.4
5°	319.4
7.5°	318.4
10°	315.4
12.5°	313.4
15°	310.4
17.5°	306.4
20°	302.3
22.5°	298.3
25°	293.3
27.5°	287.3
30°	281.3
32.5°	274.2
35°	267.2
37.5°	259.2
40°	250.1
42.5°	241.1
45°	232.0
47.5°	223.0
50°	211.9
52.5°	200.9
55°	189.8
57.5°	177.8
60°	166.7
62.5°	153.7
65°	141.6
67.5°	128.6
70°	115.5
72.5°	102.5
75°	89.4
77.5°	77.3
80°	66.3
82.5°	56.3
85°	47.2
87.5°	39.2
90°	32.1
92.5°	27.1
95°	23.1
97.5°	19.1
100°	17.1
102.5°	15.1
105°	14.1
107.5°	13.1
110°	12.1

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CANDELA DISTRIBUTION (continued):

	0°
112.5°	11.0
115°	10.0
117.5°	9.0
120°	9.0
122.5°	8.0
125°	7.0
127.5°	6.0
130°	6.0
132.5°	5.0
135°	5.0
137.5°	4.0
140°	4.0
142.5°	3.0
145°	3.0
147.5°	2.0
150°	2.0
152.5°	1.0
155°	1.0
157.5°	1.0
160°	1.0
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	17.8	19.3	18.2	19.8	20.2	17.8	19.3	18.2	19.8	20.2
	3H	19.9	21.3	20.4	21.8	22.3	19.9	21.3	20.4	21.8	22.3
	4H	20.8	22.2	21.3	22.6	23.1	20.8	22.2	21.3	22.6	23.1
	6H	21.6	22.9	22.1	23.4	23.9	21.6	22.9	22.1	23.4	23.9
	8H	22.1	23.3	22.6	23.8	24.3	22.1	23.3	22.6	23.8	24.3
	12H	22.5	23.6	23.0	24.1	24.7	22.5	23.6	23.0	24.1	24.7
4H	2H	18.5	19.8	19.0	20.3	20.8	18.5	19.8	19.0	20.3	20.8
	3H	20.8	22.0	21.3	22.5	23.0	20.8	22.0	21.3	22.5	23.0
	4H	21.9	23.0	22.4	23.5	24.0	21.9	23.0	22.4	23.5	24.0
	6H	22.9	23.9	23.5	24.4	25.0	22.9	23.9	23.5	24.4	25.0
	8H	23.4	24.3	24.0	24.8	25.4	23.4	24.3	24.0	24.8	25.4
	12H	24.0	24.7	24.5	25.3	25.9	24.0	24.7	24.5	25.3	25.9
8H	4H	22.3	23.2	22.9	23.8	24.4	22.3	23.2	22.9	23.8	24.4
	6H	23.6	24.3	24.1	24.9	25.5	23.6	24.3	24.1	24.9	25.5
	8H	24.2	24.9	24.8	25.5	26.1	24.2	24.9	24.8	25.5	26.1
	12H	24.9	25.5	25.5	26.1	26.8	24.9	25.5	25.5	26.1	26.8
12H	4H	22.4	23.2	23.0	23.8	24.4	22.4	23.2	23.0	23.8	24.4
	6H	23.7	24.4	24.3	25.0	25.6	23.7	24.4	24.3	25.0	25.6
	8H	24.5	25.0	25.0	25.6	26.3	24.5	25.0	25.0	25.6	26.3

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

Report Prepared for

Cooper Lighting Solutions

Halo Home

Report Number: SP1-2506-468-8

Test Date: 07/08/2025

Luminaire Tested: FMNL1112FS5-3000K

Data in this report applies to families of products including FMNL1112FS5-3000K

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

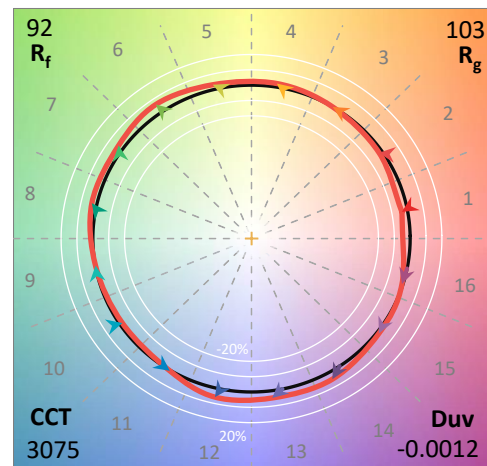
Test Information

Test Method: LM-79-2019
 Report Number: SP1-2506-468-8
 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: **FMNL1112FS5-3000K**
 Description: HALO FLUSH MOUNT NIGHT LIGHT 11 INCH

Spectral Parameters

CCT (K): 3075
 CIE u' : 0.2484
 CIE v' : 0.5182
 Duv: -0.0012
 CIE x: 0.4300
 CIE y: 0.3986
 CIE z: 0.1714
 Peak Wavelength (nm): 630
 Dominant Wavelength (nm): 582
 Purity: 48.70017
 R_f: 91.6
 R_g: 103.1

CRI (Ra): 95.4
 R1: 98.5
 R2: 97.1
 R3: 94.6
 R4: 95.1
 R5: 97.6
 R6: 96.8
 R7: 94.0
 R8: 89.2
 R9: 72.4
 R10: 91.7
 R11: 93.5
 R12: 87.9
 R13: 97.9
 R14: 95.6
 R15: 94.7



Test Conditions

Stabilization Time: 20M
 Operation Time: 1H 20M
 Sphere Temperature (°C): 24.0

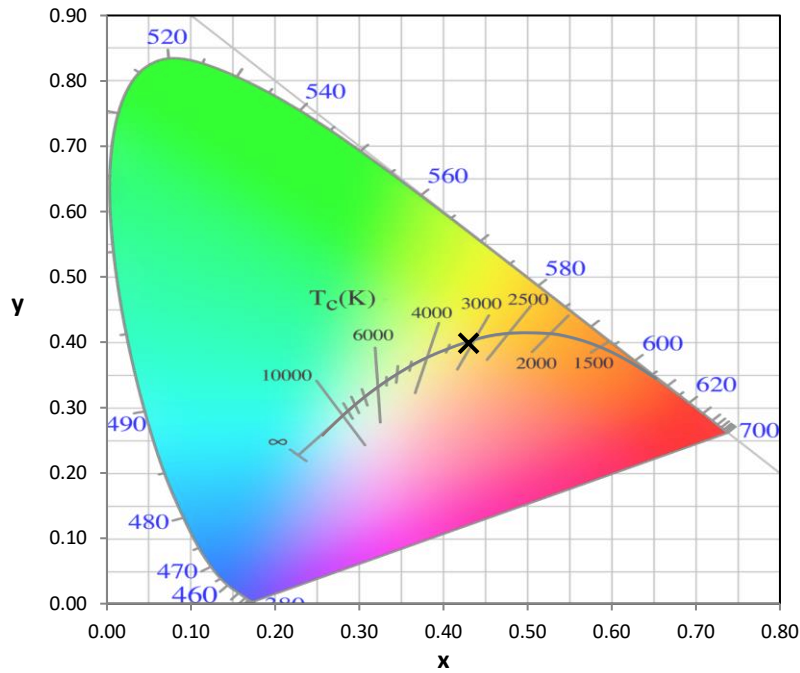
REPORT NUMBER: SP1-2506-468-8

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

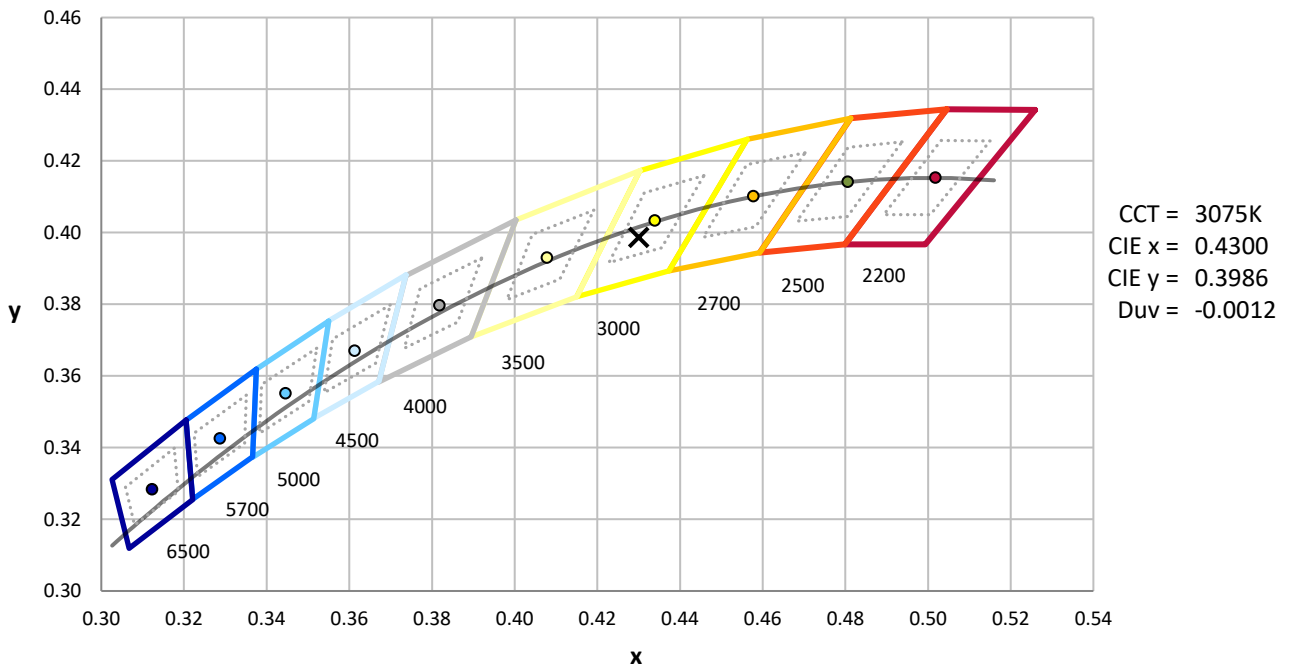
Sample Number	Condition	Description
P2506-468-LM.2	Good	HALO FLUSH MOUNT NIGHT LIGHT 11 INCH

REPORT NUMBER: SP1-2506-468-8

CIE 1931 Chromaticity Diagram



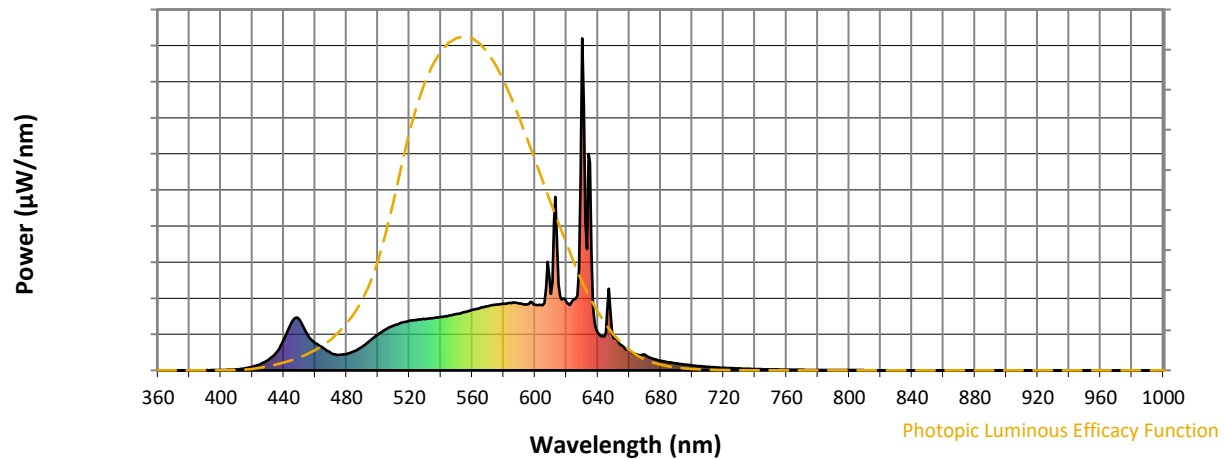
CIE 1931 Chromaticity Diagram with 2017 ANSI 7-Step and 4-Step Quadrangles



Point lies inside the ANSI 3000K 4-step quadrangle

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Photopic Flux vs. Wavelength

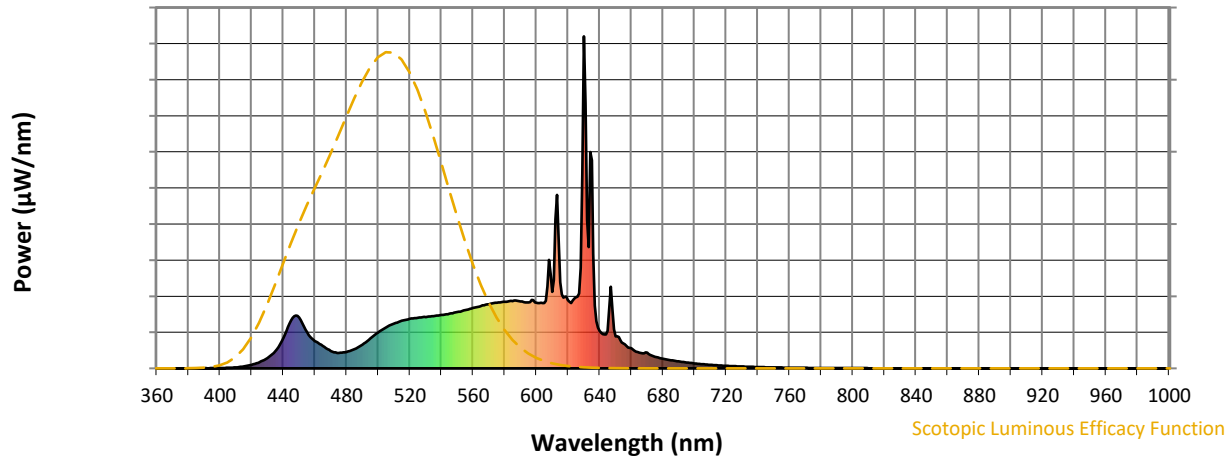


Photopic Lumens: NR

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	72	NR	620	206	NR	750	3	NR	880	0	NR
365	0	NR	495	90	NR	625	214	NR	755	3	NR	885	0	NR
370	0	NR	500	108	NR	630	1000	NR	760	2	NR	890	0	NR
375	0	NR	505	123	NR	635	626	NR	765	2	NR	895	0	NR
380	0	NR	510	135	NR	640	113	NR	770	2	NR	900	0	NR
385	0	NR	515	144	NR	645	113	NR	775	1	NR	905	0	NR
390	0	NR	520	149	NR	650	97	NR	780	1	NR	910	0	NR
395	1	NR	525	152	NR	655	75	NR	785	1	NR	915	0	NR
400	1	NR	530	155	NR	660	61	NR	790	1	NR	920	0	NR
405	2	NR	535	157	NR	665	48	NR	795	1	NR	925	0	NR
410	3	NR	540	161	NR	670	47	NR	800	1	NR	930	0	NR
415	6	NR	545	165	NR	675	35	NR	805	1	NR	935	0	NR
420	11	NR	550	170	NR	680	29	NR	810	1	NR	940	0	NR
425	19	NR	555	175	NR	685	25	NR	815	0	NR	945	0	NR
430	31	NR	560	182	NR	690	21	NR	820	0	NR	950	0	NR
435	52	NR	565	188	NR	695	18	NR	825	0	NR	955	0	NR
440	92	NR	570	193	NR	700	15	NR	830	0	NR	960	0	NR
445	145	NR	575	197	NR	705	13	NR	835	0	NR	965	0	NR
450	153	NR	580	201	NR	710	11	NR	840	0	NR	970	0	NR
455	109	NR	585	203	NR	715	9	NR	845	0	NR	975	0	NR
460	82	NR	590	202	NR	720	8	NR	850	0	NR	980	0	NR
465	68	NR	595	198	NR	725	7	NR	855	0	NR	985	0	NR
470	52	NR	600	198	NR	730	6	NR	860	0	NR	990	0	NR
475	47	NR	605	197	NR	735	5	NR	865	0	NR	995	0	NR
480	49	NR	610	230	NR	740	4	NR	870	0	NR	1000	0	NR
485	58	NR	615	260	NR	745	3	NR	875	0	NR			

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Scotopic Flux vs. Wavelength



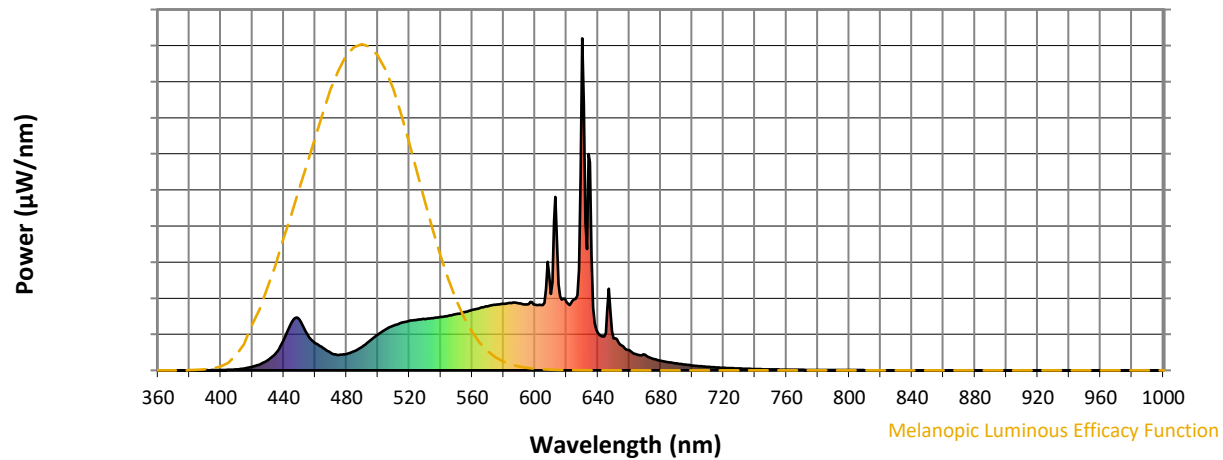
Scotopic Lumens: NR

S/P: 1.46

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	72	NR	620	206	NR	750	3	NR	880	0	NR
365	0	NR	495	90	NR	625	214	NR	755	3	NR	885	0	NR
370	0	NR	500	108	NR	630	1000	NR	760	2	NR	890	0	NR
375	0	NR	505	123	NR	635	626	NR	765	2	NR	895	0	NR
380	0	NR	510	135	NR	640	113	NR	770	2	NR	900	0	NR
385	0	NR	515	144	NR	645	113	NR	775	1	NR	905	0	NR
390	0	NR	520	149	NR	650	97	NR	780	1	NR	910	0	NR
395	1	NR	525	152	NR	655	75	NR	785	1	NR	915	0	NR
400	1	NR	530	155	NR	660	61	NR	790	1	NR	920	0	NR
405	2	NR	535	157	NR	665	48	NR	795	1	NR	925	0	NR
410	3	NR	540	161	NR	670	47	NR	800	1	NR	930	0	NR
415	6	NR	545	165	NR	675	35	NR	805	1	NR	935	0	NR
420	11	NR	550	170	NR	680	29	NR	810	1	NR	940	0	NR
425	19	NR	555	175	NR	685	25	NR	815	0	NR	945	0	NR
430	31	NR	560	182	NR	690	21	NR	820	0	NR	950	0	NR
435	52	NR	565	188	NR	695	18	NR	825	0	NR	955	0	NR
440	92	NR	570	193	NR	700	15	NR	830	0	NR	960	0	NR
445	145	NR	575	197	NR	705	13	NR	835	0	NR	965	0	NR
450	153	NR	580	201	NR	710	11	NR	840	0	NR	970	0	NR
455	109	NR	585	203	NR	715	9	NR	845	0	NR	975	0	NR
460	82	NR	590	202	NR	720	8	NR	850	0	NR	980	0	NR
465	68	NR	595	198	NR	725	7	NR	855	0	NR	985	0	NR
470	52	NR	600	198	NR	730	6	NR	860	0	NR	990	0	NR
475	47	NR	605	197	NR	735	5	NR	865	0	NR	995	0	NR
480	49	NR	610	230	NR	740	4	NR	870	0	NR	1000	0	NR
485	58	NR	615	260	NR	745	3	NR	875	0	NR			

REPORT NUMBER: SP1-2506-468-8

Melanopic Flux vs. Wavelength



Melanopic Lumens: NR

M/P: 2.84

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	72	NR	620	206	NR	750	3	NR	880	0	NR
365	0	NR	495	90	NR	625	214	NR	755	3	NR	885	0	NR
370	0	NR	500	108	NR	630	1000	NR	760	2	NR	890	0	NR
375	0	NR	505	123	NR	635	626	NR	765	2	NR	895	0	NR
380	0	NR	510	135	NR	640	113	NR	770	2	NR	900	0	NR
385	0	NR	515	144	NR	645	113	NR	775	1	NR	905	0	NR
390	0	NR	520	149	NR	650	97	NR	780	1	NR	910	0	NR
395	1	NR	525	152	NR	655	75	NR	785	1	NR	915	0	NR
400	1	NR	530	155	NR	660	61	NR	790	1	NR	920	0	NR
405	2	NR	535	157	NR	665	48	NR	795	1	NR	925	0	NR
410	3	NR	540	161	NR	670	47	NR	800	1	NR	930	0	NR
415	6	NR	545	165	NR	675	35	NR	805	1	NR	935	0	NR
420	11	NR	550	170	NR	680	29	NR	810	1	NR	940	0	NR
425	19	NR	555	175	NR	685	25	NR	815	0	NR	945	0	NR
430	31	NR	560	182	NR	690	21	NR	820	0	NR	950	0	NR
435	52	NR	565	188	NR	695	18	NR	825	0	NR	955	0	NR
440	92	NR	570	193	NR	700	15	NR	830	0	NR	960	0	NR
445	145	NR	575	197	NR	705	13	NR	835	0	NR	965	0	NR
450	153	NR	580	201	NR	710	11	NR	840	0	NR	970	0	NR
455	109	NR	585	203	NR	715	9	NR	845	0	NR	975	0	NR
460	82	NR	590	202	NR	720	8	NR	850	0	NR	980	0	NR
465	68	NR	595	198	NR	725	7	NR	855	0	NR	985	0	NR
470	52	NR	600	198	NR	730	6	NR	860	0	NR	990	0	NR
475	47	NR	605	197	NR	735	5	NR	865	0	NR	995	0	NR
480	49	NR	610	230	NR	740	4	NR	870	0	NR	1000	0	NR
485	58	NR	615	260	NR	745	3	NR	875	0	NR			

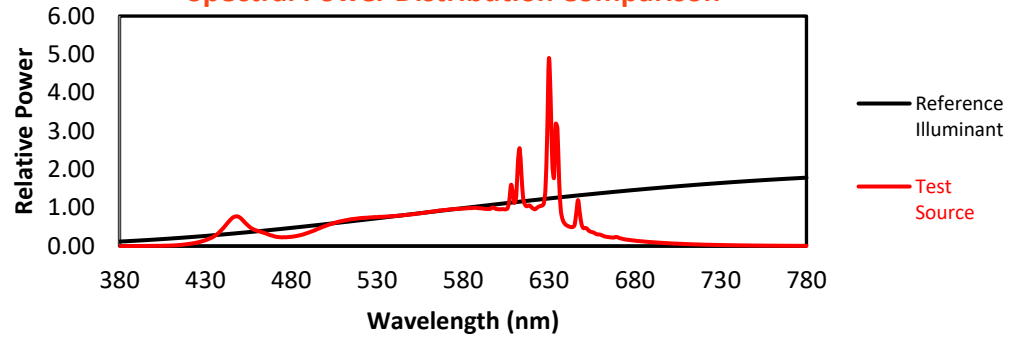
REPORT NUMBER: SP1-2506-468-8

TM-30-18

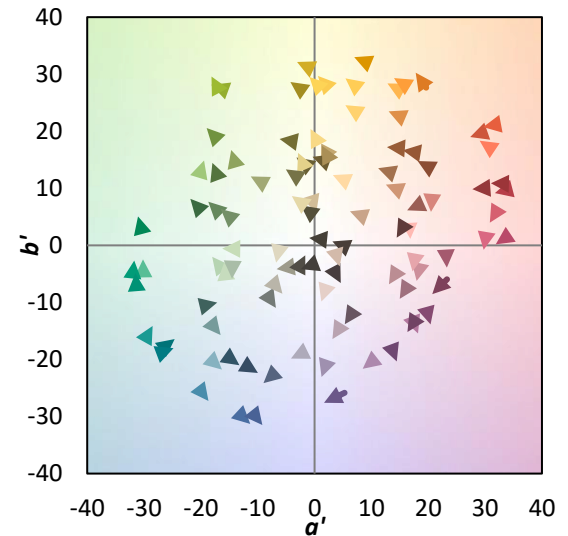
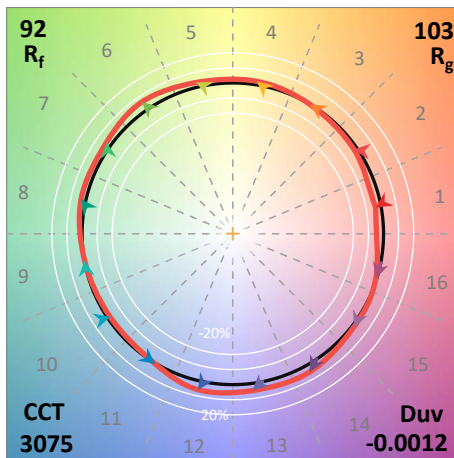
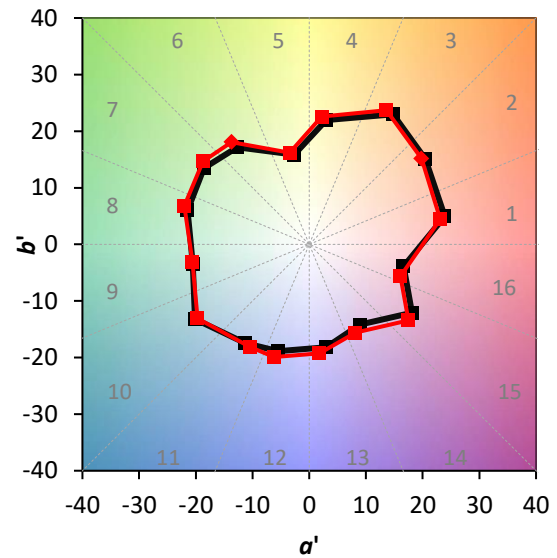
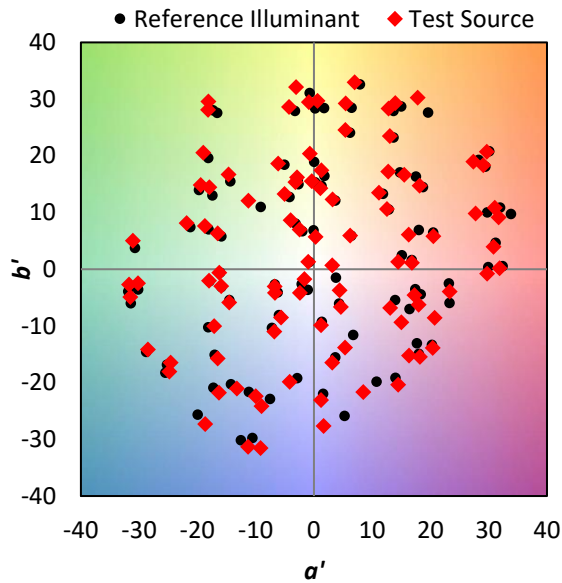
Summary

$R_f = 91.6$
 $R_g = 103.1$
 $CIE R_a = 95.4$
 $R_g = 72.4$

Spectral Power Distribution Comparison

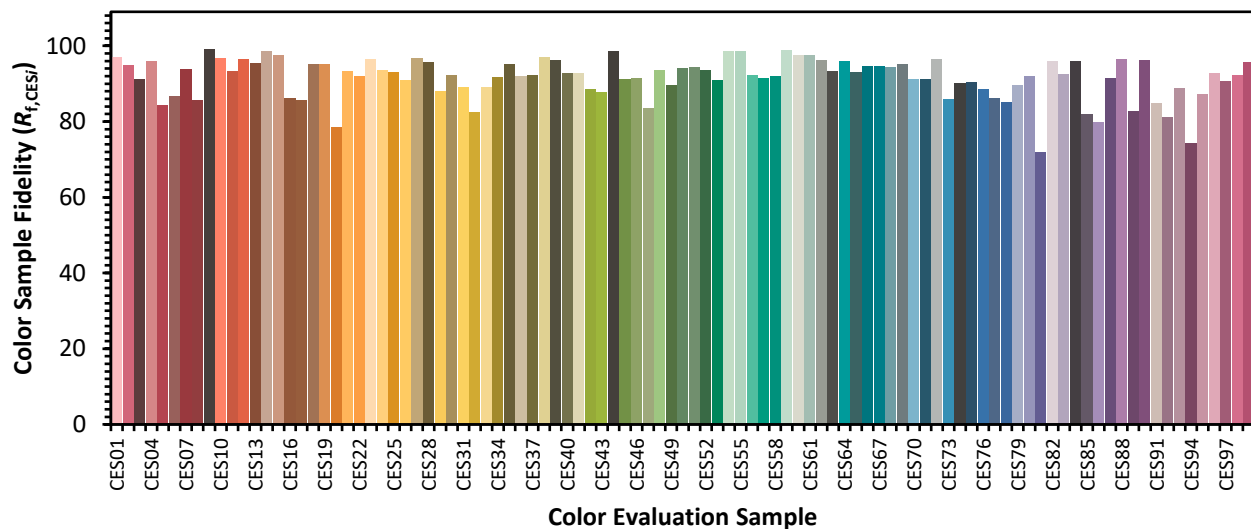


Color Vector Graphics

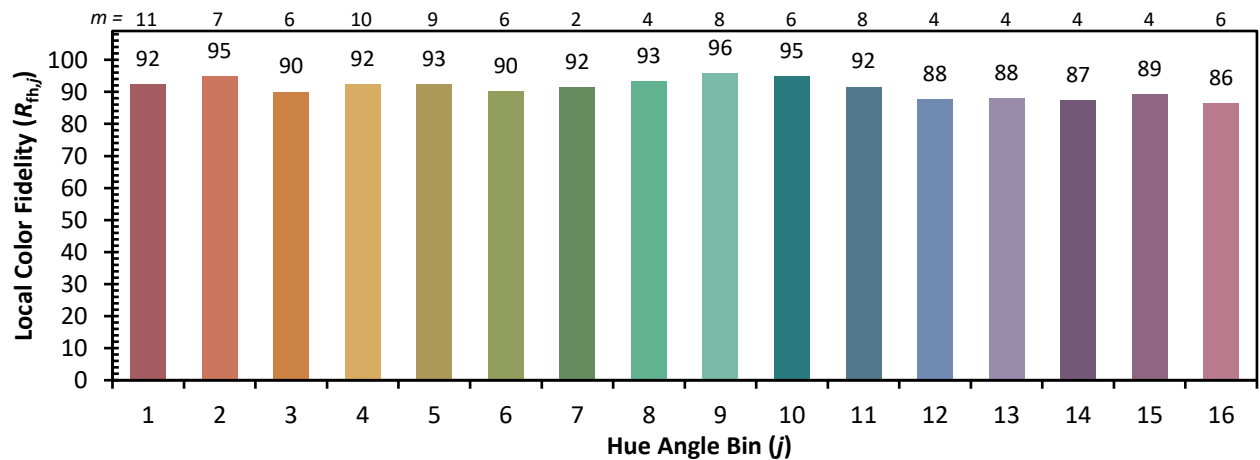
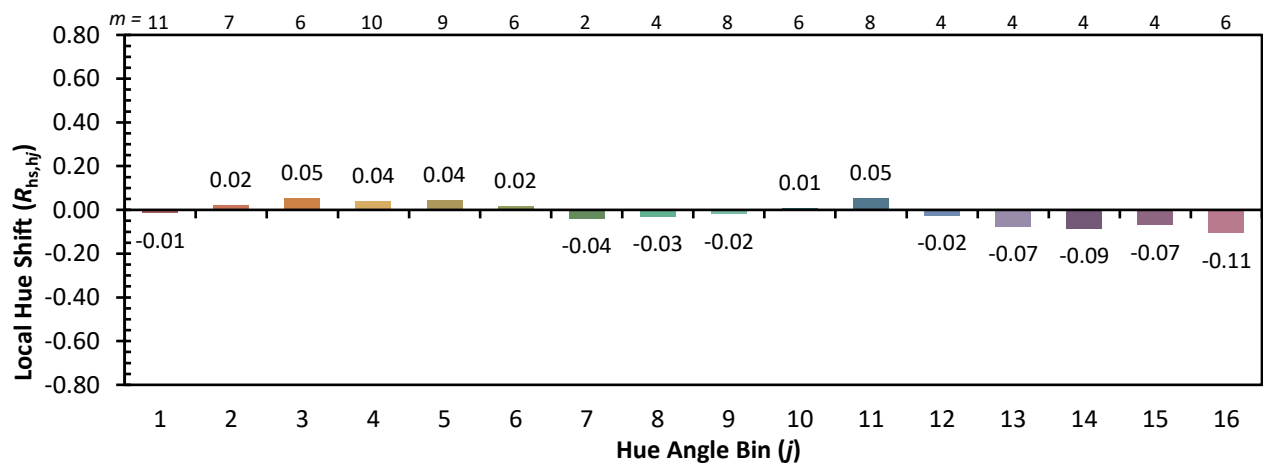
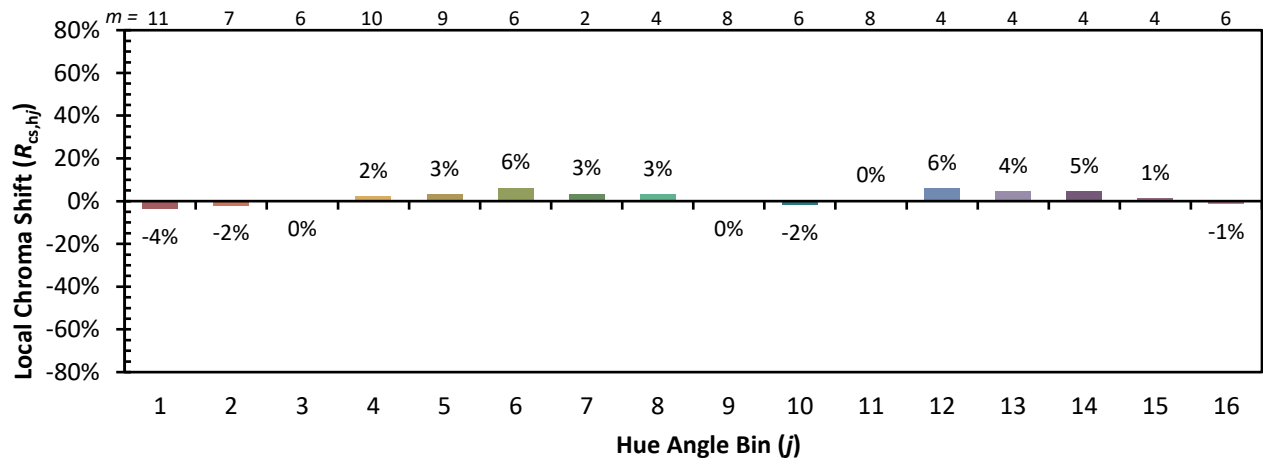


Individual Sample Fidelity Index ($R_{f,i}$)

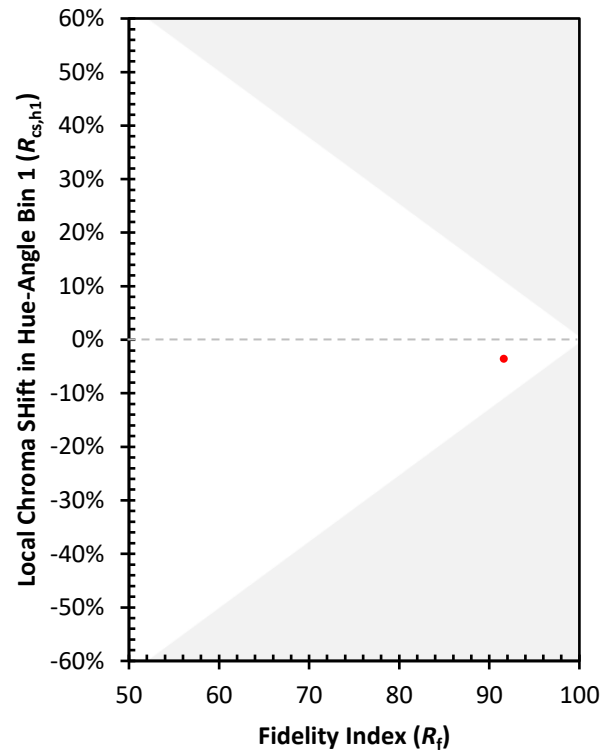
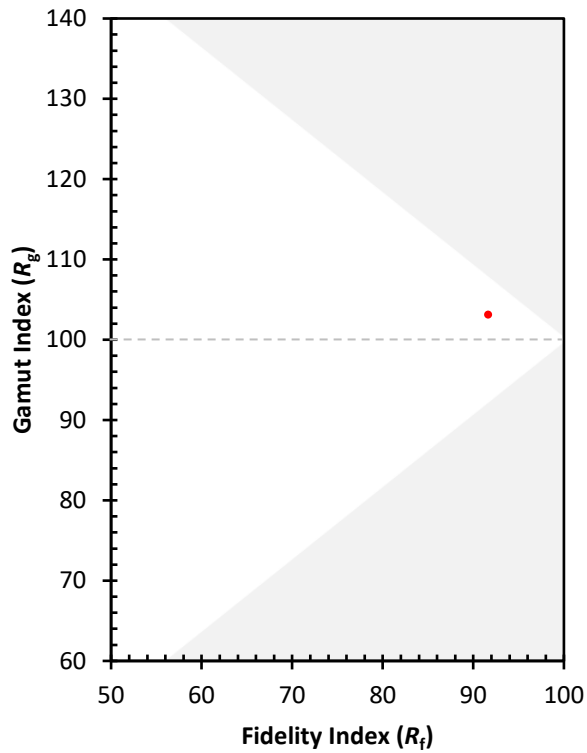
CES01 = 86	CES26 = 91	CES51 = 94	CES76 = 89
CES02 = 63	CES27 = 97	CES52 = 93	CES77 = 86
CES03 = 32	CES28 = 96	CES53 = 91	CES78 = 85
CES04 = 70	CES29 = 88	CES54 = 99	CES79 = 90
CES05 = 50	CES30 = 92	CES55 = 99	CES80 = 92
CES06 = 51	CES31 = 89	CES56 = 92	CES81 = 72
CES07 = 44	CES32 = 82	CES57 = 92	CES82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



Color Rendition by Hue-Angle Bin



Measure Comparisons



(END OF REPORT)