

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: P1046645

Luminaire Tested: FMNL1515FS5-(black trim)-940

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: P1046645
Test Lab: Cooper lighting solutions
Issue Date: 07/03/2025
Manufacturer: COOPER LIGHTING SOLUTIONS
Product Line: HALO
Catalog Number: FMNL1515FS5-(black trim)-940
Description: HALO 15 inch 90 CRI COLOR SELECTABLE flush mount Black Trim FIXTURE with night light
Light Source: 4000K CCT, 90 CRI LEDS
Ballast/Driver: -

Summary

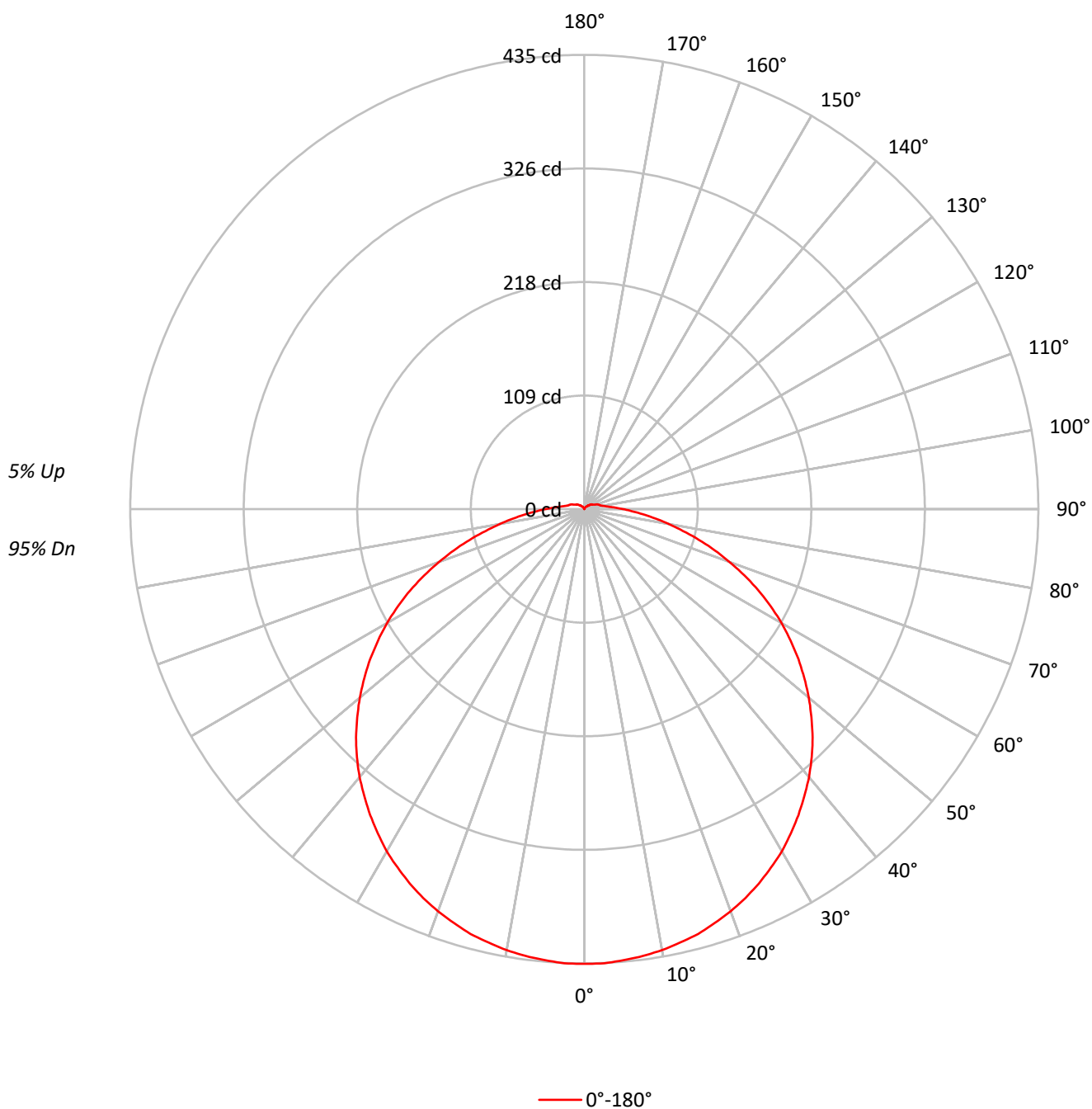
Lumens per Lamp: N/A
Luminaire Lumens: 1460.6 lumens
Efficiency: N/A
Efficacy: 86.9 lumens/watt
Spacing Criteria (0/90/45): 1.29 / 1.29 / 1.42
Luminous Opening: Circular (Dia: 1.2' x H: 0')
CIE Type: Direct

Input Watts (W): 16.8
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: P1046645
CATALOG NUMBER: FMNL1515FS5-(black trim)-940

Luminous Intensity Polar Plot



TEST NUMBER: P1046645

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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		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	57		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°	4144
5°	4142
10°	4144
15°	4150
20°	4151
25°	4154
30°	4160
35°	4155
40°	4161
45°	4163
50°	4158
55°	4155
60°	4153
65°	4144
70°	4118
75°	4185
80°	4522
85°	6115

MAXIMUM LUMINANCE 45°-90°:

Horizontal Angle: 0°

Vertical Angle: 87.5°

Luminance: 9928 cd/sqm

TEST NUMBER: P1046645

CATALOG NUMBER: FMNL1515FS5-(black trim)-940

ZONAL LUMENS:

Zone	Lumens	% Fixture
0°-10°	41.2	2.8
10°-20°	118.9	8.1
20°-30°	182.4	12.5
30°-40°	223.8	15.3
40°-50°	238.5	16.3
50°-60°	223.7	15.3
60°-70°	181.8	12.4
70°-80°	120.5	8.3
80°-90°	62.6	4.3
90°-100°	28.3	1.9
100°-110°	16.2	1.1
110°-120°	10.5	0.7
120°-130°	6.7	0.5
130°-140°	3.5	0.2
140°-150°	1.6	0.1
150°-160°	0.4	0.0
160°-170°	0.0	0.0
170°-180°	0.0	0.0
0°-30°	342.5	23.4
0°-40°	566.3	38.8
0°-60°	1028.5	70.4
0°-90°	1393.4	95.4
90°-120°	54.9	3.8
90°-150°	66.8	4.6
90°-180°	67.0	4.6
0°-180°	1460.6	100.0

CANDELA DISTRIBUTION:

	0°	Flux
0°	435	
5°	434	41
15°	421	119
25°	396	182
35°	358	224
45°	309	238
55°	250	224
65°	184	182
75°	114	121
85°	56	51
90°	37	21
95°	25	19
105°	15	16
115°	10	10
125°	8	7
135°	5	3
145°	3	2
155°	1	0
165°	0	0
175°	0	0
180°	0	0

TEST NUMBER: P1046645

CATALOG NUMBER: FMNL1515FS5-(black trim)-940

CANDELA DISTRIBUTION (FULL):

0°	
0°	435.4
2.5°	435.4
5°	433.5
7.5°	431.6
10°	428.8
12.5°	425.0
15°	421.2
17.5°	415.5
20°	409.8
22.5°	403.2
25°	395.6
27.5°	387.1
30°	378.5
32.5°	368.1
35°	357.6
37.5°	346.3
40°	334.9
42.5°	322.5
45°	309.3
47.5°	295.0
50°	280.8
52.5°	265.6
55°	250.4
57.5°	234.3
60°	218.2
62.5°	201.1
65°	184.0
67.5°	166.0
70°	148.0
72.5°	130.9
75°	113.8
77.5°	96.8
80°	82.5
82.5°	68.3
85°	56.0
87.5°	45.5
90°	37.0
92.5°	30.4
95°	24.7
97.5°	20.9
100°	18.0
102.5°	16.1
105°	15.2
107.5°	14.2
110°	13.3

TEST NUMBER: P1046645

CATALOG NUMBER: FMNL1515FS5-(black trim)-940

CANDELA DISTRIBUTION (continued):

	0°
112.5°	11.4
115°	10.4
117.5°	9.5
120°	8.5
122.5°	8.5
125°	7.6
127.5°	6.6
130°	5.7
132.5°	4.7
135°	4.7
137.5°	3.8
140°	3.8
142.5°	2.8
145°	2.8
147.5°	1.9
150°	1.9
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

TEST NUMBER: P1046645

CATALOG NUMBER: FMNL1515FS5-(black trim)-940

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	19.7	21.1	20.2	21.5	22.0	19.7	21.1	20.2	21.5	22.0
	6H	20.5	21.8	21.0	22.2	22.7	20.5	21.8	21.0	22.2	22.7
	8H	20.9	22.1	21.4	22.6	23.1	20.9	22.1	21.4	22.6	23.1
	12H	21.3	22.4	21.8	22.9	23.4	21.3	22.4	21.8	22.9	23.4
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	21.4	21.9	19.8	21.0	20.3	21.4	21.9
	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	23.2	23.8	21.8	22.7	22.3	23.2	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	23.2	24.0	24.6	22.7	23.5	23.2	24.0	24.6
8H	4H	21.2	22.1	21.8	22.6	23.2	21.2	22.1	21.8	22.6	23.2
	6H	22.4	23.1	22.9	23.7	24.3	22.4	23.1	22.9	23.7	24.3
	8H	23.0	23.6	23.5	24.2	24.8	23.0	23.6	23.5	24.2	24.8
	12H	23.6	24.2	24.2	24.8	25.4	23.6	24.2	24.2	24.8	25.4
12H	4H	21.3	22.1	21.9	22.7	23.2	21.3	22.1	21.9	22.7	23.2
	6H	22.5	23.2	23.1	23.7	24.4	22.5	23.2	23.1	23.7	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: SP1-2506-468-16

Test Date: 07/09/2025

Luminaire Tested: FMNL1515FS5-4000K

Data in this report applies to families of products including FMNL1515FS5-4000K

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

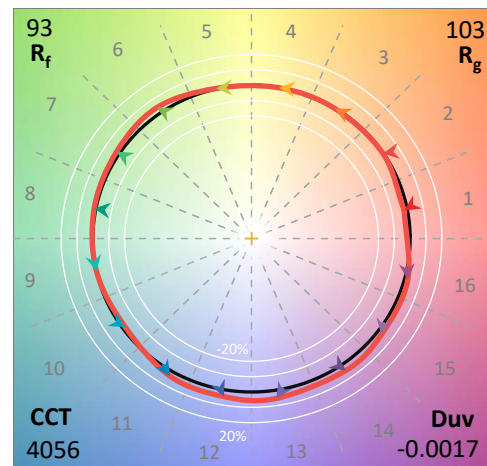
Test Information

Test Method: LM-79-2019
 Report Number: SP1-2506-468-16
 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: **FMNL1515FS5-4000K**
 Description: HALO FLUSH MOUNT NIGHT LIGHT 15 INCH

Spectral Parameters

CCT (K): 4056
 CIE u' : 0.2251
 CIE v' : 0.4984
 Duv: -0.0017
 CIE x: 0.3769
 CIE y: 0.3708
 CIE z: 0.2523
 Peak Wavelength (nm): 630
 Dominant Wavelength (nm): 579
 Purity: 24.37075
 R_f: 92.7
 R_g: 102.8

CRI (Ra): 96.6
 R1: 98.7
 R2: 97.5
 R3: 92.1
 R4: 94.7
 R5: 99.5
 R6: 95.4
 R7: 96.8
 R8: 97.8
 R9: 91.1
 R10: 92.0
 R11: 92.0
 R12: 79.2
 R13: 99.9
 R14: 94.4
 R15: 99.3



Test Conditions

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

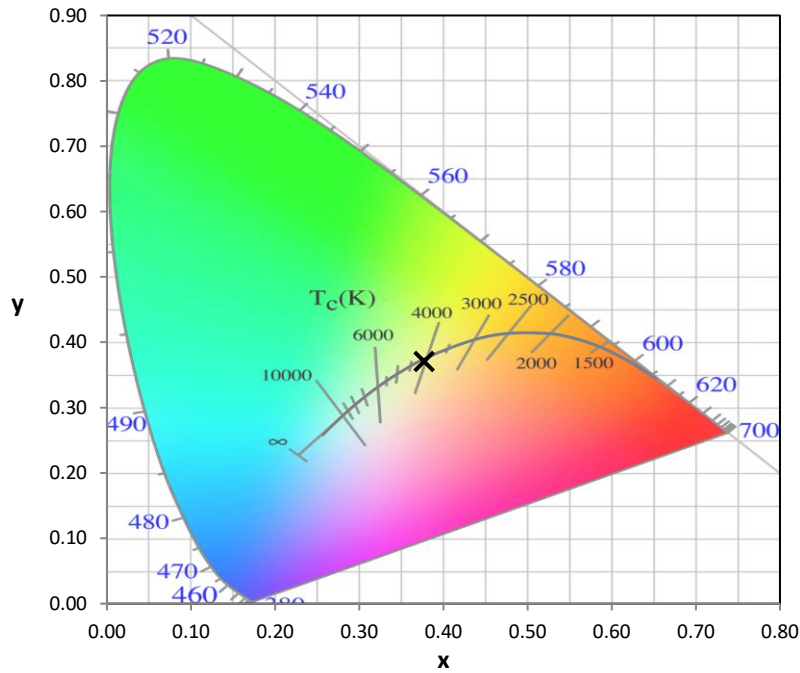
REPORT NUMBER: SP1-2506-468-16

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

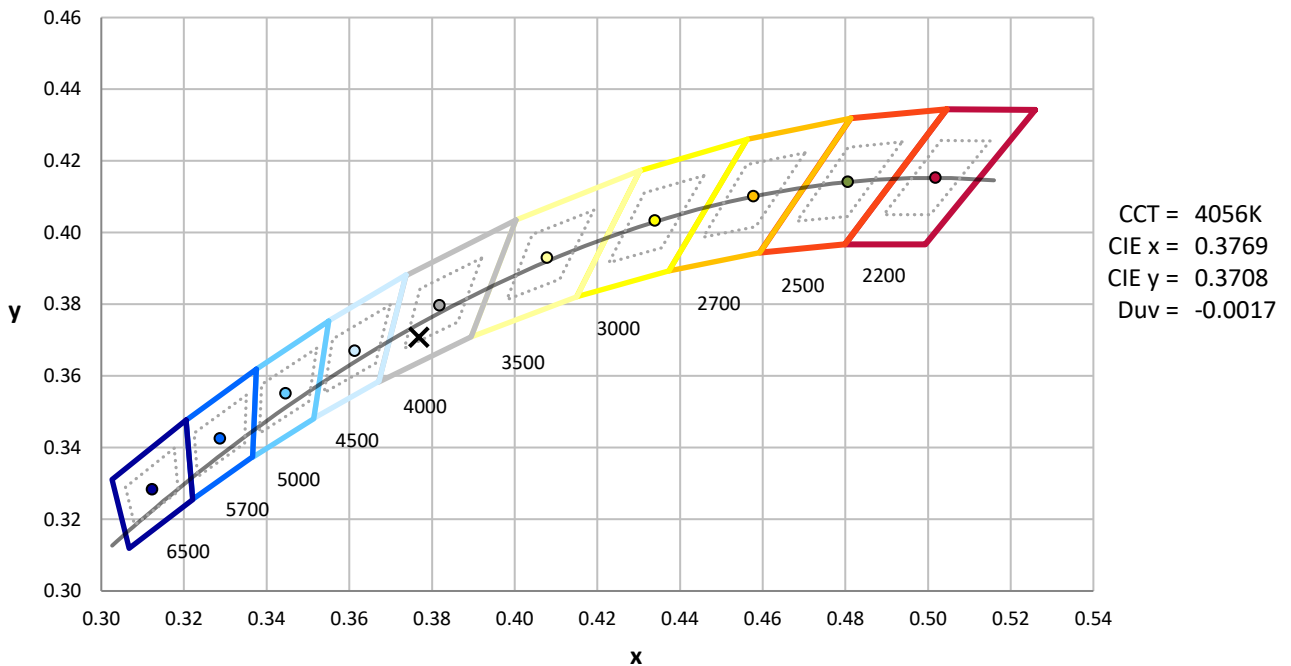
Sample Number	Condition	Description
P2506-468-LM.3	Good	HALO FLUSH MOUNT NIGHT LIGHT 15 INCH

REPORT NUMBER: SP1-2506-468-16

CIE 1931 Chromaticity Diagram



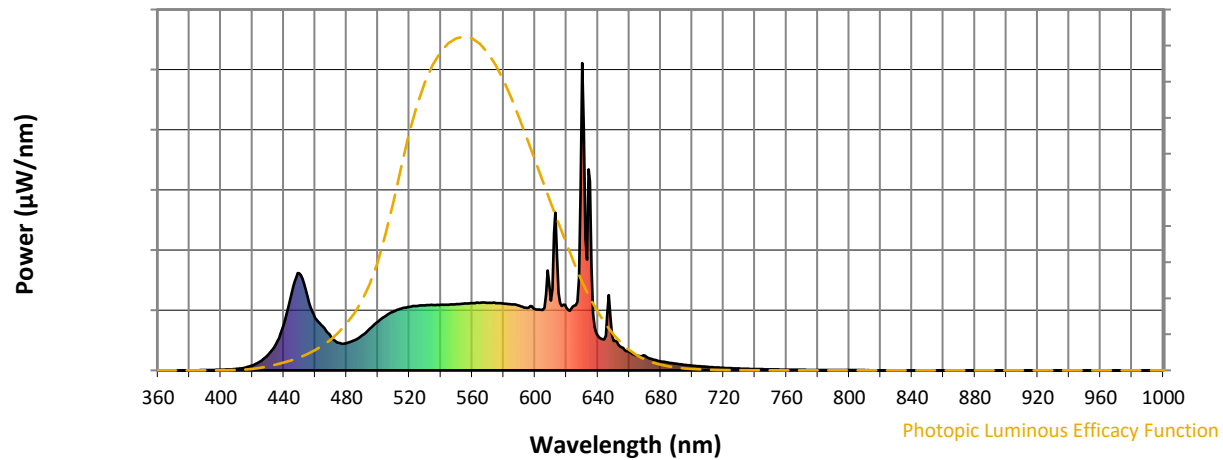
CIE 1931 Chromaticity Diagram with 2017 ANSI 7-Step and 4-Step Quadrangles



Point lies inside the ANSI 4000K 4-step quadrangle

REPORT NUMBER: SP1-2506-468-16

Photopic Flux vs. Wavelength

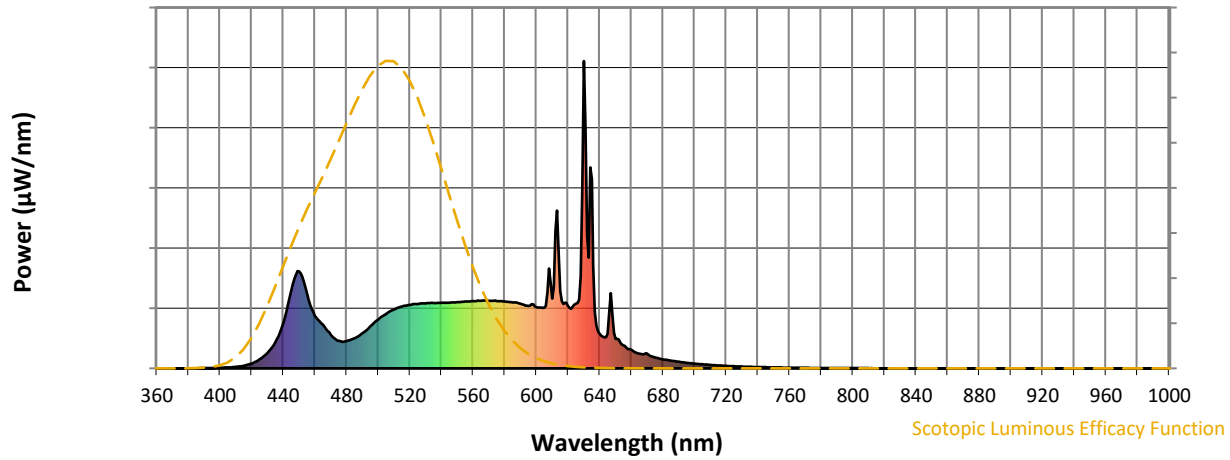


Photopic Lumens: NR

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	114	NR	620	203	NR	750	3	NR	880	0	NR
365	0	NR	495	136	NR	625	211	NR	755	3	NR	885	0	NR
370	0	NR	500	159	NR	630	1000	NR	760	2	NR	890	0	NR
375	0	NR	505	177	NR	635	616	NR	765	2	NR	895	0	NR
380	0	NR	510	192	NR	640	112	NR	770	2	NR	900	0	NR
385	0	NR	515	201	NR	645	113	NR	775	1	NR	905	0	NR
390	1	NR	520	207	NR	650	96	NR	780	1	NR	910	0	NR
395	2	NR	525	209	NR	655	75	NR	785	1	NR	915	0	NR
400	2	NR	530	211	NR	660	61	NR	790	1	NR	920	0	NR
405	3	NR	535	213	NR	665	48	NR	795	1	NR	925	0	NR
410	5	NR	540	213	NR	670	48	NR	800	1	NR	930	0	NR
415	9	NR	545	214	NR	675	35	NR	805	1	NR	935	0	NR
420	16	NR	550	216	NR	680	30	NR	810	1	NR	940	0	NR
425	29	NR	555	217	NR	685	25	NR	815	1	NR	945	0	NR
430	50	NR	560	219	NR	690	22	NR	820	0	NR	950	0	NR
435	86	NR	565	220	NR	695	18	NR	825	0	NR	955	0	NR
440	148	NR	570	220	NR	700	15	NR	830	0	NR	960	0	NR
445	251	NR	575	219	NR	705	13	NR	835	0	NR	965	0	NR
450	315	NR	580	218	NR	710	11	NR	840	0	NR	970	0	NR
455	243	NR	585	215	NR	715	10	NR	845	0	NR	975	0	NR
460	171	NR	590	210	NR	720	8	NR	850	0	NR	980	0	NR
465	143	NR	595	203	NR	725	7	NR	855	0	NR	985	0	NR
470	110	NR	600	199	NR	730	6	NR	860	0	NR	990	0	NR
475	90	NR	605	196	NR	735	5	NR	865	0	NR	995	0	NR
480	89	NR	610	227	NR	740	4	NR	870	0	NR	1000	0	NR
485	98	NR	615	252	NR	745	4	NR	875	0	NR			

REPORT NUMBER: SP1-2506-468-16

Scotopic Flux vs. Wavelength



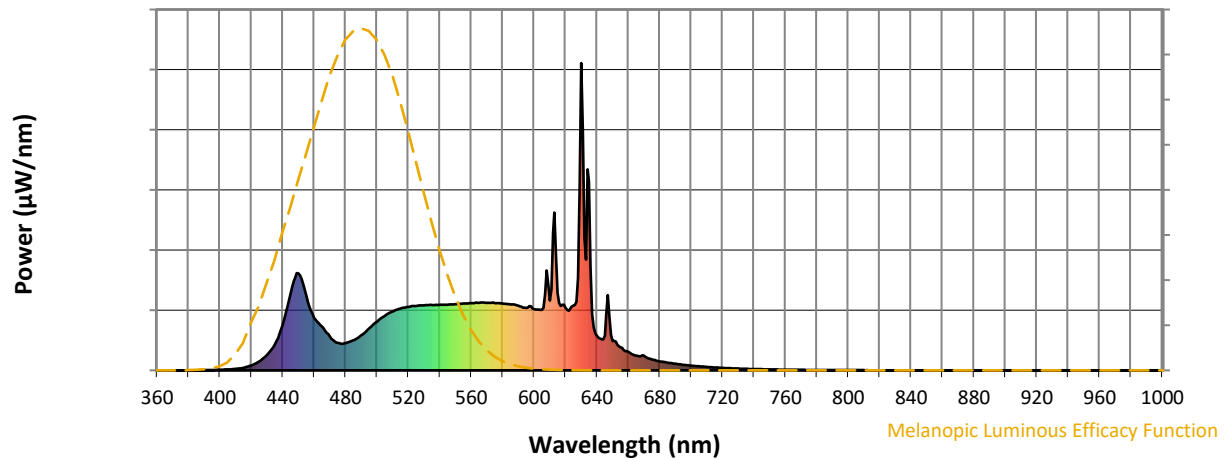
Scotopic Lumens: NR

S/P: 1.83

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	114	NR	620	203	NR	750	3	NR	880	0	NR
365	0	NR	495	136	NR	625	211	NR	755	3	NR	885	0	NR
370	0	NR	500	159	NR	630	1000	NR	760	2	NR	890	0	NR
375	0	NR	505	177	NR	635	616	NR	765	2	NR	895	0	NR
380	0	NR	510	192	NR	640	112	NR	770	2	NR	900	0	NR
385	0	NR	515	201	NR	645	113	NR	775	1	NR	905	0	NR
390	1	NR	520	207	NR	650	96	NR	780	1	NR	910	0	NR
395	2	NR	525	209	NR	655	75	NR	785	1	NR	915	0	NR
400	2	NR	530	211	NR	660	61	NR	790	1	NR	920	0	NR
405	3	NR	535	213	NR	665	48	NR	795	1	NR	925	0	NR
410	5	NR	540	213	NR	670	48	NR	800	1	NR	930	0	NR
415	9	NR	545	214	NR	675	35	NR	805	1	NR	935	0	NR
420	16	NR	550	216	NR	680	30	NR	810	1	NR	940	0	NR
425	29	NR	555	217	NR	685	25	NR	815	1	NR	945	0	NR
430	50	NR	560	219	NR	690	22	NR	820	0	NR	950	0	NR
435	86	NR	565	220	NR	695	18	NR	825	0	NR	955	0	NR
440	148	NR	570	220	NR	700	15	NR	830	0	NR	960	0	NR
445	251	NR	575	219	NR	705	13	NR	835	0	NR	965	0	NR
450	315	NR	580	218	NR	710	11	NR	840	0	NR	970	0	NR
455	243	NR	585	215	NR	715	10	NR	845	0	NR	975	0	NR
460	171	NR	590	210	NR	720	8	NR	850	0	NR	980	0	NR
465	143	NR	595	203	NR	725	7	NR	855	0	NR	985	0	NR
470	110	NR	600	199	NR	730	6	NR	860	0	NR	990	0	NR
475	90	NR	605	196	NR	735	5	NR	865	0	NR	995	0	NR
480	89	NR	610	227	NR	740	4	NR	870	0	NR	1000	0	NR
485	98	NR	615	252	NR	745	4	NR	875	0	NR			

REPORT NUMBER: SP1-2506-468-16

Melanopic Flux vs. Wavelength



Melanopic Lumens: NR

M/P: 3.8

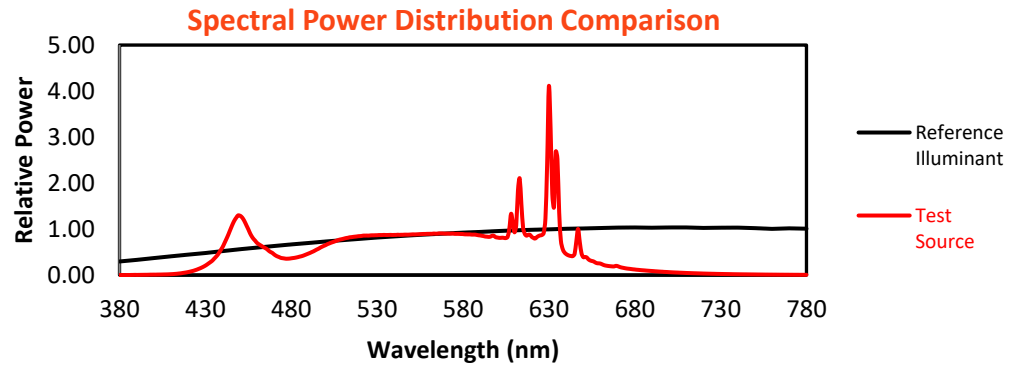
λ (nm)	Power $\text{W}^\wedge/\text{nm}$	Lumens (ϕ/nm)	λ (nm)	Power $\text{W}^\wedge/\text{nm}$	Lumens (ϕ/nm)	λ (nm)	Power $\text{W}^\wedge/\text{nm}$	Lumens (ϕ/nm)	λ (nm)	Power $\text{W}^\wedge/\text{nm}$	Lumens (ϕ/nm)	λ (nm)	Power $\text{W}^\wedge/\text{nm}$	Lumens (ϕ/nm)
360	0	NR	490	114	NR	620	203	NR	750	3	NR	880	0	NR
365	0	NR	495	136	NR	625	211	NR	755	3	NR	885	0	NR
370	0	NR	500	159	NR	630	1000	NR	760	2	NR	890	0	NR
375	0	NR	505	177	NR	635	616	NR	765	2	NR	895	0	NR
380	0	NR	510	192	NR	640	112	NR	770	2	NR	900	0	NR
385	0	NR	515	201	NR	645	113	NR	775	1	NR	905	0	NR
390	1	NR	520	207	NR	650	96	NR	780	1	NR	910	0	NR
395	2	NR	525	209	NR	655	75	NR	785	1	NR	915	0	NR
400	2	NR	530	211	NR	660	61	NR	790	1	NR	920	0	NR
405	3	NR	535	213	NR	665	48	NR	795	1	NR	925	0	NR
410	5	NR	540	213	NR	670	48	NR	800	1	NR	930	0	NR
415	9	NR	545	214	NR	675	35	NR	805	1	NR	935	0	NR
420	16	NR	550	216	NR	680	30	NR	810	1	NR	940	0	NR
425	29	NR	555	217	NR	685	25	NR	815	1	NR	945	0	NR
430	50	NR	560	219	NR	690	22	NR	820	0	NR	950	0	NR
435	86	NR	565	220	NR	695	18	NR	825	0	NR	955	0	NR
440	148	NR	570	220	NR	700	15	NR	830	0	NR	960	0	NR
445	251	NR	575	219	NR	705	13	NR	835	0	NR	965	0	NR
450	315	NR	580	218	NR	710	11	NR	840	0	NR	970	0	NR
455	243	NR	585	215	NR	715	10	NR	845	0	NR	975	0	NR
460	171	NR	590	210	NR	720	8	NR	850	0	NR	980	0	NR
465	143	NR	595	203	NR	725	7	NR	855	0	NR	985	0	NR
470	110	NR	600	199	NR	730	6	NR	860	0	NR	990	0	NR
475	90	NR	605	196	NR	735	5	NR	865	0	NR	995	0	NR
480	89	NR	610	227	NR	740	4	NR	870	0	NR	1000	0	NR
485	98	NR	615	252	NR	745	4	NR	875	0	NR			

REPORT NUMBER: SP1-2506-468-16

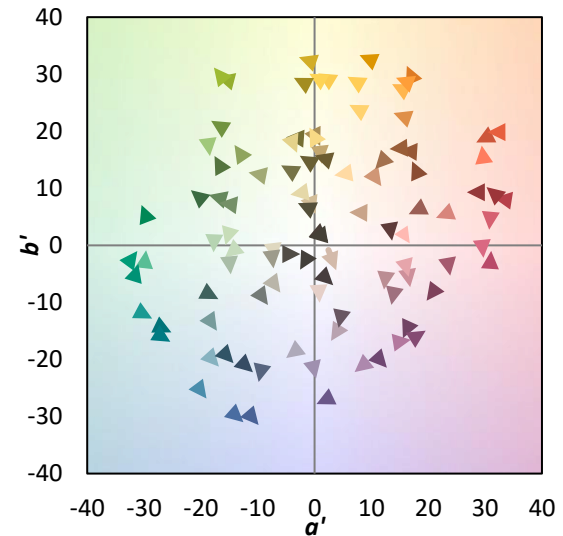
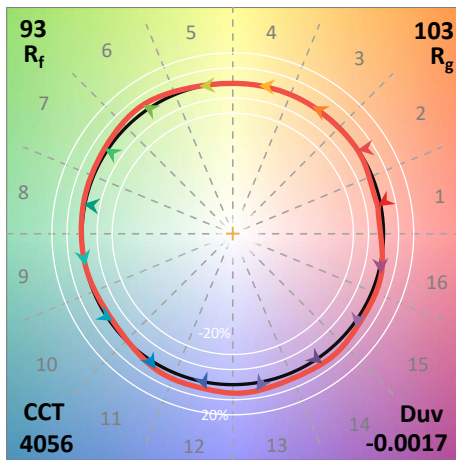
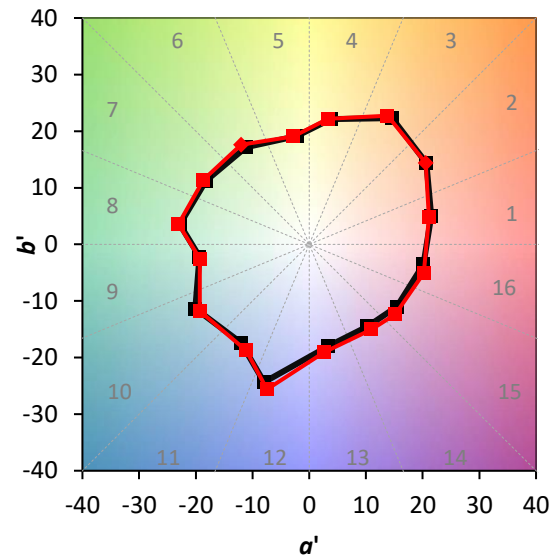
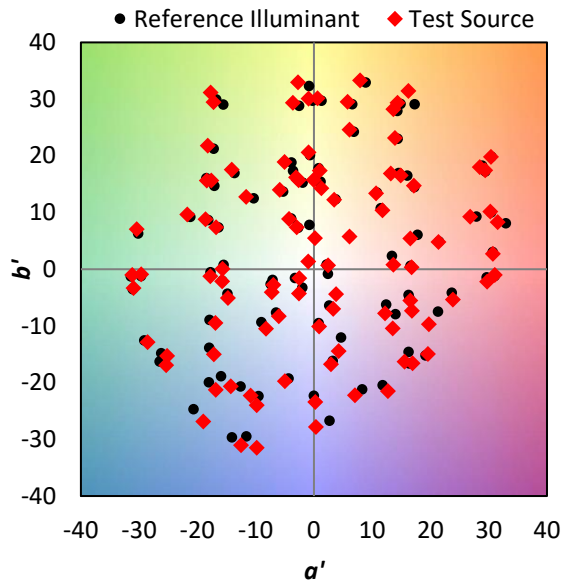
TM-30-18

Summary

$R_f = 92.7$
 $R_g = 102.8$
 $CIE R_a = 96.6$
 $R_9 = 91.1$

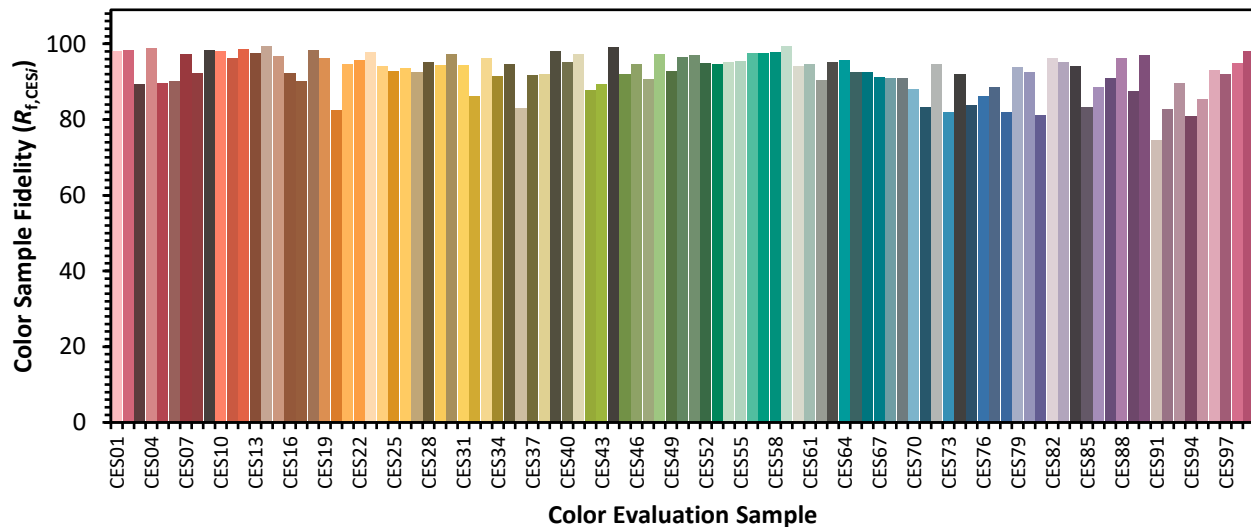


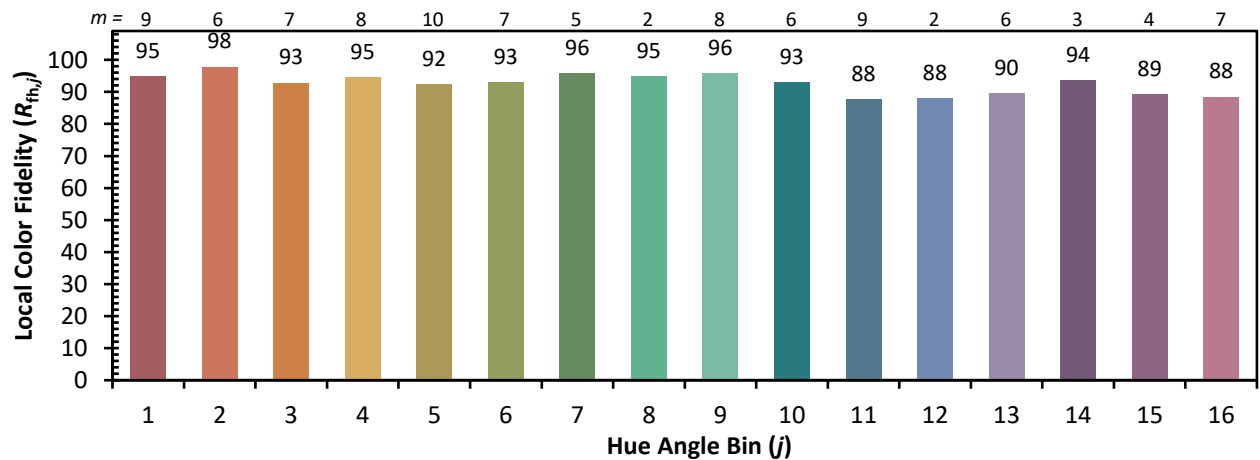
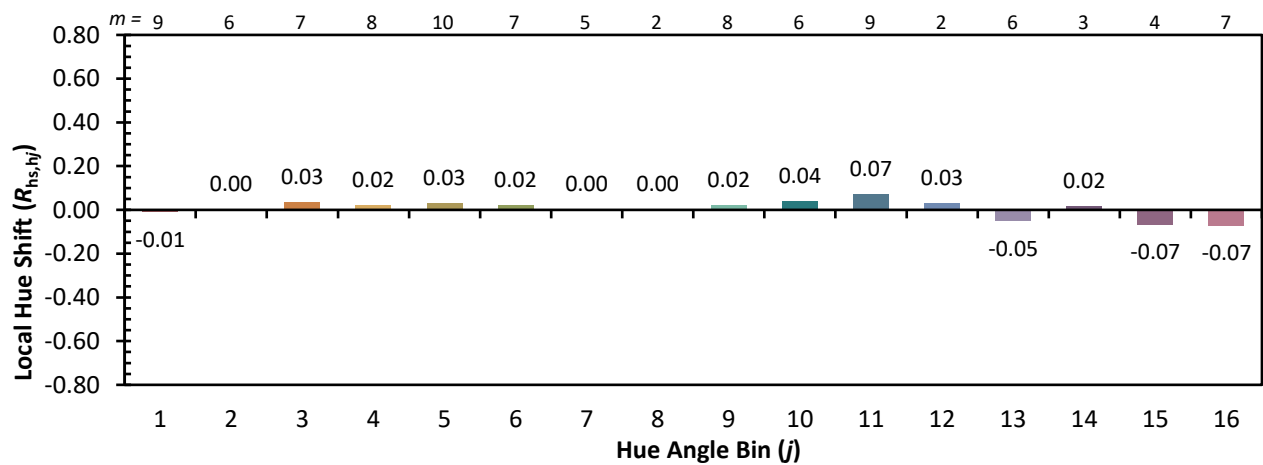
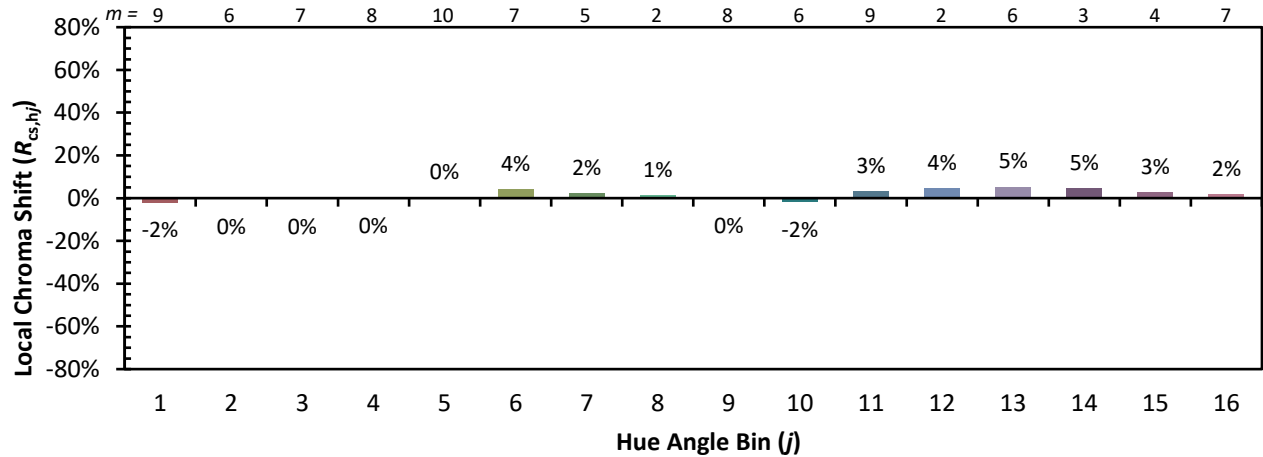
Color Vector Graphics



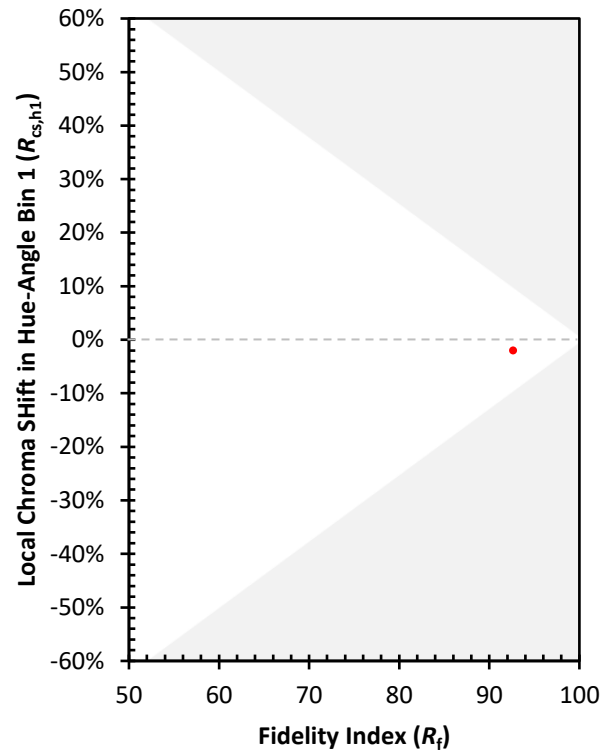
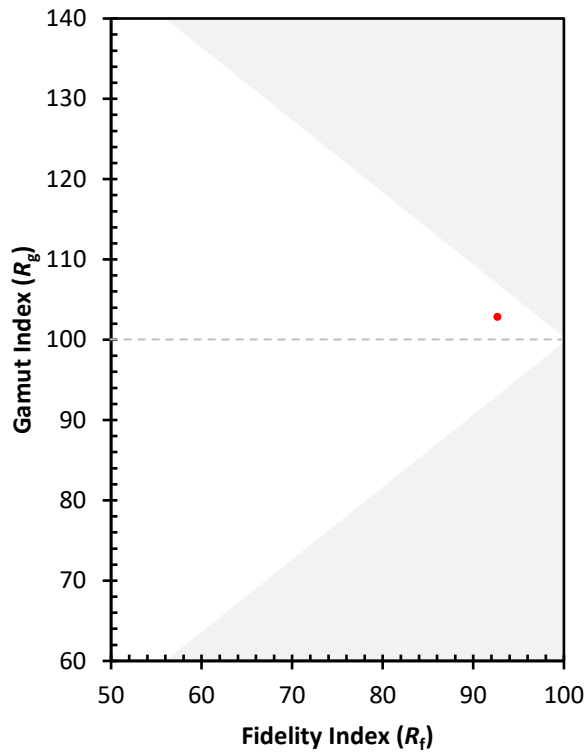
Individual Sample Fidelity Index ($R_{f,i}$)

CES01 = 86	CES26 = 93	CES51 = 97	CES76 = 86
CES02 = 62	CES27 = 92	CES52 = 95	CES77 = 89
CES03 = 31	CES28 = 95	CES53 = 95	CES78 = 82
CES04 = 69	CES29 = 94	CES54 = 95	CES79 = 94
CES05 = 49	CES30 = 97	CES55 = 95	CES80 = 93
CES06 = 50	CES31 = 94	CES56 = 98	CES81 = 81
CES07 = 42	CES32 = 86	CES57 = 97	CES82 = 96
CES08 = 41	CES33 = 96	CES58 = 98	CES83 = 95
CES09 = 29	CES34 = 92	CES59 = 99	CES84 = 94
CES10 = 74	CES35 = 95	CES60 = 94	CES85 = 83
CES11 = 57	CES36 = 83	CES61 = 95	CES86 = 89
CES12 = 63	CES37 = 92	CES62 = 90	CES87 = 91
CES13 = 43	CES38 = 92	CES63 = 95	CES88 = 96
CES14 = 74	CES39 = 98	CES64 = 96	CES89 = 88
CES15 = 71	CES40 = 95	CES65 = 93	CES90 = 97
CES16 = 47	CES41 = 97	CES66 = 92	CES91 = 75
CES17 = 49	CES42 = 88	CES67 = 91	CES92 = 83
CES18 = 56	CES43 = 89	CES68 = 91	CES93 = 90
CES19 = 71	CES44 = 99	CES69 = 91	CES94 = 81
CES20 = 66	CES45 = 92	CES70 = 88	CES95 = 85
CES21 = 85	CES46 = 95	CES71 = 83	CES96 = 93
CES22 = 78	CES47 = 91	CES72 = 95	CES97 = 92
CES23 = 91	CES48 = 97	CES73 = 82	CES98 = 95
CES24 = 90	CES49 = 93	CES74 = 92	CES99 = 98
CES25 = 71	CES50 = 96	CES75 = 84	



Color Rendition by Hue-Angle Bin


Measure Comparisons



(END OF REPORT)