

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: P1046659

Luminaire Tested: FMNL809FS5-(black trim)-935

Issue Date: 07/03/2025

Tested By:

Approved By:



NVLAP Lab Code: 200050-0

Cooper Lighting Solutions laboratories have been accredited by National Voluntary Laboratory Accreditation Program (NVLAP) that it adheres to the requirements of ISO/IEC 17025:2005 and appropriate IESNA test methods. This report must not be used to claim product certification, approval or endorsement by NVLAP, NIST or any agency of the Federal Government. Results contained in this report are valid for luminaire sample tested, as supplied by requestor. Information related to the luminaire tested has been supplied by requestor and can affect the validity of the test results. Report shall not be reproduced except in full without approval of Cooper Lighting Solutions Lighting Laboratory. Test performed at address noted above.

Test Information

Test Method: LM-79-2019
Report Number: P1046659
Test Lab: Cooper lighting solutions
Issue Date: 07/03/2025
Manufacturer: COOPER LIGHTING SOLUTIONS
Product Line: HALO
Catalog Number: FMNL809FS5-(black trim)-935
Description: HALO 8 inch 90 CRI COLOR SELECTABLE flush mount Black Trim FIXTURE with night light
Light Source: 3500K CCT, 90 CRI LEDS
Ballast/Driver: -

Summary

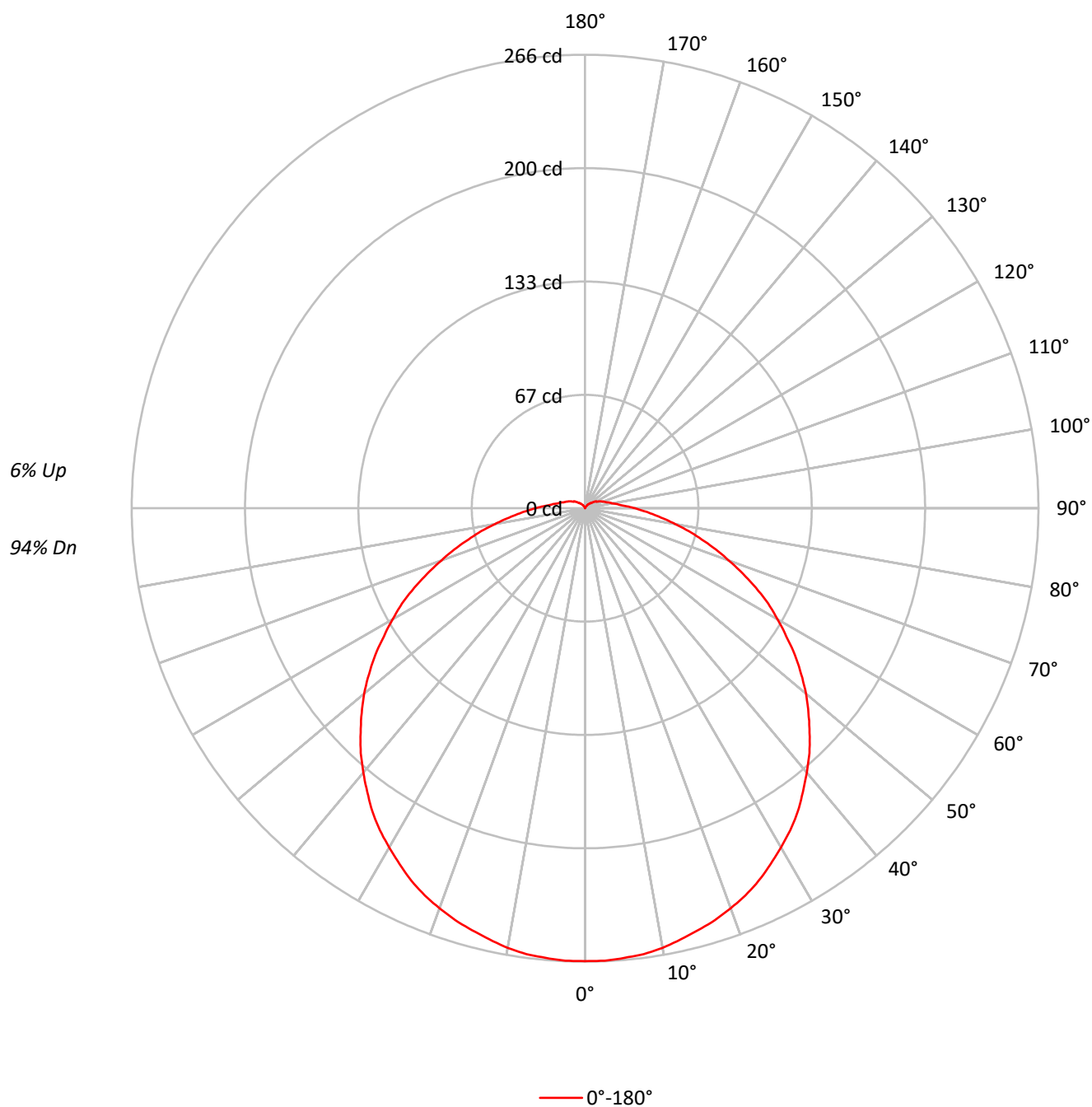
Lumens per Lamp: N/A
Luminaire Lumens: 909.8 lumens
Efficiency: N/A
Efficacy: 89.2 lumens/watt
Spacing Criteria (0/90/45): 1.29 / 1.29 / 1.41
Luminous Opening: Circular (Dia: 0.7' x H: 0')
CIE Type: Direct

Input Watts (W): 10.2
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: P1046659
CATALOG NUMBER: FMNL809FS5-(black trim)-935

Luminous Intensity Polar Plot



TEST NUMBER: P1046659

CATALOG NUMBER: FMNL809FS5-(black trim)-935

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°	7431
5°	7435
10°	7438
15°	7421
20°	7432
25°	7441
30°	7422
35°	7426
40°	7390
45°	7369
50°	7367
55°	7334
60°	7300
65°	7320
70°	7344
75°	7662
80°	8682
85°	12740

MAXIMUM LUMINANCE 45°-90°:

Horizontal Angle: 0°

Vertical Angle: 87.5°

Luminance: 21801 cd/sqm

TEST NUMBER: P1046659

CATALOG NUMBER: FMNL809FS5-(black trim)-935

ZONAL LUMENS:

Zone	Lumens	% Fixture
0°-10°	25.2	2.8
10°-20°	72.4	8.0
20°-30°	111.1	12.2
30°-40°	135.9	14.9
40°-50°	143.8	15.8
50°-60°	134.3	14.8
60°-70°	109.4	12.0
70°-80°	75.4	8.3
80°-90°	44.0	4.8
90°-100°	23.7	2.6
100°-110°	14.4	1.6
110°-120°	9.4	1.0
120°-130°	5.9	0.6
130°-140°	3.1	0.3
140°-150°	1.3	0.1
150°-160°	0.4	0.0
160°-170°	0.0	0.0
170°-180°	0.0	0.0
0°-30°	208.7	22.9
0°-40°	344.6	37.9
0°-60°	622.7	68.4
0°-90°	851.6	93.6
90°-120°	47.5	5.2
90°-150°	57.9	6.4
90°-180°	58.0	6.4
0°-180°	909.8	100.0

CANDELA DISTRIBUTION:

	0°	Flux
0°	266	
5°	265	25
15°	256	72
25°	241	111
35°	218	136
45°	186	144
55°	150	134
65°	111	109
75°	71	75
85°	40	35
90°	29	16
95°	21	16
105°	13	14
115°	10	9
125°	7	6
135°	4	3
145°	2	1
155°	1	0
165°	0	0
175°	0	0
180°	0	0

TEST NUMBER: P1046659

CATALOG NUMBER: FMNL809FS5-(black trim)-935

CANDELA DISTRIBUTION (FULL):

0°	
0°	265.7
2.5°	265.7
5°	264.8
7.5°	263.8
10°	261.9
12.5°	259.1
15°	256.3
17.5°	253.4
20°	249.7
22.5°	245.9
25°	241.1
27.5°	235.5
30°	229.8
32.5°	224.1
35°	217.5
37.5°	209.9
40°	202.4
42.5°	194.8
45°	186.3
47.5°	177.8
50°	169.3
52.5°	159.8
55°	150.4
57.5°	140.0
60°	130.5
62.5°	121.0
65°	110.6
67.5°	100.2
70°	89.8
72.5°	80.4
75°	70.9
77.5°	62.4
80°	53.9
82.5°	46.3
85°	39.7
87.5°	34.0
90°	29.3
92.5°	24.6
95°	20.8
97.5°	18.9
100°	16.1
102.5°	15.1
105°	13.2
107.5°	12.3
110°	11.3

TEST NUMBER: P1046659

CATALOG NUMBER: FMNL809FS5-(black trim)-935

CANDELA DISTRIBUTION (continued):

	0°
112.5°	10.4
115°	9.5
117.5°	8.5
120°	7.6
122.5°	7.6
125°	6.6
127.5°	5.7
130°	4.7
132.5°	4.7
135°	3.8
137.5°	3.8
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

TEST NUMBER: P1046659

CATALOG NUMBER: FMNL809FS5-(black trim)-935

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	20.1	19.0	20.5	21.0	18.5	20.1	19.0	20.5	21.0
	3H	20.6	22.1	21.1	22.5	23.0	20.6	22.1	21.1	22.5	23.0
	4H	21.6	22.9	22.1	23.4	23.9	21.6	22.9	22.1	23.4	23.9
	6H	22.5	23.7	23.0	24.2	24.7	22.5	23.7	23.0	24.2	24.7
	8H	22.9	24.1	23.4	24.6	25.1	22.9	24.1	23.4	24.6	25.1
	12H	23.4	24.5	23.9	25.0	25.6	23.4	24.5	23.9	25.0	25.6
4H	2H	19.2	20.6	19.7	21.1	21.6	19.2	20.6	19.7	21.1	21.6
	3H	21.6	22.7	22.1	23.2	23.8	21.6	22.7	22.1	23.2	23.8
	4H	22.7	23.7	23.2	24.2	24.8	22.7	23.7	23.2	24.2	24.8
	6H	23.7	24.7	24.3	25.2	25.8	23.7	24.7	24.3	25.2	25.8
	8H	24.3	25.1	24.8	25.7	26.3	24.3	25.1	24.8	25.7	26.3
	12H	24.9	25.6	25.4	26.2	26.8	24.9	25.6	25.4	26.2	26.8
8H	4H	23.1	24.0	23.7	24.5	25.1	23.1	24.0	23.7	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	25.1	25.7	25.7	26.4	27.0	25.1	25.7	25.7	26.4	27.0
	12H	25.9	26.4	26.5	27.0	27.7	25.9	26.4	26.5	27.0	27.7
12H	4H	23.2	24.0	23.8	24.6	25.2	23.2	24.0	23.8	24.6	25.2
	6H	24.6	25.2	25.2	25.8	26.5	24.6	25.2	25.2	25.8	26.5
	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: SP1-2506-468-3

Test Date: 07/08/2025

Luminaire Tested: FMNL809FS5-3500K

Data in this report applies to families of products including FMNL809FS5-3500K

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

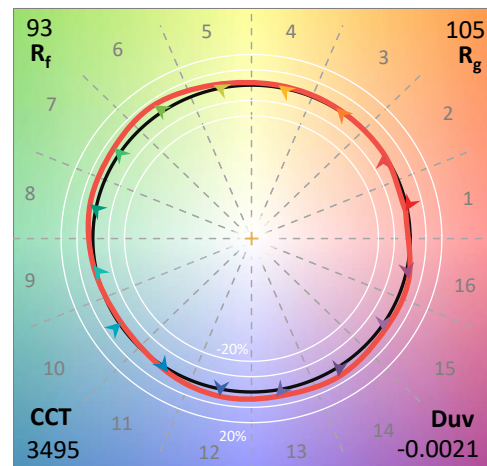
Test Information

Test Method: LM-79-2019
 Report Number: SP1-2506-468-3
 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: **FMNL809F55-3500K**
 Description: HALO FLUSH MOUNT NIGHT LIGHT 8 INCH

Spectral Parameters

CCT (K): 3495
 CIE u' : 0.2369
 CIE v' : 0.5086
 Duv: -0.0021
 CIE x: 0.4034
 CIE y: 0.3850
 CIE z: 0.2116
 Peak Wavelength (nm): 630
 Dominant Wavelength (nm): 581
 Purity: 36.60594
 R_f: 92.6
 R_g: 104.7

CRI (Ra): 95.4
 R1: 95.8
 R2: 98.5
 R3: 91.5
 R4: 90.8
 R5: 96.6
 R6: 96.6
 R7: 95.9
 R8: 97.4
 R9: 95.8
 R10: 94.6
 R11: 87.2
 R12: 88.0
 R13: 97.4
 R14: 93.7
 R15: 97.2



Test Conditions

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

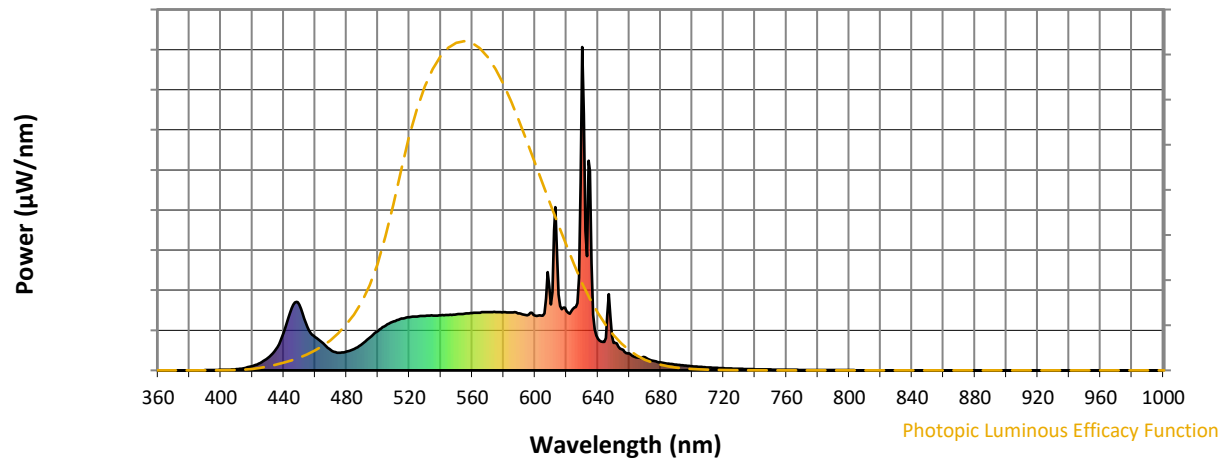
REPORT NUMBER: SP1-2506-468-3

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: SP1-2506-468-3

Photopic Flux vs. Wavelength

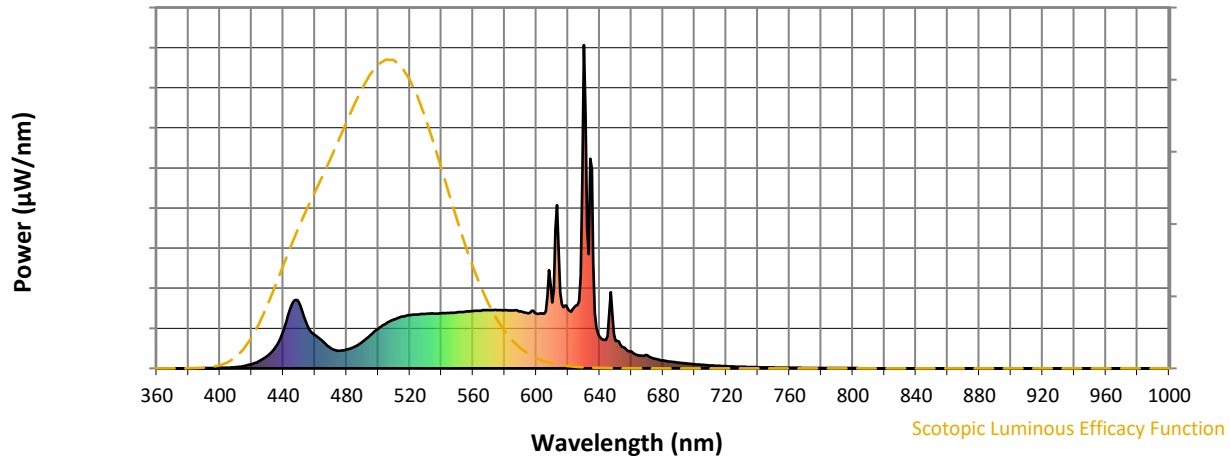


Photopic Lumens: NR

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	82	NR	620	183	NR	750	3	NR	880	0	NR
365	0	NR	495	102	NR	625	194	NR	755	2	NR	885	0	NR
370	0	NR	500	122	NR	630	1000	NR	760	2	NR	890	0	NR
375	0	NR	505	139	NR	635	617	NR	765	2	NR	895	0	NR
380	0	NR	510	151	NR	640	98	NR	770	1	NR	900	0	NR
385	0	NR	515	160	NR	645	100	NR	775	1	NR	905	0	NR
390	1	NR	520	165	NR	650	85	NR	780	1	NR	910	0	NR
395	1	NR	525	167	NR	655	65	NR	785	1	NR	915	0	NR
400	2	NR	530	168	NR	660	52	NR	790	1	NR	920	0	NR
405	2	NR	535	169	NR	665	40	NR	795	1	NR	925	0	NR
410	4	NR	540	170	NR	670	41	NR	800	1	NR	930	0	NR
415	7	NR	545	171	NR	675	29	NR	805	1	NR	935	0	NR
420	13	NR	550	173	NR	680	24	NR	810	0	NR	940	0	NR
425	23	NR	555	176	NR	685	21	NR	815	0	NR	945	0	NR
430	39	NR	560	177	NR	690	18	NR	820	0	NR	950	0	NR
435	65	NR	565	179	NR	695	15	NR	825	0	NR	955	0	NR
440	116	NR	570	180	NR	700	13	NR	830	0	NR	960	0	NR
445	192	NR	575	180	NR	705	11	NR	835	0	NR	965	0	NR
450	203	NR	580	180	NR	710	9	NR	840	0	NR	970	0	NR
455	135	NR	585	179	NR	715	8	NR	845	0	NR	975	0	NR
460	103	NR	590	176	NR	720	7	NR	850	0	NR	980	0	NR
465	84	NR	595	170	NR	725	6	NR	855	0	NR	985	0	NR
470	62	NR	600	169	NR	730	5	NR	860	0	NR	990	0	NR
475	55	NR	605	169	NR	735	4	NR	865	0	NR	995	0	NR
480	58	NR	610	204	NR	740	3	NR	870	0	NR	1000	0	NR
485	67	NR	615	235	NR	745	3	NR	875	0	NR			

REPORT NUMBER: SP1-2506-468-3

Scotopic Flux vs. Wavelength



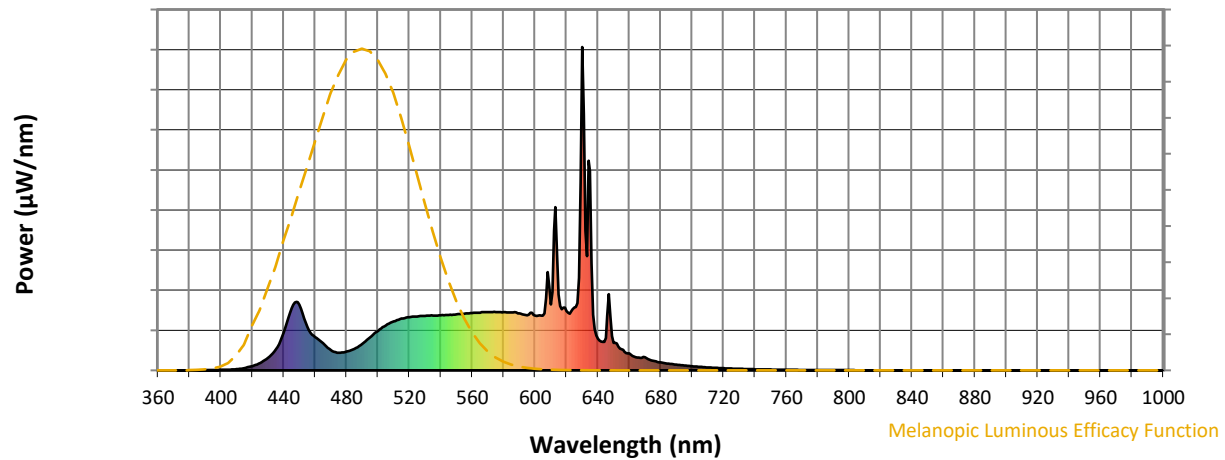
Scotopic Lumens: NR

S/P: 1.65

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	82	NR	620	183	NR	750	3	NR	880	0	NR
365	0	NR	495	102	NR	625	194	NR	755	2	NR	885	0	NR
370	0	NR	500	122	NR	630	1000	NR	760	2	NR	890	0	NR
375	0	NR	505	139	NR	635	617	NR	765	2	NR	895	0	NR
380	0	NR	510	151	NR	640	98	NR	770	1	NR	900	0	NR
385	0	NR	515	160	NR	645	100	NR	775	1	NR	905	0	NR
390	1	NR	520	165	NR	650	85	NR	780	1	NR	910	0	NR
395	1	NR	525	167	NR	655	65	NR	785	1	NR	915	0	NR
400	2	NR	530	168	NR	660	52	NR	790	1	NR	920	0	NR
405	2	NR	535	169	NR	665	40	NR	795	1	NR	925	0	NR
410	4	NR	540	170	NR	670	41	NR	800	1	NR	930	0	NR
415	7	NR	545	171	NR	675	29	NR	805	1	NR	935	0	NR
420	13	NR	550	173	NR	680	24	NR	810	0	NR	940	0	NR
425	23	NR	555	176	NR	685	21	NR	815	0	NR	945	0	NR
430	39	NR	560	177	NR	690	18	NR	820	0	NR	950	0	NR
435	65	NR	565	179	NR	695	15	NR	825	0	NR	955	0	NR
440	116	NR	570	180	NR	700	13	NR	830	0	NR	960	0	NR
445	192	NR	575	180	NR	705	11	NR	835	0	NR	965	0	NR
450	203	NR	580	180	NR	710	9	NR	840	0	NR	970	0	NR
455	135	NR	585	179	NR	715	8	NR	845	0	NR	975	0	NR
460	103	NR	590	176	NR	720	7	NR	850	0	NR	980	0	NR
465	84	NR	595	170	NR	725	6	NR	855	0	NR	985	0	NR
470	62	NR	600	169	NR	730	5	NR	860	0	NR	990	0	NR
475	55	NR	605	169	NR	735	4	NR	865	0	NR	995	0	NR
480	58	NR	610	204	NR	740	3	NR	870	0	NR	1000	0	NR
485	67	NR	615	235	NR	745	3	NR	875	0	NR			

REPORT NUMBER: SP1-2506-468-3

Melanopic Flux vs. Wavelength



Melanopic Lumens: NR

M/P: 3.33

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	82	NR	620	183	NR	750	3	NR	880	0	NR
365	0	NR	495	102	NR	625	194	NR	755	2	NR	885	0	NR
370	0	NR	500	122	NR	630	1000	NR	760	2	NR	890	0	NR
375	0	NR	505	139	NR	635	617	NR	765	2	NR	895	0	NR
380	0	NR	510	151	NR	640	98	NR	770	1	NR	900	0	NR
385	0	NR	515	160	NR	645	100	NR	775	1	NR	905	0	NR
390	1	NR	520	165	NR	650	85	NR	780	1	NR	910	0	NR
395	1	NR	525	167	NR	655	65	NR	785	1	NR	915	0	NR
400	2	NR	530	168	NR	660	52	NR	790	1	NR	920	0	NR
405	2	NR	535	169	NR	665	40	NR	795	1	NR	925	0	NR
410	4	NR	540	170	NR	670	41	NR	800	1	NR	930	0	NR
415	7	NR	545	171	NR	675	29	NR	805	1	NR	935	0	NR
420	13	NR	550	173	NR	680	24	NR	810	0	NR	940	0	NR
425	23	NR	555	176	NR	685	21	NR	815	0	NR	945	0	NR
430	39	NR	560	177	NR	690	18	NR	820	0	NR	950	0	NR
435	65	NR	565	179	NR	695	15	NR	825	0	NR	955	0	NR
440	116	NR	570	180	NR	700	13	NR	830	0	NR	960	0	NR
445	192	NR	575	180	NR	705	11	NR	835	0	NR	965	0	NR
450	203	NR	580	180	NR	710	9	NR	840	0	NR	970	0	NR
455	135	NR	585	179	NR	715	8	NR	845	0	NR	975	0	NR
460	103	NR	590	176	NR	720	7	NR	850	0	NR	980	0	NR
465	84	NR	595	170	NR	725	6	NR	855	0	NR	985	0	NR
470	62	NR	600	169	NR	730	5	NR	860	0	NR	990	0	NR
475	55	NR	605	169	NR	735	4	NR	865	0	NR	995	0	NR
480	58	NR	610	204	NR	740	3	NR	870	0	NR	1000	0	NR
485	67	NR	615	235	NR	745	3	NR	875	0	NR			

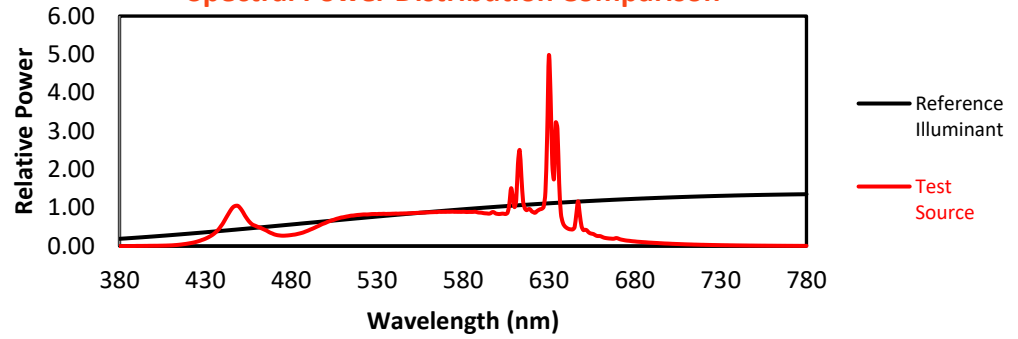
REPORT NUMBER: SP1-2506-468-3

TM-30-18

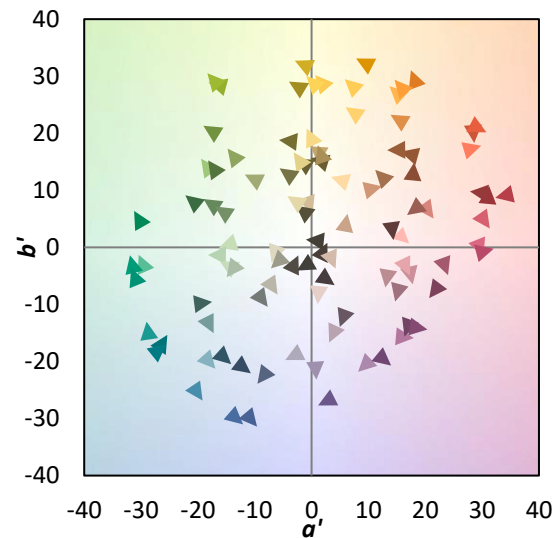
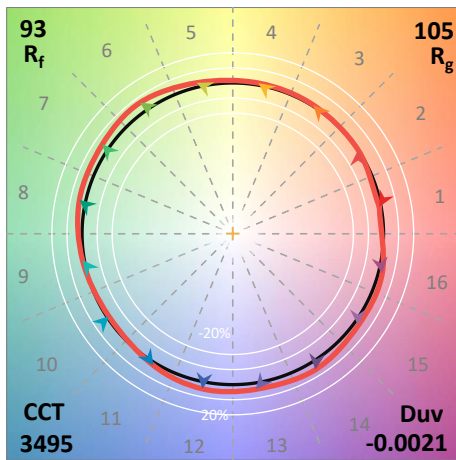
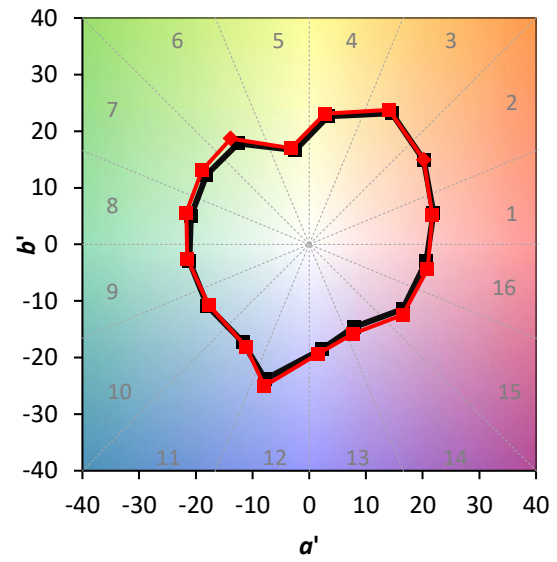
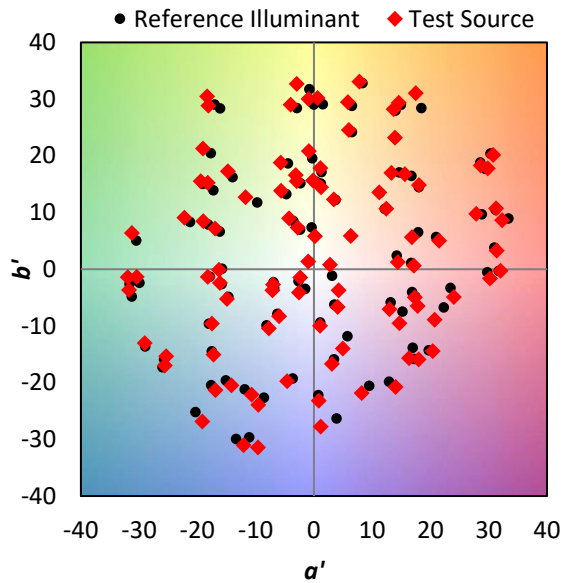
Summary

$R_f = 92.6$
 $R_g = 104.7$
 $CIE R_a = 95.4$
 $R_g = 95.8$

Spectral Power Distribution Comparison

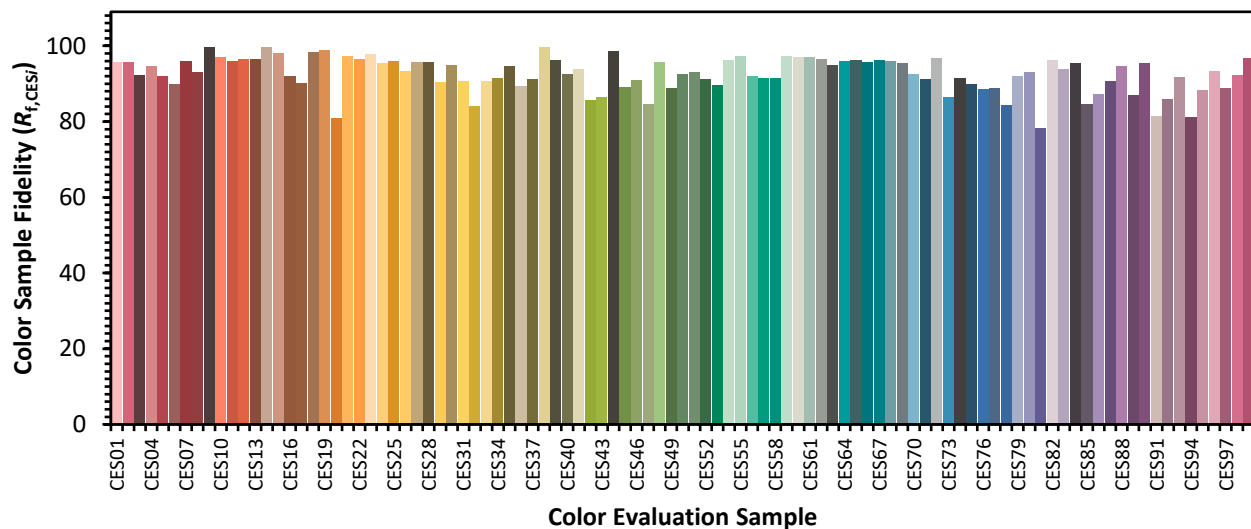


Color Vector Graphics

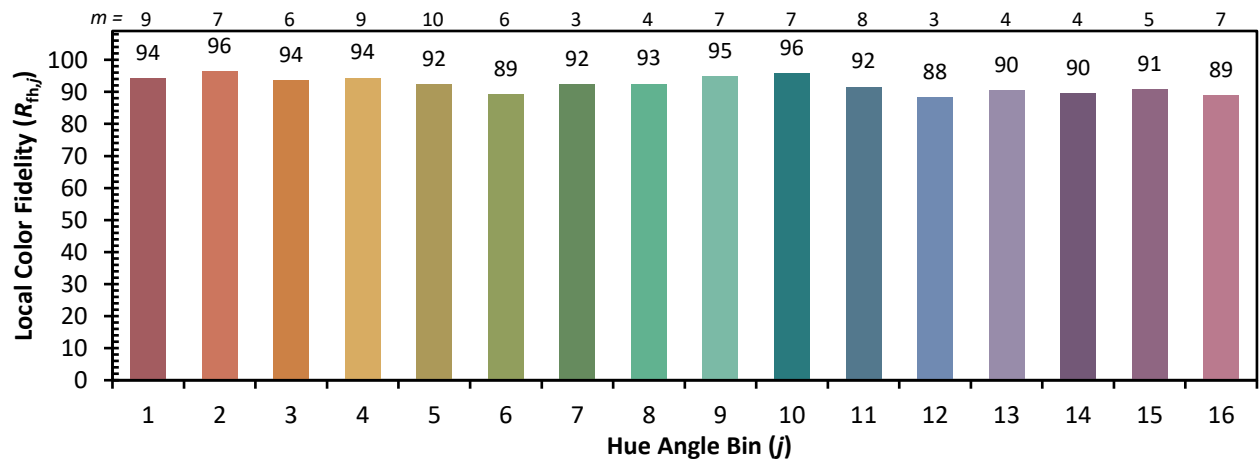
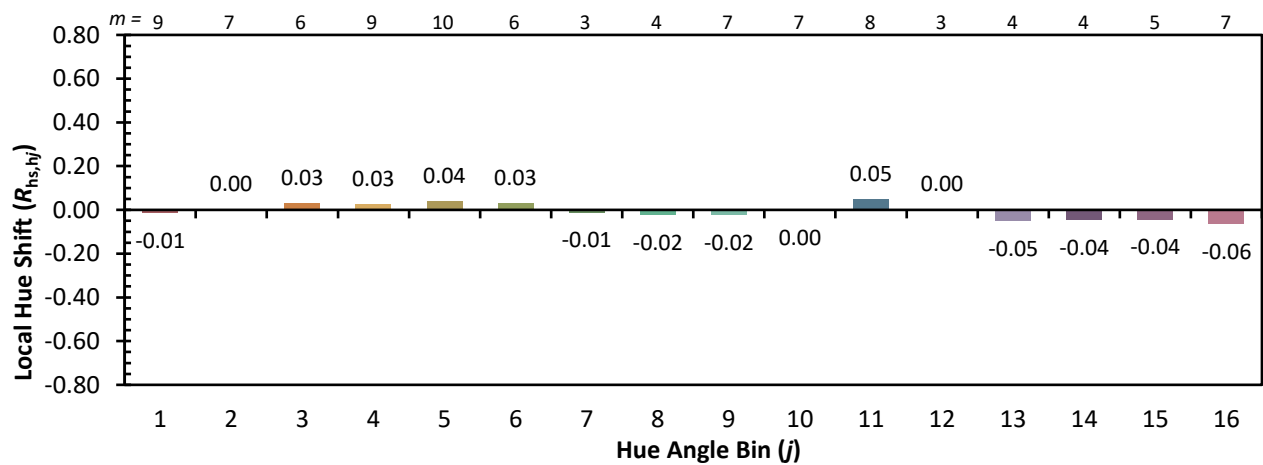
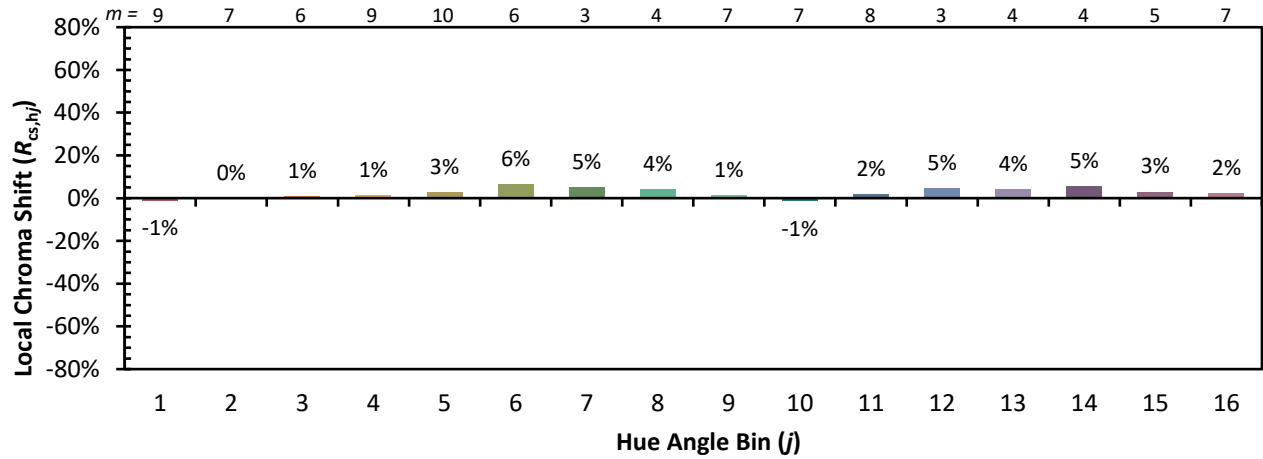


Individual Sample Fidelity Index ($R_{f,i}$)

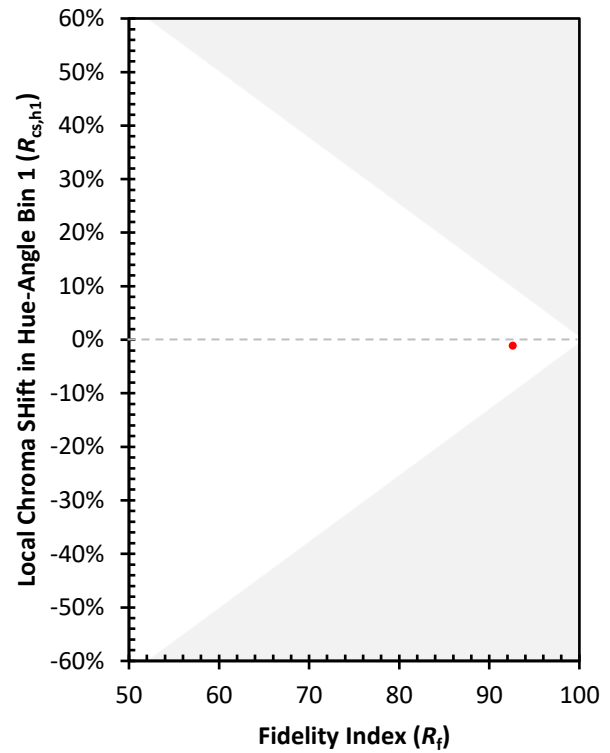
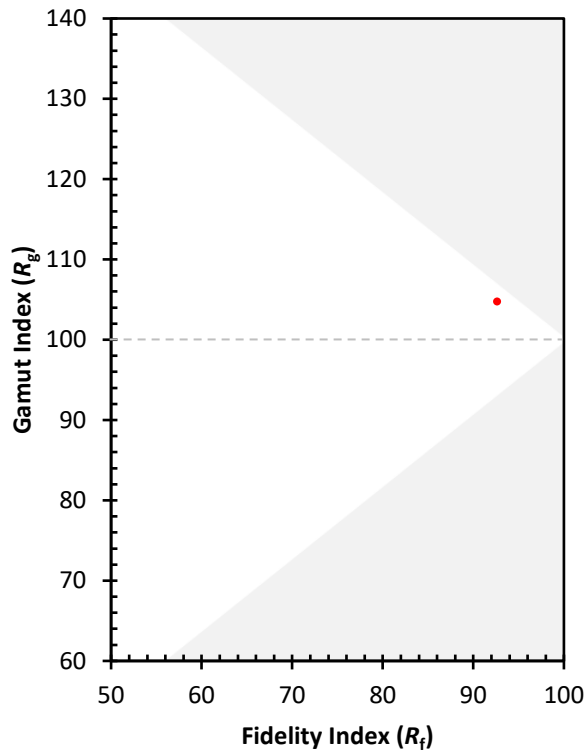
CES01 = 86	CES26 = 93	CES51 = 93	CES76 = 89
CES02 = 63	CES27 = 96	CES52 = 91	CES77 = 89
CES03 = 32	CES28 = 96	CES53 = 89	CES78 = 84
CES04 = 69	CES29 = 90	CES54 = 96	CES79 = 92
CES05 = 50	CES30 = 95	CES55 = 97	CES80 = 93
CES06 = 50	CES31 = 91	CES56 = 92	CES81 = 78
CES07 = 43	CES32 = 84	CES57 = 92	CES82 = 96
CES08 = 42	CES33 = 91	CES58 = 91	CES83 = 94
CES09 = 29	CES34 = 91	CES59 = 97	CES84 = 96
CES10 = 75	CES35 = 95	CES60 = 97	CES85 = 85
CES11 = 57	CES36 = 89	CES61 = 97	CES86 = 87
CES12 = 64	CES37 = 91	CES62 = 96	CES87 = 91
CES13 = 44	CES38 = 100	CES63 = 95	CES88 = 95
CES14 = 74	CES39 = 96	CES64 = 96	CES89 = 87
CES15 = 72	CES40 = 92	CES65 = 96	CES90 = 95
CES16 = 48	CES41 = 94	CES66 = 96	CES91 = 81
CES17 = 49	CES42 = 86	CES67 = 96	CES92 = 86
CES18 = 56	CES43 = 86	CES68 = 96	CES93 = 92
CES19 = 71	CES44 = 99	CES69 = 95	CES94 = 81
CES20 = 67	CES45 = 89	CES70 = 93	CES95 = 88
CES21 = 86	CES46 = 91	CES71 = 91	CES96 = 93
CES22 = 78	CES47 = 85	CES72 = 97	CES97 = 89
CES23 = 91	CES48 = 96	CES73 = 87	CES98 = 92
CES24 = 90	CES49 = 89	CES74 = 91	CES99 = 97
CES25 = 71	CES50 = 93	CES75 = 90	



Color Rendition by Hue-Angle Bin



Measure Comparisons



(END OF REPORT)