

Cooper Lighting Solutions Photometric Lab
1121 Highway 74 South
Peachtree City, GA 30269



Scaled data based on original data using
LM-79-08 Approved Method: Electrical and Photometric Measurements of Solid-State
Lighting Products

Test Report Prepared for

Cooper Lighting Solutions

(formerly Eaton)

Brand: METALUX

Report Number: P828599

Luminaire Tested: **OHBL-18HE-MFL-UNV-L950-CD-UPL24**

Issue Date: 5/3/2024



Test Information

Test Method: LM-79-08
Report Number: P828599
REPORT IS A COMBINATION OF REPORTS P826229 AND G3-2310-221-6
Test Lab: INNOVATION CENTER
Issue Date: 5/3/2024
Manufacturer: COOPER LIGHTING SOLUTIONS (FORMERLY EATON)
Product Line: METALUX
Catalog Number: OHBL-18HE-MFL-UNV-L950-CD-UPL24
Description:
Light Source: -
Ballast/Driver: -

Summary

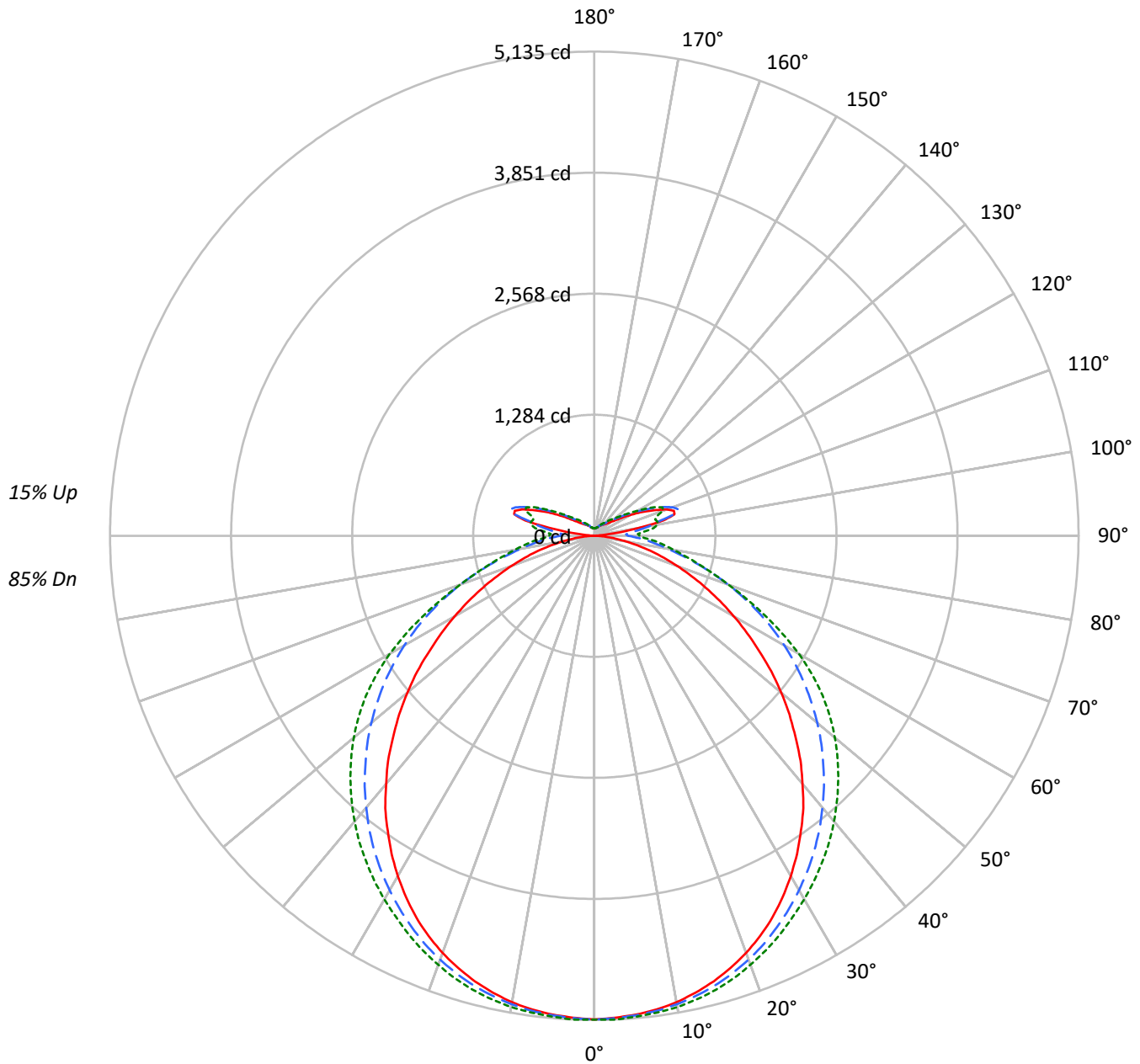
Lumens per Lamp: N/A
Luminaire Lumens: 17458.6 lumens
Efficiency: N/A
Efficacy: 145.0 lumens/watt
Spacing Criteria (0/90/45): 1.21 / 1.29 / 1.38
Luminous Opening: Rectangular w/ Sides (W: 3.78' x L: 1.67' x H: 0.17')
CIE Type: Semi-Direct

Input Watts (W): 120.4
Input Voltage (V): NR
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: 25 FT

TEST NUMBER: P828599

CATALOG NUMBER: OHBL-18HE-MFL-UNV-L950-CD-UPL24

Luminous Intensity Polar Plot





TEST NUMBER: P828599

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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
RCR																				
0	116	116	116	116	111	111	111	111		103	103	103		95	95	95		88	88	88
1	105	100	96	92	101	96	92	89		89	86	83		83	80	78		77	75	73
2	95	87	80	74	91	84	78	72		78	73	68		72	68	65		67	64	61
3	87	76	68	62	83	74	66	60		68	62	57		64	59	54		59	55	52
4	79	67	59	52	76	65	57	51		61	54	49		57	51	46		53	48	44
5	73	60	51	45	70	58	50	44		54	47	42		51	45	40		48	43	38
6	67	54	45	39	64	52	44	38		49	42	37		46	40	35		43	38	34
7	62	49	40	34	60	47	39	34		45	38	32		42	36	31		39	34	30
8	58	45	36	31	56	43	35	30		41	34	29		38	32	28		36	31	27
9	54	41	33	27	52	40	32	27		37	31	26		35	29	25		33	28	24
10	51	38	30	25	49	37	29	24		35	28	24		33	27	23		31	26	22

AVERAGE LUMINANCE (cd/sqm):

	0°	45°	90°
0°	8763	8763	8763
5°	8664	8676	8743
10°	8562	8595	8734
15°	8424	8500	8711
20°	8255	8384	8661
25°	8044	8240	8611
30°	7768	8085	8563
35°	7443	7920	8531
40°	7061	7729	8504
45°	6620	7522	8462
50°	6141	7313	8406
55°	5565	7057	8277
60°	4976	6755	7950
65°	4337	6371	7362
70°	3650	5884	6734
75°	2951	5319	6403
80°	2104	4900	6709
85°	1171	5047	8410



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ZONAL LUMENS:

Zone	Lumens	% Fixture
0°-10°	486.1	2.8
10°-20°	1394.6	8.0
20°-30°	2109.2	12.1
30°-40°	2532.1	14.5
40°-50°	2615.2	15.0
50°-60°	2352.9	13.5
60°-70°	1772.4	10.2
70°-80°	1070.2	6.1
80°-90°	528.8	3.0
90°-100°	421.9	2.4
100°-110°	825.6	4.7
110°-120°	674.1	3.9
120°-130°	329.7	1.9
130°-140°	166.1	1.0
140°-150°	94.2	0.5
150°-160°	52.6	0.3
160°-170°	25.2	0.1
170°-180°	7.7	0.0
0°-30°	3989.9	22.9
0°-40°	6522.0	37.4
0°-60°	11490.1	65.8
0°-90°	14861.4	85.1
90°-120°	1921.6	11.0
90°-150°	2511.6	14.4
90°-180°	2597.0	14.9
0°-180°	17458.6	100.0

CANDELA DISTRIBUTION:

	0°	22.5°	45°	67.5°	90°	Flux
0°	5130	5130	5130	5130	5130	
5°	5098	5112	5105	5125	5119	484
15°	4892	4916	4938	4980	4985	1379
25°	4468	4516	4580	4652	4663	2055
35°	3820	3909	4069	4192	4218	2388
45°	3015	3167	3432	3619	3658	2327
55°	2136	2357	2715	2919	2954	1915
65°	1303	1570	1921	2016	1994	1295
75°	614	881	1112	1141	1130	655
85°	128	338	558	634	645	148
90°	4	161	360	456	478	11
95°	52	186	388	502	540	148
105°	881	914	872	703	668	836
115°	612	637	693	720	720	617
125°	304	323	367	389	390	285
135°	183	189	210	230	237	144
145°	139	141	145	156	160	88
155°	113	116	117	116	118	51
165°	87	88	89	89	89	25
175°	78	79	79	80	80	8
180°	78	78	78	78	78	



TEST NUMBER: P828599

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CANDELA DISTRIBUTION (FULL):

	0°	22.5°	45°	67.5°	90°
0°	5130.4	5130.4	5130.4	5130.4	5130.4
2.5°	5115.3	5127.9	5120.3	5136.7	5135.4
5°	5097.7	5111.6	5105.3	5125.4	5119.1
7.5°	5067.6	5082.7	5081.4	5104.0	5101.6
10°	5023.7	5040.0	5045.0	5075.1	5075.1
12.5°	4963.4	4984.7	4997.3	5033.7	5035.0
15°	4891.8	4915.7	4938.3	4979.7	4984.7
17.5°	4805.2	4835.3	4866.7	4914.4	4920.7
20°	4707.3	4741.2	4783.9	4834.1	4841.6
22.5°	4594.2	4634.4	4689.7	4748.6	4757.5
25°	4467.5	4516.4	4580.4	4652.0	4663.3
27.5°	4323.1	4379.6	4466.2	4546.5	4556.6
30°	4166.1	4232.6	4340.6	4436.1	4452.3
32.5°	4000.3	4076.9	4210.0	4316.8	4339.4
35°	3819.6	3908.7	4069.4	4192.5	4217.6
37.5°	3641.2	3739.2	3921.3	4061.9	4092.0
40°	3432.8	3554.6	3763.0	3918.8	3955.2
42.5°	3236.9	3368.7	3604.8	3774.3	3809.5
45°	3014.7	3166.6	3431.5	3618.6	3657.6
47.5°	2806.3	2970.7	3264.6	3458.0	3498.1
50°	2586.5	2767.4	3086.3	3288.4	3329.9
52.5°	2366.8	2561.5	2901.7	3111.4	3150.3
55°	2135.8	2356.8	2714.6	2919.2	2954.5
57.5°	1921.0	2154.6	2522.5	2717.1	2738.5
60°	1708.9	1951.2	2326.6	2497.4	2505.0
62.5°	1501.7	1756.6	2125.7	2261.3	2251.3
65°	1303.3	1569.5	1921.0	2016.5	1993.9
67.5°	1112.5	1387.5	1711.4	1772.9	1742.8
70°	931.7	1210.4	1508.0	1539.4	1511.7
72.5°	772.2	1042.1	1302.1	1328.4	1308.3
75°	614.0	881.4	1112.5	1141.3	1130.0
77.5°	465.8	725.7	938.0	975.6	978.1
80°	335.3	583.8	786.0	845.0	852.6
82.5°	221.0	453.2	659.2	734.5	745.8
85°	128.1	337.8	557.5	634.1	645.4
87.5°	55.2	243.6	448.3	517.3	531.1
90°	4.3	161.4	359.8	455.7	478.1
92.5°	18.5	148.3	336.3	437.8	462.9
95°	52.3	185.6	388.1	502.1	539.5
97.5°	241.4	328.3	479.3	594.4	634.4
100°	487.5	574.8	590.8	667.0	684.9
102.5°	749.2	795.0	694.3	685.1	686.9
105°	880.8	914.0	872.0	703.4	668.3



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CANDELA DISTRIBUTION (continued):

	0°	22.5°	45°	67.5°	90°
112.5°	712.6	746.9	794.5	807.1	784.3
115°	611.7	636.6	693.1	720.2	720.1
117.5°	526.0	540.7	594.4	621.1	625.8
120°	437.3	457.0	509.9	530.7	530.5
122.5°	368.6	385.3	432.0	454.1	452.6
125°	304.0	323.3	367.1	388.8	389.9
127.5°	257.4	271.3	312.6	336.0	339.0
130°	225.3	233.5	269.8	292.0	296.7
132.5°	200.9	209.5	235.7	259.3	263.4
135°	182.7	188.7	209.8	230.4	237.2
137.5°	167.9	173.0	188.3	208.5	213.4
140°	156.2	160.8	171.5	188.2	194.1
142.5°	146.1	149.5	155.5	171.1	174.8
145°	138.6	140.8	144.7	155.6	160.2
147.5°	130.8	134.2	136.0	142.8	146.6
150°	124.7	127.7	129.0	131.2	135.8
152.5°	118.6	121.6	122.9	122.6	125.1
155°	113.4	116.4	116.9	116.5	117.7
157.5°	96.5	98.2	100.0	100.9	100.9
160°	93.0	93.9	95.6	96.5	96.5
162.5°	89.6	90.4	91.3	92.2	92.2
165°	86.9	87.8	88.7	88.7	88.7
167.5°	84.3	84.3	85.2	86.1	86.1
170°	81.7	82.6	82.6	83.5	83.5
172.5°	80.0	80.9	80.9	80.9	81.7
175°	78.2	79.1	79.1	80.0	80.0
177.5°	78.2	78.2	78.2	78.2	78.2
180°	78.2	78.2	78.2	78.2	78.2



Report Generated By 670246072 / DESKTOP-50001EG





— 0°-180° - - 45°-225° - - - 90°-270°







107.5°	884.3	924.2	933.0	794.6	694.8
110°	816.5	855.7	884.4	852.6	773.7



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

Report Prepared for

Cooper Lighting Solutions

METALUX

Report Number: SP1-2307-100-9

Test Date: 08/01/2023

Luminaire Tested: OHB-15SE-N-UNV-L950-CD

Data in this report applies to families of products including OHB-15SE-N-UNV-L950-CD.

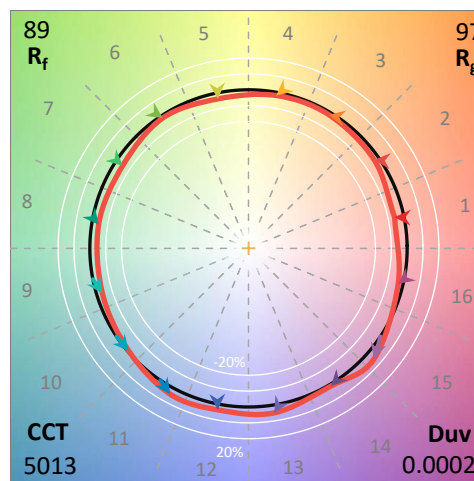
Test Information

Test Method: LM-79-2019
 Report Number: SP1-2307-100-9
 Test Lab: COOPER LIGHTING SOLUTIONS
 Photometer: SP1 - 76IN SPHERE
 Measurement Geometry: 4π
 Issue Date: 08/04/2023
 Manufacturer: COOPER LIGHTING SOLUTIONS
 Product Line: METALUX
 Catalog Number: **OHB-15SE-N-UNV-L950-CD**
 Description: 15000 LUMEN OHB SE LED LUMINAIRE WITH 90CRI, 5000K LEDS AND NARROW LENS

LENS

Spectral Parameters

CCT (K):	5013	CRI (Ra):	92.0		
CIE u':	0.2111	R1:	92.6	R9:	62.7
CIE v':	0.4847	R2:	96.7	R10:	90.0
Duv:	0.0002	R3:	96.5	R11:	89.8
CIE x:	0.3447	R4:	90.1	R12:	69.9
CIE y:	0.3517	R5:	91.1	R13:	94.5
CIE z:	0.3036	R6:	92.0	R14:	98.3
Peak Wavelength (nm):	455	R7:	92.4		
Dominant Wavelength (nm):	572	R8:	84.9		
Purity:	9.1				
Rf:	88.9				
Rg:	97.2				



Test Conditions

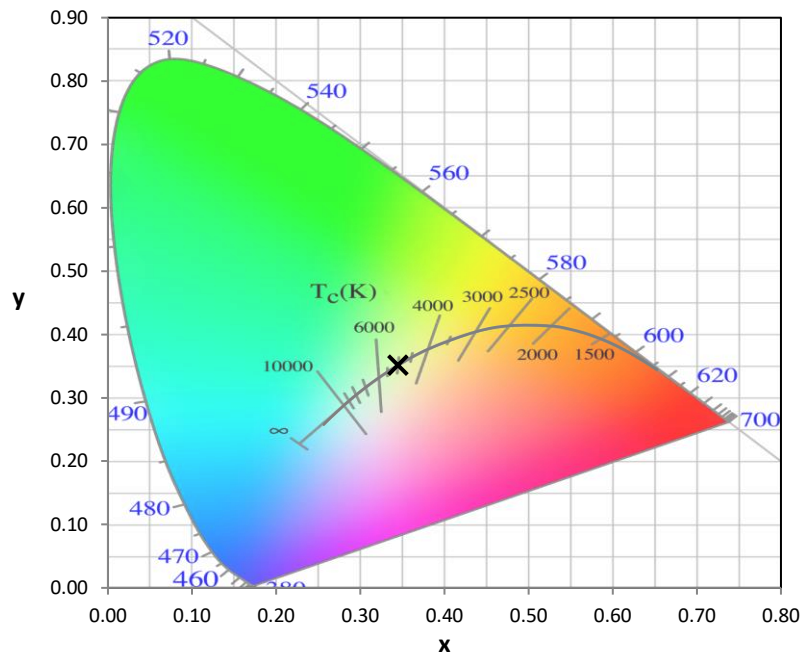
Stabilization Time: 26M
 Operation Time: 12H
 Room Temperature (°C) / RH%: 25.7/57%
 Sphere Temperature (°C): 25.2

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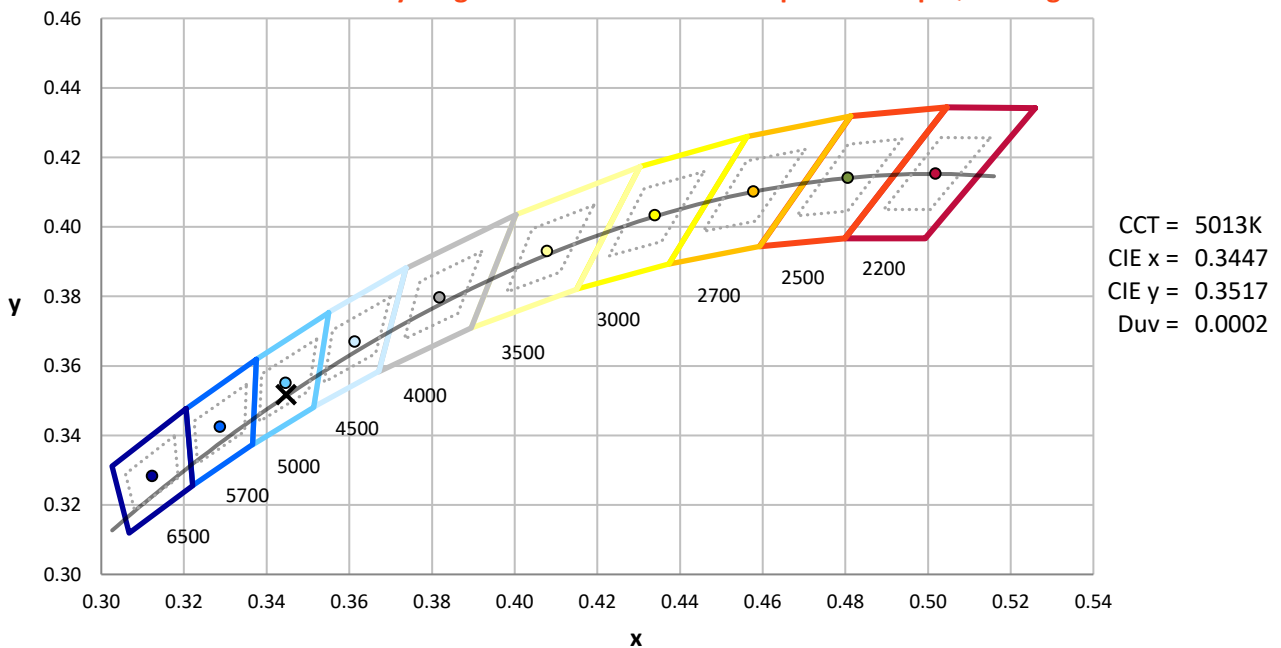
Measurement and Test Equipment			
Instrument	Identification Number	Calibration Date	Calibration Due Date
Photometer	76INCH SPHERE IN0058	2/9/2023	8/9/2023
Power Meter	XITRON 2801 IN0071	11/29/2022	11/29/2023
AC Power Source	CHROMA 61603 IN0063	11/28/2022	11/28/2023
DC Power Source	AGILENT E3634A IN0208	11/28/2022	11/28/2023
Sphere Thermometer	ONSET IN0085	11/28/2022	11/28/2023
Room Thermometer	ONSET IN0046	11/28/2022	11/28/2023

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CIE 1931 Chromaticity Diagram



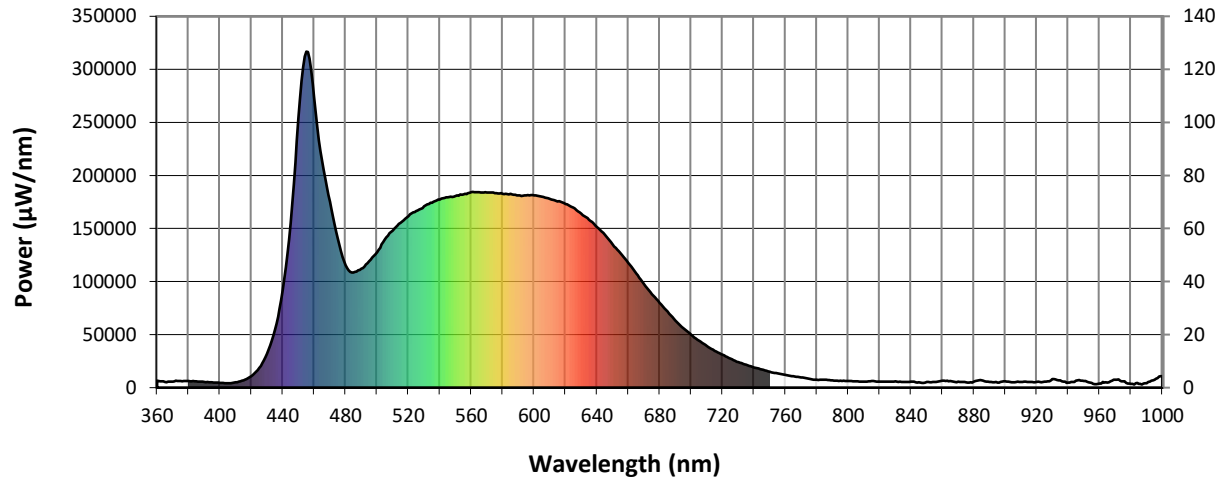
CIE 1931 Chromaticity Diagram with 2017 ANSI 7-Step and 4-Step Quadrangles



Point lies inside the ANSI 5000K 4-step quadrangle

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Photopic Flux vs. Wavelength

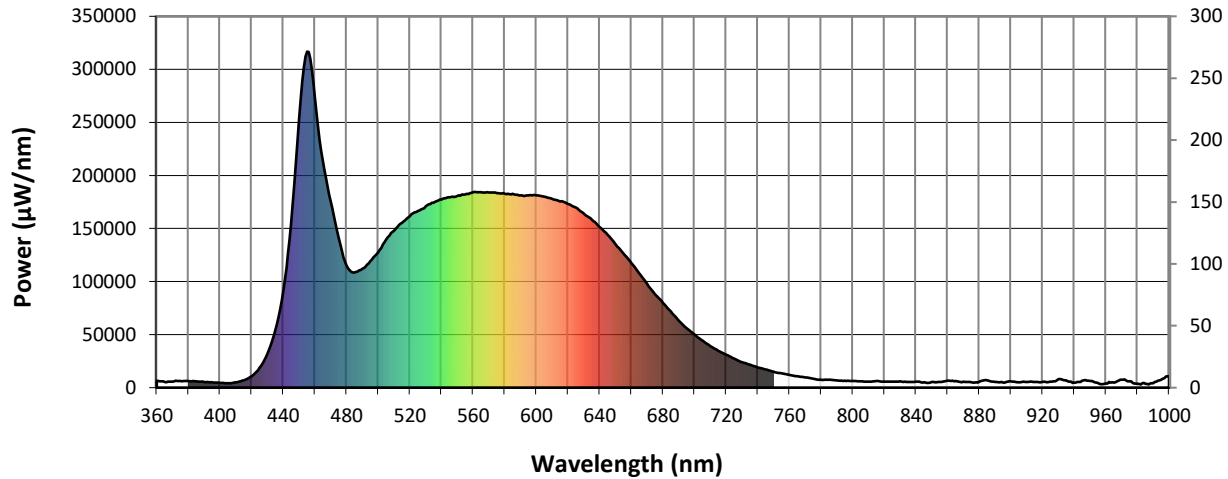


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λ (nm)	Power (μW/nm)	Lumens (φ/nm)	λ (nm)	Power (μW/nm)	Lumens (φ/nm)	λ (nm)	Power (μW/nm)	Lumens (φ/nm)	λ (nm)	Power (μW/nm)	Lumens (φ/nm)	λ (nm)	Power (μW/nm)	Lumens (φ/nm)
360	6694	NR	490	112019	NR	620	173132	NR	750	14981	NR	880	5536	NR
365	5354	NR	495	119136	NR	625	169860	NR	755	13480	NR	885	6938	NR
370	5722	NR	500	127627	NR	630	163982	NR	760	11900	NR	890	5411	NR
375	6251	NR	505	139687	NR	635	158304	NR	765	10671	NR	895	4784	NR
380	6177	NR	510	148127	NR	640	151433	NR	770	9643	NR	900	5872	NR
385	5889	NR	515	155327	NR	645	144044	NR	775	8310	NR	905	5214	NR
390	5252	NR	520	161724	NR	650	134971	NR	780	7378	NR	910	5425	NR
395	5012	NR	525	166350	NR	655	126523	NR	785	7348	NR	915	5372	NR
400	4505	NR	530	170827	NR	660	117624	NR	790	6731	NR	920	5263	NR
405	4163	NR	535	174287	NR	665	107737	NR	795	6603	NR	925	5581	NR
410	4931	NR	540	177402	NR	670	97796	NR	800	6333	NR	930	7934	NR
415	6887	NR	545	179468	NR	675	88146	NR	805	5919	NR	935	6835	NR
420	10750	NR	550	180621	NR	680	80008	NR	810	5757	NR	940	4871	NR
425	18574	NR	555	182239	NR	685	71588	NR	815	6226	NR	945	6554	NR
430	31943	NR	560	184077	NR	690	63388	NR	820	5694	NR	950	6239	NR
435	54504	NR	565	184113	NR	695	56106	NR	825	5621	NR	955	4562	NR
440	91570	NR	570	183843	NR	700	49976	NR	830	5832	NR	960	3863	NR
445	155007	NR	575	183242	NR	705	44326	NR	835	5478	NR	965	4898	NR
450	253466	NR	580	182759	NR	710	39116	NR	840	5675	NR	970	7576	NR
455	316705	NR	585	182781	NR	715	34755	NR	845	4960	NR	975	6056	NR
460	273954	NR	590	181075	NR	720	30900	NR	850	5274	NR	980	3439	NR
465	214019	NR	595	181315	NR	725	27349	NR	855	5470	NR	985	3623	NR
470	175153	NR	600	181289	NR	730	23954	NR	860	6539	NR	990	4301	NR
475	140894	NR	605	180053	NR	735	21526	NR	865	6378	NR	995	7368	NR
480	115223	NR	610	177907	NR	740	18965	NR	870	5702	NR	1000	10668	NR
485	108577	NR	615	175575	NR	745	17153	NR	875	4933	NR			

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Scotopic Flux vs. Wavelength



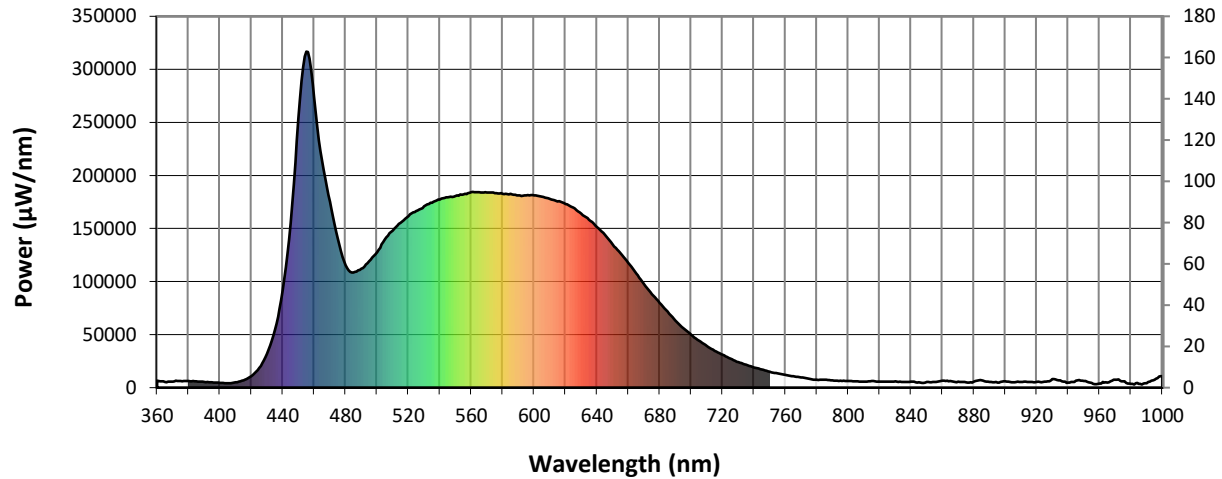
Scotopic Lumens: 26039.5

S/P: 2.08

λ (nm)	Power (μW/nm)	Lumens (φ/nm)	λ (nm)	Power (μW/nm)	Lumens (φ/nm)	λ (nm)	Power (μW/nm)	Lumens (φ/nm)	λ (nm)	Power (μW/nm)	Lumens (φ/nm)	λ (nm)	Power (μW/nm)	Lumens (φ/nm)
360	6694	NR	490	112019	NR	620	173132	NR	750	14981	NR	880	5536	NR
365	5354	NR	495	119136	NR	625	169860	NR	755	13480	NR	885	6938	NR
370	5722	NR	500	127627	NR	630	163982	NR	760	11900	NR	890	5411	NR
375	6251	NR	505	139687	NR	635	158304	NR	765	10671	NR	895	4784	NR
380	6177	NR	510	148127	NR	640	151433	NR	770	9643	NR	900	5872	NR
385	5889	NR	515	155327	NR	645	144044	NR	775	8310	NR	905	5214	NR
390	5252	NR	520	161724	NR	650	134971	NR	780	7378	NR	910	5425	NR
395	5012	NR	525	166350	NR	655	126523	NR	785	7348	NR	915	5372	NR
400	4505	NR	530	170827	NR	660	117624	NR	790	6731	NR	920	5263	NR
405	4163	NR	535	174287	NR	665	107737	NR	795	6603	NR	925	5581	NR
410	4931	NR	540	177402	NR	670	97796	NR	800	6333	NR	930	7934	NR
415	6887	NR	545	179468	NR	675	88146	NR	805	5919	NR	935	6835	NR
420	10750	NR	550	180621	NR	680	80008	NR	810	5757	NR	940	4871	NR
425	18574	NR	555	182239	NR	685	71588	NR	815	6226	NR	945	6554	NR
430	31943	NR	560	184077	NR	690	63388	NR	820	5694	NR	950	6239	NR
435	54504	NR	565	184113	NR	695	56106	NR	825	5621	NR	955	4562	NR
440	91570	NR	570	183843	NR	700	49976	NR	830	5832	NR	960	3863	NR
445	155007	NR	575	183242	NR	705	44326	NR	835	5478	NR	965	4898	NR
450	253466	NR	580	182759	NR	710	39116	NR	840	5675	NR	970	7576	NR
455	316705	NR	585	182781	NR	715	34755	NR	845	4960	NR	975	6056	NR
460	273954	NR	590	181075	NR	720	30900	NR	850	5274	NR	980	3439	NR
465	214019	NR	595	181315	NR	725	27349	NR	855	5470	NR	985	3623	NR
470	175153	NR	600	181289	NR	730	23954	NR	860	6539	NR	990	4301	NR
475	140894	NR	605	180053	NR	735	21526	NR	865	6378	NR	995	7368	NR
480	115223	NR	610	177907	NR	740	18965	NR	870	5702	NR	1000	10668	NR
485	108577	NR	615	175575	NR	745	17153	NR	875	4933	NR			

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Melanopic Flux vs. Wavelength



Melanopic Lumens: 11248.3 M/P: 0.9

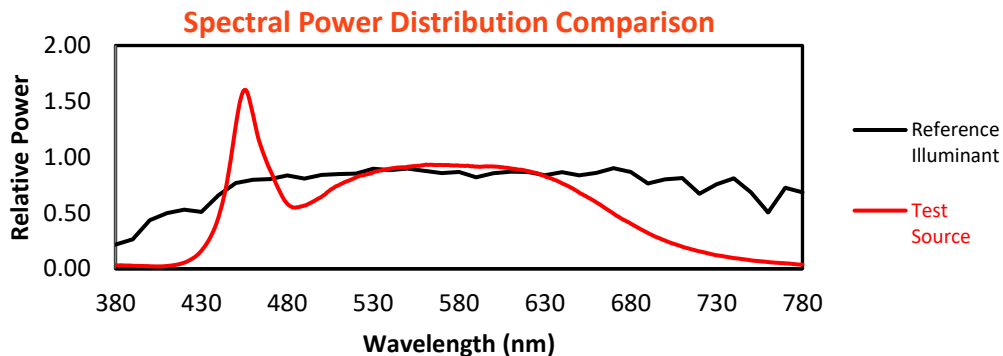
λ (nm)	Power (μW/nm)	Lumens (φ/nm)	λ (nm)	Power (μW/nm)	Lumens (φ/nm)	λ (nm)	Power (μW/nm)	Lumens (φ/nm)	λ (nm)	Power (μW/nm)	Lumens (φ/nm)	λ (nm)	Power (μW/nm)	Lumens (φ/nm)
360	6694	NR	490	112019	NR	620	173132	NR	750	14981	NR	880	5536	NR
365	5354	NR	495	119136	NR	625	169860	NR	755	13480	NR	885	6938	NR
370	5722	NR	500	127627	NR	630	163982	NR	760	11900	NR	890	5411	NR
375	6251	NR	505	139687	NR	635	158304	NR	765	10671	NR	895	4784	NR
380	6177	NR	510	148127	NR	640	151433	NR	770	9643	NR	900	5872	NR
385	5889	NR	515	155327	NR	645	144044	NR	775	8310	NR	905	5214	NR
390	5252	NR	520	161724	NR	650	134971	NR	780	7378	NR	910	5425	NR
395	5012	NR	525	166350	NR	655	126523	NR	785	7348	NR	915	5372	NR
400	4505	NR	530	170827	NR	660	117624	NR	790	6731	NR	920	5263	NR
405	4163	NR	535	174287	NR	665	107737	NR	795	6603	NR	925	5581	NR
410	4931	NR	540	177402	NR	670	97796	NR	800	6333	NR	930	7934	NR
415	6887	NR	545	179468	NR	675	88146	NR	805	5919	NR	935	6835	NR
420	10750	NR	550	180621	NR	680	80008	NR	810	5757	NR	940	4871	NR
425	18574	NR	555	182239	NR	685	71588	NR	815	6226	NR	945	6554	NR
430	31943	NR	560	184077	NR	690	63388	NR	820	5694	NR	950	6239	NR
435	54504	NR	565	184113	NR	695	56106	NR	825	5621	NR	955	4562	NR
440	91570	NR	570	183843	NR	700	49976	NR	830	5832	NR	960	3863	NR
445	155007	NR	575	183242	NR	705	44326	NR	835	5478	NR	965	4898	NR
450	253466	NR	580	182759	NR	710	39116	NR	840	5675	NR	970	7576	NR
455	316705	NR	585	182781	NR	715	34755	NR	845	4960	NR	975	6056	NR
460	273954	NR	590	181075	NR	720	30900	NR	850	5274	NR	980	3439	NR
465	214019	NR	595	181315	NR	725	27349	NR	855	5470	NR	985	3623	NR
470	175153	NR	600	181289	NR	730	23954	NR	860	6539	NR	990	4301	NR
475	140894	NR	605	180053	NR	735	21526	NR	865	6378	NR	995	7368	NR
480	115223	NR	610	177907	NR	740	18965	NR	870	5702	NR	1000	10668	NR
485	108577	NR	615	175575	NR	745	17153	NR	875	4933	NR			

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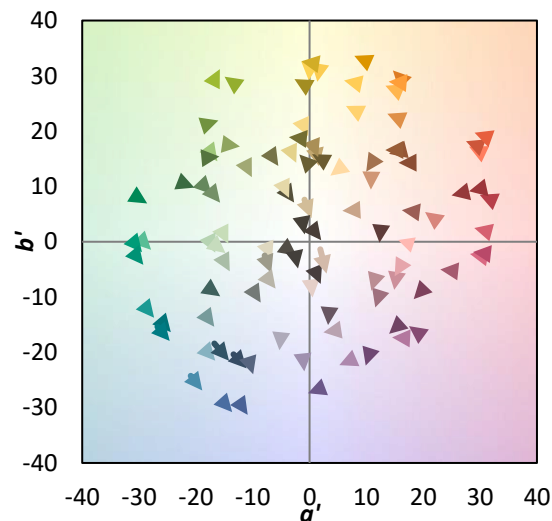
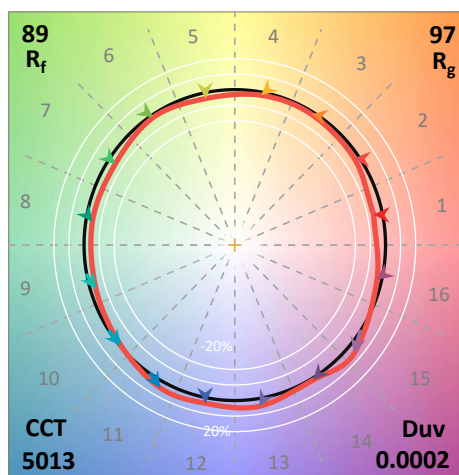
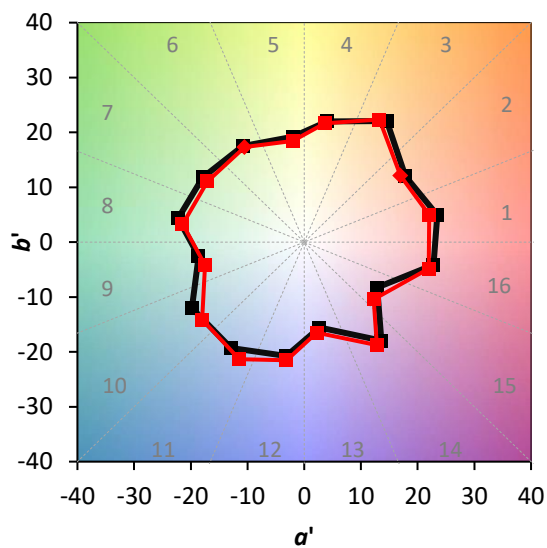
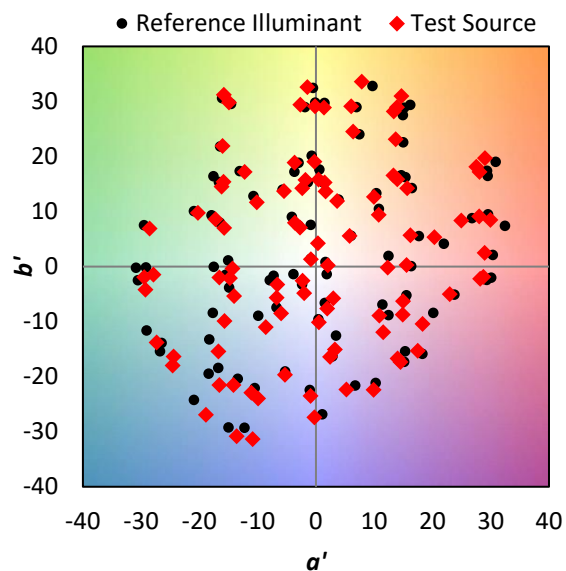
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Summary

$R_f = 88.9$
 $R_g = 97.2$
 $CIE R_a = 92.0$
 $R_9 = 62.7$



Color Vector Graphics

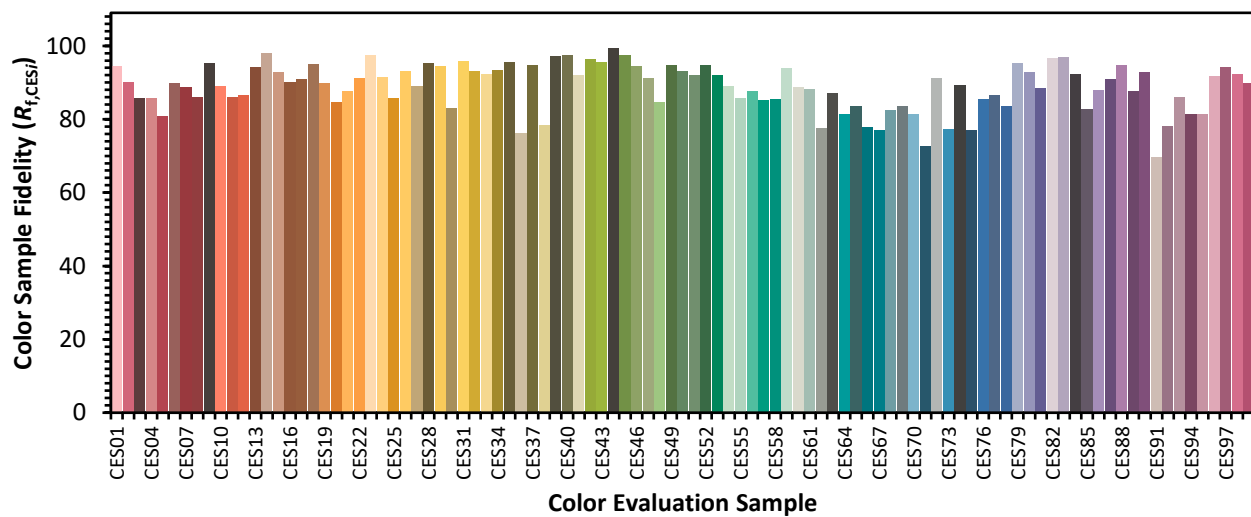


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Individual Sample Fidelity Index ($R_{f,i}$)

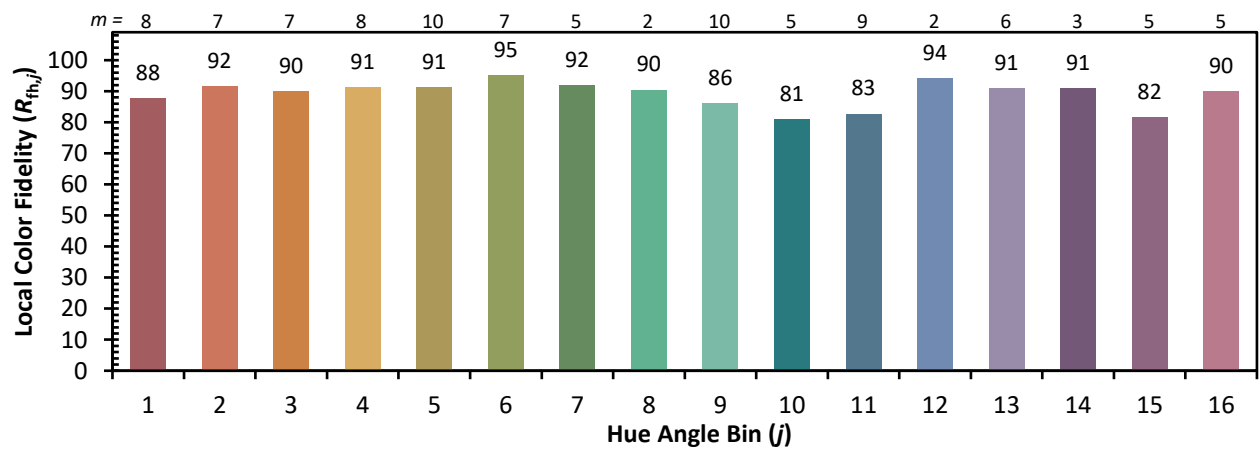
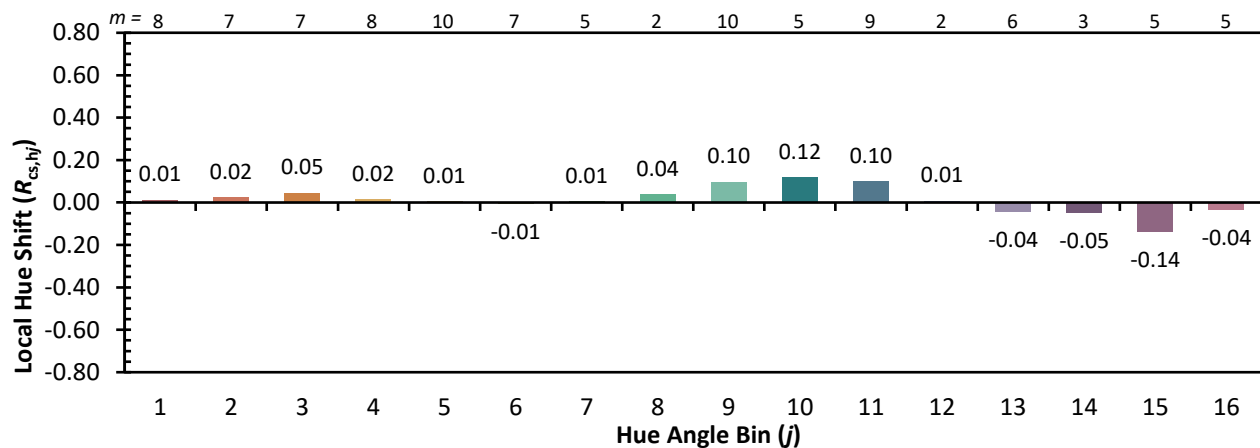
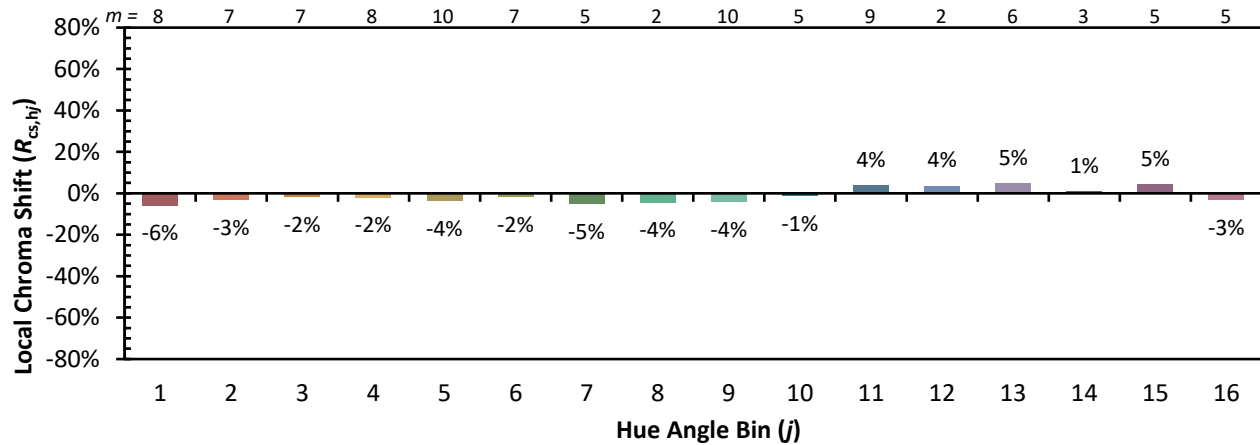
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CES02 = 61	CES27 = 89	CES52 = 95	CES77 = 86
CES03 = 31	CES28 = 95	CES53 = 92	CES78 = 84
CES04 = 69	CES29 = 94	CES54 = 89	CES79 = 95
CES05 = 48	CES30 = 83	CES55 = 86	CES80 = 93
CES06 = 50	CES31 = 96	CES56 = 88	CES81 = 89
CES07 = 41	CES32 = 93	CES57 = 85	CES82 = 97
CES08 = 40	CES33 = 92	CES58 = 85	CES83 = 97
CES09 = 29	CES34 = 93	CES59 = 94	CES84 = 92
CES10 = 73	CES35 = 96	CES60 = 89	CES85 = 83
CES11 = 56	CES36 = 76	CES61 = 88	CES86 = 88
CES12 = 62	CES37 = 95	CES62 = 78	CES87 = 91
CES13 = 42	CES38 = 78	CES63 = 87	CES88 = 95
CES14 = 74	CES39 = 97	CES64 = 81	CES89 = 88
CES15 = 71	CES40 = 97	CES65 = 84	CES90 = 93
CES16 = 46	CES41 = 92	CES66 = 78	CES91 = 70
CES17 = 49	CES42 = 96	CES67 = 77	CES92 = 78
CES18 = 56	CES43 = 95	CES68 = 82	CES93 = 86
CES19 = 70	CES44 = 99	CES69 = 84	CES94 = 81
CES20 = 65	CES45 = 97	CES70 = 81	CES95 = 81
CES21 = 85	CES46 = 95	CES71 = 73	CES96 = 92
CES22 = 77	CES47 = 91	CES72 = 91	CES97 = 94
CES23 = 91	CES48 = 85	CES73 = 77	CES98 = 92
CES24 = 90	CES49 = 95	CES74 = 89	CES99 = 90
CES25 = 70	CES50 = 93	CES75 = 77	



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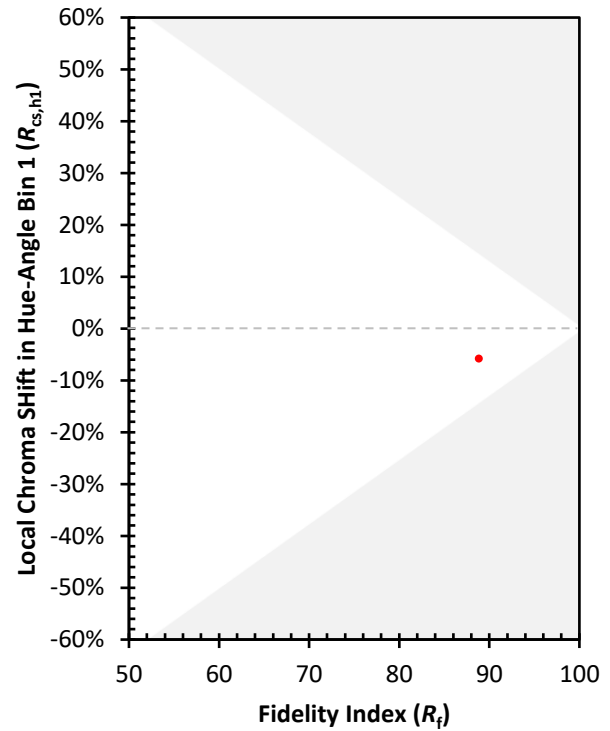
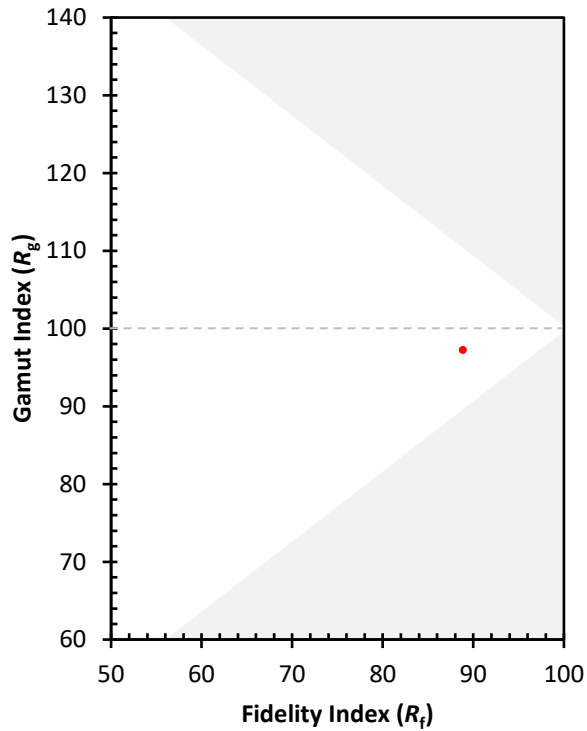
Color Rendition by Hue-Angle Bin



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Measure Comparisons



(END OF REPORT)