

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: P860154

Luminaire Tested: **SPHB-48HE-M-L835-CD**

Issue Date: 7/11/2024

This test was performed under the Supervised Manufacturer's Testing Program. The results of this test have not been influenced by sources from within Cooper Lighting Solutions or from external interests.



Test Information

Test Method: LM-79-08
Report Number: P860154
TEST IS SCALED FROM IESNA LM-79-08 TEST DATA (G3-2404-343-1)
Test Lab: INNOVATION CENTER
Issue Date: 7/11/2024
Manufacturer: COOPER LIGHTING SOLUTIONS (FORMERLY EATON)
Product Line: METALUX
Catalog Number: SPHB-48HE-M-L835-CD
Description: 48000 Lumen High Efficacy Select Pro High Bay with Medium Lens and,
3500K 80CRI LEDs
Light Source: -
Ballast/Driver: -

Luminaire Equipment: Sample No. Condition Description

Summary

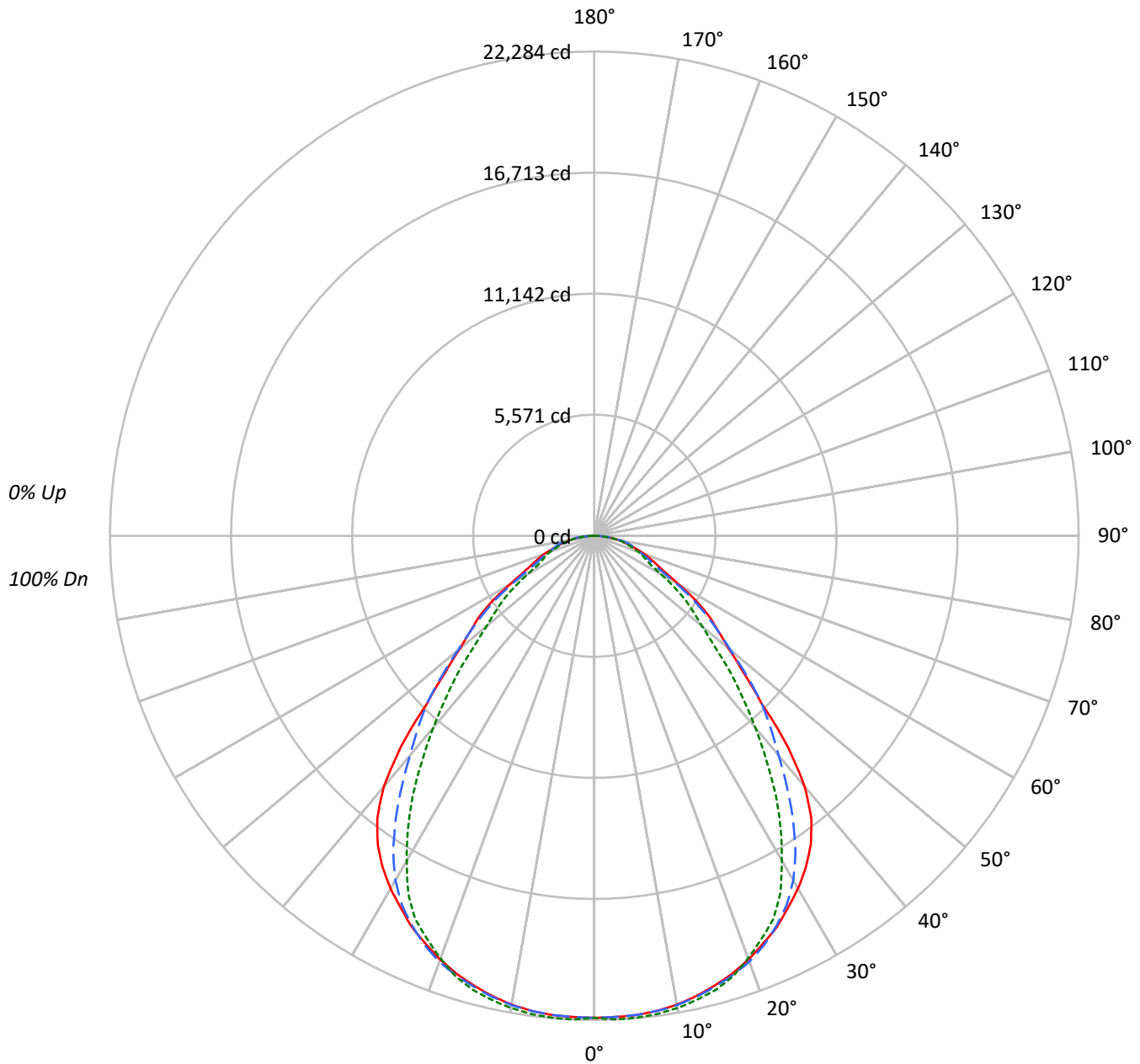
Lumens per Lamp: N/A
Luminaire Lumens: 46047.0 lumens
Efficiency: N/A
Efficacy: 159.6 lumens/watt
Spacing Criteria (0/90/45): 1.25 / 1.16 / 1.22
Luminous Opening: Rectangular (W 1' x L: 3.38' x H: 0')
CIE Type: Direct

Input Watts (W): 288.6
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: P860154

CATALOG NUMBER: SPHB-48HE-M-L835-CD

Luminous Intensity Polar Plot





TEST NUMBER: P860154

CATALOG NUMBER: SPHB-48HE-M-L835-CD

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	50	30	10
RCR																				
0	119	119	119	119	116	116	116	116	111	111	111	106	106	106	102	102	102	100		
1	110	106	103	99	108	104	101	98	100	97	95	96	94	92	92	91	89	87		
2	102	95	89	84	99	93	87	83	89	85	81	86	82	79	83	80	77	75		
3	94	85	78	72	92	83	77	71	80	75	70	78	73	69	75	71	68	66		
4	87	76	69	63	85	75	68	62	73	66	61	70	65	61	68	64	60	58		
5	81	69	61	55	79	68	61	55	66	59	54	64	58	54	62	57	53	51		
6	75	63	55	49	73	62	54	49	60	54	48	59	53	48	57	52	48	46		
7	70	58	50	44	68	57	49	44	55	49	44	54	48	43	53	47	43	41		
8	66	53	45	40	64	52	45	40	51	44	39	50	44	39	49	43	39	37		
9	61	49	41	36	60	48	41	36	47	41	36	46	40	36	45	40	36	34		
10	58	45	38	33	57	45	38	33	44	37	33	43	37	33	42	37	33	31		

AVERAGE LUMINANCE (cd/sqm):

	0°	45°	90°
0°	70649	70649	70649
5°	70788	70769	71171
10°	70849	70925	71360
15°	70643	70826	71318
20°	70334	70691	70126
25°	69820	69625	68442
30°	68936	67311	63470
35°	67489	61926	56569
40°	62631	54810	47913
45°	48862	48994	39651
50°	39908	40474	32022
55°	35756	34408	28137
60°	28625	27096	22513
65°	23988	21960	19909
70°	22776	20923	20269
75°	20665	22213	19549
80°	20766	22699	20606
85°	18069	21167	17214



TEST NUMBER: P860154

CATALOG NUMBER: SPHB-48HE-M-L835-CD

ZONAL LUMENS:

Zone	Lumens	% Fixture
0°-10°	2109.4	4.6
10°-20°	6066.5	13.2
20°-30°	9056.3	19.7
30°-40°	9881.9	21.5
40°-50°	8083.9	17.6
50°-60°	5315.1	11.5
60°-70°	3049.4	6.6
70°-80°	1847.9	4.0
80°-90°	620.5	1.3
90°-100°	16.1	0.0
100°-110°	0.0	0.0
110°-120°	0.0	0.0
120°-130°	0.0	0.0
130°-140°	0.0	0.0
140°-150°	0.0	0.0
150°-160°	0.0	0.0
160°-170°	0.0	0.0
170°-180°	0.0	0.0
0°-30°	17232.1	37.4
0°-40°	27114.1	58.9
0°-60°	40513.1	88.0
0°-90°	46030.9	100.0
90°-120°	16.1	0.0
90°-150°	16.1	0.0
90°-180°	16.0	0.0
0°-180°	46047.0	100.0

CANDELA DISTRIBUTION:

	0°	22.5°	45°	67.5°	90°	Flux
0°	22185	22185	22185	22185	22185	
5°	22144	22108	22138	22228	22264	###
15°	21427	21424	21482	21620	21632	6048
25°	19870	19917	19815	19575	19478	9141
35°	17360	16968	15929	14843	14551	10759
45°	10849	11660	10879	9603	8804	8612
55°	6440	6264	6197	5325	5068	5672
65°	3183	3137	2914	2835	2642	3254
75°	1680	1817	1805	1732	1589	1818
85°	494	562	579	506	471	536
90°	3	41	82	97	102	23
95°	3	6	9	9	6	1
105°	0	0	0	0	0	0
115°	0	0	0	0	0	0
125°	0	0	0	0	0	0
135°	0	0	0	0	0	0
145°	0	0	0	0	0	0
155°	0	0	0	0	0	0
165°	0	0	0	0	0	0
175°	0	0	0	0	0	0
180°	0	0	0	0	0	



TEST NUMBER: P860154

CATALOG NUMBER: SPHB-48HE-M-L835-CD

CANDELA DISTRIBUTION (FULL):

	0°	22.5°	45°	67.5°	90°
0°	22184.6	22184.6	22184.6	22184.6	22184.6
2.5°	22169.9	22137.8	22167.0	22257.7	22284.1
5°	22143.6	22108.5	22137.8	22228.5	22263.6
7.5°	22052.9	22032.4	22061.7	22152.4	22196.3
10°	21909.5	21886.1	21932.9	22011.9	22067.5
12.5°	21695.9	21687.2	21731.0	21845.2	21868.6
15°	21426.8	21423.8	21482.3	21619.9	21631.6
17.5°	21122.5	21119.5	21192.7	21283.4	21251.2
20°	20753.8	20774.3	20859.1	20774.3	20692.3
22.5°	20312.0	20376.3	20396.8	20130.6	20089.6
25°	19870.1	19917.0	19814.6	19574.6	19478.1
27.5°	19299.6	19355.2	19165.0	18822.7	18547.6
30°	18746.6	18693.9	18304.8	17643.5	17260.2
32.5°	18111.6	17924.4	17225.1	16312.2	15964.0
35°	17359.7	16967.6	15928.9	14843.4	14550.8
37.5°	16408.7	15691.9	14556.6	13424.3	12982.5
40°	15065.7	14237.7	13184.3	12014.0	11525.3
42.5°	13184.3	12877.1	12005.2	10688.5	10106.2
45°	10849.4	11659.9	10878.7	9603.0	8804.2
47.5°	9287.0	10413.5	9474.2	8552.6	7452.4
50°	8055.1	8830.5	8169.3	7338.3	6463.4
52.5°	7165.7	7399.7	7133.5	6220.6	5723.2
55°	6440.0	6264.5	6197.2	5325.2	5067.7
57.5°	5538.8	5442.3	5269.6	4643.5	4304.1
60°	4494.3	4699.1	4254.3	4075.9	3534.6
62.5°	3692.6	3894.4	3417.5	3405.8	2955.2
65°	3183.4	3136.6	2914.2	2835.2	2642.1
67.5°	2817.7	2671.4	2595.3	2492.9	2425.6
70°	2446.1	2384.7	2247.1	2267.6	2176.9
72.5°	2039.4	2118.4	1980.9	2018.9	1855.1
75°	1679.5	1817.0	1805.3	1732.2	1588.8
77.5°	1384.0	1530.3	1556.6	1489.3	1372.3
80°	1132.3	1231.8	1237.7	1196.7	1123.6
82.5°	831.0	889.5	933.4	863.2	816.3
85°	494.5	561.8	579.3	506.2	471.1
87.5°	160.9	225.3	251.6	260.4	263.3
90°	2.9	41.0	81.9	96.6	102.4
92.5°	2.9	11.7	17.6	26.3	29.3
95°	2.9	5.9	8.8	8.8	5.9
97.5°	0.0	0.0	0.0	0.0	0.0
100°	0.0	0.0	0.0	0.0	0.0
102.5°	0.0	0.0	0.0	0.0	0.0
105°	0.0	0.0	0.0	0.0	0.0



TEST NUMBER: P860154

CATALOG NUMBER: SPHB-48HE-M-L835-CD

CANDELA DISTRIBUTION (continued):

	0°	22.5°	45°	67.5°	90°
112.5°	0.0	0.0	0.0	0.0	0.0
115°	0.0	0.0	0.0	0.0	0.0
117.5°	0.0	0.0	0.0	0.0	0.0
120°	0.0	0.0	0.0	0.0	0.0
122.5°	0.0	0.0	0.0	0.0	0.0
125°	0.0	0.0	0.0	0.0	0.0
127.5°	0.0	0.0	0.0	0.0	0.0
130°	0.0	0.0	0.0	0.0	0.0
132.5°	0.0	0.0	0.0	0.0	0.0
135°	0.0	0.0	0.0	0.0	0.0
137.5°	0.0	0.0	0.0	0.0	0.0
140°	0.0	0.0	0.0	0.0	0.0
142.5°	0.0	0.0	0.0	0.0	0.0
145°	0.0	0.0	0.0	0.0	0.0
147.5°	0.0	0.0	0.0	0.0	0.0
150°	0.0	0.0	0.0	0.0	0.0
152.5°	0.0	0.0	0.0	0.0	0.0
155°	0.0	0.0	0.0	0.0	0.0
157.5°	0.0	0.0	0.0	0.0	0.0
160°	0.0	0.0	0.0	0.0	0.0
162.5°	0.0	0.0	0.0	0.0	0.0
165°	0.0	0.0	0.0	0.0	0.0
167.5°	0.0	0.0	0.0	0.0	0.0
170°	0.0	0.0	0.0	0.0	0.0
172.5°	0.0	0.0	0.0	0.0	0.0
175°	0.0	0.0	0.0	0.0	0.0
177.5°	0.0	0.0	0.0	0.0	0.0
180°	0.0	0.0	0.0	0.0	0.0



Report Generated By 670246072 / DESKTOP-50001EG





— 0°-180° - - 45°-225° - - - 90°-270°







107.5°	0.0	0.0	0.0	0.0	0.0
110°	0.0	0.0	0.0	0.0	0.0



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

Report Prepared for

Cooper Lighting Solutions

METALUX

Report Number: SP1-2404-343-4

Test Date: 05/20/2024

Luminaire Tested: SPHB-24SE-M-UNV-L835-CD

Data in this report applies to families of products SPHB-24SE-M-UNV-L835-CD.

Test Information

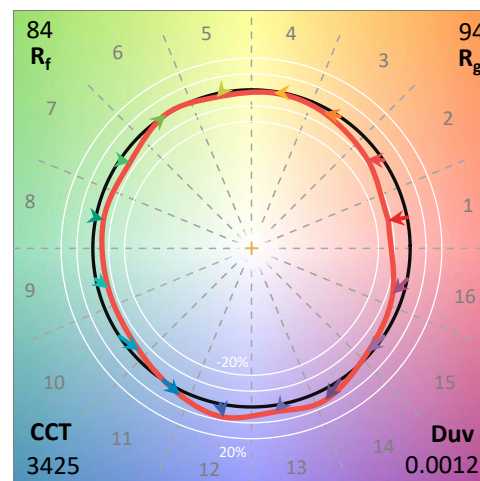
Test Method: LM-79-2019
 Report Number: SP1-2404-343-4
 Test Lab: COOPER LIGHTING SOLUTIONS
 Photometer: SP1 - 76IN SPHERE
 Measurement Geometry: 4π
 Issue Date: 05/21/2024
 Manufacturer: COOPER LIGHTING SOLUTIONS
 Product Line: METALUX
 Catalog Number: **SPHB-24SE-M-UNV-L835-CD**
 Description: 18IN SPHB WITH MEDIUM LENS, 3500K/80CRI, 24K LUMENS, SE

Spectral Parameters

CCT (K): 3425
 CIE u': 0.2370
 CIE v': 0.5143
 Duv: 0.0012
 CIE x: 0.4108
 CIE y: 0.3961
 CIE z: 0.1931
 Peak Wavelength (nm): 598
 Dominant Wavelength (nm): 580
 Purity: 42.4
 R_f: 84.3
 R_g: 94.4

CRI (Ra): 82.9
 R1: 81.2
 R2: 90.5
 R3: 96.5
 R4: 80.4
 R5: 80.9
 R6: 87.3
 R7: 84.6
 R8: 61.9

R9: 8.8
 R10: 77.5
 R11: 79.1
 R12: 64.2
 R13: 83.5
 R14: 98.5



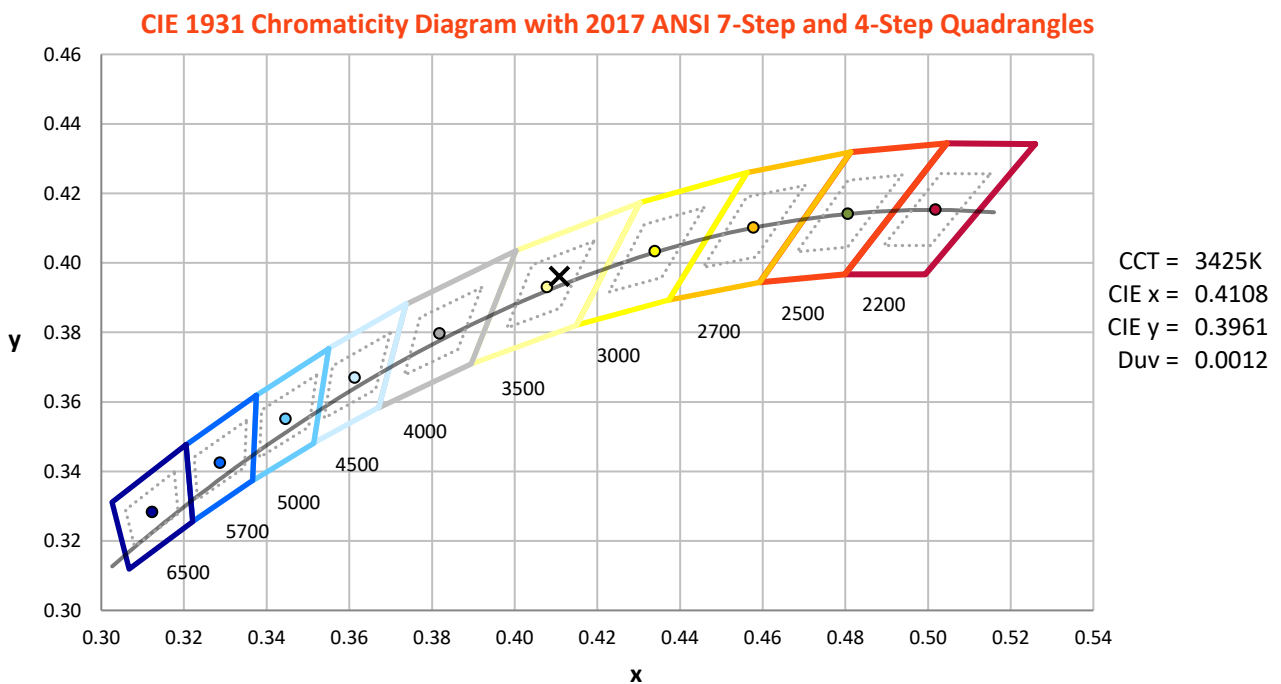
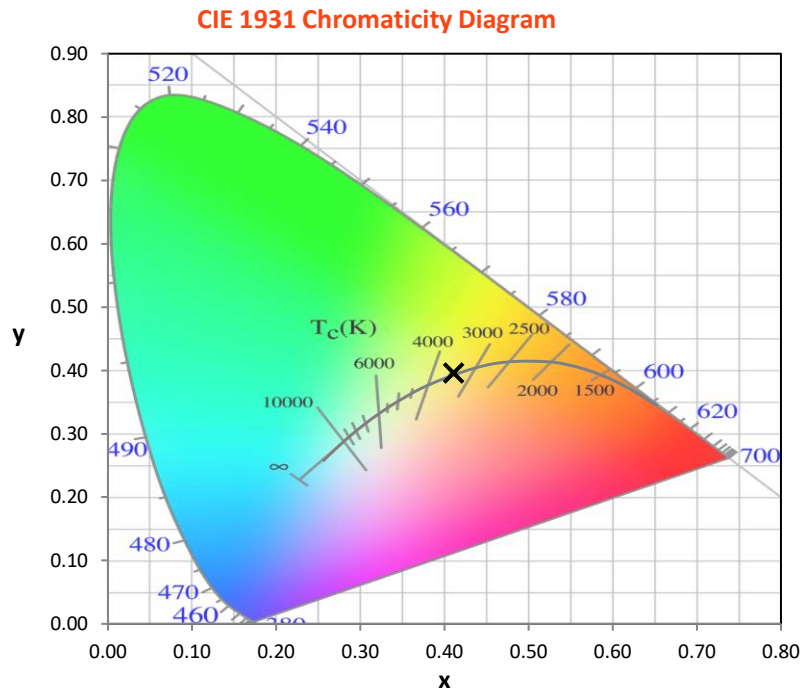
Test Conditions

Stabilization Time: 27M
 Operation Time: 12H
 Room Temperature (°C) / RH%: 25.0/41%
 Sphere Temperature (°C): 25.2

REPORT NUMBER: SP1-2404-343-4

Measurement and Test Equipment			
Instrument	Identification Number	Calibration Date	Calibration Due Date
Photometer	76INCH SPHERE IN0058	2/12/2024	8/12/2024
Power Meter	XITRON 2801 IN0071	10/23/2023	10/23/2024
AC Power Source	CHROMA 61603 IN0063	10/24/2023	10/24/2024
DC Power Source	AGILENT E3634A IN0208	10/24/2023	10/24/2024
Sphere Thermometer	ONSET IN0085	10/24/2023	10/24/2024
Room Thermometer	ONSET IN0046	10/24/2023	10/24/2024

REPORT NUMBER: SP1-2404-343-4



Point lies inside the ANSI 3500K 4-step quadrangle

REPORT NUMBER: SP1-2404-343-4

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	6937	NR	490	86536	NR	620	285855	NR	750	14885	NR	880	8993	NR
365	5820	NR	495	100007	NR	625	270301	NR	755	13434	NR	885	6908	NR
370	6342	NR	500	117528	NR	630	253548	NR	760	12497	NR	890	6405	NR
375	7421	NR	505	135586	NR	635	235289	NR	765	11021	NR	895	6392	NR
380	6619	NR	510	153068	NR	640	217346	NR	770	9938	NR	900	5762	NR
385	5813	NR	515	167170	NR	645	198000	NR	775	9105	NR	905	5445	NR
390	5630	NR	520	178364	NR	650	180267	NR	780	8315	NR	910	6424	NR
395	4917	NR	525	186887	NR	655	162796	NR	785	8364	NR	915	5977	NR
400	4279	NR	530	194310	NR	660	143827	NR	790	7202	NR	920	5589	NR
405	4043	NR	535	201832	NR	665	127951	NR	795	7271	NR	925	6728	NR
410	4666	NR	540	208553	NR	670	112526	NR	800	6583	NR	930	7328	NR
415	6309	NR	545	216697	NR	675	97790	NR	805	6730	NR	935	5077	NR
420	9564	NR	550	224567	NR	680	85489	NR	810	7628	NR	940	5558	NR
425	16500	NR	555	235296	NR	685	74086	NR	815	6335	NR	945	2171	NR
430	28210	NR	560	246750	NR	690	65039	NR	820	5679	NR	950	10555	NR
435	47088	NR	565	258189	NR	695	56035	NR	825	6974	NR	955	8787	NR
440	76402	NR	570	270186	NR	700	49223	NR	830	7136	NR	960	6936	NR
445	124288	NR	575	282577	NR	705	43027	NR	835	5971	NR	965	8547	NR
450	197266	NR	580	295795	NR	710	38080	NR	840	6371	NR	970	7502	NR
455	240978	NR	585	304888	NR	715	33706	NR	845	6027	NR	975	8793	NR
460	199802	NR	590	313177	NR	720	29961	NR	850	6816	NR	980	5517	NR
465	147559	NR	595	317388	NR	725	26440	NR	855	6168	NR	985	4652	NR
470	121976	NR	600	317783	NR	730	23027	NR	860	6333	NR	990	7259	NR
475	97268	NR	605	315536	NR	735	20496	NR	865	6493	NR	995	11735	NR
480	80092	NR	610	309123	NR	740	18168	NR	870	7357	NR	1000	8351	NR
485	79203	NR	615	300672	NR	745	15812	NR	875	7188	NR			

REPORT NUMBER: SP1-2404-343-4

Scotopic Flux vs. Wavelength



Scotopic Lumens: 25661.8

S/P: 1.51

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	6937	NR	490	86536	NR	620	285855	NR	750	14885	NR	880	8993	NR
365	5820	NR	495	100007	NR	625	270301	NR	755	13434	NR	885	6908	NR
370	6342	NR	500	117528	NR	630	253548	NR	760	12497	NR	890	6405	NR
375	7421	NR	505	135586	NR	635	235289	NR	765	11021	NR	895	6392	NR
380	6619	NR	510	153068	NR	640	217346	NR	770	9938	NR	900	5762	NR
385	5813	NR	515	167170	NR	645	198000	NR	775	9105	NR	905	5445	NR
390	5630	NR	520	178364	NR	650	180267	NR	780	8315	NR	910	6424	NR
395	4917	NR	525	186887	NR	655	162796	NR	785	8364	NR	915	5977	NR
400	4279	NR	530	194310	NR	660	143827	NR	790	7202	NR	920	5589	NR
405	4043	NR	535	201832	NR	665	127951	NR	795	7271	NR	925	6728	NR
410	4666	NR	540	208553	NR	670	112526	NR	800	6583	NR	930	7328	NR
415	6309	NR	545	216697	NR	675	97790	NR	805	6730	NR	935	5077	NR
420	9564	NR	550	224567	NR	680	85489	NR	810	7628	NR	940	5558	NR
425	16500	NR	555	235296	NR	685	74086	NR	815	6335	NR	945	2171	NR
430	28210	NR	560	246750	NR	690	65039	NR	820	5679	NR	950	10555	NR
435	47088	NR	565	258189	NR	695	56035	NR	825	6974	NR	955	8787	NR
440	76402	NR	570	270186	NR	700	49223	NR	830	7136	NR	960	6936	NR
445	124288	NR	575	282577	NR	705	43027	NR	835	5971	NR	965	8547	NR
450	197266	NR	580	295795	NR	710	38080	NR	840	6371	NR	970	7502	NR
455	240978	NR	585	304888	NR	715	33706	NR	845	6027	NR	975	8793	NR
460	199802	NR	590	313177	NR	720	29961	NR	850	6816	NR	980	5517	NR
465	147559	NR	595	317388	NR	725	26440	NR	855	6168	NR	985	4652	NR
470	121976	NR	600	317783	NR	730	23027	NR	860	6333	NR	990	7259	NR
475	97268	NR	605	315536	NR	735	20496	NR	865	6493	NR	995	11735	NR
480	80092	NR	610	309123	NR	740	18168	NR	870	7357	NR	1000	8351	NR
485	79203	NR	615	300672	NR	745	15812	NR	875	7188	NR			

REPORT NUMBER: SP1-2404-343-4

Melanopic Flux vs. Wavelength



Melanopic Lumens: 10080.3 M/P: 0.59

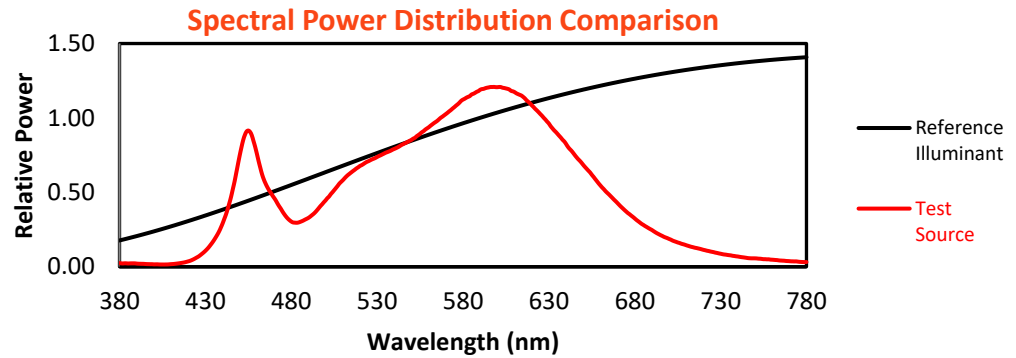
λ (nm)	Power (μW/nm)	Lumens (φ/nm)	λ (nm)	Power (μW/nm)	Lumens (φ/nm)	λ (nm)	Power (μW/nm)	Lumens (φ/nm)	λ (nm)	Power (μW/nm)	Lumens (φ/nm)	λ (nm)	Power (μW/nm)	Lumens (φ/nm)
360	6937	NR	490	86536	NR	620	285855	NR	750	14885	NR	880	8993	NR
365	5820	NR	495	100007	NR	625	270301	NR	755	13434	NR	885	6908	NR
370	6342	NR	500	117528	NR	630	253548	NR	760	12497	NR	890	6405	NR
375	7421	NR	505	135586	NR	635	235289	NR	765	11021	NR	895	6392	NR
380	6619	NR	510	153068	NR	640	217346	NR	770	9938	NR	900	5762	NR
385	5813	NR	515	167170	NR	645	198000	NR	775	9105	NR	905	5445	NR
390	5630	NR	520	178364	NR	650	180267	NR	780	8315	NR	910	6424	NR
395	4917	NR	525	186887	NR	655	162796	NR	785	8364	NR	915	5977	NR
400	4279	NR	530	194310	NR	660	143827	NR	790	7202	NR	920	5589	NR
405	4043	NR	535	201832	NR	665	127951	NR	795	7271	NR	925	6728	NR
410	4666	NR	540	208553	NR	670	112526	NR	800	6583	NR	930	7328	NR
415	6309	NR	545	216697	NR	675	97790	NR	805	6730	NR	935	5077	NR
420	9564	NR	550	224567	NR	680	85489	NR	810	7628	NR	940	5558	NR
425	16500	NR	555	235296	NR	685	74086	NR	815	6335	NR	945	2171	NR
430	28210	NR	560	246750	NR	690	65039	NR	820	5679	NR	950	10555	NR
435	47088	NR	565	258189	NR	695	56035	NR	825	6974	NR	955	8787	NR
440	76402	NR	570	270186	NR	700	49223	NR	830	7136	NR	960	6936	NR
445	124288	NR	575	282577	NR	705	43027	NR	835	5971	NR	965	8547	NR
450	197266	NR	580	295795	NR	710	38080	NR	840	6371	NR	970	7502	NR
455	240978	NR	585	304888	NR	715	33706	NR	845	6027	NR	975	8793	NR
460	199802	NR	590	313177	NR	720	29961	NR	850	6816	NR	980	5517	NR
465	147559	NR	595	317388	NR	725	26440	NR	855	6168	NR	985	4652	NR
470	121976	NR	600	317783	NR	730	23027	NR	860	6333	NR	990	7259	NR
475	97268	NR	605	315536	NR	735	20496	NR	865	6493	NR	995	11735	NR
480	80092	NR	610	309123	NR	740	18168	NR	870	7357	NR	1000	8351	NR
485	79203	NR	615	300672	NR	745	15812	NR	875	7188	NR			

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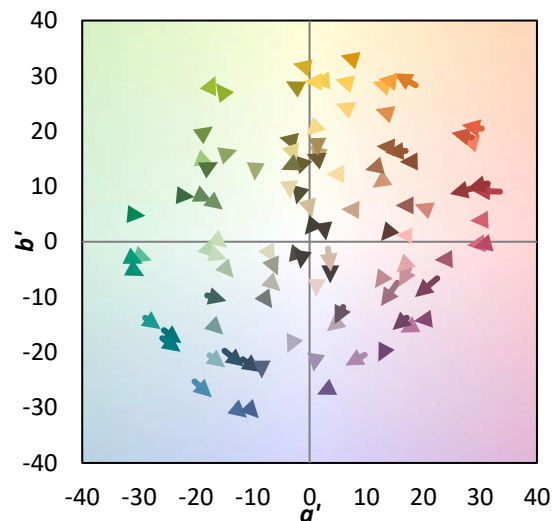
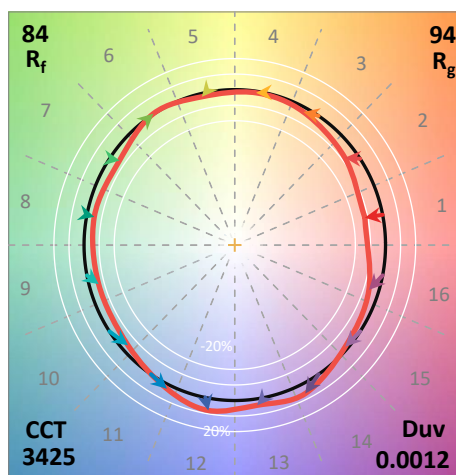
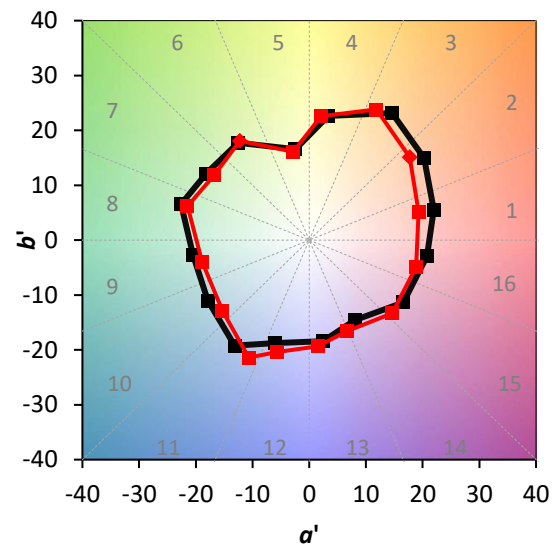
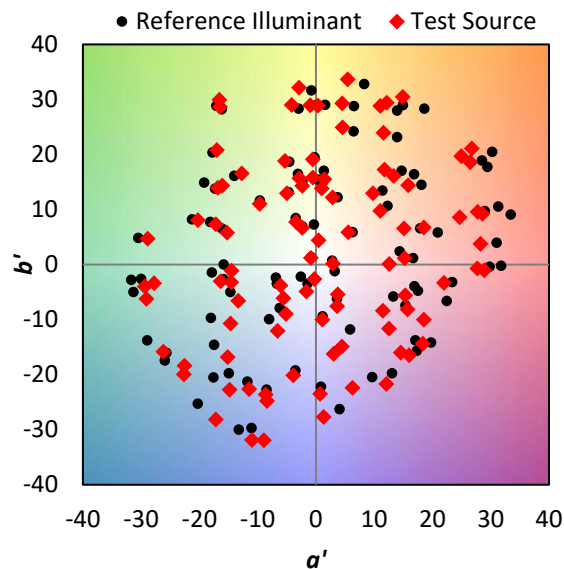
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Summary

$R_f = 84.3$
 $R_g = 94.4$
 CIE $R_a = 82.9$
 $R_9 = 8.8$



Color Vector Graphics

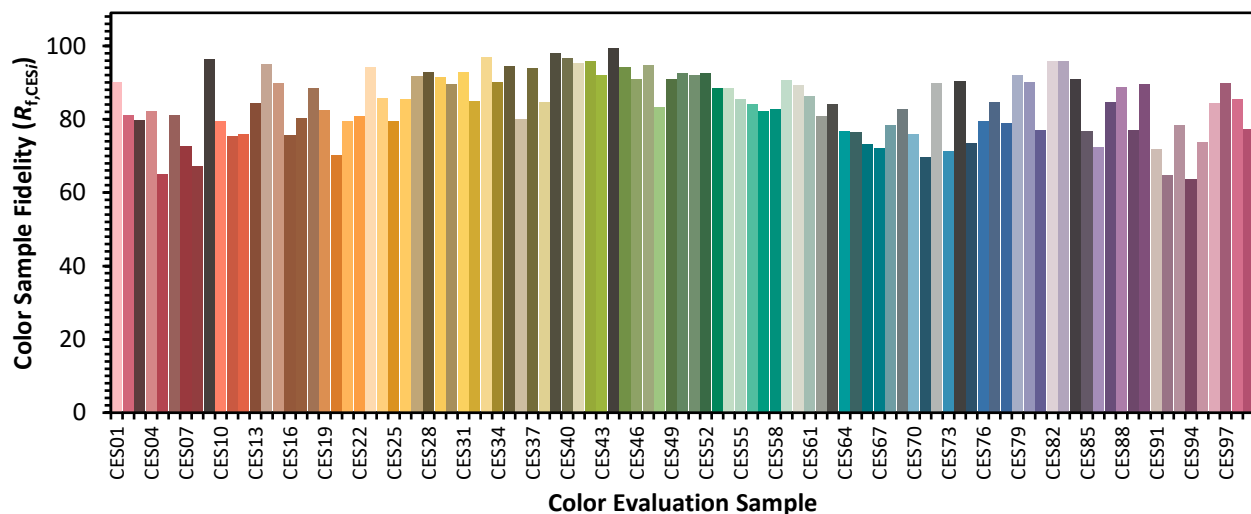


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Individual Sample Fidelity Index ($R_{f,i}$)

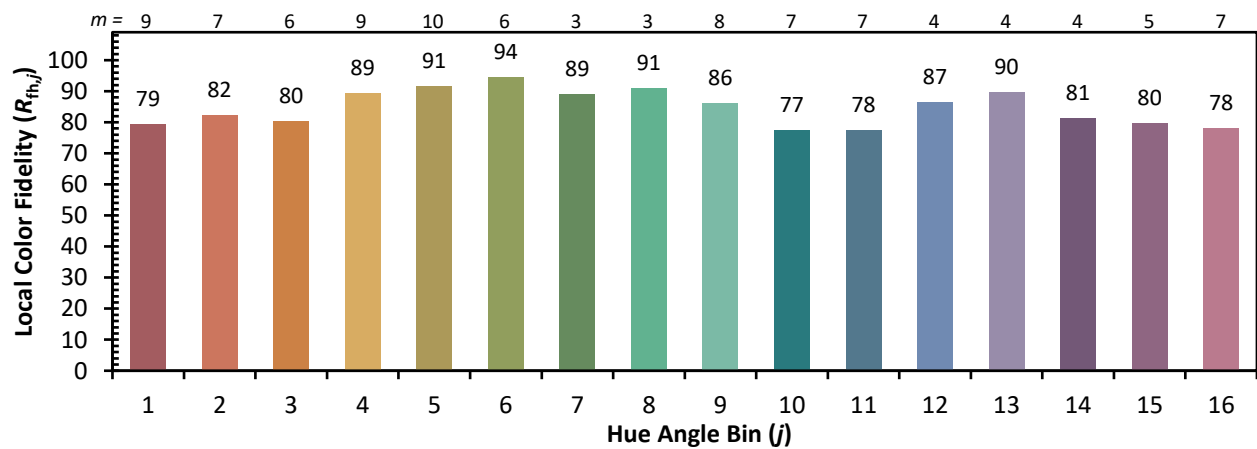
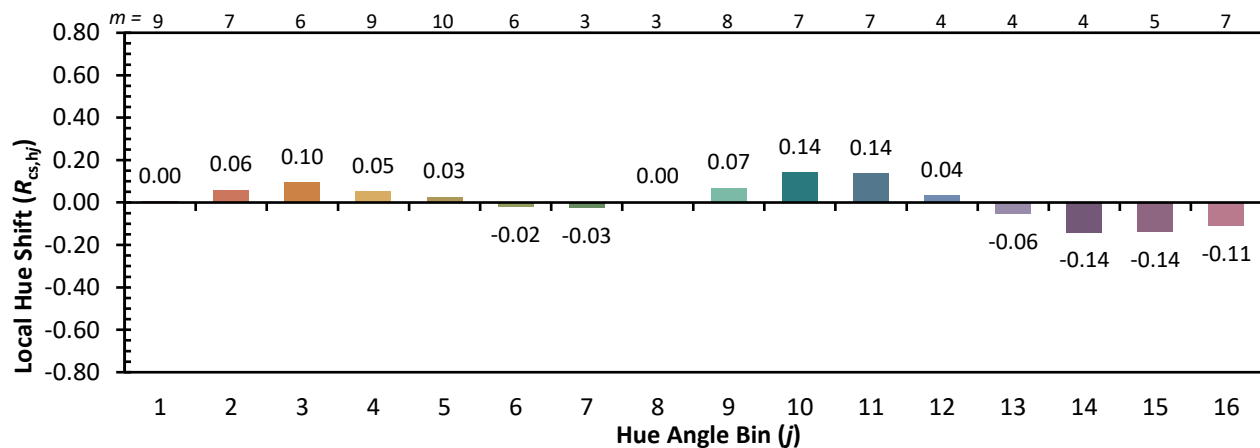
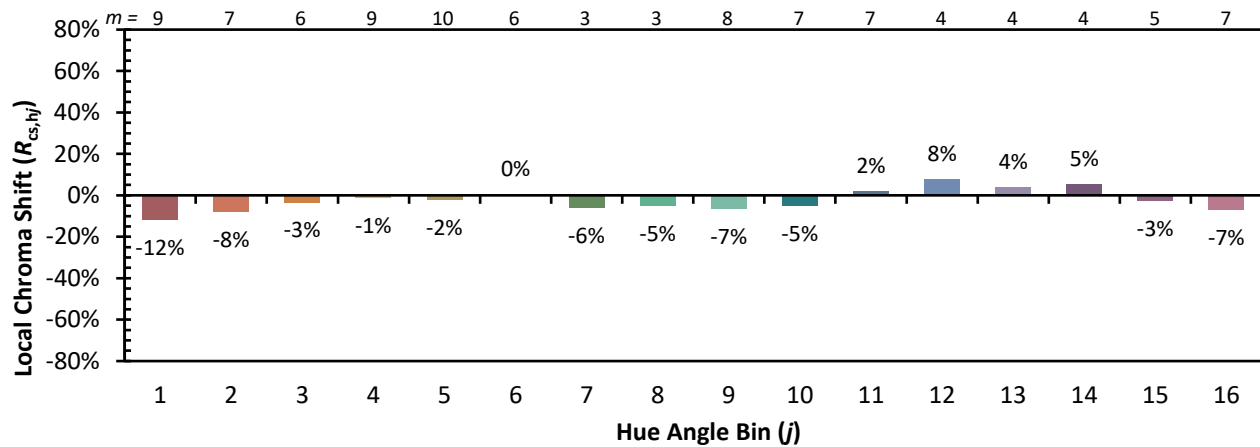
CES01 = 86	CES26 = 86	CES51 = 92	CES76 = 79
CES02 = 62	CES27 = 92	CES52 = 93	CES77 = 85
CES03 = 31	CES28 = 93	CES53 = 88	CES78 = 79
CES04 = 70	CES29 = 91	CES54 = 88	CES79 = 92
CES05 = 49	CES30 = 90	CES55 = 86	CES80 = 90
CES06 = 51	CES31 = 93	CES56 = 84	CES81 = 77
CES07 = 41	CES32 = 85	CES57 = 82	CES82 = 96
CES08 = 40	CES33 = 97	CES58 = 83	CES83 = 96
CES09 = 29	CES34 = 90	CES59 = 91	CES84 = 91
CES10 = 75	CES35 = 94	CES60 = 89	CES85 = 77
CES11 = 58	CES36 = 80	CES61 = 86	CES86 = 72
CES12 = 64	CES37 = 94	CES62 = 81	CES87 = 85
CES13 = 43	CES38 = 85	CES63 = 84	CES88 = 89
CES14 = 74	CES39 = 98	CES64 = 77	CES89 = 77
CES15 = 71	CES40 = 97	CES65 = 76	CES90 = 90
CES16 = 47	CES41 = 95	CES66 = 73	CES91 = 72
CES17 = 50	CES42 = 96	CES67 = 72	CES92 = 65
CES18 = 56	CES43 = 92	CES68 = 78	CES93 = 78
CES19 = 72	CES44 = 99	CES69 = 83	CES94 = 64
CES20 = 66	CES45 = 94	CES70 = 76	CES95 = 74
CES21 = 86	CES46 = 91	CES71 = 70	CES96 = 84
CES22 = 78	CES47 = 95	CES72 = 90	CES97 = 90
CES23 = 92	CES48 = 83	CES73 = 71	CES98 = 86
CES24 = 91	CES49 = 91	CES74 = 90	CES99 = 77
CES25 = 72	CES50 = 93	CES75 = 74	



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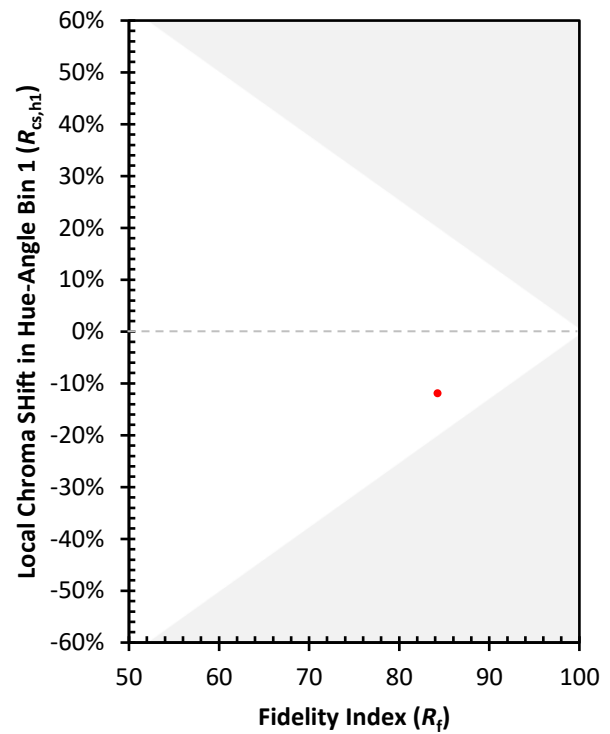
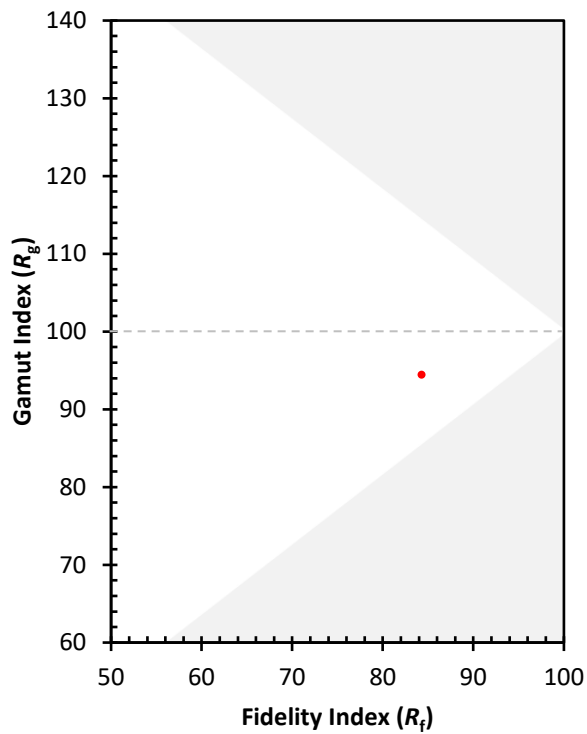
Color Rendition by Hue-Angle Bin



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Measure Comparisons



(END OF REPORT)