

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: P774883

Luminaire Tested: **SPHB-1224SE-M-L84050-CD-U (12K LUMEN, 4000K)**

Issue Date: 2/21/2024



**Test Information**

Test Method: LM-79-08  
Report Number: P774883  
TEST IS SCALED FROM IESNA LM-79-08 TEST DATA (G2-2309-187-1)  
Test Lab: INNOVATION CENTER  
Issue Date: 2/21/2024  
Manufacturer: COOPER LIGHTING SOLUTIONS (FORMERLY EATON)  
Product Line: METALUX  
Catalog Number: SPHB-1224SE-M-L84050-CD-U (12K LUMEN, 4000K)  
Description: 12000 Lumen SPHB at 4000K CCT  
Light Source: -  
Ballast/Driver: -

**Summary**

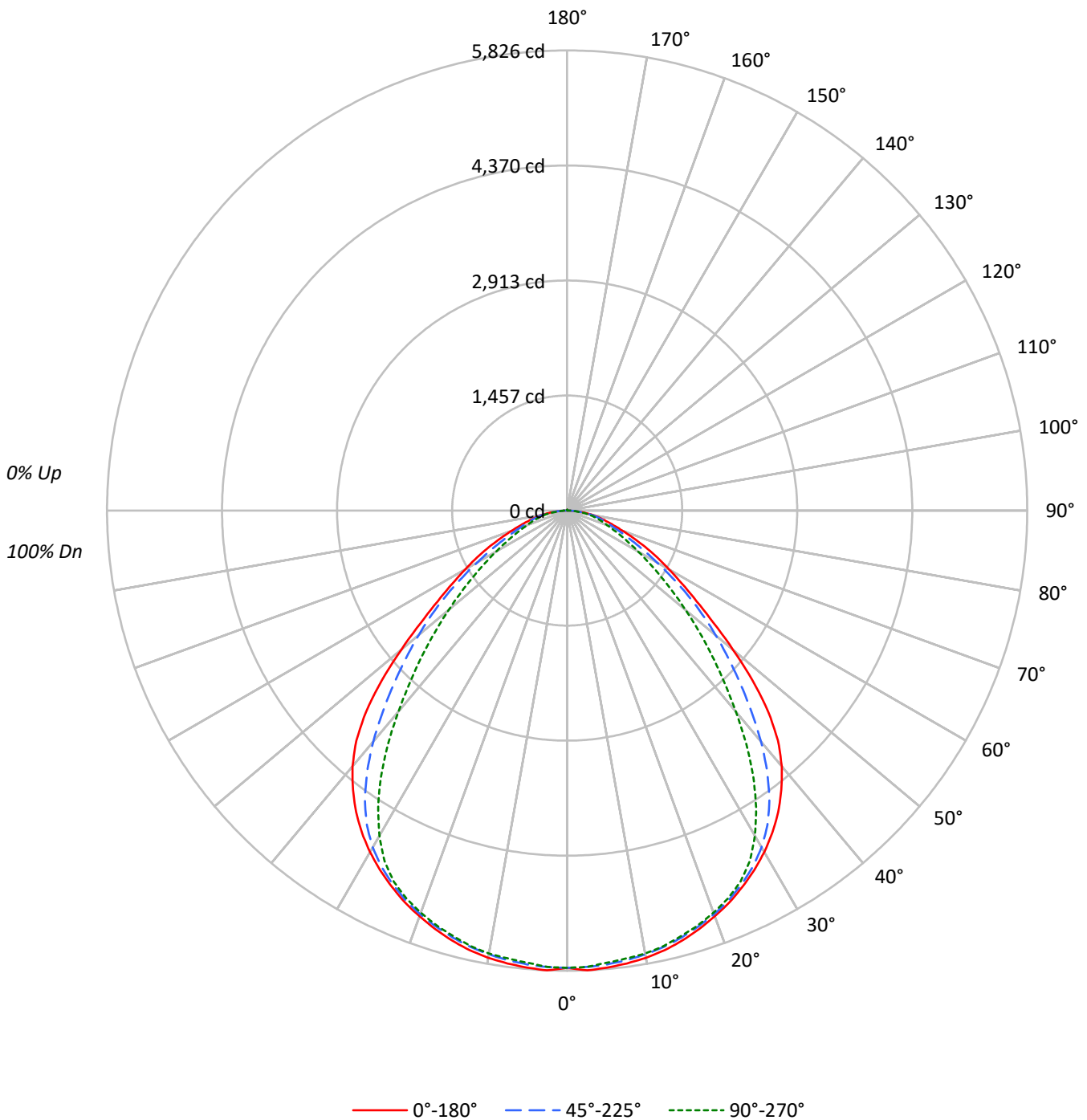
Lumens per Lamp: N/A  
Luminaire Lumens: 12853.1 lumens  
Efficiency: N/A  
Efficacy: 156.7 lumens/watt  
Spacing Criteria (0/90/45): 1.28 / 1.21 / 1.27  
Luminous Opening: Rectangular (W 1' x L: 1.42' x H: 0')  
CIE Type: Direct

Input Watts (W): 82  
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: P774883

CATALOG NUMBER: SPHB-1224SE-M-L84050-CD-U (12K LUMEN, 4000K)

### Luminous Intensity Polar Plot





TEST NUMBER: P774883

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**COEFFICIENT OF UTILIZATION - ZONAL CAVITY METHOD:**

RF	20					20					20					20					20					
RC	80					70					50					30					10					0
RW	70	50	30	10	70	50	30	10	50	30	10	50	30	10	50	30	10	50	30	10	50	30	10	0		
RCR																										
0	119	119	119	119	116	116	116	116	111	111	111	106	106	106	102	102	102	100					100			
1	110	106	102	99	108	104	100	97	100	97	94	96	93	91	92	90	89	87					87			
2	102	94	88	83	99	92	87	82	89	84	80	86	82	79	83	80	77	75					75			
3	94	84	77	71	91	83	76	71	80	74	69	77	72	68	75	70	67	65					65			
4	86	76	68	62	84	74	67	61	72	65	60	70	64	60	68	63	59	57					57			
5	80	68	60	54	78	67	60	54	65	58	53	63	57	53	61	56	52	50					50			
6	74	62	54	48	73	61	53	48	59	52	47	58	52	47	56	51	47	45					45			
7	69	57	49	43	68	56	48	43	54	47	42	53	47	42	52	46	42	40					40			
8	65	52	44	39	63	51	44	38	50	43	38	49	43	38	48	42	38	36					36			
9	61	48	40	35	59	47	40	35	46	39	35	45	39	35	44	39	34	33					33			
10	57	44	37	32	56	44	37	32	43	36	32	42	36	32	41	36	31	30					30			

**AVERAGE LUMINANCE (cd/sqm):**

	0°	45°	90°
0°	43987	43987	43987
5°	44303	43996	43822
10°	44356	44023	43935
15°	44327	44019	43863
20°	44198	43981	43805
25°	44048	43786	43495
30°	43797	43197	41711
35°	43206	41413	38109
40°	41921	37886	32932
45°	38696	33312	27829
50°	32418	29056	23117
55°	26491	24601	19034
60°	22618	19952	15804
65°	19571	16231	13470
70°	16521	14100	11976
75°	14807	13689	11710
80°	14719	13722	11770
85°	12833	12702	9938



TEST NUMBER: P774883

CATALOG NUMBER: SPHB-1224SE-M-L84050-CD-U (12K LUMEN, 4000K)

**ZONAL LUMENS:**

Zone	Lumens	% Fixture
0°-10°	548.4	4.3
10°-20°	1578.8	12.3
20°-30°	2396.6	18.6
30°-40°	2740.8	21.3
40°-50°	2374.7	18.5
50°-60°	1611.6	12.5
60°-70°	926.9	7.2
70°-80°	493.8	3.8
80°-90°	160.0	1.2
90°-100°	4.6	0.0
100°-110°	1.5	0.0
110°-120°	1.5	0.0
120°-130°	2.1	0.0
130°-140°	2.9	0.0
140°-150°	3.3	0.0
150°-160°	2.9	0.0
160°-170°	2.1	0.0
170°-180°	0.8	0.0
0°-30°	4523.7	35.2
0°-40°	7264.5	56.5
0°-60°	11250.8	87.5
0°-90°	12831.5	99.8
90°-120°	7.6	0.1
90°-150°	15.7	0.1
90°-180°	22.0	0.2
0°-180°	12853.1	100.0

**CANDELA DISTRIBUTION:**

	0°	22.5°	45°	67.5°	90°	Flux
0°	5789	5789	5789	5789	5789	
5°	5809	5756	5768	5756	5746	552
15°	5635	5584	5596	5582	5576	1590
25°	5254	5209	5223	5203	5188	2422
35°	4658	4587	4465	4206	4109	2906
45°	3601	3406	3100	2723	2590	2737
55°	2000	2011	1857	1561	1437	1822
65°	1089	1020	903	833	749	1085
75°	504	496	466	427	399	548
85°	147	151	146	120	114	158
90°	2	10	22	27	27	8
95°	1	2	2	2	2	1
105°	1	1	2	2	2	1
115°	1	2	2	2	2	1
125°	2	2	2	2	2	2
135°	4	4	4	4	4	3
145°	5	5	5	6	6	3
155°	6	6	6	6	6	3
165°	7	7	7	8	8	2
175°	8	8	8	8	9	1
180°	8	8	8	8	8	



TEST NUMBER: P774883

CATALOG NUMBER: SPHB-1224SE-M-L84050-CD-U (12K LUMEN, 4000K)

**CANDELA DISTRIBUTION (FULL):**

	0°	22.5°	45°	67.5°	90°
0°	5789.2	5789.2	5789.2	5789.2	5789.2
2.5°	5826.4	5774.9	5784.3	5777.4	5781.3
5°	5808.6	5755.6	5768.4	5755.6	5745.6
7.5°	5782.8	5729.3	5741.7	5727.3	5720.4
10°	5749.1	5694.6	5706.0	5696.6	5694.6
12.5°	5700.6	5647.0	5658.4	5647.0	5646.1
15°	5635.2	5583.6	5596.0	5581.6	5576.2
17.5°	5555.4	5506.8	5522.2	5511.3	5505.3
20°	5466.2	5421.1	5439.4	5423.1	5417.6
22.5°	5370.6	5322.5	5340.3	5324.5	5315.1
25°	5254.1	5209.0	5222.9	5203.1	5188.2
27.5°	5130.3	5078.2	5086.6	5039.1	5006.9
30°	4992.0	4934.5	4923.6	4818.1	4754.2
32.5°	4836.9	4771.0	4721.0	4534.2	4452.9
35°	4658.1	4586.7	4464.8	4206.2	4108.6
37.5°	4455.9	4364.2	4158.1	3862.3	3726.0
40°	4226.5	4096.7	3819.7	3480.3	3320.2
42.5°	3951.0	3764.7	3454.5	3093.8	2940.2
45°	3601.2	3405.5	3100.2	2722.7	2589.9
47.5°	3183.5	3034.8	2768.3	2383.8	2260.9
50°	2742.5	2691.5	2458.1	2085.0	1955.7
52.5°	2334.7	2347.6	2156.8	1803.6	1682.2
55°	1999.8	2010.7	1857.1	1561.3	1436.9
57.5°	1721.3	1695.1	1572.7	1338.8	1225.8
60°	1488.4	1428.5	1313.0	1145.1	1040.0
62.5°	1284.3	1207.0	1093.0	976.1	878.5
65°	1088.6	1020.2	902.8	832.9	749.2
67.5°	903.3	860.7	759.1	709.5	633.7
70°	743.7	723.9	634.7	601.0	539.1
72.5°	613.9	601.5	545.5	509.9	467.2
75°	504.4	496.5	466.3	427.1	398.9
77.5°	420.7	409.3	390.4	356.7	333.5
80°	336.4	328.5	313.6	285.9	269.0
82.5°	240.3	240.3	233.9	209.6	194.2
85°	147.2	151.1	145.7	120.4	114.0
87.5°	53.5	59.5	66.9	65.9	64.9
90°	1.5	10.4	21.8	26.8	27.3
92.5°	0.5	2.0	3.5	5.5	5.0
95°	1.0	1.5	2.0	2.0	2.0
97.5°	1.0	1.0	2.0	2.0	2.0
100°	1.0	1.0	1.5	2.0	2.0
102.5°	0.5	1.0	1.5	2.0	2.0
105°	1.0	1.0	1.5	1.5	2.0
107.5°	1.0	1.0	1.5	1.5	1.5
110°	1.0	1.0	1.5	1.5	2.0



TEST NUMBER: P774883

CATALOG NUMBER: SPHB-1224SE-M-L84050-CD-U (12K LUMEN, 4000K)

**CANDELA DISTRIBUTION (continued):**

	0°	22.5°	45°	67.5°	90°
112.5°	1.0	1.0	1.5	1.5	1.5
115°	1.0	1.5	1.5	1.5	2.0
117.5°	1.5	1.5	1.5	2.0	2.0
120°	1.5	1.5	2.0	2.0	2.0
122.5°	2.0	2.0	2.0	2.0	2.0
125°	2.0	2.0	2.5	2.5	2.5
127.5°	2.5	2.5	2.5	2.5	3.0
130°	2.5	3.0	3.0	3.0	3.0
132.5°	3.0	3.5	3.5	3.5	3.5
135°	3.5	3.5	3.5	4.0	4.0
137.5°	4.0	4.0	4.0	4.0	4.0
140°	4.5	4.5	4.5	4.5	4.5
142.5°	4.5	5.0	5.0	5.0	5.0
145°	5.0	5.0	5.0	5.5	5.5
147.5°	5.5	5.5	5.5	5.5	5.5
150°	5.5	5.9	5.9	5.9	5.9
152.5°	5.9	5.9	5.9	6.4	6.4
155°	5.9	5.9	6.4	6.4	6.4
157.5°	6.4	6.4	6.9	6.9	6.9
160°	6.4	6.9	6.9	7.4	7.4
162.5°	6.9	6.9	7.4	7.4	7.4
165°	7.4	7.4	7.4	7.9	7.9
167.5°	7.4	7.4	7.9	7.9	8.4
170°	7.9	7.9	7.9	8.4	8.4
172.5°	7.9	7.9	7.9	8.4	8.4
175°	7.9	7.9	8.4	8.4	8.9
177.5°	7.9	7.9	8.4	8.9	8.9
180°	8.4	8.4	8.4	8.4	8.4

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

Report Prepared for

Cooper Lighting Solutions

METALUX

Report Number: SP1-2309-187-7

Test Date: 10/09/2023

Luminaire Tested: SPHB-1224SE-M-UNV-L84050-CD-U (24K LUMEN 4000K)

Data in this report applies to families of products including SPHB-1224SE-M-UNV-L84050-CD-U (24K LUMEN 4000K).

Tested By:

Approved By:



NVLAP Lab Code: 200050-0

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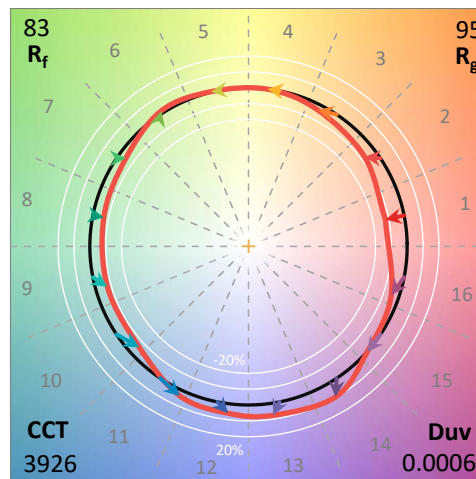


**Test Information**

Test Method: LM-79-2019  
 Report Number: SP1-2309-187-7  
 Test Lab: COOPER LIGHTING SOLUTIONS  
 Photometer: SP1 - 76IN SPHERE  
 Measurement Geometry: 4π  
 Issue Date: 10/09/2023  
 Manufacturer: COOPER LIGHTING SOLUTIONS  
 Product Line: METALUX  
 Catalog Number: **SPHB-1224SE-M-UNV-L84050-CD-U (24K LUMEN 4000K)**  
 Description: SPHB SELECT, MEDIUM LENS, 24K LUMENS, 4000K

**Spectral Parameters**

CCT (K):	3926	CRI (Ra):	82.0	R9:	8.2
CIE u':	0.2261	R1:	80.3	R10:	71.6
CIE v':	0.5037	R2:	88.4	R11:	78.1
Duv:	0.0006	R3:	93.9	R12:	57.5
CIE x:	0.3841	R4:	80.2	R13:	82.3
CIE y:	0.3802	R5:	79.7	R14:	96.6
CIE z:	0.2357	R6:	83.3		
Peak Wavelength (nm):	454	R7:	86.1		
Dominant Wavelength (nm):	579	R8:	64.3		
Purity:	29.5				
Rf:	82.9				
Rg:	95				



**Test Conditions**

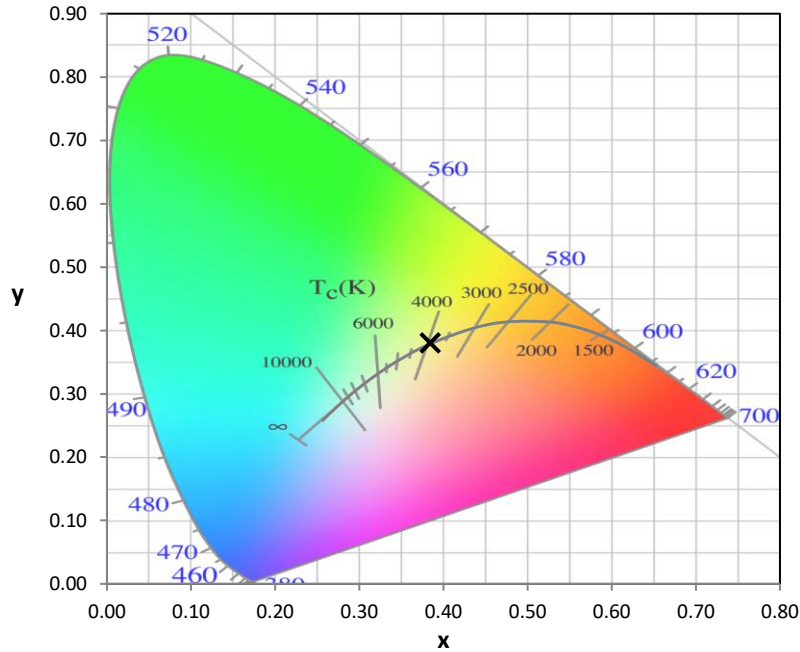
Stabilization Time: 23M  
 Operation Time: 12H  
 Room Temperature (°C) / RH%: 25.5/33%  
 Sphere Temperature (°C): 24.2

REPORT NUMBER: SP1-2309-187-7

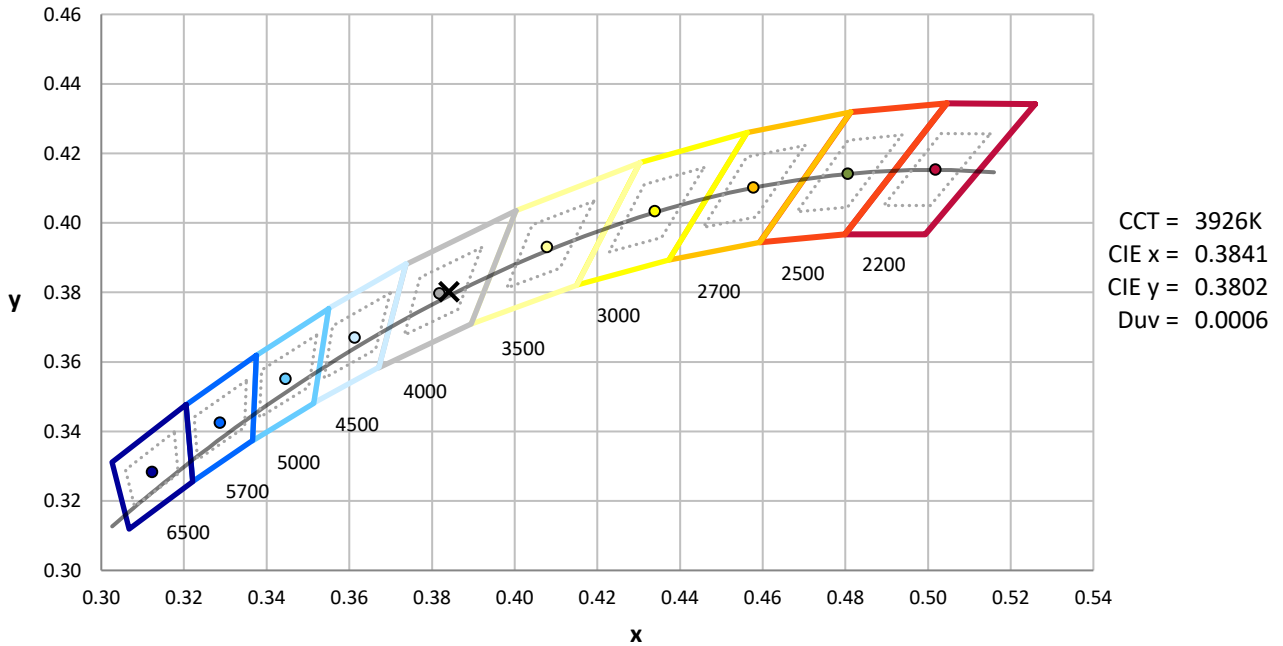
Measurement and Test Equipment			
Instrument	Identification Number	Calibration Date	Calibration Due Date
Photometer	76INCH SPHERE IN0058	8/9/2023	2/9/2024
Power Meter	XITRON 2801 IN0071	11/29/2022	11/29/2023
AC Power Source	CHROMA 61603 IN0063	11/28/2022	11/28/2023
DC Power Source	AGILENT E3634A IN0208	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

REPORT NUMBER: SP1-2309-187-7

**CIE 1931 Chromaticity Diagram**



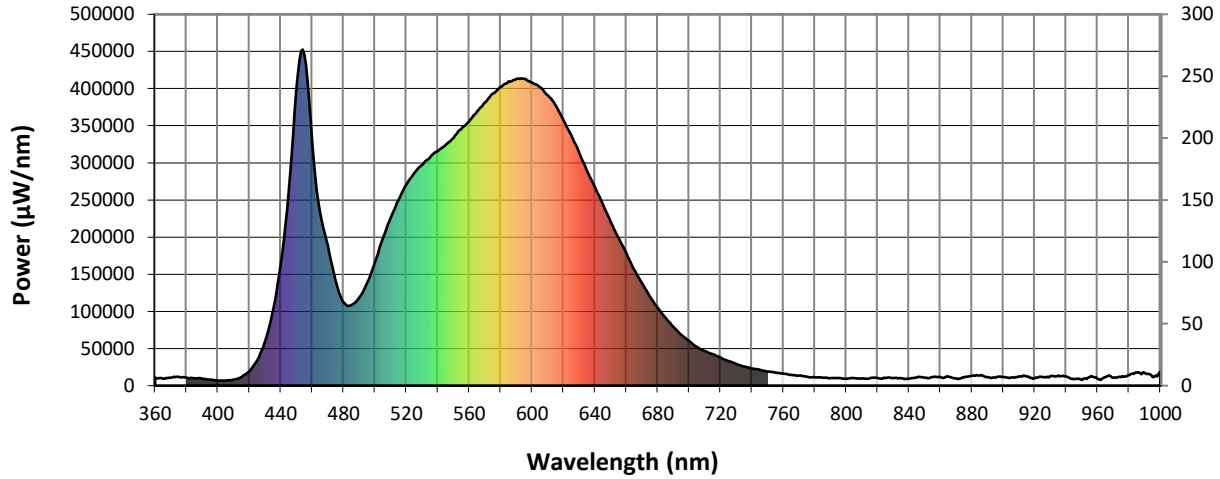
**CIE 1931 Chromaticity Diagram with 2017 ANSI 7-Step and 4-Step Quadrangles**



Point lies inside the ANSI 4000K 4-step quadrangle

REPORT NUMBER: SP1-2309-187-7

**Photopic Flux vs. Wavelength**

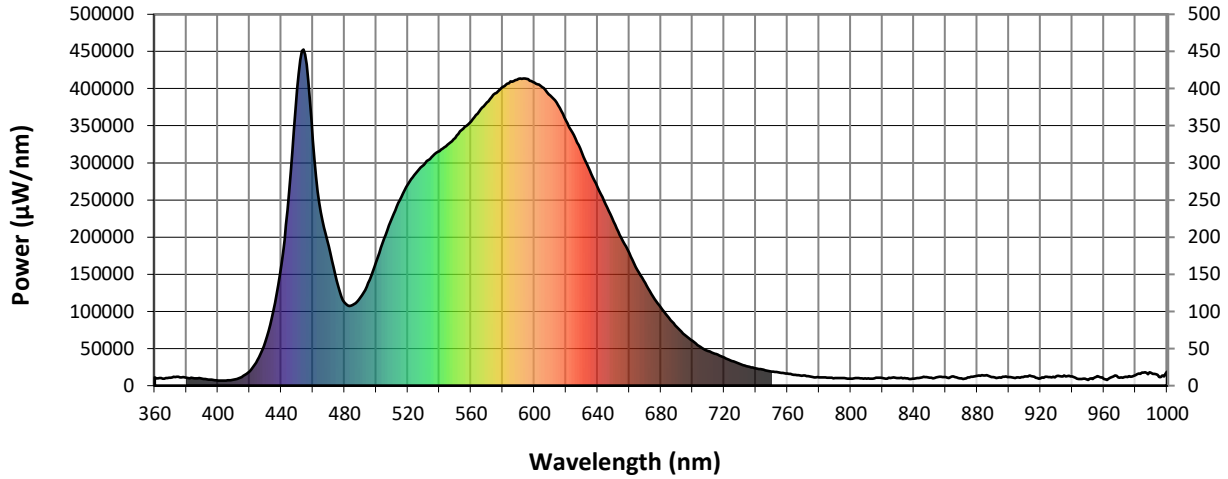


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λ (nm)	Power (µW/nm)	Lumens (φ/nm)	λ (nm)	Power (µW/nm)	Lumens (φ/nm)	λ (nm)	Power (µW/nm)	Lumens (φ/nm)	λ (nm)	Power (µW/nm)	Lumens (φ/nm)	λ (nm)	Power (µW/nm)	Lumens (φ/nm)
360	10992	NR	490	118921	NR	620	356922	NR	750	19019	NR	880	13091	NR
365	9593	NR	495	138088	NR	625	337439	NR	755	17413	NR	885	13768	NR
370	10476	NR	500	166483	NR	630	313667	NR	760	16262	NR	890	11509	NR
375	11916	NR	505	198126	NR	635	289634	NR	765	14555	NR	895	10746	NR
380	10857	NR	510	225943	NR	640	267120	NR	770	13516	NR	900	11526	NR
385	9836	NR	515	249652	NR	645	244025	NR	775	12156	NR	905	11085	NR
390	9329	NR	520	270963	NR	650	221090	NR	780	11138	NR	910	12484	NR
395	8104	NR	525	285863	NR	655	198958	NR	785	10805	NR	915	12235	NR
400	6858	NR	530	297396	NR	660	178676	NR	790	10121	NR	920	9666	NR
405	6914	NR	535	307535	NR	665	155862	NR	795	10392	NR	925	11659	NR
410	8077	NR	540	315948	NR	670	138150	NR	800	9549	NR	930	12967	NR
415	11717	NR	545	324499	NR	675	120142	NR	805	10057	NR	935	13555	NR
420	19513	NR	550	333620	NR	680	105107	NR	810	9285	NR	940	12553	NR
425	34423	NR	555	345725	NR	685	91191	NR	815	9751	NR	945	9165	NR
430	59393	NR	560	355808	NR	690	79275	NR	820	10216	NR	950	7624	NR
435	101278	NR	565	369262	NR	695	68358	NR	825	10410	NR	955	11686	NR
440	162827	NR	570	381413	NR	700	60050	NR	830	10058	NR	960	9106	NR
445	260438	NR	575	393089	NR	705	51990	NR	835	9982	NR	965	11345	NR
450	399252	NR	580	402225	NR	710	46653	NR	840	9215	NR	970	10672	NR
455	445742	NR	585	409494	NR	715	42391	NR	845	11311	NR	975	11689	NR
460	330661	NR	590	413322	NR	720	37628	NR	850	10813	NR	980	14054	NR
465	233593	NR	595	413160	NR	725	33220	NR	855	11652	NR	985	17684	NR
470	187643	NR	600	408148	NR	730	29243	NR	860	11468	NR	990	17244	NR
475	140648	NR	605	401766	NR	735	25806	NR	865	12591	NR	995	11439	NR
480	111871	NR	610	390821	NR	740	23374	NR	870	9925	NR	1000	19016	NR
485	108472	NR	615	377363	NR	745	21294	NR	875	11284	NR			

REPORT NUMBER: SP1-2309-187-7

**Scotopic Flux vs. Wavelength**

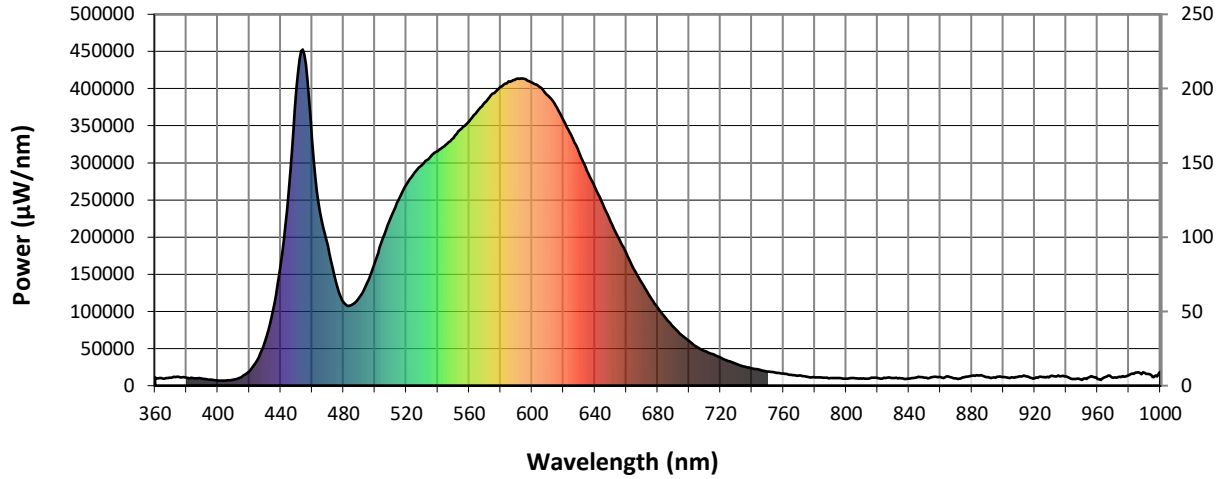


**Scotopic Lumens: 39237.7 S/P: 1.65**

$\lambda$ (nm)	Power ( $\mu\text{W}/\text{nm}$ )	Lumens ( $\phi/\text{nm}$ )	$\lambda$ (nm)	Power ( $\mu\text{W}/\text{nm}$ )	Lumens ( $\phi/\text{nm}$ )	$\lambda$ (nm)	Power ( $\mu\text{W}/\text{nm}$ )	Lumens ( $\phi/\text{nm}$ )	$\lambda$ (nm)	Power ( $\mu\text{W}/\text{nm}$ )	Lumens ( $\phi/\text{nm}$ )	$\lambda$ (nm)	Power ( $\mu\text{W}/\text{nm}$ )	Lumens ( $\phi/\text{nm}$ )
360	10992	NR	490	118921	NR	620	356922	NR	750	19019	NR	880	13091	NR
365	9593	NR	495	138088	NR	625	337439	NR	755	17413	NR	885	13768	NR
370	10476	NR	500	166483	NR	630	313667	NR	760	16262	NR	890	11509	NR
375	11916	NR	505	198126	NR	635	289634	NR	765	14555	NR	895	10746	NR
380	10857	NR	510	225943	NR	640	267120	NR	770	13516	NR	900	11526	NR
385	9836	NR	515	249652	NR	645	244025	NR	775	12156	NR	905	11085	NR
390	9329	NR	520	270963	NR	650	221090	NR	780	11138	NR	910	12484	NR
395	8104	NR	525	285863	NR	655	198958	NR	785	10805	NR	915	12235	NR
400	6858	NR	530	297396	NR	660	178676	NR	790	10121	NR	920	9666	NR
405	6914	NR	535	307535	NR	665	155862	NR	795	10392	NR	925	11659	NR
410	8077	NR	540	315948	NR	670	138150	NR	800	9549	NR	930	12967	NR
415	11717	NR	545	324499	NR	675	120142	NR	805	10057	NR	935	13555	NR
420	19513	NR	550	333620	NR	680	105107	NR	810	9285	NR	940	12553	NR
425	34423	NR	555	345725	NR	685	91191	NR	815	9751	NR	945	9165	NR
430	59393	NR	560	355808	NR	690	79275	NR	820	10216	NR	950	7624	NR
435	101278	NR	565	369262	NR	695	68358	NR	825	10410	NR	955	11686	NR
440	162827	NR	570	381413	NR	700	60050	NR	830	10058	NR	960	9106	NR
445	260438	NR	575	393089	NR	705	51990	NR	835	9982	NR	965	11345	NR
450	399252	NR	580	402225	NR	710	46653	NR	840	9215	NR	970	10672	NR
455	445742	NR	585	409494	NR	715	42391	NR	845	11311	NR	975	11689	NR
460	330661	NR	590	413322	NR	720	37628	NR	850	10813	NR	980	14054	NR
465	233593	NR	595	413160	NR	725	33220	NR	855	11652	NR	985	17684	NR
470	187643	NR	600	408148	NR	730	29243	NR	860	11468	NR	990	17244	NR
475	140648	NR	605	401766	NR	735	25806	NR	865	12591	NR	995	11439	NR
480	111871	NR	610	390821	NR	740	23374	NR	870	9925	NR	1000	19016	NR
485	108472	NR	615	377363	NR	745	21294	NR	875	11284	NR			

REPORT NUMBER: SP1-2309-187-7

**Melanopic Flux vs. Wavelength**



**Melanopic Lumens: 15753**

**M/P: 0.66**

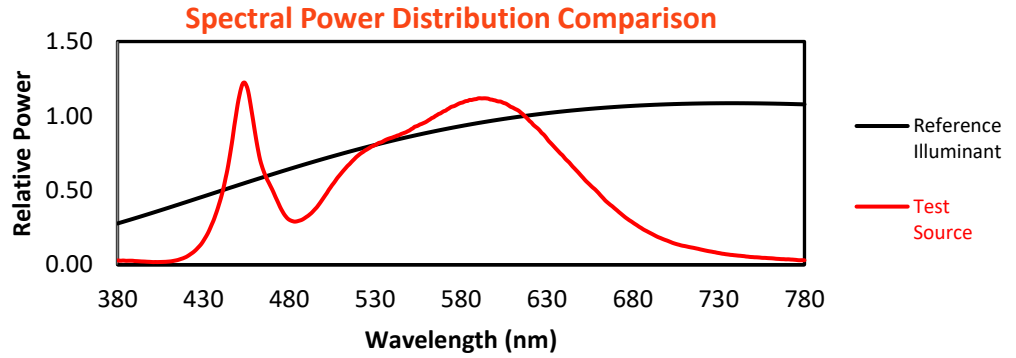
λ (nm)	Power (µW/nm)	Lumens (φ/nm)	λ (nm)	Power (µW/nm)	Lumens (φ/nm)	λ (nm)	Power (µW/nm)	Lumens (φ/nm)	λ (nm)	Power (µW/nm)	Lumens (φ/nm)	λ (nm)	Power (µW/nm)	Lumens (φ/nm)
360	10992	NR	490	118921	NR	620	356922	NR	750	19019	NR	880	13091	NR
365	9593	NR	495	138088	NR	625	337439	NR	755	17413	NR	885	13768	NR
370	10476	NR	500	166483	NR	630	313667	NR	760	16262	NR	890	11509	NR
375	11916	NR	505	198126	NR	635	289634	NR	765	14555	NR	895	10746	NR
380	10857	NR	510	225943	NR	640	267120	NR	770	13516	NR	900	11526	NR
385	9836	NR	515	249652	NR	645	244025	NR	775	12156	NR	905	11085	NR
390	9329	NR	520	270963	NR	650	221090	NR	780	11138	NR	910	12484	NR
395	8104	NR	525	285863	NR	655	198958	NR	785	10805	NR	915	12235	NR
400	6858	NR	530	297396	NR	660	178676	NR	790	10121	NR	920	9666	NR
405	6914	NR	535	307535	NR	665	155862	NR	795	10392	NR	925	11659	NR
410	8077	NR	540	315948	NR	670	138150	NR	800	9549	NR	930	12967	NR
415	11717	NR	545	324499	NR	675	120142	NR	805	10057	NR	935	13555	NR
420	19513	NR	550	333620	NR	680	105107	NR	810	9285	NR	940	12553	NR
425	34423	NR	555	345725	NR	685	91191	NR	815	9751	NR	945	9165	NR
430	59393	NR	560	355808	NR	690	79275	NR	820	10216	NR	950	7624	NR
435	101278	NR	565	369262	NR	695	68358	NR	825	10410	NR	955	11686	NR
440	162827	NR	570	381413	NR	700	60050	NR	830	10058	NR	960	9106	NR
445	260438	NR	575	393089	NR	705	51990	NR	835	9982	NR	965	11345	NR
450	399252	NR	580	402225	NR	710	46653	NR	840	9215	NR	970	10672	NR
455	445742	NR	585	409494	NR	715	42391	NR	845	11311	NR	975	11689	NR
460	330661	NR	590	413322	NR	720	37628	NR	850	10813	NR	980	14054	NR
465	233593	NR	595	413160	NR	725	33220	NR	855	11652	NR	985	17684	NR
470	187643	NR	600	408148	NR	730	29243	NR	860	11468	NR	990	17244	NR
475	140648	NR	605	401766	NR	735	25806	NR	865	12591	NR	995	11439	NR
480	111871	NR	610	390821	NR	740	23374	NR	870	9925	NR	1000	19016	NR
485	108472	NR	615	377363	NR	745	21294	NR	875	11284	NR			

REPORT NUMBER: SP1-2309-187-7

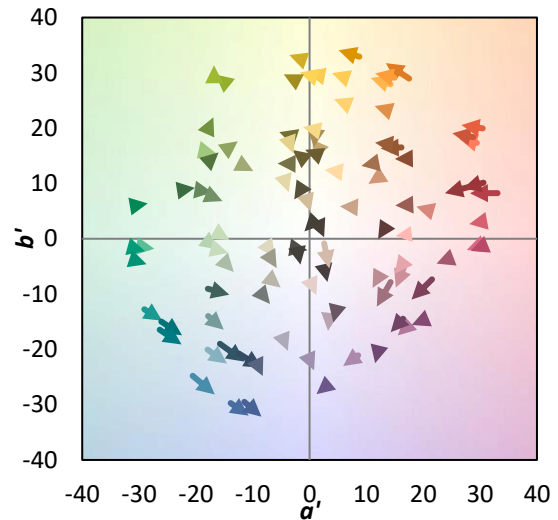
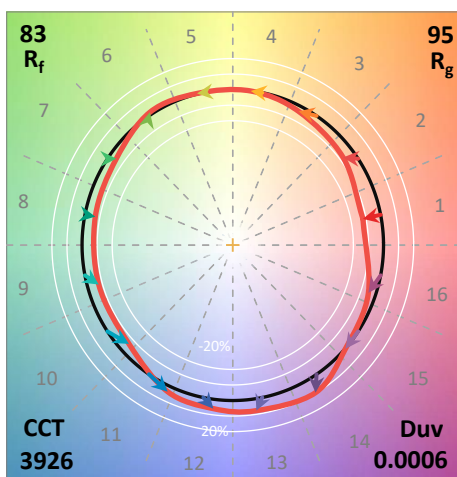
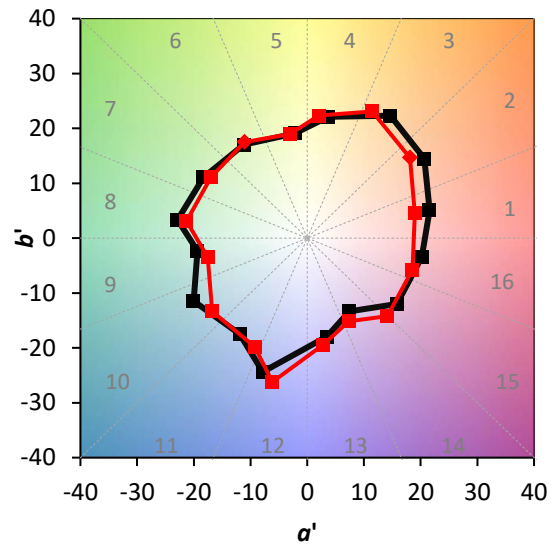
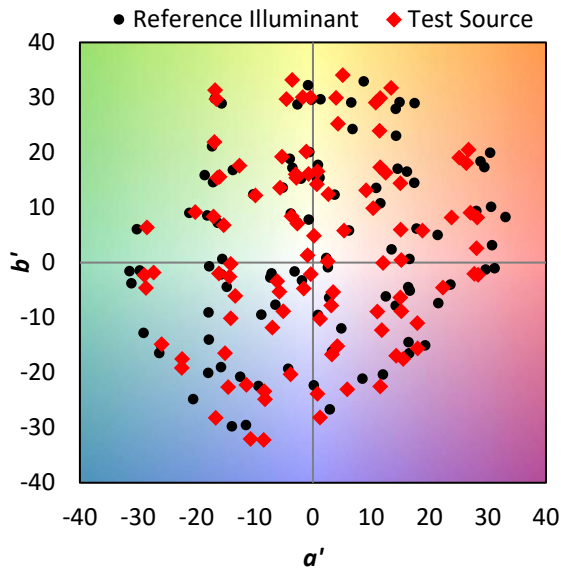
**TM-30-18**

**Summary**

$R_f = 82.9$   
 $R_g = 95$   
 CIE  $R_a = 82.0$   
 $R_9 = 8.2$



**Color Vector Graphics**

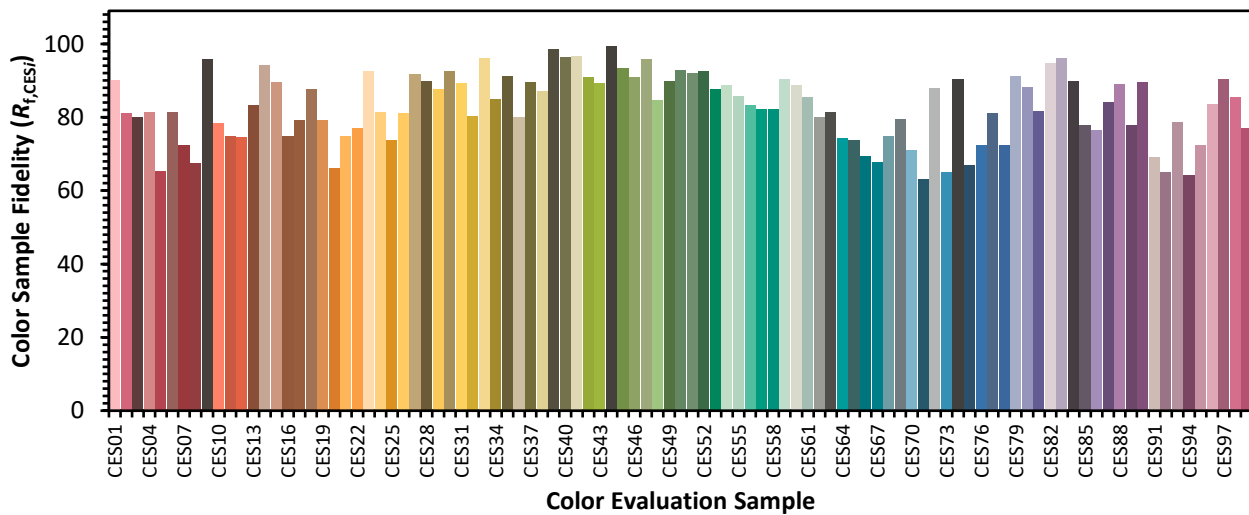


REPORT NUMBER: SP1-2309-187-7

**TM-30-18**

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

CES01 = 86	CES26 = 81	CES51 = 92	CES76 = 73
CES02 = 61	CES27 = 92	CES52 = 92	CES77 = 81
CES03 = 31	CES28 = 90	CES53 = 88	CES78 = 72
CES04 = 70	CES29 = 88	CES54 = 89	CES79 = 91
CES05 = 48	CES30 = 92	CES55 = 86	CES80 = 88
CES06 = 50	CES31 = 89	CES56 = 83	CES81 = 82
CES07 = 41	CES32 = 80	CES57 = 82	CES82 = 95
CES08 = 40	CES33 = 96	CES58 = 82	CES83 = 96
CES09 = 29	CES34 = 85	CES59 = 90	CES84 = 90
CES10 = 74	CES35 = 91	CES60 = 89	CES85 = 78
CES11 = 57	CES36 = 80	CES61 = 85	CES86 = 76
CES12 = 63	CES37 = 90	CES62 = 80	CES87 = 84
CES13 = 42	CES38 = 87	CES63 = 81	CES88 = 89
CES14 = 74	CES39 = 98	CES64 = 74	CES89 = 78
CES15 = 71	CES40 = 96	CES65 = 74	CES90 = 90
CES16 = 47	CES41 = 97	CES66 = 69	CES91 = 69
CES17 = 49	CES42 = 91	CES67 = 68	CES92 = 65
CES18 = 56	CES43 = 89	CES68 = 75	CES93 = 79
CES19 = 71	CES44 = 99	CES69 = 80	CES94 = 64
CES20 = 65	CES45 = 93	CES70 = 71	CES95 = 72
CES21 = 86	CES46 = 91	CES71 = 63	CES96 = 84
CES22 = 78	CES47 = 96	CES72 = 88	CES97 = 90
CES23 = 91	CES48 = 85	CES73 = 65	CES98 = 85
CES24 = 90	CES49 = 90	CES74 = 90	CES99 = 77
CES25 = 71	CES50 = 93	CES75 = 67	

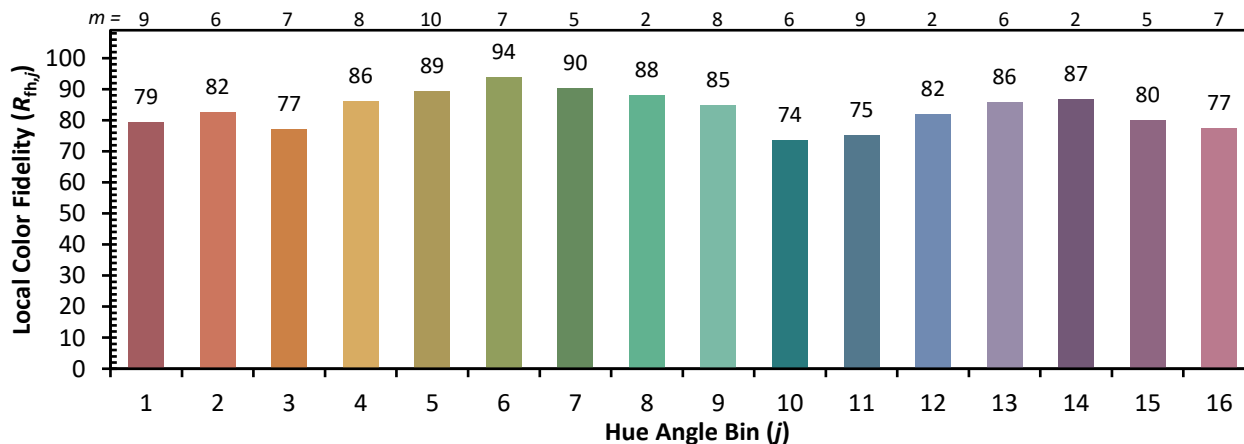
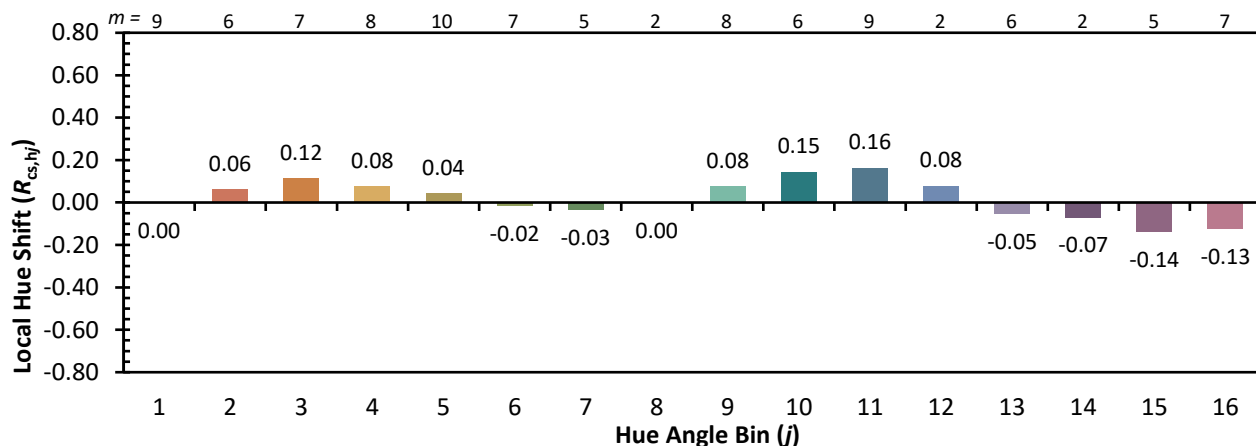
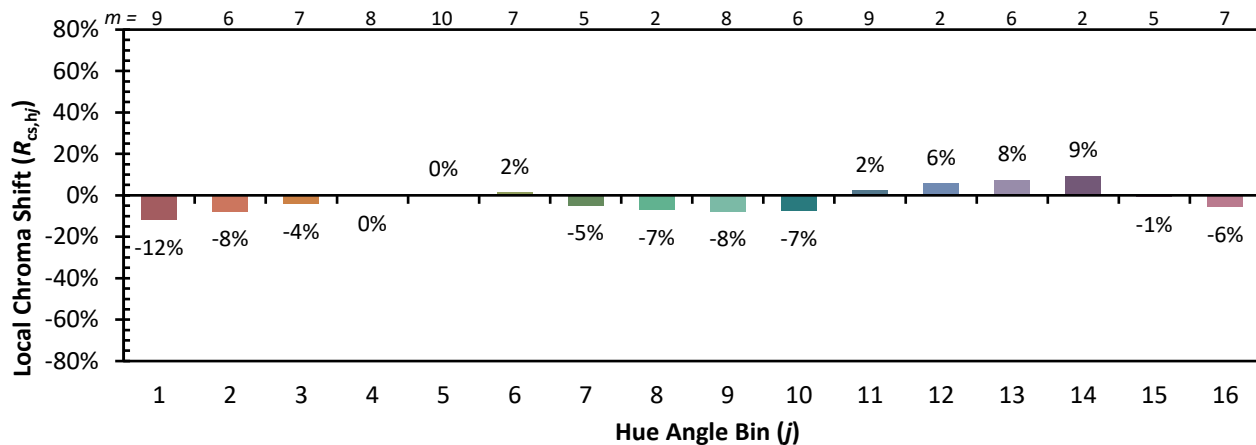




REPORT NUMBER: SP1-2309-187-7

**TM-30-18**

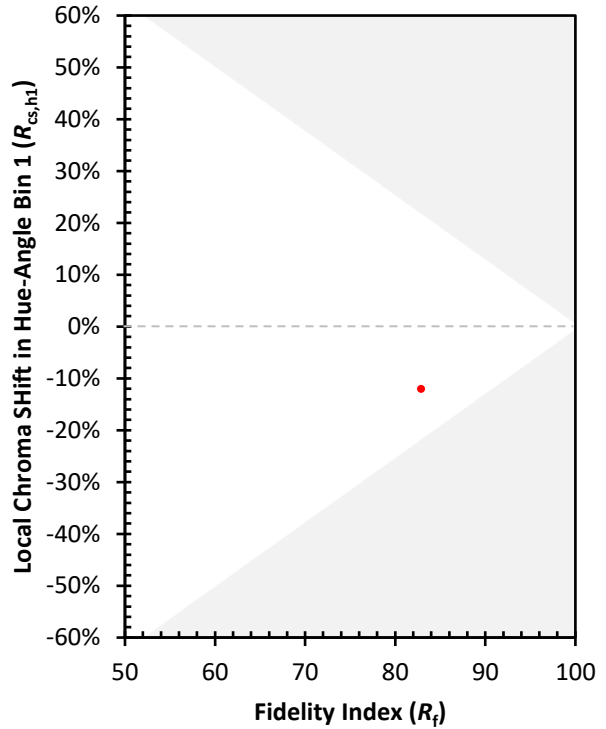
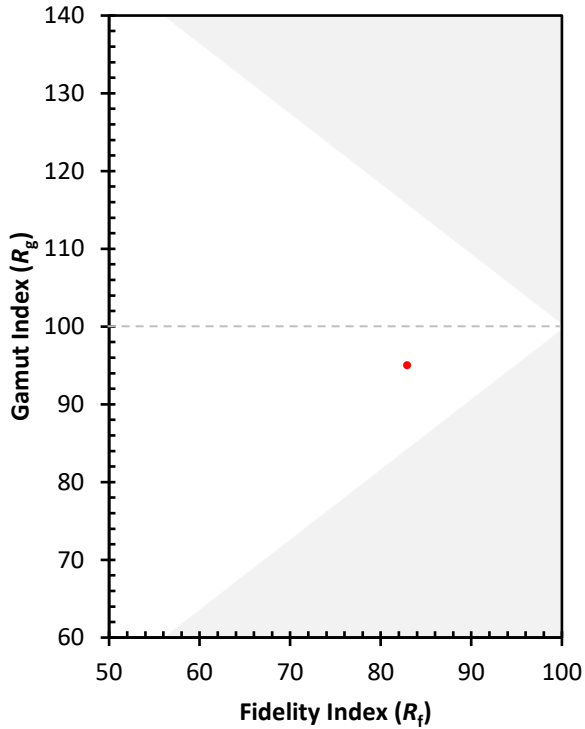
**Color Rendition by Hue-Angle Bin**



REPORT NUMBER: SP1-2309-187-7

**TM-30-18**

**Measure Comparisons**



(END OF REPORT)