

Signify Classified - Internal
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: McGRAW-EDISON

Report Number: P821321

Luminaire Tested: **TT-D2-830-12VDC-5CQ-PM**

Issue Date: 2/18/2020



Test Information

Test Method: LM-79-08
Report Number: P821321
TEST IS SCALED FROM IESNA LM-79-08 TEST DATA (G3-1908-473-17)
Test Lab: INNOVATIONS CENTER
Issue Date: 2/18/2020
Manufacturer: COOPER LIGHTING SOLUTIONS (FORMERLY EATON)
Product Line: MCGRAW-EDISON
Catalog Number: TT-D2-830-12VDC-5CQ-PM
Description: TOPTIER LED SITE LUMINAIRE
3000K, 80 CRI LEDS AND CONCENTRATED DISTRIBUTION
Light Source: -
Ballast/Driver: ELECTRONIC DRIVER

Summary

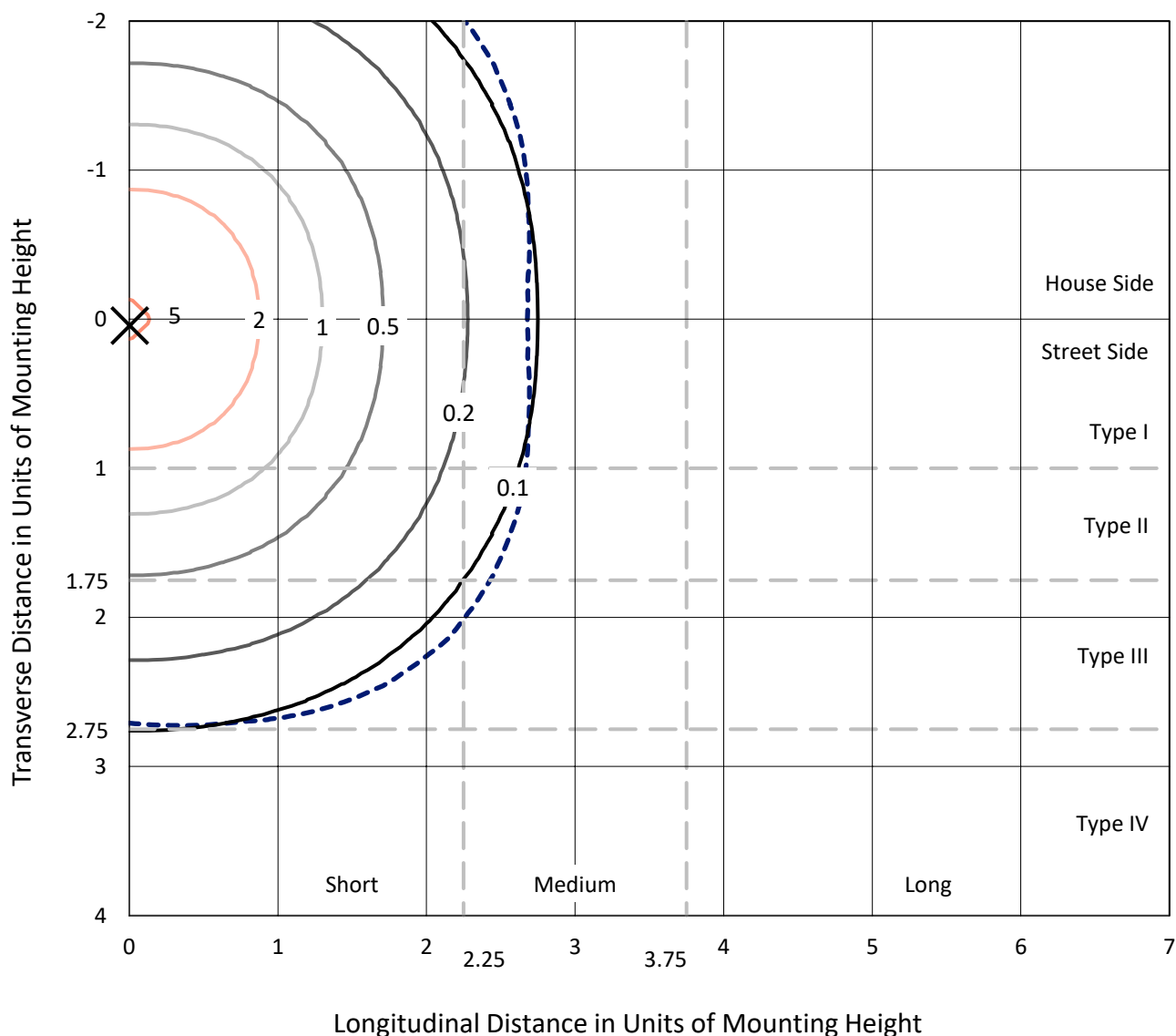
Lumens per Lamp: N/A
Luminaire Lumens: 4640 lumens
Efficiency: N/A
Efficacy: 122.1 lumens/watt
Luminous Opening: Circular (Dia: 1.12' x H: 0')
IES Classification: Type V - Short
BUG Rating: B2 - U0 - G1

Input Watts (W): 38
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

REPORT NUMBER: P821321
 CATALOG NUMBER: TT-D2-830-12VDC-5CQ-PM

Iso-Footcandle Lines of Horizontal Illumination

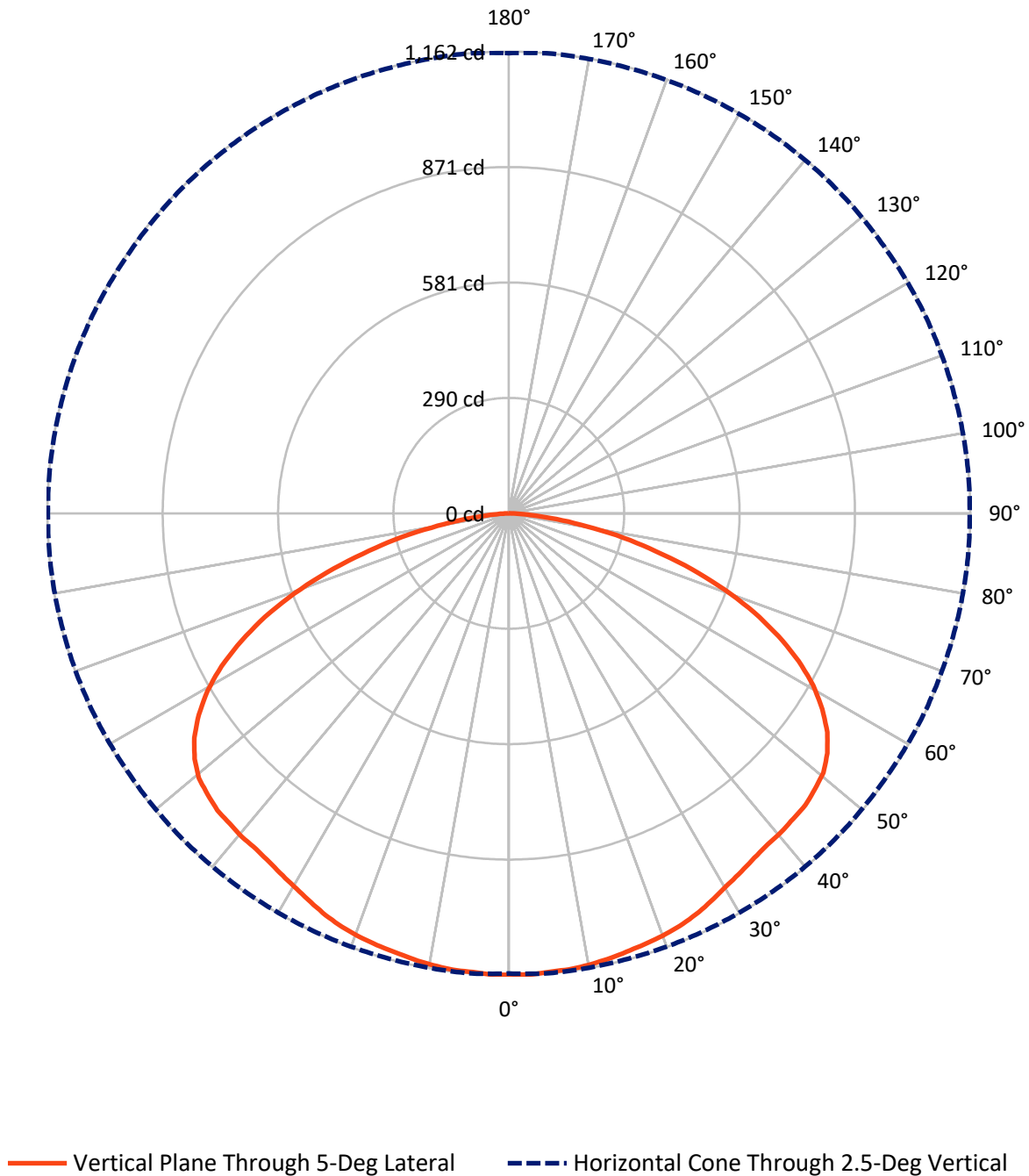
✕ Max cd
 - - - 1/2 Max cd



Based on 15 foot mounting height. Maximum calculated value = 5.2 fc
 Type V - Short - N/A

REPORT NUMBER: P821321
CATALOG NUMBER: TT-D2-830-12VDC-5CQ-PM

Luminous Intensity Polar Plot



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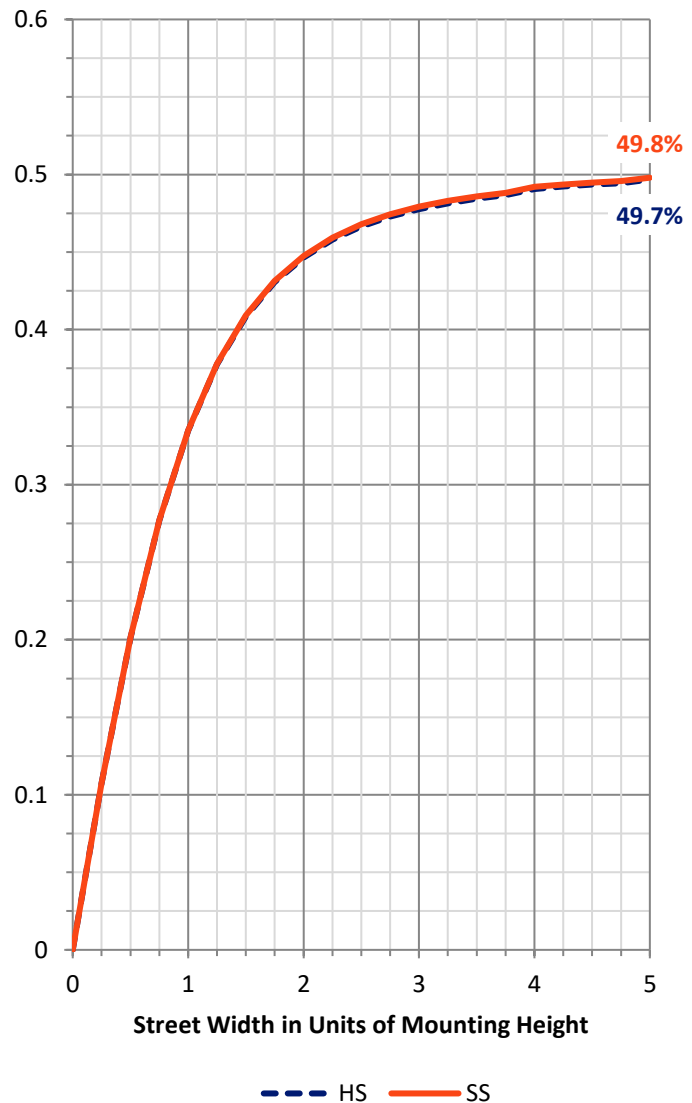
FLUX DISTRIBUTION:

		Downward	Upward	Total
House Side	Lumens	2320.0	0.0	2320.0
	% Fixture	50.0	0.0	50.0
Street Side	Lumens	2320.0	0.0	2320.0
	% Fixture	50.0	0.0	50.0
Total	Lumens	4640.0	0.0	4640.0
	% Fixture	100.0	0.0	100.0

Coefficient of Utilization

ZONAL LUMENS:

Zone	Lumens	% Fixture
0°-10°	110.4	2.4
10°-20°	323.3	7.0
20°-30°	514.2	11.1
30°-40°	676.4	14.6
40°-50°	827.9	17.8
50°-60°	896.7	19.3
60°-70°	771.4	16.6
70°-80°	433.7	9.3
80°-90°	86.0	1.9
90°-100°	0.0	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°-90°	4640.0	100.0
0°-180°	4640.0	100.0



REPORT NUMBER: P821321

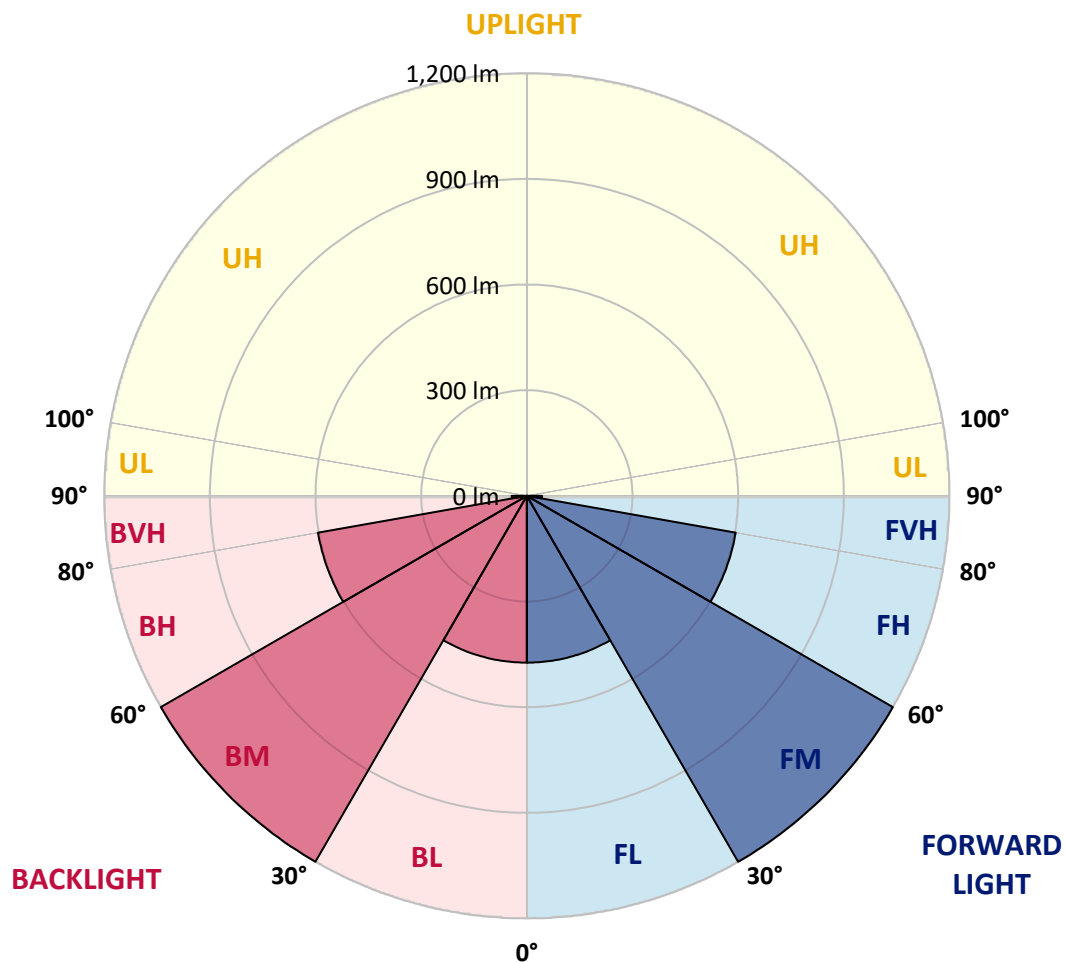
CATALOG NUMBER: TT-D2-830-12VDC-5CQ-PM

LUMINAIRE CLASSIFICATION SYSTEM LUMEN TABLE AND BUG RATING:

Zone		Lumens	% Fixture	Zone Rating/Lumen Limit		
				B	U	G
FL	(0°-30°)	474.0	10.2			
FM	(30°-60°)	1200.5	25.9			
FH	(60°-80°)	602.6	13.0			G0/660
FVH	(80°-90°)	43.0	0.9			G1/100
BL	(0°-30°)	474.0	10.2	B1/500		
BM	(30°-60°)	1200.5	25.9	B2/2500		
BH	(60°-80°)	602.6	13.0	B2/1000		G0/660
BVH	(80°-90°)	43.0	0.9			G1/100
UL	(90°-100°)	0.0	0.0		U0/0	
UH	(100°-180°)	0.0	0.0		U0/0	

BUG Rating: B2-U0-G1

Type V Short





REPORT NUMBER: P821321

CATALOG NUMBER: TT-D2-830-12VDC-5CQ-PM

CANDELA DISTRIBUTION (FULL):

	0°	5°	15°	25°	35°	45°	55°	65°	75°	85°	90°
0°	1160.8	1160.8	1160.8	1160.8	1160.8	1160.8	1160.8	1160.8	1160.8	1160.8	1160.8
2.5°	1157.8	1161.5	1160.1	1160.1	1160.1	1160.1	1158.6	1160.1	1160.1	1160.8	1160.1
5°	1158.6	1157.8	1157.8	1158.6	1158.6	1159.3	1157.8	1158.6	1159.3	1159.3	1160.1
7.5°	1156.4	1157.1	1155.6	1157.1	1155.6	1156.4	1156.4	1157.1	1156.4	1157.1	1158.6
10°	1151.9	1152.7	1151.9	1151.9	1151.9	1153.4	1150.5	1152.7	1151.9	1152.7	1151.9
12.5°	1143.8	1147.5	1146.0	1147.5	1147.5	1147.5	1145.3	1146.8	1147.5	1147.5	1147.5
15°	1140.1	1140.9	1138.6	1141.6	1142.3	1143.1	1140.1	1141.6	1141.6	1142.3	1143.1
17.5°	1132.0	1135.7	1134.9	1137.2	1136.4	1138.6	1137.9	1137.2	1136.4	1137.9	1136.4
20°	1126.1	1129.8	1129.0	1131.3	1132.0	1134.2	1132.0	1132.0	1129.8	1130.5	1132.7
22.5°	1120.2	1121.7	1121.7	1123.9	1123.9	1126.1	1123.9	1123.1	1123.1	1122.4	1124.6
25°	1110.6	1111.3	1110.6	1112.8	1114.3	1115.7	1115.0	1113.5	1112.8	1112.8	1112.1
27.5°	1095.1	1098.0	1099.5	1102.5	1103.2	1105.4	1102.5	1102.5	1101.0	1099.5	1100.2
30°	1083.3	1084.7	1084.7	1091.4	1091.4	1095.1	1091.4	1090.6	1089.9	1089.2	1087.7
32.5°	1072.2	1074.4	1076.6	1081.8	1085.5	1087.0	1084.7	1083.3	1079.6	1077.4	1076.6
35°	1063.3	1064.1	1068.5	1075.9	1080.3	1084.0	1081.0	1077.4	1072.2	1068.5	1071.4
37.5°	1056.7	1057.4	1064.1	1073.7	1081.8	1084.7	1080.3	1074.4	1066.3	1061.8	1060.4
40°	1050.8	1055.2	1062.6	1075.9	1084.7	1089.2	1085.5	1077.4	1065.5	1056.7	1055.9
42.5°	1047.8	1050.0	1061.1	1076.6	1089.2	1095.1	1089.9	1078.8	1064.1	1053.7	1053.0
45°	1040.4	1047.1	1057.4	1077.4	1091.4	1098.8	1091.4	1077.4	1059.6	1047.8	1045.6
47.5°	1034.5	1036.7	1053.0	1075.9	1092.9	1098.8	1091.4	1073.7	1051.5	1036.0	1034.5
50°	1020.5	1025.7	1041.9	1066.3	1086.2	1092.1	1083.3	1059.6	1034.5	1017.5	1014.6
52.5°	999.1	1003.5	1022.7	1053.0	1072.2	1078.8	1065.5	1040.4	1010.9	990.2	990.2
55°	965.8	972.5	992.4	1023.4	1047.8	1053.7	1038.2	1011.6	978.4	957.7	957.0
57.5°	926.0	930.4	951.8	985.8	1009.4	1018.3	1002.8	973.2	940.0	915.6	913.4
60°	874.3	880.2	903.1	935.6	959.9	967.3	954.0	924.5	890.5	864.7	864.7
62.5°	812.3	818.9	841.8	875.0	900.1	911.2	892.7	864.7	829.2	804.1	801.9
65°	739.9	745.8	766.5	801.2	827.0	835.2	821.1	791.6	757.6	734.0	731.8
67.5°	658.7	666.8	687.5	717.0	739.2	749.5	740.6	714.0	678.6	654.2	652.0
70°	570.8	576.7	592.9	620.3	645.4	652.8	639.5	621.7	588.5	566.4	563.4
72.5°	477.0	482.2	495.5	521.3	539.0	548.6	541.3	518.4	491.8	473.3	476.3
75°	382.5	381.8	396.5	415.0	431.2	437.9	432.7	417.9	393.6	378.1	377.3
77.5°	288.0	295.4	300.5	316.0	329.3	334.5	327.1	315.3	296.8	284.3	286.5
80°	202.3	197.9	207.5	217.1	226.0	231.1	226.7	220.0	207.5	197.9	196.4
82.5°	124.1	120.4	124.8	133.7	139.6	141.0	141.8	133.7	128.5	121.1	122.6
85°	54.6	55.4	59.1	65.0	65.7	66.5	66.5	65.0	59.1	58.3	56.9
87.5°	13.3	13.3	14.0	16.2	16.2	17.0	17.0	14.8	14.0	12.6	13.3
90°	0.0	0.0	0.0	0.0	0.0	0.0	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

Streetworks

Report Number: SP1-2407-176-7

Test Date: 09/27/2024

Luminaire Tested: MEM2-HTN-VA-30-830-U-WQ

Data in this report applies to families of products including MEM2-HTN-VA-30-830-U-WQ

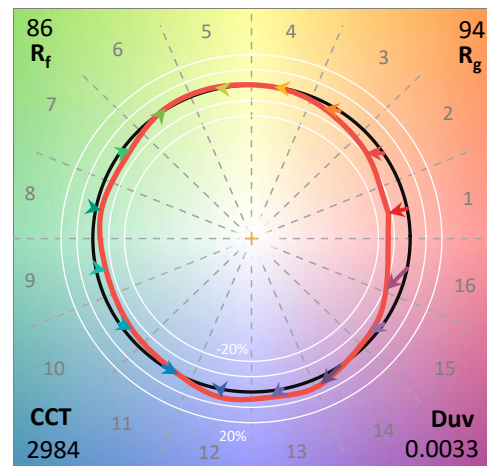
Test Information

Test Method: LM-79-2019
 Report Number: SP1-2407-176-7
 Test Lab: COOPER LIGHTING SOLUTIONS
 Photometer: SP1 - 76IN SPHERE
 Measurement Geometry: 4π
 Issue Date: 09/27/2024
 Manufacturer: COOPER LIGHTING SOLUTIONS
 Product Line: Streetworks
 Catalog Number: **MEM2-HTN-VA-30-830-U-WQ**
 Description: EPIC MODERN VISUAL COMFORT 30W WAVESTREAM WIDE

Spectral Parameters

CCT (K): 2984
 CIE u' : 0.2500
 CIE v' : 0.5264
 Duv: 0.0033
 CIE x: 0.4431
 CIE y: 0.4147
 CIE z: 0.1422
 Peak Wavelength (nm): 601
 Dominant Wavelength (nm): 581
 Purity: 57.4798
 R_f: 85.8
 R_g: 94.1

CRI (Ra): 81.8
 R1: 79.4
 R2: 89.9
 R3: 96.6
 R4: 80.6
 R5: 80.1
 R6: 88.9
 R7: 82.6
 R8: 56.0
 R9: -1.1
 R10: 78.4
 R11: 80.8
 R12: 72.8
 R13: 81.7
 R14: 98.5
 R15: 70.2



Test Conditions

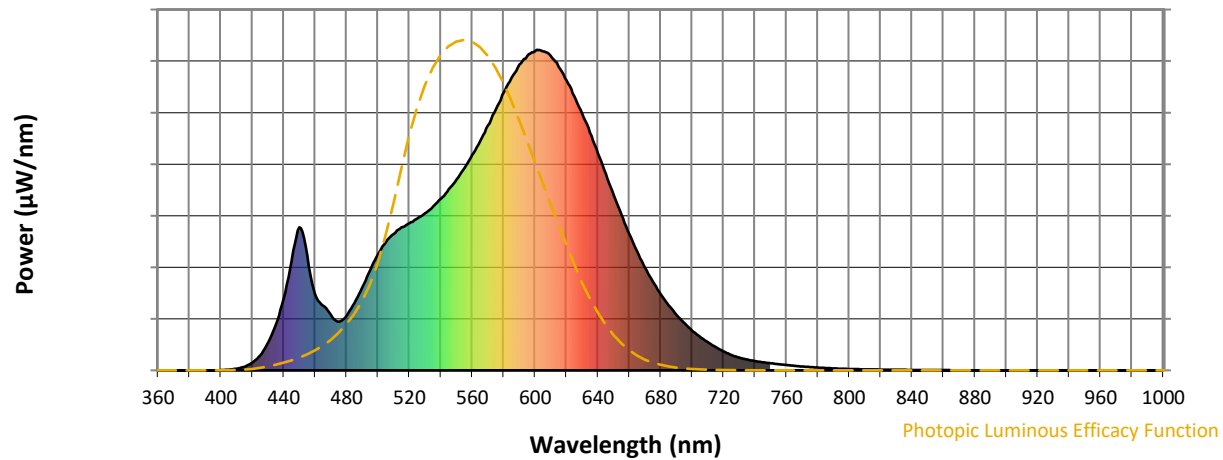
Stabilization Time: 29M
 Operation Time: 1H 29M
 Sphere Temperature (°C): 25.2

REPORT NUMBER: SP1-2407-176-7

Measurement and Test Equipment			
Instrument	Identification Number	Calibration Date	Calibration Due Date
Photometer	IN0058	6/18/2024	12/18/2024
Power Meter	INXT2011004	2/8/2024	2/8/2025
AC Power Source	IN0063	10/24/2023	10/24/2024
DC Power Source	IN0208	10/24/2023	10/24/2024
Sphere Thermometer	IN0085	10/24/2023	10/24/2024
Room Thermometer	IN0046	10/24/2023	10/24/2024

REPORT NUMBER: SP1-2407-176-7

Photopic Flux vs. Wavelength

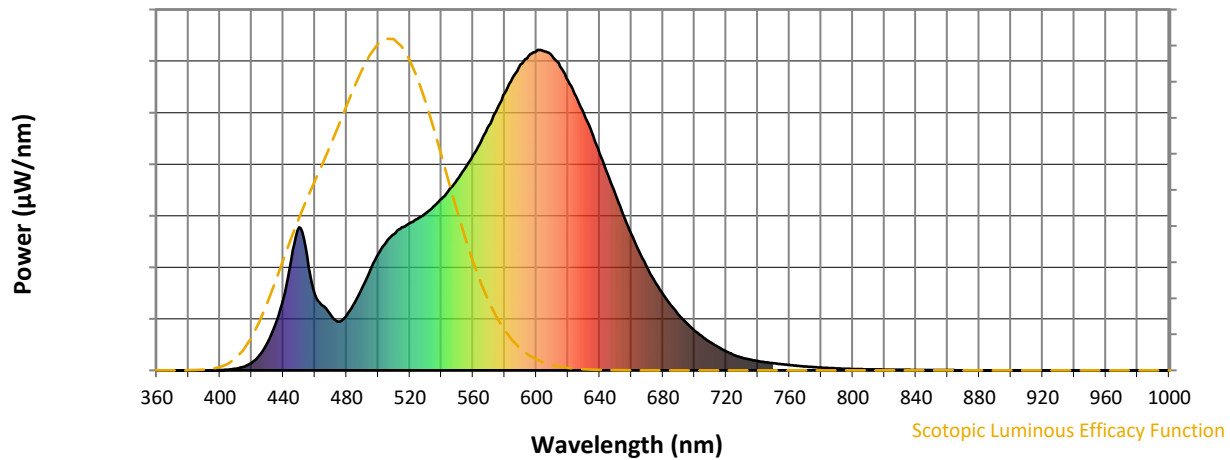


Photopic Lumens: NR

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	260	NR	620	905	NR	750	22	NR	880	0	NR
365	0	NR	495	312	NR	625	856	NR	755	19	NR	885	0	NR
370	0	NR	500	362	NR	630	801	NR	760	17	NR	890	0	NR
375	0	NR	505	399	NR	635	742	NR	765	14	NR	895	0	NR
380	0	NR	510	425	NR	640	677	NR	770	12	NR	900	0	NR
385	0	NR	515	446	NR	645	613	NR	775	10	NR	905	0	NR
390	0	NR	520	459	NR	650	549	NR	780	9	NR	910	0	NR
395	0	NR	525	473	NR	655	485	NR	785	7	NR	915	0	NR
400	1	NR	530	490	NR	660	425	NR	790	6	NR	920	0	NR
405	2	NR	535	511	NR	665	371	NR	795	5	NR	925	0	NR
410	5	NR	540	535	NR	670	321	NR	800	4	NR	930	0	NR
415	11	NR	545	565	NR	675	276	NR	805	4	NR	935	0	NR
420	24	NR	550	595	NR	680	238	NR	810	3	NR	940	0	NR
425	47	NR	555	631	NR	685	203	NR	815	3	NR	945	0	NR
430	86	NR	560	672	NR	690	174	NR	820	2	NR	950	0	NR
435	144	NR	565	715	NR	695	148	NR	825	2	NR	955	0	NR
440	224	NR	570	763	NR	700	124	NR	830	2	NR	960	0	NR
445	342	NR	575	814	NR	705	105	NR	835	2	NR	965	0	NR
450	446	NR	580	866	NR	710	88	NR	840	1	NR	970	0	NR
455	357	NR	585	912	NR	715	73	NR	845	1	NR	975	0	NR
460	237	NR	590	954	NR	720	59	NR	850	1	NR	980	0	NR
465	202	NR	595	981	NR	725	48	NR	855	1	NR	985	0	NR
470	172	NR	600	996	NR	730	40	NR	860	1	NR	990	0	NR
475	152	NR	605	996	NR	735	34	NR	865	1	NR	995	0	NR
480	171	NR	610	980	NR	740	29	NR	870	0	NR	1000	0	NR
485	210	NR	615	947	NR	745	25	NR	875	0	NR			

REPORT NUMBER: SP1-2407-176-7

Scotopic Flux vs. Wavelength



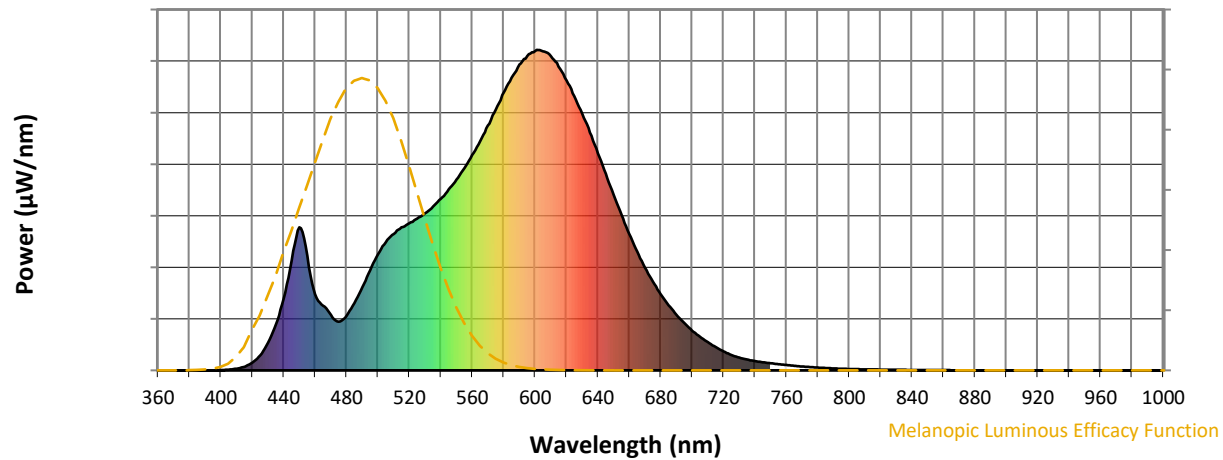
Scotopic Lumens: NR

S/P: 1.32

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	260	NR	620	905	NR	750	22	NR	880	0	NR
365	0	NR	495	312	NR	625	856	NR	755	19	NR	885	0	NR
370	0	NR	500	362	NR	630	801	NR	760	17	NR	890	0	NR
375	0	NR	505	399	NR	635	742	NR	765	14	NR	895	0	NR
380	0	NR	510	425	NR	640	677	NR	770	12	NR	900	0	NR
385	0	NR	515	446	NR	645	613	NR	775	10	NR	905	0	NR
390	0	NR	520	459	NR	650	549	NR	780	9	NR	910	0	NR
395	0	NR	525	473	NR	655	485	NR	785	7	NR	915	0	NR
400	1	NR	530	490	NR	660	425	NR	790	6	NR	920	0	NR
405	2	NR	535	511	NR	665	371	NR	795	5	NR	925	0	NR
410	5	NR	540	535	NR	670	321	NR	800	4	NR	930	0	NR
415	11	NR	545	565	NR	675	276	NR	805	4	NR	935	0	NR
420	24	NR	550	595	NR	680	238	NR	810	3	NR	940	0	NR
425	47	NR	555	631	NR	685	203	NR	815	3	NR	945	0	NR
430	86	NR	560	672	NR	690	174	NR	820	2	NR	950	0	NR
435	144	NR	565	715	NR	695	148	NR	825	2	NR	955	0	NR
440	224	NR	570	763	NR	700	124	NR	830	2	NR	960	0	NR
445	342	NR	575	814	NR	705	105	NR	835	2	NR	965	0	NR
450	446	NR	580	866	NR	710	88	NR	840	1	NR	970	0	NR
455	357	NR	585	912	NR	715	73	NR	845	1	NR	975	0	NR
460	237	NR	590	954	NR	720	59	NR	850	1	NR	980	0	NR
465	202	NR	595	981	NR	725	48	NR	855	1	NR	985	0	NR
470	172	NR	600	996	NR	730	40	NR	860	1	NR	990	0	NR
475	152	NR	605	996	NR	735	34	NR	865	1	NR	995	0	NR
480	171	NR	610	980	NR	740	29	NR	870	0	NR	1000	0	NR
485	210	NR	615	947	NR	745	25	NR	875	0	NR			

REPORT NUMBER: SP1-2407-176-7

Melanopic Flux vs. Wavelength



Melanopic Lumens: NR

M/P: 2.51

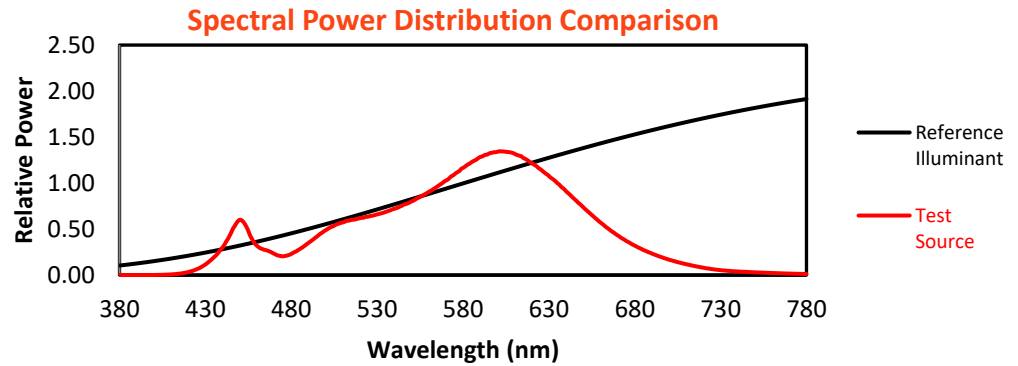
λ (nm)	Power W [^] /nm	Lumens (φ/nm)	λ (nm)	Power W [^] /nm	Lumens (φ/nm)	λ (nm)	Power W [^] /nm	Lumens (φ/nm)	λ (nm)	Power W [^] /nm	Lumens (φ/nm)	λ (nm)	Power W [^] /nm	Lumens (φ/nm)
360	0	NR	490	260	NR	620	905	NR	750	22	NR	880	0	NR
365	0	NR	495	312	NR	625	856	NR	755	19	NR	885	0	NR
370	0	NR	500	362	NR	630	801	NR	760	17	NR	890	0	NR
375	0	NR	505	399	NR	635	742	NR	765	14	NR	895	0	NR
380	0	NR	510	425	NR	640	677	NR	770	12	NR	900	0	NR
385	0	NR	515	446	NR	645	613	NR	775	10	NR	905	0	NR
390	0	NR	520	459	NR	650	549	NR	780	9	NR	910	0	NR
395	0	NR	525	473	NR	655	485	NR	785	7	NR	915	0	NR
400	1	NR	530	490	NR	660	425	NR	790	6	NR	920	0	NR
405	2	NR	535	511	NR	665	371	NR	795	5	NR	925	0	NR
410	5	NR	540	535	NR	670	321	NR	800	4	NR	930	0	NR
415	11	NR	545	565	NR	675	276	NR	805	4	NR	935	0	NR
420	24	NR	550	595	NR	680	238	NR	810	3	NR	940	0	NR
425	47	NR	555	631	NR	685	203	NR	815	3	NR	945	0	NR
430	86	NR	560	672	NR	690	174	NR	820	2	NR	950	0	NR
435	144	NR	565	715	NR	695	148	NR	825	2	NR	955	0	NR
440	224	NR	570	763	NR	700	124	NR	830	2	NR	960	0	NR
445	342	NR	575	814	NR	705	105	NR	835	2	NR	965	0	NR
450	446	NR	580	866	NR	710	88	NR	840	1	NR	970	0	NR
455	357	NR	585	912	NR	715	73	NR	845	1	NR	975	0	NR
460	237	NR	590	954	NR	720	59	NR	850	1	NR	980	0	NR
465	202	NR	595	981	NR	725	48	NR	855	1	NR	985	0	NR
470	172	NR	600	996	NR	730	40	NR	860	1	NR	990	0	NR
475	152	NR	605	996	NR	735	34	NR	865	1	NR	995	0	NR
480	171	NR	610	980	NR	740	29	NR	870	0	NR	1000	0	NR
485	210	NR	615	947	NR	745	25	NR	875	0	NR			

REPORT NUMBER: SP1-2407-176-7

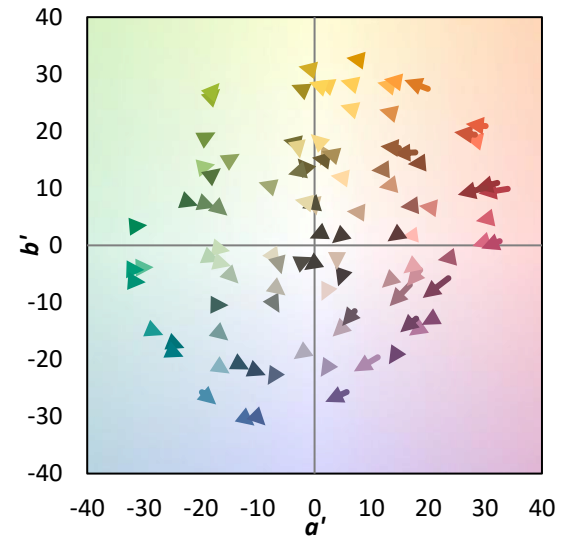
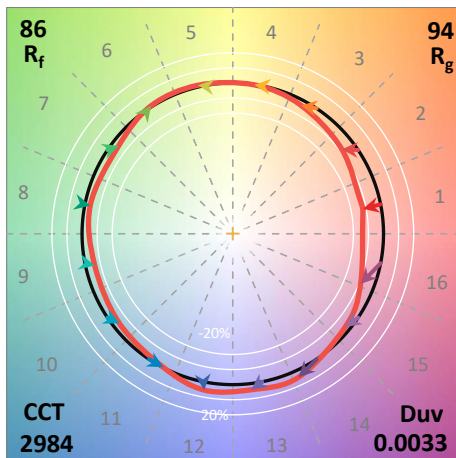
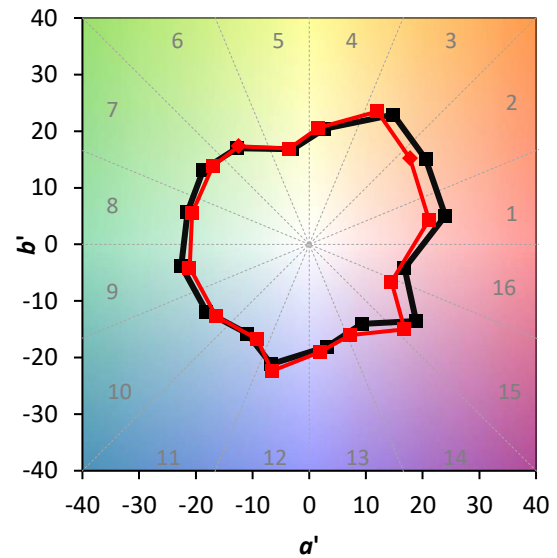
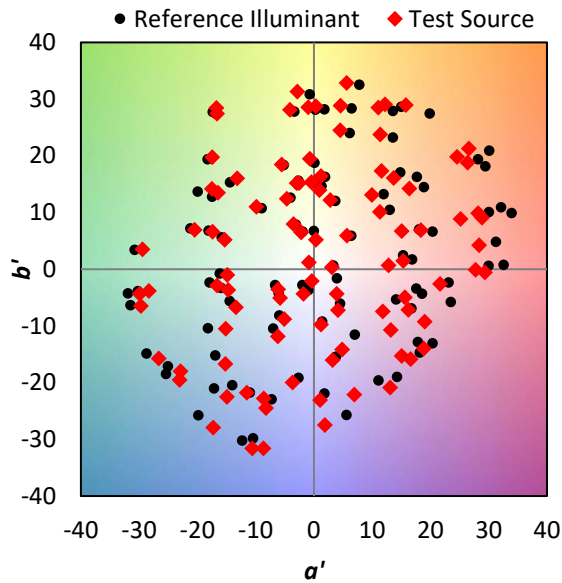
TM-30-18

Summary

$R_f = 85.8$
 $R_g = 94.1$
 $CIE R_a = 81.8$
 $R_g = -1.1$

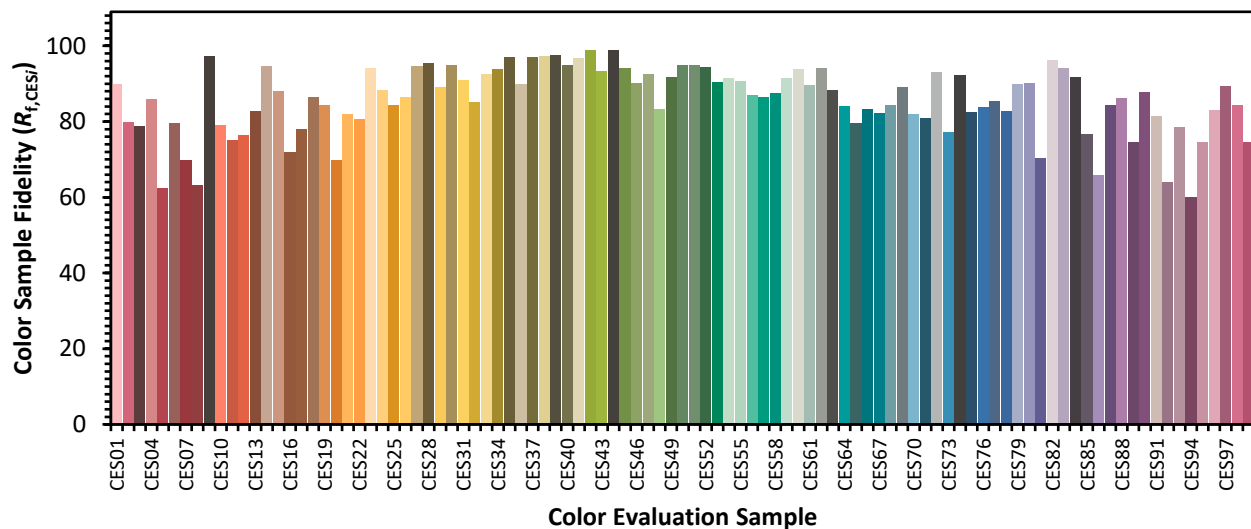


Color Vector Graphics

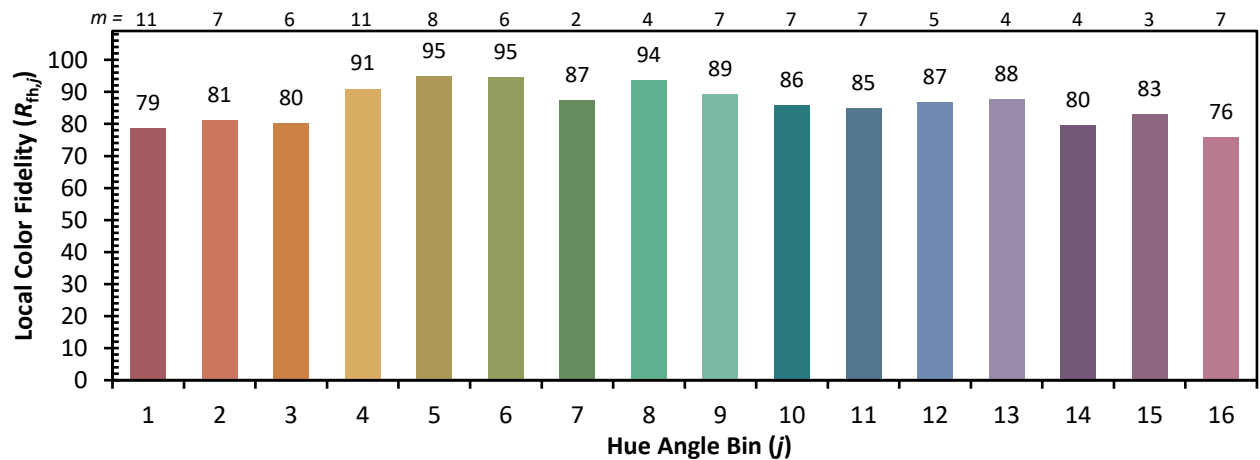
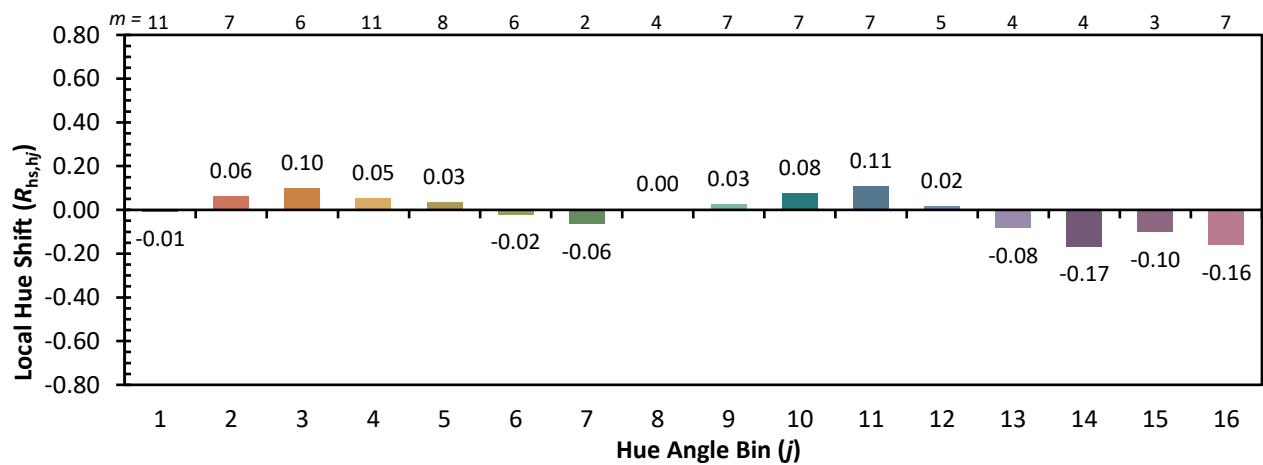
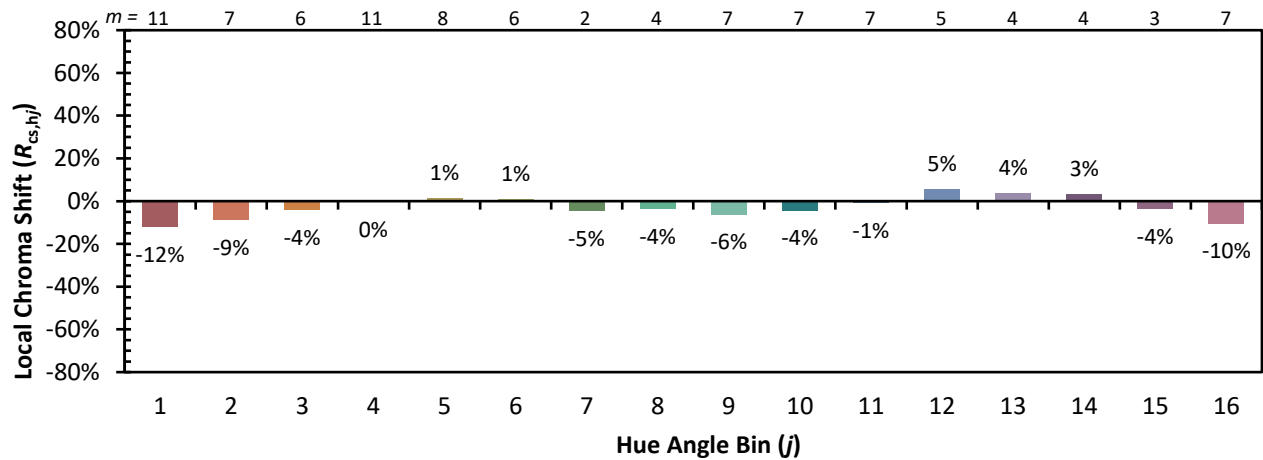


Individual Sample Fidelity Index ($R_{f,i}$)

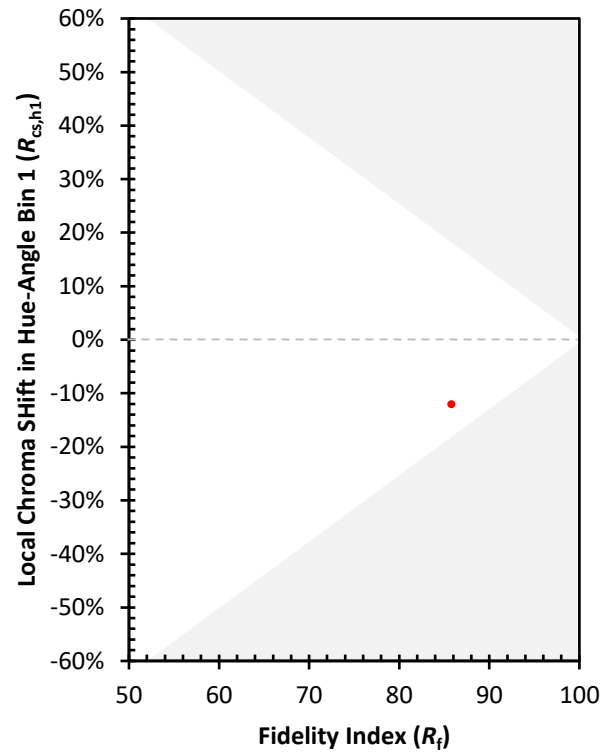
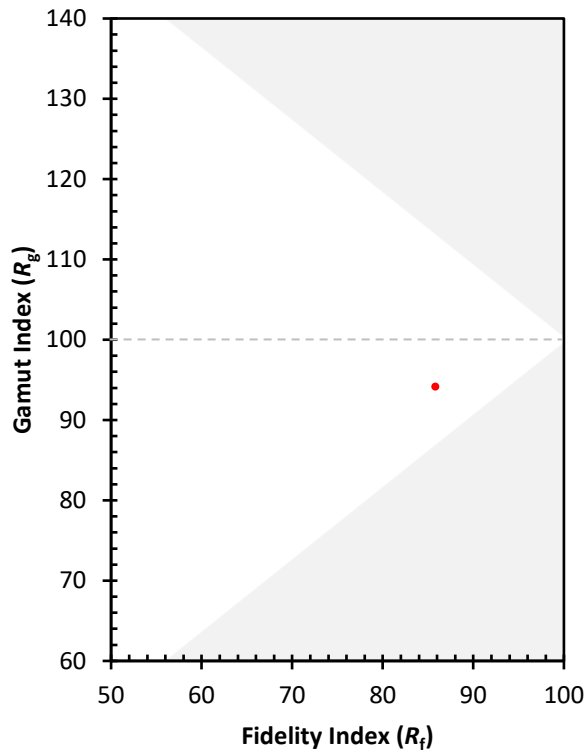
CES01 = 86	CES26 = 86	CES51 = 95	CES76 = 84
CES02 = 63	CES27 = 95	CES52 = 94	CES77 = 86
CES03 = 31	CES28 = 95	CES53 = 90	CES78 = 83
CES04 = 70	CES29 = 89	CES54 = 91	CES79 = 90
CES05 = 50	CES30 = 95	CES55 = 91	CES80 = 90
CES06 = 51	CES31 = 91	CES56 = 87	CES81 = 70
CES07 = 42	CES32 = 85	CES57 = 86	CES82 = 96
CES08 = 41	CES33 = 93	CES58 = 87	CES83 = 94
CES09 = 29	CES34 = 94	CES59 = 92	CES84 = 92
CES10 = 76	CES35 = 97	CES60 = 94	CES85 = 77
CES11 = 59	CES36 = 90	CES61 = 90	CES86 = 66
CES12 = 65	CES37 = 97	CES62 = 94	CES87 = 84
CES13 = 43	CES38 = 97	CES63 = 88	CES88 = 86
CES14 = 74	CES39 = 98	CES64 = 84	CES89 = 75
CES15 = 72	CES40 = 95	CES65 = 80	CES90 = 88
CES16 = 47	CES41 = 97	CES66 = 83	CES91 = 81
CES17 = 50	CES42 = 99	CES67 = 82	CES92 = 64
CES18 = 56	CES43 = 93	CES68 = 84	CES93 = 79
CES19 = 72	CES44 = 99	CES69 = 89	CES94 = 60
CES20 = 67	CES45 = 94	CES70 = 82	CES95 = 74
CES21 = 87	CES46 = 90	CES71 = 81	CES96 = 83
CES22 = 79	CES47 = 93	CES72 = 93	CES97 = 89
CES23 = 92	CES48 = 83	CES73 = 77	CES98 = 84
CES24 = 91	CES49 = 92	CES74 = 92	CES99 = 75
CES25 = 72	CES50 = 95	CES75 = 83	



Color Rendition by Hue-Angle Bin



Measure Comparisons



(END OF REPORT)