

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: INVUE

Report Number: P880366

Luminaire Tested: **EMM2-HTN-VA3-730-U-MQ**

Issue Date: 10/01/2024



Test Information

Test Method: LM-79-08
Report Number: P880366
Test Lab: INNOVATION CENTER(G3)
Issue Date: 10/01/2024
Manufacturer: COOPER LIGHTING SOLUTIONS (FORMERLY EATON)
Product Line: INVUE
Catalog Number: EMM2-HTN-VA3-730-U-MQ
Description: EPIC MODERN TALL HOUSING 3W 70CRI 3000K VISUAL COMFORT FIXTURE w/
TYPE V MEDIUM DISTRIBUTION OPTIC
Light Source: (1) 3000K CCT, 70 CRI LEDS
Ballast/Driver: ELECTRONIC DRIVER

Summary

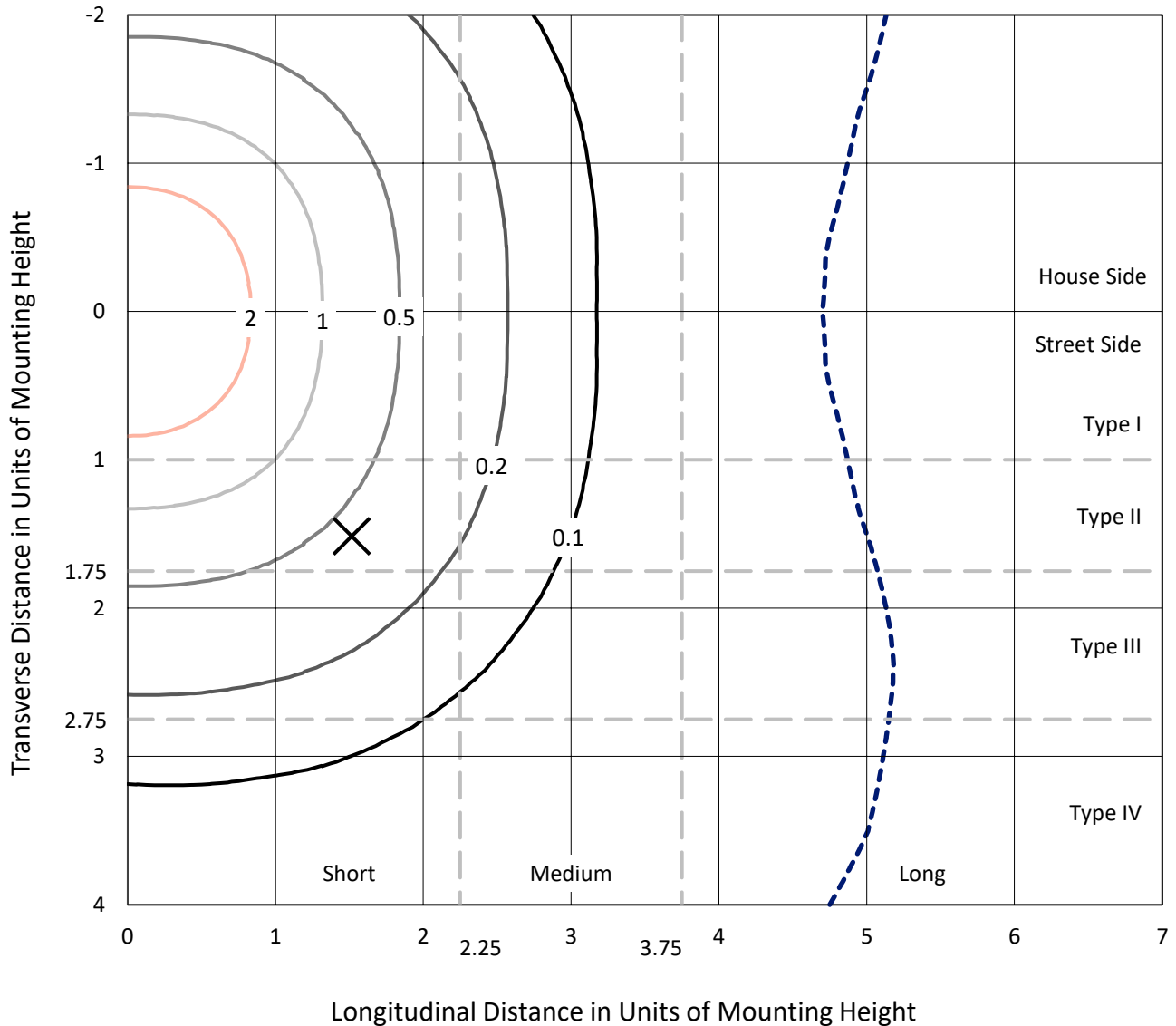
Lumens per Lamp: N/A
Luminaire Lumens: 5549.2 lumens
Efficiency: N/A
Efficacy: 113.2 lumens/watt
Luminous Opening: Circular (Dia: 1.12' x H: 0')
IES Classification: Type V - Short
BUG Rating: B2 - U0 - G2

Input Watts (W): 49
Input Voltage (V): 120
Input Current (A_{in}): NR
Voltage Rise (V): NR
Power Factor: 0.99
Total Harmonic Distortion (THDi): 11%
Frequency (hertz): 60
Stabilization Time: NR
Operation Time: NR
Ambient Temperature (°C): NR
Test Distance: 24 FT

REPORT NUMBER: P880366
 CATALOG NUMBER: EMM2-HTN-VA3-730-U-MQ

Iso-Footcandle Lines of Horizontal Illumination

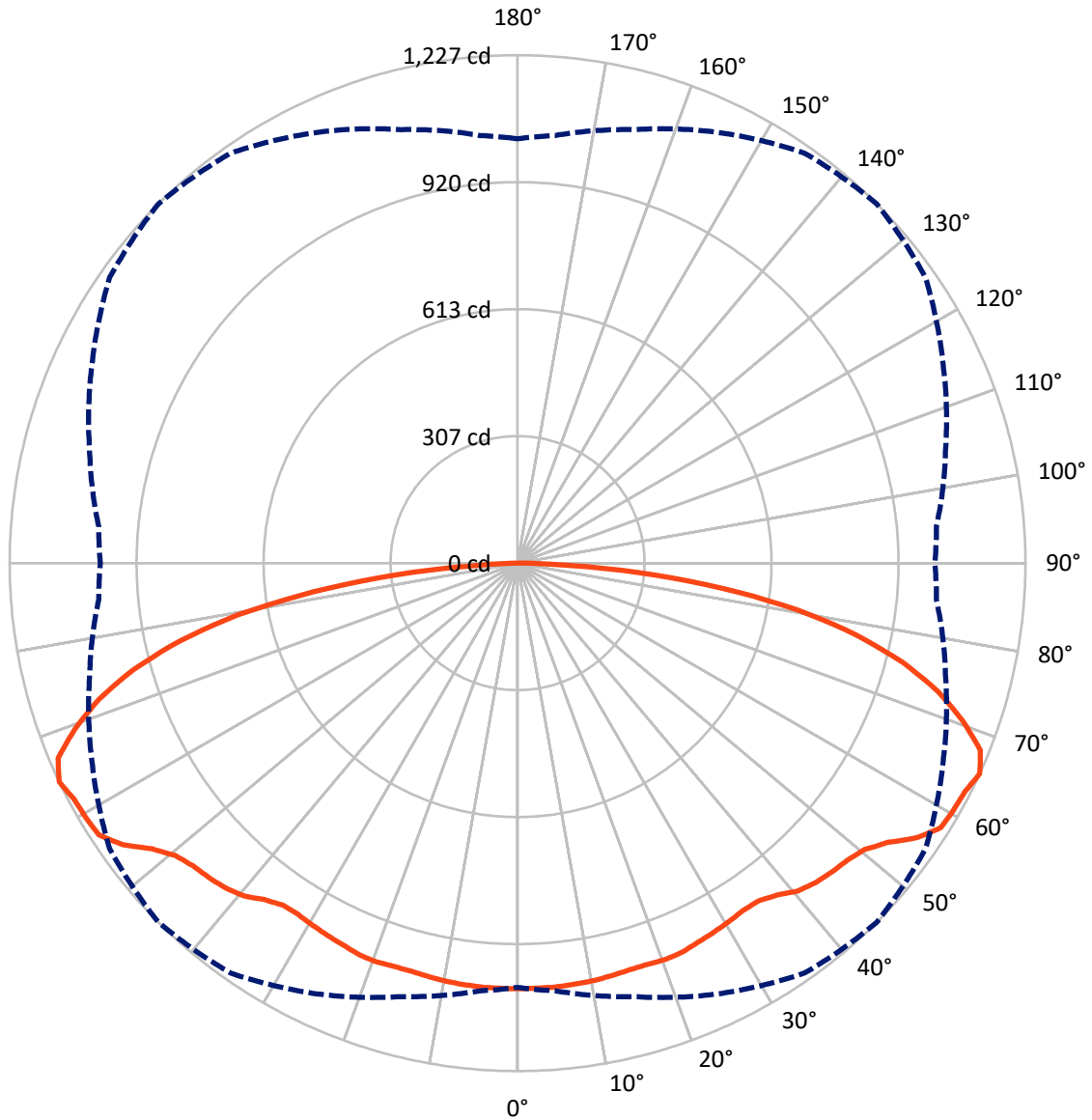
× Max cd
 - - - 1/2 Max cd



Based on 15 foot mounting height. Maximum calculated value = 4.6 fc
 Type V - Short - N/A

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CATALOG NUMBER: EMM2-HTN-VA3-730-U-MQ

Luminous Intensity Polar Plot



— Vertical Plane Through 45-Deg Lateral - - - Horizontal Cone Through 65-Deg Vertical

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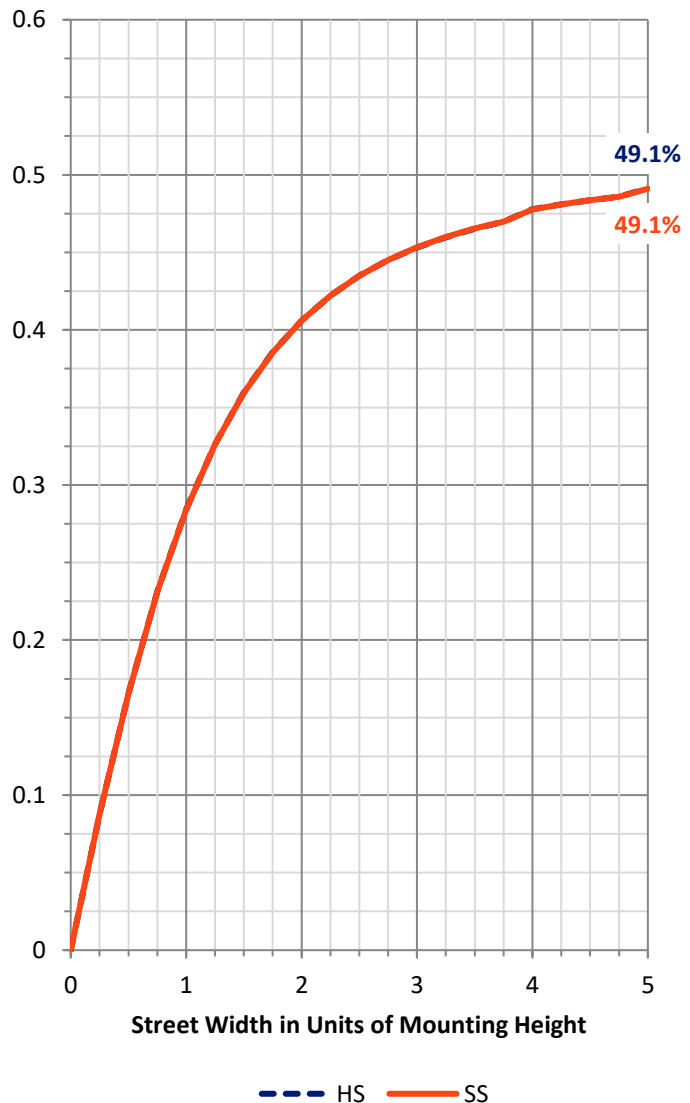
FLUX DISTRIBUTION:

		Downward	Upward	Total
House Side	Lumens	2774.6	0.0	2774.6
	% Fixture	50.0	0.0	50.0
Street Side	Lumens	2774.6	0.0	2774.6
	% Fixture	50.0	0.0	50.0
Total	Lumens	5549.2	0.0	5549.2
	% Fixture	100.0	0.0	100.0

Coefficient of Utilization

ZONAL LUMENS:

Zone	Lumens	% Fixture
0°-10°	98.0	1.8
10°-20°	288.9	5.2
20°-30°	467.8	8.4
30°-40°	628.6	11.3
40°-50°	802.3	14.5
50°-60°	987.0	17.8
60°-70°	1099.0	19.8
70°-80°	892.1	16.1
80°-90°	285.6	5.1
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°	5549.2	100.0
0°-180°	5549.2	100.0



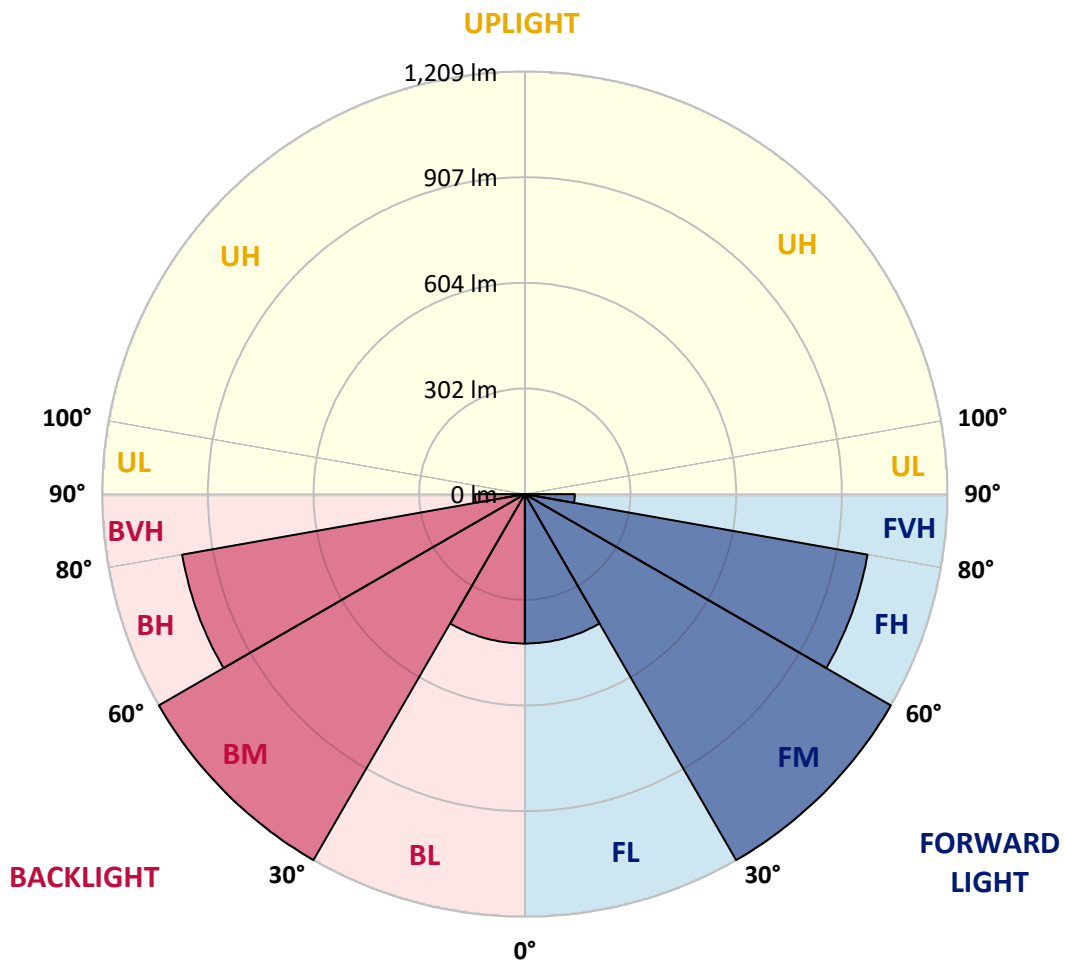
REPORT NUMBER: P880366
 CATALOG NUMBER: EMM2-HTN-VA3-730-U-MQ

LUMINAIRE CLASSIFICATION SYSTEM LUMEN TABLE AND BUG RATING:

Zone	Lumens	% Fixture	Zone Rating/Lumen Limit		
			B	U	G
FL (0°-30°)	427.3	7.7			
FM (30°-60°)	1208.9	21.8			
FH (60°-80°)	995.6	17.9			G1/1800
FVH (80°-90°)	142.8	2.6			G2/225
BL (0°-30°)	427.3	7.7	B1/500		
BM (30°-60°)	1208.9	21.8	B2/2500		
BH (60°-80°)	995.6	17.9	B2/1000		G1/1800
BVH (80°-90°)	142.8	2.6			G2/225
UL (90°-100°)	0.0	0.0		U0/0	
UH (100°-180°)	0.0	0.0		U0/0	

BUG Rating: B2-U0-G2

Type V Short





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CANDELA DISTRIBUTION (FULL):

	0°	5°	15°	25°	35°	45°	55°	65°	75°	85°	90°
0°	1027.7	1027.7	1027.7	1027.7	1027.7	1027.7	1027.7	1027.7	1027.7	1027.7	1027.7
2.5°	1027.7	1027.7	1027.7	1027.7	1027.7	1027.7	1027.7	1027.7	1027.7	1027.7	1027.7
5°	1027.7	1027.7	1027.7	1027.7	1027.7	1027.7	1027.7	1027.7	1026.2	1027.7	1027.7
7.5°	1026.2	1026.2	1026.2	1026.2	1026.2	1026.2	1026.2	1026.2	1026.2	1026.2	1026.2
10°	1024.7	1024.7	1024.7	1024.7	1024.7	1024.7	1024.7	1024.7	1024.7	1024.7	1024.7
12.5°	1021.6	1021.6	1021.6	1021.6	1021.6	1021.6	1021.6	1021.6	1021.6	1021.6	1021.6
15°	1017.1	1018.6	1018.6	1018.6	1018.6	1018.6	1018.6	1018.6	1018.6	1017.1	1017.1
17.5°	1015.5	1015.5	1015.5	1017.1	1018.6	1018.6	1018.6	1017.1	1015.5	1014.0	1014.0
20°	1017.1	1017.1	1017.1	1018.6	1020.1	1021.6	1020.1	1018.6	1015.5	1015.5	1015.5
22.5°	1015.5	1017.1	1017.1	1018.6	1020.1	1020.1	1018.6	1017.1	1015.5	1014.0	1014.0
25°	1011.0	1011.0	1012.5	1014.0	1014.0	1014.0	1014.0	1011.0	1009.5	1007.9	1007.9
27.5°	1004.9	1006.4	1006.4	1007.9	1009.5	1009.5	1007.9	1004.9	1003.4	1001.8	1001.8
30°	997.3	997.3	998.8	1001.8	1003.4	1004.9	1001.8	998.8	994.2	992.7	992.7
32.5°	989.7	991.2	994.2	997.3	998.8	1000.3	997.3	994.2	989.7	986.6	985.1
35°	986.6	986.6	991.2	997.3	1001.8	1001.8	998.8	992.7	986.6	980.6	980.6
37.5°	991.2	992.7	998.8	1009.5	1017.1	1017.1	1015.5	1004.9	994.2	985.1	983.6
40°	1001.8	1003.4	1014.0	1027.7	1039.9	1041.4	1035.3	1021.6	1006.4	995.8	992.7
42.5°	1007.9	1011.0	1023.1	1039.9	1050.5	1055.1	1047.5	1033.8	1014.0	1000.3	998.8
45°	1011.0	1014.0	1027.7	1045.9	1059.6	1064.2	1056.6	1038.3	1017.1	1001.8	1000.3
47.5°	1012.5	1015.5	1029.2	1052.0	1067.2	1071.8	1065.7	1044.4	1018.6	1003.4	1001.8
50°	1014.0	1020.1	1036.8	1061.1	1083.9	1087.0	1077.9	1052.0	1024.7	1006.4	1001.8
52.5°	1024.7	1029.2	1053.5	1088.5	1111.3	1120.4	1106.7	1080.9	1039.9	1012.5	1009.5
55°	1050.5	1052.0	1080.9	1125.0	1158.4	1170.6	1149.3	1114.3	1064.2	1036.8	1035.3
57.5°	1058.1	1067.2	1099.1	1149.3	1190.4	1205.6	1187.3	1134.1	1088.5	1052.0	1042.9
60°	1050.5	1058.1	1096.1	1153.9	1198.0	1210.1	1196.4	1146.3	1079.4	1038.3	1030.7
62.5°	1042.9	1052.0	1091.5	1156.9	1199.5	1213.2	1190.4	1147.8	1074.8	1033.8	1026.2
65°	1024.7	1036.8	1083.9	1147.8	1208.6	1226.8	1202.5	1134.1	1070.3	1015.5	1007.9
67.5°	989.7	995.8	1047.5	1122.0	1187.3	1205.6	1179.7	1108.3	1032.3	979.0	973.0
70°	924.3	938.0	986.6	1068.7	1131.1	1140.2	1120.4	1049.0	974.5	918.2	910.6
72.5°	837.7	857.4	910.6	994.2	1044.4	1062.7	1036.8	979.0	901.5	837.7	827.0
75°	746.4	757.1	811.8	893.9	945.6	962.3	939.5	883.3	790.5	746.4	735.8
77.5°	646.1	653.7	702.4	775.3	824.0	837.7	814.9	769.3	685.6	644.6	640.0
80°	506.2	521.4	567.1	629.4	665.9	687.2	662.8	618.7	557.9	509.3	501.7
82.5°	361.8	372.5	413.5	456.1	491.0	497.1	486.5	443.9	398.3	360.3	351.2
85°	197.6	202.2	228.0	272.1	285.8	296.5	281.2	249.3	226.5	202.2	194.6
87.5°	51.7	53.2	60.8	71.5	77.5	79.1	77.5	68.4	56.2	44.1	48.6
90°	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0

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



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

Report Prepared for

Cooper Lighting Solutions

Streetworks

Report Number: SP1-2407-176-3

Test Date: 09/24/2024

Luminaire Tested: MEM2-HTN-VA-30-730-U-WQ

Data in this report applies to families of products including MEM2-HTN-VA-30-730-U-WQ

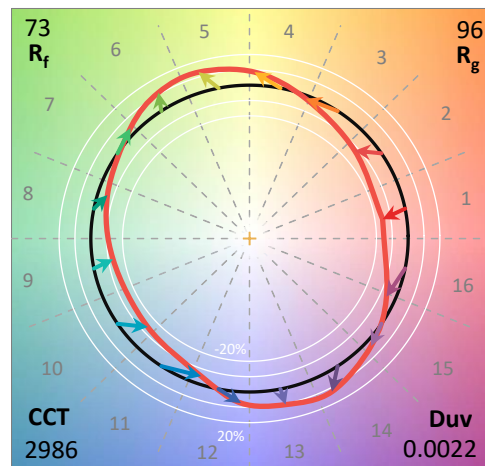
Test Information

Test Method: LM-79-2019
 Report Number: SP1-2407-176-3
 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-30-730-U-WQ**
 Description: EPIC MODERN VISUAL COMFORT 30W WAVESTREAM WIDE

Spectral Parameters

CCT (K): 2986
 CIE u': 0.2503
 CIE v': 0.5248
 Duv: 0.0022
 CIE x: 0.4413
 CIE y: 0.4112
 CIE z: 0.1476
 Peak Wavelength (nm): 596
 Dominant Wavelength (nm): 582
 Purity: 55.87534
 Rf: 73.2
 Rg: 95.9

CRI (Ra):	71.3		
R1:	68.5	R9:	-25.2
R2:	79.2	R10:	51.0
R3:	88.4	R11:	63.6
R4:	69.4	R12:	39.8
R5:	66.3	R13:	69.9
R6:	70.0	R14:	92.9
R7:	80.1	R15:	61.4
R8:	48.3		



Test Conditions

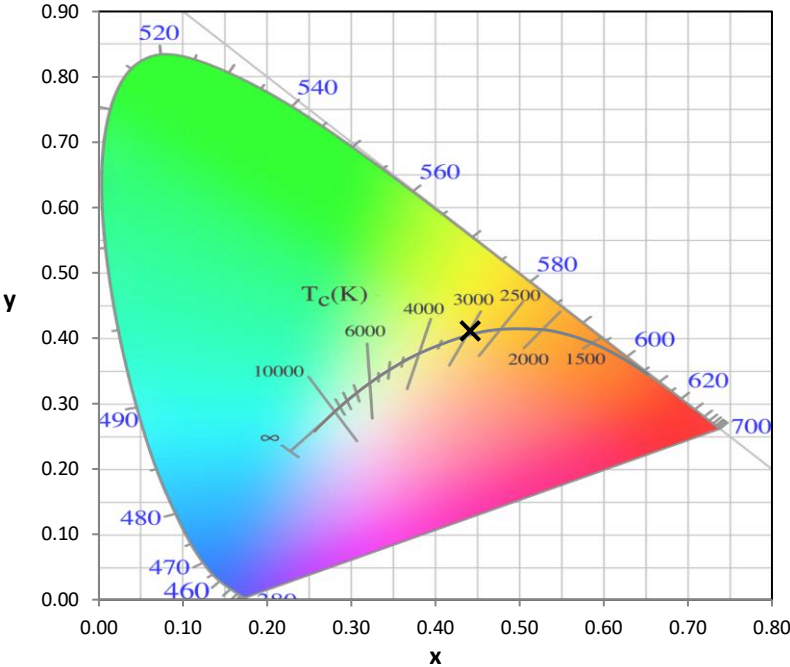
Stabilization Time: 27M
 Operation Time: 1H 27M
 Sphere Temperature (°C): 25.2

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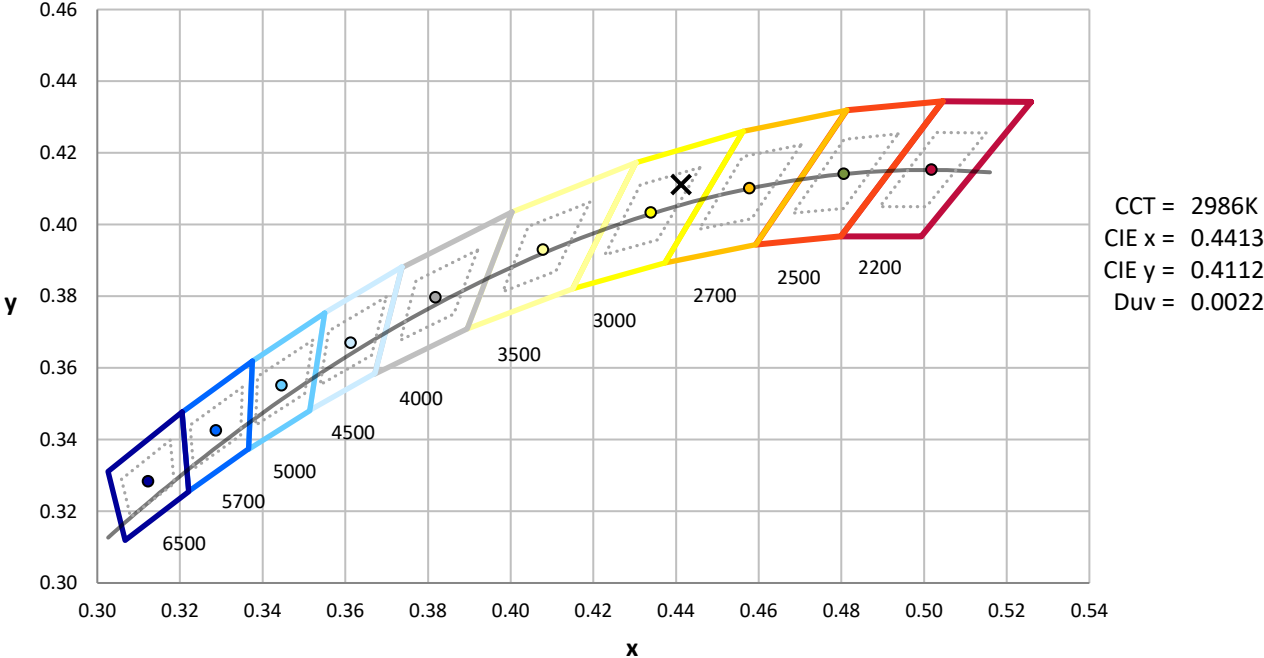
Measurement and Test Equipment			
Instrument	Identification Number	Calibration Date	Calibration Due Date
Photometer	IN0058	6/18/2024	12/18/2024
Power Meter	INXT2011004	2/8/2024	2/8/2025
AC Power Source	IN0063	10/24/2023	10/24/2024
DC Power Source	IN0208	10/24/2023	10/24/2024
Sphere Thermometer	IN0085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

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CIE 1931 Chromaticity Diagram



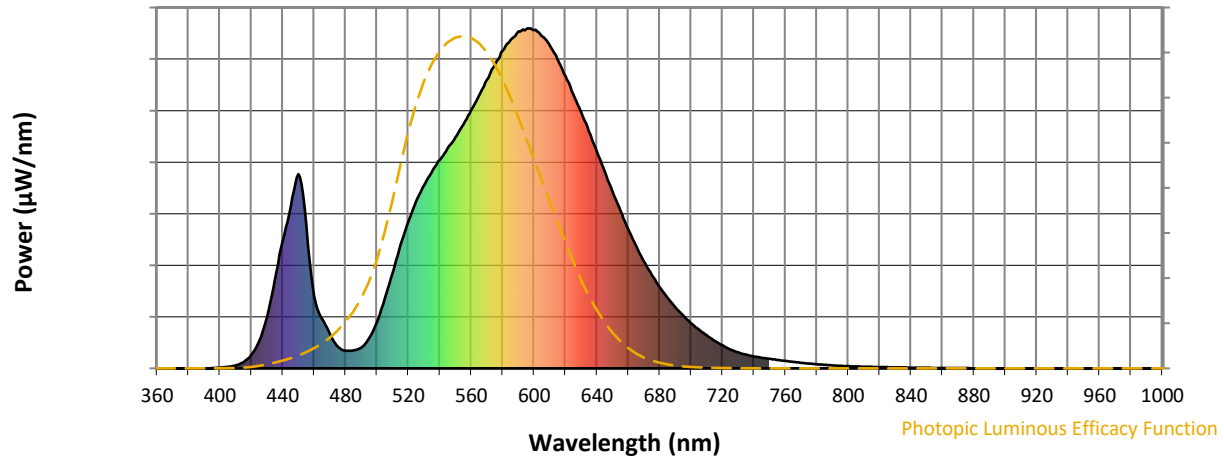
CIE 1931 Chromaticity Diagram with 2017 ANSI 7-Step and 4-Step Quadrangles



Point lies inside the ANSI 3000K 4-step quadrangle

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Photopic Flux vs. Wavelength

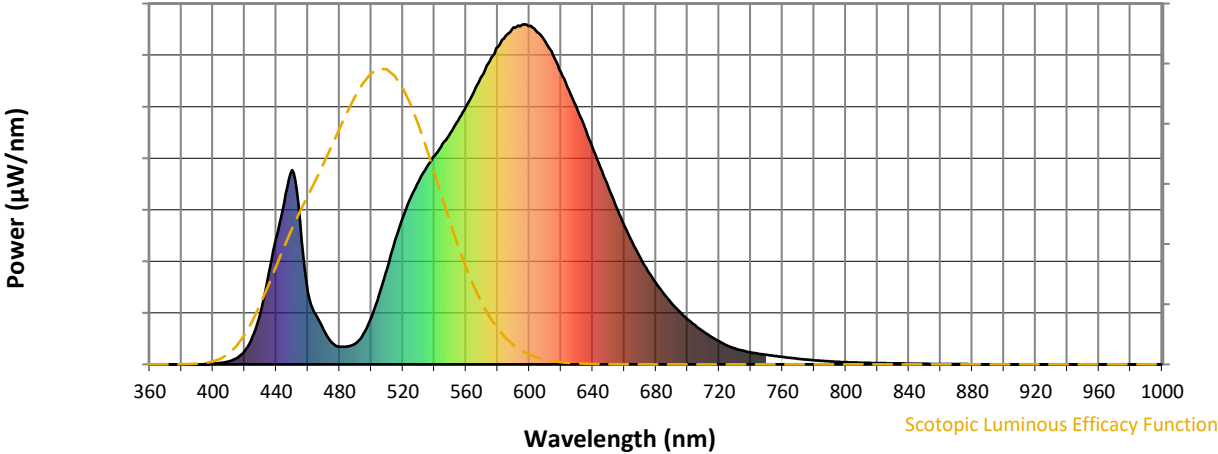


Photopic Lumens: NR

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	61	NR	620	859	NR	750	28	NR	880	0	NR
365	0	NR	495	88	NR	625	807	NR	755	25	NR	885	0	NR
370	0	NR	500	137	NR	630	753	NR	760	22	NR	890	0	NR
375	0	NR	505	205	NR	635	697	NR	765	19	NR	895	0	NR
380	0	NR	510	281	NR	640	637	NR	770	16	NR	900	0	NR
385	0	NR	515	363	NR	645	578	NR	775	14	NR	905	0	NR
390	0	NR	520	432	NR	650	520	NR	780	12	NR	910	0	NR
395	1	NR	525	492	NR	655	463	NR	785	10	NR	915	0	NR
400	2	NR	530	539	NR	660	409	NR	790	9	NR	920	0	NR
405	4	NR	535	579	NR	665	359	NR	795	8	NR	925	0	NR
410	9	NR	540	613	NR	670	315	NR	800	6	NR	930	0	NR
415	18	NR	545	648	NR	675	274	NR	805	6	NR	935	0	NR
420	39	NR	550	680	NR	680	239	NR	810	5	NR	940	0	NR
425	81	NR	555	717	NR	685	207	NR	815	4	NR	945	0	NR
430	151	NR	560	759	NR	690	180	NR	820	4	NR	950	0	NR
435	263	NR	565	803	NR	695	155	NR	825	3	NR	955	0	NR
440	375	NR	570	848	NR	700	133	NR	830	3	NR	960	0	NR
445	474	NR	575	892	NR	705	114	NR	835	3	NR	965	0	NR
450	571	NR	580	933	NR	710	97	NR	840	2	NR	970	0	NR
455	421	NR	585	966	NR	715	81	NR	845	2	NR	975	0	NR
460	214	NR	590	991	NR	720	67	NR	850	2	NR	980	0	NR
465	146	NR	595	998	NR	725	55	NR	855	1	NR	985	0	NR
470	101	NR	600	995	NR	730	47	NR	860	1	NR	990	0	NR
475	64	NR	605	977	NR	735	40	NR	865	1	NR	995	0	NR
480	52	NR	610	949	NR	740	35	NR	870	1	NR	1000	0	NR
485	53	NR	615	908	NR	745	31	NR	875	1	NR			

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Scotopic Flux vs. Wavelength



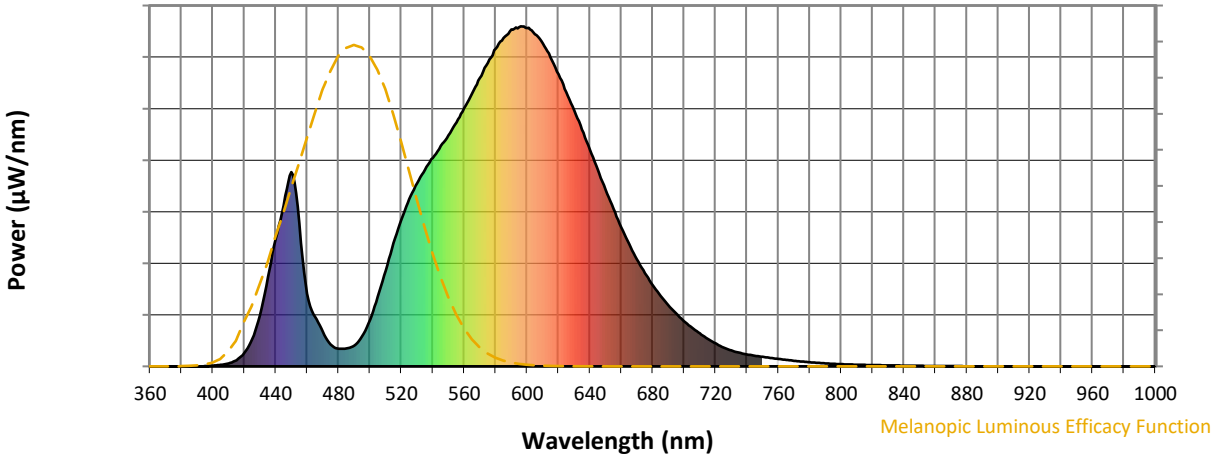
Scotopic Lumens: NR

S/P: 1.15

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	61	NR	620	859	NR	750	28	NR	880	0	NR
365	0	NR	495	88	NR	625	807	NR	755	25	NR	885	0	NR
370	0	NR	500	137	NR	630	753	NR	760	22	NR	890	0	NR
375	0	NR	505	205	NR	635	697	NR	765	19	NR	895	0	NR
380	0	NR	510	281	NR	640	637	NR	770	16	NR	900	0	NR
385	0	NR	515	363	NR	645	578	NR	775	14	NR	905	0	NR
390	0	NR	520	432	NR	650	520	NR	780	12	NR	910	0	NR
395	1	NR	525	492	NR	655	463	NR	785	10	NR	915	0	NR
400	2	NR	530	539	NR	660	409	NR	790	9	NR	920	0	NR
405	4	NR	535	579	NR	665	359	NR	795	8	NR	925	0	NR
410	9	NR	540	613	NR	670	315	NR	800	6	NR	930	0	NR
415	18	NR	545	648	NR	675	274	NR	805	6	NR	935	0	NR
420	39	NR	550	680	NR	680	239	NR	810	5	NR	940	0	NR
425	81	NR	555	717	NR	685	207	NR	815	4	NR	945	0	NR
430	151	NR	560	759	NR	690	180	NR	820	4	NR	950	0	NR
435	263	NR	565	803	NR	695	155	NR	825	3	NR	955	0	NR
440	375	NR	570	848	NR	700	133	NR	830	3	NR	960	0	NR
445	474	NR	575	892	NR	705	114	NR	835	3	NR	965	0	NR
450	571	NR	580	933	NR	710	97	NR	840	2	NR	970	0	NR
455	421	NR	585	966	NR	715	81	NR	845	2	NR	975	0	NR
460	214	NR	590	991	NR	720	67	NR	850	2	NR	980	0	NR
465	146	NR	595	998	NR	725	55	NR	855	1	NR	985	0	NR
470	101	NR	600	995	NR	730	47	NR	860	1	NR	990	0	NR
475	64	NR	605	977	NR	735	40	NR	865	1	NR	995	0	NR
480	52	NR	610	949	NR	740	35	NR	870	1	NR	1000	0	NR
485	53	NR	615	908	NR	745	31	NR	875	1	NR			

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Melanopic Flux vs. Wavelength



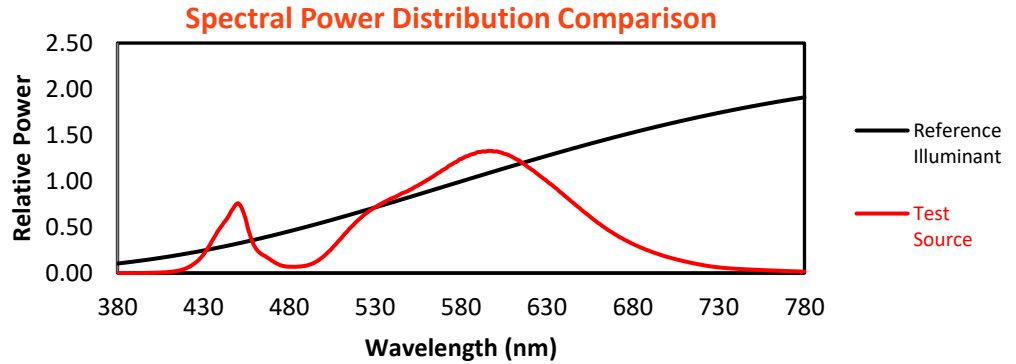
Melanopic Lumens: NR

M/P: 2.01

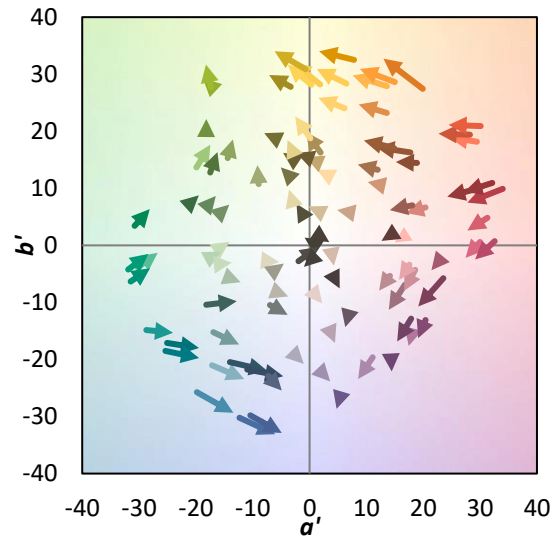
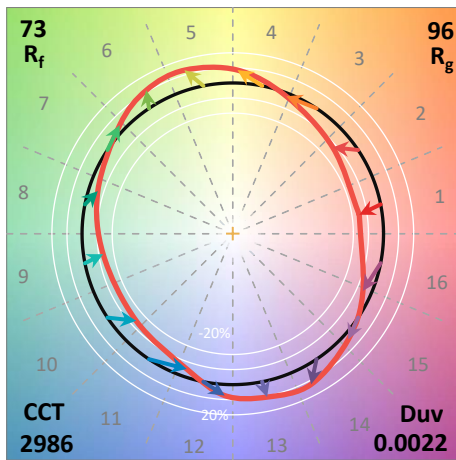
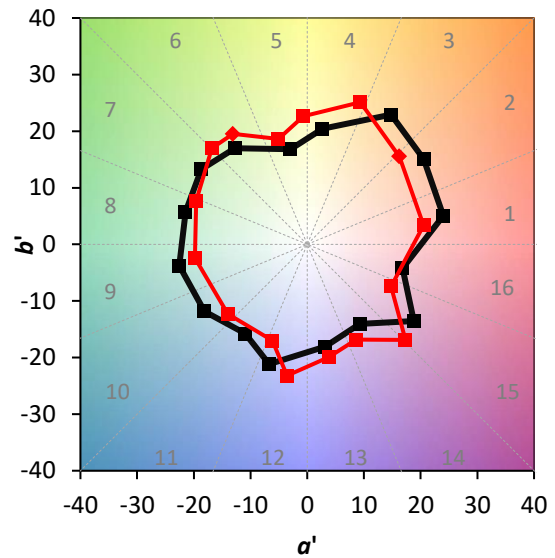
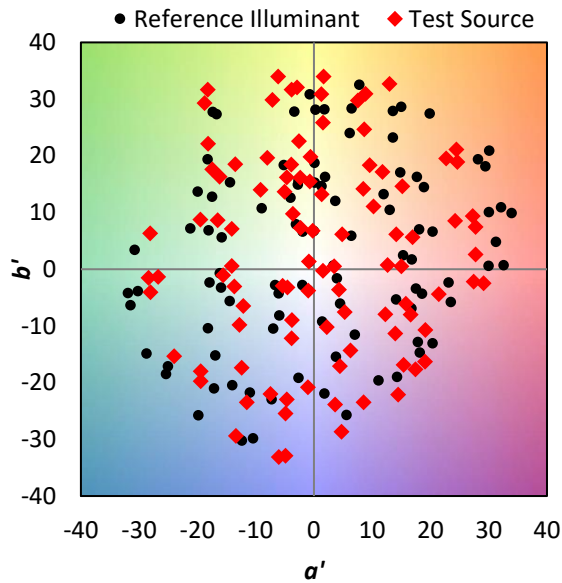
λ (nm)	Power W [^] /nm	Lumens (φ/nm)	λ (nm)	Power W [^] /nm	Lumens (φ/nm)	λ (nm)	Power W [^] /nm	Lumens (φ/nm)	λ (nm)	Power W [^] /nm	Lumens (φ/nm)	λ (nm)	Power W [^] /nm	Lumens (φ/nm)
360	0	NR	490	61	NR	620	859	NR	750	28	NR	880	0	NR
365	0	NR	495	88	NR	625	807	NR	755	25	NR	885	0	NR
370	0	NR	500	137	NR	630	753	NR	760	22	NR	890	0	NR
375	0	NR	505	205	NR	635	697	NR	765	19	NR	895	0	NR
380	0	NR	510	281	NR	640	637	NR	770	16	NR	900	0	NR
385	0	NR	515	363	NR	645	578	NR	775	14	NR	905	0	NR
390	0	NR	520	432	NR	650	520	NR	780	12	NR	910	0	NR
395	1	NR	525	492	NR	655	463	NR	785	10	NR	915	0	NR
400	2	NR	530	539	NR	660	409	NR	790	9	NR	920	0	NR
405	4	NR	535	579	NR	665	359	NR	795	8	NR	925	0	NR
410	9	NR	540	613	NR	670	315	NR	800	6	NR	930	0	NR
415	18	NR	545	648	NR	675	274	NR	805	6	NR	935	0	NR
420	39	NR	550	680	NR	680	239	NR	810	5	NR	940	0	NR
425	81	NR	555	717	NR	685	207	NR	815	4	NR	945	0	NR
430	151	NR	560	759	NR	690	180	NR	820	4	NR	950	0	NR
435	263	NR	565	803	NR	695	155	NR	825	3	NR	955	0	NR
440	375	NR	570	848	NR	700	133	NR	830	3	NR	960	0	NR
445	474	NR	575	892	NR	705	114	NR	835	3	NR	965	0	NR
450	571	NR	580	933	NR	710	97	NR	840	2	NR	970	0	NR
455	421	NR	585	966	NR	715	81	NR	845	2	NR	975	0	NR
460	214	NR	590	991	NR	720	67	NR	850	2	NR	980	0	NR
465	146	NR	595	998	NR	725	55	NR	855	1	NR	985	0	NR
470	101	NR	600	995	NR	730	47	NR	860	1	NR	990	0	NR
475	64	NR	605	977	NR	735	40	NR	865	1	NR	995	0	NR
480	52	NR	610	949	NR	740	35	NR	870	1	NR	1000	0	NR
485	53	NR	615	908	NR	745	31	NR	875	1	NR			

Summary

$R_f = 73.2$
 $R_g = 95.9$
 $CIE R_a = 71.3$
 $R_g = -25.2$

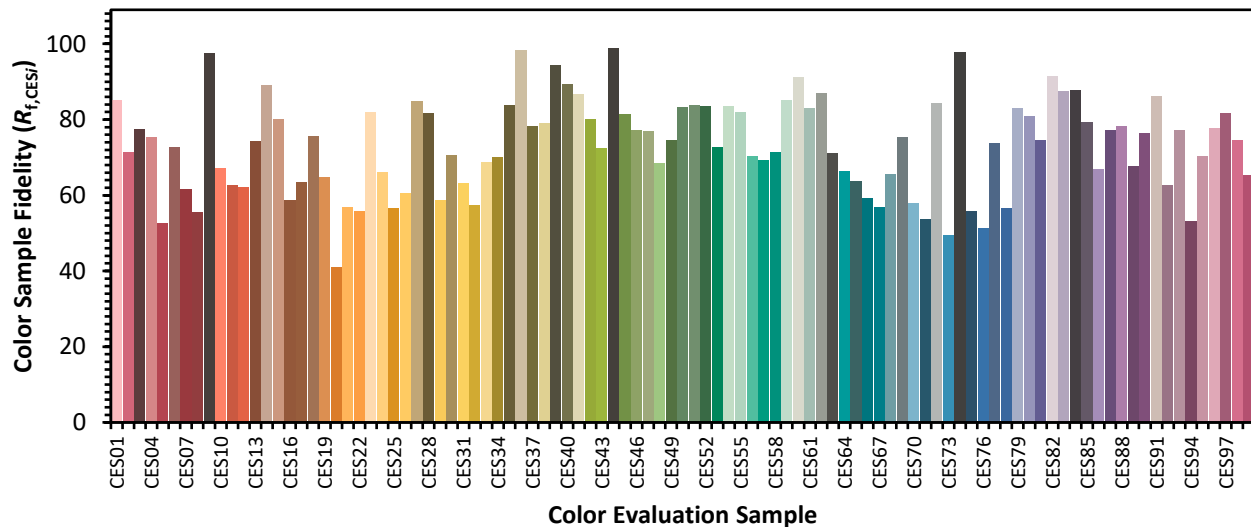


Color Vector Graphics

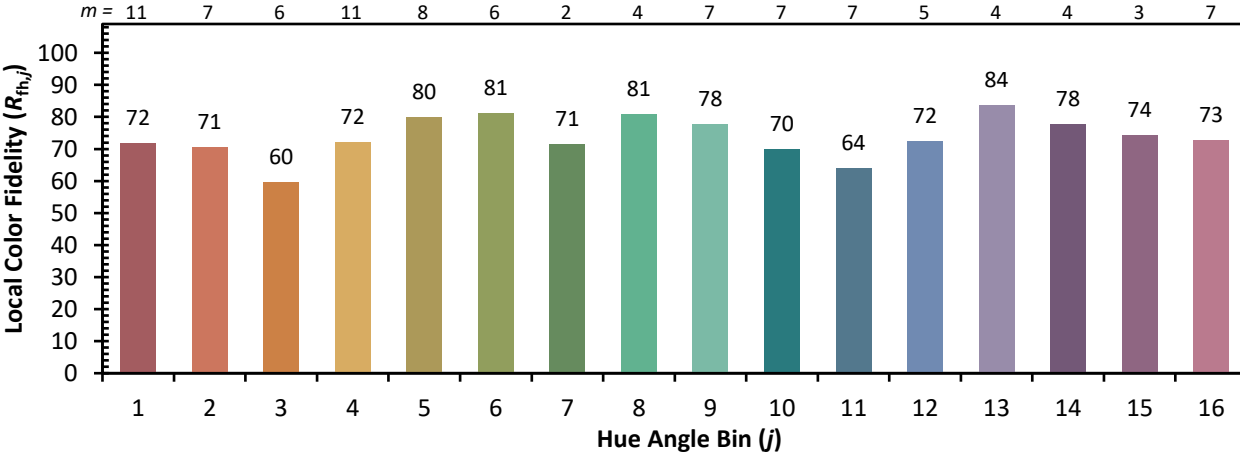
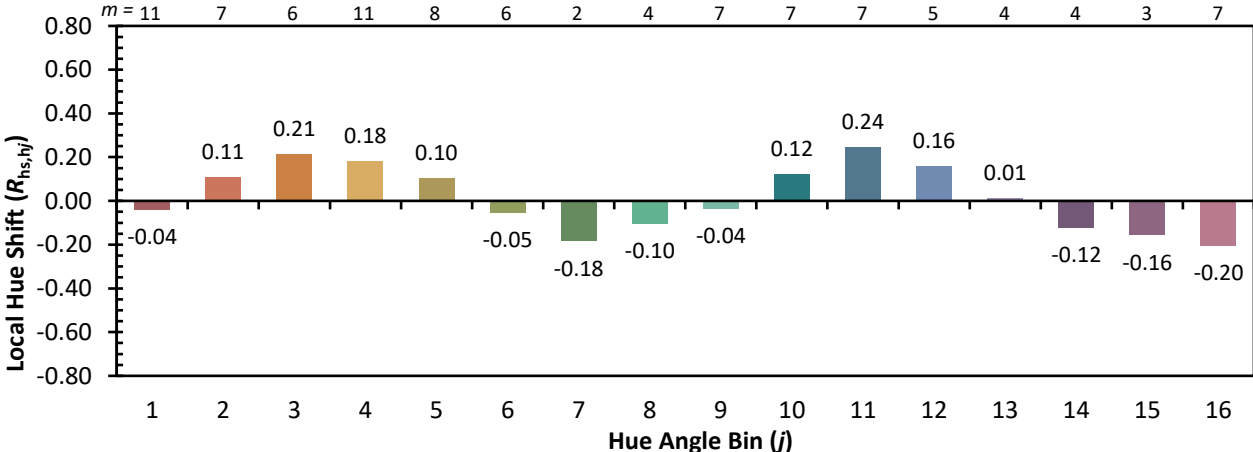
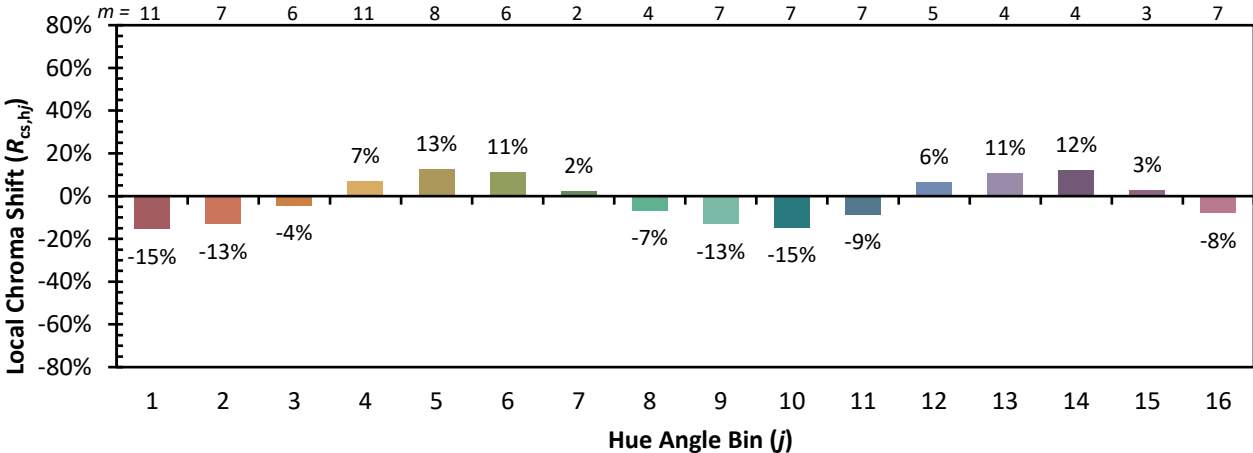


Individual Sample Fidelity Index ($R_{f,i}$)

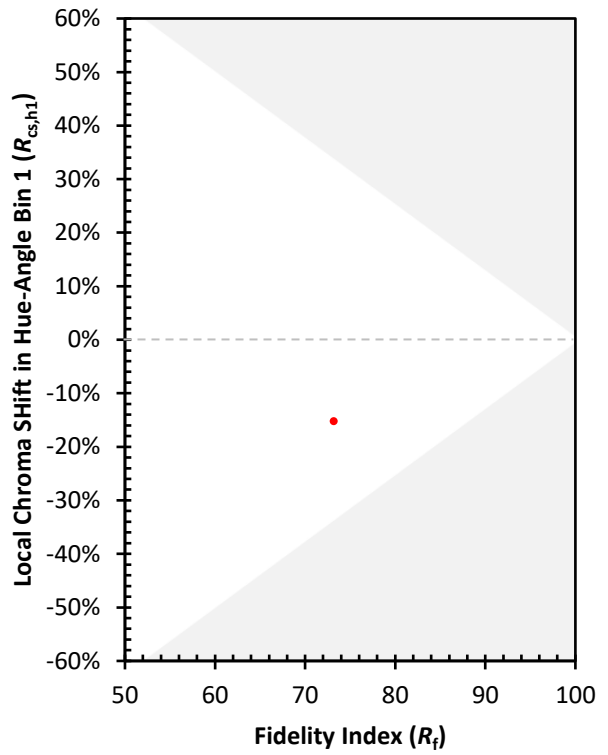
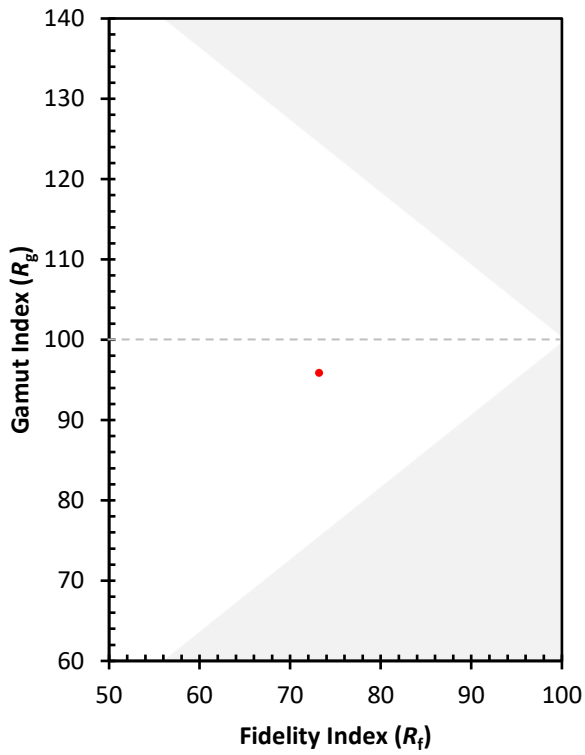
CES01 = 86	CES26 = 61	CES51 = 84	CES76 = 51
CES02 = 62	CES27 = 85	CES52 = 84	CES77 = 74
CES03 = 31	CES28 = 82	CES53 = 73	CES78 = 56
CES04 = 71	CES29 = 59	CES54 = 84	CES79 = 83
CES05 = 49	CES30 = 71	CES55 = 82	CES80 = 81
CES06 = 51	CES31 = 63	CES56 = 70	CES81 = 75
CES07 = 41	CES32 = 57	CES57 = 69	CES82 = 92
CES08 = 40	CES33 = 69	CES58 = 71	CES83 = 88
CES09 = 29	CES34 = 70	CES59 = 85	CES84 = 88
CES10 = 76	CES35 = 84	CES60 = 91	CES85 = 79
CES11 = 59	CES36 = 98	CES61 = 83	CES86 = 67
CES12 = 65	CES37 = 78	CES62 = 87	CES87 = 77
CES13 = 43	CES38 = 79	CES63 = 71	CES88 = 78
CES14 = 74	CES39 = 94	CES64 = 66	CES89 = 68
CES15 = 71	CES40 = 89	CES65 = 64	CES90 = 76
CES16 = 47	CES41 = 87	CES66 = 59	CES91 = 86
CES17 = 50	CES42 = 80	CES67 = 57	CES92 = 63
CES18 = 56	CES43 = 73	CES68 = 66	CES93 = 77
CES19 = 73	CES44 = 99	CES69 = 75	CES94 = 53
CES20 = 66	CES45 = 81	CES70 = 58	CES95 = 70
CES21 = 87	CES46 = 77	CES71 = 54	CES96 = 78
CES22 = 79	CES47 = 77	CES72 = 84	CES97 = 82
CES23 = 92	CES48 = 68	CES73 = 49	CES98 = 75
CES24 = 91	CES49 = 74	CES74 = 98	CES99 = 65
CES25 = 73	CES50 = 83	CES75 = 56	



Color Rendition by Hue-Angle Bin



Measure Comparisons



(END OF REPORT)