

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: P821264

Luminaire Tested: **TT-D1-750-24VDC-5MQ-PM**

Issue Date: 2/18/2020



Test Information

Test Method: LM-79-08
Report Number: P821264
TEST IS SCALED FROM IESNA LM-79-08 TEST DATA (G3-1908-473-16)
Test Lab: INNOVATIONS CENTER
Issue Date: 2/18/2020
Manufacturer: COOPER LIGHTING SOLUTIONS (FORMERLY EATON)
Product Line: MCGRAW-EDISON
Catalog Number: TT-D1-750-24VDC-5MQ-PM
Description: TOPTIER LED SITE LUMINAIRE
5000K, 70 CRI LEDS AND MEDIUM DISTRIBUTION
Light Source: -
Ballast/Driver: ELECTRONIC DRIVER

Summary

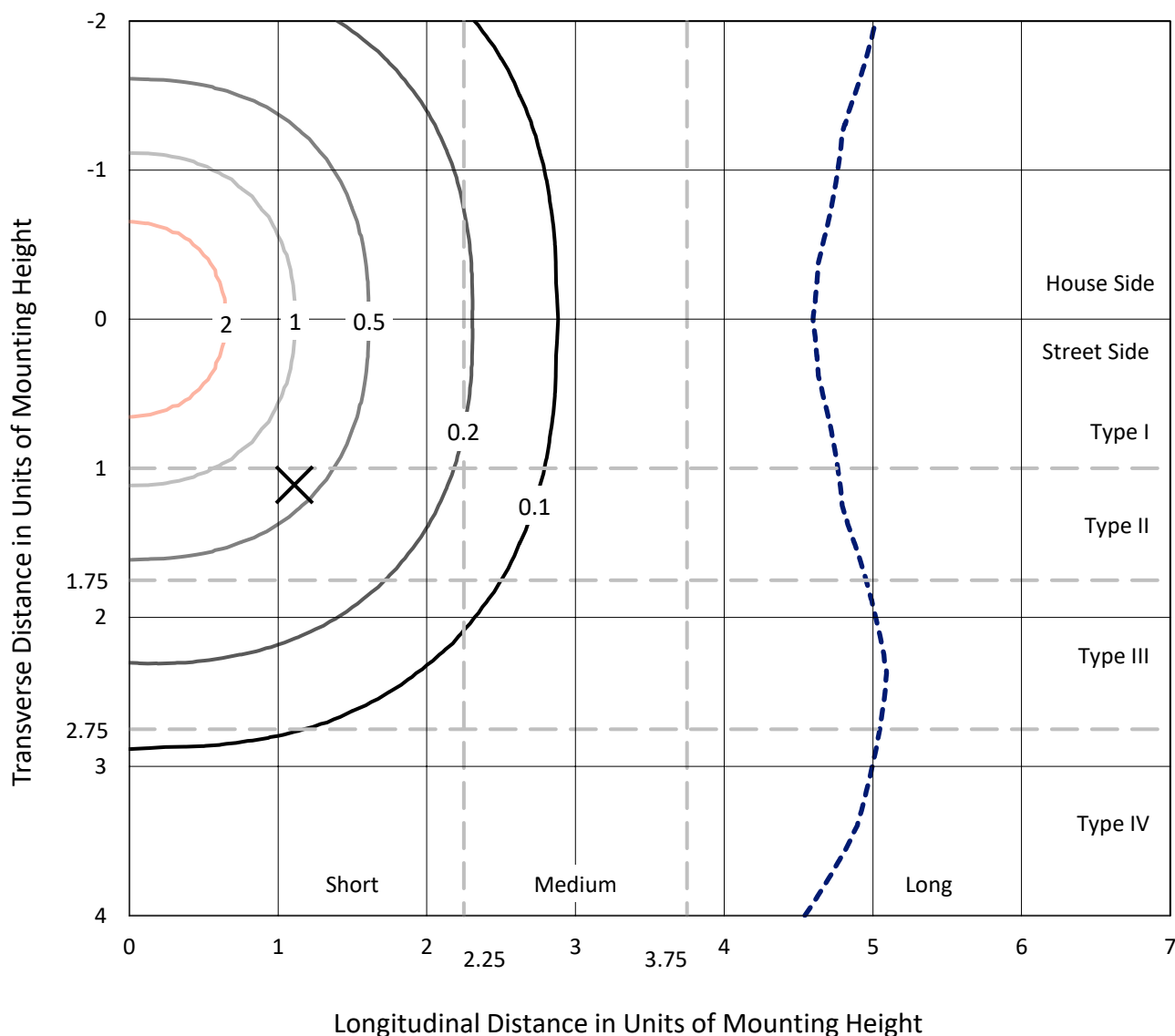
Lumens per Lamp: N/A
Luminaire Lumens: 4096 lumens
Efficiency: N/A
Efficacy: 146.3 lumens/watt
Luminous Opening: Circular (Dia: 1.12' x H: 0')
IES Classification: Type V - Short
BUG Rating: B2 - U0 - G2

Input Watts (W): 28
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

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 CATALOG NUMBER: TT-D1-750-24VDC-5MQ-PM

Iso-Footcandle Lines of Horizontal Illumination

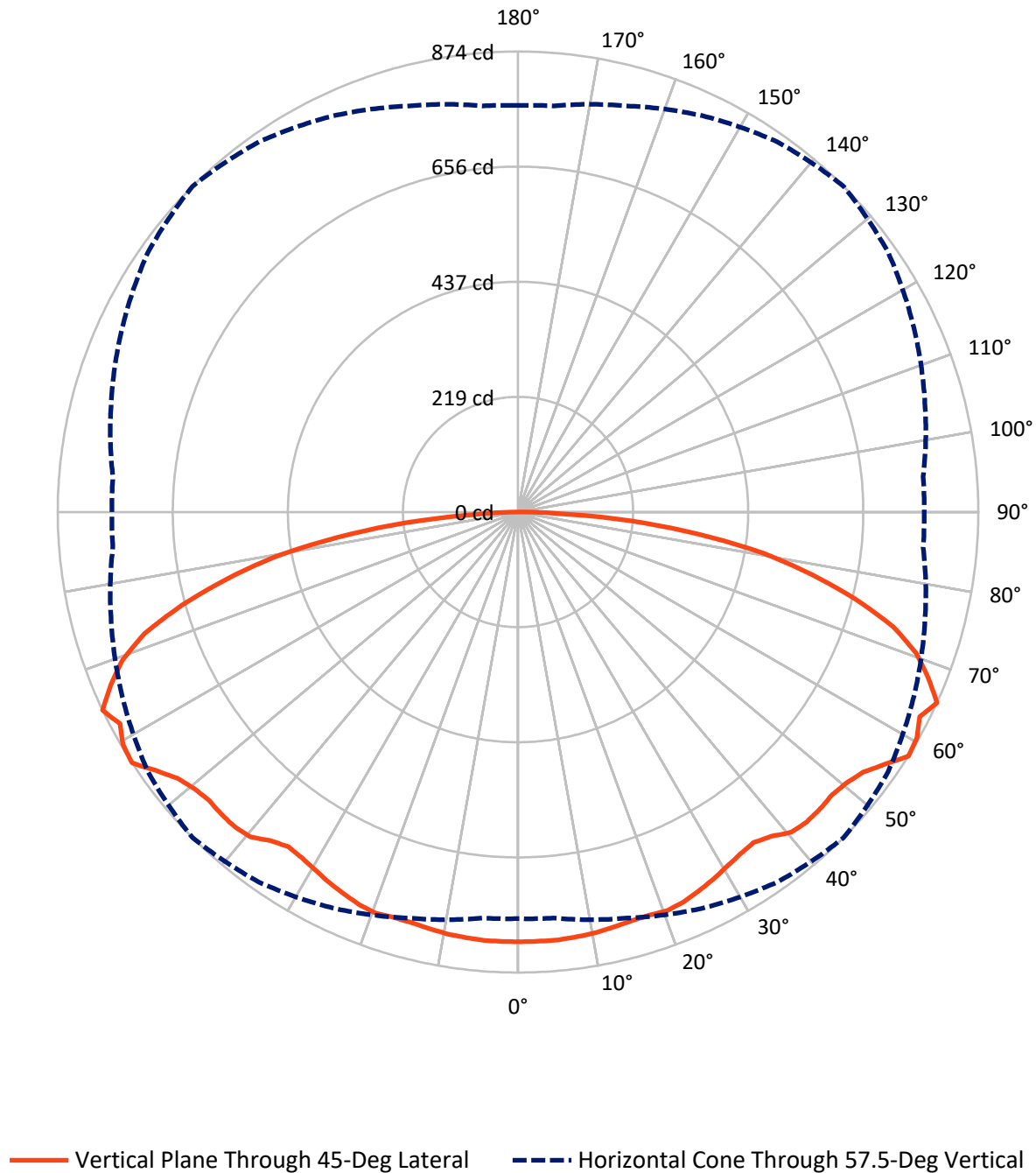
✕ Max cd
 - - - 1/2 Max cd



Based on 15 foot mounting height. Maximum calculated value = 3.6 fc
 Type V - Short - N/A

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CATALOG NUMBER: TT-D1-750-24VDC-5MQ-PM

Luminous Intensity Polar Plot



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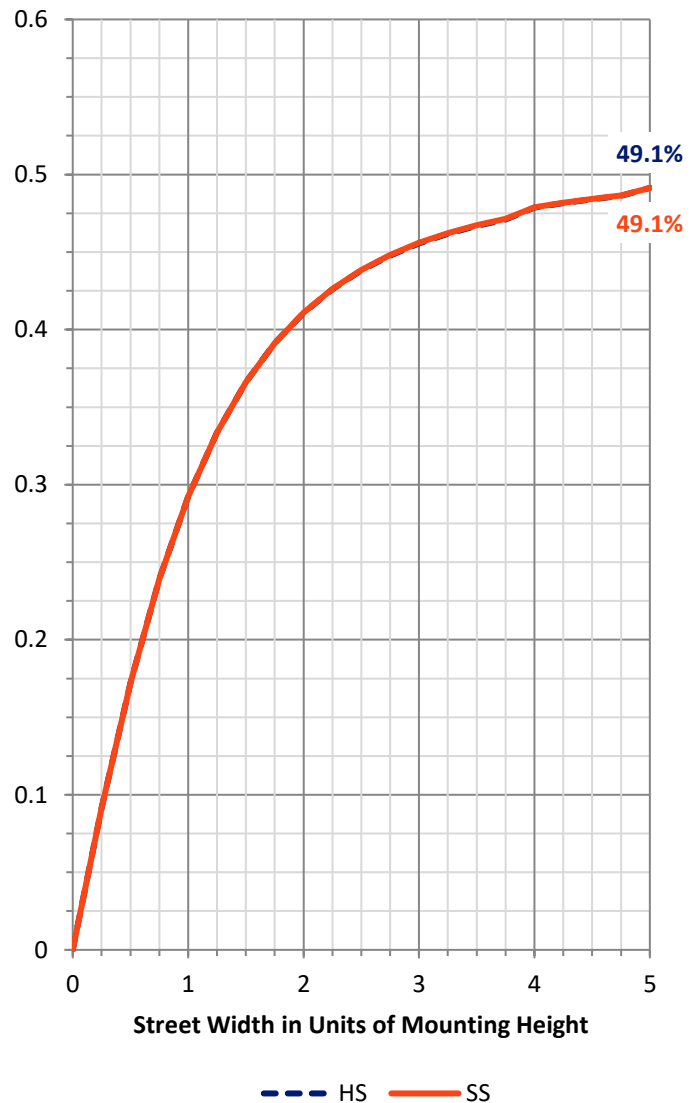
FLUX DISTRIBUTION:

		Downward	Upward	Total
House Side	Lumens	2048.0	0.0	2048.0
	% Fixture	50.0	0.0	50.0
Street Side	Lumens	2048.0	0.0	2048.0
	% Fixture	50.0	0.0	50.0
Total	Lumens	4096.0	0.0	4096.0
	% Fixture	100.0	0.0	100.0

Coefficient of Utilization

ZONAL LUMENS:

Zone	Lumens	% Fixture
0°-10°	77.7	1.9
10°-20°	228.6	5.6
20°-30°	367.4	9.0
30°-40°	485.0	11.8
40°-50°	606.8	14.8
50°-60°	721.8	17.6
60°-70°	782.9	19.1
70°-80°	623.1	15.2
80°-90°	202.6	4.9
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°	4096.0	100.0
0°-180°	4096.0	100.0



REPORT NUMBER: P821264

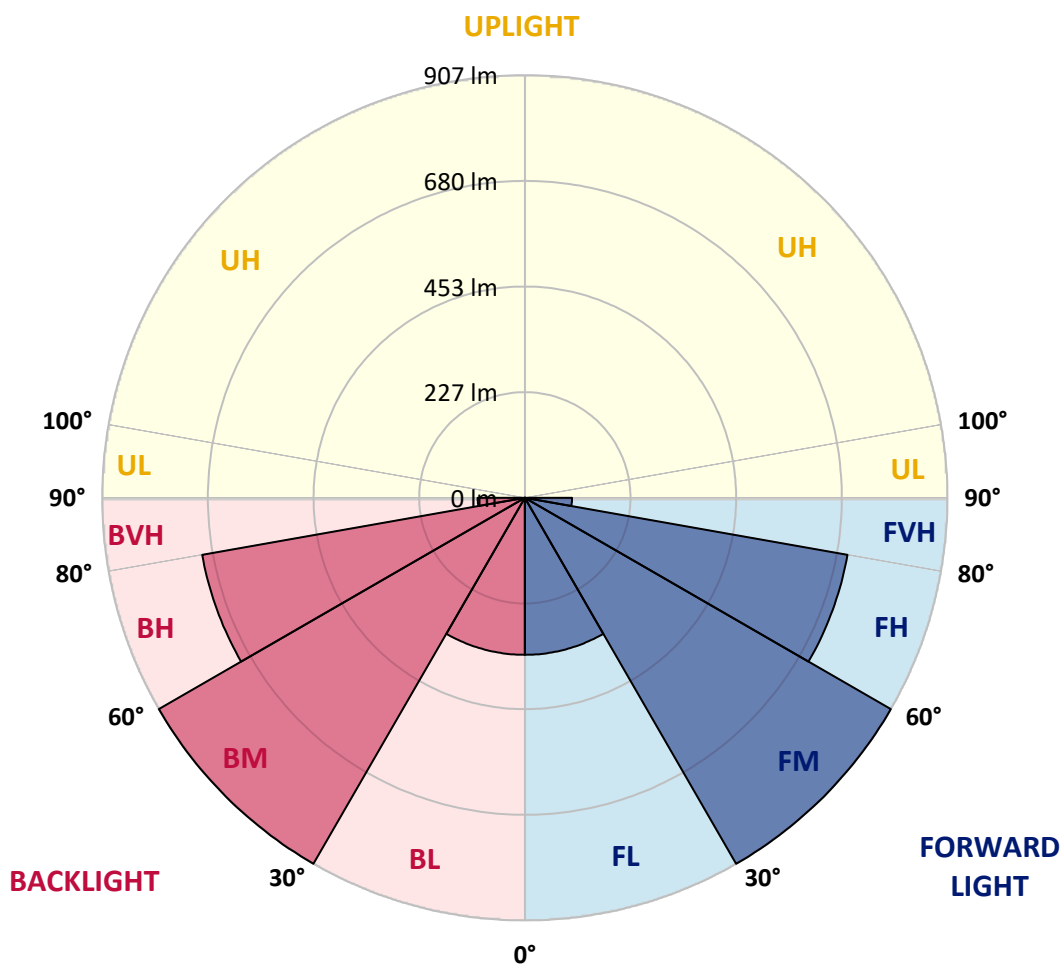
CATALOG NUMBER: TT-D1-750-24VDC-5MQ-PM

LUMINAIRE CLASSIFICATION SYSTEM LUMEN TABLE AND BUG RATING:

Zone		Lumens	% Fixture	Zone Rating/Lumen Limit		
				B	U	G
FL	(0°-30°)	336.9	8.2			
FM	(30°-60°)	906.8	22.1			
FH	(60°-80°)	703.0	17.2			G1/1800
FVH	(80°-90°)	101.3	2.5			G2/225
BL	(0°-30°)	336.9	8.2	B1/500		
BM	(30°-60°)	906.8	22.1	B1/1000		
BH	(60°-80°)	703.0	17.2	B2/1000		G1/1800
BVH	(80°-90°)	101.3	2.5			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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CATALOG NUMBER: TT-D1-750-24VDC-5MQ-PM

CANDELA DISTRIBUTION (FULL):

	0°	5°	15°	25°	35°	45°	55°	65°	75°	85°	90°
0°	815.8	815.8	815.8	815.8	815.8	815.8	815.8	815.8	815.8	815.8	815.8
2.5°	817.0	816.4	817.0	816.4	816.4	815.8	816.4	816.4	816.4	816.4	816.4
5°	816.4	815.8	815.8	816.4	815.8	815.8	815.8	815.8	815.8	815.8	815.8
7.5°	814.0	814.0	814.6	814.0	814.0	814.0	814.0	814.0	814.0	814.6	814.6
10°	812.1	811.5	812.1	812.1	811.5	811.5	811.5	812.1	812.1	812.1	812.1
12.5°	809.7	809.1	809.7	809.7	809.1	808.5	809.1	809.1	809.7	809.7	809.7
15°	805.4	805.4	806.7	806.0	806.0	805.4	806.7	806.0	805.4	806.0	806.0
17.5°	802.4	802.4	803.6	804.8	804.8	804.8	804.8	804.2	803.0	803.6	802.4
20°	803.0	803.6	804.2	806.0	807.3	807.9	807.9	806.0	804.2	804.8	804.2
22.5°	801.2	800.6	801.2	802.4	804.2	804.2	804.2	801.8	801.2	800.6	800.6
25°	793.9	793.9	795.1	796.3	797.5	796.9	797.5	796.3	795.1	793.9	793.9
27.5°	785.3	785.3	787.2	788.4	789.6	789.6	789.0	787.8	787.2	785.9	785.3
30°	776.8	776.8	778.6	779.9	781.7	781.1	781.1	779.2	777.4	776.2	776.2
32.5°	767.7	767.1	768.9	771.9	774.4	774.4	774.4	770.7	768.3	767.1	766.4
35°	759.7	759.7	762.2	767.7	770.7	770.7	769.5	767.1	761.6	759.7	759.7
37.5°	757.3	759.1	765.8	773.8	779.9	781.1	779.2	772.5	765.2	759.7	757.9
40°	765.2	767.1	775.6	788.4	797.5	799.3	797.5	787.8	775.0	766.4	765.8
42.5°	766.4	767.7	778.0	792.6	801.2	804.2	801.2	791.4	777.4	767.1	766.4
45°	762.2	762.8	775.0	790.2	800.6	804.2	800.6	789.0	774.4	762.8	762.2
47.5°	756.7	757.9	771.3	787.2	800.0	802.4	799.3	786.6	770.1	758.5	756.7
50°	752.4	756.1	768.3	785.9	801.2	808.5	801.2	784.1	767.7	754.9	752.4
52.5°	754.9	756.1	771.9	796.9	817.6	820.7	817.0	796.9	770.7	756.1	754.3
55°	762.2	767.7	784.7	820.7	839.6	845.0	837.1	819.5	785.3	767.7	762.2
57.5°	771.9	773.8	798.1	829.8	857.8	874.3	858.4	829.2	800.0	772.5	771.3
60°	764.0	758.5	789.0	826.2	863.9	870.6	861.5	826.8	787.8	757.9	763.4
62.5°	742.7	746.3	771.3	822.5	848.7	856.0	846.3	822.5	770.1	749.4	740.9
65°	725.6	747.6	775.0	811.5	853.6	874.3	854.2	810.3	776.2	743.9	723.8
67.5°	701.9	706.1	747.0	792.0	829.8	840.2	829.2	792.6	743.3	703.1	706.1
70°	661.7	655.6	697.0	749.4	785.3	801.8	786.6	747.0	695.2	654.3	659.8
72.5°	595.2	598.9	637.3	692.7	729.9	745.7	730.5	688.5	636.1	602.6	598.9
75°	525.8	530.1	567.2	617.8	655.6	662.3	658.0	614.7	568.4	529.4	525.8
77.5°	446.6	450.9	481.3	536.8	559.3	569.7	560.5	539.8	480.1	450.2	445.4
80°	358.9	357.6	384.4	432.0	460.0	471.6	460.0	433.2	383.2	360.1	352.2
82.5°	256.5	257.7	282.7	315.6	342.4	346.1	340.6	318.6	280.3	260.8	249.8
85°	142.6	148.0	166.3	190.7	208.4	214.5	205.3	184.6	165.7	150.5	145.6
87.5°	34.1	37.2	43.3	54.8	61.5	67.6	61.5	57.3	40.8	37.2	34.1
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: SP1-2407-176-6

Test Date: 09/26/2024

Luminaire Tested: MEM2-HTN-VA-30-750-U-WQ

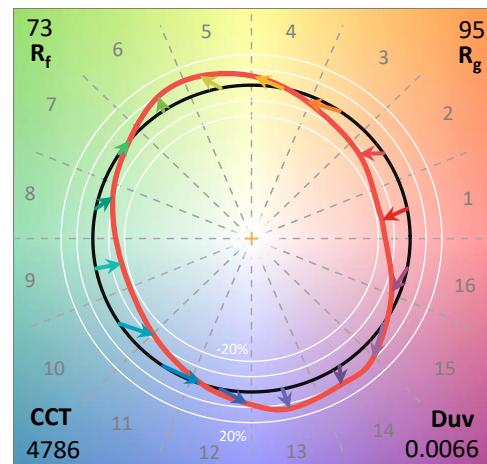
Data in this report applies to families of products including MEM2-HTN-VA-30-750-U-WQ

Test Information

Test Method: LM-79-2019
 Report Number: SP1-2407-176-6
 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-30-750-U-WQ**
 Description: EPIC MODERN VISUAL COMFORT 30W WAVESTREAM WIDE

Spectral Parameters

CCT (K):	4786	CRI (Ra):	70.9		
CIE u':	0.2093	R1:	67.8	R9:	-29.8
CIE v':	0.4953	R2:	75.1	R10:	40.9
Duv:	0.0066	R3:	80.6	R11:	67.4
CIE x:	0.3533	R4:	71.6	R12:	35.3
CIE y:	0.3716	R5:	67.8	R13:	68.5
CIE z:	0.2751	R6:	65.4	R14:	89.0
Peak Wavelength (nm):	449	R7:	82.0	R15:	60.9
Dominant Wavelength (nm):	570	R8:	57.0		
Purity:	17.53512				
Rf:	73				
Rg:	94.6				



Test Conditions

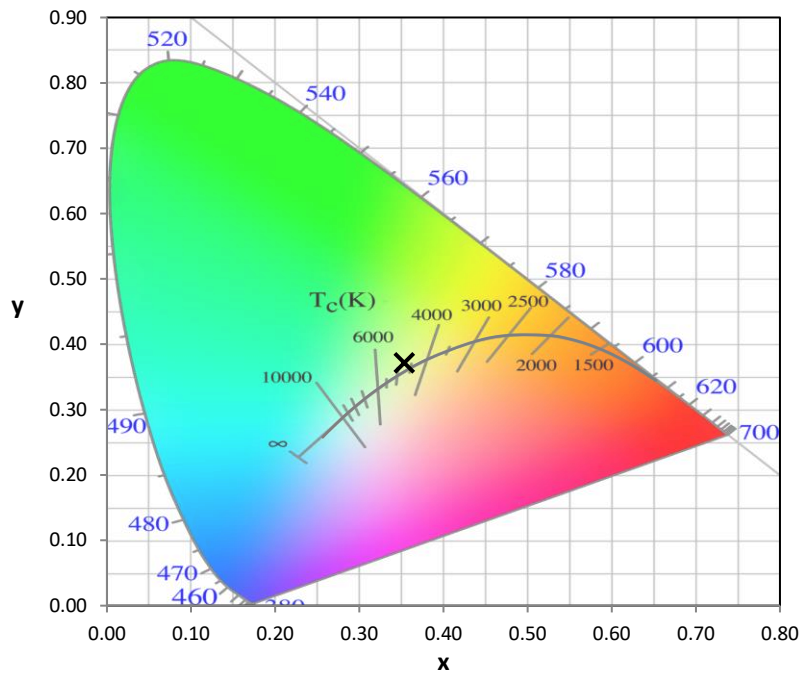
Stabilization Time: 45M
 Operation Time: 1H 45M
 Sphere Temperature (°C): 25.2

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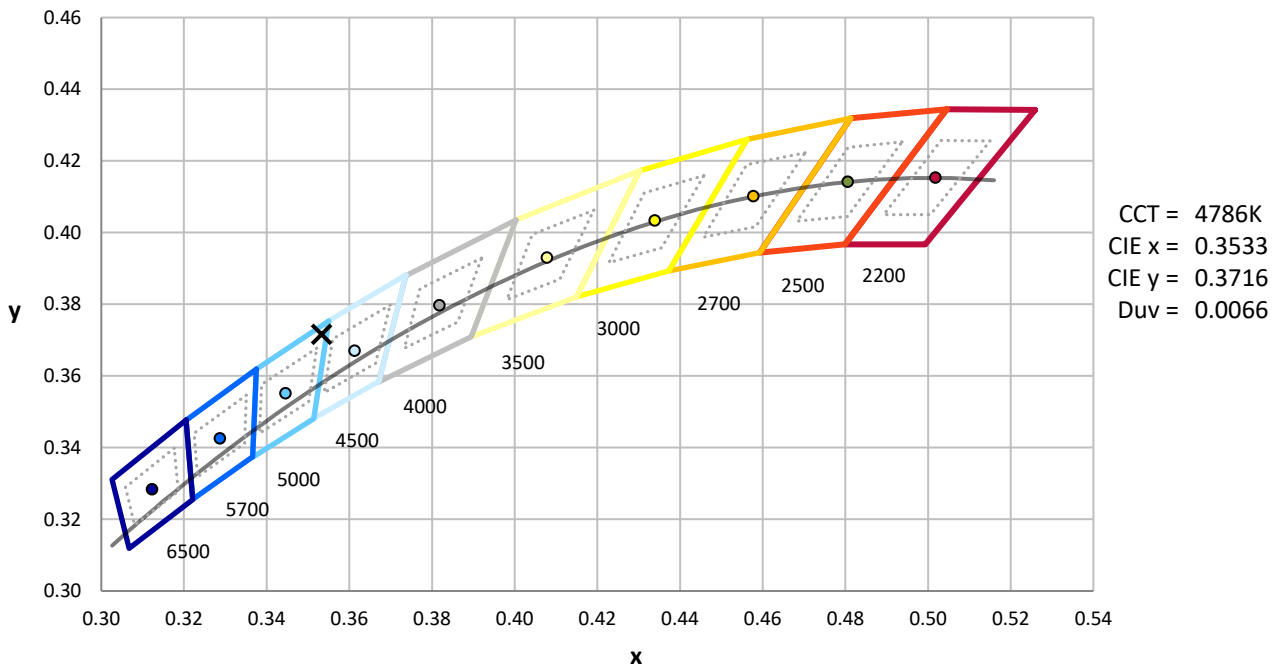
Measurement and Test Equipment			
Instrument	Identification Number	Calibration Date	Calibration Due Date
Photometer	IN0058	6/18/2024	12/18/2024
Power Meter	INXT2011004	2/8/2024	2/8/2025
AC Power Source	IN0063	10/24/2023	10/24/2024
DC Power Source	IN0208	10/24/2023	10/24/2024
Sphere Thermometer	IN0085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

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CIE 1931 Chromaticity Diagram



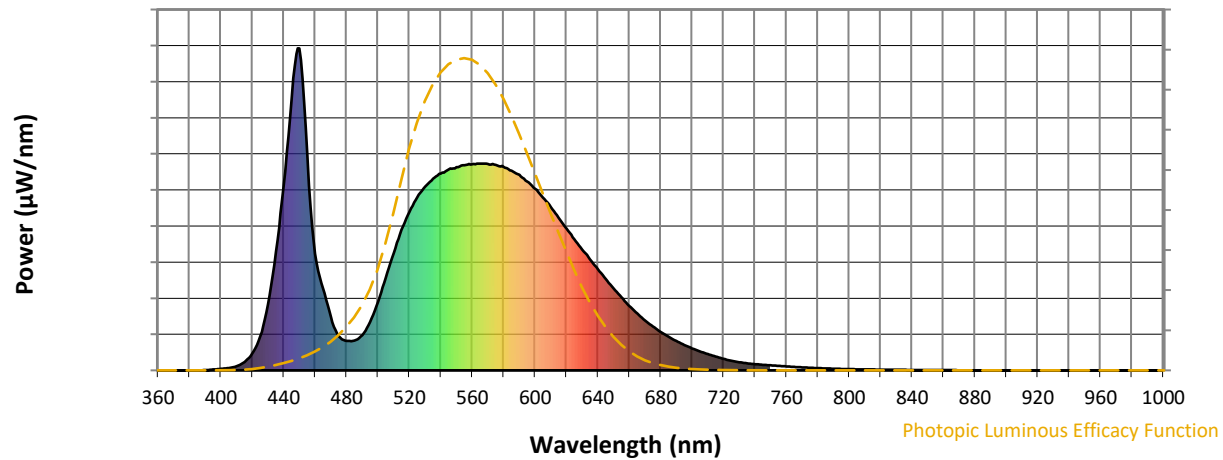
CIE 1931 Chromaticity Diagram with 2017 ANSI 7-Step and 4-Step Quadrangles



Point lies inside the ANSI 5000K 7-step quadrangle

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Photopic Flux vs. Wavelength

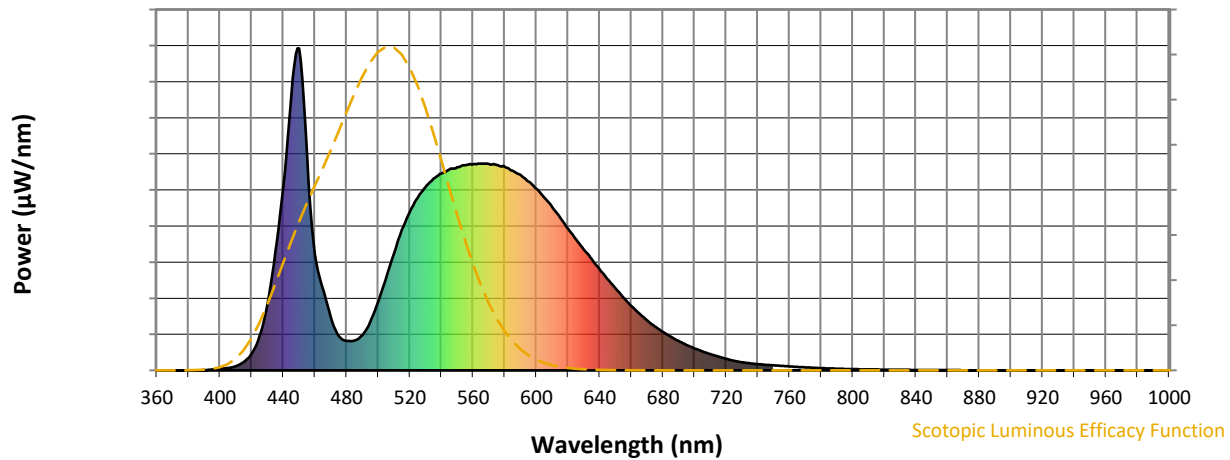


Photopic Lumens: NR

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	110	NR	620	440	NR	750	16	NR	880	0	NR
365	0	NR	495	150	NR	625	407	NR	755	14	NR	885	0	NR
370	0	NR	500	213	NR	630	375	NR	760	12	NR	890	0	NR
375	0	NR	505	288	NR	635	345	NR	765	11	NR	895	0	NR
380	0	NR	510	364	NR	640	314	NR	770	9	NR	900	0	NR
385	0	NR	515	436	NR	645	283	NR	775	8	NR	905	0	NR
390	1	NR	520	492	NR	650	254	NR	780	7	NR	910	0	NR
395	3	NR	525	537	NR	655	227	NR	785	6	NR	915	0	NR
400	5	NR	530	570	NR	660	200	NR	790	5	NR	920	0	NR
405	7	NR	535	595	NR	665	177	NR	795	4	NR	925	0	NR
410	13	NR	540	611	NR	670	155	NR	800	4	NR	930	0	NR
415	25	NR	545	624	NR	675	136	NR	805	3	NR	935	0	NR
420	52	NR	550	631	NR	680	119	NR	810	3	NR	940	0	NR
425	106	NR	555	637	NR	685	104	NR	815	3	NR	945	0	NR
430	204	NR	560	640	NR	690	91	NR	820	2	NR	950	0	NR
435	369	NR	565	642	NR	695	79	NR	825	2	NR	955	0	NR
440	573	NR	570	641	NR	700	68	NR	830	2	NR	960	0	NR
445	844	NR	575	638	NR	705	59	NR	835	2	NR	965	0	NR
450	999	NR	580	632	NR	710	50	NR	840	1	NR	970	0	NR
455	668	NR	585	620	NR	715	43	NR	845	1	NR	975	0	NR
460	361	NR	590	607	NR	720	36	NR	850	1	NR	980	0	NR
465	255	NR	595	586	NR	725	30	NR	855	1	NR	985	0	NR
470	165	NR	600	564	NR	730	25	NR	860	1	NR	990	0	NR
475	106	NR	605	537	NR	735	22	NR	865	1	NR	995	0	NR
480	91	NR	610	507	NR	740	19	NR	870	0	NR	1000	0	NR
485	93	NR	615	474	NR	745	17	NR	875	0	NR			

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Scotopic Flux vs. Wavelength



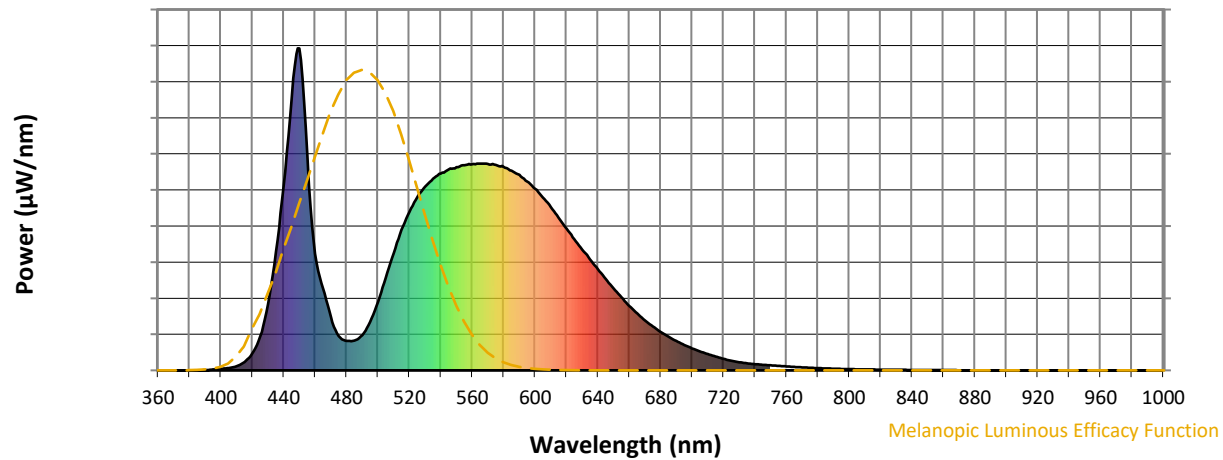
Scotopic Lumens: NR

S/P: 1.69

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	110	NR	620	440	NR	750	16	NR	880	0	NR
365	0	NR	495	150	NR	625	407	NR	755	14	NR	885	0	NR
370	0	NR	500	213	NR	630	375	NR	760	12	NR	890	0	NR
375	0	NR	505	288	NR	635	345	NR	765	11	NR	895	0	NR
380	0	NR	510	364	NR	640	314	NR	770	9	NR	900	0	NR
385	0	NR	515	436	NR	645	283	NR	775	8	NR	905	0	NR
390	1	NR	520	492	NR	650	254	NR	780	7	NR	910	0	NR
395	3	NR	525	537	NR	655	227	NR	785	6	NR	915	0	NR
400	5	NR	530	570	NR	660	200	NR	790	5	NR	920	0	NR
405	7	NR	535	595	NR	665	177	NR	795	4	NR	925	0	NR
410	13	NR	540	611	NR	670	155	NR	800	4	NR	930	0	NR
415	25	NR	545	624	NR	675	136	NR	805	3	NR	935	0	NR
420	52	NR	550	631	NR	680	119	NR	810	3	NR	940	0	NR
425	106	NR	555	637	NR	685	104	NR	815	3	NR	945	0	NR
430	204	NR	560	640	NR	690	91	NR	820	2	NR	950	0	NR
435	369	NR	565	642	NR	695	79	NR	825	2	NR	955	0	NR
440	573	NR	570	641	NR	700	68	NR	830	2	NR	960	0	NR
445	844	NR	575	638	NR	705	59	NR	835	2	NR	965	0	NR
450	999	NR	580	632	NR	710	50	NR	840	1	NR	970	0	NR
455	668	NR	585	620	NR	715	43	NR	845	1	NR	975	0	NR
460	361	NR	590	607	NR	720	36	NR	850	1	NR	980	0	NR
465	255	NR	595	586	NR	725	30	NR	855	1	NR	985	0	NR
470	165	NR	600	564	NR	730	25	NR	860	1	NR	990	0	NR
475	106	NR	605	537	NR	735	22	NR	865	1	NR	995	0	NR
480	91	NR	610	507	NR	740	19	NR	870	0	NR	1000	0	NR
485	93	NR	615	474	NR	745	17	NR	875	0	NR			

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Melanopic Flux vs. Wavelength



Melanopic Lumens: NR

M/P: 3.36

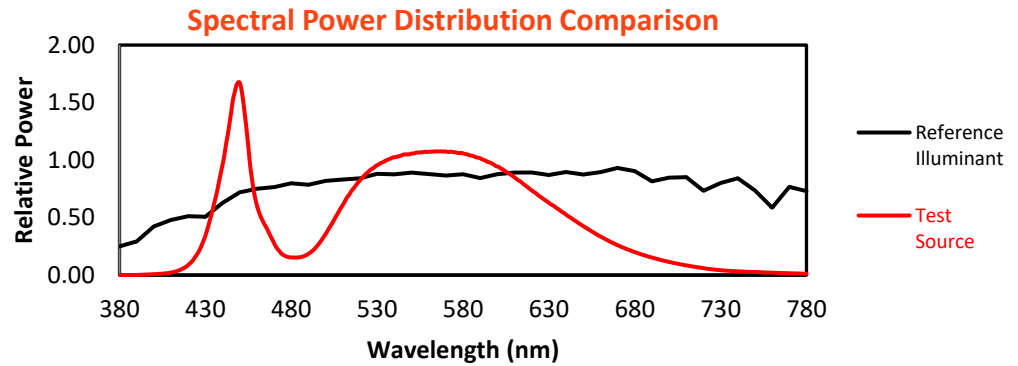
λ (nm)	Power W ^λ /nm	Lumens (φ/nm)	λ (nm)	Power W ^λ /nm	Lumens (φ/nm)	λ (nm)	Power W ^λ /nm	Lumens (φ/nm)	λ (nm)	Power W ^λ /nm	Lumens (φ/nm)	λ (nm)	Power W ^λ /nm	Lumens (φ/nm)
360	0	NR	490	110	NR	620	440	NR	750	16	NR	880	0	NR
365	0	NR	495	150	NR	625	407	NR	755	14	NR	885	0	NR
370	0	NR	500	213	NR	630	375	NR	760	12	NR	890	0	NR
375	0	NR	505	288	NR	635	345	NR	765	11	NR	895	0	NR
380	0	NR	510	364	NR	640	314	NR	770	9	NR	900	0	NR
385	0	NR	515	436	NR	645	283	NR	775	8	NR	905	0	NR
390	1	NR	520	492	NR	650	254	NR	780	7	NR	910	0	NR
395	3	NR	525	537	NR	655	227	NR	785	6	NR	915	0	NR
400	5	NR	530	570	NR	660	200	NR	790	5	NR	920	0	NR
405	7	NR	535	595	NR	665	177	NR	795	4	NR	925	0	NR
410	13	NR	540	611	NR	670	155	NR	800	4	NR	930	0	NR
415	25	NR	545	624	NR	675	136	NR	805	3	NR	935	0	NR
420	52	NR	550	631	NR	680	119	NR	810	3	NR	940	0	NR
425	106	NR	555	637	NR	685	104	NR	815	3	NR	945	0	NR
430	204	NR	560	640	NR	690	91	NR	820	2	NR	950	0	NR
435	369	NR	565	642	NR	695	79	NR	825	2	NR	955	0	NR
440	573	NR	570	641	NR	700	68	NR	830	2	NR	960	0	NR
445	844	NR	575	638	NR	705	59	NR	835	2	NR	965	0	NR
450	999	NR	580	632	NR	710	50	NR	840	1	NR	970	0	NR
455	668	NR	585	620	NR	715	43	NR	845	1	NR	975	0	NR
460	361	NR	590	607	NR	720	36	NR	850	1	NR	980	0	NR
465	255	NR	595	586	NR	725	30	NR	855	1	NR	985	0	NR
470	165	NR	600	564	NR	730	25	NR	860	1	NR	990	0	NR
475	106	NR	605	537	NR	735	22	NR	865	1	NR	995	0	NR
480	91	NR	610	507	NR	740	19	NR	870	0	NR	1000	0	NR
485	93	NR	615	474	NR	745	17	NR	875	0	NR			

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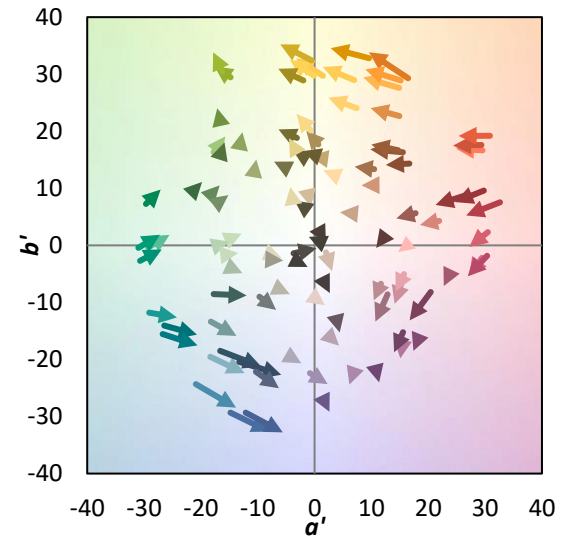
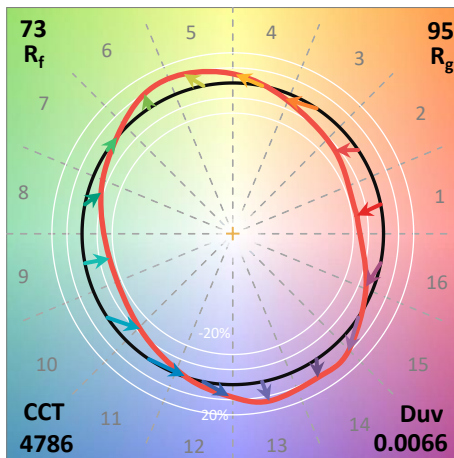
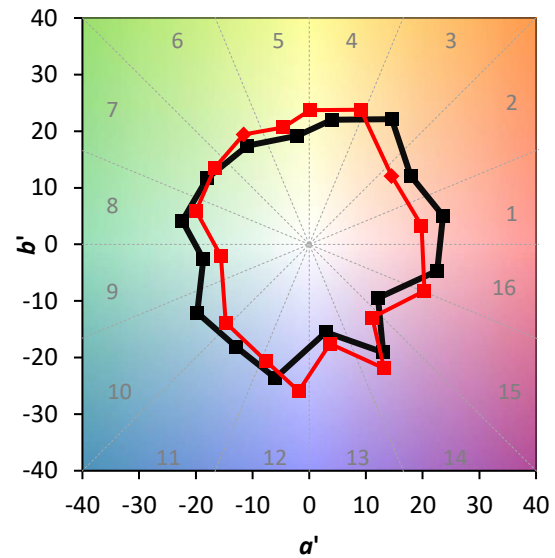
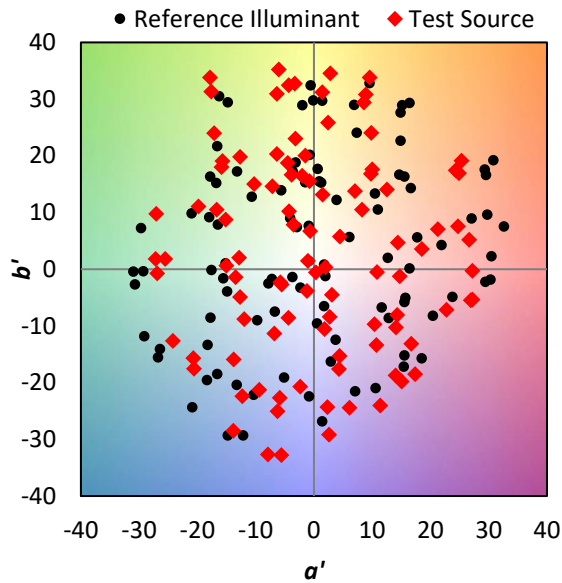
TM-30-18

Summary

$R_f = 73$
 $R_g = 94.6$
 $CIE R_a = 70.9$
 $R_g = -29.8$

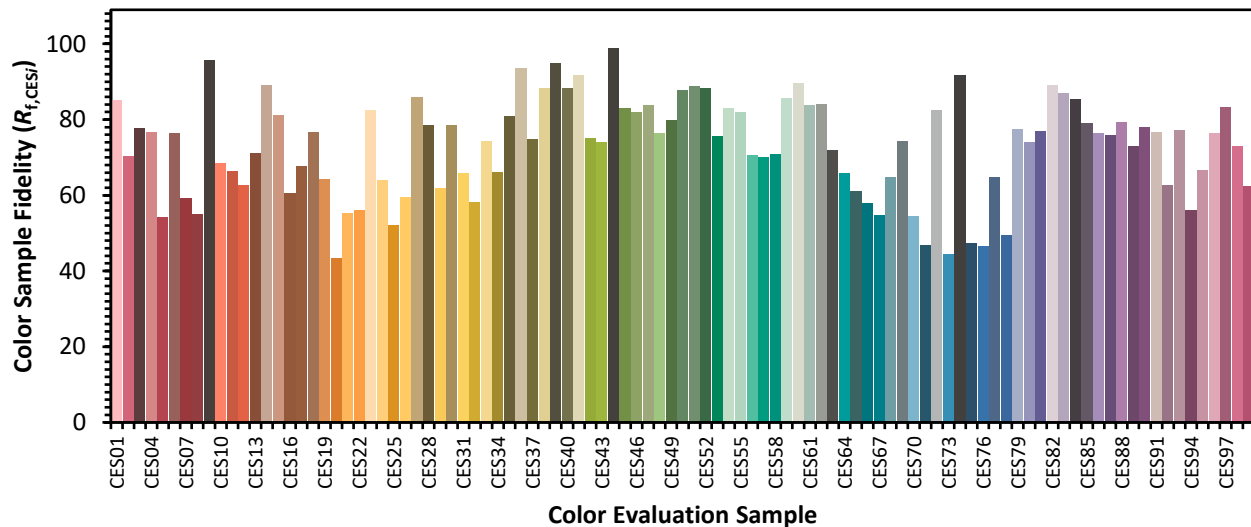


Color Vector Graphics

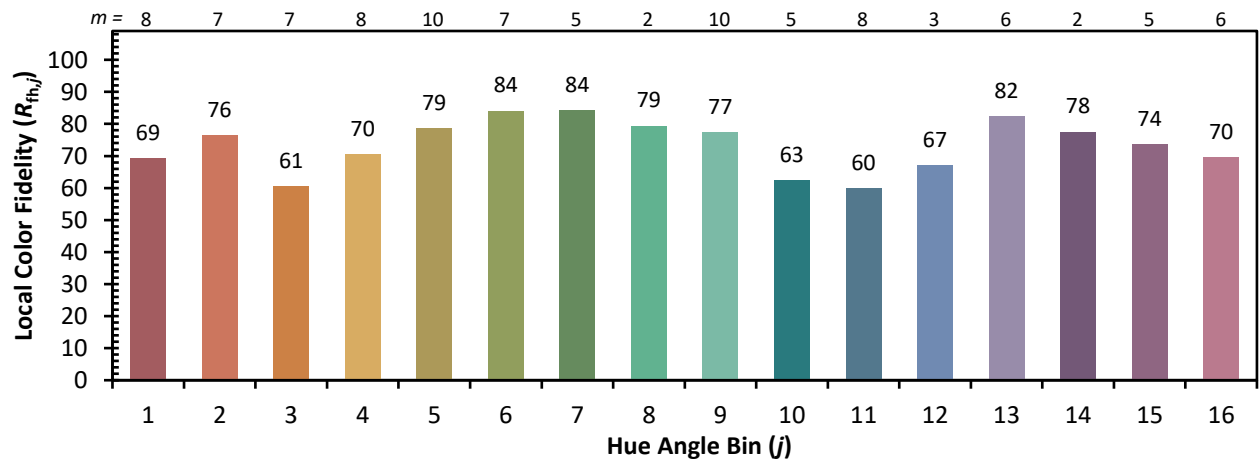
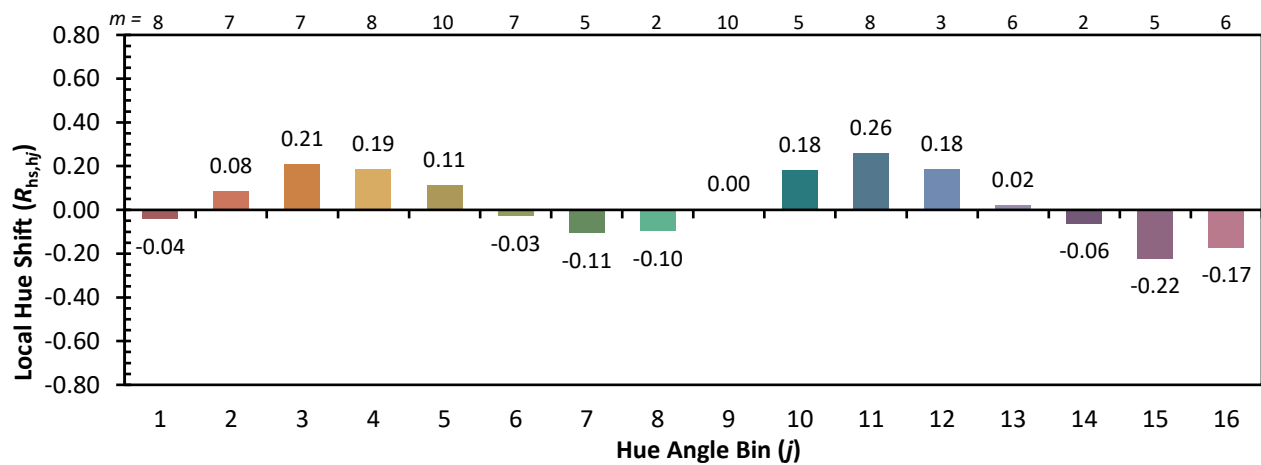
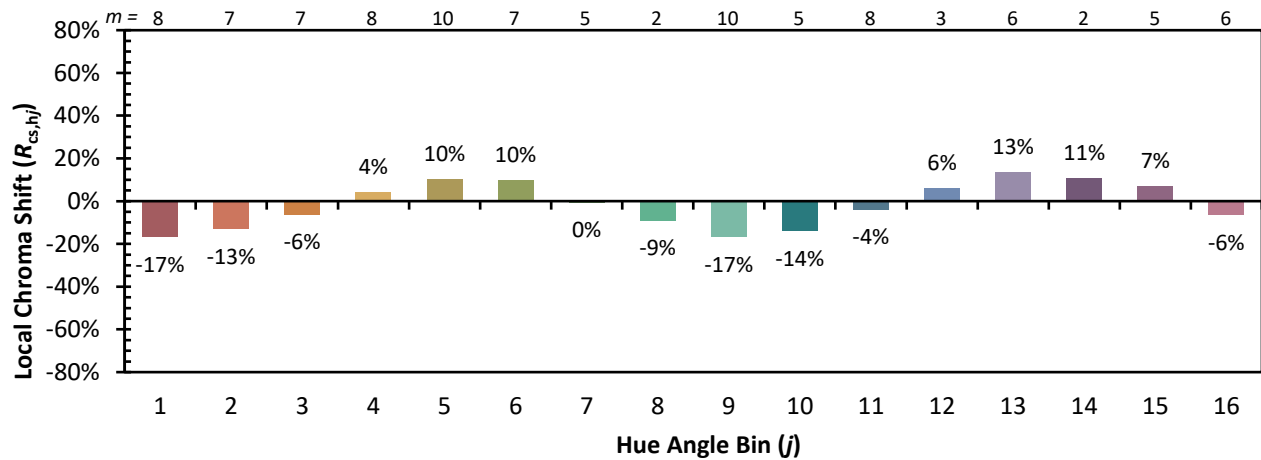


Individual Sample Fidelity Index ($R_{f,i}$)

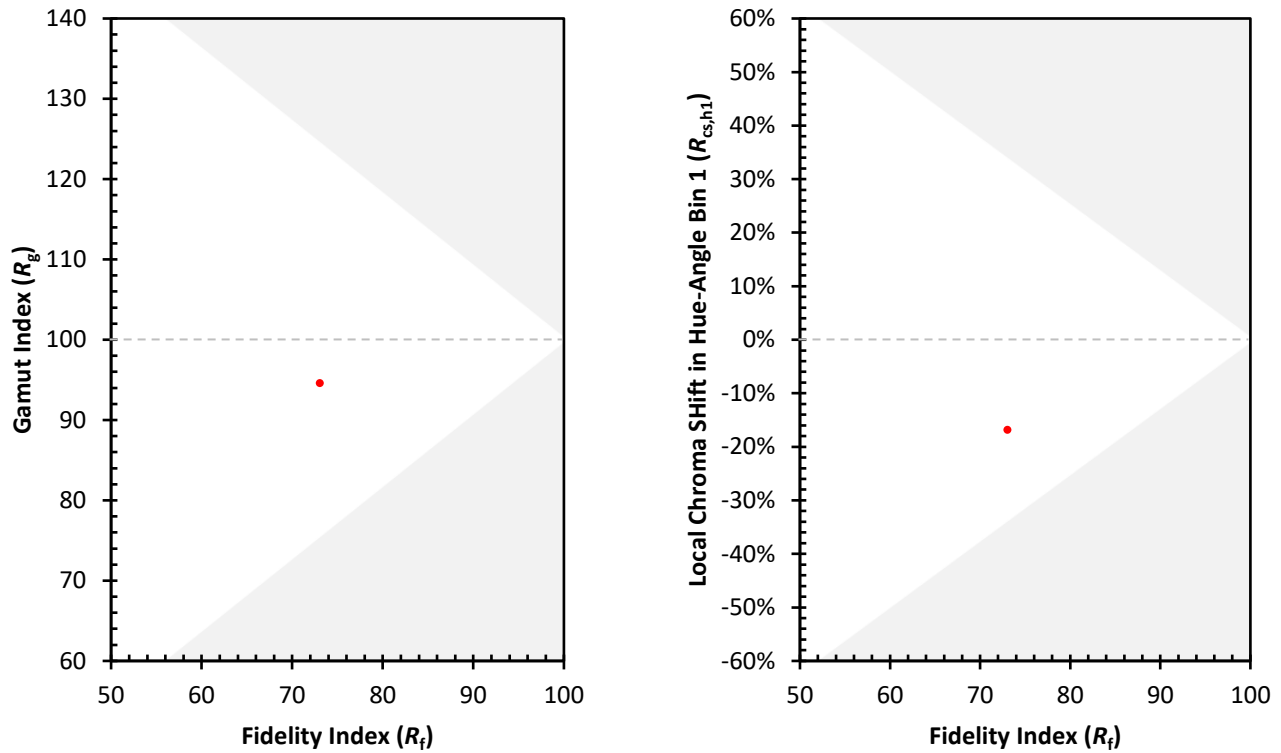
CES01 = 85	CES26 = 60	CES51 = 89	CES76 = 46
CES02 = 59	CES27 = 86	CES52 = 88	CES77 = 65
CES03 = 30	CES28 = 78	CES53 = 76	CES78 = 49
CES04 = 69	CES29 = 62	CES54 = 83	CES79 = 78
CES05 = 46	CES30 = 79	CES55 = 82	CES80 = 74
CES06 = 50	CES31 = 66	CES56 = 71	CES81 = 77
CES07 = 39	CES32 = 58	CES57 = 70	CES82 = 89
CES08 = 38	CES33 = 74	CES58 = 71	CES83 = 87
CES09 = 29	CES34 = 66	CES59 = 86	CES84 = 86
CES10 = 72	CES35 = 81	CES60 = 90	CES85 = 79
CES11 = 56	CES36 = 94	CES61 = 84	CES86 = 76
CES12 = 61	CES37 = 75	CES62 = 84	CES87 = 76
CES13 = 41	CES38 = 88	CES63 = 72	CES88 = 79
CES14 = 74	CES39 = 95	CES64 = 66	CES89 = 73
CES15 = 70	CES40 = 88	CES65 = 61	CES90 = 78
CES16 = 46	CES41 = 92	CES66 = 58	CES91 = 77
CES17 = 49	CES42 = 75	CES67 = 55	CES92 = 63
CES18 = 55	CES43 = 74	CES68 = 65	CES93 = 77
CES19 = 71	CES44 = 99	CES69 = 74	CES94 = 56
CES20 = 64	CES45 = 83	CES70 = 55	CES95 = 67
CES21 = 85	CES46 = 82	CES71 = 47	CES96 = 76
CES22 = 77	CES47 = 84	CES72 = 82	CES97 = 83
CES23 = 91	CES48 = 76	CES73 = 44	CES98 = 73
CES24 = 90	CES49 = 80	CES74 = 92	CES99 = 62
CES25 = 71	CES50 = 88	CES75 = 47	



Color Rendition by Hue-Angle Bin



Measure Comparisons



(END OF REPORT)