

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: P879651

Luminaire Tested: **EMM2-HTN-VA8-727-U-WQ**

Issue Date: 10/01/2024



Test Information

Test Method: LM-79-08
Report Number: P879651
Test Lab: INNOVATION CENTER(G3)
Issue Date: 10/01/2024
Manufacturer: COOPER LIGHTING SOLUTIONS (FORMERLY EATON)
Product Line: INVUE
Catalog Number: EMM2-HTN-VA8-727-U-WQ
Description: EPIC MODERN TALL HOUSING 8W 70CRI 2700K WAVESTREAM FIXTURE w/ TYPE
V WIDE DISTRIBUTION OPTIC
Light Source: (1) 2700K CCT, 70 CRI LEDS
Ballast/Driver: ELECTRONIC DRIVER

Summary

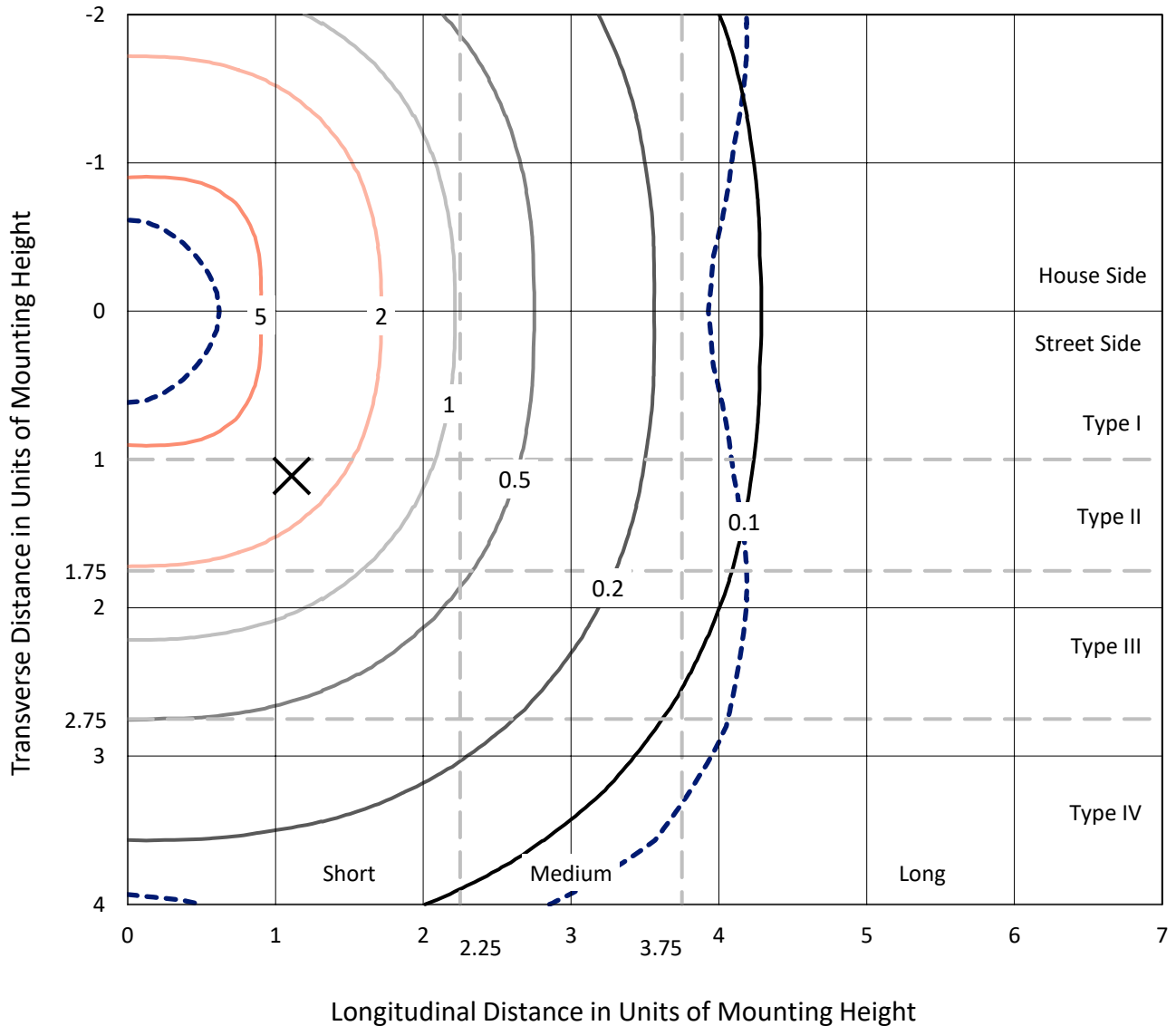
Lumens per Lamp: N/A
Luminaire Lumens: 15562 lumens
Efficiency: N/A
Efficacy: 99.8 lumens/watt
Luminous Opening: Circular (Dia: 1.12' x H: 0')
IES Classification: Type V - Short
BUG Rating: B4 - U0 - G3

Input Watts (W): 156
Input Voltage (V): 120
Input Current (Ain): NR
Voltage Rise (V): NR
Power Factor: 0.995
Total Harmonic Distortion (THDi): 6.6%
Frequency (hertz): 60
Stabilization Time: NR
Operation Time: NR
Ambient Temperature (°C): NR
Test Distance: 24 FT

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Iso-Footcandle Lines of Horizontal Illumination

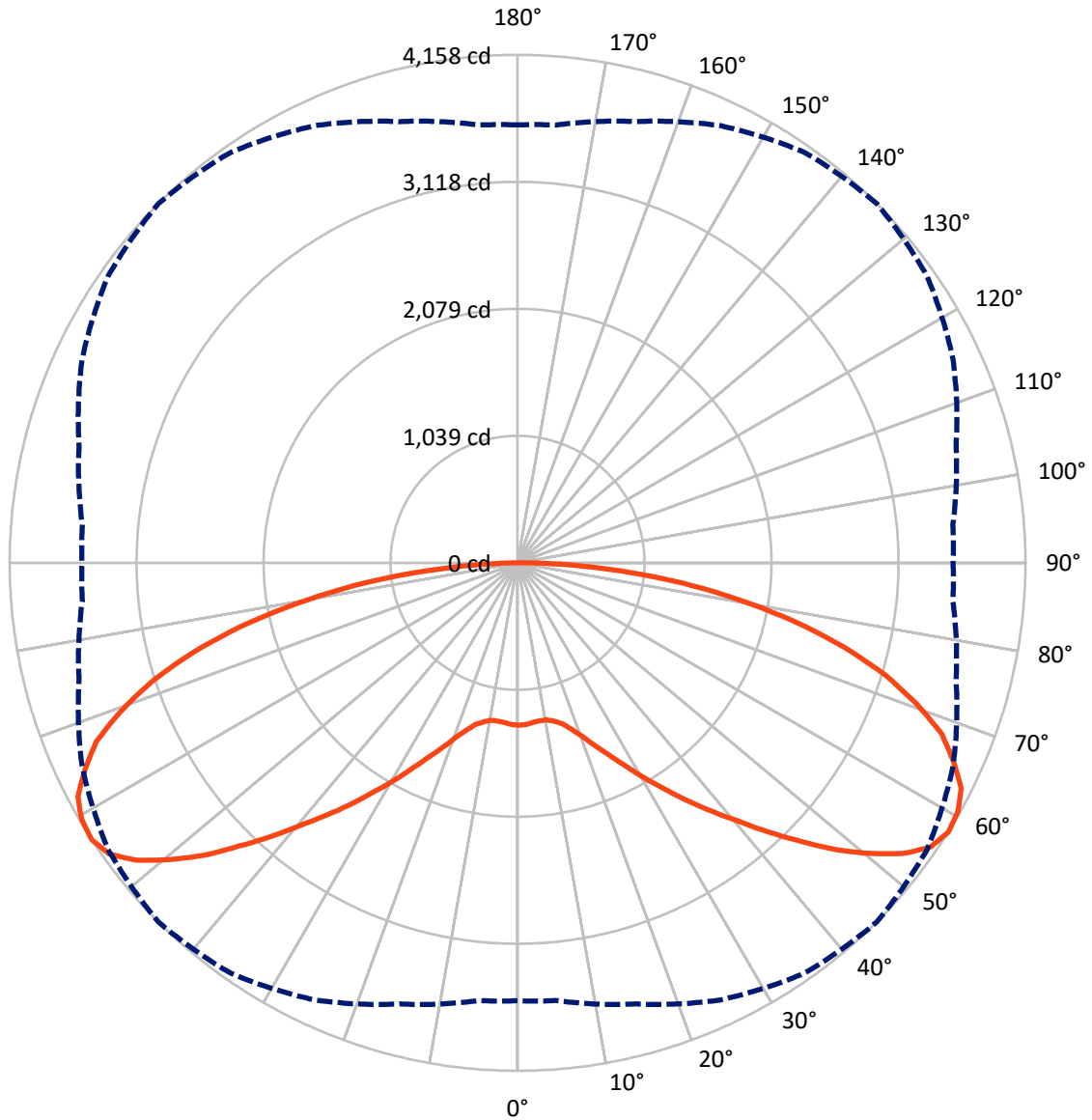
✕ Max cd
 - - - 1/2 Max cd



Based on 15 foot mounting height. Maximum calculated value = 5.9 fc
 Type V - Short - N/A

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Luminous Intensity Polar Plot



— Vertical Plane Through 45-Deg Lateral - - - Horizontal Cone Through 57.5-Deg Vertical

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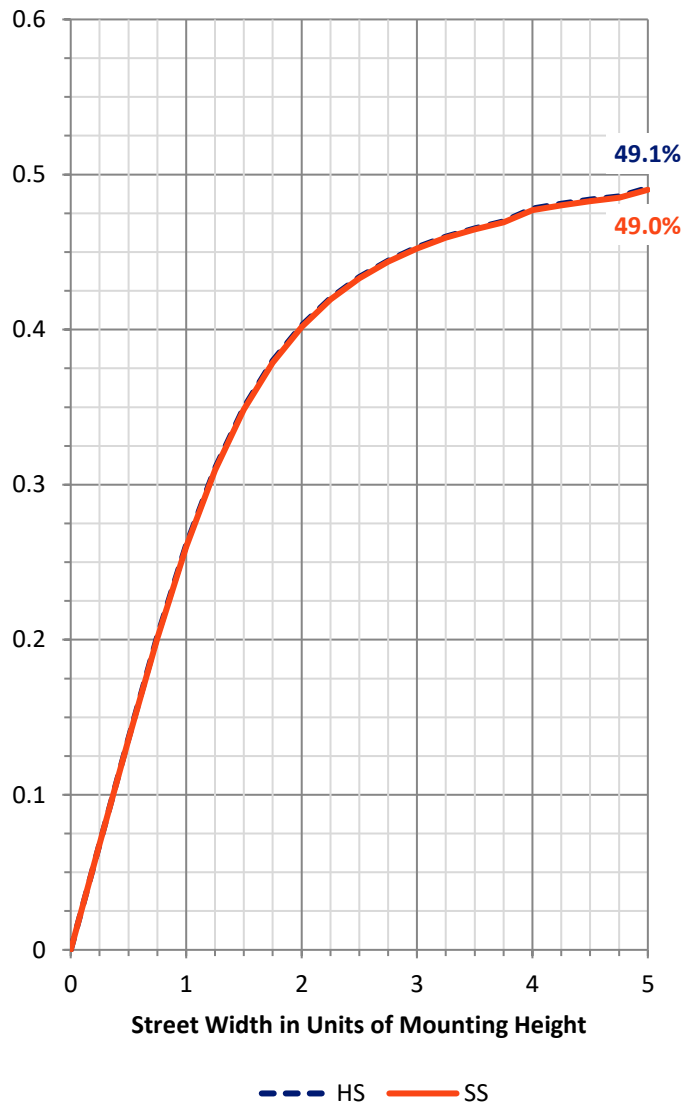
FLUX DISTRIBUTION:

		Downward	Upward	Total
House Side	Lumens	7781.0	0.0	7781.0
	% Fixture	50.0	0.0	50.0
Street Side	Lumens	7781.0	0.0	7781.0
	% Fixture	50.0	0.0	50.0
Total	Lumens	15562.0	0.0	15562.0
	% Fixture	100.0	0.0	100.0

Coefficient of Utilization

ZONAL LUMENS:

Zone	Lumens	% Fixture
0°-10°	125.1	0.8
10°-20°	393.4	2.5
20°-30°	808.6	5.2
30°-40°	1475.5	9.5
40°-50°	2419.6	15.5
50°-60°	3390.5	21.8
60°-70°	3546.8	22.8
70°-80°	2591.4	16.7
80°-90°	811.2	5.2
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°	15562.0	100.0
0°-180°	15562.0	100.0

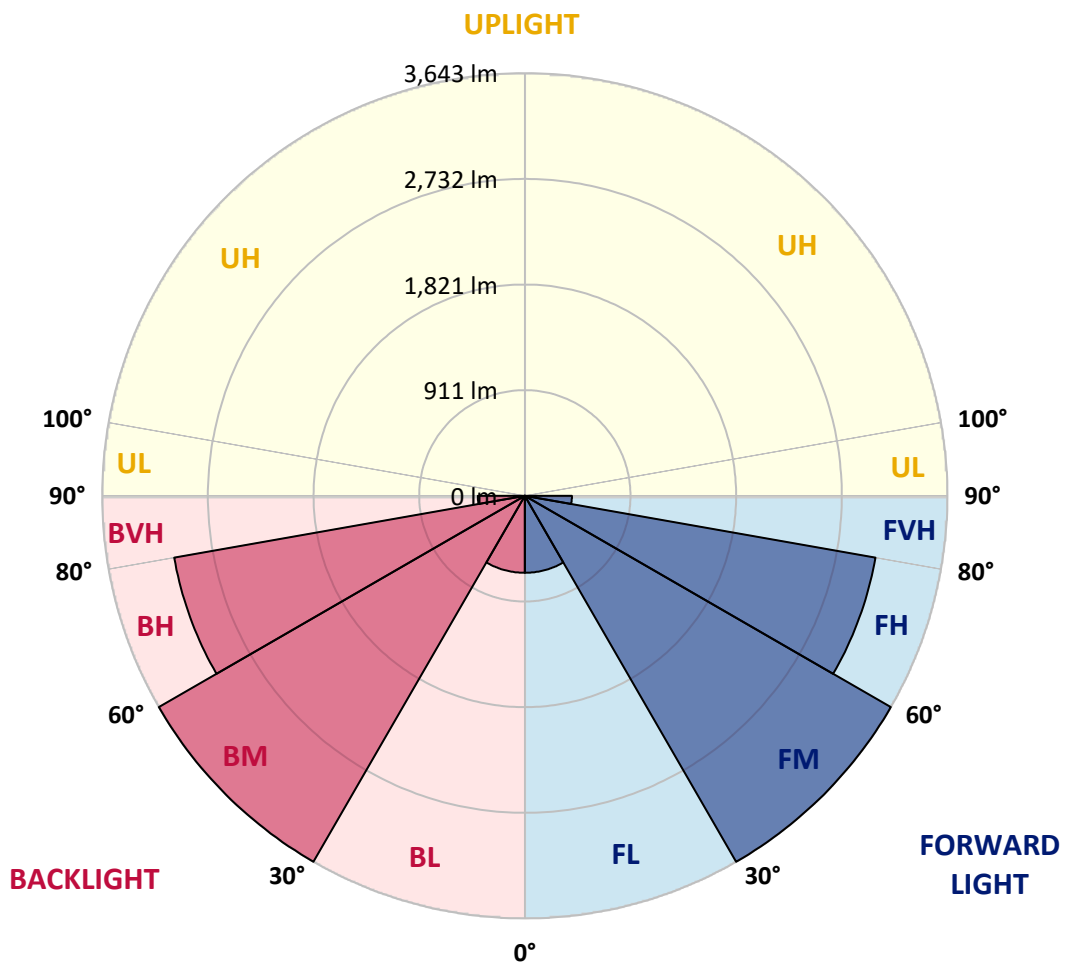


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 CATALOG NUMBER: EMM2-HTN-VA8-727-U-WQ

LUMINAIRE CLASSIFICATION SYSTEM LUMEN TABLE AND BUG RATING:

Zone	Lumens	% Fixture	Zone Rating/Lumen Limit		
			B	U	G
FL (0°-30°)	663.6	4.3			
FM (30°-60°)	3642.7	23.4			
FH (60°-80°)	3069.1	19.7			G2/5000
FVH (80°-90°)	405.6	2.6			G3/500
BL (0°-30°)	663.6	4.3	B2/1000		
BM (30°-60°)	3642.7	23.4	B3/5000		
BH (60°-80°)	3069.1	19.7	B4/5000		G2/5000
BVH (80°-90°)	405.6	2.6			G3/500
UL (90°-100°)	0.0	0.0		U0/0	
UH (100°-180°)	0.0	0.0		U0/0	

BUG Rating: B4-U0-G3
 Type V Short





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CANDELA DISTRIBUTION (FULL):

	0°	5°	15°	25°	35°	45°	55°	65°	75°	85°	90°
0°	1328.7	1328.7	1328.7	1328.7	1328.7	1328.7	1328.7	1328.7	1328.7	1328.7	1328.7
2.5°	1323.8	1325.8	1324.8	1324.8	1323.8	1324.8	1326.7	1327.7	1326.7	1327.7	1326.7
5°	1315.0	1315.0	1314.1	1313.1	1313.1	1313.1	1313.1	1313.1	1314.1	1314.1	1315.0
7.5°	1304.3	1304.3	1304.3	1306.3	1305.3	1306.3	1306.3	1305.3	1304.3	1304.3	1305.3
10°	1306.3	1305.3	1304.3	1306.3	1305.3	1306.3	1306.3	1304.3	1305.3	1306.3	1307.2
12.5°	1322.8	1320.9	1323.8	1326.7	1328.7	1330.6	1329.7	1328.7	1325.8	1322.8	1322.8
15°	1358.9	1357.0	1359.9	1363.8	1364.8	1365.7	1368.7	1364.8	1363.8	1358.9	1357.9
17.5°	1410.6	1409.6	1415.4	1423.2	1427.1	1432.0	1427.1	1423.2	1412.5	1410.6	1413.5
20°	1484.7	1481.7	1493.4	1506.1	1510.0	1515.9	1512.0	1504.2	1493.4	1481.7	1481.7
22.5°	1579.2	1586.0	1591.9	1601.6	1617.2	1627.0	1614.3	1600.7	1585.1	1578.2	1573.4
25°	1702.0	1701.1	1706.9	1726.4	1736.2	1743.0	1741.0	1722.5	1708.9	1699.1	1698.1
27.5°	1820.0	1831.7	1843.4	1856.1	1880.4	1883.4	1880.4	1858.0	1836.6	1828.8	1825.8
30°	1976.9	1975.0	1985.7	2015.9	2040.3	2042.3	2034.5	2007.2	1982.8	1968.2	1970.1
32.5°	2130.0	2114.4	2142.7	2163.1	2183.6	2205.1	2184.6	2163.1	2142.7	2111.5	2121.2
35°	2269.4	2282.1	2297.7	2339.6	2381.5	2390.3	2376.6	2332.8	2292.8	2278.2	2261.6
37.5°	2440.0	2440.0	2466.3	2527.7	2565.7	2579.4	2559.9	2516.0	2460.5	2439.0	2431.2
40°	2611.6	2611.6	2651.5	2703.2	2759.7	2779.2	2757.8	2700.3	2654.4	2598.9	2607.7
42.5°	2778.2	2791.9	2844.5	2907.9	2986.9	3013.2	2983.0	2905.9	2839.7	2787.0	2779.2
45°	2962.5	2983.9	3041.4	3145.8	3213.0	3251.0	3209.1	3142.8	3025.9	2975.2	2947.9
47.5°	3163.3	3177.9	3260.8	3360.2	3469.4	3509.4	3459.6	3351.4	3252.0	3162.3	3158.4
50°	3337.8	3334.9	3441.1	3578.6	3702.4	3740.4	3700.4	3583.5	3421.6	3322.2	3331.9
52.5°	3468.4	3485.0	3597.1	3766.7	3898.3	3953.9	3888.6	3748.2	3579.6	3476.2	3445.0
55°	3553.2	3580.5	3711.2	3894.4	4044.5	4104.0	4039.7	3877.8	3693.6	3560.1	3541.5
57.5°	3584.4	3596.1	3738.4	3946.1	4099.1	4157.6	4091.3	3933.4	3716.0	3576.6	3564.9
60°	3536.7	3548.4	3702.4	3914.9	4090.4	4140.1	4087.4	3902.2	3680.9	3538.6	3519.1
62.5°	3419.7	3451.8	3622.4	3833.0	4033.8	4075.7	4021.1	3818.4	3613.7	3442.1	3413.8
65°	3279.3	3313.4	3458.7	3693.6	3875.9	3920.7	3877.8	3682.9	3459.6	3294.9	3267.6
67.5°	3083.4	3089.2	3259.8	3497.7	3690.7	3745.3	3671.2	3493.8	3251.0	3095.1	3073.6
70°	2838.7	2842.6	3023.9	3244.2	3421.6	3466.5	3417.7	3228.6	3011.2	2841.6	2827.0
72.5°	2524.8	2560.9	2711.0	2929.3	3095.1	3147.7	3084.3	2923.5	2722.7	2555.0	2521.9
75°	2191.4	2213.8	2344.4	2556.0	2698.3	2763.6	2712.0	2556.0	2344.4	2206.0	2176.8
77.5°	1801.5	1831.7	1959.4	2137.8	2255.7	2325.9	2269.4	2131.0	1959.4	1832.7	1831.7
80°	1423.2	1415.4	1531.4	1685.5	1802.4	1843.4	1808.3	1673.8	1519.7	1421.3	1407.6
82.5°	987.5	985.5	1111.3	1214.6	1313.1	1359.9	1306.3	1219.5	1100.6	1012.8	984.6
85°	561.5	574.2	657.0	721.4	805.2	833.5	815.0	733.1	626.8	549.8	544.9
87.5°	195.0	212.5	228.1	274.9	329.5	353.9	327.5	314.9	279.8	242.7	244.7
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: SP1-2407-176-12

Test Date: 10/23/2024

Luminaire Tested: MEM2-HTN-VA-130-727-U-RW

Data in this report applies to families of products including MEM2-HTN-VA-130-727-U-RW

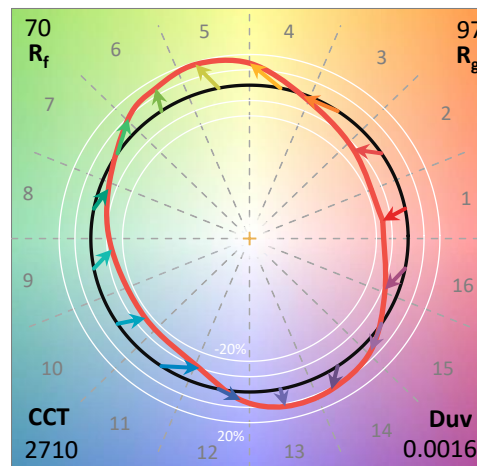
Test Information

Test Method: LM-79-2019
 Report Number: SP1-2407-176-12
 Test Lab: COOPER LIGHTING SOLUTIONS
 Photometer: SP1 - 76IN SPHERE
 Measurement Geometry: 4π
 Issue Date: 10/24/2024
 Manufacturer: COOPER LIGHTING SOLUTIONS
 Product Line: Streetworks
 Catalog Number: **MEM2-HTN-VA-130-727-U-RW**
 Description: EPIC MODERN VISUAL COMFORT 130W WAVESTREAM RECTANGULAR WIDE

Spectral Parameters

CCT (K): 2710
 CIE u': 0.2616
 CIE v': 0.5295
 Duv: 0.0016
 CIE x: 0.4619
 CIE y: 0.4154
 CIE z: 0.1227
 Peak Wavelength (nm): 601
 Dominant Wavelength (nm): 583
 Purity: 63.3407
 Rf: 70.4
 Rg: 96.7

CRI (Ra):	70.4		
R1:	67.3	R9:	-24.6
R2:	79.1	R10:	51.3
R3:	89.5	R11:	61.0
R4:	67.6	R12:	41.2
R5:	64.7	R13:	68.7
R6:	69.6	R14:	93.5
R7:	78.9	R15:	60.6
R8:	46.2		



Test Conditions

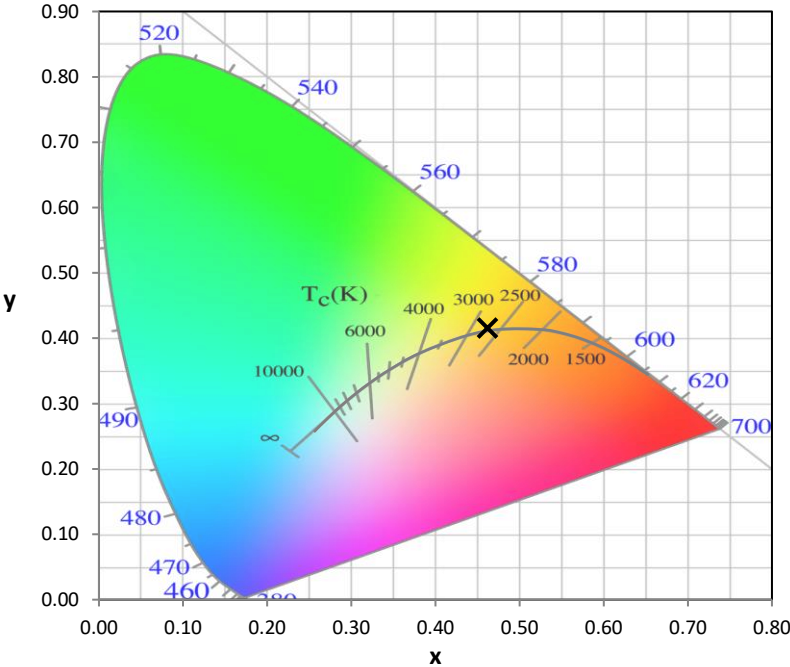
Stabilization Time: 47M
 Operation Time: 1H 47M
 Sphere Temperature (°C): 24.4

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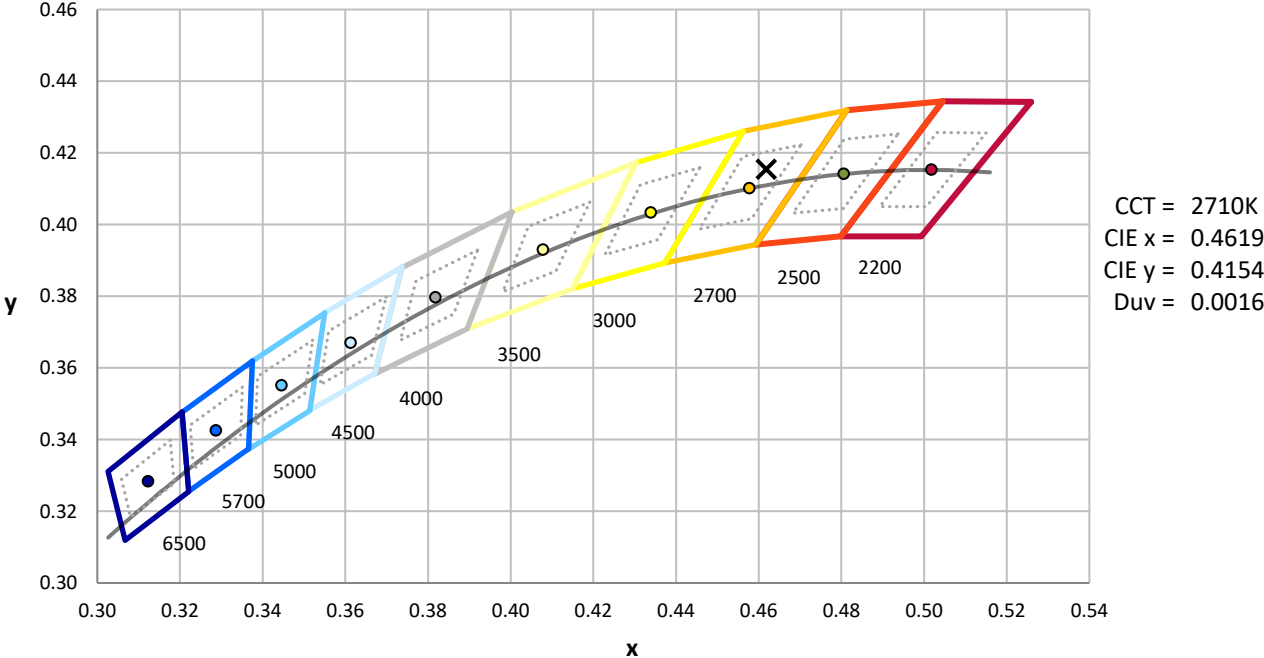
Measurement and Test Equipment			
Instrument	Identification Number	Calibration Date	Calibration Due Date
Photometer	IN0058	6/18/2024	12/18/2024
Power Meter	INXT2011004	2/8/2024	2/8/2025
AC Power Source	IN0063	10/22/2024	10/22/2025
DC Power Source	IN0208	10/22/2024	10/22/2025
Sphere Thermometer	IN0085	10/22/2024	10/22/2025
Room Thermometer	IN0046	10/22/2024	10/22/2025

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CIE 1931 Chromaticity Diagram



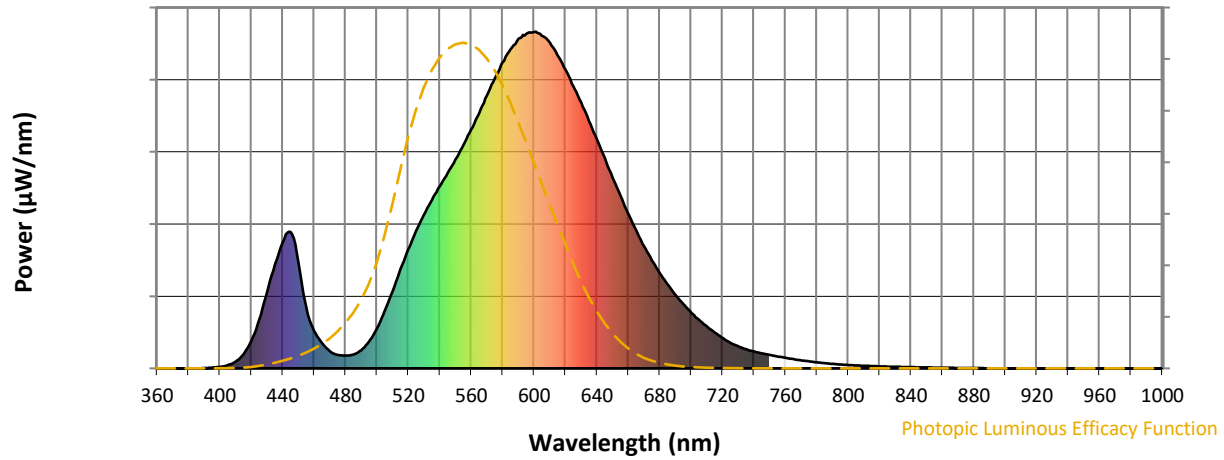
CIE 1931 Chromaticity Diagram with 2017 ANSI 7-Step and 4-Step Quadrangles



Point lies inside the ANSI 2700K 4-step quadrangle

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Photopic Flux vs. Wavelength

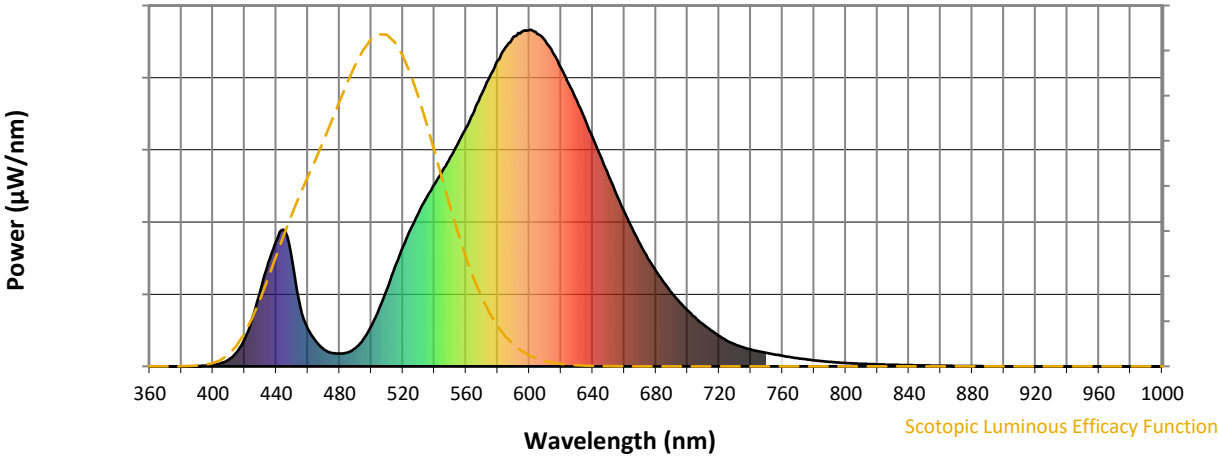


Photopic Lumens: NR

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	54	NR	620	887	NR	750	40	NR	880	1	NR
365	0	NR	495	80	NR	625	838	NR	755	35	NR	885	1	NR
370	0	NR	500	119	NR	630	790	NR	760	31	NR	890	0	NR
375	0	NR	505	171	NR	635	735	NR	765	27	NR	895	0	NR
380	0	NR	510	230	NR	640	681	NR	770	24	NR	900	0	NR
385	0	NR	515	295	NR	645	624	NR	775	21	NR	905	0	NR
390	1	NR	520	354	NR	650	567	NR	780	18	NR	910	0	NR
395	2	NR	525	408	NR	655	512	NR	785	15	NR	915	0	NR
400	5	NR	530	457	NR	660	459	NR	790	13	NR	920	0	NR
405	9	NR	535	500	NR	665	410	NR	795	12	NR	925	0	NR
410	20	NR	540	541	NR	670	363	NR	800	10	NR	930	0	NR
415	42	NR	545	581	NR	675	320	NR	805	9	NR	935	0	NR
420	81	NR	550	620	NR	680	283	NR	810	8	NR	940	0	NR
425	145	NR	555	664	NR	685	249	NR	815	7	NR	945	0	NR
430	225	NR	560	709	NR	690	219	NR	820	6	NR	950	0	NR
435	309	NR	565	758	NR	695	191	NR	825	5	NR	955	0	NR
440	373	NR	570	810	NR	700	166	NR	830	5	NR	960	0	NR
445	405	NR	575	861	NR	705	144	NR	835	4	NR	965	0	NR
450	316	NR	580	908	NR	710	124	NR	840	4	NR	970	0	NR
455	180	NR	585	948	NR	715	106	NR	845	3	NR	975	0	NR
460	111	NR	590	978	NR	720	90	NR	850	3	NR	980	0	NR
465	75	NR	595	993	NR	725	76	NR	855	2	NR	985	0	NR
470	50	NR	600	999	NR	730	65	NR	860	2	NR	990	0	NR
475	40	NR	605	988	NR	735	57	NR	865	2	NR	995	0	NR
480	38	NR	610	967	NR	740	50	NR	870	1	NR	1000	0	NR
485	41	NR	615	930	NR	745	45	NR	875	1	NR			

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Scotopic Flux vs. Wavelength



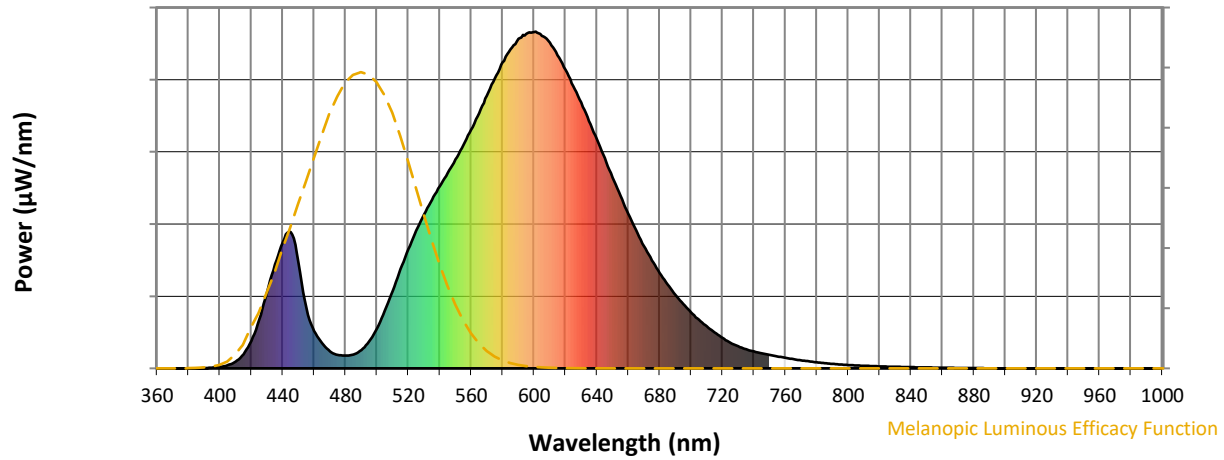
Scotopic Lumens: NR

S/P: 1.02

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	54	NR	620	887	NR	750	40	NR	880	1	NR
365	0	NR	495	80	NR	625	838	NR	755	35	NR	885	1	NR
370	0	NR	500	119	NR	630	790	NR	760	31	NR	890	0	NR
375	0	NR	505	171	NR	635	735	NR	765	27	NR	895	0	NR
380	0	NR	510	230	NR	640	681	NR	770	24	NR	900	0	NR
385	0	NR	515	295	NR	645	624	NR	775	21	NR	905	0	NR
390	1	NR	520	354	NR	650	567	NR	780	18	NR	910	0	NR
395	2	NR	525	408	NR	655	512	NR	785	15	NR	915	0	NR
400	5	NR	530	457	NR	660	459	NR	790	13	NR	920	0	NR
405	9	NR	535	500	NR	665	410	NR	795	12	NR	925	0	NR
410	20	NR	540	541	NR	670	363	NR	800	10	NR	930	0	NR
415	42	NR	545	581	NR	675	320	NR	805	9	NR	935	0	NR
420	81	NR	550	620	NR	680	283	NR	810	8	NR	940	0	NR
425	145	NR	555	664	NR	685	249	NR	815	7	NR	945	0	NR
430	225	NR	560	709	NR	690	219	NR	820	6	NR	950	0	NR
435	309	NR	565	758	NR	695	191	NR	825	5	NR	955	0	NR
440	373	NR	570	810	NR	700	166	NR	830	5	NR	960	0	NR
445	405	NR	575	861	NR	705	144	NR	835	4	NR	965	0	NR
450	316	NR	580	908	NR	710	124	NR	840	4	NR	970	0	NR
455	180	NR	585	948	NR	715	106	NR	845	3	NR	975	0	NR
460	111	NR	590	978	NR	720	90	NR	850	3	NR	980	0	NR
465	75	NR	595	993	NR	725	76	NR	855	2	NR	985	0	NR
470	50	NR	600	999	NR	730	65	NR	860	2	NR	990	0	NR
475	40	NR	605	988	NR	735	57	NR	865	2	NR	995	0	NR
480	38	NR	610	967	NR	740	50	NR	870	1	NR	1000	0	NR
485	41	NR	615	930	NR	745	45	NR	875	1	NR			

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Melanopic Flux vs. Wavelength



Melanopic Lumens: NR

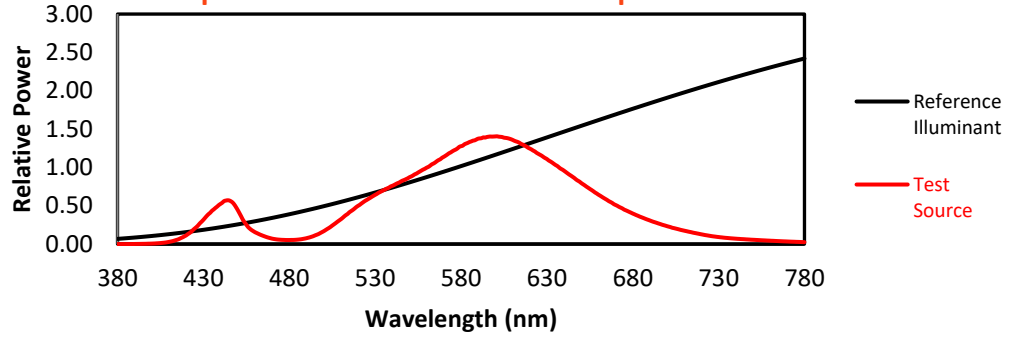
M/P: 1.71

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	54	NR	620	887	NR	750	40	NR	880	1	NR
365	0	NR	495	80	NR	625	838	NR	755	35	NR	885	1	NR
370	0	NR	500	119	NR	630	790	NR	760	31	NR	890	0	NR
375	0	NR	505	171	NR	635	735	NR	765	27	NR	895	0	NR
380	0	NR	510	230	NR	640	681	NR	770	24	NR	900	0	NR
385	0	NR	515	295	NR	645	624	NR	775	21	NR	905	0	NR
390	1	NR	520	354	NR	650	567	NR	780	18	NR	910	0	NR
395	2	NR	525	408	NR	655	512	NR	785	15	NR	915	0	NR
400	5	NR	530	457	NR	660	459	NR	790	13	NR	920	0	NR
405	9	NR	535	500	NR	665	410	NR	795	12	NR	925	0	NR
410	20	NR	540	541	NR	670	363	NR	800	10	NR	930	0	NR
415	42	NR	545	581	NR	675	320	NR	805	9	NR	935	0	NR
420	81	NR	550	620	NR	680	283	NR	810	8	NR	940	0	NR
425	145	NR	555	664	NR	685	249	NR	815	7	NR	945	0	NR
430	225	NR	560	709	NR	690	219	NR	820	6	NR	950	0	NR
435	309	NR	565	758	NR	695	191	NR	825	5	NR	955	0	NR
440	373	NR	570	810	NR	700	166	NR	830	5	NR	960	0	NR
445	405	NR	575	861	NR	705	144	NR	835	4	NR	965	0	NR
450	316	NR	580	908	NR	710	124	NR	840	4	NR	970	0	NR
455	180	NR	585	948	NR	715	106	NR	845	3	NR	975	0	NR
460	111	NR	590	978	NR	720	90	NR	850	3	NR	980	0	NR
465	75	NR	595	993	NR	725	76	NR	855	2	NR	985	0	NR
470	50	NR	600	999	NR	730	65	NR	860	2	NR	990	0	NR
475	40	NR	605	988	NR	735	57	NR	865	2	NR	995	0	NR
480	38	NR	610	967	NR	740	50	NR	870	1	NR	1000	0	NR
485	41	NR	615	930	NR	745	45	NR	875	1	NR			

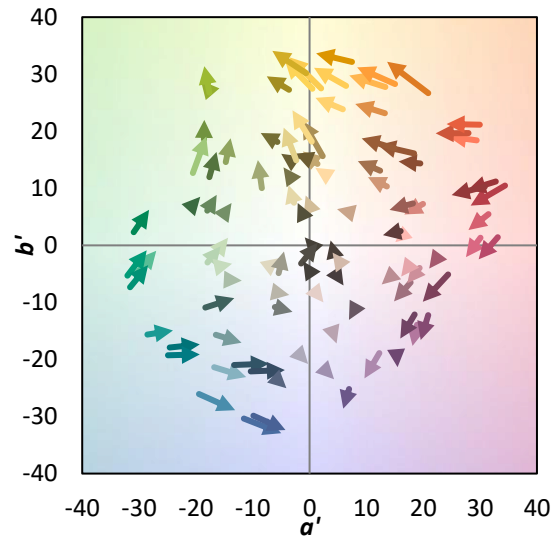
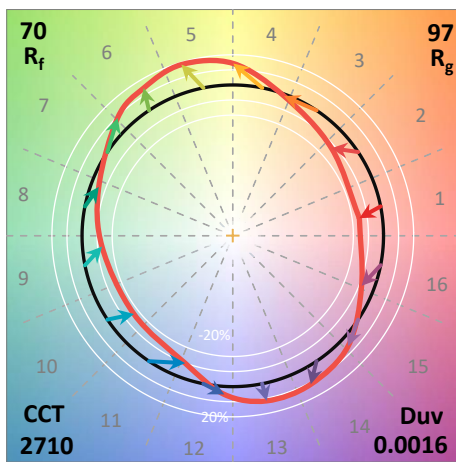
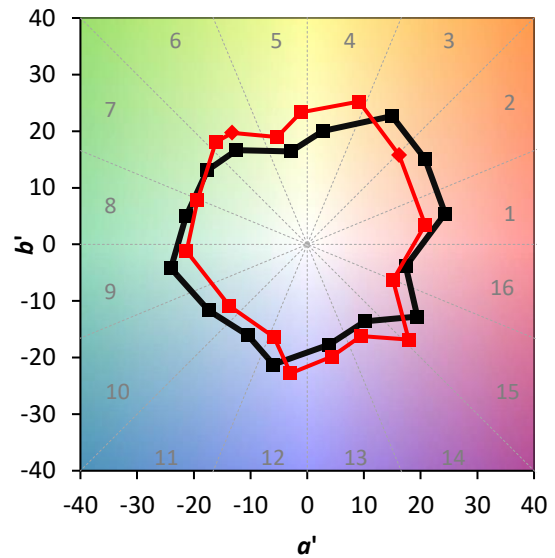
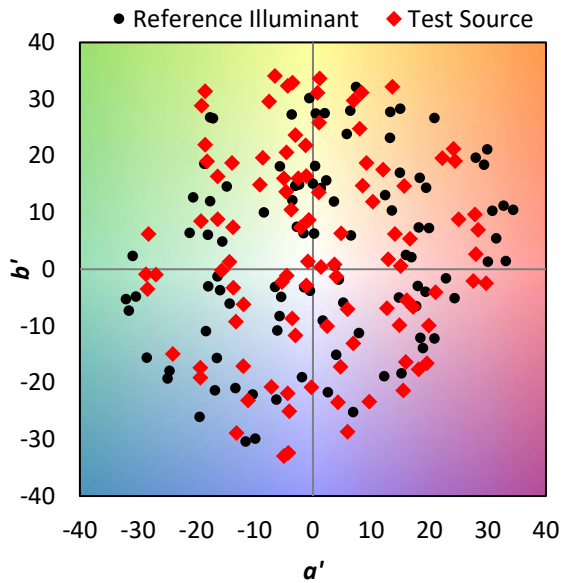
Summary

$R_f = 70.4$
 $R_g = 96.7$
 CIE $R_a = 70.4$
 $R_9 = -24.6$

Spectral Power Distribution Comparison

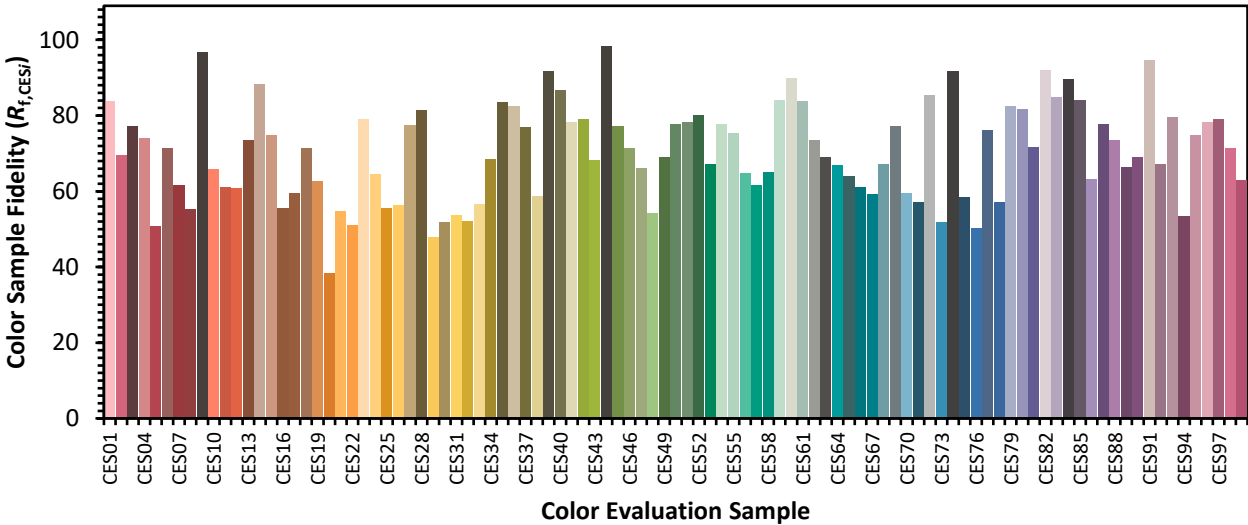


Color Vector Graphics

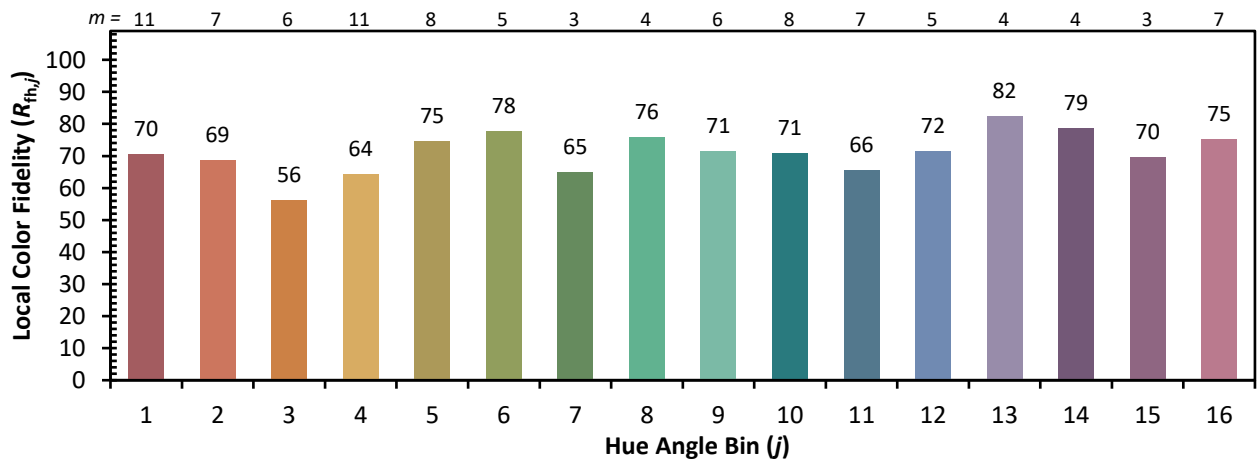
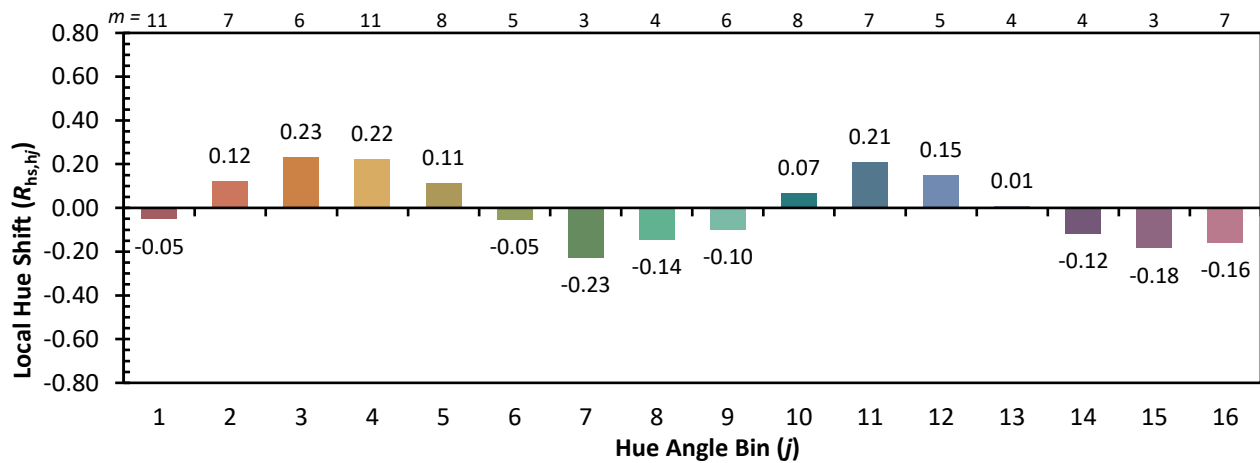
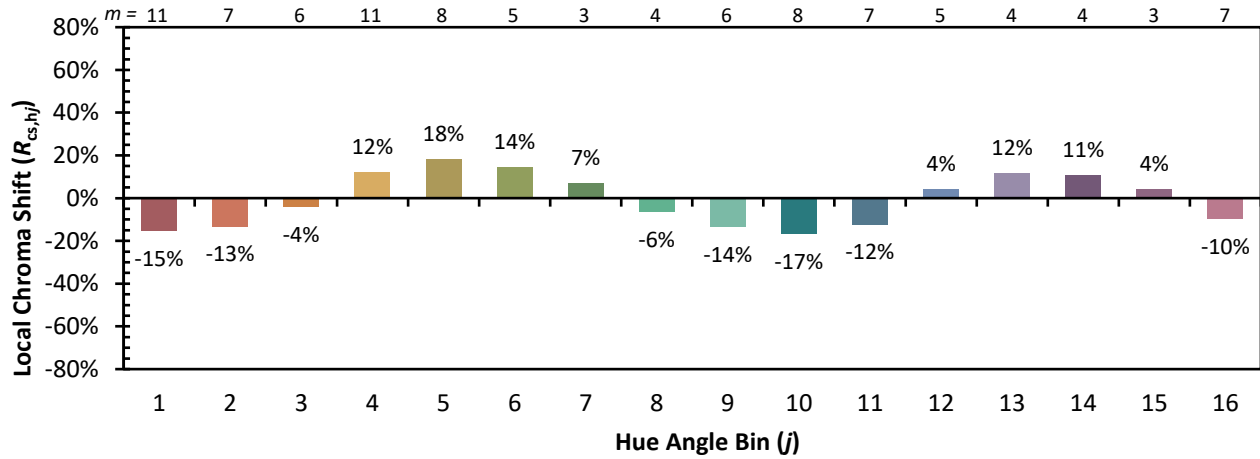


Individual Sample Fidelity Index ($R_{f,i}$)

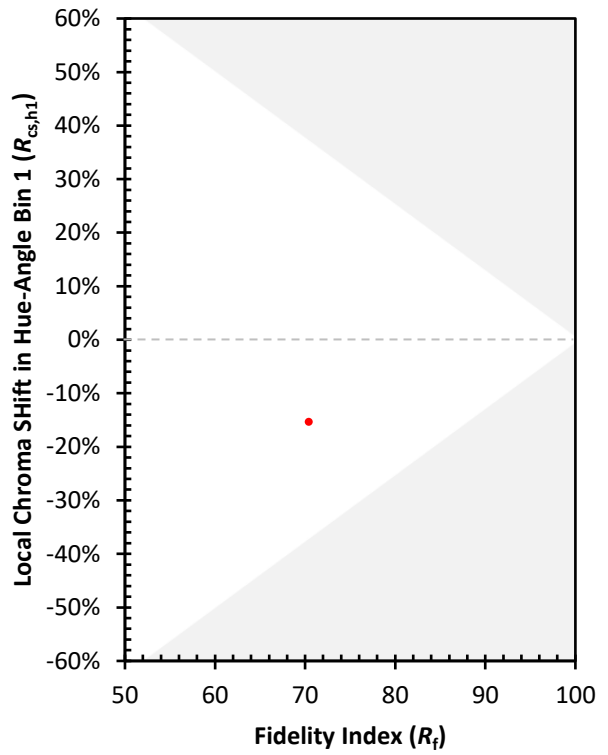
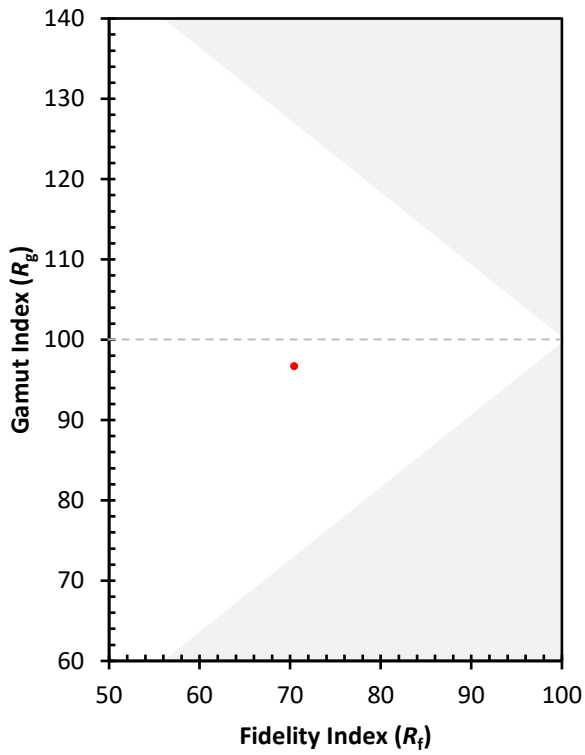
CES01 = 86	CES26 = 56	CES51 = 78	CES76 = 50
CES02 = 63	CES27 = 77	CES52 = 80	CES77 = 76
CES03 = 31	CES28 = 81	CES53 = 67	CES78 = 57
CES04 = 71	CES29 = 48	CES54 = 78	CES79 = 82
CES05 = 50	CES30 = 52	CES55 = 75	CES80 = 82
CES06 = 52	CES31 = 54	CES56 = 65	CES81 = 72
CES07 = 42	CES32 = 52	CES57 = 62	CES82 = 92
CES08 = 41	CES33 = 57	CES58 = 65	CES83 = 85
CES09 = 29	CES34 = 69	CES59 = 84	CES84 = 90
CES10 = 77	CES35 = 84	CES60 = 90	CES85 = 84
CES11 = 60	CES36 = 82	CES61 = 84	CES86 = 63
CES12 = 66	CES37 = 77	CES62 = 73	CES87 = 78
CES13 = 43	CES38 = 59	CES63 = 69	CES88 = 74
CES14 = 74	CES39 = 92	CES64 = 67	CES89 = 66
CES15 = 71	CES40 = 87	CES65 = 64	CES90 = 69
CES16 = 48	CES41 = 78	CES66 = 61	CES91 = 95
CES17 = 51	CES42 = 79	CES67 = 59	CES92 = 67
CES18 = 57	CES43 = 68	CES68 = 67	CES93 = 80
CES19 = 73	CES44 = 98	CES69 = 77	CES94 = 54
CES20 = 67	CES45 = 77	CES70 = 60	CES95 = 75
CES21 = 88	CES46 = 71	CES71 = 57	CES96 = 78
CES22 = 80	CES47 = 66	CES72 = 85	CES97 = 79
CES23 = 92	CES48 = 54	CES73 = 52	CES98 = 71
CES24 = 92	CES49 = 69	CES74 = 92	CES99 = 63
CES25 = 73	CES50 = 78	CES75 = 58	



Color Rendition by Hue-Angle Bin



Measure Comparisons



(END OF REPORT)