

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: P869108

Luminaire Tested: **EMM2-HSN-SA3A-750-U-T5R**

Issue Date: 08/22/2024



**Test Information**

Test Method: LM-79-08  
Report Number: P869108  
Test Lab: INNOVATION CENTER(G3)  
Issue Date: 08/22/2024  
Manufacturer: COOPER LIGHTING SOLUTIONS (FORMERLY EATON)  
Product Line: INVUE  
Catalog Number: EMM2-HSN-SA3A-750-U-T5R  
Description: EPIC MODERN SHORT HOUSING DISCRETE LED ARRAYS 130W 70CRI 5000K  
FIXTURE w/ TYPE V ROUND DISTRIBUTION OPTIC  
Light Source: (30) 5000K CCT, 70 CRI LEDS  
Ballast/Driver: ELECTRONIC DRIVER

**Summary**

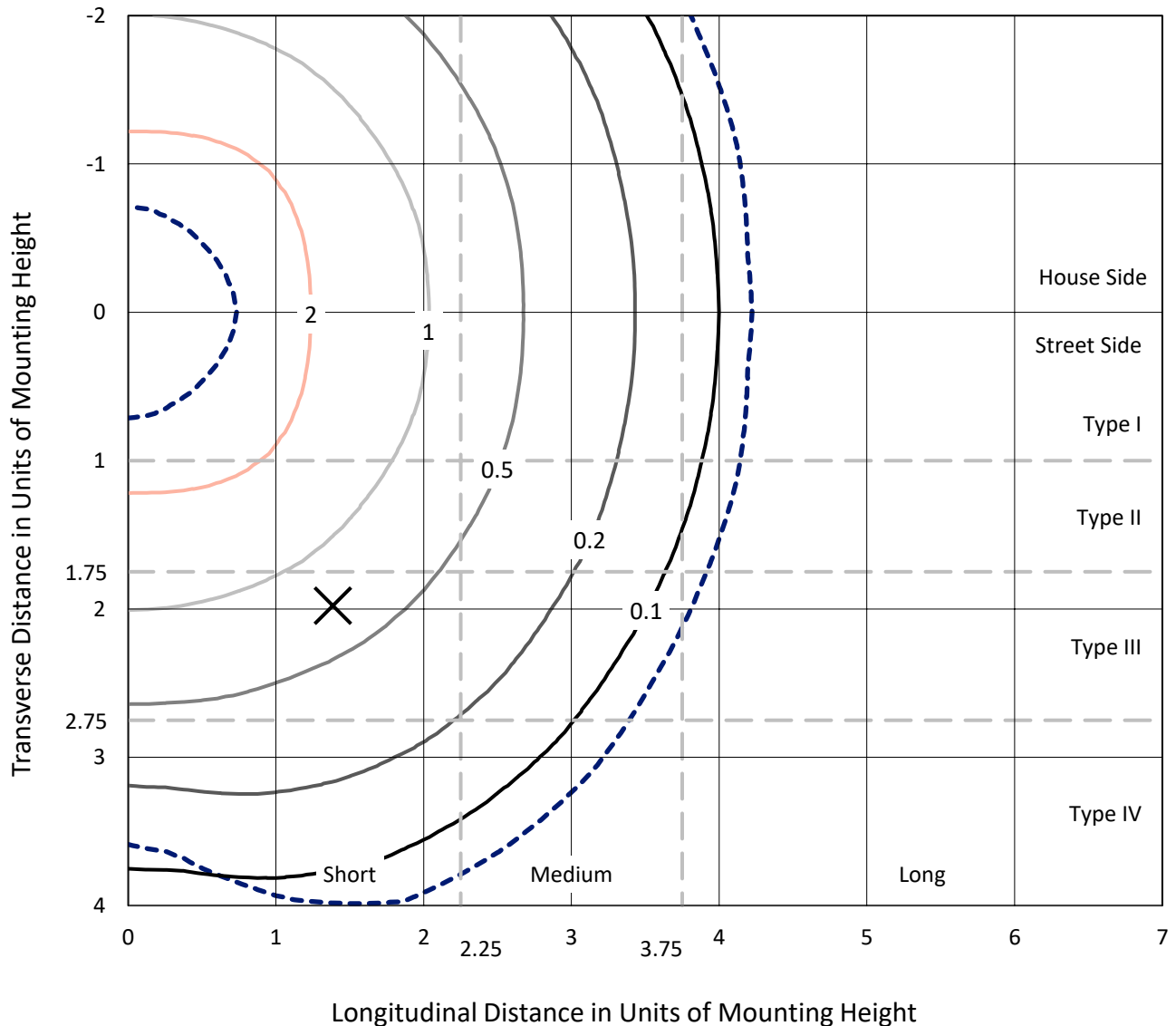
Lumens per Lamp: N/A  
Luminaire Lumens: 17064.2 lumens  
Efficiency: N/A  
Efficacy: 151.0 lumens/watt  
Luminous Opening: Rectangular (W 1' x L: 0.33' x H: 0')  
IES Classification: Type V - Short  
BUG Rating: B4 - U0 - G2

Input Watts (W): 113  
Input Voltage (V): 120  
Input Current (A<sub>in</sub>): NR  
Voltage Rise (V): NR  
Power Factor: 0.99  
Total Harmonic Distortion (THDi): 7.77%  
Frequency (hertz): 60  
Stabilization Time: NR  
Operation Time: NR  
Ambient Temperature (°C): NR  
Test Distance: 24 FT

REPORT NUMBER: P869108  
 CATALOG NUMBER: EMM2-HSN-SA3A-750-U-T5R

### Iso-Footcandle Lines of Horizontal Illumination

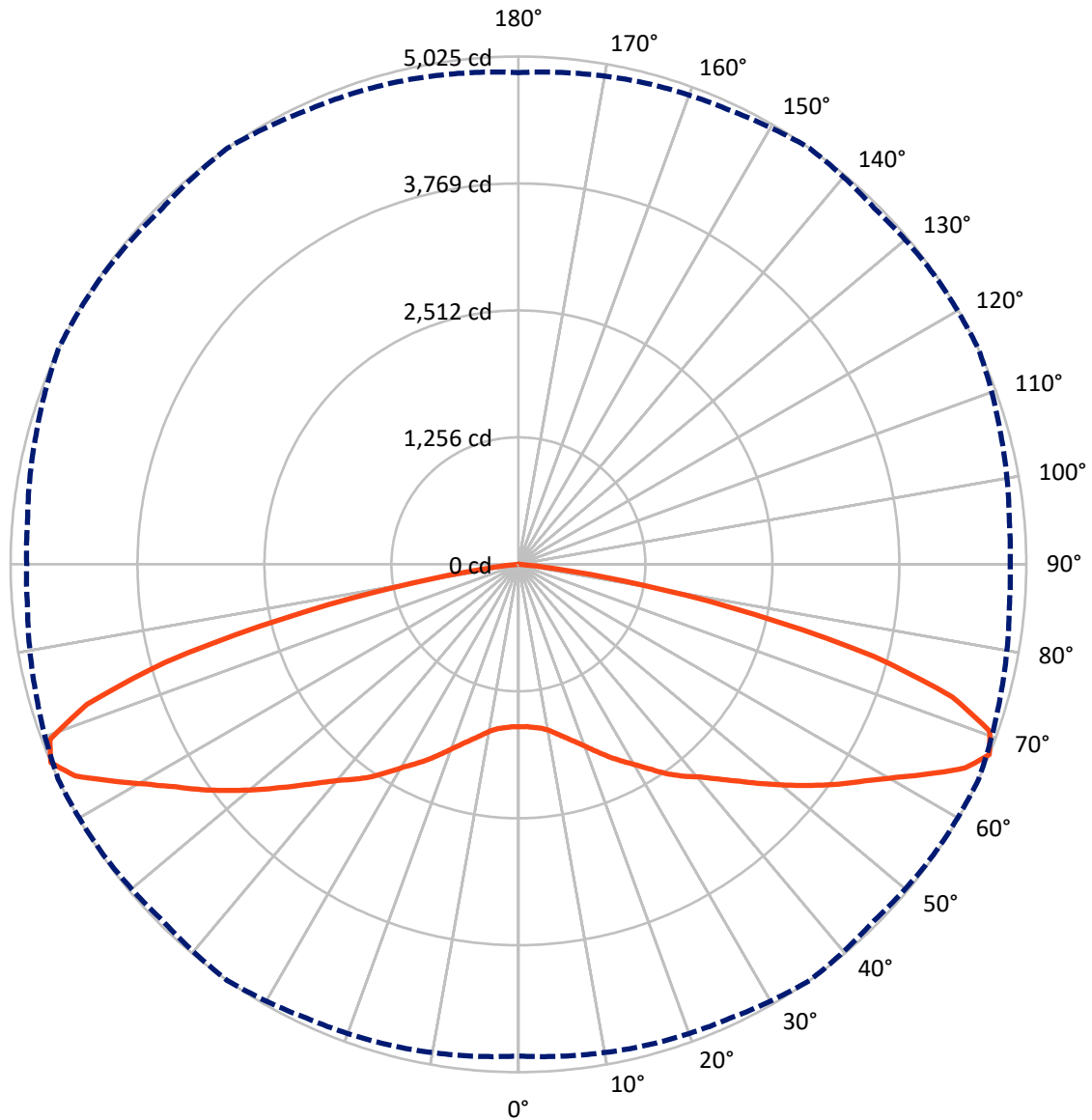
× Max cd  
 - - - 1/2 Max cd



Based on 20 foot mounting height. Maximum calculated value = 4 fc  
 Type V - Short - N/A

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### Luminous Intensity Polar Plot



— Vertical Plane Through 35-Deg Lateral    - - - Horizontal Cone Through 67.5-Deg Vertical

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**FLUX DISTRIBUTION:**

		Downward	Upward	Total
<b>House Side</b>	Lumens	8532.1	0.0	8532.1
	% Fixture	50.0	0.0	50.0
<b>Street Side</b>	Lumens	8532.1	0.0	8532.1
	% Fixture	50.0	0.0	50.0
<b>Total</b>	Lumens	17064.2	0.0	17064.2
	% Fixture	100.0	0.0	100.0

**ZONAL LUMENS:**

Zone	Lumens	% Fixture
0°-10°	156.3	0.9
10°-20°	512.3	3.0
20°-30°	979.1	5.7
30°-40°	1582.3	9.3
40°-50°	2315.9	13.6
50°-60°	3321.0	19.5
60°-70°	4654.6	27.3
70°-80°	3284.3	19.2
80°-90°	258.5	1.5
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°	17064.2	100.0
0°-180°	17064.2	100.0

**Coefficient of Utilization**



REPORT NUMBER: P869108

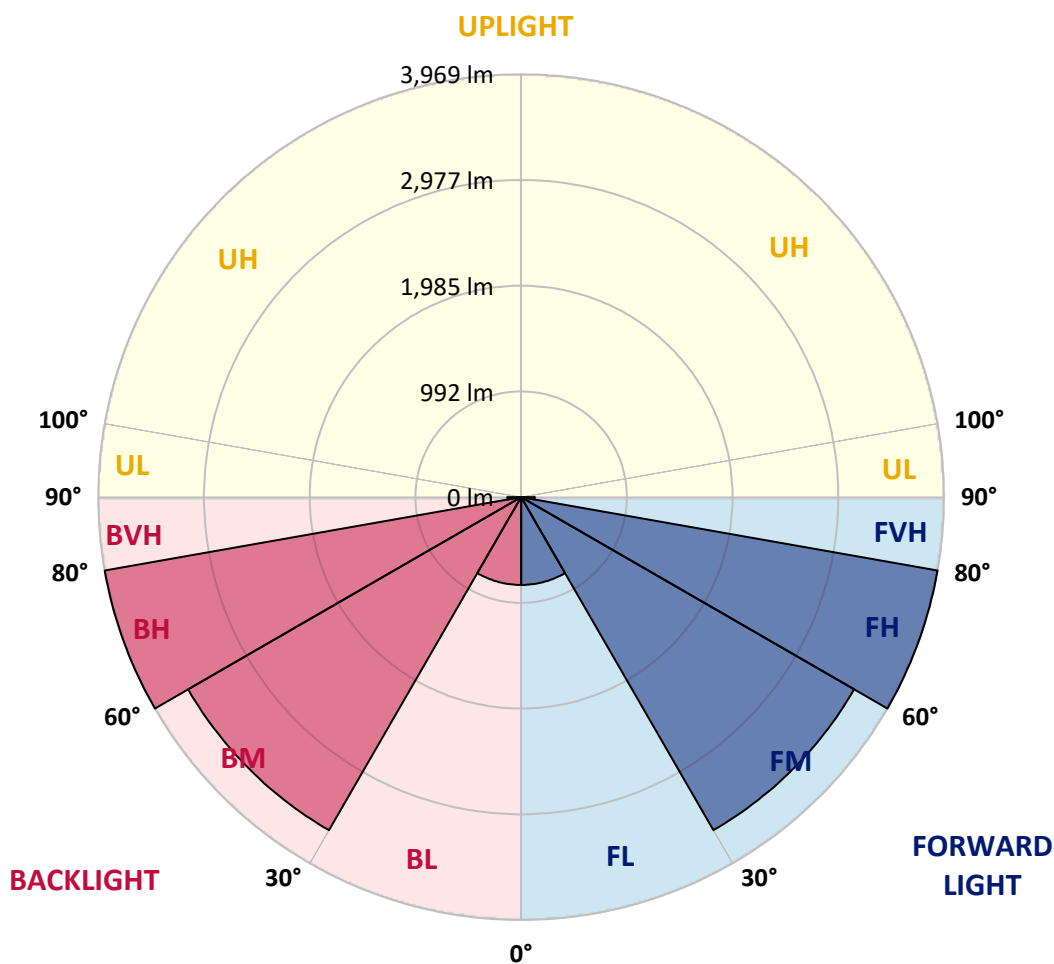
CATALOG NUMBER: EMM2-HSN-SA3A-750-U-T5R

**LUMINAIRE CLASSIFICATION SYSTEM LUMEN TABLE AND BUG RATING:**

Zone	Lumens	% Fixture	Zone Rating/Lumen Limit		
			B	U	G
FL (0°-30°)	823.9	4.8			
FM (30°-60°)	3609.6	21.2			
FH (60°-80°)	3969.4	23.3			G2/5000
FVH (80°-90°)	129.3	0.8			G2/225
BL (0°-30°)	823.9	4.8	B2/1000		
BM (30°-60°)	3609.6	21.2	B3/5000		
BH (60°-80°)	3969.4	23.3	B4/5000		G2/5000
BVH (80°-90°)	129.3	0.8			G2/225
UL (90°-100°)	0.0	0.0		U0/0	
UH (100°-180°)	0.0	0.0		U0/0	

**BUG Rating: B4-U0-G2**

Type V Short





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CATALOG NUMBER: EMM2-HSN-SA3A-750-U-T5R

**CANDELA DISTRIBUTION (FULL):**

	0°	5°	15°	25°	35°	45°	55°	65°	75°	85°	90°
0°	1607.4	1607.4	1607.4	1607.4	1607.4	1607.4	1607.4	1607.4	1607.4	1607.4	1607.4
2.5°	1617.4	1614.1	1610.7	1610.7	1607.4	1610.7	1607.4	1610.7	1607.4	1607.4	1607.4
5°	1627.3	1624.0	1624.0	1624.0	1620.7	1620.7	1620.7	1620.7	1617.4	1614.1	1617.4
7.5°	1637.3	1637.3	1634.0	1640.6	1637.3	1640.6	1640.6	1643.9	1637.3	1634.0	1637.3
10°	1663.9	1663.9	1663.9	1670.5	1670.5	1680.5	1680.5	1683.8	1680.5	1673.8	1673.8
12.5°	1720.3	1717.0	1717.0	1717.0	1723.6	1730.3	1736.9	1736.9	1733.6	1723.6	1723.6
15°	1783.4	1790.1	1783.4	1780.1	1783.4	1790.1	1796.7	1796.7	1793.4	1790.1	1790.1
17.5°	1859.8	1863.1	1856.5	1849.8	1849.8	1859.8	1863.1	1863.1	1859.8	1853.2	1853.2
20°	1926.2	1929.6	1929.6	1926.2	1929.6	1936.2	1939.5	1942.8	1932.9	1922.9	1922.9
22.5°	1982.7	1986.0	1992.7	2005.9	2019.2	2025.9	2022.5	2022.5	2005.9	1996.0	1992.7
25°	2052.4	2062.4	2075.7	2092.3	2115.5	2132.1	2125.5	2112.2	2098.9	2079.0	2075.7
27.5°	2188.6	2188.6	2175.3	2182.0	2208.5	2225.1	2218.5	2208.5	2182.0	2168.7	2165.4
30°	2294.9	2294.9	2294.9	2288.2	2304.8	2324.8	2318.1	2301.5	2288.2	2281.6	2281.6
32.5°	2397.8	2391.2	2401.2	2414.4	2421.1	2427.7	2427.7	2414.4	2391.2	2381.2	2381.2
35°	2494.1	2500.8	2510.7	2530.7	2547.3	2537.3	2520.7	2510.7	2487.5	2467.6	2467.6
37.5°	2587.1	2593.8	2603.7	2633.6	2660.2	2656.9	2636.9	2610.4	2580.5	2563.9	2553.9
40°	2653.6	2656.9	2683.4	2729.9	2766.5	2779.8	2763.2	2726.6	2680.1	2646.9	2650.2
42.5°	2733.3	2739.9	2783.1	2849.5	2902.6	2922.6	2899.3	2849.5	2783.1	2739.9	2739.9
45°	2849.5	2852.8	2909.3	2992.3	3062.0	3095.3	3062.0	2992.3	2906.0	2862.8	2859.5
47.5°	2965.7	2975.7	3038.8	3138.4	3241.4	3281.2	3244.7	3155.0	3052.1	2998.9	2992.3
50°	3098.6	3105.2	3181.6	3317.8	3434.0	3487.1	3440.7	3327.7	3214.8	3148.4	3151.7
52.5°	3228.1	3248.0	3351.0	3493.8	3633.3	3693.1	3626.6	3503.8	3384.2	3321.1	3317.8
55°	3420.7	3444.0	3533.6	3693.1	3839.2	3905.6	3842.5	3706.3	3576.8	3507.1	3493.8
57.5°	3663.2	3676.5	3756.2	3918.9	4041.8	4104.9	4068.3	3942.1	3819.3	3732.9	3716.3
60°	3938.8	3952.1	4015.2	4181.3	4280.9	4327.4	4314.1	4241.0	4158.0	4118.2	4108.2
62.5°	4330.7	4334.0	4367.2	4463.6	4563.2	4583.1	4549.9	4533.3	4559.9	4516.7	4526.7
65°	4779.1	4779.1	4769.1	4782.4	4858.8	4835.5	4812.3	4885.3	4872.0	4799.0	4785.7
67.5°	4865.4	4885.3	4925.2	4955.1	5024.8	4981.6	5011.5	5024.8	4941.8	4875.4	4865.4
70°	4354.0	4377.2	4599.7	4735.9	4948.4	4988.3	4892.0	4842.2	4749.2	4626.3	4593.1
72.5°	2969.1	3085.3	3726.3	4164.7	4490.1	4539.9	4486.8	4423.7	4237.7	4141.4	4075.0
75°	2371.3	2434.4	3005.6	3437.3	3630.0	3626.6	3414.1	3344.3	3198.2	3184.9	3198.2
77.5°	1448.0	1461.3	2022.5	2361.3	2384.5	2371.3	2284.9	2231.8	2251.7	2152.1	2168.7
80°	441.7	481.6	763.9	1152.4	1238.8	1198.9	1182.3	1202.2	1222.2	1252.1	1298.5
82.5°	89.7	112.9	152.8	332.1	378.6	375.3	372.0	411.8	448.3	465.0	564.6
85°	10.0	10.0	13.3	26.6	56.5	89.7	93.0	83.0	126.2	122.9	86.3
87.5°	3.3	3.3	3.3	3.3	3.3	6.6	6.6	6.6	6.6	6.6	6.6
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: SP1-2407-157-6

Test Date: 08/07/2024

Luminaire Tested: MEM2-HTN-SA-40-750-U-5WQ-2

Data in this report applies to families of products including MEM2-HTN-SA-40-750-U-5WQ-2



**Test Information**

Test Method: LM-79-2019  
 Report Number: SP1-2407-157-6  
 Test Lab: COOPER LIGHTING SOLUTIONS  
 Photometer: SP1 - 76IN SPHERE  
 Measurement Geometry: 4π  
 Issue Date: 08/20/2024  
 Manufacturer: COOPER LIGHTING SOLUTIONS  
 Product Line: Streetworks  
 Catalog Number: **MEM2-HTN-SA-40-750-U-5WQ-2**  
 Description: Epic Modern Light Square 40W 5WQ Optic and Flare Trim

**Spectral Parameters**

CCT (K): 5094  
 CIE u': 0.2082  
 CIE v': 0.4867  
 Duv: 0.0032  
 CIE x: 0.3430  
 CIE y: 0.3564  
 CIE z: 0.3006  
 Peak Wavelength (nm): 451  
 Dominant Wavelength (nm): 568  
 Purity: 9.86439  
 Rf: 73.7  
 Rg: 93

CRI (Ra):	72.0		
R1:	68.6	R9:	-39.6
R2:	78.1	R10:	47.6
R3:	84.6	R11:	68.2
R4:	71.6	R12:	41.4
R5:	69.6	R13:	70.4
R6:	69.4	R14:	91.4
R7:	80.9	R15:	61.4
R8:	53.1		



**Test Conditions**

Stabilization Time: 20M  
 Operation Time: 1H 20M  
 Sphere Temperature (°C): 24.2

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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**



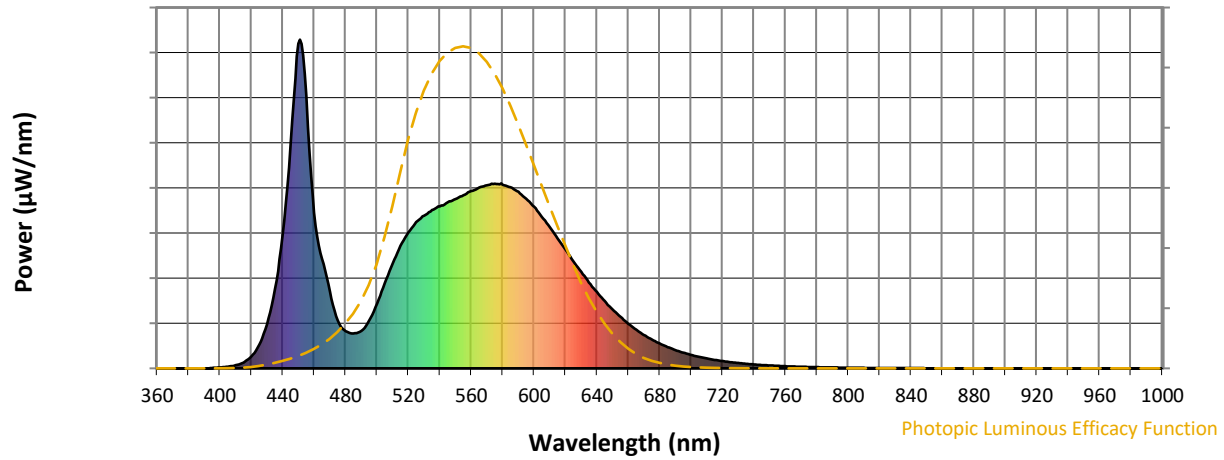
**CIE 1931 Chromaticity Diagram with 2017 ANSI 7-Step and 4-Step Quadrangles**



Point lies inside the ANSI 5000K 4-step quadrangle

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**Photopic Flux vs. Wavelength**



**Photopic Lumens: NR**

λ (nm)	Power W <sup>^</sup> /nm	Lumens (φ/nm)	λ (nm)	Power W <sup>^</sup> /nm	Lumens (φ/nm)	λ (nm)	Power W <sup>^</sup> /nm	Lumens (φ/nm)	λ (nm)	Power W <sup>^</sup> /nm	Lumens (φ/nm)	λ (nm)	Power W <sup>^</sup> /nm	Lumens (φ/nm)
360	0	NR	490	114	NR	620	361	NR	750	9	NR	880	0	NR
365	0	NR	495	145	NR	625	326	NR	755	8	NR	885	0	NR
370	0	NR	500	197	NR	630	294	NR	760	7	NR	890	0	NR
375	0	NR	505	259	NR	635	261	NR	765	6	NR	895	0	NR
380	0	NR	510	319	NR	640	232	NR	770	5	NR	900	0	NR
385	0	NR	515	373	NR	645	204	NR	775	4	NR	905	0	NR
390	0	NR	520	414	NR	650	179	NR	780	4	NR	910	0	NR
395	1	NR	525	445	NR	655	157	NR	785	3	NR	915	0	NR
400	3	NR	530	465	NR	660	136	NR	790	3	NR	920	0	NR
405	5	NR	535	482	NR	665	118	NR	795	2	NR	925	0	NR
410	9	NR	540	493	NR	670	102	NR	800	2	NR	930	0	NR
415	18	NR	545	505	NR	675	87	NR	805	2	NR	935	0	NR
420	36	NR	550	515	NR	680	75	NR	810	2	NR	940	0	NR
425	72	NR	555	527	NR	685	65	NR	815	1	NR	945	0	NR
430	134	NR	560	540	NR	690	56	NR	820	1	NR	950	0	NR
435	242	NR	565	550	NR	695	48	NR	825	1	NR	955	0	NR
440	407	NR	570	557	NR	700	41	NR	830	1	NR	960	0	NR
445	684	NR	575	561	NR	705	35	NR	835	1	NR	965	0	NR
450	988	NR	580	559	NR	710	30	NR	840	1	NR	970	0	NR
455	828	NR	585	551	NR	715	26	NR	845	1	NR	975	0	NR
460	473	NR	590	537	NR	720	22	NR	850	1	NR	980	0	NR
465	333	NR	595	516	NR	725	19	NR	855	0	NR	985	0	NR
470	232	NR	600	491	NR	730	16	NR	860	0	NR	990	0	NR
475	146	NR	605	461	NR	735	14	NR	865	0	NR	995	0	NR
480	113	NR	610	429	NR	740	12	NR	870	0	NR	1000	0	NR
485	106	NR	615	395	NR	745	10	NR	875	0	NR			

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**Scotopic Flux vs. Wavelength**



**Scotopic Lumens: NR S/P: 1.81**

λ (nm)	Power W <sup>^</sup> /nm	Lumens (φ/nm)	λ (nm)	Power W <sup>^</sup> /nm	Lumens (φ/nm)	λ (nm)	Power W <sup>^</sup> /nm	Lumens (φ/nm)	λ (nm)	Power W <sup>^</sup> /nm	Lumens (φ/nm)	λ (nm)	Power W <sup>^</sup> /nm	Lumens (φ/nm)
360	0	NR	490	114	NR	620	361	NR	750	9	NR	880	0	NR
365	0	NR	495	145	NR	625	326	NR	755	8	NR	885	0	NR
370	0	NR	500	197	NR	630	294	NR	760	7	NR	890	0	NR
375	0	NR	505	259	NR	635	261	NR	765	6	NR	895	0	NR
380	0	NR	510	319	NR	640	232	NR	770	5	NR	900	0	NR
385	0	NR	515	373	NR	645	204	NR	775	4	NR	905	0	NR
390	0	NR	520	414	NR	650	179	NR	780	4	NR	910	0	NR
395	1	NR	525	445	NR	655	157	NR	785	3	NR	915	0	NR
400	3	NR	530	465	NR	660	136	NR	790	3	NR	920	0	NR
405	5	NR	535	482	NR	665	118	NR	795	2	NR	925	0	NR
410	9	NR	540	493	NR	670	102	NR	800	2	NR	930	0	NR
415	18	NR	545	505	NR	675	87	NR	805	2	NR	935	0	NR
420	36	NR	550	515	NR	680	75	NR	810	2	NR	940	0	NR
425	72	NR	555	527	NR	685	65	NR	815	1	NR	945	0	NR
430	134	NR	560	540	NR	690	56	NR	820	1	NR	950	0	NR
435	242	NR	565	550	NR	695	48	NR	825	1	NR	955	0	NR
440	407	NR	570	557	NR	700	41	NR	830	1	NR	960	0	NR
445	684	NR	575	561	NR	705	35	NR	835	1	NR	965	0	NR
450	988	NR	580	559	NR	710	30	NR	840	1	NR	970	0	NR
455	828	NR	585	551	NR	715	26	NR	845	1	NR	975	0	NR
460	473	NR	590	537	NR	720	22	NR	850	1	NR	980	0	NR
465	333	NR	595	516	NR	725	19	NR	855	0	NR	985	0	NR
470	232	NR	600	491	NR	730	16	NR	860	0	NR	990	0	NR
475	146	NR	605	461	NR	735	14	NR	865	0	NR	995	0	NR
480	113	NR	610	429	NR	740	12	NR	870	0	NR	1000	0	NR
485	106	NR	615	395	NR	745	10	NR	875	0	NR			

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Melanopic Flux vs. Wavelength



Melanopic Lumens: NR

M/P: 3.73

λ (nm)	Power W <sup>^</sup> /nm	Lumens (φ/nm)	λ (nm)	Power W <sup>^</sup> /nm	Lumens (φ/nm)	λ (nm)	Power W <sup>^</sup> /nm	Lumens (φ/nm)	λ (nm)	Power W <sup>^</sup> /nm	Lumens (φ/nm)	λ (nm)	Power W <sup>^</sup> /nm	Lumens (φ/nm)
360	0	NR	490	114	NR	620	361	NR	750	9	NR	880	0	NR
365	0	NR	495	145	NR	625	326	NR	755	8	NR	885	0	NR
370	0	NR	500	197	NR	630	294	NR	760	7	NR	890	0	NR
375	0	NR	505	259	NR	635	261	NR	765	6	NR	895	0	NR
380	0	NR	510	319	NR	640	232	NR	770	5	NR	900	0	NR
385	0	NR	515	373	NR	645	204	NR	775	4	NR	905	0	NR
390	0	NR	520	414	NR	650	179	NR	780	4	NR	910	0	NR
395	1	NR	525	445	NR	655	157	NR	785	3	NR	915	0	NR
400	3	NR	530	465	NR	660	136	NR	790	3	NR	920	0	NR
405	5	NR	535	482	NR	665	118	NR	795	2	NR	925	0	NR
410	9	NR	540	493	NR	670	102	NR	800	2	NR	930	0	NR
415	18	NR	545	505	NR	675	87	NR	805	2	NR	935	0	NR
420	36	NR	550	515	NR	680	75	NR	810	2	NR	940	0	NR
425	72	NR	555	527	NR	685	65	NR	815	1	NR	945	0	NR
430	134	NR	560	540	NR	690	56	NR	820	1	NR	950	0	NR
435	242	NR	565	550	NR	695	48	NR	825	1	NR	955	0	NR
440	407	NR	570	557	NR	700	41	NR	830	1	NR	960	0	NR
445	684	NR	575	561	NR	705	35	NR	835	1	NR	965	0	NR
450	988	NR	580	559	NR	710	30	NR	840	1	NR	970	0	NR
455	828	NR	585	551	NR	715	26	NR	845	1	NR	975	0	NR
460	473	NR	590	537	NR	720	22	NR	850	1	NR	980	0	NR
465	333	NR	595	516	NR	725	19	NR	855	0	NR	985	0	NR
470	232	NR	600	491	NR	730	16	NR	860	0	NR	990	0	NR
475	146	NR	605	461	NR	735	14	NR	865	0	NR	995	0	NR
480	113	NR	610	429	NR	740	12	NR	870	0	NR	1000	0	NR
485	106	NR	615	395	NR	745	10	NR	875	0	NR			

**Summary**

$R_f = 73.7$   
 $R_g = 93$   
 $CIE R_a = 72.0$   
 $R_g = -39.6$

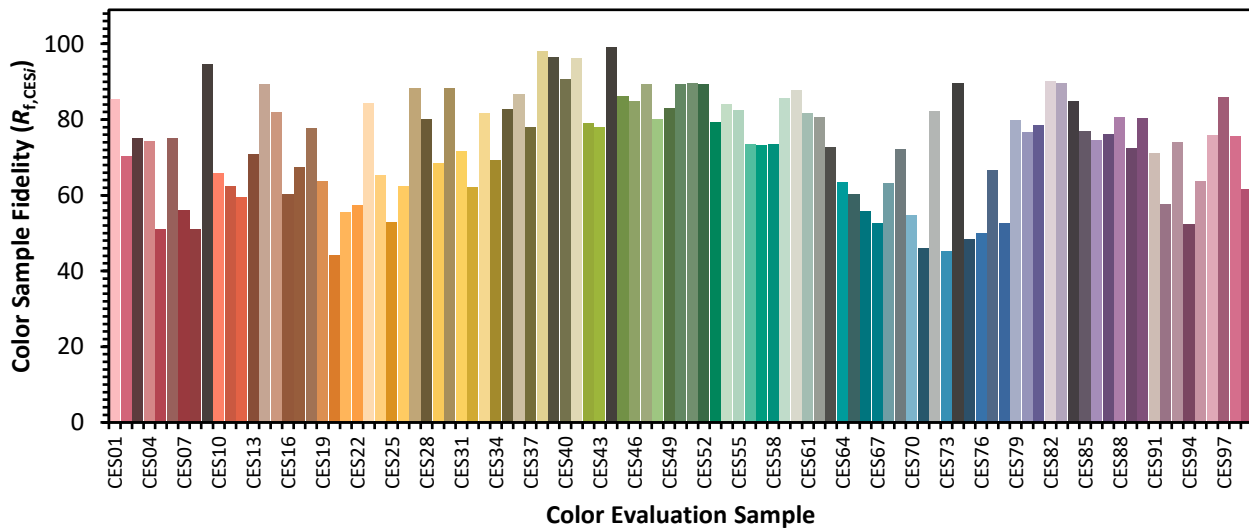


**Color Vector Graphics**



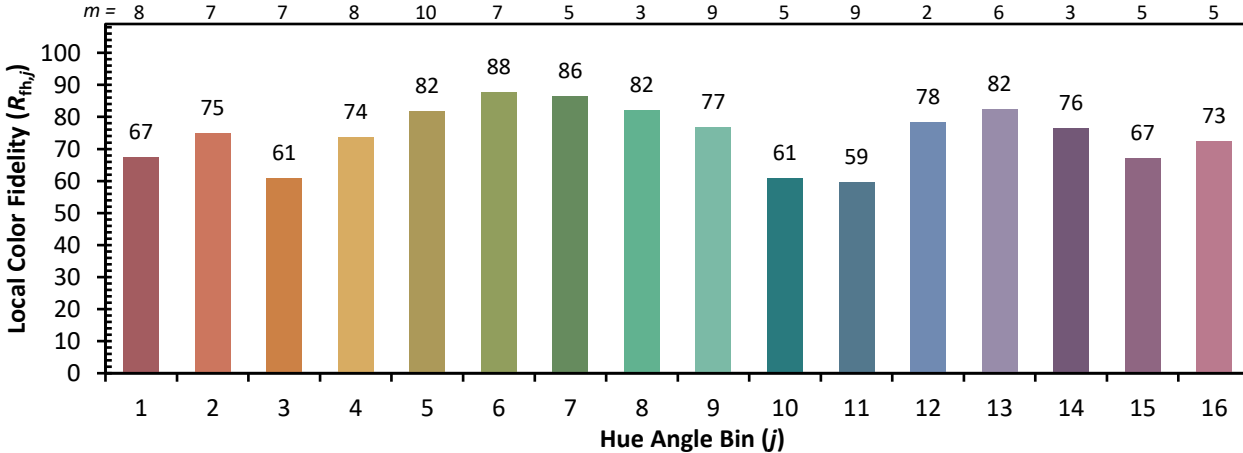
**Individual Sample Fidelity Index ( $R_{f,i}$ )**

CES01 = 85	CES26 = 62	CES51 = 90	CES76 = 50
CES02 = 59	CES27 = 88	CES52 = 89	CES77 = 67
CES03 = 30	CES28 = 80	CES53 = 79	CES78 = 53
CES04 = 69	CES29 = 69	CES54 = 84	CES79 = 80
CES05 = 46	CES30 = 88	CES55 = 83	CES80 = 77
CES06 = 50	CES31 = 72	CES56 = 74	CES81 = 78
CES07 = 38	CES32 = 62	CES57 = 73	CES82 = 90
CES08 = 38	CES33 = 82	CES58 = 73	CES83 = 90
CES09 = 29	CES34 = 69	CES59 = 86	CES84 = 85
CES10 = 72	CES35 = 83	CES60 = 88	CES85 = 77
CES11 = 56	CES36 = 87	CES61 = 82	CES86 = 75
CES12 = 61	CES37 = 78	CES62 = 81	CES87 = 76
CES13 = 41	CES38 = 98	CES63 = 73	CES88 = 81
CES14 = 74	CES39 = 96	CES64 = 63	CES89 = 72
CES15 = 70	CES40 = 91	CES65 = 60	CES90 = 80
CES16 = 46	CES41 = 96	CES66 = 56	CES91 = 71
CES17 = 49	CES42 = 79	CES67 = 53	CES92 = 58
CES18 = 55	CES43 = 78	CES68 = 63	CES93 = 74
CES19 = 71	CES44 = 99	CES69 = 72	CES94 = 52
CES20 = 63	CES45 = 86	CES70 = 55	CES95 = 64
CES21 = 85	CES46 = 85	CES71 = 46	CES96 = 76
CES22 = 77	CES47 = 89	CES72 = 82	CES97 = 86
CES23 = 91	CES48 = 80	CES73 = 45	CES98 = 76
CES24 = 90	CES49 = 83	CES74 = 90	CES99 = 62
CES25 = 71	CES50 = 89	CES75 = 48	

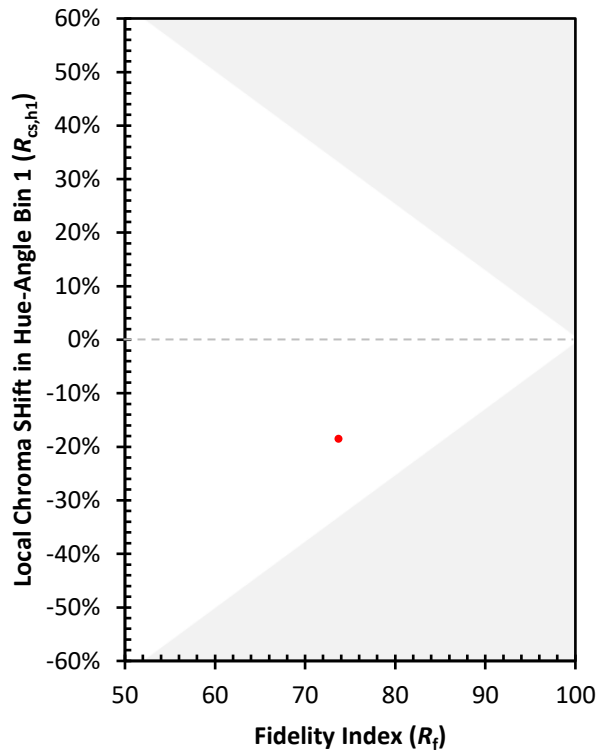
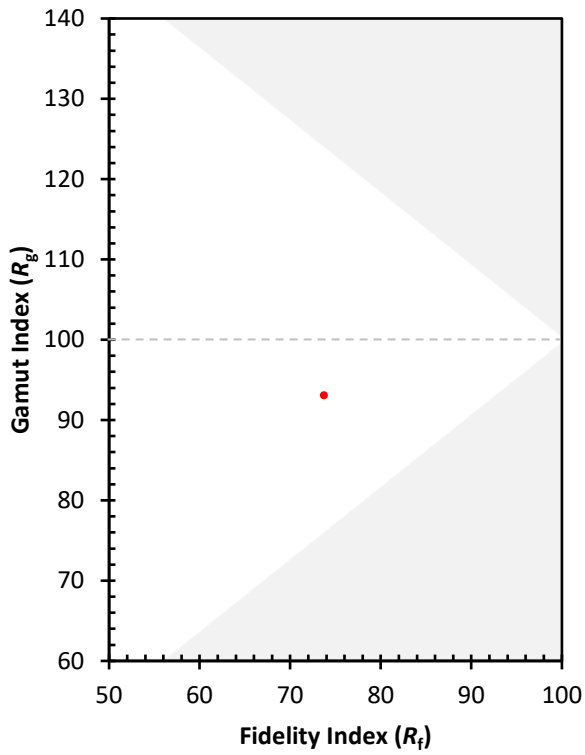




Color Rendition by Hue-Angle Bin



Measure Comparisons



(END OF REPORT)