

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: P869172

Luminaire Tested: **EMM2-HSN-SA3B-740-U-T5W**

Issue Date: 08/22/2024

**Test Information**

Test Method: LM-79-08  
Report Number: P869172  
Test Lab: INNOVATION CENTER(G3)  
Issue Date: 08/22/2024  
Manufacturer: COOPER LIGHTING SOLUTIONS (FORMERLY EATON)  
Product Line: INVUE  
Catalog Number: EMM2-HSN-SA3B-740-U-T5W  
Description: EPIC MODERN SHORT HOUSING DISCRETE LED ARRAYS 150W 70CRI 4000K  
FITXURE w/ TYPE V SQUARE WIDE DISTRIBUTION OPTIC  
Light Source: (30) 4000K CCT, 70 CRI LEDS  
Ballast/Driver: ELECTRONIC DRIVER

**Summary**

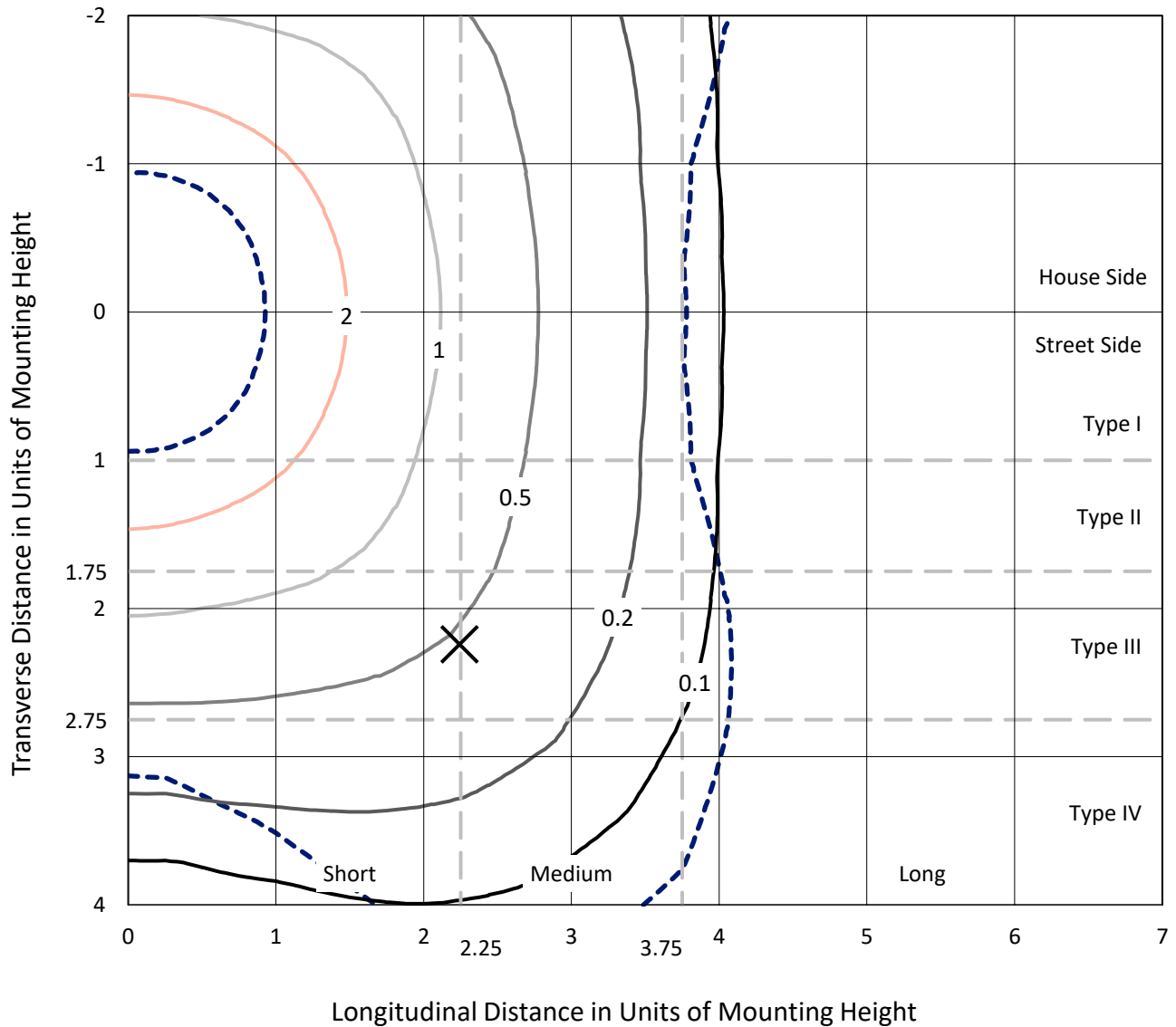
Lumens per Lamp: N/A  
Luminaire Lumens: 19702.9 lumens  
Efficiency: N/A  
Efficacy: 147.0 lumens/watt  
Luminous Opening: Rectangular (W 1' x L: 0.33' x H: 0')  
IES Classification: Type V - Short  
BUG Rating: B4 - U0 - G2

Input Watts (W): 134  
Input Voltage (V): 120  
Input Current (A<sub>in</sub>): NR  
Voltage Rise (V): NR  
Power Factor: 0.99  
Total Harmonic Distortion (THDi): 6.70%  
Frequency (hertz): 60  
Stabilization Time: NR  
Operation Time: NR  
Ambient Temperature (°C): NR  
Test Distance: 24 FT

REPORT NUMBER: P869172  
 CATALOG NUMBER: EMM2-HSN-SA3B-740-U-T5W

### Iso-Footcandle Lines of Horizontal Illumination

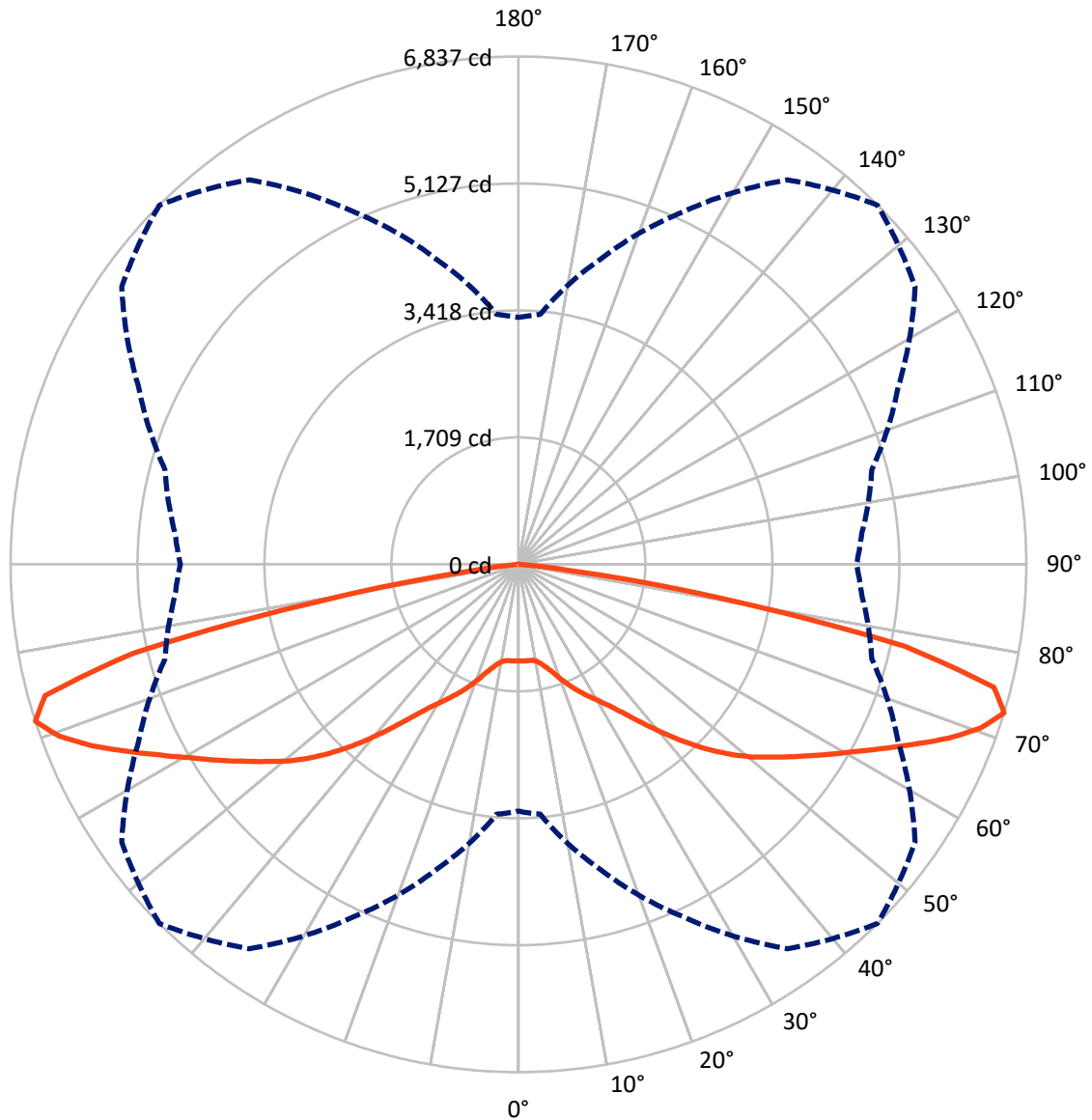
× Max cd  
 - - - 1/2 Max cd



Based on 20 foot mounting height. Maximum calculated value = 3.5 fc  
 Type V - Short - N/A

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### Luminous Intensity Polar Plot



— Vertical Plane Through 45-Deg Lateral    - - - Horizontal Cone Through 72.5-Deg Vertical

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**FLUX DISTRIBUTION:**

		Downward	Upward	Total
<b>House Side</b>	Lumens	9851.5	0.0	9851.5
	% Fixture	50.0	0.0	50.0
<b>Street Side</b>	Lumens	9851.5	0.0	9851.5
	% Fixture	50.0	0.0	50.0
<b>Total</b>	Lumens	19702.9	0.0	19702.9
	% Fixture	100.0	0.0	100.0

**Coefficient of Utilization**

**ZONAL LUMENS:**

Zone	Lumens	% Fixture
0°-10°	124.7	0.6
10°-20°	416.1	2.1
20°-30°	858.5	4.4
30°-40°	1580.4	8.0
40°-50°	2778.8	14.1
50°-60°	4030.2	20.5
60°-70°	5253.9	26.7
70°-80°	4367.2	22.2
80°-90°	293.2	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°	19702.9	100.0
0°-180°	19702.9	100.0



REPORT NUMBER: P869172

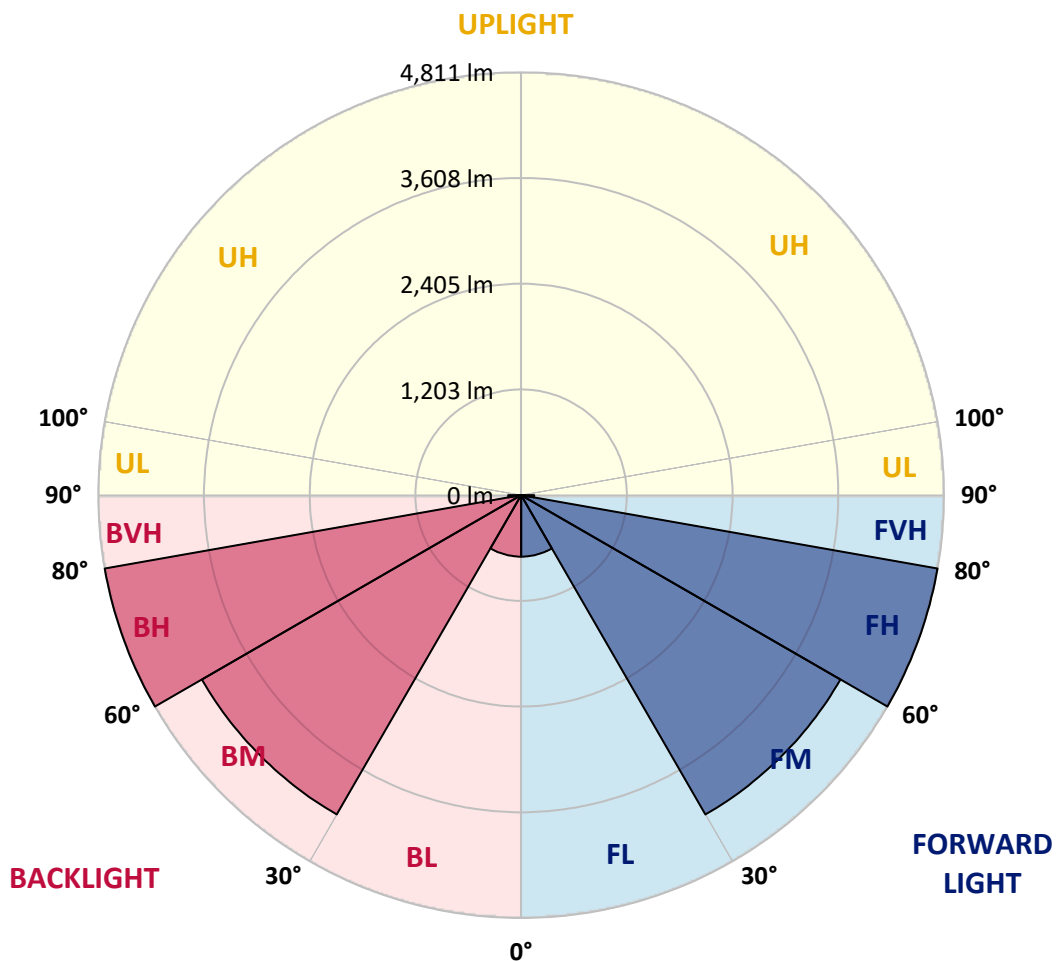
CATALOG NUMBER: EMM2-HSN-SA3B-740-U-T5W

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

Zone	Lumens	% Fixture	Zone Rating/Lumen Limit		
			B	U	G
FL (0°-30°)	699.6	3.6			
FM (30°-60°)	4194.7	21.3			
FH (60°-80°)	4810.5	24.4			G2/5000
FVH (80°-90°)	146.6	0.7			G2/225
BL (0°-30°)	699.6	3.6	B2/1000		
BM (30°-60°)	4194.7	21.3	B3/5000		
BH (60°-80°)	4810.5	24.4	B4/5000		G2/5000
BVH (80°-90°)	146.6	0.7			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-SA3B-740-U-T5W

**CANDELA DISTRIBUTION (FULL):**

	0°	5°	15°	25°	35°	45°	55°	65°	75°	85°	90°
0°	1300.7	1300.7	1300.7	1300.7	1300.7	1300.7	1300.7	1300.7	1300.7	1300.7	1300.7
2.5°	1296.7	1298.7	1298.7	1298.7	1300.7	1302.8	1304.8	1306.9	1310.9	1313.0	1313.0
5°	1302.8	1300.7	1298.7	1302.8	1302.8	1302.8	1304.8	1306.9	1306.9	1306.9	1308.9
7.5°	1296.7	1298.7	1296.7	1296.7	1302.8	1304.8	1302.8	1300.7	1300.7	1302.8	1302.8
10°	1319.1	1317.1	1315.0	1315.0	1321.2	1323.2	1321.2	1319.1	1319.1	1323.2	1323.2
12.5°	1370.2	1374.2	1362.0	1362.0	1370.2	1374.2	1368.1	1366.1	1368.1	1372.2	1372.2
15°	1449.8	1447.8	1439.6	1431.4	1439.6	1445.7	1437.5	1433.5	1435.5	1445.7	1437.5
17.5°	1537.6	1539.6	1531.5	1523.3	1529.4	1537.6	1525.4	1515.1	1517.2	1521.3	1517.2
20°	1635.6	1633.6	1631.5	1631.5	1643.8	1654.0	1635.6	1611.1	1605.0	1600.9	1600.9
22.5°	1707.1	1713.2	1715.3	1733.6	1762.2	1772.4	1747.9	1715.3	1690.8	1678.5	1670.3
25°	1819.4	1813.3	1809.2	1829.6	1872.5	1890.9	1860.2	1815.3	1790.8	1788.8	1794.9
27.5°	1921.5	1921.5	1929.7	1950.1	1990.9	2009.3	1982.8	1937.8	1925.6	1925.6	1919.5
30°	2054.2	2048.1	2056.3	2091.0	2121.6	2133.9	2111.4	2080.8	2070.6	2070.6	2060.4
32.5°	2209.4	2211.5	2223.7	2246.2	2276.8	2278.8	2270.7	2256.4	2250.3	2244.1	2254.3
35°	2446.3	2446.3	2442.2	2458.5	2466.7	2470.8	2474.9	2468.7	2468.7	2468.7	2460.6
37.5°	2740.3	2724.0	2722.0	2707.7	2697.4	2707.7	2726.0	2746.5	2762.8	2752.6	2748.5
40°	3032.3	3024.2	2999.7	2977.2	2969.0	2973.1	2995.6	3038.5	3056.8	3056.8	3073.2
42.5°	3346.8	3330.5	3299.8	3273.3	3250.8	3256.9	3277.4	3330.5	3371.3	3389.7	3381.5
45°	3628.6	3614.3	3583.7	3559.2	3542.8	3540.8	3567.3	3602.0	3657.2	3673.5	3685.8
47.5°	3869.5	3859.3	3832.8	3808.3	3814.4	3816.4	3824.6	3855.2	3900.2	3922.6	3920.6
50°	4065.6	4057.4	4032.9	4043.1	4059.4	4075.8	4065.6	4086.0	4114.6	4124.8	4133.0
52.5°	4245.3	4233.0	4216.7	4235.1	4277.9	4310.6	4316.7	4302.4	4310.6	4316.7	4310.6
55°	4422.9	4408.6	4404.5	4437.2	4502.6	4563.8	4557.7	4516.8	4506.6	4494.4	4488.3
57.5°	4567.9	4557.7	4574.0	4629.2	4755.8	4837.4	4810.9	4717.0	4676.1	4647.5	4639.4
60°	4659.8	4657.7	4694.5	4823.1	5015.1	5129.4	5086.6	4925.2	4833.4	4806.8	4794.6
62.5°	4708.8	4710.8	4776.2	5004.9	5311.2	5466.4	5390.8	5143.7	5000.8	4974.2	4978.3
65°	4753.7	4747.6	4833.4	5158.0	5631.8	5842.1	5740.0	5407.1	5198.9	5145.8	5145.8
67.5°	4786.4	4792.5	4921.2	5311.2	5944.2	6244.4	6095.3	5686.9	5411.2	5331.6	5321.4
70°	4373.9	4433.1	4835.4	5413.3	6191.3	6599.7	6403.6	5858.4	5419.4	5192.7	5170.3
72.5°	3322.3	3377.4	4247.3	5231.5	6317.9	6836.5	6518.0	5639.9	4925.2	4637.3	4551.6
75°	2191.0	2229.8	3165.1	4569.9	5966.6	6611.9	5936.0	4857.9	3877.7	3504.0	3526.5
77.5°	976.1	1100.6	2017.5	3565.3	4915.0	5321.4	4527.1	3314.1	2368.7	2005.2	1966.4
80°	408.4	447.2	761.7	1901.1	2848.6	2726.0	1927.6	1110.8	706.5	549.3	530.9
82.5°	118.4	122.5	151.1	328.8	579.9	682.0	410.4	208.3	198.1	157.2	145.0
85°	8.2	8.2	12.3	20.4	28.6	47.0	53.1	61.3	69.4	59.2	59.2
87.5°	4.1	4.1	4.1	6.1	6.1	8.2	6.1	6.1	6.1	6.1	6.1
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: SP1-2407-157-5

Test Date: 08/07/2024

Luminaire Tested: MEM2-HTN-SA-40-740-U-5WQ-2

Data in this report applies to families of products including MEM2-HTN-SA-40-740-U-5WQ-2



**Test Information**

Test Method: LM-79-2019  
 Report Number: SP1-2407-157-5  
 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-40-740-U-5WQ-2**  
 Description: Epic Modern Light Square 40W 5WQ Optic and Flare Trim

**Spectral Parameters**

CCT (K): 3915  
 CIE u': 0.2262  
 CIE v': 0.5044  
 Duv: 0.0010  
 CIE x: 0.3850  
 CIE y: 0.3816  
 CIE z: 0.2334  
 Peak Wavelength (nm): 449  
 Dominant Wavelength (nm): 578  
 Purity: 30.05482  
 Rf: 73.2  
 Rg: 93.9

CRI (Ra):	71.0		
R1:	67.6	R9:	-38.4
R2:	78.3	R10:	48.9
R3:	87.1	R11:	65.3
R4:	69.7	R12:	40.4
R5:	67.4	R13:	69.3
R6:	69.3	R14:	92.6
R7:	79.7	R15:	59.9
R8:	48.7		



**Test Conditions**

Stabilization Time: 21M  
 Operation Time: 1H 21M  
 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**



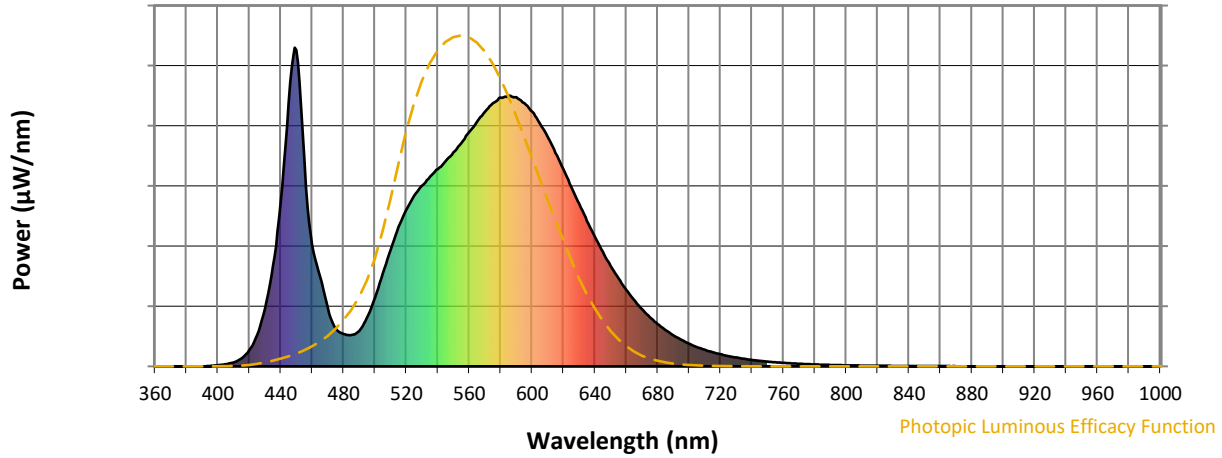
**CIE 1931 Chromaticity Diagram with 2017 ANSI 7-Step and 4-Step Quadrangles**



Point lies inside the ANSI 4000K 4-step quadrangle

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**Photopic Flux vs. Wavelength**

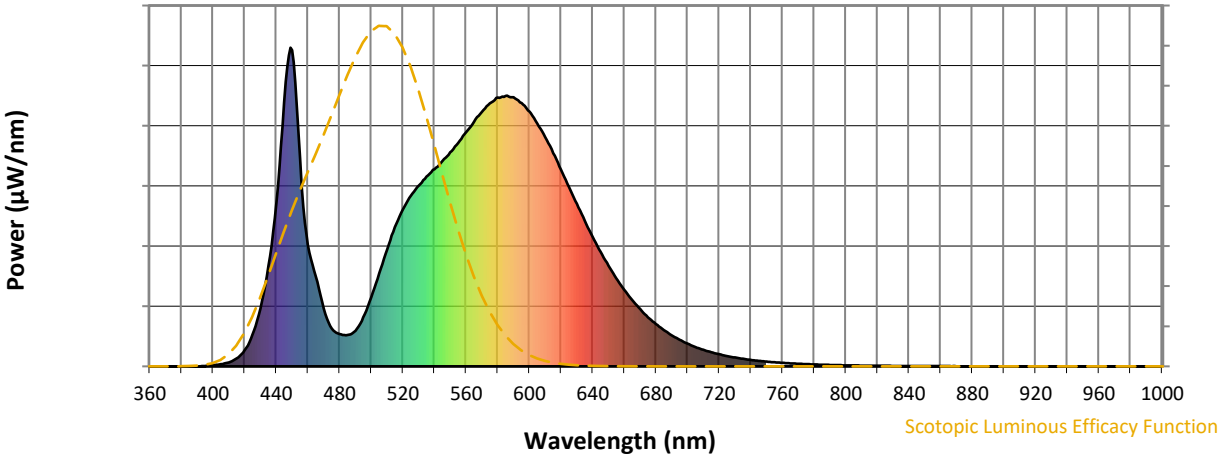


**Photopic Lumens: NR**

$\lambda$ (nm)	Power W <sup>^</sup> /nm	Lumens ( $\phi$ /nm)	$\lambda$ (nm)	Power W <sup>^</sup> /nm	Lumens ( $\phi$ /nm)	$\lambda$ (nm)	Power W <sup>^</sup> /nm	Lumens ( $\phi$ /nm)	$\lambda$ (nm)	Power W <sup>^</sup> /nm	Lumens ( $\phi$ /nm)	$\lambda$ (nm)	Power W <sup>^</sup> /nm	Lumens ( $\phi$ /nm)
360	0	NR	490	112	NR	620	618	NR	750	15	NR	880	0	NR
365	0	NR	495	153	NR	625	563	NR	755	13	NR	885	0	NR
370	0	NR	500	216	NR	630	510	NR	760	11	NR	890	0	NR
375	0	NR	505	291	NR	635	456	NR	765	9	NR	895	0	NR
380	0	NR	510	366	NR	640	407	NR	770	8	NR	900	0	NR
385	0	NR	515	436	NR	645	359	NR	775	7	NR	905	0	NR
390	0	NR	520	492	NR	650	316	NR	780	6	NR	910	0	NR
395	2	NR	525	536	NR	655	277	NR	785	5	NR	915	0	NR
400	4	NR	530	567	NR	660	240	NR	790	4	NR	920	0	NR
405	7	NR	535	596	NR	665	208	NR	795	4	NR	925	0	NR
410	12	NR	540	619	NR	670	179	NR	800	3	NR	930	0	NR
415	25	NR	545	644	NR	675	154	NR	805	3	NR	935	0	NR
420	51	NR	550	671	NR	680	133	NR	810	3	NR	940	0	NR
425	100	NR	555	701	NR	685	114	NR	815	2	NR	945	0	NR
430	180	NR	560	735	NR	690	98	NR	820	2	NR	950	0	NR
435	315	NR	565	768	NR	695	83	NR	825	2	NR	955	0	NR
440	514	NR	570	798	NR	700	71	NR	830	1	NR	960	0	NR
445	828	NR	575	825	NR	705	61	NR	835	1	NR	965	0	NR
450	992	NR	580	843	NR	710	52	NR	840	1	NR	970	0	NR
455	652	NR	585	848	NR	715	44	NR	845	1	NR	975	0	NR
460	382	NR	590	844	NR	720	38	NR	850	1	NR	980	0	NR
465	282	NR	595	826	NR	725	32	NR	855	1	NR	985	0	NR
470	180	NR	600	800	NR	730	28	NR	860	1	NR	990	0	NR
475	119	NR	605	762	NR	735	24	NR	865	1	NR	995	0	NR
480	101	NR	610	719	NR	740	20	NR	870	1	NR	1000	0	NR
485	98	NR	615	669	NR	745	17	NR	875	0	NR			

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Scotopic Flux vs. Wavelength



Scotopic Lumens: NR S/P: 1.49

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	112	NR	620	618	NR	750	15	NR	880	0	NR
365	0	NR	495	153	NR	625	563	NR	755	13	NR	885	0	NR
370	0	NR	500	216	NR	630	510	NR	760	11	NR	890	0	NR
375	0	NR	505	291	NR	635	456	NR	765	9	NR	895	0	NR
380	0	NR	510	366	NR	640	407	NR	770	8	NR	900	0	NR
385	0	NR	515	436	NR	645	359	NR	775	7	NR	905	0	NR
390	0	NR	520	492	NR	650	316	NR	780	6	NR	910	0	NR
395	2	NR	525	536	NR	655	277	NR	785	5	NR	915	0	NR
400	4	NR	530	567	NR	660	240	NR	790	4	NR	920	0	NR
405	7	NR	535	596	NR	665	208	NR	795	4	NR	925	0	NR
410	12	NR	540	619	NR	670	179	NR	800	3	NR	930	0	NR
415	25	NR	545	644	NR	675	154	NR	805	3	NR	935	0	NR
420	51	NR	550	671	NR	680	133	NR	810	3	NR	940	0	NR
425	100	NR	555	701	NR	685	114	NR	815	2	NR	945	0	NR
430	180	NR	560	735	NR	690	98	NR	820	2	NR	950	0	NR
435	315	NR	565	768	NR	695	83	NR	825	2	NR	955	0	NR
440	514	NR	570	798	NR	700	71	NR	830	1	NR	960	0	NR
445	828	NR	575	825	NR	705	61	NR	835	1	NR	965	0	NR
450	992	NR	580	843	NR	710	52	NR	840	1	NR	970	0	NR
455	652	NR	585	848	NR	715	44	NR	845	1	NR	975	0	NR
460	382	NR	590	844	NR	720	38	NR	850	1	NR	980	0	NR
465	282	NR	595	826	NR	725	32	NR	855	1	NR	985	0	NR
470	180	NR	600	800	NR	730	28	NR	860	1	NR	990	0	NR
475	119	NR	605	762	NR	735	24	NR	865	1	NR	995	0	NR
480	101	NR	610	719	NR	740	20	NR	870	1	NR	1000	0	NR
485	98	NR	615	669	NR	745	17	NR	875	0	NR			

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**Melanopic Flux vs. Wavelength**



**Melanopic Lumens: NR**

**M/P: 2.88**

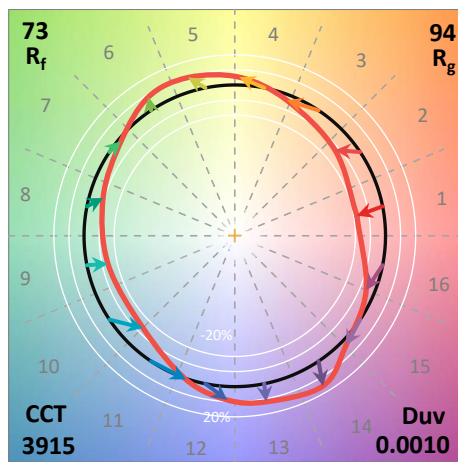
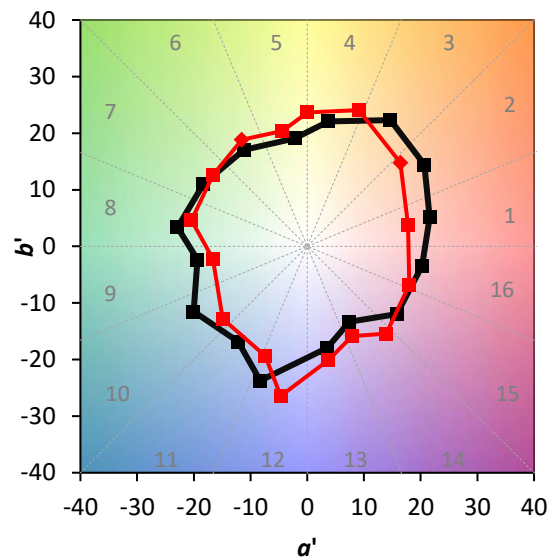
λ (nm)	Power W <sup>^</sup> /nm	Lumens (φ/nm)	λ (nm)	Power W <sup>^</sup> /nm	Lumens (φ/nm)	λ (nm)	Power W <sup>^</sup> /nm	Lumens (φ/nm)	λ (nm)	Power W <sup>^</sup> /nm	Lumens (φ/nm)	λ (nm)	Power W <sup>^</sup> /nm	Lumens (φ/nm)
360	0	NR	490	112	NR	620	618	NR	750	15	NR	880	0	NR
365	0	NR	495	153	NR	625	563	NR	755	13	NR	885	0	NR
370	0	NR	500	216	NR	630	510	NR	760	11	NR	890	0	NR
375	0	NR	505	291	NR	635	456	NR	765	9	NR	895	0	NR
380	0	NR	510	366	NR	640	407	NR	770	8	NR	900	0	NR
385	0	NR	515	436	NR	645	359	NR	775	7	NR	905	0	NR
390	0	NR	520	492	NR	650	316	NR	780	6	NR	910	0	NR
395	2	NR	525	536	NR	655	277	NR	785	5	NR	915	0	NR
400	4	NR	530	567	NR	660	240	NR	790	4	NR	920	0	NR
405	7	NR	535	596	NR	665	208	NR	795	4	NR	925	0	NR
410	12	NR	540	619	NR	670	179	NR	800	3	NR	930	0	NR
415	25	NR	545	644	NR	675	154	NR	805	3	NR	935	0	NR
420	51	NR	550	671	NR	680	133	NR	810	3	NR	940	0	NR
425	100	NR	555	701	NR	685	114	NR	815	2	NR	945	0	NR
430	180	NR	560	735	NR	690	98	NR	820	2	NR	950	0	NR
435	315	NR	565	768	NR	695	83	NR	825	2	NR	955	0	NR
440	514	NR	570	798	NR	700	71	NR	830	1	NR	960	0	NR
445	828	NR	575	825	NR	705	61	NR	835	1	NR	965	0	NR
450	992	NR	580	843	NR	710	52	NR	840	1	NR	970	0	NR
455	652	NR	585	848	NR	715	44	NR	845	1	NR	975	0	NR
460	382	NR	590	844	NR	720	38	NR	850	1	NR	980	0	NR
465	282	NR	595	826	NR	725	32	NR	855	1	NR	985	0	NR
470	180	NR	600	800	NR	730	28	NR	860	1	NR	990	0	NR
475	119	NR	605	762	NR	735	24	NR	865	1	NR	995	0	NR
480	101	NR	610	719	NR	740	20	NR	870	1	NR	1000	0	NR
485	98	NR	615	669	NR	745	17	NR	875	0	NR			

**Summary**

$R_f = 73.2$   
 $R_g = 93.9$   
 CIE  $R_a = 71.0$   
 $R_g = -38.4$

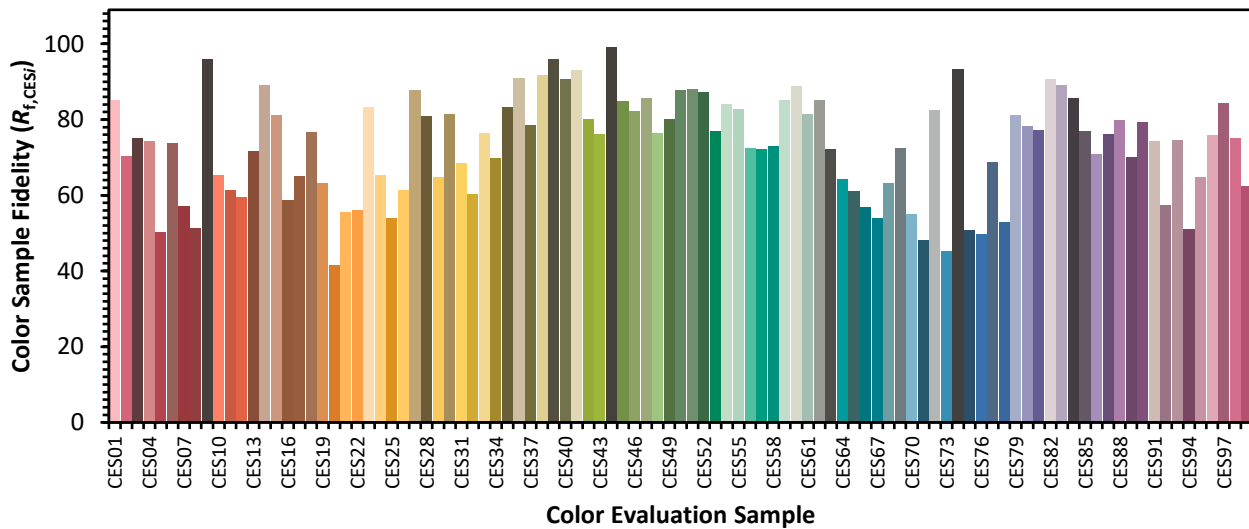


**Color Vector Graphics**



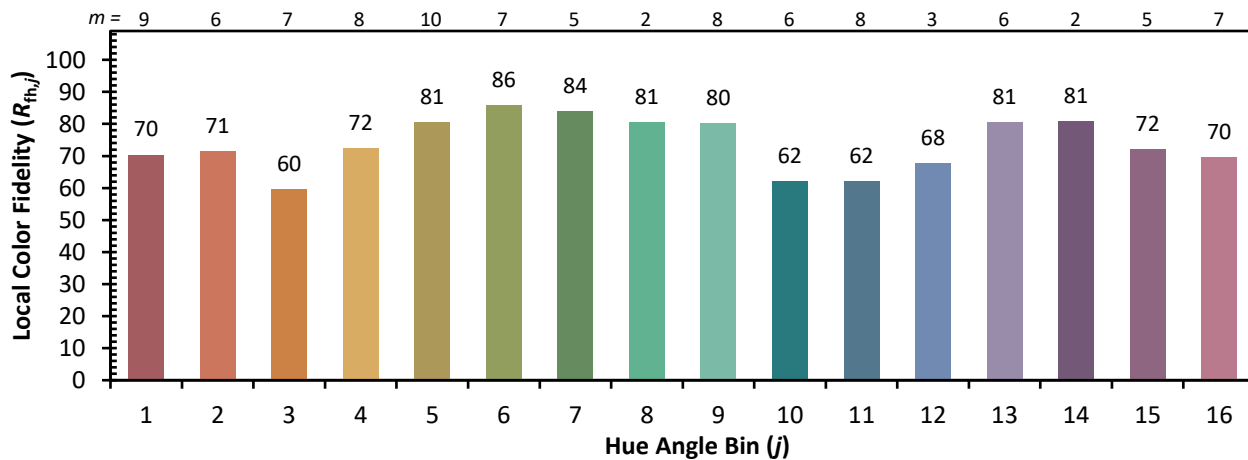
**Individual Sample Fidelity Index ( $R_{f,i}$ )**

CES01 = 85	CES26 = 61	CES51 = 88	CES76 = 50
CES02 = 61	CES27 = 88	CES52 = 87	CES77 = 69
CES03 = 30	CES28 = 81	CES53 = 77	CES78 = 53
CES04 = 70	CES29 = 65	CES54 = 84	CES79 = 81
CES05 = 47	CES30 = 81	CES55 = 83	CES80 = 78
CES06 = 50	CES31 = 69	CES56 = 73	CES81 = 77
CES07 = 40	CES32 = 60	CES57 = 72	CES82 = 91
CES08 = 39	CES33 = 76	CES58 = 73	CES83 = 89
CES09 = 29	CES34 = 70	CES59 = 85	CES84 = 86
CES10 = 74	CES35 = 83	CES60 = 89	CES85 = 77
CES11 = 57	CES36 = 91	CES61 = 81	CES86 = 71
CES12 = 63	CES37 = 79	CES62 = 85	CES87 = 76
CES13 = 42	CES38 = 92	CES63 = 72	CES88 = 80
CES14 = 74	CES39 = 96	CES64 = 64	CES89 = 70
CES15 = 71	CES40 = 91	CES65 = 61	CES90 = 79
CES16 = 46	CES41 = 93	CES66 = 57	CES91 = 74
CES17 = 49	CES42 = 80	CES67 = 54	CES92 = 57
CES18 = 56	CES43 = 76	CES68 = 63	CES93 = 74
CES19 = 72	CES44 = 99	CES69 = 73	CES94 = 51
CES20 = 65	CES45 = 85	CES70 = 55	CES95 = 65
CES21 = 86	CES46 = 82	CES71 = 48	CES96 = 76
CES22 = 78	CES47 = 86	CES72 = 83	CES97 = 84
CES23 = 92	CES48 = 77	CES73 = 45	CES98 = 75
CES24 = 91	CES49 = 80	CES74 = 93	CES99 = 62
CES25 = 72	CES50 = 88	CES75 = 51	





Color Rendition by Hue-Angle Bin



Measure Comparisons



(END OF REPORT)