

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: P869106

Luminaire Tested: **EMM2-HSN-SA2B-750-U-T5R**

Issue Date: 08/22/2024



Test Information

Test Method: LM-79-08
Report Number: P869106
Test Lab: INNOVATION CENTER(G3)
Issue Date: 08/22/2024
Manufacturer: COOPER LIGHTING SOLUTIONS (FORMERLY EATON)
Product Line: INVUE
Catalog Number: EMM2-HSN-SA2B-750-U-T5R
Description: EPIC MODERN SHORT HOUSING DISCRETE LED ARRAYS 100W 70CRI 5000K
FIXTURE w/ TYPE V ROUND DISTRIBUTION OPTIC
Light Source: (20) 5000K CCT, 70 CRI LEDS
Ballast/Driver: ELECTRONIC DRIVER

Summary

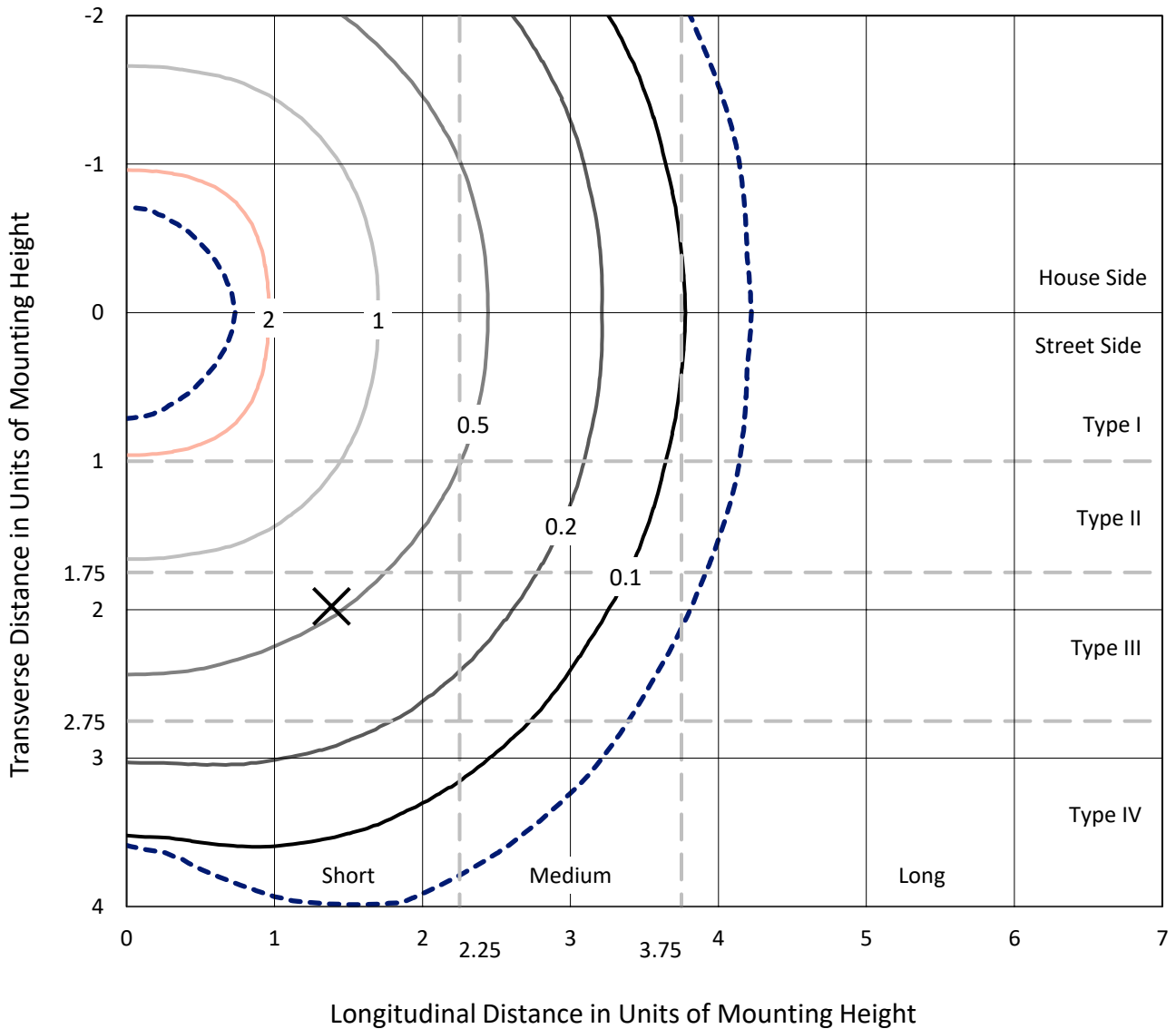
Lumens per Lamp: N/A
Luminaire Lumens: 12981 lumens
Efficiency: N/A
Efficacy: 144.2 lumens/watt
Luminous Opening: Rectangular (W 0.67' x L: 0.33' x H: 0')
IES Classification: Type V - Short
BUG Rating: B4 - U0 - G2

Input Watts (W): 90
Input Voltage (V): 120
Input Current (A_{in}): NR
Voltage Rise (V): NR
Power Factor: 0.99
Total Harmonic Distortion (THDi): 6.20%
Frequency (hertz): 60
Stabilization Time: NR
Operation Time: NR
Ambient Temperature (°C): NR
Test Distance: 24 FT

REPORT NUMBER: P869106
 CATALOG NUMBER: EMM2-HSN-SA2B-750-U-T5R

Iso-Footcandle Lines of Horizontal Illumination

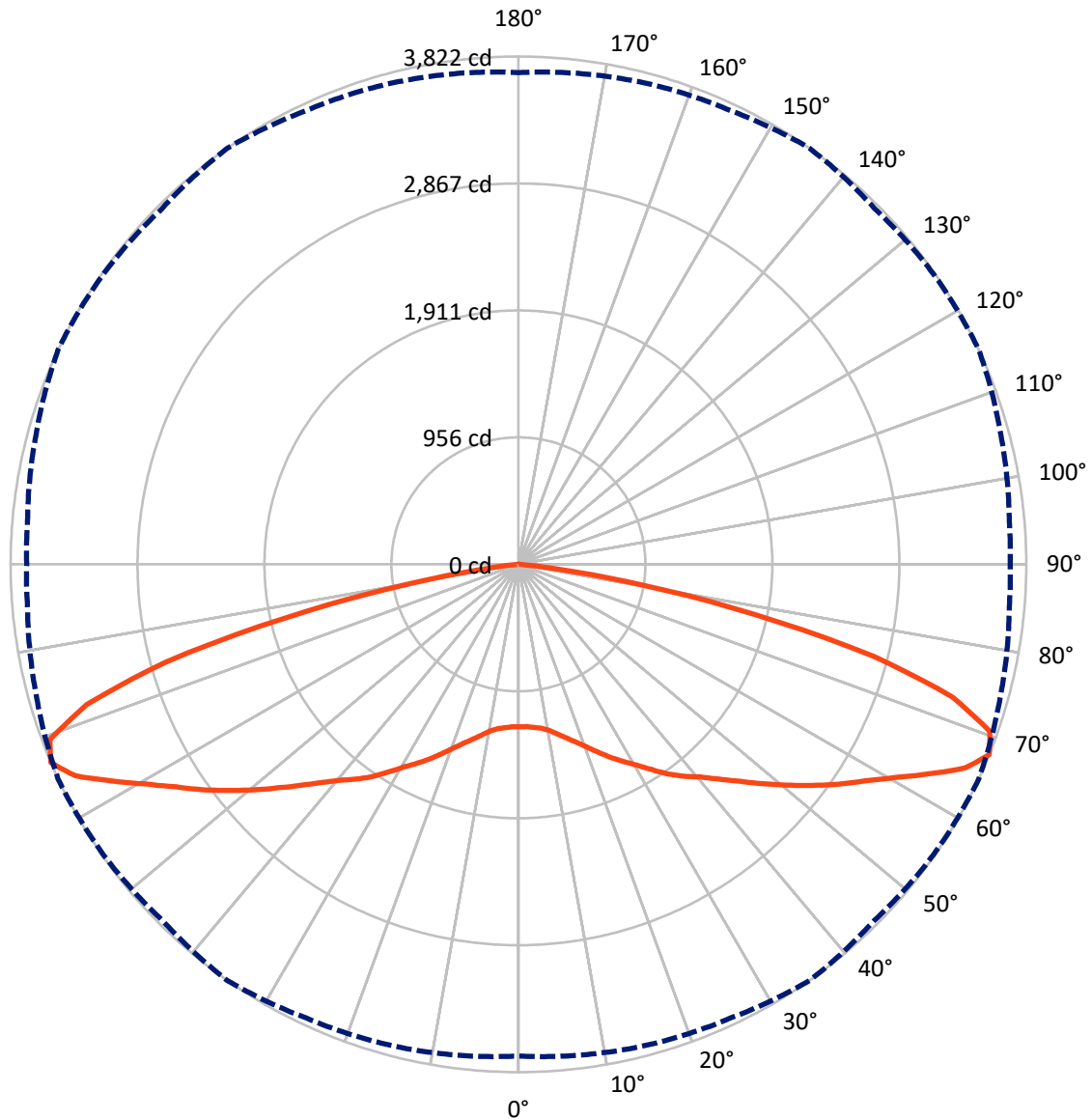
× Max cd
 - - - 1/2 Max cd



Based on 20 foot mounting height. Maximum calculated value = 3.1 fc
 Type V - Short - N/A

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CATALOG NUMBER: EMM2-HSN-SA2B-750-U-T5R

Luminous Intensity Polar Plot



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

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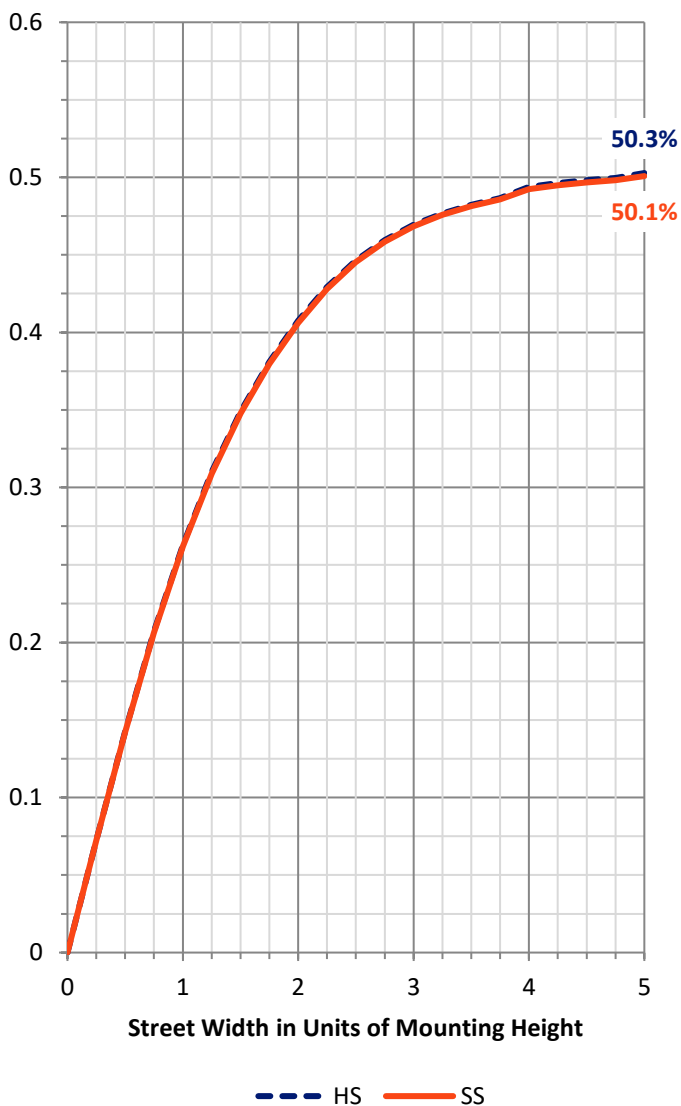
FLUX DISTRIBUTION:

		Downward	Upward	Total
House Side	Lumens	6490.5	0.0	6490.5
	% Fixture	50.0	0.0	50.0
Street Side	Lumens	6490.5	0.0	6490.5
	% Fixture	50.0	0.0	50.0
Total	Lumens	12981.0	0.0	12981.0
	% Fixture	100.0	0.0	100.0

ZONAL LUMENS:

Zone	Lumens	% Fixture
0°-10°	118.9	0.9
10°-20°	389.7	3.0
20°-30°	744.8	5.7
30°-40°	1203.7	9.3
40°-50°	1761.7	13.6
50°-60°	2526.3	19.5
60°-70°	3540.8	27.3
70°-80°	2498.4	19.2
80°-90°	196.7	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°	12981.0	100.0
0°-180°	12981.0	100.0

Coefficient of Utilization



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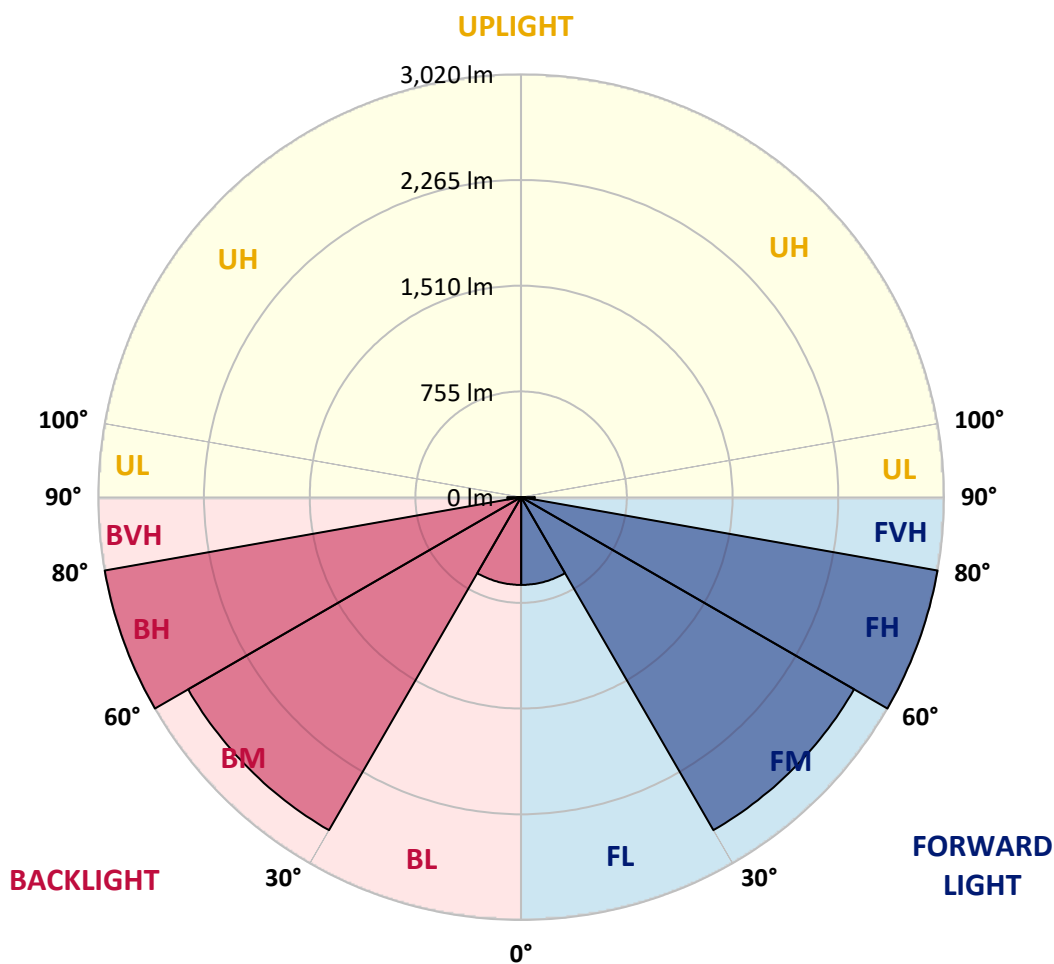
CATALOG NUMBER: EMM2-HSN-SA2B-750-U-T5R

LUMINAIRE CLASSIFICATION SYSTEM LUMEN TABLE AND BUG RATING:

Zone	Lumens	% Fixture	Zone Rating/Lumen Limit		
			B	U	G
FL (0°-30°)	626.7	4.8			
FM (30°-60°)	2745.8	21.2			
FH (60°-80°)	3019.6	23.3			G2/5000
FVH (80°-90°)	98.3	0.8			G1/100
BL (0°-30°)	626.7	4.8	B2/1000		
BM (30°-60°)	2745.8	21.2	B3/5000		
BH (60°-80°)	3019.6	23.3	B4/5000		G2/5000
BVH (80°-90°)	98.3	0.8			G1/100
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





REPORT NUMBER: P869106

CATALOG NUMBER: EMM2-HSN-SA2B-750-U-T5R

CANDELA DISTRIBUTION (FULL):

	0°	5°	15°	25°	35°	45°	55°	65°	75°	85°	90°
0°	1222.8	1222.8	1222.8	1222.8	1222.8	1222.8	1222.8	1222.8	1222.8	1222.8	1222.8
2.5°	1230.4	1227.8	1225.3	1225.3	1222.8	1225.3	1222.8	1225.3	1222.8	1222.8	1222.8
5°	1237.9	1235.4	1235.4	1235.4	1232.9	1232.9	1232.9	1232.9	1230.4	1227.8	1230.4
7.5°	1245.5	1245.5	1243.0	1248.0	1245.5	1248.0	1248.0	1250.6	1245.5	1243.0	1245.5
10°	1265.7	1265.7	1265.7	1270.8	1270.8	1278.4	1278.4	1280.9	1278.4	1273.3	1273.3
12.5°	1308.7	1306.1	1306.1	1306.1	1311.2	1316.3	1321.3	1321.3	1318.8	1311.2	1311.2
15°	1356.7	1361.7	1356.7	1354.1	1356.7	1361.7	1366.8	1366.8	1364.3	1361.7	1361.7
17.5°	1414.8	1417.3	1412.3	1407.2	1407.2	1414.8	1417.3	1417.3	1414.8	1409.7	1409.7
20°	1465.3	1467.8	1467.8	1465.3	1467.8	1472.9	1475.4	1477.9	1470.4	1462.8	1462.8
22.5°	1508.3	1510.8	1515.8	1525.9	1536.0	1541.1	1538.6	1538.6	1525.9	1518.4	1515.8
25°	1561.3	1568.9	1579.0	1591.6	1609.3	1621.9	1616.9	1606.8	1596.7	1581.5	1579.0
27.5°	1664.9	1664.9	1654.8	1659.8	1680.1	1692.7	1687.6	1680.1	1659.8	1649.7	1647.2
30°	1745.7	1745.7	1745.7	1740.7	1753.3	1768.5	1763.4	1750.8	1740.7	1735.6	1735.6
32.5°	1824.1	1819.0	1826.6	1836.7	1841.7	1846.8	1846.8	1836.7	1819.0	1811.4	1811.4
35°	1897.3	1902.4	1910.0	1925.1	1937.7	1930.2	1917.5	1910.0	1892.3	1877.1	1877.1
37.5°	1968.1	1973.1	1980.7	2003.4	2023.6	2021.1	2006.0	1985.7	1963.0	1950.4	1942.8
40°	2018.6	2021.1	2041.3	2076.7	2104.5	2114.6	2102.0	2074.2	2038.8	2013.5	2016.1
42.5°	2079.2	2084.3	2117.1	2167.6	2208.1	2223.2	2205.5	2167.6	2117.1	2084.3	2084.3
45°	2167.6	2170.2	2213.1	2276.3	2329.3	2354.6	2329.3	2276.3	2210.6	2177.8	2175.2
47.5°	2256.1	2263.6	2311.7	2387.4	2465.8	2496.1	2468.3	2400.1	2321.8	2281.3	2276.3
50°	2357.1	2362.2	2420.3	2523.9	2612.3	2652.7	2617.3	2531.4	2445.5	2395.0	2397.5
52.5°	2455.7	2470.8	2549.1	2657.8	2763.9	2809.4	2758.8	2665.3	2574.4	2526.4	2523.9
55°	2602.2	2619.9	2688.1	2809.4	2920.5	2971.0	2923.0	2819.5	2720.9	2667.9	2657.8
57.5°	2786.6	2796.7	2857.4	2981.1	3074.6	3122.6	3094.8	2998.8	2905.4	2839.7	2827.0
60°	2996.3	3006.4	3054.4	3180.7	3256.5	3291.9	3281.8	3226.2	3163.0	3132.7	3125.1
62.5°	3294.4	3296.9	3322.2	3395.5	3471.3	3486.4	3461.2	3448.5	3468.7	3435.9	3443.5
65°	3635.5	3635.5	3627.9	3638.0	3696.1	3678.4	3660.7	3716.3	3706.2	3650.6	3640.5
67.5°	3701.2	3716.3	3746.6	3769.4	3822.4	3789.6	3812.3	3822.4	3759.3	3708.7	3701.2
70°	3312.1	3329.8	3499.1	3602.6	3764.3	3794.6	3721.4	3683.5	3612.7	3519.3	3494.0
72.5°	2258.6	2347.0	2834.6	3168.1	3415.7	3453.6	3413.2	3365.2	3223.7	3150.4	3099.9
75°	1803.8	1851.8	2286.4	2614.8	2761.3	2758.8	2597.1	2544.1	2432.9	2422.8	2432.9
77.5°	1101.5	1111.6	1538.6	1796.3	1814.0	1803.8	1738.2	1697.7	1712.9	1637.1	1649.7
80°	336.0	366.3	581.1	876.7	942.3	912.0	899.4	914.6	929.7	952.5	987.8
82.5°	68.2	85.9	116.2	252.6	288.0	285.5	283.0	313.3	341.1	353.7	429.5
85°	7.6	7.6	10.1	20.2	42.9	68.2	70.7	63.2	96.0	93.5	65.7
87.5°	2.5	2.5	2.5	2.5	2.5	5.1	5.1	5.1	5.1	5.1	5.1
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: SP1-2407-157-6

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

REPORT NUMBER: SP1-2407-157-6

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 [^] /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	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



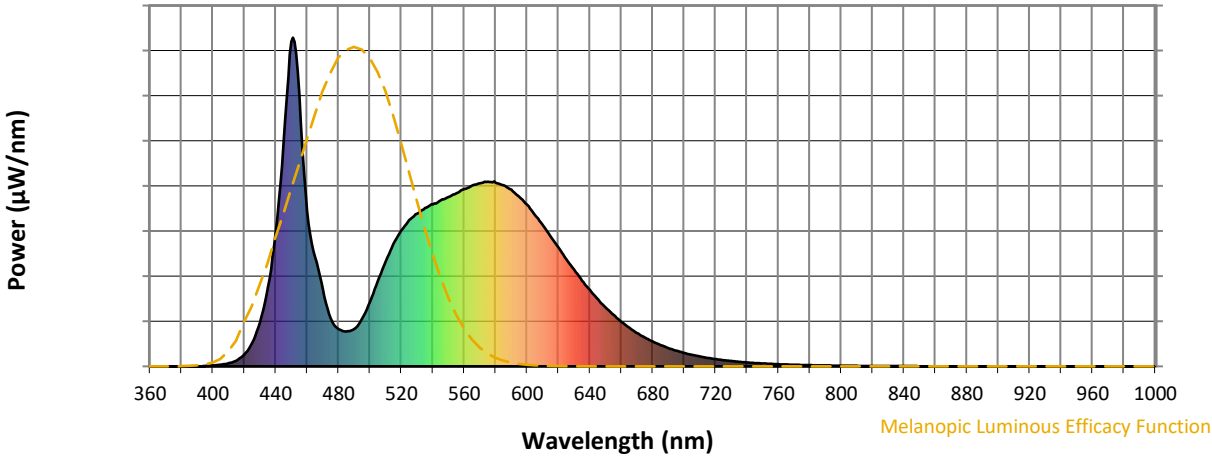
Scotopic Lumens: NR

S/P: 1.81

λ (nm)	Power W [^] /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	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 [^] /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	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

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

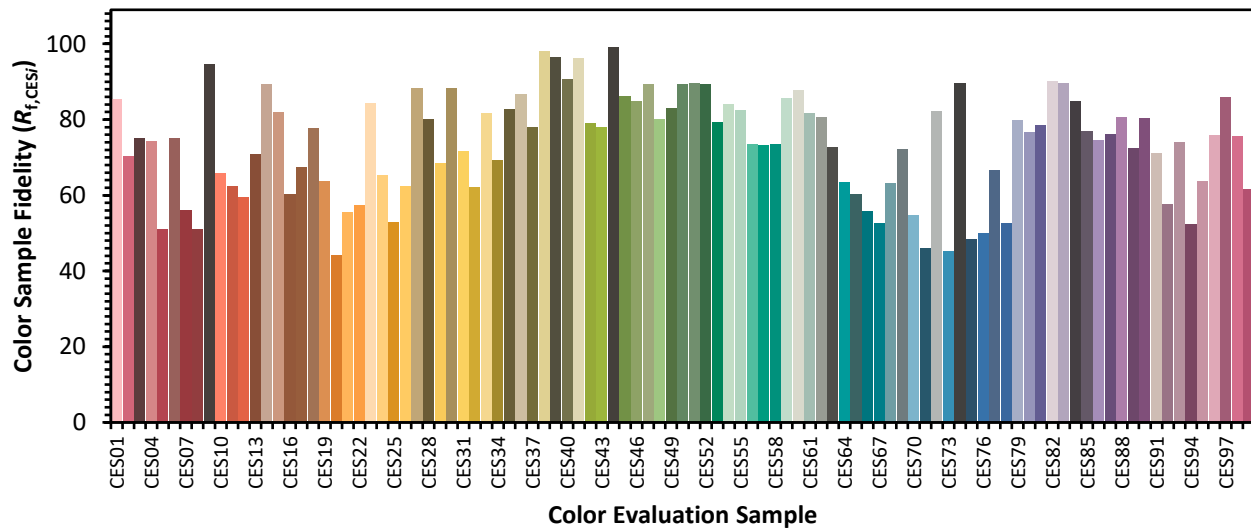


Color Vector Graphics

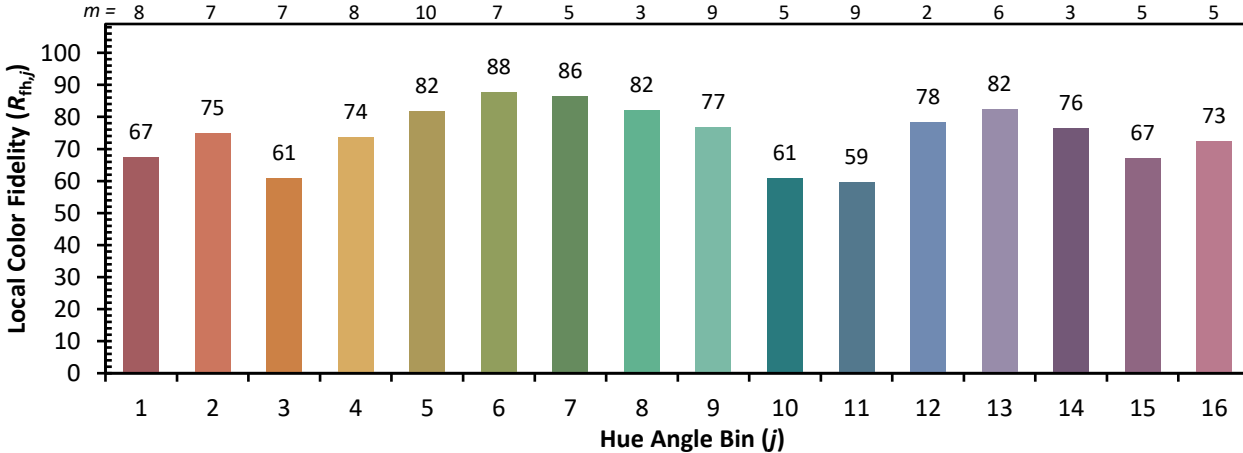


Individual Sample Fidelity Index ($R_{f,i}$)

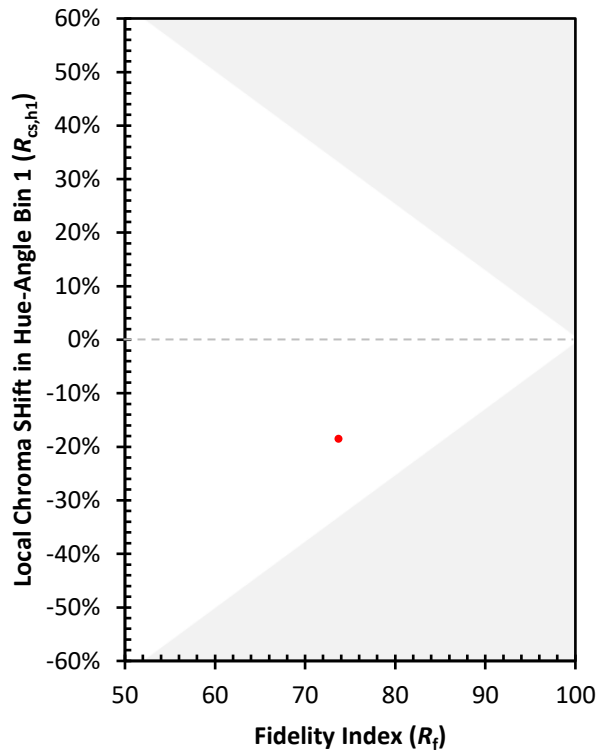
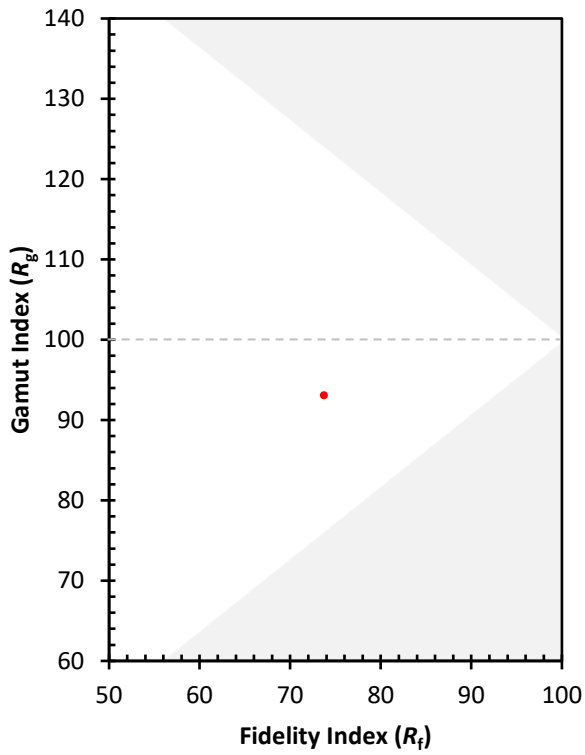
CES01 = 85	CES26 = 62	CES51 = 90	CES76 = 50
CES02 = 59	CES27 = 88	CES52 = 89	CES77 = 67
CES03 = 30	CES28 = 80	CES53 = 79	CES78 = 53
CES04 = 69	CES29 = 69	CES54 = 84	CES79 = 80
CES05 = 46	CES30 = 88	CES55 = 83	CES80 = 77
CES06 = 50	CES31 = 72	CES56 = 74	CES81 = 78
CES07 = 38	CES32 = 62	CES57 = 73	CES82 = 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)