

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: P869105

Luminaire Tested: **EMM2-HSN-SA2A-750-U-T5R**

Issue Date: 08/22/2024



**Test Information**

Test Method: LM-79-08  
Report Number: P869105  
Test Lab: INNOVATION CENTER(G3)  
Issue Date: 08/22/2024  
Manufacturer: COOPER LIGHTING SOLUTIONS (FORMERLY EATON)  
Product Line: INVUE  
Catalog Number: EMM2-HSN-SA2A-750-U-T5R  
Description: EPIC MODERN SHORT HOUSING DISCRETE LED ARRAYS 70W 70CRI 5000K  
FIXTURE w/ TYPE V ROUND DISTRIBUTION OPTIC  
Light Source: (20) 5000K CCT, 70 CRI LEDS  
Ballast/Driver: ELECTRONIC DRIVER

**Summary**

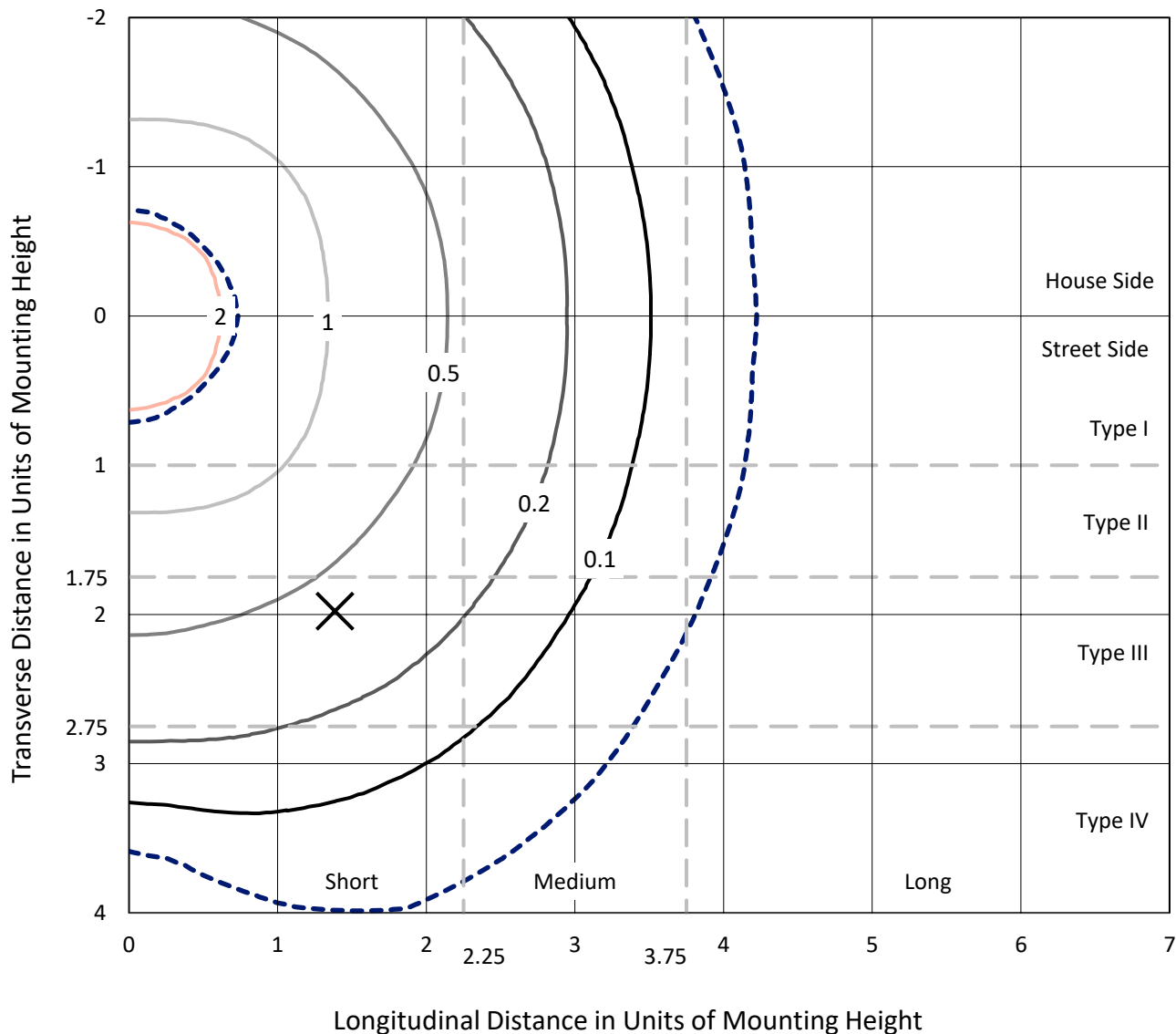
Lumens per Lamp: N/A  
Luminaire Lumens: 9443.8 lumens  
Efficiency: N/A  
Efficacy: 154.8 lumens/watt  
Luminous Opening: Rectangular (W 0.67' x L: 0.33' x H: 0')  
IES Classification: Type V - Short  
BUG Rating: B3 - U0 - G2

Input Watts (W): 61  
Input Voltage (V): 120  
Input Current (A<sub>in</sub>): NR  
Voltage Rise (V): NR  
Power Factor: 0.99  
Total Harmonic Distortion (THDi): 9.89%  
Frequency (hertz): 60  
Stabilization Time: NR  
Operation Time: NR  
Ambient Temperature (°C): NR  
Test Distance: 24 FT

REPORT NUMBER: P869105  
 CATALOG NUMBER: EMM2-HSN-SA2A-750-U-T5R

### Iso-Footcandle Lines of Horizontal Illumination

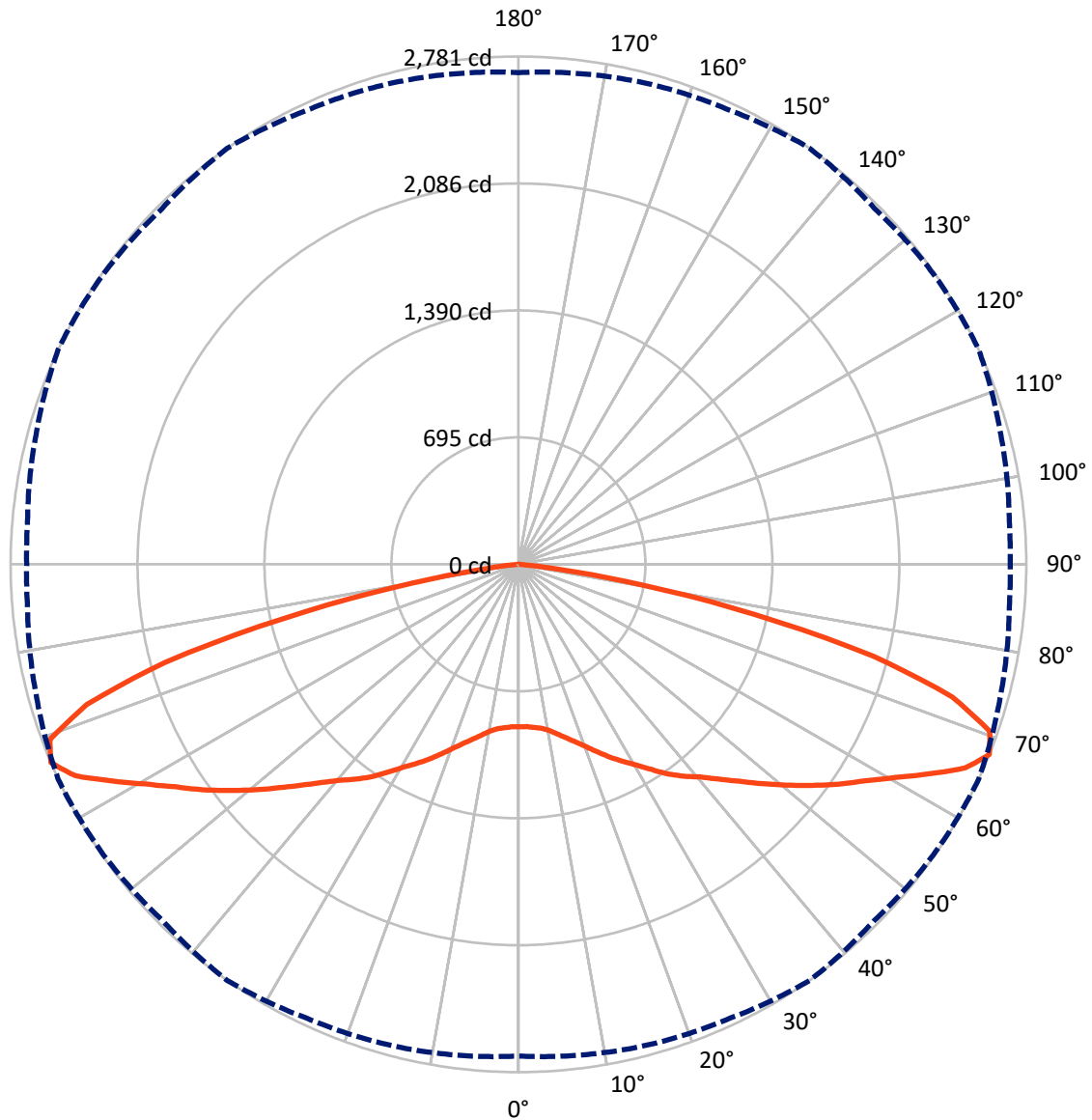
× Max cd  
 - - - 1/2 Max cd



Based on 20 foot mounting height. Maximum calculated value = 2.2 fc  
 Type V - Short - N/A

REPORT NUMBER: P869105  
CATALOG NUMBER: EMM2-HSN-SA2A-750-U-T5R

### Luminous Intensity Polar Plot



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

REPORT NUMBER: P869105  
 CATALOG NUMBER: EMM2-HSN-SA2A-750-U-T5R

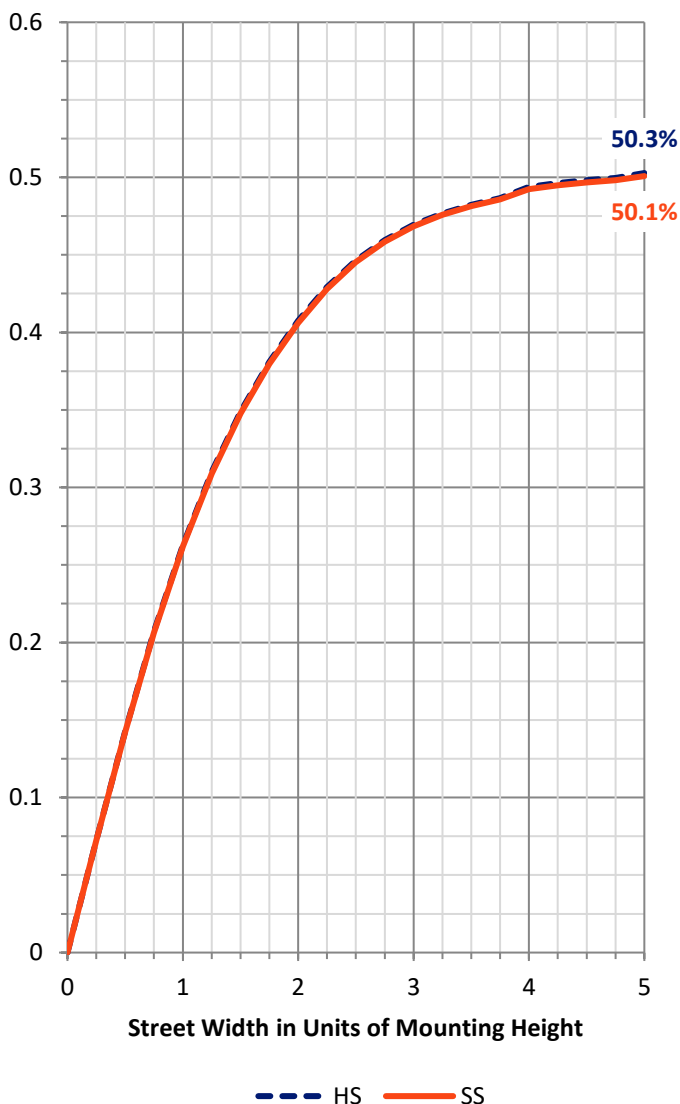
**FLUX DISTRIBUTION:**

		Downward	Upward	Total
<b>House Side</b>	Lumens	4721.9	0.0	4721.9
	% Fixture	50.0	0.0	50.0
<b>Street Side</b>	Lumens	4721.9	0.0	4721.9
	% Fixture	50.0	0.0	50.0
<b>Total</b>	Lumens	9443.8	0.0	9443.8
	% Fixture	100.0	0.0	100.0

**ZONAL LUMENS:**

Zone	Lumens	% Fixture
0°-10°	86.5	0.9
10°-20°	283.5	3.0
20°-30°	541.9	5.7
30°-40°	875.7	9.3
40°-50°	1281.7	13.6
50°-60°	1837.9	19.5
60°-70°	2576.0	27.3
70°-80°	1817.6	19.2
80°-90°	143.1	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°	9443.8	100.0
0°-180°	9443.8	100.0

**Coefficient of Utilization**



REPORT NUMBER: P869105

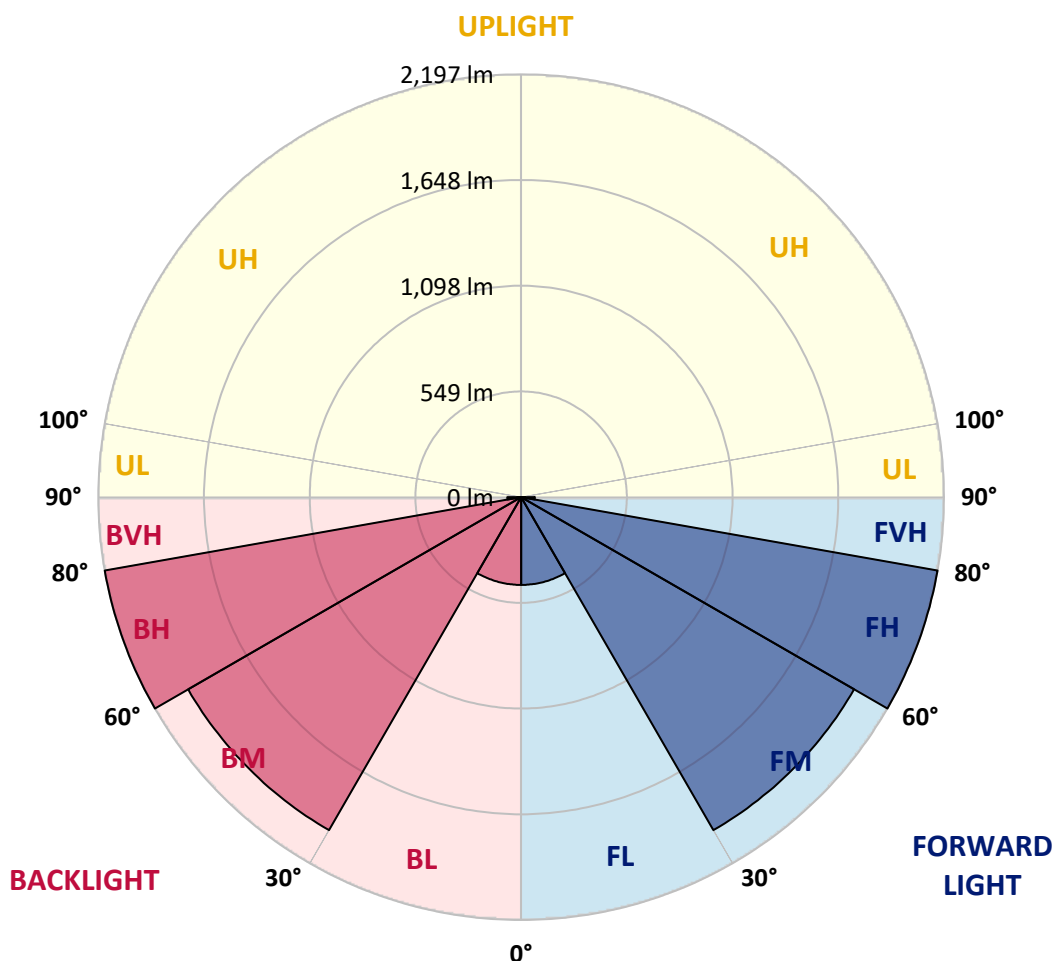
CATALOG NUMBER: EMM2-HSN-SA2A-750-U-T5R

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

Zone	Lumens	% Fixture	Zone Rating/Lumen Limit		
			B	U	G
FL (0°-30°)	455.9	4.8			
FM (30°-60°)	1997.6	21.2			
FH (60°-80°)	2196.8	23.3			G2/5000
FVH (80°-90°)	71.5	0.8			G1/100
BL (0°-30°)	455.9	4.8	B1/500		
BM (30°-60°)	1997.6	21.2	B2/2500		
BH (60°-80°)	2196.8	23.3	B3/2500		G2/5000
BVH (80°-90°)	71.5	0.8			G1/100
UL (90°-100°)	0.0	0.0		U0/0	
UH (100°-180°)	0.0	0.0		U0/0	

**BUG Rating: B3-U0-G2**

Type V Short





REPORT NUMBER: P869105

CATALOG NUMBER: EMM2-HSN-SA2A-750-U-T5R

**CANDELA DISTRIBUTION (FULL):**

	0°	5°	15°	25°	35°	45°	55°	65°	75°	85°	90°
0°	889.6	889.6	889.6	889.6	889.6	889.6	889.6	889.6	889.6	889.6	889.6
2.5°	895.1	893.3	891.4	891.4	889.6	891.4	889.6	891.4	889.6	889.6	889.6
5°	900.6	898.8	898.8	898.8	896.9	896.9	896.9	896.9	895.1	893.3	895.1
7.5°	906.1	906.1	904.3	908.0	906.1	908.0	908.0	909.8	906.1	904.3	906.1
10°	920.8	920.8	920.8	924.5	924.5	930.0	930.0	931.9	930.0	926.3	926.3
12.5°	952.1	950.2	950.2	950.2	953.9	957.6	961.3	961.3	959.4	953.9	953.9
15°	987.0	990.7	987.0	985.2	987.0	990.7	994.3	994.3	992.5	990.7	990.7
17.5°	1029.3	1031.1	1027.4	1023.8	1023.8	1029.3	1031.1	1031.1	1029.3	1025.6	1025.6
20°	1066.0	1067.9	1067.9	1066.0	1067.9	1071.5	1073.4	1075.2	1069.7	1064.2	1064.2
22.5°	1097.3	1099.1	1102.8	1110.1	1117.5	1121.2	1119.3	1119.3	1110.1	1104.6	1102.8
25°	1135.9	1141.4	1148.7	1157.9	1170.8	1180.0	1176.3	1169.0	1161.6	1150.6	1148.7
27.5°	1211.2	1211.2	1203.9	1207.6	1222.3	1231.4	1227.8	1222.3	1207.6	1200.2	1198.4
30°	1270.0	1270.0	1270.0	1266.4	1275.6	1286.6	1282.9	1273.7	1266.4	1262.7	1262.7
32.5°	1327.0	1323.3	1328.9	1336.2	1339.9	1343.6	1343.6	1336.2	1323.3	1317.8	1317.8
35°	1380.3	1384.0	1389.5	1400.5	1409.7	1404.2	1395.0	1389.5	1376.6	1365.6	1365.6
37.5°	1431.8	1435.5	1441.0	1457.5	1472.2	1470.4	1459.4	1444.7	1428.1	1418.9	1413.4
40°	1468.5	1470.4	1485.1	1510.8	1531.0	1538.4	1529.2	1509.0	1483.3	1464.9	1466.7
42.5°	1512.7	1516.3	1540.2	1577.0	1606.4	1617.4	1604.6	1577.0	1540.2	1516.3	1516.3
45°	1577.0	1578.8	1610.1	1656.0	1694.6	1713.0	1694.6	1656.0	1608.2	1584.3	1582.5
47.5°	1641.3	1646.8	1681.8	1736.9	1793.9	1815.9	1795.7	1746.1	1689.1	1659.7	1656.0
50°	1714.8	1718.5	1760.8	1836.1	1900.5	1929.9	1904.2	1841.7	1779.2	1742.4	1744.2
52.5°	1786.5	1797.5	1854.5	1933.6	2010.8	2043.8	2007.1	1939.1	1872.9	1838.0	1836.1
55°	1893.1	1906.0	1955.6	2043.8	2124.7	2161.5	2126.5	2051.2	1979.5	1940.9	1933.6
57.5°	2027.3	2034.6	2078.8	2168.8	2236.8	2271.7	2251.5	2181.7	2113.7	2065.9	2056.7
60°	2179.8	2187.2	2222.1	2314.0	2369.2	2394.9	2387.5	2347.1	2301.2	2279.1	2273.6
62.5°	2396.7	2398.6	2416.9	2470.3	2525.4	2536.4	2518.0	2508.8	2523.6	2499.7	2505.2
65°	2644.9	2644.9	2639.3	2646.7	2689.0	2676.1	2663.2	2703.7	2696.3	2655.9	2648.5
67.5°	2692.6	2703.7	2725.7	2742.3	2780.9	2757.0	2773.5	2780.9	2734.9	2698.2	2692.6
70°	2409.6	2422.5	2545.6	2621.0	2738.6	2760.7	2707.4	2679.8	2628.3	2560.3	2541.9
72.5°	1643.2	1707.5	2062.2	2304.8	2485.0	2512.5	2483.1	2448.2	2345.3	2292.0	2255.2
75°	1312.3	1347.2	1663.4	1902.3	2008.9	2007.1	1889.4	1850.8	1770.0	1762.6	1770.0
77.5°	801.4	808.7	1119.3	1306.8	1319.7	1312.3	1264.5	1235.1	1246.2	1191.0	1200.2
80°	244.5	266.5	422.7	637.8	685.6	663.5	654.3	665.4	676.4	692.9	718.7
82.5°	49.6	62.5	84.5	183.8	209.5	207.7	205.9	227.9	248.1	257.3	312.5
85°	5.5	5.5	7.4	14.7	31.2	49.6	51.5	45.9	69.8	68.0	47.8
87.5°	1.8	1.8	1.8	1.8	1.8	3.7	3.7	3.7	3.7	3.7	3.7
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

REPORT NUMBER: SP1-2407-157-6

**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

REPORT NUMBER: SP1-2407-157-6

**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			

REPORT NUMBER: SP1-2407-157-6

**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			

REPORT NUMBER: SP1-2407-157-6

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**

$R_f = 73.7$   
 $R_g = 93$   
 $CIE R_a = 72.0$   
 $R_9 = -39.6$

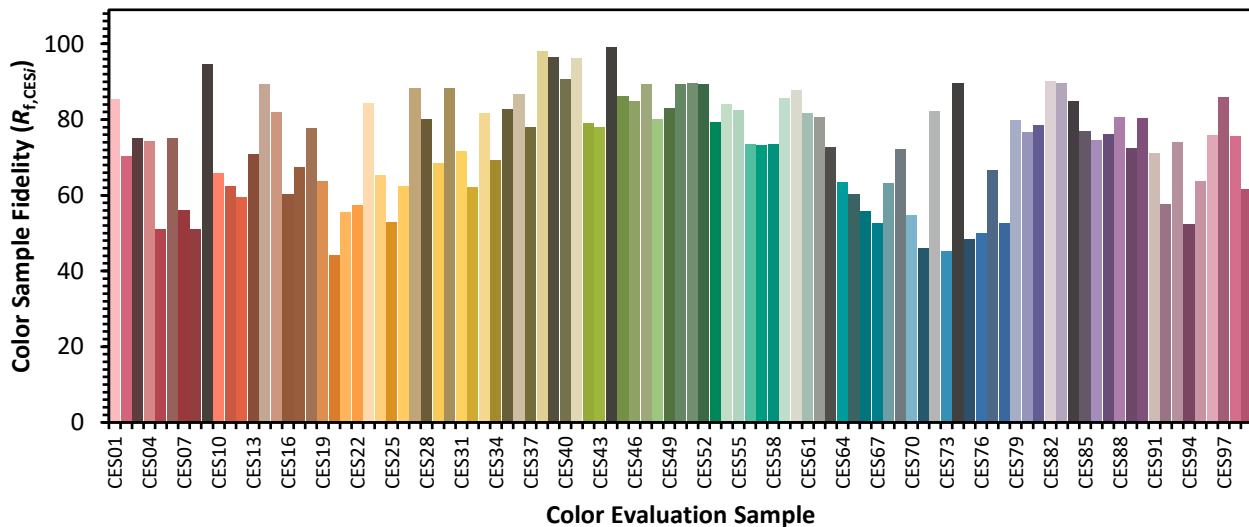


**Color Vector Graphics**



**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)