

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: P871355

Luminaire Tested: **EMM2-HSN-SA3B-830-U-T5M**

Issue Date: 09/05/2024



Test Information

Test Method: LM-79-08
Report Number: P871355
Test Lab: INNOVATION CENTER(G3)
Issue Date: 09/05/2024
Manufacturer: COOPER LIGHTING SOLUTIONS (FORMERLY EATON)
Product Line: INVUE
Catalog Number: EMM2-HSN-SA3B-830-U-T5M
Description: EPIC MODERN SHORT HOUSING DISCRETE LED ARRAYS 150W 80CRI 3000K
FIXTURE w/ TYPE V SQUARE MEDIUM DISTRIBUTION OPTIC
Light Source: (30) 3000K CCT, 80 CRI LEDS
Ballast/Driver: ELECTRONIC DRIVER

Summary

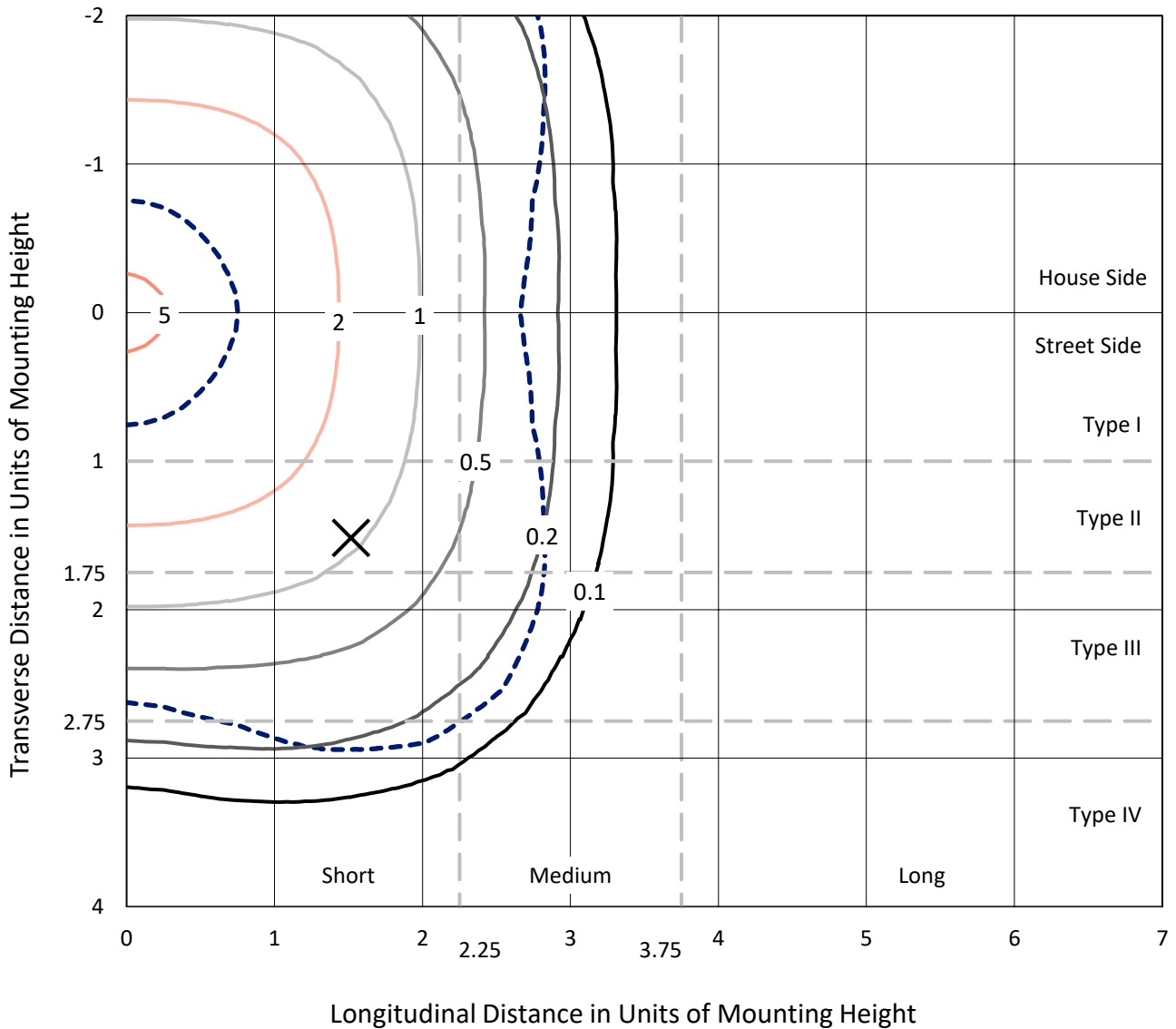
Lumens per Lamp: N/A
Luminaire Lumens: 17294.7 lumens
Efficiency: N/A
Efficacy: 129.1 lumens/watt
Luminous Opening: Rectangular (W 1' x L: 0.33' x H: 0')
IES Classification: Type V - Short
BUG Rating: B4 - U0 - G2

Input Watts (W): 134
Input Voltage (V): 120
Input Current (A_{in}): 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: P871355
 CATALOG NUMBER: EMM2-HSN-SA3B-830-U-T5M

Iso-Footcandle Lines of Horizontal Illumination

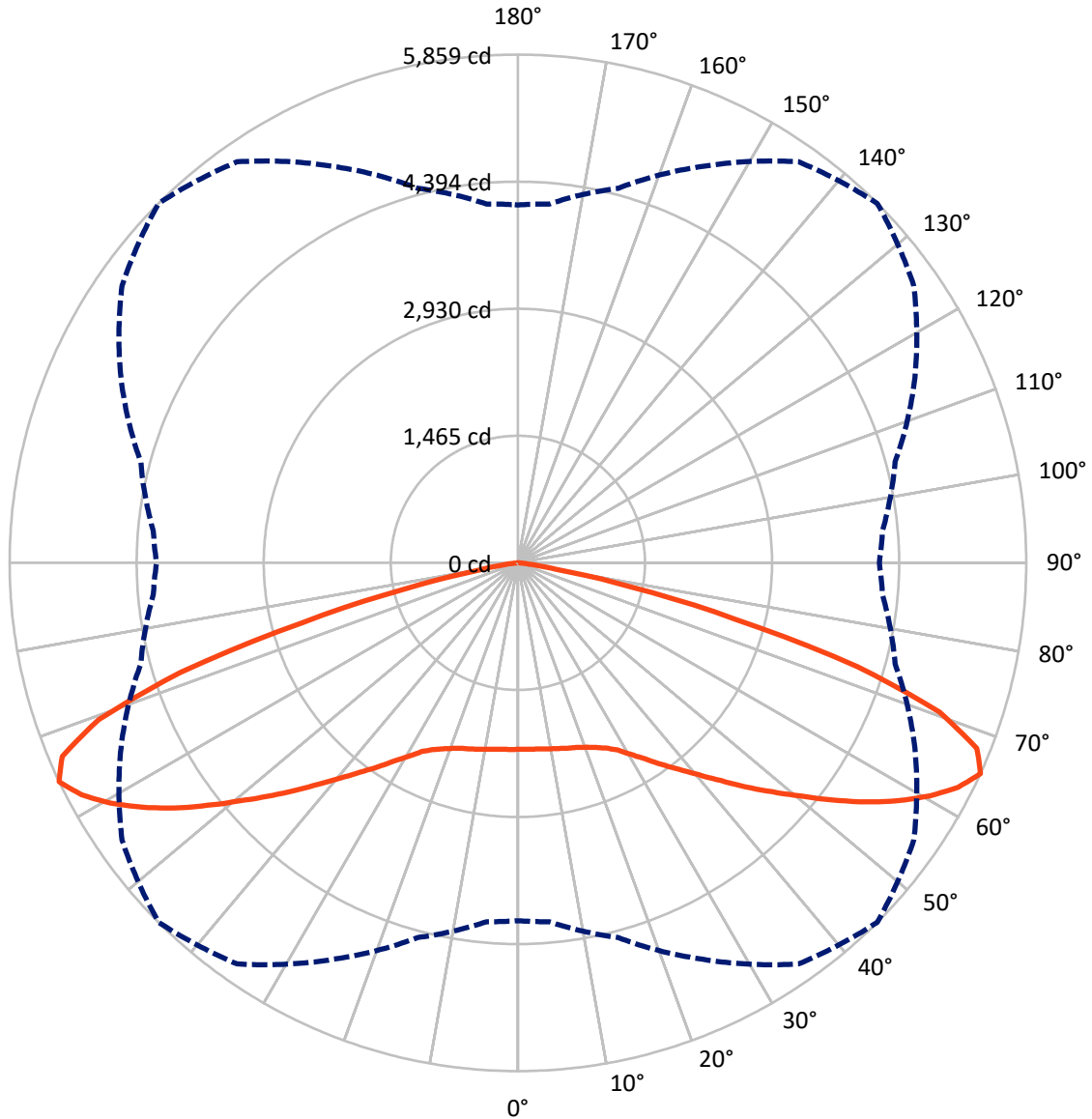
× Max cd
 - - - 1/2 Max cd



Based on 20 foot mounting height. Maximum calculated value = 5.4 fc
 Type V - Short - N/A

REPORT NUMBER: P871355
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Luminous Intensity Polar Plot



— Vertical Plane Through 45-Deg Lateral - - - Horizontal Cone Through 65-Deg Vertical

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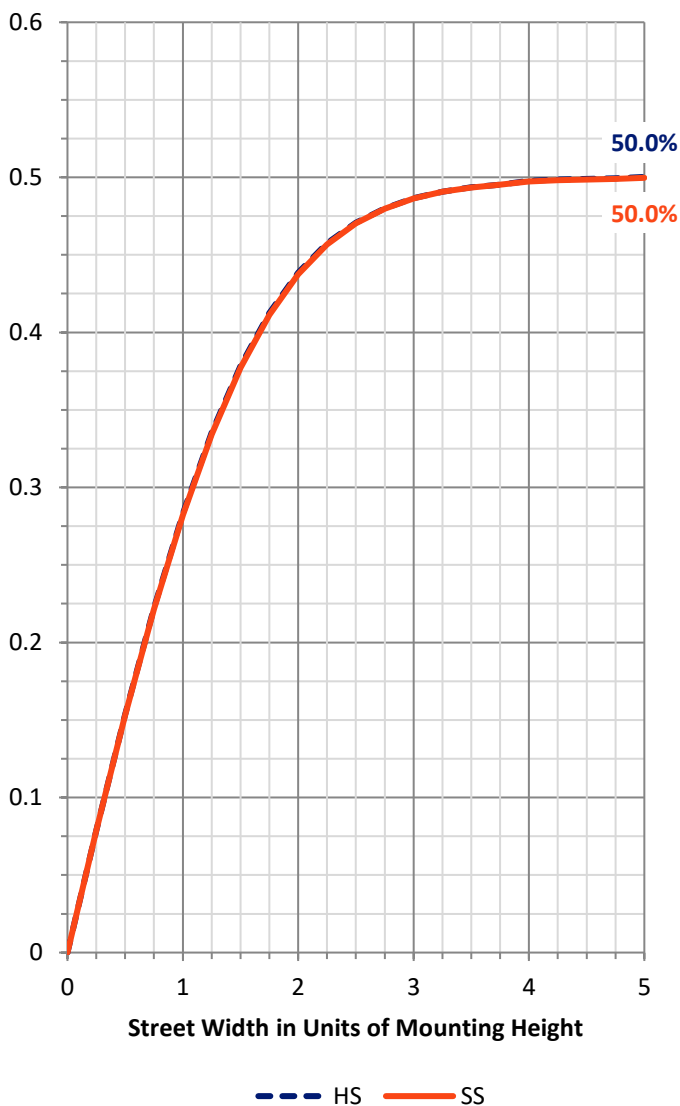
FLUX DISTRIBUTION:

		Downward	Upward	Total
House Side	Lumens	8647.3	0.0	8647.3
	% Fixture	50.0	0.0	50.0
Street Side	Lumens	8647.3	0.0	8647.3
	% Fixture	50.0	0.0	50.0
Total	Lumens	17294.7	0.0	17294.7
	% Fixture	100.0	0.0	100.0

ZONAL LUMENS:

Zone	Lumens	% Fixture
0°-10°	206.6	1.2
10°-20°	629.0	3.6
20°-30°	1106.3	6.4
30°-40°	1789.2	10.3
40°-50°	2787.0	16.1
50°-60°	4075.3	23.6
60°-70°	4692.9	27.1
70°-80°	1916.6	11.1
80°-90°	91.7	0.5
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°	17294.7	100.0
0°-180°	17294.7	100.0

Coefficient of Utilization



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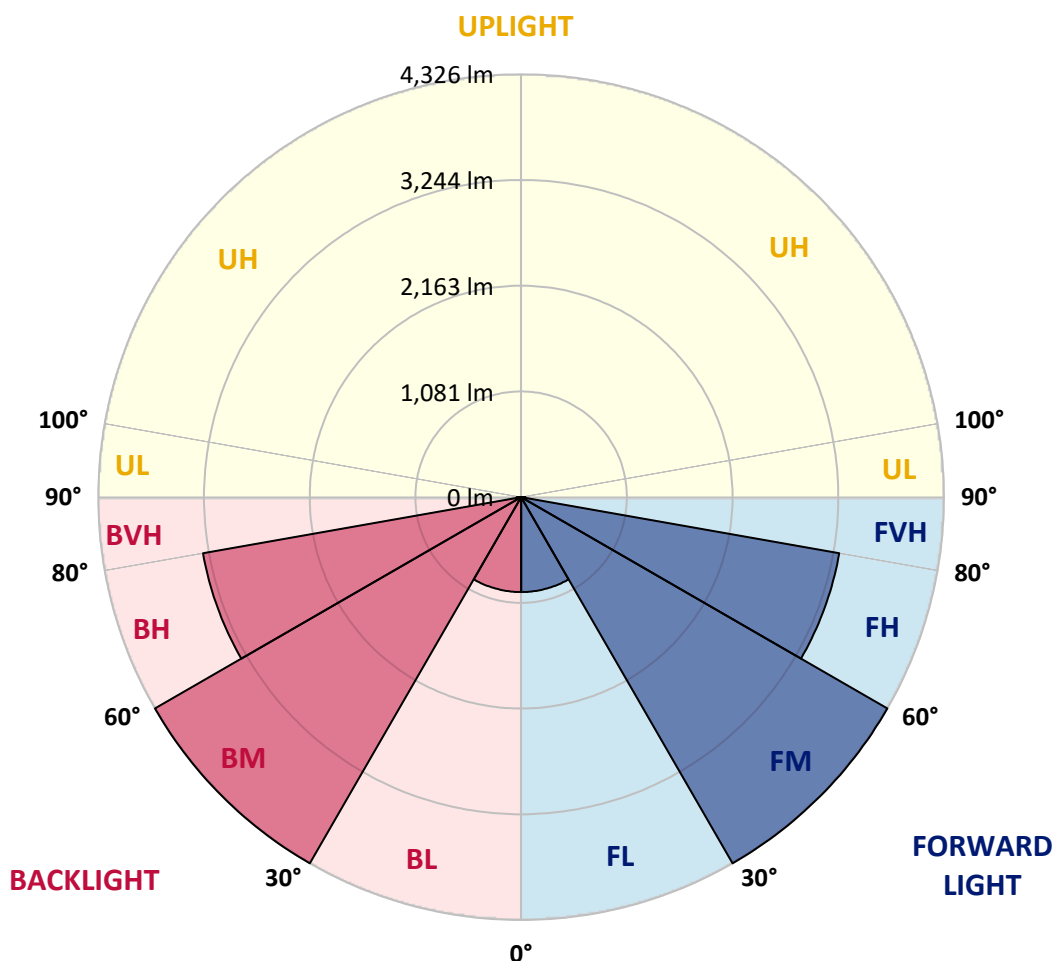
CATALOG NUMBER: EMM2-HSN-SA3B-830-U-T5M

LUMINAIRE CLASSIFICATION SYSTEM LUMEN TABLE AND BUG RATING:

Zone	Lumens	% Fixture	Zone Rating/Lumen Limit		
			B	U	G
FL (0°-30°)	971.0	5.6			
FM (30°-60°)	4325.8	25.0			
FH (60°-80°)	3304.7	19.1			G2/5000
FVH (80°-90°)	45.8	0.3			G1/100
BL (0°-30°)	971.0	5.6	B2/1000		
BM (30°-60°)	4325.8	25.0	B3/5000		
BH (60°-80°)	3304.7	19.1	B4/5000		G2/5000
BVH (80°-90°)	45.8	0.3			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





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CATALOG NUMBER: EMM2-HSN-SA3B-830-U-T5M

CANDELA DISTRIBUTION (FULL):

	0°	5°	15°	25°	35°	45°	55°	65°	75°	85°	90°
0°	2149.0	2149.0	2149.0	2149.0	2149.0	2149.0	2149.0	2149.0	2149.0	2149.0	2149.0
2.5°	2155.6	2155.6	2152.3	2152.3	2145.6	2152.3	2149.0	2152.3	2149.0	2149.0	2152.3
5°	2162.2	2162.2	2155.6	2158.9	2152.3	2155.6	2152.3	2158.9	2155.6	2152.3	2158.9
7.5°	2172.2	2172.2	2165.6	2168.9	2162.2	2165.6	2162.2	2168.9	2165.6	2165.6	2168.9
10°	2182.2	2185.5	2178.9	2175.5	2175.5	2178.9	2182.2	2185.5	2182.2	2182.2	2188.8
12.5°	2198.8	2202.1	2195.5	2192.1	2192.1	2195.5	2198.8	2205.4	2195.5	2195.5	2195.5
15°	2215.4	2215.4	2212.1	2208.7	2212.1	2215.4	2215.4	2222.0	2215.4	2208.7	2208.7
17.5°	2222.0	2225.4	2222.0	2228.7	2232.0	2235.3	2238.6	2238.6	2228.7	2225.4	2225.4
20°	2245.3	2248.6	2242.0	2245.3	2255.2	2268.5	2268.5	2268.5	2268.5	2258.6	2258.6
22.5°	2285.1	2288.5	2285.1	2285.1	2298.4	2311.7	2311.7	2321.7	2308.4	2301.7	2301.7
25°	2351.6	2351.6	2348.2	2351.6	2358.2	2364.9	2378.1	2384.8	2384.8	2381.5	2384.8
27.5°	2431.3	2434.6	2431.3	2431.3	2428.0	2441.2	2461.2	2471.1	2474.5	2477.8	2477.8
30°	2537.6	2544.2	2540.9	2544.2	2550.9	2560.8	2567.5	2570.8	2570.8	2564.1	2564.1
32.5°	2653.8	2660.5	2653.8	2670.4	2693.7	2693.7	2687.0	2700.3	2690.4	2683.7	2677.1
35°	2790.0	2790.0	2796.6	2803.3	2836.5	2853.1	2853.1	2846.5	2826.5	2816.6	2823.2
37.5°	2946.1	2949.4	2956.1	2959.4	2989.3	3019.2	3015.9	2999.2	2976.0	2949.4	2949.4
40°	3132.1	3125.5	3128.8	3152.0	3175.3	3211.8	3215.1	3191.9	3152.0	3125.5	3125.5
42.5°	3301.5	3304.8	3318.1	3348.0	3401.1	3431.0	3414.4	3374.6	3331.4	3298.2	3294.9
45°	3480.9	3477.5	3514.1	3577.2	3646.9	3683.5	3656.9	3600.4	3534.0	3490.8	3490.8
47.5°	3663.5	3660.2	3720.0	3823.0	3912.6	3942.5	3916.0	3842.9	3753.2	3690.1	3680.1
50°	3852.8	3866.1	3929.2	4075.4	4191.6	4224.8	4191.6	4095.3	3975.7	3892.7	3879.4
52.5°	4068.7	4078.7	4161.7	4321.2	4464.0	4540.4	4490.6	4347.7	4195.0	4095.3	4082.0
55°	4268.0	4274.7	4394.2	4586.9	4762.9	4865.9	4786.2	4603.5	4410.8	4284.6	4271.3
57.5°	4407.5	4424.1	4576.9	4826.0	5051.9	5171.5	5051.9	4855.9	4600.2	4444.1	4434.1
60°	4497.2	4523.8	4699.8	5012.0	5324.2	5453.8	5330.9	5058.5	4743.0	4540.4	4530.4
62.5°	4450.7	4487.2	4713.1	5121.6	5556.7	5696.2	5536.8	5154.8	4726.4	4470.6	4444.1
65°	4125.2	4151.8	4470.6	5041.9	5643.1	5859.0	5570.0	5048.6	4500.5	4218.2	4165.1
67.5°	3451.0	3497.5	3919.3	4656.6	5457.1	5706.2	5340.8	4666.6	4005.6	3660.2	3600.4
70°	2650.5	2733.5	3195.2	3995.7	4875.8	5158.2	4756.3	3939.2	3162.0	2809.9	2700.3
72.5°	1531.2	1660.7	2338.3	3118.8	3879.4	4092.0	3527.3	2753.5	2099.1	1850.0	1820.1
75°	508.2	554.7	1112.7	1796.9	2474.5	2580.7	2205.4	1737.1	1381.7	1182.4	1192.4
77.5°	249.1	249.1	335.5	657.6	1126.0	1328.6	1205.7	840.3	604.5	458.4	445.1
80°	199.3	199.3	232.5	322.2	378.6	445.1	378.6	275.7	225.9	205.9	215.9
82.5°	96.3	93.0	109.6	156.1	159.4	152.8	142.8	142.8	136.2	126.2	122.9
85°	6.6	6.6	13.3	29.9	49.8	66.4	76.4	73.1	69.7	59.8	66.4
87.5°	3.3	3.3	3.3	3.3	3.3	3.3	3.3	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

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: SP1-2407-157-7

Test Date: 09/05/2024

Luminaire Tested: MEM2-HTN-SA-40-830-U-5WQ

Data in this report applies to families of products including MEM2-HTN-SA-40-830-U-5WQ

Test Information

Test Method: LM-79-2019
 Report Number: SP1-2407-157-7
 Test Lab: COOPER LIGHTING SOLUTIONS
 Photometer: SP1 - 76IN SPHERE
 Measurement Geometry: 4π
 Issue Date: 09/05/2024
 Manufacturer: COOPER LIGHTING SOLUTIONS
 Product Line: Streetworks
 Catalog Number: **MEM2-HTN-SA-40-830-U-5WQ**
 Description: Epic Modern Light Square 40W 5WQ Optic

Spectral Parameters

CCT (K): 3126
 CIE u': 0.2465
 CIE v': 0.5182
 Duv: -0.0004
 CIE x: 0.4277
 CIE y: 0.3997
 CIE z: 0.1727
 Peak Wavelength (nm): 601
 Dominant Wavelength (nm): 582
 Purity: 48.31913
 Rf: 84.4
 Rg: 94.7

CRI (Ra):	82.6		
R1:	81.4	R9:	5.1
R2:	92.2	R10:	82.2
R3:	94.9	R11:	79.8
R4:	80.1	R12:	70.4
R5:	81.8	R13:	84.2
R6:	90.5	R14:	97.9
R7:	81.8	R15:	73.6
R8:	58.0		



Test Conditions

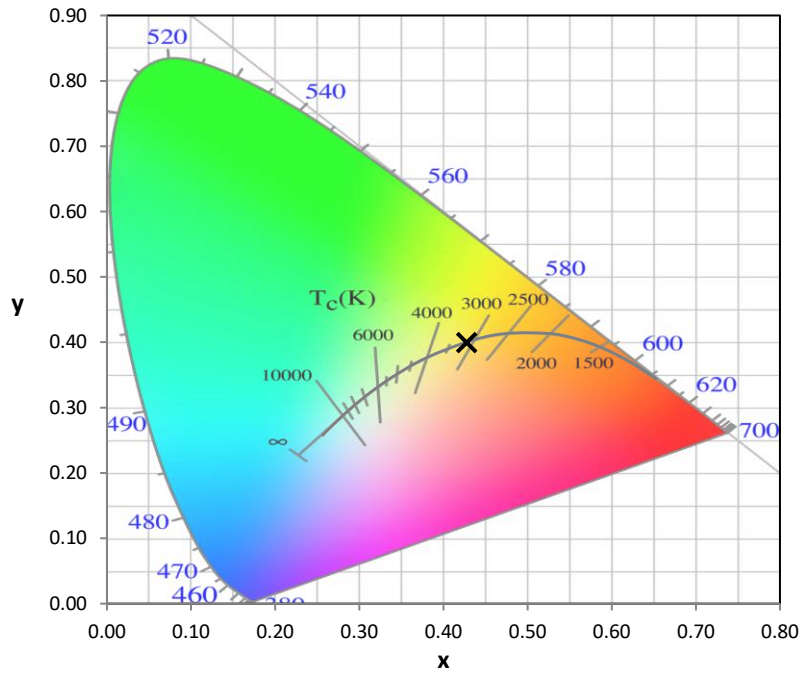
Stabilization Time: 22M
 Operation Time: 1H 22M
 Sphere Temperature (°C): 24.3

REPORT NUMBER: SP1-2407-157-7

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 3000K 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	258	NR	620	908	NR	750	26	NR	880	1	NR
365	0	NR	495	297	NR	625	857	NR	755	22	NR	885	0	NR
370	0	NR	500	345	NR	630	801	NR	760	19	NR	890	0	NR
375	0	NR	505	391	NR	635	738	NR	765	16	NR	895	0	NR
380	0	NR	510	426	NR	640	675	NR	770	14	NR	900	0	NR
385	0	NR	515	456	NR	645	610	NR	775	12	NR	905	0	NR
390	0	NR	520	480	NR	650	547	NR	780	10	NR	910	0	NR
395	0	NR	525	500	NR	655	488	NR	785	9	NR	915	0	NR
400	0	NR	530	517	NR	660	429	NR	790	7	NR	920	0	NR
405	2	NR	535	538	NR	665	378	NR	795	6	NR	925	0	NR
410	4	NR	540	558	NR	670	328	NR	800	5	NR	930	0	NR
415	9	NR	545	584	NR	675	285	NR	805	5	NR	935	0	NR
420	16	NR	550	611	NR	680	247	NR	810	4	NR	940	0	NR
425	31	NR	555	646	NR	685	212	NR	815	3	NR	945	0	NR
430	56	NR	560	687	NR	690	183	NR	820	3	NR	950	0	NR
435	101	NR	565	731	NR	695	156	NR	825	3	NR	955	0	NR
440	178	NR	570	780	NR	700	133	NR	830	2	NR	960	0	NR
445	323	NR	575	832	NR	705	114	NR	835	2	NR	965	0	NR
450	566	NR	580	883	NR	710	96	NR	840	2	NR	970	0	NR
455	645	NR	585	927	NR	715	82	NR	845	1	NR	975	0	NR
460	457	NR	590	963	NR	720	70	NR	850	1	NR	980	0	NR
465	365	NR	595	985	NR	725	59	NR	855	1	NR	985	0	NR
470	317	NR	600	998	NR	730	50	NR	860	1	NR	990	0	NR
475	244	NR	605	994	NR	735	43	NR	865	1	NR	995	0	NR
480	218	NR	610	978	NR	740	36	NR	870	1	NR	1000	0	NR
485	233	NR	615	947	NR	745	31	NR	875	1	NR			

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Scotopic Flux vs. Wavelength



Scotopic Lumens: NR

S/P: 1.42

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	258	NR	620	908	NR	750	26	NR	880	1	NR
365	0	NR	495	297	NR	625	857	NR	755	22	NR	885	0	NR
370	0	NR	500	345	NR	630	801	NR	760	19	NR	890	0	NR
375	0	NR	505	391	NR	635	738	NR	765	16	NR	895	0	NR
380	0	NR	510	426	NR	640	675	NR	770	14	NR	900	0	NR
385	0	NR	515	456	NR	645	610	NR	775	12	NR	905	0	NR
390	0	NR	520	480	NR	650	547	NR	780	10	NR	910	0	NR
395	0	NR	525	500	NR	655	488	NR	785	9	NR	915	0	NR
400	0	NR	530	517	NR	660	429	NR	790	7	NR	920	0	NR
405	2	NR	535	538	NR	665	378	NR	795	6	NR	925	0	NR
410	4	NR	540	558	NR	670	328	NR	800	5	NR	930	0	NR
415	9	NR	545	584	NR	675	285	NR	805	5	NR	935	0	NR
420	16	NR	550	611	NR	680	247	NR	810	4	NR	940	0	NR
425	31	NR	555	646	NR	685	212	NR	815	3	NR	945	0	NR
430	56	NR	560	687	NR	690	183	NR	820	3	NR	950	0	NR
435	101	NR	565	731	NR	695	156	NR	825	3	NR	955	0	NR
440	178	NR	570	780	NR	700	133	NR	830	2	NR	960	0	NR
445	323	NR	575	832	NR	705	114	NR	835	2	NR	965	0	NR
450	566	NR	580	883	NR	710	96	NR	840	2	NR	970	0	NR
455	645	NR	585	927	NR	715	82	NR	845	1	NR	975	0	NR
460	457	NR	590	963	NR	720	70	NR	850	1	NR	980	0	NR
465	365	NR	595	985	NR	725	59	NR	855	1	NR	985	0	NR
470	317	NR	600	998	NR	730	50	NR	860	1	NR	990	0	NR
475	244	NR	605	994	NR	735	43	NR	865	1	NR	995	0	NR
480	218	NR	610	978	NR	740	36	NR	870	1	NR	1000	0	NR
485	233	NR	615	947	NR	745	31	NR	875	1	NR			

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Melanopic Flux vs. Wavelength



Melanopic Lumens: NR

M/P: 2.79

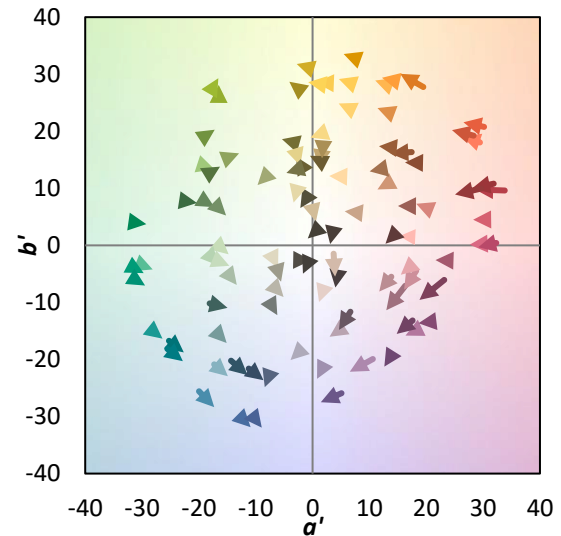
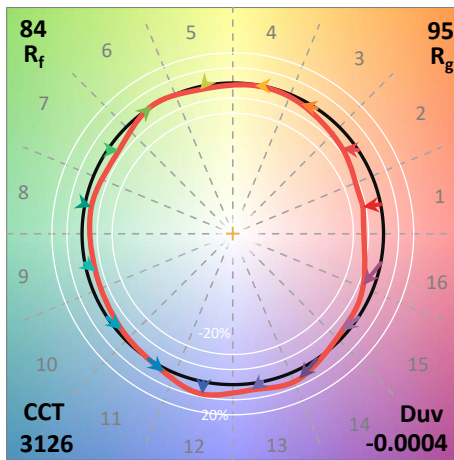
λ (nm)	Power W [^] /nm	Lumens (ϕ /nm)	λ (nm)	Power W [^] /nm	Lumens (ϕ /nm)	λ (nm)	Power W [^] /nm	Lumens (ϕ /nm)	λ (nm)	Power W [^] /nm	Lumens (ϕ /nm)	λ (nm)	Power W [^] /nm	Lumens (ϕ /nm)
360	0	NR	490	258	NR	620	908	NR	750	26	NR	880	1	NR
365	0	NR	495	297	NR	625	857	NR	755	22	NR	885	0	NR
370	0	NR	500	345	NR	630	801	NR	760	19	NR	890	0	NR
375	0	NR	505	391	NR	635	738	NR	765	16	NR	895	0	NR
380	0	NR	510	426	NR	640	675	NR	770	14	NR	900	0	NR
385	0	NR	515	456	NR	645	610	NR	775	12	NR	905	0	NR
390	0	NR	520	480	NR	650	547	NR	780	10	NR	910	0	NR
395	0	NR	525	500	NR	655	488	NR	785	9	NR	915	0	NR
400	0	NR	530	517	NR	660	429	NR	790	7	NR	920	0	NR
405	2	NR	535	538	NR	665	378	NR	795	6	NR	925	0	NR
410	4	NR	540	558	NR	670	328	NR	800	5	NR	930	0	NR
415	9	NR	545	584	NR	675	285	NR	805	5	NR	935	0	NR
420	16	NR	550	611	NR	680	247	NR	810	4	NR	940	0	NR
425	31	NR	555	646	NR	685	212	NR	815	3	NR	945	0	NR
430	56	NR	560	687	NR	690	183	NR	820	3	NR	950	0	NR
435	101	NR	565	731	NR	695	156	NR	825	3	NR	955	0	NR
440	178	NR	570	780	NR	700	133	NR	830	2	NR	960	0	NR
445	323	NR	575	832	NR	705	114	NR	835	2	NR	965	0	NR
450	566	NR	580	883	NR	710	96	NR	840	2	NR	970	0	NR
455	645	NR	585	927	NR	715	82	NR	845	1	NR	975	0	NR
460	457	NR	590	963	NR	720	70	NR	850	1	NR	980	0	NR
465	365	NR	595	985	NR	725	59	NR	855	1	NR	985	0	NR
470	317	NR	600	998	NR	730	50	NR	860	1	NR	990	0	NR
475	244	NR	605	994	NR	735	43	NR	865	1	NR	995	0	NR
480	218	NR	610	978	NR	740	36	NR	870	1	NR	1000	0	NR
485	233	NR	615	947	NR	745	31	NR	875	1	NR			

Summary

$R_f = 84.4$
 $R_g = 94.7$
 $CIE R_a = 82.6$
 $R_9 = 5.1$

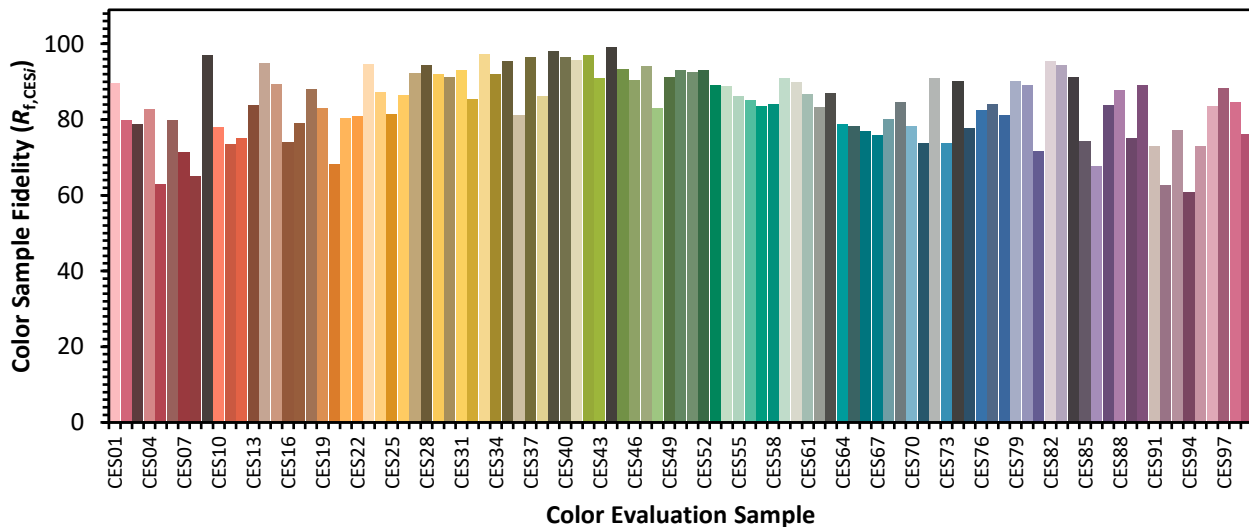


Color Vector Graphics

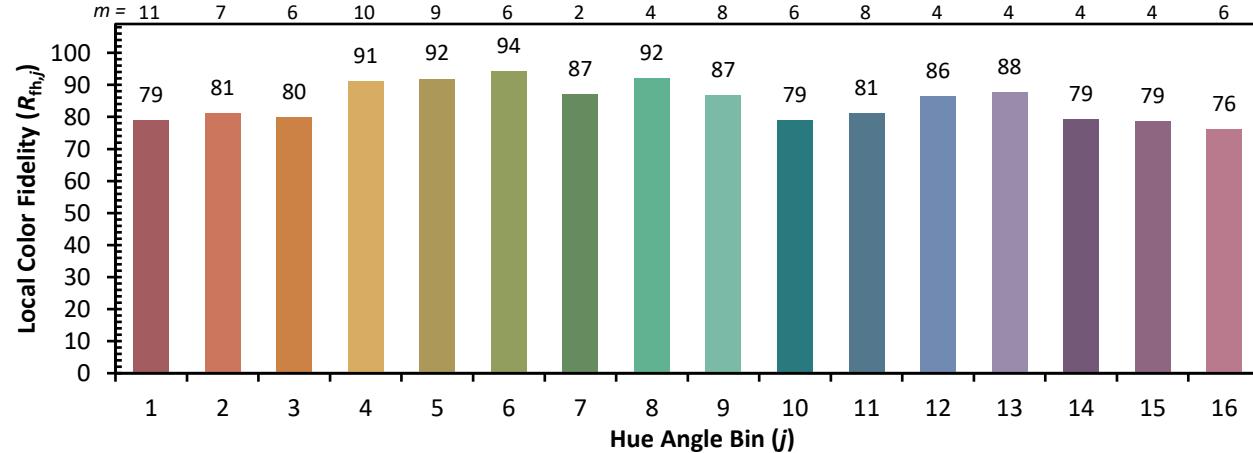


Individual Sample Fidelity Index ($R_{f,i}$)

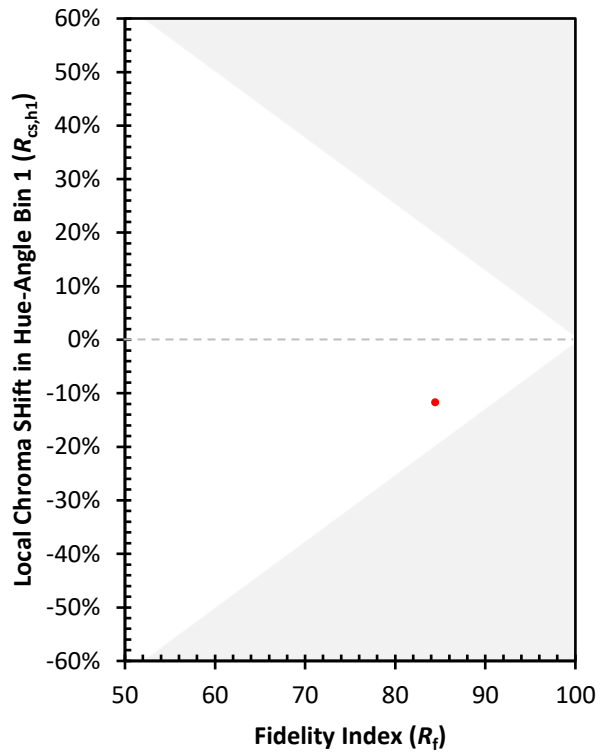
CES01 = 86	CES26 = 86	CES51 = 93	CES76 = 82
CES02 = 63	CES27 = 92	CES52 = 93	CES77 = 84
CES03 = 31	CES28 = 94	CES53 = 89	CES78 = 81
CES04 = 70	CES29 = 92	CES54 = 89	CES79 = 90
CES05 = 49	CES30 = 91	CES55 = 86	CES80 = 89
CES06 = 51	CES31 = 93	CES56 = 85	CES81 = 72
CES07 = 42	CES32 = 85	CES57 = 83	CES82 = 95
CES08 = 41	CES33 = 97	CES58 = 84	CES83 = 94
CES09 = 29	CES34 = 92	CES59 = 91	CES84 = 91
CES10 = 76	CES35 = 96	CES60 = 90	CES85 = 74
CES11 = 59	CES36 = 81	CES61 = 87	CES86 = 68
CES12 = 65	CES37 = 96	CES62 = 83	CES87 = 84
CES13 = 43	CES38 = 86	CES63 = 87	CES88 = 88
CES14 = 74	CES39 = 98	CES64 = 79	CES89 = 75
CES15 = 71	CES40 = 96	CES65 = 78	CES90 = 89
CES16 = 47	CES41 = 96	CES66 = 77	CES91 = 73
CES17 = 50	CES42 = 97	CES67 = 76	CES92 = 63
CES18 = 56	CES43 = 91	CES68 = 80	CES93 = 77
CES19 = 72	CES44 = 99	CES69 = 85	CES94 = 61
CES20 = 66	CES45 = 93	CES70 = 78	CES95 = 73
CES21 = 87	CES46 = 90	CES71 = 74	CES96 = 84
CES22 = 79	CES47 = 94	CES72 = 91	CES97 = 88
CES23 = 92	CES48 = 83	CES73 = 74	CES98 = 85
CES24 = 91	CES49 = 91	CES74 = 90	CES99 = 76
CES25 = 72	CES50 = 93	CES75 = 78	



Color Rendition by Hue-Angle Bin



Measure Comparisons



(END OF REPORT)