

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: P871390

Luminaire Tested: **EMM2-HSN-SA3B-830-U-T5W**

Issue Date: 09/05/2024

Test Information

Test Method: LM-79-08
Report Number: P871390
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-T5W
Description: EPIC MODERN SHORT HOUSING DISCRETE LED ARRAYS 150W 80CRI 3000K
FITXURE w/ TYPE V SQUARE WIDE DISTRIBUTION OPTIC
Light Source: (30) 3000K CCT, 80 CRI LEDS
Ballast/Driver: ELECTRONIC DRIVER

Summary

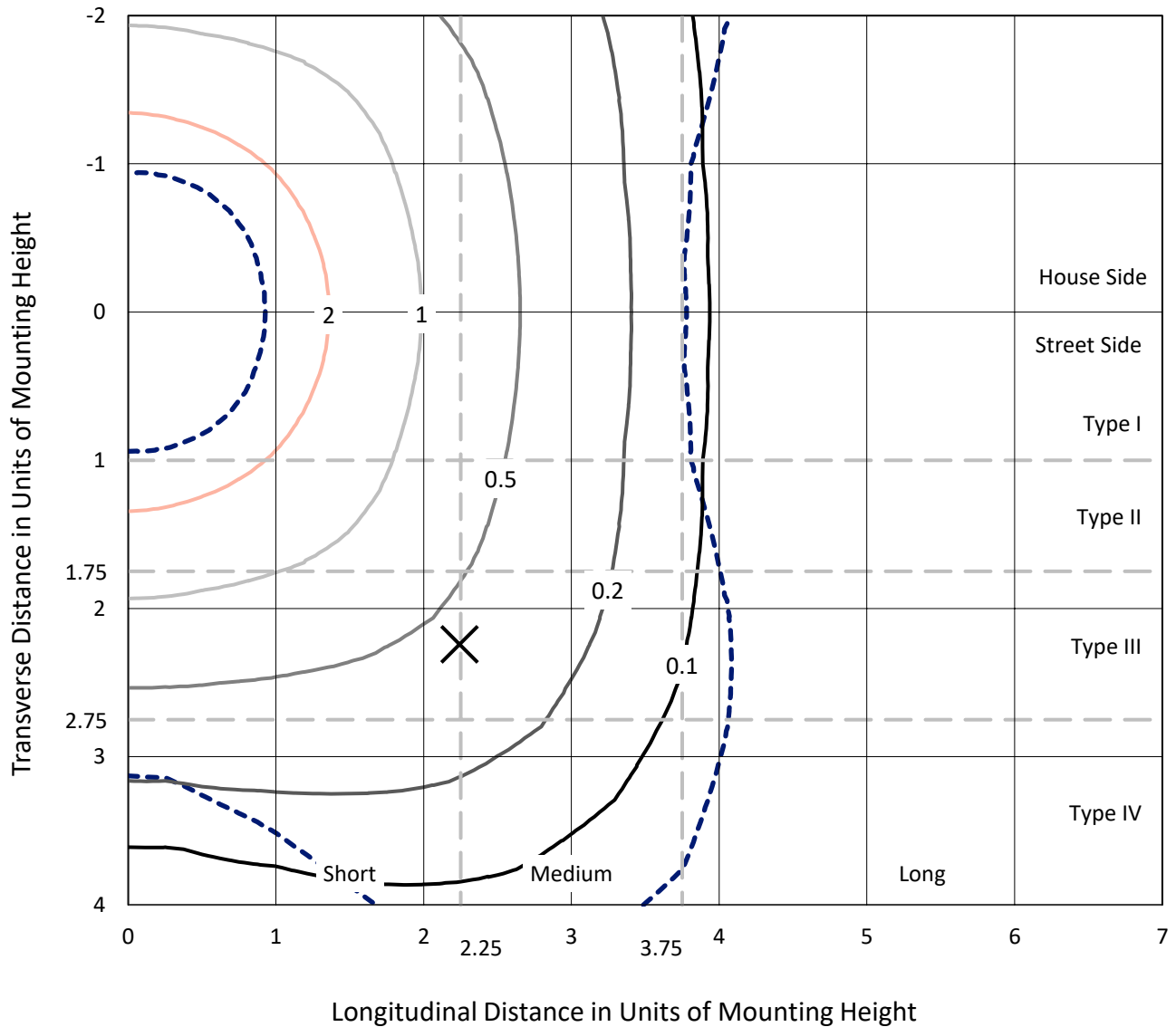
Lumens per Lamp: N/A
Luminaire Lumens: 17208.5 lumens
Efficiency: N/A
Efficacy: 128.4 lumens/watt
Luminous Opening: Rectangular (W 1' x L: 0.33' x H: 0')
IES Classification: Type V - Short
BUG Rating: B4 - U0 - G2

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: P871390
 CATALOG NUMBER: EMM2-HSN-SA3B-830-U-T5W

Iso-Footcandle Lines of Horizontal Illumination

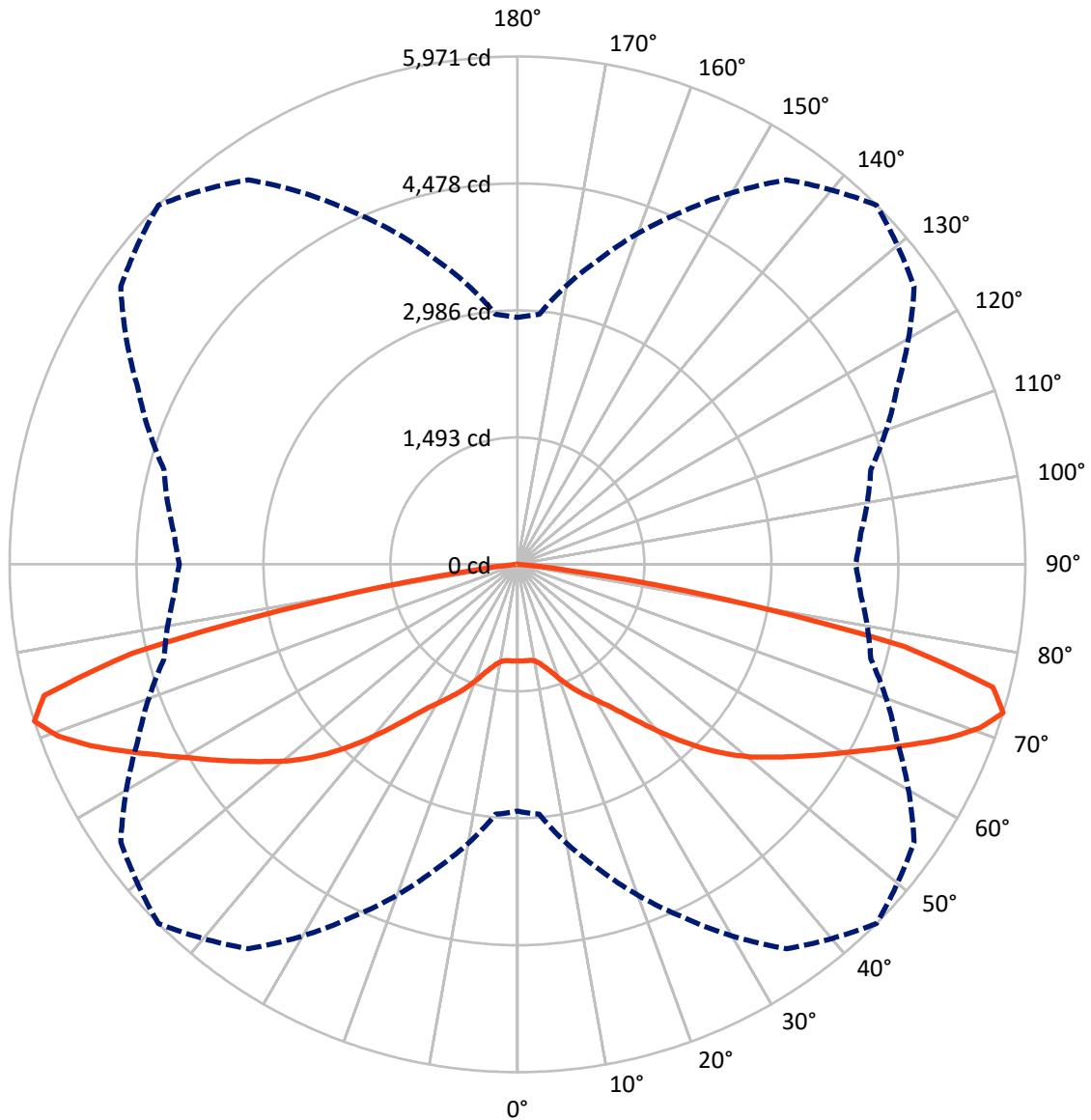
× Max cd
 - - - 1/2 Max cd



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

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Luminous Intensity Polar Plot



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

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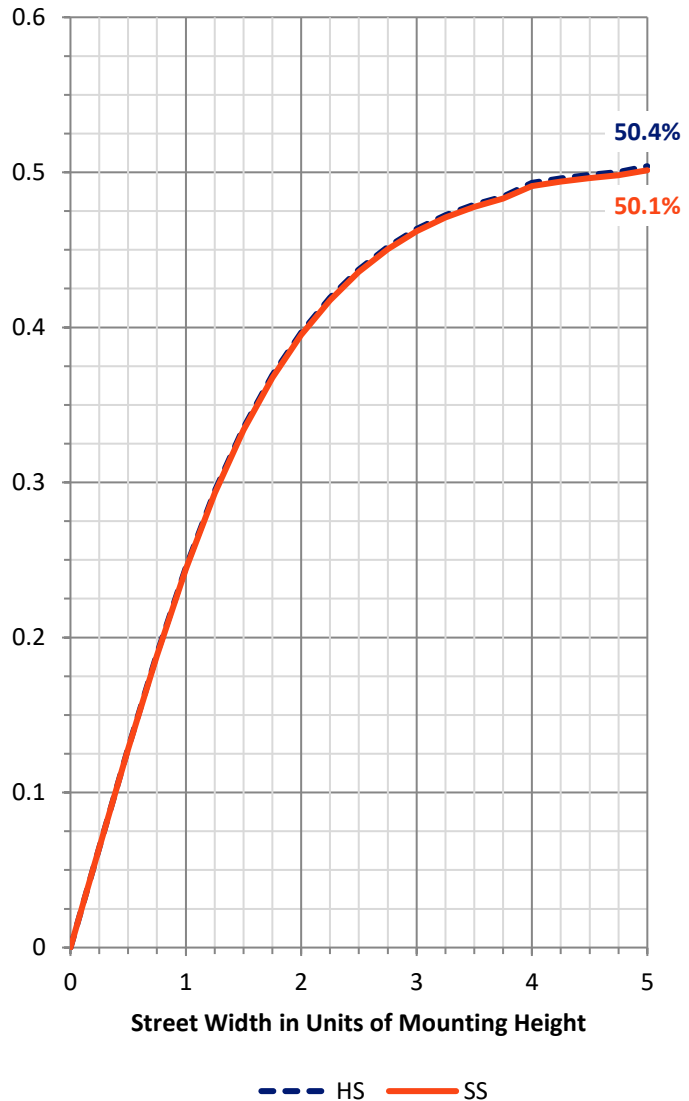
FLUX DISTRIBUTION:

		Downward	Upward	Total
House Side	Lumens	8604.3	0.0	8604.3
	% Fixture	50.0	0.0	50.0
Street Side	Lumens	8604.3	0.0	8604.3
	% Fixture	50.0	0.0	50.0
Total	Lumens	17208.5	0.0	17208.5
	% Fixture	100.0	0.0	100.0

ZONAL LUMENS:

Zone	Lumens	% Fixture
0°-10°	108.9	0.6
10°-20°	363.4	2.1
20°-30°	749.8	4.4
30°-40°	1380.3	8.0
40°-50°	2427.0	14.1
50°-60°	3520.0	20.5
60°-70°	4588.7	26.7
70°-80°	3814.3	22.2
80°-90°	256.1	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°	17208.5	100.0
0°-180°	17208.5	100.0

Coefficient of Utilization



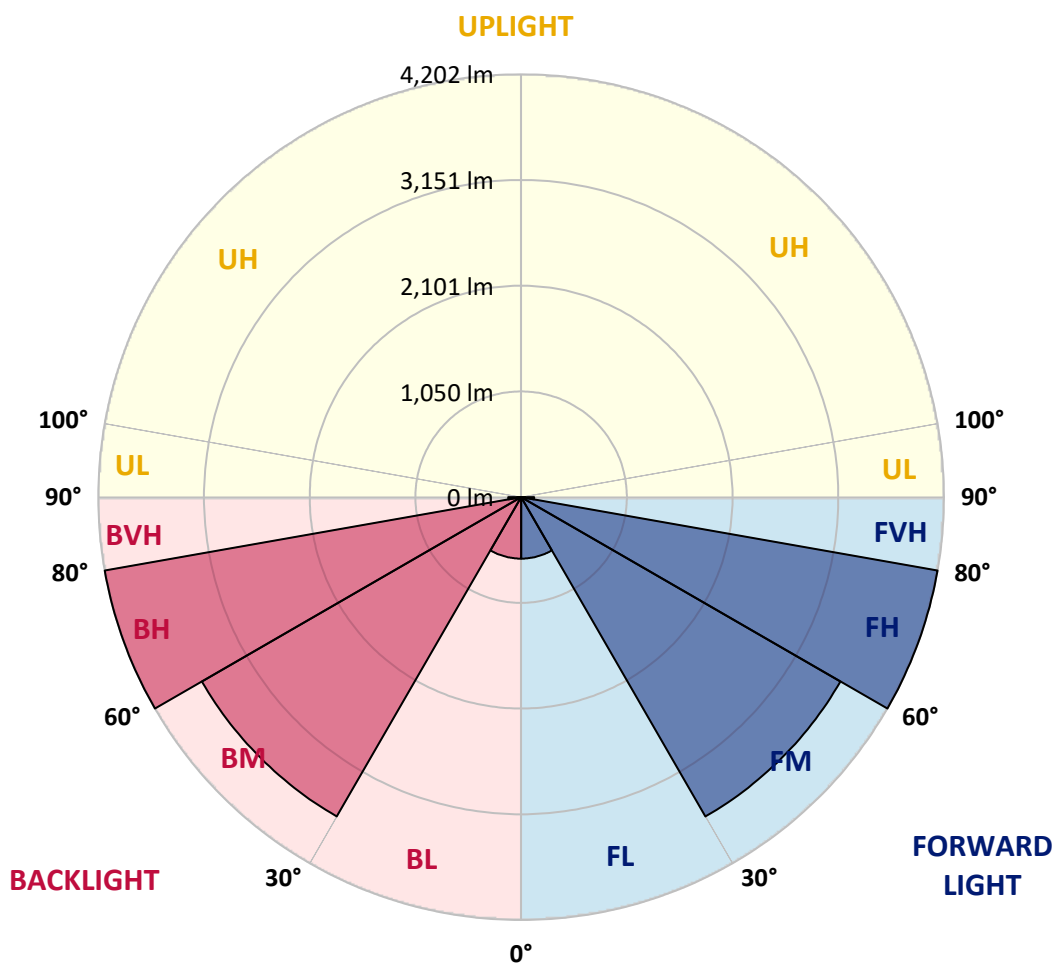
REPORT NUMBER: P871390
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LUMINAIRE CLASSIFICATION SYSTEM LUMEN TABLE AND BUG RATING:

Zone	Lumens	% Fixture	Zone Rating/Lumen Limit		
			B	U	G
FL (0°-30°)	611.0	3.6			
FM (30°-60°)	3663.7	21.3			
FH (60°-80°)	4201.5	24.4			G2/5000
FVH (80°-90°)	128.1	0.7			G2/225
BL (0°-30°)	611.0	3.6	B2/1000		
BM (30°-60°)	3663.7	21.3	B3/5000		
BH (60°-80°)	4201.5	24.4	B4/5000		G2/5000
BVH (80°-90°)	128.1	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





REPORT NUMBER: P871390

CATALOG NUMBER: EMM2-HSN-SA3B-830-U-T5W

CANDELA DISTRIBUTION (FULL):

	0°	5°	15°	25°	35°	45°	55°	65°	75°	85°	90°
0°	1136.1	1136.1	1136.1	1136.1	1136.1	1136.1	1136.1	1136.1	1136.1	1136.1	1136.1
2.5°	1132.5	1134.3	1134.3	1134.3	1136.1	1137.8	1139.6	1141.4	1145.0	1146.8	1146.8
5°	1137.8	1136.1	1134.3	1137.8	1137.8	1137.8	1139.6	1141.4	1141.4	1141.4	1143.2
7.5°	1132.5	1134.3	1132.5	1132.5	1137.8	1139.6	1137.8	1136.1	1136.1	1137.8	1137.8
10°	1152.1	1150.3	1148.5	1148.5	1153.9	1155.7	1153.9	1152.1	1152.1	1155.7	1155.7
12.5°	1196.7	1200.3	1189.6	1189.6	1196.7	1200.3	1194.9	1193.1	1194.9	1198.5	1198.5
15°	1266.3	1264.5	1257.3	1250.2	1257.3	1262.7	1255.6	1252.0	1253.8	1262.7	1255.6
17.5°	1342.9	1344.7	1337.6	1330.5	1335.8	1342.9	1332.2	1323.3	1325.1	1328.7	1325.1
20°	1428.6	1426.8	1425.0	1425.0	1435.7	1444.6	1428.6	1407.1	1401.8	1398.2	1398.2
22.5°	1491.0	1496.3	1498.1	1514.2	1539.1	1548.0	1526.6	1498.1	1476.7	1466.0	1458.9
25°	1589.1	1583.7	1580.1	1598.0	1635.4	1651.5	1624.7	1585.5	1564.1	1562.3	1567.7
27.5°	1678.2	1678.2	1685.4	1703.2	1738.9	1754.9	1731.7	1692.5	1681.8	1681.8	1676.5
30°	1794.2	1788.8	1795.9	1826.3	1853.0	1863.7	1844.1	1817.3	1808.4	1808.4	1799.5
32.5°	1929.7	1931.5	1942.2	1961.8	1988.6	1990.3	1983.2	1970.7	1965.4	1960.0	1968.9
35°	2136.6	2136.6	2133.0	2147.3	2154.4	2158.0	2161.6	2156.2	2156.2	2156.2	2149.1
37.5°	2393.4	2379.1	2377.4	2364.9	2355.9	2364.9	2380.9	2398.8	2413.0	2404.1	2400.5
40°	2648.4	2641.3	2619.9	2600.3	2593.2	2596.7	2616.3	2653.8	2669.8	2669.8	2684.1
42.5°	2923.1	2908.8	2882.1	2858.9	2839.3	2844.6	2862.5	2908.8	2944.5	2960.5	2953.4
45°	3169.2	3156.7	3130.0	3108.6	3094.3	3092.5	3115.7	3146.0	3194.2	3208.4	3219.1
47.5°	3379.7	3370.7	3347.6	3326.2	3331.5	3333.3	3340.4	3367.2	3406.4	3426.0	3424.2
50°	3550.9	3543.7	3522.3	3531.2	3545.5	3559.8	3550.9	3568.7	3593.7	3602.6	3609.7
52.5°	3707.8	3697.1	3682.8	3698.9	3736.3	3764.9	3770.2	3757.7	3764.9	3770.2	3764.9
55°	3863.0	3850.5	3846.9	3875.5	3932.5	3986.0	3980.7	3945.0	3936.1	3925.4	3920.0
57.5°	3989.6	3980.7	3994.9	4043.1	4153.7	4225.0	4201.8	4119.8	4084.1	4059.2	4052.0
60°	4069.9	4068.1	4100.2	4212.5	4380.2	4480.1	4442.6	4301.7	4221.4	4198.3	4187.6
62.5°	4112.7	4114.4	4171.5	4371.3	4638.8	4774.3	4708.3	4492.5	4367.7	4344.5	4348.1
65°	4151.9	4146.5	4221.4	4505.0	4918.8	5102.5	5013.3	4722.6	4540.7	4494.3	4494.3
67.5°	4180.4	4185.8	4298.1	4638.8	5191.7	5453.8	5323.6	4966.9	4726.2	4656.6	4647.7
70°	3820.2	3871.9	4223.2	4728.0	5407.4	5764.1	5592.9	5116.7	4733.3	4535.3	4515.7
72.5°	2901.7	2949.8	3709.6	4569.2	5518.0	5971.0	5692.8	4925.9	4301.7	4050.2	3975.3
75°	1913.7	1947.5	2764.4	3991.4	5211.3	5774.8	5184.5	4242.9	3386.8	3060.4	3080.0
77.5°	852.5	961.3	1762.1	3113.9	4292.8	4647.7	3953.9	2894.6	2068.8	1751.4	1717.5
80°	356.7	390.6	665.2	1660.4	2487.9	2380.9	1683.6	970.2	617.1	479.8	463.7
82.5°	103.4	107.0	132.0	287.1	506.5	595.7	358.5	181.9	173.0	137.3	126.6
85°	7.1	7.1	10.7	17.8	25.0	41.0	46.4	53.5	60.6	51.7	51.7
87.5°	3.6	3.6	3.6	5.4	5.4	7.1	5.4	5.4	5.4	5.4	5.4
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

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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



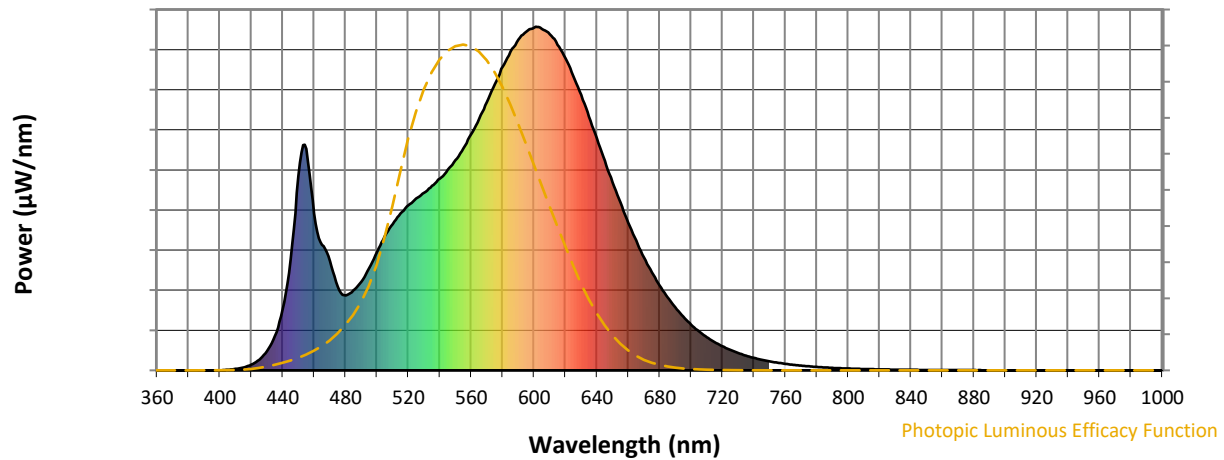
CIE 1931 Chromaticity Diagram with 2017 ANSI 7-Step and 4-Step Quadrangles



Point lies inside the ANSI 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^{\wedge}/nm	Lumens (ϕ/nm)	λ (nm)	Power W^{\wedge}/nm	Lumens (ϕ/nm)	λ (nm)	Power W^{\wedge}/nm	Lumens (ϕ/nm)	λ (nm)	Power W^{\wedge}/nm	Lumens (ϕ/nm)	λ (nm)	Power W^{\wedge}/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

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

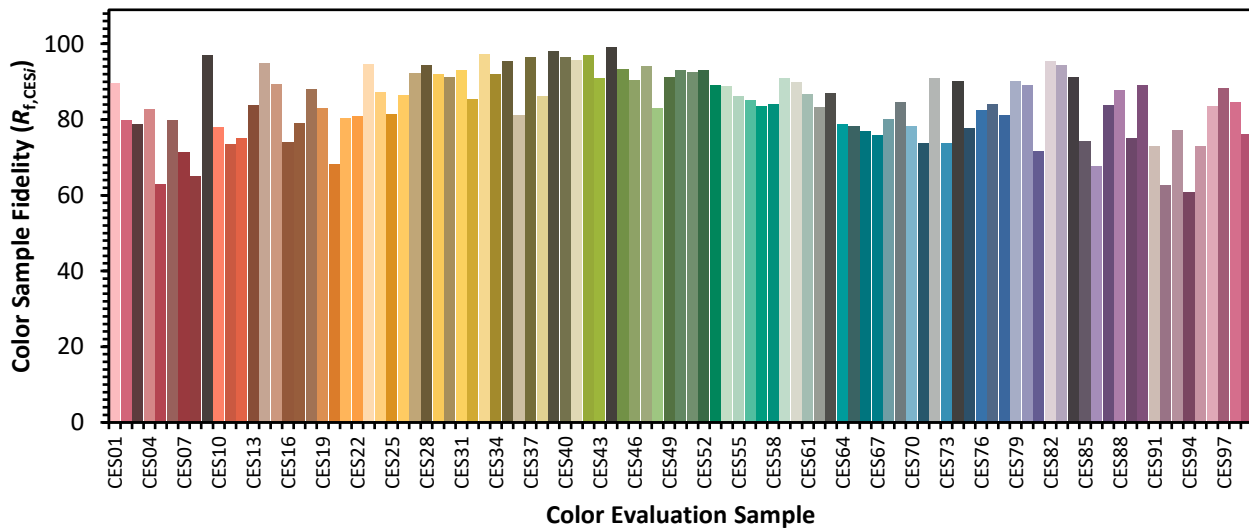


Color Vector Graphics

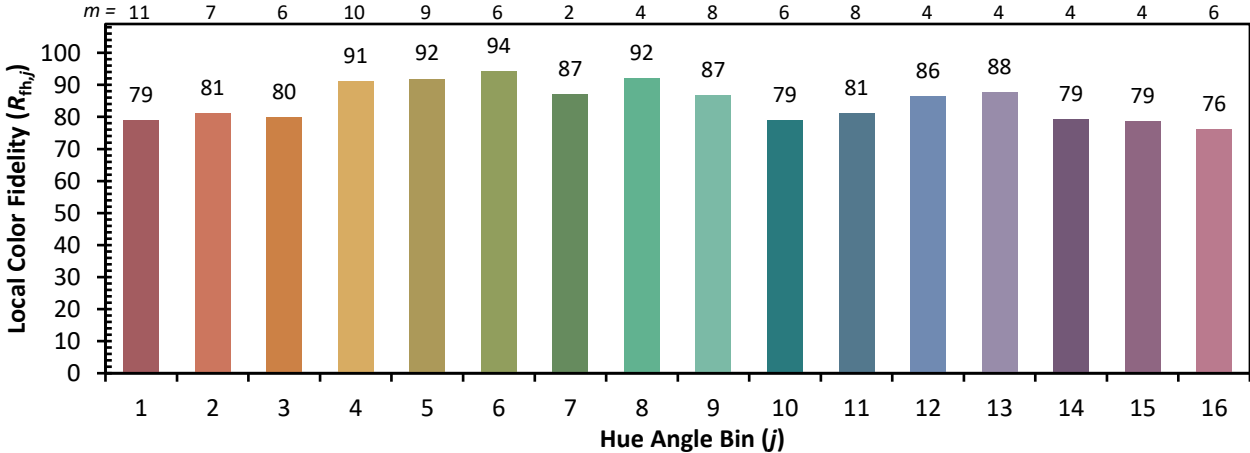


Individual Sample Fidelity Index ($R_{f,i}$)

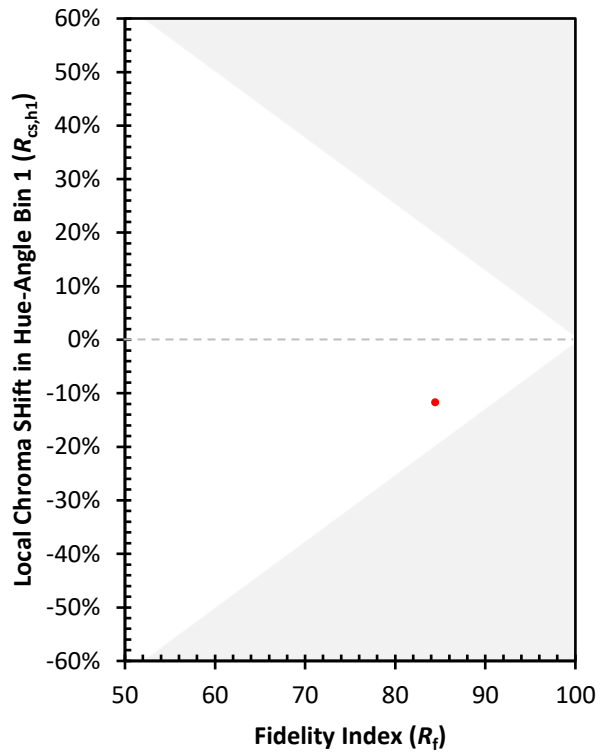
CES01 = 86	CES26 = 86	CES51 = 93	CES76 = 82
CES02 = 63	CES27 = 92	CES52 = 93	CES77 = 84
CES03 = 31	CES28 = 94	CES53 = 89	CES78 = 81
CES04 = 70	CES29 = 92	CES54 = 89	CES79 = 90
CES05 = 49	CES30 = 91	CES55 = 86	CES80 = 89
CES06 = 51	CES31 = 93	CES56 = 85	CES81 = 72
CES07 = 42	CES32 = 85	CES57 = 83	CES82 = 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)