

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: P879650

Luminaire Tested: **EMM2-HTN-VA7-727-U-WQ**

Issue Date: 10/01/2024



Test Information

Test Method: LM-79-08
Report Number: P879650
Test Lab: INNOVATION CENTER(G3)
Issue Date: 10/01/2024
Manufacturer: COOPER LIGHTING SOLUTIONS (FORMERLY EATON)
Product Line: INVUE
Catalog Number: EMM2-HTN-VA7-727-U-WQ
Description: EPIC MODERN TALL HOUSING 7W 70CRI 2700K WAVESTREAM FIXTURE w/ TYPE V WIDE DISTRIBUTION OPTIC
Light Source: (1) 2700K CCT, 70 CRI LEDS
Ballast/Driver: ELECTRONIC DRIVER

Summary

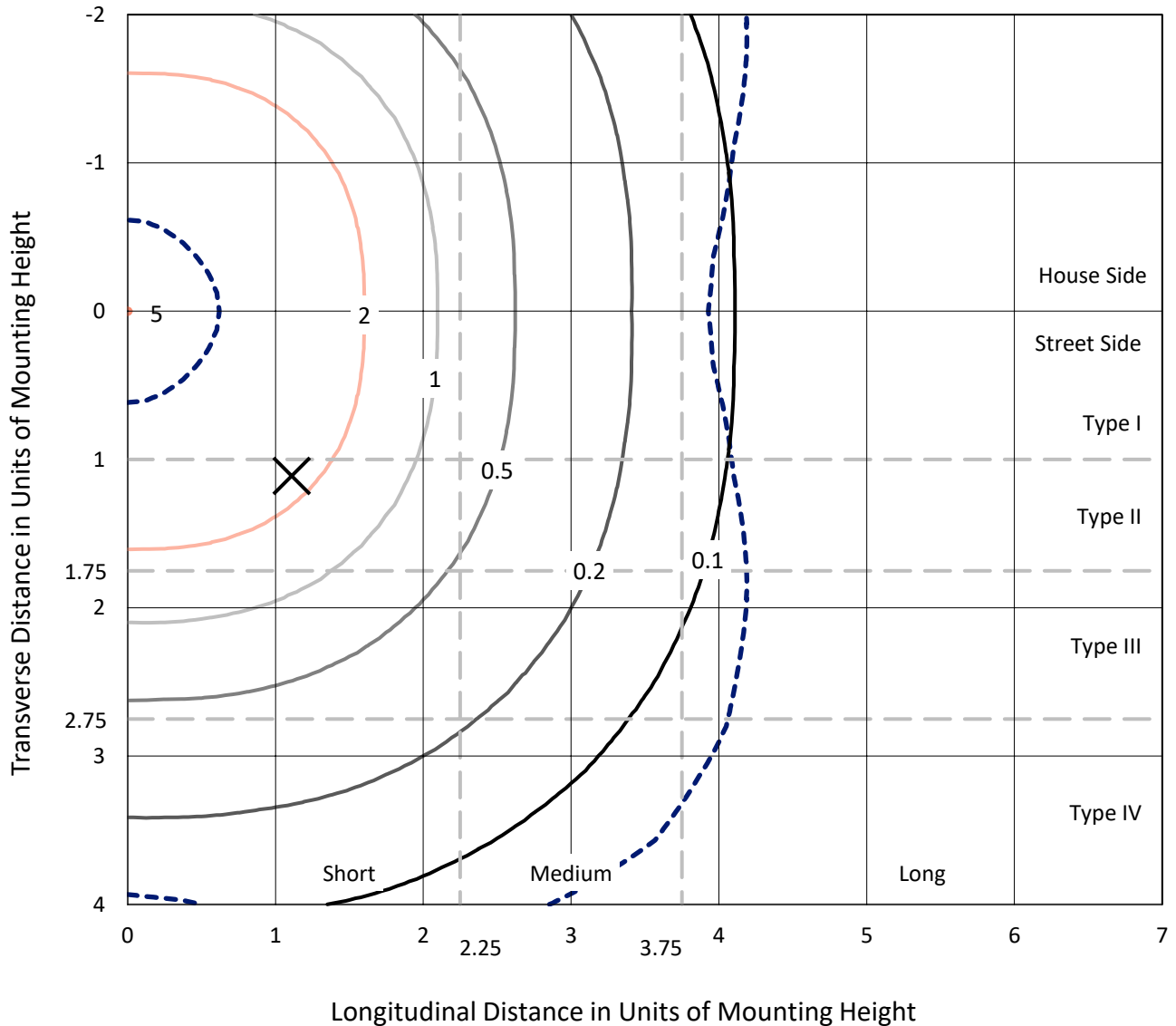
Lumens per Lamp: N/A
Luminaire Lumens: 13268.2 lumens
Efficiency: N/A
Efficacy: 102.1 lumens/watt
Luminous Opening: Circular (Dia: 1.12' x H: 0')
IES Classification: Type V - Short
BUG Rating: B4 - U0 - G3

Input Watts (W): 130
Input Voltage (V): 120
Input Current (Ain): NR
Voltage Rise (V): NR
Power Factor: 0.995
Total Harmonic Distortion (THDi): 8.1%
Frequency (hertz): 60
Stabilization Time: NR
Operation Time: NR
Ambient Temperature (°C): NR
Test Distance: 24 FT

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Iso-Footcandle Lines of Horizontal Illumination

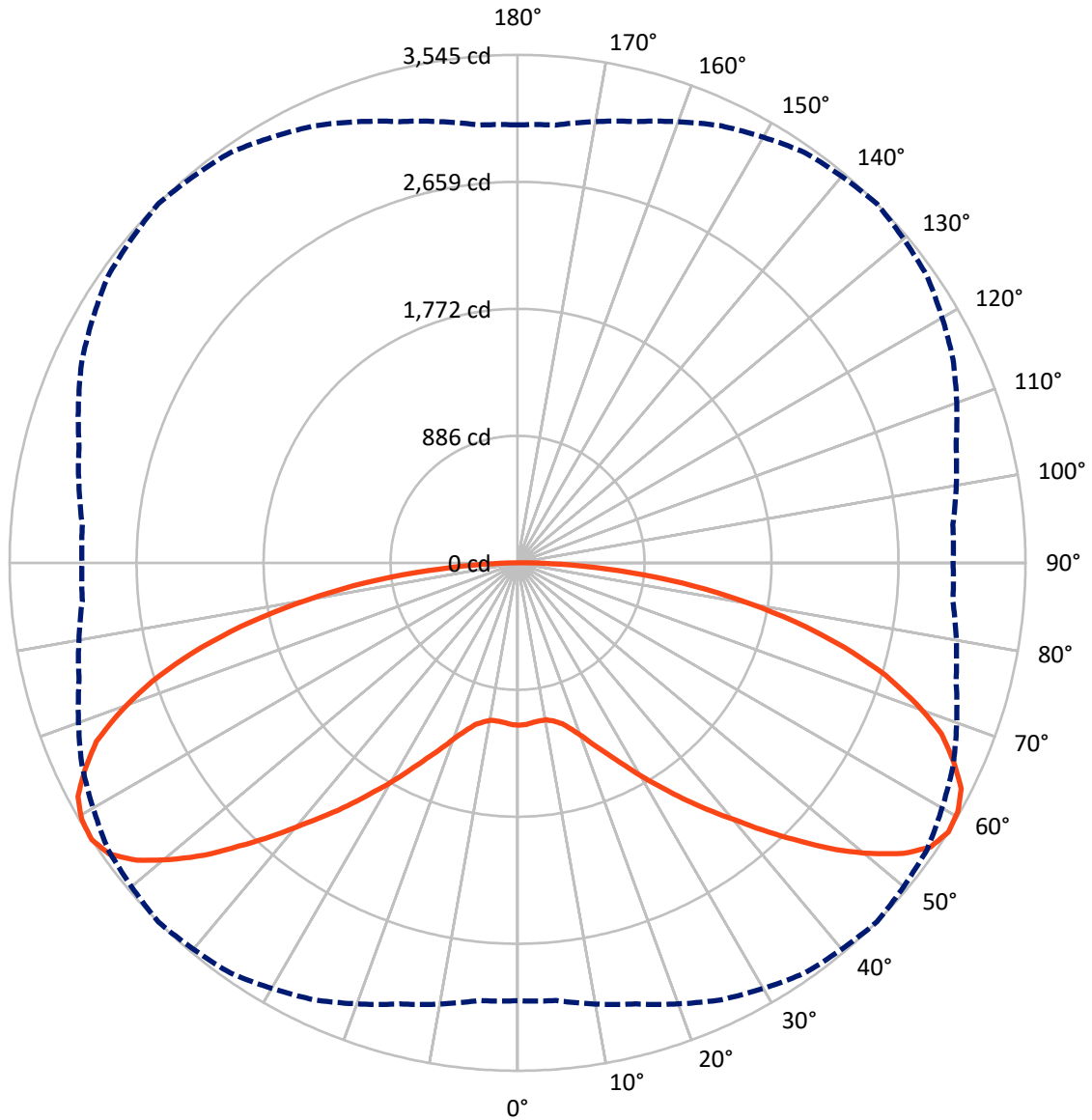
✕ Max cd
 - - - 1/2 Max cd



Based on 15 foot mounting height. Maximum calculated value = 5 fc
 Type V - Short - N/A

REPORT NUMBER: P879650
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Luminous Intensity Polar Plot



— Vertical Plane Through 45-Deg Lateral - - - Horizontal Cone Through 57.5-Deg Vertical

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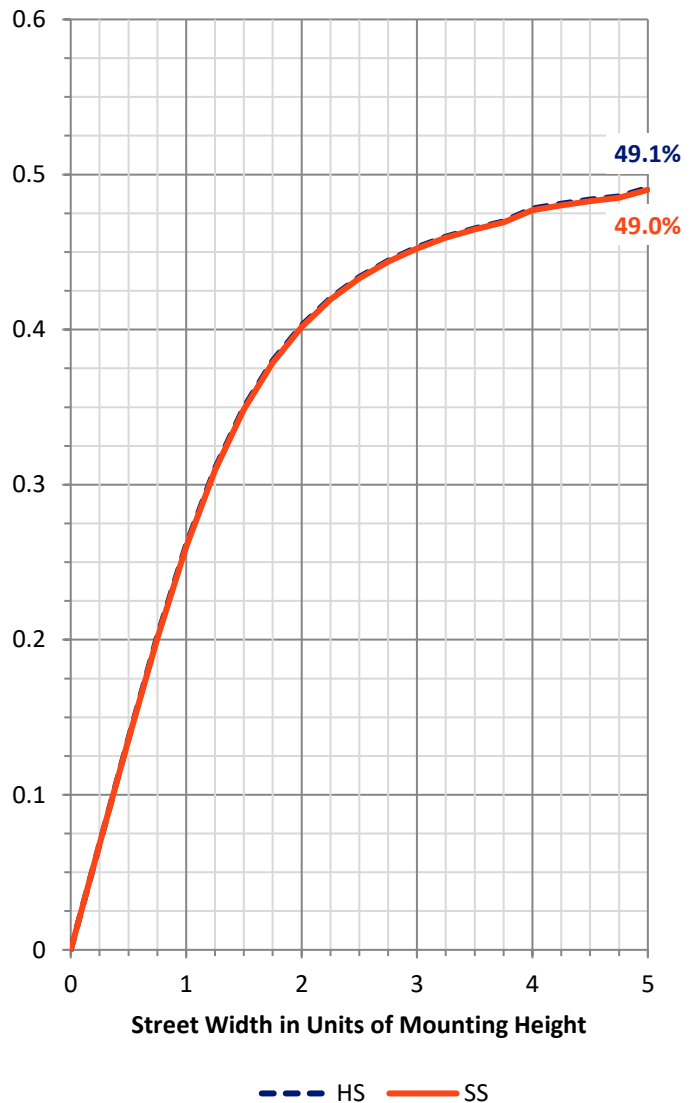
FLUX DISTRIBUTION:

		Downward	Upward	Total
House Side	Lumens	6634.1	0.0	6634.1
	% Fixture	50.0	0.0	50.0
Street Side	Lumens	6634.1	0.0	6634.1
	% Fixture	50.0	0.0	50.0
Total	Lumens	13268.2	0.0	13268.2
	% Fixture	100.0	0.0	100.0

Coefficient of Utilization

ZONAL LUMENS:

Zone	Lumens	% Fixture
0°-10°	106.7	0.8
10°-20°	335.4	2.5
20°-30°	689.4	5.2
30°-40°	1258.0	9.5
40°-50°	2062.9	15.5
50°-60°	2890.7	21.8
60°-70°	3024.0	22.8
70°-80°	2209.4	16.7
80°-90°	691.6	5.2
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°	13268.2	100.0
0°-180°	13268.2	100.0

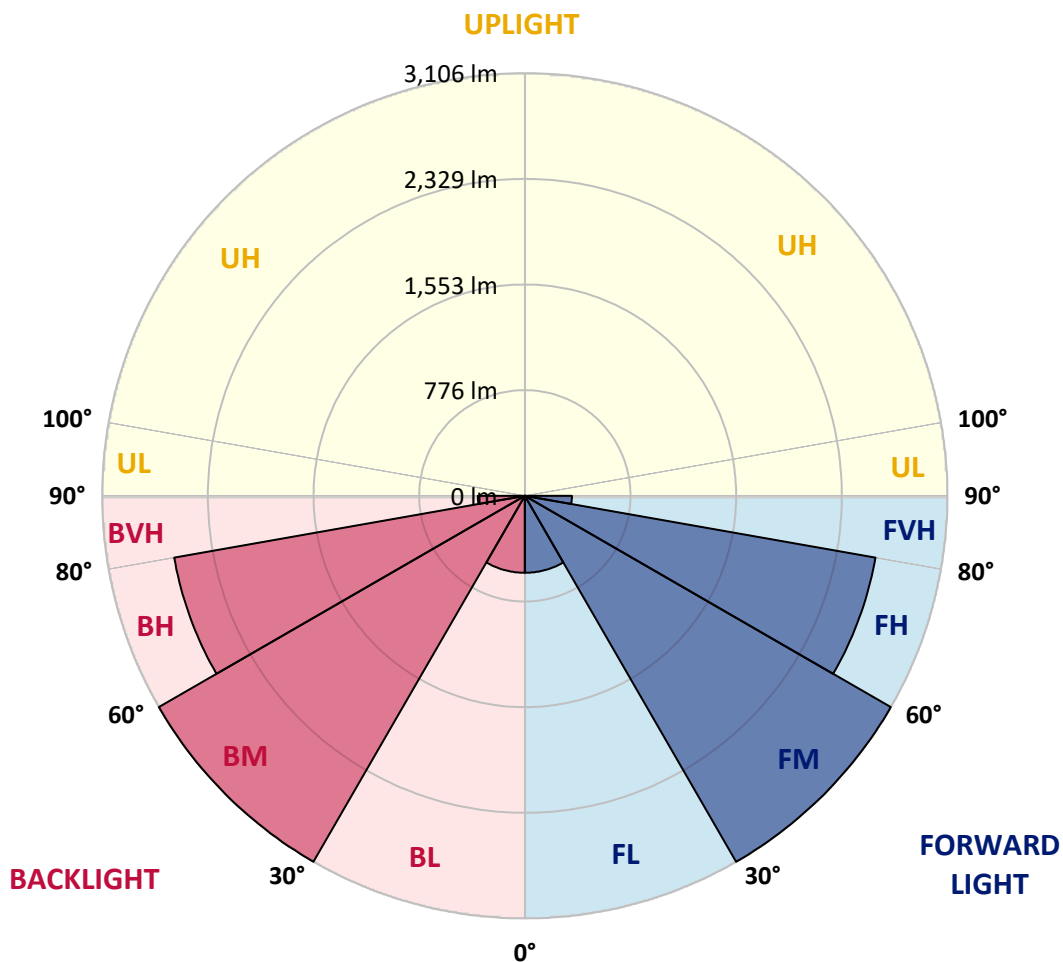


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LUMINAIRE CLASSIFICATION SYSTEM LUMEN TABLE AND BUG RATING:

Zone	Lumens	% Fixture	Zone Rating/Lumen Limit		
			B	U	G
FL (0°-30°)	565.8	4.3			
FM (30°-60°)	3105.8	23.4			
FH (60°-80°)	2616.7	19.7			G2/5000
FVH (80°-90°)	345.8	2.6			G3/500
BL (0°-30°)	565.8	4.3	B2/1000		
BM (30°-60°)	3105.8	23.4	B3/5000		
BH (60°-80°)	2616.7	19.7	B4/5000		G2/5000
BVH (80°-90°)	345.8	2.6			G3/500
UL (90°-100°)	0.0	0.0		U0/0	
UH (100°-180°)	0.0	0.0		U0/0	

BUG Rating: B4-U0-G3
 Type V Short





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CATALOG NUMBER: EMM2-HTN-VA7-727-U-WQ

CANDELA DISTRIBUTION (FULL):

	0°	5°	15°	25°	35°	45°	55°	65°	75°	85°	90°
0°	1132.8	1132.8	1132.8	1132.8	1132.8	1132.8	1132.8	1132.8	1132.8	1132.8	1132.8
2.5°	1128.7	1130.3	1129.5	1129.5	1128.7	1129.5	1131.2	1132.0	1131.2	1132.0	1131.2
5°	1121.2	1121.2	1120.4	1119.5	1119.5	1119.5	1119.5	1119.5	1120.4	1120.4	1121.2
7.5°	1112.1	1112.1	1112.1	1113.7	1112.9	1113.7	1113.7	1112.9	1112.1	1112.1	1112.9
10°	1113.7	1112.9	1112.1	1113.7	1112.9	1113.7	1113.7	1112.1	1112.9	1113.7	1114.6
12.5°	1127.8	1126.2	1128.7	1131.2	1132.8	1134.5	1133.7	1132.8	1130.3	1127.8	1127.8
15°	1158.6	1156.9	1159.4	1162.8	1163.6	1164.4	1166.9	1163.6	1162.8	1158.6	1157.8
17.5°	1202.7	1201.8	1206.8	1213.5	1216.8	1220.9	1216.8	1213.5	1204.3	1202.7	1205.1
20°	1265.8	1263.3	1273.3	1284.1	1287.4	1292.4	1289.1	1282.4	1273.3	1263.3	1263.3
22.5°	1346.4	1352.3	1357.2	1365.6	1378.9	1387.2	1376.4	1364.7	1351.4	1345.6	1341.5
25°	1451.2	1450.3	1455.3	1471.9	1480.3	1486.1	1484.4	1468.6	1457.0	1448.7	1447.8
27.5°	1551.7	1561.7	1571.7	1582.5	1603.3	1605.8	1603.3	1584.1	1565.9	1559.2	1556.7
30°	1685.5	1683.9	1693.0	1718.8	1739.6	1741.2	1734.6	1711.3	1690.5	1678.1	1679.7
32.5°	1816.0	1802.7	1826.8	1844.3	1861.7	1880.0	1862.6	1844.3	1826.8	1800.2	1808.5
35°	1934.9	1945.7	1959.0	1994.7	2030.5	2037.9	2026.3	1988.9	1954.8	1942.4	1928.2
37.5°	2080.3	2080.3	2102.8	2155.1	2187.5	2199.2	2182.6	2145.2	2097.8	2079.5	2072.8
40°	2226.6	2226.6	2260.7	2304.7	2352.9	2369.6	2351.3	2302.2	2263.2	2215.8	2223.3
42.5°	2368.7	2380.4	2425.3	2479.3	2546.6	2569.0	2543.3	2477.6	2421.1	2376.2	2369.6
45°	2525.8	2544.1	2593.1	2682.1	2739.4	2771.8	2736.1	2679.6	2579.8	2536.6	2513.4
47.5°	2697.0	2709.5	2780.1	2864.9	2958.0	2992.1	2949.7	2857.4	2772.7	2696.2	2692.9
50°	2845.8	2843.3	2933.9	3051.1	3156.6	3189.1	3155.0	3055.3	2917.3	2832.5	2840.8
52.5°	2957.2	2971.3	3066.9	3211.5	3323.7	3371.1	3315.4	3195.7	3051.9	2963.8	2937.2
55°	3029.5	3052.8	3164.1	3320.4	3448.4	3499.1	3444.2	3306.3	3149.2	3035.3	3019.5
57.5°	3056.1	3066.1	3187.4	3364.4	3494.9	3544.8	3488.3	3353.6	3168.3	3049.4	3039.5
60°	3015.4	3025.3	3156.6	3337.8	3487.4	3529.8	3484.9	3327.0	3138.4	3017.0	3000.4
62.5°	2915.6	2943.0	3088.5	3268.0	3439.2	3475.0	3428.4	3255.6	3081.0	2934.7	2910.6
65°	2795.9	2825.0	2948.9	3149.2	3304.6	3342.8	3306.3	3140.0	2949.7	2809.2	2786.0
67.5°	2628.9	2633.9	2779.3	2982.1	3146.7	3193.2	3130.1	2978.8	2771.8	2638.9	2620.6
70°	2420.3	2423.6	2578.2	2766.0	2917.3	2955.5	2914.0	2752.7	2567.4	2422.8	2410.3
72.5°	2152.6	2183.4	2311.4	2497.6	2638.9	2683.7	2629.7	2492.6	2321.4	2178.4	2150.1
75°	1868.4	1887.5	1998.9	2179.2	2300.6	2356.3	2312.2	2179.2	1998.9	1880.9	1855.9
77.5°	1535.9	1561.7	1670.6	1822.7	1923.2	1983.1	1934.9	1816.9	1670.6	1562.5	1561.7
80°	1213.5	1206.8	1305.7	1437.0	1536.8	1571.7	1541.8	1427.1	1295.7	1211.8	1200.2
82.5°	841.9	840.3	947.5	1035.6	1119.5	1159.4	1113.7	1039.7	938.4	863.5	839.4
85°	478.7	489.5	560.2	615.0	686.5	710.6	694.8	625.0	534.4	468.8	464.6
87.5°	166.2	181.2	194.5	234.4	280.9	301.7	279.3	268.5	238.5	207.0	208.6
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: SP1-2407-176-12

Test Date: 10/23/2024

Luminaire Tested: MEM2-HTN-VA-130-727-U-RW

Data in this report applies to families of products including MEM2-HTN-VA-130-727-U-RW

Test Information

Test Method: LM-79-2019
 Report Number: SP1-2407-176-12
 Test Lab: COOPER LIGHTING SOLUTIONS
 Photometer: SP1 - 76IN SPHERE
 Measurement Geometry: 4π
 Issue Date: 10/24/2024
 Manufacturer: COOPER LIGHTING SOLUTIONS
 Product Line: Streetworks
 Catalog Number: **MEM2-HTN-VA-130-727-U-RW**
 Description: EPIC MODERN VISUAL COMFORT 130W WAVESTREAM RECTANGULAR WIDE

Spectral Parameters

CCT (K): 2710
 CIE u': 0.2616
 CIE v': 0.5295
 Duv: 0.0016
 CIE x: 0.4619
 CIE y: 0.4154
 CIE z: 0.1227
 Peak Wavelength (nm): 601
 Dominant Wavelength (nm): 583
 Purity: 63.3407
 Rf: 70.4
 Rg: 96.7

CRI (Ra):	70.4		
R1:	67.3	R9:	-24.6
R2:	79.1	R10:	51.3
R3:	89.5	R11:	61.0
R4:	67.6	R12:	41.2
R5:	64.7	R13:	68.7
R6:	69.6	R14:	93.5
R7:	78.9	R15:	60.6
R8:	46.2		



Test Conditions

Stabilization Time: 47M
 Operation Time: 1H 47M
 Sphere Temperature (°C): 24.4

REPORT NUMBER: SP1-2407-176-12

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	10/22/2024	10/22/2025
DC Power Source	IN0208	10/22/2024	10/22/2025
Sphere Thermometer	IN0085	10/22/2024	10/22/2025
Room Thermometer	IN0046	10/22/2024	10/22/2025

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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 2700K 4-step quadrangle

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Photopic Flux vs. Wavelength

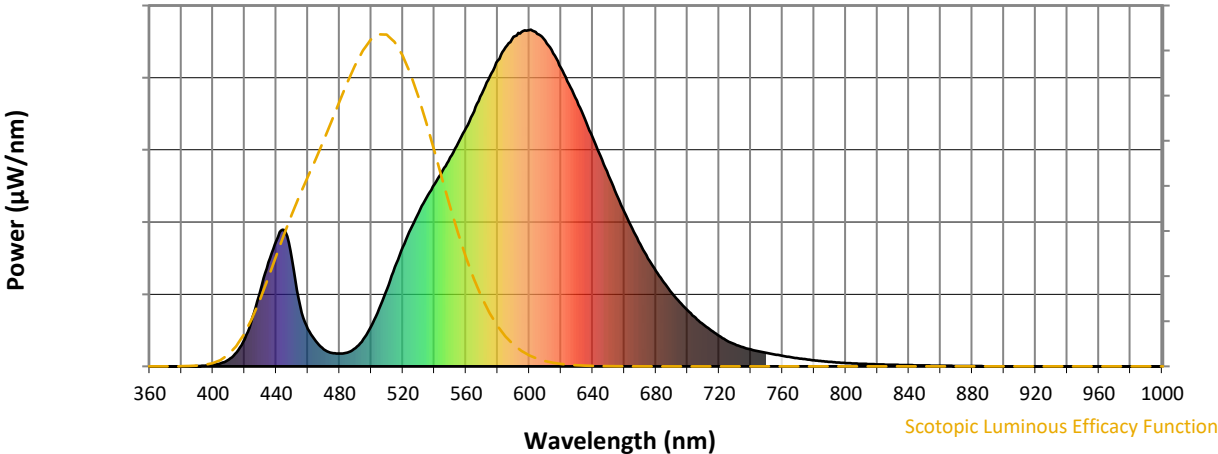


Photopic Lumens: NR

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	54	NR	620	887	NR	750	40	NR	880	1	NR
365	0	NR	495	80	NR	625	838	NR	755	35	NR	885	1	NR
370	0	NR	500	119	NR	630	790	NR	760	31	NR	890	0	NR
375	0	NR	505	171	NR	635	735	NR	765	27	NR	895	0	NR
380	0	NR	510	230	NR	640	681	NR	770	24	NR	900	0	NR
385	0	NR	515	295	NR	645	624	NR	775	21	NR	905	0	NR
390	1	NR	520	354	NR	650	567	NR	780	18	NR	910	0	NR
395	2	NR	525	408	NR	655	512	NR	785	15	NR	915	0	NR
400	5	NR	530	457	NR	660	459	NR	790	13	NR	920	0	NR
405	9	NR	535	500	NR	665	410	NR	795	12	NR	925	0	NR
410	20	NR	540	541	NR	670	363	NR	800	10	NR	930	0	NR
415	42	NR	545	581	NR	675	320	NR	805	9	NR	935	0	NR
420	81	NR	550	620	NR	680	283	NR	810	8	NR	940	0	NR
425	145	NR	555	664	NR	685	249	NR	815	7	NR	945	0	NR
430	225	NR	560	709	NR	690	219	NR	820	6	NR	950	0	NR
435	309	NR	565	758	NR	695	191	NR	825	5	NR	955	0	NR
440	373	NR	570	810	NR	700	166	NR	830	5	NR	960	0	NR
445	405	NR	575	861	NR	705	144	NR	835	4	NR	965	0	NR
450	316	NR	580	908	NR	710	124	NR	840	4	NR	970	0	NR
455	180	NR	585	948	NR	715	106	NR	845	3	NR	975	0	NR
460	111	NR	590	978	NR	720	90	NR	850	3	NR	980	0	NR
465	75	NR	595	993	NR	725	76	NR	855	2	NR	985	0	NR
470	50	NR	600	999	NR	730	65	NR	860	2	NR	990	0	NR
475	40	NR	605	988	NR	735	57	NR	865	2	NR	995	0	NR
480	38	NR	610	967	NR	740	50	NR	870	1	NR	1000	0	NR
485	41	NR	615	930	NR	745	45	NR	875	1	NR			

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Scotopic Flux vs. Wavelength



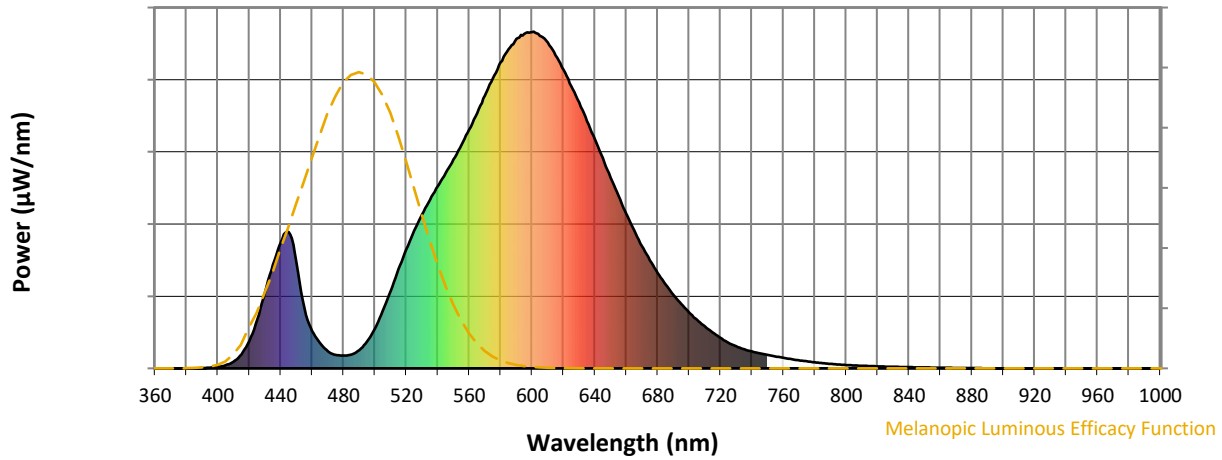
Scotopic Lumens: NR

S/P: 1.02

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	54	NR	620	887	NR	750	40	NR	880	1	NR
365	0	NR	495	80	NR	625	838	NR	755	35	NR	885	1	NR
370	0	NR	500	119	NR	630	790	NR	760	31	NR	890	0	NR
375	0	NR	505	171	NR	635	735	NR	765	27	NR	895	0	NR
380	0	NR	510	230	NR	640	681	NR	770	24	NR	900	0	NR
385	0	NR	515	295	NR	645	624	NR	775	21	NR	905	0	NR
390	1	NR	520	354	NR	650	567	NR	780	18	NR	910	0	NR
395	2	NR	525	408	NR	655	512	NR	785	15	NR	915	0	NR
400	5	NR	530	457	NR	660	459	NR	790	13	NR	920	0	NR
405	9	NR	535	500	NR	665	410	NR	795	12	NR	925	0	NR
410	20	NR	540	541	NR	670	363	NR	800	10	NR	930	0	NR
415	42	NR	545	581	NR	675	320	NR	805	9	NR	935	0	NR
420	81	NR	550	620	NR	680	283	NR	810	8	NR	940	0	NR
425	145	NR	555	664	NR	685	249	NR	815	7	NR	945	0	NR
430	225	NR	560	709	NR	690	219	NR	820	6	NR	950	0	NR
435	309	NR	565	758	NR	695	191	NR	825	5	NR	955	0	NR
440	373	NR	570	810	NR	700	166	NR	830	5	NR	960	0	NR
445	405	NR	575	861	NR	705	144	NR	835	4	NR	965	0	NR
450	316	NR	580	908	NR	710	124	NR	840	4	NR	970	0	NR
455	180	NR	585	948	NR	715	106	NR	845	3	NR	975	0	NR
460	111	NR	590	978	NR	720	90	NR	850	3	NR	980	0	NR
465	75	NR	595	993	NR	725	76	NR	855	2	NR	985	0	NR
470	50	NR	600	999	NR	730	65	NR	860	2	NR	990	0	NR
475	40	NR	605	988	NR	735	57	NR	865	2	NR	995	0	NR
480	38	NR	610	967	NR	740	50	NR	870	1	NR	1000	0	NR
485	41	NR	615	930	NR	745	45	NR	875	1	NR			

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Melanopic Flux vs. Wavelength



Melanopic Lumens: NR

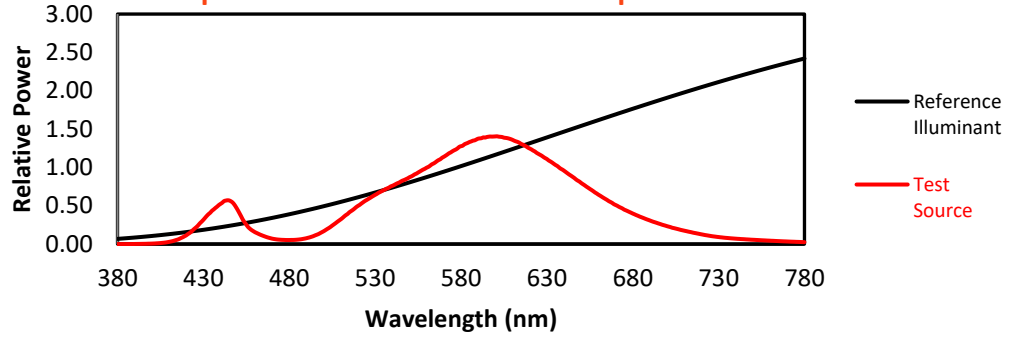
M/P: 1.71

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	54	NR	620	887	NR	750	40	NR	880	1	NR
365	0	NR	495	80	NR	625	838	NR	755	35	NR	885	1	NR
370	0	NR	500	119	NR	630	790	NR	760	31	NR	890	0	NR
375	0	NR	505	171	NR	635	735	NR	765	27	NR	895	0	NR
380	0	NR	510	230	NR	640	681	NR	770	24	NR	900	0	NR
385	0	NR	515	295	NR	645	624	NR	775	21	NR	905	0	NR
390	1	NR	520	354	NR	650	567	NR	780	18	NR	910	0	NR
395	2	NR	525	408	NR	655	512	NR	785	15	NR	915	0	NR
400	5	NR	530	457	NR	660	459	NR	790	13	NR	920	0	NR
405	9	NR	535	500	NR	665	410	NR	795	12	NR	925	0	NR
410	20	NR	540	541	NR	670	363	NR	800	10	NR	930	0	NR
415	42	NR	545	581	NR	675	320	NR	805	9	NR	935	0	NR
420	81	NR	550	620	NR	680	283	NR	810	8	NR	940	0	NR
425	145	NR	555	664	NR	685	249	NR	815	7	NR	945	0	NR
430	225	NR	560	709	NR	690	219	NR	820	6	NR	950	0	NR
435	309	NR	565	758	NR	695	191	NR	825	5	NR	955	0	NR
440	373	NR	570	810	NR	700	166	NR	830	5	NR	960	0	NR
445	405	NR	575	861	NR	705	144	NR	835	4	NR	965	0	NR
450	316	NR	580	908	NR	710	124	NR	840	4	NR	970	0	NR
455	180	NR	585	948	NR	715	106	NR	845	3	NR	975	0	NR
460	111	NR	590	978	NR	720	90	NR	850	3	NR	980	0	NR
465	75	NR	595	993	NR	725	76	NR	855	2	NR	985	0	NR
470	50	NR	600	999	NR	730	65	NR	860	2	NR	990	0	NR
475	40	NR	605	988	NR	735	57	NR	865	2	NR	995	0	NR
480	38	NR	610	967	NR	740	50	NR	870	1	NR	1000	0	NR
485	41	NR	615	930	NR	745	45	NR	875	1	NR			

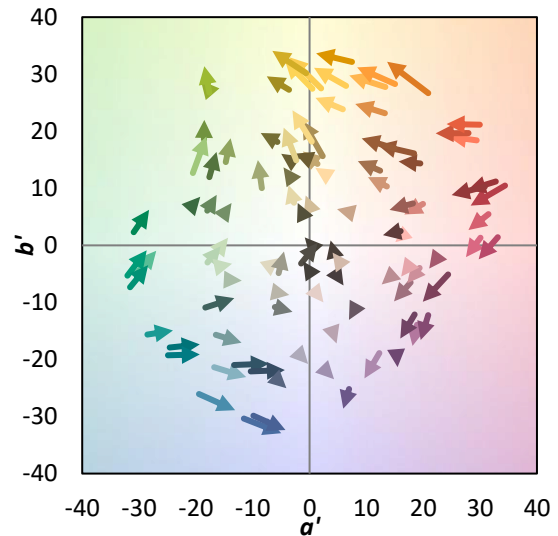
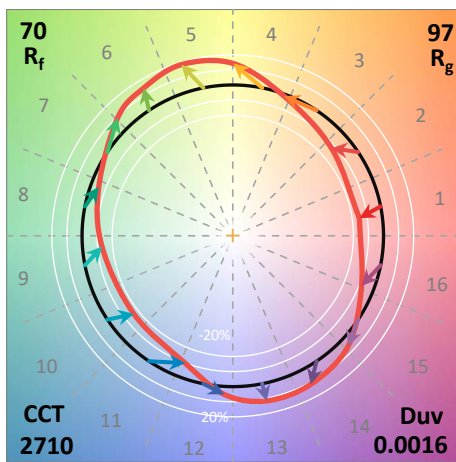
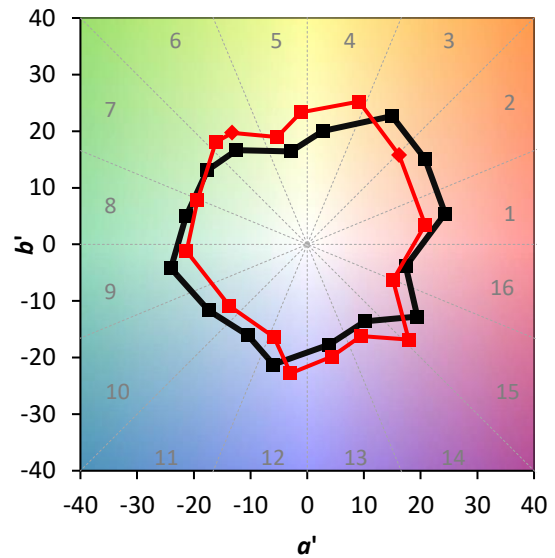
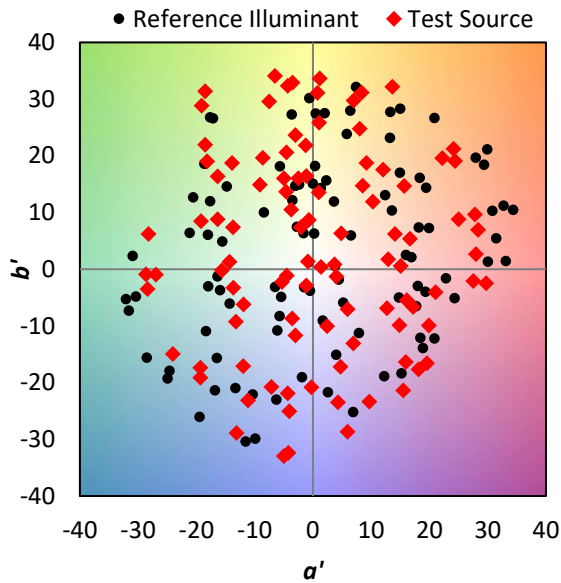
Summary

$R_f = 70.4$
 $R_g = 96.7$
 CIE $R_a = 70.4$
 $R_9 = -24.6$

Spectral Power Distribution Comparison



Color Vector Graphics



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

CES01 = 86	CES26 = 56	CES51 = 78	CES76 = 50
CES02 = 63	CES27 = 77	CES52 = 80	CES77 = 76
CES03 = 31	CES28 = 81	CES53 = 67	CES78 = 57
CES04 = 71	CES29 = 48	CES54 = 78	CES79 = 82
CES05 = 50	CES30 = 52	CES55 = 75	CES80 = 82
CES06 = 52	CES31 = 54	CES56 = 65	CES81 = 72
CES07 = 42	CES32 = 52	CES57 = 62	CES82 = 92
CES08 = 41	CES33 = 57	CES58 = 65	CES83 = 85
CES09 = 29	CES34 = 69	CES59 = 84	CES84 = 90
CES10 = 77	CES35 = 84	CES60 = 90	CES85 = 84
CES11 = 60	CES36 = 82	CES61 = 84	CES86 = 63
CES12 = 66	CES37 = 77	CES62 = 73	CES87 = 78
CES13 = 43	CES38 = 59	CES63 = 69	CES88 = 74
CES14 = 74	CES39 = 92	CES64 = 67	CES89 = 66
CES15 = 71	CES40 = 87	CES65 = 64	CES90 = 69
CES16 = 48	CES41 = 78	CES66 = 61	CES91 = 95
CES17 = 51	CES42 = 79	CES67 = 59	CES92 = 67
CES18 = 57	CES43 = 68	CES68 = 67	CES93 = 80
CES19 = 73	CES44 = 98	CES69 = 77	CES94 = 54
CES20 = 67	CES45 = 77	CES70 = 60	CES95 = 75
CES21 = 88	CES46 = 71	CES71 = 57	CES96 = 78
CES22 = 80	CES47 = 66	CES72 = 85	CES97 = 79
CES23 = 92	CES48 = 54	CES73 = 52	CES98 = 71
CES24 = 92	CES49 = 69	CES74 = 92	CES99 = 63
CES25 = 73	CES50 = 78	CES75 = 58	



Color Rendition by Hue-Angle Bin



Measure Comparisons



(END OF REPORT)