

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: P880350

Luminaire Tested: **EMM2-HSN-VA5-750-U-WQ**

Issue Date: 10/01/2024



Test Information

Test Method: LM-79-08
Report Number: P880350
Test Lab: INNOVATION CENTER(G3)
Issue Date: 10/01/2024
Manufacturer: COOPER LIGHTING SOLUTIONS (FORMERLY EATON)
Product Line: INVUE
Catalog Number: EMM2-HSN-VA5-750-U-WQ
Description: EPIC MODERN SHORT HOUSING 5W 70CRI 5000K VISUAL COMFORT FIXTURE w/
TYPE V WIDE DISTRIBUTION OPTIC
Light Source: (1) 5000K CCT, 70 CRI LEDS
Ballast/Driver: ELECTRONIC DRIVER

Summary

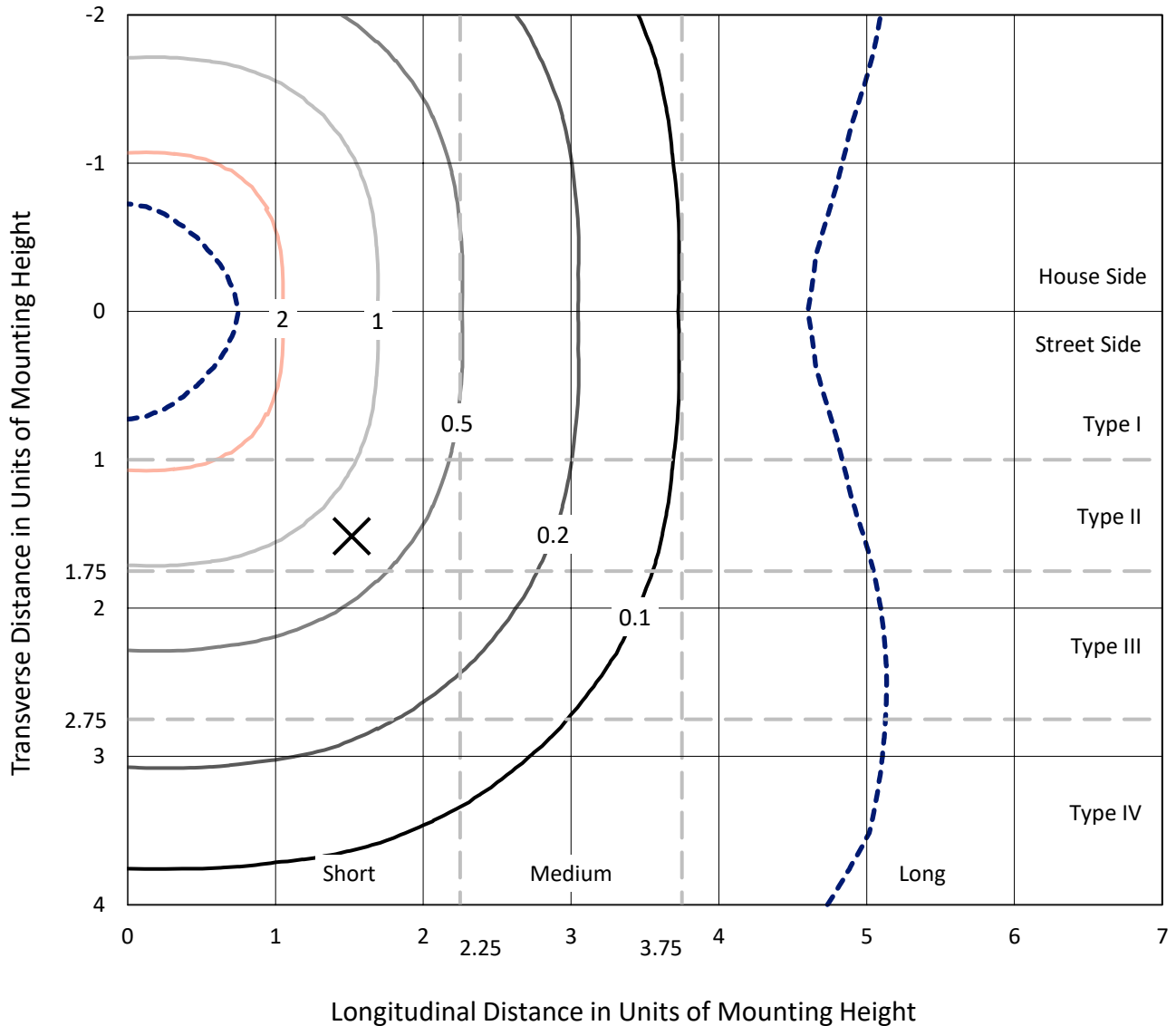
Lumens per Lamp: N/A
Luminaire Lumens: 8100.7 lumens
Efficiency: N/A
Efficacy: 103.9 lumens/watt
Luminous Opening: Circular (Dia: 1.12' x H: 0')
IES Classification: Type V - Short
BUG Rating: B3 - U0 - G3

Input Watts (W): 78
Input Voltage (V): 120
Input Current (Ain): NR
Voltage Rise (V): NR
Power Factor: 0.99
Total Harmonic Distortion (THDi): 6%
Frequency (hertz): 60
Stabilization Time: NR
Operation Time: NR
Ambient Temperature (°C): NR
Test Distance: 24 FT

REPORT NUMBER: P880350
 CATALOG NUMBER: EMM2-HSN-VA5-750-U-WQ

Iso-Footcandle Lines of Horizontal Illumination

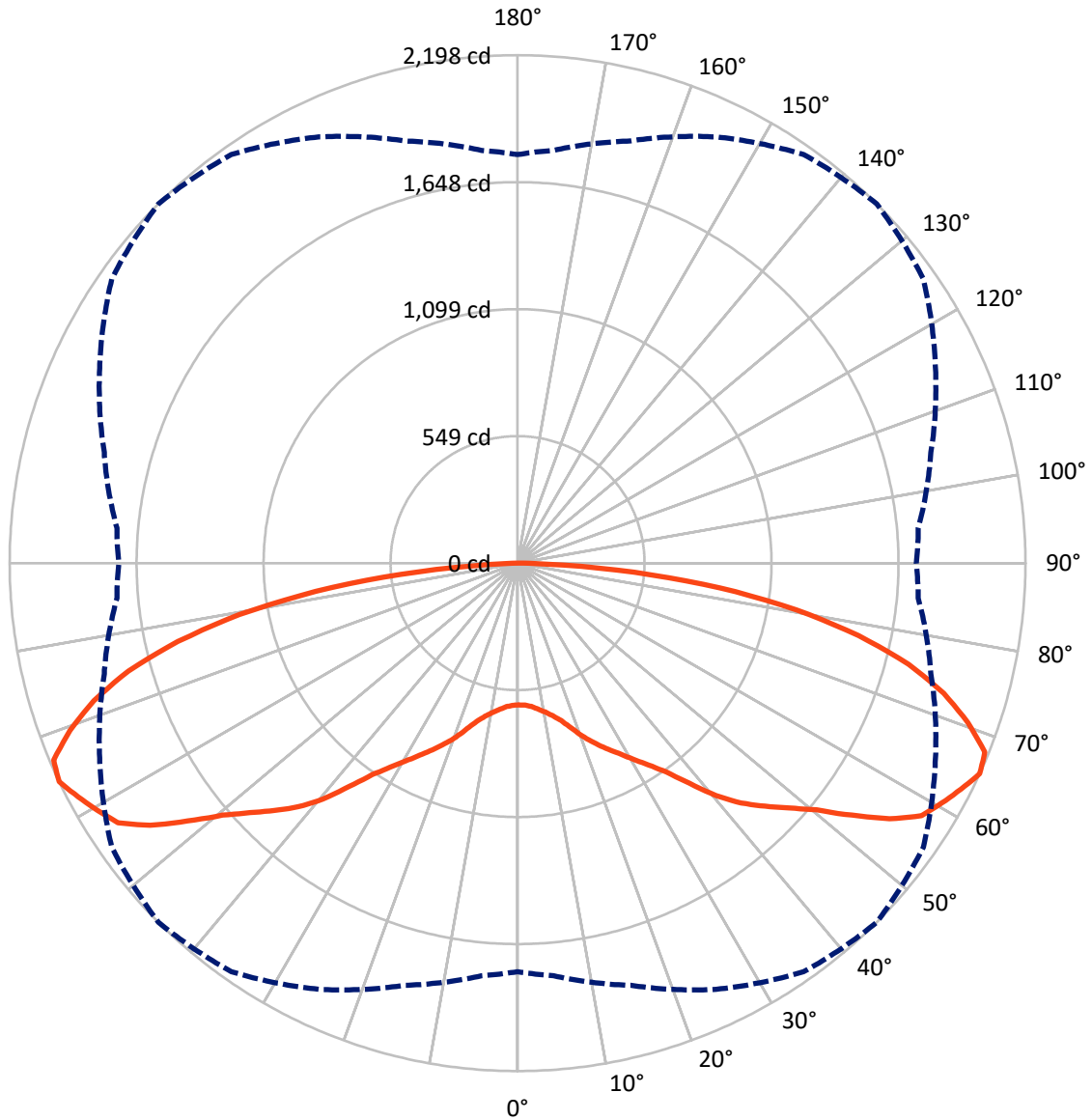
× Max cd
 - - - 1/2 Max cd



Based on 15 foot mounting height. Maximum calculated value = 2.9 fc
 Type V - Short - N/A

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CATALOG NUMBER: EMM2-HSN-VA5-750-U-WQ

Luminous Intensity Polar Plot



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

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 CATALOG NUMBER: EMM2-HSN-VA5-750-U-WQ

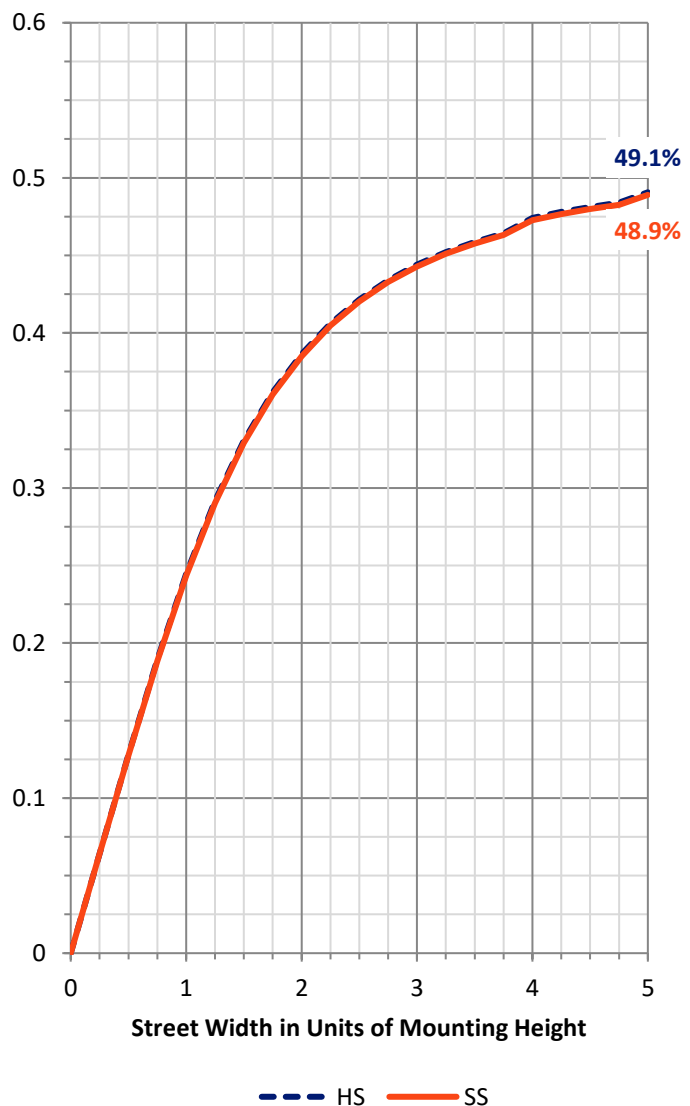
FLUX DISTRIBUTION:

		Downward	Upward	Total
House Side	Lumens	4050.4	0.0	4050.4
	% Fixture	50.0	0.0	50.0
Street Side	Lumens	4050.4	0.0	4050.4
	% Fixture	50.0	0.0	50.0
Total	Lumens	8100.7	0.0	8100.7
	% Fixture	100.0	0.0	100.0

Coefficient of Utilization

ZONAL LUMENS:

Zone	Lumens	% Fixture
0°-10°	60.6	0.7
10°-20°	203.8	2.5
20°-30°	409.5	5.1
30°-40°	693.2	8.6
40°-50°	1108.1	13.7
50°-60°	1600.5	19.8
60°-70°	1927.3	23.8
70°-80°	1596.7	19.7
80°-90°	501.0	6.2
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°	8100.7	100.0
0°-180°	8100.7	100.0



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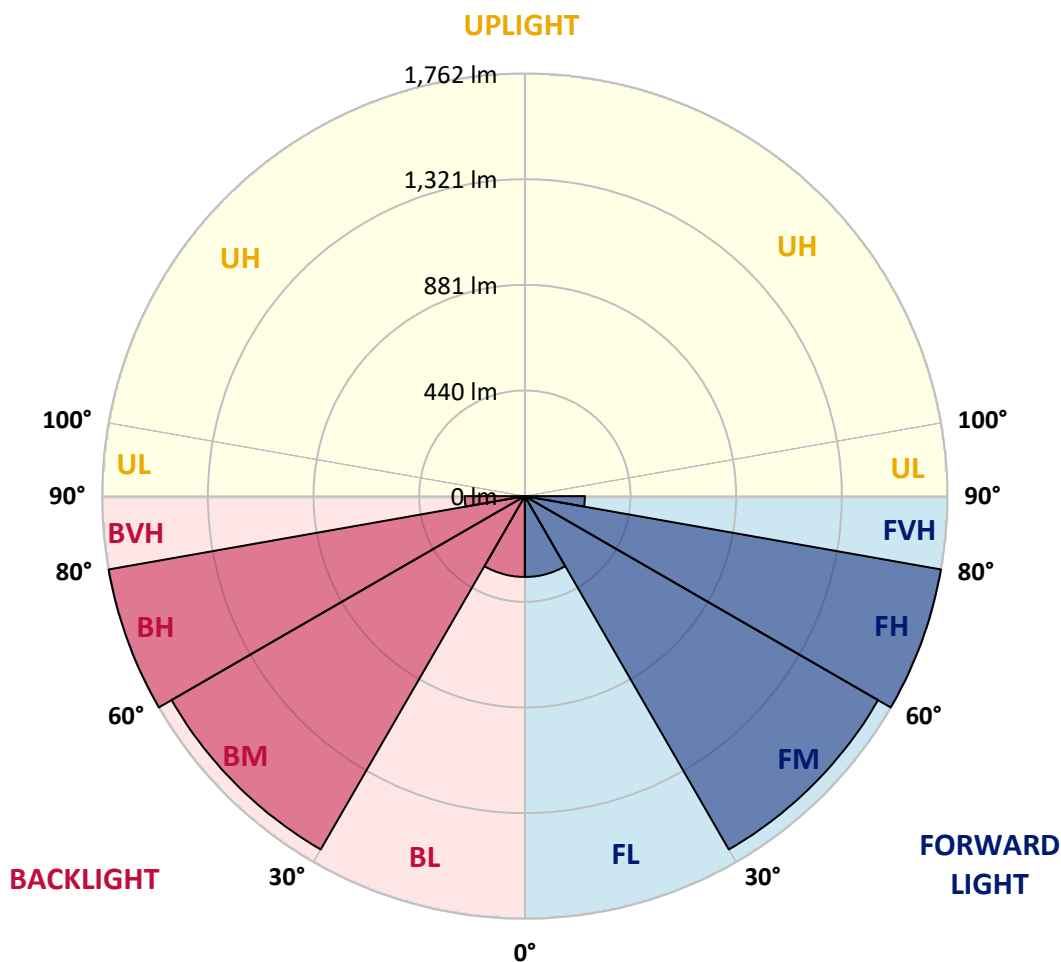
CATALOG NUMBER: EMM2-HSN-VA5-750-U-WQ

LUMINAIRE CLASSIFICATION SYSTEM LUMEN TABLE AND BUG RATING:

Zone	Lumens	% Fixture	Zone Rating/Lumen Limit		
			B	U	G
FL (0°-30°)	337.0	4.2			
FM (30°-60°)	1700.9	21.0			
FH (60°-80°)	1762.0	21.8			G1/1800
FVH (80°-90°)	250.5	3.1			G3/500
BL (0°-30°)	337.0	4.2	B1/500		
BM (30°-60°)	1700.9	21.0	B2/2500		
BH (60°-80°)	1762.0	21.8	B3/2500		G1/1800
BVH (80°-90°)	250.5	3.1			G3/500
UL (90°-100°)	0.0	0.0		U0/0	
UH (100°-180°)	0.0	0.0		U0/0	

BUG Rating: B3-U0-G3

Type V Short





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CATALOG NUMBER: EMM2-HSN-VA5-750-U-WQ

CANDELA DISTRIBUTION (FULL):

	0°	5°	15°	25°	35°	45°	55°	65°	75°	85°	90°
0°	613.1	613.1	613.1	613.1	613.1	613.1	613.1	613.1	613.1	613.1	613.1
2.5°	615.6	615.6	615.6	615.6	615.6	615.6	615.6	615.6	615.6	615.6	615.6
5°	625.5	625.5	625.5	623.0	623.0	623.0	625.5	625.5	625.5	625.5	625.5
7.5°	637.8	637.8	637.8	637.8	637.8	637.8	635.4	635.4	635.4	635.4	637.8
10°	655.1	657.6	657.6	655.1	655.1	655.1	652.7	652.7	655.1	655.1	652.7
12.5°	679.9	679.9	679.9	679.9	677.4	677.4	677.4	677.4	677.4	677.4	677.4
15°	707.1	707.1	707.1	707.1	707.1	707.1	707.1	707.1	704.6	702.1	702.1
17.5°	741.7	739.2	744.1	741.7	746.6	749.1	744.1	741.7	739.2	736.7	734.2
20°	783.7	786.2	791.1	793.6	796.1	798.5	791.1	788.6	783.7	781.2	778.8
22.5°	833.1	833.1	838.1	838.1	843.0	843.0	840.6	833.1	828.2	828.2	825.7
25°	875.2	877.6	882.6	882.6	887.5	887.5	885.1	880.1	872.7	867.8	865.3
27.5°	919.7	919.7	922.1	929.6	932.0	932.0	929.6	922.1	912.2	907.3	907.3
30°	961.7	964.2	966.6	976.5	981.5	983.9	974.1	966.6	954.3	949.3	949.3
32.5°	1011.1	1011.1	1016.1	1030.9	1038.3	1040.8	1030.9	1018.6	1003.7	993.8	993.8
35°	1065.5	1063.1	1077.9	1092.7	1110.0	1110.0	1102.6	1082.8	1060.6	1048.2	1045.8
37.5°	1137.2	1139.7	1154.5	1181.7	1208.9	1208.9	1201.5	1166.9	1142.2	1119.9	1115.0
40°	1221.3	1223.8	1250.9	1283.1	1312.8	1322.6	1307.8	1273.2	1231.2	1199.0	1196.6
42.5°	1293.0	1302.9	1330.1	1374.6	1404.2	1419.1	1396.8	1357.2	1310.3	1273.2	1265.8
45°	1362.2	1372.1	1406.7	1453.7	1490.8	1500.6	1480.9	1433.9	1379.5	1339.9	1335.0
47.5°	1426.5	1436.4	1471.0	1532.8	1572.3	1582.2	1564.9	1510.5	1443.8	1404.2	1399.3
50°	1485.8	1508.1	1550.1	1616.8	1673.7	1678.6	1653.9	1589.6	1520.4	1466.0	1458.6
52.5°	1567.4	1577.3	1636.6	1725.6	1789.9	1812.1	1772.6	1703.4	1602.0	1537.7	1525.4
55°	1666.3	1671.2	1735.5	1839.3	1923.4	1953.1	1903.6	1814.6	1698.4	1634.1	1624.2
57.5°	1723.1	1745.4	1819.6	1930.8	2022.3	2061.8	2014.9	1898.7	1784.9	1703.4	1681.1
60°	1747.9	1770.1	1851.7	1985.2	2084.1	2108.8	2074.2	1960.5	1812.1	1720.7	1705.8
62.5°	1772.6	1794.8	1876.4	2022.3	2118.7	2153.3	2098.9	1997.6	1836.9	1747.9	1728.1
65°	1767.6	1792.4	1891.2	2034.6	2158.2	2197.8	2143.4	1995.1	1851.7	1740.4	1725.6
67.5°	1718.2	1740.4	1844.3	2002.5	2138.5	2180.5	2121.2	1967.9	1807.2	1693.5	1676.2
70°	1619.3	1646.5	1747.9	1920.9	2047.0	2066.8	2022.3	1883.8	1715.7	1594.6	1572.3
72.5°	1485.8	1513.0	1616.8	1794.8	1893.7	1928.3	1878.9	1760.2	1589.6	1466.0	1446.2
75°	1327.6	1344.9	1441.3	1609.4	1715.7	1747.9	1710.8	1582.2	1409.2	1310.3	1288.0
77.5°	1142.2	1166.9	1253.4	1394.3	1478.4	1508.1	1473.4	1382.0	1221.3	1137.2	1119.9
80°	897.4	927.1	1006.2	1112.5	1201.5	1223.8	1194.1	1095.2	993.8	902.4	882.6
82.5°	647.7	655.1	726.8	803.5	870.2	882.6	860.3	805.9	699.6	637.8	610.6
85°	338.7	348.6	400.5	457.4	499.4	506.8	496.9	437.6	403.0	346.1	323.9
87.5°	76.6	79.1	93.9	103.8	126.1	123.6	131.0	103.8	98.9	81.6	71.7
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: SP1-2407-176-6

Test Date: 09/26/2024

Luminaire Tested: MEM2-HTN-VA-30-750-U-WQ

Data in this report applies to families of products including MEM2-HTN-VA-30-750-U-WQ

Test Information

Test Method: LM-79-2019
 Report Number: SP1-2407-176-6
 Test Lab: COOPER LIGHTING SOLUTIONS
 Photometer: SP1 - 76IN SPHERE
 Measurement Geometry: 4π
 Issue Date: 09/27/2024
 Manufacturer: COOPER LIGHTING SOLUTIONS
 Product Line: Streetworks
 Catalog Number: **MEM2-HTN-VA-30-750-U-WQ**
 Description: EPIC MODERN VISUAL COMFORT 30W WAVESTREAM WIDE

Spectral Parameters

CCT (K): 4786
 CIE u': 0.2093
 CIE v': 0.4953
 Duv: 0.0066
 CIE x: 0.3533
 CIE y: 0.3716
 CIE z: 0.2751
 Peak Wavelength (nm): 449
 Dominant Wavelength (nm): 570
 Purity: 17.53512
 Rf: 73
 Rg: 94.6

CRI (Ra):	70.9		
R1:	67.8	R9:	-29.8
R2:	75.1	R10:	40.9
R3:	80.6	R11:	67.4
R4:	71.6	R12:	35.3
R5:	67.8	R13:	68.5
R6:	65.4	R14:	89.0
R7:	82.0	R15:	60.9
R8:	57.0		



Test Conditions

Stabilization Time: 45M
 Operation Time: 1H 45M
 Sphere Temperature (°C): 25.2

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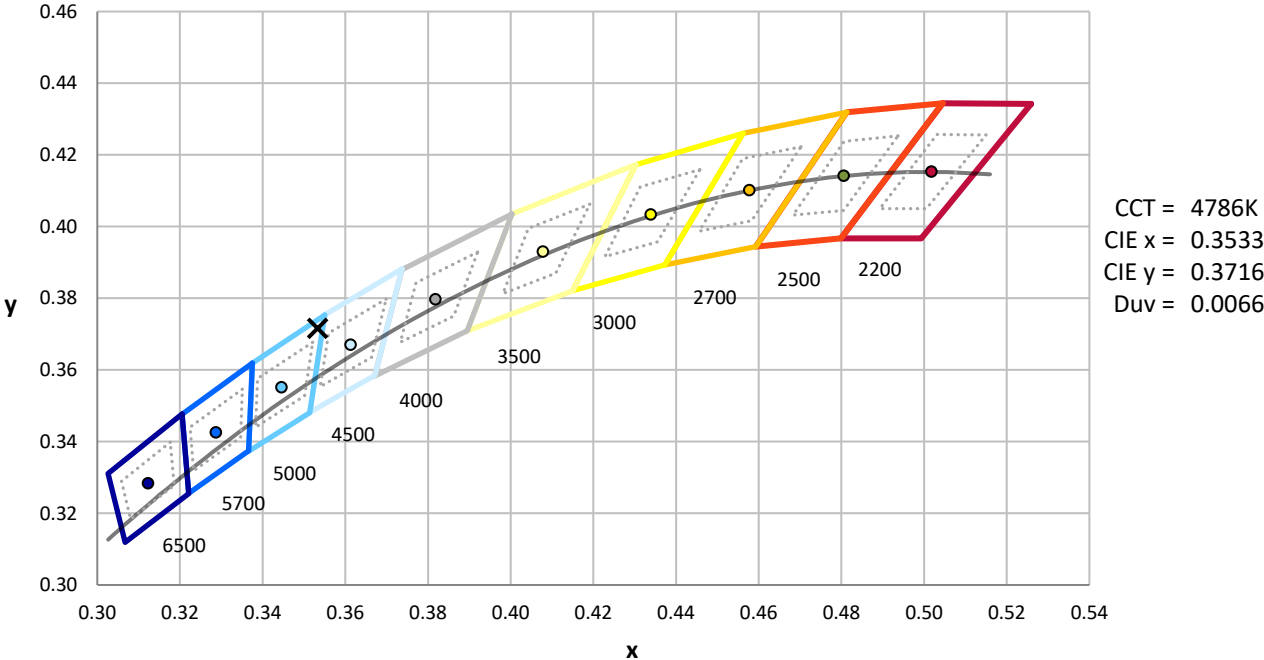
Measurement and Test Equipment			
Instrument	Identification Number	Calibration Date	Calibration Due Date
Photometer	IN0058	6/18/2024	12/18/2024
Power Meter	INXT2011004	2/8/2024	2/8/2025
AC Power Source	IN0063	10/24/2023	10/24/2024
DC Power Source	IN0208	10/24/2023	10/24/2024
Sphere Thermometer	IN0085	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 5000K 7-step quadrangle

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Photopic Flux vs. Wavelength



Photopic Lumens: NR

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	110	NR	620	440	NR	750	16	NR	880	0	NR
365	0	NR	495	150	NR	625	407	NR	755	14	NR	885	0	NR
370	0	NR	500	213	NR	630	375	NR	760	12	NR	890	0	NR
375	0	NR	505	288	NR	635	345	NR	765	11	NR	895	0	NR
380	0	NR	510	364	NR	640	314	NR	770	9	NR	900	0	NR
385	0	NR	515	436	NR	645	283	NR	775	8	NR	905	0	NR
390	1	NR	520	492	NR	650	254	NR	780	7	NR	910	0	NR
395	3	NR	525	537	NR	655	227	NR	785	6	NR	915	0	NR
400	5	NR	530	570	NR	660	200	NR	790	5	NR	920	0	NR
405	7	NR	535	595	NR	665	177	NR	795	4	NR	925	0	NR
410	13	NR	540	611	NR	670	155	NR	800	4	NR	930	0	NR
415	25	NR	545	624	NR	675	136	NR	805	3	NR	935	0	NR
420	52	NR	550	631	NR	680	119	NR	810	3	NR	940	0	NR
425	106	NR	555	637	NR	685	104	NR	815	3	NR	945	0	NR
430	204	NR	560	640	NR	690	91	NR	820	2	NR	950	0	NR
435	369	NR	565	642	NR	695	79	NR	825	2	NR	955	0	NR
440	573	NR	570	641	NR	700	68	NR	830	2	NR	960	0	NR
445	844	NR	575	638	NR	705	59	NR	835	2	NR	965	0	NR
450	999	NR	580	632	NR	710	50	NR	840	1	NR	970	0	NR
455	668	NR	585	620	NR	715	43	NR	845	1	NR	975	0	NR
460	361	NR	590	607	NR	720	36	NR	850	1	NR	980	0	NR
465	255	NR	595	586	NR	725	30	NR	855	1	NR	985	0	NR
470	165	NR	600	564	NR	730	25	NR	860	1	NR	990	0	NR
475	106	NR	605	537	NR	735	22	NR	865	1	NR	995	0	NR
480	91	NR	610	507	NR	740	19	NR	870	0	NR	1000	0	NR
485	93	NR	615	474	NR	745	17	NR	875	0	NR			

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Scotopic Flux vs. Wavelength



Scotopic Lumens: NR S/P: 1.69

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	110	NR	620	440	NR	750	16	NR	880	0	NR
365	0	NR	495	150	NR	625	407	NR	755	14	NR	885	0	NR
370	0	NR	500	213	NR	630	375	NR	760	12	NR	890	0	NR
375	0	NR	505	288	NR	635	345	NR	765	11	NR	895	0	NR
380	0	NR	510	364	NR	640	314	NR	770	9	NR	900	0	NR
385	0	NR	515	436	NR	645	283	NR	775	8	NR	905	0	NR
390	1	NR	520	492	NR	650	254	NR	780	7	NR	910	0	NR
395	3	NR	525	537	NR	655	227	NR	785	6	NR	915	0	NR
400	5	NR	530	570	NR	660	200	NR	790	5	NR	920	0	NR
405	7	NR	535	595	NR	665	177	NR	795	4	NR	925	0	NR
410	13	NR	540	611	NR	670	155	NR	800	4	NR	930	0	NR
415	25	NR	545	624	NR	675	136	NR	805	3	NR	935	0	NR
420	52	NR	550	631	NR	680	119	NR	810	3	NR	940	0	NR
425	106	NR	555	637	NR	685	104	NR	815	3	NR	945	0	NR
430	204	NR	560	640	NR	690	91	NR	820	2	NR	950	0	NR
435	369	NR	565	642	NR	695	79	NR	825	2	NR	955	0	NR
440	573	NR	570	641	NR	700	68	NR	830	2	NR	960	0	NR
445	844	NR	575	638	NR	705	59	NR	835	2	NR	965	0	NR
450	999	NR	580	632	NR	710	50	NR	840	1	NR	970	0	NR
455	668	NR	585	620	NR	715	43	NR	845	1	NR	975	0	NR
460	361	NR	590	607	NR	720	36	NR	850	1	NR	980	0	NR
465	255	NR	595	586	NR	725	30	NR	855	1	NR	985	0	NR
470	165	NR	600	564	NR	730	25	NR	860	1	NR	990	0	NR
475	106	NR	605	537	NR	735	22	NR	865	1	NR	995	0	NR
480	91	NR	610	507	NR	740	19	NR	870	0	NR	1000	0	NR
485	93	NR	615	474	NR	745	17	NR	875	0	NR			

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Melanopic Flux vs. Wavelength



Melanopic Lumens: NR

M/P: 3.36

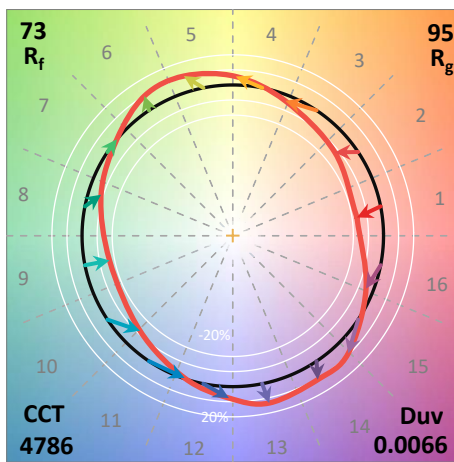
λ (nm)	Power W [^] /nm	Lumens (φ/nm)	λ (nm)	Power W [^] /nm	Lumens (φ/nm)	λ (nm)	Power W [^] /nm	Lumens (φ/nm)	λ (nm)	Power W [^] /nm	Lumens (φ/nm)	λ (nm)	Power W [^] /nm	Lumens (φ/nm)
360	0	NR	490	110	NR	620	440	NR	750	16	NR	880	0	NR
365	0	NR	495	150	NR	625	407	NR	755	14	NR	885	0	NR
370	0	NR	500	213	NR	630	375	NR	760	12	NR	890	0	NR
375	0	NR	505	288	NR	635	345	NR	765	11	NR	895	0	NR
380	0	NR	510	364	NR	640	314	NR	770	9	NR	900	0	NR
385	0	NR	515	436	NR	645	283	NR	775	8	NR	905	0	NR
390	1	NR	520	492	NR	650	254	NR	780	7	NR	910	0	NR
395	3	NR	525	537	NR	655	227	NR	785	6	NR	915	0	NR
400	5	NR	530	570	NR	660	200	NR	790	5	NR	920	0	NR
405	7	NR	535	595	NR	665	177	NR	795	4	NR	925	0	NR
410	13	NR	540	611	NR	670	155	NR	800	4	NR	930	0	NR
415	25	NR	545	624	NR	675	136	NR	805	3	NR	935	0	NR
420	52	NR	550	631	NR	680	119	NR	810	3	NR	940	0	NR
425	106	NR	555	637	NR	685	104	NR	815	3	NR	945	0	NR
430	204	NR	560	640	NR	690	91	NR	820	2	NR	950	0	NR
435	369	NR	565	642	NR	695	79	NR	825	2	NR	955	0	NR
440	573	NR	570	641	NR	700	68	NR	830	2	NR	960	0	NR
445	844	NR	575	638	NR	705	59	NR	835	2	NR	965	0	NR
450	999	NR	580	632	NR	710	50	NR	840	1	NR	970	0	NR
455	668	NR	585	620	NR	715	43	NR	845	1	NR	975	0	NR
460	361	NR	590	607	NR	720	36	NR	850	1	NR	980	0	NR
465	255	NR	595	586	NR	725	30	NR	855	1	NR	985	0	NR
470	165	NR	600	564	NR	730	25	NR	860	1	NR	990	0	NR
475	106	NR	605	537	NR	735	22	NR	865	1	NR	995	0	NR
480	91	NR	610	507	NR	740	19	NR	870	0	NR	1000	0	NR
485	93	NR	615	474	NR	745	17	NR	875	0	NR			

Summary

$R_f = 73$
 $R_g = 94.6$
 $CIE R_a = 70.9$
 $R_g = -29.8$



Color Vector Graphics



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

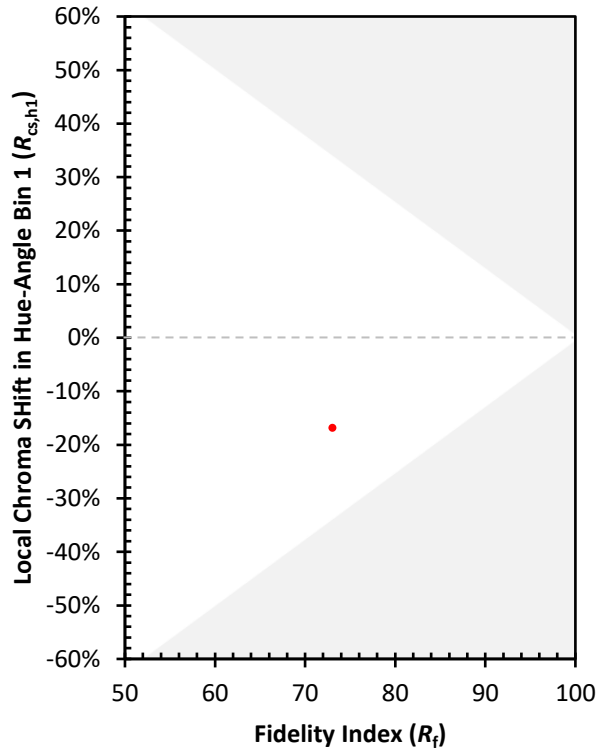
CES01 = 85	CES26 = 60	CES51 = 89	CES76 = 46
CES02 = 59	CES27 = 86	CES52 = 88	CES77 = 65
CES03 = 30	CES28 = 78	CES53 = 76	CES78 = 49
CES04 = 69	CES29 = 62	CES54 = 83	CES79 = 78
CES05 = 46	CES30 = 79	CES55 = 82	CES80 = 74
CES06 = 50	CES31 = 66	CES56 = 71	CES81 = 77
CES07 = 39	CES32 = 58	CES57 = 70	CES82 = 89
CES08 = 38	CES33 = 74	CES58 = 71	CES83 = 87
CES09 = 29	CES34 = 66	CES59 = 86	CES84 = 86
CES10 = 72	CES35 = 81	CES60 = 90	CES85 = 79
CES11 = 56	CES36 = 94	CES61 = 84	CES86 = 76
CES12 = 61	CES37 = 75	CES62 = 84	CES87 = 76
CES13 = 41	CES38 = 88	CES63 = 72	CES88 = 79
CES14 = 74	CES39 = 95	CES64 = 66	CES89 = 73
CES15 = 70	CES40 = 88	CES65 = 61	CES90 = 78
CES16 = 46	CES41 = 92	CES66 = 58	CES91 = 77
CES17 = 49	CES42 = 75	CES67 = 55	CES92 = 63
CES18 = 55	CES43 = 74	CES68 = 65	CES93 = 77
CES19 = 71	CES44 = 99	CES69 = 74	CES94 = 56
CES20 = 64	CES45 = 83	CES70 = 55	CES95 = 67
CES21 = 85	CES46 = 82	CES71 = 47	CES96 = 76
CES22 = 77	CES47 = 84	CES72 = 82	CES97 = 83
CES23 = 91	CES48 = 76	CES73 = 44	CES98 = 73
CES24 = 90	CES49 = 80	CES74 = 92	CES99 = 62
CES25 = 71	CES50 = 88	CES75 = 47	



Color Rendition by Hue-Angle Bin



Measure Comparisons



(END OF REPORT)