

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: STREETWORKS

Report Number: P867908

Luminaire Tested: **MEM2-HSN-SA-120-740-U-T2R**

Issue Date: 08/21/2024



Test Information

Test Method: LM-79-08
Report Number: P867908
Test Lab: INNOVATION CENTER(G3)
Issue Date: 08/21/2024
Manufacturer: COOPER LIGHTING SOLUTIONS (FORMERLY EATON)
Product Line: STREETWORKS
Catalog Number: MEM2-HSN-SA-120-740-U-T2R
Description: EPIC MODERN SHORT HOUSING DISCRETE LED ARRAYS 120W 70CRI 4000K
FITURE w/ TYPE II ROADWAY DISTRIBUTION OPTIC
Light Source: (20) 4000K CCT, 70 CRI LEDS
Ballast/Driver: ELECTRONIC DRIVER

Summary

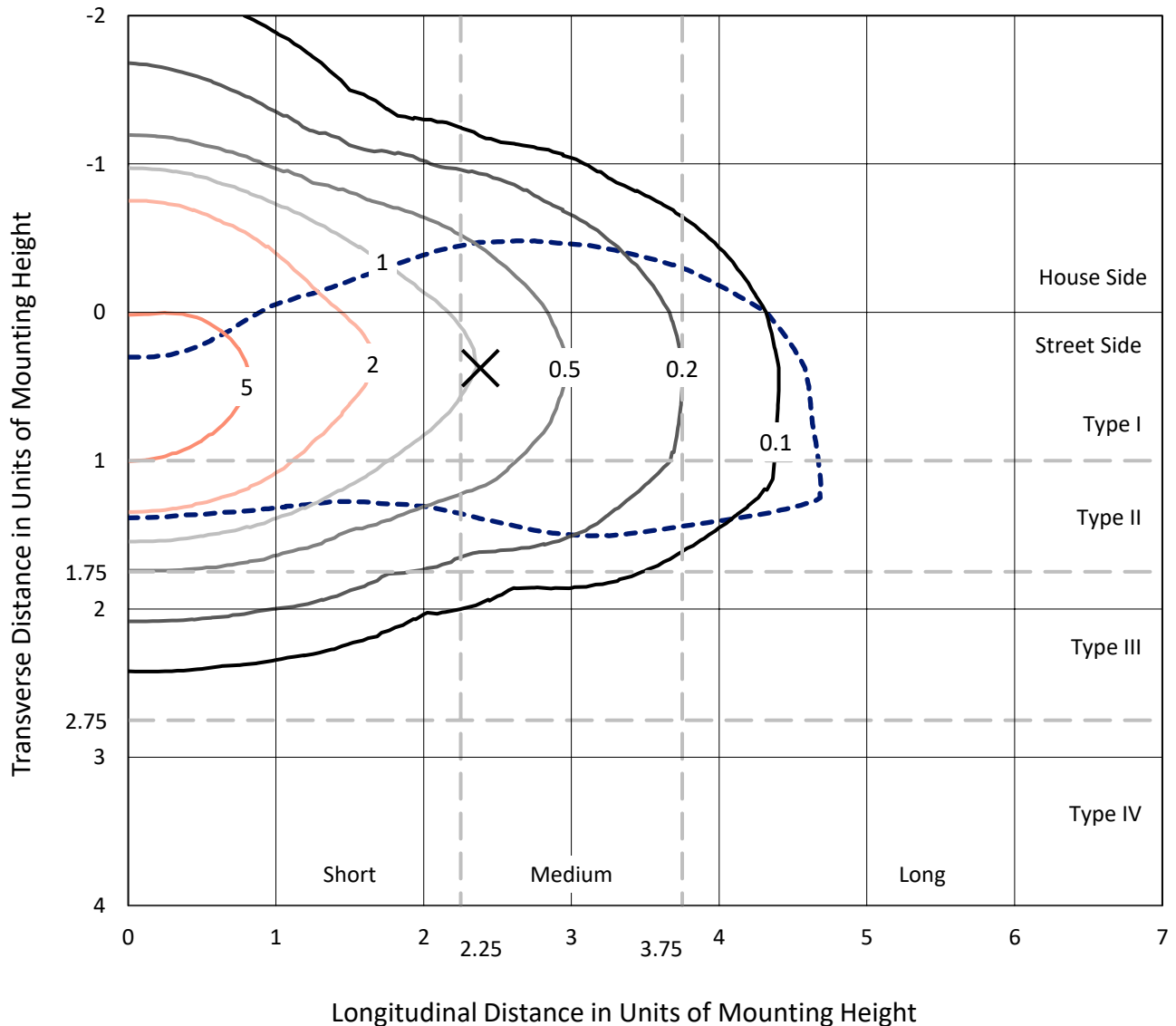
Lumens per Lamp: N/A
Luminaire Lumens: 13830.4 lumens
Efficiency: N/A
Efficacy: 136.9 lumens/watt
Luminous Opening: Rectangular (W 0.67' x L: 0.33' x H: 0')
IES Classification: Type II - Medium
BUG Rating: B3 - U0 - G3

Input Watts (W): 101
Input Voltage (V): 120
Input Current (A_{in}): NR
Voltage Rise (V): NR
Power Factor: 0.99
Total Harmonic Distortion (THDi): 9.45%
Frequency (hertz): 60
Stabilization Time: NR
Operation Time: NR
Ambient Temperature (°C): NR
Test Distance: 24 FT

REPORT NUMBER: P867908
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Iso-Footcandle Lines of Horizontal Illumination

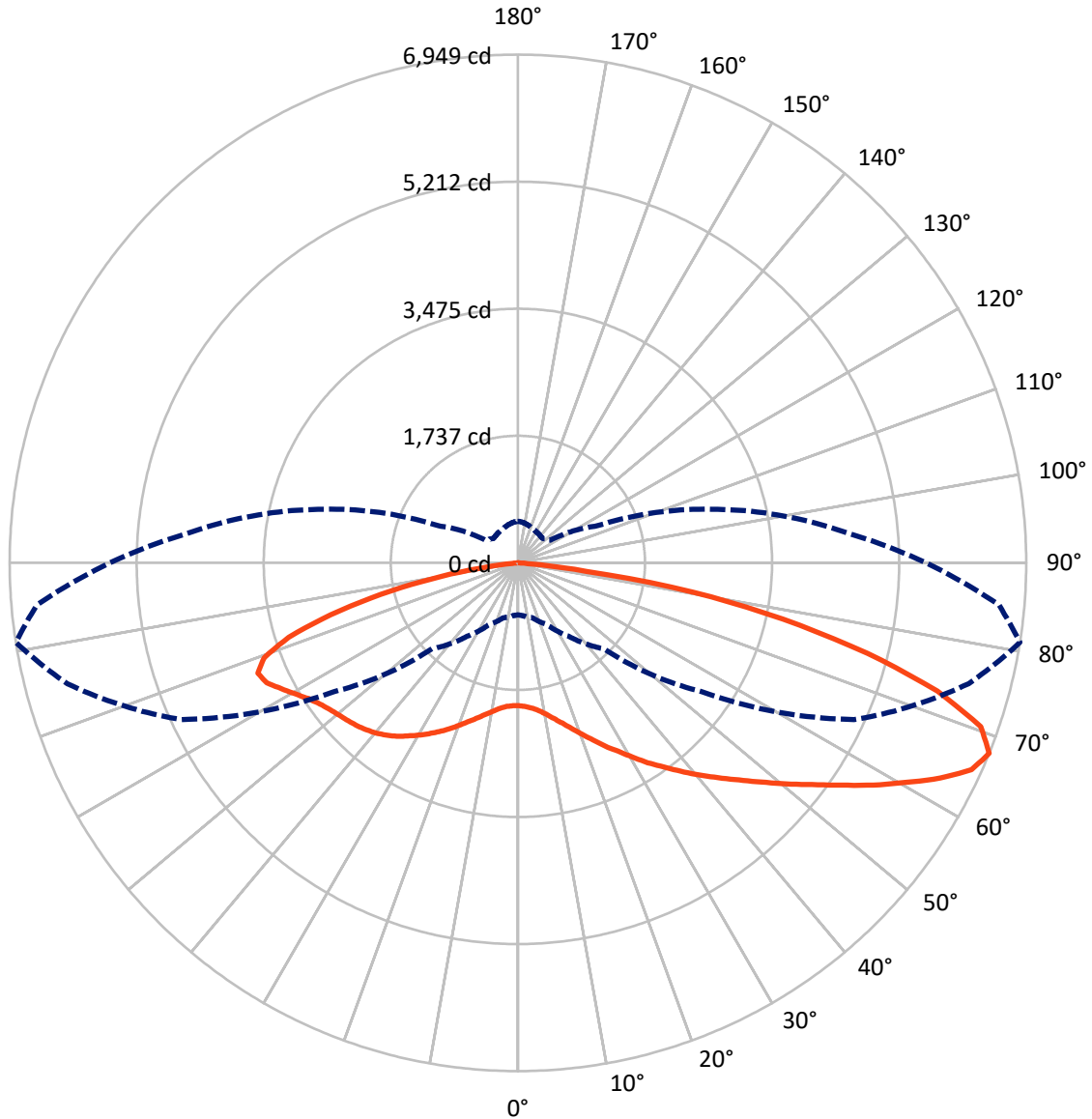
✕ Max cd
 - - - 1/2 Max cd



Based on 20 foot mounting height. Maximum calculated value = 8.8 fc
 Type II - Medium - N/A

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Luminous Intensity Polar Plot



— Vertical Plane Through 81-Deg Lateral - - - Horizontal Cone Through 67.5-Deg Vertical

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FLUX DISTRIBUTION:

| | | Downward | Upward | Total |
|--------------------|-----------|----------|--------|---------|
| House Side | Lumens | 4238.0 | 0.0 | 4238.0 |
| | % Fixture | 30.6 | 0.0 | 30.6 |
| Street Side | Lumens | 9592.4 | 0.0 | 9592.4 |
| | % Fixture | 69.4 | 0.0 | 69.4 |
| Total | Lumens | 13830.4 | 0.0 | 13830.4 |
| | % Fixture | 100.0 | 0.0 | 100.0 |

ZONAL LUMENS:

| Zone | Lumens | % Fixture |
|-----------|---------|-----------|
| 0°-10° | 199.1 | 1.4 |
| 10°-20° | 706.8 | 5.1 |
| 20°-30° | 1407.8 | 10.2 |
| 30°-40° | 2211.7 | 16.0 |
| 40°-50° | 2742.9 | 19.8 |
| 50°-60° | 2681.3 | 19.4 |
| 60°-70° | 2254.8 | 16.3 |
| 70°-80° | 1432.7 | 10.4 |
| 80°-90° | 193.4 | 1.4 |
| 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° | 13830.4 | 100.0 |
| 0°-180° | 13830.4 | 100.0 |

Coefficient of Utilization



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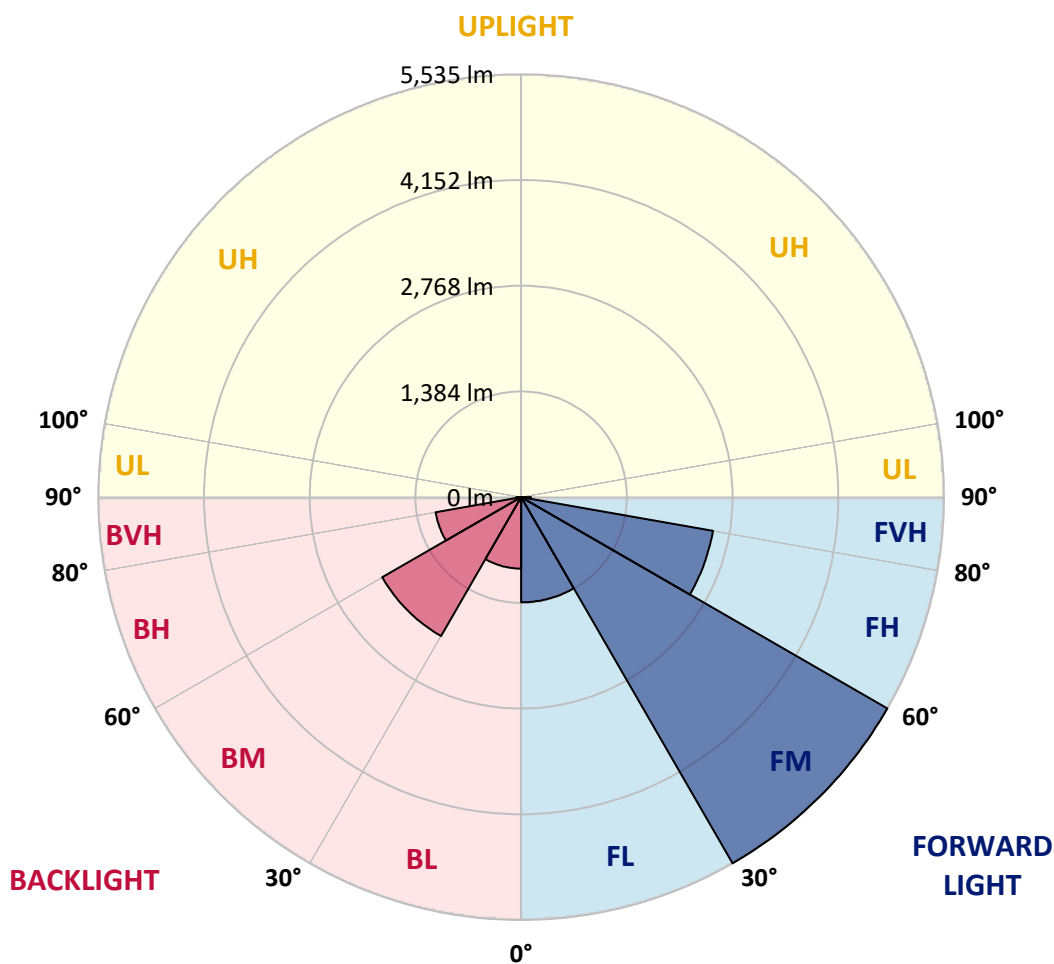
CATALOG NUMBER: MEM2-HSN-SA-120-740-U-T2R

LUMINAIRE CLASSIFICATION SYSTEM LUMEN TABLE AND BUG RATING:

| Zone | Lumens | % Fixture | Zone Rating/Lumen Limit | | |
|----------------|--------|-----------|-------------------------|------|---------|
| | | | B | U | G |
| FL (0°-30°) | 1377.6 | 10.0 | | | |
| FM (30°-60°) | 5535.3 | 40.0 | | | |
| FH (60°-80°) | 2549.9 | 18.4 | | | G2/5000 |
| FVH (80°-90°) | 129.6 | 0.9 | | | G2/225 |
| BL (0°-30°) | 936.1 | 6.8 | B2/1000 | | |
| BM (30°-60°) | 2100.4 | 15.2 | B2/2500 | | |
| BH (60°-80°) | 1137.6 | 8.2 | B3/2500 | | G3/2500 |
| BVH (80°-90°) | 63.8 | 0.5 | | | G1/100 |
| UL (90°-100°) | 0.0 | 0.0 | | U0/0 | |
| UH (100°-180°) | 0.0 | 0.0 | | U0/0 | |

BUG Rating: B3-U0-G3

Type II Medium





REPORT NUMBER: P867908

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CANDELA DISTRIBUTION (FULL):

| | 0° | 5° | 15° | 25° | 35° | 45° | 55° | 65° | 75° | 81° | 85° |
|-------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|
| 0° | 1952.6 | 1952.6 | 1952.6 | 1952.6 | 1952.6 | 1952.6 | 1952.6 | 1952.6 | 1952.6 | 1952.6 | 1952.6 |
| 2.5° | 2021.2 | 2018.4 | 2018.4 | 1996.5 | 1996.5 | 1991.0 | 1993.7 | 1977.3 | 1969.1 | 1966.3 | 1963.6 |
| 5° | 2166.5 | 2166.5 | 2150.1 | 2136.4 | 2108.9 | 2084.2 | 2062.3 | 2029.4 | 2004.7 | 1993.7 | 1985.5 |
| 7.5° | 2385.9 | 2369.5 | 2364.0 | 2322.8 | 2265.2 | 2215.9 | 2172.0 | 2100.7 | 2054.1 | 2037.6 | 2026.7 |
| 10° | 2654.7 | 2632.7 | 2591.6 | 2545.0 | 2470.9 | 2396.9 | 2309.1 | 2213.1 | 2136.4 | 2103.4 | 2089.7 |
| 12.5° | 2931.7 | 2901.5 | 2843.9 | 2800.0 | 2704.0 | 2591.6 | 2468.2 | 2336.5 | 2229.6 | 2183.0 | 2158.3 |
| 15° | 3236.1 | 3219.6 | 3151.1 | 3063.3 | 2950.9 | 2791.8 | 2638.2 | 2476.4 | 2339.3 | 2273.5 | 2232.3 |
| 17.5° | 3565.2 | 3540.5 | 3466.4 | 3359.5 | 3200.4 | 3011.2 | 2832.9 | 2624.5 | 2465.4 | 2380.4 | 2333.8 |
| 20° | 3888.8 | 3883.3 | 3773.6 | 3672.1 | 3485.6 | 3249.8 | 3019.4 | 2800.0 | 2599.8 | 2501.1 | 2440.8 |
| 22.5° | 4250.8 | 4215.1 | 4119.1 | 3976.5 | 3754.4 | 3537.7 | 3266.2 | 2981.0 | 2745.2 | 2630.0 | 2561.4 |
| 25° | 4626.5 | 4623.7 | 4505.8 | 4330.3 | 4069.8 | 3795.5 | 3502.1 | 3186.7 | 2917.9 | 2778.1 | 2687.6 |
| 27.5° | 5092.7 | 5057.0 | 4906.2 | 4706.0 | 4404.3 | 4089.0 | 3748.9 | 3400.6 | 3082.5 | 2915.2 | 2805.5 |
| 30° | 5501.3 | 5490.3 | 5320.3 | 5095.4 | 4758.1 | 4382.4 | 4014.9 | 3641.9 | 3277.2 | 3079.7 | 2959.1 |
| 32.5° | 5833.1 | 5819.4 | 5674.1 | 5449.2 | 5087.2 | 4697.8 | 4275.4 | 3869.6 | 3471.9 | 3258.0 | 3098.9 |
| 35° | 6110.1 | 6088.2 | 5937.4 | 5712.5 | 5399.8 | 5004.9 | 4555.2 | 4108.2 | 3685.8 | 3425.3 | 3274.5 |
| 37.5° | 6219.8 | 6200.6 | 6077.2 | 5890.7 | 5602.8 | 5240.8 | 4807.5 | 4371.4 | 3899.7 | 3614.5 | 3444.5 |
| 40° | 6178.7 | 6167.7 | 6080.0 | 5951.1 | 5731.7 | 5430.0 | 5048.8 | 4645.7 | 4141.1 | 3814.7 | 3611.8 |
| 42.5° | 5984.0 | 5984.0 | 5929.1 | 5863.3 | 5753.6 | 5537.0 | 5262.7 | 4908.9 | 4374.2 | 4014.9 | 3770.8 |
| 45° | 5709.7 | 5698.8 | 5679.6 | 5654.9 | 5638.4 | 5556.2 | 5402.6 | 5136.6 | 4632.0 | 4234.3 | 3962.8 |
| 47.5° | 5345.0 | 5353.2 | 5339.5 | 5350.5 | 5419.0 | 5471.1 | 5462.9 | 5347.7 | 4895.2 | 4475.6 | 4152.0 |
| 50° | 4771.8 | 4810.2 | 4854.1 | 4983.0 | 5122.9 | 5268.2 | 5402.6 | 5498.6 | 5205.1 | 4749.9 | 4371.4 |
| 52.5° | 4061.5 | 4078.0 | 4195.9 | 4500.3 | 4799.2 | 4991.2 | 5246.3 | 5567.1 | 5479.4 | 5035.1 | 4629.2 |
| 55° | 3186.7 | 3216.9 | 3395.1 | 3825.7 | 4357.7 | 4725.2 | 5024.1 | 5537.0 | 5759.1 | 5361.4 | 4930.9 |
| 57.5° | 2284.4 | 2303.6 | 2588.9 | 3033.1 | 3727.0 | 4344.0 | 4771.8 | 5416.3 | 5984.0 | 5731.7 | 5240.8 |
| 60° | 1623.5 | 1659.2 | 1842.9 | 2276.2 | 2942.6 | 3817.5 | 4541.5 | 5240.8 | 6192.4 | 6093.7 | 5646.7 |
| 62.5° | 1198.4 | 1217.6 | 1346.5 | 1661.9 | 2210.4 | 3098.9 | 4242.5 | 5111.9 | 6329.5 | 6483.1 | 6052.5 |
| 65° | 902.3 | 910.5 | 998.2 | 1214.9 | 1653.7 | 2284.4 | 3770.8 | 5087.2 | 6406.3 | 6814.9 | 6411.8 |
| 67.5° | 710.3 | 724.0 | 778.8 | 926.9 | 1231.4 | 1661.9 | 3071.5 | 5070.8 | 6378.9 | 6949.3 | 6601.0 |
| 70° | 597.8 | 600.6 | 641.7 | 724.0 | 921.5 | 1195.7 | 2295.4 | 4823.9 | 6225.3 | 6713.5 | 6425.5 |
| 72.5° | 518.3 | 518.3 | 537.5 | 603.3 | 740.5 | 905.0 | 1563.2 | 4234.3 | 5835.9 | 5997.7 | 5816.7 |
| 75° | 419.6 | 416.8 | 449.8 | 512.8 | 595.1 | 696.6 | 1050.4 | 3205.9 | 5018.6 | 4936.4 | 4788.3 |
| 77.5° | 364.7 | 362.0 | 389.4 | 444.3 | 490.9 | 556.7 | 718.5 | 2081.5 | 3949.1 | 3702.3 | 3609.0 |
| 80° | 312.6 | 304.4 | 326.3 | 378.5 | 403.1 | 433.3 | 496.4 | 1212.2 | 2580.6 | 2427.0 | 2314.6 |
| 82.5° | 235.8 | 216.7 | 211.2 | 255.0 | 271.5 | 252.3 | 252.3 | 425.1 | 937.9 | 946.1 | 874.8 |
| 85° | 19.2 | 21.9 | 27.4 | 32.9 | 46.6 | 52.1 | 54.8 | 90.5 | 139.9 | 134.4 | 137.1 |
| 87.5° | 2.7 | 2.7 | 2.7 | 5.5 | 5.5 | 8.2 | 8.2 | 8.2 | 11.0 | 11.0 | 11.0 |
| 90° | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |



REPORT NUMBER: P867908

CATALOG NUMBER: MEM2-HSN-SA-120-740-U-T2R

CANDELA DISTRIBUTION (continued):

| | 90° | 95° | 105° | 115° | 125° | 135° | 145° | 155° | 165° | 175° | 180° |
|-------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|
| 0° | 1952.6 | 1952.6 | 1952.6 | 1952.6 | 1952.6 | 1952.6 | 1952.6 | 1952.6 | 1952.6 | 1952.6 | 1952.6 |
| 2.5° | 1960.8 | 1955.4 | 1949.9 | 1949.9 | 1949.9 | 1944.4 | 1941.6 | 1941.6 | 1938.9 | 1930.7 | 1927.9 |
| 5° | 1980.0 | 1971.8 | 1963.6 | 1963.6 | 1963.6 | 1960.8 | 1958.1 | 1960.8 | 1958.1 | 1949.9 | 1947.1 |
| 7.5° | 2018.4 | 2007.5 | 1996.5 | 1996.5 | 2002.0 | 1999.2 | 1999.2 | 2002.0 | 1999.2 | 1991.0 | 1988.3 |
| 10° | 2073.3 | 2056.8 | 2051.3 | 2051.3 | 2056.8 | 2054.1 | 2051.3 | 2051.3 | 2048.6 | 2034.9 | 2040.4 |
| 12.5° | 2133.6 | 2117.2 | 2111.7 | 2114.4 | 2111.7 | 2106.2 | 2108.9 | 2100.7 | 2098.0 | 2076.0 | 2073.3 |
| 15° | 2210.4 | 2191.2 | 2180.2 | 2183.0 | 2174.7 | 2163.8 | 2152.8 | 2147.3 | 2136.4 | 2117.2 | 2111.7 |
| 17.5° | 2298.2 | 2268.0 | 2254.3 | 2254.3 | 2237.8 | 2215.9 | 2199.4 | 2183.0 | 2166.5 | 2144.6 | 2139.1 |
| 20° | 2383.2 | 2355.7 | 2333.8 | 2328.3 | 2295.4 | 2259.8 | 2229.6 | 2202.2 | 2183.0 | 2158.3 | 2152.8 |
| 22.5° | 2490.1 | 2451.7 | 2421.6 | 2396.9 | 2347.5 | 2289.9 | 2243.3 | 2204.9 | 2177.5 | 2150.1 | 2141.8 |
| 25° | 2602.6 | 2547.7 | 2498.4 | 2451.7 | 2383.2 | 2300.9 | 2235.1 | 2180.2 | 2144.6 | 2114.4 | 2108.9 |
| 27.5° | 2715.0 | 2643.7 | 2572.4 | 2498.4 | 2394.1 | 2287.2 | 2193.9 | 2128.1 | 2081.5 | 2043.1 | 2037.6 |
| 30° | 2835.7 | 2747.9 | 2635.5 | 2528.5 | 2391.4 | 2251.5 | 2133.6 | 2040.4 | 1985.5 | 1941.6 | 1936.2 |
| 32.5° | 2959.1 | 2849.4 | 2695.8 | 2550.5 | 2377.7 | 2199.4 | 2045.9 | 1947.1 | 1878.6 | 1829.2 | 1815.5 |
| 35° | 3096.2 | 2961.8 | 2750.7 | 2558.7 | 2339.3 | 2122.6 | 1952.6 | 1829.2 | 1749.7 | 1700.3 | 1689.3 |
| 37.5° | 3236.1 | 3066.0 | 2786.3 | 2553.2 | 2284.4 | 2032.1 | 1831.9 | 1705.8 | 1612.5 | 1544.0 | 1533.0 |
| 40° | 3378.7 | 3162.0 | 2808.2 | 2525.8 | 2207.7 | 1919.7 | 1719.5 | 1565.9 | 1431.5 | 1368.5 | 1338.3 |
| 42.5° | 3510.3 | 3249.8 | 2819.2 | 2487.4 | 2122.6 | 1801.8 | 1571.4 | 1371.2 | 1245.1 | 1176.5 | 1190.2 |
| 45° | 3647.4 | 3332.1 | 2822.0 | 2440.8 | 2010.2 | 1650.9 | 1384.9 | 1198.4 | 1072.3 | 1020.2 | 1014.7 |
| 47.5° | 3765.4 | 3400.6 | 2816.5 | 2374.9 | 1884.0 | 1478.2 | 1190.2 | 1012.0 | 918.7 | 869.3 | 863.9 |
| 50° | 3921.7 | 3477.4 | 2808.2 | 2298.2 | 1719.5 | 1280.7 | 1009.2 | 863.9 | 778.8 | 740.5 | 737.7 |
| 52.5° | 4078.0 | 3562.4 | 2802.8 | 2191.2 | 1546.7 | 1094.2 | 844.7 | 729.5 | 671.9 | 652.7 | 647.2 |
| 55° | 4283.7 | 3666.6 | 2805.5 | 2067.8 | 1349.3 | 902.3 | 715.8 | 636.2 | 606.1 | 597.8 | 597.8 |
| 57.5° | 4519.5 | 3801.0 | 2822.0 | 1930.7 | 1143.6 | 745.9 | 622.5 | 586.9 | 584.1 | 589.6 | 592.4 |
| 60° | 4804.7 | 3979.3 | 2854.9 | 1788.1 | 954.4 | 630.8 | 567.7 | 564.9 | 573.2 | 592.4 | 597.8 |
| 62.5° | 5125.6 | 4174.0 | 2896.0 | 1601.6 | 773.4 | 554.0 | 537.5 | 548.5 | 559.5 | 581.4 | 584.1 |
| 65° | 5408.1 | 4393.4 | 2920.7 | 1423.3 | 647.2 | 510.1 | 518.3 | 523.8 | 551.2 | 581.4 | 581.4 |
| 67.5° | 5578.1 | 4552.4 | 2827.4 | 1198.4 | 540.3 | 471.7 | 488.2 | 504.6 | 534.8 | 562.2 | 567.7 |
| 70° | 5520.5 | 4500.3 | 2509.3 | 929.7 | 458.0 | 436.0 | 455.2 | 479.9 | 510.1 | 543.0 | 559.5 |
| 72.5° | 5120.1 | 4130.1 | 2037.6 | 677.4 | 397.7 | 403.1 | 427.8 | 460.7 | 488.2 | 523.8 | 545.7 |
| 75° | 4280.9 | 3447.2 | 1469.9 | 488.2 | 348.3 | 370.2 | 408.6 | 436.0 | 455.2 | 463.5 | 466.2 |
| 77.5° | 3249.8 | 2534.0 | 1001.0 | 364.7 | 301.7 | 331.8 | 373.0 | 403.1 | 408.6 | 414.1 | 419.6 |
| 80° | 2122.6 | 1612.5 | 564.9 | 255.0 | 230.4 | 271.5 | 304.4 | 337.3 | 326.3 | 342.8 | 348.3 |
| 82.5° | 896.8 | 704.8 | 257.8 | 126.2 | 107.0 | 115.2 | 123.4 | 109.7 | 101.5 | 101.5 | 87.8 |
| 85° | 117.9 | 90.5 | 38.4 | 16.5 | 13.7 | 8.2 | 8.2 | 8.2 | 5.5 | 5.5 | 5.5 |
| 87.5° | 11.0 | 11.0 | 8.2 | 8.2 | 5.5 | 5.5 | 2.7 | 5.5 | 2.7 | 2.7 | 2.7 |
| 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: SP1-2407-157-5

Test Date: 08/07/2024

Luminaire Tested: MEM2-HTN-SA-40-740-U-5WQ-2

Data in this report applies to families of products including MEM2-HTN-SA-40-740-U-5WQ-2

Test Information

Test Method: LM-79-2019
 Report Number: SP1-2407-157-5
 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-40-740-U-5WQ-2**
 Description: Epic Modern Light Square 40W 5WQ Optic and Flare Trim

Spectral Parameters

CCT (K): 3915
 CIE u': 0.2262
 CIE v': 0.5044
 Duv: 0.0010
 CIE x: 0.3850
 CIE y: 0.3816
 CIE z: 0.2334
 Peak Wavelength (nm): 449
 Dominant Wavelength (nm): 578
 Purity: 30.05482
 Rf: 73.2
 Rg: 93.9

| | | | |
|-----------|------|------|-------|
| CRI (Ra): | 71.0 | | |
| R1: | 67.6 | R9: | -38.4 |
| R2: | 78.3 | R10: | 48.9 |
| R3: | 87.1 | R11: | 65.3 |
| R4: | 69.7 | R12: | 40.4 |
| R5: | 67.4 | R13: | 69.3 |
| R6: | 69.3 | R14: | 92.6 |
| R7: | 79.7 | R15: | 59.9 |
| R8: | 48.7 | | |



Test Conditions

Stabilization Time: 21M
 Operation Time: 1H 21M
 Sphere Temperature (°C): 24.2

REPORT NUMBER: SP1-2407-157-5

| 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: SP1-2407-157-5

CIE 1931 Chromaticity Diagram



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



Point lies inside the ANSI 4000K 4-step quadrangle

REPORT NUMBER: SP1-2407-157-5

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 | 112 | NR | 620 | 618 | NR | 750 | 15 | NR | 880 | 0 | NR |
| 365 | 0 | NR | 495 | 153 | NR | 625 | 563 | NR | 755 | 13 | NR | 885 | 0 | NR |
| 370 | 0 | NR | 500 | 216 | NR | 630 | 510 | NR | 760 | 11 | NR | 890 | 0 | NR |
| 375 | 0 | NR | 505 | 291 | NR | 635 | 456 | NR | 765 | 9 | NR | 895 | 0 | NR |
| 380 | 0 | NR | 510 | 366 | NR | 640 | 407 | NR | 770 | 8 | NR | 900 | 0 | NR |
| 385 | 0 | NR | 515 | 436 | NR | 645 | 359 | NR | 775 | 7 | NR | 905 | 0 | NR |
| 390 | 0 | NR | 520 | 492 | NR | 650 | 316 | NR | 780 | 6 | NR | 910 | 0 | NR |
| 395 | 2 | NR | 525 | 536 | NR | 655 | 277 | NR | 785 | 5 | NR | 915 | 0 | NR |
| 400 | 4 | NR | 530 | 567 | NR | 660 | 240 | NR | 790 | 4 | NR | 920 | 0 | NR |
| 405 | 7 | NR | 535 | 596 | NR | 665 | 208 | NR | 795 | 4 | NR | 925 | 0 | NR |
| 410 | 12 | NR | 540 | 619 | NR | 670 | 179 | NR | 800 | 3 | NR | 930 | 0 | NR |
| 415 | 25 | NR | 545 | 644 | NR | 675 | 154 | NR | 805 | 3 | NR | 935 | 0 | NR |
| 420 | 51 | NR | 550 | 671 | NR | 680 | 133 | NR | 810 | 3 | NR | 940 | 0 | NR |
| 425 | 100 | NR | 555 | 701 | NR | 685 | 114 | NR | 815 | 2 | NR | 945 | 0 | NR |
| 430 | 180 | NR | 560 | 735 | NR | 690 | 98 | NR | 820 | 2 | NR | 950 | 0 | NR |
| 435 | 315 | NR | 565 | 768 | NR | 695 | 83 | NR | 825 | 2 | NR | 955 | 0 | NR |
| 440 | 514 | NR | 570 | 798 | NR | 700 | 71 | NR | 830 | 1 | NR | 960 | 0 | NR |
| 445 | 828 | NR | 575 | 825 | NR | 705 | 61 | NR | 835 | 1 | NR | 965 | 0 | NR |
| 450 | 992 | NR | 580 | 843 | NR | 710 | 52 | NR | 840 | 1 | NR | 970 | 0 | NR |
| 455 | 652 | NR | 585 | 848 | NR | 715 | 44 | NR | 845 | 1 | NR | 975 | 0 | NR |
| 460 | 382 | NR | 590 | 844 | NR | 720 | 38 | NR | 850 | 1 | NR | 980 | 0 | NR |
| 465 | 282 | NR | 595 | 826 | NR | 725 | 32 | NR | 855 | 1 | NR | 985 | 0 | NR |
| 470 | 180 | NR | 600 | 800 | NR | 730 | 28 | NR | 860 | 1 | NR | 990 | 0 | NR |
| 475 | 119 | NR | 605 | 762 | NR | 735 | 24 | NR | 865 | 1 | NR | 995 | 0 | NR |
| 480 | 101 | NR | 610 | 719 | NR | 740 | 20 | NR | 870 | 1 | NR | 1000 | 0 | NR |
| 485 | 98 | NR | 615 | 669 | NR | 745 | 17 | NR | 875 | 0 | NR | | | |

REPORT NUMBER: SP1-2407-157-5

Scotopic Flux vs. Wavelength



Scotopic Lumens: NR

S/P: 1.49

| 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 | 112 | NR | 620 | 618 | NR | 750 | 15 | NR | 880 | 0 | NR |
| 365 | 0 | NR | 495 | 153 | NR | 625 | 563 | NR | 755 | 13 | NR | 885 | 0 | NR |
| 370 | 0 | NR | 500 | 216 | NR | 630 | 510 | NR | 760 | 11 | NR | 890 | 0 | NR |
| 375 | 0 | NR | 505 | 291 | NR | 635 | 456 | NR | 765 | 9 | NR | 895 | 0 | NR |
| 380 | 0 | NR | 510 | 366 | NR | 640 | 407 | NR | 770 | 8 | NR | 900 | 0 | NR |
| 385 | 0 | NR | 515 | 436 | NR | 645 | 359 | NR | 775 | 7 | NR | 905 | 0 | NR |
| 390 | 0 | NR | 520 | 492 | NR | 650 | 316 | NR | 780 | 6 | NR | 910 | 0 | NR |
| 395 | 2 | NR | 525 | 536 | NR | 655 | 277 | NR | 785 | 5 | NR | 915 | 0 | NR |
| 400 | 4 | NR | 530 | 567 | NR | 660 | 240 | NR | 790 | 4 | NR | 920 | 0 | NR |
| 405 | 7 | NR | 535 | 596 | NR | 665 | 208 | NR | 795 | 4 | NR | 925 | 0 | NR |
| 410 | 12 | NR | 540 | 619 | NR | 670 | 179 | NR | 800 | 3 | NR | 930 | 0 | NR |
| 415 | 25 | NR | 545 | 644 | NR | 675 | 154 | NR | 805 | 3 | NR | 935 | 0 | NR |
| 420 | 51 | NR | 550 | 671 | NR | 680 | 133 | NR | 810 | 3 | NR | 940 | 0 | NR |
| 425 | 100 | NR | 555 | 701 | NR | 685 | 114 | NR | 815 | 2 | NR | 945 | 0 | NR |
| 430 | 180 | NR | 560 | 735 | NR | 690 | 98 | NR | 820 | 2 | NR | 950 | 0 | NR |
| 435 | 315 | NR | 565 | 768 | NR | 695 | 83 | NR | 825 | 2 | NR | 955 | 0 | NR |
| 440 | 514 | NR | 570 | 798 | NR | 700 | 71 | NR | 830 | 1 | NR | 960 | 0 | NR |
| 445 | 828 | NR | 575 | 825 | NR | 705 | 61 | NR | 835 | 1 | NR | 965 | 0 | NR |
| 450 | 992 | NR | 580 | 843 | NR | 710 | 52 | NR | 840 | 1 | NR | 970 | 0 | NR |
| 455 | 652 | NR | 585 | 848 | NR | 715 | 44 | NR | 845 | 1 | NR | 975 | 0 | NR |
| 460 | 382 | NR | 590 | 844 | NR | 720 | 38 | NR | 850 | 1 | NR | 980 | 0 | NR |
| 465 | 282 | NR | 595 | 826 | NR | 725 | 32 | NR | 855 | 1 | NR | 985 | 0 | NR |
| 470 | 180 | NR | 600 | 800 | NR | 730 | 28 | NR | 860 | 1 | NR | 990 | 0 | NR |
| 475 | 119 | NR | 605 | 762 | NR | 735 | 24 | NR | 865 | 1 | NR | 995 | 0 | NR |
| 480 | 101 | NR | 610 | 719 | NR | 740 | 20 | NR | 870 | 1 | NR | 1000 | 0 | NR |
| 485 | 98 | NR | 615 | 669 | NR | 745 | 17 | NR | 875 | 0 | NR | | | |

REPORT NUMBER: SP1-2407-157-5

Melanopic Flux vs. Wavelength



Melanopic Lumens: NR

M/P: 2.88

| 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 | 112 | NR | 620 | 618 | NR | 750 | 15 | NR | 880 | 0 | NR |
| 365 | 0 | NR | 495 | 153 | NR | 625 | 563 | NR | 755 | 13 | NR | 885 | 0 | NR |
| 370 | 0 | NR | 500 | 216 | NR | 630 | 510 | NR | 760 | 11 | NR | 890 | 0 | NR |
| 375 | 0 | NR | 505 | 291 | NR | 635 | 456 | NR | 765 | 9 | NR | 895 | 0 | NR |
| 380 | 0 | NR | 510 | 366 | NR | 640 | 407 | NR | 770 | 8 | NR | 900 | 0 | NR |
| 385 | 0 | NR | 515 | 436 | NR | 645 | 359 | NR | 775 | 7 | NR | 905 | 0 | NR |
| 390 | 0 | NR | 520 | 492 | NR | 650 | 316 | NR | 780 | 6 | NR | 910 | 0 | NR |
| 395 | 2 | NR | 525 | 536 | NR | 655 | 277 | NR | 785 | 5 | NR | 915 | 0 | NR |
| 400 | 4 | NR | 530 | 567 | NR | 660 | 240 | NR | 790 | 4 | NR | 920 | 0 | NR |
| 405 | 7 | NR | 535 | 596 | NR | 665 | 208 | NR | 795 | 4 | NR | 925 | 0 | NR |
| 410 | 12 | NR | 540 | 619 | NR | 670 | 179 | NR | 800 | 3 | NR | 930 | 0 | NR |
| 415 | 25 | NR | 545 | 644 | NR | 675 | 154 | NR | 805 | 3 | NR | 935 | 0 | NR |
| 420 | 51 | NR | 550 | 671 | NR | 680 | 133 | NR | 810 | 3 | NR | 940 | 0 | NR |
| 425 | 100 | NR | 555 | 701 | NR | 685 | 114 | NR | 815 | 2 | NR | 945 | 0 | NR |
| 430 | 180 | NR | 560 | 735 | NR | 690 | 98 | NR | 820 | 2 | NR | 950 | 0 | NR |
| 435 | 315 | NR | 565 | 768 | NR | 695 | 83 | NR | 825 | 2 | NR | 955 | 0 | NR |
| 440 | 514 | NR | 570 | 798 | NR | 700 | 71 | NR | 830 | 1 | NR | 960 | 0 | NR |
| 445 | 828 | NR | 575 | 825 | NR | 705 | 61 | NR | 835 | 1 | NR | 965 | 0 | NR |
| 450 | 992 | NR | 580 | 843 | NR | 710 | 52 | NR | 840 | 1 | NR | 970 | 0 | NR |
| 455 | 652 | NR | 585 | 848 | NR | 715 | 44 | NR | 845 | 1 | NR | 975 | 0 | NR |
| 460 | 382 | NR | 590 | 844 | NR | 720 | 38 | NR | 850 | 1 | NR | 980 | 0 | NR |
| 465 | 282 | NR | 595 | 826 | NR | 725 | 32 | NR | 855 | 1 | NR | 985 | 0 | NR |
| 470 | 180 | NR | 600 | 800 | NR | 730 | 28 | NR | 860 | 1 | NR | 990 | 0 | NR |
| 475 | 119 | NR | 605 | 762 | NR | 735 | 24 | NR | 865 | 1 | NR | 995 | 0 | NR |
| 480 | 101 | NR | 610 | 719 | NR | 740 | 20 | NR | 870 | 1 | NR | 1000 | 0 | NR |
| 485 | 98 | NR | 615 | 669 | NR | 745 | 17 | NR | 875 | 0 | NR | | | |

Summary

$R_f = 73.2$
 $R_g = 93.9$
 $CIE R_a = 71.0$
 $R_g = -38.4$



Color Vector Graphics

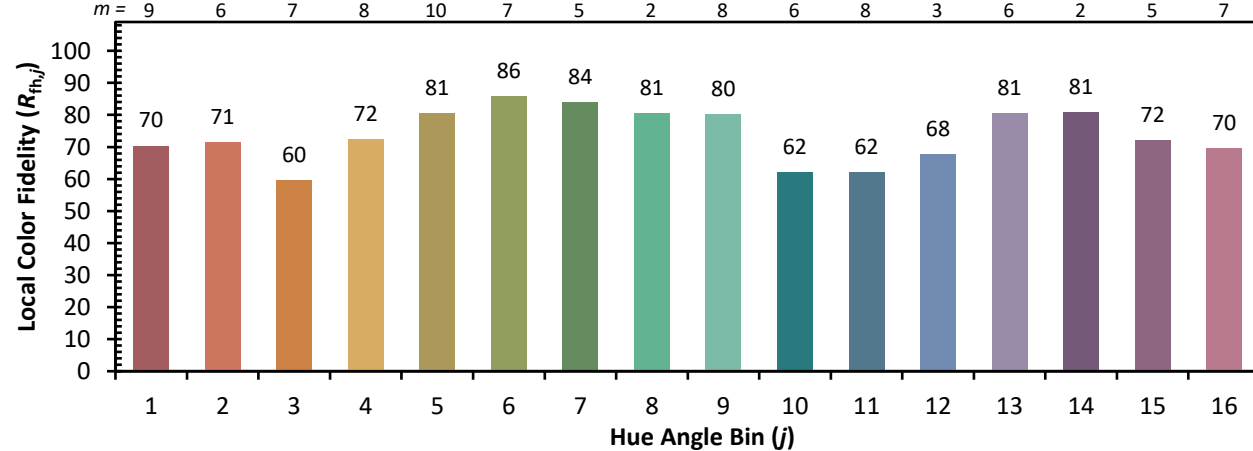
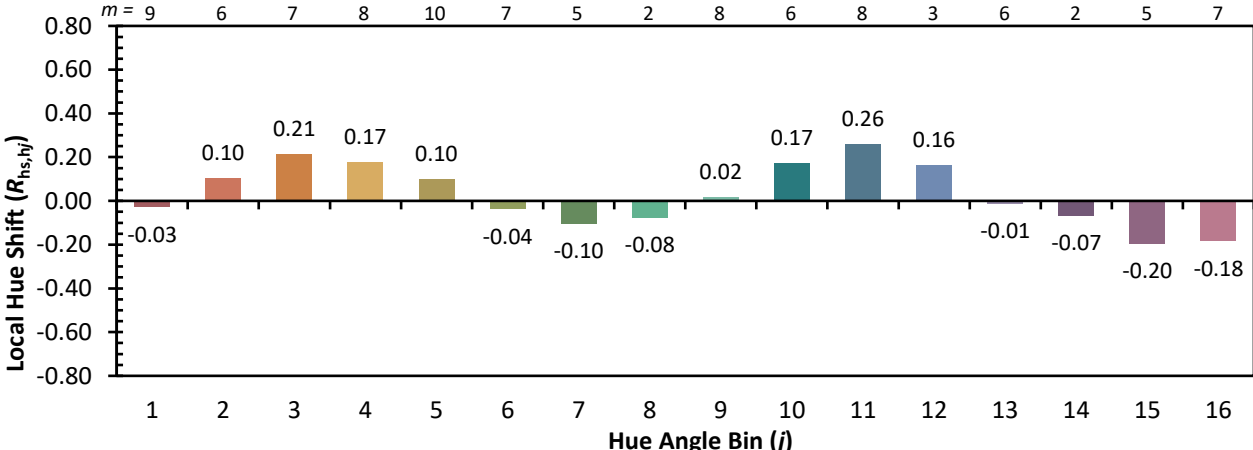
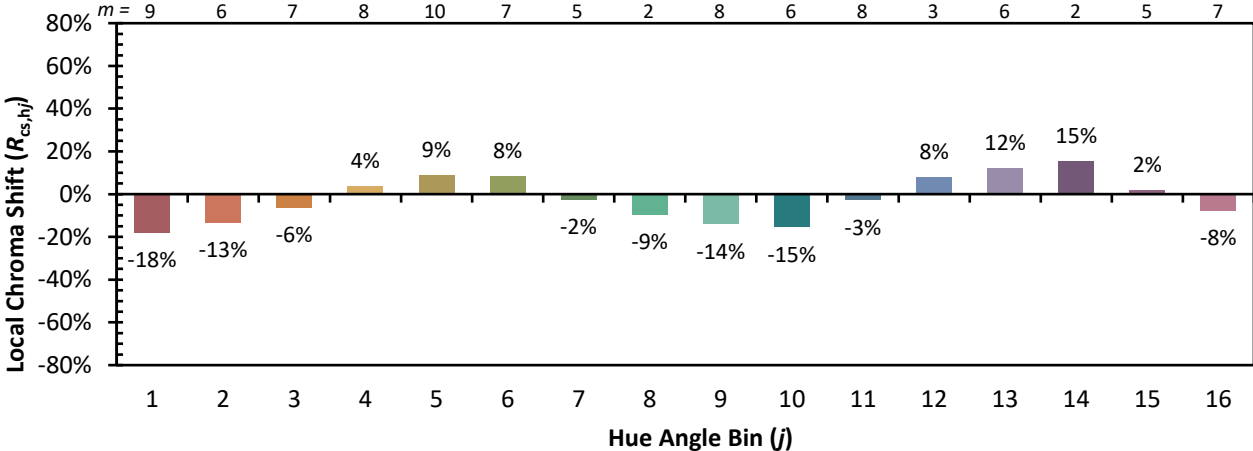


Individual Sample Fidelity Index ($R_{f,i}$)

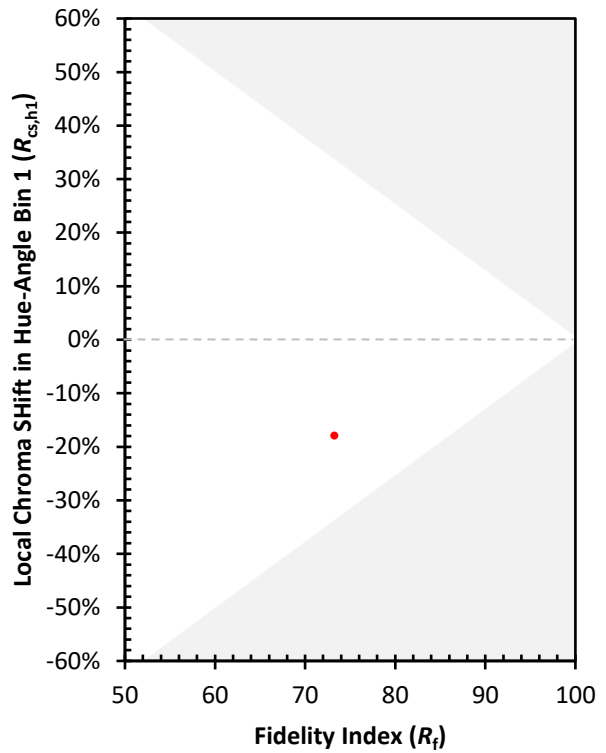
| | | | |
|------------|------------|------------|------------|
| CES01 = 85 | CES26 = 61 | CES51 = 88 | CES76 = 50 |
| CES02 = 61 | CES27 = 88 | CES52 = 87 | CES77 = 69 |
| CES03 = 30 | CES28 = 81 | CES53 = 77 | CES78 = 53 |
| CES04 = 70 | CES29 = 65 | CES54 = 84 | CES79 = 81 |
| CES05 = 47 | CES30 = 81 | CES55 = 83 | CES80 = 78 |
| CES06 = 50 | CES31 = 69 | CES56 = 73 | CES81 = 77 |
| CES07 = 40 | CES32 = 60 | CES57 = 72 | CES82 = 91 |
| CES08 = 39 | CES33 = 76 | CES58 = 73 | CES83 = 89 |
| CES09 = 29 | CES34 = 70 | CES59 = 85 | CES84 = 86 |
| CES10 = 74 | CES35 = 83 | CES60 = 89 | CES85 = 77 |
| CES11 = 57 | CES36 = 91 | CES61 = 81 | CES86 = 71 |
| CES12 = 63 | CES37 = 79 | CES62 = 85 | CES87 = 76 |
| CES13 = 42 | CES38 = 92 | CES63 = 72 | CES88 = 80 |
| CES14 = 74 | CES39 = 96 | CES64 = 64 | CES89 = 70 |
| CES15 = 71 | CES40 = 91 | CES65 = 61 | CES90 = 79 |
| CES16 = 46 | CES41 = 93 | CES66 = 57 | CES91 = 74 |
| CES17 = 49 | CES42 = 80 | CES67 = 54 | CES92 = 57 |
| CES18 = 56 | CES43 = 76 | CES68 = 63 | CES93 = 74 |
| CES19 = 72 | CES44 = 99 | CES69 = 73 | CES94 = 51 |
| CES20 = 65 | CES45 = 85 | CES70 = 55 | CES95 = 65 |
| CES21 = 86 | CES46 = 82 | CES71 = 48 | CES96 = 76 |
| CES22 = 78 | CES47 = 86 | CES72 = 83 | CES97 = 84 |
| CES23 = 92 | CES48 = 77 | CES73 = 45 | CES98 = 75 |
| CES24 = 91 | CES49 = 80 | CES74 = 93 | CES99 = 62 |
| CES25 = 72 | CES50 = 88 | CES75 = 51 | |



Color Rendition by Hue-Angle Bin



Measure Comparisons



(END OF REPORT)