

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: P868033

Luminaire Tested: **MEM2-HSN-SA-100-727-U-T3**

Issue Date: 08/21/2024



Test Information

Test Method: LM-79-08
Report Number: P868033
Test Lab: INNOVATION CENTER(G3)
Issue Date: 08/21/2024
Manufacturer: COOPER LIGHTING SOLUTIONS (FORMERLY EATON)
Product Line: STREETWORKS
Catalog Number: MEM2-HSN-SA-100-727-U-T3
Description: EPIC MODERN SHORT HOUSING DISCRETE LED ARRAYS 100W 70CRI 2700K
FITXURE w/ TYPE III DISTRIBUTION OPTIC
Light Source: (20) 2700K CCT, 70 CRI LEDS
Ballast/Driver: ELECTRONIC DRIVER

Summary

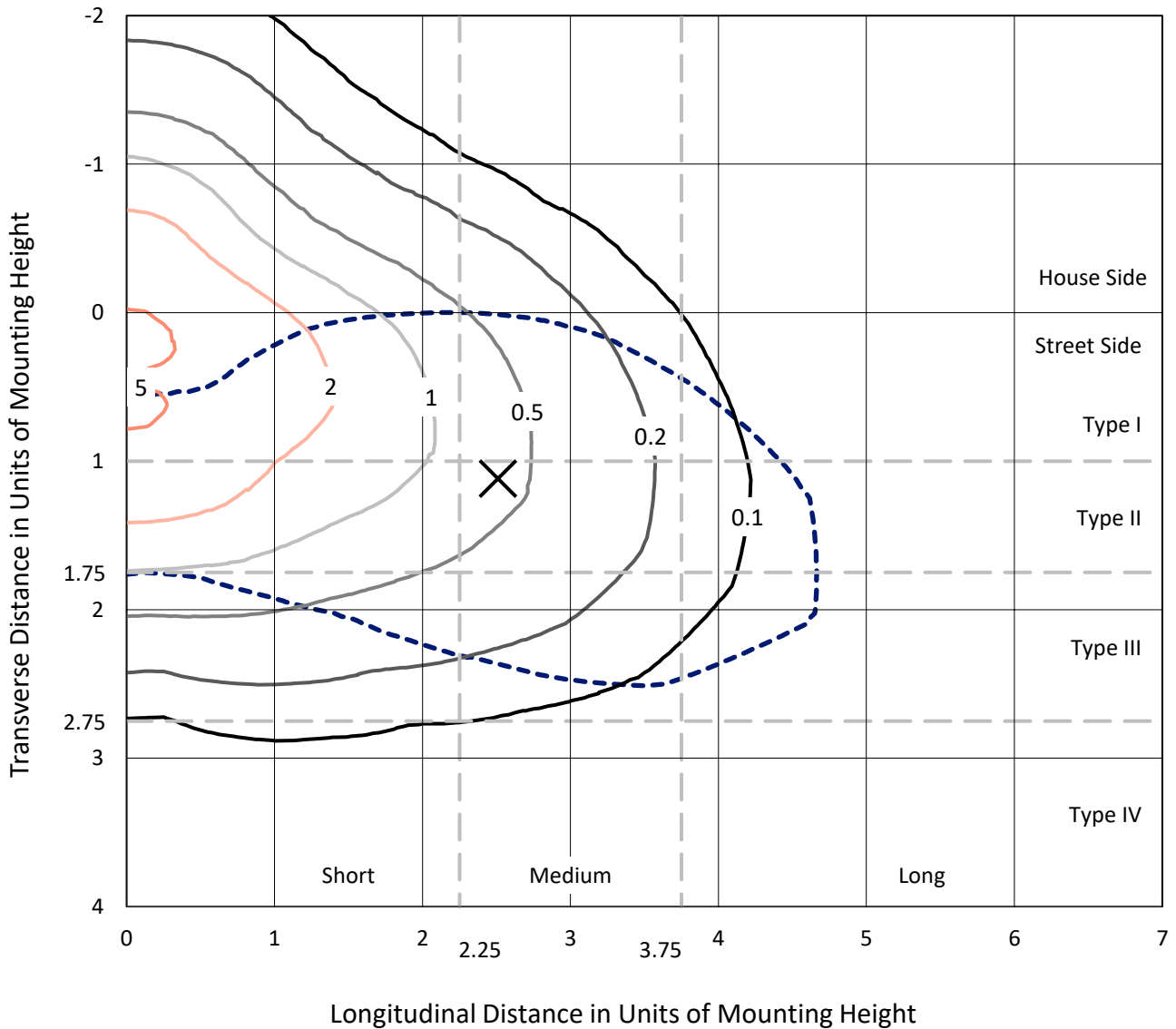
Lumens per Lamp: N/A
Luminaire Lumens: 11893.6 lumens
Efficiency: N/A
Efficacy: 132.2 lumens/watt
Luminous Opening: Rectangular (W 0.67' x L: 0.33' x H: 0')
IES Classification: Type III - Medium
BUG Rating: B2 - U0 - G2

Input Watts (W): 90
Input Voltage (V): 120
Input Current (A_{in}): NR
Voltage Rise (V): NR
Power Factor: 0.99
Total Harmonic Distortion (THDi): 6.20%
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

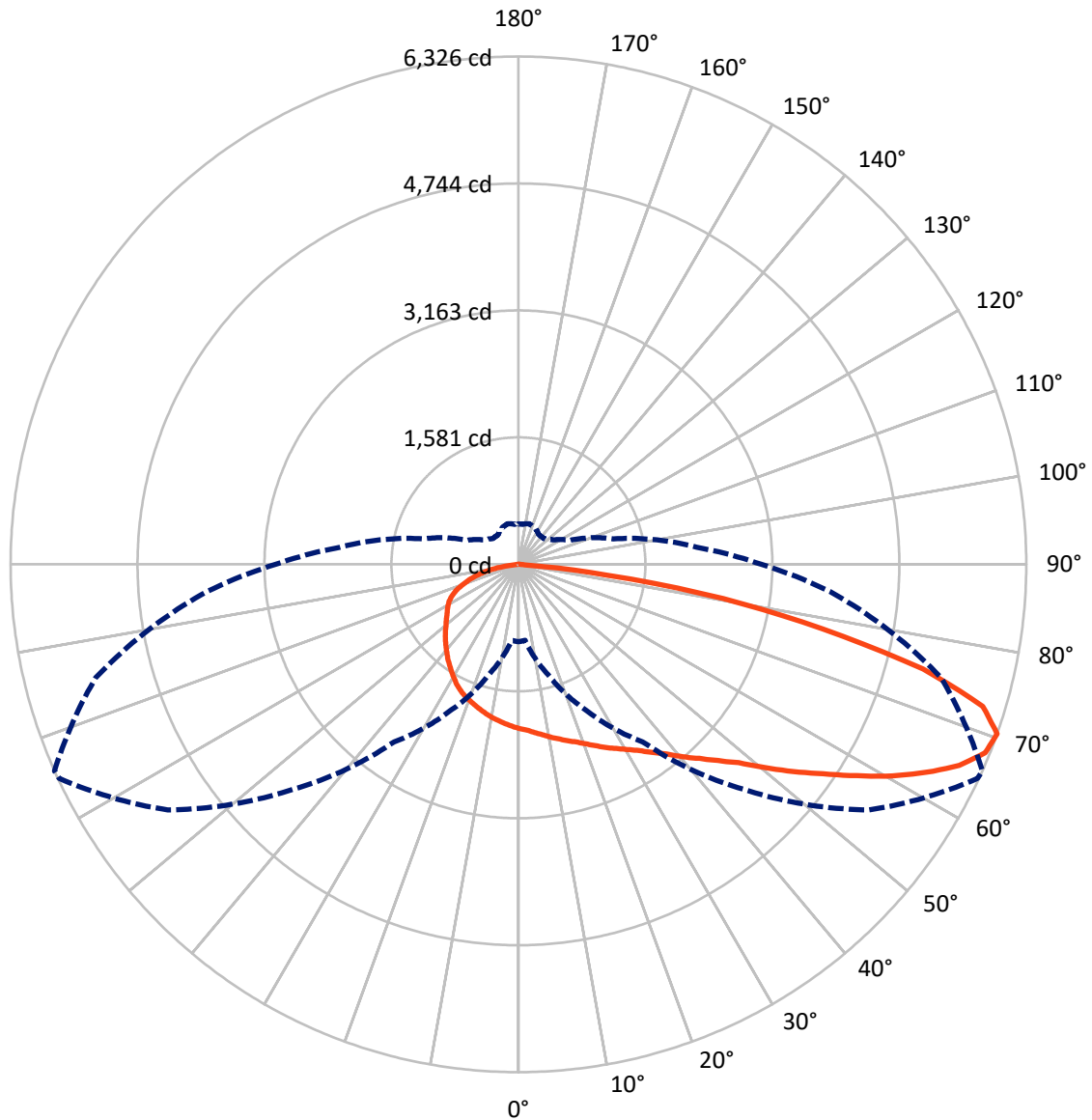
× Max cd
 - - - 1/2 Max cd



Based on 20 foot mounting height. Maximum calculated value = 5.5 fc
 Type III - Medium - N/A

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Luminous Intensity Polar Plot



— Vertical Plane Through 66-Deg Lateral - - - Horizontal Cone Through 70-Deg Vertical

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FLUX DISTRIBUTION:

| | | Downward | Upward | Total |
|--------------------|-----------|----------|--------|---------|
| House Side | Lumens | 3065.1 | 0.0 | 3065.1 |
| | % Fixture | 25.8 | 0.0 | 25.8 |
| Street Side | Lumens | 8828.5 | 0.0 | 8828.5 |
| | % Fixture | 74.2 | 0.0 | 74.2 |
| Total | Lumens | 11893.6 | 0.0 | 11893.6 |
| | % Fixture | 100.0 | 0.0 | 100.0 |

ZONAL LUMENS:

| Zone | Lumens | % Fixture |
|-----------|---------|-----------|
| 0°-10° | 195.8 | 1.6 |
| 10°-20° | 583.3 | 4.9 |
| 20°-30° | 979.8 | 8.2 |
| 30°-40° | 1476.1 | 12.4 |
| 40°-50° | 2004.0 | 16.8 |
| 50°-60° | 2381.3 | 20.0 |
| 60°-70° | 2430.3 | 20.4 |
| 70°-80° | 1625.5 | 13.7 |
| 80°-90° | 217.5 | 1.8 |
| 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° | 11893.6 | 100.0 |
| 0°-180° | 11893.6 | 100.0 |

Coefficient of Utilization



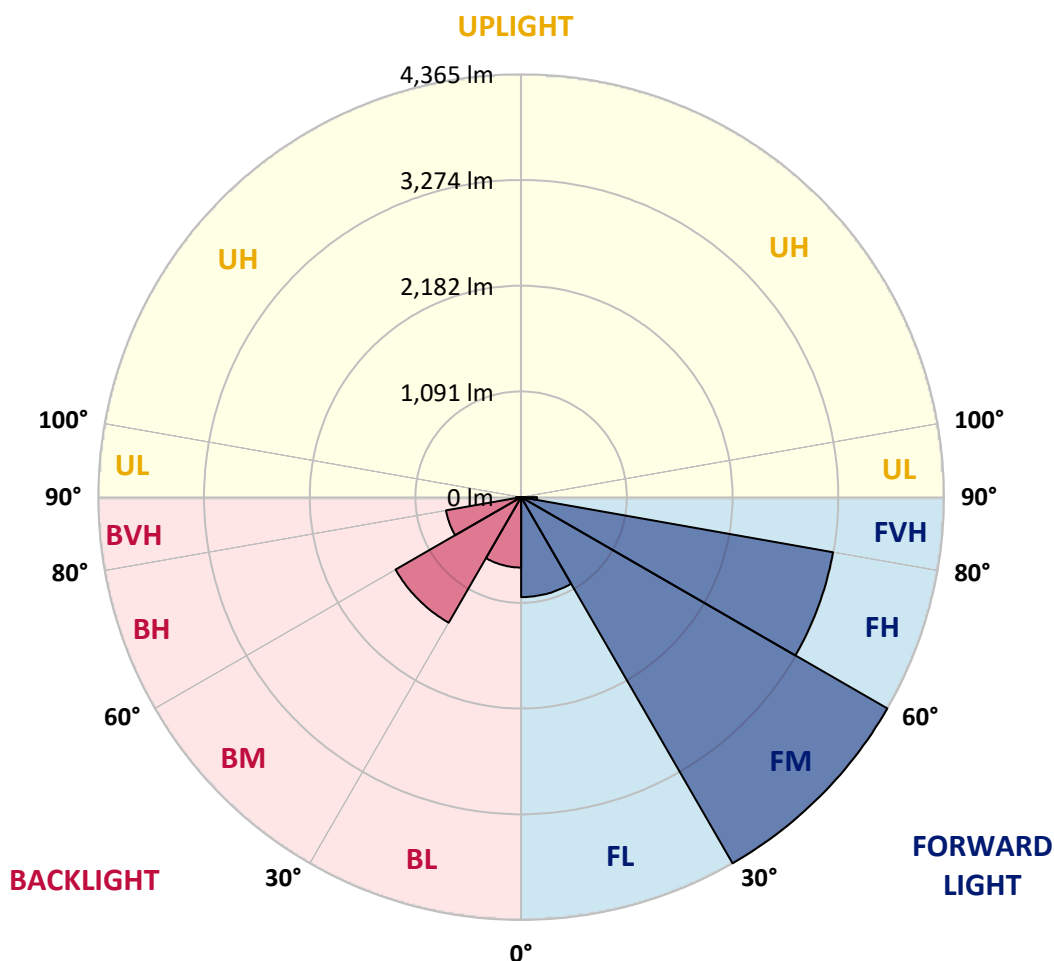
REPORT NUMBER: P868033
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LUMINAIRE CLASSIFICATION SYSTEM LUMEN TABLE AND BUG RATING:

| Zone | Lumens | % Fixture | Zone Rating/Lumen Limit | | |
|----------------|--------|-----------|-------------------------|------|---------|
| | | | B | U | G |
| FL (0°-30°) | 1032.1 | 8.7 | | | |
| FM (30°-60°) | 4364.7 | 36.7 | | | |
| FH (60°-80°) | 3268.8 | 27.5 | | | G2/5000 |
| FVH (80°-90°) | 162.9 | 1.4 | | | G2/225 |
| BL (0°-30°) | 726.8 | 6.1 | B2/1000 | | |
| BM (30°-60°) | 1496.7 | 12.6 | B2/2500 | | |
| BH (60°-80°) | 787.0 | 6.6 | B2/1000 | | G2/1000 |
| BVH (80°-90°) | 54.6 | 0.5 | | | G1/100 |
| UL (90°-100°) | 0.0 | 0.0 | | U0/0 | |
| UH (100°-180°) | 0.0 | 0.0 | | U0/0 | |

BUG Rating: B2-U0-G2

Type III Medium





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CANDELA DISTRIBUTION (FULL):

| | 0° | 5° | 15° | 25° | 35° | 45° | 55° | 65° | 66° | 75° | 85° |
|-------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|
| 0° | 2046.3 | 2046.3 | 2046.3 | 2046.3 | 2046.3 | 2046.3 | 2046.3 | 2046.3 | 2046.3 | 2046.3 | 2046.3 |
| 2.5° | 2119.6 | 2110.1 | 2103.1 | 2107.8 | 2093.6 | 2098.3 | 2081.8 | 2070.0 | 2067.6 | 2062.9 | 2058.2 |
| 5° | 2185.8 | 2185.8 | 2173.9 | 2173.9 | 2157.4 | 2155.0 | 2131.4 | 2105.4 | 2105.4 | 2088.9 | 2070.0 |
| 7.5° | 2256.7 | 2251.9 | 2237.8 | 2235.4 | 2216.5 | 2211.8 | 2185.8 | 2145.6 | 2143.2 | 2112.5 | 2084.2 |
| 10° | 2306.3 | 2308.6 | 2299.2 | 2299.2 | 2285.0 | 2273.2 | 2235.4 | 2192.9 | 2188.1 | 2148.0 | 2103.1 |
| 12.5° | 2344.1 | 2348.8 | 2346.4 | 2346.4 | 2334.6 | 2334.6 | 2292.1 | 2235.4 | 2230.7 | 2178.7 | 2114.9 |
| 15° | 2384.3 | 2381.9 | 2389.0 | 2391.3 | 2386.6 | 2379.5 | 2348.8 | 2282.6 | 2280.3 | 2211.8 | 2131.4 |
| 17.5° | 2419.7 | 2417.3 | 2419.7 | 2431.5 | 2433.9 | 2433.9 | 2403.2 | 2334.6 | 2325.2 | 2251.9 | 2145.6 |
| 20° | 2441.0 | 2445.7 | 2455.1 | 2469.3 | 2476.4 | 2495.3 | 2469.3 | 2396.1 | 2386.6 | 2294.5 | 2176.3 |
| 22.5° | 2521.3 | 2507.1 | 2514.2 | 2523.7 | 2533.1 | 2559.1 | 2535.5 | 2459.9 | 2452.8 | 2358.3 | 2211.8 |
| 25° | 2658.4 | 2658.4 | 2641.8 | 2625.3 | 2613.5 | 2625.3 | 2606.4 | 2533.1 | 2528.4 | 2415.0 | 2251.9 |
| 27.5° | 2897.0 | 2897.0 | 2861.6 | 2800.1 | 2722.2 | 2700.9 | 2686.7 | 2611.1 | 2596.9 | 2476.4 | 2277.9 |
| 30° | 3199.5 | 3208.9 | 3145.1 | 3041.2 | 2897.0 | 2802.5 | 2767.1 | 2684.4 | 2677.3 | 2537.9 | 2318.1 |
| 32.5° | 3523.2 | 3542.1 | 3494.9 | 3343.6 | 3107.3 | 2923.0 | 2866.3 | 2781.2 | 2764.7 | 2611.1 | 2370.1 |
| 35° | 3813.9 | 3832.8 | 3769.0 | 3627.2 | 3324.7 | 3097.9 | 2984.5 | 2887.6 | 2878.1 | 2705.6 | 2448.1 |
| 37.5° | 4050.2 | 4054.9 | 4014.7 | 3842.2 | 3506.7 | 3244.4 | 3131.0 | 3015.2 | 2996.3 | 2819.0 | 2530.8 |
| 40° | 4300.6 | 4319.5 | 4279.4 | 4066.7 | 3672.1 | 3402.7 | 3277.5 | 3168.8 | 3152.2 | 2937.2 | 2608.7 |
| 42.5° | 4562.9 | 4560.6 | 4560.6 | 4260.5 | 3837.5 | 3535.0 | 3435.8 | 3315.3 | 3305.8 | 3057.7 | 2693.8 |
| 45° | 4723.6 | 4733.1 | 4707.1 | 4376.3 | 4080.9 | 3672.1 | 3589.4 | 3501.9 | 3485.4 | 3225.5 | 2804.9 |
| 47.5° | 4763.8 | 4742.5 | 4624.4 | 4466.0 | 4355.0 | 3813.9 | 3783.1 | 3731.2 | 3693.4 | 3409.8 | 2941.9 |
| 50° | 4709.4 | 4676.4 | 4607.8 | 4506.2 | 4456.6 | 3984.0 | 3979.3 | 4005.3 | 3979.3 | 3634.3 | 3100.2 |
| 52.5° | 4506.2 | 4501.5 | 4489.7 | 4513.3 | 4433.0 | 4118.7 | 4201.4 | 4291.2 | 4286.5 | 3863.5 | 3265.7 |
| 55° | 4078.5 | 4109.2 | 4251.0 | 4399.9 | 4343.2 | 4210.8 | 4449.5 | 4622.0 | 4603.1 | 4132.9 | 3435.8 |
| 57.5° | 3641.4 | 3672.1 | 3854.0 | 4208.5 | 4255.7 | 4310.1 | 4728.3 | 4997.7 | 4967.0 | 4425.9 | 3591.7 |
| 60° | 3260.9 | 3227.8 | 3409.8 | 3920.2 | 4132.9 | 4399.9 | 5004.8 | 5378.2 | 5352.2 | 4718.9 | 3752.4 |
| 62.5° | 2658.4 | 2691.4 | 2982.1 | 3499.6 | 3960.4 | 4456.6 | 5231.7 | 5723.2 | 5706.6 | 4988.3 | 3882.4 |
| 65° | 2103.1 | 2058.2 | 2495.3 | 3057.7 | 3662.6 | 4437.7 | 5427.8 | 6046.9 | 6035.1 | 5252.9 | 3981.6 |
| 67.5° | 1429.6 | 1398.9 | 1975.5 | 2618.2 | 3258.6 | 4286.5 | 5472.7 | 6264.3 | 6269.0 | 5408.9 | 4007.6 |
| 70° | 964.1 | 949.9 | 1420.2 | 2013.3 | 2698.5 | 3960.4 | 5333.3 | 6309.2 | 6325.7 | 5449.1 | 3891.8 |
| 72.5° | 711.3 | 708.9 | 1039.7 | 1436.7 | 2008.5 | 3343.6 | 4952.8 | 6016.2 | 6046.9 | 5165.5 | 3551.6 |
| 75° | 560.0 | 567.1 | 742.0 | 1020.8 | 1339.8 | 2474.0 | 4165.9 | 5158.4 | 5205.7 | 4461.3 | 2949.0 |
| 77.5° | 458.4 | 458.4 | 519.9 | 732.5 | 895.6 | 1535.9 | 2996.3 | 3776.1 | 3870.6 | 3442.9 | 2270.8 |
| 80° | 371.0 | 378.1 | 385.2 | 510.4 | 593.1 | 876.7 | 1743.9 | 2518.9 | 2587.5 | 2398.4 | 1639.9 |
| 82.5° | 203.2 | 217.4 | 210.3 | 264.7 | 297.7 | 406.4 | 692.4 | 1018.4 | 1122.4 | 999.5 | 744.3 |
| 85° | 14.2 | 9.5 | 16.5 | 21.3 | 26.0 | 40.2 | 54.3 | 75.6 | 70.9 | 101.6 | 52.0 |
| 87.5° | 2.4 | 2.4 | 2.4 | 4.7 | 4.7 | 7.1 | 9.5 | 9.5 | 9.5 | 9.5 | 9.5 |
| 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: P868033

CATALOG NUMBER: MEM2-HSN-SA-100-727-U-T3

CANDELA DISTRIBUTION (continued):

| | 90° | 95° | 105° | 115° | 125° | 135° | 145° | 155° | 165° | 175° | 180° |
|-------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|
| 0° | 2046.3 | 2046.3 | 2046.3 | 2046.3 | 2046.3 | 2046.3 | 2046.3 | 2046.3 | 2046.3 | 2046.3 | 2046.3 |
| 2.5° | 2055.8 | 2044.0 | 2025.1 | 2020.4 | 2013.3 | 2003.8 | 1994.4 | 1980.2 | 1975.5 | 1980.2 | 1984.9 |
| 5° | 2058.2 | 2041.6 | 2010.9 | 1992.0 | 1973.1 | 1956.6 | 1937.7 | 1918.7 | 1906.9 | 1909.3 | 1918.7 |
| 7.5° | 2065.3 | 2041.6 | 1994.4 | 1963.6 | 1932.9 | 1906.9 | 1876.2 | 1854.9 | 1840.8 | 1843.1 | 1850.2 |
| 10° | 2074.7 | 2041.6 | 1984.9 | 1932.9 | 1890.4 | 1852.6 | 1821.9 | 1795.9 | 1781.7 | 1779.3 | 1781.7 |
| 12.5° | 2077.1 | 2039.3 | 1963.6 | 1899.8 | 1847.9 | 1798.2 | 1765.2 | 1741.5 | 1727.3 | 1720.3 | 1725.0 |
| 15° | 2084.2 | 2032.2 | 1942.4 | 1864.4 | 1800.6 | 1748.6 | 1708.4 | 1680.1 | 1670.6 | 1665.9 | 1663.5 |
| 17.5° | 2093.6 | 2029.8 | 1923.5 | 1829.0 | 1753.3 | 1694.3 | 1658.8 | 1630.5 | 1618.6 | 1613.9 | 1618.6 |
| 20° | 2107.8 | 2032.2 | 1902.2 | 1793.5 | 1710.8 | 1651.7 | 1611.6 | 1583.2 | 1573.8 | 1571.4 | 1569.0 |
| 22.5° | 2126.7 | 2036.9 | 1885.7 | 1760.4 | 1663.5 | 1604.5 | 1564.3 | 1545.4 | 1538.3 | 1540.7 | 1540.7 |
| 25° | 2145.6 | 2041.6 | 1862.0 | 1715.5 | 1613.9 | 1552.5 | 1524.1 | 1509.9 | 1514.7 | 1524.1 | 1524.1 |
| 27.5° | 2162.1 | 2039.3 | 1829.0 | 1668.3 | 1554.8 | 1498.1 | 1476.9 | 1479.2 | 1491.0 | 1507.6 | 1509.9 |
| 30° | 2183.4 | 2039.3 | 1793.5 | 1609.2 | 1488.7 | 1434.3 | 1429.6 | 1448.5 | 1467.4 | 1484.0 | 1484.0 |
| 32.5° | 2216.5 | 2053.4 | 1765.2 | 1550.1 | 1420.2 | 1377.6 | 1398.9 | 1424.9 | 1446.1 | 1462.7 | 1467.4 |
| 35° | 2273.2 | 2084.2 | 1746.2 | 1491.0 | 1354.0 | 1323.3 | 1363.4 | 1406.0 | 1420.2 | 1432.0 | 1434.3 |
| 37.5° | 2327.5 | 2112.5 | 1722.6 | 1434.3 | 1285.5 | 1273.7 | 1328.0 | 1372.9 | 1375.3 | 1382.3 | 1382.3 |
| 40° | 2379.5 | 2133.8 | 1691.9 | 1372.9 | 1219.3 | 1219.3 | 1283.1 | 1320.9 | 1316.2 | 1309.1 | 1311.5 |
| 42.5° | 2436.2 | 2145.6 | 1656.5 | 1316.2 | 1165.0 | 1165.0 | 1216.9 | 1250.0 | 1247.7 | 1257.1 | 1264.2 |
| 45° | 2504.8 | 2169.2 | 1609.2 | 1264.2 | 1108.2 | 1098.8 | 1141.3 | 1169.7 | 1205.1 | 1247.7 | 1259.5 |
| 47.5° | 2599.3 | 2202.3 | 1571.4 | 1207.5 | 1061.0 | 1027.9 | 1044.4 | 1103.5 | 1143.7 | 1179.1 | 1183.9 |
| 50° | 2698.5 | 2249.6 | 1538.3 | 1148.4 | 1004.3 | 945.2 | 959.4 | 1025.5 | 1049.2 | 1063.3 | 1070.4 |
| 52.5° | 2804.9 | 2287.4 | 1509.9 | 1098.8 | 945.2 | 860.1 | 879.0 | 942.8 | 959.4 | 971.2 | 973.6 |
| 55° | 2897.0 | 2318.1 | 1474.5 | 1051.5 | 881.4 | 779.8 | 803.4 | 864.9 | 881.4 | 895.6 | 895.6 |
| 57.5° | 2993.9 | 2346.4 | 1450.9 | 1011.4 | 812.9 | 713.6 | 730.2 | 791.6 | 815.2 | 820.0 | 827.0 |
| 60° | 3074.2 | 2372.4 | 1429.6 | 973.6 | 749.1 | 654.5 | 666.4 | 720.7 | 749.1 | 751.4 | 756.2 |
| 62.5° | 3131.0 | 2389.0 | 1417.8 | 926.3 | 685.3 | 595.5 | 604.9 | 659.3 | 692.4 | 699.4 | 701.8 |
| 65° | 3166.4 | 2398.4 | 1396.5 | 864.9 | 630.9 | 545.9 | 545.9 | 600.2 | 633.3 | 649.8 | 654.5 |
| 67.5° | 3149.9 | 2381.9 | 1339.8 | 794.0 | 581.3 | 496.2 | 493.9 | 548.2 | 576.6 | 586.0 | 588.4 |
| 70° | 3022.3 | 2285.0 | 1224.0 | 706.5 | 529.3 | 451.3 | 446.6 | 496.2 | 522.2 | 501.0 | 503.3 |
| 72.5° | 2762.3 | 2065.3 | 1065.7 | 619.1 | 475.0 | 408.8 | 404.1 | 446.6 | 449.0 | 449.0 | 446.6 |
| 75° | 2327.5 | 1687.2 | 850.7 | 526.9 | 418.2 | 363.9 | 366.3 | 399.3 | 401.7 | 413.5 | 406.4 |
| 77.5° | 1784.1 | 1250.0 | 664.0 | 420.6 | 354.4 | 323.7 | 335.5 | 347.4 | 363.9 | 380.4 | 363.9 |
| 80° | 1297.3 | 862.5 | 460.8 | 314.3 | 274.1 | 274.1 | 278.8 | 290.6 | 314.3 | 330.8 | 314.3 |
| 82.5° | 555.3 | 380.4 | 212.7 | 156.0 | 134.7 | 132.3 | 134.7 | 134.7 | 165.4 | 170.1 | 148.9 |
| 85° | 42.5 | 35.4 | 26.0 | 26.0 | 21.3 | 11.8 | 11.8 | 9.5 | 7.1 | 7.1 | 7.1 |
| 87.5° | 9.5 | 7.1 | 7.1 | 7.1 | 4.7 | 4.7 | 4.7 | 4.7 | 4.7 | 4.7 | 4.7 |
| 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: SP1-2407-157-3

Test Date: 08/07/2024

Luminaire Tested: MEM2-HTN-SA-40-727-U-5WQ-2

Data in this report applies to families of products including MEM2-HTN-SA-40-727-U-5WQ-2

Test Information

Test Method: LM-79-2019
 Report Number: SP1-2407-157-3
 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-40-727-U-5WQ-2**
 Description: Epic Modern Light Square 40W 5WQ Optic and Flare Trim

Spectral Parameters

CCT (K): 2747
 CIE u': 0.2606
 CIE v': 0.5257
 Duv: -0.0005
 CIE x: 0.4552
 CIE y: 0.4082
 CIE z: 0.1366
 Peak Wavelength (nm): 597
 Dominant Wavelength (nm): 584
 Purity: 59.16856
 R_f: 75.5
 R_g: 93.6

| | | | |
|-----------|------|------|-------|
| CRI (Ra): | 71.7 | | |
| R1: | 68.1 | R9: | -35.3 |
| R2: | 83.9 | R10: | 64.2 |
| R3: | 94.7 | R11: | 61.7 |
| R4: | 66.3 | R12: | 53.9 |
| R5: | 67.4 | R13: | 71.2 |
| R6: | 78.7 | R14: | 97.6 |
| R7: | 75.0 | R15: | 59.3 |
| R8: | 39.4 | | |



Test Conditions

Stabilization Time: 22M
 Operation Time: 1H 22M
 Sphere Temperature (°C): 24.2

REPORT NUMBER: SP1-2407-157-3

| 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: SP1-2407-157-3

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

REPORT NUMBER: SP1-2407-157-3

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 | 103 | NR | 620 | 846 | NR | 750 | 20 | NR | 880 | 0 | NR |
| 365 | 0 | NR | 495 | 130 | NR | 625 | 784 | NR | 755 | 17 | NR | 885 | 1 | NR |
| 370 | 0 | NR | 500 | 171 | NR | 630 | 720 | NR | 760 | 15 | NR | 890 | 0 | NR |
| 375 | 0 | NR | 505 | 221 | NR | 635 | 652 | NR | 765 | 13 | NR | 895 | 0 | NR |
| 380 | 0 | NR | 510 | 268 | NR | 640 | 587 | NR | 770 | 11 | NR | 900 | 0 | NR |
| 385 | 0 | NR | 515 | 313 | NR | 645 | 521 | NR | 775 | 9 | NR | 905 | 0 | NR |
| 390 | 0 | NR | 520 | 350 | NR | 650 | 461 | NR | 780 | 8 | NR | 910 | 0 | NR |
| 395 | 0 | NR | 525 | 381 | NR | 655 | 406 | NR | 785 | 7 | NR | 915 | 0 | NR |
| 400 | 0 | NR | 530 | 407 | NR | 660 | 353 | NR | 790 | 6 | NR | 920 | 0 | NR |
| 405 | 2 | NR | 535 | 435 | NR | 665 | 307 | NR | 795 | 5 | NR | 925 | 0 | NR |
| 410 | 4 | NR | 540 | 462 | NR | 670 | 264 | NR | 800 | 4 | NR | 930 | 0 | NR |
| 415 | 9 | NR | 545 | 496 | NR | 675 | 227 | NR | 805 | 4 | NR | 935 | 0 | NR |
| 420 | 20 | NR | 550 | 534 | NR | 680 | 196 | NR | 810 | 3 | NR | 940 | 0 | NR |
| 425 | 38 | NR | 555 | 582 | NR | 685 | 167 | NR | 815 | 3 | NR | 945 | 0 | NR |
| 430 | 69 | NR | 560 | 638 | NR | 690 | 144 | NR | 820 | 2 | NR | 950 | 0 | NR |
| 435 | 120 | NR | 565 | 700 | NR | 695 | 122 | NR | 825 | 2 | NR | 955 | 0 | NR |
| 440 | 193 | NR | 570 | 767 | NR | 700 | 103 | NR | 830 | 2 | NR | 960 | 0 | NR |
| 445 | 316 | NR | 575 | 836 | NR | 705 | 88 | NR | 835 | 2 | NR | 965 | 0 | NR |
| 450 | 469 | NR | 580 | 898 | NR | 710 | 74 | NR | 840 | 1 | NR | 970 | 0 | NR |
| 455 | 431 | NR | 585 | 947 | NR | 715 | 63 | NR | 845 | 1 | NR | 975 | 0 | NR |
| 460 | 264 | NR | 590 | 982 | NR | 720 | 54 | NR | 850 | 1 | NR | 980 | 0 | NR |
| 465 | 197 | NR | 595 | 997 | NR | 725 | 46 | NR | 855 | 1 | NR | 985 | 0 | NR |
| 470 | 155 | NR | 600 | 997 | NR | 730 | 39 | NR | 860 | 1 | NR | 990 | 0 | NR |
| 475 | 108 | NR | 605 | 978 | NR | 735 | 33 | NR | 865 | 1 | NR | 995 | 0 | NR |
| 480 | 90 | NR | 610 | 947 | NR | 740 | 28 | NR | 870 | 1 | NR | 1000 | 0 | NR |
| 485 | 92 | NR | 615 | 900 | NR | 745 | 24 | NR | 875 | 1 | NR | | | |

REPORT NUMBER: SP1-2407-157-3

Scotopic Flux vs. Wavelength



Scotopic Lumens: NR

S/P: 1.13

| 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 | 103 | NR | 620 | 846 | NR | 750 | 20 | NR | 880 | 0 | NR |
| 365 | 0 | NR | 495 | 130 | NR | 625 | 784 | NR | 755 | 17 | NR | 885 | 1 | NR |
| 370 | 0 | NR | 500 | 171 | NR | 630 | 720 | NR | 760 | 15 | NR | 890 | 0 | NR |
| 375 | 0 | NR | 505 | 221 | NR | 635 | 652 | NR | 765 | 13 | NR | 895 | 0 | NR |
| 380 | 0 | NR | 510 | 268 | NR | 640 | 587 | NR | 770 | 11 | NR | 900 | 0 | NR |
| 385 | 0 | NR | 515 | 313 | NR | 645 | 521 | NR | 775 | 9 | NR | 905 | 0 | NR |
| 390 | 0 | NR | 520 | 350 | NR | 650 | 461 | NR | 780 | 8 | NR | 910 | 0 | NR |
| 395 | 0 | NR | 525 | 381 | NR | 655 | 406 | NR | 785 | 7 | NR | 915 | 0 | NR |
| 400 | 0 | NR | 530 | 407 | NR | 660 | 353 | NR | 790 | 6 | NR | 920 | 0 | NR |
| 405 | 2 | NR | 535 | 435 | NR | 665 | 307 | NR | 795 | 5 | NR | 925 | 0 | NR |
| 410 | 4 | NR | 540 | 462 | NR | 670 | 264 | NR | 800 | 4 | NR | 930 | 0 | NR |
| 415 | 9 | NR | 545 | 496 | NR | 675 | 227 | NR | 805 | 4 | NR | 935 | 0 | NR |
| 420 | 20 | NR | 550 | 534 | NR | 680 | 196 | NR | 810 | 3 | NR | 940 | 0 | NR |
| 425 | 38 | NR | 555 | 582 | NR | 685 | 167 | NR | 815 | 3 | NR | 945 | 0 | NR |
| 430 | 69 | NR | 560 | 638 | NR | 690 | 144 | NR | 820 | 2 | NR | 950 | 0 | NR |
| 435 | 120 | NR | 565 | 700 | NR | 695 | 122 | NR | 825 | 2 | NR | 955 | 0 | NR |
| 440 | 193 | NR | 570 | 767 | NR | 700 | 103 | NR | 830 | 2 | NR | 960 | 0 | NR |
| 445 | 316 | NR | 575 | 836 | NR | 705 | 88 | NR | 835 | 2 | NR | 965 | 0 | NR |
| 450 | 469 | NR | 580 | 898 | NR | 710 | 74 | NR | 840 | 1 | NR | 970 | 0 | NR |
| 455 | 431 | NR | 585 | 947 | NR | 715 | 63 | NR | 845 | 1 | NR | 975 | 0 | NR |
| 460 | 264 | NR | 590 | 982 | NR | 720 | 54 | NR | 850 | 1 | NR | 980 | 0 | NR |
| 465 | 197 | NR | 595 | 997 | NR | 725 | 46 | NR | 855 | 1 | NR | 985 | 0 | NR |
| 470 | 155 | NR | 600 | 997 | NR | 730 | 39 | NR | 860 | 1 | NR | 990 | 0 | NR |
| 475 | 108 | NR | 605 | 978 | NR | 735 | 33 | NR | 865 | 1 | NR | 995 | 0 | NR |
| 480 | 90 | NR | 610 | 947 | NR | 740 | 28 | NR | 870 | 1 | NR | 1000 | 0 | NR |
| 485 | 92 | NR | 615 | 900 | NR | 745 | 24 | NR | 875 | 1 | NR | | | |

REPORT NUMBER: SP1-2407-157-3

Melanopic Flux vs. Wavelength



Melanopic Lumens: NR M/P: 2.04

| 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 | 103 | NR | 620 | 846 | NR | 750 | 20 | NR | 880 | 0 | NR |
| 365 | 0 | NR | 495 | 130 | NR | 625 | 784 | NR | 755 | 17 | NR | 885 | 1 | NR |
| 370 | 0 | NR | 500 | 171 | NR | 630 | 720 | NR | 760 | 15 | NR | 890 | 0 | NR |
| 375 | 0 | NR | 505 | 221 | NR | 635 | 652 | NR | 765 | 13 | NR | 895 | 0 | NR |
| 380 | 0 | NR | 510 | 268 | NR | 640 | 587 | NR | 770 | 11 | NR | 900 | 0 | NR |
| 385 | 0 | NR | 515 | 313 | NR | 645 | 521 | NR | 775 | 9 | NR | 905 | 0 | NR |
| 390 | 0 | NR | 520 | 350 | NR | 650 | 461 | NR | 780 | 8 | NR | 910 | 0 | NR |
| 395 | 0 | NR | 525 | 381 | NR | 655 | 406 | NR | 785 | 7 | NR | 915 | 0 | NR |
| 400 | 0 | NR | 530 | 407 | NR | 660 | 353 | NR | 790 | 6 | NR | 920 | 0 | NR |
| 405 | 2 | NR | 535 | 435 | NR | 665 | 307 | NR | 795 | 5 | NR | 925 | 0 | NR |
| 410 | 4 | NR | 540 | 462 | NR | 670 | 264 | NR | 800 | 4 | NR | 930 | 0 | NR |
| 415 | 9 | NR | 545 | 496 | NR | 675 | 227 | NR | 805 | 4 | NR | 935 | 0 | NR |
| 420 | 20 | NR | 550 | 534 | NR | 680 | 196 | NR | 810 | 3 | NR | 940 | 0 | NR |
| 425 | 38 | NR | 555 | 582 | NR | 685 | 167 | NR | 815 | 3 | NR | 945 | 0 | NR |
| 430 | 69 | NR | 560 | 638 | NR | 690 | 144 | NR | 820 | 2 | NR | 950 | 0 | NR |
| 435 | 120 | NR | 565 | 700 | NR | 695 | 122 | NR | 825 | 2 | NR | 955 | 0 | NR |
| 440 | 193 | NR | 570 | 767 | NR | 700 | 103 | NR | 830 | 2 | NR | 960 | 0 | NR |
| 445 | 316 | NR | 575 | 836 | NR | 705 | 88 | NR | 835 | 2 | NR | 965 | 0 | NR |
| 450 | 469 | NR | 580 | 898 | NR | 710 | 74 | NR | 840 | 1 | NR | 970 | 0 | NR |
| 455 | 431 | NR | 585 | 947 | NR | 715 | 63 | NR | 845 | 1 | NR | 975 | 0 | NR |
| 460 | 264 | NR | 590 | 982 | NR | 720 | 54 | NR | 850 | 1 | NR | 980 | 0 | NR |
| 465 | 197 | NR | 595 | 997 | NR | 725 | 46 | NR | 855 | 1 | NR | 985 | 0 | NR |
| 470 | 155 | NR | 600 | 997 | NR | 730 | 39 | NR | 860 | 1 | NR | 990 | 0 | NR |
| 475 | 108 | NR | 605 | 978 | NR | 735 | 33 | NR | 865 | 1 | NR | 995 | 0 | NR |
| 480 | 90 | NR | 610 | 947 | NR | 740 | 28 | NR | 870 | 1 | NR | 1000 | 0 | NR |
| 485 | 92 | NR | 615 | 900 | NR | 745 | 24 | NR | 875 | 1 | NR | | | |

Summary

$R_f = 75.5$
 $R_g = 93.6$
 $CIE R_a = 71.7$
 $R_g = -35.3$



Color Vector Graphics

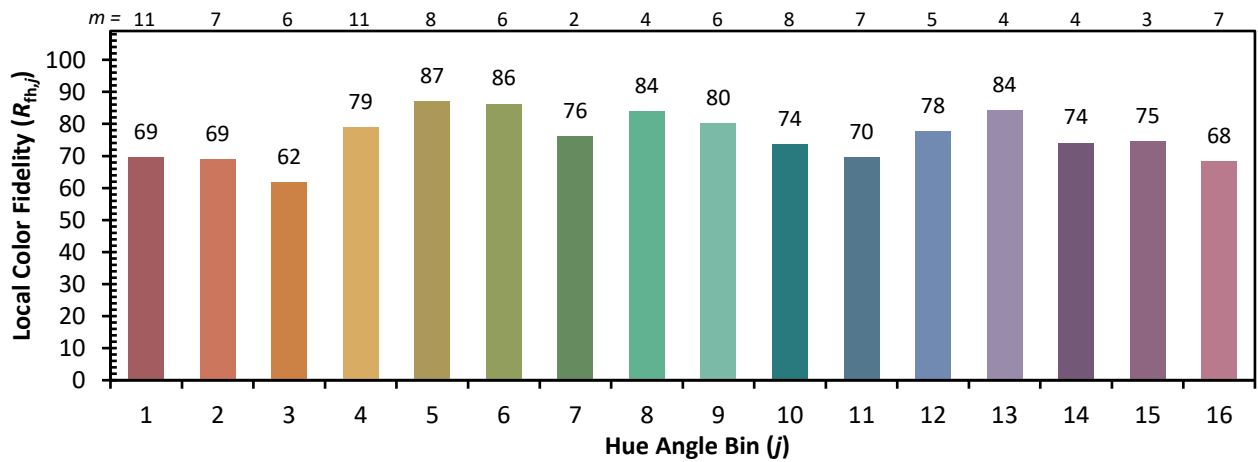
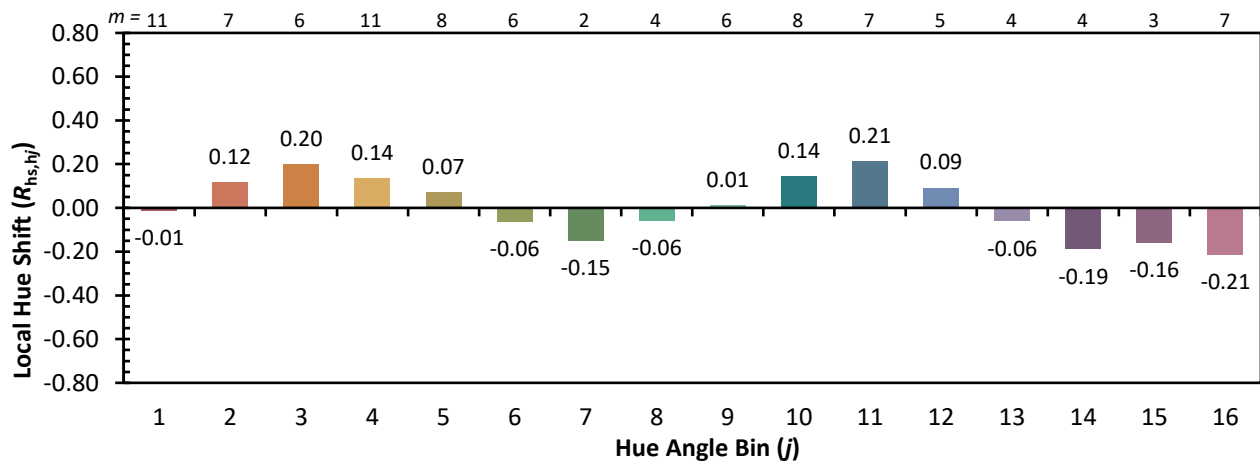
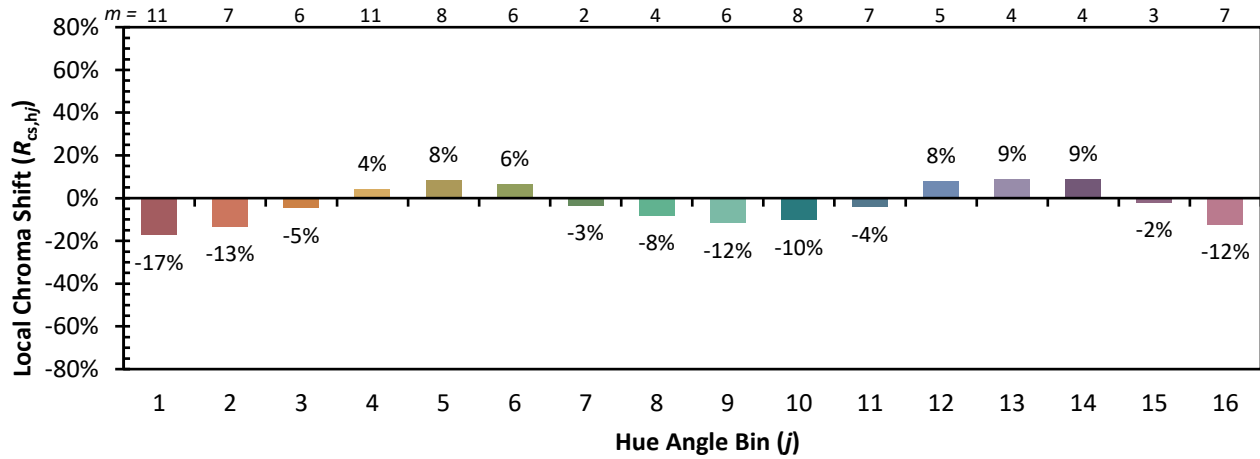


Individual Sample Fidelity Index ($R_{f,i}$)

| | | | |
|------------|------------|------------|------------|
| CES01 = 86 | CES26 = 68 | CES51 = 87 | CES76 = 63 |
| CES02 = 63 | CES27 = 90 | CES52 = 85 | CES77 = 79 |
| CES03 = 31 | CES28 = 87 | CES53 = 78 | CES78 = 66 |
| CES04 = 71 | CES29 = 71 | CES54 = 86 | CES79 = 87 |
| CES05 = 50 | CES30 = 85 | CES55 = 84 | CES80 = 85 |
| CES06 = 52 | CES31 = 74 | CES56 = 75 | CES81 = 67 |
| CES07 = 42 | CES32 = 66 | CES57 = 75 | CES82 = 93 |
| CES08 = 41 | CES33 = 80 | CES58 = 76 | CES83 = 91 |
| CES09 = 29 | CES34 = 79 | CES59 = 85 | CES84 = 89 |
| CES10 = 77 | CES35 = 89 | CES60 = 90 | CES85 = 72 |
| CES11 = 60 | CES36 = 93 | CES61 = 81 | CES86 = 59 |
| CES12 = 66 | CES37 = 88 | CES62 = 91 | CES87 = 77 |
| CES13 = 43 | CES38 = 93 | CES63 = 77 | CES88 = 79 |
| CES14 = 74 | CES39 = 97 | CES64 = 67 | CES89 = 65 |
| CES15 = 72 | CES40 = 93 | CES65 = 66 | CES90 = 80 |
| CES16 = 48 | CES41 = 93 | CES66 = 63 | CES91 = 80 |
| CES17 = 51 | CES42 = 89 | CES67 = 61 | CES92 = 55 |
| CES18 = 57 | CES43 = 78 | CES68 = 68 | CES93 = 72 |
| CES19 = 73 | CES44 = 99 | CES69 = 78 | CES94 = 48 |
| CES20 = 67 | CES45 = 85 | CES70 = 63 | CES95 = 66 |
| CES21 = 88 | CES46 = 81 | CES71 = 61 | CES96 = 76 |
| CES22 = 80 | CES47 = 86 | CES72 = 86 | CES97 = 81 |
| CES23 = 92 | CES48 = 74 | CES73 = 56 | CES98 = 76 |
| CES24 = 91 | CES49 = 79 | CES74 = 93 | CES99 = 64 |
| CES25 = 73 | CES50 = 86 | CES75 = 66 | |



Color Rendition by Hue-Angle Bin



Measure Comparisons



(END OF REPORT)