

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: P867684

Luminaire Tested: **MEM2-HTN-SA-120-727-U-T4W**

Issue Date: 08/21/2024



**Test Information**

Test Method: LM-79-08  
Report Number: P867684  
Test Lab: INNOVATION CENTER(G3)  
Issue Date: 08/21/2024  
Manufacturer: COOPER LIGHTING SOLUTIONS (FORMERLY EATON)  
Product Line: STREETWORKS  
Catalog Number: MEM2-HTN-SA-120-727-U-T4W  
Description: EPIC MODERN TALL HOUSING DISCRETE LED ARRAYS 120W 70CRI 2700K  
FITXURE w/ TYPE IV WIDE DISTRIBUTION OPTIC  
Light Source: (20) 2700K CCT, 70 CRI LEDS  
Ballast/Driver: ELECTRONIC DRIVER

**Summary**

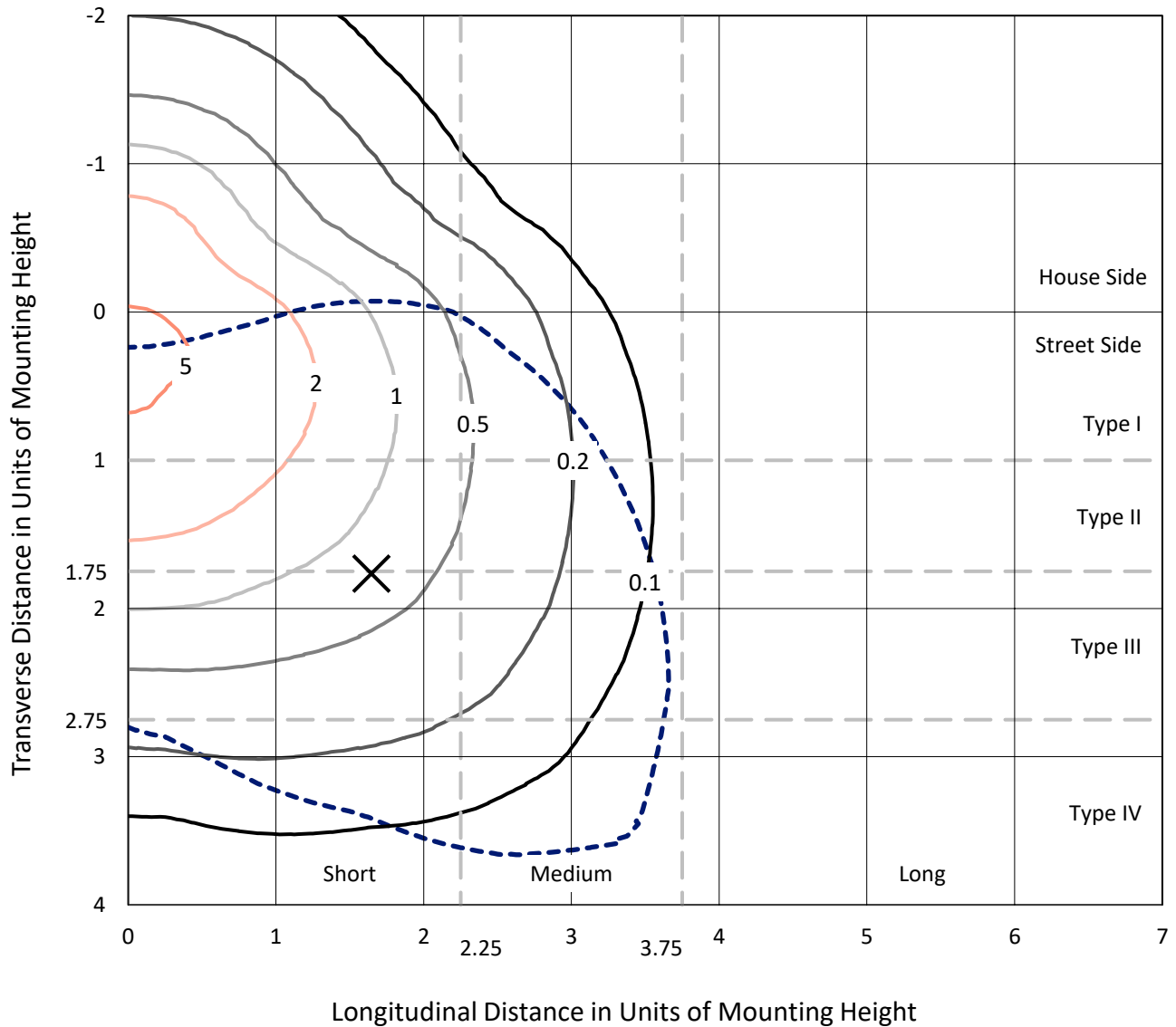
Lumens per Lamp: N/A  
Luminaire Lumens: 12511.3 lumens  
Efficiency: N/A  
Efficacy: 123.9 lumens/watt  
Luminous Opening: Rectangular (W 0.67' x L: 0.33' x H: 0')  
IES Classification: Type IV - Short  
BUG Rating: B2 - U0 - G2

Input Watts (W): 101  
Input Voltage (V): 120  
Input Current (A<sub>in</sub>): 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: P867684  
 CATALOG NUMBER: MEM2-HTN-SA-120-727-U-T4W

### Iso-Footcandle Lines of Horizontal Illumination

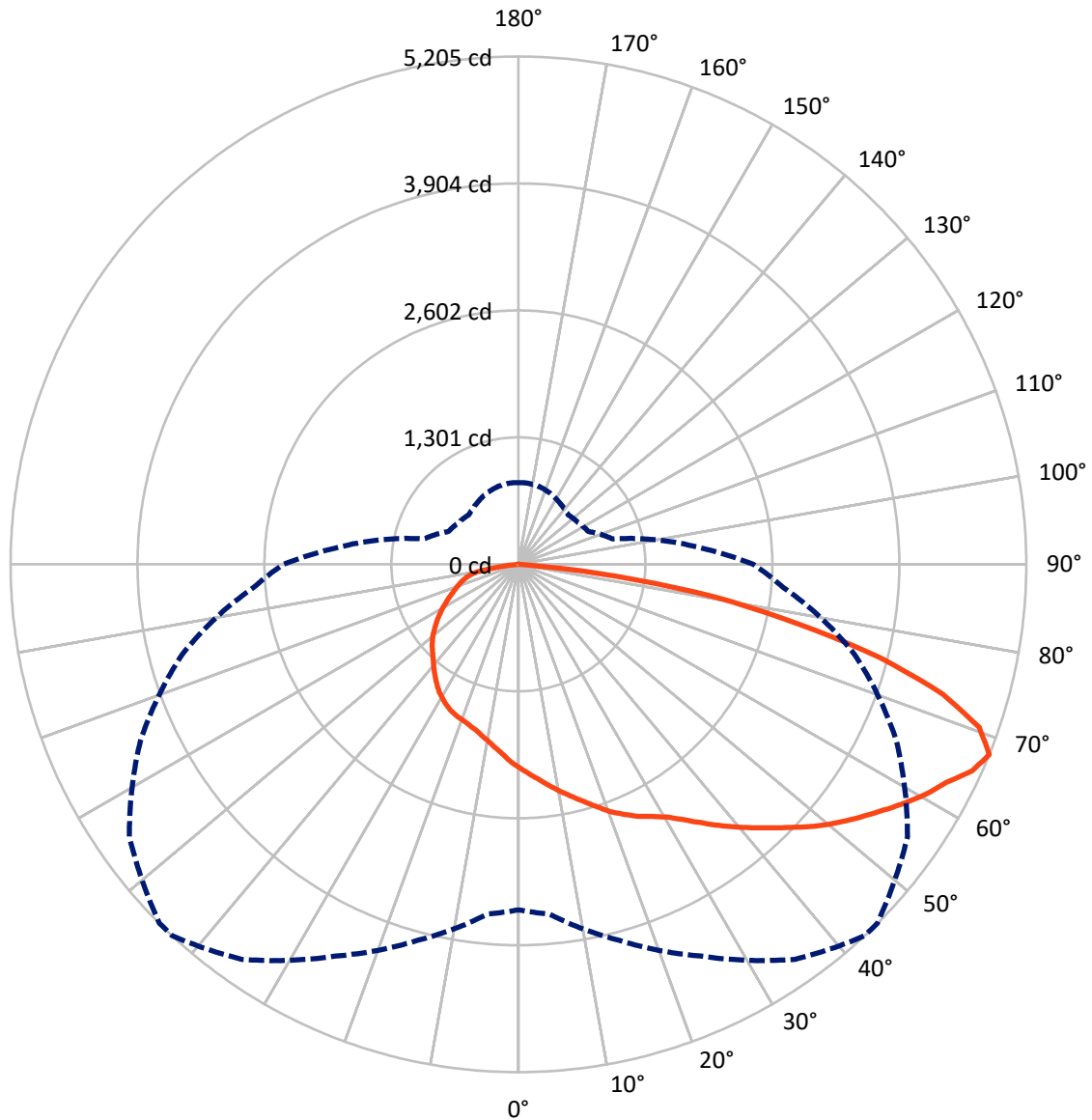
✕ Max cd  
 - - - 1/2 Max cd



Based on 20 foot mounting height. Maximum calculated value = 6 fc  
 Type IV - Short - N/A

REPORT NUMBER: P867684  
CATALOG NUMBER: MEM2-HTN-SA-120-727-U-T4W

### Luminous Intensity Polar Plot



— Vertical Plane Through 43-Deg Lateral    - - - Horizontal Cone Through 67.5-Deg Vertical

REPORT NUMBER: P867684  
 CATALOG NUMBER: MEM2-HTN-SA-120-727-U-T4W

**FLUX DISTRIBUTION:**

|                    |           | Downward | Upward | Total   |
|--------------------|-----------|----------|--------|---------|
| <b>House Side</b>  | Lumens    | 3365.6   | 0.0    | 3365.6  |
|                    | % Fixture | 26.9     | 0.0    | 26.9    |
| <b>Street Side</b> | Lumens    | 9145.7   | 0.0    | 9145.7  |
|                    | % Fixture | 73.1     | 0.0    | 73.1    |
| <b>Total</b>       | Lumens    | 12511.3  | 0.0    | 12511.3 |
|                    | % Fixture | 100.0    | 0.0    | 100.0   |

**Coefficient of Utilization**

**ZONAL LUMENS:**

| Zone      | Lumens  | % Fixture |
|-----------|---------|-----------|
| 0°-10°    | 199.9   | 1.6       |
| 10°-20°   | 610.4   | 4.9       |
| 20°-30°   | 1041.4  | 8.3       |
| 30°-40°   | 1518.9  | 12.1      |
| 40°-50°   | 2040.4  | 16.3      |
| 50°-60°   | 2497.8  | 20.0      |
| 60°-70°   | 2628.8  | 21.0      |
| 70°-80°   | 1716.2  | 13.7      |
| 80°-90°   | 257.5   | 2.1       |
| 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°    | 12511.3 | 100.0     |
| 0°-180°   | 12511.3 | 100.0     |



REPORT NUMBER: P867684

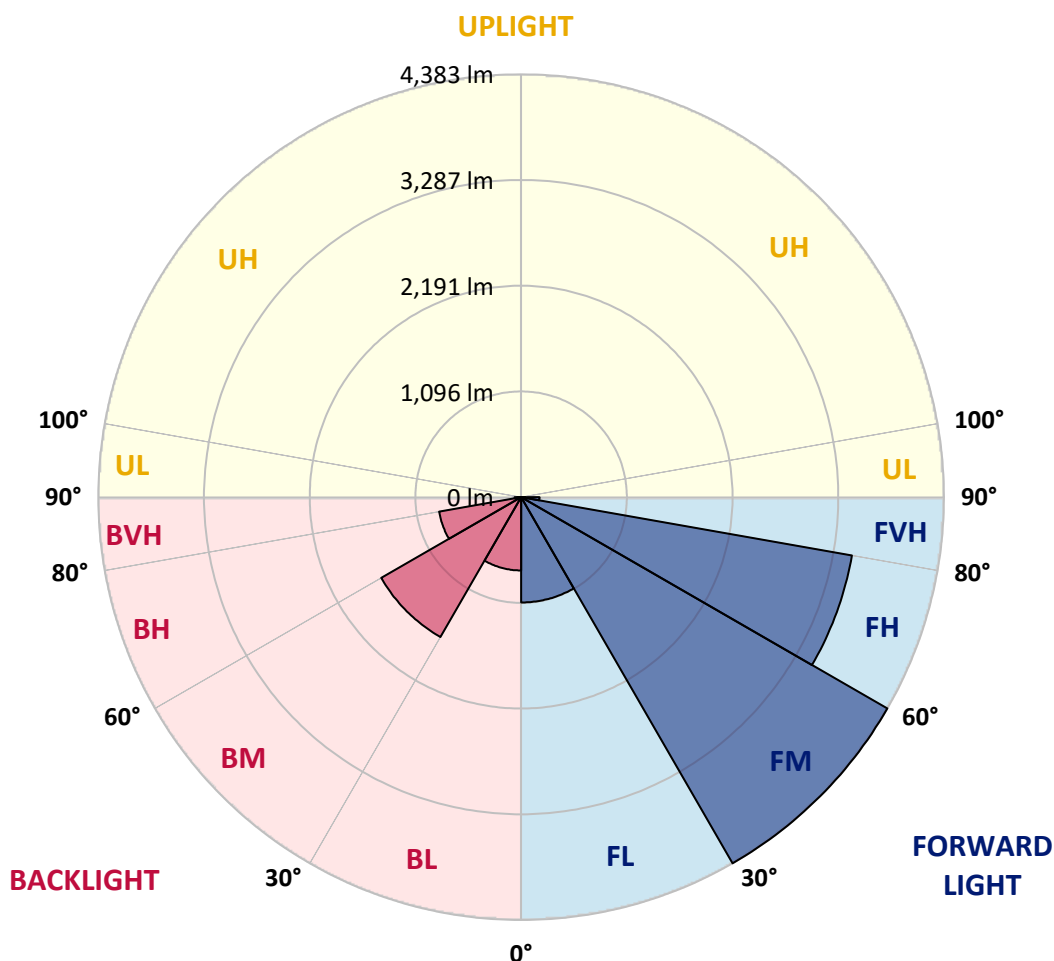
CATALOG NUMBER: MEM2-HTN-SA-120-727-U-T4W

**LUMINAIRE CLASSIFICATION SYSTEM LUMEN TABLE AND BUG RATING:**

| Zone |             | Lumens | % Fixture | Zone Rating/Lumen Limit |      |         |
|------|-------------|--------|-----------|-------------------------|------|---------|
|      |             |        |           | B                       | U    | G       |
| FL   | (0°-30°)    | 1091.9 | 8.7       |                         |      |         |
| FM   | (30°-60°)   | 4382.6 | 35.0      |                         |      |         |
| FH   | (60°-80°)   | 3481.3 | 27.8      |                         |      | G2/5000 |
| FVH  | (80°-90°)   | 189.9  | 1.5       |                         |      | G2/225  |
| BL   | (0°-30°)    | 759.8  | 6.1       | B2/1000                 |      |         |
| BM   | (30°-60°)   | 1674.5 | 13.4      | B2/2500                 |      |         |
| BH   | (60°-80°)   | 863.7  | 6.9       | B2/1000                 |      | G2/1000 |
| BVH  | (80°-90°)   | 67.5   | 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 IV Short





REPORT NUMBER: P867684

CATALOG NUMBER: MEM2-HTN-SA-120-727-U-T4W

**CANDELA DISTRIBUTION (FULL):**

|       | 0°     | 5°     | 15°    | 25°    | 35°    | 43°    | 45°    | 55°    | 65°    | 75°    | 85°    |
|-------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|
| 0°    | 2088.5 | 2088.5 | 2088.5 | 2088.5 | 2088.5 | 2088.5 | 2088.5 | 2088.5 | 2088.5 | 2088.5 | 2088.5 |
| 2.5°  | 2184.7 | 2182.2 | 2174.6 | 2169.5 | 2154.3 | 2151.8 | 2151.8 | 2136.6 | 2118.9 | 2108.8 | 2098.6 |
| 5°    | 2283.4 | 2270.8 | 2265.7 | 2255.6 | 2230.3 | 2215.1 | 2220.1 | 2192.3 | 2156.9 | 2131.5 | 2103.7 |
| 7.5°  | 2372.0 | 2367.0 | 2349.3 | 2336.6 | 2306.2 | 2291.0 | 2286.0 | 2242.9 | 2197.4 | 2159.4 | 2113.8 |
| 10°   | 2478.4 | 2465.7 | 2455.6 | 2430.3 | 2389.8 | 2367.0 | 2359.4 | 2303.7 | 2245.5 | 2194.8 | 2134.1 |
| 12.5° | 2574.6 | 2559.4 | 2546.7 | 2521.4 | 2480.9 | 2442.9 | 2432.8 | 2369.5 | 2296.1 | 2227.7 | 2151.8 |
| 15°   | 2648.0 | 2650.5 | 2637.8 | 2615.1 | 2569.5 | 2523.9 | 2516.3 | 2432.8 | 2344.2 | 2260.6 | 2169.5 |
| 17.5° | 2716.3 | 2726.4 | 2718.9 | 2703.7 | 2658.1 | 2612.5 | 2604.9 | 2511.3 | 2404.9 | 2298.6 | 2189.8 |
| 20°   | 2782.1 | 2782.1 | 2779.6 | 2769.5 | 2736.6 | 2706.2 | 2691.0 | 2597.3 | 2463.2 | 2339.1 | 2217.6 |
| 22.5° | 2820.1 | 2830.2 | 2830.2 | 2830.2 | 2810.0 | 2784.7 | 2779.6 | 2688.5 | 2541.6 | 2389.8 | 2242.9 |
| 25°   | 2878.3 | 2891.0 | 2891.0 | 2885.9 | 2868.2 | 2860.6 | 2853.0 | 2767.0 | 2617.6 | 2448.0 | 2270.8 |
| 27.5° | 3002.4 | 2999.9 | 2979.6 | 2954.3 | 2929.0 | 2926.4 | 2916.3 | 2855.6 | 2706.2 | 2511.3 | 2308.7 |
| 30°   | 3174.5 | 3179.6 | 3154.3 | 3075.8 | 3017.6 | 3004.9 | 3007.4 | 2954.3 | 2810.0 | 2584.7 | 2351.8 |
| 32.5° | 3437.8 | 3437.8 | 3339.1 | 3237.8 | 3154.3 | 3121.4 | 3113.8 | 3068.2 | 2916.3 | 2665.7 | 2399.9 |
| 35°   | 3635.3 | 3627.7 | 3572.0 | 3453.0 | 3349.2 | 3255.5 | 3242.9 | 3182.1 | 3035.3 | 2756.8 | 2453.0 |
| 37.5° | 3784.6 | 3799.8 | 3756.8 | 3665.6 | 3564.4 | 3402.4 | 3377.1 | 3291.0 | 3144.2 | 2845.4 | 2506.2 |
| 40°   | 4073.2 | 4035.2 | 3931.5 | 3847.9 | 3726.4 | 3546.7 | 3523.9 | 3417.6 | 3255.5 | 2944.2 | 2572.0 |
| 42.5° | 4283.3 | 4230.2 | 4111.2 | 3999.8 | 3847.9 | 3691.0 | 3670.7 | 3554.3 | 3384.6 | 3055.5 | 2640.4 |
| 45°   | 4584.6 | 4465.6 | 4301.1 | 4202.3 | 3987.1 | 3847.9 | 3822.6 | 3696.0 | 3518.8 | 3174.5 | 2726.4 |
| 47.5° | 4875.7 | 4668.1 | 4493.5 | 4447.9 | 4139.0 | 4017.5 | 3997.3 | 3850.4 | 3663.1 | 3303.6 | 2810.0 |
| 50°   | 4837.7 | 4701.0 | 4642.8 | 4599.8 | 4270.7 | 4177.0 | 4156.8 | 4007.4 | 3809.9 | 3440.3 | 2893.5 |
| 52.5° | 4741.5 | 4754.2 | 4756.7 | 4652.9 | 4394.7 | 4326.4 | 4306.1 | 4177.0 | 3961.8 | 3559.3 | 2974.5 |
| 55°   | 4842.8 | 4858.0 | 4855.5 | 4698.5 | 4539.0 | 4475.7 | 4463.1 | 4349.2 | 4108.7 | 3670.7 | 3032.8 |
| 57.5° | 4997.2 | 4946.6 | 4939.0 | 4812.4 | 4693.4 | 4635.2 | 4620.0 | 4521.3 | 4232.7 | 3751.7 | 3078.3 |
| 60°   | 5025.1 | 4923.8 | 4956.7 | 4837.7 | 4809.9 | 4792.2 | 4787.1 | 4670.7 | 4349.2 | 3817.5 | 3096.1 |
| 62.5° | 4713.7 | 4696.0 | 4825.1 | 4777.0 | 4870.6 | 4921.3 | 4923.8 | 4777.0 | 4412.4 | 3842.9 | 3078.3 |
| 65°   | 4182.1 | 4253.0 | 4531.4 | 4670.7 | 4961.8 | 5106.1 | 5101.0 | 4840.3 | 4404.8 | 3769.4 | 2969.5 |
| 67.5° | 3541.6 | 3597.3 | 3989.7 | 4430.2 | 4941.5 | 5204.8 | 5202.3 | 4868.1 | 4273.2 | 3566.9 | 2723.9 |
| 70°   | 2685.9 | 2860.6 | 3417.6 | 3997.3 | 4668.1 | 5009.9 | 5052.9 | 4711.2 | 3972.0 | 3197.3 | 2351.8 |
| 72.5° | 2042.9 | 2070.8 | 2744.2 | 3351.7 | 4179.5 | 4546.6 | 4539.0 | 4209.9 | 3468.2 | 2693.5 | 1959.4 |
| 75°   | 1450.6 | 1511.3 | 2065.7 | 2597.3 | 3425.2 | 3832.7 | 3815.0 | 3453.0 | 2767.0 | 2096.1 | 1498.7 |
| 77.5° | 1081.0 | 1103.7 | 1511.3 | 1926.5 | 2561.9 | 2929.0 | 2921.4 | 2551.8 | 2035.3 | 1539.2 | 1116.4 |
| 80°   | 789.8  | 827.8  | 1088.6 | 1344.2 | 1736.6 | 2053.1 | 2042.9 | 1693.6 | 1306.3 | 1075.9 | 815.2  |
| 82.5° | 443.0  | 470.9  | 632.9  | 812.6  | 916.4  | 1015.1 | 972.1  | 812.6  | 594.9  | 463.3  | 400.0  |
| 85°   | 12.7   | 15.2   | 22.8   | 27.8   | 48.1   | 81.0   | 88.6   | 78.5   | 93.7   | 58.2   | 63.3   |
| 87.5° | 5.1    | 5.1    | 5.1    | 5.1    | 5.1    | 7.6    | 7.6    | 7.6    | 7.6    | 7.6    | 7.6    |
| 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: P867684

CATALOG NUMBER: MEM2-HTN-SA-120-727-U-T4W

**CANDELA DISTRIBUTION (continued):**

|       | 90°    | 95°    | 105°   | 115°   | 125°   | 135°   | 145°   | 155°   | 165°   | 175°   | 180°   |
|-------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|
| 0°    | 2088.5 | 2088.5 | 2088.5 | 2088.5 | 2088.5 | 2088.5 | 2088.5 | 2088.5 | 2088.5 | 2088.5 | 2088.5 |
| 2.5°  | 2093.6 | 2083.4 | 2063.2 | 2050.5 | 2042.9 | 2032.8 | 2017.6 | 2007.5 | 1999.9 | 2010.0 | 2007.5 |
| 5°    | 2091.0 | 2070.8 | 2035.3 | 2010.0 | 1984.7 | 1964.5 | 1941.7 | 1924.0 | 1913.8 | 1918.9 | 1916.4 |
| 7.5°  | 2091.0 | 2065.7 | 2010.0 | 1969.5 | 1931.6 | 1901.2 | 1875.9 | 1853.1 | 1842.9 | 1845.5 | 1842.9 |
| 10°   | 2101.2 | 2065.7 | 1992.3 | 1934.1 | 1883.5 | 1848.0 | 1820.2 | 1799.9 | 1792.3 | 1799.9 | 1802.4 |
| 12.5° | 2111.3 | 2065.7 | 1977.1 | 1903.7 | 1837.9 | 1799.9 | 1774.6 | 1761.9 | 1767.0 | 1769.5 | 1772.1 |
| 15°   | 2116.4 | 2063.2 | 1961.9 | 1868.3 | 1794.8 | 1754.3 | 1739.2 | 1736.6 | 1749.3 | 1761.9 | 1764.5 |
| 17.5° | 2129.0 | 2060.7 | 1939.1 | 1832.8 | 1756.9 | 1724.0 | 1716.4 | 1726.5 | 1751.8 | 1769.5 | 1774.6 |
| 20°   | 2144.2 | 2065.7 | 1913.8 | 1789.8 | 1718.9 | 1693.6 | 1706.2 | 1729.0 | 1759.4 | 1784.7 | 1789.8 |
| 22.5° | 2159.4 | 2068.3 | 1891.0 | 1751.8 | 1678.4 | 1673.3 | 1701.2 | 1734.1 | 1769.5 | 1794.8 | 1799.9 |
| 25°   | 2177.1 | 2068.3 | 1860.7 | 1703.7 | 1637.9 | 1645.5 | 1688.5 | 1731.6 | 1764.5 | 1797.4 | 1802.4 |
| 27.5° | 2194.8 | 2073.3 | 1827.8 | 1650.6 | 1587.3 | 1610.0 | 1663.2 | 1716.4 | 1751.8 | 1784.7 | 1792.3 |
| 30°   | 2225.2 | 2083.4 | 1799.9 | 1605.0 | 1536.6 | 1567.0 | 1630.3 | 1691.1 | 1729.0 | 1764.5 | 1772.1 |
| 32.5° | 2255.6 | 2098.6 | 1777.1 | 1556.9 | 1486.0 | 1521.4 | 1592.3 | 1660.7 | 1701.2 | 1734.1 | 1739.2 |
| 35°   | 2296.1 | 2118.9 | 1759.4 | 1508.8 | 1435.4 | 1463.2 | 1539.2 | 1615.1 | 1660.7 | 1686.0 | 1698.7 |
| 37.5° | 2339.1 | 2146.7 | 1744.2 | 1465.8 | 1379.7 | 1405.0 | 1486.0 | 1567.0 | 1615.1 | 1640.4 | 1645.5 |
| 40°   | 2392.3 | 2184.7 | 1734.1 | 1425.2 | 1326.5 | 1346.8 | 1427.8 | 1516.4 | 1561.9 | 1579.7 | 1589.8 |
| 42.5° | 2450.5 | 2225.2 | 1726.5 | 1384.7 | 1268.3 | 1288.5 | 1374.6 | 1460.7 | 1506.3 | 1521.4 | 1529.0 |
| 45°   | 2523.9 | 2278.4 | 1721.4 | 1341.7 | 1220.2 | 1237.9 | 1324.0 | 1410.1 | 1448.0 | 1468.3 | 1475.9 |
| 47.5° | 2592.3 | 2331.5 | 1706.2 | 1291.1 | 1167.0 | 1192.3 | 1270.8 | 1346.8 | 1389.8 | 1402.5 | 1410.1 |
| 50°   | 2660.6 | 2377.1 | 1675.9 | 1235.4 | 1118.9 | 1141.7 | 1212.6 | 1268.3 | 1301.2 | 1316.4 | 1321.5 |
| 52.5° | 2726.4 | 2410.0 | 1627.8 | 1177.2 | 1068.3 | 1083.5 | 1141.7 | 1194.9 | 1217.7 | 1222.7 | 1237.9 |
| 55°   | 2769.5 | 2427.7 | 1559.4 | 1108.8 | 1017.7 | 1022.7 | 1065.8 | 1113.9 | 1126.5 | 1129.1 | 1129.1 |
| 57.5° | 2799.9 | 2417.6 | 1478.4 | 1040.5 | 967.0  | 967.0  | 992.4  | 1030.3 | 1035.4 | 1037.9 | 1043.0 |
| 60°   | 2804.9 | 2382.2 | 1374.6 | 977.2  | 911.3  | 903.8  | 929.1  | 951.9  | 954.4  | 959.4  | 964.5  |
| 62.5° | 2767.0 | 2303.7 | 1263.2 | 916.4  | 858.2  | 840.5  | 863.2  | 886.0  | 898.7  | 906.3  | 911.3  |
| 65°   | 2650.5 | 2144.2 | 1136.7 | 855.7  | 807.6  | 777.2  | 805.0  | 843.0  | 868.3  | 870.8  | 870.8  |
| 67.5° | 2407.5 | 1886.0 | 1002.5 | 792.4  | 746.8  | 719.0  | 754.4  | 794.9  | 825.3  | 837.9  | 835.4  |
| 70°   | 2040.4 | 1599.9 | 878.4  | 726.5  | 686.0  | 668.3  | 706.3  | 751.9  | 777.2  | 787.3  | 792.4  |
| 72.5° | 1643.0 | 1281.0 | 769.6  | 660.7  | 632.9  | 622.8  | 660.7  | 706.3  | 741.7  | 756.9  | 759.5  |
| 75°   | 1278.4 | 1007.5 | 678.4  | 592.4  | 569.6  | 572.1  | 612.6  | 658.2  | 696.2  | 703.8  | 681.0  |
| 77.5° | 992.4  | 802.5  | 592.4  | 511.4  | 498.7  | 516.4  | 556.9  | 605.0  | 627.8  | 635.4  | 620.2  |
| 80°   | 716.4  | 615.2  | 478.5  | 402.5  | 402.5  | 430.4  | 465.8  | 521.5  | 529.1  | 519.0  | 524.0  |
| 82.5° | 339.2  | 298.7  | 235.4  | 194.9  | 182.3  | 202.5  | 215.2  | 232.9  | 253.2  | 258.2  | 245.6  |
| 85°   | 45.6   | 30.4   | 22.8   | 25.3   | 22.8   | 15.2   | 10.1   | 10.1   | 10.1   | 7.6    | 7.6    |
| 87.5° | 7.6    | 7.6    | 5.1    | 5.1    | 5.1    | 5.1    | 5.1    | 5.1    | 2.5    | 2.5    | 2.5    |
| 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: SP1-2407-157-3

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  
 Rf: 75.5  
 Rg: 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**

| $\lambda$ (nm) | Power W <sup>^</sup> /nm | Lumens ( $\phi$ /nm) | $\lambda$ (nm) | Power W <sup>^</sup> /nm | Lumens ( $\phi$ /nm) | $\lambda$ (nm) | Power W <sup>^</sup> /nm | Lumens ( $\phi$ /nm) | $\lambda$ (nm) | Power W <sup>^</sup> /nm | Lumens ( $\phi$ /nm) | $\lambda$ (nm) | Power W <sup>^</sup> /nm | Lumens ( $\phi$ /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 <sup>^</sup> /nm | Lumens (φ/nm) | λ (nm) | Power W <sup>^</sup> /nm | Lumens (φ/nm) | λ (nm) | Power W <sup>^</sup> /nm | Lumens (φ/nm) | λ (nm) | Power W <sup>^</sup> /nm | Lumens (φ/nm) | λ (nm) | Power W <sup>^</sup> /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 <sup>^</sup> /nm | Lumens (φ/nm) | λ (nm) | Power W <sup>^</sup> /nm | Lumens (φ/nm) | λ (nm) | Power W <sup>^</sup> /nm | Lumens (φ/nm) | λ (nm) | Power W <sup>^</sup> /nm | Lumens (φ/nm) | λ (nm) | Power W <sup>^</sup> /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)