

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: P868110

Luminaire Tested: **MEM2-HSN-SA-90-730-U-T4W**

Issue Date: 08/21/2024



Test Information

Test Method: LM-79-08
Report Number: P868110
Test Lab: INNOVATION CENTER(G3)
Issue Date: 08/21/2024
Manufacturer: COOPER LIGHTING SOLUTIONS (FORMERLY EATON)
Product Line: STREETWORKS
Catalog Number: MEM2-HSN-SA-90-730-U-T4W
Description: EPIC MODERN SHORT HOUSING DISCRETE LED ARRAYS 90W 70CRI 3000K
FITXURE w/ TYPE IV WIDE DISTRIBUTION OPTIC
Light Source: (20) 3000K CCT, 70 CRI LEDS
Ballast/Driver: ELECTRONIC DRIVER

Summary

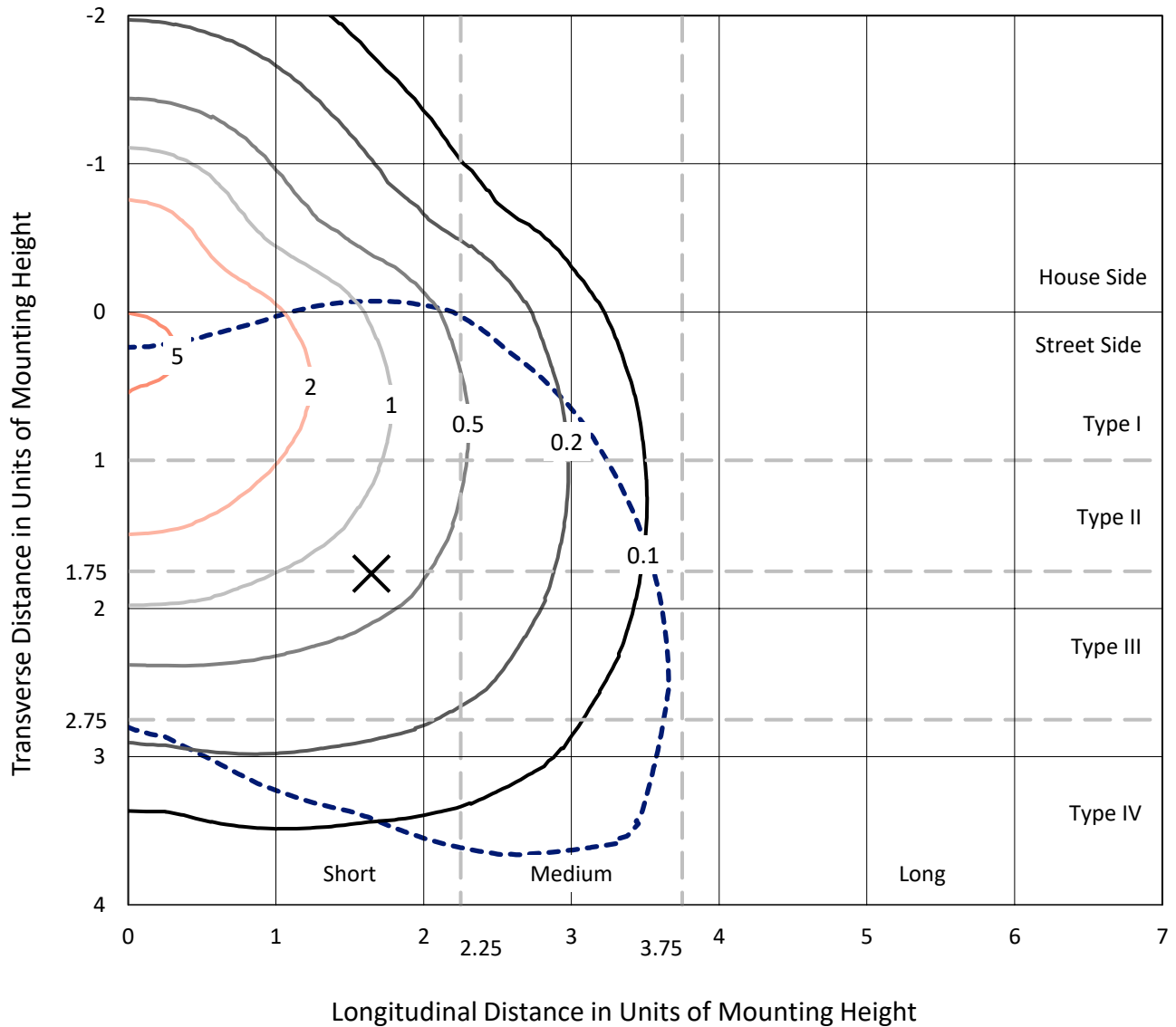
Lumens per Lamp: N/A
Luminaire Lumens: 11932.2 lumens
Efficiency: N/A
Efficacy: 132.6 lumens/watt
Luminous Opening: Rectangular (W 0.67' x L: 0.33' x H: 0')
IES Classification: Type IV - Short
BUG Rating: B2 - U0 - G2

Input Watts (W): 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

REPORT NUMBER: P868110
 CATALOG NUMBER: MEM2-HSN-SA-90-730-U-T4W

Iso-Footcandle Lines of Horizontal Illumination

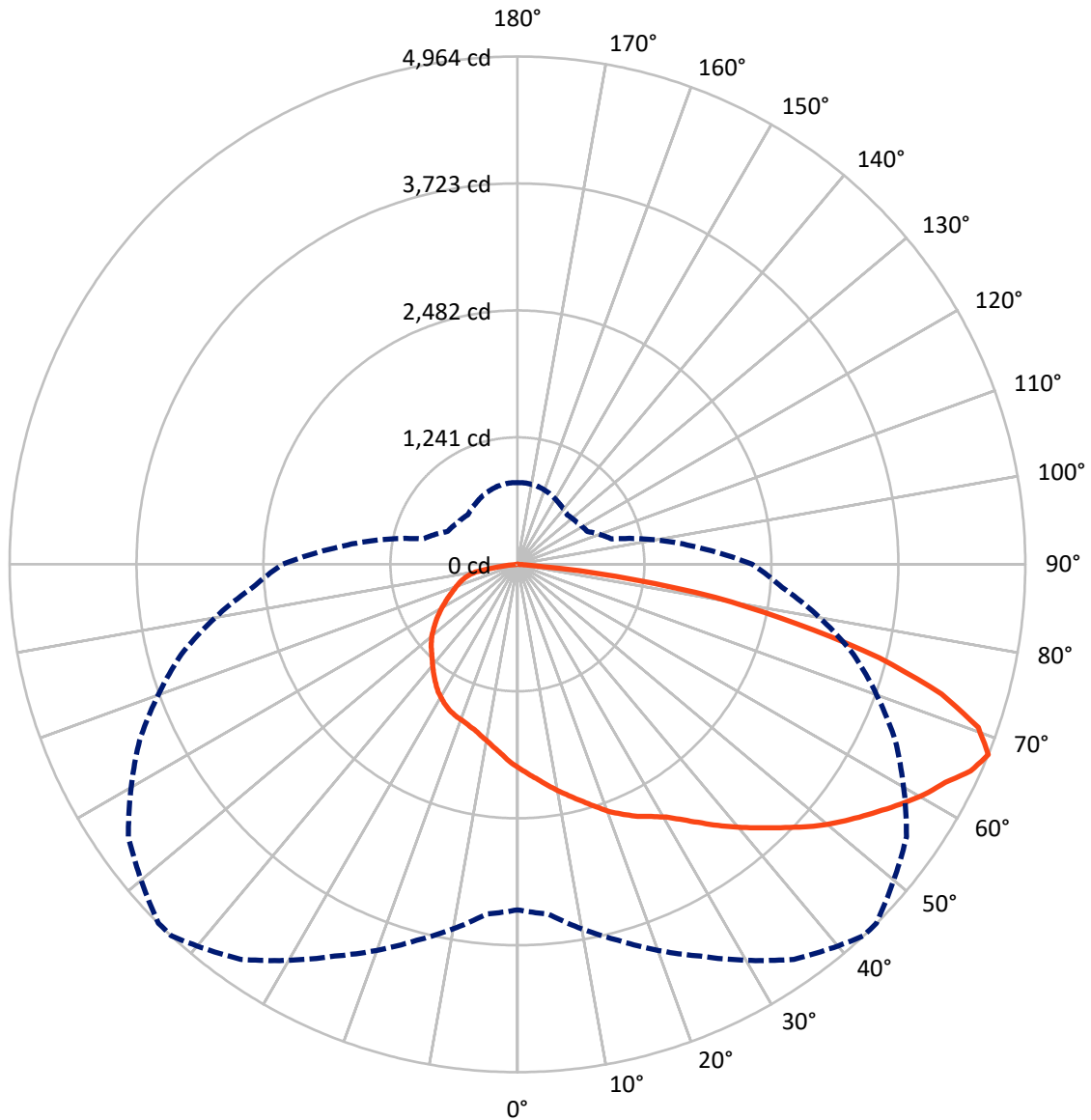
✕ Max cd
 - - - 1/2 Max cd



Based on 20 foot mounting height. Maximum calculated value = 5.7 fc
 Type IV - Short - N/A

REPORT NUMBER: P868110
CATALOG NUMBER: MEM2-HSN-SA-90-730-U-T4W

Luminous Intensity Polar Plot



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

REPORT NUMBER: P868110

CATALOG NUMBER: MEM2-HSN-SA-90-730-U-T4W

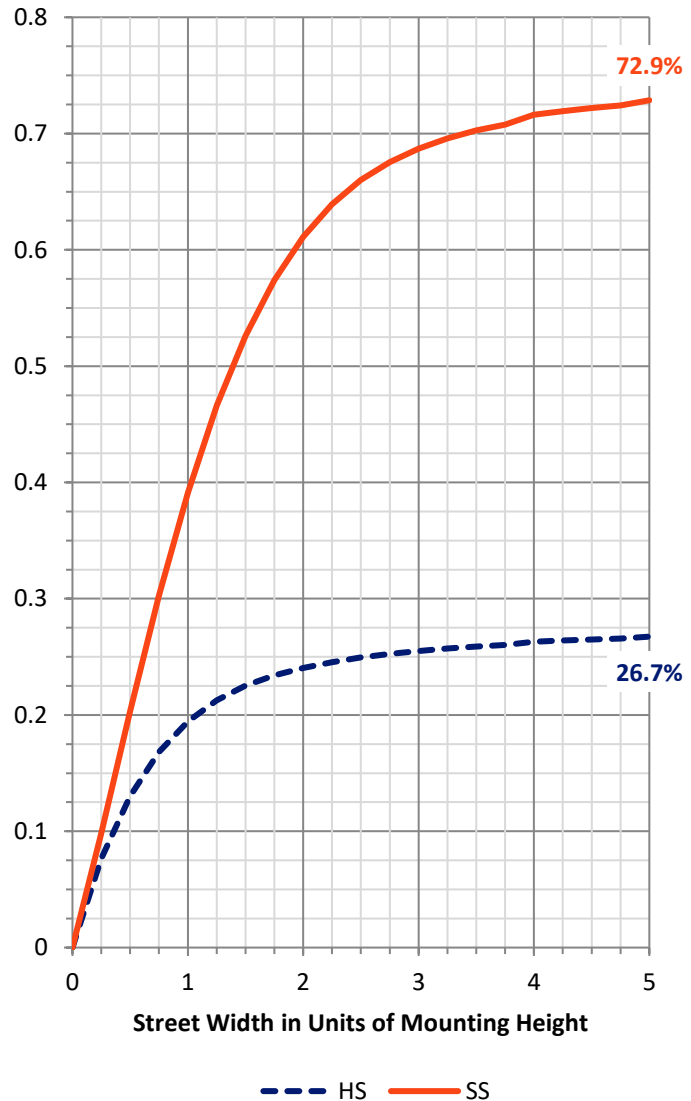
FLUX DISTRIBUTION:

| | | Downward | Upward | Total |
|--------------------|-----------|----------|--------|---------|
| House Side | Lumens | 3209.8 | 0.0 | 3209.8 |
| | % Fixture | 26.9 | 0.0 | 26.9 |
| Street Side | Lumens | 8722.4 | 0.0 | 8722.4 |
| | % Fixture | 73.1 | 0.0 | 73.1 |
| Total | Lumens | 11932.2 | 0.0 | 11932.2 |
| | % Fixture | 100.0 | 0.0 | 100.0 |

Coefficient of Utilization

ZONAL LUMENS:

| Zone | Lumens | % Fixture |
|-----------|---------|-----------|
| 0°-10° | 190.6 | 1.6 |
| 10°-20° | 582.1 | 4.9 |
| 20°-30° | 993.2 | 8.3 |
| 30°-40° | 1448.6 | 12.1 |
| 40°-50° | 1946.0 | 16.3 |
| 50°-60° | 2382.2 | 20.0 |
| 60°-70° | 2507.1 | 21.0 |
| 70°-80° | 1636.8 | 13.7 |
| 80°-90° | 245.5 | 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° | 11932.2 | 100.0 |
| 0°-180° | 11932.2 | 100.0 |



REPORT NUMBER: P868110

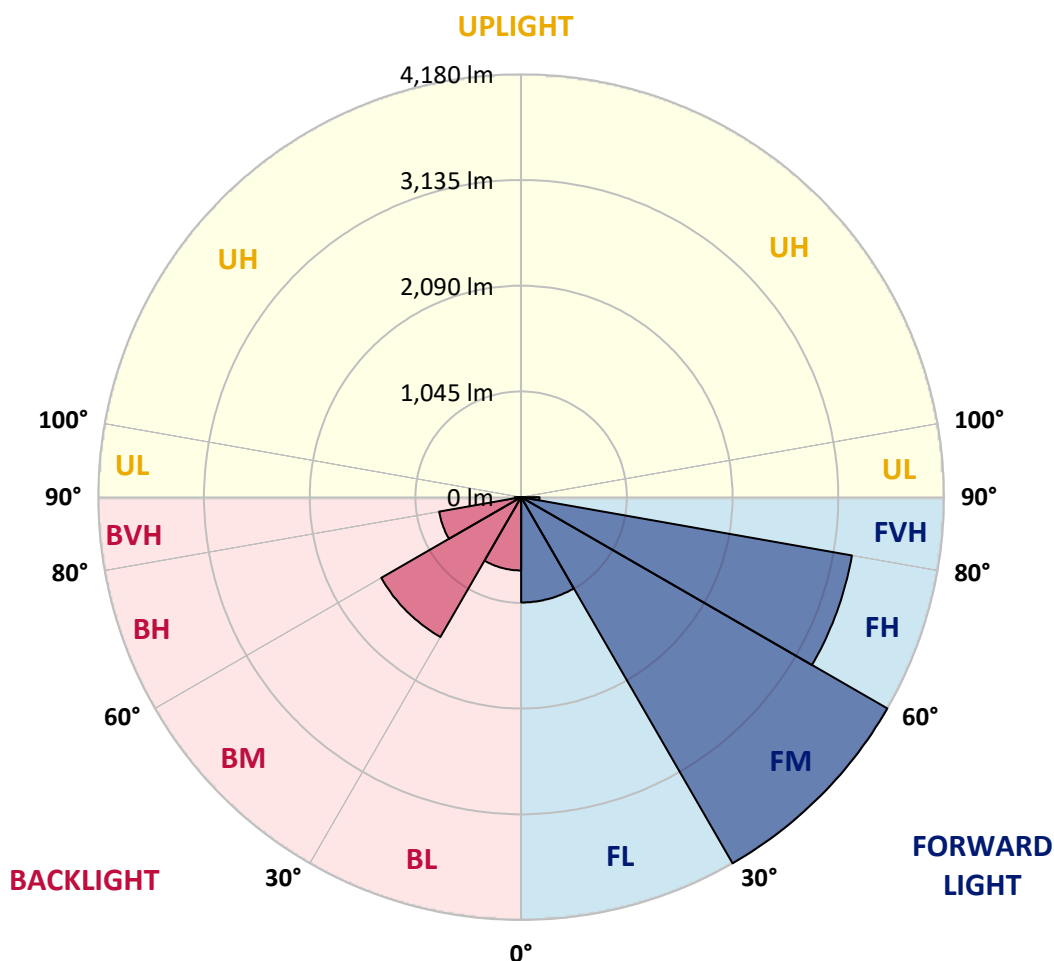
CATALOG NUMBER: MEM2-HSN-SA-90-730-U-T4W

LUMINAIRE CLASSIFICATION SYSTEM LUMEN TABLE AND BUG RATING:

| Zone | Lumens | % Fixture | Zone Rating/Lumen Limit | | |
|----------------|--------|-----------|-------------------------|------|---------|
| | | | B | U | G |
| FL (0°-30°) | 1041.3 | 8.7 | | | |
| FM (30°-60°) | 4179.7 | 35.0 | | | |
| FH (60°-80°) | 3320.2 | 27.8 | | | G2/5000 |
| FVH (80°-90°) | 181.1 | 1.5 | | | G2/225 |
| BL (0°-30°) | 724.6 | 6.1 | B2/1000 | | |
| BM (30°-60°) | 1597.0 | 13.4 | B2/2500 | | |
| BH (60°-80°) | 823.7 | 6.9 | B2/1000 | | G2/1000 |
| BVH (80°-90°) | 64.4 | 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: P868110

CATALOG NUMBER: MEM2-HSN-SA-90-730-U-T4W

CANDELA DISTRIBUTION (FULL):

| | 0° | 5° | 15° | 25° | 35° | 43° | 45° | 55° | 65° | 75° | 85° |
|-------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|
| 0° | 1991.8 | 1991.8 | 1991.8 | 1991.8 | 1991.8 | 1991.8 | 1991.8 | 1991.8 | 1991.8 | 1991.8 | 1991.8 |
| 2.5° | 2083.6 | 2081.2 | 2073.9 | 2069.1 | 2054.6 | 2052.2 | 2052.2 | 2037.7 | 2020.8 | 2011.2 | 2001.5 |
| 5° | 2177.7 | 2165.7 | 2160.8 | 2151.2 | 2127.0 | 2112.6 | 2117.4 | 2090.8 | 2057.0 | 2032.9 | 2006.3 |
| 7.5° | 2262.2 | 2257.4 | 2240.5 | 2228.4 | 2199.5 | 2185.0 | 2180.2 | 2139.1 | 2095.7 | 2059.4 | 2016.0 |
| 10° | 2363.6 | 2351.6 | 2341.9 | 2317.8 | 2279.1 | 2257.4 | 2250.2 | 2197.1 | 2141.5 | 2093.2 | 2035.3 |
| 12.5° | 2455.4 | 2440.9 | 2428.8 | 2404.7 | 2366.1 | 2329.8 | 2320.2 | 2259.8 | 2189.8 | 2124.6 | 2052.2 |
| 15° | 2525.4 | 2527.8 | 2515.7 | 2494.0 | 2450.6 | 2407.1 | 2399.9 | 2320.2 | 2235.7 | 2156.0 | 2069.1 |
| 17.5° | 2590.6 | 2600.3 | 2593.0 | 2578.5 | 2535.1 | 2491.6 | 2484.4 | 2395.0 | 2293.6 | 2192.2 | 2088.4 |
| 20° | 2653.4 | 2653.4 | 2651.0 | 2641.3 | 2609.9 | 2580.9 | 2566.5 | 2477.1 | 2349.2 | 2230.9 | 2115.0 |
| 22.5° | 2689.6 | 2699.2 | 2699.2 | 2699.2 | 2679.9 | 2655.8 | 2651.0 | 2564.0 | 2424.0 | 2279.1 | 2139.1 |
| 25° | 2745.1 | 2757.2 | 2757.2 | 2752.4 | 2735.5 | 2728.2 | 2721.0 | 2638.9 | 2496.4 | 2334.7 | 2165.7 |
| 27.5° | 2863.4 | 2861.0 | 2841.7 | 2817.5 | 2793.4 | 2791.0 | 2781.3 | 2723.4 | 2580.9 | 2395.0 | 2201.9 |
| 30° | 3027.6 | 3032.4 | 3008.3 | 2933.4 | 2877.9 | 2865.8 | 2868.2 | 2817.5 | 2679.9 | 2465.0 | 2242.9 |
| 32.5° | 3278.7 | 3278.7 | 3184.5 | 3087.9 | 3008.3 | 2976.9 | 2969.6 | 2926.2 | 2781.3 | 2542.3 | 2288.8 |
| 35° | 3467.0 | 3459.8 | 3406.6 | 3293.2 | 3194.2 | 3104.8 | 3092.8 | 3034.8 | 2894.8 | 2629.2 | 2339.5 |
| 37.5° | 3609.4 | 3623.9 | 3582.9 | 3496.0 | 3399.4 | 3244.9 | 3220.7 | 3138.7 | 2998.6 | 2713.7 | 2390.2 |
| 40° | 3884.7 | 3848.5 | 3749.5 | 3669.8 | 3553.9 | 3382.5 | 3360.8 | 3259.4 | 3104.8 | 2807.9 | 2453.0 |
| 42.5° | 4085.1 | 4034.4 | 3920.9 | 3814.7 | 3669.8 | 3520.1 | 3500.8 | 3389.7 | 3228.0 | 2914.1 | 2518.2 |
| 45° | 4372.4 | 4258.9 | 4102.0 | 4007.8 | 3802.6 | 3669.8 | 3645.7 | 3524.9 | 3355.9 | 3027.6 | 2600.3 |
| 47.5° | 4650.0 | 4452.1 | 4285.5 | 4242.0 | 3947.5 | 3831.6 | 3812.3 | 3672.2 | 3493.6 | 3150.7 | 2679.9 |
| 50° | 4613.8 | 4483.4 | 4427.9 | 4386.9 | 4073.0 | 3983.7 | 3964.4 | 3821.9 | 3633.6 | 3281.1 | 2759.6 |
| 52.5° | 4522.1 | 4534.1 | 4536.6 | 4437.6 | 4191.3 | 4126.1 | 4106.8 | 3983.7 | 3778.5 | 3394.6 | 2836.9 |
| 55° | 4618.6 | 4633.1 | 4630.7 | 4481.0 | 4328.9 | 4268.6 | 4256.5 | 4147.8 | 3918.5 | 3500.8 | 2892.4 |
| 57.5° | 4765.9 | 4717.6 | 4710.4 | 4589.7 | 4476.2 | 4420.7 | 4406.2 | 4312.0 | 4036.8 | 3578.1 | 2935.8 |
| 60° | 4792.5 | 4695.9 | 4727.3 | 4613.8 | 4587.3 | 4570.4 | 4565.5 | 4454.5 | 4147.8 | 3640.8 | 2952.7 |
| 62.5° | 4495.5 | 4478.6 | 4601.7 | 4555.9 | 4645.2 | 4693.5 | 4695.9 | 4555.9 | 4208.2 | 3665.0 | 2935.8 |
| 65° | 3988.5 | 4056.1 | 4321.7 | 4454.5 | 4732.1 | 4869.7 | 4864.9 | 4616.2 | 4201.0 | 3595.0 | 2832.0 |
| 67.5° | 3377.7 | 3430.8 | 3805.0 | 4225.1 | 4712.8 | 4963.9 | 4961.5 | 4642.8 | 4075.4 | 3401.8 | 2597.8 |
| 70° | 2561.6 | 2728.2 | 3259.4 | 3812.3 | 4452.1 | 4778.0 | 4819.0 | 4493.1 | 3788.1 | 3049.3 | 2242.9 |
| 72.5° | 1948.4 | 1974.9 | 2617.2 | 3196.6 | 3986.1 | 4336.2 | 4328.9 | 4015.1 | 3307.7 | 2568.9 | 1868.7 |
| 75° | 1383.4 | 1441.4 | 1970.1 | 2477.1 | 3266.6 | 3655.3 | 3638.4 | 3293.2 | 2638.9 | 1999.1 | 1429.3 |
| 77.5° | 1030.9 | 1052.7 | 1441.4 | 1837.3 | 2443.3 | 2793.4 | 2786.2 | 2433.7 | 1941.1 | 1467.9 | 1064.7 |
| 80° | 753.3 | 789.5 | 1038.2 | 1282.0 | 1656.2 | 1958.0 | 1948.4 | 1615.2 | 1245.8 | 1026.1 | 777.4 |
| 82.5° | 422.5 | 449.1 | 603.6 | 775.0 | 874.0 | 968.2 | 927.1 | 775.0 | 567.4 | 441.8 | 381.5 |
| 85° | 12.1 | 14.5 | 21.7 | 26.6 | 45.9 | 77.3 | 84.5 | 74.8 | 89.3 | 55.5 | 60.4 |
| 87.5° | 4.8 | 4.8 | 4.8 | 4.8 | 4.8 | 7.2 | 7.2 | 7.2 | 7.2 | 7.2 | 7.2 |
| 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: P868110

CATALOG NUMBER: MEM2-HSN-SA-90-730-U-T4W

CANDELA DISTRIBUTION (continued):

| | 90° | 95° | 105° | 115° | 125° | 135° | 145° | 155° | 165° | 175° | 180° |
|-------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|
| 0° | 1991.8 | 1991.8 | 1991.8 | 1991.8 | 1991.8 | 1991.8 | 1991.8 | 1991.8 | 1991.8 | 1991.8 | 1991.8 |
| 2.5° | 1996.7 | 1987.0 | 1967.7 | 1955.6 | 1948.4 | 1938.7 | 1924.2 | 1914.6 | 1907.3 | 1917.0 | 1914.6 |
| 5° | 1994.3 | 1974.9 | 1941.1 | 1917.0 | 1892.8 | 1873.5 | 1851.8 | 1834.9 | 1825.2 | 1830.1 | 1827.7 |
| 7.5° | 1994.3 | 1970.1 | 1917.0 | 1878.4 | 1842.1 | 1813.2 | 1789.0 | 1767.3 | 1757.6 | 1760.1 | 1757.6 |
| 10° | 2003.9 | 1970.1 | 1900.1 | 1844.6 | 1796.3 | 1762.5 | 1735.9 | 1716.6 | 1709.4 | 1716.6 | 1719.0 |
| 12.5° | 2013.6 | 1970.1 | 1885.6 | 1815.6 | 1752.8 | 1716.6 | 1692.5 | 1680.4 | 1685.2 | 1687.6 | 1690.0 |
| 15° | 2018.4 | 1967.7 | 1871.1 | 1781.8 | 1711.8 | 1673.1 | 1658.7 | 1656.2 | 1668.3 | 1680.4 | 1682.8 |
| 17.5° | 2030.5 | 1965.3 | 1849.4 | 1748.0 | 1675.6 | 1644.2 | 1636.9 | 1646.6 | 1670.7 | 1687.6 | 1692.5 |
| 20° | 2045.0 | 1970.1 | 1825.2 | 1706.9 | 1639.3 | 1615.2 | 1627.3 | 1649.0 | 1678.0 | 1702.1 | 1706.9 |
| 22.5° | 2059.4 | 1972.5 | 1803.5 | 1670.7 | 1600.7 | 1595.9 | 1622.4 | 1653.8 | 1687.6 | 1711.8 | 1716.6 |
| 25° | 2076.3 | 1972.5 | 1774.5 | 1624.9 | 1562.1 | 1569.3 | 1610.4 | 1651.4 | 1682.8 | 1714.2 | 1719.0 |
| 27.5° | 2093.2 | 1977.3 | 1743.2 | 1574.2 | 1513.8 | 1535.5 | 1586.2 | 1636.9 | 1670.7 | 1702.1 | 1709.4 |
| 30° | 2122.2 | 1987.0 | 1716.6 | 1530.7 | 1465.5 | 1494.5 | 1554.8 | 1612.8 | 1649.0 | 1682.8 | 1690.0 |
| 32.5° | 2151.2 | 2001.5 | 1694.9 | 1484.8 | 1417.2 | 1451.0 | 1518.6 | 1583.8 | 1622.4 | 1653.8 | 1658.7 |
| 35° | 2189.8 | 2020.8 | 1678.0 | 1439.0 | 1368.9 | 1395.5 | 1467.9 | 1540.4 | 1583.8 | 1608.0 | 1620.0 |
| 37.5° | 2230.9 | 2047.4 | 1663.5 | 1397.9 | 1315.8 | 1340.0 | 1417.2 | 1494.5 | 1540.4 | 1564.5 | 1569.3 |
| 40° | 2281.6 | 2083.6 | 1653.8 | 1359.3 | 1265.1 | 1284.4 | 1361.7 | 1446.2 | 1489.7 | 1506.6 | 1516.2 |
| 42.5° | 2337.1 | 2122.2 | 1646.6 | 1320.6 | 1209.6 | 1228.9 | 1311.0 | 1393.1 | 1436.5 | 1451.0 | 1458.3 |
| 45° | 2407.1 | 2172.9 | 1641.8 | 1279.6 | 1163.7 | 1180.6 | 1262.7 | 1344.8 | 1381.0 | 1400.3 | 1407.6 |
| 47.5° | 2472.3 | 2223.6 | 1627.3 | 1231.3 | 1113.0 | 1137.2 | 1212.0 | 1284.4 | 1325.5 | 1337.5 | 1344.8 |
| 50° | 2537.5 | 2267.1 | 1598.3 | 1178.2 | 1067.1 | 1088.9 | 1156.5 | 1209.6 | 1241.0 | 1255.5 | 1260.3 |
| 52.5° | 2600.3 | 2298.5 | 1552.4 | 1122.7 | 1018.9 | 1033.3 | 1088.9 | 1139.6 | 1161.3 | 1166.1 | 1180.6 |
| 55° | 2641.3 | 2315.4 | 1487.2 | 1057.5 | 970.6 | 975.4 | 1016.4 | 1062.3 | 1074.4 | 1076.8 | 1076.8 |
| 57.5° | 2670.3 | 2305.7 | 1410.0 | 992.3 | 922.3 | 922.3 | 946.4 | 982.6 | 987.5 | 989.9 | 994.7 |
| 60° | 2675.1 | 2271.9 | 1311.0 | 931.9 | 869.2 | 861.9 | 886.1 | 907.8 | 910.2 | 915.0 | 919.9 |
| 62.5° | 2638.9 | 2197.1 | 1204.8 | 874.0 | 818.5 | 801.6 | 823.3 | 845.0 | 857.1 | 864.3 | 869.2 |
| 65° | 2527.8 | 2045.0 | 1084.0 | 816.0 | 770.2 | 741.2 | 767.8 | 804.0 | 828.1 | 830.5 | 830.5 |
| 67.5° | 2296.0 | 1798.7 | 956.1 | 755.7 | 712.2 | 685.7 | 719.5 | 758.1 | 787.1 | 799.1 | 796.7 |
| 70° | 1946.0 | 1525.9 | 837.8 | 692.9 | 654.3 | 637.4 | 673.6 | 717.1 | 741.2 | 750.9 | 755.7 |
| 72.5° | 1566.9 | 1221.7 | 734.0 | 630.1 | 603.6 | 593.9 | 630.1 | 673.6 | 707.4 | 721.9 | 724.3 |
| 75° | 1219.2 | 960.9 | 647.0 | 565.0 | 543.2 | 545.6 | 584.3 | 627.7 | 663.9 | 671.2 | 649.5 |
| 77.5° | 946.4 | 765.3 | 565.0 | 487.7 | 475.6 | 492.5 | 531.2 | 577.0 | 598.8 | 606.0 | 591.5 |
| 80° | 683.3 | 586.7 | 456.3 | 383.9 | 383.9 | 410.4 | 444.2 | 497.4 | 504.6 | 494.9 | 499.8 |
| 82.5° | 323.5 | 284.9 | 224.5 | 185.9 | 173.8 | 193.1 | 205.2 | 222.1 | 241.4 | 246.3 | 234.2 |
| 85° | 43.5 | 29.0 | 21.7 | 24.1 | 21.7 | 14.5 | 9.7 | 9.7 | 9.7 | 7.2 | 7.2 |
| 87.5° | 7.2 | 7.2 | 4.8 | 4.8 | 4.8 | 4.8 | 4.8 | 4.8 | 2.4 | 2.4 | 2.4 |
| 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: SP1-2407-157-4

Test Date: 08/07/2024

Luminaire Tested: MEM2-HTN-SA-30-730-U-5WQ-2

Data in this report applies to families of products including MEM2-HTN-SA-30-730-U-5WQ-2

Test Information

Test Method: LM-79-2019
 Report Number: SP1-2407-157-4
 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-30-730-U-5WQ-2**
 Description: Epic Modern Light Square 30W 5WQ Optic and Flare Trim

Spectral Parameters

CCT (K): 3057
 CIE u': 0.2487
 CIE v': 0.5199
 Duv: -0.0002
 CIE x: 0.4326
 CIE y: 0.4020
 CIE z: 0.1654
 Peak Wavelength (nm): 593
 Dominant Wavelength (nm): 582
 Purity: 50.50735
 Rf: 74.6
 Rg: 94

| | | | |
|-----------|------|------|-------|
| CRI (Ra): | 71.7 | | |
| R1: | 68.1 | R9: | -34.8 |
| R2: | 82.0 | R10: | 58.5 |
| R3: | 93.5 | R11: | 62.5 |
| R4: | 67.5 | R12: | 47.5 |
| R5: | 67.2 | R13: | 70.7 |
| R6: | 74.9 | R14: | 96.4 |
| R7: | 77.4 | R15: | 60.0 |
| R8: | 43.1 | | |



Test Conditions

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

REPORT NUMBER: SP1-2407-157-4

| 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: SP1-2407-157-4

CIE 1931 Chromaticity Diagram



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



Point lies inside the ANSI 3000K 4-step quadrangle

REPORT NUMBER: SP1-2407-157-4

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 | 104 | NR | 620 | 818 | NR | 750 | 20 | NR | 880 | 1 | NR |
| 365 | 0 | NR | 495 | 135 | NR | 625 | 755 | NR | 755 | 17 | NR | 885 | 0 | NR |
| 370 | 0 | NR | 500 | 184 | NR | 630 | 691 | NR | 760 | 15 | NR | 890 | 0 | NR |
| 375 | 0 | NR | 505 | 247 | NR | 635 | 625 | NR | 765 | 13 | NR | 895 | 0 | NR |
| 380 | 0 | NR | 510 | 309 | NR | 640 | 561 | NR | 770 | 11 | NR | 900 | 0 | NR |
| 385 | 0 | NR | 515 | 369 | NR | 645 | 499 | NR | 775 | 9 | NR | 905 | 0 | NR |
| 390 | 0 | NR | 520 | 419 | NR | 650 | 441 | NR | 780 | 8 | NR | 910 | 0 | NR |
| 395 | 0 | NR | 525 | 460 | NR | 655 | 388 | NR | 785 | 7 | NR | 915 | 0 | NR |
| 400 | 1 | NR | 530 | 492 | NR | 660 | 338 | NR | 790 | 6 | NR | 920 | 0 | NR |
| 405 | 3 | NR | 535 | 524 | NR | 665 | 294 | NR | 795 | 5 | NR | 925 | 0 | NR |
| 410 | 7 | NR | 540 | 553 | NR | 670 | 253 | NR | 800 | 4 | NR | 930 | 0 | NR |
| 415 | 15 | NR | 545 | 588 | NR | 675 | 218 | NR | 805 | 4 | NR | 935 | 0 | NR |
| 420 | 31 | NR | 550 | 625 | NR | 680 | 188 | NR | 810 | 3 | NR | 940 | 0 | NR |
| 425 | 60 | NR | 555 | 670 | NR | 685 | 161 | NR | 815 | 3 | NR | 945 | 0 | NR |
| 430 | 107 | NR | 560 | 723 | NR | 690 | 139 | NR | 820 | 3 | NR | 950 | 0 | NR |
| 435 | 183 | NR | 565 | 780 | NR | 695 | 118 | NR | 825 | 2 | NR | 955 | 0 | NR |
| 440 | 289 | NR | 570 | 837 | NR | 700 | 100 | NR | 830 | 2 | NR | 960 | 0 | NR |
| 445 | 460 | NR | 575 | 894 | NR | 705 | 85 | NR | 835 | 2 | NR | 965 | 0 | NR |
| 450 | 646 | NR | 580 | 942 | NR | 710 | 73 | NR | 840 | 1 | NR | 970 | 0 | NR |
| 455 | 561 | NR | 585 | 976 | NR | 715 | 62 | NR | 845 | 1 | NR | 975 | 0 | NR |
| 460 | 331 | NR | 590 | 998 | NR | 720 | 53 | NR | 850 | 1 | NR | 980 | 0 | NR |
| 465 | 238 | NR | 595 | 1000 | NR | 725 | 45 | NR | 855 | 1 | NR | 985 | 0 | NR |
| 470 | 178 | NR | 600 | 990 | NR | 730 | 39 | NR | 860 | 1 | NR | 990 | 0 | NR |
| 475 | 120 | NR | 605 | 962 | NR | 735 | 33 | NR | 865 | 1 | NR | 995 | 0 | NR |
| 480 | 96 | NR | 610 | 925 | NR | 740 | 28 | NR | 870 | 1 | NR | 1000 | 0 | NR |
| 485 | 95 | NR | 615 | 873 | NR | 745 | 24 | NR | 875 | 1 | NR | | | |

REPORT NUMBER: SP1-2407-157-4

Scotopic Flux vs. Wavelength



Scotopic Lumens: NR

S/P: 1.23

| 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 | 104 | NR | 620 | 818 | NR | 750 | 20 | NR | 880 | 1 | NR |
| 365 | 0 | NR | 495 | 135 | NR | 625 | 755 | NR | 755 | 17 | NR | 885 | 0 | NR |
| 370 | 0 | NR | 500 | 184 | NR | 630 | 691 | NR | 760 | 15 | NR | 890 | 0 | NR |
| 375 | 0 | NR | 505 | 247 | NR | 635 | 625 | NR | 765 | 13 | NR | 895 | 0 | NR |
| 380 | 0 | NR | 510 | 309 | NR | 640 | 561 | NR | 770 | 11 | NR | 900 | 0 | NR |
| 385 | 0 | NR | 515 | 369 | NR | 645 | 499 | NR | 775 | 9 | NR | 905 | 0 | NR |
| 390 | 0 | NR | 520 | 419 | NR | 650 | 441 | NR | 780 | 8 | NR | 910 | 0 | NR |
| 395 | 0 | NR | 525 | 460 | NR | 655 | 388 | NR | 785 | 7 | NR | 915 | 0 | NR |
| 400 | 1 | NR | 530 | 492 | NR | 660 | 338 | NR | 790 | 6 | NR | 920 | 0 | NR |
| 405 | 3 | NR | 535 | 524 | NR | 665 | 294 | NR | 795 | 5 | NR | 925 | 0 | NR |
| 410 | 7 | NR | 540 | 553 | NR | 670 | 253 | NR | 800 | 4 | NR | 930 | 0 | NR |
| 415 | 15 | NR | 545 | 588 | NR | 675 | 218 | NR | 805 | 4 | NR | 935 | 0 | NR |
| 420 | 31 | NR | 550 | 625 | NR | 680 | 188 | NR | 810 | 3 | NR | 940 | 0 | NR |
| 425 | 60 | NR | 555 | 670 | NR | 685 | 161 | NR | 815 | 3 | NR | 945 | 0 | NR |
| 430 | 107 | NR | 560 | 723 | NR | 690 | 139 | NR | 820 | 3 | NR | 950 | 0 | NR |
| 435 | 183 | NR | 565 | 780 | NR | 695 | 118 | NR | 825 | 2 | NR | 955 | 0 | NR |
| 440 | 289 | NR | 570 | 837 | NR | 700 | 100 | NR | 830 | 2 | NR | 960 | 0 | NR |
| 445 | 460 | NR | 575 | 894 | NR | 705 | 85 | NR | 835 | 2 | NR | 965 | 0 | NR |
| 450 | 646 | NR | 580 | 942 | NR | 710 | 73 | NR | 840 | 1 | NR | 970 | 0 | NR |
| 455 | 561 | NR | 585 | 976 | NR | 715 | 62 | NR | 845 | 1 | NR | 975 | 0 | NR |
| 460 | 331 | NR | 590 | 998 | NR | 720 | 53 | NR | 850 | 1 | NR | 980 | 0 | NR |
| 465 | 238 | NR | 595 | 1000 | NR | 725 | 45 | NR | 855 | 1 | NR | 985 | 0 | NR |
| 470 | 178 | NR | 600 | 990 | NR | 730 | 39 | NR | 860 | 1 | NR | 990 | 0 | NR |
| 475 | 120 | NR | 605 | 962 | NR | 735 | 33 | NR | 865 | 1 | NR | 995 | 0 | NR |
| 480 | 96 | NR | 610 | 925 | NR | 740 | 28 | NR | 870 | 1 | NR | 1000 | 0 | NR |
| 485 | 95 | NR | 615 | 873 | NR | 745 | 24 | NR | 875 | 1 | NR | | | |

REPORT NUMBER: SP1-2407-157-4

Melanopic Flux vs. Wavelength



Melanopic Lumens: NR

M/P: 2.27

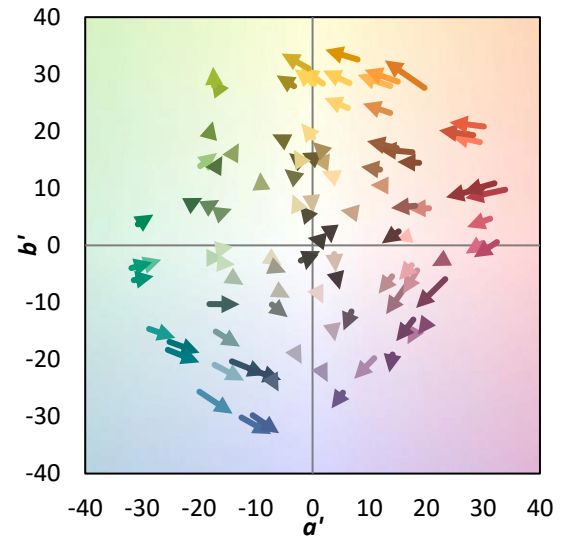
| λ (nm) | Power W [^] /nm | Lumens (φ/nm) | λ (nm) | Power W [^] /nm | Lumens (φ/nm) | λ (nm) | Power W [^] /nm | Lumens (φ/nm) | λ (nm) | Power W [^] /nm | Lumens (φ/nm) | λ (nm) | Power W [^] /nm | Lumens (φ/nm) |
|--------|--------------------------|---------------|--------|--------------------------|---------------|--------|--------------------------|---------------|--------|--------------------------|---------------|--------|--------------------------|---------------|
| 360 | 0 | NR | 490 | 104 | NR | 620 | 818 | NR | 750 | 20 | NR | 880 | 1 | NR |
| 365 | 0 | NR | 495 | 135 | NR | 625 | 755 | NR | 755 | 17 | NR | 885 | 0 | NR |
| 370 | 0 | NR | 500 | 184 | NR | 630 | 691 | NR | 760 | 15 | NR | 890 | 0 | NR |
| 375 | 0 | NR | 505 | 247 | NR | 635 | 625 | NR | 765 | 13 | NR | 895 | 0 | NR |
| 380 | 0 | NR | 510 | 309 | NR | 640 | 561 | NR | 770 | 11 | NR | 900 | 0 | NR |
| 385 | 0 | NR | 515 | 369 | NR | 645 | 499 | NR | 775 | 9 | NR | 905 | 0 | NR |
| 390 | 0 | NR | 520 | 419 | NR | 650 | 441 | NR | 780 | 8 | NR | 910 | 0 | NR |
| 395 | 0 | NR | 525 | 460 | NR | 655 | 388 | NR | 785 | 7 | NR | 915 | 0 | NR |
| 400 | 1 | NR | 530 | 492 | NR | 660 | 338 | NR | 790 | 6 | NR | 920 | 0 | NR |
| 405 | 3 | NR | 535 | 524 | NR | 665 | 294 | NR | 795 | 5 | NR | 925 | 0 | NR |
| 410 | 7 | NR | 540 | 553 | NR | 670 | 253 | NR | 800 | 4 | NR | 930 | 0 | NR |
| 415 | 15 | NR | 545 | 588 | NR | 675 | 218 | NR | 805 | 4 | NR | 935 | 0 | NR |
| 420 | 31 | NR | 550 | 625 | NR | 680 | 188 | NR | 810 | 3 | NR | 940 | 0 | NR |
| 425 | 60 | NR | 555 | 670 | NR | 685 | 161 | NR | 815 | 3 | NR | 945 | 0 | NR |
| 430 | 107 | NR | 560 | 723 | NR | 690 | 139 | NR | 820 | 3 | NR | 950 | 0 | NR |
| 435 | 183 | NR | 565 | 780 | NR | 695 | 118 | NR | 825 | 2 | NR | 955 | 0 | NR |
| 440 | 289 | NR | 570 | 837 | NR | 700 | 100 | NR | 830 | 2 | NR | 960 | 0 | NR |
| 445 | 460 | NR | 575 | 894 | NR | 705 | 85 | NR | 835 | 2 | NR | 965 | 0 | NR |
| 450 | 646 | NR | 580 | 942 | NR | 710 | 73 | NR | 840 | 1 | NR | 970 | 0 | NR |
| 455 | 561 | NR | 585 | 976 | NR | 715 | 62 | NR | 845 | 1 | NR | 975 | 0 | NR |
| 460 | 331 | NR | 590 | 998 | NR | 720 | 53 | NR | 850 | 1 | NR | 980 | 0 | NR |
| 465 | 238 | NR | 595 | 1000 | NR | 725 | 45 | NR | 855 | 1 | NR | 985 | 0 | NR |
| 470 | 178 | NR | 600 | 990 | NR | 730 | 39 | NR | 860 | 1 | NR | 990 | 0 | NR |
| 475 | 120 | NR | 605 | 962 | NR | 735 | 33 | NR | 865 | 1 | NR | 995 | 0 | NR |
| 480 | 96 | NR | 610 | 925 | NR | 740 | 28 | NR | 870 | 1 | NR | 1000 | 0 | NR |
| 485 | 95 | NR | 615 | 873 | NR | 745 | 24 | NR | 875 | 1 | NR | | | |

Summary

$R_f = 74.6$
 $R_g = 94$
 $CIE R_a = 71.7$
 $R_9 = -34.8$



Color Vector Graphics



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

| | | | |
|------------|------------|------------|------------|
| CES01 = 86 | CES26 = 65 | CES51 = 87 | CES76 = 58 |
| CES02 = 62 | CES27 = 89 | CES52 = 85 | CES77 = 76 |
| CES03 = 31 | CES28 = 84 | CES53 = 77 | CES78 = 61 |
| CES04 = 71 | CES29 = 68 | CES54 = 85 | CES79 = 86 |
| CES05 = 49 | CES30 = 83 | CES55 = 84 | CES80 = 83 |
| CES06 = 51 | CES31 = 71 | CES56 = 74 | CES81 = 73 |
| CES07 = 41 | CES32 = 64 | CES57 = 74 | CES82 = 93 |
| CES08 = 40 | CES33 = 78 | CES58 = 75 | CES83 = 91 |
| CES09 = 29 | CES34 = 75 | CES59 = 85 | CES84 = 88 |
| CES10 = 76 | CES35 = 87 | CES60 = 90 | CES85 = 75 |
| CES11 = 59 | CES36 = 92 | CES61 = 81 | CES86 = 64 |
| CES12 = 65 | CES37 = 84 | CES62 = 89 | CES87 = 77 |
| CES13 = 43 | CES38 = 92 | CES63 = 75 | CES88 = 80 |
| CES14 = 74 | CES39 = 96 | CES64 = 65 | CES89 = 67 |
| CES15 = 71 | CES40 = 92 | CES65 = 64 | CES90 = 80 |
| CES16 = 47 | CES41 = 93 | CES66 = 60 | CES91 = 78 |
| CES17 = 50 | CES42 = 86 | CES67 = 58 | CES92 = 56 |
| CES18 = 56 | CES43 = 77 | CES68 = 66 | CES93 = 73 |
| CES19 = 73 | CES44 = 99 | CES69 = 75 | CES94 = 49 |
| CES20 = 66 | CES45 = 85 | CES70 = 60 | CES95 = 66 |
| CES21 = 87 | CES46 = 81 | CES71 = 56 | CES96 = 76 |
| CES22 = 79 | CES47 = 86 | CES72 = 85 | CES97 = 82 |
| CES23 = 92 | CES48 = 75 | CES73 = 52 | CES98 = 76 |
| CES24 = 91 | CES49 = 79 | CES74 = 95 | CES99 = 64 |
| CES25 = 73 | CES50 = 86 | CES75 = 60 | |



Color Rendition by Hue-Angle Bin



Measure Comparisons



(END OF REPORT)