

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: McGRAW-EDISON

Report Number: P437548

Luminaire Tested: **ISS-SA1D-750-U-T4FT**

Issue Date: 12/9/2020

**Test Information**

Test Method: LM-79-08  
Report Number: P437548  
TEST IS SCALED FROM IESNA LM-79-08 TEST DATA (G3-2011-074-10)  
Test Lab: INNOVATION CENTER  
Issue Date: 12/9/2020  
Manufacturer: COOPER LIGHTING SOLUTIONS (FORMERLY EATON)  
Product Line: McGRAW-EDISON  
Catalog Number: ISS-SA1D-750-U-T4FT  
Description: IMPACT ELITE LED QUARTER SPHERE LUMINAIRE  
(1) 70 CRI, 5000K, 800mA LIGHTSQUARE WITH 16 LEDS AND TYPE IV FORWARD  
THROW OPTICS  
Light Source: -  
Ballast/Driver: ELECTRONIC DRIVER

**Summary**

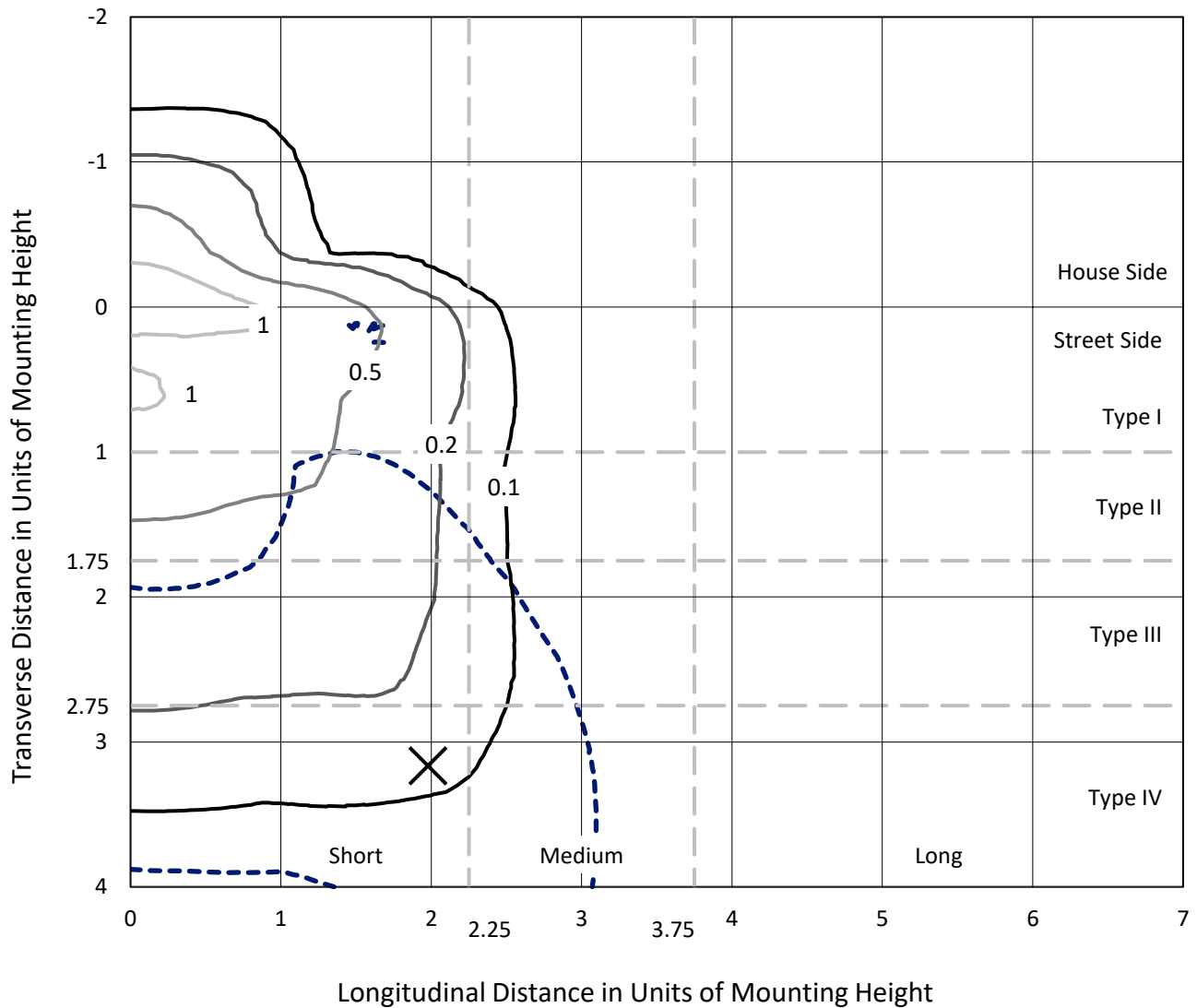
Lumens per Lamp: N/A  
Luminaire Lumens: 5673 lumens  
Efficiency: N/A  
Efficacy: 125.5 lumens/watt  
Luminous Opening: Rectangular (W 0.5' x L: 0.5' x H: 0')  
IES Classification: Type IV - Short  
BUG Rating: B1 - U0 - G2  
  
Input Watts (W): 45.2  
Input Voltage (V): NR  
Input Current (Ain): NR  
Voltage Rise (V): NR  
Power Factor: NR  
Total Harmonic Distortion (THDi): NR  
Frequency (hertz): 60  
Stabilization Time: NR  
Operation Time: NR  
Ambient Temperature (°C): NR  
Test Distance: 28.75 FT



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 CATALOG NUMBER: ISS-SA1D-750-U-T4FT

### Iso-Footcandle Lines of Horizontal Illumination

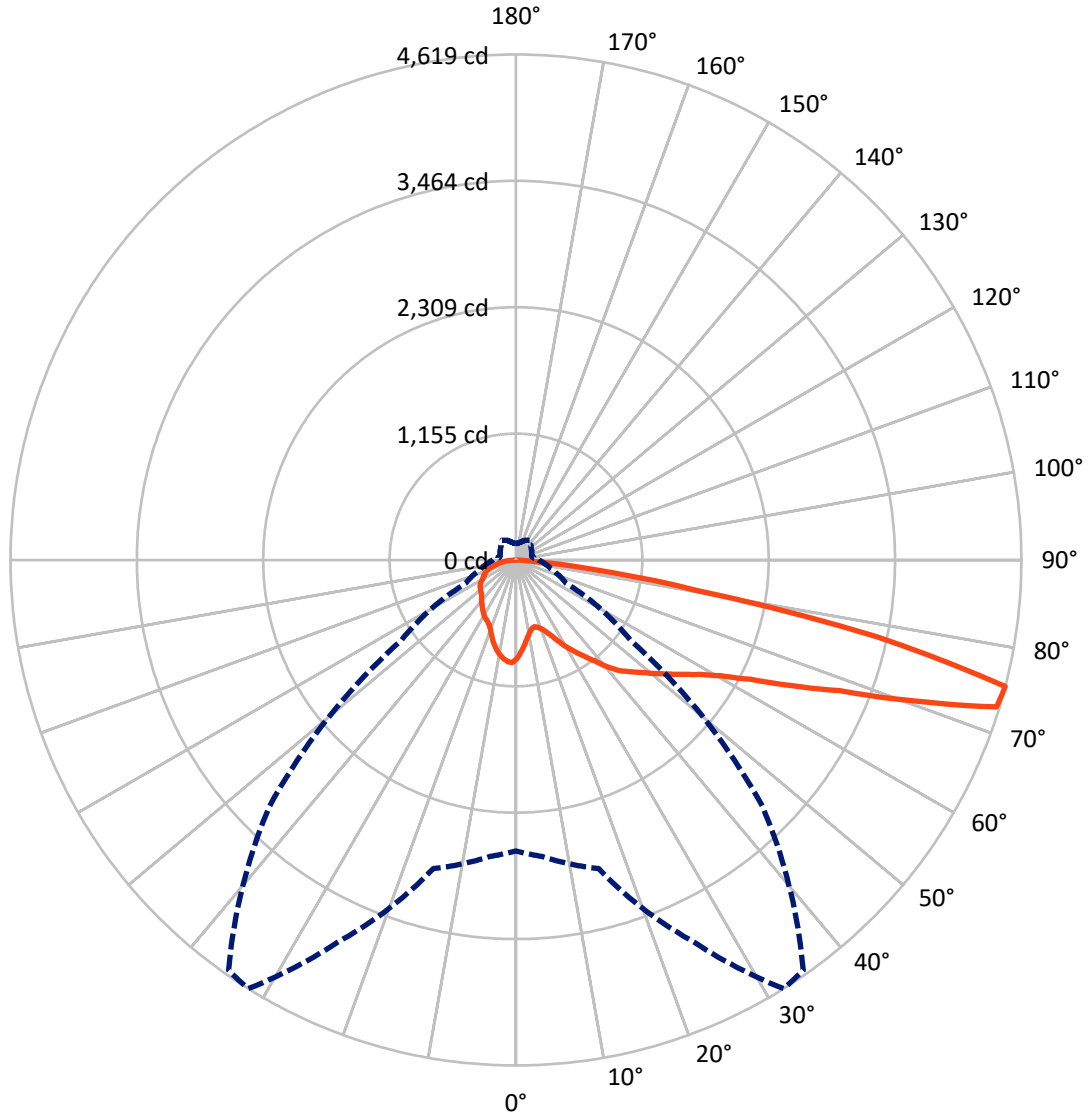
✕ Max cd  
 - - - 1/2 Max cd



Based on 25 foot mounting height. Maximum calculated value = 1.4 fc  
 Type IV - Short - N/A

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### Luminous Intensity Polar Plot



— Vertical Plane Through 32-Deg Lateral      - - - Horizontal Cone Through 75-Deg Vertical

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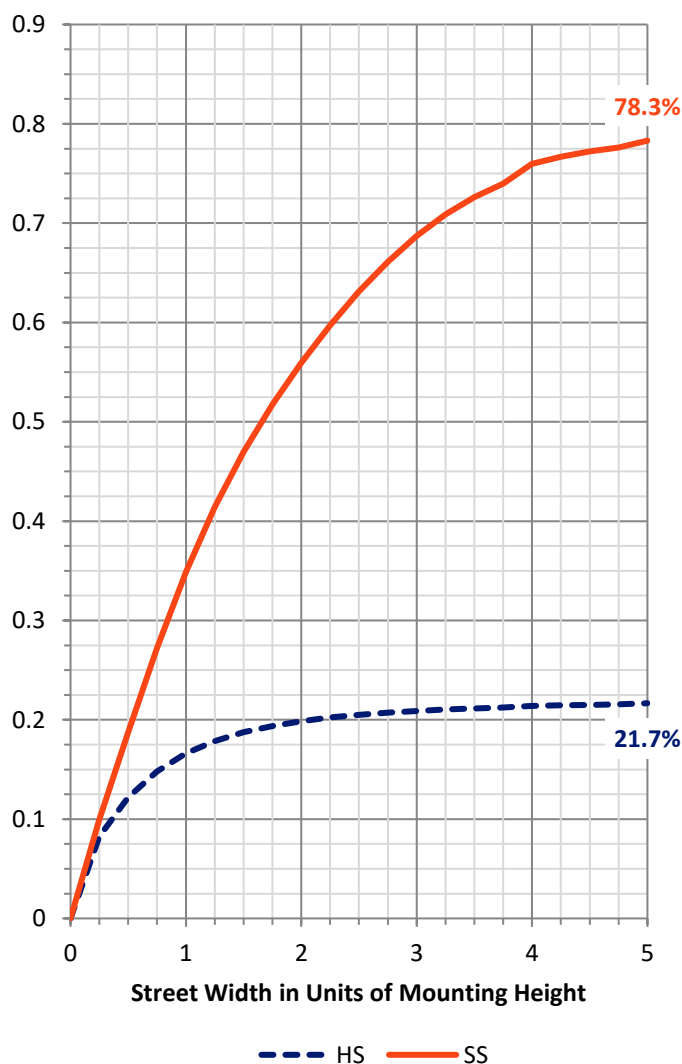
**FLUX DISTRIBUTION:**

|                    |           | Downward | Upward | Total  |
|--------------------|-----------|----------|--------|--------|
| <b>House Side</b>  | Lumens    | 1243.0   | 0.0    | 1243.0 |
|                    | % Fixture | 21.9     | 0.0    | 21.9   |
| <b>Street Side</b> | Lumens    | 4430.0   | 0.0    | 4430.0 |
|                    | % Fixture | 78.1     | 0.0    | 78.1   |
| <b>Total</b>       | Lumens    | 5673.0   | 0.0    | 5673.0 |
|                    | % Fixture | 100.0    | 0.0    | 100.0  |

**ZONAL LUMENS:**

| Zone      | Lumens | % Fixture |
|-----------|--------|-----------|
| 0°-10°    | 82.0   | 1.4       |
| 10°-20°   | 224.2  | 4.0       |
| 20°-30°   | 371.0  | 6.5       |
| 30°-40°   | 552.9  | 9.7       |
| 40°-50°   | 787.2  | 13.9      |
| 50°-60°   | 1083.1 | 19.1      |
| 60°-70°   | 1365.0 | 24.1      |
| 70°-80°   | 1103.4 | 19.5      |
| 80°-90°   | 104.3  | 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°    | 5673.0 | 100.0     |
| 0°-180°   | 5673.0 | 100.0     |

**Coefficient of Utilization**



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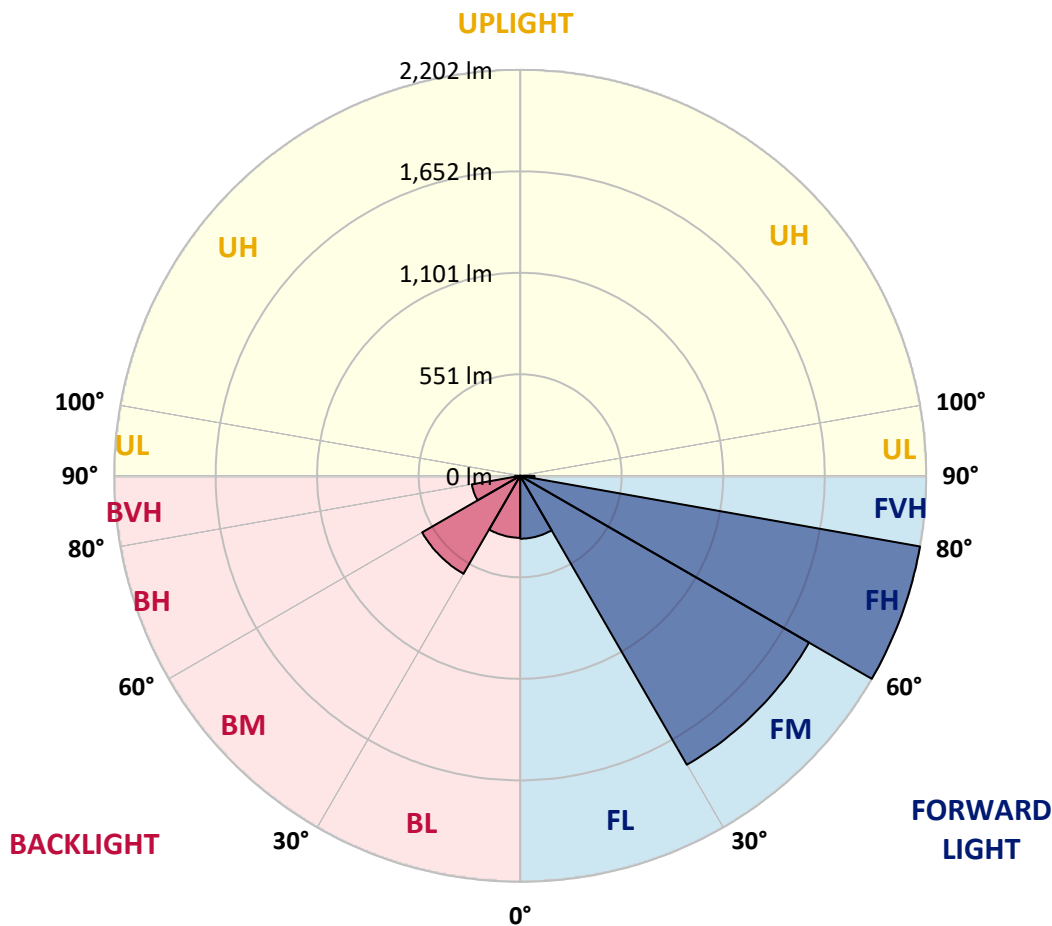
CATALOG NUMBER: ISS-SA1D-750-U-T4FT

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

| Zone |             | Lumens | % Fixture | Zone Rating/Lumen Limit |      |         |
|------|-------------|--------|-----------|-------------------------|------|---------|
|      |             |        |           | B                       | U    | G       |
| FL   | (0°-30°)    | 341.1  | 6.0       |                         |      |         |
| FM   | (30°-60°)   | 1809.3 | 31.9      |                         |      |         |
| FH   | (60°-80°)   | 2202.2 | 38.8      |                         |      | G2/5000 |
| FVH  | (80°-90°)   | 77.5   | 1.4       |                         |      | G1/100  |
| BL   | (0°-30°)    | 336.0  | 5.9       | B1/500                  |      |         |
| BM   | (30°-60°)   | 614.0  | 10.8      | B1/1000                 |      |         |
| BH   | (60°-80°)   | 266.2  | 4.7       | B1/500                  |      | G1/500  |
| BVH  | (80°-90°)   | 26.8   | 0.5       |                         |      | G1/100  |
| UL   | (90°-100°)  | 0.0    | 0.0       |                         | U0/0 |         |
| UH   | (100°-180°) | 0.0    | 0.0       |                         | U0/0 |         |

**BUG Rating: B1-U0-G2**

Type IV Short





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**CANDELA DISTRIBUTION (FULL):**

|       | 0°     | 5°     | 15°    | 25°    | 32°    | 35°    | 45°    | 55°    | 65°    | 75°    | 85°    |
|-------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|
| 0°    | 903.1  | 903.1  | 903.1  | 903.1  | 903.1  | 903.1  | 903.1  | 903.1  | 903.1  | 903.1  | 903.1  |
| 2.5°  | 824.7  | 830.9  | 833.0  | 837.1  | 845.4  | 841.2  | 851.5  | 863.9  | 880.4  | 888.7  | 905.1  |
| 5°    | 754.6  | 754.6  | 760.8  | 771.1  | 785.6  | 785.6  | 804.1  | 826.8  | 855.7  | 878.3  | 907.2  |
| 7.5°  | 692.8  | 692.8  | 699.0  | 711.3  | 725.8  | 736.1  | 758.8  | 793.8  | 833.0  | 876.3  | 913.4  |
| 10°   | 641.2  | 643.3  | 647.4  | 659.8  | 678.3  | 688.7  | 721.6  | 760.8  | 812.4  | 868.0  | 919.6  |
| 12.5° | 622.7  | 620.6  | 618.6  | 628.9  | 643.3  | 651.5  | 688.7  | 738.1  | 797.9  | 866.0  | 931.9  |
| 15°   | 637.1  | 633.0  | 626.8  | 626.8  | 633.0  | 637.1  | 668.0  | 719.6  | 785.6  | 863.9  | 946.4  |
| 17.5° | 674.2  | 670.1  | 655.7  | 641.2  | 645.4  | 647.4  | 668.0  | 709.3  | 779.4  | 872.2  | 967.0  |
| 20°   | 725.8  | 719.6  | 694.8  | 676.3  | 672.2  | 672.2  | 684.5  | 715.5  | 783.5  | 888.7  | 993.8  |
| 22.5° | 787.6  | 781.4  | 752.6  | 719.6  | 715.5  | 713.4  | 719.6  | 740.2  | 795.9  | 907.2  | 1035.0 |
| 25°   | 870.1  | 863.9  | 828.9  | 787.6  | 773.2  | 771.1  | 764.9  | 777.3  | 816.5  | 931.9  | 1063.9 |
| 27.5° | 958.8  | 960.8  | 919.6  | 863.9  | 849.5  | 843.3  | 826.8  | 824.7  | 841.2  | 952.6  | 1113.4 |
| 30°   | 1041.2 | 1037.1 | 993.8  | 948.4  | 927.8  | 919.6  | 892.8  | 880.4  | 870.1  | 983.5  | 1171.1 |
| 32.5° | 1080.4 | 1086.6 | 1066.0 | 1022.7 | 1006.2 | 991.7  | 960.8  | 940.2  | 925.8  | 1030.9 | 1241.2 |
| 35°   | 1146.4 | 1148.4 | 1140.2 | 1113.4 | 1080.4 | 1070.1 | 1041.2 | 1026.8 | 995.9  | 1088.6 | 1325.8 |
| 37.5° | 1212.4 | 1218.5 | 1216.5 | 1200.0 | 1171.1 | 1160.8 | 1136.1 | 1129.9 | 1068.0 | 1160.8 | 1430.9 |
| 40°   | 1311.3 | 1301.0 | 1286.6 | 1292.8 | 1282.5 | 1276.3 | 1266.0 | 1245.3 | 1169.1 | 1239.2 | 1534.0 |
| 42.5° | 1418.5 | 1400.0 | 1348.4 | 1364.9 | 1379.4 | 1385.6 | 1400.0 | 1377.3 | 1274.2 | 1356.7 | 1618.5 |
| 45°   | 1505.1 | 1490.7 | 1422.7 | 1426.8 | 1455.7 | 1476.3 | 1544.3 | 1531.9 | 1410.3 | 1484.5 | 1731.9 |
| 47.5° | 1554.6 | 1542.3 | 1494.8 | 1515.4 | 1534.0 | 1562.9 | 1694.8 | 1684.5 | 1538.1 | 1622.7 | 1868.0 |
| 50°   | 1624.7 | 1604.1 | 1558.7 | 1595.9 | 1628.9 | 1651.5 | 1841.2 | 1837.1 | 1647.4 | 1764.9 | 2022.7 |
| 52.5° | 1663.9 | 1643.3 | 1639.2 | 1690.7 | 1729.9 | 1760.8 | 1997.9 | 1985.5 | 1754.6 | 1907.2 | 2169.1 |
| 55°   | 1717.5 | 1721.6 | 1748.4 | 1787.6 | 1843.3 | 1894.8 | 2150.5 | 2088.6 | 1853.6 | 2047.4 | 2313.4 |
| 57.5° | 1835.0 | 1830.9 | 1882.5 | 1901.0 | 1973.2 | 2039.2 | 2331.9 | 2197.9 | 1936.1 | 2148.4 | 2381.4 |
| 60°   | 1991.7 | 2000.0 | 2018.5 | 2066.0 | 2144.3 | 2245.3 | 2507.2 | 2311.3 | 1989.7 | 2220.6 | 2369.0 |
| 62.5° | 2288.6 | 2241.2 | 2233.0 | 2245.3 | 2400.0 | 2517.5 | 2678.3 | 2412.3 | 2012.4 | 2222.7 | 2239.2 |
| 65°   | 2589.7 | 2571.1 | 2507.2 | 2538.1 | 2762.9 | 2870.1 | 2898.9 | 2478.3 | 1967.0 | 2094.8 | 1950.5 |
| 67.5° | 2901.0 | 2898.9 | 2830.9 | 2919.6 | 3189.7 | 3315.4 | 3144.3 | 2466.0 | 1818.5 | 1795.9 | 1499.0 |
| 70°   | 3220.6 | 3235.0 | 3235.0 | 3486.6 | 3855.6 | 3888.6 | 3418.5 | 2348.4 | 1523.7 | 1272.2 | 876.3  |
| 72.5° | 3360.8 | 3369.0 | 3443.3 | 4002.0 | 4591.7 | 4602.0 | 3575.2 | 1993.8 | 1039.2 | 678.3  | 441.2  |
| 75°   | 2657.7 | 2719.6 | 2919.6 | 3853.6 | 4618.5 | 4577.3 | 3185.5 | 1276.3 | 507.2  | 338.1  | 245.4  |
| 77.5° | 1043.3 | 1066.0 | 1472.2 | 2453.6 | 3364.9 | 3406.2 | 2061.8 | 509.3  | 257.7  | 214.4  | 177.3  |
| 80°   | 294.8  | 309.3  | 521.6  | 975.2  | 1661.8 | 1837.1 | 820.6  | 220.6  | 173.2  | 156.7  | 127.8  |
| 82.5° | 105.2  | 119.6  | 193.8  | 373.2  | 709.3  | 748.4  | 222.7  | 109.3  | 111.3  | 101.0  | 78.3   |
| 85°   | 14.4   | 12.4   | 26.8   | 68.0   | 156.7  | 132.0  | 37.1   | 28.9   | 45.4   | 47.4   | 33.0   |
| 87.5° | 0.0    | 0.0    | 0.0    | 2.1    | 2.1    | 2.1    | 0.0    | 0.0    | 0.0    | 2.1    | 2.1    |
| 90°   | 0.0    | 0.0    | 0.0    | 0.0    | 0.0    | 0.0    | 0.0    | 0.0    | 0.0    | 0.0    | 0.0    |



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 CATALOG NUMBER: ISS-SA1D-750-U-T4FT

**CANDELA DISTRIBUTION (continued):**

|       | 90°    | 95°    | 105°  | 115°  | 125°  | 135°  | 145°  | 155°  | 165°  | 175°  | 180°  |
|-------|--------|--------|-------|-------|-------|-------|-------|-------|-------|-------|-------|
| 0°    | 903.1  | 903.1  | 903.1 | 903.1 | 903.1 | 903.1 | 903.1 | 903.1 | 903.1 | 903.1 | 903.1 |
| 2.5°  | 909.3  | 913.4  | 921.6 | 925.8 | 929.9 | 938.1 | 936.1 | 940.2 | 940.2 | 938.1 | 942.3 |
| 5°    | 917.5  | 927.8  | 938.1 | 942.3 | 944.3 | 944.3 | 934.0 | 927.8 | 925.8 | 923.7 | 925.8 |
| 7.5°  | 925.8  | 940.2  | 950.5 | 948.4 | 940.2 | 925.8 | 913.4 | 903.1 | 892.8 | 888.7 | 892.8 |
| 10°   | 940.2  | 954.6  | 960.8 | 946.4 | 923.7 | 901.0 | 882.5 | 868.0 | 851.5 | 849.5 | 851.5 |
| 12.5° | 952.6  | 971.1  | 971.1 | 938.1 | 907.2 | 876.3 | 847.4 | 824.7 | 804.1 | 797.9 | 797.9 |
| 15°   | 973.2  | 987.6  | 973.2 | 927.8 | 884.5 | 845.4 | 804.1 | 775.3 | 750.5 | 740.2 | 742.3 |
| 17.5° | 995.9  | 1006.2 | 969.1 | 911.3 | 859.8 | 808.2 | 754.6 | 715.5 | 696.9 | 686.6 | 688.7 |
| 20°   | 1022.7 | 1024.7 | 969.1 | 890.7 | 822.7 | 754.6 | 696.9 | 668.0 | 655.7 | 649.5 | 651.5 |
| 22.5° | 1057.7 | 1049.5 | 962.9 | 863.9 | 775.3 | 701.0 | 647.4 | 639.2 | 639.2 | 639.2 | 645.4 |
| 25°   | 1094.8 | 1072.2 | 952.6 | 828.9 | 713.4 | 637.1 | 616.5 | 626.8 | 635.0 | 635.0 | 639.2 |
| 27.5° | 1131.9 | 1094.8 | 931.9 | 777.3 | 641.2 | 591.7 | 600.0 | 616.5 | 624.7 | 624.7 | 628.9 |
| 30°   | 1177.3 | 1121.6 | 907.2 | 707.2 | 573.2 | 560.8 | 581.4 | 602.1 | 614.4 | 614.4 | 618.6 |
| 32.5° | 1235.0 | 1144.3 | 870.1 | 635.0 | 527.8 | 534.0 | 556.7 | 579.4 | 593.8 | 597.9 | 600.0 |
| 35°   | 1299.0 | 1175.2 | 818.5 | 554.6 | 496.9 | 513.4 | 532.0 | 552.6 | 564.9 | 569.1 | 569.1 |
| 37.5° | 1364.9 | 1206.2 | 750.5 | 486.6 | 470.1 | 492.8 | 511.3 | 521.6 | 529.9 | 529.9 | 529.9 |
| 40°   | 1430.9 | 1222.7 | 661.8 | 433.0 | 443.3 | 476.3 | 492.8 | 488.7 | 486.6 | 480.4 | 482.5 |
| 42.5° | 1499.0 | 1235.0 | 567.0 | 393.8 | 416.5 | 457.7 | 470.1 | 459.8 | 443.3 | 433.0 | 435.0 |
| 45°   | 1573.2 | 1253.6 | 488.7 | 364.9 | 389.7 | 441.2 | 453.6 | 433.0 | 412.4 | 395.9 | 391.7 |
| 47.5° | 1657.7 | 1284.5 | 418.6 | 338.1 | 373.2 | 430.9 | 443.3 | 414.4 | 387.6 | 364.9 | 360.8 |
| 50°   | 1773.2 | 1331.9 | 364.9 | 319.6 | 362.9 | 424.7 | 435.0 | 397.9 | 367.0 | 338.1 | 336.1 |
| 52.5° | 1890.7 | 1367.0 | 327.8 | 303.1 | 350.5 | 412.4 | 424.7 | 385.6 | 348.5 | 317.5 | 313.4 |
| 55°   | 1977.3 | 1362.9 | 294.8 | 286.6 | 334.0 | 395.9 | 414.4 | 371.1 | 323.7 | 294.8 | 290.7 |
| 57.5° | 2014.4 | 1278.3 | 268.0 | 272.2 | 315.5 | 375.3 | 397.9 | 348.5 | 305.2 | 280.4 | 278.3 |
| 60°   | 1950.5 | 1142.3 | 249.5 | 255.7 | 294.8 | 348.5 | 367.0 | 332.0 | 292.8 | 270.1 | 268.0 |
| 62.5° | 1839.2 | 989.7  | 235.0 | 243.3 | 274.2 | 323.7 | 348.5 | 311.3 | 276.3 | 259.8 | 257.7 |
| 65°   | 1575.2 | 822.7  | 220.6 | 228.9 | 255.7 | 299.0 | 332.0 | 299.0 | 263.9 | 247.4 | 245.4 |
| 67.5° | 1189.7 | 591.7  | 206.2 | 214.4 | 239.2 | 280.4 | 317.5 | 282.5 | 245.4 | 233.0 | 233.0 |
| 70°   | 709.3  | 362.9  | 187.6 | 200.0 | 218.6 | 257.7 | 294.8 | 259.8 | 222.7 | 218.6 | 214.4 |
| 72.5° | 346.4  | 230.9  | 171.1 | 181.4 | 195.9 | 228.9 | 261.9 | 230.9 | 193.8 | 183.5 | 181.4 |
| 75°   | 208.2  | 167.0  | 148.5 | 160.8 | 171.1 | 191.8 | 220.6 | 197.9 | 169.1 | 152.6 | 150.5 |
| 77.5° | 150.5  | 125.8  | 125.8 | 138.1 | 138.1 | 158.8 | 189.7 | 169.1 | 142.3 | 132.0 | 129.9 |
| 80°   | 107.2  | 94.8   | 103.1 | 111.3 | 107.2 | 134.0 | 160.8 | 142.3 | 115.5 | 107.2 | 105.2 |
| 82.5° | 70.1   | 66.0   | 78.3  | 76.3  | 76.3  | 103.1 | 132.0 | 107.2 | 84.5  | 70.1  | 66.0  |
| 85°   | 28.9   | 33.0   | 45.4  | 43.3  | 43.3  | 57.7  | 68.0  | 55.7  | 39.2  | 30.9  | 30.9  |
| 87.5° | 0.0    | 2.1    | 6.2   | 4.1   | 4.1   | 6.2   | 2.1   | 2.1   | 0.0   | 0.0   | 0.0   |
| 90°   | 0.0    | 0.0    | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   |



LM-79-2008: Approved Method: Electrical and Photometric Measurements of Solid-  
State Lighting Products

Report Prepared for

Cooper Lighting Solutions

McGRAW-EDISON

Report Number: SP1-1908-441-4-R4

Test Date: 10/02/2019

Luminaire Tested: SA1C-750-U-5WQ

Data in this report applies to families of products SA1C-760-U-5WQ .

**Test Information**

Test Method: LM-79-2008  
 Report Number: SP1-1908-441-4-R4  
 Test Lab: COOPER LIGHTING SOLUTIONS  
 Photometer: SP1 - 76IN SPHERE  
 Measurement Geometry: 4π  
 Issue Date: 10/28/2024  
 Manufacturer: COOPER LIGHTING SOLUTIONS  
 Product Line: MCGRAW-EDISON  
 Catalog Number: **SA1C-750-U-5WQ**  
 Description: MCGRAW EDISON ROADWAY AND AREA LUMINAIRE

\*\*\*THIS IS A REVISION OF SP1-1908-441-4-R3. TO UPDATE THE CATALOG INFORMATION.\*\*\*TESTED IN SITU. ROADWAY AND AREA LUMINAIRE. (1) 70 CRI, 5000K, 1050MA LIGHTSQUARE WITH 16 LEDS AND TYPE V WIDE OPTICS.

**Spectral Parameters**

|                           |        |           |      |      |       |
|---------------------------|--------|-----------|------|------|-------|
| CCT (K):                  | 4884   | CRI (Ra): | 73.5 | R9:  | -28.4 |
| CIE u':                   | 0.2101 | R1:       | 70.5 | R10: | 48.6  |
| CIE v':                   | 0.4904 | R2:       | 77.7 | R11: | 73.2  |
| Duv:                      | 0.0037 | R3:       | 84.6 | R12: | 50.7  |
| CIE x:                    | 0.3493 | R4:       | 74.7 | R13: | 71.2  |
| CIE y:                    | 0.3624 | R5:       | 71.9 | R14: | 91.4  |
| CIE z:                    | 0.2884 | R6:       | 70.7 |      |       |
| Peak Wavelength (nm):     | 444    | R7:       | 81.2 |      |       |
| Dominant Wavelength (nm): | 571    | R8:       | 56.9 |      |       |
| Purity:                   | 13.7   |           |      |      |       |
| Rf:                       | 74.9   |           |      |      |       |
| Rg:                       | 96.3   |           |      |      |       |



**Test Conditions**

Stabilization Time: 240M  
 Operation Time: 12H  
 Room Temperature (°C) / RH%: 25.0./44%  
 Sphere Temperature (°C): 25.7

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| Measurement and Test Equipment |                       |                  |                      |
|--------------------------------|-----------------------|------------------|----------------------|
| Instrument                     | Identification Number | Calibration Date | Calibration Due Date |
| Photometer                     | IN0058                | 6/28/2019        | 12/28/2019           |
| Power Meter                    | IN0071                | 12/5/2018        | 12/5/2019            |
| AC Power Source                | IN0063                | 12/5/2018        | 12/5/2019            |
| DC Power Source                | IN0208                | 12/5/2018        | 12/5/2019            |
| Sphere Thermometer             | IN0085                | 12/5/2018        | 12/5/2019            |
| Room Thermometer               | IN0046                | 12/5/2018        | 12/5/2019            |

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CIE 1931 Chromaticity Diagram



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



Point lies inside the ANSI 5000K 4-step quadrangle

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**Photopic Flux vs. Wavelength**



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| λ (nm) | Power (µW/nm) | Lumens (φ/nm) | λ (nm) | Power (µW/nm) | Lumens (φ/nm) | λ (nm) | Power (µW/nm) | Lumens (φ/nm) | λ (nm) | Power (µW/nm) | Lumens (φ/nm) | λ (nm) | Power (µW/nm) | Lumens (φ/nm) |
|--------|---------------|---------------|--------|---------------|---------------|--------|---------------|---------------|--------|---------------|---------------|--------|---------------|---------------|
| 360    | 2945          | NR            | 490    | 37941         | NR            | 620    | 88803         | NR            | 750    | 3908          | NR            | 880    | 2997          | NR            |
| 365    | 2596          | NR            | 495    | 48525         | NR            | 625    | 80578         | NR            | 755    | 3988          | NR            | 885    | 2927          | NR            |
| 370    | 2732          | NR            | 500    | 60609         | NR            | 630    | 73127         | NR            | 760    | 3335          | NR            | 890    | 2649          | NR            |
| 375    | 2894          | NR            | 505    | 72036         | NR            | 635    | 66244         | NR            | 765    | 3438          | NR            | 895    | 2828          | NR            |
| 380    | 2822          | NR            | 510    | 82168         | NR            | 640    | 59440         | NR            | 770    | 3427          | NR            | 900    | 1407          | NR            |
| 385    | 2394          | NR            | 515    | 90898         | NR            | 645    | 52864         | NR            | 775    | 2759          | NR            | 905    | 2224          | NR            |
| 390    | 2370          | NR            | 520    | 97142         | NR            | 650    | 47085         | NR            | 780    | 2340          | NR            | 910    | 2905          | NR            |
| 395    | 2267          | NR            | 525    | 103255        | NR            | 655    | 41789         | NR            | 785    | 2412          | NR            | 915    | 3350          | NR            |
| 400    | 2262          | NR            | 530    | 106697        | NR            | 660    | 37064         | NR            | 790    | 1999          | NR            | 920    | 3114          | NR            |
| 405    | 3000          | NR            | 535    | 110081        | NR            | 665    | 32299         | NR            | 795    | 2054          | NR            | 925    | 2834          | NR            |
| 410    | 5324          | NR            | 540    | 112494        | NR            | 670    | 28142         | NR            | 800    | 2331          | NR            | 930    | 2271          | NR            |
| 415    | 10725         | NR            | 545    | 115513        | NR            | 675    | 24505         | NR            | 805    | 2648          | NR            | 935    | 2228          | NR            |
| 420    | 22128         | NR            | 550    | 117203        | NR            | 680    | 21162         | NR            | 810    | 2485          | NR            | 940    | 2833          | NR            |
| 425    | 44095         | NR            | 555    | 119753        | NR            | 685    | 18400         | NR            | 815    | 2409          | NR            | 945    | 2941          | NR            |
| 430    | 77002         | NR            | 560    | 122602        | NR            | 690    | 16065         | NR            | 820    | 2221          | NR            | 950    | 2323          | NR            |
| 435    | 119881        | NR            | 565    | 124314        | NR            | 695    | 13860         | NR            | 825    | 1562          | NR            | 955    | 1667          | NR            |
| 440    | 164454        | NR            | 570    | 126775        | NR            | 700    | 12177         | NR            | 830    | 2249          | NR            | 960    | 749           | NR            |
| 445    | 179997        | NR            | 575    | 127511        | NR            | 705    | 10757         | NR            | 835    | 2573          | NR            | 965    | 2669          | NR            |
| 450    | 142822        | NR            | 580    | 127577        | NR            | 710    | 9601          | NR            | 840    | 2764          | NR            | 970    | 3968          | NR            |
| 455    | 90008         | NR            | 585    | 126153        | NR            | 715    | 8944          | NR            | 845    | 3109          | NR            | 975    | 3886          | NR            |
| 460    | 60557         | NR            | 590    | 123678        | NR            | 720    | 7947          | NR            | 850    | 2963          | NR            | 980    | 2788          | NR            |
| 465    | 43305         | NR            | 595    | 119774        | NR            | 725    | 7062          | NR            | 855    | 2336          | NR            | 985    | 3496          | NR            |
| 470    | 31089         | NR            | 600    | 115733        | NR            | 730    | 6004          | NR            | 860    | 2118          | NR            | 990    | 2913          | NR            |
| 475    | 26278         | NR            | 605    | 109231        | NR            | 735    | 5594          | NR            | 865    | 3144          | NR            | 995    | 4659          | NR            |
| 480    | 27060         | NR            | 610    | 102408        | NR            | 740    | 5165          | NR            | 870    | 3069          | NR            | 1000   | 1308          | NR            |
| 485    | 30698         | NR            | 615    | 96015         | NR            | 745    | 4687          | NR            | 875    | 3311          | NR            |        |               |               |

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Scotopic Flux vs. Wavelength



Scotopic Lumens: 13493.5 S/P: 1.77

| λ (nm) | Power (µW/nm) | Lumens (φ/nm) | λ (nm) | Power (µW/nm) | Lumens (φ/nm) | λ (nm) | Power (µW/nm) | Lumens (φ/nm) | λ (nm) | Power (µW/nm) | Lumens (φ/nm) | λ (nm) | Power (µW/nm) | Lumens (φ/nm) |
|--------|---------------|---------------|--------|---------------|---------------|--------|---------------|---------------|--------|---------------|---------------|--------|---------------|---------------|
| 360    | 2945          | NR            | 490    | 37941         | NR            | 620    | 88803         | NR            | 750    | 3908          | NR            | 880    | 2997          | NR            |
| 365    | 2596          | NR            | 495    | 48525         | NR            | 625    | 80578         | NR            | 755    | 3988          | NR            | 885    | 2927          | NR            |
| 370    | 2732          | NR            | 500    | 60609         | NR            | 630    | 73127         | NR            | 760    | 3335          | NR            | 890    | 2649          | NR            |
| 375    | 2894          | NR            | 505    | 72036         | NR            | 635    | 66244         | NR            | 765    | 3438          | NR            | 895    | 2828          | NR            |
| 380    | 2822          | NR            | 510    | 82168         | NR            | 640    | 59440         | NR            | 770    | 3427          | NR            | 900    | 1407          | NR            |
| 385    | 2394          | NR            | 515    | 90898         | NR            | 645    | 52864         | NR            | 775    | 2759          | NR            | 905    | 2224          | NR            |
| 390    | 2370          | NR            | 520    | 97142         | NR            | 650    | 47085         | NR            | 780    | 2340          | NR            | 910    | 2905          | NR            |
| 395    | 2267          | NR            | 525    | 103255        | NR            | 655    | 41789         | NR            | 785    | 2412          | NR            | 915    | 3350          | NR            |
| 400    | 2262          | NR            | 530    | 106697        | NR            | 660    | 37064         | NR            | 790    | 1999          | NR            | 920    | 3114          | NR            |
| 405    | 3000          | NR            | 535    | 110081        | NR            | 665    | 32299         | NR            | 795    | 2054          | NR            | 925    | 2834          | NR            |
| 410    | 5324          | NR            | 540    | 112494        | NR            | 670    | 28142         | NR            | 800    | 2331          | NR            | 930    | 2271          | NR            |
| 415    | 10725         | NR            | 545    | 115513        | NR            | 675    | 24505         | NR            | 805    | 2648          | NR            | 935    | 2228          | NR            |
| 420    | 22128         | NR            | 550    | 117203        | NR            | 680    | 21162         | NR            | 810    | 2485          | NR            | 940    | 2833          | NR            |
| 425    | 44095         | NR            | 555    | 119753        | NR            | 685    | 18400         | NR            | 815    | 2409          | NR            | 945    | 2941          | NR            |
| 430    | 77002         | NR            | 560    | 122602        | NR            | 690    | 16065         | NR            | 820    | 2221          | NR            | 950    | 2323          | NR            |
| 435    | 119881        | NR            | 565    | 124314        | NR            | 695    | 13860         | NR            | 825    | 1562          | NR            | 955    | 1667          | NR            |
| 440    | 164454        | NR            | 570    | 126775        | NR            | 700    | 12177         | NR            | 830    | 2249          | NR            | 960    | 749           | NR            |
| 445    | 179997        | NR            | 575    | 127511        | NR            | 705    | 10757         | NR            | 835    | 2573          | NR            | 965    | 2669          | NR            |
| 450    | 142822        | NR            | 580    | 127577        | NR            | 710    | 9601          | NR            | 840    | 2764          | NR            | 970    | 3968          | NR            |
| 455    | 90008         | NR            | 585    | 126153        | NR            | 715    | 8944          | NR            | 845    | 3109          | NR            | 975    | 3886          | NR            |
| 460    | 60557         | NR            | 590    | 123678        | NR            | 720    | 7947          | NR            | 850    | 2963          | NR            | 980    | 2788          | NR            |
| 465    | 43305         | NR            | 595    | 119774        | NR            | 725    | 7062          | NR            | 855    | 2336          | NR            | 985    | 3496          | NR            |
| 470    | 31089         | NR            | 600    | 115733        | NR            | 730    | 6004          | NR            | 860    | 2118          | NR            | 990    | 2913          | NR            |
| 475    | 26278         | NR            | 605    | 109231        | NR            | 735    | 5594          | NR            | 865    | 3144          | NR            | 995    | 4659          | NR            |
| 480    | 27060         | NR            | 610    | 102408        | NR            | 740    | 5165          | NR            | 870    | 3069          | NR            | 1000   | 1308          | NR            |
| 485    | 30698         | NR            | 615    | 96015         | NR            | 745    | 4687          | NR            | 875    | 3311          | NR            |        |               |               |

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**Melanopic Flux vs. Wavelength**



**Melanopic Lumens: 5378.9 M/P: 0.71**

| λ (nm) | Power (µW/nm) | Lumens (φ/nm) | λ (nm) | Power (µW/nm) | Lumens (φ/nm) | λ (nm) | Power (µW/nm) | Lumens (φ/nm) | λ (nm) | Power (µW/nm) | Lumens (φ/nm) | λ (nm) | Power (µW/nm) | Lumens (φ/nm) |
|--------|---------------|---------------|--------|---------------|---------------|--------|---------------|---------------|--------|---------------|---------------|--------|---------------|---------------|
| 360    | 2945          | NR            | 490    | 37941         | NR            | 620    | 88803         | NR            | 750    | 3908          | NR            | 880    | 2997          | NR            |
| 365    | 2596          | NR            | 495    | 48525         | NR            | 625    | 80578         | NR            | 755    | 3988          | NR            | 885    | 2927          | NR            |
| 370    | 2732          | NR            | 500    | 60609         | NR            | 630    | 73127         | NR            | 760    | 3335          | NR            | 890    | 2649          | NR            |
| 375    | 2894          | NR            | 505    | 72036         | NR            | 635    | 66244         | NR            | 765    | 3438          | NR            | 895    | 2828          | NR            |
| 380    | 2822          | NR            | 510    | 82168         | NR            | 640    | 59440         | NR            | 770    | 3427          | NR            | 900    | 1407          | NR            |
| 385    | 2394          | NR            | 515    | 90898         | NR            | 645    | 52864         | NR            | 775    | 2759          | NR            | 905    | 2224          | NR            |
| 390    | 2370          | NR            | 520    | 97142         | NR            | 650    | 47085         | NR            | 780    | 2340          | NR            | 910    | 2905          | NR            |
| 395    | 2267          | NR            | 525    | 103255        | NR            | 655    | 41789         | NR            | 785    | 2412          | NR            | 915    | 3350          | NR            |
| 400    | 2262          | NR            | 530    | 106697        | NR            | 660    | 37064         | NR            | 790    | 1999          | NR            | 920    | 3114          | NR            |
| 405    | 3000          | NR            | 535    | 110081        | NR            | 665    | 32299         | NR            | 795    | 2054          | NR            | 925    | 2834          | NR            |
| 410    | 5324          | NR            | 540    | 112494        | NR            | 670    | 28142         | NR            | 800    | 2331          | NR            | 930    | 2271          | NR            |
| 415    | 10725         | NR            | 545    | 115513        | NR            | 675    | 24505         | NR            | 805    | 2648          | NR            | 935    | 2228          | NR            |
| 420    | 22128         | NR            | 550    | 117203        | NR            | 680    | 21162         | NR            | 810    | 2485          | NR            | 940    | 2833          | NR            |
| 425    | 44095         | NR            | 555    | 119753        | NR            | 685    | 18400         | NR            | 815    | 2409          | NR            | 945    | 2941          | NR            |
| 430    | 77002         | NR            | 560    | 122602        | NR            | 690    | 16065         | NR            | 820    | 2221          | NR            | 950    | 2323          | NR            |
| 435    | 119881        | NR            | 565    | 124314        | NR            | 695    | 13860         | NR            | 825    | 1562          | NR            | 955    | 1667          | NR            |
| 440    | 164454        | NR            | 570    | 126775        | NR            | 700    | 12177         | NR            | 830    | 2249          | NR            | 960    | 749           | NR            |
| 445    | 179997        | NR            | 575    | 127511        | NR            | 705    | 10757         | NR            | 835    | 2573          | NR            | 965    | 2669          | NR            |
| 450    | 142822        | NR            | 580    | 127577        | NR            | 710    | 9601          | NR            | 840    | 2764          | NR            | 970    | 3968          | NR            |
| 455    | 90008         | NR            | 585    | 126153        | NR            | 715    | 8944          | NR            | 845    | 3109          | NR            | 975    | 3886          | NR            |
| 460    | 60557         | NR            | 590    | 123678        | NR            | 720    | 7947          | NR            | 850    | 2963          | NR            | 980    | 2788          | NR            |
| 465    | 43305         | NR            | 595    | 119774        | NR            | 725    | 7062          | NR            | 855    | 2336          | NR            | 985    | 3496          | NR            |
| 470    | 31089         | NR            | 600    | 115733        | NR            | 730    | 6004          | NR            | 860    | 2118          | NR            | 990    | 2913          | NR            |
| 475    | 26278         | NR            | 605    | 109231        | NR            | 735    | 5594          | NR            | 865    | 3144          | NR            | 995    | 4659          | NR            |
| 480    | 27060         | NR            | 610    | 102408        | NR            | 740    | 5165          | NR            | 870    | 3069          | NR            | 1000   | 1308          | NR            |
| 485    | 30698         | NR            | 615    | 96015         | NR            | 745    | 4687          | NR            | 875    | 3311          | NR            |        |               |               |

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**Summary**

$R_f = 74.9$   
 $R_g = 96.3$   
 CIE  $R_a = 73.5$   
 $R_g = -28.4$



**Color Vector Graphics**





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

|            |            |            |            |
|------------|------------|------------|------------|
| CES01 = 85 | CES26 = 61 | CES51 = 90 | CES76 = 52 |
| CES02 = 60 | CES27 = 84 | CES52 = 91 | CES77 = 71 |
| CES03 = 30 | CES28 = 81 | CES53 = 79 | CES78 = 54 |
| CES04 = 69 | CES29 = 58 | CES54 = 83 | CES79 = 80 |
| CES05 = 46 | CES30 = 67 | CES55 = 83 | CES80 = 77 |
| CES06 = 50 | CES31 = 63 | CES56 = 73 | CES81 = 77 |
| CES07 = 39 | CES32 = 59 | CES57 = 72 | CES82 = 90 |
| CES08 = 38 | CES33 = 69 | CES58 = 73 | CES83 = 86 |
| CES09 = 29 | CES34 = 69 | CES59 = 88 | CES84 = 88 |
| CES10 = 73 | CES35 = 83 | CES60 = 93 | CES85 = 84 |
| CES11 = 56 | CES36 = 95 | CES61 = 88 | CES86 = 75 |
| CES12 = 61 | CES37 = 78 | CES62 = 85 | CES87 = 78 |
| CES13 = 41 | CES38 = 76 | CES63 = 77 | CES88 = 79 |
| CES14 = 74 | CES39 = 93 | CES64 = 74 | CES89 = 75 |
| CES15 = 70 | CES40 = 86 | CES65 = 67 | CES90 = 77 |
| CES16 = 46 | CES41 = 87 | CES66 = 69 | CES91 = 89 |
| CES17 = 49 | CES42 = 78 | CES67 = 67 | CES92 = 66 |
| CES18 = 55 | CES43 = 75 | CES68 = 73 | CES93 = 80 |
| CES19 = 71 | CES44 = 99 | CES69 = 81 | CES94 = 57 |
| CES20 = 64 | CES45 = 83 | CES70 = 63 | CES95 = 71 |
| CES21 = 85 | CES46 = 81 | CES71 = 60 | CES96 = 78 |
| CES22 = 77 | CES47 = 80 | CES72 = 86 | CES97 = 85 |
| CES23 = 91 | CES48 = 72 | CES73 = 53 | CES98 = 75 |
| CES24 = 90 | CES49 = 81 | CES74 = 96 | CES99 = 62 |
| CES25 = 71 | CES50 = 89 | CES75 = 58 |            |



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Color Rendition by Hue-Angle Bin



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Measure Comparisons



(END OF REPORT)