

Signify Classified - Internal  
Cooper Lighting Solutions Photometric Lab  
1121 Highway 74 South  
Peachtree City, GA 30269



Scaled data based on original data using  
LM-79-2019 Approved Method: Electrical and Photometric Measurements of Solid-  
State Lighting Products

Test Report Prepared for

Cooper Lighting Solutions

Brand: McGRAW-EDISON

Report Number: P640291

Luminaire Tested: GWS-SA5D-750-U-SL3-W

Issue Date: 1/10/2023

**Test Information**

Test Method: LM-79-2019  
Report Number: P640291  
TEST IS SCALED FROM IESNA LM-79-08 TEST DATA (G2-2209-782-31)  
Test Lab: COOPER LIGHTING SOLUTIONS  
Issue Date: 1/10/2023  
Manufacturer: COOPER LIGHTING SOLUTIONS  
Product Line: McGRAW-EDISON  
Catalog Number: GWS-SA5D-750-U-SL3-W  
Description: GALLEON WALL SLIM LUMINAIRE. (5) LIGHTSQUARES WITH 16 LEDS EACH AND TYPE III SPILL LIGHT ELIMINATOR OPTICS  
Light Source: (80) 5000K CCT, 70 CRI LEDS  
Ballast/Driver: -

**Summary**

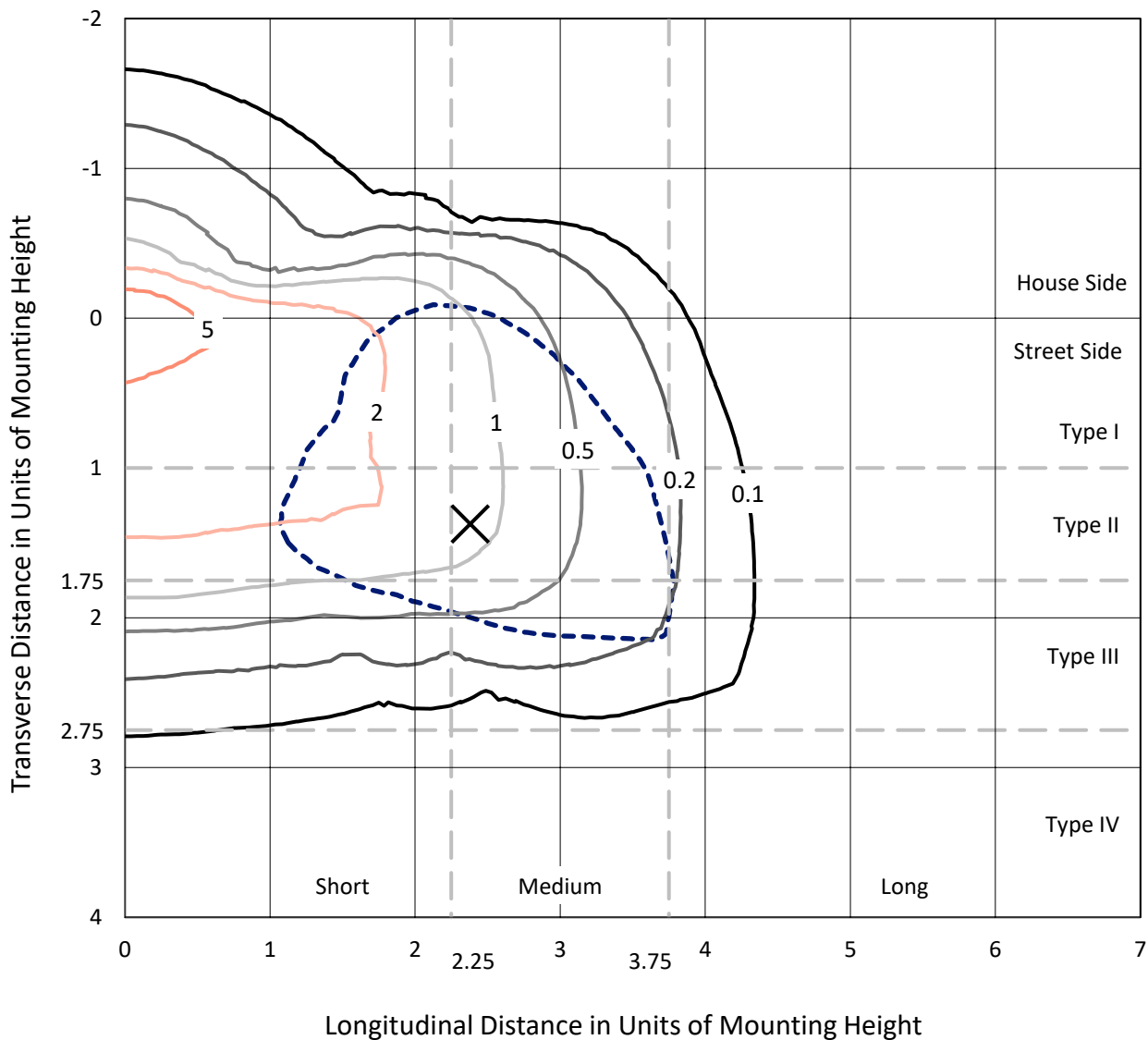
Lumens per Lamp: N/A  
Luminaire Lumens: 30109.2 lumens  
Efficiency: N/A  
Efficacy: 147.2 lumens/watt  
Luminous Opening: Rectangular (W 1.5' x L: 1' x H: 0')  
IES Classification: Type III - Medium  
BUG Rating: B3 - U0 - G4  
  
Input Watts (W): 204.6  
Input Voltage (V): 120  
Input Current (Ain): NR  
Voltage Rise (V): NR  
Power Factor: NR  
Total Harmonic Distortion (THDi): NR  
Frequency (hertz): 0  
Stabilization Time: NR  
Operation Time: NR  
Ambient Temperature (°C): NR  
Test Distance: 28.75 FT



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### Iso-Footcandle Lines of Horizontal Illumination

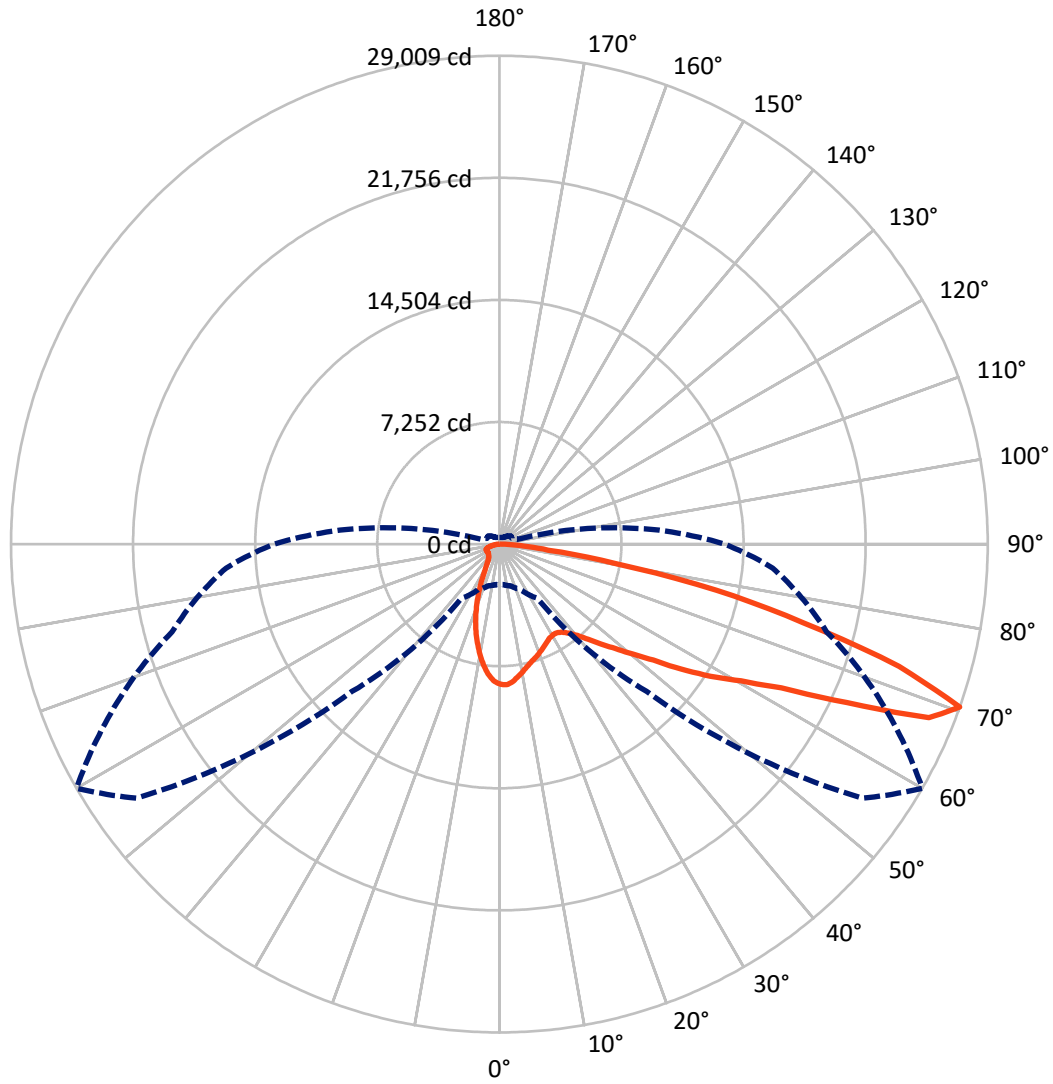
✕ Max cd  
 - - - 1/2 Max cd



Based on 30 foot mounting height. Maximum calculated value = 9.3 fc  
 Type III - Medium - N/A

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### Luminous Intensity Polar Plot



— Vertical Plane Through 60-Deg Lateral    - - - Horizontal Cone Through 70-Deg Vertical

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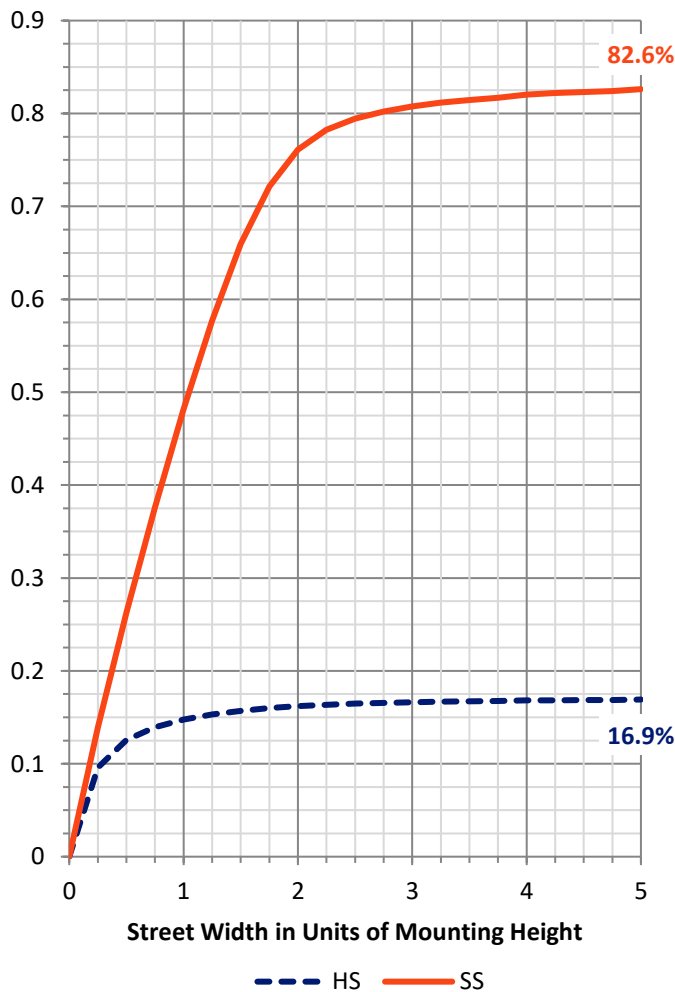
**FLUX DISTRIBUTION:**

|                    |           | Downward | Upward | Total   |
|--------------------|-----------|----------|--------|---------|
| <b>House Side</b>  | Lumens    | 5149.4   | 0.0    | 5149.4  |
|                    | % Fixture | 17.1     | 0.0    | 17.1    |
| <b>Street Side</b> | Lumens    | 24959.8  | 0.0    | 24959.8 |
|                    | % Fixture | 82.9     | 0.0    | 82.9    |
| <b>Total</b>       | Lumens    | 30109.2  | 0.0    | 30109.2 |
|                    | % Fixture | 100.0    | 0.0    | 100.0   |

**ZONAL LUMENS:**

| Zone      | Lumens  | % Fixture |
|-----------|---------|-----------|
| 0°-10°    | 718.1   | 2.4       |
| 10°-20°   | 1608.9  | 5.3       |
| 20°-30°   | 2060.5  | 6.8       |
| 30°-40°   | 2707.9  | 9.0       |
| 40°-50°   | 3928.8  | 13.0      |
| 50°-60°   | 6129.8  | 20.4      |
| 60°-70°   | 8025.1  | 26.7      |
| 70°-80°   | 4437.6  | 14.7      |
| 80°-90°   | 492.5   | 1.6       |
| 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°    | 30109.2 | 100.0     |
| 0°-180°   | 30109.2 | 100.0     |

**Coefficient of Utilization**



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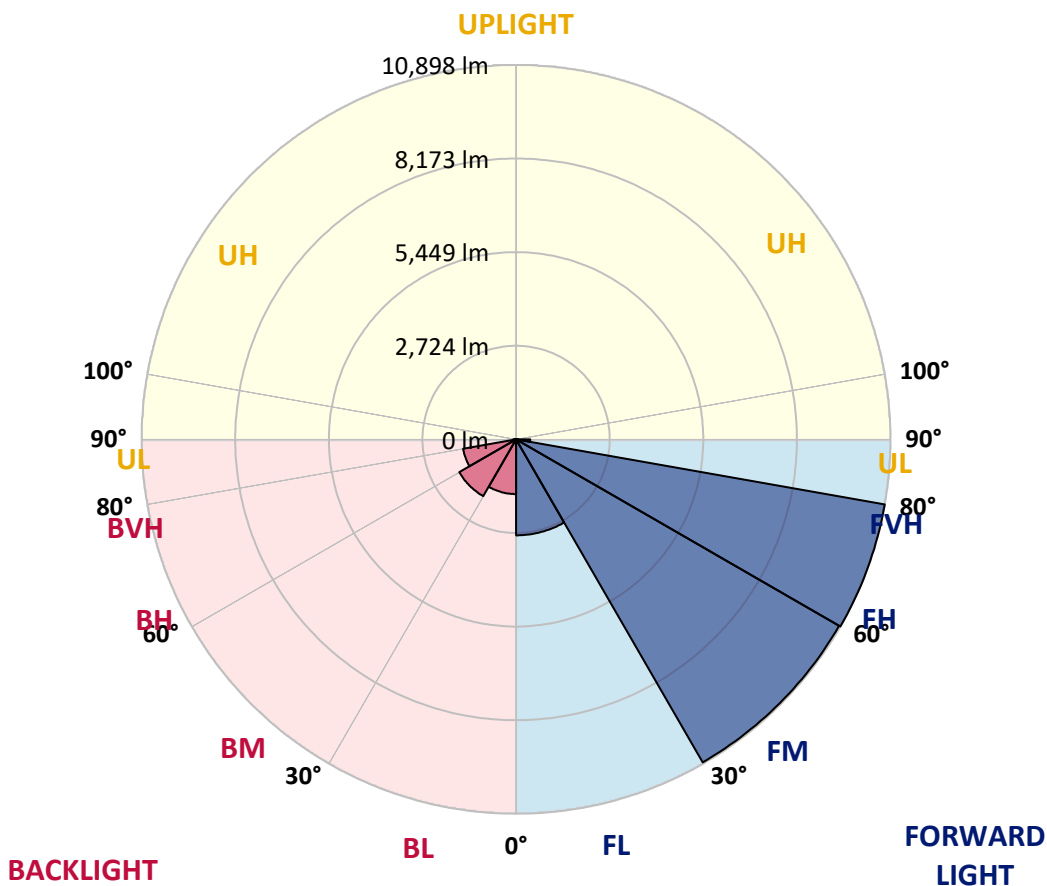
CATALOG NUMBER: GWS-SA5D-750-U-SL3-W

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

| Zone           | Lumens  | % Fixture | Zone Rating/Lumen Limit |      |          |
|----------------|---------|-----------|-------------------------|------|----------|
|                |         |           | B                       | U    | G        |
| FL (0°-30°)    | 2794.3  | 9.3       |                         |      |          |
| FM (30°-60°)   | 10857.3 | 36.1      |                         |      |          |
| FH (60°-80°)   | 10897.9 | 36.2      |                         |      | G4/12000 |
| FVH (80°-90°)  | 410.4   | 1.4       |                         |      | G3/500   |
| BL (0°-30°)    | 1593.2  | 5.3       | B3/2500                 |      |          |
| BM (30°-60°)   | 1909.2  | 6.3       | B2/2500                 |      |          |
| BH (60°-80°)   | 1564.9  | 5.2       | B3/2500                 |      | G3/2500  |
| BVH (80°-90°)  | 82.1    | 0.3       |                         |      | G1/100   |
| UL (90°-100°)  | 0.0     | 0.0       |                         | U0/0 |          |
| UH (100°-180°) | 0.0     | 0.0       |                         | U0/0 |          |

**BUG Rating: B3-U0-G4**

Type III Medium





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**CANDELA DISTRIBUTION (FULL):**

|       | 0°      | 5°      | 15°     | 25°     | 35°     | 45°     | 55°     | 60°     | 65°     | 75°     | 85°     |
|-------|---------|---------|---------|---------|---------|---------|---------|---------|---------|---------|---------|
| 0°    | 8331.6  | 8331.6  | 8331.6  | 8331.6  | 8331.6  | 8331.6  | 8331.6  | 8331.6  | 8331.6  | 8331.6  | 8331.6  |
| 2.5°  | 8214.8  | 8223.7  | 8247.9  | 8283.1  | 8318.4  | 8336.0  | 8380.1  | 8366.9  | 8358.0  | 8340.4  | 8318.4  |
| 5°    | 7851.4  | 7869.0  | 7891.0  | 7959.3  | 8036.4  | 8098.1  | 8197.2  | 8208.2  | 8212.6  | 8221.5  | 8186.2  |
| 7.5°  | 7388.7  | 7393.1  | 7446.0  | 7536.3  | 7637.7  | 7743.4  | 7908.6  | 7954.9  | 7994.6  | 8038.6  | 8010.0  |
| 10°   | 6877.6  | 6888.7  | 6928.3  | 7058.3  | 7232.3  | 7388.7  | 7611.2  | 7688.3  | 7772.1  | 7869.0  | 7829.3  |
| 12.5° | 6459.1  | 6461.3  | 6525.2  | 6664.0  | 6853.4  | 7064.9  | 7342.5  | 7435.0  | 7545.1  | 7697.2  | 7661.9  |
| 15°   | 6126.4  | 6126.4  | 6185.9  | 6304.9  | 6523.0  | 6771.9  | 7102.4  | 7221.3  | 7371.1  | 7576.0  | 7514.3  |
| 17.5° | 5862.1  | 5864.3  | 5901.7  | 6027.3  | 6221.2  | 6496.5  | 6888.7  | 7049.5  | 7214.7  | 7485.7  | 7393.1  |
| 20°   | 5723.3  | 5712.3  | 5718.9  | 5796.0  | 5961.2  | 6227.8  | 6675.0  | 6862.2  | 7084.7  | 7424.0  | 7283.0  |
| 22.5° | 5716.7  | 5696.9  | 5668.2  | 5674.8  | 5771.8  | 5992.1  | 6445.9  | 6672.8  | 6952.6  | 7373.3  | 7170.6  |
| 25°   | 5829.0  | 5807.0  | 5756.3  | 5699.1  | 5690.3  | 5822.4  | 6230.0  | 6487.7  | 6816.0  | 7351.3  | 7062.7  |
| 27.5° | 6018.5  | 6003.1  | 5937.0  | 5851.1  | 5760.7  | 5756.3  | 6067.0  | 6335.7  | 6716.8  | 7373.3  | 6985.6  |
| 30°   | 6269.6  | 6243.2  | 6201.3  | 6091.2  | 5954.6  | 5813.6  | 6003.1  | 6254.2  | 6650.7  | 7443.8  | 6952.6  |
| 32.5° | 6553.8  | 6538.4  | 6498.7  | 6388.6  | 6243.2  | 6018.5  | 6053.7  | 6271.8  | 6650.7  | 7567.2  | 6959.2  |
| 35°   | 6855.6  | 6853.4  | 6853.4  | 6780.7  | 6619.9  | 6340.1  | 6254.2  | 6421.6  | 6752.1  | 7765.4  | 7029.7  |
| 37.5° | 7148.6  | 7146.4  | 7216.9  | 7243.3  | 7060.5  | 6758.7  | 6595.7  | 6721.2  | 6974.6  | 8058.4  | 7203.7  |
| 40°   | 7386.5  | 7395.3  | 7549.6  | 7681.7  | 7580.4  | 7300.6  | 7071.5  | 7135.4  | 7335.9  | 8474.8  | 7507.7  |
| 42.5° | 7626.7  | 7650.9  | 7882.2  | 8115.7  | 8155.4  | 7913.0  | 7681.7  | 7719.2  | 7853.6  | 9025.5  | 7961.5  |
| 45°   | 7888.8  | 7899.8  | 8223.7  | 8549.7  | 8741.4  | 8598.2  | 8408.7  | 8459.4  | 8490.2  | 9706.3  | 8637.8  |
| 47.5° | 8142.2  | 8170.8  | 8589.4  | 9036.6  | 9400.0  | 9386.8  | 9281.1  | 9265.7  | 9272.3  | 10534.6 | 9437.5  |
| 50°   | 8488.0  | 8529.9  | 9021.1  | 9560.9  | 10094.0 | 10338.5 | 10369.3 | 10252.6 | 10204.1 | 11455.4 | 10433.2 |
| 52.5° | 9144.5  | 9144.5  | 9585.1  | 10116.0 | 10832.0 | 11437.8 | 11644.9 | 11453.2 | 11299.0 | 12429.1 | 11490.7 |
| 55°   | 9966.2  | 10001.5 | 10351.7 | 10781.3 | 11688.9 | 12594.3 | 13294.9 | 13083.4 | 12647.2 | 13488.7 | 12598.7 |
| 57.5° | 10331.9 | 10376.0 | 10931.1 | 11598.6 | 12810.2 | 13909.5 | 14881.0 | 14806.1 | 14169.5 | 14590.2 | 13748.7 |
| 60°   | 9671.0  | 9763.5  | 10528.0 | 11647.1 | 13825.8 | 16031.0 | 16716.1 | 16498.0 | 15588.2 | 15746.8 | 14995.6 |
| 62.5° | 8067.2  | 8168.6  | 9016.7  | 10578.6 | 13684.8 | 18324.2 | 19608.6 | 18804.5 | 17359.3 | 17207.3 | 16656.6 |
| 65°   | 4813.5  | 4809.1  | 5829.0  | 7899.8  | 11946.7 | 18960.9 | 24186.3 | 22686.1 | 20095.4 | 19212.0 | 18366.1 |
| 67.5° | 3059.9  | 3053.3  | 3267.0  | 4185.6  | 7950.5  | 17401.2 | 27129.5 | 27519.4 | 23811.8 | 20685.8 | 18507.1 |
| 70°   | 2414.4  | 2412.2  | 2566.5  | 2985.0  | 3932.3  | 12382.9 | 26310.0 | 29008.6 | 26056.6 | 20124.1 | 16295.3 |
| 72.5° | 1760.2  | 1764.6  | 2002.5  | 2500.4  | 3033.5  | 6216.8  | 21304.9 | 24820.8 | 23966.0 | 17764.7 | 13228.8 |
| 75°   | 1264.5  | 1271.1  | 1414.3  | 1914.4  | 2797.8  | 3399.2  | 14167.3 | 18663.5 | 18233.9 | 14240.0 | 9100.4  |
| 77.5° | 804.1   | 812.9   | 938.5   | 1341.6  | 2260.2  | 2744.9  | 8589.4  | 13175.9 | 12131.7 | 8023.2  | 3236.2  |
| 80°   | 491.3   | 519.9   | 625.6   | 1000.1  | 1806.4  | 2059.8  | 4293.6  | 6941.5  | 6075.8  | 2200.8  | 1088.3  |
| 82.5° | 253.3   | 275.4   | 376.7   | 619.0   | 1244.7  | 1808.6  | 2429.9  | 2916.7  | 1881.3  | 920.8   | 579.4   |
| 85°   | 79.3    | 92.5    | 132.2   | 251.1   | 592.6   | 1121.3  | 1608.2  | 1449.5  | 863.6   | 434.0   | 268.8   |
| 87.5° | 19.8    | 19.8    | 22.0    | 22.0    | 24.2    | 50.7    | 310.6   | 328.2   | 229.1   | 136.6   | 110.1   |
| 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: GWS-SA5D-750-U-SL3-W

**CANDELA DISTRIBUTION (continued):**

|       | 90°     | 95°     | 105°   | 115°   | 125°   | 135°   | 145°   | 155°   | 165°   | 175°   | 180°   |
|-------|---------|---------|--------|--------|--------|--------|--------|--------|--------|--------|--------|
| 0°    | 8331.6  | 8331.6  | 8331.6 | 8331.6 | 8331.6 | 8331.6 | 8331.6 | 8331.6 | 8331.6 | 8331.6 | 8331.6 |
| 2.5°  | 8274.3  | 8221.5  | 8199.4 | 8197.2 | 8142.2 | 8062.8 | 8010.0 | 7972.5 | 7950.5 | 7946.1 | 7946.1 |
| 5°    | 8126.7  | 8058.4  | 7968.1 | 7899.8 | 7752.2 | 7602.4 | 7476.9 | 7406.4 | 7324.9 | 7313.8 | 7311.6 |
| 7.5°  | 7930.7  | 7831.5  | 7659.7 | 7468.0 | 7210.3 | 6961.4 | 6749.9 | 6606.7 | 6463.5 | 6437.1 | 6428.2 |
| 10°   | 7719.2  | 7584.8  | 7291.8 | 6954.8 | 6569.2 | 6196.9 | 5873.1 | 5619.8 | 5452.3 | 5333.4 | 5311.3 |
| 12.5° | 7509.9  | 7331.5  | 6901.9 | 6399.6 | 5870.9 | 5362.0 | 4875.2 | 4461.0 | 4161.4 | 3987.4 | 3956.5 |
| 15°   | 7313.8  | 7064.9  | 6476.7 | 5835.6 | 5148.3 | 4452.2 | 3762.7 | 3225.1 | 2804.4 | 2654.6 | 2619.3 |
| 17.5° | 7135.4  | 6824.8  | 6064.8 | 5251.9 | 4394.9 | 3485.1 | 2700.8 | 2222.8 | 1976.1 | 1901.2 | 1883.5 |
| 20°   | 6957.0  | 6578.0  | 5646.2 | 4637.2 | 3595.2 | 2575.3 | 1973.9 | 1749.2 | 1656.6 | 1628.0 | 1619.2 |
| 22.5° | 6765.3  | 6307.1  | 5190.2 | 4031.4 | 2786.7 | 1927.6 | 1614.8 | 1515.6 | 1487.0 | 1489.2 | 1487.0 |
| 25°   | 6573.6  | 6031.7  | 4712.1 | 3372.7 | 2075.2 | 1564.1 | 1409.9 | 1372.4 | 1379.1 | 1398.9 | 1403.3 |
| 27.5° | 6415.0  | 5787.2  | 4242.9 | 2650.2 | 1621.4 | 1346.0 | 1273.3 | 1271.1 | 1295.3 | 1321.8 | 1326.2 |
| 30°   | 6300.5  | 5569.1  | 3780.3 | 2037.7 | 1335.0 | 1196.2 | 1167.6 | 1180.8 | 1209.4 | 1229.3 | 1235.9 |
| 32.5° | 6219.0  | 5381.8  | 3286.8 | 1601.6 | 1169.8 | 1090.5 | 1077.2 | 1090.5 | 1108.1 | 1127.9 | 1132.3 |
| 35°   | 6190.3  | 5245.3  | 2802.2 | 1306.4 | 1057.4 | 1013.4 | 1004.6 | 1011.2 | 1020.0 | 1031.0 | 1035.4 |
| 37.5° | 6254.2  | 5177.0  | 2295.5 | 1136.7 | 989.1  | 962.7  | 949.5  | 945.1  | 947.3  | 951.7  | 953.9  |
| 40°   | 6443.7  | 5207.8  | 1881.3 | 1037.6 | 945.1  | 920.8  | 898.8  | 890.0  | 887.8  | 892.2  | 890.0  |
| 42.5° | 6769.7  | 5337.8  | 1581.7 | 980.3  | 909.8  | 874.6  | 850.3  | 841.5  | 841.5  | 852.5  | 852.5  |
| 45°   | 7247.7  | 5593.3  | 1365.8 | 938.5  | 879.0  | 834.9  | 808.5  | 804.1  | 812.9  | 830.5  | 832.7  |
| 47.5° | 7948.3  | 5967.8  | 1235.9 | 907.6  | 850.3  | 799.7  | 773.2  | 771.0  | 788.7  | 817.3  | 819.5  |
| 50°   | 8778.8  | 6507.6  | 1165.4 | 885.6  | 830.5  | 771.0  | 744.6  | 746.8  | 766.6  | 797.5  | 804.1  |
| 52.5° | 9779.0  | 7243.3  | 1169.8 | 876.8  | 819.5  | 753.4  | 727.0  | 722.6  | 742.4  | 773.2  | 779.8  |
| 55°   | 10812.1 | 8137.7  | 1255.7 | 879.0  | 804.1  | 744.6  | 709.4  | 693.9  | 711.6  | 733.6  | 735.8  |
| 57.5° | 11948.9 | 9146.7  | 1469.4 | 874.6  | 784.3  | 735.8  | 693.9  | 658.7  | 669.7  | 682.9  | 689.5  |
| 60°   | 13231.0 | 10334.1 | 1929.8 | 883.4  | 775.4  | 716.0  | 663.1  | 616.8  | 614.6  | 623.4  | 625.6  |
| 62.5° | 14944.9 | 11948.9 | 2447.5 | 898.8  | 795.3  | 691.7  | 616.8  | 568.4  | 559.6  | 564.0  | 566.2  |
| 65°   | 16255.7 | 12719.9 | 2284.5 | 885.6  | 837.1  | 674.1  | 572.8  | 522.1  | 504.5  | 500.1  | 500.1  |
| 67.5° | 15722.5 | 11699.9 | 1590.5 | 850.3  | 857.0  | 676.3  | 537.5  | 473.6  | 451.6  | 440.6  | 438.4  |
| 70°   | 13378.6 | 9503.6  | 1105.9 | 815.1  | 834.9  | 671.9  | 500.1  | 434.0  | 405.3  | 389.9  | 387.7  |
| 72.5° | 10569.8 | 7256.6  | 894.4  | 744.6  | 757.8  | 605.8  | 445.0  | 389.9  | 365.7  | 345.9  | 345.9  |
| 75°   | 6802.7  | 4428.0  | 746.8  | 663.1  | 619.0  | 471.4  | 385.5  | 348.1  | 323.8  | 304.0  | 304.0  |
| 77.5° | 2288.9  | 1643.4  | 579.4  | 561.8  | 462.6  | 354.7  | 323.8  | 299.6  | 279.8  | 262.2  | 259.9  |
| 80°   | 929.7   | 779.8   | 425.2  | 425.2  | 323.8  | 271.0  | 253.3  | 242.3  | 229.1  | 207.1  | 207.1  |
| 82.5° | 539.7   | 473.6   | 297.4  | 257.7  | 215.9  | 187.3  | 176.2  | 165.2  | 165.2  | 149.8  | 149.8  |
| 85°   | 259.9   | 262.2   | 178.4  | 158.6  | 123.4  | 107.9  | 103.5  | 96.9   | 94.7   | 85.9   | 83.7   |
| 87.5° | 141.0   | 143.2   | 90.3   | 70.5   | 48.5   | 41.9   | 35.2   | 33.0   | 30.8   | 28.6   | 28.6   |
| 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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1121 Highway 74 South  
Peachtree City, GA 30269



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**



#####

| 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)