

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: P639180

Luminaire Tested: GWS-SA5B-735-U-AFL-W

Issue Date: 1/10/2023

**Test Information**

Test Method: LM-79-2019  
Report Number: P639180  
TEST IS SCALED FROM IESNA LM-79-08 TEST DATA (G2-2209-782-45)  
Test Lab: COOPER LIGHTING SOLUTIONS  
Issue Date: 1/10/2023  
Manufacturer: COOPER LIGHTING SOLUTIONS  
Product Line: McGRAW-EDISON  
Catalog Number: GWS-SA5B-735-U-AFL-W  
Description: GALLEON WALL SLIM LUMINAIRE. (5) LIGHTSQUARES WITH 16 LEDS EACH AND  
AUTOMOTIVE FRONTLINE OPTICS  
Light Source: (80) 3500K CCT, 70 CRI LEDS  
Ballast/Driver: -

**Summary**

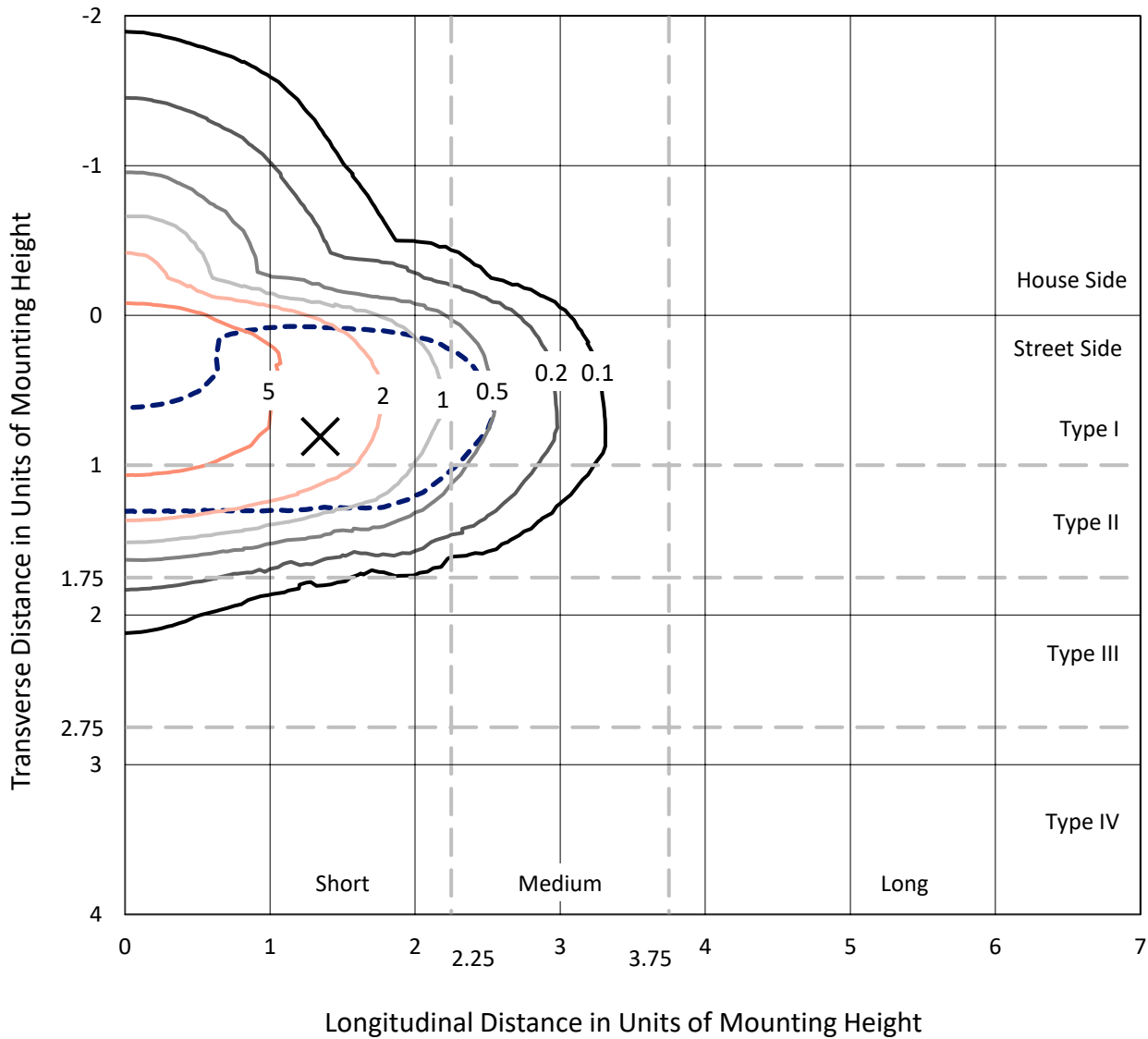
Lumens per Lamp: N/A  
Luminaire Lumens: 17833.2 lumens  
Efficiency: N/A  
Efficacy: 154.1 lumens/watt  
Luminous Opening: Rectangular (W 1.5' x L: 1' x H: 0')  
IES Classification: Type II - Short  
BUG Rating: B2 - U0 - G2  
  
Input Watts (W): 115.7  
Input Voltage (V): 120  
Input Current (Ain): 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

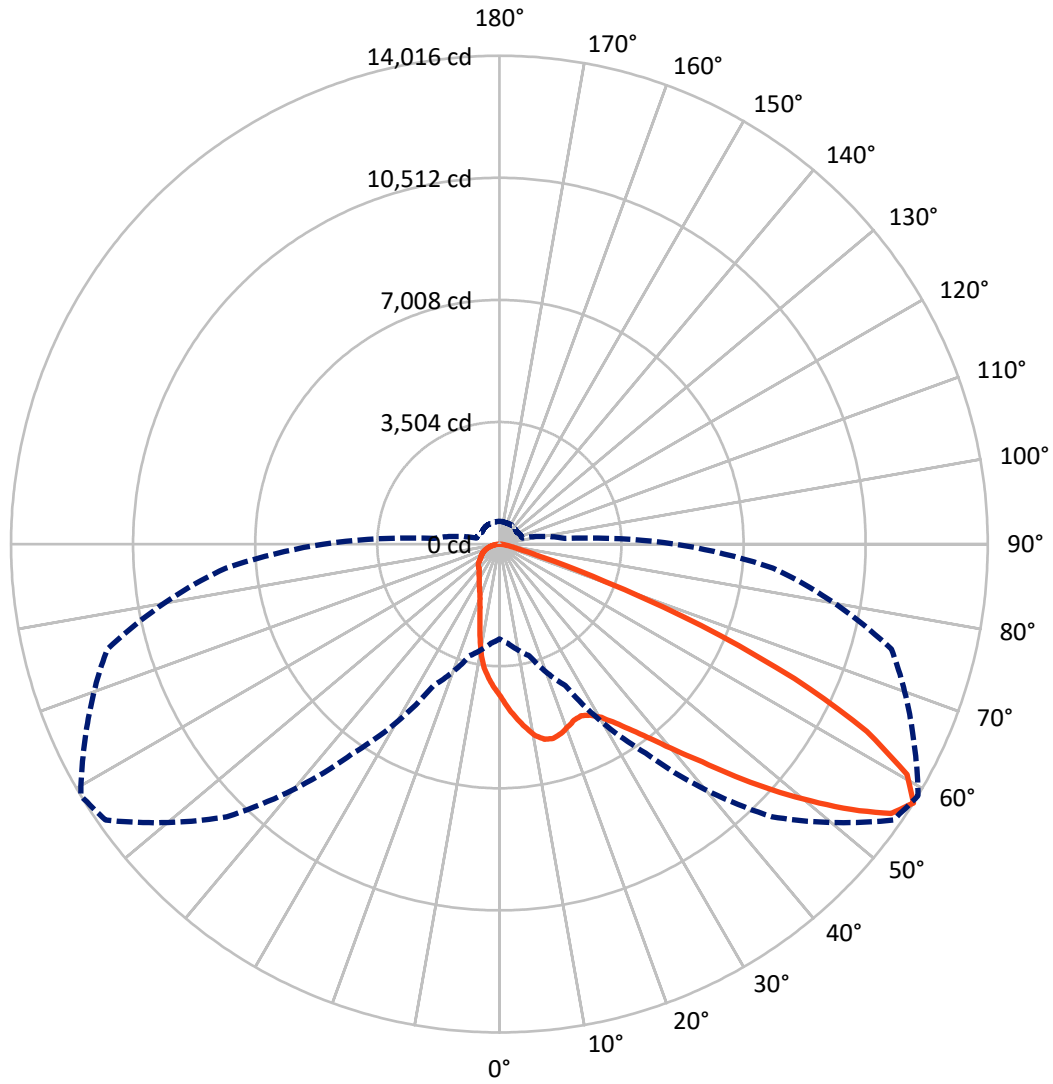
✕ Max cd  
 - - - 1/2 Max cd



Based on 25 foot mounting height. Maximum calculated value = 8.6 fc  
 Type II - Short - N/A

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### Luminous Intensity Polar Plot



— Vertical Plane Through 59-Deg Lateral    - - - Horizontal Cone Through 57.5-Deg Vertical

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**FLUX DISTRIBUTION:**

|                    |           | Downward | Upward | Total   |
|--------------------|-----------|----------|--------|---------|
| <b>House Side</b>  | Lumens    | 2767.6   | 0.0    | 2767.6  |
|                    | % Fixture | 15.5     | 0.0    | 15.5    |
| <b>Street Side</b> | Lumens    | 15065.6  | 0.0    | 15065.6 |
|                    | % Fixture | 84.5     | 0.0    | 84.5    |
| <b>Total</b>       | Lumens    | 17833.2  | 0.0    | 17833.2 |
|                    | % Fixture | 100.0    | 0.0    | 100.0   |

**ZONAL LUMENS:**

| Zone      | Lumens  | % Fixture |
|-----------|---------|-----------|
| 0°-10°    | 406.5   | 2.3       |
| 10°-20°   | 1030.0  | 5.8       |
| 20°-30°   | 1669.7  | 9.4       |
| 30°-40°   | 2685.9  | 15.1      |
| 40°-50°   | 4170.9  | 23.4      |
| 50°-60°   | 4492.6  | 25.2      |
| 60°-70°   | 2607.3  | 14.6      |
| 70°-80°   | 680.7   | 3.8       |
| 80°-90°   | 89.7    | 0.5       |
| 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°    | 17833.2 | 100.0     |
| 0°-180°   | 17833.2 | 100.0     |

**Coefficient of Utilization**



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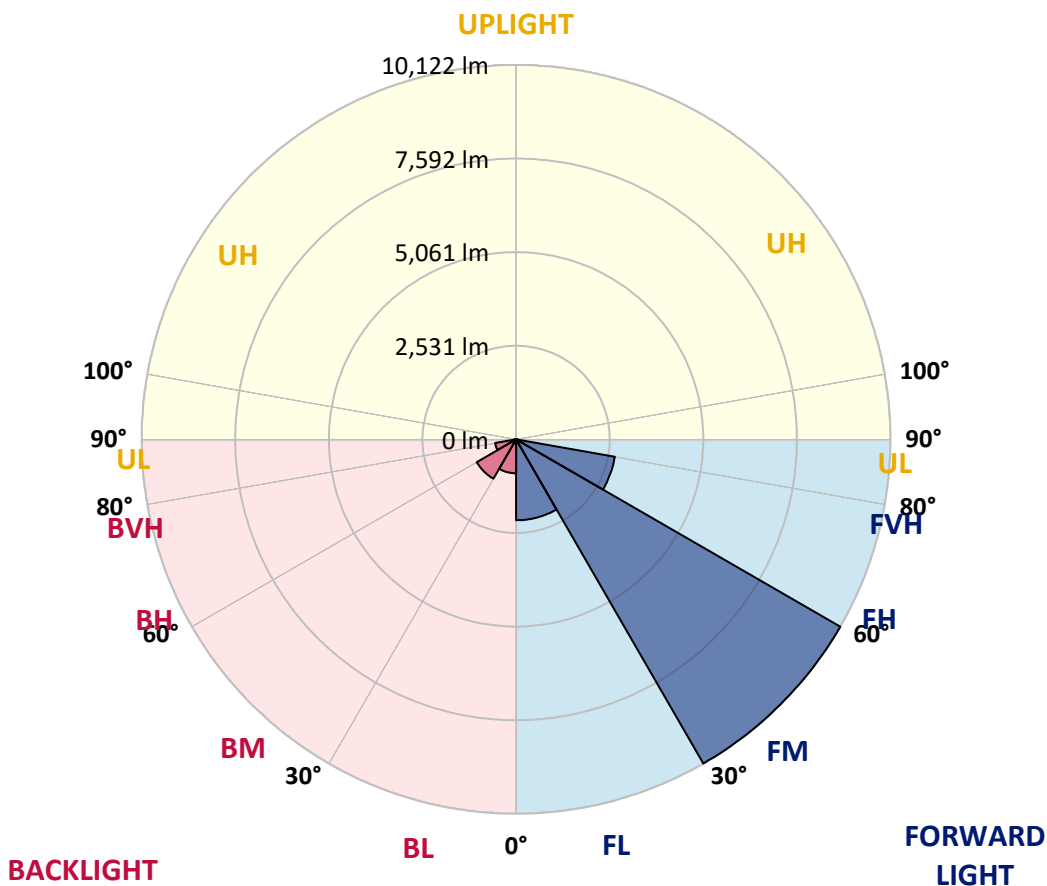
CATALOG NUMBER: GWS-SA5B-735-U-AFL-W

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

| Zone           | Lumens  | % Fixture | Zone Rating/Lumen Limit |      |         |
|----------------|---------|-----------|-------------------------|------|---------|
|                |         |           | B                       | U    | G       |
| FL (0°-30°)    | 2188.0  | 12.3      |                         |      |         |
| FM (30°-60°)   | 10122.3 | 56.8      |                         |      |         |
| FH (60°-80°)   | 2712.4  | 15.2      |                         |      | G2/5000 |
| FVH (80°-90°)  | 42.9    | 0.2       |                         |      | G1/100  |
| BL (0°-30°)    | 918.2   | 5.1       | B2/1000                 |      |         |
| BM (30°-60°)   | 1227.1  | 6.9       | B2/2500                 |      |         |
| BH (60°-80°)   | 575.7   | 3.2       | B2/1000                 |      | G2/1000 |
| BVH (80°-90°)  | 46.7    | 0.3       |                         |      | 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 II Short





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**CANDELA DISTRIBUTION (FULL):**

|       | 0°      | 5°      | 15°     | 25°     | 35°     | 45°     | 55°     | 59°     | 65°     | 75°     | 85°    |
|-------|---------|---------|---------|---------|---------|---------|---------|---------|---------|---------|--------|
| 0°    | 4377.7  | 4377.7  | 4377.7  | 4377.7  | 4377.7  | 4377.7  | 4377.7  | 4377.7  | 4377.7  | 4377.7  | 4377.7 |
| 2.5°  | 4965.2  | 4923.8  | 4952.7  | 4901.2  | 4879.9  | 4823.4  | 4750.6  | 4701.6  | 4626.3  | 4528.3  | 4443.0 |
| 5°    | 5458.6  | 5429.7  | 5436.0  | 5380.8  | 5331.8  | 5237.7  | 5088.3  | 5005.4  | 4877.4  | 4680.3  | 4497.0 |
| 7.5°  | 5443.6  | 5477.5  | 5496.3  | 5544.0  | 5557.8  | 5549.0  | 5414.7  | 5299.2  | 5158.6  | 4862.3  | 4586.1 |
| 10°   | 4879.9  | 4943.9  | 5001.6  | 5164.9  | 5363.2  | 5614.3  | 5645.7  | 5576.6  | 5434.8  | 5094.5  | 4692.8 |
| 12.5° | 4266.0  | 4314.9  | 4366.4  | 4562.2  | 4866.1  | 5368.2  | 5708.5  | 5751.1  | 5694.6  | 5324.3  | 4813.3 |
| 15°   | 3964.7  | 3987.3  | 4036.2  | 4165.5  | 4407.8  | 4965.2  | 5599.2  | 5786.3  | 5888.0  | 5567.8  | 4948.9 |
| 17.5° | 3952.1  | 3962.1  | 3986.0  | 4055.0  | 4223.3  | 4653.9  | 5402.1  | 5716.0  | 6039.9  | 5825.2  | 5107.1 |
| 20°   | 4212.0  | 4185.6  | 4170.5  | 4169.3  | 4252.2  | 4549.7  | 5211.3  | 5603.0  | 6111.4  | 6088.8  | 5276.6 |
| 22.5° | 4572.3  | 4581.1  | 4548.4  | 4468.1  | 4458.0  | 4623.8  | 5115.9  | 5488.8  | 6132.8  | 6322.4  | 5433.5 |
| 25°   | 5083.2  | 5127.2  | 5030.5  | 4877.4  | 4802.0  | 4838.4  | 5174.9  | 5453.6  | 6130.3  | 6517.0  | 5531.4 |
| 27.5° | 5679.6  | 5713.5  | 5615.6  | 5414.7  | 5259.0  | 5171.1  | 5350.7  | 5557.8  | 6151.6  | 6685.2  | 5590.4 |
| 30°   | 6358.8  | 6370.1  | 6235.7  | 6024.8  | 5797.6  | 5609.3  | 5643.2  | 5772.5  | 6260.8  | 6906.1  | 5659.5 |
| 32.5° | 7188.6  | 7236.3  | 7032.9  | 6699.0  | 6381.4  | 6140.3  | 6036.1  | 6119.0  | 6496.9  | 7167.3  | 5766.2 |
| 35°   | 8241.9  | 8258.2  | 7999.6  | 7521.3  | 7071.9  | 6737.9  | 6519.5  | 6563.4  | 6855.9  | 7532.6  | 5926.9 |
| 37.5° | 9235.0  | 9251.3  | 8976.3  | 8531.9  | 7889.1  | 7432.2  | 7115.8  | 7095.7  | 7315.4  | 8048.6  | 6189.3 |
| 40°   | 9865.2  | 9911.6  | 9788.6  | 9509.9  | 8896.0  | 8279.6  | 7850.2  | 7781.2  | 7918.0  | 8680.1  | 6554.6 |
| 42.5° | 10204.2 | 10224.2 | 10221.7 | 10258.1 | 9892.8  | 9280.2  | 8678.8  | 8540.7  | 8632.4  | 9361.8  | 6923.7 |
| 45°   | 10206.7 | 10256.9 | 10391.2 | 10741.5 | 10757.8 | 10376.2 | 9725.8  | 9509.9  | 9425.8  | 10048.5 | 7309.1 |
| 47.5° | 9749.7  | 9803.7  | 10172.8 | 10862.0 | 11370.5 | 11457.1 | 10980.0 | 10546.9 | 10192.9 | 10639.8 | 7625.5 |
| 50°   | 8366.2  | 8501.8  | 9204.8  | 10423.9 | 11491.0 | 12323.3 | 12176.4 | 11588.9 | 10874.6 | 11096.8 | 7823.9 |
| 52.5° | 7164.8  | 7159.7  | 7592.9  | 9186.0  | 10987.5 | 12705.0 | 13334.0 | 12661.0 | 11548.7 | 11386.8 | 7874.1 |
| 55°   | 5246.5  | 5275.3  | 5718.5  | 7025.4  | 9644.2  | 12335.9 | 13970.5 | 13647.8 | 12322.1 | 11541.2 | 7854.0 |
| 57.5° | 2720.5  | 2863.6  | 3318.1  | 4483.2  | 7328.0  | 11065.4 | 13801.0 | 14015.7 | 13108.0 | 11650.4 | 7880.4 |
| 60°   | 1374.7  | 1347.1  | 1510.3  | 2140.5  | 4245.9  | 8642.4  | 12756.5 | 13440.7 | 13249.8 | 11735.8 | 7896.7 |
| 62.5° | 917.7   | 910.2   | 865.0   | 991.8   | 1735.0  | 5118.4  | 10874.6 | 11833.7 | 12264.3 | 11534.9 | 7688.3 |
| 65°   | 794.7   | 779.6   | 696.8   | 691.7   | 842.4   | 2122.9  | 7970.7  | 9302.8  | 10136.4 | 10642.3 | 7189.9 |
| 67.5° | 715.6   | 693.0   | 608.9   | 567.5   | 605.1   | 932.8   | 4491.9  | 6239.5  | 7484.9  | 9000.2  | 6097.6 |
| 70°   | 639.0   | 627.7   | 543.6   | 483.3   | 479.6   | 568.7   | 1654.7  | 3220.2  | 4579.8  | 6140.3  | 4458.0 |
| 72.5° | 572.5   | 552.4   | 480.8   | 423.1   | 394.2   | 403.0   | 718.1   | 1240.4  | 2370.3  | 3830.3  | 2666.5 |
| 75°   | 495.9   | 480.8   | 418.1   | 360.3   | 325.2   | 295.0   | 438.1   | 573.7   | 1080.9  | 1820.4  | 1259.2 |
| 77.5° | 382.9   | 372.9   | 330.2   | 286.2   | 266.2   | 219.7   | 266.2   | 361.6   | 499.7   | 767.1   | 655.3  |
| 80°   | 222.2   | 228.5   | 246.1   | 223.5   | 195.8   | 156.9   | 173.2   | 208.4   | 300.0   | 415.5   | 371.6  |
| 82.5° | 111.7   | 119.3   | 159.4   | 129.3   | 116.8   | 91.6    | 102.9   | 123.0   | 156.9   | 229.7   | 145.6  |
| 85°   | 8.8     | 8.8     | 28.9    | 32.6    | 40.2    | 32.6    | 41.4    | 50.2    | 71.6    | 91.6    | 49.0   |
| 87.5° | 0.0     | 0.0     | 0.0     | 0.0     | 0.0     | 0.0     | 3.8     | 6.3     | 11.3    | 21.3    | 13.8   |
| 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: P639180  
 CATALOG NUMBER: GWS-SA5B-735-U-AFL-W

**CANDELA DISTRIBUTION (continued):**

|       | 90°    | 95°    | 105°   | 115°   | 125°   | 135°   | 145°   | 155°   | 165°   | 175°   | 180°   |
|-------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|
| 0°    | 4377.7 | 4377.7 | 4377.7 | 4377.7 | 4377.7 | 4377.7 | 4377.7 | 4377.7 | 4377.7 | 4377.7 | 4377.7 |
| 2.5°  | 4385.2 | 4321.2 | 4244.6 | 4181.8 | 4085.2 | 4033.7 | 3968.4 | 3888.1 | 3855.4 | 3840.4 | 3831.6 |
| 5°    | 4394.0 | 4281.0 | 4117.8 | 3967.2 | 3800.2 | 3668.4 | 3521.5 | 3368.3 | 3280.4 | 3259.1 | 3244.0 |
| 7.5°  | 4426.7 | 4268.5 | 4008.6 | 3760.0 | 3449.9 | 3162.4 | 2882.5 | 2605.0 | 2463.2 | 2409.2 | 2404.2 |
| 10°   | 4471.9 | 4263.4 | 3898.1 | 3485.1 | 2961.6 | 2507.1 | 2179.4 | 1962.2 | 1870.6 | 1840.5 | 1830.4 |
| 12.5° | 4528.3 | 4259.7 | 3752.5 | 3103.4 | 2397.9 | 1968.5 | 1781.5 | 1746.3 | 1758.9 | 1756.4 | 1756.4 |
| 15°   | 4599.9 | 4264.7 | 3576.7 | 2671.6 | 1939.6 | 1708.6 | 1712.4 | 1753.8 | 1792.8 | 1799.0 | 1799.0 |
| 17.5° | 4677.7 | 4259.7 | 3321.9 | 2238.4 | 1664.7 | 1647.1 | 1704.9 | 1762.6 | 1797.8 | 1802.8 | 1802.8 |
| 20°   | 4761.9 | 4235.8 | 3000.5 | 1830.4 | 1544.2 | 1608.2 | 1671.0 | 1716.2 | 1737.5 | 1742.5 | 1742.5 |
| 22.5° | 4812.1 | 4168.0 | 2651.5 | 1549.2 | 1467.6 | 1546.7 | 1588.1 | 1634.6 | 1637.1 | 1596.9 | 1595.7 |
| 25°   | 4804.5 | 4041.2 | 2253.5 | 1368.4 | 1386.0 | 1455.0 | 1507.8 | 1475.1 | 1435.0 | 1412.4 | 1408.6 |
| 27.5° | 4756.8 | 3850.4 | 1848.0 | 1231.6 | 1289.3 | 1367.2 | 1350.8 | 1323.2 | 1313.2 | 1288.1 | 1285.6 |
| 30°   | 4696.6 | 3615.6 | 1483.9 | 1124.9 | 1188.9 | 1260.5 | 1235.3 | 1232.8 | 1222.8 | 1195.2 | 1195.2 |
| 32.5° | 4638.8 | 3373.3 | 1209.0 | 1045.8 | 1124.9 | 1129.9 | 1165.0 | 1167.6 | 1162.5 | 1114.8 | 1109.8 |
| 35°   | 4622.5 | 3131.0 | 1023.2 | 983.0  | 1062.1 | 1059.6 | 1109.8 | 1108.5 | 1021.9 | 955.4  | 954.1  |
| 37.5° | 4671.5 | 2885.0 | 912.7  | 931.5  | 975.5  | 1008.1 | 1048.3 | 975.5  | 946.6  | 906.4  | 903.9  |
| 40°   | 4775.7 | 2657.8 | 856.2  | 901.4  | 920.2  | 967.9  | 905.2  | 910.2  | 902.7  | 872.5  | 868.8  |
| 42.5° | 4913.8 | 2464.4 | 824.8  | 891.4  | 888.8  | 901.4  | 832.4  | 852.4  | 863.7  | 841.1  | 837.4  |
| 45°   | 5046.8 | 2296.2 | 808.5  | 853.7  | 866.2  | 793.4  | 779.6  | 798.5  | 816.0  | 807.2  | 803.5  |
| 47.5° | 5144.8 | 2150.6 | 799.7  | 802.2  | 837.4  | 757.0  | 734.4  | 743.2  | 764.6  | 768.3  | 767.1  |
| 50°   | 5174.9 | 2026.3 | 789.7  | 759.5  | 752.0  | 720.6  | 703.0  | 700.5  | 725.6  | 743.2  | 745.7  |
| 52.5° | 5117.1 | 1915.8 | 763.3  | 721.9  | 685.5  | 690.5  | 684.2  | 671.7  | 696.8  | 720.6  | 723.1  |
| 55°   | 5031.8 | 1853.0 | 721.9  | 685.5  | 642.8  | 662.9  | 665.4  | 654.1  | 670.4  | 686.7  | 686.7  |
| 57.5° | 5038.1 | 1889.4 | 681.7  | 651.6  | 605.1  | 631.5  | 645.3  | 640.3  | 640.3  | 652.8  | 654.1  |
| 60°   | 5079.5 | 1942.2 | 655.3  | 608.9  | 567.5  | 595.1  | 626.5  | 621.4  | 610.1  | 626.5  | 626.5  |
| 62.5° | 4960.2 | 1871.9 | 637.8  | 567.5  | 527.3  | 559.9  | 597.6  | 595.1  | 582.5  | 608.9  | 611.4  |
| 65°   | 4608.7 | 1683.5 | 617.7  | 516.0  | 487.1  | 524.8  | 557.4  | 566.2  | 554.9  | 590.1  | 596.3  |
| 67.5° | 3863.0 | 1416.1 | 578.8  | 467.0  | 446.9  | 482.1  | 513.5  | 526.0  | 517.2  | 558.7  | 563.7  |
| 70°   | 2880.0 | 1146.2 | 517.2  | 413.0  | 398.0  | 429.4  | 458.2  | 463.3  | 464.5  | 513.5  | 518.5  |
| 72.5° | 1836.7 | 891.4  | 435.6  | 352.8  | 341.5  | 365.3  | 386.7  | 406.8  | 415.5  | 462.0  | 460.7  |
| 75°   | 1024.4 | 662.9  | 350.3  | 298.8  | 278.7  | 297.5  | 322.6  | 346.5  | 371.6  | 439.4  | 446.9  |
| 77.5° | 590.1  | 465.8  | 277.5  | 239.8  | 215.9  | 236.0  | 257.4  | 291.3  | 366.6  | 425.6  | 418.1  |
| 80°   | 332.7  | 302.6  | 209.7  | 175.8  | 160.7  | 175.8  | 192.1  | 256.1  | 288.7  | 313.9  | 317.6  |
| 82.5° | 155.7  | 169.5  | 143.1  | 108.0  | 108.0  | 118.0  | 133.1  | 198.4  | 218.4  | 178.3  | 155.7  |
| 85°   | 56.5   | 76.6   | 70.3   | 55.2   | 49.0   | 47.7   | 82.9   | 113.0  | 70.3   | 62.8   | 54.0   |
| 87.5° | 15.1   | 21.3   | 20.1   | 13.8   | 7.5    | 6.3    | 0.0    | 0.0    | 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-79-08: Approved Method: Electrical and Photometric Measurements of Solid-  
State Lighting Products

Report Prepared for

Cooper Lighting Solutions

All Brands

Data applicable to all product families using SA light engines

Report Number: SP1-2101-121-7

Luminaire Tested: IFLD-S-SA2A-735-U-T2

Test Date: 03/04/2021

**Test Information**

Test Method: LM-79-08  
 Report Number: SP1-2101-121-7  
 Test Lab: COOPER LIGHTING SOLUTIONS  
 Photometer: SP1  
 Measurement Geometry: 4π  
 Issue Date: 03/04/2021  
 Manufacturer: COOPER LIGHTING SOLUTIONS (FORMERLY EATON)  
 Product Line: STREETWORKS  
 Catalog Number: **IFLD-S-SA2A-735-U-T2**  
 Description: STREETWORKS INF FLOOD

PROGRAMMED @ 615mA.

**Spectral Parameters**

|                           |        |           |      |      |       |
|---------------------------|--------|-----------|------|------|-------|
| CCT (K):                  | 3388   | CRI (Ra): | 73.1 | R9:  | -34.6 |
| CIE u':                   | 0.2371 | R1:       | 68.9 | R10: | 57.8  |
| CIE v':                   | 0.5177 | R2:       | 81.1 | R11: | 68.6  |
| Duv:                      | 0.0032 | R3:       | 93.1 | R12: | 53.9  |
| CIE x:                    | 0.4153 | R4:       | 71.6 | R13: | 70.9  |
| CIE y:                    | 0.4030 | R5:       | 69.4 | R14: | 96.2  |
| CIE z:                    | 0.1817 | R6:       | 75.0 |      |       |
| Peak Wavelength (nm):     | 590    | R7:       | 79.5 |      |       |
| Dominant Wavelength (nm): | 580    | R8:       | 46.4 |      |       |
| Purity:                   | 45.7   |           |      |      |       |
| Rf:                       | 76.9   |           |      |      |       |
| Rg:                       | 94.4   |           |      |      |       |



**Test Conditions**

Stabilization Time: 81M  
 Operation Time: 12H  
 Room Temperature (°C) / RH%: 25.0/30%  
 Sphere Temperature (°C): 24.1

REPORT NUMBER: SP1-2101-121-7

| Measurement and Test Equipment |                       |                  |                      |
|--------------------------------|-----------------------|------------------|----------------------|
| Instrument                     | Identification Number | Calibration Date | Calibration Due Date |
| Photometer                     | IN0058                | 1/31/2021        | 7/31/2021            |
| Power Meter                    | IN0071                | 12/1/2020        | 12/1/2021            |
| AC Power Source                | IN0063                | 12/1/2020        | 12/1/2021            |
| DC Power Source                | IN0208                | 12/1/2020        | 12/1/2021            |
| Sphere Thermometer             | IN0085                | 12/1/2020        | 12/1/2021            |
| Room Thermometer               | IN0046                | 12/1/2020        | 12/1/2021            |

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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 3500K 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    | 2672          | 0.0           | 490    | 34553         | 4.9           | 620    | 136720        | 35.6          | 750    | 5870          | 0.0           | 880    | 4216          | 0.0           |
| 365    | 2252          | 0.0           | 495    | 44336         | 8.0           | 625    | 126308        | 27.9          | 755    | 5421          | 0.0           | 885    | 4132          | 0.0           |
| 370    | 2217          | 0.0           | 500    | 54643         | 12.1          | 630    | 114625        | 20.7          | 760    | 5097          | 0.0           | 890    | 3992          | 0.0           |
| 375    | 2697          | 0.0           | 505    | 64676         | 18.1          | 635    | 103216        | 15.5          | 765    | 4626          | 0.0           | 895    | 3214          | 0.0           |
| 380    | 3039          | 0.0           | 510    | 73825         | 25.4          | 640    | 92605         | 11.1          | 770    | 3782          | 0.0           | 900    | 2580          | 0.0           |
| 385    | 2655          | 0.0           | 515    | 81872         | 33.9          | 645    | 83234         | 8.0           | 775    | 3506          | 0.0           | 905    | 1776          | 0.0           |
| 390    | 2357          | 0.0           | 520    | 88574         | 43.0          | 650    | 73263         | 5.4           | 780    | 3507          | 0.0           | 910    | 3995          | 0.0           |
| 395    | 2186          | 0.0           | 525    | 93289         | 50.1          | 655    | 64627         | 3.7           | 785    | 3267          | 0.0           | 915    | 4288          | 0.0           |
| 400    | 2015          | 0.0           | 530    | 98393         | 57.9          | 660    | 56614         | 2.4           | 790    | 2849          | 0.0           | 920    | 2446          | 0.0           |
| 405    | 2234          | 0.0           | 535    | 103269        | 64.0          | 665    | 49537         | 1.6           | 795    | 3037          | 0.0           | 925    | 3009          | 0.0           |
| 410    | 3412          | 0.0           | 540    | 107316        | 69.9          | 670    | 42866         | 0.9           | 800    | 2716          | 0.0           | 930    | 3026          | 0.0           |
| 415    | 6135          | 0.0           | 545    | 113101        | 75.3          | 675    | 36708         | 0.6           | 805    | 2648          | 0.0           | 935    | 4734          | 0.0           |
| 420    | 12146         | 0.0           | 550    | 120690        | 82.0          | 680    | 31814         | 0.4           | 810    | 3187          | 0.0           | 940    | 3719          | 0.0           |
| 425    | 23983         | 0.1           | 555    | 128583        | 87.8          | 685    | 27485         | 0.2           | 815    | 2931          | 0.0           | 945    | 1480          | 0.0           |
| 430    | 42142         | 0.3           | 560    | 137796        | 93.6          | 690    | 23698         | 0.1           | 820    | 2717          | 0.0           | 950    | 3450          | 0.0           |
| 435    | 68228         | 0.8           | 565    | 146577        | 97.5          | 695    | 20309         | 0.1           | 825    | 2236          | 0.0           | 955    | 5051          | 0.0           |
| 440    | 99323         | 1.6           | 570    | 154581        | 100.5         | 700    | 17890         | 0.1           | 830    | 2628          | 0.0           | 960    | 3176          | 0.0           |
| 445    | 115584        | 2.4           | 575    | 162633        | 101.2         | 705    | 15500         | 0.0           | 835    | 3140          | 0.0           | 965    | 5178          | 0.0           |
| 450    | 94997         | 2.5           | 580    | 168101        | 99.9          | 710    | 13699         | 0.0           | 840    | 3675          | 0.0           | 970    | 6385          | 0.0           |
| 455    | 61433         | 2.1           | 585    | 173145        | 96.2          | 715    | 12398         | 0.0           | 845    | 3283          | 0.0           | 975    | 3810          | 0.0           |
| 460    | 43373         | 1.8           | 590    | 174675        | 90.3          | 720    | 11147         | 0.0           | 850    | 3055          | 0.0           | 980    | 4322          | 0.0           |
| 465    | 32472         | 1.7           | 595    | 173724        | 82.3          | 725    | 9761          | 0.0           | 855    | 2932          | 0.0           | 985    | 4200          | 0.0           |
| 470    | 24257         | 1.5           | 600    | 171241        | 73.8          | 730    | 8651          | 0.0           | 860    | 3382          | 0.0           | 990    | 4661          | 0.0           |
| 475    | 21690         | 1.7           | 605    | 165134        | 64.0          | 735    | 7730          | 0.0           | 865    | 2605          | 0.0           | 995    | 6746          | 0.0           |
| 480    | 23173         | 2.2           | 610    | 156652        | 53.8          | 740    | 6847          | 0.0           | 870    | 3325          | 0.0           | 1000   | 4150          | 0.0           |
| 485    | 27564         | 3.3           | 615    | 147879        | 44.6          | 745    | 6124          | 0.0           | 875    | 3325          | 0.0           |        |               |               |

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**Scotopic Flux vs. Wavelength**



**Scotopic Lumens: 12126**

**S/P: 1.36**

| 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    | 2672          | 0.0           | 490    | 34553         | 53.2          | 620    | 136720        | 1.7           | 750    | 5870          | 0.0           | 880    | 4216          | 0.0           |
| 365    | 2252          | 0.0           | 495    | 44336         | 71.7          | 625    | 126308        | 1.1           | 755    | 5421          | 0.0           | 885    | 4132          | 0.0           |
| 370    | 2217          | 0.0           | 500    | 54643         | 91.4          | 630    | 114625        | 0.6           | 760    | 5097          | 0.0           | 890    | 3992          | 0.0           |
| 375    | 2697          | 0.0           | 505    | 64676         | 110.0         | 635    | 103216        | 0.4           | 765    | 4626          | 0.0           | 895    | 3214          | 0.0           |
| 380    | 3039          | 0.0           | 510    | 73825         | 125.1         | 640    | 92605         | 0.2           | 770    | 3782          | 0.0           | 900    | 2580          | 0.0           |
| 385    | 2655          | 0.0           | 515    | 81872         | 135.7         | 645    | 83234         | 0.1           | 775    | 3506          | 0.0           | 905    | 1776          | 0.0           |
| 390    | 2357          | 0.0           | 520    | 88574         | 140.8         | 650    | 73263         | 0.1           | 780    | 3507          | 0.0           | 910    | 3995          | 0.0           |
| 395    | 2186          | 0.0           | 525    | 93289         | 139.6         | 655    | 64627         | 0.1           | 785    | 3267          | 0.0           | 915    | 4288          | 0.0           |
| 400    | 2015          | 0.0           | 530    | 98393         | 135.7         | 660    | 56614         | 0.0           | 790    | 2849          | 0.0           | 920    | 2446          | 0.0           |
| 405    | 2234          | 0.1           | 535    | 103269        | 128.7         | 665    | 49537         | 0.0           | 795    | 3037          | 0.0           | 925    | 3009          | 0.0           |
| 410    | 3412          | 0.2           | 540    | 107316        | 118.6         | 670    | 42866         | 0.0           | 800    | 2716          | 0.0           | 930    | 3026          | 0.0           |
| 415    | 6135          | 0.6           | 545    | 113101        | 108.4         | 675    | 36708         | 0.0           | 805    | 2648          | 0.0           | 935    | 4734          | 0.0           |
| 420    | 12146         | 2.0           | 550    | 120690        | 98.7          | 680    | 31814         | 0.0           | 810    | 3187          | 0.0           | 940    | 3719          | 0.0           |
| 425    | 23983         | 5.9           | 555    | 128583        | 87.9          | 685    | 27485         | 0.0           | 815    | 2931          | 0.0           | 945    | 1480          | 0.0           |
| 430    | 42142         | 14.3          | 560    | 137796        | 77.0          | 690    | 23698         | 0.0           | 820    | 2717          | 0.0           | 950    | 3450          | 0.0           |
| 435    | 68228         | 30.5          | 565    | 146577        | 65.8          | 695    | 20309         | 0.0           | 825    | 2236          | 0.0           | 955    | 5051          | 0.0           |
| 440    | 99323         | 55.5          | 570    | 154581        | 54.6          | 700    | 17890         | 0.0           | 830    | 2628          | 0.0           | 960    | 3176          | 0.0           |
| 445    | 115584        | 77.4          | 575    | 162633        | 44.3          | 705    | 15500         | 0.0           | 835    | 3140          | 0.0           | 965    | 5178          | 0.0           |
| 450    | 94997         | 73.6          | 580    | 168101        | 34.6          | 710    | 13699         | 0.0           | 840    | 3675          | 0.0           | 970    | 6385          | 0.0           |
| 455    | 61433         | 53.7          | 585    | 173145        | 26.5          | 715    | 12398         | 0.0           | 845    | 3283          | 0.0           | 975    | 3810          | 0.0           |
| 460    | 43373         | 41.9          | 590    | 174675        | 19.5          | 720    | 11147         | 0.0           | 850    | 3055          | 0.0           | 980    | 4322          | 0.0           |
| 465    | 32472         | 34.3          | 595    | 173724        | 13.9          | 725    | 9761          | 0.0           | 855    | 2932          | 0.0           | 985    | 4200          | 0.0           |
| 470    | 24257         | 27.9          | 600    | 171241        | 9.7           | 730    | 8651          | 0.0           | 860    | 3382          | 0.0           | 990    | 4661          | 0.0           |
| 475    | 21690         | 27.1          | 605    | 165134        | 6.5           | 735    | 7730          | 0.0           | 865    | 2605          | 0.0           | 995    | 6746          | 0.0           |
| 480    | 23173         | 31.3          | 610    | 156652        | 4.2           | 740    | 6847          | 0.0           | 870    | 3325          | 0.0           | 1000   | 4150          | 0.0           |
| 485    | 27564         | 40.0          | 615    | 147879        | 2.7           | 745    | 6124          | 0.0           | 875    | 3325          | 0.0           |        |               |               |

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**Melanopic Flux vs. Wavelength**



**Melanopic Lumens: 4490.7 M/P: 0.5**

| 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    | 2672          | 0.0           | 490    | 34553         | 28.8          | 620    | 136720        | 0.1           | 750    | 5870          | 0.0           | 880    | 4216          | 0.0           |
| 365    | 2252          | 0.0           | 495    | 44336         | 36.6          | 625    | 126308        | 0.1           | 755    | 5421          | 0.0           | 885    | 4132          | 0.0           |
| 370    | 2217          | 0.0           | 500    | 54643         | 43.9          | 630    | 114625        | 0.0           | 760    | 5097          | 0.0           | 890    | 3992          | 0.0           |
| 375    | 2697          | 0.0           | 505    | 64676         | 49.6          | 635    | 103216        | 0.0           | 765    | 4626          | 0.0           | 895    | 3214          | 0.0           |
| 380    | 3039          | 0.0           | 510    | 73825         | 53.0          | 640    | 92605         | 0.0           | 770    | 3782          | 0.0           | 900    | 2580          | 0.0           |
| 385    | 2655          | 0.0           | 515    | 81872         | 53.5          | 645    | 83234         | 0.0           | 775    | 3506          | 0.0           | 905    | 1776          | 0.0           |
| 390    | 2357          | 0.0           | 520    | 88574         | 51.6          | 650    | 73263         | 0.0           | 780    | 3507          | 0.0           | 910    | 3995          | 0.0           |
| 395    | 2186          | 0.0           | 525    | 93289         | 47.3          | 655    | 64627         | 0.0           | 785    | 3267          | 0.0           | 915    | 4288          | 0.0           |
| 400    | 2015          | 0.0           | 530    | 98393         | 42.5          | 660    | 56614         | 0.0           | 790    | 2849          | 0.0           | 920    | 2446          | 0.0           |
| 405    | 2234          | 0.0           | 535    | 103269        | 37.2          | 665    | 49537         | 0.0           | 795    | 3037          | 0.0           | 925    | 3009          | 0.0           |
| 410    | 3412          | 0.1           | 540    | 107316        | 31.4          | 670    | 42866         | 0.0           | 800    | 2716          | 0.0           | 930    | 3026          | 0.0           |
| 415    | 6135          | 0.4           | 545    | 113101        | 26.3          | 675    | 36708         | 0.0           | 805    | 2648          | 0.0           | 935    | 4734          | 0.0           |
| 420    | 12146         | 1.4           | 550    | 120690        | 21.7          | 680    | 31814         | 0.0           | 810    | 3187          | 0.0           | 940    | 3719          | 0.0           |
| 425    | 23983         | 3.7           | 555    | 128583        | 17.3          | 685    | 27485         | 0.0           | 815    | 2931          | 0.0           | 945    | 1480          | 0.0           |
| 430    | 42142         | 8.9           | 560    | 137796        | 13.6          | 690    | 23698         | 0.0           | 820    | 2717          | 0.0           | 950    | 3450          | 0.0           |
| 435    | 68228         | 18.2          | 565    | 146577        | 10.3          | 695    | 20309         | 0.0           | 825    | 2236          | 0.0           | 955    | 5051          | 0.0           |
| 440    | 99323         | 33.2          | 570    | 154581        | 7.6           | 700    | 17890         | 0.0           | 830    | 2628          | 0.0           | 960    | 3176          | 0.0           |
| 445    | 115584        | 45.6          | 575    | 162633        | 5.4           | 705    | 15500         | 0.0           | 835    | 3140          | 0.0           | 965    | 5178          | 0.0           |
| 450    | 94997         | 43.8          | 580    | 168101        | 3.8           | 710    | 13699         | 0.0           | 840    | 3675          | 0.0           | 970    | 6385          | 0.0           |
| 455    | 61433         | 32.2          | 585    | 173145        | 2.6           | 715    | 12398         | 0.0           | 845    | 3283          | 0.0           | 975    | 3810          | 0.0           |
| 460    | 43373         | 25.6          | 590    | 174675        | 1.7           | 720    | 11147         | 0.0           | 850    | 3055          | 0.0           | 980    | 4322          | 0.0           |
| 465    | 32472         | 21.2          | 595    | 173724        | 1.1           | 725    | 9761          | 0.0           | 855    | 2932          | 0.0           | 985    | 4200          | 0.0           |
| 470    | 24257         | 17.4          | 600    | 171241        | 0.7           | 730    | 8651          | 0.0           | 860    | 3382          | 0.0           | 990    | 4661          | 0.0           |
| 475    | 21690         | 16.6          | 605    | 165134        | 0.5           | 735    | 7730          | 0.0           | 865    | 2605          | 0.0           | 995    | 6746          | 0.0           |
| 480    | 23173         | 18.6          | 610    | 156652        | 0.3           | 740    | 6847          | 0.0           | 870    | 3325          | 0.0           | 1000   | 4150          | 0.0           |
| 485    | 27564         | 22.7          | 615    | 147879        | 0.2           | 745    | 6124          | 0.0           | 875    | 3325          | 0.0           |        |               |               |

**Summary**

$R_f = 76.9$   
 $R_g = 94.4$   
 CIE  $R_a = 73.1$   
 $R_g = -34.6$



**Color Vector Graphics**





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

|            |            |            |            |
|------------|------------|------------|------------|
| CES01 = 86 | CES26 = 68 | CES51 = 90 | CES76 = 63 |
| CES02 = 62 | CES27 = 88 | CES52 = 89 | CES77 = 80 |
| CES03 = 31 | CES28 = 87 | CES53 = 80 | CES78 = 65 |
| CES04 = 70 | CES29 = 67 | CES54 = 84 | CES79 = 87 |
| CES05 = 48 | CES30 = 74 | CES55 = 84 | CES80 = 86 |
| CES06 = 51 | CES31 = 71 | CES56 = 75 | CES81 = 75 |
| CES07 = 40 | CES32 = 67 | CES57 = 74 | CES82 = 94 |
| CES08 = 39 | CES33 = 74 | CES58 = 76 | CES83 = 91 |
| CES09 = 29 | CES34 = 78 | CES59 = 87 | CES84 = 89 |
| CES10 = 75 | CES35 = 89 | CES60 = 93 | CES85 = 80 |
| CES11 = 58 | CES36 = 98 | CES61 = 86 | CES86 = 66 |
| CES12 = 64 | CES37 = 86 | CES62 = 89 | CES87 = 79 |
| CES13 = 43 | CES38 = 82 | CES63 = 77 | CES88 = 79 |
| CES14 = 74 | CES39 = 95 | CES64 = 74 | CES89 = 70 |
| CES15 = 71 | CES40 = 91 | CES65 = 68 | CES90 = 77 |
| CES16 = 47 | CES41 = 89 | CES66 = 71 | CES91 = 88 |
| CES17 = 50 | CES42 = 88 | CES67 = 69 | CES92 = 60 |
| CES18 = 56 | CES43 = 82 | CES68 = 74 | CES93 = 77 |
| CES19 = 72 | CES44 = 99 | CES69 = 82 | CES94 = 52 |
| CES20 = 65 | CES45 = 87 | CES70 = 67 | CES95 = 69 |
| CES21 = 86 | CES46 = 82 | CES71 = 66 | CES96 = 78 |
| CES22 = 79 | CES47 = 82 | CES72 = 88 | CES97 = 85 |
| CES23 = 92 | CES48 = 72 | CES73 = 59 | CES98 = 76 |
| CES24 = 91 | CES49 = 82 | CES74 = 97 | CES99 = 63 |
| CES25 = 72 | CES50 = 88 | CES75 = 66 |            |



Color Rendition by Hue-Angle Bin



Measure Comparisons



(END OF REPORT)