

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: P640278

Luminaire Tested: GWS-SA5D-750-U-AFL-W-GRSWH

Issue Date: 1/10/2023

**Test Information**

Test Method: LM-79-2019  
Report Number: P640278  
TEST IS SCALED FROM IESNA LM-79-08 TEST DATA (G2-2209-782-47)  
Test Lab: COOPER LIGHTING SOLUTIONS  
Issue Date: 1/10/2023  
Manufacturer: COOPER LIGHTING SOLUTIONS  
Product Line: McGRAW-EDISON  
Catalog Number: GWS-SA5D-750-U-AFL-W-GRSWH  
Description: GALLEON WALL SLIM LUMINAIRE. (5) LIGHTSQUARES WITH 16 LEDS EACH AND AUTOMOTIVE FRONTLINE OPTICS W/ FACTORY INSTALLED GLARE SHIELD, WH  
Light Source: (80) 5000K CCT, 70 CRI LEDS  
Ballast/Driver: -

**Summary**

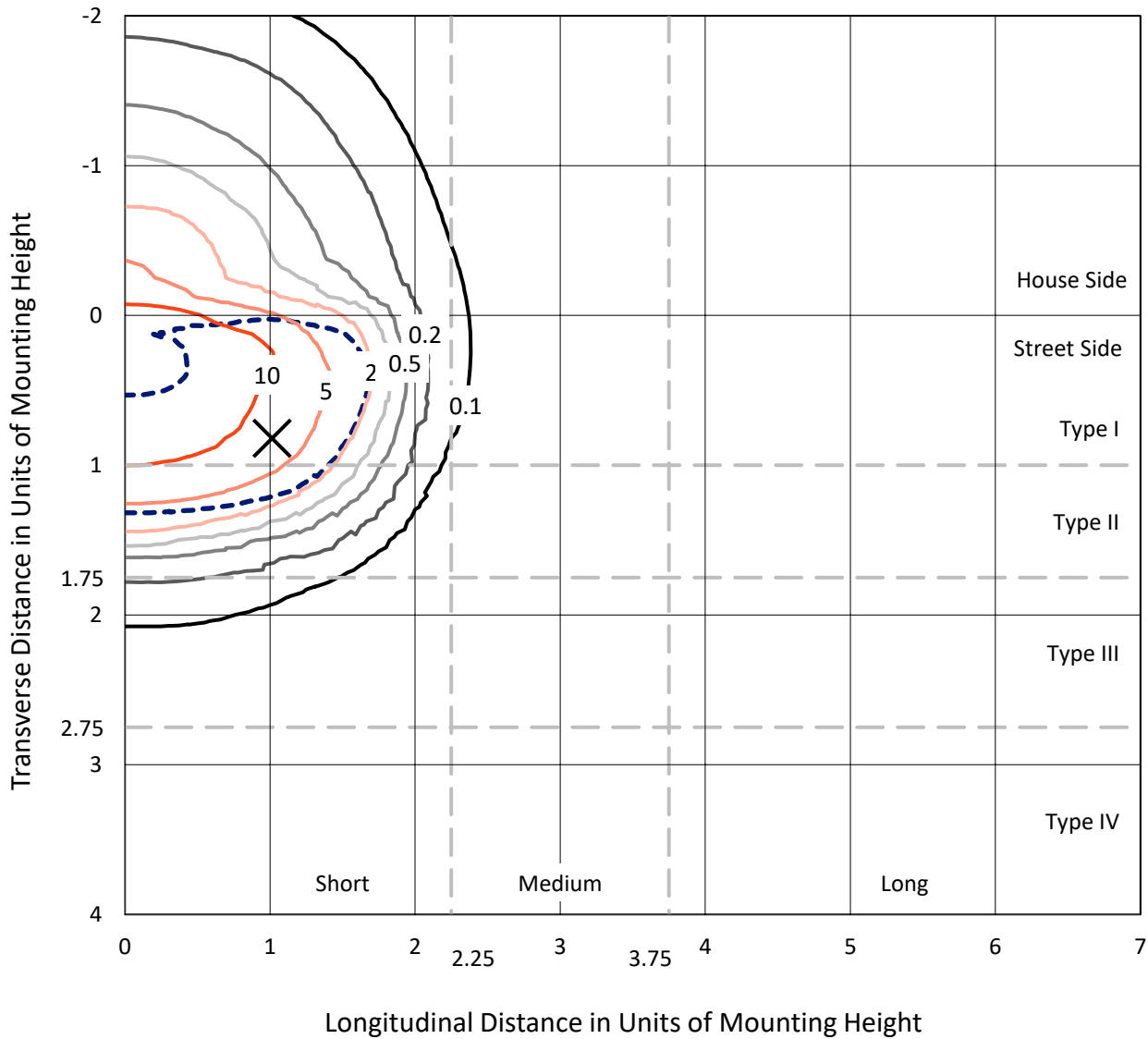
Lumens per Lamp: N/A  
Luminaire Lumens: 27877.7 lumens  
Efficiency: N/A  
Efficacy: 136.3 lumens/watt  
Luminous Opening: Rectangular (W 1.5' x L: 1' x H: 0')  
IES Classification: Type II - Short  
BUG Rating: B3 - U0 - G2  
  
Input Watts (W): 204.6  
Input Voltage (V): 120  
Input Current (Ain): 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



REPORT NUMBER: P640278  
 CATALOG NUMBER: GWS-SA5D-750-U-AFL-W-GRSWH

### Iso-Footcandle Lines of Horizontal Illumination

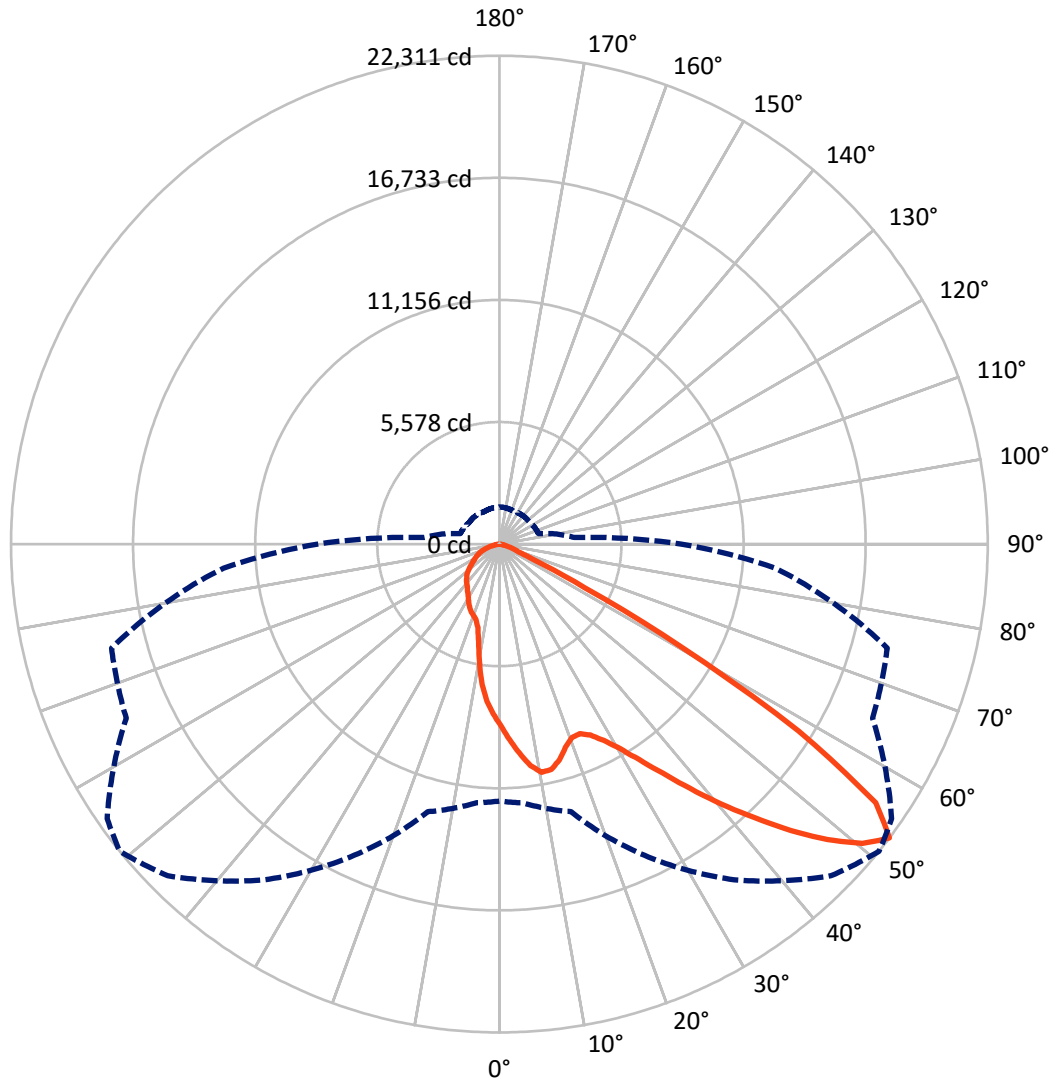
✕ Max cd  
 - - - 1/2 Max cd



Based on 25 foot mounting height. Maximum calculated value = 16.2 fc  
 Type II - Short - N/A

REPORT NUMBER: P640278  
CATALOG NUMBER: GWS-SA5D-750-U-AFL-W-GRSWH

### Luminous Intensity Polar Plot



— Vertical Plane Through 51-Deg Lateral    - - - Horizontal Cone Through 52.5-Deg Vertical

REPORT NUMBER: P640278

CATALOG NUMBER: GWS-SA5D-750-U-AFL-W-GRSWH

**FLUX DISTRIBUTION:**

|                    |           | Downward | Upward | Total   |
|--------------------|-----------|----------|--------|---------|
| <b>House Side</b>  | Lumens    | 5431.7   | 0.0    | 5431.7  |
|                    | % Fixture | 19.5     | 0.0    | 19.5    |
| <b>Street Side</b> | Lumens    | 22446.0  | 0.0    | 22446.0 |
|                    | % Fixture | 80.5     | 0.0    | 80.5    |
| <b>Total</b>       | Lumens    | 27877.7  | 0.0    | 27877.7 |
|                    | % Fixture | 100.0    | 0.0    | 100.0   |

**ZONAL LUMENS:**

| Zone      | Lumens  | % Fixture |
|-----------|---------|-----------|
| 0°-10°    | 774.6   | 2.8       |
| 10°-20°   | 2012.6  | 7.2       |
| 20°-30°   | 3272.3  | 11.7      |
| 30°-40°   | 5185.9  | 18.6      |
| 40°-50°   | 7821.5  | 28.1      |
| 50°-60°   | 6766.2  | 24.3      |
| 60°-70°   | 1534.0  | 5.5       |
| 70°-80°   | 452.3   | 1.6       |
| 80°-90°   | 58.3    | 0.2       |
| 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°    | 27877.7 | 100.0     |
| 0°-180°   | 27877.7 | 100.0     |

**Coefficient of Utilization**



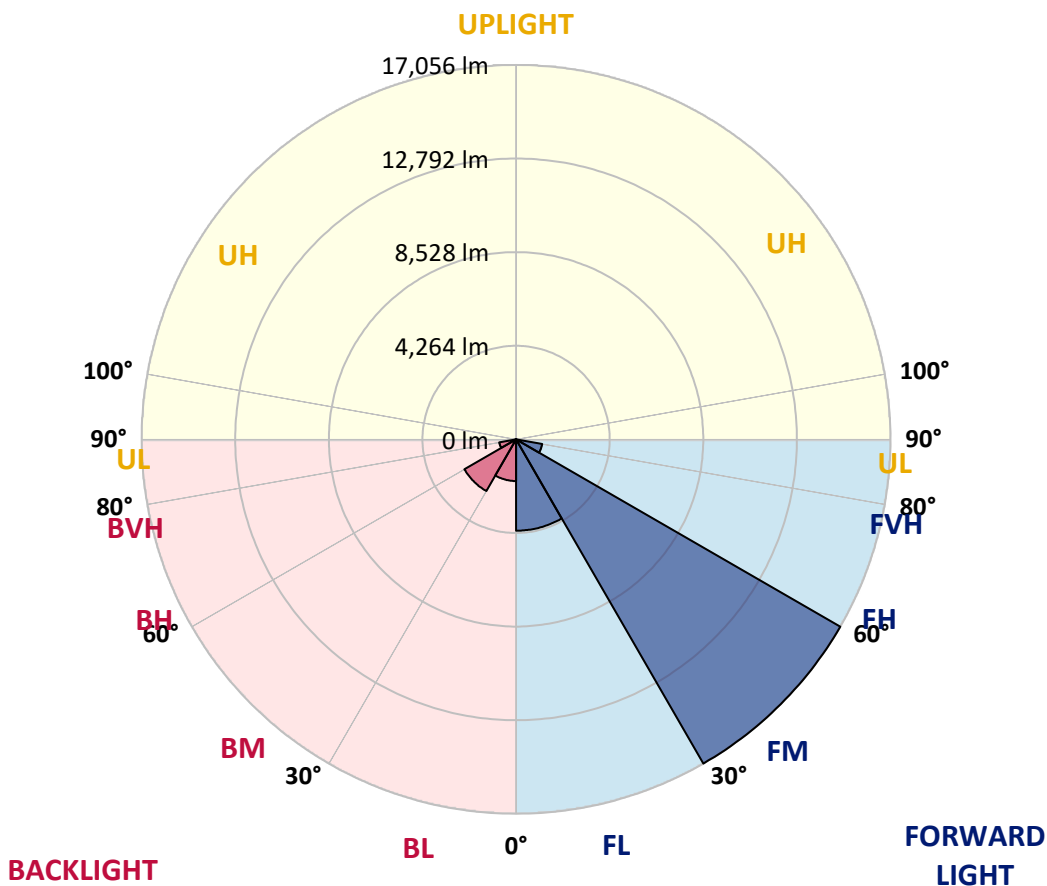
REPORT NUMBER: P640278

CATALOG NUMBER: GWS-SA5D-750-U-AFL-W-GRSWH

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

| Zone           | Lumens  | % Fixture | Zone Rating/Lumen Limit |      |         |
|----------------|---------|-----------|-------------------------|------|---------|
|                |         |           | B                       | U    | G       |
| FL (0°-30°)    | 4160.8  | 14.9      |                         |      |         |
| FM (30°-60°)   | 17056.0 | 61.2      |                         |      |         |
| FH (60°-80°)   | 1207.2  | 4.3       |                         |      | G1/1800 |
| FVH (80°-90°)  | 21.9    | 0.1       |                         |      | G1/100  |
| BL (0°-30°)    | 1898.7  | 6.8       | B3/2500                 |      |         |
| BM (30°-60°)   | 2717.7  | 9.7       | B3/5000                 |      |         |
| BH (60°-80°)   | 779.1   | 2.8       | B2/1000                 |      | G2/1000 |
| BVH (80°-90°)  | 36.3    | 0.1       |                         |      | G1/100  |
| UL (90°-100°)  | 0.0     | 0.0       |                         | U0/0 |         |
| UH (100°-180°) | 0.0     | 0.0       |                         | U0/0 |         |

**BUG Rating: B3-U0-G2**  
 Type II Short





REPORT NUMBER: P640278

CATALOG NUMBER: GWS-SA5D-750-U-AFL-W-GRSWH

**CANDELA DISTRIBUTION (FULL):**

|       | 0°      | 5°      | 15°     | 25°     | 35°     | 45°     | 51°     | 55°     | 65°     | 75°     | 85°     |
|-------|---------|---------|---------|---------|---------|---------|---------|---------|---------|---------|---------|
| 0°    | 8300.6  | 8300.6  | 8300.6  | 8300.6  | 8300.6  | 8300.6  | 8300.6  | 8300.6  | 8300.6  | 8300.6  | 8300.6  |
| 2.5°  | 9250.0  | 9302.9  | 9221.4  | 9190.6  | 9139.9  | 9051.8  | 8950.4  | 8921.8  | 8703.7  | 8560.5  | 8399.7  |
| 5°    | 10179.7 | 10208.3 | 10142.2 | 10076.1 | 9950.6  | 9794.2  | 9598.1  | 9556.2  | 9159.7  | 8831.5  | 8490.0  |
| 7.5°  | 10386.7 | 10375.7 | 10433.0 | 10470.5 | 10455.0 | 10393.4 | 10219.3 | 10137.8 | 9664.2  | 9144.3  | 8639.8  |
| 10°   | 9567.3  | 9505.6  | 9717.1  | 9968.2  | 10270.0 | 10618.0 | 10598.2 | 10591.6 | 10179.7 | 9565.1  | 8831.5  |
| 12.5° | 8481.2  | 8450.4  | 8622.2  | 8937.2  | 9507.8  | 10278.8 | 10567.4 | 10792.1 | 10644.5 | 9966.0  | 9045.2  |
| 15°   | 7860.0  | 7849.0  | 7965.7  | 8192.6  | 8646.4  | 9620.1  | 10236.9 | 10681.9 | 11043.2 | 10395.6 | 9272.1  |
| 17.5° | 7747.7  | 7754.3  | 7793.9  | 7923.9  | 8249.9  | 9051.8  | 9765.5  | 10386.7 | 11353.8 | 10867.0 | 9556.2  |
| 20°   | 8075.9  | 8119.9  | 8051.7  | 8071.5  | 8247.7  | 8846.9  | 9443.9  | 10089.3 | 11552.1 | 11340.6 | 9862.4  |
| 22.5° | 8805.0  | 8789.6  | 8639.8  | 8551.7  | 8553.9  | 8972.5  | 9408.6  | 9950.6  | 11682.1 | 11801.0 | 10140.0 |
| 25°   | 9631.1  | 9613.5  | 9435.1  | 9239.0  | 9115.7  | 9313.9  | 9662.0  | 10098.2 | 11798.8 | 12221.8 | 10362.5 |
| 27.5° | 10607.0 | 10552.0 | 10353.7 | 10102.6 | 9829.4  | 9915.3  | 10151.0 | 10496.9 | 11979.4 | 12635.9 | 10510.1 |
| 30°   | 11552.1 | 11616.0 | 11331.8 | 11034.4 | 10745.8 | 10692.9 | 10829.5 | 11142.3 | 12347.3 | 13120.6 | 10686.3 |
| 32.5° | 12805.5 | 12783.5 | 12468.5 | 12080.8 | 11668.8 | 11629.2 | 11737.1 | 12023.5 | 13008.2 | 13790.2 | 10955.1 |
| 35°   | 14323.4 | 14327.8 | 13880.6 | 13356.3 | 12770.3 | 12664.6 | 12845.2 | 13122.8 | 13992.9 | 14697.8 | 11380.3 |
| 37.5° | 15900.6 | 15894.0 | 15504.1 | 14909.3 | 14109.7 | 13959.9 | 14166.9 | 14374.0 | 15224.3 | 15933.7 | 12041.1 |
| 40°   | 17006.5 | 17050.6 | 16867.7 | 16554.9 | 15797.1 | 15431.4 | 15614.3 | 15757.4 | 16563.7 | 17387.6 | 12911.3 |
| 42.5° | 17634.3 | 17700.4 | 17740.1 | 17927.3 | 17528.6 | 17138.7 | 17072.6 | 17147.5 | 17759.9 | 18738.0 | 13728.6 |
| 45°   | 17768.7 | 17856.8 | 18145.4 | 18839.3 | 18993.5 | 18883.4 | 18667.5 | 18486.9 | 18652.1 | 19696.3 | 14263.9 |
| 47.5° | 17176.1 | 17330.3 | 17947.1 | 19161.0 | 20061.9 | 20407.8 | 20167.7 | 19892.3 | 19167.6 | 19943.0 | 14208.8 |
| 50°   | 14827.8 | 15008.5 | 16398.5 | 18504.5 | 20213.9 | 21474.0 | 21496.0 | 21088.5 | 19105.9 | 19231.4 | 13517.1 |
| 52.5° | 11739.3 | 11862.7 | 12657.9 | 15687.0 | 18722.6 | 21430.0 | 22311.1 | 21874.9 | 18808.5 | 18341.5 | 12651.3 |
| 55°   | 7016.3  | 7214.5  | 7956.9  | 10349.3 | 14585.5 | 18993.5 | 20870.4 | 21081.9 | 18663.1 | 17594.7 | 12061.0 |
| 57.5° | 2368.1  | 2465.1  | 3174.4  | 4571.0  | 8595.8  | 13907.0 | 16125.3 | 16984.5 | 16942.6 | 16453.6 | 10908.8 |
| 60°   | 1127.9  | 1149.9  | 1293.1  | 1733.7  | 3441.0  | 7267.4  | 9545.2  | 10536.5 | 11439.7 | 11530.1 | 6787.2  |
| 62.5° | 859.1   | 872.4   | 945.1   | 1039.8  | 1383.4  | 3062.1  | 4375.0  | 5132.8  | 5483.1  | 4705.4  | 2471.7  |
| 65°   | 718.2   | 729.2   | 784.2   | 843.7   | 940.6   | 1326.2  | 1678.6  | 1936.4  | 1744.7  | 1359.2  | 1178.6  |
| 67.5° | 599.2   | 608.0   | 649.9   | 713.7   | 779.8   | 887.8   | 931.8   | 958.3   | 1004.5  | 1127.9  | 1083.8  |
| 70°   | 469.2   | 478.0   | 522.1   | 577.2   | 641.0   | 667.5   | 709.3   | 735.8   | 828.3   | 986.9   | 982.5   |
| 72.5° | 361.3   | 372.3   | 396.5   | 431.8   | 484.6   | 511.1   | 557.3   | 588.2   | 641.0   | 768.8   | 821.7   |
| 75°   | 264.3   | 271.0   | 293.0   | 304.0   | 310.6   | 304.0   | 350.3   | 385.5   | 456.0   | 504.5   | 517.7   |
| 77.5° | 107.9   | 121.2   | 116.8   | 116.8   | 138.8   | 167.4   | 191.7   | 213.7   | 262.1   | 290.8   | 293.0   |
| 80°   | 44.1    | 48.5    | 57.3    | 63.9    | 77.1    | 99.1    | 114.6   | 123.4   | 145.4   | 163.0   | 176.2   |
| 82.5° | 26.4    | 28.6    | 33.0    | 35.2    | 44.1    | 57.3    | 66.1    | 72.7    | 90.3    | 107.9   | 114.6   |
| 85°   | 13.2    | 13.2    | 15.4    | 17.6    | 22.0    | 26.4    | 30.8    | 35.2    | 46.3    | 57.3    | 63.9    |
| 87.5° | 2.2     | 2.2     | 2.2     | 4.4     | 6.6     | 8.8     | 11.0    | 13.2    | 15.4    | 17.6    | 22.0    |
| 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: P640278

CATALOG NUMBER: GWS-SA5D-750-U-AFL-W-GRSWH

**CANDELA DISTRIBUTION (continued):**

|       | 90°    | 95°    | 105°   | 115°   | 125°   | 135°   | 145°   | 155°   | 165°   | 175°   | 180°   |
|-------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|
| 0°    | 8300.6 | 8300.6 | 8300.6 | 8300.6 | 8300.6 | 8300.6 | 8300.6 | 8300.6 | 8300.6 | 8300.6 | 8300.6 |
| 2.5°  | 8305.0 | 8186.0 | 8047.2 | 7937.1 | 7809.3 | 7714.6 | 7580.2 | 7496.5 | 7417.2 | 7351.1 | 7302.7 |
| 5°    | 8313.8 | 8113.3 | 7824.8 | 7569.2 | 7304.9 | 7053.7 | 6796.0 | 6586.7 | 6399.5 | 6243.1 | 6229.8 |
| 7.5°  | 8364.5 | 8075.9 | 7624.3 | 7177.1 | 6661.6 | 6163.8 | 5665.9 | 5260.6 | 4952.2 | 4791.3 | 4758.3 |
| 10°   | 8450.4 | 8071.5 | 7419.4 | 6705.7 | 5826.7 | 5024.8 | 4434.5 | 4126.1 | 3947.6 | 3883.7 | 3861.7 |
| 12.5° | 8540.7 | 8060.5 | 7157.3 | 6040.4 | 4820.0 | 4117.2 | 3793.4 | 3756.0 | 3789.0 | 3793.4 | 3791.2 |
| 15°   | 8650.8 | 8053.9 | 6826.8 | 5260.6 | 4084.2 | 3696.5 | 3718.5 | 3797.8 | 3874.9 | 3892.6 | 3892.6 |
| 17.5° | 8785.2 | 8038.4 | 6377.4 | 4498.4 | 3623.8 | 3615.0 | 3731.7 | 3837.5 | 3910.2 | 3923.4 | 3923.4 |
| 20°   | 8926.2 | 7998.8 | 5824.5 | 3877.1 | 3436.5 | 3564.3 | 3689.9 | 3771.4 | 3822.1 | 3839.7 | 3841.9 |
| 22.5° | 9023.1 | 7893.0 | 5187.9 | 3416.7 | 3319.8 | 3467.4 | 3557.7 | 3641.4 | 3641.4 | 3597.4 | 3584.1 |
| 25°   | 9043.0 | 7666.1 | 4498.4 | 3101.7 | 3181.0 | 3317.6 | 3410.1 | 3361.6 | 3271.3 | 3236.1 | 3233.9 |
| 27.5° | 8970.3 | 7335.7 | 3817.7 | 2877.0 | 3013.6 | 3150.2 | 3134.7 | 3064.3 | 3024.6 | 2989.4 | 3002.6 |
| 30°   | 8882.2 | 6939.2 | 3227.3 | 2692.0 | 2819.7 | 2954.1 | 2901.2 | 2877.0 | 2848.4 | 2808.7 | 2817.5 |
| 32.5° | 8822.7 | 6496.4 | 2773.5 | 2548.8 | 2689.8 | 2711.8 | 2749.2 | 2747.0 | 2720.6 | 2645.7 | 2641.3 |
| 35°   | 8840.3 | 6049.2 | 2469.5 | 2432.0 | 2581.8 | 2573.0 | 2643.5 | 2630.3 | 2447.4 | 2343.9 | 2337.3 |
| 37.5° | 8981.3 | 5619.6 | 2291.0 | 2339.5 | 2410.0 | 2465.1 | 2526.7 | 2368.1 | 2304.2 | 2238.2 | 2242.6 |
| 40°   | 9250.0 | 5220.9 | 2194.1 | 2288.8 | 2306.5 | 2388.0 | 2244.8 | 2242.6 | 2213.9 | 2154.5 | 2152.2 |
| 42.5° | 9554.0 | 4883.9 | 2128.0 | 2264.6 | 2240.4 | 2255.8 | 2103.8 | 2121.4 | 2119.2 | 2081.8 | 2070.7 |
| 45°   | 9739.1 | 4573.3 | 2075.1 | 2174.3 | 2180.9 | 2026.7 | 1980.4 | 2000.2 | 2011.3 | 1991.4 | 1989.2 |
| 47.5° | 9547.4 | 4216.4 | 2020.1 | 2035.5 | 2092.8 | 1923.1 | 1865.9 | 1868.1 | 1887.9 | 1890.1 | 1881.3 |
| 50°   | 9009.9 | 3817.7 | 1954.0 | 1916.5 | 1879.1 | 1815.2 | 1762.3 | 1751.3 | 1771.1 | 1791.0 | 1797.6 |
| 52.5° | 8316.0 | 3436.5 | 1843.8 | 1786.6 | 1698.4 | 1698.4 | 1674.2 | 1639.0 | 1665.4 | 1691.8 | 1700.7 |
| 55°   | 7807.1 | 3154.6 | 1687.4 | 1623.5 | 1526.6 | 1559.7 | 1555.3 | 1524.4 | 1559.7 | 1579.5 | 1586.1 |
| 57.5° | 6765.2 | 2535.6 | 1484.8 | 1464.9 | 1383.4 | 1423.1 | 1431.9 | 1392.2 | 1374.6 | 1379.0 | 1385.6 |
| 60°   | 4015.9 | 1636.8 | 1339.4 | 1337.2 | 1264.5 | 1310.7 | 1337.2 | 1297.5 | 1244.6 | 1251.3 | 1260.1 |
| 62.5° | 1802.0 | 1251.3 | 1156.5 | 1147.7 | 1145.5 | 1205.0 | 1233.6 | 1196.2 | 1121.3 | 1127.9 | 1136.7 |
| 65°   | 1134.5 | 1081.6 | 1004.5 | 1004.5 | 1039.8 | 1090.4 | 1112.5 | 1081.6 | 995.7  | 984.7  | 993.5  |
| 67.5° | 1053.0 | 1006.7 | 927.4  | 912.0  | 929.6  | 971.5  | 973.7  | 914.2  | 863.5  | 854.7  | 854.7  |
| 70°   | 945.1  | 909.8  | 832.7  | 801.9  | 795.3  | 793.0  | 786.4  | 771.0  | 738.0  | 729.2  | 733.6  |
| 72.5° | 782.0  | 757.8  | 709.3  | 676.3  | 658.7  | 656.5  | 630.0  | 616.8  | 588.2  | 583.8  | 581.6  |
| 75°   | 517.7  | 524.3  | 524.3  | 519.9  | 504.5  | 497.9  | 469.2  | 456.0  | 423.0  | 409.7  | 407.5  |
| 77.5° | 306.2  | 312.8  | 321.6  | 323.8  | 321.6  | 321.6  | 295.2  | 279.8  | 246.7  | 229.1  | 224.7  |
| 80°   | 187.2  | 191.7  | 196.1  | 202.7  | 193.9  | 187.2  | 163.0  | 147.6  | 132.2  | 121.2  | 119.0  |
| 82.5° | 121.2  | 125.6  | 127.8  | 132.2  | 127.8  | 119.0  | 99.1   | 90.3   | 79.3   | 70.5   | 68.3   |
| 85°   | 68.3   | 70.5   | 74.9   | 74.9   | 68.3   | 61.7   | 50.7   | 44.1   | 37.4   | 33.0   | 33.0   |
| 87.5° | 24.2   | 24.2   | 24.2   | 26.4   | 22.0   | 19.8   | 13.2   | 8.8    | 6.6    | 6.6    | 6.6    |
| 90°   | 0.0    | 0.0    | 0.0    | 0.0    | 0.0    | 0.0    | 0.0    | 0.0    | 0.0    | 0.0    | 0.0    |



Signify Classified - Internal  
Cooper Lighting Solutions Photometric Lab  
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

REPORT NUMBER: SP1-1908-441-4-R4

| 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            |

REPORT NUMBER: SP1-1908-441-4-R4

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

REPORT NUMBER: SP1-1908-441-4-R4

**Photopic Flux vs. Wavelength**



#####

| $\lambda$<br>(nm) | Power<br>( $\mu\text{W}/\text{nm}$ ) | Lumens<br>( $\phi/\text{nm}$ ) | $\lambda$<br>(nm) | Power<br>( $\mu\text{W}/\text{nm}$ ) | Lumens<br>( $\phi/\text{nm}$ ) | $\lambda$<br>(nm) | Power<br>( $\mu\text{W}/\text{nm}$ ) | Lumens<br>( $\phi/\text{nm}$ ) | $\lambda$<br>(nm) | Power<br>( $\mu\text{W}/\text{nm}$ ) | Lumens<br>( $\phi/\text{nm}$ ) | $\lambda$<br>(nm) | Power<br>( $\mu\text{W}/\text{nm}$ ) | Lumens<br>( $\phi/\text{nm}$ ) |
|-------------------|--------------------------------------|--------------------------------|-------------------|--------------------------------------|--------------------------------|-------------------|--------------------------------------|--------------------------------|-------------------|--------------------------------------|--------------------------------|-------------------|--------------------------------------|--------------------------------|
| 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                             |                   |                                      |                                |

REPORT NUMBER: SP1-1908-441-4-R4

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            |        |               |               |

REPORT NUMBER: SP1-1908-441-4-R4

**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            |        |               |               |





REPORT NUMBER: SP1-1908-441-4-R4

TM-30-18

**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 |            |



REPORT NUMBER: SP1-1908-441-4-R4

TM-30-18

Color Rendition by Hue-Angle Bin



REPORT NUMBER: SP1-1908-441-4-R4

TM-30-18

Measure Comparisons



(END OF REPORT)