

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: P631382

Luminaire Tested: GWS-SA1F-750-U-SL4-W-HSS

Issue Date: 1/10/2023

**Test Information**

Test Method: LM-79-2019  
Report Number: P631382  
TEST IS SCALED FROM IESNA LM-79-08 TEST DATA (G2-2209-782-36)  
Test Lab: COOPER LIGHTING SOLUTIONS  
Issue Date: 1/10/2023  
Manufacturer: COOPER LIGHTING SOLUTIONS  
Product Line: McGRAW-EDISON  
Catalog Number: GWS-SA1F-750-U-SL4-W-HSS  
Description: GALLEON WALL SLIM LUMINAIRE. (1) LIGHTSQUARES WITH 16 LEDS EACH AND TYPE IV SPILL LIGHT ELIMINATOR OPTICS WITH HOUSE SIDE SHIELD  
Light Source: (16) 5000K CCT, 70 CRI LEDS  
Ballast/Driver: -

**Summary**

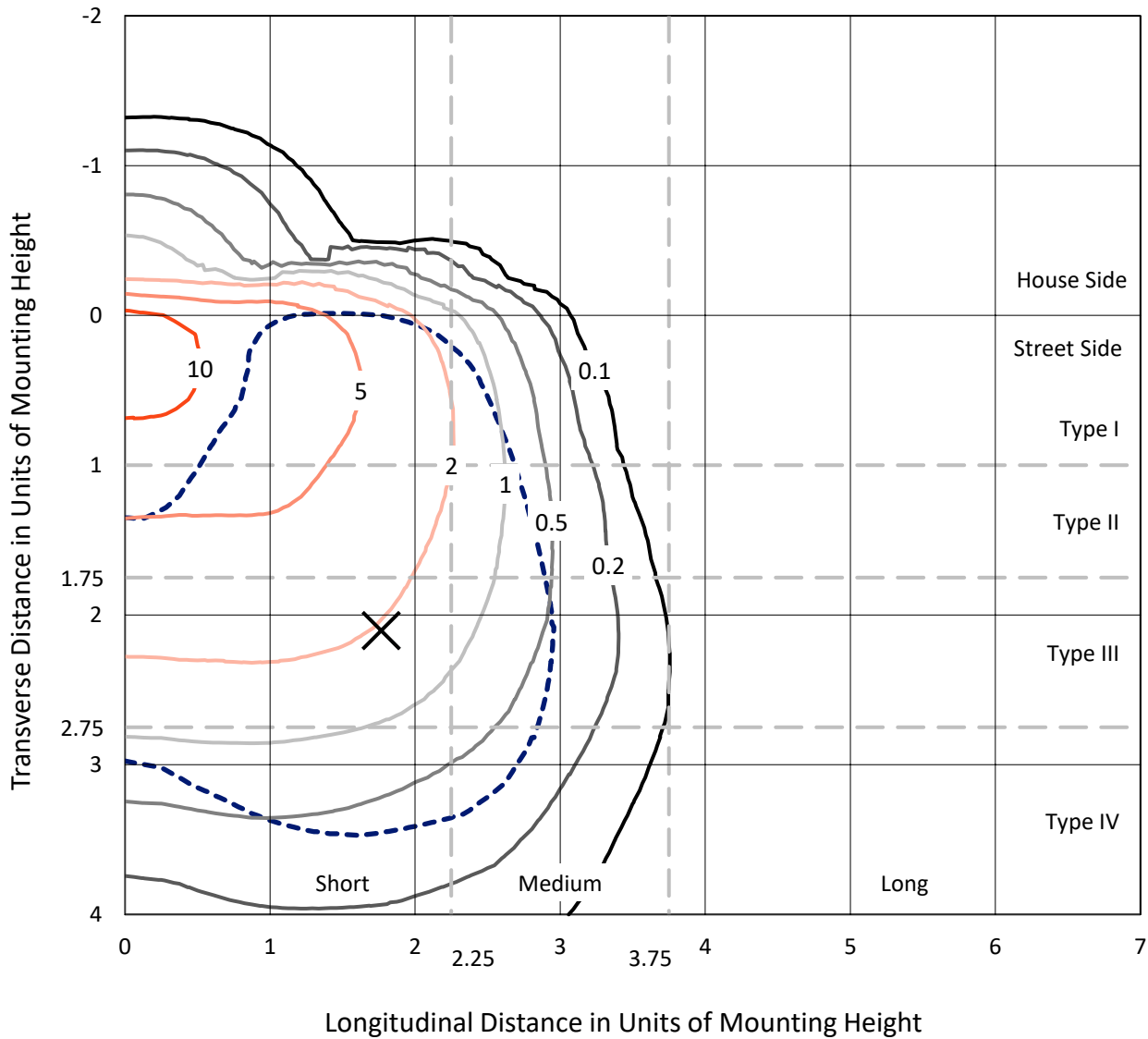
Lumens per Lamp: N/A  
Luminaire Lumens: 6790.2 lumens  
Efficiency: N/A  
Efficacy: 101.0 lumens/watt  
Luminous Opening: Rectangular (W 0.5' x L: 0.5' x H: 0')  
IES Classification: Type IV - Short  
BUG Rating: B1 - U0 - G2  
  
Input Watts (W): 67.2  
Input Voltage (V): 120  
Input Current (Ain): 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: P631382  
 CATALOG NUMBER: GWS-SA1F-750-U-SL4-W-HSS

### Iso-Footcandle Lines of Horizontal Illumination

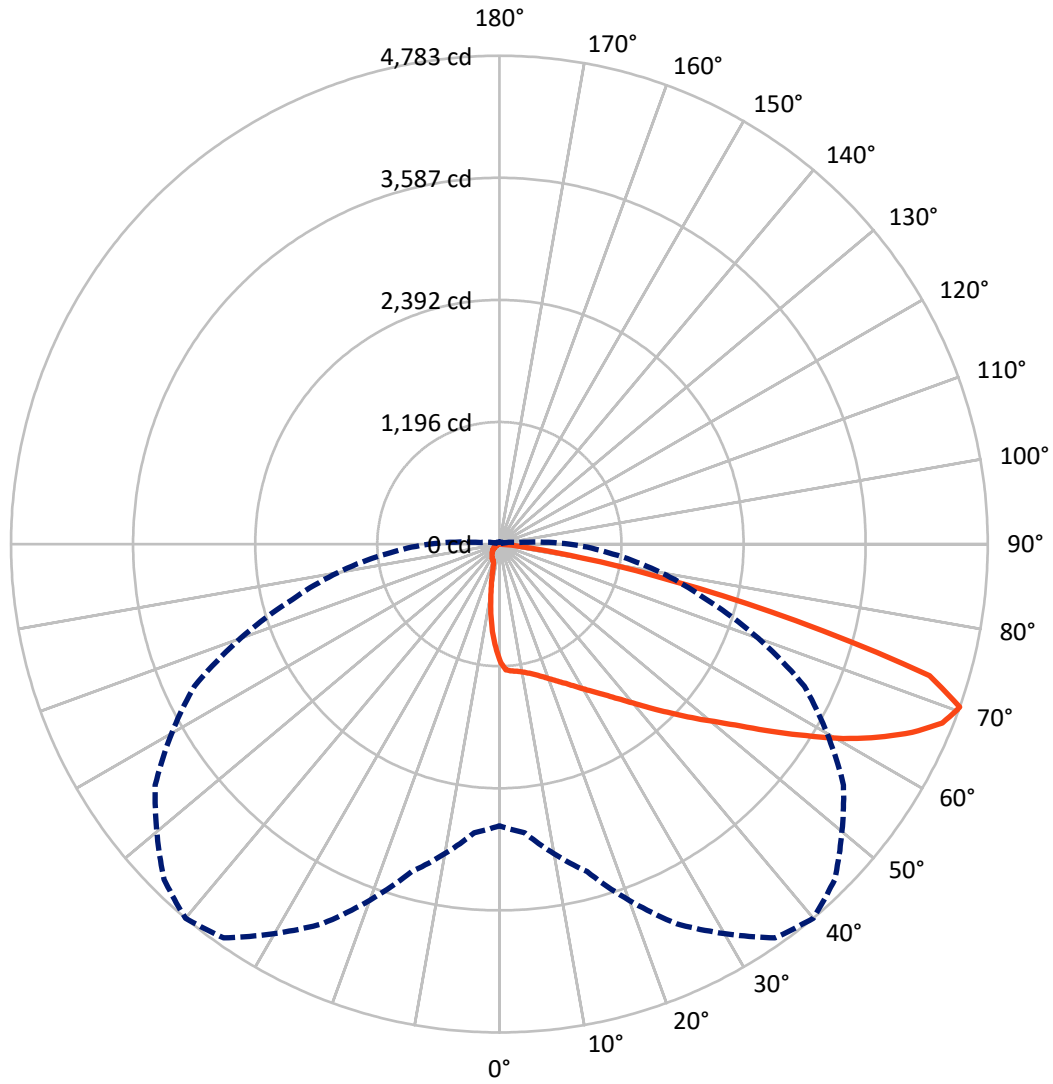
✕ Max cd  
 - - - 1/2 Max cd



Based on 10 foot mounting height. Maximum calculated value = 12.5 fc  
 Type IV - Short - N/A

REPORT NUMBER: P631382  
CATALOG NUMBER: GWS-SA1F-750-U-SL4-W-HSS

### Luminous Intensity Polar Plot



— Vertical Plane Through 40-Deg Lateral    - - - Horizontal Cone Through 70-Deg Vertical

REPORT NUMBER: P631382

CATALOG NUMBER: GWS-SA1F-750-U-SL4-W-HSS

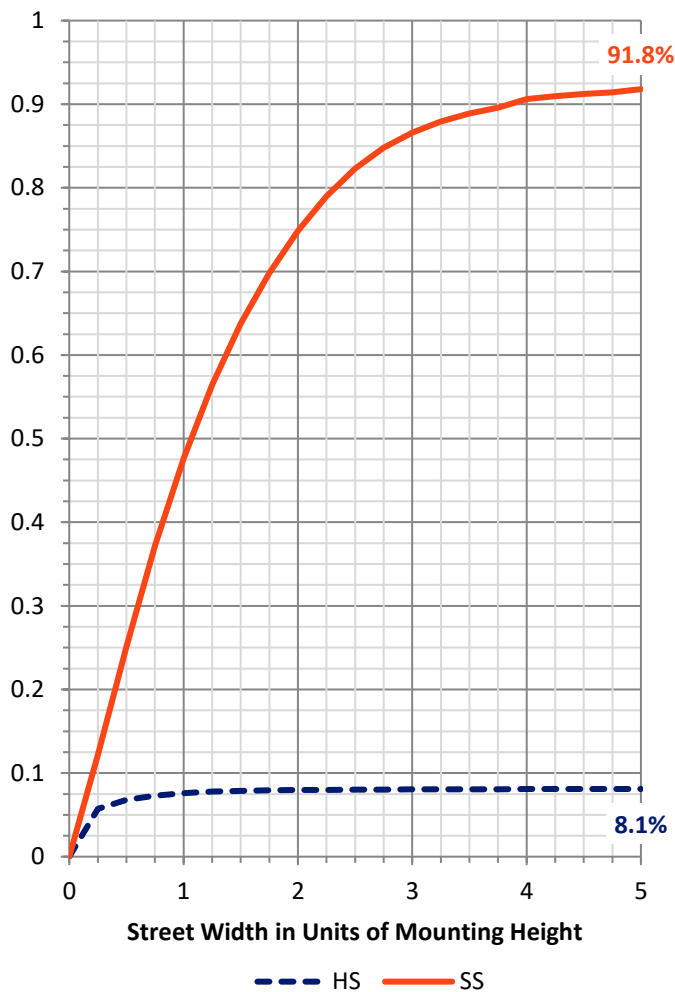
**FLUX DISTRIBUTION:**

|                    |           | Downward | Upward | Total  |
|--------------------|-----------|----------|--------|--------|
| <b>House Side</b>  | Lumens    | 555.3    | 0.0    | 555.3  |
|                    | % Fixture | 8.2      | 0.0    | 8.2    |
| <b>Street Side</b> | Lumens    | 6234.9   | 0.0    | 6234.9 |
|                    | % Fixture | 91.8     | 0.0    | 91.8   |
| <b>Total</b>       | Lumens    | 6790.2   | 0.0    | 6790.2 |
|                    | % Fixture | 100.0    | 0.0    | 100.0  |

**ZONAL LUMENS:**

| Zone      | Lumens | % Fixture |
|-----------|--------|-----------|
| 0°-10°    | 97.4   | 1.4       |
| 10°-20°   | 247.0  | 3.6       |
| 20°-30°   | 413.4  | 6.1       |
| 30°-40°   | 649.3  | 9.6       |
| 40°-50°   | 1027.0 | 15.1      |
| 50°-60°   | 1498.1 | 22.1      |
| 60°-70°   | 1857.1 | 27.4      |
| 70°-80°   | 939.6  | 13.8      |
| 80°-90°   | 61.3   | 0.9       |
| 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°    | 6790.2 | 100.0     |
| 0°-180°   | 6790.2 | 100.0     |

**Coefficient of Utilization**



REPORT NUMBER: P631382

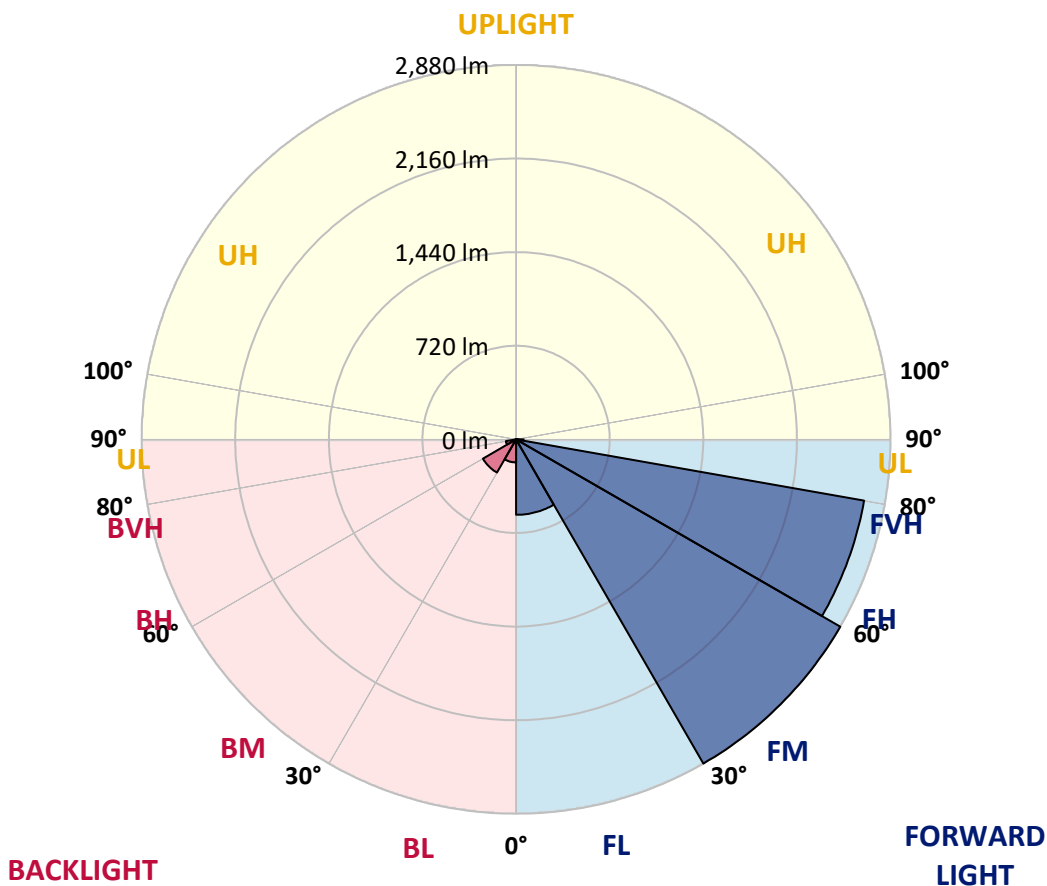
CATALOG NUMBER: GWS-SA1F-750-U-SL4-W-HSS

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

| Zone           | Lumens | % Fixture | Zone Rating/Lumen Limit |      |         |
|----------------|--------|-----------|-------------------------|------|---------|
|                |        |           | B                       | U    | G       |
| FL (0°-30°)    | 580.4  | 8.5       |                         |      |         |
| FM (30°-60°)   | 2879.6 | 42.4      |                         |      |         |
| FH (60°-80°)   | 2717.6 | 40.0      |                         |      | G2/5000 |
| FVH (80°-90°)  | 57.3   | 0.8       |                         |      | G1/100  |
| BL (0°-30°)    | 177.3  | 2.6       | B1/500                  |      |         |
| BM (30°-60°)   | 294.7  | 4.3       | B1/1000                 |      |         |
| BH (60°-80°)   | 79.2   | 1.2       | B0/110                  |      | G0/110  |
| BVH (80°-90°)  | 4.0    | 0.1       |                         |      | G0/10   |
| UL (90°-100°)  | 0.0    | 0.0       |                         | U0/0 |         |
| UH (100°-180°) | 0.0    | 0.0       |                         | U0/0 |         |

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

Type IV Short





REPORT NUMBER: P631382

CATALOG NUMBER: GWS-SA1F-750-U-SL4-W-HSS

**CANDELA DISTRIBUTION (FULL):**

|       | 0°     | 5°     | 15°    | 25°    | 35°    | 40°    | 45°    | 55°    | 65°    | 75°    | 85°    |
|-------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|
| 0°    | 1152.2 | 1152.2 | 1152.2 | 1152.2 | 1152.2 | 1152.2 | 1152.2 | 1152.2 | 1152.2 | 1152.2 | 1152.2 |
| 2.5°  | 1238.7 | 1243.0 | 1242.4 | 1244.3 | 1239.9 | 1233.1 | 1231.9 | 1222.6 | 1206.0 | 1185.0 | 1161.5 |
| 5°    | 1264.0 | 1269.0 | 1265.3 | 1263.4 | 1255.4 | 1248.0 | 1246.1 | 1236.2 | 1217.1 | 1188.7 | 1147.9 |
| 7.5°  | 1285.7 | 1286.9 | 1284.4 | 1280.1 | 1268.4 | 1258.5 | 1251.7 | 1238.1 | 1215.2 | 1186.8 | 1139.9 |
| 10°   | 1289.4 | 1288.8 | 1290.0 | 1290.6 | 1283.2 | 1274.5 | 1269.0 | 1250.4 | 1221.4 | 1191.1 | 1140.5 |
| 12.5° | 1285.0 | 1285.0 | 1293.1 | 1302.3 | 1302.3 | 1298.0 | 1292.5 | 1275.8 | 1241.8 | 1206.0 | 1152.8 |
| 15°   | 1290.6 | 1292.5 | 1307.9 | 1325.2 | 1330.8 | 1326.4 | 1324.0 | 1306.7 | 1271.5 | 1231.9 | 1175.1 |
| 17.5° | 1310.4 | 1312.2 | 1336.9 | 1362.9 | 1369.7 | 1364.7 | 1359.8 | 1342.5 | 1304.8 | 1261.6 | 1200.4 |
| 20°   | 1339.4 | 1344.4 | 1375.9 | 1409.2 | 1415.4 | 1409.2 | 1399.3 | 1375.2 | 1337.6 | 1293.7 | 1224.5 |
| 22.5° | 1392.5 | 1395.6 | 1429.6 | 1464.8 | 1467.9 | 1458.0 | 1443.2 | 1409.8 | 1370.3 | 1327.7 | 1251.7 |
| 25°   | 1463.0 | 1467.3 | 1501.3 | 1535.3 | 1527.2 | 1512.4 | 1492.0 | 1454.3 | 1409.2 | 1367.8 | 1286.3 |
| 27.5° | 1547.0 | 1551.9 | 1585.3 | 1615.0 | 1593.9 | 1576.7 | 1553.8 | 1506.8 | 1461.1 | 1423.4 | 1330.8 |
| 30°   | 1637.8 | 1642.1 | 1671.8 | 1698.4 | 1670.6 | 1650.2 | 1623.0 | 1574.8 | 1528.5 | 1500.0 | 1393.8 |
| 32.5° | 1725.5 | 1724.9 | 1753.3 | 1775.0 | 1746.5 | 1730.5 | 1705.8 | 1657.0 | 1619.9 | 1607.5 | 1487.7 |
| 35°   | 1807.1 | 1807.1 | 1830.6 | 1852.2 | 1831.8 | 1823.2 | 1800.3 | 1761.4 | 1740.4 | 1755.2 | 1613.1 |
| 37.5° | 1889.3 | 1884.9 | 1907.2 | 1931.3 | 1929.4 | 1930.0 | 1917.1 | 1898.5 | 1899.8 | 1952.3 | 1785.5 |
| 40°   | 1957.2 | 1955.4 | 1981.3 | 2012.8 | 2037.5 | 2057.3 | 2049.3 | 2056.1 | 2095.0 | 2193.2 | 2006.0 |
| 42.5° | 2011.6 | 2015.9 | 2049.3 | 2099.3 | 2161.7 | 2201.9 | 2207.4 | 2235.2 | 2335.3 | 2487.3 | 2255.0 |
| 45°   | 2074.0 | 2074.6 | 2120.9 | 2197.5 | 2297.0 | 2360.7 | 2382.9 | 2454.6 | 2596.7 | 2792.5 | 2528.1 |
| 47.5° | 2150.6 | 2143.2 | 2195.1 | 2302.6 | 2446.5 | 2540.4 | 2580.0 | 2669.6 | 2889.5 | 3090.3 | 2750.5 |
| 50°   | 2235.2 | 2221.6 | 2280.3 | 2426.8 | 2614.0 | 2731.3 | 2811.7 | 2942.6 | 3179.9 | 3334.9 | 2916.1 |
| 52.5° | 2333.5 | 2320.5 | 2387.2 | 2569.5 | 2814.7 | 2957.5 | 3060.6 | 3192.8 | 3428.8 | 3521.5 | 3014.9 |
| 55°   | 2458.3 | 2445.3 | 2515.7 | 2740.6 | 3052.0 | 3237.3 | 3345.4 | 3456.6 | 3660.5 | 3659.3 | 3086.6 |
| 57.5° | 2596.7 | 2578.7 | 2676.4 | 2956.8 | 3347.9 | 3540.7 | 3650.6 | 3705.0 | 3836.6 | 3766.2 | 3134.8 |
| 60°   | 2755.4 | 2739.4 | 2874.7 | 3214.5 | 3689.6 | 3868.1 | 3937.3 | 3915.1 | 3981.2 | 3829.2 | 3118.1 |
| 62.5° | 2898.8 | 2891.4 | 3059.4 | 3487.5 | 4015.1 | 4165.9 | 4185.0 | 4088.0 | 4087.4 | 3830.4 | 3005.6 |
| 65°   | 3047.7 | 3061.9 | 3311.5 | 3802.0 | 4342.6 | 4443.9 | 4411.2 | 4259.8 | 4130.1 | 3679.1 | 2673.3 |
| 67.5° | 3103.3 | 3144.7 | 3477.7 | 4086.2 | 4600.8 | 4679.9 | 4622.5 | 4345.7 | 3952.7 | 3170.0 | 2035.7 |
| 70°   | 2759.8 | 2837.6 | 3320.7 | 4102.3 | 4707.7 | 4783.1 | 4645.3 | 4114.6 | 3295.4 | 2099.9 | 1115.1 |
| 72.5° | 2098.7 | 2189.5 | 2767.2 | 3359.0 | 4233.9 | 4405.6 | 4170.2 | 3352.2 | 2124.0 | 919.9  | 374.4  |
| 75°   | 1174.5 | 1272.7 | 2061.0 | 2529.3 | 2842.5 | 2999.5 | 2913.0 | 2150.6 | 940.9  | 240.3  | 111.8  |
| 77.5° | 397.3  | 430.0  | 958.8  | 1564.9 | 1876.3 | 1735.4 | 1469.2 | 1068.2 | 346.0  | 91.4   | 59.3   |
| 80°   | 235.4  | 247.7  | 357.1  | 779.1  | 987.3  | 818.6  | 646.2  | 394.8  | 176.1  | 48.8   | 41.4   |
| 82.5° | 70.4   | 83.4   | 197.1  | 289.1  | 386.7  | 240.9  | 203.9  | 225.5  | 91.4   | 26.6   | 34.6   |
| 85°   | 0.0    | 0.0    | 42.0   | 89.6   | 101.3  | 39.5   | 39.5   | 127.9  | 16.7   | 11.1   | 25.3   |
| 87.5° | 0.0    | 0.0    | 0.0    | 0.0    | 0.0    | 0.0    | 0.6    | 3.1    | 1.9    | 2.5    | 5.6    |
| 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: P631382

CATALOG NUMBER: GWS-SA1F-750-U-SL4-W-HSS

**CANDELA DISTRIBUTION (continued):**

|       | 90°    | 95°    | 105°   | 115°   | 125°   | 135°   | 145°   | 155°   | 165°   | 175°   | 180°   |
|-------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|
| 0°    | 1152.2 | 1152.2 | 1152.2 | 1152.2 | 1152.2 | 1152.2 | 1152.2 | 1152.2 | 1152.2 | 1152.2 | 1152.2 |
| 2.5°  | 1144.8 | 1123.2 | 1097.8 | 1073.8 | 1050.9 | 1021.2 | 1007.0 | 989.7  | 974.9  | 966.9  | 971.2  |
| 5°    | 1121.9 | 1088.0 | 1036.1 | 983.6  | 930.4  | 880.4  | 835.3  | 805.0  | 777.8  | 763.6  | 766.7  |
| 7.5°  | 1102.2 | 1056.5 | 975.5  | 889.6  | 804.4  | 718.5  | 648.7  | 594.3  | 552.3  | 535.0  | 531.9  |
| 10°   | 1093.5 | 1036.1 | 921.8  | 798.2  | 667.2  | 551.7  | 452.9  | 392.9  | 350.3  | 329.3  | 333.0  |
| 12.5° | 1097.8 | 1025.6 | 876.1  | 708.6  | 538.7  | 404.0  | 309.5  | 253.3  | 223.0  | 210.7  | 207.6  |
| 15°   | 1110.2 | 1023.1 | 835.3  | 617.2  | 415.8  | 282.3  | 213.8  | 190.9  | 184.7  | 183.5  | 183.5  |
| 17.5° | 1124.4 | 1023.7 | 793.3  | 524.5  | 315.7  | 209.4  | 182.9  | 178.5  | 176.7  | 175.5  | 176.1  |
| 20°   | 1138.6 | 1023.7 | 745.1  | 430.6  | 237.2  | 181.0  | 174.2  | 171.1  | 169.3  | 168.7  | 168.7  |
| 22.5° | 1155.9 | 1023.7 | 691.3  | 343.5  | 190.3  | 171.8  | 166.2  | 164.3  | 162.5  | 161.9  | 161.2  |
| 25°   | 1176.9 | 1024.3 | 632.0  | 268.7  | 173.0  | 163.7  | 159.4  | 157.5  | 155.7  | 154.5  | 154.5  |
| 27.5° | 1207.2 | 1029.3 | 566.5  | 209.4  | 163.1  | 156.3  | 152.6  | 150.7  | 148.9  | 147.0  | 147.0  |
| 30°   | 1251.1 | 1041.6 | 493.0  | 173.0  | 153.8  | 148.3  | 144.6  | 143.3  | 141.5  | 139.6  | 139.0  |
| 32.5° | 1316.6 | 1063.3 | 417.0  | 155.1  | 145.2  | 139.6  | 135.3  | 134.1  | 132.2  | 130.4  | 129.7  |
| 35°   | 1408.0 | 1102.8 | 342.9  | 143.9  | 134.1  | 128.5  | 126.0  | 125.4  | 122.9  | 121.1  | 121.1  |
| 37.5° | 1542.1 | 1167.0 | 271.8  | 132.8  | 124.8  | 120.5  | 117.4  | 116.1  | 113.7  | 111.8  | 111.2  |
| 40°   | 1705.8 | 1250.4 | 211.3  | 124.2  | 116.1  | 111.8  | 108.7  | 106.9  | 103.8  | 101.3  | 100.1  |
| 42.5° | 1914.6 | 1352.4 | 166.8  | 114.9  | 108.1  | 103.8  | 101.3  | 97.6   | 93.3   | 89.6   | 89.0   |
| 45°   | 2132.1 | 1457.4 | 137.8  | 106.3  | 100.7  | 97.0   | 93.9   | 89.0   | 82.8   | 78.5   | 77.2   |
| 47.5° | 2298.9 | 1522.9 | 120.5  | 97.0   | 92.7   | 89.6   | 85.9   | 79.7   | 72.3   | 67.3   | 66.1   |
| 50°   | 2418.1 | 1532.8 | 107.5  | 88.3   | 85.9   | 82.8   | 77.2   | 69.8   | 61.8   | 56.8   | 55.6   |
| 52.5° | 2476.8 | 1488.3 | 97.0   | 80.3   | 78.5   | 75.4   | 68.6   | 60.5   | 51.9   | 47.0   | 45.7   |
| 55°   | 2503.4 | 1404.3 | 87.1   | 73.5   | 71.0   | 67.3   | 59.9   | 51.3   | 42.6   | 38.3   | 37.1   |
| 57.5° | 2492.9 | 1280.1 | 78.5   | 66.7   | 63.6   | 59.3   | 51.3   | 42.0   | 35.2   | 30.9   | 30.3   |
| 60°   | 2415.0 | 1105.9 | 69.8   | 59.9   | 56.2   | 51.3   | 43.2   | 34.6   | 28.4   | 25.3   | 24.7   |
| 62.5° | 2247.0 | 889.6  | 61.2   | 51.9   | 49.4   | 44.5   | 37.1   | 28.4   | 23.5   | 21.6   | 21.0   |
| 65°   | 1902.9 | 628.9  | 52.5   | 43.9   | 42.6   | 37.7   | 30.9   | 23.5   | 20.4   | 19.2   | 18.5   |
| 67.5° | 1367.8 | 382.4  | 44.5   | 37.7   | 36.5   | 32.1   | 25.9   | 20.4   | 18.5   | 17.9   | 17.9   |
| 70°   | 687.6  | 181.0  | 35.2   | 30.9   | 30.9   | 26.6   | 22.2   | 18.5   | 17.9   | 17.3   | 17.3   |
| 72.5° | 233.5  | 77.2   | 26.6   | 24.1   | 25.3   | 22.9   | 19.2   | 17.3   | 17.3   | 17.3   | 17.3   |
| 75°   | 79.7   | 40.8   | 18.5   | 17.3   | 18.5   | 18.5   | 16.7   | 16.7   | 17.3   | 17.3   | 17.3   |
| 77.5° | 51.9   | 27.2   | 13.0   | 11.7   | 14.2   | 14.2   | 14.2   | 15.4   | 16.7   | 16.7   | 16.7   |
| 80°   | 42.6   | 14.8   | 8.6    | 8.0    | 10.5   | 10.5   | 11.7   | 14.2   | 15.4   | 15.4   | 15.4   |
| 82.5° | 36.5   | 9.3    | 4.9    | 5.6    | 7.4    | 8.0    | 9.9    | 11.7   | 13.6   | 14.2   | 14.2   |
| 85°   | 24.7   | 4.9    | 3.7    | 4.3    | 4.9    | 6.2    | 8.0    | 9.9    | 11.1   | 12.4   | 12.4   |
| 87.5° | 6.8    | 1.9    | 2.5    | 3.1    | 3.1    | 4.3    | 6.2    | 7.4    | 8.6    | 9.3    | 9.3    |
| 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**



#####

| 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

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

**Summary**

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



**Color Vector Graphics**





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)