

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: P628848

Luminaire Tested: GWS-SA1A-740-U-SL2-W-HSS

Issue Date: 1/10/2023

**Test Information**

Test Method: LM-79-2019  
Report Number: P628848  
TEST IS SCALED FROM IESNA LM-79-08 TEST DATA (G2-2209-782-30)  
Test Lab: COOPER LIGHTING SOLUTIONS  
Issue Date: 1/10/2023  
Manufacturer: COOPER LIGHTING SOLUTIONS  
Product Line: McGRAW-EDISON  
Catalog Number: GWS-SA1A-740-U-SL2-W-HSS  
Description: GALLEON WALL SLIM LUMINAIRE. (1) LIGHTSQUARES WITH 16 LEDS EACH AND TYPE II SPILL LIGHT ELIMINATOR OPTICS WITH HOUSE SIDE SHIELD  
Light Source: (16) 4000K CCT, 70 CRI LEDS  
Ballast/Driver: -

**Summary**

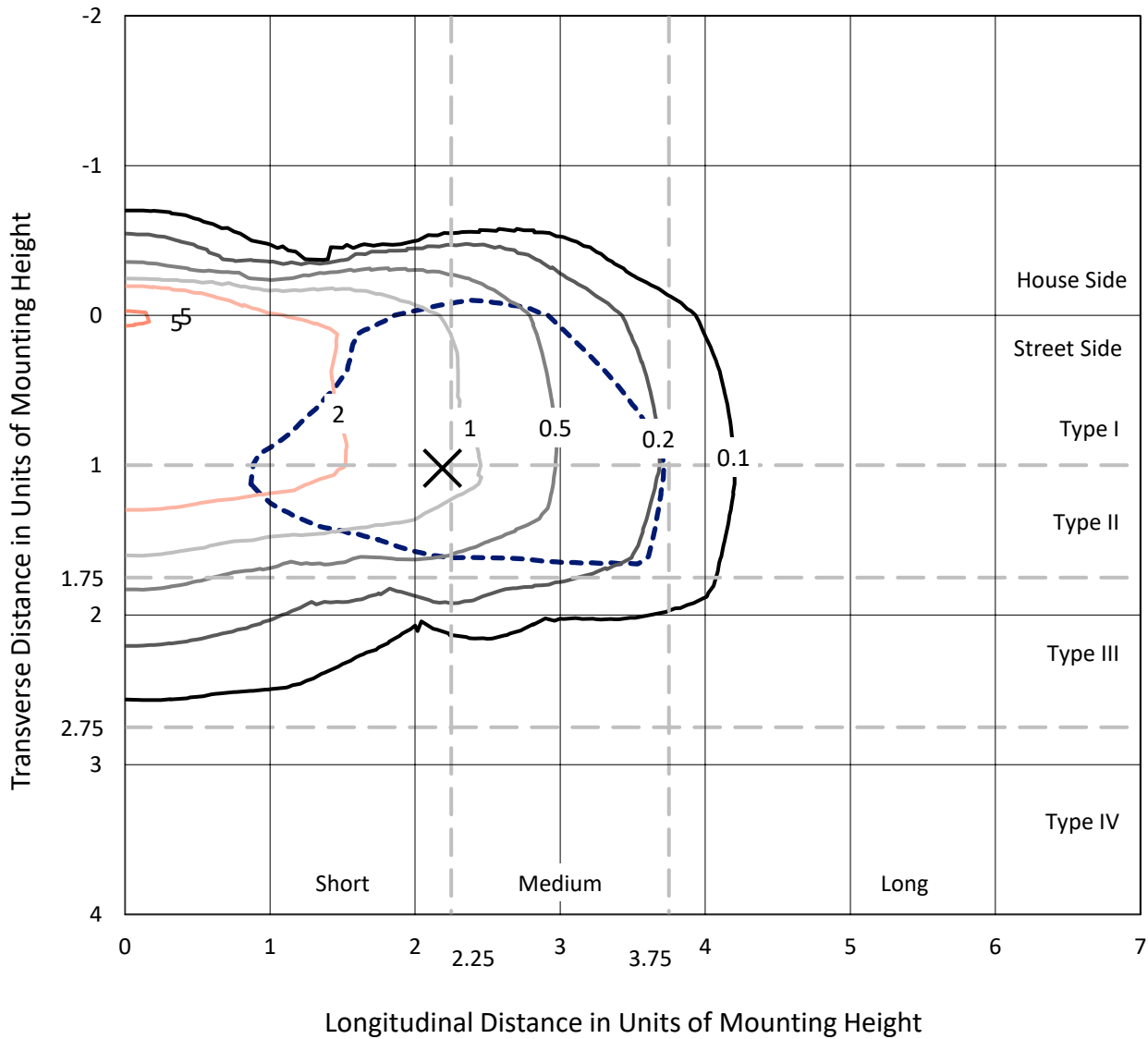
Lumens per Lamp: N/A  
Luminaire Lumens: 2254.3 lumens  
Efficiency: N/A  
Efficacy: 114.4 lumens/watt  
Luminous Opening: Rectangular (W 0.5' x L: 0.5' x H: 0')  
IES Classification: Type II - Short  
BUG Rating: B0 - U0 - G1  
  
Input Watts (W): 19.7  
Input Voltage (V): 120  
Input Current (Ain): 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



REPORT NUMBER: P628848  
 CATALOG NUMBER: GWS-SA1A-740-U-SL2-W-HSS

### Iso-Footcandle Lines of Horizontal Illumination

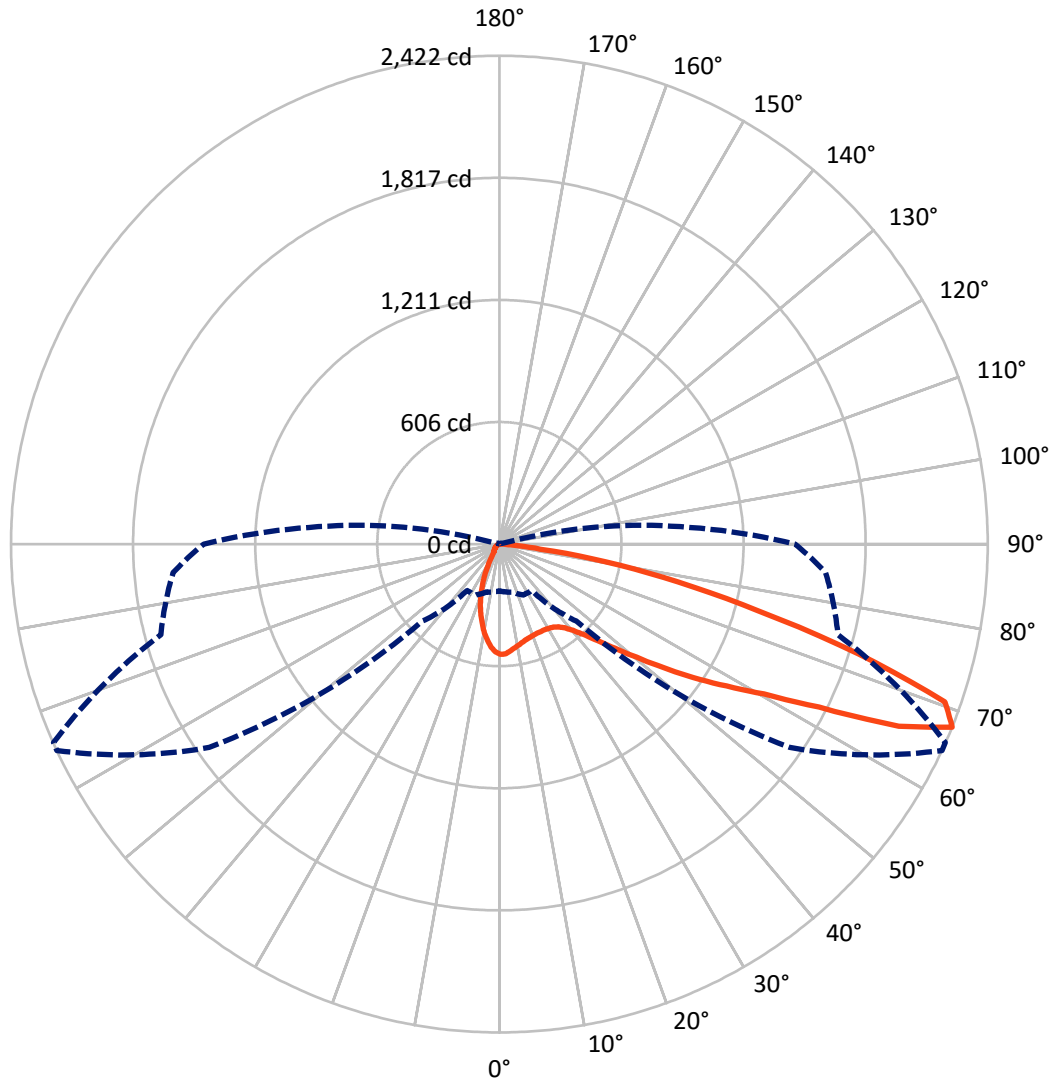
✕ Max cd  
 - - - 1/2 Max cd



Based on 10 foot mounting height. Maximum calculated value = 5.5 fc  
 Type II - Short - N/A

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### Luminous Intensity Polar Plot



— Vertical Plane Through 65-Deg Lateral    - - - Horizontal Cone Through 67.5-Deg Vertical

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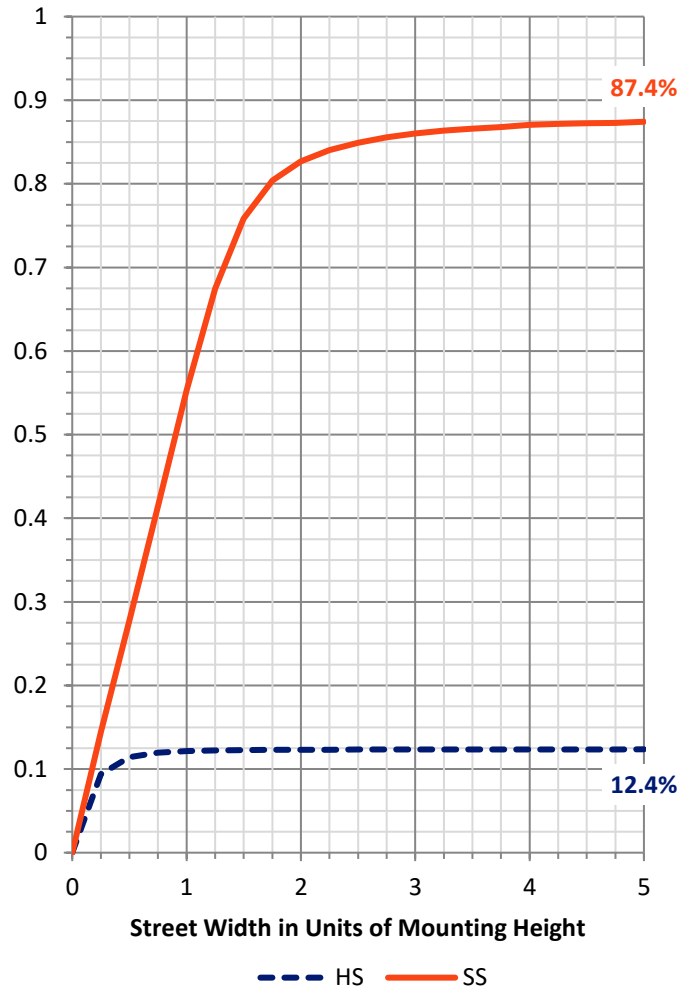
**FLUX DISTRIBUTION:**

|                    |           | Downward | Upward | Total  |
|--------------------|-----------|----------|--------|--------|
| <b>House Side</b>  | Lumens    | 281.5    | 0.0    | 281.5  |
|                    | % Fixture | 12.5     | 0.0    | 12.5   |
| <b>Street Side</b> | Lumens    | 1972.8   | 0.0    | 1972.8 |
|                    | % Fixture | 87.5     | 0.0    | 87.5   |
| <b>Total</b>       | Lumens    | 2254.3   | 0.0    | 2254.3 |
|                    | % Fixture | 100.0    | 0.0    | 100.0  |

**ZONAL LUMENS:**

| Zone      | Lumens | % Fixture |
|-----------|--------|-----------|
| 0°-10°    | 45.4   | 2.0       |
| 10°-20°   | 102.1  | 4.5       |
| 20°-30°   | 145.9  | 6.5       |
| 30°-40°   | 212.2  | 9.4       |
| 40°-50°   | 332.4  | 14.7      |
| 50°-60°   | 518.5  | 23.0      |
| 60°-70°   | 569.5  | 25.3      |
| 70°-80°   | 303.1  | 13.4      |
| 80°-90°   | 25.2   | 1.1       |
| 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°    | 2254.3 | 100.0     |
| 0°-180°   | 2254.3 | 100.0     |

**Coefficient of Utilization**



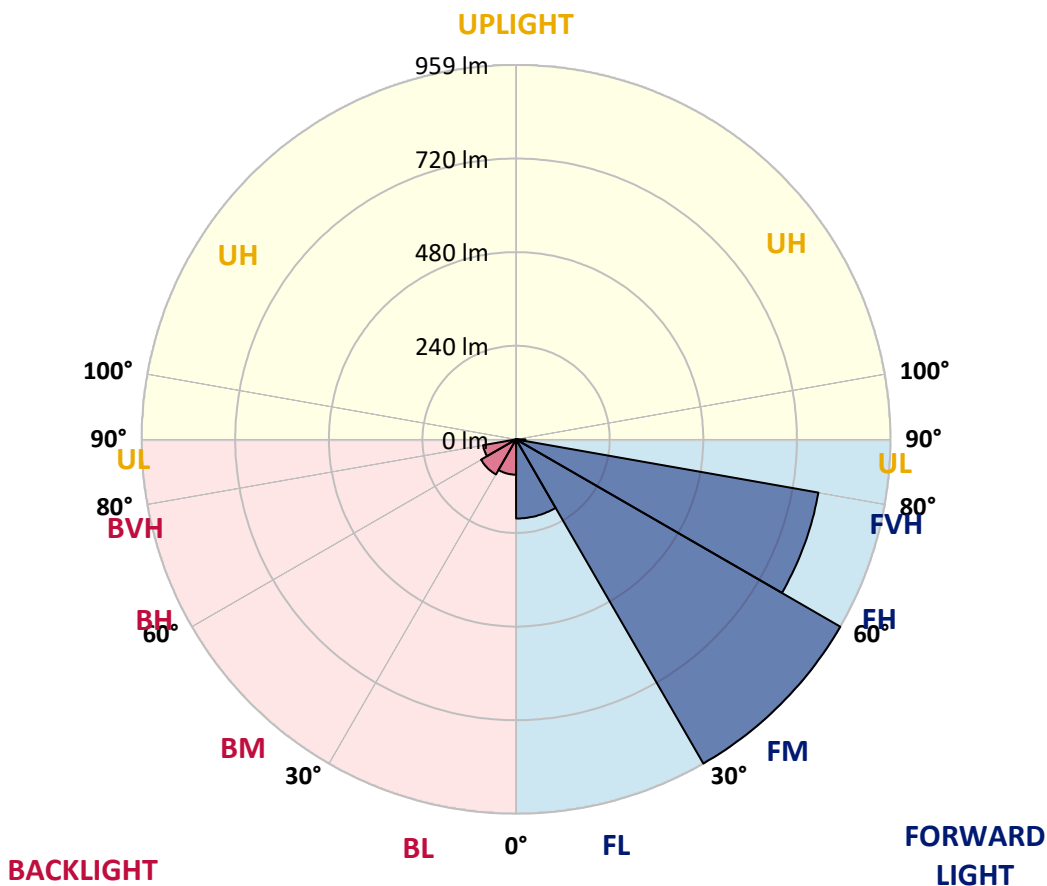
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**LUMINAIRE CLASSIFICATION SYSTEM LUMEN TABLE AND BUG RATING:**

| Zone           | Lumens | % Fixture | Zone Rating/Lumen Limit |      |         |
|----------------|--------|-----------|-------------------------|------|---------|
|                |        |           | B                       | U    | G       |
| FL (0°-30°)    | 202.9  | 9.0       |                         |      |         |
| FM (30°-60°)   | 959.4  | 42.6      |                         |      |         |
| FH (60°-80°)   | 786.7  | 34.9      |                         |      | G1/1800 |
| FVH (80°-90°)  | 23.9   | 1.1       |                         |      | G1/100  |
| BL (0°-30°)    | 90.5   | 4.0       | B0/110                  |      |         |
| BM (30°-60°)   | 103.7  | 4.6       | B0/220                  |      |         |
| BH (60°-80°)   | 86.0   | 3.8       | B0/110                  |      | G0/110  |
| BVH (80°-90°)  | 1.3    | 0.1       |                         |      | G0/10   |
| UL (90°-100°)  | 0.0    | 0.0       |                         | U0/0 |         |
| UH (100°-180°) | 0.0    | 0.0       |                         | U0/0 |         |

**BUG Rating: B0-U0-G1**  
 Type II Short





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**CANDELA DISTRIBUTION (FULL):**

|       | 0°    | 5°    | 15°   | 25°   | 35°    | 45°    | 55°    | 65°    | 66°    | 75°    | 85°    |
|-------|-------|-------|-------|-------|--------|--------|--------|--------|--------|--------|--------|
| 0°    | 546.7 | 546.7 | 546.7 | 546.7 | 546.7  | 546.7  | 546.7  | 546.7  | 546.7  | 546.7  | 546.7  |
| 2.5°  | 527.8 | 529.4 | 527.2 | 532.7 | 533.7  | 539.8  | 543.3  | 545.7  | 545.5  | 548.6  | 548.6  |
| 5°    | 496.8 | 498.4 | 497.2 | 503.1 | 507.8  | 517.4  | 525.3  | 534.5  | 534.9  | 544.3  | 547.8  |
| 7.5°  | 470.5 | 470.7 | 470.7 | 478.0 | 484.2  | 496.0  | 507.8  | 521.9  | 523.5  | 538.0  | 547.1  |
| 10°   | 448.9 | 449.5 | 449.7 | 458.1 | 464.8  | 479.1  | 494.1  | 511.1  | 512.9  | 532.5  | 546.7  |
| 12.5° | 434.0 | 434.2 | 435.0 | 443.8 | 451.1  | 466.0  | 481.3  | 500.7  | 503.1  | 526.1  | 544.9  |
| 15°   | 426.9 | 426.5 | 426.9 | 434.2 | 441.5  | 455.8  | 471.5  | 492.3  | 495.0  | 520.8  | 545.1  |
| 17.5° | 426.5 | 425.9 | 425.4 | 430.9 | 435.6  | 448.3  | 464.2  | 486.8  | 489.7  | 518.4  | 547.4  |
| 20°   | 432.4 | 432.0 | 429.9 | 432.4 | 433.4  | 443.8  | 459.5  | 482.5  | 485.4  | 518.0  | 552.2  |
| 22.5° | 447.9 | 446.8 | 443.8 | 441.5 | 436.0  | 442.2  | 456.2  | 479.5  | 482.7  | 519.0  | 558.6  |
| 25°   | 470.9 | 470.5 | 466.6 | 461.1 | 447.1  | 444.6  | 456.4  | 479.5  | 482.5  | 520.2  | 565.3  |
| 27.5° | 505.6 | 503.1 | 498.2 | 488.6 | 468.5  | 454.2  | 460.5  | 480.7  | 483.7  | 521.9  | 570.8  |
| 30°   | 540.8 | 540.6 | 539.0 | 529.2 | 499.2  | 472.5  | 469.1  | 484.0  | 486.8  | 523.3  | 575.9  |
| 32.5° | 577.3 | 577.9 | 582.0 | 574.5 | 541.6  | 499.9  | 484.6  | 490.7  | 492.7  | 526.1  | 580.4  |
| 35°   | 612.0 | 613.2 | 624.0 | 626.6 | 593.2  | 541.2  | 509.8  | 504.1  | 504.3  | 532.5  | 586.3  |
| 37.5° | 645.2 | 649.3 | 666.6 | 679.4 | 657.4  | 591.4  | 546.3  | 527.0  | 525.3  | 545.1  | 595.3  |
| 40°   | 682.9 | 690.7 | 712.5 | 734.3 | 727.4  | 657.6  | 596.1  | 562.0  | 558.6  | 568.3  | 611.4  |
| 42.5° | 724.7 | 733.1 | 762.0 | 792.6 | 795.8  | 737.8  | 658.2  | 613.2  | 607.3  | 607.5  | 641.5  |
| 45°   | 769.6 | 780.8 | 814.4 | 858.4 | 878.2  | 827.0  | 734.9  | 682.3  | 676.4  | 667.6  | 690.0  |
| 47.5° | 828.5 | 838.3 | 870.7 | 921.4 | 959.3  | 922.9  | 835.4  | 771.2  | 760.4  | 747.5  | 765.5  |
| 50°   | 879.2 | 887.8 | 915.7 | 979.3 | 1058.2 | 1046.4 | 949.4  | 882.3  | 871.9  | 850.1  | 865.0  |
| 52.5° | 890.4 | 897.2 | 922.9 | 994.4 | 1133.8 | 1202.3 | 1089.0 | 1016.6 | 1009.3 | 968.9  | 974.6  |
| 55°   | 840.1 | 850.3 | 873.3 | 952.8 | 1153.6 | 1354.8 | 1270.2 | 1168.1 | 1152.8 | 1088.4 | 1098.6 |
| 57.5° | 712.9 | 731.0 | 752.6 | 856.0 | 1100.0 | 1436.0 | 1523.4 | 1328.5 | 1314.7 | 1203.4 | 1203.6 |
| 60°   | 522.5 | 537.2 | 551.6 | 646.2 | 972.8  | 1430.4 | 1753.2 | 1508.7 | 1483.5 | 1297.3 | 1293.9 |
| 62.5° | 380.0 | 387.5 | 387.3 | 421.0 | 668.0  | 1336.3 | 1873.8 | 1780.3 | 1721.4 | 1397.8 | 1378.1 |
| 65°   | 298.9 | 298.6 | 307.4 | 318.4 | 373.1  | 1031.5 | 1888.7 | 2176.8 | 2113.2 | 1532.6 | 1491.4 |
| 67.5° | 232.6 | 237.1 | 245.8 | 278.3 | 280.3  | 539.8  | 1757.8 | 2422.0 | 2420.8 | 1738.3 | 1624.1 |
| 70°   | 179.4 | 185.5 | 197.9 | 245.2 | 258.9  | 302.1  | 1315.3 | 2344.3 | 2364.1 | 1830.2 | 1530.1 |
| 72.5° | 115.2 | 114.8 | 133.1 | 198.1 | 248.7  | 251.8  | 727.4  | 1862.2 | 1884.6 | 1657.7 | 1237.2 |
| 75°   | 64.4  | 64.8  | 75.2  | 121.3 | 231.8  | 236.9  | 360.2  | 1327.9 | 1345.6 | 1292.4 | 950.6  |
| 77.5° | 25.3  | 26.1  | 35.3  | 63.8  | 152.9  | 211.6  | 214.0  | 905.5  | 908.2  | 800.9  | 583.0  |
| 80°   | 10.2  | 10.8  | 17.9  | 39.5  | 93.2   | 142.5  | 152.9  | 533.5  | 522.7  | 310.1  | 169.6  |
| 82.5° | 3.1   | 3.3   | 7.1   | 22.4  | 48.7   | 101.3  | 103.2  | 204.7  | 193.3  | 66.7   | 43.2   |
| 85°   | 0.2   | 0.2   | 1.6   | 6.9   | 17.3   | 25.5   | 68.7   | 66.7   | 59.1   | 16.7   | 19.2   |
| 87.5° | 0.0   | 0.0   | 0.2   | 0.2   | 0.4    | 0.8    | 7.3    | 12.2   | 12.4   | 3.1    | 8.6    |
| 90°   | 0.0   | 0.0   | 0.0   | 0.0   | 0.0    | 0.0    | 0.0    | 0.0    | 0.0    | 0.0    | 0.0    |



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 CATALOG NUMBER: GWS-SA1A-740-U-SL2-W-HSS

**CANDELA DISTRIBUTION (continued):**

|       | 90°    | 95°   | 105°  | 115°  | 125°  | 135°  | 145°  | 155°  | 165°  | 175°  | 180°  |
|-------|--------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|
| 0°    | 546.7  | 546.7 | 546.7 | 546.7 | 546.7 | 546.7 | 546.7 | 546.7 | 546.7 | 546.7 | 546.7 |
| 2.5°  | 548.6  | 541.2 | 540.6 | 534.9 | 529.2 | 522.1 | 513.7 | 507.6 | 503.3 | 495.8 | 494.3 |
| 5°    | 547.8  | 538.0 | 528.8 | 512.5 | 494.3 | 474.8 | 457.7 | 441.8 | 431.8 | 425.0 | 422.2 |
| 7.5°  | 546.1  | 533.7 | 512.5 | 481.7 | 451.3 | 417.1 | 390.4 | 365.9 | 349.2 | 339.4 | 335.1 |
| 10°   | 544.9  | 528.2 | 493.7 | 447.1 | 400.0 | 352.7 | 312.1 | 275.8 | 255.6 | 239.7 | 237.1 |
| 12.5° | 542.5  | 520.2 | 469.7 | 406.5 | 345.7 | 283.0 | 231.2 | 186.7 | 155.9 | 142.1 | 137.2 |
| 15°   | 540.0  | 511.9 | 445.6 | 363.7 | 286.6 | 209.2 | 146.4 | 103.6 | 82.4  | 75.8  | 75.4  |
| 17.5° | 539.6  | 504.3 | 419.5 | 323.1 | 224.6 | 137.0 | 83.4  | 67.1  | 62.6  | 61.0  | 61.0  |
| 20°   | 540.8  | 498.0 | 393.8 | 276.4 | 163.7 | 83.4  | 62.2  | 58.1  | 55.4  | 54.0  | 54.0  |
| 22.5° | 542.1  | 491.5 | 369.2 | 229.3 | 108.7 | 61.0  | 54.8  | 51.4  | 48.3  | 46.7  | 45.9  |
| 25°   | 542.9  | 484.4 | 341.9 | 182.0 | 70.9  | 53.0  | 48.1  | 43.6  | 40.0  | 37.9  | 37.9  |
| 27.5° | 542.7  | 475.8 | 314.3 | 135.8 | 55.0  | 47.1  | 41.2  | 36.5  | 32.8  | 30.6  | 30.8  |
| 30°   | 541.0  | 466.4 | 285.8 | 94.8  | 48.1  | 41.2  | 35.3  | 30.4  | 26.7  | 24.9  | 24.7  |
| 32.5° | 539.8  | 456.4 | 252.8 | 66.7  | 43.2  | 36.1  | 30.0  | 25.3  | 22.2  | 20.8  | 20.6  |
| 35°   | 538.4  | 446.6 | 221.4 | 50.8  | 38.9  | 31.2  | 25.3  | 21.4  | 19.0  | 17.7  | 17.7  |
| 37.5° | 538.8  | 436.5 | 187.3 | 43.6  | 34.7  | 27.1  | 21.6  | 18.3  | 16.3  | 15.1  | 14.9  |
| 40°   | 545.1  | 430.3 | 153.9 | 39.5  | 30.8  | 23.4  | 18.8  | 15.9  | 13.9  | 12.6  | 12.4  |
| 42.5° | 560.8  | 430.5 | 121.9 | 36.5  | 27.3  | 20.0  | 16.3  | 13.7  | 11.8  | 10.4  | 10.2  |
| 45°   | 592.2  | 439.1 | 93.6  | 33.2  | 23.6  | 17.3  | 14.1  | 11.6  | 9.8   | 8.6   | 8.4   |
| 47.5° | 643.6  | 464.6 | 70.9  | 30.4  | 20.6  | 15.1  | 12.0  | 9.8   | 8.2   | 7.1   | 6.9   |
| 50°   | 725.3  | 510.7 | 55.9  | 26.9  | 17.3  | 13.0  | 10.2  | 8.2   | 6.7   | 5.7   | 5.5   |
| 52.5° | 823.6  | 579.8 | 47.9  | 23.9  | 14.9  | 11.4  | 8.8   | 6.7   | 5.5   | 4.7   | 4.5   |
| 55°   | 936.5  | 662.3 | 44.2  | 20.8  | 12.6  | 9.8   | 7.1   | 5.5   | 4.5   | 3.9   | 3.5   |
| 57.5° | 1040.1 | 736.7 | 44.0  | 17.7  | 10.8  | 8.4   | 5.9   | 4.7   | 3.9   | 3.1   | 2.9   |
| 60°   | 1141.0 | 798.9 | 41.4  | 14.7  | 9.4   | 6.9   | 5.1   | 3.9   | 3.3   | 2.7   | 2.4   |
| 62.5° | 1232.5 | 849.5 | 34.7  | 11.8  | 8.0   | 5.7   | 4.3   | 3.5   | 2.9   | 2.2   | 2.2   |
| 65°   | 1347.5 | 913.9 | 26.5  | 9.6   | 6.5   | 4.7   | 3.7   | 3.1   | 2.7   | 2.0   | 2.0   |
| 67.5° | 1466.3 | 947.9 | 19.0  | 8.0   | 5.3   | 4.1   | 3.3   | 2.9   | 2.2   | 1.8   | 1.8   |
| 70°   | 1328.1 | 800.9 | 13.7  | 6.5   | 4.5   | 3.5   | 2.9   | 2.7   | 2.2   | 1.8   | 1.6   |
| 72.5° | 1037.2 | 577.5 | 10.2  | 5.1   | 3.9   | 3.3   | 2.7   | 2.4   | 2.0   | 1.6   | 1.6   |
| 75°   | 769.1  | 336.8 | 7.7   | 4.1   | 3.1   | 2.7   | 2.7   | 2.4   | 2.0   | 1.6   | 1.4   |
| 77.5° | 418.1  | 117.4 | 5.9   | 3.3   | 2.4   | 2.0   | 2.2   | 2.2   | 1.8   | 1.4   | 1.2   |
| 80°   | 110.7  | 32.2  | 4.1   | 2.4   | 2.0   | 1.6   | 1.6   | 2.0   | 1.6   | 1.2   | 1.2   |
| 82.5° | 32.2   | 9.4   | 2.9   | 2.0   | 1.6   | 1.4   | 1.4   | 1.4   | 1.2   | 1.0   | 0.8   |
| 85°   | 15.7   | 3.5   | 2.0   | 1.6   | 1.4   | 1.2   | 1.0   | 1.0   | 0.8   | 0.6   | 0.6   |
| 87.5° | 6.9    | 1.4   | 1.6   | 1.4   | 1.4   | 1.0   | 0.8   | 0.6   | 0.6   | 0.4   | 0.2   |
| 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

MCGRAW, INVUE, LUMARK AND STREETWORKS

DATA VALID FOR LUMINAIRES UTILIZING SA LIGHT ENGINES

Report Number: SP1-2101-121-2

Luminaire Tested: IFLD-S-SA2A-740-U-T3R-HSS

Test Date: 03/05/2021

**Test Information**

Test Method: LM-79-08  
 Report Number: SP1-2101-121-2  
 Test Lab: COOPER LIGHTING SOLUTIONS  
 Photometer: SP1  
 Measurement Geometry: 4π  
 Issue Date: 03/05/2021  
 Manufacturer: COOPER LIGHTING SOLUTIONS (FORMERLY EATON)  
 Product Line: STREETWORKS  
 Catalog Number: **IFLD-S-SA2A-740-U-T3R-HSS**  
 Description: STREETWORKS INF FLOOD

SHIELD, DRIVER PROGRAMMED @ 615mA.

**Spectral Parameters**

|                           |         |           |      |      |       |
|---------------------------|---------|-----------|------|------|-------|
| CCT (K):                  | 3905    | CRI (Ra): | 71.2 | R9:  | -29.7 |
| CIE u':                   | 0.2273  | R1:       | 68.9 | R10: | 46.2  |
| CIE v':                   | 0.5024  | R2:       | 77.0 | R11: | 68.8  |
| Duv:                      | -0.0008 | R3:       | 84.0 | R12: | 45.6  |
| CIE x:                    | 0.3841  | R4:       | 71.6 | R13: | 69.5  |
| CIE y:                    | 0.3774  | R5:       | 68.9 | R14: | 90.7  |
| CIE z:                    | 0.2385  | R6:       | 68.3 |      |       |
| Peak Wavelength (nm):     | 443     | R7:       | 78.7 |      |       |
| Dominant Wavelength (nm): | 579     | R8:       | 52.2 |      |       |
| Purity:                   | 28.7    |           |      |      |       |
| Rf:                       | 71.7    |           |      |      |       |
| Rg:                       | 96.9    |           |      |      |       |



**Test Conditions**

Stabilization Time: 211M  
 Operation Time: 12H  
 Room Temperature (°C) / RH%: 24.8/312%  
 Sphere Temperature (°C): 24.1

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| 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 4000K 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    | 2304          | 0.0           | 490    | 19043         | 2.7           | 620    | 97577         | 25.4          | 750    | 4830          | 0.0           | 880    | 3505          | 0.0           |
| 365    | 2150          | 0.0           | 495    | 26606         | 4.8           | 625    | 90158         | 19.9          | 755    | 4664          | 0.0           | 885    | 2991          | 0.0           |
| 370    | 2146          | 0.0           | 500    | 36376         | 8.0           | 630    | 82240         | 14.9          | 760    | 4006          | 0.0           | 890    | 2327          | 0.0           |
| 375    | 2332          | 0.0           | 505    | 47714         | 13.3          | 635    | 74361         | 11.2          | 765    | 3715          | 0.0           | 895    | 2775          | 0.0           |
| 380    | 2527          | 0.0           | 510    | 58741         | 20.2          | 640    | 66994         | 8.0           | 770    | 3696          | 0.0           | 900    | 2141          | 0.0           |
| 385    | 2304          | 0.0           | 515    | 68716         | 28.5          | 645    | 60405         | 5.8           | 775    | 3117          | 0.0           | 905    | 2421          | 0.0           |
| 390    | 2064          | 0.0           | 520    | 77136         | 37.4          | 650    | 53806         | 3.9           | 780    | 3062          | 0.0           | 910    | 2200          | 0.0           |
| 395    | 1856          | 0.0           | 525    | 83567         | 44.9          | 655    | 47610         | 2.7           | 785    | 2907          | 0.0           | 915    | 2716          | 0.0           |
| 400    | 1856          | 0.0           | 530    | 89283         | 52.6          | 660    | 42018         | 1.8           | 790    | 2655          | 0.0           | 920    | 2656          | 0.0           |
| 405    | 2374          | 0.0           | 535    | 94097         | 58.4          | 665    | 36742         | 1.2           | 795    | 2467          | 0.0           | 925    | 2671          | 0.0           |
| 410    | 4084          | 0.0           | 540    | 96845         | 63.1          | 670    | 32105         | 0.7           | 800    | 2609          | 0.0           | 930    | 3292          | 0.0           |
| 415    | 8543          | 0.0           | 545    | 100829        | 67.1          | 675    | 27946         | 0.5           | 805    | 2293          | 0.0           | 935    | 3188          | 0.0           |
| 420    | 18394         | 0.1           | 550    | 105648        | 71.8          | 680    | 24146         | 0.3           | 810    | 2188          | 0.0           | 940    | 1997          | 0.0           |
| 425    | 37987         | 0.2           | 555    | 110017        | 75.1          | 685    | 21191         | 0.2           | 815    | 2386          | 0.0           | 945    | 2623          | 0.0           |
| 430    | 67605         | 0.5           | 560    | 114586        | 77.9          | 690    | 18544         | 0.1           | 820    | 2712          | 0.0           | 950    | 2969          | 0.0           |
| 435    | 102160        | 1.2           | 565    | 118987        | 79.1          | 695    | 16058         | 0.1           | 825    | 2473          | 0.0           | 955    | 2277          | 0.0           |
| 440    | 135103        | 2.1           | 570    | 122326        | 79.5          | 700    | 14133         | 0.0           | 830    | 1969          | 0.0           | 960    | 4267          | 0.0           |
| 445    | 140126        | 2.9           | 575    | 125968        | 78.4          | 705    | 12309         | 0.0           | 835    | 1917          | 0.0           | 965    | 2034          | 0.0           |
| 450    | 102339        | 2.7           | 580    | 127613        | 75.8          | 710    | 11142         | 0.0           | 840    | 2248          | 0.0           | 970    | 3586          | 0.0           |
| 455    | 58751         | 2.0           | 585    | 129466        | 71.9          | 715    | 10143         | 0.0           | 845    | 2266          | 0.0           | 975    | 2505          | 0.0           |
| 460    | 36892         | 1.5           | 590    | 128813        | 66.6          | 720    | 9072          | 0.0           | 850    | 2558          | 0.0           | 980    | 2666          | 0.0           |
| 465    | 24637         | 1.3           | 595    | 126387        | 59.9          | 725    | 8130          | 0.0           | 855    | 2767          | 0.0           | 985    | 2934          | 0.0           |
| 470    | 16738         | 1.0           | 600    | 123477        | 53.2          | 730    | 7149          | 0.0           | 860    | 2826          | 0.0           | 990    | 4120          | 0.0           |
| 475    | 13456         | 1.1           | 605    | 118718        | 46.0          | 735    | 6311          | 0.0           | 865    | 2385          | 0.0           | 995    | 3858          | 0.0           |
| 480    | 13081         | 1.2           | 610    | 112091        | 38.5          | 740    | 5711          | 0.0           | 870    | 3194          | 0.0           | 1000   | 3405          | 0.0           |
| 485    | 14734         | 1.7           | 615    | 105039        | 31.7          | 745    | 5111          | 0.0           | 875    | 3189          | 0.0           |        |               |               |

REPORT NUMBER: SP1-2101-121-2

**Scotopic Flux vs. Wavelength**



**Scotopic Lumens: 10425.8      S/P: 1.47**

| 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    | 2304          | 0.0           | 490    | 19043         | 29.3          | 620    | 97577         | 1.2           | 750    | 4830          | 0.0           | 880    | 3505          | 0.0           |
| 365    | 2150          | 0.0           | 495    | 26606         | 43.0          | 625    | 90158         | 0.8           | 755    | 4664          | 0.0           | 885    | 2991          | 0.0           |
| 370    | 2146          | 0.0           | 500    | 36376         | 60.8          | 630    | 82240         | 0.5           | 760    | 4006          | 0.0           | 890    | 2327          | 0.0           |
| 375    | 2332          | 0.0           | 505    | 47714         | 81.1          | 635    | 74361         | 0.3           | 765    | 3715          | 0.0           | 895    | 2775          | 0.0           |
| 380    | 2527          | 0.0           | 510    | 58741         | 99.6          | 640    | 66994         | 0.2           | 770    | 3696          | 0.0           | 900    | 2141          | 0.0           |
| 385    | 2304          | 0.0           | 515    | 68716         | 113.9         | 645    | 60405         | 0.1           | 775    | 3117          | 0.0           | 905    | 2421          | 0.0           |
| 390    | 2064          | 0.0           | 520    | 77136         | 122.6         | 650    | 53806         | 0.1           | 780    | 3062          | 0.0           | 910    | 2200          | 0.0           |
| 395    | 1856          | 0.0           | 525    | 83567         | 125.0         | 655    | 47610         | 0.0           | 785    | 2907          | 0.0           | 915    | 2716          | 0.0           |
| 400    | 1856          | 0.0           | 530    | 89283         | 123.1         | 660    | 42018         | 0.0           | 790    | 2655          | 0.0           | 920    | 2656          | 0.0           |
| 405    | 2374          | 0.1           | 535    | 94097         | 117.3         | 665    | 36742         | 0.0           | 795    | 2467          | 0.0           | 925    | 2671          | 0.0           |
| 410    | 4084          | 0.2           | 540    | 96845         | 107.0         | 670    | 32105         | 0.0           | 800    | 2609          | 0.0           | 930    | 3292          | 0.0           |
| 415    | 8543          | 0.9           | 545    | 100829        | 96.7          | 675    | 27946         | 0.0           | 805    | 2293          | 0.0           | 935    | 3188          | 0.0           |
| 420    | 18394         | 3.0           | 550    | 105648        | 86.4          | 680    | 24146         | 0.0           | 810    | 2188          | 0.0           | 940    | 1997          | 0.0           |
| 425    | 37987         | 9.3           | 555    | 110017        | 75.2          | 685    | 21191         | 0.0           | 815    | 2386          | 0.0           | 945    | 2623          | 0.0           |
| 430    | 67605         | 23.0          | 560    | 114586        | 64.0          | 690    | 18544         | 0.0           | 820    | 2712          | 0.0           | 950    | 2969          | 0.0           |
| 435    | 102160        | 45.7          | 565    | 118987        | 53.4          | 695    | 16058         | 0.0           | 825    | 2473          | 0.0           | 955    | 2277          | 0.0           |
| 440    | 135103        | 75.5          | 570    | 122326        | 43.2          | 700    | 14133         | 0.0           | 830    | 1969          | 0.0           | 960    | 4267          | 0.0           |
| 445    | 140126        | 93.8          | 575    | 125968        | 34.3          | 705    | 12309         | 0.0           | 835    | 1917          | 0.0           | 965    | 2034          | 0.0           |
| 450    | 102339        | 79.3          | 580    | 127613        | 26.3          | 710    | 11142         | 0.0           | 840    | 2248          | 0.0           | 970    | 3586          | 0.0           |
| 455    | 58751         | 51.3          | 585    | 129466        | 19.8          | 715    | 10143         | 0.0           | 845    | 2266          | 0.0           | 975    | 2505          | 0.0           |
| 460    | 36892         | 35.6          | 590    | 128813        | 14.3          | 720    | 9072          | 0.0           | 850    | 2558          | 0.0           | 980    | 2666          | 0.0           |
| 465    | 24637         | 26.0          | 595    | 126387        | 10.1          | 725    | 8130          | 0.0           | 855    | 2767          | 0.0           | 985    | 2934          | 0.0           |
| 470    | 16738         | 19.3          | 600    | 123477        | 7.0           | 730    | 7149          | 0.0           | 860    | 2826          | 0.0           | 990    | 4120          | 0.0           |
| 475    | 13456         | 16.8          | 605    | 118718        | 4.7           | 735    | 6311          | 0.0           | 865    | 2385          | 0.0           | 995    | 3858          | 0.0           |
| 480    | 13081         | 17.7          | 610    | 112091        | 3.0           | 740    | 5711          | 0.0           | 870    | 3194          | 0.0           | 1000   | 3405          | 0.0           |
| 485    | 14734         | 21.4          | 615    | 105039        | 1.9           | 745    | 5111          | 0.0           | 875    | 3189          | 0.0           |        |               |               |

REPORT NUMBER: SP1-2101-121-2

**Melanopic Flux vs. Wavelength**



**Melanopic Lumens: 3927.2 M/P: 0.55**

| 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    | 2304          | 0.0           | 490    | 19043         | 15.8          | 620    | 97577         | 0.1           | 750    | 4830          | 0.0           | 880    | 3505          | 0.0           |
| 365    | 2150          | 0.0           | 495    | 26606         | 22.0          | 625    | 90158         | 0.0           | 755    | 4664          | 0.0           | 885    | 2991          | 0.0           |
| 370    | 2146          | 0.0           | 500    | 36376         | 29.2          | 630    | 82240         | 0.0           | 760    | 4006          | 0.0           | 890    | 2327          | 0.0           |
| 375    | 2332          | 0.0           | 505    | 47714         | 36.6          | 635    | 74361         | 0.0           | 765    | 3715          | 0.0           | 895    | 2775          | 0.0           |
| 380    | 2527          | 0.0           | 510    | 58741         | 42.2          | 640    | 66994         | 0.0           | 770    | 3696          | 0.0           | 900    | 2141          | 0.0           |
| 385    | 2304          | 0.0           | 515    | 68716         | 44.9          | 645    | 60405         | 0.0           | 775    | 3117          | 0.0           | 905    | 2421          | 0.0           |
| 390    | 2064          | 0.0           | 520    | 77136         | 44.9          | 650    | 53806         | 0.0           | 780    | 3062          | 0.0           | 910    | 2200          | 0.0           |
| 395    | 1856          | 0.0           | 525    | 83567         | 42.4          | 655    | 47610         | 0.0           | 785    | 2907          | 0.0           | 915    | 2716          | 0.0           |
| 400    | 1856          | 0.0           | 530    | 89283         | 38.6          | 660    | 42018         | 0.0           | 790    | 2655          | 0.0           | 920    | 2656          | 0.0           |
| 405    | 2374          | 0.0           | 535    | 94097         | 33.9          | 665    | 36742         | 0.0           | 795    | 2467          | 0.0           | 925    | 2671          | 0.0           |
| 410    | 4084          | 0.2           | 540    | 96845         | 28.3          | 670    | 32105         | 0.0           | 800    | 2609          | 0.0           | 930    | 3292          | 0.0           |
| 415    | 8543          | 0.6           | 545    | 100829        | 23.4          | 675    | 27946         | 0.0           | 805    | 2293          | 0.0           | 935    | 3188          | 0.0           |
| 420    | 18394         | 2.1           | 550    | 105648        | 19.0          | 680    | 24146         | 0.0           | 810    | 2188          | 0.0           | 940    | 1997          | 0.0           |
| 425    | 37987         | 5.9           | 555    | 110017        | 14.8          | 685    | 21191         | 0.0           | 815    | 2386          | 0.0           | 945    | 2623          | 0.0           |
| 430    | 67605         | 14.3          | 560    | 114586        | 11.3          | 690    | 18544         | 0.0           | 820    | 2712          | 0.0           | 950    | 2969          | 0.0           |
| 435    | 102160        | 27.3          | 565    | 118987        | 8.4           | 695    | 16058         | 0.0           | 825    | 2473          | 0.0           | 955    | 2277          | 0.0           |
| 440    | 135103        | 45.1          | 570    | 122326        | 6.0           | 700    | 14133         | 0.0           | 830    | 1969          | 0.0           | 960    | 4267          | 0.0           |
| 445    | 140126        | 55.3          | 575    | 125968        | 4.2           | 705    | 12309         | 0.0           | 835    | 1917          | 0.0           | 965    | 2034          | 0.0           |
| 450    | 102339        | 47.2          | 580    | 127613        | 2.9           | 710    | 11142         | 0.0           | 840    | 2248          | 0.0           | 970    | 3586          | 0.0           |
| 455    | 58751         | 30.8          | 585    | 129466        | 1.9           | 715    | 10143         | 0.0           | 845    | 2266          | 0.0           | 975    | 2505          | 0.0           |
| 460    | 36892         | 21.7          | 590    | 128813        | 1.3           | 720    | 9072          | 0.0           | 850    | 2558          | 0.0           | 980    | 2666          | 0.0           |
| 465    | 24637         | 16.1          | 595    | 126387        | 0.8           | 725    | 8130          | 0.0           | 855    | 2767          | 0.0           | 985    | 2934          | 0.0           |
| 470    | 16738         | 12.0          | 600    | 123477        | 0.5           | 730    | 7149          | 0.0           | 860    | 2826          | 0.0           | 990    | 4120          | 0.0           |
| 475    | 13456         | 10.3          | 605    | 118718        | 0.3           | 735    | 6311          | 0.0           | 865    | 2385          | 0.0           | 995    | 3858          | 0.0           |
| 480    | 13081         | 10.5          | 610    | 112091        | 0.2           | 740    | 5711          | 0.0           | 870    | 3194          | 0.0           | 1000   | 3405          | 0.0           |
| 485    | 14734         | 12.1          | 615    | 105039        | 0.1           | 745    | 5111          | 0.0           | 875    | 3189          | 0.0           |        |               |               |

**Summary**

$R_f = 71.7$   
 $R_g = 96.9$   
 CIE  $R_a = 71.2$   
 $R_g = -29.7$



**Color Vector Graphics**





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

|            |            |            |            |
|------------|------------|------------|------------|
| CES01 = 85 | CES26 = 55 | CES51 = 86 | CES76 = 45 |
| CES02 = 61 | CES27 = 80 | CES52 = 87 | CES77 = 68 |
| CES03 = 30 | CES28 = 79 | CES53 = 74 | CES78 = 49 |
| CES04 = 70 | CES29 = 51 | CES54 = 81 | CES79 = 77 |
| CES05 = 47 | CES30 = 60 | CES55 = 80 | CES80 = 75 |
| CES06 = 50 | CES31 = 56 | CES56 = 69 | CES81 = 75 |
| CES07 = 40 | CES32 = 52 | CES57 = 67 | CES82 = 90 |
| CES08 = 39 | CES33 = 62 | CES58 = 69 | CES83 = 85 |
| CES09 = 29 | CES34 = 65 | CES59 = 86 | CES84 = 87 |
| CES10 = 74 | CES35 = 81 | CES60 = 91 | CES85 = 83 |
| CES11 = 57 | CES36 = 92 | CES61 = 85 | CES86 = 72 |
| CES12 = 63 | CES37 = 74 | CES62 = 81 | CES87 = 77 |
| CES13 = 42 | CES38 = 69 | CES63 = 72 | CES88 = 77 |
| CES14 = 74 | CES39 = 92 | CES64 = 69 | CES89 = 72 |
| CES15 = 71 | CES40 = 86 | CES65 = 64 | CES90 = 75 |
| CES16 = 46 | CES41 = 84 | CES66 = 63 | CES91 = 91 |
| CES17 = 49 | CES42 = 75 | CES67 = 60 | CES92 = 66 |
| CES18 = 56 | CES43 = 70 | CES68 = 67 | CES93 = 80 |
| CES19 = 72 | CES44 = 98 | CES69 = 77 | CES94 = 56 |
| CES20 = 65 | CES45 = 80 | CES70 = 57 | CES95 = 72 |
| CES21 = 86 | CES46 = 77 | CES71 = 53 | CES96 = 78 |
| CES22 = 78 | CES47 = 74 | CES72 = 84 | CES97 = 83 |
| CES23 = 92 | CES48 = 66 | CES73 = 47 | CES98 = 73 |
| CES24 = 91 | CES49 = 76 | CES74 = 96 | CES99 = 63 |
| CES25 = 72 | CES50 = 85 | CES75 = 52 |            |



Color Rendition by Hue-Angle Bin



Measure Comparisons



(END OF REPORT)