

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: P628864

Luminaire Tested: GWS-SA1A-740-U-T1-W

Issue Date: 1/10/2023

**Test Information**

Test Method: LM-79-2019  
Report Number: P628864  
TEST IS SCALED FROM IESNA LM-79-08 TEST DATA (G2-2209-782-10)  
Test Lab: COOPER LIGHTING SOLUTIONS  
Issue Date: 1/10/2023  
Manufacturer: COOPER LIGHTING SOLUTIONS  
Product Line: McGRAW-EDISON  
Catalog Number: GWS-SA1A-740-U-T1-W  
Description: GALLEON WALL SLIM LUMINAIRE. (1) LIGHTSQUARES WITH 16 LEDS EACH AND TYPE I OPTICS  
Light Source: (16) 4000K CCT, 70 CRI LEDS  
Ballast/Driver: -

**Summary**

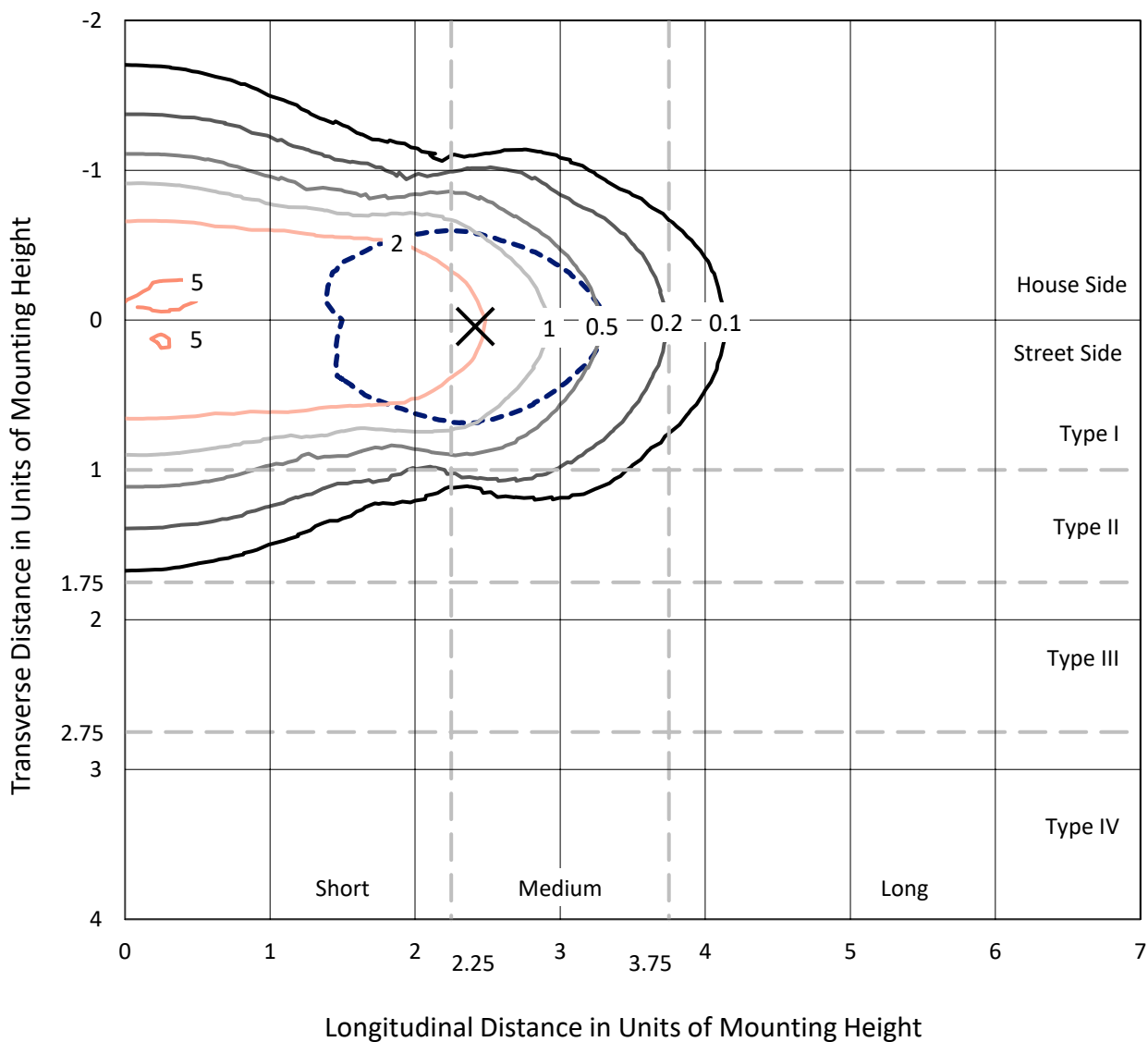
Lumens per Lamp: N/A  
Luminaire Lumens: 2838.6 lumens  
Efficiency: N/A  
Efficacy: 144.1 lumens/watt  
Luminous Opening: Rectangular (W 0.5' x L: 0.5' x H: 0')  
IES Classification: Type I - Medium  
BUG Rating: B1 - U0 - G1  
  
Input Watts (W): 19.7  
Input Voltage (V): 120  
Input Current (Ain): 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



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### Iso-Footcandle Lines of Horizontal Illumination

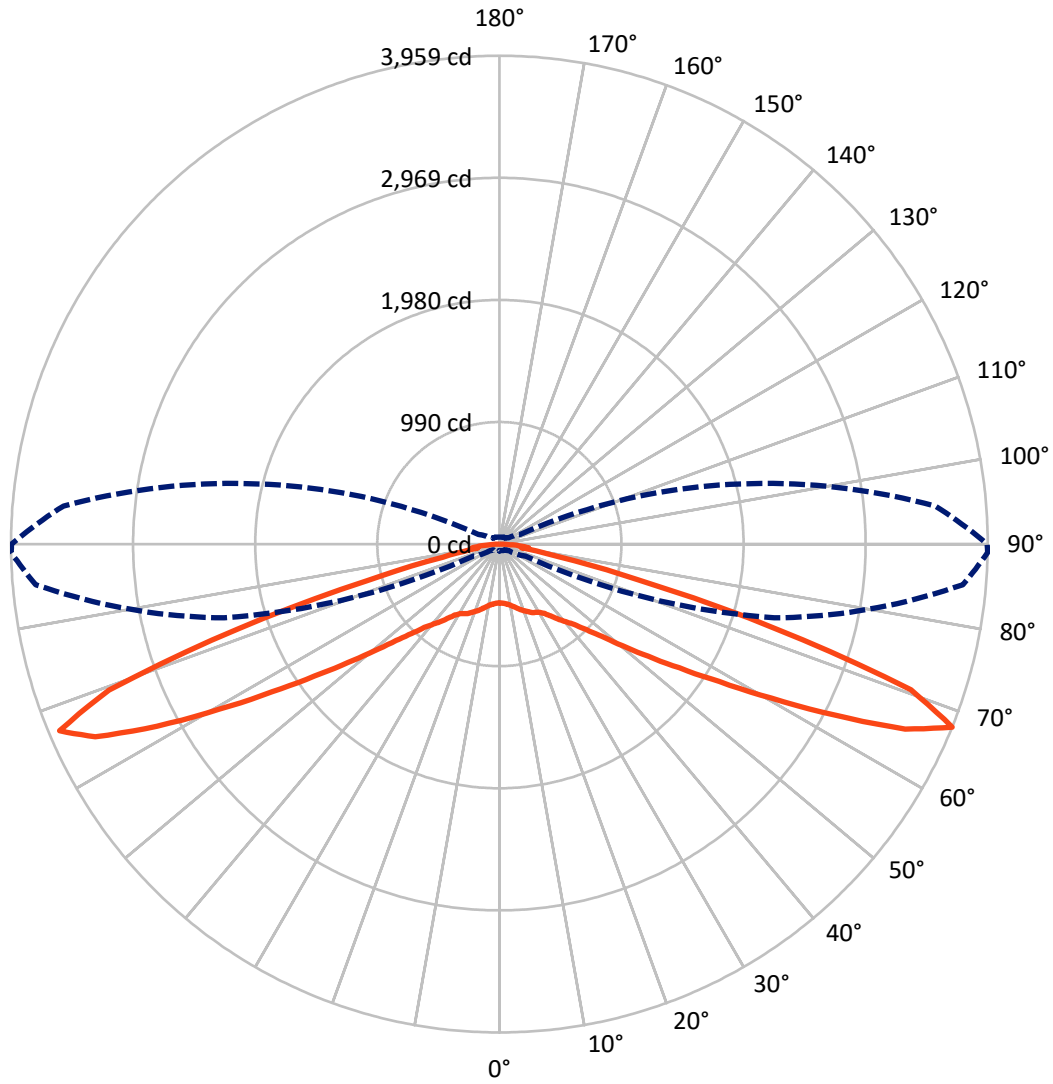
✕ Max cd  
 - - - 1/2 Max cd



Based on 10 foot mounting height. Maximum calculated value = 5.2 fc  
 Type I - Medium - N/A

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### Luminous Intensity Polar Plot



— Vertical Plane Through 89-Deg Lateral    - - - Horizontal Cone Through 67.5-Deg Vertical

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CATALOG NUMBER: GWS-SA1A-740-U-T1-W

**FLUX DISTRIBUTION:**

|                    |           | Downward | Upward | Total  |
|--------------------|-----------|----------|--------|--------|
| <b>House Side</b>  | Lumens    | 1406.9   | 0.0    | 1406.9 |
|                    | % Fixture | 49.6     | 0.0    | 49.6   |
| <b>Street Side</b> | Lumens    | 1431.7   | 0.0    | 1431.7 |
|                    | % Fixture | 50.4     | 0.0    | 50.4   |
| <b>Total</b>       | Lumens    | 2838.6   | 0.0    | 2838.6 |
|                    | % Fixture | 100.0    | 0.0    | 100.0  |

**ZONAL LUMENS:**

| Zone      | Lumens | % Fixture |
|-----------|--------|-----------|
| 0°-10°    | 47.8   | 1.7       |
| 10°-20°   | 155.6  | 5.5       |
| 20°-30°   | 263.1  | 9.3       |
| 30°-40°   | 361.0  | 12.7      |
| 40°-50°   | 460.4  | 16.2      |
| 50°-60°   | 577.6  | 20.3      |
| 60°-70°   | 696.6  | 24.5      |
| 70°-80°   | 252.0  | 8.9       |
| 80°-90°   | 24.5   | 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°    | 2838.6 | 100.0     |
| 0°-180°   | 2838.6 | 100.0     |

**Coefficient of Utilization**



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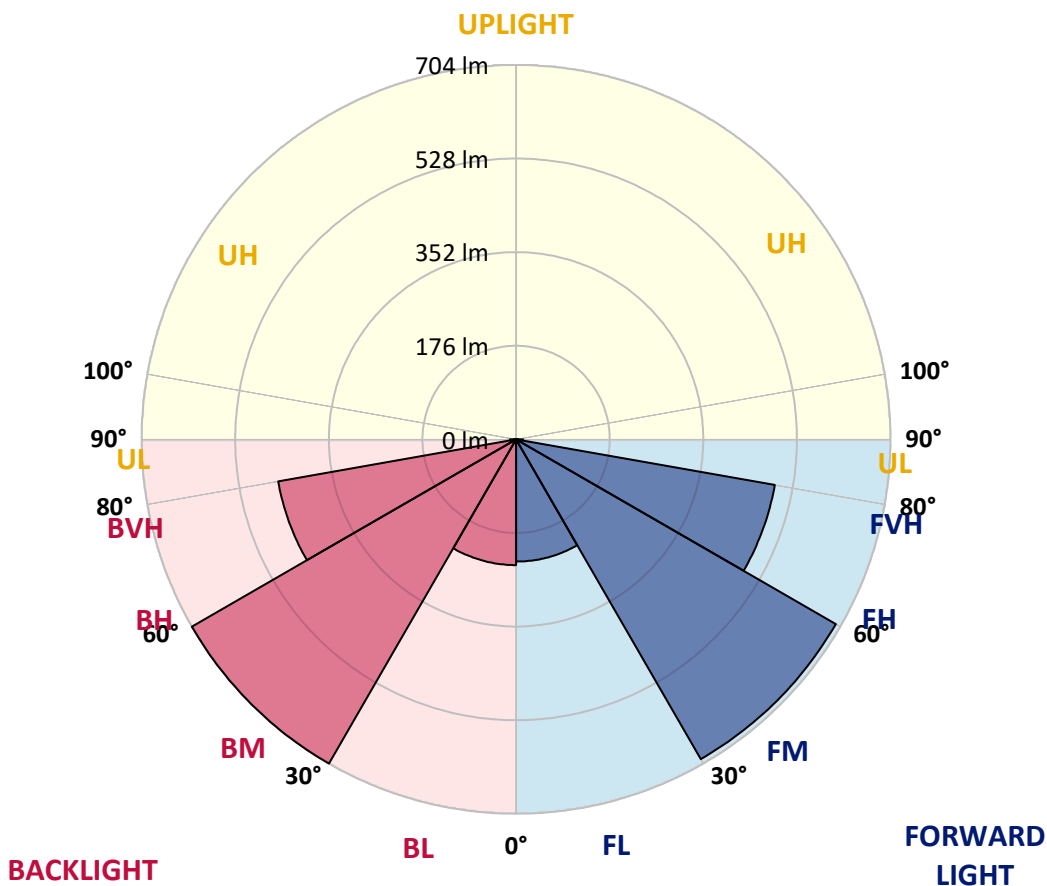
CATALOG NUMBER: GWS-SA1A-740-U-T1-W

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

| Zone           | Lumens | % Fixture | Zone Rating/Lumen Limit |      |        |
|----------------|--------|-----------|-------------------------|------|--------|
|                |        |           | B                       | U    | G      |
| FL (0°-30°)    | 229.9  | 8.1       |                         |      |        |
| FM (30°-60°)   | 694.7  | 24.5      |                         |      |        |
| FH (60°-80°)   | 494.2  | 17.4      |                         |      | G0/660 |
| FVH (80°-90°)  | 12.9   | 0.5       |                         |      | G1/100 |
| BL (0°-30°)    | 236.6  | 8.3       | B1/500                  |      |        |
| BM (30°-60°)   | 704.3  | 24.8      | B1/1000                 |      |        |
| BH (60°-80°)   | 454.4  | 16.0      | B1/500                  |      | G1/500 |
| BVH (80°-90°)  | 11.6   | 0.4       |                         |      | G1/100 |
| UL (90°-100°)  | 0.0    | 0.0       |                         | U0/0 |        |
| UH (100°-180°) | 0.0    | 0.0       |                         | U0/0 |        |

**BUG Rating: B1-U0-G1**

Type I Medium





REPORT NUMBER: P628864  
 CATALOG NUMBER: GWS-SA1A-740-U-T1-W

**CANDELA DISTRIBUTION (FULL):**

|       | 0°    | 5°    | 15°   | 25°   | 35°   | 45°   | 55°   | 65°    | 75°    | 85°    | 89°    |
|-------|-------|-------|-------|-------|-------|-------|-------|--------|--------|--------|--------|
| 0°    | 476.4 | 476.4 | 476.4 | 476.4 | 476.4 | 476.4 | 476.4 | 476.4  | 476.4  | 476.4  | 476.4  |
| 2.5°  | 477.9 | 477.5 | 476.4 | 479.5 | 478.9 | 479.1 | 480.3 | 479.5  | 478.1  | 475.6  | 479.1  |
| 5°    | 491.3 | 491.1 | 488.9 | 490.7 | 488.7 | 487.2 | 487.0 | 485.0  | 483.4  | 480.7  | 484.4  |
| 7.5°  | 504.4 | 504.2 | 502.3 | 505.6 | 504.0 | 502.3 | 500.5 | 496.4  | 492.5  | 488.7  | 492.7  |
| 10°   | 514.4 | 514.2 | 513.7 | 518.4 | 518.8 | 519.5 | 518.6 | 511.7  | 505.0  | 500.3  | 504.4  |
| 12.5° | 520.1 | 520.7 | 521.7 | 530.3 | 534.5 | 538.6 | 539.6 | 533.9  | 522.7  | 516.0  | 520.9  |
| 15°   | 516.2 | 517.4 | 522.5 | 538.0 | 549.8 | 559.0 | 562.9 | 558.2  | 543.7  | 532.5  | 538.0  |
| 17.5° | 497.6 | 498.7 | 508.6 | 532.3 | 558.4 | 579.6 | 585.9 | 583.1  | 567.0  | 553.3  | 558.6  |
| 20°   | 472.0 | 474.2 | 485.0 | 518.0 | 557.0 | 593.9 | 610.8 | 609.8  | 592.2  | 571.2  | 577.6  |
| 22.5° | 448.7 | 451.4 | 462.8 | 499.3 | 547.4 | 597.5 | 635.9 | 638.5  | 615.3  | 589.2  | 594.3  |
| 25°   | 422.6 | 425.1 | 439.7 | 477.0 | 530.9 | 594.7 | 657.3 | 669.3  | 641.4  | 609.8  | 614.5  |
| 27.5° | 395.9 | 397.7 | 412.2 | 452.0 | 509.3 | 589.4 | 674.2 | 703.1  | 667.1  | 624.0  | 627.3  |
| 30°   | 372.5 | 374.9 | 388.2 | 426.9 | 485.6 | 578.8 | 688.0 | 739.2  | 696.6  | 640.1  | 642.8  |
| 32.5° | 349.8 | 351.9 | 366.3 | 402.2 | 460.5 | 562.5 | 700.5 | 781.6  | 740.4  | 670.1  | 670.1  |
| 35°   | 321.3 | 325.0 | 341.3 | 378.6 | 436.9 | 540.9 | 709.5 | 831.0  | 800.4  | 714.3  | 714.6  |
| 37.5° | 295.0 | 297.0 | 314.2 | 351.9 | 412.0 | 516.4 | 710.3 | 882.1  | 876.2  | 770.6  | 771.0  |
| 40°   | 265.0 | 267.7 | 286.0 | 323.3 | 383.5 | 490.7 | 702.5 | 929.8  | 955.7  | 828.5  | 826.3  |
| 42.5° | 234.7 | 238.5 | 256.1 | 292.5 | 352.7 | 459.3 | 681.9 | 975.3  | 1056.6 | 895.6  | 890.1  |
| 45°   | 205.3 | 207.7 | 225.3 | 259.7 | 317.4 | 421.8 | 648.9 | 1018.9 | 1176.5 | 997.5  | 989.6  |
| 47.5° | 172.3 | 173.3 | 191.4 | 224.5 | 280.9 | 380.0 | 601.6 | 1057.9 | 1308.2 | 1132.5 | 1118.8 |
| 50°   | 142.9 | 144.3 | 158.6 | 186.9 | 236.3 | 330.5 | 542.7 | 1080.7 | 1476.0 | 1316.6 | 1292.9 |
| 52.5° | 115.6 | 117.0 | 128.4 | 151.1 | 195.3 | 274.0 | 469.7 | 1075.4 | 1646.2 | 1545.1 | 1510.7 |
| 55°   | 93.4  | 94.4  | 102.1 | 119.9 | 153.7 | 217.9 | 383.5 | 1027.9 | 1835.2 | 1843.6 | 1769.4 |
| 57.5° | 78.9  | 79.3  | 84.6  | 95.4  | 120.1 | 168.0 | 296.0 | 915.8  | 2033.4 | 2224.4 | 2102.5 |
| 60°   | 70.5  | 70.7  | 73.2  | 79.9  | 94.8  | 128.2 | 216.9 | 737.2  | 2238.7 | 2700.8 | 2533.7 |
| 62.5° | 65.2  | 65.2  | 67.3  | 71.1  | 78.7  | 98.7  | 159.4 | 529.4  | 2386.1 | 3219.3 | 3053.1 |
| 65°   | 60.1  | 60.1  | 61.6  | 64.8  | 68.9  | 80.5  | 119.7 | 341.5  | 2458.4 | 3652.7 | 3615.8 |
| 67.5° | 53.6  | 53.8  | 54.8  | 58.3  | 62.0  | 67.3  | 90.7  | 231.0  | 2308.2 | 3772.6 | 3959.3 |
| 70°   | 47.5  | 47.7  | 49.1  | 51.4  | 54.4  | 58.1  | 70.9  | 159.2  | 1680.1 | 3142.0 | 3540.1 |
| 72.5° | 40.8  | 41.6  | 42.6  | 45.1  | 46.9  | 49.5  | 57.9  | 103.2  | 977.5  | 2021.1 | 2340.2 |
| 75°   | 33.4  | 34.5  | 35.7  | 38.1  | 39.3  | 40.4  | 47.7  | 73.6   | 470.3  | 1024.2 | 1166.3 |
| 77.5° | 25.9  | 26.9  | 28.3  | 30.6  | 31.4  | 32.6  | 36.5  | 53.2   | 225.3  | 454.0  | 489.5  |
| 80°   | 17.3  | 17.7  | 19.0  | 21.6  | 23.0  | 23.9  | 26.9  | 36.3   | 97.9   | 182.3  | 180.6  |
| 82.5° | 10.6  | 10.8  | 11.2  | 12.8  | 13.5  | 14.3  | 17.5  | 22.2   | 46.7   | 207.1  | 237.5  |
| 85°   | 3.9   | 3.7   | 3.5   | 4.5   | 5.3   | 6.1   | 8.2   | 11.2   | 20.4   | 142.3  | 159.2  |
| 87.5° | 0.0   | 0.0   | 0.0   | 0.2   | 0.4   | 0.4   | 0.8   | 1.6    | 4.9    | 53.2   | 36.5   |
| 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: P628864  
 CATALOG NUMBER: GWS-SA1A-740-U-T1-W

**CANDELA DISTRIBUTION (continued):**

|       | 90°    | 95°    | 105°   | 115°   | 125°  | 135°  | 145°  | 155°  | 165°  | 175°  | 180°  |
|-------|--------|--------|--------|--------|-------|-------|-------|-------|-------|-------|-------|
| 0°    | 476.4  | 476.4  | 476.4  | 476.4  | 476.4 | 476.4 | 476.4 | 476.4 | 476.4 | 476.4 | 476.4 |
| 2.5°  | 478.1  | 475.8  | 478.7  | 480.7  | 485.2 | 486.8 | 487.2 | 485.8 | 485.8 | 483.4 | 483.8 |
| 5°    | 483.6  | 482.1  | 486.8  | 490.3  | 496.8 | 499.3 | 500.9 | 499.9 | 500.5 | 498.9 | 499.3 |
| 7.5°  | 491.9  | 490.7  | 498.9  | 505.6  | 512.3 | 515.2 | 516.6 | 515.8 | 516.0 | 513.9 | 514.6 |
| 10°   | 503.6  | 504.0  | 513.7  | 522.5  | 531.5 | 534.3 | 534.9 | 532.5 | 530.5 | 526.8 | 527.0 |
| 12.5° | 519.5  | 521.5  | 535.4  | 545.1  | 554.3 | 558.4 | 553.9 | 544.9 | 536.6 | 530.3 | 529.4 |
| 15°   | 536.8  | 540.5  | 560.4  | 572.9  | 582.9 | 580.8 | 567.6 | 547.4 | 530.9 | 521.5 | 519.7 |
| 17.5° | 557.6  | 563.1  | 588.2  | 603.0  | 611.6 | 598.6 | 570.8 | 540.7 | 517.6 | 505.0 | 502.5 |
| 20°   | 577.1  | 585.9  | 617.5  | 636.9  | 637.9 | 608.5 | 569.4 | 527.0 | 498.0 | 482.6 | 479.3 |
| 22.5° | 595.1  | 606.3  | 648.3  | 673.0  | 659.7 | 613.0 | 560.6 | 507.6 | 474.4 | 456.3 | 453.4 |
| 25°   | 614.7  | 630.6  | 684.2  | 707.2  | 681.5 | 611.2 | 542.3 | 483.6 | 445.9 | 427.3 | 425.3 |
| 27.5° | 628.1  | 648.1  | 720.3  | 742.3  | 699.5 | 600.8 | 518.6 | 457.3 | 419.8 | 402.2 | 399.4 |
| 30°   | 643.6  | 669.1  | 760.0  | 780.4  | 710.5 | 585.5 | 493.4 | 432.8 | 395.5 | 376.5 | 374.5 |
| 32.5° | 671.7  | 703.7  | 809.4  | 820.8  | 713.9 | 566.5 | 469.1 | 409.2 | 370.2 | 351.3 | 348.4 |
| 35°   | 717.0  | 754.5  | 878.7  | 865.8  | 711.3 | 545.8 | 446.1 | 381.4 | 344.3 | 326.6 | 323.7 |
| 37.5° | 774.1  | 820.8  | 955.9  | 906.4  | 704.0 | 522.9 | 418.7 | 358.2 | 321.1 | 303.1 | 301.5 |
| 40°   | 827.3  | 884.8  | 1042.6 | 941.5  | 689.1 | 494.8 | 392.4 | 333.9 | 296.0 | 277.1 | 273.4 |
| 42.5° | 894.0  | 970.4  | 1142.9 | 971.8  | 664.6 | 461.1 | 362.9 | 304.0 | 264.6 | 247.5 | 243.0 |
| 45°   | 995.3  | 1090.3 | 1259.5 | 1001.0 | 628.1 | 419.8 | 325.8 | 267.5 | 230.2 | 212.6 | 209.2 |
| 47.5° | 1121.7 | 1240.1 | 1385.9 | 1018.3 | 572.7 | 376.1 | 283.8 | 228.9 | 191.6 | 171.9 | 170.2 |
| 50°   | 1299.2 | 1458.1 | 1521.5 | 1015.3 | 510.7 | 324.4 | 236.5 | 183.1 | 151.9 | 137.6 | 135.4 |
| 52.5° | 1515.5 | 1731.6 | 1668.0 | 978.6  | 444.8 | 265.4 | 184.3 | 143.7 | 120.5 | 110.3 | 108.5 |
| 55°   | 1786.9 | 2059.3 | 1822.4 | 899.9  | 361.7 | 203.3 | 144.7 | 113.3 | 97.4  | 91.3  | 90.5  |
| 57.5° | 2122.9 | 2483.5 | 1971.0 | 767.4  | 272.0 | 155.1 | 111.5 | 93.6  | 86.0  | 82.4  | 82.2  |
| 60°   | 2566.3 | 2933.8 | 2100.0 | 596.3  | 194.7 | 118.7 | 92.1  | 83.6  | 77.7  | 75.2  | 75.0  |
| 62.5° | 3093.5 | 3342.8 | 2180.4 | 406.1  | 146.4 | 94.6  | 81.1  | 75.8  | 72.4  | 70.9  | 70.7  |
| 65°   | 3635.3 | 3601.3 | 2142.0 | 266.0  | 111.1 | 80.3  | 72.8  | 69.9  | 66.9  | 65.4  | 65.4  |
| 67.5° | 3955.4 | 3546.7 | 1847.8 | 184.7  | 88.1  | 70.5  | 65.6  | 63.0  | 57.9  | 56.7  | 56.7  |
| 70°   | 3503.4 | 2873.9 | 1211.2 | 135.2  | 71.4  | 61.8  | 57.1  | 53.4  | 51.4  | 50.2  | 49.9  |
| 72.5° | 2317.1 | 1870.1 | 644.0  | 93.8   | 59.5  | 52.6  | 48.3  | 46.9  | 44.4  | 43.2  | 43.0  |
| 75°   | 1153.3 | 982.2  | 330.1  | 67.7   | 49.5  | 42.2  | 40.4  | 39.8  | 37.7  | 36.1  | 35.7  |
| 77.5° | 480.7  | 437.3  | 153.9  | 49.1   | 37.7  | 34.0  | 32.4  | 32.4  | 30.2  | 28.3  | 27.5  |
| 80°   | 181.2  | 161.5  | 72.8   | 33.6   | 27.9  | 25.3  | 24.3  | 23.4  | 21.6  | 19.4  | 18.1  |
| 82.5° | 242.4  | 158.4  | 35.7   | 21.0   | 18.3  | 16.3  | 14.9  | 14.3  | 13.3  | 12.2  | 11.4  |
| 85°   | 157.0  | 112.5  | 16.1   | 10.8   | 9.2   | 6.9   | 6.1   | 5.7   | 5.1   | 4.5   | 4.1   |
| 87.5° | 32.0   | 37.7   | 4.9    | 2.0    | 1.2   | 0.6   | 0.6   | 0.2   | 0.0   | 0.0   | 0.0   |
| 90°   | 0.0    | 0.0    | 0.0    | 0.0    | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   |



LM-79-08: Approved Method: Electrical and Photometric Measurements of Solid-  
State Lighting Products

Report Prepared for

Cooper Lighting Solutions

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)