

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: P632827

Luminaire Tested: GWS-SA2D-740-U-T2R-W-GRSBK

Issue Date: 1/10/2023

**Test Information**

Test Method: LM-79-2019  
Report Number: P632827  
TEST IS SCALED FROM IESNA LM-79-08 TEST DATA (G2-2209-782-12)  
Test Lab: COOPER LIGHTING SOLUTIONS  
Issue Date: 1/10/2023  
Manufacturer: COOPER LIGHTING SOLUTIONS  
Product Line: McGRAW-EDISON  
Catalog Number: GWS-SA2D-740-U-T2R-W-GRSBK  
Description: GALLEON WALL SLIM LUMINAIRE. (2) LIGHTSQUARES WITH 16 LEDS EACH AND TYPE II ROADWAY OPTICS W/ FACTORY INSTALLED GLARE SHIELD, BK  
Light Source: (32) 4000K CCT, 70 CRI LEDS  
Ballast/Driver: -

**Summary**

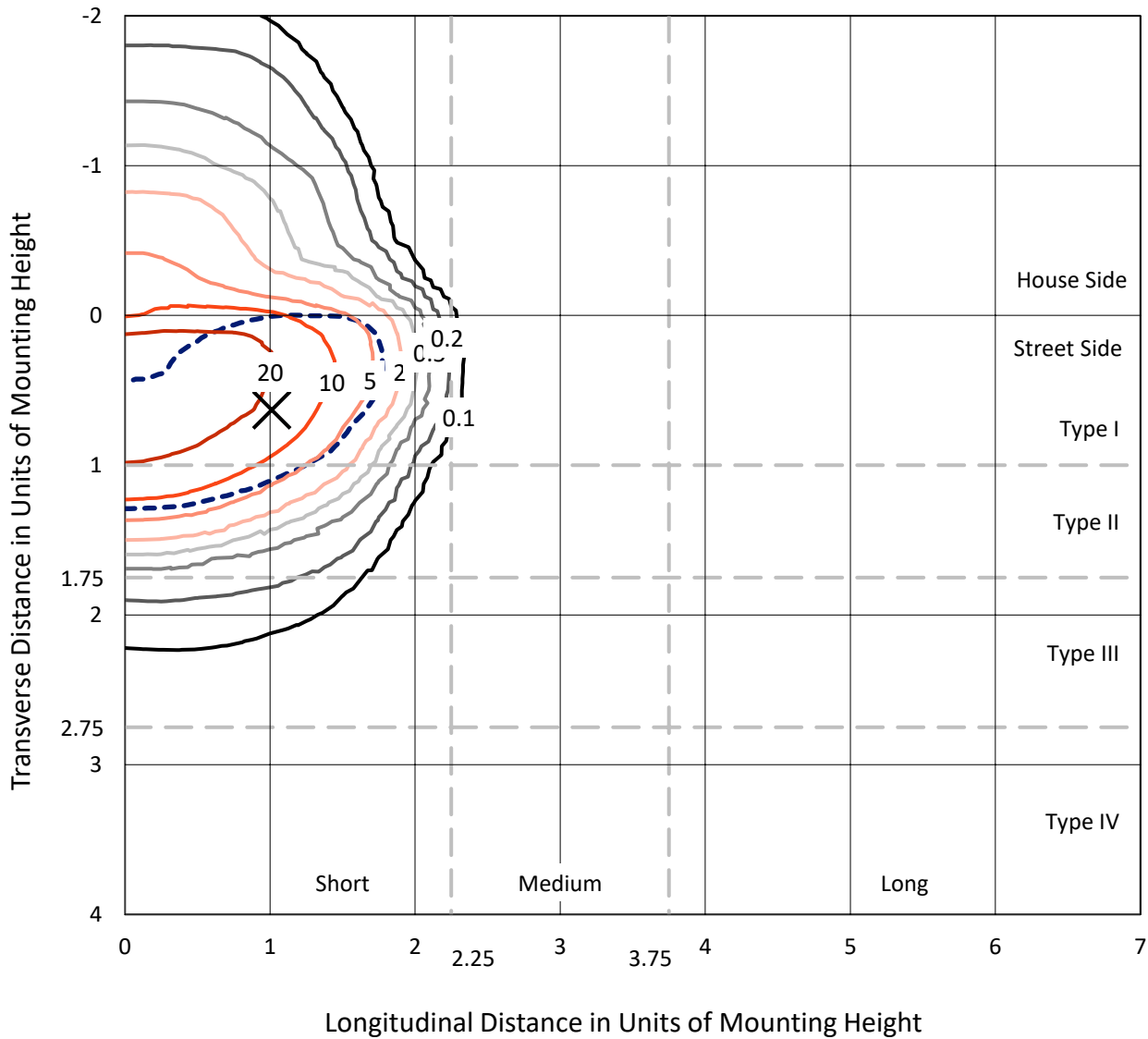
Lumens per Lamp: N/A  
Luminaire Lumens: 7827 lumens  
Efficiency: N/A  
Efficacy: 95.3 lumens/watt  
Luminous Opening: Rectangular (W 1' x L: 0.5' x H: 0')  
IES Classification: Type II - Short  
BUG Rating: B1 - U0 - G0  
  
Input Watts (W): 82.1  
Input Voltage (V): 120  
Input Current (Ain): NR  
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: P632827  
 CATALOG NUMBER: GWS-SA2D-740-U-T2R-W-GRSBK

### Iso-Footcandle Lines of Horizontal Illumination

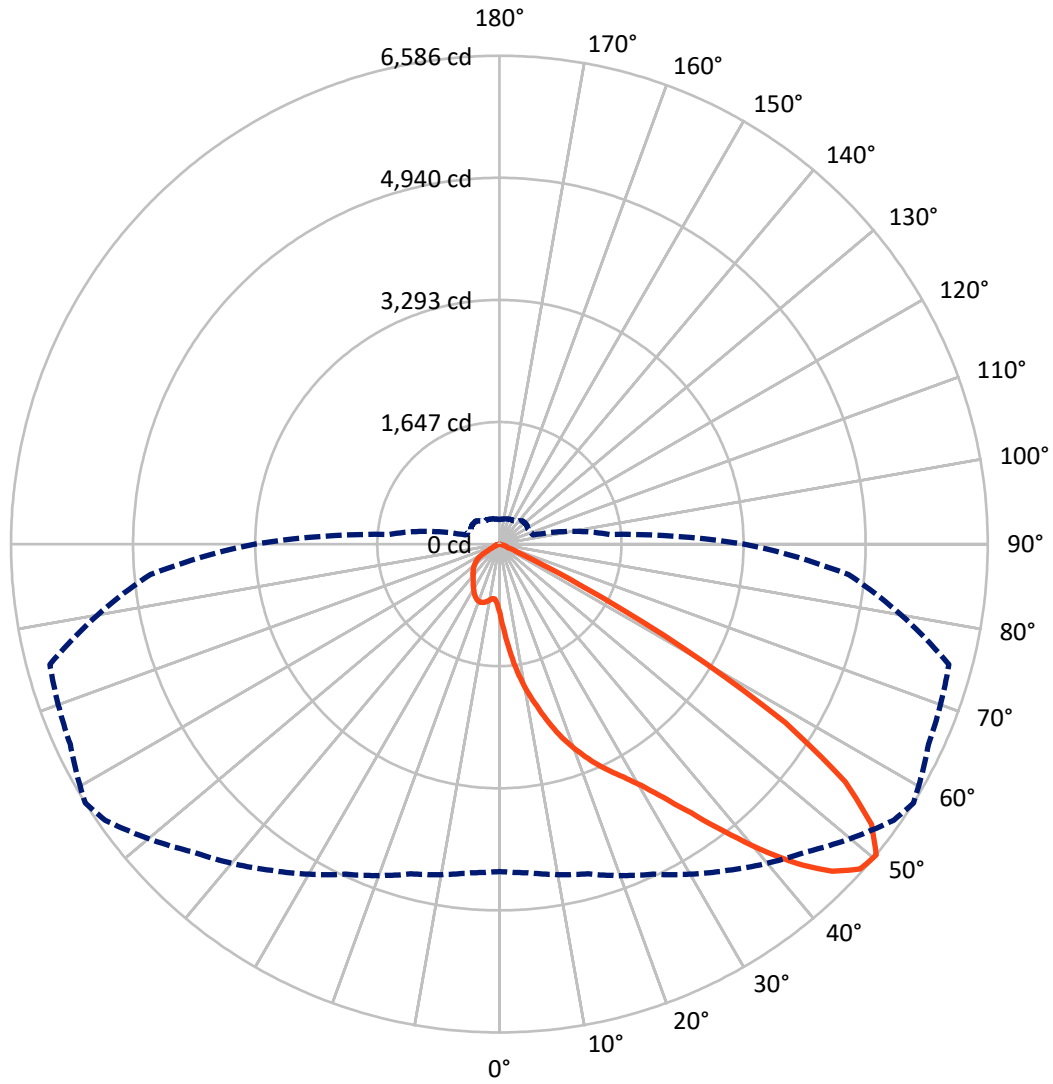
✕ Max cd  
 - - - 1/2 Max cd



Based on 10 foot mounting height. Maximum calculated value = 28.7 fc  
 Type II - Short - N/A

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### Luminous Intensity Polar Plot



— Vertical Plane Through 58-Deg Lateral    - - - Horizontal Cone Through 50-Deg Vertical

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**FLUX DISTRIBUTION:**

|                    |           | Downward | Upward | Total  |
|--------------------|-----------|----------|--------|--------|
| <b>House Side</b>  | Lumens    | 1096.3   | 0.0    | 1096.3 |
|                    | % Fixture | 14.0     | 0.0    | 14.0   |
| <b>Street Side</b> | Lumens    | 6730.7   | 0.0    | 6730.7 |
|                    | % Fixture | 86.0     | 0.0    | 86.0   |
| <b>Total</b>       | Lumens    | 7827.0   | 0.0    | 7827.0 |
|                    | % Fixture | 100.0    | 0.0    | 100.0  |

**ZONAL LUMENS:**

| Zone      | Lumens | % Fixture |
|-----------|--------|-----------|
| 0°-10°    | 115.8  | 1.5       |
| 10°-20°   | 458.5  | 5.9       |
| 20°-30°   | 927.8  | 11.9      |
| 30°-40°   | 1641.4 | 21.0      |
| 40°-50°   | 2392.8 | 30.6      |
| 50°-60°   | 1917.9 | 24.5      |
| 60°-70°   | 345.5  | 4.4       |
| 70°-80°   | 27.2   | 0.3       |
| 80°-90°   | 0.0    | 0.0       |
| 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°    | 7827.0 | 100.0     |
| 0°-180°   | 7827.0 | 100.0     |

**Coefficient of Utilization**



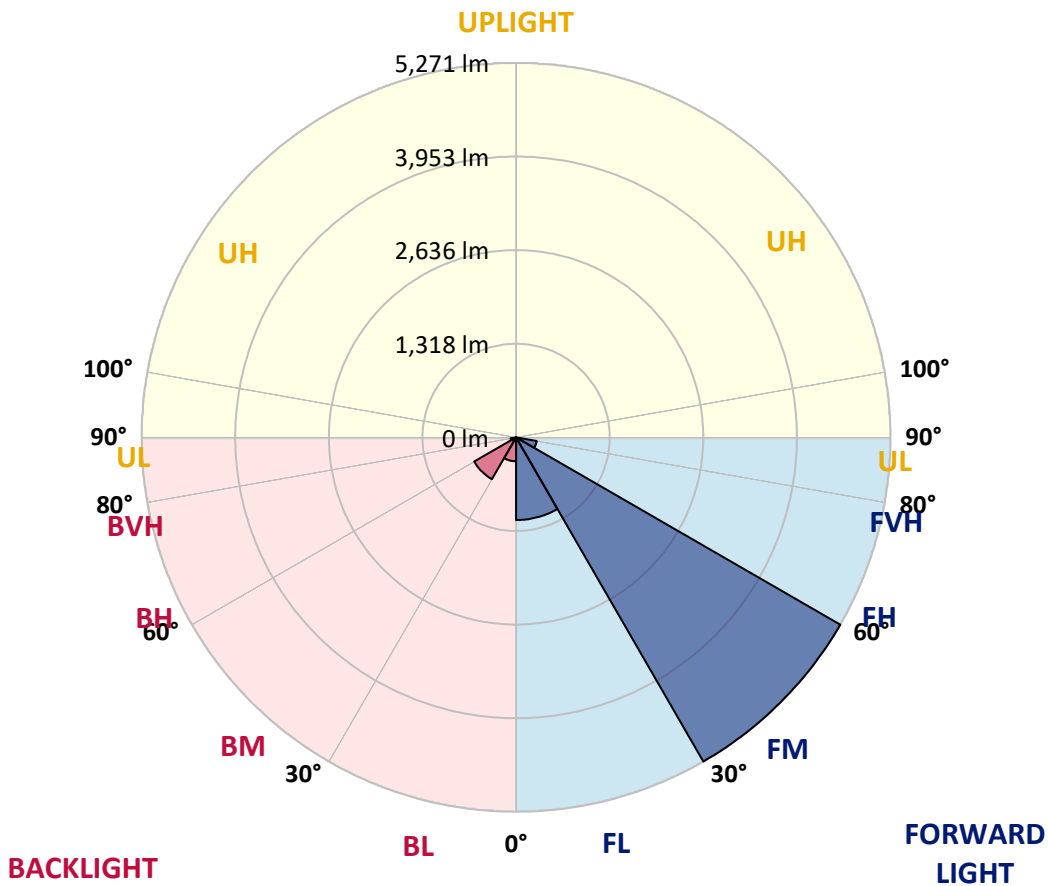
REPORT NUMBER: P632827

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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°)    | 1164.6 | 14.9      |                         |      |        |
| FM (30°-60°)   | 5271.3 | 67.3      |                         |      |        |
| FH (60°-80°)   | 294.8  | 3.8       |                         |      | G0/660 |
| FVH (80°-90°)  | 0.0    | 0.0       |                         |      | G0/10  |
| BL (0°-30°)    | 337.5  | 4.3       | B1/500                  |      |        |
| BM (30°-60°)   | 680.8  | 8.7       | B1/1000                 |      |        |
| BH (60°-80°)   | 77.9   | 1.0       | B0/110                  |      | G0/110 |
| BVH (80°-90°)  | 0.0    | 0.0       |                         |      | G0/10  |
| UL (90°-100°)  | 0.0    | 0.0       |                         | U0/0 |        |
| UH (100°-180°) | 0.0    | 0.0       |                         | U0/0 |        |

**BUG Rating: B1-U0-G0**  
 Type II Short





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**CANDELA DISTRIBUTION (FULL):**

|       | 0°     | 5°     | 15°    | 25°    | 35°    | 45°    | 55°    | 58°    | 65°    | 75°    | 85°    |
|-------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|
| 0°    | 934.9  | 934.9  | 934.9  | 934.9  | 934.9  | 934.9  | 934.9  | 934.9  | 934.9  | 934.9  | 934.9  |
| 2.5°  | 1383.6 | 1361.8 | 1349.2 | 1339.2 | 1294.8 | 1224.5 | 1178.5 | 1154.2 | 1114.0 | 1046.2 | 987.7  |
| 5°    | 1805.4 | 1789.5 | 1760.2 | 1740.1 | 1683.2 | 1583.6 | 1480.6 | 1439.6 | 1348.4 | 1195.2 | 1058.0 |
| 7.5°  | 2085.0 | 2073.2 | 2062.4 | 2035.6 | 1982.0 | 1891.6 | 1777.8 | 1735.1 | 1594.5 | 1376.9 | 1151.7 |
| 10°   | 2300.1 | 2290.9 | 2278.3 | 2277.5 | 2235.6 | 2154.4 | 2043.1 | 1998.7 | 1846.4 | 1574.4 | 1262.2 |
| 12.5° | 2489.2 | 2481.7 | 2479.2 | 2502.6 | 2475.8 | 2415.6 | 2295.0 | 2239.8 | 2078.3 | 1776.1 | 1384.4 |
| 15°   | 2619.0 | 2617.3 | 2628.2 | 2674.2 | 2689.3 | 2661.6 | 2560.4 | 2500.9 | 2315.1 | 1978.7 | 1519.1 |
| 17.5° | 2678.4 | 2683.4 | 2704.3 | 2783.8 | 2850.8 | 2874.2 | 2796.4 | 2746.2 | 2550.3 | 2183.7 | 1663.1 |
| 20°   | 2779.7 | 2778.0 | 2790.5 | 2865.9 | 2947.9 | 3031.6 | 3008.2 | 2965.5 | 2788.0 | 2400.5 | 1823.0 |
| 22.5° | 3065.1 | 3040.8 | 3014.0 | 3025.7 | 3055.0 | 3153.0 | 3196.5 | 3174.7 | 3033.3 | 2623.1 | 1987.9 |
| 25°   | 3503.7 | 3478.5 | 3392.3 | 3308.6 | 3253.4 | 3297.8 | 3357.2 | 3368.1 | 3276.8 | 2851.6 | 2160.3 |
| 27.5° | 3969.0 | 3946.4 | 3849.3 | 3723.8 | 3565.6 | 3488.6 | 3532.9 | 3554.7 | 3516.2 | 3123.7 | 2343.6 |
| 30°   | 4405.1 | 4375.0 | 4268.7 | 4113.0 | 3929.7 | 3811.7 | 3761.4 | 3776.5 | 3799.1 | 3445.9 | 2558.7 |
| 32.5° | 4783.4 | 4760.8 | 4633.6 | 4469.5 | 4292.9 | 4169.9 | 4052.7 | 4077.8 | 4133.1 | 3840.1 | 2834.1 |
| 35°   | 5104.0 | 5092.3 | 4957.5 | 4794.3 | 4607.6 | 4544.9 | 4444.4 | 4449.5 | 4504.7 | 4316.4 | 3169.7 |
| 37.5° | 5382.7 | 5362.6 | 5240.4 | 5088.9 | 4940.8 | 4930.7 | 4903.1 | 4905.6 | 4934.1 | 4871.3 | 3555.5 |
| 40°   | 5558.5 | 5540.1 | 5453.0 | 5359.3 | 5253.8 | 5255.5 | 5398.6 | 5409.5 | 5376.8 | 5416.2 | 3963.2 |
| 42.5° | 5624.6 | 5611.2 | 5564.3 | 5565.2 | 5554.3 | 5603.7 | 5872.3 | 5892.4 | 5775.3 | 5843.9 | 4311.4 |
| 45°   | 5509.9 | 5504.1 | 5507.4 | 5627.9 | 5758.5 | 5910.8 | 6259.9 | 6295.0 | 6129.3 | 6127.6 | 4583.4 |
| 47.5° | 5140.0 | 5128.3 | 5226.2 | 5431.3 | 5733.4 | 6029.7 | 6494.2 | 6548.6 | 6377.1 | 6290.0 | 4754.1 |
| 50°   | 4415.1 | 4448.6 | 4603.5 | 4911.5 | 5371.0 | 5866.5 | 6491.7 | 6586.3 | 6386.3 | 6275.8 | 4725.7 |
| 52.5° | 3198.2 | 3191.5 | 3530.4 | 3954.0 | 4513.1 | 5344.2 | 6146.9 | 6285.0 | 6162.8 | 6136.0 | 4662.1 |
| 55°   | 1740.1 | 1801.2 | 2029.7 | 2590.5 | 3288.5 | 4355.7 | 5359.3 | 5660.6 | 5802.0 | 6084.9 | 4776.7 |
| 57.5° | 639.5  | 666.2  | 809.4  | 1206.1 | 1740.9 | 2708.5 | 4093.7 | 4548.2 | 4985.1 | 5942.7 | 4757.5 |
| 60°   | 257.8  | 262.8  | 319.7  | 443.6  | 731.5  | 1378.5 | 2455.7 | 2859.2 | 3271.0 | 4549.1 | 3651.0 |
| 62.5° | 187.5  | 194.2  | 216.8  | 259.5  | 370.0  | 602.6  | 1058.8 | 1231.2 | 1345.9 | 2253.2 | 1798.7 |
| 65°   | 151.5  | 156.5  | 174.9  | 194.2  | 244.4  | 323.9  | 341.5  | 328.9  | 327.3  | 582.5  | 412.6  |
| 67.5° | 125.5  | 130.6  | 144.0  | 157.4  | 175.8  | 161.5  | 117.2  | 123.0  | 100.4  | 99.6   | 81.2   |
| 70°   | 92.1   | 97.9   | 111.3  | 125.5  | 105.5  | 43.5   | 67.8   | 100.4  | 76.2   | 63.6   | 61.9   |
| 72.5° | 69.5   | 73.7   | 86.2   | 82.0   | 31.0   | 16.7   | 45.2   | 72.8   | 58.6   | 46.9   | 46.0   |
| 75°   | 51.9   | 54.4   | 43.5   | 13.4   | 3.3    | 4.2    | 16.7   | 30.1   | 32.6   | 26.8   | 26.8   |
| 77.5° | 0.0    | 0.0    | 0.0    | 0.0    | 0.0    | 0.0    | 1.7    | 2.5    | 3.3    | 4.2    | 5.0    |
| 80°   | 0.0    | 0.0    | 0.0    | 0.0    | 0.0    | 0.0    | 0.0    | 0.0    | 0.0    | 0.0    | 0.0    |
| 82.5° | 0.0    | 0.0    | 0.0    | 0.0    | 0.0    | 0.0    | 0.0    | 0.0    | 0.0    | 0.0    | 0.0    |
| 85°   | 0.0    | 0.0    | 0.0    | 0.0    | 0.0    | 0.0    | 0.0    | 0.0    | 0.0    | 0.0    | 0.0    |
| 87.5° | 0.0    | 0.0    | 0.0    | 0.0    | 0.0    | 0.0    | 0.0    | 0.0    | 0.0    | 0.0    | 0.0    |
| 90°   | 0.0    | 0.0    | 0.0    | 0.0    | 0.0    | 0.0    | 0.0    | 0.0    | 0.0    | 0.0    | 0.0    |



REPORT NUMBER: P632827

CATALOG NUMBER: GWS-SA2D-740-U-T2R-W-GRSBK

**CANDELA DISTRIBUTION (continued):**

|       | 90°    | 95°    | 105°  | 115°  | 125°  | 135°  | 145°  | 155°  | 165°  | 175°  | 180°  |
|-------|--------|--------|-------|-------|-------|-------|-------|-------|-------|-------|-------|
| 0°    | 934.9  | 934.9  | 934.9 | 934.9 | 934.9 | 934.9 | 934.9 | 934.9 | 934.9 | 934.9 | 934.9 |
| 2.5°  | 954.2  | 919.0  | 868.8 | 826.9 | 795.1 | 764.2 | 740.7 | 717.3 | 716.5 | 704.7 | 702.2 |
| 5°    | 994.3  | 930.7  | 838.7 | 772.5 | 732.4 | 708.1 | 691.4 | 683.0 | 678.8 | 674.6 | 672.9 |
| 7.5°  | 1052.1 | 960.9  | 833.6 | 763.3 | 729.9 | 714.0 | 702.2 | 697.2 | 694.7 | 691.4 | 690.5 |
| 10°   | 1123.2 | 1004.4 | 852.1 | 780.9 | 751.6 | 736.6 | 724.0 | 716.5 | 712.3 | 706.4 | 704.7 |
| 12.5° | 1208.6 | 1058.0 | 881.4 | 810.2 | 779.2 | 759.2 | 742.4 | 731.5 | 725.7 | 718.1 | 716.5 |
| 15°   | 1300.7 | 1115.7 | 914.0 | 837.0 | 800.2 | 774.2 | 753.3 | 736.6 | 725.7 | 716.5 | 714.0 |
| 17.5° | 1396.1 | 1174.3 | 943.3 | 855.4 | 810.2 | 779.2 | 749.1 | 726.5 | 713.1 | 701.4 | 698.1 |
| 20°   | 1503.2 | 1234.6 | 962.5 | 858.8 | 806.9 | 765.8 | 730.7 | 702.2 | 688.8 | 672.9 | 669.6 |
| 22.5° | 1615.4 | 1290.6 | 970.9 | 851.2 | 788.4 | 740.7 | 703.1 | 673.8 | 654.5 | 637.8 | 632.8 |
| 25°   | 1724.2 | 1340.9 | 966.7 | 830.3 | 760.8 | 705.6 | 667.1 | 637.0 | 616.0 | 599.3 | 595.1 |
| 27.5° | 1839.7 | 1382.7 | 951.7 | 799.3 | 723.2 | 667.1 | 630.3 | 604.3 | 585.1 | 566.6 | 562.5 |
| 30°   | 1969.4 | 1421.2 | 927.4 | 761.7 | 678.8 | 627.7 | 599.3 | 581.7 | 560.8 | 541.5 | 535.7 |
| 32.5° | 2126.0 | 1455.5 | 892.2 | 716.5 | 639.5 | 593.4 | 577.5 | 564.1 | 539.9 | 519.8 | 515.6 |
| 35°   | 2305.1 | 1484.0 | 847.9 | 669.6 | 601.0 | 571.7 | 568.3 | 550.7 | 518.9 | 495.5 | 490.5 |
| 37.5° | 2512.7 | 1511.6 | 795.1 | 623.6 | 572.5 | 561.6 | 562.5 | 532.3 | 493.8 | 465.4 | 462.0 |
| 40°   | 2736.1 | 1539.2 | 736.6 | 583.4 | 546.6 | 555.8 | 548.2 | 505.5 | 442.8 | 415.1 | 411.8 |
| 42.5° | 2968.8 | 1569.4 | 677.1 | 545.7 | 524.8 | 533.2 | 522.3 | 452.0 | 406.8 | 392.5 | 390.9 |
| 45°   | 3178.9 | 1605.4 | 612.7 | 508.1 | 503.0 | 500.5 | 482.1 | 409.3 | 390.0 | 380.0 | 379.2 |
| 47.5° | 3330.4 | 1599.5 | 544.0 | 472.1 | 479.6 | 471.2 | 415.1 | 389.2 | 373.3 | 359.9 | 356.6 |
| 50°   | 3302.8 | 1497.4 | 472.9 | 431.9 | 449.5 | 441.9 | 373.3 | 365.8 | 351.5 | 337.3 | 332.3 |
| 52.5° | 3232.5 | 1358.4 | 411.0 | 389.2 | 416.8 | 399.2 | 344.8 | 337.3 | 324.8 | 306.3 | 300.5 |
| 55°   | 3270.1 | 1227.9 | 362.4 | 354.9 | 383.3 | 330.6 | 313.0 | 301.3 | 287.9 | 267.8 | 265.3 |
| 57.5° | 3148.8 | 1001.9 | 291.3 | 296.3 | 339.0 | 282.1 | 274.5 | 256.1 | 233.5 | 220.1 | 218.5 |
| 60°   | 2179.5 | 538.2  | 182.5 | 188.3 | 245.2 | 236.9 | 246.1 | 229.3 | 201.7 | 189.2 | 186.6 |
| 62.5° | 1001.0 | 215.9  | 99.6  | 95.4  | 128.9 | 160.7 | 210.9 | 209.2 | 174.9 | 154.8 | 153.2 |
| 65°   | 242.7  | 98.8   | 71.1  | 67.0  | 72.8  | 96.3  | 137.3 | 164.9 | 141.5 | 118.0 | 115.5 |
| 67.5° | 78.7   | 80.4   | 65.3  | 61.1  | 64.4  | 72.0  | 82.0  | 91.2  | 90.4  | 82.9  | 81.2  |
| 70°   | 62.8   | 72.8   | 60.3  | 55.2  | 55.2  | 57.8  | 55.2  | 44.4  | 38.5  | 41.8  | 43.5  |
| 72.5° | 46.9   | 55.2   | 47.7  | 42.7  | 41.0  | 40.2  | 34.3  | 25.1  | 17.6  | 15.9  | 15.1  |
| 75°   | 27.6   | 31.0   | 29.3  | 25.1  | 23.4  | 20.9  | 16.7  | 10.9  | 5.9   | 4.2   | 2.5   |
| 77.5° | 5.0    | 5.9    | 6.7   | 5.0   | 4.2   | 3.3   | 2.5   | 0.8   | 0.0   | 0.0   | 0.0   |
| 80°   | 0.0    | 0.8    | 0.8   | 0.8   | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   |
| 82.5° | 0.0    | 0.0    | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   |
| 85°   | 0.0    | 0.0    | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   |
| 87.5° | 0.0    | 0.0    | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   |
| 90°   | 0.0    | 0.0    | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   |



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

Report Prepared for

Cooper Lighting Solutions

MCGRAW, INVUE, LUMARK AND STREETWORKS

DATA VALID FOR LUMINIAIRES 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

REPORT NUMBER: SP1-2101-121-2

| 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            |

REPORT NUMBER: SP1-2101-121-2

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)