

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: P628822

Luminaire Tested: GWS-SA1A-735-U-T3R-W-GRSBK

Issue Date: 1/10/2023

**Test Information**

Test Method: LM-79-2019  
Report Number: P628822  
TEST IS SCALED FROM IESNA LM-79-08 TEST DATA (G2-2209-782-16)  
Test Lab: COOPER LIGHTING SOLUTIONS  
Issue Date: 1/10/2023  
Manufacturer: COOPER LIGHTING SOLUTIONS  
Product Line: McGRAW-EDISON  
Catalog Number: GWS-SA1A-735-U-T3R-W-GRSBK  
Description: GALLEON WALL SLIM LUMINAIRE. (1) LIGHTSQUARES WITH 16 LEDS EACH AND TYPE III ROADWAY OPTICS W/ FACTORY INSTALLED GLARE SHIELD, BK  
Light Source: (16) 3500K CCT, 70 CRI LEDS  
Ballast/Driver: -

**Summary**

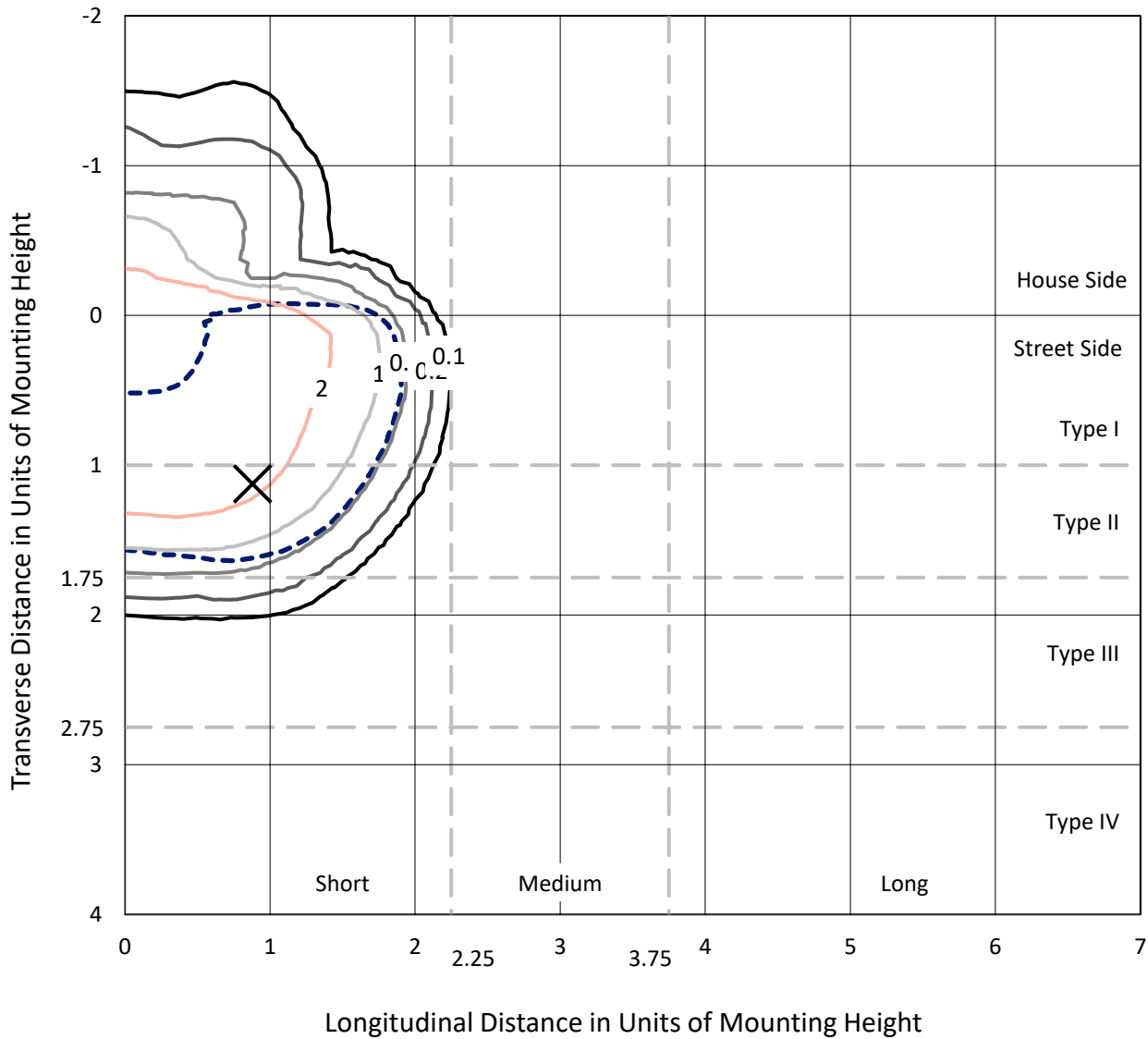
Lumens per Lamp: N/A  
Luminaire Lumens: 1759.1 lumens  
Efficiency: N/A  
Efficacy: 89.3 lumens/watt  
Luminous Opening: Rectangular (W 0.5' x L: 0.5' x H: 0')  
IES Classification: Type II - Short  
BUG Rating: B1 - U0 - G0  
  
Input Watts (W): 19.7  
Input Voltage (V): 120  
Input Current (Ain): 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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 CATALOG NUMBER: GWS-SA1A-735-U-T3R-W-GRSBK

### Iso-Footcandle Lines of Horizontal Illumination

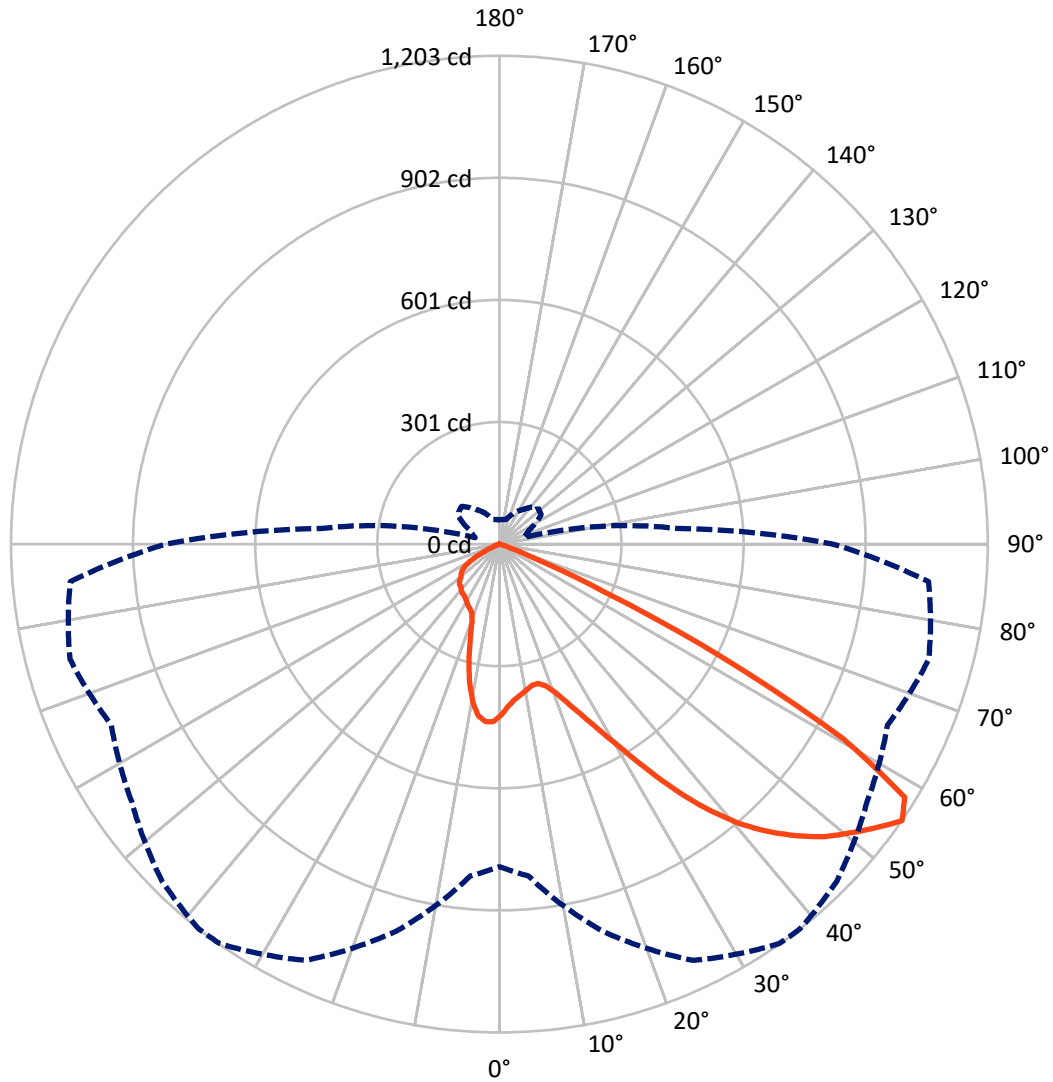
✕ Max cd  
 - - - 1/2 Max cd



Based on 10 foot mounting height. Maximum calculated value = 4.4 fc  
 Type II - Short - N/A

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### Luminous Intensity Polar Plot



— Vertical Plane Through 38-Deg Lateral    - - - Horizontal Cone Through 55-Deg Vertical

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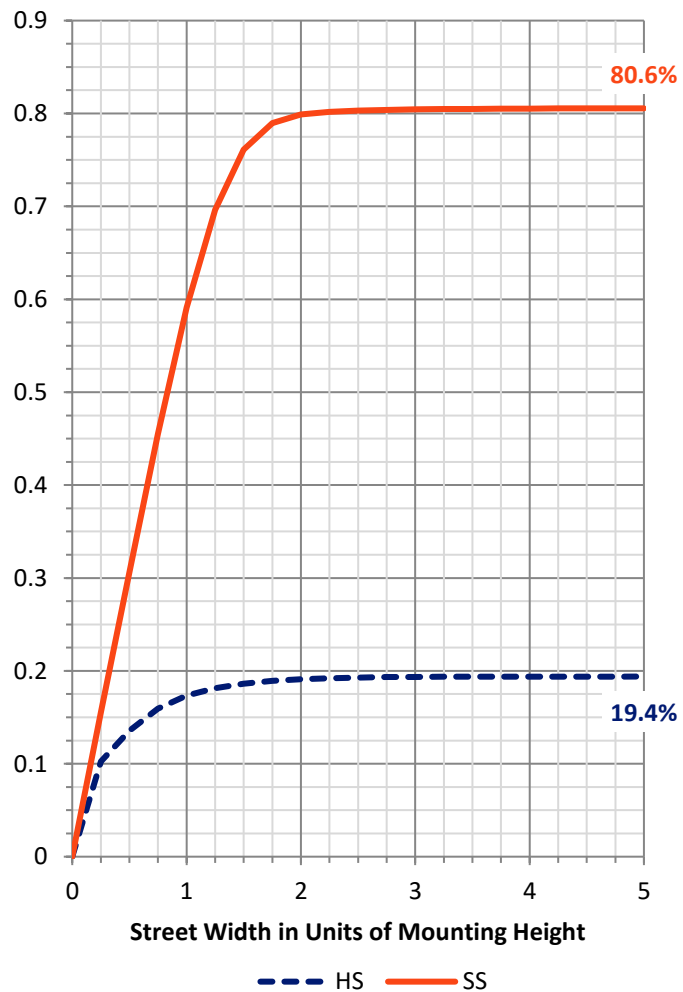
**FLUX DISTRIBUTION:**

|                    |           | Downward | Upward | Total  |
|--------------------|-----------|----------|--------|--------|
| <b>House Side</b>  | Lumens    | 342.7    | 0.0    | 342.7  |
|                    | % Fixture | 19.5     | 0.0    | 19.5   |
| <b>Street Side</b> | Lumens    | 1416.4   | 0.0    | 1416.4 |
|                    | % Fixture | 80.5     | 0.0    | 80.5   |
| <b>Total</b>       | Lumens    | 1759.1   | 0.0    | 1759.1 |
|                    | % Fixture | 100.0    | 0.0    | 100.0  |

**ZONAL LUMENS:**

| Zone      | Lumens | % Fixture |
|-----------|--------|-----------|
| 0°-10°    | 39.0   | 2.2       |
| 10°-20°   | 105.0  | 6.0       |
| 20°-30°   | 180.2  | 10.2      |
| 30°-40°   | 298.9  | 17.0      |
| 40°-50°   | 439.4  | 25.0      |
| 50°-60°   | 513.4  | 29.2      |
| 60°-70°   | 174.0  | 9.9       |
| 70°-80°   | 8.9    | 0.5       |
| 80°-90°   | 0.3    | 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°    | 1759.1 | 100.0     |
| 0°-180°   | 1759.1 | 100.0     |

**Coefficient of Utilization**



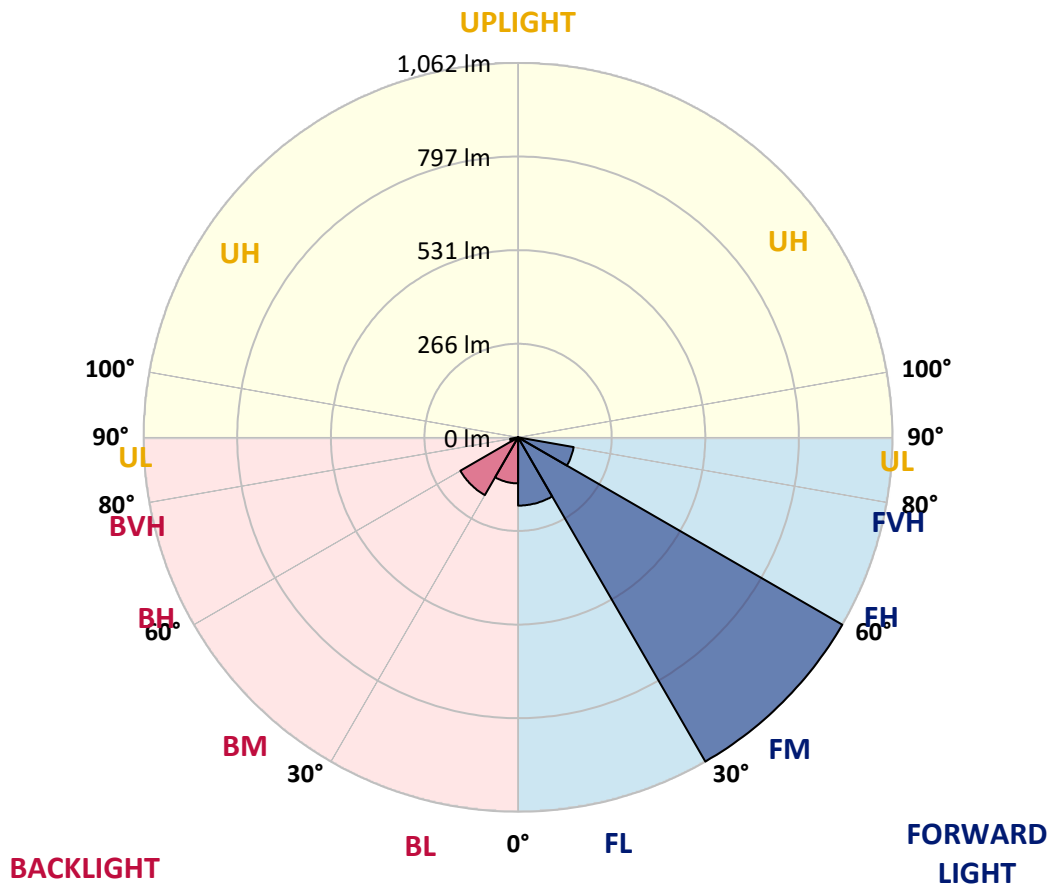
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**LUMINAIRE CLASSIFICATION SYSTEM LUMEN TABLE AND BUG RATING:**

| Zone           | Lumens | % Fixture | Zone Rating/Lumen Limit |      |        |
|----------------|--------|-----------|-------------------------|------|--------|
|                |        |           | B                       | U    | G      |
| FL (0°-30°)    | 193.6  | 11.0      |                         |      |        |
| FM (30°-60°)   | 1062.4 | 60.4      |                         |      |        |
| FH (60°-80°)   | 160.1  | 9.1       |                         |      | G0/660 |
| FVH (80°-90°)  | 0.2    | 0.0       |                         |      | G0/10  |
| BL (0°-30°)    | 130.6  | 7.4       | B1/500                  |      |        |
| BM (30°-60°)   | 189.2  | 10.8      | B0/220                  |      |        |
| BH (60°-80°)   | 22.8   | 1.3       | B0/110                  |      | G0/110 |
| BVH (80°-90°)  | 0.2    | 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°    | 38°    | 45°    | 55°    | 65°    | 75°    | 85°    |
|-------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|
| 0°    | 421.8  | 421.8  | 421.8  | 421.8  | 421.8  | 421.8  | 421.8  | 421.8  | 421.8  | 421.8  | 421.8  |
| 2.5°  | 392.9  | 392.1  | 393.7  | 396.9  | 399.9  | 400.9  | 404.0  | 408.2  | 410.8  | 417.0  | 422.0  |
| 5°    | 375.2  | 374.8  | 376.4  | 379.2  | 383.2  | 384.6  | 389.3  | 396.3  | 403.3  | 414.2  | 424.9  |
| 7.5°  | 359.1  | 358.9  | 361.3  | 367.6  | 373.4  | 375.2  | 380.8  | 389.5  | 398.9  | 415.6  | 431.3  |
| 10°   | 338.0  | 338.2  | 342.8  | 351.7  | 362.3  | 365.9  | 375.0  | 387.5  | 399.7  | 421.2  | 443.0  |
| 12.5° | 331.2  | 331.6  | 334.0  | 340.8  | 352.5  | 357.1  | 369.8  | 388.7  | 404.4  | 429.3  | 458.0  |
| 15°   | 347.9  | 347.9  | 345.8  | 346.6  | 351.9  | 356.1  | 369.4  | 392.7  | 412.2  | 438.9  | 472.9  |
| 17.5° | 380.2  | 379.0  | 374.0  | 367.2  | 365.3  | 366.8  | 377.4  | 401.3  | 423.3  | 450.2  | 489.8  |
| 20°   | 424.1  | 424.5  | 414.6  | 400.3  | 388.9  | 388.7  | 395.1  | 416.6  | 439.1  | 463.7  | 508.1  |
| 22.5° | 477.1  | 475.5  | 462.5  | 443.0  | 423.1  | 421.4  | 424.1  | 439.9  | 462.1  | 485.0  | 530.6  |
| 25°   | 538.7  | 537.9  | 519.4  | 493.2  | 466.9  | 463.1  | 463.1  | 478.7  | 494.8  | 515.3  | 557.6  |
| 27.5° | 603.0  | 603.0  | 585.1  | 555.0  | 520.0  | 513.1  | 512.1  | 530.6  | 541.3  | 545.3  | 580.3  |
| 30°   | 669.2  | 668.4  | 650.7  | 619.7  | 582.3  | 575.3  | 572.4  | 586.1  | 593.8  | 581.7  | 608.6  |
| 32.5° | 736.3  | 737.7  | 719.8  | 691.1  | 657.7  | 653.1  | 644.4  | 644.4  | 650.7  | 633.8  | 653.3  |
| 35°   | 808.5  | 808.1  | 794.0  | 774.5  | 746.0  | 740.7  | 726.5  | 704.1  | 713.6  | 706.2  | 715.0  |
| 37.5° | 872.2  | 875.3  | 868.4  | 853.9  | 830.8  | 825.6  | 802.1  | 761.7  | 768.9  | 780.6  | 788.4  |
| 40°   | 937.0  | 939.4  | 946.2  | 941.6  | 912.5  | 902.8  | 861.0  | 794.6  | 802.7  | 842.7  | 865.2  |
| 42.5° | 1000.5 | 1001.7 | 1015.6 | 1023.2 | 984.2  | 967.3  | 905.6  | 814.7  | 823.2  | 891.3  | 930.8  |
| 45°   | 1040.9 | 1043.6 | 1066.5 | 1089.8 | 1047.6 | 1024.5 | 944.4  | 840.5  | 844.1  | 925.1  | 979.2  |
| 47.5° | 1039.3 | 1045.4 | 1088.4 | 1130.8 | 1102.1 | 1077.1 | 991.1  | 881.7  | 875.7  | 956.9  | 1011.2 |
| 50°   | 1007.0 | 1014.2 | 1075.9 | 1143.3 | 1141.3 | 1118.2 | 1043.0 | 941.4  | 922.5  | 985.0  | 1015.2 |
| 52.5° | 939.8  | 960.7  | 1054.0 | 1144.9 | 1172.8 | 1161.2 | 1107.1 | 1021.8 | 985.8  | 1025.5 | 1021.6 |
| 55°   | 794.6  | 820.4  | 987.5  | 1131.2 | 1201.4 | 1202.8 | 1174.5 | 1105.7 | 1054.6 | 1095.0 | 1061.2 |
| 57.5° | 603.2  | 623.7  | 760.0  | 1007.0 | 1154.1 | 1177.3 | 1200.6 | 1149.9 | 1097.0 | 1142.5 | 1070.5 |
| 60°   | 363.5  | 387.3  | 475.9  | 738.9  | 932.2  | 971.6  | 1063.1 | 1053.2 | 989.5  | 1009.0 | 877.9  |
| 62.5° | 147.4  | 159.9  | 219.8  | 407.2  | 586.7  | 623.5  | 711.2  | 726.1  | 710.4  | 690.5  | 532.4  |
| 65°   | 53.9   | 58.9   | 88.1   | 168.3  | 269.8  | 283.3  | 329.6  | 355.9  | 377.6  | 321.5  | 198.1  |
| 67.5° | 33.4   | 36.6   | 57.3   | 86.5   | 98.1   | 91.3   | 92.9   | 110.8  | 105.8  | 65.3   | 35.4   |
| 70°   | 24.7   | 27.3   | 44.8   | 59.9   | 39.6   | 30.6   | 20.7   | 22.1   | 19.9   | 17.5   | 17.3   |
| 72.5° | 17.1   | 19.5   | 33.6   | 35.4   | 15.3   | 10.9   | 7.6    | 10.7   | 12.1   | 11.9   | 12.3   |
| 75°   | 11.3   | 13.1   | 21.1   | 13.9   | 3.8    | 3.0    | 2.6    | 5.6    | 7.2    | 7.2    | 7.4    |
| 77.5° | 6.6    | 7.6    | 7.4    | 2.8    | 0.8    | 0.8    | 0.6    | 1.0    | 1.6    | 1.8    | 2.2    |
| 80°   | 0.8    | 0.6    | 0.4    | 0.4    | 0.4    | 0.4    | 0.4    | 0.4    | 0.6    | 0.6    | 0.6    |
| 82.5° | 0.2    | 0.2    | 0.2    | 0.4    | 0.4    | 0.4    | 0.4    | 0.4    | 0.4    | 0.6    | 0.6    |
| 85°   | 0.0    | 0.0    | 0.2    | 0.2    | 0.4    | 0.4    | 0.4    | 0.4    | 0.4    | 0.6    | 0.6    |
| 87.5° | 0.0    | 0.0    | 0.2    | 0.2    | 0.4    | 0.4    | 0.4    | 0.4    | 0.4    | 0.6    | 0.6    |
| 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-735-U-T3R-W-GRSBK

**CANDELA DISTRIBUTION (continued):**

|       | 90°   | 95°   | 105°  | 115°  | 125°  | 135°  | 145°  | 155°  | 165°  | 175°  | 180°  |
|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|
| 0°    | 421.8 | 421.8 | 421.8 | 421.8 | 421.8 | 421.8 | 421.8 | 421.8 | 421.8 | 421.8 | 421.8 |
| 2.5°  | 425.9 | 424.5 | 430.3 | 434.5 | 437.9 | 439.5 | 437.3 | 437.1 | 437.1 | 432.7 | 431.5 |
| 5°    | 430.9 | 431.5 | 439.7 | 443.4 | 444.0 | 442.0 | 436.9 | 433.5 | 431.5 | 426.9 | 424.3 |
| 7.5°  | 440.5 | 442.6 | 450.4 | 449.8 | 444.4 | 435.1 | 421.8 | 411.6 | 405.0 | 397.7 | 393.3 |
| 10°   | 454.4 | 458.2 | 463.1 | 454.6 | 437.3 | 413.8 | 386.5 | 367.0 | 355.3 | 347.0 | 342.0 |
| 12.5° | 471.3 | 475.1 | 473.5 | 453.6 | 417.6 | 375.6 | 340.4 | 312.3 | 298.8 | 291.4 | 286.1 |
| 15°   | 488.4 | 490.8 | 480.4 | 441.6 | 382.8 | 326.3 | 287.1 | 259.2 | 242.7 | 236.7 | 232.2 |
| 17.5° | 505.9 | 505.3 | 481.6 | 417.8 | 336.4 | 270.8 | 232.2 | 213.1 | 208.5 | 207.5 | 207.1 |
| 20°   | 524.2 | 518.8 | 476.7 | 383.8 | 280.5 | 215.9 | 194.0 | 195.2 | 203.7 | 207.7 | 208.5 |
| 22.5° | 545.1 | 531.4 | 464.7 | 337.8 | 223.4 | 180.0 | 182.2 | 194.0 | 205.5 | 210.9 | 211.7 |
| 25°   | 567.4 | 543.1 | 444.6 | 278.7 | 176.1 | 165.5 | 178.6 | 192.2 | 204.5 | 211.1 | 211.9 |
| 27.5° | 582.1 | 545.9 | 411.6 | 219.2 | 151.2 | 159.9 | 173.7 | 186.8 | 199.5 | 206.7 | 207.7 |
| 30°   | 598.0 | 544.7 | 366.8 | 168.9 | 142.8 | 155.0 | 167.1 | 179.0 | 190.6 | 198.7 | 199.5 |
| 32.5° | 621.3 | 543.9 | 312.1 | 137.1 | 139.3 | 151.2 | 160.1 | 169.9 | 177.9 | 182.6 | 182.0 |
| 35°   | 651.9 | 542.9 | 248.3 | 123.7 | 137.3 | 148.2 | 155.2 | 159.9 | 151.0 | 148.2 | 148.8 |
| 37.5° | 691.1 | 545.3 | 194.6 | 118.0 | 136.7 | 147.4 | 153.4 | 140.1 | 126.5 | 121.2 | 120.4 |
| 40°   | 734.5 | 551.5 | 148.4 | 115.8 | 138.7 | 149.4 | 146.6 | 124.7 | 107.8 | 97.5  | 95.3  |
| 42.5° | 778.1 | 558.4 | 117.4 | 115.0 | 142.2 | 155.0 | 135.3 | 113.4 | 88.1  | 82.2  | 81.4  |
| 45°   | 810.5 | 557.2 | 101.5 | 113.6 | 145.2 | 158.2 | 132.3 | 97.3  | 78.6  | 76.0  | 76.2  |
| 47.5° | 826.8 | 543.9 | 92.9  | 110.4 | 146.4 | 155.0 | 124.9 | 90.7  | 72.2  | 75.0  | 77.4  |
| 50°   | 818.2 | 509.5 | 84.9  | 104.2 | 143.8 | 150.8 | 113.0 | 85.7  | 69.0  | 80.6  | 86.1  |
| 52.5° | 807.7 | 467.3 | 76.0  | 94.5  | 137.5 | 145.0 | 108.4 | 84.2  | 67.0  | 77.8  | 81.8  |
| 55°   | 821.6 | 440.5 | 61.5  | 79.6  | 125.3 | 131.3 | 104.8 | 84.0  | 62.3  | 60.5  | 59.9  |
| 57.5° | 802.1 | 387.3 | 44.0  | 57.3  | 96.1  | 104.0 | 102.1 | 82.6  | 55.3  | 55.1  | 55.9  |
| 60°   | 619.9 | 236.3 | 30.2  | 36.4  | 58.9  | 66.4  | 92.7  | 79.0  | 47.7  | 43.8  | 44.0  |
| 62.5° | 352.3 | 100.5 | 20.7  | 22.5  | 30.2  | 35.8  | 70.8  | 71.8  | 44.0  | 41.8  | 44.0  |
| 65°   | 122.7 | 36.0  | 16.1  | 15.1  | 16.7  | 19.1  | 40.6  | 55.5  | 40.0  | 36.2  | 36.6  |
| 67.5° | 25.3  | 17.9  | 14.3  | 12.5  | 12.5  | 12.5  | 20.7  | 34.6  | 33.0  | 28.8  | 29.2  |
| 70°   | 16.1  | 15.3  | 12.5  | 10.7  | 10.3  | 9.5   | 11.9  | 19.1  | 22.7  | 20.9  | 21.1  |
| 72.5° | 11.9  | 11.7  | 9.9   | 8.6   | 7.6   | 6.8   | 7.4   | 9.5   | 11.7  | 12.1  | 12.3  |
| 75°   | 7.2   | 7.4   | 6.4   | 5.4   | 4.8   | 4.2   | 4.4   | 4.4   | 4.4   | 4.0   | 4.4   |
| 77.5° | 2.2   | 2.4   | 2.0   | 1.6   | 1.4   | 1.4   | 1.4   | 1.2   | 1.0   | 0.6   | 0.6   |
| 80°   | 0.6   | 0.6   | 0.6   | 0.6   | 0.6   | 0.4   | 0.4   | 0.2   | 0.2   | 0.0   | 0.0   |
| 82.5° | 0.6   | 0.6   | 0.6   | 0.6   | 0.4   | 0.4   | 0.2   | 0.2   | 0.0   | 0.0   | 0.0   |
| 85°   | 0.6   | 0.6   | 0.6   | 0.6   | 0.4   | 0.4   | 0.2   | 0.2   | 0.0   | 0.0   | 0.0   |
| 87.5° | 0.6   | 0.6   | 0.6   | 0.6   | 0.4   | 0.4   | 0.2   | 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

All Brands

Data applicable to all product families using SA light engines

Report Number: SP1-2101-121-7

Luminaire Tested: IFLD-S-SA2A-735-U-T2

Test Date: 03/04/2021

**Test Information**

Test Method: LM-79-08  
 Report Number: SP1-2101-121-7  
 Test Lab: COOPER LIGHTING SOLUTIONS  
 Photometer: SP1  
 Measurement Geometry: 4π  
 Issue Date: 03/04/2021  
 Manufacturer: COOPER LIGHTING SOLUTIONS (FORMERLY EATON)  
 Product Line: STREETWORKS  
 Catalog Number: **IFLD-S-SA2A-735-U-T2**  
 Description: STREETWORKS INF FLOOD

PROGRAMMED @ 615mA.

**Spectral Parameters**

|                           |        |           |      |      |       |
|---------------------------|--------|-----------|------|------|-------|
| CCT (K):                  | 3388   | CRI (Ra): | 73.1 | R9:  | -34.6 |
| CIE u':                   | 0.2371 | R1:       | 68.9 | R10: | 57.8  |
| CIE v':                   | 0.5177 | R2:       | 81.1 | R11: | 68.6  |
| Duv:                      | 0.0032 | R3:       | 93.1 | R12: | 53.9  |
| CIE x:                    | 0.4153 | R4:       | 71.6 | R13: | 70.9  |
| CIE y:                    | 0.4030 | R5:       | 69.4 | R14: | 96.2  |
| CIE z:                    | 0.1817 | R6:       | 75.0 |      |       |
| Peak Wavelength (nm):     | 590    | R7:       | 79.5 |      |       |
| Dominant Wavelength (nm): | 580    | R8:       | 46.4 |      |       |
| Purity:                   | 45.7   |           |      |      |       |
| Rf:                       | 76.9   |           |      |      |       |
| Rg:                       | 94.4   |           |      |      |       |



**Test Conditions**

Stabilization Time: 81M  
 Operation Time: 12H  
 Room Temperature (°C) / RH%: 25.0/30%  
 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 3500K 4-step quadrangle

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**Photopic Flux vs. Wavelength**

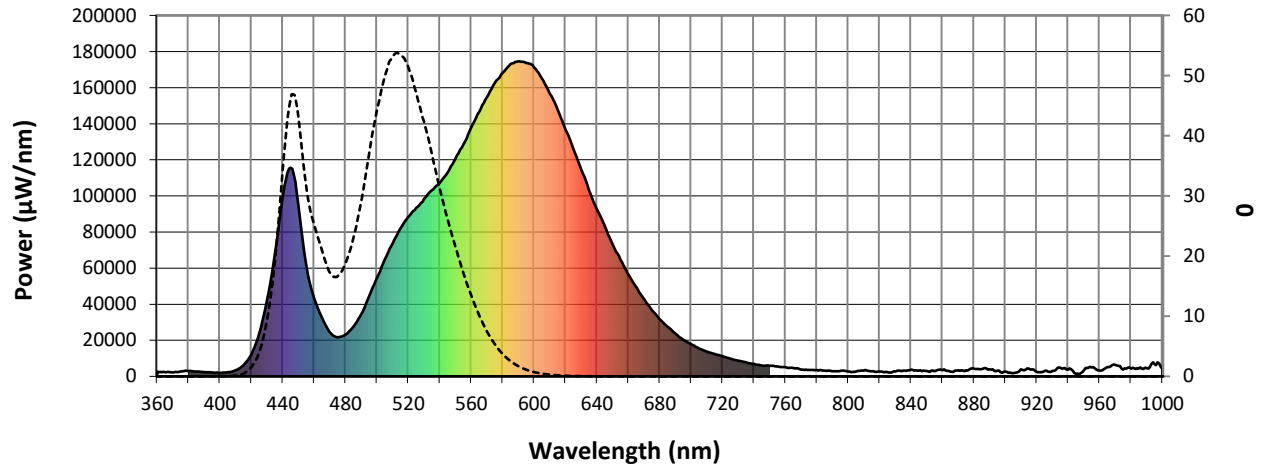


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| λ (nm) | Power (µW/nm) | Lumens (Φ/nm) | λ (nm) | Power (µW/nm) | Lumens (Φ/nm) | λ (nm) | Power (µW/nm) | Lumens (Φ/nm) | λ (nm) | Power (µW/nm) | Lumens (Φ/nm) | λ (nm) | Power (µW/nm) | Lumens (Φ/nm) |
|--------|---------------|---------------|--------|---------------|---------------|--------|---------------|---------------|--------|---------------|---------------|--------|---------------|---------------|
| 360    | 2672          | 0.0           | 490    | 34553         | 4.9           | 620    | 136720        | 35.6          | 750    | 5870          | 0.0           | 880    | 4216          | 0.0           |
| 365    | 2252          | 0.0           | 495    | 44336         | 8.0           | 625    | 126308        | 27.9          | 755    | 5421          | 0.0           | 885    | 4132          | 0.0           |
| 370    | 2217          | 0.0           | 500    | 54643         | 12.1          | 630    | 114625        | 20.7          | 760    | 5097          | 0.0           | 890    | 3992          | 0.0           |
| 375    | 2697          | 0.0           | 505    | 64676         | 18.1          | 635    | 103216        | 15.5          | 765    | 4626          | 0.0           | 895    | 3214          | 0.0           |
| 380    | 3039          | 0.0           | 510    | 73825         | 25.4          | 640    | 92605         | 11.1          | 770    | 3782          | 0.0           | 900    | 2580          | 0.0           |
| 385    | 2655          | 0.0           | 515    | 81872         | 33.9          | 645    | 83234         | 8.0           | 775    | 3506          | 0.0           | 905    | 1776          | 0.0           |
| 390    | 2357          | 0.0           | 520    | 88574         | 43.0          | 650    | 73263         | 5.4           | 780    | 3507          | 0.0           | 910    | 3995          | 0.0           |
| 395    | 2186          | 0.0           | 525    | 93289         | 50.1          | 655    | 64627         | 3.7           | 785    | 3267          | 0.0           | 915    | 4288          | 0.0           |
| 400    | 2015          | 0.0           | 530    | 98393         | 57.9          | 660    | 56614         | 2.4           | 790    | 2849          | 0.0           | 920    | 2446          | 0.0           |
| 405    | 2234          | 0.0           | 535    | 103269        | 64.0          | 665    | 49537         | 1.6           | 795    | 3037          | 0.0           | 925    | 3009          | 0.0           |
| 410    | 3412          | 0.0           | 540    | 107316        | 69.9          | 670    | 42866         | 0.9           | 800    | 2716          | 0.0           | 930    | 3026          | 0.0           |
| 415    | 6135          | 0.0           | 545    | 113101        | 75.3          | 675    | 36708         | 0.6           | 805    | 2648          | 0.0           | 935    | 4734          | 0.0           |
| 420    | 12146         | 0.0           | 550    | 120690        | 82.0          | 680    | 31814         | 0.4           | 810    | 3187          | 0.0           | 940    | 3719          | 0.0           |
| 425    | 23983         | 0.1           | 555    | 128583        | 87.8          | 685    | 27485         | 0.2           | 815    | 2931          | 0.0           | 945    | 1480          | 0.0           |
| 430    | 42142         | 0.3           | 560    | 137796        | 93.6          | 690    | 23698         | 0.1           | 820    | 2717          | 0.0           | 950    | 3450          | 0.0           |
| 435    | 68228         | 0.8           | 565    | 146577        | 97.5          | 695    | 20309         | 0.1           | 825    | 2236          | 0.0           | 955    | 5051          | 0.0           |
| 440    | 99323         | 1.6           | 570    | 154581        | 100.5         | 700    | 17890         | 0.1           | 830    | 2628          | 0.0           | 960    | 3176          | 0.0           |
| 445    | 115584        | 2.4           | 575    | 162633        | 101.2         | 705    | 15500         | 0.0           | 835    | 3140          | 0.0           | 965    | 5178          | 0.0           |
| 450    | 94997         | 2.5           | 580    | 168101        | 99.9          | 710    | 13699         | 0.0           | 840    | 3675          | 0.0           | 970    | 6385          | 0.0           |
| 455    | 61433         | 2.1           | 585    | 173145        | 96.2          | 715    | 12398         | 0.0           | 845    | 3283          | 0.0           | 975    | 3810          | 0.0           |
| 460    | 43373         | 1.8           | 590    | 174675        | 90.3          | 720    | 11147         | 0.0           | 850    | 3055          | 0.0           | 980    | 4322          | 0.0           |
| 465    | 32472         | 1.7           | 595    | 173724        | 82.3          | 725    | 9761          | 0.0           | 855    | 2932          | 0.0           | 985    | 4200          | 0.0           |
| 470    | 24257         | 1.5           | 600    | 171241        | 73.8          | 730    | 8651          | 0.0           | 860    | 3382          | 0.0           | 990    | 4661          | 0.0           |
| 475    | 21690         | 1.7           | 605    | 165134        | 64.0          | 735    | 7730          | 0.0           | 865    | 2605          | 0.0           | 995    | 6746          | 0.0           |
| 480    | 23173         | 2.2           | 610    | 156652        | 53.8          | 740    | 6847          | 0.0           | 870    | 3325          | 0.0           | 1000   | 4150          | 0.0           |
| 485    | 27564         | 3.3           | 615    | 147879        | 44.6          | 745    | 6124          | 0.0           | 875    | 3325          | 0.0           |        |               |               |

REPORT NUMBER: SP1-2101-121-7

**Scotopic Flux vs. Wavelength**



**Scotopic Lumens: 12126**

**S/P: 1.36**

| $\lambda$<br>(nm) | Power<br>( $\mu\text{W}/\text{nm}$ ) | Lumens<br>( $\phi/\text{nm}$ ) | $\lambda$<br>(nm) | Power<br>( $\mu\text{W}/\text{nm}$ ) | Lumens<br>( $\phi/\text{nm}$ ) | $\lambda$<br>(nm) | Power<br>( $\mu\text{W}/\text{nm}$ ) | Lumens<br>( $\phi/\text{nm}$ ) | $\lambda$<br>(nm) | Power<br>( $\mu\text{W}/\text{nm}$ ) | Lumens<br>( $\phi/\text{nm}$ ) | $\lambda$<br>(nm) | Power<br>( $\mu\text{W}/\text{nm}$ ) | Lumens<br>( $\phi/\text{nm}$ ) |
|-------------------|--------------------------------------|--------------------------------|-------------------|--------------------------------------|--------------------------------|-------------------|--------------------------------------|--------------------------------|-------------------|--------------------------------------|--------------------------------|-------------------|--------------------------------------|--------------------------------|
| 360               | 2672                                 | 0.0                            | 490               | 34553                                | 53.2                           | 620               | 136720                               | 1.7                            | 750               | 5870                                 | 0.0                            | 880               | 4216                                 | 0.0                            |
| 365               | 2252                                 | 0.0                            | 495               | 44336                                | 71.7                           | 625               | 126308                               | 1.1                            | 755               | 5421                                 | 0.0                            | 885               | 4132                                 | 0.0                            |
| 370               | 2217                                 | 0.0                            | 500               | 54643                                | 91.4                           | 630               | 114625                               | 0.6                            | 760               | 5097                                 | 0.0                            | 890               | 3992                                 | 0.0                            |
| 375               | 2697                                 | 0.0                            | 505               | 64676                                | 110.0                          | 635               | 103216                               | 0.4                            | 765               | 4626                                 | 0.0                            | 895               | 3214                                 | 0.0                            |
| 380               | 3039                                 | 0.0                            | 510               | 73825                                | 125.1                          | 640               | 92605                                | 0.2                            | 770               | 3782                                 | 0.0                            | 900               | 2580                                 | 0.0                            |
| 385               | 2655                                 | 0.0                            | 515               | 81872                                | 135.7                          | 645               | 83234                                | 0.1                            | 775               | 3506                                 | 0.0                            | 905               | 1776                                 | 0.0                            |
| 390               | 2357                                 | 0.0                            | 520               | 88574                                | 140.8                          | 650               | 73263                                | 0.1                            | 780               | 3507                                 | 0.0                            | 910               | 3995                                 | 0.0                            |
| 395               | 2186                                 | 0.0                            | 525               | 93289                                | 139.6                          | 655               | 64627                                | 0.1                            | 785               | 3267                                 | 0.0                            | 915               | 4288                                 | 0.0                            |
| 400               | 2015                                 | 0.0                            | 530               | 98393                                | 135.7                          | 660               | 56614                                | 0.0                            | 790               | 2849                                 | 0.0                            | 920               | 2446                                 | 0.0                            |
| 405               | 2234                                 | 0.1                            | 535               | 103269                               | 128.7                          | 665               | 49537                                | 0.0                            | 795               | 3037                                 | 0.0                            | 925               | 3009                                 | 0.0                            |
| 410               | 3412                                 | 0.2                            | 540               | 107316                               | 118.6                          | 670               | 42866                                | 0.0                            | 800               | 2716                                 | 0.0                            | 930               | 3026                                 | 0.0                            |
| 415               | 6135                                 | 0.6                            | 545               | 113101                               | 108.4                          | 675               | 36708                                | 0.0                            | 805               | 2648                                 | 0.0                            | 935               | 4734                                 | 0.0                            |
| 420               | 12146                                | 2.0                            | 550               | 120690                               | 98.7                           | 680               | 31814                                | 0.0                            | 810               | 3187                                 | 0.0                            | 940               | 3719                                 | 0.0                            |
| 425               | 23983                                | 5.9                            | 555               | 128583                               | 87.9                           | 685               | 27485                                | 0.0                            | 815               | 2931                                 | 0.0                            | 945               | 1480                                 | 0.0                            |
| 430               | 42142                                | 14.3                           | 560               | 137796                               | 77.0                           | 690               | 23698                                | 0.0                            | 820               | 2717                                 | 0.0                            | 950               | 3450                                 | 0.0                            |
| 435               | 68228                                | 30.5                           | 565               | 146577                               | 65.8                           | 695               | 20309                                | 0.0                            | 825               | 2236                                 | 0.0                            | 955               | 5051                                 | 0.0                            |
| 440               | 99323                                | 55.5                           | 570               | 154581                               | 54.6                           | 700               | 17890                                | 0.0                            | 830               | 2628                                 | 0.0                            | 960               | 3176                                 | 0.0                            |
| 445               | 115584                               | 77.4                           | 575               | 162633                               | 44.3                           | 705               | 15500                                | 0.0                            | 835               | 3140                                 | 0.0                            | 965               | 5178                                 | 0.0                            |
| 450               | 94997                                | 73.6                           | 580               | 168101                               | 34.6                           | 710               | 13699                                | 0.0                            | 840               | 3675                                 | 0.0                            | 970               | 6385                                 | 0.0                            |
| 455               | 61433                                | 53.7                           | 585               | 173145                               | 26.5                           | 715               | 12398                                | 0.0                            | 845               | 3283                                 | 0.0                            | 975               | 3810                                 | 0.0                            |
| 460               | 43373                                | 41.9                           | 590               | 174675                               | 19.5                           | 720               | 11147                                | 0.0                            | 850               | 3055                                 | 0.0                            | 980               | 4322                                 | 0.0                            |
| 465               | 32472                                | 34.3                           | 595               | 173724                               | 13.9                           | 725               | 9761                                 | 0.0                            | 855               | 2932                                 | 0.0                            | 985               | 4200                                 | 0.0                            |
| 470               | 24257                                | 27.9                           | 600               | 171241                               | 9.7                            | 730               | 8651                                 | 0.0                            | 860               | 3382                                 | 0.0                            | 990               | 4661                                 | 0.0                            |
| 475               | 21690                                | 27.1                           | 605               | 165134                               | 6.5                            | 735               | 7730                                 | 0.0                            | 865               | 2605                                 | 0.0                            | 995               | 6746                                 | 0.0                            |
| 480               | 23173                                | 31.3                           | 610               | 156652                               | 4.2                            | 740               | 6847                                 | 0.0                            | 870               | 3325                                 | 0.0                            | 1000              | 4150                                 | 0.0                            |
| 485               | 27564                                | 40.0                           | 615               | 147879                               | 2.7                            | 745               | 6124                                 | 0.0                            | 875               | 3325                                 | 0.0                            |                   |                                      |                                |

REPORT NUMBER: SP1-2101-121-7

**Melanopic Flux vs. Wavelength**



**Melanopic Lumens: 4490.7 M/P: 0.5**

| 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    | 2672          | 0.0           | 490    | 34553         | 28.8          | 620    | 136720        | 0.1           | 750    | 5870          | 0.0           | 880    | 4216          | 0.0           |
| 365    | 2252          | 0.0           | 495    | 44336         | 36.6          | 625    | 126308        | 0.1           | 755    | 5421          | 0.0           | 885    | 4132          | 0.0           |
| 370    | 2217          | 0.0           | 500    | 54643         | 43.9          | 630    | 114625        | 0.0           | 760    | 5097          | 0.0           | 890    | 3992          | 0.0           |
| 375    | 2697          | 0.0           | 505    | 64676         | 49.6          | 635    | 103216        | 0.0           | 765    | 4626          | 0.0           | 895    | 3214          | 0.0           |
| 380    | 3039          | 0.0           | 510    | 73825         | 53.0          | 640    | 92605         | 0.0           | 770    | 3782          | 0.0           | 900    | 2580          | 0.0           |
| 385    | 2655          | 0.0           | 515    | 81872         | 53.5          | 645    | 83234         | 0.0           | 775    | 3506          | 0.0           | 905    | 1776          | 0.0           |
| 390    | 2357          | 0.0           | 520    | 88574         | 51.6          | 650    | 73263         | 0.0           | 780    | 3507          | 0.0           | 910    | 3995          | 0.0           |
| 395    | 2186          | 0.0           | 525    | 93289         | 47.3          | 655    | 64627         | 0.0           | 785    | 3267          | 0.0           | 915    | 4288          | 0.0           |
| 400    | 2015          | 0.0           | 530    | 98393         | 42.5          | 660    | 56614         | 0.0           | 790    | 2849          | 0.0           | 920    | 2446          | 0.0           |
| 405    | 2234          | 0.0           | 535    | 103269        | 37.2          | 665    | 49537         | 0.0           | 795    | 3037          | 0.0           | 925    | 3009          | 0.0           |
| 410    | 3412          | 0.1           | 540    | 107316        | 31.4          | 670    | 42866         | 0.0           | 800    | 2716          | 0.0           | 930    | 3026          | 0.0           |
| 415    | 6135          | 0.4           | 545    | 113101        | 26.3          | 675    | 36708         | 0.0           | 805    | 2648          | 0.0           | 935    | 4734          | 0.0           |
| 420    | 12146         | 1.4           | 550    | 120690        | 21.7          | 680    | 31814         | 0.0           | 810    | 3187          | 0.0           | 940    | 3719          | 0.0           |
| 425    | 23983         | 3.7           | 555    | 128583        | 17.3          | 685    | 27485         | 0.0           | 815    | 2931          | 0.0           | 945    | 1480          | 0.0           |
| 430    | 42142         | 8.9           | 560    | 137796        | 13.6          | 690    | 23698         | 0.0           | 820    | 2717          | 0.0           | 950    | 3450          | 0.0           |
| 435    | 68228         | 18.2          | 565    | 146577        | 10.3          | 695    | 20309         | 0.0           | 825    | 2236          | 0.0           | 955    | 5051          | 0.0           |
| 440    | 99323         | 33.2          | 570    | 154581        | 7.6           | 700    | 17890         | 0.0           | 830    | 2628          | 0.0           | 960    | 3176          | 0.0           |
| 445    | 115584        | 45.6          | 575    | 162633        | 5.4           | 705    | 15500         | 0.0           | 835    | 3140          | 0.0           | 965    | 5178          | 0.0           |
| 450    | 94997         | 43.8          | 580    | 168101        | 3.8           | 710    | 13699         | 0.0           | 840    | 3675          | 0.0           | 970    | 6385          | 0.0           |
| 455    | 61433         | 32.2          | 585    | 173145        | 2.6           | 715    | 12398         | 0.0           | 845    | 3283          | 0.0           | 975    | 3810          | 0.0           |
| 460    | 43373         | 25.6          | 590    | 174675        | 1.7           | 720    | 11147         | 0.0           | 850    | 3055          | 0.0           | 980    | 4322          | 0.0           |
| 465    | 32472         | 21.2          | 595    | 173724        | 1.1           | 725    | 9761          | 0.0           | 855    | 2932          | 0.0           | 985    | 4200          | 0.0           |
| 470    | 24257         | 17.4          | 600    | 171241        | 0.7           | 730    | 8651          | 0.0           | 860    | 3382          | 0.0           | 990    | 4661          | 0.0           |
| 475    | 21690         | 16.6          | 605    | 165134        | 0.5           | 735    | 7730          | 0.0           | 865    | 2605          | 0.0           | 995    | 6746          | 0.0           |
| 480    | 23173         | 18.6          | 610    | 156652        | 0.3           | 740    | 6847          | 0.0           | 870    | 3325          | 0.0           | 1000   | 4150          | 0.0           |
| 485    | 27564         | 22.7          | 615    | 147879        | 0.2           | 745    | 6124          | 0.0           | 875    | 3325          | 0.0           |        |               |               |

**Summary**

$R_f = 76.9$   
 $R_g = 94.4$   
 CIE  $R_a = 73.1$   
 $R_g = -34.6$



**Color Vector Graphics**





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

|            |            |            |            |
|------------|------------|------------|------------|
| CES01 = 86 | CES26 = 68 | CES51 = 90 | CES76 = 63 |
| CES02 = 62 | CES27 = 88 | CES52 = 89 | CES77 = 80 |
| CES03 = 31 | CES28 = 87 | CES53 = 80 | CES78 = 65 |
| CES04 = 70 | CES29 = 67 | CES54 = 84 | CES79 = 87 |
| CES05 = 48 | CES30 = 74 | CES55 = 84 | CES80 = 86 |
| CES06 = 51 | CES31 = 71 | CES56 = 75 | CES81 = 75 |
| CES07 = 40 | CES32 = 67 | CES57 = 74 | CES82 = 94 |
| CES08 = 39 | CES33 = 74 | CES58 = 76 | CES83 = 91 |
| CES09 = 29 | CES34 = 78 | CES59 = 87 | CES84 = 89 |
| CES10 = 75 | CES35 = 89 | CES60 = 93 | CES85 = 80 |
| CES11 = 58 | CES36 = 98 | CES61 = 86 | CES86 = 66 |
| CES12 = 64 | CES37 = 86 | CES62 = 89 | CES87 = 79 |
| CES13 = 43 | CES38 = 82 | CES63 = 77 | CES88 = 79 |
| CES14 = 74 | CES39 = 95 | CES64 = 74 | CES89 = 70 |
| CES15 = 71 | CES40 = 91 | CES65 = 68 | CES90 = 77 |
| CES16 = 47 | CES41 = 89 | CES66 = 71 | CES91 = 88 |
| CES17 = 50 | CES42 = 88 | CES67 = 69 | CES92 = 60 |
| CES18 = 56 | CES43 = 82 | CES68 = 74 | CES93 = 77 |
| CES19 = 72 | CES44 = 99 | CES69 = 82 | CES94 = 52 |
| CES20 = 65 | CES45 = 87 | CES70 = 67 | CES95 = 69 |
| CES21 = 86 | CES46 = 82 | CES71 = 66 | CES96 = 78 |
| CES22 = 79 | CES47 = 82 | CES72 = 88 | CES97 = 85 |
| CES23 = 92 | CES48 = 72 | CES73 = 59 | CES98 = 76 |
| CES24 = 91 | CES49 = 82 | CES74 = 97 | CES99 = 63 |
| CES25 = 72 | CES50 = 88 | CES75 = 66 |            |



Color Rendition by Hue-Angle Bin



Measure Comparisons



(END OF REPORT)