

Signify Classified - Internal  
Cooper Lighting Solutions Photometric Lab  
1121 Highway 74 South  
Peachtree City, GA 30269



Scaled data based on original data using  
LM-79-08 Approved Method: Electrical and Photometric Measurements of Solid-  
State Lighting Products

Test Report Prepared for  
Cooper Lighting Solutions  
(formerly Eaton)

Brand: McGRAW-EDISON

Report Number: P438723

Luminaire Tested: **ISW-SA1E-740-U-T3-HSS**

Issue Date: 12/10/2020

**Test Information**

Test Method: LM-79-08  
Report Number: P438723  
TEST IS SCALED FROM IESNA LM-79-08 TEST DATA (G3-2011-074-9)  
Test Lab: INNOVATION CENTER  
Issue Date: 12/10/2020  
Manufacturer: COOPER LIGHTING SOLUTIONS (FORMERLY EATON)  
Product Line: McGRAW-EDISON  
Catalog Number: ISW-SA1E-740-U-T3-HSS  
Description: IMPACT ELITE LED WEDGE LUMINAIRE  
(1) 70 CRI, 4000K, 1050mA LIGHTSQUARE WITH 16 LEDS AND TYPE III OPTICS  
WITH HOUSE SIDE SHIELD  
Light Source: -  
Ballast/Driver: ELECTRONIC DRIVER

**Summary**

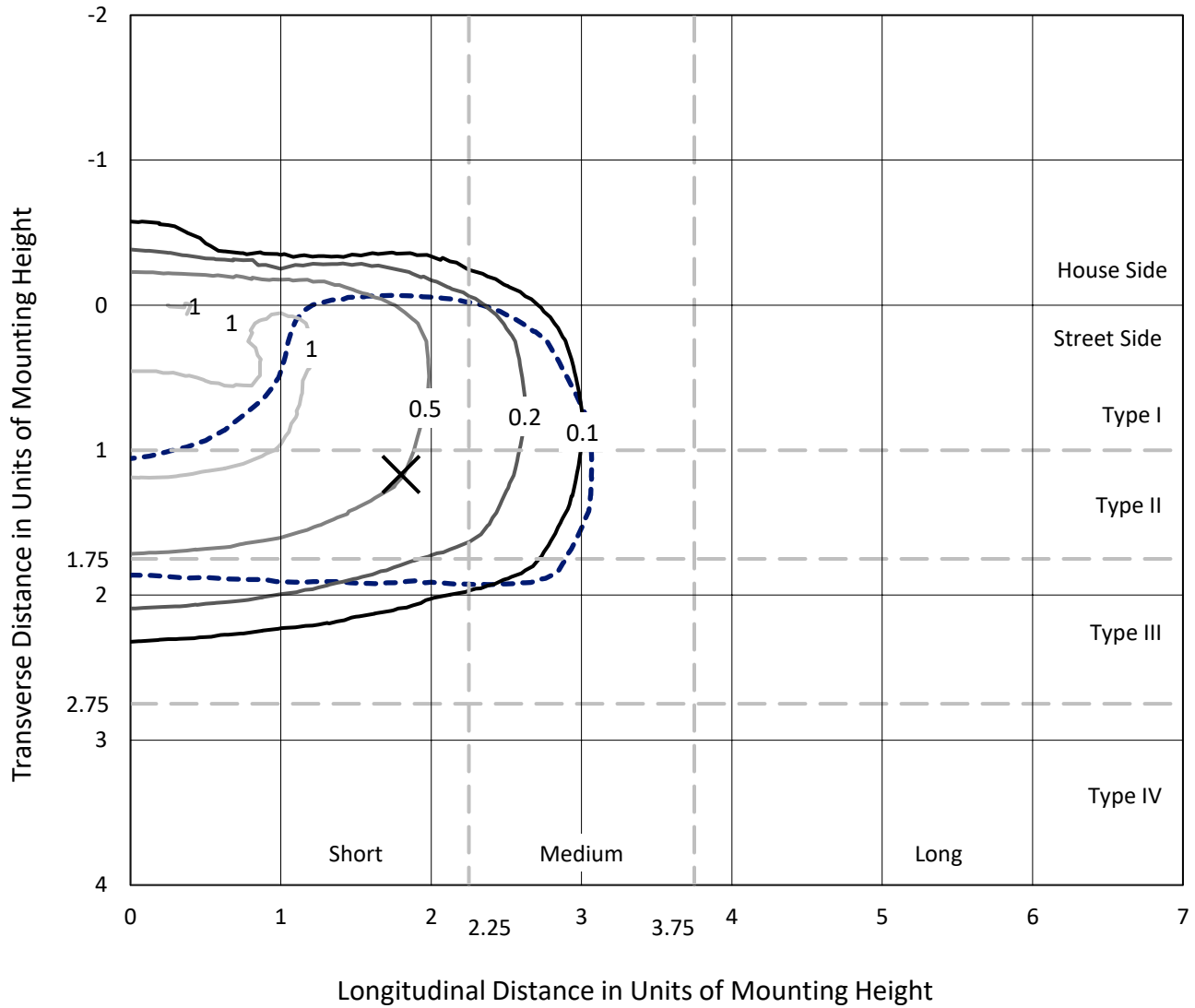
Lumens per Lamp: N/A  
Luminaire Lumens: 5047 lumens  
Efficiency: N/A  
Efficacy: 86.7 lumens/watt  
Luminous Opening: Rectangular (W 0.5' x L: 0.5' x H: 0')  
IES Classification: Type III - Short  
BUG Rating: B1 - U0 - G1  
  
Input Watts (W): 58.2  
Input Voltage (V): NR  
Input Current (Ain): NR  
Voltage Rise (V): NR  
Power Factor: NR  
Total Harmonic Distortion (THDi): NR  
Frequency (hertz): 60  
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

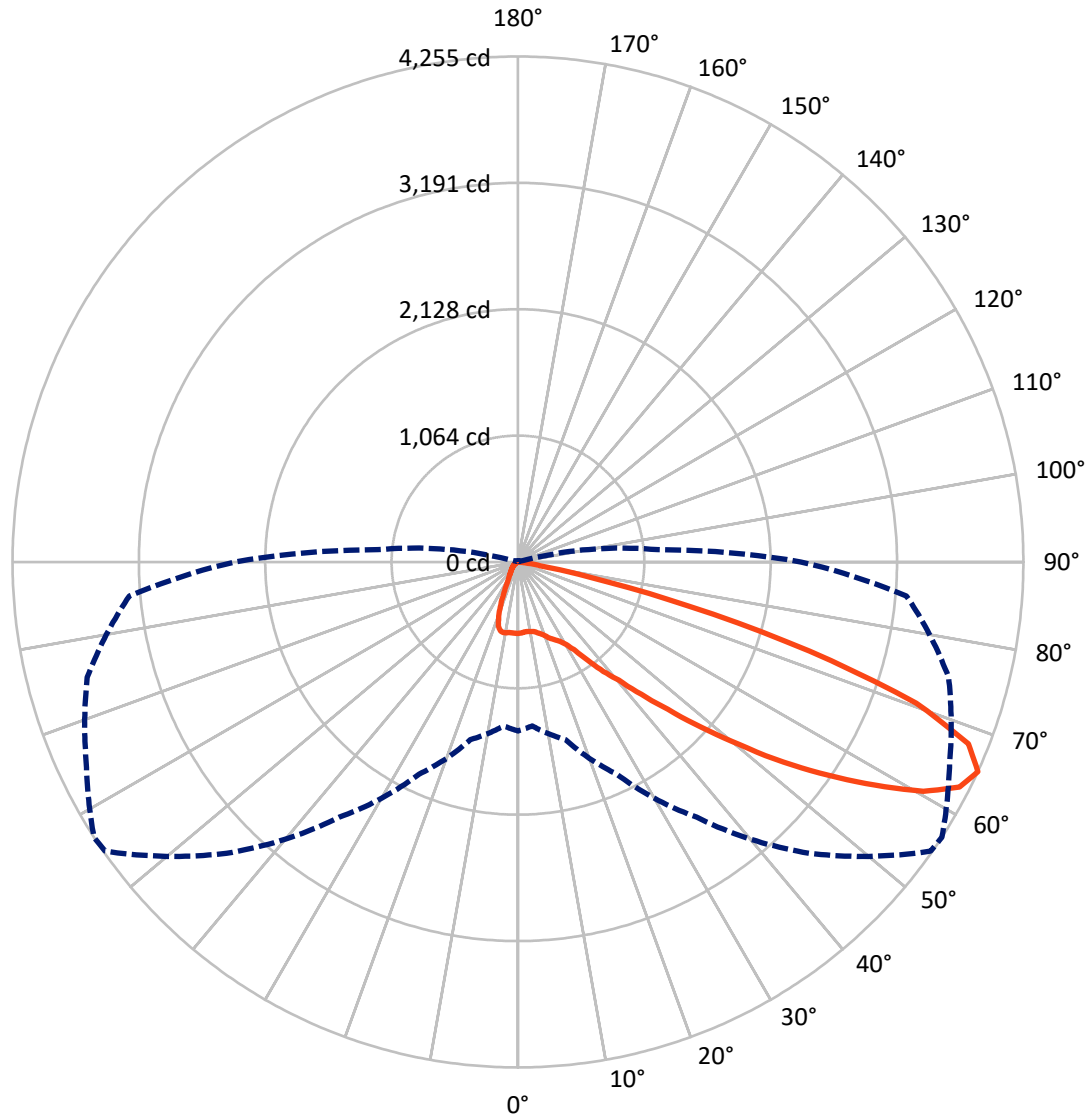
✕ Max cd  
 - - - 1/2 Max cd



Based on 25 foot mounting height. Maximum calculated value = 1.2 fc  
 Type III - Short - N/A

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### Luminous Intensity Polar Plot



— Vertical Plane Through 57-Deg Lateral      - - - Horizontal Cone Through 65-Deg Vertical

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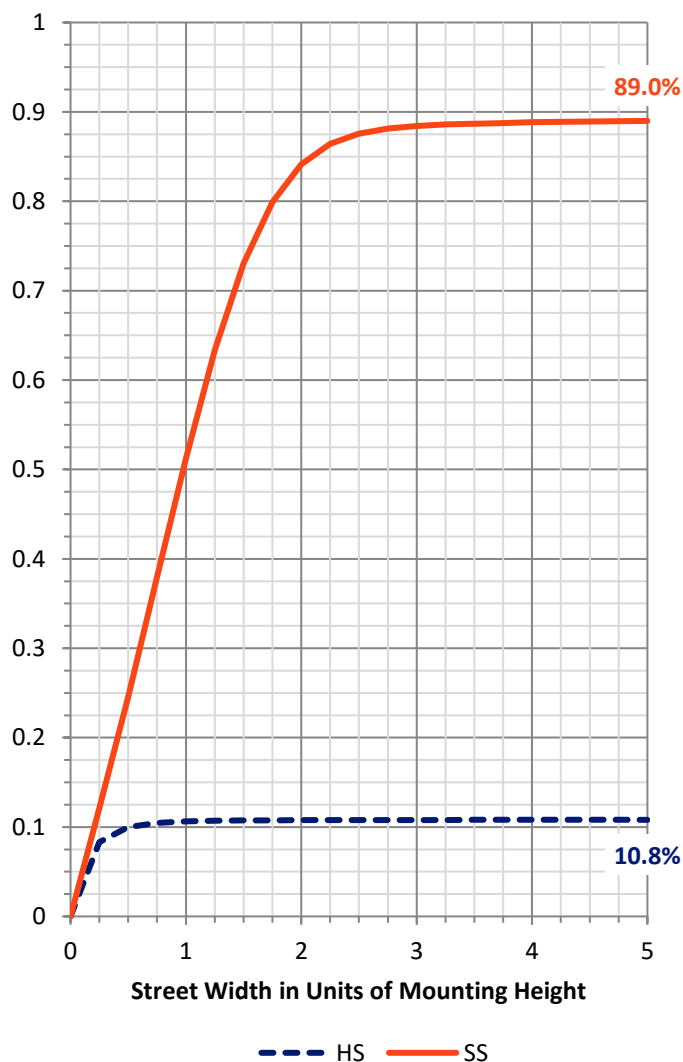
**FLUX DISTRIBUTION:**

|                    |           | Downward | Upward | Total  |
|--------------------|-----------|----------|--------|--------|
| <b>House Side</b>  | Lumens    | 550.5    | 0.0    | 550.5  |
|                    | % Fixture | 10.9     | 0.0    | 10.9   |
| <b>Street Side</b> | Lumens    | 4496.5   | 0.0    | 4496.5 |
|                    | % Fixture | 89.1     | 0.0    | 89.1   |
| <b>Total</b>       | Lumens    | 5047.0   | 0.0    | 5047.0 |
|                    | % Fixture | 100.0    | 0.0    | 100.0  |

**ZONAL LUMENS:**

| Zone      | Lumens | % Fixture |
|-----------|--------|-----------|
| 0°-10°    | 55.8   | 1.1       |
| 10°-20°   | 151.0  | 3.0       |
| 20°-30°   | 260.8  | 5.2       |
| 30°-40°   | 462.0  | 9.2       |
| 40°-50°   | 838.0  | 16.6      |
| 50°-60°   | 1411.5 | 28.0      |
| 60°-70°   | 1451.3 | 28.8      |
| 70°-80°   | 402.2  | 8.0       |
| 80°-90°   | 14.3   | 0.3       |
| 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°    | 5047.0 | 100.0     |
| 0°-180°   | 5047.0 | 100.0     |

**Coefficient of Utilization**



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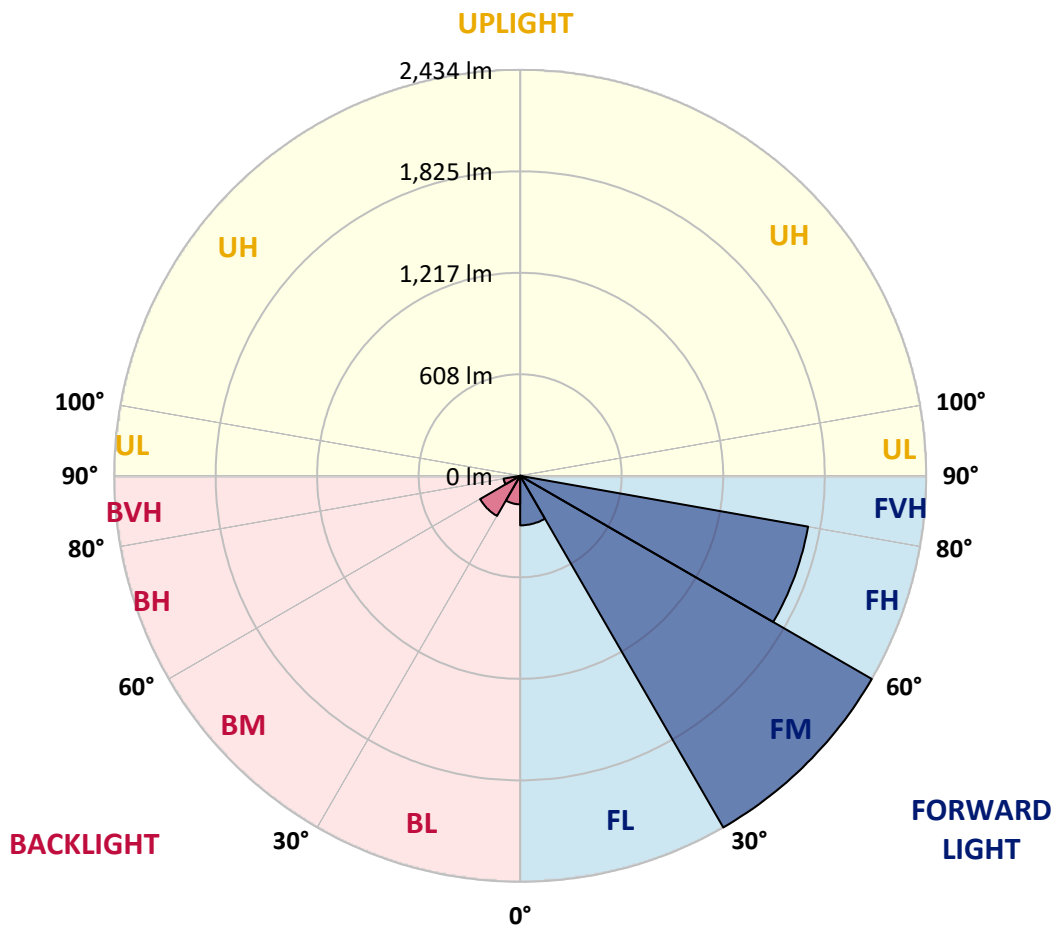
CATALOG NUMBER: ISW-SA1E-740-U-T3-HSS

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

| Zone           | Lumens | % Fixture | Zone Rating/Lumen Limit |      |         |
|----------------|--------|-----------|-------------------------|------|---------|
|                |        |           | B                       | U    | G       |
| FL (0°-30°)    | 296.8  | 5.9       |                         |      |         |
| FM (30°-60°)   | 2433.9 | 48.2      |                         |      |         |
| FH (60°-80°)   | 1752.6 | 34.7      |                         |      | G1/1800 |
| FVH (80°-90°)  | 13.2   | 0.3       |                         |      | G1/100  |
| BL (0°-30°)    | 170.9  | 3.4       | B1/500                  |      |         |
| BM (30°-60°)   | 277.5  | 5.5       | B1/1000                 |      |         |
| BH (60°-80°)   | 101.0  | 2.0       | B0/110                  |      | G0/110  |
| BVH (80°-90°)  | 1.1    | 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-G1**

Type III Short





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**CANDELA DISTRIBUTION (FULL):**

|       | 0°     | 5°     | 15°    | 25°    | 35°    | 45°    | 55°    | 57°    | 65°    | 75°    | 85°    |
|-------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|
| 0°    | 600.5  | 600.5  | 600.5  | 600.5  | 600.5  | 600.5  | 600.5  | 600.5  | 600.5  | 600.5  | 600.5  |
| 2.5°  | 583.3  | 583.3  | 588.2  | 590.7  | 590.7  | 593.1  | 595.6  | 598.1  | 598.1  | 598.1  | 603.0  |
| 5°    | 553.8  | 551.3  | 556.2  | 561.1  | 568.5  | 578.4  | 585.8  | 590.7  | 598.1  | 605.4  | 607.9  |
| 7.5°  | 526.7  | 526.7  | 531.6  | 539.0  | 553.8  | 568.5  | 583.3  | 590.7  | 603.0  | 617.7  | 622.7  |
| 10°   | 519.3  | 516.8  | 524.2  | 531.6  | 546.4  | 563.6  | 585.8  | 595.6  | 612.8  | 632.5  | 639.9  |
| 12.5° | 514.4  | 514.4  | 516.8  | 529.1  | 543.9  | 566.1  | 593.1  | 600.5  | 627.6  | 649.7  | 667.0  |
| 15°   | 511.9  | 511.9  | 516.8  | 526.7  | 543.9  | 568.5  | 605.4  | 617.7  | 649.7  | 681.7  | 696.5  |
| 17.5° | 531.6  | 529.1  | 526.7  | 531.6  | 548.8  | 575.9  | 625.1  | 637.4  | 676.8  | 716.2  | 733.4  |
| 20°   | 590.7  | 588.2  | 580.8  | 563.6  | 563.6  | 595.6  | 649.7  | 664.5  | 716.2  | 755.6  | 765.4  |
| 22.5° | 701.4  | 708.8  | 681.7  | 637.4  | 605.4  | 620.2  | 681.7  | 699.0  | 758.0  | 799.9  | 799.9  |
| 25°   | 861.4  | 851.6  | 826.9  | 753.1  | 689.1  | 659.6  | 708.8  | 726.0  | 797.4  | 846.6  | 836.8  |
| 27.5° | 1028.8 | 1031.2 | 996.8  | 913.1  | 809.7  | 731.0  | 738.3  | 758.0  | 839.3  | 895.9  | 873.7  |
| 30°   | 1161.7 | 1151.8 | 1134.6 | 1065.7 | 952.5  | 844.2  | 795.0  | 807.3  | 886.0  | 950.0  | 930.3  |
| 32.5° | 1279.8 | 1274.9 | 1252.7 | 1193.7 | 1092.8 | 977.1  | 888.5  | 890.9  | 952.5  | 1031.2 | 1006.6 |
| 35°   | 1385.6 | 1390.6 | 1380.7 | 1314.3 | 1223.2 | 1114.9 | 1014.0 | 1021.4 | 1068.1 | 1149.4 | 1100.1 |
| 37.5° | 1518.5 | 1518.5 | 1501.3 | 1439.8 | 1370.9 | 1262.6 | 1166.6 | 1169.0 | 1193.7 | 1260.1 | 1198.6 |
| 40°   | 1634.2 | 1639.1 | 1636.7 | 1589.9 | 1523.5 | 1425.0 | 1309.3 | 1309.3 | 1316.7 | 1395.5 | 1363.5 |
| 42.5° | 1791.7 | 1799.1 | 1796.6 | 1752.3 | 1700.7 | 1629.3 | 1530.8 | 1523.5 | 1518.5 | 1617.0 | 1582.5 |
| 45°   | 1993.5 | 2010.8 | 2018.1 | 1964.0 | 1917.2 | 1875.4 | 1799.1 | 1769.6 | 1781.9 | 1872.9 | 1845.9 |
| 47.5° | 2185.5 | 2205.2 | 2239.7 | 2212.6 | 2190.4 | 2190.4 | 2087.1 | 2082.1 | 2062.4 | 2168.3 | 2094.4 |
| 50°   | 2367.6 | 2370.1 | 2419.3 | 2461.2 | 2527.6 | 2515.3 | 2446.4 | 2416.9 | 2387.3 | 2458.7 | 2325.8 |
| 52.5° | 2471.0 | 2500.5 | 2564.5 | 2685.1 | 2830.3 | 2889.4 | 2818.0 | 2800.8 | 2741.7 | 2731.9 | 2549.8 |
| 55°   | 2567.0 | 2567.0 | 2667.9 | 2877.1 | 3123.2 | 3248.7 | 3189.7 | 3170.0 | 3051.8 | 3017.4 | 2781.1 |
| 57.5° | 2599.0 | 2589.1 | 2724.5 | 2990.3 | 3359.5 | 3578.5 | 3590.8 | 3546.5 | 3381.6 | 3275.8 | 3017.4 |
| 60°   | 2439.0 | 2421.8 | 2564.5 | 2916.5 | 3423.5 | 3817.3 | 3950.2 | 3920.6 | 3667.1 | 3526.8 | 3266.0 |
| 62.5° | 1978.8 | 2000.9 | 2183.0 | 2564.5 | 3197.0 | 3792.6 | 4188.9 | 4171.7 | 3878.8 | 3696.7 | 3364.4 |
| 65°   | 1422.5 | 1385.6 | 1548.1 | 1971.4 | 2623.6 | 3467.8 | 4243.0 | 4255.3 | 4009.2 | 3753.3 | 3283.2 |
| 67.5° | 797.4  | 763.0  | 898.3  | 1220.7 | 1865.6 | 2845.1 | 4021.5 | 4090.4 | 3915.7 | 3613.0 | 2933.7 |
| 70°   | 305.2  | 324.9  | 418.4  | 603.0  | 1100.1 | 1964.0 | 3460.4 | 3558.8 | 3433.3 | 3014.9 | 2185.5 |
| 72.5° | 108.3  | 123.1  | 172.3  | 268.3  | 509.5  | 1058.3 | 2419.3 | 2567.0 | 2530.1 | 2094.4 | 1250.3 |
| 75°   | 64.0   | 66.5   | 88.6   | 130.4  | 224.0  | 413.5  | 1365.9 | 1489.0 | 1429.9 | 1036.1 | 516.8  |
| 77.5° | 44.3   | 44.3   | 56.6   | 78.8   | 128.0  | 164.9  | 534.1  | 605.4  | 622.7  | 374.1  | 152.6  |
| 80°   | 27.1   | 29.5   | 39.4   | 51.7   | 73.8   | 76.3   | 164.9  | 194.4  | 182.1  | 132.9  | 54.1   |
| 82.5° | 12.3   | 12.3   | 22.2   | 34.5   | 36.9   | 32.0   | 51.7   | 56.6   | 66.5   | 59.1   | 24.6   |
| 85°   | 0.0    | 0.0    | 7.4    | 12.3   | 9.8    | 7.4    | 17.2   | 17.2   | 22.2   | 27.1   | 12.3   |
| 87.5° | 0.0    | 0.0    | 0.0    | 0.0    | 2.5    | 2.5    | 2.5    | 2.5    | 2.5    | 4.9    | 2.5    |
| 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: ISW-SA1E-740-U-T3-HSS

**CANDELA DISTRIBUTION (continued):**

|       | 90°    | 95°    | 105°  | 115°  | 125°  | 135°  | 145°  | 155°  | 165°  | 175°  | 180°  |
|-------|--------|--------|-------|-------|-------|-------|-------|-------|-------|-------|-------|
| 0°    | 600.5  | 600.5  | 600.5 | 600.5 | 600.5 | 600.5 | 600.5 | 600.5 | 600.5 | 600.5 | 600.5 |
| 2.5°  | 603.0  | 605.4  | 603.0 | 600.5 | 600.5 | 598.1 | 598.1 | 598.1 | 598.1 | 598.1 | 598.1 |
| 5°    | 607.9  | 610.4  | 607.9 | 603.0 | 598.1 | 593.1 | 588.2 | 588.2 | 588.2 | 588.2 | 593.1 |
| 7.5°  | 622.7  | 622.7  | 617.7 | 607.9 | 595.6 | 590.7 | 580.8 | 578.4 | 573.4 | 571.0 | 573.4 |
| 10°   | 644.8  | 644.8  | 635.0 | 620.2 | 600.5 | 580.8 | 563.6 | 539.0 | 524.2 | 514.4 | 511.9 |
| 12.5° | 667.0  | 664.5  | 652.2 | 632.5 | 600.5 | 556.2 | 499.6 | 438.1 | 401.2 | 374.1 | 369.2 |
| 15°   | 696.5  | 694.0  | 674.4 | 639.9 | 585.8 | 492.2 | 381.5 | 297.8 | 253.5 | 233.8 | 231.3 |
| 17.5° | 728.5  | 723.6  | 696.5 | 644.8 | 539.0 | 371.6 | 251.0 | 194.4 | 177.2 | 172.3 | 172.3 |
| 20°   | 763.0  | 755.6  | 713.7 | 637.4 | 445.5 | 253.5 | 174.7 | 162.4 | 160.0 | 157.5 | 157.5 |
| 22.5° | 790.0  | 777.7  | 726.0 | 600.5 | 332.3 | 174.7 | 155.1 | 152.6 | 150.1 | 147.7 | 147.7 |
| 25°   | 819.6  | 799.9  | 735.9 | 519.3 | 219.0 | 150.1 | 145.2 | 142.7 | 137.8 | 135.4 | 135.4 |
| 27.5° | 854.0  | 824.5  | 750.7 | 408.6 | 152.6 | 135.4 | 130.4 | 128.0 | 120.6 | 115.7 | 115.7 |
| 30°   | 898.3  | 861.4  | 758.0 | 297.8 | 128.0 | 118.1 | 113.2 | 108.3 | 98.4  | 93.5  | 93.5  |
| 32.5° | 969.7  | 937.7  | 743.3 | 199.4 | 115.7 | 105.8 | 98.4  | 88.6  | 78.8  | 73.8  | 71.4  |
| 35°   | 1060.8 | 1016.5 | 691.6 | 140.3 | 103.4 | 93.5  | 81.2  | 68.9  | 61.5  | 59.1  | 59.1  |
| 37.5° | 1161.7 | 1102.6 | 612.8 | 113.2 | 93.5  | 81.2  | 68.9  | 56.6  | 49.2  | 46.8  | 46.8  |
| 40°   | 1304.4 | 1213.3 | 504.5 | 98.4  | 81.2  | 68.9  | 56.6  | 46.8  | 41.8  | 39.4  | 39.4  |
| 42.5° | 1491.5 | 1353.6 | 381.5 | 91.1  | 73.8  | 59.1  | 46.8  | 39.4  | 34.5  | 32.0  | 32.0  |
| 45°   | 1700.7 | 1501.3 | 278.1 | 81.2  | 64.0  | 49.2  | 36.9  | 32.0  | 27.1  | 24.6  | 24.6  |
| 47.5° | 1909.9 | 1607.1 | 192.0 | 73.8  | 54.1  | 41.8  | 32.0  | 24.6  | 19.7  | 19.7  | 17.2  |
| 50°   | 2092.0 | 1663.7 | 137.8 | 64.0  | 49.2  | 34.5  | 24.6  | 19.7  | 17.2  | 14.8  | 14.8  |
| 52.5° | 2252.0 | 1688.4 | 105.8 | 56.6  | 41.8  | 29.5  | 19.7  | 17.2  | 14.8  | 14.8  | 14.8  |
| 55°   | 2387.3 | 1668.7 | 83.7  | 49.2  | 36.9  | 24.6  | 17.2  | 14.8  | 12.3  | 12.3  | 12.3  |
| 57.5° | 2520.2 | 1609.6 | 66.5  | 41.8  | 29.5  | 17.2  | 14.8  | 12.3  | 9.8   | 9.8   | 9.8   |
| 60°   | 2589.1 | 1533.3 | 54.1  | 34.5  | 24.6  | 14.8  | 12.3  | 9.8   | 9.8   | 7.4   | 7.4   |
| 62.5° | 2542.4 | 1378.2 | 44.3  | 29.5  | 17.2  | 12.3  | 9.8   | 7.4   | 7.4   | 4.9   | 4.9   |
| 65°   | 2384.9 | 1181.4 | 34.5  | 22.2  | 12.3  | 9.8   | 7.4   | 7.4   | 4.9   | 2.5   | 2.5   |
| 67.5° | 2010.8 | 925.4  | 27.1  | 17.2  | 9.8   | 7.4   | 4.9   | 4.9   | 2.5   | 0.0   | 0.0   |
| 70°   | 1437.3 | 610.4  | 22.2  | 12.3  | 7.4   | 7.4   | 4.9   | 2.5   | 0.0   | 0.0   | 0.0   |
| 72.5° | 829.4  | 295.3  | 17.2  | 7.4   | 4.9   | 4.9   | 2.5   | 2.5   | 0.0   | 0.0   | 0.0   |
| 75°   | 310.1  | 103.4  | 14.8  | 7.4   | 4.9   | 2.5   | 2.5   | 2.5   | 0.0   | 0.0   | 0.0   |
| 77.5° | 103.4  | 41.8   | 12.3  | 9.8   | 7.4   | 2.5   | 2.5   | 0.0   | 0.0   | 0.0   | 0.0   |
| 80°   | 32.0   | 19.7   | 4.9   | 4.9   | 4.9   | 4.9   | 2.5   | 0.0   | 0.0   | 0.0   | 0.0   |
| 82.5° | 17.2   | 9.8    | 2.5   | 2.5   | 2.5   | 2.5   | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   |
| 85°   | 7.4    | 4.9    | 2.5   | 2.5   | 2.5   | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   |
| 87.5° | 2.5    | 2.5    | 2.5   | 2.5   | 2.5   | 2.5   | 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   |



Cooper Lighting Solutions Photometric Lab  
1121 Highway 74 South  
Peachtree City, GA 30269



**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



CCT = 3905K  
 CIE x = 0.3841  
 CIE y = 0.3774  
 Duv = -0.0008

Point lies inside the ANSI 4000K 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    | 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           |        |               |               |

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**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**



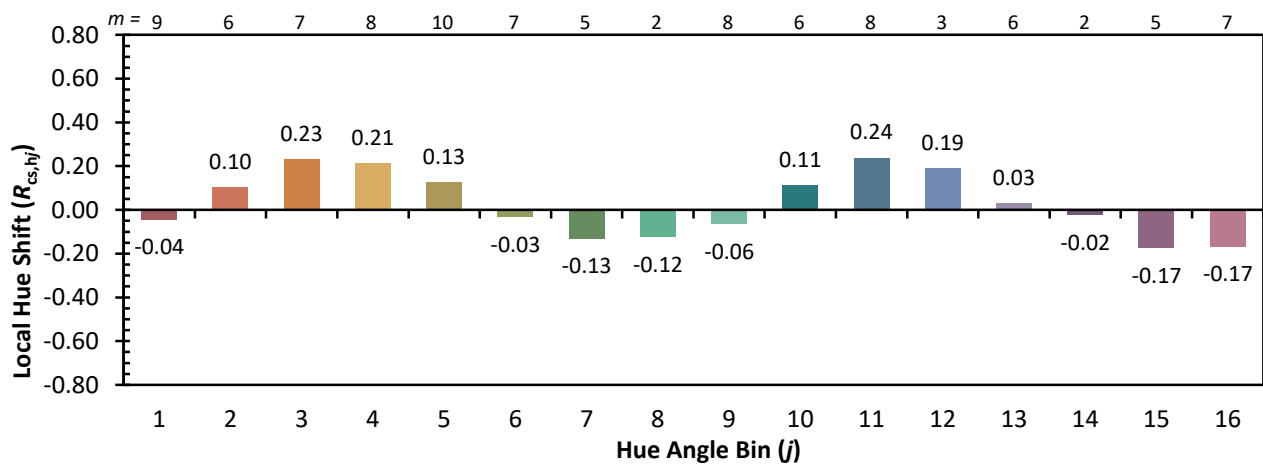


**Individual Sample Fidelity Index ( $R_{f,i}$ )**

|            |            |            |            |
|------------|------------|------------|------------|
| 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)