

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: P438874

Luminaire Tested: **ISW-SA1F-735-U-T2**

Issue Date: 12/10/2020

**Test Information**

Test Method: LM-79-08  
Report Number: P438874  
TEST IS SCALED FROM IESNA LM-79-08 TEST DATA (G3-2011-074-1)  
Test Lab: INNOVATION CENTER  
Issue Date: 12/10/2020  
Manufacturer: COOPER LIGHTING SOLUTIONS (FORMERLY EATON)  
Product Line: McGRAW-EDISON  
Catalog Number: ISW-SA1F-735-U-T2  
Description: IMPACT ELITE LED WEDGE LUMINAIRE  
(1) 70 CRI, 3500K, 1200mA LIGHTSQUARE WITH 16 LEDS AND TYPE II OPTICS  
Light Source: -  
Ballast/Driver: ELECTRONIC DRIVER

**Summary**

Lumens per Lamp: N/A  
Luminaire Lumens: 7359 lumens  
Efficiency: N/A  
Efficacy: 111.5 lumens/watt  
Luminous Opening: Rectangular (W 0.5' x L: 0.5' x H: 0')  
IES Classification: Type II - Medium  
BUG Rating: B1 - U0 - G2

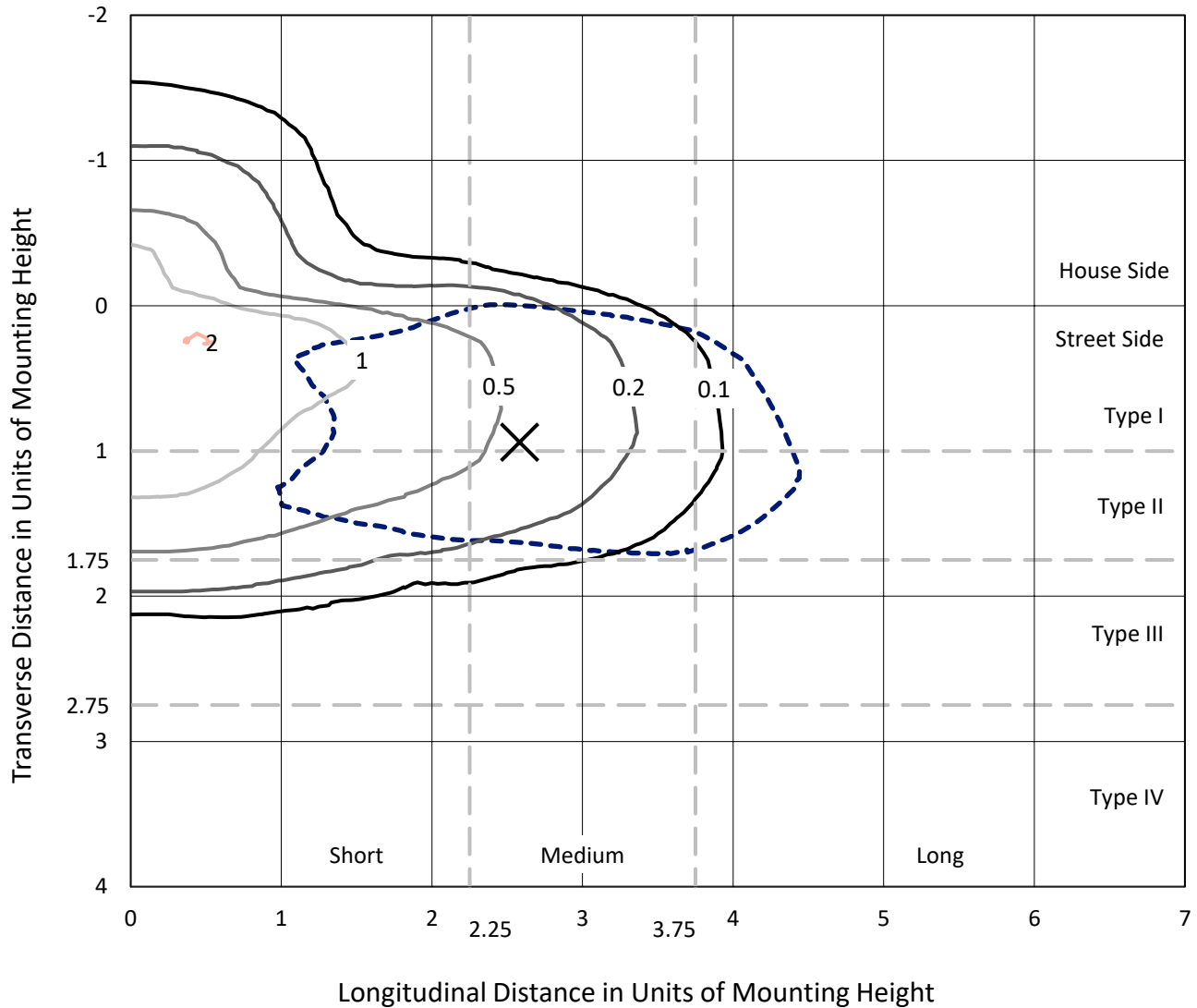
Input Watts (W): 66  
Input Voltage (V): NR  
Input Current (Ain): NR  
Voltage Rise (V): NR  
Power Factor: NR  
Total Harmonic Distortion (THDi): NR  
Frequency (hertz): 60  
Stabilization Time: NR  
Operation Time: NR  
Ambient Temperature (°C): NR  
Test Distance: 28.75 FT



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### Iso-Footcandle Lines of Horizontal Illumination

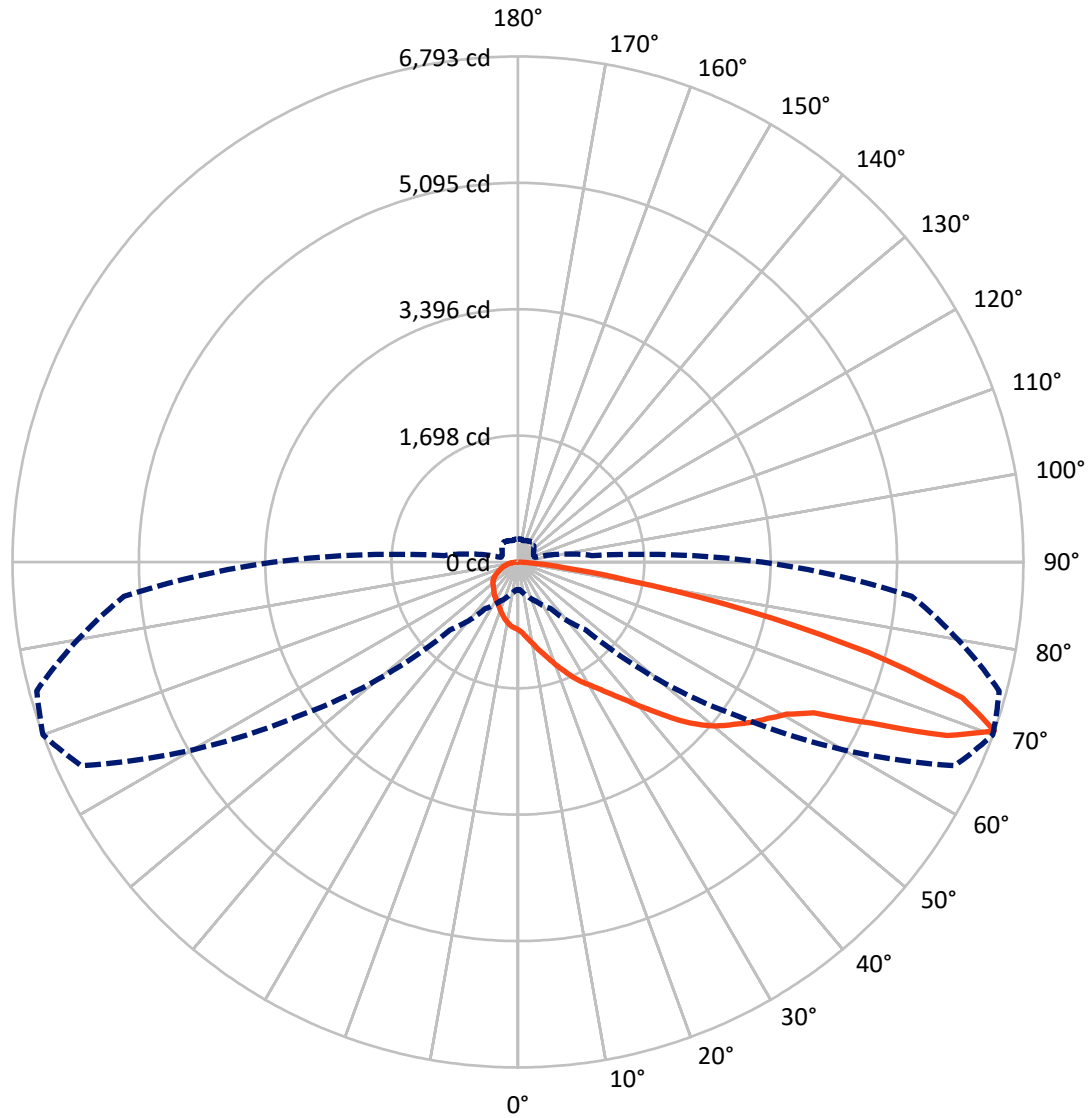
✕ Max cd  
 - - - 1/2 Max cd



Based on 25 foot mounting height. Maximum calculated value = 2 fc  
 Type II - Medium - N/A

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### Luminous Intensity Polar Plot



— Vertical Plane Through 70-Deg Lateral      - - - Horizontal Cone Through 70-Deg Vertical

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**FLUX DISTRIBUTION:**

|                    |           | Downward | Upward | Total  |
|--------------------|-----------|----------|--------|--------|
| <b>House Side</b>  | Lumens    | 1331.0   | 0.0    | 1331.0 |
|                    | % Fixture | 18.1     | 0.0    | 18.1   |
| <b>Street Side</b> | Lumens    | 6028.0   | 0.0    | 6028.0 |
|                    | % Fixture | 81.9     | 0.0    | 81.9   |
| <b>Total</b>       | Lumens    | 7359.0   | 0.0    | 7359.0 |
|                    | % Fixture | 100.0    | 0.0    | 100.0  |

**ZONAL LUMENS:**

| Zone      | Lumens | % Fixture |
|-----------|--------|-----------|
| 0°-10°    | 91.6   | 1.2       |
| 10°-20°   | 294.3  | 4.0       |
| 20°-30°   | 514.9  | 7.0       |
| 30°-40°   | 766.1  | 10.4      |
| 40°-50°   | 1132.9 | 15.4      |
| 50°-60°   | 1596.3 | 21.7      |
| 60°-70°   | 1776.7 | 24.1      |
| 70°-80°   | 1074.6 | 14.6      |
| 80°-90°   | 111.6  | 1.5       |
| 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°    | 7359.0 | 100.0     |
| 0°-180°   | 7359.0 | 100.0     |

**Coefficient of Utilization**

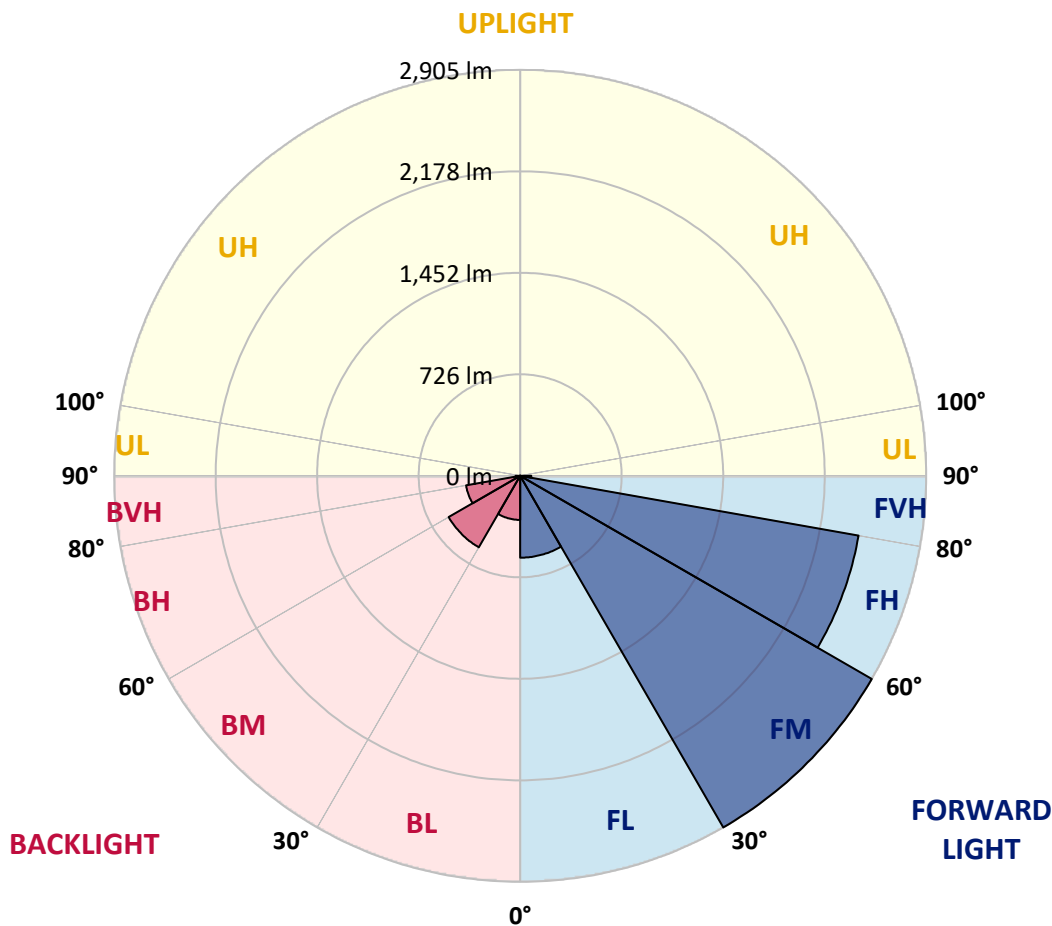


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**LUMINAIRE CLASSIFICATION SYSTEM LUMEN TABLE AND BUG RATING:**

| Zone           | Lumens | % Fixture | Zone Rating/Lumen Limit |      |         |
|----------------|--------|-----------|-------------------------|------|---------|
|                |        |           | B                       | U    | G       |
| FL (0°-30°)    | 585.6  | 8.0       |                         |      |         |
| FM (30°-60°)   | 2904.5 | 39.5      |                         |      |         |
| FH (60°-80°)   | 2458.3 | 33.4      |                         |      | G2/5000 |
| FVH (80°-90°)  | 79.6   | 1.1       |                         |      | G1/100  |
| BL (0°-30°)    | 315.3  | 4.3       | B1/500                  |      |         |
| BM (30°-60°)   | 590.7  | 8.0       | B1/1000                 |      |         |
| BH (60°-80°)   | 392.9  | 5.3       | B1/500                  |      | G1/500  |
| BVH (80°-90°)  | 32.0   | 0.4       |                         |      | G1/100  |
| UL (90°-100°)  | 0.0    | 0.0       |                         | U0/0 |         |
| UH (100°-180°) | 0.0    | 0.0       |                         | U0/0 |         |

**BUG Rating: B1-U0-G2**  
 Type II Medium





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**CANDELA DISTRIBUTION (FULL):**

|       | 0°     | 5°     | 15°    | 25°    | 35°    | 45°    | 55°    | 65°    | 70°    | 75°    | 85°    |
|-------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|
| 0°    | 911.5  | 911.5  | 911.5  | 911.5  | 911.5  | 911.5  | 911.5  | 911.5  | 911.5  | 911.5  | 911.5  |
| 2.5°  | 1019.2 | 1016.6 | 1003.4 | 1008.7 | 1000.8 | 985.0  | 969.3  | 958.8  | 945.6  | 943.0  | 929.9  |
| 5°    | 1124.3 | 1121.6 | 1113.8 | 1103.2 | 1087.5 | 1069.1 | 1040.2 | 1013.9 | 992.9  | 974.5  | 950.9  |
| 7.5°  | 1197.8 | 1192.6 | 1192.6 | 1187.3 | 1179.4 | 1158.4 | 1119.0 | 1084.9 | 1053.3 | 1029.7 | 977.2  |
| 10°   | 1239.8 | 1239.8 | 1239.8 | 1250.3 | 1250.3 | 1234.6 | 1203.1 | 1155.8 | 1119.0 | 1090.1 | 1013.9 |
| 12.5° | 1258.2 | 1258.2 | 1263.5 | 1279.2 | 1302.9 | 1302.9 | 1276.6 | 1239.8 | 1203.1 | 1153.2 | 1053.3 |
| 15°   | 1271.4 | 1274.0 | 1281.9 | 1305.5 | 1339.7 | 1363.3 | 1363.3 | 1329.2 | 1279.2 | 1232.0 | 1103.2 |
| 17.5° | 1284.5 | 1287.1 | 1302.9 | 1331.8 | 1371.2 | 1415.8 | 1442.1 | 1418.5 | 1373.8 | 1321.3 | 1150.5 |
| 20°   | 1287.1 | 1284.5 | 1310.8 | 1350.2 | 1408.0 | 1460.5 | 1526.2 | 1531.4 | 1484.1 | 1408.0 | 1205.7 |
| 22.5° | 1313.4 | 1313.4 | 1323.9 | 1363.3 | 1426.3 | 1502.5 | 1602.3 | 1631.2 | 1589.2 | 1523.5 | 1274.0 |
| 25°   | 1365.9 | 1376.4 | 1384.3 | 1397.4 | 1444.7 | 1536.7 | 1668.0 | 1749.4 | 1710.0 | 1636.5 | 1344.9 |
| 27.5° | 1463.1 | 1463.1 | 1471.0 | 1468.4 | 1484.1 | 1565.6 | 1736.3 | 1862.4 | 1823.0 | 1725.8 | 1389.6 |
| 30°   | 1557.7 | 1552.4 | 1560.3 | 1560.3 | 1555.1 | 1599.7 | 1786.2 | 1967.5 | 1925.4 | 1830.9 | 1442.1 |
| 32.5° | 1681.1 | 1683.8 | 1678.5 | 1654.9 | 1647.0 | 1662.8 | 1825.6 | 2067.3 | 2043.6 | 1933.3 | 1489.4 |
| 35°   | 1849.3 | 1851.9 | 1823.0 | 1773.1 | 1746.8 | 1749.4 | 1878.2 | 2185.5 | 2188.1 | 2072.5 | 1547.2 |
| 37.5° | 1996.4 | 2009.5 | 2006.9 | 1914.9 | 1870.3 | 1859.8 | 1957.0 | 2306.3 | 2353.6 | 2232.8 | 1636.5 |
| 40°   | 2132.9 | 2151.3 | 2146.1 | 2069.9 | 2012.1 | 1985.8 | 2080.4 | 2445.5 | 2555.9 | 2432.4 | 1744.2 |
| 42.5° | 2232.8 | 2243.3 | 2248.5 | 2196.0 | 2143.5 | 2156.6 | 2209.1 | 2603.1 | 2776.5 | 2653.1 | 1888.7 |
| 45°   | 2340.5 | 2345.7 | 2353.6 | 2324.7 | 2287.9 | 2351.0 | 2369.4 | 2773.9 | 3033.9 | 2936.7 | 2059.4 |
| 47.5° | 2450.8 | 2471.8 | 2479.7 | 2448.2 | 2424.5 | 2527.0 | 2542.7 | 2939.4 | 3262.5 | 3215.2 | 2230.1 |
| 50°   | 2629.4 | 2650.4 | 2642.5 | 2605.8 | 2584.8 | 2663.6 | 2697.7 | 3089.1 | 3464.7 | 3496.2 | 2395.6 |
| 52.5° | 2860.6 | 2873.7 | 2907.8 | 2844.8 | 2797.5 | 2768.6 | 2826.4 | 3254.6 | 3627.6 | 3743.2 | 2571.6 |
| 55°   | 2905.2 | 2923.6 | 3047.1 | 3104.9 | 3144.3 | 2926.2 | 2963.0 | 3401.7 | 3803.6 | 3977.0 | 2768.6 |
| 57.5° | 2721.3 | 2731.9 | 2931.5 | 3107.5 | 3391.2 | 3315.0 | 3157.4 | 3590.8 | 3966.4 | 4218.6 | 2968.3 |
| 60°   | 2264.3 | 2303.7 | 2563.7 | 2873.7 | 3322.9 | 3711.6 | 3661.7 | 3835.1 | 4150.3 | 4460.3 | 3257.2 |
| 62.5° | 1476.3 | 1513.0 | 1788.8 | 2314.2 | 2947.3 | 3716.9 | 4384.1 | 4334.2 | 4462.9 | 4754.5 | 3619.7 |
| 65°   | 753.9  | 767.0  | 1006.1 | 1402.7 | 2125.1 | 3322.9 | 4817.5 | 5363.9 | 5216.8 | 5342.9 | 4405.1 |
| 67.5° | 501.7  | 512.2  | 619.9  | 809.0  | 1263.5 | 2301.1 | 4675.7 | 6404.1 | 6225.5 | 6293.8 | 5240.4 |
| 70°   | 370.4  | 380.9  | 470.2  | 585.8  | 764.4  | 1289.8 | 3617.1 | 6477.6 | 6792.9 | 6695.7 | 5314.0 |
| 72.5° | 275.8  | 278.4  | 333.6  | 451.8  | 564.8  | 693.5  | 2138.2 | 5345.5 | 6243.9 | 6595.9 | 4938.4 |
| 75°   | 210.1  | 210.1  | 239.0  | 333.6  | 441.3  | 446.6  | 1192.6 | 3948.1 | 4870.1 | 5516.2 | 4118.8 |
| 77.5° | 157.6  | 162.9  | 176.0  | 231.2  | 328.3  | 320.5  | 562.1  | 2613.6 | 3167.9 | 3596.1 | 2534.8 |
| 80°   | 113.0  | 115.6  | 123.5  | 141.8  | 218.0  | 207.5  | 283.7  | 1260.9 | 1510.4 | 1607.6 | 1035.0 |
| 82.5° | 70.9   | 70.9   | 86.7   | 86.7   | 123.5  | 128.7  | 128.7  | 509.6  | 609.4  | 683.0  | 346.7  |
| 85°   | 13.1   | 13.1   | 26.3   | 34.1   | 39.4   | 44.7   | 39.4   | 128.7  | 176.0  | 207.5  | 118.2  |
| 87.5° | 0.0    | 0.0    | 0.0    | 2.6    | 2.6    | 5.3    | 5.3    | 5.3    | 5.3    | 5.3    | 5.3    |
| 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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**CANDELA DISTRIBUTION (continued):**

|       | 90°    | 95°    | 105°  | 115°  | 125°  | 135°  | 145°  | 155°  | 165°  | 175°  | 180°  |
|-------|--------|--------|-------|-------|-------|-------|-------|-------|-------|-------|-------|
| 0°    | 911.5  | 911.5  | 911.5 | 911.5 | 911.5 | 911.5 | 911.5 | 911.5 | 911.5 | 911.5 | 911.5 |
| 2.5°  | 919.4  | 914.1  | 901.0 | 885.2 | 874.7 | 864.2 | 856.3 | 851.1 | 848.5 | 848.5 | 845.8 |
| 5°    | 932.5  | 916.7  | 890.5 | 864.2 | 840.6 | 822.2 | 809.0 | 801.2 | 795.9 | 798.5 | 793.3 |
| 7.5°  | 953.5  | 924.6  | 877.3 | 835.3 | 803.8 | 780.2 | 769.6 | 764.4 | 767.0 | 769.6 | 769.6 |
| 10°   | 969.3  | 929.9  | 853.7 | 795.9 | 767.0 | 753.9 | 751.3 | 756.5 | 764.4 | 767.0 | 764.4 |
| 12.5° | 987.7  | 932.5  | 827.4 | 761.8 | 743.4 | 735.5 | 748.6 | 761.8 | 774.9 | 785.4 | 780.2 |
| 15°   | 1016.6 | 932.5  | 795.9 | 732.9 | 719.7 | 727.6 | 751.3 | 769.6 | 793.3 | 803.8 | 806.4 |
| 17.5° | 1037.6 | 924.6  | 756.5 | 701.4 | 698.7 | 719.7 | 753.9 | 785.4 | 809.0 | 827.4 | 827.4 |
| 20°   | 1058.6 | 911.5  | 717.1 | 672.5 | 683.0 | 711.9 | 751.3 | 788.0 | 816.9 | 835.3 | 840.6 |
| 22.5° | 1084.9 | 893.1  | 677.7 | 646.2 | 664.6 | 701.4 | 743.4 | 774.9 | 801.2 | 816.9 | 819.6 |
| 25°   | 1103.2 | 861.6  | 638.3 | 625.2 | 654.1 | 688.2 | 719.7 | 740.8 | 753.9 | 764.4 | 764.4 |
| 27.5° | 1113.8 | 824.8  | 606.8 | 609.4 | 640.9 | 669.8 | 685.6 | 685.6 | 690.8 | 690.8 | 688.2 |
| 30°   | 1100.6 | 785.4  | 583.1 | 593.7 | 622.5 | 643.6 | 648.8 | 638.3 | 622.5 | 606.8 | 601.5 |
| 32.5° | 1095.4 | 732.9  | 559.5 | 577.9 | 598.9 | 609.4 | 606.8 | 591.0 | 562.1 | 538.5 | 538.5 |
| 35°   | 1084.9 | 683.0  | 538.5 | 559.5 | 572.6 | 575.3 | 570.0 | 546.4 | 520.1 | 499.1 | 496.5 |
| 37.5° | 1077.0 | 643.6  | 520.1 | 538.5 | 546.4 | 549.0 | 538.5 | 517.5 | 501.7 | 486.0 | 483.3 |
| 40°   | 1100.6 | 609.4  | 501.7 | 514.8 | 520.1 | 520.1 | 509.6 | 493.8 | 501.7 | 499.1 | 499.1 |
| 42.5° | 1145.3 | 596.3  | 483.3 | 491.2 | 496.5 | 501.7 | 493.8 | 480.7 | 499.1 | 483.3 | 488.6 |
| 45°   | 1210.9 | 596.3  | 470.2 | 472.8 | 478.1 | 491.2 | 488.6 | 470.2 | 472.8 | 436.0 | 428.2 |
| 47.5° | 1308.1 | 612.0  | 459.7 | 451.8 | 464.9 | 483.3 | 475.4 | 454.4 | 433.4 | 404.5 | 401.9 |
| 50°   | 1418.5 | 643.6  | 449.2 | 430.8 | 451.8 | 472.8 | 464.9 | 438.7 | 415.0 | 399.3 | 396.6 |
| 52.5° | 1528.8 | 683.0  | 441.3 | 409.8 | 428.2 | 467.6 | 464.9 | 436.0 | 401.9 | 391.4 | 388.8 |
| 55°   | 1665.4 | 719.7  | 428.2 | 386.1 | 409.8 | 462.3 | 462.3 | 420.3 | 394.0 | 391.4 | 388.8 |
| 57.5° | 1820.4 | 767.0  | 407.2 | 354.6 | 386.1 | 446.6 | 443.9 | 409.8 | 388.8 | 383.5 | 386.1 |
| 60°   | 2020.0 | 824.8  | 375.6 | 325.7 | 365.1 | 422.9 | 428.2 | 399.3 | 378.3 | 375.6 | 375.6 |
| 62.5° | 2358.9 | 932.5  | 338.9 | 299.5 | 338.9 | 391.4 | 404.5 | 380.9 | 365.1 | 367.7 | 370.4 |
| 65°   | 3010.3 | 1134.8 | 296.8 | 275.8 | 312.6 | 357.2 | 383.5 | 362.5 | 346.7 | 357.2 | 357.2 |
| 67.5° | 3493.6 | 1224.1 | 262.7 | 252.2 | 286.3 | 331.0 | 359.9 | 341.5 | 325.7 | 338.9 | 338.9 |
| 70°   | 3283.5 | 995.6  | 236.4 | 231.2 | 257.4 | 302.1 | 328.3 | 312.6 | 296.8 | 310.0 | 307.3 |
| 72.5° | 2915.7 | 790.7  | 207.5 | 207.5 | 228.5 | 267.9 | 296.8 | 281.1 | 260.1 | 265.3 | 262.7 |
| 75°   | 2553.2 | 732.9  | 181.2 | 181.2 | 199.6 | 231.2 | 254.8 | 246.9 | 225.9 | 223.3 | 218.0 |
| 77.5° | 1473.6 | 488.6  | 152.4 | 155.0 | 162.9 | 191.8 | 215.4 | 191.8 | 176.0 | 173.4 | 170.7 |
| 80°   | 580.5  | 239.0  | 123.5 | 120.8 | 120.8 | 144.5 | 155.0 | 144.5 | 131.3 | 128.7 | 123.5 |
| 82.5° | 210.1  | 120.8  | 94.6  | 84.1  | 86.7  | 105.1 | 120.8 | 113.0 | 102.4 | 81.4  | 76.2  |
| 85°   | 81.4   | 60.4   | 63.0  | 49.9  | 55.2  | 55.2  | 63.0  | 52.5  | 36.8  | 26.3  | 26.3  |
| 87.5° | 5.3    | 5.3    | 5.3   | 5.3   | 2.6   | 2.6   | 0.0   | 0.0   | 2.6   | 2.6   | 2.6   |
| 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**



#####

| 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)