

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: P1434311

Luminaire Tested: **GALN-SB1A-835-U-T2LG**

Issue Date: 03/24/202

This test was performed under the Supervised Manufacturer's Testing Program. The results of this test have not been influenced by sources from within Cooper Lighting Solutions or from external interests.

Report Generated By 670245763



**Test Information**

Test Method: LM-79-08  
 Report Number: P1434311  
 Test Lab: INNOVATION CENTER(G1)  
 Issue Date: 03/24/202  
 Manufacturer: COOPER LIGHTING SOLUTIONS (FORMERLY EATON)  
 Product Line: McGRAW-EDISON  
 Catalog Number: GALN-SB1A-835-U-T2LG  
 Description: GALLEON II AREA AND ROADWAY HIGH DENSITY LUMINAIRE 350mA 1xLight Square PACKAGE 80CRI 3500K FIXTURE w/ TYPE II LOW GLARE  
 Light Source: (26) 3500K CCT, 80 CRI LEDS  
 Ballast/Driver: ELECTRONIC DRIVER

Luminaire Equipment:

| <u>Sample No.</u> | <u>Condition</u> | <u>Description</u> |
|-------------------|------------------|--------------------|
| a                 | good             | reflector          |
| b                 | good             | lens               |
| c                 | good             | housing            |
| d                 | good             | cord               |

**Summary**

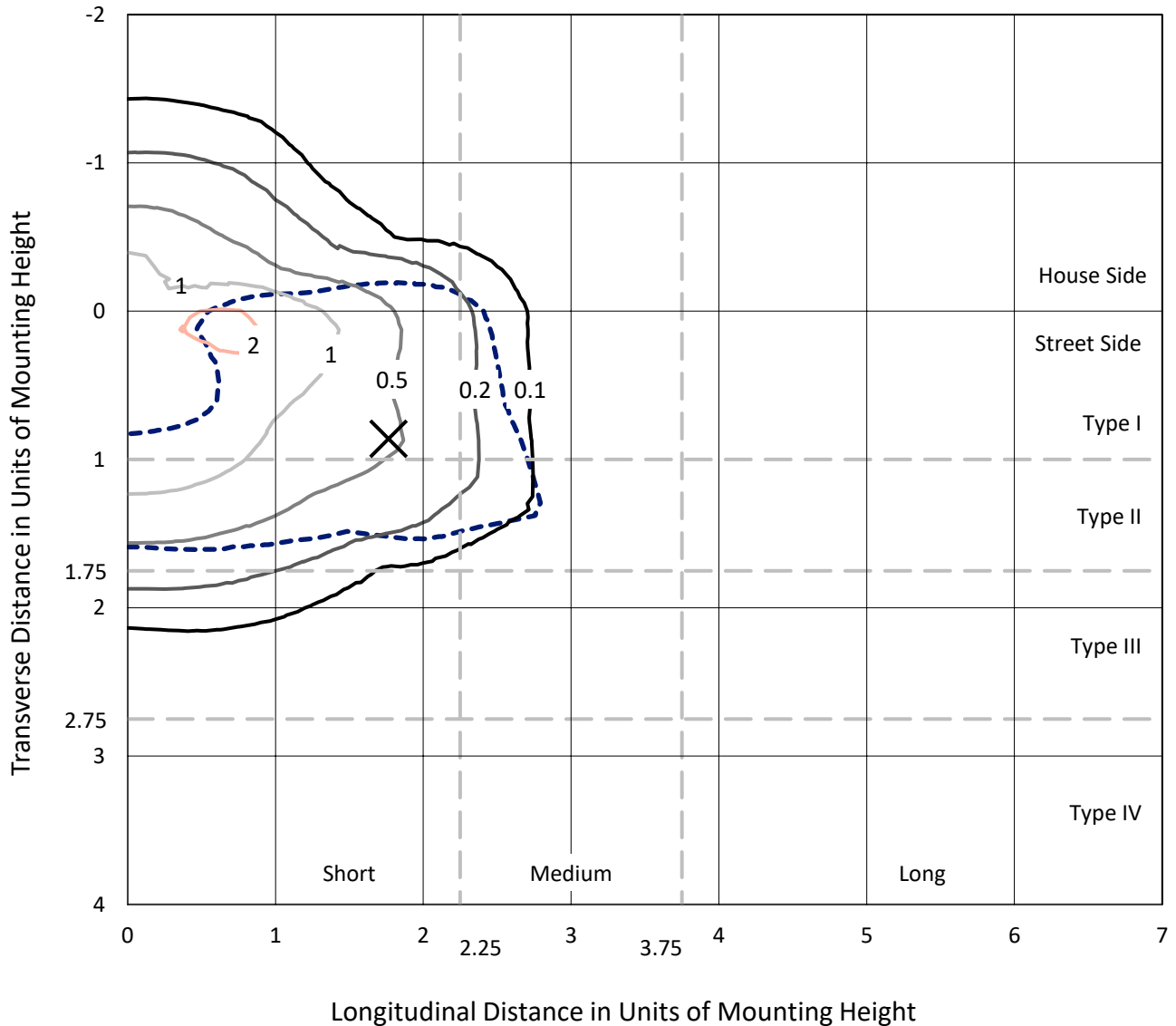
Lumens per Lamp: N/A  
 Luminaire Lumens: 4027.8 lumens  
 Efficiency: N/A  
 Efficacy: 130.3 lumens/watt  
 Luminous Opening: Rectangular (W 0.5' x L: 0.5' x H: 0')  
 IES Classification: Type II - Short  
 BUG Rating: B1 - U0 - G1

Input Watts (W): 30.9  
 Input Voltage (V): 120  
 Input Current (Ain): NR  
 Voltage Rise (V): NR  
 Power Factor: 0.97  
 Total Harmonic Distortion (THDi): NR  
 Frequency (hertz): 60  
 Stabilization Time: NR  
 Operation Time: NR  
 Ambient Temperature (°C): NR  
 Test Distance: 28.75 FT

REPORT NUMBER: P1434311  
 CATALOG NUMBER: GALN-SB1A-835-U-T2LG

### Iso-Footcandle Lines of Horizontal Illumination

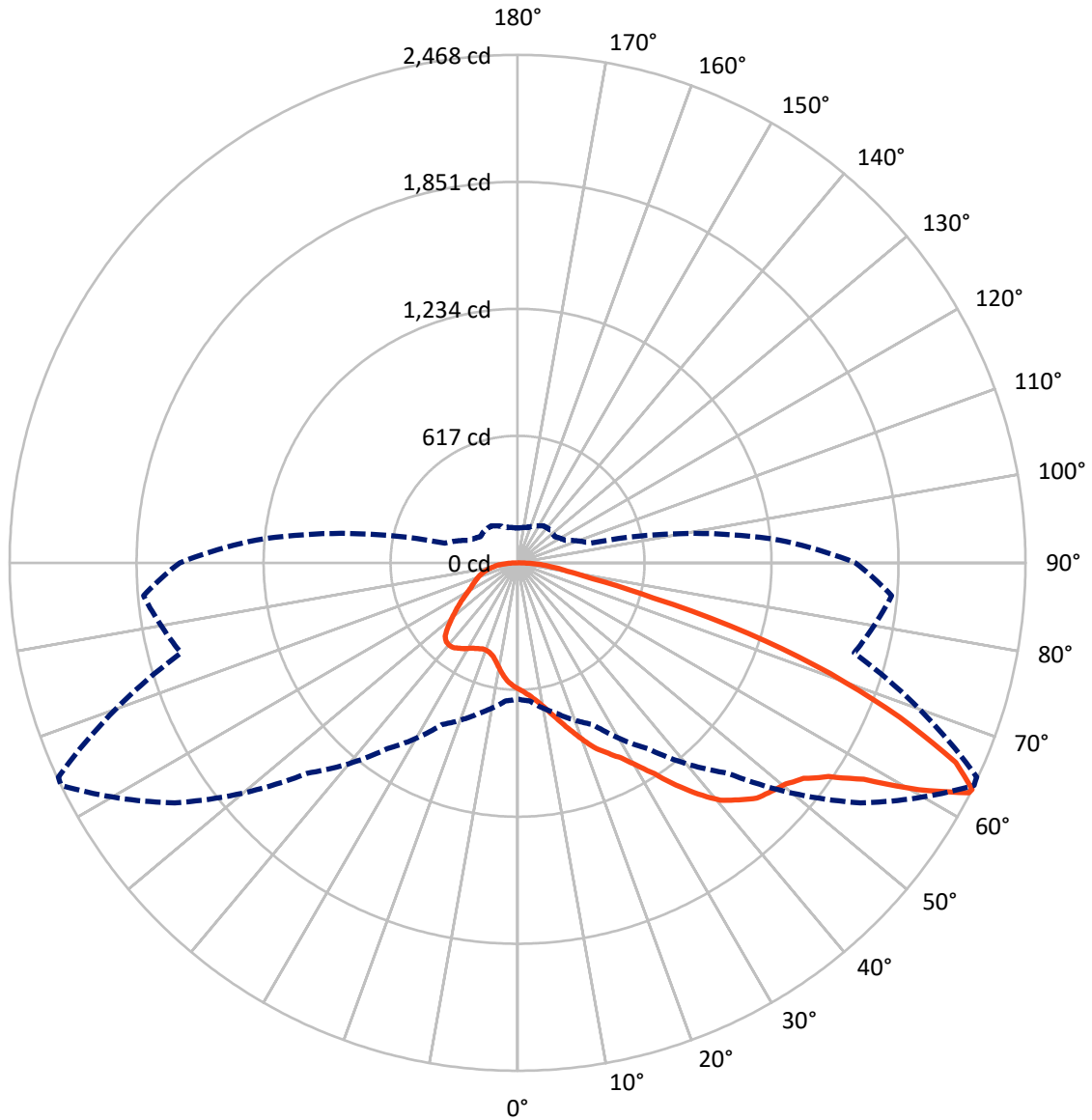
× Max cd  
 - - - 1/2 Max cd



Based on 20 foot mounting height. Maximum calculated value = 2.4 fc  
 Type II - Short - N/A

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### Luminous Intensity Polar Plot



— Vertical Plane Through 64-Deg Lateral    - - - Horizontal Cone Through 63-Deg Vertical

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**FLUX DISTRIBUTION:**

|                    |           | Downward | Upward | Total  |
|--------------------|-----------|----------|--------|--------|
| <b>House Side</b>  | Lumens    | 1082.2   | 0.0    | 1082.2 |
|                    | % Fixture | 26.9     | 0.0    | 26.9   |
| <b>Street Side</b> | Lumens    | 2945.6   | 0.0    | 2945.6 |
|                    | % Fixture | 73.1     | 0.0    | 73.1   |
| <b>Total</b>       | Lumens    | 4027.8   | 0.0    | 4027.8 |
|                    | % Fixture | 100.0    | 0.0    | 100.0  |

**Coefficient of Utilization**

**ZONAL LUMENS:**

| Zone      | Lumens | % Fixture |
|-----------|--------|-----------|
| 0°-10°    | 56.3   | 1.4       |
| 10°-20°   | 173.4  | 4.3       |
| 20°-30°   | 317.0  | 7.9       |
| 30°-40°   | 545.4  | 13.5      |
| 40°-50°   | 804.3  | 20.0      |
| 50°-60°   | 964.0  | 23.9      |
| 60°-70°   | 773.7  | 19.2      |
| 70°-80°   | 310.9  | 7.7       |
| 80°-90°   | 82.9   | 2.1       |
| 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°    | 4027.8 | 100.0     |
| 0°-180°   | 4027.8 | 100.0     |

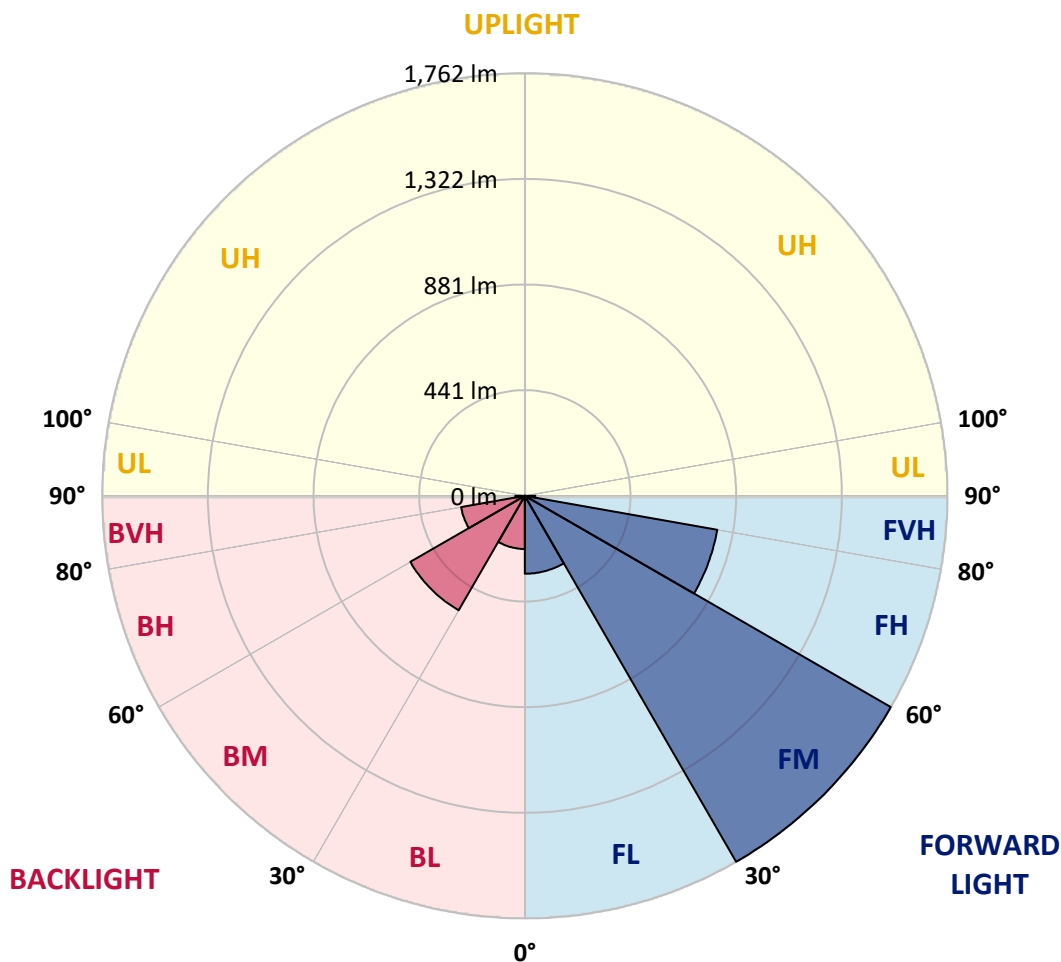


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**LUMINAIRE CLASSIFICATION SYSTEM LUMEN TABLE AND BUG RATING:**

| Zone           | Lumens | % Fixture | Zone Rating/Lumen Limit |      |         |
|----------------|--------|-----------|-------------------------|------|---------|
|                |        |           | B                       | U    | G       |
| FL (0°-30°)    | 325.0  | 8.1       |                         |      |         |
| FM (30°-60°)   | 1762.4 | 43.8      |                         |      |         |
| FH (60°-80°)   | 814.7  | 20.2      |                         |      | G1/1800 |
| FVH (80°-90°)  | 43.6   | 1.1       |                         |      | G1/100  |
| BL (0°-30°)    | 221.8  | 5.5       | B1/500                  |      |         |
| BM (30°-60°)   | 551.2  | 13.7      | B1/1000                 |      |         |
| BH (60°-80°)   | 269.8  | 6.7       | B1/500                  |      | G1/500  |
| BVH (80°-90°)  | 39.3   | 1.0       |                         |      | G1/100  |
| UL (90°-100°)  | 0.0    | 0.0       |                         | U0/0 |         |
| UH (100°-180°) | 0.0    | 0.0       |                         | U0/0 |         |

**BUG Rating: B1-U0-G1**  
 Type II Short





REPORT NUMBER: P1434311

CATALOG NUMBER: GALN-SB1A-835-U-T2LG

**CANDELA DISTRIBUTION (FULL):**

|       | 0°     | 5°     | 15°    | 25°    | 35°    | 45°    | 55°    | 64°    | 65°    | 75°    | 85°    |
|-------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|
| 0°    | 613.4  | 613.4  | 613.4  | 613.4  | 613.4  | 613.4  | 613.4  | 613.4  | 613.4  | 613.4  | 613.4  |
| 2.5°  | 638.7  | 639.6  | 636.9  | 636.0  | 637.8  | 634.2  | 633.3  | 629.7  | 627.9  | 624.2  | 619.7  |
| 5°    | 656.8  | 657.7  | 655.9  | 655.9  | 657.7  | 655.0  | 654.1  | 650.5  | 648.7  | 645.1  | 636.0  |
| 7.5°  | 655.9  | 656.8  | 658.6  | 665.9  | 674.9  | 678.5  | 681.2  | 678.5  | 677.6  | 672.2  | 663.1  |
| 10°   | 641.4  | 642.3  | 646.9  | 657.7  | 680.3  | 696.6  | 713.8  | 713.8  | 715.6  | 711.1  | 694.8  |
| 12.5° | 621.5  | 622.4  | 633.3  | 650.5  | 680.3  | 708.4  | 743.7  | 758.1  | 757.2  | 754.5  | 735.5  |
| 15°   | 573.6  | 573.6  | 589.9  | 622.4  | 670.4  | 716.5  | 769.0  | 807.9  | 808.8  | 811.5  | 788.9  |
| 17.5° | 532.9  | 533.8  | 547.3  | 576.3  | 638.7  | 712.0  | 796.1  | 863.1  | 865.8  | 881.2  | 848.6  |
| 20°   | 536.5  | 536.5  | 541.0  | 553.7  | 604.3  | 693.9  | 811.5  | 921.9  | 930.9  | 967.1  | 926.4  |
| 22.5° | 564.5  | 564.5  | 568.2  | 567.2  | 598.0  | 682.1  | 821.5  | 980.7  | 997.0  | 1072.1 | 1019.6 |
| 25°   | 616.1  | 615.2  | 611.6  | 606.2  | 624.2  | 694.8  | 844.1  | 1025.9 | 1057.6 | 1187.9 | 1127.3 |
| 27.5° | 679.4  | 677.6  | 672.2  | 663.1  | 675.8  | 732.8  | 883.0  | 1073.9 | 1108.3 | 1314.5 | 1241.3 |
| 30°   | 758.1  | 752.7  | 747.3  | 735.5  | 749.1  | 795.2  | 940.9  | 1141.7 | 1174.3 | 1458.4 | 1378.8 |
| 32.5° | 851.3  | 857.7  | 839.6  | 823.3  | 837.8  | 880.3  | 1026.8 | 1222.3 | 1257.5 | 1608.6 | 1521.7 |
| 35°   | 990.7  | 1009.6 | 1004.2 | 921.9  | 935.5  | 982.5  | 1127.3 | 1326.3 | 1358.0 | 1745.2 | 1668.3 |
| 37.5° | 1128.2 | 1123.6 | 1128.2 | 1059.4 | 1037.7 | 1094.7 | 1234.9 | 1425.8 | 1456.6 | 1856.5 | 1797.6 |
| 40°   | 1238.5 | 1252.1 | 1252.1 | 1196.0 | 1168.0 | 1206.0 | 1332.6 | 1517.2 | 1547.0 | 1918.0 | 1890.8 |
| 42.5° | 1358.9 | 1360.7 | 1357.1 | 1308.2 | 1297.3 | 1307.3 | 1418.6 | 1575.1 | 1599.5 | 1949.6 | 1954.2 |
| 45°   | 1494.6 | 1493.7 | 1478.3 | 1437.6 | 1421.3 | 1412.2 | 1472.0 | 1631.2 | 1655.6 | 1964.1 | 1988.5 |
| 47.5° | 1606.8 | 1611.3 | 1612.2 | 1568.8 | 1541.6 | 1502.7 | 1518.1 | 1659.2 | 1687.3 | 1947.8 | 1995.8 |
| 50°   | 1613.1 | 1620.3 | 1654.7 | 1667.4 | 1661.9 | 1599.5 | 1560.6 | 1689.1 | 1717.1 | 1951.4 | 2022.0 |
| 52.5° | 1573.3 | 1580.5 | 1624.8 | 1677.3 | 1740.6 | 1710.8 | 1627.6 | 1740.6 | 1769.6 | 1986.7 | 2081.7 |
| 55°   | 1466.5 | 1478.3 | 1544.3 | 1617.6 | 1730.7 | 1773.2 | 1746.1 | 1833.8 | 1861.0 | 2014.8 | 2151.4 |
| 57.5° | 1276.5 | 1291.0 | 1382.4 | 1499.1 | 1653.8 | 1758.7 | 1918.0 | 1983.1 | 2005.7 | 2034.7 | 2152.3 |
| 60°   | 954.5  | 966.2  | 1109.2 | 1266.6 | 1499.1 | 1668.3 | 2020.2 | 2239.1 | 2251.8 | 1927.0 | 2030.2 |
| 62.5° | 703.0  | 714.7  | 810.6  | 923.7  | 1177.9 | 1501.8 | 2040.1 | 2460.8 | 2462.6 | 1732.5 | 1861.9 |
| 63°   | 662.2  | 674.0  | 760.9  | 866.7  | 1101.9 | 1445.7 | 2033.8 | 2468.0 | 2461.7 | 1692.7 | 1824.8 |
| 65°   | 515.7  | 536.5  | 627.0  | 707.5  | 826.0  | 1150.8 | 1952.3 | 2339.6 | 2348.6 | 1575.1 | 1638.4 |
| 67.5° | 351.0  | 366.4  | 481.3  | 574.5  | 624.2  | 732.8  | 1601.3 | 2002.1 | 2016.6 | 1453.0 | 1307.3 |
| 70°   | 271.4  | 278.6  | 345.6  | 455.1  | 504.8  | 465.9  | 1044.0 | 1612.2 | 1612.2 | 1134.5 | 926.4  |
| 72.5° | 212.6  | 215.3  | 260.6  | 355.5  | 406.2  | 358.3  | 581.7  | 1172.5 | 1129.1 | 673.1  | 617.9  |
| 75°   | 152.0  | 155.6  | 196.3  | 265.1  | 323.9  | 282.3  | 371.8  | 683.1  | 656.8  | 387.2  | 412.5  |
| 77.5° | 120.3  | 122.1  | 146.6  | 195.4  | 262.4  | 215.3  | 283.2  | 372.7  | 369.1  | 272.3  | 265.1  |
| 80°   | 95.0   | 98.6   | 114.9  | 140.2  | 202.7  | 168.3  | 210.8  | 246.1  | 238.8  | 187.3  | 170.1  |
| 82.5° | 67.9   | 74.2   | 88.7   | 106.8  | 150.2  | 120.3  | 138.4  | 173.7  | 173.7  | 141.1  | 112.2  |
| 85°   | 41.6   | 47.0   | 52.5   | 66.0   | 106.8  | 77.8   | 73.3   | 112.2  | 114.9  | 105.9  | 72.4   |
| 87.5° | 19.9   | 21.7   | 25.3   | 28.0   | 38.9   | 35.3   | 29.0   | 42.5   | 43.4   | 47.0   | 29.9   |
| 90°   | 0.0    | 0.0    | 0.0    | 0.0    | 0.0    | 0.0    | 0.0    | 0.0    | 0.0    | 0.0    | 0.0    |



REPORT NUMBER: P1434311  
 CATALOG NUMBER: GALN-SB1A-835-U-T2LG

**CANDELA DISTRIBUTION (continued):**

|       | 90°    | 95°    | 105°  | 115°  | 125°  | 135°  | 145°  | 155°  | 165°  | 175°  | 180°  |
|-------|--------|--------|-------|-------|-------|-------|-------|-------|-------|-------|-------|
| 0°    | 613.4  | 613.4  | 613.4 | 613.4 | 613.4 | 613.4 | 613.4 | 613.4 | 613.4 | 613.4 | 613.4 |
| 2.5°  | 618.8  | 617.0  | 608.0 | 598.9 | 589.0 | 579.9 | 570.9 | 563.6 | 555.5 | 557.3 | 558.2 |
| 5°    | 630.6  | 626.1  | 606.2 | 582.6 | 551.9 | 522.9 | 494.9 | 475.0 | 462.3 | 458.7 | 451.4 |
| 7.5°  | 655.9  | 645.1  | 608.9 | 559.1 | 502.1 | 456.9 | 430.6 | 418.9 | 415.3 | 416.2 | 414.4 |
| 10°   | 684.9  | 668.6  | 612.5 | 531.1 | 458.7 | 427.9 | 424.3 | 431.5 | 435.2 | 438.8 | 439.7 |
| 12.5° | 722.9  | 696.6  | 610.7 | 500.3 | 437.9 | 432.4 | 446.0 | 459.6 | 467.7 | 473.2 | 472.3 |
| 15°   | 767.2  | 731.9  | 605.2 | 475.0 | 435.2 | 449.6 | 466.8 | 482.2 | 492.2 | 497.6 | 494.9 |
| 17.5° | 820.6  | 773.5  | 598.9 | 458.7 | 443.3 | 460.5 | 478.6 | 494.0 | 504.8 | 508.4 | 505.7 |
| 20°   | 886.6  | 820.6  | 588.1 | 451.4 | 449.6 | 465.0 | 481.3 | 495.8 | 504.8 | 508.4 | 504.8 |
| 22.5° | 964.4  | 876.7  | 579.0 | 451.4 | 452.4 | 465.0 | 476.8 | 487.6 | 495.8 | 498.5 | 494.0 |
| 25°   | 1063.9 | 941.8  | 575.4 | 458.7 | 453.3 | 460.5 | 466.8 | 473.2 | 477.7 | 479.5 | 477.7 |
| 27.5° | 1165.3 | 1016.9 | 577.2 | 467.7 | 452.4 | 454.2 | 454.2 | 455.1 | 456.0 | 456.9 | 456.0 |
| 30°   | 1282.0 | 1092.9 | 584.4 | 479.5 | 454.2 | 445.1 | 442.4 | 437.0 | 432.4 | 428.8 | 425.2 |
| 32.5° | 1395.1 | 1165.3 | 597.1 | 496.7 | 452.4 | 435.2 | 429.7 | 416.2 | 403.5 | 392.6 | 392.6 |
| 35°   | 1517.2 | 1240.3 | 619.7 | 509.3 | 450.5 | 426.1 | 410.7 | 395.4 | 381.8 | 366.4 | 366.4 |
| 37.5° | 1622.1 | 1304.6 | 637.8 | 523.8 | 448.7 | 415.3 | 390.8 | 373.6 | 359.2 | 343.8 | 342.0 |
| 40°   | 1695.4 | 1341.7 | 648.7 | 529.3 | 442.4 | 400.8 | 371.8 | 350.1 | 329.3 | 308.5 | 307.6 |
| 42.5° | 1730.7 | 1339.9 | 642.3 | 527.4 | 430.6 | 382.7 | 355.5 | 326.6 | 298.6 | 279.6 | 277.7 |
| 45°   | 1749.7 | 1328.1 | 617.9 | 512.1 | 411.6 | 363.7 | 334.7 | 304.0 | 275.9 | 258.7 | 255.1 |
| 47.5° | 1746.1 | 1299.2 | 584.4 | 474.1 | 386.3 | 342.9 | 313.9 | 282.3 | 259.6 | 249.7 | 249.7 |
| 50°   | 1756.0 | 1276.5 | 546.4 | 430.6 | 351.9 | 318.5 | 294.9 | 266.0 | 252.4 | 239.7 | 235.2 |
| 52.5° | 1800.4 | 1295.5 | 513.9 | 389.9 | 319.4 | 294.9 | 278.6 | 254.2 | 237.0 | 228.9 | 226.2 |
| 55°   | 1859.2 | 1336.2 | 483.1 | 353.7 | 287.7 | 274.1 | 266.0 | 243.4 | 223.5 | 215.3 | 210.8 |
| 57.5° | 1870.0 | 1364.3 | 453.3 | 318.5 | 261.5 | 257.8 | 255.1 | 224.4 | 208.1 | 201.7 | 198.1 |
| 60°   | 1794.9 | 1343.5 | 414.4 | 286.8 | 240.7 | 242.5 | 235.2 | 212.6 | 193.6 | 187.3 | 183.7 |
| 62.5° | 1667.4 | 1289.2 | 375.5 | 259.6 | 224.4 | 228.0 | 220.7 | 198.1 | 179.1 | 172.8 | 171.0 |
| 63°   | 1642.0 | 1274.7 | 366.4 | 256.9 | 220.7 | 225.3 | 218.9 | 196.3 | 177.3 | 171.0 | 168.3 |
| 65°   | 1491.0 | 1187.9 | 334.7 | 242.5 | 209.0 | 209.0 | 209.9 | 187.3 | 171.0 | 168.3 | 166.5 |
| 67.5° | 1215.9 | 991.6  | 300.4 | 225.3 | 196.3 | 199.0 | 203.6 | 190.9 | 184.6 | 182.8 | 180.9 |
| 70°   | 919.2  | 746.4  | 270.5 | 209.0 | 182.8 | 191.8 | 222.6 | 217.1 | 193.6 | 177.3 | 173.7 |
| 72.5° | 651.4  | 508.4  | 244.3 | 192.7 | 166.5 | 189.1 | 230.7 | 207.2 | 174.6 | 155.6 | 152.0 |
| 75°   | 436.1  | 327.5  | 218.0 | 175.5 | 148.4 | 174.6 | 218.0 | 189.1 | 152.0 | 147.5 | 142.0 |
| 77.5° | 274.1  | 233.4  | 191.8 | 155.6 | 128.5 | 155.6 | 198.1 | 168.3 | 131.2 | 133.0 | 124.8 |
| 80°   | 167.4  | 166.5  | 161.0 | 132.1 | 103.1 | 123.9 | 166.5 | 142.0 | 104.9 | 104.9 | 93.2  |
| 82.5° | 99.5   | 120.3  | 136.6 | 109.5 | 75.1  | 88.7  | 120.3 | 106.8 | 87.8  | 85.0  | 79.6  |
| 85°   | 66.9   | 81.4   | 108.6 | 84.1  | 47.9  | 54.3  | 83.2  | 89.6  | 80.5  | 70.6  | 66.0  |
| 87.5° | 24.4   | 32.6   | 49.8  | 34.4  | 20.8  | 32.6  | 62.4  | 65.1  | 48.9  | 38.0  | 34.4  |
| 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



LM-79-2019: Approved Method: Electrical and Photometric Measurements of Solid-State Lighting Products

Report Prepared for

Cooper Lighting Solutions

McGraw-Edison

Report Number: SP1-2407-184-10

Test Date: 10/11/2024

Luminaire Tested: GSS-SB1A-835-U-5WQ

Data in this report applies to families of products including GSS-SB1A-835-U-5WQ

**Test Information**

Test Method: LM-79-2019  
 Report Number: SP1-2407-184-10  
 Test Lab: COOPER LIGHTING SOLUTIONS  
 Photometer: SP1 - 76IN SPHERE  
 Measurement Geometry: 4π  
 Issue Date: 10/15/2024  
 Manufacturer: COOPER LIGHTING SOLUTIONS  
 Product Line: McGraw-Edison  
 Catalog Number: **GSS-SB1A-835-U-5WQ**  
 Description: GALLEON II SITE SLIM 1SQ 350MA 5WQ HIGH DENSITY LIGHTSQUARE WITH 80 CRI 3500K CCT 26 LEDS

**Spectral Parameters**

CCT (K): 3411  
 CIE u': 0.2360  
 CIE v': 0.5189  
 Duv: 0.0044  
 CIE x: 0.4154  
 CIE y: 0.4059  
 CIE z: 0.1787  
 Peak Wavelength (nm): 601  
 Dominant Wavelength (nm): 579  
 Purity: 46.51914  
 Rf: 86.6  
 Rg: 95.9

|           |      |      |      |
|-----------|------|------|------|
| CRI (Ra): | 83.5 |      |      |
| R1:       | 81.1 | R9:  | 6.3  |
| R2:       | 88.9 | R10: | 75.4 |
| R3:       | 97.2 | R11: | 84.1 |
| R4:       | 83.8 | R12: | 69.7 |
| R5:       | 81.7 | R13: | 82.8 |
| R6:       | 86.9 | R14: | 98.5 |
| R7:       | 86.1 | R15: | 72.6 |
| R8:       | 62.2 |      |      |



**Test Conditions**

Stabilization Time: 35M  
 Operation Time: 1H 35M  
 Sphere Temperature (°C): 25.2

REPORT NUMBER: SP1-2407-184-10

| Measurement and Test Equipment |                       |                  |                      |
|--------------------------------|-----------------------|------------------|----------------------|
| Instrument                     | Identification Number | Calibration Date | Calibration Due Date |
| Photometer                     | IN0058                | 6/18/2024        | 12/18/2024           |
| Power Meter                    | INXT2011004           | 2/8/2024         | 2/8/2025             |
| AC Power Source                | IN0063                | 10/24/2023       | 10/24/2024           |
| DC Power Source                | IN0208                | 10/24/2023       | 10/24/2024           |
| Sphere Thermometer             | IN0085                | 10/24/2023       | 10/24/2024           |
| Room Thermometer               | IN0046                | 10/24/2023       | 10/24/2024           |

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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 7-step quadrangle

REPORT NUMBER: SP1-2407-184-10

**Photopic Flux vs. Wavelength**



**Photopic Lumens: NR**

| $\lambda$<br>(nm) | Power<br>W <sup>^</sup> /nm | Lumens<br>( $\phi$ /nm) | $\lambda$<br>(nm) | Power<br>W <sup>^</sup> /nm | Lumens<br>( $\phi$ /nm) | $\lambda$<br>(nm) | Power<br>W <sup>^</sup> /nm | Lumens<br>( $\phi$ /nm) | $\lambda$<br>(nm) | Power<br>W <sup>^</sup> /nm | Lumens<br>( $\phi$ /nm) | $\lambda$<br>(nm) | Power<br>W <sup>^</sup> /nm | Lumens<br>( $\phi$ /nm) |
|-------------------|-----------------------------|-------------------------|-------------------|-----------------------------|-------------------------|-------------------|-----------------------------|-------------------------|-------------------|-----------------------------|-------------------------|-------------------|-----------------------------|-------------------------|
| 360               | 0                           | NR                      | 490               | 311                         | NR                      | 620               | 903                         | NR                      | 750               | 26                          | NR                      | 880               | 1                           | NR                      |
| 365               | 0                           | NR                      | 495               | 376                         | NR                      | 625               | 851                         | NR                      | 755               | 22                          | NR                      | 885               | 1                           | NR                      |
| 370               | 0                           | NR                      | 500               | 438                         | NR                      | 630               | 797                         | NR                      | 760               | 19                          | NR                      | 890               | 0                           | NR                      |
| 375               | 0                           | NR                      | 505               | 491                         | NR                      | 635               | 735                         | NR                      | 765               | 16                          | NR                      | 895               | 0                           | NR                      |
| 380               | 0                           | NR                      | 510               | 533                         | NR                      | 640               | 672                         | NR                      | 770               | 14                          | NR                      | 900               | 0                           | NR                      |
| 385               | 0                           | NR                      | 515               | 566                         | NR                      | 645               | 607                         | NR                      | 775               | 12                          | NR                      | 905               | 0                           | NR                      |
| 390               | 0                           | NR                      | 520               | 592                         | NR                      | 650               | 546                         | NR                      | 780               | 10                          | NR                      | 910               | 0                           | NR                      |
| 395               | 1                           | NR                      | 525               | 608                         | NR                      | 655               | 487                         | NR                      | 785               | 9                           | NR                      | 915               | 0                           | NR                      |
| 400               | 3                           | NR                      | 530               | 625                         | NR                      | 660               | 429                         | NR                      | 790               | 7                           | NR                      | 920               | 0                           | NR                      |
| 405               | 6                           | NR                      | 535               | 642                         | NR                      | 665               | 378                         | NR                      | 795               | 6                           | NR                      | 925               | 0                           | NR                      |
| 410               | 12                          | NR                      | 540               | 657                         | NR                      | 670               | 329                         | NR                      | 800               | 5                           | NR                      | 930               | 0                           | NR                      |
| 415               | 22                          | NR                      | 545               | 677                         | NR                      | 675               | 286                         | NR                      | 805               | 5                           | NR                      | 935               | 0                           | NR                      |
| 420               | 43                          | NR                      | 550               | 701                         | NR                      | 680               | 248                         | NR                      | 810               | 4                           | NR                      | 940               | 0                           | NR                      |
| 425               | 80                          | NR                      | 555               | 728                         | NR                      | 685               | 213                         | NR                      | 815               | 3                           | NR                      | 945               | 0                           | NR                      |
| 430               | 140                         | NR                      | 560               | 757                         | NR                      | 690               | 184                         | NR                      | 820               | 3                           | NR                      | 950               | 0                           | NR                      |
| 435               | 243                         | NR                      | 565               | 793                         | NR                      | 695               | 156                         | NR                      | 825               | 3                           | NR                      | 955               | 0                           | NR                      |
| 440               | 412                         | NR                      | 570               | 831                         | NR                      | 700               | 134                         | NR                      | 830               | 2                           | NR                      | 960               | 0                           | NR                      |
| 445               | 610                         | NR                      | 575               | 872                         | NR                      | 705               | 114                         | NR                      | 835               | 2                           | NR                      | 965               | 0                           | NR                      |
| 450               | 597                         | NR                      | 580               | 911                         | NR                      | 710               | 97                          | NR                      | 840               | 2                           | NR                      | 970               | 0                           | NR                      |
| 455               | 412                         | NR                      | 585               | 944                         | NR                      | 715               | 83                          | NR                      | 845               | 1                           | NR                      | 975               | 0                           | NR                      |
| 460               | 330                         | NR                      | 590               | 974                         | NR                      | 720               | 70                          | NR                      | 850               | 1                           | NR                      | 980               | 0                           | NR                      |
| 465               | 274                         | NR                      | 595               | 992                         | NR                      | 725               | 60                          | NR                      | 855               | 1                           | NR                      | 985               | 0                           | NR                      |
| 470               | 211                         | NR                      | 600               | 999                         | NR                      | 730               | 51                          | NR                      | 860               | 1                           | NR                      | 990               | 0                           | NR                      |
| 475               | 200                         | NR                      | 605               | 992                         | NR                      | 735               | 43                          | NR                      | 865               | 1                           | NR                      | 995               | 0                           | NR                      |
| 480               | 220                         | NR                      | 610               | 975                         | NR                      | 740               | 36                          | NR                      | 870               | 1                           | NR                      | 1000              | 0                           | NR                      |
| 485               | 255                         | NR                      | 615               | 944                         | NR                      | 745               | 31                          | NR                      | 875               | 1                           | NR                      |                   |                             |                         |

REPORT NUMBER: SP1-2407-184-10

**Scotopic Flux vs. Wavelength**



**Scotopic Lumens: NR**

**S/P: 1.48**

| $\lambda$<br>(nm) | Power<br>W <sup>^</sup> /nm | Lumens<br>( $\phi$ /nm) | $\lambda$<br>(nm) | Power<br>W <sup>^</sup> /nm | Lumens<br>( $\phi$ /nm) | $\lambda$<br>(nm) | Power<br>W <sup>^</sup> /nm | Lumens<br>( $\phi$ /nm) | $\lambda$<br>(nm) | Power<br>W <sup>^</sup> /nm | Lumens<br>( $\phi$ /nm) | $\lambda$<br>(nm) | Power<br>W <sup>^</sup> /nm | Lumens<br>( $\phi$ /nm) |
|-------------------|-----------------------------|-------------------------|-------------------|-----------------------------|-------------------------|-------------------|-----------------------------|-------------------------|-------------------|-----------------------------|-------------------------|-------------------|-----------------------------|-------------------------|
| 360               | 0                           | NR                      | 490               | 311                         | NR                      | 620               | 903                         | NR                      | 750               | 26                          | NR                      | 880               | 1                           | NR                      |
| 365               | 0                           | NR                      | 495               | 376                         | NR                      | 625               | 851                         | NR                      | 755               | 22                          | NR                      | 885               | 1                           | NR                      |
| 370               | 0                           | NR                      | 500               | 438                         | NR                      | 630               | 797                         | NR                      | 760               | 19                          | NR                      | 890               | 0                           | NR                      |
| 375               | 0                           | NR                      | 505               | 491                         | NR                      | 635               | 735                         | NR                      | 765               | 16                          | NR                      | 895               | 0                           | NR                      |
| 380               | 0                           | NR                      | 510               | 533                         | NR                      | 640               | 672                         | NR                      | 770               | 14                          | NR                      | 900               | 0                           | NR                      |
| 385               | 0                           | NR                      | 515               | 566                         | NR                      | 645               | 607                         | NR                      | 775               | 12                          | NR                      | 905               | 0                           | NR                      |
| 390               | 0                           | NR                      | 520               | 592                         | NR                      | 650               | 546                         | NR                      | 780               | 10                          | NR                      | 910               | 0                           | NR                      |
| 395               | 1                           | NR                      | 525               | 608                         | NR                      | 655               | 487                         | NR                      | 785               | 9                           | NR                      | 915               | 0                           | NR                      |
| 400               | 3                           | NR                      | 530               | 625                         | NR                      | 660               | 429                         | NR                      | 790               | 7                           | NR                      | 920               | 0                           | NR                      |
| 405               | 6                           | NR                      | 535               | 642                         | NR                      | 665               | 378                         | NR                      | 795               | 6                           | NR                      | 925               | 0                           | NR                      |
| 410               | 12                          | NR                      | 540               | 657                         | NR                      | 670               | 329                         | NR                      | 800               | 5                           | NR                      | 930               | 0                           | NR                      |
| 415               | 22                          | NR                      | 545               | 677                         | NR                      | 675               | 286                         | NR                      | 805               | 5                           | NR                      | 935               | 0                           | NR                      |
| 420               | 43                          | NR                      | 550               | 701                         | NR                      | 680               | 248                         | NR                      | 810               | 4                           | NR                      | 940               | 0                           | NR                      |
| 425               | 80                          | NR                      | 555               | 728                         | NR                      | 685               | 213                         | NR                      | 815               | 3                           | NR                      | 945               | 0                           | NR                      |
| 430               | 140                         | NR                      | 560               | 757                         | NR                      | 690               | 184                         | NR                      | 820               | 3                           | NR                      | 950               | 0                           | NR                      |
| 435               | 243                         | NR                      | 565               | 793                         | NR                      | 695               | 156                         | NR                      | 825               | 3                           | NR                      | 955               | 0                           | NR                      |
| 440               | 412                         | NR                      | 570               | 831                         | NR                      | 700               | 134                         | NR                      | 830               | 2                           | NR                      | 960               | 0                           | NR                      |
| 445               | 610                         | NR                      | 575               | 872                         | NR                      | 705               | 114                         | NR                      | 835               | 2                           | NR                      | 965               | 0                           | NR                      |
| 450               | 597                         | NR                      | 580               | 911                         | NR                      | 710               | 97                          | NR                      | 840               | 2                           | NR                      | 970               | 0                           | NR                      |
| 455               | 412                         | NR                      | 585               | 944                         | NR                      | 715               | 83                          | NR                      | 845               | 1                           | NR                      | 975               | 0                           | NR                      |
| 460               | 330                         | NR                      | 590               | 974                         | NR                      | 720               | 70                          | NR                      | 850               | 1                           | NR                      | 980               | 0                           | NR                      |
| 465               | 274                         | NR                      | 595               | 992                         | NR                      | 725               | 60                          | NR                      | 855               | 1                           | NR                      | 985               | 0                           | NR                      |
| 470               | 211                         | NR                      | 600               | 999                         | NR                      | 730               | 51                          | NR                      | 860               | 1                           | NR                      | 990               | 0                           | NR                      |
| 475               | 200                         | NR                      | 605               | 992                         | NR                      | 735               | 43                          | NR                      | 865               | 1                           | NR                      | 995               | 0                           | NR                      |
| 480               | 220                         | NR                      | 610               | 975                         | NR                      | 740               | 36                          | NR                      | 870               | 1                           | NR                      | 1000              | 0                           | NR                      |
| 485               | 255                         | NR                      | 615               | 944                         | NR                      | 745               | 31                          | NR                      | 875               | 1                           | NR                      |                   |                             |                         |

REPORT NUMBER: SP1-2407-184-10

Melanopic Flux vs. Wavelength



Melanopic Lumens: NR

M/P: 2.88

| λ (nm) | Power W <sup>^</sup> /nm | Lumens (φ/nm) | λ (nm) | Power W <sup>^</sup> /nm | Lumens (φ/nm) | λ (nm) | Power W <sup>^</sup> /nm | Lumens (φ/nm) | λ (nm) | Power W <sup>^</sup> /nm | Lumens (φ/nm) | λ (nm) | Power W <sup>^</sup> /nm | Lumens (φ/nm) |
|--------|--------------------------|---------------|--------|--------------------------|---------------|--------|--------------------------|---------------|--------|--------------------------|---------------|--------|--------------------------|---------------|
| 360    | 0                        | NR            | 490    | 311                      | NR            | 620    | 903                      | NR            | 750    | 26                       | NR            | 880    | 1                        | NR            |
| 365    | 0                        | NR            | 495    | 376                      | NR            | 625    | 851                      | NR            | 755    | 22                       | NR            | 885    | 1                        | NR            |
| 370    | 0                        | NR            | 500    | 438                      | NR            | 630    | 797                      | NR            | 760    | 19                       | NR            | 890    | 0                        | NR            |
| 375    | 0                        | NR            | 505    | 491                      | NR            | 635    | 735                      | NR            | 765    | 16                       | NR            | 895    | 0                        | NR            |
| 380    | 0                        | NR            | 510    | 533                      | NR            | 640    | 672                      | NR            | 770    | 14                       | NR            | 900    | 0                        | NR            |
| 385    | 0                        | NR            | 515    | 566                      | NR            | 645    | 607                      | NR            | 775    | 12                       | NR            | 905    | 0                        | NR            |
| 390    | 0                        | NR            | 520    | 592                      | NR            | 650    | 546                      | NR            | 780    | 10                       | NR            | 910    | 0                        | NR            |
| 395    | 1                        | NR            | 525    | 608                      | NR            | 655    | 487                      | NR            | 785    | 9                        | NR            | 915    | 0                        | NR            |
| 400    | 3                        | NR            | 530    | 625                      | NR            | 660    | 429                      | NR            | 790    | 7                        | NR            | 920    | 0                        | NR            |
| 405    | 6                        | NR            | 535    | 642                      | NR            | 665    | 378                      | NR            | 795    | 6                        | NR            | 925    | 0                        | NR            |
| 410    | 12                       | NR            | 540    | 657                      | NR            | 670    | 329                      | NR            | 800    | 5                        | NR            | 930    | 0                        | NR            |
| 415    | 22                       | NR            | 545    | 677                      | NR            | 675    | 286                      | NR            | 805    | 5                        | NR            | 935    | 0                        | NR            |
| 420    | 43                       | NR            | 550    | 701                      | NR            | 680    | 248                      | NR            | 810    | 4                        | NR            | 940    | 0                        | NR            |
| 425    | 80                       | NR            | 555    | 728                      | NR            | 685    | 213                      | NR            | 815    | 3                        | NR            | 945    | 0                        | NR            |
| 430    | 140                      | NR            | 560    | 757                      | NR            | 690    | 184                      | NR            | 820    | 3                        | NR            | 950    | 0                        | NR            |
| 435    | 243                      | NR            | 565    | 793                      | NR            | 695    | 156                      | NR            | 825    | 3                        | NR            | 955    | 0                        | NR            |
| 440    | 412                      | NR            | 570    | 831                      | NR            | 700    | 134                      | NR            | 830    | 2                        | NR            | 960    | 0                        | NR            |
| 445    | 610                      | NR            | 575    | 872                      | NR            | 705    | 114                      | NR            | 835    | 2                        | NR            | 965    | 0                        | NR            |
| 450    | 597                      | NR            | 580    | 911                      | NR            | 710    | 97                       | NR            | 840    | 2                        | NR            | 970    | 0                        | NR            |
| 455    | 412                      | NR            | 585    | 944                      | NR            | 715    | 83                       | NR            | 845    | 1                        | NR            | 975    | 0                        | NR            |
| 460    | 330                      | NR            | 590    | 974                      | NR            | 720    | 70                       | NR            | 850    | 1                        | NR            | 980    | 0                        | NR            |
| 465    | 274                      | NR            | 595    | 992                      | NR            | 725    | 60                       | NR            | 855    | 1                        | NR            | 985    | 0                        | NR            |
| 470    | 211                      | NR            | 600    | 999                      | NR            | 730    | 51                       | NR            | 860    | 1                        | NR            | 990    | 0                        | NR            |
| 475    | 200                      | NR            | 605    | 992                      | NR            | 735    | 43                       | NR            | 865    | 1                        | NR            | 995    | 0                        | NR            |
| 480    | 220                      | NR            | 610    | 975                      | NR            | 740    | 36                       | NR            | 870    | 1                        | NR            | 1000   | 0                        | NR            |
| 485    | 255                      | NR            | 615    | 944                      | NR            | 745    | 31                       | NR            | 875    | 1                        | NR            |        |                          |               |

**Summary**

$R_f = 86.6$   
 $R_g = 95.9$   
 $CIE R_a = 83.5$   
 $R_9 = 6.3$



**Color Vector Graphics**



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

|            |             |            |            |
|------------|-------------|------------|------------|
| CES01 = 86 | CES26 = 85  | CES51 = 97 | CES76 = 81 |
| CES02 = 62 | CES27 = 95  | CES52 = 96 | CES77 = 87 |
| CES03 = 31 | CES28 = 94  | CES53 = 91 | CES78 = 80 |
| CES04 = 70 | CES29 = 87  | CES54 = 92 | CES79 = 93 |
| CES05 = 49 | CES30 = 93  | CES55 = 92 | CES80 = 91 |
| CES06 = 51 | CES31 = 89  | CES56 = 88 | CES81 = 77 |
| CES07 = 41 | CES32 = 84  | CES57 = 87 | CES82 = 96 |
| CES08 = 40 | CES33 = 91  | CES58 = 88 | CES83 = 95 |
| CES09 = 29 | CES34 = 91  | CES59 = 93 | CES84 = 92 |
| CES10 = 75 | CES35 = 95  | CES60 = 94 | CES85 = 80 |
| CES11 = 58 | CES36 = 90  | CES61 = 91 | CES86 = 72 |
| CES12 = 64 | CES37 = 95  | CES62 = 95 | CES87 = 86 |
| CES13 = 43 | CES38 = 100 | CES63 = 88 | CES88 = 88 |
| CES14 = 74 | CES39 = 97  | CES64 = 85 | CES89 = 77 |
| CES15 = 71 | CES40 = 94  | CES65 = 80 | CES90 = 88 |
| CES16 = 47 | CES41 = 97  | CES66 = 84 | CES91 = 81 |
| CES17 = 49 | CES42 = 96  | CES67 = 82 | CES92 = 67 |
| CES18 = 56 | CES43 = 93  | CES68 = 85 | CES93 = 81 |
| CES19 = 72 | CES44 = 99  | CES69 = 89 | CES94 = 63 |
| CES20 = 66 | CES45 = 95  | CES70 = 81 | CES95 = 76 |
| CES21 = 86 | CES46 = 91  | CES71 = 79 | CES96 = 84 |
| CES22 = 78 | CES47 = 93  | CES72 = 93 | CES97 = 92 |
| CES23 = 91 | CES48 = 85  | CES73 = 76 | CES98 = 86 |
| CES24 = 90 | CES49 = 92  | CES74 = 95 | CES99 = 77 |
| CES25 = 72 | CES50 = 96  | CES75 = 80 |            |



Color Rendition by Hue-Angle Bin



Measure Comparisons



(END OF REPORT)