

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: P1435216

Luminaire Tested: **GALN-SB2B-727-U-T4LG**

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: P1435216  
 Test Lab: INNOVATION CENTER(G1)  
 Issue Date: 03/24/202  
 Manufacturer: COOPER LIGHTING SOLUTIONS (FORMERLY EATON)  
 Product Line: McGRAW-EDISON  
 Catalog Number: GALN-SB2B-727-U-T4LG  
 Description: GALLEON II AREA AND ROADWAY HIGH DENSITY LUMINAIRE 450mA 2xLight Square PACKAGE 70CRI 2700K FIXTURE w/ TYPE IV LOW GLARE  
 Light Source: (52) 2700K CCT, 70 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**

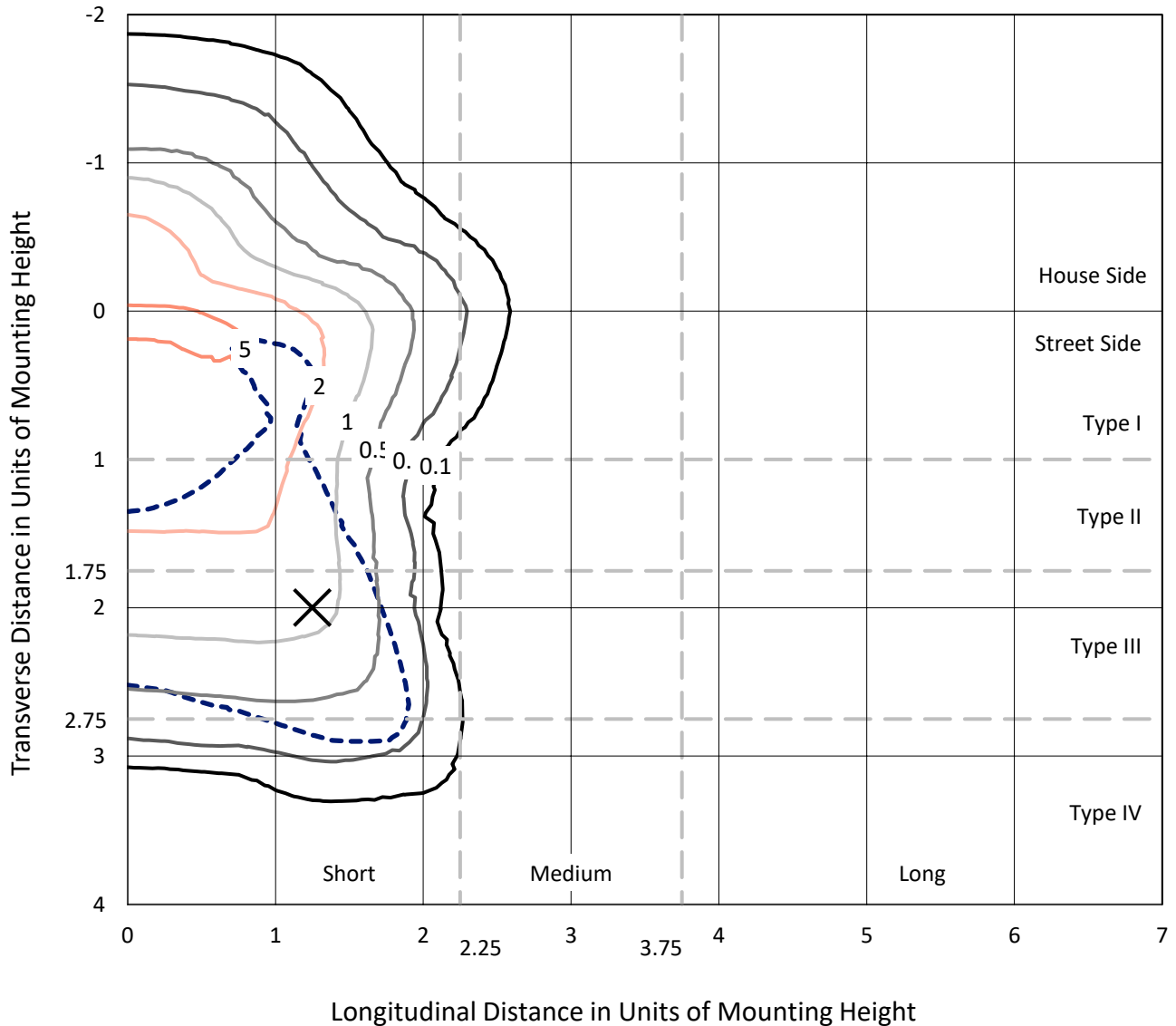
Lumens per Lamp: N/A  
 Luminaire Lumens: 10225.6 lumens  
 Efficiency: N/A  
 Efficacy: 138.4 lumens/watt  
 Luminous Opening: Rectangular (W 1' x L: 1' x H: 0')  
 IES Classification: Type IV - Short  
 BUG Rating: B2 - U0 - G2

Input Watts (W): 73.9  
 Input Voltage (V): 120  
 Input Current (A<sub>in</sub>): 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: P1435216  
 CATALOG NUMBER: GALN-SB2B-727-U-T4LG

### Iso-Footcandle Lines of Horizontal Illumination

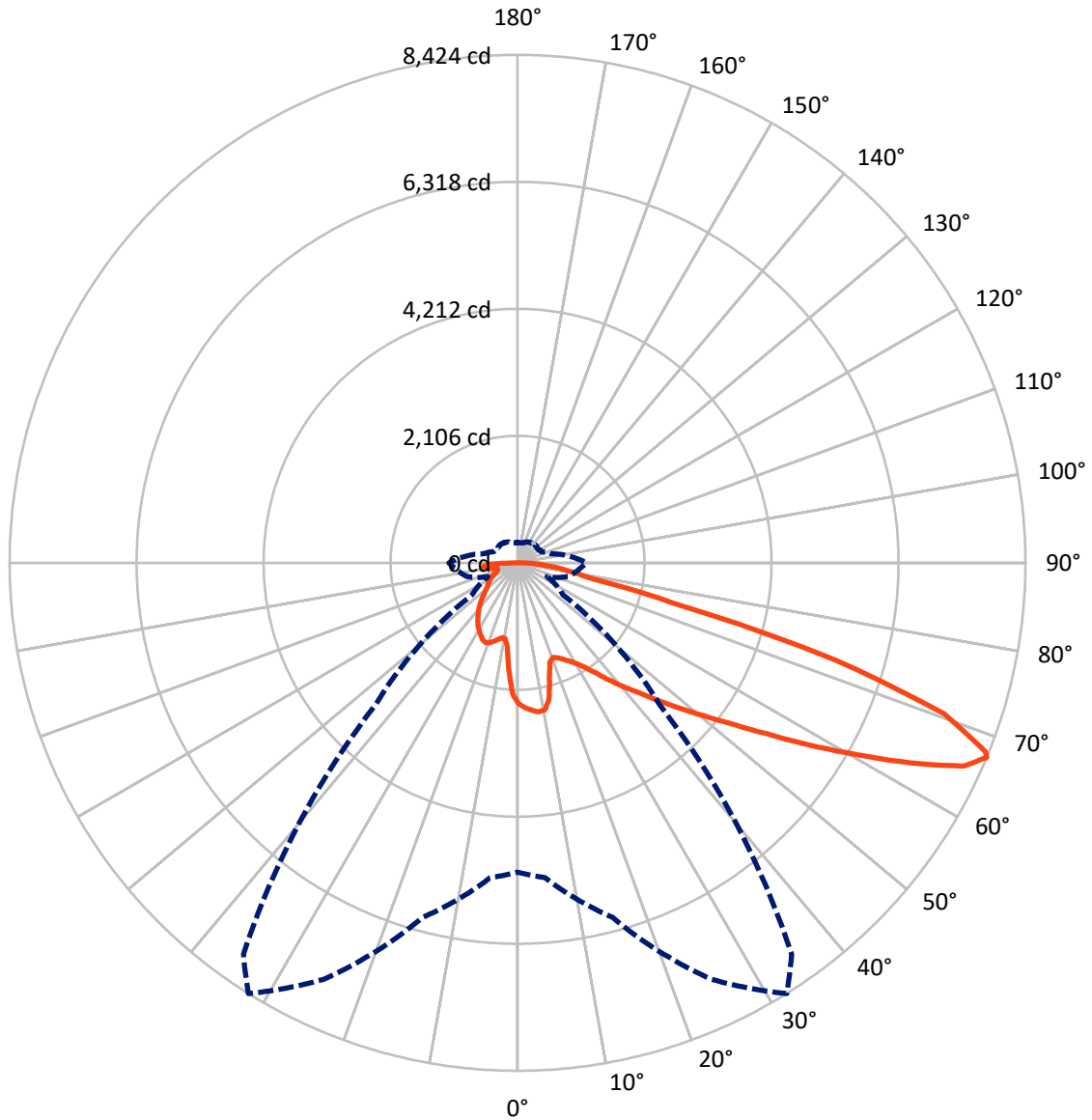
✕ Max cd  
 - - - 1/2 Max cd



Based on 20 foot mounting height. Maximum calculated value = 6.3 fc  
 Type IV - Short - N/A

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### Luminous Intensity Polar Plot



— Vertical Plane Through 32-Deg Lateral      - - - Horizontal Cone Through 67-Deg Vertical

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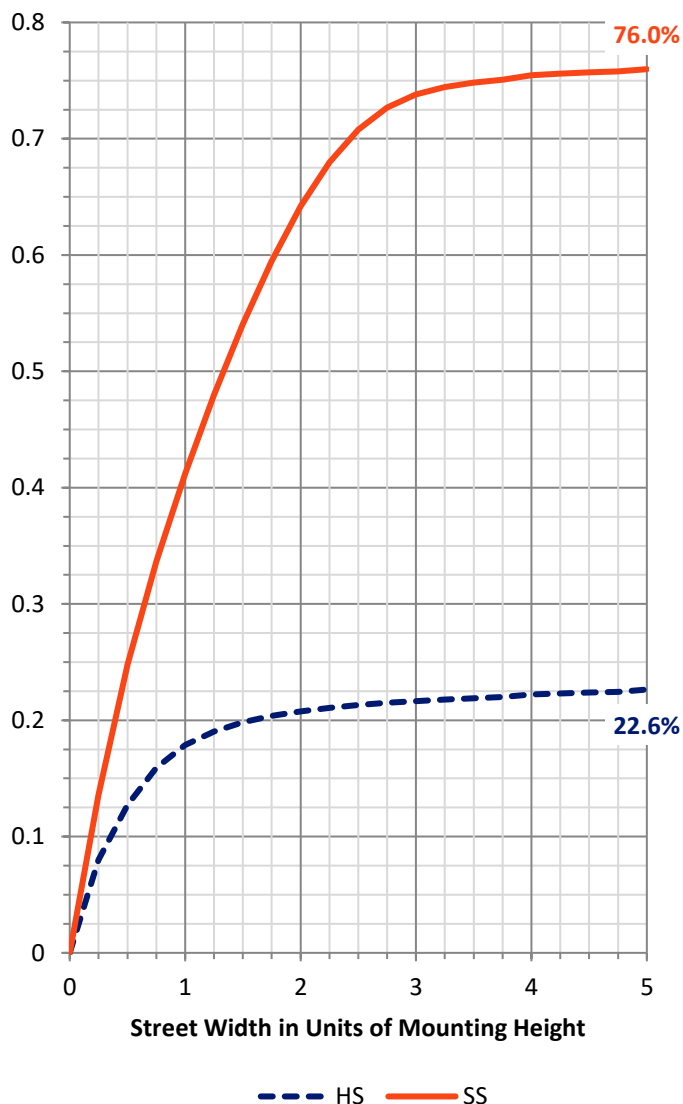
**FLUX DISTRIBUTION:**

|                    |           | Downward | Upward | Total   |
|--------------------|-----------|----------|--------|---------|
| <b>House Side</b>  | Lumens    | 2420.9   | 0.0    | 2420.9  |
|                    | % Fixture | 23.7     | 0.0    | 23.7    |
| <b>Street Side</b> | Lumens    | 7804.7   | 0.0    | 7804.7  |
|                    | % Fixture | 76.3     | 0.0    | 76.3    |
| <b>Total</b>       | Lumens    | 10225.6  | 0.0    | 10225.6 |
|                    | % Fixture | 100.0    | 0.0    | 100.0   |

**Coefficient of Utilization**

**ZONAL LUMENS:**

| Zone      | Lumens  | % Fixture |
|-----------|---------|-----------|
| 0°-10°    | 204.1   | 2.0       |
| 10°-20°   | 542.0   | 5.3       |
| 20°-30°   | 885.1   | 8.7       |
| 30°-40°   | 1304.6  | 12.8      |
| 40°-50°   | 1799.1  | 17.6      |
| 50°-60°   | 2272.8  | 22.2      |
| 60°-70°   | 2199.7  | 21.5      |
| 70°-80°   | 785.0   | 7.7       |
| 80°-90°   | 233.1   | 2.3       |
| 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°    | 10225.6 | 100.0     |
| 0°-180°   | 10225.6 | 100.0     |

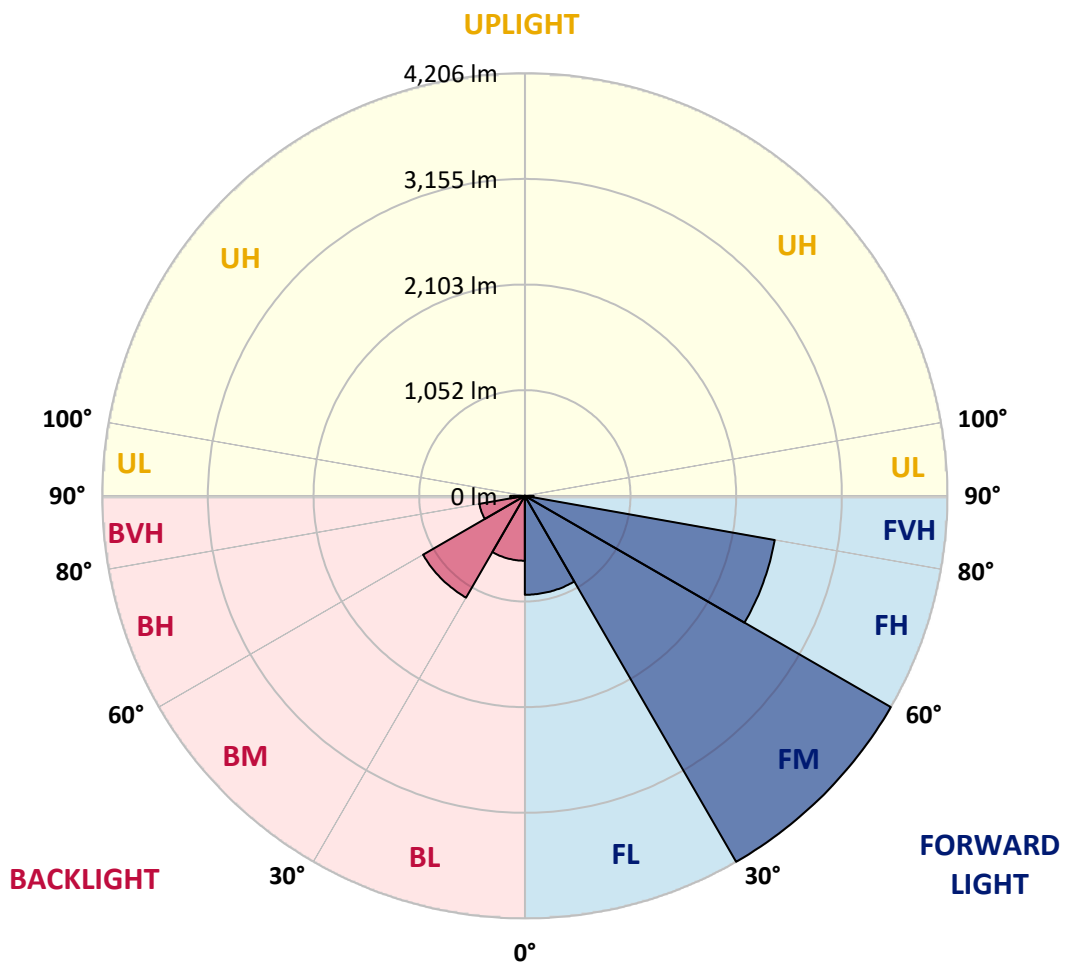


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**LUMINAIRE CLASSIFICATION SYSTEM LUMEN TABLE AND BUG RATING:**

| Zone           | Lumens | % Fixture | Zone Rating/Lumen Limit |      |         |
|----------------|--------|-----------|-------------------------|------|---------|
|                |        |           | B                       | U    | G       |
| FL (0°-30°)    | 985.3  | 9.6       |                         |      |         |
| FM (30°-60°)   | 4206.1 | 41.1      |                         |      |         |
| FH (60°-80°)   | 2525.5 | 24.7      |                         |      | G2/5000 |
| FVH (80°-90°)  | 87.8   | 0.9       |                         |      | G1/100  |
| BL (0°-30°)    | 646.0  | 6.3       | B2/1000                 |      |         |
| BM (30°-60°)   | 1170.4 | 11.4      | B2/2500                 |      |         |
| BH (60°-80°)   | 459.2  | 4.5       | B1/500                  |      | G1/500  |
| BVH (80°-90°)  | 145.3  | 1.4       |                         |      | G2/225  |
| UL (90°-100°)  | 0.0    | 0.0       |                         | U0/0 |         |
| UH (100°-180°) | 0.0    | 0.0       |                         | U0/0 |         |

**BUG Rating: B2-U0-G2**  
 Type IV Short





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CATALOG NUMBER: GALN-SB2B-727-U-T4LG

**CANDELA DISTRIBUTION (FULL):**

|       | 0°     | 5°     | 15°    | 25°    | 32°    | 35°    | 45°    | 55°    | 65°    | 75°    | 85°    |
|-------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|
| 0°    | 2336.3 | 2336.3 | 2336.3 | 2336.3 | 2336.3 | 2336.3 | 2336.3 | 2336.3 | 2336.3 | 2336.3 | 2336.3 |
| 2.5°  | 2424.9 | 2418.1 | 2411.3 | 2415.8 | 2406.7 | 2404.5 | 2393.1 | 2388.6 | 2374.9 | 2372.7 | 2347.7 |
| 5°    | 2474.8 | 2461.2 | 2458.9 | 2463.5 | 2454.4 | 2454.4 | 2445.3 | 2438.5 | 2418.1 | 2406.7 | 2370.4 |
| 7.5°  | 2474.8 | 2472.6 | 2477.1 | 2493.0 | 2495.3 | 2495.3 | 2495.3 | 2497.5 | 2477.1 | 2461.2 | 2404.5 |
| 10°   | 2334.1 | 2311.4 | 2361.3 | 2440.8 | 2479.4 | 2502.1 | 2543.0 | 2567.9 | 2552.0 | 2540.7 | 2463.5 |
| 12.5° | 1914.0 | 1916.3 | 1995.8 | 2166.1 | 2320.4 | 2386.3 | 2556.6 | 2647.4 | 2654.2 | 2636.0 | 2538.4 |
| 15°   | 1623.4 | 1634.8 | 1675.6 | 1798.2 | 1975.3 | 2073.0 | 2477.1 | 2717.8 | 2772.3 | 2754.1 | 2629.2 |
| 17.5° | 1534.9 | 1541.7 | 1559.8 | 1630.2 | 1730.1 | 1809.6 | 2261.4 | 2763.2 | 2915.3 | 2892.6 | 2731.4 |
| 20°   | 1521.2 | 1525.8 | 1548.5 | 1607.5 | 1675.6 | 1721.0 | 2041.2 | 2726.9 | 3049.3 | 3040.2 | 2824.5 |
| 22.5° | 1523.5 | 1528.0 | 1557.6 | 1639.3 | 1709.7 | 1748.3 | 1970.8 | 2642.9 | 3190.0 | 3199.1 | 2919.9 |
| 25°   | 1528.0 | 1530.3 | 1575.7 | 1684.7 | 1773.3 | 1820.9 | 2016.2 | 2567.9 | 3308.1 | 3385.3 | 3024.3 |
| 27.5° | 1553.0 | 1559.8 | 1621.1 | 1743.7 | 1848.2 | 1902.7 | 2122.9 | 2592.9 | 3437.5 | 3596.5 | 3149.2 |
| 30°   | 1621.1 | 1625.7 | 1700.6 | 1827.7 | 1941.3 | 1998.0 | 2250.1 | 2692.8 | 3596.5 | 3814.4 | 3271.8 |
| 32.5° | 1727.8 | 1732.4 | 1818.7 | 1950.4 | 2073.0 | 2141.1 | 2415.8 | 2883.5 | 3773.6 | 4043.7 | 3394.4 |
| 35°   | 1875.4 | 1877.7 | 1975.3 | 2116.1 | 2245.5 | 2322.7 | 2608.8 | 3099.2 | 3957.5 | 4239.0 | 3485.2 |
| 37.5° | 2050.3 | 2066.1 | 2166.1 | 2313.6 | 2465.8 | 2536.1 | 2835.8 | 3351.2 | 4120.9 | 4404.8 | 3537.4 |
| 40°   | 2290.9 | 2295.5 | 2393.1 | 2536.1 | 2697.3 | 2765.5 | 3062.9 | 3589.6 | 4300.3 | 4502.4 | 3585.1 |
| 42.5° | 2538.4 | 2577.0 | 2658.7 | 2817.7 | 2938.0 | 2992.5 | 3321.7 | 3807.6 | 4443.4 | 4506.9 | 3564.7 |
| 45°   | 2869.9 | 2899.4 | 2981.2 | 3121.9 | 3242.3 | 3305.8 | 3601.0 | 4007.4 | 4516.0 | 4468.3 | 3519.3 |
| 47.5° | 3249.1 | 3267.2 | 3333.1 | 3460.2 | 3594.2 | 3639.6 | 3891.6 | 4120.9 | 4543.3 | 4441.1 | 3498.8 |
| 50°   | 3696.4 | 3696.4 | 3744.0 | 3853.0 | 3975.6 | 4039.2 | 4159.5 | 4189.1 | 4622.7 | 4393.4 | 3551.1 |
| 52.5° | 4073.3 | 4091.4 | 4155.0 | 4309.4 | 4432.0 | 4504.7 | 4368.4 | 4293.5 | 4461.5 | 4127.8 | 3566.9 |
| 55°   | 4434.3 | 4454.7 | 4597.7 | 4790.7 | 4999.6 | 5079.1 | 4629.5 | 4241.3 | 3918.9 | 3739.5 | 3458.0 |
| 57.5° | 4779.4 | 4822.5 | 5001.9 | 5378.8 | 5694.4 | 5687.6 | 4961.0 | 3773.6 | 3199.1 | 3310.4 | 3219.6 |
| 60°   | 5260.7 | 5306.1 | 5592.2 | 6066.8 | 6452.7 | 6291.5 | 4965.6 | 3140.1 | 2493.0 | 2642.9 | 2772.3 |
| 62.5° | 5662.6 | 5739.8 | 6159.8 | 6950.0 | 7304.2 | 7052.2 | 4554.6 | 2404.5 | 1655.2 | 1843.6 | 2143.3 |
| 65°   | 5626.3 | 5728.5 | 6380.1 | 7599.3 | 8128.4 | 7894.5 | 3952.9 | 1521.2 | 853.7  | 1260.1 | 1500.8 |
| 67°   | 5131.3 | 5242.6 | 6087.2 | 7622.0 | 8423.5 | 7924.0 | 3337.6 | 919.5  | 542.6  | 874.1  | 1042.2 |
| 67.5° | 4847.5 | 5011.0 | 5941.9 | 7578.9 | 8369.0 | 7799.1 | 3060.6 | 769.7  | 510.9  | 812.8  | 949.1  |
| 70°   | 2981.2 | 3244.5 | 4459.2 | 6700.2 | 7501.7 | 6527.7 | 1700.6 | 435.9  | 415.5  | 544.9  | 656.2  |
| 72.5° | 896.8  | 976.3  | 1721.0 | 4298.0 | 5505.9 | 4838.4 | 765.2  | 336.0  | 372.4  | 438.2  | 506.3  |
| 75°   | 435.9  | 465.5  | 710.7  | 1757.4 | 2681.5 | 2667.8 | 426.9  | 288.4  | 345.1  | 367.8  | 399.6  |
| 77.5° | 279.3  | 297.4  | 442.7  | 983.1  | 1228.3 | 1094.4 | 308.8  | 252.0  | 306.5  | 302.0  | 297.4  |
| 80°   | 174.8  | 183.9  | 283.8  | 569.9  | 905.9  | 756.1  | 227.0  | 206.6  | 263.4  | 233.9  | 211.2  |
| 82.5° | 113.5  | 124.9  | 181.6  | 347.4  | 647.1  | 563.1  | 149.9  | 147.6  | 218.0  | 186.2  | 163.5  |
| 85°   | 74.9   | 84.0   | 115.8  | 204.3  | 383.7  | 401.9  | 97.6   | 102.2  | 168.0  | 140.8  | 124.9  |
| 87.5° | 27.2   | 34.1   | 59.0   | 90.8   | 179.4  | 222.5  | 40.9   | 38.6   | 81.7   | 65.8   | 52.2   |
| 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: P1435216  
 CATALOG NUMBER: GALN-SB2B-727-U-T4LG

**CANDELA DISTRIBUTION (continued):**

|       | 90°    | 95°    | 105°   | 115°   | 125°   | 135°   | 145°   | 155°   | 165°   | 175°   | 180°   |
|-------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|
| 0°    | 2336.3 | 2336.3 | 2336.3 | 2336.3 | 2336.3 | 2336.3 | 2336.3 | 2336.3 | 2336.3 | 2336.3 | 2336.3 |
| 2.5°  | 2343.1 | 2336.3 | 2304.6 | 2277.3 | 2256.9 | 2229.6 | 2200.1 | 2166.1 | 2143.3 | 2147.9 | 2141.1 |
| 5°    | 2354.5 | 2336.3 | 2275.0 | 2181.9 | 2091.1 | 1977.6 | 1832.3 | 1746.0 | 1680.2 | 1646.1 | 1655.2 |
| 7.5°  | 2379.5 | 2347.7 | 2218.3 | 2029.8 | 1793.7 | 1562.1 | 1419.1 | 1337.3 | 1298.7 | 1282.8 | 1280.6 |
| 10°   | 2422.6 | 2368.1 | 2145.6 | 1793.7 | 1484.9 | 1328.2 | 1276.0 | 1253.3 | 1248.8 | 1248.8 | 1246.5 |
| 12.5° | 2474.8 | 2388.6 | 2023.0 | 1564.4 | 1337.3 | 1280.6 | 1271.5 | 1273.7 | 1280.6 | 1287.4 | 1276.0 |
| 15°   | 2538.4 | 2397.6 | 1870.9 | 1425.9 | 1307.8 | 1294.2 | 1307.8 | 1323.7 | 1335.0 | 1344.1 | 1332.8 |
| 17.5° | 2602.0 | 2388.6 | 1727.8 | 1360.0 | 1312.3 | 1330.5 | 1357.8 | 1382.7 | 1389.5 | 1403.2 | 1394.1 |
| 20°   | 2647.4 | 2356.8 | 1605.2 | 1335.0 | 1323.7 | 1364.6 | 1398.6 | 1425.9 | 1439.5 | 1448.6 | 1439.5 |
| 22.5° | 2681.5 | 2315.9 | 1516.7 | 1310.1 | 1323.7 | 1373.6 | 1414.5 | 1446.3 | 1462.2 | 1471.3 | 1459.9 |
| 25°   | 2711.0 | 2259.1 | 1448.6 | 1273.7 | 1296.5 | 1344.1 | 1389.5 | 1421.3 | 1444.0 | 1457.7 | 1450.8 |
| 27.5° | 2747.3 | 2213.7 | 1385.0 | 1219.3 | 1239.7 | 1285.1 | 1332.8 | 1371.4 | 1414.5 | 1437.2 | 1432.7 |
| 30°   | 2788.2 | 2191.0 | 1323.7 | 1160.2 | 1173.8 | 1219.3 | 1276.0 | 1328.2 | 1387.3 | 1416.8 | 1416.8 |
| 32.5° | 2835.8 | 2175.1 | 1266.9 | 1103.5 | 1114.8 | 1164.8 | 1219.3 | 1266.9 | 1330.5 | 1378.2 | 1375.9 |
| 35°   | 2856.3 | 2157.0 | 1221.5 | 1051.2 | 1073.9 | 1114.8 | 1158.0 | 1189.7 | 1255.6 | 1312.3 | 1316.9 |
| 37.5° | 2876.7 | 2150.2 | 1198.8 | 1010.4 | 1028.5 | 1060.3 | 1083.0 | 1098.9 | 1160.2 | 1219.3 | 1221.5 |
| 40°   | 2901.7 | 2181.9 | 1214.7 | 983.1  | 967.2  | 999.0  | 1010.4 | 1019.5 | 1051.2 | 1089.8 | 1089.8 |
| 42.5° | 2885.8 | 2204.6 | 1251.0 | 958.1  | 892.3  | 928.6  | 933.2  | 930.9  | 933.2  | 935.4  | 933.2  |
| 45°   | 2844.9 | 2181.9 | 1251.0 | 919.5  | 812.8  | 851.4  | 849.2  | 837.8  | 819.6  | 772.0  | 765.2  |
| 47.5° | 2835.8 | 2168.3 | 1203.4 | 856.0  | 733.4  | 765.2  | 769.7  | 747.0  | 694.8  | 644.8  | 628.9  |
| 50°   | 2874.4 | 2193.3 | 1128.4 | 778.8  | 665.3  | 692.5  | 703.9  | 665.3  | 606.2  | 554.0  | 544.9  |
| 52.5° | 2931.2 | 2225.1 | 1019.5 | 694.8  | 608.5  | 635.7  | 649.4  | 606.2  | 544.9  | 504.0  | 499.5  |
| 55°   | 2924.4 | 2225.1 | 896.8  | 617.6  | 565.4  | 585.8  | 608.5  | 563.1  | 515.4  | 492.7  | 490.4  |
| 57.5° | 2776.8 | 2141.1 | 806.0  | 563.1  | 524.5  | 542.6  | 572.2  | 529.0  | 483.6  | 488.2  | 495.0  |
| 60°   | 2488.5 | 1923.1 | 737.9  | 526.8  | 488.2  | 506.3  | 538.1  | 488.2  | 429.1  | 413.2  | 413.2  |
| 62.5° | 2050.3 | 1584.8 | 683.4  | 490.4  | 454.1  | 476.8  | 492.7  | 426.9  | 388.3  | 370.1  | 370.1  |
| 65°   | 1537.1 | 1226.1 | 626.7  | 460.9  | 424.6  | 449.6  | 431.4  | 399.6  | 361.0  | 347.4  | 349.7  |
| 67°   | 1139.8 | 951.3  | 579.0  | 435.9  | 406.4  | 417.8  | 404.1  | 381.4  | 342.8  | 331.5  | 342.8  |
| 67.5° | 1024.0 | 903.7  | 567.6  | 429.1  | 401.9  | 411.0  | 397.3  | 379.2  | 338.3  | 327.0  | 338.3  |
| 70°   | 703.9  | 694.8  | 506.3  | 397.3  | 376.9  | 367.8  | 374.6  | 351.9  | 317.9  | 313.3  | 324.7  |
| 72.5° | 535.8  | 554.0  | 454.1  | 370.1  | 349.7  | 338.3  | 354.2  | 331.5  | 297.4  | 304.2  | 315.6  |
| 75°   | 420.0  | 447.3  | 406.4  | 331.5  | 317.9  | 320.1  | 351.9  | 342.8  | 315.6  | 322.4  | 324.7  |
| 77.5° | 311.1  | 361.0  | 347.4  | 288.4  | 277.0  | 308.8  | 397.3  | 424.6  | 376.9  | 365.5  | 349.7  |
| 80°   | 227.0  | 258.8  | 292.9  | 238.4  | 231.6  | 297.4  | 490.4  | 542.6  | 465.5  | 420.0  | 408.7  |
| 82.5° | 168.0  | 181.6  | 240.7  | 190.7  | 168.0  | 265.6  | 544.9  | 638.0  | 554.0  | 467.7  | 454.1  |
| 85°   | 120.3  | 140.8  | 190.7  | 140.8  | 111.3  | 218.0  | 533.6  | 624.4  | 549.5  | 442.7  | 431.4  |
| 87.5° | 43.1   | 61.3   | 81.7   | 63.6   | 56.8   | 149.9  | 440.5  | 449.6  | 342.8  | 156.7  | 158.9  |
| 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: SP1-2407-184-3

Test Date: 10/09/2024

Luminaire Tested: GSS-SB1A-727-U-5WQ

Data in this report applies to families of products including GSS-SB1A-727-U-5WQ

**Test Information**

Test Method: LM-79-2019  
 Report Number: SP1-2407-184-3  
 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-727-U-5WQ**  
 Description: GALLEON II SITE SLIM 1SQ 350MA 5WQ HIGH DENSITY LIGHTSQUARE WITH 70 CRI 2700K CCT 26 LEDS

**Spectral Parameters**

CCT (K): 2672  
 CIE u': 0.2638  
 CIE v': 0.5276  
 Duv: -0.0002  
 CIE x: 0.4619  
 CIE y: 0.4106  
 CIE z: 0.1275  
 Peak Wavelength (nm): 601  
 Dominant Wavelength (nm): 584  
 Purity: 61.88407  
 Rf: 67.9  
 Rg: 98.6

|           |      |      |       |
|-----------|------|------|-------|
| CRI (Ra): | 71.1 |      |       |
| R1:       | 68.3 | R9:  | -27.8 |
| R2:       | 79.8 | R10: | 54.4  |
| R3:       | 91.2 | R11: | 65.8  |
| R4:       | 69.4 | R12: | 45.6  |
| R5:       | 66.5 | R13: | 69.8  |
| R6:       | 72.6 | R14: | 94.5  |
| R7:       | 77.0 | R15: | 60.1  |
| R8:       | 44.1 |      |       |



**Test Conditions**

Stabilization Time: 21M  
 Operation Time: 1H 21M  
 Sphere Temperature (°C): 25.2

REPORT NUMBER: SP1-2407-184-3

| 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 2700K 4-step quadrangle

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**Photopic Flux vs. Wavelength**



**Photopic Lumens: NR**

| 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    | 52                       | NR            | 620    | 888                      | NR            | 750    | 27                       | NR            | 880    | 1                        | NR            |
| 365    | 0                        | NR            | 495    | 87                       | NR            | 625    | 834                      | NR            | 755    | 23                       | NR            | 885    | 1                        | NR            |
| 370    | 0                        | NR            | 500    | 135                      | NR            | 630    | 776                      | NR            | 760    | 20                       | NR            | 890    | 1                        | NR            |
| 375    | 0                        | NR            | 505    | 196                      | NR            | 635    | 712                      | NR            | 765    | 17                       | NR            | 895    | 0                        | NR            |
| 380    | 0                        | NR            | 510    | 258                      | NR            | 640    | 648                      | NR            | 770    | 15                       | NR            | 900    | 0                        | NR            |
| 385    | 1                        | NR            | 515    | 317                      | NR            | 645    | 583                      | NR            | 775    | 12                       | NR            | 905    | 0                        | NR            |
| 390    | 2                        | NR            | 520    | 368                      | NR            | 650    | 523                      | NR            | 780    | 11                       | NR            | 910    | 0                        | NR            |
| 395    | 4                        | NR            | 525    | 408                      | NR            | 655    | 465                      | NR            | 785    | 9                        | NR            | 915    | 0                        | NR            |
| 400    | 6                        | NR            | 530    | 443                      | NR            | 660    | 410                      | NR            | 790    | 8                        | NR            | 920    | 0                        | NR            |
| 405    | 11                       | NR            | 535    | 473                      | NR            | 665    | 360                      | NR            | 795    | 7                        | NR            | 925    | 0                        | NR            |
| 410    | 23                       | NR            | 540    | 498                      | NR            | 670    | 313                      | NR            | 800    | 6                        | NR            | 930    | 0                        | NR            |
| 415    | 51                       | NR            | 545    | 530                      | NR            | 675    | 272                      | NR            | 805    | 5                        | NR            | 935    | 0                        | NR            |
| 420    | 111                      | NR            | 550    | 563                      | NR            | 680    | 236                      | NR            | 810    | 4                        | NR            | 940    | 0                        | NR            |
| 425    | 214                      | NR            | 555    | 605                      | NR            | 685    | 203                      | NR            | 815    | 4                        | NR            | 945    | 0                        | NR            |
| 430    | 339                      | NR            | 560    | 651                      | NR            | 690    | 175                      | NR            | 820    | 3                        | NR            | 950    | 0                        | NR            |
| 435    | 467                      | NR            | 565    | 705                      | NR            | 695    | 150                      | NR            | 825    | 3                        | NR            | 955    | 0                        | NR            |
| 440    | 535                      | NR            | 570    | 765                      | NR            | 700    | 128                      | NR            | 830    | 3                        | NR            | 960    | 0                        | NR            |
| 445    | 372                      | NR            | 575    | 824                      | NR            | 705    | 110                      | NR            | 835    | 2                        | NR            | 965    | 0                        | NR            |
| 450    | 160                      | NR            | 580    | 882                      | NR            | 710    | 94                       | NR            | 840    | 2                        | NR            | 970    | 0                        | NR            |
| 455    | 89                       | NR            | 585    | 930                      | NR            | 715    | 80                       | NR            | 845    | 2                        | NR            | 975    | 0                        | NR            |
| 460    | 53                       | NR            | 590    | 968                      | NR            | 720    | 69                       | NR            | 850    | 1                        | NR            | 980    | 0                        | NR            |
| 465    | 31                       | NR            | 595    | 991                      | NR            | 725    | 59                       | NR            | 855    | 1                        | NR            | 985    | 0                        | NR            |
| 470    | 23                       | NR            | 600    | 999                      | NR            | 730    | 50                       | NR            | 860    | 1                        | NR            | 990    | 0                        | NR            |
| 475    | 21                       | NR            | 605    | 992                      | NR            | 735    | 43                       | NR            | 865    | 1                        | NR            | 995    | 0                        | NR            |
| 480    | 23                       | NR            | 610    | 969                      | NR            | 740    | 36                       | NR            | 870    | 1                        | NR            | 1000   | 0                        | NR            |
| 485    | 32                       | NR            | 615    | 935                      | NR            | 745    | 31                       | NR            | 875    | 1                        | NR            |        |                          |               |

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**Scotopic Flux vs. Wavelength**



**Scotopic Lumens: NR**

**S/P: 1.02**

| 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    | 52                       | NR            | 620    | 888                      | NR            | 750    | 27                       | NR            | 880    | 1                        | NR            |
| 365    | 0                        | NR            | 495    | 87                       | NR            | 625    | 834                      | NR            | 755    | 23                       | NR            | 885    | 1                        | NR            |
| 370    | 0                        | NR            | 500    | 135                      | NR            | 630    | 776                      | NR            | 760    | 20                       | NR            | 890    | 1                        | NR            |
| 375    | 0                        | NR            | 505    | 196                      | NR            | 635    | 712                      | NR            | 765    | 17                       | NR            | 895    | 0                        | NR            |
| 380    | 0                        | NR            | 510    | 258                      | NR            | 640    | 648                      | NR            | 770    | 15                       | NR            | 900    | 0                        | NR            |
| 385    | 1                        | NR            | 515    | 317                      | NR            | 645    | 583                      | NR            | 775    | 12                       | NR            | 905    | 0                        | NR            |
| 390    | 2                        | NR            | 520    | 368                      | NR            | 650    | 523                      | NR            | 780    | 11                       | NR            | 910    | 0                        | NR            |
| 395    | 4                        | NR            | 525    | 408                      | NR            | 655    | 465                      | NR            | 785    | 9                        | NR            | 915    | 0                        | NR            |
| 400    | 6                        | NR            | 530    | 443                      | NR            | 660    | 410                      | NR            | 790    | 8                        | NR            | 920    | 0                        | NR            |
| 405    | 11                       | NR            | 535    | 473                      | NR            | 665    | 360                      | NR            | 795    | 7                        | NR            | 925    | 0                        | NR            |
| 410    | 23                       | NR            | 540    | 498                      | NR            | 670    | 313                      | NR            | 800    | 6                        | NR            | 930    | 0                        | NR            |
| 415    | 51                       | NR            | 545    | 530                      | NR            | 675    | 272                      | NR            | 805    | 5                        | NR            | 935    | 0                        | NR            |
| 420    | 111                      | NR            | 550    | 563                      | NR            | 680    | 236                      | NR            | 810    | 4                        | NR            | 940    | 0                        | NR            |
| 425    | 214                      | NR            | 555    | 605                      | NR            | 685    | 203                      | NR            | 815    | 4                        | NR            | 945    | 0                        | NR            |
| 430    | 339                      | NR            | 560    | 651                      | NR            | 690    | 175                      | NR            | 820    | 3                        | NR            | 950    | 0                        | NR            |
| 435    | 467                      | NR            | 565    | 705                      | NR            | 695    | 150                      | NR            | 825    | 3                        | NR            | 955    | 0                        | NR            |
| 440    | 535                      | NR            | 570    | 765                      | NR            | 700    | 128                      | NR            | 830    | 3                        | NR            | 960    | 0                        | NR            |
| 445    | 372                      | NR            | 575    | 824                      | NR            | 705    | 110                      | NR            | 835    | 2                        | NR            | 965    | 0                        | NR            |
| 450    | 160                      | NR            | 580    | 882                      | NR            | 710    | 94                       | NR            | 840    | 2                        | NR            | 970    | 0                        | NR            |
| 455    | 89                       | NR            | 585    | 930                      | NR            | 715    | 80                       | NR            | 845    | 2                        | NR            | 975    | 0                        | NR            |
| 460    | 53                       | NR            | 590    | 968                      | NR            | 720    | 69                       | NR            | 850    | 1                        | NR            | 980    | 0                        | NR            |
| 465    | 31                       | NR            | 595    | 991                      | NR            | 725    | 59                       | NR            | 855    | 1                        | NR            | 985    | 0                        | NR            |
| 470    | 23                       | NR            | 600    | 999                      | NR            | 730    | 50                       | NR            | 860    | 1                        | NR            | 990    | 0                        | NR            |
| 475    | 21                       | NR            | 605    | 992                      | NR            | 735    | 43                       | NR            | 865    | 1                        | NR            | 995    | 0                        | NR            |
| 480    | 23                       | NR            | 610    | 969                      | NR            | 740    | 36                       | NR            | 870    | 1                        | NR            | 1000   | 0                        | NR            |
| 485    | 32                       | NR            | 615    | 935                      | NR            | 745    | 31                       | NR            | 875    | 1                        | NR            |        |                          |               |

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**Melanopic Flux vs. Wavelength**



**Melanopic Lumens: NR**

**M/P: 1.71**

| 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    | 52                       | NR            | 620    | 888                      | NR            | 750    | 27                       | NR            | 880    | 1                        | NR            |
| 365    | 0                        | NR            | 495    | 87                       | NR            | 625    | 834                      | NR            | 755    | 23                       | NR            | 885    | 1                        | NR            |
| 370    | 0                        | NR            | 500    | 135                      | NR            | 630    | 776                      | NR            | 760    | 20                       | NR            | 890    | 1                        | NR            |
| 375    | 0                        | NR            | 505    | 196                      | NR            | 635    | 712                      | NR            | 765    | 17                       | NR            | 895    | 0                        | NR            |
| 380    | 0                        | NR            | 510    | 258                      | NR            | 640    | 648                      | NR            | 770    | 15                       | NR            | 900    | 0                        | NR            |
| 385    | 1                        | NR            | 515    | 317                      | NR            | 645    | 583                      | NR            | 775    | 12                       | NR            | 905    | 0                        | NR            |
| 390    | 2                        | NR            | 520    | 368                      | NR            | 650    | 523                      | NR            | 780    | 11                       | NR            | 910    | 0                        | NR            |
| 395    | 4                        | NR            | 525    | 408                      | NR            | 655    | 465                      | NR            | 785    | 9                        | NR            | 915    | 0                        | NR            |
| 400    | 6                        | NR            | 530    | 443                      | NR            | 660    | 410                      | NR            | 790    | 8                        | NR            | 920    | 0                        | NR            |
| 405    | 11                       | NR            | 535    | 473                      | NR            | 665    | 360                      | NR            | 795    | 7                        | NR            | 925    | 0                        | NR            |
| 410    | 23                       | NR            | 540    | 498                      | NR            | 670    | 313                      | NR            | 800    | 6                        | NR            | 930    | 0                        | NR            |
| 415    | 51                       | NR            | 545    | 530                      | NR            | 675    | 272                      | NR            | 805    | 5                        | NR            | 935    | 0                        | NR            |
| 420    | 111                      | NR            | 550    | 563                      | NR            | 680    | 236                      | NR            | 810    | 4                        | NR            | 940    | 0                        | NR            |
| 425    | 214                      | NR            | 555    | 605                      | NR            | 685    | 203                      | NR            | 815    | 4                        | NR            | 945    | 0                        | NR            |
| 430    | 339                      | NR            | 560    | 651                      | NR            | 690    | 175                      | NR            | 820    | 3                        | NR            | 950    | 0                        | NR            |
| 435    | 467                      | NR            | 565    | 705                      | NR            | 695    | 150                      | NR            | 825    | 3                        | NR            | 955    | 0                        | NR            |
| 440    | 535                      | NR            | 570    | 765                      | NR            | 700    | 128                      | NR            | 830    | 3                        | NR            | 960    | 0                        | NR            |
| 445    | 372                      | NR            | 575    | 824                      | NR            | 705    | 110                      | NR            | 835    | 2                        | NR            | 965    | 0                        | NR            |
| 450    | 160                      | NR            | 580    | 882                      | NR            | 710    | 94                       | NR            | 840    | 2                        | NR            | 970    | 0                        | NR            |
| 455    | 89                       | NR            | 585    | 930                      | NR            | 715    | 80                       | NR            | 845    | 2                        | NR            | 975    | 0                        | NR            |
| 460    | 53                       | NR            | 590    | 968                      | NR            | 720    | 69                       | NR            | 850    | 1                        | NR            | 980    | 0                        | NR            |
| 465    | 31                       | NR            | 595    | 991                      | NR            | 725    | 59                       | NR            | 855    | 1                        | NR            | 985    | 0                        | NR            |
| 470    | 23                       | NR            | 600    | 999                      | NR            | 730    | 50                       | NR            | 860    | 1                        | NR            | 990    | 0                        | NR            |
| 475    | 21                       | NR            | 605    | 992                      | NR            | 735    | 43                       | NR            | 865    | 1                        | NR            | 995    | 0                        | NR            |
| 480    | 23                       | NR            | 610    | 969                      | NR            | 740    | 36                       | NR            | 870    | 1                        | NR            | 1000   | 0                        | NR            |
| 485    | 32                       | NR            | 615    | 935                      | NR            | 745    | 31                       | NR            | 875    | 1                        | NR            |        |                          |               |

**Summary**

$R_f = 67.9$   
 $R_g = 98.6$   
 $CIE R_a = 71.1$   
 $R_9 = -27.8$



**Color Vector Graphics**



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

|            |            |            |            |
|------------|------------|------------|------------|
| CES01 = 86 | CES26 = 53 | CES51 = 75 | CES76 = 51 |
| CES02 = 63 | CES27 = 70 | CES52 = 80 | CES77 = 79 |
| CES03 = 31 | CES28 = 81 | CES53 = 64 | CES78 = 58 |
| CES04 = 71 | CES29 = 37 | CES54 = 73 | CES79 = 82 |
| CES05 = 50 | CES30 = 33 | CES55 = 69 | CES80 = 82 |
| CES06 = 52 | CES31 = 44 | CES56 = 60 | CES81 = 69 |
| CES07 = 42 | CES32 = 47 | CES57 = 54 | CES82 = 92 |
| CES08 = 41 | CES33 = 45 | CES58 = 59 | CES83 = 82 |
| CES09 = 29 | CES34 = 67 | CES59 = 85 | CES84 = 92 |
| CES10 = 77 | CES35 = 84 | CES60 = 86 | CES85 = 87 |
| CES11 = 60 | CES36 = 68 | CES61 = 86 | CES86 = 60 |
| CES12 = 66 | CES37 = 77 | CES62 = 59 | CES87 = 79 |
| CES13 = 44 | CES38 = 40 | CES63 = 66 | CES88 = 70 |
| CES14 = 74 | CES39 = 88 | CES64 = 69 | CES89 = 66 |
| CES15 = 72 | CES40 = 82 | CES65 = 64 | CES90 = 64 |
| CES16 = 48 | CES41 = 70 | CES66 = 65 | CES91 = 81 |
| CES17 = 51 | CES42 = 76 | CES67 = 64 | CES92 = 69 |
| CES18 = 57 | CES43 = 63 | CES68 = 73 | CES93 = 81 |
| CES19 = 73 | CES44 = 97 | CES69 = 83 | CES94 = 53 |
| CES20 = 67 | CES45 = 74 | CES70 = 64 | CES95 = 77 |
| CES21 = 88 | CES46 = 67 | CES71 = 60 | CES96 = 79 |
| CES22 = 80 | CES47 = 55 | CES72 = 87 | CES97 = 78 |
| CES23 = 92 | CES48 = 42 | CES73 = 57 | CES98 = 69 |
| CES24 = 92 | CES49 = 65 | CES74 = 84 | CES99 = 60 |
| CES25 = 73 | CES50 = 74 | CES75 = 60 |            |



Color Rendition by Hue-Angle Bin



Measure Comparisons



(END OF REPORT)