

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



Scaled data based on original data using  
LM-79-2019 Approved Method: Electrical and Photometric Measurements of Solid-  
State Lighting Products

Test Report Prepared for

Cooper Lighting Solutions

Brand: McGRAW-EDISON

Report Number: P641965

Luminaire Tested: GWS-SA6B-830-U-T3R-W-GRSBK

Issue Date: 1/10/2023

**Test Information**

Test Method: LM-79-2019  
Report Number: P641965  
TEST IS SCALED FROM IESNA LM-79-08 TEST DATA (G2-2209-782-16)  
Test Lab: COOPER LIGHTING SOLUTIONS  
Issue Date: 1/10/2023  
Manufacturer: COOPER LIGHTING SOLUTIONS  
Product Line: McGRAW-EDISON  
Catalog Number: GWS-SA6B-830-U-T3R-W-GRSBK  
Description: GALLEON WALL SLIM LUMINAIRE. (6) LIGHTSQUARES WITH 16 LEDS EACH AND TYPE III ROADWAY OPTICS W/ FACTORY INSTALLED GLARE SHIELD, BK  
Light Source: (96) 3000K CCT, 80 CRI LEDS  
Ballast/Driver: -

**Summary**

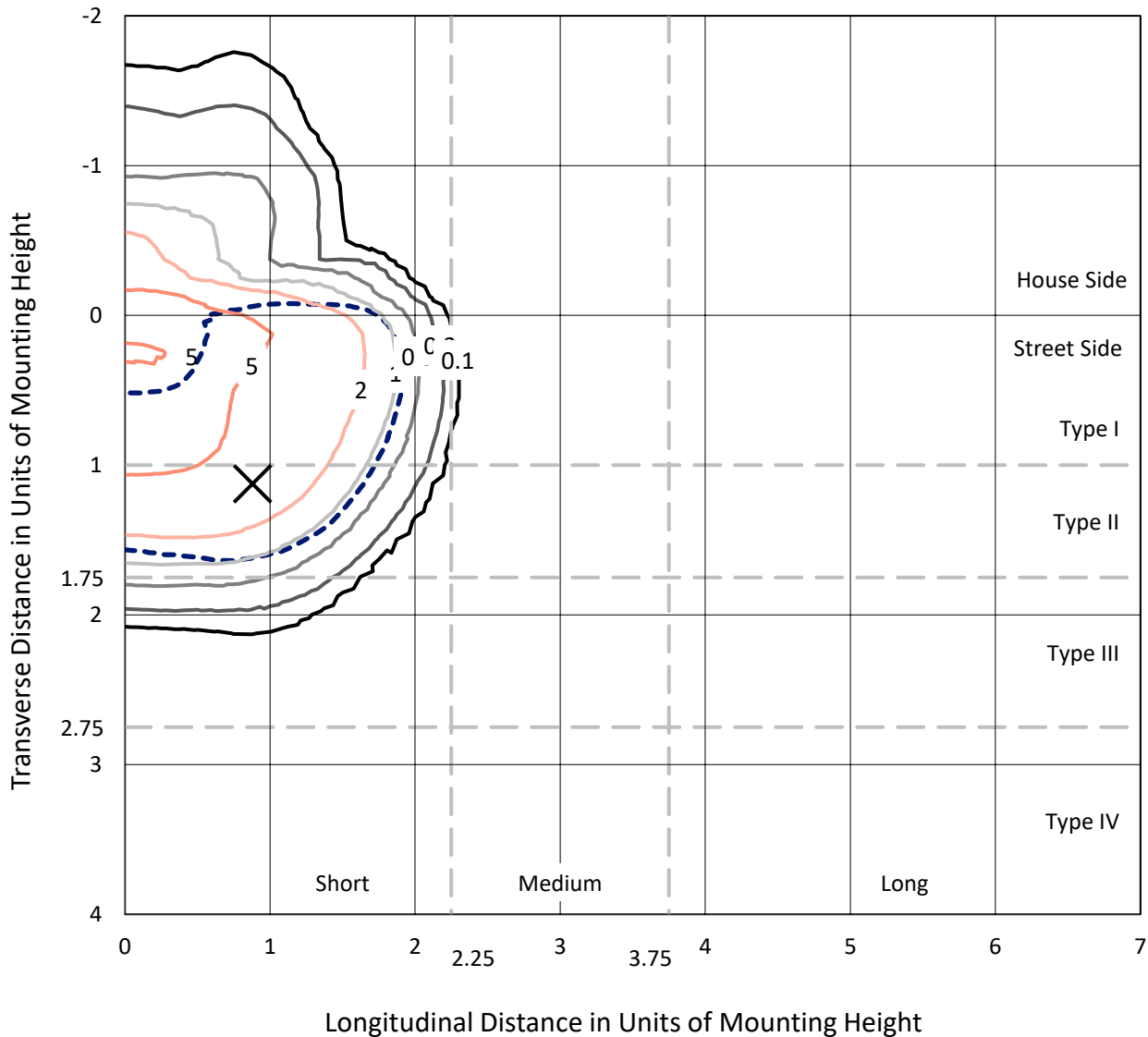
Lumens per Lamp: N/A  
Luminaire Lumens: 10548.9 lumens  
Efficiency: N/A  
Efficacy: 75.9 lumens/watt  
Luminous Opening: Rectangular (W 2' x L: 1' x H: 0')  
IES Classification: Type II - Short  
BUG Rating: B2 - U0 - G1  
  
Input Watts (W): 138.9  
Input Voltage (V): 120  
Input Current (Ain): NR  
Voltage Rise (V): NR  
Power Factor: NR  
Total Harmonic Distortion (THDi): NR  
Frequency (hertz): 0  
Stabilization Time: NR  
Operation Time: NR  
Ambient Temperature (°C): NR  
Test Distance: 28.75 FT



REPORT NUMBER: P641965  
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### Iso-Footcandle Lines of Horizontal Illumination

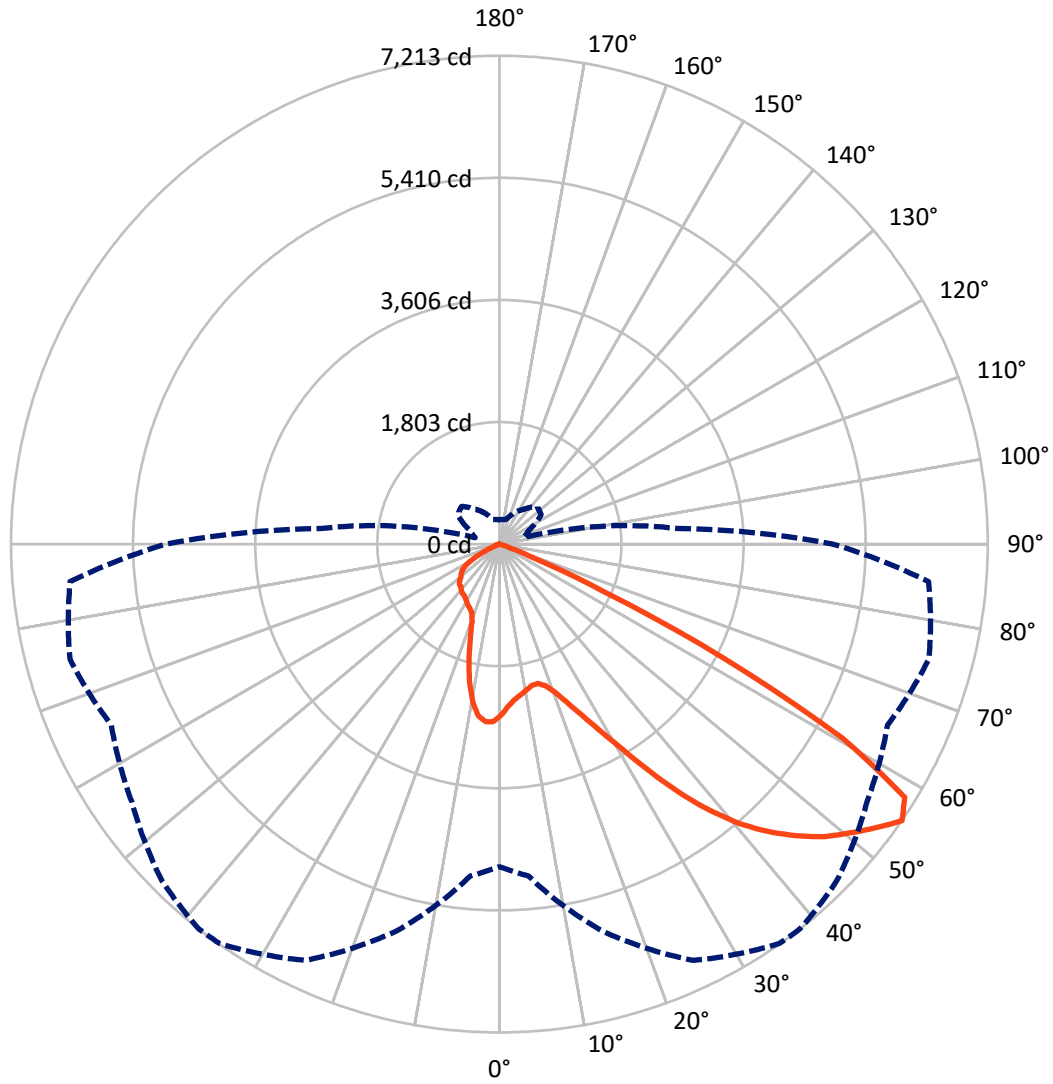
✕ Max cd  
 - - - 1/2 Max cd



Based on 20 foot mounting height. Maximum calculated value = 6.6 fc  
 Type II - Short - N/A

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### Luminous Intensity Polar Plot



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

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**FLUX DISTRIBUTION:**

|                    |           | Downward | Upward | Total   |
|--------------------|-----------|----------|--------|---------|
| <b>House Side</b>  | Lumens    | 2055.2   | 0.0    | 2055.2  |
|                    | % Fixture | 19.5     | 0.0    | 19.5    |
| <b>Street Side</b> | Lumens    | 8493.6   | 0.0    | 8493.6  |
|                    | % Fixture | 80.5     | 0.0    | 80.5    |
| <b>Total</b>       | Lumens    | 10548.9  | 0.0    | 10548.9 |
|                    | % Fixture | 100.0    | 0.0    | 100.0   |

**ZONAL LUMENS:**

| Zone      | Lumens  | % Fixture |
|-----------|---------|-----------|
| 0°-10°    | 233.9   | 2.2       |
| 10°-20°   | 629.7   | 6.0       |
| 20°-30°   | 1080.6  | 10.2      |
| 30°-40°   | 1792.3  | 17.0      |
| 40°-50°   | 2634.7  | 25.0      |
| 50°-60°   | 3078.7  | 29.2      |
| 60°-70°   | 1043.6  | 9.9       |
| 70°-80°   | 53.3    | 0.5       |
| 80°-90°   | 2.1     | 0.0       |
| 90°-100°  | 0.0     | 0.0       |
| 100°-110° | 0.0     | 0.0       |
| 110°-120° | 0.0     | 0.0       |
| 120°-130° | 0.0     | 0.0       |
| 130°-140° | 0.0     | 0.0       |
| 140°-150° | 0.0     | 0.0       |
| 150°-160° | 0.0     | 0.0       |
| 160°-170° | 0.0     | 0.0       |
| 170°-180° | 0.0     | 0.0       |
| 0°-90°    | 10548.9 | 100.0     |
| 0°-180°   | 10548.9 | 100.0     |

**Coefficient of Utilization**

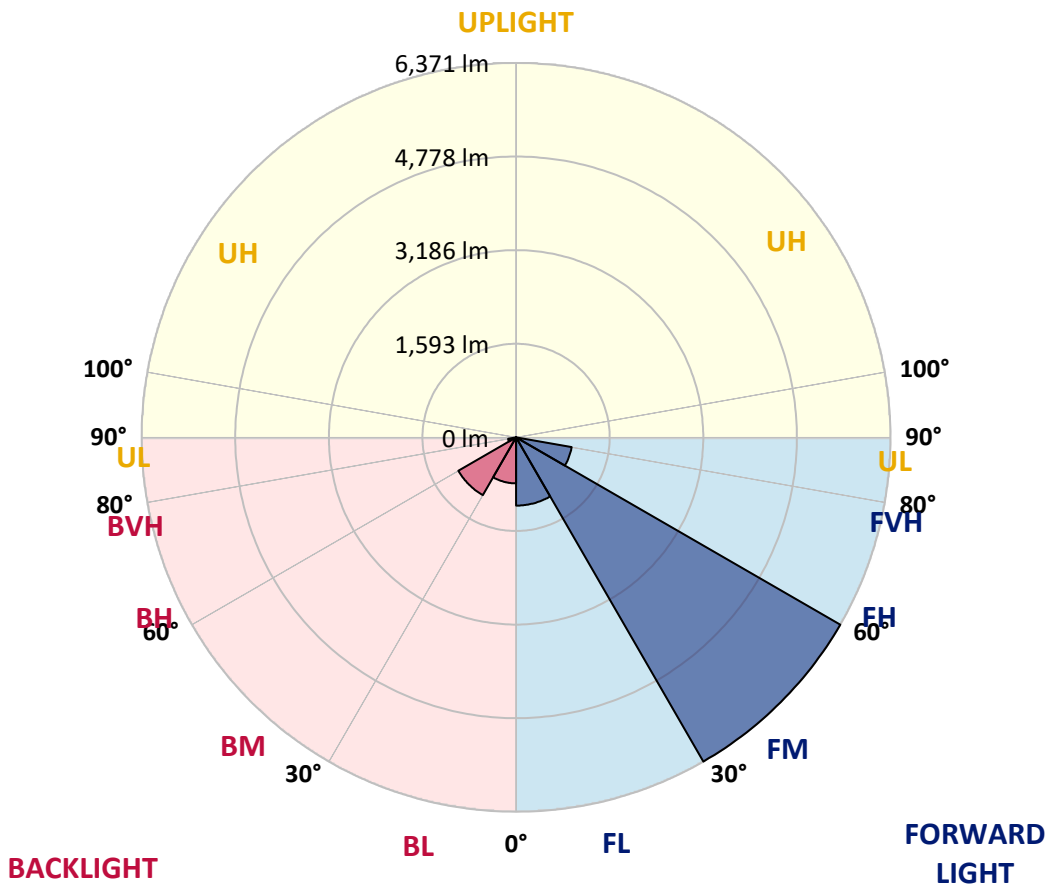


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**LUMINAIRE CLASSIFICATION SYSTEM LUMEN TABLE AND BUG RATING:**

| Zone           | Lumens | % Fixture | Zone Rating/Lumen Limit |      |         |
|----------------|--------|-----------|-------------------------|------|---------|
|                |        |           | B                       | U    | G       |
| FL (0°-30°)    | 1161.2 | 11.0      |                         |      |         |
| FM (30°-60°)   | 6371.2 | 60.4      |                         |      |         |
| FH (60°-80°)   | 960.1  | 9.1       |                         |      | G1/1800 |
| FVH (80°-90°)  | 1.1    | 0.0       |                         |      | G0/10   |
| BL (0°-30°)    | 783.0  | 7.4       | B2/1000                 |      |         |
| BM (30°-60°)   | 1134.4 | 10.8      | B2/2500                 |      |         |
| BH (60°-80°)   | 136.8  | 1.3       | B1/500                  |      | G1/500  |
| BVH (80°-90°)  | 1.0    | 0.0       |                         |      | G0/10   |
| UL (90°-100°)  | 0.0    | 0.0       |                         | U0/0 |         |
| UH (100°-180°) | 0.0    | 0.0       |                         | U0/0 |         |

**BUG Rating: B2-U0-G1**  
 Type II Short





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**CANDELA DISTRIBUTION (FULL):**

|       | 0°     | 5°     | 15°    | 25°    | 35°    | 38°    | 45°    | 55°    | 65°    | 75°    | 85°    |
|-------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|
| 0°    | 2529.7 | 2529.7 | 2529.7 | 2529.7 | 2529.7 | 2529.7 | 2529.7 | 2529.7 | 2529.7 | 2529.7 | 2529.7 |
| 2.5°  | 2356.1 | 2351.3 | 2360.9 | 2380.2 | 2398.3 | 2404.3 | 2422.4 | 2447.7 | 2463.4 | 2500.8 | 2530.9 |
| 5°    | 2250.0 | 2247.6 | 2257.2 | 2274.1 | 2298.2 | 2306.6 | 2334.4 | 2376.6 | 2418.8 | 2483.9 | 2547.8 |
| 7.5°  | 2153.5 | 2152.3 | 2166.8 | 2204.1 | 2239.1 | 2250.0 | 2283.7 | 2335.6 | 2392.2 | 2492.3 | 2586.4 |
| 10°   | 2026.9 | 2028.1 | 2055.8 | 2108.9 | 2172.8 | 2194.5 | 2248.8 | 2323.5 | 2397.1 | 2526.1 | 2656.3 |
| 12.5° | 1985.9 | 1988.3 | 2002.8 | 2043.8 | 2113.7 | 2141.4 | 2217.4 | 2330.8 | 2424.8 | 2574.3 | 2746.7 |
| 15°   | 2086.0 | 2086.0 | 2073.9 | 2078.7 | 2110.1 | 2135.4 | 2215.0 | 2354.9 | 2471.8 | 2632.2 | 2836.0 |
| 17.5° | 2280.1 | 2272.9 | 2242.7 | 2201.7 | 2190.9 | 2199.3 | 2263.2 | 2406.7 | 2538.1 | 2699.7 | 2937.3 |
| 20°   | 2543.0 | 2545.4 | 2486.3 | 2400.7 | 2332.0 | 2330.8 | 2369.3 | 2498.4 | 2633.4 | 2780.5 | 3047.0 |
| 22.5° | 2861.3 | 2851.6 | 2773.3 | 2656.3 | 2536.9 | 2527.3 | 2543.0 | 2638.2 | 2770.9 | 2908.3 | 3182.0 |
| 25°   | 3230.3 | 3225.4 | 3114.5 | 2957.8 | 2799.8 | 2776.9 | 2776.9 | 2870.9 | 2967.4 | 3090.4 | 3343.6 |
| 27.5° | 3616.1 | 3616.1 | 3508.8 | 3327.9 | 3118.1 | 3077.1 | 3071.1 | 3182.0 | 3245.9 | 3270.1 | 3479.9 |
| 30°   | 4012.8 | 4008.0 | 3901.9 | 3716.2 | 3491.9 | 3449.7 | 3432.8 | 3514.8 | 3560.6 | 3488.3 | 3649.9 |
| 32.5° | 4415.5 | 4424.0 | 4316.7 | 4144.2 | 3944.1 | 3916.3 | 3864.5 | 3864.5 | 3901.9 | 3800.6 | 3917.5 |
| 35°   | 4848.4 | 4846.0 | 4761.6 | 4644.6 | 4473.4 | 4442.1 | 4356.4 | 4222.6 | 4279.3 | 4234.7 | 4287.7 |
| 37.5° | 5230.6 | 5248.7 | 5207.7 | 5120.9 | 4982.2 | 4950.9 | 4809.8 | 4567.5 | 4610.9 | 4680.8 | 4727.8 |
| 40°   | 5618.9 | 5633.4 | 5674.4 | 5646.6 | 5471.8 | 5413.9 | 5163.1 | 4765.2 | 4813.4 | 5053.4 | 5188.4 |
| 42.5° | 5999.9 | 6007.1 | 6090.3 | 6136.2 | 5902.2 | 5801.0 | 5430.8 | 4885.8 | 4936.4 | 5345.2 | 5581.5 |
| 45°   | 6242.3 | 6258.0 | 6395.4 | 6535.3 | 6282.1 | 6143.4 | 5663.5 | 5040.1 | 5061.8 | 5547.8 | 5872.1 |
| 47.5° | 6232.6 | 6268.8 | 6526.8 | 6781.3 | 6608.8 | 6459.3 | 5943.2 | 5287.3 | 5251.1 | 5738.3 | 6063.8 |
| 50°   | 6038.5 | 6081.9 | 6452.1 | 6856.0 | 6844.0 | 6705.3 | 6254.3 | 5645.4 | 5532.1 | 5907.1 | 6087.9 |
| 52.5° | 5635.8 | 5761.2 | 6320.7 | 6865.7 | 7033.3 | 6963.3 | 6639.0 | 6127.7 | 5911.9 | 6149.4 | 6126.5 |
| 55°   | 4765.2 | 4919.5 | 5921.5 | 6783.7 | 7204.5 | 7212.9 | 7042.9 | 6630.5 | 6324.3 | 6566.6 | 6364.1 |
| 57.5° | 3617.3 | 3740.3 | 4557.8 | 6038.5 | 6921.1 | 7059.8 | 7199.7 | 6895.8 | 6578.7 | 6851.2 | 6419.5 |
| 60°   | 2180.0 | 2322.3 | 2854.1 | 4431.2 | 5590.0 | 5826.3 | 6374.9 | 6315.8 | 5933.6 | 6050.6 | 5264.4 |
| 62.5° | 883.8  | 958.6  | 1317.9 | 2441.7 | 3518.4 | 3739.1 | 4264.8 | 4354.0 | 4260.0 | 4140.6 | 3192.9 |
| 65°   | 323.1  | 353.3  | 528.1  | 1009.2 | 1618.1 | 1698.9 | 1976.3 | 2134.2 | 2264.4 | 1928.0 | 1187.7 |
| 67.5° | 200.2  | 219.5  | 343.6  | 518.5  | 588.4  | 547.4  | 557.1  | 664.4  | 634.2  | 391.9  | 212.2  |
| 70°   | 148.3  | 164.0  | 268.9  | 359.3  | 237.5  | 183.3  | 124.2  | 132.6  | 119.4  | 104.9  | 103.7  |
| 72.5° | 102.5  | 117.0  | 201.4  | 212.2  | 91.6   | 65.1   | 45.8   | 63.9   | 72.3   | 71.1   | 73.6   |
| 75°   | 67.5   | 78.4   | 126.6  | 83.2   | 22.9   | 18.1   | 15.7   | 33.8   | 43.4   | 43.4   | 44.6   |
| 77.5° | 39.8   | 45.8   | 44.6   | 16.9   | 4.8    | 4.8    | 3.6    | 6.0    | 9.6    | 10.9   | 13.3   |
| 80°   | 4.8    | 3.6    | 2.4    | 2.4    | 2.4    | 2.4    | 2.4    | 2.4    | 3.6    | 3.6    | 3.6    |
| 82.5° | 1.2    | 1.2    | 1.2    | 2.4    | 2.4    | 2.4    | 2.4    | 2.4    | 2.4    | 3.6    | 3.6    |
| 85°   | 0.0    | 0.0    | 1.2    | 1.2    | 2.4    | 2.4    | 2.4    | 2.4    | 2.4    | 3.6    | 3.6    |
| 87.5° | 0.0    | 0.0    | 1.2    | 1.2    | 2.4    | 2.4    | 2.4    | 2.4    | 2.4    | 3.6    | 3.6    |
| 90°   | 0.0    | 0.0    | 0.0    | 0.0    | 0.0    | 0.0    | 0.0    | 0.0    | 0.0    | 0.0    | 0.0    |



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CATALOG NUMBER: GWS-SA6B-830-U-T3R-W-GRSBK

**CANDELA DISTRIBUTION (continued):**

|       | 90°    | 95°    | 105°   | 115°   | 125°   | 135°   | 145°   | 155°   | 165°   | 175°   | 180°   |
|-------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|
| 0°    | 2529.7 | 2529.7 | 2529.7 | 2529.7 | 2529.7 | 2529.7 | 2529.7 | 2529.7 | 2529.7 | 2529.7 | 2529.7 |
| 2.5°  | 2553.8 | 2545.4 | 2580.3 | 2605.7 | 2626.2 | 2635.8 | 2622.6 | 2621.3 | 2621.3 | 2594.8 | 2587.6 |
| 5°    | 2584.0 | 2587.6 | 2637.0 | 2658.7 | 2662.3 | 2650.3 | 2620.1 | 2599.6 | 2587.6 | 2559.9 | 2544.2 |
| 7.5°  | 2641.8 | 2653.9 | 2700.9 | 2697.3 | 2664.8 | 2609.3 | 2529.7 | 2468.2 | 2428.4 | 2385.0 | 2358.5 |
| 10°   | 2725.0 | 2748.0 | 2776.9 | 2726.2 | 2622.6 | 2481.5 | 2317.5 | 2200.5 | 2130.6 | 2081.2 | 2051.0 |
| 12.5° | 2826.3 | 2849.2 | 2839.6 | 2720.2 | 2504.4 | 2252.4 | 2041.4 | 1872.6 | 1791.8 | 1747.2 | 1715.8 |
| 15°   | 2928.8 | 2943.3 | 2880.6 | 2647.9 | 2295.8 | 1957.0 | 1721.8 | 1554.2 | 1455.4 | 1419.2 | 1392.7 |
| 17.5° | 3033.7 | 3030.1 | 2887.8 | 2505.6 | 2017.3 | 1624.2 | 1392.7 | 1278.1 | 1250.4 | 1244.4 | 1241.9 |
| 20°   | 3143.4 | 3110.9 | 2858.9 | 2301.8 | 1682.1 | 1295.0 | 1163.6 | 1170.8 | 1221.4 | 1245.6 | 1250.4 |
| 22.5° | 3268.8 | 3186.9 | 2786.5 | 2025.7 | 1339.6 | 1079.2 | 1092.4 | 1163.6 | 1232.3 | 1264.9 | 1269.7 |
| 25°   | 3402.7 | 3256.8 | 2666.0 | 1671.2 | 1056.3 | 992.3  | 1070.7 | 1152.7 | 1226.3 | 1266.1 | 1270.9 |
| 27.5° | 3490.7 | 3273.7 | 2468.2 | 1314.3 | 906.7  | 958.6  | 1041.8 | 1120.2 | 1196.1 | 1239.5 | 1245.6 |
| 30°   | 3586.0 | 3266.4 | 2199.3 | 1012.8 | 856.1  | 929.6  | 1002.0 | 1073.1 | 1143.1 | 1191.3 | 1196.1 |
| 32.5° | 3725.8 | 3261.6 | 1871.4 | 822.3  | 835.6  | 906.7  | 959.8  | 1018.9 | 1067.1 | 1094.8 | 1091.2 |
| 35°   | 3909.1 | 3255.6 | 1489.1 | 741.5  | 823.5  | 888.7  | 930.9  | 958.6  | 905.5  | 888.7  | 892.3  |
| 37.5° | 4144.2 | 3270.1 | 1167.2 | 707.8  | 819.9  | 883.8  | 920.0  | 840.4  | 758.4  | 727.1  | 722.3  |
| 40°   | 4404.7 | 3307.4 | 889.9  | 694.5  | 832.0  | 895.9  | 879.0  | 747.6  | 646.3  | 584.8  | 571.5  |
| 42.5° | 4666.3 | 3348.4 | 704.2  | 689.7  | 852.5  | 929.6  | 811.5  | 680.1  | 528.1  | 493.2  | 488.3  |
| 45°   | 4860.5 | 3341.2 | 608.9  | 681.3  | 870.6  | 948.9  | 793.4  | 583.6  | 471.5  | 455.8  | 457.0  |
| 47.5° | 4958.1 | 3261.6 | 557.1  | 662.0  | 877.8  | 929.6  | 748.8  | 543.8  | 432.9  | 449.8  | 464.2  |
| 50°   | 4906.3 | 3055.4 | 508.8  | 624.6  | 862.1  | 904.3  | 677.6  | 513.7  | 413.6  | 483.5  | 516.1  |
| 52.5° | 4843.6 | 2802.2 | 455.8  | 566.7  | 824.7  | 869.4  | 649.9  | 505.2  | 401.5  | 466.6  | 490.7  |
| 55°   | 4926.8 | 2641.8 | 369.0  | 477.5  | 751.2  | 787.4  | 628.2  | 504.0  | 373.8  | 362.9  | 359.3  |
| 57.5° | 4809.8 | 2322.3 | 264.1  | 343.6  | 576.4  | 623.4  | 612.5  | 495.6  | 331.6  | 330.4  | 335.2  |
| 60°   | 3717.4 | 1416.8 | 180.9  | 218.2  | 353.3  | 397.9  | 555.9  | 473.9  | 285.8  | 262.9  | 264.1  |
| 62.5° | 2112.5 | 602.9  | 124.2  | 135.0  | 180.9  | 214.6  | 424.4  | 430.5  | 264.1  | 250.8  | 264.1  |
| 65°   | 735.5  | 215.8  | 96.5   | 90.4   | 100.1  | 114.5  | 243.6  | 332.8  | 239.9  | 217.0  | 219.5  |
| 67.5° | 151.9  | 107.3  | 85.6   | 74.8   | 74.8   | 74.8   | 124.2  | 207.4  | 197.7  | 172.4  | 174.8  |
| 70°   | 96.5   | 91.6   | 74.8   | 63.9   | 61.5   | 56.7   | 71.1   | 114.5  | 136.3  | 125.4  | 126.6  |
| 72.5° | 71.1   | 69.9   | 59.1   | 51.8   | 45.8   | 41.0   | 44.6   | 56.7   | 69.9   | 72.3   | 73.6   |
| 75°   | 43.4   | 44.6   | 38.6   | 32.6   | 28.9   | 25.3   | 26.5   | 26.5   | 26.5   | 24.1   | 26.5   |
| 77.5° | 13.3   | 14.5   | 12.1   | 9.6    | 8.4    | 8.4    | 8.4    | 7.2    | 6.0    | 3.6    | 3.6    |
| 80°   | 3.6    | 3.6    | 3.6    | 3.6    | 3.6    | 2.4    | 2.4    | 1.2    | 1.2    | 0.0    | 0.0    |
| 82.5° | 3.6    | 3.6    | 3.6    | 3.6    | 2.4    | 2.4    | 1.2    | 1.2    | 0.0    | 0.0    | 0.0    |
| 85°   | 3.6    | 3.6    | 3.6    | 3.6    | 2.4    | 2.4    | 1.2    | 1.2    | 0.0    | 0.0    | 0.0    |
| 87.5° | 3.6    | 3.6    | 3.6    | 3.6    | 2.4    | 2.4    | 1.2    | 1.2    | 0.0    | 0.0    | 0.0    |
| 90°   | 0.0    | 0.0    | 0.0    | 0.0    | 0.0    | 0.0    | 0.0    | 0.0    | 0.0    | 0.0    | 0.0    |



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: SP1-2408-195-9

Test Date: 08/07/2024

Luminaire Tested: GALN-SB1A-830-U-5WQ

Data in this report applies to families of products including GALN-SB1A-830-U-5WQ.

**Test Information**

Test Method: LM-79-2019  
 Report Number: SP1-2408-195-9  
 Test Lab: COOPER LIGHTING SOLUTIONS  
 Photometer: SP1 - 76IN SPHERE  
 Measurement Geometry: 4π  
 Issue Date: 08/07/2024  
 Manufacturer: COOPER LIGHTING SOLUTIONS  
 Product Line: MCGRAW EDISON  
 Catalog Number: **GALN-SB1A-830-U-5WQ**  
 Description: GALLEON AREA AND ROADWAY LUMINAIRE. (1) 80 CRI, 3000K, 350MA HIGH DENSITY LIGHTSQUARE WITH 26 LEDS AND TYPE V WIDE OPTICS

**Spectral Parameters**

CCT (K): 3050  
 CIE u': 0.2476  
 CIE v': 0.5251  
 Duv: 0.0034  
 CIE x: 0.4383  
 CIE y: 0.4131  
 CIE z: 0.1487  
 Peak Wavelength (nm): 603  
 Dominant Wavelength (nm): 581  
 Purity: 55.55201  
 Rf: 81.5  
 Rg: 99.2

|           |      |      |      |
|-----------|------|------|------|
| CRI (Ra): | 81.0 |      |      |
| R1:       | 79.6 | R9:  | 7.1  |
| R2:       | 85.6 | R10: | 67.0 |
| R3:       | 92.0 | R11: | 82.7 |
| R4:       | 82.6 | R12: | 63.2 |
| R5:       | 78.9 | R13: | 80.3 |
| R6:       | 81.7 | R14: | 95.0 |
| R7:       | 85.2 | R15: | 71.7 |
| R8:       | 62.0 |      |      |



**Test Conditions**

Stabilization Time: 20M  
 Operation Time: 1H 20M  
 Sphere Temperature (°C): 24.2

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| 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 3000K 4-step quadrangle

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**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               | 168                         | NR                      | 620               | 940                         | NR                      | 750               | 35                          | NR                      | 880               | 1                           | NR                      |
| 365               | 0                           | NR                      | 495               | 233                         | NR                      | 625               | 897                         | NR                      | 755               | 30                          | NR                      | 885               | 1                           | NR                      |
| 370               | 0                           | NR                      | 500               | 300                         | NR                      | 630               | 847                         | NR                      | 760               | 26                          | NR                      | 890               | 1                           | NR                      |
| 375               | 0                           | NR                      | 505               | 372                         | NR                      | 635               | 790                         | NR                      | 765               | 22                          | NR                      | 895               | 1                           | NR                      |
| 380               | 0                           | NR                      | 510               | 430                         | NR                      | 640               | 730                         | NR                      | 770               | 19                          | NR                      | 900               | 1                           | NR                      |
| 385               | 0                           | NR                      | 515               | 483                         | NR                      | 645               | 668                         | NR                      | 775               | 16                          | NR                      | 905               | 1                           | NR                      |
| 390               | 0                           | NR                      | 520               | 524                         | NR                      | 650               | 605                         | NR                      | 780               | 14                          | NR                      | 910               | 0                           | NR                      |
| 395               | 2                           | NR                      | 525               | 555                         | NR                      | 655               | 545                         | NR                      | 785               | 12                          | NR                      | 915               | 0                           | NR                      |
| 400               | 4                           | NR                      | 530               | 581                         | NR                      | 660               | 485                         | NR                      | 790               | 10                          | NR                      | 920               | 0                           | NR                      |
| 405               | 7                           | NR                      | 535               | 604                         | NR                      | 665               | 430                         | NR                      | 795               | 9                           | NR                      | 925               | 0                           | NR                      |
| 410               | 17                          | NR                      | 540               | 623                         | NR                      | 670               | 378                         | NR                      | 800               | 8                           | NR                      | 930               | 0                           | NR                      |
| 415               | 34                          | NR                      | 545               | 645                         | NR                      | 675               | 331                         | NR                      | 805               | 7                           | NR                      | 935               | 0                           | NR                      |
| 420               | 68                          | NR                      | 550               | 667                         | NR                      | 680               | 290                         | NR                      | 810               | 6                           | NR                      | 940               | 0                           | NR                      |
| 425               | 128                         | NR                      | 555               | 693                         | NR                      | 685               | 251                         | NR                      | 815               | 5                           | NR                      | 945               | 0                           | NR                      |
| 430               | 214                         | NR                      | 560               | 719                         | NR                      | 690               | 218                         | NR                      | 820               | 4                           | NR                      | 950               | 0                           | NR                      |
| 435               | 339                         | NR                      | 565               | 754                         | NR                      | 695               | 188                         | NR                      | 825               | 4                           | NR                      | 955               | 0                           | NR                      |
| 440               | 507                         | NR                      | 570               | 791                         | NR                      | 700               | 162                         | NR                      | 830               | 3                           | NR                      | 960               | 0                           | NR                      |
| 445               | 573                         | NR                      | 575               | 830                         | NR                      | 705               | 139                         | NR                      | 835               | 3                           | NR                      | 965               | 0                           | NR                      |
| 450               | 356                         | NR                      | 580               | 873                         | NR                      | 710               | 119                         | NR                      | 840               | 3                           | NR                      | 970               | 0                           | NR                      |
| 455               | 217                         | NR                      | 585               | 913                         | NR                      | 715               | 102                         | NR                      | 845               | 2                           | NR                      | 975               | 0                           | NR                      |
| 460               | 168                         | NR                      | 590               | 948                         | NR                      | 720               | 88                          | NR                      | 850               | 2                           | NR                      | 980               | 0                           | NR                      |
| 465               | 113                         | NR                      | 595               | 974                         | NR                      | 725               | 76                          | NR                      | 855               | 2                           | NR                      | 985               | 0                           | NR                      |
| 470               | 85                          | NR                      | 600               | 994                         | NR                      | 730               | 65                          | NR                      | 860               | 1                           | NR                      | 990               | 0                           | NR                      |
| 475               | 85                          | NR                      | 605               | 998                         | NR                      | 735               | 55                          | NR                      | 865               | 1                           | NR                      | 995               | 0                           | NR                      |
| 480               | 94                          | NR                      | 610               | 994                         | NR                      | 740               | 47                          | NR                      | 870               | 1                           | NR                      | 1000              | 0                           | NR                      |
| 485               | 120                         | NR                      | 615               | 973                         | NR                      | 745               | 41                          | NR                      | 875               | 1                           | NR                      |                   |                             |                         |

REPORT NUMBER: SP1-2408-195-9

**Scotopic Flux vs. Wavelength**



**Scotopic Lumens: NR**

**S/P: 1.27**

| 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    | 168                      | NR            | 620    | 940                      | NR            | 750    | 35                       | NR            | 880    | 1                        | NR            |
| 365    | 0                        | NR            | 495    | 233                      | NR            | 625    | 897                      | NR            | 755    | 30                       | NR            | 885    | 1                        | NR            |
| 370    | 0                        | NR            | 500    | 300                      | NR            | 630    | 847                      | NR            | 760    | 26                       | NR            | 890    | 1                        | NR            |
| 375    | 0                        | NR            | 505    | 372                      | NR            | 635    | 790                      | NR            | 765    | 22                       | NR            | 895    | 1                        | NR            |
| 380    | 0                        | NR            | 510    | 430                      | NR            | 640    | 730                      | NR            | 770    | 19                       | NR            | 900    | 1                        | NR            |
| 385    | 0                        | NR            | 515    | 483                      | NR            | 645    | 668                      | NR            | 775    | 16                       | NR            | 905    | 1                        | NR            |
| 390    | 0                        | NR            | 520    | 524                      | NR            | 650    | 605                      | NR            | 780    | 14                       | NR            | 910    | 0                        | NR            |
| 395    | 2                        | NR            | 525    | 555                      | NR            | 655    | 545                      | NR            | 785    | 12                       | NR            | 915    | 0                        | NR            |
| 400    | 4                        | NR            | 530    | 581                      | NR            | 660    | 485                      | NR            | 790    | 10                       | NR            | 920    | 0                        | NR            |
| 405    | 7                        | NR            | 535    | 604                      | NR            | 665    | 430                      | NR            | 795    | 9                        | NR            | 925    | 0                        | NR            |
| 410    | 17                       | NR            | 540    | 623                      | NR            | 670    | 378                      | NR            | 800    | 8                        | NR            | 930    | 0                        | NR            |
| 415    | 34                       | NR            | 545    | 645                      | NR            | 675    | 331                      | NR            | 805    | 7                        | NR            | 935    | 0                        | NR            |
| 420    | 68                       | NR            | 550    | 667                      | NR            | 680    | 290                      | NR            | 810    | 6                        | NR            | 940    | 0                        | NR            |
| 425    | 128                      | NR            | 555    | 693                      | NR            | 685    | 251                      | NR            | 815    | 5                        | NR            | 945    | 0                        | NR            |
| 430    | 214                      | NR            | 560    | 719                      | NR            | 690    | 218                      | NR            | 820    | 4                        | NR            | 950    | 0                        | NR            |
| 435    | 339                      | NR            | 565    | 754                      | NR            | 695    | 188                      | NR            | 825    | 4                        | NR            | 955    | 0                        | NR            |
| 440    | 507                      | NR            | 570    | 791                      | NR            | 700    | 162                      | NR            | 830    | 3                        | NR            | 960    | 0                        | NR            |
| 445    | 573                      | NR            | 575    | 830                      | NR            | 705    | 139                      | NR            | 835    | 3                        | NR            | 965    | 0                        | NR            |
| 450    | 356                      | NR            | 580    | 873                      | NR            | 710    | 119                      | NR            | 840    | 3                        | NR            | 970    | 0                        | NR            |
| 455    | 217                      | NR            | 585    | 913                      | NR            | 715    | 102                      | NR            | 845    | 2                        | NR            | 975    | 0                        | NR            |
| 460    | 168                      | NR            | 590    | 948                      | NR            | 720    | 88                       | NR            | 850    | 2                        | NR            | 980    | 0                        | NR            |
| 465    | 113                      | NR            | 595    | 974                      | NR            | 725    | 76                       | NR            | 855    | 2                        | NR            | 985    | 0                        | NR            |
| 470    | 85                       | NR            | 600    | 994                      | NR            | 730    | 65                       | NR            | 860    | 1                        | NR            | 990    | 0                        | NR            |
| 475    | 85                       | NR            | 605    | 998                      | NR            | 735    | 55                       | NR            | 865    | 1                        | NR            | 995    | 0                        | NR            |
| 480    | 94                       | NR            | 610    | 994                      | NR            | 740    | 47                       | NR            | 870    | 1                        | NR            | 1000   | 0                        | NR            |
| 485    | 120                      | NR            | 615    | 973                      | NR            | 745    | 41                       | NR            | 875    | 1                        | NR            |        |                          |               |

REPORT NUMBER: SP1-2408-195-9

**Melanopic Flux vs. Wavelength**



**Melanopic Lumens: NR**

**M/P: 2.32**

| 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    | 168                      | NR            | 620    | 940                      | NR            | 750    | 35                       | NR            | 880    | 1                        | NR            |
| 365    | 0                        | NR            | 495    | 233                      | NR            | 625    | 897                      | NR            | 755    | 30                       | NR            | 885    | 1                        | NR            |
| 370    | 0                        | NR            | 500    | 300                      | NR            | 630    | 847                      | NR            | 760    | 26                       | NR            | 890    | 1                        | NR            |
| 375    | 0                        | NR            | 505    | 372                      | NR            | 635    | 790                      | NR            | 765    | 22                       | NR            | 895    | 1                        | NR            |
| 380    | 0                        | NR            | 510    | 430                      | NR            | 640    | 730                      | NR            | 770    | 19                       | NR            | 900    | 1                        | NR            |
| 385    | 0                        | NR            | 515    | 483                      | NR            | 645    | 668                      | NR            | 775    | 16                       | NR            | 905    | 1                        | NR            |
| 390    | 0                        | NR            | 520    | 524                      | NR            | 650    | 605                      | NR            | 780    | 14                       | NR            | 910    | 0                        | NR            |
| 395    | 2                        | NR            | 525    | 555                      | NR            | 655    | 545                      | NR            | 785    | 12                       | NR            | 915    | 0                        | NR            |
| 400    | 4                        | NR            | 530    | 581                      | NR            | 660    | 485                      | NR            | 790    | 10                       | NR            | 920    | 0                        | NR            |
| 405    | 7                        | NR            | 535    | 604                      | NR            | 665    | 430                      | NR            | 795    | 9                        | NR            | 925    | 0                        | NR            |
| 410    | 17                       | NR            | 540    | 623                      | NR            | 670    | 378                      | NR            | 800    | 8                        | NR            | 930    | 0                        | NR            |
| 415    | 34                       | NR            | 545    | 645                      | NR            | 675    | 331                      | NR            | 805    | 7                        | NR            | 935    | 0                        | NR            |
| 420    | 68                       | NR            | 550    | 667                      | NR            | 680    | 290                      | NR            | 810    | 6                        | NR            | 940    | 0                        | NR            |
| 425    | 128                      | NR            | 555    | 693                      | NR            | 685    | 251                      | NR            | 815    | 5                        | NR            | 945    | 0                        | NR            |
| 430    | 214                      | NR            | 560    | 719                      | NR            | 690    | 218                      | NR            | 820    | 4                        | NR            | 950    | 0                        | NR            |
| 435    | 339                      | NR            | 565    | 754                      | NR            | 695    | 188                      | NR            | 825    | 4                        | NR            | 955    | 0                        | NR            |
| 440    | 507                      | NR            | 570    | 791                      | NR            | 700    | 162                      | NR            | 830    | 3                        | NR            | 960    | 0                        | NR            |
| 445    | 573                      | NR            | 575    | 830                      | NR            | 705    | 139                      | NR            | 835    | 3                        | NR            | 965    | 0                        | NR            |
| 450    | 356                      | NR            | 580    | 873                      | NR            | 710    | 119                      | NR            | 840    | 3                        | NR            | 970    | 0                        | NR            |
| 455    | 217                      | NR            | 585    | 913                      | NR            | 715    | 102                      | NR            | 845    | 2                        | NR            | 975    | 0                        | NR            |
| 460    | 168                      | NR            | 590    | 948                      | NR            | 720    | 88                       | NR            | 850    | 2                        | NR            | 980    | 0                        | NR            |
| 465    | 113                      | NR            | 595    | 974                      | NR            | 725    | 76                       | NR            | 855    | 2                        | NR            | 985    | 0                        | NR            |
| 470    | 85                       | NR            | 600    | 994                      | NR            | 730    | 65                       | NR            | 860    | 1                        | NR            | 990    | 0                        | NR            |
| 475    | 85                       | NR            | 605    | 998                      | NR            | 735    | 55                       | NR            | 865    | 1                        | NR            | 995    | 0                        | NR            |
| 480    | 94                       | NR            | 610    | 994                      | NR            | 740    | 47                       | NR            | 870    | 1                        | NR            | 1000   | 0                        | NR            |
| 485    | 120                      | NR            | 615    | 973                      | NR            | 745    | 41                       | NR            | 875    | 1                        | NR            |        |                          |               |

**Summary**

$R_f = 81.5$   
 $R_g = 99.2$   
 $CIE R_a = 81.0$   
 $R_9 = 7.1$



**Color Vector Graphics**





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

|            |            |            |            |
|------------|------------|------------|------------|
| CES01 = 86 | CES26 = 74 | CES51 = 89 | CES76 = 70 |
| CES02 = 63 | CES27 = 88 | CES52 = 92 | CES77 = 86 |
| CES03 = 31 | CES28 = 89 | CES53 = 81 | CES78 = 72 |
| CES04 = 70 | CES29 = 67 | CES54 = 87 | CES79 = 90 |
| CES05 = 50 | CES30 = 68 | CES55 = 85 | CES80 = 88 |
| CES06 = 51 | CES31 = 71 | CES56 = 78 | CES81 = 78 |
| CES07 = 42 | CES32 = 70 | CES57 = 76 | CES82 = 95 |
| CES08 = 41 | CES33 = 71 | CES58 = 78 | CES83 = 90 |
| CES09 = 29 | CES34 = 82 | CES59 = 92 | CES84 = 94 |
| CES10 = 76 | CES35 = 90 | CES60 = 95 | CES85 = 86 |
| CES11 = 59 | CES36 = 93 | CES61 = 93 | CES86 = 72 |
| CES12 = 65 | CES37 = 87 | CES62 = 83 | CES87 = 85 |
| CES13 = 43 | CES38 = 75 | CES63 = 77 | CES88 = 83 |
| CES14 = 74 | CES39 = 94 | CES64 = 83 | CES89 = 75 |
| CES15 = 71 | CES40 = 89 | CES65 = 77 | CES90 = 81 |
| CES16 = 47 | CES41 = 85 | CES66 = 80 | CES91 = 96 |
| CES17 = 50 | CES42 = 86 | CES67 = 79 | CES92 = 73 |
| CES18 = 56 | CES43 = 81 | CES68 = 84 | CES93 = 84 |
| CES19 = 72 | CES44 = 99 | CES69 = 91 | CES94 = 64 |
| CES20 = 66 | CES45 = 87 | CES70 = 78 | CES95 = 80 |
| CES21 = 87 | CES46 = 82 | CES71 = 76 | CES96 = 84 |
| CES22 = 79 | CES47 = 77 | CES72 = 92 | CES97 = 87 |
| CES23 = 92 | CES48 = 71 | CES73 = 71 | CES98 = 81 |
| CES24 = 91 | CES49 = 81 | CES74 = 93 | CES99 = 74 |
| CES25 = 72 | CES50 = 89 | CES75 = 74 |            |



Color Rendition by Hue-Angle Bin



Measure Comparisons



(END OF REPORT)