

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: P643417

Luminaire Tested: GWS-SA6E-830-U-RW-W-GRSWH

Issue Date: 1/10/2023

**Test Information**

Test Method: LM-79-2019  
Report Number: P643417  
TEST IS SCALED FROM IESNA LM-79-08 TEST DATA (G2-2209-782-51)  
Test Lab: COOPER LIGHTING SOLUTIONS  
Issue Date: 1/10/2023  
Manufacturer: COOPER LIGHTING SOLUTIONS  
Product Line: McGRAW-EDISON  
Catalog Number: GWS-SAGE-830-U-RW-W-GRSWH  
Description: GALLEON WALL SLIM LUMINAIRE. (6) LIGHTSQUARES WITH 16 LEDS EACH AND RECTANGULAR WIDE OPTICS W/ FACTORY INSTALLED GLARE SHIELD, WH  
Light Source: (96) 3000K CCT, 80 CRI LEDS  
Ballast/Driver: -

**Summary**

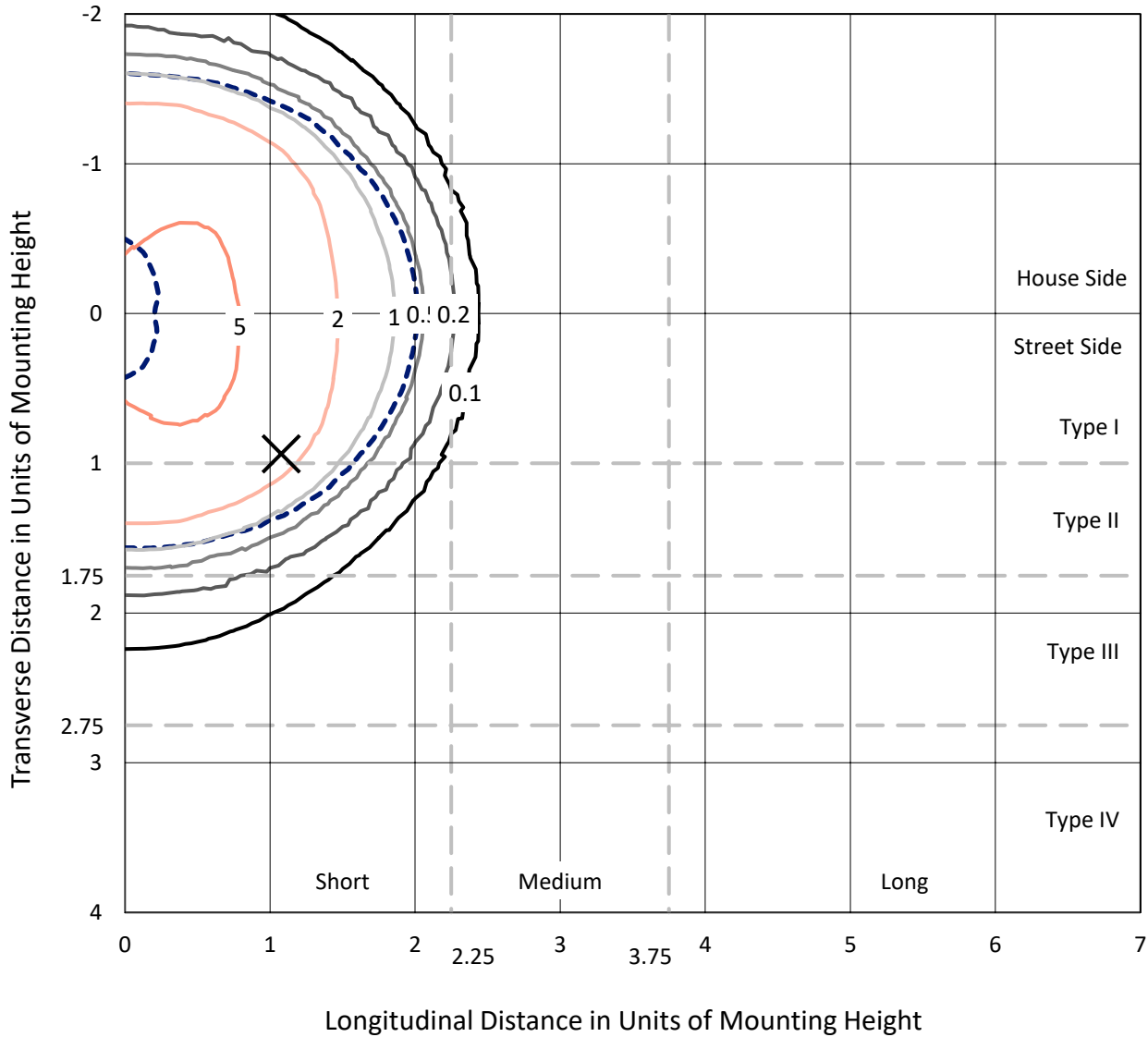
Lumens per Lamp: N/A  
Luminaire Lumens: 31347.8 lumens  
Efficiency: N/A  
Efficacy: 96.8 lumens/watt  
Luminous Opening: Rectangular (W 2' x L: 1' x H: 0')  
IES Classification: Type V - Short  
BUG Rating: B5 - U0 - G1  
  
Input Watts (W): 323.8  
Input Voltage (V): 120  
Input Current (Ain): NR  
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: P643417  
 CATALOG NUMBER: GWS-SA6E-830-U-RW-W-GRSWH

### Iso-Footcandle Lines of Horizontal Illumination

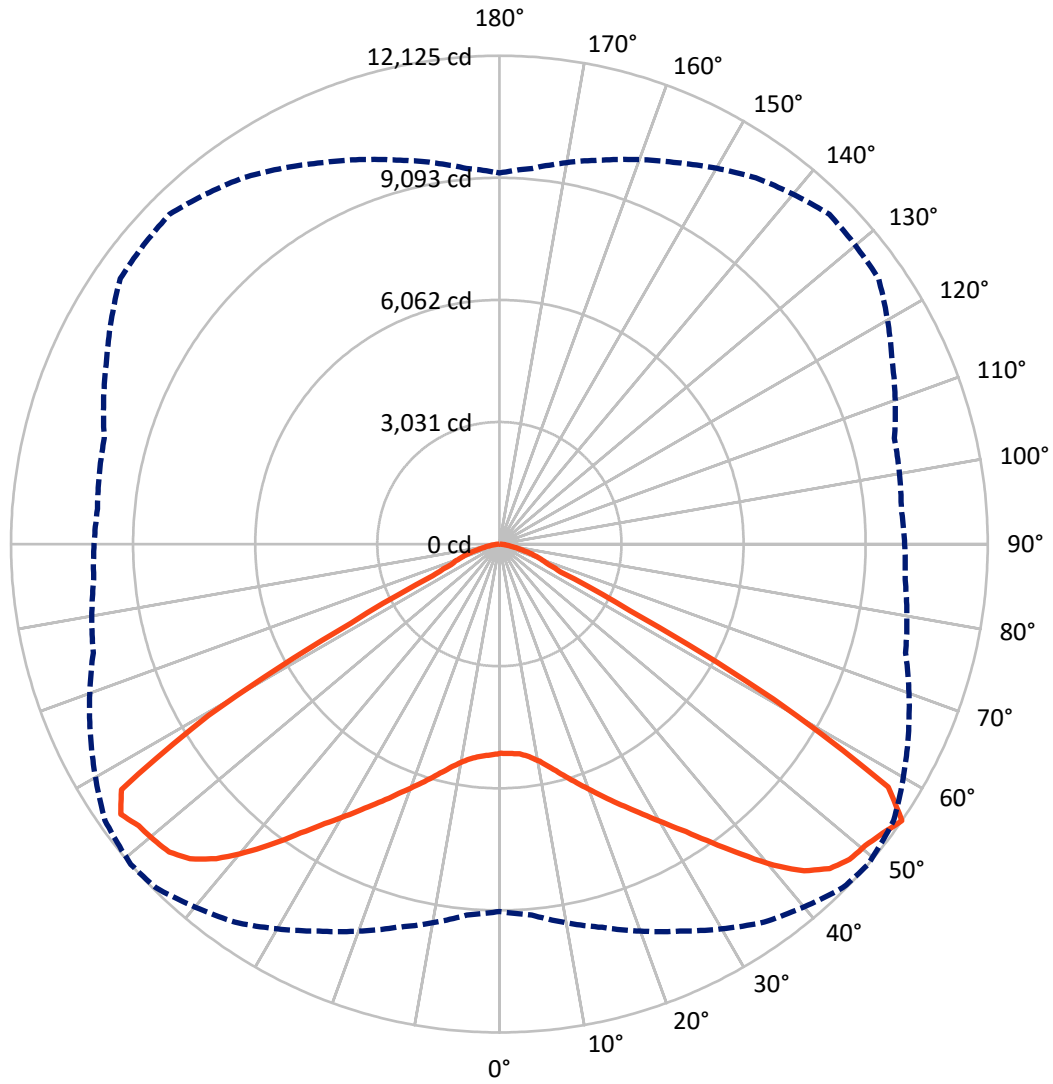
✕ Max cd  
 - - - 1/2 Max cd



Based on 30 foot mounting height. Maximum calculated value = 6.4 fc  
 Type V - Short - N/A

REPORT NUMBER: P643417  
CATALOG NUMBER: GWS-SA6E-830-U-RW-W-GRSWH

### Luminous Intensity Polar Plot



— Vertical Plane Through 49-Deg Lateral    - - - Horizontal Cone Through 55-Deg Vertical

REPORT NUMBER: P643417

CATALOG NUMBER: GWS-SA6E-830-U-RW-W-GRSWH

**FLUX DISTRIBUTION:**

|                    |           | Downward | Upward | Total   |
|--------------------|-----------|----------|--------|---------|
| <b>House Side</b>  | Lumens    | 15520.1  | 0.0    | 15520.1 |
|                    | % Fixture | 49.5     | 0.0    | 49.5    |
| <b>Street Side</b> | Lumens    | 15827.7  | 0.0    | 15827.7 |
|                    | % Fixture | 50.5     | 0.0    | 50.5    |
| <b>Total</b>       | Lumens    | 31347.8  | 0.0    | 31347.8 |
|                    | % Fixture | 100.0    | 0.0    | 100.0   |

**ZONAL LUMENS:**

| Zone      | Lumens  | % Fixture |
|-----------|---------|-----------|
| 0°-10°    | 506.6   | 1.6       |
| 10°-20°   | 1670.9  | 5.3       |
| 20°-30°   | 3182.6  | 10.2      |
| 30°-40°   | 5395.2  | 17.2      |
| 40°-50°   | 8119.3  | 25.9      |
| 50°-60°   | 8887.4  | 28.4      |
| 60°-70°   | 2810.2  | 9.0       |
| 70°-80°   | 674.5   | 2.2       |
| 80°-90°   | 101.2   | 0.3       |
| 90°-100°  | 0.0     | 0.0       |
| 100°-110° | 0.0     | 0.0       |
| 110°-120° | 0.0     | 0.0       |
| 120°-130° | 0.0     | 0.0       |
| 130°-140° | 0.0     | 0.0       |
| 140°-150° | 0.0     | 0.0       |
| 150°-160° | 0.0     | 0.0       |
| 160°-170° | 0.0     | 0.0       |
| 170°-180° | 0.0     | 0.0       |
| 0°-90°    | 31347.8 | 100.0     |
| 0°-180°   | 31347.8 | 100.0     |

**Coefficient of Utilization**



REPORT NUMBER: P643417

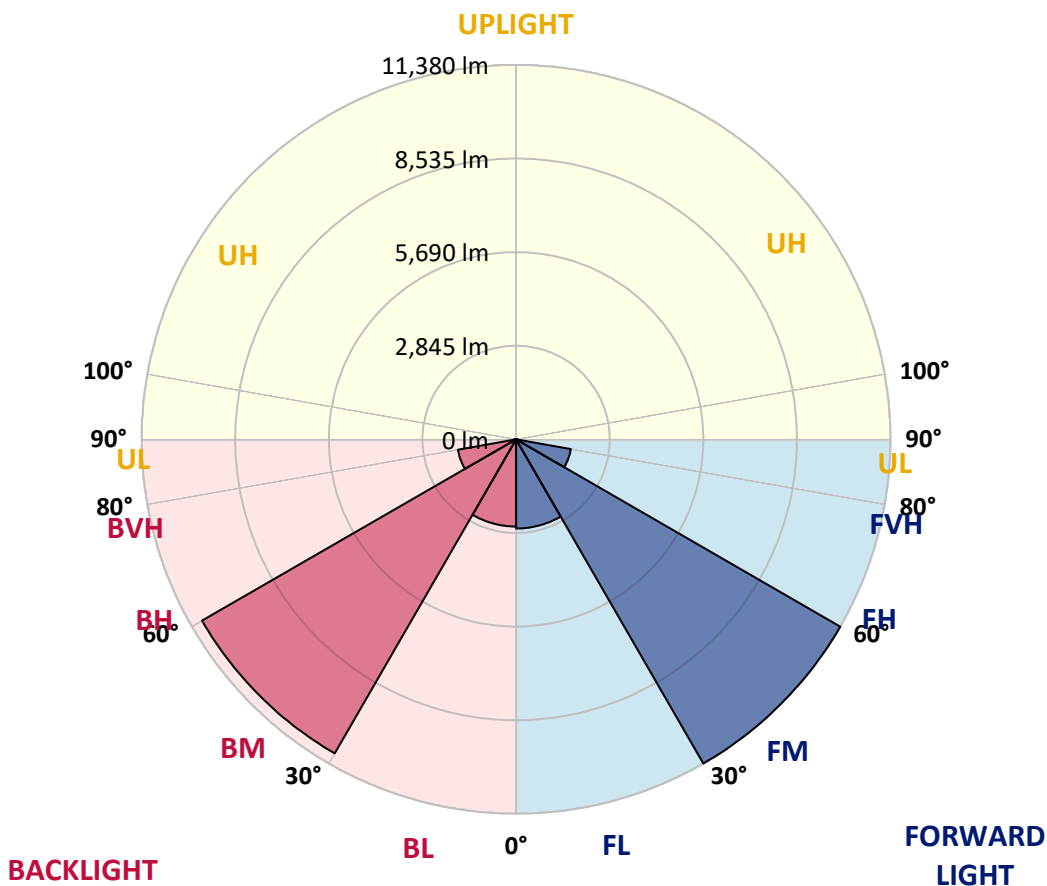
CATALOG NUMBER: GWS-SA6E-830-U-RW-W-GRSWH

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

| Zone           | Lumens  | % Fixture | Zone Rating/Lumen Limit |      |         |
|----------------|---------|-----------|-------------------------|------|---------|
|                |         |           | B                       | U    | G       |
| FL (0°-30°)    | 2710.3  | 8.6       |                         |      |         |
| FM (30°-60°)   | 11380.1 | 36.3      |                         |      |         |
| FH (60°-80°)   | 1690.4  | 5.4       |                         |      | G1/1800 |
| FVH (80°-90°)  | 46.9    | 0.1       |                         |      | G1/100  |
| BL (0°-30°)    | 2649.8  | 8.5       | B4/5000                 |      |         |
| BM (30°-60°)   | 11021.7 | 35.2      | B5                      |      |         |
| BH (60°-80°)   | 1794.3  | 5.7       | B3/2500                 |      | G1/1800 |
| BVH (80°-90°)  | 54.4    | 0.2       |                         |      | G1/100  |
| UL (90°-100°)  | 0.0     | 0.0       |                         | U0/0 |         |
| UH (100°-180°) | 0.0     | 0.0       |                         | U0/0 |         |

**BUG Rating: B5-U0-G1**

Type V Short





REPORT NUMBER: P643417

CATALOG NUMBER: GWS-SA6E-830-U-RW-W-GRSWH

**CANDELA DISTRIBUTION (FULL):**

|       | 0°      | 5°      | 15°     | 25°     | 35°     | 45°     | 49°     | 55°     | 65°     | 75°     | 85°     |
|-------|---------|---------|---------|---------|---------|---------|---------|---------|---------|---------|---------|
| 0°    | 5193.0  | 5193.0  | 5193.0  | 5193.0  | 5193.0  | 5193.0  | 5193.0  | 5193.0  | 5193.0  | 5193.0  | 5193.0  |
| 2.5°  | 5116.5  | 5121.6  | 5131.8  | 5149.6  | 5167.5  | 5193.0  | 5203.2  | 5215.9  | 5213.3  | 5228.6  | 5228.6  |
| 5°    | 5091.0  | 5098.6  | 5113.9  | 5139.4  | 5170.0  | 5218.4  | 5231.2  | 5261.8  | 5292.4  | 5330.6  | 5343.4  |
| 7.5°  | 5121.6  | 5131.8  | 5149.6  | 5190.4  | 5236.3  | 5300.0  | 5325.5  | 5376.5  | 5435.1  | 5504.0  | 5532.0  |
| 10°   | 5180.2  | 5193.0  | 5223.5  | 5289.8  | 5363.8  | 5460.6  | 5483.6  | 5547.3  | 5641.6  | 5736.0  | 5792.0  |
| 12.5° | 5246.5  | 5266.9  | 5323.0  | 5427.5  | 5537.1  | 5664.6  | 5700.3  | 5779.3  | 5881.3  | 6003.6  | 6080.1  |
| 15°   | 5323.0  | 5340.8  | 5427.5  | 5575.4  | 5746.2  | 5914.4  | 5955.2  | 6031.7  | 6146.4  | 6266.2  | 6373.3  |
| 17.5° | 5483.6  | 5514.2  | 5616.1  | 5786.9  | 5985.8  | 6184.6  | 6230.5  | 6317.2  | 6409.0  | 6503.3  | 6605.3  |
| 20°   | 5702.8  | 5728.3  | 5858.3  | 6069.9  | 6304.5  | 6485.5  | 6531.3  | 6607.8  | 6651.2  | 6699.6  | 6786.3  |
| 22.5° | 5922.1  | 5957.7  | 6105.6  | 6355.4  | 6630.8  | 6827.1  | 6862.8  | 6934.1  | 6903.5  | 6888.2  | 6944.3  |
| 25°   | 6194.8  | 6243.3  | 6388.6  | 6661.4  | 6941.8  | 7184.0  | 7212.0  | 7273.2  | 7222.2  | 7143.2  | 7140.6  |
| 27.5° | 6533.9  | 6577.2  | 6727.6  | 7008.1  | 7285.9  | 7538.3  | 7591.9  | 7673.4  | 7561.3  | 7464.4  | 7395.6  |
| 30°   | 6936.7  | 6964.7  | 7130.4  | 7428.7  | 7714.2  | 7953.9  | 8022.7  | 8104.3  | 8020.1  | 7859.5  | 7790.7  |
| 32.5° | 7405.8  | 7444.0  | 7635.2  | 7948.8  | 8203.7  | 8443.3  | 8512.2  | 8614.1  | 8522.4  | 8341.4  | 8254.7  |
| 35°   | 7969.2  | 8007.4  | 8208.8  | 8550.4  | 8810.4  | 9057.7  | 9106.2  | 9190.3  | 9075.6  | 8866.5  | 8797.7  |
| 37.5° | 8581.0  | 8629.4  | 8884.4  | 9208.1  | 9480.9  | 9769.0  | 9771.5  | 9797.0  | 9633.9  | 9373.8  | 9297.3  |
| 40°   | 9269.3  | 9333.0  | 9588.0  | 9924.5  | 10253.3 | 10487.9 | 10485.3 | 10413.9 | 10138.6 | 9735.8  | 9618.6  |
| 42.5° | 9950.0  | 10001.0 | 10258.4 | 10605.1 | 10934.0 | 11155.8 | 11089.5 | 10916.2 | 10518.5 | 9970.4  | 9814.9  |
| 45°   | 10442.0 | 10480.2 | 10750.5 | 11140.5 | 11474.5 | 11612.1 | 11492.3 | 11283.3 | 10745.4 | 10118.2 | 9888.8  |
| 47.5° | 10674.0 | 10725.0 | 10997.7 | 11385.2 | 11762.5 | 11841.6 | 11698.8 | 11502.5 | 10877.9 | 10255.9 | 9947.4  |
| 50°   | 10549.1 | 10615.3 | 10923.8 | 11283.3 | 11709.0 | 11872.2 | 11770.2 | 11573.9 | 11018.1 | 10391.0 | 10051.9 |
| 52.5° | 10225.3 | 10289.0 | 10679.1 | 11115.0 | 11596.8 | 11920.6 | 11918.0 | 11757.4 | 11178.7 | 10429.2 | 10057.0 |
| 55°   | 9118.9  | 9243.8  | 9850.6  | 10602.6 | 11459.2 | 12063.4 | 12124.5 | 11953.7 | 11204.2 | 10439.4 | 10110.6 |
| 57.5° | 5934.8  | 6154.0  | 6730.2  | 7709.1  | 9427.4  | 10972.2 | 11385.2 | 11426.0 | 11020.7 | 10396.1 | 10120.8 |
| 60°   | 2477.9  | 2653.8  | 3110.2  | 3760.2  | 5180.2  | 7018.3  | 7818.7  | 8621.8  | 9590.5  | 9942.3  | 10026.5 |
| 62.5° | 1539.8  | 1555.1  | 1601.0  | 1748.8  | 2223.0  | 3120.4  | 3635.3  | 4387.4  | 5827.7  | 7054.0  | 7619.9  |
| 65°   | 1389.4  | 1397.0  | 1407.2  | 1397.0  | 1420.0  | 1529.6  | 1667.3  | 1929.8  | 2516.2  | 3125.5  | 3849.5  |
| 67.5° | 1223.7  | 1233.9  | 1241.5  | 1233.9  | 1241.5  | 1246.6  | 1261.9  | 1284.9  | 1391.9  | 1478.6  | 1544.9  |
| 70°   | 989.1   | 1004.4  | 1017.2  | 1012.1  | 1042.7  | 1042.7  | 1058.0  | 1075.8  | 1129.3  | 1193.1  | 1239.0  |
| 72.5° | 754.6   | 741.9   | 757.1   | 762.2   | 790.3   | 805.6   | 828.5   | 848.9   | 910.1   | 948.3   | 1007.0  |
| 75°   | 489.5   | 476.7   | 499.7   | 512.4   | 550.7   | 571.0   | 591.4   | 611.8   | 655.2   | 680.7   | 736.8   |
| 77.5° | 265.1   | 262.6   | 285.5   | 303.4   | 344.2   | 369.7   | 384.9   | 400.2   | 435.9   | 443.6   | 479.3   |
| 80°   | 153.0   | 153.0   | 168.3   | 181.0   | 206.5   | 234.5   | 249.8   | 262.6   | 288.1   | 295.7   | 311.0   |
| 82.5° | 84.1    | 84.1    | 91.8    | 99.4    | 119.8   | 135.1   | 147.9   | 158.1   | 181.0   | 188.6   | 196.3   |
| 85°   | 40.8    | 38.2    | 43.3    | 48.4    | 56.1    | 63.7    | 71.4    | 76.5    | 94.3    | 99.4    | 109.6   |
| 87.5° | 5.1     | 5.1     | 5.1     | 7.6     | 10.2    | 15.3    | 17.8    | 17.8    | 28.0    | 33.1    | 38.2    |
| 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: P643417

CATALOG NUMBER: GWS-SA6E-830-U-RW-W-GRSWH

**CANDELA DISTRIBUTION (continued):**

|       | 90°     | 95°     | 105°    | 115°    | 125°    | 135°    | 145°    | 155°    | 165°    | 175°    | 180°    |
|-------|---------|---------|---------|---------|---------|---------|---------|---------|---------|---------|---------|
| 0°    | 5193.0  | 5193.0  | 5193.0  | 5193.0  | 5193.0  | 5193.0  | 5193.0  | 5193.0  | 5193.0  | 5193.0  | 5193.0  |
| 2.5°  | 5243.9  | 5210.8  | 5231.2  | 5238.8  | 5238.8  | 5231.2  | 5198.1  | 5187.9  | 5172.6  | 5149.6  | 5149.6  |
| 5°    | 5361.2  | 5335.7  | 5340.8  | 5328.1  | 5297.5  | 5259.2  | 5198.1  | 5167.5  | 5142.0  | 5113.9  | 5111.4  |
| 7.5°  | 5562.6  | 5529.5  | 5524.4  | 5475.9  | 5394.3  | 5312.8  | 5221.0  | 5164.9  | 5126.7  | 5091.0  | 5088.4  |
| 10°   | 5825.2  | 5794.6  | 5756.4  | 5659.5  | 5539.7  | 5419.8  | 5294.9  | 5218.4  | 5162.4  | 5111.4  | 5108.8  |
| 12.5° | 6118.4  | 6082.7  | 6011.3  | 5868.5  | 5718.1  | 5600.8  | 5458.1  | 5340.8  | 5256.7  | 5187.9  | 5175.1  |
| 15°   | 6437.0  | 6386.0  | 6263.7  | 6095.4  | 5947.6  | 5822.6  | 5669.7  | 5501.4  | 5374.0  | 5264.3  | 5251.6  |
| 17.5° | 6681.8  | 6615.5  | 6482.9  | 6324.8  | 6202.5  | 6077.6  | 5878.7  | 5667.1  | 5483.6  | 5345.9  | 5325.5  |
| 20°   | 6850.0  | 6796.5  | 6646.1  | 6528.8  | 6457.4  | 6347.8  | 6115.8  | 5876.2  | 5669.7  | 5496.3  | 5486.1  |
| 22.5° | 7005.5  | 6941.8  | 6793.9  | 6725.1  | 6725.1  | 6651.2  | 6429.4  | 6146.4  | 5904.2  | 5702.8  | 5677.3  |
| 25°   | 7181.4  | 7112.6  | 7000.4  | 6992.8  | 7028.5  | 6995.3  | 6727.6  | 6424.3  | 6141.3  | 5914.4  | 5873.6  |
| 27.5° | 7426.2  | 7349.7  | 7283.4  | 7329.3  | 7380.3  | 7344.6  | 7046.3  | 6694.5  | 6396.2  | 6166.8  | 6131.1  |
| 30°   | 7816.2  | 7721.9  | 7660.7  | 7716.8  | 7816.2  | 7711.7  | 7387.9  | 7015.7  | 6714.9  | 6462.5  | 6444.7  |
| 32.5° | 8270.0  | 8162.9  | 8099.2  | 8188.4  | 8277.6  | 8114.5  | 7793.3  | 7436.3  | 7120.2  | 6855.1  | 6824.5  |
| 35°   | 8815.5  | 8680.4  | 8586.1  | 8705.9  | 8797.7  | 8637.1  | 8318.4  | 7979.4  | 7627.5  | 7352.2  | 7311.4  |
| 37.5° | 9299.9  | 9136.7  | 9073.0  | 9241.3  | 9363.6  | 9259.1  | 8912.4  | 8593.7  | 8208.8  | 7908.0  | 7890.1  |
| 40°   | 9651.7  | 9491.1  | 9445.2  | 9723.1  | 9937.2  | 9911.7  | 9600.7  | 9236.2  | 8874.2  | 8527.5  | 8494.3  |
| 42.5° | 9804.7  | 9692.5  | 9702.7  | 10077.4 | 10408.9 | 10572.0 | 10294.1 | 9904.1  | 9554.8  | 9195.4  | 9172.4  |
| 45°   | 9837.8  | 9769.0  | 9850.6  | 10319.6 | 10755.6 | 11089.5 | 10852.4 | 10526.1 | 10131.0 | 9784.3  | 9774.1  |
| 47.5° | 9873.5  | 9835.3  | 9960.2  | 10457.3 | 10974.8 | 11362.3 | 11229.7 | 10893.2 | 10493.0 | 10153.9 | 10128.4 |
| 50°   | 9957.6  | 9942.3  | 10082.5 | 10554.2 | 11079.3 | 11436.2 | 11285.8 | 10951.9 | 10541.4 | 10207.5 | 10146.3 |
| 52.5° | 9983.1  | 9957.6  | 10159.0 | 10704.6 | 11252.7 | 11433.7 | 11109.9 | 10674.0 | 10261.0 | 9888.8  | 9825.1  |
| 55°   | 10062.1 | 10016.3 | 10153.9 | 10760.7 | 11492.3 | 11581.5 | 11099.7 | 10447.1 | 9870.9  | 9363.6  | 9213.2  |
| 57.5° | 10082.5 | 10031.6 | 10120.8 | 10668.9 | 11232.3 | 11153.2 | 9756.2  | 8430.6  | 7344.6  | 6781.2  | 6844.9  |
| 60°   | 9972.9  | 9988.2  | 9835.3  | 9774.1  | 9009.3  | 7953.9  | 5973.0  | 4774.9  | 3750.0  | 3316.7  | 3411.0  |
| 62.5° | 7591.9  | 7655.6  | 7133.0  | 6202.5  | 4769.8  | 3780.6  | 2500.9  | 1942.6  | 1644.3  | 1567.8  | 1580.6  |
| 65°   | 3831.6  | 3918.3  | 3375.3  | 2791.5  | 2075.1  | 1677.4  | 1450.6  | 1404.7  | 1389.4  | 1371.5  | 1371.5  |
| 67.5° | 1516.8  | 1542.3  | 1521.9  | 1425.1  | 1325.6  | 1290.0  | 1279.8  | 1274.7  | 1256.8  | 1246.6  | 1249.2  |
| 70°   | 1218.6  | 1239.0  | 1208.4  | 1147.2  | 1106.4  | 1103.9  | 1098.8  | 1088.6  | 1075.8  | 1075.8  | 1083.5  |
| 72.5° | 994.2   | 1014.6  | 971.3   | 933.0   | 902.5   | 879.5   | 866.8   | 859.1   | 841.3   | 841.3   | 848.9   |
| 75°   | 731.7   | 744.4   | 708.7   | 703.6   | 670.5   | 647.5   | 627.1   | 616.9   | 594.0   | 583.8   | 591.4   |
| 77.5° | 486.9   | 484.4   | 466.5   | 466.5   | 453.8   | 425.7   | 402.8   | 379.8   | 349.3   | 328.9   | 334.0   |
| 80°   | 316.1   | 316.1   | 308.5   | 308.5   | 295.7   | 272.8   | 244.7   | 221.8   | 203.9   | 188.6   | 188.6   |
| 82.5° | 201.4   | 198.8   | 196.3   | 193.7   | 188.6   | 165.7   | 145.3   | 130.0   | 117.3   | 107.1   | 109.6   |
| 85°   | 112.2   | 112.2   | 107.1   | 107.1   | 96.9    | 84.1    | 73.9    | 63.7    | 56.1    | 53.5    | 53.5    |
| 87.5° | 38.2    | 38.2    | 35.7    | 35.7    | 30.6    | 22.9    | 17.8    | 15.3    | 12.7    | 10.2    | 12.7    |
| 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

REPORT NUMBER: SP1-2408-195-9

| 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           |

REPORT NUMBER: SP1-2408-195-9

**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

REPORT NUMBER: SP1-2408-195-9

**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**

| $\lambda$<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

**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)