

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



Scaled data based on original data using  
LM-79-08 Approved Method: Electrical and Photometric Measurements of Solid-  
State Lighting Products

Test Report Prepared for  
Cooper Lighting Solutions  
(formerly Eaton)

Brand: McGRAW-EDISON

Report Number: P1434366

Luminaire Tested: **GALN-SB5D-840-U-T2LG**

Issue Date: 03/24/202

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

Report Generated By 670245763



**Test Information**

Test Method: LM-79-08  
 Report Number: P1434366  
 Test Lab: INNOVATION CENTER(G1)  
 Issue Date: 03/24/202  
 Manufacturer: COOPER LIGHTING SOLUTIONS (FORMERLY EATON)  
 Product Line: McGRAW-EDISON  
 Catalog Number: GALN-SB5D-840-U-T2LG  
 Description: GALLEON II AREA AND ROADWAY HIGH DENSITY LUMINAIRE 900mA 5xLight Square PACKAGE 80CRI 4000K FIXTURE w/ TYPE II LOW GLARE  
 Light Source: (130) 4000K CCT, 80 CRI LEDS  
 Ballast/Driver: ELECTRONIC DRIVER

Luminaire Equipment:

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

**Summary**

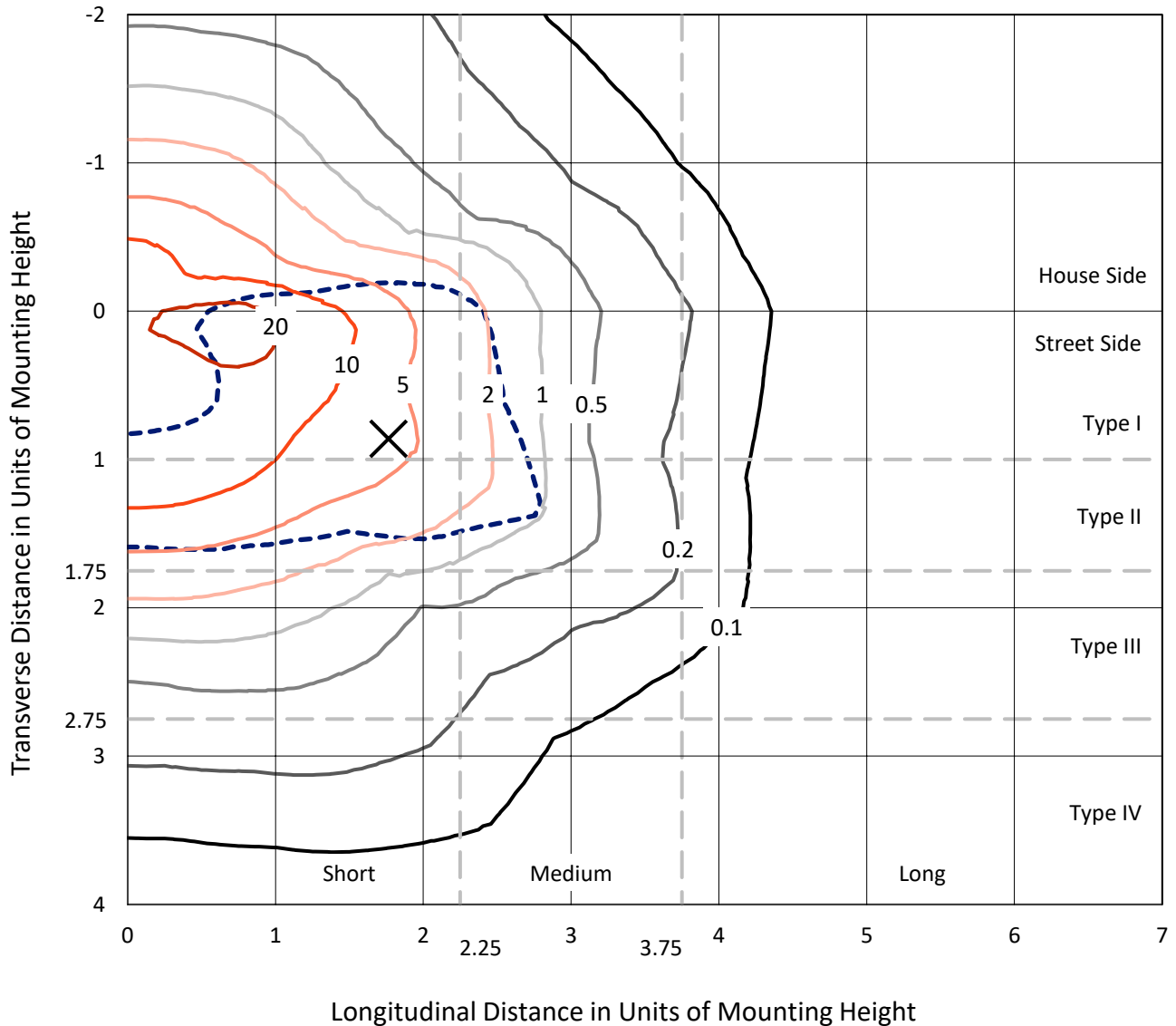
Lumens per Lamp: N/A  
 Luminaire Lumens: 47560.8 lumens  
 Efficiency: N/A  
 Efficacy: 130.3 lumens/watt  
 Luminous Opening: Rectangular (W 1.5' x L: 1' x H: 0')  
 IES Classification: Type II - Short  
 BUG Rating: B4 - U0 - G4

Input Watts (W): 364.9  
 Input Voltage (V): 120  
 Input Current (A<sub>in</sub>): NR  
 Voltage Rise (V): NR  
 Power Factor: 0.97  
 Total Harmonic Distortion (THDi): NR  
 Frequency (hertz): 60  
 Stabilization Time: NR  
 Operation Time: NR  
 Ambient Temperature (°C): NR  
 Test Distance: 28.75 FT

REPORT NUMBER: P1434366  
 CATALOG NUMBER: GALN-SB5D-840-U-T2LG

### Iso-Footcandle Lines of Horizontal Illumination

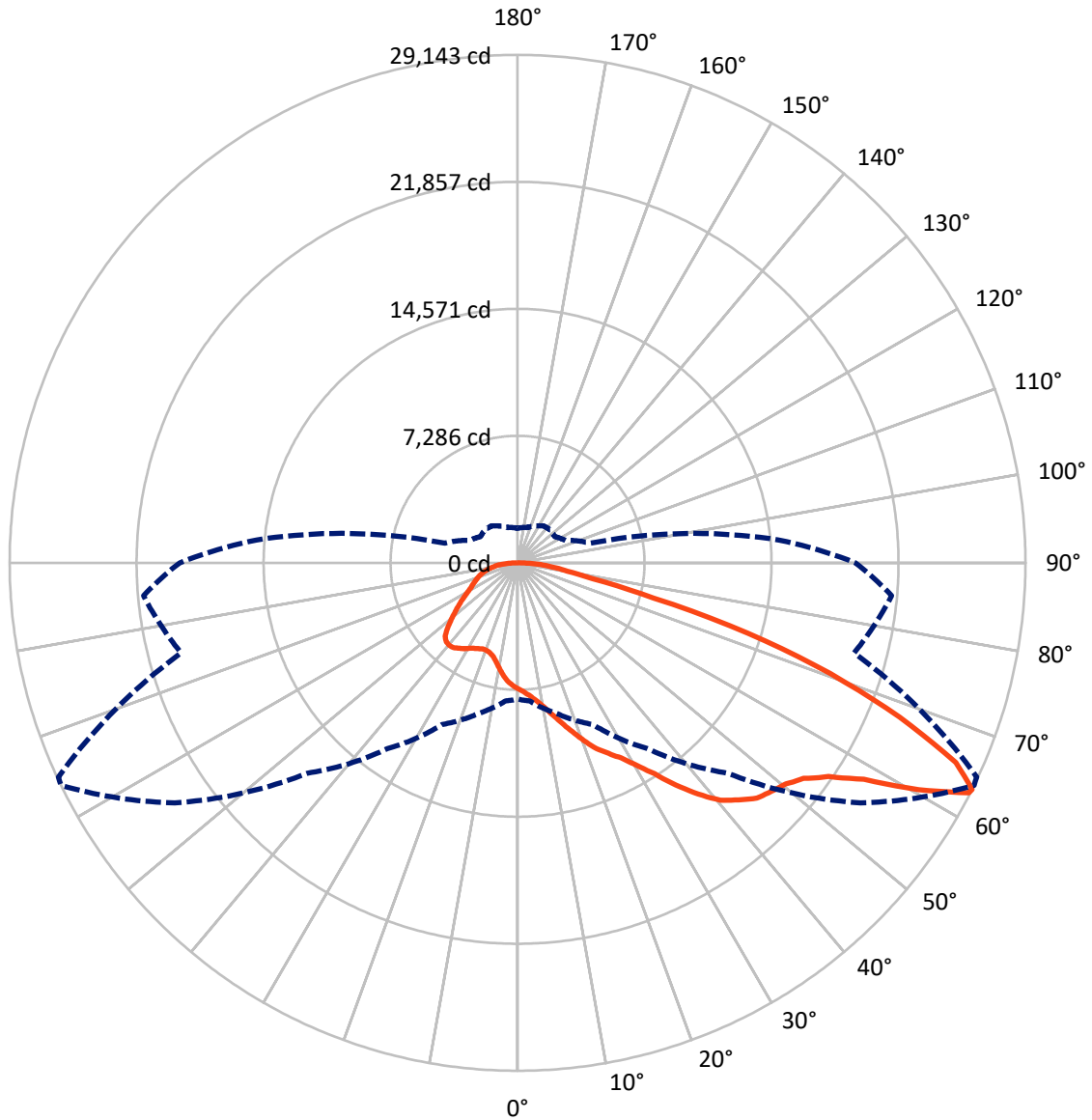
✕ Max cd  
 - - - 1/2 Max cd



Based on 20 foot mounting height. Maximum calculated value = 27.9 fc  
 Type II - Short - N/A

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### Luminous Intensity Polar Plot



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

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**FLUX DISTRIBUTION:**

|                    |           | Downward | Upward | Total   |
|--------------------|-----------|----------|--------|---------|
| <b>House Side</b>  | Lumens    | 12778.2  | 0.0    | 12778.2 |
|                    | % Fixture | 26.9     | 0.0    | 26.9    |
| <b>Street Side</b> | Lumens    | 34782.5  | 0.0    | 34782.5 |
|                    | % Fixture | 73.1     | 0.0    | 73.1    |
| <b>Total</b>       | Lumens    | 47560.8  | 0.0    | 47560.8 |
|                    | % Fixture | 100.0    | 0.0    | 100.0   |

**Coefficient of Utilization**

**ZONAL LUMENS:**

| Zone      | Lumens  | % Fixture |
|-----------|---------|-----------|
| 0°-10°    | 665.0   | 1.4       |
| 10°-20°   | 2047.3  | 4.3       |
| 20°-30°   | 3743.7  | 7.9       |
| 30°-40°   | 6439.8  | 13.5      |
| 40°-50°   | 9496.9  | 20.0      |
| 50°-60°   | 11382.6 | 23.9      |
| 60°-70°   | 9135.7  | 19.2      |
| 70°-80°   | 3671.0  | 7.7       |
| 80°-90°   | 978.9   | 2.1       |
| 90°-100°  | 0.0     | 0.0       |
| 100°-110° | 0.0     | 0.0       |
| 110°-120° | 0.0     | 0.0       |
| 120°-130° | 0.0     | 0.0       |
| 130°-140° | 0.0     | 0.0       |
| 140°-150° | 0.0     | 0.0       |
| 150°-160° | 0.0     | 0.0       |
| 160°-170° | 0.0     | 0.0       |
| 170°-180° | 0.0     | 0.0       |
| 0°-90°    | 47560.8 | 100.0     |
| 0°-180°   | 47560.8 | 100.0     |

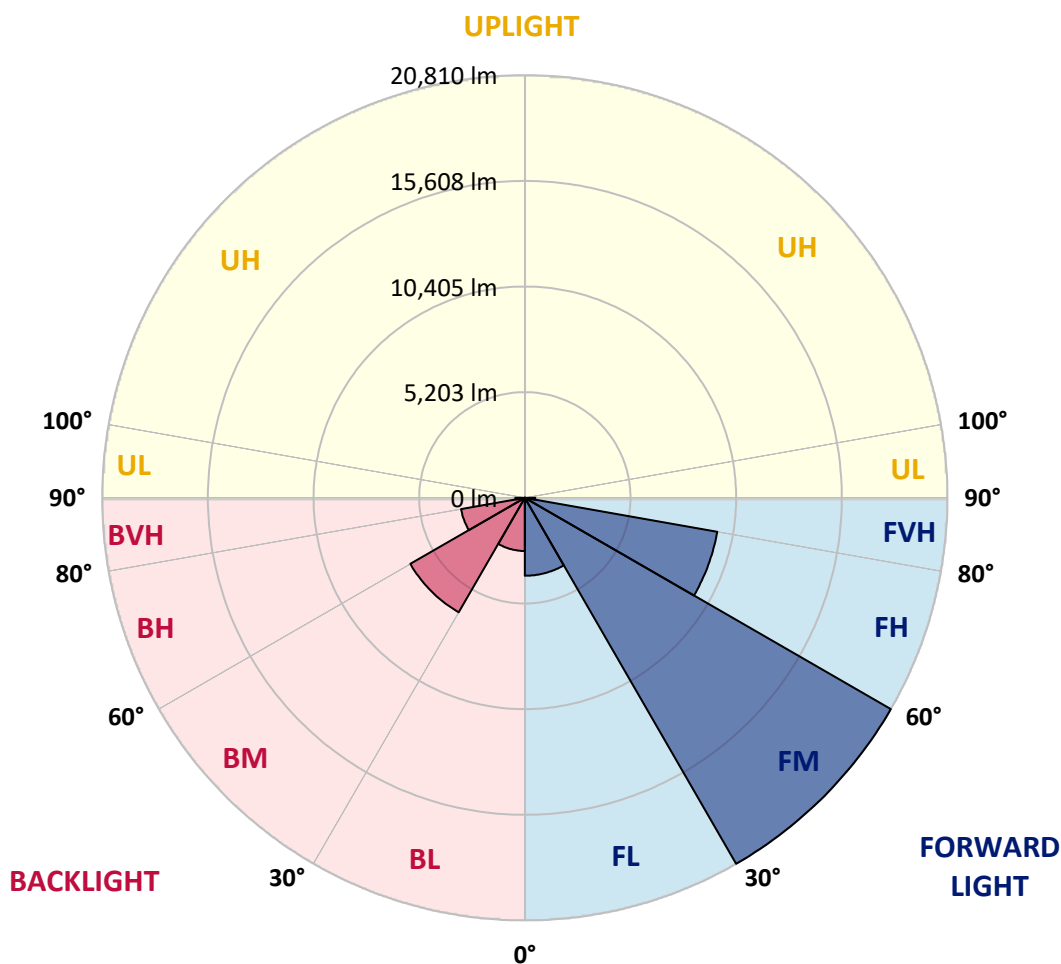


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**LUMINAIRE CLASSIFICATION SYSTEM LUMEN TABLE AND BUG RATING:**

| Zone           | Lumens  | % Fixture | Zone Rating/Lumen Limit |      |          |
|----------------|---------|-----------|-------------------------|------|----------|
|                |         |           | B                       | U    | G        |
| FL (0°-30°)    | 3837.2  | 8.1       |                         |      |          |
| FM (30°-60°)   | 20810.4 | 43.8      |                         |      |          |
| FH (60°-80°)   | 9620.6  | 20.2      |                         |      | G4/12000 |
| FVH (80°-90°)  | 514.3   | 1.1       |                         |      | G4/750   |
| BL (0°-30°)    | 2618.7  | 5.5       | B4/5000                 |      |          |
| BM (30°-60°)   | 6509.0  | 13.7      | B4/8500                 |      |          |
| BH (60°-80°)   | 3186.0  | 6.7       | B4/5000                 |      | G4/5000  |
| BVH (80°-90°)  | 464.6   | 1.0       |                         |      | G3/500   |
| UL (90°-100°)  | 0.0     | 0.0       |                         | U0/0 |          |
| UH (100°-180°) | 0.0     | 0.0       |                         | U0/0 |          |

**BUG Rating: B4-U0-G4**  
 Type II Short





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**CANDELA DISTRIBUTION (FULL):**

|       | 0°      | 5°      | 15°     | 25°     | 35°     | 45°     | 55°     | 64°     | 65°     | 75°     | 85°     |
|-------|---------|---------|---------|---------|---------|---------|---------|---------|---------|---------|---------|
| 0°    | 7243.0  | 7243.0  | 7243.0  | 7243.0  | 7243.0  | 7243.0  | 7243.0  | 7243.0  | 7243.0  | 7243.0  | 7243.0  |
| 2.5°  | 7542.1  | 7552.8  | 7520.7  | 7510.0  | 7531.4  | 7488.7  | 7478.0  | 7435.3  | 7413.9  | 7371.2  | 7317.7  |
| 5°    | 7755.7  | 7766.4  | 7745.1  | 7745.1  | 7766.4  | 7734.4  | 7723.7  | 7681.0  | 7659.6  | 7616.9  | 7510.0  |
| 7.5°  | 7745.1  | 7755.7  | 7777.1  | 7862.6  | 7969.4  | 8012.1  | 8044.2  | 8012.1  | 8001.4  | 7937.3  | 7830.5  |
| 10°   | 7574.1  | 7584.8  | 7638.2  | 7766.4  | 8033.5  | 8225.8  | 8428.8  | 8428.8  | 8450.1  | 8396.7  | 8204.4  |
| 12.5° | 7339.1  | 7349.8  | 7478.0  | 7681.0  | 8033.5  | 8364.7  | 8781.3  | 8952.2  | 8941.5  | 8909.5  | 8685.1  |
| 15°   | 6772.9  | 6772.9  | 6965.2  | 7349.8  | 7916.0  | 8460.8  | 9080.4  | 9539.8  | 9550.5  | 9582.5  | 9315.4  |
| 17.5° | 6292.2  | 6302.9  | 6463.1  | 6805.0  | 7542.1  | 8407.4  | 9400.9  | 10191.4 | 10223.5 | 10405.1 | 10020.5 |
| 20°   | 6334.9  | 6334.9  | 6388.3  | 6537.9  | 7136.1  | 8193.7  | 9582.5  | 10885.8 | 10992.6 | 11420.0 | 10939.2 |
| 22.5° | 6666.1  | 6666.1  | 6708.8  | 6698.1  | 7061.4  | 8054.9  | 9700.0  | 11580.2 | 11772.5 | 12659.2 | 12039.6 |
| 25°   | 7275.0  | 7264.3  | 7221.6  | 7157.5  | 7371.2  | 8204.4  | 9967.1  | 12114.3 | 12488.2 | 14026.6 | 13310.8 |
| 27.5° | 8022.8  | 8001.4  | 7937.3  | 7830.5  | 7980.1  | 8653.1  | 10426.4 | 12680.5 | 13086.5 | 15522.2 | 14656.9 |
| 30°   | 8952.2  | 8888.1  | 8824.0  | 8685.1  | 8845.4  | 9390.2  | 11110.2 | 13481.7 | 13866.3 | 17220.7 | 16280.6 |
| 32.5° | 10052.5 | 10127.3 | 9913.7  | 9721.4  | 9892.3  | 10394.4 | 12125.0 | 14432.5 | 14849.1 | 18994.1 | 17968.5 |
| 35°   | 11697.7 | 11922.0 | 11857.9 | 10885.8 | 11046.1 | 11601.6 | 13310.8 | 15661.0 | 16034.9 | 20607.2 | 19699.2 |
| 37.5° | 13321.5 | 13268.1 | 13321.5 | 12509.6 | 12253.2 | 12926.2 | 14582.1 | 16836.2 | 17199.4 | 21921.2 | 21226.8 |
| 40°   | 14624.8 | 14785.0 | 14785.0 | 14122.7 | 13791.5 | 14240.2 | 15735.8 | 17915.1 | 18267.7 | 22647.6 | 22327.1 |
| 42.5° | 16045.6 | 16067.0 | 16024.3 | 15447.4 | 15319.2 | 15436.7 | 16750.7 | 18598.8 | 18887.3 | 23021.5 | 23074.9 |
| 45°   | 17648.0 | 17637.4 | 17455.8 | 16975.0 | 16782.7 | 16675.9 | 17381.0 | 19261.2 | 19549.6 | 23192.4 | 23480.9 |
| 47.5° | 18972.7 | 19026.1 | 19036.8 | 18524.0 | 18203.6 | 17744.2 | 17925.8 | 19592.3 | 19923.5 | 23000.1 | 23566.3 |
| 50°   | 19047.5 | 19133.0 | 19538.9 | 19688.5 | 19624.4 | 18887.3 | 18427.9 | 19944.9 | 20276.0 | 23042.9 | 23876.1 |
| 52.5° | 18577.5 | 18662.9 | 19186.4 | 19806.0 | 20553.8 | 20201.2 | 19218.4 | 20553.8 | 20895.6 | 23459.5 | 24581.2 |
| 55°   | 17316.9 | 17455.8 | 18235.6 | 19100.9 | 20436.3 | 20938.4 | 20617.9 | 21654.1 | 21974.6 | 23790.7 | 25403.8 |
| 57.5° | 15073.5 | 15244.4 | 16323.4 | 17701.5 | 19528.2 | 20767.4 | 22647.6 | 23416.8 | 23683.8 | 24025.7 | 25414.5 |
| 60°   | 11270.4 | 11409.3 | 13097.2 | 14956.0 | 17701.5 | 19699.2 | 23854.8 | 26440.0 | 26589.6 | 22754.4 | 23972.3 |
| 62.5° | 8300.6  | 8439.4  | 9571.8  | 10907.2 | 13909.1 | 17733.5 | 24089.8 | 29057.3 | 29078.7 | 20457.6 | 21985.3 |
| 63°   | 7819.8  | 7958.7  | 8984.3  | 10234.2 | 13011.7 | 17071.2 | 24015.0 | 29142.8 | 29068.0 | 19987.6 | 21547.3 |
| 65°   | 6089.2  | 6334.9  | 7403.2  | 8354.0  | 9753.4  | 13588.6 | 23053.6 | 27625.8 | 27732.6 | 18598.8 | 19346.6 |
| 67.5° | 4144.9  | 4326.5  | 5683.3  | 6783.6  | 7371.2  | 8653.1  | 18908.6 | 23641.1 | 23812.0 | 17156.6 | 15436.7 |
| 70°   | 3204.9  | 3290.3  | 4080.8  | 5373.5  | 5961.0  | 5501.7  | 12328.0 | 19036.8 | 19036.8 | 13396.3 | 10939.2 |
| 72.5° | 2510.5  | 2542.5  | 3076.7  | 4198.4  | 4796.6  | 4230.4  | 6869.1  | 13845.0 | 13332.2 | 7948.0  | 7296.4  |
| 75°   | 1794.7  | 1837.4  | 2318.2  | 3130.1  | 3824.5  | 3333.0  | 4390.6  | 8065.5  | 7755.7  | 4572.3  | 4871.4  |
| 77.5° | 1420.8  | 1442.2  | 1730.6  | 2307.5  | 3098.0  | 2542.5  | 3343.7  | 4401.3  | 4358.6  | 3215.5  | 3130.1  |
| 80°   | 1121.7  | 1164.4  | 1356.7  | 1655.8  | 2393.0  | 1987.0  | 2489.1  | 2905.7  | 2820.3  | 2211.3  | 2008.4  |
| 82.5° | 801.2   | 876.0   | 1046.9  | 1260.6  | 1773.4  | 1420.8  | 1634.5  | 2051.1  | 2051.1  | 1666.5  | 1324.7  |
| 85°   | 491.4   | 555.5   | 619.6   | 779.8   | 1260.6  | 918.7   | 865.3   | 1324.7  | 1356.7  | 1249.9  | 854.6   |
| 87.5° | 235.0   | 256.4   | 299.1   | 331.2   | 459.4   | 416.6   | 341.9   | 502.1   | 512.8   | 555.5   | 352.5   |
| 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: GALN-SB5D-840-U-T2LG

**CANDELA DISTRIBUTION (continued):**

|       | 90°     | 95°     | 105°   | 115°   | 125°   | 135°   | 145°   | 155°   | 165°   | 175°   | 180°   |
|-------|---------|---------|--------|--------|--------|--------|--------|--------|--------|--------|--------|
| 0°    | 7243.0  | 7243.0  | 7243.0 | 7243.0 | 7243.0 | 7243.0 | 7243.0 | 7243.0 | 7243.0 | 7243.0 | 7243.0 |
| 2.5°  | 7307.1  | 7285.7  | 7178.9 | 7072.0 | 6954.5 | 6847.7 | 6740.9 | 6655.4 | 6559.3 | 6580.6 | 6591.3 |
| 5°    | 7445.9  | 7392.5  | 7157.5 | 6879.7 | 6516.5 | 6174.7 | 5843.5 | 5608.5 | 5458.9 | 5416.2 | 5330.7 |
| 7.5°  | 7745.1  | 7616.9  | 7189.5 | 6602.0 | 5929.0 | 5394.8 | 5085.0 | 4946.2 | 4903.4 | 4914.1 | 4892.7 |
| 10°   | 8086.9  | 7894.6  | 7232.3 | 6270.8 | 5416.2 | 5053.0 | 5010.3 | 5095.7 | 5138.4 | 5181.2 | 5191.9 |
| 12.5° | 8535.6  | 8225.8  | 7210.9 | 5907.6 | 5170.5 | 5106.4 | 5266.6 | 5426.9 | 5523.0 | 5587.1 | 5576.4 |
| 15°   | 9059.0  | 8642.4  | 7146.8 | 5608.5 | 5138.4 | 5309.4 | 5512.3 | 5694.0 | 5811.5 | 5875.6 | 5843.5 |
| 17.5° | 9689.3  | 9133.8  | 7072.0 | 5416.2 | 5234.6 | 5437.6 | 5651.2 | 5832.8 | 5961.0 | 6003.8 | 5971.7 |
| 20°   | 10469.2 | 9689.3  | 6943.8 | 5330.7 | 5309.4 | 5491.0 | 5683.3 | 5854.2 | 5961.0 | 6003.8 | 5961.0 |
| 22.5° | 11387.9 | 10351.7 | 6837.0 | 5330.7 | 5341.4 | 5491.0 | 5629.9 | 5758.0 | 5854.2 | 5886.2 | 5832.8 |
| 25°   | 12563.0 | 11120.8 | 6794.3 | 5416.2 | 5352.1 | 5437.6 | 5512.3 | 5587.1 | 5640.5 | 5661.9 | 5640.5 |
| 27.5° | 13759.5 | 12007.5 | 6815.6 | 5523.0 | 5341.4 | 5362.8 | 5362.8 | 5373.5 | 5384.1 | 5394.8 | 5384.1 |
| 30°   | 15137.6 | 12904.9 | 6901.1 | 5661.9 | 5362.8 | 5256.0 | 5223.9 | 5159.8 | 5106.4 | 5063.7 | 5020.9 |
| 32.5° | 16472.9 | 13759.5 | 7050.7 | 5864.9 | 5341.4 | 5138.4 | 5074.3 | 4914.1 | 4764.5 | 4636.4 | 4636.4 |
| 35°   | 17915.1 | 14646.2 | 7317.7 | 6014.4 | 5320.1 | 5031.6 | 4850.0 | 4668.4 | 4508.2 | 4326.5 | 4326.5 |
| 37.5° | 19154.3 | 15404.7 | 7531.4 | 6185.4 | 5298.7 | 4903.4 | 4615.0 | 4412.0 | 4241.1 | 4059.5 | 4038.1 |
| 40°   | 20019.6 | 15842.6 | 7659.6 | 6249.5 | 5223.9 | 4732.5 | 4390.6 | 4134.3 | 3888.6 | 3642.8 | 3632.2 |
| 42.5° | 20436.3 | 15821.3 | 7584.8 | 6228.1 | 5085.0 | 4518.8 | 4198.4 | 3856.5 | 3525.3 | 3301.0 | 3279.6 |
| 45°   | 20660.6 | 15682.4 | 7296.4 | 6046.5 | 4860.7 | 4294.5 | 3952.6 | 3589.4 | 3258.3 | 3055.3 | 3012.6 |
| 47.5° | 20617.9 | 15340.6 | 6901.1 | 5597.8 | 4561.6 | 4048.8 | 3706.9 | 3333.0 | 3066.0 | 2948.5 | 2948.5 |
| 50°   | 20735.4 | 15073.5 | 6452.4 | 5085.0 | 4155.6 | 3760.4 | 3482.6 | 3140.8 | 2980.5 | 2831.0 | 2777.5 |
| 52.5° | 21258.8 | 15297.8 | 6067.9 | 4604.3 | 3771.0 | 3482.6 | 3290.3 | 3001.9 | 2798.9 | 2702.8 | 2670.7 |
| 55°   | 21953.2 | 15778.5 | 5704.6 | 4177.0 | 3397.1 | 3236.9 | 3140.8 | 2873.7 | 2638.7 | 2542.5 | 2489.1 |
| 57.5° | 22081.4 | 16109.7 | 5352.1 | 3760.4 | 3087.3 | 3044.6 | 3012.6 | 2649.3 | 2457.1 | 2382.3 | 2339.5 |
| 60°   | 21194.7 | 15864.0 | 4892.7 | 3386.5 | 2841.6 | 2863.0 | 2777.5 | 2510.5 | 2286.1 | 2211.3 | 2168.6 |
| 62.5° | 19688.5 | 15223.0 | 4433.4 | 3066.0 | 2649.3 | 2692.1 | 2606.6 | 2339.5 | 2115.2 | 2040.4 | 2019.1 |
| 63°   | 19389.3 | 15052.1 | 4326.5 | 3033.9 | 2606.6 | 2660.0 | 2585.2 | 2318.2 | 2093.8 | 2019.1 | 1987.0 |
| 65°   | 17605.3 | 14026.6 | 3952.6 | 2863.0 | 2467.7 | 2467.7 | 2478.4 | 2211.3 | 2019.1 | 1987.0 | 1965.6 |
| 67.5° | 14357.7 | 11708.4 | 3546.7 | 2660.0 | 2318.2 | 2350.2 | 2403.6 | 2254.1 | 2179.3 | 2157.9 | 2136.6 |
| 70°   | 10853.8 | 8813.3  | 3194.2 | 2467.7 | 2157.9 | 2264.8 | 2628.0 | 2563.9 | 2286.1 | 2093.8 | 2051.1 |
| 72.5° | 7691.6  | 6003.8  | 2884.4 | 2275.4 | 1965.6 | 2232.7 | 2724.1 | 2446.4 | 2061.8 | 1837.4 | 1794.7 |
| 75°   | 5149.1  | 3867.2  | 2574.6 | 2072.5 | 1752.0 | 2061.8 | 2574.6 | 2232.7 | 1794.7 | 1741.3 | 1677.2 |
| 77.5° | 3236.9  | 2756.2  | 2264.8 | 1837.4 | 1517.0 | 1837.4 | 2339.5 | 1987.0 | 1549.0 | 1570.4 | 1474.2 |
| 80°   | 1976.3  | 1965.6  | 1901.5 | 1559.7 | 1217.8 | 1463.5 | 1965.6 | 1677.2 | 1239.2 | 1239.2 | 1100.3 |
| 82.5° | 1175.1  | 1420.8  | 1613.1 | 1292.6 | 886.7  | 1046.9 | 1420.8 | 1260.6 | 1036.2 | 1004.2 | 940.1  |
| 85°   | 790.5   | 961.5   | 1281.9 | 993.5  | 566.2  | 641.0  | 982.8  | 1057.6 | 950.8  | 833.3  | 779.8  |
| 87.5° | 288.4   | 384.6   | 587.6  | 405.9  | 245.7  | 384.6  | 737.1  | 769.2  | 576.9  | 448.7  | 405.9  |
| 90°   | 0.0     | 0.0     | 0.0    | 0.0    | 0.0    | 0.0    | 0.0    | 0.0    | 0.0    | 0.0    | 0.0    |

Cooper Lighting Solutions Photometric Lab  
1121 Highway 74 South  
Peachtree City, GA 30269



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

Report Prepared for

Cooper Lighting Solutions

McGraw-Edison

Report Number: SP1-2407-184-11

Test Date: 10/11/2024

Luminaire Tested: GSS-SB1A-840-U-5WQ

Data in this report applies to families of products including GSS-SB1A-840-U-5WQ

**Test Information**

Test Method: LM-79-2019  
 Report Number: SP1-2407-184-11  
 Test Lab: COOPER LIGHTING SOLUTIONS  
 Photometer: SP1 - 76IN SPHERE  
 Measurement Geometry: 4π  
 Issue Date: 10/15/2024  
 Manufacturer: COOPER LIGHTING SOLUTIONS  
 Product Line: McGraw-Edison  
 Catalog Number: **GSS-SB1A-840-U-5WQ**  
 Description: GALLEON II SITE SLIM 1SQ 350MA 5WQ HIGH DENSITY LIGHTSQUARE WITH 80 CRI 4000K CCT 26 LEDS

**Spectral Parameters**

CCT (K): 3897  
 CIE u': 0.2249  
 CIE v': 0.5084  
 Duv: 0.0039  
 CIE x: 0.3882  
 CIE y: 0.3900  
 CIE z: 0.2218  
 Peak Wavelength (nm): 445  
 Dominant Wavelength (nm): 577  
 Purity: 33.54925  
 Rf: 81.8  
 Rg: 98.6

|           |      |      |      |
|-----------|------|------|------|
| CRI (Ra): | 80.2 |      |      |
| R1:       | 78.9 | R9:  | 6.7  |
| R2:       | 83.5 | R10: | 61.9 |
| R3:       | 88.3 | R11: | 81.9 |
| R4:       | 82.1 | R12: | 58.9 |
| R5:       | 78.8 | R13: | 79.2 |
| R6:       | 78.4 | R14: | 93.2 |
| R7:       | 85.8 | R15: | 71.9 |
| R8:       | 65.8 |      |      |



**Test Conditions**

Stabilization Time: 24M  
 Operation Time: 1H 24M  
 Sphere Temperature (°C): 25.2

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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 4000K 4-step quadrangle

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**Photopic Flux vs. Wavelength**



**Photopic Lumens: NR**

| λ (nm) | Power W <sup>^</sup> /nm | Lumens (φ/nm) | λ (nm) | Power W <sup>^</sup> /nm | Lumens (φ/nm) | λ (nm) | Power W <sup>^</sup> /nm | Lumens (φ/nm) | λ (nm) | Power W <sup>^</sup> /nm | Lumens (φ/nm) | λ (nm) | Power W <sup>^</sup> /nm | Lumens (φ/nm) |
|--------|--------------------------|---------------|--------|--------------------------|---------------|--------|--------------------------|---------------|--------|--------------------------|---------------|--------|--------------------------|---------------|
| 360    | 0                        | NR            | 490    | 242                      | NR            | 620    | 792                      | NR            | 750    | 29                       | NR            | 880    | 1                        | NR            |
| 365    | 0                        | NR            | 495    | 320                      | NR            | 625    | 748                      | NR            | 755    | 25                       | NR            | 885    | 1                        | NR            |
| 370    | 0                        | NR            | 500    | 401                      | NR            | 630    | 703                      | NR            | 760    | 22                       | NR            | 890    | 1                        | NR            |
| 375    | 0                        | NR            | 505    | 479                      | NR            | 635    | 651                      | NR            | 765    | 19                       | NR            | 895    | 1                        | NR            |
| 380    | 0                        | NR            | 510    | 546                      | NR            | 640    | 599                      | NR            | 770    | 16                       | NR            | 900    | 1                        | NR            |
| 385    | 0                        | NR            | 515    | 602                      | NR            | 645    | 545                      | NR            | 775    | 14                       | NR            | 905    | 0                        | NR            |
| 390    | 2                        | NR            | 520    | 645                      | NR            | 650    | 493                      | NR            | 780    | 12                       | NR            | 910    | 0                        | NR            |
| 395    | 4                        | NR            | 525    | 674                      | NR            | 655    | 443                      | NR            | 785    | 10                       | NR            | 915    | 0                        | NR            |
| 400    | 6                        | NR            | 530    | 699                      | NR            | 660    | 394                      | NR            | 790    | 9                        | NR            | 920    | 0                        | NR            |
| 405    | 11                       | NR            | 535    | 718                      | NR            | 665    | 349                      | NR            | 795    | 8                        | NR            | 925    | 0                        | NR            |
| 410    | 22                       | NR            | 540    | 732                      | NR            | 670    | 307                      | NR            | 800    | 7                        | NR            | 930    | 0                        | NR            |
| 415    | 43                       | NR            | 545    | 749                      | NR            | 675    | 269                      | NR            | 805    | 6                        | NR            | 935    | 0                        | NR            |
| 420    | 86                       | NR            | 550    | 762                      | NR            | 680    | 235                      | NR            | 810    | 5                        | NR            | 940    | 0                        | NR            |
| 425    | 164                      | NR            | 555    | 778                      | NR            | 685    | 204                      | NR            | 815    | 5                        | NR            | 945    | 0                        | NR            |
| 430    | 288                      | NR            | 560    | 792                      | NR            | 690    | 178                      | NR            | 820    | 4                        | NR            | 950    | 0                        | NR            |
| 435    | 478                      | NR            | 565    | 809                      | NR            | 695    | 153                      | NR            | 825    | 3                        | NR            | 955    | 0                        | NR            |
| 440    | 766                      | NR            | 570    | 827                      | NR            | 700    | 132                      | NR            | 830    | 3                        | NR            | 960    | 0                        | NR            |
| 445    | 1000                     | NR            | 575    | 845                      | NR            | 705    | 114                      | NR            | 835    | 3                        | NR            | 965    | 0                        | NR            |
| 450    | 726                      | NR            | 580    | 862                      | NR            | 710    | 98                       | NR            | 840    | 2                        | NR            | 970    | 0                        | NR            |
| 455    | 425                      | NR            | 585    | 875                      | NR            | 715    | 84                       | NR            | 845    | 2                        | NR            | 975    | 0                        | NR            |
| 460    | 324                      | NR            | 590    | 887                      | NR            | 720    | 73                       | NR            | 850    | 2                        | NR            | 980    | 0                        | NR            |
| 465    | 225                      | NR            | 595    | 890                      | NR            | 725    | 63                       | NR            | 855    | 1                        | NR            | 985    | 0                        | NR            |
| 470    | 157                      | NR            | 600    | 887                      | NR            | 730    | 54                       | NR            | 860    | 1                        | NR            | 990    | 0                        | NR            |
| 475    | 147                      | NR            | 605    | 875                      | NR            | 735    | 46                       | NR            | 865    | 1                        | NR            | 995    | 0                        | NR            |
| 480    | 154                      | NR            | 610    | 856                      | NR            | 740    | 40                       | NR            | 870    | 1                        | NR            | 1000   | 0                        | NR            |
| 485    | 184                      | NR            | 615    | 828                      | NR            | 745    | 34                       | NR            | 875    | 1                        | NR            |        |                          |               |

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**Scotopic Flux vs. Wavelength**



**Scotopic Lumens: NR**

**S/P: 1.57**

| 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    | 242                      | NR            | 620    | 792                      | NR            | 750    | 29                       | NR            | 880    | 1                        | NR            |
| 365    | 0                        | NR            | 495    | 320                      | NR            | 625    | 748                      | NR            | 755    | 25                       | NR            | 885    | 1                        | NR            |
| 370    | 0                        | NR            | 500    | 401                      | NR            | 630    | 703                      | NR            | 760    | 22                       | NR            | 890    | 1                        | NR            |
| 375    | 0                        | NR            | 505    | 479                      | NR            | 635    | 651                      | NR            | 765    | 19                       | NR            | 895    | 1                        | NR            |
| 380    | 0                        | NR            | 510    | 546                      | NR            | 640    | 599                      | NR            | 770    | 16                       | NR            | 900    | 1                        | NR            |
| 385    | 0                        | NR            | 515    | 602                      | NR            | 645    | 545                      | NR            | 775    | 14                       | NR            | 905    | 0                        | NR            |
| 390    | 2                        | NR            | 520    | 645                      | NR            | 650    | 493                      | NR            | 780    | 12                       | NR            | 910    | 0                        | NR            |
| 395    | 4                        | NR            | 525    | 674                      | NR            | 655    | 443                      | NR            | 785    | 10                       | NR            | 915    | 0                        | NR            |
| 400    | 6                        | NR            | 530    | 699                      | NR            | 660    | 394                      | NR            | 790    | 9                        | NR            | 920    | 0                        | NR            |
| 405    | 11                       | NR            | 535    | 718                      | NR            | 665    | 349                      | NR            | 795    | 8                        | NR            | 925    | 0                        | NR            |
| 410    | 22                       | NR            | 540    | 732                      | NR            | 670    | 307                      | NR            | 800    | 7                        | NR            | 930    | 0                        | NR            |
| 415    | 43                       | NR            | 545    | 749                      | NR            | 675    | 269                      | NR            | 805    | 6                        | NR            | 935    | 0                        | NR            |
| 420    | 86                       | NR            | 550    | 762                      | NR            | 680    | 235                      | NR            | 810    | 5                        | NR            | 940    | 0                        | NR            |
| 425    | 164                      | NR            | 555    | 778                      | NR            | 685    | 204                      | NR            | 815    | 5                        | NR            | 945    | 0                        | NR            |
| 430    | 288                      | NR            | 560    | 792                      | NR            | 690    | 178                      | NR            | 820    | 4                        | NR            | 950    | 0                        | NR            |
| 435    | 478                      | NR            | 565    | 809                      | NR            | 695    | 153                      | NR            | 825    | 3                        | NR            | 955    | 0                        | NR            |
| 440    | 766                      | NR            | 570    | 827                      | NR            | 700    | 132                      | NR            | 830    | 3                        | NR            | 960    | 0                        | NR            |
| 445    | 1000                     | NR            | 575    | 845                      | NR            | 705    | 114                      | NR            | 835    | 3                        | NR            | 965    | 0                        | NR            |
| 450    | 726                      | NR            | 580    | 862                      | NR            | 710    | 98                       | NR            | 840    | 2                        | NR            | 970    | 0                        | NR            |
| 455    | 425                      | NR            | 585    | 875                      | NR            | 715    | 84                       | NR            | 845    | 2                        | NR            | 975    | 0                        | NR            |
| 460    | 324                      | NR            | 590    | 887                      | NR            | 720    | 73                       | NR            | 850    | 2                        | NR            | 980    | 0                        | NR            |
| 465    | 225                      | NR            | 595    | 890                      | NR            | 725    | 63                       | NR            | 855    | 1                        | NR            | 985    | 0                        | NR            |
| 470    | 157                      | NR            | 600    | 887                      | NR            | 730    | 54                       | NR            | 860    | 1                        | NR            | 990    | 0                        | NR            |
| 475    | 147                      | NR            | 605    | 875                      | NR            | 735    | 46                       | NR            | 865    | 1                        | NR            | 995    | 0                        | NR            |
| 480    | 154                      | NR            | 610    | 856                      | NR            | 740    | 40                       | NR            | 870    | 1                        | NR            | 1000   | 0                        | NR            |
| 485    | 184                      | NR            | 615    | 828                      | NR            | 745    | 34                       | NR            | 875    | 1                        | NR            |        |                          |               |

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**Melanopic Flux vs. Wavelength**



**Melanopic Lumens: NR**

**M/P: 3.06**

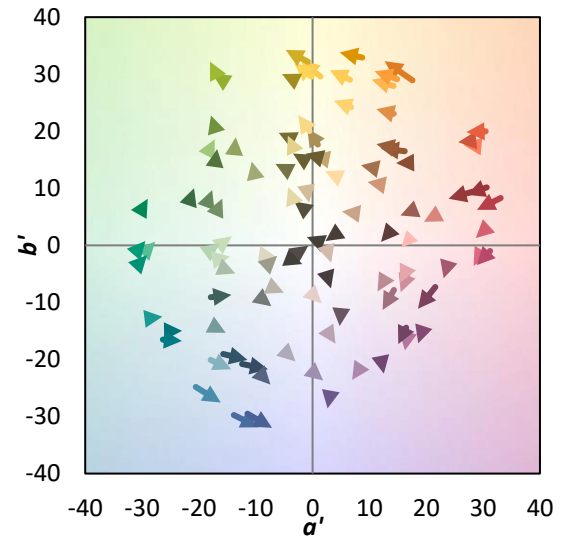
| λ (nm) | Power W <sup>^</sup> /nm | Lumens (φ/nm) | λ (nm) | Power W <sup>^</sup> /nm | Lumens (φ/nm) | λ (nm) | Power W <sup>^</sup> /nm | Lumens (φ/nm) | λ (nm) | Power W <sup>^</sup> /nm | Lumens (φ/nm) | λ (nm) | Power W <sup>^</sup> /nm | Lumens (φ/nm) |
|--------|--------------------------|---------------|--------|--------------------------|---------------|--------|--------------------------|---------------|--------|--------------------------|---------------|--------|--------------------------|---------------|
| 360    | 0                        | NR            | 490    | 242                      | NR            | 620    | 792                      | NR            | 750    | 29                       | NR            | 880    | 1                        | NR            |
| 365    | 0                        | NR            | 495    | 320                      | NR            | 625    | 748                      | NR            | 755    | 25                       | NR            | 885    | 1                        | NR            |
| 370    | 0                        | NR            | 500    | 401                      | NR            | 630    | 703                      | NR            | 760    | 22                       | NR            | 890    | 1                        | NR            |
| 375    | 0                        | NR            | 505    | 479                      | NR            | 635    | 651                      | NR            | 765    | 19                       | NR            | 895    | 1                        | NR            |
| 380    | 0                        | NR            | 510    | 546                      | NR            | 640    | 599                      | NR            | 770    | 16                       | NR            | 900    | 1                        | NR            |
| 385    | 0                        | NR            | 515    | 602                      | NR            | 645    | 545                      | NR            | 775    | 14                       | NR            | 905    | 0                        | NR            |
| 390    | 2                        | NR            | 520    | 645                      | NR            | 650    | 493                      | NR            | 780    | 12                       | NR            | 910    | 0                        | NR            |
| 395    | 4                        | NR            | 525    | 674                      | NR            | 655    | 443                      | NR            | 785    | 10                       | NR            | 915    | 0                        | NR            |
| 400    | 6                        | NR            | 530    | 699                      | NR            | 660    | 394                      | NR            | 790    | 9                        | NR            | 920    | 0                        | NR            |
| 405    | 11                       | NR            | 535    | 718                      | NR            | 665    | 349                      | NR            | 795    | 8                        | NR            | 925    | 0                        | NR            |
| 410    | 22                       | NR            | 540    | 732                      | NR            | 670    | 307                      | NR            | 800    | 7                        | NR            | 930    | 0                        | NR            |
| 415    | 43                       | NR            | 545    | 749                      | NR            | 675    | 269                      | NR            | 805    | 6                        | NR            | 935    | 0                        | NR            |
| 420    | 86                       | NR            | 550    | 762                      | NR            | 680    | 235                      | NR            | 810    | 5                        | NR            | 940    | 0                        | NR            |
| 425    | 164                      | NR            | 555    | 778                      | NR            | 685    | 204                      | NR            | 815    | 5                        | NR            | 945    | 0                        | NR            |
| 430    | 288                      | NR            | 560    | 792                      | NR            | 690    | 178                      | NR            | 820    | 4                        | NR            | 950    | 0                        | NR            |
| 435    | 478                      | NR            | 565    | 809                      | NR            | 695    | 153                      | NR            | 825    | 3                        | NR            | 955    | 0                        | NR            |
| 440    | 766                      | NR            | 570    | 827                      | NR            | 700    | 132                      | NR            | 830    | 3                        | NR            | 960    | 0                        | NR            |
| 445    | 1000                     | NR            | 575    | 845                      | NR            | 705    | 114                      | NR            | 835    | 3                        | NR            | 965    | 0                        | NR            |
| 450    | 726                      | NR            | 580    | 862                      | NR            | 710    | 98                       | NR            | 840    | 2                        | NR            | 970    | 0                        | NR            |
| 455    | 425                      | NR            | 585    | 875                      | NR            | 715    | 84                       | NR            | 845    | 2                        | NR            | 975    | 0                        | NR            |
| 460    | 324                      | NR            | 590    | 887                      | NR            | 720    | 73                       | NR            | 850    | 2                        | NR            | 980    | 0                        | NR            |
| 465    | 225                      | NR            | 595    | 890                      | NR            | 725    | 63                       | NR            | 855    | 1                        | NR            | 985    | 0                        | NR            |
| 470    | 157                      | NR            | 600    | 887                      | NR            | 730    | 54                       | NR            | 860    | 1                        | NR            | 990    | 0                        | NR            |
| 475    | 147                      | NR            | 605    | 875                      | NR            | 735    | 46                       | NR            | 865    | 1                        | NR            | 995    | 0                        | NR            |
| 480    | 154                      | NR            | 610    | 856                      | NR            | 740    | 40                       | NR            | 870    | 1                        | NR            | 1000   | 0                        | NR            |
| 485    | 184                      | NR            | 615    | 828                      | NR            | 745    | 34                       | NR            | 875    | 1                        | NR            |        |                          |               |

**Summary**

$R_f = 81.8$   
 $R_g = 98.6$   
 CIE  $R_a = 80.2$   
 $R_9 = 6.7$



**Color Vector Graphics**



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

|            |            |            |            |
|------------|------------|------------|------------|
| CES01 = 85 | CES26 = 73 | CES51 = 93 | CES76 = 66 |
| CES02 = 61 | CES27 = 91 | CES52 = 93 | CES77 = 80 |
| CES03 = 31 | CES28 = 87 | CES53 = 83 | CES78 = 66 |
| CES04 = 69 | CES29 = 71 | CES54 = 89 | CES79 = 88 |
| CES05 = 48 | CES30 = 77 | CES55 = 88 | CES80 = 85 |
| CES06 = 50 | CES31 = 74 | CES56 = 80 | CES81 = 83 |
| CES07 = 41 | CES32 = 70 | CES57 = 79 | CES82 = 93 |
| CES08 = 40 | CES33 = 77 | CES58 = 80 | CES83 = 91 |
| CES09 = 29 | CES34 = 79 | CES59 = 92 | CES84 = 91 |
| CES10 = 74 | CES35 = 88 | CES60 = 95 | CES85 = 84 |
| CES11 = 57 | CES36 = 98 | CES61 = 91 | CES86 = 78 |
| CES12 = 63 | CES37 = 85 | CES62 = 90 | CES87 = 84 |
| CES13 = 42 | CES38 = 85 | CES63 = 81 | CES88 = 85 |
| CES14 = 74 | CES39 = 95 | CES64 = 81 | CES89 = 78 |
| CES15 = 71 | CES40 = 90 | CES65 = 76 | CES90 = 84 |
| CES16 = 47 | CES41 = 90 | CES66 = 78 | CES91 = 85 |
| CES17 = 49 | CES42 = 84 | CES67 = 76 | CES92 = 71 |
| CES18 = 56 | CES43 = 81 | CES68 = 80 | CES93 = 84 |
| CES19 = 71 | CES44 = 99 | CES69 = 86 | CES94 = 65 |
| CES20 = 65 | CES45 = 87 | CES70 = 73 | CES95 = 77 |
| CES21 = 86 | CES46 = 85 | CES71 = 70 | CES96 = 83 |
| CES22 = 78 | CES47 = 84 | CES72 = 90 | CES97 = 87 |
| CES23 = 91 | CES48 = 79 | CES73 = 65 | CES98 = 81 |
| CES24 = 90 | CES49 = 84 | CES74 = 98 | CES99 = 75 |
| CES25 = 71 | CES50 = 91 | CES75 = 68 |            |



Color Rendition by Hue-Angle Bin



Measure Comparisons



(END OF REPORT)