

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: P1434870

Luminaire Tested: **GALN-SB5D-830-U-T3LG**

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: P1434870  
 Test Lab: INNOVATION CENTER(G1)  
 Issue Date: 03/24/202  
 Manufacturer: COOPER LIGHTING SOLUTIONS (FORMERLY EATON)  
 Product Line: McGRAW-EDISON  
 Catalog Number: GALN-SB5D-830-U-T3LG  
 Description: GALLEON II AREA AND ROADWAY HIGH DENSITY LUMINAIRE 900mA 5xLight Square PACKAGE 80CRI 3000K FIXTURE w/ TYPE III LOW GLARE  
 Light Source: (130) 3000K 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**

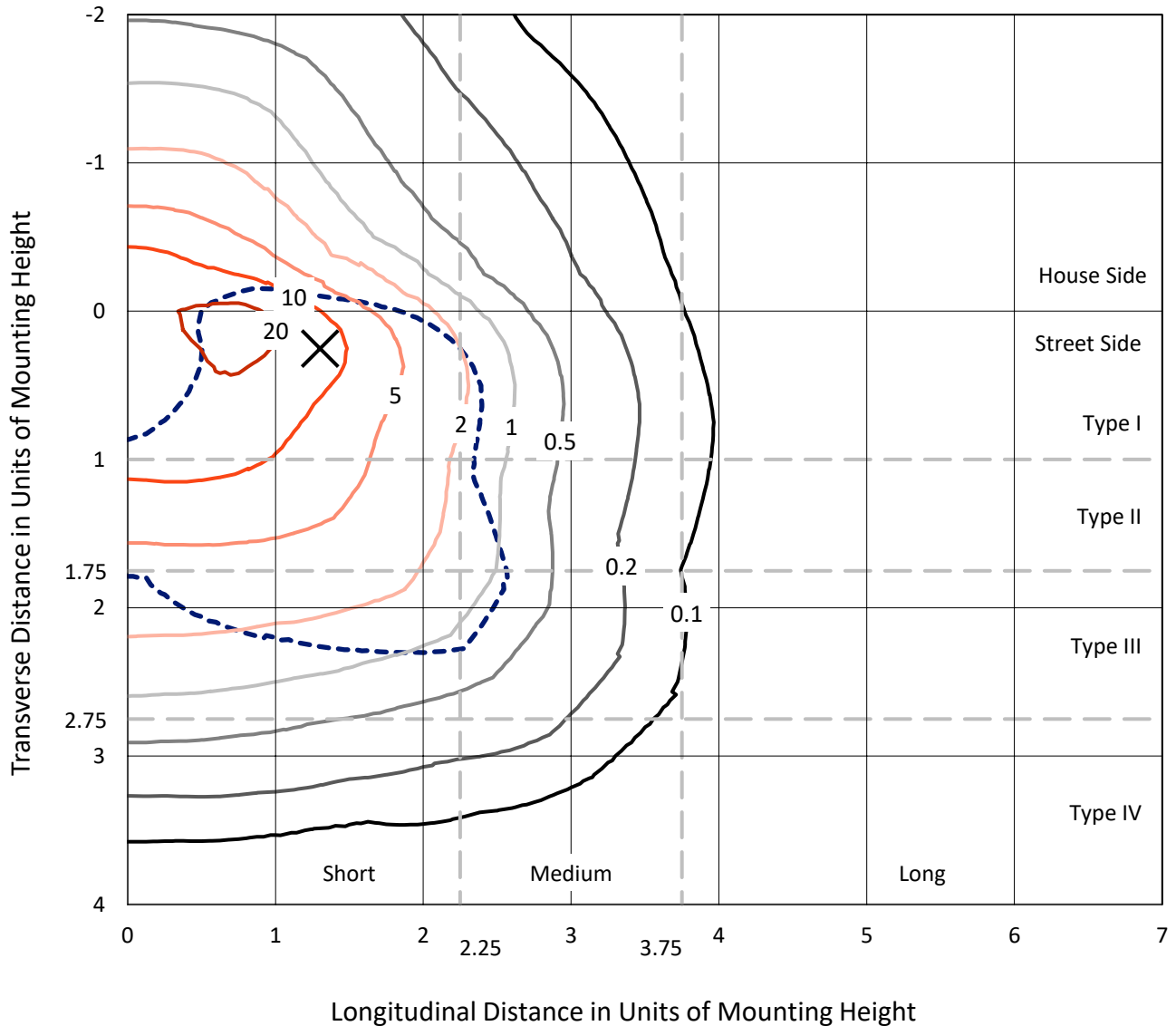
Lumens per Lamp: N/A  
 Luminaire Lumens: 45035.6 lumens  
 Efficiency: N/A  
 Efficacy: 123.4 lumens/watt  
 Luminous Opening: Rectangular (W 1.5' x L: 1' x H: 0')  
 IES Classification: Type III - Short  
 BUG Rating: B4 - U0 - G4

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: P1434870  
 CATALOG NUMBER: GALN-SB5D-830-U-T3LG

### Iso-Footcandle Lines of Horizontal Illumination

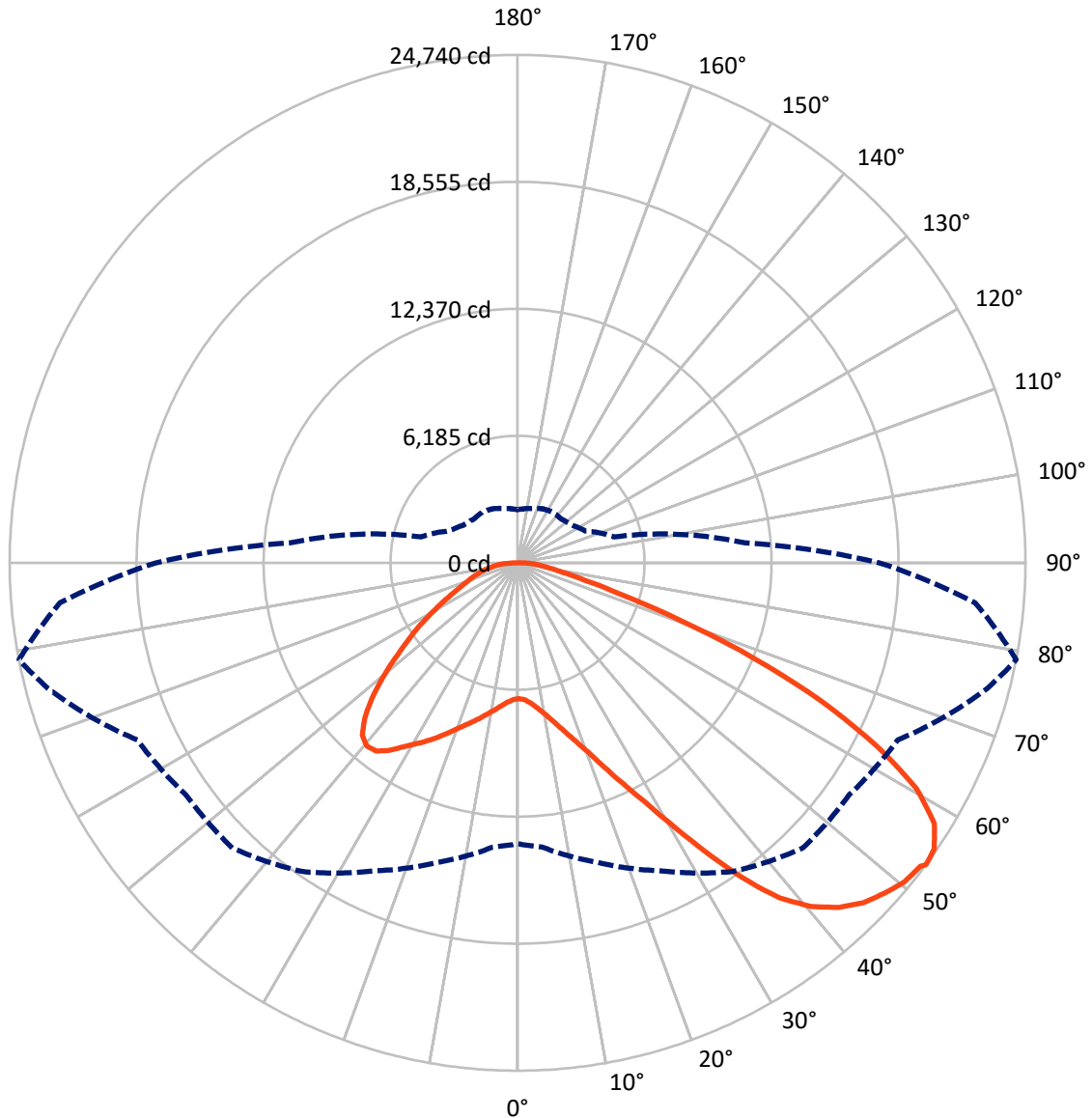
× Max cd  
 - - - 1/2 Max cd



Based on 20 foot mounting height. Maximum calculated value = 25.7 fc  
 Type III - Short - N/A

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### Luminous Intensity Polar Plot



— Vertical Plane Through 79-Deg Lateral      - - - Horizontal Cone Through 53-Deg Vertical

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**FLUX DISTRIBUTION:**

|                    |           | Downward | Upward | Total   |
|--------------------|-----------|----------|--------|---------|
| <b>House Side</b>  | Lumens    | 11353.1  | 0.0    | 11353.1 |
|                    | % Fixture | 25.2     | 0.0    | 25.2    |
| <b>Street Side</b> | Lumens    | 33682.4  | 0.0    | 33682.4 |
|                    | % Fixture | 74.8     | 0.0    | 74.8    |
| <b>Total</b>       | Lumens    | 45035.6  | 0.0    | 45035.6 |
|                    | % Fixture | 100.0    | 0.0    | 100.0   |

**Coefficient of Utilization**

**ZONAL LUMENS:**

| Zone      | Lumens  | % Fixture |
|-----------|---------|-----------|
| 0°-10°    | 630.0   | 1.4       |
| 10°-20°   | 1950.7  | 4.3       |
| 20°-30°   | 3729.7  | 8.3       |
| 30°-40°   | 6403.5  | 14.2      |
| 40°-50°   | 8969.4  | 19.9      |
| 50°-60°   | 10179.1 | 22.6      |
| 60°-70°   | 8926.5  | 19.8      |
| 70°-80°   | 3490.4  | 7.8       |
| 80°-90°   | 756.3   | 1.7       |
| 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°    | 45035.6 | 100.0     |
| 0°-180°   | 45035.6 | 100.0     |

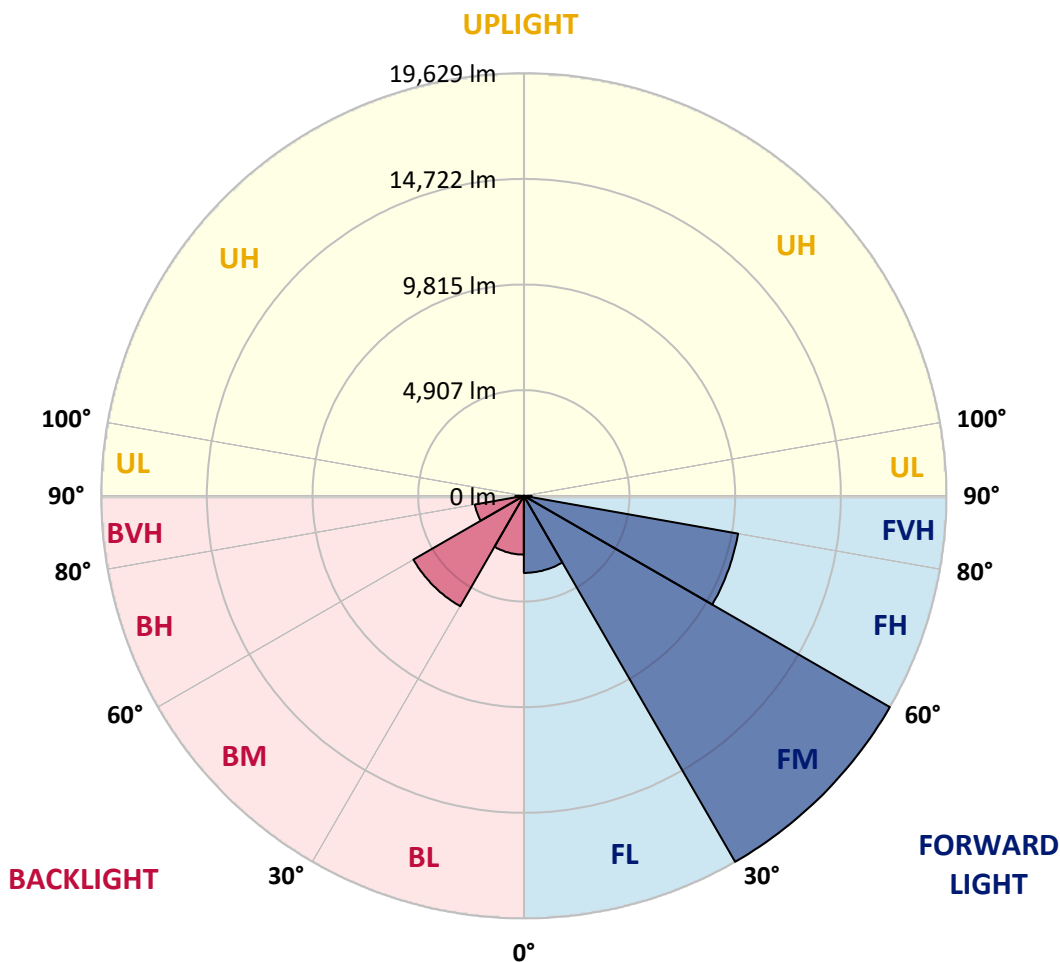


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**LUMINAIRE CLASSIFICATION SYSTEM LUMEN TABLE AND BUG RATING:**

| Zone           | Lumens  | % Fixture | Zone Rating/Lumen Limit |      |          |
|----------------|---------|-----------|-------------------------|------|----------|
|                |         |           | B                       | U    | G        |
| FL (0°-30°)    | 3579.9  | 7.9       |                         |      |          |
| FM (30°-60°)   | 19629.4 | 43.6      |                         |      |          |
| FH (60°-80°)   | 10106.3 | 22.4      |                         |      | G4/12000 |
| FVH (80°-90°)  | 366.8   | 0.8       |                         |      | G3/500   |
| BL (0°-30°)    | 2730.5  | 6.1       | B4/5000                 |      |          |
| BM (30°-60°)   | 5922.7  | 13.2      | B4/8500                 |      |          |
| BH (60°-80°)   | 2310.5  | 5.1       | B3/2500                 |      | G3/2500  |
| BVH (80°-90°)  | 389.4   | 0.9       |                         |      | 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 III Short





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**CANDELA DISTRIBUTION (FULL):**

|       | 0°      | 5°      | 15°     | 25°     | 35°     | 45°     | 55°     | 65°     | 75°     | 79°     | 85°     |
|-------|---------|---------|---------|---------|---------|---------|---------|---------|---------|---------|---------|
| 0°    | 6611.3  | 6611.3  | 6611.3  | 6611.3  | 6611.3  | 6611.3  | 6611.3  | 6611.3  | 6611.3  | 6611.3  | 6611.3  |
| 2.5°  | 6621.4  | 6621.4  | 6581.2  | 6621.4  | 6601.3  | 6631.4  | 6651.5  | 6651.5  | 6691.6  | 6681.6  | 6681.6  |
| 5°    | 6511.0  | 6491.0  | 6480.9  | 6551.1  | 6591.3  | 6671.5  | 6761.8  | 6802.0  | 6872.2  | 6872.2  | 6882.2  |
| 7.5°  | 6220.1  | 6210.0  | 6260.2  | 6400.7  | 6531.1  | 6731.7  | 6922.3  | 7032.7  | 7143.1  | 7163.1  | 7163.1  |
| 10°   | 6039.5  | 6029.5  | 6089.7  | 6260.2  | 6470.9  | 6761.8  | 7062.8  | 7293.5  | 7474.1  | 7524.3  | 7524.3  |
| 12.5° | 6039.5  | 6039.5  | 6089.7  | 6260.2  | 6480.9  | 6832.1  | 7243.4  | 7634.6  | 7915.5  | 7975.7  | 7955.7  |
| 15°   | 6210.0  | 6200.0  | 6260.2  | 6440.8  | 6651.5  | 6982.5  | 7484.2  | 8005.8  | 8387.1  | 8497.4  | 8507.5  |
| 17.5° | 6390.6  | 6380.6  | 6470.9  | 6701.6  | 6952.4  | 7283.5  | 7795.2  | 8437.2  | 8979.0  | 9119.4  | 9149.5  |
| 20°   | 6671.5  | 6661.5  | 6771.9  | 6992.6  | 7303.6  | 7684.8  | 8216.5  | 8948.9  | 9701.3  | 9851.8  | 9891.9  |
| 22.5° | 6992.6  | 7002.6  | 7123.0  | 7393.9  | 7704.9  | 8206.5  | 8858.6  | 9671.2  | 10574.1 | 10804.9 | 10845.0 |
| 25°   | 7664.7  | 7634.6  | 7735.0  | 7925.6  | 8256.6  | 8858.6  | 9661.2  | 10544.0 | 11617.5 | 11898.4 | 11948.6 |
| 27.5° | 8557.6  | 8507.5  | 8617.8  | 8808.4  | 9049.2  | 9611.0  | 10534.0 | 11517.2 | 12811.4 | 13162.5 | 13172.5 |
| 30°   | 9360.2  | 9330.1  | 9480.6  | 9871.9  | 10122.7 | 10554.1 | 11537.2 | 12660.9 | 14286.1 | 14797.8 | 14817.8 |
| 32.5° | 10052.4 | 10042.4 | 10323.3 | 10824.9 | 11396.8 | 11858.3 | 12811.4 | 14105.5 | 16152.1 | 16744.0 | 16613.6 |
| 35°   | 10714.6 | 10744.7 | 11095.8 | 11617.5 | 12380.0 | 13302.9 | 14266.0 | 15740.8 | 18118.5 | 18830.8 | 18620.1 |
| 37.5° | 11386.8 | 11406.8 | 11868.3 | 12540.5 | 13343.1 | 14547.0 | 15841.1 | 17516.5 | 19824.0 | 20706.8 | 20245.3 |
| 40°   | 12008.8 | 12069.0 | 12691.0 | 13413.3 | 14456.7 | 15680.6 | 17125.3 | 18750.5 | 21138.2 | 22011.0 | 21509.4 |
| 42.5° | 12630.8 | 12721.1 | 13393.2 | 14386.4 | 15500.0 | 16774.1 | 18018.2 | 19502.9 | 21980.9 | 22954.1 | 22181.6 |
| 45°   | 13272.8 | 13333.0 | 14165.7 | 15199.1 | 16463.1 | 17636.9 | 18529.8 | 19984.5 | 22562.8 | 23616.2 | 22562.8 |
| 47.5° | 13704.2 | 13824.6 | 14737.6 | 15931.4 | 17195.5 | 18299.1 | 18941.1 | 20185.1 | 22934.0 | 24047.6 | 22703.3 |
| 50°   | 13874.8 | 14045.3 | 15028.5 | 16352.8 | 17797.4 | 18921.1 | 19262.2 | 20295.5 | 23345.3 | 24428.8 | 22673.2 |
| 52.5° | 13844.7 | 14005.2 | 15078.7 | 16543.4 | 18279.0 | 19492.9 | 19573.2 | 20415.9 | 23636.3 | 24559.3 | 22412.3 |
| 53°   | 13684.2 | 13904.9 | 15108.8 | 16553.4 | 18349.2 | 19643.4 | 19713.6 | 20425.9 | 23676.4 | 24739.9 | 22372.2 |
| 55°   | 13132.4 | 13252.8 | 14797.8 | 16543.4 | 18680.3 | 20205.2 | 20104.9 | 20726.9 | 23786.8 | 24619.5 | 21930.8 |
| 57.5° | 12630.8 | 12751.2 | 14095.5 | 16352.8 | 18951.2 | 20997.8 | 20736.9 | 20676.7 | 23184.8 | 23937.3 | 20817.2 |
| 60°   | 12309.7 | 12349.9 | 13483.5 | 15750.8 | 18840.8 | 21549.6 | 21148.3 | 20084.8 | 21700.0 | 22322.0 | 18860.9 |
| 62.5° | 12038.9 | 12028.8 | 13032.1 | 14888.1 | 18419.5 | 21629.8 | 21228.5 | 18620.1 | 19523.0 | 19623.3 | 16252.5 |
| 65°   | 11426.9 | 11356.7 | 12329.8 | 13914.9 | 17546.6 | 21268.6 | 20245.3 | 16402.9 | 16633.7 | 16302.6 | 13052.1 |
| 67.5° | 10213.0 | 10062.5 | 10925.3 | 12430.1 | 15770.9 | 20245.3 | 18369.3 | 13824.6 | 13112.3 | 12450.2 | 9831.7  |
| 70°   | 7313.6  | 7313.6  | 8005.8  | 9510.7  | 12660.9 | 17496.5 | 15770.9 | 10463.8 | 9029.1  | 8437.2  | 6571.2  |
| 72.5° | 3581.6  | 3671.9  | 4394.2  | 5618.1  | 8487.4  | 12701.0 | 12079.0 | 6781.9  | 5477.7  | 5186.7  | 4213.6  |
| 75°   | 1524.9  | 1535.0  | 1876.1  | 2488.0  | 4303.9  | 7514.3  | 7564.4  | 3912.6  | 3511.3  | 3370.9  | 2789.0  |
| 77.5° | 1063.4  | 1083.5  | 1234.0  | 1464.7  | 2046.6  | 3451.1  | 3932.7  | 2367.6  | 2357.6  | 2257.3  | 1986.4  |
| 80°   | 812.6   | 832.7   | 933.0   | 1093.5  | 1374.4  | 1765.7  | 2036.6  | 1605.2  | 1685.4  | 1585.1  | 1434.6  |
| 82.5° | 612.0   | 632.0   | 702.3   | 822.7   | 983.2   | 1183.8  | 1143.7  | 1183.8  | 1244.0  | 1183.8  | 1033.3  |
| 85°   | 411.3   | 421.4   | 471.5   | 571.8   | 632.0   | 712.3   | 712.3   | 862.8   | 902.9   | 882.8   | 812.6   |
| 87.5° | 210.7   | 210.7   | 250.8   | 301.0   | 321.0   | 331.1   | 290.9   | 381.2   | 431.4   | 471.5   | 381.2   |
| 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: P1434870  
 CATALOG NUMBER: GALN-SB5D-830-U-T3LG

**CANDELA DISTRIBUTION (continued):**

|       | 90°     | 95°     | 105°   | 115°   | 125°   | 135°   | 145°   | 155°   | 165°   | 175°   | 180°   |
|-------|---------|---------|--------|--------|--------|--------|--------|--------|--------|--------|--------|
| 0°    | 6611.3  | 6611.3  | 6611.3 | 6611.3 | 6611.3 | 6611.3 | 6611.3 | 6611.3 | 6611.3 | 6611.3 | 6611.3 |
| 2.5°  | 6681.6  | 6691.6  | 6661.5 | 6651.5 | 6641.4 | 6591.3 | 6591.3 | 6541.1 | 6531.1 | 6541.1 | 6511.0 |
| 5°    | 6902.3  | 6882.2  | 6802.0 | 6741.8 | 6671.5 | 6531.1 | 6450.8 | 6340.5 | 6310.4 | 6280.3 | 6250.2 |
| 7.5°  | 7173.2  | 7143.1  | 7002.6 | 6842.1 | 6651.5 | 6380.6 | 6230.1 | 6049.5 | 5989.3 | 5939.2 | 5919.1 |
| 10°   | 7514.3  | 7454.1  | 7233.3 | 6892.2 | 6541.1 | 6210.0 | 5999.4 | 5778.7 | 5678.3 | 5658.3 | 5608.1 |
| 12.5° | 7955.7  | 7845.3  | 7434.0 | 6902.3 | 6440.8 | 6009.4 | 5778.7 | 5608.1 | 5568.0 | 5557.9 | 5507.8 |
| 15°   | 8447.3  | 8286.7  | 7624.6 | 6912.3 | 6310.4 | 5838.8 | 5698.4 | 5608.1 | 5608.1 | 5598.1 | 5568.0 |
| 17.5° | 9049.2  | 8788.4  | 7805.2 | 6872.2 | 6149.8 | 5788.7 | 5718.5 | 5638.2 | 5618.1 | 5628.2 | 5588.0 |
| 20°   | 9771.5  | 9340.1  | 7995.8 | 6822.0 | 6079.6 | 5798.7 | 5718.5 | 5608.1 | 5557.9 | 5547.9 | 5517.8 |
| 22.5° | 10604.2 | 9972.2  | 8206.5 | 6741.8 | 6079.6 | 5788.7 | 5658.3 | 5507.8 | 5407.5 | 5367.3 | 5327.2 |
| 25°   | 11557.3 | 10704.6 | 8427.2 | 6711.7 | 6099.7 | 5748.6 | 5537.9 | 5297.1 | 5136.6 | 5076.4 | 5046.3 |
| 27.5° | 12711.0 | 11477.0 | 8587.7 | 6741.8 | 6089.7 | 5658.3 | 5327.2 | 5016.2 | 4835.6 | 4735.3 | 4715.2 |
| 30°   | 13985.1 | 12309.7 | 8698.1 | 6791.9 | 6029.5 | 5487.7 | 5076.4 | 4725.3 | 4474.4 | 4354.1 | 4324.0 |
| 32.5° | 15490.0 | 13242.7 | 8808.4 | 6791.9 | 5879.0 | 5246.9 | 4785.4 | 4404.2 | 4143.4 | 4002.9 | 3982.9 |
| 35°   | 17155.4 | 14386.4 | 8908.8 | 6781.9 | 5698.4 | 4986.1 | 4494.5 | 4103.2 | 3832.4 | 3691.9 | 3681.9 |
| 37.5° | 18569.9 | 15249.2 | 8958.9 | 6681.6 | 5447.6 | 4685.1 | 4223.6 | 3832.4 | 3551.5 | 3401.0 | 3390.9 |
| 40°   | 19442.8 | 15610.4 | 8858.6 | 6480.9 | 5146.6 | 4374.1 | 3922.7 | 3561.5 | 3280.6 | 3100.0 | 3059.9 |
| 42.5° | 19773.8 | 15439.8 | 8537.6 | 6149.8 | 4785.4 | 4063.1 | 3671.9 | 3290.6 | 2919.4 | 2768.9 | 2738.8 |
| 45°   | 19663.5 | 14777.7 | 7855.4 | 5678.3 | 4384.2 | 3782.2 | 3451.1 | 3019.7 | 2779.0 | 2648.5 | 2638.5 |
| 47.5° | 19292.3 | 13754.4 | 7002.6 | 5086.4 | 3962.8 | 3531.4 | 3160.2 | 2949.5 | 2728.8 | 2588.4 | 2578.3 |
| 50°   | 18640.2 | 12660.9 | 5979.3 | 4414.2 | 3581.6 | 3270.6 | 3090.0 | 2919.4 | 2738.8 | 2628.5 | 2608.4 |
| 52.5° | 17807.5 | 11426.9 | 5036.3 | 3762.1 | 3250.5 | 3039.8 | 3019.7 | 2899.4 | 2758.9 | 2638.5 | 2588.4 |
| 53°   | 17616.9 | 11105.8 | 4855.7 | 3651.8 | 3200.3 | 3009.7 | 2999.7 | 2899.4 | 2738.8 | 2628.5 | 2588.4 |
| 55°   | 16703.9 | 10112.6 | 4283.8 | 3260.5 | 2949.5 | 2909.4 | 2999.7 | 2889.3 | 2688.7 | 2598.4 | 2568.3 |
| 57.5° | 15239.2 | 8808.4  | 3732.0 | 2899.4 | 2688.7 | 2789.0 | 2969.6 | 2849.2 | 2628.5 | 2468.0 | 2417.8 |
| 60°   | 13473.5 | 7313.6  | 3310.7 | 2658.6 | 2498.1 | 2638.5 | 2849.2 | 2708.7 | 2407.8 | 2327.5 | 2317.5 |
| 62.5° | 11366.7 | 5919.1  | 2989.6 | 2457.9 | 2337.5 | 2478.0 | 2668.6 | 2427.8 | 2207.1 | 2146.9 | 2126.9 |
| 65°   | 8878.7  | 4705.2  | 2738.8 | 2307.4 | 2177.0 | 2287.4 | 2417.8 | 2267.3 | 2126.9 | 2076.7 | 2066.7 |
| 67.5° | 6601.3  | 3691.9  | 2538.2 | 2177.0 | 2016.5 | 2086.7 | 2237.2 | 2197.1 | 2076.7 | 2046.6 | 2036.6 |
| 70°   | 4554.7  | 2999.7  | 2357.6 | 2056.6 | 1815.9 | 1896.1 | 2126.9 | 2157.0 | 2036.6 | 2016.5 | 2006.5 |
| 72.5° | 3190.3  | 2538.2  | 2167.0 | 1926.2 | 1655.3 | 1735.6 | 2076.7 | 2076.7 | 1946.3 | 1976.4 | 1956.3 |
| 75°   | 2397.7  | 2136.9  | 1946.3 | 1765.7 | 1454.7 | 1575.1 | 2006.5 | 1986.4 | 1856.0 | 1986.4 | 1936.2 |
| 77.5° | 1805.8  | 1725.6  | 1685.4 | 1565.1 | 1274.1 | 1394.5 | 1866.0 | 1825.9 | 1655.3 | 1665.4 | 1575.1 |
| 80°   | 1314.2  | 1334.3  | 1444.7 | 1334.3 | 1063.4 | 1153.7 | 1575.1 | 1555.0 | 1344.3 | 1384.5 | 1274.1 |
| 82.5° | 943.0   | 993.2   | 1234.0 | 1073.5 | 772.5  | 822.7  | 1083.5 | 1173.8 | 1053.4 | 993.2  | 1013.3 |
| 85°   | 712.3   | 742.4   | 993.2  | 792.6  | 481.6  | 541.7  | 742.4  | 842.7  | 822.7  | 762.5  | 772.5  |
| 87.5° | 301.0   | 341.1   | 461.5  | 371.2  | 280.9  | 280.9  | 461.5  | 591.9  | 531.7  | 451.5  | 471.5  |
| 90°   | 0.0     | 0.0     | 0.0    | 0.0    | 0.0    | 0.0    | 0.0    | 0.0    | 0.0    | 0.0    | 0.0    |

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

Report Prepared for

Cooper Lighting Solutions

McGraw-Edison

Report Number: SP1-2407-184-9

Test Date: 10/10/2024

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

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

**Test Information**

Test Method: LM-79-2019  
 Report Number: SP1-2407-184-9  
 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-830-U-5WQ**  
 Description: GALLEON II SITE SLIM 1SQ 350MA 5WQ HIGH DENSITY LIGHTSQUARE WITH 80 CRI 3000K CCT 26 LEDS

**Spectral Parameters**

CCT (K): 3055  
 CIE u': 0.2475  
 CIE v': 0.5247  
 Duv: 0.0032  
 CIE x: 0.4377  
 CIE y: 0.4124  
 CIE z: 0.1499  
 Peak Wavelength (nm): 604  
 Dominant Wavelength (nm): 581  
 Purity: 55.16339  
 Rf: 81.5  
 Rg: 99.2

|           |      |      |      |
|-----------|------|------|------|
| CRI (Ra): | 80.9 |      |      |
| R1:       | 79.5 | R9:  | 6.8  |
| R2:       | 85.6 | R10: | 67.1 |
| R3:       | 92.1 | R11: | 82.5 |
| R4:       | 82.4 | R12: | 63.4 |
| R5:       | 78.9 | R13: | 80.2 |
| R6:       | 81.7 | R14: | 95.1 |
| R7:       | 85.1 | R15: | 71.7 |
| R8:       | 61.9 |      |      |



**Test Conditions**

Stabilization Time: 20M  
 Operation Time: 1H 20M  
 Sphere Temperature (°C): 25.2

REPORT NUMBER: SP1-2407-184-9

| 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           |

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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               | 170                         | NR                      | 620               | 938                         | NR                      | 750               | 35                          | NR                      | 880               | 1                           | NR                      |
| 365               | 0                           | NR                      | 495               | 234                         | NR                      | 625               | 894                         | NR                      | 755               | 30                          | NR                      | 885               | 1                           | NR                      |
| 370               | 0                           | NR                      | 500               | 302                         | NR                      | 630               | 847                         | NR                      | 760               | 26                          | NR                      | 890               | 1                           | NR                      |
| 375               | 0                           | NR                      | 505               | 371                         | NR                      | 635               | 788                         | NR                      | 765               | 22                          | NR                      | 895               | 1                           | NR                      |
| 380               | 0                           | NR                      | 510               | 431                         | NR                      | 640               | 728                         | NR                      | 770               | 19                          | NR                      | 900               | 1                           | NR                      |
| 385               | 0                           | NR                      | 515               | 482                         | NR                      | 645               | 665                         | NR                      | 775               | 16                          | NR                      | 905               | 1                           | NR                      |
| 390               | 0                           | NR                      | 520               | 523                         | NR                      | 650               | 603                         | NR                      | 780               | 14                          | NR                      | 910               | 0                           | NR                      |
| 395               | 2                           | NR                      | 525               | 553                         | NR                      | 655               | 542                         | NR                      | 785               | 12                          | NR                      | 915               | 0                           | NR                      |
| 400               | 4                           | NR                      | 530               | 580                         | NR                      | 660               | 484                         | NR                      | 790               | 11                          | NR                      | 920               | 0                           | NR                      |
| 405               | 8                           | NR                      | 535               | 603                         | NR                      | 665               | 430                         | NR                      | 795               | 9                           | NR                      | 925               | 0                           | NR                      |
| 410               | 18                          | NR                      | 540               | 622                         | NR                      | 670               | 377                         | NR                      | 800               | 8                           | NR                      | 930               | 0                           | NR                      |
| 415               | 36                          | NR                      | 545               | 644                         | NR                      | 675               | 330                         | NR                      | 805               | 7                           | NR                      | 935               | 0                           | NR                      |
| 420               | 71                          | NR                      | 550               | 668                         | NR                      | 680               | 289                         | NR                      | 810               | 6                           | NR                      | 940               | 0                           | NR                      |
| 425               | 131                         | NR                      | 555               | 693                         | NR                      | 685               | 250                         | NR                      | 815               | 5                           | NR                      | 945               | 0                           | NR                      |
| 430               | 215                         | NR                      | 560               | 720                         | NR                      | 690               | 218                         | NR                      | 820               | 4                           | NR                      | 950               | 0                           | NR                      |
| 435               | 341                         | NR                      | 565               | 754                         | NR                      | 695               | 188                         | NR                      | 825               | 4                           | NR                      | 955               | 0                           | NR                      |
| 440               | 514                         | NR                      | 570               | 792                         | NR                      | 700               | 161                         | NR                      | 830               | 3                           | NR                      | 960               | 0                           | NR                      |
| 445               | 576                         | NR                      | 575               | 832                         | NR                      | 705               | 139                         | NR                      | 835               | 3                           | NR                      | 965               | 0                           | NR                      |
| 450               | 358                         | NR                      | 580               | 875                         | NR                      | 710               | 119                         | NR                      | 840               | 3                           | NR                      | 970               | 0                           | NR                      |
| 455               | 222                         | NR                      | 585               | 913                         | NR                      | 715               | 102                         | NR                      | 845               | 2                           | NR                      | 975               | 0                           | NR                      |
| 460               | 170                         | NR                      | 590               | 950                         | NR                      | 720               | 88                          | NR                      | 850               | 2                           | NR                      | 980               | 0                           | NR                      |
| 465               | 115                         | NR                      | 595               | 977                         | NR                      | 725               | 76                          | NR                      | 855               | 2                           | NR                      | 985               | 0                           | NR                      |
| 470               | 88                          | NR                      | 600               | 994                         | NR                      | 730               | 65                          | NR                      | 860               | 1                           | NR                      | 990               | 0                           | NR                      |
| 475               | 87                          | NR                      | 605               | 997                         | NR                      | 735               | 56                          | NR                      | 865               | 1                           | NR                      | 995               | 0                           | NR                      |
| 480               | 96                          | NR                      | 610               | 990                         | NR                      | 740               | 47                          | NR                      | 870               | 1                           | NR                      | 1000              | 0                           | NR                      |
| 485               | 122                         | NR                      | 615               | 971                         | NR                      | 745               | 41                          | NR                      | 875               | 1                           | NR                      |                   |                             |                         |

REPORT NUMBER: SP1-2407-184-9

**Scotopic Flux vs. Wavelength**



**Scotopic Lumens: NR**

**S/P: 1.28**

| $\lambda$ (nm) | Power W <sup>^</sup> /nm | Lumens ( $\phi$ /nm) | $\lambda$ (nm) | Power W <sup>^</sup> /nm | Lumens ( $\phi$ /nm) | $\lambda$ (nm) | Power W <sup>^</sup> /nm | Lumens ( $\phi$ /nm) | $\lambda$ (nm) | Power W <sup>^</sup> /nm | Lumens ( $\phi$ /nm) | $\lambda$ (nm) | Power W <sup>^</sup> /nm | Lumens ( $\phi$ /nm) |
|----------------|--------------------------|----------------------|----------------|--------------------------|----------------------|----------------|--------------------------|----------------------|----------------|--------------------------|----------------------|----------------|--------------------------|----------------------|
| 360            | 0                        | NR                   | 490            | 170                      | NR                   | 620            | 938                      | NR                   | 750            | 35                       | NR                   | 880            | 1                        | NR                   |
| 365            | 0                        | NR                   | 495            | 234                      | NR                   | 625            | 894                      | NR                   | 755            | 30                       | NR                   | 885            | 1                        | NR                   |
| 370            | 0                        | NR                   | 500            | 302                      | NR                   | 630            | 847                      | NR                   | 760            | 26                       | NR                   | 890            | 1                        | NR                   |
| 375            | 0                        | NR                   | 505            | 371                      | NR                   | 635            | 788                      | NR                   | 765            | 22                       | NR                   | 895            | 1                        | NR                   |
| 380            | 0                        | NR                   | 510            | 431                      | NR                   | 640            | 728                      | NR                   | 770            | 19                       | NR                   | 900            | 1                        | NR                   |
| 385            | 0                        | NR                   | 515            | 482                      | NR                   | 645            | 665                      | NR                   | 775            | 16                       | NR                   | 905            | 1                        | NR                   |
| 390            | 0                        | NR                   | 520            | 523                      | NR                   | 650            | 603                      | NR                   | 780            | 14                       | NR                   | 910            | 0                        | NR                   |
| 395            | 2                        | NR                   | 525            | 553                      | NR                   | 655            | 542                      | NR                   | 785            | 12                       | NR                   | 915            | 0                        | NR                   |
| 400            | 4                        | NR                   | 530            | 580                      | NR                   | 660            | 484                      | NR                   | 790            | 11                       | NR                   | 920            | 0                        | NR                   |
| 405            | 8                        | NR                   | 535            | 603                      | NR                   | 665            | 430                      | NR                   | 795            | 9                        | NR                   | 925            | 0                        | NR                   |
| 410            | 18                       | NR                   | 540            | 622                      | NR                   | 670            | 377                      | NR                   | 800            | 8                        | NR                   | 930            | 0                        | NR                   |
| 415            | 36                       | NR                   | 545            | 644                      | NR                   | 675            | 330                      | NR                   | 805            | 7                        | NR                   | 935            | 0                        | NR                   |
| 420            | 71                       | NR                   | 550            | 668                      | NR                   | 680            | 289                      | NR                   | 810            | 6                        | NR                   | 940            | 0                        | NR                   |
| 425            | 131                      | NR                   | 555            | 693                      | NR                   | 685            | 250                      | NR                   | 815            | 5                        | NR                   | 945            | 0                        | NR                   |
| 430            | 215                      | NR                   | 560            | 720                      | NR                   | 690            | 218                      | NR                   | 820            | 4                        | NR                   | 950            | 0                        | NR                   |
| 435            | 341                      | NR                   | 565            | 754                      | NR                   | 695            | 188                      | NR                   | 825            | 4                        | NR                   | 955            | 0                        | NR                   |
| 440            | 514                      | NR                   | 570            | 792                      | NR                   | 700            | 161                      | NR                   | 830            | 3                        | NR                   | 960            | 0                        | NR                   |
| 445            | 576                      | NR                   | 575            | 832                      | NR                   | 705            | 139                      | NR                   | 835            | 3                        | NR                   | 965            | 0                        | NR                   |
| 450            | 358                      | NR                   | 580            | 875                      | NR                   | 710            | 119                      | NR                   | 840            | 3                        | NR                   | 970            | 0                        | NR                   |
| 455            | 222                      | NR                   | 585            | 913                      | NR                   | 715            | 102                      | NR                   | 845            | 2                        | NR                   | 975            | 0                        | NR                   |
| 460            | 170                      | NR                   | 590            | 950                      | NR                   | 720            | 88                       | NR                   | 850            | 2                        | NR                   | 980            | 0                        | NR                   |
| 465            | 115                      | NR                   | 595            | 977                      | NR                   | 725            | 76                       | NR                   | 855            | 2                        | NR                   | 985            | 0                        | NR                   |
| 470            | 88                       | NR                   | 600            | 994                      | NR                   | 730            | 65                       | NR                   | 860            | 1                        | NR                   | 990            | 0                        | NR                   |
| 475            | 87                       | NR                   | 605            | 997                      | NR                   | 735            | 56                       | NR                   | 865            | 1                        | NR                   | 995            | 0                        | NR                   |
| 480            | 96                       | NR                   | 610            | 990                      | NR                   | 740            | 47                       | NR                   | 870            | 1                        | NR                   | 1000           | 0                        | NR                   |
| 485            | 122                      | NR                   | 615            | 971                      | NR                   | 745            | 41                       | NR                   | 875            | 1                        | NR                   |                |                          |                      |

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**Melanopic Flux vs. Wavelength**



**Melanopic Lumens: NR**

**M/P: 2.33**

| 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    | 170                      | NR            | 620    | 938                      | NR            | 750    | 35                       | NR            | 880    | 1                        | NR            |
| 365    | 0                        | NR            | 495    | 234                      | NR            | 625    | 894                      | NR            | 755    | 30                       | NR            | 885    | 1                        | NR            |
| 370    | 0                        | NR            | 500    | 302                      | NR            | 630    | 847                      | NR            | 760    | 26                       | NR            | 890    | 1                        | NR            |
| 375    | 0                        | NR            | 505    | 371                      | NR            | 635    | 788                      | NR            | 765    | 22                       | NR            | 895    | 1                        | NR            |
| 380    | 0                        | NR            | 510    | 431                      | NR            | 640    | 728                      | NR            | 770    | 19                       | NR            | 900    | 1                        | NR            |
| 385    | 0                        | NR            | 515    | 482                      | NR            | 645    | 665                      | NR            | 775    | 16                       | NR            | 905    | 1                        | NR            |
| 390    | 0                        | NR            | 520    | 523                      | NR            | 650    | 603                      | NR            | 780    | 14                       | NR            | 910    | 0                        | NR            |
| 395    | 2                        | NR            | 525    | 553                      | NR            | 655    | 542                      | NR            | 785    | 12                       | NR            | 915    | 0                        | NR            |
| 400    | 4                        | NR            | 530    | 580                      | NR            | 660    | 484                      | NR            | 790    | 11                       | NR            | 920    | 0                        | NR            |
| 405    | 8                        | NR            | 535    | 603                      | NR            | 665    | 430                      | NR            | 795    | 9                        | NR            | 925    | 0                        | NR            |
| 410    | 18                       | NR            | 540    | 622                      | NR            | 670    | 377                      | NR            | 800    | 8                        | NR            | 930    | 0                        | NR            |
| 415    | 36                       | NR            | 545    | 644                      | NR            | 675    | 330                      | NR            | 805    | 7                        | NR            | 935    | 0                        | NR            |
| 420    | 71                       | NR            | 550    | 668                      | NR            | 680    | 289                      | NR            | 810    | 6                        | NR            | 940    | 0                        | NR            |
| 425    | 131                      | NR            | 555    | 693                      | NR            | 685    | 250                      | NR            | 815    | 5                        | NR            | 945    | 0                        | NR            |
| 430    | 215                      | NR            | 560    | 720                      | NR            | 690    | 218                      | NR            | 820    | 4                        | NR            | 950    | 0                        | NR            |
| 435    | 341                      | NR            | 565    | 754                      | NR            | 695    | 188                      | NR            | 825    | 4                        | NR            | 955    | 0                        | NR            |
| 440    | 514                      | NR            | 570    | 792                      | NR            | 700    | 161                      | NR            | 830    | 3                        | NR            | 960    | 0                        | NR            |
| 445    | 576                      | NR            | 575    | 832                      | NR            | 705    | 139                      | NR            | 835    | 3                        | NR            | 965    | 0                        | NR            |
| 450    | 358                      | NR            | 580    | 875                      | NR            | 710    | 119                      | NR            | 840    | 3                        | NR            | 970    | 0                        | NR            |
| 455    | 222                      | NR            | 585    | 913                      | NR            | 715    | 102                      | NR            | 845    | 2                        | NR            | 975    | 0                        | NR            |
| 460    | 170                      | NR            | 590    | 950                      | NR            | 720    | 88                       | NR            | 850    | 2                        | NR            | 980    | 0                        | NR            |
| 465    | 115                      | NR            | 595    | 977                      | NR            | 725    | 76                       | NR            | 855    | 2                        | NR            | 985    | 0                        | NR            |
| 470    | 88                       | NR            | 600    | 994                      | NR            | 730    | 65                       | NR            | 860    | 1                        | NR            | 990    | 0                        | NR            |
| 475    | 87                       | NR            | 605    | 997                      | NR            | 735    | 56                       | NR            | 865    | 1                        | NR            | 995    | 0                        | NR            |
| 480    | 96                       | NR            | 610    | 990                      | NR            | 740    | 47                       | NR            | 870    | 1                        | NR            | 1000   | 0                        | NR            |
| 485    | 122                      | NR            | 615    | 971                      | NR            | 745    | 41                       | NR            | 875    | 1                        | NR            |        |                          |               |

**Summary**

$R_f = 81.5$   
 $R_g = 99.2$   
 $CIE R_a = 80.9$   
 $R_9 = 6.8$

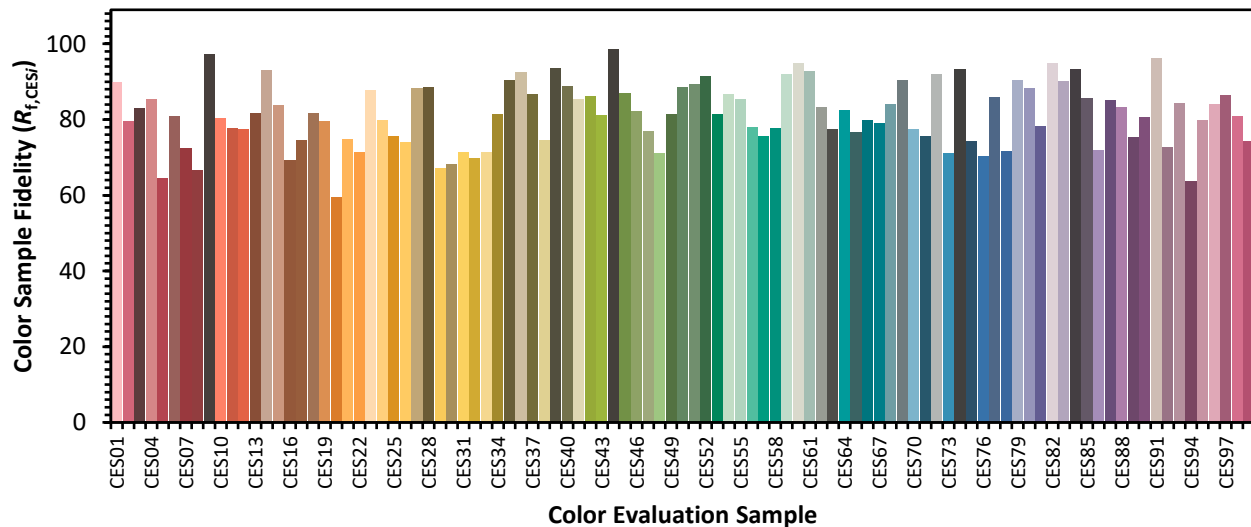


**Color Vector Graphics**

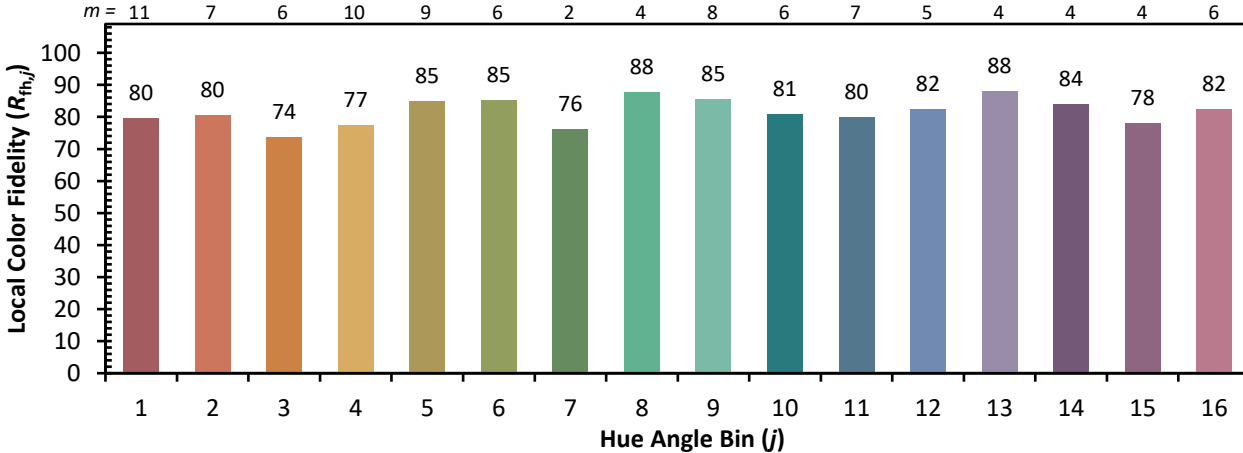


Individual Sample Fidelity Index ( $R_{f,i}$ )

|            |            |            |            |
|------------|------------|------------|------------|
| CES01 = 86 | CES26 = 74 | CES51 = 89 | CES76 = 70 |
| CES02 = 63 | CES27 = 88 | CES52 = 91 | 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 = 93 |
| 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 = 90 | CES94 = 64 |
| CES20 = 66 | CES45 = 87 | CES70 = 77 | 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)