

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: P1048005

Luminaire Tested: **GALN-SA6A-840-U-T2BC**

Issue Date: 07/10/2025

**Test Information**

Test Method: LM-79-08  
Report Number: P1048005  
Test Lab: INNOVATION CENTER(G3)  
Issue Date: 07/10/2025  
Manufacturer: COOPER LIGHTING SOLUTIONS (FORMERLY EATON)  
Product Line: MCGRAW-EDISON  
Catalog Number: GALN-SA6A-840-U-T2BC  
Description: GALLEON II AREA AND ROADWAY LUMINAIRE 615mA 6xLight Square PACKAGE  
80CRI 4000K FIXTURE w/ TYPE II ANGLED BACKLIGHT CONTROL  
Light Source: (84) 4000K CCT, 80 CRI LEDS  
Ballast/Driver: ELECTRONIC DRIVER

**Summary**

Lumens per Lamp: N/A  
Luminaire Lumens: 19378.9 lumens  
Efficiency: N/A  
Efficacy: 119.0 lumens/watt  
Luminous Opening: Rectangular (W 1.5' x L: 1' x H: 0')  
IES Classification: Type II - Short  
BUG Rating: B0 - U0 - G3

Input Watts (W): 162.9  
Input Voltage (V): 120  
Input Current (Ain): 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

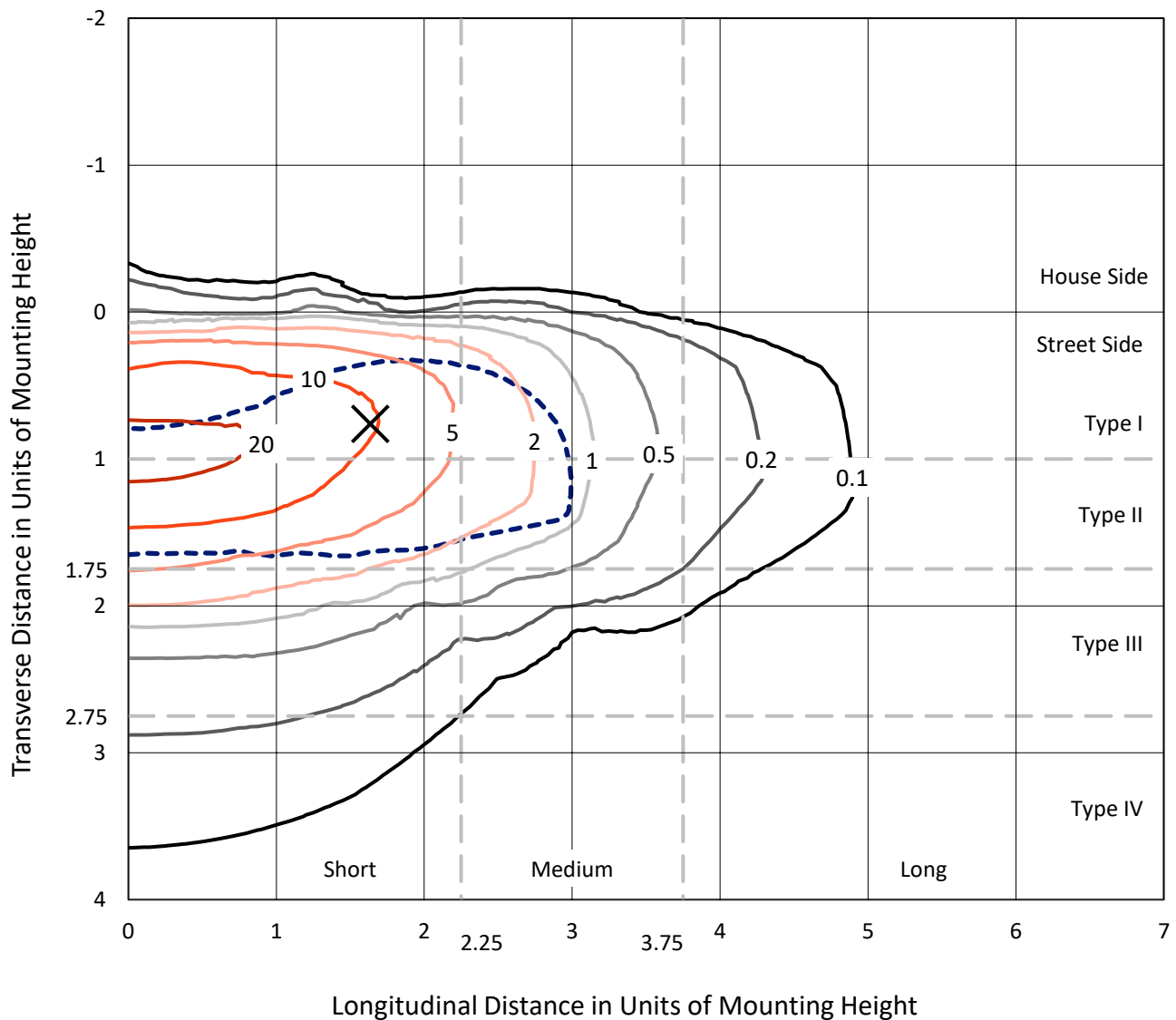


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## Iso-Footcandle Lines of Horizontal Illumination

✕ Max cd  
 - - - 1/2 Max cd

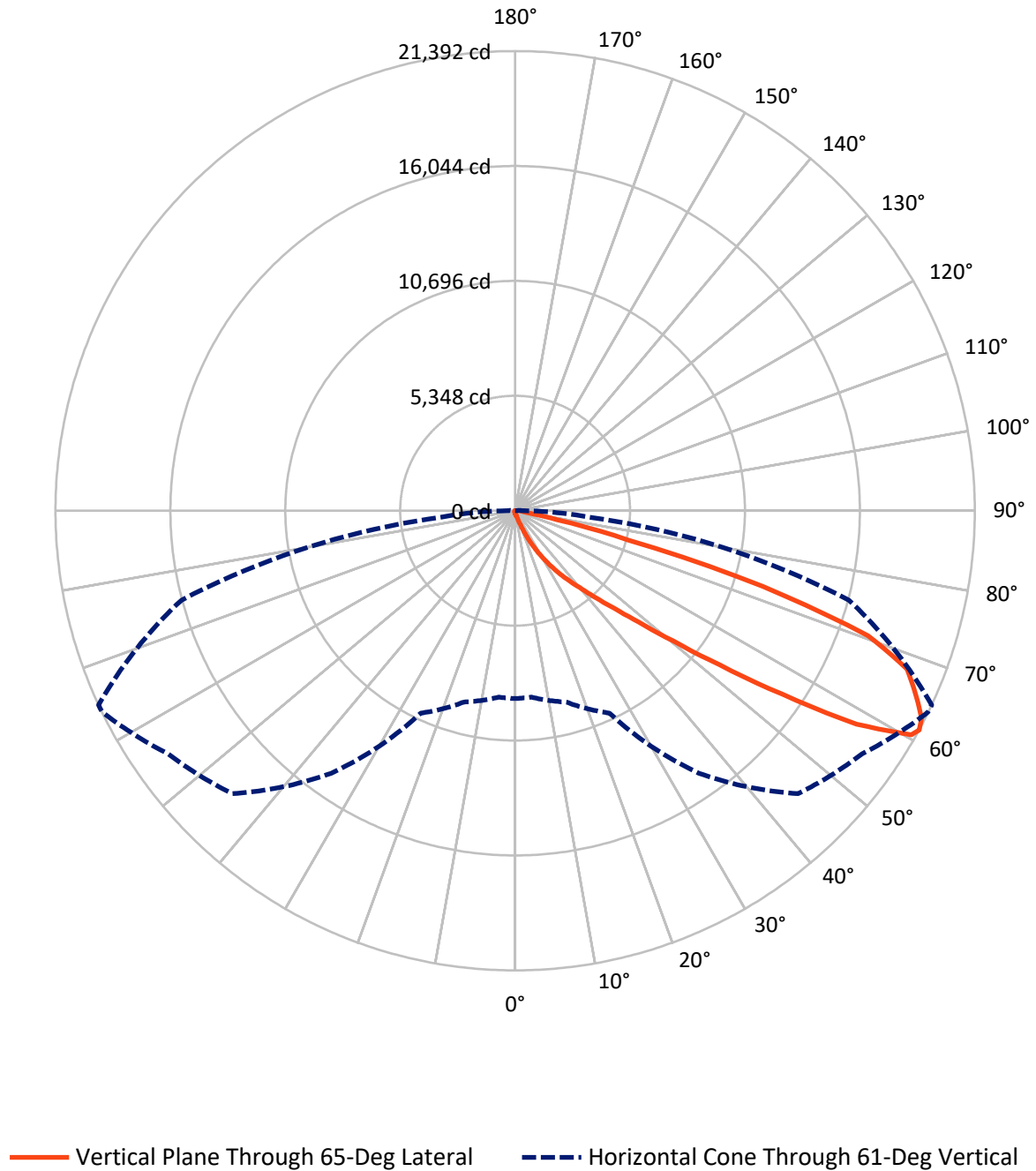


Based on 15 foot mounting height. Maximum calculated value = 25.6 fc  
 Type II - Short - N/A

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## Luminous Intensity Polar Plot



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**FLUX DISTRIBUTION:**

|                    |           | Downward | Upward | Total   |
|--------------------|-----------|----------|--------|---------|
| <b>House Side</b>  | Lumens    | 82.7     | 0.0    | 82.7    |
|                    | % Fixture | 0.4      | 0.0    | 0.4     |
| <b>Street Side</b> | Lumens    | 19296.2  | 0.0    | 19296.2 |
|                    | % Fixture | 99.6     | 0.0    | 99.6    |
| <b>Total</b>       | Lumens    | 19378.9  | 0.0    | 19378.9 |
|                    | % Fixture | 100.0    | 0.0    | 100.0   |

**Coefficient of Utilization**

**ZONAL LUMENS:**

| Zone      | Lumens  | % Fixture |
|-----------|---------|-----------|
| 0°-10°    | 15.1    | 0.1       |
| 10°-20°   | 159.4   | 0.8       |
| 20°-30°   | 571.9   | 3.0       |
| 30°-40°   | 1522.6  | 7.9       |
| 40°-50°   | 3999.9  | 20.6      |
| 50°-60°   | 6196.6  | 32.0      |
| 60°-70°   | 5195.8  | 26.8      |
| 70°-80°   | 1529.0  | 7.9       |
| 80°-90°   | 188.6   | 1.0       |
| 90°-100°  | 0.0     | 0.0       |
| 100°-110° | 0.0     | 0.0       |
| 110°-120° | 0.0     | 0.0       |
| 120°-130° | 0.0     | 0.0       |
| 130°-140° | 0.0     | 0.0       |
| 140°-150° | 0.0     | 0.0       |
| 150°-160° | 0.0     | 0.0       |
| 160°-170° | 0.0     | 0.0       |
| 170°-180° | 0.0     | 0.0       |
| 0°-90°    | 19378.9 | 100.0     |
| 0°-180°   | 19378.9 | 100.0     |



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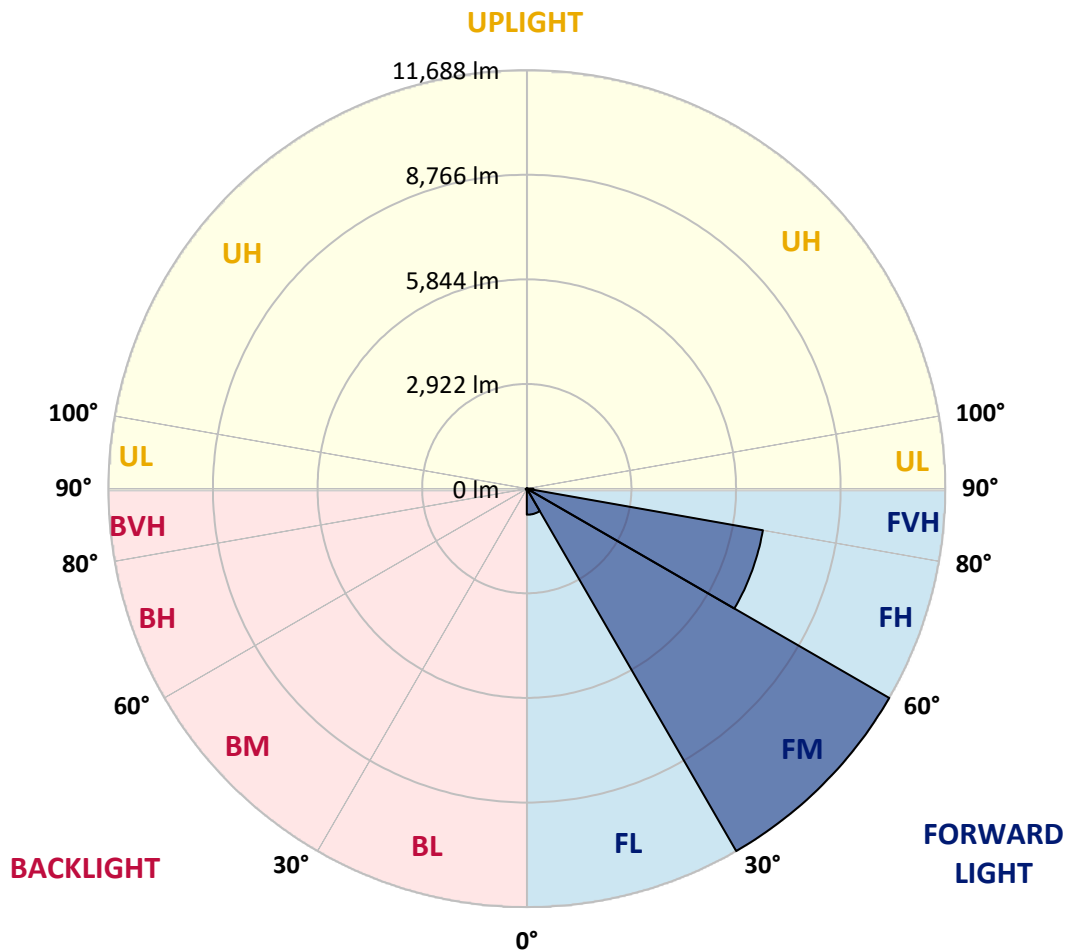
CATALOG NUMBER: GALN-SA6A-840-U-T2BC

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

| Zone |             | Lumens  | % Fixture | Zone Rating/Lumen Limit |      |         |
|------|-------------|---------|-----------|-------------------------|------|---------|
|      |             |         |           | B                       | U    | G       |
| FL   | (0°-30°)    | 727.8   | 3.8       |                         |      |         |
| FM   | (30°-60°)   | 11687.7 | 60.3      |                         |      |         |
| FH   | (60°-80°)   | 6695.6  | 34.6      |                         |      | G3/7500 |
| FVH  | (80°-90°)   | 185.1   | 1.0       |                         |      | G2/225  |
| BL   | (0°-30°)    | 18.6    | 0.1       | B0/110                  |      |         |
| BM   | (30°-60°)   | 31.5    | 0.2       | B0/220                  |      |         |
| BH   | (60°-80°)   | 29.2    | 0.2       | B0/110                  |      | G0/110  |
| BVH  | (80°-90°)   | 3.5     | 0.0       |                         |      | G0/10   |
| UL   | (90°-100°)  | 0.0     | 0.0       |                         | U0/0 |         |
| UH   | (100°-180°) | 0.0     | 0.0       |                         | U0/0 |         |

**BUG Rating: B0-U0-G3**

Type II Short



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**CANDELA DISTRIBUTION (FULL):**

|       | 0°      | 5°      | 15°     | 25°     | 35°     | 45°     | 55°     | 64°     | 65°     | 75°     | 85°    |
|-------|---------|---------|---------|---------|---------|---------|---------|---------|---------|---------|--------|
| 0°    | 118.6   | 118.6   | 118.6   | 118.6   | 118.6   | 118.6   | 118.6   | 118.6   | 118.6   | 118.6   | 118.6  |
| 2.5°  | 144.0   | 145.3   | 142.6   | 137.3   | 133.3   | 133.3   | 132.0   | 128.0   | 128.0   | 124.0   | 121.3  |
| 5°    | 201.3   | 198.6   | 193.3   | 182.6   | 173.3   | 164.0   | 154.6   | 145.3   | 144.0   | 132.0   | 124.0  |
| 7.5°  | 329.3   | 331.9   | 314.6   | 281.3   | 253.3   | 217.3   | 184.0   | 164.0   | 161.3   | 141.3   | 125.3  |
| 10°   | 722.5   | 702.5   | 662.5   | 533.2   | 438.6   | 330.6   | 245.3   | 190.6   | 188.0   | 152.0   | 128.0  |
| 12.5° | 1317.1  | 1301.1  | 1227.7  | 1094.4  | 850.5   | 591.9   | 358.6   | 236.0   | 228.0   | 161.3   | 129.3  |
| 15°   | 1898.3  | 1872.9  | 1833.0  | 1698.3  | 1413.0  | 1061.1  | 586.5   | 322.6   | 301.3   | 174.6   | 128.0  |
| 17.5° | 2268.9  | 2272.9  | 2236.9  | 2179.6  | 1995.6  | 1570.3  | 1013.1  | 481.2   | 439.9   | 198.6   | 125.3  |
| 20°   | 2592.8  | 2583.5  | 2603.5  | 2572.8  | 2443.5  | 2134.2  | 1474.4  | 762.5   | 691.9   | 237.3   | 126.6  |
| 22.5° | 2966.1  | 2988.7  | 3003.4  | 2996.7  | 2854.1  | 2590.1  | 1998.3  | 1141.1  | 1051.8  | 307.9   | 130.6  |
| 25°   | 3466.0  | 3463.3  | 3464.6  | 3447.3  | 3308.7  | 3015.4  | 2523.5  | 1611.7  | 1521.0  | 422.6   | 140.0  |
| 27.5° | 3989.8  | 4005.8  | 4012.5  | 3949.9  | 3768.6  | 3480.6  | 3010.0  | 2126.2  | 2019.6  | 606.5   | 152.0  |
| 30°   | 4705.7  | 4692.4  | 4661.7  | 4533.7  | 4313.8  | 3956.5  | 3490.0  | 2666.1  | 2554.1  | 863.8   | 170.6  |
| 32.5° | 5670.8  | 5656.2  | 5501.5  | 5218.9  | 4889.7  | 4452.4  | 3972.5  | 3207.3  | 3071.4  | 1185.1  | 196.0  |
| 35°   | 7261.2  | 7283.8  | 6903.9  | 6172.1  | 5581.5  | 5048.3  | 4507.1  | 3745.9  | 3625.9  | 1581.0  | 230.6  |
| 37.5° | 9696.7  | 9572.7  | 9056.8  | 7763.7  | 6492.0  | 5792.1  | 5017.6  | 4289.8  | 4185.8  | 2068.9  | 275.9  |
| 40°   | 12062.9 | 11940.2 | 11790.9 | 10565.8 | 8074.3  | 6612.0  | 5732.2  | 4928.3  | 4793.7  | 2619.5  | 342.6  |
| 42.5° | 14550.3 | 14482.4 | 14475.7 | 13551.9 | 10961.7 | 7901.0  | 6592.0  | 5676.2  | 5561.5  | 3223.3  | 451.9  |
| 45°   | 16312.7 | 16244.7 | 16387.3 | 16548.6 | 14894.3 | 10663.1 | 8089.0  | 6648.0  | 6481.3  | 3956.5  | 626.5  |
| 47.5° | 16549.9 | 16552.6 | 16933.9 | 17439.1 | 17816.3 | 14935.6 | 10083.3 | 7935.7  | 7733.1  | 5005.6  | 919.8  |
| 50°   | 15760.8 | 15791.4 | 16398.0 | 17301.8 | 18317.6 | 18520.2 | 13599.9 | 9804.7  | 9504.7  | 6249.4  | 1335.7 |
| 52.5° | 14258.4 | 14293.1 | 15138.2 | 16624.6 | 17856.3 | 19381.4 | 17740.4 | 12249.5 | 11904.2 | 7801.1  | 1922.3 |
| 55°   | 12905.4 | 12926.7 | 13895.8 | 15774.1 | 17300.4 | 18913.5 | 20198.5 | 15514.1 | 15060.9 | 9710.0  | 2500.8 |
| 57.5° | 11565.6 | 11516.3 | 12146.8 | 14297.1 | 17205.8 | 18338.9 | 20561.1 | 19234.7 | 18734.8 | 11796.2 | 2951.4 |
| 60°   | 9774.0  | 9691.3  | 10197.9 | 11565.6 | 15960.7 | 18716.2 | 19882.6 | 21293.0 | 21179.7 | 14701.0 | 3299.3 |
| 61°   | 8743.5  | 8708.9  | 9218.1  | 10391.2 | 14912.9 | 18620.2 | 19720.0 | 21379.6 | 21391.6 | 16075.4 | 3455.3 |
| 62.5° | 6244.1  | 6342.7  | 7121.2  | 8646.2  | 12490.8 | 17997.6 | 19741.3 | 21111.7 | 21230.3 | 17901.7 | 3859.2 |
| 65°   | 2775.4  | 2934.1  | 3539.3  | 4780.4  | 7263.8  | 14971.6 | 19552.0 | 20523.8 | 20465.1 | 18402.9 | 5250.9 |
| 67.5° | 1646.3  | 1670.3  | 1971.6  | 2708.8  | 3847.2  | 8053.0  | 17253.8 | 19746.6 | 19668.0 | 16020.7 | 6533.3 |
| 70°   | 1297.1  | 1309.1  | 1405.0  | 1699.7  | 2232.9  | 3084.7  | 9847.3  | 17084.5 | 17427.1 | 12990.7 | 6396.0 |
| 72.5° | 1230.4  | 1227.7  | 1241.1  | 1293.1  | 1406.4  | 1530.4  | 3812.6  | 11356.3 | 12053.5 | 9355.4  | 5362.9 |
| 75°   | 1214.4  | 1209.1  | 1195.8  | 1175.8  | 1018.5  | 901.1   | 1181.1  | 5023.0  | 5426.9  | 6392.0  | 4037.8 |
| 77.5° | 1178.4  | 1179.8  | 1182.4  | 1127.8  | 873.2   | 637.2   | 571.9   | 1611.7  | 1982.3  | 4056.5  | 2870.1 |
| 80°   | 797.2   | 809.2   | 829.2   | 807.8   | 785.2   | 461.2   | 403.9   | 573.2   | 581.2   | 2276.9  | 1895.6 |
| 82.5° | 403.9   | 403.9   | 394.6   | 351.9   | 303.9   | 299.9   | 321.3   | 415.9   | 421.2   | 1151.8  | 891.8  |
| 85°   | 243.9   | 257.3   | 262.6   | 238.6   | 218.6   | 201.3   | 245.3   | 330.6   | 342.6   | 446.6   | 208.0  |
| 87.5° | 54.7    | 56.0    | 61.3    | 81.3    | 118.6   | 161.3   | 228.0   | 302.6   | 307.9   | 286.6   | 25.3   |
| 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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**CANDELA DISTRIBUTION (continued):**

|       | 90°    | 95°   | 105°  | 115°  | 125°  | 135°  | 145°  | 155°  | 165°  | 175°  | 180°  |
|-------|--------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|
| 0°    | 118.6  | 118.6 | 118.6 | 118.6 | 118.6 | 118.6 | 118.6 | 118.6 | 118.6 | 118.6 | 118.6 |
| 2.5°  | 120.0  | 117.3 | 116.0 | 112.0 | 108.0 | 104.0 | 101.3 | 100.0 | 101.3 | 102.6 | 102.6 |
| 5°    | 118.6  | 114.6 | 108.0 | 101.3 | 96.0  | 90.6  | 85.3  | 84.0  | 84.0  | 85.3  | 85.3  |
| 7.5°  | 118.6  | 112.0 | 102.6 | 94.6  | 86.6  | 78.7  | 74.7  | 72.0  | 73.3  | 73.3  | 73.3  |
| 10°   | 118.6  | 110.6 | 98.6  | 86.6  | 77.3  | 68.0  | 61.3  | 58.7  | 58.7  | 58.7  | 58.7  |
| 12.5° | 117.3  | 109.3 | 94.6  | 80.0  | 66.7  | 56.0  | 48.0  | 44.0  | 45.3  | 45.3  | 45.3  |
| 15°   | 114.6  | 105.3 | 89.3  | 68.0  | 53.3  | 42.7  | 34.7  | 30.7  | 32.0  | 34.7  | 36.0  |
| 17.5° | 110.6  | 101.3 | 80.0  | 57.3  | 42.7  | 32.0  | 24.0  | 21.3  | 22.7  | 26.7  | 26.7  |
| 20°   | 109.3  | 97.3  | 70.7  | 46.7  | 32.0  | 22.7  | 16.0  | 13.3  | 14.7  | 20.0  | 21.3  |
| 22.5° | 109.3  | 94.6  | 64.0  | 38.7  | 24.0  | 14.7  | 9.3   | 5.3   | 5.3   | 9.3   | 9.3   |
| 25°   | 110.6  | 93.3  | 58.7  | 32.0  | 17.3  | 10.7  | 5.3   | 2.7   | 5.3   | 14.7  | 17.3  |
| 27.5° | 113.3  | 92.0  | 56.0  | 26.7  | 13.3  | 9.3   | 4.0   | 9.3   | 16.0  | 16.0  | 16.0  |
| 30°   | 116.0  | 89.3  | 52.0  | 22.7  | 12.0  | 6.7   | 6.7   | 13.3  | 13.3  | 16.0  | 17.3  |
| 32.5° | 120.0  | 88.0  | 49.3  | 20.0  | 9.3   | 5.3   | 9.3   | 8.0   | 8.0   | 9.3   | 10.7  |
| 35°   | 128.0  | 89.3  | 46.7  | 20.0  | 9.3   | 6.7   | 8.0   | 4.0   | 2.7   | 2.7   | 2.7   |
| 37.5° | 138.6  | 90.6  | 42.7  | 17.3  | 8.0   | 8.0   | 4.0   | 0.0   | 0.0   | 0.0   | 0.0   |
| 40°   | 156.0  | 94.6  | 40.0  | 16.0  | 6.7   | 6.7   | 1.3   | 0.0   | 0.0   | 0.0   | 0.0   |
| 42.5° | 185.3  | 102.6 | 38.7  | 14.7  | 6.7   | 5.3   | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   |
| 45°   | 243.9  | 121.3 | 36.0  | 13.3  | 6.7   | 2.7   | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   |
| 47.5° | 350.6  | 165.3 | 34.7  | 10.7  | 4.0   | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   |
| 50°   | 511.9  | 224.0 | 33.3  | 9.3   | 1.3   | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   |
| 52.5° | 653.2  | 236.0 | 22.7  | 8.0   | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   |
| 55°   | 669.2  | 162.6 | 17.3  | 5.3   | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   |
| 57.5° | 533.2  | 105.3 | 14.7  | 4.0   | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   |
| 60°   | 403.9  | 80.0  | 13.3  | 1.3   | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   |
| 61°   | 387.9  | 72.0  | 13.3  | 1.3   | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   |
| 62.5° | 427.9  | 62.7  | 12.0  | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   |
| 65°   | 695.9  | 52.0  | 10.7  | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   |
| 67.5° | 1209.1 | 45.3  | 9.3   | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   |
| 70°   | 1527.7 | 42.7  | 8.0   | 1.3   | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   |
| 72.5° | 1331.7 | 38.7  | 8.0   | 2.7   | 1.3   | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   |
| 75°   | 801.2  | 33.3  | 8.0   | 5.3   | 2.7   | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   |
| 77.5° | 419.9  | 25.3  | 8.0   | 6.7   | 4.0   | 1.3   | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   |
| 80°   | 204.0  | 22.7  | 9.3   | 6.7   | 5.3   | 2.7   | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   |
| 82.5° | 80.0   | 18.7  | 10.7  | 9.3   | 6.7   | 4.0   | 1.3   | 0.0   | 0.0   | 0.0   | 0.0   |
| 85°   | 36.0   | 16.0  | 12.0  | 10.7  | 9.3   | 5.3   | 1.3   | 0.0   | 0.0   | 0.0   | 0.0   |
| 87.5° | 18.7   | 14.7  | 13.3  | 12.0  | 9.3   | 6.7   | 2.7   | 0.0   | 0.0   | 0.0   | 0.0   |
| 90°   | 0.0    | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   |



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:  $4\pi$   
 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  
 R<sub>f</sub>: 81.8  
 R<sub>g</sub>: 98.6

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



### Test Conditions

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

REPORT NUMBER: SP1-2407-184-11

| 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: SP1-2407-184-11

**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

REPORT NUMBER: SP1-2407-184-11

### 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<br>(nm) | Power<br>W <sup>^</sup> /nm | Lumens<br>(φ/nm) | λ<br>(nm) | Power<br>W <sup>^</sup> /nm | Lumens<br>(φ/nm) | λ<br>(nm) | Power<br>W <sup>^</sup> /nm | Lumens<br>(φ/nm) | λ<br>(nm) | Power<br>W <sup>^</sup> /nm | Lumens<br>(φ/nm) | λ<br>(nm) | Power<br>W <sup>^</sup> /nm | Lumens<br>(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<br>(nm) | Power<br>W <sup>λ</sup> /nm | Lumens<br>(φ/nm) | λ<br>(nm) | Power<br>W <sup>λ</sup> /nm | Lumens<br>(φ/nm) | λ<br>(nm) | Power<br>W <sup>λ</sup> /nm | Lumens<br>(φ/nm) | λ<br>(nm) | Power<br>W <sup>λ</sup> /nm | Lumens<br>(φ/nm) | λ<br>(nm) | Power<br>W <sup>λ</sup> /nm | Lumens<br>(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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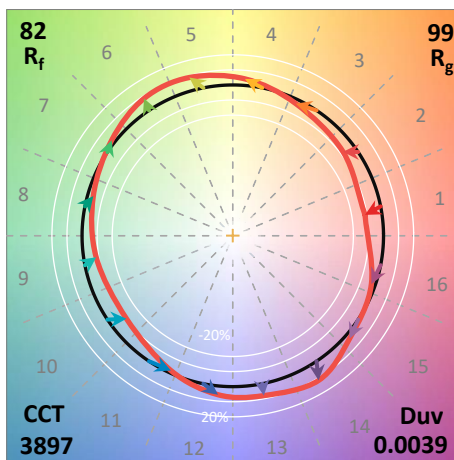
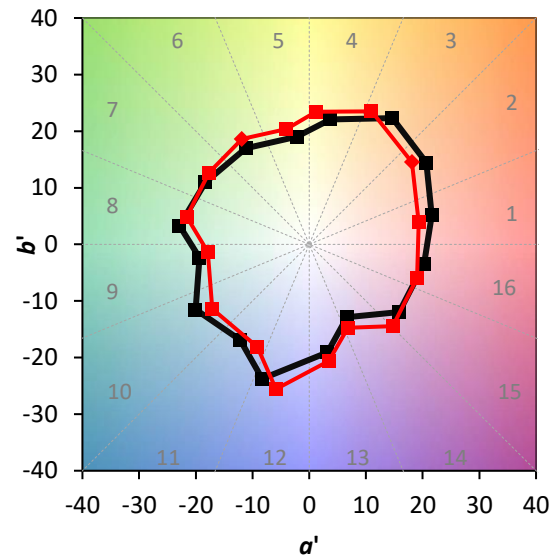
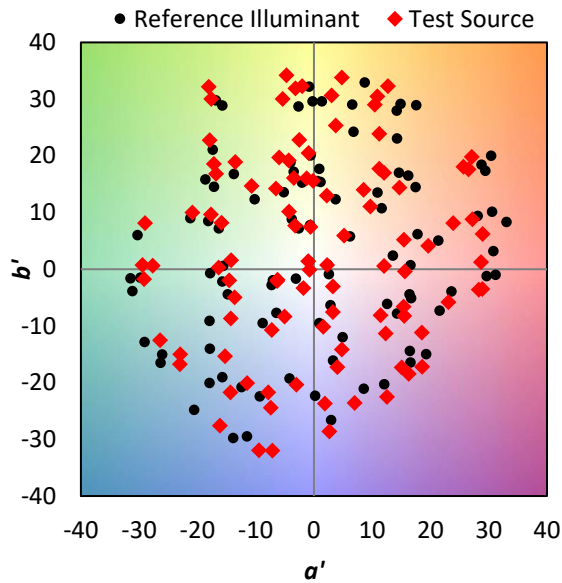
TM-30-18

### Summary

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



### Color Vector Graphics



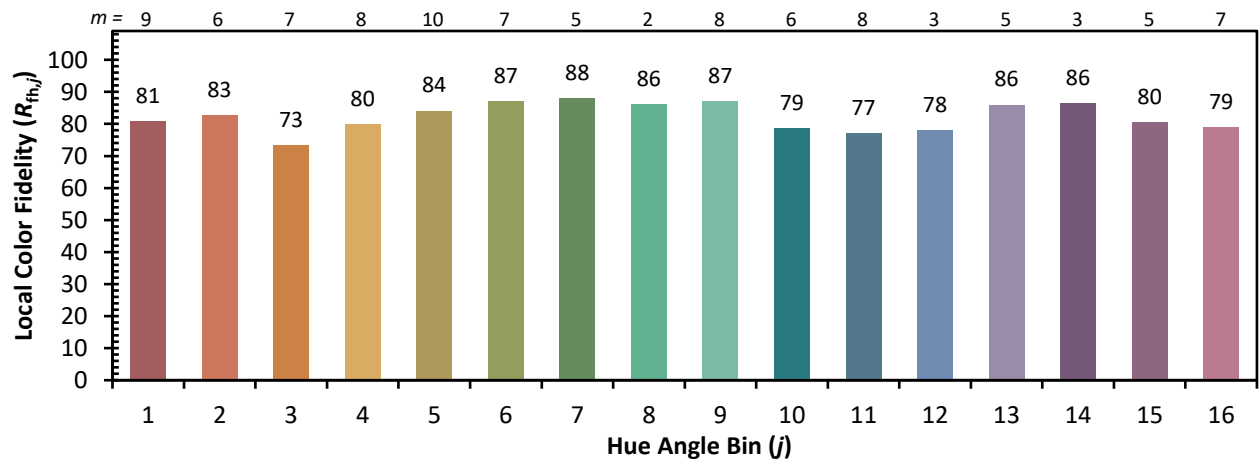
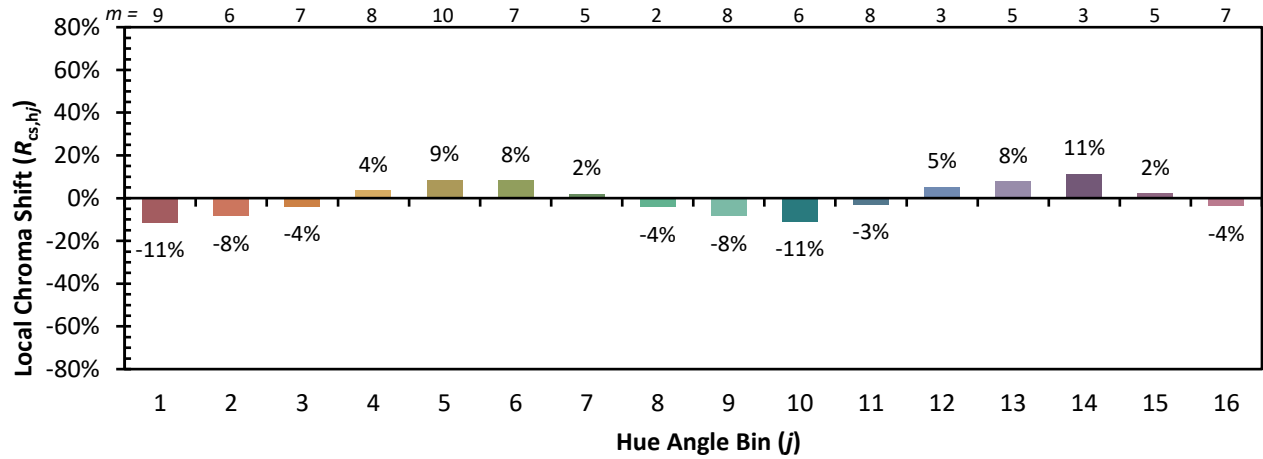


**Individual Sample Fidelity Index ( $R_{f,i}$ )**

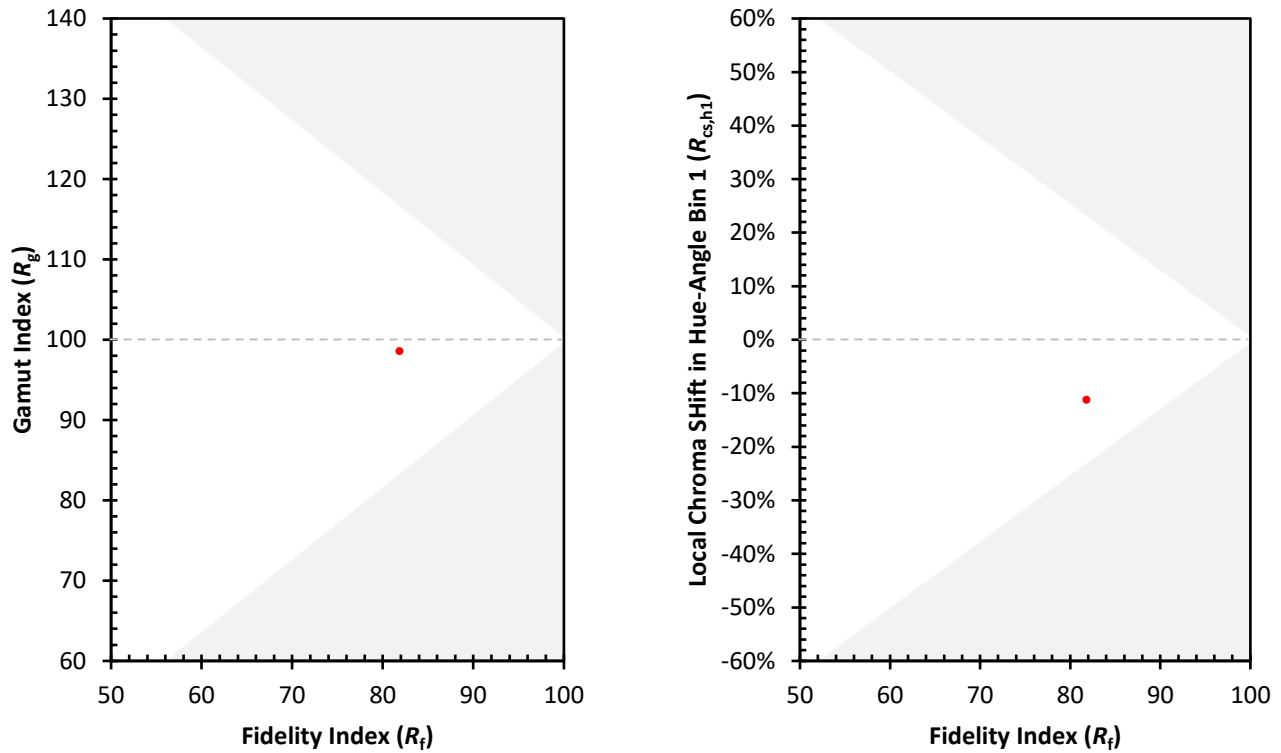
|            |            |            |            |
|------------|------------|------------|------------|
| CES01 = 85 | CES26 = 73 | CES51 = 93 | CES76 = 66 |
| CES02 = 61 | CES27 = 91 | CES52 = 93 | CES77 = 80 |
| CES03 = 31 | CES28 = 87 | CES53 = 83 | CES78 = 66 |
| CES04 = 69 | CES29 = 71 | CES54 = 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)