

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: P1048131

Luminaire Tested: **GALN-SA1C-935-U-T2BC**

Issue Date: 07/10/2025

**Test Information**

Test Method: LM-79-08  
Report Number: P1048131  
Test Lab: INNOVATION CENTER(G3)  
Issue Date: 07/10/2025  
Manufacturer: COOPER LIGHTING SOLUTIONS (FORMERLY EATON)  
Product Line: MCGRAW-EDISON  
Catalog Number: GALN-SA1C-935-U-T2BC  
Description: GALLEON II AREA AND ROADWAY LUMINAIRE 1050mA 1xLight Square PACKAGE  
90CRI 3500K FIXTURE w/ TYPE II ANGLED BACKLIGHT CONTROL  
Light Source: (14) 3500K CCT, 90 CRI LEDS  
Ballast/Driver: ELECTRONIC DRIVER

**Summary**

Lumens per Lamp: N/A  
Luminaire Lumens: 4152.3 lumens  
Efficiency: N/A  
Efficacy: 82.7 lumens/watt  
Luminous Opening: Rectangular (W 0.5' x L: 0.5' x H: 0')  
IES Classification: Type II - Short  
BUG Rating: B0 - U0 - G1

Input Watts (W): 50.2  
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

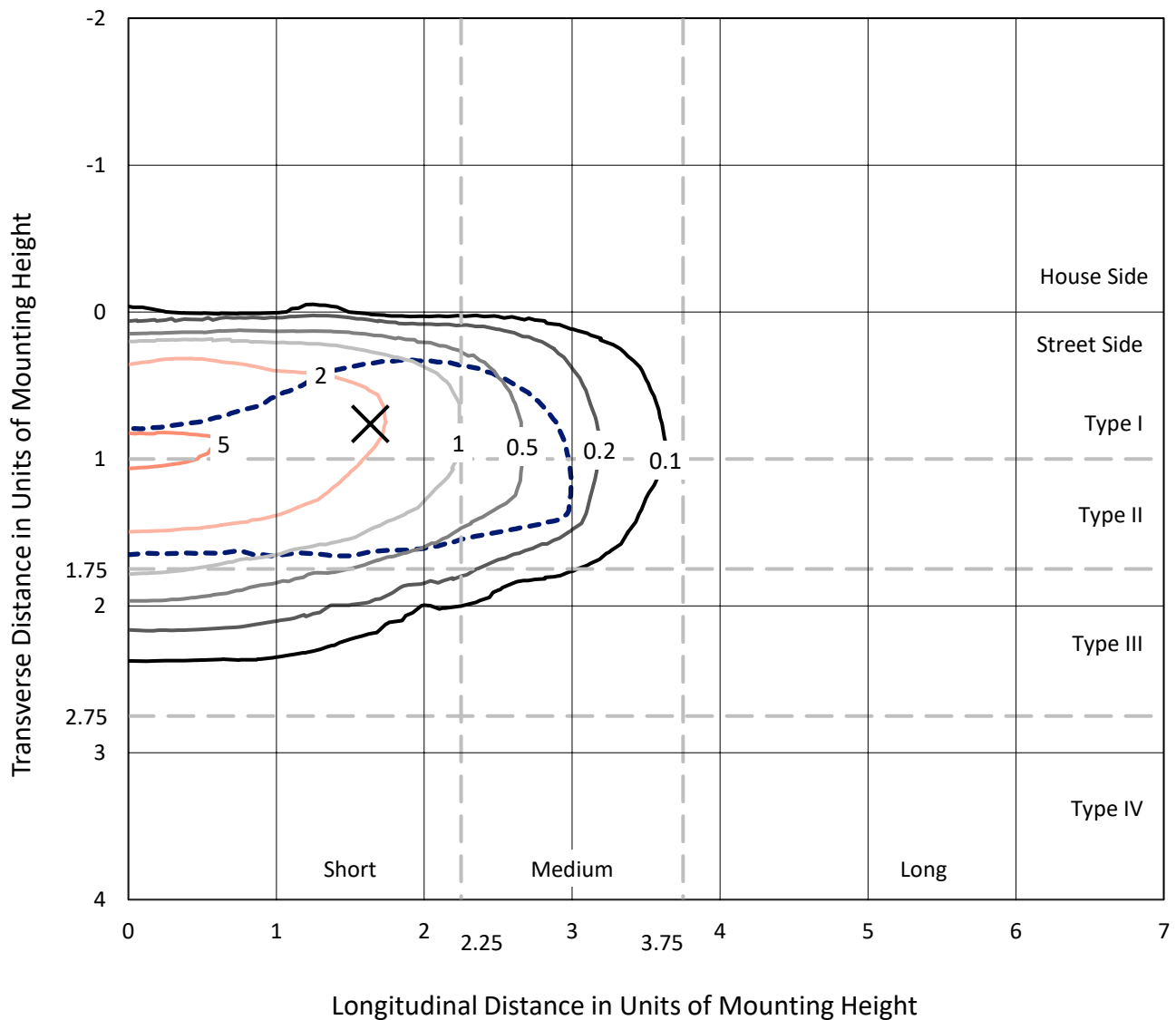


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## Iso-Footcandle Lines of Horizontal Illumination

✕ Max cd  
 - - - 1/2 Max cd

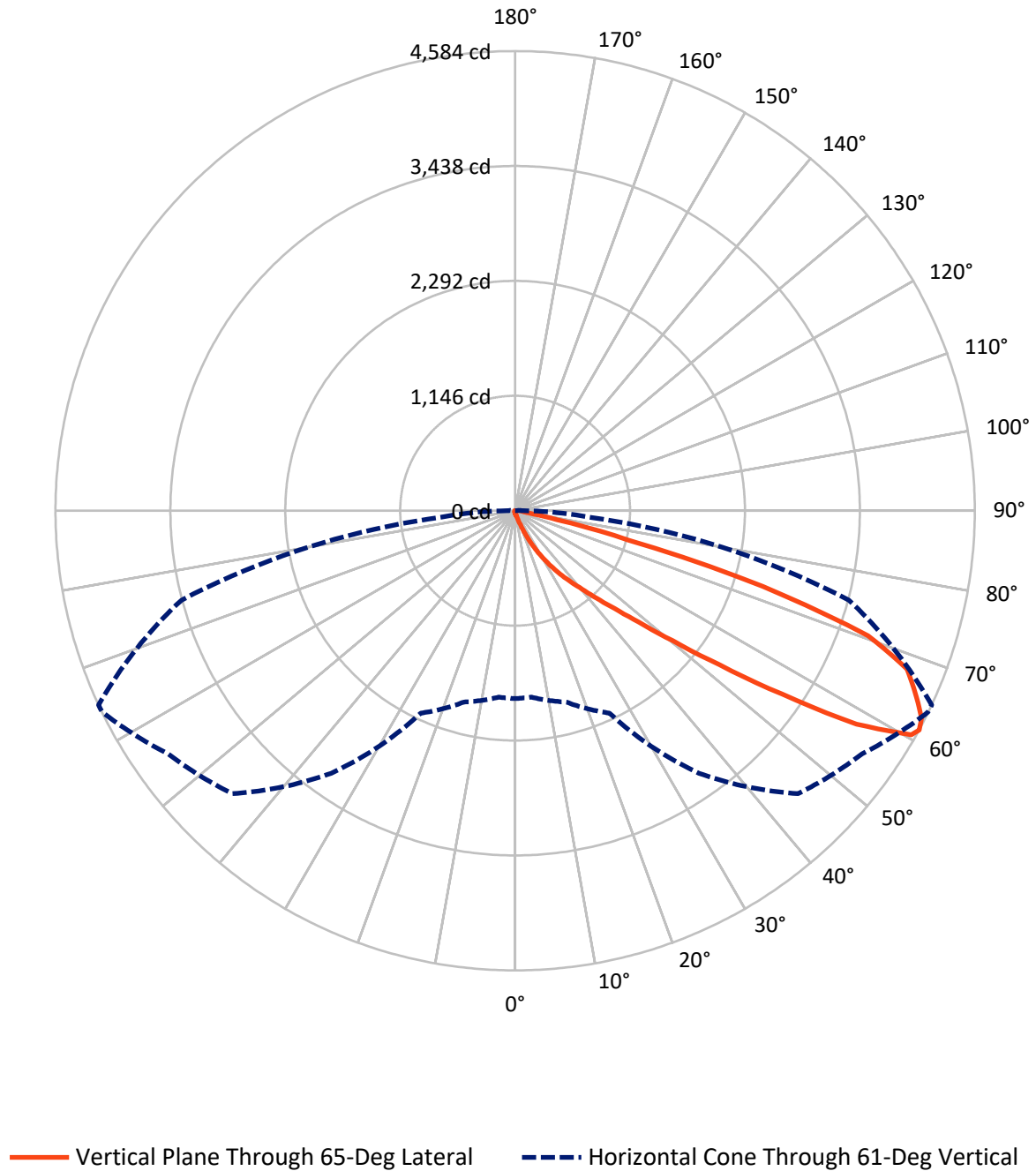


Based on 15 foot mounting height. Maximum calculated value = 5.5 fc  
 Type II - Short - N/A

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## Luminous Intensity Polar Plot



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CATALOG NUMBER: GALN-SA1C-935-U-T2BC

**FLUX DISTRIBUTION:**

|                    |           | Downward | Upward | Total  |
|--------------------|-----------|----------|--------|--------|
| <b>House Side</b>  | Lumens    | 17.7     | 0.0    | 17.7   |
|                    | % Fixture | 0.4      | 0.0    | 0.4    |
| <b>Street Side</b> | Lumens    | 4134.5   | 0.0    | 4134.5 |
|                    | % Fixture | 99.6     | 0.0    | 99.6   |
| <b>Total</b>       | Lumens    | 4152.3   | 0.0    | 4152.3 |
|                    | % Fixture | 100.0    | 0.0    | 100.0  |

**Coefficient of Utilization**

**ZONAL LUMENS:**

| Zone      | Lumens | % Fixture |
|-----------|--------|-----------|
| 0°-10°    | 3.2    | 0.1       |
| 10°-20°   | 34.1   | 0.8       |
| 20°-30°   | 122.5  | 3.0       |
| 30°-40°   | 326.2  | 7.9       |
| 40°-50°   | 857.0  | 20.6      |
| 50°-60°   | 1327.7 | 32.0      |
| 60°-70°   | 1113.3 | 26.8      |
| 70°-80°   | 327.6  | 7.9       |
| 80°-90°   | 40.4   | 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°    | 4152.3 | 100.0     |
| 0°-180°   | 4152.3 | 100.0     |



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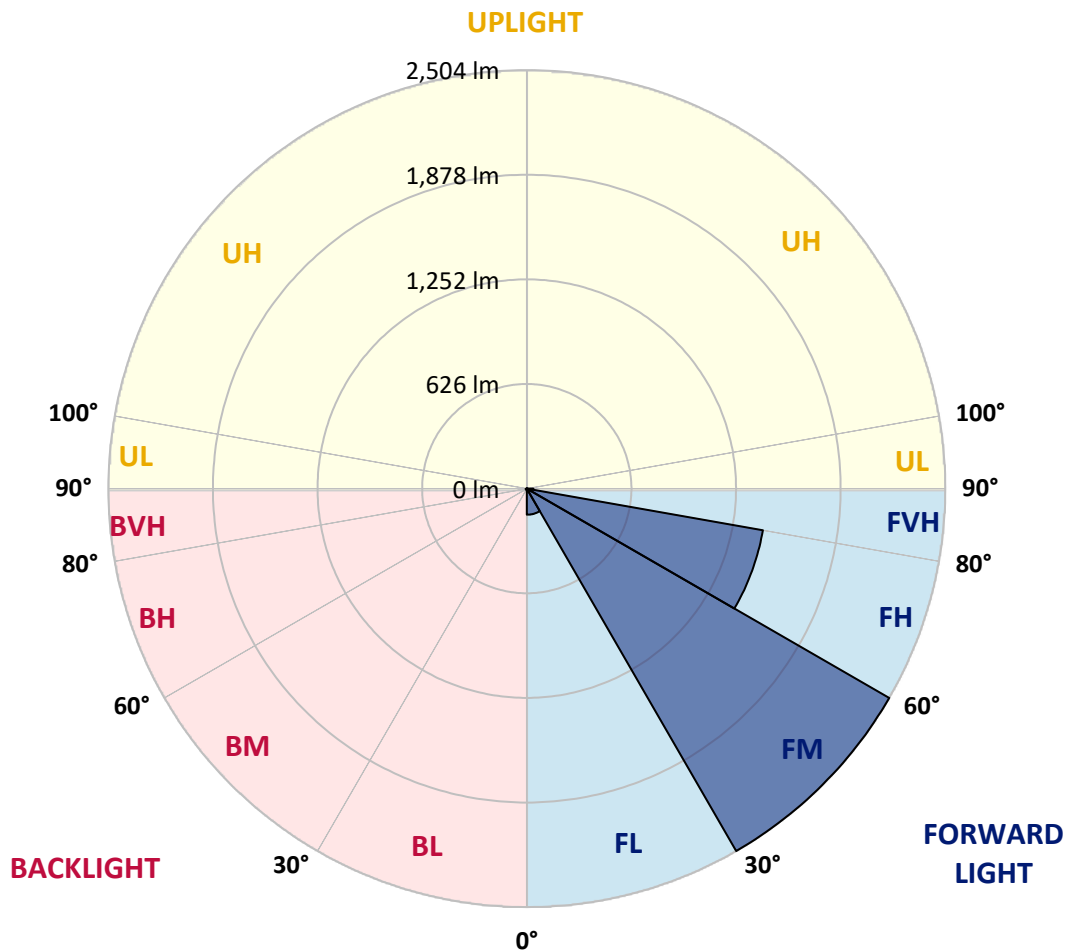
CATALOG NUMBER: GALN-SA1C-935-U-T2BC

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

| Zone |             | Lumens | % Fixture | Zone Rating/Lumen Limit |      |         |
|------|-------------|--------|-----------|-------------------------|------|---------|
|      |             |        |           | B                       | U    | G       |
| FL   | (0°-30°)    | 155.9  | 3.8       |                         |      |         |
| FM   | (30°-60°)   | 2504.3 | 60.3      |                         |      |         |
| FH   | (60°-80°)   | 1434.6 | 34.6      |                         |      | G1/1800 |
| FVH  | (80°-90°)   | 39.7   | 1.0       |                         |      | G1/100  |
| BL   | (0°-30°)    | 4.0    | 0.1       | B0/110                  |      |         |
| BM   | (30°-60°)   | 6.7    | 0.2       | B0/220                  |      |         |
| BH   | (60°-80°)   | 6.3    | 0.2       | B0/110                  |      | G0/110  |
| BVH  | (80°-90°)   | 0.8    | 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-G1**

Type II Short



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**CANDELA DISTRIBUTION (FULL):**

|       | 0°     | 5°     | 15°    | 25°    | 35°    | 45°    | 55°    | 64°    | 65°    | 75°    | 85°    |
|-------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|
| 0°    | 25.4   | 25.4   | 25.4   | 25.4   | 25.4   | 25.4   | 25.4   | 25.4   | 25.4   | 25.4   | 25.4   |
| 2.5°  | 30.8   | 31.1   | 30.6   | 29.4   | 28.6   | 28.6   | 28.3   | 27.4   | 27.4   | 26.6   | 26.0   |
| 5°    | 43.1   | 42.6   | 41.4   | 39.1   | 37.1   | 35.1   | 33.1   | 31.1   | 30.8   | 28.3   | 26.6   |
| 7.5°  | 70.6   | 71.1   | 67.4   | 60.3   | 54.3   | 46.6   | 39.4   | 35.1   | 34.6   | 30.3   | 26.8   |
| 10°   | 154.8  | 150.5  | 142.0  | 114.3  | 94.0   | 70.8   | 52.6   | 40.8   | 40.3   | 32.6   | 27.4   |
| 12.5° | 282.2  | 278.8  | 263.1  | 234.5  | 182.2  | 126.8  | 76.8   | 50.6   | 48.8   | 34.6   | 27.7   |
| 15°   | 406.7  | 401.3  | 392.7  | 363.9  | 302.8  | 227.4  | 125.7  | 69.1   | 64.6   | 37.4   | 27.4   |
| 17.5° | 486.1  | 487.0  | 479.3  | 467.0  | 427.6  | 336.5  | 217.1  | 103.1  | 94.3   | 42.6   | 26.8   |
| 20°   | 555.6  | 553.6  | 557.8  | 551.3  | 523.6  | 457.3  | 315.9  | 163.4  | 148.2  | 50.8   | 27.1   |
| 22.5° | 635.5  | 640.4  | 643.5  | 642.1  | 611.5  | 555.0  | 428.2  | 244.5  | 225.4  | 66.0   | 28.0   |
| 25°   | 742.6  | 742.1  | 742.4  | 738.6  | 708.9  | 646.1  | 540.7  | 345.3  | 325.9  | 90.5   | 30.0   |
| 27.5° | 854.9  | 858.3  | 859.7  | 846.3  | 807.5  | 745.8  | 645.0  | 455.6  | 432.7  | 130.0  | 32.6   |
| 30°   | 1008.3 | 1005.4 | 998.8  | 971.4  | 924.3  | 847.8  | 747.8  | 571.3  | 547.3  | 185.1  | 36.6   |
| 32.5° | 1215.1 | 1211.9 | 1178.8 | 1118.2 | 1047.7 | 954.0  | 851.2  | 687.2  | 658.1  | 253.9  | 42.0   |
| 35°   | 1555.8 | 1560.7 | 1479.3 | 1322.5 | 1195.9 | 1081.7 | 965.7  | 802.6  | 776.9  | 338.8  | 49.4   |
| 37.5° | 2077.7 | 2051.1 | 1940.6 | 1663.5 | 1391.0 | 1241.1 | 1075.1 | 919.2  | 896.9  | 443.3  | 59.1   |
| 40°   | 2584.7 | 2558.4 | 2526.4 | 2263.9 | 1730.1 | 1416.7 | 1228.2 | 1056.0 | 1027.1 | 561.3  | 73.4   |
| 42.5° | 3117.7 | 3103.1 | 3101.7 | 2903.7 | 2348.7 | 1692.9 | 1412.4 | 1216.2 | 1191.7 | 690.7  | 96.8   |
| 45°   | 3495.3 | 3480.7 | 3511.3 | 3545.8 | 3191.3 | 2284.8 | 1733.2 | 1424.4 | 1388.7 | 847.8  | 134.2  |
| 47.5° | 3546.1 | 3546.7 | 3628.4 | 3736.6 | 3817.5 | 3200.2 | 2160.5 | 1700.4 | 1656.9 | 1072.5 | 197.1  |
| 50°   | 3377.0 | 3383.6 | 3513.5 | 3707.2 | 3924.8 | 3968.3 | 2914.0 | 2100.8 | 2036.5 | 1339.0 | 286.2  |
| 52.5° | 3055.1 | 3062.5 | 3243.6 | 3562.1 | 3826.0 | 4152.8 | 3801.2 | 2624.7 | 2550.7 | 1671.5 | 411.9  |
| 55°   | 2765.2 | 2769.8 | 2977.4 | 3379.9 | 3706.9 | 4052.5 | 4327.9 | 3324.2 | 3227.1 | 2080.5 | 535.8  |
| 57.5° | 2478.1 | 2467.6 | 2602.7 | 3063.4 | 3686.6 | 3929.4 | 4405.6 | 4121.4 | 4014.2 | 2527.5 | 632.4  |
| 60°   | 2094.2 | 2076.5 | 2185.1 | 2478.1 | 3419.9 | 4010.3 | 4260.2 | 4562.4 | 4538.1 | 3149.9 | 706.9  |
| 61°   | 1873.4 | 1866.0 | 1975.1 | 2226.5 | 3195.3 | 3989.7 | 4225.3 | 4580.9 | 4583.5 | 3444.4 | 740.4  |
| 62.5° | 1337.9 | 1359.0 | 1525.8 | 1852.6 | 2676.4 | 3856.3 | 4229.9 | 4523.5 | 4548.9 | 3835.7 | 826.9  |
| 65°   | 594.7  | 628.7  | 758.3  | 1024.3 | 1556.4 | 3207.9 | 4189.3 | 4397.6 | 4385.0 | 3943.1 | 1125.1 |
| 67.5° | 352.8  | 357.9  | 422.4  | 580.4  | 824.3  | 1725.5 | 3696.9 | 4231.0 | 4214.2 | 3432.7 | 1399.9 |
| 70°   | 277.9  | 280.5  | 301.1  | 364.2  | 478.4  | 660.9  | 2110.0 | 3660.6 | 3734.0 | 2783.5 | 1370.5 |
| 72.5° | 263.6  | 263.1  | 265.9  | 277.1  | 301.3  | 327.9  | 816.9  | 2433.3 | 2582.7 | 2004.6 | 1149.1 |
| 75°   | 260.2  | 259.1  | 256.2  | 251.9  | 218.2  | 193.1  | 253.1  | 1076.3 | 1162.8 | 1369.6 | 865.2  |
| 77.5° | 252.5  | 252.8  | 253.4  | 241.6  | 187.1  | 136.5  | 122.5  | 345.3  | 424.7  | 869.2  | 615.0  |
| 80°   | 170.8  | 173.4  | 177.7  | 173.1  | 168.2  | 98.8   | 86.5   | 122.8  | 124.5  | 487.9  | 406.2  |
| 82.5° | 86.5   | 86.5   | 84.5   | 75.4   | 65.1   | 64.3   | 68.8   | 89.1   | 90.3   | 246.8  | 191.1  |
| 85°   | 52.3   | 55.1   | 56.3   | 51.1   | 46.8   | 43.1   | 52.6   | 70.8   | 73.4   | 95.7   | 44.6   |
| 87.5° | 11.7   | 12.0   | 13.1   | 17.4   | 25.4   | 34.6   | 48.8   | 64.8   | 66.0   | 61.4   | 5.4    |
| 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°    | 25.4  | 25.4 | 25.4 | 25.4 | 25.4 | 25.4 | 25.4 | 25.4 | 25.4 | 25.4 | 25.4 |
| 2.5°  | 25.7  | 25.1 | 24.8 | 24.0 | 23.1 | 22.3 | 21.7 | 21.4 | 21.7 | 22.0 | 22.0 |
| 5°    | 25.4  | 24.6 | 23.1 | 21.7 | 20.6 | 19.4 | 18.3 | 18.0 | 18.0 | 18.3 | 18.3 |
| 7.5°  | 25.4  | 24.0 | 22.0 | 20.3 | 18.6 | 16.9 | 16.0 | 15.4 | 15.7 | 15.7 | 15.7 |
| 10°   | 25.4  | 23.7 | 21.1 | 18.6 | 16.6 | 14.6 | 13.1 | 12.6 | 12.6 | 12.6 | 12.6 |
| 12.5° | 25.1  | 23.4 | 20.3 | 17.1 | 14.3 | 12.0 | 10.3 | 9.4  | 9.7  | 9.7  | 9.7  |
| 15°   | 24.6  | 22.6 | 19.1 | 14.6 | 11.4 | 9.1  | 7.4  | 6.6  | 6.9  | 7.4  | 7.7  |
| 17.5° | 23.7  | 21.7 | 17.1 | 12.3 | 9.1  | 6.9  | 5.1  | 4.6  | 4.9  | 5.7  | 5.7  |
| 20°   | 23.4  | 20.9 | 15.1 | 10.0 | 6.9  | 4.9  | 3.4  | 2.9  | 3.1  | 4.3  | 4.6  |
| 22.5° | 23.4  | 20.3 | 13.7 | 8.3  | 5.1  | 3.1  | 2.0  | 1.1  | 1.1  | 2.0  | 2.0  |
| 25°   | 23.7  | 20.0 | 12.6 | 6.9  | 3.7  | 2.3  | 1.1  | 0.6  | 1.1  | 3.1  | 3.7  |
| 27.5° | 24.3  | 19.7 | 12.0 | 5.7  | 2.9  | 2.0  | 0.9  | 2.0  | 3.4  | 3.4  | 3.4  |
| 30°   | 24.8  | 19.1 | 11.1 | 4.9  | 2.6  | 1.4  | 1.4  | 2.9  | 2.9  | 3.4  | 3.7  |
| 32.5° | 25.7  | 18.9 | 10.6 | 4.3  | 2.0  | 1.1  | 2.0  | 1.7  | 1.7  | 2.0  | 2.3  |
| 35°   | 27.4  | 19.1 | 10.0 | 4.3  | 2.0  | 1.4  | 1.7  | 0.9  | 0.6  | 0.6  | 0.6  |
| 37.5° | 29.7  | 19.4 | 9.1  | 3.7  | 1.7  | 1.7  | 0.9  | 0.0  | 0.0  | 0.0  | 0.0  |
| 40°   | 33.4  | 20.3 | 8.6  | 3.4  | 1.4  | 1.4  | 0.3  | 0.0  | 0.0  | 0.0  | 0.0  |
| 42.5° | 39.7  | 22.0 | 8.3  | 3.1  | 1.4  | 1.1  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  |
| 45°   | 52.3  | 26.0 | 7.7  | 2.9  | 1.4  | 0.6  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  |
| 47.5° | 75.1  | 35.4 | 7.4  | 2.3  | 0.9  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  |
| 50°   | 109.7 | 48.0 | 7.1  | 2.0  | 0.3  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  |
| 52.5° | 140.0 | 50.6 | 4.9  | 1.7  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  |
| 55°   | 143.4 | 34.8 | 3.7  | 1.1  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  |
| 57.5° | 114.3 | 22.6 | 3.1  | 0.9  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  |
| 60°   | 86.5  | 17.1 | 2.9  | 0.3  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  |
| 61°   | 83.1  | 15.4 | 2.9  | 0.3  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  |
| 62.5° | 91.7  | 13.4 | 2.6  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  |
| 65°   | 149.1 | 11.1 | 2.3  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  |
| 67.5° | 259.1 | 9.7  | 2.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  |
| 70°   | 327.3 | 9.1  | 1.7  | 0.3  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  |
| 72.5° | 285.3 | 8.3  | 1.7  | 0.6  | 0.3  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  |
| 75°   | 171.7 | 7.1  | 1.7  | 1.1  | 0.6  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  |
| 77.5° | 90.0  | 5.4  | 1.7  | 1.4  | 0.9  | 0.3  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  |
| 80°   | 43.7  | 4.9  | 2.0  | 1.4  | 1.1  | 0.6  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  |
| 82.5° | 17.1  | 4.0  | 2.3  | 2.0  | 1.4  | 0.9  | 0.3  | 0.0  | 0.0  | 0.0  | 0.0  |
| 85°   | 7.7   | 3.4  | 2.6  | 2.3  | 2.0  | 1.1  | 0.3  | 0.0  | 0.0  | 0.0  | 0.0  |
| 87.5° | 4.0   | 3.1  | 2.9  | 2.6  | 2.0  | 1.4  | 0.6  | 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: SP1-2407-184-15

Test Date: 10/11/2024

Luminaire Tested: GSS-SB1A-935-U-5WQ

Data in this report applies to families of products including GSS-SB1A-935-U-5WQ

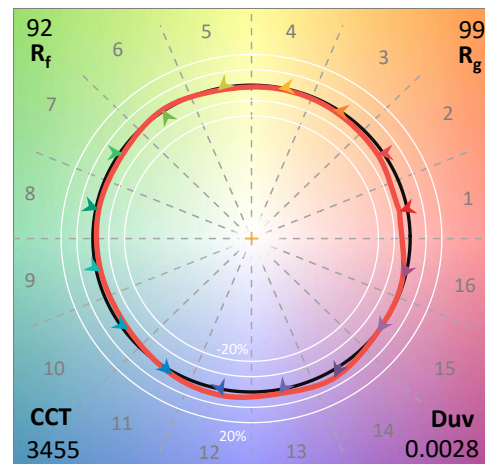
### Test Information

Test Method: LM-79-2019  
 Report Number: SP1-2407-184-15  
 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-935-U-5WQ**  
 Description: GALLEON II SITE SLIM 1SQ 350MA 5WQ HIGH DENSITY LIGHTSQUARE WITH 90 CRI  
 3500K CCT 26 LEDS

### Spectral Parameters

CCT (K): 3455  
 CIE  $u'$ : 0.2356  
 CIE  $v'$ : 0.5159  
 Duv: 0.0028  
 CIE x: 0.4109  
 CIE y: 0.3999  
 CIE z: 0.1892  
 Peak Wavelength (nm): 616  
 Dominant Wavelength (nm): 579  
 Purity: 43.35383  
 R<sub>f</sub>: 92.3  
 R<sub>g</sub>: 98.5

CRI (Ra): 92.2  
 R1: 92.0  
 R2: 94.4  
 R3: 95.6  
 R4: 93.2  
 R5: 91.4  
 R6: 92.5  
 R7: 94.5  
 R8: 84.2  
 R9: 59.8  
 R10: 85.8  
 R11: 93.2  
 R12: 78.0  
 R13: 92.5  
 R14: 97.0  
 R15: 88.4



### Test Conditions

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

REPORT NUMBER: SP1-2407-184-15

| 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 3500K 4-step quadrangle

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### Photopic Flux vs. Wavelength



### Photopic Lumens: NR

| $\lambda$<br>(nm) | Power<br>$\text{W}^{\wedge}/\text{nm}$ | Lumens<br>( $\phi/\text{nm}$ ) | $\lambda$<br>(nm) | Power<br>$\text{W}^{\wedge}/\text{nm}$ | Lumens<br>( $\phi/\text{nm}$ ) | $\lambda$<br>(nm) | Power<br>$\text{W}^{\wedge}/\text{nm}$ | Lumens<br>( $\phi/\text{nm}$ ) | $\lambda$<br>(nm) | Power<br>$\text{W}^{\wedge}/\text{nm}$ | Lumens<br>( $\phi/\text{nm}$ ) | $\lambda$<br>(nm) | Power<br>$\text{W}^{\wedge}/\text{nm}$ | Lumens<br>( $\phi/\text{nm}$ ) |
|-------------------|----------------------------------------|--------------------------------|-------------------|----------------------------------------|--------------------------------|-------------------|----------------------------------------|--------------------------------|-------------------|----------------------------------------|--------------------------------|-------------------|----------------------------------------|--------------------------------|
| 360               | 0                                      | NR                             | 490               | 410                                    | NR                             | 620               | 997                                    | NR                             | 750               | 74                                     | NR                             | 880               | 1                                      | NR                             |
| 365               | 0                                      | NR                             | 495               | 454                                    | NR                             | 625               | 988                                    | NR                             | 755               | 64                                     | NR                             | 885               | 1                                      | NR                             |
| 370               | 0                                      | NR                             | 500               | 493                                    | NR                             | 630               | 973                                    | NR                             | 760               | 54                                     | NR                             | 890               | 1                                      | NR                             |
| 375               | 0                                      | NR                             | 505               | 530                                    | NR                             | 635               | 946                                    | NR                             | 765               | 47                                     | NR                             | 895               | 1                                      | NR                             |
| 380               | 0                                      | NR                             | 510               | 564                                    | NR                             | 640               | 913                                    | NR                             | 770               | 40                                     | NR                             | 900               | 1                                      | NR                             |
| 385               | 0                                      | NR                             | 515               | 599                                    | NR                             | 645               | 870                                    | NR                             | 775               | 34                                     | NR                             | 905               | 1                                      | NR                             |
| 390               | 0                                      | NR                             | 520               | 634                                    | NR                             | 650               | 826                                    | NR                             | 780               | 29                                     | NR                             | 910               | 1                                      | NR                             |
| 395               | 0                                      | NR                             | 525               | 664                                    | NR                             | 655               | 774                                    | NR                             | 785               | 25                                     | NR                             | 915               | 1                                      | NR                             |
| 400               | 2                                      | NR                             | 530               | 695                                    | NR                             | 660               | 720                                    | NR                             | 790               | 21                                     | NR                             | 920               | 1                                      | NR                             |
| 405               | 4                                      | NR                             | 535               | 722                                    | NR                             | 665               | 664                                    | NR                             | 795               | 18                                     | NR                             | 925               | 1                                      | NR                             |
| 410               | 9                                      | NR                             | 540               | 741                                    | NR                             | 670               | 605                                    | NR                             | 800               | 16                                     | NR                             | 930               | 0                                      | NR                             |
| 415               | 17                                     | NR                             | 545               | 762                                    | NR                             | 675               | 550                                    | NR                             | 805               | 13                                     | NR                             | 935               | 0                                      | NR                             |
| 420               | 32                                     | NR                             | 550               | 777                                    | NR                             | 680               | 497                                    | NR                             | 810               | 12                                     | NR                             | 940               | 0                                      | NR                             |
| 425               | 61                                     | NR                             | 555               | 789                                    | NR                             | 685               | 445                                    | NR                             | 815               | 10                                     | NR                             | 945               | 0                                      | NR                             |
| 430               | 114                                    | NR                             | 560               | 800                                    | NR                             | 690               | 398                                    | NR                             | 820               | 9                                      | NR                             | 950               | 0                                      | NR                             |
| 435               | 218                                    | NR                             | 565               | 813                                    | NR                             | 695               | 352                                    | NR                             | 825               | 7                                      | NR                             | 955               | 0                                      | NR                             |
| 440               | 427                                    | NR                             | 570               | 828                                    | NR                             | 700               | 309                                    | NR                             | 830               | 6                                      | NR                             | 960               | 0                                      | NR                             |
| 445               | 684                                    | NR                             | 575               | 846                                    | NR                             | 705               | 273                                    | NR                             | 835               | 5                                      | NR                             | 965               | 0                                      | NR                             |
| 450               | 611                                    | NR                             | 580               | 866                                    | NR                             | 710               | 237                                    | NR                             | 840               | 5                                      | NR                             | 970               | 0                                      | NR                             |
| 455               | 461                                    | NR                             | 585               | 888                                    | NR                             | 715               | 208                                    | NR                             | 845               | 4                                      | NR                             | 975               | 0                                      | NR                             |
| 460               | 427                                    | NR                             | 590               | 913                                    | NR                             | 720               | 181                                    | NR                             | 850               | 4                                      | NR                             | 980               | 0                                      | NR                             |
| 465               | 349                                    | NR                             | 595               | 936                                    | NR                             | 725               | 157                                    | NR                             | 855               | 3                                      | NR                             | 985               | 0                                      | NR                             |
| 470               | 298                                    | NR                             | 600               | 957                                    | NR                             | 730               | 136                                    | NR                             | 860               | 3                                      | NR                             | 990               | 1                                      | NR                             |
| 475               | 312                                    | NR                             | 605               | 976                                    | NR                             | 735               | 117                                    | NR                             | 865               | 2                                      | NR                             | 995               | 0                                      | NR                             |
| 480               | 335                                    | NR                             | 610               | 990                                    | NR                             | 740               | 100                                    | NR                             | 870               | 2                                      | NR                             | 1000              | 0                                      | NR                             |
| 485               | 367                                    | NR                             | 615               | 999                                    | NR                             | 745               | 86                                     | NR                             | 875               | 2                                      | NR                             |                   |                                        |                                |

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### Scotopic Flux vs. Wavelength



Scotopic Lumens: NR

S/P: 1.58

| 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       | 410                         | NR               | 620       | 997                         | NR               | 750       | 74                          | NR               | 880       | 1                           | NR               |
| 365       | 0                           | NR               | 495       | 454                         | NR               | 625       | 988                         | NR               | 755       | 64                          | NR               | 885       | 1                           | NR               |
| 370       | 0                           | NR               | 500       | 493                         | NR               | 630       | 973                         | NR               | 760       | 54                          | NR               | 890       | 1                           | NR               |
| 375       | 0                           | NR               | 505       | 530                         | NR               | 635       | 946                         | NR               | 765       | 47                          | NR               | 895       | 1                           | NR               |
| 380       | 0                           | NR               | 510       | 564                         | NR               | 640       | 913                         | NR               | 770       | 40                          | NR               | 900       | 1                           | NR               |
| 385       | 0                           | NR               | 515       | 599                         | NR               | 645       | 870                         | NR               | 775       | 34                          | NR               | 905       | 1                           | NR               |
| 390       | 0                           | NR               | 520       | 634                         | NR               | 650       | 826                         | NR               | 780       | 29                          | NR               | 910       | 1                           | NR               |
| 395       | 0                           | NR               | 525       | 664                         | NR               | 655       | 774                         | NR               | 785       | 25                          | NR               | 915       | 1                           | NR               |
| 400       | 2                           | NR               | 530       | 695                         | NR               | 660       | 720                         | NR               | 790       | 21                          | NR               | 920       | 1                           | NR               |
| 405       | 4                           | NR               | 535       | 722                         | NR               | 665       | 664                         | NR               | 795       | 18                          | NR               | 925       | 1                           | NR               |
| 410       | 9                           | NR               | 540       | 741                         | NR               | 670       | 605                         | NR               | 800       | 16                          | NR               | 930       | 0                           | NR               |
| 415       | 17                          | NR               | 545       | 762                         | NR               | 675       | 550                         | NR               | 805       | 13                          | NR               | 935       | 0                           | NR               |
| 420       | 32                          | NR               | 550       | 777                         | NR               | 680       | 497                         | NR               | 810       | 12                          | NR               | 940       | 0                           | NR               |
| 425       | 61                          | NR               | 555       | 789                         | NR               | 685       | 445                         | NR               | 815       | 10                          | NR               | 945       | 0                           | NR               |
| 430       | 114                         | NR               | 560       | 800                         | NR               | 690       | 398                         | NR               | 820       | 9                           | NR               | 950       | 0                           | NR               |
| 435       | 218                         | NR               | 565       | 813                         | NR               | 695       | 352                         | NR               | 825       | 7                           | NR               | 955       | 0                           | NR               |
| 440       | 427                         | NR               | 570       | 828                         | NR               | 700       | 309                         | NR               | 830       | 6                           | NR               | 960       | 0                           | NR               |
| 445       | 684                         | NR               | 575       | 846                         | NR               | 705       | 273                         | NR               | 835       | 5                           | NR               | 965       | 0                           | NR               |
| 450       | 611                         | NR               | 580       | 866                         | NR               | 710       | 237                         | NR               | 840       | 5                           | NR               | 970       | 0                           | NR               |
| 455       | 461                         | NR               | 585       | 888                         | NR               | 715       | 208                         | NR               | 845       | 4                           | NR               | 975       | 0                           | NR               |
| 460       | 427                         | NR               | 590       | 913                         | NR               | 720       | 181                         | NR               | 850       | 4                           | NR               | 980       | 0                           | NR               |
| 465       | 349                         | NR               | 595       | 936                         | NR               | 725       | 157                         | NR               | 855       | 3                           | NR               | 985       | 0                           | NR               |
| 470       | 298                         | NR               | 600       | 957                         | NR               | 730       | 136                         | NR               | 860       | 3                           | NR               | 990       | 1                           | NR               |
| 475       | 312                         | NR               | 605       | 976                         | NR               | 735       | 117                         | NR               | 865       | 2                           | NR               | 995       | 0                           | NR               |
| 480       | 335                         | NR               | 610       | 990                         | NR               | 740       | 100                         | NR               | 870       | 2                           | NR               | 1000      | 0                           | NR               |
| 485       | 367                         | NR               | 615       | 999                         | NR               | 745       | 86                          | NR               | 875       | 2                           | NR               |           |                             |                  |

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### Melanopic Flux vs. Wavelength



Melanopic Lumens: NR

M/P: 3.14

| $\lambda$<br>(nm) | Power<br>$\text{W}^{\wedge}/\text{nm}$ | Lumens<br>( $\phi/\text{nm}$ ) | $\lambda$<br>(nm) | Power<br>$\text{W}^{\wedge}/\text{nm}$ | Lumens<br>( $\phi/\text{nm}$ ) | $\lambda$<br>(nm) | Power<br>$\text{W}^{\wedge}/\text{nm}$ | Lumens<br>( $\phi/\text{nm}$ ) | $\lambda$<br>(nm) | Power<br>$\text{W}^{\wedge}/\text{nm}$ | Lumens<br>( $\phi/\text{nm}$ ) | $\lambda$<br>(nm) | Power<br>$\text{W}^{\wedge}/\text{nm}$ | Lumens<br>( $\phi/\text{nm}$ ) |
|-------------------|----------------------------------------|--------------------------------|-------------------|----------------------------------------|--------------------------------|-------------------|----------------------------------------|--------------------------------|-------------------|----------------------------------------|--------------------------------|-------------------|----------------------------------------|--------------------------------|
| 360               | 0                                      | NR                             | 490               | 410                                    | NR                             | 620               | 997                                    | NR                             | 750               | 74                                     | NR                             | 880               | 1                                      | NR                             |
| 365               | 0                                      | NR                             | 495               | 454                                    | NR                             | 625               | 988                                    | NR                             | 755               | 64                                     | NR                             | 885               | 1                                      | NR                             |
| 370               | 0                                      | NR                             | 500               | 493                                    | NR                             | 630               | 973                                    | NR                             | 760               | 54                                     | NR                             | 890               | 1                                      | NR                             |
| 375               | 0                                      | NR                             | 505               | 530                                    | NR                             | 635               | 946                                    | NR                             | 765               | 47                                     | NR                             | 895               | 1                                      | NR                             |
| 380               | 0                                      | NR                             | 510               | 564                                    | NR                             | 640               | 913                                    | NR                             | 770               | 40                                     | NR                             | 900               | 1                                      | NR                             |
| 385               | 0                                      | NR                             | 515               | 599                                    | NR                             | 645               | 870                                    | NR                             | 775               | 34                                     | NR                             | 905               | 1                                      | NR                             |
| 390               | 0                                      | NR                             | 520               | 634                                    | NR                             | 650               | 826                                    | NR                             | 780               | 29                                     | NR                             | 910               | 1                                      | NR                             |
| 395               | 0                                      | NR                             | 525               | 664                                    | NR                             | 655               | 774                                    | NR                             | 785               | 25                                     | NR                             | 915               | 1                                      | NR                             |
| 400               | 2                                      | NR                             | 530               | 695                                    | NR                             | 660               | 720                                    | NR                             | 790               | 21                                     | NR                             | 920               | 1                                      | NR                             |
| 405               | 4                                      | NR                             | 535               | 722                                    | NR                             | 665               | 664                                    | NR                             | 795               | 18                                     | NR                             | 925               | 1                                      | NR                             |
| 410               | 9                                      | NR                             | 540               | 741                                    | NR                             | 670               | 605                                    | NR                             | 800               | 16                                     | NR                             | 930               | 0                                      | NR                             |
| 415               | 17                                     | NR                             | 545               | 762                                    | NR                             | 675               | 550                                    | NR                             | 805               | 13                                     | NR                             | 935               | 0                                      | NR                             |
| 420               | 32                                     | NR                             | 550               | 777                                    | NR                             | 680               | 497                                    | NR                             | 810               | 12                                     | NR                             | 940               | 0                                      | NR                             |
| 425               | 61                                     | NR                             | 555               | 789                                    | NR                             | 685               | 445                                    | NR                             | 815               | 10                                     | NR                             | 945               | 0                                      | NR                             |
| 430               | 114                                    | NR                             | 560               | 800                                    | NR                             | 690               | 398                                    | NR                             | 820               | 9                                      | NR                             | 950               | 0                                      | NR                             |
| 435               | 218                                    | NR                             | 565               | 813                                    | NR                             | 695               | 352                                    | NR                             | 825               | 7                                      | NR                             | 955               | 0                                      | NR                             |
| 440               | 427                                    | NR                             | 570               | 828                                    | NR                             | 700               | 309                                    | NR                             | 830               | 6                                      | NR                             | 960               | 0                                      | NR                             |
| 445               | 684                                    | NR                             | 575               | 846                                    | NR                             | 705               | 273                                    | NR                             | 835               | 5                                      | NR                             | 965               | 0                                      | NR                             |
| 450               | 611                                    | NR                             | 580               | 866                                    | NR                             | 710               | 237                                    | NR                             | 840               | 5                                      | NR                             | 970               | 0                                      | NR                             |
| 455               | 461                                    | NR                             | 585               | 888                                    | NR                             | 715               | 208                                    | NR                             | 845               | 4                                      | NR                             | 975               | 0                                      | NR                             |
| 460               | 427                                    | NR                             | 590               | 913                                    | NR                             | 720               | 181                                    | NR                             | 850               | 4                                      | NR                             | 980               | 0                                      | NR                             |
| 465               | 349                                    | NR                             | 595               | 936                                    | NR                             | 725               | 157                                    | NR                             | 855               | 3                                      | NR                             | 985               | 0                                      | NR                             |
| 470               | 298                                    | NR                             | 600               | 957                                    | NR                             | 730               | 136                                    | NR                             | 860               | 3                                      | NR                             | 990               | 1                                      | NR                             |
| 475               | 312                                    | NR                             | 605               | 976                                    | NR                             | 735               | 117                                    | NR                             | 865               | 2                                      | NR                             | 995               | 0                                      | NR                             |
| 480               | 335                                    | NR                             | 610               | 990                                    | NR                             | 740               | 100                                    | NR                             | 870               | 2                                      | NR                             | 1000              | 0                                      | NR                             |
| 485               | 367                                    | NR                             | 615               | 999                                    | NR                             | 745               | 86                                     | NR                             | 875               | 2                                      | NR                             |                   |                                        |                                |

REPORT NUMBER: SP1-2407-184-15

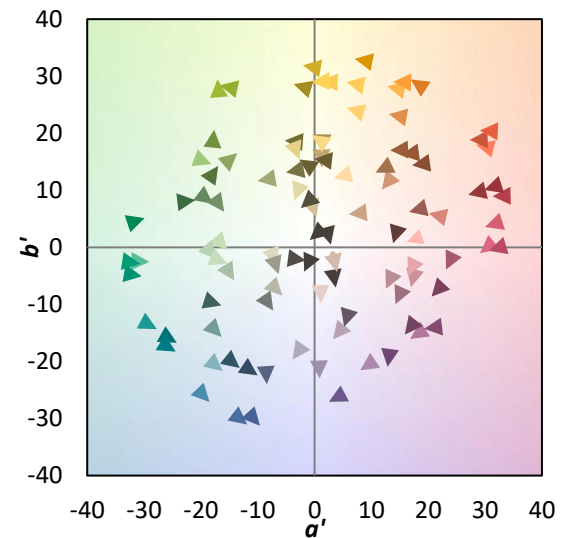
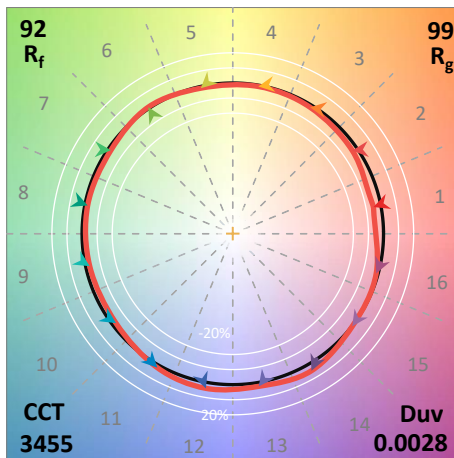
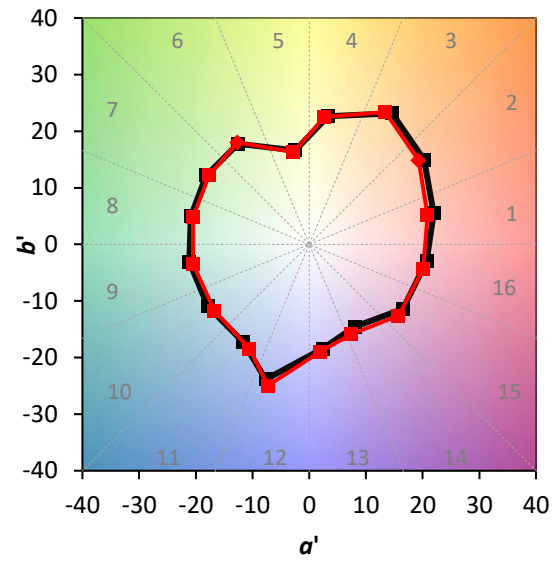
TM-30-18

### Summary

$R_f = 92.3$   
 $R_g = 98.5$   
 $\text{CIE } R_a = 92.2$   
 $R_9 = 59.8$



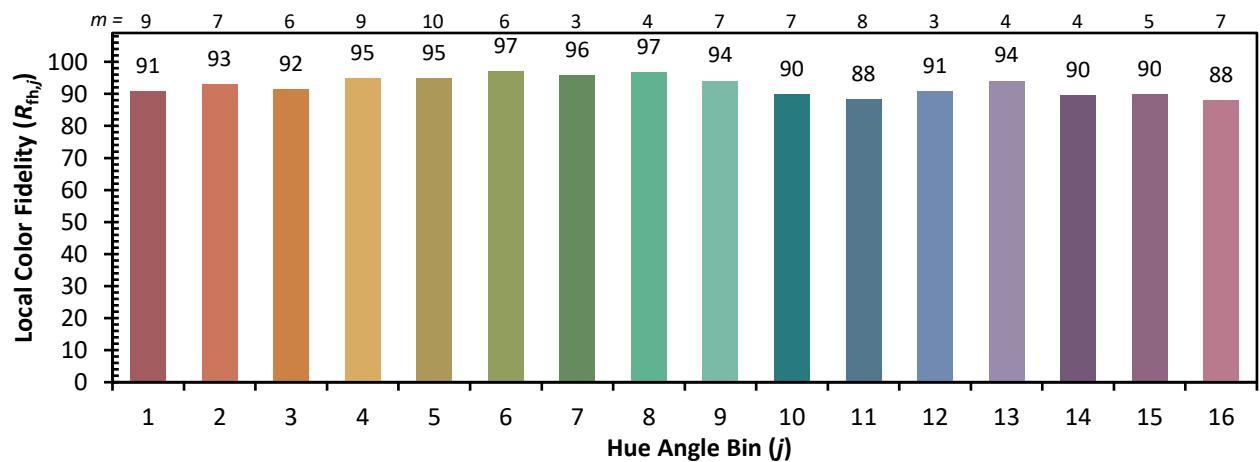
### Color Vector Graphics



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

|            |            |            |            |
|------------|------------|------------|------------|
| CES01 = 86 | CES26 = 93 | CES51 = 97 | CES76 = 88 |
| CES02 = 62 | CES27 = 93 | CES52 = 98 | CES77 = 91 |
| CES03 = 31 | CES28 = 96 | CES53 = 96 | CES78 = 85 |
| CES04 = 70 | CES29 = 95 | CES54 = 95 | CES79 = 96 |
| CES05 = 50 | CES30 = 97 | CES55 = 94 | CES80 = 94 |
| CES06 = 51 | CES31 = 96 | CES56 = 94 | CES81 = 87 |
| CES07 = 42 | CES32 = 91 | CES57 = 93 | CES82 = 97 |
| CES08 = 41 | CES33 = 98 | CES58 = 94 | CES83 = 97 |
| CES09 = 29 | CES34 = 94 | CES59 = 96 | CES84 = 94 |
| CES10 = 75 | CES35 = 97 | CES60 = 94 | CES85 = 85 |
| CES11 = 58 | CES36 = 86 | CES61 = 93 | CES86 = 87 |
| CES12 = 64 | CES37 = 95 | CES62 = 91 | CES87 = 92 |
| CES13 = 43 | CES38 = 92 | CES63 = 93 | CES88 = 96 |
| CES14 = 74 | CES39 = 99 | CES64 = 91 | CES89 = 87 |
| CES15 = 71 | CES40 = 98 | CES65 = 89 | CES90 = 96 |
| CES16 = 47 | CES41 = 98 | CES66 = 89 | CES91 = 78 |
| CES17 = 49 | CES42 = 96 | CES67 = 88 | CES92 = 81 |
| CES18 = 56 | CES43 = 96 | CES68 = 89 | CES93 = 89 |
| CES19 = 71 | CES44 = 99 | CES69 = 91 | CES94 = 81 |
| CES20 = 66 | CES45 = 98 | CES70 = 87 | CES95 = 85 |
| CES21 = 86 | CES46 = 97 | CES71 = 84 | CES96 = 92 |
| CES22 = 78 | CES47 = 97 | CES72 = 95 | CES97 = 95 |
| CES23 = 91 | CES48 = 93 | CES73 = 83 | CES98 = 94 |
| CES24 = 90 | CES49 = 96 | CES74 = 94 | CES99 = 91 |
| CES25 = 71 | CES50 = 98 | CES75 = 85 |            |



**Color Rendition by Hue-Angle Bin**


**Measure Comparisons**



(END OF REPORT)