

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: P1047659

Luminaire Tested: **GALN-SA9C-740-U-T2BC**

Issue Date: 07/10/2025

**Test Information**

Test Method: LM-79-08  
Report Number: P1047659  
Test Lab: INNOVATION CENTER(G3)  
Issue Date: 07/10/2025  
Manufacturer: COOPER LIGHTING SOLUTIONS (FORMERLY EATON)  
Product Line: MCGRAW-EDISON  
Catalog Number: GALN-SA9C-740-U-T2BC  
Description: GALLEON II AREA AND ROADWAY LUMINAIRE 1050mA 9xLight Square PACKAGE  
70CRI 4000K FIXTURE w/ TYPE II ANGLED BACKLIGHT CONTROL  
Light Source: (126) 4000K CCT, 70 CRI LEDs  
Ballast/Driver: ELECTRONIC DRIVER

**Summary**

Lumens per Lamp: N/A  
Luminaire Lumens: 49195.4 lumens  
Efficiency: N/A  
Efficacy: 117.9 lumens/watt  
Luminous Opening: Rectangular (W 1.5' x L: 1.5' x H: 0')  
IES Classification: Type II - Short  
BUG Rating: B0 - U0 - G5

Input Watts (W): 417.1  
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



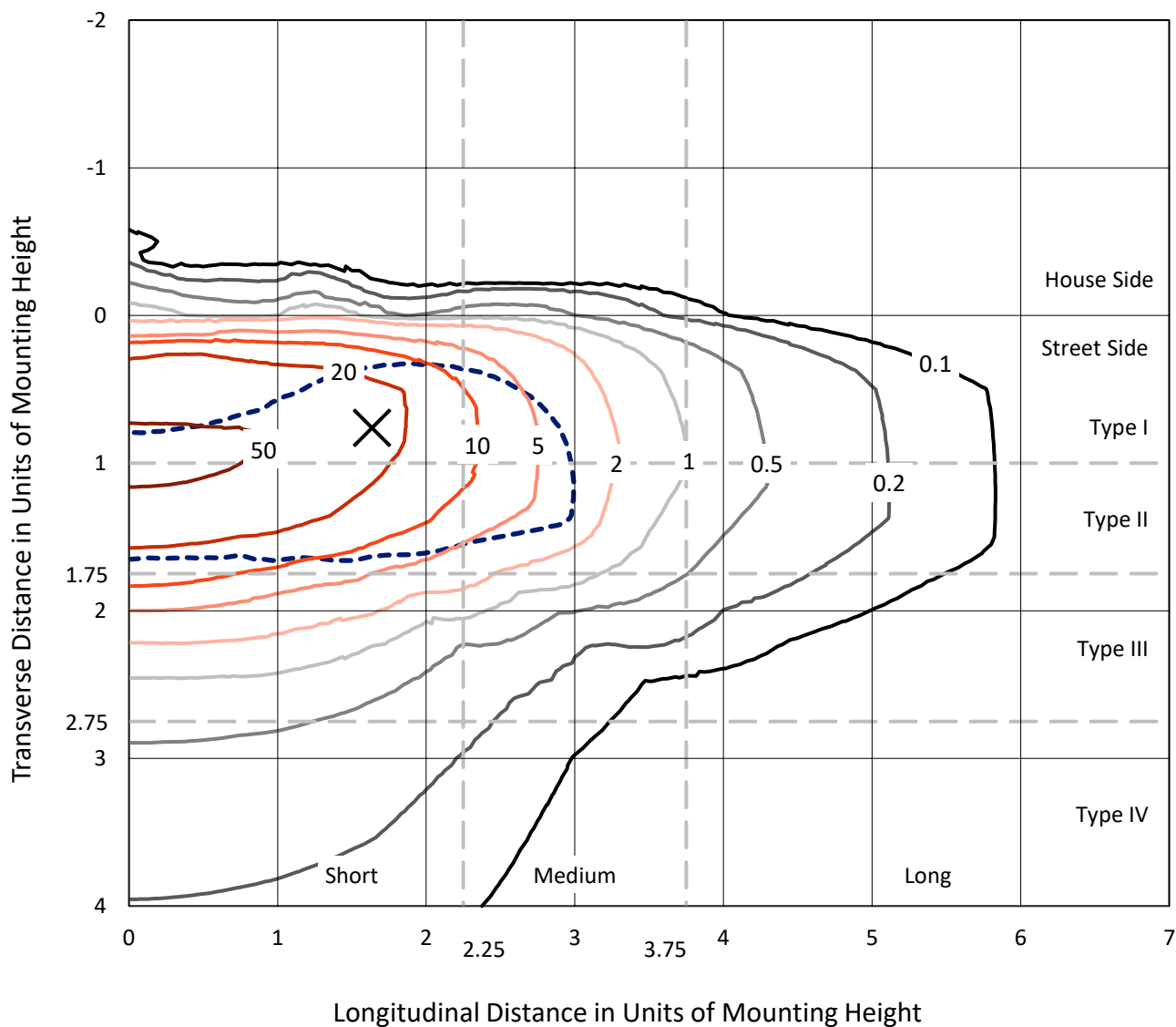
REPORT NUMBER: P1047659

CATALOG NUMBER: GALN-SA9C-740-U-T2BC

## Iso-Footcandle Lines of Horizontal Illumination

× Max cd

--- 1/2 Max cd

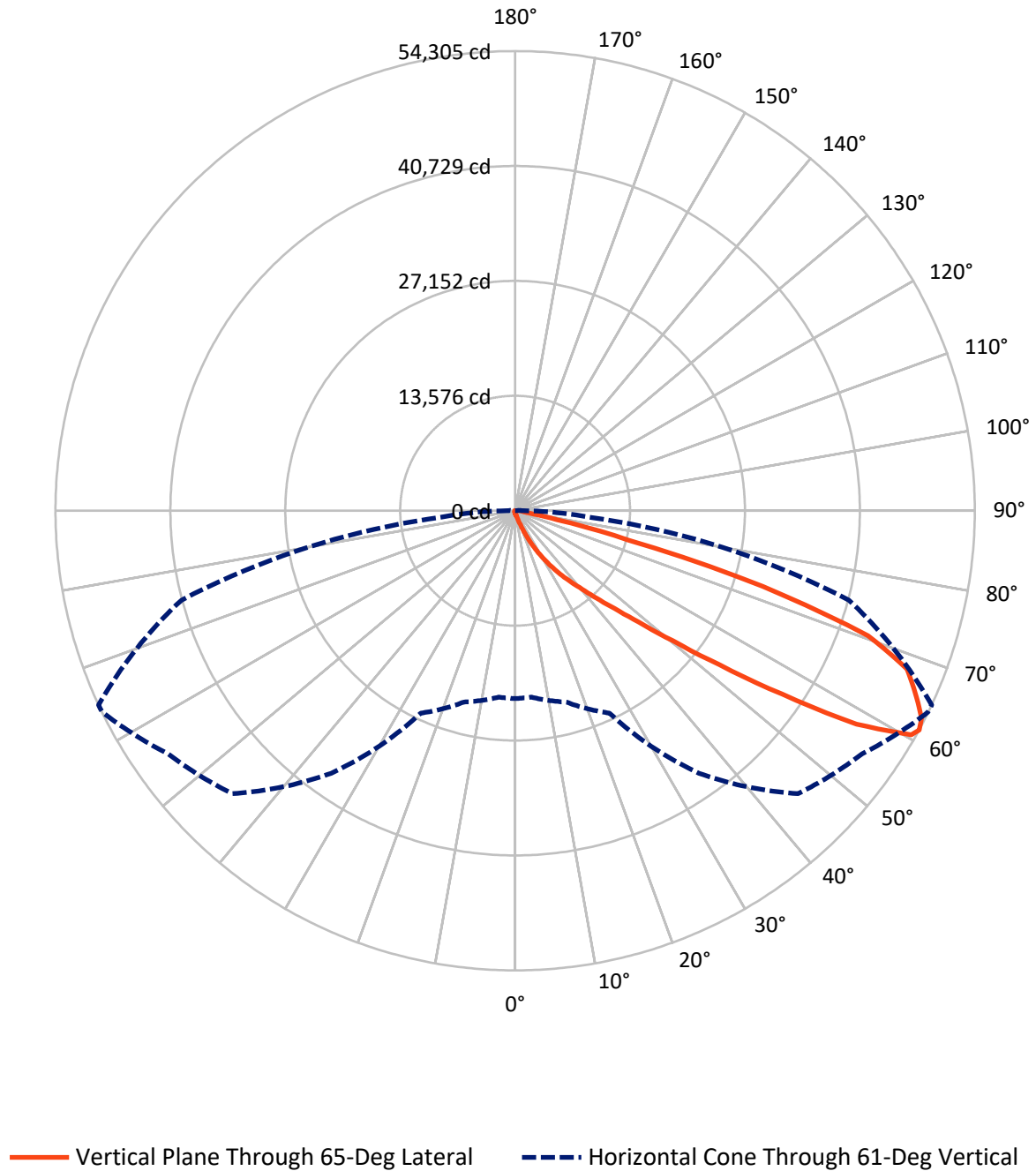


Based on 15 foot mounting height. Maximum calculated value = 65.1 fc  
 Type II - Short - N/A

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CATALOG NUMBER: GALN-SA9C-740-U-T2BC

## Luminous Intensity Polar Plot



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CATALOG NUMBER: GALN-SA9C-740-U-T2BC

**FLUX DISTRIBUTION:**

|                    |           | Downward | Upward | Total   |
|--------------------|-----------|----------|--------|---------|
| <b>House Side</b>  | Lumens    | 210.0    | 0.0    | 210.0   |
|                    | % Fixture | 0.4      | 0.0    | 0.4     |
| <b>Street Side</b> | Lumens    | 48985.4  | 0.0    | 48985.4 |
|                    | % Fixture | 99.6     | 0.0    | 99.6    |
| <b>Total</b>       | Lumens    | 49195.4  | 0.0    | 49195.4 |
|                    | % Fixture | 100.0    | 0.0    | 100.0   |

**Coefficient of Utilization**

**ZONAL LUMENS:**

| Zone      | Lumens  | % Fixture |
|-----------|---------|-----------|
| 0°-10°    | 38.3    | 0.1       |
| 10°-20°   | 404.5   | 0.8       |
| 20°-30°   | 1451.8  | 3.0       |
| 30°-40°   | 3865.3  | 7.9       |
| 40°-50°   | 10154.2 | 20.6      |
| 50°-60°   | 15730.8 | 32.0      |
| 60°-70°   | 13190.0 | 26.8      |
| 70°-80°   | 3881.6  | 7.9       |
| 80°-90°   | 478.8   | 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°    | 49195.4 | 100.0     |
| 0°-180°   | 49195.4 | 100.0     |



REPORT NUMBER: P1047659

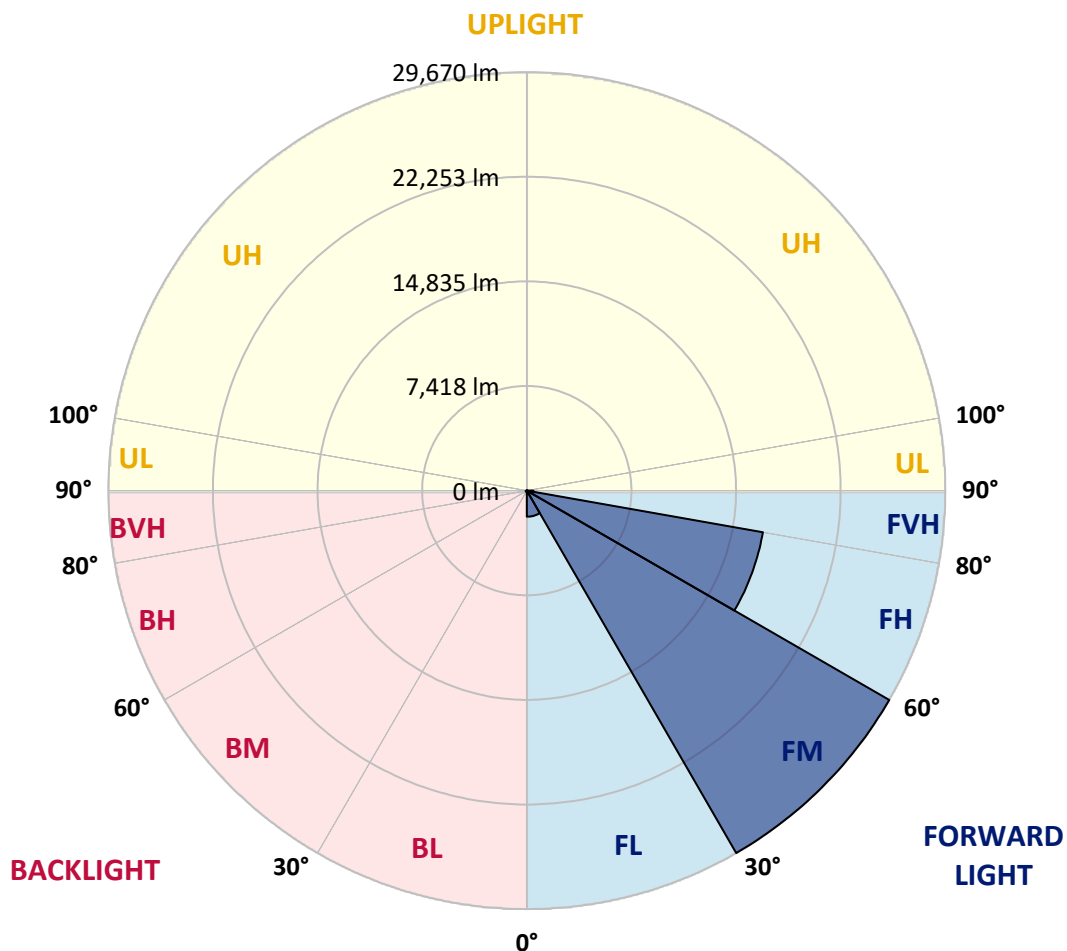
CATALOG NUMBER: GALN-SA9C-740-U-T2BC

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

| Zone |             | Lumens  | % Fixture | Zone Rating/Lumen Limit |      |        |
|------|-------------|---------|-----------|-------------------------|------|--------|
|      |             |         |           | B                       | U    | G      |
| FL   | (0°-30°)    | 1847.5  | 3.8       |                         |      |        |
| FM   | (30°-60°)   | 29670.4 | 60.3      |                         |      |        |
| FH   | (60°-80°)   | 16997.5 | 34.6      |                         |      | G5     |
| FVH  | (80°-90°)   | 469.9   | 1.0       |                         |      | G3/500 |
| BL   | (0°-30°)    | 47.1    | 0.1       | B0/110                  |      |        |
| BM   | (30°-60°)   | 79.9    | 0.2       | B0/220                  |      |        |
| BH   | (60°-80°)   | 74.1    | 0.2       | B0/110                  |      | G0/110 |
| BVH  | (80°-90°)   | 8.9     | 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-G5**

Type II Short



REPORT NUMBER: P1047659

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**CANDELA DISTRIBUTION (FULL):**

|       | 0°      | 5°      | 15°     | 25°     | 35°     | 45°     | 55°     | 64°     | 65°     | 75°     | 85°     |
|-------|---------|---------|---------|---------|---------|---------|---------|---------|---------|---------|---------|
| 0°    | 301.2   | 301.2   | 301.2   | 301.2   | 301.2   | 301.2   | 301.2   | 301.2   | 301.2   | 301.2   | 301.2   |
| 2.5°  | 365.5   | 368.9   | 362.1   | 348.6   | 338.4   | 338.4   | 335.0   | 324.9   | 324.9   | 314.7   | 308.0   |
| 5°    | 511.0   | 504.2   | 490.7   | 463.6   | 439.9   | 416.2   | 392.6   | 368.9   | 365.5   | 335.0   | 314.7   |
| 7.5°  | 835.9   | 842.6   | 798.7   | 714.0   | 643.0   | 551.6   | 467.0   | 416.2   | 409.5   | 358.7   | 318.1   |
| 10°   | 1834.2  | 1783.4  | 1681.9  | 1353.6  | 1113.4  | 839.3   | 622.7   | 483.9   | 477.2   | 385.8   | 324.9   |
| 12.5° | 3343.5  | 3302.9  | 3116.8  | 2778.4  | 2159.1  | 1502.5  | 910.3   | 599.0   | 578.7   | 409.5   | 328.3   |
| 15°   | 4819.0  | 4754.7  | 4653.2  | 4311.4  | 3587.2  | 2693.8  | 1489.0  | 819.0   | 764.8   | 443.3   | 324.9   |
| 17.5° | 5759.8  | 5769.9  | 5678.5  | 5533.0  | 5066.0  | 3986.5  | 2571.9  | 1221.7  | 1116.8  | 504.2   | 318.1   |
| 20°   | 6582.1  | 6558.4  | 6609.2  | 6531.3  | 6203.1  | 5418.0  | 3742.8  | 1935.7  | 1756.4  | 602.4   | 321.5   |
| 22.5° | 7529.7  | 7587.2  | 7624.4  | 7607.5  | 7245.4  | 6575.3  | 5072.8  | 2896.8  | 2670.1  | 781.7   | 331.6   |
| 25°   | 8798.7  | 8791.9  | 8795.3  | 8751.3  | 8399.4  | 7654.9  | 6406.1  | 4091.4  | 3861.3  | 1072.8  | 355.3   |
| 27.5° | 10128.7 | 10169.3 | 10186.2 | 10027.1 | 9566.9  | 8835.9  | 7641.3  | 5397.7  | 5126.9  | 1539.8  | 385.8   |
| 30°   | 11945.9 | 11912.1 | 11834.2 | 11509.4 | 10951.0 | 10044.1 | 8859.6  | 6768.2  | 6484.0  | 2192.9  | 433.2   |
| 32.5° | 14396.0 | 14358.8 | 13966.2 | 13248.8 | 12412.9 | 11302.9 | 10084.7 | 8142.2  | 7797.0  | 3008.5  | 497.5   |
| 35°   | 18433.3 | 18490.8 | 17526.3 | 15668.4 | 14169.3 | 12815.6 | 11441.7 | 9509.4  | 9204.8  | 4013.6  | 585.5   |
| 37.5° | 24616.0 | 24301.3 | 22991.7 | 19709.1 | 16480.6 | 14704.0 | 12737.8 | 10890.1 | 10626.1 | 5252.1  | 700.5   |
| 40°   | 30622.8 | 30311.5 | 29932.5 | 26822.5 | 20497.6 | 16785.2 | 14551.7 | 12511.1 | 12169.3 | 6649.8  | 869.7   |
| 42.5° | 36937.6 | 36765.0 | 36748.1 | 34402.9 | 27827.6 | 20057.6 | 16734.4 | 14409.6 | 14118.5 | 8182.8  | 1147.2  |
| 45°   | 41411.4 | 41238.8 | 41600.9 | 42010.4 | 37810.7 | 27069.5 | 20534.8 | 16876.6 | 16453.6 | 10044.1 | 1590.5  |
| 47.5° | 42013.8 | 42020.5 | 42988.4 | 44271.0 | 45228.7 | 37915.6 | 25597.4 | 20145.6 | 19631.2 | 12707.3 | 2335.0  |
| 50°   | 40010.4 | 40088.2 | 41628.0 | 43922.4 | 46501.1 | 47015.5 | 34524.7 | 24890.2 | 24128.7 | 15864.7 | 3390.9  |
| 52.5° | 36196.5 | 36284.5 | 38430.0 | 42203.3 | 45330.2 | 49201.6 | 45035.8 | 31096.6 | 30220.1 | 19803.8 | 4879.9  |
| 55°   | 32761.6 | 32815.8 | 35276.0 | 40044.2 | 43919.0 | 48013.8 | 51276.1 | 39384.3 | 38233.7 | 24649.9 | 6348.6  |
| 57.5° | 29360.6 | 29235.4 | 30836.0 | 36294.6 | 43678.8 | 46555.3 | 52196.6 | 48829.4 | 47560.3 | 29946.0 | 7492.4  |
| 60°   | 24812.3 | 24602.5 | 25888.5 | 29360.6 | 40518.0 | 47513.0 | 50474.1 | 54054.5 | 53766.8 | 37320.0 | 8375.7  |
| 61°   | 22196.4 | 22108.4 | 23401.1 | 26379.2 | 37858.1 | 47269.3 | 50061.2 | 54274.4 | 54304.9 | 40809.0 | 8771.6  |
| 62.5° | 15851.2 | 16101.6 | 18077.9 | 21949.4 | 31709.1 | 45688.9 | 50115.3 | 53594.2 | 53895.4 | 45445.3 | 9797.0  |
| 65°   | 7045.7  | 7448.4  | 8984.8  | 12135.4 | 18440.0 | 38007.0 | 49634.8 | 52101.8 | 51952.9 | 46717.7 | 13330.0 |
| 67.5° | 4179.4  | 4240.3  | 5005.1  | 6876.5  | 9766.6  | 20443.4 | 43800.6 | 50128.9 | 49929.2 | 40670.3 | 16585.5 |
| 70°   | 3292.7  | 3323.2  | 3566.9  | 4314.7  | 5668.4  | 7830.8  | 24998.5 | 43370.8 | 44240.5 | 32978.2 | 16237.0 |
| 72.5° | 3123.5  | 3116.8  | 3150.6  | 3282.6  | 3570.2  | 3885.0  | 9678.6  | 28829.3 | 30599.2 | 23749.7 | 13614.3 |
| 75°   | 3082.9  | 3069.4  | 3035.6  | 2984.8  | 2585.5  | 2287.7  | 2998.3  | 12751.3 | 13776.7 | 16226.8 | 10250.5 |
| 77.5° | 2991.6  | 2994.9  | 3001.7  | 2863.0  | 2216.6  | 1617.6  | 1451.8  | 4091.4  | 5032.2  | 10297.9 | 7286.0  |
| 80°   | 2023.7  | 2054.2  | 2104.9  | 2050.8  | 1993.2  | 1170.9  | 1025.4  | 1455.2  | 1475.5  | 5780.1  | 4812.2  |
| 82.5° | 1025.4  | 1025.4  | 1001.7  | 893.4   | 771.6   | 761.4   | 815.6   | 1055.8  | 1069.4  | 2923.9  | 2264.0  |
| 85°   | 619.3   | 653.1   | 666.7   | 605.8   | 555.0   | 511.0   | 622.7   | 839.3   | 869.7   | 1133.7  | 527.9   |
| 87.5° | 138.7   | 142.1   | 155.7   | 206.4   | 301.2   | 409.5   | 578.7   | 768.2   | 781.7   | 727.6   | 64.3    |
| 90°   | 0.0     | 0.0     | 0.0     | 0.0     | 0.0     | 0.0     | 0.0     | 0.0     | 0.0     | 0.0     | 0.0     |

REPORT NUMBER: P1047659

CATALOG NUMBER: GALN-SA9C-740-U-T2BC

**CANDELA DISTRIBUTION (continued):**

|       | 90°    | 95°   | 105°  | 115°  | 125°  | 135°  | 145°  | 155°  | 165°  | 175°  | 180°  |
|-------|--------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|
| 0°    | 301.2  | 301.2 | 301.2 | 301.2 | 301.2 | 301.2 | 301.2 | 301.2 | 301.2 | 301.2 | 301.2 |
| 2.5°  | 304.6  | 297.8 | 294.4 | 284.3 | 274.1 | 264.0 | 257.2 | 253.8 | 257.2 | 260.6 | 260.6 |
| 5°    | 301.2  | 291.0 | 274.1 | 257.2 | 243.7 | 230.1 | 216.6 | 213.2 | 213.2 | 216.6 | 216.6 |
| 7.5°  | 301.2  | 284.3 | 260.6 | 240.3 | 220.0 | 199.7 | 189.5 | 182.7 | 186.1 | 186.1 | 186.1 |
| 10°   | 301.2  | 280.9 | 250.4 | 220.0 | 196.3 | 172.6 | 155.7 | 148.9 | 148.9 | 148.9 | 148.9 |
| 12.5° | 297.8  | 277.5 | 240.3 | 203.0 | 169.2 | 142.1 | 121.8 | 111.7 | 115.1 | 115.1 | 115.1 |
| 15°   | 291.0  | 267.3 | 226.7 | 172.6 | 135.4 | 108.3 | 88.0  | 77.8  | 81.2  | 88.0  | 91.4  |
| 17.5° | 280.9  | 257.2 | 203.0 | 145.5 | 108.3 | 81.2  | 60.9  | 54.1  | 57.5  | 67.7  | 67.7  |
| 20°   | 277.5  | 247.0 | 179.4 | 118.4 | 81.2  | 57.5  | 40.6  | 33.8  | 37.2  | 50.8  | 54.1  |
| 22.5° | 277.5  | 240.3 | 162.4 | 98.1  | 60.9  | 37.2  | 23.7  | 13.5  | 13.5  | 23.7  | 23.7  |
| 25°   | 280.9  | 236.9 | 148.9 | 81.2  | 44.0  | 27.1  | 13.5  | 6.8   | 13.5  | 37.2  | 44.0  |
| 27.5° | 287.6  | 233.5 | 142.1 | 67.7  | 33.8  | 23.7  | 10.2  | 23.7  | 40.6  | 40.6  | 40.6  |
| 30°   | 294.4  | 226.7 | 132.0 | 57.5  | 30.5  | 16.9  | 16.9  | 33.8  | 33.8  | 40.6  | 44.0  |
| 32.5° | 304.6  | 223.4 | 125.2 | 50.8  | 23.7  | 13.5  | 23.7  | 20.3  | 20.3  | 23.7  | 27.1  |
| 35°   | 324.9  | 226.7 | 118.4 | 50.8  | 23.7  | 16.9  | 20.3  | 10.2  | 6.8   | 6.8   | 6.8   |
| 37.5° | 351.9  | 230.1 | 108.3 | 44.0  | 20.3  | 20.3  | 10.2  | 0.0   | 0.0   | 0.0   | 0.0   |
| 40°   | 395.9  | 240.3 | 101.5 | 40.6  | 16.9  | 16.9  | 3.4   | 0.0   | 0.0   | 0.0   | 0.0   |
| 42.5° | 470.4  | 260.6 | 98.1  | 37.2  | 16.9  | 13.5  | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   |
| 45°   | 619.3  | 308.0 | 91.4  | 33.8  | 16.9  | 6.8   | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   |
| 47.5° | 890.0  | 419.6 | 88.0  | 27.1  | 10.2  | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   |
| 50°   | 1299.5 | 568.5 | 84.6  | 23.7  | 3.4   | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   |
| 52.5° | 1658.2 | 599.0 | 57.5  | 20.3  | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   |
| 55°   | 1698.8 | 412.9 | 44.0  | 13.5  | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   |
| 57.5° | 1353.6 | 267.3 | 37.2  | 10.2  | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   |
| 60°   | 1025.4 | 203.0 | 33.8  | 3.4   | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   |
| 61°   | 984.8  | 182.7 | 33.8  | 3.4   | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   |
| 62.5° | 1086.3 | 159.1 | 30.5  | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   |
| 65°   | 1766.5 | 132.0 | 27.1  | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   |
| 67.5° | 3069.4 | 115.1 | 23.7  | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   |
| 70°   | 3878.2 | 108.3 | 20.3  | 3.4   | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   |
| 72.5° | 3380.7 | 98.1  | 20.3  | 6.8   | 3.4   | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   |
| 75°   | 2033.9 | 84.6  | 20.3  | 13.5  | 6.8   | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   |
| 77.5° | 1066.0 | 64.3  | 20.3  | 16.9  | 10.2  | 3.4   | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   |
| 80°   | 517.8  | 57.5  | 23.7  | 16.9  | 13.5  | 6.8   | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   |
| 82.5° | 203.0  | 47.4  | 27.1  | 23.7  | 16.9  | 10.2  | 3.4   | 0.0   | 0.0   | 0.0   | 0.0   |
| 85°   | 91.4   | 40.6  | 30.5  | 27.1  | 23.7  | 13.5  | 3.4   | 0.0   | 0.0   | 0.0   | 0.0   |
| 87.5° | 47.4   | 37.2  | 33.8  | 30.5  | 23.7  | 16.9  | 6.8   | 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: SP1-2407-184-1

Test Date: 10/09/2024

Luminaire Tested: GSS-SB1A-740-U-5WQ

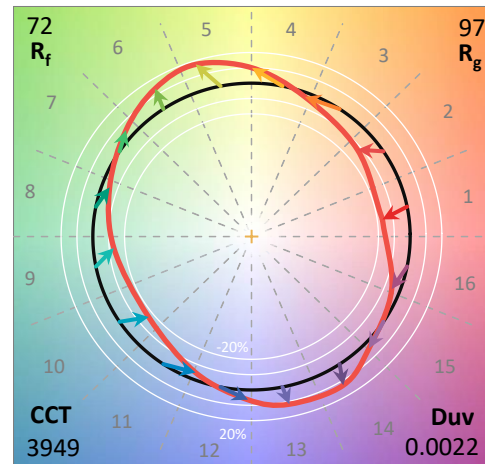
Data in this report applies to families of products including GSS-SB1A-740-U-5WQ

### Test Information

Test Method: LM-79-2019  
 Report Number: SP1-2407-184-1  
 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-740-U-5WQ**  
 Description: GALLEON II SITE SLIM 1SQ 350MA 5WQ HIGH DENSITY LIGHTSQUARE WITH 70 CRI  
 4000K CCT 26 LEDS

### Spectral Parameters

|                           |          |           |      |      |       |
|---------------------------|----------|-----------|------|------|-------|
| CCT (K):                  | 3949     | CRI (Ra): | 70.7 |      |       |
| CIE u':                   | 0.2248   | R1:       | 68.0 | R9:  | -36.7 |
| CIE v':                   | 0.5053   | R2:       | 76.0 | R10: | 45.1  |
| Duv:                      | 0.0022   | R3:       | 84.3 | R11: | 70.7  |
| CIE x:                    | 0.3844   | R4:       | 72.0 | R12: | 47.1  |
| CIE y:                    | 0.3840   | R5:       | 68.6 | R13: | 68.5  |
| CIE z:                    | 0.2316   | R6:       | 68.3 | R14: | 91.1  |
| Peak Wavelength (nm):     | 440      | R7:       | 77.9 | R15: | 58.7  |
| Dominant Wavelength (nm): | 578      | R8:       | 50.3 |      |       |
| Purity:                   | 30.60026 |           |      |      |       |
| Rf:                       | 71.8     |           |      |      |       |
| Rg:                       | 96.5     |           |      |      |       |



### Test Conditions

Stabilization Time: 34M  
 Operation Time: 1H 34M  
 Sphere Temperature (°C): 25.2

REPORT NUMBER: SP1-2407-184-1

| 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: SP1-2407-184-1

**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: SP1-2407-184-1

### Photopic Flux vs. Wavelength



### Photopic Lumens: NR

| $\lambda$<br>(nm) | Power<br>$\text{W}/\text{nm}$ | Lumens<br>( $\phi/\text{nm}$ ) | $\lambda$<br>(nm) | Power<br>$\text{W}/\text{nm}$ | Lumens<br>( $\phi/\text{nm}$ ) | $\lambda$<br>(nm) | Power<br>$\text{W}/\text{nm}$ | Lumens<br>( $\phi/\text{nm}$ ) | $\lambda$<br>(nm) | Power<br>$\text{W}/\text{nm}$ | Lumens<br>( $\phi/\text{nm}$ ) | $\lambda$<br>(nm) | Power<br>$\text{W}/\text{nm}$ | Lumens<br>( $\phi/\text{nm}$ ) |
|-------------------|-------------------------------|--------------------------------|-------------------|-------------------------------|--------------------------------|-------------------|-------------------------------|--------------------------------|-------------------|-------------------------------|--------------------------------|-------------------|-------------------------------|--------------------------------|
| 360               | 0                             | NR                             | 490               | 139                           | NR                             | 620               | 607                           | NR                             | 750               | 15                            | NR                             | 880               | 0                             | NR                             |
| 365               | 0                             | NR                             | 495               | 198                           | NR                             | 625               | 554                           | NR                             | 755               | 13                            | NR                             | 885               | 0                             | NR                             |
| 370               | 0                             | NR                             | 500               | 267                           | NR                             | 630               | 504                           | NR                             | 760               | 11                            | NR                             | 890               | 0                             | NR                             |
| 375               | 0                             | NR                             | 505               | 343                           | NR                             | 635               | 452                           | NR                             | 765               | 10                            | NR                             | 895               | 0                             | NR                             |
| 380               | 0                             | NR                             | 510               | 410                           | NR                             | 640               | 403                           | NR                             | 770               | 8                             | NR                             | 900               | 0                             | NR                             |
| 385               | 2                             | NR                             | 515               | 470                           | NR                             | 645               | 357                           | NR                             | 775               | 7                             | NR                             | 905               | 0                             | NR                             |
| 390               | 4                             | NR                             | 520               | 516                           | NR                             | 650               | 314                           | NR                             | 780               | 6                             | NR                             | 910               | 0                             | NR                             |
| 395               | 7                             | NR                             | 525               | 550                           | NR                             | 655               | 275                           | NR                             | 785               | 5                             | NR                             | 915               | 0                             | NR                             |
| 400               | 10                            | NR                             | 530               | 578                           | NR                             | 660               | 240                           | NR                             | 790               | 5                             | NR                             | 920               | 0                             | NR                             |
| 405               | 17                            | NR                             | 535               | 601                           | NR                             | 665               | 208                           | NR                             | 795               | 4                             | NR                             | 925               | 0                             | NR                             |
| 410               | 35                            | NR                             | 540               | 620                           | NR                             | 670               | 179                           | NR                             | 800               | 4                             | NR                             | 930               | 0                             | NR                             |
| 415               | 70                            | NR                             | 545               | 641                           | NR                             | 675               | 155                           | NR                             | 805               | 3                             | NR                             | 935               | 0                             | NR                             |
| 420               | 147                           | NR                             | 550               | 664                           | NR                             | 680               | 133                           | NR                             | 810               | 3                             | NR                             | 940               | 0                             | NR                             |
| 425               | 285                           | NR                             | 555               | 689                           | NR                             | 685               | 114                           | NR                             | 815               | 2                             | NR                             | 945               | 0                             | NR                             |
| 430               | 487                           | NR                             | 560               | 715                           | NR                             | 690               | 98                            | NR                             | 820               | 2                             | NR                             | 950               | 0                             | NR                             |
| 435               | 787                           | NR                             | 565               | 743                           | NR                             | 695               | 84                            | NR                             | 825               | 2                             | NR                             | 955               | 0                             | NR                             |
| 440               | 1000                          | NR                             | 570               | 771                           | NR                             | 700               | 72                            | NR                             | 830               | 2                             | NR                             | 960               | 0                             | NR                             |
| 445               | 783                           | NR                             | 575               | 794                           | NR                             | 705               | 61                            | NR                             | 835               | 1                             | NR                             | 965               | 0                             | NR                             |
| 450               | 417                           | NR                             | 580               | 811                           | NR                             | 710               | 52                            | NR                             | 840               | 1                             | NR                             | 970               | 0                             | NR                             |
| 455               | 261                           | NR                             | 585               | 817                           | NR                             | 715               | 45                            | NR                             | 845               | 1                             | NR                             | 975               | 0                             | NR                             |
| 460               | 167                           | NR                             | 590               | 815                           | NR                             | 720               | 39                            | NR                             | 850               | 1                             | NR                             | 980               | 0                             | NR                             |
| 465               | 104                           | NR                             | 595               | 801                           | NR                             | 725               | 33                            | NR                             | 855               | 1                             | NR                             | 985               | 0                             | NR                             |
| 470               | 79                            | NR                             | 600               | 777                           | NR                             | 730               | 28                            | NR                             | 860               | 1                             | NR                             | 990               | 0                             | NR                             |
| 475               | 73                            | NR                             | 605               | 744                           | NR                             | 735               | 24                            | NR                             | 865               | 1                             | NR                             | 995               | 0                             | NR                             |
| 480               | 76                            | NR                             | 610               | 704                           | NR                             | 740               | 21                            | NR                             | 870               | 1                             | NR                             | 1000              | 0                             | NR                             |
| 485               | 98                            | NR                             | 615               | 657                           | NR                             | 745               | 18                            | NR                             | 875               | 1                             | NR                             |                   |                               |                                |

REPORT NUMBER: SP1-2407-184-1

### Scotopic Flux vs. Wavelength



Scotopic Lumens: NR

S/P: 1.47

| 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    | 139                      | NR            | 620    | 607                      | NR            | 750    | 15                       | NR            | 880    | 0                        | NR            |
| 365    | 0                        | NR            | 495    | 198                      | NR            | 625    | 554                      | NR            | 755    | 13                       | NR            | 885    | 0                        | NR            |
| 370    | 0                        | NR            | 500    | 267                      | NR            | 630    | 504                      | NR            | 760    | 11                       | NR            | 890    | 0                        | NR            |
| 375    | 0                        | NR            | 505    | 343                      | NR            | 635    | 452                      | NR            | 765    | 10                       | NR            | 895    | 0                        | NR            |
| 380    | 0                        | NR            | 510    | 410                      | NR            | 640    | 403                      | NR            | 770    | 8                        | NR            | 900    | 0                        | NR            |
| 385    | 2                        | NR            | 515    | 470                      | NR            | 645    | 357                      | NR            | 775    | 7                        | NR            | 905    | 0                        | NR            |
| 390    | 4                        | NR            | 520    | 516                      | NR            | 650    | 314                      | NR            | 780    | 6                        | NR            | 910    | 0                        | NR            |
| 395    | 7                        | NR            | 525    | 550                      | NR            | 655    | 275                      | NR            | 785    | 5                        | NR            | 915    | 0                        | NR            |
| 400    | 10                       | NR            | 530    | 578                      | NR            | 660    | 240                      | NR            | 790    | 5                        | NR            | 920    | 0                        | NR            |
| 405    | 17                       | NR            | 535    | 601                      | NR            | 665    | 208                      | NR            | 795    | 4                        | NR            | 925    | 0                        | NR            |
| 410    | 35                       | NR            | 540    | 620                      | NR            | 670    | 179                      | NR            | 800    | 4                        | NR            | 930    | 0                        | NR            |
| 415    | 70                       | NR            | 545    | 641                      | NR            | 675    | 155                      | NR            | 805    | 3                        | NR            | 935    | 0                        | NR            |
| 420    | 147                      | NR            | 550    | 664                      | NR            | 680    | 133                      | NR            | 810    | 3                        | NR            | 940    | 0                        | NR            |
| 425    | 285                      | NR            | 555    | 689                      | NR            | 685    | 114                      | NR            | 815    | 2                        | NR            | 945    | 0                        | NR            |
| 430    | 487                      | NR            | 560    | 715                      | NR            | 690    | 98                       | NR            | 820    | 2                        | NR            | 950    | 0                        | NR            |
| 435    | 787                      | NR            | 565    | 743                      | NR            | 695    | 84                       | NR            | 825    | 2                        | NR            | 955    | 0                        | NR            |
| 440    | 1000                     | NR            | 570    | 771                      | NR            | 700    | 72                       | NR            | 830    | 2                        | NR            | 960    | 0                        | NR            |
| 445    | 783                      | NR            | 575    | 794                      | NR            | 705    | 61                       | NR            | 835    | 1                        | NR            | 965    | 0                        | NR            |
| 450    | 417                      | NR            | 580    | 811                      | NR            | 710    | 52                       | NR            | 840    | 1                        | NR            | 970    | 0                        | NR            |
| 455    | 261                      | NR            | 585    | 817                      | NR            | 715    | 45                       | NR            | 845    | 1                        | NR            | 975    | 0                        | NR            |
| 460    | 167                      | NR            | 590    | 815                      | NR            | 720    | 39                       | NR            | 850    | 1                        | NR            | 980    | 0                        | NR            |
| 465    | 104                      | NR            | 595    | 801                      | NR            | 725    | 33                       | NR            | 855    | 1                        | NR            | 985    | 0                        | NR            |
| 470    | 79                       | NR            | 600    | 777                      | NR            | 730    | 28                       | NR            | 860    | 1                        | NR            | 990    | 0                        | NR            |
| 475    | 73                       | NR            | 605    | 744                      | NR            | 735    | 24                       | NR            | 865    | 1                        | NR            | 995    | 0                        | NR            |
| 480    | 76                       | NR            | 610    | 704                      | NR            | 740    | 21                       | NR            | 870    | 1                        | NR            | 1000   | 0                        | NR            |
| 485    | 98                       | NR            | 615    | 657                      | NR            | 745    | 18                       | NR            | 875    | 1                        | NR            |        |                          |               |

REPORT NUMBER: SP1-2407-184-1

### Melanopic Flux vs. Wavelength



Melanopic Lumens: NR

M/P: 2.78

| 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       | 139                         | NR               | 620       | 607                         | NR               | 750       | 15                          | NR               | 880       | 0                           | NR               |
| 365       | 0                           | NR               | 495       | 198                         | NR               | 625       | 554                         | NR               | 755       | 13                          | NR               | 885       | 0                           | NR               |
| 370       | 0                           | NR               | 500       | 267                         | NR               | 630       | 504                         | NR               | 760       | 11                          | NR               | 890       | 0                           | NR               |
| 375       | 0                           | NR               | 505       | 343                         | NR               | 635       | 452                         | NR               | 765       | 10                          | NR               | 895       | 0                           | NR               |
| 380       | 0                           | NR               | 510       | 410                         | NR               | 640       | 403                         | NR               | 770       | 8                           | NR               | 900       | 0                           | NR               |
| 385       | 2                           | NR               | 515       | 470                         | NR               | 645       | 357                         | NR               | 775       | 7                           | NR               | 905       | 0                           | NR               |
| 390       | 4                           | NR               | 520       | 516                         | NR               | 650       | 314                         | NR               | 780       | 6                           | NR               | 910       | 0                           | NR               |
| 395       | 7                           | NR               | 525       | 550                         | NR               | 655       | 275                         | NR               | 785       | 5                           | NR               | 915       | 0                           | NR               |
| 400       | 10                          | NR               | 530       | 578                         | NR               | 660       | 240                         | NR               | 790       | 5                           | NR               | 920       | 0                           | NR               |
| 405       | 17                          | NR               | 535       | 601                         | NR               | 665       | 208                         | NR               | 795       | 4                           | NR               | 925       | 0                           | NR               |
| 410       | 35                          | NR               | 540       | 620                         | NR               | 670       | 179                         | NR               | 800       | 4                           | NR               | 930       | 0                           | NR               |
| 415       | 70                          | NR               | 545       | 641                         | NR               | 675       | 155                         | NR               | 805       | 3                           | NR               | 935       | 0                           | NR               |
| 420       | 147                         | NR               | 550       | 664                         | NR               | 680       | 133                         | NR               | 810       | 3                           | NR               | 940       | 0                           | NR               |
| 425       | 285                         | NR               | 555       | 689                         | NR               | 685       | 114                         | NR               | 815       | 2                           | NR               | 945       | 0                           | NR               |
| 430       | 487                         | NR               | 560       | 715                         | NR               | 690       | 98                          | NR               | 820       | 2                           | NR               | 950       | 0                           | NR               |
| 435       | 787                         | NR               | 565       | 743                         | NR               | 695       | 84                          | NR               | 825       | 2                           | NR               | 955       | 0                           | NR               |
| 440       | 1000                        | NR               | 570       | 771                         | NR               | 700       | 72                          | NR               | 830       | 2                           | NR               | 960       | 0                           | NR               |
| 445       | 783                         | NR               | 575       | 794                         | NR               | 705       | 61                          | NR               | 835       | 1                           | NR               | 965       | 0                           | NR               |
| 450       | 417                         | NR               | 580       | 811                         | NR               | 710       | 52                          | NR               | 840       | 1                           | NR               | 970       | 0                           | NR               |
| 455       | 261                         | NR               | 585       | 817                         | NR               | 715       | 45                          | NR               | 845       | 1                           | NR               | 975       | 0                           | NR               |
| 460       | 167                         | NR               | 590       | 815                         | NR               | 720       | 39                          | NR               | 850       | 1                           | NR               | 980       | 0                           | NR               |
| 465       | 104                         | NR               | 595       | 801                         | NR               | 725       | 33                          | NR               | 855       | 1                           | NR               | 985       | 0                           | NR               |
| 470       | 79                          | NR               | 600       | 777                         | NR               | 730       | 28                          | NR               | 860       | 1                           | NR               | 990       | 0                           | NR               |
| 475       | 73                          | NR               | 605       | 744                         | NR               | 735       | 24                          | NR               | 865       | 1                           | NR               | 995       | 0                           | NR               |
| 480       | 76                          | NR               | 610       | 704                         | NR               | 740       | 21                          | NR               | 870       | 1                           | NR               | 1000      | 0                           | NR               |
| 485       | 98                          | NR               | 615       | 657                         | NR               | 745       | 18                          | NR               | 875       | 1                           | NR               |           |                             |                  |

REPORT NUMBER: SP1-2407-184-1

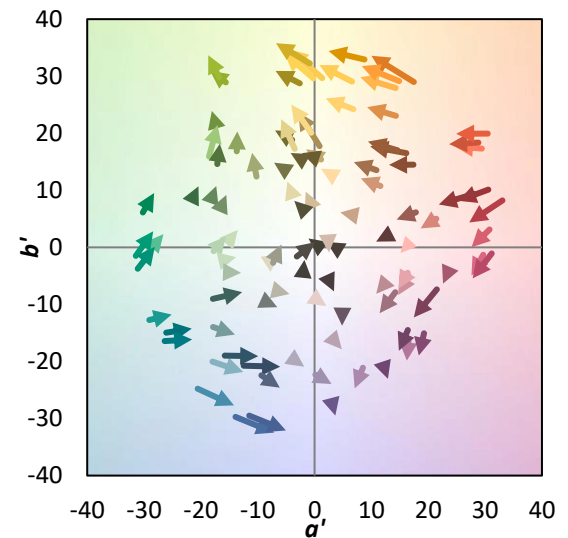
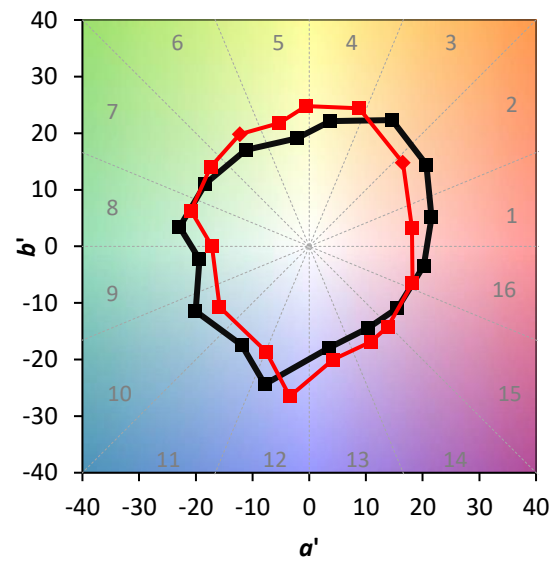
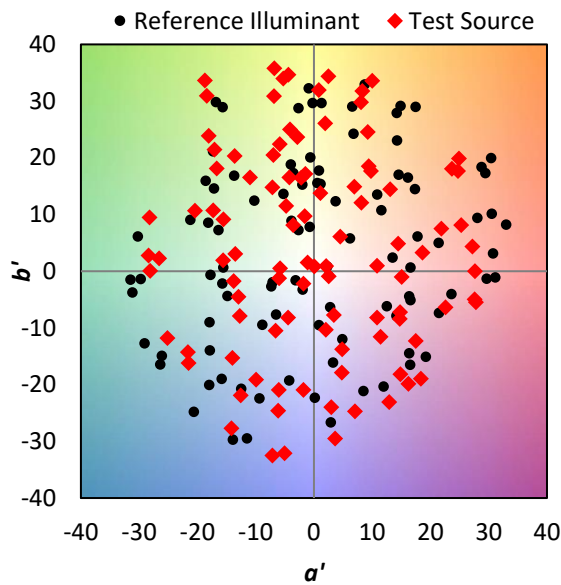
TM-30-18

### Summary

$R_f = 71.8$   
 $R_g = 96.5$   
 $CIE R_a = 70.7$   
 $R_g = -36.7$

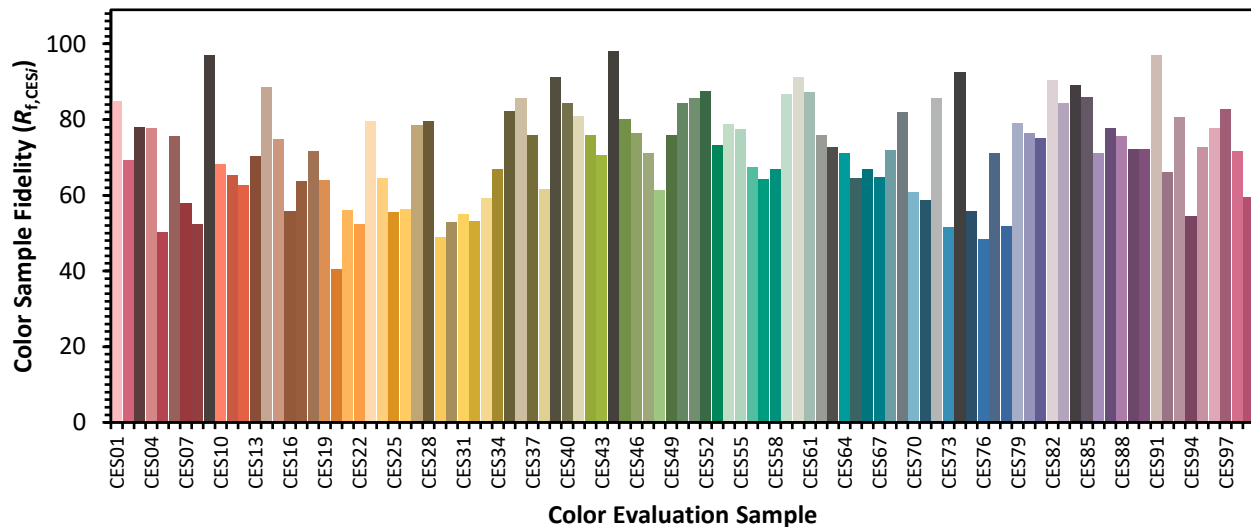


### Color Vector Graphics



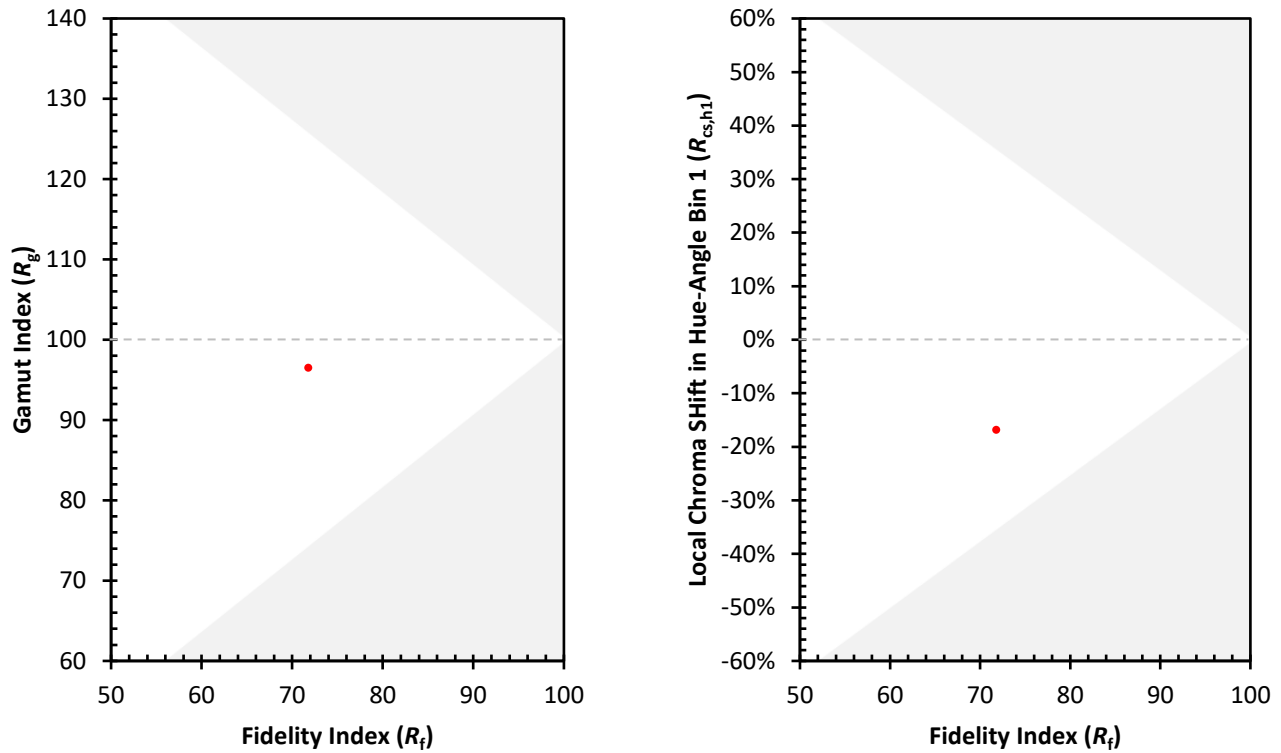
**Individual Sample Fidelity Index ( $R_{f,i}$ )**

|            |            |            |            |
|------------|------------|------------|------------|
| CES01 = 85 | CES26 = 56 | CES51 = 86 | CES76 = 48 |
| CES02 = 61 | CES27 = 79 | CES52 = 88 | CES77 = 71 |
| CES03 = 30 | CES28 = 80 | CES53 = 73 | CES78 = 52 |
| CES04 = 70 | CES29 = 49 | CES54 = 79 | CES79 = 79 |
| CES05 = 47 | CES30 = 53 | CES55 = 77 | CES80 = 77 |
| CES06 = 50 | CES31 = 55 | CES56 = 67 | CES81 = 75 |
| CES07 = 40 | CES32 = 53 | CES57 = 64 | CES82 = 90 |
| CES08 = 39 | CES33 = 59 | CES58 = 67 | CES83 = 84 |
| CES09 = 29 | CES34 = 67 | CES59 = 87 | CES84 = 89 |
| CES10 = 74 | CES35 = 82 | CES60 = 91 | CES85 = 86 |
| CES11 = 57 | CES36 = 86 | CES61 = 87 | CES86 = 71 |
| CES12 = 63 | CES37 = 76 | CES62 = 76 | CES87 = 78 |
| CES13 = 42 | CES38 = 62 | CES63 = 73 | CES88 = 76 |
| CES14 = 74 | CES39 = 91 | CES64 = 71 | CES89 = 72 |
| CES15 = 71 | CES40 = 84 | CES65 = 64 | CES90 = 72 |
| CES16 = 46 | CES41 = 81 | CES66 = 67 | CES91 = 97 |
| CES17 = 49 | CES42 = 76 | CES67 = 65 | CES92 = 66 |
| CES18 = 56 | CES43 = 71 | CES68 = 72 | CES93 = 81 |
| CES19 = 72 | CES44 = 98 | CES69 = 82 | CES94 = 55 |
| CES20 = 65 | CES45 = 80 | CES70 = 61 | CES95 = 73 |
| CES21 = 86 | CES46 = 76 | CES71 = 59 | CES96 = 78 |
| CES22 = 78 | CES47 = 71 | CES72 = 86 | CES97 = 83 |
| CES23 = 92 | CES48 = 61 | CES73 = 52 | CES98 = 72 |
| CES24 = 91 | CES49 = 76 | CES74 = 93 | CES99 = 60 |
| CES25 = 72 | CES50 = 84 | CES75 = 56 |            |



**Color Rendition by Hue-Angle Bin**


**Measure Comparisons**



(END OF REPORT)