

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: LUMARK

Report Number: P1067030

Luminaire Tested: **NAV-SA1B-750-U-T3BC**

Issue Date: 08/07/2025

**Test Information**

Test Method: LM-79-08  
Report Number: P1067030  
Test Lab: INNOVATION CENTER(G3)  
Issue Date: 08/07/2025  
Manufacturer: COOPER LIGHTING SOLUTIONS (FORMERLY EATON)  
Product Line: LUMARK  
Catalog Number: NAV-SA1B-750-U-T3BC  
Description: Navion AREA AND ROADWAY LUMINAIRE 800mA 1xLight Square PACKAGE  
70CRI 5000K FIXTURE w/ TYPE III ANGLED BACKLIGHT CONTROL  
Light Source: (14) 5000K CCT, 70 CRI LEDS  
Ballast/Driver: ELECTRONIC DRIVER

**Summary**

Lumens per Lamp: N/A  
Luminaire Lumens: 4834 lumens  
Efficiency: N/A  
Efficacy: 127.5 lumens/watt  
Luminous Opening: Rectangular (W 0.5' x L: 0.5' x H: 0')  
IES Classification: Type III - Short  
BUG Rating: B0 - U0 - G2

Input Watts (W): 37.9  
Input Voltage (V): 120  
Input Current (Ain): NR  
Voltage Rise (V): NR  
Power Factor: 0.97  
Total Harmonic Distortion (THDi): NR  
Frequency (hertz): 60  
Stabilization Time: NR  
Operation Time: NR  
Ambient Temperature (°C): NR  
Test Distance: 28.75 FT

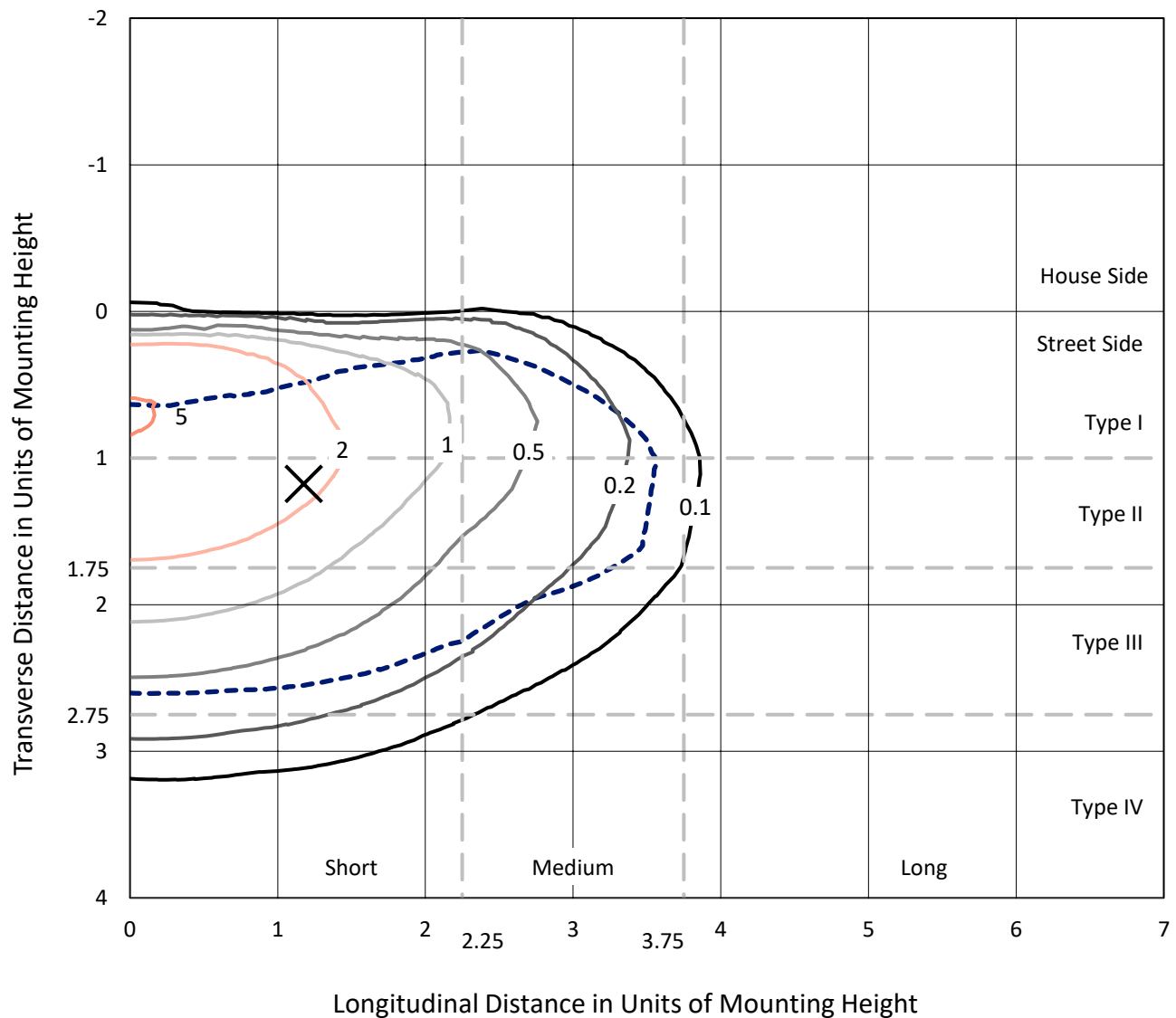


REPORT NUMBER: P1067030

CATALOG NUMBER: NAV-SA1B-750-U-T3BC

## Iso-Footcandle Lines of Horizontal Illumination

✕ Max cd  
 - - - 1/2 Max cd

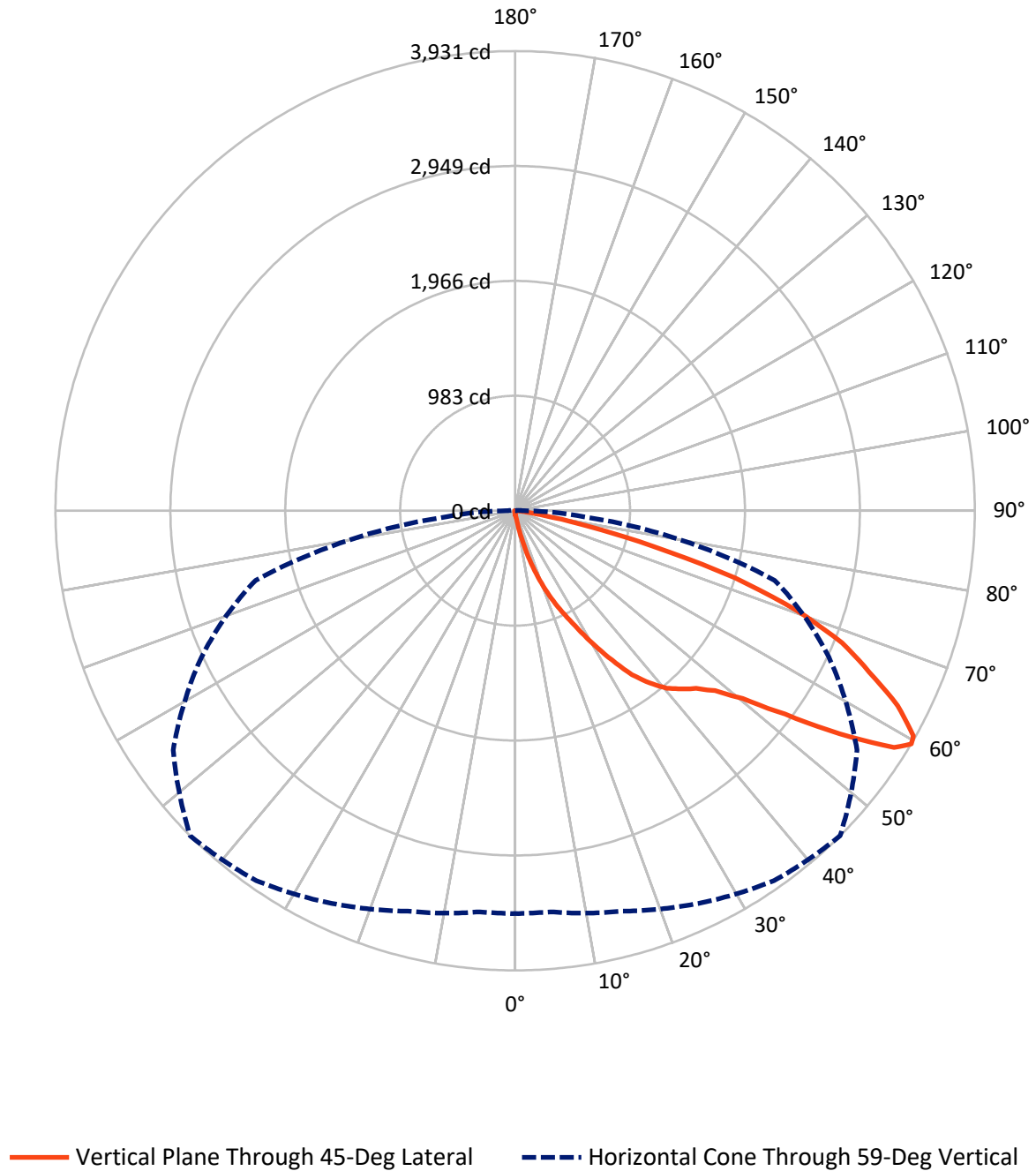


Based on 15 foot mounting height. Maximum calculated value = 5.3 fc  
 Type III - Short - N/A

REPORT NUMBER: P1067030

CATALOG NUMBER: NAV-SA1B-750-U-T3BC

## Luminous Intensity Polar Plot



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CATALOG NUMBER: NAV-SA1B-750-U-T3BC

**FLUX DISTRIBUTION:**

|                    |           | Downward | Upward | Total  |
|--------------------|-----------|----------|--------|--------|
| <b>House Side</b>  | Lumens    | 17.2     | 0.0    | 17.2   |
|                    | % Fixture | 0.4      | 0.0    | 0.4    |
| <b>Street Side</b> | Lumens    | 4816.9   | 0.0    | 4816.9 |
|                    | % Fixture | 99.6     | 0.0    | 99.6   |
| <b>Total</b>       | Lumens    | 4834.0   | 0.0    | 4834.0 |
|                    | % Fixture | 100.0    | 0.0    | 100.0  |

**Coefficient of Utilization**

**ZONAL LUMENS:**

| Zone      | Lumens | % Fixture |
|-----------|--------|-----------|
| 0°-10°    | 4.5    | 0.1       |
| 10°-20°   | 53.4   | 1.1       |
| 20°-30°   | 192.0  | 4.0       |
| 30°-40°   | 446.1  | 9.2       |
| 40°-50°   | 760.4  | 15.7      |
| 50°-60°   | 1252.9 | 25.9      |
| 60°-70°   | 1448.6 | 30.0      |
| 70°-80°   | 622.4  | 12.9      |
| 80°-90°   | 53.8   | 1.1       |
| 90°-100°  | 0.0    | 0.0       |
| 100°-110° | 0.0    | 0.0       |
| 110°-120° | 0.0    | 0.0       |
| 120°-130° | 0.0    | 0.0       |
| 130°-140° | 0.0    | 0.0       |
| 140°-150° | 0.0    | 0.0       |
| 150°-160° | 0.0    | 0.0       |
| 160°-170° | 0.0    | 0.0       |
| 170°-180° | 0.0    | 0.0       |
| 0°-90°    | 4834.0 | 100.0     |
| 0°-180°   | 4834.0 | 100.0     |



REPORT NUMBER: P1067030

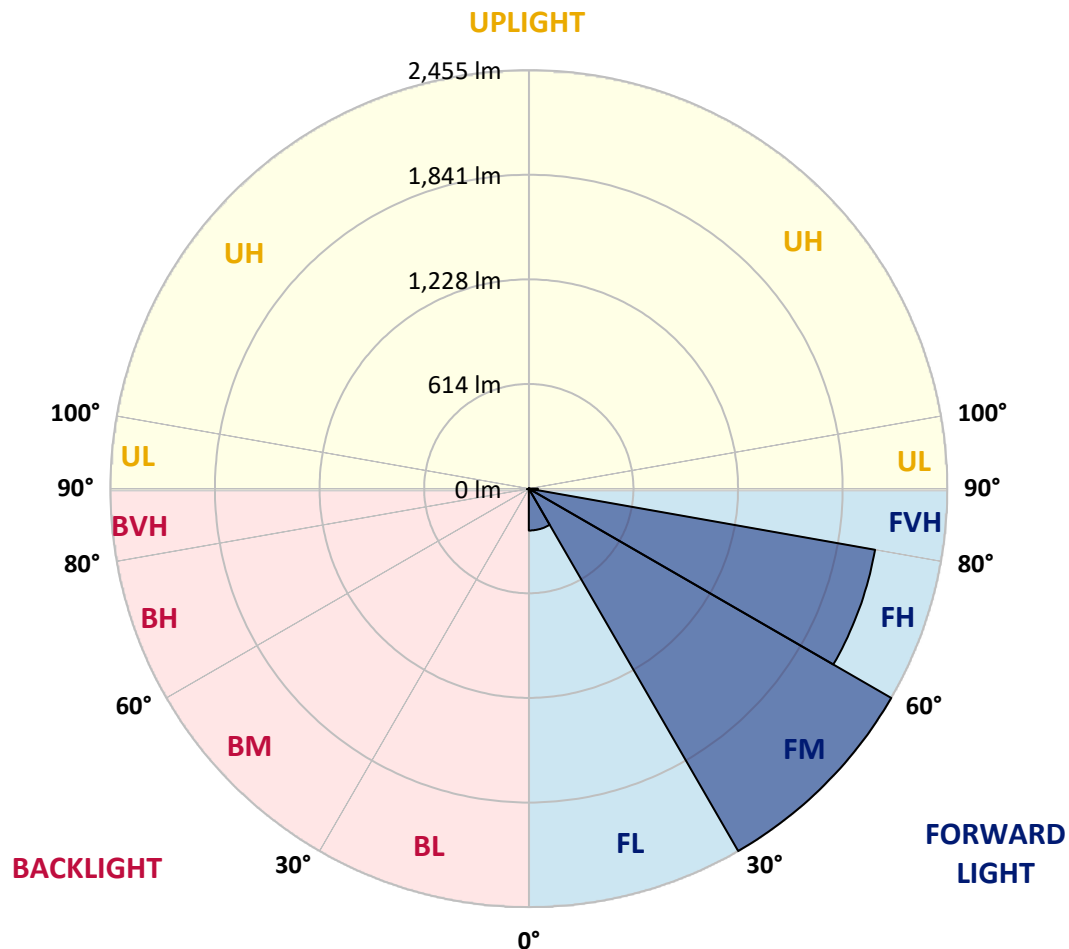
CATALOG NUMBER: NAV-SA1B-750-U-T3BC

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

| Zone |             | Lumens | % Fixture | Zone Rating/Lumen Limit |      |         |
|------|-------------|--------|-----------|-------------------------|------|---------|
|      |             |        |           | B                       | U    | G       |
| FL   | (0°-30°)    | 245.7  | 5.1       |                         |      |         |
| FM   | (30°-60°)   | 2455.2 | 50.8      |                         |      |         |
| FH   | (60°-80°)   | 2062.9 | 42.7      |                         |      | G2/5000 |
| FVH  | (80°-90°)   | 53.1   | 1.1       |                         |      | G1/100  |
| BL   | (0°-30°)    | 4.2    | 0.1       | B0/110                  |      |         |
| BM   | (30°-60°)   | 4.2    | 0.1       | B0/220                  |      |         |
| BH   | (60°-80°)   | 8.1    | 0.2       | B0/110                  |      | G0/110  |
| BVH  | (80°-90°)   | 0.7    | 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-G2**

Type III Short



REPORT NUMBER: P1067030

CATALOG NUMBER: NAV-SA1B-750-U-T3BC

**CANDELA DISTRIBUTION (FULL):**

|       | 0°     | 5°     | 15°    | 25°    | 35°    | 44°    | 45°    | 55°    | 65°    | 75°    | 85°    |
|-------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|
| 0°    | 30.6   | 30.6   | 30.6   | 30.6   | 30.6   | 30.6   | 30.6   | 30.6   | 30.6   | 30.6   | 30.6   |
| 2.5°  | 39.7   | 39.7   | 38.7   | 37.4   | 37.1   | 36.1   | 36.1   | 35.1   | 33.8   | 32.8   | 31.5   |
| 5°    | 57.5   | 57.2   | 54.6   | 51.4   | 47.1   | 44.5   | 44.5   | 41.0   | 37.7   | 34.8   | 32.2   |
| 7.5°  | 125.8  | 122.9  | 113.4  | 97.8   | 77.4   | 63.7   | 62.7   | 51.0   | 43.2   | 37.4   | 32.5   |
| 10°   | 288.6  | 278.6  | 265.2  | 227.9  | 168.4  | 117.7  | 115.4  | 74.4   | 51.7   | 40.3   | 33.2   |
| 12.5° | 472.9  | 481.1  | 454.4  | 395.6  | 326.0  | 242.5  | 226.2  | 125.5  | 68.3   | 44.2   | 33.8   |
| 15°   | 640.7  | 638.7  | 623.8  | 575.6  | 495.4  | 384.2  | 374.1  | 218.1  | 97.8   | 50.4   | 34.5   |
| 17.5° | 766.1  | 763.8  | 749.5  | 718.7  | 656.9  | 545.7  | 537.0  | 347.8  | 153.4  | 59.2   | 35.1   |
| 20°   | 898.4  | 895.5  | 875.3  | 850.6  | 796.7  | 702.1  | 691.7  | 492.8  | 240.2  | 73.5   | 35.1   |
| 22.5° | 1057.0 | 1051.5 | 1030.1 | 988.1  | 931.2  | 849.0  | 839.6  | 641.0  | 347.8  | 96.9   | 36.7   |
| 25°   | 1248.8 | 1239.4 | 1209.8 | 1172.1 | 1103.5 | 994.3  | 984.2  | 806.1  | 477.5  | 132.3  | 38.4   |
| 27.5° | 1467.6 | 1469.2 | 1429.2 | 1365.5 | 1273.5 | 1162.0 | 1143.2 | 954.0  | 611.7  | 183.0  | 40.3   |
| 30°   | 1727.3 | 1711.0 | 1654.8 | 1580.7 | 1491.3 | 1349.2 | 1331.0 | 1101.2 | 762.5  | 257.8  | 43.6   |
| 32.5° | 1970.4 | 1952.8 | 1877.1 | 1783.8 | 1687.9 | 1538.1 | 1523.1 | 1266.7 | 899.7  | 346.2  | 49.4   |
| 35°   | 2179.1 | 2166.7 | 2060.8 | 1947.0 | 1861.8 | 1727.9 | 1723.4 | 1451.3 | 1060.9 | 441.4  | 55.9   |
| 37.5° | 2362.7 | 2340.3 | 2204.1 | 2086.1 | 1999.6 | 1879.7 | 1870.0 | 1620.3 | 1216.3 | 551.9  | 65.7   |
| 40°   | 2519.4 | 2507.0 | 2340.9 | 2185.9 | 2115.7 | 2008.4 | 1996.1 | 1768.5 | 1376.9 | 680.3  | 77.7   |
| 42.5° | 2687.1 | 2670.9 | 2509.6 | 2335.7 | 2206.4 | 2091.6 | 2083.5 | 1890.8 | 1519.9 | 821.4  | 95.6   |
| 45°   | 2876.6 | 2846.4 | 2705.0 | 2549.0 | 2352.3 | 2177.8 | 2168.7 | 1999.6 | 1666.5 | 972.8  | 117.3  |
| 47.5° | 3079.1 | 3052.8 | 2938.4 | 2828.8 | 2602.6 | 2319.8 | 2300.3 | 2092.3 | 1812.1 | 1147.7 | 145.0  |
| 50°   | 3285.2 | 3285.8 | 3200.0 | 3147.4 | 2908.5 | 2550.6 | 2523.0 | 2228.5 | 1965.2 | 1334.9 | 185.9  |
| 52.5° | 3525.1 | 3531.2 | 3529.9 | 3490.9 | 3305.7 | 2928.0 | 2890.9 | 2435.2 | 2143.0 | 1553.4 | 242.5  |
| 55°   | 3625.5 | 3636.6 | 3708.4 | 3794.8 | 3744.5 | 3406.4 | 3366.8 | 2791.8 | 2378.6 | 1796.8 | 326.3  |
| 57.5° | 3543.3 | 3555.6 | 3654.8 | 3806.2 | 3921.9 | 3825.4 | 3820.8 | 3255.9 | 2689.1 | 2092.0 | 463.5  |
| 59°   | 3445.4 | 3443.8 | 3545.5 | 3706.1 | 3862.1 | 3924.9 | 3931.4 | 3569.9 | 2959.5 | 2299.0 | 581.8  |
| 60°   | 3380.4 | 3381.7 | 3449.3 | 3614.1 | 3779.9 | 3888.8 | 3914.1 | 3754.9 | 3117.5 | 2447.9 | 683.2  |
| 62.5° | 3129.5 | 3144.4 | 3198.1 | 3351.2 | 3508.5 | 3630.1 | 3673.3 | 3919.7 | 3569.6 | 2799.6 | 1035.9 |
| 65°   | 2856.8 | 2857.8 | 2934.1 | 3065.1 | 3215.9 | 3301.4 | 3328.7 | 3663.2 | 3871.6 | 3157.8 | 1498.4 |
| 67.5° | 2370.2 | 2390.0 | 2476.8 | 2689.1 | 2888.3 | 2996.5 | 3017.3 | 3188.6 | 3746.4 | 3391.1 | 1730.2 |
| 70°   | 1658.7 | 1684.7 | 1808.5 | 2083.8 | 2380.6 | 2558.4 | 2557.1 | 2650.7 | 3297.2 | 3287.1 | 1466.9 |
| 72.5° | 828.2  | 873.1  | 974.1  | 1269.0 | 1628.5 | 1907.7 | 1966.5 | 2132.3 | 2648.8 | 2730.3 | 1094.4 |
| 75°   | 366.0  | 368.6  | 426.1  | 574.7  | 809.4  | 1164.0 | 1216.6 | 1692.5 | 2032.2 | 1897.6 | 790.5  |
| 77.5° | 212.9  | 214.9  | 225.3  | 258.1  | 328.0  | 570.4  | 629.6  | 1110.0 | 1436.0 | 1102.9 | 515.5  |
| 80°   | 77.4   | 79.3   | 79.0   | 97.8   | 143.7  | 224.6  | 250.3  | 537.9  | 957.9  | 580.8  | 270.1  |
| 82.5° | 47.5   | 47.5   | 45.8   | 46.2   | 52.3   | 86.1   | 94.3   | 229.2  | 466.4  | 286.0  | 77.4   |
| 85°   | 23.4   | 24.7   | 26.3   | 29.6   | 35.1   | 42.6   | 45.2   | 65.7   | 157.0  | 69.2   | 18.5   |
| 87.5° | 14.0   | 14.3   | 15.6   | 18.9   | 23.4   | 30.6   | 32.5   | 44.5   | 56.2   | 46.5   | 4.6    |
| 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: P1067030

CATALOG NUMBER: NAV-SA1B-750-U-T3BC

**CANDELA DISTRIBUTION (continued):**

|       | 90°   | 95°  | 105° | 115° | 125° | 135° | 145° | 155° | 165° | 175° | 180° |
|-------|-------|------|------|------|------|------|------|------|------|------|------|
| 0°    | 30.6  | 30.6 | 30.6 | 30.6 | 30.6 | 30.6 | 30.6 | 30.6 | 30.6 | 30.6 | 30.6 |
| 2.5°  | 30.9  | 30.6 | 28.9 | 27.6 | 26.3 | 25.0 | 24.1 | 23.1 | 23.1 | 23.4 | 23.1 |
| 5°    | 30.9  | 29.6 | 27.0 | 24.7 | 22.8 | 21.1 | 19.5 | 18.2 | 17.9 | 17.9 | 18.2 |
| 7.5°  | 30.6  | 28.9 | 25.4 | 22.4 | 19.8 | 17.6 | 15.9 | 14.3 | 14.0 | 14.3 | 14.0 |
| 10°   | 30.2  | 28.3 | 24.1 | 20.5 | 16.9 | 14.6 | 12.4 | 10.7 | 10.7 | 10.7 | 11.1 |
| 12.5° | 30.2  | 27.3 | 22.8 | 18.5 | 14.6 | 12.0 | 9.8  | 8.1  | 7.8  | 7.8  | 7.8  |
| 15°   | 29.9  | 26.7 | 21.5 | 16.3 | 12.4 | 9.1  | 7.2  | 5.5  | 5.5  | 5.5  | 5.5  |
| 17.5° | 29.3  | 25.7 | 19.8 | 14.3 | 9.8  | 6.8  | 4.9  | 3.3  | 3.3  | 3.9  | 3.9  |
| 20°   | 28.6  | 24.7 | 17.9 | 11.7 | 8.1  | 5.2  | 3.3  | 2.0  | 2.0  | 2.9  | 3.3  |
| 22.5° | 28.9  | 24.7 | 16.6 | 10.4 | 6.5  | 3.9  | 2.6  | 1.6  | 1.3  | 2.3  | 2.9  |
| 25°   | 29.3  | 24.1 | 15.0 | 9.1  | 4.9  | 2.9  | 2.0  | 0.7  | 0.3  | 0.7  | 1.0  |
| 27.5° | 29.3  | 23.4 | 13.0 | 7.2  | 3.6  | 2.3  | 1.0  | 0.0  | 0.0  | 0.0  | 0.0  |
| 30°   | 28.9  | 22.4 | 11.4 | 5.9  | 2.6  | 1.3  | 0.3  | 0.0  | 0.0  | 0.0  | 0.0  |
| 32.5° | 28.6  | 21.5 | 10.4 | 4.6  | 2.3  | 0.7  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  |
| 35°   | 28.9  | 20.2 | 9.1  | 3.6  | 1.3  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.7  |
| 37.5° | 29.9  | 18.9 | 7.8  | 2.9  | 1.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  |
| 40°   | 31.2  | 17.9 | 6.5  | 2.3  | 0.3  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  |
| 42.5° | 33.8  | 17.9 | 5.9  | 1.6  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  |
| 45°   | 37.1  | 17.9 | 4.9  | 1.3  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  |
| 47.5° | 41.3  | 18.2 | 4.2  | 1.3  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  |
| 50°   | 46.5  | 18.9 | 3.9  | 1.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  |
| 52.5° | 50.4  | 18.2 | 3.6  | 1.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  |
| 55°   | 57.2  | 17.6 | 3.3  | 0.7  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  |
| 57.5° | 66.3  | 16.6 | 3.3  | 0.3  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  |
| 59°   | 75.4  | 15.3 | 3.3  | 0.3  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  |
| 60°   | 85.8  | 14.6 | 2.9  | 0.3  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  |
| 62.5° | 141.7 | 13.0 | 2.6  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  |
| 65°   | 273.7 | 12.4 | 2.3  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  |
| 67.5° | 442.4 | 12.4 | 1.6  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  |
| 70°   | 465.1 | 12.4 | 1.3  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  |
| 72.5° | 309.4 | 10.1 | 1.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  |
| 75°   | 165.8 | 9.1  | 1.0  | 0.3  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  |
| 77.5° | 89.4  | 8.5  | 1.3  | 0.7  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  |
| 80°   | 39.3  | 6.2  | 1.6  | 1.0  | 0.7  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  |
| 82.5° | 15.6  | 4.2  | 2.0  | 1.6  | 1.3  | 0.7  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  |
| 85°   | 7.5   | 3.3  | 2.6  | 2.3  | 1.6  | 1.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  |
| 87.5° | 3.6   | 3.3  | 2.9  | 2.6  | 2.3  | 1.6  | 0.3  | 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: SP1-2407-184-6

Test Date: 10/10/2024

Luminaire Tested: GSS-SB1A-750-U-5WQ

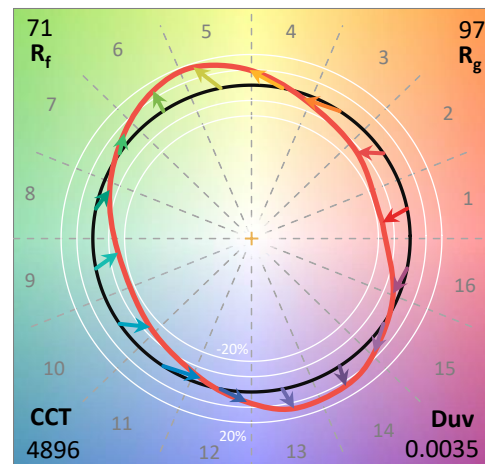
Data in this report applies to families of products including GSS-SB1A-750-U-5WQ

### Test Information

Test Method: LM-79-2019  
 Report Number: SP1-2407-184-6  
 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-750-U-5WQ**  
 Description: GALLEON II SITE SLIM 1SQ 350MA 5WQ HIGH DENSITY LIGHTSQUARE WITH 70 CRI  
 5000K CCT 26 LEDS

### Spectral Parameters

|                           |          |           |      |      |       |
|---------------------------|----------|-----------|------|------|-------|
| CCT (K):                  | 4896     | CRI (Ra): | 70.2 |      |       |
| CIE u':                   | 0.2101   | R1:       | 68.1 | R9:  | -35.1 |
| CIE v':                   | 0.4901   | R2:       | 73.9 | R10: | 39.3  |
| Duv:                      | 0.0035   | R3:       | 79.4 | R11: | 71.1  |
| CIE x:                    | 0.3489   | R4:       | 72.1 | R12: | 43.8  |
| CIE y:                    | 0.3618   | R5:       | 69.2 | R13: | 68.1  |
| CIE z:                    | 0.2893   | R6:       | 65.7 | R14: | 88.4  |
| Peak Wavelength (nm):     | 443      | R7:       | 78.1 | R15: | 59.7  |
| Dominant Wavelength (nm): | 570      | R8:       | 55.3 |      |       |
| Purity:                   | 13.25435 |           |      |      |       |
| Rf:                       | 70.7     |           |      |      |       |
| Rg:                       | 96.8     |           |      |      |       |



### Test Conditions

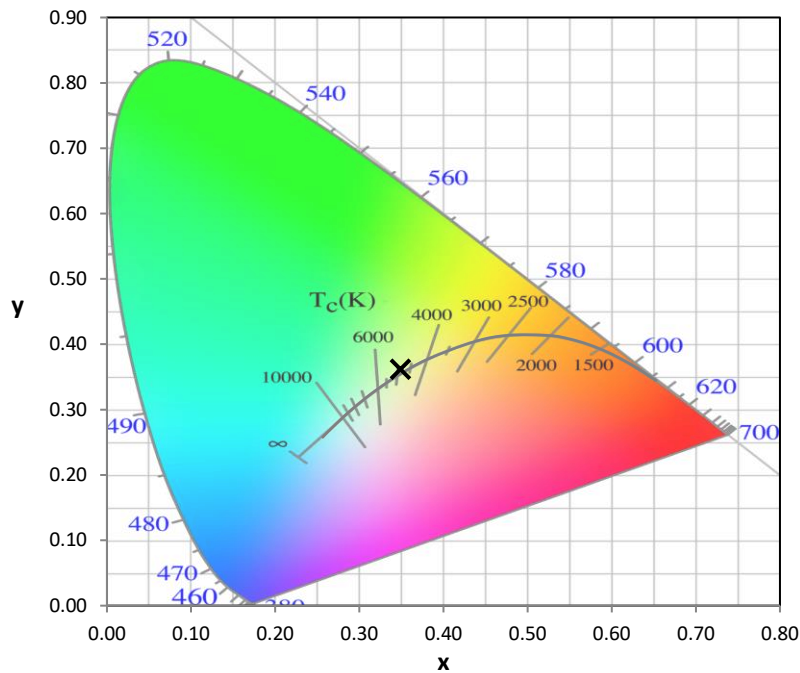
Stabilization Time: 21M  
 Operation Time: 1H 21M  
 Sphere Temperature (°C): 25.2

REPORT NUMBER: SP1-2407-184-6

| 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: SP1-2407-184-6

**CIE 1931 Chromaticity Diagram**



**CIE 1931 Chromaticity Diagram with 2017 ANSI 7-Step and 4-Step Quadrangles**



Point lies inside the ANSI 5000K 4-step quadrangle

REPORT NUMBER: SP1-2407-184-6

### Photopic Flux vs. Wavelength



### Photopic Lumens: NR

| λ (nm) | Power W <sup>λ</sup> /nm | Lumens (φ/nm) | λ (nm) | Power W <sup>λ</sup> /nm | Lumens (φ/nm) | λ (nm) | Power W <sup>λ</sup> /nm | Lumens (φ/nm) | λ (nm) | Power W <sup>λ</sup> /nm | Lumens (φ/nm) | λ (nm) | Power W <sup>λ</sup> /nm | Lumens (φ/nm) |
|--------|--------------------------|---------------|--------|--------------------------|---------------|--------|--------------------------|---------------|--------|--------------------------|---------------|--------|--------------------------|---------------|
| 360    | 0                        | NR            | 490    | 118                      | NR            | 620    | 401                      | NR            | 750    | 12                       | NR            | 880    | 0                        | NR            |
| 365    | 0                        | NR            | 495    | 168                      | NR            | 625    | 365                      | NR            | 755    | 10                       | NR            | 885    | 0                        | NR            |
| 370    | 0                        | NR            | 500    | 230                      | NR            | 630    | 331                      | NR            | 760    | 9                        | NR            | 890    | 0                        | NR            |
| 375    | 0                        | NR            | 505    | 299                      | NR            | 635    | 298                      | NR            | 765    | 8                        | NR            | 895    | 0                        | NR            |
| 380    | 0                        | NR            | 510    | 362                      | NR            | 640    | 266                      | NR            | 770    | 6                        | NR            | 900    | 0                        | NR            |
| 385    | 2                        | NR            | 515    | 418                      | NR            | 645    | 236                      | NR            | 775    | 6                        | NR            | 905    | 0                        | NR            |
| 390    | 4                        | NR            | 520    | 461                      | NR            | 650    | 209                      | NR            | 780    | 5                        | NR            | 910    | 0                        | NR            |
| 395    | 6                        | NR            | 525    | 491                      | NR            | 655    | 184                      | NR            | 785    | 4                        | NR            | 915    | 0                        | NR            |
| 400    | 9                        | NR            | 530    | 514                      | NR            | 660    | 160                      | NR            | 790    | 4                        | NR            | 920    | 0                        | NR            |
| 405    | 14                       | NR            | 535    | 530                      | NR            | 665    | 140                      | NR            | 795    | 3                        | NR            | 925    | 0                        | NR            |
| 410    | 27                       | NR            | 540    | 539                      | NR            | 670    | 122                      | NR            | 800    | 3                        | NR            | 930    | 0                        | NR            |
| 415    | 55                       | NR            | 545    | 549                      | NR            | 675    | 106                      | NR            | 805    | 2                        | NR            | 935    | 0                        | NR            |
| 420    | 115                      | NR            | 550    | 557                      | NR            | 680    | 92                       | NR            | 810    | 2                        | NR            | 940    | 0                        | NR            |
| 425    | 226                      | NR            | 555    | 565                      | NR            | 685    | 79                       | NR            | 815    | 2                        | NR            | 945    | 0                        | NR            |
| 430    | 395                      | NR            | 560    | 572                      | NR            | 690    | 68                       | NR            | 820    | 2                        | NR            | 950    | 0                        | NR            |
| 435    | 648                      | NR            | 565    | 580                      | NR            | 695    | 59                       | NR            | 825    | 1                        | NR            | 955    | 0                        | NR            |
| 440    | 937                      | NR            | 570    | 586                      | NR            | 700    | 51                       | NR            | 830    | 1                        | NR            | 960    | 0                        | NR            |
| 445    | 953                      | NR            | 575    | 588                      | NR            | 705    | 44                       | NR            | 835    | 1                        | NR            | 965    | 0                        | NR            |
| 450    | 591                      | NR            | 580    | 588                      | NR            | 710    | 38                       | NR            | 840    | 1                        | NR            | 970    | 0                        | NR            |
| 455    | 334                      | NR            | 585    | 580                      | NR            | 715    | 32                       | NR            | 845    | 1                        | NR            | 975    | 0                        | NR            |
| 460    | 221                      | NR            | 590    | 568                      | NR            | 720    | 28                       | NR            | 850    | 1                        | NR            | 980    | 0                        | NR            |
| 465    | 140                      | NR            | 595    | 550                      | NR            | 725    | 24                       | NR            | 855    | 1                        | NR            | 985    | 0                        | NR            |
| 470    | 93                       | NR            | 600    | 527                      | NR            | 730    | 21                       | NR            | 860    | 1                        | NR            | 990    | 0                        | NR            |
| 475    | 79                       | NR            | 605    | 499                      | NR            | 735    | 18                       | NR            | 865    | 0                        | NR            | 995    | 0                        | NR            |
| 480    | 76                       | NR            | 610    | 469                      | NR            | 740    | 15                       | NR            | 870    | 0                        | NR            | 1000   | 0                        | NR            |
| 485    | 87                       | NR            | 615    | 435                      | NR            | 745    | 13                       | NR            | 875    | 0                        | NR            |        |                          |               |

REPORT NUMBER: SP1-2407-184-6

### Scotopic Flux vs. Wavelength


**Scotopic Lumens: NR**
**S/P: 1.7**

| λ<br>(nm) | Power<br>W <sup>^</sup> /nm | Lumens<br>(Φ/nm) | λ<br>(nm) | Power<br>W <sup>^</sup> /nm | Lumens<br>(Φ/nm) | λ<br>(nm) | Power<br>W <sup>^</sup> /nm | Lumens<br>(Φ/nm) | λ<br>(nm) | Power<br>W <sup>^</sup> /nm | Lumens<br>(Φ/nm) | λ<br>(nm) | Power<br>W <sup>^</sup> /nm | Lumens<br>(Φ/nm) |
|-----------|-----------------------------|------------------|-----------|-----------------------------|------------------|-----------|-----------------------------|------------------|-----------|-----------------------------|------------------|-----------|-----------------------------|------------------|
| 360       | 0                           | NR               | 490       | 118                         | NR               | 620       | 401                         | NR               | 750       | 12                          | NR               | 880       | 0                           | NR               |
| 365       | 0                           | NR               | 495       | 168                         | NR               | 625       | 365                         | NR               | 755       | 10                          | NR               | 885       | 0                           | NR               |
| 370       | 0                           | NR               | 500       | 230                         | NR               | 630       | 331                         | NR               | 760       | 9                           | NR               | 890       | 0                           | NR               |
| 375       | 0                           | NR               | 505       | 299                         | NR               | 635       | 298                         | NR               | 765       | 8                           | NR               | 895       | 0                           | NR               |
| 380       | 0                           | NR               | 510       | 362                         | NR               | 640       | 266                         | NR               | 770       | 6                           | NR               | 900       | 0                           | NR               |
| 385       | 2                           | NR               | 515       | 418                         | NR               | 645       | 236                         | NR               | 775       | 6                           | NR               | 905       | 0                           | NR               |
| 390       | 4                           | NR               | 520       | 461                         | NR               | 650       | 209                         | NR               | 780       | 5                           | NR               | 910       | 0                           | NR               |
| 395       | 6                           | NR               | 525       | 491                         | NR               | 655       | 184                         | NR               | 785       | 4                           | NR               | 915       | 0                           | NR               |
| 400       | 9                           | NR               | 530       | 514                         | NR               | 660       | 160                         | NR               | 790       | 4                           | NR               | 920       | 0                           | NR               |
| 405       | 14                          | NR               | 535       | 530                         | NR               | 665       | 140                         | NR               | 795       | 3                           | NR               | 925       | 0                           | NR               |
| 410       | 27                          | NR               | 540       | 539                         | NR               | 670       | 122                         | NR               | 800       | 3                           | NR               | 930       | 0                           | NR               |
| 415       | 55                          | NR               | 545       | 549                         | NR               | 675       | 106                         | NR               | 805       | 2                           | NR               | 935       | 0                           | NR               |
| 420       | 115                         | NR               | 550       | 557                         | NR               | 680       | 92                          | NR               | 810       | 2                           | NR               | 940       | 0                           | NR               |
| 425       | 226                         | NR               | 555       | 565                         | NR               | 685       | 79                          | NR               | 815       | 2                           | NR               | 945       | 0                           | NR               |
| 430       | 395                         | NR               | 560       | 572                         | NR               | 690       | 68                          | NR               | 820       | 2                           | NR               | 950       | 0                           | NR               |
| 435       | 648                         | NR               | 565       | 580                         | NR               | 695       | 59                          | NR               | 825       | 1                           | NR               | 955       | 0                           | NR               |
| 440       | 937                         | NR               | 570       | 586                         | NR               | 700       | 51                          | NR               | 830       | 1                           | NR               | 960       | 0                           | NR               |
| 445       | 953                         | NR               | 575       | 588                         | NR               | 705       | 44                          | NR               | 835       | 1                           | NR               | 965       | 0                           | NR               |
| 450       | 591                         | NR               | 580       | 588                         | NR               | 710       | 38                          | NR               | 840       | 1                           | NR               | 970       | 0                           | NR               |
| 455       | 334                         | NR               | 585       | 580                         | NR               | 715       | 32                          | NR               | 845       | 1                           | NR               | 975       | 0                           | NR               |
| 460       | 221                         | NR               | 590       | 568                         | NR               | 720       | 28                          | NR               | 850       | 1                           | NR               | 980       | 0                           | NR               |
| 465       | 140                         | NR               | 595       | 550                         | NR               | 725       | 24                          | NR               | 855       | 1                           | NR               | 985       | 0                           | NR               |
| 470       | 93                          | NR               | 600       | 527                         | NR               | 730       | 21                          | NR               | 860       | 1                           | NR               | 990       | 0                           | NR               |
| 475       | 79                          | NR               | 605       | 499                         | NR               | 735       | 18                          | NR               | 865       | 0                           | NR               | 995       | 0                           | NR               |
| 480       | 76                          | NR               | 610       | 469                         | NR               | 740       | 15                          | NR               | 870       | 0                           | NR               | 1000      | 0                           | NR               |
| 485       | 87                          | NR               | 615       | 435                         | NR               | 745       | 13                          | NR               | 875       | 0                           | NR               |           |                             |                  |

REPORT NUMBER: SP1-2407-184-6

### Melanopic Flux vs. Wavelength



Melanopic Lumens: NR

M/P: 3.37

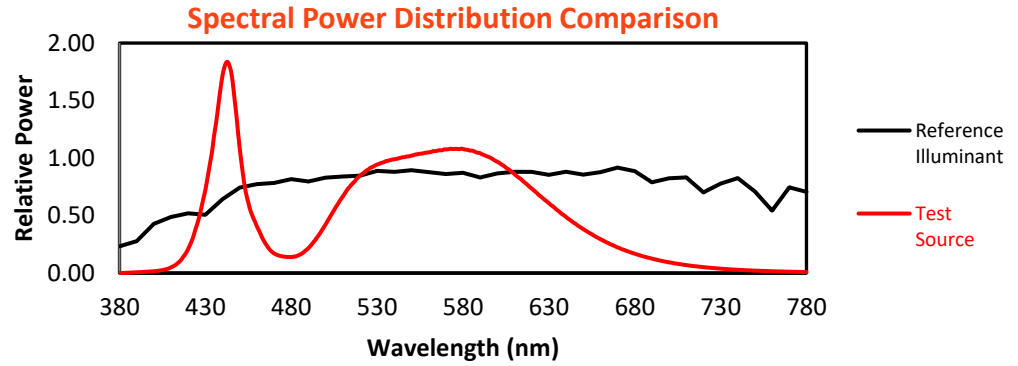
| $\lambda$<br>(nm) | Power<br>$\text{W}^{\wedge}/\text{nm}$ | Lumens<br>( $\phi/\text{nm}$ ) | $\lambda$<br>(nm) | Power<br>$\text{W}^{\wedge}/\text{nm}$ | Lumens<br>( $\phi/\text{nm}$ ) | $\lambda$<br>(nm) | Power<br>$\text{W}^{\wedge}/\text{nm}$ | Lumens<br>( $\phi/\text{nm}$ ) | $\lambda$<br>(nm) | 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               | 118                                    | NR                             | 620               | 401                                    | NR                             | 750               | 12                                     | NR                             | 880               | 0                                      | NR                             |
| 365               | 0                                      | NR                             | 495               | 168                                    | NR                             | 625               | 365                                    | NR                             | 755               | 10                                     | NR                             | 885               | 0                                      | NR                             |
| 370               | 0                                      | NR                             | 500               | 230                                    | NR                             | 630               | 331                                    | NR                             | 760               | 9                                      | NR                             | 890               | 0                                      | NR                             |
| 375               | 0                                      | NR                             | 505               | 299                                    | NR                             | 635               | 298                                    | NR                             | 765               | 8                                      | NR                             | 895               | 0                                      | NR                             |
| 380               | 0                                      | NR                             | 510               | 362                                    | NR                             | 640               | 266                                    | NR                             | 770               | 6                                      | NR                             | 900               | 0                                      | NR                             |
| 385               | 2                                      | NR                             | 515               | 418                                    | NR                             | 645               | 236                                    | NR                             | 775               | 6                                      | NR                             | 905               | 0                                      | NR                             |
| 390               | 4                                      | NR                             | 520               | 461                                    | NR                             | 650               | 209                                    | NR                             | 780               | 5                                      | NR                             | 910               | 0                                      | NR                             |
| 395               | 6                                      | NR                             | 525               | 491                                    | NR                             | 655               | 184                                    | NR                             | 785               | 4                                      | NR                             | 915               | 0                                      | NR                             |
| 400               | 9                                      | NR                             | 530               | 514                                    | NR                             | 660               | 160                                    | NR                             | 790               | 4                                      | NR                             | 920               | 0                                      | NR                             |
| 405               | 14                                     | NR                             | 535               | 530                                    | NR                             | 665               | 140                                    | NR                             | 795               | 3                                      | NR                             | 925               | 0                                      | NR                             |
| 410               | 27                                     | NR                             | 540               | 539                                    | NR                             | 670               | 122                                    | NR                             | 800               | 3                                      | NR                             | 930               | 0                                      | NR                             |
| 415               | 55                                     | NR                             | 545               | 549                                    | NR                             | 675               | 106                                    | NR                             | 805               | 2                                      | NR                             | 935               | 0                                      | NR                             |
| 420               | 115                                    | NR                             | 550               | 557                                    | NR                             | 680               | 92                                     | NR                             | 810               | 2                                      | NR                             | 940               | 0                                      | NR                             |
| 425               | 226                                    | NR                             | 555               | 565                                    | NR                             | 685               | 79                                     | NR                             | 815               | 2                                      | NR                             | 945               | 0                                      | NR                             |
| 430               | 395                                    | NR                             | 560               | 572                                    | NR                             | 690               | 68                                     | NR                             | 820               | 2                                      | NR                             | 950               | 0                                      | NR                             |
| 435               | 648                                    | NR                             | 565               | 580                                    | NR                             | 695               | 59                                     | NR                             | 825               | 1                                      | NR                             | 955               | 0                                      | NR                             |
| 440               | 937                                    | NR                             | 570               | 586                                    | NR                             | 700               | 51                                     | NR                             | 830               | 1                                      | NR                             | 960               | 0                                      | NR                             |
| 445               | 953                                    | NR                             | 575               | 588                                    | NR                             | 705               | 44                                     | NR                             | 835               | 1                                      | NR                             | 965               | 0                                      | NR                             |
| 450               | 591                                    | NR                             | 580               | 588                                    | NR                             | 710               | 38                                     | NR                             | 840               | 1                                      | NR                             | 970               | 0                                      | NR                             |
| 455               | 334                                    | NR                             | 585               | 580                                    | NR                             | 715               | 32                                     | NR                             | 845               | 1                                      | NR                             | 975               | 0                                      | NR                             |
| 460               | 221                                    | NR                             | 590               | 568                                    | NR                             | 720               | 28                                     | NR                             | 850               | 1                                      | NR                             | 980               | 0                                      | NR                             |
| 465               | 140                                    | NR                             | 595               | 550                                    | NR                             | 725               | 24                                     | NR                             | 855               | 1                                      | NR                             | 985               | 0                                      | NR                             |
| 470               | 93                                     | NR                             | 600               | 527                                    | NR                             | 730               | 21                                     | NR                             | 860               | 1                                      | NR                             | 990               | 0                                      | NR                             |
| 475               | 79                                     | NR                             | 605               | 499                                    | NR                             | 735               | 18                                     | NR                             | 865               | 0                                      | NR                             | 995               | 0                                      | NR                             |
| 480               | 76                                     | NR                             | 610               | 469                                    | NR                             | 740               | 15                                     | NR                             | 870               | 0                                      | NR                             | 1000              | 0                                      | NR                             |
| 485               | 87                                     | NR                             | 615               | 435                                    | NR                             | 745               | 13                                     | NR                             | 875               | 0                                      | NR                             |                   |                                        |                                |

REPORT NUMBER: SP1-2407-184-6

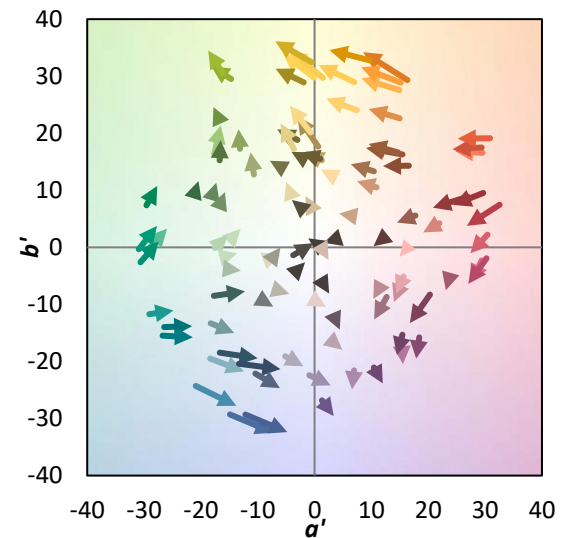
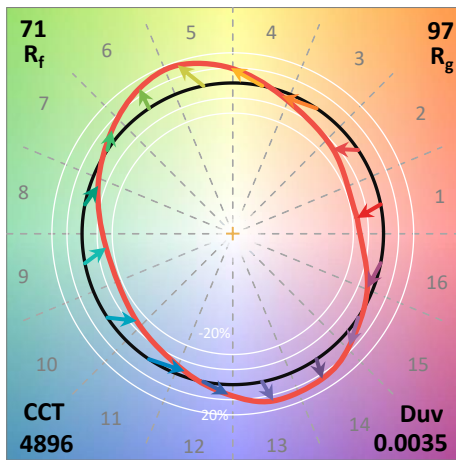
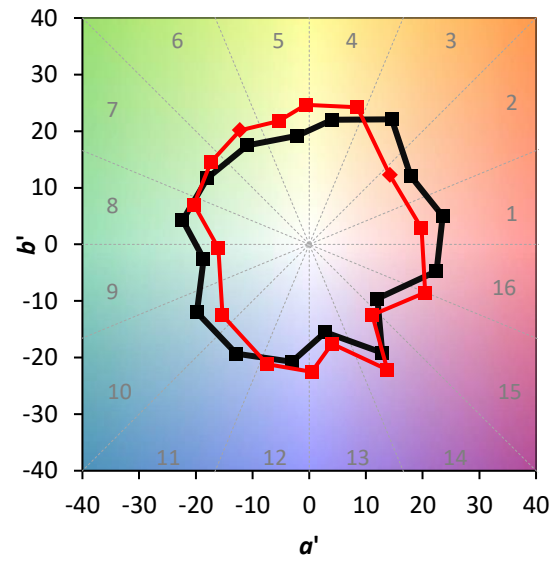
TM-30-18

### Summary

$R_f = 70.7$   
 $R_g = 96.8$   
 $CIE R_a = 70.2$   
 $R_g = -35.1$



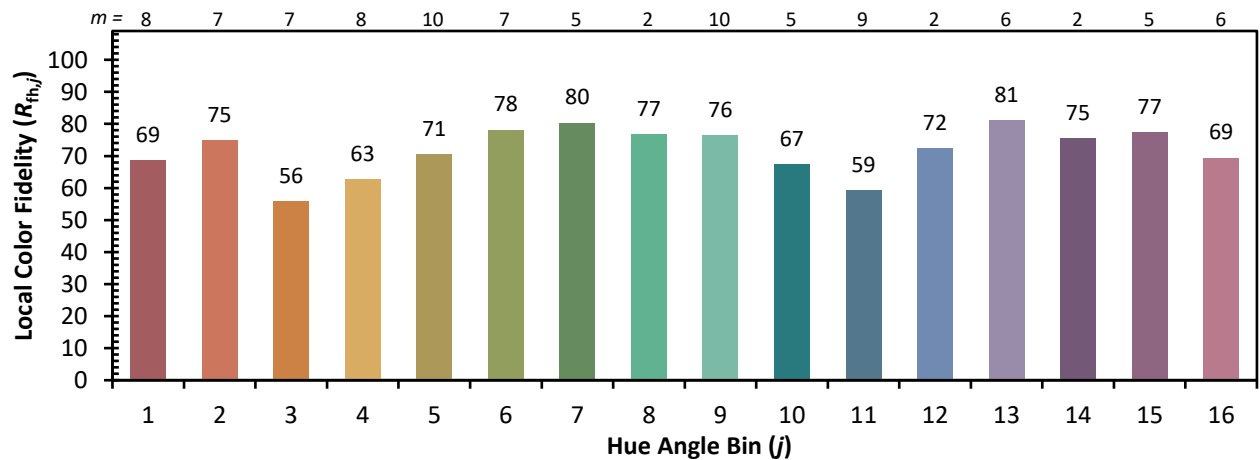
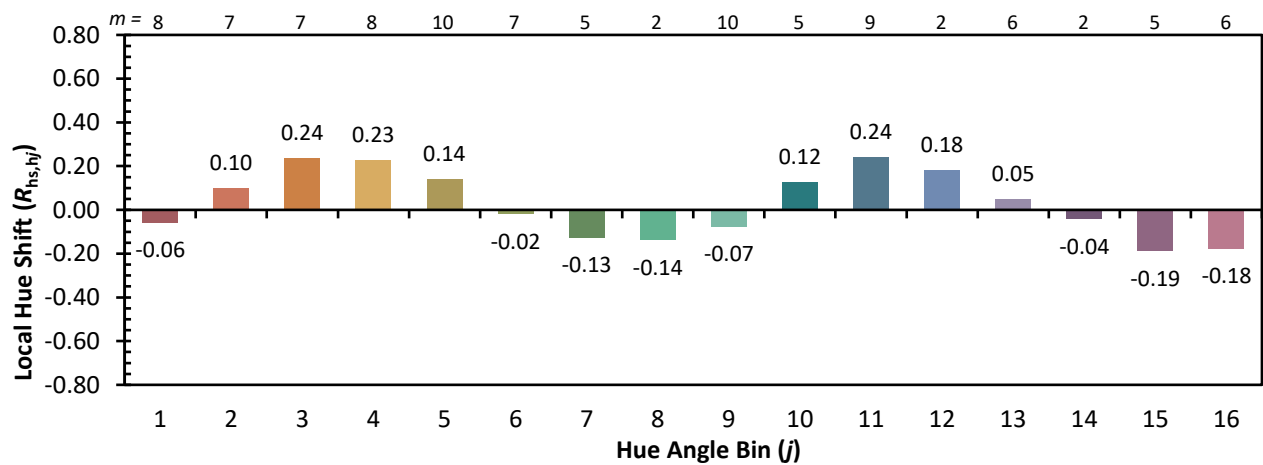
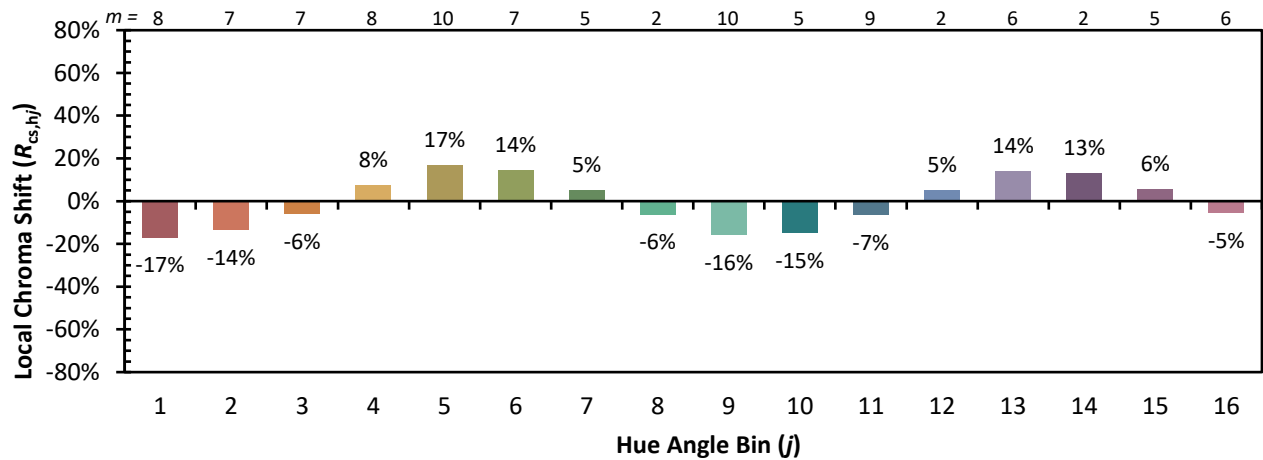
### Color Vector Graphics



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

|            |            |            |            |
|------------|------------|------------|------------|
| CES01 = 85 | CES26 = 53 | CES51 = 87 | CES76 = 42 |
| CES02 = 59 | CES27 = 78 | CES52 = 88 | CES77 = 64 |
| CES03 = 30 | CES28 = 76 | CES53 = 74 | CES78 = 45 |
| CES04 = 69 | CES29 = 48 | CES54 = 80 | CES79 = 74 |
| CES05 = 46 | CES30 = 56 | CES55 = 79 | CES80 = 71 |
| CES06 = 50 | CES31 = 54 | CES56 = 68 | CES81 = 72 |
| CES07 = 39 | CES32 = 50 | CES57 = 65 | CES82 = 88 |
| CES08 = 38 | CES33 = 60 | CES58 = 67 | CES83 = 82 |
| CES09 = 29 | CES34 = 62 | CES59 = 87 | CES84 = 87 |
| CES10 = 72 | CES35 = 79 | CES60 = 91 | CES85 = 84 |
| CES11 = 56 | CES36 = 90 | CES61 = 87 | CES86 = 74 |
| CES12 = 61 | CES37 = 72 | CES62 = 79 | CES87 = 75 |
| CES13 = 41 | CES38 = 66 | CES63 = 72 | CES88 = 76 |
| CES14 = 74 | CES39 = 91 | CES64 = 70 | CES89 = 74 |
| CES15 = 70 | CES40 = 83 | CES65 = 63 | CES90 = 73 |
| CES16 = 46 | CES41 = 83 | CES66 = 64 | CES91 = 92 |
| CES17 = 49 | CES42 = 70 | CES67 = 62 | CES92 = 67 |
| CES18 = 55 | CES43 = 68 | CES68 = 69 | CES93 = 81 |
| CES19 = 71 | CES44 = 98 | CES69 = 80 | CES94 = 56 |
| CES20 = 64 | CES45 = 78 | CES70 = 56 | CES95 = 71 |
| CES21 = 85 | CES46 = 77 | CES71 = 53 | CES96 = 77 |
| CES22 = 77 | CES47 = 73 | CES72 = 84 | CES97 = 82 |
| CES23 = 91 | CES48 = 65 | CES73 = 46 | CES98 = 71 |
| CES24 = 90 | CES49 = 76 | CES74 = 94 | CES99 = 59 |
| CES25 = 71 | CES50 = 85 | CES75 = 49 |            |



**Color Rendition by Hue-Angle Bin**


**Measure Comparisons**



(END OF REPORT)