

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: P1047587

Luminaire Tested: **GALN-SA9C-940-U-T3BC**

Issue Date: 07/10/2025

**Test Information**

Test Method: LM-79-08  
Report Number: P1047587  
Test Lab: INNOVATION CENTER(G3)  
Issue Date: 07/10/2025  
Manufacturer: COOPER LIGHTING SOLUTIONS (FORMERLY EATON)  
Product Line: MCGRAW-EDISON  
Catalog Number: GALN-SA9C-940-U-T3BC  
Description: GALLEON II AREA AND ROADWAY LUMINAIRE 1050mA 9xLight Square PACKAGE  
90CRI 4000K FIXTURE w/ TYPE III ANGLED BACKLIGHT CONTROL  
Light Source: (126) 4000K CCT, 90 CRI LEDS  
Ballast/Driver: ELECTRONIC DRIVER

**Summary**

Lumens per Lamp: N/A  
Luminaire Lumens: 37816.3 lumens  
Efficiency: N/A  
Efficacy: 90.7 lumens/watt  
Luminous Opening: Rectangular (W 1.5' x L: 1.5' x H: 0')  
IES Classification: Type III - 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

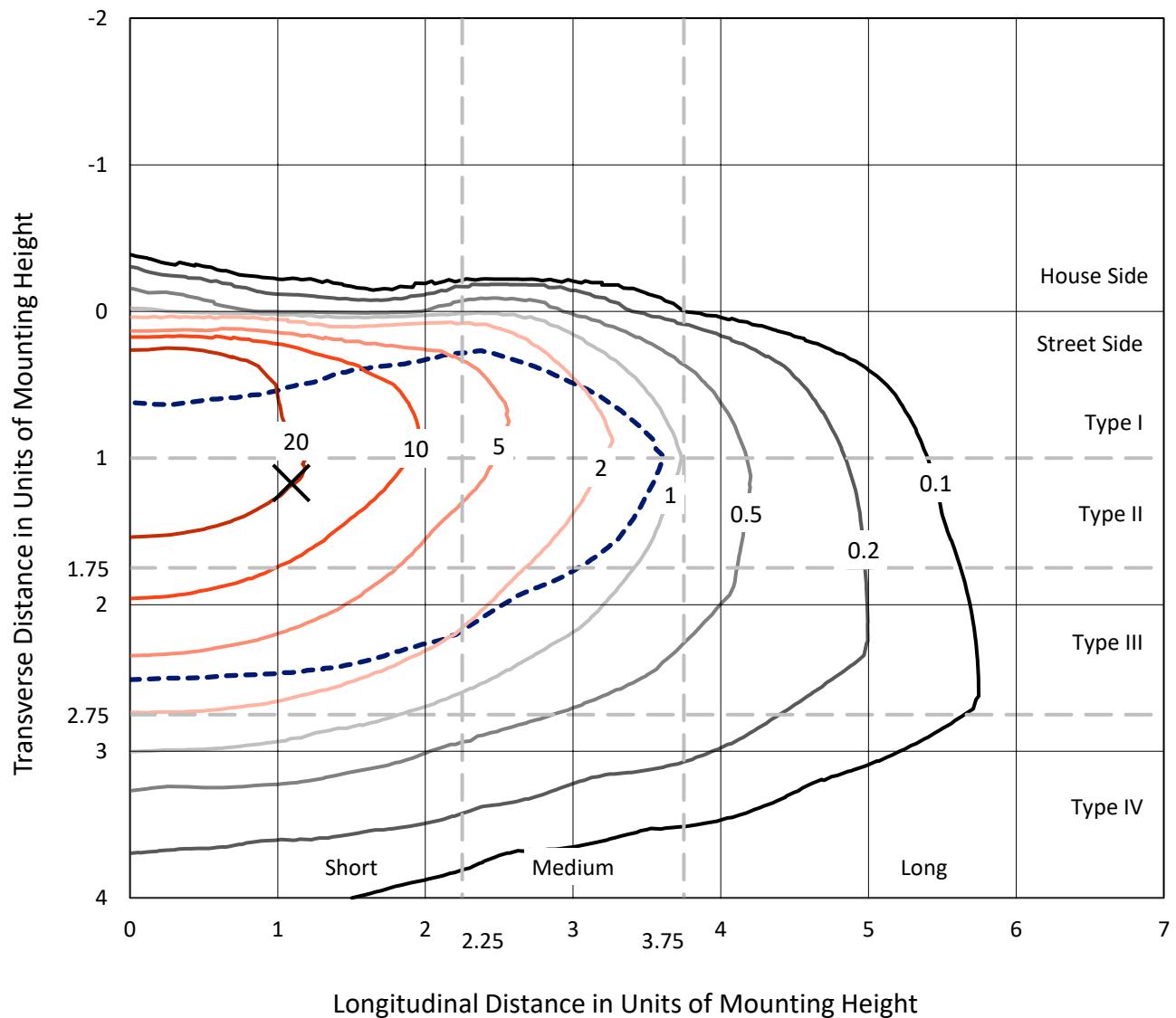


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## Iso-Footcandle Lines of Horizontal Illumination

× Max cd  
 - - - 1/2 Max cd

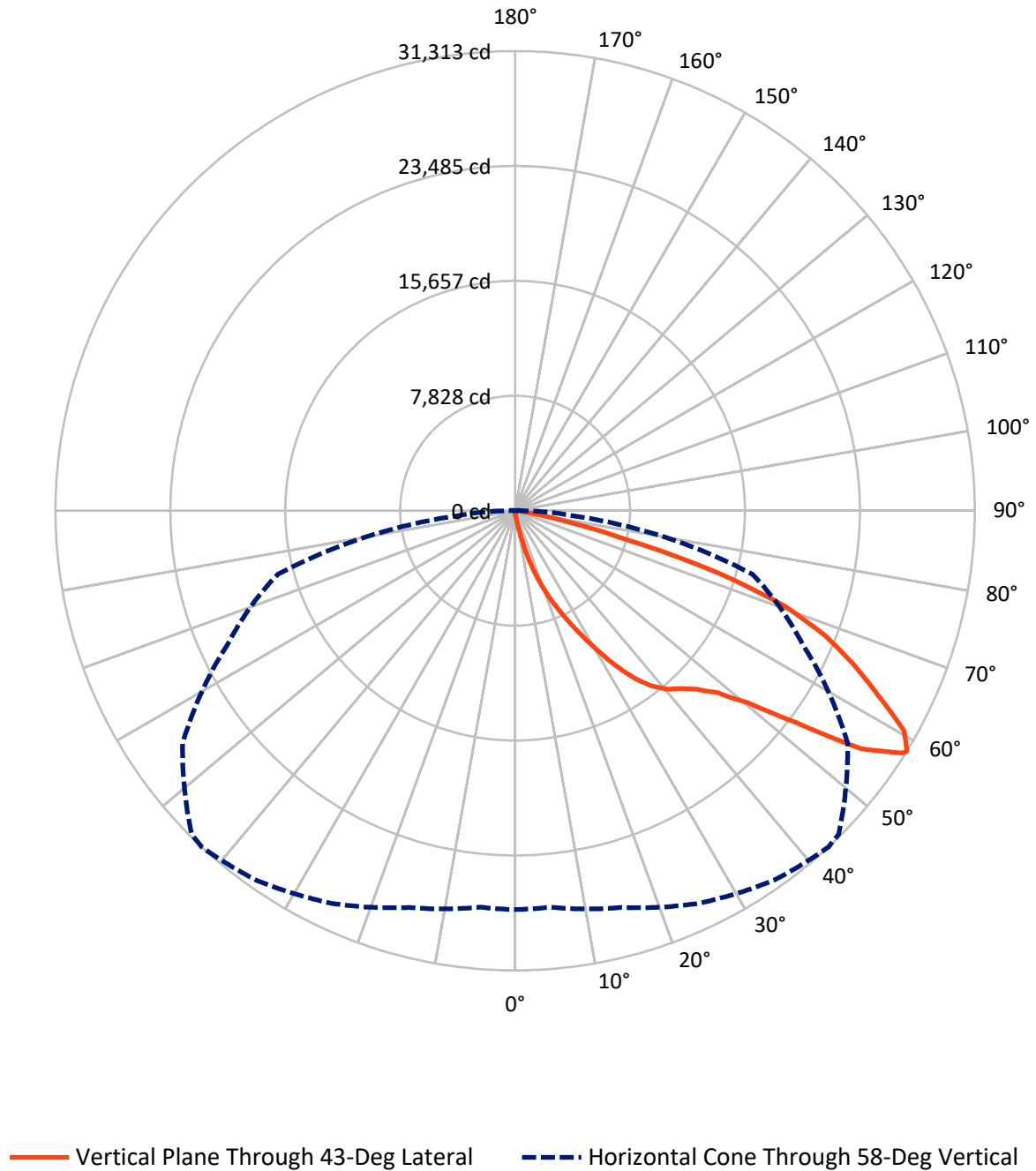


Based on 15 foot mounting height. Maximum calculated value = 42.4 fc  
 Type III - Short - N/A

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CATALOG NUMBER: GALN-SA9C-940-U-T3BC

## Luminous Intensity Polar Plot



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CATALOG NUMBER: GALN-SA9C-940-U-T3BC

**FLUX DISTRIBUTION:**

|                    |           | Downward | Upward | Total   |
|--------------------|-----------|----------|--------|---------|
| <b>House Side</b>  | Lumens    | 138.1    | 0.0    | 138.1   |
|                    | % Fixture | 0.4      | 0.0    | 0.4     |
| <b>Street Side</b> | Lumens    | 37678.2  | 0.0    | 37678.2 |
|                    | % Fixture | 99.6     | 0.0    | 99.6    |
| <b>Total</b>       | Lumens    | 37816.3  | 0.0    | 37816.3 |
|                    | % Fixture | 100.0    | 0.0    | 100.0   |

**Coefficient of Utilization**

**ZONAL LUMENS:**

| Zone      | Lumens  | % Fixture |
|-----------|---------|-----------|
| 0°-10°    | 36.2    | 0.1       |
| 10°-20°   | 434.7   | 1.1       |
| 20°-30°   | 1566.8  | 4.1       |
| 30°-40°   | 3584.7  | 9.5       |
| 40°-50°   | 6046.1  | 16.0      |
| 50°-60°   | 9977.4  | 26.4      |
| 60°-70°   | 11151.1 | 29.5      |
| 70°-80°   | 4604.1  | 12.2      |
| 80°-90°   | 415.1   | 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°    | 37816.3 | 100.0     |
| 0°-180°   | 37816.3 | 100.0     |



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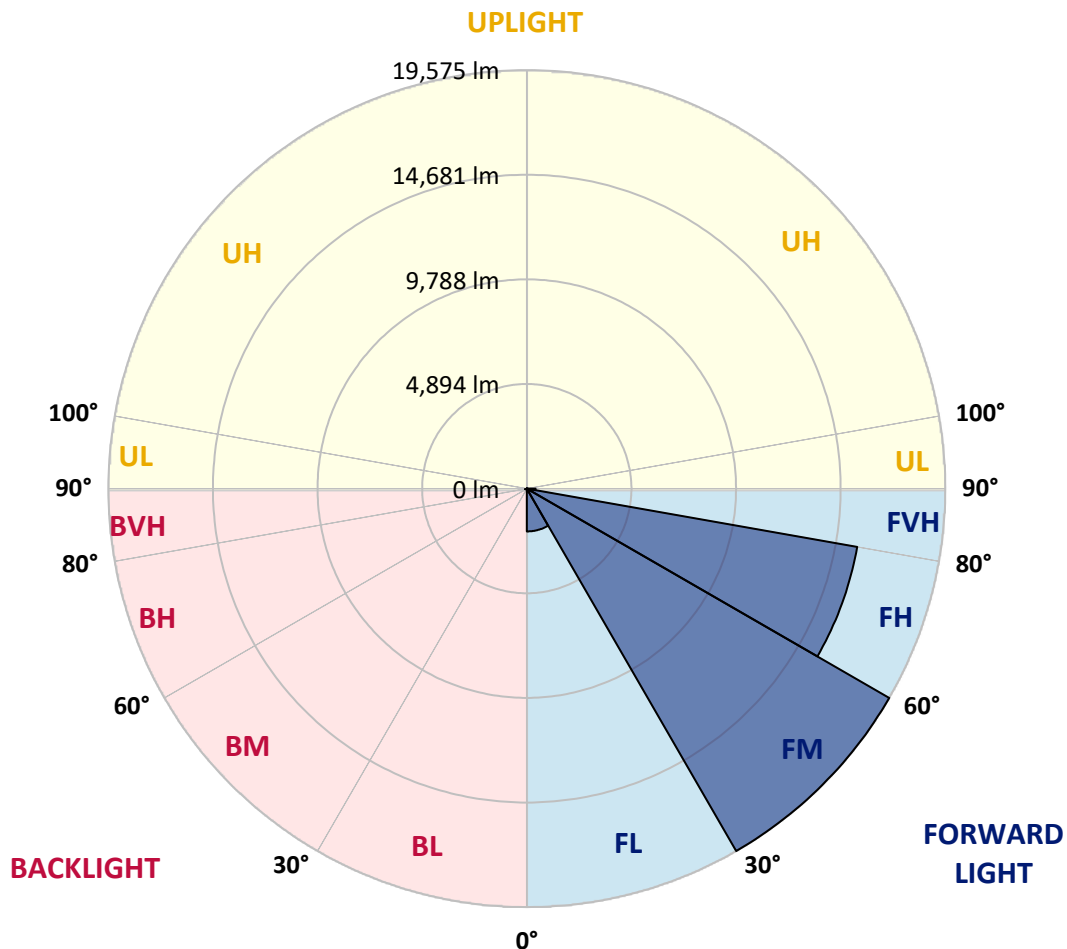
CATALOG NUMBER: GALN-SA9C-940-U-T3BC

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

| Zone |             | Lumens  | % Fixture | Zone Rating/Lumen Limit |      |        |
|------|-------------|---------|-----------|-------------------------|------|--------|
|      |             |         |           | B                       | U    | G      |
| FL   | (0°-30°)    | 2001.7  | 5.3       |                         |      |        |
| FM   | (30°-60°)   | 19575.1 | 51.8      |                         |      |        |
| FH   | (60°-80°)   | 15692.0 | 41.5      |                         |      | G5     |
| FVH  | (80°-90°)   | 409.4   | 1.1       |                         |      | G3/500 |
| BL   | (0°-30°)    | 36.0    | 0.1       | B0/110                  |      |        |
| BM   | (30°-60°)   | 33.1    | 0.1       | B0/220                  |      |        |
| BH   | (60°-80°)   | 63.3    | 0.2       | B0/110                  |      | G0/110 |
| BVH  | (80°-90°)   | 5.7     | 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-G5**

Type III Short



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**CANDELA DISTRIBUTION (FULL):**

|       | 0°      | 5°      | 15°     | 25°     | 35°     | 43°     | 45°     | 55°     | 65°     | 75°     | 85°     |
|-------|---------|---------|---------|---------|---------|---------|---------|---------|---------|---------|---------|
| 0°    | 247.3   | 247.3   | 247.3   | 247.3   | 247.3   | 247.3   | 247.3   | 247.3   | 247.3   | 247.3   | 247.3   |
| 2.5°  | 296.7   | 306.6   | 296.7   | 296.7   | 296.7   | 286.8   | 286.8   | 276.9   | 276.9   | 267.0   | 257.2   |
| 5°    | 435.2   | 435.2   | 405.5   | 385.7   | 365.9   | 356.1   | 346.2   | 326.4   | 306.6   | 286.8   | 267.0   |
| 7.5°  | 969.3   | 969.3   | 880.3   | 761.6   | 603.3   | 514.3   | 494.5   | 405.5   | 346.2   | 306.6   | 267.0   |
| 10°   | 2314.4  | 2314.4  | 2116.6  | 1790.2  | 1384.7  | 1028.6  | 919.8   | 583.5   | 415.4   | 326.4   | 276.9   |
| 12.5° | 3847.4  | 3896.9  | 3649.6  | 3234.2  | 2630.9  | 2007.8  | 1790.2  | 1068.2  | 553.9   | 356.1   | 276.9   |
| 15°   | 5222.2  | 5103.5  | 5034.3  | 4638.6  | 4065.0  | 3323.2  | 3046.3  | 1800.1  | 801.1   | 405.5   | 276.9   |
| 17.5° | 6151.9  | 6151.9  | 6053.0  | 5785.9  | 5261.8  | 4609.0  | 4381.5  | 2907.8  | 1295.7  | 464.9   | 286.8   |
| 20°   | 7239.9  | 7239.9  | 7061.8  | 6873.9  | 6409.0  | 5855.2  | 5637.6  | 4134.2  | 2007.8  | 593.4   | 286.8   |
| 22.5° | 8555.3  | 8575.1  | 8377.3  | 8041.0  | 7595.9  | 6982.7  | 6794.8  | 5271.6  | 2907.8  | 791.2   | 296.7   |
| 25°   | 10157.6 | 10177.3 | 9890.5  | 9574.0  | 8891.6  | 8228.9  | 7942.1  | 6577.2  | 4005.7  | 1107.7  | 296.7   |
| 27.5° | 11928.0 | 12066.4 | 11641.1 | 11097.1 | 10375.1 | 9544.3  | 9326.7  | 7754.2  | 5093.6  | 1562.7  | 316.5   |
| 30°   | 14133.5 | 14133.5 | 13569.8 | 12808.2 | 12026.9 | 10998.2 | 10721.3 | 8990.5  | 6250.8  | 2166.0  | 336.3   |
| 32.5° | 16032.5 | 15884.2 | 15162.1 | 14361.0 | 13530.2 | 12570.8 | 12274.1 | 10286.1 | 7437.7  | 2917.7  | 375.8   |
| 35°   | 17486.4 | 17357.8 | 16467.7 | 15607.2 | 14885.2 | 14005.0 | 13648.9 | 11690.6 | 8693.8  | 3768.3  | 435.2   |
| 37.5° | 18732.6 | 18683.2 | 17476.5 | 16398.5 | 15923.7 | 15152.3 | 14835.8 | 13015.9 | 9930.1  | 4688.1  | 504.4   |
| 40°   | 20097.5 | 19939.3 | 18653.5 | 17318.3 | 16606.2 | 15983.1 | 15696.2 | 14084.1 | 11116.9 | 5766.2  | 603.3   |
| 42.5° | 21264.6 | 21076.7 | 19919.5 | 18613.9 | 17397.4 | 16556.7 | 16279.8 | 14984.1 | 12274.1 | 6844.2  | 731.9   |
| 45°   | 22560.2 | 22461.3 | 21294.3 | 20305.2 | 18683.2 | 17338.1 | 16972.1 | 15706.1 | 13332.4 | 8130.0  | 900.0   |
| 47.5° | 24508.7 | 24330.6 | 23242.7 | 22431.7 | 20552.5 | 18524.9 | 18000.7 | 16447.9 | 14351.1 | 9396.0  | 1157.2  |
| 50°   | 26773.6 | 26654.9 | 26012.0 | 25369.2 | 23499.8 | 20552.5 | 19929.4 | 17516.1 | 15488.5 | 10899.3 | 1493.5  |
| 52.5° | 28623.1 | 28603.3 | 28682.5 | 28692.4 | 27278.0 | 23964.7 | 23035.0 | 19237.0 | 16794.1 | 12382.9 | 1968.2  |
| 55°   | 28583.6 | 28672.6 | 29542.9 | 30541.9 | 30650.7 | 28623.1 | 27723.1 | 22135.0 | 18495.2 | 14212.7 | 2630.9  |
| 57.5° | 27515.4 | 27446.2 | 28366.0 | 29869.3 | 30927.6 | 31145.2 | 30996.9 | 26635.1 | 21056.9 | 16418.2 | 3649.6  |
| 58°   | 27169.2 | 27109.9 | 27980.2 | 29513.3 | 30729.8 | 31313.3 | 31165.0 | 27653.9 | 21630.5 | 16734.7 | 3926.5  |
| 60°   | 25913.1 | 25923.0 | 26437.3 | 27831.9 | 29048.4 | 30433.1 | 30571.6 | 30561.7 | 24488.9 | 18851.3 | 5321.1  |
| 62.5° | 24251.5 | 24172.4 | 24647.1 | 25784.6 | 26852.7 | 27782.4 | 28019.8 | 30759.5 | 28672.6 | 21541.5 | 7981.6  |
| 65°   | 21956.9 | 21838.2 | 22342.7 | 23628.4 | 24775.7 | 25379.0 | 25388.9 | 28108.8 | 30640.8 | 24429.6 | 11779.6 |
| 67.5° | 17694.1 | 17595.2 | 18604.0 | 20255.8 | 22026.2 | 22817.4 | 23173.5 | 24390.0 | 28979.2 | 26387.9 | 13955.5 |
| 70°   | 10840.0 | 11047.7 | 12452.1 | 15043.5 | 18070.0 | 19523.9 | 20057.9 | 20433.8 | 24676.8 | 26091.2 | 11670.8 |
| 72.5° | 5004.6  | 4757.3  | 5954.1  | 7764.0  | 11215.8 | 14450.0 | 15003.9 | 16477.6 | 19563.4 | 22649.3 | 8703.6  |
| 75°   | 2334.2  | 2245.1  | 2522.1  | 3392.4  | 5083.7  | 7803.6  | 8812.4  | 13154.4 | 15003.9 | 15755.6 | 6280.5  |
| 77.5° | 1196.8  | 1206.6  | 1434.1  | 1542.9  | 2096.8  | 3610.0  | 4144.1  | 8654.2  | 10998.2 | 8792.7  | 4213.4  |
| 80°   | 524.2   | 544.0   | 553.9   | 603.3   | 850.6   | 1394.6  | 1572.6  | 4015.5  | 7516.8  | 4480.4  | 2304.5  |
| 82.5° | 336.3   | 346.2   | 346.2   | 346.2   | 405.5   | 553.9   | 633.0   | 1612.2  | 3748.5  | 2225.4  | 712.1   |
| 85°   | 178.0   | 178.0   | 197.8   | 247.3   | 286.8   | 336.3   | 356.1   | 514.3   | 1236.3  | 662.7   | 168.1   |
| 87.5° | 98.9    | 108.8   | 118.7   | 148.4   | 187.9   | 227.5   | 247.3   | 356.1   | 474.7   | 455.0   | 39.6    |
| 90°   | 0.0     | 0.0     | 0.0     | 0.0     | 0.0     | 0.0     | 0.0     | 0.0     | 0.0     | 0.0     | 0.0     |

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CATALOG NUMBER: GALN-SA9C-940-U-T3BC

**CANDELA DISTRIBUTION (continued):**

|       | 90°    | 95°   | 105°  | 115°  | 125°  | 135°  | 145°  | 155°  | 165°  | 175°  | 180°  |
|-------|--------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|
| 0°    | 247.3  | 247.3 | 247.3 | 247.3 | 247.3 | 247.3 | 247.3 | 247.3 | 247.3 | 247.3 | 247.3 |
| 2.5°  | 257.2  | 247.3 | 237.4 | 227.5 | 217.6 | 207.7 | 207.7 | 207.7 | 207.7 | 207.7 | 207.7 |
| 5°    | 247.3  | 237.4 | 227.5 | 207.7 | 187.9 | 178.0 | 168.1 | 158.2 | 158.2 | 158.2 | 158.2 |
| 7.5°  | 247.3  | 237.4 | 207.7 | 187.9 | 168.1 | 148.4 | 128.6 | 128.6 | 128.6 | 128.6 | 128.6 |
| 10°   | 247.3  | 227.5 | 197.8 | 168.1 | 138.5 | 118.7 | 108.8 | 98.9  | 98.9  | 98.9  | 98.9  |
| 12.5° | 247.3  | 217.6 | 187.9 | 148.4 | 118.7 | 98.9  | 89.0  | 79.1  | 79.1  | 79.1  | 79.1  |
| 15°   | 247.3  | 217.6 | 178.0 | 138.5 | 108.8 | 79.1  | 69.2  | 59.3  | 59.3  | 59.3  | 59.3  |
| 17.5° | 237.4  | 207.7 | 168.1 | 118.7 | 89.0  | 59.3  | 49.5  | 39.6  | 39.6  | 49.5  | 49.5  |
| 20°   | 227.5  | 197.8 | 148.4 | 98.9  | 69.2  | 49.5  | 29.7  | 29.7  | 29.7  | 29.7  | 29.7  |
| 22.5° | 227.5  | 197.8 | 138.5 | 89.0  | 59.3  | 29.7  | 19.8  | 19.8  | 19.8  | 19.8  | 29.7  |
| 25°   | 227.5  | 187.9 | 118.7 | 69.2  | 39.6  | 19.8  | 9.9   | 9.9   | 9.9   | 9.9   | 9.9   |
| 27.5° | 227.5  | 187.9 | 108.8 | 59.3  | 29.7  | 19.8  | 9.9   | 0.0   | 0.0   | 0.0   | 0.0   |
| 30°   | 217.6  | 178.0 | 98.9  | 49.5  | 19.8  | 9.9   | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   |
| 32.5° | 217.6  | 168.1 | 79.1  | 39.6  | 19.8  | 9.9   | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   |
| 35°   | 227.5  | 158.2 | 69.2  | 29.7  | 9.9   | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   | 9.9   |
| 37.5° | 237.4  | 148.4 | 59.3  | 19.8  | 9.9   | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   |
| 40°   | 247.3  | 138.5 | 59.3  | 19.8  | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   |
| 42.5° | 267.0  | 138.5 | 49.5  | 19.8  | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   |
| 45°   | 286.8  | 138.5 | 39.6  | 9.9   | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   |
| 47.5° | 326.4  | 148.4 | 39.6  | 9.9   | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   |
| 50°   | 356.1  | 158.2 | 29.7  | 9.9   | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   |
| 52.5° | 395.6  | 148.4 | 29.7  | 9.9   | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   |
| 55°   | 445.1  | 148.4 | 29.7  | 9.9   | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   |
| 57.5° | 484.6  | 138.5 | 29.7  | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   |
| 58°   | 504.4  | 128.6 | 19.8  | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   |
| 60°   | 603.3  | 118.7 | 19.8  | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   |
| 62.5° | 939.6  | 98.9  | 19.8  | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   |
| 65°   | 1908.9 | 89.0  | 19.8  | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   |
| 67.5° | 3560.6 | 79.1  | 19.8  | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   |
| 70°   | 3985.9 | 89.0  | 9.9   | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   |
| 72.5° | 2512.2 | 69.2  | 9.9   | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   |
| 75°   | 1325.3 | 69.2  | 9.9   | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   |
| 77.5° | 662.7  | 69.2  | 9.9   | 9.9   | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   |
| 80°   | 306.6  | 49.5  | 9.9   | 9.9   | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   |
| 82.5° | 128.6  | 29.7  | 19.8  | 9.9   | 9.9   | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   |
| 85°   | 59.3   | 29.7  | 19.8  | 19.8  | 9.9   | 9.9   | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   |
| 87.5° | 29.7   | 29.7  | 29.7  | 19.8  | 19.8  | 9.9   | 9.9   | 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: SP1-2407-184-16

Test Date: 10/11/2024

Luminaire Tested: GSS-SB1A-940-U-5WQ

Data in this report applies to families of products including GSS-SB1A-940-U-5WQ

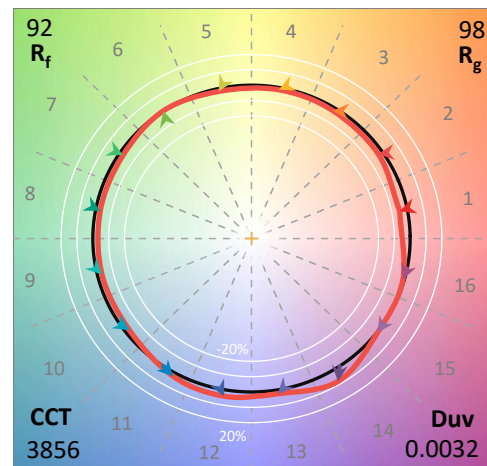
### Test Information

Test Method: LM-79-2019  
 Report Number: SP1-2407-184-16  
 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-940-U-5WQ**  
 Description: GALLEON II SITE SLIM 1SQ 350MA 5WQ HIGH DENSITY LIGHTSQUARE WITH 90 CRI  
 4000K CCT 26 LEDS

### Spectral Parameters

CCT (K): 3856  
 CIE  $u'$ : 0.2261  
 CIE  $v'$ : 0.5084  
 Duv: 0.0032  
 CIE x: 0.3896  
 CIE y: 0.3894  
 CIE z: 0.2211  
 Peak Wavelength (nm): 614  
 Dominant Wavelength (nm): 578  
 Purity: 33.77304  
 R<sub>f</sub>: 91.8  
 R<sub>g</sub>: 98.4

CRI (Ra): 92.1  
 R1: 91.8  
 R2: 94.1  
 R3: 95.3  
 R4: 92.8  
 R5: 91.0  
 R6: 91.6  
 R7: 95.0  
 R8: 85.2  
 R9: 60.7  
 R10: 85.2  
 R11: 92.4  
 R12: 74.5  
 R13: 92.3  
 R14: 97.0  
 R15: 88.5



### Test Conditions

Stabilization Time: 23M  
 Operation Time: 1H 23M  
 Sphere Temperature (°C): 25.2

REPORT NUMBER: SP1-2407-184-16

| 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: SP1-2407-184-16

**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: SP1-2407-184-16

### Photopic Flux vs. Wavelength



### Photopic Lumens: NR

| $\lambda$<br>(nm) | Power<br>$\text{W}^\wedge/\text{nm}$ | Lumens<br>( $\phi/\text{nm}$ ) | $\lambda$<br>(nm) | Power<br>$\text{W}^\wedge/\text{nm}$ | Lumens<br>( $\phi/\text{nm}$ ) | $\lambda$<br>(nm) | Power<br>$\text{W}^\wedge/\text{nm}$ | Lumens<br>( $\phi/\text{nm}$ ) | $\lambda$<br>(nm) | Power<br>$\text{W}^\wedge/\text{nm}$ | Lumens<br>( $\phi/\text{nm}$ ) | $\lambda$<br>(nm) | Power<br>$\text{W}^\wedge/\text{nm}$ | Lumens<br>( $\phi/\text{nm}$ ) |
|-------------------|--------------------------------------|--------------------------------|-------------------|--------------------------------------|--------------------------------|-------------------|--------------------------------------|--------------------------------|-------------------|--------------------------------------|--------------------------------|-------------------|--------------------------------------|--------------------------------|
| 360               | 0                                    | NR                             | 490               | 492                                  | NR                             | 620               | 993                                  | NR                             | 750               | 73                                   | NR                             | 880               | 1                                    | NR                             |
| 365               | 0                                    | NR                             | 495               | 539                                  | NR                             | 625               | 978                                  | NR                             | 755               | 62                                   | NR                             | 885               | 1                                    | NR                             |
| 370               | 0                                    | NR                             | 500               | 583                                  | NR                             | 630               | 962                                  | NR                             | 760               | 54                                   | NR                             | 890               | 1                                    | NR                             |
| 375               | 0                                    | NR                             | 505               | 623                                  | NR                             | 635               | 933                                  | NR                             | 765               | 46                                   | NR                             | 895               | 1                                    | NR                             |
| 380               | 0                                    | NR                             | 510               | 661                                  | NR                             | 640               | 898                                  | NR                             | 770               | 39                                   | NR                             | 900               | 1                                    | NR                             |
| 385               | 0                                    | NR                             | 515               | 698                                  | NR                             | 645               | 855                                  | NR                             | 775               | 34                                   | NR                             | 905               | 1                                    | NR                             |
| 390               | 0                                    | NR                             | 520               | 733                                  | NR                             | 650               | 810                                  | NR                             | 780               | 29                                   | NR                             | 910               | 1                                    | NR                             |
| 395               | 1                                    | NR                             | 525               | 764                                  | NR                             | 655               | 759                                  | NR                             | 785               | 25                                   | NR                             | 915               | 1                                    | NR                             |
| 400               | 3                                    | NR                             | 530               | 794                                  | NR                             | 660               | 704                                  | NR                             | 790               | 21                                   | NR                             | 920               | 1                                    | NR                             |
| 405               | 6                                    | NR                             | 535               | 820                                  | NR                             | 665               | 651                                  | NR                             | 795               | 18                                   | NR                             | 925               | 1                                    | NR                             |
| 410               | 12                                   | NR                             | 540               | 837                                  | NR                             | 670               | 592                                  | NR                             | 800               | 16                                   | NR                             | 930               | 1                                    | NR                             |
| 415               | 22                                   | NR                             | 545               | 853                                  | NR                             | 675               | 538                                  | NR                             | 805               | 13                                   | NR                             | 935               | 0                                    | NR                             |
| 420               | 42                                   | NR                             | 550               | 864                                  | NR                             | 680               | 486                                  | NR                             | 810               | 12                                   | NR                             | 940               | 0                                    | NR                             |
| 425               | 79                                   | NR                             | 555               | 872                                  | NR                             | 685               | 435                                  | NR                             | 815               | 10                                   | NR                             | 945               | 0                                    | NR                             |
| 430               | 147                                  | NR                             | 560               | 876                                  | NR                             | 690               | 389                                  | NR                             | 820               | 9                                    | NR                             | 950               | 0                                    | NR                             |
| 435               | 278                                  | NR                             | 565               | 883                                  | NR                             | 695               | 344                                  | NR                             | 825               | 7                                    | NR                             | 955               | 0                                    | NR                             |
| 440               | 515                                  | NR                             | 570               | 891                                  | NR                             | 700               | 303                                  | NR                             | 830               | 6                                    | NR                             | 960               | 0                                    | NR                             |
| 445               | 832                                  | NR                             | 575               | 900                                  | NR                             | 705               | 266                                  | NR                             | 835               | 5                                    | NR                             | 965               | 0                                    | NR                             |
| 450               | 874                                  | NR                             | 580               | 914                                  | NR                             | 710               | 233                                  | NR                             | 840               | 5                                    | NR                             | 970               | 0                                    | NR                             |
| 455               | 659                                  | NR                             | 585               | 927                                  | NR                             | 715               | 203                                  | NR                             | 845               | 4                                    | NR                             | 975               | 0                                    | NR                             |
| 460               | 567                                  | NR                             | 590               | 944                                  | NR                             | 720               | 178                                  | NR                             | 850               | 4                                    | NR                             | 980               | 0                                    | NR                             |
| 465               | 485                                  | NR                             | 595               | 961                                  | NR                             | 725               | 154                                  | NR                             | 855               | 3                                    | NR                             | 985               | 0                                    | NR                             |
| 470               | 401                                  | NR                             | 600               | 975                                  | NR                             | 730               | 133                                  | NR                             | 860               | 3                                    | NR                             | 990               | 0                                    | NR                             |
| 475               | 393                                  | NR                             | 605               | 988                                  | NR                             | 735               | 115                                  | NR                             | 865               | 2                                    | NR                             | 995               | 1                                    | NR                             |
| 480               | 417                                  | NR                             | 610               | 996                                  | NR                             | 740               | 98                                   | NR                             | 870               | 2                                    | NR                             | 1000              | 0                                    | NR                             |
| 485               | 448                                  | NR                             | 615               | 998                                  | NR                             | 745               | 85                                   | NR                             | 875               | 2                                    | NR                             |                   |                                      |                                |

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### Scotopic Flux vs. Wavelength



Scotopic Lumens: NR

S/P: 1.72

| 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    | 492                      | NR            | 620    | 993                      | NR            | 750    | 73                       | NR            | 880    | 1                        | NR            |
| 365    | 0                        | NR            | 495    | 539                      | NR            | 625    | 978                      | NR            | 755    | 62                       | NR            | 885    | 1                        | NR            |
| 370    | 0                        | NR            | 500    | 583                      | NR            | 630    | 962                      | NR            | 760    | 54                       | NR            | 890    | 1                        | NR            |
| 375    | 0                        | NR            | 505    | 623                      | NR            | 635    | 933                      | NR            | 765    | 46                       | NR            | 895    | 1                        | NR            |
| 380    | 0                        | NR            | 510    | 661                      | NR            | 640    | 898                      | NR            | 770    | 39                       | NR            | 900    | 1                        | NR            |
| 385    | 0                        | NR            | 515    | 698                      | NR            | 645    | 855                      | NR            | 775    | 34                       | NR            | 905    | 1                        | NR            |
| 390    | 0                        | NR            | 520    | 733                      | NR            | 650    | 810                      | NR            | 780    | 29                       | NR            | 910    | 1                        | NR            |
| 395    | 1                        | NR            | 525    | 764                      | NR            | 655    | 759                      | NR            | 785    | 25                       | NR            | 915    | 1                        | NR            |
| 400    | 3                        | NR            | 530    | 794                      | NR            | 660    | 704                      | NR            | 790    | 21                       | NR            | 920    | 1                        | NR            |
| 405    | 6                        | NR            | 535    | 820                      | NR            | 665    | 651                      | NR            | 795    | 18                       | NR            | 925    | 1                        | NR            |
| 410    | 12                       | NR            | 540    | 837                      | NR            | 670    | 592                      | NR            | 800    | 16                       | NR            | 930    | 1                        | NR            |
| 415    | 22                       | NR            | 545    | 853                      | NR            | 675    | 538                      | NR            | 805    | 13                       | NR            | 935    | 0                        | NR            |
| 420    | 42                       | NR            | 550    | 864                      | NR            | 680    | 486                      | NR            | 810    | 12                       | NR            | 940    | 0                        | NR            |
| 425    | 79                       | NR            | 555    | 872                      | NR            | 685    | 435                      | NR            | 815    | 10                       | NR            | 945    | 0                        | NR            |
| 430    | 147                      | NR            | 560    | 876                      | NR            | 690    | 389                      | NR            | 820    | 9                        | NR            | 950    | 0                        | NR            |
| 435    | 278                      | NR            | 565    | 883                      | NR            | 695    | 344                      | NR            | 825    | 7                        | NR            | 955    | 0                        | NR            |
| 440    | 515                      | NR            | 570    | 891                      | NR            | 700    | 303                      | NR            | 830    | 6                        | NR            | 960    | 0                        | NR            |
| 445    | 832                      | NR            | 575    | 900                      | NR            | 705    | 266                      | NR            | 835    | 5                        | NR            | 965    | 0                        | NR            |
| 450    | 874                      | NR            | 580    | 914                      | NR            | 710    | 233                      | NR            | 840    | 5                        | NR            | 970    | 0                        | NR            |
| 455    | 659                      | NR            | 585    | 927                      | NR            | 715    | 203                      | NR            | 845    | 4                        | NR            | 975    | 0                        | NR            |
| 460    | 567                      | NR            | 590    | 944                      | NR            | 720    | 178                      | NR            | 850    | 4                        | NR            | 980    | 0                        | NR            |
| 465    | 485                      | NR            | 595    | 961                      | NR            | 725    | 154                      | NR            | 855    | 3                        | NR            | 985    | 0                        | NR            |
| 470    | 401                      | NR            | 600    | 975                      | NR            | 730    | 133                      | NR            | 860    | 3                        | NR            | 990    | 0                        | NR            |
| 475    | 393                      | NR            | 605    | 988                      | NR            | 735    | 115                      | NR            | 865    | 2                        | NR            | 995    | 1                        | NR            |
| 480    | 417                      | NR            | 610    | 996                      | NR            | 740    | 98                       | NR            | 870    | 2                        | NR            | 1000   | 0                        | NR            |
| 485    | 448                      | NR            | 615    | 998                      | NR            | 745    | 85                       | NR            | 875    | 2                        | NR            |        |                          |               |

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### Melanopic Flux vs. Wavelength



Melanopic Lumens: NR

M/P: 3.52

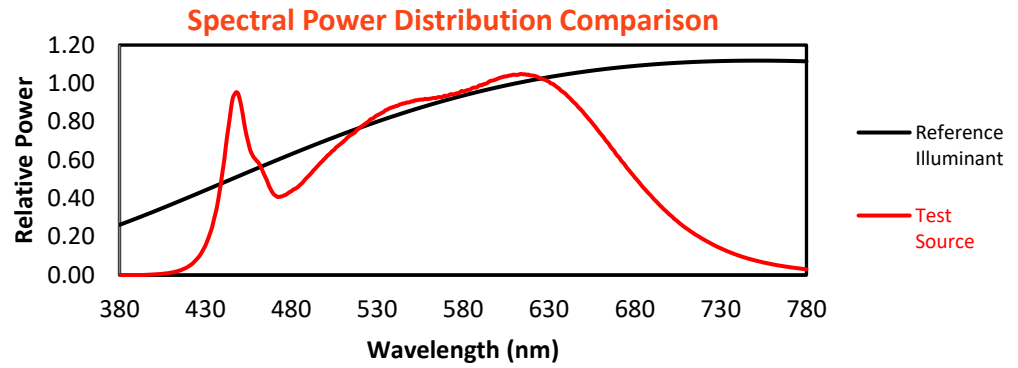
| λ (nm) | Power W <sup>^</sup> /nm | Lumens (φ/nm) | λ (nm) | Power W <sup>^</sup> /nm | Lumens (φ/nm) | λ (nm) | Power W <sup>^</sup> /nm | Lumens (φ/nm) | λ (nm) | Power W <sup>^</sup> /nm | Lumens (φ/nm) | λ (nm) | Power W <sup>^</sup> /nm | Lumens (φ/nm) |
|--------|--------------------------|---------------|--------|--------------------------|---------------|--------|--------------------------|---------------|--------|--------------------------|---------------|--------|--------------------------|---------------|
| 360    | 0                        | NR            | 490    | 492                      | NR            | 620    | 993                      | NR            | 750    | 73                       | NR            | 880    | 1                        | NR            |
| 365    | 0                        | NR            | 495    | 539                      | NR            | 625    | 978                      | NR            | 755    | 62                       | NR            | 885    | 1                        | NR            |
| 370    | 0                        | NR            | 500    | 583                      | NR            | 630    | 962                      | NR            | 760    | 54                       | NR            | 890    | 1                        | NR            |
| 375    | 0                        | NR            | 505    | 623                      | NR            | 635    | 933                      | NR            | 765    | 46                       | NR            | 895    | 1                        | NR            |
| 380    | 0                        | NR            | 510    | 661                      | NR            | 640    | 898                      | NR            | 770    | 39                       | NR            | 900    | 1                        | NR            |
| 385    | 0                        | NR            | 515    | 698                      | NR            | 645    | 855                      | NR            | 775    | 34                       | NR            | 905    | 1                        | NR            |
| 390    | 0                        | NR            | 520    | 733                      | NR            | 650    | 810                      | NR            | 780    | 29                       | NR            | 910    | 1                        | NR            |
| 395    | 1                        | NR            | 525    | 764                      | NR            | 655    | 759                      | NR            | 785    | 25                       | NR            | 915    | 1                        | NR            |
| 400    | 3                        | NR            | 530    | 794                      | NR            | 660    | 704                      | NR            | 790    | 21                       | NR            | 920    | 1                        | NR            |
| 405    | 6                        | NR            | 535    | 820                      | NR            | 665    | 651                      | NR            | 795    | 18                       | NR            | 925    | 1                        | NR            |
| 410    | 12                       | NR            | 540    | 837                      | NR            | 670    | 592                      | NR            | 800    | 16                       | NR            | 930    | 1                        | NR            |
| 415    | 22                       | NR            | 545    | 853                      | NR            | 675    | 538                      | NR            | 805    | 13                       | NR            | 935    | 0                        | NR            |
| 420    | 42                       | NR            | 550    | 864                      | NR            | 680    | 486                      | NR            | 810    | 12                       | NR            | 940    | 0                        | NR            |
| 425    | 79                       | NR            | 555    | 872                      | NR            | 685    | 435                      | NR            | 815    | 10                       | NR            | 945    | 0                        | NR            |
| 430    | 147                      | NR            | 560    | 876                      | NR            | 690    | 389                      | NR            | 820    | 9                        | NR            | 950    | 0                        | NR            |
| 435    | 278                      | NR            | 565    | 883                      | NR            | 695    | 344                      | NR            | 825    | 7                        | NR            | 955    | 0                        | NR            |
| 440    | 515                      | NR            | 570    | 891                      | NR            | 700    | 303                      | NR            | 830    | 6                        | NR            | 960    | 0                        | NR            |
| 445    | 832                      | NR            | 575    | 900                      | NR            | 705    | 266                      | NR            | 835    | 5                        | NR            | 965    | 0                        | NR            |
| 450    | 874                      | NR            | 580    | 914                      | NR            | 710    | 233                      | NR            | 840    | 5                        | NR            | 970    | 0                        | NR            |
| 455    | 659                      | NR            | 585    | 927                      | NR            | 715    | 203                      | NR            | 845    | 4                        | NR            | 975    | 0                        | NR            |
| 460    | 567                      | NR            | 590    | 944                      | NR            | 720    | 178                      | NR            | 850    | 4                        | NR            | 980    | 0                        | NR            |
| 465    | 485                      | NR            | 595    | 961                      | NR            | 725    | 154                      | NR            | 855    | 3                        | NR            | 985    | 0                        | NR            |
| 470    | 401                      | NR            | 600    | 975                      | NR            | 730    | 133                      | NR            | 860    | 3                        | NR            | 990    | 0                        | NR            |
| 475    | 393                      | NR            | 605    | 988                      | NR            | 735    | 115                      | NR            | 865    | 2                        | NR            | 995    | 1                        | NR            |
| 480    | 417                      | NR            | 610    | 996                      | NR            | 740    | 98                       | NR            | 870    | 2                        | NR            | 1000   | 0                        | NR            |
| 485    | 448                      | NR            | 615    | 998                      | NR            | 745    | 85                       | NR            | 875    | 2                        | NR            |        |                          |               |

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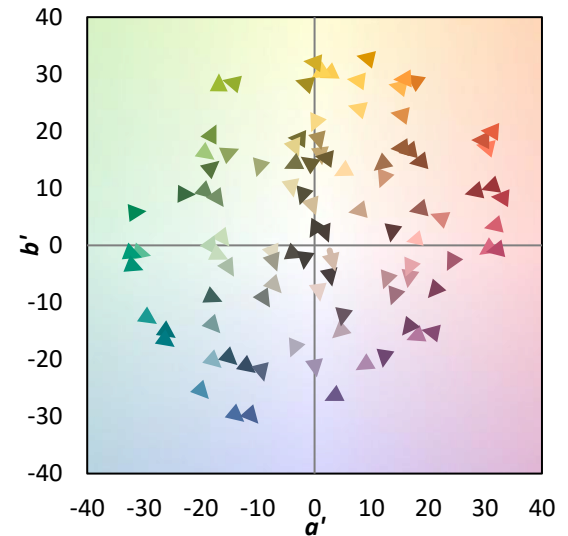
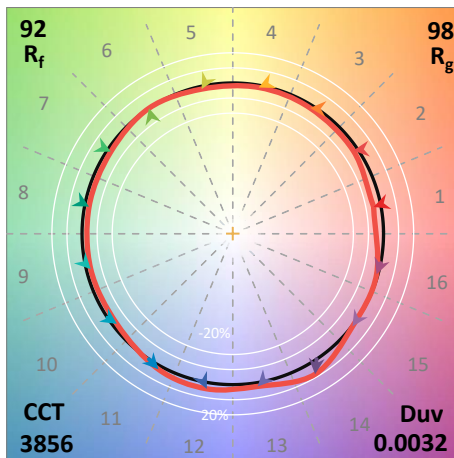
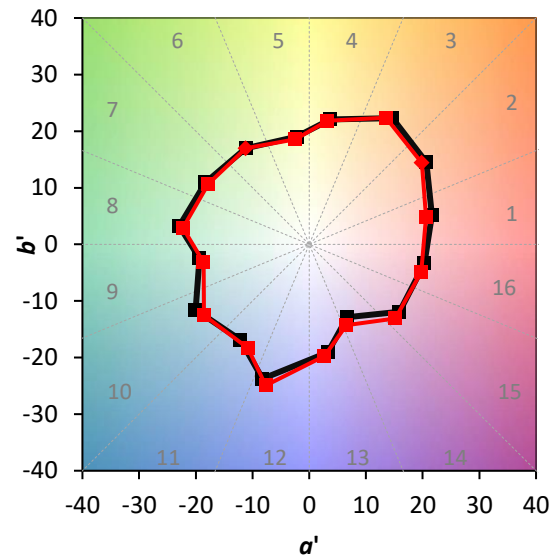
TM-30-18

### Summary

$R_f = 91.8$   
 $R_g = 98.4$   
 $CIE R_a = 92.1$   
 $R_9 = 60.7$



### Color Vector Graphics



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

|            |            |            |            |
|------------|------------|------------|------------|
| CES01 = 86 | CES26 = 94 | CES51 = 96 | CES76 = 87 |
| CES02 = 62 | CES27 = 91 | CES52 = 98 | CES77 = 90 |
| CES03 = 31 | CES28 = 96 | CES53 = 95 | CES78 = 84 |
| CES04 = 69 | CES29 = 96 | CES54 = 94 | CES79 = 96 |
| CES05 = 49 | CES30 = 93 | CES55 = 92 | CES80 = 94 |
| CES06 = 50 | CES31 = 97 | CES56 = 93 | CES81 = 89 |
| CES07 = 42 | CES32 = 92 | CES57 = 92 | CES82 = 97 |
| CES08 = 41 | CES33 = 99 | CES58 = 92 | CES83 = 98 |
| CES09 = 29 | CES34 = 94 | CES59 = 96 | CES84 = 94 |
| CES10 = 74 | CES35 = 96 | CES60 = 93 | CES85 = 85 |
| CES11 = 57 | CES36 = 82 | CES61 = 92 | CES86 = 88 |
| CES12 = 63 | CES37 = 95 | CES62 = 87 | CES87 = 92 |
| CES13 = 43 | CES38 = 88 | CES63 = 92 | CES88 = 96 |
| CES14 = 74 | CES39 = 99 | CES64 = 89 | CES89 = 87 |
| CES15 = 71 | CES40 = 98 | CES65 = 88 | CES90 = 96 |
| CES16 = 47 | CES41 = 97 | CES66 = 87 | CES91 = 74 |
| CES17 = 49 | CES42 = 96 | CES67 = 86 | CES92 = 80 |
| CES18 = 56 | CES43 = 96 | CES68 = 88 | CES93 = 88 |
| CES19 = 71 | CES44 = 99 | CES69 = 89 | CES94 = 82 |
| CES20 = 66 | CES45 = 98 | CES70 = 86 | CES95 = 83 |
| CES21 = 85 | CES46 = 97 | CES71 = 81 | CES96 = 92 |
| CES22 = 78 | CES47 = 97 | CES72 = 94 | CES97 = 95 |
| CES23 = 91 | CES48 = 91 | CES73 = 81 | CES98 = 94 |
| CES24 = 90 | CES49 = 96 | CES74 = 93 | CES99 = 91 |
| CES25 = 71 | CES50 = 97 | CES75 = 83 |            |



**Color Rendition by Hue-Angle Bin**


**Measure Comparisons**



(END OF REPORT)