

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: P1047547

Luminaire Tested: **GALN-SA8C-935-U-T3BC**

Issue Date: 07/10/2025

**Test Information**

Test Method: LM-79-08  
Report Number: P1047547  
Test Lab: INNOVATION CENTER(G3)  
Issue Date: 07/10/2025  
Manufacturer: COOPER LIGHTING SOLUTIONS (FORMERLY EATON)  
Product Line: MCGRAW-EDISON  
Catalog Number: GALN-SA8C-935-U-T3BC  
Description: GALLEON II AREA AND ROADWAY LUMINAIRE 1050mA 8xLight Square PACKAGE  
90CRI 3500K FIXTURE w/ TYPE III ANGLED BACKLIGHT CONTROL  
Light Source: (112) 3500K CCT, 90 CRI LEDS  
Ballast/Driver: ELECTRONIC DRIVER

**Summary**

Lumens per Lamp: N/A  
Luminaire Lumens: 33816.4 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): 372.9  
Input Voltage (V): 120  
Input Current (Ain): NR  
Voltage Rise (V): NR  
Power Factor: 0.97  
Total Harmonic Distortion (THDi): NR  
Frequency (hertz): 60  
Stabilization Time: NR  
Operation Time: NR  
Ambient Temperature (°C): NR  
Test Distance: 28.75 FT

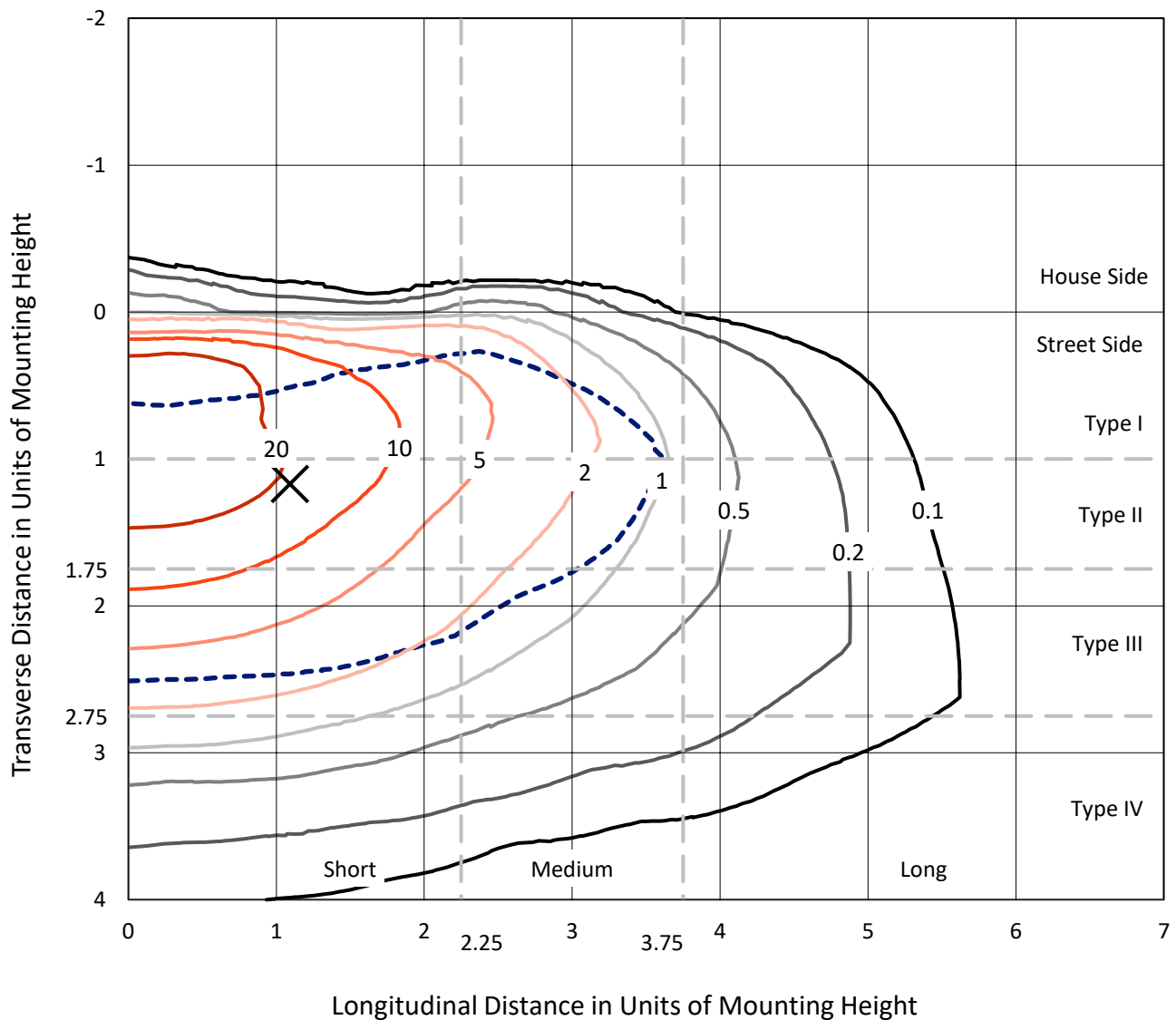


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## Iso-Footcandle Lines of Horizontal Illumination

× Max cd  
- - - 1/2 Max cd

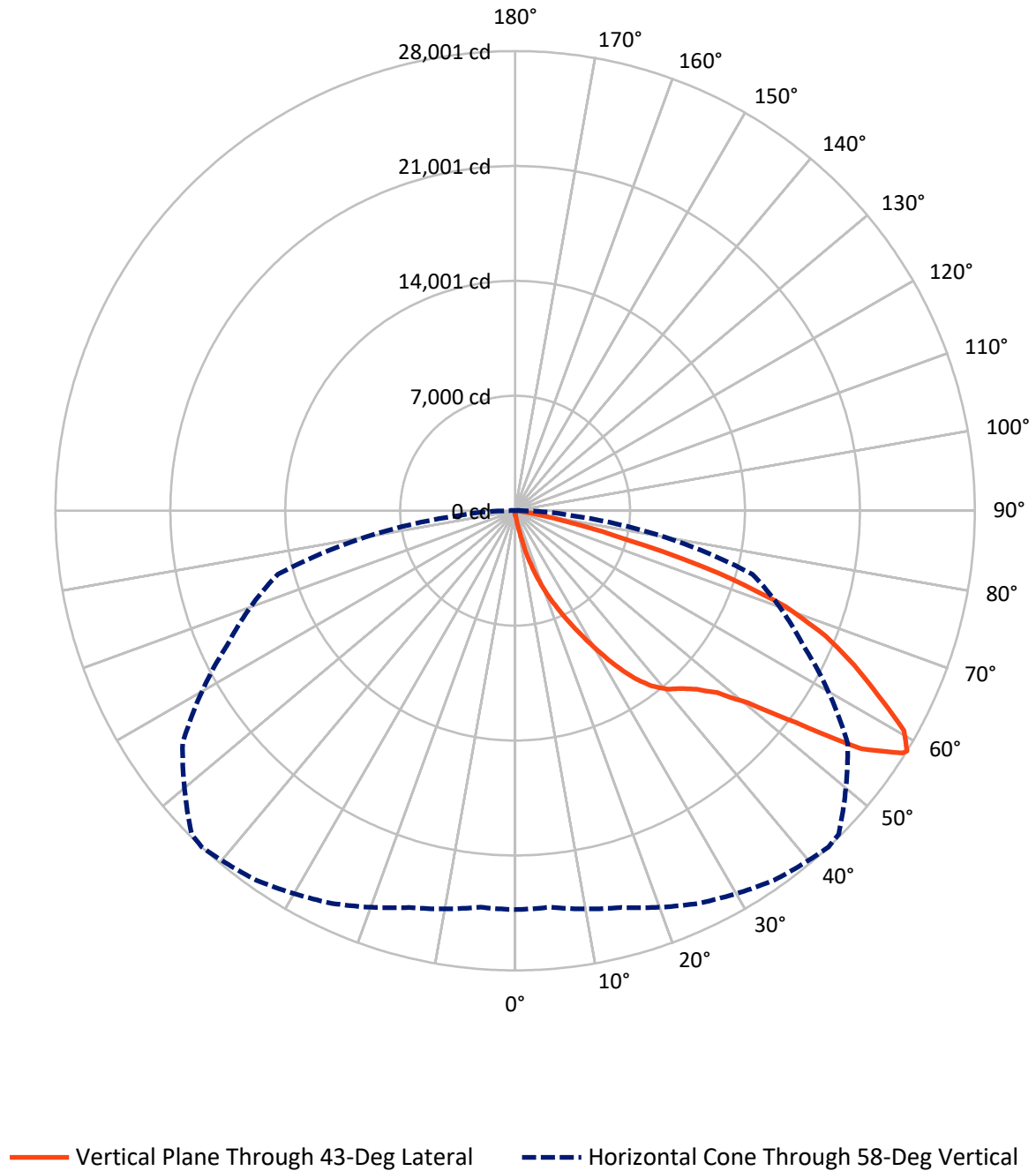


Based on 15 foot mounting height. Maximum calculated value = 37.9 fc  
Type III - Short - N/A

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CATALOG NUMBER: GALN-SA8C-935-U-T3BC

## Luminous Intensity Polar Plot



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CATALOG NUMBER: GALN-SA8C-935-U-T3BC

**FLUX DISTRIBUTION:**

|                    |           | Downward | Upward | Total   |
|--------------------|-----------|----------|--------|---------|
| <b>House Side</b>  | Lumens    | 123.4    | 0.0    | 123.4   |
|                    | % Fixture | 0.4      | 0.0    | 0.4     |
| <b>Street Side</b> | Lumens    | 33693.0  | 0.0    | 33693.0 |
|                    | % Fixture | 99.6     | 0.0    | 99.6    |
| <b>Total</b>       | Lumens    | 33816.4  | 0.0    | 33816.4 |
|                    | % Fixture | 100.0    | 0.0    | 100.0   |

**Coefficient of Utilization**

**ZONAL LUMENS:**

| Zone      | Lumens  | % Fixture |
|-----------|---------|-----------|
| 0°-10°    | 32.4    | 0.1       |
| 10°-20°   | 388.7   | 1.1       |
| 20°-30°   | 1401.1  | 4.1       |
| 30°-40°   | 3205.6  | 9.5       |
| 40°-50°   | 5406.6  | 16.0      |
| 50°-60°   | 8922.1  | 26.4      |
| 60°-70°   | 9971.7  | 29.5      |
| 70°-80°   | 4117.1  | 12.2      |
| 80°-90°   | 371.2   | 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°    | 33816.4 | 100.0     |
| 0°-180°   | 33816.4 | 100.0     |



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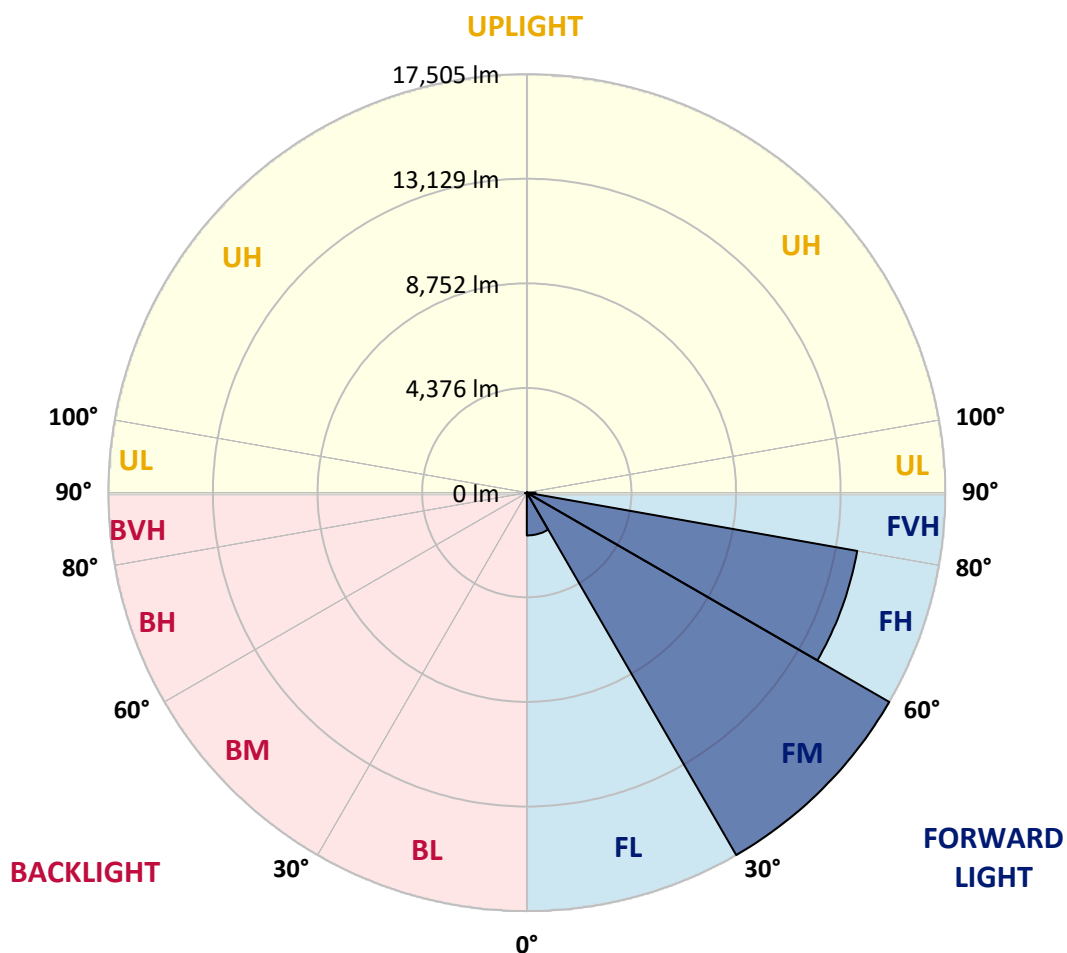
CATALOG NUMBER: GALN-SA8C-935-U-T3BC

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

| Zone |             | Lumens  | % Fixture | Zone Rating/Lumen Limit |      |        |
|------|-------------|---------|-----------|-------------------------|------|--------|
|      |             |         |           | B                       | U    | G      |
| FL   | (0°-30°)    | 1790.0  | 5.3       |                         |      |        |
| FM   | (30°-60°)   | 17504.7 | 51.8      |                         |      |        |
| FH   | (60°-80°)   | 14032.2 | 41.5      |                         |      | G5     |
| FVH  | (80°-90°)   | 366.1   | 1.1       |                         |      | G3/500 |
| BL   | (0°-30°)    | 32.2    | 0.1       | B0/110                  |      |        |
| BM   | (30°-60°)   | 29.6    | 0.1       | B0/220                  |      |        |
| BH   | (60°-80°)   | 56.6    | 0.2       | B0/110                  |      | G0/110 |
| BVH  | (80°-90°)   | 5.1     | 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°    | 221.1   | 221.1   | 221.1   | 221.1   | 221.1   | 221.1   | 221.1   | 221.1   | 221.1   | 221.1   | 221.1   |
| 2.5°  | 265.3   | 274.2   | 265.3   | 265.3   | 265.3   | 256.5   | 256.5   | 247.6   | 247.6   | 238.8   | 230.0   |
| 5°    | 389.2   | 389.2   | 362.6   | 344.9   | 327.2   | 318.4   | 309.6   | 291.9   | 274.2   | 256.5   | 238.8   |
| 7.5°  | 866.7   | 866.7   | 787.2   | 681.0   | 539.5   | 459.9   | 442.2   | 362.6   | 309.6   | 274.2   | 238.8   |
| 10°   | 2069.6  | 2069.6  | 1892.7  | 1600.8  | 1238.2  | 919.8   | 822.5   | 521.8   | 371.5   | 291.9   | 247.6   |
| 12.5° | 3440.5  | 3484.7  | 3263.6  | 2892.1  | 2352.6  | 1795.4  | 1600.8  | 955.2   | 495.3   | 318.4   | 247.6   |
| 15°   | 4669.8  | 4563.7  | 4501.8  | 4148.0  | 3635.0  | 2971.7  | 2724.1  | 1609.7  | 716.4   | 362.6   | 247.6   |
| 17.5° | 5501.2  | 5501.2  | 5412.8  | 5174.0  | 4705.2  | 4121.5  | 3918.1  | 2600.2  | 1158.6  | 415.7   | 256.5   |
| 20°   | 6474.1  | 6474.1  | 6314.9  | 6146.8  | 5731.2  | 5235.9  | 5041.3  | 3697.0  | 1795.4  | 530.7   | 256.5   |
| 22.5° | 7650.4  | 7668.1  | 7491.2  | 7190.5  | 6792.5  | 6244.1  | 6076.1  | 4714.1  | 2600.2  | 707.6   | 265.3   |
| 25°   | 9083.2  | 9100.9  | 8844.4  | 8561.4  | 7951.1  | 7358.5  | 7102.0  | 5881.5  | 3582.0  | 990.6   | 265.3   |
| 27.5° | 10666.3 | 10790.2 | 10409.8 | 9923.4  | 9277.8  | 8534.8  | 8340.3  | 6934.0  | 4554.9  | 1397.4  | 283.0   |
| 30°   | 12638.6 | 12638.6 | 12134.5 | 11453.5 | 10754.8 | 9835.0  | 9587.3  | 8039.5  | 5589.7  | 1936.9  | 300.7   |
| 32.5° | 14336.8 | 14204.1 | 13558.4 | 12842.0 | 12099.1 | 11241.2 | 10975.9 | 9198.2  | 6651.0  | 2609.1  | 336.1   |
| 35°   | 15636.9 | 15521.9 | 14725.9 | 13956.4 | 13310.8 | 12523.7 | 12205.3 | 10454.1 | 7774.2  | 3369.7  | 389.2   |
| 37.5° | 16751.3 | 16707.0 | 15628.0 | 14664.0 | 14239.5 | 13549.6 | 13266.6 | 11639.2 | 8879.8  | 4192.2  | 451.1   |
| 40°   | 17971.8 | 17830.3 | 16680.5 | 15486.5 | 14849.7 | 14292.5 | 14036.0 | 12594.4 | 9941.1  | 5156.3  | 539.5   |
| 42.5° | 19015.4 | 18847.4 | 17812.6 | 16645.1 | 15557.3 | 14805.5 | 14557.9 | 13399.2 | 10975.9 | 6120.3  | 654.5   |
| 45°   | 20174.0 | 20085.6 | 19042.0 | 18157.5 | 16707.0 | 15504.2 | 15177.0 | 14044.9 | 11922.2 | 7270.1  | 804.8   |
| 47.5° | 21916.4 | 21757.2 | 20784.3 | 20059.1 | 18378.6 | 16565.5 | 16096.8 | 14708.2 | 12833.2 | 8402.2  | 1034.8  |
| 50°   | 23941.8 | 23835.6 | 23260.7 | 22685.9 | 21014.3 | 18378.6 | 17821.4 | 15663.4 | 13850.3 | 9746.5  | 1335.5  |
| 52.5° | 25595.7 | 25578.0 | 25648.7 | 25657.6 | 24392.8 | 21429.9 | 20598.6 | 17202.3 | 15017.8 | 11073.2 | 1760.0  |
| 55°   | 25560.3 | 25639.9 | 26418.2 | 27311.5 | 27408.8 | 25595.7 | 24790.8 | 19793.7 | 16539.0 | 12709.4 | 2352.6  |
| 57.5° | 24605.1 | 24543.2 | 25365.7 | 26710.0 | 27656.4 | 27851.0 | 27718.3 | 23817.9 | 18829.7 | 14681.7 | 3263.6  |
| 58°   | 24295.5 | 24242.5 | 25020.8 | 26391.7 | 27479.5 | 28001.3 | 27868.7 | 24728.9 | 19342.7 | 14964.7 | 3511.2  |
| 60°   | 23172.3 | 23181.1 | 23641.0 | 24888.1 | 25976.0 | 27214.2 | 27338.0 | 27329.2 | 21898.7 | 16857.4 | 4758.3  |
| 62.5° | 21686.4 | 21615.7 | 22040.2 | 23057.3 | 24012.5 | 24843.9 | 25056.1 | 27506.0 | 25639.9 | 19263.1 | 7137.4  |
| 65°   | 19634.5 | 19528.4 | 19979.5 | 21129.2 | 22155.2 | 22694.7 | 22703.5 | 25135.7 | 27399.9 | 21845.6 | 10533.7 |
| 67.5° | 15822.6 | 15734.2 | 16636.3 | 18113.3 | 19696.4 | 20404.0 | 20722.4 | 21810.3 | 25914.1 | 23596.8 | 12479.4 |
| 70°   | 9693.4  | 9879.2  | 11135.1 | 13452.3 | 16158.7 | 17458.8 | 17936.4 | 18272.5 | 22066.7 | 23331.5 | 10436.4 |
| 72.5° | 4475.3  | 4254.2  | 5324.3  | 6942.8  | 10029.5 | 12921.6 | 13416.9 | 14734.7 | 17494.2 | 20253.6 | 7783.1  |
| 75°   | 2087.3  | 2007.7  | 2255.3  | 3033.6  | 4546.0  | 6978.2  | 7880.3  | 11763.0 | 13416.9 | 14089.1 | 5616.2  |
| 77.5° | 1070.2  | 1079.0  | 1282.4  | 1379.7  | 1875.0  | 3228.2  | 3705.8  | 7738.8  | 9835.0  | 7862.7  | 3767.7  |
| 80°   | 468.8   | 486.4   | 495.3   | 539.5   | 760.6   | 1247.1  | 1406.3  | 3590.8  | 6721.7  | 4006.5  | 2060.7  |
| 82.5° | 300.7   | 309.6   | 309.6   | 309.6   | 362.6   | 495.3   | 566.0   | 1441.6  | 3352.0  | 1990.0  | 636.8   |
| 85°   | 159.2   | 159.2   | 176.9   | 221.1   | 256.5   | 300.7   | 318.4   | 459.9   | 1105.5  | 592.6   | 150.4   |
| 87.5° | 88.4    | 97.3    | 106.1   | 132.7   | 168.0   | 203.4   | 221.1   | 318.4   | 424.5   | 406.8   | 35.4    |
| 90°   | 0.0     | 0.0     | 0.0     | 0.0     | 0.0     | 0.0     | 0.0     | 0.0     | 0.0     | 0.0     | 0.0     |

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CATALOG NUMBER: GALN-SA8C-935-U-T3BC

**CANDELA DISTRIBUTION (continued):**

|       | 90°    | 95°   | 105°  | 115°  | 125°  | 135°  | 145°  | 155°  | 165°  | 175°  | 180°  |
|-------|--------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|
| 0°    | 221.1  | 221.1 | 221.1 | 221.1 | 221.1 | 221.1 | 221.1 | 221.1 | 221.1 | 221.1 | 221.1 |
| 2.5°  | 230.0  | 221.1 | 212.3 | 203.4 | 194.6 | 185.7 | 185.7 | 185.7 | 185.7 | 185.7 | 185.7 |
| 5°    | 221.1  | 212.3 | 203.4 | 185.7 | 168.0 | 159.2 | 150.4 | 141.5 | 141.5 | 141.5 | 141.5 |
| 7.5°  | 221.1  | 212.3 | 185.7 | 168.0 | 150.4 | 132.7 | 115.0 | 115.0 | 115.0 | 115.0 | 115.0 |
| 10°   | 221.1  | 203.4 | 176.9 | 150.4 | 123.8 | 106.1 | 97.3  | 88.4  | 88.4  | 88.4  | 88.4  |
| 12.5° | 221.1  | 194.6 | 168.0 | 132.7 | 106.1 | 88.4  | 79.6  | 70.8  | 70.8  | 70.8  | 70.8  |
| 15°   | 221.1  | 194.6 | 159.2 | 123.8 | 97.3  | 70.8  | 61.9  | 53.1  | 53.1  | 53.1  | 53.1  |
| 17.5° | 212.3  | 185.7 | 150.4 | 106.1 | 79.6  | 53.1  | 44.2  | 35.4  | 35.4  | 44.2  | 44.2  |
| 20°   | 203.4  | 176.9 | 132.7 | 88.4  | 61.9  | 44.2  | 26.5  | 26.5  | 26.5  | 26.5  | 26.5  |
| 22.5° | 203.4  | 176.9 | 123.8 | 79.6  | 53.1  | 26.5  | 17.7  | 17.7  | 17.7  | 17.7  | 26.5  |
| 25°   | 203.4  | 168.0 | 106.1 | 61.9  | 35.4  | 17.7  | 8.8   | 8.8   | 8.8   | 8.8   | 8.8   |
| 27.5° | 203.4  | 168.0 | 97.3  | 53.1  | 26.5  | 17.7  | 8.8   | 0.0   | 0.0   | 0.0   | 0.0   |
| 30°   | 194.6  | 159.2 | 88.4  | 44.2  | 17.7  | 8.8   | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   |
| 32.5° | 194.6  | 150.4 | 70.8  | 35.4  | 17.7  | 8.8   | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   |
| 35°   | 203.4  | 141.5 | 61.9  | 26.5  | 8.8   | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   | 8.8   |
| 37.5° | 212.3  | 132.7 | 53.1  | 17.7  | 8.8   | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   |
| 40°   | 221.1  | 123.8 | 53.1  | 17.7  | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   |
| 42.5° | 238.8  | 123.8 | 44.2  | 17.7  | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   |
| 45°   | 256.5  | 123.8 | 35.4  | 8.8   | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   |
| 47.5° | 291.9  | 132.7 | 35.4  | 8.8   | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   |
| 50°   | 318.4  | 141.5 | 26.5  | 8.8   | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   |
| 52.5° | 353.8  | 132.7 | 26.5  | 8.8   | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   |
| 55°   | 398.0  | 132.7 | 26.5  | 8.8   | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   |
| 57.5° | 433.4  | 123.8 | 26.5  | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   |
| 58°   | 451.1  | 115.0 | 17.7  | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   |
| 60°   | 539.5  | 106.1 | 17.7  | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   |
| 62.5° | 840.2  | 88.4  | 17.7  | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   |
| 65°   | 1707.0 | 79.6  | 17.7  | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   |
| 67.5° | 3184.0 | 70.8  | 17.7  | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   |
| 70°   | 3564.3 | 79.6  | 8.8   | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   |
| 72.5° | 2246.5 | 61.9  | 8.8   | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   |
| 75°   | 1185.1 | 61.9  | 8.8   | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   |
| 77.5° | 592.6  | 61.9  | 8.8   | 8.8   | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   |
| 80°   | 274.2  | 44.2  | 8.8   | 8.8   | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   |
| 82.5° | 115.0  | 26.5  | 17.7  | 8.8   | 8.8   | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   |
| 85°   | 53.1   | 26.5  | 17.7  | 17.7  | 8.8   | 8.8   | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   |
| 87.5° | 26.5   | 26.5  | 26.5  | 17.7  | 17.7  | 8.8   | 8.8   | 0.0   | 0.0   | 0.0   | 0.0   |
| 90°   | 0.0    | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   |

LM-79-2019: Approved Method: Electrical and Photometric Measurements of Solid-State Lighting Products

Report Prepared for

Cooper Lighting Solutions

McGraw-Edison

Report Number: SP1-2407-184-15

Test Date: 10/11/2024

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

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

### Test Information

Test Method: LM-79-2019  
 Report Number: SP1-2407-184-15  
 Test Lab: COOPER LIGHTING SOLUTIONS  
 Photometer: SP1 - 76IN SPHERE  
 Measurement Geometry:  $4\pi$   
 Issue Date: 10/15/2024  
 Manufacturer: COOPER LIGHTING SOLUTIONS  
 Product Line: McGraw-Edison  
 Catalog Number: **GSS-SB1A-935-U-5WQ**  
 Description: GALLEON II SITE SLIM 1SQ 350MA 5WQ HIGH DENSITY LIGHTSQUARE WITH 90 CRI  
 3500K CCT 26 LEDS

### Spectral Parameters

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

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



### Test Conditions

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

REPORT NUMBER: SP1-2407-184-15

| Measurement and Test Equipment |                       |                  |                      |
|--------------------------------|-----------------------|------------------|----------------------|
| Instrument                     | Identification Number | Calibration Date | Calibration Due Date |
| Photometer                     | IN0058                | 6/18/2024        | 12/18/2024           |
| Power Meter                    | INXT2011004           | 2/8/2024         | 2/8/2025             |
| AC Power Source                | IN0063                | 10/24/2023       | 10/24/2024           |
| DC Power Source                | IN0208                | 10/24/2023       | 10/24/2024           |
| Sphere Thermometer             | IN0085                | 10/24/2023       | 10/24/2024           |
| Room Thermometer               | IN0046                | 10/24/2023       | 10/24/2024           |

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**CIE 1931 Chromaticity Diagram**



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



Point lies inside the ANSI 3500K 4-step quadrangle

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### Photopic Flux vs. Wavelength



### Photopic Lumens: NR

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

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### Scotopic Flux vs. Wavelength



Scotopic Lumens: NR

S/P: 1.58

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

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### Melanopic Flux vs. Wavelength



Melanopic Lumens: NR

M/P: 3.14

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

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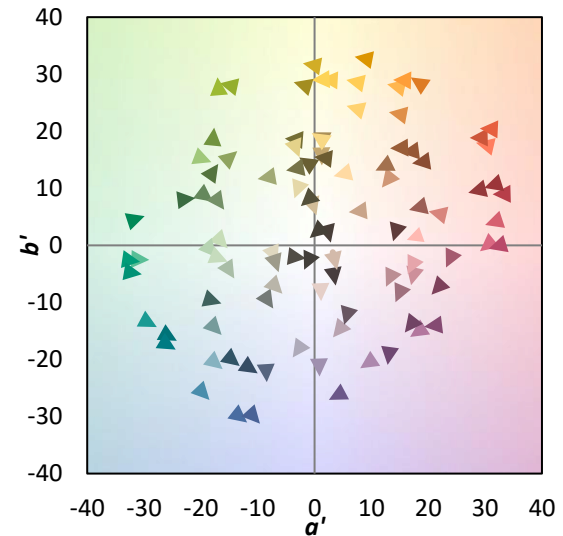
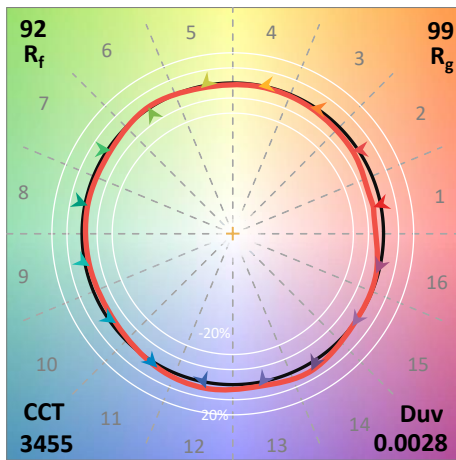
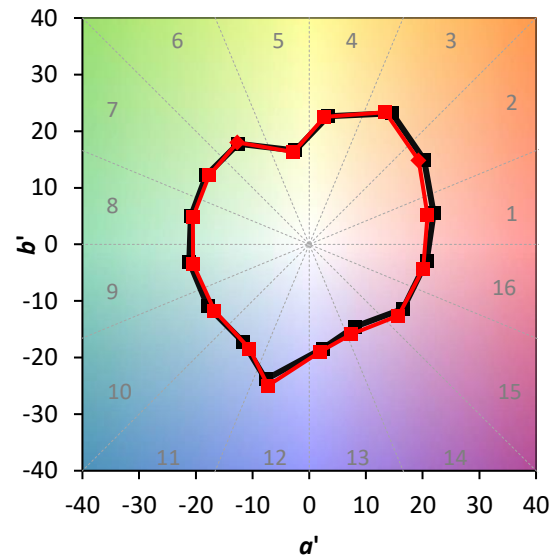
TM-30-18

### Summary

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



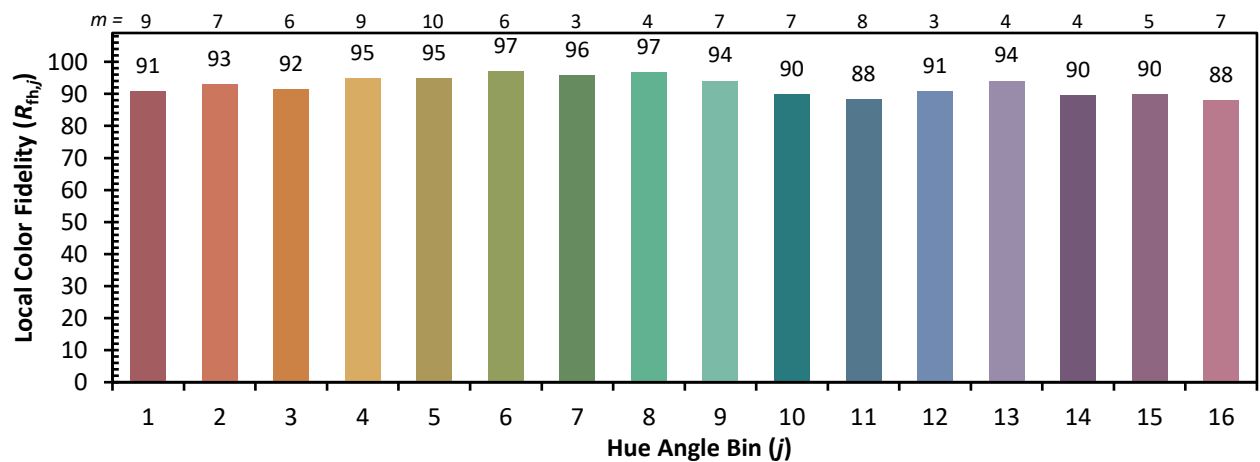
### Color Vector Graphics



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

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



**Color Rendition by Hue-Angle Bin**


**Measure Comparisons**



(END OF REPORT)