

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: P1047705

Luminaire Tested: **GALN-SA3A-727-U-T2BC**

Issue Date: 07/10/2025

**Test Information**

Test Method: LM-79-08  
Report Number: P1047705  
Test Lab: INNOVATION CENTER(G3)  
Issue Date: 07/10/2025  
Manufacturer: COOPER LIGHTING SOLUTIONS (FORMERLY EATON)  
Product Line: MCGRAW-EDISON  
Catalog Number: GALN-SA3A-727-U-T2BC  
Description: GALLEON II AREA AND ROADWAY LUMINAIRE 615mA 3xLight Square PACKAGE  
70CRI 2700K FIXTURE w/ TYPE II ANGLED BACKLIGHT CONTROL  
Light Source: (42) 2700K CCT, 70 CRI LEDS  
Ballast/Driver: ELECTRONIC DRIVER

**Summary**

Lumens per Lamp: N/A  
Luminaire Lumens: 9948.9 lumens  
Efficiency: N/A  
Efficacy: 122.2 lumens/watt  
Luminous Opening: Rectangular (W 1' x L: 1' x H: 0')  
IES Classification: Type II - Short  
BUG Rating: B0 - U0 - G2

Input Watts (W): 81.4  
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

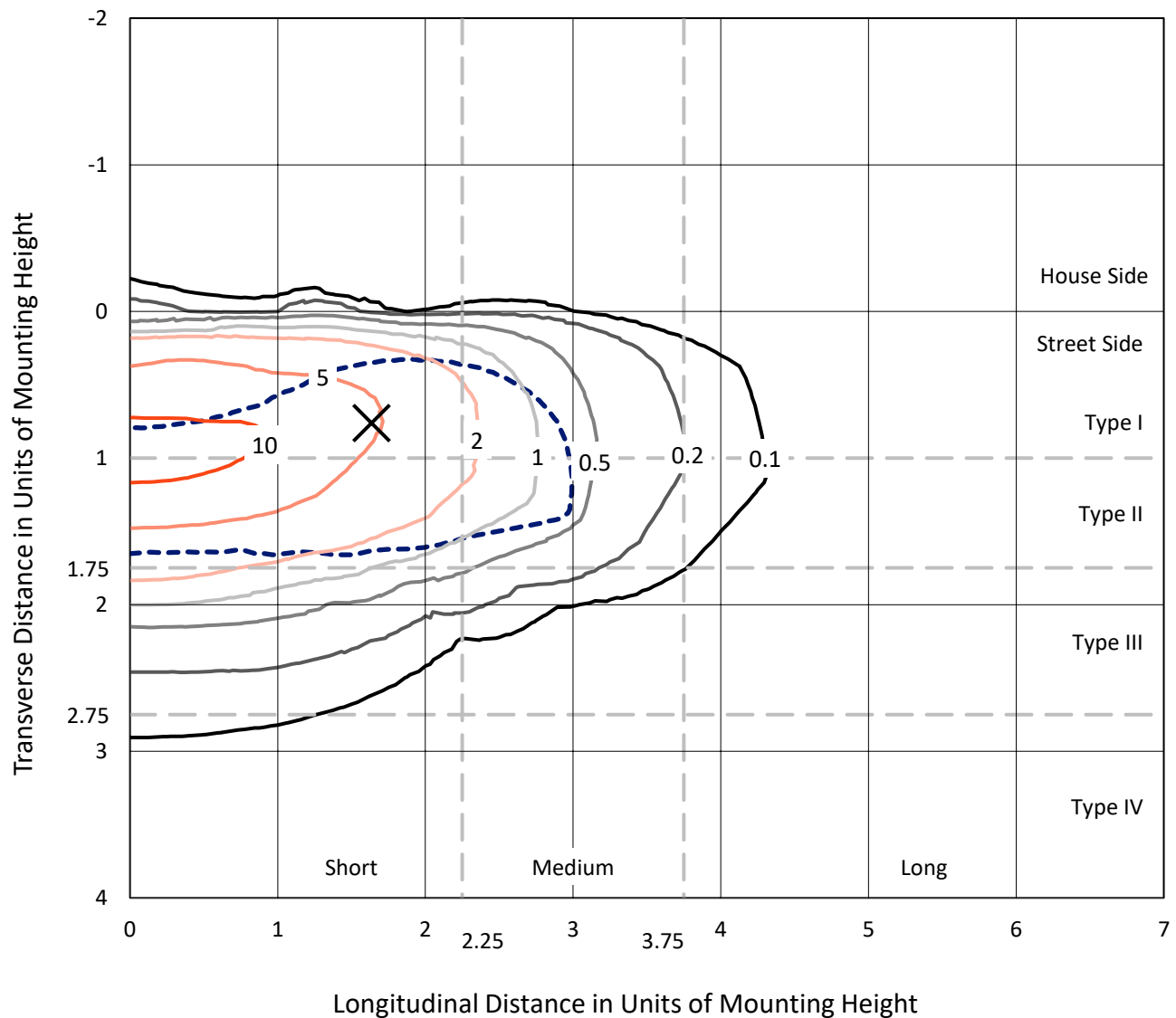


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## Iso-Footcandle Lines of Horizontal Illumination

× Max cd  
 - - - 1/2 Max cd

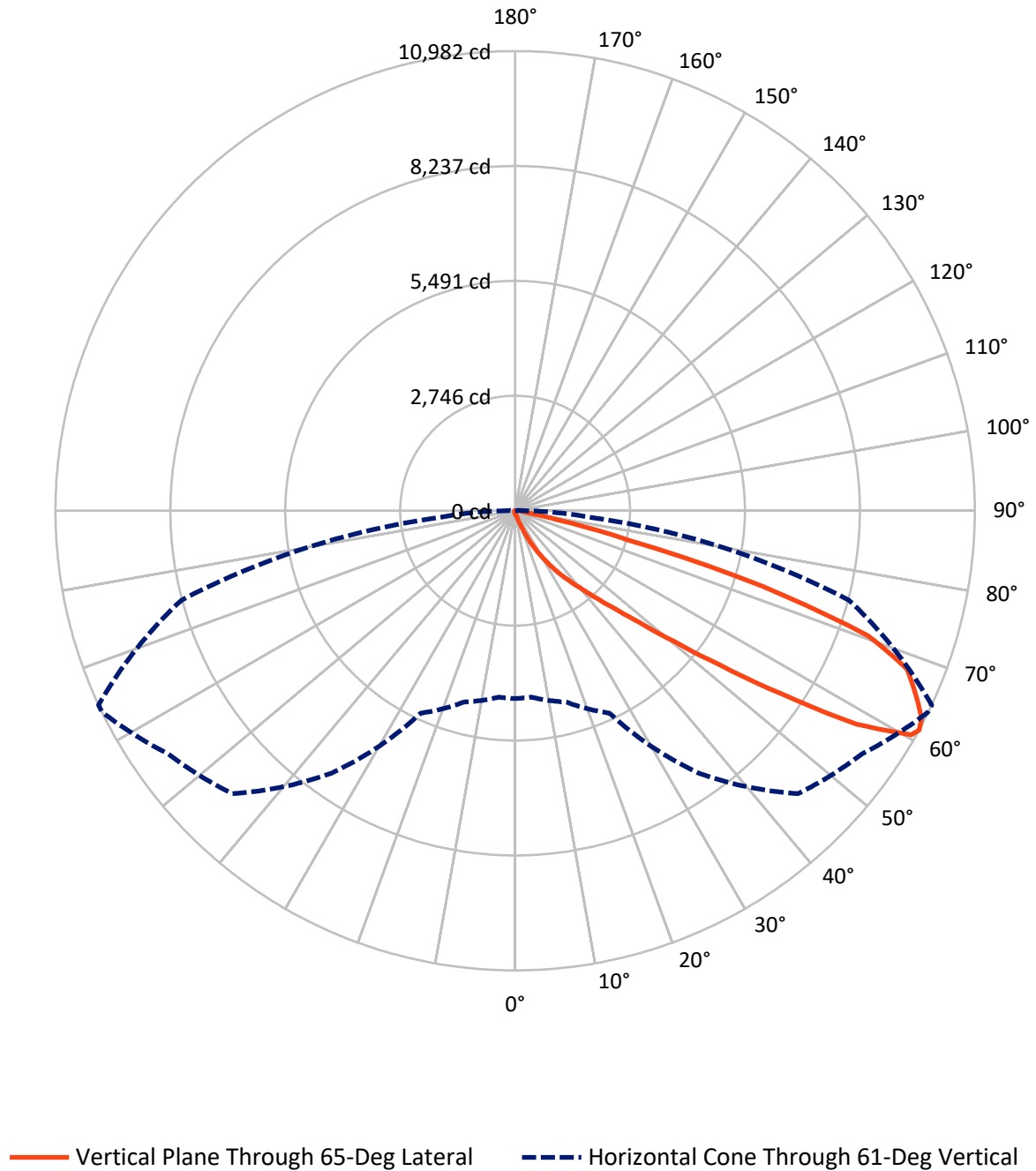


Based on 15 foot mounting height. Maximum calculated value = 13.2 fc  
 Type II - Short - N/A

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## Luminous Intensity Polar Plot



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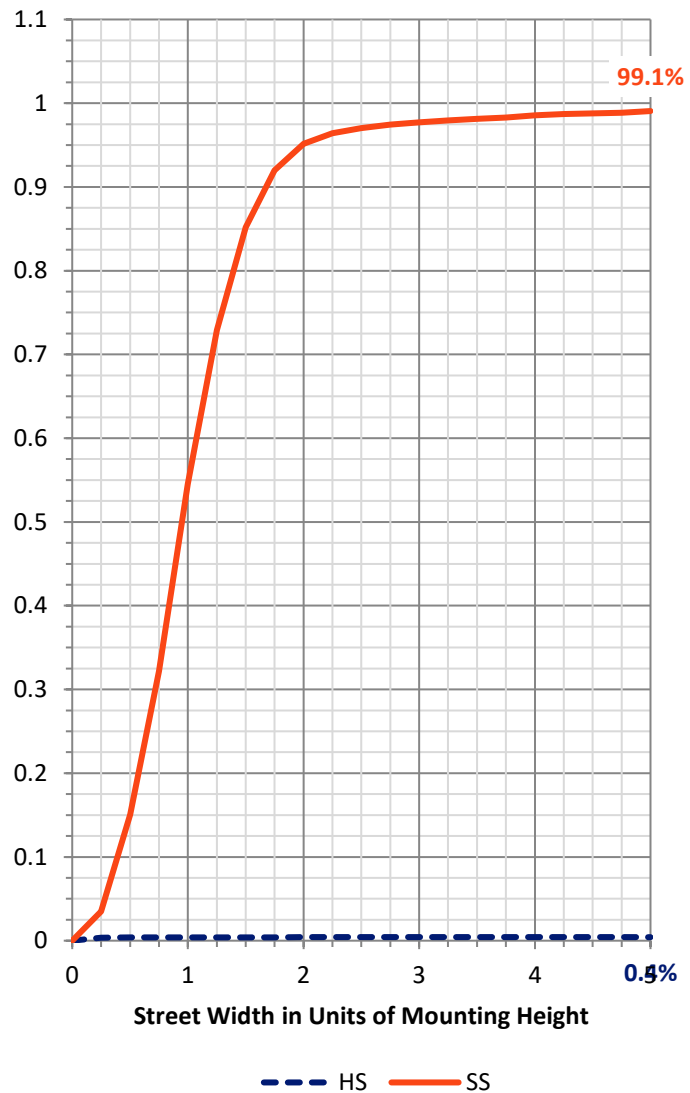
**FLUX DISTRIBUTION:**

|                    |           | Downward | Upward | Total  |
|--------------------|-----------|----------|--------|--------|
| <b>House Side</b>  | Lumens    | 42.5     | 0.0    | 42.5   |
|                    | % Fixture | 0.4      | 0.0    | 0.4    |
| <b>Street Side</b> | Lumens    | 9906.5   | 0.0    | 9906.5 |
|                    | % Fixture | 99.6     | 0.0    | 99.6   |
| <b>Total</b>       | Lumens    | 9948.9   | 0.0    | 9948.9 |
|                    | % Fixture | 100.0    | 0.0    | 100.0  |

**Coefficient of Utilization**

**ZONAL LUMENS:**

| Zone      | Lumens | % Fixture |
|-----------|--------|-----------|
| 0°-10°    | 7.7    | 0.1       |
| 10°-20°   | 81.8   | 0.8       |
| 20°-30°   | 293.6  | 3.0       |
| 30°-40°   | 781.7  | 7.9       |
| 40°-50°   | 2053.5 | 20.6      |
| 50°-60°   | 3181.3 | 32.0      |
| 60°-70°   | 2667.5 | 26.8      |
| 70°-80°   | 785.0  | 7.9       |
| 80°-90°   | 96.8   | 1.0       |
| 90°-100°  | 0.0    | 0.0       |
| 100°-110° | 0.0    | 0.0       |
| 110°-120° | 0.0    | 0.0       |
| 120°-130° | 0.0    | 0.0       |
| 130°-140° | 0.0    | 0.0       |
| 140°-150° | 0.0    | 0.0       |
| 150°-160° | 0.0    | 0.0       |
| 160°-170° | 0.0    | 0.0       |
| 170°-180° | 0.0    | 0.0       |
| 0°-90°    | 9948.9 | 100.0     |
| 0°-180°   | 9948.9 | 100.0     |



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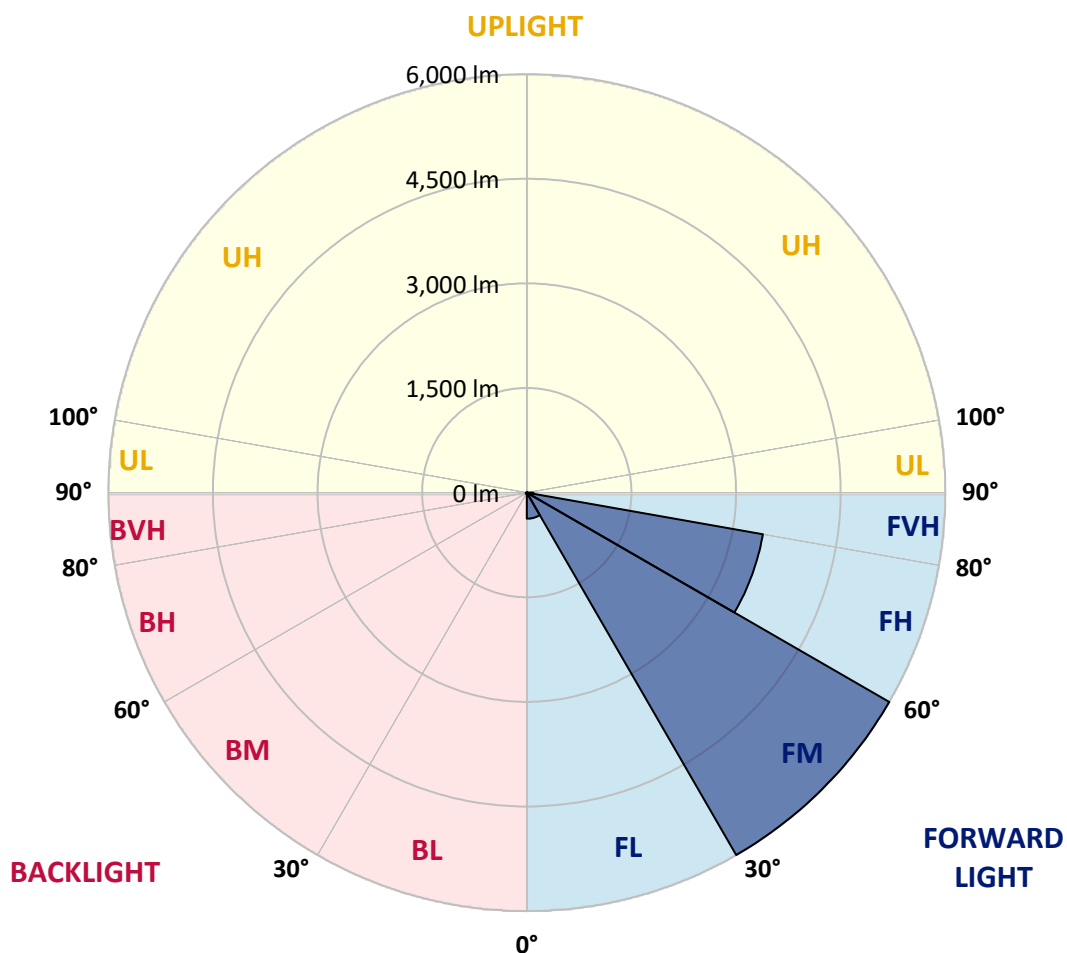
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**LUMINAIRE CLASSIFICATION SYSTEM LUMEN TABLE AND BUG RATING:**

| Zone |             | Lumens | % Fixture | Zone Rating/Lumen Limit |      |         |
|------|-------------|--------|-----------|-------------------------|------|---------|
|      |             |        |           | B                       | U    | G       |
| FL   | (0°-30°)    | 373.6  | 3.8       |                         |      |         |
| FM   | (30°-60°)   | 6000.3 | 60.3      |                         |      |         |
| FH   | (60°-80°)   | 3437.5 | 34.6      |                         |      | G2/5000 |
| FVH  | (80°-90°)   | 95.0   | 1.0       |                         |      | G1/100  |
| BL   | (0°-30°)    | 9.5    | 0.1       | B0/110                  |      |         |
| BM   | (30°-60°)   | 16.2   | 0.2       | B0/220                  |      |         |
| BH   | (60°-80°)   | 15.0   | 0.2       | B0/110                  |      | G0/110  |
| BVH  | (80°-90°)   | 1.8    | 0.0       |                         |      | G0/10   |
| UL   | (90°-100°)  | 0.0    | 0.0       |                         | U0/0 |         |
| UH   | (100°-180°) | 0.0    | 0.0       |                         | U0/0 |         |

**BUG Rating: B0-U0-G2**

Type II Short



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**CANDELA DISTRIBUTION (FULL):**

|       | 0°     | 5°     | 15°    | 25°    | 35°    | 45°    | 55°     | 64°     | 65°     | 75°    | 85°    |
|-------|--------|--------|--------|--------|--------|--------|---------|---------|---------|--------|--------|
| 0°    | 60.9   | 60.9   | 60.9   | 60.9   | 60.9   | 60.9   | 60.9    | 60.9    | 60.9    | 60.9   | 60.9   |
| 2.5°  | 73.9   | 74.6   | 73.2   | 70.5   | 68.4   | 68.4   | 67.8    | 65.7    | 65.7    | 63.6   | 62.3   |
| 5°    | 103.3  | 102.0  | 99.2   | 93.8   | 89.0   | 84.2   | 79.4    | 74.6    | 73.9    | 67.8   | 63.6   |
| 7.5°  | 169.0  | 170.4  | 161.5  | 144.4  | 130.0  | 111.6  | 94.4    | 84.2    | 82.8    | 72.5   | 64.3   |
| 10°   | 370.9  | 360.7  | 340.1  | 273.8  | 225.2  | 169.7  | 125.9   | 97.9    | 96.5    | 78.0   | 65.7   |
| 12.5° | 676.2  | 668.0  | 630.3  | 561.9  | 436.6  | 303.9  | 184.1   | 121.1   | 117.0   | 82.8   | 66.4   |
| 15°   | 974.6  | 961.6  | 941.0  | 871.9  | 725.4  | 544.8  | 301.1   | 165.6   | 154.7   | 89.7   | 65.7   |
| 17.5° | 1164.8 | 1166.9 | 1148.4 | 1119.0 | 1024.5 | 806.2  | 520.1   | 247.1   | 225.8   | 102.0  | 64.3   |
| 20°   | 1331.1 | 1326.3 | 1336.6 | 1320.9 | 1254.5 | 1095.7 | 756.9   | 391.5   | 355.2   | 121.8  | 65.0   |
| 22.5° | 1522.7 | 1534.4 | 1541.9 | 1538.5 | 1465.3 | 1329.7 | 1025.9  | 585.8   | 540.0   | 158.1  | 67.1   |
| 25°   | 1779.4 | 1778.0 | 1778.7 | 1769.8 | 1698.6 | 1548.1 | 1295.5  | 827.4   | 780.9   | 216.9  | 71.9   |
| 27.5° | 2048.3 | 2056.6 | 2060.0 | 2027.8 | 1934.7 | 1786.9 | 1545.3  | 1091.6  | 1036.8  | 311.4  | 78.0   |
| 30°   | 2415.9 | 2409.0 | 2393.3 | 2327.6 | 2214.7 | 2031.2 | 1791.7  | 1368.8  | 1311.3  | 443.5  | 87.6   |
| 32.5° | 2911.3 | 2903.8 | 2824.4 | 2679.3 | 2510.3 | 2285.8 | 2039.5  | 1646.6  | 1576.8  | 608.4  | 100.6  |
| 35°   | 3727.8 | 3739.4 | 3544.4 | 3168.7 | 2865.5 | 2591.7 | 2313.9  | 1923.1  | 1861.5  | 811.7  | 118.4  |
| 37.5° | 4978.2 | 4914.5 | 4649.7 | 3985.8 | 3332.9 | 2973.6 | 2576.0  | 2202.3  | 2149.0  | 1062.2 | 141.7  |
| 40°   | 6192.9 | 6130.0 | 6053.3 | 5424.4 | 4145.3 | 3394.5 | 2942.8  | 2530.2  | 2461.0  | 1344.8 | 175.9  |
| 42.5° | 7470.0 | 7435.1 | 7431.7 | 6957.4 | 5627.7 | 4056.3 | 3384.3  | 2914.1  | 2855.2  | 1654.8 | 232.0  |
| 45°   | 8374.7 | 8339.8 | 8413.1 | 8495.9 | 7646.6 | 5474.3 | 4152.8  | 3413.0  | 3327.5  | 2031.2 | 321.7  |
| 47.5° | 8496.6 | 8497.9 | 8693.7 | 8953.0 | 9146.7 | 7667.8 | 5176.6  | 4074.1  | 3970.1  | 2569.8 | 472.2  |
| 50°   | 8091.4 | 8107.2 | 8418.5 | 8882.6 | 9404.1 | 9508.1 | 6982.0  | 5033.6  | 4879.6  | 3208.4 | 685.7  |
| 52.5° | 7320.1 | 7337.9 | 7771.8 | 8534.9 | 9167.3 | 9950.2 | 9107.7  | 6288.8  | 6111.5  | 4005.0 | 986.9  |
| 55°   | 6625.5 | 6636.4 | 7134.0 | 8098.3 | 8881.9 | 9710.0 | 10369.7 | 7964.8  | 7732.1  | 4985.0 | 1283.9 |
| 57.5° | 5937.7 | 5912.4 | 6236.1 | 7340.0 | 8833.3 | 9415.0 | 10555.9 | 9874.9  | 9618.3  | 6056.1 | 1515.2 |
| 60°   | 5017.9 | 4975.4 | 5235.5 | 5937.7 | 8194.1 | 9608.7 | 10207.5 | 10931.6 | 10873.4 | 7547.3 | 1693.8 |
| 61°   | 4488.8 | 4471.0 | 4732.5 | 5334.7 | 7656.2 | 9559.4 | 10124.0 | 10976.1 | 10982.2 | 8252.9 | 1773.9 |
| 62.5° | 3205.6 | 3256.3 | 3656.0 | 4438.9 | 6412.6 | 9239.8 | 10135.0 | 10838.5 | 10899.4 | 9190.5 | 1981.3 |
| 65°   | 1424.9 | 1506.3 | 1817.0 | 2454.2 | 3729.2 | 7686.3 | 10037.8 | 10536.7 | 10506.6 | 9447.9 | 2695.8 |
| 67.5° | 845.2  | 857.5  | 1012.2 | 1390.7 | 1975.1 | 4134.3 | 8857.9  | 10137.7 | 10097.3 | 8224.9 | 3354.1 |
| 70°   | 665.9  | 672.1  | 721.3  | 872.6  | 1146.3 | 1583.7 | 5055.5  | 8771.0  | 8946.9  | 6669.3 | 3283.7 |
| 72.5° | 631.7  | 630.3  | 637.2  | 663.8  | 722.0  | 785.7  | 1957.3  | 5830.2  | 6188.2  | 4803.0 | 2753.3 |
| 75°   | 623.5  | 620.7  | 613.9  | 603.6  | 522.9  | 462.6  | 606.4   | 2578.7  | 2786.1  | 3281.6 | 2073.0 |
| 77.5° | 605.0  | 605.7  | 607.0  | 579.0  | 448.3  | 327.1  | 293.6   | 827.4   | 1017.7  | 2082.6 | 1473.5 |
| 80°   | 409.3  | 415.4  | 425.7  | 414.7  | 403.1  | 236.8  | 207.4   | 294.3   | 298.4   | 1168.9 | 973.2  |
| 82.5° | 207.4  | 207.4  | 202.6  | 180.7  | 156.0  | 154.0  | 164.9   | 213.5   | 216.3   | 591.3  | 457.8  |
| 85°   | 125.2  | 132.1  | 134.8  | 122.5  | 112.2  | 103.3  | 125.9   | 169.7   | 175.9   | 229.3  | 106.8  |
| 87.5° | 28.1   | 28.7   | 31.5   | 41.7   | 60.9   | 82.8   | 117.0   | 155.4   | 158.1   | 147.1  | 13.0   |
| 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-SA3A-727-U-T2BC

**CANDELA DISTRIBUTION (continued):**

|       | 90°   | 95°   | 105° | 115° | 125° | 135° | 145° | 155° | 165° | 175° | 180° |
|-------|-------|-------|------|------|------|------|------|------|------|------|------|
| 0°    | 60.9  | 60.9  | 60.9 | 60.9 | 60.9 | 60.9 | 60.9 | 60.9 | 60.9 | 60.9 | 60.9 |
| 2.5°  | 61.6  | 60.2  | 59.5 | 57.5 | 55.4 | 53.4 | 52.0 | 51.3 | 52.0 | 52.7 | 52.7 |
| 5°    | 60.9  | 58.9  | 55.4 | 52.0 | 49.3 | 46.5 | 43.8 | 43.1 | 43.1 | 43.8 | 43.8 |
| 7.5°  | 60.9  | 57.5  | 52.7 | 48.6 | 44.5 | 40.4 | 38.3 | 37.0 | 37.6 | 37.6 | 37.6 |
| 10°   | 60.9  | 56.8  | 50.6 | 44.5 | 39.7 | 34.9 | 31.5 | 30.1 | 30.1 | 30.1 | 30.1 |
| 12.5° | 60.2  | 56.1  | 48.6 | 41.1 | 34.2 | 28.7 | 24.6 | 22.6 | 23.3 | 23.3 | 23.3 |
| 15°   | 58.9  | 54.1  | 45.9 | 34.9 | 27.4 | 21.9 | 17.8 | 15.7 | 16.4 | 17.8 | 18.5 |
| 17.5° | 56.8  | 52.0  | 41.1 | 29.4 | 21.9 | 16.4 | 12.3 | 11.0 | 11.6 | 13.7 | 13.7 |
| 20°   | 56.1  | 50.0  | 36.3 | 24.0 | 16.4 | 11.6 | 8.2  | 6.8  | 7.5  | 10.3 | 11.0 |
| 22.5° | 56.1  | 48.6  | 32.9 | 19.8 | 12.3 | 7.5  | 4.8  | 2.7  | 2.7  | 4.8  | 4.8  |
| 25°   | 56.8  | 47.9  | 30.1 | 16.4 | 8.9  | 5.5  | 2.7  | 1.4  | 2.7  | 7.5  | 8.9  |
| 27.5° | 58.2  | 47.2  | 28.7 | 13.7 | 6.8  | 4.8  | 2.1  | 4.8  | 8.2  | 8.2  | 8.2  |
| 30°   | 59.5  | 45.9  | 26.7 | 11.6 | 6.2  | 3.4  | 3.4  | 6.8  | 6.8  | 8.2  | 8.9  |
| 32.5° | 61.6  | 45.2  | 25.3 | 10.3 | 4.8  | 2.7  | 4.8  | 4.1  | 4.1  | 4.8  | 5.5  |
| 35°   | 65.7  | 45.9  | 24.0 | 10.3 | 4.8  | 3.4  | 4.1  | 2.1  | 1.4  | 1.4  | 1.4  |
| 37.5° | 71.2  | 46.5  | 21.9 | 8.9  | 4.1  | 4.1  | 2.1  | 0.0  | 0.0  | 0.0  | 0.0  |
| 40°   | 80.1  | 48.6  | 20.5 | 8.2  | 3.4  | 3.4  | 0.7  | 0.0  | 0.0  | 0.0  | 0.0  |
| 42.5° | 95.1  | 52.7  | 19.8 | 7.5  | 3.4  | 2.7  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  |
| 45°   | 125.2 | 62.3  | 18.5 | 6.8  | 3.4  | 1.4  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  |
| 47.5° | 180.0 | 84.9  | 17.8 | 5.5  | 2.1  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  |
| 50°   | 262.8 | 115.0 | 17.1 | 4.8  | 0.7  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  |
| 52.5° | 335.3 | 121.1 | 11.6 | 4.1  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  |
| 55°   | 343.6 | 83.5  | 8.9  | 2.7  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  |
| 57.5° | 273.8 | 54.1  | 7.5  | 2.1  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  |
| 60°   | 207.4 | 41.1  | 6.8  | 0.7  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  |
| 61°   | 199.2 | 37.0  | 6.8  | 0.7  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  |
| 62.5° | 219.7 | 32.2  | 6.2  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  |
| 65°   | 357.2 | 26.7  | 5.5  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  |
| 67.5° | 620.7 | 23.3  | 4.8  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  |
| 70°   | 784.3 | 21.9  | 4.1  | 0.7  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  |
| 72.5° | 683.7 | 19.8  | 4.1  | 1.4  | 0.7  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  |
| 75°   | 411.3 | 17.1  | 4.1  | 2.7  | 1.4  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  |
| 77.5° | 215.6 | 13.0  | 4.1  | 3.4  | 2.1  | 0.7  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  |
| 80°   | 104.7 | 11.6  | 4.8  | 3.4  | 2.7  | 1.4  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  |
| 82.5° | 41.1  | 9.6   | 5.5  | 4.8  | 3.4  | 2.1  | 0.7  | 0.0  | 0.0  | 0.0  | 0.0  |
| 85°   | 18.5  | 8.2   | 6.2  | 5.5  | 4.8  | 2.7  | 0.7  | 0.0  | 0.0  | 0.0  | 0.0  |
| 87.5° | 9.6   | 7.5   | 6.8  | 6.2  | 4.8  | 3.4  | 1.4  | 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: SP1-2407-184-3

Test Date: 10/09/2024

Luminaire Tested: GSS-SB1A-727-U-5WQ

Data in this report applies to families of products including GSS-SB1A-727-U-5WQ

### Test Information

Test Method: LM-79-2019  
 Report Number: SP1-2407-184-3  
 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-727-U-5WQ**  
 Description: GALLEON II SITE SLIM 1SQ 350MA 5WQ HIGH DENSITY LIGHTSQUARE WITH 70 CRI  
 2700K CCT 26 LEDS

### Spectral Parameters

|                           |          |           |      |      |       |
|---------------------------|----------|-----------|------|------|-------|
| CCT (K):                  | 2672     | CRI (Ra): | 71.1 |      |       |
| CIE u':                   | 0.2638   | R1:       | 68.3 | R9:  | -27.8 |
| CIE v':                   | 0.5276   | R2:       | 79.8 | R10: | 54.4  |
| Duv:                      | -0.0002  | R3:       | 91.2 | R11: | 65.8  |
| CIE x:                    | 0.4619   | R4:       | 69.4 | R12: | 45.6  |
| CIE y:                    | 0.4106   | R5:       | 66.5 | R13: | 69.8  |
| CIE z:                    | 0.1275   | R6:       | 72.6 | R14: | 94.5  |
| Peak Wavelength (nm):     | 601      | R7:       | 77.0 | R15: | 60.1  |
| Dominant Wavelength (nm): | 584      | R8:       | 44.1 |      |       |
| Purity:                   | 61.88407 |           |      |      |       |
| Rf:                       | 67.9     |           |      |      |       |
| Rg:                       | 98.6     |           |      |      |       |



### Test Conditions

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

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| 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**



REPORT NUMBER: SP1-2407-184-3

### 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               | 52                                   | NR                             | 620               | 888                                  | NR                             | 750               | 27                                   | NR                             | 880               | 1                                    | NR                             |
| 365               | 0                                    | NR                             | 495               | 87                                   | NR                             | 625               | 834                                  | NR                             | 755               | 23                                   | NR                             | 885               | 1                                    | NR                             |
| 370               | 0                                    | NR                             | 500               | 135                                  | NR                             | 630               | 776                                  | NR                             | 760               | 20                                   | NR                             | 890               | 1                                    | NR                             |
| 375               | 0                                    | NR                             | 505               | 196                                  | NR                             | 635               | 712                                  | NR                             | 765               | 17                                   | NR                             | 895               | 0                                    | NR                             |
| 380               | 0                                    | NR                             | 510               | 258                                  | NR                             | 640               | 648                                  | NR                             | 770               | 15                                   | NR                             | 900               | 0                                    | NR                             |
| 385               | 1                                    | NR                             | 515               | 317                                  | NR                             | 645               | 583                                  | NR                             | 775               | 12                                   | NR                             | 905               | 0                                    | NR                             |
| 390               | 2                                    | NR                             | 520               | 368                                  | NR                             | 650               | 523                                  | NR                             | 780               | 11                                   | NR                             | 910               | 0                                    | NR                             |
| 395               | 4                                    | NR                             | 525               | 408                                  | NR                             | 655               | 465                                  | NR                             | 785               | 9                                    | NR                             | 915               | 0                                    | NR                             |
| 400               | 6                                    | NR                             | 530               | 443                                  | NR                             | 660               | 410                                  | NR                             | 790               | 8                                    | NR                             | 920               | 0                                    | NR                             |
| 405               | 11                                   | NR                             | 535               | 473                                  | NR                             | 665               | 360                                  | NR                             | 795               | 7                                    | NR                             | 925               | 0                                    | NR                             |
| 410               | 23                                   | NR                             | 540               | 498                                  | NR                             | 670               | 313                                  | NR                             | 800               | 6                                    | NR                             | 930               | 0                                    | NR                             |
| 415               | 51                                   | NR                             | 545               | 530                                  | NR                             | 675               | 272                                  | NR                             | 805               | 5                                    | NR                             | 935               | 0                                    | NR                             |
| 420               | 111                                  | NR                             | 550               | 563                                  | NR                             | 680               | 236                                  | NR                             | 810               | 4                                    | NR                             | 940               | 0                                    | NR                             |
| 425               | 214                                  | NR                             | 555               | 605                                  | NR                             | 685               | 203                                  | NR                             | 815               | 4                                    | NR                             | 945               | 0                                    | NR                             |
| 430               | 339                                  | NR                             | 560               | 651                                  | NR                             | 690               | 175                                  | NR                             | 820               | 3                                    | NR                             | 950               | 0                                    | NR                             |
| 435               | 467                                  | NR                             | 565               | 705                                  | NR                             | 695               | 150                                  | NR                             | 825               | 3                                    | NR                             | 955               | 0                                    | NR                             |
| 440               | 535                                  | NR                             | 570               | 765                                  | NR                             | 700               | 128                                  | NR                             | 830               | 3                                    | NR                             | 960               | 0                                    | NR                             |
| 445               | 372                                  | NR                             | 575               | 824                                  | NR                             | 705               | 110                                  | NR                             | 835               | 2                                    | NR                             | 965               | 0                                    | NR                             |
| 450               | 160                                  | NR                             | 580               | 882                                  | NR                             | 710               | 94                                   | NR                             | 840               | 2                                    | NR                             | 970               | 0                                    | NR                             |
| 455               | 89                                   | NR                             | 585               | 930                                  | NR                             | 715               | 80                                   | NR                             | 845               | 2                                    | NR                             | 975               | 0                                    | NR                             |
| 460               | 53                                   | NR                             | 590               | 968                                  | NR                             | 720               | 69                                   | NR                             | 850               | 1                                    | NR                             | 980               | 0                                    | NR                             |
| 465               | 31                                   | NR                             | 595               | 991                                  | NR                             | 725               | 59                                   | NR                             | 855               | 1                                    | NR                             | 985               | 0                                    | NR                             |
| 470               | 23                                   | NR                             | 600               | 999                                  | NR                             | 730               | 50                                   | NR                             | 860               | 1                                    | NR                             | 990               | 0                                    | NR                             |
| 475               | 21                                   | NR                             | 605               | 992                                  | NR                             | 735               | 43                                   | NR                             | 865               | 1                                    | NR                             | 995               | 0                                    | NR                             |
| 480               | 23                                   | NR                             | 610               | 969                                  | NR                             | 740               | 36                                   | NR                             | 870               | 1                                    | NR                             | 1000              | 0                                    | NR                             |
| 485               | 32                                   | NR                             | 615               | 935                                  | NR                             | 745               | 31                                   | NR                             | 875               | 1                                    | NR                             |                   |                                      |                                |

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### Scotopic Flux vs. Wavelength



Scotopic Lumens: NR

S/P: 1.02

| 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       | 52                          | NR               | 620       | 888                         | NR               | 750       | 27                          | NR               | 880       | 1                           | NR               |
| 365       | 0                           | NR               | 495       | 87                          | NR               | 625       | 834                         | NR               | 755       | 23                          | NR               | 885       | 1                           | NR               |
| 370       | 0                           | NR               | 500       | 135                         | NR               | 630       | 776                         | NR               | 760       | 20                          | NR               | 890       | 1                           | NR               |
| 375       | 0                           | NR               | 505       | 196                         | NR               | 635       | 712                         | NR               | 765       | 17                          | NR               | 895       | 0                           | NR               |
| 380       | 0                           | NR               | 510       | 258                         | NR               | 640       | 648                         | NR               | 770       | 15                          | NR               | 900       | 0                           | NR               |
| 385       | 1                           | NR               | 515       | 317                         | NR               | 645       | 583                         | NR               | 775       | 12                          | NR               | 905       | 0                           | NR               |
| 390       | 2                           | NR               | 520       | 368                         | NR               | 650       | 523                         | NR               | 780       | 11                          | NR               | 910       | 0                           | NR               |
| 395       | 4                           | NR               | 525       | 408                         | NR               | 655       | 465                         | NR               | 785       | 9                           | NR               | 915       | 0                           | NR               |
| 400       | 6                           | NR               | 530       | 443                         | NR               | 660       | 410                         | NR               | 790       | 8                           | NR               | 920       | 0                           | NR               |
| 405       | 11                          | NR               | 535       | 473                         | NR               | 665       | 360                         | NR               | 795       | 7                           | NR               | 925       | 0                           | NR               |
| 410       | 23                          | NR               | 540       | 498                         | NR               | 670       | 313                         | NR               | 800       | 6                           | NR               | 930       | 0                           | NR               |
| 415       | 51                          | NR               | 545       | 530                         | NR               | 675       | 272                         | NR               | 805       | 5                           | NR               | 935       | 0                           | NR               |
| 420       | 111                         | NR               | 550       | 563                         | NR               | 680       | 236                         | NR               | 810       | 4                           | NR               | 940       | 0                           | NR               |
| 425       | 214                         | NR               | 555       | 605                         | NR               | 685       | 203                         | NR               | 815       | 4                           | NR               | 945       | 0                           | NR               |
| 430       | 339                         | NR               | 560       | 651                         | NR               | 690       | 175                         | NR               | 820       | 3                           | NR               | 950       | 0                           | NR               |
| 435       | 467                         | NR               | 565       | 705                         | NR               | 695       | 150                         | NR               | 825       | 3                           | NR               | 955       | 0                           | NR               |
| 440       | 535                         | NR               | 570       | 765                         | NR               | 700       | 128                         | NR               | 830       | 3                           | NR               | 960       | 0                           | NR               |
| 445       | 372                         | NR               | 575       | 824                         | NR               | 705       | 110                         | NR               | 835       | 2                           | NR               | 965       | 0                           | NR               |
| 450       | 160                         | NR               | 580       | 882                         | NR               | 710       | 94                          | NR               | 840       | 2                           | NR               | 970       | 0                           | NR               |
| 455       | 89                          | NR               | 585       | 930                         | NR               | 715       | 80                          | NR               | 845       | 2                           | NR               | 975       | 0                           | NR               |
| 460       | 53                          | NR               | 590       | 968                         | NR               | 720       | 69                          | NR               | 850       | 1                           | NR               | 980       | 0                           | NR               |
| 465       | 31                          | NR               | 595       | 991                         | NR               | 725       | 59                          | NR               | 855       | 1                           | NR               | 985       | 0                           | NR               |
| 470       | 23                          | NR               | 600       | 999                         | NR               | 730       | 50                          | NR               | 860       | 1                           | NR               | 990       | 0                           | NR               |
| 475       | 21                          | NR               | 605       | 992                         | NR               | 735       | 43                          | NR               | 865       | 1                           | NR               | 995       | 0                           | NR               |
| 480       | 23                          | NR               | 610       | 969                         | NR               | 740       | 36                          | NR               | 870       | 1                           | NR               | 1000      | 0                           | NR               |
| 485       | 32                          | NR               | 615       | 935                         | NR               | 745       | 31                          | NR               | 875       | 1                           | NR               |           |                             |                  |

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### Melanopic Flux vs. Wavelength



Melanopic Lumens: NR

M/P: 1.71

| λ<br>(nm) | Power<br>W <sup>λ</sup> /nm | Lumens<br>(φ/nm) | λ<br>(nm) | Power<br>W <sup>λ</sup> /nm | Lumens<br>(φ/nm) | λ<br>(nm) | Power<br>W <sup>λ</sup> /nm | Lumens<br>(φ/nm) | λ<br>(nm) | Power<br>W <sup>λ</sup> /nm | Lumens<br>(φ/nm) | λ<br>(nm) | Power<br>W <sup>λ</sup> /nm | Lumens<br>(φ/nm) |
|-----------|-----------------------------|------------------|-----------|-----------------------------|------------------|-----------|-----------------------------|------------------|-----------|-----------------------------|------------------|-----------|-----------------------------|------------------|
| 360       | 0                           | NR               | 490       | 52                          | NR               | 620       | 888                         | NR               | 750       | 27                          | NR               | 880       | 1                           | NR               |
| 365       | 0                           | NR               | 495       | 87                          | NR               | 625       | 834                         | NR               | 755       | 23                          | NR               | 885       | 1                           | NR               |
| 370       | 0                           | NR               | 500       | 135                         | NR               | 630       | 776                         | NR               | 760       | 20                          | NR               | 890       | 1                           | NR               |
| 375       | 0                           | NR               | 505       | 196                         | NR               | 635       | 712                         | NR               | 765       | 17                          | NR               | 895       | 0                           | NR               |
| 380       | 0                           | NR               | 510       | 258                         | NR               | 640       | 648                         | NR               | 770       | 15                          | NR               | 900       | 0                           | NR               |
| 385       | 1                           | NR               | 515       | 317                         | NR               | 645       | 583                         | NR               | 775       | 12                          | NR               | 905       | 0                           | NR               |
| 390       | 2                           | NR               | 520       | 368                         | NR               | 650       | 523                         | NR               | 780       | 11                          | NR               | 910       | 0                           | NR               |
| 395       | 4                           | NR               | 525       | 408                         | NR               | 655       | 465                         | NR               | 785       | 9                           | NR               | 915       | 0                           | NR               |
| 400       | 6                           | NR               | 530       | 443                         | NR               | 660       | 410                         | NR               | 790       | 8                           | NR               | 920       | 0                           | NR               |
| 405       | 11                          | NR               | 535       | 473                         | NR               | 665       | 360                         | NR               | 795       | 7                           | NR               | 925       | 0                           | NR               |
| 410       | 23                          | NR               | 540       | 498                         | NR               | 670       | 313                         | NR               | 800       | 6                           | NR               | 930       | 0                           | NR               |
| 415       | 51                          | NR               | 545       | 530                         | NR               | 675       | 272                         | NR               | 805       | 5                           | NR               | 935       | 0                           | NR               |
| 420       | 111                         | NR               | 550       | 563                         | NR               | 680       | 236                         | NR               | 810       | 4                           | NR               | 940       | 0                           | NR               |
| 425       | 214                         | NR               | 555       | 605                         | NR               | 685       | 203                         | NR               | 815       | 4                           | NR               | 945       | 0                           | NR               |
| 430       | 339                         | NR               | 560       | 651                         | NR               | 690       | 175                         | NR               | 820       | 3                           | NR               | 950       | 0                           | NR               |
| 435       | 467                         | NR               | 565       | 705                         | NR               | 695       | 150                         | NR               | 825       | 3                           | NR               | 955       | 0                           | NR               |
| 440       | 535                         | NR               | 570       | 765                         | NR               | 700       | 128                         | NR               | 830       | 3                           | NR               | 960       | 0                           | NR               |
| 445       | 372                         | NR               | 575       | 824                         | NR               | 705       | 110                         | NR               | 835       | 2                           | NR               | 965       | 0                           | NR               |
| 450       | 160                         | NR               | 580       | 882                         | NR               | 710       | 94                          | NR               | 840       | 2                           | NR               | 970       | 0                           | NR               |
| 455       | 89                          | NR               | 585       | 930                         | NR               | 715       | 80                          | NR               | 845       | 2                           | NR               | 975       | 0                           | NR               |
| 460       | 53                          | NR               | 590       | 968                         | NR               | 720       | 69                          | NR               | 850       | 1                           | NR               | 980       | 0                           | NR               |
| 465       | 31                          | NR               | 595       | 991                         | NR               | 725       | 59                          | NR               | 855       | 1                           | NR               | 985       | 0                           | NR               |
| 470       | 23                          | NR               | 600       | 999                         | NR               | 730       | 50                          | NR               | 860       | 1                           | NR               | 990       | 0                           | NR               |
| 475       | 21                          | NR               | 605       | 992                         | NR               | 735       | 43                          | NR               | 865       | 1                           | NR               | 995       | 0                           | NR               |
| 480       | 23                          | NR               | 610       | 969                         | NR               | 740       | 36                          | NR               | 870       | 1                           | NR               | 1000      | 0                           | NR               |
| 485       | 32                          | NR               | 615       | 935                         | NR               | 745       | 31                          | NR               | 875       | 1                           | NR               |           |                             |                  |

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TM-30-18

### Summary

$R_f = 67.9$   
 $R_g = 98.6$   
 $CIE R_a = 71.1$   
 $R_g = -27.8$

### Spectral Power Distribution Comparison

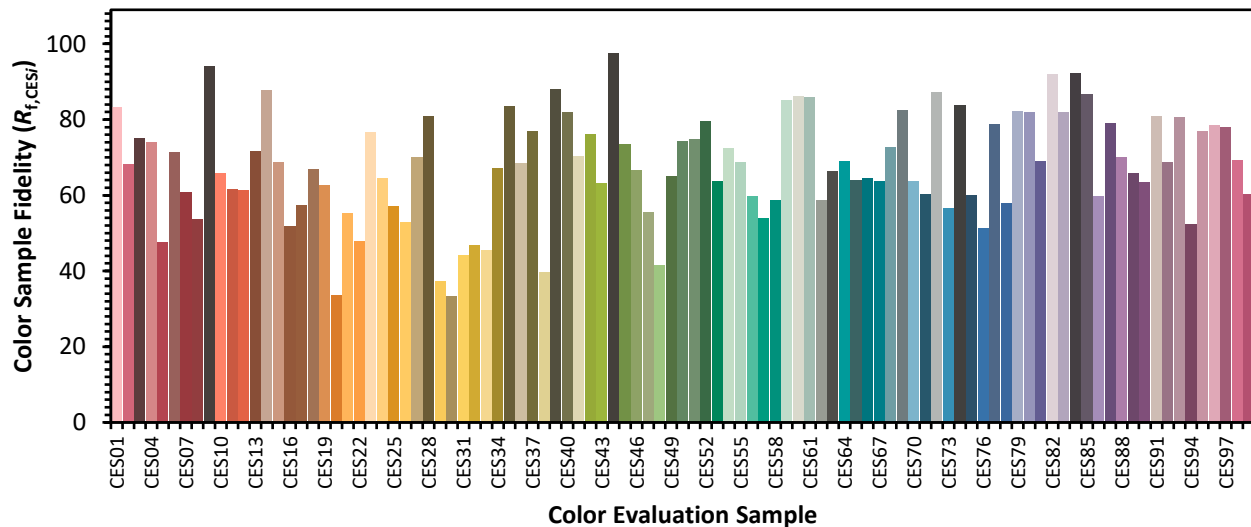


### Color Vector Graphics



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

|            |            |            |            |
|------------|------------|------------|------------|
| CES01 = 86 | CES26 = 53 | CES51 = 75 | CES76 = 51 |
| CES02 = 63 | CES27 = 70 | CES52 = 80 | CES77 = 79 |
| CES03 = 31 | CES28 = 81 | CES53 = 64 | CES78 = 58 |
| CES04 = 71 | CES29 = 37 | CES54 = 73 | CES79 = 82 |
| CES05 = 50 | CES30 = 33 | CES55 = 69 | CES80 = 82 |
| CES06 = 52 | CES31 = 44 | CES56 = 60 | CES81 = 69 |
| CES07 = 42 | CES32 = 47 | CES57 = 54 | CES82 = 92 |
| CES08 = 41 | CES33 = 45 | CES58 = 59 | CES83 = 82 |
| CES09 = 29 | CES34 = 67 | CES59 = 85 | CES84 = 92 |
| CES10 = 77 | CES35 = 84 | CES60 = 86 | CES85 = 87 |
| CES11 = 60 | CES36 = 68 | CES61 = 86 | CES86 = 60 |
| CES12 = 66 | CES37 = 77 | CES62 = 59 | CES87 = 79 |
| CES13 = 44 | CES38 = 40 | CES63 = 66 | CES88 = 70 |
| CES14 = 74 | CES39 = 88 | CES64 = 69 | CES89 = 66 |
| CES15 = 72 | CES40 = 82 | CES65 = 64 | CES90 = 64 |
| CES16 = 48 | CES41 = 70 | CES66 = 65 | CES91 = 81 |
| CES17 = 51 | CES42 = 76 | CES67 = 64 | CES92 = 69 |
| CES18 = 57 | CES43 = 63 | CES68 = 73 | CES93 = 81 |
| CES19 = 73 | CES44 = 97 | CES69 = 83 | CES94 = 53 |
| CES20 = 67 | CES45 = 74 | CES70 = 64 | CES95 = 77 |
| CES21 = 88 | CES46 = 67 | CES71 = 60 | CES96 = 79 |
| CES22 = 80 | CES47 = 55 | CES72 = 87 | CES97 = 78 |
| CES23 = 92 | CES48 = 42 | CES73 = 57 | CES98 = 69 |
| CES24 = 92 | CES49 = 65 | CES74 = 84 | CES99 = 60 |
| CES25 = 73 | CES50 = 74 | CES75 = 60 |            |



**Color Rendition by Hue-Angle Bin**


**Measure Comparisons**



(END OF REPORT)