

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: P1048341

Luminaire Tested: **GALN-SA9A-727-U-T4BC**

Issue Date: 07/10/2025

**Test Information**

Test Method: LM-79-08  
Report Number: P1048341  
Test Lab: INNOVATION CENTER(G3)  
Issue Date: 07/10/2025  
Manufacturer: COOPER LIGHTING SOLUTIONS (FORMERLY EATON)  
Product Line: MCGRAW-EDISON  
Catalog Number: GALN-SA9A-727-U-T4BC  
Description: GALLEON II AREA AND ROADWAY LUMINAIRE 615mA 9xLight Square PACKAGE  
70CRI 2700K FIXTURE w/ TYPE IV ANGLED BACKLIGHT CONTROL  
Light Source: (126) 2700K CCT, 70 CRI LEDs  
Ballast/Driver: ELECTRONIC DRIVER

**Summary**

Lumens per Lamp: N/A  
Luminaire Lumens: 29650.6 lumens  
Efficiency: N/A  
Efficacy: 121.2 lumens/watt  
Luminous Opening: Rectangular (W 1.5' x L: 1.5' x H: 0')  
IES Classification: Type IV - Short  
BUG Rating: B0 - U0 - G5

Input Watts (W): 244.6  
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



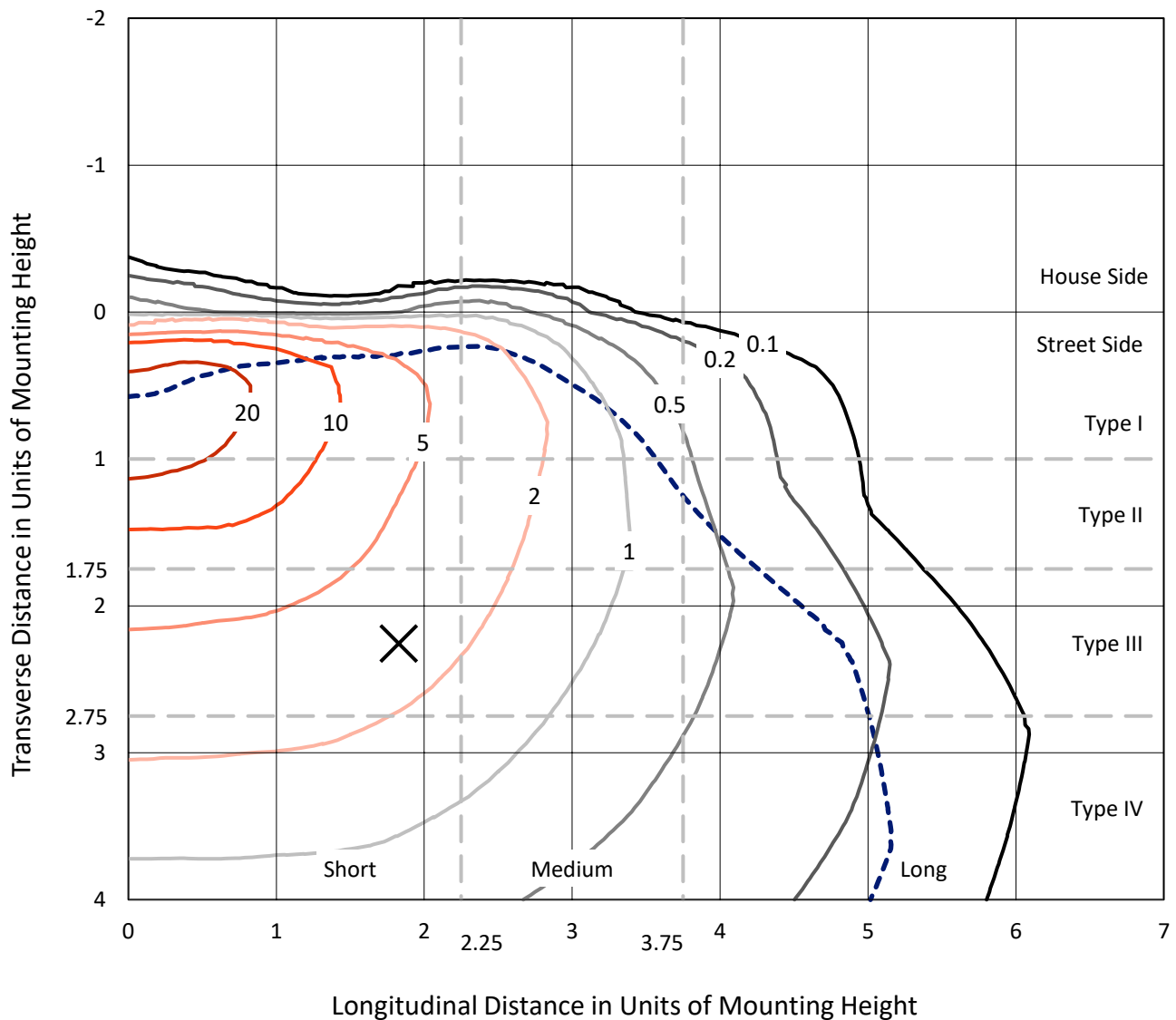
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## Iso-Footcandle Lines of Horizontal Illumination

× Max cd

--- 1/2 Max cd

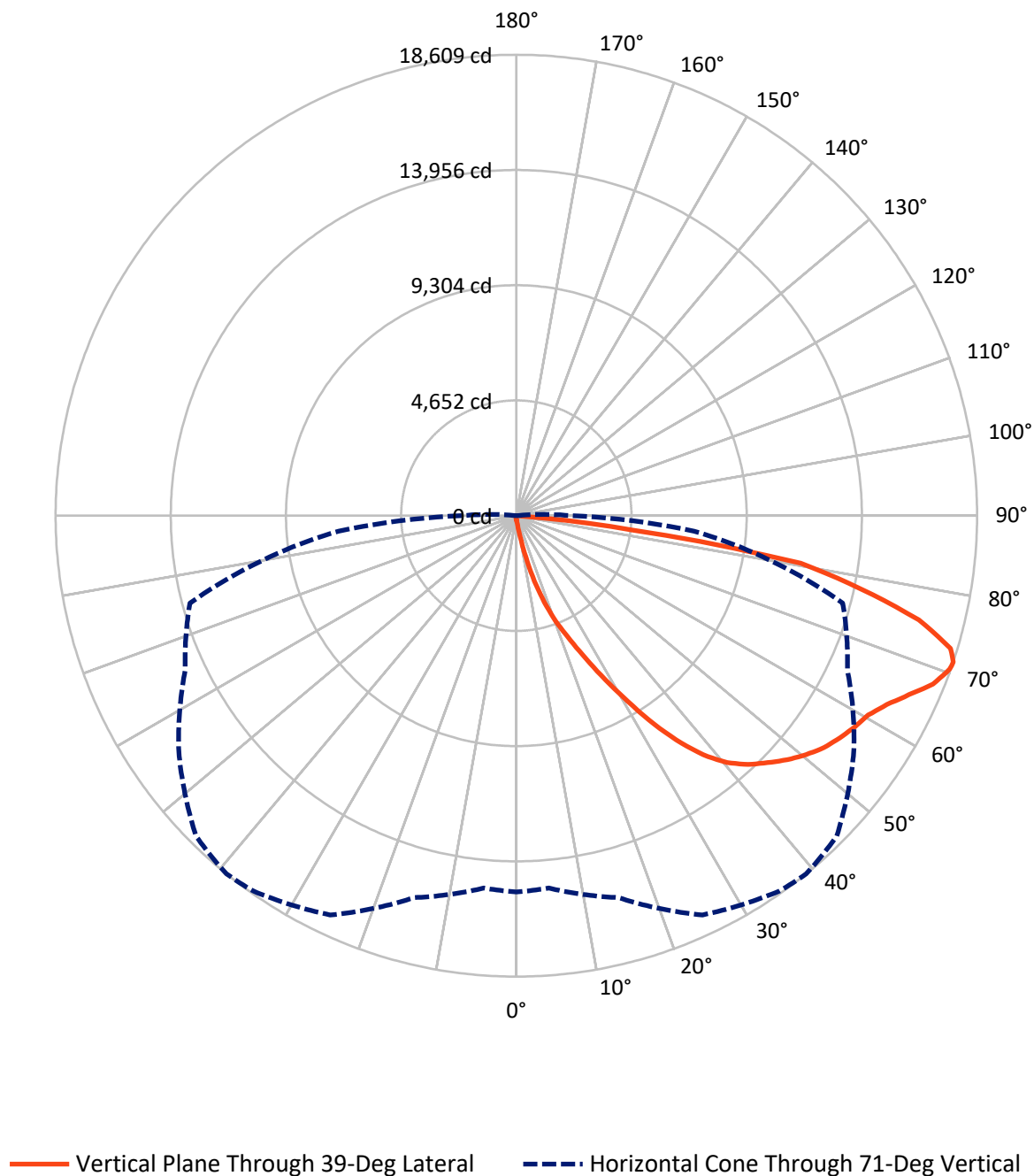


Based on 15 foot mounting height. Maximum calculated value = 30.5 fc  
 Type IV - Short - N/A

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## Luminous Intensity Polar Plot



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CATALOG NUMBER: GALN-SA9A-727-U-T4BC

**FLUX DISTRIBUTION:**

|                    |           | Downward | Upward | Total   |
|--------------------|-----------|----------|--------|---------|
| <b>House Side</b>  | Lumens    | 105.4    | 0.0    | 105.4   |
|                    | % Fixture | 0.4      | 0.0    | 0.4     |
| <b>Street Side</b> | Lumens    | 29545.2  | 0.0    | 29545.2 |
|                    | % Fixture | 99.6     | 0.0    | 99.6    |
| <b>Total</b>       | Lumens    | 29650.6  | 0.0    | 29650.6 |
|                    | % Fixture | 100.0    | 0.0    | 100.0   |

**Coefficient of Utilization**

**ZONAL LUMENS:**

| Zone      | Lumens  | % Fixture |
|-----------|---------|-----------|
| 0°-10°    | 24.8    | 0.1       |
| 10°-20°   | 316.9   | 1.1       |
| 20°-30°   | 1128.6  | 3.8       |
| 30°-40°   | 2720.0  | 9.2       |
| 40°-50°   | 4552.1  | 15.4      |
| 50°-60°   | 5846.6  | 19.7      |
| 60°-70°   | 7398.9  | 25.0      |
| 70°-80°   | 6596.4  | 22.2      |
| 80°-90°   | 1066.3  | 3.6       |
| 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°    | 29650.6 | 100.0     |
| 0°-180°   | 29650.6 | 100.0     |



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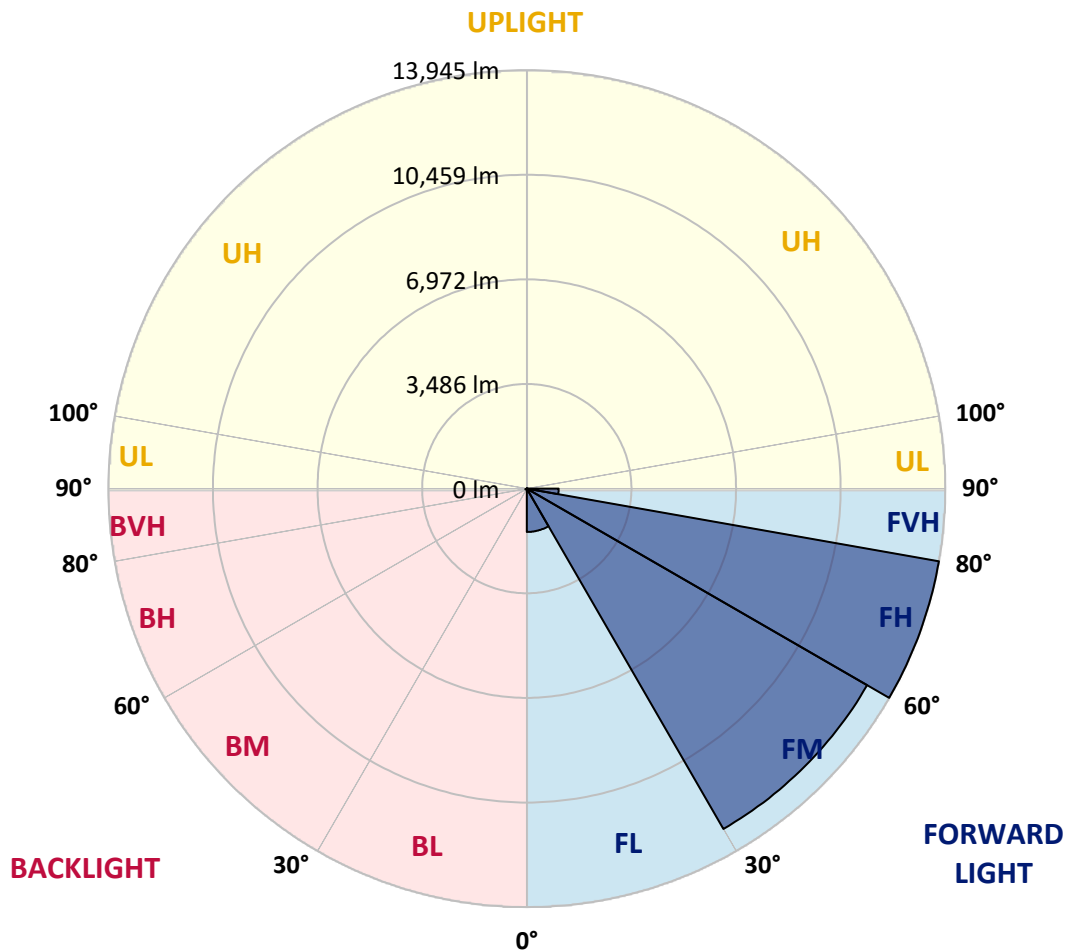
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**LUMINAIRE CLASSIFICATION SYSTEM LUMEN TABLE AND BUG RATING:**

| Zone |             | Lumens  | % Fixture | Zone Rating/Lumen Limit |      |        |
|------|-------------|---------|-----------|-------------------------|------|--------|
|      |             |         |           | B                       | U    | G      |
| FL   | (0°-30°)    | 1444.8  | 4.9       |                         |      |        |
| FM   | (30°-60°)   | 13094.3 | 44.2      |                         |      |        |
| FH   | (60°-80°)   | 13944.7 | 47.0      |                         |      | G5     |
| FVH  | (80°-90°)   | 1061.4  | 3.6       |                         |      | G5     |
| BL   | (0°-30°)    | 25.5    | 0.1       | B0/110                  |      |        |
| BM   | (30°-60°)   | 24.4    | 0.1       | B0/220                  |      |        |
| BH   | (60°-80°)   | 50.7    | 0.2       | B0/110                  |      | G0/110 |
| BVH  | (80°-90°)   | 4.8     | 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-G5**

Type IV Short





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**CANDELA DISTRIBUTION (FULL):**

|       | 0°      | 5°      | 15°     | 25°     | 35°     | 39°     | 45°     | 55°     | 65°     | 75°     | 85°    |
|-------|---------|---------|---------|---------|---------|---------|---------|---------|---------|---------|--------|
| 0°    | 162.6   | 162.6   | 162.6   | 162.6   | 162.6   | 162.6   | 162.6   | 162.6   | 162.6   | 162.6   | 162.6  |
| 2.5°  | 186.7   | 186.7   | 186.7   | 180.6   | 180.6   | 178.6   | 176.6   | 176.6   | 172.6   | 170.6   | 166.6  |
| 5°    | 283.0   | 277.0   | 262.9   | 254.9   | 238.9   | 228.8   | 218.8   | 204.7   | 190.7   | 180.6   | 168.6  |
| 7.5°  | 640.3   | 654.3   | 608.2   | 521.9   | 433.6   | 395.4   | 331.2   | 267.0   | 220.8   | 190.7   | 170.6  |
| 10°   | 1631.8  | 1623.8  | 1467.3  | 1294.6  | 999.6   | 881.2   | 690.5   | 435.6   | 285.0   | 208.7   | 172.6  |
| 12.5° | 2775.9  | 2767.9  | 2583.2  | 2348.4  | 1959.0  | 1712.1  | 1350.8  | 812.9   | 409.5   | 236.8   | 172.6  |
| 15°   | 3737.4  | 3705.3  | 3647.1  | 3414.2  | 2958.6  | 2751.9  | 2274.1  | 1437.1  | 662.4   | 285.0   | 176.6  |
| 17.5° | 4373.7  | 4345.6  | 4291.4  | 4207.1  | 3918.0  | 3673.2  | 3289.8  | 2258.1  | 1071.8  | 369.3   | 184.7  |
| 20°   | 4957.8  | 4937.7  | 4893.5  | 4877.5  | 4690.8  | 4560.3  | 4243.2  | 3201.5  | 1670.0  | 501.8   | 196.7  |
| 22.5° | 5760.6  | 5718.5  | 5736.5  | 5640.2  | 5457.5  | 5301.0  | 5106.3  | 4189.0  | 2400.6  | 722.6   | 218.8  |
| 25°   | 6744.1  | 6724.1  | 6673.9  | 6605.7  | 6352.7  | 6216.3  | 5917.2  | 5120.3  | 3217.5  | 1011.6  | 242.9  |
| 27.5° | 7932.4  | 7910.3  | 7898.3  | 7741.7  | 7450.7  | 7302.1  | 6884.6  | 5999.5  | 4136.8  | 1417.1  | 275.0  |
| 30°   | 9301.3  | 9311.3  | 9233.1  | 9032.3  | 8693.1  | 8484.4  | 8054.8  | 6920.8  | 5078.2  | 1892.8  | 309.1  |
| 32.5° | 10718.4 | 10698.3 | 10577.9 | 10341.0 | 10037.9 | 9843.2  | 9297.3  | 7930.4  | 6065.7  | 2521.0  | 349.3  |
| 35°   | 12245.8 | 12207.7 | 11890.6 | 11619.6 | 11360.7 | 11115.8 | 10618.0 | 9102.6  | 7053.3  | 3225.5  | 403.4  |
| 37.5° | 13787.4 | 13608.7 | 12972.4 | 12629.2 | 12450.6 | 12249.9 | 11786.2 | 10353.1 | 8034.8  | 4012.4  | 469.7  |
| 40°   | 14951.5 | 14813.0 | 14058.3 | 13426.1 | 13283.6 | 13112.9 | 12767.7 | 11432.9 | 9078.5  | 4857.4  | 550.0  |
| 42.5° | 15595.8 | 15519.6 | 14841.1 | 14216.9 | 13881.7 | 13731.2 | 13436.1 | 12376.3 | 10110.2 | 5790.7  | 666.4  |
| 45°   | 15870.8 | 15752.4 | 15298.8 | 15007.7 | 14473.8 | 14224.9 | 13873.7 | 13088.9 | 11188.1 | 6850.5  | 829.0  |
| 47.5° | 15786.5 | 15718.3 | 15393.1 | 15499.5 | 15112.1 | 14724.7 | 14208.9 | 13634.8 | 12109.4 | 8066.9  | 1051.8 |
| 50°   | 15256.6 | 15198.4 | 15098.1 | 15674.1 | 15625.9 | 15168.3 | 14642.4 | 14066.4 | 12862.1 | 9321.4  | 1397.0 |
| 52.5° | 14249.0 | 14224.9 | 14481.8 | 15537.6 | 15917.0 | 15559.7 | 15059.9 | 14447.7 | 13564.6 | 10632.1 | 1890.8 |
| 55°   | 12950.4 | 13048.7 | 13783.3 | 15324.9 | 16065.5 | 15848.7 | 15429.2 | 14805.0 | 14128.6 | 11804.3 | 2619.4 |
| 57.5° | 12416.5 | 12442.5 | 13359.8 | 15174.3 | 16131.8 | 16103.7 | 15788.5 | 15146.2 | 14646.4 | 12741.6 | 3731.4 |
| 60°   | 13040.7 | 13000.5 | 13484.3 | 15288.7 | 16264.2 | 16332.5 | 16107.7 | 15463.4 | 15096.0 | 13546.5 | 5212.7 |
| 62.5° | 14168.7 | 14146.6 | 14301.2 | 15776.5 | 16651.6 | 16790.1 | 16551.3 | 15692.2 | 15493.5 | 14076.4 | 6902.7 |
| 65°   | 15176.3 | 15130.2 | 15417.2 | 16641.6 | 17332.1 | 17430.4 | 17221.7 | 16083.6 | 15668.1 | 14461.8 | 8490.4 |
| 67.5° | 15611.9 | 15601.9 | 16063.5 | 17464.5 | 18046.6 | 18153.0 | 17970.3 | 16623.5 | 15628.0 | 14584.2 | 9190.9 |
| 70°   | 15413.2 | 15375.0 | 16113.7 | 17813.8 | 18450.1 | 18570.5 | 18393.9 | 16824.2 | 15192.4 | 14196.8 | 8153.2 |
| 71°   | 15194.4 | 15092.0 | 15963.2 | 17789.7 | 18506.3 | 18608.6 | 18299.5 | 16641.6 | 14754.8 | 13646.9 | 7211.8 |
| 72.5° | 14516.0 | 14534.0 | 15549.7 | 17538.8 | 18371.8 | 18341.7 | 17765.6 | 15987.2 | 14226.9 | 12398.4 | 5792.7 |
| 75°   | 12846.0 | 12952.4 | 14210.9 | 16485.0 | 17171.5 | 16788.1 | 15907.0 | 14736.8 | 13167.1 | 8889.8  | 4022.4 |
| 77.5° | 10497.6 | 10656.2 | 12039.1 | 14457.8 | 14263.1 | 14224.9 | 14188.8 | 12984.5 | 11244.3 | 4775.1  | 2798.0 |
| 80°   | 5011.9  | 5355.2  | 7262.0  | 10321.0 | 11212.1 | 11643.7 | 11372.7 | 10463.5 | 8695.1  | 2274.1  | 1672.0 |
| 82.5° | 327.2   | 323.2   | 457.6   | 867.1   | 3655.1  | 4724.9  | 7506.9  | 7478.8  | 6061.7  | 1108.0  | 682.4  |
| 85°   | 154.6   | 158.6   | 174.6   | 198.7   | 230.8   | 252.9   | 349.3   | 2047.3  | 2900.4  | 527.9   | 148.5  |
| 87.5° | 90.3    | 92.3    | 108.4   | 138.5   | 180.6   | 200.7   | 238.9   | 307.1   | 377.4   | 291.0   | 32.1   |
| 90°   | 0.0     | 0.0     | 0.0     | 0.0     | 0.0     | 0.0     | 0.0     | 0.0     | 0.0     | 0.0     | 0.0    |



REPORT NUMBER: P1048341

CATALOG NUMBER: GALN-SA9A-727-U-T4BC

**CANDELA DISTRIBUTION (continued):**

|       | 90°    | 95°   | 105°  | 115°  | 125°  | 135°  | 145°  | 155°  | 165°  | 175°  | 180°  |
|-------|--------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|
| 0°    | 162.6  | 162.6 | 162.6 | 162.6 | 162.6 | 162.6 | 162.6 | 162.6 | 162.6 | 162.6 | 162.6 |
| 2.5°  | 164.6  | 162.6 | 156.6 | 150.5 | 144.5 | 140.5 | 138.5 | 140.5 | 140.5 | 142.5 | 142.5 |
| 5°    | 164.6  | 158.6 | 148.5 | 136.5 | 128.5 | 120.4 | 116.4 | 114.4 | 116.4 | 116.4 | 116.4 |
| 7.5°  | 162.6  | 152.5 | 138.5 | 124.4 | 114.4 | 104.4 | 100.4 | 98.4  | 98.4  | 100.4 | 100.4 |
| 10°   | 158.6  | 148.5 | 130.5 | 114.4 | 102.4 | 90.3  | 84.3  | 78.3  | 78.3  | 78.3  | 80.3  |
| 12.5° | 156.6  | 142.5 | 120.4 | 104.4 | 88.3  | 74.3  | 62.2  | 56.2  | 58.2  | 58.2  | 58.2  |
| 15°   | 152.5  | 136.5 | 114.4 | 94.3  | 74.3  | 56.2  | 46.2  | 40.1  | 42.2  | 44.2  | 42.2  |
| 17.5° | 152.5  | 134.5 | 106.4 | 82.3  | 58.2  | 42.2  | 34.1  | 30.1  | 30.1  | 32.1  | 32.1  |
| 20°   | 152.5  | 130.5 | 100.4 | 70.3  | 44.2  | 32.1  | 24.1  | 22.1  | 22.1  | 26.1  | 28.1  |
| 22.5° | 156.6  | 130.5 | 92.3  | 58.2  | 36.1  | 24.1  | 18.1  | 16.1  | 18.1  | 22.1  | 24.1  |
| 25°   | 162.6  | 128.5 | 84.3  | 52.2  | 30.1  | 18.1  | 14.1  | 10.0  | 12.0  | 16.1  | 18.1  |
| 27.5° | 168.6  | 126.5 | 76.3  | 46.2  | 24.1  | 14.1  | 10.0  | 8.0   | 6.0   | 8.0   | 8.0   |
| 30°   | 174.6  | 126.5 | 68.2  | 38.1  | 20.1  | 10.0  | 6.0   | 4.0   | 2.0   | 0.0   | 0.0   |
| 32.5° | 178.6  | 122.4 | 62.2  | 30.1  | 16.1  | 8.0   | 4.0   | 2.0   | 0.0   | 0.0   | 0.0   |
| 35°   | 182.7  | 118.4 | 54.2  | 24.1  | 12.0  | 6.0   | 2.0   | 0.0   | 0.0   | 0.0   | 0.0   |
| 37.5° | 186.7  | 112.4 | 46.2  | 20.1  | 10.0  | 4.0   | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   |
| 40°   | 190.7  | 104.4 | 38.1  | 18.1  | 6.0   | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   |
| 42.5° | 194.7  | 98.4  | 32.1  | 14.1  | 4.0   | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   |
| 45°   | 204.7  | 94.3  | 26.1  | 12.0  | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   |
| 47.5° | 222.8  | 90.3  | 24.1  | 8.0   | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   |
| 50°   | 248.9  | 86.3  | 22.1  | 6.0   | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   |
| 52.5° | 285.0  | 84.3  | 20.1  | 4.0   | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   |
| 55°   | 349.3  | 82.3  | 18.1  | 4.0   | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   |
| 57.5° | 459.6  | 80.3  | 18.1  | 4.0   | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   |
| 60°   | 704.5  | 76.3  | 18.1  | 4.0   | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   |
| 62.5° | 1258.5 | 74.3  | 16.1  | 4.0   | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   |
| 65°   | 2193.9 | 76.3  | 16.1  | 4.0   | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   |
| 67.5° | 3145.3 | 80.3  | 14.1  | 6.0   | 2.0   | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   |
| 70°   | 2691.6 | 70.3  | 14.1  | 8.0   | 4.0   | 2.0   | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   |
| 71°   | 2193.9 | 62.2  | 14.1  | 8.0   | 4.0   | 2.0   | 2.0   | 0.0   | 0.0   | 0.0   | 0.0   |
| 72.5° | 1411.1 | 48.2  | 12.0  | 8.0   | 4.0   | 4.0   | 2.0   | 0.0   | 0.0   | 0.0   | 0.0   |
| 75°   | 596.1  | 40.1  | 12.0  | 8.0   | 6.0   | 4.0   | 4.0   | 2.0   | 0.0   | 0.0   | 0.0   |
| 77.5° | 254.9  | 30.1  | 12.0  | 10.0  | 8.0   | 6.0   | 6.0   | 4.0   | 2.0   | 0.0   | 0.0   |
| 80°   | 96.3   | 24.1  | 14.1  | 12.0  | 10.0  | 10.0  | 8.0   | 4.0   | 2.0   | 0.0   | 0.0   |
| 82.5° | 44.2   | 20.1  | 14.1  | 12.0  | 12.0  | 10.0  | 8.0   | 6.0   | 4.0   | 0.0   | 0.0   |
| 85°   | 28.1   | 18.1  | 14.1  | 12.0  | 12.0  | 10.0  | 10.0  | 6.0   | 4.0   | 0.0   | 0.0   |
| 87.5° | 22.1   | 18.1  | 14.1  | 14.1  | 12.0  | 12.0  | 8.0   | 6.0   | 2.0   | 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

REPORT NUMBER: SP1-2407-184-3

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



REPORT NUMBER: SP1-2407-184-3

### 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

| $\lambda$<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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### 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)