

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: P1048174

Luminaire Tested: **GALN-SA3B-940-U-T2BC**

Issue Date: 07/10/2025

**Test Information**

Test Method: LM-79-08  
Report Number: P1048174  
Test Lab: INNOVATION CENTER(G3)  
Issue Date: 07/10/2025  
Manufacturer: COOPER LIGHTING SOLUTIONS (FORMERLY EATON)  
Product Line: MCGRAW-EDISON  
Catalog Number: GALN-SA3B-940-U-T2BC  
Description: GALLEON II AREA AND ROADWAY LUMINAIRE 800mA 3xLight Square PACKAGE  
90CRI 4000K FIXTURE w/ TYPE II ANGLED BACKLIGHT CONTROL  
Light Source: (42) 4000K CCT, 90 CRI LEDS  
Ballast/Driver: ELECTRONIC DRIVER

**Summary**

Lumens per Lamp: N/A  
Luminaire Lumens: 10259.8 lumens  
Efficiency: N/A  
Efficacy: 96.6 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): 106.2  
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



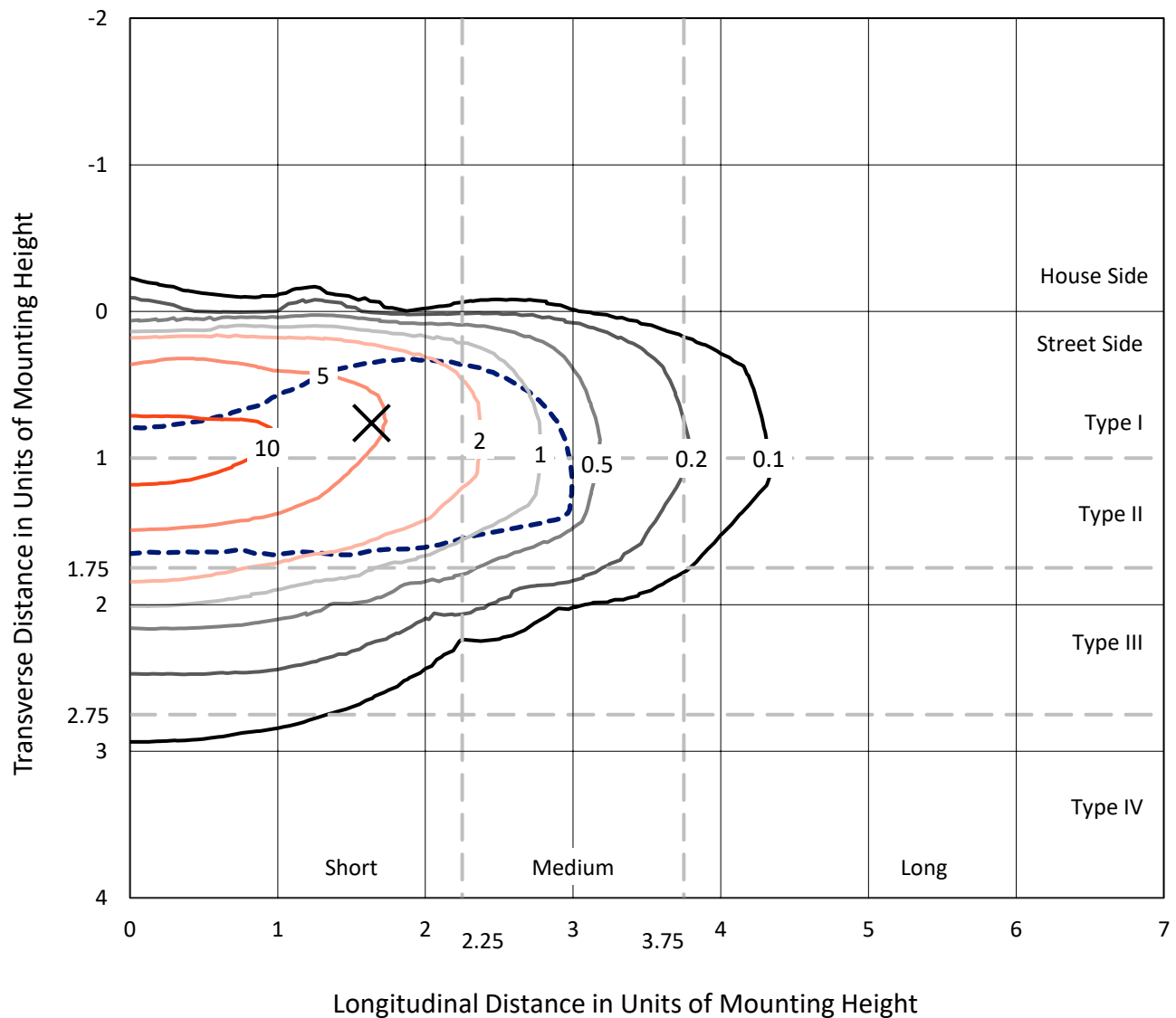
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CATALOG NUMBER: GALN-SA3B-940-U-T2BC

## Iso-Footcandle Lines of Horizontal Illumination

× Max cd

--- 1/2 Max cd

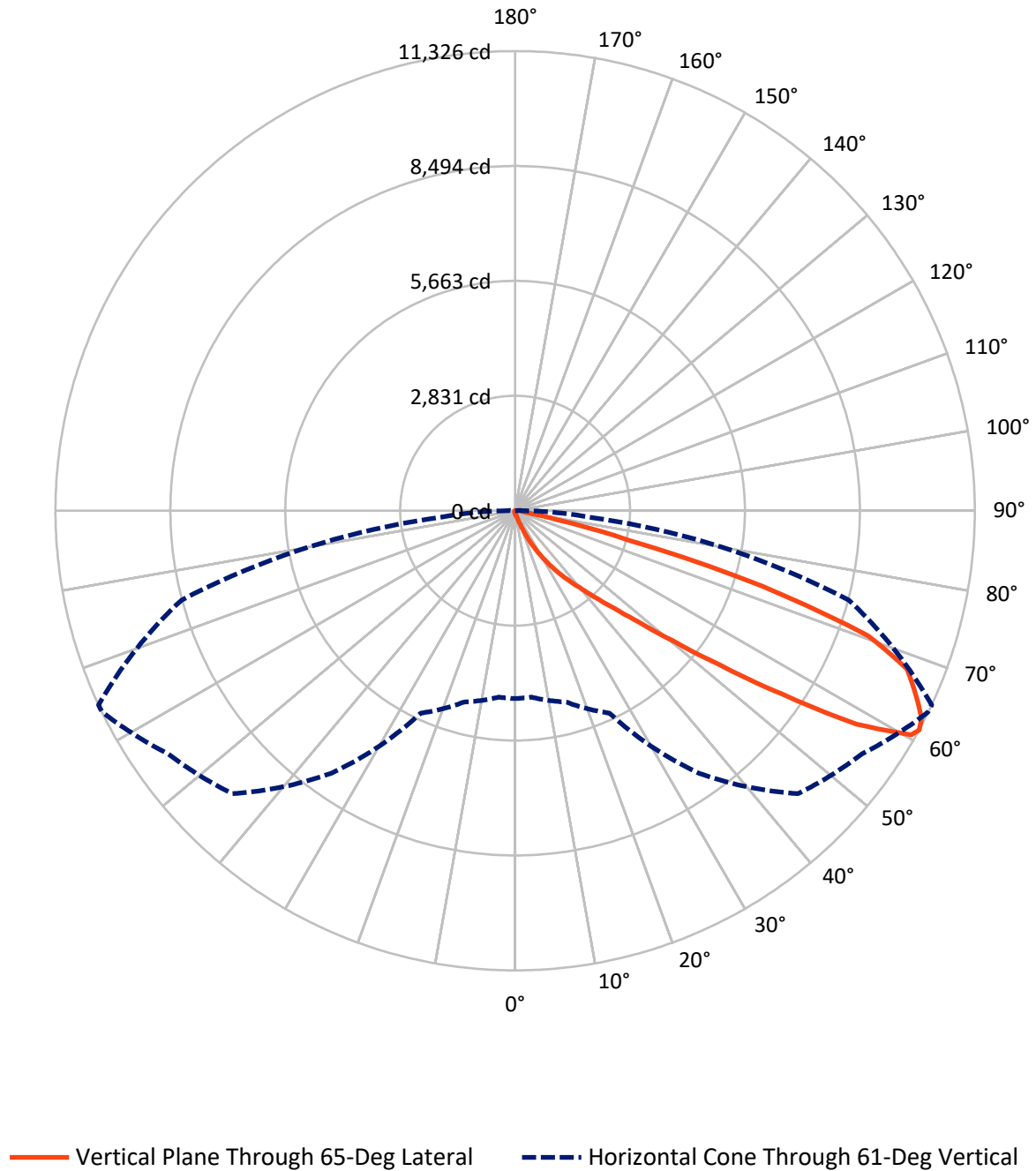


Based on 15 foot mounting height. Maximum calculated value = 13.6 fc  
 Type II - Short - N/A

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CATALOG NUMBER: GALN-SA3B-940-U-T2BC

## Luminous Intensity Polar Plot



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CATALOG NUMBER: GALN-SA3B-940-U-T2BC

**FLUX DISTRIBUTION:**

|                    |           | Downward | Upward | Total   |
|--------------------|-----------|----------|--------|---------|
| <b>House Side</b>  | Lumens    | 43.8     | 0.0    | 43.8    |
|                    | % Fixture | 0.4      | 0.0    | 0.4     |
| <b>Street Side</b> | Lumens    | 10216.1  | 0.0    | 10216.1 |
|                    | % Fixture | 99.6     | 0.0    | 99.6    |
| <b>Total</b>       | Lumens    | 10259.8  | 0.0    | 10259.8 |
|                    | % Fixture | 100.0    | 0.0    | 100.0   |

**Coefficient of Utilization**

**ZONAL LUMENS:**

| Zone      | Lumens  | % Fixture |
|-----------|---------|-----------|
| 0°-10°    | 8.0     | 0.1       |
| 10°-20°   | 84.4    | 0.8       |
| 20°-30°   | 302.8   | 3.0       |
| 30°-40°   | 806.1   | 7.9       |
| 40°-50°   | 2117.7  | 20.6      |
| 50°-60°   | 3280.7  | 32.0      |
| 60°-70°   | 2750.8  | 26.8      |
| 70°-80°   | 809.5   | 7.9       |
| 80°-90°   | 99.9    | 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°    | 10259.8 | 100.0     |
| 0°-180°   | 10259.8 | 100.0     |



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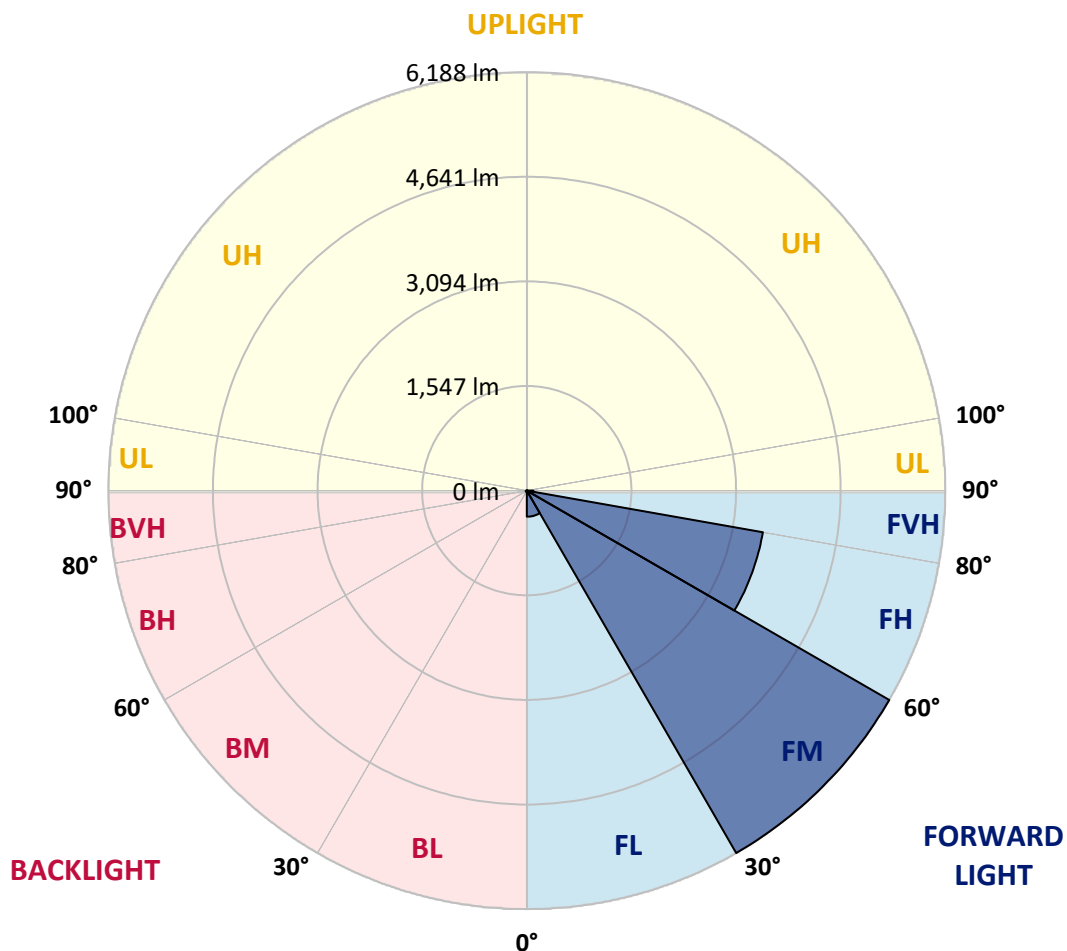
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**LUMINAIRE CLASSIFICATION SYSTEM LUMEN TABLE AND BUG RATING:**

| Zone |             | Lumens | % Fixture | Zone Rating/Lumen Limit |      |         |
|------|-------------|--------|-----------|-------------------------|------|---------|
|      |             |        |           | B                       | U    | G       |
| FL   | (0°-30°)    | 385.3  | 3.8       |                         |      |         |
| FM   | (30°-60°)   | 6187.9 | 60.3      |                         |      |         |
| FH   | (60°-80°)   | 3544.9 | 34.6      |                         |      | G2/5000 |
| FVH  | (80°-90°)   | 98.0   | 1.0       |                         |      | G1/100  |
| BL   | (0°-30°)    | 9.8    | 0.1       | B0/110                  |      |         |
| BM   | (30°-60°)   | 16.7   | 0.2       | B0/220                  |      |         |
| BH   | (60°-80°)   | 15.4   | 0.2       | B0/110                  |      | G0/110  |
| BVH  | (80°-90°)   | 1.9    | 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°    | 62.8   | 62.8   | 62.8   | 62.8   | 62.8   | 62.8    | 62.8    | 62.8    | 62.8    | 62.8   | 62.8   |
| 2.5°  | 76.2   | 76.9   | 75.5   | 72.7   | 70.6   | 70.6    | 69.9    | 67.8    | 67.8    | 65.6   | 64.2   |
| 5°    | 106.6  | 105.2  | 102.3  | 96.7   | 91.7   | 86.8    | 81.9    | 76.9    | 76.2    | 69.9   | 65.6   |
| 7.5°  | 174.3  | 175.7  | 166.6  | 148.9  | 134.1  | 115.0   | 97.4    | 86.8    | 85.4    | 74.8   | 66.3   |
| 10°   | 382.5  | 371.9  | 350.8  | 282.3  | 232.2  | 175.0   | 129.9   | 100.9   | 99.5    | 80.5   | 67.8   |
| 12.5° | 697.3  | 688.8  | 650.0  | 579.4  | 450.3  | 313.4   | 189.9   | 124.9   | 120.7   | 85.4   | 68.5   |
| 15°   | 1005.0 | 991.6  | 970.4  | 899.1  | 748.1  | 561.8   | 310.5   | 170.8   | 159.5   | 92.5   | 67.8   |
| 17.5° | 1201.2 | 1203.3 | 1184.3 | 1153.9 | 1056.5 | 831.4   | 536.4   | 254.8   | 232.9   | 105.2  | 66.3   |
| 20°   | 1372.7 | 1367.8 | 1378.4 | 1362.1 | 1293.7 | 1129.9  | 780.6   | 403.7   | 366.3   | 125.6  | 67.0   |
| 22.5° | 1570.3 | 1582.3 | 1590.1 | 1586.6 | 1511.0 | 1371.3  | 1057.9  | 604.1   | 556.9   | 163.0  | 69.2   |
| 25°   | 1835.0 | 1833.6 | 1834.3 | 1825.1 | 1751.7 | 1596.4  | 1336.0  | 853.3   | 805.3   | 223.7  | 74.1   |
| 27.5° | 2112.4 | 2120.8 | 2124.4 | 2091.2 | 1995.2 | 1842.8  | 1593.6  | 1125.7  | 1069.2  | 321.1  | 80.5   |
| 30°   | 2491.4 | 2484.3 | 2468.1 | 2400.3 | 2283.9 | 2094.7  | 1847.7  | 1411.5  | 1352.3  | 457.3  | 90.3   |
| 32.5° | 3002.3 | 2994.6 | 2912.7 | 2763.1 | 2588.8 | 2357.3  | 2103.2  | 1698.1  | 1626.1  | 627.4  | 103.7  |
| 35°   | 3844.3 | 3856.3 | 3655.2 | 3267.7 | 2955.1 | 2672.7  | 2386.2  | 1983.2  | 1919.7  | 837.0  | 122.1  |
| 37.5° | 5133.8 | 5068.1 | 4795.0 | 4110.4 | 3437.1 | 3066.6  | 2656.5  | 2271.2  | 2216.1  | 1095.4 | 146.1  |
| 40°   | 6386.5 | 6321.6 | 6242.5 | 5593.9 | 4274.8 | 3500.6  | 3034.8  | 2609.2  | 2537.9  | 1386.8 | 181.4  |
| 42.5° | 7703.5 | 7667.5 | 7663.9 | 7174.8 | 5803.5 | 4183.1  | 3490.0  | 3005.2  | 2944.5  | 1706.5 | 239.3  |
| 45°   | 8636.5 | 8600.5 | 8676.0 | 8761.4 | 7885.5 | 5645.4  | 4282.6  | 3519.7  | 3431.4  | 2094.7 | 331.7  |
| 47.5° | 8762.1 | 8763.5 | 8965.4 | 9232.9 | 9432.6 | 7907.4  | 5338.4  | 4201.4  | 4094.2  | 2650.2 | 487.0  |
| 50°   | 8344.3 | 8360.5 | 8681.7 | 9160.2 | 9698.0 | 9805.2  | 7200.2  | 5190.9  | 5032.1  | 3308.6 | 707.2  |
| 52.5° | 7548.9 | 7567.2 | 8014.7 | 8801.6 | 9453.8 | 10261.2 | 9392.4  | 6485.3  | 6302.5  | 4130.2 | 1017.7 |
| 55°   | 6832.5 | 6843.8 | 7356.9 | 8351.4 | 9159.5 | 10013.4 | 10693.8 | 8213.7  | 7973.8  | 5140.8 | 1324.0 |
| 57.5° | 6123.2 | 6097.1 | 6431.0 | 7569.4 | 9109.3 | 9709.3  | 10885.8 | 10183.5 | 9918.9  | 6245.3 | 1562.6 |
| 60°   | 5174.7 | 5130.9 | 5399.1 | 6123.2 | 8450.2 | 9909.0  | 10526.5 | 11273.2 | 11213.2 | 7783.2 | 1746.8 |
| 61°   | 4629.1 | 4610.8 | 4880.4 | 5501.5 | 7895.4 | 9858.2  | 10440.4 | 11319.1 | 11325.5 | 8510.9 | 1829.4 |
| 62.5° | 3305.8 | 3358.0 | 3770.2 | 4577.6 | 6613.0 | 9528.6  | 10451.7 | 11177.2 | 11240.1 | 9477.8 | 2043.2 |
| 65°   | 1469.4 | 1553.4 | 1873.8 | 2530.9 | 3845.7 | 7926.5  | 10351.5 | 10866.0 | 10835.0 | 9743.1 | 2780.0 |
| 67.5° | 871.6  | 884.3  | 1043.8 | 1434.1 | 2036.8 | 4263.5  | 9134.8  | 10454.5 | 10412.9 | 8481.9 | 3459.0 |
| 70°   | 686.7  | 693.1  | 743.9  | 899.9  | 1182.2 | 1633.1  | 5213.5  | 9045.1  | 9226.5  | 6877.7 | 3386.3 |
| 72.5° | 651.4  | 650.0  | 657.1  | 684.6  | 744.6  | 810.2   | 2018.5  | 6012.4  | 6381.6  | 4953.1 | 2839.3 |
| 75°   | 643.0  | 640.1  | 633.1  | 622.5  | 539.2  | 477.1   | 625.3   | 2659.3  | 2873.2  | 3384.2 | 2137.8 |
| 77.5° | 623.9  | 624.6  | 626.0  | 597.1  | 462.3  | 337.4   | 302.8   | 853.3   | 1049.5  | 2147.7 | 1519.5 |
| 80°   | 422.0  | 428.4  | 439.0  | 427.7  | 415.7  | 244.2   | 213.8   | 303.5   | 307.7   | 1205.5 | 1003.6 |
| 82.5° | 213.8  | 213.8  | 208.9  | 186.3  | 160.9  | 158.8   | 170.1   | 220.2   | 223.0   | 609.8  | 472.2  |
| 85°   | 129.2  | 136.2  | 139.0  | 126.3  | 115.7  | 106.6   | 129.9   | 175.0   | 181.4   | 236.4  | 110.1  |
| 87.5° | 28.9   | 29.6   | 32.5   | 43.1   | 62.8   | 85.4    | 120.7   | 160.2   | 163.0   | 151.7  | 13.4   |
| 90°   | 0.0    | 0.0    | 0.0    | 0.0    | 0.0    | 0.0     | 0.0     | 0.0     | 0.0     | 0.0    | 0.0    |



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CATALOG NUMBER: GALN-SA3B-940-U-T2BC

**CANDELA DISTRIBUTION (continued):**

|       | 90°   | 95°   | 105° | 115° | 125° | 135° | 145° | 155° | 165° | 175° | 180° |
|-------|-------|-------|------|------|------|------|------|------|------|------|------|
| 0°    | 62.8  | 62.8  | 62.8 | 62.8 | 62.8 | 62.8 | 62.8 | 62.8 | 62.8 | 62.8 | 62.8 |
| 2.5°  | 63.5  | 62.1  | 61.4 | 59.3 | 57.2 | 55.0 | 53.6 | 52.9 | 53.6 | 54.3 | 54.3 |
| 5°    | 62.8  | 60.7  | 57.2 | 53.6 | 50.8 | 48.0 | 45.2 | 44.5 | 44.5 | 45.2 | 45.2 |
| 7.5°  | 62.8  | 59.3  | 54.3 | 50.1 | 45.9 | 41.6 | 39.5 | 38.1 | 38.8 | 38.8 | 38.8 |
| 10°   | 62.8  | 58.6  | 52.2 | 45.9 | 40.9 | 36.0 | 32.5 | 31.1 | 31.1 | 31.1 | 31.1 |
| 12.5° | 62.1  | 57.9  | 50.1 | 42.3 | 35.3 | 29.6 | 25.4 | 23.3 | 24.0 | 24.0 | 24.0 |
| 15°   | 60.7  | 55.8  | 47.3 | 36.0 | 28.2 | 22.6 | 18.3 | 16.2 | 16.9 | 18.3 | 19.1 |
| 17.5° | 58.6  | 53.6  | 42.3 | 30.3 | 22.6 | 16.9 | 12.7 | 11.3 | 12.0 | 14.1 | 14.1 |
| 20°   | 57.9  | 51.5  | 37.4 | 24.7 | 16.9 | 12.0 | 8.5  | 7.1  | 7.8  | 10.6 | 11.3 |
| 22.5° | 57.9  | 50.1  | 33.9 | 20.5 | 12.7 | 7.8  | 4.9  | 2.8  | 2.8  | 4.9  | 4.9  |
| 25°   | 58.6  | 49.4  | 31.1 | 16.9 | 9.2  | 5.6  | 2.8  | 1.4  | 2.8  | 7.8  | 9.2  |
| 27.5° | 60.0  | 48.7  | 29.6 | 14.1 | 7.1  | 4.9  | 2.1  | 4.9  | 8.5  | 8.5  | 8.5  |
| 30°   | 61.4  | 47.3  | 27.5 | 12.0 | 6.4  | 3.5  | 3.5  | 7.1  | 7.1  | 8.5  | 9.2  |
| 32.5° | 63.5  | 46.6  | 26.1 | 10.6 | 4.9  | 2.8  | 4.9  | 4.2  | 4.2  | 4.9  | 5.6  |
| 35°   | 67.8  | 47.3  | 24.7 | 10.6 | 4.9  | 3.5  | 4.2  | 2.1  | 1.4  | 1.4  | 1.4  |
| 37.5° | 73.4  | 48.0  | 22.6 | 9.2  | 4.2  | 4.2  | 2.1  | 0.0  | 0.0  | 0.0  | 0.0  |
| 40°   | 82.6  | 50.1  | 21.2 | 8.5  | 3.5  | 3.5  | 0.7  | 0.0  | 0.0  | 0.0  | 0.0  |
| 42.5° | 98.1  | 54.3  | 20.5 | 7.8  | 3.5  | 2.8  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  |
| 45°   | 129.2 | 64.2  | 19.1 | 7.1  | 3.5  | 1.4  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  |
| 47.5° | 185.6 | 87.5  | 18.3 | 5.6  | 2.1  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  |
| 50°   | 271.0 | 118.6 | 17.6 | 4.9  | 0.7  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  |
| 52.5° | 345.8 | 124.9 | 12.0 | 4.2  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  |
| 55°   | 354.3 | 86.1  | 9.2  | 2.8  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  |
| 57.5° | 282.3 | 55.8  | 7.8  | 2.1  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  |
| 60°   | 213.8 | 42.3  | 7.1  | 0.7  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  |
| 61°   | 205.4 | 38.1  | 7.1  | 0.7  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  |
| 62.5° | 226.6 | 33.2  | 6.4  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  |
| 65°   | 368.4 | 27.5  | 5.6  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  |
| 67.5° | 640.1 | 24.0  | 4.9  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  |
| 70°   | 808.8 | 22.6  | 4.2  | 0.7  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  |
| 72.5° | 705.1 | 20.5  | 4.2  | 1.4  | 0.7  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  |
| 75°   | 424.2 | 17.6  | 4.2  | 2.8  | 1.4  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  |
| 77.5° | 222.3 | 13.4  | 4.2  | 3.5  | 2.1  | 0.7  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  |
| 80°   | 108.0 | 12.0  | 4.9  | 3.5  | 2.8  | 1.4  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  |
| 82.5° | 42.3  | 9.9   | 5.6  | 4.9  | 3.5  | 2.1  | 0.7  | 0.0  | 0.0  | 0.0  | 0.0  |
| 85°   | 19.1  | 8.5   | 6.4  | 5.6  | 4.9  | 2.8  | 0.7  | 0.0  | 0.0  | 0.0  | 0.0  |
| 87.5° | 9.9   | 7.8   | 7.1  | 6.4  | 4.9  | 3.5  | 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: SP1-2407-184-16

Test Date: 10/11/2024

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

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

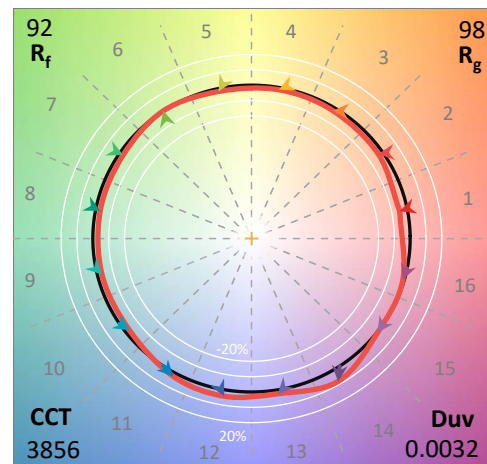
### Test Information

Test Method: LM-79-2019  
 Report Number: SP1-2407-184-16  
 Test Lab: COOPER LIGHTING SOLUTIONS  
 Photometer: SP1 - 76IN SPHERE  
 Measurement Geometry:  $4\pi$   
 Issue Date: 10/15/2024  
 Manufacturer: COOPER LIGHTING SOLUTIONS  
 Product Line: McGraw-Edison  
 Catalog Number: **GSS-SB1A-940-U-5WQ**  
 Description: GALLEON II SITE SLIM 1SQ 350MA 5WQ HIGH DENSITY LIGHTSQUARE WITH 90 CRI 4000K CCT 26 LEDS

### Spectral Parameters

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

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



### Test Conditions

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

REPORT NUMBER: SP1-2407-184-16

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

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**CIE 1931 Chromaticity Diagram**



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



Point lies inside the ANSI 4000K 4-step quadrangle

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### Photopic Flux vs. Wavelength

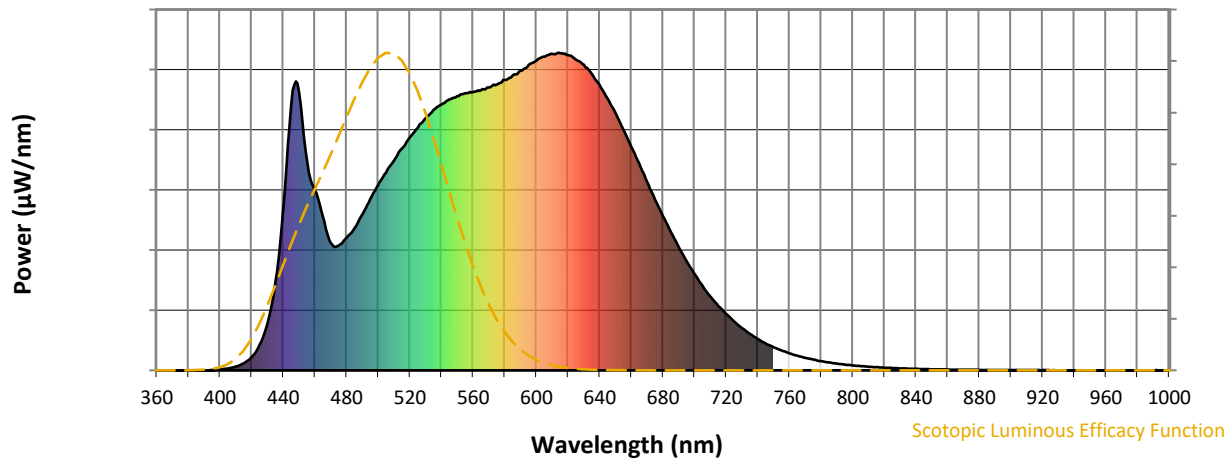


### Photopic Lumens: NR

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

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### Scotopic Flux vs. Wavelength



Scotopic Lumens: NR

S/P: 1.72

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

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### Melanopic Flux vs. Wavelength


**Melanopic Lumens: NR**
**M/P: 3.52**

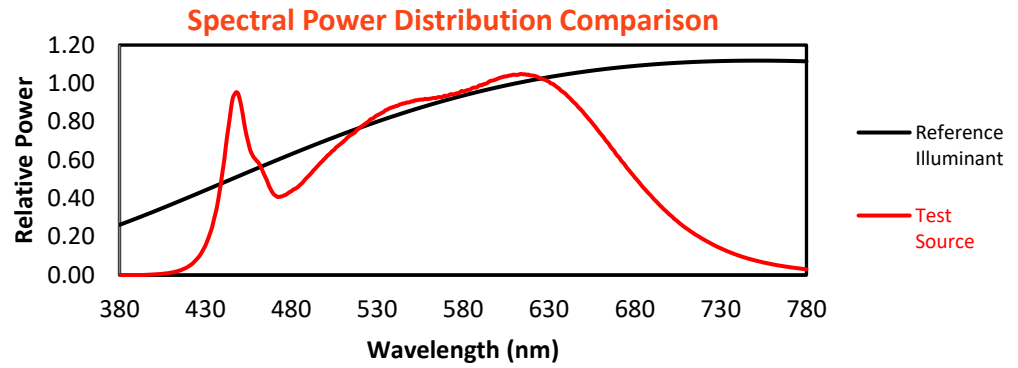
| $\lambda$<br>(nm) | Power<br>$\text{W}^\wedge/\text{nm}$ | Lumens<br>( $\phi/\text{nm}$ ) | $\lambda$<br>(nm) | Power<br>$\text{W}^\wedge/\text{nm}$ | Lumens<br>( $\phi/\text{nm}$ ) | $\lambda$<br>(nm) | Power<br>$\text{W}^\wedge/\text{nm}$ | Lumens<br>( $\phi/\text{nm}$ ) | $\lambda$<br>(nm) | Power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

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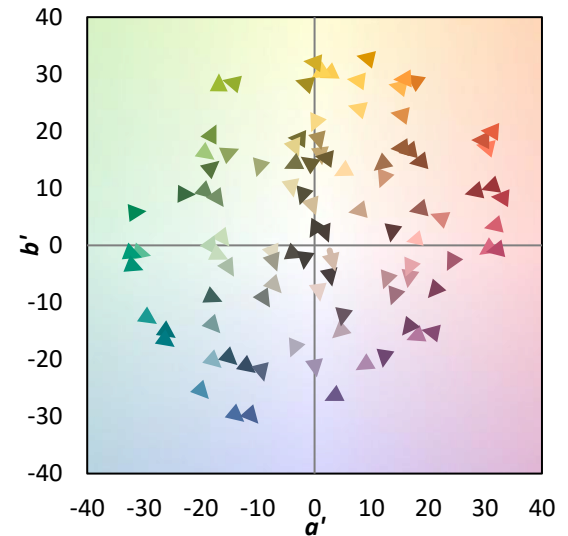
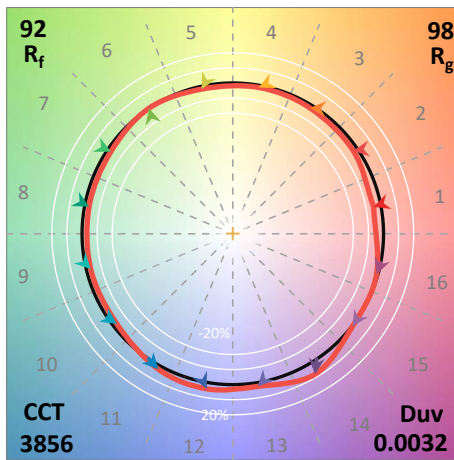
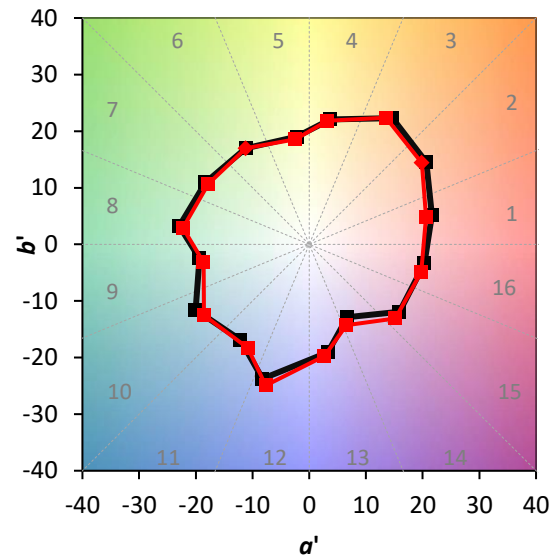
TM-30-18

### Summary

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



### Color Vector Graphics



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

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



Color Rendition by Hue-Angle Bin



**Measure Comparisons**



(END OF REPORT)