

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: P1048219

Luminaire Tested: **GALN-SA5C-950-U-T2BC**

Issue Date: 07/10/2025

**Test Information**

Test Method: LM-79-08  
Report Number: P1048219  
Test Lab: INNOVATION CENTER(G3)  
Issue Date: 07/10/2025  
Manufacturer: COOPER LIGHTING SOLUTIONS (FORMERLY EATON)  
Product Line: MCGRAW-EDISON  
Catalog Number: GALN-SA5C-950-U-T2BC  
Description: GALLEON II AREA AND ROADWAY LUMINAIRE 1050mA 5xLight Square PACKAGE  
90CRI 5000K FIXTURE w/ TYPE II ANGLED BACKLIGHT CONTROL  
Light Source: (70) 5000K CCT, 90 CRI LEDS  
Ballast/Driver: ELECTRONIC DRIVER

**Summary**

Lumens per Lamp: N/A  
Luminaire Lumens: 21841.3 lumens  
Efficiency: N/A  
Efficacy: 92.5 lumens/watt  
Luminous Opening: Rectangular (W 1.5' x L: 1' x H: 0')  
IES Classification: Type II - Short  
BUG Rating: B0 - U0 - G4

Input Watts (W): 236  
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

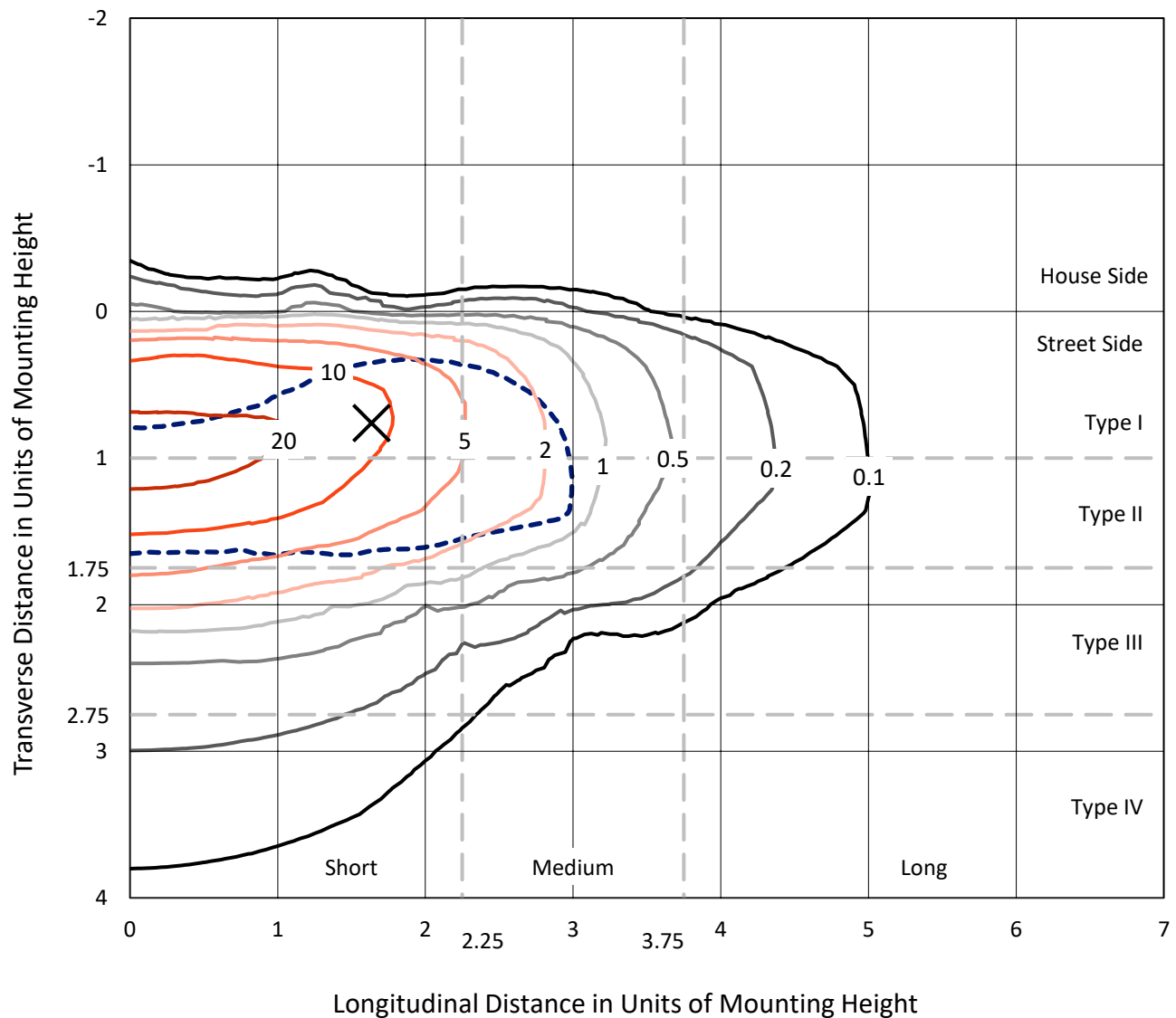


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## Iso-Footcandle Lines of Horizontal Illumination

× Max cd  
 - - - 1/2 Max cd

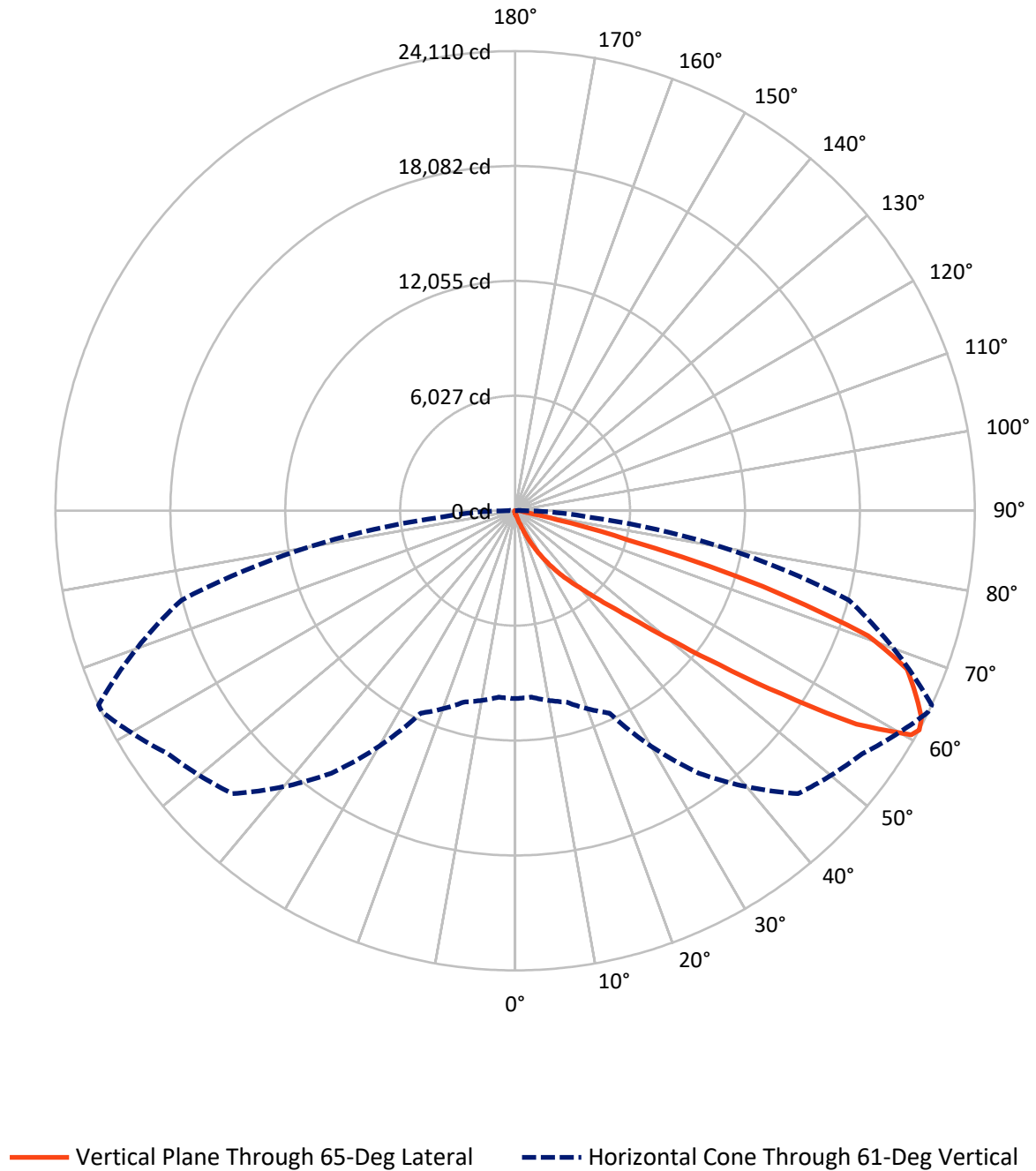


Based on 15 foot mounting height. Maximum calculated value = 28.9 fc  
 Type II - Short - N/A

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CATALOG NUMBER: GALN-SA5C-950-U-T2BC

## Luminous Intensity Polar Plot



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CATALOG NUMBER: GALN-SA5C-950-U-T2BC

**FLUX DISTRIBUTION:**

|                    |           | Downward | Upward | Total   |
|--------------------|-----------|----------|--------|---------|
| <b>House Side</b>  | Lumens    | 93.2     | 0.0    | 93.2    |
|                    | % Fixture | 0.4      | 0.0    | 0.4     |
| <b>Street Side</b> | Lumens    | 21748.1  | 0.0    | 21748.1 |
|                    | % Fixture | 99.6     | 0.0    | 99.6    |
| <b>Total</b>       | Lumens    | 21841.3  | 0.0    | 21841.3 |
|                    | % Fixture | 100.0    | 0.0    | 100.0   |

**Coefficient of Utilization**

**ZONAL LUMENS:**

| Zone      | Lumens  | % Fixture |
|-----------|---------|-----------|
| 0°-10°    | 17.0    | 0.1       |
| 10°-20°   | 179.6   | 0.8       |
| 20°-30°   | 644.6   | 3.0       |
| 30°-40°   | 1716.1  | 7.9       |
| 40°-50°   | 4508.2  | 20.6      |
| 50°-60°   | 6984.0  | 32.0      |
| 60°-70°   | 5856.0  | 26.8      |
| 70°-80°   | 1723.3  | 7.9       |
| 80°-90°   | 212.6   | 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°    | 21841.3 | 100.0     |
| 0°-180°   | 21841.3 | 100.0     |



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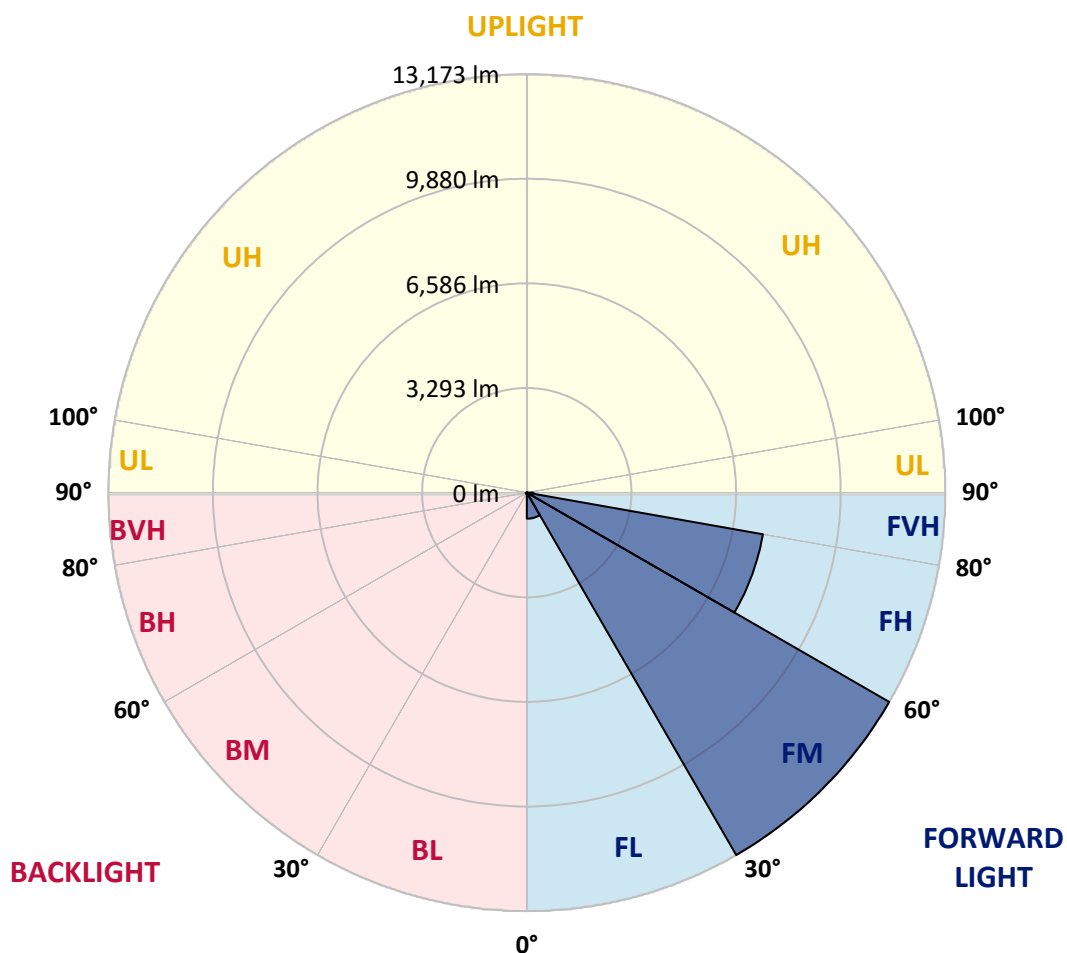
CATALOG NUMBER: GALN-SA5C-950-U-T2BC

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

| Zone |             | Lumens  | % Fixture | Zone Rating/Lumen Limit |      |          |
|------|-------------|---------|-----------|-------------------------|------|----------|
|      |             |         |           | B                       | U    | G        |
| FL   | (0°-30°)    | 820.3   | 3.8       |                         |      |          |
| FM   | (30°-60°)   | 13172.8 | 60.3      |                         |      |          |
| FH   | (60°-80°)   | 7546.4  | 34.6      |                         |      | G4/12000 |
| FVH  | (80°-90°)   | 208.6   | 1.0       |                         |      | G2/225   |
| BL   | (0°-30°)    | 20.9    | 0.1       | B0/110                  |      |          |
| BM   | (30°-60°)   | 35.5    | 0.2       | B0/220                  |      |          |
| BH   | (60°-80°)   | 32.9    | 0.2       | B0/110                  |      | G0/110   |
| BVH  | (80°-90°)   | 3.9     | 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-G4**

Type II Short





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**CANDELA DISTRIBUTION (FULL):**

|       | 0°      | 5°      | 15°     | 25°     | 35°     | 45°     | 55°     | 64°     | 65°     | 75°     | 85°    |
|-------|---------|---------|---------|---------|---------|---------|---------|---------|---------|---------|--------|
| 0°    | 133.7   | 133.7   | 133.7   | 133.7   | 133.7   | 133.7   | 133.7   | 133.7   | 133.7   | 133.7   | 133.7  |
| 2.5°  | 162.3   | 163.8   | 160.8   | 154.8   | 150.2   | 150.2   | 148.7   | 144.2   | 144.2   | 139.7   | 136.7  |
| 5°    | 226.9   | 223.9   | 217.9   | 205.8   | 195.3   | 184.8   | 174.3   | 163.8   | 162.3   | 148.7   | 139.7  |
| 7.5°  | 371.1   | 374.1   | 354.6   | 317.0   | 285.5   | 244.9   | 207.3   | 184.8   | 181.8   | 159.3   | 141.2  |
| 10°   | 814.3   | 791.8   | 746.7   | 601.0   | 494.3   | 372.6   | 276.4   | 214.8   | 211.8   | 171.3   | 144.2  |
| 12.5° | 1484.4  | 1466.4  | 1383.8  | 1233.5  | 958.6   | 667.1   | 404.2   | 265.9   | 256.9   | 181.8   | 145.7  |
| 15°   | 2139.5  | 2110.9  | 2065.9  | 1914.1  | 1592.6  | 1195.9  | 661.1   | 363.6   | 339.6   | 196.8   | 144.2  |
| 17.5° | 2557.2  | 2561.7  | 2521.1  | 2456.5  | 2249.2  | 1769.9  | 1141.9  | 542.4   | 495.8   | 223.9   | 141.2  |
| 20°   | 2922.3  | 2911.7  | 2934.3  | 2899.7  | 2754.0  | 2405.4  | 1661.7  | 859.4   | 779.8   | 267.4   | 142.7  |
| 22.5° | 3342.9  | 3368.5  | 3385.0  | 3377.5  | 3216.7  | 2919.3  | 2252.2  | 1286.1  | 1185.4  | 347.1   | 147.2  |
| 25°   | 3906.4  | 3903.4  | 3904.9  | 3885.3  | 3729.1  | 3398.5  | 2844.1  | 1816.5  | 1714.3  | 476.3   | 157.8  |
| 27.5° | 4496.8  | 4514.8  | 4522.4  | 4451.7  | 4247.4  | 3922.9  | 3392.5  | 2396.4  | 2276.2  | 683.6   | 171.3  |
| 30°   | 5303.6  | 5288.6  | 5254.1  | 5109.8  | 4861.9  | 4459.3  | 3933.4  | 3004.9  | 2878.7  | 973.6   | 192.3  |
| 32.5° | 6391.4  | 6374.9  | 6200.6  | 5882.1  | 5511.0  | 5018.2  | 4477.3  | 3614.9  | 3461.6  | 1335.7  | 220.9  |
| 35°   | 8183.8  | 8209.4  | 7781.2  | 6956.3  | 6290.7  | 5689.8  | 5079.8  | 4221.9  | 4086.7  | 1781.9  | 259.9  |
| 37.5° | 10928.8 | 10789.1 | 10207.6 | 8750.2  | 7316.9  | 6528.1  | 5655.2  | 4834.9  | 4717.7  | 2331.8  | 311.0  |
| 40°   | 13595.6 | 13457.4 | 13289.1 | 11908.4 | 9100.3  | 7452.1  | 6460.5  | 5554.5  | 5402.8  | 2952.3  | 386.1  |
| 42.5° | 16399.2 | 16322.6 | 16315.1 | 15273.9 | 12354.6 | 8905.0  | 7429.6  | 6397.4  | 6268.2  | 3632.9  | 509.3  |
| 45°   | 18385.4 | 18308.8 | 18469.6 | 18651.4 | 16786.8 | 12018.1 | 9116.8  | 7492.7  | 7304.9  | 4459.3  | 706.1  |
| 47.5° | 18652.9 | 18655.9 | 19085.6 | 19655.0 | 20080.2 | 16833.4 | 11364.5 | 8944.1  | 8715.7  | 5641.7  | 1036.7 |
| 50°   | 17763.4 | 17798.0 | 18481.6 | 19500.2 | 20645.1 | 20873.5 | 15327.9 | 11050.5 | 10712.4 | 7043.5  | 1505.5 |
| 52.5° | 16070.2 | 16109.2 | 17061.8 | 18737.0 | 20125.3 | 21844.1 | 19994.5 | 13806.0 | 13416.8 | 8792.3  | 2166.5 |
| 55°   | 14545.2 | 14569.2 | 15661.5 | 17778.4 | 19498.7 | 21316.7 | 22765.0 | 17485.5 | 16974.6 | 10943.8 | 2818.6 |
| 57.5° | 13035.2 | 12979.6 | 13690.3 | 16113.7 | 19392.1 | 20669.1 | 23173.7 | 21678.8 | 21115.4 | 13295.1 | 3326.4 |
| 60°   | 11015.9 | 10922.8 | 11493.7 | 13035.2 | 17988.8 | 21094.3 | 22409.0 | 23998.6 | 23870.8 | 16569.0 | 3718.6 |
| 61°   | 9854.5  | 9815.5  | 10389.4 | 11711.6 | 16807.9 | 20986.2 | 22225.7 | 24096.2 | 24109.7 | 18118.0 | 3894.3 |
| 62.5° | 7037.5  | 7148.6  | 8026.1  | 9744.9  | 14077.9 | 20284.5 | 22249.7 | 23794.2 | 23927.9 | 20176.3 | 4349.6 |
| 65°   | 3128.1  | 3306.9  | 3989.0  | 5387.8  | 8186.8  | 16874.0 | 22036.4 | 23131.6 | 23065.5 | 20741.3 | 5918.1 |
| 67.5° | 1855.5  | 1882.6  | 2222.1  | 3053.0  | 4336.1  | 9076.3  | 19446.1 | 22255.7 | 22167.1 | 18056.4 | 7363.5 |
| 70°   | 1461.9  | 1475.4  | 1583.6  | 1915.6  | 2516.6  | 3476.7  | 11098.6 | 19255.3 | 19641.5 | 14641.3 | 7208.7 |
| 72.5° | 1386.8  | 1383.8  | 1398.8  | 1457.4  | 1585.1  | 1724.8  | 4297.0  | 12799.3 | 13585.1 | 10544.2 | 6044.3 |
| 75°   | 1368.7  | 1362.7  | 1347.7  | 1325.2  | 1147.9  | 1015.7  | 1331.2  | 5661.2  | 6116.5  | 7204.2  | 4550.9 |
| 77.5° | 1328.2  | 1329.7  | 1332.7  | 1271.1  | 984.1   | 718.2   | 644.5   | 1816.5  | 2234.1  | 4571.9  | 3234.8 |
| 80°   | 898.5   | 912.0   | 934.5   | 910.5   | 884.9   | 519.8   | 455.2   | 646.1   | 655.1   | 2566.2  | 2136.5 |
| 82.5° | 455.2   | 455.2   | 444.7   | 396.6   | 342.6   | 338.1   | 362.1   | 468.8   | 474.8   | 1298.1  | 1005.1 |
| 85°   | 274.9   | 290.0   | 296.0   | 268.9   | 246.4   | 226.9   | 276.4   | 372.6   | 386.1   | 503.3   | 234.4  |
| 87.5° | 61.6    | 63.1    | 69.1    | 91.6    | 133.7   | 181.8   | 256.9   | 341.1   | 347.1   | 323.0   | 28.5   |
| 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-SA5C-950-U-T2BC

**CANDELA DISTRIBUTION (continued):**

|       | 90°    | 95°   | 105°  | 115°  | 125°  | 135°  | 145°  | 155°  | 165°  | 175°  | 180°  |
|-------|--------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|
| 0°    | 133.7  | 133.7 | 133.7 | 133.7 | 133.7 | 133.7 | 133.7 | 133.7 | 133.7 | 133.7 | 133.7 |
| 2.5°  | 135.2  | 132.2 | 130.7 | 126.2 | 121.7 | 117.2 | 114.2 | 112.7 | 114.2 | 115.7 | 115.7 |
| 5°    | 133.7  | 129.2 | 121.7 | 114.2 | 108.2 | 102.2 | 96.2  | 94.7  | 94.7  | 96.2  | 96.2  |
| 7.5°  | 133.7  | 126.2 | 115.7 | 106.7 | 97.7  | 88.6  | 84.1  | 81.1  | 82.6  | 82.6  | 82.6  |
| 10°   | 133.7  | 124.7 | 111.2 | 97.7  | 87.1  | 76.6  | 69.1  | 66.1  | 66.1  | 66.1  | 66.1  |
| 12.5° | 132.2  | 123.2 | 106.7 | 90.1  | 75.1  | 63.1  | 54.1  | 49.6  | 51.1  | 51.1  | 51.1  |
| 15°   | 129.2  | 118.7 | 100.7 | 76.6  | 60.1  | 48.1  | 39.1  | 34.6  | 36.1  | 39.1  | 40.6  |
| 17.5° | 124.7  | 114.2 | 90.1  | 64.6  | 48.1  | 36.1  | 27.0  | 24.0  | 25.5  | 30.0  | 30.0  |
| 20°   | 123.2  | 109.7 | 79.6  | 52.6  | 36.1  | 25.5  | 18.0  | 15.0  | 16.5  | 22.5  | 24.0  |
| 22.5° | 123.2  | 106.7 | 72.1  | 43.6  | 27.0  | 16.5  | 10.5  | 6.0   | 6.0   | 10.5  | 10.5  |
| 25°   | 124.7  | 105.2 | 66.1  | 36.1  | 19.5  | 12.0  | 6.0   | 3.0   | 6.0   | 16.5  | 19.5  |
| 27.5° | 127.7  | 103.7 | 63.1  | 30.0  | 15.0  | 10.5  | 4.5   | 10.5  | 18.0  | 18.0  | 18.0  |
| 30°   | 130.7  | 100.7 | 58.6  | 25.5  | 13.5  | 7.5   | 7.5   | 15.0  | 15.0  | 18.0  | 19.5  |
| 32.5° | 135.2  | 99.2  | 55.6  | 22.5  | 10.5  | 6.0   | 10.5  | 9.0   | 9.0   | 10.5  | 12.0  |
| 35°   | 144.2  | 100.7 | 52.6  | 22.5  | 10.5  | 7.5   | 9.0   | 4.5   | 3.0   | 3.0   | 3.0   |
| 37.5° | 156.3  | 102.2 | 48.1  | 19.5  | 9.0   | 9.0   | 4.5   | 0.0   | 0.0   | 0.0   | 0.0   |
| 40°   | 175.8  | 106.7 | 45.1  | 18.0  | 7.5   | 7.5   | 1.5   | 0.0   | 0.0   | 0.0   | 0.0   |
| 42.5° | 208.8  | 115.7 | 43.6  | 16.5  | 7.5   | 6.0   | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   |
| 45°   | 274.9  | 136.7 | 40.6  | 15.0  | 7.5   | 3.0   | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   |
| 47.5° | 395.1  | 186.3 | 39.1  | 12.0  | 4.5   | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   |
| 50°   | 576.9  | 252.4 | 37.6  | 10.5  | 1.5   | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   |
| 52.5° | 736.2  | 265.9 | 25.5  | 9.0   | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   |
| 55°   | 754.2  | 183.3 | 19.5  | 6.0   | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   |
| 57.5° | 601.0  | 118.7 | 16.5  | 4.5   | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   |
| 60°   | 455.2  | 90.1  | 15.0  | 1.5   | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   |
| 61°   | 437.2  | 81.1  | 15.0  | 1.5   | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   |
| 62.5° | 482.3  | 70.6  | 13.5  | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   |
| 65°   | 784.3  | 58.6  | 12.0  | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   |
| 67.5° | 1362.7 | 51.1  | 10.5  | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   |
| 70°   | 1721.8 | 48.1  | 9.0   | 1.5   | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   |
| 72.5° | 1500.9 | 43.6  | 9.0   | 3.0   | 1.5   | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   |
| 75°   | 903.0  | 37.6  | 9.0   | 6.0   | 3.0   | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   |
| 77.5° | 473.3  | 28.5  | 9.0   | 7.5   | 4.5   | 1.5   | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   |
| 80°   | 229.9  | 25.5  | 10.5  | 7.5   | 6.0   | 3.0   | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   |
| 82.5° | 90.1   | 21.0  | 12.0  | 10.5  | 7.5   | 4.5   | 1.5   | 0.0   | 0.0   | 0.0   | 0.0   |
| 85°   | 40.6   | 18.0  | 13.5  | 12.0  | 10.5  | 6.0   | 1.5   | 0.0   | 0.0   | 0.0   | 0.0   |
| 87.5° | 21.0   | 16.5  | 15.0  | 13.5  | 10.5  | 7.5   | 3.0   | 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: SP1-2407-184-17

Test Date: 10/11/2024

Luminaire Tested: GSS-SB1A-950-U-5WQ

Data in this report applies to families of products including GSS-SB1A-950-U-5WQ

### Test Information

Test Method: LM-79-2019  
 Report Number: SP1-2407-184-17  
 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-950-U-5WQ**  
 Description: GALLEON II SITE SLIM 1SQ 350MA 5WQ HIGH DENSITY LIGHTSQUARE WITH 90 CRI  
 5000K CCT 26 LEDS

### Spectral Parameters

CCT (K): 4765  
 CIE  $u'$ : 0.2105  
 CIE  $v'$ : 0.4941  
 Duv: 0.0052  
 CIE x: 0.3536  
 CIE y: 0.3689  
 CIE z: 0.2775  
 Peak Wavelength (nm): 449  
 Dominant Wavelength (nm): 571  
 Purity: 16.80041  
 R<sub>f</sub>: 90.7  
 R<sub>g</sub>: 98

CRI (Ra): 90.8  
 R1: 89.8  
 R2: 93.1  
 R3: 95.3  
 R4: 90.3  
 R5: 89.0  
 R6: 89.7  
 R7: 94.9  
 R8: 84.0  
 R9: 54.9  
 R10: 83.0  
 R11: 89.6  
 R12: 68.0  
 R13: 90.6  
 R14: 97.3  
 R15: 86.2



### Test Conditions

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

REPORT NUMBER: SP1-2407-184-17

| 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: SP1-2407-184-17

**CIE 1931 Chromaticity Diagram**



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



Point lies inside the ANSI 5000K 7-step quadrangle

REPORT NUMBER: SP1-2407-184-17

### Photopic Flux vs. Wavelength



### Photopic Lumens: NR

| 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    | 462                      | NR            | 620    | 668                      | NR            | 750    | 45                       | NR            | 880    | 1                        | NR            |
| 365    | 0                        | NR            | 495    | 498                      | NR            | 625    | 652                      | NR            | 755    | 39                       | NR            | 885    | 1                        | NR            |
| 370    | 0                        | NR            | 500    | 533                      | NR            | 630    | 634                      | NR            | 760    | 33                       | NR            | 890    | 1                        | NR            |
| 375    | 0                        | NR            | 505    | 562                      | NR            | 635    | 610                      | NR            | 765    | 28                       | NR            | 895    | 1                        | NR            |
| 380    | 0                        | NR            | 510    | 590                      | NR            | 640    | 583                      | NR            | 770    | 24                       | NR            | 900    | 1                        | NR            |
| 385    | 0                        | NR            | 515    | 617                      | NR            | 645    | 552                      | NR            | 775    | 21                       | NR            | 905    | 1                        | NR            |
| 390    | 0                        | NR            | 520    | 642                      | NR            | 650    | 519                      | NR            | 780    | 18                       | NR            | 910    | 0                        | NR            |
| 395    | 2                        | NR            | 525    | 661                      | NR            | 655    | 484                      | NR            | 785    | 15                       | NR            | 915    | 0                        | NR            |
| 400    | 4                        | NR            | 530    | 681                      | NR            | 660    | 448                      | NR            | 790    | 13                       | NR            | 920    | 0                        | NR            |
| 405    | 7                        | NR            | 535    | 695                      | NR            | 665    | 411                      | NR            | 795    | 11                       | NR            | 925    | 0                        | NR            |
| 410    | 12                       | NR            | 540    | 702                      | NR            | 670    | 373                      | NR            | 800    | 10                       | NR            | 930    | 0                        | NR            |
| 415    | 21                       | NR            | 545    | 708                      | NR            | 675    | 338                      | NR            | 805    | 8                        | NR            | 935    | 0                        | NR            |
| 420    | 39                       | NR            | 550    | 707                      | NR            | 680    | 305                      | NR            | 810    | 7                        | NR            | 940    | 0                        | NR            |
| 425    | 74                       | NR            | 555    | 706                      | NR            | 685    | 272                      | NR            | 815    | 6                        | NR            | 945    | 0                        | NR            |
| 430    | 139                      | NR            | 560    | 700                      | NR            | 690    | 243                      | NR            | 820    | 5                        | NR            | 950    | 0                        | NR            |
| 435    | 270                      | NR            | 565    | 696                      | NR            | 695    | 214                      | NR            | 825    | 5                        | NR            | 955    | 0                        | NR            |
| 440    | 517                      | NR            | 570    | 692                      | NR            | 700    | 188                      | NR            | 830    | 4                        | NR            | 960    | 0                        | NR            |
| 445    | 877                      | NR            | 575    | 689                      | NR            | 705    | 165                      | NR            | 835    | 3                        | NR            | 965    | 0                        | NR            |
| 450    | 978                      | NR            | 580    | 688                      | NR            | 710    | 144                      | NR            | 840    | 3                        | NR            | 970    | 0                        | NR            |
| 455    | 738                      | NR            | 585    | 688                      | NR            | 715    | 125                      | NR            | 845    | 3                        | NR            | 975    | 0                        | NR            |
| 460    | 618                      | NR            | 590    | 689                      | NR            | 720    | 110                      | NR            | 850    | 2                        | NR            | 980    | 0                        | NR            |
| 465    | 529                      | NR            | 595    | 690                      | NR            | 725    | 95                       | NR            | 855    | 2                        | NR            | 985    | 0                        | NR            |
| 470    | 420                      | NR            | 600    | 690                      | NR            | 730    | 82                       | NR            | 860    | 2                        | NR            | 990    | 0                        | NR            |
| 475    | 395                      | NR            | 605    | 688                      | NR            | 735    | 71                       | NR            | 865    | 1                        | NR            | 995    | 0                        | NR            |
| 480    | 408                      | NR            | 610    | 685                      | NR            | 740    | 61                       | NR            | 870    | 1                        | NR            | 1000   | 0                        | NR            |
| 485    | 429                      | NR            | 615    | 678                      | NR            | 745    | 52                       | NR            | 875    | 1                        | NR            |        |                          |               |

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### Scotopic Flux vs. Wavelength



Scotopic Lumens: NR

S/P: 1.99

| 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    | 462                      | NR            | 620    | 668                      | NR            | 750    | 45                       | NR            | 880    | 1                        | NR            |
| 365    | 0                        | NR            | 495    | 498                      | NR            | 625    | 652                      | NR            | 755    | 39                       | NR            | 885    | 1                        | NR            |
| 370    | 0                        | NR            | 500    | 533                      | NR            | 630    | 634                      | NR            | 760    | 33                       | NR            | 890    | 1                        | NR            |
| 375    | 0                        | NR            | 505    | 562                      | NR            | 635    | 610                      | NR            | 765    | 28                       | NR            | 895    | 1                        | NR            |
| 380    | 0                        | NR            | 510    | 590                      | NR            | 640    | 583                      | NR            | 770    | 24                       | NR            | 900    | 1                        | NR            |
| 385    | 0                        | NR            | 515    | 617                      | NR            | 645    | 552                      | NR            | 775    | 21                       | NR            | 905    | 1                        | NR            |
| 390    | 0                        | NR            | 520    | 642                      | NR            | 650    | 519                      | NR            | 780    | 18                       | NR            | 910    | 0                        | NR            |
| 395    | 2                        | NR            | 525    | 661                      | NR            | 655    | 484                      | NR            | 785    | 15                       | NR            | 915    | 0                        | NR            |
| 400    | 4                        | NR            | 530    | 681                      | NR            | 660    | 448                      | NR            | 790    | 13                       | NR            | 920    | 0                        | NR            |
| 405    | 7                        | NR            | 535    | 695                      | NR            | 665    | 411                      | NR            | 795    | 11                       | NR            | 925    | 0                        | NR            |
| 410    | 12                       | NR            | 540    | 702                      | NR            | 670    | 373                      | NR            | 800    | 10                       | NR            | 930    | 0                        | NR            |
| 415    | 21                       | NR            | 545    | 708                      | NR            | 675    | 338                      | NR            | 805    | 8                        | NR            | 935    | 0                        | NR            |
| 420    | 39                       | NR            | 550    | 707                      | NR            | 680    | 305                      | NR            | 810    | 7                        | NR            | 940    | 0                        | NR            |
| 425    | 74                       | NR            | 555    | 706                      | NR            | 685    | 272                      | NR            | 815    | 6                        | NR            | 945    | 0                        | NR            |
| 430    | 139                      | NR            | 560    | 700                      | NR            | 690    | 243                      | NR            | 820    | 5                        | NR            | 950    | 0                        | NR            |
| 435    | 270                      | NR            | 565    | 696                      | NR            | 695    | 214                      | NR            | 825    | 5                        | NR            | 955    | 0                        | NR            |
| 440    | 517                      | NR            | 570    | 692                      | NR            | 700    | 188                      | NR            | 830    | 4                        | NR            | 960    | 0                        | NR            |
| 445    | 877                      | NR            | 575    | 689                      | NR            | 705    | 165                      | NR            | 835    | 3                        | NR            | 965    | 0                        | NR            |
| 450    | 978                      | NR            | 580    | 688                      | NR            | 710    | 144                      | NR            | 840    | 3                        | NR            | 970    | 0                        | NR            |
| 455    | 738                      | NR            | 585    | 688                      | NR            | 715    | 125                      | NR            | 845    | 3                        | NR            | 975    | 0                        | NR            |
| 460    | 618                      | NR            | 590    | 689                      | NR            | 720    | 110                      | NR            | 850    | 2                        | NR            | 980    | 0                        | NR            |
| 465    | 529                      | NR            | 595    | 690                      | NR            | 725    | 95                       | NR            | 855    | 2                        | NR            | 985    | 0                        | NR            |
| 470    | 420                      | NR            | 600    | 690                      | NR            | 730    | 82                       | NR            | 860    | 2                        | NR            | 990    | 0                        | NR            |
| 475    | 395                      | NR            | 605    | 688                      | NR            | 735    | 71                       | NR            | 865    | 1                        | NR            | 995    | 0                        | NR            |
| 480    | 408                      | NR            | 610    | 685                      | NR            | 740    | 61                       | NR            | 870    | 1                        | NR            | 1000   | 0                        | NR            |
| 485    | 429                      | NR            | 615    | 678                      | NR            | 745    | 52                       | NR            | 875    | 1                        | NR            |        |                          |               |

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### Melanopic Flux vs. Wavelength


**Melanopic Lumens: NR**
**M/P: 4.22**

| $\lambda$<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               | 462                                  | NR                             | 620               | 668                                  | NR                             | 750               | 45                                   | NR                             | 880               | 1                                    | NR                             |
| 365               | 0                                    | NR                             | 495               | 498                                  | NR                             | 625               | 652                                  | NR                             | 755               | 39                                   | NR                             | 885               | 1                                    | NR                             |
| 370               | 0                                    | NR                             | 500               | 533                                  | NR                             | 630               | 634                                  | NR                             | 760               | 33                                   | NR                             | 890               | 1                                    | NR                             |
| 375               | 0                                    | NR                             | 505               | 562                                  | NR                             | 635               | 610                                  | NR                             | 765               | 28                                   | NR                             | 895               | 1                                    | NR                             |
| 380               | 0                                    | NR                             | 510               | 590                                  | NR                             | 640               | 583                                  | NR                             | 770               | 24                                   | NR                             | 900               | 1                                    | NR                             |
| 385               | 0                                    | NR                             | 515               | 617                                  | NR                             | 645               | 552                                  | NR                             | 775               | 21                                   | NR                             | 905               | 1                                    | NR                             |
| 390               | 0                                    | NR                             | 520               | 642                                  | NR                             | 650               | 519                                  | NR                             | 780               | 18                                   | NR                             | 910               | 0                                    | NR                             |
| 395               | 2                                    | NR                             | 525               | 661                                  | NR                             | 655               | 484                                  | NR                             | 785               | 15                                   | NR                             | 915               | 0                                    | NR                             |
| 400               | 4                                    | NR                             | 530               | 681                                  | NR                             | 660               | 448                                  | NR                             | 790               | 13                                   | NR                             | 920               | 0                                    | NR                             |
| 405               | 7                                    | NR                             | 535               | 695                                  | NR                             | 665               | 411                                  | NR                             | 795               | 11                                   | NR                             | 925               | 0                                    | NR                             |
| 410               | 12                                   | NR                             | 540               | 702                                  | NR                             | 670               | 373                                  | NR                             | 800               | 10                                   | NR                             | 930               | 0                                    | NR                             |
| 415               | 21                                   | NR                             | 545               | 708                                  | NR                             | 675               | 338                                  | NR                             | 805               | 8                                    | NR                             | 935               | 0                                    | NR                             |
| 420               | 39                                   | NR                             | 550               | 707                                  | NR                             | 680               | 305                                  | NR                             | 810               | 7                                    | NR                             | 940               | 0                                    | NR                             |
| 425               | 74                                   | NR                             | 555               | 706                                  | NR                             | 685               | 272                                  | NR                             | 815               | 6                                    | NR                             | 945               | 0                                    | NR                             |
| 430               | 139                                  | NR                             | 560               | 700                                  | NR                             | 690               | 243                                  | NR                             | 820               | 5                                    | NR                             | 950               | 0                                    | NR                             |
| 435               | 270                                  | NR                             | 565               | 696                                  | NR                             | 695               | 214                                  | NR                             | 825               | 5                                    | NR                             | 955               | 0                                    | NR                             |
| 440               | 517                                  | NR                             | 570               | 692                                  | NR                             | 700               | 188                                  | NR                             | 830               | 4                                    | NR                             | 960               | 0                                    | NR                             |
| 445               | 877                                  | NR                             | 575               | 689                                  | NR                             | 705               | 165                                  | NR                             | 835               | 3                                    | NR                             | 965               | 0                                    | NR                             |
| 450               | 978                                  | NR                             | 580               | 688                                  | NR                             | 710               | 144                                  | NR                             | 840               | 3                                    | NR                             | 970               | 0                                    | NR                             |
| 455               | 738                                  | NR                             | 585               | 688                                  | NR                             | 715               | 125                                  | NR                             | 845               | 3                                    | NR                             | 975               | 0                                    | NR                             |
| 460               | 618                                  | NR                             | 590               | 689                                  | NR                             | 720               | 110                                  | NR                             | 850               | 2                                    | NR                             | 980               | 0                                    | NR                             |
| 465               | 529                                  | NR                             | 595               | 690                                  | NR                             | 725               | 95                                   | NR                             | 855               | 2                                    | NR                             | 985               | 0                                    | NR                             |
| 470               | 420                                  | NR                             | 600               | 690                                  | NR                             | 730               | 82                                   | NR                             | 860               | 2                                    | NR                             | 990               | 0                                    | NR                             |
| 475               | 395                                  | NR                             | 605               | 688                                  | NR                             | 735               | 71                                   | NR                             | 865               | 1                                    | NR                             | 995               | 0                                    | NR                             |
| 480               | 408                                  | NR                             | 610               | 685                                  | NR                             | 740               | 61                                   | NR                             | 870               | 1                                    | NR                             | 1000              | 0                                    | NR                             |
| 485               | 429                                  | NR                             | 615               | 678                                  | NR                             | 745               | 52                                   | NR                             | 875               | 1                                    | NR                             |                   |                                      |                                |

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TM-30-18

### Summary

$R_f = 90.7$   
 $R_g = 98$   
 CIE  $R_a = 90.8$   
 $R_9 = 54.9$



### Color Vector Graphics



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

|            |             |            |            |
|------------|-------------|------------|------------|
| CES01 = 85 | CES26 = 92  | CES51 = 96 | CES76 = 85 |
| CES02 = 60 | CES27 = 92  | CES52 = 97 | CES77 = 88 |
| CES03 = 31 | CES28 = 95  | CES53 = 94 | CES78 = 82 |
| CES04 = 69 | CES29 = 95  | CES54 = 93 | CES79 = 96 |
| CES05 = 48 | CES30 = 94  | CES55 = 92 | CES80 = 93 |
| CES06 = 50 | CES31 = 96  | CES56 = 92 | CES81 = 89 |
| CES07 = 41 | CES32 = 91  | CES57 = 91 | CES82 = 97 |
| CES08 = 40 | CES33 = 99  | CES58 = 91 | CES83 = 98 |
| CES09 = 29 | CES34 = 93  | CES59 = 95 | CES84 = 93 |
| CES10 = 73 | CES35 = 96  | CES60 = 92 | CES85 = 85 |
| CES11 = 56 | CES36 = 82  | CES61 = 92 | CES86 = 88 |
| CES12 = 62 | CES37 = 95  | CES62 = 87 | CES87 = 90 |
| CES13 = 42 | CES38 = 89  | CES63 = 91 | CES88 = 94 |
| CES14 = 74 | CES39 = 99  | CES64 = 88 | CES89 = 87 |
| CES15 = 71 | CES40 = 98  | CES65 = 86 | CES90 = 94 |
| CES16 = 46 | CES41 = 97  | CES66 = 85 | CES91 = 74 |
| CES17 = 48 | CES42 = 95  | CES67 = 84 | CES92 = 78 |
| CES18 = 56 | CES43 = 95  | CES68 = 86 | CES93 = 87 |
| CES19 = 70 | CES44 = 100 | CES69 = 88 | CES94 = 80 |
| CES20 = 65 | CES45 = 97  | CES70 = 84 | CES95 = 81 |
| CES21 = 85 | CES46 = 96  | CES71 = 79 | CES96 = 90 |
| CES22 = 77 | CES47 = 98  | CES72 = 93 | CES97 = 95 |
| CES23 = 91 | CES48 = 90  | CES73 = 78 | CES98 = 92 |
| CES24 = 90 | CES49 = 95  | CES74 = 93 | CES99 = 88 |
| CES25 = 70 | CES50 = 97  | CES75 = 80 |            |



Color Rendition by Hue-Angle Bin



**Measure Comparisons**



(END OF REPORT)