

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: STREETWORKS

Report Number: P1388375

Luminaire Tested: **VAL-T-SB5A-727-U-T4W-HSS**

Issue Date: 02/18/2026

This test was performed under the Supervised Manufacturer's Testing Program. The results of this test have not been  
influenced by sources from within Cooper Lighting Solutions or from external interests.

**Test Information**

Test Method: LM-79-08  
 Report Number: P1388375  
 Test Lab: INNOVATION CENTER(G1)  
 Issue Date: 02/18/2026  
 Manufacturer: COOPER LIGHTING SOLUTIONS (FORMERLY EATON)  
 Product Line: STREETWORKS  
 Catalog Number: VAL-T-SB5A-727-U-T4W-HSS  
 Description: GALLEON II WALL SLIM HIGH DENSITY LED ARRAYS 55 SQUARE 143W 70CRI  
 2700K FIXTURE w/ TYPE IV WIDE DISTRIBUTION OPTIC AND HOUSE SIDE SHIELD  
 Light Source: (130) 2700K CCT, 70 CRI LEDS  
 Ballast/Driver: ELECTRONIC DRIVER  
 Luminaire Equipment:

| <u>Sample No.</u> | <u>Condition</u> | <u>Description</u> |
|-------------------|------------------|--------------------|
| a                 | good             | reflector          |
| b                 | good             | lens               |
| c                 | good             | housing            |
| d                 | good             | cord               |

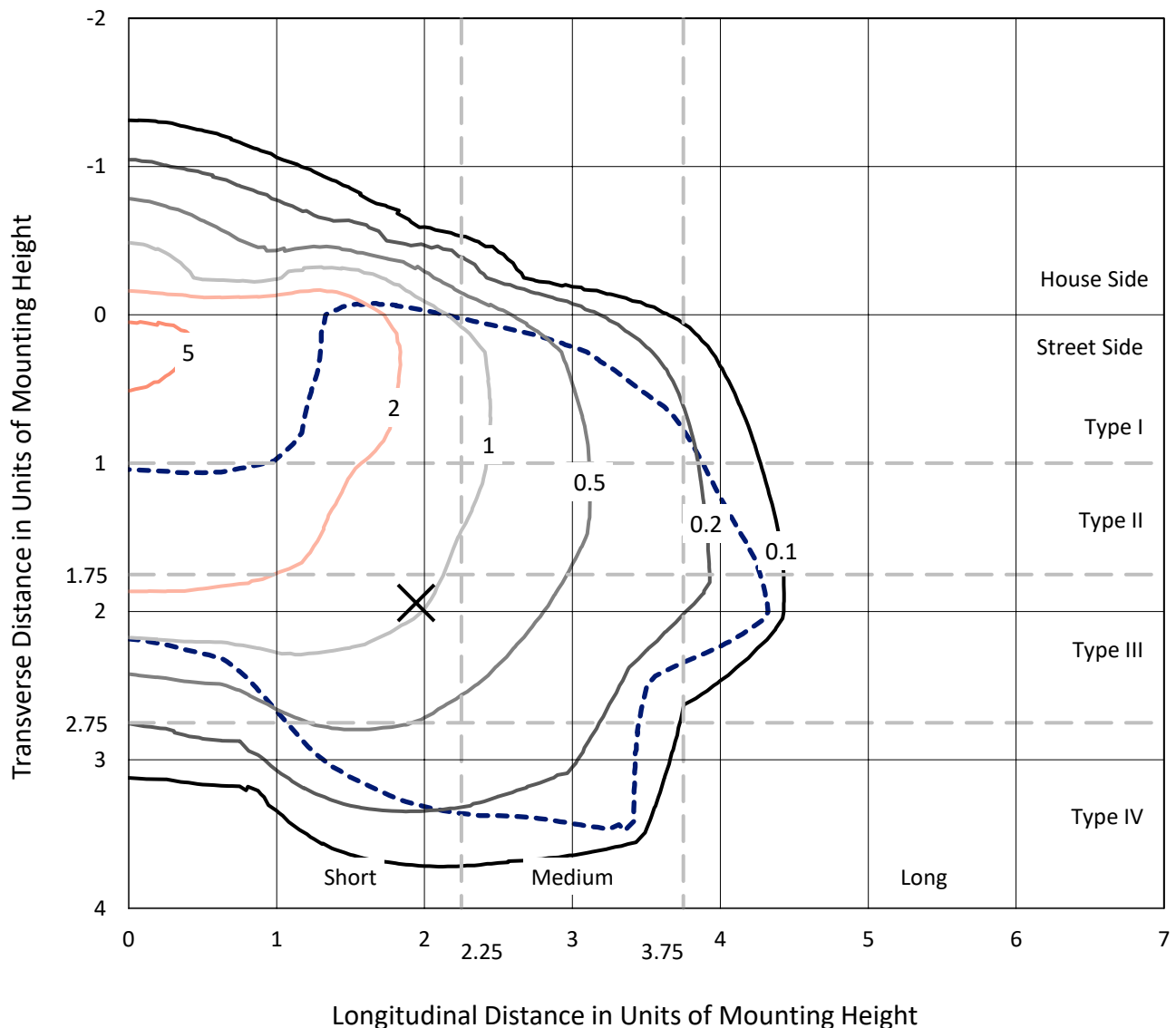
**Summary**

Lumens per Lamp: N/A  
 Luminaire Lumens: 14590.9 lumens  
 Efficiency: N/A  
 Efficacy: 102.0 lumens/watt  
 Luminous Opening: Rectangular (W 1.5' x L: 1' x H: 0')  
 IES Classification: Type IV - Short  
 BUG Rating: B1 - U0 - G3  
  
 Input Watts (W): 143  
 Input Voltage (V): 120  
 Input Current (A<sub>in</sub>): NR  
 Voltage Rise (V): NR  
 Power Factor: 0.98  
 Total Harmonic Distortion (THDi): 10.5%  
 Frequency (hertz): 60  
 Stabilization Time: NR  
 Operation Time: NR  
 Ambient Temperature (°C): NR  
 Test Distance: 28.75 FT

REPORT NUMBER: P1388375  
 CATALOG NUMBER: VAL-T-SB5A-727-U-T4W-HSS

## Iso-Footcandle Lines of Horizontal Illumination

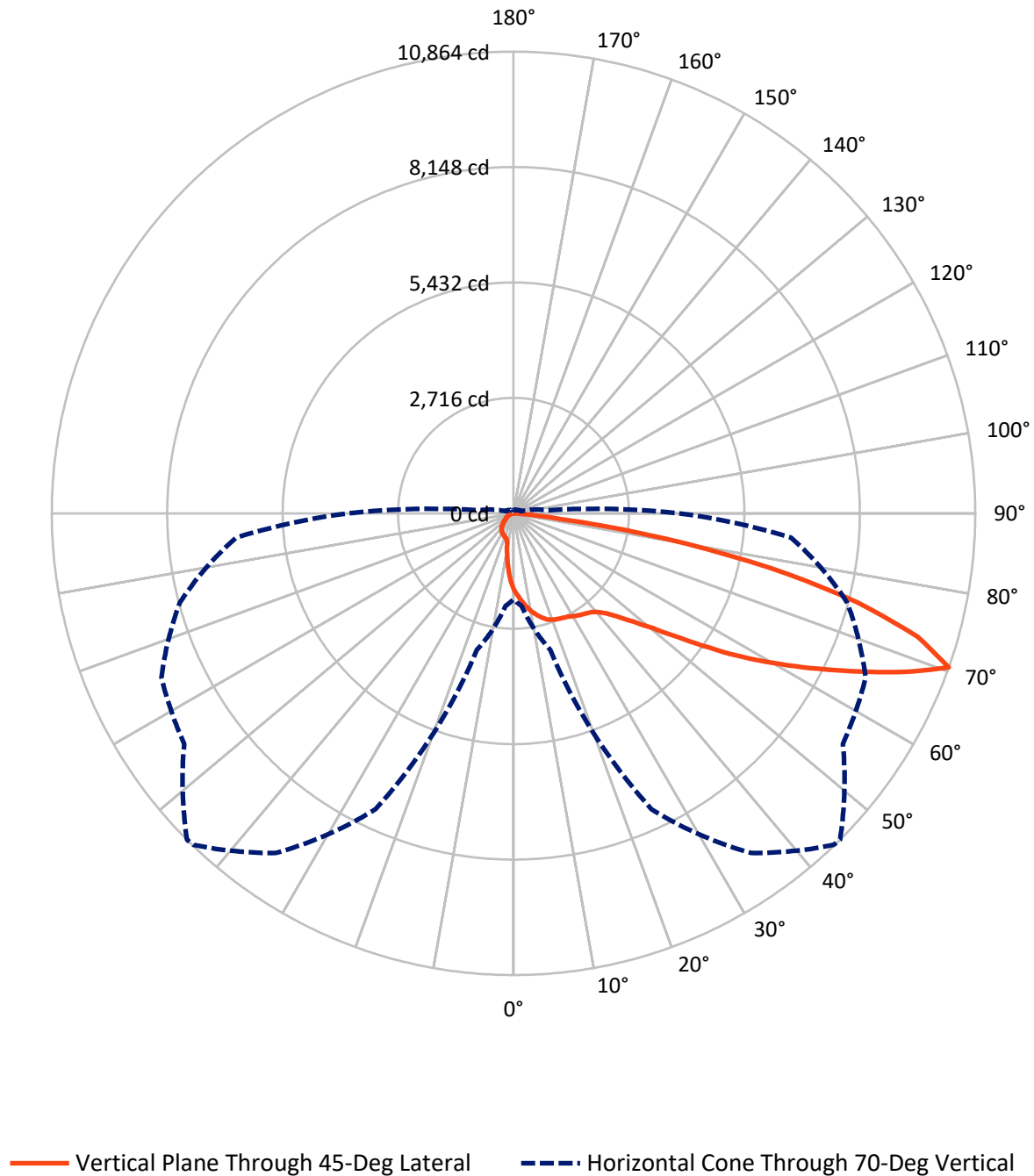
× Max cd  
 - - - 1/2 Max cd



Based on 20 foot mounting height. Maximum calculated value = 6.3 fc  
 Type IV - Short - N/A

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## Luminous Intensity Polar Plot



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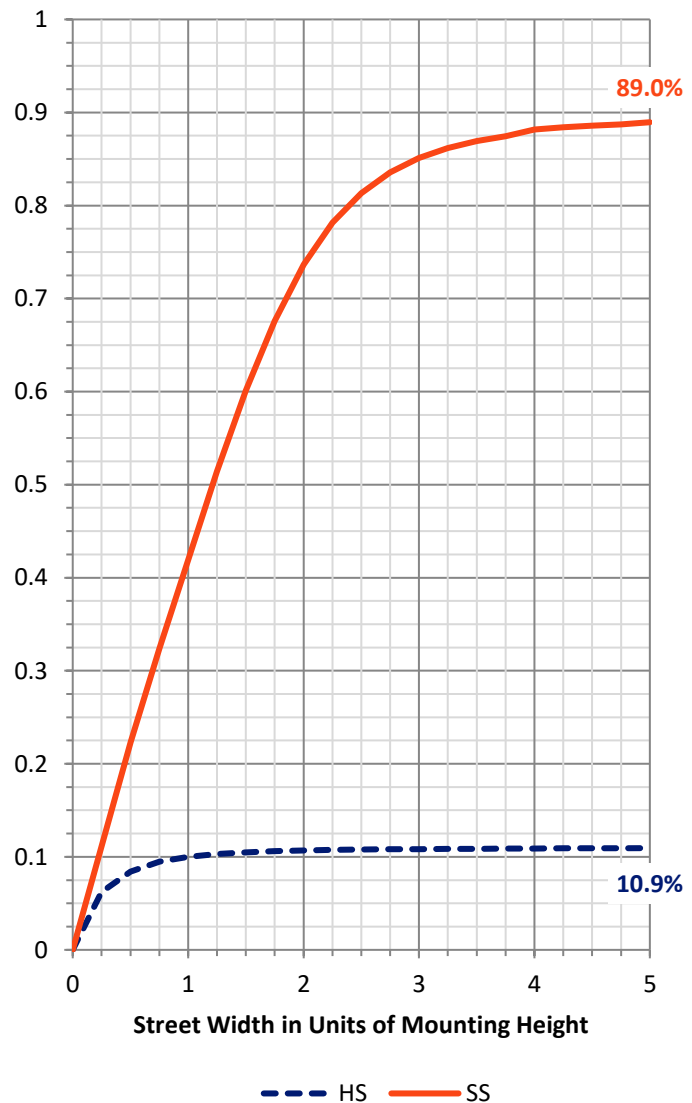
**FLUX DISTRIBUTION:**

|                    |           | Downward | Upward | Total   |
|--------------------|-----------|----------|--------|---------|
| <b>House Side</b>  | Lumens    | 1611.3   | 0.0    | 1611.3  |
|                    | % Fixture | 11.0     | 0.0    | 11.0    |
| <b>Street Side</b> | Lumens    | 12979.6  | 0.0    | 12979.6 |
|                    | % Fixture | 89.0     | 0.0    | 89.0    |
| <b>Total</b>       | Lumens    | 14590.9  | 0.0    | 14590.9 |
|                    | % Fixture | 100.0    | 0.0    | 100.0   |

**ZONAL LUMENS:**

| Zone      | Lumens  | % Fixture |
|-----------|---------|-----------|
| 0°-10°    | 165.1   | 1.1       |
| 10°-20°   | 487.1   | 3.3       |
| 20°-30°   | 808.6   | 5.5       |
| 30°-40°   | 1146.4  | 7.9       |
| 40°-50°   | 1818.1  | 12.5      |
| 50°-60°   | 3201.7  | 21.9      |
| 60°-70°   | 4150.2  | 28.4      |
| 70°-80°   | 2650.9  | 18.2      |
| 80°-90°   | 162.8   | 1.1       |
| 90°-100°  | 0.0     | 0.0       |
| 100°-110° | 0.0     | 0.0       |
| 110°-120° | 0.0     | 0.0       |
| 120°-130° | 0.0     | 0.0       |
| 130°-140° | 0.0     | 0.0       |
| 140°-150° | 0.0     | 0.0       |
| 150°-160° | 0.0     | 0.0       |
| 160°-170° | 0.0     | 0.0       |
| 170°-180° | 0.0     | 0.0       |
| 0°-90°    | 14590.9 | 100.0     |
| 0°-180°   | 14590.9 | 100.0     |

**Coefficient of Utilization**



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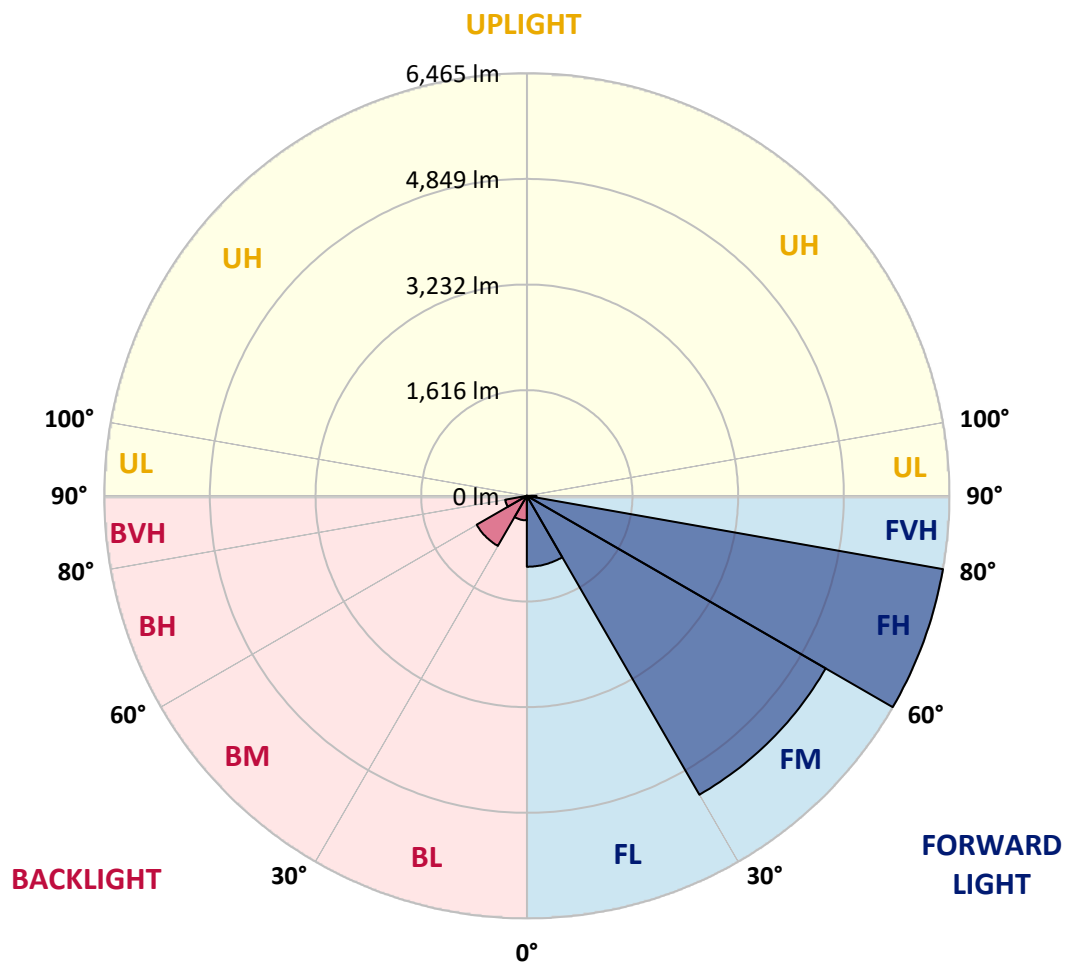
CATALOG NUMBER: VAL-T-SB5A-727-U-T4W-HSS

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

| Zone |             | Lumens | % Fixture | Zone Rating/Lumen Limit |      |         |
|------|-------------|--------|-----------|-------------------------|------|---------|
|      |             |        |           | B                       | U    | G       |
| FL   | (0°-30°)    | 1085.5 | 7.4       |                         |      |         |
| FM   | (30°-60°)   | 5280.6 | 36.2      |                         |      |         |
| FH   | (60°-80°)   | 6464.9 | 44.3      |                         |      | G3/7500 |
| FVH  | (80°-90°)   | 148.5  | 1.0       |                         |      | G2/225  |
| BL   | (0°-30°)    | 375.3  | 2.6       | B1/500                  |      |         |
| BM   | (30°-60°)   | 885.5  | 6.1       | B1/1000                 |      |         |
| BH   | (60°-80°)   | 336.2  | 2.3       | B1/500                  |      | G1/500  |
| BVH  | (80°-90°)   | 14.3   | 0.1       |                         |      | G1/100  |
| UL   | (90°-100°)  | 0.0    | 0.0       |                         | U0/0 |         |
| UH   | (100°-180°) | 0.0    | 0.0       |                         | U0/0 |         |

**BUG Rating: B1-U0-G3**

Type IV Short





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CATALOG NUMBER: VAL-T-SB5A-727-U-T4W-HSS

**CANDELA DISTRIBUTION (FULL):**

|       | 0°     | 5°     | 15°    | 25°    | 35°    | 44°     | 45°     | 55°     | 65°    | 75°    | 85°    |
|-------|--------|--------|--------|--------|--------|---------|---------|---------|--------|--------|--------|
| 0°    | 1803.6 | 1803.6 | 1803.6 | 1803.6 | 1803.6 | 1803.6  | 1803.6  | 1803.6  | 1803.6 | 1803.6 | 1803.6 |
| 2.5°  | 2014.4 | 2014.4 | 1995.7 | 1986.3 | 1972.2 | 1944.1  | 1944.1  | 1925.4  | 1887.9 | 1859.8 | 1827.0 |
| 5°    | 2220.5 | 2211.2 | 2183.1 | 2164.3 | 2126.8 | 2084.7  | 2084.7  | 2033.2  | 1976.9 | 1934.8 | 1864.5 |
| 7.5°  | 2389.2 | 2384.5 | 2365.8 | 2333.0 | 2281.4 | 2229.9  | 2220.5  | 2159.6  | 2080.0 | 2005.0 | 1920.7 |
| 10°   | 2553.2 | 2553.2 | 2511.0 | 2473.5 | 2417.3 | 2351.7  | 2351.7  | 2272.1  | 2178.4 | 2089.4 | 1981.6 |
| 12.5° | 2693.7 | 2675.0 | 2642.2 | 2581.3 | 2525.0 | 2459.5  | 2454.8  | 2375.1  | 2276.8 | 2183.1 | 2056.6 |
| 15°   | 2801.4 | 2792.1 | 2749.9 | 2684.3 | 2618.7 | 2553.2  | 2553.2  | 2468.8  | 2375.1 | 2267.4 | 2131.5 |
| 17.5° | 2876.4 | 2871.7 | 2824.9 | 2749.9 | 2679.6 | 2623.4  | 2628.1  | 2553.2  | 2468.8 | 2356.4 | 2215.9 |
| 20°   | 2895.1 | 2881.1 | 2843.6 | 2773.3 | 2717.1 | 2665.6  | 2670.3  | 2614.1  | 2539.1 | 2450.1 | 2295.5 |
| 22.5° | 2867.0 | 2862.3 | 2820.2 | 2764.0 | 2731.2 | 2693.7  | 2698.4  | 2665.6  | 2618.7 | 2525.0 | 2389.2 |
| 25°   | 2834.2 | 2824.9 | 2796.8 | 2749.9 | 2731.2 | 2712.4  | 2721.8  | 2707.7  | 2689.0 | 2614.1 | 2482.9 |
| 27.5° | 2824.9 | 2815.5 | 2782.7 | 2740.5 | 2740.5 | 2740.5  | 2749.9  | 2768.6  | 2764.0 | 2703.1 | 2576.6 |
| 30°   | 2838.9 | 2843.6 | 2810.8 | 2768.6 | 2759.3 | 2787.4  | 2806.1  | 2848.3  | 2848.3 | 2782.7 | 2679.6 |
| 32.5° | 2881.1 | 2876.4 | 2848.3 | 2792.1 | 2787.4 | 2834.2  | 2853.0  | 2913.9  | 2899.8 | 2848.3 | 2768.6 |
| 35°   | 2965.4 | 2965.4 | 2923.2 | 2838.9 | 2820.2 | 2881.1  | 2899.8  | 2974.8  | 2974.8 | 2927.9 | 2857.7 |
| 37.5° | 3120.0 | 3138.7 | 3087.2 | 2951.3 | 2890.4 | 2923.2  | 2951.3  | 3040.4  | 3073.1 | 3016.9 | 2965.4 |
| 40°   | 3396.4 | 3358.9 | 3307.4 | 3120.0 | 3007.6 | 3035.7  | 3049.7  | 3148.1  | 3195.0 | 3124.7 | 3091.9 |
| 42.5° | 4071.0 | 4028.8 | 3804.0 | 3377.7 | 3199.6 | 3204.3  | 3218.4  | 3312.1  | 3401.1 | 3321.4 | 3293.3 |
| 45°   | 5068.8 | 5031.3 | 4651.9 | 3925.8 | 3485.4 | 3462.0  | 3480.7  | 3560.4  | 3682.2 | 3625.9 | 3597.8 |
| 47.5° | 5832.4 | 5785.6 | 5499.8 | 4731.5 | 3944.5 | 3804.0  | 3818.0  | 3878.9  | 4085.0 | 4038.2 | 4033.5 |
| 50°   | 6202.5 | 6174.4 | 6005.8 | 5598.2 | 4717.5 | 4249.0  | 4244.3  | 4300.5  | 4581.6 | 4576.9 | 4591.0 |
| 52.5° | 6572.6 | 6572.6 | 6441.4 | 6249.4 | 5645.0 | 4862.7  | 4834.6  | 4783.1  | 5167.2 | 5195.3 | 5345.2 |
| 55°   | 6975.5 | 6984.9 | 6980.2 | 6928.6 | 6563.2 | 5663.8  | 5574.8  | 5392.1  | 5846.5 | 5930.8 | 6113.5 |
| 57.5° | 7383.1 | 7401.8 | 7439.3 | 7640.7 | 7537.6 | 6507.0  | 6394.6  | 6057.3  | 6642.9 | 6624.1 | 6741.3 |
| 60°   | 7701.6 | 7720.4 | 7874.9 | 8249.7 | 8334.0 | 7359.6  | 7205.0  | 6820.9  | 7434.6 | 7326.8 | 7251.9 |
| 62.5° | 7509.5 | 7556.4 | 8104.5 | 8755.7 | 9032.1 | 8156.0  | 8057.6  | 7682.9  | 8216.9 | 7874.9 | 7448.6 |
| 65°   | 5715.3 | 5949.5 | 7162.9 | 8854.0 | 9664.5 | 9060.2  | 8975.8  | 8601.1  | 8751.0 | 7959.3 | 7294.0 |
| 67.5° | 3532.2 | 3855.5 | 5171.9 | 8249.7 | 9987.7 | 10044.0 | 9950.3  | 9280.3  | 8793.1 | 8029.5 | 7116.0 |
| 70°   | 2023.8 | 2187.7 | 3321.4 | 7678.2 | 9758.2 | 10845.0 | 10863.8 | 9458.4  | 9139.8 | 8127.9 | 6549.2 |
| 72.5° | 1335.1 | 1382.0 | 1822.3 | 6422.7 | 9458.4 | 9833.1  | 9940.9  | 10114.2 | 9374.0 | 7678.2 | 5401.4 |
| 75°   | 609.0  | 632.4  | 918.2  | 4108.5 | 7195.7 | 8451.2  | 8348.1  | 8423.1  | 8900.9 | 6708.5 | 3963.2 |
| 77.5° | 192.1  | 220.2  | 370.1  | 1564.7 | 3827.4 | 6249.4  | 6174.4  | 4342.7  | 6596.0 | 3672.8 | 1241.4 |
| 80°   | 93.7   | 107.7  | 220.2  | 473.2  | 1414.8 | 3541.6  | 3630.6  | 1480.4  | 2089.4 | 829.2  | 253.0  |
| 82.5° | 42.2   | 46.8   | 126.5  | 224.9  | 552.8  | 1040.0  | 1105.6  | 482.5   | 543.4  | 257.7  | 93.7   |
| 85°   | 18.7   | 23.4   | 51.5   | 89.0   | 154.6  | 168.6   | 182.7   | 103.1   | 201.4  | 145.2  | 46.8   |
| 87.5° | 0.0    | 4.7    | 4.7    | 14.1   | 14.1   | 18.7    | 18.7    | 23.4    | 28.1   | 32.8   | 28.1   |
| 90°   | 0.0    | 0.0    | 0.0    | 0.0    | 0.0    | 0.0     | 0.0     | 0.0     | 0.0    | 0.0    | 0.0    |



REPORT NUMBER: P1388375

CATALOG NUMBER: VAL-T-SB5A-727-U-T4W-HSS

**CANDELA DISTRIBUTION (continued):**

|       | 90°    | 95°    | 105°   | 115°   | 125°   | 135°   | 145°   | 155°   | 165°   | 175°   | 180°   |
|-------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|
| 0°    | 1803.6 | 1803.6 | 1803.6 | 1803.6 | 1803.6 | 1803.6 | 1803.6 | 1803.6 | 1803.6 | 1803.6 | 1803.6 |
| 2.5°  | 1808.3 | 1784.9 | 1752.1 | 1705.2 | 1672.4 | 1620.9 | 1583.4 | 1555.3 | 1522.5 | 1531.9 | 1536.6 |
| 5°    | 1822.3 | 1784.9 | 1695.9 | 1583.4 | 1485.0 | 1386.7 | 1316.4 | 1250.8 | 1208.6 | 1204.0 | 1185.2 |
| 7.5°  | 1859.8 | 1794.2 | 1644.3 | 1461.6 | 1288.3 | 1157.1 | 1040.0 | 951.0  | 894.8  | 876.0  | 866.7  |
| 10°   | 1911.3 | 1817.7 | 1583.4 | 1325.8 | 1096.2 | 918.2  | 782.3  | 712.1  | 684.0  | 679.3  | 679.3  |
| 12.5° | 1967.6 | 1850.4 | 1522.5 | 1189.9 | 908.8  | 716.8  | 655.9  | 646.5  | 646.5  | 651.2  | 651.2  |
| 15°   | 2033.2 | 1873.9 | 1452.3 | 1030.6 | 726.1  | 632.4  | 627.7  | 627.7  | 627.7  | 637.1  | 632.4  |
| 17.5° | 2098.7 | 1906.7 | 1367.9 | 871.4  | 627.7  | 609.0  | 609.0  | 609.0  | 609.0  | 618.4  | 613.7  |
| 20°   | 2169.0 | 1930.1 | 1278.9 | 726.1  | 599.6  | 595.0  | 595.0  | 590.3  | 590.3  | 599.6  | 599.6  |
| 22.5° | 2248.6 | 1948.8 | 1180.5 | 627.7  | 585.6  | 576.2  | 576.2  | 576.2  | 571.5  | 580.9  | 580.9  |
| 25°   | 2328.3 | 1976.9 | 1068.1 | 576.2  | 566.8  | 562.2  | 557.5  | 557.5  | 552.8  | 562.2  | 557.5  |
| 27.5° | 2417.3 | 2009.7 | 960.4  | 557.5  | 552.8  | 548.1  | 543.4  | 538.7  | 534.1  | 543.4  | 538.7  |
| 30°   | 2520.4 | 2042.5 | 857.3  | 548.1  | 538.7  | 534.1  | 524.7  | 520.0  | 510.6  | 520.0  | 520.0  |
| 32.5° | 2614.1 | 2075.3 | 777.7  | 543.4  | 529.4  | 510.6  | 496.6  | 487.2  | 482.5  | 491.9  | 496.6  |
| 35°   | 2712.4 | 2126.8 | 735.5  | 552.8  | 520.0  | 491.9  | 468.5  | 454.4  | 449.7  | 459.1  | 463.8  |
| 37.5° | 2829.5 | 2187.7 | 726.1  | 571.5  | 510.6  | 468.5  | 435.7  | 412.3  | 407.6  | 416.9  | 421.6  |
| 40°   | 2993.5 | 2272.1 | 744.9  | 580.9  | 496.6  | 440.4  | 393.5  | 370.1  | 356.0  | 356.0  | 360.7  |
| 42.5° | 3204.3 | 2450.1 | 758.9  | 590.3  | 473.2  | 407.6  | 356.0  | 323.2  | 299.8  | 299.8  | 304.5  |
| 45°   | 3527.6 | 2745.2 | 829.2  | 580.9  | 449.7  | 365.4  | 313.9  | 271.7  | 253.0  | 253.0  | 257.7  |
| 47.5° | 3963.2 | 3157.5 | 1025.9 | 562.2  | 416.9  | 327.9  | 271.7  | 234.2  | 220.2  | 220.2  | 220.2  |
| 50°   | 4539.5 | 3672.8 | 1236.8 | 529.4  | 379.5  | 290.5  | 234.2  | 210.8  | 201.4  | 196.8  | 192.1  |
| 52.5° | 5228.1 | 4216.2 | 1386.7 | 496.6  | 346.7  | 257.7  | 210.8  | 192.1  | 182.7  | 178.0  | 178.0  |
| 55°   | 5893.3 | 4600.4 | 1438.2 | 463.8  | 313.9  | 229.5  | 196.8  | 182.7  | 173.3  | 168.6  | 168.6  |
| 57.5° | 6296.2 | 4675.3 | 1227.4 | 426.3  | 281.1  | 210.8  | 178.0  | 168.6  | 159.3  | 154.6  | 154.6  |
| 60°   | 6389.9 | 4352.1 | 866.7  | 374.8  | 243.6  | 187.4  | 164.0  | 154.6  | 145.2  | 135.9  | 135.9  |
| 62.5° | 6057.3 | 3597.8 | 604.3  | 304.5  | 215.5  | 168.6  | 149.9  | 140.5  | 126.5  | 117.1  | 112.4  |
| 65°   | 5387.4 | 2628.1 | 426.3  | 238.9  | 187.4  | 149.9  | 131.2  | 121.8  | 107.7  | 93.7   | 89.0   |
| 67.5° | 4703.4 | 1592.8 | 276.4  | 196.8  | 164.0  | 121.8  | 112.4  | 107.7  | 93.7   | 79.6   | 79.6   |
| 70°   | 3893.0 | 815.1  | 192.1  | 159.3  | 135.9  | 98.4   | 93.7   | 93.7   | 84.3   | 70.3   | 70.3   |
| 72.5° | 3002.9 | 299.8  | 131.2  | 126.5  | 103.1  | 75.0   | 84.3   | 79.6   | 70.3   | 60.9   | 60.9   |
| 75°   | 2037.8 | 145.2  | 98.4   | 89.0   | 70.3   | 60.9   | 65.6   | 65.6   | 60.9   | 51.5   | 46.8   |
| 77.5° | 646.5  | 93.7   | 75.0   | 70.3   | 56.2   | 51.5   | 56.2   | 56.2   | 46.8   | 42.2   | 37.5   |
| 80°   | 164.0  | 65.6   | 60.9   | 51.5   | 42.2   | 42.2   | 46.8   | 37.5   | 37.5   | 32.8   | 32.8   |
| 82.5° | 70.3   | 46.8   | 42.2   | 37.5   | 32.8   | 32.8   | 32.8   | 32.8   | 28.1   | 28.1   | 28.1   |
| 85°   | 37.5   | 32.8   | 28.1   | 28.1   | 28.1   | 23.4   | 23.4   | 28.1   | 23.4   | 23.4   | 23.4   |
| 87.5° | 23.4   | 23.4   | 18.7   | 14.1   | 14.1   | 18.7   | 18.7   | 18.7   | 18.7   | 18.7   | 18.7   |
| 90°   | 0.0    | 0.0    | 0.0    | 0.0    | 0.0    | 0.0    | 0.0    | 0.0    | 0.0    | 0.0    | 0.0    |

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

Report Prepared for

Cooper Lighting Solutions

McGraw-Edison

Report Number: SP1-2407-184-3

Test Date: 10/09/2024

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

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

### Test Information

Test Method: LM-79-2019  
 Report Number: SP1-2407-184-3  
 Test Lab: COOPER LIGHTING SOLUTIONS  
 Photometer: SP1 - 76IN SPHERE  
 Measurement Geometry:  $4\pi$   
 Issue Date: 10/15/2024  
 Manufacturer: COOPER LIGHTING SOLUTIONS  
 Product Line: McGraw-Edison  
 Catalog Number: **GSS-SB1A-727-U-5WQ**  
 Description: GALLEON II SITE SLIM 1SQ 350MA 5WQ HIGH DENSITY LIGHTSQUARE WITH 70 CRI  
 2700K CCT 26 LEDS

### Spectral Parameters

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



### Test Conditions

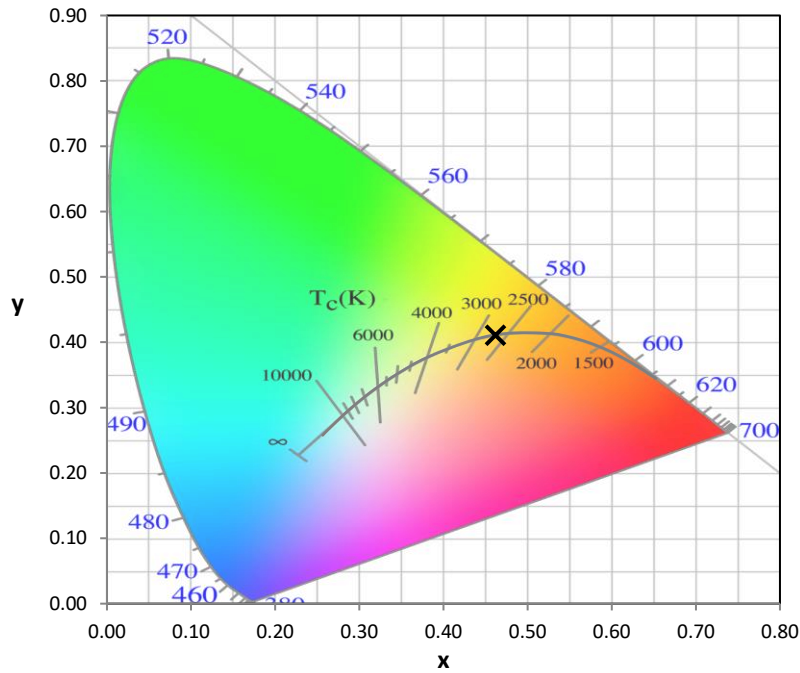
Stabilization Time: 21M  
 Operation Time: 1H 21M  
 Sphere Temperature (°C): 25.2

REPORT NUMBER: SP1-2407-184-3

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

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**CIE 1931 Chromaticity Diagram**



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



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

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### Scotopic Flux vs. Wavelength



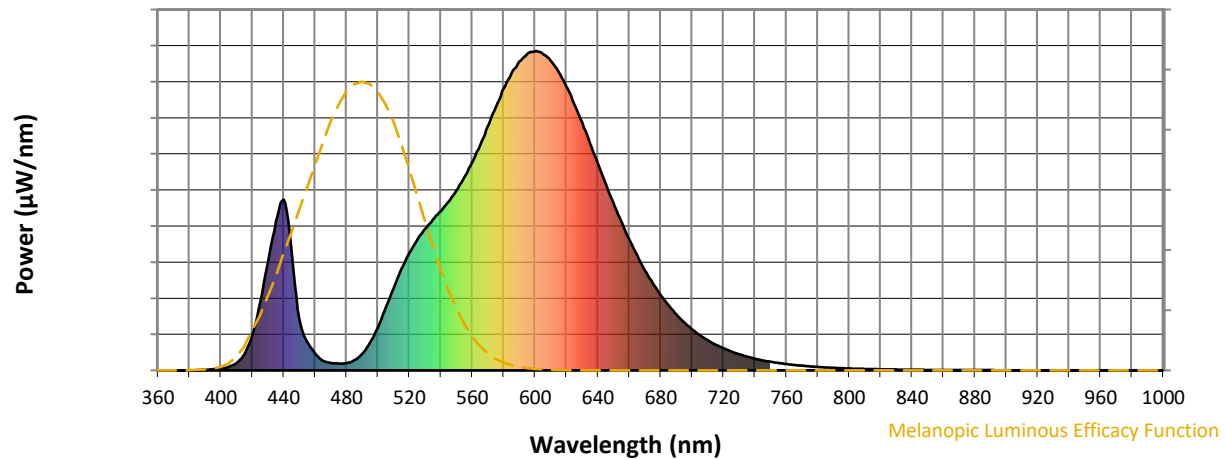
Scotopic Lumens: NR

S/P: 1.02

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

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### Melanopic Flux vs. Wavelength



Melanopic Lumens: NR

M/P: 1.71

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

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TM-30-18

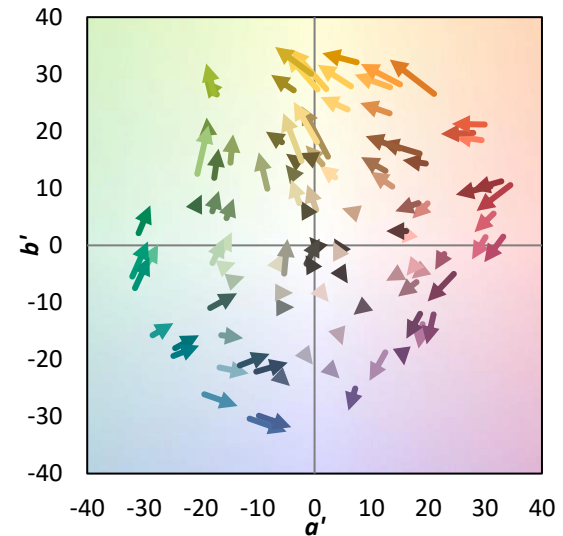
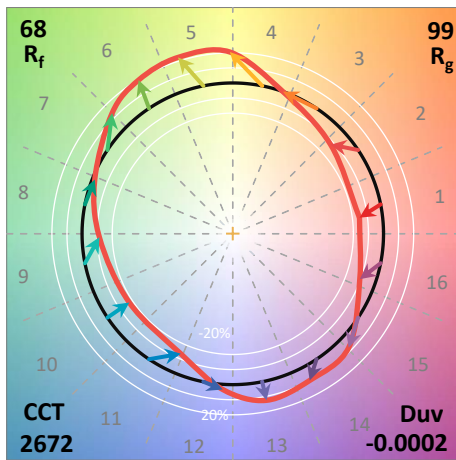
### Summary

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

### Spectral Power Distribution Comparison



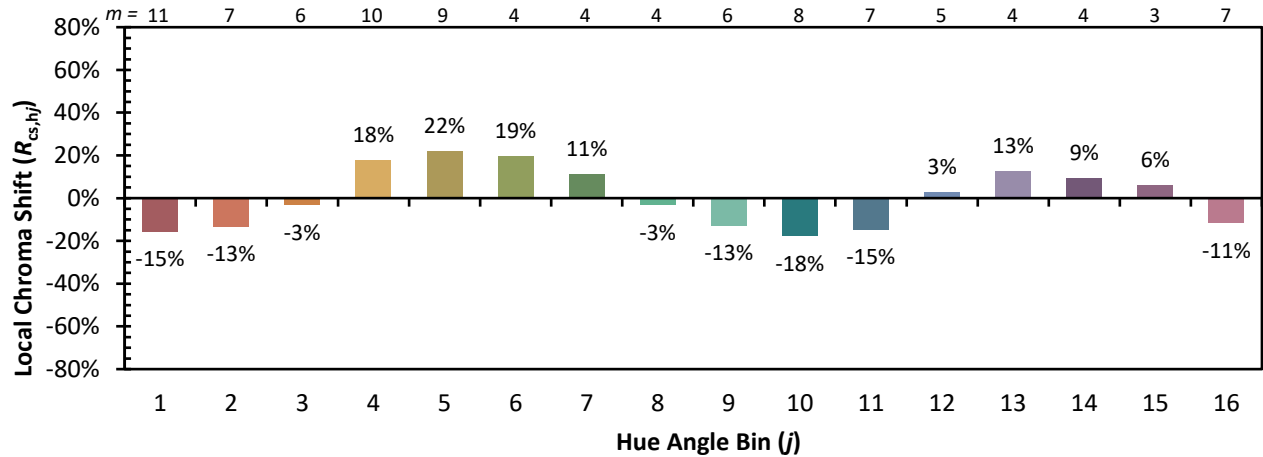
### Color Vector Graphics



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

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



**Color Rendition by Hue-Angle Bin**


**Measure Comparisons**



(END OF REPORT)