

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: P1379516

Luminaire Tested: **VAL-T-SB4B-722-U-SL4-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: P1379516  
Test Lab: INNOVATION CENTER(G3)  
Issue Date: 02/18/2026  
Manufacturer: COOPER LIGHTING SOLUTIONS (FORMERLY EATON)  
Product Line: STREETWORKS  
Catalog Number: VAL-T-SB4B-722-U-SL4-HSS  
Description: GALLEON II WALL SLIM HIGH DENSITY LED ARRAYS 45 SQUARE 148W 70CRI  
2200K FIXTURE w/ TYPE IV SPILL CONTROL DISTRIBUTION OPTIC AND HOUSE SIDE  
SHIELD  
Light Source: (104) 2200K 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               |

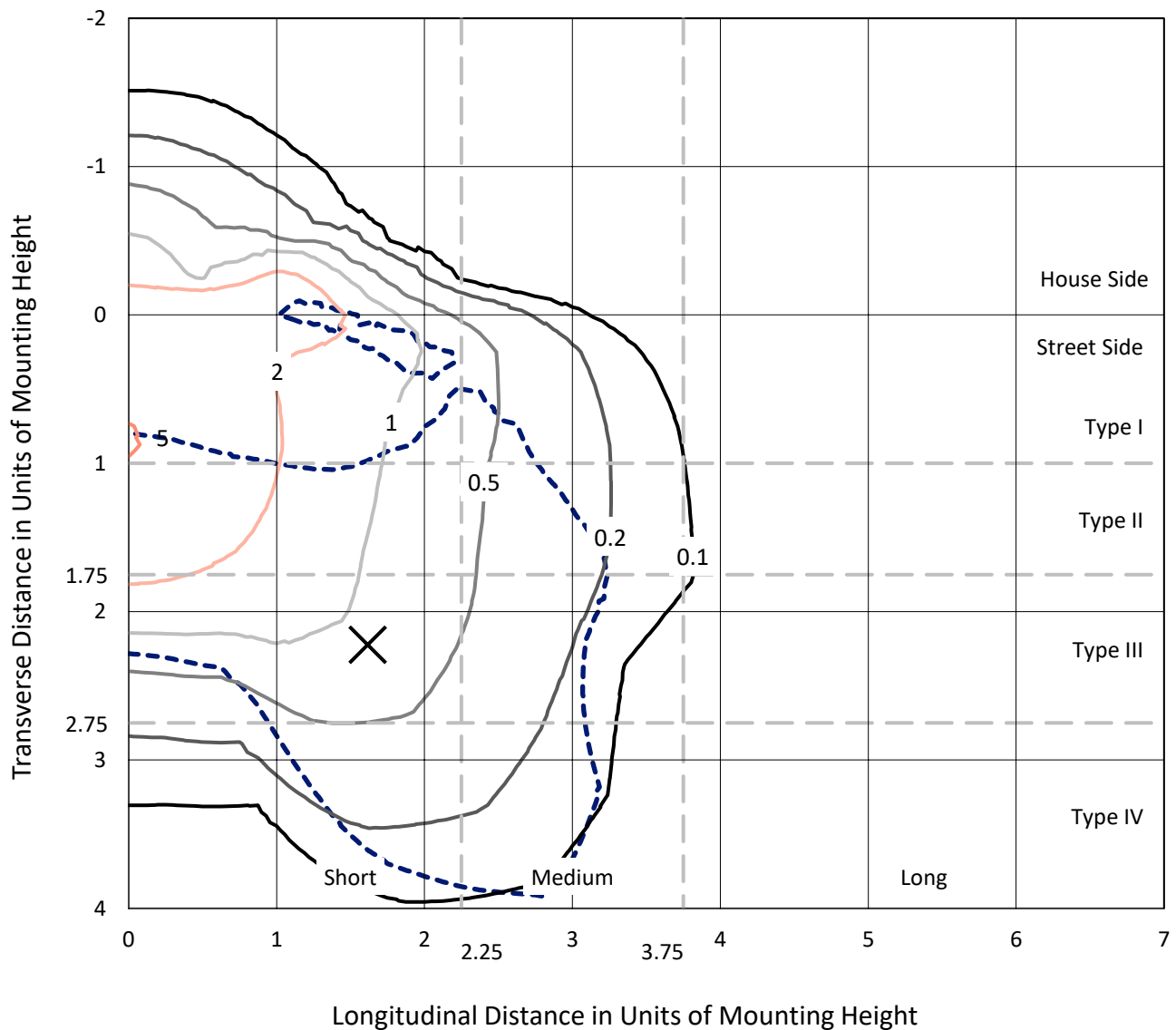
**Summary**

Lumens per Lamp: N/A  
Luminaire Lumens: 11550.3 lumens  
Efficiency: N/A  
Efficacy: 78.0 lumens/watt  
Luminous Opening: Rectangular (W 1.5' x L: 1' x H: 0')  
IES Classification: Type IV - Short  
BUG Rating: B2 - U0 - G2  
  
Input Watts (W): 148  
Input Voltage (V): 120  
Input Current (Ain): NR  
Voltage Rise (V): NR  
Power Factor: 0.98  
Total Harmonic Distortion (THDi): 13.6%  
Frequency (hertz): 60  
Stabilization Time: NR  
Operation Time: NR  
Ambient Temperature (°C): NR  
Test Distance: 28.75 FT

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CATALOG NUMBER: VAL-T-SB4B-722-U-SL4-HSS

## Iso-Footcandle Lines of Horizontal Illumination

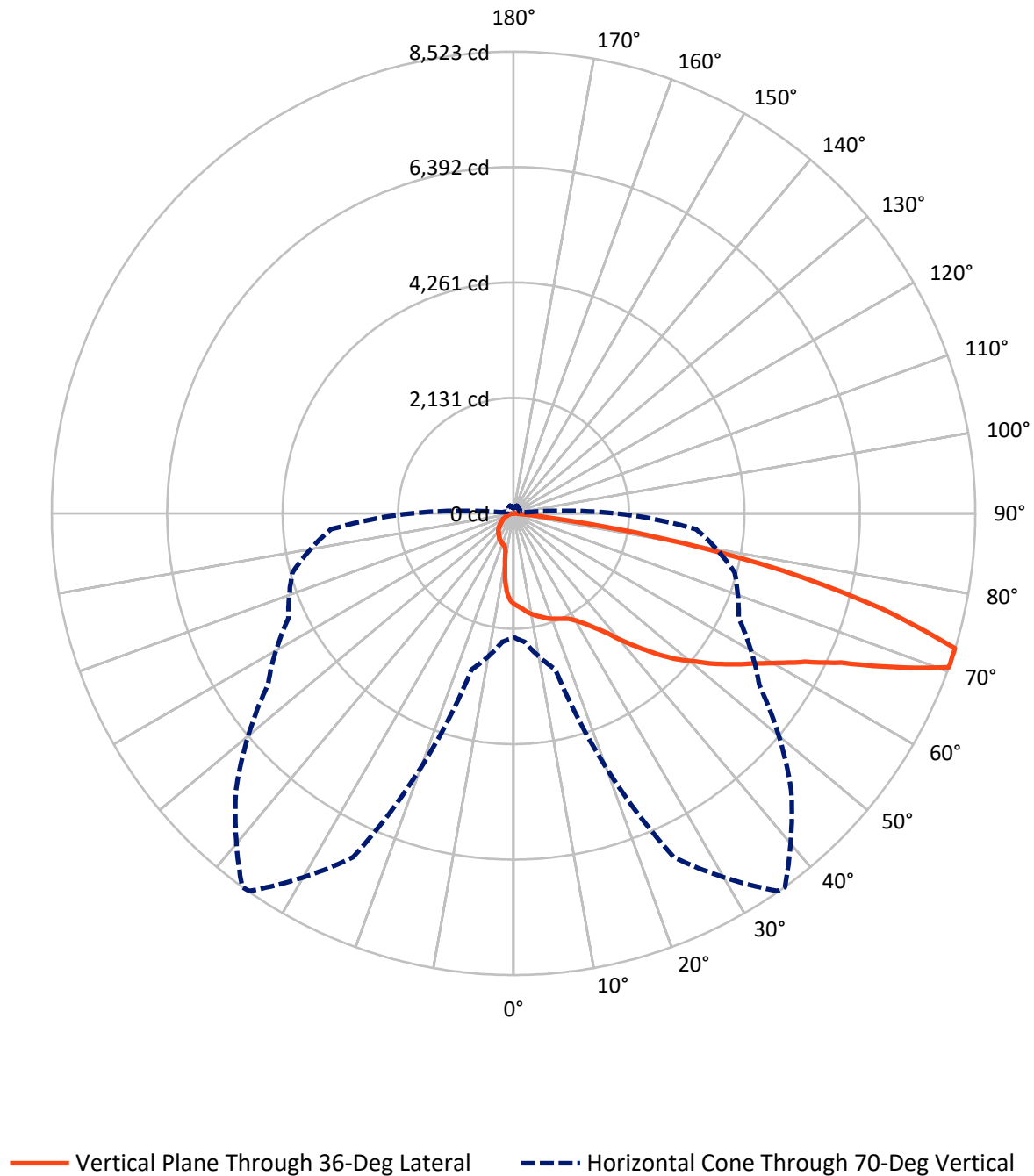
× Max cd  
- - - 1/2 Max cd



Based on 20 foot mounting height. Maximum calculated value = 5.1 fc  
Type IV - Short - N/A

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## Luminous Intensity Polar Plot



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CATALOG NUMBER: VAL-T-SB4B-722-U-SL4-HSS

**FLUX DISTRIBUTION:**

|                    |           | Downward | Upward | Total   |
|--------------------|-----------|----------|--------|---------|
| <b>House Side</b>  | Lumens    | 1705.0   | 0.0    | 1705.0  |
|                    | % Fixture | 14.8     | 0.0    | 14.8    |
| <b>Street Side</b> | Lumens    | 9845.3   | 0.0    | 9845.3  |
|                    | % Fixture | 85.2     | 0.0    | 85.2    |
| <b>Total</b>       | Lumens    | 11550.3  | 0.0    | 11550.3 |
|                    | % Fixture | 100.0    | 0.0    | 100.0   |

**Coefficient of Utilization**

**ZONAL LUMENS:**

| Zone      | Lumens  | % Fixture |
|-----------|---------|-----------|
| 0°-10°    | 152.7   | 1.3       |
| 10°-20°   | 423.2   | 3.7       |
| 20°-30°   | 713.4   | 6.2       |
| 30°-40°   | 1139.4  | 9.9       |
| 40°-50°   | 1862.1  | 16.1      |
| 50°-60°   | 2512.5  | 21.8      |
| 60°-70°   | 2790.4  | 24.2      |
| 70°-80°   | 1847.4  | 16.0      |
| 80°-90°   | 109.2   | 0.9       |
| 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°    | 11550.3 | 100.0     |
| 0°-180°   | 11550.3 | 100.0     |



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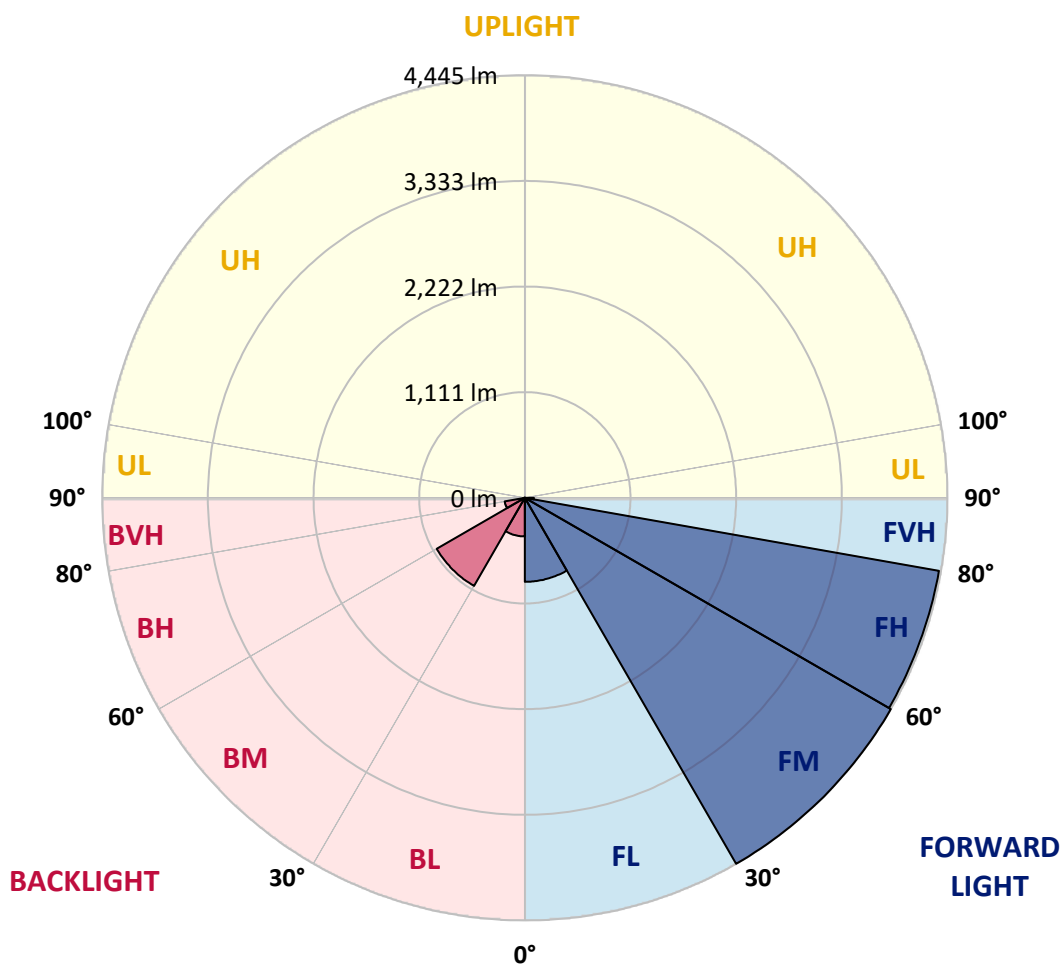
CATALOG NUMBER: VAL-T-SB4B-722-U-SL4-HSS

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

| Zone |             | Lumens | % Fixture | Zone Rating/Lumen Limit |      |         |
|------|-------------|--------|-----------|-------------------------|------|---------|
|      |             |        |           | B                       | U    | G       |
| FL   | (0°-30°)    | 883.3  | 7.6       |                         |      |         |
| FM   | (30°-60°)   | 4444.6 | 38.5      |                         |      |         |
| FH   | (60°-80°)   | 4422.2 | 38.3      |                         |      | G2/5000 |
| FVH  | (80°-90°)   | 95.2   | 0.8       |                         |      | G1/100  |
| BL   | (0°-30°)    | 406.0  | 3.5       | B1/500                  |      |         |
| BM   | (30°-60°)   | 1069.5 | 9.3       | B2/2500                 |      |         |
| BH   | (60°-80°)   | 215.6  | 1.9       | B1/500                  |      | G1/500  |
| BVH  | (80°-90°)   | 14.0   | 0.1       |                         |      | G1/100  |
| UL   | (90°-100°)  | 0.0    | 0.0       |                         | U0/0 |         |
| UH   | (100°-180°) | 0.0    | 0.0       |                         | U0/0 |         |

**BUG Rating: B2-U0-G2**

Type IV Short



REPORT NUMBER: P1379516

CATALOG NUMBER: VAL-T-SB4B-722-U-SL4-HSS

**CANDELA DISTRIBUTION (FULL):**

|       | 0°     | 5°     | 15°    | 25°    | 35°    | 36°    | 45°    | 55°    | 65°    | 75°    | 85°    |
|-------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|
| 0°    | 1675.4 | 1675.4 | 1675.4 | 1675.4 | 1675.4 | 1675.4 | 1675.4 | 1675.4 | 1675.4 | 1675.4 | 1675.4 |
| 2.5°  | 1734.5 | 1718.7 | 1726.6 | 1730.6 | 1718.7 | 1722.7 | 1714.8 | 1710.9 | 1695.1 | 1706.9 | 1691.1 |
| 5°    | 1797.6 | 1793.6 | 1789.7 | 1789.7 | 1777.9 | 1773.9 | 1762.1 | 1754.2 | 1738.5 | 1726.6 | 1706.9 |
| 7.5°  | 1872.5 | 1848.8 | 1844.9 | 1852.8 | 1829.1 | 1840.9 | 1829.1 | 1817.3 | 1789.7 | 1758.2 | 1726.6 |
| 10°   | 1931.6 | 1919.8 | 1904.0 | 1900.1 | 1904.0 | 1896.1 | 1884.3 | 1872.5 | 1856.7 | 1817.3 | 1781.8 |
| 12.5° | 1998.6 | 1990.7 | 1975.0 | 1967.1 | 1939.5 | 1943.4 | 1943.4 | 1927.7 | 1904.0 | 1880.4 | 1840.9 |
| 15°   | 2073.5 | 2042.0 | 2034.1 | 2014.4 | 1998.6 | 1986.8 | 1990.7 | 1994.7 | 1967.1 | 1943.4 | 1904.0 |
| 17.5° | 2109.0 | 2101.1 | 2081.4 | 2057.8 | 2057.8 | 2042.0 | 2038.0 | 2038.0 | 2026.2 | 2018.3 | 1971.0 |
| 20°   | 2164.2 | 2156.3 | 2120.8 | 2101.1 | 2081.4 | 2077.5 | 2089.3 | 2089.3 | 2069.6 | 2065.6 | 2057.8 |
| 22.5° | 2247.0 | 2223.3 | 2176.0 | 2144.5 | 2120.8 | 2116.9 | 2132.7 | 2128.7 | 2128.7 | 2132.7 | 2148.4 |
| 25°   | 2325.8 | 2298.2 | 2247.0 | 2195.7 | 2144.5 | 2152.4 | 2172.1 | 2176.0 | 2160.3 | 2183.9 | 2243.0 |
| 27.5° | 2444.1 | 2440.1 | 2361.3 | 2258.8 | 2211.5 | 2207.6 | 2215.4 | 2207.6 | 2191.8 | 2219.4 | 2329.8 |
| 30°   | 2755.5 | 2720.0 | 2589.9 | 2400.7 | 2294.3 | 2302.2 | 2290.3 | 2243.0 | 2203.6 | 2235.2 | 2412.5 |
| 32.5° | 3059.0 | 2976.3 | 2842.2 | 2625.4 | 2428.3 | 2432.3 | 2349.5 | 2258.8 | 2215.4 | 2250.9 | 2495.3 |
| 35°   | 3500.6 | 3413.8 | 3212.8 | 2834.3 | 2633.3 | 2597.8 | 2428.3 | 2317.9 | 2239.1 | 2278.5 | 2589.9 |
| 37.5° | 4123.4 | 3997.3 | 3725.3 | 3248.3 | 2814.6 | 2798.9 | 2566.3 | 2369.2 | 2258.8 | 2274.6 | 2716.1 |
| 40°   | 4604.3 | 4482.1 | 4261.4 | 3685.8 | 3126.1 | 3094.5 | 2783.1 | 2467.7 | 2262.7 | 2294.3 | 2834.3 |
| 42.5° | 5022.2 | 4959.1 | 4663.5 | 4072.2 | 3449.3 | 3382.3 | 2992.0 | 2589.9 | 2345.5 | 2345.5 | 3031.5 |
| 45°   | 5582.0 | 5463.7 | 5128.6 | 4434.8 | 3772.6 | 3697.7 | 3268.0 | 2783.1 | 2448.0 | 2404.7 | 3236.4 |
| 47.5° | 6074.7 | 5976.2 | 5585.9 | 4777.8 | 4080.0 | 4017.0 | 3532.1 | 2992.0 | 2578.1 | 2511.1 | 3476.9 |
| 50°   | 6614.8 | 6512.3 | 6062.9 | 5187.8 | 4383.6 | 4292.9 | 3823.8 | 3185.2 | 2735.8 | 2676.7 | 3764.7 |
| 52.5° | 6989.3 | 6902.6 | 6453.2 | 5558.3 | 4675.3 | 4612.2 | 4060.3 | 3382.3 | 2921.1 | 2861.9 | 4040.6 |
| 55°   | 7237.6 | 7099.7 | 6662.1 | 5881.6 | 4998.5 | 4919.7 | 4273.2 | 3603.1 | 3130.0 | 3110.3 | 4277.1 |
| 57.5° | 7355.9 | 7217.9 | 6847.4 | 6165.4 | 5317.8 | 5231.1 | 4537.3 | 3843.5 | 3402.0 | 3417.8 | 4529.4 |
| 60°   | 7292.8 | 7190.3 | 6918.3 | 6433.5 | 5672.6 | 5601.7 | 4789.6 | 4119.5 | 3681.9 | 3748.9 | 4647.7 |
| 62.5° | 6827.7 | 6851.3 | 6926.2 | 6831.6 | 6126.0 | 6039.2 | 5156.2 | 4470.3 | 4064.3 | 4076.1 | 4635.9 |
| 65°   | 5282.4 | 5380.9 | 6240.3 | 7292.8 | 6760.6 | 6646.3 | 5660.8 | 4911.8 | 4324.4 | 4190.4 | 4328.4 |
| 67.5° | 3358.6 | 3567.6 | 4513.7 | 7549.1 | 7647.6 | 7576.7 | 6327.0 | 5274.5 | 4387.5 | 4359.9 | 4048.5 |
| 70°   | 2286.4 | 2381.0 | 2984.1 | 7005.1 | 8510.9 | 8522.8 | 7249.5 | 5538.6 | 4584.6 | 4225.9 | 3382.3 |
| 72.5° | 1797.6 | 1805.5 | 2109.0 | 6311.3 | 8475.4 | 8518.8 | 7182.4 | 5814.6 | 4446.7 | 3764.7 | 2578.1 |
| 75°   | 1206.3 | 1237.8 | 1438.9 | 5148.3 | 7040.5 | 7005.1 | 5865.8 | 4466.4 | 4056.4 | 2976.3 | 1671.4 |
| 77.5° | 339.0  | 350.8  | 599.2  | 3279.8 | 4935.5 | 5085.3 | 4257.4 | 1533.5 | 2822.5 | 1364.0 | 630.7  |
| 80°   | 102.5  | 110.4  | 244.4  | 942.2  | 2361.3 | 2704.3 | 2215.4 | 461.2  | 682.0  | 323.2  | 126.1  |
| 82.5° | 43.4   | 47.3   | 145.9  | 216.8  | 540.1  | 583.4  | 520.4  | 122.2  | 212.9  | 102.5  | 43.4   |
| 85°   | 15.8   | 19.7   | 47.3   | 51.2   | 82.8   | 74.9   | 59.1   | 39.4   | 55.2   | 47.3   | 23.7   |
| 87.5° | 0.0    | 3.9    | 3.9    | 7.9    | 11.8   | 11.8   | 15.8   | 15.8   | 15.8   | 15.8   | 15.8   |
| 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: P1379516

CATALOG NUMBER: VAL-T-SB4B-722-U-SL4-HSS

**CANDELA DISTRIBUTION (continued):**

|       | 90°    | 95°    | 105°   | 115°   | 125°   | 135°   | 145°   | 155°   | 165°   | 175°   | 180°   |
|-------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|
| 0°    | 1675.4 | 1675.4 | 1675.4 | 1675.4 | 1675.4 | 1675.4 | 1675.4 | 1675.4 | 1675.4 | 1675.4 | 1675.4 |
| 2.5°  | 1679.3 | 1675.4 | 1659.6 | 1639.9 | 1628.1 | 1624.1 | 1612.3 | 1588.7 | 1596.5 | 1600.5 | 1580.8 |
| 5°    | 1695.1 | 1667.5 | 1636.0 | 1596.5 | 1553.2 | 1517.7 | 1470.4 | 1434.9 | 1411.3 | 1407.3 | 1403.4 |
| 7.5°  | 1710.9 | 1687.2 | 1632.0 | 1545.3 | 1458.6 | 1367.9 | 1245.7 | 1159.0 | 1095.9 | 1064.4 | 1076.2 |
| 10°   | 1762.1 | 1722.7 | 1628.1 | 1494.0 | 1308.8 | 1111.7 | 934.3  | 831.8  | 772.6  | 745.1  | 733.2  |
| 12.5° | 1813.4 | 1758.2 | 1628.1 | 1403.4 | 1088.0 | 839.7  | 697.7  | 666.2  | 666.2  | 674.1  | 670.2  |
| 15°   | 1880.4 | 1817.3 | 1639.9 | 1265.4 | 863.3  | 658.3  | 634.7  | 638.6  | 650.4  | 658.3  | 658.3  |
| 17.5° | 1955.3 | 1908.0 | 1639.9 | 1092.0 | 674.1  | 611.0  | 615.0  | 626.8  | 638.6  | 642.6  | 646.5  |
| 20°   | 2061.7 | 1994.7 | 1588.7 | 890.9  | 591.3  | 591.3  | 599.2  | 607.1  | 622.8  | 630.7  | 634.7  |
| 22.5° | 2160.3 | 2085.4 | 1494.0 | 709.6  | 567.7  | 571.6  | 587.4  | 595.3  | 611.0  | 618.9  | 615.0  |
| 25°   | 2282.5 | 2211.5 | 1391.6 | 575.5  | 544.0  | 551.9  | 563.7  | 575.5  | 599.2  | 607.1  | 607.1  |
| 27.5° | 2416.5 | 2353.4 | 1312.7 | 563.7  | 520.4  | 532.2  | 551.9  | 567.7  | 587.4  | 595.3  | 595.3  |
| 30°   | 2562.3 | 2499.3 | 1265.4 | 607.1  | 508.5  | 504.6  | 528.2  | 540.1  | 563.7  | 583.4  | 587.4  |
| 32.5° | 2716.1 | 2617.5 | 1249.6 | 693.8  | 516.4  | 484.9  | 504.6  | 520.4  | 551.9  | 575.5  | 575.5  |
| 35°   | 2936.8 | 2794.9 | 1249.6 | 788.4  | 547.9  | 465.2  | 480.9  | 500.6  | 536.1  | 559.8  | 559.8  |
| 37.5° | 3208.8 | 3074.8 | 1371.8 | 855.4  | 575.5  | 449.4  | 457.3  | 477.0  | 504.6  | 536.1  | 540.1  |
| 40°   | 3532.1 | 3469.0 | 1695.1 | 898.8  | 591.3  | 433.6  | 441.5  | 449.4  | 465.2  | 496.7  | 504.6  |
| 42.5° | 3879.0 | 3812.0 | 2156.3 | 942.2  | 583.4  | 421.8  | 417.9  | 417.9  | 425.7  | 445.5  | 449.4  |
| 45°   | 4214.1 | 4119.5 | 2570.2 | 926.4  | 547.9  | 398.1  | 390.3  | 378.4  | 378.4  | 394.2  | 394.2  |
| 47.5° | 4509.7 | 4340.2 | 2771.3 | 820.0  | 504.6  | 374.5  | 358.7  | 339.0  | 339.0  | 346.9  | 346.9  |
| 50°   | 4698.9 | 4332.3 | 2645.1 | 650.4  | 441.5  | 350.8  | 327.2  | 311.4  | 307.5  | 311.4  | 307.5  |
| 52.5° | 4726.5 | 4056.4 | 2176.0 | 504.6  | 382.4  | 323.2  | 295.7  | 287.8  | 283.8  | 283.8  | 283.8  |
| 55°   | 4541.3 | 3547.9 | 1529.5 | 386.3  | 335.1  | 291.7  | 272.0  | 268.1  | 264.1  | 260.2  | 256.2  |
| 57.5° | 4222.0 | 2810.7 | 934.3  | 311.4  | 303.5  | 264.1  | 252.3  | 248.4  | 240.5  | 228.6  | 224.7  |
| 60°   | 3796.2 | 2069.6 | 492.8  | 264.1  | 264.1  | 232.6  | 232.6  | 232.6  | 212.9  | 197.1  | 189.2  |
| 62.5° | 3323.2 | 1395.5 | 275.9  | 224.7  | 220.8  | 208.9  | 212.9  | 208.9  | 189.2  | 161.6  | 157.7  |
| 65°   | 2794.9 | 792.4  | 185.3  | 185.3  | 189.2  | 181.3  | 189.2  | 185.3  | 157.7  | 130.1  | 122.2  |
| 67.5° | 2412.5 | 413.9  | 145.9  | 157.7  | 157.7  | 149.8  | 161.6  | 165.6  | 141.9  | 114.3  | 106.4  |
| 70°   | 1888.3 | 208.9  | 118.3  | 130.1  | 130.1  | 118.3  | 141.9  | 153.7  | 130.1  | 98.6   | 94.6   |
| 72.5° | 1332.4 | 130.1  | 98.6   | 102.5  | 98.6   | 90.7   | 122.2  | 138.0  | 114.3  | 82.8   | 78.8   |
| 75°   | 812.1  | 86.7   | 74.9   | 82.8   | 71.0   | 71.0   | 106.4  | 122.2  | 98.6   | 67.0   | 63.1   |
| 77.5° | 378.4  | 63.1   | 55.2   | 59.1   | 51.2   | 55.2   | 86.7   | 94.6   | 71.0   | 55.2   | 51.2   |
| 80°   | 94.6   | 43.4   | 43.4   | 39.4   | 39.4   | 43.4   | 63.1   | 59.1   | 51.2   | 47.3   | 43.4   |
| 82.5° | 39.4   | 31.5   | 27.6   | 27.6   | 27.6   | 31.5   | 39.4   | 39.4   | 43.4   | 39.4   | 39.4   |
| 85°   | 19.7   | 19.7   | 19.7   | 19.7   | 23.7   | 23.7   | 31.5   | 35.5   | 35.5   | 35.5   | 31.5   |
| 87.5° | 11.8   | 11.8   | 11.8   | 11.8   | 11.8   | 15.8   | 19.7   | 23.7   | 27.6   | 15.8   | 11.8   |
| 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: SP1-2407-184-2

Test Date: 10/09/2024

Luminaire Tested: GSS-SB1A-722-U-5WQ

Data in this report applies to families of products including GSS-SB1A-722-U-5WQ

### Test Information

Test Method: LM-79-2019  
 Report Number: SP1-2407-184-2  
 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-722-U-5WQ**  
 Description: GALLEON II SITE SLIM 1SQ 350MA 5WQ HIGH DENSITY LIGHTSQUARE WITH 70 CRI  
 2200K CCT 26 LEDS

### Spectral Parameters

|                           |          |           |      |      |       |
|---------------------------|----------|-----------|------|------|-------|
| CCT (K):                  | 2160     | CRI (Ra): | 71.9 |      |       |
| CIE u':                   | 0.2927   | R1:       | 68.7 | R9:  | -17.8 |
| CIE v':                   | 0.5388   | R2:       | 82.6 | R10: | 60.5  |
| Duv:                      | 0.0015   | R3:       | 95.5 | R11: | 60.2  |
| CIE x:                    | 0.5130   | R4:       | 66.4 | R12: | 48.2  |
| CIE y:                    | 0.4197   | R5:       | 65.4 | R13: | 70.7  |
| CIE z:                    | 0.0674   | R6:       | 75.9 | R14: | 96.8  |
| Peak Wavelength (nm):     | 609      | R7:       | 77.2 | R15: | 61.8  |
| Dominant Wavelength (nm): | 587      | R8:       | 43.5 |      |       |
| Purity:                   | 79.96089 |           |      |      |       |
| Rf:                       | 70.6     |           |      |      |       |
| Rg:                       | 97.6     |           |      |      |       |



### Test Conditions

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

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

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**CIE 1931 Chromaticity Diagram**



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



Point lies inside the ANSI 2200K 7-step quadrangle

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### Photopic Flux vs. Wavelength



### Photopic Lumens: NR

| $\lambda$<br>(nm) | Power<br>$\text{W}^\wedge/\text{nm}$ | Lumens<br>( $\phi/\text{nm}$ ) | $\lambda$<br>(nm) | Power<br>$\text{W}^\wedge/\text{nm}$ | Lumens<br>( $\phi/\text{nm}$ ) | $\lambda$<br>(nm) | Power<br>$\text{W}^\wedge/\text{nm}$ | Lumens<br>( $\phi/\text{nm}$ ) | $\lambda$<br>(nm) | Power<br>$\text{W}^\wedge/\text{nm}$ | Lumens<br>( $\phi/\text{nm}$ ) | $\lambda$<br>(nm) | Power<br>$\text{W}^\wedge/\text{nm}$ | Lumens<br>( $\phi/\text{nm}$ ) |
|-------------------|--------------------------------------|--------------------------------|-------------------|--------------------------------------|--------------------------------|-------------------|--------------------------------------|--------------------------------|-------------------|--------------------------------------|--------------------------------|-------------------|--------------------------------------|--------------------------------|
| 360               | 0                                    | NR                             | 490               | 27                                   | NR                             | 620               | 966                                  | NR                             | 750               | 46                                   | NR                             | 880               | 1                                    | NR                             |
| 365               | 0                                    | NR                             | 495               | 42                                   | NR                             | 625               | 930                                  | NR                             | 755               | 39                                   | NR                             | 885               | 1                                    | NR                             |
| 370               | 0                                    | NR                             | 500               | 67                                   | NR                             | 630               | 888                                  | NR                             | 760               | 34                                   | NR                             | 890               | 1                                    | NR                             |
| 375               | 0                                    | NR                             | 505               | 101                                  | NR                             | 635               | 835                                  | NR                             | 765               | 30                                   | NR                             | 895               | 1                                    | NR                             |
| 380               | 0                                    | NR                             | 510               | 139                                  | NR                             | 640               | 778                                  | NR                             | 770               | 26                                   | NR                             | 900               | 1                                    | NR                             |
| 385               | 0                                    | NR                             | 515               | 183                                  | NR                             | 645               | 717                                  | NR                             | 775               | 22                                   | NR                             | 905               | 1                                    | NR                             |
| 390               | 0                                    | NR                             | 520               | 224                                  | NR                             | 650               | 656                                  | NR                             | 780               | 19                                   | NR                             | 910               | 1                                    | NR                             |
| 395               | 0                                    | NR                             | 525               | 262                                  | NR                             | 655               | 595                                  | NR                             | 785               | 17                                   | NR                             | 915               | 1                                    | NR                             |
| 400               | 1                                    | NR                             | 530               | 299                                  | NR                             | 660               | 536                                  | NR                             | 790               | 15                                   | NR                             | 920               | 1                                    | NR                             |
| 405               | 3                                    | NR                             | 535               | 332                                  | NR                             | 665               | 480                                  | NR                             | 795               | 13                                   | NR                             | 925               | 1                                    | NR                             |
| 410               | 7                                    | NR                             | 540               | 365                                  | NR                             | 670               | 425                                  | NR                             | 800               | 11                                   | NR                             | 930               | 1                                    | NR                             |
| 415               | 17                                   | NR                             | 545               | 400                                  | NR                             | 675               | 376                                  | NR                             | 805               | 10                                   | NR                             | 935               | 0                                    | NR                             |
| 420               | 36                                   | NR                             | 550               | 437                                  | NR                             | 680               | 332                                  | NR                             | 810               | 8                                    | NR                             | 940               | 0                                    | NR                             |
| 425               | 67                                   | NR                             | 555               | 479                                  | NR                             | 685               | 291                                  | NR                             | 815               | 8                                    | NR                             | 945               | 0                                    | NR                             |
| 430               | 105                                  | NR                             | 560               | 525                                  | NR                             | 690               | 255                                  | NR                             | 820               | 7                                    | NR                             | 950               | 0                                    | NR                             |
| 435               | 141                                  | NR                             | 565               | 579                                  | NR                             | 695               | 221                                  | NR                             | 825               | 6                                    | NR                             | 955               | 0                                    | NR                             |
| 440               | 169                                  | NR                             | 570               | 639                                  | NR                             | 700               | 192                                  | NR                             | 830               | 5                                    | NR                             | 960               | 0                                    | NR                             |
| 445               | 173                                  | NR                             | 575               | 703                                  | NR                             | 705               | 167                                  | NR                             | 835               | 4                                    | NR                             | 965               | 0                                    | NR                             |
| 450               | 136                                  | NR                             | 580               | 769                                  | NR                             | 710               | 144                                  | NR                             | 840               | 4                                    | NR                             | 970               | 0                                    | NR                             |
| 455               | 80                                   | NR                             | 585               | 832                                  | NR                             | 715               | 125                                  | NR                             | 845               | 3                                    | NR                             | 975               | 0                                    | NR                             |
| 460               | 45                                   | NR                             | 590               | 890                                  | NR                             | 720               | 109                                  | NR                             | 850               | 3                                    | NR                             | 980               | 0                                    | NR                             |
| 465               | 32                                   | NR                             | 595               | 937                                  | NR                             | 725               | 94                                   | NR                             | 855               | 3                                    | NR                             | 985               | 0                                    | NR                             |
| 470               | 23                                   | NR                             | 600               | 972                                  | NR                             | 730               | 81                                   | NR                             | 860               | 2                                    | NR                             | 990               | 0                                    | NR                             |
| 475               | 18                                   | NR                             | 605               | 992                                  | NR                             | 735               | 70                                   | NR                             | 865               | 2                                    | NR                             | 995               | 0                                    | NR                             |
| 480               | 18                                   | NR                             | 610               | 998                                  | NR                             | 740               | 61                                   | NR                             | 870               | 2                                    | NR                             | 1000              | 0                                    | NR                             |
| 485               | 20                                   | NR                             | 615               | 990                                  | NR                             | 745               | 53                                   | NR                             | 875               | 2                                    | NR                             |                   |                                      |                                |

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### Scotopic Flux vs. Wavelength



Scotopic Lumens: NR

S/P: 0.8

| 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    | 27                       | NR            | 620    | 966                      | NR            | 750    | 46                       | NR            | 880    | 1                        | NR            |
| 365    | 0                        | NR            | 495    | 42                       | NR            | 625    | 930                      | NR            | 755    | 39                       | NR            | 885    | 1                        | NR            |
| 370    | 0                        | NR            | 500    | 67                       | NR            | 630    | 888                      | NR            | 760    | 34                       | NR            | 890    | 1                        | NR            |
| 375    | 0                        | NR            | 505    | 101                      | NR            | 635    | 835                      | NR            | 765    | 30                       | NR            | 895    | 1                        | NR            |
| 380    | 0                        | NR            | 510    | 139                      | NR            | 640    | 778                      | NR            | 770    | 26                       | NR            | 900    | 1                        | NR            |
| 385    | 0                        | NR            | 515    | 183                      | NR            | 645    | 717                      | NR            | 775    | 22                       | NR            | 905    | 1                        | NR            |
| 390    | 0                        | NR            | 520    | 224                      | NR            | 650    | 656                      | NR            | 780    | 19                       | NR            | 910    | 1                        | NR            |
| 395    | 0                        | NR            | 525    | 262                      | NR            | 655    | 595                      | NR            | 785    | 17                       | NR            | 915    | 1                        | NR            |
| 400    | 1                        | NR            | 530    | 299                      | NR            | 660    | 536                      | NR            | 790    | 15                       | NR            | 920    | 1                        | NR            |
| 405    | 3                        | NR            | 535    | 332                      | NR            | 665    | 480                      | NR            | 795    | 13                       | NR            | 925    | 1                        | NR            |
| 410    | 7                        | NR            | 540    | 365                      | NR            | 670    | 425                      | NR            | 800    | 11                       | NR            | 930    | 1                        | NR            |
| 415    | 17                       | NR            | 545    | 400                      | NR            | 675    | 376                      | NR            | 805    | 10                       | NR            | 935    | 0                        | NR            |
| 420    | 36                       | NR            | 550    | 437                      | NR            | 680    | 332                      | NR            | 810    | 8                        | NR            | 940    | 0                        | NR            |
| 425    | 67                       | NR            | 555    | 479                      | NR            | 685    | 291                      | NR            | 815    | 8                        | NR            | 945    | 0                        | NR            |
| 430    | 105                      | NR            | 560    | 525                      | NR            | 690    | 255                      | NR            | 820    | 7                        | NR            | 950    | 0                        | NR            |
| 435    | 141                      | NR            | 565    | 579                      | NR            | 695    | 221                      | NR            | 825    | 6                        | NR            | 955    | 0                        | NR            |
| 440    | 169                      | NR            | 570    | 639                      | NR            | 700    | 192                      | NR            | 830    | 5                        | NR            | 960    | 0                        | NR            |
| 445    | 173                      | NR            | 575    | 703                      | NR            | 705    | 167                      | NR            | 835    | 4                        | NR            | 965    | 0                        | NR            |
| 450    | 136                      | NR            | 580    | 769                      | NR            | 710    | 144                      | NR            | 840    | 4                        | NR            | 970    | 0                        | NR            |
| 455    | 80                       | NR            | 585    | 832                      | NR            | 715    | 125                      | NR            | 845    | 3                        | NR            | 975    | 0                        | NR            |
| 460    | 45                       | NR            | 590    | 890                      | NR            | 720    | 109                      | NR            | 850    | 3                        | NR            | 980    | 0                        | NR            |
| 465    | 32                       | NR            | 595    | 937                      | NR            | 725    | 94                       | NR            | 855    | 3                        | NR            | 985    | 0                        | NR            |
| 470    | 23                       | NR            | 600    | 972                      | NR            | 730    | 81                       | NR            | 860    | 2                        | NR            | 990    | 0                        | NR            |
| 475    | 18                       | NR            | 605    | 992                      | NR            | 735    | 70                       | NR            | 865    | 2                        | NR            | 995    | 0                        | NR            |
| 480    | 18                       | NR            | 610    | 998                      | NR            | 740    | 61                       | NR            | 870    | 2                        | NR            | 1000   | 0                        | NR            |
| 485    | 20                       | NR            | 615    | 990                      | NR            | 745    | 53                       | NR            | 875    | 2                        | NR            |        |                          |               |

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### Melanopic Flux vs. Wavelength



Melanopic Lumens: NR

M/P: 1.21

| $\lambda$<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               | 27                                     | NR                             | 620               | 966                                    | NR                             | 750               | 46                                     | NR                             | 880               | 1                                      | NR                             |
| 365               | 0                                      | NR                             | 495               | 42                                     | NR                             | 625               | 930                                    | NR                             | 755               | 39                                     | NR                             | 885               | 1                                      | NR                             |
| 370               | 0                                      | NR                             | 500               | 67                                     | NR                             | 630               | 888                                    | NR                             | 760               | 34                                     | NR                             | 890               | 1                                      | NR                             |
| 375               | 0                                      | NR                             | 505               | 101                                    | NR                             | 635               | 835                                    | NR                             | 765               | 30                                     | NR                             | 895               | 1                                      | NR                             |
| 380               | 0                                      | NR                             | 510               | 139                                    | NR                             | 640               | 778                                    | NR                             | 770               | 26                                     | NR                             | 900               | 1                                      | NR                             |
| 385               | 0                                      | NR                             | 515               | 183                                    | NR                             | 645               | 717                                    | NR                             | 775               | 22                                     | NR                             | 905               | 1                                      | NR                             |
| 390               | 0                                      | NR                             | 520               | 224                                    | NR                             | 650               | 656                                    | NR                             | 780               | 19                                     | NR                             | 910               | 1                                      | NR                             |
| 395               | 0                                      | NR                             | 525               | 262                                    | NR                             | 655               | 595                                    | NR                             | 785               | 17                                     | NR                             | 915               | 1                                      | NR                             |
| 400               | 1                                      | NR                             | 530               | 299                                    | NR                             | 660               | 536                                    | NR                             | 790               | 15                                     | NR                             | 920               | 1                                      | NR                             |
| 405               | 3                                      | NR                             | 535               | 332                                    | NR                             | 665               | 480                                    | NR                             | 795               | 13                                     | NR                             | 925               | 1                                      | NR                             |
| 410               | 7                                      | NR                             | 540               | 365                                    | NR                             | 670               | 425                                    | NR                             | 800               | 11                                     | NR                             | 930               | 1                                      | NR                             |
| 415               | 17                                     | NR                             | 545               | 400                                    | NR                             | 675               | 376                                    | NR                             | 805               | 10                                     | NR                             | 935               | 0                                      | NR                             |
| 420               | 36                                     | NR                             | 550               | 437                                    | NR                             | 680               | 332                                    | NR                             | 810               | 8                                      | NR                             | 940               | 0                                      | NR                             |
| 425               | 67                                     | NR                             | 555               | 479                                    | NR                             | 685               | 291                                    | NR                             | 815               | 8                                      | NR                             | 945               | 0                                      | NR                             |
| 430               | 105                                    | NR                             | 560               | 525                                    | NR                             | 690               | 255                                    | NR                             | 820               | 7                                      | NR                             | 950               | 0                                      | NR                             |
| 435               | 141                                    | NR                             | 565               | 579                                    | NR                             | 695               | 221                                    | NR                             | 825               | 6                                      | NR                             | 955               | 0                                      | NR                             |
| 440               | 169                                    | NR                             | 570               | 639                                    | NR                             | 700               | 192                                    | NR                             | 830               | 5                                      | NR                             | 960               | 0                                      | NR                             |
| 445               | 173                                    | NR                             | 575               | 703                                    | NR                             | 705               | 167                                    | NR                             | 835               | 4                                      | NR                             | 965               | 0                                      | NR                             |
| 450               | 136                                    | NR                             | 580               | 769                                    | NR                             | 710               | 144                                    | NR                             | 840               | 4                                      | NR                             | 970               | 0                                      | NR                             |
| 455               | 80                                     | NR                             | 585               | 832                                    | NR                             | 715               | 125                                    | NR                             | 845               | 3                                      | NR                             | 975               | 0                                      | NR                             |
| 460               | 45                                     | NR                             | 590               | 890                                    | NR                             | 720               | 109                                    | NR                             | 850               | 3                                      | NR                             | 980               | 0                                      | NR                             |
| 465               | 32                                     | NR                             | 595               | 937                                    | NR                             | 725               | 94                                     | NR                             | 855               | 3                                      | NR                             | 985               | 0                                      | NR                             |
| 470               | 23                                     | NR                             | 600               | 972                                    | NR                             | 730               | 81                                     | NR                             | 860               | 2                                      | NR                             | 990               | 0                                      | NR                             |
| 475               | 18                                     | NR                             | 605               | 992                                    | NR                             | 735               | 70                                     | NR                             | 865               | 2                                      | NR                             | 995               | 0                                      | NR                             |
| 480               | 18                                     | NR                             | 610               | 998                                    | NR                             | 740               | 61                                     | NR                             | 870               | 2                                      | NR                             | 1000              | 0                                      | NR                             |
| 485               | 20                                     | NR                             | 615               | 990                                    | NR                             | 745               | 53                                     | NR                             | 875               | 2                                      | NR                             |                   |                                        |                                |

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TM-30-18

### Summary

$R_f = 70.6$   
 $R_g = 97.6$   
 $CIE\ R_a = 71.9$   
 $R_g = -17.8$



### Color Vector Graphics



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

|            |            |            |            |
|------------|------------|------------|------------|
| CES01 = 87 | CES26 = 60 | CES51 = 74 | CES76 = 58 |
| CES02 = 65 | CES27 = 77 | CES52 = 77 | CES77 = 82 |
| CES03 = 32 | CES28 = 85 | CES53 = 65 | CES78 = 65 |
| CES04 = 72 | CES29 = 50 | CES54 = 77 | CES79 = 86 |
| CES05 = 52 | CES30 = 49 | CES55 = 74 | CES80 = 85 |
| CES06 = 53 | CES31 = 55 | CES56 = 64 | CES81 = 61 |
| CES07 = 44 | CES32 = 55 | CES57 = 60 | CES82 = 93 |
| CES08 = 43 | CES33 = 55 | CES58 = 64 | CES83 = 83 |
| CES09 = 29 | CES34 = 75 | CES59 = 84 | CES84 = 93 |
| CES10 = 79 | CES35 = 88 | CES60 = 89 | CES85 = 81 |
| CES11 = 62 | CES36 = 78 | CES61 = 84 | CES86 = 55 |
| CES12 = 68 | CES37 = 82 | CES62 = 68 | CES87 = 79 |
| CES13 = 45 | CES38 = 54 | CES63 = 68 | CES88 = 72 |
| CES14 = 75 | CES39 = 90 | CES64 = 69 | CES89 = 62 |
| CES15 = 72 | CES40 = 86 | CES65 = 66 | CES90 = 67 |
| CES16 = 49 | CES41 = 75 | CES66 = 64 | CES91 = 89 |
| CES17 = 51 | CES42 = 83 | CES67 = 63 | CES92 = 67 |
| CES18 = 57 | CES43 = 68 | CES68 = 71 | CES93 = 78 |
| CES19 = 74 | CES44 = 98 | CES69 = 81 | CES94 = 52 |
| CES20 = 68 | CES45 = 76 | CES70 = 65 | CES95 = 76 |
| CES21 = 89 | CES46 = 68 | CES71 = 64 | CES96 = 78 |
| CES22 = 81 | CES47 = 60 | CES72 = 88 | CES97 = 76 |
| CES23 = 92 | CES48 = 47 | CES73 = 59 | CES98 = 71 |
| CES24 = 92 | CES49 = 65 | CES74 = 85 | CES99 = 65 |
| CES25 = 74 | CES50 = 74 | CES75 = 66 |            |



**Color Rendition by Hue-Angle Bin**


**Measure Comparisons**



(END OF REPORT)