

Signify Classified - Internal  
Cooper Lighting Solutions Photometric Lab  
1121 Highway 74 South  
Peachtree City, GA 30269



Scaled data based on original data using  
LM-79-08 Approved Method: Electrical and Photometric Measurements of Solid-  
State Lighting Products

Test Report Prepared for  
Cooper Lighting Solutions  
(formerly Eaton)

Brand: STREETWORKS

Report Number: P1386476

Luminaire Tested: **VAL-T-SB4B-730-U-T2R**

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.

Report Generated By 670245763



**Test Information**

Test Method: LM-79-08  
 Report Number: P1386476  
 Test Lab: INNOVATION CENTER(G1)  
 Issue Date: 02/18/2026  
 Manufacturer: COOPER LIGHTING SOLUTIONS (FORMERLY EATON)  
 Product Line: STREETWORKS  
 Catalog Number: VAL-T-SB4B-730-U-T2R  
 Description: GALLEON II WALL SLIM HIGH DENSITY LED ARRAYS 45 SQUARE 148W 70CRI  
 3000K FIXTURE w/ TYPE II ROADWAY DISTRIBUTION OPTIC  
 Light Source: (104) 3000K 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**

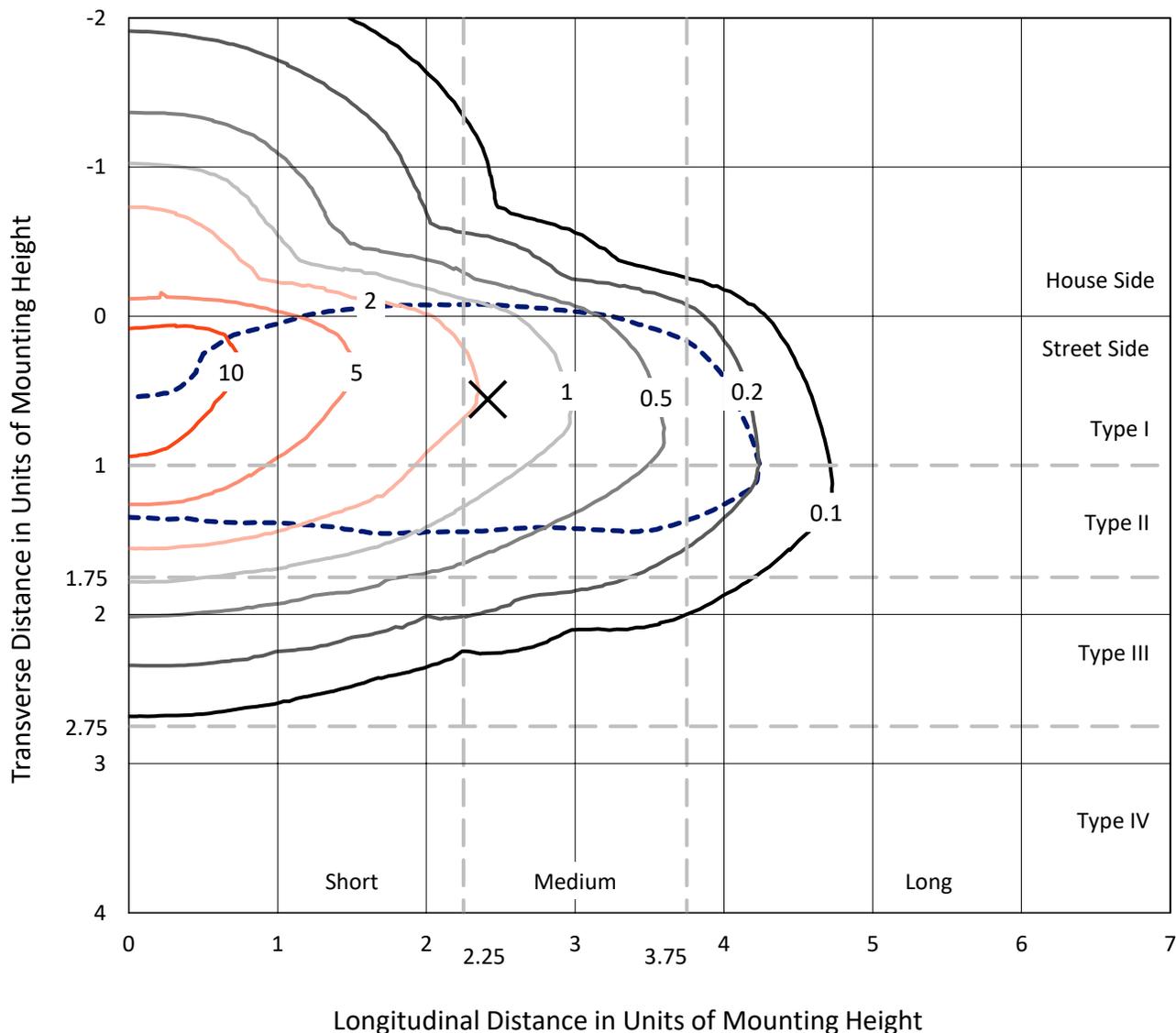
Lumens per Lamp: N/A  
 Luminaire Lumens: 22024 lumens  
 Efficiency: N/A  
 Efficacy: 148.8 lumens/watt  
 Luminous Opening: Rectangular (W 1.5' x L: 1' x H: 0')  
 IES Classification: Type II - Medium  
 BUG Rating: B3 - U0 - G3

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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### Iso-Footcandle Lines of Horizontal Illumination

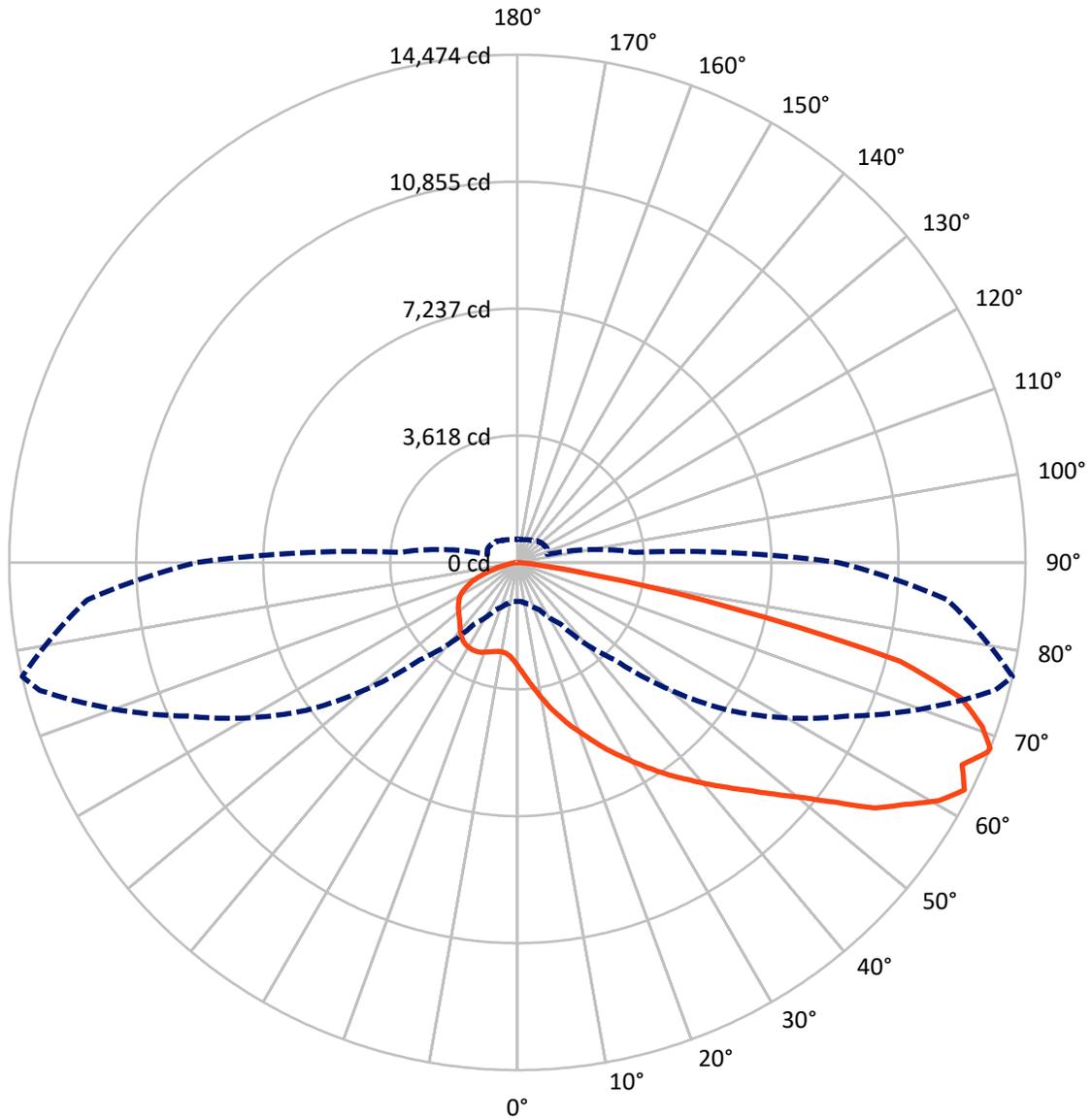
✕ Max cd  
 - - - 1/2 Max cd



Based on 20 foot mounting height. Maximum calculated value = 12.9 fc  
 Type II - Medium - N/A

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### Luminous Intensity Polar Plot



— Vertical Plane Through 77-Deg Lateral      - - - Horizontal Cone Through 68-Deg Vertical

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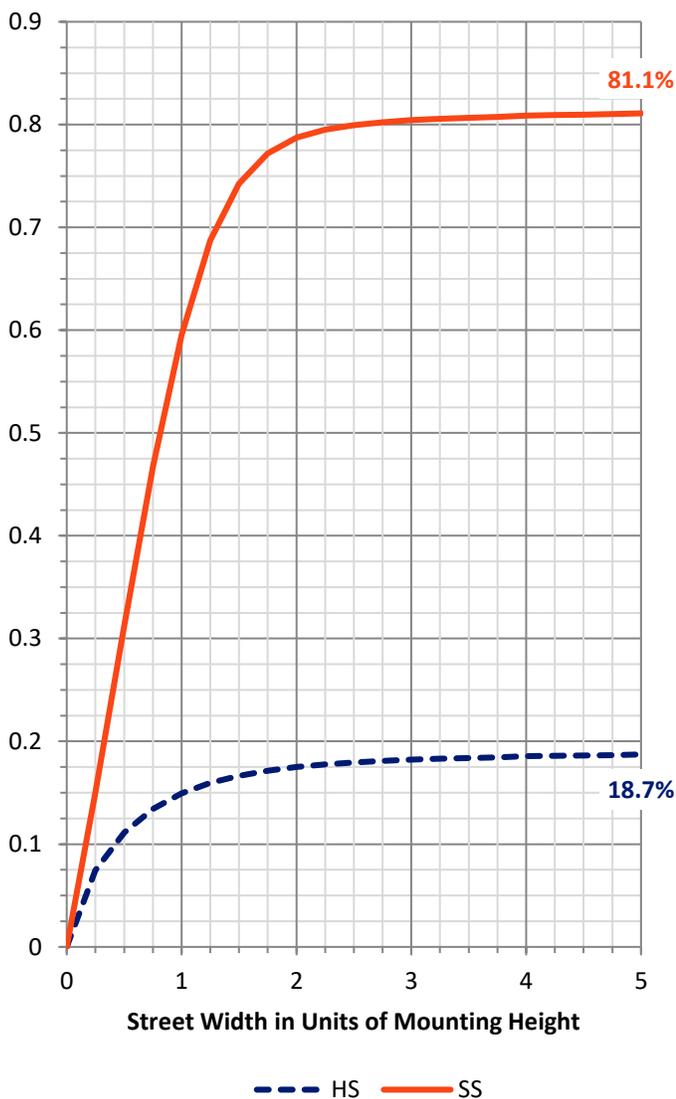
**FLUX DISTRIBUTION:**

|                    |           | Downward | Upward | Total   |
|--------------------|-----------|----------|--------|---------|
| <b>House Side</b>  | Lumens    | 4157.5   | 0.0    | 4157.5  |
|                    | % Fixture | 18.9     | 0.0    | 18.9    |
| <b>Street Side</b> | Lumens    | 17866.4  | 0.0    | 17866.4 |
|                    | % Fixture | 81.1     | 0.0    | 81.1    |
| <b>Total</b>       | Lumens    | 22024.0  | 0.0    | 22024.0 |
|                    | % Fixture | 100.0    | 0.0    | 100.0   |

**Coefficient of Utilization**

**ZONAL LUMENS:**

| Zone      | Lumens  | % Fixture |
|-----------|---------|-----------|
| 0°-10°    | 304.0   | 1.4       |
| 10°-20°   | 1067.5  | 4.8       |
| 20°-30°   | 1951.3  | 8.9       |
| 30°-40°   | 3161.8  | 14.4      |
| 40°-50°   | 4348.8  | 19.7      |
| 50°-60°   | 4876.0  | 22.1      |
| 60°-70°   | 4109.5  | 18.7      |
| 70°-80°   | 2036.8  | 9.2       |
| 80°-90°   | 168.2   | 0.8       |
| 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°    | 22024.0 | 100.0     |
| 0°-180°   | 22024.0 | 100.0     |

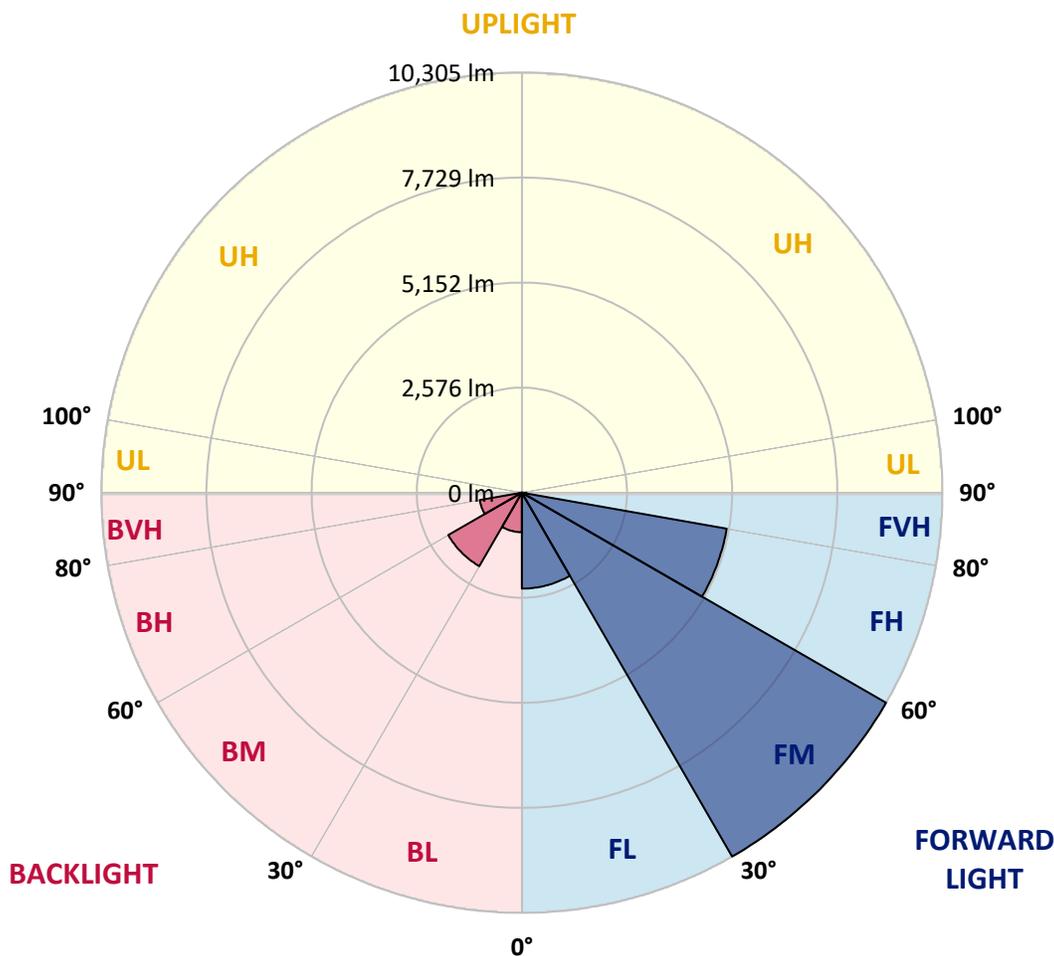


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**LUMINAIRE CLASSIFICATION SYSTEM LUMEN TABLE AND BUG RATING:**

| Zone           | Lumens  | % Fixture | Zone Rating/Lumen Limit |      |         |
|----------------|---------|-----------|-------------------------|------|---------|
|                |         |           | B                       | U    | G       |
| FL (0°-30°)    | 2353.4  | 10.7      |                         |      |         |
| FM (30°-60°)   | 10304.8 | 46.8      |                         |      |         |
| FH (60°-80°)   | 5097.6  | 23.1      |                         |      | G3/7500 |
| FVH (80°-90°)  | 110.6   | 0.5       |                         |      | G2/225  |
| BL (0°-30°)    | 969.4   | 4.4       | B2/1000                 |      |         |
| BM (30°-60°)   | 2081.8  | 9.5       | B2/2500                 |      |         |
| BH (60°-80°)   | 1048.7  | 4.8       | B3/2500                 |      | G3/2500 |
| BVH (80°-90°)  | 57.7    | 0.3       |                         |      | G1/100  |
| UL (90°-100°)  | 0.0     | 0.0       |                         | U0/0 |         |
| UH (100°-180°) | 0.0     | 0.0       |                         | U0/0 |         |

**BUG Rating: B3-U0-G3**  
 Type II Medium





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**CANDELA DISTRIBUTION (FULL):**

|       | 0°      | 5°      | 15°     | 25°    | 35°    | 45°    | 55°     | 65°     | 75°     | 77°     | 85°     |
|-------|---------|---------|---------|--------|--------|--------|---------|---------|---------|---------|---------|
| 0°    | 2963.0  | 2963.0  | 2963.0  | 2963.0 | 2963.0 | 2963.0 | 2963.0  | 2963.0  | 2963.0  | 2963.0  | 2963.0  |
| 2.5°  | 3696.1  | 3675.7  | 3660.5  | 3609.6 | 3579.0 | 3497.6 | 3431.4  | 3319.4  | 3176.8  | 3166.6  | 3054.6  |
| 5°    | 4261.2  | 4235.8  | 4215.4  | 4144.1 | 4113.6 | 3971.0 | 3843.7  | 3645.2  | 3441.6  | 3405.9  | 3181.9  |
| 7.5°  | 4719.4  | 4688.9  | 4668.5  | 4602.3 | 4541.2 | 4429.2 | 4266.3  | 4027.0  | 3731.7  | 3665.6  | 3370.3  |
| 10°   | 5040.1  | 5040.1  | 5035.1  | 4994.3 | 4958.7 | 4851.8 | 4663.4  | 4383.4  | 4032.1  | 3955.8  | 3568.8  |
| 12.5° | 5289.6  | 5274.3  | 5294.7  | 5320.2 | 5325.2 | 5264.2 | 5091.1  | 4775.4  | 4352.9  | 4276.5  | 3777.6  |
| 15°   | 5310.0  | 5315.1  | 5391.4  | 5493.2 | 5620.5 | 5640.9 | 5498.3  | 5167.4  | 4663.4  | 4561.6  | 4021.9  |
| 17.5° | 5208.2  | 5233.6  | 5340.5  | 5508.5 | 5752.9 | 5900.5 | 5870.0  | 5574.7  | 4999.4  | 4892.5  | 4245.9  |
| 20°   | 5177.6  | 5208.2  | 5315.1  | 5523.8 | 5814.0 | 6058.4 | 6150.0  | 5936.2  | 5335.4  | 5187.8  | 4490.3  |
| 22.5° | 5360.9  | 5371.1  | 5447.4  | 5620.5 | 5900.5 | 6180.5 | 6384.2  | 6282.4  | 5691.8  | 5528.9  | 4770.3  |
| 25°   | 5859.8  | 5849.6  | 5844.5  | 5885.3 | 6094.0 | 6338.4 | 6587.8  | 6608.2  | 6063.4  | 5900.5  | 5035.1  |
| 27.5° | 6689.6  | 6730.4  | 6613.3  | 6389.3 | 6409.6 | 6598.0 | 6791.5  | 6898.4  | 6424.9  | 6246.7  | 5299.8  |
| 30°   | 7723.1  | 7718.0  | 7509.3  | 7147.8 | 6872.9 | 6939.1 | 7046.0  | 7173.3  | 6786.4  | 6623.5  | 5595.1  |
| 32.5° | 8603.9  | 8583.5  | 8359.5  | 7942.0 | 7509.3 | 7366.8 | 7407.5  | 7432.9  | 7203.8  | 7020.6  | 5895.4  |
| 35°   | 9169.0  | 9174.1  | 8960.3  | 8598.8 | 8115.1 | 7881.0 | 7779.1  | 7718.0  | 7621.3  | 7443.1  | 6251.8  |
| 37.5° | 9734.1  | 9703.6  | 9433.7  | 9006.1 | 8603.9 | 8410.4 | 8293.3  | 8033.7  | 8008.2  | 7850.4  | 6567.5  |
| 40°   | 10156.7 | 10126.1 | 9851.2  | 9362.5 | 8995.9 | 8838.1 | 8792.3  | 8400.2  | 8441.0  | 8303.5  | 6918.7  |
| 42.5° | 10350.1 | 10355.2 | 10105.7 | 9662.8 | 9286.1 | 9209.7 | 9301.4  | 8822.8  | 8899.2  | 8771.9  | 7300.6  |
| 45°   | 10355.2 | 10329.8 | 10156.7 | 9805.4 | 9520.3 | 9459.2 | 9708.6  | 9301.4  | 9398.1  | 9281.0  | 7743.5  |
| 47.5° | 10075.2 | 10075.2 | 10003.9 | 9795.2 | 9642.5 | 9647.6 | 10049.7 | 9785.0  | 9958.1  | 9871.6  | 8257.7  |
| 50°   | 9464.3  | 9515.2  | 9545.7  | 9586.5 | 9581.4 | 9779.9 | 10324.7 | 10289.0 | 10558.9 | 10533.4 | 8833.0  |
| 52.5° | 7600.9  | 7814.8  | 8583.5  | 9077.4 | 9393.0 | 9764.6 | 10625.0 | 10808.3 | 11317.4 | 11363.2 | 9662.8  |
| 55°   | 6063.4  | 6114.4  | 6760.9  | 8033.7 | 8970.4 | 9637.4 | 10731.9 | 11393.8 | 12289.8 | 12361.1 | 10421.4 |
| 57.5° | 4923.1  | 5045.2  | 5437.2  | 6654.0 | 8049.0 | 9352.3 | 10803.2 | 11709.4 | 12905.8 | 13022.9 | 11047.6 |
| 60°   | 3640.1  | 3711.4  | 4088.1  | 5096.1 | 6740.6 | 8685.3 | 10844.0 | 11999.6 | 13623.7 | 13791.7 | 11862.2 |
| 62.5° | 2677.9  | 2683.0  | 2922.3  | 3558.6 | 5320.2 | 7590.8 | 10528.3 | 12233.8 | 14097.1 | 14290.6 | 12121.8 |
| 65°   | 1731.0  | 1751.3  | 1990.6  | 2540.4 | 3594.3 | 6221.3 | 9800.3  | 11317.4 | 13633.8 | 13918.9 | 11964.0 |
| 67.5° | 1165.9  | 1201.5  | 1344.0  | 1619.0 | 2408.1 | 4439.4 | 7646.8  | 10477.4 | 14061.5 | 14438.2 | 12345.8 |
| 68°   | 1109.9  | 1114.9  | 1226.9  | 1491.7 | 2143.3 | 3930.3 | 7351.5  | 10370.5 | 14081.9 | 14473.9 | 12300.0 |
| 70°   | 880.8   | 890.9   | 962.2   | 1104.8 | 1456.0 | 2408.1 | 5936.2  | 9474.5  | 13705.1 | 14051.3 | 11633.1 |
| 72.5° | 672.0   | 687.3   | 733.1   | 789.1  | 946.9  | 1476.4 | 3472.1  | 7718.0  | 12712.4 | 13206.2 | 10533.4 |
| 75°   | 570.2   | 575.3   | 610.9   | 631.3  | 621.1  | 896.0  | 1949.9  | 6038.0  | 10813.4 | 11266.5 | 8649.7  |
| 77.5° | 448.0   | 463.3   | 514.2   | 524.4  | 473.5  | 621.1  | 1023.3  | 3446.6  | 6348.5  | 6200.9  | 4164.5  |
| 80°   | 320.7   | 330.9   | 371.6   | 351.3  | 371.6  | 427.6  | 483.7   | 1237.1  | 2642.3  | 2306.2  | 977.5   |
| 82.5° | 112.0   | 127.3   | 254.6   | 244.4  | 244.4  | 193.5  | 218.9   | 539.7   | 687.3   | 600.7   | 244.4   |
| 85°   | 20.4    | 25.5    | 71.3    | 101.8  | 91.6   | 71.3   | 91.6    | 168.0   | 137.5   | 117.1   | 71.3    |
| 87.5° | 5.1     | 5.1     | 10.2    | 10.2   | 10.2   | 15.3   | 25.5    | 35.6    | 40.7    | 40.7    | 40.7    |
| 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: P1386476  
 CATALOG NUMBER: VAL-T-SB4B-730-U-T2R

**CANDELA DISTRIBUTION (continued):**

|       | 90°    | 95°    | 105°   | 115°   | 125°   | 135°   | 145°   | 155°   | 165°   | 175°   | 180°   |
|-------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|
| 0°    | 2963.0 | 2963.0 | 2963.0 | 2963.0 | 2963.0 | 2963.0 | 2963.0 | 2963.0 | 2963.0 | 2963.0 | 2963.0 |
| 2.5°  | 2993.5 | 2917.2 | 2769.5 | 2637.2 | 2530.3 | 2428.4 | 2347.0 | 2291.0 | 2250.2 | 2229.9 | 2229.9 |
| 5°    | 3059.7 | 2896.8 | 2627.0 | 2387.7 | 2204.4 | 2082.2 | 2005.9 | 1960.1 | 1955.0 | 1949.9 | 1949.9 |
| 7.5°  | 3161.5 | 2932.4 | 2530.3 | 2229.9 | 2072.1 | 2005.9 | 1985.5 | 1980.4 | 1980.4 | 1990.6 | 1990.6 |
| 10°   | 3299.0 | 2993.5 | 2489.5 | 2173.9 | 2087.3 | 2067.0 | 2056.8 | 2072.1 | 2077.2 | 2082.2 | 2087.3 |
| 12.5° | 3461.9 | 3069.9 | 2469.2 | 2199.3 | 2148.4 | 2138.2 | 2143.3 | 2138.2 | 2153.5 | 2163.7 | 2158.6 |
| 15°   | 3619.7 | 3166.6 | 2489.5 | 2250.2 | 2209.5 | 2204.4 | 2189.2 | 2199.3 | 2194.2 | 2189.2 | 2189.2 |
| 17.5° | 3797.9 | 3278.6 | 2509.9 | 2291.0 | 2250.2 | 2229.9 | 2209.5 | 2199.3 | 2179.0 | 2173.9 | 2168.8 |
| 20°   | 3991.4 | 3390.6 | 2545.5 | 2326.6 | 2260.4 | 2214.6 | 2179.0 | 2138.2 | 2107.7 | 2092.4 | 2092.4 |
| 22.5° | 4189.9 | 3507.7 | 2576.1 | 2331.7 | 2240.1 | 2158.6 | 2097.5 | 2046.6 | 2000.8 | 1970.2 | 1955.0 |
| 25°   | 4393.6 | 3624.8 | 2586.3 | 2311.3 | 2179.0 | 2082.2 | 2000.8 | 1939.7 | 1878.6 | 1848.1 | 1837.9 |
| 27.5° | 4602.3 | 3726.7 | 2571.0 | 2260.4 | 2097.5 | 1990.6 | 1899.0 | 1832.8 | 1781.9 | 1746.2 | 1746.2 |
| 30°   | 4806.0 | 3823.4 | 2530.3 | 2189.2 | 2011.0 | 1904.1 | 1812.4 | 1751.3 | 1705.5 | 1675.0 | 1669.9 |
| 32.5° | 5040.1 | 3920.1 | 2479.3 | 2097.5 | 1924.4 | 1827.7 | 1736.1 | 1680.0 | 1639.3 | 1624.0 | 1629.1 |
| 35°   | 5274.3 | 4006.7 | 2397.9 | 2011.0 | 1832.8 | 1751.3 | 1664.8 | 1619.0 | 1603.7 | 1593.5 | 1588.4 |
| 37.5° | 5503.4 | 4067.8 | 2291.0 | 1904.1 | 1756.4 | 1659.7 | 1619.0 | 1573.1 | 1532.4 | 1481.5 | 1476.4 |
| 40°   | 5737.6 | 4118.7 | 2153.5 | 1797.1 | 1669.9 | 1593.5 | 1573.1 | 1512.0 | 1415.3 | 1328.8 | 1328.8 |
| 42.5° | 6007.4 | 4169.6 | 2005.9 | 1695.3 | 1563.0 | 1527.3 | 1522.2 | 1425.5 | 1282.9 | 1221.9 | 1216.8 |
| 45°   | 6328.2 | 4205.2 | 1873.5 | 1598.6 | 1451.0 | 1435.7 | 1476.4 | 1349.1 | 1232.0 | 1181.1 | 1186.2 |
| 47.5° | 6699.8 | 4286.7 | 1756.4 | 1491.7 | 1344.0 | 1369.5 | 1374.6 | 1277.9 | 1186.2 | 1125.1 | 1125.1 |
| 50°   | 7178.4 | 4429.2 | 1634.2 | 1354.2 | 1267.7 | 1323.7 | 1277.9 | 1206.6 | 1109.9 | 1074.2 | 1069.1 |
| 52.5° | 7814.8 | 4546.3 | 1532.4 | 1242.2 | 1216.8 | 1272.8 | 1211.7 | 1135.3 | 1053.8 | 1002.9 | 997.8  |
| 55°   | 8298.4 | 4551.4 | 1435.7 | 1155.7 | 1181.1 | 1170.9 | 1145.5 | 1064.0 | 1002.9 | 941.8  | 941.8  |
| 57.5° | 8817.7 | 4520.9 | 1349.1 | 1104.8 | 1145.5 | 1099.7 | 1079.3 | 992.8  | 931.7  | 885.8  | 875.7  |
| 60°   | 9377.7 | 4464.9 | 1257.5 | 1069.1 | 1114.9 | 1048.8 | 1002.9 | 931.7  | 880.8  | 845.1  | 845.1  |
| 62.5° | 9474.5 | 4195.0 | 1145.5 | 1058.9 | 1079.3 | 997.8  | 926.6  | 870.6  | 819.7  | 799.3  | 799.3  |
| 65°   | 9296.3 | 3909.9 | 1018.2 | 1008.0 | 1023.3 | 936.8  | 855.3  | 804.4  | 763.7  | 743.3  | 738.2  |
| 67.5° | 9301.4 | 3446.6 | 916.4  | 946.9  | 921.5  | 865.5  | 784.0  | 738.2  | 687.3  | 672.0  | 672.0  |
| 68°   | 9138.4 | 3334.6 | 880.8  | 936.8  | 901.1  | 845.1  | 763.7  | 712.7  | 666.9  | 661.8  | 661.8  |
| 70°   | 8374.8 | 2703.4 | 753.5  | 865.5  | 840.0  | 773.8  | 672.0  | 646.6  | 616.0  | 610.9  | 616.0  |
| 72.5° | 7315.8 | 1995.7 | 605.8  | 728.0  | 748.4  | 600.7  | 590.6  | 580.4  | 544.7  | 544.7  | 539.7  |
| 75°   | 5722.3 | 1456.0 | 458.2  | 575.3  | 554.9  | 549.8  | 504.0  | 498.9  | 468.4  | 463.3  | 453.1  |
| 77.5° | 2596.4 | 743.3  | 310.6  | 381.8  | 442.9  | 488.7  | 422.6  | 407.3  | 386.9  | 386.9  | 381.8  |
| 80°   | 728.0  | 381.8  | 208.7  | 218.9  | 269.8  | 397.1  | 330.9  | 300.4  | 315.6  | 305.5  | 264.7  |
| 82.5° | 224.0  | 157.8  | 127.3  | 137.5  | 127.3  | 229.1  | 244.4  | 188.4  | 168.0  | 178.2  | 188.4  |
| 85°   | 76.4   | 71.3   | 61.1   | 66.2   | 56.0   | 91.6   | 106.9  | 71.3   | 76.4   | 76.4   | 66.2   |
| 87.5° | 40.7   | 40.7   | 30.5   | 25.5   | 20.4   | 15.3   | 10.2   | 10.2   | 5.1    | 5.1    | 5.1    |
| 90°   | 0.0    | 0.0    | 0.0    | 0.0    | 0.0    | 0.0    | 0.0    | 0.0    | 0.0    | 0.0    | 0.0    |

Cooper Lighting Solutions Photometric Lab  
1121 Highway 74 South  
Peachtree City, GA 30269



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

Report Prepared for

Cooper Lighting Solutions

McGraw-Edison

Report Number: SP1-2407-184-4

Test Date: 10/10/2024

Luminaire Tested: GSS-SB1A-730-U-5WQ

Data in this report applies to families of products including GSS-SB1A-730-U-5WQ

**Test Information**

Test Method: LM-79-2019  
 Report Number: SP1-2407-184-4  
 Test Lab: COOPER LIGHTING SOLUTIONS  
 Photometer: SP1 - 76IN SPHERE  
 Measurement Geometry: 4π  
 Issue Date: 10/15/2024  
 Manufacturer: COOPER LIGHTING SOLUTIONS  
 Product Line: McGraw-Edison  
 Catalog Number: **GSS-SB1A-730-U-5WQ**  
 Description: GALLEON II SITE SLIM 1SQ 350MA 5WQ HIGH DENSITY LIGHTSQUARE WITH 70 CRI 3000K CCT 26 LEDS

**Spectral Parameters**

CCT (K): 2985  
 CIE u': 0.2504  
 CIE v': 0.5243  
 Duv: 0.0019  
 CIE x: 0.4408  
 CIE y: 0.4101  
 CIE z: 0.1491  
 Peak Wavelength (nm): 595  
 Dominant Wavelength (nm): 582  
 Purity: 55.41818  
 Rf: 73.8  
 Rg: 94.4

|           |      |      |       |
|-----------|------|------|-------|
| CRI (Ra): | 70.8 |      |       |
| R1:       | 66.3 | R9:  | -43.2 |
| R2:       | 80.6 | R10: | 57.6  |
| R3:       | 94.5 | R11: | 64.8  |
| R4:       | 68.2 | R12: | 53.5  |
| R5:       | 66.5 | R13: | 68.7  |
| R6:       | 74.7 | R14: | 97.0  |
| R7:       | 76.2 | R15: | 56.4  |
| R8:       | 39.6 |      |       |



**Test Conditions**

Stabilization Time: 36M  
 Operation Time: 1H 36M  
 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



CCT = 2985K  
 CIE x = 0.4408  
 CIE y = 0.4101  
 Duv = 0.0019

Point lies inside the ANSI 3000K 4-step quadrangle

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**Photopic Flux vs. Wavelength**



**Photopic Lumens: NR**

| $\lambda$<br>(nm) | Power<br>W <sup>^</sup> /nm | Lumens<br>( $\phi$ /nm) | $\lambda$<br>(nm) | Power<br>W <sup>^</sup> /nm | Lumens<br>( $\phi$ /nm) | $\lambda$<br>(nm) | Power<br>W <sup>^</sup> /nm | Lumens<br>( $\phi$ /nm) | $\lambda$<br>(nm) | Power<br>W <sup>^</sup> /nm | Lumens<br>( $\phi$ /nm) | $\lambda$<br>(nm) | Power<br>W <sup>^</sup> /nm | Lumens<br>( $\phi$ /nm) |
|-------------------|-----------------------------|-------------------------|-------------------|-----------------------------|-------------------------|-------------------|-----------------------------|-------------------------|-------------------|-----------------------------|-------------------------|-------------------|-----------------------------|-------------------------|
| 360               | 0                           | NR                      | 490               | 142                         | NR                      | 620               | 803                         | NR                      | 750               | 17                          | NR                      | 880               | 0                           | NR                      |
| 365               | 0                           | NR                      | 495               | 189                         | NR                      | 625               | 734                         | NR                      | 755               | 15                          | NR                      | 885               | 0                           | NR                      |
| 370               | 0                           | NR                      | 500               | 240                         | NR                      | 630               | 670                         | NR                      | 760               | 13                          | NR                      | 890               | 0                           | NR                      |
| 375               | 0                           | NR                      | 505               | 290                         | NR                      | 635               | 600                         | NR                      | 765               | 11                          | NR                      | 895               | 0                           | NR                      |
| 380               | 0                           | NR                      | 510               | 335                         | NR                      | 640               | 535                         | NR                      | 770               | 9                           | NR                      | 900               | 0                           | NR                      |
| 385               | 0                           | NR                      | 515               | 375                         | NR                      | 645               | 473                         | NR                      | 775               | 8                           | NR                      | 905               | 0                           | NR                      |
| 390               | 1                           | NR                      | 520               | 408                         | NR                      | 650               | 415                         | NR                      | 780               | 7                           | NR                      | 910               | 0                           | NR                      |
| 395               | 2                           | NR                      | 525               | 434                         | NR                      | 655               | 362                         | NR                      | 785               | 6                           | NR                      | 915               | 0                           | NR                      |
| 400               | 4                           | NR                      | 530               | 461                         | NR                      | 660               | 313                         | NR                      | 790               | 5                           | NR                      | 920               | 0                           | NR                      |
| 405               | 8                           | NR                      | 535               | 486                         | NR                      | 665               | 271                         | NR                      | 795               | 4                           | NR                      | 925               | 0                           | NR                      |
| 410               | 16                          | NR                      | 540               | 514                         | NR                      | 670               | 231                         | NR                      | 800               | 4                           | NR                      | 930               | 0                           | NR                      |
| 415               | 33                          | NR                      | 545               | 549                         | NR                      | 675               | 198                         | NR                      | 805               | 3                           | NR                      | 935               | 0                           | NR                      |
| 420               | 69                          | NR                      | 550               | 591                         | NR                      | 680               | 169                         | NR                      | 810               | 3                           | NR                      | 940               | 0                           | NR                      |
| 425               | 131                         | NR                      | 555               | 640                         | NR                      | 685               | 144                         | NR                      | 815               | 2                           | NR                      | 945               | 0                           | NR                      |
| 430               | 227                         | NR                      | 560               | 695                         | NR                      | 690               | 123                         | NR                      | 820               | 2                           | NR                      | 950               | 0                           | NR                      |
| 435               | 369                         | NR                      | 565               | 757                         | NR                      | 695               | 104                         | NR                      | 825               | 2                           | NR                      | 955               | 0                           | NR                      |
| 440               | 517                         | NR                      | 570               | 822                         | NR                      | 700               | 88                          | NR                      | 830               | 2                           | NR                      | 960               | 0                           | NR                      |
| 445               | 498                         | NR                      | 575               | 882                         | NR                      | 705               | 75                          | NR                      | 835               | 1                           | NR                      | 965               | 0                           | NR                      |
| 450               | 315                         | NR                      | 580               | 935                         | NR                      | 710               | 63                          | NR                      | 840               | 1                           | NR                      | 970               | 0                           | NR                      |
| 455               | 204                         | NR                      | 585               | 972                         | NR                      | 715               | 54                          | NR                      | 845               | 1                           | NR                      | 975               | 0                           | NR                      |
| 460               | 145                         | NR                      | 590               | 996                         | NR                      | 720               | 46                          | NR                      | 850               | 1                           | NR                      | 980               | 0                           | NR                      |
| 465               | 100                         | NR                      | 595               | 1000                        | NR                      | 725               | 39                          | NR                      | 855               | 1                           | NR                      | 985               | 0                           | NR                      |
| 470               | 78                          | NR                      | 600               | 989                         | NR                      | 730               | 33                          | NR                      | 860               | 1                           | NR                      | 990               | 0                           | NR                      |
| 475               | 76                          | NR                      | 605               | 960                         | NR                      | 735               | 28                          | NR                      | 865               | 1                           | NR                      | 995               | 0                           | NR                      |
| 480               | 83                          | NR                      | 610               | 918                         | NR                      | 740               | 24                          | NR                      | 870               | 1                           | NR                      | 1000              | 0                           | NR                      |
| 485               | 105                         | NR                      | 615               | 864                         | NR                      | 745               | 20                          | NR                      | 875               | 1                           | NR                      |                   |                             |                         |

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**Scotopic Flux vs. Wavelength**



**Scotopic Lumens: NR**

**S/P: 1.19**

| $\lambda$ (nm) | Power W <sup>^</sup> /nm | Lumens ( $\phi$ /nm) | $\lambda$ (nm) | Power W <sup>^</sup> /nm | Lumens ( $\phi$ /nm) | $\lambda$ (nm) | Power W <sup>^</sup> /nm | Lumens ( $\phi$ /nm) | $\lambda$ (nm) | Power W <sup>^</sup> /nm | Lumens ( $\phi$ /nm) | $\lambda$ (nm) | Power W <sup>^</sup> /nm | Lumens ( $\phi$ /nm) |
|----------------|--------------------------|----------------------|----------------|--------------------------|----------------------|----------------|--------------------------|----------------------|----------------|--------------------------|----------------------|----------------|--------------------------|----------------------|
| 360            | 0                        | NR                   | 490            | 142                      | NR                   | 620            | 803                      | NR                   | 750            | 17                       | NR                   | 880            | 0                        | NR                   |
| 365            | 0                        | NR                   | 495            | 189                      | NR                   | 625            | 734                      | NR                   | 755            | 15                       | NR                   | 885            | 0                        | NR                   |
| 370            | 0                        | NR                   | 500            | 240                      | NR                   | 630            | 670                      | NR                   | 760            | 13                       | NR                   | 890            | 0                        | NR                   |
| 375            | 0                        | NR                   | 505            | 290                      | NR                   | 635            | 600                      | NR                   | 765            | 11                       | NR                   | 895            | 0                        | NR                   |
| 380            | 0                        | NR                   | 510            | 335                      | NR                   | 640            | 535                      | NR                   | 770            | 9                        | NR                   | 900            | 0                        | NR                   |
| 385            | 0                        | NR                   | 515            | 375                      | NR                   | 645            | 473                      | NR                   | 775            | 8                        | NR                   | 905            | 0                        | NR                   |
| 390            | 1                        | NR                   | 520            | 408                      | NR                   | 650            | 415                      | NR                   | 780            | 7                        | NR                   | 910            | 0                        | NR                   |
| 395            | 2                        | NR                   | 525            | 434                      | NR                   | 655            | 362                      | NR                   | 785            | 6                        | NR                   | 915            | 0                        | NR                   |
| 400            | 4                        | NR                   | 530            | 461                      | NR                   | 660            | 313                      | NR                   | 790            | 5                        | NR                   | 920            | 0                        | NR                   |
| 405            | 8                        | NR                   | 535            | 486                      | NR                   | 665            | 271                      | NR                   | 795            | 4                        | NR                   | 925            | 0                        | NR                   |
| 410            | 16                       | NR                   | 540            | 514                      | NR                   | 670            | 231                      | NR                   | 800            | 4                        | NR                   | 930            | 0                        | NR                   |
| 415            | 33                       | NR                   | 545            | 549                      | NR                   | 675            | 198                      | NR                   | 805            | 3                        | NR                   | 935            | 0                        | NR                   |
| 420            | 69                       | NR                   | 550            | 591                      | NR                   | 680            | 169                      | NR                   | 810            | 3                        | NR                   | 940            | 0                        | NR                   |
| 425            | 131                      | NR                   | 555            | 640                      | NR                   | 685            | 144                      | NR                   | 815            | 2                        | NR                   | 945            | 0                        | NR                   |
| 430            | 227                      | NR                   | 560            | 695                      | NR                   | 690            | 123                      | NR                   | 820            | 2                        | NR                   | 950            | 0                        | NR                   |
| 435            | 369                      | NR                   | 565            | 757                      | NR                   | 695            | 104                      | NR                   | 825            | 2                        | NR                   | 955            | 0                        | NR                   |
| 440            | 517                      | NR                   | 570            | 822                      | NR                   | 700            | 88                       | NR                   | 830            | 2                        | NR                   | 960            | 0                        | NR                   |
| 445            | 498                      | NR                   | 575            | 882                      | NR                   | 705            | 75                       | NR                   | 835            | 1                        | NR                   | 965            | 0                        | NR                   |
| 450            | 315                      | NR                   | 580            | 935                      | NR                   | 710            | 63                       | NR                   | 840            | 1                        | NR                   | 970            | 0                        | NR                   |
| 455            | 204                      | NR                   | 585            | 972                      | NR                   | 715            | 54                       | NR                   | 845            | 1                        | NR                   | 975            | 0                        | NR                   |
| 460            | 145                      | NR                   | 590            | 996                      | NR                   | 720            | 46                       | NR                   | 850            | 1                        | NR                   | 980            | 0                        | NR                   |
| 465            | 100                      | NR                   | 595            | 1000                     | NR                   | 725            | 39                       | NR                   | 855            | 1                        | NR                   | 985            | 0                        | NR                   |
| 470            | 78                       | NR                   | 600            | 989                      | NR                   | 730            | 33                       | NR                   | 860            | 1                        | NR                   | 990            | 0                        | NR                   |
| 475            | 76                       | NR                   | 605            | 960                      | NR                   | 735            | 28                       | NR                   | 865            | 1                        | NR                   | 995            | 0                        | NR                   |
| 480            | 83                       | NR                   | 610            | 918                      | NR                   | 740            | 24                       | NR                   | 870            | 1                        | NR                   | 1000           | 0                        | NR                   |
| 485            | 105                      | NR                   | 615            | 864                      | NR                   | 745            | 20                       | NR                   | 875            | 1                        | NR                   |                |                          |                      |

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Melanopic Flux vs. Wavelength



Melanopic Lumens: NR

M/P: 2.13

| 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    | 142                      | NR            | 620    | 803                      | NR            | 750    | 17                       | NR            | 880    | 0                        | NR            |
| 365    | 0                        | NR            | 495    | 189                      | NR            | 625    | 734                      | NR            | 755    | 15                       | NR            | 885    | 0                        | NR            |
| 370    | 0                        | NR            | 500    | 240                      | NR            | 630    | 670                      | NR            | 760    | 13                       | NR            | 890    | 0                        | NR            |
| 375    | 0                        | NR            | 505    | 290                      | NR            | 635    | 600                      | NR            | 765    | 11                       | NR            | 895    | 0                        | NR            |
| 380    | 0                        | NR            | 510    | 335                      | NR            | 640    | 535                      | NR            | 770    | 9                        | NR            | 900    | 0                        | NR            |
| 385    | 0                        | NR            | 515    | 375                      | NR            | 645    | 473                      | NR            | 775    | 8                        | NR            | 905    | 0                        | NR            |
| 390    | 1                        | NR            | 520    | 408                      | NR            | 650    | 415                      | NR            | 780    | 7                        | NR            | 910    | 0                        | NR            |
| 395    | 2                        | NR            | 525    | 434                      | NR            | 655    | 362                      | NR            | 785    | 6                        | NR            | 915    | 0                        | NR            |
| 400    | 4                        | NR            | 530    | 461                      | NR            | 660    | 313                      | NR            | 790    | 5                        | NR            | 920    | 0                        | NR            |
| 405    | 8                        | NR            | 535    | 486                      | NR            | 665    | 271                      | NR            | 795    | 4                        | NR            | 925    | 0                        | NR            |
| 410    | 16                       | NR            | 540    | 514                      | NR            | 670    | 231                      | NR            | 800    | 4                        | NR            | 930    | 0                        | NR            |
| 415    | 33                       | NR            | 545    | 549                      | NR            | 675    | 198                      | NR            | 805    | 3                        | NR            | 935    | 0                        | NR            |
| 420    | 69                       | NR            | 550    | 591                      | NR            | 680    | 169                      | NR            | 810    | 3                        | NR            | 940    | 0                        | NR            |
| 425    | 131                      | NR            | 555    | 640                      | NR            | 685    | 144                      | NR            | 815    | 2                        | NR            | 945    | 0                        | NR            |
| 430    | 227                      | NR            | 560    | 695                      | NR            | 690    | 123                      | NR            | 820    | 2                        | NR            | 950    | 0                        | NR            |
| 435    | 369                      | NR            | 565    | 757                      | NR            | 695    | 104                      | NR            | 825    | 2                        | NR            | 955    | 0                        | NR            |
| 440    | 517                      | NR            | 570    | 822                      | NR            | 700    | 88                       | NR            | 830    | 2                        | NR            | 960    | 0                        | NR            |
| 445    | 498                      | NR            | 575    | 882                      | NR            | 705    | 75                       | NR            | 835    | 1                        | NR            | 965    | 0                        | NR            |
| 450    | 315                      | NR            | 580    | 935                      | NR            | 710    | 63                       | NR            | 840    | 1                        | NR            | 970    | 0                        | NR            |
| 455    | 204                      | NR            | 585    | 972                      | NR            | 715    | 54                       | NR            | 845    | 1                        | NR            | 975    | 0                        | NR            |
| 460    | 145                      | NR            | 590    | 996                      | NR            | 720    | 46                       | NR            | 850    | 1                        | NR            | 980    | 0                        | NR            |
| 465    | 100                      | NR            | 595    | 1000                     | NR            | 725    | 39                       | NR            | 855    | 1                        | NR            | 985    | 0                        | NR            |
| 470    | 78                       | NR            | 600    | 989                      | NR            | 730    | 33                       | NR            | 860    | 1                        | NR            | 990    | 0                        | NR            |
| 475    | 76                       | NR            | 605    | 960                      | NR            | 735    | 28                       | NR            | 865    | 1                        | NR            | 995    | 0                        | NR            |
| 480    | 83                       | NR            | 610    | 918                      | NR            | 740    | 24                       | NR            | 870    | 1                        | NR            | 1000   | 0                        | NR            |
| 485    | 105                      | NR            | 615    | 864                      | NR            | 745    | 20                       | NR            | 875    | 1                        | NR            |        |                          |               |

**Summary**

$R_f = 73.8$   
 $R_g = 94.4$   
 CIE  $R_a = 70.8$   
 $R_9 = -43.2$



**Color Vector Graphics**



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

|            |            |            |            |
|------------|------------|------------|------------|
| CES01 = 86 | CES26 = 63 | CES51 = 86 | CES76 = 61 |
| CES02 = 62 | CES27 = 83 | CES52 = 86 | CES77 = 81 |
| CES03 = 31 | CES28 = 86 | CES53 = 75 | CES78 = 64 |
| CES04 = 71 | CES29 = 58 | CES54 = 81 | CES79 = 86 |
| CES05 = 49 | CES30 = 61 | CES55 = 80 | CES80 = 86 |
| CES06 = 51 | CES31 = 63 | CES56 = 71 | CES81 = 70 |
| CES07 = 41 | CES32 = 61 | CES57 = 69 | CES82 = 94 |
| CES08 = 40 | CES33 = 65 | CES58 = 72 | CES83 = 88 |
| CES09 = 29 | CES34 = 77 | CES59 = 85 | CES84 = 90 |
| CES10 = 76 | CES35 = 88 | CES60 = 93 | CES85 = 80 |
| CES11 = 59 | CES36 = 89 | CES61 = 86 | CES86 = 60 |
| CES12 = 65 | CES37 = 85 | CES62 = 81 | CES87 = 78 |
| CES13 = 43 | CES38 = 69 | CES63 = 73 | CES88 = 75 |
| CES14 = 74 | CES39 = 93 | CES64 = 72 | CES89 = 66 |
| CES15 = 71 | CES40 = 89 | CES65 = 67 | CES90 = 72 |
| CES16 = 47 | CES41 = 83 | CES66 = 70 | CES91 = 95 |
| CES17 = 50 | CES42 = 87 | CES67 = 68 | CES92 = 59 |
| CES18 = 56 | CES43 = 77 | CES68 = 73 | CES93 = 76 |
| CES19 = 73 | CES44 = 99 | CES69 = 83 | CES94 = 48 |
| CES20 = 66 | CES45 = 83 | CES70 = 66 | CES95 = 70 |
| CES21 = 87 | CES46 = 77 | CES71 = 66 | CES96 = 76 |
| CES22 = 79 | CES47 = 74 | CES72 = 88 | CES97 = 82 |
| CES23 = 92 | CES48 = 62 | CES73 = 59 | CES98 = 73 |
| CES24 = 91 | CES49 = 77 | CES74 = 93 | CES99 = 60 |
| CES25 = 73 | CES50 = 85 | CES75 = 67 |            |



Color Rendition by Hue-Angle Bin



Measure Comparisons



(END OF REPORT)