

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: P1386847

Luminaire Tested: **VAL-T-SB1A-730-U-T2R-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: P1386847  
 Test Lab: INNOVATION CENTER(G1)  
 Issue Date: 02/18/2026  
 Manufacturer: COOPER LIGHTING SOLUTIONS (FORMERLY EATON)  
 Product Line: STREETWORKS  
 Catalog Number: VAL-T-SB1A-730-U-T2R-HSS  
 Description: GALLEON II WALL SLIM HIGH DENSITY LED ARRAYS 15 SQUARE 31W 70CRI  
 3000K FIXTURE w/ TYPE II ROADWAY DISTRIBUTION OPTIC AND HOUSE SIDE SHIELD  
 Light Source: (26) 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               |

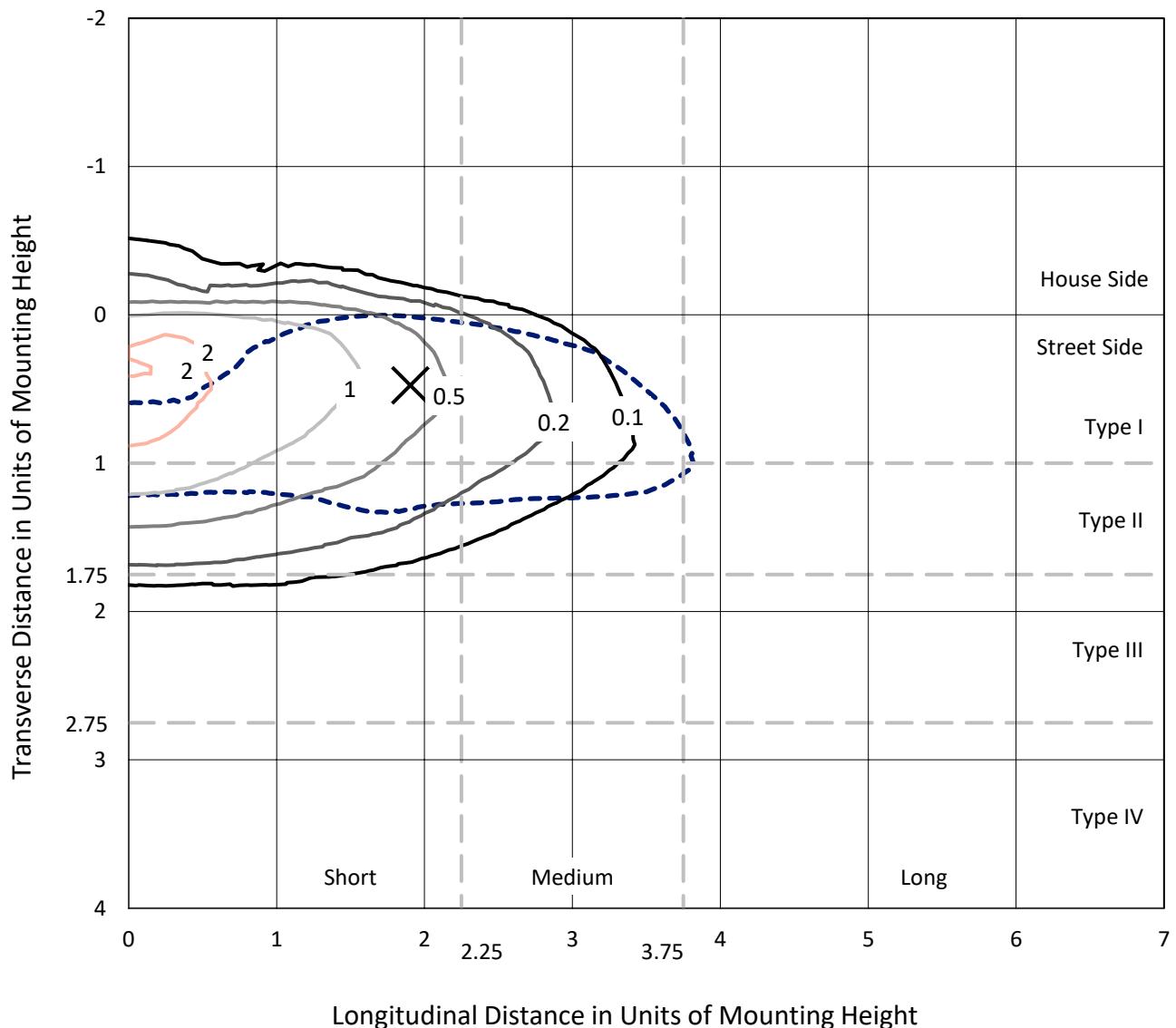
**Summary**

Lumens per Lamp: N/A  
 Luminaire Lumens: 3432 lumens  
 Efficiency: N/A  
 Efficacy: 110.7 lumens/watt  
 Luminous Opening: Rectangular (W 0.5' x L: 0.5' x H: 0')  
 IES Classification: Type II - Short  
 BUG Rating: B0 - U0 - G1  
  
 Input Watts (W): 31  
 Input Voltage (V): 120  
 Input Current (A<sub>in</sub>): NR  
 Voltage Rise (V): NR  
 Power Factor: 0.98  
 Total Harmonic Distortion (THDi): 6.4%  
 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-SB1A-730-U-T2R-HSS

## Iso-Footcandle Lines of Horizontal Illumination

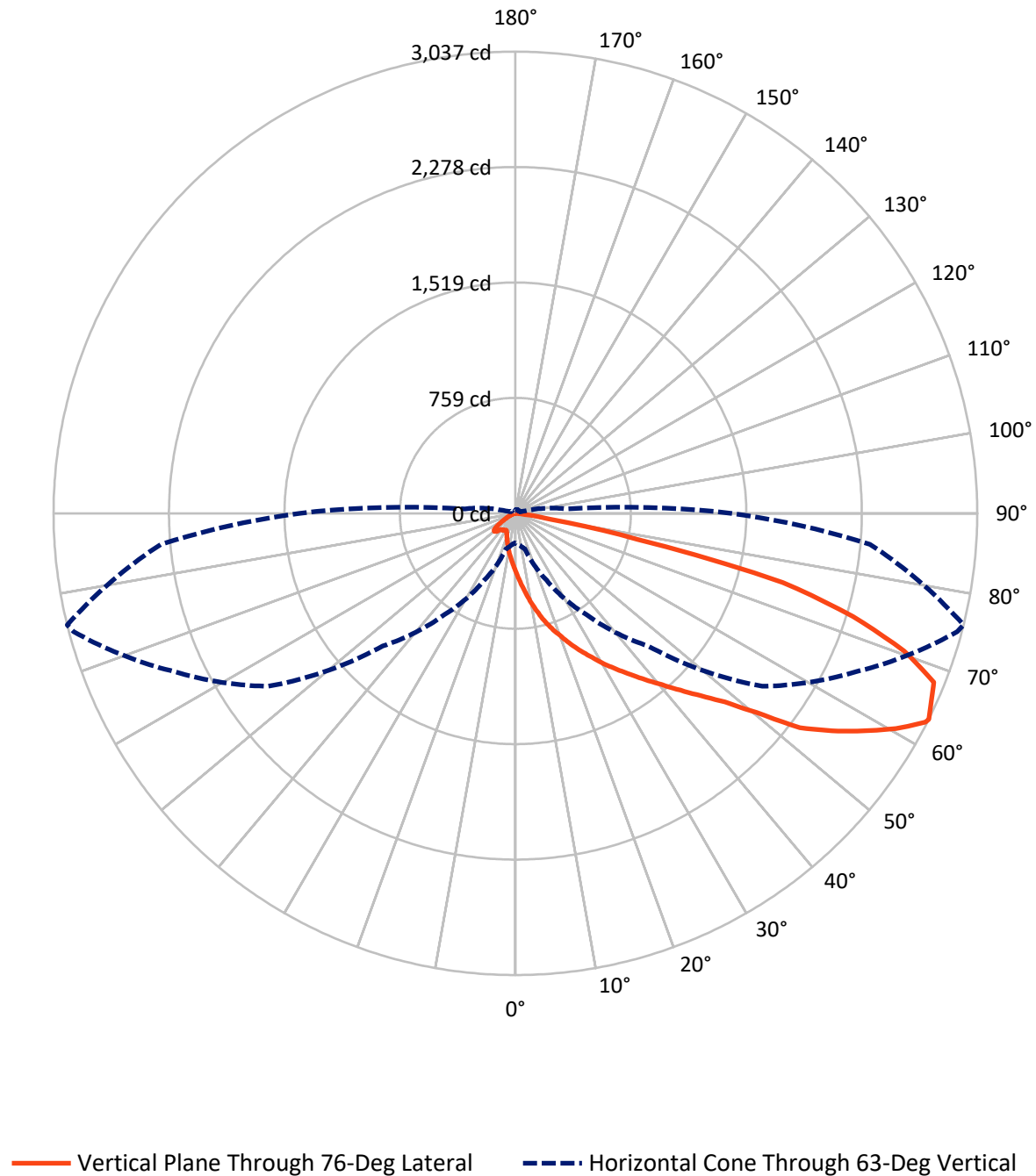
× Max cd  
 - - - 1/2 Max cd



Based on 20 foot mounting height. Maximum calculated value = 2.4 fc  
 Type II - Short - N/A

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## Luminous Intensity Polar Plot



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**FLUX DISTRIBUTION:**

|                    |           | Downward | Upward | Total  |
|--------------------|-----------|----------|--------|--------|
| <b>House Side</b>  | Lumens    | 247.3    | 0.0    | 247.3  |
|                    | % Fixture | 7.2      | 0.0    | 7.2    |
| <b>Street Side</b> | Lumens    | 3184.7   | 0.0    | 3184.7 |
|                    | % Fixture | 92.8     | 0.0    | 92.8   |
| <b>Total</b>       | Lumens    | 3432.0   | 0.0    | 3432.0 |
|                    | % Fixture | 100.0    | 0.0    | 100.0  |

**ZONAL LUMENS:**

| Zone      | Lumens | % Fixture |
|-----------|--------|-----------|
| 0°-10°    | 40.0   | 1.2       |
| 10°-20°   | 143.2  | 4.2       |
| 20°-30°   | 279.2  | 8.1       |
| 30°-40°   | 490.4  | 14.3      |
| 40°-50°   | 717.6  | 20.9      |
| 50°-60°   | 832.7  | 24.3      |
| 60°-70°   | 656.3  | 19.1      |
| 70°-80°   | 260.8  | 7.6       |
| 80°-90°   | 11.8   | 0.3       |
| 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°    | 3432.0 | 100.0     |
| 0°-180°   | 3432.0 | 100.0     |

**Coefficient of Utilization**



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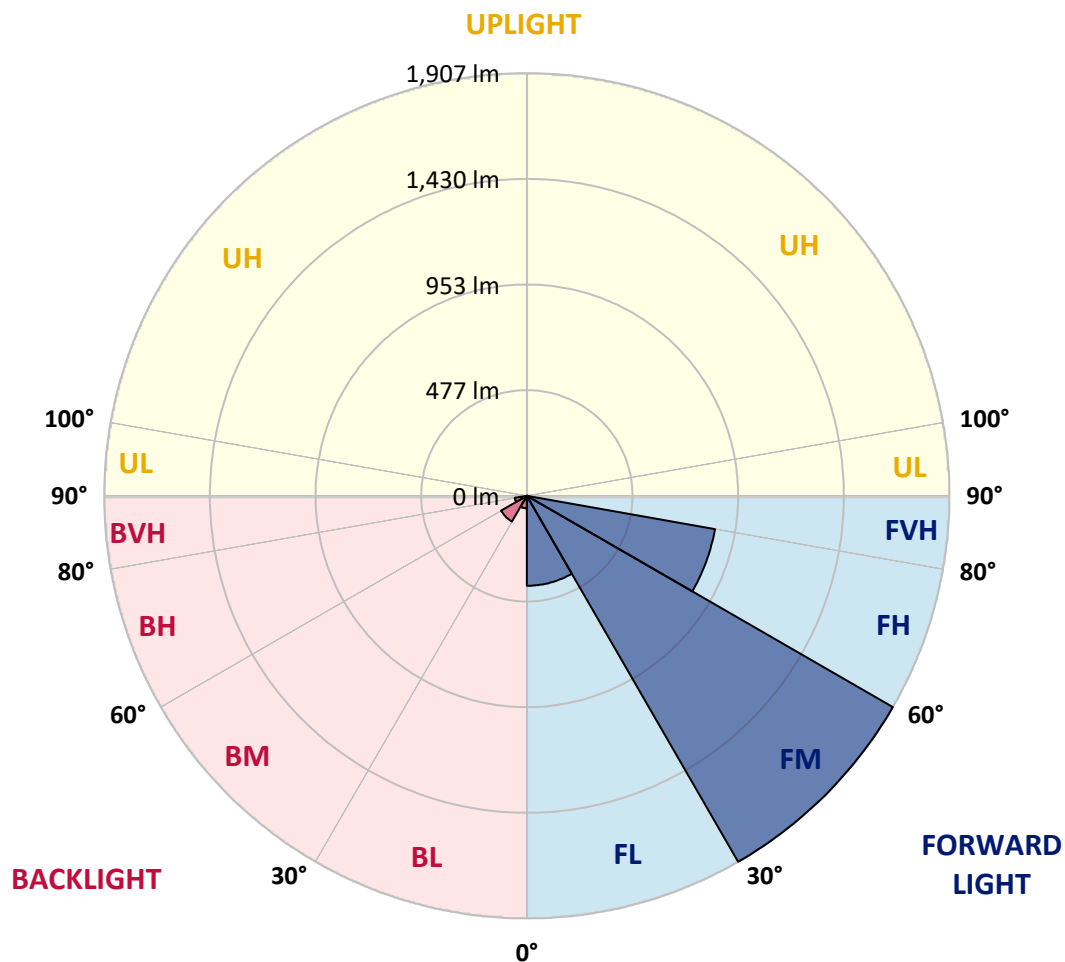
CATALOG NUMBER: VAL-T-SB1A-730-U-T2R-HSS

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

| Zone |             | Lumens | % Fixture | Zone Rating/Lumen Limit |      |         |
|------|-------------|--------|-----------|-------------------------|------|---------|
|      |             |        |           | B                       | U    | G       |
| FL   | (0°-30°)    | 405.8  | 11.8      |                         |      |         |
| FM   | (30°-60°)   | 1906.5 | 55.6      |                         |      |         |
| FH   | (60°-80°)   | 862.0  | 25.1      |                         |      | G1/1800 |
| FVH  | (80°-90°)   | 10.3   | 0.3       |                         |      | G1/100  |
| BL   | (0°-30°)    | 56.6   | 1.7       | B0/110                  |      |         |
| BM   | (30°-60°)   | 134.2  | 3.9       | B0/220                  |      |         |
| BH   | (60°-80°)   | 55.0   | 1.6       | B0/110                  |      | G0/110  |
| BVH  | (80°-90°)   | 1.5    | 0.0       |                         |      | G0/10   |
| UL   | (90°-100°)  | 0.0    | 0.0       |                         | U0/0 |         |
| UH   | (100°-180°) | 0.0    | 0.0       |                         | U0/0 |         |

**BUG Rating: B0-U0-G1**

Type II Short



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**CANDELA DISTRIBUTION (FULL):**

|       | 0°     | 5°     | 15°    | 25°    | 35°    | 45°    | 55°    | 65°    | 75°    | 76°    | 85°    |
|-------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|
| 0°    | 383.7  | 383.7  | 383.7  | 383.7  | 383.7  | 383.7  | 383.7  | 383.7  | 383.7  | 383.7  | 383.7  |
| 2.5°  | 550.0  | 547.2  | 547.2  | 536.8  | 521.6  | 505.6  | 482.9  | 457.4  | 431.9  | 430.9  | 402.6  |
| 5°    | 682.3  | 678.5  | 673.8  | 661.5  | 641.7  | 615.2  | 585.0  | 540.5  | 487.6  | 485.7  | 430.0  |
| 7.5°  | 768.3  | 769.2  | 762.6  | 757.0  | 743.7  | 715.4  | 676.6  | 621.8  | 552.8  | 544.3  | 465.9  |
| 10°   | 845.8  | 841.1  | 840.1  | 839.2  | 829.7  | 802.3  | 765.5  | 701.2  | 617.1  | 608.6  | 505.6  |
| 12.5° | 894.0  | 892.1  | 898.7  | 904.4  | 902.5  | 891.1  | 848.6  | 784.4  | 685.1  | 674.7  | 545.3  |
| 15°   | 909.1  | 911.0  | 927.1  | 945.0  | 960.1  | 963.9  | 928.0  | 861.9  | 749.4  | 742.8  | 590.6  |
| 17.5° | 897.8  | 900.6  | 923.3  | 955.4  | 992.3  | 1020.6 | 1004.5 | 934.6  | 818.4  | 806.1  | 631.3  |
| 20°   | 902.5  | 905.3  | 926.1  | 956.4  | 1004.5 | 1052.7 | 1066.9 | 1012.1 | 879.8  | 866.6  | 678.5  |
| 22.5° | 981.9  | 985.6  | 990.4  | 990.4  | 1023.4 | 1075.4 | 1107.6 | 1084.9 | 949.7  | 936.5  | 730.5  |
| 25°   | 1155.8 | 1152.9 | 1127.4 | 1085.8 | 1086.8 | 1109.4 | 1144.4 | 1145.4 | 1020.6 | 1004.5 | 777.7  |
| 27.5° | 1328.7 | 1336.2 | 1303.2 | 1241.7 | 1193.6 | 1171.8 | 1186.9 | 1199.2 | 1088.7 | 1072.6 | 830.7  |
| 30°   | 1488.4 | 1483.7 | 1448.7 | 1385.4 | 1324.9 | 1274.8 | 1242.7 | 1249.3 | 1161.4 | 1149.1 | 883.6  |
| 32.5° | 1614.1 | 1616.0 | 1576.3 | 1506.4 | 1440.2 | 1396.7 | 1330.6 | 1303.2 | 1232.3 | 1222.8 | 940.3  |
| 35°   | 1719.9 | 1714.3 | 1666.1 | 1598.0 | 1536.6 | 1508.2 | 1438.3 | 1361.8 | 1313.6 | 1301.3 | 999.8  |
| 37.5° | 1821.0 | 1817.3 | 1757.7 | 1667.0 | 1611.2 | 1598.0 | 1558.3 | 1439.3 | 1397.7 | 1388.2 | 1075.4 |
| 40°   | 1889.1 | 1885.3 | 1834.3 | 1745.4 | 1678.3 | 1667.0 | 1665.1 | 1535.6 | 1488.4 | 1481.8 | 1152.9 |
| 42.5° | 1905.1 | 1900.4 | 1864.5 | 1798.4 | 1738.8 | 1726.5 | 1767.2 | 1640.5 | 1601.8 | 1590.5 | 1243.6 |
| 45°   | 1873.0 | 1877.7 | 1853.2 | 1813.5 | 1785.1 | 1771.0 | 1851.3 | 1754.9 | 1718.0 | 1711.4 | 1341.0 |
| 47.5° | 1780.4 | 1782.3 | 1780.4 | 1792.7 | 1798.4 | 1823.9 | 1928.8 | 1878.7 | 1853.2 | 1854.1 | 1465.7 |
| 50°   | 1612.2 | 1609.4 | 1638.7 | 1706.7 | 1773.8 | 1861.7 | 2028.9 | 2040.3 | 2064.9 | 2059.2 | 1651.9 |
| 52.5° | 1283.3 | 1288.1 | 1414.7 | 1539.4 | 1702.9 | 1857.9 | 2104.5 | 2242.5 | 2342.7 | 2342.7 | 1853.2 |
| 55°   | 1034.8 | 1038.6 | 1121.7 | 1332.5 | 1559.3 | 1817.3 | 2146.1 | 2346.5 | 2526.0 | 2525.1 | 1996.8 |
| 57.5° | 845.8  | 852.4  | 918.6  | 1084.9 | 1344.8 | 1700.1 | 2163.1 | 2427.7 | 2683.8 | 2700.8 | 2144.2 |
| 60°   | 473.5  | 510.3  | 641.7  | 860.0  | 1107.6 | 1517.7 | 2136.7 | 2496.7 | 2855.8 | 2875.7 | 2294.5 |
| 62.5° | 214.5  | 219.2  | 278.8  | 531.1  | 862.8  | 1285.2 | 2013.8 | 2479.7 | 3010.8 | 3025.9 | 2343.6 |
| 63°   | 194.7  | 202.2  | 241.9  | 485.7  | 813.7  | 1233.2 | 1982.6 | 2467.4 | 3008.0 | 3037.3 | 2339.9 |
| 65°   | 153.1  | 157.8  | 168.2  | 313.7  | 545.3  | 1012.1 | 1772.8 | 2265.2 | 2968.3 | 3003.3 | 2256.7 |
| 67.5° | 125.7  | 125.7  | 134.2  | 195.6  | 301.5  | 696.5  | 1314.5 | 1977.9 | 2926.7 | 2967.3 | 2150.8 |
| 70°   | 106.8  | 106.8  | 112.5  | 138.0  | 179.6  | 336.4  | 946.0  | 1692.5 | 2679.1 | 2712.2 | 1872.1 |
| 72.5° | 77.5   | 81.3   | 89.8   | 107.7  | 123.8  | 189.9  | 485.7  | 1299.4 | 2292.6 | 2321.9 | 1570.6 |
| 75°   | 63.3   | 65.2   | 72.8   | 82.2   | 85.1   | 114.3  | 171.0  | 967.7  | 1804.0 | 1815.4 | 1089.6 |
| 77.5° | 33.1   | 35.9   | 59.5   | 67.1   | 65.2   | 69.9   | 83.2   | 527.3  | 877.0  | 817.4  | 353.4  |
| 80°   | 14.2   | 14.2   | 42.5   | 43.5   | 46.3   | 33.1   | 39.7   | 121.0  | 251.4  | 234.4  | 71.8   |
| 82.5° | 3.8    | 4.7    | 34.0   | 30.2   | 31.2   | 15.1   | 17.0   | 38.7   | 64.3   | 60.5   | 20.8   |
| 85°   | 1.9    | 2.8    | 8.5    | 7.6    | 9.5    | 5.7    | 7.6    | 15.1   | 11.3   | 11.3   | 8.5    |
| 87.5° | 0.0    | 0.0    | 0.9    | 0.9    | 0.9    | 1.9    | 2.8    | 4.7    | 5.7    | 5.7    | 5.7    |
| 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: P1386847

CATALOG NUMBER: VAL-T-SB1A-730-U-T2R-HSS

**CANDELA DISTRIBUTION (continued):**

|       | 90°    | 95°   | 105°  | 115°  | 125°  | 135°  | 145°  | 155°  | 165°  | 175°  | 180°  |
|-------|--------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|
| 0°    | 383.7  | 383.7 | 383.7 | 383.7 | 383.7 | 383.7 | 383.7 | 383.7 | 383.7 | 383.7 | 383.7 |
| 2.5°  | 387.5  | 371.4 | 342.1 | 315.6 | 289.2 | 264.6 | 244.8 | 235.3 | 222.1 | 224.0 | 222.1 |
| 5°    | 397.9  | 365.7 | 304.3 | 249.5 | 208.8 | 176.7 | 155.9 | 144.6 | 135.1 | 133.2 | 135.1 |
| 7.5°  | 413.9  | 363.8 | 272.2 | 199.4 | 153.1 | 132.3 | 123.8 | 120.0 | 117.2 | 116.2 | 117.2 |
| 10°   | 434.7  | 364.8 | 242.9 | 161.6 | 129.5 | 120.0 | 114.3 | 110.6 | 107.7 | 107.7 | 106.8 |
| 12.5° | 457.4  | 365.7 | 213.6 | 137.0 | 118.1 | 111.5 | 105.8 | 102.1 | 99.2  | 98.3  | 98.3  |
| 15°   | 479.1  | 365.7 | 189.0 | 122.9 | 110.6 | 104.0 | 99.2  | 94.5  | 91.7  | 89.8  | 90.7  |
| 17.5° | 500.9  | 363.8 | 165.4 | 114.3 | 104.0 | 97.3  | 91.7  | 86.9  | 84.1  | 82.2  | 82.2  |
| 20°   | 525.4  | 361.9 | 144.6 | 106.8 | 97.3  | 90.7  | 84.1  | 80.3  | 77.5  | 75.6  | 75.6  |
| 22.5° | 550.9  | 358.2 | 128.5 | 99.2  | 89.8  | 83.2  | 77.5  | 72.8  | 69.9  | 68.0  | 68.0  |
| 25°   | 575.5  | 354.4 | 114.3 | 92.6  | 84.1  | 76.5  | 70.9  | 66.2  | 62.4  | 61.4  | 61.4  |
| 27.5° | 602.0  | 349.7 | 104.0 | 86.0  | 77.5  | 70.9  | 64.3  | 59.5  | 56.7  | 55.8  | 55.8  |
| 30°   | 634.1  | 352.5 | 100.2 | 79.4  | 71.8  | 65.2  | 59.5  | 54.8  | 52.0  | 52.0  | 52.0  |
| 32.5° | 664.3  | 354.4 | 104.9 | 76.5  | 66.2  | 59.5  | 53.9  | 50.1  | 48.2  | 48.2  | 48.2  |
| 35°   | 698.4  | 358.2 | 109.6 | 79.4  | 62.4  | 54.8  | 50.1  | 47.3  | 44.4  | 44.4  | 44.4  |
| 37.5° | 738.1  | 359.1 | 113.4 | 83.2  | 61.4  | 51.0  | 48.2  | 44.4  | 42.5  | 42.5  | 42.5  |
| 40°   | 806.1  | 374.2 | 113.4 | 86.0  | 61.4  | 47.3  | 43.5  | 40.6  | 38.7  | 38.7  | 38.7  |
| 42.5° | 890.2  | 421.5 | 111.5 | 86.9  | 62.4  | 46.3  | 40.6  | 38.7  | 36.9  | 36.9  | 36.9  |
| 45°   | 979.0  | 476.3 | 123.8 | 82.2  | 62.4  | 46.3  | 37.8  | 37.8  | 35.0  | 35.0  | 35.0  |
| 47.5° | 1083.0 | 531.1 | 136.1 | 74.7  | 63.3  | 46.3  | 36.9  | 34.0  | 33.1  | 33.1  | 33.1  |
| 50°   | 1218.1 | 567.0 | 139.9 | 66.2  | 61.4  | 46.3  | 35.0  | 33.1  | 31.2  | 32.1  | 32.1  |
| 52.5° | 1323.0 | 566.1 | 135.1 | 57.6  | 57.6  | 45.4  | 33.1  | 32.1  | 31.2  | 31.2  | 31.2  |
| 55°   | 1410.0 | 550.9 | 110.6 | 49.1  | 51.0  | 38.7  | 32.1  | 32.1  | 30.2  | 30.2  | 30.2  |
| 57.5° | 1478.0 | 503.7 | 79.4  | 41.6  | 42.5  | 32.1  | 31.2  | 31.2  | 30.2  | 29.3  | 29.3  |
| 60°   | 1509.2 | 427.1 | 54.8  | 35.9  | 35.0  | 29.3  | 29.3  | 29.3  | 28.4  | 27.4  | 27.4  |
| 62.5° | 1453.4 | 349.7 | 39.7  | 31.2  | 28.4  | 26.5  | 27.4  | 27.4  | 25.5  | 23.6  | 22.7  |
| 63°   | 1422.2 | 333.6 | 37.8  | 30.2  | 27.4  | 26.5  | 27.4  | 27.4  | 25.5  | 22.7  | 21.7  |
| 65°   | 1319.2 | 269.3 | 33.1  | 27.4  | 24.6  | 23.6  | 25.5  | 24.6  | 21.7  | 17.0  | 17.0  |
| 67.5° | 1180.3 | 178.6 | 28.4  | 24.6  | 21.7  | 20.8  | 21.7  | 21.7  | 18.9  | 15.1  | 14.2  |
| 70°   | 1006.4 | 112.5 | 23.6  | 19.8  | 18.0  | 16.1  | 17.0  | 18.9  | 16.1  | 12.3  | 11.3  |
| 72.5° | 825.9  | 78.4  | 18.9  | 16.1  | 14.2  | 11.3  | 14.2  | 16.1  | 13.2  | 9.5   | 9.5   |
| 75°   | 556.6  | 50.1  | 15.1  | 12.3  | 10.4  | 9.5   | 11.3  | 12.3  | 10.4  | 6.6   | 6.6   |
| 77.5° | 175.8  | 25.5  | 12.3  | 9.5   | 7.6   | 6.6   | 7.6   | 8.5   | 5.7   | 3.8   | 3.8   |
| 80°   | 38.7   | 15.1  | 8.5   | 6.6   | 5.7   | 4.7   | 4.7   | 2.8   | 1.9   | 1.9   | 0.9   |
| 82.5° | 14.2   | 9.5   | 6.6   | 4.7   | 3.8   | 2.8   | 1.9   | 1.9   | 0.9   | 0.0   | 0.0   |
| 85°   | 7.6    | 5.7   | 3.8   | 2.8   | 2.8   | 1.9   | 1.9   | 0.9   | 0.0   | 0.0   | 0.0   |
| 87.5° | 4.7    | 3.8   | 2.8   | 2.8   | 1.9   | 1.9   | 0.9   | 0.9   | 0.0   | 0.0   | 0.0   |
| 90°   | 0.0    | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   |

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

Report Prepared for

Cooper Lighting Solutions

McGraw-Edison

Report Number: SP1-2407-184-4

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:  $4\pi$   
 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  
 R<sub>f</sub>: 73.8  
 R<sub>g</sub>: 94.4

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



### Test Conditions

Stabilization Time: 36M  
 Operation Time: 1H 36M  
 Sphere Temperature (°C): 25.2

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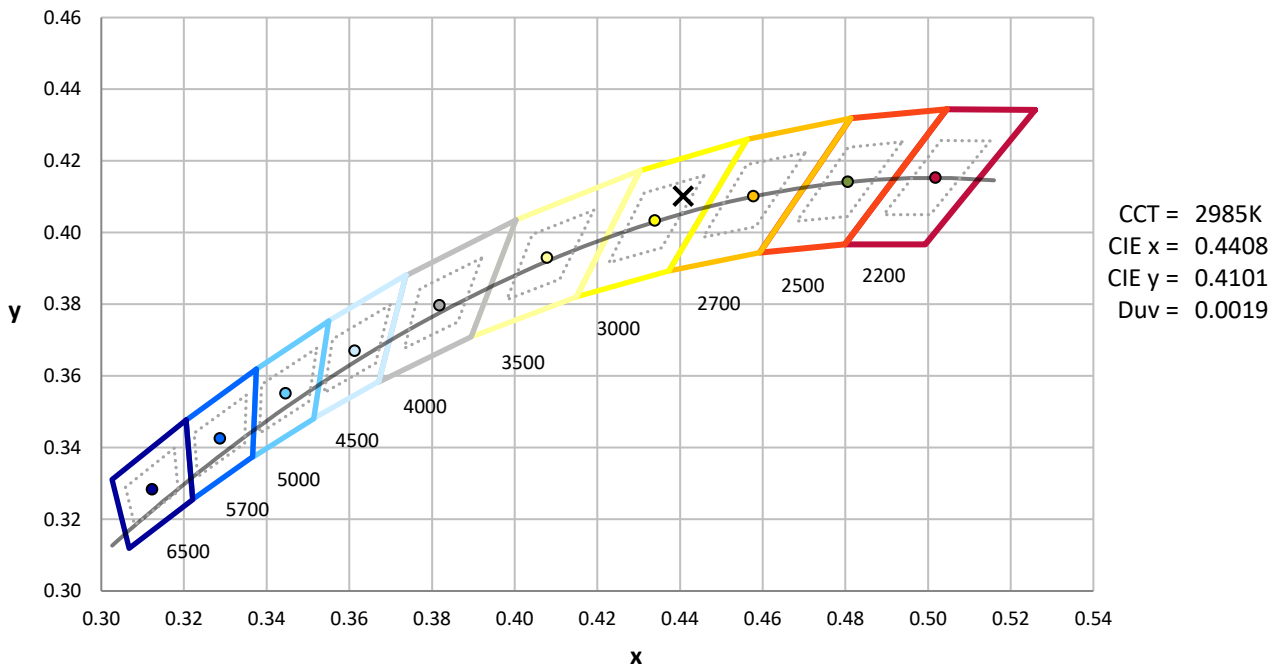
| Measurement and Test Equipment |                       |                  |                      |
|--------------------------------|-----------------------|------------------|----------------------|
| Instrument                     | Identification Number | Calibration Date | Calibration Due Date |
| 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           |

REPORT NUMBER: SP1-2407-184-4

**CIE 1931 Chromaticity Diagram**



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



Point lies inside the ANSI 3000K 4-step quadrangle

REPORT NUMBER: SP1-2407-184-4

### Photopic Flux vs. Wavelength



### Photopic Lumens: NR

| λ<br>(nm) | Power<br>W <sup>λ</sup> /nm | Lumens<br>(φ/nm) | λ<br>(nm) | Power<br>W <sup>λ</sup> /nm | Lumens<br>(φ/nm) | λ<br>(nm) | Power<br>W <sup>λ</sup> /nm | Lumens<br>(φ/nm) | λ<br>(nm) | Power<br>W <sup>λ</sup> /nm | Lumens<br>(φ/nm) | λ<br>(nm) | Power<br>W <sup>λ</sup> /nm | Lumens<br>(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               |           |                             |                  |

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### Scotopic Flux vs. Wavelength



Scotopic Lumens: NR

S/P: 1.19

| $\lambda$<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               | 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

| $\lambda$<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               | 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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TM-30-18

### Summary

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



### 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)