

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: P1387623

Luminaire Tested: **VAL-T-SB3A-730-U-T3R-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: P1387623  
 Test Lab: INNOVATION CENTER(G1)  
 Issue Date: 02/18/2026  
 Manufacturer: COOPER LIGHTING SOLUTIONS (FORMERLY EATON)  
 Product Line: STREETWORKS  
 Catalog Number: VAL-T-SB3A-730-U-T3R-HSS  
 Description: GALLEON II WALL SLIM HIGH DENSITY LED ARRAYS 3SQUARE 85W 70CRI  
 3000K FIXTURE w/ TYPE III ROADWAY DISTRIBUTION OPTIC AND HOUSE SIDE SHIELD  
 Light Source: (78) 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               |

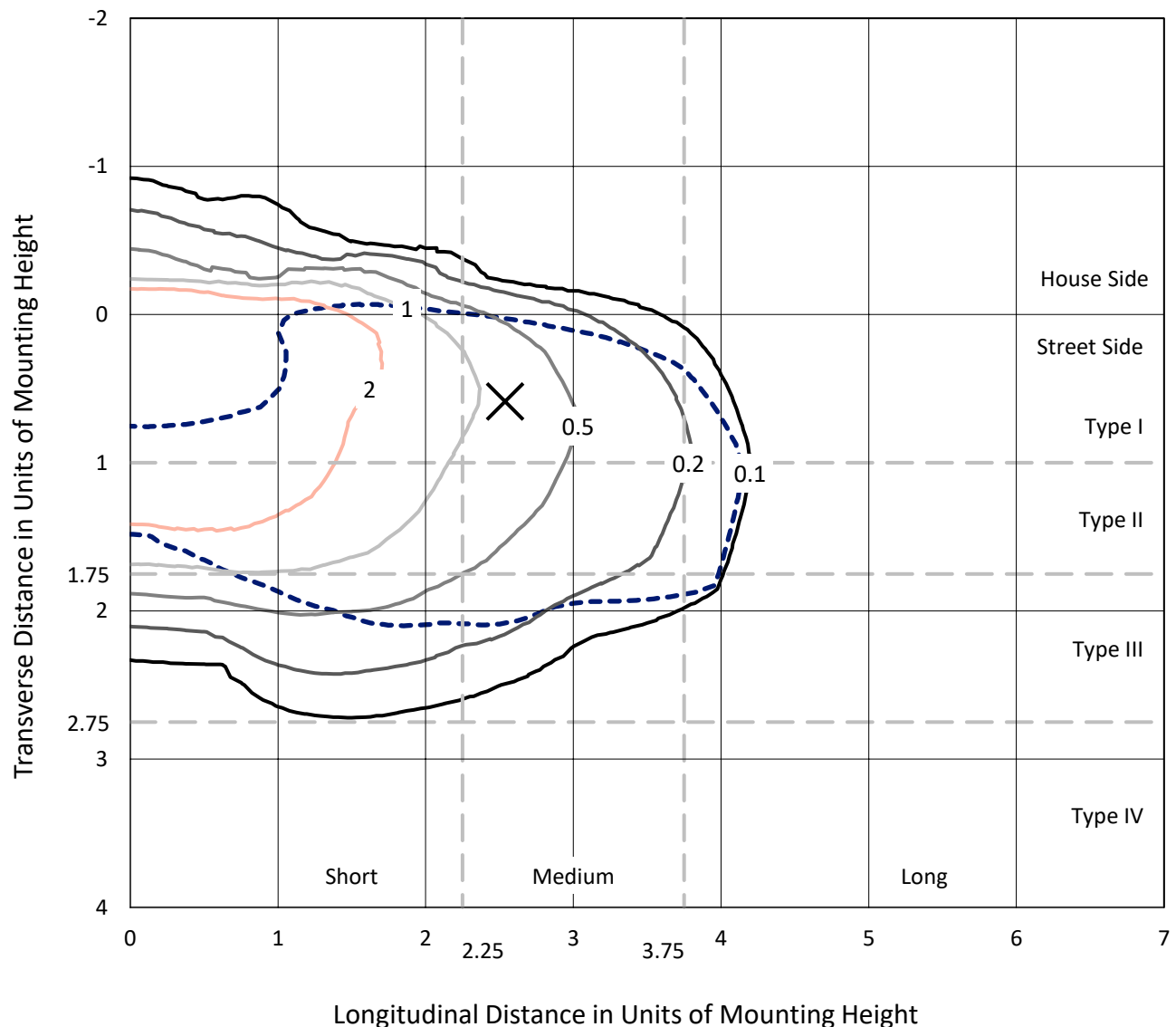
**Summary**

Lumens per Lamp: N/A  
 Luminaire Lumens: 10025.8 lumens  
 Efficiency: N/A  
 Efficacy: 118.0 lumens/watt  
 Luminous Opening: Rectangular (W 1.5' x L: 0.5' x H: 0')  
 IES Classification: Type III - Medium  
 BUG Rating: B1 - U0 - G2  
  
 Input Watts (W): 85  
 Input Voltage (V): 120  
 Input Current (Ain): NR  
 Voltage Rise (V): NR  
 Power Factor: 0.98  
 Total Harmonic Distortion (THDi): 11.0%  
 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

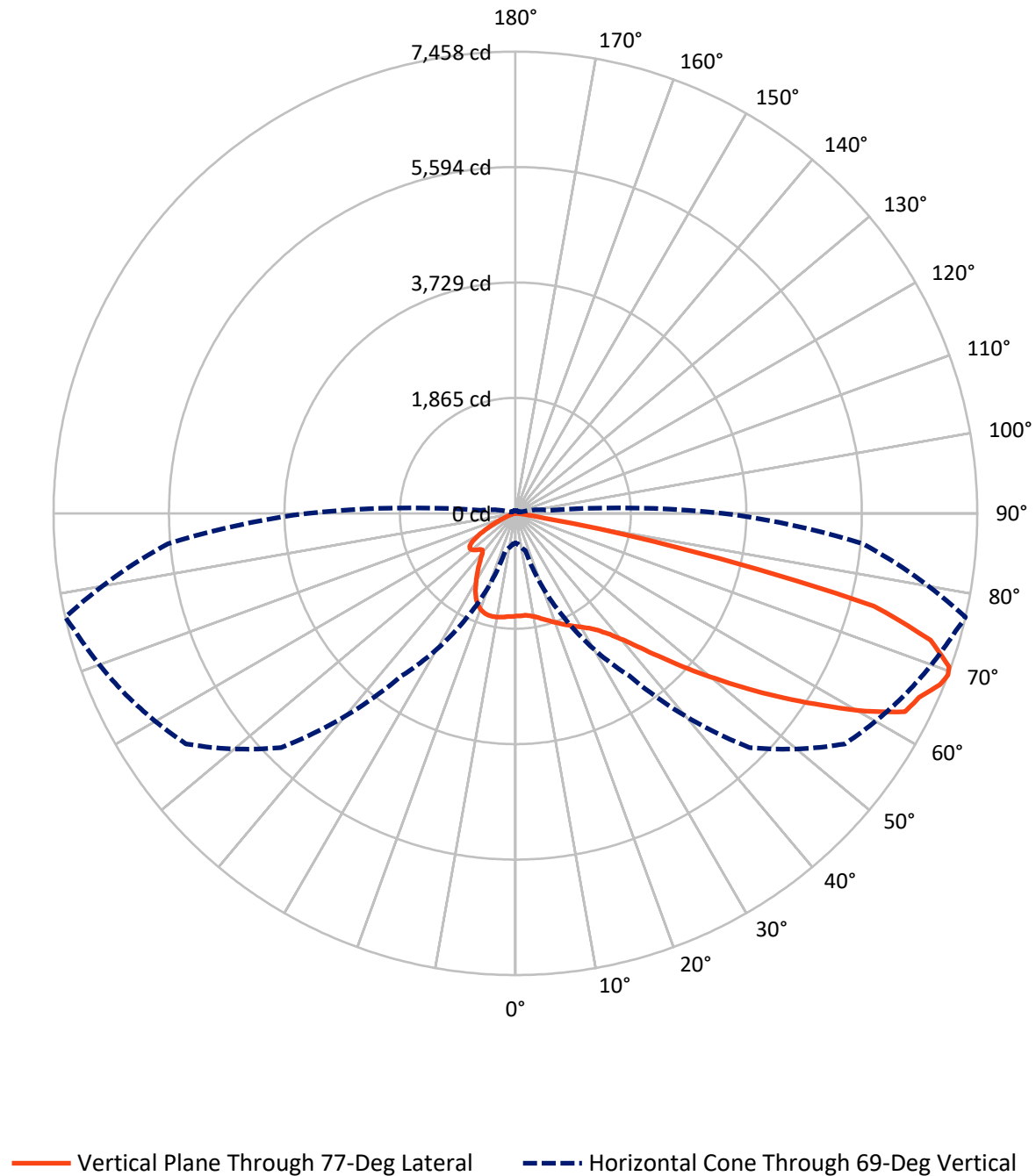
× Max cd  
 - - - 1/2 Max cd



Based on 20 foot mounting height. Maximum calculated value = 4.7 fc  
 Type III - Medium - N/A

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## Luminous Intensity Polar Plot



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**FLUX DISTRIBUTION:**

|                    |           | Downward | Upward | Total   |
|--------------------|-----------|----------|--------|---------|
| <b>House Side</b>  | Lumens    | 1083.7   | 0.0    | 1083.7  |
|                    | % Fixture | 10.8     | 0.0    | 10.8    |
| <b>Street Side</b> | Lumens    | 8942.1   | 0.0    | 8942.1  |
|                    | % Fixture | 89.2     | 0.0    | 89.2    |
| <b>Total</b>       | Lumens    | 10025.8  | 0.0    | 10025.8 |
|                    | % Fixture | 100.0    | 0.0    | 100.0   |

**ZONAL LUMENS:**

| Zone      | Lumens  | % Fixture |
|-----------|---------|-----------|
| 0°-10°    | 141.8   | 1.4       |
| 10°-20°   | 336.7   | 3.4       |
| 20°-30°   | 519.4   | 5.2       |
| 30°-40°   | 922.7   | 9.2       |
| 40°-50°   | 1782.3  | 17.8      |
| 50°-60°   | 2589.5  | 25.8      |
| 60°-70°   | 2485.0  | 24.8      |
| 70°-80°   | 1204.3  | 12.0      |
| 80°-90°   | 44.2    | 0.4       |
| 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°    | 10025.8 | 100.0     |
| 0°-180°   | 10025.8 | 100.0     |

**Coefficient of Utilization**



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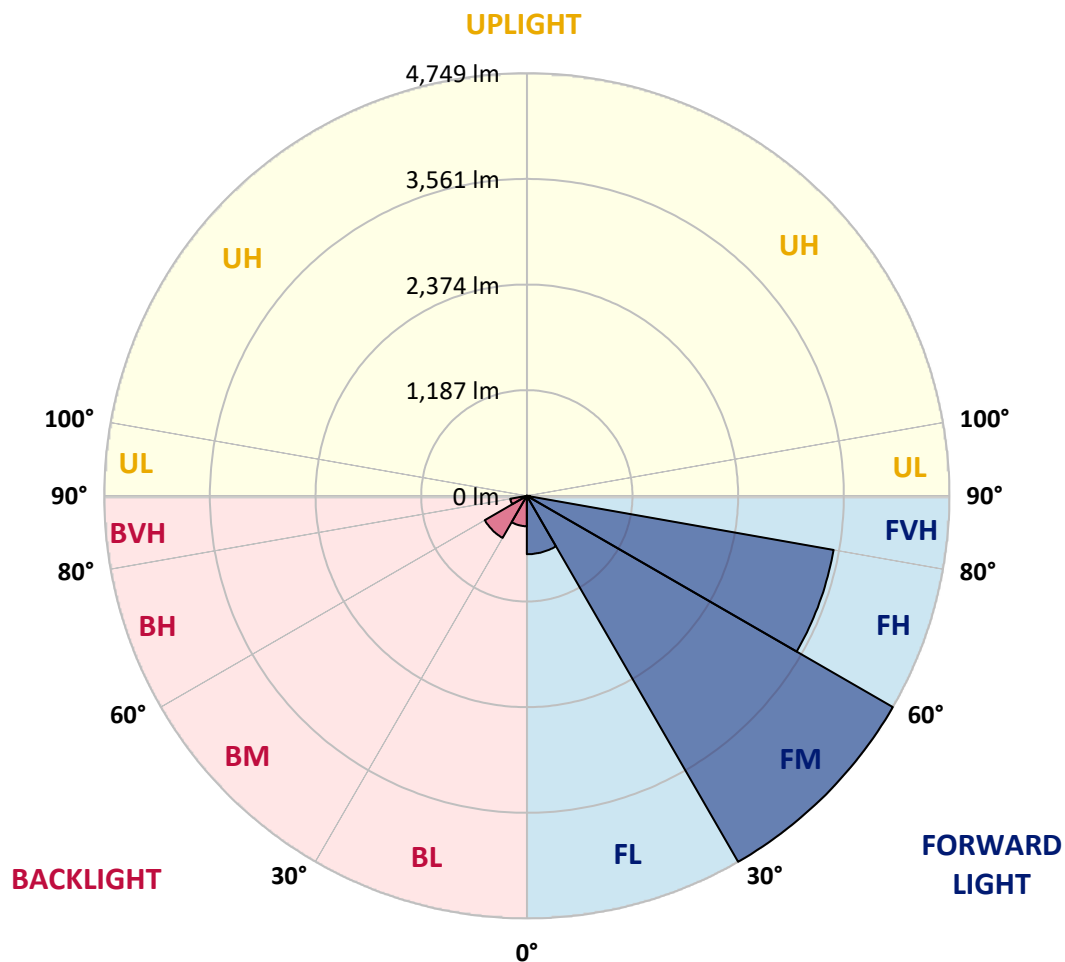
CATALOG NUMBER: VAL-T-SB3A-730-U-T3R-HSS

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

| Zone |             | Lumens | % Fixture | Zone Rating/Lumen Limit |      |         |
|------|-------------|--------|-----------|-------------------------|------|---------|
|      |             |        |           | B                       | U    | G       |
| FL   | (0°-30°)    | 655.9  | 6.5       |                         |      |         |
| FM   | (30°-60°)   | 4748.6 | 47.4      |                         |      |         |
| FH   | (60°-80°)   | 3500.4 | 34.9      |                         |      | G2/5000 |
| FVH  | (80°-90°)   | 37.2   | 0.4       |                         |      | G1/100  |
| BL   | (0°-30°)    | 342.0  | 3.4       | B1/500                  |      |         |
| BM   | (30°-60°)   | 545.9  | 5.4       | B1/1000                 |      |         |
| BH   | (60°-80°)   | 188.9  | 1.9       | B1/500                  |      | G1/500  |
| BVH  | (80°-90°)   | 7.0    | 0.1       |                         |      | G0/10   |
| UL   | (90°-100°)  | 0.0    | 0.0       |                         | U0/0 |         |
| UH   | (100°-180°) | 0.0    | 0.0       |                         | U0/0 |         |

**BUG Rating: B1-U0-G2**

Type III Medium



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**CANDELA DISTRIBUTION (FULL):**

|       | 0°     | 5°     | 15°    | 25°    | 35°    | 45°    | 55°    | 65°    | 75°    | 77°    | 85°    |
|-------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|
| 0°    | 1659.7 | 1659.7 | 1659.7 | 1659.7 | 1659.7 | 1659.7 | 1659.7 | 1659.7 | 1659.7 | 1659.7 | 1659.7 |
| 2.5°  | 1595.7 | 1601.5 | 1592.8 | 1598.6 | 1607.3 | 1613.1 | 1627.7 | 1633.5 | 1653.8 | 1659.7 | 1665.5 |
| 5°    | 1517.2 | 1523.0 | 1523.0 | 1534.7 | 1549.2 | 1566.6 | 1589.9 | 1613.1 | 1650.9 | 1653.8 | 1680.0 |
| 7.5°  | 1424.2 | 1421.3 | 1430.0 | 1453.3 | 1482.4 | 1526.0 | 1566.6 | 1607.3 | 1662.6 | 1671.3 | 1717.8 |
| 10°   | 1305.1 | 1305.1 | 1322.5 | 1354.5 | 1401.0 | 1473.6 | 1543.4 | 1604.4 | 1677.1 | 1697.4 | 1758.5 |
| 12.5° | 1238.2 | 1241.1 | 1249.8 | 1276.0 | 1342.8 | 1427.1 | 1520.1 | 1619.0 | 1714.9 | 1735.2 | 1819.5 |
| 15°   | 1212.0 | 1214.9 | 1226.6 | 1252.7 | 1305.1 | 1403.9 | 1514.3 | 1636.4 | 1755.6 | 1781.7 | 1883.5 |
| 17.5° | 1214.9 | 1212.0 | 1220.8 | 1241.1 | 1293.4 | 1389.3 | 1520.1 | 1665.5 | 1799.2 | 1831.1 | 1950.3 |
| 20°   | 1232.4 | 1232.4 | 1232.4 | 1246.9 | 1296.3 | 1389.3 | 1537.6 | 1706.2 | 1854.4 | 1883.5 | 2031.7 |
| 22.5° | 1264.4 | 1258.5 | 1261.5 | 1267.3 | 1313.8 | 1406.8 | 1563.7 | 1749.8 | 1909.6 | 1944.5 | 2107.3 |
| 25°   | 1287.6 | 1284.7 | 1284.7 | 1296.3 | 1339.9 | 1424.2 | 1589.9 | 1816.6 | 1970.7 | 2002.6 | 2185.7 |
| 27.5° | 1432.9 | 1418.4 | 1371.9 | 1334.1 | 1369.0 | 1462.0 | 1627.7 | 1874.7 | 2034.6 | 2069.5 | 2258.4 |
| 30°   | 1889.3 | 1866.0 | 1723.6 | 1520.1 | 1432.9 | 1505.6 | 1677.1 | 1935.8 | 2104.4 | 2133.4 | 2351.4 |
| 32.5° | 2575.2 | 2546.2 | 2325.3 | 1935.8 | 1645.1 | 1592.8 | 1743.9 | 2008.4 | 2182.8 | 2214.8 | 2461.9 |
| 35°   | 3293.1 | 3255.4 | 3037.4 | 2595.6 | 2095.6 | 1787.5 | 1845.7 | 2101.5 | 2290.4 | 2325.3 | 2618.8 |
| 37.5° | 3822.1 | 3796.0 | 3641.9 | 3275.7 | 2674.0 | 2156.7 | 2014.3 | 2235.2 | 2441.5 | 2479.3 | 2833.9 |
| 40°   | 4261.0 | 4243.6 | 4197.1 | 3891.9 | 3325.1 | 2691.5 | 2299.1 | 2441.5 | 2647.9 | 2688.6 | 3095.5 |
| 42.5° | 4644.7 | 4638.9 | 4659.2 | 4522.6 | 4054.7 | 3310.6 | 2729.3 | 2743.8 | 2929.8 | 2973.4 | 3426.8 |
| 45°   | 4961.5 | 4964.4 | 5045.8 | 5112.7 | 4804.6 | 3987.8 | 3226.3 | 3104.2 | 3269.9 | 3328.0 | 3787.3 |
| 47.5° | 5272.5 | 5249.3 | 5397.5 | 5542.8 | 5432.4 | 4673.8 | 3740.8 | 3511.1 | 3688.4 | 3755.3 | 4188.4 |
| 50°   | 5316.1 | 5324.8 | 5580.6 | 5821.9 | 5917.8 | 5321.9 | 4298.8 | 3967.5 | 4133.1 | 4197.1 | 4615.6 |
| 52.5° | 5069.1 | 5121.4 | 5508.0 | 5949.8 | 6202.6 | 5894.5 | 4880.1 | 4455.8 | 4604.0 | 4714.5 | 5054.5 |
| 55°   | 3862.8 | 3984.9 | 5252.2 | 5810.2 | 6249.1 | 6281.1 | 5417.9 | 4920.8 | 5130.1 | 5263.8 | 5467.3 |
| 57.5° | 3360.0 | 3394.9 | 4089.5 | 5519.6 | 6092.2 | 6487.5 | 5871.3 | 5385.9 | 5699.8 | 5848.0 | 5885.8 |
| 60°   | 2886.2 | 2903.7 | 3438.5 | 5057.4 | 5821.9 | 6403.2 | 6252.0 | 5929.4 | 6318.9 | 6490.4 | 6243.3 |
| 62.5° | 1697.4 | 1834.0 | 2432.8 | 4075.0 | 5484.7 | 6292.7 | 6542.7 | 6490.4 | 6906.0 | 7060.1 | 6286.9 |
| 65°   | 860.3  | 935.9  | 1299.2 | 3019.9 | 4900.5 | 6231.7 | 6807.2 | 6807.2 | 7016.5 | 7164.7 | 5967.2 |
| 67.5° | 558.1  | 587.1  | 732.5  | 2243.9 | 3807.6 | 6002.1 | 6696.7 | 6813.0 | 7228.6 | 7391.4 | 5836.4 |
| 69°   | 479.6  | 499.9  | 622.0  | 1860.2 | 3205.9 | 5351.0 | 6493.3 | 6938.0 | 7359.4 | 7458.3 | 5630.0 |
| 70°   | 430.2  | 447.6  | 566.8  | 1621.9 | 2784.5 | 4513.9 | 6377.0 | 6975.8 | 7339.1 | 7429.2 | 5420.8 |
| 72.5° | 299.4  | 302.3  | 421.5  | 959.2  | 1764.3 | 2868.8 | 5173.7 | 6670.6 | 7010.7 | 7010.7 | 4775.5 |
| 75°   | 125.0  | 148.2  | 238.3  | 421.5  | 735.4  | 1589.9 | 2505.5 | 5688.2 | 6083.5 | 5978.8 | 3679.7 |
| 77.5° | 98.8   | 116.3  | 206.4  | 232.5  | 267.4  | 656.9  | 889.4  | 3328.0 | 2900.8 | 2738.0 | 1203.3 |
| 80°   | 72.7   | 84.3   | 174.4  | 157.0  | 98.8   | 191.8  | 220.9  | 758.6  | 543.5  | 476.7  | 183.1  |
| 82.5° | 32.0   | 40.7   | 133.7  | 98.8   | 55.2   | 61.0   | 81.4   | 159.9  | 157.0  | 139.5  | 75.6   |
| 85°   | 17.4   | 26.2   | 58.1   | 34.9   | 23.3   | 23.3   | 32.0   | 49.4   | 43.6   | 43.6   | 32.0   |
| 87.5° | 0.0    | 0.0    | 2.9    | 2.9    | 5.8    | 8.7    | 11.6   | 17.4   | 20.3   | 20.3   | 20.3   |
| 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: P1387623

CATALOG NUMBER: VAL-T-SB3A-730-U-T3R-HSS

**CANDELA DISTRIBUTION (continued):**

|       | 90°    | 95°    | 105°   | 115°   | 125°   | 135°   | 145°   | 155°   | 165°   | 175°   | 180°   |
|-------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|
| 0°    | 1659.7 | 1659.7 | 1659.7 | 1659.7 | 1659.7 | 1659.7 | 1659.7 | 1659.7 | 1659.7 | 1659.7 | 1659.7 |
| 2.5°  | 1665.5 | 1668.4 | 1668.4 | 1659.7 | 1650.9 | 1639.3 | 1619.0 | 1607.3 | 1601.5 | 1595.7 | 1592.8 |
| 5°    | 1680.0 | 1685.8 | 1671.3 | 1633.5 | 1587.0 | 1523.0 | 1464.9 | 1418.4 | 1377.7 | 1369.0 | 1360.3 |
| 7.5°  | 1717.8 | 1723.6 | 1680.0 | 1584.1 | 1464.9 | 1357.4 | 1241.1 | 1159.7 | 1092.9 | 1078.3 | 1081.2 |
| 10°   | 1767.2 | 1773.0 | 1682.9 | 1517.2 | 1337.0 | 1153.9 | 994.0  | 854.5  | 764.4  | 744.1  | 717.9  |
| 12.5° | 1837.0 | 1831.1 | 1674.2 | 1432.9 | 1174.3 | 915.6  | 700.5  | 549.3  | 473.8  | 427.3  | 436.0  |
| 15°   | 1903.8 | 1889.3 | 1656.7 | 1328.3 | 967.9  | 654.0  | 441.8  | 357.5  | 331.3  | 328.4  | 328.4  |
| 17.5° | 1985.2 | 1950.3 | 1624.8 | 1191.7 | 732.5  | 438.9  | 334.3  | 316.8  | 311.0  | 313.9  | 311.0  |
| 20°   | 2060.8 | 1996.8 | 1572.5 | 1020.2 | 526.1  | 337.2  | 311.0  | 302.3  | 299.4  | 296.5  | 296.5  |
| 22.5° | 2142.1 | 2034.6 | 1494.0 | 822.6  | 377.9  | 308.1  | 296.5  | 287.8  | 279.0  | 276.1  | 276.1  |
| 25°   | 2220.6 | 2060.8 | 1389.3 | 624.9  | 311.0  | 290.7  | 276.1  | 264.5  | 255.8  | 250.0  | 250.0  |
| 27.5° | 2287.5 | 2069.5 | 1258.5 | 456.3  | 284.8  | 273.2  | 252.9  | 238.3  | 226.7  | 223.8  | 223.8  |
| 30°   | 2366.0 | 2066.6 | 1098.7 | 343.0  | 267.4  | 250.0  | 226.7  | 206.4  | 197.6  | 200.6  | 200.6  |
| 32.5° | 2447.3 | 2078.2 | 938.8  | 287.8  | 250.0  | 223.8  | 191.8  | 174.4  | 168.6  | 168.6  | 171.5  |
| 35°   | 2552.0 | 2095.6 | 787.7  | 270.3  | 232.5  | 191.8  | 162.8  | 142.4  | 139.5  | 145.3  | 145.3  |
| 37.5° | 2688.6 | 2116.0 | 642.4  | 267.4  | 218.0  | 165.7  | 133.7  | 122.1  | 119.2  | 122.1  | 122.1  |
| 40°   | 2880.4 | 2179.9 | 505.7  | 267.4  | 206.4  | 148.2  | 113.4  | 107.5  | 107.5  | 107.5  | 107.5  |
| 42.5° | 3153.6 | 2325.3 | 412.7  | 264.5  | 200.6  | 136.6  | 101.7  | 95.9   | 95.9   | 98.8   | 98.8   |
| 45°   | 3447.2 | 2546.2 | 383.7  | 255.8  | 194.7  | 136.6  | 95.9   | 90.1   | 93.0   | 93.0   | 93.0   |
| 47.5° | 3729.1 | 2770.0 | 392.4  | 241.2  | 188.9  | 139.5  | 93.0   | 87.2   | 87.2   | 87.2   | 87.2   |
| 50°   | 3979.1 | 2926.9 | 406.9  | 220.9  | 177.3  | 136.6  | 93.0   | 81.4   | 84.3   | 84.3   | 84.3   |
| 52.5° | 4240.7 | 2993.8 | 412.7  | 191.8  | 159.9  | 130.8  | 93.0   | 78.5   | 78.5   | 81.4   | 81.4   |
| 55°   | 4461.6 | 2973.4 | 389.5  | 162.8  | 139.5  | 122.1  | 87.2   | 75.6   | 75.6   | 75.6   | 75.6   |
| 57.5° | 4647.6 | 2825.2 | 316.8  | 136.6  | 119.2  | 101.7  | 81.4   | 72.7   | 72.7   | 72.7   | 72.7   |
| 60°   | 4714.5 | 2453.1 | 232.5  | 116.3  | 95.9   | 84.3   | 75.6   | 69.8   | 66.9   | 66.9   | 63.9   |
| 62.5° | 4458.7 | 1892.2 | 159.9  | 98.8   | 81.4   | 72.7   | 66.9   | 63.9   | 61.0   | 55.2   | 52.3   |
| 65°   | 3976.2 | 1302.1 | 116.3  | 81.4   | 69.8   | 61.0   | 61.0   | 58.1   | 49.4   | 43.6   | 40.7   |
| 67.5° | 3610.0 | 799.3  | 93.0   | 66.9   | 58.1   | 52.3   | 52.3   | 52.3   | 46.5   | 37.8   | 37.8   |
| 69°   | 3357.1 | 555.2  | 84.3   | 61.0   | 52.3   | 46.5   | 46.5   | 49.4   | 43.6   | 34.9   | 34.9   |
| 70°   | 3139.1 | 436.0  | 78.5   | 55.2   | 46.5   | 43.6   | 43.6   | 46.5   | 40.7   | 32.0   | 32.0   |
| 72.5° | 2618.8 | 215.1  | 66.9   | 46.5   | 37.8   | 34.9   | 37.8   | 37.8   | 34.9   | 26.2   | 26.2   |
| 75°   | 1909.6 | 127.9  | 55.2   | 37.8   | 29.1   | 26.2   | 32.0   | 32.0   | 26.2   | 20.3   | 20.3   |
| 77.5° | 619.1  | 75.6   | 43.6   | 32.0   | 26.2   | 23.3   | 26.2   | 23.3   | 20.3   | 14.5   | 14.5   |
| 80°   | 130.8  | 46.5   | 32.0   | 23.3   | 20.3   | 17.4   | 17.4   | 14.5   | 14.5   | 11.6   | 11.6   |
| 82.5° | 58.1   | 34.9   | 23.3   | 20.3   | 14.5   | 14.5   | 11.6   | 11.6   | 8.7    | 8.7    | 8.7    |
| 85°   | 29.1   | 23.3   | 17.4   | 14.5   | 11.6   | 11.6   | 8.7    | 8.7    | 8.7    | 8.7    | 8.7    |
| 87.5° | 20.3   | 17.4   | 14.5   | 8.7    | 8.7    | 8.7    | 5.8    | 5.8    | 5.8    | 5.8    | 5.8    |
| 90°   | 0.0    | 0.0    | 0.0    | 0.0    | 0.0    | 0.0    | 0.0    | 0.0    | 0.0    | 0.0    | 0.0    |

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

Report Prepared for

Cooper Lighting Solutions

McGraw-Edison

Report Number: SP1-2407-184-4

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

REPORT NUMBER: SP1-2407-184-4

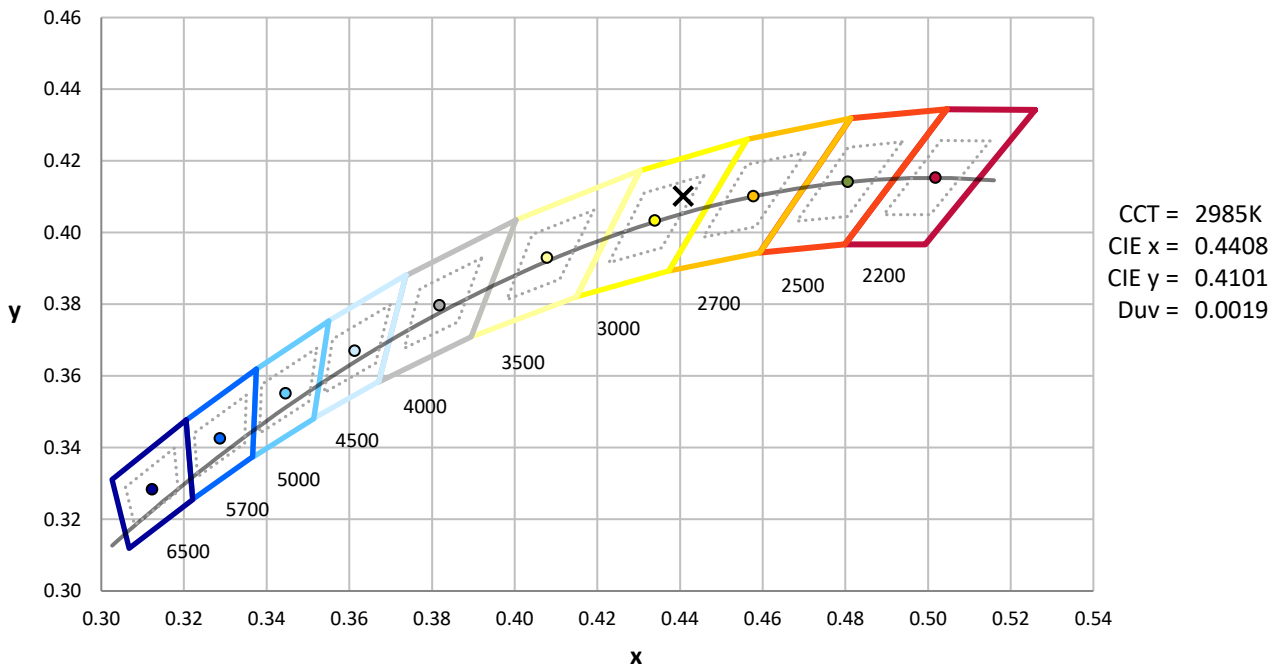
| Measurement and Test Equipment |                       |                  |                      |
|--------------------------------|-----------------------|------------------|----------------------|
| Instrument                     | Identification Number | Calibration Date | Calibration Due Date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

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**CIE 1931 Chromaticity Diagram**



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



Point lies inside the ANSI 3000K 4-step quadrangle

REPORT NUMBER: SP1-2407-184-4

### Photopic Flux vs. Wavelength



### Photopic Lumens: NR

| $\lambda$<br>(nm) | Power<br>$\text{W}^\wedge/\text{nm}$ | Lumens<br>( $\phi/\text{nm}$ ) | $\lambda$<br>(nm) | Power<br>$\text{W}^\wedge/\text{nm}$ | Lumens<br>( $\phi/\text{nm}$ ) | $\lambda$<br>(nm) | Power<br>$\text{W}^\wedge/\text{nm}$ | Lumens<br>( $\phi/\text{nm}$ ) | $\lambda$<br>(nm) | Power<br>$\text{W}^\wedge/\text{nm}$ | Lumens<br>( $\phi/\text{nm}$ ) | $\lambda$<br>(nm) | Power<br>$\text{W}^\wedge/\text{nm}$ | Lumens<br>( $\phi/\text{nm}$ ) |
|-------------------|--------------------------------------|--------------------------------|-------------------|--------------------------------------|--------------------------------|-------------------|--------------------------------------|--------------------------------|-------------------|--------------------------------------|--------------------------------|-------------------|--------------------------------------|--------------------------------|
| 360               | 0                                    | NR                             | 490               | 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)