

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: McGRAW-EDISON

Report Number: P382812

Luminaire Tested: **GLEON-SA1D-735-U-T2R-HSS**

Issue Date: 3/3/2020

**Test Information**

Test Method: LM-79-08  
Report Number: P382812  
TEST IS SCALED FROM IESNA LM-79-08 TEST DATA (G2-1903-205-9)  
Test Lab: INNOVATION CENTER  
Issue Date: 3/3/2020  
Manufacturer: COOPER LIGHTING SOLUTIONS (FORMERLY EATON)  
Product Line: McGRAW-EDISON  
Catalog Number: GLEON-SA1D-735-U-T2R-HSS  
Description: GALLEON AREA AND ROADWAY LUMINAIRE  
(1) 70 CRI, 3500K, 1200mA LIGHTSQUARE WITH 16 LEDS AND TYPE II ROADWAY  
OPTICS WITH HOUSE SIDE SHIELD  
Light Source: -  
Ballast/Driver: ELECTRONIC DRIVER

**Summary**

Lumens per Lamp: N/A  
Luminaire Lumens: 6108.2 lumens  
Efficiency: N/A  
Efficacy: 91.2 lumens/watt  
Luminous Opening: Rectangular (W 0.5' x L: 0.5' x H: 0')  
IES Classification: Type II - Medium  
BUG Rating: B0 - U0 - G1

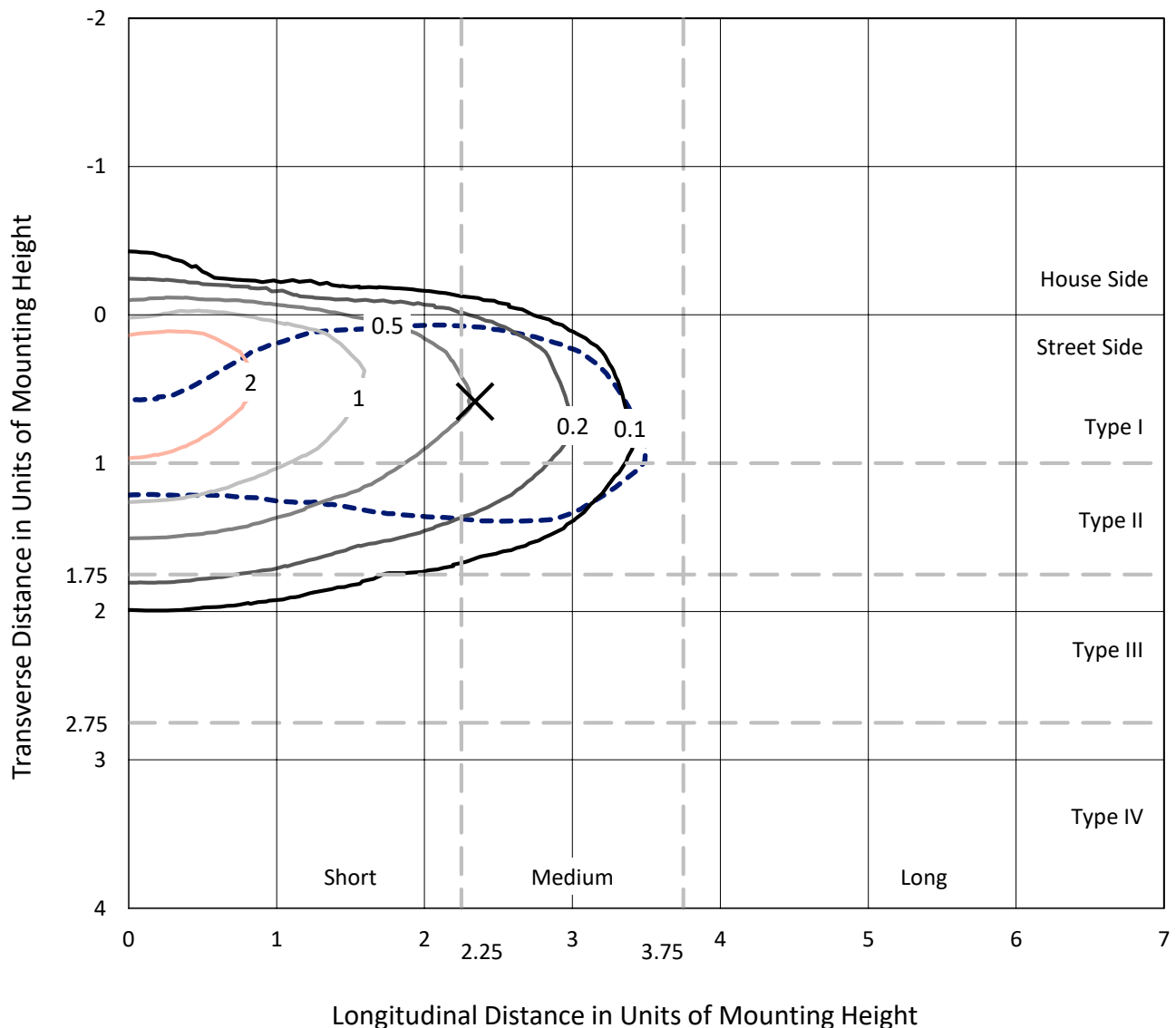
Input Watts (W): 67  
Input Voltage (V): NR  
Input Current (Ain): NR  
Voltage Rise (V): NR  
Power Factor: NR  
Total Harmonic Distortion (THDi): NR  
Frequency (hertz): 60  
Stabilization Time: NR  
Operation Time: NR  
Ambient Temperature (°C): NR  
Test Distance: 24 FT



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 CATALOG NUMBER: GLEON-SA1D-735-U-T2R-HSS

## Iso-Footcandle Lines of Horizontal Illumination

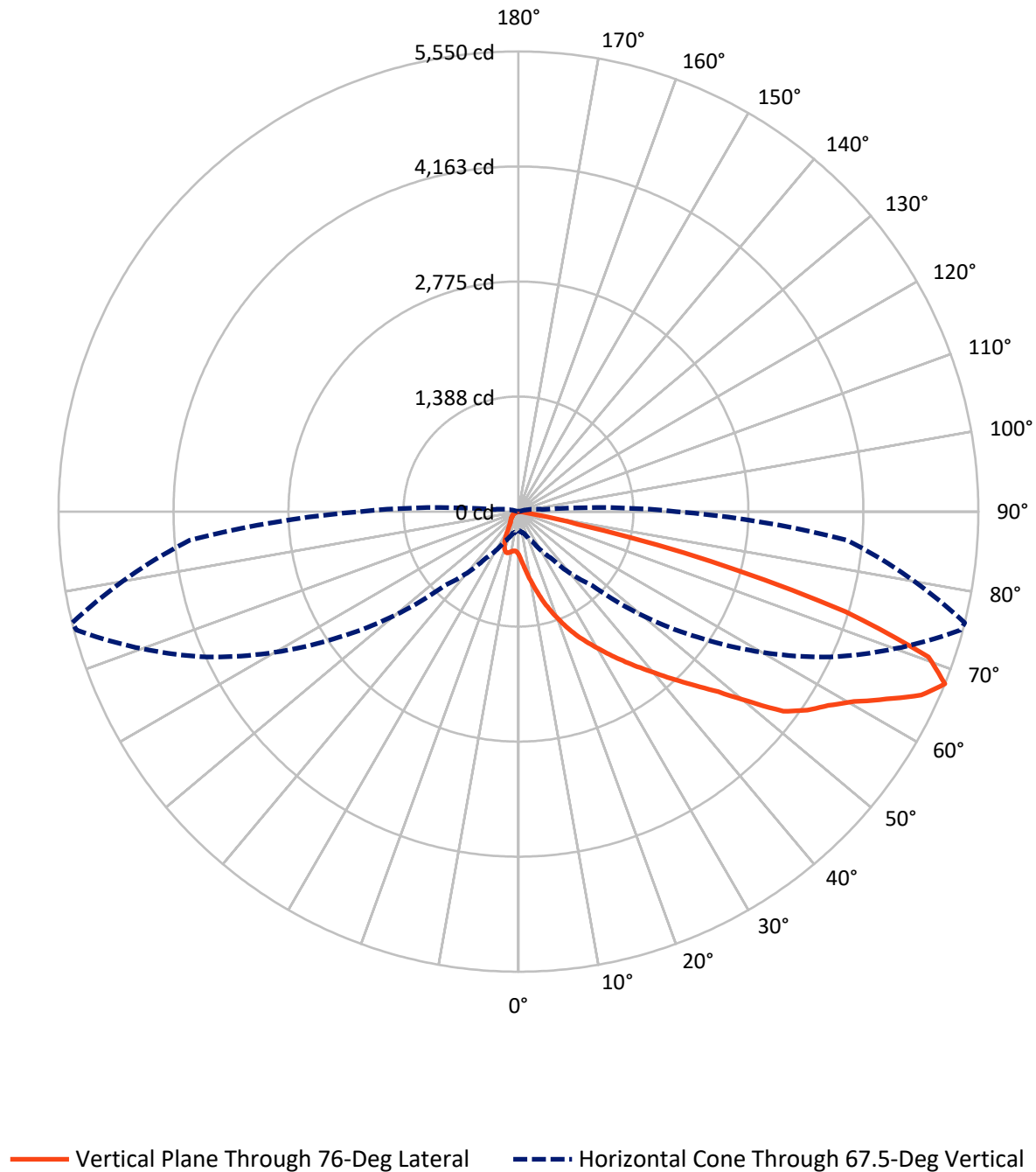
✕ Max cd  
 - - - 1/2 Max cd



Based on 25 foot mounting height. Maximum calculated value = 2.9 fc  
 Type II - Medium - N/A

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## Luminous Intensity Polar Plot



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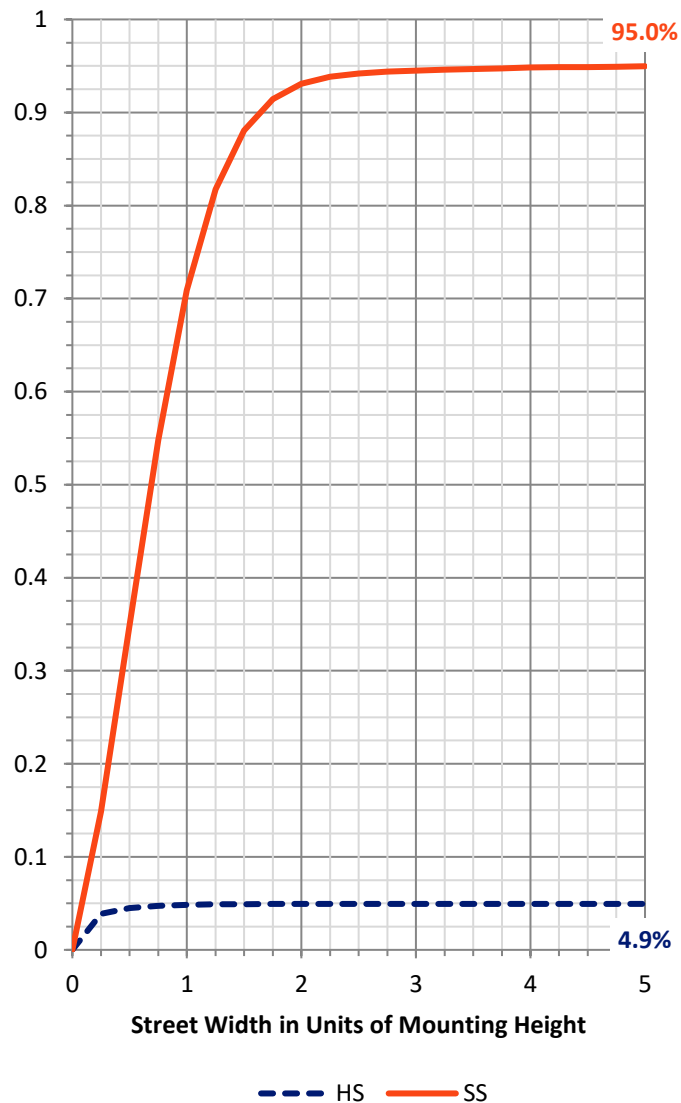
**FLUX DISTRIBUTION:**

|                    |           | Downward | Upward | Total  |
|--------------------|-----------|----------|--------|--------|
| <b>House Side</b>  | Lumens    | 303.3    | 0.0    | 303.3  |
|                    | % Fixture | 5.0      | 0.0    | 5.0    |
| <b>Street Side</b> | Lumens    | 5804.8   | 0.0    | 5804.8 |
|                    | % Fixture | 95.0     | 0.0    | 95.0   |
| <b>Total</b>       | Lumens    | 6108.2   | 0.0    | 6108.2 |
|                    | % Fixture | 100.0    | 0.0    | 100.0  |

**ZONAL LUMENS:**

| Zone      | Lumens | % Fixture |
|-----------|--------|-----------|
| 0°-10°    | 64.4   | 1.1       |
| 10°-20°   | 255.4  | 4.2       |
| 20°-30°   | 519.7  | 8.5       |
| 30°-40°   | 902.0  | 14.8      |
| 40°-50°   | 1274.4 | 20.9      |
| 50°-60°   | 1445.2 | 23.7      |
| 60°-70°   | 1198.7 | 19.6      |
| 70°-80°   | 434.2  | 7.1       |
| 80°-90°   | 14.1   | 0.2       |
| 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°    | 6108.2 | 100.0     |
| 0°-180°   | 6108.2 | 100.0     |

**Coefficient of Utilization**



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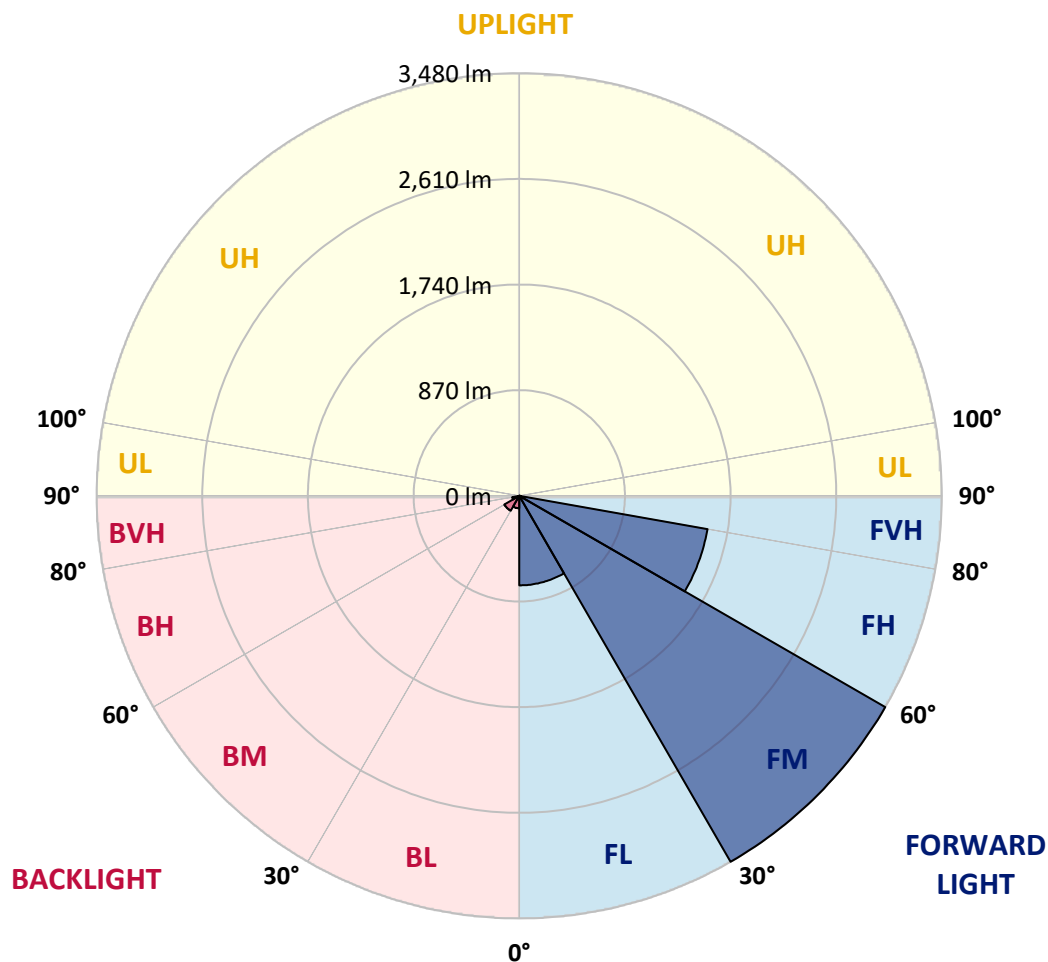
CATALOG NUMBER: GLEON-SA1D-735-U-T2R-HSS

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

| Zone |             | Lumens | % Fixture | Zone Rating/Lumen Limit |      |         |
|------|-------------|--------|-----------|-------------------------|------|---------|
|      |             |        |           | B                       | U    | G       |
| FL   | (0°-30°)    | 737.2  | 12.1      |                         |      |         |
| FM   | (30°-60°)   | 3479.7 | 57.0      |                         |      |         |
| FH   | (60°-80°)   | 1574.3 | 25.8      |                         |      | G1/1800 |
| FVH  | (80°-90°)   | 13.6   | 0.2       |                         |      | G1/100  |
| BL   | (0°-30°)    | 102.3  | 1.7       | B0/110                  |      |         |
| BM   | (30°-60°)   | 142.0  | 2.3       | B0/220                  |      |         |
| BH   | (60°-80°)   | 58.6   | 1.0       | B0/110                  |      | G0/110  |
| BVH  | (80°-90°)   | 0.4    | 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 Medium



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**CANDELA DISTRIBUTION (FULL):**

|       | 0°     | 5°     | 15°    | 25°    | 35°    | 45°    | 55°    | 65°    | 75°    | 76°    | 85°    |
|-------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|
| 0°    | 518.1  | 518.1  | 518.1  | 518.1  | 518.1  | 518.1  | 518.1  | 518.1  | 518.1  | 518.1  | 518.1  |
| 2.5°  | 773.5  | 756.0  | 760.0  | 748.9  | 728.5  | 686.7  | 651.2  | 617.4  | 578.1  | 576.7  | 544.4  |
| 5°    | 1043.0 | 1028.2 | 1026.4 | 1003.6 | 966.7  | 895.8  | 826.7  | 748.0  | 660.3  | 653.9  | 585.0  |
| 7.5°  | 1287.6 | 1275.8 | 1271.6 | 1244.5 | 1175.7 | 1106.7 | 1016.8 | 901.2  | 763.9  | 752.0  | 639.9  |
| 10°   | 1475.5 | 1469.9 | 1470.9 | 1451.6 | 1392.8 | 1328.6 | 1210.5 | 1063.1 | 881.3  | 863.2  | 705.7  |
| 12.5° | 1617.9 | 1619.2 | 1628.8 | 1617.1 | 1584.2 | 1536.5 | 1410.5 | 1235.7 | 1011.4 | 986.5  | 781.0  |
| 15°   | 1722.5 | 1729.2 | 1746.8 | 1761.6 | 1759.2 | 1718.0 | 1602.4 | 1411.0 | 1149.5 | 1122.0 | 864.8  |
| 17.5° | 1790.2 | 1797.7 | 1823.4 | 1856.1 | 1886.0 | 1876.4 | 1787.5 | 1580.2 | 1289.3 | 1257.4 | 954.4  |
| 20°   | 1849.7 | 1858.4 | 1886.0 | 1929.1 | 1985.0 | 1997.1 | 1938.7 | 1744.2 | 1428.6 | 1389.9 | 1047.0 |
| 22.5° | 1978.4 | 1978.1 | 1995.0 | 2020.2 | 2073.4 | 2104.5 | 2067.5 | 1896.4 | 1566.5 | 1526.1 | 1141.5 |
| 25°   | 2211.2 | 2202.4 | 2196.5 | 2176.7 | 2188.5 | 2207.8 | 2187.2 | 2038.9 | 1705.1 | 1664.2 | 1237.3 |
| 27.5° | 2488.0 | 2493.3 | 2445.7 | 2392.4 | 2351.2 | 2331.4 | 2297.7 | 2170.8 | 1838.4 | 1793.4 | 1331.0 |
| 30°   | 2779.9 | 2781.6 | 2725.3 | 2657.4 | 2566.7 | 2491.4 | 2433.1 | 2296.9 | 1975.4 | 1926.4 | 1422.0 |
| 32.5° | 3043.4 | 3032.8 | 2977.2 | 2884.6 | 2770.0 | 2685.5 | 2564.3 | 2437.7 | 2120.5 | 2073.2 | 1523.2 |
| 35°   | 3252.0 | 3239.7 | 3172.0 | 3087.7 | 2968.9 | 2883.8 | 2737.9 | 2578.2 | 2273.1 | 2226.8 | 1624.5 |
| 37.5° | 3404.6 | 3390.2 | 3320.6 | 3233.9 | 3131.4 | 3081.8 | 2939.5 | 2731.0 | 2439.5 | 2389.8 | 1731.4 |
| 40°   | 3457.6 | 3445.0 | 3401.5 | 3338.0 | 3255.6 | 3244.3 | 3153.3 | 2906.8 | 2620.7 | 2567.7 | 1852.3 |
| 42.5° | 3426.0 | 3413.7 | 3398.2 | 3376.8 | 3342.6 | 3353.3 | 3355.2 | 3107.3 | 2821.9 | 2769.8 | 1985.9 |
| 45°   | 3300.8 | 3289.9 | 3305.9 | 3337.2 | 3379.7 | 3432.8 | 3539.2 | 3322.7 | 3046.8 | 2991.1 | 2140.3 |
| 47.5° | 3116.4 | 3108.4 | 3152.8 | 3231.0 | 3355.3 | 3501.5 | 3707.6 | 3549.2 | 3299.2 | 3247.6 | 2333.0 |
| 50°   | 2854.1 | 2852.8 | 2941.6 | 3084.3 | 3275.6 | 3534.7 | 3881.6 | 3806.6 | 3649.8 | 3595.5 | 2600.9 |
| 52.5° | 2445.7 | 2448.4 | 2623.1 | 2851.5 | 3135.7 | 3512.2 | 3993.5 | 4137.5 | 4057.6 | 4001.2 | 2832.9 |
| 55°   | 2056.8 | 2072.9 | 2196.8 | 2526.0 | 2921.1 | 3428.7 | 4032.0 | 4291.8 | 4282.8 | 4229.2 | 2961.9 |
| 57.5° | 1675.9 | 1705.1 | 1824.5 | 2132.0 | 2607.6 | 3236.3 | 4010.9 | 4358.8 | 4450.3 | 4409.4 | 3132.1 |
| 60°   | 1263.3 | 1276.6 | 1414.2 | 1701.7 | 2205.3 | 2885.2 | 3857.4 | 4395.1 | 4679.3 | 4651.0 | 3379.2 |
| 62.5° | 803.7  | 837.2  | 959.2  | 1236.5 | 1717.2 | 2397.5 | 3598.9 | 4394.7 | 4966.1 | 4981.5 | 3698.0 |
| 65°   | 423.4  | 462.5  | 527.3  | 766.3  | 1180.0 | 1852.8 | 3210.0 | 4353.4 | 5317.7 | 5339.4 | 3947.2 |
| 67.5° | 228.3  | 239.5  | 273.8  | 397.7  | 684.3  | 1255.3 | 2638.6 | 4150.0 | 5521.4 | 5550.1 | 3981.9 |
| 70°   | 167.0  | 173.2  | 186.0  | 220.0  | 344.5  | 729.0  | 1925.4 | 3688.8 | 5258.9 | 5248.2 | 3537.9 |
| 72.5° | 128.2  | 137.9  | 147.5  | 161.2  | 198.0  | 389.1  | 1198.7 | 2888.6 | 4196.1 | 4125.4 | 2644.6 |
| 75°   | 101.2  | 102.7  | 116.4  | 128.7  | 148.6  | 221.6  | 532.4  | 1682.4 | 2561.0 | 2393.8 | 1371.4 |
| 77.5° | 80.9   | 81.9   | 89.9   | 100.6  | 119.3  | 145.6  | 164.9  | 661.9  | 817.6  | 729.6  | 297.6  |
| 80°   | 47.9   | 50.6   | 66.9   | 77.6   | 99.0   | 91.8   | 60.2   | 143.7  | 127.6  | 115.6  | 50.0   |
| 82.5° | 26.7   | 28.9   | 37.7   | 61.3   | 69.0   | 43.9   | 30.0   | 38.8   | 30.0   | 29.2   | 14.2   |
| 85°   | 0.0    | 1.3    | 24.3   | 38.0   | 28.1   | 9.6    | 12.6   | 12.9   | 8.8    | 8.3    | 5.6    |
| 87.5° | 0.0    | 0.0    | 7.5    | 7.3    | 1.0    | 1.6    | 3.0    | 4.3    | 3.4    | 3.4    | 3.0    |
| 90°   | 0.0    | 0.0    | 0.0    | 0.0    | 0.0    | 0.0    | 0.0    | 0.0    | 0.0    | 0.0    | 0.0    |

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**CANDELA DISTRIBUTION (continued):**

|       | 90°    | 95°   | 105°  | 115°  | 125°  | 135°  | 145°  | 155°  | 165°  | 175°  | 180°  |
|-------|--------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|
| 0°    | 518.1  | 518.1 | 518.1 | 518.1 | 518.1 | 518.1 | 518.1 | 518.1 | 518.1 | 518.1 | 518.1 |
| 2.5°  | 528.3  | 513.8 | 486.5 | 459.8 | 437.4 | 418.8 | 402.2 | 395.5 | 390.2 | 389.4 | 385.1 |
| 5°    | 551.8  | 522.7 | 470.5 | 427.7 | 399.1 | 378.7 | 361.3 | 350.6 | 342.3 | 339.1 | 336.2 |
| 7.5°  | 587.4  | 543.3 | 468.4 | 419.1 | 384.8 | 350.6 | 318.5 | 283.7 | 262.0 | 253.8 | 248.9 |
| 10°   | 630.8  | 570.6 | 476.4 | 416.7 | 356.8 | 284.5 | 231.2 | 187.1 | 169.2 | 163.3 | 161.6 |
| 12.5° | 681.4  | 604.6 | 490.3 | 401.7 | 296.8 | 202.1 | 159.5 | 144.5 | 140.5 | 138.6 | 138.6 |
| 15°   | 739.5  | 641.8 | 500.2 | 358.4 | 219.5 | 152.9 | 138.1 | 131.2 | 126.9 | 124.5 | 124.7 |
| 17.5° | 798.9  | 678.2 | 495.4 | 295.5 | 161.9 | 136.0 | 125.0 | 117.5 | 111.6 | 109.2 | 108.6 |
| 20°   | 858.9  | 711.9 | 468.7 | 220.0 | 137.0 | 123.3 | 111.0 | 102.7 | 96.9  | 94.5  | 93.9  |
| 22.5° | 920.9  | 740.6 | 421.5 | 161.3 | 123.2 | 109.5 | 97.4  | 89.1  | 83.5  | 81.3  | 80.3  |
| 25°   | 981.4  | 763.9 | 355.7 | 130.6 | 110.0 | 96.3  | 84.9  | 77.0  | 72.0  | 69.9  | 69.6  |
| 27.5° | 1037.9 | 778.6 | 279.4 | 115.3 | 98.5  | 84.6  | 74.2  | 67.2  | 62.9  | 61.3  | 61.0  |
| 30°   | 1088.8 | 779.9 | 206.6 | 104.1 | 88.3  | 74.4  | 64.7  | 58.6  | 54.9  | 53.3  | 52.7  |
| 32.5° | 1140.1 | 768.6 | 150.4 | 93.9  | 79.0  | 65.6  | 56.2  | 51.4  | 48.7  | 47.4  | 47.4  |
| 35°   | 1188.6 | 742.7 | 117.2 | 85.1  | 69.9  | 57.0  | 49.6  | 46.0  | 44.4  | 43.1  | 43.1  |
| 37.5° | 1236.0 | 705.5 | 99.6  | 77.3  | 61.3  | 49.7  | 43.6  | 41.5  | 40.1  | 38.8  | 38.8  |
| 40°   | 1284.1 | 658.7 | 90.5  | 70.1  | 54.3  | 44.2  | 38.8  | 36.9  | 35.6  | 34.6  | 34.3  |
| 42.5° | 1343.3 | 604.6 | 84.6  | 63.4  | 48.2  | 39.0  | 34.3  | 32.1  | 31.0  | 30.0  | 29.4  |
| 45°   | 1411.8 | 558.0 | 79.7  | 56.7  | 43.1  | 34.7  | 29.7  | 27.6  | 26.0  | 24.6  | 24.3  |
| 47.5° | 1510.6 | 524.3 | 73.3  | 49.6  | 38.3  | 30.3  | 25.7  | 23.3  | 20.9  | 19.6  | 19.3  |
| 50°   | 1636.6 | 496.5 | 65.0  | 43.1  | 33.4  | 25.7  | 21.4  | 18.4  | 16.3  | 15.0  | 15.0  |
| 52.5° | 1699.2 | 460.1 | 57.6  | 37.4  | 28.1  | 21.7  | 17.4  | 13.9  | 12.9  | 11.6  | 11.6  |
| 55°   | 1724.4 | 432.2 | 50.0  | 31.9  | 23.3  | 17.9  | 13.7  | 10.7  | 9.9   | 9.1   | 8.8   |
| 57.5° | 1795.1 | 424.2 | 43.6  | 27.0  | 19.3  | 14.2  | 10.4  | 8.0   | 7.5   | 6.4   | 6.4   |
| 60°   | 1908.8 | 428.2 | 37.7  | 23.0  | 15.6  | 11.0  | 7.7   | 6.1   | 5.6   | 4.6   | 4.6   |
| 62.5° | 2031.6 | 423.1 | 31.9  | 19.8  | 12.0  | 8.0   | 5.3   | 4.6   | 4.6   | 2.7   | 2.4   |
| 65°   | 2055.2 | 376.8 | 27.3  | 16.3  | 9.4   | 5.9   | 3.4   | 3.0   | 4.0   | 0.6   | 0.0   |
| 67.5° | 1907.4 | 292.2 | 23.6  | 12.6  | 7.0   | 4.6   | 2.7   | 1.3   | 3.4   | 0.0   | 0.0   |
| 70°   | 1525.3 | 185.8 | 19.0  | 9.1   | 5.3   | 3.7   | 2.1   | 0.6   | 2.7   | 0.0   | 0.0   |
| 72.5° | 1078.5 | 107.9 | 15.0  | 6.4   | 4.6   | 3.0   | 1.6   | 0.0   | 1.6   | 0.0   | 0.0   |
| 75°   | 545.4  | 57.6  | 9.4   | 4.8   | 3.4   | 2.1   | 1.0   | 0.0   | 0.3   | 0.0   | 0.0   |
| 77.5° | 118.0  | 26.7  | 5.9   | 3.4   | 2.4   | 1.3   | 0.6   | 0.0   | 0.0   | 0.0   | 0.0   |
| 80°   | 25.7   | 11.7  | 3.7   | 2.1   | 1.3   | 0.8   | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   |
| 82.5° | 9.4    | 6.1   | 1.9   | 1.0   | 0.6   | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   |
| 85°   | 5.1    | 3.2   | 1.0   | 0.6   | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   |
| 87.5° | 2.7    | 1.0   | 0.3   | 0.3   | 0.0   | 0.0   | 0.0   | 0.0   | 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-79-08: Approved Method: Electrical and Photometric Measurements of Solid-State Lighting Products

Report Prepared for

Cooper Lighting Solutions

All Brands

Data applicable to all product families using SA light engines

Report Number: SP1-2101-121-7

Luminaire Tested: IFLD-S-SA2A-735-U-T2

Test Date: 03/04/2021

### Test Information

Test Method: LM-79-08  
 Report Number: SP1-2101-121-7  
 Test Lab: COOPER LIGHTING SOLUTIONS  
 Photometer: SP1  
 Measurement Geometry:  $4\pi$   
 Issue Date: 03/04/2021  
 Manufacturer: COOPER LIGHTING SOLUTIONS (FORMERLY EATON)  
 Product Line: STREETWORKS  
 Catalog Number: **IFLD-S-SA2A-735-U-T2**  
 Description: STREETWORKS INF FLOOD

PROGRAMMED @ 615mA.

### Spectral Parameters

|                           |        |           |      |      |       |
|---------------------------|--------|-----------|------|------|-------|
| CCT (K):                  | 3388   | CRI (Ra): | 73.1 |      |       |
| CIE u':                   | 0.2371 | R1:       | 68.9 | R9:  | -34.6 |
| CIE v':                   | 0.5177 | R2:       | 81.1 | R10: | 57.8  |
| Duv:                      | 0.0032 | R3:       | 93.1 | R11: | 68.6  |
| CIE x:                    | 0.4153 | R4:       | 71.6 | R12: | 53.9  |
| CIE y:                    | 0.4030 | R5:       | 69.4 | R13: | 70.9  |
| CIE z:                    | 0.1817 | R6:       | 75.0 | R14: | 96.2  |
| Peak Wavelength (nm):     | 590    | R7:       | 79.5 |      |       |
| Dominant Wavelength (nm): | 580    | R8:       | 46.4 |      |       |
| Purity:                   | 45.7   |           |      |      |       |
| Rf:                       | 76.9   |           |      |      |       |
| Rg:                       | 94.4   |           |      |      |       |



### Test Conditions

Stabilization Time: 81M  
 Operation Time: 12H  
 Room Temperature (°C) / RH%: 25.0/30%  
 Sphere Temperature (°C): 24.1

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| Measurement and Test Equipment |                       |                  |                      |
|--------------------------------|-----------------------|------------------|----------------------|
| Instrument                     | Identification Number | Calibration Date | Calibration Due Date |
| Photometer                     | IN0058                | 1/31/2021        | 7/31/2021            |
| Power Meter                    | IN0071                | 12/1/2020        | 12/1/2021            |
| AC Power Source                | IN0063                | 12/1/2020        | 12/1/2021            |
| DC Power Source                | IN0208                | 12/1/2020        | 12/1/2021            |
| Sphere Thermometer             | IN0085                | 12/1/2020        | 12/1/2021            |
| Room Thermometer               | IN0046                | 12/1/2020        | 12/1/2021            |

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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 3500K 4-step quadrangle

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### Photopic Flux vs. Wavelength



#####

| λ<br>(nm) | Power<br>(μW/nm) | Lumens<br>(Φ/nm) | λ<br>(nm) | Power<br>(μW/nm) | Lumens<br>(Φ/nm) | λ<br>(nm) | Power<br>(μW/nm) | Lumens<br>(Φ/nm) | λ<br>(nm) | Power<br>(μW/nm) | Lumens<br>(Φ/nm) | λ<br>(nm) | Power<br>(μW/nm) | Lumens<br>(Φ/nm) |
|-----------|------------------|------------------|-----------|------------------|------------------|-----------|------------------|------------------|-----------|------------------|------------------|-----------|------------------|------------------|
| 360       | 2672             | 0.0              | 490       | 34553            | 4.9              | 620       | 136720           | 35.6             | 750       | 5870             | 0.0              | 880       | 4216             | 0.0              |
| 365       | 2252             | 0.0              | 495       | 44336            | 8.0              | 625       | 126308           | 27.9             | 755       | 5421             | 0.0              | 885       | 4132             | 0.0              |
| 370       | 2217             | 0.0              | 500       | 54643            | 12.1             | 630       | 114625           | 20.7             | 760       | 5097             | 0.0              | 890       | 3992             | 0.0              |
| 375       | 2697             | 0.0              | 505       | 64676            | 18.1             | 635       | 103216           | 15.5             | 765       | 4626             | 0.0              | 895       | 3214             | 0.0              |
| 380       | 3039             | 0.0              | 510       | 73825            | 25.4             | 640       | 92605            | 11.1             | 770       | 3782             | 0.0              | 900       | 2580             | 0.0              |
| 385       | 2655             | 0.0              | 515       | 81872            | 33.9             | 645       | 83234            | 8.0              | 775       | 3506             | 0.0              | 905       | 1776             | 0.0              |
| 390       | 2357             | 0.0              | 520       | 88574            | 43.0             | 650       | 73263            | 5.4              | 780       | 3507             | 0.0              | 910       | 3995             | 0.0              |
| 395       | 2186             | 0.0              | 525       | 93289            | 50.1             | 655       | 64627            | 3.7              | 785       | 3267             | 0.0              | 915       | 4288             | 0.0              |
| 400       | 2015             | 0.0              | 530       | 98393            | 57.9             | 660       | 56614            | 2.4              | 790       | 2849             | 0.0              | 920       | 2446             | 0.0              |
| 405       | 2234             | 0.0              | 535       | 103269           | 64.0             | 665       | 49537            | 1.6              | 795       | 3037             | 0.0              | 925       | 3009             | 0.0              |
| 410       | 3412             | 0.0              | 540       | 107316           | 69.9             | 670       | 42866            | 0.9              | 800       | 2716             | 0.0              | 930       | 3026             | 0.0              |
| 415       | 6135             | 0.0              | 545       | 113101           | 75.3             | 675       | 36708            | 0.6              | 805       | 2648             | 0.0              | 935       | 4734             | 0.0              |
| 420       | 12146            | 0.0              | 550       | 120690           | 82.0             | 680       | 31814            | 0.4              | 810       | 3187             | 0.0              | 940       | 3719             | 0.0              |
| 425       | 23983            | 0.1              | 555       | 128583           | 87.8             | 685       | 27485            | 0.2              | 815       | 2931             | 0.0              | 945       | 1480             | 0.0              |
| 430       | 42142            | 0.3              | 560       | 137796           | 93.6             | 690       | 23698            | 0.1              | 820       | 2717             | 0.0              | 950       | 3450             | 0.0              |
| 435       | 68228            | 0.8              | 565       | 146577           | 97.5             | 695       | 20309            | 0.1              | 825       | 2236             | 0.0              | 955       | 5051             | 0.0              |
| 440       | 99323            | 1.6              | 570       | 154581           | 100.5            | 700       | 17890            | 0.1              | 830       | 2628             | 0.0              | 960       | 3176             | 0.0              |
| 445       | 115584           | 2.4              | 575       | 162633           | 101.2            | 705       | 15500            | 0.0              | 835       | 3140             | 0.0              | 965       | 5178             | 0.0              |
| 450       | 94997            | 2.5              | 580       | 168101           | 99.9             | 710       | 13699            | 0.0              | 840       | 3675             | 0.0              | 970       | 6385             | 0.0              |
| 455       | 61433            | 2.1              | 585       | 173145           | 96.2             | 715       | 12398            | 0.0              | 845       | 3283             | 0.0              | 975       | 3810             | 0.0              |
| 460       | 43373            | 1.8              | 590       | 174675           | 90.3             | 720       | 11147            | 0.0              | 850       | 3055             | 0.0              | 980       | 4322             | 0.0              |
| 465       | 32472            | 1.7              | 595       | 173724           | 82.3             | 725       | 9761             | 0.0              | 855       | 2932             | 0.0              | 985       | 4200             | 0.0              |
| 470       | 24257            | 1.5              | 600       | 171241           | 73.8             | 730       | 8651             | 0.0              | 860       | 3382             | 0.0              | 990       | 4661             | 0.0              |
| 475       | 21690            | 1.7              | 605       | 165134           | 64.0             | 735       | 7730             | 0.0              | 865       | 2605             | 0.0              | 995       | 6746             | 0.0              |
| 480       | 23173            | 2.2              | 610       | 156652           | 53.8             | 740       | 6847             | 0.0              | 870       | 3325             | 0.0              | 1000      | 4150             | 0.0              |
| 485       | 27564            | 3.3              | 615       | 147879           | 44.6             | 745       | 6124             | 0.0              | 875       | 3325             | 0.0              |           |                  |                  |

REPORT NUMBER: SP1-2101-121-7

### Scotopic Flux vs. Wavelength



Scotopic Lumens: 12126

S/P: 1.36

| $\lambda$<br>(nm) | Power<br>( $\mu\text{W/nm}$ ) | Lumens<br>( $\Phi/\text{nm}$ ) | $\lambda$<br>(nm) | Power<br>( $\mu\text{W/nm}$ ) | Lumens<br>( $\Phi/\text{nm}$ ) | $\lambda$<br>(nm) | Power<br>( $\mu\text{W/nm}$ ) | Lumens<br>( $\Phi/\text{nm}$ ) | $\lambda$<br>(nm) | Power<br>( $\mu\text{W/nm}$ ) | Lumens<br>( $\Phi/\text{nm}$ ) | $\lambda$<br>(nm) | Power<br>( $\mu\text{W/nm}$ ) | Lumens<br>( $\Phi/\text{nm}$ ) |
|-------------------|-------------------------------|--------------------------------|-------------------|-------------------------------|--------------------------------|-------------------|-------------------------------|--------------------------------|-------------------|-------------------------------|--------------------------------|-------------------|-------------------------------|--------------------------------|
| 360               | 2672                          | 0.0                            | 490               | 34553                         | 53.2                           | 620               | 136720                        | 1.7                            | 750               | 5870                          | 0.0                            | 880               | 4216                          | 0.0                            |
| 365               | 2252                          | 0.0                            | 495               | 44336                         | 71.7                           | 625               | 126308                        | 1.1                            | 755               | 5421                          | 0.0                            | 885               | 4132                          | 0.0                            |
| 370               | 2217                          | 0.0                            | 500               | 54643                         | 91.4                           | 630               | 114625                        | 0.6                            | 760               | 5097                          | 0.0                            | 890               | 3992                          | 0.0                            |
| 375               | 2697                          | 0.0                            | 505               | 64676                         | 110.0                          | 635               | 103216                        | 0.4                            | 765               | 4626                          | 0.0                            | 895               | 3214                          | 0.0                            |
| 380               | 3039                          | 0.0                            | 510               | 73825                         | 125.1                          | 640               | 92605                         | 0.2                            | 770               | 3782                          | 0.0                            | 900               | 2580                          | 0.0                            |
| 385               | 2655                          | 0.0                            | 515               | 81872                         | 135.7                          | 645               | 83234                         | 0.1                            | 775               | 3506                          | 0.0                            | 905               | 1776                          | 0.0                            |
| 390               | 2357                          | 0.0                            | 520               | 88574                         | 140.8                          | 650               | 73263                         | 0.1                            | 780               | 3507                          | 0.0                            | 910               | 3995                          | 0.0                            |
| 395               | 2186                          | 0.0                            | 525               | 93289                         | 139.6                          | 655               | 64627                         | 0.1                            | 785               | 3267                          | 0.0                            | 915               | 4288                          | 0.0                            |
| 400               | 2015                          | 0.0                            | 530               | 98393                         | 135.7                          | 660               | 56614                         | 0.0                            | 790               | 2849                          | 0.0                            | 920               | 2446                          | 0.0                            |
| 405               | 2234                          | 0.1                            | 535               | 103269                        | 128.7                          | 665               | 49537                         | 0.0                            | 795               | 3037                          | 0.0                            | 925               | 3009                          | 0.0                            |
| 410               | 3412                          | 0.2                            | 540               | 107316                        | 118.6                          | 670               | 42866                         | 0.0                            | 800               | 2716                          | 0.0                            | 930               | 3026                          | 0.0                            |
| 415               | 6135                          | 0.6                            | 545               | 113101                        | 108.4                          | 675               | 36708                         | 0.0                            | 805               | 2648                          | 0.0                            | 935               | 4734                          | 0.0                            |
| 420               | 12146                         | 2.0                            | 550               | 120690                        | 98.7                           | 680               | 31814                         | 0.0                            | 810               | 3187                          | 0.0                            | 940               | 3719                          | 0.0                            |
| 425               | 23983                         | 5.9                            | 555               | 128583                        | 87.9                           | 685               | 27485                         | 0.0                            | 815               | 2931                          | 0.0                            | 945               | 1480                          | 0.0                            |
| 430               | 42142                         | 14.3                           | 560               | 137796                        | 77.0                           | 690               | 23698                         | 0.0                            | 820               | 2717                          | 0.0                            | 950               | 3450                          | 0.0                            |
| 435               | 68228                         | 30.5                           | 565               | 146577                        | 65.8                           | 695               | 20309                         | 0.0                            | 825               | 2236                          | 0.0                            | 955               | 5051                          | 0.0                            |
| 440               | 99323                         | 55.5                           | 570               | 154581                        | 54.6                           | 700               | 17890                         | 0.0                            | 830               | 2628                          | 0.0                            | 960               | 3176                          | 0.0                            |
| 445               | 115584                        | 77.4                           | 575               | 162633                        | 44.3                           | 705               | 15500                         | 0.0                            | 835               | 3140                          | 0.0                            | 965               | 5178                          | 0.0                            |
| 450               | 94997                         | 73.6                           | 580               | 168101                        | 34.6                           | 710               | 13699                         | 0.0                            | 840               | 3675                          | 0.0                            | 970               | 6385                          | 0.0                            |
| 455               | 61433                         | 53.7                           | 585               | 173145                        | 26.5                           | 715               | 12398                         | 0.0                            | 845               | 3283                          | 0.0                            | 975               | 3810                          | 0.0                            |
| 460               | 43373                         | 41.9                           | 590               | 174675                        | 19.5                           | 720               | 11147                         | 0.0                            | 850               | 3055                          | 0.0                            | 980               | 4322                          | 0.0                            |
| 465               | 32472                         | 34.3                           | 595               | 173724                        | 13.9                           | 725               | 9761                          | 0.0                            | 855               | 2932                          | 0.0                            | 985               | 4200                          | 0.0                            |
| 470               | 24257                         | 27.9                           | 600               | 171241                        | 9.7                            | 730               | 8651                          | 0.0                            | 860               | 3382                          | 0.0                            | 990               | 4661                          | 0.0                            |
| 475               | 21690                         | 27.1                           | 605               | 165134                        | 6.5                            | 735               | 7730                          | 0.0                            | 865               | 2605                          | 0.0                            | 995               | 6746                          | 0.0                            |
| 480               | 23173                         | 31.3                           | 610               | 156652                        | 4.2                            | 740               | 6847                          | 0.0                            | 870               | 3325                          | 0.0                            | 1000              | 4150                          | 0.0                            |
| 485               | 27564                         | 40.0                           | 615               | 147879                        | 2.7                            | 745               | 6124                          | 0.0                            | 875               | 3325                          | 0.0                            |                   |                               |                                |

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### Melanopic Flux vs. Wavelength



Melanopic Lumens: 4490.7

M/P: 0.5

| λ<br>(nm) | Power<br>(μW/nm) | Lumens<br>(Φ/nm) | λ<br>(nm) | Power<br>(μW/nm) | Lumens<br>(Φ/nm) | λ<br>(nm) | Power<br>(μW/nm) | Lumens<br>(Φ/nm) | λ<br>(nm) | Power<br>(μW/nm) | Lumens<br>(Φ/nm) | λ<br>(nm) | Power<br>(μW/nm) | Lumens<br>(Φ/nm) |
|-----------|------------------|------------------|-----------|------------------|------------------|-----------|------------------|------------------|-----------|------------------|------------------|-----------|------------------|------------------|
| 360       | 2672             | 0.0              | 490       | 34553            | 28.8             | 620       | 136720           | 0.1              | 750       | 5870             | 0.0              | 880       | 4216             | 0.0              |
| 365       | 2252             | 0.0              | 495       | 44336            | 36.6             | 625       | 126308           | 0.1              | 755       | 5421             | 0.0              | 885       | 4132             | 0.0              |
| 370       | 2217             | 0.0              | 500       | 54643            | 43.9             | 630       | 114625           | 0.0              | 760       | 5097             | 0.0              | 890       | 3992             | 0.0              |
| 375       | 2697             | 0.0              | 505       | 64676            | 49.6             | 635       | 103216           | 0.0              | 765       | 4626             | 0.0              | 895       | 3214             | 0.0              |
| 380       | 3039             | 0.0              | 510       | 73825            | 53.0             | 640       | 92605            | 0.0              | 770       | 3782             | 0.0              | 900       | 2580             | 0.0              |
| 385       | 2655             | 0.0              | 515       | 81872            | 53.5             | 645       | 83234            | 0.0              | 775       | 3506             | 0.0              | 905       | 1776             | 0.0              |
| 390       | 2357             | 0.0              | 520       | 88574            | 51.6             | 650       | 73263            | 0.0              | 780       | 3507             | 0.0              | 910       | 3995             | 0.0              |
| 395       | 2186             | 0.0              | 525       | 93289            | 47.3             | 655       | 64627            | 0.0              | 785       | 3267             | 0.0              | 915       | 4288             | 0.0              |
| 400       | 2015             | 0.0              | 530       | 98393            | 42.5             | 660       | 56614            | 0.0              | 790       | 2849             | 0.0              | 920       | 2446             | 0.0              |
| 405       | 2234             | 0.0              | 535       | 103269           | 37.2             | 665       | 49537            | 0.0              | 795       | 3037             | 0.0              | 925       | 3009             | 0.0              |
| 410       | 3412             | 0.1              | 540       | 107316           | 31.4             | 670       | 42866            | 0.0              | 800       | 2716             | 0.0              | 930       | 3026             | 0.0              |
| 415       | 6135             | 0.4              | 545       | 113101           | 26.3             | 675       | 36708            | 0.0              | 805       | 2648             | 0.0              | 935       | 4734             | 0.0              |
| 420       | 12146            | 1.4              | 550       | 120690           | 21.7             | 680       | 31814            | 0.0              | 810       | 3187             | 0.0              | 940       | 3719             | 0.0              |
| 425       | 23983            | 3.7              | 555       | 128583           | 17.3             | 685       | 27485            | 0.0              | 815       | 2931             | 0.0              | 945       | 1480             | 0.0              |
| 430       | 42142            | 8.9              | 560       | 137796           | 13.6             | 690       | 23698            | 0.0              | 820       | 2717             | 0.0              | 950       | 3450             | 0.0              |
| 435       | 68228            | 18.2             | 565       | 146577           | 10.3             | 695       | 20309            | 0.0              | 825       | 2236             | 0.0              | 955       | 5051             | 0.0              |
| 440       | 99323            | 33.2             | 570       | 154581           | 7.6              | 700       | 17890            | 0.0              | 830       | 2628             | 0.0              | 960       | 3176             | 0.0              |
| 445       | 115584           | 45.6             | 575       | 162633           | 5.4              | 705       | 15500            | 0.0              | 835       | 3140             | 0.0              | 965       | 5178             | 0.0              |
| 450       | 94997            | 43.8             | 580       | 168101           | 3.8              | 710       | 13699            | 0.0              | 840       | 3675             | 0.0              | 970       | 6385             | 0.0              |
| 455       | 61433            | 32.2             | 585       | 173145           | 2.6              | 715       | 12398            | 0.0              | 845       | 3283             | 0.0              | 975       | 3810             | 0.0              |
| 460       | 43373            | 25.6             | 590       | 174675           | 1.7              | 720       | 11147            | 0.0              | 850       | 3055             | 0.0              | 980       | 4322             | 0.0              |
| 465       | 32472            | 21.2             | 595       | 173724           | 1.1              | 725       | 9761             | 0.0              | 855       | 2932             | 0.0              | 985       | 4200             | 0.0              |
| 470       | 24257            | 17.4             | 600       | 171241           | 0.7              | 730       | 8651             | 0.0              | 860       | 3382             | 0.0              | 990       | 4661             | 0.0              |
| 475       | 21690            | 16.6             | 605       | 165134           | 0.5              | 735       | 7730             | 0.0              | 865       | 2605             | 0.0              | 995       | 6746             | 0.0              |
| 480       | 23173            | 18.6             | 610       | 156652           | 0.3              | 740       | 6847             | 0.0              | 870       | 3325             | 0.0              | 1000      | 4150             | 0.0              |
| 485       | 27564            | 22.7             | 615       | 147879           | 0.2              | 745       | 6124             | 0.0              | 875       | 3325             | 0.0              |           |                  |                  |

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TM-30-18

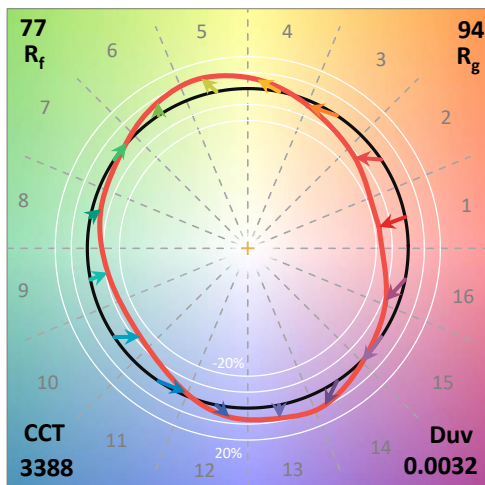
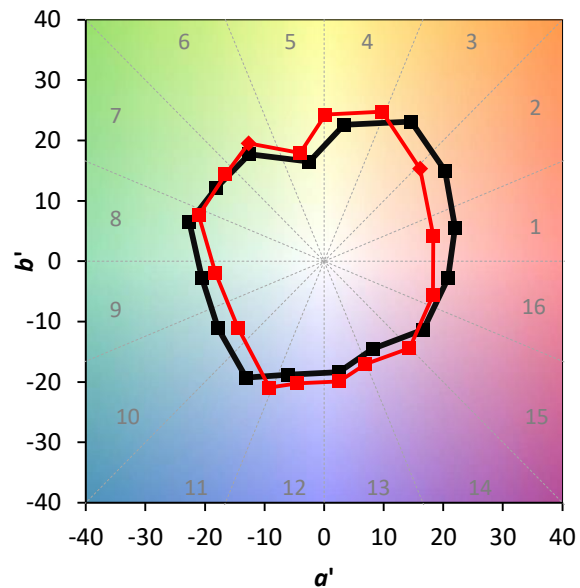
### Summary

$R_f = 76.9$   
 $R_g = 94.4$   
 CIE  $R_a = 73.1$   
 $R_g = -34.6$

### Spectral Power Distribution Comparison



### Color Vector Graphics



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

|            |            |            |            |
|------------|------------|------------|------------|
| CES01 = 86 | CES26 = 68 | CES51 = 90 | CES76 = 63 |
| CES02 = 62 | CES27 = 88 | CES52 = 89 | CES77 = 80 |
| CES03 = 31 | CES28 = 87 | CES53 = 80 | CES78 = 65 |
| CES04 = 70 | CES29 = 67 | CES54 = 84 | CES79 = 87 |
| CES05 = 48 | CES30 = 74 | CES55 = 84 | CES80 = 86 |
| CES06 = 51 | CES31 = 71 | CES56 = 75 | CES81 = 75 |
| CES07 = 40 | CES32 = 67 | CES57 = 74 | CES82 = 94 |
| CES08 = 39 | CES33 = 74 | CES58 = 76 | CES83 = 91 |
| CES09 = 29 | CES34 = 78 | CES59 = 87 | CES84 = 89 |
| CES10 = 75 | CES35 = 89 | CES60 = 93 | CES85 = 80 |
| CES11 = 58 | CES36 = 98 | CES61 = 86 | CES86 = 66 |
| CES12 = 64 | CES37 = 86 | CES62 = 89 | CES87 = 79 |
| CES13 = 43 | CES38 = 82 | CES63 = 77 | CES88 = 79 |
| CES14 = 74 | CES39 = 95 | CES64 = 74 | CES89 = 70 |
| CES15 = 71 | CES40 = 91 | CES65 = 68 | CES90 = 77 |
| CES16 = 47 | CES41 = 89 | CES66 = 71 | CES91 = 88 |
| CES17 = 50 | CES42 = 88 | CES67 = 69 | CES92 = 60 |
| CES18 = 56 | CES43 = 82 | CES68 = 74 | CES93 = 77 |
| CES19 = 72 | CES44 = 99 | CES69 = 82 | CES94 = 52 |
| CES20 = 65 | CES45 = 87 | CES70 = 67 | CES95 = 69 |
| CES21 = 86 | CES46 = 82 | CES71 = 66 | CES96 = 78 |
| CES22 = 79 | CES47 = 82 | CES72 = 88 | CES97 = 85 |
| CES23 = 92 | CES48 = 72 | CES73 = 59 | CES98 = 76 |
| CES24 = 91 | CES49 = 82 | CES74 = 97 | CES99 = 63 |
| CES25 = 72 | CES50 = 88 | CES75 = 66 |            |



Color Rendition by Hue-Angle Bin



**Measure Comparisons**



(END OF REPORT)