

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



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

Test Report Prepared for  
Cooper Lighting Solutions  
(formerly Eaton)

Brand: McGRAW-EDISON

Report Number: P382785

Luminaire Tested: **GLEON-SA1C-735-U-T2R**

Issue Date: 3/3/2020

**Test Information**

Test Method: LM-79-08  
Report Number: P382785  
TEST IS SCALED FROM IESNA LM-79-08 TEST DATA (G2-1903-205-8)  
Test Lab: INNOVATION CENTER  
Issue Date: 3/3/2020  
Manufacturer: COOPER LIGHTING SOLUTIONS (FORMERLY EATON)  
Product Line: McGRAW-EDISON  
Catalog Number: GLEON-SA1C-735-U-T2R  
Description: GALLEON AREA AND ROADWAY LUMINAIRE  
(1) 70 CRI, 3500K, 1050mA LIGHTSQUARE WITH 16 LEDS AND TYPE II ROADWAY OPTICS  
Light Source: -  
Ballast/Driver: ELECTRONIC DRIVER

**Summary**

Lumens per Lamp: N/A  
Luminaire Lumens: 7186.9 lumens  
Efficiency: N/A  
Efficacy: 121.8 lumens/watt  
Luminous Opening: Rectangular (W 0.5' x L: 0.5' x H: 0')  
IES Classification: Type II - Short  
BUG Rating: B1 - U0 - G2

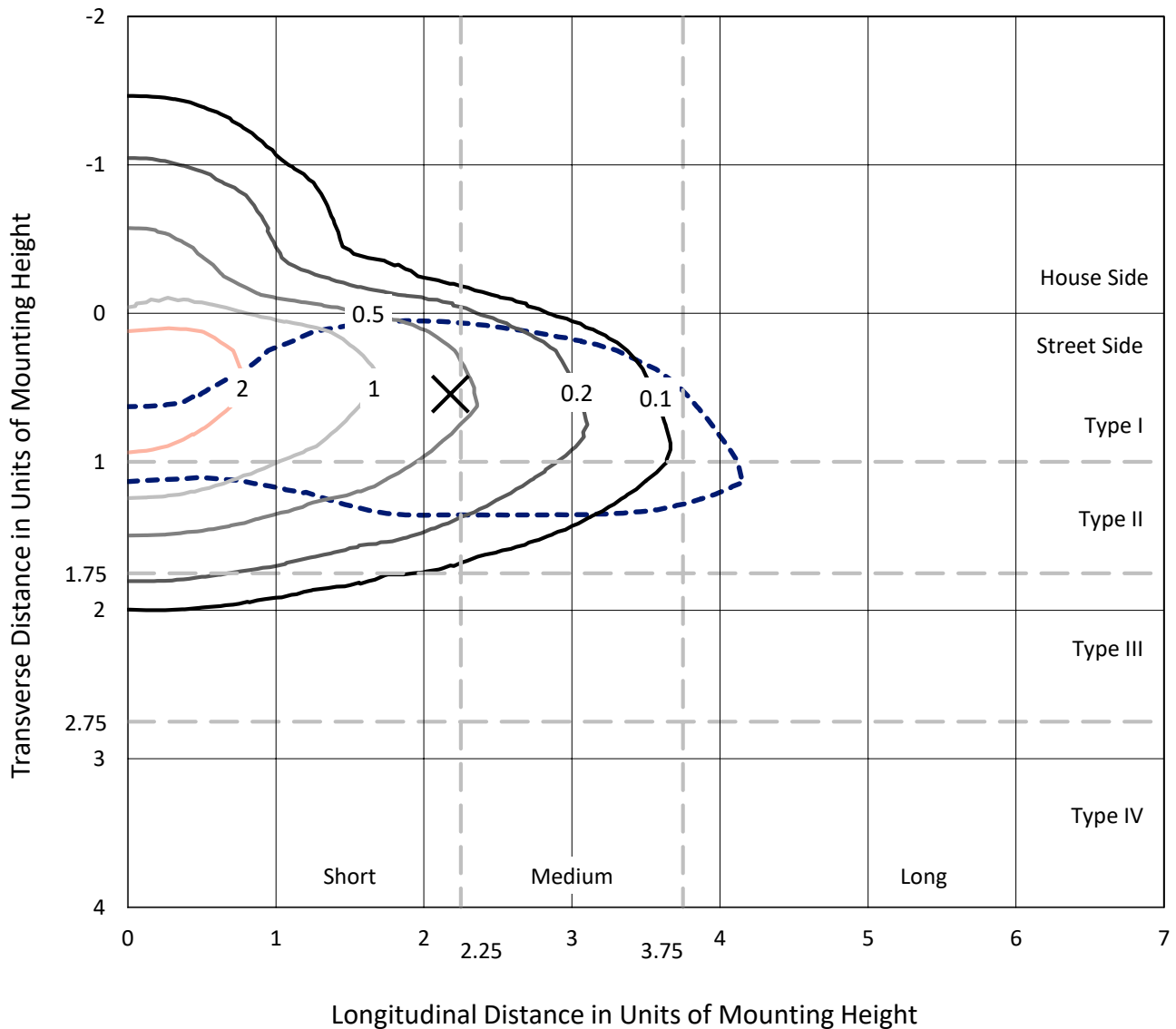
Input Watts (W): 59  
Input Voltage (V): NR  
Input Current (Ain): NR  
Voltage Rise (V): NR  
Power Factor: NR  
Total Harmonic Distortion (THDi): NR  
Frequency (hertz): 60  
Stabilization Time: NR  
Operation Time: NR  
Ambient Temperature (°C): NR  
Test Distance: 24 FT



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CATALOG NUMBER: GLEON-SA1C-735-U-T2R

## Iso-Footcandle Lines of Horizontal Illumination

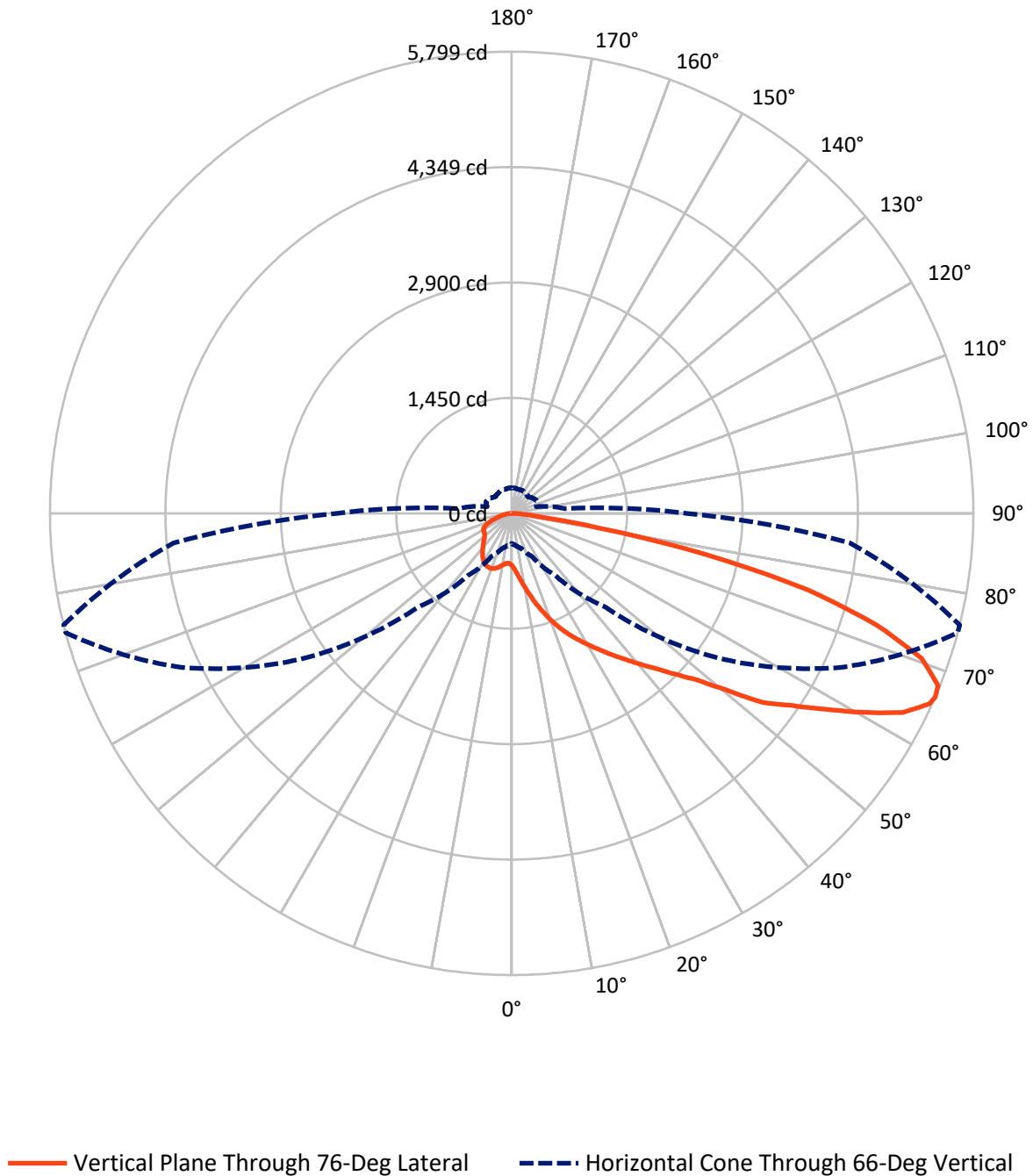
✕ Max cd  
- - - 1/2 Max cd



Based on 25 foot mounting height. Maximum calculated value = 2.8 fc  
Type II - Short - N/A

REPORT NUMBER: P382785  
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## Luminous Intensity Polar Plot



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CATALOG NUMBER: GLEON-SA1C-735-U-T2R

**FLUX DISTRIBUTION:**

|                    |           | Downward | Upward | Total  |
|--------------------|-----------|----------|--------|--------|
| <b>House Side</b>  | Lumens    | 1209.3   | 0.0    | 1209.3 |
|                    | % Fixture | 16.8     | 0.0    | 16.8   |
| <b>Street Side</b> | Lumens    | 5977.6   | 0.0    | 5977.6 |
|                    | % Fixture | 83.2     | 0.0    | 83.2   |
| <b>Total</b>       | Lumens    | 7186.9   | 0.0    | 7186.9 |
|                    | % Fixture | 100.0    | 0.0    | 100.0  |

**ZONAL LUMENS:**

| Zone      | Lumens | % Fixture |
|-----------|--------|-----------|
| 0°-10°    | 79.4   | 1.1       |
| 10°-20°   | 313.4  | 4.4       |
| 20°-30°   | 609.0  | 8.5       |
| 30°-40°   | 994.1  | 13.8      |
| 40°-50°   | 1358.2 | 18.9      |
| 50°-60°   | 1582.0 | 22.0      |
| 60°-70°   | 1418.3 | 19.7      |
| 70°-80°   | 716.8  | 10.0      |
| 80°-90°   | 115.7  | 1.6       |
| 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°    | 7186.9 | 100.0     |
| 0°-180°   | 7186.9 | 100.0     |

**Coefficient of Utilization**



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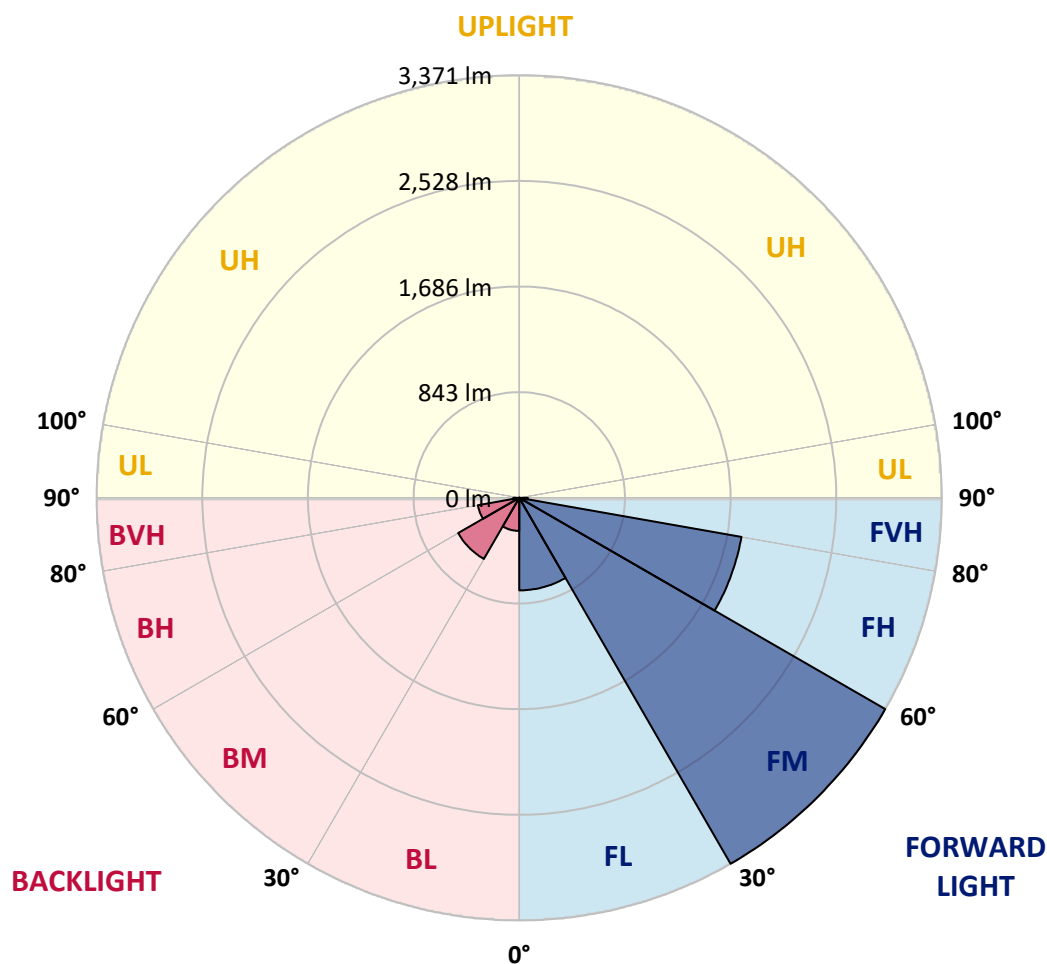
CATALOG NUMBER: GLEON-SA1C-735-U-T2R

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

| Zone |             | Lumens | % Fixture | Zone Rating/Lumen Limit |      |         |
|------|-------------|--------|-----------|-------------------------|------|---------|
|      |             |        |           | B                       | U    | G       |
| FL   | (0°-30°)    | 738.1  | 10.3      |                         |      |         |
| FM   | (30°-60°)   | 3371.1 | 46.9      |                         |      |         |
| FH   | (60°-80°)   | 1800.0 | 25.0      |                         |      | G2/5000 |
| FVH  | (80°-90°)   | 68.4   | 1.0       |                         |      | G1/100  |
| BL   | (0°-30°)    | 263.8  | 3.7       | B1/500                  |      |         |
| BM   | (30°-60°)   | 563.1  | 7.8       | B1/1000                 |      |         |
| BH   | (60°-80°)   | 335.0  | 4.7       | B1/500                  |      | G1/500  |
| BVH  | (80°-90°)   | 47.4   | 0.7       |                         |      | G1/100  |
| UL   | (90°-100°)  | 0.0    | 0.0       |                         | U0/0 |         |
| UH   | (100°-180°) | 0.0    | 0.0       |                         | U0/0 |         |

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

Type II Short





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**CANDELA DISTRIBUTION (FULL):**

|       | 0°     | 5°     | 15°    | 25°    | 35°    | 45°    | 55°    | 65°    | 75°    | 76°    | 85°    |
|-------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|
| 0°    | 656.4  | 656.4  | 656.4  | 656.4  | 656.4  | 656.4  | 656.4  | 656.4  | 656.4  | 656.4  | 656.4  |
| 2.5°  | 871.3  | 858.1  | 856.8  | 837.6  | 833.2  | 796.4  | 769.3  | 741.0  | 708.8  | 702.5  | 677.0  |
| 5°    | 1119.2 | 1118.0 | 1101.1 | 1069.6 | 1045.0 | 982.0  | 919.8  | 853.9  | 781.8  | 770.0  | 712.9  |
| 7.5°  | 1342.2 | 1340.2 | 1327.3 | 1293.4 | 1257.8 | 1180.4 | 1091.6 | 990.6  | 873.5  | 856.2  | 761.4  |
| 10°   | 1511.5 | 1510.8 | 1506.4 | 1481.5 | 1451.3 | 1377.1 | 1279.0 | 1141.1 | 980.1  | 956.4  | 822.3  |
| 12.5° | 1642.3 | 1643.7 | 1646.7 | 1637.8 | 1623.5 | 1560.3 | 1459.7 | 1300.7 | 1093.8 | 1070.3 | 889.8  |
| 15°   | 1730.8 | 1735.2 | 1750.4 | 1762.8 | 1770.4 | 1731.6 | 1634.2 | 1463.9 | 1221.2 | 1193.1 | 964.7  |
| 17.5° | 1775.5 | 1780.4 | 1806.5 | 1844.1 | 1878.7 | 1874.8 | 1797.4 | 1619.6 | 1343.4 | 1316.3 | 1045.2 |
| 20°   | 1814.0 | 1817.7 | 1847.0 | 1892.2 | 1953.4 | 1980.5 | 1937.0 | 1769.4 | 1477.3 | 1445.1 | 1130.6 |
| 22.5° | 1925.8 | 1930.4 | 1939.2 | 1964.8 | 2019.0 | 2068.8 | 2047.8 | 1911.2 | 1600.0 | 1570.0 | 1211.7 |
| 25°   | 2141.4 | 2147.1 | 2128.0 | 2106.3 | 2116.6 | 2151.2 | 2155.1 | 2040.5 | 1724.5 | 1690.6 | 1298.8 |
| 27.5° | 2401.3 | 2409.4 | 2376.9 | 2321.0 | 2272.2 | 2258.8 | 2254.2 | 2146.4 | 1843.3 | 1804.0 | 1384.8 |
| 30°   | 2655.8 | 2669.7 | 2627.5 | 2555.0 | 2465.5 | 2402.6 | 2356.0 | 2250.1 | 1960.4 | 1922.9 | 1466.2 |
| 32.5° | 2904.4 | 2898.8 | 2837.6 | 2766.8 | 2661.9 | 2583.1 | 2470.4 | 2361.3 | 2092.2 | 2049.0 | 1546.8 |
| 35°   | 3074.8 | 3076.7 | 3019.8 | 2935.9 | 2835.8 | 2775.4 | 2623.6 | 2481.4 | 2226.6 | 2186.9 | 1638.6 |
| 37.5° | 3219.6 | 3210.7 | 3146.2 | 3067.9 | 2981.8 | 2955.9 | 2802.9 | 2613.5 | 2372.3 | 2328.9 | 1736.2 |
| 40°   | 3268.0 | 3257.4 | 3215.2 | 3158.9 | 3089.9 | 3087.6 | 3000.8 | 2763.4 | 2537.0 | 2494.0 | 1846.2 |
| 42.5° | 3238.7 | 3225.3 | 3208.0 | 3192.6 | 3171.4 | 3181.1 | 3186.7 | 2939.0 | 2718.0 | 2669.9 | 1973.6 |
| 45°   | 3130.6 | 3110.3 | 3122.5 | 3156.0 | 3202.1 | 3257.2 | 3354.6 | 3133.5 | 2920.8 | 2880.5 | 2123.2 |
| 47.5° | 2964.5 | 2946.1 | 2984.2 | 3055.7 | 3181.1 | 3320.7 | 3513.4 | 3348.3 | 3162.8 | 3122.8 | 2336.1 |
| 50°   | 2730.7 | 2736.0 | 2790.5 | 2920.5 | 3110.1 | 3349.9 | 3709.0 | 3632.5 | 3514.6 | 3477.3 | 2626.8 |
| 52.5° | 2347.1 | 2348.2 | 2501.4 | 2714.8 | 2984.2 | 3334.8 | 3817.7 | 3995.8 | 3995.0 | 3949.9 | 2903.4 |
| 55°   | 1990.9 | 2012.6 | 2133.9 | 2417.6 | 2780.2 | 3274.3 | 3893.6 | 4172.4 | 4310.6 | 4257.5 | 3161.3 |
| 57.5° | 1643.0 | 1655.7 | 1770.6 | 2055.6 | 2489.2 | 3113.0 | 3971.4 | 4384.4 | 4674.0 | 4640.6 | 3481.9 |
| 60°   | 1247.2 | 1266.8 | 1385.6 | 1648.8 | 2116.8 | 2826.9 | 3978.7 | 4605.8 | 5108.6 | 5074.9 | 3839.8 |
| 62.5° | 809.5  | 843.2  | 954.5  | 1201.1 | 1666.4 | 2415.2 | 3808.9 | 4750.4 | 5520.4 | 5508.5 | 4157.5 |
| 65°   | 465.3  | 490.6  | 568.0  | 758.3  | 1149.6 | 1898.5 | 3405.1 | 4694.8 | 5773.9 | 5767.1 | 4276.4 |
| 66°   | 380.2  | 396.0  | 455.2  | 592.7  | 948.6  | 1667.2 | 3170.3 | 4577.4 | 5799.1 | 5799.3 | 4262.7 |
| 67.5° | 304.0  | 311.0  | 337.7  | 424.3  | 700.0  | 1321.4 | 2751.0 | 4318.6 | 5767.9 | 5776.4 | 4174.6 |
| 70°   | 251.5  | 255.2  | 263.5  | 284.5  | 382.1  | 796.8  | 1952.6 | 3645.9 | 5454.3 | 5460.9 | 3830.8 |
| 72.5° | 225.7  | 227.9  | 231.0  | 234.0  | 269.6  | 445.3  | 1192.6 | 2916.6 | 4782.1 | 4790.7 | 3307.0 |
| 75°   | 204.5  | 205.7  | 205.2  | 205.4  | 226.2  | 283.7  | 616.3  | 2177.6 | 3866.7 | 3849.6 | 2533.3 |
| 77.5° | 179.6  | 180.8  | 178.4  | 178.9  | 200.1  | 218.2  | 306.7  | 1524.4 | 2609.5 | 2488.9 | 1427.3 |
| 80°   | 151.7  | 152.8  | 151.7  | 153.4  | 174.2  | 164.7  | 178.4  | 857.6  | 1153.8 | 1091.3 | 507.5  |
| 82.5° | 114.7  | 118.9  | 121.8  | 128.6  | 143.5  | 117.1  | 119.3  | 334.1  | 351.4  | 334.5  | 155.7  |
| 85°   | 50.3   | 61.2   | 91.8   | 98.4   | 107.9  | 70.2   | 78.3   | 136.1  | 143.0  | 138.6  | 56.6   |
| 87.5° | 13.1   | 14.4   | 45.4   | 57.1   | 59.8   | 31.7   | 40.7   | 61.9   | 65.4   | 61.9   | 18.8   |
| 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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CATALOG NUMBER: GLEON-SA1C-735-U-T2R

**CANDELA DISTRIBUTION (continued):**

|       | 90°    | 95°   | 105°  | 115°  | 125°  | 135°  | 145°  | 155°  | 165°  | 175°  | 180°  |
|-------|--------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|
| 0°    | 656.4  | 656.4 | 656.4 | 656.4 | 656.4 | 656.4 | 656.4 | 656.4 | 656.4 | 656.4 | 656.4 |
| 2.5°  | 663.6  | 651.7 | 630.2 | 611.2 | 596.7 | 587.1 | 577.3 | 572.4 | 569.5 | 566.6 | 567.0 |
| 5°    | 684.9  | 660.7 | 623.9 | 597.8 | 583.1 | 573.8 | 569.0 | 567.0 | 565.8 | 562.8 | 562.8 |
| 7.5°  | 716.8  | 682.6 | 632.0 | 605.1 | 593.6 | 586.5 | 583.6 | 582.7 | 581.2 | 577.7 | 578.2 |
| 10°   | 757.1  | 709.3 | 648.7 | 622.6 | 612.1 | 604.4 | 600.2 | 598.7 | 596.1 | 592.2 | 592.7 |
| 12.5° | 804.4  | 742.2 | 671.0 | 643.6 | 630.9 | 620.5 | 613.6 | 609.5 | 604.9 | 599.7 | 600.0 |
| 15°   | 856.2  | 778.0 | 694.8 | 662.4 | 645.1 | 630.5 | 619.5 | 612.4 | 605.1 | 598.7 | 598.5 |
| 17.5° | 908.6  | 812.7 | 713.2 | 672.7 | 649.3 | 630.0 | 615.1 | 604.1 | 595.1 | 587.2 | 586.5 |
| 20°   | 965.2  | 844.0 | 723.4 | 671.7 | 641.5 | 618.5 | 598.7 | 585.1 | 575.0 | 567.3 | 566.0 |
| 22.5° | 1022.8 | 873.2 | 725.1 | 661.7 | 624.1 | 596.1 | 575.3 | 560.2 | 550.0 | 541.9 | 539.0 |
| 25°   | 1075.5 | 896.0 | 718.0 | 642.4 | 600.0 | 569.7 | 549.4 | 534.1 | 525.8 | 516.3 | 513.4 |
| 27.5° | 1123.5 | 911.8 | 703.9 | 617.8 | 572.9 | 543.1 | 524.1 | 511.0 | 501.9 | 494.6 | 492.1 |
| 30°   | 1166.8 | 920.3 | 680.7 | 588.5 | 545.0 | 517.9 | 501.9 | 492.9 | 485.1 | 475.7 | 474.1 |
| 32.5° | 1207.8 | 920.3 | 651.0 | 556.5 | 517.5 | 495.8 | 486.3 | 480.7 | 471.8 | 462.9 | 460.4 |
| 35°   | 1248.7 | 914.7 | 615.8 | 523.1 | 492.1 | 479.9 | 479.5 | 472.9 | 459.4 | 447.2 | 444.1 |
| 37.5° | 1291.9 | 903.2 | 576.3 | 491.9 | 471.4 | 472.9 | 477.0 | 462.3 | 443.3 | 426.0 | 421.3 |
| 40°   | 1340.7 | 887.4 | 535.3 | 464.7 | 454.0 | 469.7 | 470.4 | 447.2 | 410.2 | 394.3 | 390.1 |
| 42.5° | 1398.1 | 871.6 | 497.3 | 440.9 | 440.4 | 460.2 | 457.9 | 414.5 | 392.4 | 384.3 | 382.1 |
| 45°   | 1473.4 | 862.5 | 461.1 | 418.2 | 429.6 | 444.8 | 436.7 | 396.5 | 387.2 | 382.6 | 380.6 |
| 47.5° | 1592.3 | 867.1 | 428.0 | 400.1 | 418.9 | 429.4 | 397.2 | 389.2 | 382.6 | 377.0 | 375.0 |
| 50°   | 1741.1 | 864.5 | 401.1 | 387.7 | 406.7 | 413.3 | 379.4 | 379.6 | 376.3 | 369.9 | 366.9 |
| 52.5° | 1853.1 | 843.4 | 383.8 | 380.6 | 396.0 | 384.7 | 368.1 | 370.4 | 368.7 | 359.4 | 356.2 |
| 55°   | 1961.2 | 825.4 | 375.0 | 377.9 | 388.2 | 349.1 | 355.0 | 360.3 | 358.6 | 349.6 | 348.2 |
| 57.5° | 2095.6 | 822.0 | 369.6 | 378.7 | 381.6 | 331.4 | 342.3 | 349.4 | 348.2 | 344.3 | 343.6 |
| 60°   | 2260.3 | 822.9 | 364.8 | 379.9 | 374.3 | 318.1 | 330.3 | 339.4 | 340.1 | 339.4 | 338.9 |
| 62.5° | 2350.9 | 796.4 | 352.6 | 376.4 | 361.3 | 306.7 | 317.9 | 331.1 | 331.4 | 332.8 | 332.6 |
| 65°   | 2274.0 | 716.8 | 329.9 | 364.5 | 339.6 | 297.2 | 307.2 | 321.6 | 317.9 | 324.5 | 324.5 |
| 66°   | 2199.3 | 671.0 | 318.7 | 356.7 | 330.3 | 293.5 | 303.8 | 316.7 | 312.1 | 321.1 | 321.1 |
| 67.5° | 2046.8 | 593.6 | 298.4 | 340.1 | 317.2 | 288.4 | 299.9 | 308.6 | 302.3 | 315.7 | 314.8 |
| 70°   | 1768.2 | 459.2 | 257.7 | 302.6 | 295.5 | 280.9 | 294.5 | 292.5 | 283.3 | 303.8 | 299.9 |
| 72.5° | 1490.8 | 348.9 | 206.9 | 253.3 | 262.5 | 271.4 | 286.9 | 272.0 | 260.4 | 274.7 | 266.2 |
| 75°   | 1156.7 | 262.3 | 163.5 | 196.9 | 221.8 | 256.5 | 277.9 | 248.4 | 231.6 | 230.1 | 225.4 |
| 77.5° | 625.3  | 180.1 | 129.6 | 150.3 | 176.2 | 237.9 | 271.8 | 223.0 | 197.7 | 191.8 | 188.1 |
| 80°   | 247.6  | 117.1 | 94.2  | 113.9 | 123.2 | 211.1 | 257.2 | 193.5 | 163.0 | 157.2 | 151.5 |
| 82.5° | 102.2  | 69.3  | 60.7  | 76.4  | 80.3  | 180.5 | 230.8 | 158.5 | 125.9 | 174.2 | 184.9 |
| 85°   | 43.9   | 38.1  | 36.1  | 39.5  | 45.4  | 126.6 | 183.7 | 121.0 | 135.9 | 121.3 | 96.4  |
| 87.5° | 13.1   | 16.1  | 15.4  | 15.1  | 16.6  | 30.3  | 97.8  | 67.4  | 99.8  | 37.8  | 28.3  |
| 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              |           |                  |                  |

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### Scotopic Flux vs. Wavelength



Scotopic Lumens: 12126

S/P: 1.36

| 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            | 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

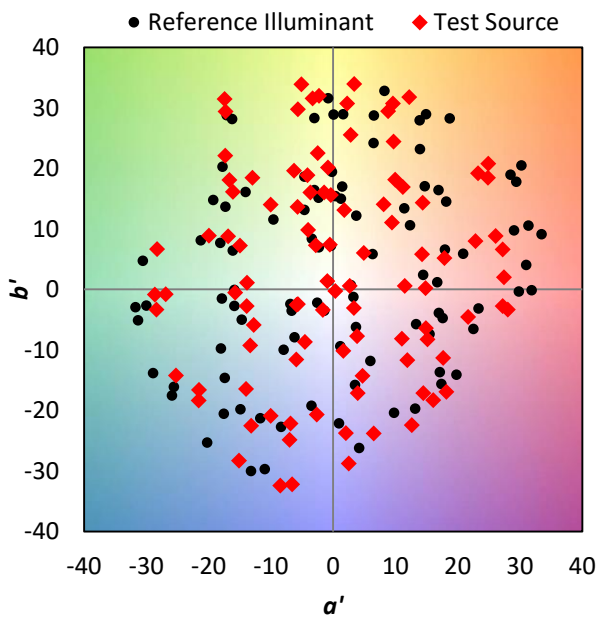
### Summary

$R_f = 76.9$   
 $R_g = 94.4$   
 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)