

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: P383568

Luminaire Tested: **GLEON-SA8C-735-U-T2R-HSS**

Issue Date: 3/3/2020

**Test Information**

Test Method: LM-79-08  
Report Number: P383568  
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-SA8C-735-U-T2R-HSS  
Description: GALLEON AREA AND ROADWAY LUMINAIRE  
(8) 70 CRI, 3500K, 1050mA LIGHTSQUARES WITH 16 LEDS EACH AND TYPE II  
ROADWAY OPTICS WITH HOUSE SIDE SHIELD  
Light Source: -  
Ballast/Driver: ELECTRONIC DRIVER

**Summary**

Lumens per Lamp: N/A  
Luminaire Lumens: 42623.9 lumens  
Efficiency: N/A  
Efficacy: 95.8 lumens/watt  
Luminous Opening: Rectangular (W 2' x L: 1' x H: 0')  
IES Classification: Type II - Medium  
BUG Rating: B2 - U0 - G4

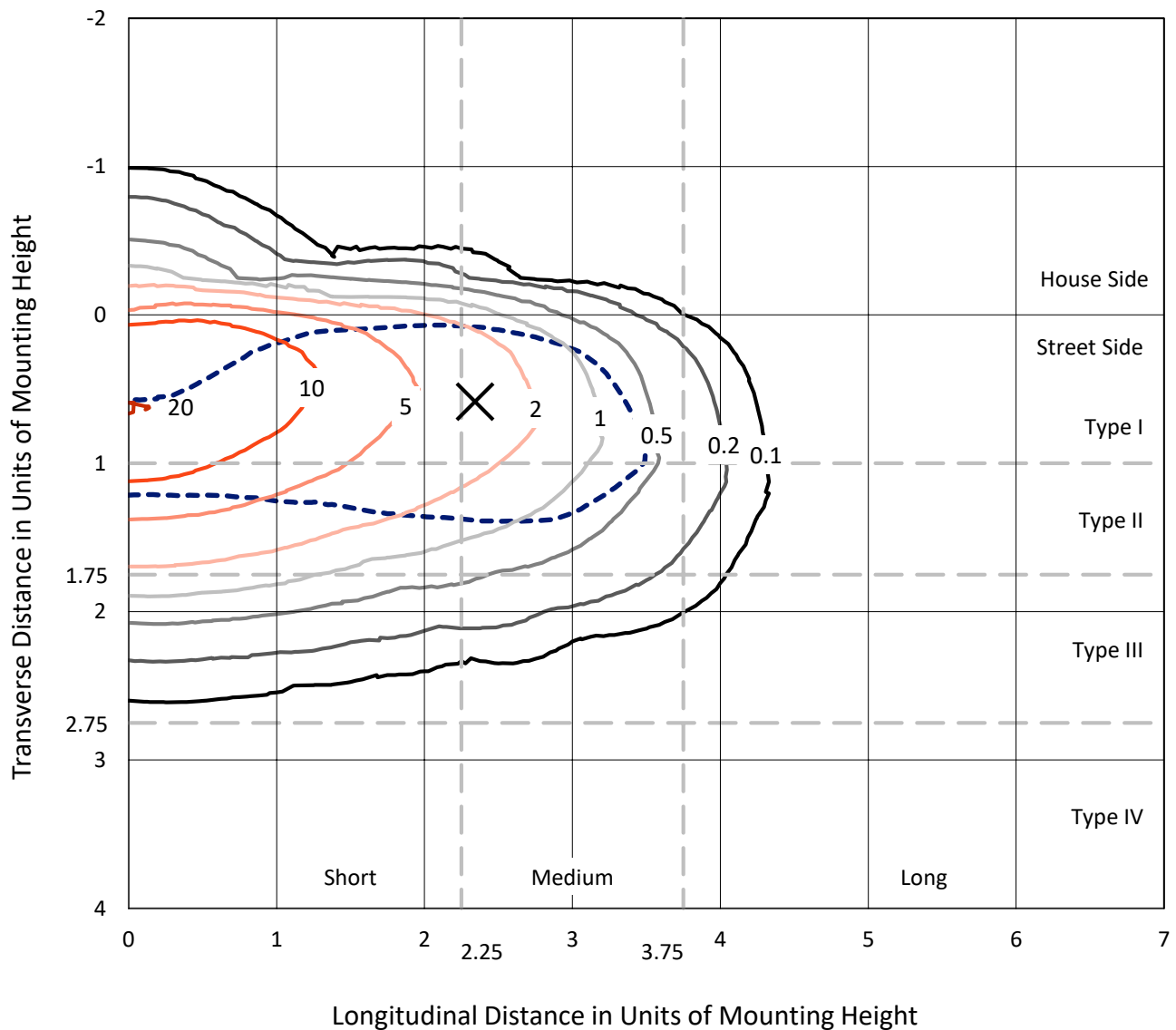
Input Watts (W): 445  
Input Voltage (V): NR  
Input Current (Ain): NR  
Voltage Rise (V): NR  
Power Factor: NR  
Total Harmonic Distortion (THDi): NR  
Frequency (hertz): 60  
Stabilization Time: NR  
Operation Time: NR  
Ambient Temperature (°C): NR  
Test Distance: 24 FT



REPORT NUMBER: P383568  
 CATALOG NUMBER: GLEON-SA8C-735-U-T2R-HSS

## Iso-Footcandle Lines of Horizontal Illumination

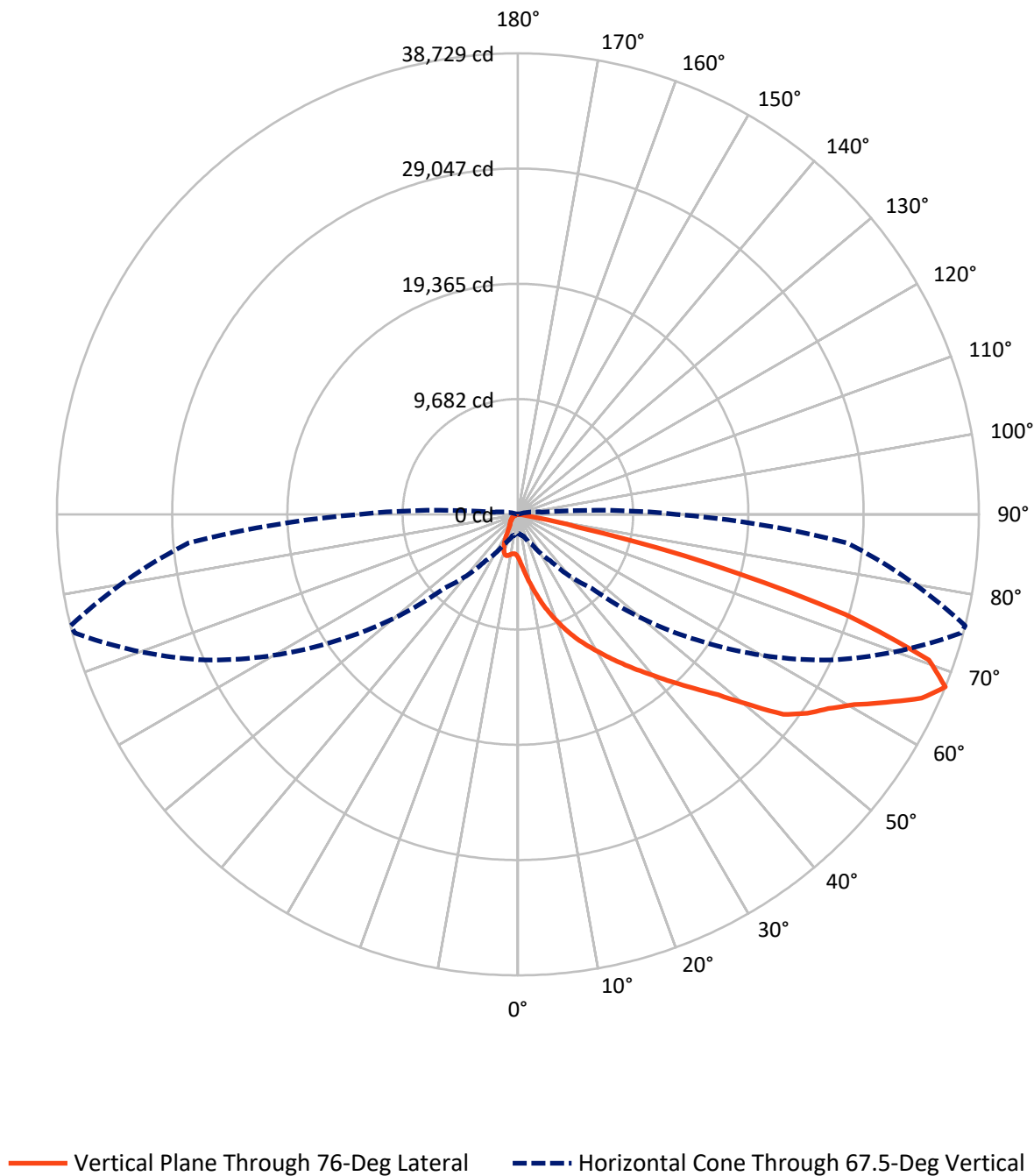
✕ Max cd  
 - - - 1/2 Max cd



Based on 25 foot mounting height. Maximum calculated value = 20.4 fc  
 Type II - Medium - N/A

REPORT NUMBER: P383568  
CATALOG NUMBER: GLEON-SA8C-735-U-T2R-HSS

## Luminous Intensity Polar Plot



REPORT NUMBER: P383568  
 CATALOG NUMBER: GLEON-SA8C-735-U-T2R-HSS

**FLUX DISTRIBUTION:**

|                    |           | Downward | Upward | Total   |
|--------------------|-----------|----------|--------|---------|
| <b>House Side</b>  | Lumens    | 2116.6   | 0.0    | 2116.6  |
|                    | % Fixture | 5.0      | 0.0    | 5.0     |
| <b>Street Side</b> | Lumens    | 40507.3  | 0.0    | 40507.3 |
|                    | % Fixture | 95.0     | 0.0    | 95.0    |
| <b>Total</b>       | Lumens    | 42623.9  | 0.0    | 42623.9 |
|                    | % Fixture | 100.0    | 0.0    | 100.0   |

**ZONAL LUMENS:**

| Zone      | Lumens  | % Fixture |
|-----------|---------|-----------|
| 0°-10°    | 449.6   | 1.1       |
| 10°-20°   | 1782.3  | 4.2       |
| 20°-30°   | 3626.4  | 8.5       |
| 30°-40°   | 6294.3  | 14.8      |
| 40°-50°   | 8893.1  | 20.9      |
| 50°-60°   | 10085.2 | 23.7      |
| 60°-70°   | 8364.7  | 19.6      |
| 70°-80°   | 3029.9  | 7.1       |
| 80°-90°   | 98.3    | 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°    | 42623.9 | 100.0     |
| 0°-180°   | 42623.9 | 100.0     |

**Coefficient of Utilization**



REPORT NUMBER: P383568

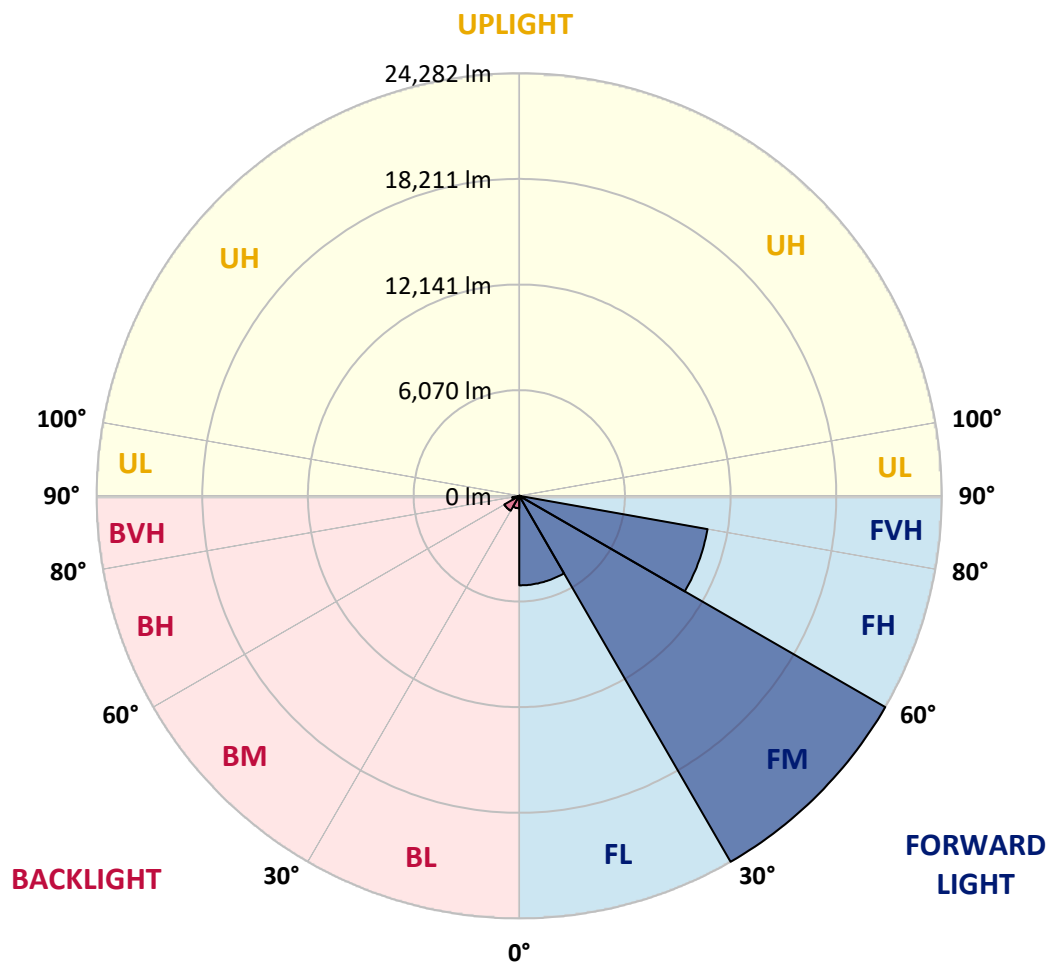
CATALOG NUMBER: GLEON-SA8C-735-U-T2R-HSS

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

| Zone |             | Lumens  | % Fixture | Zone Rating/Lumen Limit |      |          |
|------|-------------|---------|-----------|-------------------------|------|----------|
|      |             |         |           | B                       | U    | G        |
| FL   | (0°-30°)    | 5144.6  | 12.1      |                         |      |          |
| FM   | (30°-60°)   | 24282.0 | 57.0      |                         |      |          |
| FH   | (60°-80°)   | 10985.6 | 25.8      |                         |      | G4/12000 |
| FVH  | (80°-90°)   | 95.2    | 0.2       |                         |      | G1/100   |
| BL   | (0°-30°)    | 713.8   | 1.7       | B2/1000                 |      |          |
| BM   | (30°-60°)   | 990.6   | 2.3       | B1/1000                 |      |          |
| BH   | (60°-80°)   | 409.0   | 1.0       | B1/500                  |      | G1/500   |
| BVH  | (80°-90°)   | 3.1     | 0.0       |                         |      | G0/10    |
| UL   | (90°-100°)  | 0.0     | 0.0       |                         | U0/0 |          |
| UH   | (100°-180°) | 0.0     | 0.0       |                         | U0/0 |          |

**BUG Rating: B2-U0-G4**

Type II Medium





REPORT NUMBER: P383568

CATALOG NUMBER: GLEON-SA8C-735-U-T2R-HSS

**CANDELA DISTRIBUTION (FULL):**

|       | 0°      | 5°      | 15°     | 25°     | 35°     | 45°     | 55°     | 65°     | 75°     | 76°     | 85°     |
|-------|---------|---------|---------|---------|---------|---------|---------|---------|---------|---------|---------|
| 0°    | 3615.7  | 3615.7  | 3615.7  | 3615.7  | 3615.7  | 3615.7  | 3615.7  | 3615.7  | 3615.7  | 3615.7  | 3615.7  |
| 2.5°  | 5397.5  | 5276.1  | 5304.0  | 5225.6  | 5083.7  | 4792.3  | 4544.0  | 4308.6  | 4034.1  | 4024.8  | 3798.8  |
| 5°    | 7278.2  | 7175.4  | 7162.4  | 7003.7  | 6745.9  | 6251.0  | 5769.2  | 5220.0  | 4607.4  | 4562.6  | 4082.7  |
| 7.5°  | 8985.1  | 8903.0  | 8873.2  | 8684.5  | 8204.5  | 7722.6  | 7095.1  | 6288.3  | 5330.2  | 5248.1  | 4465.6  |
| 10°   | 10296.3 | 10257.1 | 10264.5 | 10130.0 | 9719.2  | 9270.9  | 8447.3  | 7418.3  | 6150.1  | 6023.1  | 4924.9  |
| 12.5° | 11289.9 | 11299.2 | 11366.5 | 11284.2 | 11054.5 | 10722.1 | 9842.5  | 8622.9  | 7057.8  | 6884.1  | 5449.7  |
| 15°   | 12020.1 | 12066.8 | 12190.0 | 12292.8 | 12275.9 | 11988.4 | 11181.6 | 9846.2  | 8021.5  | 7829.1  | 6034.3  |
| 17.5° | 12492.6 | 12544.9 | 12724.2 | 12952.1 | 13161.2 | 13094.0 | 12473.9 | 11026.5 | 8996.4  | 8774.2  | 6660.0  |
| 20°   | 12907.2 | 12968.8 | 13161.2 | 13461.9 | 13852.2 | 13936.3 | 13529.1 | 12171.4 | 9969.4  | 9698.6  | 7306.2  |
| 22.5° | 13805.5 | 13803.7 | 13921.3 | 14096.9 | 14468.6 | 14685.2 | 14427.4 | 13234.0 | 10931.2 | 10649.3 | 7965.5  |
| 25°   | 15430.4 | 15368.8 | 15327.7 | 15189.4 | 15271.6 | 15406.1 | 15262.3 | 14227.6 | 11898.7 | 11613.0 | 8634.0  |
| 27.5° | 17361.5 | 17398.9 | 17066.4 | 16694.8 | 16407.2 | 16268.9 | 16033.6 | 15148.4 | 12828.8 | 12515.1 | 9287.7  |
| 30°   | 19399.1 | 19410.3 | 19018.1 | 18543.8 | 17910.6 | 17385.8 | 16978.7 | 16028.0 | 13785.0 | 13443.3 | 9922.8  |
| 32.5° | 21236.9 | 21164.0 | 20775.6 | 20129.3 | 19330.0 | 18739.8 | 17893.8 | 17010.4 | 14797.3 | 14466.7 | 10628.7 |
| 35°   | 22693.6 | 22607.7 | 22135.2 | 21546.9 | 20717.7 | 20123.8 | 19105.9 | 17990.9 | 15861.8 | 15538.7 | 11336.6 |
| 37.5° | 23758.2 | 23657.3 | 23171.8 | 22566.6 | 21851.3 | 21505.8 | 20512.2 | 19057.3 | 17023.5 | 16676.1 | 12081.7 |
| 40°   | 24128.0 | 24040.2 | 23735.7 | 23293.2 | 22717.9 | 22639.5 | 22004.5 | 20284.4 | 18287.9 | 17918.1 | 12925.9 |
| 42.5° | 23907.6 | 23821.7 | 23713.4 | 23564.0 | 23324.9 | 23399.6 | 23412.7 | 21683.3 | 19692.4 | 19328.1 | 13857.9 |
| 45°   | 23033.5 | 22957.0 | 23069.0 | 23287.6 | 23584.5 | 23954.3 | 24697.6 | 23186.7 | 21261.2 | 20872.7 | 14935.5 |
| 47.5° | 21746.7 | 21690.7 | 22000.7 | 22546.1 | 23414.5 | 24434.3 | 25872.3 | 24766.7 | 23022.4 | 22661.9 | 16280.2 |
| 50°   | 19916.5 | 19907.1 | 20527.2 | 21522.7 | 22857.9 | 24665.9 | 27086.3 | 26563.4 | 25469.0 | 25089.8 | 18149.7 |
| 52.5° | 17066.4 | 17085.1 | 18304.7 | 19897.8 | 21881.2 | 24508.9 | 27867.0 | 28871.7 | 28315.2 | 27921.2 | 19768.9 |
| 55°   | 14352.7 | 14464.8 | 15329.5 | 17626.7 | 20383.4 | 23926.2 | 28135.9 | 29949.3 | 29885.9 | 29512.4 | 20669.1 |
| 57.5° | 11695.1 | 11898.7 | 12731.6 | 14877.6 | 18196.4 | 22583.4 | 27988.3 | 30416.3 | 31055.0 | 30769.3 | 21856.9 |
| 60°   | 8815.2  | 8908.6  | 9868.5  | 11874.4 | 15389.4 | 20133.1 | 26918.2 | 30670.3 | 32653.7 | 32455.8 | 23580.7 |
| 62.5° | 5608.5  | 5841.9  | 6693.6  | 8628.5  | 11982.8 | 16730.3 | 25114.1 | 30666.5 | 34653.9 | 34762.3 | 25805.1 |
| 65°   | 2954.6  | 3227.3  | 3679.2  | 5347.1  | 8234.4  | 12929.6 | 22400.4 | 30379.0 | 37108.0 | 37259.3 | 27543.9 |
| 67.5° | 1593.1  | 1671.6  | 1910.6  | 2775.3  | 4775.6  | 8759.2  | 18413.0 | 28959.6 | 38529.3 | 38729.2 | 27786.7 |
| 70°   | 1165.4  | 1208.4  | 1298.0  | 1535.2  | 2403.7  | 5087.5  | 13435.8 | 25741.6 | 36697.1 | 36622.5 | 24688.2 |
| 72.5° | 894.6   | 961.8   | 1029.1  | 1124.3  | 1382.0  | 2715.6  | 8365.1  | 20157.4 | 29280.8 | 28787.7 | 18454.1 |
| 75°   | 705.9   | 717.2   | 812.4   | 898.3   | 1036.5  | 1546.4  | 3714.7  | 11739.9 | 17871.4 | 16704.1 | 9569.8  |
| 77.5° | 564.1   | 571.5   | 627.5   | 702.2   | 833.0   | 1016.0  | 1150.5  | 4618.7  | 5705.6  | 5091.2  | 2076.8  |
| 80°   | 334.3   | 353.0   | 466.9   | 541.6   | 691.0   | 640.6   | 420.2   | 1002.9  | 890.8   | 806.8   | 349.2   |
| 82.5° | 186.8   | 201.7   | 263.3   | 427.7   | 481.9   | 306.3   | 209.1   | 270.8   | 209.1   | 203.5   | 99.0    |
| 85°   | 0.0     | 9.3     | 169.9   | 265.2   | 196.1   | 67.3    | 87.8    | 89.6    | 61.7    | 57.9    | 39.2    |
| 87.5° | 0.0     | 0.0     | 52.3    | 50.4    | 7.5     | 11.2    | 20.6    | 29.9    | 24.3    | 24.3    | 20.6    |
| 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: P383568

CATALOG NUMBER: GLEON-SA8C-735-U-T2R-HSS

**CANDELA DISTRIBUTION (continued):**

|       | 90°     | 95°    | 105°   | 115°   | 125°   | 135°   | 145°   | 155°   | 165°   | 175°   | 180°   |
|-------|---------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|
| 0°    | 3615.7  | 3615.7 | 3615.7 | 3615.7 | 3615.7 | 3615.7 | 3615.7 | 3615.7 | 3615.7 | 3615.7 | 3615.7 |
| 2.5°  | 3686.7  | 3585.9 | 3395.4 | 3208.6 | 3051.7 | 2922.8 | 2807.0 | 2760.4 | 2723.0 | 2717.4 | 2687.5 |
| 5°    | 3851.0  | 3647.5 | 3283.3 | 2984.5 | 2784.7 | 2642.7 | 2521.3 | 2446.6 | 2388.7 | 2366.3 | 2345.7 |
| 7.5°  | 4099.5  | 3791.3 | 3268.3 | 2924.7 | 2685.7 | 2446.6 | 2222.5 | 1979.7 | 1828.4 | 1770.5 | 1736.9 |
| 10°   | 4402.0  | 3981.8 | 3324.4 | 2907.9 | 2489.6 | 1985.3 | 1613.6 | 1305.5 | 1180.4 | 1139.3 | 1128.0 |
| 12.5° | 4755.0  | 4219.0 | 3421.5 | 2803.3 | 2071.2 | 1410.1 | 1113.1 | 1008.5 | 980.5  | 967.4  | 967.4  |
| 15°   | 5160.3  | 4478.6 | 3490.6 | 2500.7 | 1531.5 | 1066.4 | 963.7  | 915.2  | 885.2  | 868.5  | 870.3  |
| 17.5° | 5574.8  | 4732.5 | 3457.0 | 2061.9 | 1129.9 | 948.8  | 872.2  | 819.9  | 778.8  | 762.0  | 758.3  |
| 20°   | 5993.2  | 4967.9 | 3270.2 | 1535.2 | 956.2  | 860.9  | 775.0  | 717.2  | 676.1  | 659.3  | 655.5  |
| 22.5° | 6426.6  | 5167.8 | 2941.5 | 1126.1 | 859.1  | 763.9  | 679.8  | 621.9  | 582.7  | 567.8  | 560.3  |
| 25°   | 6848.6  | 5330.2 | 2482.1 | 911.4  | 767.6  | 672.4  | 592.0  | 537.9  | 502.4  | 487.5  | 485.6  |
| 27.5° | 7242.7  | 5433.0 | 1949.8 | 805.0  | 687.3  | 590.1  | 517.3  | 468.8  | 438.9  | 427.7  | 425.8  |
| 30°   | 7597.5  | 5442.3 | 1441.8 | 726.5  | 616.3  | 519.2  | 452.0  | 409.0  | 382.9  | 371.7  | 368.0  |
| 32.5° | 7956.2  | 5363.9 | 1049.6 | 655.5  | 550.9  | 457.6  | 392.2  | 358.6  | 339.9  | 330.6  | 330.6  |
| 35°   | 8294.1  | 5182.7 | 818.0  | 593.9  | 487.5  | 397.8  | 345.5  | 321.2  | 310.0  | 300.7  | 300.7  |
| 37.5° | 8624.7  | 4923.0 | 694.7  | 539.7  | 427.7  | 347.4  | 304.4  | 289.5  | 280.1  | 270.8  | 270.8  |
| 40°   | 8960.9  | 4596.3 | 631.2  | 489.3  | 379.1  | 308.2  | 270.8  | 257.8  | 248.4  | 240.9  | 239.0  |
| 42.5° | 9373.7  | 4219.0 | 590.1  | 442.7  | 336.2  | 272.7  | 239.0  | 224.1  | 216.7  | 209.1  | 205.4  |
| 45°   | 9851.8  | 3894.1 | 556.6  | 395.9  | 300.7  | 242.8  | 207.3  | 192.4  | 181.2  | 171.8  | 169.9  |
| 47.5° | 10540.9 | 3658.7 | 511.7  | 345.5  | 267.1  | 211.1  | 179.3  | 162.5  | 145.7  | 136.4  | 134.5  |
| 50°   | 11420.6 | 3464.4 | 453.8  | 300.7  | 233.4  | 179.3  | 149.4  | 128.8  | 113.9  | 104.6  | 104.6  |
| 52.5° | 11857.6 | 3210.5 | 401.5  | 261.5  | 196.1  | 151.3  | 121.4  | 97.2   | 89.6   | 80.3   | 80.3   |
| 55°   | 12033.2 | 3016.3 | 349.2  | 222.3  | 162.5  | 125.1  | 95.2   | 74.7   | 69.1   | 63.5   | 61.7   |
| 57.5° | 12526.2 | 2960.2 | 304.4  | 188.6  | 134.5  | 99.0   | 72.8   | 56.0   | 52.3   | 44.8   | 44.8   |
| 60°   | 13320.0 | 2988.2 | 263.3  | 160.6  | 108.3  | 76.6   | 54.1   | 42.9   | 39.2   | 31.8   | 31.8   |
| 62.5° | 14177.2 | 2952.7 | 222.3  | 138.2  | 84.0   | 56.0   | 37.4   | 31.8   | 31.8   | 18.6   | 16.8   |
| 65°   | 14341.5 | 2629.7 | 190.5  | 113.9  | 65.4   | 41.1   | 24.3   | 20.6   | 28.0   | 3.7    | 0.0    |
| 67.5° | 13310.6 | 2039.4 | 164.3  | 87.8   | 48.5   | 31.8   | 18.6   | 9.3    | 24.3   | 0.0    | 0.0    |
| 70°   | 10643.7 | 1296.2 | 132.6  | 63.5   | 37.4   | 26.2   | 14.9   | 3.7    | 18.6   | 0.0    | 0.0    |
| 72.5° | 7526.5  | 752.7  | 104.6  | 44.8   | 31.8   | 20.6   | 11.2   | 0.0    | 11.2   | 0.0    | 0.0    |
| 75°   | 3806.2  | 401.5  | 65.4   | 33.6   | 24.3   | 14.9   | 7.5    | 0.0    | 1.9    | 0.0    | 0.0    |
| 77.5° | 823.6   | 186.8  | 41.1   | 24.3   | 16.8   | 9.3    | 3.7    | 0.0    | 0.0    | 0.0    | 0.0    |
| 80°   | 179.3   | 82.2   | 26.2   | 14.9   | 9.3    | 5.6    | 0.0    | 0.0    | 0.0    | 0.0    | 0.0    |
| 82.5° | 65.4    | 42.9   | 13.0   | 7.5    | 3.7    | 0.0    | 0.0    | 0.0    | 0.0    | 0.0    | 0.0    |
| 85°   | 35.5    | 22.5   | 7.5    | 3.7    | 0.0    | 0.0    | 0.0    | 0.0    | 0.0    | 0.0    | 0.0    |
| 87.5° | 18.6    | 7.5    | 1.9    | 1.9    | 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

REPORT NUMBER: SP1-2101-121-7

| 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            |

REPORT NUMBER: SP1-2101-121-7

**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

REPORT NUMBER: SP1-2101-121-7

### 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**

| 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              |           |                  |                  |

REPORT NUMBER: SP1-2101-121-7

### 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              |           |                  |                  |

REPORT NUMBER: SP1-2101-121-7

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)