

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: P383460

Luminaire Tested: **GLEON-SA7C-735-U-T3R-HSS**

Issue Date: 3/3/2020

**Test Information**

Test Method: LM-79-08  
Report Number: P383460  
TEST IS SCALED FROM IESNA LM-79-08 TEST DATA (G2-1903-205-11)  
Test Lab: INNOVATION CENTER  
Issue Date: 3/3/2020  
Manufacturer: COOPER LIGHTING SOLUTIONS (FORMERLY EATON)  
Product Line: McGRAW-EDISON  
Catalog Number: GLEON-SA7C-735-U-T3R-HSS  
Description: GALLEON AREA AND ROADWAY LUMINAIRE  
(7) 70 CRI, 3500K, 1050mA LIGHTSQUARES WITH 16 LEDS EACH AND TYPE III  
ROADWAY OPTICS WITH HOUSE SIDE SHIELD  
Light Source: -  
Ballast/Driver: ELECTRONIC DRIVER

**Summary**

Lumens per Lamp: N/A  
Luminaire Lumens: 35844.1 lumens  
Efficiency: N/A  
Efficacy: 91.7 lumens/watt  
Luminous Opening: Rectangular (W 2' x L: 1' x H: 0')  
IES Classification: Type III - Medium  
BUG Rating: B3 - U0 - G5

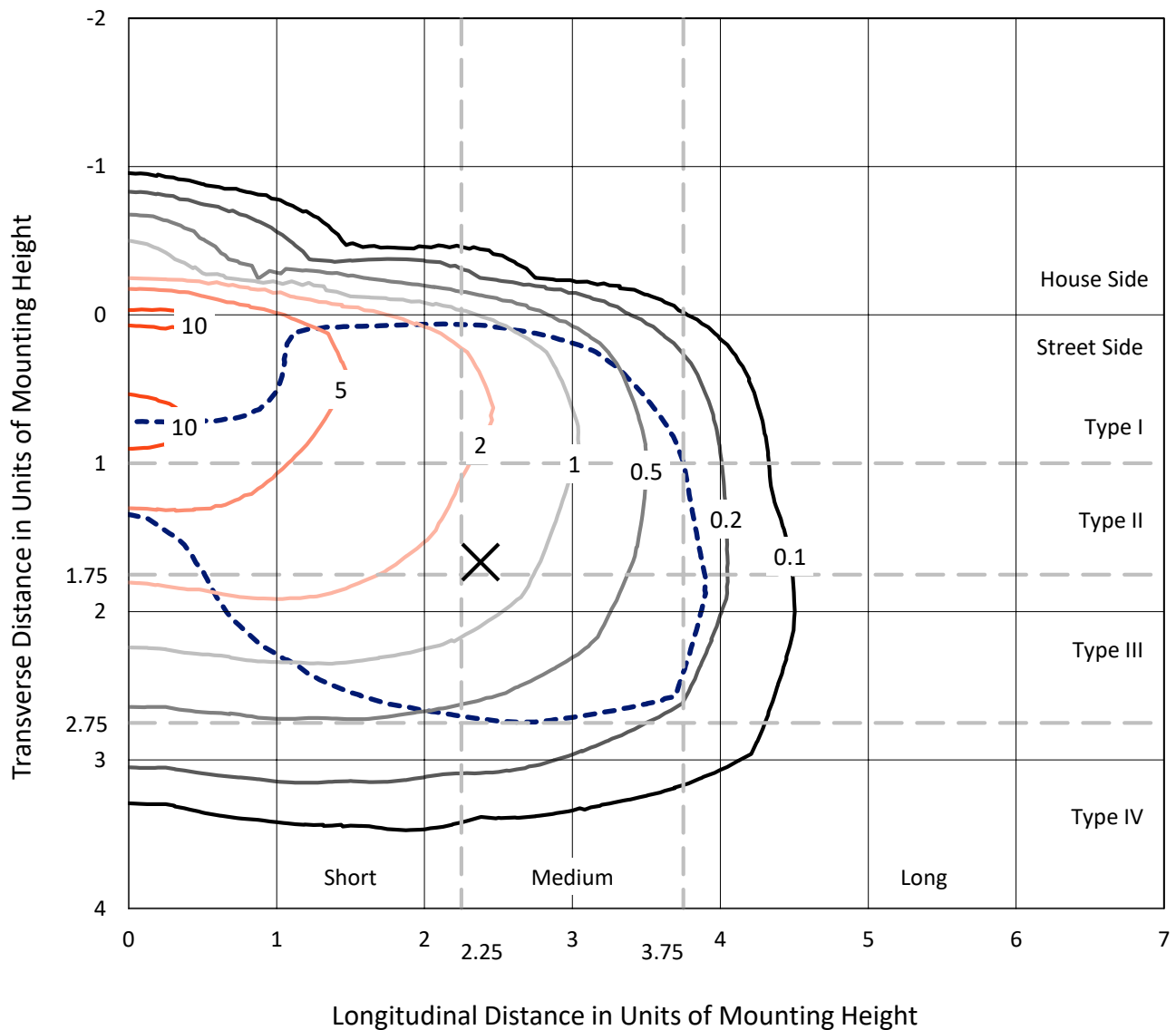
Input Watts (W): 391  
Input Voltage (V): NR  
Input Current (Ain): NR  
Voltage Rise (V): NR  
Power Factor: NR  
Total Harmonic Distortion (THDi): NR  
Frequency (hertz): 60  
Stabilization Time: NR  
Operation Time: NR  
Ambient Temperature (°C): NR  
Test Distance: 24 FT



REPORT NUMBER: P383460  
 CATALOG NUMBER: GLEON-SA7C-735-U-T3R-HSS

## Iso-Footcandle Lines of Horizontal Illumination

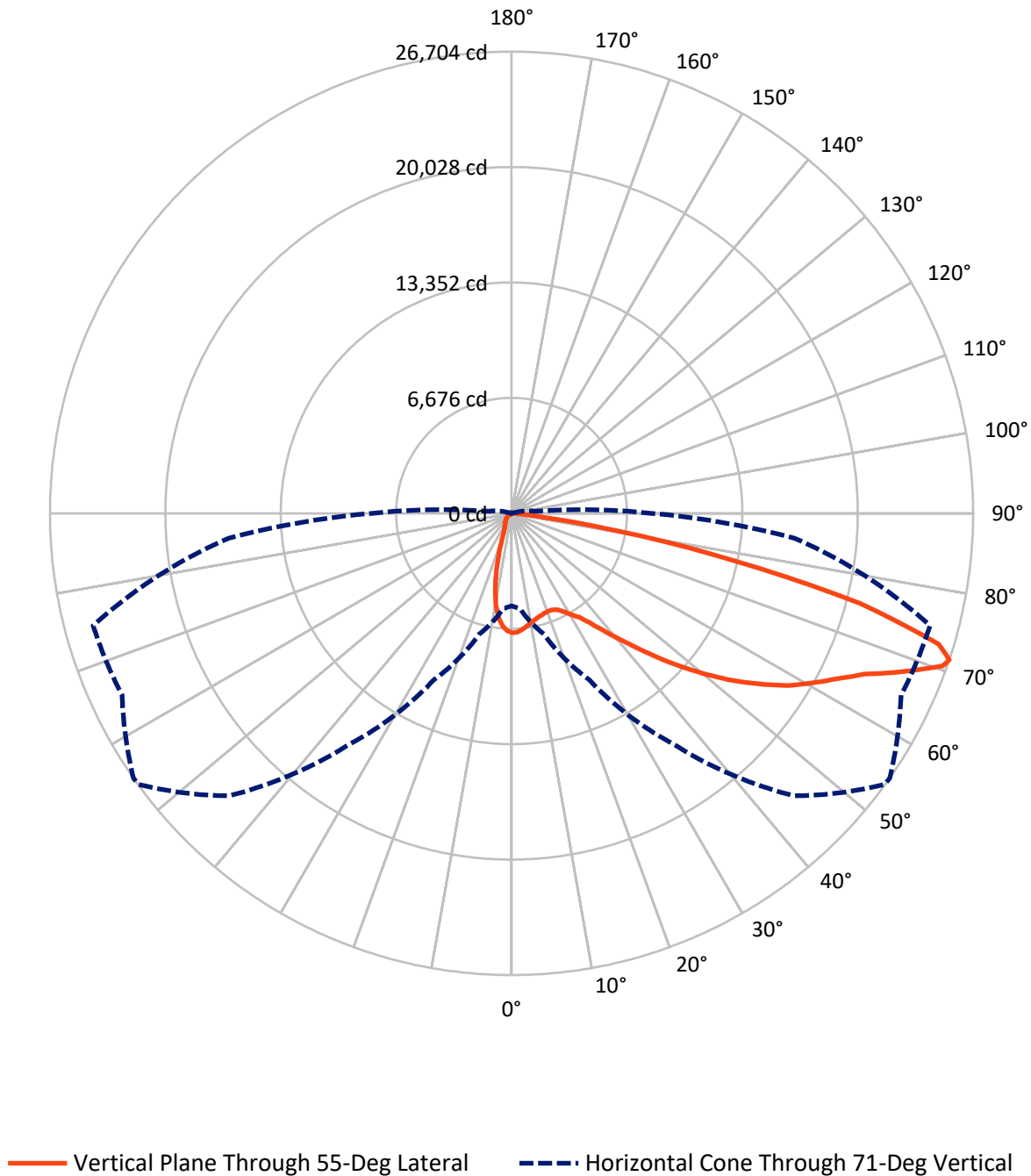
✕ Max cd  
 - - - 1/2 Max cd



Based on 25 foot mounting height. Maximum calculated value = 11.3 fc  
 Type III - Medium - N/A

REPORT NUMBER: P383460  
CATALOG NUMBER: GLEON-SA7C-735-U-T3R-HSS

## Luminous Intensity Polar Plot



REPORT NUMBER: P383460  
 CATALOG NUMBER: GLEON-SA7C-735-U-T3R-HSS

**FLUX DISTRIBUTION:**

|                    |           | Downward | Upward | Total   |
|--------------------|-----------|----------|--------|---------|
| <b>House Side</b>  | Lumens    | 2837.9   | 0.0    | 2837.9  |
|                    | % Fixture | 7.9      | 0.0    | 7.9     |
| <b>Street Side</b> | Lumens    | 33006.2  | 0.0    | 33006.2 |
|                    | % Fixture | 92.1     | 0.0    | 92.1    |
| <b>Total</b>       | Lumens    | 35844.1  | 0.0    | 35844.1 |
|                    | % Fixture | 100.0    | 0.0    | 100.0   |

**ZONAL LUMENS:**

| Zone      | Lumens  | % Fixture |
|-----------|---------|-----------|
| 0°-10°    | 589.4   | 1.6       |
| 10°-20°   | 1330.6  | 3.7       |
| 20°-30°   | 2138.3  | 6.0       |
| 30°-40°   | 3633.1  | 10.1      |
| 40°-50°   | 5639.1  | 15.7      |
| 50°-60°   | 7581.6  | 21.2      |
| 60°-70°   | 9274.8  | 25.9      |
| 70°-80°   | 5422.8  | 15.1      |
| 80°-90°   | 234.4   | 0.7       |
| 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°    | 35844.1 | 100.0     |
| 0°-180°   | 35844.1 | 100.0     |

**Coefficient of Utilization**



REPORT NUMBER: P383460

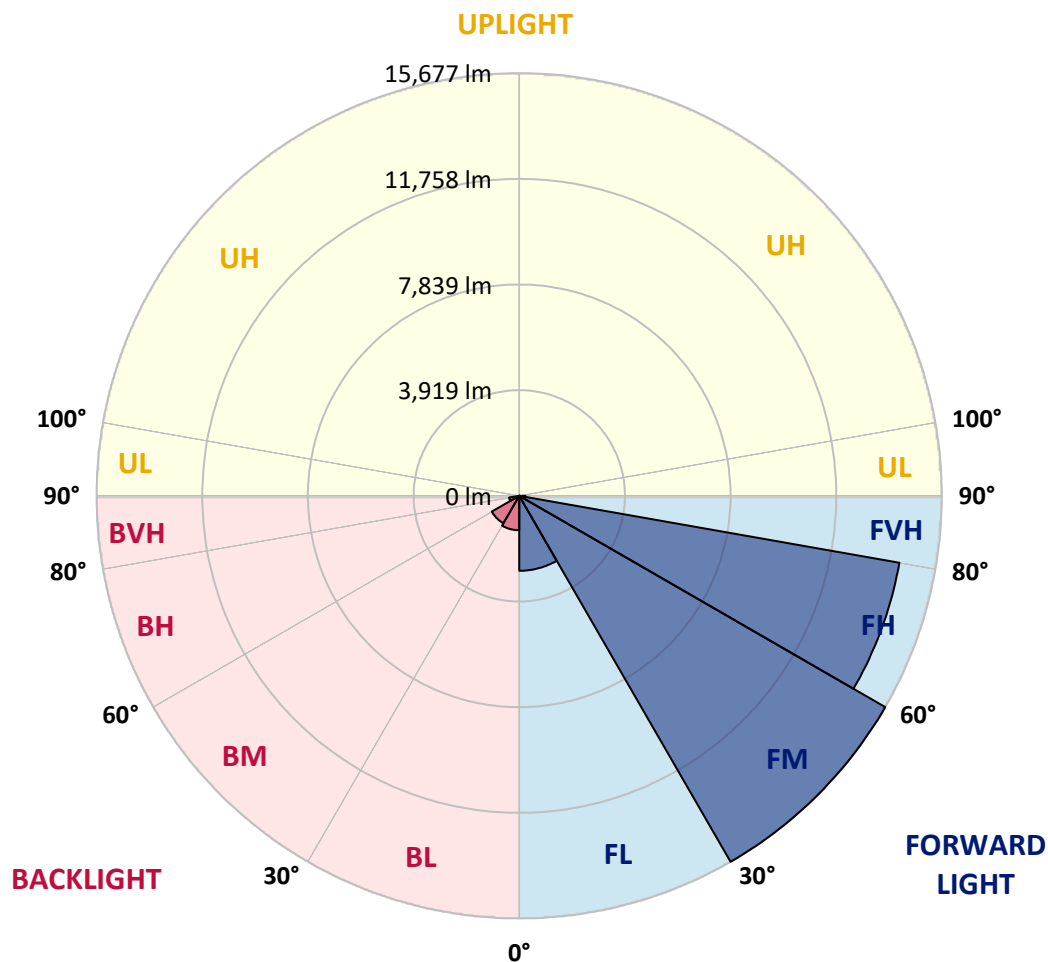
CATALOG NUMBER: GLEON-SA7C-735-U-T3R-HSS

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

| Zone |             | Lumens  | % Fixture | Zone Rating/Lumen Limit |      |        |
|------|-------------|---------|-----------|-------------------------|------|--------|
|      |             |         |           | B                       | U    | G      |
| FL   | (0°-30°)    | 2781.0  | 7.8       |                         |      |        |
| FM   | (30°-60°)   | 15677.2 | 43.7      |                         |      |        |
| FH   | (60°-80°)   | 14317.3 | 39.9      |                         |      | G5     |
| FVH  | (80°-90°)   | 230.7   | 0.6       |                         |      | G3/500 |
| BL   | (0°-30°)    | 1277.3  | 3.6       | B3/2500                 |      |        |
| BM   | (30°-60°)   | 1176.6  | 3.3       | B2/2500                 |      |        |
| BH   | (60°-80°)   | 380.2   | 1.1       | B1/500                  |      | G1/500 |
| BVH  | (80°-90°)   | 3.7     | 0.0       |                         |      | G0/10  |
| UL   | (90°-100°)  | 0.0     | 0.0       |                         | U0/0 |        |
| UH   | (100°-180°) | 0.0     | 0.0       |                         | U0/0 |        |

**BUG Rating: B3-U0-G5**

Type III Medium





REPORT NUMBER: P383460

CATALOG NUMBER: GLEON-SA7C-735-U-T3R-HSS

**CANDELA DISTRIBUTION (FULL):**

|       | 0°      | 5°      | 15°     | 25°     | 35°     | 45°     | 54°     | 55°     | 65°     | 75°     | 85°     |
|-------|---------|---------|---------|---------|---------|---------|---------|---------|---------|---------|---------|
| 0°    | 6912.6  | 6912.6  | 6912.6  | 6912.6  | 6912.6  | 6912.6  | 6912.6  | 6912.6  | 6912.6  | 6912.6  | 6912.6  |
| 2.5°  | 6709.8  | 6717.9  | 6746.9  | 6759.8  | 6790.3  | 6841.8  | 6867.6  | 6869.2  | 6911.1  | 6927.2  | 6940.0  |
| 5°    | 6235.0  | 6283.4  | 6331.6  | 6383.2  | 6476.5  | 6600.4  | 6722.7  | 6734.0  | 6869.2  | 6969.0  | 7022.1  |
| 7.5°  | 5826.3  | 5869.7  | 5927.6  | 6009.8  | 6141.7  | 6336.5  | 6540.9  | 6565.0  | 6820.9  | 7047.9  | 7167.0  |
| 10°   | 5406.2  | 5441.6  | 5525.3  | 5646.0  | 5827.9  | 6088.6  | 6363.9  | 6404.1  | 6777.5  | 7154.1  | 7363.3  |
| 12.5° | 4957.1  | 4978.1  | 5079.4  | 5253.3  | 5520.4  | 5852.0  | 6214.2  | 6267.3  | 6750.1  | 7276.4  | 7595.1  |
| 15°   | 4615.9  | 4625.6  | 4722.2  | 4902.5  | 5208.2  | 5639.6  | 6098.3  | 6162.7  | 6756.5  | 7422.9  | 7847.7  |
| 17.5° | 4529.0  | 4533.8  | 4585.4  | 4709.3  | 4979.7  | 5449.6  | 6006.5  | 6085.4  | 6775.9  | 7566.1  | 8102.0  |
| 20°   | 4881.5  | 4847.7  | 4794.6  | 4775.3  | 4891.2  | 5335.3  | 5951.8  | 6040.3  | 6801.6  | 7693.3  | 8330.6  |
| 22.5° | 5848.8  | 5749.0  | 5528.5  | 5234.0  | 5055.3  | 5343.5  | 5966.3  | 6054.8  | 6883.7  | 7849.4  | 8594.6  |
| 25°   | 7284.4  | 7146.0  | 6771.0  | 6191.6  | 5634.7  | 5575.2  | 6087.0  | 6177.1  | 7043.1  | 8036.1  | 8847.3  |
| 27.5° | 8918.1  | 8781.2  | 8322.5  | 7495.3  | 6545.7  | 6033.9  | 6363.9  | 6447.5  | 7279.6  | 8201.8  | 9040.4  |
| 30°   | 10482.4 | 10443.9 | 9903.1  | 8963.2  | 7691.6  | 6777.5  | 6721.1  | 6791.9  | 7455.1  | 8301.7  | 9193.3  |
| 32.5° | 11808.7 | 11747.5 | 11312.9 | 10398.8 | 9003.3  | 7670.7  | 7141.2  | 7162.1  | 7587.0  | 8430.4  | 9392.9  |
| 35°   | 13038.3 | 12962.7 | 12581.2 | 11716.9 | 10348.8 | 8762.0  | 7788.2  | 7757.6  | 7875.1  | 8689.5  | 9682.6  |
| 37.5° | 14111.8 | 14181.0 | 13757.7 | 12935.3 | 11555.9 | 9896.6  | 8660.5  | 8568.8  | 8325.8  | 9111.2  | 10102.6 |
| 40°   | 15009.9 | 15009.9 | 14789.4 | 14103.7 | 12859.6 | 11070.0 | 9647.1  | 9526.5  | 9003.3  | 9761.4  | 10635.4 |
| 42.5° | 15333.4 | 15402.6 | 15484.6 | 15096.8 | 14026.5 | 12289.9 | 10746.4 | 10620.9 | 9957.8  | 10683.6 | 11308.1 |
| 45°   | 15352.7 | 15462.1 | 15882.2 | 15880.7 | 15080.7 | 13501.9 | 11985.7 | 11926.1 | 11181.0 | 11868.2 | 12141.8 |
| 47.5° | 15080.7 | 15217.5 | 15909.6 | 16302.3 | 15916.0 | 14630.0 | 13340.9 | 13266.8 | 12618.2 | 13319.9 | 13014.2 |
| 50°   | 14660.6 | 14811.9 | 15616.7 | 16468.1 | 16484.2 | 15611.8 | 14768.5 | 14657.4 | 14200.3 | 14979.3 | 13915.5 |
| 52.5° | 13909.0 | 14201.9 | 15354.3 | 16506.7 | 16857.6 | 16460.0 | 16126.9 | 16078.6 | 15970.7 | 16577.5 | 14633.3 |
| 55°   | 12301.2 | 12626.3 | 14696.0 | 16519.6 | 17203.6 | 17211.6 | 17399.9 | 17412.9 | 17630.1 | 18071.1 | 15167.6 |
| 57.5° | 11541.5 | 11724.9 | 13546.8 | 16580.7 | 17717.0 | 18064.7 | 18697.2 | 18797.0 | 19133.3 | 19489.0 | 15777.6 |
| 60°   | 11063.4 | 11280.8 | 12980.4 | 16497.1 | 18523.4 | 19183.3 | 19899.4 | 19933.3 | 20293.8 | 20952.0 | 16603.3 |
| 62.5° | 10682.1 | 10896.1 | 12623.0 | 16175.1 | 19429.5 | 20528.8 | 21074.4 | 21077.6 | 21348.0 | 22695.1 | 17541.6 |
| 65°   | 9740.5  | 9920.8  | 11900.4 | 15813.0 | 20028.2 | 21859.8 | 22439.2 | 22418.3 | 22638.7 | 24533.1 | 18631.2 |
| 67.5° | 8378.9  | 8517.3  | 10424.5 | 14440.1 | 19802.8 | 23070.1 | 24499.3 | 24430.1 | 24162.9 | 26121.6 | 19059.3 |
| 70°   | 6478.1  | 6528.0  | 8216.3  | 12034.0 | 17691.3 | 23535.3 | 26490.2 | 26454.8 | 25098.0 | 25836.8 | 17490.1 |
| 71°   | 5354.7  | 5518.9  | 7241.0  | 10620.9 | 16276.6 | 23105.5 | 26683.3 | 26704.3 | 24863.0 | 25061.1 | 16410.1 |
| 72.5° | 3109.5  | 3249.5  | 5248.4  | 8156.8  | 13818.9 | 21312.6 | 25682.3 | 25833.6 | 23765.4 | 22794.9 | 14016.8 |
| 75°   | 666.3   | 713.0   | 1945.8  | 3948.0  | 7601.5  | 14937.5 | 20271.2 | 20810.4 | 19369.9 | 15507.2 | 8448.1  |
| 77.5° | 463.5   | 500.5   | 833.7   | 1791.4  | 2512.4  | 7381.0  | 12592.5 | 13200.9 | 11572.1 | 5827.9  | 2703.9  |
| 80°   | 366.9   | 408.8   | 650.2   | 885.2   | 679.2   | 2380.4  | 5898.7  | 6270.5  | 3859.5  | 1300.4  | 455.4   |
| 82.5° | 204.4   | 243.0   | 506.9   | 478.0   | 260.7   | 452.3   | 1651.4  | 1867.0  | 772.5   | 262.3   | 107.9   |
| 85°   | 59.5    | 72.4    | 326.7   | 347.7   | 111.0   | 86.9    | 281.7   | 349.2   | 146.4   | 69.2    | 48.3    |
| 87.5° | 0.0     | 0.0     | 157.7   | 133.6   | 32.2    | 12.9    | 25.7    | 29.0    | 29.0    | 29.0    | 32.2    |
| 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: P383460

CATALOG NUMBER: GLEON-SA7C-735-U-T3R-HSS

**CANDELA DISTRIBUTION (continued):**

|       | 90°     | 95°    | 105°   | 115°   | 125°   | 135°   | 145°   | 155°   | 165°   | 175°   | 180°   |
|-------|---------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|
| 0°    | 6912.6  | 6912.6 | 6912.6 | 6912.6 | 6912.6 | 6912.6 | 6912.6 | 6912.6 | 6912.6 | 6912.6 | 6912.6 |
| 2.5°  | 6940.0  | 6951.3 | 6911.1 | 6858.0 | 6801.6 | 6732.4 | 6660.0 | 6603.6 | 6602.1 | 6574.7 | 6547.3 |
| 5°    | 7025.4  | 7018.9 | 6907.8 | 6738.8 | 6539.3 | 6331.6 | 6133.7 | 5909.9 | 5836.0 | 5744.2 | 5713.6 |
| 7.5°  | 7183.1  | 7138.0 | 6903.0 | 6532.9 | 6095.0 | 5660.5 | 5211.4 | 4759.2 | 4566.1 | 4392.2 | 4361.7 |
| 10°   | 7381.0  | 7295.7 | 6872.4 | 6223.8 | 5420.7 | 4619.2 | 3941.6 | 3326.7 | 3056.4 | 2848.8 | 2839.1 |
| 12.5° | 7587.0  | 7456.7 | 6787.2 | 5757.1 | 4537.1 | 3410.5 | 2629.9 | 2024.7 | 1799.4 | 1654.5 | 1667.4 |
| 15°   | 7802.7  | 7607.9 | 6603.6 | 5127.8 | 3531.1 | 2314.4 | 1615.9 | 1260.2 | 1170.1 | 1133.0 | 1142.7 |
| 17.5° | 8023.2  | 7712.6 | 6347.8 | 4369.7 | 2538.1 | 1493.6 | 1118.6 | 1018.8 | 1018.8 | 1026.8 | 1030.1 |
| 20°   | 8214.8  | 7768.9 | 5971.1 | 3519.9 | 1720.5 | 1088.0 | 978.6  | 964.1  | 972.2  | 985.0  | 986.6  |
| 22.5° | 8404.6  | 7772.1 | 5480.2 | 2658.8 | 1203.8 | 952.8  | 931.9  | 925.4  | 930.2  | 944.8  | 946.4  |
| 25°   | 8559.2  | 7733.5 | 4865.4 | 1891.1 | 960.9  | 898.1  | 888.4  | 885.2  | 888.4  | 906.1  | 906.1  |
| 27.5° | 8621.9  | 7593.5 | 4115.4 | 1329.4 | 861.0  | 836.9  | 833.7  | 836.9  | 841.7  | 854.6  | 856.3  |
| 30°   | 8628.4  | 7348.8 | 3297.8 | 962.5  | 780.6  | 754.8  | 761.3  | 772.5  | 767.7  | 764.5  | 767.7  |
| 32.5° | 8644.5  | 7065.6 | 2501.1 | 791.8  | 713.0  | 672.8  | 664.8  | 664.8  | 645.4  | 634.1  | 627.7  |
| 35°   | 8697.6  | 6732.4 | 1813.9 | 711.4  | 643.8  | 597.1  | 566.6  | 531.2  | 494.1  | 474.8  | 470.0  |
| 37.5° | 8781.2  | 6383.2 | 1298.9 | 658.2  | 582.6  | 529.5  | 471.5  | 408.8  | 355.7  | 341.2  | 341.2  |
| 40°   | 8934.2  | 6022.6 | 960.9  | 616.4  | 534.3  | 468.4  | 381.5  | 299.4  | 251.1  | 243.0  | 243.0  |
| 42.5° | 9175.6  | 5642.8 | 766.1  | 579.4  | 492.5  | 405.6  | 291.3  | 217.2  | 181.8  | 177.1  | 175.4  |
| 45°   | 9426.6  | 5224.3 | 669.5  | 544.0  | 447.4  | 333.1  | 215.7  | 161.0  | 140.0  | 135.2  | 135.2  |
| 47.5° | 9677.8  | 4778.5 | 622.8  | 510.2  | 404.0  | 259.2  | 161.0  | 127.2  | 117.5  | 117.5  | 119.1  |
| 50°   | 9890.1  | 4313.3 | 589.1  | 473.2  | 347.7  | 196.4  | 127.2  | 107.9  | 104.6  | 111.0  | 112.6  |
| 52.5° | 9943.2  | 3856.3 | 547.2  | 426.5  | 278.4  | 149.7  | 104.6  | 94.9   | 94.9   | 94.9   | 94.9   |
| 55°   | 9911.1  | 3502.2 | 492.5  | 368.6  | 206.1  | 119.1  | 90.2   | 83.7   | 82.1   | 82.1   | 82.1   |
| 57.5° | 10020.6 | 3292.9 | 394.3  | 286.5  | 148.1  | 96.6   | 78.9   | 74.1   | 70.8   | 69.2   | 69.2   |
| 60°   | 10241.1 | 3156.2 | 281.7  | 206.1  | 111.0  | 80.5   | 67.6   | 62.8   | 57.9   | 54.7   | 54.7   |
| 62.5° | 10533.9 | 3037.0 | 209.2  | 152.9  | 85.3   | 64.4   | 56.4   | 51.5   | 45.1   | 41.8   | 41.8   |
| 65°   | 10759.3 | 2824.6 | 159.3  | 114.3  | 64.4   | 51.5   | 43.4   | 41.8   | 32.2   | 29.0   | 27.4   |
| 67.5° | 10414.9 | 2357.8 | 128.7  | 83.7   | 48.3   | 40.2   | 33.8   | 32.2   | 19.3   | 16.1   | 16.1   |
| 70°   | 8932.5  | 1641.7 | 103.0  | 61.2   | 35.4   | 32.2   | 27.4   | 21.0   | 14.4   | 12.9   | 12.9   |
| 71°   | 8100.5  | 1371.2 | 93.3   | 51.5   | 30.6   | 30.6   | 25.7   | 17.7   | 12.9   | 11.3   | 11.3   |
| 72.5° | 6729.2  | 973.7  | 78.9   | 40.2   | 27.4   | 32.2   | 27.4   | 16.1   | 12.9   | 11.3   | 9.7    |
| 75°   | 3906.2  | 407.2  | 54.7   | 27.4   | 21.0   | 38.7   | 35.4   | 14.4   | 9.7    | 8.0    | 8.0    |
| 77.5° | 1174.9  | 149.7  | 30.6   | 17.7   | 16.1   | 33.8   | 40.2   | 12.9   | 4.8    | 1.6    | 1.6    |
| 80°   | 214.1   | 64.4   | 19.3   | 11.3   | 11.3   | 21.0   | 30.6   | 6.4    | 0.0    | 0.0    | 0.0    |
| 82.5° | 75.6    | 32.2   | 11.3   | 6.4    | 4.8    | 9.7    | 14.4   | 0.0    | 0.0    | 0.0    | 0.0    |
| 85°   | 43.4    | 22.5   | 6.4    | 3.3    | 0.0    | 1.6    | 3.3    | 0.0    | 0.0    | 0.0    | 0.0    |
| 87.5° | 29.0    | 6.4    | 0.0    | 0.0    | 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



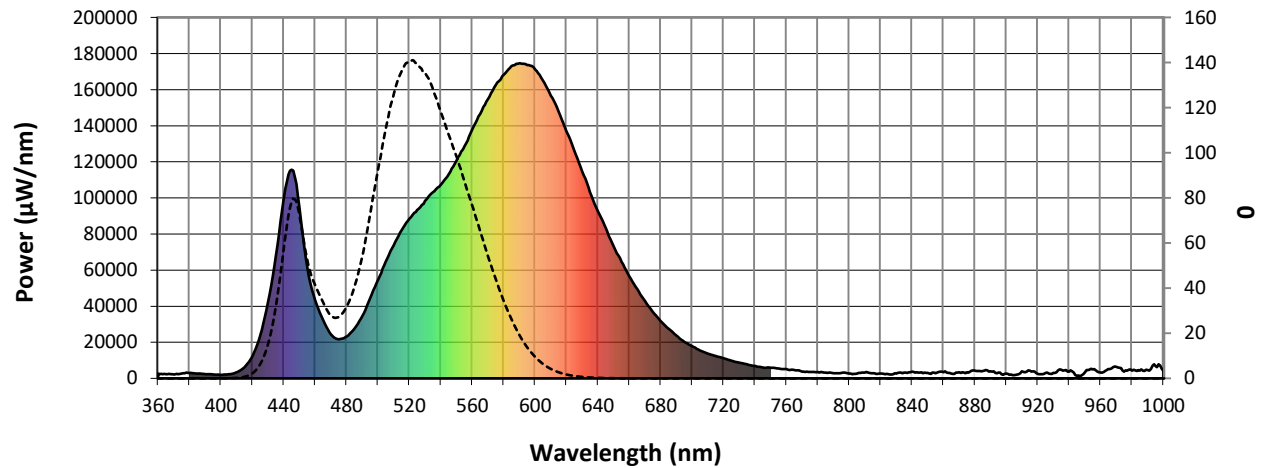
Scotopic Lumens: 12126

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)