

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: P319049

Luminaire Tested: **GLEON-SA5C-740-U-T4W**

Issue Date: 3/3/2020

**Test Information**

Test Method: LM-79-08  
Report Number: P319049  
TEST IS SCALED FROM IESNA LM-79-08 TEST DATA (G2-1903-205-18)  
Test Lab: INNOVATION CENTER  
Issue Date: 3/3/2020  
Manufacturer: COOPER LIGHTING SOLUTIONS (FORMERLY EATON)  
Product Line: McGRAW-EDISON  
Catalog Number: GLEON-SA5C-740-U-T4W  
Description: GALLEON AREA AND ROADWAY LUMINAIRE  
(5) 70 CRI, 4000K, 1050mA LIGHTSQUARES WITH 16 LEDS EACH AND TYPE IV WIDE OPTICS  
Light Source: -  
Ballast/Driver: ELECTRONIC DRIVER

**Summary**

Lumens per Lamp: N/A  
Luminaire Lumens: 35105 lumens  
Efficiency: N/A  
Efficacy: 125.8 lumens/watt  
Luminous Opening: Rectangular (W 1.5' x L: 1' x H: 0')  
IES Classification: Type IV - Short  
BUG Rating: B3 - U0 - G5

Input Watts (W): 279  
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

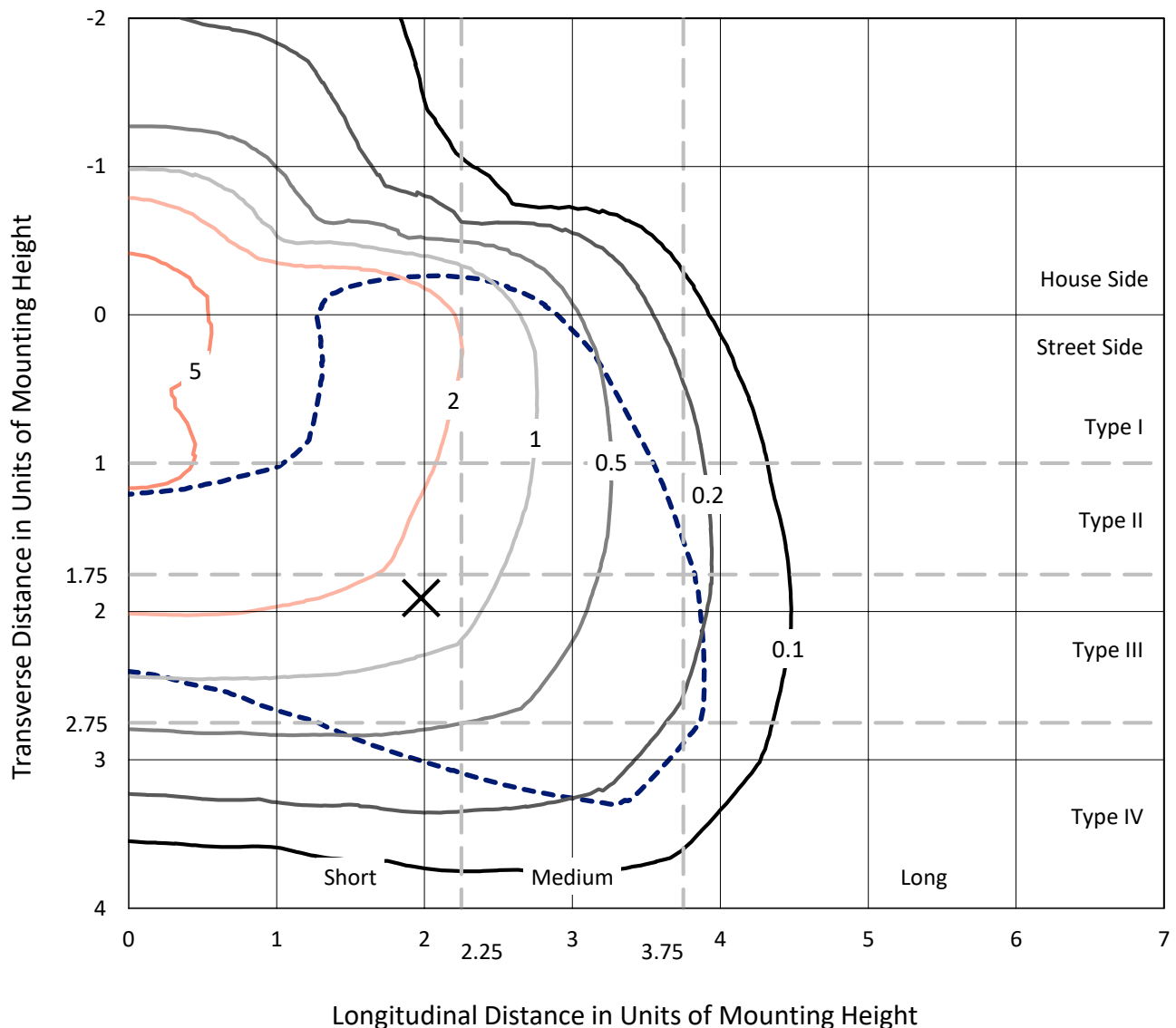


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## Iso-Footcandle Lines of Horizontal Illumination

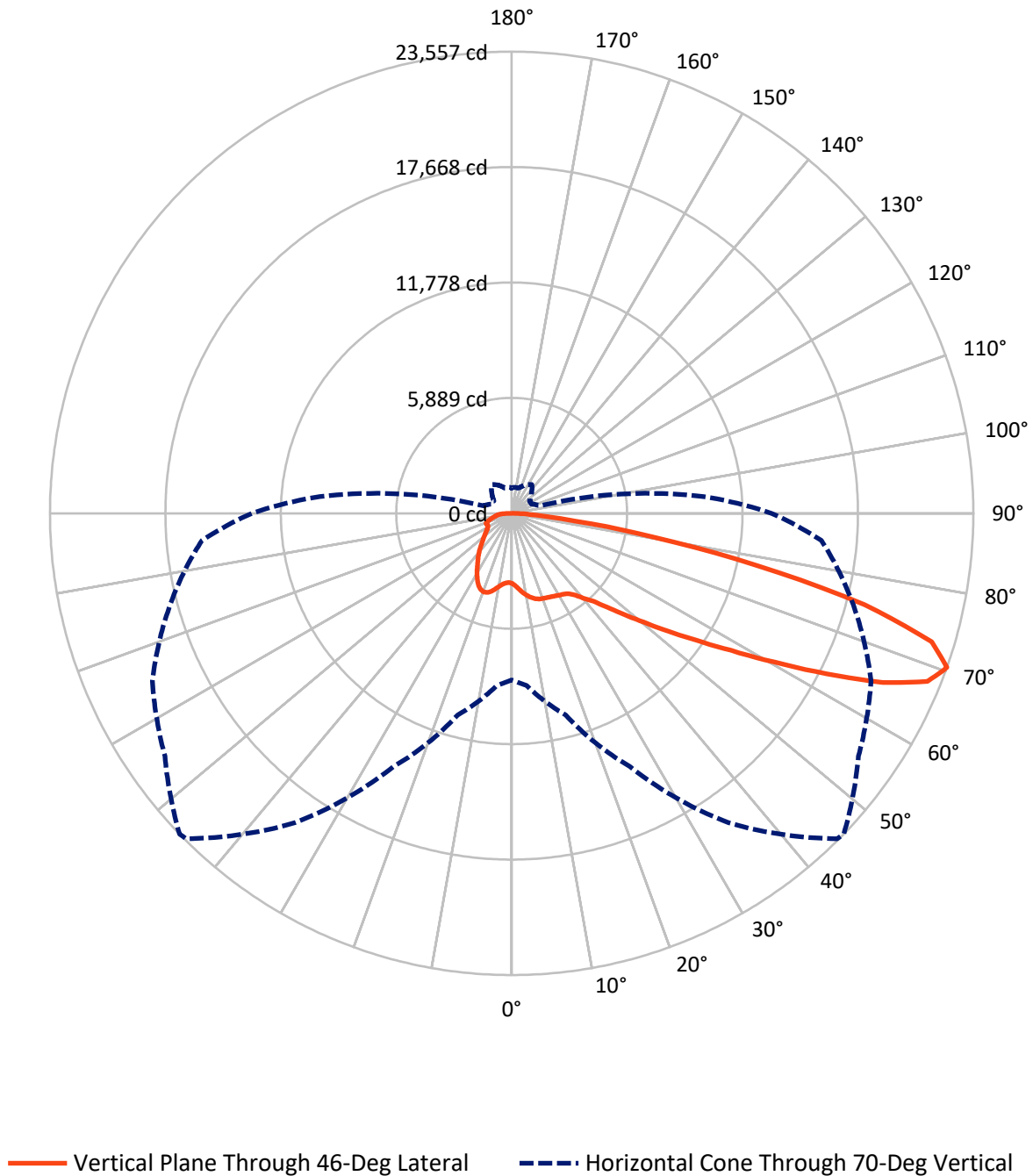
✕ Max cd  
 - - - 1/2 Max cd



Based on 25 foot mounting height. Maximum calculated value = 7.2 fc  
 Type IV - Short - N/A

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## Luminous Intensity Polar Plot



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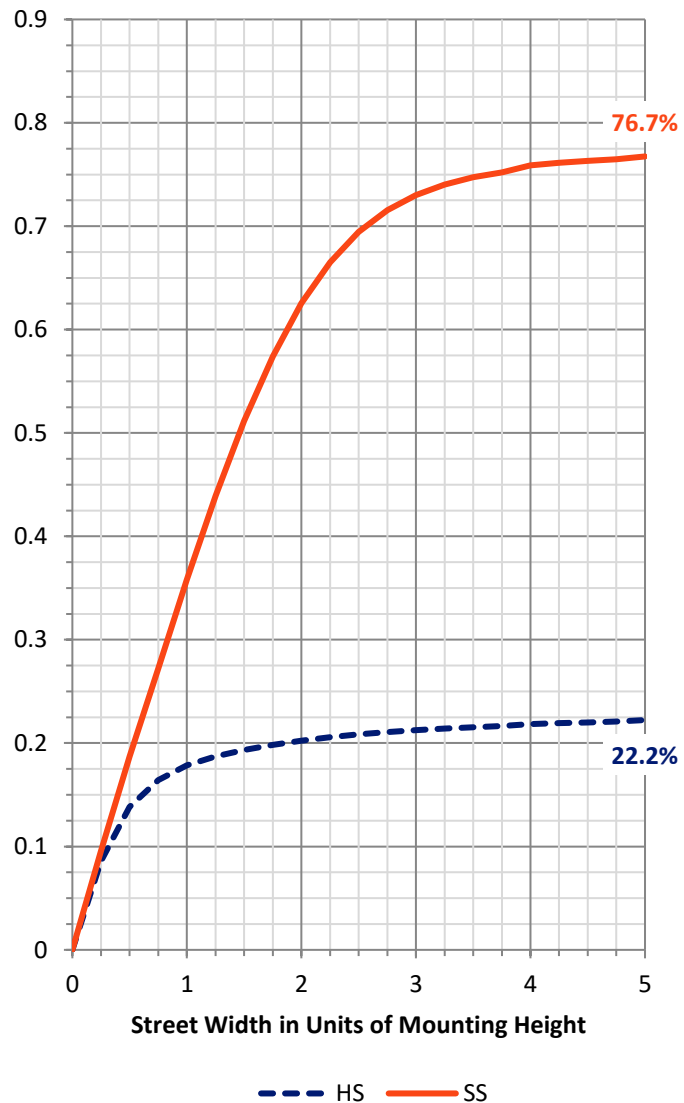
**FLUX DISTRIBUTION:**

|                    |           | Downward | Upward | Total   |
|--------------------|-----------|----------|--------|---------|
| <b>House Side</b>  | Lumens    | 8046.0   | 0.0    | 8046.0  |
|                    | % Fixture | 22.9     | 0.0    | 22.9    |
| <b>Street Side</b> | Lumens    | 27059.0  | 0.0    | 27059.0 |
|                    | % Fixture | 77.1     | 0.0    | 77.1    |
| <b>Total</b>       | Lumens    | 35105.0  | 0.0    | 35105.0 |
|                    | % Fixture | 100.0    | 0.0    | 100.0   |

**ZONAL LUMENS:**

| Zone      | Lumens  | % Fixture |
|-----------|---------|-----------|
| 0°-10°    | 364.6   | 1.0       |
| 10°-20°   | 1214.7  | 3.5       |
| 20°-30°   | 2025.4  | 5.8       |
| 30°-40°   | 2874.2  | 8.2       |
| 40°-50°   | 4227.8  | 12.0      |
| 50°-60°   | 7159.8  | 20.4      |
| 60°-70°   | 10163.2 | 29.0      |
| 70°-80°   | 6174.2  | 17.6      |
| 80°-90°   | 901.1   | 2.6       |
| 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°    | 35105.0 | 100.0     |
| 0°-180°   | 35105.0 | 100.0     |

**Coefficient of Utilization**



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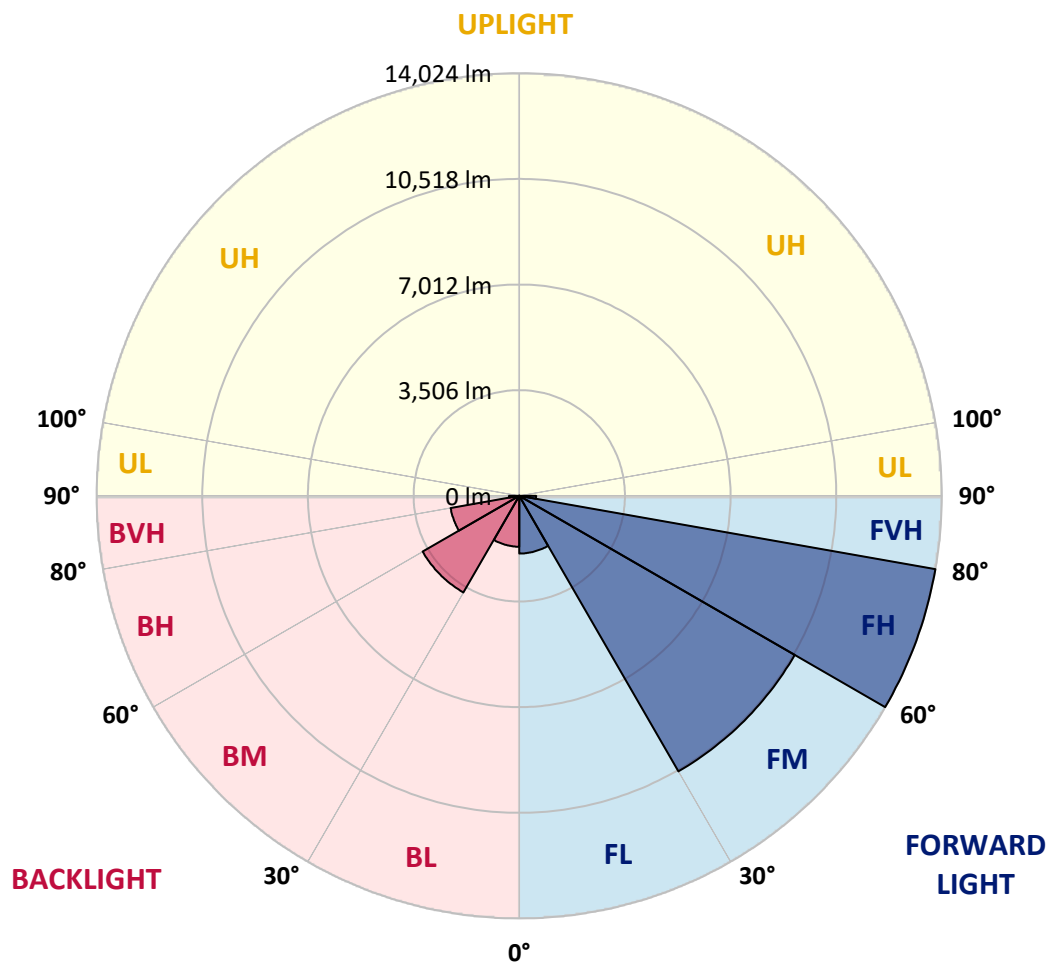
CATALOG NUMBER: GLEON-SA5C-740-U-T4W

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

| Zone |             | Lumens  | % Fixture | Zone Rating/Lumen Limit |      |         |
|------|-------------|---------|-----------|-------------------------|------|---------|
|      |             |         |           | B                       | U    | G       |
| FL   | (0°-30°)    | 1915.5  | 5.5       |                         |      |         |
| FM   | (30°-60°)   | 10558.0 | 30.1      |                         |      |         |
| FH   | (60°-80°)   | 14024.3 | 39.9      |                         |      | G5      |
| FVH  | (80°-90°)   | 561.3   | 1.6       |                         |      | G4/750  |
| BL   | (0°-30°)    | 1689.3  | 4.8       | B3/2500                 |      |         |
| BM   | (30°-60°)   | 3703.8  | 10.6      | B3/5000                 |      |         |
| BH   | (60°-80°)   | 2313.1  | 6.6       | B3/2500                 |      | G3/2500 |
| BVH  | (80°-90°)   | 339.8   | 1.0       |                         |      | G3/500  |
| UL   | (90°-100°)  | 0.0     | 0.0       |                         | U0/0 |         |
| UH   | (100°-180°) | 0.0     | 0.0       |                         | U0/0 |         |

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

Type IV Short





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**CANDELA DISTRIBUTION (FULL):**

|       | 0°      | 5°      | 15°     | 25°     | 35°     | 45°     | 46°     | 55°     | 65°     | 75°     | 85°     |
|-------|---------|---------|---------|---------|---------|---------|---------|---------|---------|---------|---------|
| 0°    | 3576.5  | 3576.5  | 3576.5  | 3576.5  | 3576.5  | 3576.5  | 3576.5  | 3576.5  | 3576.5  | 3576.5  | 3576.5  |
| 2.5°  | 3755.5  | 3757.9  | 3762.7  | 3750.7  | 3717.1  | 3707.5  | 3703.9  | 3669.0  | 3646.2  | 3612.6  | 3583.7  |
| 5°    | 4055.9  | 4058.3  | 4051.1  | 4017.4  | 3942.9  | 3887.7  | 3882.9  | 3803.6  | 3731.5  | 3654.6  | 3596.9  |
| 7.5°  | 4369.4  | 4373.0  | 4350.2  | 4286.5  | 4182.0  | 4085.9  | 4079.9  | 3971.8  | 3862.4  | 3745.9  | 3659.4  |
| 10°   | 4646.9  | 4632.5  | 4595.3  | 4506.4  | 4382.6  | 4264.9  | 4260.1  | 4147.2  | 4021.0  | 3880.5  | 3765.1  |
| 12.5° | 4832.0  | 4819.9  | 4771.9  | 4663.8  | 4528.0  | 4419.9  | 4410.3  | 4305.8  | 4183.2  | 4029.4  | 3891.3  |
| 15°   | 4934.1  | 4942.5  | 4877.6  | 4755.1  | 4622.9  | 4531.6  | 4523.2  | 4448.7  | 4339.4  | 4184.4  | 4025.8  |
| 17.5° | 4947.3  | 4954.5  | 4892.0  | 4770.7  | 4662.6  | 4600.1  | 4596.5  | 4547.2  | 4467.9  | 4319.0  | 4153.2  |
| 20°   | 4870.4  | 4875.2  | 4823.5  | 4723.8  | 4653.0  | 4633.7  | 4632.5  | 4610.9  | 4552.0  | 4419.9  | 4258.9  |
| 22.5° | 4758.7  | 4762.3  | 4725.0  | 4653.0  | 4628.9  | 4659.0  | 4667.4  | 4659.0  | 4616.9  | 4493.2  | 4341.8  |
| 25°   | 4731.0  | 4728.6  | 4690.2  | 4616.9  | 4637.3  | 4701.0  | 4711.8  | 4715.4  | 4686.6  | 4578.5  | 4447.5  |
| 27.5° | 4864.4  | 4856.0  | 4782.7  | 4665.0  | 4678.2  | 4755.1  | 4769.5  | 4804.3  | 4786.3  | 4691.4  | 4567.7  |
| 30°   | 5250.0  | 5235.6  | 5085.4  | 4847.6  | 4782.7  | 4822.3  | 4840.4  | 4895.6  | 4899.2  | 4819.9  | 4727.4  |
| 32.5° | 5901.2  | 5883.2  | 5614.1  | 5188.8  | 4959.3  | 4890.8  | 4907.6  | 4990.5  | 5035.0  | 4973.7  | 4874.0  |
| 35°   | 6724.1  | 6703.7  | 6350.5  | 5769.0  | 5254.8  | 5021.8  | 5033.8  | 5099.9  | 5188.8  | 5102.3  | 4970.1  |
| 37.5° | 7581.9  | 7532.7  | 7192.7  | 6451.4  | 5724.6  | 5301.7  | 5301.7  | 5310.1  | 5352.2  | 5171.9  | 5083.0  |
| 40°   | 8434.9  | 8385.6  | 8078.1  | 7253.9  | 6332.5  | 5742.6  | 5715.0  | 5528.8  | 5495.1  | 5340.1  | 5310.1  |
| 42.5° | 9227.8  | 9213.4  | 9032.0  | 8161.0  | 7046.1  | 6176.3  | 6137.9  | 5821.9  | 5829.1  | 5733.0  | 5734.2  |
| 45°   | 10071.2 | 10071.2 | 9923.4  | 9076.4  | 7877.5  | 6873.1  | 6834.7  | 6369.7  | 6441.8  | 6397.4  | 6504.3  |
| 47.5° | 10759.6 | 10781.2 | 10760.8 | 10030.3 | 8844.6  | 7758.5  | 7688.8  | 7129.0  | 7330.8  | 7483.4  | 7794.6  |
| 50°   | 11462.4 | 11496.0 | 11499.6 | 11076.7 | 10013.5 | 8810.9  | 8731.6  | 8137.0  | 8587.5  | 9024.8  | 9636.3  |
| 52.5° | 12482.4 | 12558.0 | 12256.5 | 12120.7 | 11445.6 | 10060.4 | 9982.3  | 9433.2  | 10185.3 | 10799.2 | 11852.8 |
| 55°   | 13427.8 | 13361.8 | 13146.7 | 13230.8 | 12978.5 | 11482.8 | 11423.9 | 10942.2 | 11965.8 | 12763.5 | 14131.8 |
| 57.5° | 13939.6 | 13934.8 | 14151.1 | 14511.5 | 14631.6 | 13236.8 | 13187.6 | 12719.0 | 13973.3 | 14572.8 | 16271.5 |
| 60°   | 14540.3 | 14548.7 | 15084.5 | 15902.7 | 16397.7 | 15420.9 | 15399.3 | 15043.7 | 15923.1 | 16261.9 | 17949.8 |
| 62.5° | 14624.4 | 14775.8 | 15698.5 | 17106.5 | 18050.8 | 17972.7 | 18020.7 | 17137.7 | 17667.5 | 17609.8 | 19202.9 |
| 65°   | 13657.3 | 13856.7 | 15526.7 | 17470.5 | 19694.2 | 20763.5 | 20807.9 | 19243.7 | 19043.1 | 18762.0 | 19651.0 |
| 67.5° | 11675.0 | 11970.6 | 13784.7 | 16678.8 | 20236.1 | 22826.2 | 22888.7 | 20876.4 | 20184.4 | 19152.4 | 18572.2 |
| 70°   | 8496.2  | 8824.1  | 10650.2 | 14244.8 | 19270.2 | 23485.8 | 23556.7 | 21598.4 | 20227.7 | 18041.1 | 15854.6 |
| 72.5° | 5132.3  | 5389.4  | 6894.7  | 10486.9 | 16264.3 | 22284.4 | 22410.6 | 20683.0 | 18467.6 | 15281.6 | 11707.5 |
| 75°   | 2253.8  | 2422.0  | 3333.8  | 6042.9  | 11643.8 | 18437.6 | 18595.0 | 17703.6 | 15005.3 | 11105.6 | 6920.0  |
| 77.5° | 959.9   | 1008.0  | 1367.2  | 2625.0  | 6582.4  | 12598.9 | 12815.1 | 12935.3 | 10180.5 | 6042.9  | 2924.2  |
| 80°   | 598.3   | 617.5   | 773.7   | 1188.2  | 3080.3  | 7076.1  | 7309.2  | 7610.8  | 5055.4  | 2221.4  | 1021.2  |
| 82.5° | 364.0   | 385.6   | 514.2   | 718.4   | 1603.8  | 3207.7  | 3319.4  | 3532.1  | 1961.9  | 959.9   | 528.6   |
| 85°   | 218.7   | 234.3   | 314.8   | 454.1   | 913.0   | 1261.5  | 1260.2  | 1393.6  | 923.9   | 617.5   | 278.7   |
| 87.5° | 104.5   | 116.5   | 168.2   | 235.5   | 460.1   | 473.3   | 443.3   | 502.2   | 561.0   | 404.9   | 140.6   |
| 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-SA5C-740-U-T4W

**CANDELA DISTRIBUTION (continued):**

|       | 90°     | 95°     | 105°   | 115°   | 125°   | 135°   | 145°   | 155°   | 165°   | 175°   | 180°   |
|-------|---------|---------|--------|--------|--------|--------|--------|--------|--------|--------|--------|
| 0°    | 3576.5  | 3576.5  | 3576.5 | 3576.5 | 3576.5 | 3576.5 | 3576.5 | 3576.5 | 3576.5 | 3576.5 | 3576.5 |
| 2.5°  | 3574.1  | 3569.3  | 3553.7 | 3541.7 | 3539.3 | 3532.1 | 3526.1 | 3529.7 | 3534.5 | 3535.7 | 3535.7 |
| 5°    | 3572.9  | 3559.7  | 3539.3 | 3530.9 | 3541.7 | 3556.1 | 3574.1 | 3598.1 | 3612.6 | 3623.4 | 3630.6 |
| 7.5°  | 3630.6  | 3605.3  | 3582.5 | 3577.7 | 3599.3 | 3637.8 | 3678.6 | 3729.1 | 3763.9 | 3788.0 | 3792.8 |
| 10°   | 3726.7  | 3695.4  | 3672.6 | 3677.4 | 3715.9 | 3771.1 | 3828.8 | 3893.7 | 3946.5 | 3979.0 | 3981.4 |
| 12.5° | 3837.2  | 3807.2  | 3785.6 | 3806.0 | 3869.6 | 3936.9 | 3997.0 | 4053.5 | 4101.5 | 4134.0 | 4134.0 |
| 15°   | 3964.6  | 3942.9  | 3917.7 | 3964.6 | 4051.1 | 4111.1 | 4136.4 | 4164.0 | 4190.4 | 4214.4 | 4209.6 |
| 17.5° | 4087.1  | 4066.7  | 4053.5 | 4108.7 | 4198.8 | 4226.5 | 4209.6 | 4189.2 | 4189.2 | 4202.4 | 4204.8 |
| 20°   | 4192.8  | 4174.8  | 4183.2 | 4237.3 | 4284.1 | 4255.3 | 4192.8 | 4127.9 | 4101.5 | 4108.7 | 4115.9 |
| 22.5° | 4285.3  | 4276.9  | 4302.1 | 4327.4 | 4293.7 | 4192.8 | 4077.5 | 3989.8 | 3957.4 | 3954.9 | 3957.4 |
| 25°   | 4393.5  | 4392.3  | 4423.5 | 4377.8 | 4228.9 | 4042.6 | 3887.7 | 3802.4 | 3784.4 | 3798.8 | 3822.8 |
| 27.5° | 4528.0  | 4541.2  | 4556.8 | 4389.8 | 4096.7 | 3815.6 | 3658.2 | 3599.3 | 3617.4 | 3652.2 | 3675.0 |
| 30°   | 4699.8  | 4735.8  | 4702.2 | 4359.8 | 3906.9 | 3556.1 | 3405.9 | 3389.1 | 3438.4 | 3487.6 | 3511.6 |
| 32.5° | 4866.8  | 4923.3  | 4841.6 | 4281.7 | 3661.8 | 3281.0 | 3164.4 | 3159.6 | 3219.7 | 3267.8 | 3301.4 |
| 35°   | 5001.4  | 5113.1  | 4946.1 | 4126.7 | 3378.3 | 3027.5 | 2942.2 | 2909.7 | 2931.4 | 2987.8 | 3026.3 |
| 37.5° | 5176.8  | 5363.0  | 5018.2 | 3890.1 | 3070.7 | 2818.4 | 2718.7 | 2644.2 | 2625.0 | 2647.8 | 2667.1 |
| 40°   | 5497.5  | 5743.8  | 5051.8 | 3559.7 | 2770.4 | 2609.4 | 2508.5 | 2399.2 | 2323.5 | 2268.2 | 2269.4 |
| 42.5° | 6021.3  | 6240.0  | 5030.2 | 3158.4 | 2492.9 | 2405.2 | 2291.0 | 2164.9 | 2042.3 | 1917.4 | 1907.8 |
| 45°   | 6871.9  | 6977.6  | 4965.3 | 2733.1 | 2249.0 | 2191.3 | 2084.4 | 1958.3 | 1794.9 | 1653.1 | 1639.9 |
| 47.5° | 8233.1  | 7998.8  | 4864.4 | 2361.9 | 2033.9 | 2009.9 | 1911.4 | 1766.0 | 1593.0 | 1478.9 | 1469.3 |
| 50°   | 10089.2 | 9472.9  | 4815.1 | 2066.4 | 1844.1 | 1851.3 | 1770.8 | 1617.1 | 1453.7 | 1369.6 | 1360.0 |
| 52.5° | 12309.4 | 11189.7 | 4910.0 | 1838.1 | 1691.5 | 1716.8 | 1656.7 | 1512.5 | 1375.6 | 1309.5 | 1299.9 |
| 55°   | 14612.4 | 12967.7 | 5012.2 | 1672.3 | 1547.4 | 1596.6 | 1576.2 | 1457.3 | 1333.5 | 1272.3 | 1263.9 |
| 57.5° | 16583.9 | 14295.2 | 4807.9 | 1537.8 | 1418.8 | 1495.7 | 1513.7 | 1422.4 | 1311.9 | 1256.6 | 1247.0 |
| 60°   | 17824.9 | 14829.9 | 4272.1 | 1411.6 | 1316.7 | 1415.2 | 1477.7 | 1412.8 | 1320.3 | 1315.5 | 1308.3 |
| 62.5° | 18413.6 | 14783.0 | 3468.4 | 1311.9 | 1253.0 | 1380.4 | 1504.1 | 1466.9 | 1416.4 | 1459.7 | 1463.3 |
| 65°   | 18149.3 | 14076.6 | 2583.0 | 1245.8 | 1207.4 | 1393.6 | 1583.4 | 1569.0 | 1444.1 | 1487.3 | 1493.3 |
| 67.5° | 16409.7 | 12391.0 | 1912.6 | 1188.2 | 1156.9 | 1430.8 | 1727.6 | 1602.6 | 1390.0 | 1421.2 | 1402.0 |
| 70°   | 13263.3 | 9823.7  | 1475.3 | 1123.3 | 1105.3 | 1426.0 | 1792.5 | 1582.2 | 1331.1 | 1338.3 | 1286.7 |
| 72.5° | 9146.1  | 6698.9  | 1200.2 | 1063.2 | 1030.8 | 1299.9 | 1746.8 | 1531.8 | 1281.9 | 1226.6 | 1158.1 |
| 75°   | 4973.7  | 3595.7  | 1020.0 | 1000.8 | 899.8  | 1141.3 | 1662.7 | 1495.7 | 1237.4 | 1164.1 | 1125.7 |
| 77.5° | 1957.1  | 1492.1  | 885.4  | 915.5  | 786.9  | 1008.0 | 1569.0 | 1427.2 | 1176.2 | 1080.0 | 1060.8 |
| 80°   | 798.9   | 761.7   | 734.0  | 791.7  | 676.4  | 881.8  | 1456.1 | 1346.7 | 1102.9 | 1002.0 | 963.5  |
| 82.5° | 452.9   | 473.3   | 570.7  | 624.7  | 549.0  | 812.1  | 1402.0 | 1281.9 | 1015.2 | 897.4  | 851.8  |
| 85°   | 231.9   | 277.5   | 397.7  | 448.1  | 403.7  | 690.8  | 1291.5 | 1122.1 | 814.5  | 687.2  | 690.8  |
| 87.5° | 111.7   | 155.0   | 251.1  | 281.1  | 261.9  | 499.8  | 964.7  | 813.3  | 634.3  | 502.2  | 486.6  |
| 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

MCGRAW, INVUE, LUMARK AND STREETWORKS

DATA VALID FOR LUMINAIRES UTILIZING SA LIGHT ENGINES

Report Number: SP1-2101-121-2

Luminaire Tested: IFLD-S-SA2A-740-U-T3R-HSS

Test Date: 03/05/2021

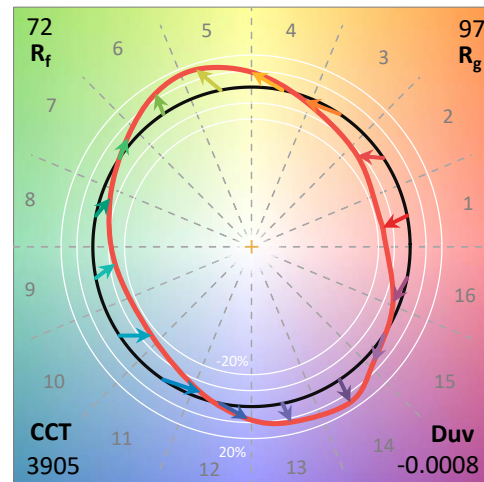
### Test Information

Test Method: LM-79-08  
 Report Number: SP1-2101-121-2  
 Test Lab: COOPER LIGHTING SOLUTIONS  
 Photometer: SP1  
 Measurement Geometry:  $4\pi$   
 Issue Date: 03/05/2021  
 Manufacturer: COOPER LIGHTING SOLUTIONS (FORMERLY EATON)  
 Product Line: STREETWORKS  
 Catalog Number: **IFLD-S-SA2A-740-U-T3R-HSS**  
 Description: STREETWORKS INF FLOOD

SHIELD, DRIVER PROGRAMMED @ 615mA.

### Spectral Parameters

|                           |         |           |      |      |       |
|---------------------------|---------|-----------|------|------|-------|
| CCT (K):                  | 3905    | CRI (Ra): | 71.2 |      |       |
| CIE u':                   | 0.2273  | R1:       | 68.9 | R9:  | -29.7 |
| CIE v':                   | 0.5024  | R2:       | 77.0 | R10: | 46.2  |
| Duv:                      | -0.0008 | R3:       | 84.0 | R11: | 68.8  |
| CIE x:                    | 0.3841  | R4:       | 71.6 | R12: | 45.6  |
| CIE y:                    | 0.3774  | R5:       | 68.9 | R13: | 69.5  |
| CIE z:                    | 0.2385  | R6:       | 68.3 | R14: | 90.7  |
| Peak Wavelength (nm):     | 443     | R7:       | 78.7 |      |       |
| Dominant Wavelength (nm): | 579     | R8:       | 52.2 |      |       |
| Purity:                   | 28.7    |           |      |      |       |
| Rf:                       | 71.7    |           |      |      |       |
| Rg:                       | 96.9    |           |      |      |       |



### Test Conditions

Stabilization Time: 211M  
 Operation Time: 12H  
 Room Temperature (°C) / RH%: 24.8/312%  
 Sphere Temperature (°C): 24.1

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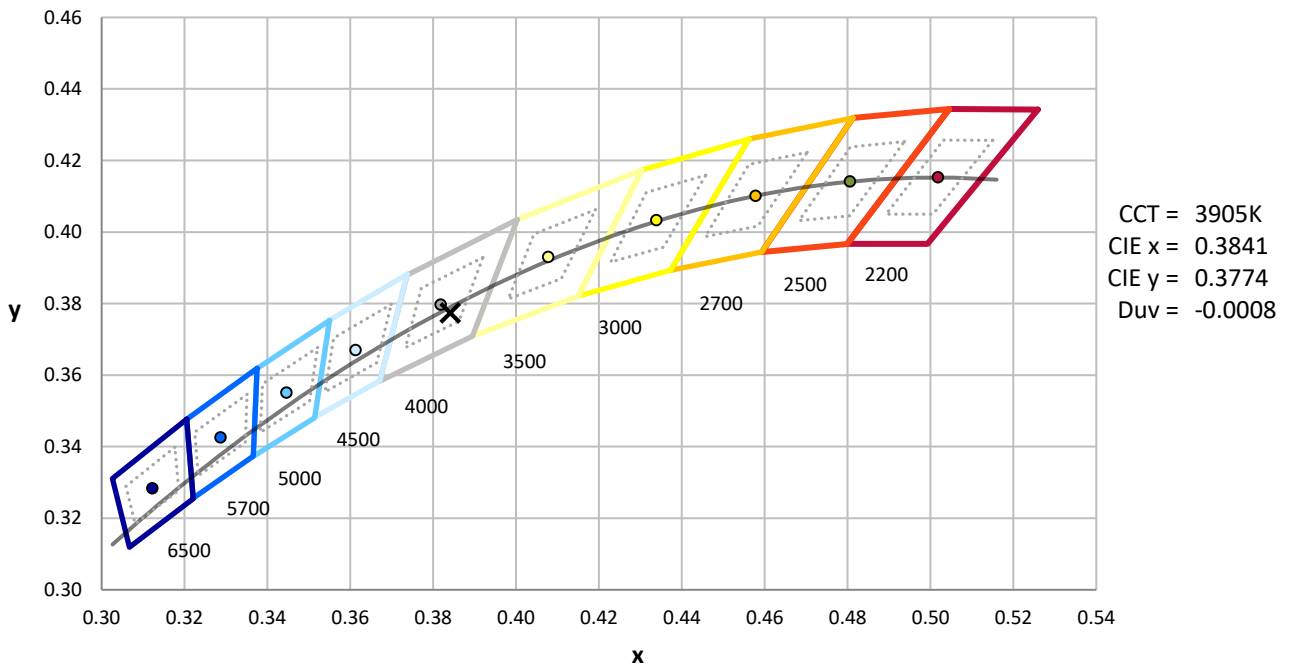
| Measurement and Test Equipment |                       |                  |                      |
|--------------------------------|-----------------------|------------------|----------------------|
| Instrument                     | Identification Number | Calibration Date | Calibration Due Date |
| 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 4000K 4-step quadrangle

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### Photopic Flux vs. Wavelength

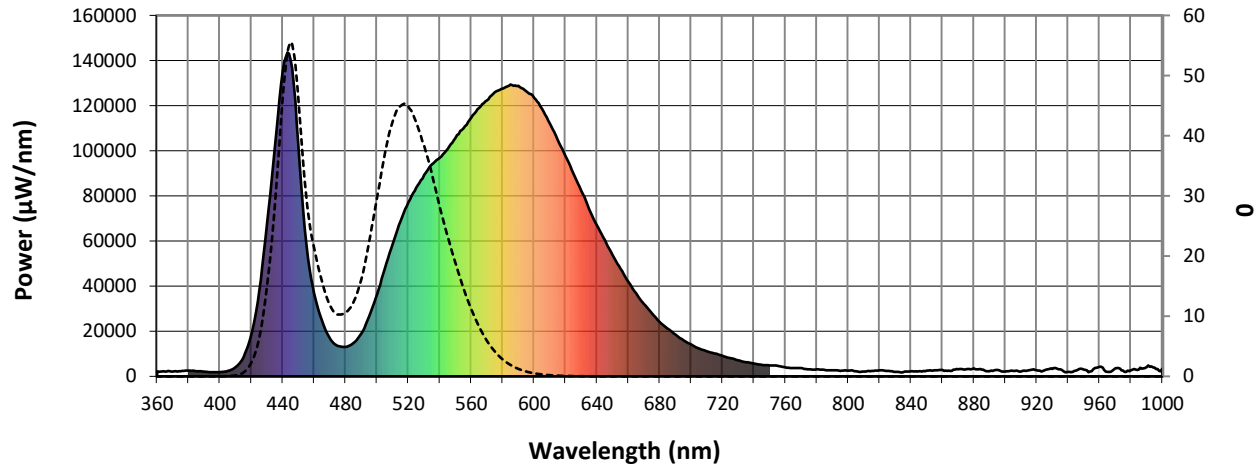


#####

| 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       | 2304             | 0.0              | 490       | 19043            | 2.7              | 620       | 97577            | 25.4             | 750       | 4830             | 0.0              | 880       | 3505             | 0.0              |
| 365       | 2150             | 0.0              | 495       | 26606            | 4.8              | 625       | 90158            | 19.9             | 755       | 4664             | 0.0              | 885       | 2991             | 0.0              |
| 370       | 2146             | 0.0              | 500       | 36376            | 8.0              | 630       | 82240            | 14.9             | 760       | 4006             | 0.0              | 890       | 2327             | 0.0              |
| 375       | 2332             | 0.0              | 505       | 47714            | 13.3             | 635       | 74361            | 11.2             | 765       | 3715             | 0.0              | 895       | 2775             | 0.0              |
| 380       | 2527             | 0.0              | 510       | 58741            | 20.2             | 640       | 66994            | 8.0              | 770       | 3696             | 0.0              | 900       | 2141             | 0.0              |
| 385       | 2304             | 0.0              | 515       | 68716            | 28.5             | 645       | 60405            | 5.8              | 775       | 3117             | 0.0              | 905       | 2421             | 0.0              |
| 390       | 2064             | 0.0              | 520       | 77136            | 37.4             | 650       | 53806            | 3.9              | 780       | 3062             | 0.0              | 910       | 2200             | 0.0              |
| 395       | 1856             | 0.0              | 525       | 83567            | 44.9             | 655       | 47610            | 2.7              | 785       | 2907             | 0.0              | 915       | 2716             | 0.0              |
| 400       | 1856             | 0.0              | 530       | 89283            | 52.6             | 660       | 42018            | 1.8              | 790       | 2655             | 0.0              | 920       | 2656             | 0.0              |
| 405       | 2374             | 0.0              | 535       | 94097            | 58.4             | 665       | 36742            | 1.2              | 795       | 2467             | 0.0              | 925       | 2671             | 0.0              |
| 410       | 4084             | 0.0              | 540       | 96845            | 63.1             | 670       | 32105            | 0.7              | 800       | 2609             | 0.0              | 930       | 3292             | 0.0              |
| 415       | 8543             | 0.0              | 545       | 100829           | 67.1             | 675       | 27946            | 0.5              | 805       | 2293             | 0.0              | 935       | 3188             | 0.0              |
| 420       | 18394            | 0.1              | 550       | 105648           | 71.8             | 680       | 24146            | 0.3              | 810       | 2188             | 0.0              | 940       | 1997             | 0.0              |
| 425       | 37987            | 0.2              | 555       | 110017           | 75.1             | 685       | 21191            | 0.2              | 815       | 2386             | 0.0              | 945       | 2623             | 0.0              |
| 430       | 67605            | 0.5              | 560       | 114586           | 77.9             | 690       | 18544            | 0.1              | 820       | 2712             | 0.0              | 950       | 2969             | 0.0              |
| 435       | 102160           | 1.2              | 565       | 118987           | 79.1             | 695       | 16058            | 0.1              | 825       | 2473             | 0.0              | 955       | 2277             | 0.0              |
| 440       | 135103           | 2.1              | 570       | 122326           | 79.5             | 700       | 14133            | 0.0              | 830       | 1969             | 0.0              | 960       | 4267             | 0.0              |
| 445       | 140126           | 2.9              | 575       | 125968           | 78.4             | 705       | 12309            | 0.0              | 835       | 1917             | 0.0              | 965       | 2034             | 0.0              |
| 450       | 102339           | 2.7              | 580       | 127613           | 75.8             | 710       | 11142            | 0.0              | 840       | 2248             | 0.0              | 970       | 3586             | 0.0              |
| 455       | 58751            | 2.0              | 585       | 129466           | 71.9             | 715       | 10143            | 0.0              | 845       | 2266             | 0.0              | 975       | 2505             | 0.0              |
| 460       | 36892            | 1.5              | 590       | 128813           | 66.6             | 720       | 9072             | 0.0              | 850       | 2558             | 0.0              | 980       | 2666             | 0.0              |
| 465       | 24637            | 1.3              | 595       | 126387           | 59.9             | 725       | 8130             | 0.0              | 855       | 2767             | 0.0              | 985       | 2934             | 0.0              |
| 470       | 16738            | 1.0              | 600       | 123477           | 53.2             | 730       | 7149             | 0.0              | 860       | 2826             | 0.0              | 990       | 4120             | 0.0              |
| 475       | 13456            | 1.1              | 605       | 118718           | 46.0             | 735       | 6311             | 0.0              | 865       | 2385             | 0.0              | 995       | 3858             | 0.0              |
| 480       | 13081            | 1.2              | 610       | 112091           | 38.5             | 740       | 5711             | 0.0              | 870       | 3194             | 0.0              | 1000      | 3405             | 0.0              |
| 485       | 14734            | 1.7              | 615       | 105039           | 31.7             | 745       | 5111             | 0.0              | 875       | 3189             | 0.0              |           |                  |                  |

REPORT NUMBER: SP1-2101-121-2

### Scotopic Flux vs. Wavelength



Scotopic Lumens: 10425.8

S/P: 1.47

| 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       | 2304             | 0.0              | 490       | 19043            | 29.3             | 620       | 97577            | 1.2              | 750       | 4830             | 0.0              | 880       | 3505             | 0.0              |
| 365       | 2150             | 0.0              | 495       | 26606            | 43.0             | 625       | 90158            | 0.8              | 755       | 4664             | 0.0              | 885       | 2991             | 0.0              |
| 370       | 2146             | 0.0              | 500       | 36376            | 60.8             | 630       | 82240            | 0.5              | 760       | 4006             | 0.0              | 890       | 2327             | 0.0              |
| 375       | 2332             | 0.0              | 505       | 47714            | 81.1             | 635       | 74361            | 0.3              | 765       | 3715             | 0.0              | 895       | 2775             | 0.0              |
| 380       | 2527             | 0.0              | 510       | 58741            | 99.6             | 640       | 66994            | 0.2              | 770       | 3696             | 0.0              | 900       | 2141             | 0.0              |
| 385       | 2304             | 0.0              | 515       | 68716            | 113.9            | 645       | 60405            | 0.1              | 775       | 3117             | 0.0              | 905       | 2421             | 0.0              |
| 390       | 2064             | 0.0              | 520       | 77136            | 122.6            | 650       | 53806            | 0.1              | 780       | 3062             | 0.0              | 910       | 2200             | 0.0              |
| 395       | 1856             | 0.0              | 525       | 83567            | 125.0            | 655       | 47610            | 0.0              | 785       | 2907             | 0.0              | 915       | 2716             | 0.0              |
| 400       | 1856             | 0.0              | 530       | 89283            | 123.1            | 660       | 42018            | 0.0              | 790       | 2655             | 0.0              | 920       | 2656             | 0.0              |
| 405       | 2374             | 0.1              | 535       | 94097            | 117.3            | 665       | 36742            | 0.0              | 795       | 2467             | 0.0              | 925       | 2671             | 0.0              |
| 410       | 4084             | 0.2              | 540       | 96845            | 107.0            | 670       | 32105            | 0.0              | 800       | 2609             | 0.0              | 930       | 3292             | 0.0              |
| 415       | 8543             | 0.9              | 545       | 100829           | 96.7             | 675       | 27946            | 0.0              | 805       | 2293             | 0.0              | 935       | 3188             | 0.0              |
| 420       | 18394            | 3.0              | 550       | 105648           | 86.4             | 680       | 24146            | 0.0              | 810       | 2188             | 0.0              | 940       | 1997             | 0.0              |
| 425       | 37987            | 9.3              | 555       | 110017           | 75.2             | 685       | 21191            | 0.0              | 815       | 2386             | 0.0              | 945       | 2623             | 0.0              |
| 430       | 67605            | 23.0             | 560       | 114586           | 64.0             | 690       | 18544            | 0.0              | 820       | 2712             | 0.0              | 950       | 2969             | 0.0              |
| 435       | 102160           | 45.7             | 565       | 118987           | 53.4             | 695       | 16058            | 0.0              | 825       | 2473             | 0.0              | 955       | 2277             | 0.0              |
| 440       | 135103           | 75.5             | 570       | 122326           | 43.2             | 700       | 14133            | 0.0              | 830       | 1969             | 0.0              | 960       | 4267             | 0.0              |
| 445       | 140126           | 93.8             | 575       | 125968           | 34.3             | 705       | 12309            | 0.0              | 835       | 1917             | 0.0              | 965       | 2034             | 0.0              |
| 450       | 102339           | 79.3             | 580       | 127613           | 26.3             | 710       | 11142            | 0.0              | 840       | 2248             | 0.0              | 970       | 3586             | 0.0              |
| 455       | 58751            | 51.3             | 585       | 129466           | 19.8             | 715       | 10143            | 0.0              | 845       | 2266             | 0.0              | 975       | 2505             | 0.0              |
| 460       | 36892            | 35.6             | 590       | 128813           | 14.3             | 720       | 9072             | 0.0              | 850       | 2558             | 0.0              | 980       | 2666             | 0.0              |
| 465       | 24637            | 26.0             | 595       | 126387           | 10.1             | 725       | 8130             | 0.0              | 855       | 2767             | 0.0              | 985       | 2934             | 0.0              |
| 470       | 16738            | 19.3             | 600       | 123477           | 7.0              | 730       | 7149             | 0.0              | 860       | 2826             | 0.0              | 990       | 4120             | 0.0              |
| 475       | 13456            | 16.8             | 605       | 118718           | 4.7              | 735       | 6311             | 0.0              | 865       | 2385             | 0.0              | 995       | 3858             | 0.0              |
| 480       | 13081            | 17.7             | 610       | 112091           | 3.0              | 740       | 5711             | 0.0              | 870       | 3194             | 0.0              | 1000      | 3405             | 0.0              |
| 485       | 14734            | 21.4             | 615       | 105039           | 1.9              | 745       | 5111             | 0.0              | 875       | 3189             | 0.0              |           |                  |                  |

REPORT NUMBER: SP1-2101-121-2

### Melanopic Flux vs. Wavelength


**Melanopic Lumens: 3927.2**
**M/P: 0.55**

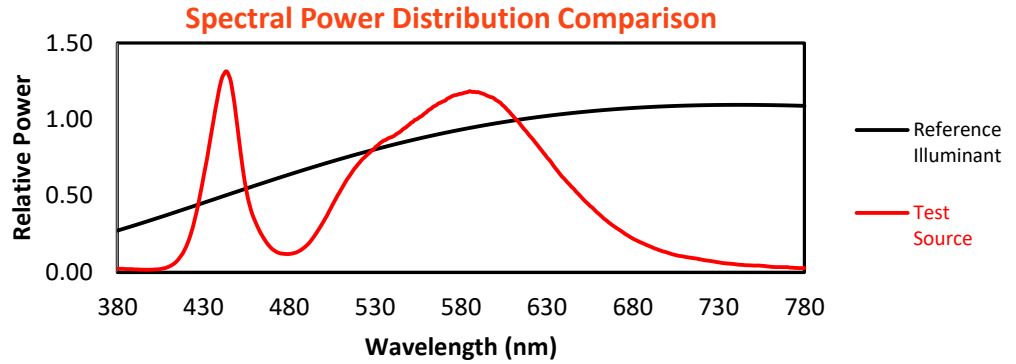
| λ<br>(nm) | Power<br>(μW/nm) | Lumens<br>(Φ/nm) | λ<br>(nm) | Power<br>(μW/nm) | Lumens<br>(Φ/nm) | λ<br>(nm) | Power<br>(μW/nm) | Lumens<br>(Φ/nm) | λ<br>(nm) | Power<br>(μW/nm) | Lumens<br>(Φ/nm) | λ<br>(nm) | Power<br>(μW/nm) | Lumens<br>(Φ/nm) |
|-----------|------------------|------------------|-----------|------------------|------------------|-----------|------------------|------------------|-----------|------------------|------------------|-----------|------------------|------------------|
| 360       | 2304             | 0.0              | 490       | 19043            | 15.8             | 620       | 97577            | 0.1              | 750       | 4830             | 0.0              | 880       | 3505             | 0.0              |
| 365       | 2150             | 0.0              | 495       | 26606            | 22.0             | 625       | 90158            | 0.0              | 755       | 4664             | 0.0              | 885       | 2991             | 0.0              |
| 370       | 2146             | 0.0              | 500       | 36376            | 29.2             | 630       | 82240            | 0.0              | 760       | 4006             | 0.0              | 890       | 2327             | 0.0              |
| 375       | 2332             | 0.0              | 505       | 47714            | 36.6             | 635       | 74361            | 0.0              | 765       | 3715             | 0.0              | 895       | 2775             | 0.0              |
| 380       | 2527             | 0.0              | 510       | 58741            | 42.2             | 640       | 66994            | 0.0              | 770       | 3696             | 0.0              | 900       | 2141             | 0.0              |
| 385       | 2304             | 0.0              | 515       | 68716            | 44.9             | 645       | 60405            | 0.0              | 775       | 3117             | 0.0              | 905       | 2421             | 0.0              |
| 390       | 2064             | 0.0              | 520       | 77136            | 44.9             | 650       | 53806            | 0.0              | 780       | 3062             | 0.0              | 910       | 2200             | 0.0              |
| 395       | 1856             | 0.0              | 525       | 83567            | 42.4             | 655       | 47610            | 0.0              | 785       | 2907             | 0.0              | 915       | 2716             | 0.0              |
| 400       | 1856             | 0.0              | 530       | 89283            | 38.6             | 660       | 42018            | 0.0              | 790       | 2655             | 0.0              | 920       | 2656             | 0.0              |
| 405       | 2374             | 0.0              | 535       | 94097            | 33.9             | 665       | 36742            | 0.0              | 795       | 2467             | 0.0              | 925       | 2671             | 0.0              |
| 410       | 4084             | 0.2              | 540       | 96845            | 28.3             | 670       | 32105            | 0.0              | 800       | 2609             | 0.0              | 930       | 3292             | 0.0              |
| 415       | 8543             | 0.6              | 545       | 100829           | 23.4             | 675       | 27946            | 0.0              | 805       | 2293             | 0.0              | 935       | 3188             | 0.0              |
| 420       | 18394            | 2.1              | 550       | 105648           | 19.0             | 680       | 24146            | 0.0              | 810       | 2188             | 0.0              | 940       | 1997             | 0.0              |
| 425       | 37987            | 5.9              | 555       | 110017           | 14.8             | 685       | 21191            | 0.0              | 815       | 2386             | 0.0              | 945       | 2623             | 0.0              |
| 430       | 67605            | 14.3             | 560       | 114586           | 11.3             | 690       | 18544            | 0.0              | 820       | 2712             | 0.0              | 950       | 2969             | 0.0              |
| 435       | 102160           | 27.3             | 565       | 118987           | 8.4              | 695       | 16058            | 0.0              | 825       | 2473             | 0.0              | 955       | 2277             | 0.0              |
| 440       | 135103           | 45.1             | 570       | 122326           | 6.0              | 700       | 14133            | 0.0              | 830       | 1969             | 0.0              | 960       | 4267             | 0.0              |
| 445       | 140126           | 55.3             | 575       | 125968           | 4.2              | 705       | 12309            | 0.0              | 835       | 1917             | 0.0              | 965       | 2034             | 0.0              |
| 450       | 102339           | 47.2             | 580       | 127613           | 2.9              | 710       | 11142            | 0.0              | 840       | 2248             | 0.0              | 970       | 3586             | 0.0              |
| 455       | 58751            | 30.8             | 585       | 129466           | 1.9              | 715       | 10143            | 0.0              | 845       | 2266             | 0.0              | 975       | 2505             | 0.0              |
| 460       | 36892            | 21.7             | 590       | 128813           | 1.3              | 720       | 9072             | 0.0              | 850       | 2558             | 0.0              | 980       | 2666             | 0.0              |
| 465       | 24637            | 16.1             | 595       | 126387           | 0.8              | 725       | 8130             | 0.0              | 855       | 2767             | 0.0              | 985       | 2934             | 0.0              |
| 470       | 16738            | 12.0             | 600       | 123477           | 0.5              | 730       | 7149             | 0.0              | 860       | 2826             | 0.0              | 990       | 4120             | 0.0              |
| 475       | 13456            | 10.3             | 605       | 118718           | 0.3              | 735       | 6311             | 0.0              | 865       | 2385             | 0.0              | 995       | 3858             | 0.0              |
| 480       | 13081            | 10.5             | 610       | 112091           | 0.2              | 740       | 5711             | 0.0              | 870       | 3194             | 0.0              | 1000      | 3405             | 0.0              |
| 485       | 14734            | 12.1             | 615       | 105039           | 0.1              | 745       | 5111             | 0.0              | 875       | 3189             | 0.0              |           |                  |                  |

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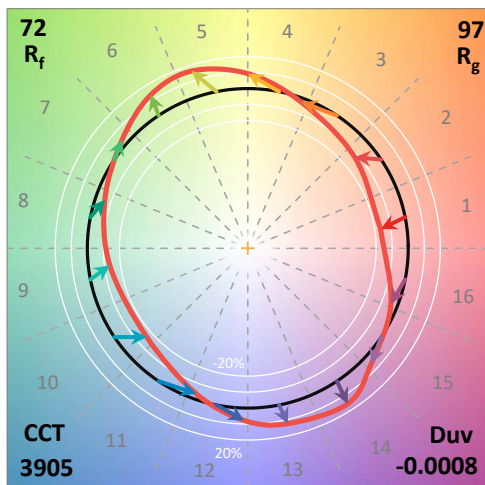
TM-30-18

### Summary

$R_f = 71.7$   
 $R_g = 96.9$   
 CIE  $R_a = 71.2$   
 $R_g = -29.7$



### Color Vector Graphics





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

|            |            |            |            |
|------------|------------|------------|------------|
| CES01 = 85 | CES26 = 55 | CES51 = 86 | CES76 = 45 |
| CES02 = 61 | CES27 = 80 | CES52 = 87 | CES77 = 68 |
| CES03 = 30 | CES28 = 79 | CES53 = 74 | CES78 = 49 |
| CES04 = 70 | CES29 = 51 | CES54 = 81 | CES79 = 77 |
| CES05 = 47 | CES30 = 60 | CES55 = 80 | CES80 = 75 |
| CES06 = 50 | CES31 = 56 | CES56 = 69 | CES81 = 75 |
| CES07 = 40 | CES32 = 52 | CES57 = 67 | CES82 = 90 |
| CES08 = 39 | CES33 = 62 | CES58 = 69 | CES83 = 85 |
| CES09 = 29 | CES34 = 65 | CES59 = 86 | CES84 = 87 |
| CES10 = 74 | CES35 = 81 | CES60 = 91 | CES85 = 83 |
| CES11 = 57 | CES36 = 92 | CES61 = 85 | CES86 = 72 |
| CES12 = 63 | CES37 = 74 | CES62 = 81 | CES87 = 77 |
| CES13 = 42 | CES38 = 69 | CES63 = 72 | CES88 = 77 |
| CES14 = 74 | CES39 = 92 | CES64 = 69 | CES89 = 72 |
| CES15 = 71 | CES40 = 86 | CES65 = 64 | CES90 = 75 |
| CES16 = 46 | CES41 = 84 | CES66 = 63 | CES91 = 91 |
| CES17 = 49 | CES42 = 75 | CES67 = 60 | CES92 = 66 |
| CES18 = 56 | CES43 = 70 | CES68 = 67 | CES93 = 80 |
| CES19 = 72 | CES44 = 98 | CES69 = 77 | CES94 = 56 |
| CES20 = 65 | CES45 = 80 | CES70 = 57 | CES95 = 72 |
| CES21 = 86 | CES46 = 77 | CES71 = 53 | CES96 = 78 |
| CES22 = 78 | CES47 = 74 | CES72 = 84 | CES97 = 83 |
| CES23 = 92 | CES48 = 66 | CES73 = 47 | CES98 = 73 |
| CES24 = 91 | CES49 = 76 | CES74 = 96 | CES99 = 63 |
| CES25 = 72 | CES50 = 85 | CES75 = 52 |            |



### Color Rendition by Hue-Angle Bin



**Measure Comparisons**



(END OF REPORT)