

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



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

Test Report Prepared for  
Cooper Lighting Solutions  
(formerly Eaton)

Brand: McGRAW-EDISON

Report Number: P321930

Luminaire Tested: **GLEON-SA6C-740-U-T2-HSS**

Issue Date: 3/3/2020

**Test Information**

Test Method: LM-79-08  
Report Number: P321930  
TEST IS SCALED FROM IESNA LM-79-08 TEST DATA (G2-1903-205-13)  
Test Lab: INNOVATION CENTER  
Issue Date: 3/3/2020  
Manufacturer: COOPER LIGHTING SOLUTIONS (FORMERLY EATON)  
Product Line: McGRAW-EDISON  
Catalog Number: GLEON-SA6C-740-U-T2-HSS  
Description: GALLEON AREA AND ROADWAY LUMINAIRE  
(6) 70 CRI, 4000K, 1050mA LIGHTSQUARES WITH 16 LEDS EACH AND TYPE II  
OPTICS WITH HOUSE SIDE SHIELD  
Light Source: -  
Ballast/Driver: ELECTRONIC DRIVER

**Summary**

Lumens per Lamp: N/A  
Luminaire Lumens: 30095 lumens  
Efficiency: N/A  
Efficacy: 90.4 lumens/watt  
Luminous Opening: Rectangular (W 1.5' x L: 1' x H: 0')  
IES Classification: Type II - Medium  
BUG Rating: B2 - U0 - G4

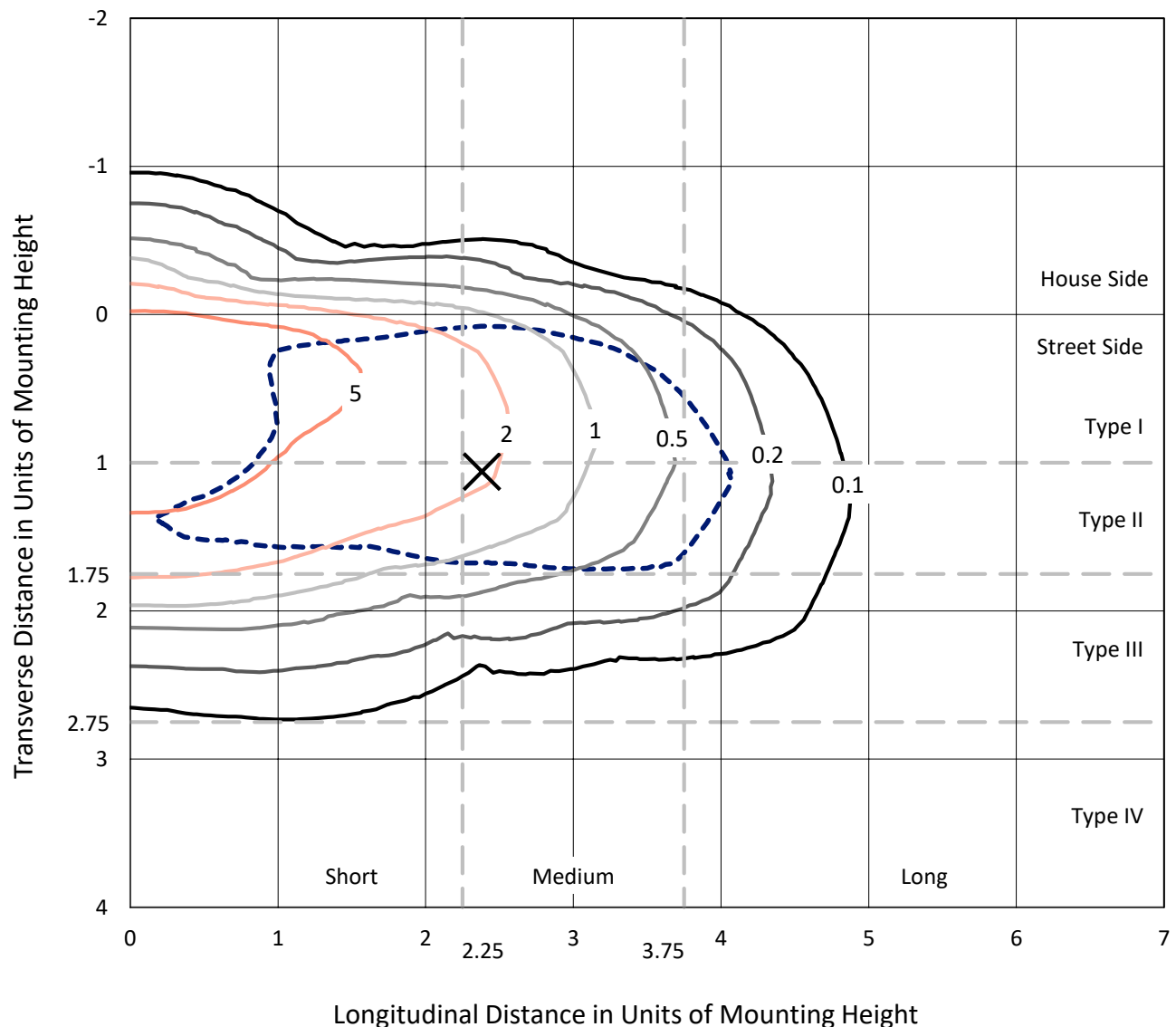
Input Watts (W): 333  
Input Voltage (V): NR  
Input Current (Ain): NR  
Voltage Rise (V): NR  
Power Factor: NR  
Total Harmonic Distortion (THDi): NR  
Frequency (hertz): 60  
Stabilization Time: NR  
Operation Time: NR  
Ambient Temperature (°C): NR  
Test Distance: 24 FT



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## Iso-Footcandle Lines of Horizontal Illumination

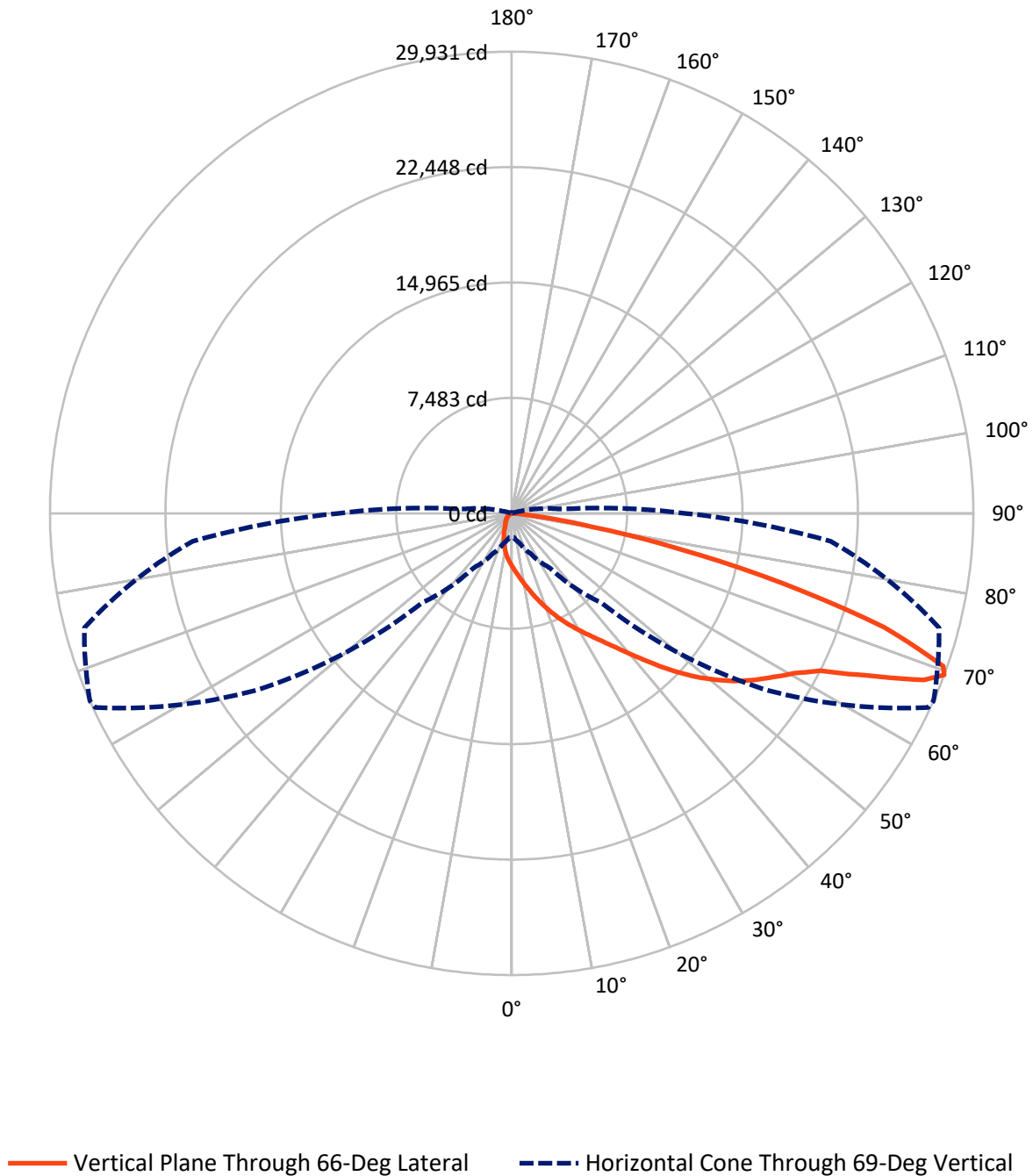
✕ Max cd  
 - - - 1/2 Max cd



Based on 25 foot mounting height. Maximum calculated value = 9.1 fc  
 Type II - Medium - N/A

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## Luminous Intensity Polar Plot



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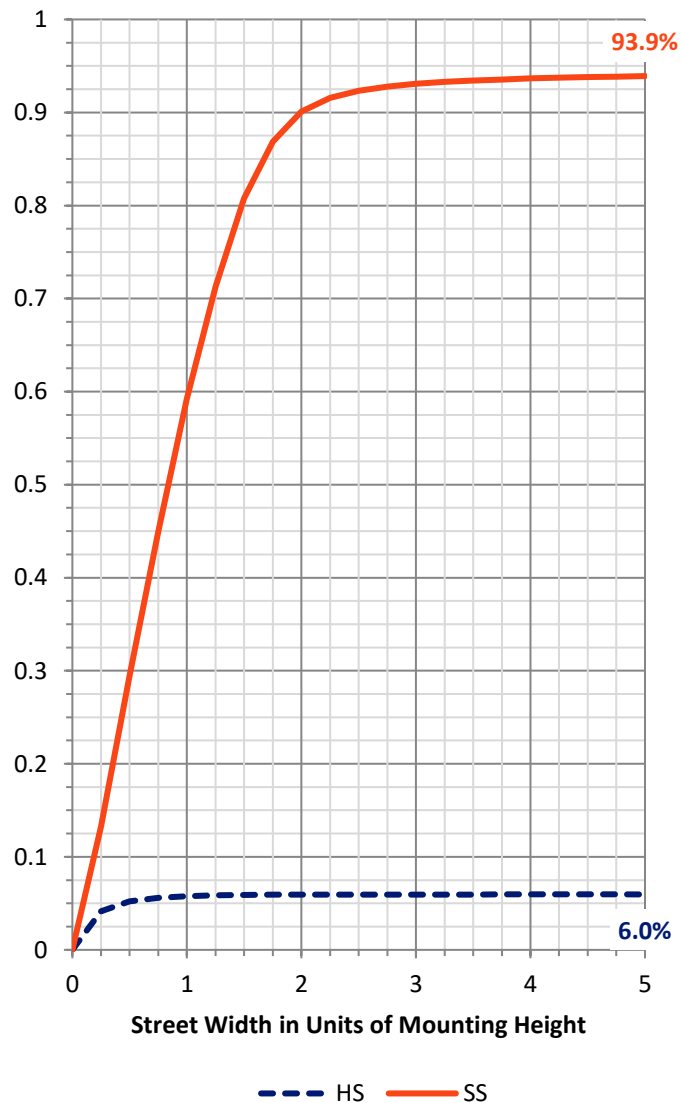
**FLUX DISTRIBUTION:**

|                    |           | Downward | Upward | Total   |
|--------------------|-----------|----------|--------|---------|
| <b>House Side</b>  | Lumens    | 1805.3   | 0.0    | 1805.3  |
|                    | % Fixture | 6.0      | 0.0    | 6.0     |
| <b>Street Side</b> | Lumens    | 28289.7  | 0.0    | 28289.7 |
|                    | % Fixture | 94.0     | 0.0    | 94.0    |
| <b>Total</b>       | Lumens    | 30095.0  | 0.0    | 30095.0 |
|                    | % Fixture | 100.0    | 0.0    | 100.0   |

**ZONAL LUMENS:**

| Zone      | Lumens  | % Fixture |
|-----------|---------|-----------|
| 0°-10°    | 331.1   | 1.1       |
| 10°-20°   | 985.3   | 3.3       |
| 20°-30°   | 1715.8  | 5.7       |
| 30°-40°   | 3010.3  | 10.0      |
| 40°-50°   | 5038.8  | 16.7      |
| 50°-60°   | 7406.6  | 24.6      |
| 60°-70°   | 7604.7  | 25.3      |
| 70°-80°   | 3754.2  | 12.5      |
| 80°-90°   | 248.2   | 0.8       |
| 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°    | 30095.0 | 100.0     |
| 0°-180°   | 30095.0 | 100.0     |

**Coefficient of Utilization**



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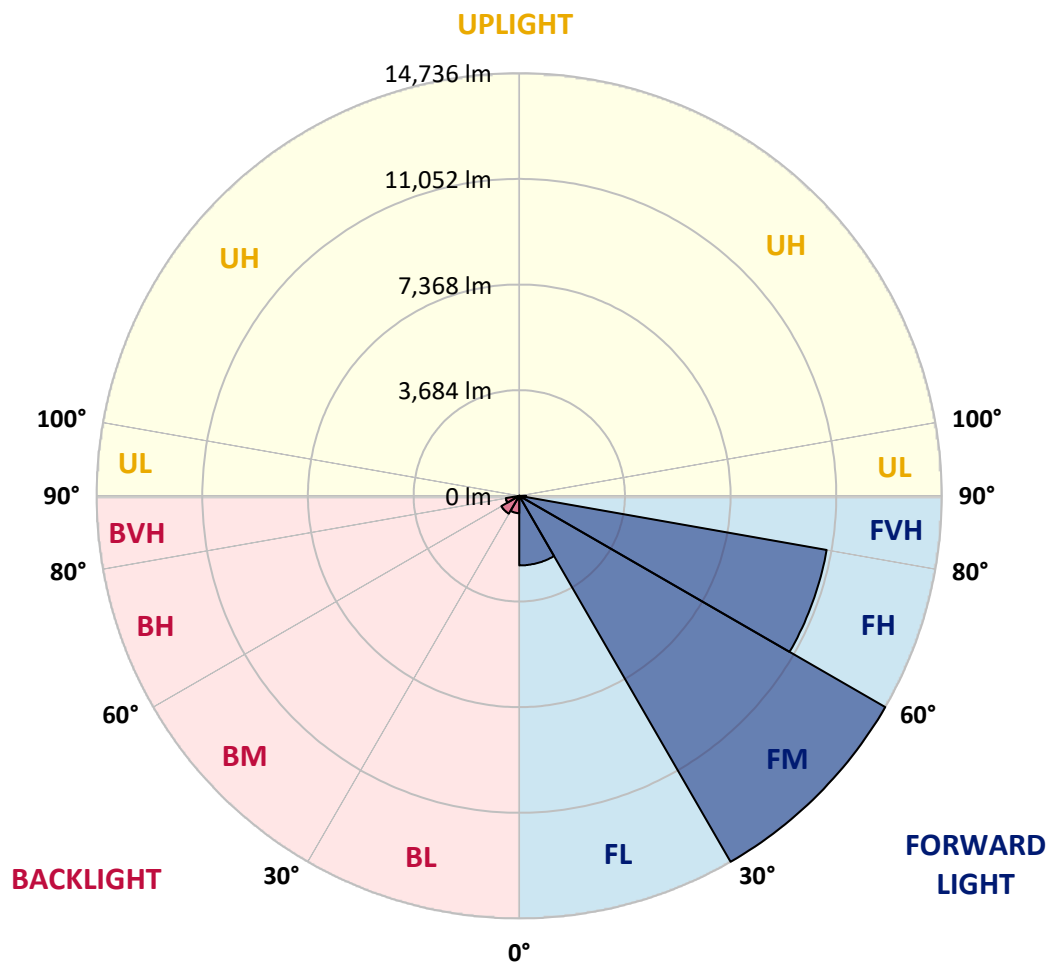
CATALOG NUMBER: GLEON-SA6C-740-U-T2-HSS

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

| Zone |             | Lumens  | % Fixture | Zone Rating/Lumen Limit |      |          |
|------|-------------|---------|-----------|-------------------------|------|----------|
|      |             |         |           | B                       | U    | G        |
| FL   | (0°-30°)    | 2428.4  | 8.1       |                         |      |          |
| FM   | (30°-60°)   | 14735.9 | 49.0      |                         |      |          |
| FH   | (60°-80°)   | 10883.2 | 36.2      |                         |      | G4/12000 |
| FVH  | (80°-90°)   | 242.2   | 0.8       |                         |      | G3/500   |
| BL   | (0°-30°)    | 603.8   | 2.0       | B2/1000                 |      |          |
| BM   | (30°-60°)   | 719.8   | 2.4       | B1/1000                 |      |          |
| BH   | (60°-80°)   | 475.7   | 1.6       | B1/500                  |      | G1/500   |
| BVH  | (80°-90°)   | 6.0     | 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



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**CANDELA DISTRIBUTION (FULL):**

|       | 0°      | 5°      | 15°     | 25°     | 35°     | 45°     | 55°     | 65°     | 66°     | 75°     | 85°     |
|-------|---------|---------|---------|---------|---------|---------|---------|---------|---------|---------|---------|
| 0°    | 3424.9  | 3424.9  | 3424.9  | 3424.9  | 3424.9  | 3424.9  | 3424.9  | 3424.9  | 3424.9  | 3424.9  | 3424.9  |
| 2.5°  | 4031.0  | 4013.8  | 4006.7  | 3975.2  | 3920.9  | 3879.5  | 3799.4  | 3706.5  | 3689.4  | 3599.3  | 3489.2  |
| 5°    | 4554.2  | 4539.9  | 4529.9  | 4485.5  | 4429.8  | 4325.4  | 4179.6  | 4006.7  | 3973.8  | 3802.3  | 3582.1  |
| 7.5°  | 4918.7  | 4944.4  | 4944.4  | 4915.8  | 4845.8  | 4767.1  | 4588.5  | 4352.6  | 4311.2  | 4048.1  | 3706.5  |
| 10°   | 5131.6  | 5163.1  | 5187.4  | 5211.7  | 5201.7  | 5170.2  | 5001.6  | 4735.7  | 4685.7  | 4336.9  | 3850.9  |
| 12.5° | 5151.7  | 5183.1  | 5251.7  | 5353.2  | 5451.8  | 5523.3  | 5417.5  | 5160.2  | 5103.1  | 4671.4  | 4022.4  |
| 15°   | 5040.2  | 5073.0  | 5178.8  | 5376.1  | 5614.8  | 5823.5  | 5857.8  | 5630.5  | 5571.9  | 5070.2  | 4236.8  |
| 17.5° | 4845.8  | 4867.2  | 5018.7  | 5291.7  | 5666.2  | 6049.3  | 6256.6  | 6135.1  | 6080.8  | 5526.2  | 4475.5  |
| 20°   | 4701.4  | 4717.1  | 4850.0  | 5143.1  | 5634.8  | 6190.8  | 6634.0  | 6671.1  | 6614.0  | 6015.0  | 4734.3  |
| 22.5° | 4948.7  | 4977.3  | 4981.6  | 5120.2  | 5549.0  | 6260.9  | 6965.6  | 7198.6  | 7155.7  | 6533.9  | 4988.7  |
| 25°   | 5624.8  | 5657.7  | 5549.0  | 5463.3  | 5621.9  | 6292.3  | 7250.1  | 7738.9  | 7704.6  | 7092.8  | 5244.6  |
| 27.5° | 6518.2  | 6552.5  | 6412.4  | 6156.5  | 6003.6  | 6411.0  | 7503.1  | 8287.8  | 8286.4  | 7684.6  | 5520.4  |
| 30°   | 7395.9  | 7430.2  | 7287.2  | 7031.4  | 6679.7  | 6746.9  | 7721.8  | 8862.4  | 8871.0  | 8295.0  | 5813.5  |
| 32.5° | 8316.4  | 8359.3  | 8212.1  | 7883.3  | 7515.9  | 7327.2  | 8029.1  | 9439.9  | 9488.5  | 9002.5  | 6143.7  |
| 35°   | 9362.7  | 9368.5  | 9161.2  | 8816.7  | 8393.6  | 8103.4  | 8522.2  | 10087.5 | 10203.3 | 9878.8  | 6562.5  |
| 37.5° | 10389.1 | 10430.5 | 10260.4 | 9717.2  | 9328.4  | 8999.7  | 9255.5  | 10896.5 | 11060.9 | 10949.4 | 7110.0  |
| 40°   | 11149.5 | 11236.7 | 11212.4 | 10626.4 | 10257.6 | 10023.1 | 10166.1 | 11858.5 | 12067.2 | 12195.9 | 7800.4  |
| 42.5° | 11627.0 | 11692.7 | 11804.2 | 11451.1 | 11116.7 | 11155.3 | 11241.0 | 12979.2 | 13236.5 | 13616.7 | 8593.7  |
| 45°   | 12174.4 | 12205.9 | 12298.8 | 12143.0 | 11917.1 | 12305.9 | 12381.7 | 14241.4 | 14511.5 | 15144.8 | 9474.2  |
| 47.5° | 12843.4 | 12917.7 | 12943.5 | 12800.5 | 12697.6 | 13323.7 | 13480.9 | 15389.2 | 15768.0 | 16781.5 | 10406.2 |
| 50°   | 13695.3 | 13715.4 | 13759.7 | 13666.8 | 13563.8 | 14198.5 | 14467.2 | 16594.2 | 16938.7 | 18423.9 | 11325.4 |
| 52.5° | 14528.7 | 14600.2 | 14754.5 | 14695.9 | 14654.5 | 14943.2 | 15346.3 | 17680.6 | 18065.1 | 19793.3 | 12243.0 |
| 55°   | 14768.8 | 14830.3 | 15363.5 | 15728.0 | 16065.3 | 15860.9 | 16186.8 | 18654.0 | 19070.0 | 21016.9 | 13126.4 |
| 57.5° | 13809.7 | 13934.1 | 14857.5 | 15806.6 | 17206.0 | 17287.5 | 17341.8 | 19653.2 | 20026.3 | 21954.6 | 14045.6 |
| 60°   | 11385.4 | 11409.7 | 12924.9 | 14553.0 | 17017.3 | 18532.5 | 19028.5 | 20726.7 | 21039.7 | 22828.0 | 15146.2 |
| 62.5° | 7241.5  | 7488.8  | 9151.2  | 11449.7 | 15021.9 | 18352.4 | 21068.3 | 22350.5 | 22464.9 | 23875.7 | 16724.3 |
| 65°   | 3449.2  | 3609.3  | 4807.2  | 7074.2  | 10880.8 | 16046.7 | 22476.3 | 25288.0 | 25339.5 | 25952.7 | 18832.7 |
| 67.5° | 1909.7  | 1986.9  | 2557.2  | 3808.0  | 6361.0  | 11348.2 | 21907.4 | 28767.2 | 28815.8 | 28074.0 | 20682.4 |
| 69°   | 1493.8  | 1559.5  | 2008.3  | 2870.3  | 4312.6  | 8156.3  | 19824.7 | 29786.4 | 29930.8 | 28681.5 | 20748.1 |
| 70°   | 1267.9  | 1332.2  | 1729.6  | 2424.3  | 3467.8  | 6302.3  | 17646.3 | 29533.4 | 29686.3 | 28624.3 | 20257.8 |
| 72.5° | 776.2   | 813.3   | 1152.1  | 1706.7  | 2324.2  | 3170.5  | 10882.2 | 24976.4 | 25235.1 | 26257.1 | 17410.4 |
| 75°   | 523.2   | 543.2   | 720.4   | 1177.8  | 1662.4  | 1632.4  | 5653.4  | 17604.8 | 18165.2 | 20425.1 | 12859.1 |
| 77.5° | 374.5   | 393.1   | 483.1   | 761.9   | 1165.0  | 1077.8  | 2560.1  | 10940.8 | 11060.9 | 12250.2 | 7012.8  |
| 80°   | 213.0   | 230.1   | 341.6   | 453.1   | 790.5   | 719.0   | 1017.8  | 5226.0  | 5286.0  | 5253.1  | 2341.4  |
| 82.5° | 111.5   | 125.8   | 187.3   | 298.8   | 507.4   | 470.3   | 423.1   | 1749.6  | 1758.2  | 1462.3  | 513.2   |
| 85°   | 21.4    | 25.7    | 92.9    | 204.4   | 261.6   | 204.4   | 173.0   | 410.2   | 418.8   | 370.2   | 127.2   |
| 87.5° | 0.0     | 1.4     | 37.2    | 45.7    | 51.5    | 52.9    | 55.7    | 80.0    | 85.8    | 115.8   | 34.3    |
| 90°   | 0.0     | 0.0     | 0.0     | 0.0     | 0.0     | 0.0     | 0.0     | 0.0     | 0.0     | 0.0     | 0.0     |



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**CANDELA DISTRIBUTION (continued):**

|       | 90°     | 95°    | 105°   | 115°   | 125°   | 135°   | 145°   | 155°   | 165°   | 175°   | 180°   |
|-------|---------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|
| 0°    | 3424.9  | 3424.9 | 3424.9 | 3424.9 | 3424.9 | 3424.9 | 3424.9 | 3424.9 | 3424.9 | 3424.9 | 3424.9 |
| 2.5°  | 3440.6  | 3389.2 | 3290.5 | 3176.2 | 3087.6 | 3000.4 | 2931.8 | 2860.3 | 2834.6 | 2821.7 | 2820.3 |
| 5°    | 3474.9  | 3366.3 | 3157.6 | 2943.2 | 2767.4 | 2601.6 | 2482.9 | 2370.0 | 2317.1 | 2292.8 | 2282.8 |
| 7.5°  | 3532.1  | 3357.7 | 3021.8 | 2694.5 | 2441.5 | 2234.2 | 2069.8 | 1946.9 | 1885.4 | 1859.7 | 1849.7 |
| 10°   | 3599.3  | 3346.3 | 2863.1 | 2431.5 | 2108.4 | 1894.0 | 1731.0 | 1609.5 | 1542.4 | 1513.8 | 1499.5 |
| 12.5° | 3677.9  | 3326.3 | 2680.2 | 2165.6 | 1823.9 | 1609.5 | 1412.3 | 1262.2 | 1185.0 | 1152.1 | 1136.4 |
| 15°   | 3775.1  | 3306.3 | 2488.6 | 1915.4 | 1573.8 | 1312.2 | 1096.4 | 994.9  | 979.2  | 973.4  | 974.9  |
| 17.5° | 3870.9  | 3274.8 | 2279.9 | 1668.1 | 1310.8 | 1024.9 | 914.8  | 909.1  | 912.0  | 912.0  | 912.0  |
| 20°   | 3956.7  | 3203.3 | 2052.7 | 1456.6 | 1060.6 | 864.8  | 841.9  | 831.9  | 824.8  | 819.1  | 811.9  |
| 22.5° | 4023.8  | 3107.6 | 1834.0 | 1246.5 | 866.2  | 791.9  | 756.2  | 724.7  | 699.0  | 681.8  | 673.3  |
| 25°   | 4069.6  | 2980.4 | 1633.8 | 1044.9 | 779.0  | 720.4  | 656.1  | 603.2  | 563.2  | 538.9  | 528.9  |
| 27.5° | 4103.9  | 2843.1 | 1455.2 | 874.8  | 719.0  | 637.5  | 553.2  | 490.3  | 448.8  | 427.4  | 418.8  |
| 30°   | 4128.2  | 2687.3 | 1297.9 | 769.0  | 651.8  | 550.3  | 460.3  | 398.8  | 368.8  | 357.4  | 351.6  |
| 32.5° | 4151.1  | 2514.4 | 1149.3 | 719.0  | 588.9  | 470.3  | 385.9  | 338.8  | 320.2  | 305.9  | 301.6  |
| 35°   | 4208.2  | 2354.3 | 1007.7 | 666.1  | 524.6  | 401.7  | 331.6  | 297.3  | 278.7  | 270.2  | 267.3  |
| 37.5° | 4344.0  | 2235.6 | 872.0  | 611.8  | 460.3  | 347.4  | 290.2  | 265.9  | 248.7  | 240.1  | 237.3  |
| 40°   | 4562.7  | 2175.6 | 757.6  | 553.2  | 397.4  | 305.9  | 263.0  | 240.1  | 221.6  | 208.7  | 205.8  |
| 42.5° | 4884.4  | 2184.2 | 677.5  | 494.6  | 347.4  | 273.0  | 237.3  | 210.1  | 190.1  | 178.7  | 175.8  |
| 45°   | 5274.6  | 2247.1 | 621.8  | 437.4  | 305.9  | 247.3  | 208.7  | 180.1  | 161.5  | 151.5  | 148.7  |
| 47.5° | 5697.7  | 2348.5 | 576.1  | 385.9  | 273.0  | 223.0  | 180.1  | 150.1  | 134.4  | 125.8  | 124.4  |
| 50°   | 6143.7  | 2447.2 | 528.9  | 335.9  | 244.4  | 198.7  | 151.5  | 124.4  | 111.5  | 104.3  | 101.5  |
| 52.5° | 6595.4  | 2561.5 | 486.0  | 290.2  | 220.1  | 170.1  | 125.8  | 101.5  | 91.5   | 85.8   | 82.9   |
| 55°   | 7081.4  | 2647.3 | 444.6  | 254.4  | 195.8  | 144.4  | 104.3  | 84.3   | 75.8   | 68.6   | 67.2   |
| 57.5° | 7653.2  | 2780.2 | 401.7  | 220.1  | 167.2  | 120.1  | 85.8   | 67.2   | 60.0   | 52.9   | 51.5   |
| 60°   | 8425.0  | 2936.0 | 355.9  | 194.4  | 137.2  | 98.6   | 70.0   | 54.3   | 45.7   | 40.0   | 38.6   |
| 62.5° | 9442.8  | 3109.0 | 298.8  | 170.1  | 111.5  | 80.0   | 55.7   | 42.9   | 32.9   | 25.7   | 25.7   |
| 65°   | 10733.6 | 3390.6 | 244.4  | 142.9  | 91.5   | 65.8   | 42.9   | 31.4   | 18.6   | 11.4   | 11.4   |
| 67.5° | 11486.9 | 3439.2 | 197.3  | 117.2  | 74.3   | 55.7   | 35.7   | 21.4   | 5.7    | 1.4    | 0.0    |
| 69°   | 11245.3 | 3157.6 | 167.2  | 100.1  | 64.3   | 52.9   | 32.9   | 15.7   | 2.9    | 0.0    | 0.0    |
| 70°   | 10790.7 | 2887.4 | 147.2  | 88.6   | 58.6   | 50.0   | 31.4   | 11.4   | 2.9    | 0.0    | 0.0    |
| 72.5° | 8916.8  | 2055.5 | 111.5  | 65.8   | 42.9   | 44.3   | 28.6   | 7.1    | 2.9    | 0.0    | 0.0    |
| 75°   | 6495.3  | 1249.3 | 80.0   | 45.7   | 27.2   | 32.9   | 20.0   | 2.9    | 1.4    | 0.0    | 0.0    |
| 77.5° | 3613.6  | 588.9  | 50.0   | 25.7   | 17.2   | 20.0   | 10.0   | 0.0    | 0.0    | 0.0    | 0.0    |
| 80°   | 1173.6  | 160.1  | 22.9   | 14.3   | 10.0   | 11.4   | 4.3    | 0.0    | 0.0    | 0.0    | 0.0    |
| 82.5° | 217.3   | 45.7   | 12.9   | 7.1    | 2.9    | 2.9    | 0.0    | 0.0    | 0.0    | 0.0    | 0.0    |
| 85°   | 47.2    | 18.6   | 7.1    | 2.9    | 0.0    | 0.0    | 0.0    | 0.0    | 0.0    | 0.0    | 0.0    |
| 87.5° | 15.7    | 5.7    | 1.4    | 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

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

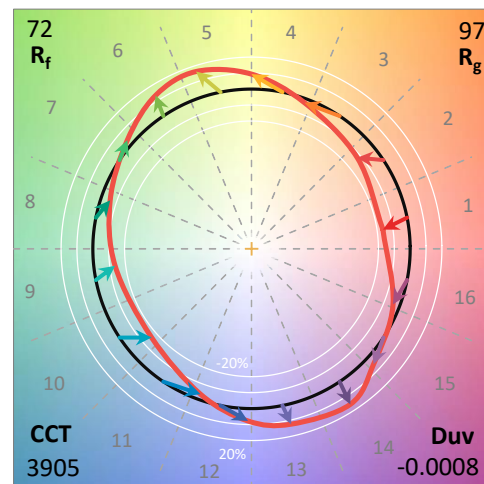
### Test Information

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

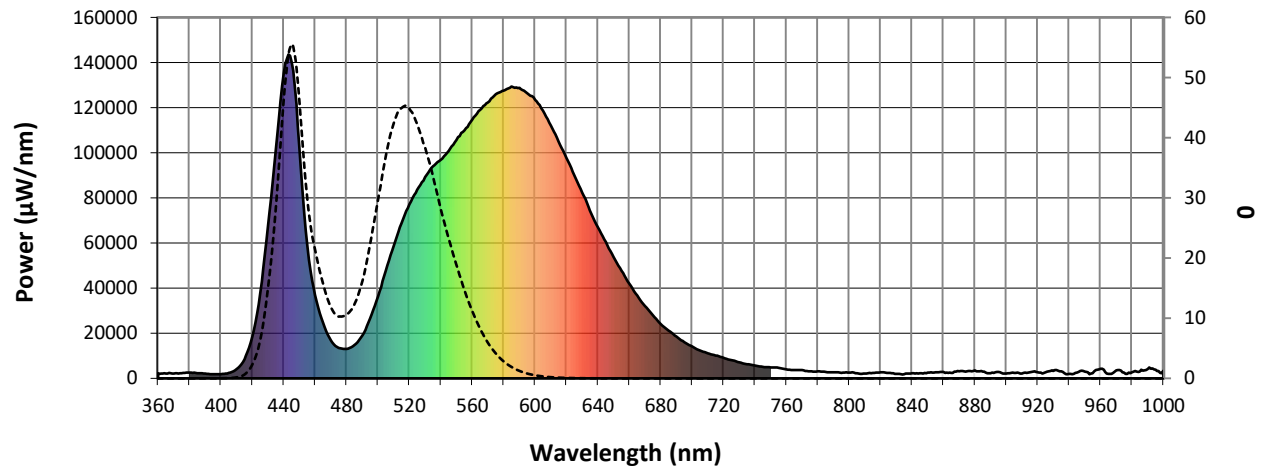


#####

| 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              |           |                  |                  |

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### Melanopic Flux vs. Wavelength



**Melanopic Lumens: 3927.2**

**M/P: 0.55**

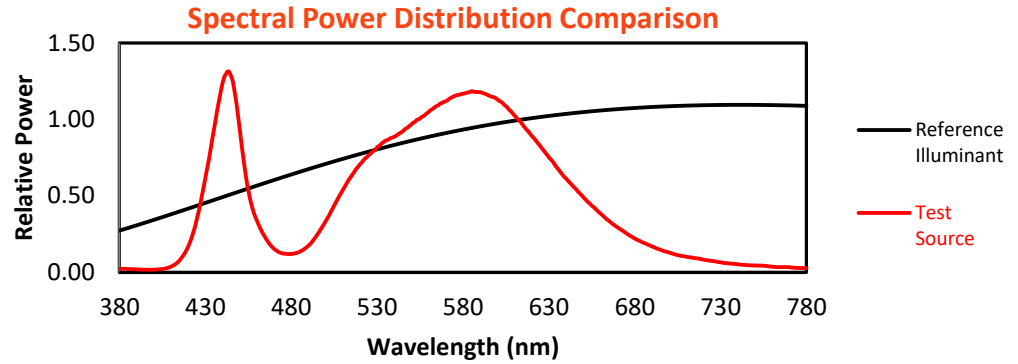
| λ<br>(nm) | Power<br>(μW/nm) | Lumens<br>(Φ/nm) | λ<br>(nm) | Power<br>(μW/nm) | Lumens<br>(Φ/nm) | λ<br>(nm) | Power<br>(μW/nm) | Lumens<br>(Φ/nm) | λ<br>(nm) | Power<br>(μW/nm) | Lumens<br>(Φ/nm) | λ<br>(nm) | Power<br>(μW/nm) | Lumens<br>(Φ/nm) |
|-----------|------------------|------------------|-----------|------------------|------------------|-----------|------------------|------------------|-----------|------------------|------------------|-----------|------------------|------------------|
| 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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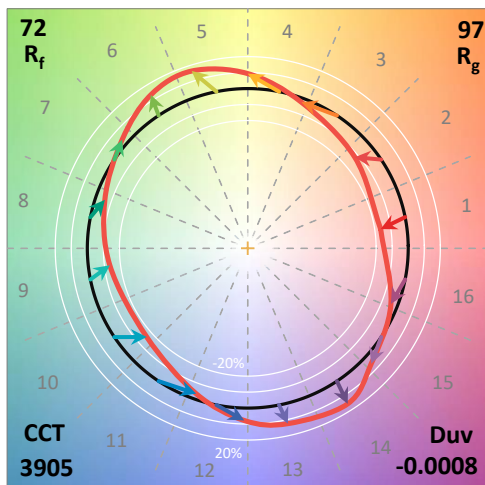
TM-30-18

### Summary

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



### Color Vector Graphics



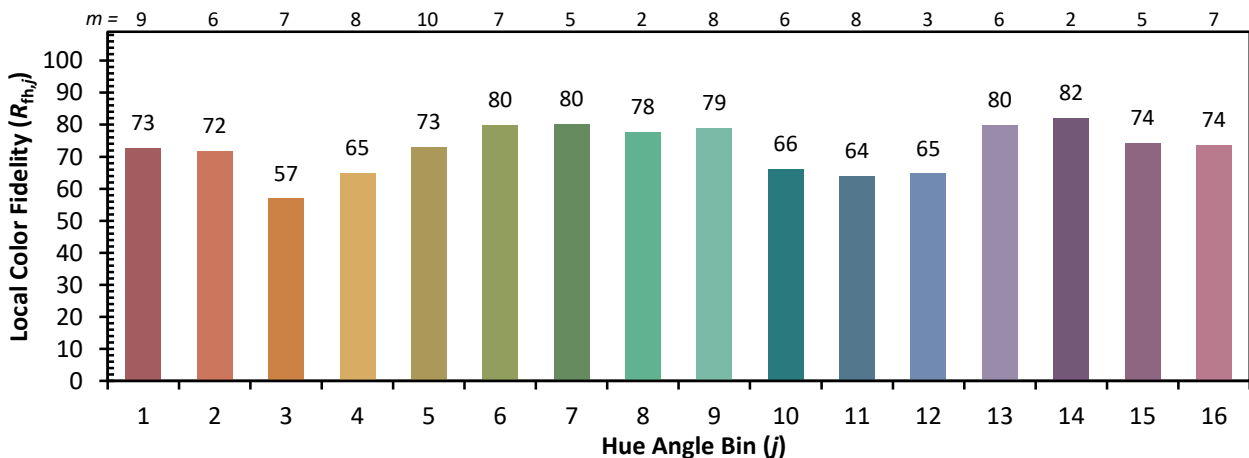
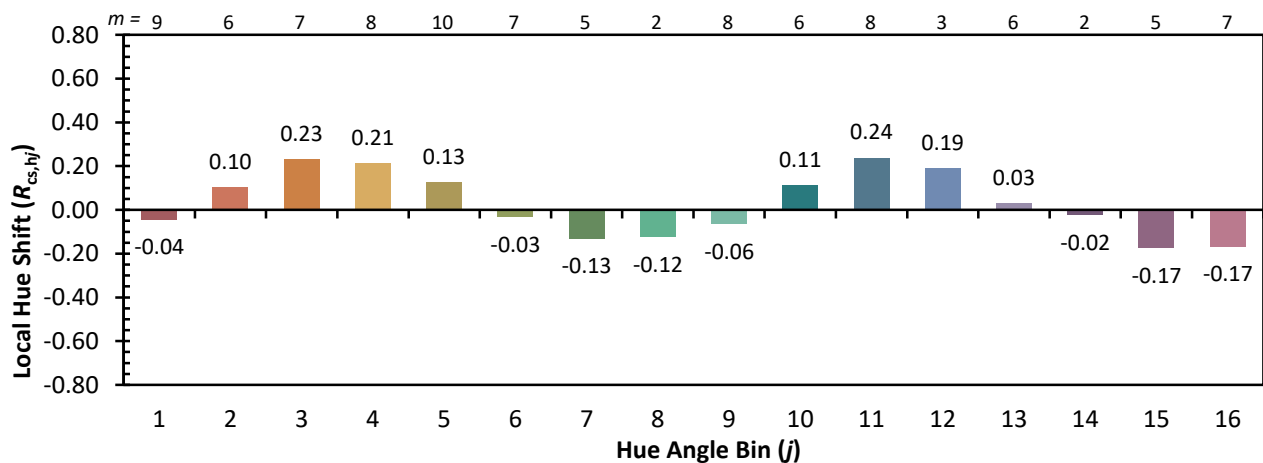
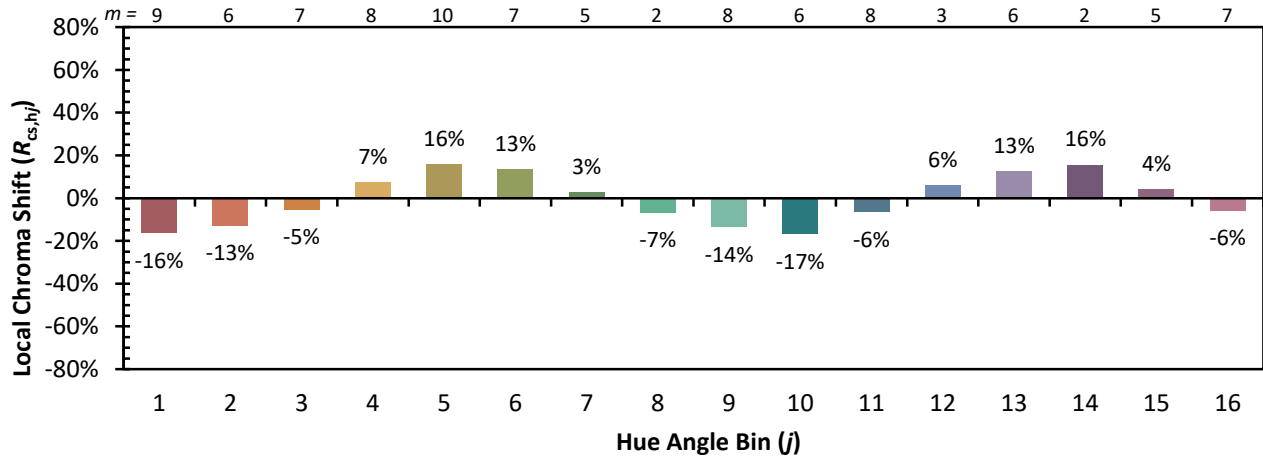


**Individual Sample Fidelity Index ( $R_{f,i}$ )**

|            |            |            |            |
|------------|------------|------------|------------|
| 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)