

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



Scaled data based on original data using  
LM-79-2019 Approved Method: Electrical and Photometric Measurements of Solid-  
State Lighting Products

Test Report Prepared for

Cooper Lighting Solutions

Brand: McGRAW-EDISON

Report Number: P636269

Luminaire Tested: GWS-SA3F-740-U-SL2-W-GRSBK

Issue Date: 1/10/2023

**Test Information**

Test Method: LM-79-2019  
Report Number: P636269  
TEST IS SCALED FROM IESNA LM-79-08 TEST DATA (G2-2209-782-28)  
Test Lab: COOPER LIGHTING SOLUTIONS  
Issue Date: 1/10/2023  
Manufacturer: COOPER LIGHTING SOLUTIONS  
Product Line: McGRAW-EDISON  
Catalog Number: GWS-SA3F-740-U-SL2-W-GRSBK  
Description: GALLEON WALL SLIM LUMINAIRE. (3) LIGHTSQUARES WITH 16 LEDS EACH AND TYPE II SPILL LIGHT ELIMINATOR OPTICS W/ FACTORY INSTALLED GLARE SHIELD, BK  
Light Source: (48) 4000K CCT, 70 CRI LEDS  
Ballast/Driver: -

**Summary**

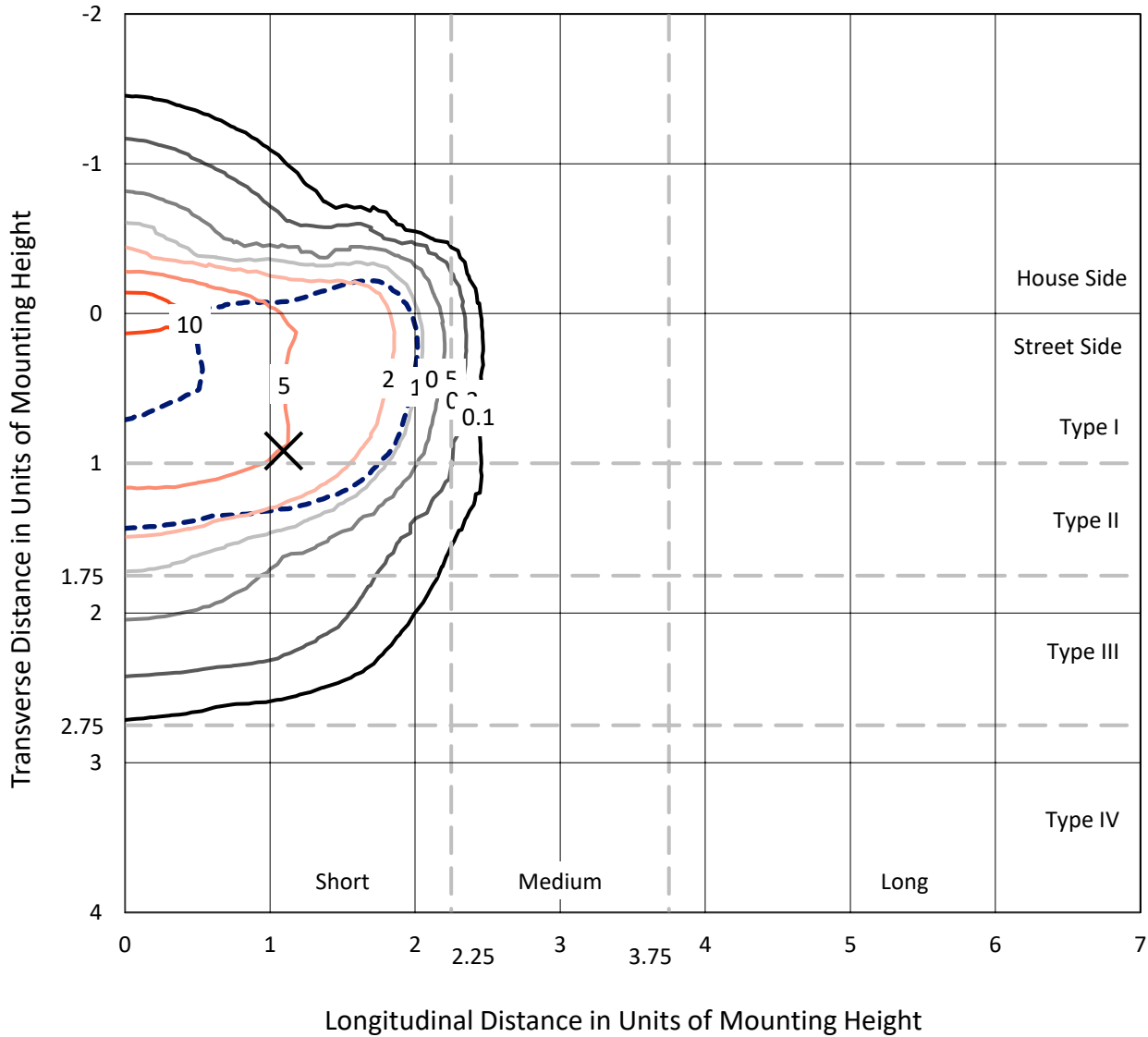
Lumens per Lamp: N/A  
Luminaire Lumens: 14357.1 lumens  
Efficiency: N/A  
Efficacy: 78.4 lumens/watt  
Luminous Opening: Rectangular (W 1.5' x L: 0.5' x H: 0')  
IES Classification: Type II - Short  
BUG Rating: B3 - U0 - G1  
  
Input Watts (W): 183.2  
Input Voltage (V): 120  
Input Current (Ain): NR  
Voltage Rise (V): NR  
Power Factor: NR  
Total Harmonic Distortion (THDi): NR  
Frequency (hertz): 0  
Stabilization Time: NR  
Operation Time: NR  
Ambient Temperature (°C): NR  
Test Distance: 28.75 FT



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### Iso-Footcandle Lines of Horizontal Illumination

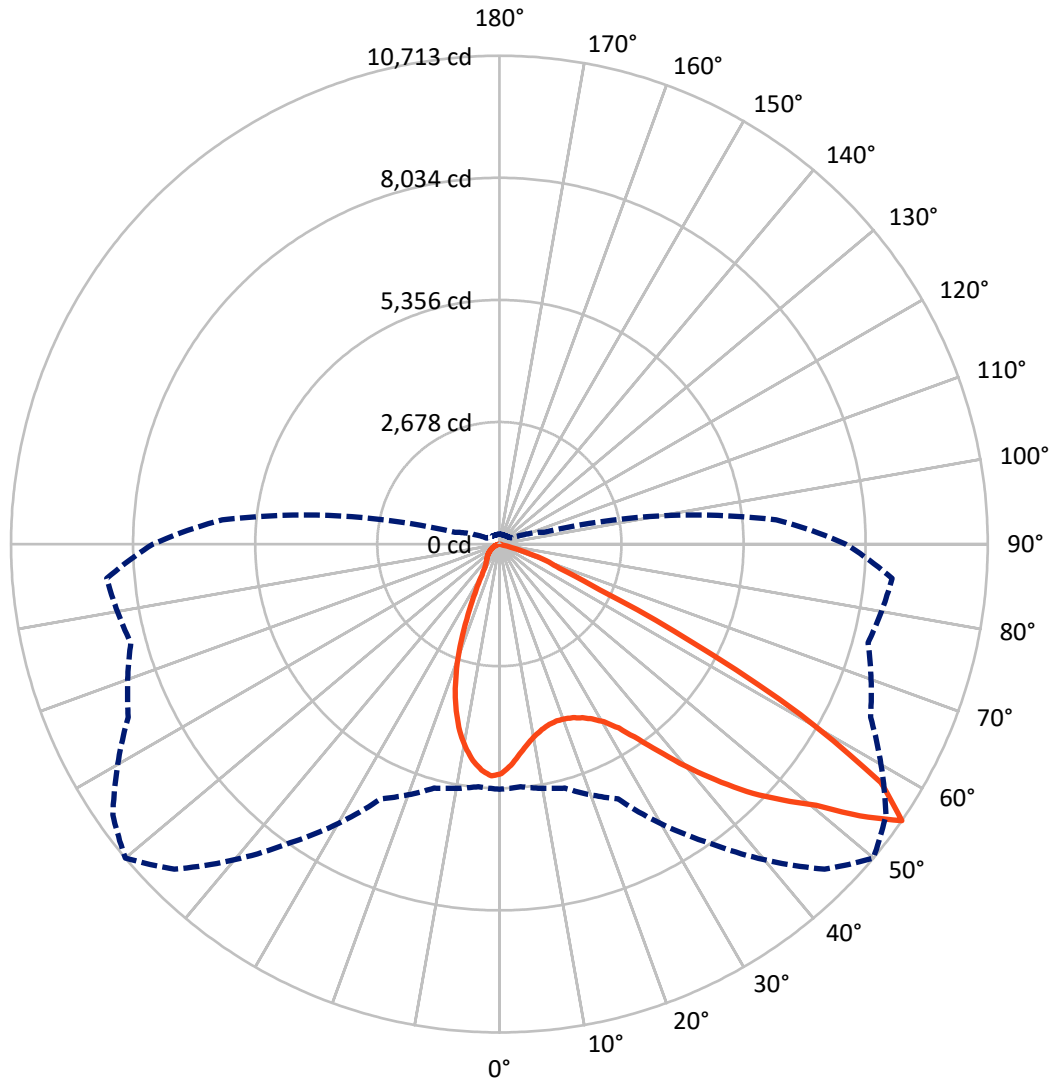
✕ Max cd  
 - - - 1/2 Max cd



Based on 20 foot mounting height. Maximum calculated value = 12.6 fc  
 Type II - Short - N/A

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### Luminous Intensity Polar Plot



— Vertical Plane Through 50-Deg Lateral    - - - Horizontal Cone Through 55-Deg Vertical

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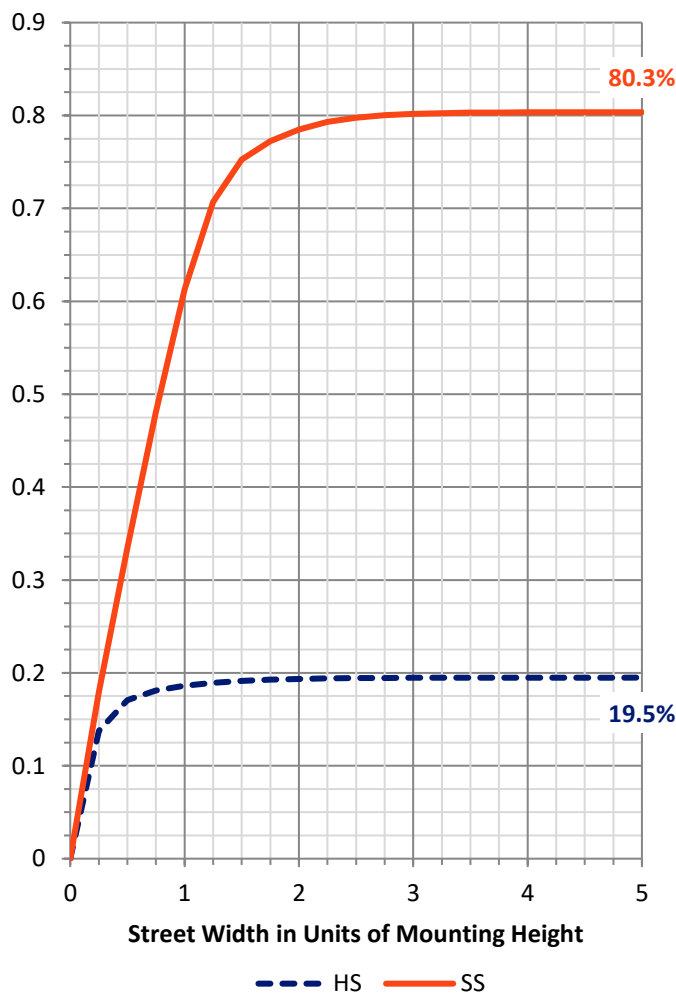
**FLUX DISTRIBUTION:**

|                    |           | Downward | Upward | Total   |
|--------------------|-----------|----------|--------|---------|
| <b>House Side</b>  | Lumens    | 2829.0   | 0.0    | 2829.0  |
|                    | % Fixture | 19.7     | 0.0    | 19.7    |
| <b>Street Side</b> | Lumens    | 11528.1  | 0.0    | 11528.1 |
|                    | % Fixture | 80.3     | 0.0    | 80.3    |
| <b>Total</b>       | Lumens    | 14357.1  | 0.0    | 14357.1 |
|                    | % Fixture | 100.0    | 0.0    | 100.0   |

**ZONAL LUMENS:**

| Zone      | Lumens  | % Fixture |
|-----------|---------|-----------|
| 0°-10°    | 442.4   | 3.1       |
| 10°-20°   | 1088.6  | 7.6       |
| 20°-30°   | 1535.5  | 10.7      |
| 30°-40°   | 2272.3  | 15.8      |
| 40°-50°   | 3278.2  | 22.8      |
| 50°-60°   | 3866.8  | 26.9      |
| 60°-70°   | 1724.9  | 12.0      |
| 70°-80°   | 148.3   | 1.0       |
| 80°-90°   | 0.1     | 0.0       |
| 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°    | 14357.1 | 100.0     |
| 0°-180°   | 14357.1 | 100.0     |

**Coefficient of Utilization**



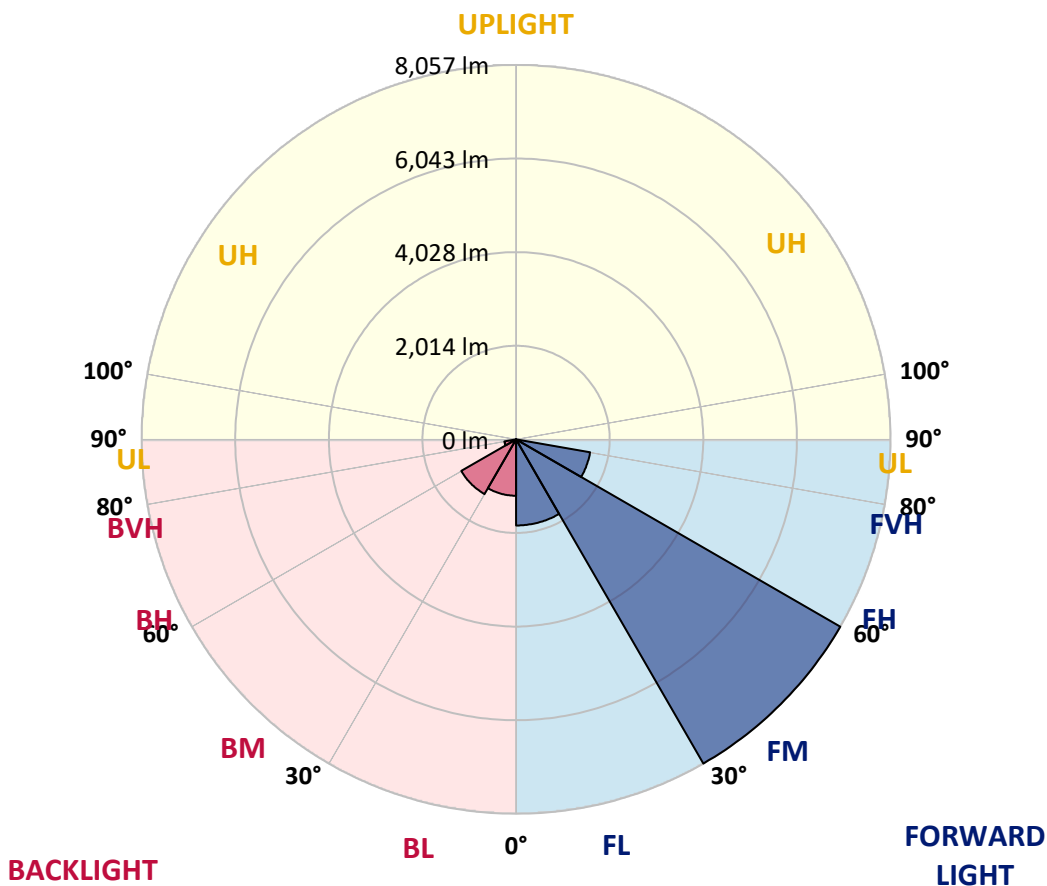
REPORT NUMBER: P636269

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

| Zone           | Lumens | % Fixture | Zone Rating/Lumen Limit |      |         |
|----------------|--------|-----------|-------------------------|------|---------|
|                |        |           | B                       | U    | G       |
| FL (0°-30°)    | 1853.5 | 12.9      |                         |      |         |
| FM (30°-60°)   | 8056.7 | 56.1      |                         |      |         |
| FH (60°-80°)   | 1617.8 | 11.3      |                         |      | G1/1800 |
| FVH (80°-90°)  | 0.0    | 0.0       |                         |      | G0/10   |
| BL (0°-30°)    | 1213.0 | 8.4       | B3/2500                 |      |         |
| BM (30°-60°)   | 1360.6 | 9.5       | B2/2500                 |      |         |
| BH (60°-80°)   | 255.4  | 1.8       | B1/500                  |      | G1/500  |
| BVH (80°-90°)  | 0.1    | 0.0       |                         |      | G0/10   |
| UL (90°-100°)  | 0.0    | 0.0       |                         | U0/0 |         |
| UH (100°-180°) | 0.0    | 0.0       |                         | U0/0 |         |

**BUG Rating: B3-U0-G1**  
 Type II Short





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**CANDELA DISTRIBUTION (FULL):**

|       | 0°     | 5°     | 15°    | 25°    | 35°    | 45°     | 50°     | 55°     | 65°    | 75°    | 85°    |
|-------|--------|--------|--------|--------|--------|---------|---------|---------|--------|--------|--------|
| 0°    | 5037.3 | 5037.3 | 5037.3 | 5037.3 | 5037.3 | 5037.3  | 5037.3  | 5037.3  | 5037.3 | 5037.3 | 5037.3 |
| 2.5°  | 4679.7 | 4683.2 | 4685.0 | 4732.3 | 4749.8 | 4819.9  | 4856.7  | 4876.0  | 4926.8 | 4986.4 | 5035.5 |
| 5°    | 4366.0 | 4360.7 | 4369.5 | 4429.1 | 4467.6 | 4571.0  | 4627.1  | 4665.7  | 4777.9 | 4918.1 | 5035.5 |
| 7.5°  | 4092.6 | 4103.1 | 4113.6 | 4178.4 | 4236.3 | 4348.5  | 4429.1  | 4486.9  | 4642.9 | 4851.5 | 5049.5 |
| 10°   | 3899.8 | 3899.8 | 3915.5 | 3989.2 | 4057.5 | 4196.0  | 4276.6  | 4350.2  | 4536.0 | 4791.9 | 5065.3 |
| 12.5° | 3757.8 | 3759.5 | 3778.8 | 3863.0 | 3941.8 | 4085.6  | 4169.7  | 4241.5  | 4446.6 | 4732.3 | 5068.8 |
| 15°   | 3691.2 | 3685.9 | 3701.7 | 3791.1 | 3878.7 | 4013.7  | 4101.3  | 4171.4  | 4383.5 | 4699.0 | 5086.3 |
| 17.5° | 3673.7 | 3670.2 | 3682.4 | 3770.1 | 3859.5 | 3990.9  | 4076.8  | 4146.9  | 4374.7 | 4709.5 | 5138.9 |
| 20°   | 3724.5 | 3717.5 | 3712.2 | 3787.6 | 3871.7 | 4001.4  | 4090.8  | 4169.7  | 4416.8 | 4767.4 | 5219.6 |
| 22.5° | 3845.4 | 3845.4 | 3833.2 | 3870.0 | 3926.1 | 4043.5  | 4136.4  | 4239.8  | 4527.2 | 4883.0 | 5338.7 |
| 25°   | 4068.0 | 4050.5 | 4027.7 | 4043.5 | 4036.5 | 4110.1  | 4220.5  | 4364.2  | 4735.8 | 5074.1 | 5484.2 |
| 27.5° | 4322.2 | 4337.9 | 4299.4 | 4301.1 | 4239.8 | 4213.5  | 4341.4  | 4558.8  | 5046.0 | 5344.0 | 5699.8 |
| 30°   | 4667.4 | 4655.2 | 4656.9 | 4651.7 | 4509.7 | 4385.3  | 4523.7  | 4812.9  | 5436.9 | 5755.9 | 5980.2 |
| 32.5° | 4937.4 | 4954.9 | 5012.7 | 5046.0 | 4860.2 | 4660.4  | 4807.7  | 5158.2  | 5882.1 | 6225.6 | 6323.8 |
| 35°   | 5223.1 | 5254.6 | 5372.0 | 5480.7 | 5324.7 | 5095.1  | 5252.9  | 5615.7  | 6301.0 | 6690.1 | 6718.1 |
| 37.5° | 5524.5 | 5587.6 | 5727.8 | 5918.9 | 5894.3 | 5691.0  | 5834.7  | 6153.7  | 6630.5 | 6970.5 | 7044.1 |
| 40°   | 5869.8 | 5931.1 | 6160.8 | 6435.9 | 6493.8 | 6448.2  | 6495.5  | 6681.3  | 6847.8 | 6982.8 | 7184.3 |
| 42.5° | 6248.4 | 6332.5 | 6623.5 | 6991.5 | 7208.9 | 7249.2  | 7138.8  | 7119.5  | 6942.5 | 6842.6 | 7154.5 |
| 45°   | 6695.3 | 6793.5 | 7123.0 | 7599.7 | 7945.0 | 7999.3  | 7808.3  | 7561.2  | 7002.0 | 6739.1 | 7065.1 |
| 47.5° | 7196.6 | 7289.5 | 7617.2 | 8190.4 | 8703.9 | 8725.0  | 8391.9  | 7994.1  | 7179.1 | 6858.3 | 7133.5 |
| 50°   | 7364.9 | 7422.7 | 7706.6 | 8379.7 | 9326.1 | 9487.4  | 9005.4  | 8481.3  | 7534.9 | 7208.9 | 7466.5 |
| 52.5° | 6786.5 | 6809.3 | 7056.4 | 7736.4 | 9199.9 | 10235.8 | 9901.0  | 9208.7  | 8167.6 | 7743.4 | 7980.1 |
| 55°   | 5377.3 | 5340.5 | 5540.3 | 6164.3 | 7995.8 | 10083.3 | 10712.5 | 10351.5 | 8982.6 | 8370.9 | 8647.8 |
| 57.5° | 3761.3 | 3717.5 | 3671.9 | 4094.3 | 5966.2 | 8547.9  | 9871.2  | 10511.0 | 9759.1 | 8993.1 | 9368.2 |
| 60°   | 3091.8 | 3049.7 | 2828.9 | 2634.3 | 3607.1 | 6138.0  | 7582.2  | 8786.3  | 9696.0 | 8961.6 | 9345.4 |
| 62.5° | 2671.1 | 2646.6 | 2557.2 | 2292.5 | 2122.5 | 3503.7  | 4748.1  | 5901.4  | 7440.2 | 7037.1 | 7058.1 |
| 65°   | 2098.0 | 2091.0 | 2152.3 | 2180.4 | 1877.1 | 1938.5  | 2422.2  | 3067.2  | 4022.5 | 3792.8 | 3596.5 |
| 67.5° | 1433.7 | 1417.9 | 1533.6 | 1885.9 | 1805.3 | 1530.1  | 1417.9  | 1430.2  | 1740.4 | 1063.9 | 844.8  |
| 70°   | 911.4  | 874.6  | 876.4  | 1169.1 | 1468.8 | 1207.6  | 1093.7  | 962.2   | 865.8  | 157.7  | 178.8  |
| 72.5° | 583.7  | 560.9  | 482.0  | 527.6  | 680.0  | 588.9   | 594.2   | 511.8   | 341.8  | 84.1   | 98.2   |
| 75°   | 245.4  | 226.1  | 173.5  | 138.5  | 136.7  | 85.9    | 75.4    | 70.1    | 47.3   | 47.3   | 50.8   |
| 77.5° | 1.8    | 0.0    | 0.0    | 1.8    | 3.5    | 1.8     | 1.8     | 3.5     | 7.0    | 10.5   | 12.3   |
| 80°   | 0.0    | 0.0    | 0.0    | 0.0    | 0.0    | 0.0     | 0.0     | 0.0     | 0.0    | 0.0    | 1.8    |
| 82.5° | 0.0    | 0.0    | 0.0    | 0.0    | 0.0    | 0.0     | 0.0     | 0.0     | 0.0    | 0.0    | 0.0    |
| 85°   | 0.0    | 0.0    | 0.0    | 0.0    | 0.0    | 0.0     | 0.0     | 0.0     | 0.0    | 0.0    | 0.0    |
| 87.5° | 0.0    | 0.0    | 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    |



REPORT NUMBER: P636269

CATALOG NUMBER: GWS-SA3F-740-U-SL2-W-GRSBK

**CANDELA DISTRIBUTION (continued):**

|       | 90°    | 95°    | 105°   | 115°   | 125°   | 135°   | 145°   | 155°   | 165°   | 175°   | 180°   |
|-------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|
| 0°    | 5037.3 | 5037.3 | 5037.3 | 5037.3 | 5037.3 | 5037.3 | 5037.3 | 5037.3 | 5037.3 | 5037.3 | 5037.3 |
| 2.5°  | 5065.3 | 5023.2 | 5070.6 | 5088.1 | 5086.3 | 5088.1 | 5037.3 | 5002.2 | 5000.5 | 4956.6 | 4935.6 |
| 5°    | 5084.6 | 5051.3 | 5086.3 | 5063.6 | 5009.2 | 4940.9 | 4849.7 | 4770.9 | 4735.8 | 4685.0 | 4660.4 |
| 7.5°  | 5121.4 | 5086.3 | 5081.1 | 4989.9 | 4855.0 | 4711.3 | 4550.0 | 4406.3 | 4329.2 | 4236.3 | 4241.5 |
| 10°   | 5147.7 | 5107.4 | 5039.0 | 4853.2 | 4628.9 | 4399.3 | 4159.2 | 3945.3 | 3810.4 | 3685.9 | 3664.9 |
| 12.5° | 5158.2 | 5098.6 | 4939.1 | 4658.7 | 4343.2 | 4043.5 | 3691.2 | 3386.2 | 3175.9 | 3012.9 | 2990.1 |
| 15°   | 5177.5 | 5081.1 | 4811.2 | 4423.8 | 3990.9 | 3566.8 | 3118.1 | 2700.9 | 2422.2 | 2234.7 | 2250.5 |
| 17.5° | 5207.3 | 5061.8 | 4667.4 | 4160.9 | 3612.3 | 3012.9 | 2406.5 | 1928.0 | 1672.1 | 1563.4 | 1565.2 |
| 20°   | 5249.3 | 5039.0 | 4509.7 | 3871.7 | 3158.4 | 2387.2 | 1682.6 | 1321.5 | 1249.7 | 1246.2 | 1240.9 |
| 22.5° | 5305.4 | 5016.2 | 4341.4 | 3554.5 | 2620.3 | 1672.1 | 1120.0 | 1007.8 | 1037.6 | 1095.4 | 1106.0 |
| 25°   | 5372.0 | 4988.2 | 4153.9 | 3196.9 | 2033.1 | 1097.2 | 839.5  | 822.0  | 893.9  | 971.0  | 988.5  |
| 27.5° | 5475.4 | 4974.2 | 3940.1 | 2790.3 | 1426.7 | 787.0  | 687.1  | 697.6  | 762.4  | 827.3  | 843.1  |
| 30°   | 5650.7 | 5000.5 | 3707.0 | 2334.6 | 916.7  | 627.5  | 595.9  | 611.7  | 646.7  | 680.0  | 694.1  |
| 32.5° | 5889.1 | 5077.6 | 3480.9 | 1836.8 | 653.8  | 545.1  | 538.1  | 546.8  | 560.9  | 580.1  | 585.4  |
| 35°   | 6167.8 | 5210.8 | 3247.8 | 1314.5 | 539.8  | 497.8  | 490.8  | 490.8  | 497.8  | 501.3  | 503.0  |
| 37.5° | 6397.4 | 5351.0 | 3028.7 | 874.6  | 483.7  | 461.0  | 450.4  | 445.2  | 443.4  | 446.9  | 448.7  |
| 40°   | 6497.3 | 5408.8 | 2790.3 | 636.2  | 443.4  | 427.7  | 411.9  | 396.1  | 396.1  | 408.4  | 410.1  |
| 42.5° | 6427.2 | 5344.0 | 2515.1 | 525.8  | 415.4  | 392.6  | 368.1  | 354.0  | 361.1  | 373.3  | 376.8  |
| 45°   | 6278.2 | 5184.5 | 2211.9 | 464.5  | 387.3  | 357.6  | 329.5  | 320.7  | 327.8  | 343.5  | 347.0  |
| 47.5° | 6253.6 | 5079.3 | 1849.1 | 424.2  | 357.6  | 327.8  | 298.0  | 289.2  | 298.0  | 310.2  | 313.7  |
| 50°   | 6497.3 | 5170.5 | 1446.0 | 389.1  | 329.5  | 296.2  | 271.7  | 262.9  | 268.2  | 275.2  | 278.7  |
| 52.5° | 6942.5 | 5508.7 | 1167.3 | 355.8  | 296.2  | 264.7  | 248.9  | 238.4  | 238.4  | 245.4  | 247.1  |
| 55°   | 7599.7 | 6099.4 | 1007.8 | 317.2  | 257.6  | 240.1  | 226.1  | 215.6  | 215.6  | 219.1  | 220.8  |
| 57.5° | 8356.9 | 6814.5 | 1044.6 | 266.4  | 226.1  | 217.3  | 205.1  | 196.3  | 199.8  | 199.8  | 199.8  |
| 60°   | 8251.7 | 6761.9 | 1118.2 | 224.3  | 199.8  | 196.3  | 185.8  | 182.3  | 191.0  | 184.0  | 180.5  |
| 62.5° | 6078.4 | 4671.0 | 585.4  | 184.0  | 171.8  | 168.3  | 161.2  | 168.3  | 180.5  | 161.2  | 154.2  |
| 65°   | 2951.6 | 2261.0 | 234.9  | 150.7  | 145.5  | 142.0  | 138.5  | 149.0  | 156.0  | 126.2  | 119.2  |
| 67.5° | 694.1  | 564.4  | 152.5  | 127.9  | 120.9  | 113.9  | 117.4  | 119.2  | 113.9  | 85.9   | 82.4   |
| 70°   | 180.5  | 177.0  | 119.2  | 106.9  | 96.4   | 89.4   | 89.4   | 87.6   | 75.4   | 54.3   | 50.8   |
| 72.5° | 98.2   | 96.4   | 85.9   | 80.6   | 66.6   | 59.6   | 61.3   | 54.3   | 42.1   | 31.5   | 29.8   |
| 75°   | 49.1   | 52.6   | 49.1   | 45.6   | 36.8   | 33.3   | 33.3   | 29.8   | 21.0   | 12.3   | 12.3   |
| 77.5° | 10.5   | 12.3   | 12.3   | 10.5   | 8.8    | 7.0    | 7.0    | 8.8    | 3.5    | 0.0    | 0.0    |
| 80°   | 1.8    | 1.8    | 1.8    | 1.8    | 1.8    | 0.0    | 0.0    | 0.0    | 0.0    | 0.0    | 0.0    |
| 82.5° | 0.0    | 0.0    | 0.0    | 0.0    | 0.0    | 0.0    | 0.0    | 0.0    | 0.0    | 0.0    | 0.0    |
| 85°   | 0.0    | 0.0    | 0.0    | 0.0    | 0.0    | 0.0    | 0.0    | 0.0    | 0.0    | 0.0    | 0.0    |
| 87.5° | 0.0    | 0.0    | 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

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: 4π  
 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 | R9:  | -29.7 |
| CIE u':                   | 0.2273  | R1:       | 68.9 | R10: | 46.2  |
| CIE v':                   | 0.5024  | R2:       | 77.0 | R11: | 68.8  |
| Duv:                      | -0.0008 | R3:       | 84.0 | R12: | 45.6  |
| CIE x:                    | 0.3841  | R4:       | 71.6 | R13: | 69.5  |
| CIE y:                    | 0.3774  | R5:       | 68.9 | R14: | 90.7  |
| CIE z:                    | 0.2385  | R6:       | 68.3 |      |       |
| 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

REPORT NUMBER: SP1-2101-121-2

| 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 (nm) | Power (µW/nm) | Lumens (φ/nm) | λ (nm) | Power (µW/nm) | Lumens (φ/nm) | λ (nm) | Power (µW/nm) | Lumens (φ/nm) | λ (nm) | Power (µW/nm) | Lumens (φ/nm) | λ (nm) | Power (µW/nm) | Lumens (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           |        |               |               |

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**Scotopic Flux vs. Wavelength**



**Scotopic Lumens: 10425.8 S/P: 1.47**

| λ (nm) | Power (µW/nm) | Lumens (φ/nm) | λ (nm) | Power (µW/nm) | Lumens (φ/nm) | λ (nm) | Power (µW/nm) | Lumens (φ/nm) | λ (nm) | Power (µW/nm) | Lumens (φ/nm) | λ (nm) | Power (µW/nm) | Lumens (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**

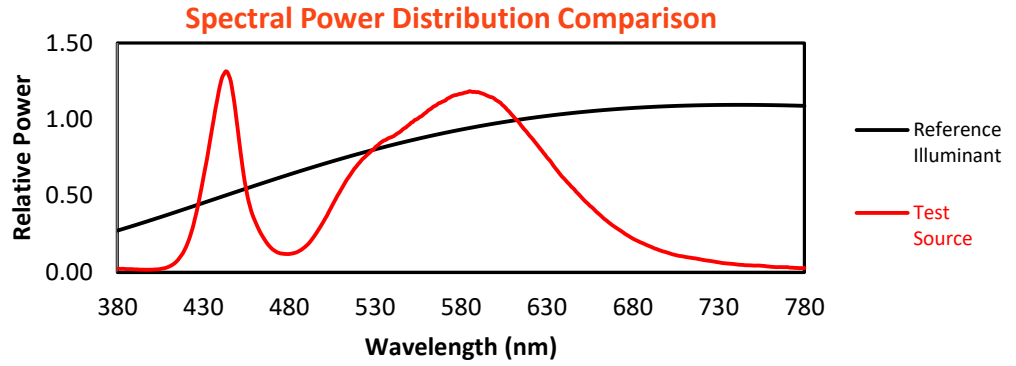


**Melanopic Lumens: 3927.2 M/P: 0.55**

| λ (nm) | Power (µW/nm) | Lumens (φ/nm) | λ (nm) | Power (µW/nm) | Lumens (φ/nm) | λ (nm) | Power (µW/nm) | Lumens (φ/nm) | λ (nm) | Power (µW/nm) | Lumens (φ/nm) | λ (nm) | Power (µW/nm) | Lumens (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           |        |               |               |

**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)