

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: P636177

Luminaire Tested: GWS-SA3F-730-U-T1-W

Issue Date: 1/10/2023

**Test Information**

Test Method: LM-79-2019  
Report Number: P636177  
TEST IS SCALED FROM IESNA LM-79-08 TEST DATA (G2-2209-782-10)  
Test Lab: COOPER LIGHTING SOLUTIONS  
Issue Date: 1/10/2023  
Manufacturer: COOPER LIGHTING SOLUTIONS  
Product Line: McGRAW-EDISON  
Catalog Number: GWS-SA3F-730-U-T1-W  
Description: GALLEON WALL SLIM LUMINAIRE. (3) LIGHTSQUARES WITH 16 LEDS EACH AND TYPE I OPTICS  
Light Source: (48) 3000K CCT, 70 CRI LEDS  
Ballast/Driver: -

**Summary**

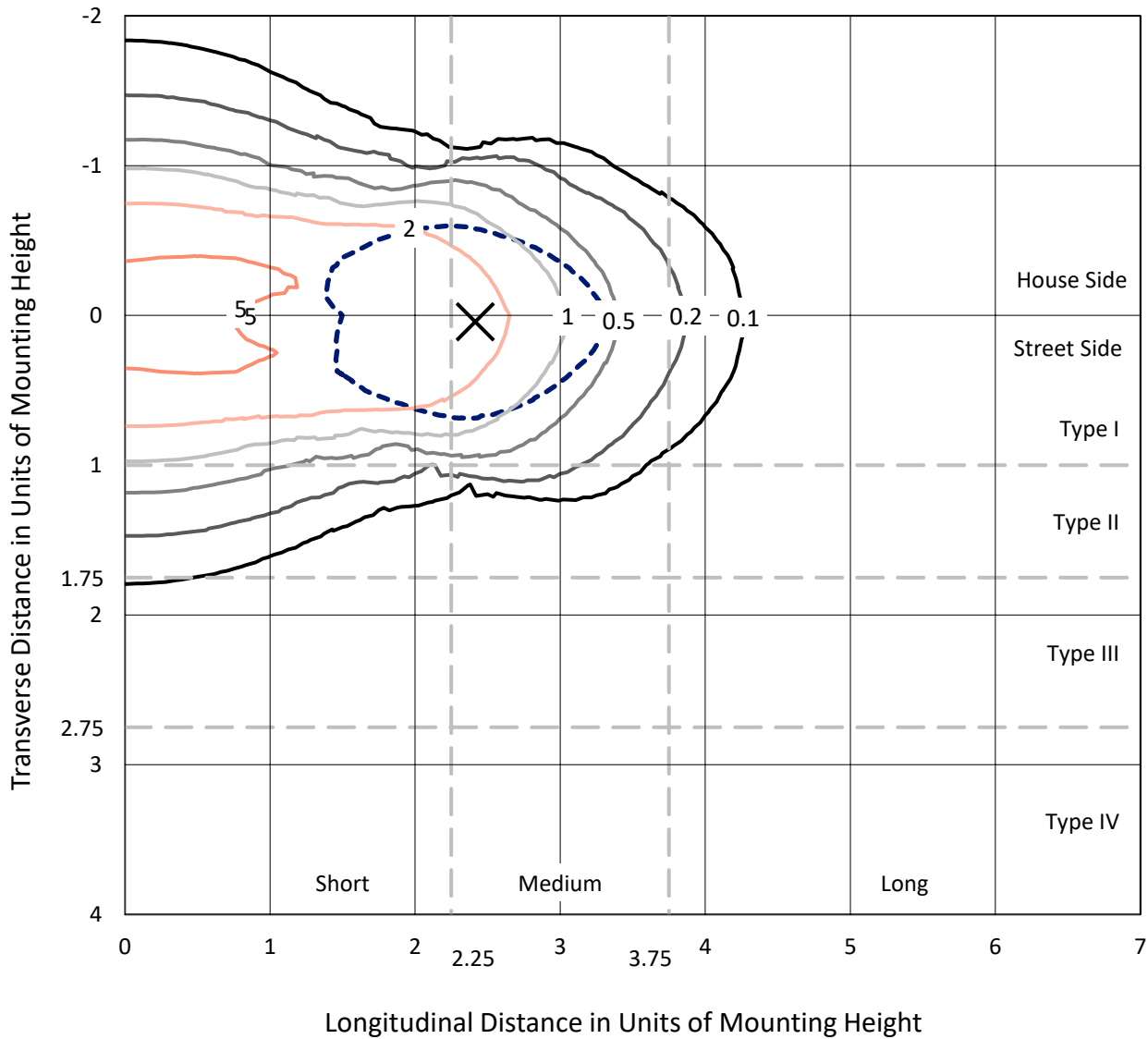
Lumens per Lamp: N/A  
Luminaire Lumens: 22224.4 lumens  
Efficiency: N/A  
Efficacy: 121.3 lumens/watt  
Luminous Opening: Rectangular (W 1.5' x L: 0.5' x H: 0')  
IES Classification: Type I - Medium  
BUG Rating: B4 - U0 - G4  
  
Input Watts (W): 183.2  
Input Voltage (V): 120  
Input Current (Ain): 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



REPORT NUMBER: P636177  
 CATALOG NUMBER: GWS-SA3F-730-U-T1-W

### Iso-Footcandle Lines of Horizontal Illumination

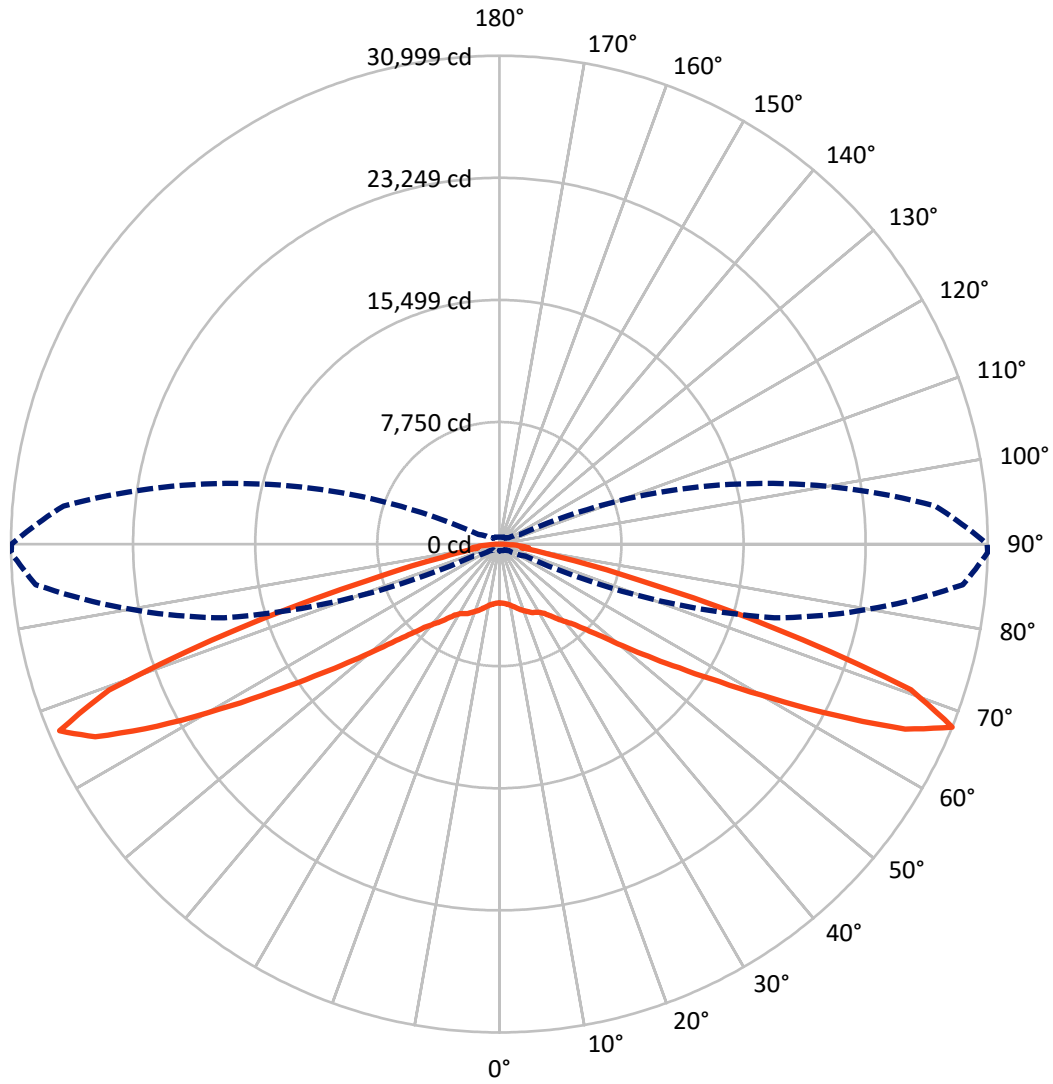
✕ Max cd  
 - - - 1/2 Max cd



Based on 25 foot mounting height. Maximum calculated value = 6.5 fc  
 Type I - Medium - N/A

REPORT NUMBER: P636177  
CATALOG NUMBER: GWS-SA3F-730-U-T1-W

### Luminous Intensity Polar Plot



— Vertical Plane Through 89-Deg Lateral    - - - Horizontal Cone Through 67.5-Deg Vertical

REPORT NUMBER: P636177

CATALOG NUMBER: GWS-SA3F-730-U-T1-W

**FLUX DISTRIBUTION:**

|                    |           | Downward | Upward | Total   |
|--------------------|-----------|----------|--------|---------|
| <b>House Side</b>  | Lumens    | 11014.8  | 0.0    | 11014.8 |
|                    | % Fixture | 49.6     | 0.0    | 49.6    |
| <b>Street Side</b> | Lumens    | 11209.6  | 0.0    | 11209.6 |
|                    | % Fixture | 50.4     | 0.0    | 50.4    |
| <b>Total</b>       | Lumens    | 22224.4  | 0.0    | 22224.4 |
|                    | % Fixture | 100.0    | 0.0    | 100.0   |

**ZONAL LUMENS:**

| Zone      | Lumens  | % Fixture |
|-----------|---------|-----------|
| 0°-10°    | 374.2   | 1.7       |
| 10°-20°   | 1218.3  | 5.5       |
| 20°-30°   | 2059.6  | 9.3       |
| 30°-40°   | 2826.5  | 12.7      |
| 40°-50°   | 3604.4  | 16.2      |
| 50°-60°   | 4522.2  | 20.3      |
| 60°-70°   | 5454.2  | 24.5      |
| 70°-80°   | 1973.2  | 8.9       |
| 80°-90°   | 191.9   | 0.9       |
| 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°    | 22224.4 | 100.0     |
| 0°-180°   | 22224.4 | 100.0     |

**Coefficient of Utilization**



REPORT NUMBER: P636177

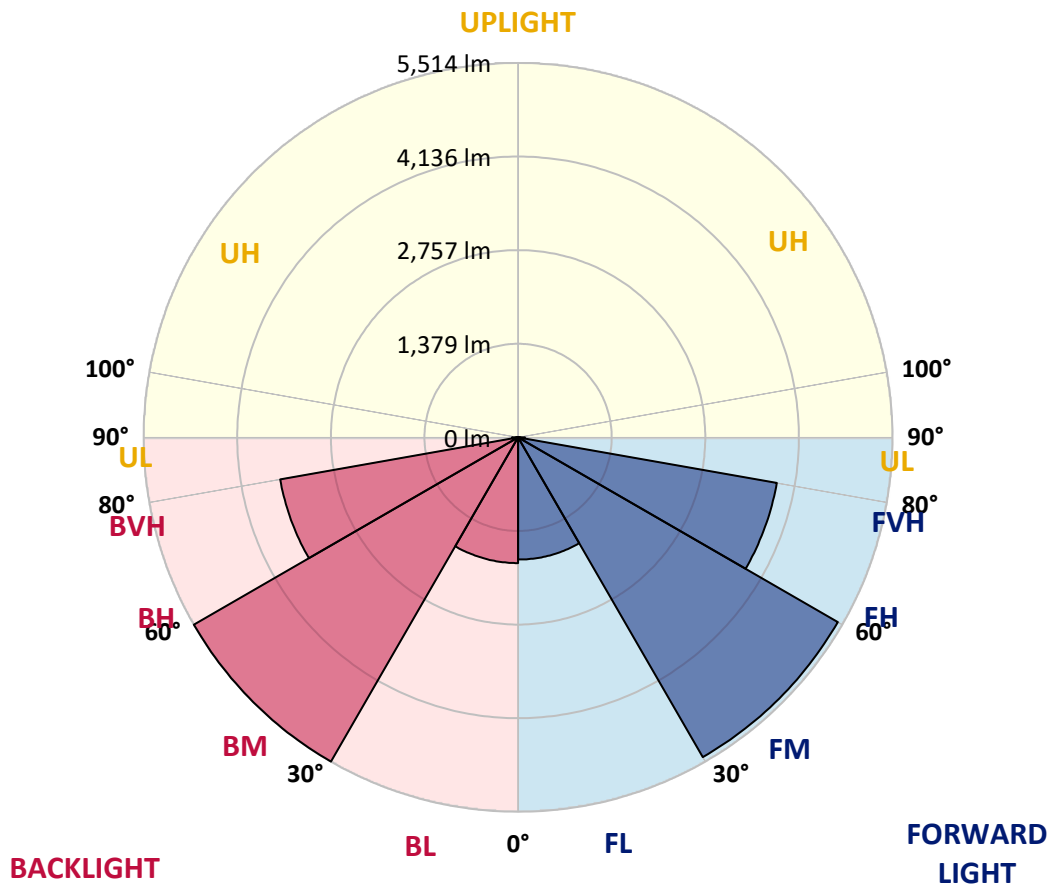
CATALOG NUMBER: GWS-SA3F-730-U-T1-W

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

| Zone           | Lumens | % Fixture | Zone Rating/Lumen Limit |      |         |
|----------------|--------|-----------|-------------------------|------|---------|
|                |        |           | B                       | U    | G       |
| FL (0°-30°)    | 1800.0 | 8.1       |                         |      |         |
| FM (30°-60°)   | 5438.7 | 24.5      |                         |      |         |
| FH (60°-80°)   | 3869.6 | 17.4      |                         |      | G2/5000 |
| FVH (80°-90°)  | 101.2  | 0.5       |                         |      | G2/225  |
| BL (0°-30°)    | 1852.1 | 8.3       | B3/2500                 |      |         |
| BM (30°-60°)   | 5514.3 | 24.8      | B4/8500                 |      |         |
| BH (60°-80°)   | 3557.8 | 16.0      | B4/5000                 |      | G4/5000 |
| BVH (80°-90°)  | 90.6   | 0.4       |                         |      | G1/100  |
| UL (90°-100°)  | 0.0    | 0.0       |                         | U0/0 |         |
| UH (100°-180°) | 0.0    | 0.0       |                         | U0/0 |         |

**BUG Rating: B4-U0-G4**

Type I Medium





REPORT NUMBER: P636177  
 CATALOG NUMBER: GWS-SA3F-730-U-T1-W

**CANDELA DISTRIBUTION (FULL):**

|       | 0°     | 5°     | 15°    | 25°    | 35°    | 45°    | 55°    | 65°    | 75°     | 85°     | 89°     |
|-------|--------|--------|--------|--------|--------|--------|--------|--------|---------|---------|---------|
| 0°    | 3730.2 | 3730.2 | 3730.2 | 3730.2 | 3730.2 | 3730.2 | 3730.2 | 3730.2 | 3730.2  | 3730.2  | 3730.2  |
| 2.5°  | 3741.4 | 3738.2 | 3730.2 | 3754.1 | 3749.3 | 3750.9 | 3760.5 | 3754.1 | 3743.0  | 3723.8  | 3750.9  |
| 5°    | 3846.7 | 3845.1 | 3827.6 | 3841.9 | 3826.0 | 3814.8 | 3813.2 | 3797.2 | 3784.5  | 3763.7  | 3792.4  |
| 7.5°  | 3948.9 | 3947.3 | 3932.9 | 3958.4 | 3945.7 | 3932.9 | 3918.5 | 3886.6 | 3856.3  | 3826.0  | 3857.9  |
| 10°   | 4027.1 | 4025.5 | 4022.3 | 4059.0 | 4062.2 | 4067.0 | 4060.6 | 4006.3 | 3953.6  | 3916.9  | 3948.9  |
| 12.5° | 4071.8 | 4076.5 | 4084.5 | 4151.6 | 4185.1 | 4217.0 | 4225.0 | 4180.3 | 4092.5  | 4039.8  | 4078.1  |
| 15°   | 4041.4 | 4051.0 | 4090.9 | 4212.2 | 4304.8 | 4376.6 | 4407.0 | 4370.2 | 4256.9  | 4169.1  | 4212.2  |
| 17.5° | 3896.2 | 3904.2 | 3982.4 | 4167.5 | 4371.8 | 4537.8 | 4587.3 | 4565.0 | 4438.9  | 4331.9  | 4373.4  |
| 20°   | 3695.1 | 3712.6 | 3797.2 | 4055.8 | 4360.7 | 4649.6 | 4782.0 | 4774.1 | 4636.8  | 4472.4  | 4521.9  |
| 22.5° | 3513.1 | 3533.9 | 3623.2 | 3909.0 | 4285.6 | 4678.3 | 4978.4 | 4999.1 | 4817.2  | 4612.9  | 4652.8  |
| 25°   | 3308.8 | 3328.0 | 3442.9 | 3735.0 | 4156.4 | 4655.9 | 5146.0 | 5240.1 | 5021.5  | 4774.1  | 4810.8  |
| 27.5° | 3099.7 | 3114.1 | 3227.4 | 3538.6 | 3987.2 | 4614.4 | 5278.4 | 5505.1 | 5222.6  | 4885.8  | 4911.3  |
| 30°   | 2916.2 | 2935.3 | 3039.1 | 3342.3 | 3802.0 | 4531.5 | 5387.0 | 5787.6 | 5454.0  | 5011.9  | 5032.6  |
| 32.5° | 2739.0 | 2754.9 | 2868.3 | 3149.2 | 3605.7 | 4403.8 | 5484.3 | 6119.6 | 5797.2  | 5246.5  | 5246.5  |
| 35°   | 2515.5 | 2544.3 | 2671.9 | 2964.0 | 3420.5 | 4234.6 | 5554.6 | 6505.9 | 6266.5  | 5592.9  | 5594.5  |
| 37.5° | 2309.6 | 2325.6 | 2459.7 | 2754.9 | 3225.8 | 4043.0 | 5561.0 | 6906.5 | 6860.2  | 6033.4  | 6036.6  |
| 40°   | 2075.0 | 2095.7 | 2239.4 | 2531.5 | 3002.3 | 3841.9 | 5500.3 | 7280.0 | 7482.7  | 6486.7  | 6469.2  |
| 42.5° | 1837.2 | 1867.5 | 2004.8 | 2290.5 | 2761.3 | 3596.1 | 5339.1 | 7635.9 | 8272.8  | 7011.9  | 6968.8  |
| 45°   | 1607.3 | 1626.5 | 1763.7 | 2033.5 | 2485.2 | 3302.4 | 5080.5 | 7977.5 | 9211.3  | 7809.9  | 7747.7  |
| 47.5° | 1348.7 | 1356.7 | 1498.8 | 1757.4 | 2199.5 | 2975.2 | 4710.2 | 8282.4 | 10242.5 | 8866.6  | 8759.6  |
| 50°   | 1118.9 | 1130.1 | 1241.8 | 1463.7 | 1849.9 | 2587.3 | 4248.9 | 8461.2 | 11556.1 | 10307.9 | 10122.7 |
| 52.5° | 905.0  | 916.2  | 1005.6 | 1182.7 | 1529.1 | 2145.2 | 3677.5 | 8419.7 | 12888.9 | 12097.2 | 11827.4 |
| 55°   | 731.0  | 739.0  | 799.7  | 938.5  | 1203.5 | 1706.3 | 3002.3 | 8047.8 | 14368.5 | 14433.9 | 13852.9 |
| 57.5° | 617.7  | 620.9  | 662.4  | 747.0  | 940.1  | 1315.2 | 2317.6 | 7169.9 | 15919.9 | 17415.5 | 16461.0 |
| 60°   | 552.3  | 553.9  | 573.0  | 625.7  | 742.2  | 1004.0 | 1698.3 | 5771.7 | 17527.2 | 21145.7 | 19836.9 |
| 62.5° | 510.8  | 510.8  | 526.7  | 557.1  | 616.1  | 772.5  | 1248.2 | 4145.2 | 18681.3 | 25204.7 | 23903.8 |
| 65°   | 470.9  | 470.9  | 482.0  | 507.6  | 539.5  | 630.5  | 936.9  | 2673.5 | 19247.9 | 28598.1 | 28309.2 |
| 67.5° | 419.8  | 421.4  | 429.4  | 456.5  | 485.2  | 526.7  | 710.3  | 1808.4 | 18071.5 | 29536.6 | 30998.7 |
| 70°   | 371.9  | 373.5  | 384.7  | 402.2  | 426.2  | 454.9  | 555.5  | 1246.6 | 13153.8 | 24599.8 | 27717.0 |
| 72.5° | 319.2  | 325.6  | 333.6  | 352.7  | 367.1  | 387.9  | 453.3  | 807.6  | 7653.5  | 15824.2 | 18322.1 |
| 75°   | 261.8  | 269.7  | 279.3  | 298.5  | 308.1  | 316.0  | 373.5  | 576.2  | 3682.3  | 8019.0  | 9131.5  |
| 77.5° | 202.7  | 210.7  | 221.9  | 239.4  | 245.8  | 255.4  | 285.7  | 416.6  | 1763.7  | 3554.6  | 3832.3  |
| 80°   | 135.7  | 138.9  | 148.4  | 169.2  | 180.4  | 186.7  | 210.7  | 284.1  | 766.1   | 1427.0  | 1414.2  |
| 82.5° | 83.0   | 84.6   | 87.8   | 100.6  | 105.3  | 111.7  | 137.3  | 174.0  | 365.5   | 1621.7  | 1859.5  |
| 85°   | 30.3   | 28.7   | 27.1   | 35.1   | 41.5   | 47.9   | 63.8   | 87.8   | 159.6   | 1114.1  | 1246.6  |
| 87.5° | 0.0    | 0.0    | 0.0    | 1.6    | 3.2    | 3.2    | 6.4    | 12.8   | 38.3    | 416.6   | 285.7   |
| 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: P636177  
 CATALOG NUMBER: GWS-SA3F-730-U-T1-W

**CANDELA DISTRIBUTION (continued):**

|       | 90°     | 95°     | 105°    | 115°   | 125°   | 135°   | 145°   | 155°   | 165°   | 175°   | 180°   |
|-------|---------|---------|---------|--------|--------|--------|--------|--------|--------|--------|--------|
| 0°    | 3730.2  | 3730.2  | 3730.2  | 3730.2 | 3730.2 | 3730.2 | 3730.2 | 3730.2 | 3730.2 | 3730.2 | 3730.2 |
| 2.5°  | 3743.0  | 3725.4  | 3747.7  | 3763.7 | 3798.8 | 3811.6 | 3814.8 | 3803.6 | 3803.6 | 3784.5 | 3787.6 |
| 5°    | 3786.1  | 3774.9  | 3811.6  | 3838.7 | 3889.8 | 3909.0 | 3921.7 | 3913.7 | 3918.5 | 3905.8 | 3909.0 |
| 7.5°  | 3851.5  | 3841.9  | 3905.8  | 3958.4 | 4011.1 | 4033.5 | 4044.6 | 4038.2 | 4039.8 | 4023.9 | 4028.7 |
| 10°   | 3942.5  | 3945.7  | 4022.3  | 4090.9 | 4161.1 | 4183.5 | 4188.3 | 4169.1 | 4153.2 | 4124.4 | 4126.0 |
| 12.5° | 4067.0  | 4082.9  | 4191.5  | 4268.1 | 4339.9 | 4371.8 | 4336.7 | 4266.5 | 4201.0 | 4151.6 | 4145.2 |
| 15°   | 4202.6  | 4231.4  | 4387.8  | 4485.2 | 4563.4 | 4547.4 | 4443.7 | 4285.6 | 4156.4 | 4082.9 | 4068.6 |
| 17.5° | 4365.5  | 4408.5  | 4604.9  | 4721.4 | 4788.4 | 4686.3 | 4469.2 | 4233.0 | 4052.6 | 3953.6 | 3934.5 |
| 20°   | 4518.7  | 4587.3  | 4834.7  | 4986.4 | 4994.3 | 4764.5 | 4458.0 | 4126.0 | 3899.4 | 3778.1 | 3752.5 |
| 22.5° | 4659.1  | 4746.9  | 5075.7  | 5268.9 | 5165.1 | 4799.6 | 4389.4 | 3974.4 | 3714.2 | 3572.2 | 3549.8 |
| 25°   | 4812.4  | 4936.9  | 5356.7  | 5537.0 | 5335.9 | 4785.2 | 4245.7 | 3786.1 | 3490.8 | 3345.5 | 3329.6 |
| 27.5° | 4917.7  | 5074.1  | 5639.2  | 5811.6 | 5476.4 | 4703.8 | 4060.6 | 3580.1 | 3286.5 | 3149.2 | 3126.8 |
| 30°   | 5039.0  | 5238.5  | 5950.4  | 6110.0 | 5562.6 | 4584.1 | 3862.7 | 3388.6 | 3096.5 | 2948.1 | 2932.1 |
| 32.5° | 5259.3  | 5509.9  | 6336.7  | 6426.1 | 5589.7 | 4435.7 | 3672.7 | 3203.5 | 2898.6 | 2750.2 | 2727.8 |
| 35°   | 5613.6  | 5907.3  | 6879.4  | 6778.8 | 5568.9 | 4272.9 | 3492.4 | 2986.4 | 2695.9 | 2557.0 | 2534.7 |
| 37.5° | 6060.6  | 6426.1  | 7484.3  | 7096.5 | 5511.5 | 4094.1 | 3278.5 | 2804.4 | 2513.9 | 2373.5 | 2360.7 |
| 40°   | 6477.1  | 6927.3  | 8162.7  | 7371.0 | 5395.0 | 3873.8 | 3072.6 | 2614.5 | 2317.6 | 2169.2 | 2140.4 |
| 42.5° | 6999.1  | 7597.6  | 8948.0  | 7608.8 | 5203.4 | 3610.5 | 2841.1 | 2379.8 | 2071.8 | 1937.7 | 1902.6 |
| 45°   | 7792.4  | 8536.2  | 9861.0  | 7837.1 | 4917.7 | 3286.5 | 2550.6 | 2094.1 | 1802.0 | 1664.8 | 1637.6 |
| 47.5° | 8782.0  | 9709.3  | 10850.6 | 7972.7 | 4483.6 | 2944.9 | 2221.8 | 1792.5 | 1500.4 | 1345.5 | 1332.8 |
| 50°   | 10172.2 | 11415.6 | 11912.0 | 7948.8 | 3998.3 | 2539.5 | 1851.5 | 1433.3 | 1189.1 | 1077.4 | 1059.8 |
| 52.5° | 11865.7 | 13557.6 | 13059.6 | 7661.5 | 3482.8 | 2078.2 | 1442.9 | 1125.3 | 943.3  | 863.5  | 849.1  |
| 55°   | 13990.2 | 16122.6 | 14267.9 | 7045.4 | 2831.6 | 1591.4 | 1133.3 | 887.5  | 763.0  | 715.1  | 708.7  |
| 57.5° | 16620.6 | 19444.2 | 15431.5 | 6007.9 | 2129.3 | 1214.7 | 873.1  | 732.6  | 673.6  | 644.8  | 643.2  |
| 60°   | 20092.2 | 22970.1 | 16441.9 | 4668.7 | 1524.3 | 929.0  | 721.5  | 654.4  | 608.1  | 589.0  | 587.4  |
| 62.5° | 24219.9 | 26172.0 | 17070.8 | 3179.5 | 1146.0 | 740.6  | 635.3  | 593.8  | 566.6  | 555.5  | 553.9  |
| 65°   | 28462.4 | 28195.9 | 16770.7 | 2083.0 | 869.9  | 628.9  | 569.8  | 547.5  | 523.5  | 512.4  | 512.4  |
| 67.5° | 30968.4 | 27768.1 | 14467.4 | 1446.1 | 689.5  | 552.3  | 514.0  | 493.2  | 453.3  | 443.7  | 443.7  |
| 70°   | 27429.7 | 22500.8 | 9482.7  | 1058.2 | 558.7  | 483.6  | 446.9  | 418.2  | 402.2  | 392.7  | 391.1  |
| 72.5° | 18141.8 | 14641.4 | 5042.2  | 734.2  | 466.1  | 411.8  | 378.3  | 367.1  | 348.0  | 338.4  | 336.8  |
| 75°   | 9029.4  | 7690.2  | 2584.2  | 529.9  | 387.9  | 330.4  | 316.0  | 311.2  | 295.3  | 282.5  | 279.3  |
| 77.5° | 3763.7  | 3423.7  | 1205.1  | 384.7  | 295.3  | 266.6  | 253.8  | 253.8  | 236.2  | 221.9  | 215.5  |
| 80°   | 1419.0  | 1264.1  | 569.8   | 263.4  | 218.7  | 197.9  | 189.9  | 183.6  | 169.2  | 151.6  | 142.1  |
| 82.5° | 1897.8  | 1240.2  | 279.3   | 164.4  | 143.7  | 127.7  | 116.5  | 111.7  | 103.7  | 95.8   | 89.4   |
| 85°   | 1229.0  | 881.1   | 126.1   | 84.6   | 71.8   | 54.3   | 47.9   | 44.7   | 39.9   | 35.1   | 31.9   |
| 87.5° | 250.6   | 295.3   | 38.3    | 16.0   | 9.6    | 4.8    | 4.8    | 1.6    | 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    |



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



LM-79-2008: Approved Method: Electrical and Photometric Measurements of Solid-  
State Lighting Products

Report Prepared for

Cooper Lighting Solutions

McGRAW-EDISON

Report Number: SP1-1908-441-2-R4

Test Date: 10/03/2019

Luminaire Tested: SA1C-730-U-5WQ

Data in this report applies to families of products SA1C-730-U-5WQ .

**Test Information**

Test Method: LM-79-2008  
 Report Number: SP1-1908-441-2-R4  
 Test Lab: COOPER LIGHTING SOLUTIONS  
 Photometer: SP1 - 76IN SPHERE  
 Measurement Geometry: 4π  
 Issue Date: 10/28/2024  
 Manufacturer: COOPER LIGHTING SOLUTIONS  
 Product Line: MCGRAW-EDISON  
 Catalog Number: **SA1C-730-U-5WQ**  
 Description: MCGRAW EDISON ROADWAY AND AREA LUMINAIRE

\*\*\*THIS IS A REVISION OF SP1-1908-441-2-R3. TO UPDATE THE CATALOG INFORMATION.\*\*\*TESTED IN SITU. (1) 70 CRI, 3000K, 1050MA LIGHTSQUARE WITH 16 LEDS AND TYPE V WIDE OPTICS.

**Spectral Parameters**

|                           |        |           |      |      |       |
|---------------------------|--------|-----------|------|------|-------|
| CCT (K):                  | 2993   | CRI (Ra): | 71.8 | R9:  | -38.3 |
| CIE u':                   | 0.2508 | R1:       | 67.5 | R10: | 62.5  |
| CIE v':                   | 0.5215 | R2:       | 82.9 | R11: | 63.7  |
| Duv:                      | 0.0000 | R3:       | 94.7 | R12: | 57.8  |
| CIE x:                    | 0.4374 | R4:       | 67.7 | R13: | 70.4  |
| CIE y:                    | 0.4043 | R5:       | 67.9 | R14: | 97.3  |
| CIE z:                    | 0.1583 | R6:       | 77.6 |      |       |
| Peak Wavelength (nm):     | 593    | R7:       | 76.0 |      |       |
| Dominant Wavelength (nm): | 582    | R8:       | 40.5 |      |       |
| Purity:                   | 53     |           |      |      |       |
| Rf:                       | 75.7   |           |      |      |       |
| Rg:                       | 93.9   |           |      |      |       |



**Test Conditions**

Stabilization Time: 53M  
 Operation Time: 12H  
 Room Temperature (°C) / RH%: 25.0./44%  
 Sphere Temperature (°C): 25.7

REPORT NUMBER: SP1-1908-441-2-R4

| Measurement and Test Equipment |                       |                  |                      |
|--------------------------------|-----------------------|------------------|----------------------|
| Instrument                     | Identification Number | Calibration Date | Calibration Due Date |
| Photometer                     | IN0058                | 6/28/2019        | 12/28/2019           |
| Power Meter                    | IN0071                | 12/5/2018        | 12/5/2019            |
| AC Power Source                | IN0063                | 12/5/2018        | 12/5/2019            |
| DC Power Source                | IN0208                | 12/5/2018        | 12/5/2019            |
| Sphere Thermometer             | IN0085                | 12/5/2018        | 12/5/2019            |
| Room Thermometer               | IN0046                | 12/5/2018        | 12/5/2019            |

REPORT NUMBER: SP1-1908-441-2-R4

CIE 1931 Chromaticity Diagram



CIE 1931 Chromaticity Diagram with 2017 ANSI 7-Step and 4-Step Quadrangles



Point lies inside the ANSI 3000K 4-step quadrangle

REPORT NUMBER: SP1-1908-441-2-R4

**Photopic Flux vs. Wavelength**



#####

| $\lambda$<br>(nm) | Power<br>( $\mu\text{W}/\text{nm}$ ) | Lumens<br>( $\phi/\text{nm}$ ) | $\lambda$<br>(nm) | Power<br>( $\mu\text{W}/\text{nm}$ ) | Lumens<br>( $\phi/\text{nm}$ ) | $\lambda$<br>(nm) | Power<br>( $\mu\text{W}/\text{nm}$ ) | Lumens<br>( $\phi/\text{nm}$ ) | $\lambda$<br>(nm) | Power<br>( $\mu\text{W}/\text{nm}$ ) | Lumens<br>( $\phi/\text{nm}$ ) | $\lambda$<br>(nm) | Power<br>( $\mu\text{W}/\text{nm}$ ) | Lumens<br>( $\phi/\text{nm}$ ) |
|-------------------|--------------------------------------|--------------------------------|-------------------|--------------------------------------|--------------------------------|-------------------|--------------------------------------|--------------------------------|-------------------|--------------------------------------|--------------------------------|-------------------|--------------------------------------|--------------------------------|
| 360               | 2397                                 | NR                             | 490               | 24908                                | NR                             | 620               | 118784                               | NR                             | 750               | 5037                                 | NR                             | 880               | 2677                                 | NR                             |
| 365               | 2084                                 | NR                             | 495               | 30998                                | NR                             | 625               | 108951                               | NR                             | 755               | 4413                                 | NR                             | 885               | 2940                                 | NR                             |
| 370               | 2143                                 | NR                             | 500               | 37103                                | NR                             | 630               | 99573                                | NR                             | 760               | 4189                                 | NR                             | 890               | 3116                                 | NR                             |
| 375               | 2413                                 | NR                             | 505               | 42987                                | NR                             | 635               | 90444                                | NR                             | 765               | 3677                                 | NR                             | 895               | 3345                                 | NR                             |
| 380               | 2172                                 | NR                             | 510               | 48702                                | NR                             | 640               | 80749                                | NR                             | 770               | 3366                                 | NR                             | 900               | 2312                                 | NR                             |
| 385               | 1997                                 | NR                             | 515               | 53741                                | NR                             | 645               | 71664                                | NR                             | 775               | 3211                                 | NR                             | 905               | 2829                                 | NR                             |
| 390               | 1830                                 | NR                             | 520               | 57283                                | NR                             | 650               | 63936                                | NR                             | 780               | 2682                                 | NR                             | 910               | 2783                                 | NR                             |
| 395               | 1861                                 | NR                             | 525               | 61876                                | NR                             | 655               | 56611                                | NR                             | 785               | 2804                                 | NR                             | 915               | 2662                                 | NR                             |
| 400               | 1717                                 | NR                             | 530               | 65398                                | NR                             | 660               | 49763                                | NR                             | 790               | 2581                                 | NR                             | 920               | 3047                                 | NR                             |
| 405               | 1761                                 | NR                             | 535               | 69597                                | NR                             | 665               | 42891                                | NR                             | 795               | 2711                                 | NR                             | 925               | 2256                                 | NR                             |
| 410               | 2680                                 | NR                             | 540               | 74214                                | NR                             | 670               | 36939                                | NR                             | 800               | 2609                                 | NR                             | 930               | 2976                                 | NR                             |
| 415               | 4374                                 | NR                             | 545               | 79911                                | NR                             | 675               | 31946                                | NR                             | 805               | 2581                                 | NR                             | 935               | 3503                                 | NR                             |
| 420               | 8071                                 | NR                             | 550               | 86153                                | NR                             | 680               | 27385                                | NR                             | 810               | 2404                                 | NR                             | 940               | 4226                                 | NR                             |
| 425               | 15169                                | NR                             | 555               | 93952                                | NR                             | 685               | 23504                                | NR                             | 815               | 2556                                 | NR                             | 945               | 2930                                 | NR                             |
| 430               | 26038                                | NR                             | 560               | 102904                               | NR                             | 690               | 20210                                | NR                             | 820               | 2742                                 | NR                             | 950               | 2115                                 | NR                             |
| 435               | 41316                                | NR                             | 565               | 112009                               | NR                             | 695               | 17459                                | NR                             | 825               | 2014                                 | NR                             | 955               | 2634                                 | NR                             |
| 440               | 59674                                | NR                             | 570               | 121662                               | NR                             | 700               | 15207                                | NR                             | 830               | 2488                                 | NR                             | 960               | 4200                                 | NR                             |
| 445               | 72751                                | NR                             | 575               | 130476                               | NR                             | 705               | 13322                                | NR                             | 835               | 2625                                 | NR                             | 965               | 1982                                 | NR                             |
| 450               | 65091                                | NR                             | 580               | 137926                               | NR                             | 710               | 11676                                | NR                             | 840               | 2754                                 | NR                             | 970               | 3613                                 | NR                             |
| 455               | 44894                                | NR                             | 585               | 143406                               | NR                             | 715               | 10626                                | NR                             | 845               | 2708                                 | NR                             | 975               | 4034                                 | NR                             |
| 460               | 32712                                | NR                             | 590               | 147039                               | NR                             | 720               | 9416                                 | NR                             | 850               | 2608                                 | NR                             | 980               | 3922                                 | NR                             |
| 465               | 25296                                | NR                             | 595               | 147365                               | NR                             | 725               | 8333                                 | NR                             | 855               | 2605                                 | NR                             | 985               | 1909                                 | NR                             |
| 470               | 19318                                | NR                             | 600               | 145800                               | NR                             | 730               | 7134                                 | NR                             | 860               | 1765                                 | NR                             | 990               | 3617                                 | NR                             |
| 475               | 17265                                | NR                             | 605               | 141363                               | NR                             | 735               | 6437                                 | NR                             | 865               | 2581                                 | NR                             | 995               | 4767                                 | NR                             |
| 480               | 18260                                | NR                             | 610               | 134199                               | NR                             | 740               | 5834                                 | NR                             | 870               | 3016                                 | NR                             | 1000              | 2528                                 | NR                             |
| 485               | 20845                                | NR                             | 615               | 127683                               | NR                             | 745               | 5500                                 | NR                             | 875               | 3952                                 | NR                             |                   |                                      |                                |

REPORT NUMBER: SP1-1908-441-2-R4

Scotopic Flux vs. Wavelength



Scotopic Lumens: 8494.8

S/P: 1.23

| 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    | 2397          | NR            | 490    | 24908         | NR            | 620    | 118784        | NR            | 750    | 5037          | NR            | 880    | 2677          | NR            |
| 365    | 2084          | NR            | 495    | 30998         | NR            | 625    | 108951        | NR            | 755    | 4413          | NR            | 885    | 2940          | NR            |
| 370    | 2143          | NR            | 500    | 37103         | NR            | 630    | 99573         | NR            | 760    | 4189          | NR            | 890    | 3116          | NR            |
| 375    | 2413          | NR            | 505    | 42987         | NR            | 635    | 90444         | NR            | 765    | 3677          | NR            | 895    | 3345          | NR            |
| 380    | 2172          | NR            | 510    | 48702         | NR            | 640    | 80749         | NR            | 770    | 3366          | NR            | 900    | 2312          | NR            |
| 385    | 1997          | NR            | 515    | 53741         | NR            | 645    | 71664         | NR            | 775    | 3211          | NR            | 905    | 2829          | NR            |
| 390    | 1830          | NR            | 520    | 57283         | NR            | 650    | 63936         | NR            | 780    | 2682          | NR            | 910    | 2783          | NR            |
| 395    | 1861          | NR            | 525    | 61876         | NR            | 655    | 56611         | NR            | 785    | 2804          | NR            | 915    | 2662          | NR            |
| 400    | 1717          | NR            | 530    | 65398         | NR            | 660    | 49763         | NR            | 790    | 2581          | NR            | 920    | 3047          | NR            |
| 405    | 1761          | NR            | 535    | 69597         | NR            | 665    | 42891         | NR            | 795    | 2711          | NR            | 925    | 2256          | NR            |
| 410    | 2680          | NR            | 540    | 74214         | NR            | 670    | 36939         | NR            | 800    | 2609          | NR            | 930    | 2976          | NR            |
| 415    | 4374          | NR            | 545    | 79911         | NR            | 675    | 31946         | NR            | 805    | 2581          | NR            | 935    | 3503          | NR            |
| 420    | 8071          | NR            | 550    | 86153         | NR            | 680    | 27385         | NR            | 810    | 2404          | NR            | 940    | 4226          | NR            |
| 425    | 15169         | NR            | 555    | 93952         | NR            | 685    | 23504         | NR            | 815    | 2556          | NR            | 945    | 2930          | NR            |
| 430    | 26038         | NR            | 560    | 102904        | NR            | 690    | 20210         | NR            | 820    | 2742          | NR            | 950    | 2115          | NR            |
| 435    | 41316         | NR            | 565    | 112009        | NR            | 695    | 17459         | NR            | 825    | 2014          | NR            | 955    | 2634          | NR            |
| 440    | 59674         | NR            | 570    | 121662        | NR            | 700    | 15207         | NR            | 830    | 2488          | NR            | 960    | 4200          | NR            |
| 445    | 72751         | NR            | 575    | 130476        | NR            | 705    | 13322         | NR            | 835    | 2625          | NR            | 965    | 1982          | NR            |
| 450    | 65091         | NR            | 580    | 137926        | NR            | 710    | 11676         | NR            | 840    | 2754          | NR            | 970    | 3613          | NR            |
| 455    | 44894         | NR            | 585    | 143406        | NR            | 715    | 10626         | NR            | 845    | 2708          | NR            | 975    | 4034          | NR            |
| 460    | 32712         | NR            | 590    | 147039        | NR            | 720    | 9416          | NR            | 850    | 2608          | NR            | 980    | 3922          | NR            |
| 465    | 25296         | NR            | 595    | 147365        | NR            | 725    | 8333          | NR            | 855    | 2605          | NR            | 985    | 1909          | NR            |
| 470    | 19318         | NR            | 600    | 145800        | NR            | 730    | 7134          | NR            | 860    | 1765          | NR            | 990    | 3617          | NR            |
| 475    | 17265         | NR            | 605    | 141363        | NR            | 735    | 6437          | NR            | 865    | 2581          | NR            | 995    | 4767          | NR            |
| 480    | 18260         | NR            | 610    | 134199        | NR            | 740    | 5834          | NR            | 870    | 3016          | NR            | 1000   | 2528          | NR            |
| 485    | 20845         | NR            | 615    | 127683        | NR            | 745    | 5500          | NR            | 875    | 3952          | NR            |        |               |               |

REPORT NUMBER: SP1-1908-441-2-R4

**Melanopic Flux vs. Wavelength**



**Melanopic Lumens: 3101.5 M/P: 0.45**

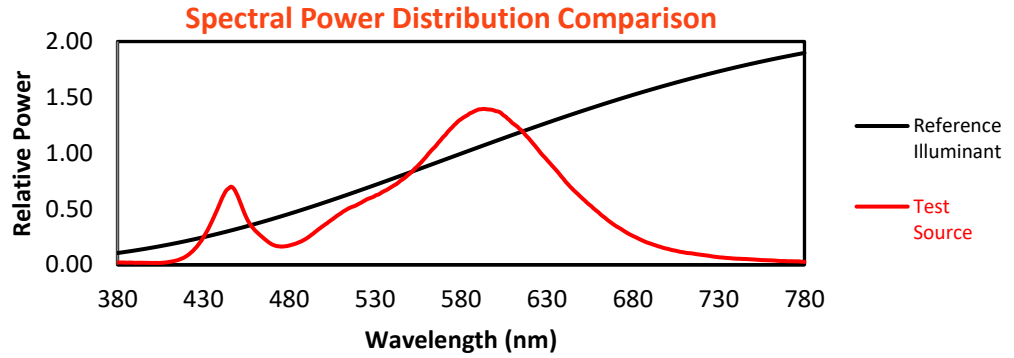
| λ (nm) | Power (µW/nm) | Lumens (φ/nm) | λ (nm) | Power (µW/nm) | Lumens (φ/nm) | λ (nm) | Power (µW/nm) | Lumens (φ/nm) | λ (nm) | Power (µW/nm) | Lumens (φ/nm) | λ (nm) | Power (µW/nm) | Lumens (φ/nm) |
|--------|---------------|---------------|--------|---------------|---------------|--------|---------------|---------------|--------|---------------|---------------|--------|---------------|---------------|
| 360    | 2397          | NR            | 490    | 24908         | NR            | 620    | 118784        | NR            | 750    | 5037          | NR            | 880    | 2677          | NR            |
| 365    | 2084          | NR            | 495    | 30998         | NR            | 625    | 108951        | NR            | 755    | 4413          | NR            | 885    | 2940          | NR            |
| 370    | 2143          | NR            | 500    | 37103         | NR            | 630    | 99573         | NR            | 760    | 4189          | NR            | 890    | 3116          | NR            |
| 375    | 2413          | NR            | 505    | 42987         | NR            | 635    | 90444         | NR            | 765    | 3677          | NR            | 895    | 3345          | NR            |
| 380    | 2172          | NR            | 510    | 48702         | NR            | 640    | 80749         | NR            | 770    | 3366          | NR            | 900    | 2312          | NR            |
| 385    | 1997          | NR            | 515    | 53741         | NR            | 645    | 71664         | NR            | 775    | 3211          | NR            | 905    | 2829          | NR            |
| 390    | 1830          | NR            | 520    | 57283         | NR            | 650    | 63936         | NR            | 780    | 2682          | NR            | 910    | 2783          | NR            |
| 395    | 1861          | NR            | 525    | 61876         | NR            | 655    | 56611         | NR            | 785    | 2804          | NR            | 915    | 2662          | NR            |
| 400    | 1717          | NR            | 530    | 65398         | NR            | 660    | 49763         | NR            | 790    | 2581          | NR            | 920    | 3047          | NR            |
| 405    | 1761          | NR            | 535    | 69597         | NR            | 665    | 42891         | NR            | 795    | 2711          | NR            | 925    | 2256          | NR            |
| 410    | 2680          | NR            | 540    | 74214         | NR            | 670    | 36939         | NR            | 800    | 2609          | NR            | 930    | 2976          | NR            |
| 415    | 4374          | NR            | 545    | 79911         | NR            | 675    | 31946         | NR            | 805    | 2581          | NR            | 935    | 3503          | NR            |
| 420    | 8071          | NR            | 550    | 86153         | NR            | 680    | 27385         | NR            | 810    | 2404          | NR            | 940    | 4226          | NR            |
| 425    | 15169         | NR            | 555    | 93952         | NR            | 685    | 23504         | NR            | 815    | 2556          | NR            | 945    | 2930          | NR            |
| 430    | 26038         | NR            | 560    | 102904        | NR            | 690    | 20210         | NR            | 820    | 2742          | NR            | 950    | 2115          | NR            |
| 435    | 41316         | NR            | 565    | 112009        | NR            | 695    | 17459         | NR            | 825    | 2014          | NR            | 955    | 2634          | NR            |
| 440    | 59674         | NR            | 570    | 121662        | NR            | 700    | 15207         | NR            | 830    | 2488          | NR            | 960    | 4200          | NR            |
| 445    | 72751         | NR            | 575    | 130476        | NR            | 705    | 13322         | NR            | 835    | 2625          | NR            | 965    | 1982          | NR            |
| 450    | 65091         | NR            | 580    | 137926        | NR            | 710    | 11676         | NR            | 840    | 2754          | NR            | 970    | 3613          | NR            |
| 455    | 44894         | NR            | 585    | 143406        | NR            | 715    | 10626         | NR            | 845    | 2708          | NR            | 975    | 4034          | NR            |
| 460    | 32712         | NR            | 590    | 147039        | NR            | 720    | 9416          | NR            | 850    | 2608          | NR            | 980    | 3922          | NR            |
| 465    | 25296         | NR            | 595    | 147365        | NR            | 725    | 8333          | NR            | 855    | 2605          | NR            | 985    | 1909          | NR            |
| 470    | 19318         | NR            | 600    | 145800        | NR            | 730    | 7134          | NR            | 860    | 1765          | NR            | 990    | 3617          | NR            |
| 475    | 17265         | NR            | 605    | 141363        | NR            | 735    | 6437          | NR            | 865    | 2581          | NR            | 995    | 4767          | NR            |
| 480    | 18260         | NR            | 610    | 134199        | NR            | 740    | 5834          | NR            | 870    | 3016          | NR            | 1000   | 2528          | NR            |
| 485    | 20845         | NR            | 615    | 127683        | NR            | 745    | 5500          | NR            | 875    | 3952          | NR            |        |               |               |

REPORT NUMBER: SP1-1908-441-2-R4

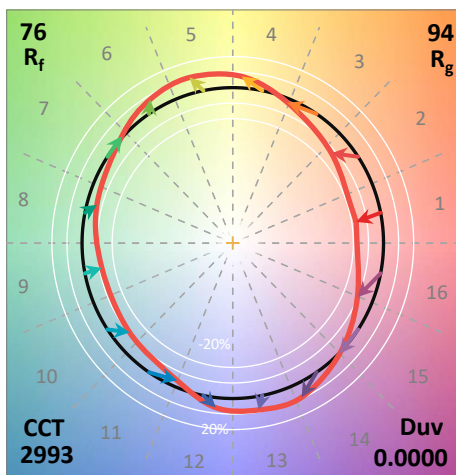
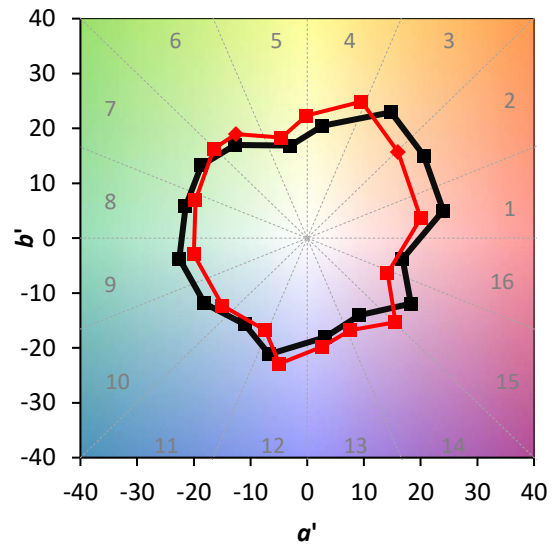
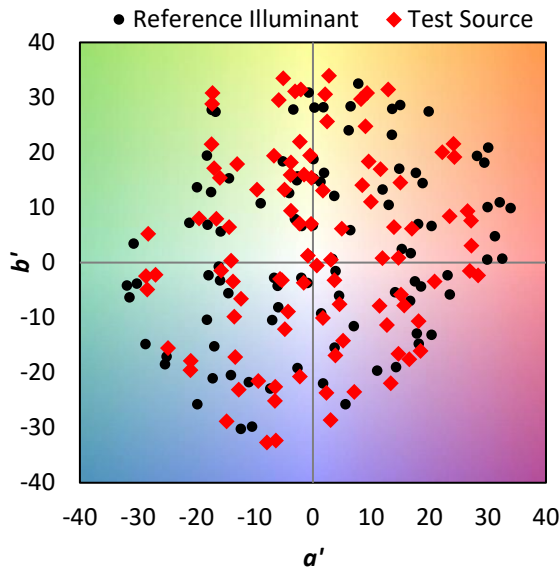
TM-30-18

**Summary**

$R_f = 75.7$   
 $R_g = 93.9$   
 CIE  $R_a = 71.8$   
 $R_9 = -38.3$



**Color Vector Graphics**





REPORT NUMBER: SP1-1908-441-2-R4

TM-30-18

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

|            |            |            |            |
|------------|------------|------------|------------|
| CES01 = 86 | CES26 = 67 | CES51 = 87 | CES76 = 63 |
| CES02 = 63 | CES27 = 88 | CES52 = 86 | CES77 = 80 |
| CES03 = 31 | CES28 = 87 | CES53 = 78 | CES78 = 67 |
| CES04 = 71 | CES29 = 66 | CES54 = 84 | CES79 = 87 |
| CES05 = 49 | CES30 = 73 | CES55 = 84 | CES80 = 86 |
| CES06 = 51 | CES31 = 70 | CES56 = 75 | CES81 = 71 |
| CES07 = 41 | CES32 = 65 | CES57 = 74 | CES82 = 94 |
| CES08 = 40 | CES33 = 73 | CES58 = 76 | CES83 = 90 |
| CES09 = 29 | CES34 = 79 | CES59 = 85 | CES84 = 89 |
| CES10 = 76 | CES35 = 89 | CES60 = 93 | CES85 = 77 |
| CES11 = 59 | CES36 = 97 | CES61 = 84 | CES86 = 61 |
| CES12 = 65 | CES37 = 87 | CES62 = 91 | CES87 = 78 |
| CES13 = 43 | CES38 = 81 | CES63 = 77 | CES88 = 77 |
| CES14 = 74 | CES39 = 95 | CES64 = 72 | CES89 = 67 |
| CES15 = 71 | CES40 = 92 | CES65 = 68 | CES90 = 76 |
| CES16 = 47 | CES41 = 88 | CES66 = 69 | CES91 = 89 |
| CES17 = 50 | CES42 = 89 | CES67 = 67 | CES92 = 58 |
| CES18 = 56 | CES43 = 79 | CES68 = 72 | CES93 = 74 |
| CES19 = 73 | CES44 = 99 | CES69 = 81 | CES94 = 49 |
| CES20 = 66 | CES45 = 85 | CES70 = 66 | CES95 = 68 |
| CES21 = 87 | CES46 = 80 | CES71 = 67 | CES96 = 76 |
| CES22 = 79 | CES47 = 82 | CES72 = 88 | CES97 = 82 |
| CES23 = 92 | CES48 = 69 | CES73 = 59 | CES98 = 75 |
| CES24 = 91 | CES49 = 80 | CES74 = 95 | CES99 = 62 |
| CES25 = 73 | CES50 = 87 | CES75 = 69 |            |



REPORT NUMBER: SP1-1908-441-2-R4

TM-30-18

Color Rendition by Hue-Angle Bin



REPORT NUMBER: SP1-1908-441-2-R4

TM-30-18

Measure Comparisons



(END OF REPORT)