

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: P642285

Luminaire Tested: GWS-SA6C-750-U-T2-W-HSS

Issue Date: 1/10/2023

### Test Information

Test Method: LM-79-2019  
Report Number: P642285  
TEST IS SCALED FROM IESNA LM-79-08 TEST DATA (G2-2209-782-22)  
Test Lab: COOPER LIGHTING SOLUTIONS  
Issue Date: 1/10/2023  
Manufacturer: COOPER LIGHTING SOLUTIONS  
Product Line: McGRAW-EDISON  
Catalog Number: GWS-SA6C-750-U-T2-W-HSS  
Description: GALLEON WALL SLIM LUMINAIRE. (6) LIGHTSQUARES WITH 16 LEDS EACH AND  
TYPE II OPTICS WITH HOUSE SIDE SHIELD  
Light Source: (96) 5000K CCT, 70 CRI LEDS  
Ballast/Driver: -

### Summary

Lumens per Lamp: N/A  
Luminaire Lumens: 21756.7 lumens  
Efficiency: N/A  
Efficacy: 115.0 lumens/watt  
Luminous Opening: Rectangular (W 2' x L: 1' x H: 0')  
IES Classification: Type II - Short  
BUG Rating: B1 - U0 - G4

Input Watts (W): 189.2  
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



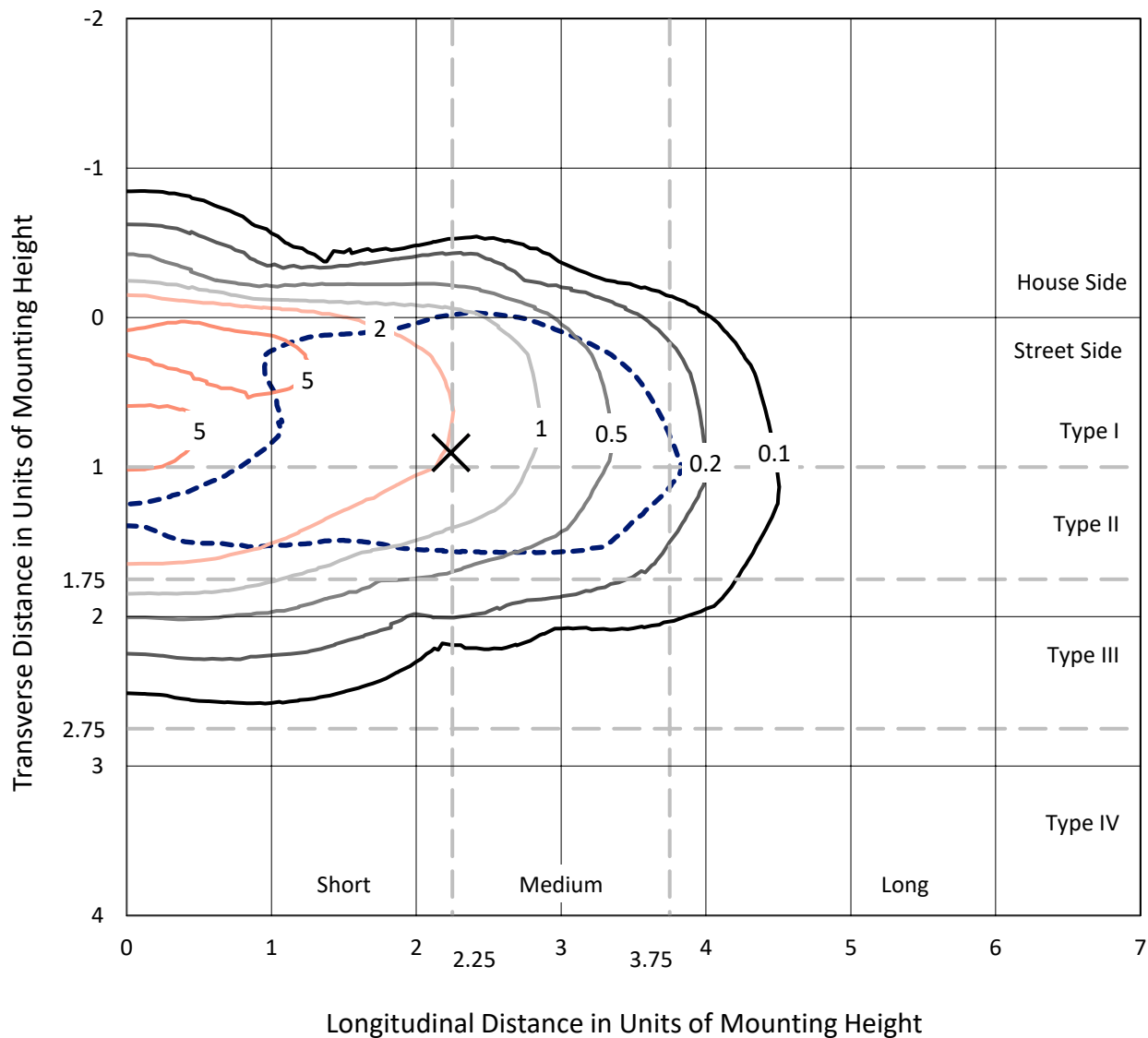
REPORT NUMBER: P642285

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## Iso-Footcandle Lines of Horizontal Illumination

✕ Max cd

--- 1/2 Max cd

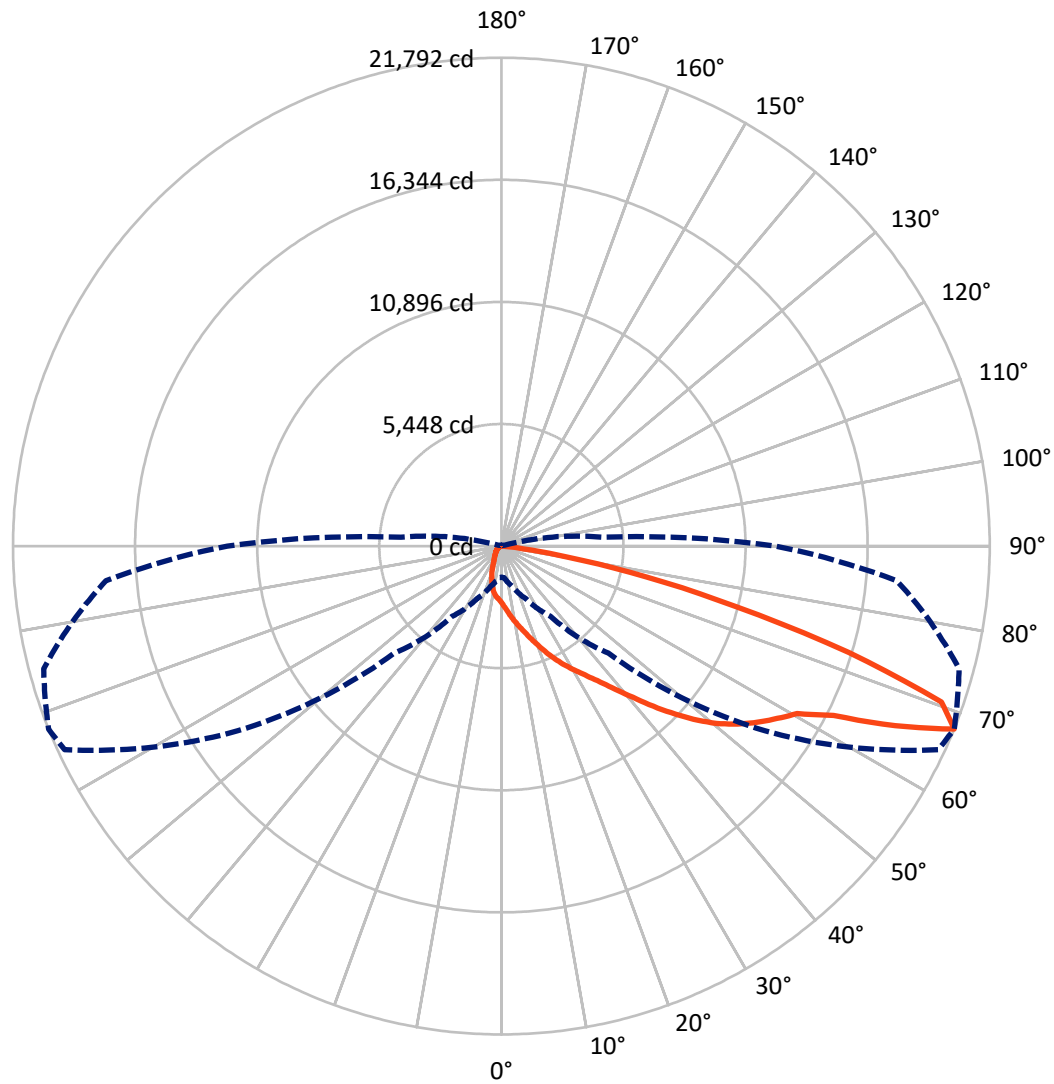


Based on 25 foot mounting height. Maximum calculated value = 6.5 fc  
 Type II - Short - N/A

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## Luminous Intensity Polar Plot



— Vertical Plane Through 68-Deg Lateral    - - - Horizontal Cone Through 67.5-Deg Vertical

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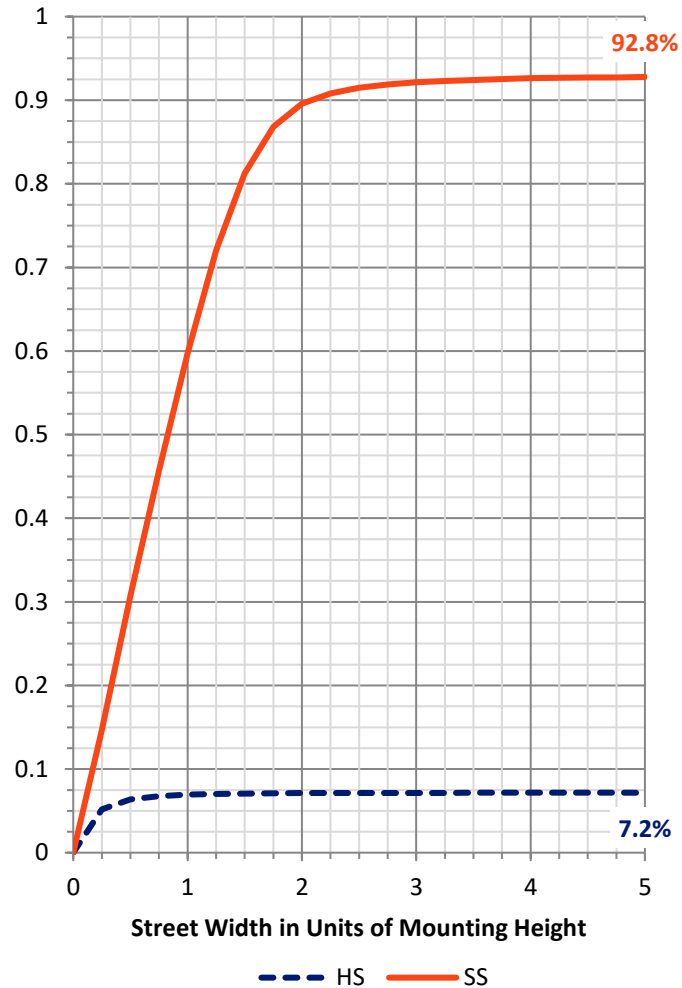
**FLUX DISTRIBUTION:**

|                    |           | Downward | Upward | Total   |
|--------------------|-----------|----------|--------|---------|
| <b>House Side</b>  | Lumens    | 1571.1   | 0.0    | 1571.1  |
|                    | % Fixture | 7.2      | 0.0    | 7.2     |
| <b>Street Side</b> | Lumens    | 20185.6  | 0.0    | 20185.6 |
|                    | % Fixture | 92.8     | 0.0    | 92.8    |
| <b>Total</b>       | Lumens    | 21756.7  | 0.0    | 21756.7 |
|                    | % Fixture | 100.0    | 0.0    | 100.0   |

**ZONAL LUMENS:**

| Zone      | Lumens  | % Fixture |
|-----------|---------|-----------|
| 0°-10°    | 246.9   | 1.1       |
| 10°-20°   | 709.1   | 3.3       |
| 20°-30°   | 1218.6  | 5.6       |
| 30°-40°   | 2118.8  | 9.7       |
| 40°-50°   | 3697.1  | 17.0      |
| 50°-60°   | 5576.1  | 25.6      |
| 60°-70°   | 5591.4  | 25.7      |
| 70°-80°   | 2466.9  | 11.3      |
| 80°-90°   | 131.8   | 0.6       |
| 90°-100°  | 0.0     | 0.0       |
| 100°-110° | 0.0     | 0.0       |
| 110°-120° | 0.0     | 0.0       |
| 120°-130° | 0.0     | 0.0       |
| 130°-140° | 0.0     | 0.0       |
| 140°-150° | 0.0     | 0.0       |
| 150°-160° | 0.0     | 0.0       |
| 160°-170° | 0.0     | 0.0       |
| 170°-180° | 0.0     | 0.0       |
| 0°-90°    | 21756.7 | 100.0     |
| 0°-180°   | 21756.7 | 100.0     |

**Coefficient of Utilization**



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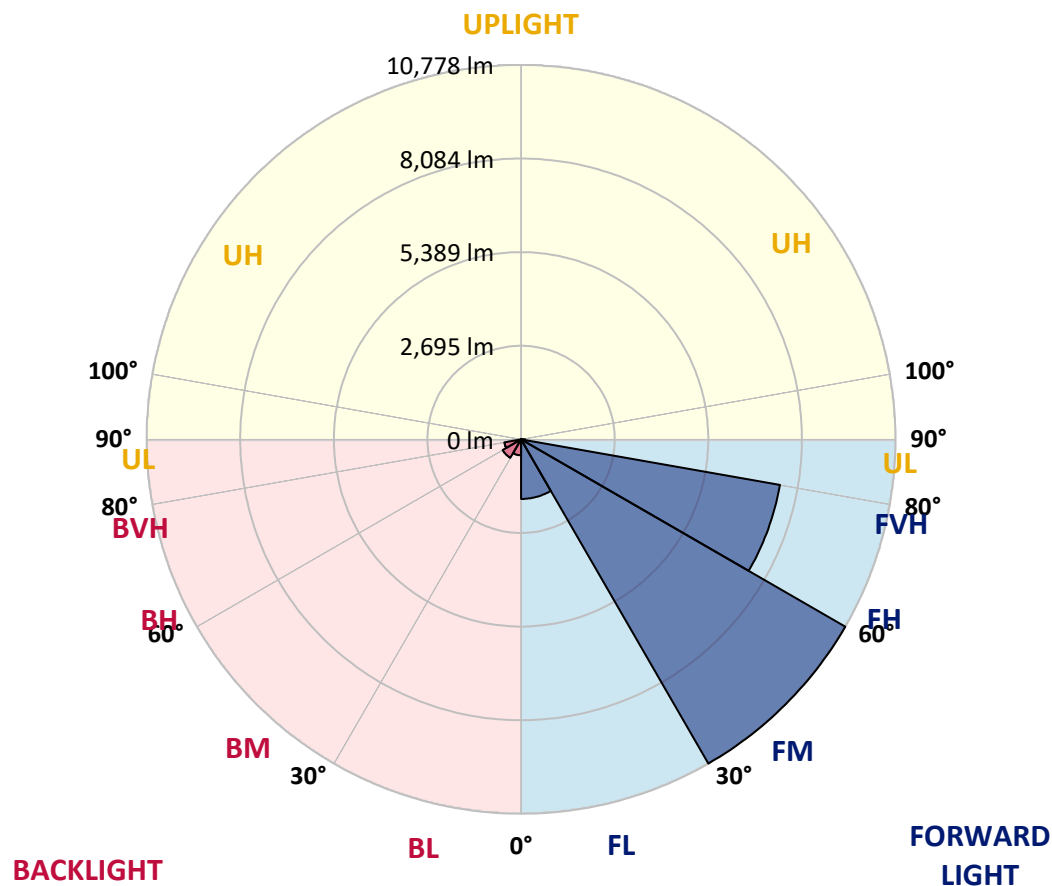
CATALOG NUMBER: GWS-SA6C-750-U-T2-W-HSS

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

| Zone |             | Lumens  | % Fixture | Zone Rating/Lumen Limit |      |          |
|------|-------------|---------|-----------|-------------------------|------|----------|
|      |             |         |           | B                       | U    | G        |
| FL   | (0°-30°)    | 1715.1  | 7.9       |                         |      |          |
| FM   | (30°-60°)   | 10778.2 | 49.5      |                         |      |          |
| FH   | (60°-80°)   | 7568.0  | 34.8      |                         |      | G4/12000 |
| FVH  | (80°-90°)   | 124.3   | 0.6       |                         |      | G2/225   |
| BL   | (0°-30°)    | 459.6   | 2.1       | B1/500                  |      |          |
| BM   | (30°-60°)   | 613.7   | 2.8       | B1/1000                 |      |          |
| BH   | (60°-80°)   | 490.3   | 2.3       | B1/500                  |      | G1/500   |
| BVH  | (80°-90°)   | 7.4     | 0.0       |                         |      | G0/10    |
| UL   | (90°-100°)  | 0.0     | 0.0       |                         | U0/0 |          |
| UH   | (100°-180°) | 0.0     | 0.0       |                         | U0/0 |          |

**BUG Rating: B1-U0-G4**

Type II Short



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**CANDELA DISTRIBUTION (FULL):**

|       | 0°      | 5°      | 15°     | 25°     | 35°     | 45°     | 55°     | 65°     | 68°     | 75°     | 85°     |
|-------|---------|---------|---------|---------|---------|---------|---------|---------|---------|---------|---------|
| 0°    | 2531.9  | 2531.9  | 2531.9  | 2531.9  | 2531.9  | 2531.9  | 2531.9  | 2531.9  | 2531.9  | 2531.9  | 2531.9  |
| 2.5°  | 2948.4  | 2967.1  | 2948.4  | 2952.5  | 2898.4  | 2873.4  | 2819.3  | 2744.3  | 2725.6  | 2677.7  | 2604.8  |
| 5°    | 3308.6  | 3325.2  | 3306.5  | 3302.3  | 3239.9  | 3194.1  | 3104.5  | 2975.4  | 2938.0  | 2844.3  | 2700.6  |
| 7.5°  | 3504.3  | 3514.7  | 3521.0  | 3531.4  | 3508.5  | 3471.0  | 3389.8  | 3229.5  | 3189.9  | 3037.9  | 2835.9  |
| 10°   | 3525.1  | 3533.5  | 3564.7  | 3627.2  | 3673.0  | 3695.9  | 3650.1  | 3502.2  | 3439.8  | 3291.9  | 3002.5  |
| 12.5° | 3466.8  | 3479.3  | 3529.3  | 3633.4  | 3760.4  | 3877.0  | 3906.2  | 3777.1  | 3720.8  | 3531.4  | 3198.2  |
| 15°   | 3389.8  | 3400.2  | 3468.9  | 3610.5  | 3802.1  | 4016.5  | 4137.3  | 4081.1  | 4018.6  | 3820.8  | 3414.8  |
| 17.5° | 3271.1  | 3285.7  | 3381.5  | 3573.0  | 3820.8  | 4126.9  | 4387.1  | 4405.9  | 4362.2  | 4147.7  | 3654.2  |
| 20°   | 3204.5  | 3214.9  | 3300.2  | 3498.1  | 3808.3  | 4208.1  | 4620.3  | 4797.3  | 4749.4  | 4524.6  | 3929.1  |
| 22.5° | 3260.7  | 3269.0  | 3325.2  | 3479.3  | 3766.7  | 4253.9  | 4836.9  | 5188.8  | 5161.7  | 4928.5  | 4218.5  |
| 25°   | 3556.4  | 3583.4  | 3550.1  | 3577.2  | 3785.4  | 4278.9  | 5011.8  | 5580.2  | 5586.5  | 5351.2  | 4518.3  |
| 27.5° | 4156.0  | 4120.6  | 4041.5  | 3906.2  | 3931.1  | 4345.5  | 5161.7  | 5948.8  | 6002.9  | 5763.5  | 4784.8  |
| 30°   | 4766.1  | 4745.3  | 4697.4  | 4487.1  | 4312.2  | 4493.3  | 5288.7  | 6325.7  | 6411.0  | 6169.5  | 5022.2  |
| 32.5° | 5451.1  | 5472.0  | 5386.6  | 5134.6  | 4836.9  | 4793.2  | 5419.9  | 6683.8  | 6844.1  | 6629.7  | 5301.2  |
| 35°   | 6269.4  | 6275.7  | 6107.0  | 5828.0  | 5490.7  | 5288.7  | 5655.2  | 7079.4  | 7375.1  | 7216.8  | 5673.9  |
| 37.5° | 7066.9  | 7104.4  | 7012.8  | 6573.4  | 6273.6  | 5905.1  | 6044.6  | 7587.5  | 8003.9  | 7941.4  | 6142.4  |
| 40°   | 7772.8  | 7831.1  | 7801.9  | 7377.2  | 6983.6  | 6673.4  | 6648.4  | 8183.0  | 8763.9  | 8834.7  | 6760.8  |
| 42.5° | 8335.0  | 8372.4  | 8395.3  | 8093.4  | 7745.7  | 7570.8  | 7393.8  | 8874.2  | 9661.3  | 9950.7  | 7518.7  |
| 45°   | 8928.4  | 8940.9  | 8988.8  | 8784.7  | 8480.7  | 8495.3  | 8274.6  | 9713.4  | 10606.6 | 11187.5 | 8389.1  |
| 47.5° | 9684.2  | 9725.8  | 9702.9  | 9488.5  | 9213.6  | 9378.1  | 9184.5  | 10577.5 | 11539.4 | 12507.6 | 9280.3  |
| 50°   | 10604.5 | 10648.3 | 10627.4 | 10377.6 | 10071.5 | 10140.2 | 10019.4 | 11416.6 | 12438.9 | 13752.8 | 10021.5 |
| 52.5° | 11079.3 | 11114.7 | 11372.8 | 11485.3 | 11325.0 | 10887.7 | 10731.5 | 12339.0 | 13198.9 | 14777.2 | 10702.4 |
| 55°   | 10850.2 | 10875.2 | 11437.4 | 11912.1 | 12499.3 | 12062.0 | 11447.8 | 13051.1 | 13869.4 | 15576.8 | 11208.4 |
| 57.5° | 9900.7  | 10036.1 | 10800.2 | 11604.0 | 12838.7 | 13221.8 | 12609.7 | 13825.7 | 14514.9 | 16132.7 | 11706.0 |
| 60°   | 7953.9  | 7947.7  | 9042.9  | 10485.8 | 12176.6 | 13540.4 | 14250.4 | 14873.0 | 15162.4 | 16559.5 | 12372.3 |
| 62.5° | 4395.5  | 4435.0  | 5892.6  | 7793.6  | 10335.9 | 12715.9 | 15481.0 | 16682.4 | 16638.7 | 17305.0 | 13415.5 |
| 65°   | 2188.4  | 2267.5  | 3058.7  | 4464.2  | 6877.4  | 10508.7 | 15693.4 | 19443.4 | 19318.4 | 19060.2 | 15570.5 |
| 67.5° | 1388.8  | 1420.0  | 1857.3  | 2594.4  | 3822.9  | 6754.6  | 14371.2 | 21502.6 | 21792.1 | 21142.4 | 17708.9 |
| 70°   | 899.5   | 951.6   | 1290.9  | 1774.0  | 2307.1  | 3481.4  | 10527.5 | 20168.0 | 20832.2 | 20913.4 | 16376.3 |
| 72.5° | 489.3   | 526.8   | 824.5   | 1266.0  | 1665.7  | 1740.7  | 5913.4  | 15135.3 | 16203.5 | 17740.1 | 12811.6 |
| 75°   | 279.0   | 306.1   | 451.8   | 859.9   | 1222.2  | 1059.8  | 2621.5  | 10131.9 | 10812.7 | 12678.4 | 9180.3  |
| 77.5° | 168.7   | 191.6   | 254.0   | 418.5   | 766.2   | 707.9   | 991.1   | 6167.4  | 6600.5  | 7564.5  | 4818.2  |
| 80°   | 77.0    | 91.6    | 160.3   | 231.1   | 418.5   | 335.2   | 379.0   | 2875.5  | 2969.2  | 3104.5  | 1594.9  |
| 82.5° | 35.4    | 41.6    | 72.9    | 137.4   | 237.4   | 193.6   | 145.8   | 664.2   | 934.9   | 884.9   | 406.0   |
| 85°   | 4.2     | 4.2     | 27.1    | 56.2    | 66.6    | 50.0    | 60.4    | 149.9   | 189.5   | 266.5   | 116.6   |
| 87.5° | 0.0     | 0.0     | 2.1     | 2.1     | 4.2     | 6.2     | 12.5    | 18.7    | 27.1    | 43.7    | 29.2    |
| 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°    | 2531.9  | 2531.9 | 2531.9 | 2531.9 | 2531.9 | 2531.9 | 2531.9 | 2531.9 | 2531.9 | 2531.9 | 2531.9 |
| 2.5°  | 2571.5  | 2513.2 | 2461.1 | 2384.1 | 2332.0 | 2273.7 | 2234.2 | 2186.3 | 2167.5 | 2153.0 | 2132.1 |
| 5°    | 2629.8  | 2536.1 | 2409.1 | 2267.5 | 2150.9 | 2040.5 | 1938.5 | 1871.9 | 1813.6 | 1805.2 | 1776.1 |
| 7.5°  | 2725.6  | 2586.1 | 2371.6 | 2140.5 | 1942.7 | 1759.4 | 1615.8 | 1499.2 | 1440.9 | 1422.1 | 1388.8 |
| 10°   | 2852.6  | 2661.0 | 2315.4 | 1961.4 | 1676.2 | 1457.5 | 1295.1 | 1163.9 | 1072.3 | 1039.0 | 1014.0 |
| 12.5° | 2994.2  | 2729.7 | 2225.8 | 1740.7 | 1415.9 | 1166.0 | 959.9  | 820.4  | 762.1  | 741.3  | 722.5  |
| 15°   | 3156.6  | 2794.3 | 2084.3 | 1520.0 | 1161.9 | 857.9  | 712.1  | 651.7  | 626.7  | 620.5  | 614.2  |
| 17.5° | 3312.7  | 2835.9 | 1915.6 | 1290.9 | 893.3  | 666.3  | 597.6  | 574.7  | 568.4  | 562.2  | 558.0  |
| 20°   | 3489.7  | 2865.1 | 1717.8 | 1074.4 | 693.4  | 564.3  | 531.0  | 514.3  | 501.8  | 489.3  | 487.2  |
| 22.5° | 3670.9  | 2865.1 | 1503.3 | 862.0  | 580.9  | 506.0  | 468.5  | 437.3  | 414.4  | 401.9  | 397.7  |
| 25°   | 3843.7  | 2825.5 | 1290.9 | 689.2  | 512.2  | 449.8  | 401.9  | 366.5  | 335.2  | 320.7  | 316.5  |
| 27.5° | 3966.5  | 2723.5 | 1105.6 | 583.0  | 464.3  | 399.8  | 341.5  | 301.9  | 276.9  | 262.4  | 260.3  |
| 30°   | 4043.6  | 2571.5 | 934.9  | 520.5  | 422.7  | 347.7  | 289.4  | 256.1  | 237.4  | 227.0  | 222.8  |
| 32.5° | 4101.9  | 2384.1 | 782.9  | 476.8  | 383.1  | 301.9  | 251.9  | 224.9  | 208.2  | 199.9  | 197.8  |
| 35°   | 4218.5  | 2207.1 | 670.5  | 437.3  | 341.5  | 264.4  | 220.7  | 199.9  | 187.4  | 177.0  | 174.9  |
| 37.5° | 4380.9  | 2059.3 | 580.9  | 401.9  | 301.9  | 235.3  | 199.9  | 181.1  | 170.7  | 160.3  | 158.2  |
| 40°   | 4620.3  | 1965.6 | 514.3  | 366.5  | 266.5  | 212.4  | 183.2  | 166.6  | 152.0  | 141.6  | 139.5  |
| 42.5° | 4988.9  | 1921.8 | 470.6  | 331.1  | 235.3  | 191.6  | 168.7  | 147.8  | 133.3  | 122.8  | 120.8  |
| 45°   | 5428.2  | 1944.8 | 433.1  | 295.7  | 214.5  | 177.0  | 149.9  | 129.1  | 114.5  | 104.1  | 102.0  |
| 47.5° | 5898.8  | 2026.0 | 401.9  | 262.4  | 193.6  | 162.4  | 133.3  | 110.4  | 97.9   | 87.5   | 85.4   |
| 50°   | 6390.2  | 2159.2 | 374.8  | 231.1  | 177.0  | 145.8  | 114.5  | 95.8   | 83.3   | 75.0   | 72.9   |
| 52.5° | 6817.0  | 2340.4 | 347.7  | 208.2  | 162.4  | 129.1  | 99.9   | 83.3   | 70.8   | 62.5   | 60.4   |
| 55°   | 7225.2  | 2511.1 | 326.9  | 187.4  | 145.8  | 112.4  | 87.5   | 70.8   | 60.4   | 52.1   | 50.0   |
| 57.5° | 7668.7  | 2692.3 | 301.9  | 168.7  | 131.2  | 99.9   | 77.0   | 60.4   | 52.1   | 43.7   | 41.6   |
| 60°   | 8314.1  | 2960.9 | 264.4  | 154.1  | 114.5  | 87.5   | 66.6   | 54.1   | 45.8   | 35.4   | 33.3   |
| 62.5° | 9244.9  | 3450.2 | 222.8  | 133.3  | 97.9   | 75.0   | 56.2   | 45.8   | 37.5   | 29.2   | 25.0   |
| 65°   | 10985.6 | 4283.0 | 183.2  | 110.4  | 79.1   | 62.5   | 47.9   | 37.5   | 29.2   | 20.8   | 18.7   |
| 67.5° | 12239.0 | 4499.6 | 147.8  | 89.5   | 64.5   | 47.9   | 39.6   | 29.2   | 20.8   | 14.6   | 12.5   |
| 70°   | 10700.3 | 3231.5 | 114.5  | 72.9   | 54.1   | 37.5   | 31.2   | 22.9   | 14.6   | 10.4   | 8.3    |
| 72.5° | 8062.2  | 2111.3 | 85.4   | 56.2   | 41.6   | 31.2   | 22.9   | 18.7   | 12.5   | 8.3    | 6.2    |
| 75°   | 5682.3  | 1220.2 | 62.5   | 41.6   | 29.2   | 22.9   | 18.7   | 14.6   | 10.4   | 6.2    | 6.2    |
| 77.5° | 2913.0  | 503.9  | 43.7   | 29.2   | 20.8   | 14.6   | 12.5   | 8.3    | 8.3    | 6.2    | 4.2    |
| 80°   | 884.9   | 166.6  | 25.0   | 18.7   | 14.6   | 10.4   | 6.2    | 6.2    | 6.2    | 4.2    | 2.1    |
| 82.5° | 202.0   | 54.1   | 14.6   | 14.6   | 10.4   | 8.3    | 6.2    | 2.1    | 2.1    | 0.0    | 0.0    |
| 85°   | 52.1    | 16.7   | 12.5   | 10.4   | 10.4   | 8.3    | 4.2    | 2.1    | 0.0    | 0.0    | 0.0    |
| 87.5° | 18.7    | 10.4   | 10.4   | 10.4   | 8.3    | 6.2    | 4.2    | 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-79-2008: Approved Method: Electrical and Photometric Measurements of Solid-  
State Lighting Products

Report Prepared for

Cooper Lighting Solutions

McGRAW-EDISON

Report Number: SP1-1908-441-4-R4

Test Date: 10/02/2019

Luminaire Tested: SA1C-750-U-5WQ

Data in this report applies to families of products SA1C-760-U-5WQ .

### Test Information

Test Method: LM-79-2008  
 Report Number: SP1-1908-441-4-R4  
 Test Lab: COOPER LIGHTING SOLUTIONS  
 Photometer: SP1 - 76IN SPHERE  
 Measurement Geometry:  $4\pi$   
 Issue Date: 10/28/2024  
 Manufacturer: COOPER LIGHTING SOLUTIONS  
 Product Line: MCGRAW-EDISON  
 Catalog Number: **SA1C-750-U-5WQ**  
 Description: MCGRAW EDISON ROADWAY AND AREA LUMINAIRE

\*\*\*THIS IS A REVISION OF SP1-1908-441-4-R3. TO UPDATE THE CATALOG INFORMATION.\*\*\*TESTED IN SITU. ROADWAY AND AREA LUMINAIRE. (1) 70 CRI, 5000K, 1050MA LIGHTSQUARE WITH 16 LEDS AND TYPE V WIDE OPTICS.

### Spectral Parameters

|                           |        |           |      |      |       |
|---------------------------|--------|-----------|------|------|-------|
| CCT (K):                  | 4884   | CRI (Ra): | 73.5 |      |       |
| CIE u':                   | 0.2101 | R1:       | 70.5 | R9:  | -28.4 |
| CIE v':                   | 0.4904 | R2:       | 77.7 | R10: | 48.6  |
| Duv:                      | 0.0037 | R3:       | 84.6 | R11: | 73.2  |
| CIE x:                    | 0.3493 | R4:       | 74.7 | R12: | 50.7  |
| CIE y:                    | 0.3624 | R5:       | 71.9 | R13: | 71.2  |
| CIE z:                    | 0.2884 | R6:       | 70.7 | R14: | 91.4  |
| Peak Wavelength (nm):     | 444    | R7:       | 81.2 |      |       |
| Dominant Wavelength (nm): | 571    | R8:       | 56.9 |      |       |
| Purity:                   | 13.7   |           |      |      |       |
| Rf:                       | 74.9   |           |      |      |       |
| Rg:                       | 96.3   |           |      |      |       |



REPORT NUMBER: SP1-1908-441-4-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            |

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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 5000K 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       | 2945             | NR               | 490       | 37941            | NR               | 620       | 88803            | NR               | 750       | 3908             | NR               | 880       | 2997             | NR               |
| 365       | 2596             | NR               | 495       | 48525            | NR               | 625       | 80578            | NR               | 755       | 3988             | NR               | 885       | 2927             | NR               |
| 370       | 2732             | NR               | 500       | 60609            | NR               | 630       | 73127            | NR               | 760       | 3335             | NR               | 890       | 2649             | NR               |
| 375       | 2894             | NR               | 505       | 72036            | NR               | 635       | 66244            | NR               | 765       | 3438             | NR               | 895       | 2828             | NR               |
| 380       | 2822             | NR               | 510       | 82168            | NR               | 640       | 59440            | NR               | 770       | 3427             | NR               | 900       | 1407             | NR               |
| 385       | 2394             | NR               | 515       | 90898            | NR               | 645       | 52864            | NR               | 775       | 2759             | NR               | 905       | 2224             | NR               |
| 390       | 2370             | NR               | 520       | 97142            | NR               | 650       | 47085            | NR               | 780       | 2340             | NR               | 910       | 2905             | NR               |
| 395       | 2267             | NR               | 525       | 103255           | NR               | 655       | 41789            | NR               | 785       | 2412             | NR               | 915       | 3350             | NR               |
| 400       | 2262             | NR               | 530       | 106697           | NR               | 660       | 37064            | NR               | 790       | 1999             | NR               | 920       | 3114             | NR               |
| 405       | 3000             | NR               | 535       | 110081           | NR               | 665       | 32299            | NR               | 795       | 2054             | NR               | 925       | 2834             | NR               |
| 410       | 5324             | NR               | 540       | 112494           | NR               | 670       | 28142            | NR               | 800       | 2331             | NR               | 930       | 2271             | NR               |
| 415       | 10725            | NR               | 545       | 115513           | NR               | 675       | 24505            | NR               | 805       | 2648             | NR               | 935       | 2228             | NR               |
| 420       | 22128            | NR               | 550       | 117203           | NR               | 680       | 21162            | NR               | 810       | 2485             | NR               | 940       | 2833             | NR               |
| 425       | 44095            | NR               | 555       | 119753           | NR               | 685       | 18400            | NR               | 815       | 2409             | NR               | 945       | 2941             | NR               |
| 430       | 77002            | NR               | 560       | 122602           | NR               | 690       | 16065            | NR               | 820       | 2221             | NR               | 950       | 2323             | NR               |
| 435       | 119881           | NR               | 565       | 124314           | NR               | 695       | 13860            | NR               | 825       | 1562             | NR               | 955       | 1667             | NR               |
| 440       | 164454           | NR               | 570       | 126775           | NR               | 700       | 12177            | NR               | 830       | 2249             | NR               | 960       | 749              | NR               |
| 445       | 179997           | NR               | 575       | 127511           | NR               | 705       | 10757            | NR               | 835       | 2573             | NR               | 965       | 2669             | NR               |
| 450       | 142822           | NR               | 580       | 127577           | NR               | 710       | 9601             | NR               | 840       | 2764             | NR               | 970       | 3968             | NR               |
| 455       | 90008            | NR               | 585       | 126153           | NR               | 715       | 8944             | NR               | 845       | 3109             | NR               | 975       | 3886             | NR               |
| 460       | 60557            | NR               | 590       | 123678           | NR               | 720       | 7947             | NR               | 850       | 2963             | NR               | 980       | 2788             | NR               |
| 465       | 43305            | NR               | 595       | 119774           | NR               | 725       | 7062             | NR               | 855       | 2336             | NR               | 985       | 3496             | NR               |
| 470       | 31089            | NR               | 600       | 115733           | NR               | 730       | 6004             | NR               | 860       | 2118             | NR               | 990       | 2913             | NR               |
| 475       | 26278            | NR               | 605       | 109231           | NR               | 735       | 5594             | NR               | 865       | 3144             | NR               | 995       | 4659             | NR               |
| 480       | 27060            | NR               | 610       | 102408           | NR               | 740       | 5165             | NR               | 870       | 3069             | NR               | 1000      | 1308             | NR               |
| 485       | 30698            | NR               | 615       | 96015            | NR               | 745       | 4687             | NR               | 875       | 3311             | NR               |           |                  |                  |

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Scotopic Flux vs. Wavelength



Scotopic Lumens: 13493.5

S/P: 1.77

| 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       | 2945             | NR               | 490       | 37941            | NR               | 620       | 88803            | NR               | 750       | 3908             | NR               | 880       | 2997             | NR               |
| 365       | 2596             | NR               | 495       | 48525            | NR               | 625       | 80578            | NR               | 755       | 3988             | NR               | 885       | 2927             | NR               |
| 370       | 2732             | NR               | 500       | 60609            | NR               | 630       | 73127            | NR               | 760       | 3335             | NR               | 890       | 2649             | NR               |
| 375       | 2894             | NR               | 505       | 72036            | NR               | 635       | 66244            | NR               | 765       | 3438             | NR               | 895       | 2828             | NR               |
| 380       | 2822             | NR               | 510       | 82168            | NR               | 640       | 59440            | NR               | 770       | 3427             | NR               | 900       | 1407             | NR               |
| 385       | 2394             | NR               | 515       | 90898            | NR               | 645       | 52864            | NR               | 775       | 2759             | NR               | 905       | 2224             | NR               |
| 390       | 2370             | NR               | 520       | 97142            | NR               | 650       | 47085            | NR               | 780       | 2340             | NR               | 910       | 2905             | NR               |
| 395       | 2267             | NR               | 525       | 103255           | NR               | 655       | 41789            | NR               | 785       | 2412             | NR               | 915       | 3350             | NR               |
| 400       | 2262             | NR               | 530       | 106697           | NR               | 660       | 37064            | NR               | 790       | 1999             | NR               | 920       | 3114             | NR               |
| 405       | 3000             | NR               | 535       | 110081           | NR               | 665       | 32299            | NR               | 795       | 2054             | NR               | 925       | 2834             | NR               |
| 410       | 5324             | NR               | 540       | 112494           | NR               | 670       | 28142            | NR               | 800       | 2331             | NR               | 930       | 2271             | NR               |
| 415       | 10725            | NR               | 545       | 115513           | NR               | 675       | 24505            | NR               | 805       | 2648             | NR               | 935       | 2228             | NR               |
| 420       | 22128            | NR               | 550       | 117203           | NR               | 680       | 21162            | NR               | 810       | 2485             | NR               | 940       | 2833             | NR               |
| 425       | 44095            | NR               | 555       | 119753           | NR               | 685       | 18400            | NR               | 815       | 2409             | NR               | 945       | 2941             | NR               |
| 430       | 77002            | NR               | 560       | 122602           | NR               | 690       | 16065            | NR               | 820       | 2221             | NR               | 950       | 2323             | NR               |
| 435       | 119881           | NR               | 565       | 124314           | NR               | 695       | 13860            | NR               | 825       | 1562             | NR               | 955       | 1667             | NR               |
| 440       | 164454           | NR               | 570       | 126775           | NR               | 700       | 12177            | NR               | 830       | 2249             | NR               | 960       | 749              | NR               |
| 445       | 179997           | NR               | 575       | 127511           | NR               | 705       | 10757            | NR               | 835       | 2573             | NR               | 965       | 2669             | NR               |
| 450       | 142822           | NR               | 580       | 127577           | NR               | 710       | 9601             | NR               | 840       | 2764             | NR               | 970       | 3968             | NR               |
| 455       | 90008            | NR               | 585       | 126153           | NR               | 715       | 8944             | NR               | 845       | 3109             | NR               | 975       | 3886             | NR               |
| 460       | 60557            | NR               | 590       | 123678           | NR               | 720       | 7947             | NR               | 850       | 2963             | NR               | 980       | 2788             | NR               |
| 465       | 43305            | NR               | 595       | 119774           | NR               | 725       | 7062             | NR               | 855       | 2336             | NR               | 985       | 3496             | NR               |
| 470       | 31089            | NR               | 600       | 115733           | NR               | 730       | 6004             | NR               | 860       | 2118             | NR               | 990       | 2913             | NR               |
| 475       | 26278            | NR               | 605       | 109231           | NR               | 735       | 5594             | NR               | 865       | 3144             | NR               | 995       | 4659             | NR               |
| 480       | 27060            | NR               | 610       | 102408           | NR               | 740       | 5165             | NR               | 870       | 3069             | NR               | 1000      | 1308             | NR               |
| 485       | 30698            | NR               | 615       | 96015            | NR               | 745       | 4687             | NR               | 875       | 3311             | NR               |           |                  |                  |

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**Melanopic Flux vs. Wavelength**



**Melanopic Lumens: 5378.9**

**M/P: 0.71**

| 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       | 2945             | NR               | 490       | 37941            | NR               | 620       | 88803            | NR               | 750       | 3908             | NR               | 880       | 2997             | NR               |
| 365       | 2596             | NR               | 495       | 48525            | NR               | 625       | 80578            | NR               | 755       | 3988             | NR               | 885       | 2927             | NR               |
| 370       | 2732             | NR               | 500       | 60609            | NR               | 630       | 73127            | NR               | 760       | 3335             | NR               | 890       | 2649             | NR               |
| 375       | 2894             | NR               | 505       | 72036            | NR               | 635       | 66244            | NR               | 765       | 3438             | NR               | 895       | 2828             | NR               |
| 380       | 2822             | NR               | 510       | 82168            | NR               | 640       | 59440            | NR               | 770       | 3427             | NR               | 900       | 1407             | NR               |
| 385       | 2394             | NR               | 515       | 90898            | NR               | 645       | 52864            | NR               | 775       | 2759             | NR               | 905       | 2224             | NR               |
| 390       | 2370             | NR               | 520       | 97142            | NR               | 650       | 47085            | NR               | 780       | 2340             | NR               | 910       | 2905             | NR               |
| 395       | 2267             | NR               | 525       | 103255           | NR               | 655       | 41789            | NR               | 785       | 2412             | NR               | 915       | 3350             | NR               |
| 400       | 2262             | NR               | 530       | 106697           | NR               | 660       | 37064            | NR               | 790       | 1999             | NR               | 920       | 3114             | NR               |
| 405       | 3000             | NR               | 535       | 110081           | NR               | 665       | 32299            | NR               | 795       | 2054             | NR               | 925       | 2834             | NR               |
| 410       | 5324             | NR               | 540       | 112494           | NR               | 670       | 28142            | NR               | 800       | 2331             | NR               | 930       | 2271             | NR               |
| 415       | 10725            | NR               | 545       | 115513           | NR               | 675       | 24505            | NR               | 805       | 2648             | NR               | 935       | 2228             | NR               |
| 420       | 22128            | NR               | 550       | 117203           | NR               | 680       | 21162            | NR               | 810       | 2485             | NR               | 940       | 2833             | NR               |
| 425       | 44095            | NR               | 555       | 119753           | NR               | 685       | 18400            | NR               | 815       | 2409             | NR               | 945       | 2941             | NR               |
| 430       | 77002            | NR               | 560       | 122602           | NR               | 690       | 16065            | NR               | 820       | 2221             | NR               | 950       | 2323             | NR               |
| 435       | 119881           | NR               | 565       | 124314           | NR               | 695       | 13860            | NR               | 825       | 1562             | NR               | 955       | 1667             | NR               |
| 440       | 164454           | NR               | 570       | 126775           | NR               | 700       | 12177            | NR               | 830       | 2249             | NR               | 960       | 749              | NR               |
| 445       | 179997           | NR               | 575       | 127511           | NR               | 705       | 10757            | NR               | 835       | 2573             | NR               | 965       | 2669             | NR               |
| 450       | 142822           | NR               | 580       | 127577           | NR               | 710       | 9601             | NR               | 840       | 2764             | NR               | 970       | 3968             | NR               |
| 455       | 90008            | NR               | 585       | 126153           | NR               | 715       | 8944             | NR               | 845       | 3109             | NR               | 975       | 3886             | NR               |
| 460       | 60557            | NR               | 590       | 123678           | NR               | 720       | 7947             | NR               | 850       | 2963             | NR               | 980       | 2788             | NR               |
| 465       | 43305            | NR               | 595       | 119774           | NR               | 725       | 7062             | NR               | 855       | 2336             | NR               | 985       | 3496             | NR               |
| 470       | 31089            | NR               | 600       | 115733           | NR               | 730       | 6004             | NR               | 860       | 2118             | NR               | 990       | 2913             | NR               |
| 475       | 26278            | NR               | 605       | 109231           | NR               | 735       | 5594             | NR               | 865       | 3144             | NR               | 995       | 4659             | NR               |
| 480       | 27060            | NR               | 610       | 102408           | NR               | 740       | 5165             | NR               | 870       | 3069             | NR               | 1000      | 1308             | NR               |
| 485       | 30698            | NR               | 615       | 96015            | NR               | 745       | 4687             | NR               | 875       | 3311             | NR               |           |                  |                  |

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**Summary**

$R_f = 74.9$   
 $R_g = 96.3$   
 CIE  $R_a = 73.5$   
 $R_g = -28.4$

**Spectral Power Distribution Comparison**



**Color Vector Graphics**



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

|            |            |            |            |
|------------|------------|------------|------------|
| CES01 = 85 | CES26 = 61 | CES51 = 90 | CES76 = 52 |
| CES02 = 60 | CES27 = 84 | CES52 = 91 | CES77 = 71 |
| CES03 = 30 | CES28 = 81 | CES53 = 79 | CES78 = 54 |
| CES04 = 69 | CES29 = 58 | CES54 = 83 | CES79 = 80 |
| CES05 = 46 | CES30 = 67 | CES55 = 83 | CES80 = 77 |
| CES06 = 50 | CES31 = 63 | CES56 = 73 | CES81 = 77 |
| CES07 = 39 | CES32 = 59 | CES57 = 72 | CES82 = 90 |
| CES08 = 38 | CES33 = 69 | CES58 = 73 | CES83 = 86 |
| CES09 = 29 | CES34 = 69 | CES59 = 88 | CES84 = 88 |
| CES10 = 73 | CES35 = 83 | CES60 = 93 | CES85 = 84 |
| CES11 = 56 | CES36 = 95 | CES61 = 88 | CES86 = 75 |
| CES12 = 61 | CES37 = 78 | CES62 = 85 | CES87 = 78 |
| CES13 = 41 | CES38 = 76 | CES63 = 77 | CES88 = 79 |
| CES14 = 74 | CES39 = 93 | CES64 = 74 | CES89 = 75 |
| CES15 = 70 | CES40 = 86 | CES65 = 67 | CES90 = 77 |
| CES16 = 46 | CES41 = 87 | CES66 = 69 | CES91 = 89 |
| CES17 = 49 | CES42 = 78 | CES67 = 67 | CES92 = 66 |
| CES18 = 55 | CES43 = 75 | CES68 = 73 | CES93 = 80 |
| CES19 = 71 | CES44 = 99 | CES69 = 81 | CES94 = 57 |
| CES20 = 64 | CES45 = 83 | CES70 = 63 | CES95 = 71 |
| CES21 = 85 | CES46 = 81 | CES71 = 60 | CES96 = 78 |
| CES22 = 77 | CES47 = 80 | CES72 = 86 | CES97 = 85 |
| CES23 = 91 | CES48 = 72 | CES73 = 53 | CES98 = 75 |
| CES24 = 90 | CES49 = 81 | CES74 = 96 | CES99 = 62 |
| CES25 = 71 | CES50 = 89 | CES75 = 58 |            |



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**Color Rendition by Hue-Angle Bin**



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**Measure Comparisons**



(END OF REPORT)