

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

Test Report Prepared for  
Cooper Lighting Solutions  
(formerly Eaton)

Brand: McGRAW-EDISON

Report Number: P321800

Luminaire Tested: **GLEON-SA6B-722-U-T3R-HSS**

Issue Date: 3/3/2020

**Test Information**

Test Method: LM-79-08  
Report Number: P321800  
TEST IS SCALED FROM IESNA LM-79-08 TEST DATA (G2-1903-205-11)  
Test Lab: INNOVATION CENTER  
Issue Date: 3/3/2020  
Manufacturer: COOPER LIGHTING SOLUTIONS (FORMERLY EATON)  
Product Line: McGRAW-EDISON  
Catalog Number: GLEON-SA6B-722-U-T3R-HSS  
Description: GALLEON AREA AND ROADWAY LUMINAIRE  
(6) 70 CRI, 2200K, 800mA LIGHTSQUARES WITH 16 LEDS EACH AND TYPE III  
ROADWAY OPTICS WITH HOUSE SIDE SHIELD  
Light Source: -  
Ballast/Driver: ELECTRONIC DRIVER

**Summary**

Lumens per Lamp: N/A  
Luminaire Lumens: 19324 lumens  
Efficiency: N/A  
Efficacy: 77.6 lumens/watt  
Luminous Opening: Rectangular (W 1.5' x L: 1' x H: 0')  
IES Classification: Type III - Medium  
BUG Rating: B2 - U0 - G4

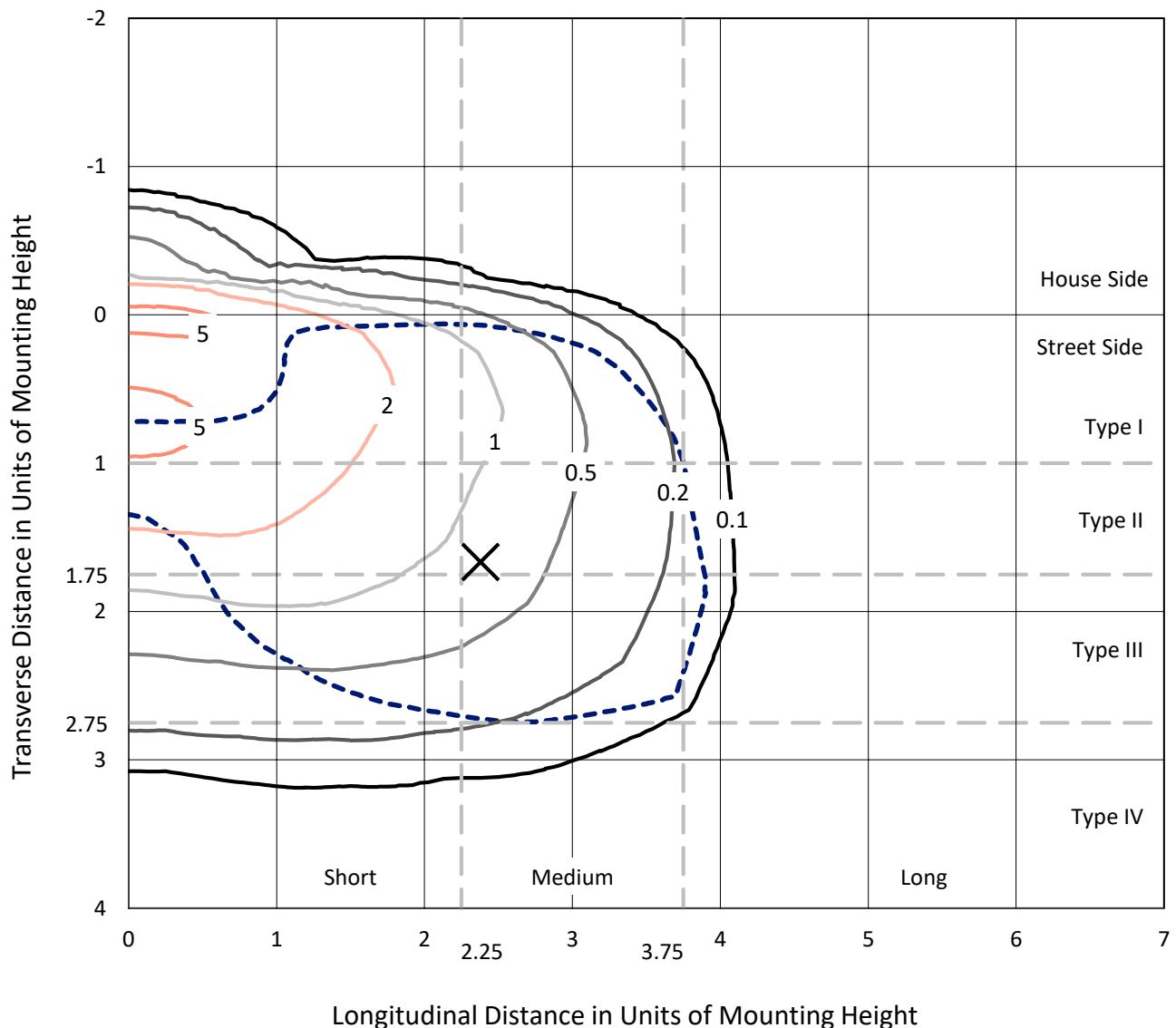
Input Watts (W): 249  
Input Voltage (V): NR  
Input Current (Ain): NR  
Voltage Rise (V): NR  
Power Factor: NR  
Total Harmonic Distortion (THDi): NR  
Frequency (hertz): 60  
Stabilization Time: NR  
Operation Time: NR  
Ambient Temperature (°C): NR  
Test Distance: 24 FT



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## Iso-Footcandle Lines of Horizontal Illumination

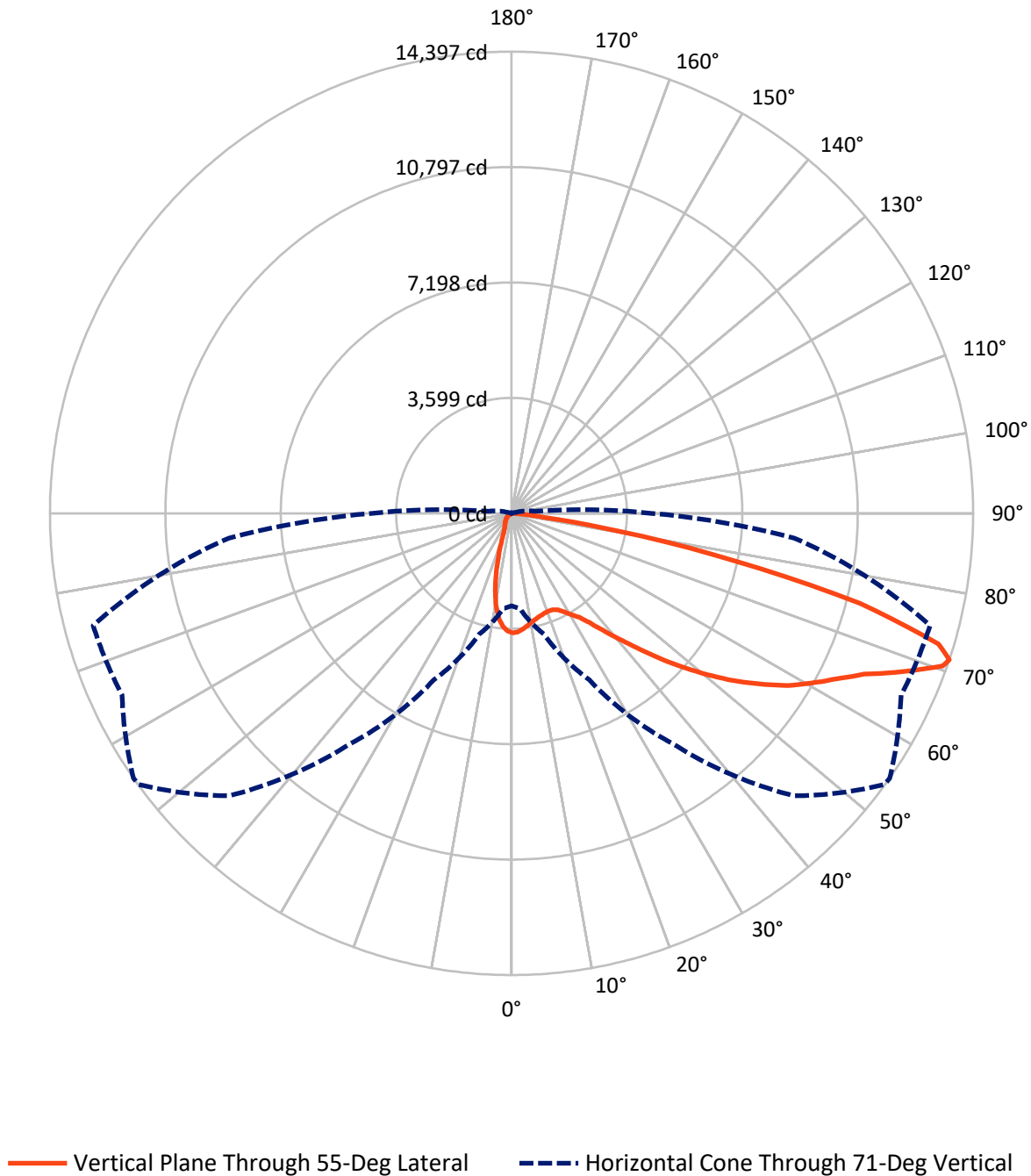
✕ Max cd  
 - - - 1/2 Max cd



Based on 25 foot mounting height. Maximum calculated value = 6.1 fc  
 Type III - Medium - N/A

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## Luminous Intensity Polar Plot



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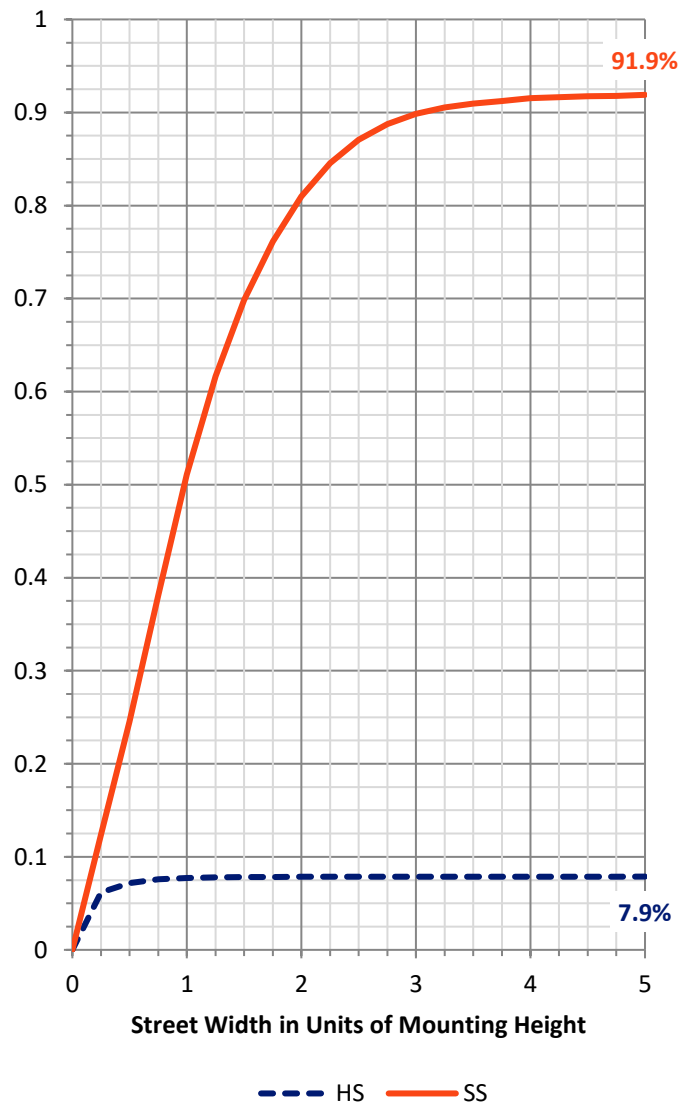
**FLUX DISTRIBUTION:**

|                    |           | Downward | Upward | Total   |
|--------------------|-----------|----------|--------|---------|
| <b>House Side</b>  | Lumens    | 1529.9   | 0.0    | 1529.9  |
|                    | % Fixture | 7.9      | 0.0    | 7.9     |
| <b>Street Side</b> | Lumens    | 17794.1  | 0.0    | 17794.1 |
|                    | % Fixture | 92.1     | 0.0    | 92.1    |
| <b>Total</b>       | Lumens    | 19324.0  | 0.0    | 19324.0 |
|                    | % Fixture | 100.0    | 0.0    | 100.0   |

**ZONAL LUMENS:**

| Zone      | Lumens  | % Fixture |
|-----------|---------|-----------|
| 0°-10°    | 317.8   | 1.6       |
| 10°-20°   | 717.3   | 3.7       |
| 20°-30°   | 1152.8  | 6.0       |
| 30°-40°   | 1958.7  | 10.1      |
| 40°-50°   | 3040.1  | 15.7      |
| 50°-60°   | 4087.3  | 21.2      |
| 60°-70°   | 5000.2  | 25.9      |
| 70°-80°   | 2923.5  | 15.1      |
| 80°-90°   | 126.4   | 0.7       |
| 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°    | 19324.0 | 100.0     |
| 0°-180°   | 19324.0 | 100.0     |

**Coefficient of Utilization**



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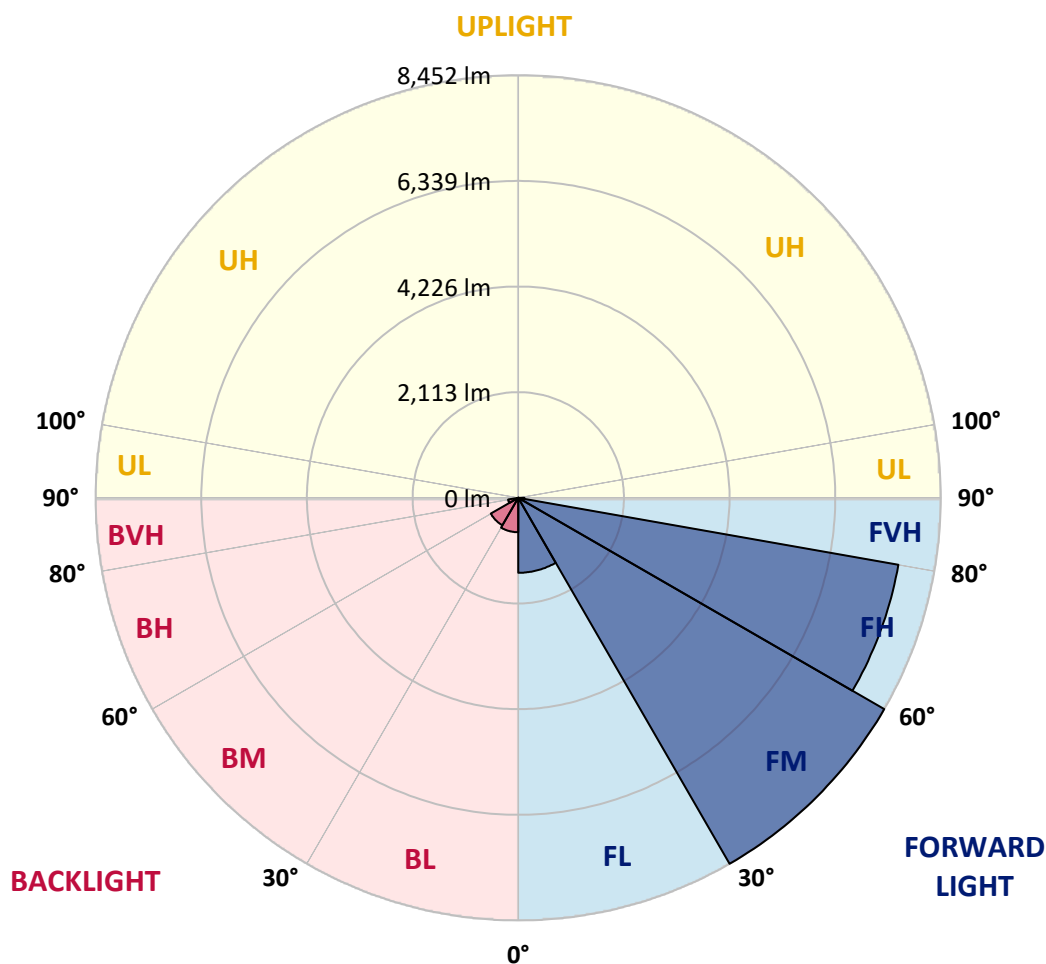
CATALOG NUMBER: GLEON-SA6B-722-U-T3R-HSS

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

| Zone |             | Lumens | % Fixture | Zone Rating/Lumen Limit |      |          |
|------|-------------|--------|-----------|-------------------------|------|----------|
|      |             |        |           | B                       | U    | G        |
| FL   | (0°-30°)    | 1499.3 | 7.8       |                         |      |          |
| FM   | (30°-60°)   | 8451.8 | 43.7      |                         |      |          |
| FH   | (60°-80°)   | 7718.7 | 39.9      |                         |      | G4/12000 |
| FVH  | (80°-90°)   | 124.4  | 0.6       |                         |      | G2/225   |
| BL   | (0°-30°)    | 688.6  | 3.6       | B2/1000                 |      |          |
| BM   | (30°-60°)   | 634.3  | 3.3       | B1/1000                 |      |          |
| BH   | (60°-80°)   | 205.0  | 1.1       | B1/500                  |      | G1/500   |
| BVH  | (80°-90°)   | 2.0    | 0.0       |                         |      | G0/10    |
| UL   | (90°-100°)  | 0.0    | 0.0       |                         | U0/0 |          |
| UH   | (100°-180°) | 0.0    | 0.0       |                         | U0/0 |          |

**BUG Rating: B2-U0-G4**

Type III Medium





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**CANDELA DISTRIBUTION (FULL):**

|       | 0°     | 5°     | 15°    | 25°    | 35°     | 45°     | 54°     | 55°     | 65°     | 75°     | 85°     |
|-------|--------|--------|--------|--------|---------|---------|---------|---------|---------|---------|---------|
| 0°    | 3726.7 | 3726.7 | 3726.7 | 3726.7 | 3726.7  | 3726.7  | 3726.7  | 3726.7  | 3726.7  | 3726.7  | 3726.7  |
| 2.5°  | 3617.4 | 3621.7 | 3637.3 | 3644.3 | 3660.8  | 3688.5  | 3702.4  | 3703.3  | 3725.8  | 3734.5  | 3741.5  |
| 5°    | 3361.4 | 3387.4 | 3413.5 | 3441.2 | 3491.6  | 3558.4  | 3624.3  | 3630.4  | 3703.3  | 3757.1  | 3785.7  |
| 7.5°  | 3141.0 | 3164.4 | 3195.7 | 3239.9 | 3311.1  | 3416.1  | 3526.3  | 3539.3  | 3677.2  | 3799.6  | 3863.8  |
| 10°   | 2914.6 | 2933.6 | 2978.8 | 3043.8 | 3141.9  | 3282.4  | 3430.8  | 3452.5  | 3653.8  | 3856.9  | 3969.7  |
| 12.5° | 2672.5 | 2683.7 | 2738.4 | 2832.1 | 2976.2  | 3154.9  | 3350.1  | 3378.8  | 3639.1  | 3922.8  | 4094.6  |
| 15°   | 2488.5 | 2493.7 | 2545.8 | 2643.0 | 2807.8  | 3040.4  | 3287.7  | 3322.4  | 3642.5  | 4001.8  | 4230.8  |
| 17.5° | 2441.7 | 2444.3 | 2472.0 | 2538.8 | 2684.6  | 2938.0  | 3238.2  | 3280.7  | 3652.9  | 4079.0  | 4367.9  |
| 20°   | 2631.7 | 2613.5 | 2584.8 | 2574.4 | 2636.9  | 2876.4  | 3208.7  | 3256.4  | 3666.8  | 4147.5  | 4491.1  |
| 22.5° | 3153.2 | 3099.4 | 2980.5 | 2821.7 | 2725.4  | 2880.7  | 3216.5  | 3264.2  | 3711.1  | 4231.7  | 4633.4  |
| 25°   | 3927.1 | 3852.5 | 3650.3 | 3338.0 | 3037.8  | 3005.7  | 3281.6  | 3330.2  | 3797.0  | 4332.3  | 4769.7  |
| 27.5° | 4807.8 | 4734.1 | 4486.8 | 4040.8 | 3528.9  | 3252.9  | 3430.8  | 3475.9  | 3924.5  | 4421.7  | 4873.8  |
| 30°   | 5651.2 | 5630.4 | 5338.9 | 4832.1 | 4146.7  | 3653.8  | 3623.4  | 3661.6  | 4019.1  | 4475.5  | 4956.2  |
| 32.5° | 6366.2 | 6333.2 | 6099.0 | 5606.1 | 4853.8  | 4135.4  | 3849.9  | 3861.2  | 4090.3  | 4544.9  | 5063.8  |
| 35°   | 7029.1 | 6988.3 | 6782.7 | 6316.7 | 5579.2  | 4723.7  | 4198.7  | 4182.2  | 4245.6  | 4684.6  | 5220.0  |
| 37.5° | 7607.9 | 7645.2 | 7417.0 | 6973.6 | 6230.0  | 5335.4  | 4669.0  | 4619.5  | 4488.5  | 4912.0  | 5446.5  |
| 40°   | 8092.0 | 8092.0 | 7973.1 | 7603.5 | 6932.8  | 5967.9  | 5200.9  | 5135.8  | 4853.8  | 5262.5  | 5733.7  |
| 42.5° | 8266.4 | 8303.7 | 8348.0 | 8138.9 | 7561.9  | 6625.6  | 5793.5  | 5725.8  | 5368.4  | 5759.7  | 6096.3  |
| 45°   | 8276.8 | 8335.8 | 8562.3 | 8561.4 | 8130.2  | 7279.0  | 6461.6  | 6429.5  | 6027.8  | 6398.3  | 6545.8  |
| 47.5° | 8130.2 | 8204.0 | 8577.1 | 8788.8 | 8580.5  | 7887.2  | 7192.2  | 7152.3  | 6802.6  | 7181.0  | 7016.1  |
| 50°   | 7903.7 | 7985.3 | 8419.1 | 8878.1 | 8886.8  | 8416.5  | 7961.9  | 7902.0  | 7655.6  | 8075.5  | 7502.0  |
| 52.5° | 7498.5 | 7656.4 | 8277.7 | 8899.0 | 9088.1  | 8873.8  | 8694.2  | 8668.2  | 8610.0  | 8937.1  | 7889.0  |
| 55°   | 6631.7 | 6807.0 | 7922.8 | 8905.9 | 9274.7  | 9279.0  | 9380.5  | 9387.5  | 9504.6  | 9742.4  | 8177.1  |
| 57.5° | 6222.2 | 6321.1 | 7303.3 | 8938.9 | 9551.5  | 9738.9  | 10079.9 | 10133.7 | 10315.0 | 10506.8 | 8505.9  |
| 60°   | 5964.5 | 6081.6 | 6997.9 | 8893.8 | 9986.2  | 10341.9 | 10728.0 | 10746.3 | 10940.6 | 11295.5 | 8951.0  |
| 62.5° | 5758.8 | 5874.2 | 6805.2 | 8720.2 | 10474.7 | 11067.3 | 11361.5 | 11363.2 | 11509.0 | 12235.2 | 9456.9  |
| 65°   | 5251.2 | 5348.4 | 6415.7 | 8525.0 | 10797.5 | 11784.9 | 12097.3 | 12086.0 | 12204.8 | 13226.1 | 10044.3 |
| 67.5° | 4517.2 | 4591.8 | 5620.0 | 7784.9 | 10676.0 | 12437.4 | 13207.9 | 13170.6 | 13026.5 | 14082.5 | 10275.1 |
| 70°   | 3492.4 | 3519.3 | 4429.5 | 6487.7 | 9537.6  | 12688.1 | 14281.2 | 14262.1 | 13530.7 | 13928.9 | 9429.1  |
| 71°   | 2886.8 | 2975.3 | 3903.7 | 5725.8 | 8774.9  | 12456.5 | 14385.3 | 14396.6 | 13404.0 | 13510.7 | 8846.9  |
| 72.5° | 1676.4 | 1751.9 | 2829.5 | 4397.4 | 7449.9  | 11489.9 | 13845.6 | 13927.2 | 12812.2 | 12289.0 | 7556.7  |
| 75°   | 359.2  | 384.4  | 1049.0 | 2128.4 | 4098.1  | 8053.0  | 10928.5 | 11219.2 | 10442.6 | 8360.1  | 4554.5  |
| 77.5° | 249.9  | 269.8  | 449.5  | 965.7  | 1354.5  | 3979.2  | 6788.8  | 7116.7  | 6238.6  | 3141.9  | 1457.7  |
| 80°   | 197.8  | 220.4  | 350.5  | 477.2  | 366.2   | 1283.3  | 3180.1  | 3380.5  | 2080.7  | 701.1   | 245.6   |
| 82.5° | 110.2  | 131.0  | 273.3  | 257.7  | 140.6   | 243.8   | 890.2   | 1006.5  | 416.5   | 141.4   | 58.1    |
| 85°   | 32.1   | 39.0   | 176.1  | 187.4  | 59.9    | 46.9    | 151.8   | 188.3   | 79.0    | 37.3    | 26.0    |
| 87.5° | 0.0    | 0.0    | 85.0   | 72.0   | 17.4    | 6.9     | 13.9    | 15.6    | 15.6    | 15.6    | 17.4    |
| 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: P321800

CATALOG NUMBER: GLEON-SA6B-722-U-T3R-HSS

**CANDELA DISTRIBUTION (continued):**

|       | 90°    | 95°    | 105°   | 115°   | 125°   | 135°   | 145°   | 155°   | 165°   | 175°   | 180°   |
|-------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|
| 0°    | 3726.7 | 3726.7 | 3726.7 | 3726.7 | 3726.7 | 3726.7 | 3726.7 | 3726.7 | 3726.7 | 3726.7 | 3726.7 |
| 2.5°  | 3741.5 | 3747.5 | 3725.8 | 3697.2 | 3666.8 | 3629.5 | 3590.5 | 3560.1 | 3559.2 | 3544.5 | 3529.7 |
| 5°    | 3787.4 | 3784.0 | 3724.1 | 3633.0 | 3525.4 | 3413.5 | 3306.7 | 3186.1 | 3146.2 | 3096.8 | 3080.3 |
| 7.5°  | 3872.5 | 3848.2 | 3721.5 | 3521.9 | 3285.9 | 3051.6 | 2809.6 | 2565.7 | 2461.6 | 2367.9 | 2351.4 |
| 10°   | 3979.2 | 3933.2 | 3705.0 | 3355.3 | 2922.4 | 2490.3 | 2125.0 | 1793.5 | 1647.7 | 1535.8 | 1530.6 |
| 12.5° | 4090.3 | 4020.0 | 3659.0 | 3103.7 | 2446.0 | 1838.6 | 1417.8 | 1091.5 | 970.1  | 892.0  | 898.9  |
| 15°   | 4206.5 | 4101.5 | 3560.1 | 2764.4 | 1903.7 | 1247.7 | 871.2  | 679.4  | 630.8  | 610.8  | 616.1  |
| 17.5° | 4325.4 | 4157.9 | 3422.1 | 2355.8 | 1368.3 | 805.2  | 603.0  | 549.2  | 549.2  | 553.6  | 555.3  |
| 20°   | 4428.7 | 4188.3 | 3219.1 | 1897.6 | 927.6  | 586.6  | 527.6  | 519.7  | 524.1  | 531.0  | 531.9  |
| 22.5° | 4531.0 | 4190.0 | 2954.5 | 1433.4 | 649.0  | 513.7  | 502.4  | 498.9  | 501.5  | 509.3  | 510.2  |
| 25°   | 4614.3 | 4169.2 | 2623.0 | 1019.5 | 518.0  | 484.2  | 479.0  | 477.2  | 479.0  | 488.5  | 488.5  |
| 27.5° | 4648.2 | 4093.7 | 2218.7 | 716.7  | 464.2  | 451.2  | 449.5  | 451.2  | 453.8  | 460.7  | 461.6  |
| 30°   | 4651.7 | 3961.8 | 1777.9 | 518.9  | 420.8  | 406.9  | 410.4  | 416.5  | 413.9  | 412.1  | 413.9  |
| 32.5° | 4660.3 | 3809.1 | 1348.4 | 426.9  | 384.4  | 362.7  | 358.4  | 358.4  | 347.9  | 341.9  | 338.4  |
| 35°   | 4689.0 | 3629.5 | 977.9  | 383.5  | 347.1  | 321.9  | 305.4  | 286.3  | 266.4  | 256.0  | 253.4  |
| 37.5° | 4734.1 | 3441.2 | 700.2  | 354.9  | 314.1  | 285.5  | 254.2  | 220.4  | 191.8  | 183.9  | 183.9  |
| 40°   | 4816.5 | 3246.9 | 518.0  | 332.3  | 288.1  | 252.5  | 205.6  | 161.4  | 135.4  | 131.0  | 131.0  |
| 42.5° | 4946.7 | 3042.1 | 413.0  | 312.4  | 265.5  | 218.7  | 157.1  | 117.1  | 98.0   | 95.4   | 94.6   |
| 45°   | 5082.0 | 2816.5 | 361.0  | 293.3  | 241.2  | 179.6  | 116.3  | 86.8   | 75.5   | 72.9   | 72.9   |
| 47.5° | 5217.4 | 2576.2 | 335.8  | 275.1  | 217.8  | 139.7  | 86.8   | 68.5   | 63.3   | 63.3   | 64.2   |
| 50°   | 5331.9 | 2325.4 | 317.6  | 255.1  | 187.4  | 105.9  | 68.5   | 58.1   | 56.4   | 59.9   | 60.7   |
| 52.5° | 5360.6 | 2079.0 | 295.0  | 229.9  | 150.1  | 80.7   | 56.4   | 51.2   | 51.2   | 51.2   | 51.2   |
| 55°   | 5343.2 | 1888.1 | 265.5  | 198.7  | 111.1  | 64.2   | 48.6   | 45.1   | 44.3   | 44.3   | 44.3   |
| 57.5° | 5402.2 | 1775.3 | 212.6  | 154.4  | 79.8   | 52.1   | 42.5   | 39.9   | 38.2   | 37.3   | 37.3   |
| 60°   | 5521.1 | 1701.5 | 151.8  | 111.1  | 59.9   | 43.4   | 36.4   | 33.8   | 31.2   | 29.5   | 29.5   |
| 62.5° | 5679.0 | 1637.3 | 112.8  | 82.4   | 46.0   | 34.7   | 30.4   | 27.8   | 24.3   | 22.6   | 22.6   |
| 65°   | 5800.5 | 1522.8 | 85.9   | 61.6   | 34.7   | 27.8   | 23.4   | 22.6   | 17.4   | 15.6   | 14.8   |
| 67.5° | 5614.8 | 1271.2 | 69.4   | 45.1   | 26.0   | 21.7   | 18.2   | 17.4   | 10.4   | 8.7    | 8.7    |
| 70°   | 4815.6 | 885.0  | 55.5   | 33.0   | 19.1   | 17.4   | 14.8   | 11.3   | 7.8    | 6.9    | 6.9    |
| 71°   | 4367.1 | 739.3  | 50.3   | 27.8   | 16.5   | 16.5   | 13.9   | 9.5    | 6.9    | 6.1    | 6.1    |
| 72.5° | 3627.8 | 524.9  | 42.5   | 21.7   | 14.8   | 17.4   | 14.8   | 8.7    | 6.9    | 6.1    | 5.2    |
| 75°   | 2105.9 | 219.5  | 29.5   | 14.8   | 11.3   | 20.8   | 19.1   | 7.8    | 5.2    | 4.3    | 4.3    |
| 77.5° | 633.4  | 80.7   | 16.5   | 9.5    | 8.7    | 18.2   | 21.7   | 6.9    | 2.6    | 0.9    | 0.9    |
| 80°   | 115.4  | 34.7   | 10.4   | 6.1    | 6.1    | 11.3   | 16.5   | 3.5    | 0.0    | 0.0    | 0.0    |
| 82.5° | 40.8   | 17.4   | 6.1    | 3.5    | 2.6    | 5.2    | 7.8    | 0.0    | 0.0    | 0.0    | 0.0    |
| 85°   | 23.4   | 12.1   | 3.5    | 1.7    | 0.0    | 0.9    | 1.7    | 0.0    | 0.0    | 0.0    | 0.0    |
| 87.5° | 15.6   | 3.5    | 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-79-2008: Approved Method: Electrical and Photometric Measurements of Solid-  
State Lighting Products

Report Prepared for

Cooper Lighting Solutions

McGRAW-EDISON

Report Number: SP1-1908-441-10-R4

Test Date: 10/25/2019

Luminaire Tested: SA1C-722-U-5WQ

Data in this report applies to families of products SA1C-722-U-5WQ.

### Test Information

Test Method: LM-79-2008 Report  
 Number: SP1-1908-441-10-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-722-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):                  | 2237    | CRI (Ra): | 72.0 |      |       |
| CIE u':                   | 0.2876  | R1:       | 68.9 | R9:  | -17.4 |
| CIE v':                   | 0.5346  | R2:       | 83.0 | R10: | 61.3  |
| Duv:                      | -0.0006 | R3:       | 95.2 | R11: | 59.8  |
| CIE x:                    | 0.5005  | R4:       | 66.2 | R12: | 50.5  |
| CIE y:                    | 0.4134  | R5:       | 65.9 | R13: | 71.1  |
| CIE z:                    | 0.0860  | R6:       | 76.3 | R14: | 96.9  |
| Peak Wavelength (nm):     | 603     | R7:       | 76.7 |      |       |
| Dominant Wavelength (nm): | 587     | R8:       | 43.8 |      |       |
| Purity:                   | 74.5    |           |      |      |       |
| Rf:                       | 69.8    |           |      |      |       |
| Rg:                       | 99.2    |           |      |      |       |



### Test Conditions

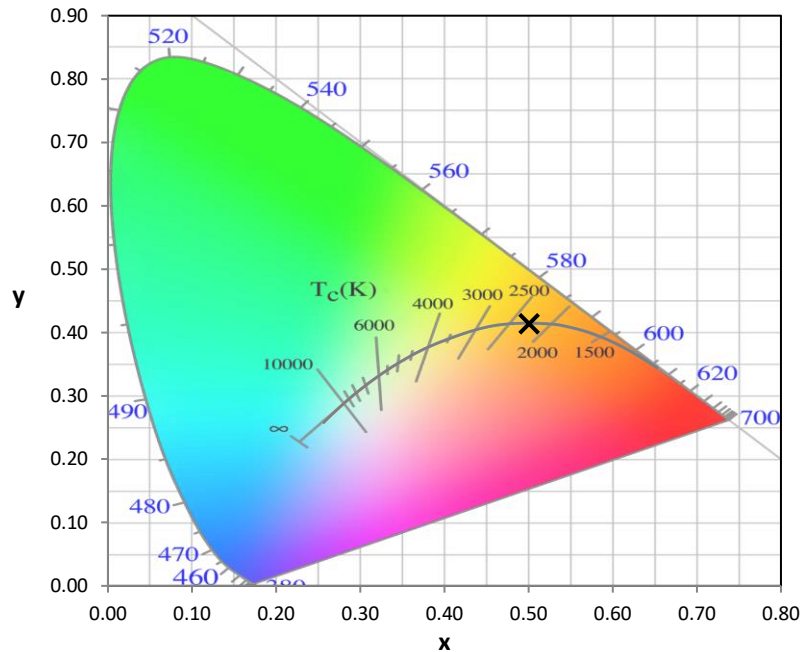
Stabilization Time: 71M  
 Operation Time: 12H  
 Room Temperature (°C) / RH%: 24.7/41%  
 Sphere Temperature (°C): 25.6

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| 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 2200K 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       | 1768             | NR               | 490       | 5206             | NR               | 620       | 130919           | NR               | 750       | 8553             | NR               | 880       | 2713             | NR               |
| 365       | 1569             | NR               | 495       | 7286             | NR               | 625       | 125335           | NR               | 755       | 7696             | NR               | 885       | 2316             | NR               |
| 370       | 1594             | NR               | 500       | 10654            | NR               | 630       | 118388           | NR               | 760       | 6978             | NR               | 890       | 2539             | NR               |
| 375       | 1744             | NR               | 505       | 15189            | NR               | 635       | 111855           | NR               | 765       | 6377             | NR               | 895       | 1933             | NR               |
| 380       | 1659             | NR               | 510       | 20541            | NR               | 640       | 104062           | NR               | 770       | 5600             | NR               | 900       | 2216             | NR               |
| 385       | 1504             | NR               | 515       | 26492            | NR               | 645       | 96365            | NR               | 775       | 5000             | NR               | 905       | 2067             | NR               |
| 390       | 1541             | NR               | 520       | 32294            | NR               | 650       | 88651            | NR               | 780       | 4709             | NR               | 910       | 1959             | NR               |
| 395       | 1355             | NR               | 525       | 38123            | NR               | 655       | 81152            | NR               | 785       | 4305             | NR               | 915       | 1874             | NR               |
| 400       | 1243             | NR               | 530       | 43232            | NR               | 660       | 73523            | NR               | 790       | 4040             | NR               | 920       | 1484             | NR               |
| 405       | 1417             | NR               | 535       | 48012            | NR               | 665       | 66123            | NR               | 795       | 3642             | NR               | 925       | 1914             | NR               |
| 410       | 2147             | NR               | 540       | 52623            | NR               | 670       | 58677            | NR               | 800       | 3594             | NR               | 930       | 1948             | NR               |
| 415       | 3837             | NR               | 545       | 57516            | NR               | 675       | 52349            | NR               | 805       | 3190             | NR               | 935       | 2079             | NR               |
| 420       | 7159             | NR               | 550       | 62613            | NR               | 680       | 46159            | NR               | 810       | 3241             | NR               | 940       | 2263             | NR               |
| 425       | 12599            | NR               | 555       | 68554            | NR               | 685       | 40525            | NR               | 815       | 2732             | NR               | 945       | 1688             | NR               |
| 430       | 19019            | NR               | 560       | 75325            | NR               | 690       | 35615            | NR               | 820       | 2612             | NR               | 950       | 1560             | NR               |
| 435       | 24875            | NR               | 565       | 82533            | NR               | 695       | 31158            | NR               | 825       | 2966             | NR               | 955       | 2826             | NR               |
| 440       | 29103            | NR               | 570       | 90909            | NR               | 700       | 27409            | NR               | 830       | 2574             | NR               | 960       | 1477             | NR               |
| 445       | 29901            | NR               | 575       | 99621            | NR               | 705       | 24204            | NR               | 835       | 2633             | NR               | 965       | 1568             | NR               |
| 450       | 24862            | NR               | 580       | 108484           | NR               | 710       | 21558            | NR               | 840       | 2526             | NR               | 970       | 2030             | NR               |
| 455       | 15942            | NR               | 585       | 116679           | NR               | 715       | 19222            | NR               | 845       | 2631             | NR               | 975       | 1986             | NR               |
| 460       | 9916             | NR               | 590       | 123752           | NR               | 720       | 17310            | NR               | 850       | 2079             | NR               | 980       | 2540             | NR               |
| 465       | 7051             | NR               | 595       | 129324           | NR               | 725       | 15280            | NR               | 855       | 2309             | NR               | 985       | 1139             | NR               |
| 470       | 5227             | NR               | 600       | 134082           | NR               | 730       | 13282            | NR               | 860       | 2528             | NR               | 990       | 2018             | NR               |
| 475       | 4257             | NR               | 605       | 135698           | NR               | 735       | 11753            | NR               | 865       | 2121             | NR               | 995       | 3445             | NR               |
| 480       | 4052             | NR               | 610       | 135144           | NR               | 740       | 10654            | NR               | 870       | 2751             | NR               | 1000      | 3704             | NR               |
| 485       | 4298             | NR               | 615       | 134180           | NR               | 745       | 9451             | NR               | 875       | 2317             | NR               |           |                  |                  |

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Scotopic Flux vs. Wavelength



Scotopic Lumens: 4696.9

S/P: 0.85

| 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       | 1768             | NR               | 490       | 5206             | NR               | 620       | 130919           | NR               | 750       | 8553             | NR               | 880       | 2713             | NR               |
| 365       | 1569             | NR               | 495       | 7286             | NR               | 625       | 125335           | NR               | 755       | 7696             | NR               | 885       | 2316             | NR               |
| 370       | 1594             | NR               | 500       | 10654            | NR               | 630       | 118388           | NR               | 760       | 6978             | NR               | 890       | 2539             | NR               |
| 375       | 1744             | NR               | 505       | 15189            | NR               | 635       | 111855           | NR               | 765       | 6377             | NR               | 895       | 1933             | NR               |
| 380       | 1659             | NR               | 510       | 20541            | NR               | 640       | 104062           | NR               | 770       | 5600             | NR               | 900       | 2216             | NR               |
| 385       | 1504             | NR               | 515       | 26492            | NR               | 645       | 96365            | NR               | 775       | 5000             | NR               | 905       | 2067             | NR               |
| 390       | 1541             | NR               | 520       | 32294            | NR               | 650       | 88651            | NR               | 780       | 4709             | NR               | 910       | 1959             | NR               |
| 395       | 1355             | NR               | 525       | 38123            | NR               | 655       | 81152            | NR               | 785       | 4305             | NR               | 915       | 1874             | NR               |
| 400       | 1243             | NR               | 530       | 43232            | NR               | 660       | 73523            | NR               | 790       | 4040             | NR               | 920       | 1484             | NR               |
| 405       | 1417             | NR               | 535       | 48012            | NR               | 665       | 66123            | NR               | 795       | 3642             | NR               | 925       | 1914             | NR               |
| 410       | 2147             | NR               | 540       | 52623            | NR               | 670       | 58677            | NR               | 800       | 3594             | NR               | 930       | 1948             | NR               |
| 415       | 3837             | NR               | 545       | 57516            | NR               | 675       | 52349            | NR               | 805       | 3190             | NR               | 935       | 2079             | NR               |
| 420       | 7159             | NR               | 550       | 62613            | NR               | 680       | 46159            | NR               | 810       | 3241             | NR               | 940       | 2263             | NR               |
| 425       | 12599            | NR               | 555       | 68554            | NR               | 685       | 40525            | NR               | 815       | 2732             | NR               | 945       | 1688             | NR               |
| 430       | 19019            | NR               | 560       | 75325            | NR               | 690       | 35615            | NR               | 820       | 2612             | NR               | 950       | 1560             | NR               |
| 435       | 24875            | NR               | 565       | 82533            | NR               | 695       | 31158            | NR               | 825       | 2966             | NR               | 955       | 2826             | NR               |
| 440       | 29103            | NR               | 570       | 90909            | NR               | 700       | 27409            | NR               | 830       | 2574             | NR               | 960       | 1477             | NR               |
| 445       | 29901            | NR               | 575       | 99621            | NR               | 705       | 24204            | NR               | 835       | 2633             | NR               | 965       | 1568             | NR               |
| 450       | 24862            | NR               | 580       | 108484           | NR               | 710       | 21558            | NR               | 840       | 2526             | NR               | 970       | 2030             | NR               |
| 455       | 15942            | NR               | 585       | 116679           | NR               | 715       | 19222            | NR               | 845       | 2631             | NR               | 975       | 1986             | NR               |
| 460       | 9916             | NR               | 590       | 123752           | NR               | 720       | 17310            | NR               | 850       | 2079             | NR               | 980       | 2540             | NR               |
| 465       | 7051             | NR               | 595       | 129324           | NR               | 725       | 15280            | NR               | 855       | 2309             | NR               | 985       | 1139             | NR               |
| 470       | 5227             | NR               | 600       | 134082           | NR               | 730       | 13282            | NR               | 860       | 2528             | NR               | 990       | 2018             | NR               |
| 475       | 4257             | NR               | 605       | 135698           | NR               | 735       | 11753            | NR               | 865       | 2121             | NR               | 995       | 3445             | NR               |
| 480       | 4052             | NR               | 610       | 135144           | NR               | 740       | 10654            | NR               | 870       | 2751             | NR               | 1000      | 3704             | NR               |
| 485       | 4298             | NR               | 615       | 134180           | NR               | 745       | 9451             | NR               | 875       | 2317             | NR               |           |                  |                  |

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**Melanopic Flux vs. Wavelength**



**Melanopic Lumens: 1470.8 M/P: 0.27**

| 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       | 1768             | NR               | 490       | 5206             | NR               | 620       | 130919           | NR               | 750       | 8553             | NR               | 880       | 2713             | NR               |
| 365       | 1569             | NR               | 495       | 7286             | NR               | 625       | 125335           | NR               | 755       | 7696             | NR               | 885       | 2316             | NR               |
| 370       | 1594             | NR               | 500       | 10654            | NR               | 630       | 118388           | NR               | 760       | 6978             | NR               | 890       | 2539             | NR               |
| 375       | 1744             | NR               | 505       | 15189            | NR               | 635       | 111855           | NR               | 765       | 6377             | NR               | 895       | 1933             | NR               |
| 380       | 1659             | NR               | 510       | 20541            | NR               | 640       | 104062           | NR               | 770       | 5600             | NR               | 900       | 2216             | NR               |
| 385       | 1504             | NR               | 515       | 26492            | NR               | 645       | 96365            | NR               | 775       | 5000             | NR               | 905       | 2067             | NR               |
| 390       | 1541             | NR               | 520       | 32294            | NR               | 650       | 88651            | NR               | 780       | 4709             | NR               | 910       | 1959             | NR               |
| 395       | 1355             | NR               | 525       | 38123            | NR               | 655       | 81152            | NR               | 785       | 4305             | NR               | 915       | 1874             | NR               |
| 400       | 1243             | NR               | 530       | 43232            | NR               | 660       | 73523            | NR               | 790       | 4040             | NR               | 920       | 1484             | NR               |
| 405       | 1417             | NR               | 535       | 48012            | NR               | 665       | 66123            | NR               | 795       | 3642             | NR               | 925       | 1914             | NR               |
| 410       | 2147             | NR               | 540       | 52623            | NR               | 670       | 58677            | NR               | 800       | 3594             | NR               | 930       | 1948             | NR               |
| 415       | 3837             | NR               | 545       | 57516            | NR               | 675       | 52349            | NR               | 805       | 3190             | NR               | 935       | 2079             | NR               |
| 420       | 7159             | NR               | 550       | 62613            | NR               | 680       | 46159            | NR               | 810       | 3241             | NR               | 940       | 2263             | NR               |
| 425       | 12599            | NR               | 555       | 68554            | NR               | 685       | 40525            | NR               | 815       | 2732             | NR               | 945       | 1688             | NR               |
| 430       | 19019            | NR               | 560       | 75325            | NR               | 690       | 35615            | NR               | 820       | 2612             | NR               | 950       | 1560             | NR               |
| 435       | 24875            | NR               | 565       | 82533            | NR               | 695       | 31158            | NR               | 825       | 2966             | NR               | 955       | 2826             | NR               |
| 440       | 29103            | NR               | 570       | 90909            | NR               | 700       | 27409            | NR               | 830       | 2574             | NR               | 960       | 1477             | NR               |
| 445       | 29901            | NR               | 575       | 99621            | NR               | 705       | 24204            | NR               | 835       | 2633             | NR               | 965       | 1568             | NR               |
| 450       | 24862            | NR               | 580       | 108484           | NR               | 710       | 21558            | NR               | 840       | 2526             | NR               | 970       | 2030             | NR               |
| 455       | 15942            | NR               | 585       | 116679           | NR               | 715       | 19222            | NR               | 845       | 2631             | NR               | 975       | 1986             | NR               |
| 460       | 9916             | NR               | 590       | 123752           | NR               | 720       | 17310            | NR               | 850       | 2079             | NR               | 980       | 2540             | NR               |
| 465       | 7051             | NR               | 595       | 129324           | NR               | 725       | 15280            | NR               | 855       | 2309             | NR               | 985       | 1139             | NR               |
| 470       | 5227             | NR               | 600       | 134082           | NR               | 730       | 13282            | NR               | 860       | 2528             | NR               | 990       | 2018             | NR               |
| 475       | 4257             | NR               | 605       | 135698           | NR               | 735       | 11753            | NR               | 865       | 2121             | NR               | 995       | 3445             | NR               |
| 480       | 4052             | NR               | 610       | 135144           | NR               | 740       | 10654            | NR               | 870       | 2751             | NR               | 1000      | 3704             | NR               |
| 485       | 4298             | NR               | 615       | 134180           | NR               | 745       | 9451             | NR               | 875       | 2317             | NR               |           |                  |                  |

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### Summary

$R_f = 69.8$   
 $R_g = 99.2$   
 CIE  $R_a = 72.0$   
 $R_g = -17.4$



### Color Vector Graphics





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

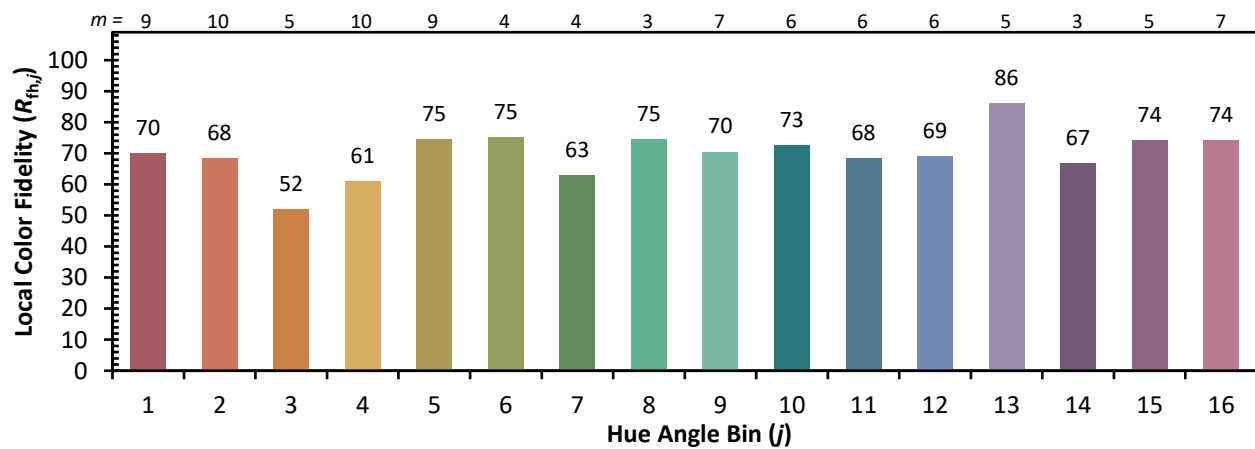
|            |            |            |            |
|------------|------------|------------|------------|
| CES01 = 87 | CES26 = 56 | CES51 = 74 | CES76 = 56 |
| CES02 = 65 | CES27 = 76 | CES52 = 76 | CES77 = 81 |
| CES03 = 32 | CES28 = 83 | CES53 = 65 | CES78 = 63 |
| CES04 = 72 | CES29 = 46 | CES54 = 78 | CES79 = 84 |
| CES05 = 52 | CES30 = 48 | CES55 = 75 | CES80 = 84 |
| CES06 = 52 | CES31 = 51 | CES56 = 65 | CES81 = 63 |
| CES07 = 44 | CES32 = 51 | CES57 = 62 | CES82 = 92 |
| CES08 = 42 | CES33 = 53 | CES58 = 66 | CES83 = 83 |
| CES09 = 29 | CES34 = 70 | CES59 = 84 | CES84 = 92 |
| CES10 = 78 | CES35 = 85 | CES60 = 90 | CES85 = 81 |
| CES11 = 61 | CES36 = 78 | CES61 = 84 | CES86 = 56 |
| CES12 = 68 | CES37 = 80 | CES62 = 70 | CES87 = 78 |
| CES13 = 45 | CES38 = 53 | CES63 = 68 | CES88 = 72 |
| CES14 = 75 | CES39 = 90 | CES64 = 69 | CES89 = 62 |
| CES15 = 72 | CES40 = 84 | CES65 = 67 | CES90 = 67 |
| CES16 = 49 | CES41 = 75 | CES66 = 64 | CES91 = 90 |
| CES17 = 51 | CES42 = 79 | CES67 = 63 | CES92 = 67 |
| CES18 = 57 | CES43 = 64 | CES68 = 69 | CES93 = 79 |
| CES19 = 74 | CES44 = 98 | CES69 = 80 | CES94 = 52 |
| CES20 = 68 | CES45 = 73 | CES70 = 63 | CES95 = 76 |
| CES21 = 89 | CES46 = 67 | CES71 = 63 | CES96 = 78 |
| CES22 = 81 | CES47 = 60 | CES72 = 87 | CES97 = 77 |
| CES23 = 92 | CES48 = 48 | CES73 = 56 | CES98 = 71 |
| CES24 = 92 | CES49 = 64 | CES74 = 87 | CES99 = 65 |
| CES25 = 74 | CES50 = 74 | CES75 = 66 |            |



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Color Rendition by Hue-Angle Bin



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**Measure Comparisons**



(END OF REPORT)