

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: P324054

Luminaire Tested: **GLEON-SA0C-722-U-SL4-HSS**

Issue Date: 3/3/2020

**Test Information**

Test Method: LM-79-08  
Report Number: P324054  
TEST IS SCALED FROM IESNA LM-79-08 TEST DATA (G2-1903-205-25)  
Test Lab: INNOVATION CENTER  
Issue Date: 3/3/2020  
Manufacturer: COOPER LIGHTING SOLUTIONS (FORMERLY EATON)  
Product Line: McGRAW-EDISON  
Catalog Number: GLEON-SA0C-722-U-SL4-HSS  
Description: GALLEON AREA AND ROADWAY LUMINAIRE  
(10) 70 CRI, 2200K, 1050mA LIGHTSQUARES WITH 16 LEDS EACH AND TYPE IV  
SPILL LIGHT ELIMINATOR OPTICS WITH HOUSE SIDE SHIELD  
Light Source: -  
Ballast/Driver: ELECTRONIC DRIVER

**Summary**

Lumens per Lamp: N/A  
Luminaire Lumens: 41769 lumens  
Efficiency: N/A  
Efficacy: 74.9 lumens/watt  
Luminous Opening: Rectangular (W 2.5' x L: 1' x H: 0')  
IES Classification: Type IV - Short  
BUG Rating: B3 - U0 - G5

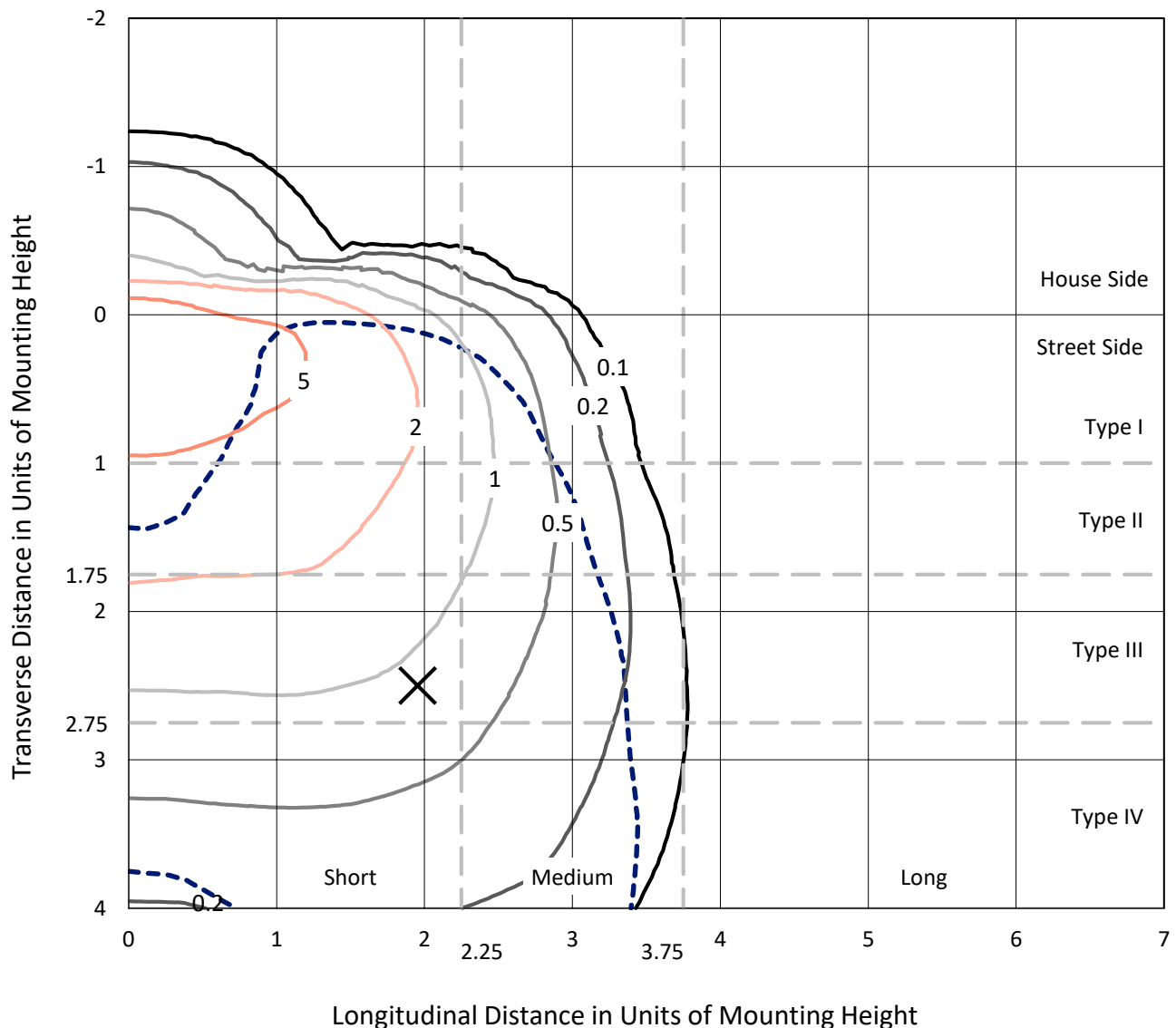
Input Watts (W): 558  
Input Voltage (V): NR  
Input Current (Ain): NR  
Voltage Rise (V): NR  
Power Factor: NR  
Total Harmonic Distortion (THDi): NR  
Frequency (hertz): 60  
Stabilization Time: NR  
Operation Time: NR  
Ambient Temperature (°C): NR  
Test Distance: 24 FT



REPORT NUMBER: P324054  
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## Iso-Footcandle Lines of Horizontal Illumination

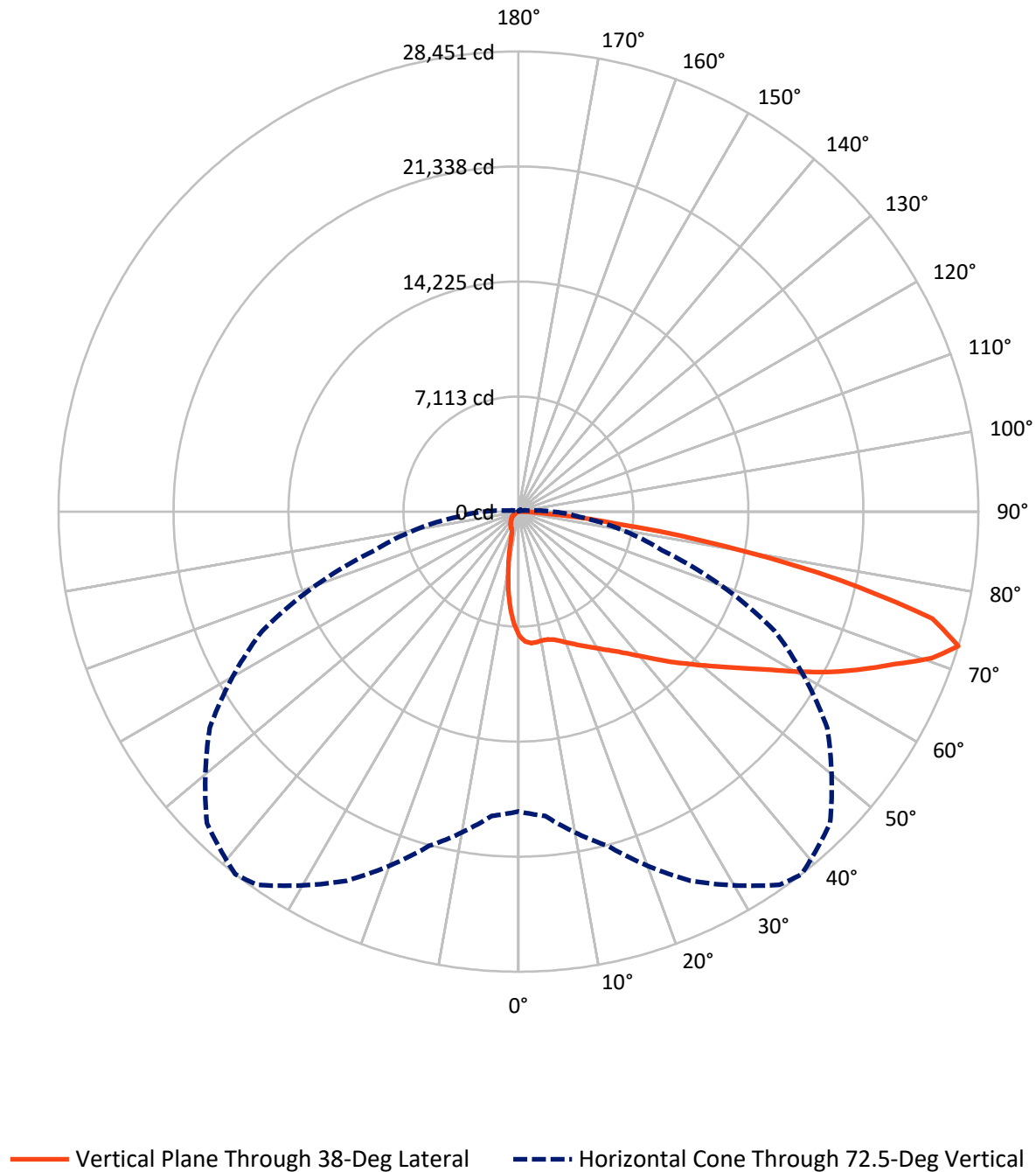
✕ Max cd  
 - - - 1/2 Max cd



Based on 30 foot mounting height. Maximum calculated value = 9 fc  
 Type IV - Short - N/A

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## Luminous Intensity Polar Plot



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**FLUX DISTRIBUTION:**

|                    |           | Downward | Upward | Total   |
|--------------------|-----------|----------|--------|---------|
| <b>House Side</b>  | Lumens    | 3515.0   | 0.0    | 3515.0  |
|                    | % Fixture | 8.4      | 0.0    | 8.4     |
| <b>Street Side</b> | Lumens    | 38254.0  | 0.0    | 38254.0 |
|                    | % Fixture | 91.6     | 0.0    | 91.6    |
| <b>Total</b>       | Lumens    | 41769.0  | 0.0    | 41769.0 |
|                    | % Fixture | 100.0    | 0.0    | 100.0   |

**ZONAL LUMENS:**

| Zone      | Lumens  | % Fixture |
|-----------|---------|-----------|
| 0°-10°    | 654.6   | 1.6       |
| 10°-20°   | 1600.6  | 3.8       |
| 20°-30°   | 2545.7  | 6.1       |
| 30°-40°   | 3827.2  | 9.2       |
| 40°-50°   | 5838.7  | 14.0      |
| 50°-60°   | 8252.1  | 19.8      |
| 60°-70°   | 10350.9 | 24.8      |
| 70°-80°   | 7739.5  | 18.5      |
| 80°-90°   | 959.7   | 2.3       |
| 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°    | 41769.0 | 100.0     |
| 0°-180°   | 41769.0 | 100.0     |

**Coefficient of Utilization**



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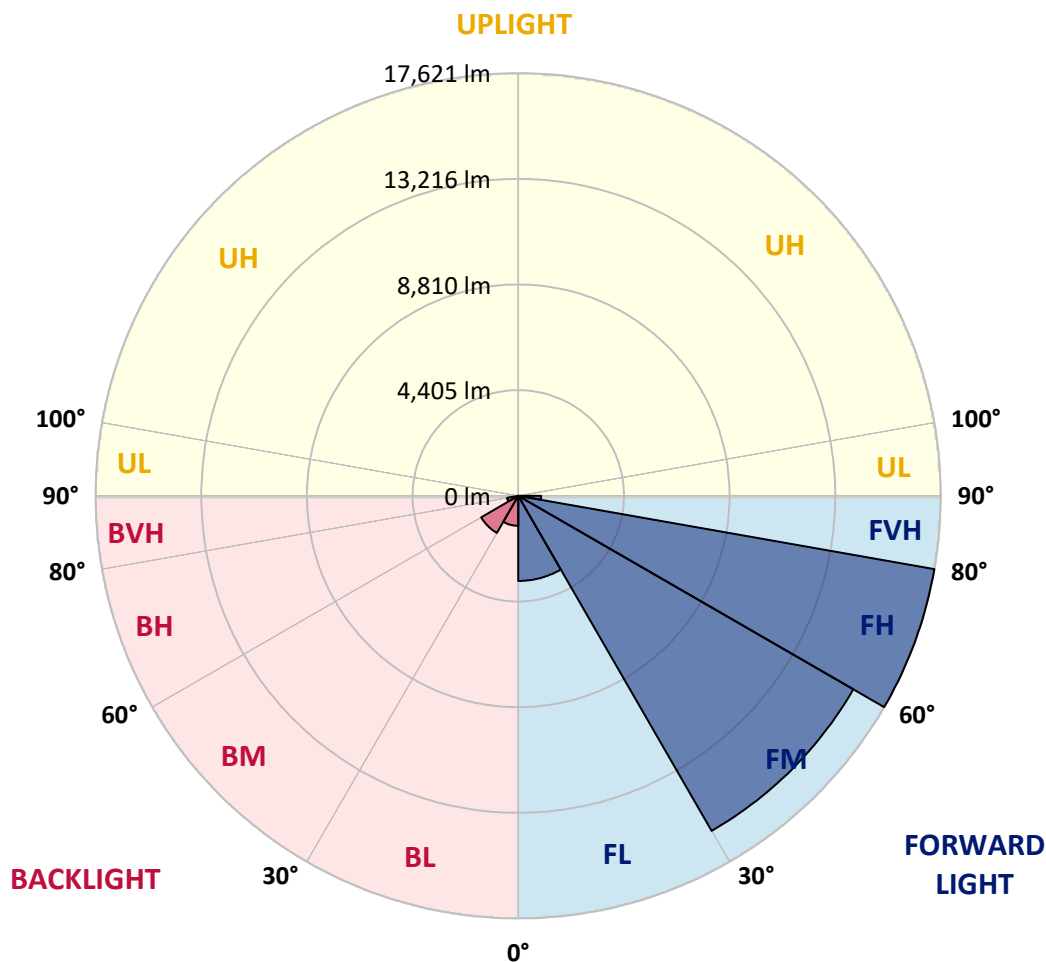
CATALOG NUMBER: GLEON-SA0C-722-U-SL4-HSS

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

| Zone |             | Lumens  | % Fixture | Zone Rating/Lumen Limit |      |        |
|------|-------------|---------|-----------|-------------------------|------|--------|
|      |             |         |           | B                       | U    | G      |
| FL   | (0°-30°)    | 3549.4  | 8.5       |                         |      |        |
| FM   | (30°-60°)   | 16133.0 | 38.6      |                         |      |        |
| FH   | (60°-80°)   | 17620.9 | 42.2      |                         |      | G5     |
| FVH  | (80°-90°)   | 950.7   | 2.3       |                         |      | G5     |
| BL   | (0°-30°)    | 1251.6  | 3.0       | B3/2500                 |      |        |
| BM   | (30°-60°)   | 1785.0  | 4.3       | B2/2500                 |      |        |
| BH   | (60°-80°)   | 469.5   | 1.1       | B1/500                  |      | G1/500 |
| BVH  | (80°-90°)   | 8.9     | 0.0       |                         |      | G0/10  |
| UL   | (90°-100°)  | 0.0     | 0.0       |                         | U0/0 |        |
| UH   | (100°-180°) | 0.0     | 0.0       |                         | U0/0 |        |

**BUG Rating: B3-U0-G5**

Type IV Short





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**CANDELA DISTRIBUTION (FULL):**

|       | 0°      | 5°      | 15°     | 25°     | 35°     | 38°     | 45°     | 55°     | 65°     | 75°     | 85°     |
|-------|---------|---------|---------|---------|---------|---------|---------|---------|---------|---------|---------|
| 0°    | 7681.2  | 7681.2  | 7681.2  | 7681.2  | 7681.2  | 7681.2  | 7681.2  | 7681.2  | 7681.2  | 7681.2  | 7681.2  |
| 2.5°  | 8153.0  | 8154.8  | 8135.7  | 8104.4  | 8064.5  | 8043.7  | 8009.0  | 7953.5  | 7894.5  | 7788.7  | 7674.2  |
| 5°    | 8319.5  | 8319.5  | 8295.3  | 8253.6  | 8189.4  | 8170.4  | 8104.4  | 8016.0  | 7894.5  | 7722.8  | 7530.3  |
| 7.5°  | 8302.2  | 8305.7  | 8272.7  | 8229.3  | 8165.2  | 8147.8  | 8068.0  | 7969.1  | 7818.2  | 7610.1  | 7363.7  |
| 10°   | 8212.0  | 8220.7  | 8194.6  | 8173.8  | 8114.9  | 8095.8  | 8021.2  | 7922.3  | 7771.4  | 7549.3  | 7266.6  |
| 12.5° | 8120.1  | 8128.7  | 8137.4  | 8156.5  | 8120.1  | 8113.1  | 8054.1  | 7970.9  | 7826.9  | 7596.2  | 7277.0  |
| 15°   | 8061.1  | 8078.4  | 8140.9  | 8215.5  | 8224.1  | 8217.2  | 8179.0  | 8101.0  | 7955.3  | 7715.9  | 7351.6  |
| 17.5° | 8061.1  | 8088.8  | 8218.9  | 8361.2  | 8411.5  | 8416.7  | 8383.7  | 8274.4  | 8101.0  | 7844.2  | 7421.0  |
| 20°   | 8128.7  | 8166.9  | 8369.9  | 8571.1  | 8654.3  | 8654.3  | 8590.2  | 8437.5  | 8234.5  | 7960.5  | 7467.8  |
| 22.5° | 8302.2  | 8352.5  | 8607.5  | 8840.0  | 8928.4  | 8909.3  | 8822.6  | 8600.6  | 8373.3  | 8092.3  | 7526.8  |
| 25°   | 8643.9  | 8682.1  | 8947.5  | 9181.7  | 9235.5  | 9192.1  | 9082.8  | 8798.3  | 8550.3  | 8271.0  | 7634.3  |
| 27.5° | 9084.5  | 9089.7  | 9363.8  | 9561.6  | 9528.6  | 9499.1  | 9362.1  | 9046.4  | 8805.3  | 8526.0  | 7820.0  |
| 30°   | 9568.5  | 9568.5  | 9809.6  | 9960.6  | 9859.9  | 9835.7  | 9698.6  | 9346.5  | 9131.4  | 8872.9  | 8083.6  |
| 32.5° | 10036.9 | 10057.7 | 10253.7 | 10349.1 | 10236.4 | 10212.1 | 10078.5 | 9726.4  | 9565.0  | 9402.0  | 8494.7  |
| 35°   | 10489.6 | 10505.2 | 10690.9 | 10742.9 | 10635.3 | 10642.3 | 10546.9 | 10248.5 | 10187.8 | 10167.0 | 9114.0  |
| 37.5° | 10928.5 | 10932.0 | 11121.1 | 11154.0 | 11100.2 | 11159.2 | 11167.9 | 10904.2 | 11017.0 | 11185.2 | 9986.6  |
| 40°   | 11329.2 | 11332.7 | 11520.0 | 11605.0 | 11697.0 | 11773.3 | 11841.0 | 11700.4 | 12073.4 | 12463.7 | 11025.7 |
| 42.5° | 11650.1 | 11686.6 | 11924.2 | 12085.5 | 12328.4 | 12474.1 | 12658.0 | 12651.1 | 13331.0 | 13917.4 | 12281.6 |
| 45°   | 11932.9 | 11995.3 | 12326.7 | 12609.4 | 13025.7 | 13258.2 | 13546.1 | 13771.7 | 14746.5 | 15535.8 | 13553.1 |
| 47.5° | 12305.8 | 12364.8 | 12743.0 | 13206.2 | 13761.2 | 14066.6 | 14543.6 | 15031.0 | 16302.6 | 17124.8 | 14795.1 |
| 50°   | 12831.5 | 12805.4 | 13178.4 | 13842.8 | 14555.7 | 14956.4 | 15636.4 | 16366.7 | 17846.4 | 18509.1 | 15525.4 |
| 52.5° | 13391.8 | 13381.4 | 13657.2 | 14534.9 | 15492.5 | 15960.8 | 16859.4 | 17747.6 | 19322.6 | 19463.2 | 15860.2 |
| 55°   | 14085.6 | 14011.0 | 14243.5 | 15324.2 | 16604.4 | 17107.5 | 18165.6 | 19114.5 | 20498.8 | 20000.9 | 16028.5 |
| 57.5° | 14812.5 | 14689.3 | 14911.3 | 16203.7 | 17858.6 | 18453.6 | 19612.3 | 20446.7 | 21281.1 | 20368.7 | 16026.7 |
| 60°   | 15563.6 | 15417.9 | 15681.5 | 17303.5 | 19416.3 | 20105.0 | 21180.5 | 21347.0 | 22011.4 | 20554.3 | 15908.8 |
| 62.5° | 16191.5 | 16104.8 | 16496.8 | 18479.6 | 21156.2 | 21832.7 | 22365.3 | 22165.8 | 22627.2 | 20698.3 | 15633.0 |
| 65°   | 16855.9 | 16861.1 | 17494.3 | 19851.7 | 23005.4 | 23461.6 | 23506.7 | 23227.4 | 23142.4 | 20668.8 | 14699.7 |
| 67.5° | 17754.5 | 17837.8 | 18894.2 | 21714.8 | 24804.2 | 25156.4 | 25152.9 | 24377.5 | 23518.8 | 19496.1 | 12630.2 |
| 70°   | 18705.1 | 18901.1 | 20507.4 | 23846.7 | 26767.9 | 27125.3 | 26941.4 | 25109.6 | 22145.0 | 15764.8 | 8938.8  |
| 72.5° | 18545.5 | 18885.5 | 21404.3 | 25191.1 | 28178.2 | 28450.6 | 27255.4 | 23310.7 | 17503.0 | 9162.6  | 3805.9  |
| 75°   | 14307.7 | 14701.4 | 19626.2 | 23858.8 | 26698.5 | 26453.9 | 23418.2 | 18139.6 | 9565.0  | 2556.9  | 856.9   |
| 77.5° | 7558.0  | 7767.9  | 12965.0 | 18176.0 | 20817.9 | 20306.2 | 16496.8 | 10062.9 | 2916.0  | 633.2   | 385.1   |
| 80°   | 3958.5  | 4007.1  | 5649.9  | 10312.7 | 12848.8 | 12852.3 | 9776.7  | 4420.0  | 1202.1  | 324.4   | 258.5   |
| 82.5° | 2119.8  | 2161.4  | 2985.4  | 4765.2  | 6732.3  | 6102.6  | 3743.4  | 2432.0  | 699.1   | 183.9   | 248.1   |
| 85°   | 510.0   | 518.7   | 1693.1  | 2177.0  | 2647.1  | 1890.8  | 1111.9  | 2041.7  | 189.1   | 107.6   | 201.2   |
| 87.5° | 196.0   | 199.5   | 628.0   | 941.9   | 674.8   | 437.1   | 520.4   | 761.5   | 24.3    | 41.6    | 31.2    |
| 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: P324054

CATALOG NUMBER: GLEON-SA0C-722-U-SL4-HSS

**CANDELA DISTRIBUTION (continued):**

|       | 90°     | 95°    | 105°   | 115°   | 125°   | 135°   | 145°   | 155°   | 165°   | 175°   | 180°   |
|-------|---------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|
| 0°    | 7681.2  | 7681.2 | 7681.2 | 7681.2 | 7681.2 | 7681.2 | 7681.2 | 7681.2 | 7681.2 | 7681.2 | 7681.2 |
| 2.5°  | 7604.9  | 7559.8 | 7448.7 | 7308.2 | 7183.3 | 7093.1 | 6957.8 | 6869.3 | 6810.4 | 6808.6 | 6786.1 |
| 5°    | 7412.3  | 7320.4 | 7081.0 | 6796.5 | 6538.0 | 6305.6 | 6031.5 | 5814.7 | 5653.3 | 5627.3 | 5571.8 |
| 7.5°  | 7205.9  | 7055.0 | 6687.2 | 6243.1 | 5809.5 | 5368.8 | 4857.1 | 4539.7 | 4267.3 | 4137.2 | 4123.3 |
| 10°   | 7079.2  | 6867.6 | 6345.5 | 5703.6 | 5023.6 | 4307.2 | 3637.6 | 3174.5 | 2839.7 | 2744.3 | 2673.1 |
| 12.5° | 7053.2  | 6773.9 | 6081.8 | 5197.1 | 4225.7 | 3278.6 | 2537.8 | 2045.2 | 1778.1 | 1693.1 | 1670.5 |
| 15°   | 7079.2  | 6730.6 | 5859.8 | 4695.8 | 3417.3 | 2326.2 | 1703.5 | 1417.2 | 1316.6 | 1292.3 | 1290.6 |
| 17.5° | 7094.9  | 6678.5 | 5608.2 | 4139.0 | 2633.3 | 1661.8 | 1304.5 | 1221.2 | 1205.6 | 1203.9 | 1207.3 |
| 20°   | 7093.1  | 6598.7 | 5308.1 | 3517.9 | 1958.5 | 1306.2 | 1179.6 | 1162.2 | 1158.8 | 1160.5 | 1158.8 |
| 22.5° | 7081.0  | 6505.1 | 4978.5 | 2877.8 | 1479.7 | 1167.4 | 1125.8 | 1115.4 | 1113.7 | 1113.7 | 1113.7 |
| 25°   | 7103.5  | 6430.5 | 4616.0 | 2265.5 | 1219.5 | 1103.3 | 1077.2 | 1068.6 | 1066.8 | 1066.8 | 1063.4 |
| 27.5° | 7185.1  | 6388.8 | 4218.8 | 1743.4 | 1101.5 | 1046.0 | 1025.2 | 1023.5 | 1018.3 | 1016.5 | 1020.0 |
| 30°   | 7316.9  | 6388.8 | 3783.3 | 1356.5 | 1030.4 | 987.0  | 971.4  | 968.0  | 966.2  | 964.5  | 966.2  |
| 32.5° | 7549.3  | 6437.4 | 3308.0 | 1127.5 | 962.7  | 921.1  | 910.7  | 915.9  | 910.7  | 910.7  | 910.7  |
| 35°   | 7969.1  | 6583.1 | 2810.2 | 983.6  | 891.6  | 856.9  | 846.5  | 853.5  | 850.0  | 850.0  | 848.3  |
| 37.5° | 8581.5  | 6853.7 | 2308.9 | 896.8  | 829.2  | 792.8  | 778.9  | 789.3  | 785.8  | 785.8  | 784.1  |
| 40°   | 9327.4  | 7247.5 | 1831.8 | 830.9  | 768.5  | 730.3  | 718.2  | 723.4  | 714.7  | 714.7  | 718.2  |
| 42.5° | 10248.5 | 7747.1 | 1415.5 | 766.7  | 707.8  | 671.3  | 664.4  | 659.2  | 643.6  | 634.9  | 636.6  |
| 45°   | 11272.0 | 8267.5 | 1103.3 | 704.3  | 650.5  | 621.0  | 610.6  | 596.7  | 570.7  | 553.4  | 555.1  |
| 47.5° | 12186.2 | 8668.2 | 896.8  | 643.6  | 598.5  | 575.9  | 560.3  | 534.3  | 496.1  | 475.3  | 477.0  |
| 50°   | 12666.7 | 8728.9 | 763.3  | 582.9  | 549.9  | 527.3  | 504.8  | 464.9  | 419.8  | 397.2  | 395.5  |
| 52.5° | 12789.8 | 8444.4 | 664.4  | 527.3  | 501.3  | 475.3  | 445.8  | 392.0  | 341.7  | 317.4  | 314.0  |
| 55°   | 12834.9 | 8010.8 | 575.9  | 475.3  | 449.3  | 419.8  | 381.6  | 320.9  | 274.1  | 249.8  | 248.1  |
| 57.5° | 12685.7 | 7363.7 | 506.5  | 428.5  | 397.2  | 360.8  | 314.0  | 256.7  | 211.6  | 192.5  | 192.5  |
| 60°   | 12354.4 | 6487.7 | 452.8  | 378.2  | 343.5  | 301.8  | 253.3  | 199.5  | 157.9  | 142.2  | 142.2  |
| 62.5° | 11693.5 | 5353.2 | 402.4  | 326.1  | 293.2  | 249.8  | 204.7  | 150.9  | 111.0  | 102.3  | 104.1  |
| 65°   | 10446.3 | 4060.9 | 352.1  | 279.3  | 249.8  | 206.4  | 159.6  | 107.6  | 74.6   | 74.6   | 78.1   |
| 67.5° | 8519.0  | 2820.6 | 300.1  | 237.7  | 215.1  | 168.3  | 121.4  | 74.6   | 52.0   | 59.0   | 65.9   |
| 70°   | 5639.5  | 1582.0 | 256.7  | 196.0  | 183.9  | 133.6  | 90.2   | 50.3   | 41.6   | 55.5   | 67.7   |
| 72.5° | 2128.5  | 615.8  | 215.1  | 157.9  | 159.6  | 102.3  | 64.2   | 38.2   | 38.2   | 60.7   | 79.8   |
| 75°   | 593.3   | 301.8  | 154.4  | 116.2  | 124.9  | 74.6   | 46.8   | 33.0   | 36.4   | 69.4   | 93.7   |
| 77.5° | 348.7   | 222.0  | 100.6  | 67.7   | 85.0   | 52.0   | 31.2   | 26.0   | 31.2   | 59.0   | 90.2   |
| 80°   | 281.0   | 118.0  | 59.0   | 34.7   | 46.8   | 29.5   | 20.8   | 15.6   | 8.7    | 22.6   | 46.8   |
| 82.5° | 281.0   | 71.1   | 27.8   | 24.3   | 24.3   | 15.6   | 10.4   | 6.9    | 1.7    | 0.0    | 12.1   |
| 85°   | 189.1   | 29.5   | 17.3   | 15.6   | 12.1   | 5.2    | 3.5    | 1.7    | 0.0    | 0.0    | 0.0    |
| 87.5° | 31.2    | 12.1   | 6.9    | 3.5    | 1.7    | 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

REPORT NUMBER: SP1-1908-441-10-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 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)