

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: P319305

Luminaire Tested: **GLEON-SA1A-730-U-SL2**

Issue Date: 3/3/2020

**Test Information**

Test Method: LM-79-08  
Report Number: P319305  
TEST IS SCALED FROM IESNA LM-79-08 TEST DATA (G2-1903-205-20)  
Test Lab: INNOVATION CENTER  
Issue Date: 3/3/2020  
Manufacturer: COOPER LIGHTING SOLUTIONS (FORMERLY EATON)  
Product Line: McGRAW-EDISON  
Catalog Number: GLEON-SA1A-730-U-SL2  
Description: GALLEON AREA AND ROADWAY LUMINAIRE  
(1) 70 CRI, 3000K, 615mA LIGHTSQUARE WITH 16 LEDS AND TYPE II SPILL LIGHT  
ELIMINATOR OPTICS  
Light Source: -  
Ballast/Driver: ELECTRONIC DRIVER

**Summary**

Lumens per Lamp: N/A  
Luminaire Lumens: 4352 lumens  
Efficiency: N/A  
Efficacy: 128.0 lumens/watt  
Luminous Opening: Rectangular (W 0.5' x L: 0.5' x H: 0')  
IES Classification: Type III - Medium  
BUG Rating: B1 - U0 - G2

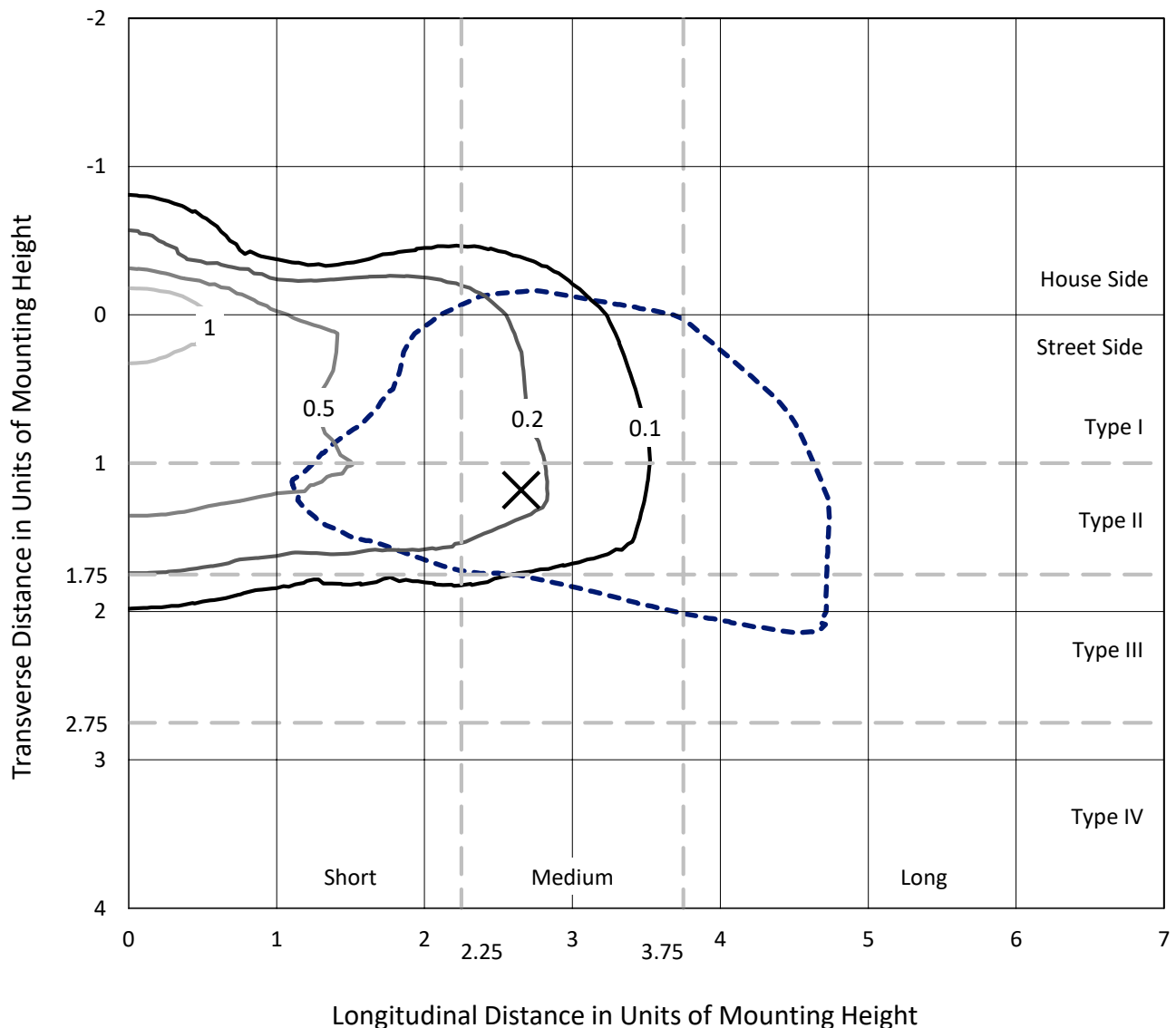
Input Watts (W): 34  
Input Voltage (V): NR  
Input Current (Ain): NR  
Voltage Rise (V): NR  
Power Factor: NR  
Total Harmonic Distortion (THDi): NR  
Frequency (hertz): 60  
Stabilization Time: NR  
Operation Time: NR  
Ambient Temperature (°C): NR  
Test Distance: 24 FT



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 CATALOG NUMBER: GLEON-SA1A-730-U-SL2

## Iso-Footcandle Lines of Horizontal Illumination

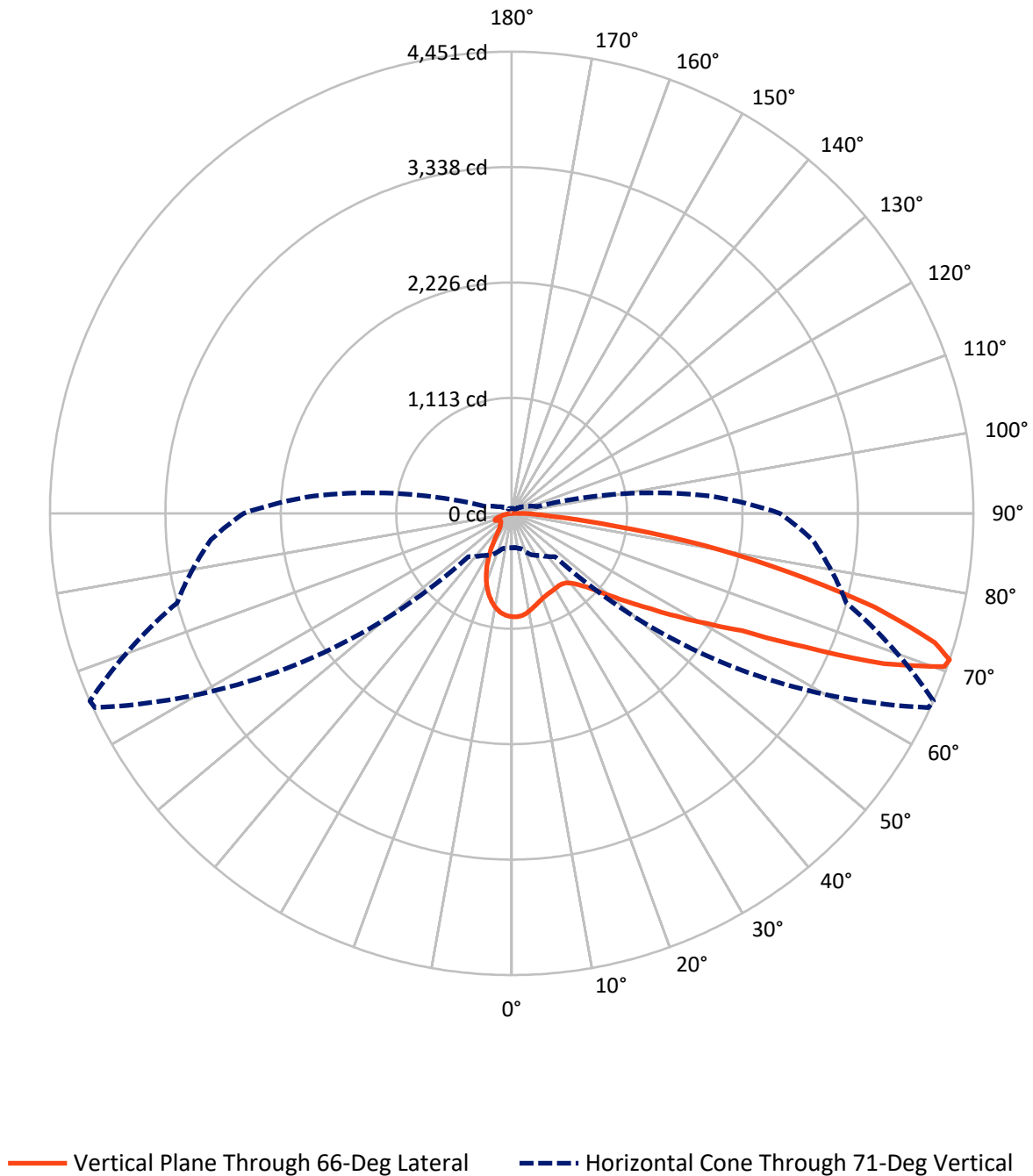
✕ Max cd  
 - - - 1/2 Max cd



Based on 25 foot mounting height. Maximum calculated value = 1.6 fc  
 Type III - Medium - N/A

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## Luminous Intensity Polar Plot



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CATALOG NUMBER: GLEON-SA1A-730-U-SL2

**FLUX DISTRIBUTION:**

|                    |           | Downward | Upward | Total  |
|--------------------|-----------|----------|--------|--------|
| <b>House Side</b>  | Lumens    | 806.5    | 0.0    | 806.5  |
|                    | % Fixture | 18.5     | 0.0    | 18.5   |
| <b>Street Side</b> | Lumens    | 3545.5   | 0.0    | 3545.5 |
|                    | % Fixture | 81.5     | 0.0    | 81.5   |
| <b>Total</b>       | Lumens    | 4352.0   | 0.0    | 4352.0 |
|                    | % Fixture | 100.0    | 0.0    | 100.0  |

**ZONAL LUMENS:**

| Zone      | Lumens | % Fixture |
|-----------|--------|-----------|
| 0°-10°    | 87.8   | 2.0       |
| 10°-20°   | 210.5  | 4.8       |
| 20°-30°   | 282.7  | 6.5       |
| 30°-40°   | 371.9  | 8.5       |
| 40°-50°   | 541.0  | 12.4      |
| 50°-60°   | 845.2  | 19.4      |
| 60°-70°   | 1058.7 | 24.3      |
| 70°-80°   | 807.6  | 18.6      |
| 80°-90°   | 146.6  | 3.4       |
| 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°    | 4352.0 | 100.0     |
| 0°-180°   | 4352.0 | 100.0     |

**Coefficient of Utilization**



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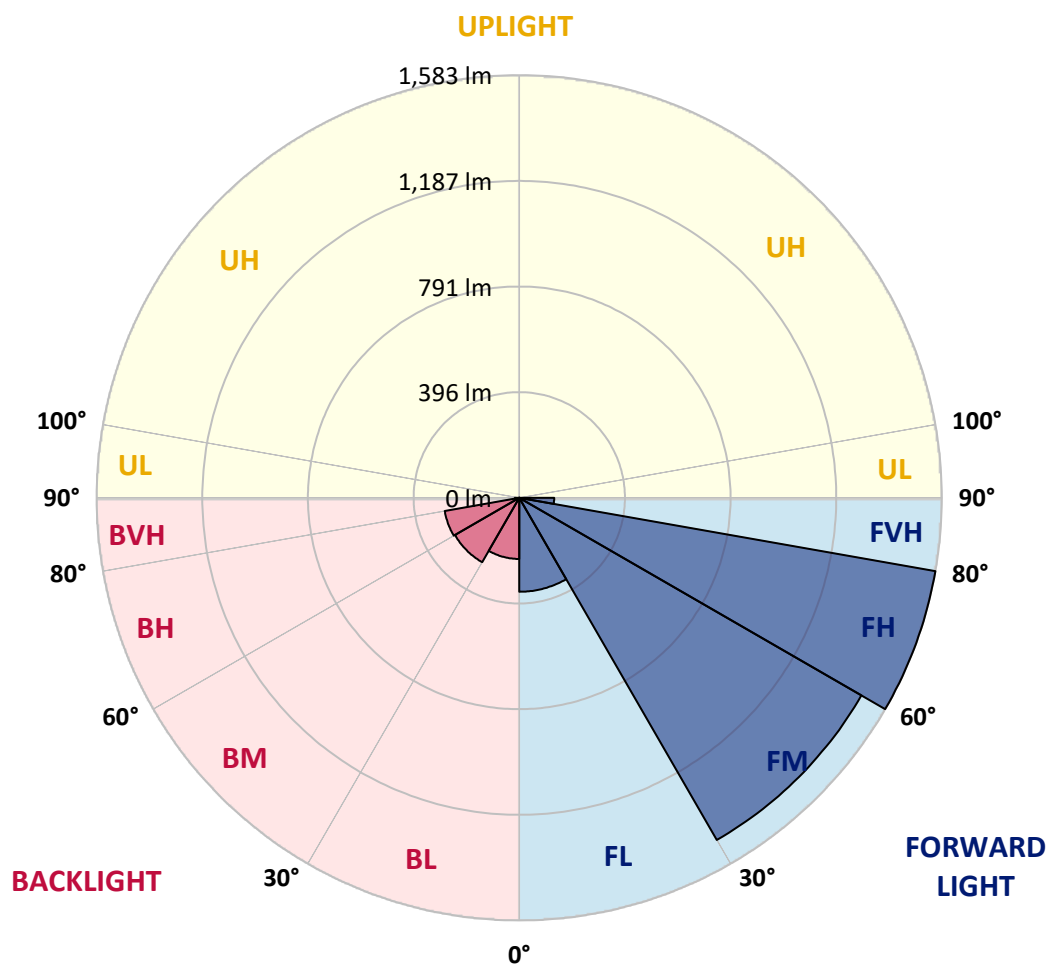
CATALOG NUMBER: GLEON-SA1A-730-U-SL2

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

| Zone |             | Lumens | % Fixture | Zone Rating/Lumen Limit |      |         |
|------|-------------|--------|-----------|-------------------------|------|---------|
|      |             |        |           | B                       | U    | G       |
| FL   | (0°-30°)    | 351.9  | 8.1       |                         |      |         |
| FM   | (30°-60°)   | 1479.9 | 34.0      |                         |      |         |
| FH   | (60°-80°)   | 1582.9 | 36.4      |                         |      | G1/1800 |
| FVH  | (80°-90°)   | 130.8  | 3.0       |                         |      | G2/225  |
| BL   | (0°-30°)    | 229.0  | 5.3       | B1/500                  |      |         |
| BM   | (30°-60°)   | 278.2  | 6.4       | B1/1000                 |      |         |
| BH   | (60°-80°)   | 283.4  | 6.5       | B1/500                  |      | G1/500  |
| BVH  | (80°-90°)   | 15.9   | 0.4       |                         |      | G1/100  |
| UL   | (90°-100°)  | 0.0    | 0.0       |                         | U0/0 |         |
| UH   | (100°-180°) | 0.0    | 0.0       |                         | U0/0 |         |

**BUG Rating: B1-U0-G2**

Type III Medium





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**CANDELA DISTRIBUTION (FULL):**

|       | 0°     | 5°     | 15°    | 25°    | 35°    | 45°    | 55°    | 65°    | 66°    | 75°    | 85°    |
|-------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|
| 0°    | 997.0  | 997.0  | 997.0  | 997.0  | 997.0  | 997.0  | 997.0  | 997.0  | 997.0  | 997.0  | 997.0  |
| 2.5°  | 978.5  | 977.0  | 981.5  | 986.1  | 987.9  | 990.9  | 995.5  | 998.0  | 997.9  | 998.3  | 996.8  |
| 5°    | 913.6  | 911.6  | 920.6  | 928.0  | 942.1  | 958.0  | 977.4  | 991.2  | 991.5  | 999.4  | 1001.5 |
| 7.5°  | 852.1  | 850.8  | 861.1  | 873.0  | 889.4  | 913.7  | 945.1  | 974.9  | 976.7  | 997.9  | 1005.2 |
| 10°   | 802.8  | 802.5  | 812.6  | 825.5  | 844.6  | 871.8  | 907.9  | 951.4  | 954.1  | 990.6  | 1005.8 |
| 12.5° | 764.4  | 765.0  | 773.7  | 788.4  | 808.5  | 836.9  | 876.0  | 925.1  | 929.5  | 979.2  | 1002.4 |
| 15°   | 736.0  | 738.4  | 745.4  | 760.3  | 780.1  | 809.0  | 849.1  | 900.8  | 907.4  | 966.5  | 1000.4 |
| 17.5° | 719.7  | 722.4  | 727.4  | 739.7  | 758.3  | 786.1  | 824.2  | 880.8  | 886.8  | 956.7  | 1000.6 |
| 20°   | 714.9  | 717.2  | 720.0  | 727.5  | 743.3  | 768.6  | 804.5  | 862.8  | 869.2  | 948.9  | 1002.1 |
| 22.5° | 724.4  | 726.0  | 726.3  | 725.7  | 735.4  | 755.9  | 790.2  | 849.6  | 856.5  | 943.8  | 1003.1 |
| 25°   | 744.7  | 746.9  | 745.3  | 739.7  | 736.6  | 749.2  | 782.8  | 840.8  | 847.8  | 940.0  | 1001.0 |
| 27.5° | 775.2  | 775.5  | 774.1  | 766.9  | 752.0  | 749.9  | 780.6  | 835.7  | 842.3  | 935.7  | 996.7  |
| 30°   | 816.6  | 818.6  | 816.2  | 806.4  | 782.1  | 762.0  | 783.3  | 830.8  | 836.8  | 930.1  | 989.6  |
| 32.5° | 865.2  | 870.0  | 869.8  | 859.6  | 824.8  | 788.9  | 794.4  | 827.8  | 832.4  | 924.2  | 981.0  |
| 35°   | 915.5  | 922.1  | 934.5  | 930.1  | 887.0  | 831.4  | 815.7  | 832.6  | 835.7  | 923.5  | 975.0  |
| 37.5° | 967.8  | 974.4  | 999.8  | 1011.5 | 961.0  | 892.2  | 849.4  | 849.6  | 851.1  | 932.6  | 974.6  |
| 40°   | 1022.5 | 1029.6 | 1067.7 | 1098.2 | 1057.1 | 969.3  | 903.6  | 885.0  | 883.4  | 955.2  | 983.4  |
| 42.5° | 1099.1 | 1105.4 | 1151.3 | 1190.2 | 1163.6 | 1068.0 | 978.6  | 939.7  | 936.3  | 999.4  | 1011.8 |
| 45°   | 1196.1 | 1201.5 | 1250.1 | 1291.8 | 1278.1 | 1180.7 | 1072.8 | 1015.0 | 1014.4 | 1073.0 | 1069.4 |
| 47.5° | 1311.3 | 1315.5 | 1359.2 | 1399.5 | 1404.5 | 1310.4 | 1191.2 | 1131.1 | 1121.4 | 1174.0 | 1158.5 |
| 50°   | 1431.4 | 1436.0 | 1465.8 | 1509.0 | 1545.8 | 1483.9 | 1343.6 | 1273.4 | 1260.4 | 1307.2 | 1284.7 |
| 52.5° | 1510.8 | 1517.0 | 1542.8 | 1597.7 | 1704.8 | 1674.2 | 1523.8 | 1445.9 | 1426.1 | 1468.8 | 1451.5 |
| 55°   | 1475.4 | 1489.2 | 1528.7 | 1616.6 | 1831.9 | 1964.8 | 1746.0 | 1647.1 | 1624.7 | 1660.2 | 1650.0 |
| 57.5° | 1314.2 | 1333.1 | 1387.0 | 1522.7 | 1849.8 | 2220.8 | 2082.0 | 1884.1 | 1868.3 | 1858.1 | 1862.7 |
| 60°   | 1019.5 | 1037.7 | 1104.5 | 1281.4 | 1725.3 | 2407.7 | 2587.6 | 2176.2 | 2153.3 | 2056.7 | 2060.9 |
| 62.5° | 721.5  | 712.4  | 758.2  | 887.6  | 1401.9 | 2429.7 | 3162.9 | 2566.8 | 2491.7 | 2266.5 | 2248.0 |
| 65°   | 550.2  | 548.1  | 568.7  | 609.9  | 849.1  | 2167.2 | 3505.7 | 3223.5 | 3106.1 | 2513.2 | 2469.6 |
| 67.5° | 452.1  | 448.4  | 468.7  | 528.6  | 546.8  | 1398.1 | 3513.2 | 3985.3 | 3870.0 | 2820.3 | 2726.0 |
| 70°   | 371.7  | 367.5  | 386.5  | 463.8  | 505.3  | 709.1  | 2956.8 | 4431.4 | 4425.2 | 3209.2 | 2919.5 |
| 71°   | 333.3  | 330.3  | 353.0  | 438.9  | 496.5  | 591.0  | 2552.9 | 4432.6 | 4451.1 | 3340.8 | 2908.1 |
| 72.5° | 271.4  | 272.4  | 296.5  | 390.7  | 489.8  | 521.8  | 1876.3 | 4226.0 | 4265.1 | 3466.3 | 2804.3 |
| 75°   | 180.3  | 181.2  | 212.8  | 300.5  | 475.0  | 510.6  | 1031.2 | 3546.1 | 3617.9 | 3391.2 | 2558.9 |
| 77.5° | 121.1  | 120.8  | 142.3  | 206.2  | 413.8  | 510.6  | 604.6  | 2652.2 | 2731.1 | 2698.3 | 1972.7 |
| 80°   | 83.4   | 82.8   | 98.0   | 142.3  | 313.3  | 516.7  | 467.5  | 1858.7 | 1882.6 | 1457.2 | 801.8  |
| 82.5° | 51.1   | 51.5   | 64.0   | 100.5  | 213.2  | 465.0  | 441.3  | 1013.5 | 987.5  | 408.7  | 200.3  |
| 85°   | 29.3   | 29.1   | 40.9   | 68.1   | 136.9  | 392.5  | 430.3  | 436.2  | 400.1  | 123.1  | 72.4   |
| 87.5° | 10.5   | 11.3   | 21.9   | 37.7   | 78.4   | 273.3  | 365.1  | 226.9  | 204.5  | 55.6   | 32.8   |
| 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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CATALOG NUMBER: GLEON-SA1A-730-U-SL2

**CANDELA DISTRIBUTION (continued):**

|       | 90°    | 95°    | 105°  | 115°  | 125°  | 135°  | 145°  | 155°  | 165°  | 175°  | 180°  |
|-------|--------|--------|-------|-------|-------|-------|-------|-------|-------|-------|-------|
| 0°    | 997.0  | 997.0  | 997.0 | 997.0 | 997.0 | 997.0 | 997.0 | 997.0 | 997.0 | 997.0 | 997.0 |
| 2.5°  | 995.8  | 996.7  | 995.6 | 989.6 | 984.5 | 976.2 | 971.6 | 965.1 | 963.2 | 962.2 | 964.7 |
| 5°    | 999.5  | 999.8  | 990.9 | 975.2 | 957.4 | 936.6 | 921.5 | 903.0 | 894.3 | 890.6 | 893.0 |
| 7.5°  | 1003.0 | 1001.6 | 982.2 | 952.0 | 919.3 | 882.9 | 850.6 | 821.0 | 803.7 | 796.7 | 797.3 |
| 10°   | 1003.4 | 997.7  | 966.6 | 919.9 | 869.1 | 815.7 | 766.2 | 720.5 | 691.6 | 672.9 | 678.6 |
| 12.5° | 998.8  | 989.1  | 943.6 | 878.3 | 807.8 | 735.1 | 668.0 | 599.5 | 558.4 | 539.3 | 539.9 |
| 15°   | 995.2  | 977.7  | 915.4 | 829.3 | 734.6 | 638.3 | 546.8 | 466.2 | 422.4 | 402.8 | 393.7 |
| 17.5° | 992.2  | 965.4  | 882.6 | 774.1 | 648.2 | 526.1 | 416.1 | 344.2 | 320.2 | 314.5 | 312.1 |
| 20°   | 987.9  | 952.3  | 846.1 | 710.3 | 549.8 | 400.4 | 303.8 | 268.4 | 268.5 | 275.1 | 276.0 |
| 22.5° | 982.1  | 937.5  | 807.2 | 638.6 | 444.2 | 291.6 | 238.2 | 227.9 | 238.3 | 250.9 | 253.2 |
| 25°   | 973.4  | 919.9  | 763.9 | 559.4 | 338.7 | 224.2 | 203.4 | 203.0 | 215.6 | 228.8 | 230.8 |
| 27.5° | 961.0  | 896.9  | 715.8 | 474.4 | 249.6 | 190.5 | 182.3 | 185.4 | 194.7 | 204.4 | 205.1 |
| 30°   | 944.5  | 870.1  | 662.8 | 384.7 | 195.6 | 169.6 | 168.7 | 171.6 | 177.3 | 184.1 | 184.7 |
| 32.5° | 926.3  | 842.9  | 606.1 | 297.8 | 167.5 | 158.4 | 159.3 | 160.6 | 163.3 | 166.0 | 166.6 |
| 35°   | 909.8  | 815.1  | 548.1 | 226.3 | 154.2 | 151.0 | 150.4 | 150.1 | 150.4 | 149.5 | 149.7 |
| 37.5° | 899.1  | 792.2  | 487.7 | 180.2 | 146.5 | 144.5 | 142.7 | 140.5 | 137.9 | 136.4 | 136.7 |
| 40°   | 895.2  | 775.0  | 426.6 | 155.7 | 140.2 | 138.8 | 135.4 | 130.6 | 127.6 | 126.7 | 126.7 |
| 42.5° | 905.8  | 766.2  | 367.5 | 143.3 | 134.9 | 132.7 | 127.0 | 121.4 | 119.2 | 119.0 | 118.9 |
| 45°   | 937.9  | 769.8  | 311.3 | 136.6 | 130.1 | 125.8 | 118.3 | 113.6 | 112.1 | 112.4 | 112.2 |
| 47.5° | 995.6  | 792.5  | 263.3 | 132.1 | 125.3 | 119.6 | 111.2 | 107.4 | 105.6 | 105.6 | 105.8 |
| 50°   | 1093.7 | 845.5  | 224.9 | 128.3 | 121.3 | 113.9 | 106.1 | 101.4 | 99.0  | 98.9  | 98.9  |
| 52.5° | 1236.6 | 940.5  | 201.0 | 125.2 | 116.8 | 108.8 | 101.0 | 95.1  | 92.3  | 91.7  | 91.4  |
| 55°   | 1415.7 | 1076.6 | 194.4 | 123.1 | 110.7 | 103.2 | 94.8  | 89.0  | 85.8  | 84.4  | 84.3  |
| 57.5° | 1616.0 | 1242.2 | 207.5 | 120.5 | 104.6 | 96.6  | 88.1  | 82.5  | 79.2  | 77.5  | 77.4  |
| 60°   | 1818.7 | 1422.9 | 260.8 | 116.9 | 99.5  | 89.4  | 81.1  | 76.0  | 72.7  | 70.9  | 70.6  |
| 62.5° | 2021.7 | 1613.5 | 369.8 | 116.6 | 95.9  | 82.5  | 74.1  | 69.7  | 66.6  | 64.6  | 64.2  |
| 65°   | 2250.7 | 1822.0 | 493.6 | 124.6 | 94.7  | 76.2  | 66.9  | 63.4  | 60.7  | 58.9  | 58.8  |
| 67.5° | 2513.7 | 2057.5 | 481.7 | 140.9 | 98.7  | 70.5  | 60.1  | 57.4  | 55.4  | 53.9  | 53.8  |
| 70°   | 2637.0 | 2020.7 | 299.5 | 152.5 | 104.4 | 64.9  | 53.6  | 51.7  | 50.2  | 49.1  | 48.7  |
| 71°   | 2585.3 | 1918.6 | 251.1 | 151.2 | 103.8 | 62.5  | 51.1  | 49.6  | 48.1  | 47.2  | 46.7  |
| 72.5° | 2444.4 | 1749.7 | 209.5 | 140.6 | 97.1  | 58.1  | 47.8  | 46.3  | 44.9  | 43.9  | 43.6  |
| 75°   | 2193.5 | 1562.7 | 167.7 | 112.4 | 77.4  | 49.1  | 41.9  | 40.3  | 39.2  | 38.6  | 38.0  |
| 77.5° | 1612.4 | 1115.2 | 129.7 | 88.8  | 56.9  | 40.1  | 35.8  | 34.6  | 33.5  | 32.6  | 32.2  |
| 80°   | 617.7  | 432.0  | 87.3  | 66.3  | 41.8  | 31.7  | 28.8  | 28.2  | 27.2  | 26.6  | 26.6  |
| 82.5° | 166.3  | 129.1  | 46.6  | 40.1  | 27.9  | 23.1  | 22.1  | 21.8  | 20.9  | 19.7  | 19.8  |
| 85°   | 67.3   | 56.9   | 26.1  | 22.1  | 17.1  | 13.7  | 14.9  | 15.0  | 14.0  | 12.5  | 12.6  |
| 87.5° | 29.6   | 24.2   | 14.6  | 9.8   | 7.5   | 5.3   | 6.8   | 6.8   | 6.2   | 5.1   | 4.7   |
| 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: SP1-1908-441-2-R4

Test Date: 10/03/2019

Luminaire Tested: SA1C-730-U-5WQ

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

### Test Information

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

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

### Spectral Parameters

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



### Test Conditions

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

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

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

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

**CIE 1931 Chromaticity Diagram**



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



Point lies inside the ANSI 3000K 4-step quadrangle

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

**Photopic Flux vs. Wavelength**



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

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**Scotopic Flux vs. Wavelength**



**Scotopic Lumens: 8494.8**

**S/P: 1.23**

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

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**Melanopic Flux vs. Wavelength**



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

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

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**TM-30-18**

**Summary**

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



**Color Vector Graphics**



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

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



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**Color Rendition by Hue-Angle Bin**



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**Measure Comparisons**



(END OF REPORT)