

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



Scaled data based on original data using  
LM-79-08 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: P318795

Luminaire Tested: **GLEON-SA1B-760-U-T4FT**

Issue Date: 3/3/2020

### Test Information

Test Method: LM-79-08  
Report Number: P318795  
TEST IS SCALED FROM IESNA LM-79-08 TEST DATA (G2-1903-205-16)  
Test Lab: INNOVATION CENTER  
Issue Date: 3/3/2020  
Manufacturer: COOPER LIGHTING SOLUTIONS (FORMERLY EATON)  
Product Line: McGRAW-EDISON  
Catalog Number: GLEON-SA1B-760-U-T4FT  
Description: GALLEON AREA AND ROADWAY LUMINAIRE  
(1) 70 CRI, 5700K, 800mA LIGHTSQUARE WITH 16 LEDS AND TYPE IV FORWARD  
THROW OPTICS  
Light Source: -  
Ballast/Driver: ELECTRONIC DRIVER

### Summary

Lumens per Lamp: N/A  
Luminaire Lumens: 6020 lumens  
Efficiency: N/A  
Efficacy: 136.8 lumens/watt  
Luminous Opening: Rectangular (W 0.5' x L: 0.5' x H: 0')  
IES Classification: Type IV - Short  
BUG Rating: B1 - U0 - G2

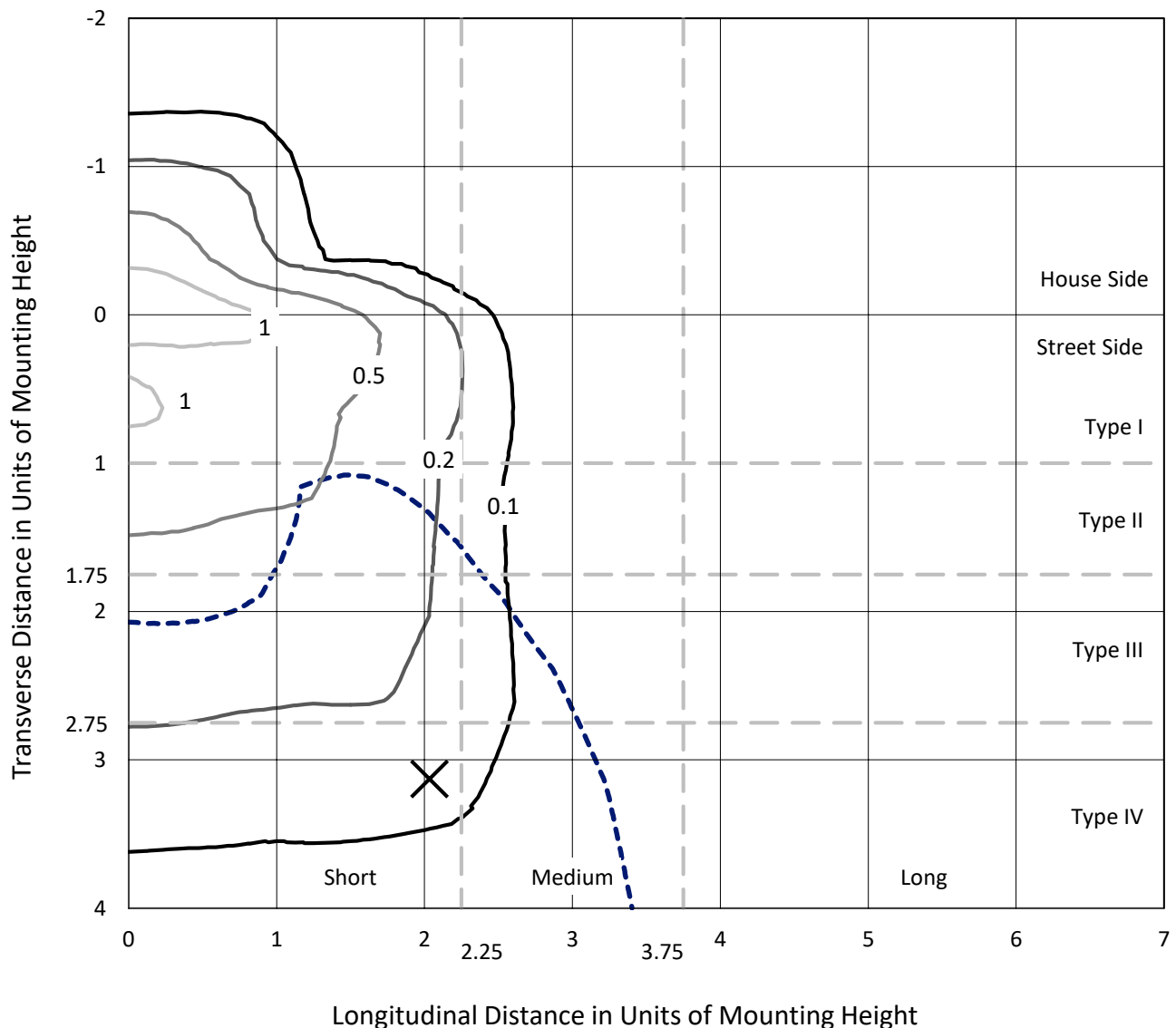
Input Watts (W): 44  
Input Voltage (V): NR  
Input Current (Ain): NR  
Voltage Rise (V): NR  
Power Factor: NR  
Total Harmonic Distortion (THDi): NR  
Frequency (hertz): 60  
Stabilization Time: NR  
Operation Time: NR  
Ambient Temperature (°C): NR  
Test Distance: 24 FT



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## Iso-Footcandle Lines of Horizontal Illumination

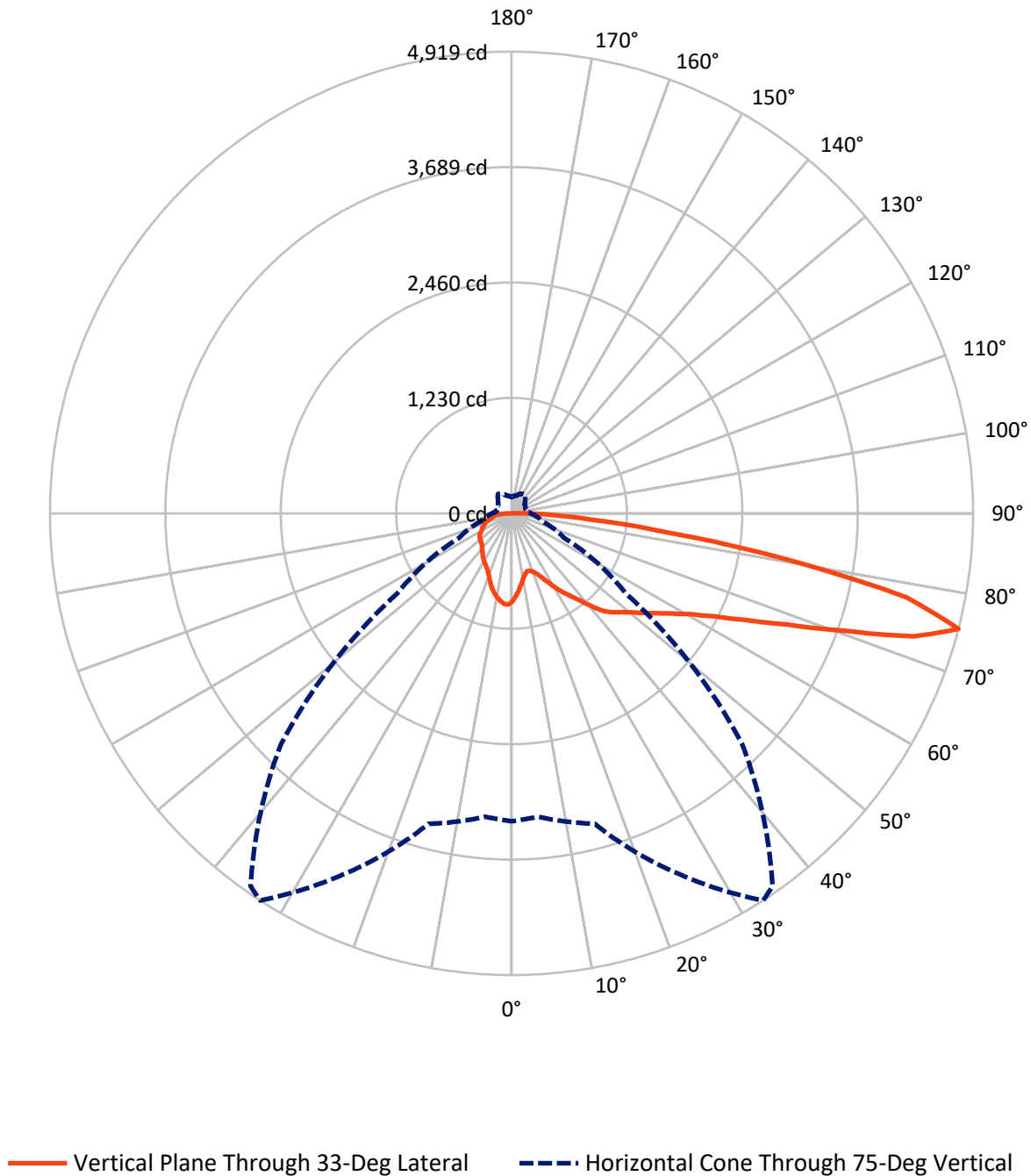
× Max cd  
 - - - 1/2 Max cd



Based on 25 foot mounting height. Maximum calculated value = 1.5 fc  
 Type IV - Short - N/A

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## Luminous Intensity Polar Plot



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CATALOG NUMBER: GLEON-SA1B-760-U-T4FT

**FLUX DISTRIBUTION:**

|                    |           | Downward | Upward | Total  |
|--------------------|-----------|----------|--------|--------|
| <b>House Side</b>  | Lumens    | 1292.6   | 0.0    | 1292.6 |
|                    | % Fixture | 21.5     | 0.0    | 21.5   |
| <b>Street Side</b> | Lumens    | 4727.3   | 0.0    | 4727.3 |
|                    | % Fixture | 78.5     | 0.0    | 78.5   |
| <b>Total</b>       | Lumens    | 6020.0   | 0.0    | 6020.0 |
|                    | % Fixture | 100.0    | 0.0    | 100.0  |

**ZONAL LUMENS:**

| Zone      | Lumens | % Fixture |
|-----------|--------|-----------|
| 0°-10°    | 85.1   | 1.4       |
| 10°-20°   | 230.5  | 3.8       |
| 20°-30°   | 376.4  | 6.3       |
| 30°-40°   | 560.6  | 9.3       |
| 40°-50°   | 804.0  | 13.4      |
| 50°-60°   | 1103.8 | 18.3      |
| 60°-70°   | 1381.9 | 23.0      |
| 70°-80°   | 1250.1 | 20.8      |
| 80°-90°   | 227.7  | 3.8       |
| 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°    | 6020.0 | 100.0     |
| 0°-180°   | 6020.0 | 100.0     |

**Coefficient of Utilization**



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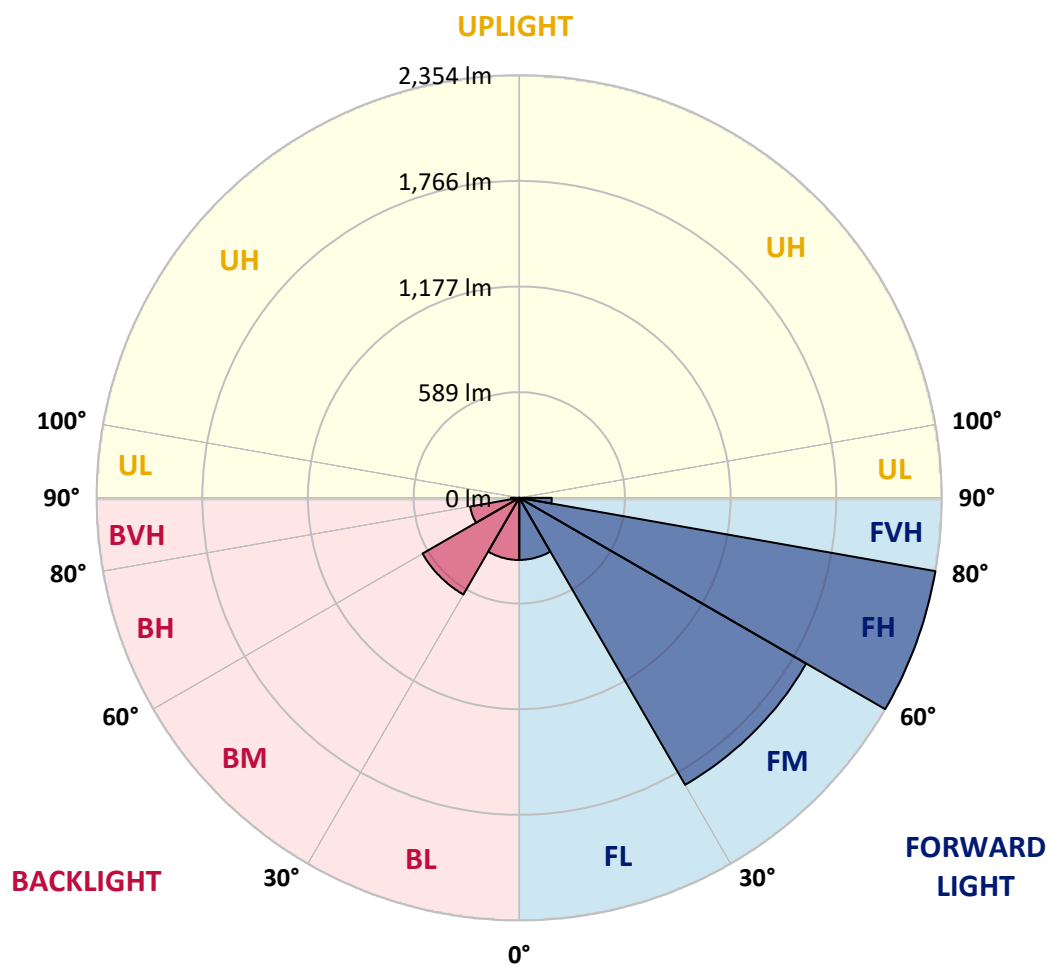
CATALOG NUMBER: GLEON-SA1B-760-U-T4FT

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

| Zone |             | Lumens | % Fixture | Zone Rating/Lumen Limit |      |         |
|------|-------------|--------|-----------|-------------------------|------|---------|
|      |             |        |           | B                       | U    | G       |
| FL   | (0°-30°)    | 345.8  | 5.7       |                         |      |         |
| FM   | (30°-60°)   | 1846.2 | 30.7      |                         |      |         |
| FH   | (60°-80°)   | 2354.0 | 39.1      |                         |      | G2/5000 |
| FVH  | (80°-90°)   | 181.4  | 3.0       |                         |      | G2/225  |
| BL   | (0°-30°)    | 346.2  | 5.8       | B1/500                  |      |         |
| BM   | (30°-60°)   | 622.1  | 10.3      | B1/1000                 |      |         |
| BH   | (60°-80°)   | 277.9  | 4.6       | B1/500                  |      | G1/500  |
| BVH  | (80°-90°)   | 46.4   | 0.8       |                         |      | 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 IV Short





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CATALOG NUMBER: GLEON-SA1B-760-U-T4FT

**CANDELA DISTRIBUTION (FULL):**

|       | 0°     | 5°     | 15°    | 25°    | 33°    | 35°    | 45°    | 55°    | 65°    | 75°    | 85°    |
|-------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|
| 0°    | 941.0  | 941.0  | 941.0  | 941.0  | 941.0  | 941.0  | 941.0  | 941.0  | 941.0  | 941.0  | 941.0  |
| 2.5°  | 873.8  | 870.5  | 876.7  | 877.5  | 882.9  | 885.0  | 892.5  | 904.2  | 913.7  | 924.7  | 934.7  |
| 5°    | 794.6  | 792.3  | 801.0  | 807.2  | 819.1  | 824.1  | 841.8  | 866.5  | 888.6  | 913.5  | 936.2  |
| 7.5°  | 719.3  | 718.0  | 727.8  | 742.0  | 755.7  | 762.5  | 793.1  | 829.1  | 865.9  | 906.2  | 941.0  |
| 10°   | 655.9  | 655.4  | 664.8  | 678.7  | 698.9  | 706.6  | 746.1  | 793.5  | 845.1  | 900.6  | 949.1  |
| 12.5° | 620.3  | 621.8  | 626.1  | 637.8  | 656.5  | 664.2  | 708.1  | 763.8  | 827.6  | 898.7  | 960.9  |
| 15°   | 629.0  | 631.3  | 623.8  | 623.4  | 636.7  | 642.8  | 683.9  | 742.6  | 815.2  | 901.9  | 978.2  |
| 17.5° | 666.3  | 666.7  | 646.9  | 634.4  | 642.6  | 645.7  | 676.5  | 730.5  | 807.9  | 908.9  | 999.8  |
| 20°   | 718.7  | 717.6  | 682.7  | 661.9  | 666.3  | 667.1  | 687.1  | 730.7  | 807.2  | 921.2  | 1027.9 |
| 22.5° | 788.1  | 780.4  | 733.4  | 705.1  | 704.1  | 702.9  | 714.3  | 746.1  | 816.4  | 941.2  | 1061.4 |
| 25°   | 878.8  | 871.5  | 806.8  | 768.2  | 759.8  | 756.7  | 758.4  | 779.0  | 834.5  | 962.6  | 1098.8 |
| 27.5° | 979.6  | 967.0  | 904.6  | 849.9  | 832.6  | 828.3  | 818.3  | 825.3  | 854.2  | 983.2  | 1143.3 |
| 30°   | 1064.1 | 1057.2 | 1002.7 | 937.8  | 917.5  | 911.2  | 885.0  | 877.3  | 882.7  | 1011.2 | 1199.4 |
| 32.5° | 1111.3 | 1106.7 | 1073.6 | 1021.2 | 1002.3 | 993.6  | 956.6  | 941.2  | 928.5  | 1055.5 | 1275.5 |
| 35°   | 1168.5 | 1165.5 | 1145.6 | 1107.5 | 1079.5 | 1070.3 | 1041.6 | 1025.6 | 992.9  | 1116.5 | 1373.9 |
| 37.5° | 1241.2 | 1238.1 | 1238.5 | 1207.8 | 1174.3 | 1165.8 | 1146.8 | 1130.0 | 1076.5 | 1196.5 | 1480.8 |
| 40°   | 1323.6 | 1317.6 | 1315.3 | 1313.8 | 1292.6 | 1287.8 | 1277.8 | 1255.0 | 1181.3 | 1292.2 | 1586.2 |
| 42.5° | 1447.5 | 1426.1 | 1380.4 | 1397.6 | 1418.6 | 1416.1 | 1424.2 | 1391.4 | 1297.8 | 1405.3 | 1689.2 |
| 45°   | 1567.1 | 1531.9 | 1452.9 | 1456.7 | 1502.6 | 1516.6 | 1577.3 | 1554.0 | 1424.0 | 1529.2 | 1795.6 |
| 47.5° | 1621.6 | 1595.0 | 1527.8 | 1528.0 | 1573.5 | 1602.4 | 1735.5 | 1718.9 | 1556.7 | 1670.0 | 1925.6 |
| 50°   | 1682.5 | 1655.9 | 1595.6 | 1618.2 | 1658.0 | 1688.7 | 1888.4 | 1879.8 | 1682.9 | 1824.1 | 2081.3 |
| 52.5° | 1749.0 | 1703.9 | 1665.7 | 1706.2 | 1761.9 | 1797.7 | 2041.4 | 2018.1 | 1798.7 | 1979.2 | 2260.4 |
| 55°   | 1749.9 | 1737.6 | 1766.7 | 1796.5 | 1879.8 | 1923.7 | 2201.7 | 2140.2 | 1893.1 | 2131.7 | 2406.2 |
| 57.5° | 1849.5 | 1829.5 | 1891.3 | 1905.0 | 2014.0 | 2063.5 | 2361.2 | 2246.5 | 1989.2 | 2248.5 | 2484.8 |
| 60°   | 1981.3 | 1964.3 | 2014.8 | 2051.0 | 2179.9 | 2246.0 | 2531.5 | 2355.6 | 2064.7 | 2336.7 | 2481.0 |
| 62.5° | 2209.0 | 2189.7 | 2189.1 | 2239.8 | 2413.4 | 2490.4 | 2722.6 | 2462.7 | 2094.6 | 2354.2 | 2375.2 |
| 65°   | 2542.4 | 2511.6 | 2453.6 | 2477.7 | 2736.0 | 2812.7 | 2936.2 | 2540.3 | 2055.1 | 2260.6 | 2102.6 |
| 67.5° | 2866.8 | 2865.7 | 2794.4 | 2843.9 | 3161.8 | 3223.4 | 3179.5 | 2548.0 | 1931.8 | 1934.7 | 1618.9 |
| 70°   | 3190.1 | 3194.3 | 3182.2 | 3354.4 | 3737.2 | 3801.3 | 3438.6 | 2444.6 | 1654.6 | 1397.2 | 969.9  |
| 72.5° | 3446.3 | 3445.3 | 3506.0 | 3950.0 | 4484.0 | 4469.6 | 3657.0 | 2131.5 | 1188.0 | 754.2  | 463.5  |
| 75°   | 3280.4 | 3244.2 | 3425.1 | 4244.8 | 4919.2 | 4849.1 | 3471.3 | 1486.8 | 616.6  | 343.3  | 249.5  |
| 77.5° | 2139.6 | 2173.9 | 2439.4 | 3506.6 | 4302.8 | 4217.6 | 2546.7 | 693.7  | 290.5  | 225.2  | 180.9  |
| 80°   | 774.8  | 811.0  | 1142.3 | 1986.3 | 2964.5 | 2950.6 | 1254.1 | 285.1  | 196.5  | 170.1  | 131.8  |
| 82.5° | 266.6  | 279.9  | 450.6  | 882.1  | 1673.8 | 1736.1 | 471.8  | 162.0  | 142.9  | 120.6  | 90.2   |
| 85°   | 104.6  | 119.8  | 206.1  | 424.4  | 844.3  | 850.5  | 191.1  | 96.9   | 99.4   | 79.0   | 49.5   |
| 87.5° | 39.7   | 48.2   | 98.6   | 197.1  | 385.5  | 354.1  | 68.4   | 46.2   | 56.6   | 47.0   | 23.5   |
| 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-SA1B-760-U-T4FT

**CANDELA DISTRIBUTION (continued):**

|       | 90°    | 95°    | 105°   | 115°  | 125°  | 135°  | 145°  | 155°  | 165°  | 175°  | 180°  |
|-------|--------|--------|--------|-------|-------|-------|-------|-------|-------|-------|-------|
| 0°    | 941.0  | 941.0  | 941.0  | 941.0 | 941.0 | 941.0 | 941.0 | 941.0 | 941.0 | 941.0 | 941.0 |
| 2.5°  | 942.4  | 946.8  | 955.9  | 962.2 | 968.8 | 970.7 | 971.5 | 973.2 | 974.9 | 974.2 | 974.4 |
| 5°    | 948.2  | 956.8  | 971.5  | 977.8 | 980.7 | 977.4 | 970.9 | 965.7 | 962.0 | 959.9 | 959.3 |
| 7.5°  | 957.8  | 969.9  | 985.7  | 984.6 | 978.0 | 963.2 | 946.6 | 934.1 | 923.7 | 920.0 | 917.9 |
| 10°   | 970.5  | 984.6  | 995.6  | 983.8 | 964.5 | 938.9 | 913.9 | 894.6 | 879.0 | 873.0 | 871.9 |
| 12.5° | 986.7  | 1001.1 | 1003.1 | 978.0 | 946.0 | 911.0 | 877.1 | 851.5 | 828.3 | 820.8 | 819.1 |
| 15°   | 1007.7 | 1021.2 | 1008.3 | 967.8 | 923.1 | 876.1 | 832.2 | 797.5 | 772.9 | 763.8 | 760.5 |
| 17.5° | 1029.8 | 1042.6 | 1009.4 | 950.9 | 893.1 | 834.7 | 779.6 | 744.0 | 716.0 | 705.4 | 704.1 |
| 20°   | 1056.2 | 1062.0 | 1005.0 | 926.8 | 852.0 | 781.0 | 723.0 | 689.6 | 674.6 | 667.1 | 666.3 |
| 22.5° | 1088.8 | 1082.6 | 995.0  | 894.2 | 799.8 | 719.1 | 671.9 | 656.3 | 652.5 | 650.9 | 651.5 |
| 25°   | 1123.3 | 1104.2 | 980.3  | 851.5 | 733.8 | 657.1 | 634.4 | 638.8 | 643.8 | 643.2 | 643.2 |
| 27.5° | 1161.4 | 1126.2 | 957.6  | 795.0 | 660.9 | 606.4 | 609.1 | 625.1 | 632.6 | 632.4 | 632.2 |
| 30°   | 1210.3 | 1151.2 | 928.7  | 727.0 | 592.6 | 570.6 | 587.0 | 606.6 | 616.8 | 616.4 | 616.6 |
| 32.5° | 1270.3 | 1178.6 | 889.4  | 651.1 | 543.4 | 544.2 | 563.1 | 582.5 | 594.3 | 593.3 | 593.5 |
| 35°   | 1340.6 | 1209.4 | 836.2  | 576.2 | 510.7 | 523.2 | 538.2 | 551.7 | 562.9 | 561.5 | 560.0 |
| 37.5° | 1417.2 | 1239.6 | 765.5  | 509.3 | 484.1 | 503.6 | 516.1 | 518.4 | 523.6 | 519.9 | 517.2 |
| 40°   | 1489.9 | 1262.7 | 674.4  | 454.4 | 457.3 | 487.0 | 495.1 | 486.0 | 476.6 | 475.4 | 471.6 |
| 42.5° | 1553.4 | 1270.3 | 582.3  | 410.5 | 429.0 | 469.5 | 474.5 | 455.4 | 438.6 | 430.7 | 427.3 |
| 45°   | 1620.3 | 1273.1 | 496.4  | 373.7 | 401.8 | 453.9 | 459.4 | 433.8 | 410.1 | 393.0 | 387.4 |
| 47.5° | 1707.9 | 1292.6 | 429.6  | 346.4 | 381.0 | 443.6 | 451.2 | 416.5 | 385.7 | 361.4 | 356.2 |
| 50°   | 1822.4 | 1331.3 | 375.3  | 325.6 | 367.4 | 436.7 | 445.4 | 399.7 | 365.8 | 336.5 | 331.3 |
| 52.5° | 1949.7 | 1366.8 | 331.5  | 308.8 | 354.3 | 424.6 | 437.9 | 387.6 | 347.1 | 313.4 | 307.8 |
| 55°   | 2038.7 | 1339.6 | 296.1  | 291.3 | 337.3 | 407.4 | 427.5 | 377.4 | 320.2 | 290.9 | 285.9 |
| 57.5° | 2055.8 | 1246.4 | 269.3  | 273.2 | 316.7 | 385.7 | 411.5 | 354.8 | 305.7 | 281.1 | 275.9 |
| 60°   | 2009.2 | 1116.7 | 249.3  | 256.6 | 294.7 | 358.5 | 381.6 | 338.7 | 291.7 | 270.7 | 266.4 |
| 62.5° | 1892.1 | 983.8  | 234.6  | 241.6 | 274.1 | 330.8 | 362.9 | 321.9 | 277.6 | 258.9 | 254.5 |
| 65°   | 1655.7 | 826.0  | 220.4  | 228.3 | 254.9 | 306.9 | 346.0 | 306.3 | 263.7 | 249.3 | 245.2 |
| 67.5° | 1249.8 | 618.6  | 207.1  | 214.2 | 237.9 | 286.1 | 327.7 | 290.9 | 250.2 | 241.0 | 236.0 |
| 70°   | 735.9  | 387.4  | 191.9  | 199.4 | 220.0 | 264.5 | 308.2 | 274.1 | 233.3 | 229.2 | 222.7 |
| 72.5° | 342.5  | 233.1  | 174.7  | 182.0 | 197.5 | 235.6 | 283.0 | 252.0 | 213.4 | 204.2 | 195.5 |
| 75°   | 204.4  | 170.5  | 154.3  | 160.7 | 171.8 | 204.8 | 251.4 | 229.6 | 194.4 | 182.4 | 173.2 |
| 77.5° | 152.8  | 130.4  | 131.8  | 138.7 | 147.6 | 179.3 | 222.7 | 211.9 | 179.9 | 170.5 | 164.3 |
| 80°   | 110.0  | 99.0   | 107.5  | 115.0 | 124.4 | 163.0 | 213.4 | 195.9 | 162.6 | 150.1 | 144.3 |
| 82.5° | 73.4   | 71.1   | 80.9   | 88.6  | 97.7  | 142.7 | 200.5 | 171.6 | 138.9 | 123.1 | 110.2 |
| 85°   | 40.5   | 42.8   | 54.5   | 57.8  | 65.7  | 100.4 | 164.3 | 137.9 | 104.6 | 84.2  | 80.5  |
| 87.5° | 16.8   | 19.8   | 29.3   | 28.3  | 34.9  | 59.9  | 108.1 | 83.2  | 66.5  | 49.7  | 38.7  |
| 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: SP1-1908-441-9-R4

Test Date: 10/23/2019

Luminaire Tested: SA1C-760-U-5WQ

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

### Test Information

Test Method: LM-79-2008  
 Report Number: SP1-1908-441-9-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-760-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):                  | 5474   | CRI (Ra): | 71.7 |      |       |
| CIE u':                   | 0.2052 | R1:       | 70.6 | R9:  | -27.1 |
| CIE v':                   | 0.4804 | R2:       | 74.6 | R10: | 40.8  |
| Duv:                      | 0.0025 | R3:       | 78.3 | R11: | 74.6  |
| CIE x:                    | 0.3330 | R4:       | 73.8 | R12: | 50.4  |
| CIE y:                    | 0.3466 | R5:       | 72.4 | R13: | 70.0  |
| CIE z:                    | 0.3204 | R6:       | 67.5 | R14: | 87.8  |
| Peak Wavelength (nm):     | 442    | R7:       | 77.5 |      |       |
| Dominant Wavelength (nm): | 554    | R8:       | 58.9 |      |       |
| Purity:                   | 4.1    |           |      |      |       |
| Rf:                       | 72.1   |           |      |      |       |
| Rg:                       | 97.2   |           |      |      |       |



### Test Conditions

Stabilization Time: 240M  
 Operation Time: 12H  
 Room Temperature (°C) / RH%: 24.6/31%  
 Sphere Temperature (°C): 25.9

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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 5700K 4-step quadrangle

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**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       | 3540             | NR               | 490       | 33363            | NR               | 620       | 80193            | NR               | 750       | 4663             | NR               | 880       | 4678             | NR               |
| 365       | 2862             | NR               | 495       | 44177            | NR               | 625       | 73091            | NR               | 755       | 4147             | NR               | 885       | 4128             | NR               |
| 370       | 2865             | NR               | 500       | 57019            | NR               | 630       | 66269            | NR               | 760       | 4040             | NR               | 890       | 4504             | NR               |
| 375       | 3254             | NR               | 505       | 70030            | NR               | 635       | 60012            | NR               | 765       | 3474             | NR               | 895       | 4371             | NR               |
| 380       | 3076             | NR               | 510       | 81972            | NR               | 640       | 53914            | NR               | 770       | 3469             | NR               | 900       | 4082             | NR               |
| 385       | 2904             | NR               | 515       | 92590            | NR               | 645       | 48385            | NR               | 775       | 3181             | NR               | 905       | 2982             | NR               |
| 390       | 2689             | NR               | 520       | 100305           | NR               | 650       | 43219            | NR               | 780       | 2969             | NR               | 910       | 4351             | NR               |
| 395       | 2619             | NR               | 525       | 107452           | NR               | 655       | 38562            | NR               | 785       | 3132             | NR               | 915       | 3365             | NR               |
| 400       | 2679             | NR               | 530       | 111373           | NR               | 660       | 34110            | NR               | 790       | 2507             | NR               | 920       | 3430             | NR               |
| 405       | 3515             | NR               | 535       | 114505           | NR               | 665       | 30085            | NR               | 795       | 2968             | NR               | 925       | 4264             | NR               |
| 410       | 6934             | NR               | 540       | 116408           | NR               | 670       | 26205            | NR               | 800       | 2758             | NR               | 930       | 4095             | NR               |
| 415       | 14943            | NR               | 545       | 118700           | NR               | 675       | 22906            | NR               | 805       | 2872             | NR               | 935       | 5048             | NR               |
| 420       | 31939            | NR               | 550       | 119209           | NR               | 680       | 20058            | NR               | 810       | 3094             | NR               | 940       | 4074             | NR               |
| 425       | 64701            | NR               | 555       | 120742           | NR               | 685       | 17413            | NR               | 815       | 3222             | NR               | 945       | 4949             | NR               |
| 430       | 110939           | NR               | 560       | 121594           | NR               | 690       | 15447            | NR               | 820       | 3238             | NR               | 950       | 4387             | NR               |
| 435       | 164597           | NR               | 565       | 121913           | NR               | 695       | 13398            | NR               | 825       | 3524             | NR               | 955       | 4978             | NR               |
| 440       | 207696           | NR               | 570       | 122147           | NR               | 700       | 11777            | NR               | 830       | 2921             | NR               | 960       | 4706             | NR               |
| 445       | 201830           | NR               | 575       | 121605           | NR               | 705       | 10412            | NR               | 835       | 3595             | NR               | 965       | 5083             | NR               |
| 450       | 145410           | NR               | 580       | 120248           | NR               | 710       | 9544             | NR               | 840       | 3016             | NR               | 970       | 4522             | NR               |
| 455       | 89594            | NR               | 585       | 117717           | NR               | 715       | 8940             | NR               | 845       | 4032             | NR               | 975       | 4740             | NR               |
| 460       | 58321            | NR               | 590       | 114359           | NR               | 720       | 7897             | NR               | 850       | 3579             | NR               | 980       | 6122             | NR               |
| 465       | 39318            | NR               | 595       | 109974           | NR               | 725       | 7045             | NR               | 855       | 4571             | NR               | 985       | 6450             | NR               |
| 470       | 27693            | NR               | 600       | 105269           | NR               | 730       | 6483             | NR               | 860       | 4485             | NR               | 990       | 4875             | NR               |
| 475       | 23081            | NR               | 605       | 99453            | NR               | 735       | 5838             | NR               | 865       | 3978             | NR               | 995       | 4764             | NR               |
| 480       | 23002            | NR               | 610       | 92921            | NR               | 740       | 5261             | NR               | 870       | 4298             | NR               | 1000      | 3640             | NR               |
| 485       | 26201            | NR               | 615       | 86989            | NR               | 745       | 4760             | NR               | 875       | 4356             | NR               |           |                  |                  |

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**Scotopic Flux vs. Wavelength**



**Scotopic Lumens: 13759.3**

**S/P: 1.85**

| 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       | 3540             | NR               | 490       | 33363            | NR               | 620       | 80193            | NR               | 750       | 4663             | NR               | 880       | 4678             | NR               |
| 365       | 2862             | NR               | 495       | 44177            | NR               | 625       | 73091            | NR               | 755       | 4147             | NR               | 885       | 4128             | NR               |
| 370       | 2865             | NR               | 500       | 57019            | NR               | 630       | 66269            | NR               | 760       | 4040             | NR               | 890       | 4504             | NR               |
| 375       | 3254             | NR               | 505       | 70030            | NR               | 635       | 60012            | NR               | 765       | 3474             | NR               | 895       | 4371             | NR               |
| 380       | 3076             | NR               | 510       | 81972            | NR               | 640       | 53914            | NR               | 770       | 3469             | NR               | 900       | 4082             | NR               |
| 385       | 2904             | NR               | 515       | 92590            | NR               | 645       | 48385            | NR               | 775       | 3181             | NR               | 905       | 2982             | NR               |
| 390       | 2689             | NR               | 520       | 100305           | NR               | 650       | 43219            | NR               | 780       | 2969             | NR               | 910       | 4351             | NR               |
| 395       | 2619             | NR               | 525       | 107452           | NR               | 655       | 38562            | NR               | 785       | 3132             | NR               | 915       | 3365             | NR               |
| 400       | 2679             | NR               | 530       | 111373           | NR               | 660       | 34110            | NR               | 790       | 2507             | NR               | 920       | 3430             | NR               |
| 405       | 3515             | NR               | 535       | 114505           | NR               | 665       | 30085            | NR               | 795       | 2968             | NR               | 925       | 4264             | NR               |
| 410       | 6934             | NR               | 540       | 116408           | NR               | 670       | 26205            | NR               | 800       | 2758             | NR               | 930       | 4095             | NR               |
| 415       | 14943            | NR               | 545       | 118700           | NR               | 675       | 22906            | NR               | 805       | 2872             | NR               | 935       | 5048             | NR               |
| 420       | 31939            | NR               | 550       | 119209           | NR               | 680       | 20058            | NR               | 810       | 3094             | NR               | 940       | 4074             | NR               |
| 425       | 64701            | NR               | 555       | 120742           | NR               | 685       | 17413            | NR               | 815       | 3222             | NR               | 945       | 4949             | NR               |
| 430       | 110939           | NR               | 560       | 121594           | NR               | 690       | 15447            | NR               | 820       | 3238             | NR               | 950       | 4387             | NR               |
| 435       | 164597           | NR               | 565       | 121913           | NR               | 695       | 13398            | NR               | 825       | 3524             | NR               | 955       | 4978             | NR               |
| 440       | 207696           | NR               | 570       | 122147           | NR               | 700       | 11777            | NR               | 830       | 2921             | NR               | 960       | 4706             | NR               |
| 445       | 201830           | NR               | 575       | 121605           | NR               | 705       | 10412            | NR               | 835       | 3595             | NR               | 965       | 5083             | NR               |
| 450       | 145410           | NR               | 580       | 120248           | NR               | 710       | 9544             | NR               | 840       | 3016             | NR               | 970       | 4522             | NR               |
| 455       | 89594            | NR               | 585       | 117717           | NR               | 715       | 8940             | NR               | 845       | 4032             | NR               | 975       | 4740             | NR               |
| 460       | 58321            | NR               | 590       | 114359           | NR               | 720       | 7897             | NR               | 850       | 3579             | NR               | 980       | 6122             | NR               |
| 465       | 39318            | NR               | 595       | 109974           | NR               | 725       | 7045             | NR               | 855       | 4571             | NR               | 985       | 6450             | NR               |
| 470       | 27693            | NR               | 600       | 105269           | NR               | 730       | 6483             | NR               | 860       | 4485             | NR               | 990       | 4875             | NR               |
| 475       | 23081            | NR               | 605       | 99453            | NR               | 735       | 5838             | NR               | 865       | 3978             | NR               | 995       | 4764             | NR               |
| 480       | 23002            | NR               | 610       | 92921            | NR               | 740       | 5261             | NR               | 870       | 4298             | NR               | 1000      | 3640             | NR               |
| 485       | 26201            | NR               | 615       | 86989            | NR               | 745       | 4760             | NR               | 875       | 4356             | NR               |           |                  |                  |

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**Melanopic Flux vs. Wavelength**



**Melanopic Lumens: 5527.6 M/P: 0.74**

| 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       | 3540             | NR               | 490       | 33363            | NR               | 620       | 80193            | NR               | 750       | 4663             | NR               | 880       | 4678             | NR               |
| 365       | 2862             | NR               | 495       | 44177            | NR               | 625       | 73091            | NR               | 755       | 4147             | NR               | 885       | 4128             | NR               |
| 370       | 2865             | NR               | 500       | 57019            | NR               | 630       | 66269            | NR               | 760       | 4040             | NR               | 890       | 4504             | NR               |
| 375       | 3254             | NR               | 505       | 70030            | NR               | 635       | 60012            | NR               | 765       | 3474             | NR               | 895       | 4371             | NR               |
| 380       | 3076             | NR               | 510       | 81972            | NR               | 640       | 53914            | NR               | 770       | 3469             | NR               | 900       | 4082             | NR               |
| 385       | 2904             | NR               | 515       | 92590            | NR               | 645       | 48385            | NR               | 775       | 3181             | NR               | 905       | 2982             | NR               |
| 390       | 2689             | NR               | 520       | 100305           | NR               | 650       | 43219            | NR               | 780       | 2969             | NR               | 910       | 4351             | NR               |
| 395       | 2619             | NR               | 525       | 107452           | NR               | 655       | 38562            | NR               | 785       | 3132             | NR               | 915       | 3365             | NR               |
| 400       | 2679             | NR               | 530       | 111373           | NR               | 660       | 34110            | NR               | 790       | 2507             | NR               | 920       | 3430             | NR               |
| 405       | 3515             | NR               | 535       | 114505           | NR               | 665       | 30085            | NR               | 795       | 2968             | NR               | 925       | 4264             | NR               |
| 410       | 6934             | NR               | 540       | 116408           | NR               | 670       | 26205            | NR               | 800       | 2758             | NR               | 930       | 4095             | NR               |
| 415       | 14943            | NR               | 545       | 118700           | NR               | 675       | 22906            | NR               | 805       | 2872             | NR               | 935       | 5048             | NR               |
| 420       | 31939            | NR               | 550       | 119209           | NR               | 680       | 20058            | NR               | 810       | 3094             | NR               | 940       | 4074             | NR               |
| 425       | 64701            | NR               | 555       | 120742           | NR               | 685       | 17413            | NR               | 815       | 3222             | NR               | 945       | 4949             | NR               |
| 430       | 110939           | NR               | 560       | 121594           | NR               | 690       | 15447            | NR               | 820       | 3238             | NR               | 950       | 4387             | NR               |
| 435       | 164597           | NR               | 565       | 121913           | NR               | 695       | 13398            | NR               | 825       | 3524             | NR               | 955       | 4978             | NR               |
| 440       | 207696           | NR               | 570       | 122147           | NR               | 700       | 11777            | NR               | 830       | 2921             | NR               | 960       | 4706             | NR               |
| 445       | 201830           | NR               | 575       | 121605           | NR               | 705       | 10412            | NR               | 835       | 3595             | NR               | 965       | 5083             | NR               |
| 450       | 145410           | NR               | 580       | 120248           | NR               | 710       | 9544             | NR               | 840       | 3016             | NR               | 970       | 4522             | NR               |
| 455       | 89594            | NR               | 585       | 117717           | NR               | 715       | 8940             | NR               | 845       | 4032             | NR               | 975       | 4740             | NR               |
| 460       | 58321            | NR               | 590       | 114359           | NR               | 720       | 7897             | NR               | 850       | 3579             | NR               | 980       | 6122             | NR               |
| 465       | 39318            | NR               | 595       | 109974           | NR               | 725       | 7045             | NR               | 855       | 4571             | NR               | 985       | 6450             | NR               |
| 470       | 27693            | NR               | 600       | 105269           | NR               | 730       | 6483             | NR               | 860       | 4485             | NR               | 990       | 4875             | NR               |
| 475       | 23081            | NR               | 605       | 99453            | NR               | 735       | 5838             | NR               | 865       | 3978             | NR               | 995       | 4764             | NR               |
| 480       | 23002            | NR               | 610       | 92921            | NR               | 740       | 5261             | NR               | 870       | 4298             | NR               | 1000      | 3640             | NR               |
| 485       | 26201            | NR               | 615       | 86989            | NR               | 745       | 4760             | NR               | 875       | 4356             | NR               |           |                  |                  |

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**TM-30-18**

### Summary

$R_f = 72.1$   
 $R_g = 97.2$   
 CIE  $R_a = 71.7$   
 $R_g = -27.1$



### Color Vector Graphics



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

|            |            |            |            |
|------------|------------|------------|------------|
| CES01 = 85 | CES26 = 54 | CES51 = 88 | CES76 = 43 |
| CES02 = 59 | CES27 = 79 | CES52 = 90 | CES77 = 64 |
| CES03 = 30 | CES28 = 77 | CES53 = 77 | CES78 = 46 |
| CES04 = 69 | CES29 = 50 | CES54 = 81 | CES79 = 74 |
| CES05 = 46 | CES30 = 59 | CES55 = 80 | CES80 = 70 |
| CES06 = 50 | CES31 = 55 | CES56 = 70 | CES81 = 71 |
| CES07 = 38 | CES32 = 52 | CES57 = 68 | CES82 = 88 |
| CES08 = 38 | CES33 = 63 | CES58 = 70 | CES83 = 82 |
| CES09 = 29 | CES34 = 63 | CES59 = 88 | CES84 = 87 |
| CES10 = 72 | CES35 = 79 | CES60 = 92 | CES85 = 84 |
| CES11 = 55 | CES36 = 90 | CES61 = 88 | CES86 = 76 |
| CES12 = 61 | CES37 = 72 | CES62 = 81 | CES87 = 75 |
| CES13 = 41 | CES38 = 68 | CES63 = 75 | CES88 = 77 |
| CES14 = 74 | CES39 = 91 | CES64 = 72 | CES89 = 76 |
| CES15 = 70 | CES40 = 83 | CES65 = 65 | CES90 = 76 |
| CES16 = 46 | CES41 = 84 | CES66 = 66 | CES91 = 92 |
| CES17 = 48 | CES42 = 70 | CES67 = 64 | CES92 = 70 |
| CES18 = 55 | CES43 = 69 | CES68 = 71 | CES93 = 83 |
| CES19 = 70 | CES44 = 98 | CES69 = 80 | CES94 = 60 |
| CES20 = 64 | CES45 = 79 | CES70 = 58 | CES95 = 73 |
| CES21 = 85 | CES46 = 78 | CES71 = 55 | CES96 = 79 |
| CES22 = 77 | CES47 = 76 | CES72 = 84 | CES97 = 84 |
| CES23 = 91 | CES48 = 68 | CES73 = 47 | CES98 = 73 |
| CES24 = 90 | CES49 = 78 | CES74 = 94 | CES99 = 62 |
| CES25 = 71 | CES50 = 87 | CES75 = 51 |            |



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Color Rendition by Hue-Angle Bin



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**Measure Comparisons**



(END OF REPORT)