

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: P323265

Luminaire Tested: **GLEON-SA1A-760-U-SL2-HSS**

Issue Date: 3/3/2020

### Test Information

Test Method: LM-79-08  
Report Number: P323265  
TEST IS SCALED FROM IESNA LM-79-08 TEST DATA (G2-1903-205-21)  
Test Lab: INNOVATION CENTER  
Issue Date: 3/3/2020  
Manufacturer: COOPER LIGHTING SOLUTIONS (FORMERLY EATON)  
Product Line: McGRAW-EDISON  
Catalog Number: GLEON-SA1A-760-U-SL2-HSS  
Description: GALLEON AREA AND ROADWAY LUMINAIRE  
(1) 70 CRI, 5700K, 615mA LIGHTSQUARE WITH 16 LEDS AND TYPE II SPILL LIGHT  
ELIMINATOR OPTICS WITH HOUSE SIDE SHIELD  
Light Source: -  
Ballast/Driver: ELECTRONIC DRIVER

### Summary

Lumens per Lamp: N/A  
Luminaire Lumens: 4041 lumens  
Efficiency: N/A  
Efficacy: 118.9 lumens/watt  
Luminous Opening: Rectangular (W 0.5' x L: 0.5' x H: 0')  
IES Classification: Type III - Medium  
BUG Rating: B1 - U0 - G1

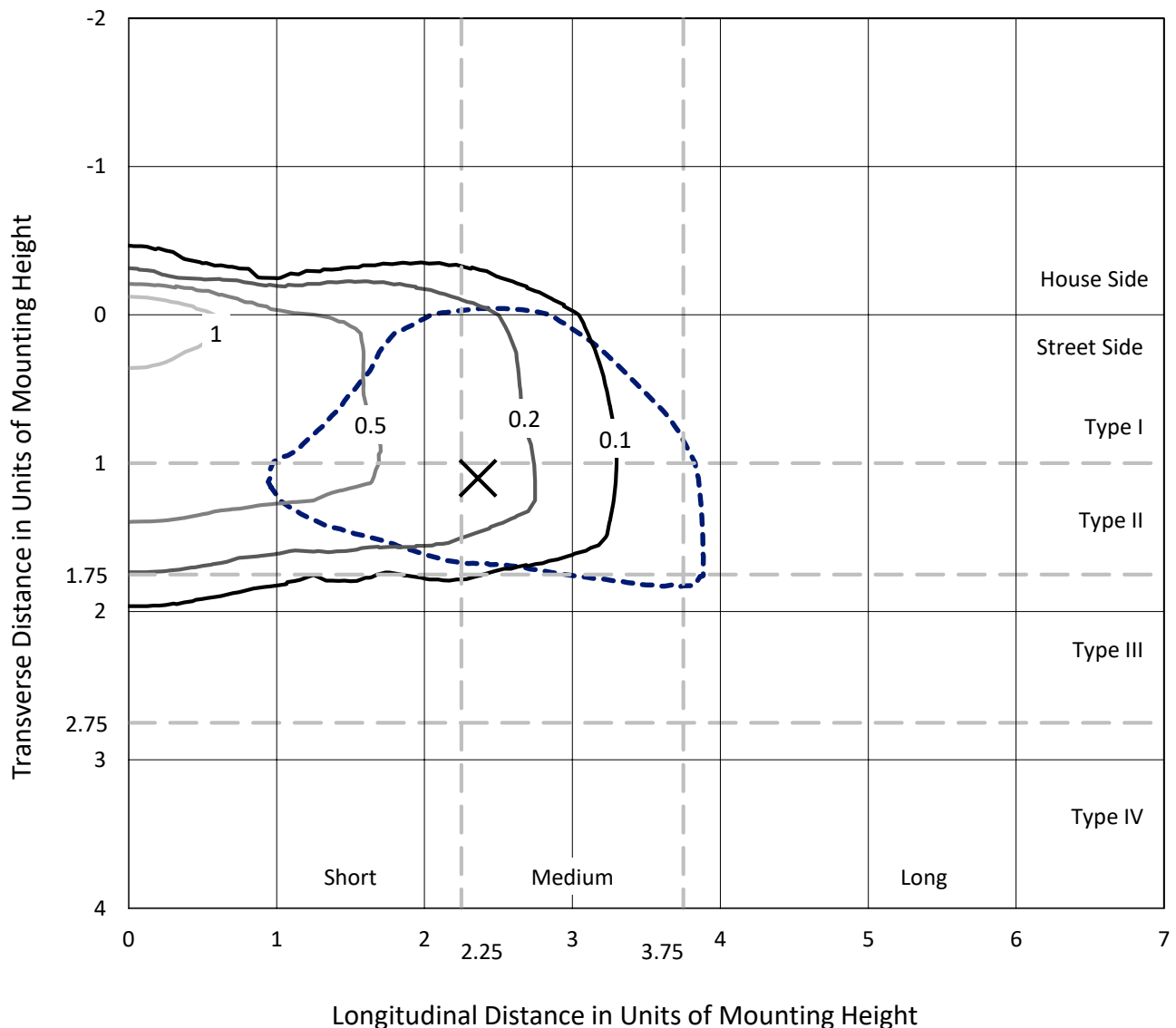
Input Watts (W): 34  
Input Voltage (V): NR  
Input Current (Ain): NR  
Voltage Rise (V): NR  
Power Factor: NR  
Total Harmonic Distortion (THDi): NR  
Frequency (hertz): 60  
Stabilization Time: NR  
Operation Time: NR  
Ambient Temperature (°C): NR  
Test Distance: 24 FT



REPORT NUMBER: P323265  
 CATALOG NUMBER: GLEON-SA1A-760-U-SL2-HSS

## Iso-Footcandle Lines of Horizontal Illumination

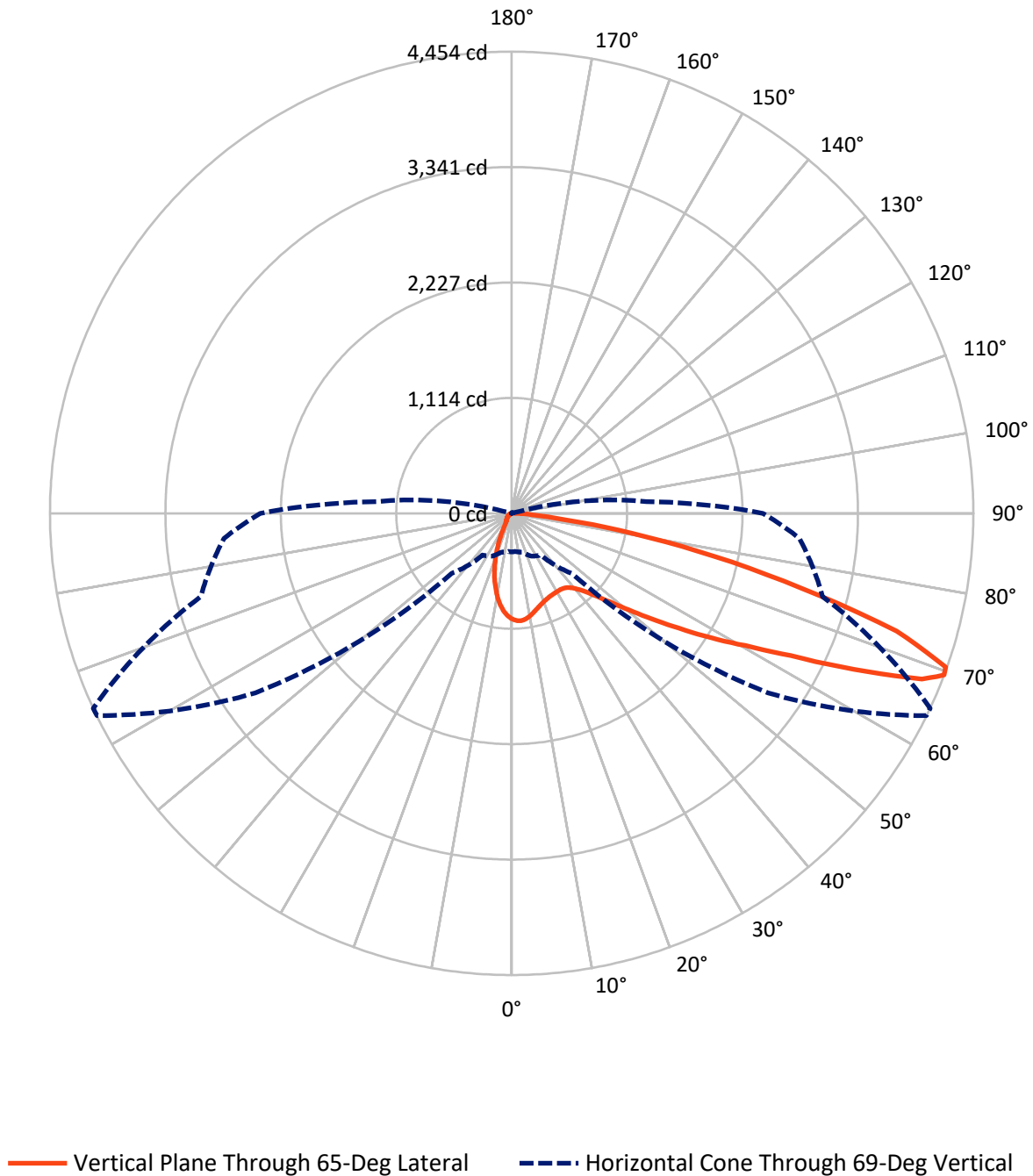
✕ Max cd  
 - - - 1/2 Max cd



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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**FLUX DISTRIBUTION:**

|                    |           | Downward | Upward | Total  |
|--------------------|-----------|----------|--------|--------|
| <b>House Side</b>  | Lumens    | 476.3    | 0.0    | 476.3  |
|                    | % Fixture | 11.8     | 0.0    | 11.8   |
| <b>Street Side</b> | Lumens    | 3564.7   | 0.0    | 3564.7 |
|                    | % Fixture | 88.2     | 0.0    | 88.2   |
| <b>Total</b>       | Lumens    | 4041.0   | 0.0    | 4041.0 |
|                    | % Fixture | 100.0    | 0.0    | 100.0  |

**ZONAL LUMENS:**

| Zone      | Lumens | % Fixture |
|-----------|--------|-----------|
| 0°-10°    | 85.4   | 2.1       |
| 10°-20°   | 186.9  | 4.6       |
| 20°-30°   | 258.9  | 6.4       |
| 30°-40°   | 361.0  | 8.9       |
| 40°-50°   | 561.1  | 13.9      |
| 50°-60°   | 900.8  | 22.3      |
| 60°-70°   | 1018.9 | 25.2      |
| 70°-80°   | 598.4  | 14.8      |
| 80°-90°   | 69.6   | 1.7       |
| 90°-100°  | 0.0    | 0.0       |
| 100°-110° | 0.0    | 0.0       |
| 110°-120° | 0.0    | 0.0       |
| 120°-130° | 0.0    | 0.0       |
| 130°-140° | 0.0    | 0.0       |
| 140°-150° | 0.0    | 0.0       |
| 150°-160° | 0.0    | 0.0       |
| 160°-170° | 0.0    | 0.0       |
| 170°-180° | 0.0    | 0.0       |
| 0°-90°    | 4041.0 | 100.0     |
| 0°-180°   | 4041.0 | 100.0     |

**Coefficient of Utilization**



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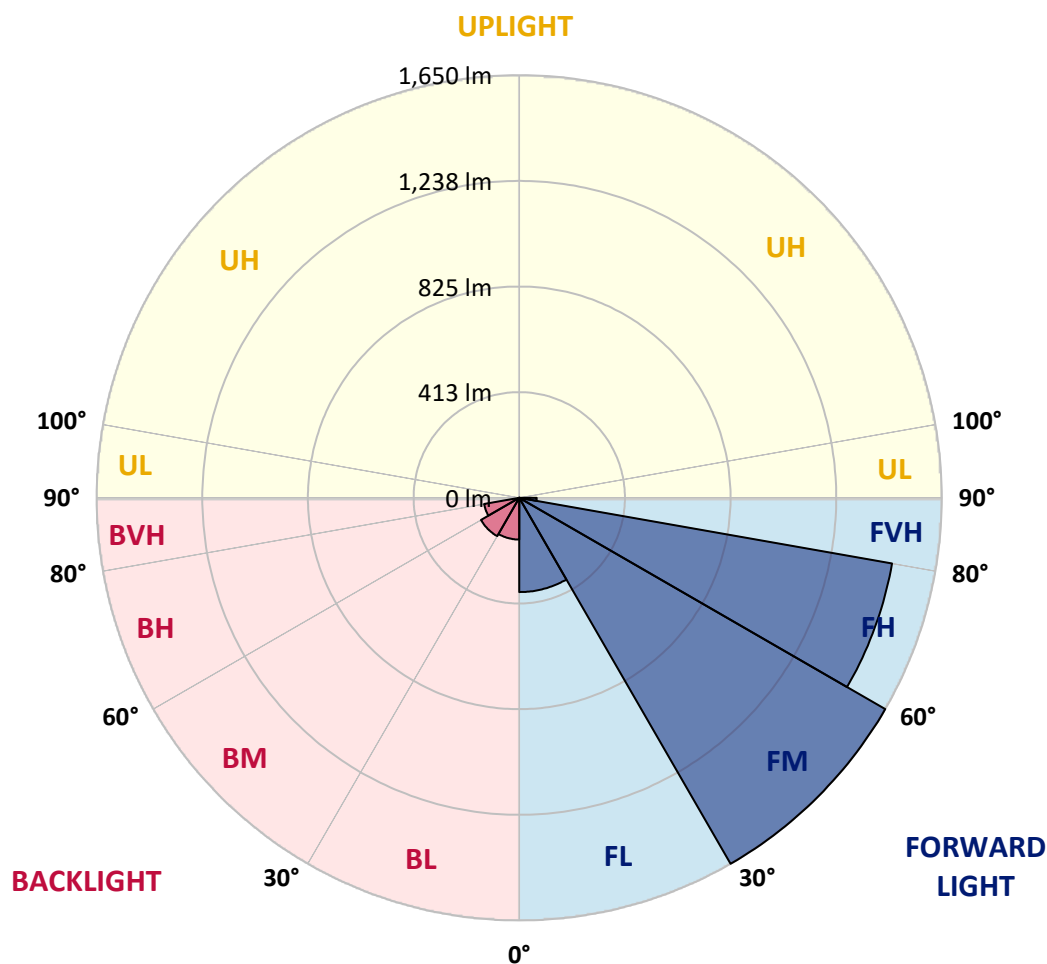
CATALOG NUMBER: GLEON-SA1A-760-U-SL2-HSS

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

| Zone |             | Lumens | % Fixture | Zone Rating/Lumen Limit |      |         |
|------|-------------|--------|-----------|-------------------------|------|---------|
|      |             |        |           | B                       | U    | G       |
| FL   | (0°-30°)    | 368.2  | 9.1       |                         |      |         |
| FM   | (30°-60°)   | 1650.2 | 40.8      |                         |      |         |
| FH   | (60°-80°)   | 1478.2 | 36.6      |                         |      | G1/1800 |
| FVH  | (80°-90°)   | 68.0   | 1.7       |                         |      | G1/100  |
| BL   | (0°-30°)    | 163.0  | 4.0       | B1/500                  |      |         |
| BM   | (30°-60°)   | 172.6  | 4.3       | B0/220                  |      |         |
| BH   | (60°-80°)   | 139.2  | 3.4       | B1/500                  |      | G1/500  |
| BVH  | (80°-90°)   | 1.6    | 0.0       |                         |      | G0/10   |
| UL   | (90°-100°)  | 0.0    | 0.0       |                         | U0/0 |         |
| UH   | (100°-180°) | 0.0    | 0.0       |                         | U0/0 |         |

**BUG Rating: B1-U0-G1**

Type III Medium





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**CANDELA DISTRIBUTION (FULL):**

|       | 0°     | 5°     | 15°    | 25°    | 35°    | 45°    | 55°    | 64°    | 65°    | 75°    | 85°    |
|-------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|
| 0°    | 1021.2 | 1021.2 | 1021.2 | 1021.2 | 1021.2 | 1021.2 | 1021.2 | 1021.2 | 1021.2 | 1021.2 | 1021.2 |
| 2.5°  | 1030.2 | 1027.7 | 1029.7 | 1034.2 | 1036.4 | 1036.4 | 1038.1 | 1036.0 | 1036.7 | 1031.8 | 1024.6 |
| 5°    | 965.8  | 961.8  | 967.5  | 980.0  | 995.3  | 1008.5 | 1028.0 | 1038.3 | 1039.3 | 1039.5 | 1031.1 |
| 7.5°  | 896.3  | 892.8  | 901.1  | 915.8  | 935.7  | 960.1  | 994.2  | 1023.9 | 1025.6 | 1041.7 | 1035.5 |
| 10°   | 839.9  | 837.4  | 847.1  | 862.8  | 886.1  | 913.4  | 955.2  | 996.5  | 1001.5 | 1037.1 | 1034.8 |
| 12.5° | 795.1  | 793.1  | 802.3  | 820.4  | 844.2  | 874.5  | 918.1  | 966.1  | 972.8  | 1026.6 | 1031.4 |
| 15°   | 762.5  | 762.1  | 769.8  | 787.2  | 813.6  | 841.8  | 886.4  | 937.9  | 945.6  | 1015.4 | 1030.9 |
| 17.5° | 745.4  | 745.9  | 751.5  | 766.4  | 789.0  | 817.0  | 859.8  | 914.1  | 922.5  | 1005.3 | 1033.5 |
| 20°   | 743.6  | 744.2  | 747.2  | 755.6  | 773.9  | 798.7  | 838.0  | 894.1  | 902.8  | 997.7  | 1037.6 |
| 22.5° | 758.7  | 758.4  | 759.2  | 758.4  | 768.6  | 787.4  | 823.7  | 878.7  | 888.8  | 992.8  | 1040.8 |
| 25°   | 787.6  | 787.1  | 786.7  | 780.4  | 773.6  | 783.7  | 817.7  | 870.0  | 879.6  | 989.2  | 1042.7 |
| 27.5° | 827.8  | 827.4  | 826.9  | 816.5  | 796.0  | 789.6  | 818.4  | 866.8  | 874.8  | 986.3  | 1042.4 |
| 30°   | 880.6  | 883.0  | 882.3  | 867.8  | 835.8  | 807.9  | 825.6  | 865.1  | 872.1  | 980.6  | 1038.8 |
| 32.5° | 942.7  | 947.5  | 951.2  | 935.7  | 895.7  | 844.2  | 842.1  | 866.9  | 872.1  | 976.4  | 1032.3 |
| 35°   | 1007.1 | 1013.3 | 1027.2 | 1021.7 | 969.0  | 898.7  | 870.7  | 878.2  | 882.5  | 978.8  | 1029.2 |
| 37.5° | 1070.6 | 1077.9 | 1108.0 | 1123.9 | 1065.1 | 970.9  | 915.2  | 906.1  | 908.3  | 993.3  | 1032.6 |
| 40°   | 1144.3 | 1155.4 | 1201.1 | 1226.7 | 1179.8 | 1067.5 | 981.7  | 954.0  | 954.8  | 1025.3 | 1048.5 |
| 42.5° | 1241.1 | 1252.5 | 1301.9 | 1342.1 | 1309.1 | 1189.6 | 1072.0 | 1027.2 | 1026.3 | 1085.1 | 1086.0 |
| 45°   | 1359.0 | 1371.0 | 1422.1 | 1466.8 | 1451.9 | 1334.3 | 1187.5 | 1134.0 | 1133.0 | 1179.5 | 1156.9 |
| 47.5° | 1492.8 | 1504.6 | 1550.2 | 1596.2 | 1612.3 | 1503.2 | 1334.8 | 1279.9 | 1277.5 | 1310.7 | 1266.5 |
| 50°   | 1607.5 | 1615.2 | 1657.3 | 1719.2 | 1791.7 | 1710.8 | 1517.9 | 1465.1 | 1462.5 | 1484.9 | 1427.4 |
| 52.5° | 1649.2 | 1653.7 | 1696.4 | 1783.1 | 1964.0 | 1991.9 | 1758.5 | 1690.4 | 1688.6 | 1698.3 | 1641.7 |
| 55°   | 1564.8 | 1572.8 | 1625.3 | 1753.9 | 2057.4 | 2309.6 | 2062.2 | 1969.5 | 1955.3 | 1934.3 | 1865.7 |
| 57.5° | 1334.6 | 1347.4 | 1403.8 | 1574.8 | 2013.8 | 2561.6 | 2508.5 | 2285.1 | 2264.3 | 2135.7 | 2047.8 |
| 60°   | 1000.0 | 1015.7 | 1062.5 | 1247.0 | 1781.1 | 2651.4 | 2996.1 | 2636.9 | 2589.9 | 2296.1 | 2215.2 |
| 62.5° | 686.2  | 694.1  | 725.9  | 846.1  | 1311.7 | 2504.4 | 3404.1 | 3108.0 | 3022.1 | 2470.5 | 2396.3 |
| 65°   | 524.1  | 526.8  | 539.8  | 581.2  | 781.1  | 2034.3 | 3566.4 | 3729.5 | 3625.7 | 2679.1 | 2584.2 |
| 67.5° | 422.4  | 420.1  | 438.1  | 497.2  | 523.1  | 1241.1 | 3377.1 | 4317.6 | 4269.0 | 2958.0 | 2773.3 |
| 69°   | 372.4  | 369.3  | 387.6  | 456.4  | 491.3  | 820.4  | 3019.0 | 4451.1 | 4454.2 | 3105.2 | 2786.3 |
| 70°   | 335.1  | 337.2  | 355.3  | 432.1  | 480.5  | 644.0  | 2677.1 | 4417.1 | 4441.4 | 3160.3 | 2708.4 |
| 72.5° | 223.8  | 229.3  | 265.7  | 358.7  | 462.0  | 487.3  | 1616.4 | 3790.4 | 3883.8 | 3036.3 | 2323.6 |
| 75°   | 126.2  | 130.3  | 173.6  | 270.5  | 435.3  | 464.1  | 853.8  | 2792.5 | 2882.8 | 2539.1 | 1791.8 |
| 77.5° | 61.9   | 64.1   | 98.1   | 174.6  | 364.0  | 442.2  | 484.3  | 1896.8 | 1999.9 | 1657.3 | 1013.5 |
| 80°   | 26.2   | 27.4   | 49.1   | 107.7  | 260.3  | 422.0  | 359.6  | 1167.4 | 1180.2 | 649.3  | 270.0  |
| 82.5° | 10.1   | 10.4   | 20.7   | 67.2   | 165.3  | 329.0  | 300.8  | 553.5  | 540.2  | 122.3  | 61.6   |
| 85°   | 1.2    | 1.4    | 7.5    | 40.4   | 92.0   | 169.3  | 244.3  | 238.5  | 220.8  | 24.3   | 31.6   |
| 87.5° | 0.0    | 0.0    | 0.5    | 12.3   | 27.4   | 79.3   | 127.0  | 99.0   | 89.3   | 7.9    | 16.4   |
| 90°   | 0.0    | 0.0    | 0.0    | 0.0    | 0.0    | 0.0    | 0.0    | 0.0    | 0.0    | 0.0    | 0.0    |

REPORT NUMBER: P323265

CATALOG NUMBER: GLEON-SA1A-760-U-SL2-HSS

**CANDELA DISTRIBUTION (continued):**

|       | 90°    | 95°    | 105°   | 115°   | 125°   | 135°   | 145°   | 155°   | 165°   | 175°   | 180°   |
|-------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|
| 0°    | 1021.2 | 1021.2 | 1021.2 | 1021.2 | 1021.2 | 1021.2 | 1021.2 | 1021.2 | 1021.2 | 1021.2 | 1021.2 |
| 2.5°  | 1018.6 | 1016.9 | 1007.7 | 994.3  | 981.7  | 965.9  | 950.9  | 941.8  | 934.6  | 929.9  | 935.5  |
| 5°    | 1021.3 | 1013.8 | 985.8  | 949.9  | 914.6  | 875.0  | 838.0  | 806.7  | 794.4  | 780.8  | 786.9  |
| 7.5°  | 1020.5 | 1006.3 | 955.8  | 891.9  | 827.3  | 760.4  | 697.1  | 648.4  | 623.1  | 598.3  | 604.6  |
| 10°   | 1016.2 | 992.3  | 915.8  | 821.1  | 724.3  | 628.2  | 538.5  | 470.2  | 432.1  | 397.6  | 402.5  |
| 12.5° | 1006.8 | 973.5  | 868.6  | 740.1  | 610.6  | 483.9  | 378.7  | 291.4  | 244.5  | 223.8  | 226.4  |
| 15°   | 1001.2 | 955.2  | 818.7  | 658.0  | 489.2  | 337.0  | 231.5  | 172.2  | 150.8  | 144.0  | 144.8  |
| 17.5° | 998.4  | 937.6  | 767.1  | 564.1  | 365.1  | 214.6  | 149.6  | 132.0  | 127.4  | 126.2  | 126.5  |
| 20°   | 995.7  | 919.8  | 713.9  | 471.3  | 251.5  | 144.3  | 122.9  | 117.8  | 116.1  | 114.6  | 114.9  |
| 22.5° | 991.1  | 902.7  | 656.8  | 377.2  | 169.6  | 117.1  | 110.8  | 105.8  | 102.3  | 100.4  | 100.7  |
| 25°   | 985.4  | 884.7  | 598.5  | 280.9  | 123.8  | 104.5  | 98.5   | 91.5   | 87.2   | 83.8   | 84.0   |
| 27.5° | 976.4  | 862.7  | 538.3  | 204.5  | 104.0  | 93.5   | 85.5   | 77.8   | 70.6   | 66.7   | 66.7   |
| 30°   | 963.7  | 837.7  | 471.4  | 146.4  | 93.2   | 82.8   | 73.0   | 63.4   | 55.7   | 52.2   | 51.8   |
| 32.5° | 949.7  | 811.7  | 403.9  | 111.0  | 84.6   | 72.7   | 61.6   | 51.5   | 44.6   | 41.7   | 41.6   |
| 35°   | 937.7  | 783.7  | 336.5  | 93.0   | 76.1   | 62.9   | 50.8   | 42.2   | 36.8   | 34.4   | 34.2   |
| 37.5° | 930.0  | 755.6  | 270.9  | 83.1   | 68.4   | 53.9   | 42.6   | 34.9   | 30.9   | 29.1   | 28.9   |
| 40°   | 928.8  | 734.8  | 210.8  | 75.6   | 61.2   | 45.8   | 35.6   | 29.6   | 26.0   | 23.9   | 23.8   |
| 42.5° | 944.4  | 722.8  | 161.8  | 69.3   | 53.9   | 38.8   | 30.3   | 25.3   | 21.5   | 19.5   | 19.3   |
| 45°   | 985.3  | 726.5  | 124.5  | 63.6   | 46.5   | 32.8   | 25.6   | 21.0   | 17.6   | 16.1   | 15.7   |
| 47.5° | 1059.8 | 752.5  | 99.0   | 58.0   | 39.5   | 27.9   | 21.9   | 17.4   | 14.5   | 13.0   | 12.8   |
| 50°   | 1192.5 | 813.6  | 82.8   | 51.8   | 33.0   | 23.8   | 18.1   | 14.2   | 11.8   | 10.4   | 10.3   |
| 52.5° | 1368.6 | 922.3  | 73.9   | 45.8   | 27.4   | 20.2   | 14.9   | 11.3   | 9.2    | 8.2    | 8.0    |
| 55°   | 1562.9 | 1054.0 | 68.1   | 39.3   | 22.4   | 16.8   | 11.8   | 8.9    | 7.2    | 6.3    | 6.0    |
| 57.5° | 1752.5 | 1168.1 | 62.6   | 33.0   | 18.6   | 13.7   | 9.4    | 7.0    | 5.6    | 4.8    | 4.6    |
| 60°   | 1926.7 | 1272.9 | 56.3   | 26.5   | 15.2   | 10.8   | 7.4    | 5.5    | 4.4    | 3.6    | 3.6    |
| 62.5° | 2113.3 | 1353.9 | 47.5   | 20.7   | 12.5   | 8.2    | 6.0    | 5.0    | 3.6    | 3.1    | 2.9    |
| 65°   | 2311.0 | 1414.1 | 37.3   | 16.1   | 9.7    | 6.2    | 5.0    | 5.1    | 2.9    | 2.2    | 2.1    |
| 67.5° | 2457.0 | 1402.1 | 27.5   | 12.7   | 7.5    | 4.8    | 4.8    | 5.5    | 2.6    | 1.7    | 1.5    |
| 69°   | 2424.8 | 1304.8 | 23.1   | 10.9   | 6.5    | 4.1    | 4.4    | 5.5    | 2.4    | 1.5    | 1.4    |
| 70°   | 2331.7 | 1197.1 | 20.3   | 9.7    | 5.8    | 3.8    | 4.3    | 5.3    | 2.2    | 1.5    | 1.4    |
| 72.5° | 1941.8 | 901.6  | 15.9   | 7.4    | 4.6    | 3.1    | 3.6    | 4.6    | 2.2    | 1.5    | 1.2    |
| 75°   | 1460.6 | 577.1  | 12.1   | 5.3    | 3.4    | 2.4    | 2.7    | 3.4    | 2.2    | 1.4    | 1.2    |
| 77.5° | 794.8  | 208.1  | 8.7    | 3.6    | 2.4    | 1.9    | 1.9    | 2.6    | 2.1    | 1.0    | 0.7    |
| 80°   | 204.3  | 52.3   | 5.5    | 2.4    | 1.9    | 1.4    | 1.2    | 1.7    | 1.2    | 0.2    | 0.0    |
| 82.5° | 50.4   | 11.8   | 2.9    | 1.7    | 1.4    | 0.5    | 0.5    | 0.9    | 0.5    | 0.0    | 0.0    |
| 85°   | 27.7   | 5.8    | 1.9    | 1.2    | 0.7    | 0.0    | 0.0    | 0.2    | 0.0    | 0.0    | 0.0    |
| 87.5° | 14.2   | 1.7    | 0.5    | 0.3    | 0.2    | 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: SP1-1908-441-9-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

REPORT NUMBER: SP1-1908-441-9-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 5700K 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       | 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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**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)