

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: P317725

Luminaire Tested: **GLEON-SA1C-730-U-T3R**

Issue Date: 3/3/2020

**Test Information**

Test Method: LM-79-08  
Report Number: P317725  
TEST IS SCALED FROM IESNA LM-79-08 TEST DATA (G2-1903-205-10)  
Test Lab: INNOVATION CENTER  
Issue Date: 3/3/2020  
Manufacturer: COOPER LIGHTING SOLUTIONS (FORMERLY EATON)  
Product Line: McGRAW-EDISON  
Catalog Number: GLEON-SA1C-730-U-T3R  
Description: GALLEON AREA AND ROADWAY LUMINAIRE  
(1) 70 CRI, 3000K, 1050mA LIGHTSQUARE WITH 16 LEDS AND TYPE III ROADWAY OPTICS  
Light Source: -  
Ballast/Driver: ELECTRONIC DRIVER

**Summary**

Lumens per Lamp: N/A  
Luminaire Lumens: 6895 lumens  
Efficiency: N/A  
Efficacy: 116.9 lumens/watt  
Luminous Opening: Rectangular (W 0.5' x L: 0.5' x H: 0')  
IES Classification: Type IV - Medium  
BUG Rating: B1 - U0 - G2

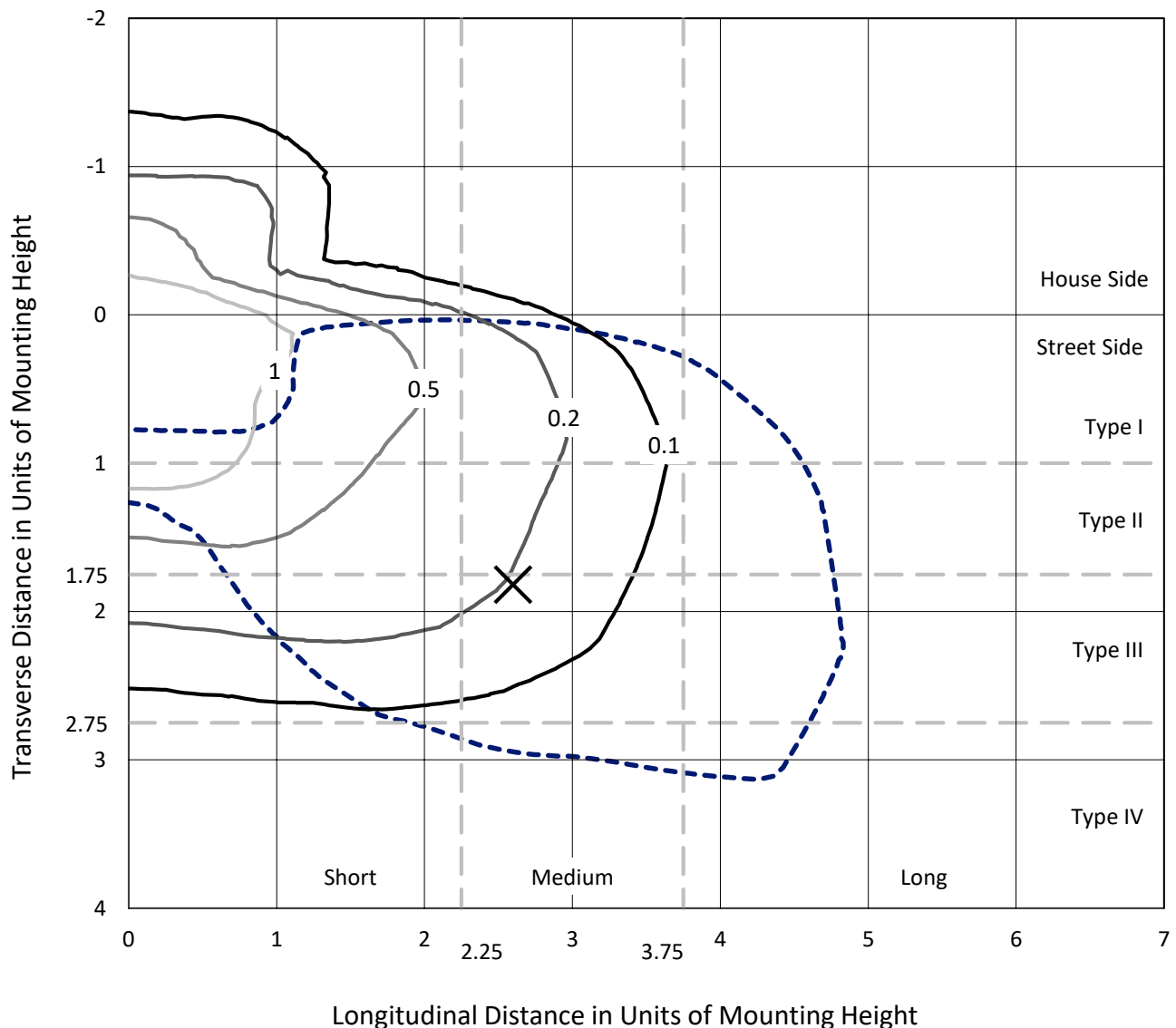
Input Watts (W): 59  
Input Voltage (V): NR  
Input Current (Ain): NR  
Voltage Rise (V): NR  
Power Factor: NR  
Total Harmonic Distortion (THDi): NR  
Frequency (hertz): 60  
Stabilization Time: NR  
Operation Time: NR  
Ambient Temperature (°C): NR  
Test Distance: 24 FT



REPORT NUMBER: P317725  
CATALOG NUMBER: GLEON-SA1C-730-U-T3R

## Iso-Footcandle Lines of Horizontal Illumination

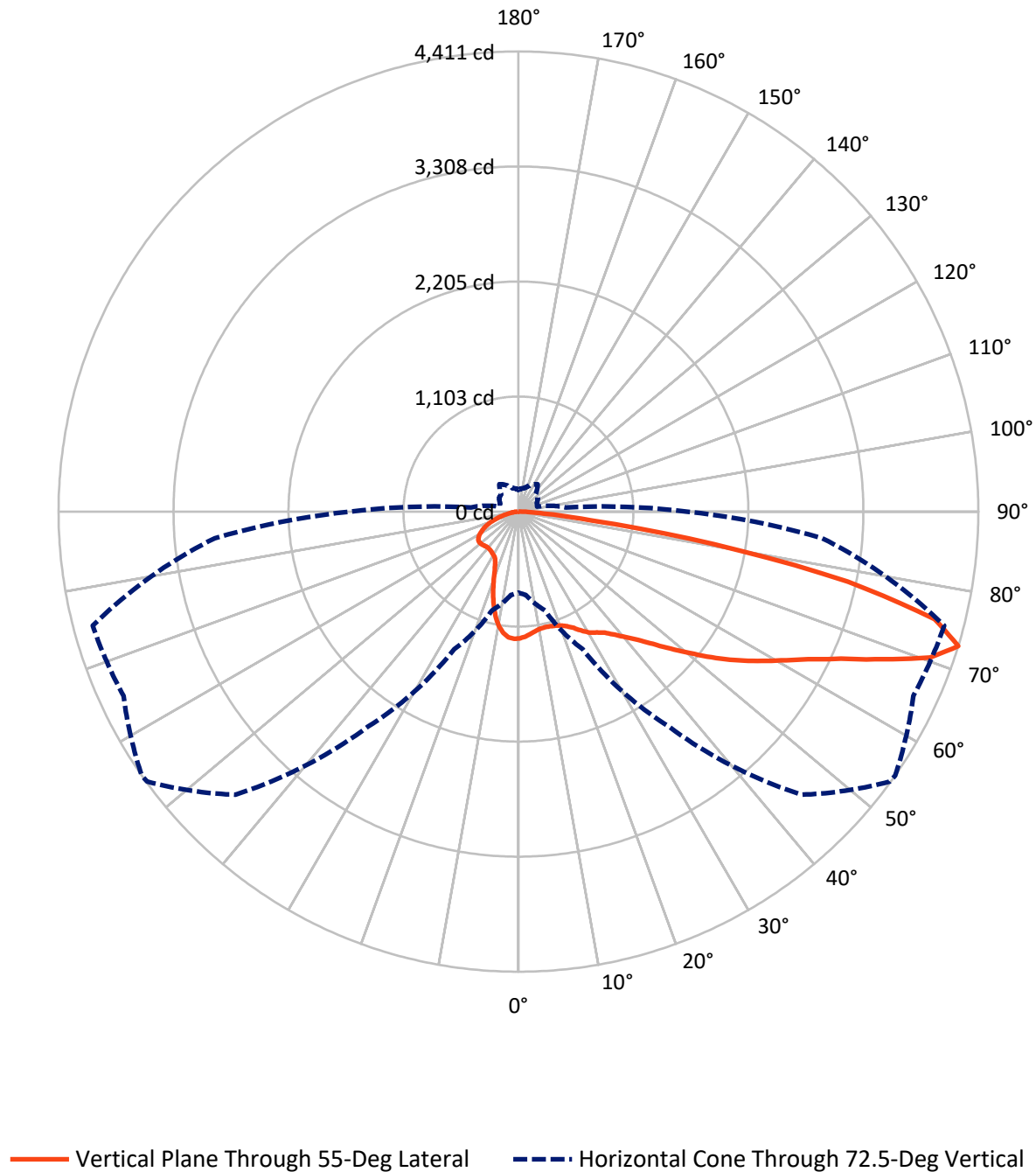
× Max cd  
- - - 1/2 Max cd



Based on 25 foot mounting height. Maximum calculated value = 2 fc  
Type IV - Medium - N/A

REPORT NUMBER: P317725  
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## Luminous Intensity Polar Plot



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CATALOG NUMBER: GLEON-SA1C-730-U-T3R

**FLUX DISTRIBUTION:**

|                    |           | Downward | Upward | Total  |
|--------------------|-----------|----------|--------|--------|
| <b>House Side</b>  | Lumens    | 1281.6   | 0.0    | 1281.6 |
|                    | % Fixture | 18.6     | 0.0    | 18.6   |
| <b>Street Side</b> | Lumens    | 5613.4   | 0.0    | 5613.4 |
|                    | % Fixture | 81.4     | 0.0    | 81.4   |
| <b>Total</b>       | Lumens    | 6895.0   | 0.0    | 6895.0 |
|                    | % Fixture | 100.0    | 0.0    | 100.0  |

**ZONAL LUMENS:**

| Zone      | Lumens | % Fixture |
|-----------|--------|-----------|
| 0°-10°    | 110.0  | 1.6       |
| 10°-20°   | 293.0  | 4.2       |
| 20°-30°   | 483.1  | 7.0       |
| 30°-40°   | 714.6  | 10.4      |
| 40°-50°   | 997.4  | 14.5      |
| 50°-60°   | 1298.6 | 18.8      |
| 60°-70°   | 1596.0 | 23.1      |
| 70°-80°   | 1251.0 | 18.1      |
| 80°-90°   | 151.4  | 2.2       |
| 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°    | 6895.0 | 100.0     |
| 0°-180°   | 6895.0 | 100.0     |

**Coefficient of Utilization**



REPORT NUMBER: P317725

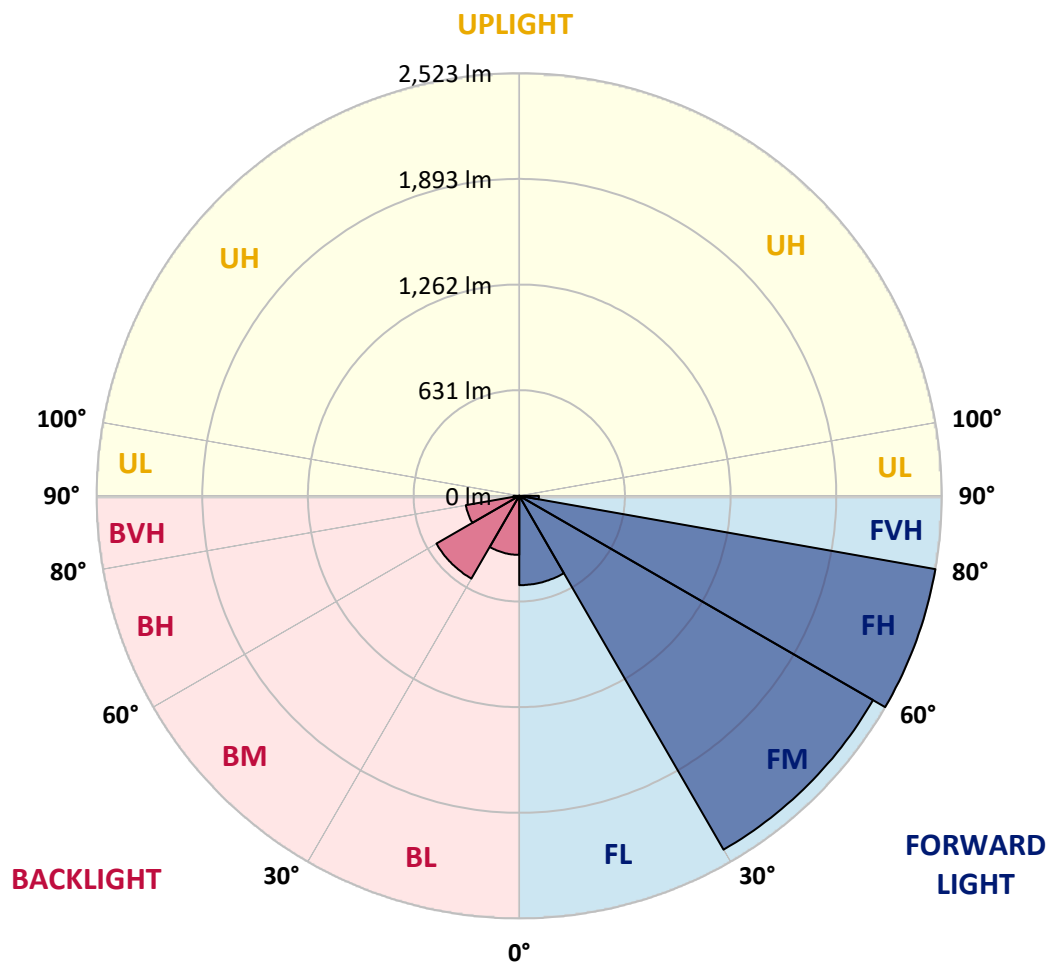
CATALOG NUMBER: GLEON-SA1C-730-U-T3R

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

| Zone |             | Lumens | % Fixture | Zone Rating/Lumen Limit |      |         |
|------|-------------|--------|-----------|-------------------------|------|---------|
|      |             |        |           | B                       | U    | G       |
| FL   | (0°-30°)    | 533.5  | 7.7       |                         |      |         |
| FM   | (30°-60°)   | 2439.6 | 35.4      |                         |      |         |
| FH   | (60°-80°)   | 2523.3 | 36.6      |                         |      | G2/5000 |
| FVH  | (80°-90°)   | 117.0  | 1.7       |                         |      | G2/225  |
| BL   | (0°-30°)    | 352.6  | 5.1       | B1/500                  |      |         |
| BM   | (30°-60°)   | 571.0  | 8.3       | B1/1000                 |      |         |
| BH   | (60°-80°)   | 323.6  | 4.7       | B1/500                  |      | G1/500  |
| BVH  | (80°-90°)   | 34.3   | 0.5       |                         |      | 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 Medium





REPORT NUMBER: P317725

CATALOG NUMBER: GLEON-SA1C-730-U-T3R

**CANDELA DISTRIBUTION (FULL):**

|       | 0°     | 5°     | 15°    | 25°    | 35°    | 45°    | 54°    | 55°    | 65°    | 75°    | 85°    |
|-------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|
| 0°    | 1216.1 | 1216.1 | 1216.1 | 1216.1 | 1216.1 | 1216.1 | 1216.1 | 1216.1 | 1216.1 | 1216.1 | 1216.1 |
| 2.5°  | 1176.5 | 1173.7 | 1177.2 | 1182.1 | 1187.5 | 1194.7 | 1198.9 | 1200.8 | 1208.0 | 1210.8 | 1216.8 |
| 5°    | 1122.0 | 1120.6 | 1126.5 | 1134.9 | 1146.7 | 1163.5 | 1177.0 | 1179.6 | 1198.7 | 1212.2 | 1224.5 |
| 7.5°  | 1082.5 | 1082.5 | 1089.2 | 1099.2 | 1112.5 | 1135.1 | 1154.2 | 1157.7 | 1190.0 | 1219.2 | 1242.0 |
| 10°   | 1051.0 | 1052.2 | 1060.1 | 1072.0 | 1087.6 | 1111.6 | 1136.9 | 1140.9 | 1187.7 | 1235.5 | 1271.8 |
| 12.5° | 1030.1 | 1032.8 | 1040.1 | 1050.8 | 1070.1 | 1099.2 | 1131.4 | 1136.7 | 1192.6 | 1258.7 | 1307.7 |
| 15°   | 1043.3 | 1048.0 | 1048.7 | 1053.1 | 1063.8 | 1095.5 | 1134.6 | 1140.2 | 1203.1 | 1282.5 | 1348.4 |
| 17.5° | 1101.5 | 1103.2 | 1096.0 | 1086.6 | 1081.5 | 1101.8 | 1144.4 | 1150.2 | 1215.7 | 1306.0 | 1387.5 |
| 20°   | 1190.0 | 1189.1 | 1173.5 | 1148.4 | 1122.3 | 1125.5 | 1160.5 | 1166.5 | 1232.7 | 1326.8 | 1426.7 |
| 22.5° | 1301.8 | 1298.6 | 1274.6 | 1228.2 | 1183.8 | 1165.1 | 1188.6 | 1193.8 | 1258.3 | 1356.3 | 1468.6 |
| 25°   | 1437.4 | 1430.2 | 1398.5 | 1336.3 | 1270.9 | 1222.9 | 1231.0 | 1235.9 | 1295.5 | 1389.4 | 1507.0 |
| 27.5° | 1580.4 | 1573.1 | 1532.9 | 1457.6 | 1370.5 | 1295.8 | 1289.5 | 1293.7 | 1337.9 | 1413.8 | 1535.4 |
| 30°   | 1729.9 | 1722.2 | 1685.4 | 1601.1 | 1476.3 | 1371.2 | 1344.0 | 1345.6 | 1367.7 | 1427.1 | 1558.7 |
| 32.5° | 1880.1 | 1872.9 | 1831.6 | 1733.8 | 1591.1 | 1452.3 | 1383.3 | 1381.2 | 1385.7 | 1440.9 | 1585.0 |
| 35°   | 2032.4 | 2035.2 | 1987.0 | 1878.7 | 1718.2 | 1542.4 | 1429.9 | 1425.5 | 1415.7 | 1469.0 | 1622.3 |
| 37.5° | 2195.4 | 2193.6 | 2131.1 | 2018.0 | 1851.2 | 1640.2 | 1496.8 | 1496.1 | 1462.3 | 1522.4 | 1680.7 |
| 40°   | 2304.4 | 2305.6 | 2267.6 | 2160.5 | 1985.6 | 1748.5 | 1582.5 | 1580.8 | 1536.6 | 1602.3 | 1757.4 |
| 42.5° | 2347.0 | 2354.7 | 2364.5 | 2296.5 | 2126.2 | 1874.0 | 1684.7 | 1682.4 | 1640.2 | 1716.8 | 1847.5 |
| 45°   | 2350.1 | 2365.4 | 2426.0 | 2417.4 | 2268.8 | 2017.7 | 1815.3 | 1808.8 | 1778.5 | 1869.1 | 1955.1 |
| 47.5° | 2324.0 | 2339.8 | 2440.4 | 2489.3 | 2396.2 | 2169.3 | 1968.1 | 1963.0 | 1936.9 | 2059.6 | 2071.5 |
| 50°   | 2266.9 | 2282.0 | 2410.6 | 2524.5 | 2501.0 | 2315.1 | 2144.2 | 2130.7 | 2116.7 | 2279.7 | 2204.7 |
| 52.5° | 2160.0 | 2189.1 | 2370.8 | 2532.9 | 2563.6 | 2444.6 | 2329.3 | 2320.5 | 2328.2 | 2511.9 | 2338.2 |
| 55°   | 1906.9 | 1939.5 | 2268.1 | 2525.9 | 2610.0 | 2553.4 | 2514.5 | 2514.0 | 2553.8 | 2755.5 | 2481.4 |
| 57.5° | 1765.0 | 1788.1 | 2058.9 | 2514.0 | 2664.9 | 2661.4 | 2697.7 | 2702.2 | 2779.7 | 3020.8 | 2631.4 |
| 60°   | 1684.9 | 1709.1 | 1953.0 | 2470.0 | 2750.1 | 2801.2 | 2884.8 | 2893.6 | 3009.4 | 3314.4 | 2811.9 |
| 62.5° | 1612.0 | 1638.6 | 1887.3 | 2380.3 | 2850.5 | 3001.0 | 3108.8 | 3116.7 | 3252.5 | 3616.3 | 2986.3 |
| 65°   | 1487.4 | 1517.5 | 1791.1 | 2321.4 | 2941.8 | 3261.6 | 3393.6 | 3399.0 | 3531.7 | 3932.5 | 3119.7 |
| 67.5° | 1311.4 | 1338.9 | 1609.7 | 2191.2 | 3009.4 | 3578.1 | 3772.3 | 3775.3 | 3808.6 | 4155.8 | 3188.0 |
| 70°   | 1105.7 | 1116.2 | 1351.2 | 1922.5 | 2929.5 | 3874.1 | 4187.3 | 4188.0 | 4061.1 | 4298.8 | 3176.8 |
| 72.5° | 776.9  | 801.6  | 980.9  | 1455.3 | 2517.5 | 3838.0 | 4402.7 | 4410.6 | 4178.4 | 4226.6 | 2922.9 |
| 75°   | 476.5  | 502.6  | 615.3  | 881.9  | 1597.1 | 3018.4 | 4067.8 | 4122.8 | 3958.4 | 3768.6 | 2387.8 |
| 77.5° | 318.6  | 328.4  | 401.5  | 514.2  | 723.6  | 1736.6 | 3127.4 | 3230.8 | 3288.3 | 2748.3 | 1527.0 |
| 80°   | 177.7  | 196.3  | 266.2  | 319.5  | 321.8  | 690.0  | 1875.2 | 1899.4 | 1829.6 | 1094.3 | 471.1  |
| 82.5° | 94.1   | 104.3  | 177.7  | 187.7  | 175.6  | 231.0  | 698.9  | 699.6  | 584.5  | 293.4  | 140.0  |
| 85°   | 72.9   | 81.5   | 121.8  | 114.6  | 89.7   | 102.5  | 230.6  | 243.1  | 198.9  | 120.2  | 45.6   |
| 87.5° | 36.3   | 45.2   | 82.7   | 72.7   | 35.2   | 29.3   | 82.4   | 88.0   | 78.5   | 47.0   | 16.5   |
| 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: P317725

CATALOG NUMBER: GLEON-SA1C-730-U-T3R

**CANDELA DISTRIBUTION (continued):**

|       | 90°    | 95°    | 105°   | 115°   | 125°   | 135°   | 145°   | 155°   | 165°   | 175°   | 180°   |
|-------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|
| 0°    | 1216.1 | 1216.1 | 1216.1 | 1216.1 | 1216.1 | 1216.1 | 1216.1 | 1216.1 | 1216.1 | 1216.1 | 1216.1 |
| 2.5°  | 1219.2 | 1221.3 | 1223.8 | 1221.0 | 1220.1 | 1216.4 | 1210.1 | 1208.7 | 1205.4 | 1205.6 | 1207.5 |
| 5°    | 1229.9 | 1233.4 | 1232.0 | 1221.3 | 1208.4 | 1190.5 | 1171.9 | 1156.0 | 1145.6 | 1144.9 | 1144.2 |
| 7.5°  | 1250.4 | 1252.7 | 1241.7 | 1211.2 | 1175.4 | 1133.9 | 1094.8 | 1060.6 | 1039.8 | 1034.7 | 1033.5 |
| 10°   | 1282.5 | 1282.0 | 1252.0 | 1190.5 | 1119.0 | 1045.0 | 982.1  | 934.6  | 906.9  | 898.7  | 896.6  |
| 12.5° | 1318.4 | 1313.0 | 1255.5 | 1152.8 | 1039.4 | 936.7  | 857.0  | 804.2  | 775.3  | 766.0  | 763.6  |
| 15°   | 1355.4 | 1342.1 | 1246.9 | 1096.4 | 941.6  | 820.0  | 736.4  | 687.5  | 671.9  | 666.8  | 665.8  |
| 17.5° | 1389.9 | 1364.2 | 1222.2 | 1020.0 | 830.0  | 703.8  | 638.6  | 619.0  | 622.7  | 629.5  | 629.7  |
| 20°   | 1423.6 | 1379.1 | 1182.6 | 923.6  | 712.4  | 608.1  | 585.9  | 600.4  | 618.1  | 631.8  | 633.7  |
| 22.5° | 1456.9 | 1389.6 | 1131.6 | 812.3  | 607.1  | 554.3  | 569.9  | 596.2  | 616.4  | 631.4  | 633.9  |
| 25°   | 1484.9 | 1392.2 | 1061.3 | 693.5  | 534.0  | 534.0  | 562.2  | 587.1  | 607.1  | 621.8  | 624.4  |
| 27.5° | 1495.1 | 1375.0 | 962.1  | 583.6  | 497.2  | 524.7  | 551.5  | 572.2  | 589.2  | 604.8  | 607.6  |
| 30°   | 1499.1 | 1343.1 | 847.5  | 495.3  | 482.1  | 514.7  | 537.0  | 554.7  | 570.8  | 585.5  | 588.0  |
| 32.5° | 1499.8 | 1304.6 | 725.9  | 445.3  | 471.6  | 504.2  | 519.1  | 534.7  | 551.9  | 557.8  | 558.7  |
| 35°   | 1504.2 | 1259.2 | 597.8  | 419.7  | 461.8  | 494.4  | 506.3  | 517.5  | 489.5  | 491.6  | 493.5  |
| 37.5° | 1517.0 | 1214.3 | 490.7  | 405.2  | 455.5  | 489.3  | 503.5  | 463.0  | 441.1  | 436.0  | 435.3  |
| 40°   | 1541.0 | 1166.3 | 411.3  | 393.6  | 453.2  | 491.9  | 485.6  | 432.2  | 394.5  | 366.3  | 362.1  |
| 42.5° | 1574.3 | 1114.6 | 360.5  | 385.9  | 454.8  | 504.2  | 460.6  | 402.7  | 340.0  | 321.8  | 319.5  |
| 45°   | 1611.8 | 1060.3 | 333.0  | 380.5  | 460.4  | 513.7  | 455.5  | 363.3  | 314.6  | 300.9  | 299.7  |
| 47.5° | 1648.1 | 994.0  | 318.8  | 378.2  | 468.1  | 506.1  | 433.9  | 351.2  | 302.5  | 295.3  | 296.0  |
| 50°   | 1689.8 | 934.1  | 310.2  | 375.6  | 474.9  | 501.2  | 409.4  | 344.9  | 297.9  | 306.7  | 316.0  |
| 52.5° | 1725.0 | 872.2  | 302.5  | 370.5  | 477.4  | 492.6  | 403.1  | 346.1  | 297.9  | 314.9  | 323.7  |
| 55°   | 1766.7 | 825.3  | 293.7  | 359.8  | 472.5  | 468.1  | 398.7  | 353.1  | 301.4  | 290.6  | 291.6  |
| 57.5° | 1820.5 | 810.0  | 283.9  | 343.0  | 456.2  | 432.5  | 396.6  | 359.8  | 299.3  | 292.5  | 294.8  |
| 60°   | 1895.0 | 826.3  | 279.9  | 321.1  | 430.8  | 404.5  | 396.8  | 356.3  | 284.6  | 272.9  | 273.2  |
| 62.5° | 1966.0 | 844.4  | 279.7  | 307.4  | 399.6  | 379.6  | 391.5  | 344.9  | 277.1  | 270.4  | 272.9  |
| 65°   | 1989.3 | 826.0  | 268.5  | 292.0  | 364.5  | 349.8  | 381.7  | 332.8  | 271.5  | 261.3  | 260.8  |
| 67.5° | 1958.1 | 769.0  | 245.9  | 267.1  | 324.2  | 315.1  | 368.9  | 318.4  | 262.7  | 254.3  | 252.9  |
| 70°   | 1865.4 | 641.6  | 218.0  | 234.3  | 278.3  | 276.0  | 348.6  | 301.6  | 250.8  | 243.6  | 237.5  |
| 72.5° | 1616.0 | 457.2  | 183.7  | 194.9  | 226.6  | 234.1  | 320.7  | 279.7  | 234.1  | 218.4  | 209.1  |
| 75°   | 1327.2 | 338.4  | 150.9  | 153.2  | 172.1  | 192.4  | 282.3  | 254.1  | 214.3  | 187.7  | 180.5  |
| 77.5° | 812.8  | 207.0  | 120.2  | 121.1  | 123.4  | 153.5  | 232.4  | 225.4  | 189.1  | 156.5  | 151.4  |
| 80°   | 263.2  | 112.9  | 86.9   | 91.3   | 84.3   | 112.5  | 179.8  | 191.9  | 162.3  | 130.9  | 125.3  |
| 82.5° | 100.1  | 65.9   | 58.7   | 61.7   | 58.5   | 75.5   | 131.1  | 153.7  | 133.0  | 107.6  | 87.6   |
| 85°   | 48.4   | 37.3   | 34.7   | 38.9   | 36.1   | 38.7   | 83.8   | 113.2  | 100.8  | 70.1   | 65.2   |
| 87.5° | 17.2   | 16.5   | 13.3   | 17.9   | 15.4   | 13.7   | 25.6   | 57.1   | 66.6   | 48.2   | 43.1   |
| 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               |           |                  |                  |

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

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               |           |                  |                  |

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

**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               |           |                  |                  |

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

**TM-30-18**

**Summary**

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



**Color Vector Graphics**



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

**TM-30-18**

**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 |            |



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

**TM-30-18**

**Color Rendition by Hue-Angle Bin**



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

**TM-30-18**

**Measure Comparisons**



(END OF REPORT)