

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: P317397

Luminaire Tested: **GLEON-SA3B-730-U-T2R**

Issue Date: 3/3/2020

**Test Information**

Test Method: LM-79-08  
Report Number: P317397  
TEST IS SCALED FROM IESNA LM-79-08 TEST DATA (G2-1903-205-8)  
Test Lab: INNOVATION CENTER  
Issue Date: 3/3/2020  
Manufacturer: COOPER LIGHTING SOLUTIONS (FORMERLY EATON)  
Product Line: McGRAW-EDISON  
Catalog Number: GLEON-SA3B-730-U-T2R  
Description: GALLEON AREA AND ROADWAY LUMINAIRE  
(3) 70 CRI, 3000K, 800mA LIGHTSQUARES WITH 16 LEDS EACH AND TYPE II  
ROADWAY OPTICS  
Light Source: -  
Ballast/Driver: ELECTRONIC DRIVER

**Summary**

Lumens per Lamp: N/A  
Luminaire Lumens: 16553 lumens  
Efficiency: N/A  
Efficacy: 133.5 lumens/watt  
Luminous Opening: Rectangular (W 1' x L: 1' x H: 0')  
IES Classification: Type II - Short  
BUG Rating: B2 - U0 - G2

Input Watts (W): 124  
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

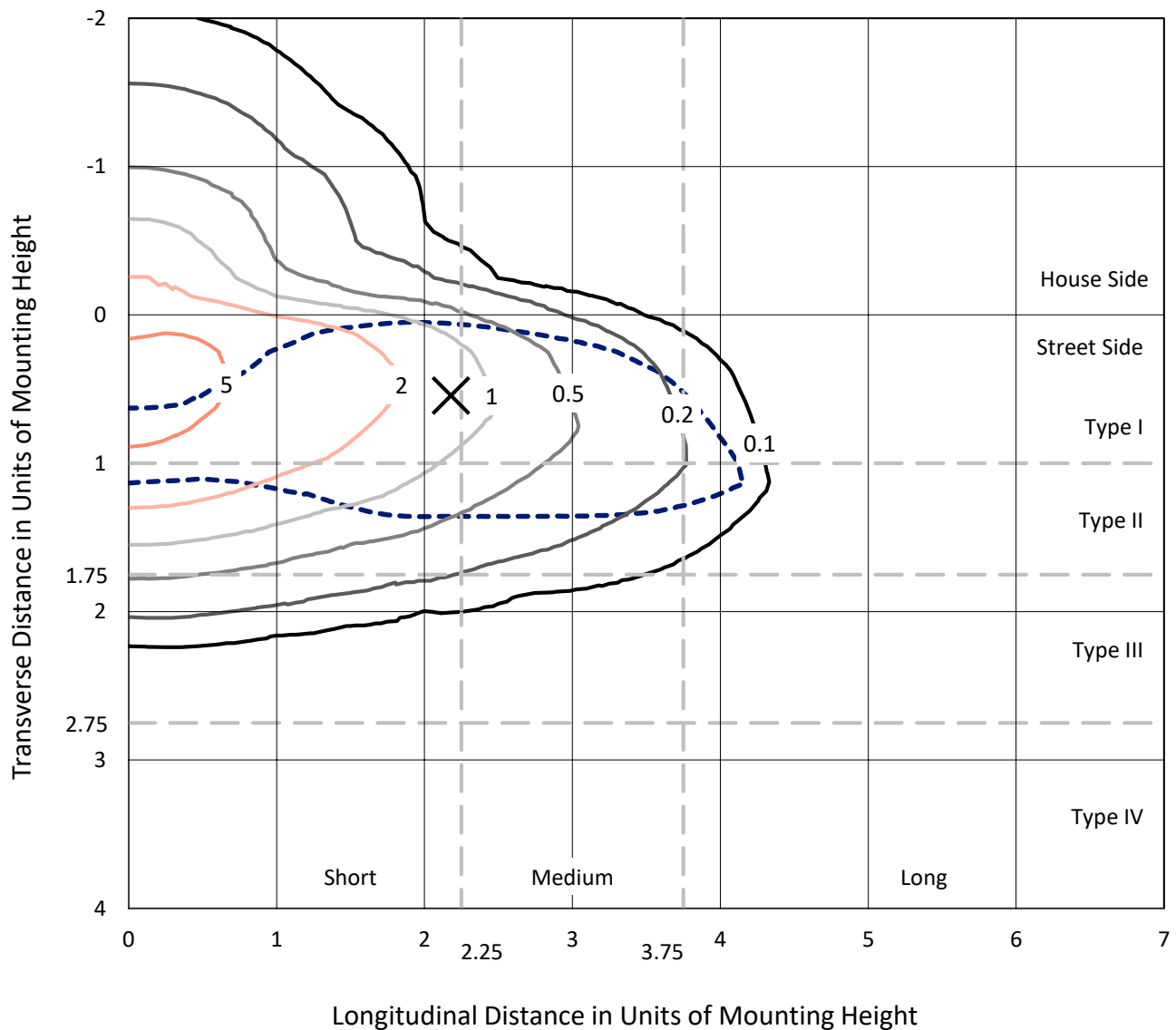


REPORT NUMBER: P317397

CATALOG NUMBER: GLEON-SA3B-730-U-T2R

## Iso-Footcandle Lines of Horizontal Illumination

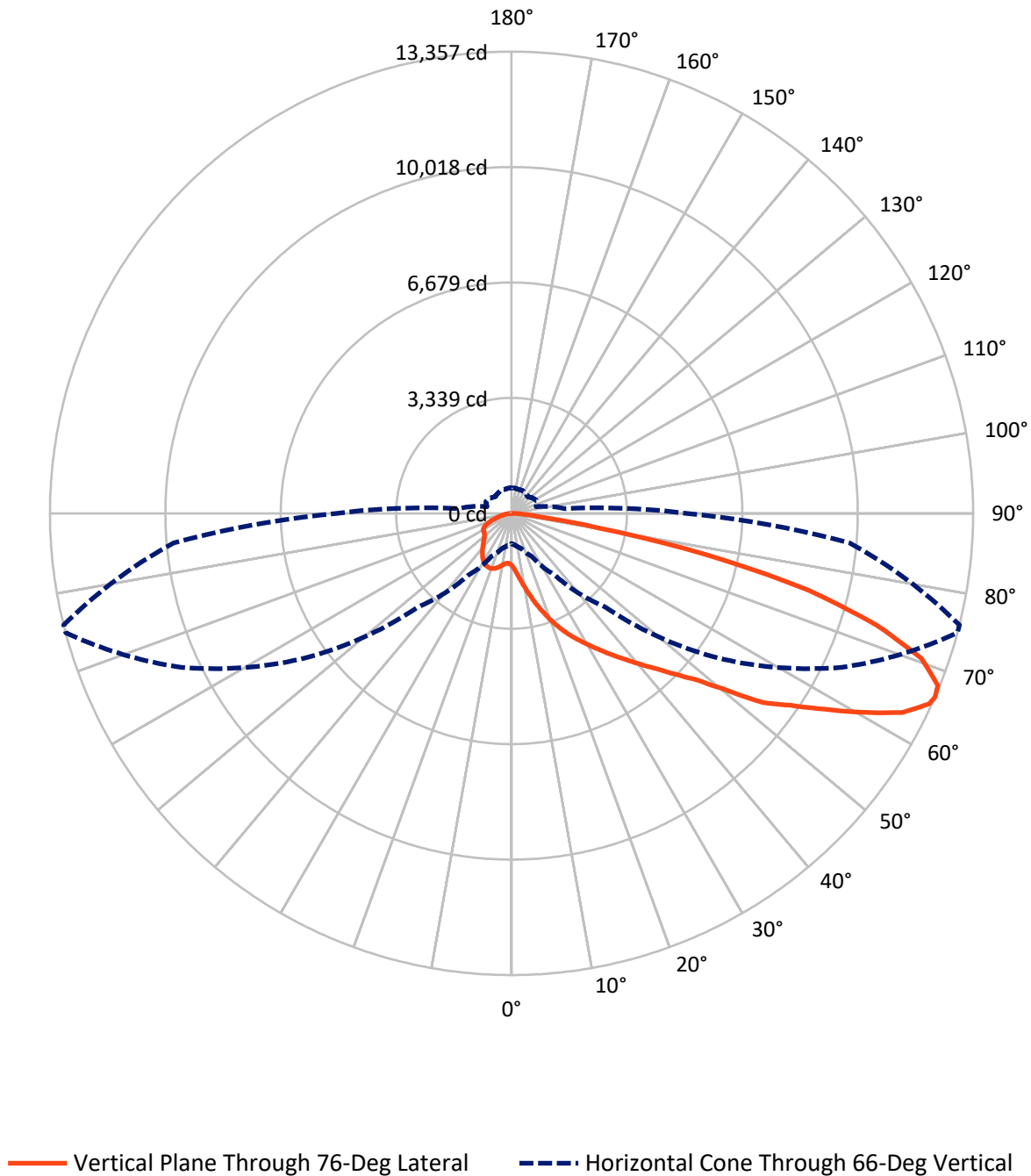
✕ Max cd  
 - - - 1/2 Max cd



Based on 25 foot mounting height. Maximum calculated value = 6.4 fc  
 Type II - Short - N/A

REPORT NUMBER: P317397  
CATALOG NUMBER: GLEON-SA3B-730-U-T2R

## Luminous Intensity Polar Plot



REPORT NUMBER: P317397

CATALOG NUMBER: GLEON-SA3B-730-U-T2R

**FLUX DISTRIBUTION:**

|                    |           | Downward | Upward | Total   |
|--------------------|-----------|----------|--------|---------|
| <b>House Side</b>  | Lumens    | 2785.3   | 0.0    | 2785.3  |
|                    | % Fixture | 16.8     | 0.0    | 16.8    |
| <b>Street Side</b> | Lumens    | 13767.7  | 0.0    | 13767.7 |
|                    | % Fixture | 83.2     | 0.0    | 83.2    |
| <b>Total</b>       | Lumens    | 16553.0  | 0.0    | 16553.0 |
|                    | % Fixture | 100.0    | 0.0    | 100.0   |

**ZONAL LUMENS:**

| Zone      | Lumens  | % Fixture |
|-----------|---------|-----------|
| 0°-10°    | 182.8   | 1.1       |
| 10°-20°   | 721.9   | 4.4       |
| 20°-30°   | 1402.8  | 8.5       |
| 30°-40°   | 2289.6  | 13.8      |
| 40°-50°   | 3128.2  | 18.9      |
| 50°-60°   | 3643.7  | 22.0      |
| 60°-70°   | 3266.6  | 19.7      |
| 70°-80°   | 1650.8  | 10.0      |
| 80°-90°   | 266.6   | 1.6       |
| 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°    | 16553.0 | 100.0     |
| 0°-180°   | 16553.0 | 100.0     |

**Coefficient of Utilization**



REPORT NUMBER: P317397

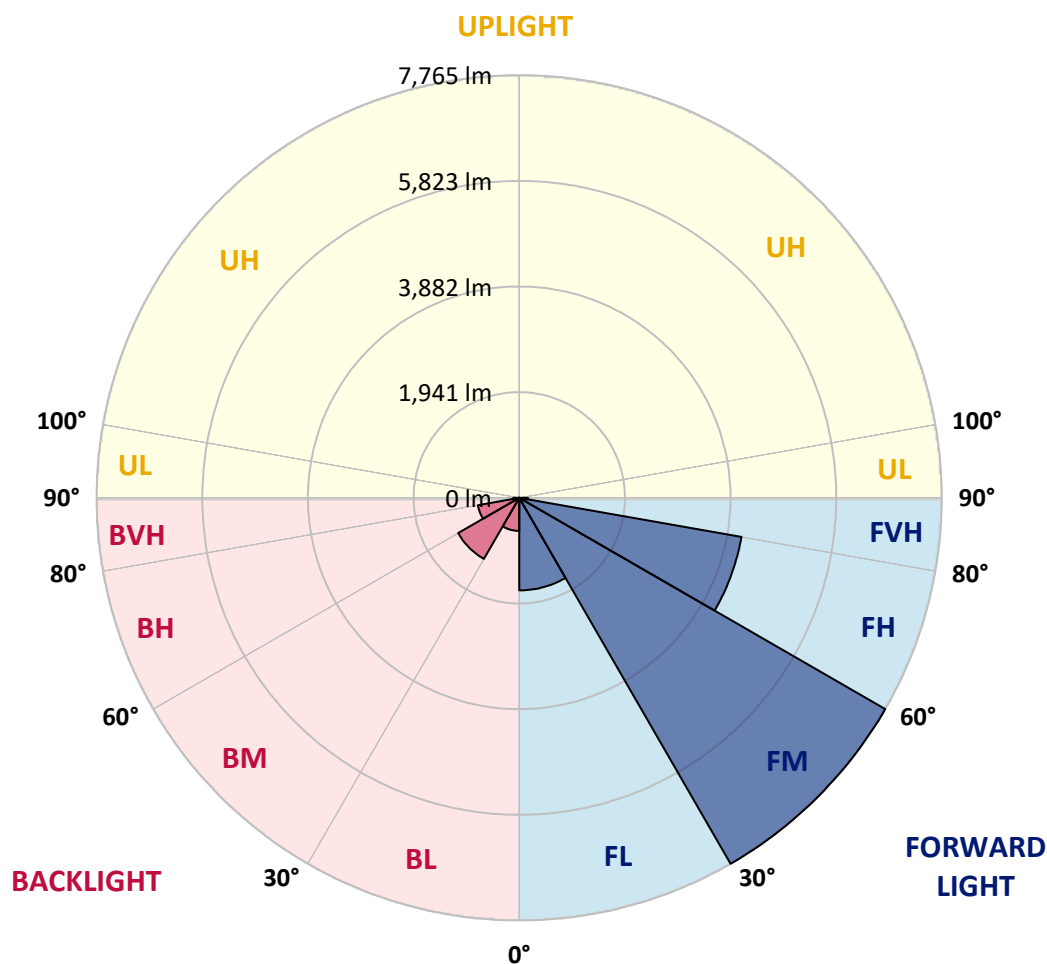
CATALOG NUMBER: GLEON-SA3B-730-U-T2R

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

| Zone |             | Lumens | % Fixture | Zone Rating/Lumen Limit |      |         |
|------|-------------|--------|-----------|-------------------------|------|---------|
|      |             |        |           | B                       | U    | G       |
| FL   | (0°-30°)    | 1699.9 | 10.3      |                         |      |         |
| FM   | (30°-60°)   | 7764.5 | 46.9      |                         |      |         |
| FH   | (60°-80°)   | 4145.8 | 25.0      |                         |      | G2/5000 |
| FVH  | (80°-90°)   | 157.4  | 1.0       |                         |      | G2/225  |
| BL   | (0°-30°)    | 607.5  | 3.7       | B2/1000                 |      |         |
| BM   | (30°-60°)   | 1297.0 | 7.8       | B2/2500                 |      |         |
| BH   | (60°-80°)   | 771.7  | 4.7       | B2/1000                 |      | G2/1000 |
| BVH  | (80°-90°)   | 109.1  | 0.7       |                         |      | G2/225  |
| UL   | (90°-100°)  | 0.0    | 0.0       |                         | U0/0 |         |
| UH   | (100°-180°) | 0.0    | 0.0       |                         | U0/0 |         |

**BUG Rating: B2-U0-G2**

Type II Short



REPORT NUMBER: P317397

CATALOG NUMBER: GLEON-SA3B-730-U-T2R

**CANDELA DISTRIBUTION (FULL):**

|       | 0°     | 5°     | 15°    | 25°    | 35°    | 45°    | 55°    | 65°     | 75°     | 76°     | 85°    |
|-------|--------|--------|--------|--------|--------|--------|--------|---------|---------|---------|--------|
| 0°    | 1511.7 | 1511.7 | 1511.7 | 1511.7 | 1511.7 | 1511.7 | 1511.7 | 1511.7  | 1511.7  | 1511.7  | 1511.7 |
| 2.5°  | 2006.7 | 1976.4 | 1973.6 | 1929.2 | 1919.1 | 1834.2 | 1771.8 | 1706.7  | 1632.5  | 1617.9  | 1559.4 |
| 5°    | 2577.7 | 2574.9 | 2536.1 | 2463.6 | 2406.9 | 2261.9 | 2118.6 | 1966.8  | 1800.5  | 1773.5  | 1642.0 |
| 7.5°  | 3091.3 | 3086.8 | 3057.0 | 2978.9 | 2896.9 | 2718.7 | 2514.2 | 2281.5  | 2011.8  | 1971.9  | 1753.9 |
| 10°   | 3481.3 | 3479.6 | 3469.5 | 3412.2 | 3342.5 | 3171.7 | 2945.8 | 2628.3  | 2257.4  | 2202.9  | 1893.8 |
| 12.5° | 3782.5 | 3785.9 | 3792.6 | 3772.4 | 3739.3 | 3593.7 | 3362.2 | 2995.8  | 2519.2  | 2465.3  | 2049.5 |
| 15°   | 3986.5 | 3996.6 | 4031.5 | 4060.1 | 4077.6 | 3988.2 | 3764.0 | 3371.7  | 2812.6  | 2748.0  | 2222.0 |
| 17.5° | 4089.4 | 4100.6 | 4160.7 | 4247.3 | 4327.1 | 4318.1 | 4139.9 | 3730.3  | 3094.1  | 3031.8  | 2407.4 |
| 20°   | 4178.1 | 4186.6 | 4254.0 | 4358.0 | 4499.0 | 4561.4 | 4461.4 | 4075.3  | 3402.6  | 3328.5  | 2604.1 |
| 22.5° | 4435.5 | 4446.2 | 4466.4 | 4525.4 | 4650.2 | 4764.8 | 4716.5 | 4401.8  | 3685.3  | 3616.2  | 2790.7 |
| 25°   | 4932.3 | 4945.2 | 4901.4 | 4851.4 | 4875.0 | 4954.8 | 4963.8 | 4699.6  | 3971.9  | 3893.8  | 2991.3 |
| 27.5° | 5530.8 | 5549.3 | 5474.6 | 5345.9 | 5233.5 | 5202.6 | 5191.9 | 4943.5  | 4245.6  | 4155.1  | 3189.7 |
| 30°   | 6116.9 | 6148.9 | 6051.7 | 5884.8 | 5678.6 | 5533.6 | 5426.2 | 5182.4  | 4515.3  | 4428.8  | 3376.8 |
| 32.5° | 6689.5 | 6676.6 | 6535.6 | 6372.6 | 6130.9 | 5949.4 | 5689.8 | 5438.6  | 4818.8  | 4719.3  | 3562.8 |
| 35°   | 7081.8 | 7086.3 | 6955.3 | 6762.0 | 6531.6 | 6392.3 | 6042.7 | 5715.1  | 5128.4  | 5036.8  | 3774.1 |
| 37.5° | 7415.6 | 7394.8 | 7246.4 | 7066.0 | 6867.7 | 6808.1 | 6455.8 | 6019.7  | 5463.9  | 5363.9  | 3998.9 |
| 40°   | 7526.8 | 7502.7 | 7405.5 | 7275.6 | 7116.6 | 7111.6 | 6911.5 | 6364.7  | 5843.2  | 5744.3  | 4252.3 |
| 42.5° | 7459.4 | 7428.5 | 7388.6 | 7353.2 | 7304.3 | 7326.8 | 7339.7 | 6769.3  | 6260.2  | 6149.5  | 4545.7 |
| 45°   | 7210.5 | 7163.8 | 7191.9 | 7268.9 | 7375.1 | 7502.1 | 7726.3 | 7217.2  | 6727.2  | 6634.5  | 4890.1 |
| 47.5° | 6827.8 | 6785.6 | 6873.3 | 7037.9 | 7326.8 | 7648.2 | 8092.2 | 7711.7  | 7284.6  | 7192.5  | 5380.7 |
| 50°   | 6289.4 | 6301.8 | 6427.1 | 6726.6 | 7163.3 | 7715.7 | 8542.9 | 8366.4  | 8095.0  | 8009.0  | 6050.0 |
| 52.5° | 5406.0 | 5408.3 | 5761.2 | 6252.9 | 6873.3 | 7680.8 | 8792.9 | 9203.2  | 9201.5  | 9097.5  | 6687.3 |
| 55°   | 4585.6 | 4635.6 | 4914.9 | 5568.4 | 6403.5 | 7541.5 | 8967.7 | 9610.0  | 9928.1  | 9806.1  | 7281.3 |
| 57.5° | 3784.2 | 3813.4 | 4078.1 | 4734.5 | 5733.1 | 7170.0 | 9147.0 | 10098.4 | 10765.4 | 10688.4 | 8019.7 |
| 60°   | 2872.7 | 2917.7 | 3191.3 | 3797.7 | 4875.5 | 6510.8 | 9163.8 | 10608.0 | 11766.2 | 11688.7 | 8844.1 |
| 62.5° | 1864.6 | 1942.1 | 2198.4 | 2766.5 | 3838.2 | 5562.8 | 8772.7 | 10941.3 | 12714.8 | 12687.3 | 9575.7 |
| 65°   | 1071.7 | 1130.1 | 1308.2 | 1746.6 | 2647.9 | 4372.6 | 7842.7 | 10813.2 | 13298.7 | 13283.0 | 9849.4 |
| 66°   | 875.5  | 912.1  | 1048.6 | 1365.0 | 2184.9 | 3839.8 | 7302.1 | 10542.9 | 13356.6 | 13357.1 | 9817.9 |
| 67.5° | 700.2  | 716.5  | 777.7  | 977.2  | 1612.3 | 3043.6 | 6336.1 | 9946.6  | 13284.6 | 13304.3 | 9615.1 |
| 70°   | 579.4  | 587.8  | 606.9  | 655.2  | 880.0  | 1835.3 | 4497.3 | 8397.3  | 12562.5 | 12577.7 | 8823.3 |
| 72.5° | 519.8  | 524.9  | 532.2  | 538.9  | 621.0  | 1025.6 | 2746.8 | 6717.6  | 11014.3 | 11034.0 | 7616.8 |
| 75°   | 470.9  | 473.7  | 472.6  | 473.2  | 520.9  | 653.6  | 1419.5 | 5015.5  | 8905.9  | 8866.5  | 5834.8 |
| 77.5° | 413.6  | 416.4  | 410.8  | 411.9  | 460.8  | 502.4  | 706.4  | 3511.1  | 6010.1  | 5732.5  | 3287.4 |
| 80°   | 349.5  | 351.8  | 349.5  | 353.5  | 401.2  | 379.3  | 410.8  | 1975.3  | 2657.5  | 2513.6  | 1168.9 |
| 82.5° | 264.1  | 273.7  | 280.4  | 296.2  | 330.4  | 269.7  | 274.8  | 769.3   | 809.2   | 770.4   | 358.5  |
| 85°   | 115.8  | 141.1  | 211.3  | 226.5  | 248.4  | 161.8  | 180.4  | 313.6   | 329.3   | 319.2   | 130.4  |
| 87.5° | 30.3   | 33.2   | 104.5  | 131.5  | 137.7  | 73.1   | 93.8   | 142.7   | 150.6   | 142.7   | 43.3   |
| 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: P317397

CATALOG NUMBER: GLEON-SA3B-730-U-T2R

**CANDELA DISTRIBUTION (continued):**

|       | 90°    | 95°    | 105°   | 115°   | 125°   | 135°   | 145°   | 155°   | 165°   | 175°   | 180°   |
|-------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|
| 0°    | 1511.7 | 1511.7 | 1511.7 | 1511.7 | 1511.7 | 1511.7 | 1511.7 | 1511.7 | 1511.7 | 1511.7 | 1511.7 |
| 2.5°  | 1528.5 | 1501.0 | 1451.5 | 1407.7 | 1374.5 | 1352.1 | 1329.6 | 1318.3 | 1311.6 | 1304.9 | 1306.0 |
| 5°    | 1577.4 | 1521.8 | 1436.9 | 1376.8 | 1343.1 | 1321.7 | 1310.5 | 1306.0 | 1303.2 | 1296.4 | 1296.4 |
| 7.5°  | 1651.0 | 1572.4 | 1455.5 | 1393.7 | 1367.2 | 1350.9 | 1344.2 | 1342.0 | 1338.6 | 1330.7 | 1331.8 |
| 10°   | 1743.8 | 1633.6 | 1494.2 | 1434.1 | 1409.9 | 1392.0 | 1382.4 | 1379.0 | 1372.9 | 1363.9 | 1365.0 |
| 12.5° | 1852.8 | 1709.5 | 1545.4 | 1482.4 | 1453.2 | 1429.1 | 1413.3 | 1403.8 | 1393.1 | 1381.3 | 1381.9 |
| 15°   | 1971.9 | 1792.1 | 1600.5 | 1525.7 | 1485.8 | 1452.1 | 1426.8 | 1410.5 | 1393.7 | 1379.0 | 1378.5 |
| 17.5° | 2092.7 | 1871.9 | 1642.6 | 1549.3 | 1495.4 | 1451.0 | 1416.7 | 1391.4 | 1370.6 | 1352.6 | 1350.9 |
| 20°   | 2223.1 | 1943.8 | 1666.2 | 1547.1 | 1477.4 | 1424.6 | 1379.0 | 1347.6 | 1324.5 | 1306.5 | 1303.7 |
| 22.5° | 2355.7 | 2011.2 | 1670.1 | 1524.0 | 1437.5 | 1372.9 | 1325.1 | 1290.3 | 1266.6 | 1248.1 | 1241.4 |
| 25°   | 2477.1 | 2063.5 | 1653.8 | 1479.6 | 1381.9 | 1312.2 | 1265.5 | 1230.1 | 1211.0 | 1189.1 | 1182.4 |
| 27.5° | 2587.8 | 2100.0 | 1621.2 | 1422.9 | 1319.5 | 1250.9 | 1207.1 | 1176.7 | 1155.9 | 1139.1 | 1133.5 |
| 30°   | 2687.3 | 2119.7 | 1567.9 | 1355.4 | 1255.4 | 1193.0 | 1155.9 | 1135.2 | 1117.2 | 1095.8 | 1091.9 |
| 32.5° | 2781.7 | 2119.7 | 1499.3 | 1281.8 | 1191.9 | 1141.9 | 1120.0 | 1107.1 | 1086.8 | 1066.0 | 1060.4 |
| 35°   | 2876.1 | 2106.8 | 1418.4 | 1204.8 | 1133.5 | 1105.4 | 1104.2 | 1089.1 | 1058.2 | 1030.1 | 1022.8 |
| 37.5° | 2975.6 | 2080.4 | 1327.3 | 1132.9 | 1085.7 | 1089.1 | 1098.6 | 1064.9 | 1021.1 | 981.2  | 970.5  |
| 40°   | 3087.9 | 2043.8 | 1232.9 | 1070.5 | 1045.8 | 1081.8 | 1083.5 | 1030.1 | 944.6  | 908.1  | 898.6  |
| 42.5° | 3220.0 | 2007.3 | 1145.3 | 1015.5 | 1014.3 | 1059.8 | 1054.8 | 954.8  | 903.6  | 885.1  | 880.0  |
| 45°   | 3393.7 | 1986.5 | 1062.1 | 963.2  | 989.6  | 1024.4 | 1005.9 | 913.2  | 891.8  | 881.1  | 876.7  |
| 47.5° | 3667.3 | 1997.2 | 985.7  | 921.6  | 964.9  | 989.0  | 914.9  | 896.3  | 881.1  | 868.2  | 863.7  |
| 50°   | 4010.1 | 1991.0 | 923.9  | 892.9  | 936.8  | 952.0  | 873.8  | 874.4  | 866.5  | 851.9  | 845.2  |
| 52.5° | 4268.1 | 1942.7 | 884.0  | 876.7  | 912.1  | 886.2  | 848.0  | 853.0  | 849.1  | 827.8  | 820.5  |
| 55°   | 4517.0 | 1901.1 | 863.7  | 870.5  | 894.1  | 804.2  | 817.6  | 830.0  | 826.1  | 805.3  | 801.9  |
| 57.5° | 4826.6 | 1893.2 | 851.4  | 872.2  | 878.9  | 763.1  | 788.4  | 804.7  | 801.9  | 792.9  | 791.2  |
| 60°   | 5206.0 | 1895.5 | 840.1  | 875.0  | 862.0  | 732.8  | 760.9  | 781.7  | 783.4  | 781.7  | 780.6  |
| 62.5° | 5414.4 | 1834.2 | 812.0  | 867.1  | 832.3  | 706.4  | 732.2  | 762.6  | 763.1  | 766.5  | 765.9  |
| 65°   | 5237.4 | 1651.0 | 759.8  | 839.6  | 782.2  | 684.5  | 707.5  | 740.7  | 732.2  | 747.4  | 747.4  |
| 66°   | 5065.5 | 1545.4 | 733.9  | 821.6  | 760.9  | 676.0  | 699.6  | 729.4  | 718.7  | 739.5  | 739.5  |
| 67.5° | 4714.3 | 1367.2 | 687.3  | 783.4  | 730.5  | 664.2  | 690.6  | 710.9  | 696.3  | 727.2  | 724.9  |
| 70°   | 4072.5 | 1057.6 | 593.4  | 696.8  | 680.5  | 646.8  | 678.3  | 673.8  | 652.4  | 699.6  | 690.6  |
| 72.5° | 3433.6 | 803.6  | 476.5  | 583.3  | 604.7  | 624.9  | 660.9  | 626.6  | 599.6  | 632.8  | 613.1  |
| 75°   | 2664.2 | 604.1  | 376.5  | 453.5  | 510.8  | 590.6  | 640.1  | 572.1  | 533.3  | 529.9  | 519.2  |
| 77.5° | 1440.3 | 414.7  | 298.4  | 346.2  | 405.7  | 547.9  | 626.0  | 513.6  | 455.2  | 441.7  | 433.3  |
| 80°   | 570.4  | 269.7  | 216.9  | 262.4  | 283.8  | 486.1  | 592.3  | 445.6  | 375.4  | 361.9  | 349.0  |
| 82.5° | 235.5  | 159.6  | 139.9  | 175.9  | 184.9  | 415.8  | 531.6  | 365.3  | 290.0  | 401.2  | 426.0  |
| 85°   | 101.2  | 87.7   | 83.2   | 91.0   | 104.5  | 291.7  | 423.2  | 278.7  | 313.0  | 279.3  | 222.0  |
| 87.5° | 30.3   | 37.1   | 35.4   | 34.8   | 38.2   | 69.7   | 225.3  | 155.1  | 229.8  | 87.1   | 65.2   |
| 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**



#####

| 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)