

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: P321007

Luminaire Tested: **GLEON-SA3C-750-U-AFL**

Issue Date: 3/3/2020

**Test Information**

Test Method: LM-79-08  
Report Number: P321007  
TEST IS SCALED FROM IESNA LM-79-08 TEST DATA (G2-1903-205-29)  
Test Lab: INNOVATION CENTER  
Issue Date: 3/3/2020  
Manufacturer: COOPER LIGHTING SOLUTIONS (FORMERLY EATON)  
Product Line: McGRAW-EDISON  
Catalog Number: GLEON-SA3C-750-U-AFL  
Description: GALLEON AREA AND ROADWAY LUMINAIRE  
(3) 70 CRI, 5000K, 1050mA LIGHTSQUARES WITH 16 LEDS EACH AND AUTOMOTIVE  
FRONTLINE OPTICS  
Light Source: -  
Ballast/Driver: ELECTRONIC DRIVER

**Summary**

Lumens per Lamp: N/A  
Luminaire Lumens: 22154 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: B3 - U0 - G2

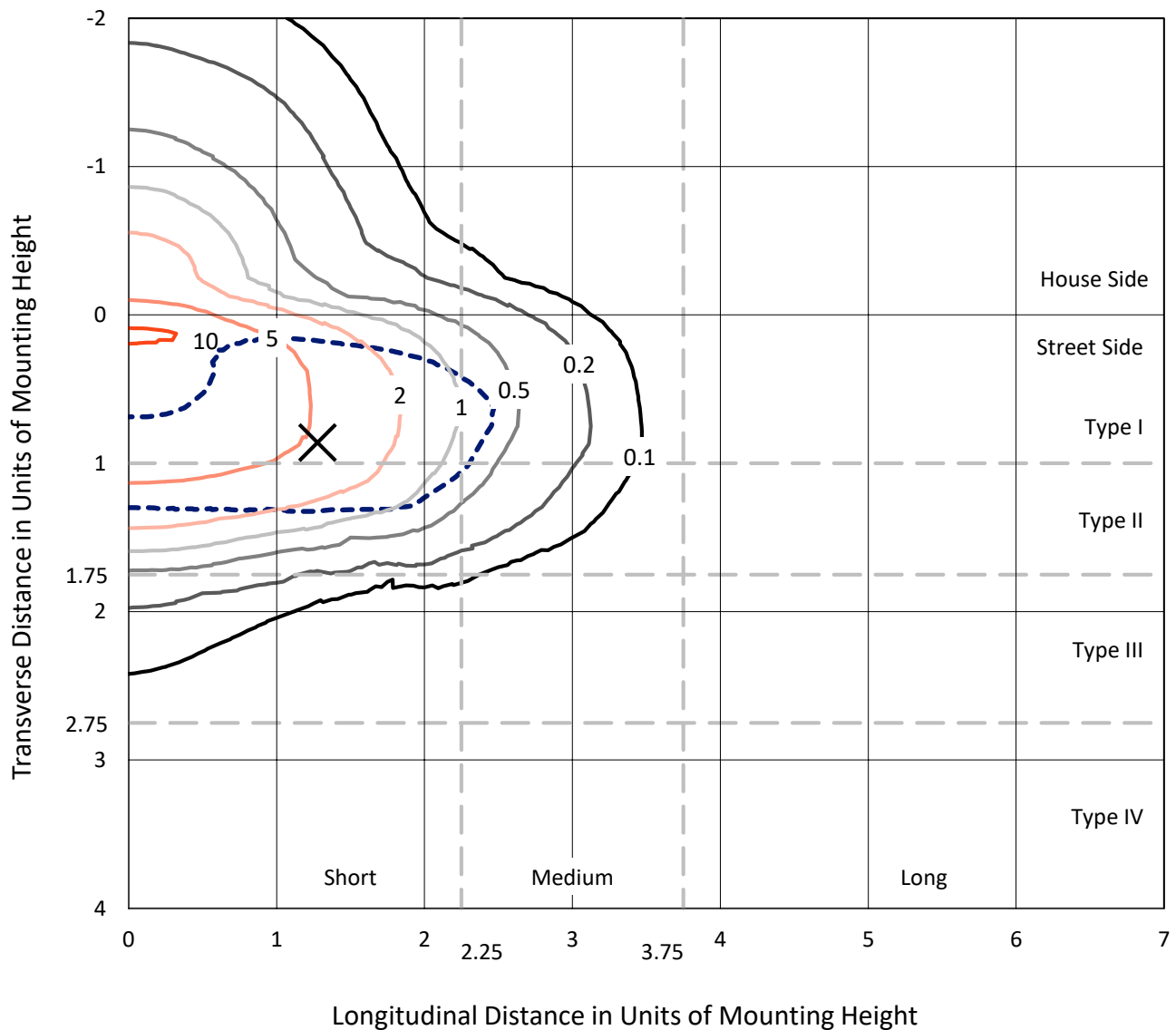
Input Watts (W): 166  
Input Voltage (V): NR  
Input Current (Ain): NR  
Voltage Rise (V): NR  
Power Factor: NR  
Total Harmonic Distortion (THDi): NR  
Frequency (hertz): 60  
Stabilization Time: NR  
Operation Time: NR  
Ambient Temperature (°C): NR  
Test Distance: 24 FT



REPORT NUMBER: P321007  
 CATALOG NUMBER: GLEON-SA3C-750-U-AFL

## Iso-Footcandle Lines of Horizontal Illumination

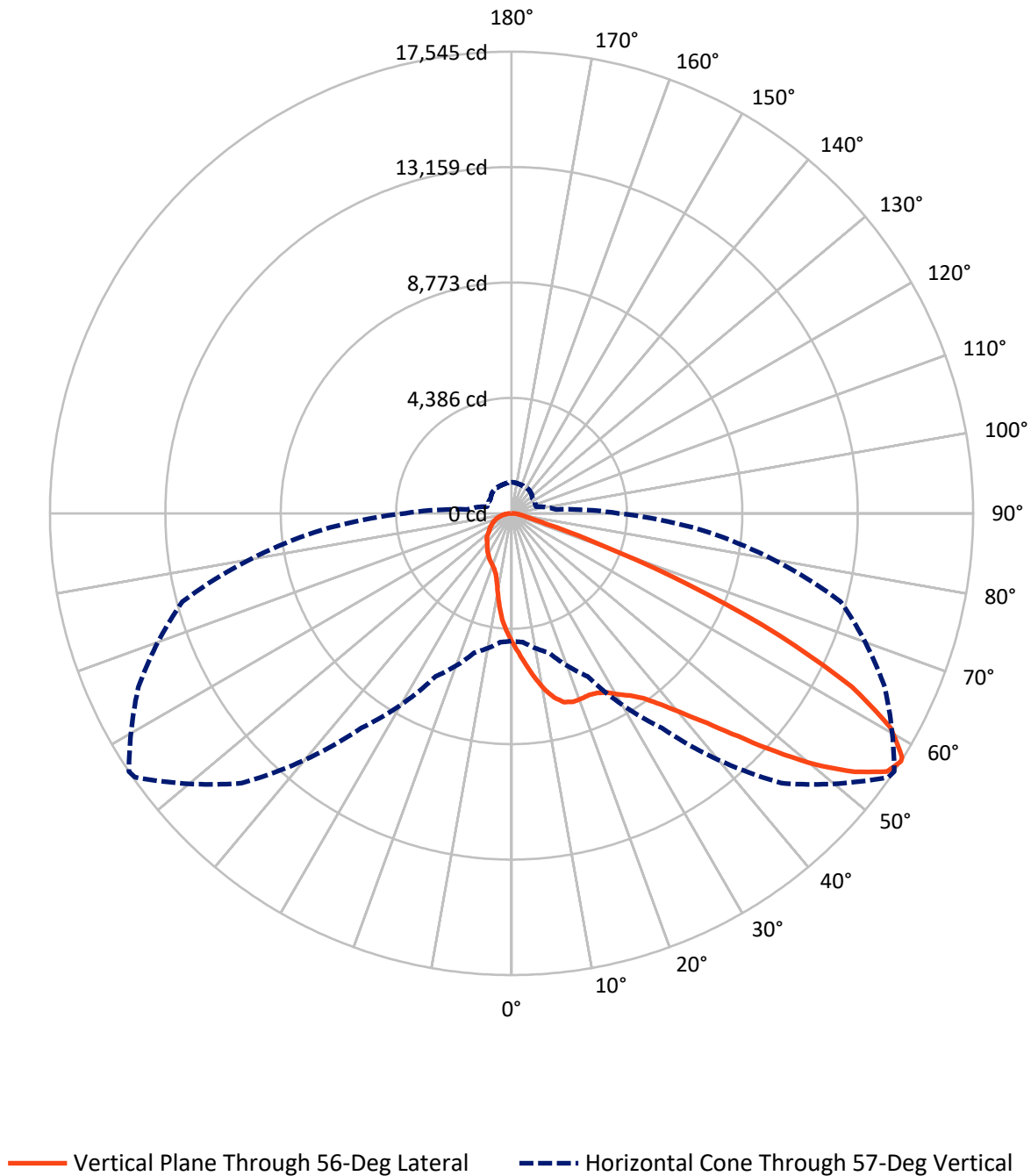
✕ Max cd  
 - - - 1/2 Max cd



Based on 25 foot mounting height. Maximum calculated value = 10.9 fc  
 Type II - Short - N/A

REPORT NUMBER: P321007  
CATALOG NUMBER: GLEON-SA3C-750-U-AFL

## Luminous Intensity Polar Plot



REPORT NUMBER: P321007

CATALOG NUMBER: GLEON-SA3C-750-U-AFL

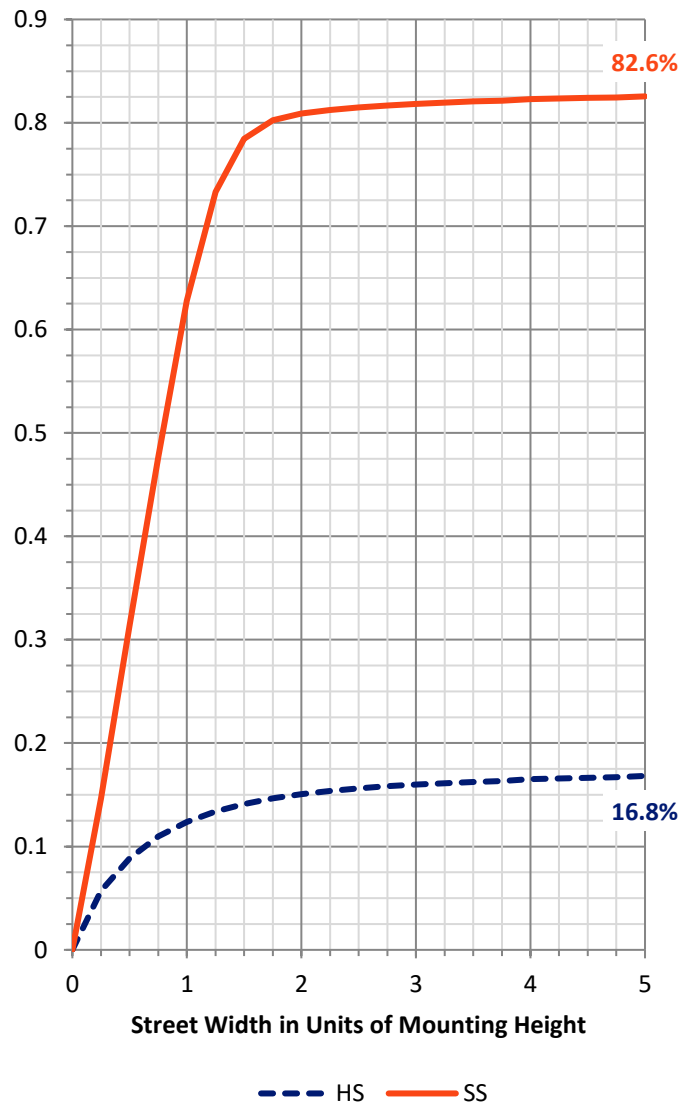
**FLUX DISTRIBUTION:**

|                    |           | Downward | Upward | Total   |
|--------------------|-----------|----------|--------|---------|
| <b>House Side</b>  | Lumens    | 3818.9   | 0.0    | 3818.9  |
|                    | % Fixture | 17.2     | 0.0    | 17.2    |
| <b>Street Side</b> | Lumens    | 18335.1  | 0.0    | 18335.1 |
|                    | % Fixture | 82.8     | 0.0    | 82.8    |
| <b>Total</b>       | Lumens    | 22154.0  | 0.0    | 22154.0 |
|                    | % Fixture | 100.0    | 0.0    | 100.0   |

**ZONAL LUMENS:**

| Zone      | Lumens  | % Fixture |
|-----------|---------|-----------|
| 0°-10°    | 469.4   | 2.1       |
| 10°-20°   | 1327.1  | 6.0       |
| 20°-30°   | 2161.5  | 9.8       |
| 30°-40°   | 3231.3  | 14.6      |
| 40°-50°   | 4901.1  | 22.1      |
| 50°-60°   | 5493.3  | 24.8      |
| 60°-70°   | 3244.6  | 14.6      |
| 70°-80°   | 1063.0  | 4.8       |
| 80°-90°   | 262.6   | 1.2       |
| 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°    | 22154.0 | 100.0     |
| 0°-180°   | 22154.0 | 100.0     |

**Coefficient of Utilization**



REPORT NUMBER: P321007

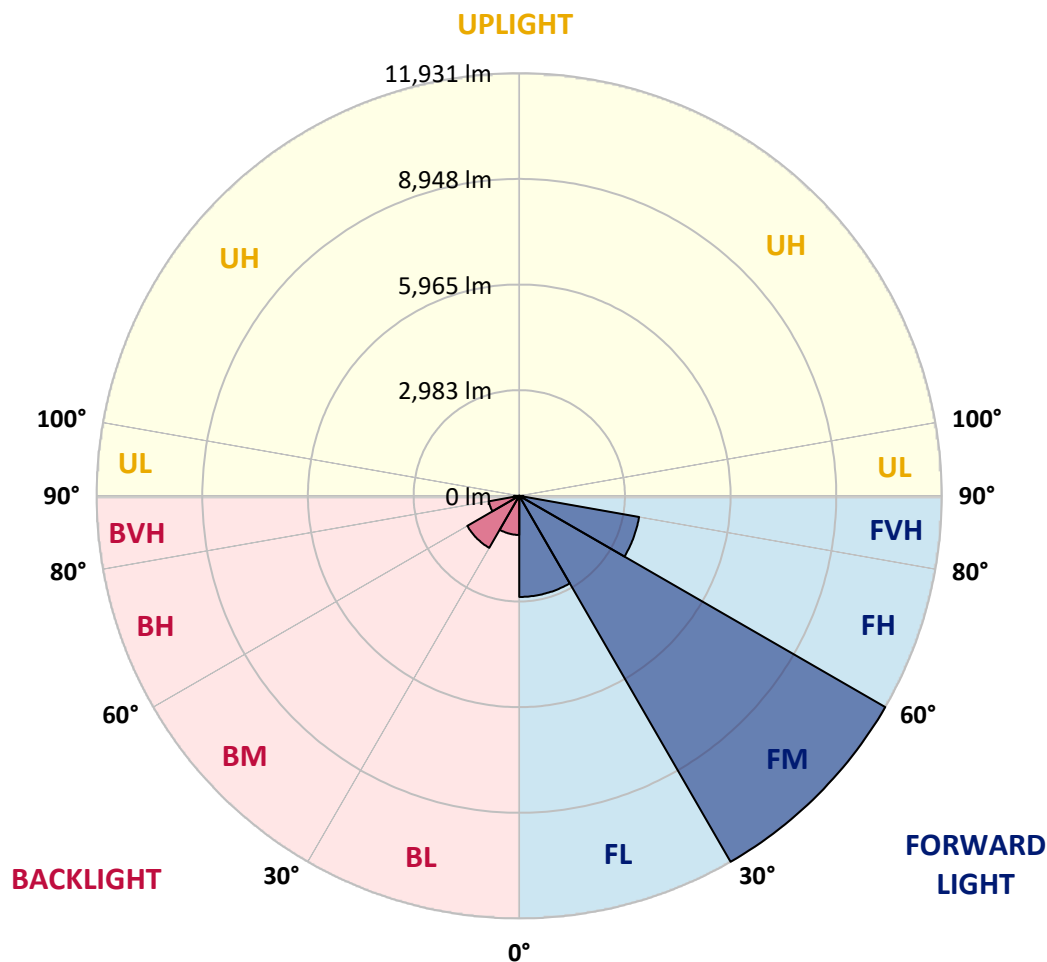
CATALOG NUMBER: GLEON-SA3C-750-U-AFL

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

| Zone |             | Lumens  | % Fixture | Zone Rating/Lumen Limit |      |         |
|------|-------------|---------|-----------|-------------------------|------|---------|
|      |             |         |           | B                       | U    | G       |
| FL   | (0°-30°)    | 2853.8  | 12.9      |                         |      |         |
| FM   | (30°-60°)   | 11930.7 | 53.9      |                         |      |         |
| FH   | (60°-80°)   | 3435.0  | 15.5      |                         |      | G2/5000 |
| FVH  | (80°-90°)   | 115.6   | 0.5       |                         |      | G2/225  |
| BL   | (0°-30°)    | 1104.2  | 5.0       | B3/2500                 |      |         |
| BM   | (30°-60°)   | 1695.1  | 7.7       | B2/2500                 |      |         |
| BH   | (60°-80°)   | 872.6   | 3.9       | B2/1000                 |      | G2/1000 |
| BVH  | (80°-90°)   | 147.0   | 0.7       |                         |      | G2/225  |
| UL   | (90°-100°)  | 0.0     | 0.0       |                         | U0/0 |         |
| UH   | (100°-180°) | 0.0     | 0.0       |                         | U0/0 |         |

**BUG Rating: B3-U0-G2**

Type II Short



REPORT NUMBER: P321007

CATALOG NUMBER: GLEON-SA3C-750-U-AFL

**CANDELA DISTRIBUTION (FULL):**

|       | 0°      | 5°      | 15°     | 25°     | 35°     | 45°     | 55°     | 56°     | 65°     | 75°     | 85°    |
|-------|---------|---------|---------|---------|---------|---------|---------|---------|---------|---------|--------|
| 0°    | 4913.8  | 4913.8  | 4913.8  | 4913.8  | 4913.8  | 4913.8  | 4913.8  | 4913.8  | 4913.8  | 4913.8  | 4913.8 |
| 2.5°  | 5642.4  | 5694.2  | 5671.3  | 5592.1  | 5531.2  | 5445.2  | 5349.3  | 5320.3  | 5219.1  | 5105.6  | 4969.4 |
| 5°    | 6535.5  | 6509.6  | 6472.3  | 6348.9  | 6218.7  | 6067.2  | 5826.6  | 5788.6  | 5563.2  | 5306.6  | 5035.6 |
| 7.5°  | 7044.0  | 7041.8  | 7019.7  | 6947.4  | 6828.6  | 6630.6  | 6340.6  | 6295.6  | 5955.3  | 5542.7  | 5122.4 |
| 10°   | 6970.2  | 6964.9  | 7001.4  | 7076.8  | 7112.6  | 7071.5  | 6827.1  | 6782.1  | 6364.2  | 5803.8  | 5222.9 |
| 12.5° | 6550.7  | 6553.7  | 6612.4  | 6770.7  | 6986.2  | 7245.0  | 7205.5  | 7183.4  | 6788.2  | 6099.2  | 5344.7 |
| 15°   | 6224.1  | 6230.9  | 6277.4  | 6415.2  | 6669.5  | 7139.2  | 7435.4  | 7443.0  | 7198.6  | 6425.1  | 5487.1 |
| 17.5° | 6080.9  | 6095.4  | 6116.7  | 6213.4  | 6446.4  | 6928.3  | 7490.2  | 7531.3  | 7558.0  | 6763.1  | 5624.1 |
| 20°   | 6126.6  | 6140.3  | 6146.4  | 6208.1  | 6399.2  | 6800.4  | 7452.1  | 7526.0  | 7833.6  | 7081.4  | 5761.2 |
| 22.5° | 6331.4  | 6339.8  | 6343.6  | 6359.6  | 6508.1  | 6837.0  | 7427.0  | 7504.7  | 8033.0  | 7366.9  | 5864.7 |
| 25°   | 6671.0  | 6664.9  | 6640.5  | 6620.0  | 6719.7  | 6981.6  | 7484.9  | 7558.7  | 8195.2  | 7625.7  | 5932.5 |
| 27.5° | 7077.5  | 7069.9  | 7022.7  | 6966.4  | 7023.5  | 7207.0  | 7651.6  | 7710.2  | 8340.6  | 7867.8  | 5966.7 |
| 30°   | 7565.6  | 7545.8  | 7456.7  | 7389.7  | 7411.8  | 7545.0  | 7926.5  | 7979.7  | 8565.2  | 8142.7  | 6000.2 |
| 32.5° | 8129.7  | 8108.4  | 7979.7  | 7868.6  | 7868.6  | 7979.7  | 8209.7  | 8253.8  | 8755.6  | 8453.3  | 6054.3 |
| 35°   | 8836.3  | 8809.6  | 8642.1  | 8455.6  | 8403.1  | 8459.4  | 8595.7  | 8626.9  | 9098.2  | 8844.6  | 6152.5 |
| 37.5° | 9669.2  | 9633.4  | 9416.4  | 9166.7  | 9051.7  | 9048.7  | 9146.9  | 9210.9  | 9645.6  | 9358.6  | 6319.2 |
| 40°   | 10504.4 | 10479.3 | 10289.7 | 10093.3 | 9867.9  | 9795.6  | 9947.1  | 9966.9  | 10361.3 | 9996.6  | 6532.4 |
| 42.5° | 11150.0 | 11145.5 | 11110.4 | 11136.3 | 10905.6 | 10759.5 | 10878.2 | 10894.2 | 11235.3 | 10687.1 | 6759.3 |
| 45°   | 11491.1 | 11498.7 | 11668.5 | 12044.6 | 12129.9 | 12023.3 | 12081.9 | 12086.5 | 12234.2 | 11383.8 | 6967.1 |
| 47.5° | 11217.8 | 11257.4 | 11686.8 | 12528.1 | 13226.2 | 13580.3 | 13482.8 | 13539.2 | 13202.6 | 11982.2 | 7130.1 |
| 50°   | 10152.7 | 10201.4 | 10932.3 | 12312.6 | 13737.9 | 15087.0 | 15036.0 | 15023.0 | 13983.8 | 12420.7 | 7218.4 |
| 52.5° | 8833.2  | 8871.3  | 9474.3  | 11192.7 | 13362.5 | 15919.9 | 16388.1 | 16321.1 | 14678.1 | 12748.9 | 7235.1 |
| 55°   | 6824.0  | 6883.4  | 7461.3  | 8957.3  | 11844.4 | 15601.7 | 17382.5 | 17322.3 | 15310.8 | 12920.9 | 7215.3 |
| 57°   | 4851.3  | 4913.8  | 5487.8  | 6836.2  | 9963.8  | 14500.0 | 17481.4 | 17545.4 | 15652.7 | 12949.9 | 7237.4 |
| 57.5° | 4329.1  | 4393.0  | 4961.7  | 6271.3  | 9377.6  | 14101.8 | 17396.2 | 17502.8 | 15714.3 | 12945.3 | 7249.6 |
| 60°   | 2179.8  | 2204.1  | 2566.5  | 3500.7  | 5927.9  | 11400.5 | 16283.8 | 16558.7 | 15769.9 | 12721.5 | 7302.1 |
| 62.5° | 1355.2  | 1337.7  | 1326.3  | 1612.5  | 2884.0  | 7560.2  | 13988.4 | 14517.5 | 14706.3 | 12179.4 | 7175.0 |
| 65°   | 1191.5  | 1158.8  | 1033.2  | 1010.3  | 1273.7  | 3672.0  | 10534.1 | 11192.7 | 12433.7 | 11325.1 | 6872.0 |
| 67.5° | 1119.2  | 1087.2  | 945.6   | 860.3   | 861.1   | 1455.7  | 6540.0  | 7281.6  | 9685.9  | 9880.8  | 6157.1 |
| 70°   | 1044.6  | 1015.6  | 883.2   | 782.7   | 733.2   | 806.3   | 3008.9  | 3571.5  | 6313.9  | 7766.6  | 5146.0 |
| 72.5° | 948.6   | 928.9   | 803.2   | 699.7   | 647.2   | 603.8   | 1151.9  | 1360.5  | 3655.3  | 5216.0  | 3573.8 |
| 75°   | 848.1   | 829.9   | 722.5   | 623.5   | 559.6   | 475.1   | 648.7   | 698.9   | 1856.9  | 2668.5  | 1759.5 |
| 77.5° | 737.8   | 727.1   | 642.6   | 551.2   | 500.2   | 393.6   | 459.1   | 483.5   | 796.4   | 1144.3  | 882.4  |
| 80°   | 587.0   | 607.6   | 561.9   | 491.1   | 443.9   | 315.2   | 325.1   | 341.1   | 463.7   | 558.8   | 501.0  |
| 82.5° | 382.2   | 418.0   | 440.1   | 398.9   | 365.4   | 248.2   | 233.7   | 240.6   | 302.3   | 341.1   | 217.7  |
| 85°   | 159.1   | 178.9   | 289.3   | 261.1   | 242.9   | 181.2   | 156.8   | 159.9   | 187.3   | 194.1   | 89.1   |
| 87.5° | 70.8    | 75.4    | 127.1   | 119.5   | 102.8   | 62.4    | 67.0    | 73.1    | 99.7    | 94.4    | 34.3   |
| 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: P321007

CATALOG NUMBER: GLEON-SA3C-750-U-AFL

**CANDELA DISTRIBUTION (continued):**

|       | 90°    | 95°    | 105°   | 115°   | 125°   | 135°   | 145°   | 155°   | 165°   | 175°   | 180°   |
|-------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|
| 0°    | 4913.8 | 4913.8 | 4913.8 | 4913.8 | 4913.8 | 4913.8 | 4913.8 | 4913.8 | 4913.8 | 4913.8 | 4913.8 |
| 2.5°  | 4918.3 | 4854.4 | 4744.8 | 4623.7 | 4524.7 | 4445.5 | 4365.6 | 4310.8 | 4246.8 | 4212.6 | 4195.1 |
| 5°    | 4922.2 | 4796.5 | 4565.8 | 4329.1 | 4117.4 | 3924.0 | 3739.8 | 3598.2 | 3465.7 | 3394.1 | 3374.3 |
| 7.5°  | 4938.1 | 4749.3 | 4376.3 | 3986.4 | 3610.3 | 3267.0 | 3002.0 | 2836.0 | 2716.5 | 2663.2 | 2648.0 |
| 10°   | 4951.1 | 4693.7 | 4141.8 | 3564.7 | 3053.0 | 2705.1 | 2499.5 | 2406.6 | 2365.5 | 2358.7 | 2351.8 |
| 12.5° | 4981.5 | 4636.6 | 3895.1 | 3124.6 | 2619.8 | 2379.2 | 2307.7 | 2301.6 | 2313.0 | 2329.7 | 2329.7 |
| 15°   | 5029.5 | 4580.3 | 3613.4 | 2747.0 | 2344.2 | 2259.7 | 2274.2 | 2307.7 | 2338.9 | 2364.8 | 2368.6 |
| 17.5° | 5064.5 | 4511.0 | 3310.4 | 2444.7 | 2197.3 | 2220.1 | 2271.9 | 2319.1 | 2351.1 | 2376.2 | 2378.5 |
| 20°   | 5089.7 | 4403.7 | 2986.8 | 2214.0 | 2112.8 | 2183.6 | 2248.3 | 2290.2 | 2312.2 | 2337.4 | 2341.2 |
| 22.5° | 5076.7 | 4259.8 | 2699.8 | 2048.8 | 2044.2 | 2130.3 | 2191.9 | 2242.2 | 2225.4 | 2201.1 | 2217.1 |
| 25°   | 5014.3 | 4061.8 | 2404.4 | 1925.5 | 1971.9 | 2058.7 | 2134.8 | 2101.3 | 2045.0 | 2034.3 | 2040.4 |
| 27.5° | 4903.1 | 3809.1 | 2131.0 | 1811.3 | 1888.2 | 1992.5 | 1987.9 | 1954.4 | 1934.6 | 1920.9 | 1929.3 |
| 30°   | 4783.6 | 3535.0 | 1892.0 | 1711.5 | 1795.3 | 1881.3 | 1863.8 | 1863.0 | 1843.2 | 1821.2 | 1831.8 |
| 32.5° | 4665.6 | 3259.4 | 1702.4 | 1629.3 | 1725.2 | 1736.6 | 1774.7 | 1786.1 | 1747.3 | 1700.9 | 1697.8 |
| 35°   | 4562.8 | 2999.0 | 1558.5 | 1554.7 | 1640.7 | 1642.2 | 1697.8 | 1681.8 | 1585.1 | 1537.2 | 1537.2 |
| 37.5° | 4485.9 | 2739.4 | 1448.9 | 1487.7 | 1529.6 | 1569.2 | 1597.3 | 1531.1 | 1515.1 | 1488.4 | 1487.7 |
| 40°   | 4452.4 | 2510.9 | 1380.3 | 1436.7 | 1451.1 | 1501.4 | 1429.1 | 1454.9 | 1462.6 | 1448.9 | 1448.9 |
| 42.5° | 4417.4 | 2312.2 | 1320.9 | 1397.8 | 1395.6 | 1388.7 | 1352.2 | 1385.7 | 1416.1 | 1416.9 | 1414.6 |
| 45°   | 4382.4 | 2140.9 | 1268.4 | 1314.9 | 1346.8 | 1273.0 | 1279.8 | 1315.6 | 1358.3 | 1373.5 | 1373.5 |
| 47.5° | 4343.5 | 2005.4 | 1220.5 | 1227.3 | 1276.8 | 1227.3 | 1222.0 | 1249.4 | 1299.6 | 1324.0 | 1329.3 |
| 50°   | 4258.3 | 1883.6 | 1165.6 | 1150.4 | 1164.1 | 1180.9 | 1185.4 | 1198.4 | 1253.9 | 1292.8 | 1301.9 |
| 52.5° | 4140.2 | 1774.7 | 1095.6 | 1079.6 | 1079.6 | 1142.8 | 1164.1 | 1167.9 | 1215.1 | 1261.6 | 1270.7 |
| 55°   | 4042.0 | 1705.4 | 1023.3 | 1020.2 | 1017.2 | 1102.4 | 1139.0 | 1145.1 | 1177.8 | 1214.4 | 1218.9 |
| 57°   | 4048.9 | 1700.1 | 967.7  | 970.7  | 970.0  | 1061.3 | 1115.4 | 1128.3 | 1145.1 | 1176.3 | 1181.6 |
| 57.5° | 4052.7 | 1703.9 | 955.5  | 957.0  | 956.3  | 1049.9 | 1108.5 | 1123.0 | 1135.9 | 1168.7 | 1174.0 |
| 60°   | 4109.8 | 1713.8 | 906.0  | 889.3  | 893.1  | 989.0  | 1069.7 | 1088.0 | 1096.3 | 1139.7 | 1146.6 |
| 62.5° | 4025.3 | 1669.6 | 866.4  | 826.1  | 826.1  | 925.0  | 1015.6 | 1044.6 | 1057.5 | 1116.1 | 1127.6 |
| 65°   | 3780.1 | 1545.5 | 820.0  | 754.5  | 762.1  | 861.1  | 950.9  | 998.1  | 1017.9 | 1091.0 | 1103.2 |
| 67.5° | 3401.7 | 1401.7 | 770.5  | 690.5  | 698.2  | 794.1  | 883.9  | 934.9  | 966.2  | 1063.6 | 1073.5 |
| 70°   | 2909.1 | 1225.8 | 703.5  | 622.8  | 631.9  | 721.0  | 804.8  | 862.6  | 909.1  | 1037.7 | 1040.8 |
| 72.5° | 2144.7 | 1005.0 | 609.8  | 548.2  | 558.1  | 635.7  | 724.8  | 791.8  | 854.2  | 973.0  | 971.5  |
| 75°   | 1275.3 | 785.7  | 506.3  | 472.8  | 479.7  | 552.0  | 652.5  | 733.9  | 827.6  | 947.9  | 962.4  |
| 77.5° | 773.5  | 591.6  | 412.7  | 395.9  | 404.3  | 478.1  | 600.7  | 687.5  | 816.2  | 893.8  | 889.3  |
| 80°   | 467.5  | 422.6  | 329.7  | 319.0  | 327.4  | 408.8  | 555.8  | 652.5  | 713.4  | 763.6  | 763.6  |
| 82.5° | 244.4  | 258.1  | 242.1  | 233.7  | 245.2  | 332.0  | 505.5  | 569.5  | 630.4  | 541.3  | 505.5  |
| 85°   | 99.7   | 134.8  | 146.9  | 146.2  | 153.0  | 229.9  | 436.3  | 487.3  | 406.6  | 386.0  | 395.1  |
| 87.5° | 33.5   | 57.1   | 71.6   | 61.7   | 64.7   | 144.7  | 302.3  | 235.3  | 279.4  | 194.9  | 185.0  |
| 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: SP1-1908-441-4-R4

Test Date: 10/02/2019

Luminaire Tested: SA1C-750-U-5WQ

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

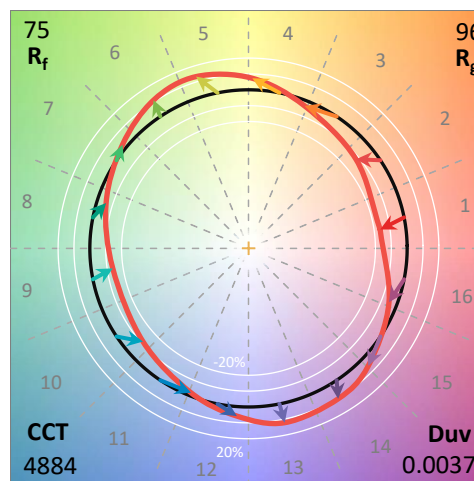
### Test Information

Test Method: LM-79-2008  
 Report Number: SP1-1908-441-4-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-750-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):                  | 4884   | CRI (Ra): | 73.5 |      |       |
| CIE u':                   | 0.2101 | R1:       | 70.5 | R9:  | -28.4 |
| CIE v':                   | 0.4904 | R2:       | 77.7 | R10: | 48.6  |
| Duv:                      | 0.0037 | R3:       | 84.6 | R11: | 73.2  |
| CIE x:                    | 0.3493 | R4:       | 74.7 | R12: | 50.7  |
| CIE y:                    | 0.3624 | R5:       | 71.9 | R13: | 71.2  |
| CIE z:                    | 0.2884 | R6:       | 70.7 | R14: | 91.4  |
| Peak Wavelength (nm):     | 444    | R7:       | 81.2 |      |       |
| Dominant Wavelength (nm): | 571    | R8:       | 56.9 |      |       |
| Purity:                   | 13.7   |           |      |      |       |
| Rf:                       | 74.9   |           |      |      |       |
| Rg:                       | 96.3   |           |      |      |       |



### Test Conditions

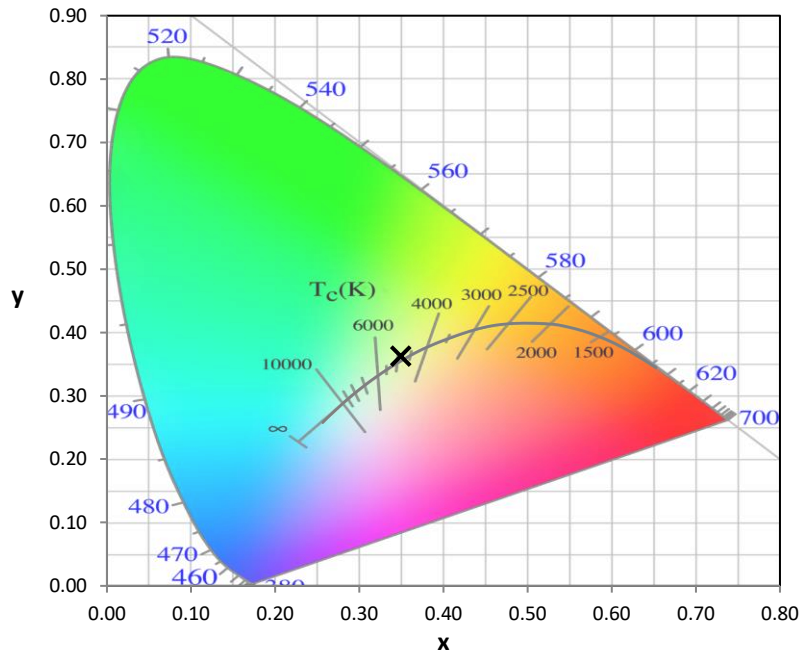
Stabilization Time: 240M  
 Operation Time: 12H  
 Room Temperature (°C) / RH%: 25.0./44%  
 Sphere Temperature (°C): 25.7

REPORT NUMBER: SP1-1908-441-4-R4

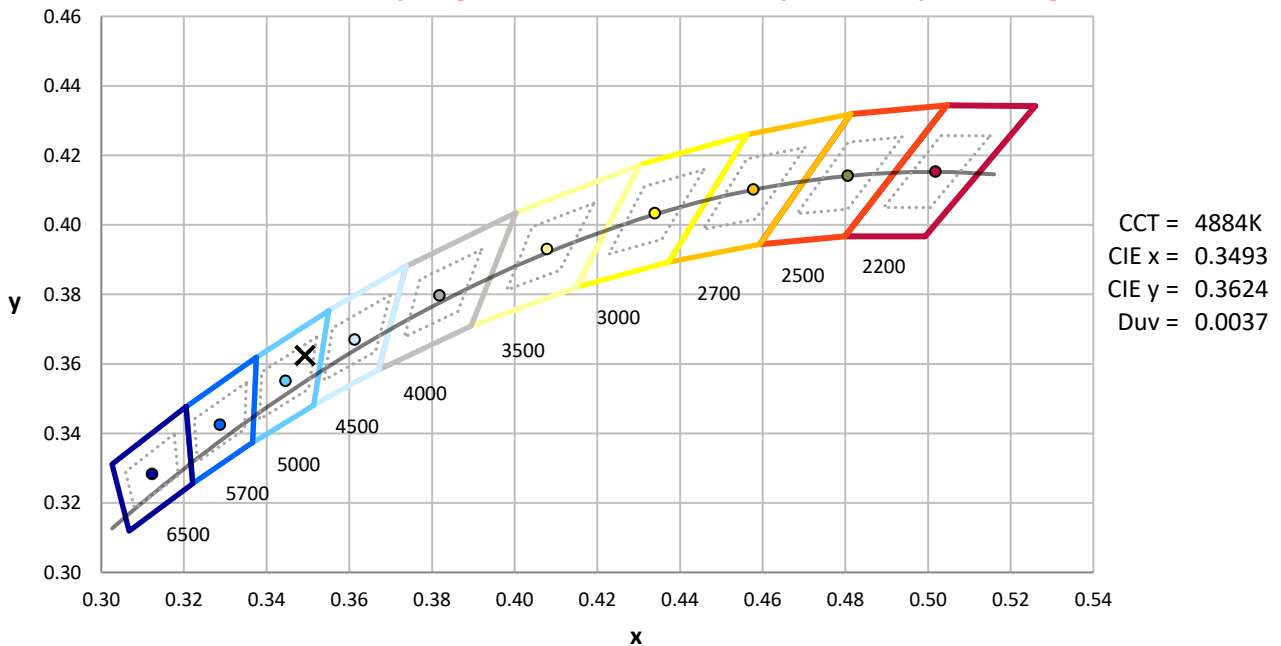
| Measurement and Test Equipment |                       |                  |                      |
|--------------------------------|-----------------------|------------------|----------------------|
| Instrument                     | Identification Number | Calibration Date | Calibration Due Date |
| 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: SP1-1908-441-4-R4

CIE 1931 Chromaticity Diagram



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



Point lies inside the ANSI 5000K 4-step quadrangle

REPORT NUMBER: SP1-1908-441-4-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       | 2945             | NR               | 490       | 37941            | NR               | 620       | 88803            | NR               | 750       | 3908             | NR               | 880       | 2997             | NR               |
| 365       | 2596             | NR               | 495       | 48525            | NR               | 625       | 80578            | NR               | 755       | 3988             | NR               | 885       | 2927             | NR               |
| 370       | 2732             | NR               | 500       | 60609            | NR               | 630       | 73127            | NR               | 760       | 3335             | NR               | 890       | 2649             | NR               |
| 375       | 2894             | NR               | 505       | 72036            | NR               | 635       | 66244            | NR               | 765       | 3438             | NR               | 895       | 2828             | NR               |
| 380       | 2822             | NR               | 510       | 82168            | NR               | 640       | 59440            | NR               | 770       | 3427             | NR               | 900       | 1407             | NR               |
| 385       | 2394             | NR               | 515       | 90898            | NR               | 645       | 52864            | NR               | 775       | 2759             | NR               | 905       | 2224             | NR               |
| 390       | 2370             | NR               | 520       | 97142            | NR               | 650       | 47085            | NR               | 780       | 2340             | NR               | 910       | 2905             | NR               |
| 395       | 2267             | NR               | 525       | 103255           | NR               | 655       | 41789            | NR               | 785       | 2412             | NR               | 915       | 3350             | NR               |
| 400       | 2262             | NR               | 530       | 106697           | NR               | 660       | 37064            | NR               | 790       | 1999             | NR               | 920       | 3114             | NR               |
| 405       | 3000             | NR               | 535       | 110081           | NR               | 665       | 32299            | NR               | 795       | 2054             | NR               | 925       | 2834             | NR               |
| 410       | 5324             | NR               | 540       | 112494           | NR               | 670       | 28142            | NR               | 800       | 2331             | NR               | 930       | 2271             | NR               |
| 415       | 10725            | NR               | 545       | 115513           | NR               | 675       | 24505            | NR               | 805       | 2648             | NR               | 935       | 2228             | NR               |
| 420       | 22128            | NR               | 550       | 117203           | NR               | 680       | 21162            | NR               | 810       | 2485             | NR               | 940       | 2833             | NR               |
| 425       | 44095            | NR               | 555       | 119753           | NR               | 685       | 18400            | NR               | 815       | 2409             | NR               | 945       | 2941             | NR               |
| 430       | 77002            | NR               | 560       | 122602           | NR               | 690       | 16065            | NR               | 820       | 2221             | NR               | 950       | 2323             | NR               |
| 435       | 119881           | NR               | 565       | 124314           | NR               | 695       | 13860            | NR               | 825       | 1562             | NR               | 955       | 1667             | NR               |
| 440       | 164454           | NR               | 570       | 126775           | NR               | 700       | 12177            | NR               | 830       | 2249             | NR               | 960       | 749              | NR               |
| 445       | 179997           | NR               | 575       | 127511           | NR               | 705       | 10757            | NR               | 835       | 2573             | NR               | 965       | 2669             | NR               |
| 450       | 142822           | NR               | 580       | 127577           | NR               | 710       | 9601             | NR               | 840       | 2764             | NR               | 970       | 3968             | NR               |
| 455       | 90008            | NR               | 585       | 126153           | NR               | 715       | 8944             | NR               | 845       | 3109             | NR               | 975       | 3886             | NR               |
| 460       | 60557            | NR               | 590       | 123678           | NR               | 720       | 7947             | NR               | 850       | 2963             | NR               | 980       | 2788             | NR               |
| 465       | 43305            | NR               | 595       | 119774           | NR               | 725       | 7062             | NR               | 855       | 2336             | NR               | 985       | 3496             | NR               |
| 470       | 31089            | NR               | 600       | 115733           | NR               | 730       | 6004             | NR               | 860       | 2118             | NR               | 990       | 2913             | NR               |
| 475       | 26278            | NR               | 605       | 109231           | NR               | 735       | 5594             | NR               | 865       | 3144             | NR               | 995       | 4659             | NR               |
| 480       | 27060            | NR               | 610       | 102408           | NR               | 740       | 5165             | NR               | 870       | 3069             | NR               | 1000      | 1308             | NR               |
| 485       | 30698            | NR               | 615       | 96015            | NR               | 745       | 4687             | NR               | 875       | 3311             | NR               |           |                  |                  |

REPORT NUMBER: SP1-1908-441-4-R4

Scotopic Flux vs. Wavelength



Scotopic Lumens: 13493.5

S/P: 1.77

| 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       | 2945             | NR               | 490       | 37941            | NR               | 620       | 88803            | NR               | 750       | 3908             | NR               | 880       | 2997             | NR               |
| 365       | 2596             | NR               | 495       | 48525            | NR               | 625       | 80578            | NR               | 755       | 3988             | NR               | 885       | 2927             | NR               |
| 370       | 2732             | NR               | 500       | 60609            | NR               | 630       | 73127            | NR               | 760       | 3335             | NR               | 890       | 2649             | NR               |
| 375       | 2894             | NR               | 505       | 72036            | NR               | 635       | 66244            | NR               | 765       | 3438             | NR               | 895       | 2828             | NR               |
| 380       | 2822             | NR               | 510       | 82168            | NR               | 640       | 59440            | NR               | 770       | 3427             | NR               | 900       | 1407             | NR               |
| 385       | 2394             | NR               | 515       | 90898            | NR               | 645       | 52864            | NR               | 775       | 2759             | NR               | 905       | 2224             | NR               |
| 390       | 2370             | NR               | 520       | 97142            | NR               | 650       | 47085            | NR               | 780       | 2340             | NR               | 910       | 2905             | NR               |
| 395       | 2267             | NR               | 525       | 103255           | NR               | 655       | 41789            | NR               | 785       | 2412             | NR               | 915       | 3350             | NR               |
| 400       | 2262             | NR               | 530       | 106697           | NR               | 660       | 37064            | NR               | 790       | 1999             | NR               | 920       | 3114             | NR               |
| 405       | 3000             | NR               | 535       | 110081           | NR               | 665       | 32299            | NR               | 795       | 2054             | NR               | 925       | 2834             | NR               |
| 410       | 5324             | NR               | 540       | 112494           | NR               | 670       | 28142            | NR               | 800       | 2331             | NR               | 930       | 2271             | NR               |
| 415       | 10725            | NR               | 545       | 115513           | NR               | 675       | 24505            | NR               | 805       | 2648             | NR               | 935       | 2228             | NR               |
| 420       | 22128            | NR               | 550       | 117203           | NR               | 680       | 21162            | NR               | 810       | 2485             | NR               | 940       | 2833             | NR               |
| 425       | 44095            | NR               | 555       | 119753           | NR               | 685       | 18400            | NR               | 815       | 2409             | NR               | 945       | 2941             | NR               |
| 430       | 77002            | NR               | 560       | 122602           | NR               | 690       | 16065            | NR               | 820       | 2221             | NR               | 950       | 2323             | NR               |
| 435       | 119881           | NR               | 565       | 124314           | NR               | 695       | 13860            | NR               | 825       | 1562             | NR               | 955       | 1667             | NR               |
| 440       | 164454           | NR               | 570       | 126775           | NR               | 700       | 12177            | NR               | 830       | 2249             | NR               | 960       | 749              | NR               |
| 445       | 179997           | NR               | 575       | 127511           | NR               | 705       | 10757            | NR               | 835       | 2573             | NR               | 965       | 2669             | NR               |
| 450       | 142822           | NR               | 580       | 127577           | NR               | 710       | 9601             | NR               | 840       | 2764             | NR               | 970       | 3968             | NR               |
| 455       | 90008            | NR               | 585       | 126153           | NR               | 715       | 8944             | NR               | 845       | 3109             | NR               | 975       | 3886             | NR               |
| 460       | 60557            | NR               | 590       | 123678           | NR               | 720       | 7947             | NR               | 850       | 2963             | NR               | 980       | 2788             | NR               |
| 465       | 43305            | NR               | 595       | 119774           | NR               | 725       | 7062             | NR               | 855       | 2336             | NR               | 985       | 3496             | NR               |
| 470       | 31089            | NR               | 600       | 115733           | NR               | 730       | 6004             | NR               | 860       | 2118             | NR               | 990       | 2913             | NR               |
| 475       | 26278            | NR               | 605       | 109231           | NR               | 735       | 5594             | NR               | 865       | 3144             | NR               | 995       | 4659             | NR               |
| 480       | 27060            | NR               | 610       | 102408           | NR               | 740       | 5165             | NR               | 870       | 3069             | NR               | 1000      | 1308             | NR               |
| 485       | 30698            | NR               | 615       | 96015            | NR               | 745       | 4687             | NR               | 875       | 3311             | NR               |           |                  |                  |

REPORT NUMBER: SP1-1908-441-4-R4

**Melanopic Flux vs. Wavelength**



**Melanopic Lumens: 5378.9**

**M/P: 0.71**

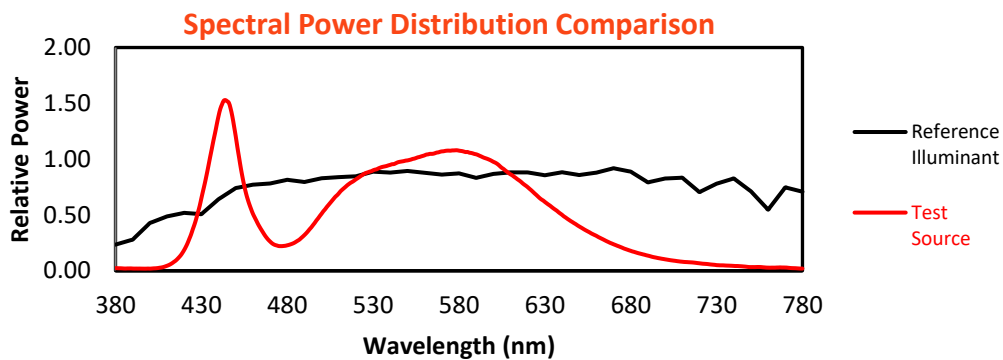
| λ<br>(nm) | Power<br>(μW/nm) | Lumens<br>(φ/nm) | λ<br>(nm) | Power<br>(μW/nm) | Lumens<br>(φ/nm) | λ<br>(nm) | Power<br>(μW/nm) | Lumens<br>(φ/nm) | λ<br>(nm) | Power<br>(μW/nm) | Lumens<br>(φ/nm) | λ<br>(nm) | Power<br>(μW/nm) | Lumens<br>(φ/nm) |
|-----------|------------------|------------------|-----------|------------------|------------------|-----------|------------------|------------------|-----------|------------------|------------------|-----------|------------------|------------------|
| 360       | 2945             | NR               | 490       | 37941            | NR               | 620       | 88803            | NR               | 750       | 3908             | NR               | 880       | 2997             | NR               |
| 365       | 2596             | NR               | 495       | 48525            | NR               | 625       | 80578            | NR               | 755       | 3988             | NR               | 885       | 2927             | NR               |
| 370       | 2732             | NR               | 500       | 60609            | NR               | 630       | 73127            | NR               | 760       | 3335             | NR               | 890       | 2649             | NR               |
| 375       | 2894             | NR               | 505       | 72036            | NR               | 635       | 66244            | NR               | 765       | 3438             | NR               | 895       | 2828             | NR               |
| 380       | 2822             | NR               | 510       | 82168            | NR               | 640       | 59440            | NR               | 770       | 3427             | NR               | 900       | 1407             | NR               |
| 385       | 2394             | NR               | 515       | 90898            | NR               | 645       | 52864            | NR               | 775       | 2759             | NR               | 905       | 2224             | NR               |
| 390       | 2370             | NR               | 520       | 97142            | NR               | 650       | 47085            | NR               | 780       | 2340             | NR               | 910       | 2905             | NR               |
| 395       | 2267             | NR               | 525       | 103255           | NR               | 655       | 41789            | NR               | 785       | 2412             | NR               | 915       | 3350             | NR               |
| 400       | 2262             | NR               | 530       | 106697           | NR               | 660       | 37064            | NR               | 790       | 1999             | NR               | 920       | 3114             | NR               |
| 405       | 3000             | NR               | 535       | 110081           | NR               | 665       | 32299            | NR               | 795       | 2054             | NR               | 925       | 2834             | NR               |
| 410       | 5324             | NR               | 540       | 112494           | NR               | 670       | 28142            | NR               | 800       | 2331             | NR               | 930       | 2271             | NR               |
| 415       | 10725            | NR               | 545       | 115513           | NR               | 675       | 24505            | NR               | 805       | 2648             | NR               | 935       | 2228             | NR               |
| 420       | 22128            | NR               | 550       | 117203           | NR               | 680       | 21162            | NR               | 810       | 2485             | NR               | 940       | 2833             | NR               |
| 425       | 44095            | NR               | 555       | 119753           | NR               | 685       | 18400            | NR               | 815       | 2409             | NR               | 945       | 2941             | NR               |
| 430       | 77002            | NR               | 560       | 122602           | NR               | 690       | 16065            | NR               | 820       | 2221             | NR               | 950       | 2323             | NR               |
| 435       | 119881           | NR               | 565       | 124314           | NR               | 695       | 13860            | NR               | 825       | 1562             | NR               | 955       | 1667             | NR               |
| 440       | 164454           | NR               | 570       | 126775           | NR               | 700       | 12177            | NR               | 830       | 2249             | NR               | 960       | 749              | NR               |
| 445       | 179997           | NR               | 575       | 127511           | NR               | 705       | 10757            | NR               | 835       | 2573             | NR               | 965       | 2669             | NR               |
| 450       | 142822           | NR               | 580       | 127577           | NR               | 710       | 9601             | NR               | 840       | 2764             | NR               | 970       | 3968             | NR               |
| 455       | 90008            | NR               | 585       | 126153           | NR               | 715       | 8944             | NR               | 845       | 3109             | NR               | 975       | 3886             | NR               |
| 460       | 60557            | NR               | 590       | 123678           | NR               | 720       | 7947             | NR               | 850       | 2963             | NR               | 980       | 2788             | NR               |
| 465       | 43305            | NR               | 595       | 119774           | NR               | 725       | 7062             | NR               | 855       | 2336             | NR               | 985       | 3496             | NR               |
| 470       | 31089            | NR               | 600       | 115733           | NR               | 730       | 6004             | NR               | 860       | 2118             | NR               | 990       | 2913             | NR               |
| 475       | 26278            | NR               | 605       | 109231           | NR               | 735       | 5594             | NR               | 865       | 3144             | NR               | 995       | 4659             | NR               |
| 480       | 27060            | NR               | 610       | 102408           | NR               | 740       | 5165             | NR               | 870       | 3069             | NR               | 1000      | 1308             | NR               |
| 485       | 30698            | NR               | 615       | 96015            | NR               | 745       | 4687             | NR               | 875       | 3311             | NR               |           |                  |                  |

REPORT NUMBER: SP1-1908-441-4-R4

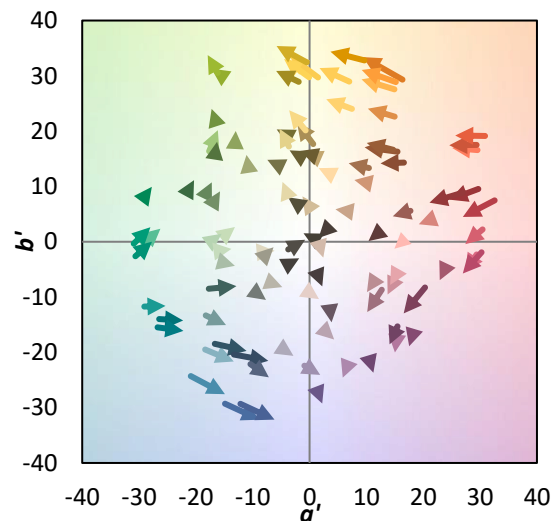
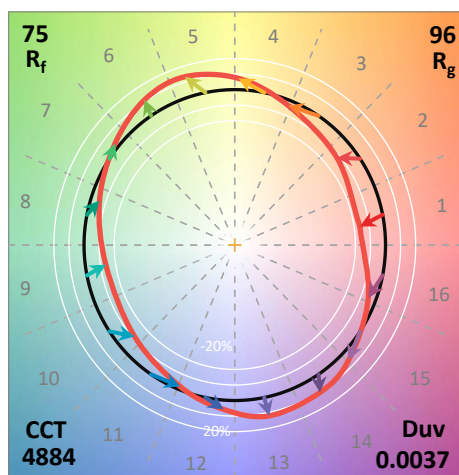
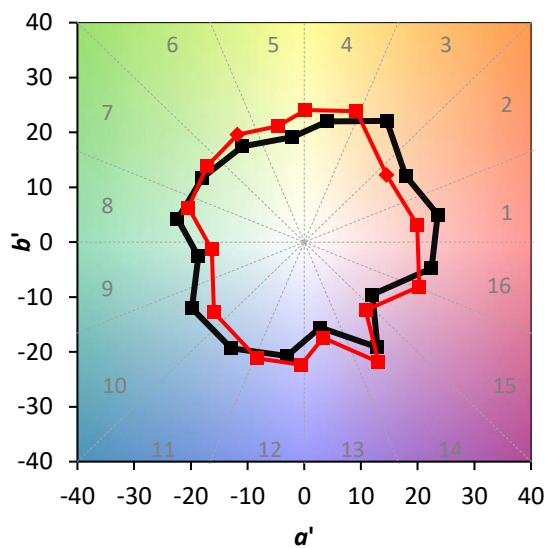
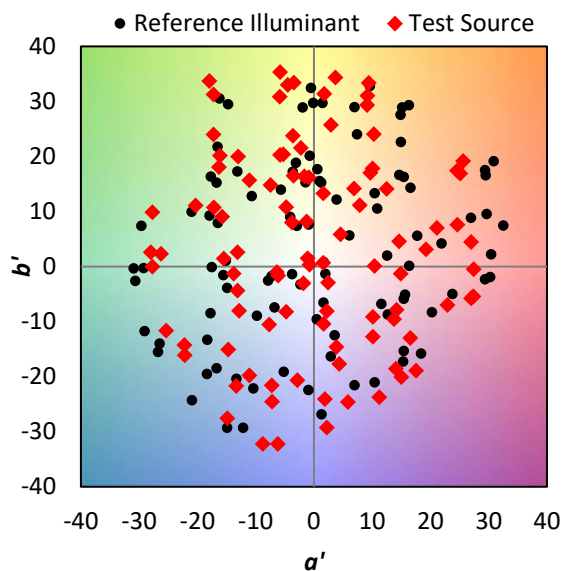
**TM-30-18**

**Summary**

$R_f = 74.9$   
 $R_g = 96.3$   
 CIE  $R_a = 73.5$   
 $R_g = -28.4$



**Color Vector Graphics**





REPORT NUMBER: SP1-1908-441-4-R4

**TM-30-18**

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

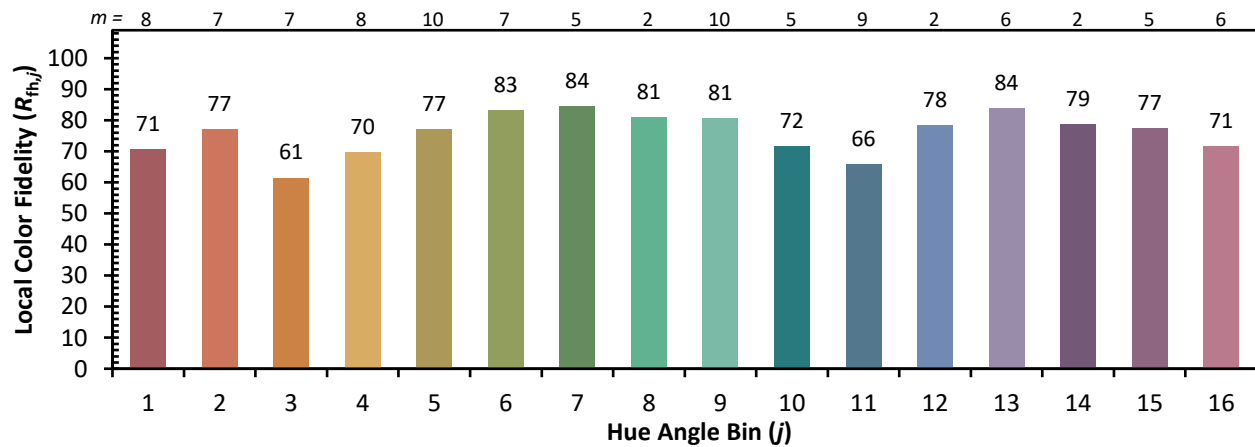
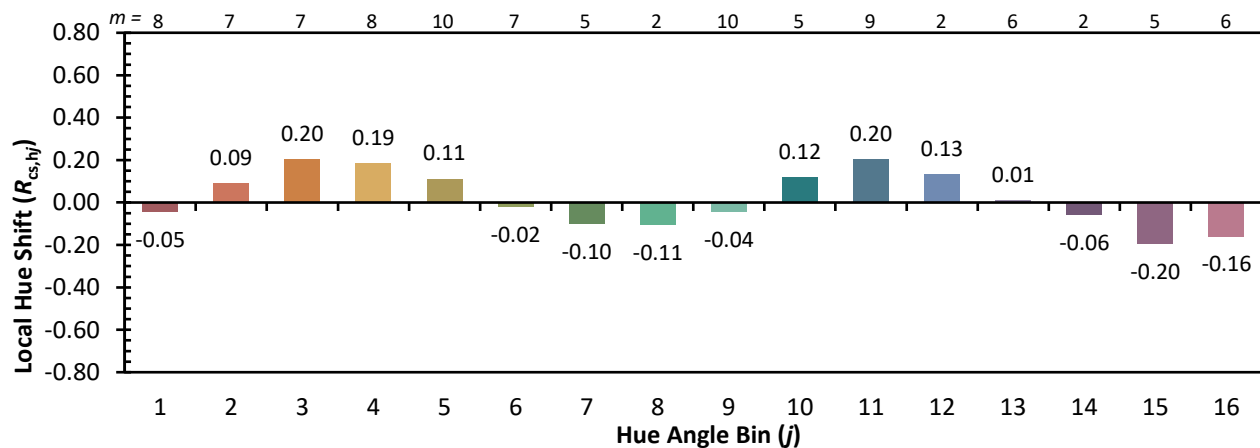
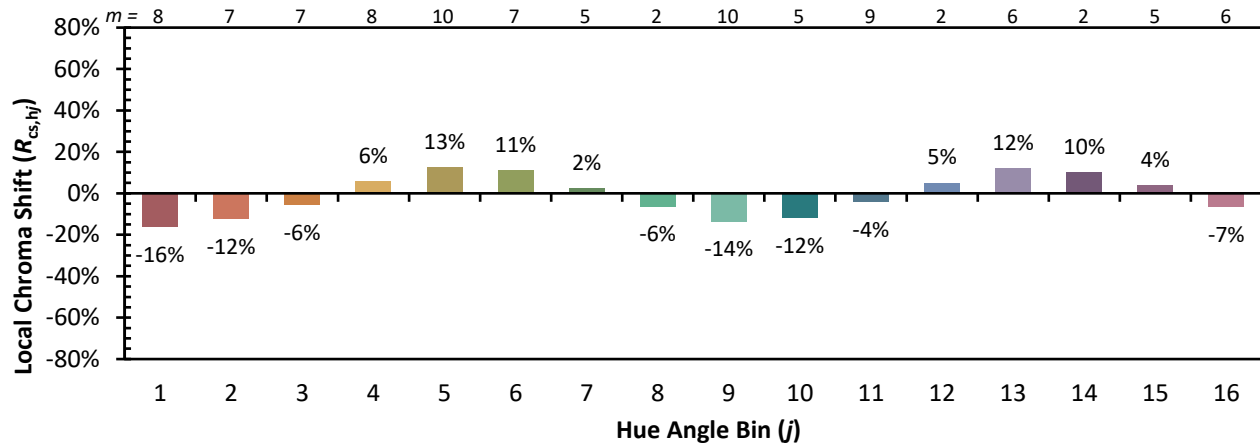
|            |            |            |            |
|------------|------------|------------|------------|
| CES01 = 85 | CES26 = 61 | CES51 = 90 | CES76 = 52 |
| CES02 = 60 | CES27 = 84 | CES52 = 91 | CES77 = 71 |
| CES03 = 30 | CES28 = 81 | CES53 = 79 | CES78 = 54 |
| CES04 = 69 | CES29 = 58 | CES54 = 83 | CES79 = 80 |
| CES05 = 46 | CES30 = 67 | CES55 = 83 | CES80 = 77 |
| CES06 = 50 | CES31 = 63 | CES56 = 73 | CES81 = 77 |
| CES07 = 39 | CES32 = 59 | CES57 = 72 | CES82 = 90 |
| CES08 = 38 | CES33 = 69 | CES58 = 73 | CES83 = 86 |
| CES09 = 29 | CES34 = 69 | CES59 = 88 | CES84 = 88 |
| CES10 = 73 | CES35 = 83 | CES60 = 93 | CES85 = 84 |
| CES11 = 56 | CES36 = 95 | CES61 = 88 | CES86 = 75 |
| CES12 = 61 | CES37 = 78 | CES62 = 85 | CES87 = 78 |
| CES13 = 41 | CES38 = 76 | CES63 = 77 | CES88 = 79 |
| CES14 = 74 | CES39 = 93 | CES64 = 74 | CES89 = 75 |
| CES15 = 70 | CES40 = 86 | CES65 = 67 | CES90 = 77 |
| CES16 = 46 | CES41 = 87 | CES66 = 69 | CES91 = 89 |
| CES17 = 49 | CES42 = 78 | CES67 = 67 | CES92 = 66 |
| CES18 = 55 | CES43 = 75 | CES68 = 73 | CES93 = 80 |
| CES19 = 71 | CES44 = 99 | CES69 = 81 | CES94 = 57 |
| CES20 = 64 | CES45 = 83 | CES70 = 63 | CES95 = 71 |
| CES21 = 85 | CES46 = 81 | CES71 = 60 | CES96 = 78 |
| CES22 = 77 | CES47 = 80 | CES72 = 86 | CES97 = 85 |
| CES23 = 91 | CES48 = 72 | CES73 = 53 | CES98 = 75 |
| CES24 = 90 | CES49 = 81 | CES74 = 96 | CES99 = 62 |
| CES25 = 71 | CES50 = 89 | CES75 = 58 |            |



REPORT NUMBER: SP1-1908-441-4-R4

**TM-30-18**

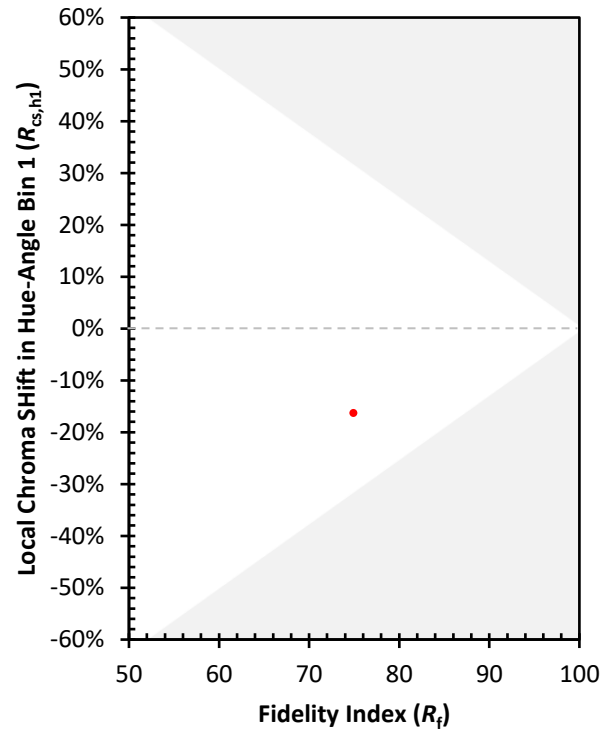
Color Rendition by Hue-Angle Bin



REPORT NUMBER: SP1-1908-441-4-R4

**TM-30-18**

**Measure Comparisons**



(END OF REPORT)