

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: P321684

Luminaire Tested: **GLEON-SA0B-760-U-T3R-HSS**

Issue Date: 3/3/2020

**Test Information**

Test Method: LM-79-08  
Report Number: P321684  
TEST IS SCALED FROM IESNA LM-79-08 TEST DATA (G2-1903-205-11)  
Test Lab: INNOVATION CENTER  
Issue Date: 3/3/2020  
Manufacturer: COOPER LIGHTING SOLUTIONS (FORMERLY EATON)  
Product Line: McGRAW-EDISON  
Catalog Number: GLEON-SA0B-760-U-T3R-HSS  
Description: GALLEON AREA AND ROADWAY LUMINAIRE  
(10) 70 CRI, 5700K, 800mA LIGHTSQUARES WITH 16 LEDS EACH AND TYPE III  
ROADWAY OPTICS WITH HOUSE SIDE SHIELD  
Light Source: -  
Ballast/Driver: ELECTRONIC DRIVER

**Summary**

Lumens per Lamp: N/A  
Luminaire Lumens: 43502 lumens  
Efficiency: N/A  
Efficacy: 103.8 lumens/watt  
Luminous Opening: Rectangular (W 2.5' x L: 1' x H: 0')  
IES Classification: Type III - Medium  
BUG Rating: B3 - U0 - G5

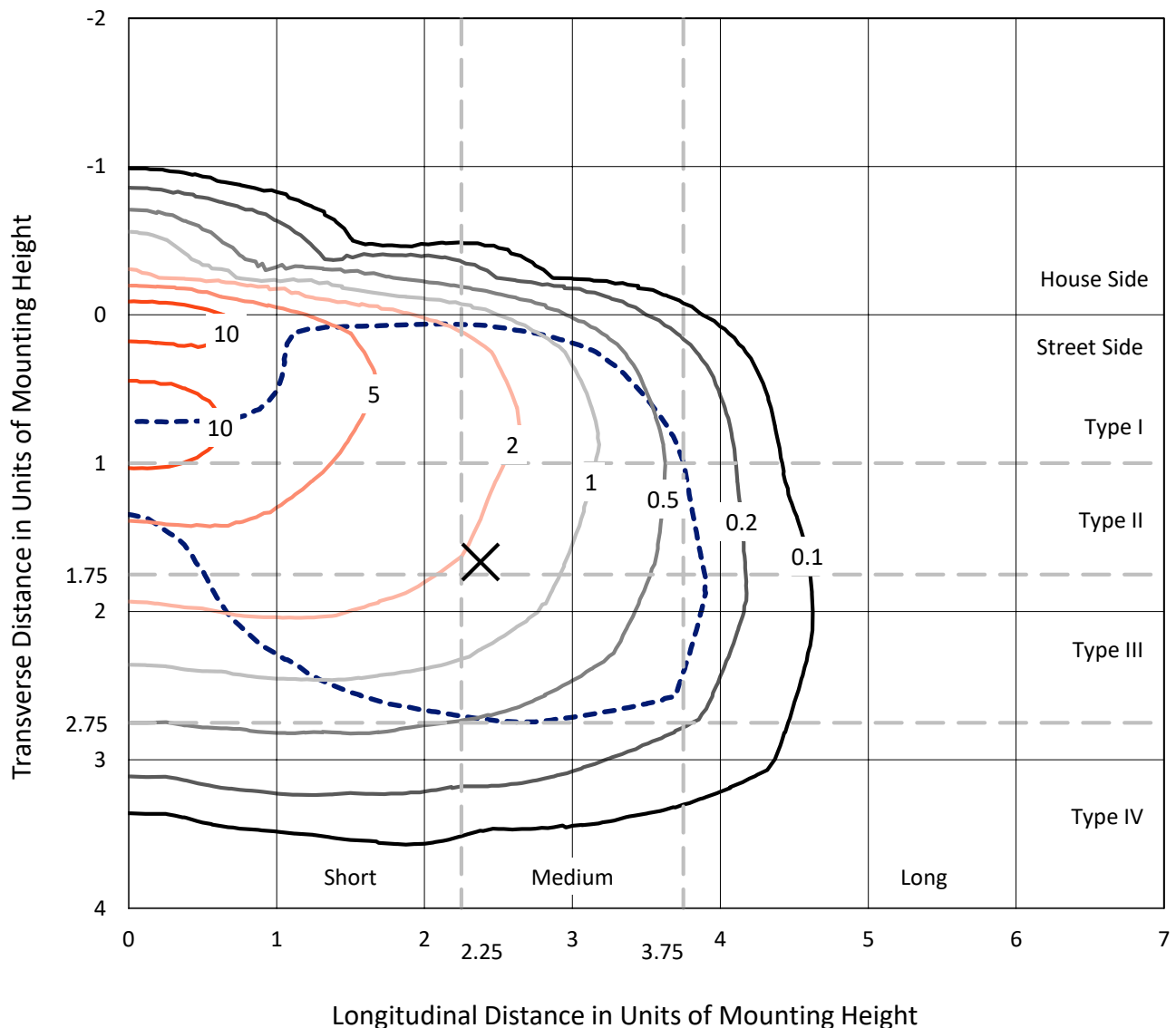
Input Watts (W): 419  
Input Voltage (V): NR  
Input Current (Ain): NR  
Voltage Rise (V): NR  
Power Factor: NR  
Total Harmonic Distortion (THDi): NR  
Frequency (hertz): 60  
Stabilization Time: NR  
Operation Time: NR  
Ambient Temperature (°C): NR  
Test Distance: 24 FT



REPORT NUMBER: P321684  
 CATALOG NUMBER: GLEON-SA0B-760-U-T3R-HSS

## Iso-Footcandle Lines of Horizontal Illumination

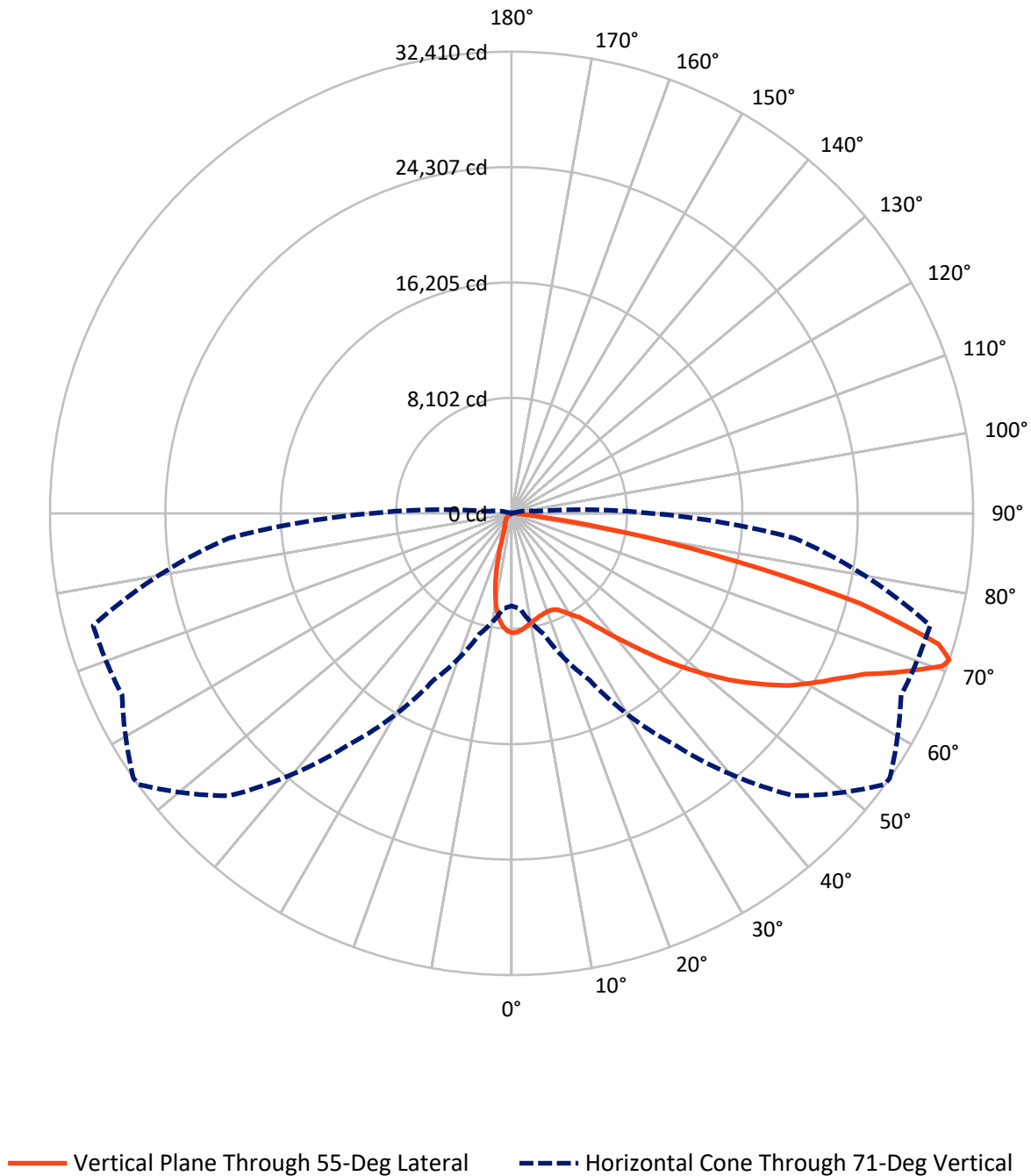
✕ Max cd  
 - - - 1/2 Max cd



Based on 25 foot mounting height. Maximum calculated value = 13.8 fc  
 Type III - Medium - N/A

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## Luminous Intensity Polar Plot



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**FLUX DISTRIBUTION:**

|                    |           | Downward | Upward | Total   |
|--------------------|-----------|----------|--------|---------|
| <b>House Side</b>  | Lumens    | 3444.2   | 0.0    | 3444.2  |
|                    | % Fixture | 7.9      | 0.0    | 7.9     |
| <b>Street Side</b> | Lumens    | 40057.8  | 0.0    | 40057.8 |
|                    | % Fixture | 92.1     | 0.0    | 92.1    |
| <b>Total</b>       | Lumens    | 43502.0  | 0.0    | 43502.0 |
|                    | % Fixture | 100.0    | 0.0    | 100.0   |

**ZONAL LUMENS:**

| Zone      | Lumens  | % Fixture |
|-----------|---------|-----------|
| 0°-10°    | 715.3   | 1.6       |
| 10°-20°   | 1614.9  | 3.7       |
| 20°-30°   | 2595.2  | 6.0       |
| 30°-40°   | 4409.3  | 10.1      |
| 40°-50°   | 6843.8  | 15.7      |
| 50°-60°   | 9201.4  | 21.2      |
| 60°-70°   | 11256.3 | 25.9      |
| 70°-80°   | 6581.3  | 15.1      |
| 80°-90°   | 284.5   | 0.7       |
| 90°-100°  | 0.0     | 0.0       |
| 100°-110° | 0.0     | 0.0       |
| 110°-120° | 0.0     | 0.0       |
| 120°-130° | 0.0     | 0.0       |
| 130°-140° | 0.0     | 0.0       |
| 140°-150° | 0.0     | 0.0       |
| 150°-160° | 0.0     | 0.0       |
| 160°-170° | 0.0     | 0.0       |
| 170°-180° | 0.0     | 0.0       |
| 0°-90°    | 43502.0 | 100.0     |
| 0°-180°   | 43502.0 | 100.0     |

**Coefficient of Utilization**



REPORT NUMBER: P321684

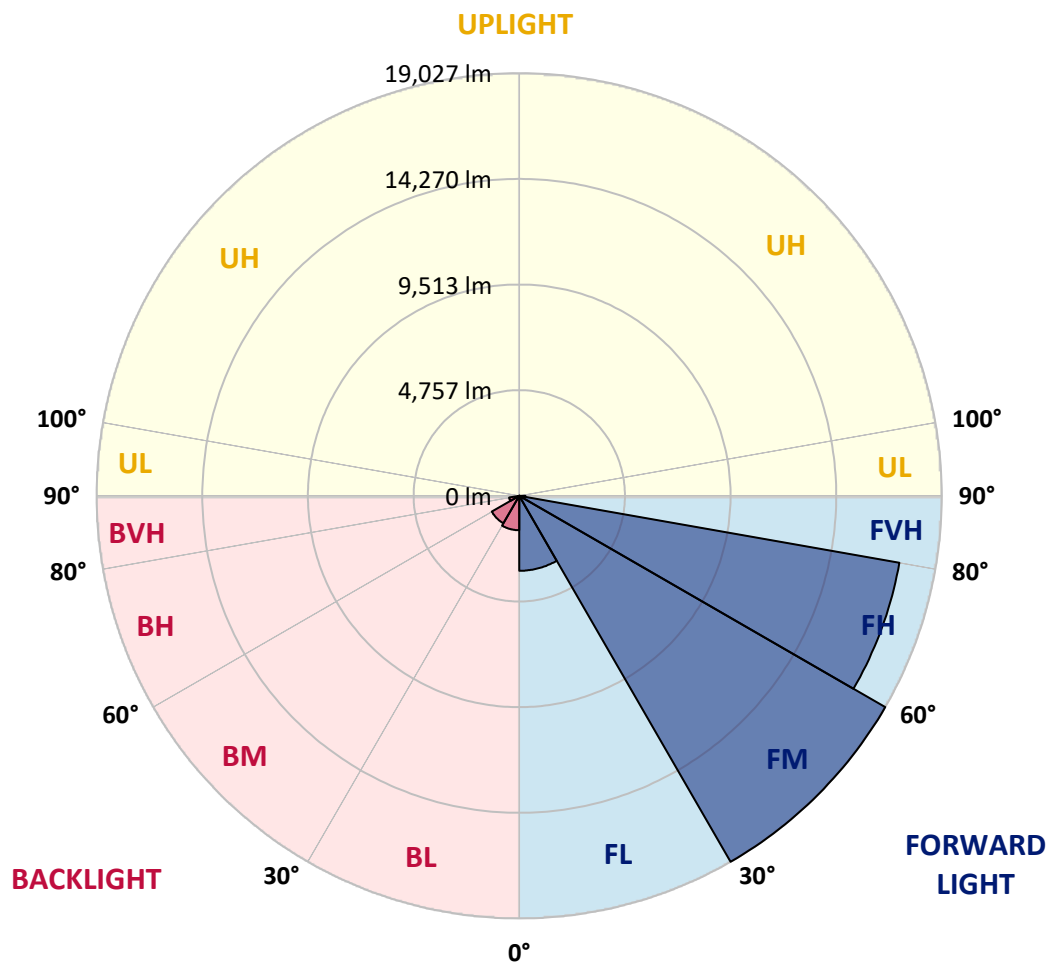
CATALOG NUMBER: GLEON-SA0B-760-U-T3R-HSS

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

| Zone |             | Lumens  | % Fixture | Zone Rating/Lumen Limit |      |        |
|------|-------------|---------|-----------|-------------------------|------|--------|
|      |             |         |           | B                       | U    | G      |
| FL   | (0°-30°)    | 3375.2  | 7.8       |                         |      |        |
| FM   | (30°-60°)   | 19026.5 | 43.7      |                         |      |        |
| FH   | (60°-80°)   | 17376.2 | 39.9      |                         |      | G5     |
| FVH  | (80°-90°)   | 280.0   | 0.6       |                         |      | G3/500 |
| BL   | (0°-30°)    | 1550.2  | 3.6       | B3/2500                 |      |        |
| BM   | (30°-60°)   | 1428.0  | 3.3       | B2/2500                 |      |        |
| BH   | (60°-80°)   | 461.4   | 1.1       | B1/500                  |      | G1/500 |
| BVH  | (80°-90°)   | 4.5     | 0.0       |                         |      | G0/10  |
| UL   | (90°-100°)  | 0.0     | 0.0       |                         | U0/0 |        |
| UH   | (100°-180°) | 0.0     | 0.0       |                         | U0/0 |        |

**BUG Rating: B3-U0-G5**

Type III Medium





REPORT NUMBER: P321684

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**CANDELA DISTRIBUTION (FULL):**

|       | 0°      | 5°      | 15°     | 25°     | 35°     | 45°     | 54°     | 55°     | 65°     | 75°     | 85°     |
|-------|---------|---------|---------|---------|---------|---------|---------|---------|---------|---------|---------|
| 0°    | 8389.5  | 8389.5  | 8389.5  | 8389.5  | 8389.5  | 8389.5  | 8389.5  | 8389.5  | 8389.5  | 8389.5  | 8389.5  |
| 2.5°  | 8143.4  | 8153.2  | 8188.3  | 8204.0  | 8241.1  | 8303.6  | 8334.8  | 8336.8  | 8387.6  | 8407.1  | 8422.7  |
| 5°    | 7567.2  | 7625.8  | 7684.4  | 7746.9  | 7860.2  | 8010.6  | 8159.0  | 8172.7  | 8336.8  | 8457.9  | 8522.3  |
| 7.5°  | 7071.0  | 7123.8  | 7194.1  | 7293.7  | 7453.9  | 7690.2  | 7938.3  | 7967.6  | 8278.2  | 8553.6  | 8698.1  |
| 10°   | 6561.2  | 6604.2  | 6705.8  | 6852.3  | 7073.0  | 7389.4  | 7723.4  | 7772.3  | 8225.4  | 8682.5  | 8936.4  |
| 12.5° | 6016.2  | 6041.6  | 6164.7  | 6375.6  | 6699.9  | 7102.3  | 7541.8  | 7606.2  | 8192.2  | 8831.0  | 9217.7  |
| 15°   | 5602.1  | 5613.8  | 5731.0  | 5949.8  | 6320.9  | 6844.4  | 7401.1  | 7479.3  | 8200.0  | 9008.7  | 9524.4  |
| 17.5° | 5496.6  | 5502.5  | 5565.0  | 5715.4  | 6043.6  | 6613.9  | 7289.8  | 7385.5  | 8223.5  | 9182.6  | 9833.0  |
| 20°   | 5924.4  | 5883.4  | 5818.9  | 5795.5  | 5936.1  | 6475.3  | 7223.4  | 7330.8  | 8254.7  | 9336.9  | 10110.4 |
| 22.5° | 7098.4  | 6977.3  | 6709.7  | 6352.2  | 6135.4  | 6485.0  | 7241.0  | 7348.4  | 8354.4  | 9526.4  | 10430.7 |
| 25°   | 8840.7  | 8672.7  | 8217.6  | 7514.4  | 6838.6  | 6766.3  | 7387.5  | 7496.8  | 8547.7  | 9752.9  | 10737.4 |
| 27.5° | 10823.4 | 10657.3 | 10100.6 | 9096.6  | 7944.2  | 7323.0  | 7723.4  | 7825.0  | 8834.9  | 9954.1  | 10971.8 |
| 30°   | 12722.0 | 12675.1 | 12018.8 | 10878.0 | 9334.9  | 8225.4  | 8157.1  | 8243.0  | 9047.8  | 10075.2 | 11157.4 |
| 32.5° | 14331.5 | 14257.3 | 13729.9 | 12620.4 | 10926.9 | 9309.5  | 8666.9  | 8692.3  | 9208.0  | 10231.5 | 11399.6 |
| 35°   | 15823.9 | 15732.1 | 15269.1 | 14220.2 | 12559.9 | 10633.9 | 9452.1  | 9415.0  | 9557.6  | 10546.0 | 11751.2 |
| 37.5° | 17126.7 | 17210.7 | 16697.0 | 15698.8 | 14024.8 | 12011.0 | 10510.8 | 10399.5 | 10104.5 | 11057.8 | 12261.0 |
| 40°   | 18216.7 | 18216.7 | 17949.1 | 17117.0 | 15607.0 | 13434.9 | 11708.2 | 11561.7 | 10926.9 | 11846.9 | 12907.5 |
| 42.5° | 18609.3 | 18693.3 | 18792.9 | 18322.2 | 17023.2 | 14915.6 | 13042.3 | 12890.0 | 12085.2 | 12966.1 | 13724.0 |
| 45°   | 18632.7 | 18765.6 | 19275.4 | 19273.4 | 18302.6 | 16386.4 | 14546.4 | 14474.1 | 13569.7 | 14403.8 | 14735.9 |
| 47.5° | 18302.6 | 18468.7 | 19308.6 | 19785.2 | 19316.4 | 17755.7 | 16191.1 | 16101.2 | 15314.0 | 16165.7 | 15794.6 |
| 50°   | 17792.8 | 17976.4 | 18953.1 | 19986.4 | 20005.9 | 18947.2 | 17923.7 | 17788.9 | 17234.2 | 18179.6 | 16888.4 |
| 52.5° | 16880.6 | 17236.1 | 18634.7 | 20033.3 | 20459.1 | 19976.6 | 19572.3 | 19513.7 | 19382.8 | 20119.2 | 17759.6 |
| 55°   | 14929.2 | 15323.8 | 17835.8 | 20048.9 | 20879.1 | 20888.8 | 21117.4 | 21133.0 | 21396.7 | 21931.9 | 18408.1 |
| 57.5° | 14007.3 | 14229.9 | 16441.1 | 20123.1 | 21502.2 | 21924.1 | 22691.7 | 22812.8 | 23221.1 | 23652.8 | 19148.4 |
| 60°   | 13427.1 | 13690.8 | 15753.5 | 20021.5 | 22480.8 | 23281.6 | 24150.9 | 24191.9 | 24629.4 | 25428.3 | 20150.5 |
| 62.5° | 12964.2 | 13224.0 | 15319.9 | 19630.9 | 23580.5 | 24914.6 | 25576.8 | 25580.7 | 25908.9 | 27543.8 | 21289.3 |
| 65°   | 11821.5 | 12040.3 | 14442.9 | 19191.4 | 24307.1 | 26530.0 | 27233.2 | 27207.8 | 27475.4 | 29774.5 | 22611.7 |
| 67.5° | 10169.0 | 10337.0 | 12651.7 | 17525.2 | 24033.7 | 27998.9 | 29733.5 | 29649.5 | 29325.2 | 31702.4 | 23131.2 |
| 70°   | 7862.1  | 7922.7  | 9971.7  | 14605.0 | 21470.9 | 28563.4 | 32149.7 | 32106.7 | 30460.1 | 31356.7 | 21226.7 |
| 71°   | 6498.7  | 6697.9  | 8788.0  | 12890.0 | 19753.9 | 28041.9 | 32384.1 | 32409.5 | 30174.9 | 30415.2 | 19916.1 |
| 72.5° | 3773.8  | 3943.8  | 6369.8  | 9899.4  | 16771.2 | 25865.9 | 31169.2 | 31352.8 | 28842.7 | 27664.9 | 17011.5 |
| 75°   | 808.7   | 865.3   | 2361.6  | 4791.5  | 9225.5  | 18128.8 | 24602.1 | 25256.4 | 23508.2 | 18820.3 | 10253.0 |
| 77.5° | 562.6   | 607.5   | 1011.8  | 2174.0  | 3049.1  | 8957.9  | 15282.8 | 16021.1 | 14044.4 | 7073.0  | 3281.6  |
| 80°   | 445.4   | 496.1   | 789.1   | 1074.3  | 824.3   | 2889.0  | 7158.9  | 7610.1  | 4684.1  | 1578.3  | 552.8   |
| 82.5° | 248.1   | 295.0   | 615.3   | 580.1   | 316.4   | 548.9   | 2004.1  | 2265.9  | 937.6   | 318.4   | 130.9   |
| 85°   | 72.3    | 87.9    | 396.5   | 421.9   | 134.8   | 105.5   | 341.8   | 423.9   | 177.8   | 84.0    | 58.6    |
| 87.5° | 0.0     | 0.0     | 191.4   | 162.1   | 39.1    | 15.6    | 31.3    | 35.2    | 35.2    | 35.2    | 39.1    |
| 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: P321684

CATALOG NUMBER: GLEON-SA0B-760-U-T3R-HSS

**CANDELA DISTRIBUTION (continued):**

|       | 90°     | 95°    | 105°   | 115°   | 125°   | 135°   | 145°   | 155°   | 165°   | 175°   | 180°   |
|-------|---------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|
| 0°    | 8389.5  | 8389.5 | 8389.5 | 8389.5 | 8389.5 | 8389.5 | 8389.5 | 8389.5 | 8389.5 | 8389.5 | 8389.5 |
| 2.5°  | 8422.7  | 8436.4 | 8387.6 | 8323.1 | 8254.7 | 8170.7 | 8082.8 | 8014.5 | 8012.5 | 7979.3 | 7946.1 |
| 5°    | 8526.2  | 8518.4 | 8383.7 | 8178.6 | 7936.3 | 7684.4 | 7444.1 | 7172.6 | 7082.7 | 6971.4 | 6934.3 |
| 7.5°  | 8717.7  | 8663.0 | 8377.8 | 7928.5 | 7397.2 | 6869.8 | 6324.9 | 5776.0 | 5541.6 | 5330.6 | 5293.5 |
| 10°   | 8957.9  | 8854.4 | 8340.7 | 7553.5 | 6578.8 | 5606.0 | 4783.7 | 4037.5 | 3709.4 | 3457.4 | 3445.7 |
| 12.5° | 9208.0  | 9049.7 | 8237.2 | 6987.0 | 5506.4 | 4139.1 | 3191.7 | 2457.3 | 2183.8 | 2008.0 | 2023.6 |
| 15°   | 9469.7  | 9233.4 | 8014.5 | 6223.3 | 4285.6 | 2808.9 | 1961.1 | 1529.5 | 1420.1 | 1375.1 | 1386.9 |
| 17.5° | 9737.3  | 9360.3 | 7703.9 | 5303.3 | 3080.4 | 1812.7 | 1357.6 | 1236.5 | 1236.5 | 1246.2 | 1250.1 |
| 20°   | 9969.8  | 9428.7 | 7246.8 | 4271.9 | 2088.1 | 1320.4 | 1187.6 | 1170.0 | 1179.8 | 1195.4 | 1197.4 |
| 22.5° | 10200.2 | 9432.6 | 6651.1 | 3226.9 | 1461.1 | 1156.4 | 1131.0 | 1123.2 | 1129.0 | 1146.6 | 1148.6 |
| 25°   | 10387.8 | 9385.7 | 5904.9 | 2295.2 | 1166.1 | 1090.0 | 1078.2 | 1074.3 | 1078.2 | 1099.7 | 1099.7 |
| 27.5° | 10463.9 | 9215.8 | 4994.6 | 1613.4 | 1045.0 | 1015.7 | 1011.8 | 1015.7 | 1021.6 | 1037.2 | 1039.2 |
| 30°   | 10471.8 | 8918.9 | 4002.4 | 1168.1 | 947.4  | 916.1  | 923.9  | 937.6  | 931.7  | 927.8  | 931.7  |
| 32.5° | 10491.3 | 8575.1 | 3035.5 | 961.0  | 865.3  | 816.5  | 806.7  | 806.7  | 783.3  | 769.6  | 761.8  |
| 35°   | 10555.8 | 8170.7 | 2201.4 | 863.4  | 781.3  | 724.7  | 687.6  | 644.6  | 599.7  | 576.2  | 570.4  |
| 37.5° | 10657.3 | 7746.9 | 1576.3 | 798.9  | 707.1  | 642.6  | 572.3  | 496.1  | 431.7  | 414.1  | 414.1  |
| 40°   | 10842.9 | 7309.3 | 1166.1 | 748.1  | 648.5  | 568.4  | 462.9  | 363.3  | 304.7  | 295.0  | 295.0  |
| 42.5° | 11135.9 | 6848.3 | 929.8  | 703.2  | 597.7  | 492.2  | 353.6  | 263.7  | 220.7  | 214.9  | 212.9  |
| 45°   | 11440.6 | 6340.5 | 812.6  | 660.2  | 543.0  | 404.3  | 261.7  | 195.3  | 169.9  | 164.1  | 164.1  |
| 47.5° | 11745.3 | 5799.4 | 755.9  | 619.2  | 490.3  | 314.5  | 195.3  | 154.3  | 142.6  | 142.6  | 144.5  |
| 50°   | 12003.2 | 5234.9 | 714.9  | 574.3  | 421.9  | 238.3  | 154.3  | 130.9  | 127.0  | 134.8  | 136.7  |
| 52.5° | 12067.6 | 4680.2 | 664.1  | 517.6  | 337.9  | 181.7  | 127.0  | 115.2  | 115.2  | 115.2  | 115.2  |
| 55°   | 12028.6 | 4250.4 | 597.7  | 447.3  | 250.0  | 144.5  | 109.4  | 101.6  | 99.6   | 99.6   | 99.6   |
| 57.5° | 12161.4 | 3996.5 | 478.6  | 347.7  | 179.7  | 117.2  | 95.7   | 89.9   | 85.9   | 84.0   | 84.0   |
| 60°   | 12429.0 | 3830.5 | 341.8  | 250.0  | 134.8  | 97.7   | 82.0   | 76.2   | 70.3   | 66.4   | 66.4   |
| 62.5° | 12784.5 | 3685.9 | 253.9  | 185.6  | 103.5  | 78.1   | 68.4   | 62.5   | 54.7   | 50.8   | 50.8   |
| 65°   | 13058.0 | 3428.1 | 193.4  | 138.7  | 78.1   | 62.5   | 52.7   | 50.8   | 39.1   | 35.2   | 33.2   |
| 67.5° | 12639.9 | 2861.6 | 156.3  | 101.6  | 58.6   | 48.8   | 41.0   | 39.1   | 23.4   | 19.5   | 19.5   |
| 70°   | 10840.9 | 1992.4 | 125.0  | 74.2   | 43.0   | 39.1   | 33.2   | 25.4   | 17.6   | 15.6   | 15.6   |
| 71°   | 9831.1  | 1664.2 | 113.3  | 62.5   | 37.1   | 37.1   | 31.3   | 21.5   | 15.6   | 13.7   | 13.7   |
| 72.5° | 8166.8  | 1181.8 | 95.7   | 48.8   | 33.2   | 39.1   | 33.2   | 19.5   | 15.6   | 13.7   | 11.7   |
| 75°   | 4740.7  | 494.2  | 66.4   | 33.2   | 25.4   | 46.9   | 43.0   | 17.6   | 11.7   | 9.8    | 9.8    |
| 77.5° | 1425.9  | 181.7  | 37.1   | 21.5   | 19.5   | 41.0   | 48.8   | 15.6   | 5.9    | 2.0    | 2.0    |
| 80°   | 259.8   | 78.1   | 23.4   | 13.7   | 13.7   | 25.4   | 37.1   | 7.8    | 0.0    | 0.0    | 0.0    |
| 82.5° | 91.8    | 39.1   | 13.7   | 7.8    | 5.9    | 11.7   | 17.6   | 0.0    | 0.0    | 0.0    | 0.0    |
| 85°   | 52.7    | 27.3   | 7.8    | 3.9    | 0.0    | 2.0    | 3.9    | 0.0    | 0.0    | 0.0    | 0.0    |
| 87.5° | 35.2    | 7.8    | 0.0    | 0.0    | 0.0    | 0.0    | 0.0    | 0.0    | 0.0    | 0.0    | 0.0    |
| 90°   | 0.0     | 0.0    | 0.0    | 0.0    | 0.0    | 0.0    | 0.0    | 0.0    | 0.0    | 0.0    | 0.0    |

LM-79-2008: Approved Method: Electrical and Photometric Measurements of Solid-State Lighting Products

Report Prepared for

Cooper Lighting Solutions

McGRAW-EDISON

Report Number: SP1-1908-441-9-R4

Test Date: 10/23/2019

Luminaire Tested: SA1C-760-U-5WQ

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

### Test Information

Test Method: LM-79-2008  
 Report Number: SP1-1908-441-9-R4  
 Test Lab: COOPER LIGHTING SOLUTIONS  
 Photometer: SP1 - 76IN SPHERE  
 Measurement Geometry:  $4\pi$   
 Issue Date: 10/28/2024  
 Manufacturer: COOPER LIGHTING SOLUTIONS  
 Product Line: MCGRAW-EDISON  
 Catalog Number: **SA1C-760-U-5WQ**  
 Description: MCGRAW EDISON ROADWAY AND AREA LUMINAIRE

\*\*\*THIS IS A REVISION OF SP1-1908-441-4-R3. TO UPDATE THE CATALOG INFORMATION.\*\*\*TESTED IN SITU. ROADWAY AND AREA LUMINAIRE. (1) 70 CRI, 5000K, 1050MA LIGHTSQUARE WITH 16 LEDS AND TYPE V WIDE OPTICS.

### Spectral Parameters

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



### Test Conditions

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

REPORT NUMBER: SP1-1908-441-9-R4

| Measurement and Test Equipment |                       |                  |                      |
|--------------------------------|-----------------------|------------------|----------------------|
| Instrument                     | Identification Number | Calibration Date | Calibration Due Date |
| Photometer                     | IN0058                | 6/28/2019        | 12/28/2019           |
| Power Meter                    | IN0071                | 12/5/2018        | 12/5/2019            |
| AC Power Source                | IN0063                | 12/5/2018        | 12/5/2019            |
| DC Power Source                | IN0208                | 12/5/2018        | 12/5/2019            |
| Sphere Thermometer             | IN0085                | 12/5/2018        | 12/5/2019            |
| Room Thermometer               | IN0046                | 12/5/2018        | 12/5/2019            |

REPORT NUMBER: SP1-1908-441-9-R4

CIE 1931 Chromaticity Diagram



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



Point lies inside the ANSI 5700K 4-step quadrangle

REPORT NUMBER: SP1-1908-441-9-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       | 3540             | NR               | 490       | 33363            | NR               | 620       | 80193            | NR               | 750       | 4663             | NR               | 880       | 4678             | NR               |
| 365       | 2862             | NR               | 495       | 44177            | NR               | 625       | 73091            | NR               | 755       | 4147             | NR               | 885       | 4128             | NR               |
| 370       | 2865             | NR               | 500       | 57019            | NR               | 630       | 66269            | NR               | 760       | 4040             | NR               | 890       | 4504             | NR               |
| 375       | 3254             | NR               | 505       | 70030            | NR               | 635       | 60012            | NR               | 765       | 3474             | NR               | 895       | 4371             | NR               |
| 380       | 3076             | NR               | 510       | 81972            | NR               | 640       | 53914            | NR               | 770       | 3469             | NR               | 900       | 4082             | NR               |
| 385       | 2904             | NR               | 515       | 92590            | NR               | 645       | 48385            | NR               | 775       | 3181             | NR               | 905       | 2982             | NR               |
| 390       | 2689             | NR               | 520       | 100305           | NR               | 650       | 43219            | NR               | 780       | 2969             | NR               | 910       | 4351             | NR               |
| 395       | 2619             | NR               | 525       | 107452           | NR               | 655       | 38562            | NR               | 785       | 3132             | NR               | 915       | 3365             | NR               |
| 400       | 2679             | NR               | 530       | 111373           | NR               | 660       | 34110            | NR               | 790       | 2507             | NR               | 920       | 3430             | NR               |
| 405       | 3515             | NR               | 535       | 114505           | NR               | 665       | 30085            | NR               | 795       | 2968             | NR               | 925       | 4264             | NR               |
| 410       | 6934             | NR               | 540       | 116408           | NR               | 670       | 26205            | NR               | 800       | 2758             | NR               | 930       | 4095             | NR               |
| 415       | 14943            | NR               | 545       | 118700           | NR               | 675       | 22906            | NR               | 805       | 2872             | NR               | 935       | 5048             | NR               |
| 420       | 31939            | NR               | 550       | 119209           | NR               | 680       | 20058            | NR               | 810       | 3094             | NR               | 940       | 4074             | NR               |
| 425       | 64701            | NR               | 555       | 120742           | NR               | 685       | 17413            | NR               | 815       | 3222             | NR               | 945       | 4949             | NR               |
| 430       | 110939           | NR               | 560       | 121594           | NR               | 690       | 15447            | NR               | 820       | 3238             | NR               | 950       | 4387             | NR               |
| 435       | 164597           | NR               | 565       | 121913           | NR               | 695       | 13398            | NR               | 825       | 3524             | NR               | 955       | 4978             | NR               |
| 440       | 207696           | NR               | 570       | 122147           | NR               | 700       | 11777            | NR               | 830       | 2921             | NR               | 960       | 4706             | NR               |
| 445       | 201830           | NR               | 575       | 121605           | NR               | 705       | 10412            | NR               | 835       | 3595             | NR               | 965       | 5083             | NR               |
| 450       | 145410           | NR               | 580       | 120248           | NR               | 710       | 9544             | NR               | 840       | 3016             | NR               | 970       | 4522             | NR               |
| 455       | 89594            | NR               | 585       | 117717           | NR               | 715       | 8940             | NR               | 845       | 4032             | NR               | 975       | 4740             | NR               |
| 460       | 58321            | NR               | 590       | 114359           | NR               | 720       | 7897             | NR               | 850       | 3579             | NR               | 980       | 6122             | NR               |
| 465       | 39318            | NR               | 595       | 109974           | NR               | 725       | 7045             | NR               | 855       | 4571             | NR               | 985       | 6450             | NR               |
| 470       | 27693            | NR               | 600       | 105269           | NR               | 730       | 6483             | NR               | 860       | 4485             | NR               | 990       | 4875             | NR               |
| 475       | 23081            | NR               | 605       | 99453            | NR               | 735       | 5838             | NR               | 865       | 3978             | NR               | 995       | 4764             | NR               |
| 480       | 23002            | NR               | 610       | 92921            | NR               | 740       | 5261             | NR               | 870       | 4298             | NR               | 1000      | 3640             | NR               |
| 485       | 26201            | NR               | 615       | 86989            | NR               | 745       | 4760             | NR               | 875       | 4356             | NR               |           |                  |                  |

REPORT NUMBER: SP1-1908-441-9-R4

Scotopic Flux vs. Wavelength



Scotopic Lumens: 13759.3

S/P: 1.85

| λ<br>(nm) | Power<br>(μW/nm) | Lumens<br>(Φ/nm) | λ<br>(nm) | Power<br>(μW/nm) | Lumens<br>(Φ/nm) | λ<br>(nm) | Power<br>(μW/nm) | Lumens<br>(Φ/nm) | λ<br>(nm) | Power<br>(μW/nm) | Lumens<br>(Φ/nm) | λ<br>(nm) | Power<br>(μW/nm) | Lumens<br>(Φ/nm) |
|-----------|------------------|------------------|-----------|------------------|------------------|-----------|------------------|------------------|-----------|------------------|------------------|-----------|------------------|------------------|
| 360       | 3540             | NR               | 490       | 33363            | NR               | 620       | 80193            | NR               | 750       | 4663             | NR               | 880       | 4678             | NR               |
| 365       | 2862             | NR               | 495       | 44177            | NR               | 625       | 73091            | NR               | 755       | 4147             | NR               | 885       | 4128             | NR               |
| 370       | 2865             | NR               | 500       | 57019            | NR               | 630       | 66269            | NR               | 760       | 4040             | NR               | 890       | 4504             | NR               |
| 375       | 3254             | NR               | 505       | 70030            | NR               | 635       | 60012            | NR               | 765       | 3474             | NR               | 895       | 4371             | NR               |
| 380       | 3076             | NR               | 510       | 81972            | NR               | 640       | 53914            | NR               | 770       | 3469             | NR               | 900       | 4082             | NR               |
| 385       | 2904             | NR               | 515       | 92590            | NR               | 645       | 48385            | NR               | 775       | 3181             | NR               | 905       | 2982             | NR               |
| 390       | 2689             | NR               | 520       | 100305           | NR               | 650       | 43219            | NR               | 780       | 2969             | NR               | 910       | 4351             | NR               |
| 395       | 2619             | NR               | 525       | 107452           | NR               | 655       | 38562            | NR               | 785       | 3132             | NR               | 915       | 3365             | NR               |
| 400       | 2679             | NR               | 530       | 111373           | NR               | 660       | 34110            | NR               | 790       | 2507             | NR               | 920       | 3430             | NR               |
| 405       | 3515             | NR               | 535       | 114505           | NR               | 665       | 30085            | NR               | 795       | 2968             | NR               | 925       | 4264             | NR               |
| 410       | 6934             | NR               | 540       | 116408           | NR               | 670       | 26205            | NR               | 800       | 2758             | NR               | 930       | 4095             | NR               |
| 415       | 14943            | NR               | 545       | 118700           | NR               | 675       | 22906            | NR               | 805       | 2872             | NR               | 935       | 5048             | NR               |
| 420       | 31939            | NR               | 550       | 119209           | NR               | 680       | 20058            | NR               | 810       | 3094             | NR               | 940       | 4074             | NR               |
| 425       | 64701            | NR               | 555       | 120742           | NR               | 685       | 17413            | NR               | 815       | 3222             | NR               | 945       | 4949             | NR               |
| 430       | 110939           | NR               | 560       | 121594           | NR               | 690       | 15447            | NR               | 820       | 3238             | NR               | 950       | 4387             | NR               |
| 435       | 164597           | NR               | 565       | 121913           | NR               | 695       | 13398            | NR               | 825       | 3524             | NR               | 955       | 4978             | NR               |
| 440       | 207696           | NR               | 570       | 122147           | NR               | 700       | 11777            | NR               | 830       | 2921             | NR               | 960       | 4706             | NR               |
| 445       | 201830           | NR               | 575       | 121605           | NR               | 705       | 10412            | NR               | 835       | 3595             | NR               | 965       | 5083             | NR               |
| 450       | 145410           | NR               | 580       | 120248           | NR               | 710       | 9544             | NR               | 840       | 3016             | NR               | 970       | 4522             | NR               |
| 455       | 89594            | NR               | 585       | 117717           | NR               | 715       | 8940             | NR               | 845       | 4032             | NR               | 975       | 4740             | NR               |
| 460       | 58321            | NR               | 590       | 114359           | NR               | 720       | 7897             | NR               | 850       | 3579             | NR               | 980       | 6122             | NR               |
| 465       | 39318            | NR               | 595       | 109974           | NR               | 725       | 7045             | NR               | 855       | 4571             | NR               | 985       | 6450             | NR               |
| 470       | 27693            | NR               | 600       | 105269           | NR               | 730       | 6483             | NR               | 860       | 4485             | NR               | 990       | 4875             | NR               |
| 475       | 23081            | NR               | 605       | 99453            | NR               | 735       | 5838             | NR               | 865       | 3978             | NR               | 995       | 4764             | NR               |
| 480       | 23002            | NR               | 610       | 92921            | NR               | 740       | 5261             | NR               | 870       | 4298             | NR               | 1000      | 3640             | NR               |
| 485       | 26201            | NR               | 615       | 86989            | NR               | 745       | 4760             | NR               | 875       | 4356             | NR               |           |                  |                  |

REPORT NUMBER: SP1-1908-441-9-R4

**Melanopic Flux vs. Wavelength**



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

| λ<br>(nm) | Power<br>(μW/nm) | Lumens<br>(φ/nm) | λ<br>(nm) | Power<br>(μW/nm) | Lumens<br>(φ/nm) | λ<br>(nm) | Power<br>(μW/nm) | Lumens<br>(φ/nm) | λ<br>(nm) | Power<br>(μW/nm) | Lumens<br>(φ/nm) | λ<br>(nm) | Power<br>(μW/nm) | Lumens<br>(φ/nm) |
|-----------|------------------|------------------|-----------|------------------|------------------|-----------|------------------|------------------|-----------|------------------|------------------|-----------|------------------|------------------|
| 360       | 3540             | NR               | 490       | 33363            | NR               | 620       | 80193            | NR               | 750       | 4663             | NR               | 880       | 4678             | NR               |
| 365       | 2862             | NR               | 495       | 44177            | NR               | 625       | 73091            | NR               | 755       | 4147             | NR               | 885       | 4128             | NR               |
| 370       | 2865             | NR               | 500       | 57019            | NR               | 630       | 66269            | NR               | 760       | 4040             | NR               | 890       | 4504             | NR               |
| 375       | 3254             | NR               | 505       | 70030            | NR               | 635       | 60012            | NR               | 765       | 3474             | NR               | 895       | 4371             | NR               |
| 380       | 3076             | NR               | 510       | 81972            | NR               | 640       | 53914            | NR               | 770       | 3469             | NR               | 900       | 4082             | NR               |
| 385       | 2904             | NR               | 515       | 92590            | NR               | 645       | 48385            | NR               | 775       | 3181             | NR               | 905       | 2982             | NR               |
| 390       | 2689             | NR               | 520       | 100305           | NR               | 650       | 43219            | NR               | 780       | 2969             | NR               | 910       | 4351             | NR               |
| 395       | 2619             | NR               | 525       | 107452           | NR               | 655       | 38562            | NR               | 785       | 3132             | NR               | 915       | 3365             | NR               |
| 400       | 2679             | NR               | 530       | 111373           | NR               | 660       | 34110            | NR               | 790       | 2507             | NR               | 920       | 3430             | NR               |
| 405       | 3515             | NR               | 535       | 114505           | NR               | 665       | 30085            | NR               | 795       | 2968             | NR               | 925       | 4264             | NR               |
| 410       | 6934             | NR               | 540       | 116408           | NR               | 670       | 26205            | NR               | 800       | 2758             | NR               | 930       | 4095             | NR               |
| 415       | 14943            | NR               | 545       | 118700           | NR               | 675       | 22906            | NR               | 805       | 2872             | NR               | 935       | 5048             | NR               |
| 420       | 31939            | NR               | 550       | 119209           | NR               | 680       | 20058            | NR               | 810       | 3094             | NR               | 940       | 4074             | NR               |
| 425       | 64701            | NR               | 555       | 120742           | NR               | 685       | 17413            | NR               | 815       | 3222             | NR               | 945       | 4949             | NR               |
| 430       | 110939           | NR               | 560       | 121594           | NR               | 690       | 15447            | NR               | 820       | 3238             | NR               | 950       | 4387             | NR               |
| 435       | 164597           | NR               | 565       | 121913           | NR               | 695       | 13398            | NR               | 825       | 3524             | NR               | 955       | 4978             | NR               |
| 440       | 207696           | NR               | 570       | 122147           | NR               | 700       | 11777            | NR               | 830       | 2921             | NR               | 960       | 4706             | NR               |
| 445       | 201830           | NR               | 575       | 121605           | NR               | 705       | 10412            | NR               | 835       | 3595             | NR               | 965       | 5083             | NR               |
| 450       | 145410           | NR               | 580       | 120248           | NR               | 710       | 9544             | NR               | 840       | 3016             | NR               | 970       | 4522             | NR               |
| 455       | 89594            | NR               | 585       | 117717           | NR               | 715       | 8940             | NR               | 845       | 4032             | NR               | 975       | 4740             | NR               |
| 460       | 58321            | NR               | 590       | 114359           | NR               | 720       | 7897             | NR               | 850       | 3579             | NR               | 980       | 6122             | NR               |
| 465       | 39318            | NR               | 595       | 109974           | NR               | 725       | 7045             | NR               | 855       | 4571             | NR               | 985       | 6450             | NR               |
| 470       | 27693            | NR               | 600       | 105269           | NR               | 730       | 6483             | NR               | 860       | 4485             | NR               | 990       | 4875             | NR               |
| 475       | 23081            | NR               | 605       | 99453            | NR               | 735       | 5838             | NR               | 865       | 3978             | NR               | 995       | 4764             | NR               |
| 480       | 23002            | NR               | 610       | 92921            | NR               | 740       | 5261             | NR               | 870       | 4298             | NR               | 1000      | 3640             | NR               |
| 485       | 26201            | NR               | 615       | 86989            | NR               | 745       | 4760             | NR               | 875       | 4356             | NR               |           |                  |                  |

REPORT NUMBER: SP1-1908-441-9-R4

**TM-30-18**

**Summary**

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



**Color Vector Graphics**



REPORT NUMBER: SP1-1908-441-9-R4

**TM-30-18**

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

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



REPORT NUMBER: SP1-1908-441-9-R4

**TM-30-18**

Color Rendition by Hue-Angle Bin



REPORT NUMBER: SP1-1908-441-9-R4

**TM-30-18**

**Measure Comparisons**



(END OF REPORT)