

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: P318064

Luminaire Tested: **GLEON-SA0D-730-U-T2**

Issue Date: 3/3/2020

**Test Information**

Test Method: LM-79-08  
Report Number: P318064  
TEST IS SCALED FROM IESNA LM-79-08 TEST DATA (G2-1903-205-12)  
Test Lab: INNOVATION CENTER  
Issue Date: 3/3/2020  
Manufacturer: COOPER LIGHTING SOLUTIONS (FORMERLY EATON)  
Product Line: McGRAW-EDISON  
Catalog Number: GLEON-SA0D-730-U-T2  
Description: GALLEON AREA AND ROADWAY LUMINAIRE  
(10) 70 CRI, 3000K, 1200mA LIGHTSQUARES WITH 16 LEDS EACH AND TYPE II OPTICS  
Light Source: -  
Ballast/Driver: ELECTRONIC DRIVER

**Summary**

Lumens per Lamp: N/A  
Luminaire Lumens: 68634 lumens  
Efficiency: N/A  
Efficacy: 107.2 lumens/watt  
Luminous Opening: Rectangular (W 2.5' x L: 1' x H: 0')  
IES Classification: Type III - Medium  
BUG Rating: B4 - U0 - G5

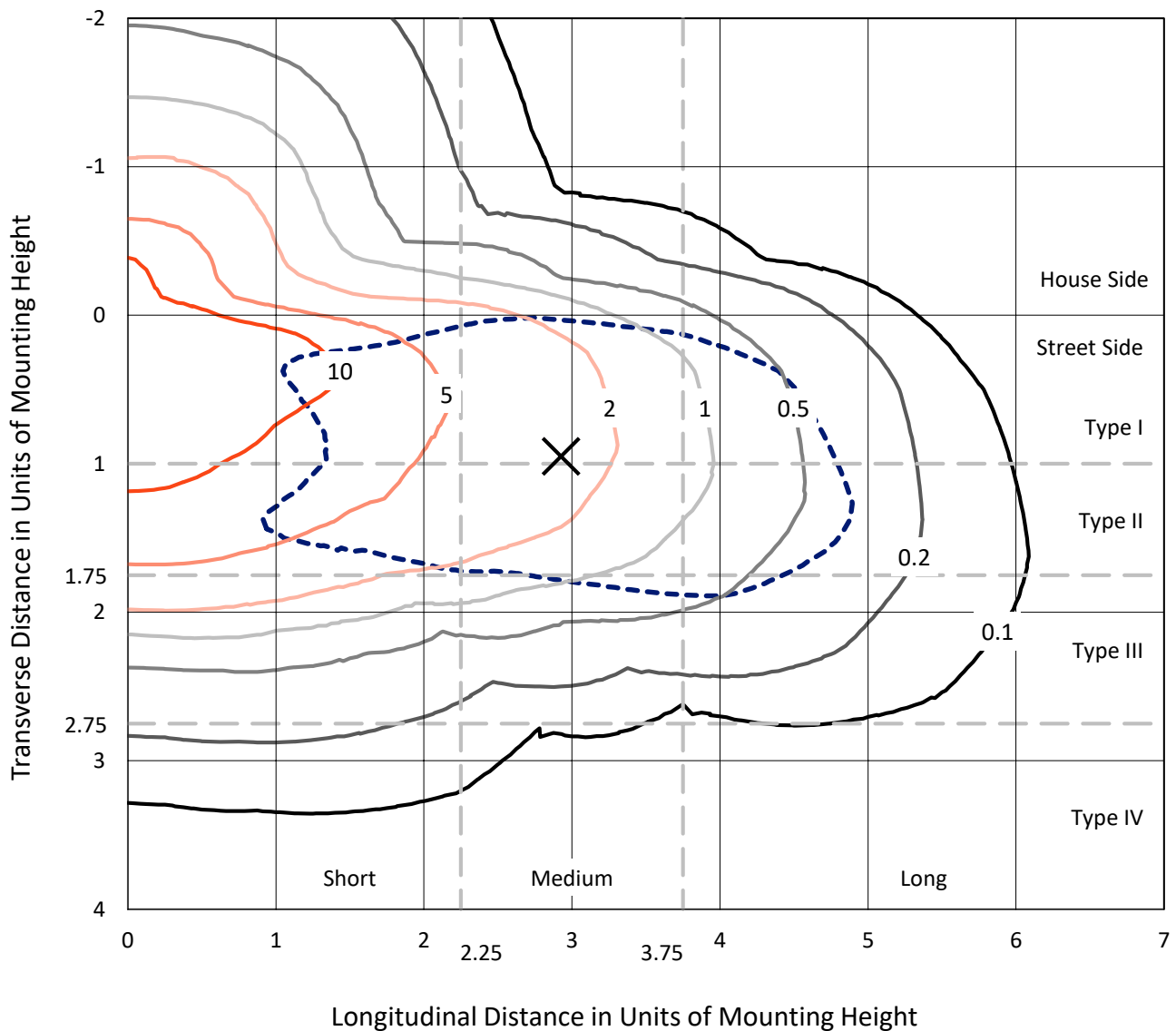
Input Watts (W): 640  
Input Voltage (V): NR  
Input Current (Ain): NR  
Voltage Rise (V): NR  
Power Factor: NR  
Total Harmonic Distortion (THDi): NR  
Frequency (hertz): 60  
Stabilization Time: NR  
Operation Time: NR  
Ambient Temperature (°C): NR  
Test Distance: 24 FT



REPORT NUMBER: P318064  
CATALOG NUMBER: GLEON-SA0D-730-U-T2

## Iso-Footcandle Lines of Horizontal Illumination

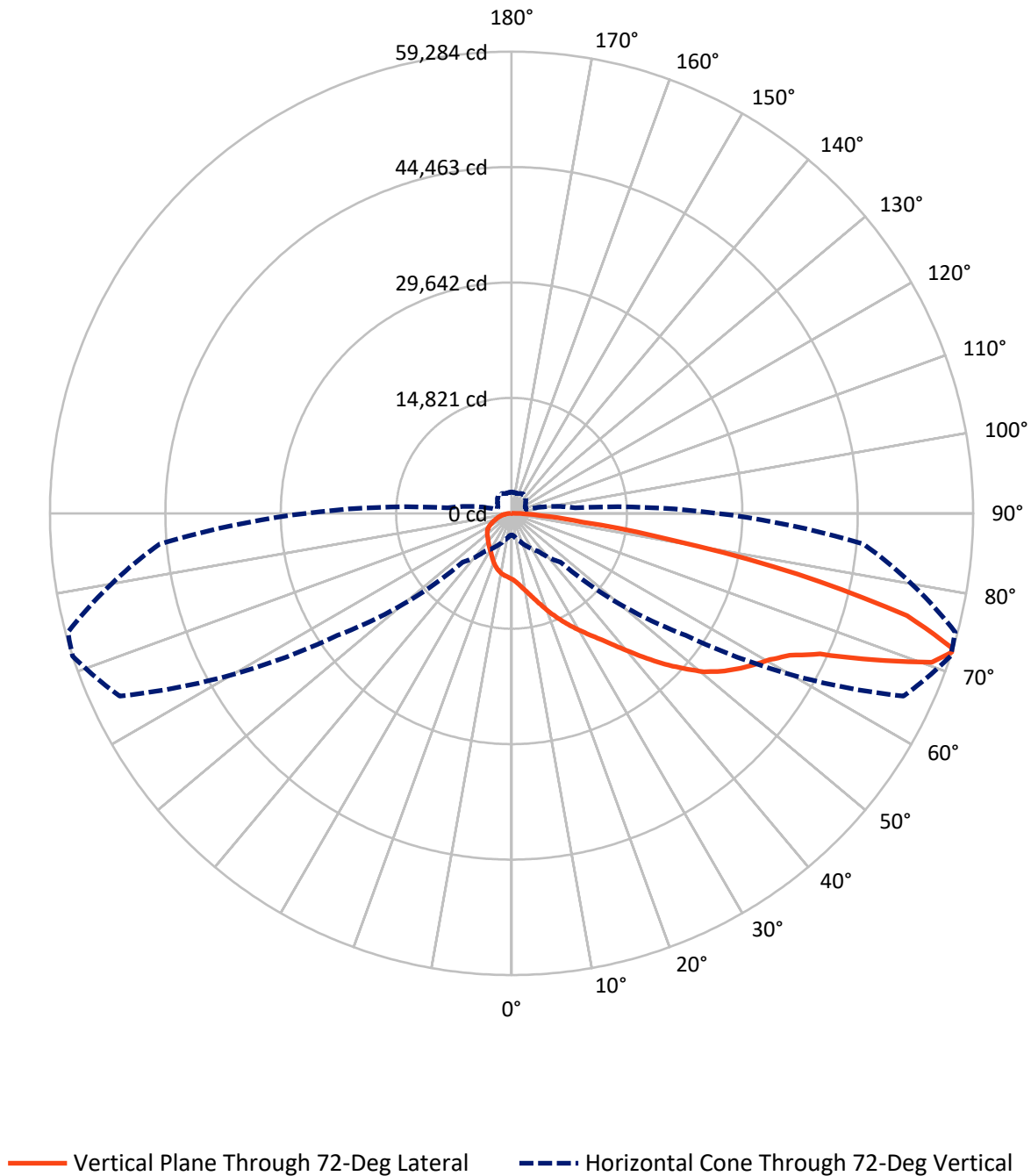
× Max cd  
- - - 1/2 Max cd



Based on 25 foot mounting height. Maximum calculated value = 18.7 fc  
Type III - Medium - N/A

REPORT NUMBER: P318064  
CATALOG NUMBER: GLEON-SA0D-730-U-T2

## Luminous Intensity Polar Plot



REPORT NUMBER: P318064

CATALOG NUMBER: GLEON-SA0D-730-U-T2

**FLUX DISTRIBUTION:**

|                    |           | Downward | Upward | Total   |
|--------------------|-----------|----------|--------|---------|
| <b>House Side</b>  | Lumens    | 12732.1  | 0.0    | 12732.1 |
|                    | % Fixture | 18.6     | 0.0    | 18.6    |
| <b>Street Side</b> | Lumens    | 55901.9  | 0.0    | 55901.9 |
|                    | % Fixture | 81.4     | 0.0    | 81.4    |
| <b>Total</b>       | Lumens    | 68634.0  | 0.0    | 68634.0 |
|                    | % Fixture | 100.0    | 0.0    | 100.0   |

**ZONAL LUMENS:**

| Zone      | Lumens  | % Fixture |
|-----------|---------|-----------|
| 0°-10°    | 846.1   | 1.2       |
| 10°-20°   | 2734.2  | 4.0       |
| 20°-30°   | 4791.1  | 7.0       |
| 30°-40°   | 7103.7  | 10.4      |
| 40°-50°   | 10389.7 | 15.1      |
| 50°-60°   | 14296.2 | 20.8      |
| 60°-70°   | 15915.9 | 23.2      |
| 70°-80°   | 10784.6 | 15.7      |
| 80°-90°   | 1772.5  | 2.6       |
| 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°    | 68634.0 | 100.0     |
| 0°-180°   | 68634.0 | 100.0     |

**Coefficient of Utilization**



REPORT NUMBER: P318064

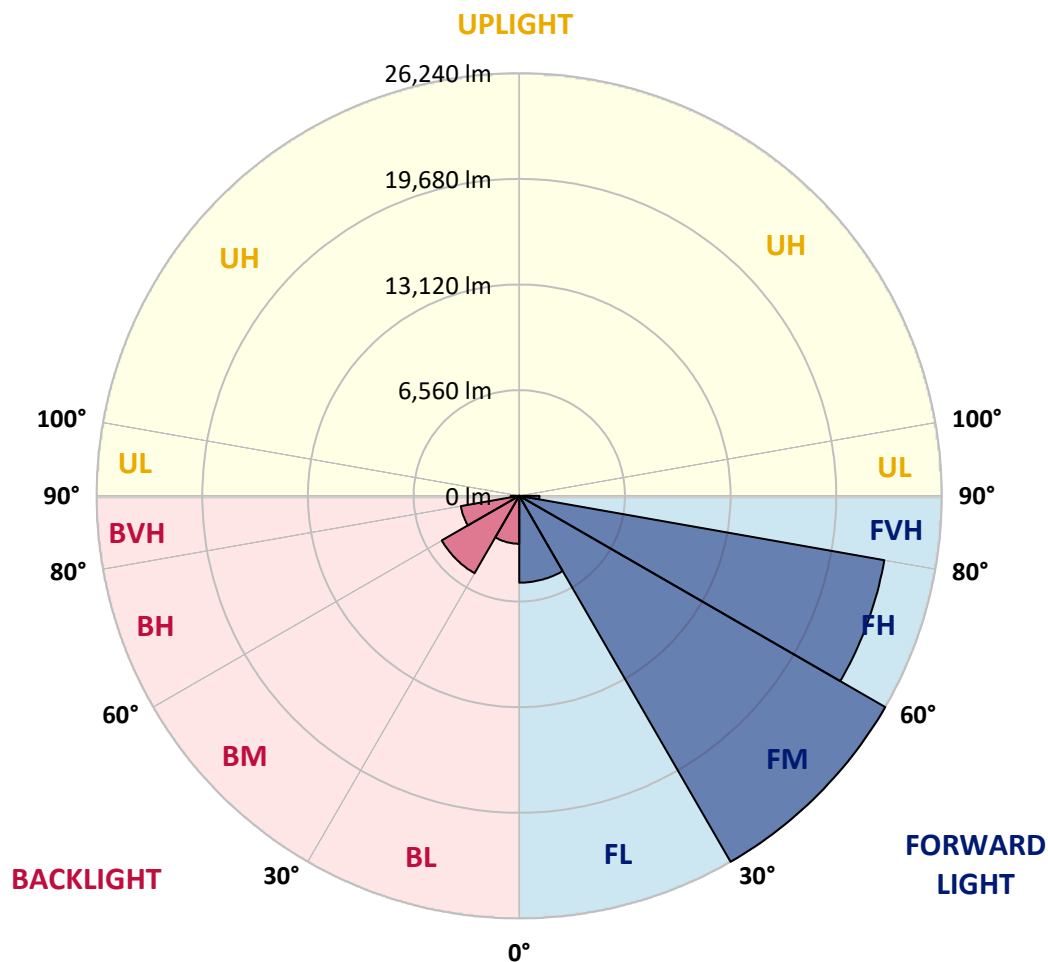
CATALOG NUMBER: GLEON-SA0D-730-U-T2

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

| Zone |             | Lumens  | % Fixture | Zone Rating/Lumen Limit |      |         |
|------|-------------|---------|-----------|-------------------------|------|---------|
|      |             |         |           | B                       | U    | G       |
| FL   | (0°-30°)    | 5395.0  | 7.9       |                         |      |         |
| FM   | (30°-60°)   | 26239.6 | 38.2      |                         |      |         |
| FH   | (60°-80°)   | 23016.9 | 33.5      |                         |      | G5      |
| FVH  | (80°-90°)   | 1250.3  | 1.8       |                         |      | G5      |
| BL   | (0°-30°)    | 2976.3  | 4.3       | B4/5000                 |      |         |
| BM   | (30°-60°)   | 5550.0  | 8.1       | B4/8500                 |      |         |
| BH   | (60°-80°)   | 3683.6  | 5.4       | B4/5000                 |      | G4/5000 |
| BVH  | (80°-90°)   | 522.2   | 0.8       |                         |      | G4/750  |
| UL   | (90°-100°)  | 0.0     | 0.0       |                         | U0/0 |         |
| UH   | (100°-180°) | 0.0     | 0.0       |                         | U0/0 |         |

**BUG Rating: B4-U0-G5**

Type III Medium



REPORT NUMBER: P318064

CATALOG NUMBER: GLEON-SA0D-730-U-T2

**CANDELA DISTRIBUTION (FULL):**

|       | 0°      | 5°      | 15°     | 25°     | 35°     | 45°     | 55°     | 65°     | 72°     | 75°     | 85°     |
|-------|---------|---------|---------|---------|---------|---------|---------|---------|---------|---------|---------|
| 0°    | 8443.8  | 8443.8  | 8443.8  | 8443.8  | 8443.8  | 8443.8  | 8443.8  | 8443.8  | 8443.8  | 8443.8  | 8443.8  |
| 2.5°  | 9327.6  | 9313.4  | 9263.8  | 9263.8  | 9169.3  | 9088.9  | 8937.7  | 8836.1  | 8715.5  | 8673.0  | 8531.2  |
| 5°    | 10230.4 | 10235.1 | 10173.6 | 10131.1 | 9991.7  | 9821.5  | 9563.9  | 9330.0  | 9096.0  | 9001.5  | 8710.8  |
| 7.5°  | 10989.0 | 10979.5 | 10963.0 | 10927.5 | 10797.5 | 10622.7 | 10275.3 | 9927.9  | 9582.8  | 9441.0  | 8940.0  |
| 10°   | 11475.8 | 11497.0 | 11511.2 | 11527.8 | 11473.4 | 11348.2 | 11019.7 | 10596.7 | 10145.3 | 9951.5  | 9214.2  |
| 12.5° | 11721.6 | 11759.4 | 11825.5 | 11939.0 | 12028.8 | 12014.6 | 11775.9 | 11326.9 | 10790.4 | 10547.0 | 9556.8  |
| 15°   | 11865.7 | 11915.3 | 12019.3 | 12222.6 | 12475.4 | 12619.6 | 12555.8 | 12149.3 | 11551.4 | 11251.3 | 9975.1  |
| 17.5° | 11955.5 | 11995.7 | 12156.4 | 12428.2 | 12803.9 | 13186.7 | 13354.5 | 13014.2 | 12411.6 | 12068.9 | 10454.9 |
| 20°   | 12017.0 | 12047.7 | 12248.6 | 12567.6 | 13054.4 | 13664.1 | 14132.0 | 14047.0 | 13359.3 | 12915.0 | 10955.9 |
| 22.5° | 12154.0 | 12180.0 | 12371.4 | 12692.8 | 13231.6 | 14018.6 | 14881.2 | 15008.8 | 14358.9 | 13855.5 | 11492.3 |
| 25°   | 12536.9 | 12536.9 | 12697.6 | 12922.1 | 13427.8 | 14325.8 | 15514.5 | 16079.3 | 15379.8 | 14793.7 | 11988.6 |
| 27.5° | 13267.1 | 13260.0 | 13319.1 | 13397.1 | 13779.9 | 14637.8 | 16079.3 | 17024.6 | 16438.5 | 15798.1 | 12470.7 |
| 30°   | 14132.0 | 14179.3 | 14186.4 | 14148.6 | 14328.2 | 15027.7 | 16601.6 | 18021.9 | 17504.3 | 16814.3 | 12964.6 |
| 32.5° | 15245.1 | 15275.8 | 15240.4 | 15115.1 | 15089.1 | 15580.7 | 17114.4 | 19066.4 | 18657.6 | 17875.4 | 13416.0 |
| 35°   | 16658.3 | 16599.2 | 16488.2 | 16232.9 | 15989.5 | 16320.4 | 17700.5 | 20111.0 | 19952.6 | 19158.6 | 14037.5 |
| 37.5° | 18173.1 | 18175.5 | 18038.4 | 17459.4 | 17123.9 | 17265.7 | 18508.7 | 21294.9 | 21519.4 | 20685.2 | 14833.9 |
| 40°   | 19387.8 | 19451.6 | 19536.7 | 18775.8 | 18340.9 | 18537.1 | 19536.7 | 22668.0 | 23372.2 | 22495.5 | 15871.4 |
| 42.5° | 20236.2 | 20309.5 | 20550.5 | 20073.2 | 19621.8 | 19985.7 | 20746.7 | 24133.2 | 25451.8 | 24584.5 | 17086.1 |
| 45°   | 21134.2 | 21174.4 | 21344.6 | 21139.0 | 20850.7 | 21670.7 | 22110.3 | 25650.4 | 27652.0 | 26810.7 | 18444.9 |
| 47.5° | 22079.5 | 22122.1 | 22296.9 | 22159.9 | 22008.6 | 23244.6 | 23532.9 | 27080.1 | 29760.0 | 29256.6 | 19895.9 |
| 50°   | 23247.0 | 23275.3 | 23440.7 | 23192.6 | 23239.9 | 24430.9 | 24804.3 | 28391.7 | 31969.6 | 31454.4 | 21351.7 |
| 52.5° | 24839.8 | 24846.9 | 25076.1 | 24851.6 | 24629.4 | 25300.6 | 25898.5 | 29627.6 | 33701.8 | 33458.4 | 22807.4 |
| 55°   | 26087.5 | 26163.2 | 26914.7 | 26867.4 | 26739.8 | 26089.9 | 26813.1 | 30804.5 | 35247.4 | 35363.2 | 24352.9 |
| 57.5° | 25291.1 | 25586.5 | 27108.5 | 28181.4 | 29225.9 | 28053.7 | 28049.0 | 32130.3 | 36684.2 | 37232.5 | 26052.1 |
| 60°   | 22150.4 | 22552.2 | 24794.9 | 27174.6 | 30443.0 | 31471.0 | 30615.5 | 33749.1 | 38135.2 | 39085.2 | 28181.4 |
| 62.5° | 15819.4 | 16481.1 | 19520.2 | 23320.2 | 28774.5 | 33734.9 | 35838.2 | 36317.9 | 40108.5 | 41231.0 | 30948.7 |
| 65°   | 7997.1  | 8498.1  | 11045.7 | 15623.2 | 22989.4 | 32255.5 | 41514.6 | 41942.4 | 43537.5 | 44534.8 | 35209.6 |
| 67.5° | 4858.8  | 5047.8  | 6290.9  | 8689.5  | 14094.2 | 25125.7 | 43367.4 | 51317.2 | 50173.4 | 50702.8 | 41285.4 |
| 70°   | 3580.3  | 3719.7  | 4494.8  | 5771.0  | 8105.8  | 14744.1 | 37681.5 | 58007.5 | 57256.0 | 57196.9 | 45775.5 |
| 72°   | 2788.6  | 2890.2  | 3575.5  | 4662.6  | 5926.9  | 8845.5  | 27311.7 | 55538.0 | 59283.6 | 58985.9 | 45364.3 |
| 72.5° | 2644.4  | 2734.2  | 3358.1  | 4388.5  | 5600.8  | 8018.4  | 24556.2 | 53871.9 | 59137.1 | 59002.4 | 44832.6 |
| 75°   | 2082.0  | 2145.8  | 2486.1  | 3393.6  | 4383.8  | 4549.2  | 13456.2 | 41748.6 | 52461.0 | 54642.3 | 40323.6 |
| 77.5° | 1722.8  | 1732.2  | 1911.8  | 2469.6  | 3417.2  | 3216.3  | 6609.9  | 28965.9 | 37565.7 | 39964.4 | 28564.2 |
| 80°   | 1403.8  | 1415.6  | 1500.6  | 1732.2  | 2585.4  | 2379.8  | 3138.4  | 16655.9 | 21032.6 | 21058.6 | 13583.8 |
| 82.5° | 1117.8  | 1120.2  | 1214.7  | 1266.7  | 1857.5  | 1701.5  | 1798.4  | 7819.9  | 9190.5  | 8840.8  | 4882.4  |
| 85°   | 787.0   | 770.4   | 1186.3  | 1039.8  | 1214.7  | 1091.8  | 992.6   | 3095.8  | 3800.1  | 3634.6  | 1529.0  |
| 87.5° | 262.3   | 271.8   | 527.0   | 673.5   | 709.0   | 619.2   | 441.9   | 1186.3  | 1434.5  | 1422.7  | 484.5   |
| 90°   | 0.0     | 0.0     | 0.0     | 0.0     | 0.0     | 0.0     | 0.0     | 0.0     | 0.0     | 0.0     | 0.0     |



REPORT NUMBER: P318064

CATALOG NUMBER: GLEON-SA0D-730-U-T2

**CANDELA DISTRIBUTION (continued):**

|       | 90°     | 95°     | 105°   | 115°   | 125°   | 135°   | 145°   | 155°   | 165°   | 175°   | 180°   |
|-------|---------|---------|--------|--------|--------|--------|--------|--------|--------|--------|--------|
| 0°    | 8443.8  | 8443.8  | 8443.8 | 8443.8 | 8443.8 | 8443.8 | 8443.8 | 8443.8 | 8443.8 | 8443.8 | 8443.8 |
| 2.5°  | 8486.3  | 8410.7  | 8299.6 | 8176.7 | 8079.8 | 7980.6 | 7907.3 | 7869.5 | 7827.0 | 7791.5 | 7834.1 |
| 5°    | 8576.1  | 8434.3  | 8198.0 | 7966.4 | 7796.3 | 7645.0 | 7536.3 | 7479.6 | 7427.6 | 7392.1 | 7396.9 |
| 7.5°  | 8722.6  | 8493.4  | 8096.4 | 7758.4 | 7522.1 | 7359.1 | 7248.0 | 7210.2 | 7177.1 | 7167.6 | 7179.5 |
| 10°   | 8878.6  | 8540.7  | 7961.7 | 7512.7 | 7243.3 | 7108.6 | 7058.9 | 7084.9 | 7108.6 | 7129.8 | 7153.5 |
| 12.5° | 9055.8  | 8583.2  | 7765.5 | 7224.4 | 6995.1 | 6943.1 | 6992.8 | 7106.2 | 7188.9 | 7238.5 | 7269.3 |
| 15°   | 9287.4  | 8621.0  | 7538.7 | 6936.0 | 6782.4 | 6841.5 | 7009.3 | 7205.4 | 7349.6 | 7441.8 | 7455.9 |
| 17.5° | 9500.1  | 8618.7  | 7248.0 | 6645.4 | 6609.9 | 6782.4 | 7035.3 | 7311.8 | 7505.6 | 7635.6 | 7661.5 |
| 20°   | 9719.9  | 8554.8  | 6910.0 | 6361.8 | 6435.0 | 6718.6 | 7047.1 | 7380.3 | 7614.3 | 7765.5 | 7801.0 |
| 22.5° | 9925.5  | 8443.8  | 6539.0 | 6104.2 | 6288.5 | 6633.5 | 7002.2 | 7340.2 | 7574.1 | 7697.0 | 7734.8 |
| 25°   | 10064.9 | 8250.0  | 6163.3 | 5886.8 | 6158.5 | 6529.6 | 6855.7 | 7127.5 | 7302.3 | 7363.8 | 7373.2 |
| 27.5° | 10135.8 | 7997.1  | 5808.8 | 5697.7 | 6023.8 | 6359.4 | 6583.9 | 6718.6 | 6768.3 | 6763.5 | 6754.1 |
| 30°   | 10145.3 | 7663.9  | 5503.9 | 5544.1 | 5867.9 | 6108.9 | 6215.3 | 6189.3 | 6125.5 | 6016.7 | 6026.2 |
| 32.5° | 10114.6 | 7288.2  | 5248.7 | 5397.6 | 5669.4 | 5804.1 | 5808.8 | 5683.5 | 5513.4 | 5340.9 | 5293.6 |
| 35°   | 10124.0 | 6919.5  | 5024.2 | 5232.2 | 5428.3 | 5487.4 | 5433.0 | 5248.7 | 5017.1 | 4795.0 | 4747.7 |
| 37.5° | 10228.0 | 6598.1  | 4830.4 | 5040.7 | 5161.3 | 5175.4 | 5097.5 | 4903.7 | 4733.5 | 4516.1 | 4497.2 |
| 40°   | 10476.1 | 6368.9  | 4646.1 | 4825.7 | 4894.2 | 4901.3 | 4790.2 | 4653.2 | 4667.4 | 4551.6 | 4549.2 |
| 42.5° | 10922.8 | 6269.6  | 4483.0 | 4601.2 | 4643.7 | 4657.9 | 4572.8 | 4485.4 | 4608.3 | 4532.6 | 4506.7 |
| 45°   | 11499.4 | 6293.2  | 4346.0 | 4381.4 | 4459.4 | 4525.6 | 4473.6 | 4367.2 | 4414.5 | 4086.0 | 3977.3 |
| 47.5° | 12165.8 | 6444.5  | 4237.2 | 4192.3 | 4327.0 | 4452.3 | 4372.0 | 4211.3 | 4043.5 | 3717.3 | 3655.9 |
| 50°   | 12945.7 | 6678.4  | 4138.0 | 4005.7 | 4182.9 | 4353.0 | 4272.7 | 4043.5 | 3790.6 | 3632.3 | 3611.0 |
| 52.5° | 13758.6 | 6964.4  | 4038.7 | 3800.1 | 4000.9 | 4277.4 | 4237.2 | 4005.7 | 3693.7 | 3537.7 | 3509.4 |
| 55°   | 14680.3 | 7252.7  | 3913.5 | 3561.4 | 3804.8 | 4242.0 | 4220.7 | 3868.6 | 3620.4 | 3533.0 | 3511.7 |
| 57.5° | 15826.5 | 7581.2  | 3748.1 | 3313.2 | 3620.4 | 4114.4 | 4048.2 | 3785.9 | 3544.8 | 3478.7 | 3471.6 |
| 60°   | 17320.0 | 8065.7  | 3509.4 | 3048.5 | 3395.9 | 3918.2 | 3904.0 | 3665.3 | 3424.3 | 3377.0 | 3367.6 |
| 62.5° | 19560.3 | 8866.8  | 3180.9 | 2783.9 | 3145.4 | 3585.0 | 3715.0 | 3502.3 | 3296.7 | 3294.3 | 3299.1 |
| 65°   | 23034.3 | 10072.0 | 2824.0 | 2552.3 | 2892.6 | 3303.8 | 3495.2 | 3334.5 | 3166.7 | 3214.0 | 3221.1 |
| 67.5° | 27061.2 | 11071.7 | 2474.3 | 2325.4 | 2635.0 | 3036.7 | 3296.7 | 3166.7 | 2994.2 | 3117.1 | 3119.4 |
| 70°   | 28401.1 | 10178.4 | 2167.1 | 2100.9 | 2367.9 | 2779.1 | 3081.6 | 2982.4 | 2807.5 | 2930.4 | 2918.6 |
| 72°   | 26430.2 | 8216.9  | 1968.6 | 1930.7 | 2167.1 | 2566.5 | 2890.2 | 2809.9 | 2637.3 | 2720.1 | 2689.3 |
| 72.5° | 25808.7 | 7834.1  | 1918.9 | 1888.2 | 2112.7 | 2512.1 | 2840.6 | 2767.3 | 2594.8 | 2665.7 | 2637.3 |
| 75°   | 23022.5 | 6803.7  | 1649.5 | 1656.6 | 1843.3 | 2247.4 | 2561.7 | 2538.1 | 2360.9 | 2367.9 | 2358.5 |
| 77.5° | 16698.5 | 4988.8  | 1389.6 | 1436.8 | 1569.2 | 1975.6 | 2280.5 | 2266.3 | 2072.5 | 2037.1 | 2030.0 |
| 80°   | 7749.0  | 2545.2  | 1132.0 | 1153.2 | 1290.3 | 1651.9 | 1944.9 | 1926.0 | 1770.0 | 1725.1 | 1699.2 |
| 82.5° | 2653.9  | 1210.0  | 850.8  | 864.9  | 999.6  | 1330.5 | 1687.3 | 1675.5 | 1545.5 | 1458.1 | 1403.8 |
| 85°   | 947.6   | 602.6   | 595.5  | 581.4  | 713.7  | 1046.9 | 1469.9 | 1406.1 | 1214.7 | 1035.1 | 1030.4 |
| 87.5° | 307.2   | 257.6   | 307.2  | 304.9  | 415.9  | 709.0  | 1068.2 | 909.8  | 881.5  | 732.6  | 718.4  |
| 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 ( $R_{f,i}$ )**

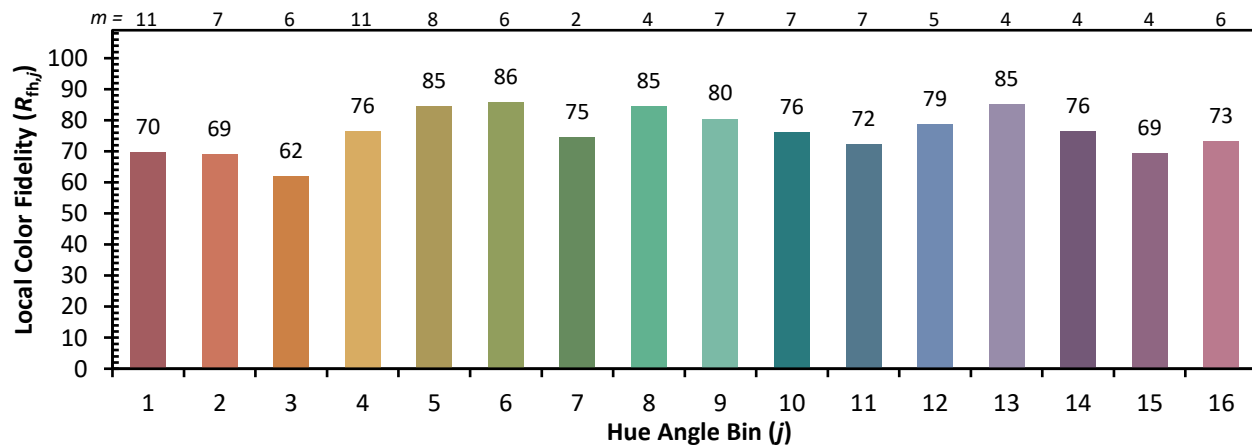
|            |            |            |            |
|------------|------------|------------|------------|
| CES01 = 86 | CES26 = 67 | CES51 = 87 | CES76 = 63 |
| CES02 = 63 | CES27 = 88 | CES52 = 86 | CES77 = 80 |
| CES03 = 31 | CES28 = 87 | CES53 = 78 | CES78 = 67 |
| CES04 = 71 | CES29 = 66 | CES54 = 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)