

Signify Classified - Internal
Cooper Lighting Solutions Photometric Lab
1121 Highway 74 South
Peachtree City, GA 30269



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: P321215

Luminaire Tested: **GLEON-SA1D-727-U-T2R-HSS**

Issue Date: 3/3/2020

Test Information

Test Method: LM-79-08
Report Number: P321215
TEST IS SCALED FROM IESNA LM-79-08 TEST DATA (G2-1903-205-9)
Test Lab: INNOVATION CENTER
Issue Date: 3/3/2020
Manufacturer: COOPER LIGHTING SOLUTIONS (FORMERLY EATON)
Product Line: McGRAW-EDISON
Catalog Number: GLEON-SA1D-727-U-T2R-HSS
Description: GALLEON AREA AND ROADWAY LUMINAIRE
(1) 70 CRI, 2700K, 1200mA LIGHTSQUARE WITH 16 LEDS AND TYPE II ROADWAY OPTICS WITH HOUSE SIDE SHIELD
Light Source: -
Ballast/Driver: ELECTRONIC DRIVER

Summary

Lumens per Lamp: N/A
Luminaire Lumens: 5482 lumens
Efficiency: N/A
Efficacy: 81.8 lumens/watt
Luminous Opening: Rectangular (W 0.5' x L: 0.5' x H: 0')
IES Classification: Type II - Medium
BUG Rating: B0 - U0 - G1

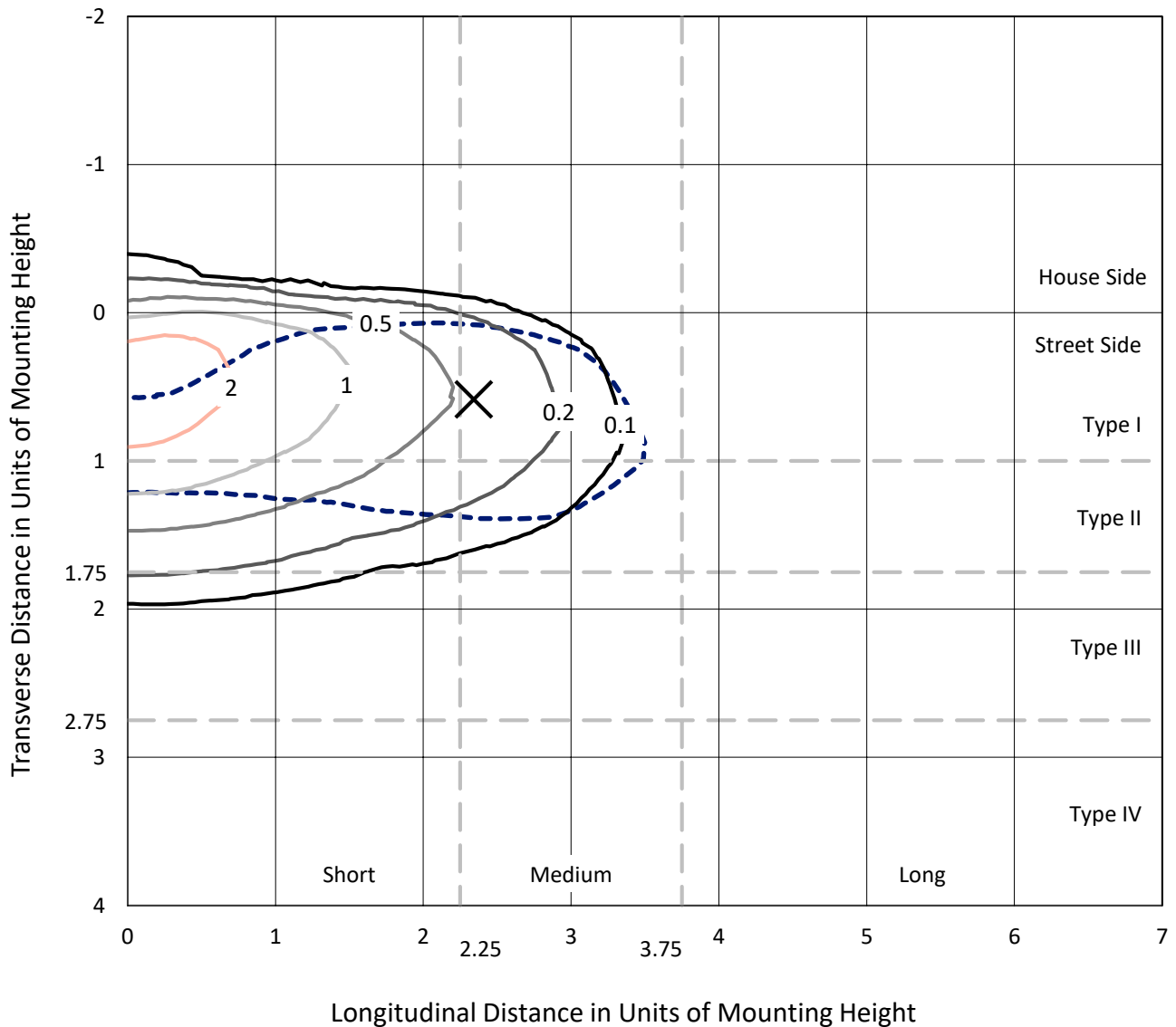
Input Watts (W): 67
Input Voltage (V): NR
Input Current (Ain): NR
Voltage Rise (V): NR
Power Factor: NR
Total Harmonic Distortion (THDi): NR
Frequency (hertz): 60
Stabilization Time: NR
Operation Time: NR
Ambient Temperature (°C): NR
Test Distance: 24 FT



REPORT NUMBER: P321215
 CATALOG NUMBER: GLEON-SA1D-727-U-T2R-HSS

Iso-Footcandle Lines of Horizontal Illumination

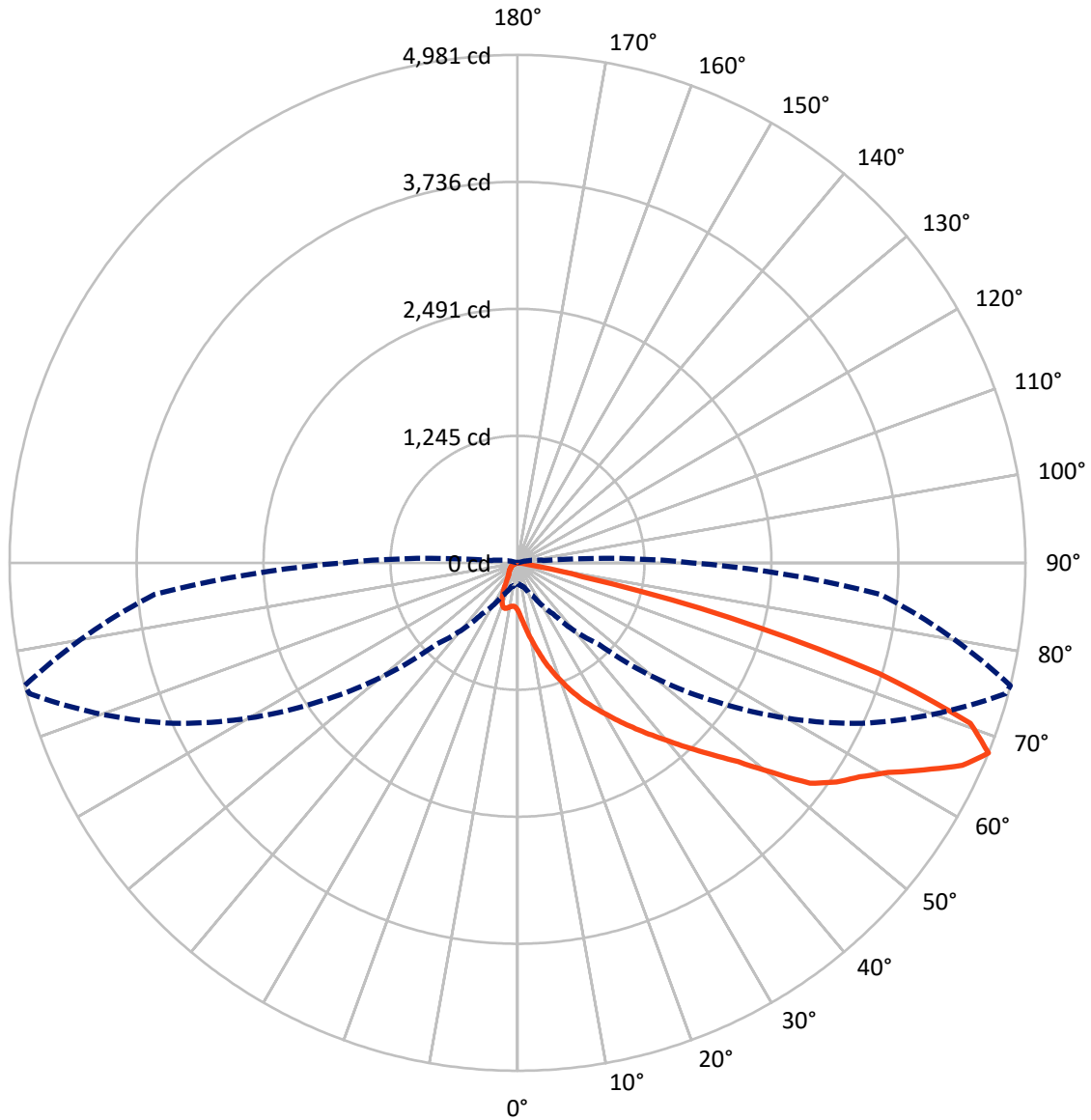
✕ Max cd
 - - - 1/2 Max cd



Based on 25 foot mounting height. Maximum calculated value = 2.6 fc
 Type II - Medium - N/A

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Luminous Intensity Polar Plot



— Vertical Plane Through 76-Deg Lateral - - - Horizontal Cone Through 67.5-Deg Vertical

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FLUX DISTRIBUTION:

| | | Downward | Upward | Total |
|--------------------|-----------|----------|--------|--------|
| House Side | Lumens | 272.2 | 0.0 | 272.2 |
| | % Fixture | 5.0 | 0.0 | 5.0 |
| Street Side | Lumens | 5209.8 | 0.0 | 5209.8 |
| | % Fixture | 95.0 | 0.0 | 95.0 |
| Total | Lumens | 5482.0 | 0.0 | 5482.0 |
| | % Fixture | 100.0 | 0.0 | 100.0 |

ZONAL LUMENS:

| Zone | Lumens | % Fixture |
|-----------|--------|-----------|
| 0°-10° | 57.8 | 1.1 |
| 10°-20° | 229.2 | 4.2 |
| 20°-30° | 466.4 | 8.5 |
| 30°-40° | 809.5 | 14.8 |
| 40°-50° | 1143.8 | 20.9 |
| 50°-60° | 1297.1 | 23.7 |
| 60°-70° | 1075.8 | 19.6 |
| 70°-80° | 389.7 | 7.1 |
| 80°-90° | 12.6 | 0.2 |
| 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° | 5482.0 | 100.0 |
| 0°-180° | 5482.0 | 100.0 |

Coefficient of Utilization

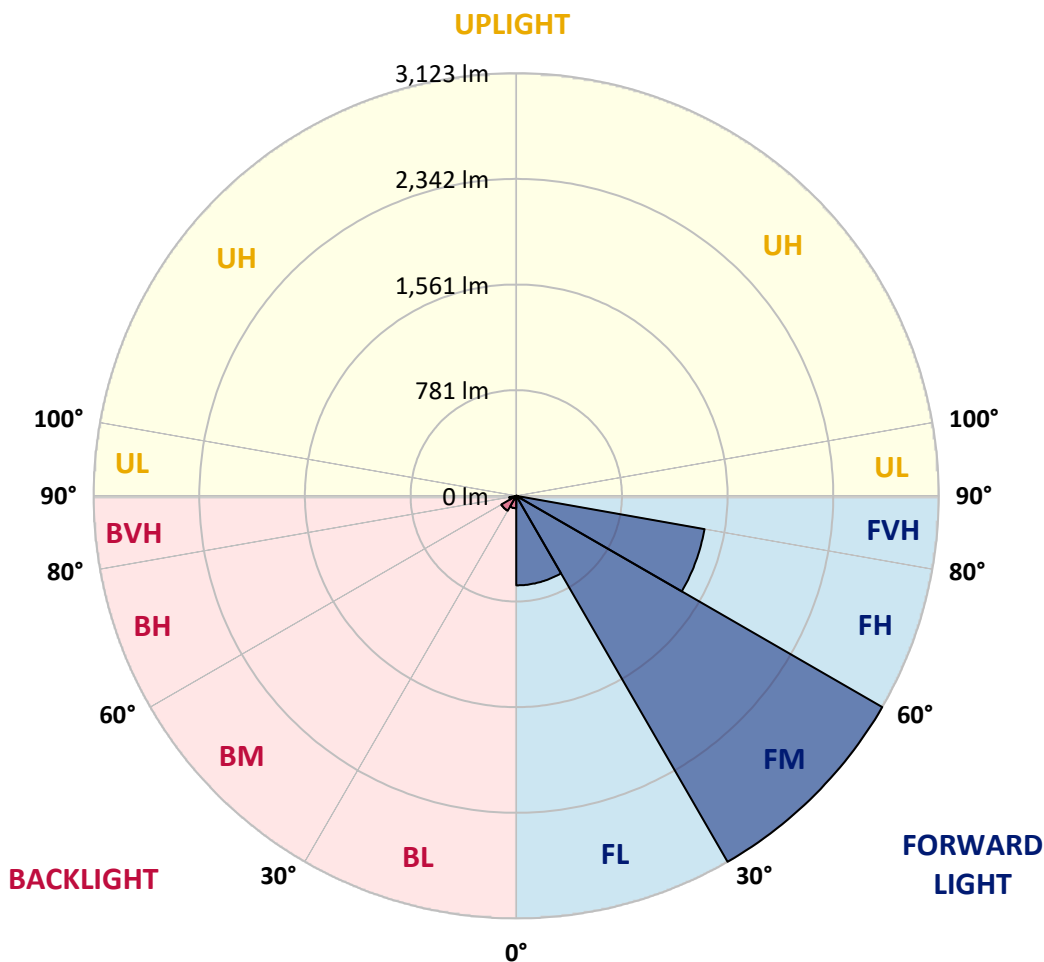


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LUMINAIRE CLASSIFICATION SYSTEM LUMEN TABLE AND BUG RATING:

| Zone | Lumens | % Fixture | Zone Rating/Lumen Limit | | |
|----------------|--------|-----------|-------------------------|------|---------|
| | | | B | U | G |
| FL (0°-30°) | 661.7 | 12.1 | | | |
| FM (30°-60°) | 3123.0 | 57.0 | | | |
| FH (60°-80°) | 1412.9 | 25.8 | | | G1/1800 |
| FVH (80°-90°) | 12.2 | 0.2 | | | G1/100 |
| BL (0°-30°) | 91.8 | 1.7 | B0/110 | | |
| BM (30°-60°) | 127.4 | 2.3 | B0/220 | | |
| BH (60°-80°) | 52.6 | 1.0 | B0/110 | | G0/110 |
| BVH (80°-90°) | 0.4 | 0.0 | | | G0/10 |
| UL (90°-100°) | 0.0 | 0.0 | | U0/0 | |
| UH (100°-180°) | 0.0 | 0.0 | | U0/0 | |

BUG Rating: B0-U0-G1
 Type II Medium





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CANDELA DISTRIBUTION (FULL):

| | 0° | 5° | 15° | 25° | 35° | 45° | 55° | 65° | 75° | 76° | 85° |
|-------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|
| 0° | 465.0 | 465.0 | 465.0 | 465.0 | 465.0 | 465.0 | 465.0 | 465.0 | 465.0 | 465.0 | 465.0 |
| 2.5° | 694.2 | 678.6 | 682.2 | 672.1 | 653.8 | 616.4 | 584.4 | 554.1 | 518.8 | 517.6 | 488.6 |
| 5° | 936.1 | 922.9 | 921.2 | 900.8 | 867.6 | 804.0 | 742.0 | 671.4 | 592.6 | 586.8 | 525.1 |
| 7.5° | 1155.6 | 1145.0 | 1141.2 | 1116.9 | 1055.2 | 993.2 | 912.5 | 808.8 | 685.5 | 675.0 | 574.3 |
| 10° | 1324.2 | 1319.2 | 1320.2 | 1302.9 | 1250.0 | 1192.4 | 1086.4 | 954.1 | 791.0 | 774.7 | 633.4 |
| 12.5° | 1452.0 | 1453.2 | 1461.9 | 1451.3 | 1421.8 | 1379.0 | 1265.9 | 1109.0 | 907.7 | 885.4 | 700.9 |
| 15° | 1545.9 | 1551.9 | 1567.8 | 1581.0 | 1578.9 | 1541.9 | 1438.1 | 1266.3 | 1031.7 | 1006.9 | 776.1 |
| 17.5° | 1606.7 | 1613.4 | 1636.5 | 1665.8 | 1692.7 | 1684.1 | 1604.3 | 1418.2 | 1157.1 | 1128.5 | 856.6 |
| 20° | 1660.0 | 1668.0 | 1692.7 | 1731.4 | 1781.6 | 1792.4 | 1740.0 | 1565.4 | 1282.2 | 1247.4 | 939.7 |
| 22.5° | 1775.6 | 1775.3 | 1790.5 | 1813.0 | 1860.9 | 1888.7 | 1855.6 | 1702.1 | 1405.9 | 1369.6 | 1024.5 |
| 25° | 1984.6 | 1976.6 | 1971.3 | 1953.6 | 1964.1 | 1981.4 | 1962.9 | 1829.9 | 1530.3 | 1493.6 | 1110.5 |
| 27.5° | 2232.9 | 2237.7 | 2195.0 | 2147.2 | 2110.2 | 2092.4 | 2062.1 | 1948.3 | 1650.0 | 1609.6 | 1194.5 |
| 30° | 2495.0 | 2496.4 | 2446.0 | 2385.0 | 2303.5 | 2236.0 | 2183.7 | 2061.4 | 1772.9 | 1729.0 | 1276.2 |
| 32.5° | 2731.3 | 2722.0 | 2672.0 | 2588.9 | 2486.1 | 2410.2 | 2301.4 | 2187.8 | 1903.1 | 1860.6 | 1367.0 |
| 35° | 2918.7 | 2907.7 | 2846.9 | 2771.2 | 2664.6 | 2588.2 | 2457.3 | 2313.9 | 2040.0 | 1998.5 | 1458.0 |
| 37.5° | 3055.6 | 3042.6 | 2980.2 | 2902.4 | 2810.4 | 2765.9 | 2638.1 | 2451.0 | 2189.4 | 2144.8 | 1553.9 |
| 40° | 3103.2 | 3091.9 | 3052.7 | 2995.8 | 2921.8 | 2911.7 | 2830.1 | 2608.8 | 2352.1 | 2304.5 | 1662.4 |
| 42.5° | 3074.8 | 3063.8 | 3049.9 | 3030.6 | 2999.9 | 3009.5 | 3011.2 | 2788.8 | 2532.7 | 2485.9 | 1782.3 |
| 45° | 2962.4 | 2952.6 | 2967.0 | 2995.1 | 3033.3 | 3080.8 | 3176.4 | 2982.1 | 2734.5 | 2684.5 | 1920.9 |
| 47.5° | 2796.9 | 2789.7 | 2829.6 | 2899.7 | 3011.4 | 3142.6 | 3327.5 | 3185.3 | 2961.0 | 2914.6 | 2093.8 |
| 50° | 2561.5 | 2560.3 | 2640.1 | 2768.1 | 2939.8 | 3172.4 | 3483.7 | 3416.4 | 3275.6 | 3226.9 | 2334.3 |
| 52.5° | 2195.0 | 2197.4 | 2354.2 | 2559.1 | 2814.2 | 3152.2 | 3584.1 | 3713.3 | 3641.7 | 3591.0 | 2542.5 |
| 55° | 1846.0 | 1860.4 | 1971.6 | 2267.0 | 2621.6 | 3077.2 | 3618.7 | 3851.9 | 3843.7 | 3795.7 | 2658.3 |
| 57.5° | 1504.1 | 1530.3 | 1637.5 | 1913.5 | 2340.3 | 2904.5 | 3599.7 | 3911.9 | 3994.1 | 3957.3 | 2811.1 |
| 60° | 1133.8 | 1145.8 | 1269.2 | 1527.2 | 1979.3 | 2589.4 | 3462.0 | 3944.6 | 4199.7 | 4174.2 | 3032.8 |
| 62.5° | 721.3 | 751.4 | 860.9 | 1109.7 | 1541.1 | 2151.7 | 3230.0 | 3944.1 | 4457.0 | 4470.9 | 3318.9 |
| 65° | 380.0 | 415.1 | 473.2 | 687.7 | 1059.1 | 1662.9 | 2881.0 | 3907.1 | 4772.6 | 4792.0 | 3542.5 |
| 67.5° | 204.9 | 215.0 | 245.7 | 356.9 | 614.2 | 1126.6 | 2368.2 | 3724.6 | 4955.4 | 4981.1 | 3573.7 |
| 70° | 149.9 | 155.4 | 166.9 | 197.4 | 309.1 | 654.3 | 1728.0 | 3310.7 | 4719.7 | 4710.1 | 3175.2 |
| 72.5° | 115.1 | 123.7 | 132.4 | 144.6 | 177.7 | 349.3 | 1075.9 | 2592.5 | 3765.9 | 3702.5 | 2373.4 |
| 75° | 90.8 | 92.2 | 104.5 | 115.5 | 133.3 | 198.9 | 477.8 | 1509.9 | 2298.5 | 2148.4 | 1230.8 |
| 77.5° | 72.5 | 73.5 | 80.7 | 90.3 | 107.1 | 130.7 | 148.0 | 594.0 | 733.8 | 654.8 | 267.1 |
| 80° | 43.0 | 45.4 | 60.1 | 69.7 | 88.9 | 82.4 | 54.0 | 129.0 | 114.6 | 103.8 | 44.9 |
| 82.5° | 24.0 | 25.9 | 33.9 | 55.0 | 62.0 | 39.4 | 26.9 | 34.8 | 26.9 | 26.2 | 12.7 |
| 85° | 0.0 | 1.2 | 21.9 | 34.1 | 25.2 | 8.6 | 11.3 | 11.5 | 7.9 | 7.4 | 5.0 |
| 87.5° | 0.0 | 0.0 | 6.7 | 6.5 | 1.0 | 1.4 | 2.6 | 3.8 | 3.1 | 3.1 | 2.6 |
| 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: P321215

CATALOG NUMBER: GLEON-SA1D-727-U-T2R-HSS

CANDELA DISTRIBUTION (continued):

| | 90° | 95° | 105° | 115° | 125° | 135° | 145° | 155° | 165° | 175° | 180° |
|-------|--------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|
| 0° | 465.0 | 465.0 | 465.0 | 465.0 | 465.0 | 465.0 | 465.0 | 465.0 | 465.0 | 465.0 | 465.0 |
| 2.5° | 474.2 | 461.2 | 436.7 | 412.7 | 392.5 | 375.9 | 361.0 | 355.0 | 350.2 | 349.5 | 345.7 |
| 5° | 495.3 | 469.1 | 422.3 | 383.8 | 358.1 | 339.9 | 324.3 | 314.7 | 307.2 | 304.3 | 301.7 |
| 7.5° | 527.2 | 487.6 | 420.4 | 376.2 | 345.4 | 314.7 | 285.8 | 254.6 | 235.2 | 227.7 | 223.4 |
| 10° | 566.2 | 512.1 | 427.6 | 374.0 | 320.2 | 255.3 | 207.5 | 167.9 | 151.8 | 146.5 | 145.1 |
| 12.5° | 611.6 | 542.6 | 440.1 | 360.5 | 266.4 | 181.4 | 143.2 | 129.7 | 126.1 | 124.4 | 124.4 |
| 15° | 663.7 | 576.0 | 448.9 | 321.6 | 197.0 | 137.2 | 123.9 | 117.7 | 113.9 | 111.7 | 111.9 |
| 17.5° | 717.0 | 608.7 | 444.6 | 265.2 | 145.3 | 122.0 | 112.2 | 105.4 | 100.2 | 98.0 | 97.5 |
| 20° | 770.8 | 638.9 | 420.6 | 197.4 | 123.0 | 110.7 | 99.7 | 92.2 | 87.0 | 84.8 | 84.3 |
| 22.5° | 826.5 | 664.6 | 378.3 | 144.8 | 110.5 | 98.2 | 87.4 | 80.0 | 74.9 | 73.0 | 72.1 |
| 25° | 880.8 | 685.5 | 319.2 | 117.2 | 98.7 | 86.5 | 76.1 | 69.2 | 64.6 | 62.7 | 62.5 |
| 27.5° | 931.5 | 698.7 | 250.8 | 103.5 | 88.4 | 75.9 | 66.5 | 60.3 | 56.4 | 55.0 | 54.8 |
| 30° | 977.1 | 700.0 | 185.4 | 93.4 | 79.3 | 66.8 | 58.1 | 52.6 | 49.2 | 47.8 | 47.3 |
| 32.5° | 1023.3 | 689.9 | 135.0 | 84.3 | 70.9 | 58.8 | 50.4 | 46.1 | 43.7 | 42.5 | 42.5 |
| 35° | 1066.7 | 666.6 | 105.2 | 76.4 | 62.7 | 51.2 | 44.4 | 41.3 | 39.9 | 38.7 | 38.7 |
| 37.5° | 1109.3 | 633.2 | 89.4 | 69.4 | 55.0 | 44.7 | 39.2 | 37.2 | 36.0 | 34.8 | 34.8 |
| 40° | 1152.5 | 591.1 | 81.2 | 62.9 | 48.8 | 39.6 | 34.8 | 33.1 | 31.9 | 31.0 | 30.7 |
| 42.5° | 1205.6 | 542.6 | 75.9 | 56.9 | 43.2 | 35.1 | 30.7 | 28.8 | 27.9 | 26.9 | 26.4 |
| 45° | 1267.1 | 500.8 | 71.6 | 50.9 | 38.7 | 31.2 | 26.7 | 24.7 | 23.3 | 22.1 | 21.9 |
| 47.5° | 1355.7 | 470.6 | 65.8 | 44.4 | 34.3 | 27.1 | 23.1 | 20.9 | 18.7 | 17.5 | 17.3 |
| 50° | 1468.8 | 445.6 | 58.4 | 38.7 | 30.0 | 23.1 | 19.2 | 16.6 | 14.7 | 13.5 | 13.5 |
| 52.5° | 1525.0 | 412.9 | 51.6 | 33.6 | 25.2 | 19.5 | 15.6 | 12.5 | 11.5 | 10.3 | 10.3 |
| 55° | 1547.6 | 387.9 | 44.9 | 28.6 | 20.9 | 16.1 | 12.3 | 9.6 | 8.9 | 8.2 | 7.9 |
| 57.5° | 1611.0 | 380.7 | 39.2 | 24.3 | 17.3 | 12.7 | 9.4 | 7.2 | 6.7 | 5.8 | 5.8 |
| 60° | 1713.1 | 384.3 | 33.9 | 20.7 | 13.9 | 9.8 | 7.0 | 5.5 | 5.0 | 4.1 | 4.1 |
| 62.5° | 1823.4 | 379.8 | 28.6 | 17.8 | 10.8 | 7.2 | 4.8 | 4.1 | 4.1 | 2.4 | 2.2 |
| 65° | 1844.5 | 338.2 | 24.5 | 14.7 | 8.4 | 5.3 | 3.1 | 2.6 | 3.6 | 0.5 | 0.0 |
| 67.5° | 1711.9 | 262.3 | 21.1 | 11.3 | 6.2 | 4.1 | 2.4 | 1.2 | 3.1 | 0.0 | 0.0 |
| 70° | 1368.9 | 166.7 | 17.1 | 8.2 | 4.8 | 3.4 | 1.9 | 0.5 | 2.4 | 0.0 | 0.0 |
| 72.5° | 968.0 | 96.8 | 13.5 | 5.8 | 4.1 | 2.6 | 1.4 | 0.0 | 1.4 | 0.0 | 0.0 |
| 75° | 489.5 | 51.6 | 8.4 | 4.3 | 3.1 | 1.9 | 1.0 | 0.0 | 0.2 | 0.0 | 0.0 |
| 77.5° | 105.9 | 24.0 | 5.3 | 3.1 | 2.2 | 1.2 | 0.5 | 0.0 | 0.0 | 0.0 | 0.0 |
| 80° | 23.1 | 10.6 | 3.4 | 1.9 | 1.2 | 0.7 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| 82.5° | 8.4 | 5.5 | 1.7 | 1.0 | 0.5 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| 85° | 4.6 | 2.9 | 1.0 | 0.5 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| 87.5° | 2.4 | 1.0 | 0.2 | 0.2 | 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 |

Signify Classified - Internal
Cooper Lighting Solutions Photometric Lab
1121 Highway 74 South
Peachtree City, GA 30269



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

Report Prepared for

Cooper Lighting Solutions

McGRAW-EDISON

Report Number: SP1-1908-441-1-R4

Test Date: 08/20/2019

Luminaire Tested: SA1C-727-U-5WQ

Test Information

Test Method: LM-79-2008
 Report Number: SP1-1908-441-1-R4
 Test Lab: COOPER LIGHTING SOLUTIONS
 Photometer: SP1 - 76IN SPHERE
 Measurement Geometry: 4π
 Issue Date: 10/28/2024
 Manufacturer: COOPER LIGHTING SOLUTIONS
 Product Line: McGRAW-EDISON
 Catalog Number: **SA1C-727-U-5WQ**
 Description: McGRAW EDISON ROADWAY AND AREA LUMINAIRE

THIS IS A REVISION OF SP1-1908-441-1-R3. TO UPDATE THE CATALOG NUMBER.TESTED IN
 SITU. (1) 70 CRI, 2700K, 1050MA LIGHTSQUARE WITH 16 LEDS AND TYPE V WIDE OPTICS.

Spectral Parameters

CCT (K): 2741
 CIE u': 0.2605
 CIE v': 0.5272
 Duv: 0.0005
 CIE x: 0.4573
 CIE y: 0.4113
 CIE z: 0.1313
 Peak Wavelength (nm): 602
 Dominant Wavelength (nm): 583
 Purity: 61.2

| | | | |
|-----------|------|------|-------|
| CRI (Ra): | 71.5 | | |
| R1: | 69.2 | R9: | -16.1 |
| R2: | 79.4 | R10: | 51.4 |
| R3: | 87.8 | R11: | 63.1 |
| R4: | 69.4 | R12: | 42.0 |
| R5: | 66.4 | R13: | 70.2 |
| R6: | 69.8 | R14: | 92.4 |
| R7: | 79.8 | | |
| R8: | 50.1 | | |

Rf: 69.9
 Rg: 98.3



Test Conditions

Stabilization Time: 56M
 Operation Time: 12H
 Room Temperature (°C) / RH%: 25.3./42%
 Sphere Temperature (°C): 25.7

REPORT NUMBER: SP1-1908-441-1-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: SP1-1908-441-1-R4

CIE 1931 Chromaticity Diagram



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



Point lies inside the ANSI 2700K 4-step quadrangle

REPORT NUMBER: SP1-1908-441-1-R4

Photopic Flux vs. Wavelength



Photopic Lumens: 6211.7

| λ (nm) | Power ($\mu\text{W}/\text{nm}$) | Lumens (ϕ/nm) | λ (nm) | Power ($\mu\text{W}/\text{nm}$) | Lumens (ϕ/nm) | λ (nm) | Power ($\mu\text{W}/\text{nm}$) | Lumens (ϕ/nm) | λ (nm) | Power ($\mu\text{W}/\text{nm}$) | Lumens (ϕ/nm) | λ (nm) | Power ($\mu\text{W}/\text{nm}$) | Lumens (ϕ/nm) |
|----------------|-----------------------------------|-----------------------------|----------------|-----------------------------------|-----------------------------|----------------|-----------------------------------|-----------------------------|----------------|-----------------------------------|-----------------------------|----------------|-----------------------------------|-----------------------------|
| 360 | 2044 | 0.0 | 490 | 7179 | 1.0 | 620 | 118034 | 30.7 | 750 | 8362 | 0.0 | 880 | 3128 | 0.0 |
| 365 | 2016 | 0.0 | 495 | 10476 | 1.9 | 625 | 111884 | 24.7 | 755 | 7635 | 0.0 | 885 | 3110 | 0.0 |
| 370 | 2020 | 0.0 | 500 | 15549 | 3.4 | 630 | 106119 | 19.2 | 760 | 6582 | 0.0 | 890 | 2632 | 0.0 |
| 375 | 2137 | 0.0 | 505 | 22477 | 6.3 | 635 | 99706 | 15.0 | 765 | 5777 | 0.0 | 895 | 2709 | 0.0 |
| 380 | 2046 | 0.0 | 510 | 30417 | 10.4 | 640 | 92142 | 11.0 | 770 | 5474 | 0.0 | 900 | 2016 | 0.0 |
| 385 | 1925 | 0.0 | 515 | 39274 | 16.3 | 645 | 84987 | 8.2 | 775 | 4977 | 0.0 | 905 | 1748 | 0.0 |
| 390 | 1893 | 0.0 | 520 | 47282 | 22.9 | 650 | 78016 | 5.7 | 780 | 4723 | 0.0 | 910 | 2046 | 0.0 |
| 395 | 1695 | 0.0 | 525 | 55413 | 29.7 | 655 | 71541 | 4.1 | 785 | 4219 | 0.0 | 915 | 1844 | 0.0 |
| 400 | 1633 | 0.0 | 530 | 62377 | 36.7 | 660 | 64863 | 2.7 | 790 | 3969 | 0.0 | 920 | 2734 | 0.0 |
| 405 | 2065 | 0.0 | 535 | 68520 | 42.5 | 665 | 58485 | 1.9 | 795 | 4122 | 0.0 | 925 | 2307 | 0.0 |
| 410 | 3449 | 0.0 | 540 | 73435 | 47.8 | 670 | 51641 | 1.1 | 800 | 2864 | 0.0 | 930 | 2039 | 0.0 |
| 415 | 7117 | 0.0 | 545 | 78677 | 52.4 | 675 | 46030 | 0.8 | 805 | 3151 | 0.0 | 935 | 1784 | 0.0 |
| 420 | 13992 | 0.0 | 550 | 83331 | 56.6 | 680 | 40590 | 0.5 | 810 | 3022 | 0.0 | 940 | 2464 | 0.0 |
| 425 | 25176 | 0.1 | 555 | 89120 | 60.9 | 685 | 35691 | 0.3 | 815 | 3471 | 0.0 | 945 | 2794 | 0.0 |
| 430 | 38151 | 0.3 | 560 | 94613 | 64.3 | 690 | 31631 | 0.2 | 820 | 2749 | 0.0 | 950 | 3090 | 0.0 |
| 435 | 49673 | 0.6 | 565 | 99818 | 66.4 | 695 | 27437 | 0.1 | 825 | 2729 | 0.0 | 955 | 1866 | 0.0 |
| 440 | 57273 | 0.9 | 570 | 106526 | 69.3 | 700 | 24589 | 0.1 | 830 | 2282 | 0.0 | 960 | 3110 | 0.0 |
| 445 | 54802 | 1.1 | 575 | 111610 | 69.4 | 705 | 21832 | 0.0 | 835 | 3140 | 0.0 | 965 | 3880 | 0.0 |
| 450 | 39184 | 1.0 | 580 | 117163 | 69.6 | 710 | 19500 | 0.0 | 840 | 2365 | 0.0 | 970 | 3243 | 0.0 |
| 455 | 22506 | 0.8 | 585 | 122201 | 67.9 | 715 | 17870 | 0.0 | 845 | 3024 | 0.0 | 975 | 2014 | 0.0 |
| 460 | 13692 | 0.6 | 590 | 125662 | 65.0 | 720 | 15924 | 0.0 | 850 | 2510 | 0.0 | 980 | 1688 | 0.0 |
| 465 | 9446 | 0.5 | 595 | 127415 | 60.4 | 725 | 14268 | 0.0 | 855 | 2739 | 0.0 | 985 | 2827 | 0.0 |
| 470 | 6698 | 0.4 | 600 | 129155 | 55.7 | 730 | 12438 | 0.0 | 860 | 3515 | 0.0 | 990 | 4172 | 0.0 |
| 475 | 5328 | 0.4 | 605 | 128057 | 49.6 | 735 | 11255 | 0.0 | 865 | 3600 | 0.0 | 995 | 3177 | 0.0 |
| 480 | 5081 | 0.5 | 610 | 126031 | 43.3 | 740 | 9951 | 0.0 | 870 | 3609 | 0.0 | 1000 | 3241 | 0.0 |
| 485 | 5579 | 0.7 | 615 | 123059 | 37.1 | 745 | 8870 | 0.0 | 875 | 3208 | 0.0 | | | |

REPORT NUMBER: SP1-1908-441-1-R4

Scotopic Flux vs. Wavelength



Scotopic Lumens: 6474.3 S/P: 1.04

| λ (nm) | Power (µW/nm) | Lumens (φ/nm) | λ (nm) | Power (µW/nm) | Lumens (φ/nm) | λ (nm) | Power (µW/nm) | Lumens (φ/nm) | λ (nm) | Power (µW/nm) | Lumens (φ/nm) | λ (nm) | Power (µW/nm) | Lumens (φ/nm) |
|--------|---------------|---------------|--------|---------------|---------------|--------|---------------|---------------|--------|---------------|---------------|--------|---------------|---------------|
| 360 | 2044 | 0.0 | 490 | 7179 | 6.0 | 620 | 118034 | 0.1 | 750 | 8362 | 0.0 | 880 | 3128 | 0.0 |
| 365 | 2016 | 0.0 | 495 | 10476 | 8.6 | 625 | 111884 | 0.1 | 755 | 7635 | 0.0 | 885 | 3110 | 0.0 |
| 370 | 2020 | 0.0 | 500 | 15549 | 12.5 | 630 | 106119 | 0.0 | 760 | 6582 | 0.0 | 890 | 2632 | 0.0 |
| 375 | 2137 | 0.0 | 505 | 22477 | 17.3 | 635 | 99706 | 0.0 | 765 | 5777 | 0.0 | 895 | 2709 | 0.0 |
| 380 | 2046 | 0.0 | 510 | 30417 | 21.8 | 640 | 92142 | 0.0 | 770 | 5474 | 0.0 | 900 | 2016 | 0.0 |
| 385 | 1925 | 0.0 | 515 | 39274 | 25.7 | 645 | 84987 | 0.0 | 775 | 4977 | 0.0 | 905 | 1748 | 0.0 |
| 390 | 1893 | 0.0 | 520 | 47282 | 27.5 | 650 | 78016 | 0.0 | 780 | 4723 | 0.0 | 910 | 2046 | 0.0 |
| 395 | 1695 | 0.0 | 525 | 55413 | 28.1 | 655 | 71541 | 0.0 | 785 | 4219 | 0.0 | 915 | 1844 | 0.0 |
| 400 | 1633 | 0.0 | 530 | 62377 | 27.0 | 660 | 64863 | 0.0 | 790 | 3969 | 0.0 | 920 | 2734 | 0.0 |
| 405 | 2065 | 0.0 | 535 | 68520 | 24.7 | 665 | 58485 | 0.0 | 795 | 4122 | 0.0 | 925 | 2307 | 0.0 |
| 410 | 3449 | 0.1 | 540 | 73435 | 21.5 | 670 | 51641 | 0.0 | 800 | 2864 | 0.0 | 930 | 2039 | 0.0 |
| 415 | 7117 | 0.5 | 545 | 78677 | 18.3 | 675 | 46030 | 0.0 | 805 | 3151 | 0.0 | 935 | 1784 | 0.0 |
| 420 | 13992 | 1.6 | 550 | 83331 | 15.0 | 680 | 40590 | 0.0 | 810 | 3022 | 0.0 | 940 | 2464 | 0.0 |
| 425 | 25176 | 3.9 | 555 | 89120 | 12.0 | 685 | 35691 | 0.0 | 815 | 3471 | 0.0 | 945 | 2794 | 0.0 |
| 430 | 38151 | 8.1 | 560 | 94613 | 9.3 | 690 | 31631 | 0.0 | 820 | 2749 | 0.0 | 950 | 3090 | 0.0 |
| 435 | 49673 | 13.3 | 565 | 99818 | 7.0 | 695 | 27437 | 0.0 | 825 | 2729 | 0.0 | 955 | 1866 | 0.0 |
| 440 | 57273 | 19.1 | 570 | 106526 | 5.2 | 700 | 24589 | 0.0 | 830 | 2282 | 0.0 | 960 | 3110 | 0.0 |
| 445 | 54802 | 21.6 | 575 | 111610 | 3.7 | 705 | 21832 | 0.0 | 835 | 3140 | 0.0 | 965 | 3880 | 0.0 |
| 450 | 39184 | 18.1 | 580 | 117163 | 2.6 | 710 | 19500 | 0.0 | 840 | 2365 | 0.0 | 970 | 3243 | 0.0 |
| 455 | 22506 | 11.8 | 585 | 122201 | 1.8 | 715 | 17870 | 0.0 | 845 | 3024 | 0.0 | 975 | 2014 | 0.0 |
| 460 | 13692 | 8.1 | 590 | 125662 | 1.2 | 720 | 15924 | 0.0 | 850 | 2510 | 0.0 | 980 | 1688 | 0.0 |
| 465 | 9446 | 6.2 | 595 | 127415 | 0.8 | 725 | 14268 | 0.0 | 855 | 2739 | 0.0 | 985 | 2827 | 0.0 |
| 470 | 6698 | 4.8 | 600 | 129155 | 0.5 | 730 | 12438 | 0.0 | 860 | 3515 | 0.0 | 990 | 4172 | 0.0 |
| 475 | 5328 | 4.1 | 605 | 128057 | 0.4 | 735 | 11255 | 0.0 | 865 | 3600 | 0.0 | 995 | 3177 | 0.0 |
| 480 | 5081 | 4.1 | 610 | 126031 | 0.2 | 740 | 9951 | 0.0 | 870 | 3609 | 0.0 | 1000 | 3241 | 0.0 |
| 485 | 5579 | 4.6 | 615 | 123059 | 0.1 | 745 | 8870 | 0.0 | 875 | 3208 | 0.0 | | | |

REPORT NUMBER: SP1-1908-441-1-R4

Melanopic Flux vs. Wavelength



Melanopic Lumens: 2145.7 M/P: 0.35

| λ (nm) | Power ($\mu\text{W}/\text{nm}$) | Lumens (ϕ/nm) | λ (nm) | Power ($\mu\text{W}/\text{nm}$) | Lumens (ϕ/nm) | λ (nm) | Power ($\mu\text{W}/\text{nm}$) | Lumens (ϕ/nm) | λ (nm) | Power ($\mu\text{W}/\text{nm}$) | Lumens (ϕ/nm) | λ (nm) | Power ($\mu\text{W}/\text{nm}$) | Lumens (ϕ/nm) |
|----------------|-----------------------------------|-----------------------------|----------------|-----------------------------------|-----------------------------|----------------|-----------------------------------|-----------------------------|----------------|-----------------------------------|-----------------------------|----------------|-----------------------------------|-----------------------------|
| 360 | 2044 | 0.0 | 490 | 7179 | 11.1 | 620 | 118034 | 1.5 | 750 | 8362 | 0.0 | 880 | 3128 | 0.0 |
| 365 | 2016 | 0.0 | 495 | 10476 | 16.9 | 625 | 111884 | 0.9 | 755 | 7635 | 0.0 | 885 | 3110 | 0.0 |
| 370 | 2020 | 0.0 | 500 | 15549 | 26.0 | 630 | 106119 | 0.6 | 760 | 6582 | 0.0 | 890 | 2632 | 0.0 |
| 375 | 2137 | 0.0 | 505 | 22477 | 38.2 | 635 | 99706 | 0.4 | 765 | 5777 | 0.0 | 895 | 2709 | 0.0 |
| 380 | 2046 | 0.0 | 510 | 30417 | 51.6 | 640 | 92142 | 0.2 | 770 | 5474 | 0.0 | 900 | 2016 | 0.0 |
| 385 | 1925 | 0.0 | 515 | 39274 | 65.1 | 645 | 84987 | 0.1 | 775 | 4977 | 0.0 | 905 | 1748 | 0.0 |
| 390 | 1893 | 0.0 | 520 | 47282 | 75.2 | 650 | 78016 | 0.1 | 780 | 4723 | 0.0 | 910 | 2046 | 0.0 |
| 395 | 1695 | 0.0 | 525 | 55413 | 82.9 | 655 | 71541 | 0.1 | 785 | 4219 | 0.0 | 915 | 1844 | 0.0 |
| 400 | 1633 | 0.0 | 530 | 62377 | 86.0 | 660 | 64863 | 0.0 | 790 | 3969 | 0.0 | 920 | 2734 | 0.0 |
| 405 | 2065 | 0.1 | 535 | 68520 | 85.4 | 665 | 58485 | 0.0 | 795 | 4122 | 0.0 | 925 | 2307 | 0.0 |
| 410 | 3449 | 0.2 | 540 | 73435 | 81.1 | 670 | 51641 | 0.0 | 800 | 2864 | 0.0 | 930 | 2039 | 0.0 |
| 415 | 7117 | 0.7 | 545 | 78677 | 75.4 | 675 | 46030 | 0.0 | 805 | 3151 | 0.0 | 935 | 1784 | 0.0 |
| 420 | 13992 | 2.3 | 550 | 83331 | 68.1 | 680 | 40590 | 0.0 | 810 | 3022 | 0.0 | 940 | 2464 | 0.0 |
| 425 | 25176 | 6.2 | 555 | 89120 | 60.9 | 685 | 35691 | 0.0 | 815 | 3471 | 0.0 | 945 | 2794 | 0.0 |
| 430 | 38151 | 13.0 | 560 | 94613 | 52.9 | 690 | 31631 | 0.0 | 820 | 2749 | 0.0 | 950 | 3090 | 0.0 |
| 435 | 49673 | 22.2 | 565 | 99818 | 44.8 | 695 | 27437 | 0.0 | 825 | 2729 | 0.0 | 955 | 1866 | 0.0 |
| 440 | 57273 | 32.0 | 570 | 106526 | 37.6 | 700 | 24589 | 0.0 | 830 | 2282 | 0.0 | 960 | 3110 | 0.0 |
| 445 | 54802 | 36.7 | 575 | 111610 | 30.4 | 705 | 21832 | 0.0 | 835 | 3140 | 0.0 | 965 | 3880 | 0.0 |
| 450 | 39184 | 30.4 | 580 | 117163 | 24.1 | 710 | 19500 | 0.0 | 840 | 2365 | 0.0 | 970 | 3243 | 0.0 |
| 455 | 22506 | 19.7 | 585 | 122201 | 18.7 | 715 | 17870 | 0.0 | 845 | 3024 | 0.0 | 975 | 2014 | 0.0 |
| 460 | 13692 | 13.2 | 590 | 125662 | 14.0 | 720 | 15924 | 0.0 | 850 | 2510 | 0.0 | 980 | 1688 | 0.0 |
| 465 | 9446 | 10.0 | 595 | 127415 | 10.2 | 725 | 14268 | 0.0 | 855 | 2739 | 0.0 | 985 | 2827 | 0.0 |
| 470 | 6698 | 7.7 | 600 | 129155 | 7.3 | 730 | 12438 | 0.0 | 860 | 3515 | 0.0 | 990 | 4172 | 0.0 |
| 475 | 5328 | 6.7 | 605 | 128057 | 5.0 | 735 | 11255 | 0.0 | 865 | 3600 | 0.0 | 995 | 3177 | 0.0 |
| 480 | 5081 | 6.9 | 610 | 126031 | 3.4 | 740 | 9951 | 0.0 | 870 | 3609 | 0.0 | 1000 | 3241 | 0.0 |
| 485 | 5579 | 8.1 | 615 | 123059 | 2.3 | 745 | 8870 | 0.0 | 875 | 3208 | 0.0 | | | |

REPORT NUMBER: SP1-1908-441-1-R4

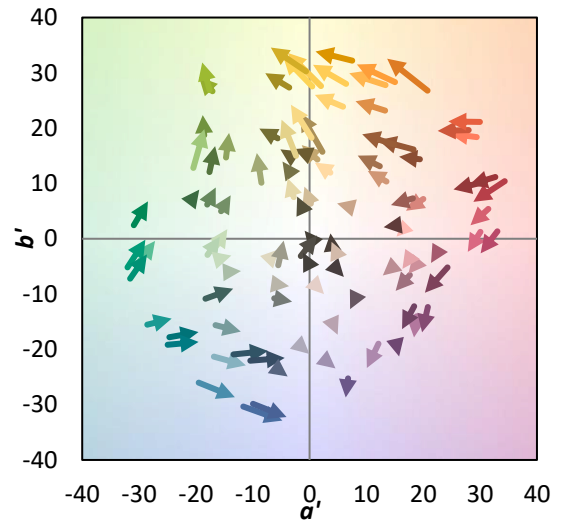
TM-30-18

Summary

$R_f = 69.9$
 $R_g = 98.3$
 $CIE R_a = 71.5$
 $R_9 = -16.1$



Color Vector Graphics



REPORT NUMBER: SP1-1908-441-1-R4

TM-30-18

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

| | | | |
|------------|------------|------------|------------|
| CES01 = 86 | CES26 = 54 | CES51 = 77 | CES76 = 48 |
| CES02 = 63 | CES27 = 74 | CES52 = 80 | CES77 = 75 |
| CES03 = 31 | CES28 = 80 | CES53 = 66 | CES78 = 56 |
| CES04 = 71 | CES29 = 44 | CES54 = 77 | CES79 = 81 |
| CES05 = 50 | CES30 = 46 | CES55 = 74 | CES80 = 80 |
| CES06 = 52 | CES31 = 50 | CES56 = 63 | CES81 = 73 |
| CES07 = 42 | CES32 = 49 | CES57 = 60 | CES82 = 91 |
| CES08 = 41 | CES33 = 53 | CES58 = 63 | CES83 = 84 |
| CES09 = 29 | CES34 = 66 | CES59 = 85 | CES84 = 90 |
| CES10 = 77 | CES35 = 82 | CES60 = 89 | CES85 = 87 |
| CES11 = 60 | CES36 = 78 | CES61 = 85 | CES86 = 65 |
| CES12 = 66 | CES37 = 75 | CES62 = 69 | CES87 = 78 |
| CES13 = 43 | CES38 = 53 | CES63 = 68 | CES88 = 73 |
| CES14 = 74 | CES39 = 91 | CES64 = 68 | CES89 = 68 |
| CES15 = 71 | CES40 = 85 | CES65 = 65 | CES90 = 68 |
| CES16 = 48 | CES41 = 76 | CES66 = 62 | CES91 = 91 |
| CES17 = 50 | CES42 = 76 | CES67 = 60 | CES92 = 71 |
| CES18 = 57 | CES43 = 65 | CES68 = 68 | CES93 = 82 |
| CES19 = 73 | CES44 = 98 | CES69 = 77 | CES94 = 57 |
| CES20 = 67 | CES45 = 75 | CES70 = 60 | CES95 = 78 |
| CES21 = 88 | CES46 = 70 | CES71 = 57 | CES96 = 80 |
| CES22 = 80 | CES47 = 63 | CES72 = 86 | CES97 = 79 |
| CES23 = 92 | CES48 = 51 | CES73 = 52 | CES98 = 71 |
| CES24 = 91 | CES49 = 68 | CES74 = 90 | CES99 = 64 |
| CES25 = 73 | CES50 = 77 | CES75 = 58 | |



REPORT NUMBER: SP1-1908-441-1-R4

TM-30-18

Color Rendition by Hue-Angle Bin



REPORT NUMBER: SP1-1908-441-1-R4

TM-30-18

Measure Comparisons



(END OF REPORT)