

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: P317347

Luminaire Tested: **GLEON-SA3A-727-U-T2R**

Issue Date: 3/3/2020

Test Information

Test Method: LM-79-08
Report Number: P317347
TEST IS SCALED FROM IESNA LM-79-08 TEST DATA (G2-1903-205-8)
Test Lab: INNOVATION CENTER
Issue Date: 3/3/2020
Manufacturer: COOPER LIGHTING SOLUTIONS (FORMERLY EATON)
Product Line: McGRAW-EDISON
Catalog Number: GLEON-SA3A-727-U-T2R
Description: GALLEON AREA AND ROADWAY LUMINAIRE
(3) 70 CRI, 2700K, 615mA LIGHTSQUARES WITH 16 LEDS EACH AND TYPE II
ROADWAY OPTICS
Light Source: -
Ballast/Driver: ELECTRONIC DRIVER

Summary

Lumens per Lamp: N/A
Luminaire Lumens: 12395 lumens
Efficiency: N/A
Efficacy: 129.1 lumens/watt
Luminous Opening: Rectangular (W 1' x L: 1' x H: 0')
IES Classification: Type II - Short
BUG Rating: B2 - U0 - G2

Input Watts (W): 96
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

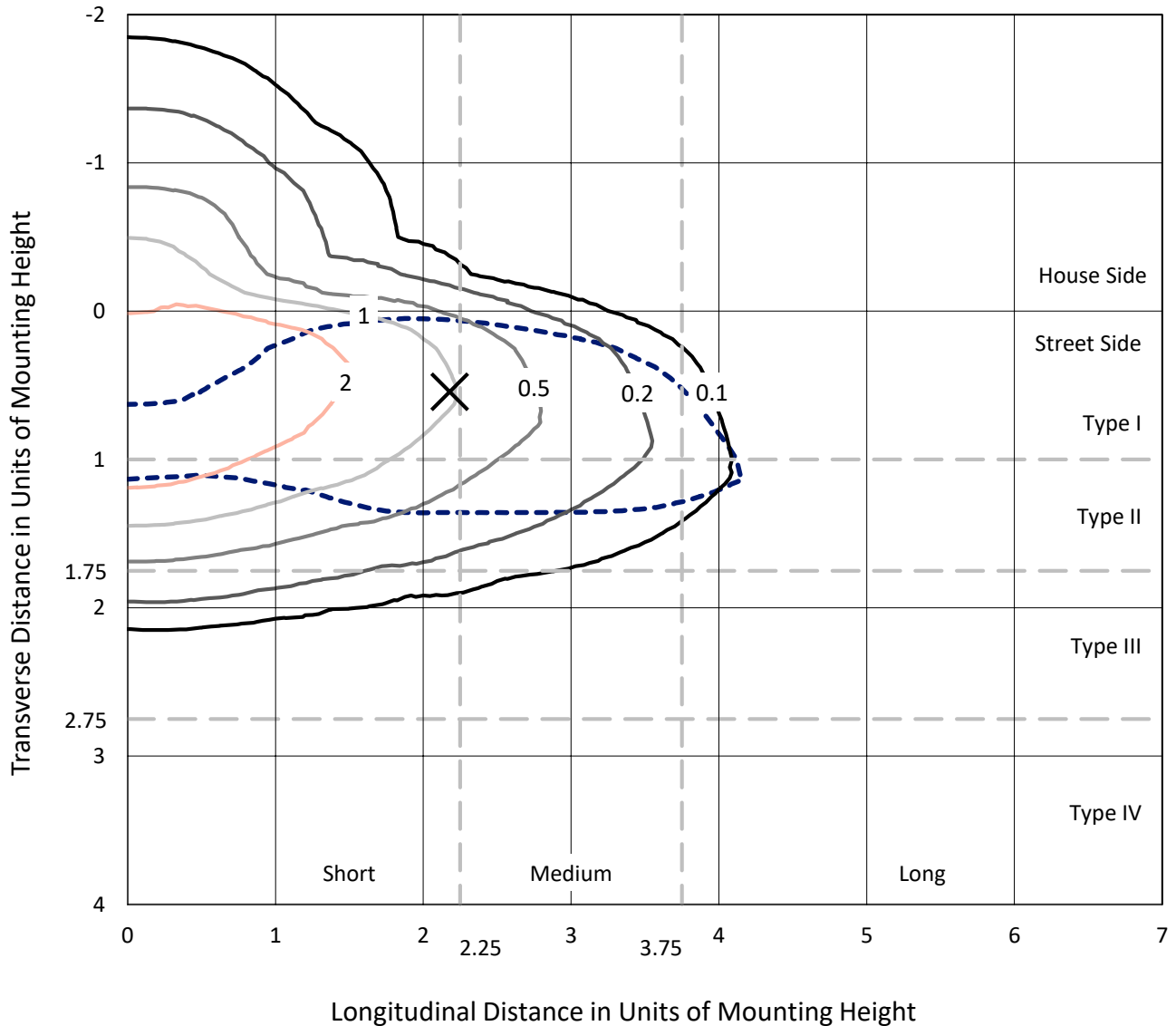




REPORT NUMBER: P317347
 CATALOG NUMBER: GLEON-SA3A-727-U-T2R

Iso-Footcandle Lines of Horizontal Illumination

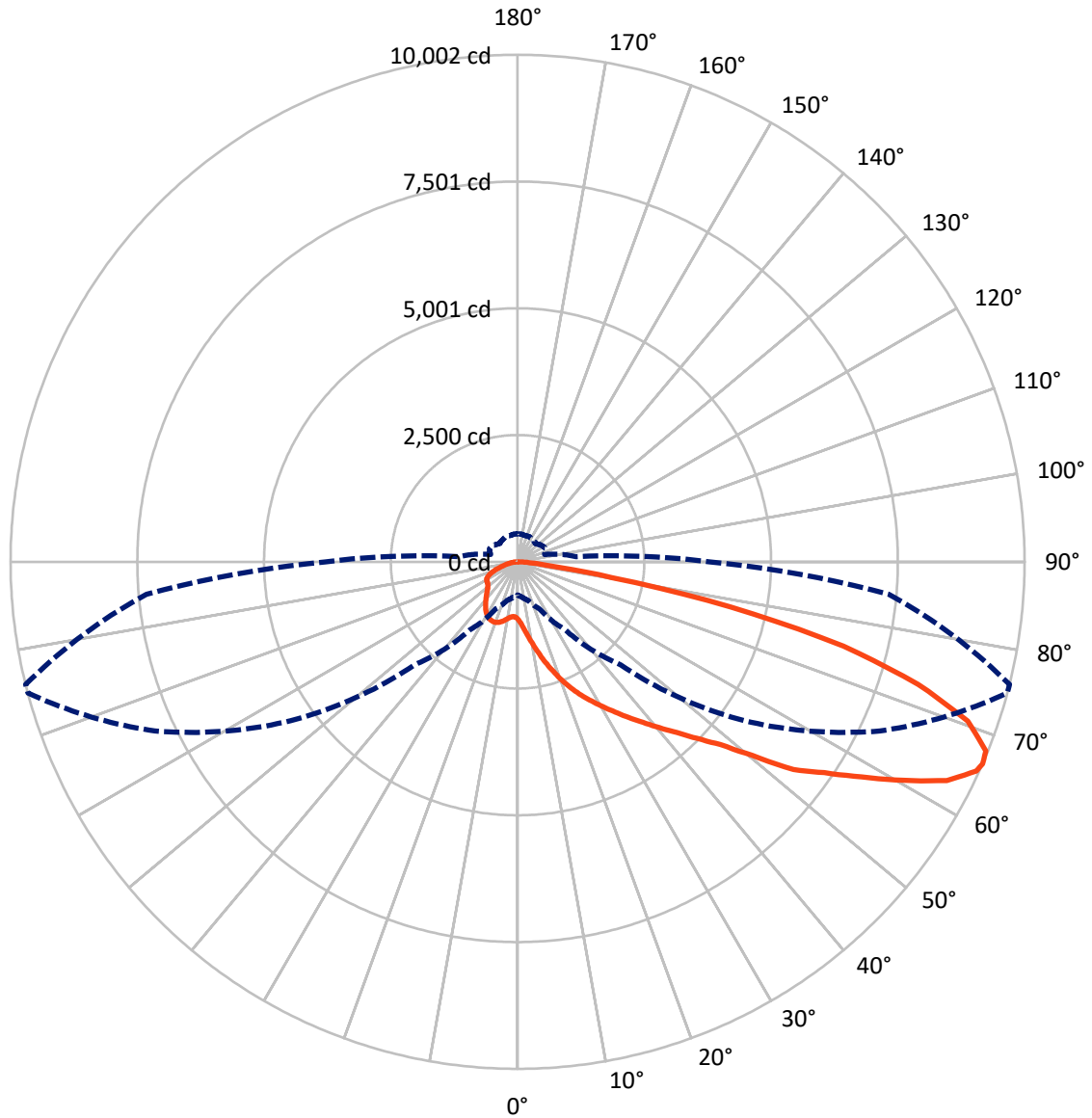
✕ Max cd
 - - - 1/2 Max cd



Based on 25 foot mounting height. Maximum calculated value = 4.8 fc
 Type II - Short - N/A

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Luminous Intensity Polar Plot



— Vertical Plane Through 76-Deg Lateral - - - Horizontal Cone Through 66-Deg Vertical



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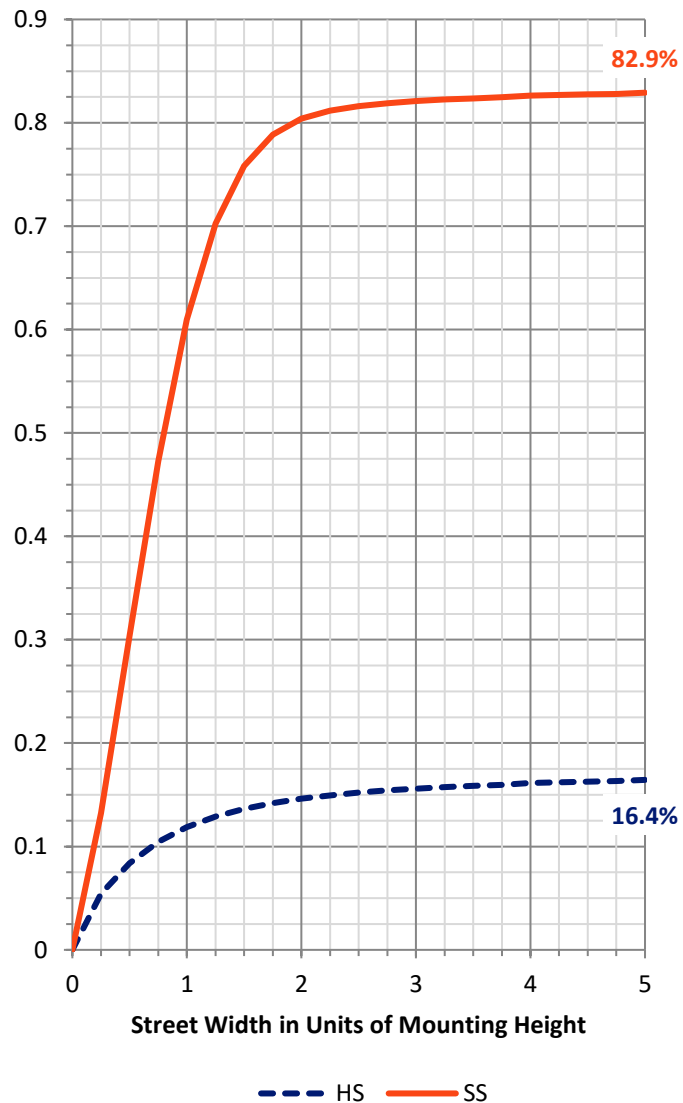
FLUX DISTRIBUTION:

| | | Downward | Upward | Total |
|--------------------|-----------|----------|--------|---------|
| House Side | Lumens | 2085.6 | 0.0 | 2085.6 |
| | % Fixture | 16.8 | 0.0 | 16.8 |
| Street Side | Lumens | 10309.3 | 0.0 | 10309.3 |
| | % Fixture | 83.2 | 0.0 | 83.2 |
| Total | Lumens | 12395.0 | 0.0 | 12395.0 |
| | % Fixture | 100.0 | 0.0 | 100.0 |

ZONAL LUMENS:

| Zone | Lumens | % Fixture |
|-----------|---------|-----------|
| 0°-10° | 136.9 | 1.1 |
| 10°-20° | 540.5 | 4.4 |
| 20°-30° | 1050.4 | 8.5 |
| 30°-40° | 1714.5 | 13.8 |
| 40°-50° | 2342.4 | 18.9 |
| 50°-60° | 2728.4 | 22.0 |
| 60°-70° | 2446.1 | 19.7 |
| 70°-80° | 1236.1 | 10.0 |
| 80°-90° | 199.6 | 1.6 |
| 90°-100° | 0.0 | 0.0 |
| 100°-110° | 0.0 | 0.0 |
| 110°-120° | 0.0 | 0.0 |
| 120°-130° | 0.0 | 0.0 |
| 130°-140° | 0.0 | 0.0 |
| 140°-150° | 0.0 | 0.0 |
| 150°-160° | 0.0 | 0.0 |
| 160°-170° | 0.0 | 0.0 |
| 170°-180° | 0.0 | 0.0 |
| 0°-90° | 12395.0 | 100.0 |
| 0°-180° | 12395.0 | 100.0 |

Coefficient of Utilization

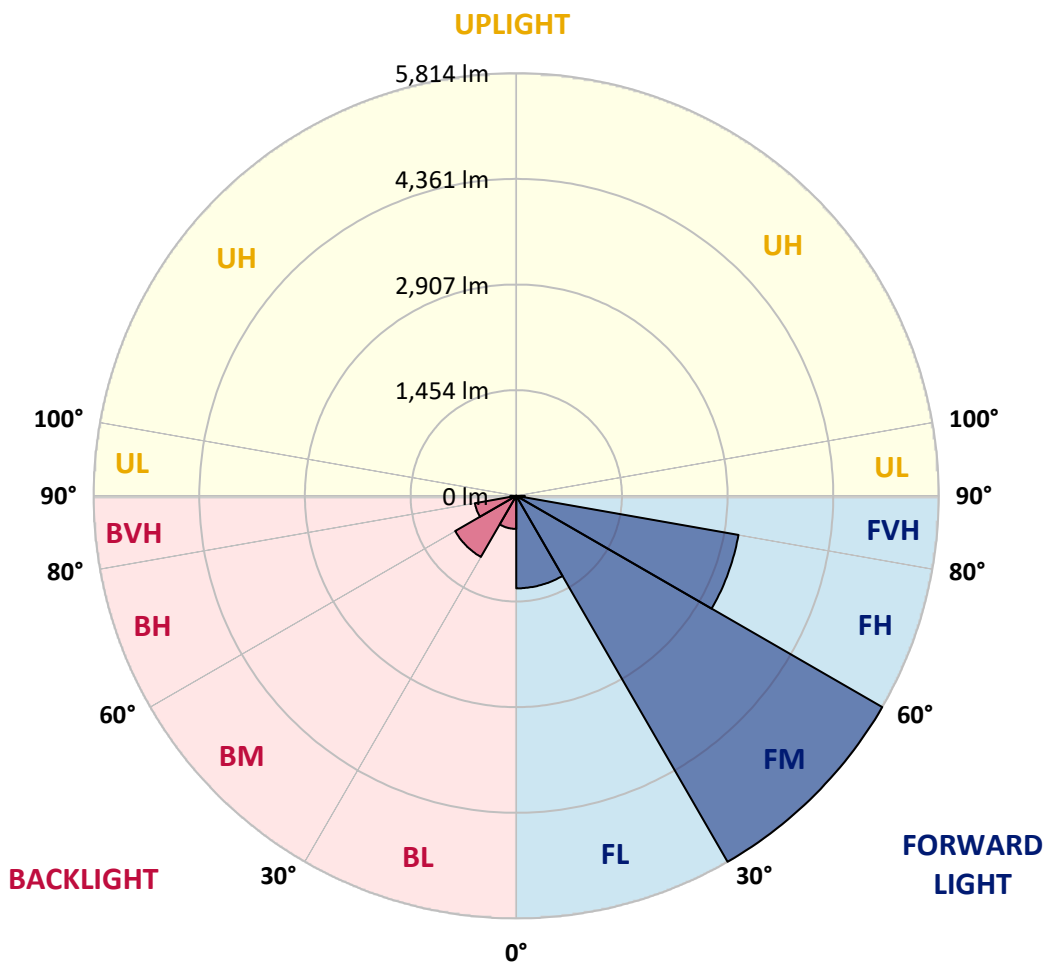


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LUMINAIRE CLASSIFICATION SYSTEM LUMEN TABLE AND BUG RATING:

| Zone | Lumens | % Fixture | Zone Rating/Lumen Limit | | |
|----------------|--------|-----------|-------------------------|------|---------|
| | | | B | U | G |
| FL (0°-30°) | 1272.9 | 10.3 | | | |
| FM (30°-60°) | 5814.1 | 46.9 | | | |
| FH (60°-80°) | 3104.4 | 25.0 | | | G2/5000 |
| FVH (80°-90°) | 117.9 | 1.0 | | | G2/225 |
| BL (0°-30°) | 454.9 | 3.7 | B1/500 | | |
| BM (30°-60°) | 971.2 | 7.8 | B1/1000 | | |
| BH (60°-80°) | 577.8 | 4.7 | B2/1000 | | G2/1000 |
| BVH (80°-90°) | 81.7 | 0.7 | | | G1/100 |
| UL (90°-100°) | 0.0 | 0.0 | | U0/0 | |
| UH (100°-180°) | 0.0 | 0.0 | | U0/0 | |

BUG Rating: B2-U0-G2
 Type II Short





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CANDELA DISTRIBUTION (FULL):

| | 0° | 5° | 15° | 25° | 35° | 45° | 55° | 65° | 75° | 76° | 85° |
|-------|--------|--------|--------|--------|--------|--------|--------|--------|---------|---------|--------|
| 0° | 1131.9 | 1131.9 | 1131.9 | 1131.9 | 1131.9 | 1131.9 | 1131.9 | 1131.9 | 1131.9 | 1131.9 | 1131.9 |
| 2.5° | 1502.7 | 1479.9 | 1477.8 | 1444.6 | 1437.0 | 1373.5 | 1326.8 | 1278.0 | 1222.4 | 1211.5 | 1167.7 |
| 5° | 1930.2 | 1928.1 | 1899.1 | 1844.8 | 1802.3 | 1693.7 | 1586.4 | 1472.8 | 1348.2 | 1328.0 | 1229.6 |
| 7.5° | 2314.8 | 2311.4 | 2289.1 | 2230.6 | 2169.2 | 2035.8 | 1882.6 | 1708.4 | 1506.5 | 1476.6 | 1313.3 |
| 10° | 2606.8 | 2605.6 | 2598.0 | 2555.1 | 2502.9 | 2375.0 | 2205.8 | 1968.1 | 1690.3 | 1649.5 | 1418.1 |
| 12.5° | 2832.4 | 2834.9 | 2840.0 | 2824.8 | 2800.0 | 2691.0 | 2517.6 | 2243.3 | 1886.4 | 1846.0 | 1534.6 |
| 15° | 2985.1 | 2992.7 | 3018.8 | 3040.3 | 3053.3 | 2986.4 | 2818.5 | 2524.8 | 2106.1 | 2057.7 | 1663.8 |
| 17.5° | 3062.1 | 3070.6 | 3115.6 | 3180.4 | 3240.1 | 3233.4 | 3100.0 | 2793.2 | 2316.9 | 2270.2 | 1802.7 |
| 20° | 3128.6 | 3134.9 | 3185.4 | 3263.3 | 3368.9 | 3415.6 | 3340.7 | 3051.6 | 2547.9 | 2492.4 | 1950.0 |
| 22.5° | 3321.3 | 3329.3 | 3344.5 | 3388.7 | 3482.1 | 3567.9 | 3531.7 | 3296.1 | 2759.6 | 2707.8 | 2089.7 |
| 25° | 3693.3 | 3703.0 | 3670.2 | 3632.7 | 3650.4 | 3710.2 | 3716.9 | 3519.1 | 2974.2 | 2915.7 | 2239.9 |
| 27.5° | 4141.5 | 4155.4 | 4099.4 | 4003.0 | 3918.9 | 3895.7 | 3887.7 | 3701.7 | 3179.1 | 3111.4 | 2388.4 |
| 30° | 4580.4 | 4604.4 | 4531.6 | 4406.6 | 4252.2 | 4143.6 | 4063.2 | 3880.6 | 3381.1 | 3316.3 | 2528.6 |
| 32.5° | 5009.2 | 4999.5 | 4893.9 | 4771.8 | 4590.9 | 4455.0 | 4260.6 | 4072.5 | 3608.3 | 3533.9 | 2667.9 |
| 35° | 5302.9 | 5306.2 | 5208.2 | 5063.4 | 4890.9 | 4786.6 | 4524.8 | 4279.5 | 3840.2 | 3771.6 | 2826.1 |
| 37.5° | 5552.8 | 5537.3 | 5426.2 | 5291.1 | 5142.6 | 5098.0 | 4834.1 | 4507.6 | 4091.4 | 4016.5 | 2994.4 |
| 40° | 5636.2 | 5618.1 | 5545.3 | 5448.1 | 5329.0 | 5325.2 | 5175.4 | 4765.9 | 4375.4 | 4301.4 | 3184.2 |
| 42.5° | 5585.7 | 5562.5 | 5532.6 | 5506.1 | 5469.5 | 5486.3 | 5496.0 | 5068.9 | 4687.7 | 4604.8 | 3403.8 |
| 45° | 5399.2 | 5364.3 | 5385.4 | 5443.0 | 5522.5 | 5617.6 | 5785.5 | 5404.3 | 5037.4 | 4967.9 | 3661.8 |
| 47.5° | 5112.7 | 5081.1 | 5146.8 | 5270.1 | 5486.3 | 5727.0 | 6059.5 | 5774.6 | 5454.8 | 5385.8 | 4029.1 |
| 50° | 4709.6 | 4718.8 | 4812.7 | 5036.9 | 5363.9 | 5777.5 | 6397.0 | 6264.8 | 6061.6 | 5997.2 | 4530.3 |
| 52.5° | 4048.1 | 4049.7 | 4314.0 | 4682.2 | 5146.8 | 5751.4 | 6584.2 | 6891.4 | 6890.1 | 6812.3 | 5007.5 |
| 55° | 3433.7 | 3471.2 | 3680.3 | 4169.7 | 4795.0 | 5647.1 | 6715.1 | 7196.0 | 7434.2 | 7342.9 | 5452.3 |
| 57.5° | 2833.6 | 2855.5 | 3053.7 | 3545.2 | 4293.0 | 5368.9 | 6849.3 | 7561.7 | 8061.2 | 8003.6 | 6005.2 |
| 60° | 2151.1 | 2184.8 | 2389.7 | 2843.7 | 3650.8 | 4875.4 | 6861.9 | 7943.4 | 8810.6 | 8752.6 | 6622.5 |
| 62.5° | 1396.2 | 1454.3 | 1646.2 | 2071.6 | 2874.0 | 4165.5 | 6569.1 | 8192.9 | 9520.9 | 9500.3 | 7170.4 |
| 65° | 802.5 | 846.2 | 979.6 | 1307.8 | 1982.8 | 3274.2 | 5872.6 | 8097.0 | 9958.2 | 9946.4 | 7375.3 |
| 66° | 655.6 | 683.0 | 785.2 | 1022.1 | 1636.1 | 2875.3 | 5467.8 | 7894.6 | 10001.5 | 10001.9 | 7351.7 |
| 67.5° | 524.3 | 536.5 | 582.4 | 731.8 | 1207.3 | 2279.0 | 4744.5 | 7448.1 | 9947.6 | 9962.4 | 7199.8 |
| 70° | 433.8 | 440.2 | 454.5 | 490.6 | 659.0 | 1374.3 | 3367.6 | 6288.0 | 9406.9 | 9418.3 | 6606.9 |
| 72.5° | 389.2 | 393.0 | 398.5 | 403.5 | 465.0 | 768.0 | 2056.9 | 5030.2 | 8247.6 | 8262.3 | 5703.5 |
| 75° | 352.6 | 354.7 | 353.9 | 354.3 | 390.1 | 489.4 | 1062.9 | 3755.6 | 6668.8 | 6639.3 | 4369.1 |
| 77.5° | 309.7 | 311.8 | 307.6 | 308.4 | 345.1 | 376.2 | 528.9 | 2629.1 | 4500.4 | 4292.5 | 2461.7 |
| 80° | 261.7 | 263.4 | 261.7 | 264.7 | 300.4 | 284.0 | 307.6 | 1479.1 | 1989.9 | 1882.2 | 875.3 |
| 82.5° | 197.8 | 204.9 | 210.0 | 221.8 | 247.4 | 202.0 | 205.8 | 576.1 | 605.9 | 576.9 | 268.5 |
| 85° | 86.7 | 105.6 | 158.2 | 169.6 | 186.0 | 121.2 | 135.1 | 234.8 | 246.6 | 239.0 | 97.6 |
| 87.5° | 22.7 | 24.8 | 78.3 | 98.5 | 103.1 | 54.7 | 70.3 | 106.9 | 112.8 | 106.9 | 32.4 |
| 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: P317347
 CATALOG NUMBER: GLEON-SA3A-727-U-T2R

CANDELA DISTRIBUTION (continued):

| | 90° | 95° | 105° | 115° | 125° | 135° | 145° | 155° | 165° | 175° | 180° |
|-------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|
| 0° | 1131.9 | 1131.9 | 1131.9 | 1131.9 | 1131.9 | 1131.9 | 1131.9 | 1131.9 | 1131.9 | 1131.9 | 1131.9 |
| 2.5° | 1144.6 | 1123.9 | 1086.9 | 1054.1 | 1029.3 | 1012.4 | 995.6 | 987.2 | 982.1 | 977.1 | 977.9 |
| 5° | 1181.2 | 1139.5 | 1076.0 | 1031.0 | 1005.7 | 989.7 | 981.3 | 977.9 | 975.8 | 970.8 | 970.8 |
| 7.5° | 1236.3 | 1177.4 | 1089.9 | 1043.6 | 1023.8 | 1011.6 | 1006.5 | 1004.9 | 1002.3 | 996.4 | 997.3 |
| 10° | 1305.7 | 1223.3 | 1118.9 | 1073.9 | 1055.8 | 1042.3 | 1035.2 | 1032.6 | 1028.0 | 1021.3 | 1022.1 |
| 12.5° | 1387.4 | 1280.1 | 1157.2 | 1110.1 | 1088.2 | 1070.1 | 1058.3 | 1051.2 | 1043.2 | 1034.3 | 1034.7 |
| 15° | 1476.6 | 1341.9 | 1198.4 | 1142.5 | 1112.6 | 1087.3 | 1068.4 | 1056.2 | 1043.6 | 1032.6 | 1032.2 |
| 17.5° | 1567.0 | 1401.7 | 1230.0 | 1160.1 | 1119.7 | 1086.5 | 1060.8 | 1041.9 | 1026.3 | 1012.9 | 1011.6 |
| 20° | 1664.7 | 1455.5 | 1247.7 | 1158.5 | 1106.3 | 1066.7 | 1032.6 | 1009.1 | 991.8 | 978.4 | 976.2 |
| 22.5° | 1764.0 | 1506.0 | 1250.6 | 1141.2 | 1076.4 | 1028.0 | 992.2 | 966.1 | 948.5 | 934.6 | 929.5 |
| 25° | 1854.9 | 1545.2 | 1238.4 | 1108.0 | 1034.7 | 982.6 | 947.6 | 921.1 | 906.8 | 890.4 | 885.4 |
| 27.5° | 1937.8 | 1572.5 | 1214.0 | 1065.5 | 988.0 | 936.7 | 903.9 | 881.1 | 865.6 | 853.0 | 848.7 |
| 30° | 2012.2 | 1587.2 | 1174.0 | 1015.0 | 940.1 | 893.4 | 865.6 | 850.0 | 836.5 | 820.6 | 817.6 |
| 32.5° | 2082.9 | 1587.2 | 1122.7 | 959.8 | 892.5 | 855.1 | 838.6 | 829.0 | 813.8 | 798.3 | 794.0 |
| 35° | 2153.6 | 1577.6 | 1062.1 | 902.2 | 848.7 | 827.7 | 826.9 | 815.5 | 792.4 | 771.3 | 765.8 |
| 37.5° | 2228.1 | 1557.8 | 993.9 | 848.3 | 813.0 | 815.5 | 822.7 | 797.4 | 764.6 | 734.7 | 726.7 |
| 40° | 2312.3 | 1530.4 | 923.2 | 801.6 | 783.1 | 810.0 | 811.3 | 771.3 | 707.4 | 680.0 | 672.9 |
| 42.5° | 2411.2 | 1503.1 | 857.6 | 760.4 | 759.5 | 793.6 | 789.8 | 714.9 | 676.6 | 662.8 | 659.0 |
| 45° | 2541.2 | 1487.5 | 795.3 | 721.2 | 741.0 | 767.1 | 753.2 | 683.8 | 667.8 | 659.8 | 656.4 |
| 47.5° | 2746.1 | 1495.5 | 738.1 | 690.1 | 722.5 | 740.6 | 685.1 | 671.2 | 659.8 | 650.1 | 646.8 |
| 50° | 3002.8 | 1490.9 | 691.8 | 668.6 | 701.5 | 712.8 | 654.3 | 654.8 | 648.9 | 637.9 | 632.9 |
| 52.5° | 3196.0 | 1454.7 | 661.9 | 656.4 | 683.0 | 663.6 | 635.0 | 638.8 | 635.8 | 619.8 | 614.4 |
| 55° | 3382.4 | 1423.6 | 646.8 | 651.8 | 669.5 | 602.2 | 612.3 | 621.5 | 618.6 | 603.0 | 600.5 |
| 57.5° | 3614.2 | 1417.7 | 637.5 | 653.1 | 658.1 | 571.4 | 590.4 | 602.6 | 600.5 | 593.7 | 592.5 |
| 60° | 3898.3 | 1419.3 | 629.1 | 655.2 | 645.5 | 548.7 | 569.8 | 585.3 | 586.6 | 585.3 | 584.5 |
| 62.5° | 4054.4 | 1373.5 | 608.1 | 649.3 | 623.2 | 528.9 | 548.3 | 571.0 | 571.4 | 574.0 | 573.5 |
| 65° | 3921.8 | 1236.3 | 568.9 | 628.7 | 585.7 | 512.5 | 529.8 | 554.6 | 548.3 | 559.7 | 559.7 |
| 66° | 3793.1 | 1157.2 | 549.6 | 615.2 | 569.8 | 506.2 | 523.9 | 546.2 | 538.2 | 553.8 | 553.8 |
| 67.5° | 3530.1 | 1023.8 | 514.6 | 586.6 | 547.0 | 497.4 | 517.2 | 532.3 | 521.4 | 544.5 | 542.8 |
| 70° | 3049.5 | 791.9 | 444.4 | 521.8 | 509.6 | 484.3 | 507.9 | 504.5 | 488.5 | 523.9 | 517.2 |
| 72.5° | 2571.1 | 601.7 | 356.8 | 436.8 | 452.8 | 467.9 | 494.9 | 469.2 | 449.0 | 473.8 | 459.1 |
| 75° | 1995.0 | 452.4 | 281.9 | 339.6 | 382.5 | 442.3 | 479.3 | 428.4 | 399.3 | 396.8 | 388.8 |
| 77.5° | 1078.5 | 310.5 | 223.4 | 259.2 | 303.8 | 410.3 | 468.8 | 384.6 | 340.8 | 330.7 | 324.4 |
| 80° | 427.1 | 202.0 | 162.4 | 196.5 | 212.5 | 364.0 | 443.5 | 333.7 | 281.1 | 271.0 | 261.3 |
| 82.5° | 176.3 | 119.5 | 104.8 | 131.7 | 138.4 | 311.4 | 398.1 | 273.5 | 217.1 | 300.4 | 319.0 |
| 85° | 75.7 | 65.6 | 62.3 | 68.2 | 78.3 | 218.4 | 316.9 | 208.7 | 234.4 | 209.1 | 166.2 |
| 87.5° | 22.7 | 27.8 | 26.5 | 26.1 | 28.6 | 52.2 | 168.7 | 116.1 | 172.1 | 65.2 | 48.8 |
| 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 |

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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

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Photopic Flux vs. Wavelength



Photopic Lumens: 6211.7

| 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 | 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 (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 | 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 | |



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Color Rendition by Hue-Angle Bin



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Measure Comparisons



(END OF REPORT)