

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: P1437502

Luminaire Tested: **GALN-SB2B-727-U-T3LG-HSS**

Issue Date: 03/27/202

This test was performed under the Supervised Manufacturer's Testing Program. The results of this test have not been influenced by sources from within Cooper Lighting Solutions or from external interests.

Report Generated By 670245763



**Test Information**

Test Method: LM-79-08  
Report Number: P1437502  
Test Lab: INNOVATION CENTER(G1)  
Issue Date: 03/27/202  
Manufacturer: COOPER LIGHTING SOLUTIONS (FORMERLY EATON)  
Product Line: McGRAW-EDISON  
Catalog Number: GALN-SB2B-727-U-T3LG-HSS  
Description: GALLEON II AREA AND ROADWAY HIGH DENSITY LUMINAIRE 450mA 2xLight Square PACKAGE 70CRI 2700K FIXTURE w/ TYPE III LOW GLARE WITH HOUSE SIDE SHIELD  
Light Source: (52) 2700K CCT, 70 CRI LEDS  
Ballast/Driver: ELECTRONIC DRIVER  
Luminaire Equipment: 

| <u>Sample No.</u> | <u>Condition</u> | <u>Description</u> |
|-------------------|------------------|--------------------|
| a                 | good             | reflector          |
| b                 | good             | lens               |
| c                 | good             | housing            |
| d                 | good             | cord               |

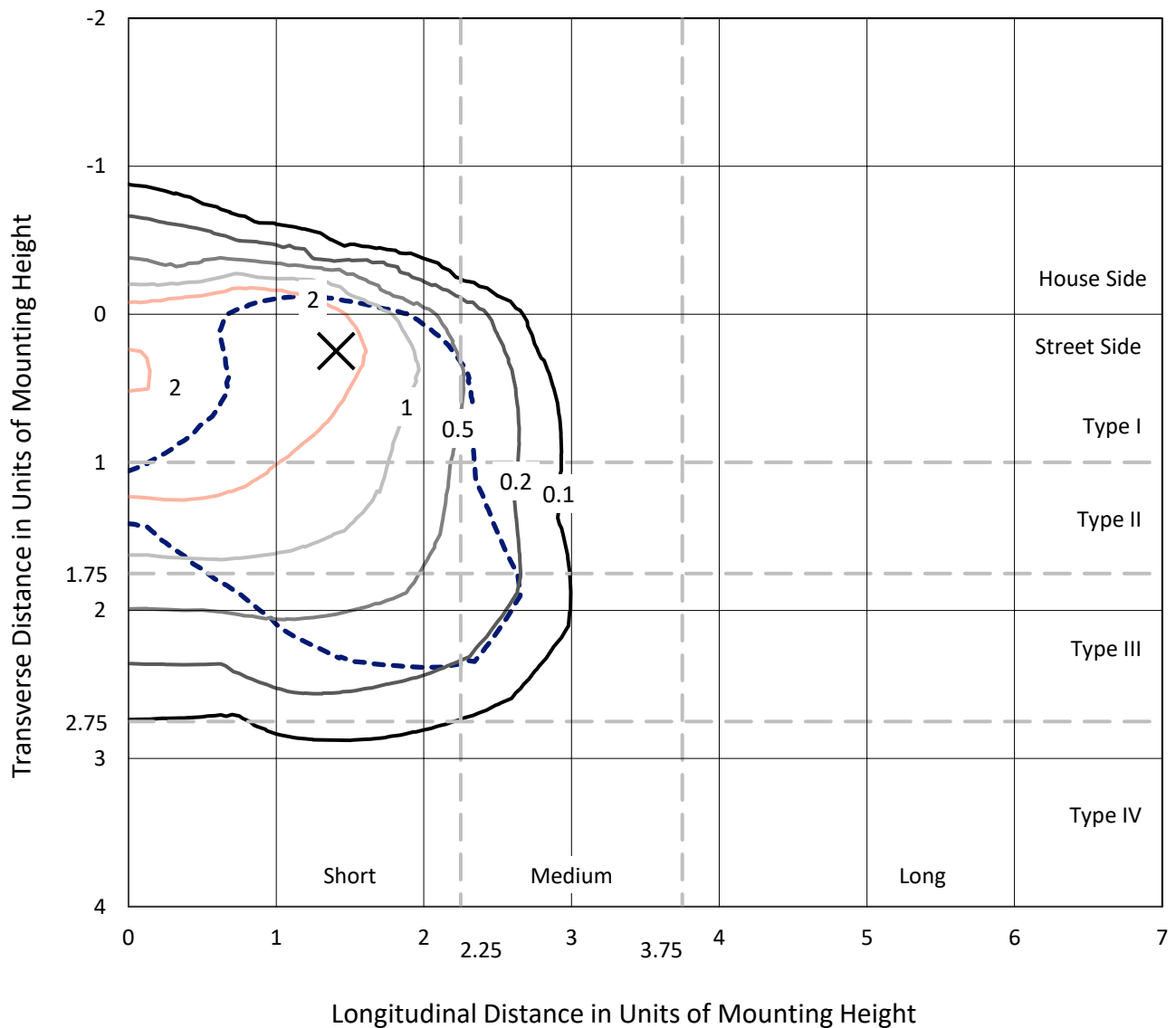
**Summary**

Lumens per Lamp: N/A  
Luminaire Lumens: 7986 lumens  
Efficiency: N/A  
Efficacy: 108.1 lumens/watt  
Luminous Opening: Rectangular (W 1' x L: 1' x H: 0')  
IES Classification: Type III - Short  
BUG Rating: B1 - U0 - G2  
  
Input Watts (W): 73.9  
Input Voltage (V): 120  
Input Current (A<sub>in</sub>): NR  
Voltage Rise (V): NR  
Power Factor: 0.97  
Total Harmonic Distortion (THDi): NR  
Frequency (hertz): 60  
Stabilization Time: NR  
Operation Time: NR  
Ambient Temperature (°C): NR  
Test Distance: 28.75 FT

REPORT NUMBER: P1437502  
 CATALOG NUMBER: GALN-SB2B-727-U-T3LG-HSS

### Iso-Footcandle Lines of Horizontal Illumination

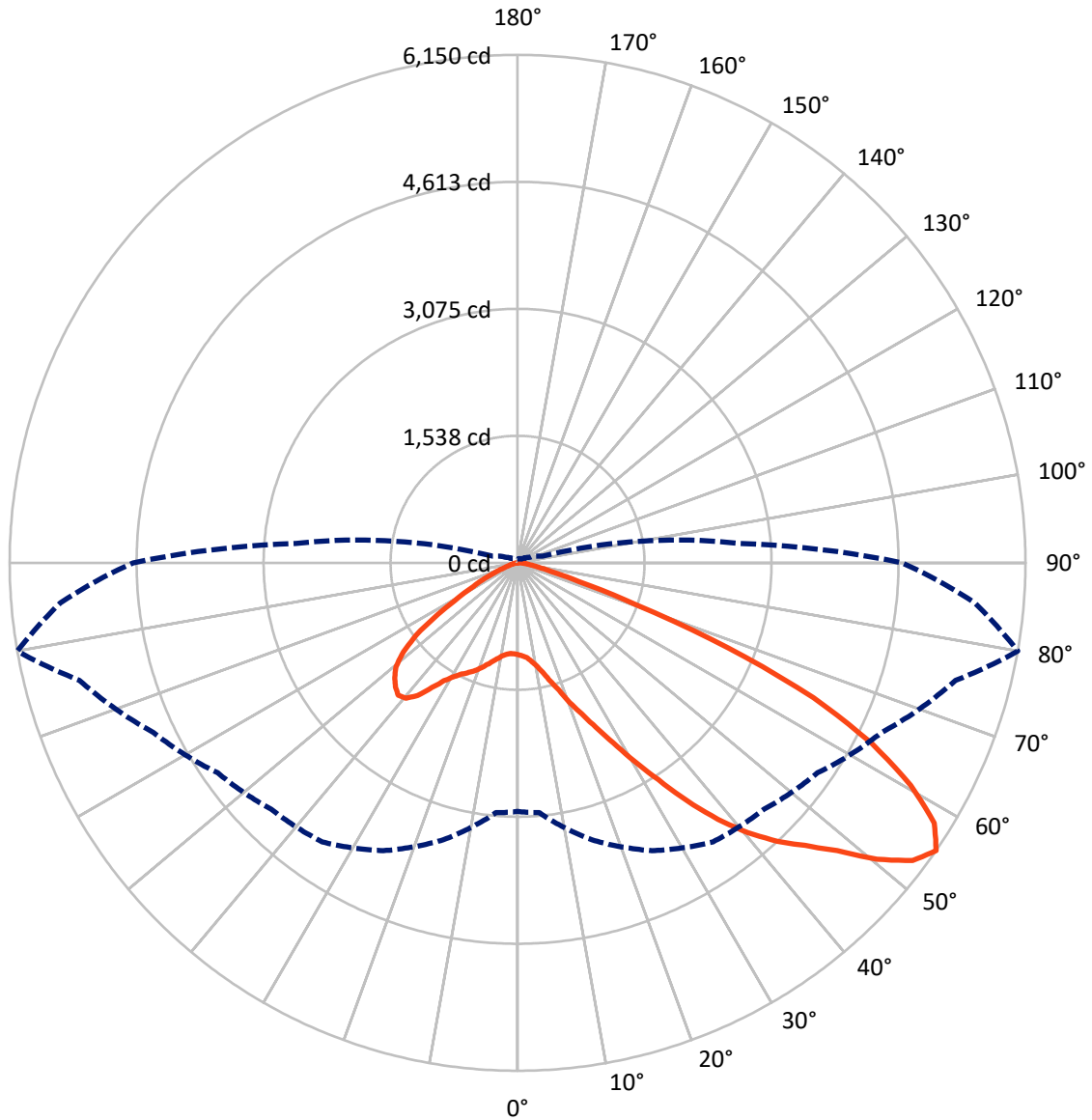
✕ Max cd  
 - - - 1/2 Max cd



Based on 20 foot mounting height. Maximum calculated value = 4.9 fc  
 Type III - Short - N/A

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### Luminous Intensity Polar Plot



— Vertical Plane Through 80-Deg Lateral    - - - Horizontal Cone Through 55-Deg Vertical

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**FLUX DISTRIBUTION:**

|                    |           | Downward | Upward | Total  |
|--------------------|-----------|----------|--------|--------|
| <b>House Side</b>  | Lumens    | 970.8    | 0.0    | 970.8  |
|                    | % Fixture | 12.2     | 0.0    | 12.2   |
| <b>Street Side</b> | Lumens    | 7015.2   | 0.0    | 7015.2 |
|                    | % Fixture | 87.8     | 0.0    | 87.8   |
| <b>Total</b>       | Lumens    | 7986.0   | 0.0    | 7986.0 |
|                    | % Fixture | 100.0    | 0.0    | 100.0  |

**Coefficient of Utilization**

**ZONAL LUMENS:**

| Zone      | Lumens | % Fixture |
|-----------|--------|-----------|
| 0°-10°    | 93.4   | 1.2       |
| 10°-20°   | 246.1  | 3.1       |
| 20°-30°   | 481.8  | 6.0       |
| 30°-40°   | 980.2  | 12.3      |
| 40°-50°   | 1652.6 | 20.7      |
| 50°-60°   | 2111.5 | 26.4      |
| 60°-70°   | 1802.7 | 22.6      |
| 70°-80°   | 576.1  | 7.2       |
| 80°-90°   | 41.6   | 0.5       |
| 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°    | 7986.0 | 100.0     |
| 0°-180°   | 7986.0 | 100.0     |

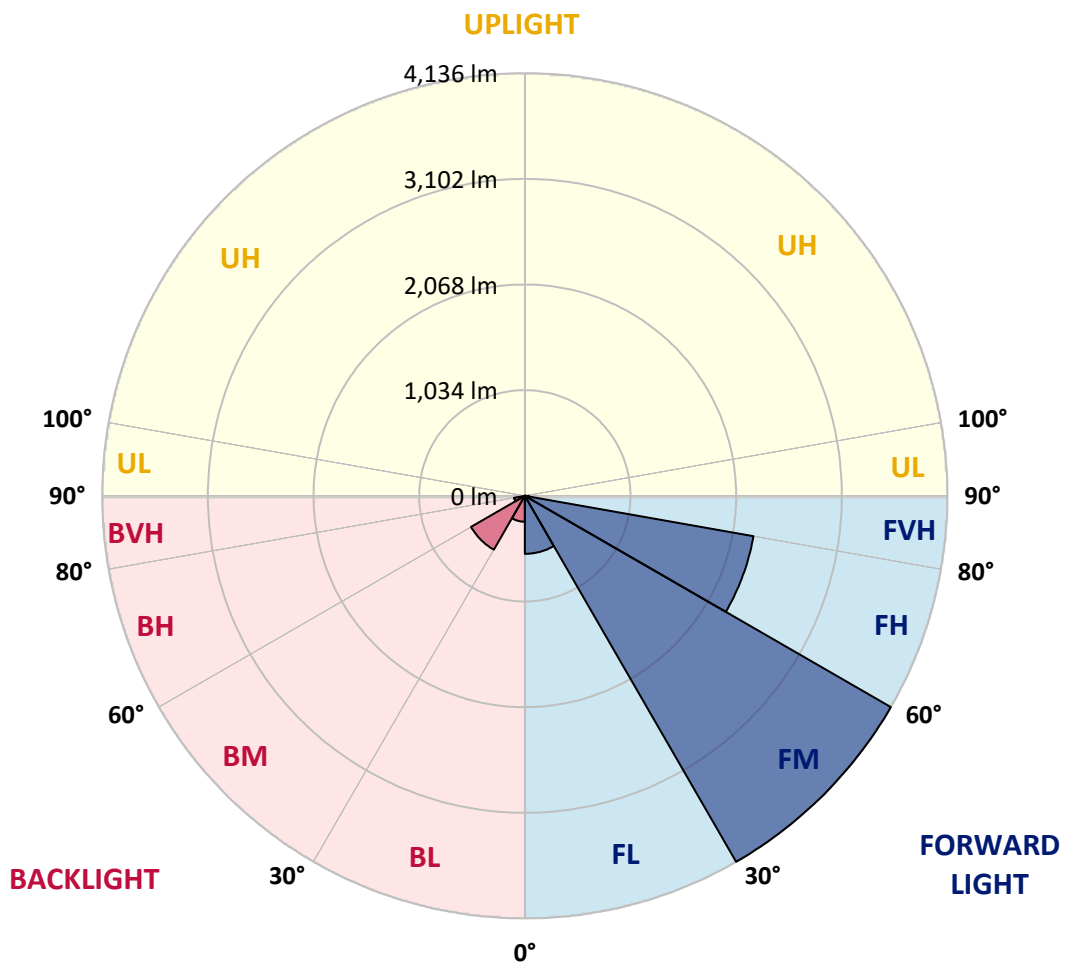


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**LUMINAIRE CLASSIFICATION SYSTEM LUMEN TABLE AND BUG RATING:**

| Zone           | Lumens | % Fixture | Zone Rating/Lumen Limit |      |         |
|----------------|--------|-----------|-------------------------|------|---------|
|                |        |           | B                       | U    | G       |
| FL (0°-30°)    | 567.8  | 7.1       |                         |      |         |
| FM (30°-60°)   | 4135.9 | 51.8      |                         |      |         |
| FH (60°-80°)   | 2272.1 | 28.5      |                         |      | G2/5000 |
| FVH (80°-90°)  | 39.4   | 0.5       |                         |      | G1/100  |
| BL (0°-30°)    | 253.5  | 3.2       | B1/500                  |      |         |
| BM (30°-60°)   | 608.4  | 7.6       | B1/1000                 |      |         |
| BH (60°-80°)   | 106.7  | 1.3       | B0/110                  |      | G0/110  |
| BVH (80°-90°)  | 2.2    | 0.0       |                         |      | G0/10   |
| UL (90°-100°)  | 0.0    | 0.0       |                         | U0/0 |         |
| UH (100°-180°) | 0.0    | 0.0       |                         | U0/0 |         |

**BUG Rating: B1-U0-G2**  
 Type III Short





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**CANDELA DISTRIBUTION (FULL):**

|       | 0°     | 5°     | 15°    | 25°    | 35°    | 45°    | 55°    | 65°    | 75°    | 80°    | 85°    |
|-------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|
| 0°    | 1112.4 | 1112.4 | 1112.4 | 1112.4 | 1112.4 | 1112.4 | 1112.4 | 1112.4 | 1112.4 | 1112.4 | 1112.4 |
| 2.5°  | 1119.2 | 1121.5 | 1119.2 | 1121.5 | 1126.1 | 1123.8 | 1132.9 | 1130.6 | 1130.6 | 1128.3 | 1119.2 |
| 5°    | 1055.7 | 1057.9 | 1062.5 | 1073.8 | 1089.7 | 1105.6 | 1126.1 | 1139.7 | 1153.3 | 1151.0 | 1141.9 |
| 7.5°  | 930.8  | 935.3  | 953.5  | 976.2  | 1028.4 | 1076.1 | 1128.3 | 1162.4 | 1191.9 | 1201.0 | 1194.2 |
| 10°   | 860.4  | 865.0  | 876.3  | 899.0  | 946.7  | 1026.2 | 1128.3 | 1198.7 | 1250.9 | 1269.1 | 1271.3 |
| 12.5° | 853.6  | 855.9  | 865.0  | 889.9  | 930.8  | 998.9  | 1126.1 | 1246.4 | 1334.9 | 1362.2 | 1371.2 |
| 15°   | 858.2  | 862.7  | 871.8  | 892.2  | 939.9  | 1017.1 | 1144.2 | 1321.3 | 1446.2 | 1484.8 | 1487.0 |
| 17.5° | 876.3  | 880.9  | 892.2  | 914.9  | 967.1  | 1064.8 | 1201.0 | 1398.5 | 1580.1 | 1623.2 | 1648.2 |
| 20°   | 912.6  | 914.9  | 928.5  | 958.1  | 1017.1 | 1123.8 | 1285.0 | 1502.9 | 1741.3 | 1804.9 | 1823.0 |
| 22.5° | 960.3  | 967.1  | 985.3  | 1021.6 | 1096.5 | 1205.5 | 1400.8 | 1630.0 | 1918.4 | 1984.2 | 2016.0 |
| 25°   | 1012.5 | 1021.6 | 1048.9 | 1107.9 | 1203.2 | 1330.4 | 1543.8 | 1798.0 | 2127.2 | 2206.7 | 2249.8 |
| 27.5° | 1119.2 | 1121.5 | 1139.7 | 1214.6 | 1337.2 | 1493.8 | 1725.4 | 2013.7 | 2372.4 | 2465.5 | 2513.2 |
| 30°   | 1353.1 | 1355.3 | 1339.5 | 1359.9 | 1484.8 | 1686.8 | 1938.8 | 2265.7 | 2658.5 | 2787.9 | 2826.5 |
| 32.5° | 1639.1 | 1650.5 | 1648.2 | 1634.6 | 1691.3 | 1879.8 | 2193.1 | 2567.7 | 2994.5 | 3130.7 | 3167.0 |
| 35°   | 1963.8 | 1991.0 | 1984.2 | 1979.7 | 1986.5 | 2127.2 | 2483.7 | 2901.4 | 3375.9 | 3541.6 | 3571.1 |
| 37.5° | 2281.6 | 2288.4 | 2320.2 | 2358.8 | 2363.3 | 2461.0 | 2819.7 | 3255.6 | 3730.0 | 3941.2 | 3986.6 |
| 40°   | 2526.8 | 2549.5 | 2629.0 | 2706.2 | 2785.6 | 2862.8 | 3096.6 | 3541.6 | 4011.6 | 4295.3 | 4315.8 |
| 42.5° | 2717.5 | 2772.0 | 2887.8 | 3008.1 | 3169.3 | 3255.6 | 3360.0 | 3743.7 | 4240.9 | 4610.9 | 4601.8 |
| 45°   | 2949.1 | 2971.8 | 3135.2 | 3294.2 | 3457.6 | 3589.3 | 3587.0 | 3913.9 | 4420.2 | 4881.1 | 4824.3 |
| 47.5° | 3105.7 | 3133.0 | 3355.4 | 3541.6 | 3709.6 | 3775.4 | 3789.1 | 4097.8 | 4667.7 | 5208.0 | 5074.0 |
| 50°   | 3189.7 | 3237.4 | 3480.3 | 3716.4 | 3898.0 | 3918.5 | 3979.8 | 4338.5 | 4992.3 | 5641.6 | 5389.6 |
| 52.5° | 3198.8 | 3244.2 | 3523.4 | 3827.7 | 4025.2 | 4066.0 | 4170.5 | 4610.9 | 5307.9 | 5989.0 | 5571.2 |
| 55°   | 3010.4 | 3037.6 | 3471.2 | 3845.8 | 4125.1 | 4220.4 | 4433.8 | 4862.9 | 5491.8 | 6150.1 | 5555.3 |
| 57.5° | 2833.3 | 2860.5 | 3237.4 | 3814.0 | 4227.2 | 4422.5 | 4715.3 | 5035.4 | 5348.7 | 5950.4 | 5201.2 |
| 60°   | 2681.2 | 2694.8 | 3037.6 | 3666.5 | 4265.8 | 4620.0 | 4958.3 | 4865.2 | 4978.7 | 5471.3 | 4595.0 |
| 62.5° | 2395.1 | 2404.2 | 2810.6 | 3400.9 | 4188.6 | 4772.1 | 5042.3 | 4504.2 | 4572.3 | 4810.7 | 3882.2 |
| 65°   | 1809.4 | 1843.5 | 2215.8 | 3201.1 | 4061.5 | 4842.5 | 4847.0 | 4063.8 | 3993.4 | 3936.6 | 3053.5 |
| 67.5° | 1228.2 | 1266.8 | 1491.6 | 2878.7 | 3854.9 | 4872.0 | 4467.9 | 3493.9 | 3042.2 | 2749.3 | 2000.1 |
| 70°   | 980.8  | 980.8  | 1057.9 | 2313.4 | 3364.5 | 4495.1 | 3997.9 | 2638.0 | 1932.0 | 1518.8 | 1071.6 |
| 72.5° | 644.8  | 647.0  | 719.7  | 1468.9 | 2386.0 | 3428.1 | 3260.1 | 1525.6 | 1003.5 | 774.2  | 529.0  |
| 75°   | 233.8  | 233.8  | 315.6  | 588.0  | 1262.3 | 2041.0 | 1986.5 | 728.8  | 544.9  | 422.3  | 320.1  |
| 77.5° | 124.9  | 129.4  | 152.1  | 242.9  | 483.6  | 830.9  | 776.4  | 372.3  | 308.8  | 263.4  | 199.8  |
| 80°   | 84.0   | 86.3   | 102.2  | 149.8  | 233.8  | 320.1  | 249.7  | 208.9  | 208.9  | 177.1  | 133.9  |
| 82.5° | 45.4   | 47.7   | 68.1   | 97.6   | 124.9  | 149.8  | 120.3  | 122.6  | 147.6  | 120.3  | 77.2   |
| 85°   | 31.8   | 31.8   | 52.2   | 70.4   | 70.4   | 72.6   | 52.2   | 77.2   | 86.3   | 74.9   | 52.2   |
| 87.5° | 18.2   | 18.2   | 29.5   | 34.1   | 34.1   | 31.8   | 15.9   | 27.2   | 34.1   | 38.6   | 22.7   |
| 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: P1437502

CATALOG NUMBER: GALN-SB2B-727-U-T3LG-HSS

**CANDELA DISTRIBUTION (continued):**

|       | 90°    | 95°    | 105°   | 115°   | 125°   | 135°   | 145°   | 155°   | 165°   | 175°   | 180°   |
|-------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|
| 0°    | 1112.4 | 1112.4 | 1112.4 | 1112.4 | 1112.4 | 1112.4 | 1112.4 | 1112.4 | 1112.4 | 1112.4 | 1112.4 |
| 2.5°  | 1117.0 | 1110.2 | 1096.5 | 1069.3 | 1055.7 | 1037.5 | 1021.6 | 1001.2 | 996.6  | 994.4  | 985.3  |
| 5°    | 1135.1 | 1121.5 | 1080.6 | 1021.6 | 971.7  | 924.0  | 876.3  | 849.1  | 826.4  | 815.0  | 812.8  |
| 7.5°  | 1180.5 | 1153.3 | 1078.4 | 973.9  | 880.9  | 799.1  | 728.8  | 667.5  | 635.7  | 608.4  | 610.7  |
| 10°   | 1248.6 | 1205.5 | 1082.9 | 928.5  | 790.1  | 658.4  | 556.2  | 467.7  | 404.1  | 374.6  | 372.3  |
| 12.5° | 1339.5 | 1278.2 | 1098.8 | 883.1  | 678.8  | 494.9  | 365.5  | 313.3  | 299.7  | 297.4  | 295.1  |
| 15°   | 1450.7 | 1364.4 | 1114.7 | 824.1  | 529.0  | 342.8  | 297.4  | 286.1  | 283.8  | 281.5  | 281.5  |
| 17.5° | 1584.6 | 1464.3 | 1123.8 | 724.2  | 385.9  | 295.1  | 279.2  | 272.4  | 270.2  | 267.9  | 267.9  |
| 20°   | 1752.6 | 1575.6 | 1135.1 | 597.1  | 326.9  | 283.8  | 265.6  | 256.5  | 254.3  | 254.3  | 252.0  |
| 22.5° | 1918.4 | 1700.4 | 1126.1 | 485.8  | 315.6  | 270.2  | 249.7  | 240.6  | 236.1  | 236.1  | 233.8  |
| 25°   | 2109.1 | 1827.6 | 1098.8 | 438.2  | 313.3  | 258.8  | 233.8  | 220.2  | 213.4  | 211.1  | 211.1  |
| 27.5° | 2327.0 | 1972.9 | 1055.7 | 440.4  | 313.3  | 249.7  | 213.4  | 195.2  | 190.7  | 186.2  | 186.2  |
| 30°   | 2576.7 | 2149.9 | 1023.9 | 469.9  | 317.8  | 240.6  | 195.2  | 172.5  | 165.7  | 161.2  | 163.5  |
| 32.5° | 2862.8 | 2347.5 | 1021.6 | 517.6  | 324.6  | 227.0  | 174.8  | 149.8  | 143.0  | 140.8  | 143.0  |
| 35°   | 3187.4 | 2592.6 | 1073.8 | 553.9  | 306.5  | 197.5  | 149.8  | 129.4  | 122.6  | 122.6  | 124.9  |
| 37.5° | 3548.4 | 2874.2 | 1144.2 | 544.9  | 247.5  | 156.6  | 129.4  | 113.5  | 106.7  | 109.0  | 111.2  |
| 40°   | 3877.6 | 3094.4 | 1155.6 | 465.4  | 186.2  | 133.9  | 111.2  | 99.9   | 95.4   | 97.6   | 99.9   |
| 42.5° | 4127.3 | 3271.4 | 1046.6 | 361.0  | 156.6  | 113.5  | 95.4   | 86.3   | 84.0   | 88.5   | 88.5   |
| 45°   | 4329.4 | 3341.8 | 874.1  | 267.9  | 138.5  | 97.6   | 84.0   | 79.5   | 74.9   | 77.2   | 77.2   |
| 47.5° | 4540.5 | 3353.2 | 712.9  | 215.7  | 122.6  | 88.5   | 77.2   | 72.6   | 68.1   | 68.1   | 68.1   |
| 50°   | 4744.9 | 3325.9 | 544.9  | 190.7  | 113.5  | 79.5   | 70.4   | 65.8   | 61.3   | 59.0   | 59.0   |
| 52.5° | 4794.8 | 3108.0 | 399.6  | 177.1  | 104.4  | 74.9   | 65.8   | 61.3   | 56.8   | 54.5   | 54.5   |
| 55°   | 4656.3 | 2694.8 | 313.3  | 158.9  | 95.4   | 68.1   | 61.3   | 56.8   | 49.9   | 47.7   | 47.7   |
| 57.5° | 4200.0 | 2054.6 | 249.7  | 136.2  | 86.3   | 65.8   | 56.8   | 52.2   | 45.4   | 43.1   | 43.1   |
| 60°   | 3607.4 | 1457.5 | 202.1  | 111.2  | 79.5   | 59.0   | 52.2   | 45.4   | 40.9   | 36.3   | 36.3   |
| 62.5° | 2951.3 | 1046.6 | 163.5  | 93.1   | 74.9   | 52.2   | 47.7   | 40.9   | 31.8   | 25.0   | 25.0   |
| 65°   | 2263.5 | 751.5  | 127.1  | 74.9   | 68.1   | 45.4   | 40.9   | 34.1   | 25.0   | 18.2   | 18.2   |
| 67.5° | 1464.3 | 485.8  | 95.4   | 65.8   | 52.2   | 38.6   | 31.8   | 27.2   | 22.7   | 15.9   | 13.6   |
| 70°   | 771.9  | 283.8  | 70.4   | 56.8   | 38.6   | 29.5   | 27.2   | 22.7   | 18.2   | 11.4   | 11.4   |
| 72.5° | 399.6  | 186.2  | 52.2   | 49.9   | 29.5   | 20.4   | 22.7   | 18.2   | 13.6   | 6.8    | 6.8    |
| 75°   | 256.5  | 124.9  | 38.6   | 40.9   | 18.2   | 15.9   | 15.9   | 11.4   | 6.8    | 4.5    | 2.3    |
| 77.5° | 165.7  | 84.0   | 27.2   | 34.1   | 11.4   | 9.1    | 9.1    | 4.5    | 2.3    | 0.0    | 0.0    |
| 80°   | 97.6   | 52.2   | 18.2   | 22.7   | 4.5    | 4.5    | 2.3    | 0.0    | 0.0    | 0.0    | 0.0    |
| 82.5° | 49.9   | 27.2   | 9.1    | 9.1    | 2.3    | 0.0    | 0.0    | 0.0    | 0.0    | 0.0    | 0.0    |
| 85°   | 31.8   | 13.6   | 2.3    | 2.3    | 0.0    | 0.0    | 0.0    | 0.0    | 0.0    | 0.0    | 0.0    |
| 87.5° | 15.9   | 4.5    | 2.3    | 0.0    | 0.0    | 0.0    | 0.0    | 0.0    | 0.0    | 0.0    | 0.0    |
| 90°   | 0.0    | 0.0    | 0.0    | 0.0    | 0.0    | 0.0    | 0.0    | 0.0    | 0.0    | 0.0    | 0.0    |

Cooper Lighting Solutions Photometric Lab  
1121 Highway 74 South  
Peachtree City, GA 30269



LM-79-2019: Approved Method: Electrical and Photometric Measurements of Solid-State Lighting Products

Report Prepared for

Cooper Lighting Solutions

McGraw-Edison

Report Number: SP1-2407-184-3

Test Date: 10/09/2024

Luminaire Tested: GSS-SB1A-727-U-5WQ

Data in this report applies to families of products including GSS-SB1A-727-U-5WQ

**Test Information**

Test Method: LM-79-2019  
 Report Number: SP1-2407-184-3  
 Test Lab: COOPER LIGHTING SOLUTIONS  
 Photometer: SP1 - 76IN SPHERE  
 Measurement Geometry: 4π  
 Issue Date: 10/15/2024  
 Manufacturer: COOPER LIGHTING SOLUTIONS  
 Product Line: McGraw-Edison  
 Catalog Number: **GSS-SB1A-727-U-5WQ**  
 Description: GALLEON II SITE SLIM 1SQ 350MA 5WQ HIGH DENSITY LIGHTSQUARE WITH 70 CRI 2700K CCT 26 LEDS

**Spectral Parameters**

CCT (K): 2672  
 CIE u': 0.2638  
 CIE v': 0.5276  
 Duv: -0.0002  
 CIE x: 0.4619  
 CIE y: 0.4106  
 CIE z: 0.1275  
 Peak Wavelength (nm): 601  
 Dominant Wavelength (nm): 584  
 Purity: 61.88407  
 Rf: 67.9  
 Rg: 98.6

|           |      |      |       |
|-----------|------|------|-------|
| CRI (Ra): | 71.1 |      |       |
| R1:       | 68.3 | R9:  | -27.8 |
| R2:       | 79.8 | R10: | 54.4  |
| R3:       | 91.2 | R11: | 65.8  |
| R4:       | 69.4 | R12: | 45.6  |
| R5:       | 66.5 | R13: | 69.8  |
| R6:       | 72.6 | R14: | 94.5  |
| R7:       | 77.0 | R15: | 60.1  |
| R8:       | 44.1 |      |       |



**Test Conditions**

Stabilization Time: 21M  
 Operation Time: 1H 21M  
 Sphere Temperature (°C): 25.2

REPORT NUMBER: SP1-2407-184-3

| Measurement and Test Equipment |                       |                  |                      |
|--------------------------------|-----------------------|------------------|----------------------|
| Instrument                     | Identification Number | Calibration Date | Calibration Due Date |
| Photometer                     | IN0058                | 6/18/2024        | 12/18/2024           |
| Power Meter                    | INXT2011004           | 2/8/2024         | 2/8/2025             |
| AC Power Source                | IN0063                | 10/24/2023       | 10/24/2024           |
| DC Power Source                | IN0208                | 10/24/2023       | 10/24/2024           |
| Sphere Thermometer             | IN0085                | 10/24/2023       | 10/24/2024           |
| Room Thermometer               | IN0046                | 10/24/2023       | 10/24/2024           |

REPORT NUMBER: SP1-2407-184-3

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: SP1-2407-184-3

**Photopic Flux vs. Wavelength**



**Photopic Lumens: NR**

| $\lambda$<br>(nm) | Power<br>W <sup>^</sup> /nm | Lumens<br>( $\phi$ /nm) | $\lambda$<br>(nm) | Power<br>W <sup>^</sup> /nm | Lumens<br>( $\phi$ /nm) | $\lambda$<br>(nm) | Power<br>W <sup>^</sup> /nm | Lumens<br>( $\phi$ /nm) | $\lambda$<br>(nm) | Power<br>W <sup>^</sup> /nm | Lumens<br>( $\phi$ /nm) | $\lambda$<br>(nm) | Power<br>W <sup>^</sup> /nm | Lumens<br>( $\phi$ /nm) |
|-------------------|-----------------------------|-------------------------|-------------------|-----------------------------|-------------------------|-------------------|-----------------------------|-------------------------|-------------------|-----------------------------|-------------------------|-------------------|-----------------------------|-------------------------|
| 360               | 0                           | NR                      | 490               | 52                          | NR                      | 620               | 888                         | NR                      | 750               | 27                          | NR                      | 880               | 1                           | NR                      |
| 365               | 0                           | NR                      | 495               | 87                          | NR                      | 625               | 834                         | NR                      | 755               | 23                          | NR                      | 885               | 1                           | NR                      |
| 370               | 0                           | NR                      | 500               | 135                         | NR                      | 630               | 776                         | NR                      | 760               | 20                          | NR                      | 890               | 1                           | NR                      |
| 375               | 0                           | NR                      | 505               | 196                         | NR                      | 635               | 712                         | NR                      | 765               | 17                          | NR                      | 895               | 0                           | NR                      |
| 380               | 0                           | NR                      | 510               | 258                         | NR                      | 640               | 648                         | NR                      | 770               | 15                          | NR                      | 900               | 0                           | NR                      |
| 385               | 1                           | NR                      | 515               | 317                         | NR                      | 645               | 583                         | NR                      | 775               | 12                          | NR                      | 905               | 0                           | NR                      |
| 390               | 2                           | NR                      | 520               | 368                         | NR                      | 650               | 523                         | NR                      | 780               | 11                          | NR                      | 910               | 0                           | NR                      |
| 395               | 4                           | NR                      | 525               | 408                         | NR                      | 655               | 465                         | NR                      | 785               | 9                           | NR                      | 915               | 0                           | NR                      |
| 400               | 6                           | NR                      | 530               | 443                         | NR                      | 660               | 410                         | NR                      | 790               | 8                           | NR                      | 920               | 0                           | NR                      |
| 405               | 11                          | NR                      | 535               | 473                         | NR                      | 665               | 360                         | NR                      | 795               | 7                           | NR                      | 925               | 0                           | NR                      |
| 410               | 23                          | NR                      | 540               | 498                         | NR                      | 670               | 313                         | NR                      | 800               | 6                           | NR                      | 930               | 0                           | NR                      |
| 415               | 51                          | NR                      | 545               | 530                         | NR                      | 675               | 272                         | NR                      | 805               | 5                           | NR                      | 935               | 0                           | NR                      |
| 420               | 111                         | NR                      | 550               | 563                         | NR                      | 680               | 236                         | NR                      | 810               | 4                           | NR                      | 940               | 0                           | NR                      |
| 425               | 214                         | NR                      | 555               | 605                         | NR                      | 685               | 203                         | NR                      | 815               | 4                           | NR                      | 945               | 0                           | NR                      |
| 430               | 339                         | NR                      | 560               | 651                         | NR                      | 690               | 175                         | NR                      | 820               | 3                           | NR                      | 950               | 0                           | NR                      |
| 435               | 467                         | NR                      | 565               | 705                         | NR                      | 695               | 150                         | NR                      | 825               | 3                           | NR                      | 955               | 0                           | NR                      |
| 440               | 535                         | NR                      | 570               | 765                         | NR                      | 700               | 128                         | NR                      | 830               | 3                           | NR                      | 960               | 0                           | NR                      |
| 445               | 372                         | NR                      | 575               | 824                         | NR                      | 705               | 110                         | NR                      | 835               | 2                           | NR                      | 965               | 0                           | NR                      |
| 450               | 160                         | NR                      | 580               | 882                         | NR                      | 710               | 94                          | NR                      | 840               | 2                           | NR                      | 970               | 0                           | NR                      |
| 455               | 89                          | NR                      | 585               | 930                         | NR                      | 715               | 80                          | NR                      | 845               | 2                           | NR                      | 975               | 0                           | NR                      |
| 460               | 53                          | NR                      | 590               | 968                         | NR                      | 720               | 69                          | NR                      | 850               | 1                           | NR                      | 980               | 0                           | NR                      |
| 465               | 31                          | NR                      | 595               | 991                         | NR                      | 725               | 59                          | NR                      | 855               | 1                           | NR                      | 985               | 0                           | NR                      |
| 470               | 23                          | NR                      | 600               | 999                         | NR                      | 730               | 50                          | NR                      | 860               | 1                           | NR                      | 990               | 0                           | NR                      |
| 475               | 21                          | NR                      | 605               | 992                         | NR                      | 735               | 43                          | NR                      | 865               | 1                           | NR                      | 995               | 0                           | NR                      |
| 480               | 23                          | NR                      | 610               | 969                         | NR                      | 740               | 36                          | NR                      | 870               | 1                           | NR                      | 1000              | 0                           | NR                      |
| 485               | 32                          | NR                      | 615               | 935                         | NR                      | 745               | 31                          | NR                      | 875               | 1                           | NR                      |                   |                             |                         |

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**Scotopic Flux vs. Wavelength**



**Scotopic Lumens: NR**

**S/P: 1.02**

| λ (nm) | Power W <sup>^</sup> /nm | Lumens (φ/nm) | λ (nm) | Power W <sup>^</sup> /nm | Lumens (φ/nm) | λ (nm) | Power W <sup>^</sup> /nm | Lumens (φ/nm) | λ (nm) | Power W <sup>^</sup> /nm | Lumens (φ/nm) | λ (nm) | Power W <sup>^</sup> /nm | Lumens (φ/nm) |
|--------|--------------------------|---------------|--------|--------------------------|---------------|--------|--------------------------|---------------|--------|--------------------------|---------------|--------|--------------------------|---------------|
| 360    | 0                        | NR            | 490    | 52                       | NR            | 620    | 888                      | NR            | 750    | 27                       | NR            | 880    | 1                        | NR            |
| 365    | 0                        | NR            | 495    | 87                       | NR            | 625    | 834                      | NR            | 755    | 23                       | NR            | 885    | 1                        | NR            |
| 370    | 0                        | NR            | 500    | 135                      | NR            | 630    | 776                      | NR            | 760    | 20                       | NR            | 890    | 1                        | NR            |
| 375    | 0                        | NR            | 505    | 196                      | NR            | 635    | 712                      | NR            | 765    | 17                       | NR            | 895    | 0                        | NR            |
| 380    | 0                        | NR            | 510    | 258                      | NR            | 640    | 648                      | NR            | 770    | 15                       | NR            | 900    | 0                        | NR            |
| 385    | 1                        | NR            | 515    | 317                      | NR            | 645    | 583                      | NR            | 775    | 12                       | NR            | 905    | 0                        | NR            |
| 390    | 2                        | NR            | 520    | 368                      | NR            | 650    | 523                      | NR            | 780    | 11                       | NR            | 910    | 0                        | NR            |
| 395    | 4                        | NR            | 525    | 408                      | NR            | 655    | 465                      | NR            | 785    | 9                        | NR            | 915    | 0                        | NR            |
| 400    | 6                        | NR            | 530    | 443                      | NR            | 660    | 410                      | NR            | 790    | 8                        | NR            | 920    | 0                        | NR            |
| 405    | 11                       | NR            | 535    | 473                      | NR            | 665    | 360                      | NR            | 795    | 7                        | NR            | 925    | 0                        | NR            |
| 410    | 23                       | NR            | 540    | 498                      | NR            | 670    | 313                      | NR            | 800    | 6                        | NR            | 930    | 0                        | NR            |
| 415    | 51                       | NR            | 545    | 530                      | NR            | 675    | 272                      | NR            | 805    | 5                        | NR            | 935    | 0                        | NR            |
| 420    | 111                      | NR            | 550    | 563                      | NR            | 680    | 236                      | NR            | 810    | 4                        | NR            | 940    | 0                        | NR            |
| 425    | 214                      | NR            | 555    | 605                      | NR            | 685    | 203                      | NR            | 815    | 4                        | NR            | 945    | 0                        | NR            |
| 430    | 339                      | NR            | 560    | 651                      | NR            | 690    | 175                      | NR            | 820    | 3                        | NR            | 950    | 0                        | NR            |
| 435    | 467                      | NR            | 565    | 705                      | NR            | 695    | 150                      | NR            | 825    | 3                        | NR            | 955    | 0                        | NR            |
| 440    | 535                      | NR            | 570    | 765                      | NR            | 700    | 128                      | NR            | 830    | 3                        | NR            | 960    | 0                        | NR            |
| 445    | 372                      | NR            | 575    | 824                      | NR            | 705    | 110                      | NR            | 835    | 2                        | NR            | 965    | 0                        | NR            |
| 450    | 160                      | NR            | 580    | 882                      | NR            | 710    | 94                       | NR            | 840    | 2                        | NR            | 970    | 0                        | NR            |
| 455    | 89                       | NR            | 585    | 930                      | NR            | 715    | 80                       | NR            | 845    | 2                        | NR            | 975    | 0                        | NR            |
| 460    | 53                       | NR            | 590    | 968                      | NR            | 720    | 69                       | NR            | 850    | 1                        | NR            | 980    | 0                        | NR            |
| 465    | 31                       | NR            | 595    | 991                      | NR            | 725    | 59                       | NR            | 855    | 1                        | NR            | 985    | 0                        | NR            |
| 470    | 23                       | NR            | 600    | 999                      | NR            | 730    | 50                       | NR            | 860    | 1                        | NR            | 990    | 0                        | NR            |
| 475    | 21                       | NR            | 605    | 992                      | NR            | 735    | 43                       | NR            | 865    | 1                        | NR            | 995    | 0                        | NR            |
| 480    | 23                       | NR            | 610    | 969                      | NR            | 740    | 36                       | NR            | 870    | 1                        | NR            | 1000   | 0                        | NR            |
| 485    | 32                       | NR            | 615    | 935                      | NR            | 745    | 31                       | NR            | 875    | 1                        | NR            |        |                          |               |

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Melanopic Flux vs. Wavelength



Melanopic Lumens: NR

M/P: 1.71

| $\lambda$ (nm) | Power W <sup>^</sup> /nm | Lumens (φ/nm) | $\lambda$ (nm) | Power W <sup>^</sup> /nm | Lumens (φ/nm) | $\lambda$ (nm) | Power W <sup>^</sup> /nm | Lumens (φ/nm) | $\lambda$ (nm) | Power W <sup>^</sup> /nm | Lumens (φ/nm) | $\lambda$ (nm) | Power W <sup>^</sup> /nm | Lumens (φ/nm) |
|----------------|--------------------------|---------------|----------------|--------------------------|---------------|----------------|--------------------------|---------------|----------------|--------------------------|---------------|----------------|--------------------------|---------------|
| 360            | 0                        | NR            | 490            | 52                       | NR            | 620            | 888                      | NR            | 750            | 27                       | NR            | 880            | 1                        | NR            |
| 365            | 0                        | NR            | 495            | 87                       | NR            | 625            | 834                      | NR            | 755            | 23                       | NR            | 885            | 1                        | NR            |
| 370            | 0                        | NR            | 500            | 135                      | NR            | 630            | 776                      | NR            | 760            | 20                       | NR            | 890            | 1                        | NR            |
| 375            | 0                        | NR            | 505            | 196                      | NR            | 635            | 712                      | NR            | 765            | 17                       | NR            | 895            | 0                        | NR            |
| 380            | 0                        | NR            | 510            | 258                      | NR            | 640            | 648                      | NR            | 770            | 15                       | NR            | 900            | 0                        | NR            |
| 385            | 1                        | NR            | 515            | 317                      | NR            | 645            | 583                      | NR            | 775            | 12                       | NR            | 905            | 0                        | NR            |
| 390            | 2                        | NR            | 520            | 368                      | NR            | 650            | 523                      | NR            | 780            | 11                       | NR            | 910            | 0                        | NR            |
| 395            | 4                        | NR            | 525            | 408                      | NR            | 655            | 465                      | NR            | 785            | 9                        | NR            | 915            | 0                        | NR            |
| 400            | 6                        | NR            | 530            | 443                      | NR            | 660            | 410                      | NR            | 790            | 8                        | NR            | 920            | 0                        | NR            |
| 405            | 11                       | NR            | 535            | 473                      | NR            | 665            | 360                      | NR            | 795            | 7                        | NR            | 925            | 0                        | NR            |
| 410            | 23                       | NR            | 540            | 498                      | NR            | 670            | 313                      | NR            | 800            | 6                        | NR            | 930            | 0                        | NR            |
| 415            | 51                       | NR            | 545            | 530                      | NR            | 675            | 272                      | NR            | 805            | 5                        | NR            | 935            | 0                        | NR            |
| 420            | 111                      | NR            | 550            | 563                      | NR            | 680            | 236                      | NR            | 810            | 4                        | NR            | 940            | 0                        | NR            |
| 425            | 214                      | NR            | 555            | 605                      | NR            | 685            | 203                      | NR            | 815            | 4                        | NR            | 945            | 0                        | NR            |
| 430            | 339                      | NR            | 560            | 651                      | NR            | 690            | 175                      | NR            | 820            | 3                        | NR            | 950            | 0                        | NR            |
| 435            | 467                      | NR            | 565            | 705                      | NR            | 695            | 150                      | NR            | 825            | 3                        | NR            | 955            | 0                        | NR            |
| 440            | 535                      | NR            | 570            | 765                      | NR            | 700            | 128                      | NR            | 830            | 3                        | NR            | 960            | 0                        | NR            |
| 445            | 372                      | NR            | 575            | 824                      | NR            | 705            | 110                      | NR            | 835            | 2                        | NR            | 965            | 0                        | NR            |
| 450            | 160                      | NR            | 580            | 882                      | NR            | 710            | 94                       | NR            | 840            | 2                        | NR            | 970            | 0                        | NR            |
| 455            | 89                       | NR            | 585            | 930                      | NR            | 715            | 80                       | NR            | 845            | 2                        | NR            | 975            | 0                        | NR            |
| 460            | 53                       | NR            | 590            | 968                      | NR            | 720            | 69                       | NR            | 850            | 1                        | NR            | 980            | 0                        | NR            |
| 465            | 31                       | NR            | 595            | 991                      | NR            | 725            | 59                       | NR            | 855            | 1                        | NR            | 985            | 0                        | NR            |
| 470            | 23                       | NR            | 600            | 999                      | NR            | 730            | 50                       | NR            | 860            | 1                        | NR            | 990            | 0                        | NR            |
| 475            | 21                       | NR            | 605            | 992                      | NR            | 735            | 43                       | NR            | 865            | 1                        | NR            | 995            | 0                        | NR            |
| 480            | 23                       | NR            | 610            | 969                      | NR            | 740            | 36                       | NR            | 870            | 1                        | NR            | 1000           | 0                        | NR            |
| 485            | 32                       | NR            | 615            | 935                      | NR            | 745            | 31                       | NR            | 875            | 1                        | NR            |                |                          |               |

**Summary**

$R_f = 67.9$   
 $R_g = 98.6$   
 $CIE R_a = 71.1$   
 $R_9 = -27.8$



**Color Vector Graphics**



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

|            |            |            |            |
|------------|------------|------------|------------|
| CES01 = 86 | CES26 = 53 | CES51 = 75 | CES76 = 51 |
| CES02 = 63 | CES27 = 70 | CES52 = 80 | CES77 = 79 |
| CES03 = 31 | CES28 = 81 | CES53 = 64 | CES78 = 58 |
| CES04 = 71 | CES29 = 37 | CES54 = 73 | CES79 = 82 |
| CES05 = 50 | CES30 = 33 | CES55 = 69 | CES80 = 82 |
| CES06 = 52 | CES31 = 44 | CES56 = 60 | CES81 = 69 |
| CES07 = 42 | CES32 = 47 | CES57 = 54 | CES82 = 92 |
| CES08 = 41 | CES33 = 45 | CES58 = 59 | CES83 = 82 |
| CES09 = 29 | CES34 = 67 | CES59 = 85 | CES84 = 92 |
| CES10 = 77 | CES35 = 84 | CES60 = 86 | CES85 = 87 |
| CES11 = 60 | CES36 = 68 | CES61 = 86 | CES86 = 60 |
| CES12 = 66 | CES37 = 77 | CES62 = 59 | CES87 = 79 |
| CES13 = 44 | CES38 = 40 | CES63 = 66 | CES88 = 70 |
| CES14 = 74 | CES39 = 88 | CES64 = 69 | CES89 = 66 |
| CES15 = 72 | CES40 = 82 | CES65 = 64 | CES90 = 64 |
| CES16 = 48 | CES41 = 70 | CES66 = 65 | CES91 = 81 |
| CES17 = 51 | CES42 = 76 | CES67 = 64 | CES92 = 69 |
| CES18 = 57 | CES43 = 63 | CES68 = 73 | CES93 = 81 |
| CES19 = 73 | CES44 = 97 | CES69 = 83 | CES94 = 53 |
| CES20 = 67 | CES45 = 74 | CES70 = 64 | CES95 = 77 |
| CES21 = 88 | CES46 = 67 | CES71 = 60 | CES96 = 79 |
| CES22 = 80 | CES47 = 55 | CES72 = 87 | CES97 = 78 |
| CES23 = 92 | CES48 = 42 | CES73 = 57 | CES98 = 69 |
| CES24 = 92 | CES49 = 65 | CES74 = 84 | CES99 = 60 |
| CES25 = 73 | CES50 = 74 | CES75 = 60 |            |



Color Rendition by Hue-Angle Bin



Measure Comparisons



(END OF REPORT)