

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

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Peachtree City, GA 30269

Scaled data based on original data using  
LM-79-2024 Approved Method: Electrical and Photometric Measurements of Solid-  
State Lighting Products

Test Report Prepared for  
Cooper Lighting Solutions

Brand: STREETWORKS

Report Number: P1459114

Luminaire Tested: GLAN-SB3D-930-U-T4LG-HSS

Issue Date: 05/20/2026

**Test Information**

Test Method: LM-79-2024  
Report Number: P1459114  
Test Lab: INNOVATION CENTER(G1)  
Issue Date: 5/22/2026  
Manufacturer: COOPER LIGHTING SOLUTIONS  
Product Line: STREETWORKS  
Catalog Number: GLAN-SB3D-930-U-T4LG-HSS  
Description: GALLEON II AREA AND ROADWAY HIGH DENSITY LUMINAIRE 900mA 3xLight Square PACKAGE 90CRI 3000K FIXTURE w/ TYPE IV LOW GLARE WITH HOUSE SIDE SHIELD  
Light Source: (78) 3000K CCT, 90 CRI LEDS  
Ballast/Driver: ELECTRONIC DRIVER

**Summary**

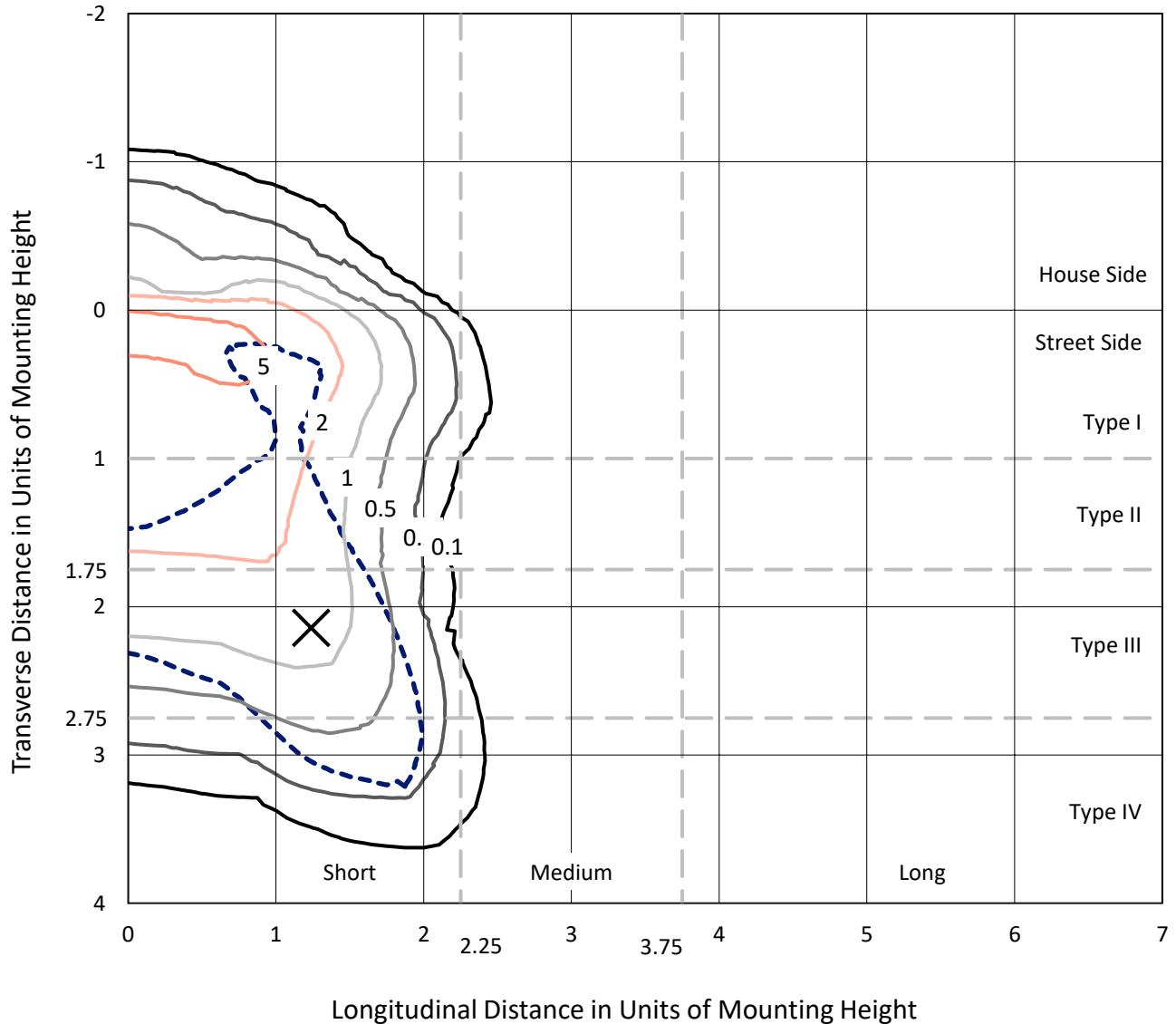
Lumens per Lamp: N/A  
Luminaire Lumens: 15412.1 lumens  
Efficiency: N/A  
Efficacy: 70.7 lumens/watt  
Luminous Opening: Rectangular (W 1' x L: 1' x H: 0')  
IES Classification: Type IV - Short  
BUG Rating: B1 - U0 - G2

Input Watts (W): 218.1  
Input Voltage (V): 120  
Input Current (Ain): 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: P1459114  
 CATALOG NUMBER: GLAN-SB3D-930-U-T4LG-HSS

### Iso-Footcandle Lines of Horizontal Illumination

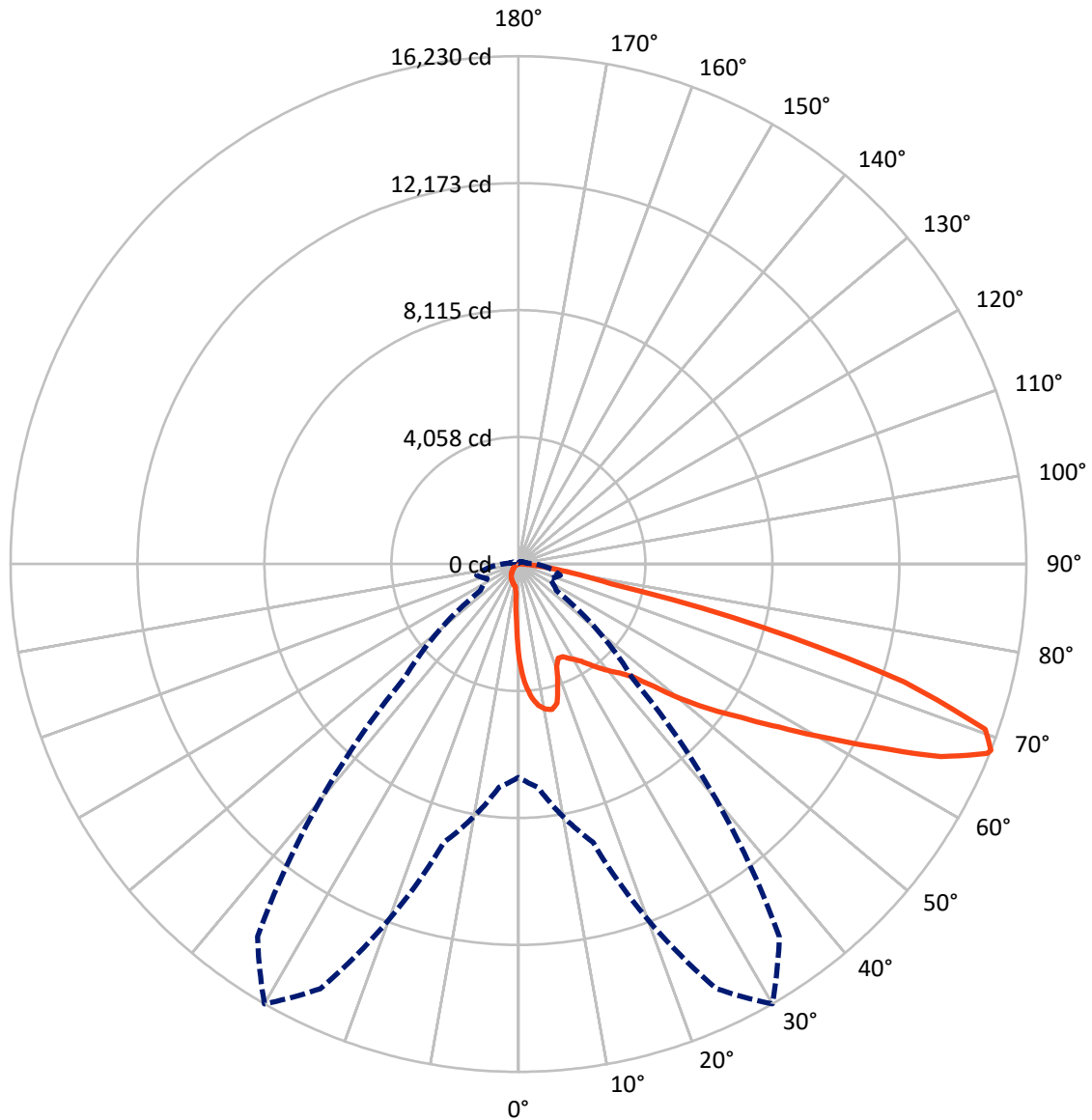
× Max cd  
 - - - 1/2 Max cd



Based on 25 foot mounting height. Maximum calculated value = 7.4 fc  
 Type IV - Short - N/A

REPORT NUMBER: P1459114  
CATALOG NUMBER: GLAN-SB3D-930-U-T4LG-HSS

### Luminous Intensity Polar Plot



— Vertical Plane Through 30-Deg Lateral      - - - Horizontal Cone Through 68-Deg Vertical

REPORT NUMBER: P1459114

CATALOG NUMBER: GLAN-SB3D-930-U-T4LG-HSS

**FLUX DISTRIBUTION:**

|                    |           | Downward | Upward | Total   |
|--------------------|-----------|----------|--------|---------|
| <b>House Side</b>  | Lumens    | 1176.3   | 0.0    | 1176.3  |
|                    | % Fixture | 7.6      | 0.0    | 7.6     |
| <b>Street Side</b> | Lumens    | 14235.8  | 0.0    | 14235.8 |
|                    | % Fixture | 92.4     | 0.0    | 92.4    |
| <b>Total</b>       | Lumens    | 15412.1  | 0.0    | 15412.1 |
|                    | % Fixture | 100.0    | 0.0    | 100.0   |

**Coefficient of Utilization**

**ZONAL LUMENS:**

| Zone      | Lumens  | % Fixture |
|-----------|---------|-----------|
| 0°-10°    | 262.2   | 1.7       |
| 10°-20°   | 748.7   | 4.9       |
| 20°-30°   | 1176.5  | 7.6       |
| 30°-40°   | 1845.3  | 12.0      |
| 40°-50°   | 2758.1  | 17.9      |
| 50°-60°   | 3669.2  | 23.8      |
| 60°-70°   | 3547.0  | 23.0      |
| 70°-80°   | 1275.0  | 8.3       |
| 80°-90°   | 130.1   | 0.8       |
| 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°    | 15412.1 | 100.0     |
| 0°-180°   | 15412.1 | 100.0     |



REPORT NUMBER: P1459114

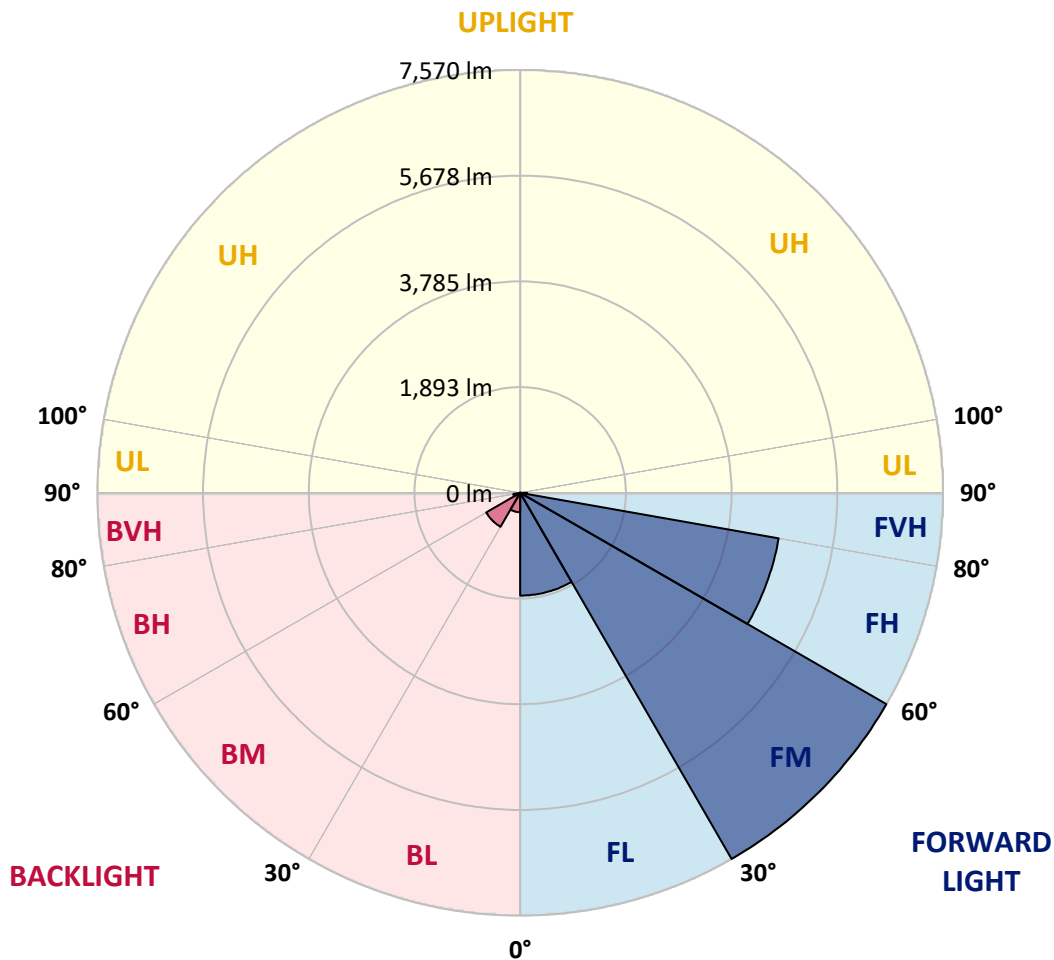
CATALOG NUMBER: GLAN-SB3D-930-U-T4LG-HSS

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

| Zone |             | Lumens | % Fixture | Zone Rating/Lumen Limit |      |         |
|------|-------------|--------|-----------|-------------------------|------|---------|
|      |             |        |           | B                       | U    | G       |
| FL   | (0°-30°)    | 1840.2 | 11.9      |                         |      |         |
| FM   | (30°-60°)   | 7570.4 | 49.1      |                         |      |         |
| FH   | (60°-80°)   | 4699.6 | 30.5      |                         |      | G2/5000 |
| FVH  | (80°-90°)   | 125.5  | 0.8       |                         |      | G2/225  |
| BL   | (0°-30°)    | 347.2  | 2.3       | B1/500                  |      |         |
| BM   | (30°-60°)   | 702.2  | 4.6       | B1/1000                 |      |         |
| BH   | (60°-80°)   | 122.3  | 0.8       | B1/500                  |      | G1/500  |
| BVH  | (80°-90°)   | 4.6    | 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 IV Short





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CATALOG NUMBER: GLAN-SB3D-930-U-T4LG-HSS

**CANDELA DISTRIBUTION (FULL):**

|       | 0°     | 5°     | 15°     | 25°     | 30°     | 35°     | 45°    | 55°    | 65°    | 75°    | 85°    |
|-------|--------|--------|---------|---------|---------|---------|--------|--------|--------|--------|--------|
| 0°    | 3039.1 | 3039.1 | 3039.1  | 3039.1  | 3039.1  | 3039.1  | 3039.1 | 3039.1 | 3039.1 | 3039.1 | 3039.1 |
| 2.5°  | 3884.3 | 3884.3 | 3856.6  | 3819.6  | 3778.1  | 3764.2  | 3685.7 | 3574.9 | 3459.4 | 3325.4 | 3131.5 |
| 5°    | 4383.1 | 4378.5 | 4323.1  | 4323.1  | 4267.7  | 4216.8  | 4138.3 | 3976.7 | 3791.9 | 3551.8 | 3214.6 |
| 7.5°  | 4604.8 | 4614.1 | 4591.0  | 4591.0  | 4558.6  | 4521.7  | 4475.5 | 4318.5 | 4101.4 | 3778.1 | 3297.7 |
| 10°   | 4683.3 | 4688.0 | 4688.0  | 4720.3  | 4711.0  | 4706.4  | 4701.8 | 4614.1 | 4387.7 | 4009.0 | 3385.5 |
| 12.5° | 4494.0 | 4517.1 | 4581.7  | 4724.9  | 4771.1  | 4821.9  | 4891.2 | 4863.5 | 4706.4 | 4300.0 | 3519.4 |
| 15°   | 3884.3 | 3888.9 | 4069.1  | 4424.7  | 4614.1  | 4808.0  | 5075.9 | 5131.3 | 5029.7 | 4614.1 | 3658.0 |
| 17.5° | 3205.4 | 3219.2 | 3362.4  | 3759.6  | 4064.4  | 4512.4  | 5182.2 | 5408.5 | 5371.5 | 4923.5 | 3787.3 |
| 20°   | 2923.6 | 2942.1 | 3011.4  | 3260.8  | 3491.7  | 3907.4  | 5075.9 | 5671.7 | 5685.6 | 5233.0 | 3907.4 |
| 22.5° | 2859.0 | 2872.8 | 2928.2  | 3122.2  | 3265.4  | 3542.5  | 4715.7 | 5879.6 | 6041.2 | 5588.6 | 4050.6 |
| 25°   | 2840.5 | 2854.3 | 2937.5  | 3149.9  | 3283.9  | 3514.8  | 4387.7 | 5990.4 | 6461.5 | 5958.1 | 4189.1 |
| 27.5° | 2826.6 | 2845.1 | 2979.0  | 3251.5  | 3408.6  | 3630.3  | 4327.7 | 6013.5 | 6863.3 | 6350.7 | 4415.5 |
| 30°   | 2845.1 | 2872.8 | 3048.3  | 3357.8  | 3537.9  | 3787.3  | 4470.9 | 6036.6 | 7306.7 | 6798.7 | 4701.8 |
| 32.5° | 2919.0 | 2942.1 | 3154.6  | 3501.0  | 3708.8  | 3990.5  | 4715.7 | 6175.2 | 7727.0 | 7255.9 | 4974.3 |
| 35°   | 3002.1 | 3034.5 | 3288.5  | 3704.2  | 3953.6  | 4272.3  | 5048.2 | 6447.7 | 8128.9 | 7690.1 | 5256.1 |
| 37.5° | 3103.7 | 3140.7 | 3445.5  | 3935.1  | 4221.5  | 4581.7  | 5408.5 | 6826.4 | 8484.5 | 8045.7 | 5537.8 |
| 40°   | 3242.3 | 3283.9 | 3625.7  | 4179.9  | 4489.4  | 4849.6  | 5764.1 | 7200.5 | 8757.0 | 8258.2 | 5722.5 |
| 42.5° | 3787.3 | 3842.7 | 3985.9  | 4420.1  | 4766.5  | 5136.0  | 6115.1 | 7556.2 | 8858.6 | 8327.5 | 5759.5 |
| 45°   | 4803.4 | 4858.8 | 4821.9  | 4905.0  | 5136.0  | 5482.4  | 6498.5 | 7897.9 | 8872.5 | 8309.0 | 5741.0 |
| 47.5° | 5824.1 | 5888.8 | 5856.5  | 5810.3  | 5861.1  | 6027.4  | 6928.0 | 8115.0 | 8798.6 | 8299.8 | 5741.0 |
| 50°   | 6798.7 | 6761.7 | 6766.4  | 6752.5  | 6798.7  | 6886.4  | 7343.7 | 8156.6 | 8780.1 | 8387.5 | 5791.8 |
| 52.5° | 7320.6 | 7339.1 | 7454.5  | 7625.4  | 7727.0  | 7814.8  | 7819.4 | 8221.2 | 8646.2 | 8239.7 | 5731.8 |
| 55°   | 7833.3 | 7870.2 | 8138.1  | 8429.1  | 8655.4  | 8821.7  | 8295.1 | 8179.7 | 7847.1 | 7745.5 | 5417.7 |
| 57.5° | 8410.6 | 8461.4 | 8840.1  | 9440.6  | 9837.8  | 9925.5  | 8766.2 | 7403.7 | 6641.7 | 7038.9 | 4808.0 |
| 60°   | 9205.0 | 9265.1 | 9768.5  | 10669.1 | 11260.3 | 11080.2 | 8803.2 | 6170.5 | 5274.5 | 5842.6 | 3967.4 |
| 62.5° | 9828.5 | 9948.6 | 10858.5 | 12262.6 | 12913.8 | 12341.1 | 8115.0 | 4729.5 | 3685.7 | 4106.0 | 2895.9 |
| 65°   | 9163.4 | 9394.4 | 10877.0 | 14087.0 | 14839.8 | 13823.7 | 7034.2 | 3228.5 | 2078.4 | 2655.7 | 1852.1 |
| 67.5° | 7408.4 | 7731.7 | 9657.6  | 14973.7 | 16160.7 | 14604.2 | 5537.8 | 1713.5 | 1191.6 | 1542.6 | 974.5  |
| 68°   | 6817.2 | 7168.2 | 9209.6  | 14973.7 | 16230.0 | 14535.0 | 5140.6 | 1482.6 | 1099.2 | 1385.6 | 845.2  |
| 70°   | 4711.0 | 4960.5 | 7080.4  | 14133.1 | 15823.6 | 13251.0 | 3385.5 | 849.8  | 826.7  | 951.4  | 558.9  |
| 72.5° | 2309.3 | 2577.2 | 3787.3  | 11200.3 | 12890.7 | 10184.2 | 1542.6 | 563.5  | 628.1  | 697.4  | 438.8  |
| 75°   | 919.1  | 974.5  | 1491.8  | 5523.9  | 8055.0  | 6498.5  | 808.3  | 424.9  | 540.4  | 545.0  | 346.4  |
| 77.5° | 526.5  | 558.9  | 826.7   | 2032.2  | 3020.6  | 2905.1  | 521.9  | 304.8  | 429.5  | 392.6  | 226.3  |
| 80°   | 295.6  | 300.2  | 466.5   | 1071.5  | 1727.4  | 1547.3  | 355.6  | 221.7  | 327.9  | 277.1  | 152.4  |
| 82.5° | 147.8  | 166.3  | 295.6   | 591.2   | 960.7   | 983.8   | 189.4  | 157.0  | 263.3  | 198.6  | 124.7  |
| 85°   | 106.2  | 115.5  | 212.5   | 327.9   | 443.4   | 665.1   | 115.5  | 78.5   | 198.6  | 133.9  | 87.8   |
| 87.5° | 55.4   | 69.3   | 133.9   | 161.7   | 180.1   | 226.3   | 55.4   | 36.9   | 110.8  | 78.5   | 46.2   |
| 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: P1459114

CATALOG NUMBER: GLAN-SB3D-930-U-T4LG-HSS

**CANDELA DISTRIBUTION (continued):**

|       | 90°    | 95°    | 105°   | 115°   | 125°   | 135°   | 145°   | 155°   | 165°   | 175°   | 180°   |
|-------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|
| 0°    | 3039.1 | 3039.1 | 3039.1 | 3039.1 | 3039.1 | 3039.1 | 3039.1 | 3039.1 | 3039.1 | 3039.1 | 3039.1 |
| 2.5°  | 3039.1 | 2932.9 | 2715.8 | 2461.8 | 2263.2 | 2059.9 | 1893.7 | 1736.6 | 1662.7 | 1653.5 | 1672.0 |
| 5°    | 3025.2 | 2794.3 | 2300.1 | 1815.1 | 1417.9 | 1140.8 | 988.4  | 909.9  | 868.3  | 849.8  | 854.5  |
| 7.5°  | 2997.5 | 2646.5 | 1856.7 | 1228.6 | 919.1  | 799.0  | 762.1  | 748.2  | 743.6  | 743.6  | 743.6  |
| 10°   | 2969.8 | 2447.9 | 1422.6 | 900.6  | 752.8  | 720.5  | 711.3  | 711.3  | 706.7  | 706.7  | 711.3  |
| 12.5° | 2956.0 | 2263.2 | 1103.9 | 752.8  | 702.0  | 688.2  | 678.9  | 674.3  | 674.3  | 674.3  | 678.9  |
| 15°   | 2923.6 | 2059.9 | 891.4  | 697.4  | 669.7  | 651.2  | 646.6  | 642.0  | 642.0  | 642.0  | 642.0  |
| 17.5° | 2895.9 | 1861.3 | 775.9  | 660.5  | 637.4  | 618.9  | 614.3  | 609.7  | 609.7  | 614.3  | 614.3  |
| 20°   | 2854.3 | 1672.0 | 697.4  | 623.5  | 605.0  | 586.6  | 582.0  | 577.3  | 582.0  | 582.0  | 582.0  |
| 22.5° | 2803.5 | 1514.9 | 651.2  | 595.8  | 572.7  | 554.2  | 554.2  | 554.2  | 554.2  | 554.2  | 558.9  |
| 25°   | 2771.2 | 1404.1 | 618.9  | 563.5  | 540.4  | 526.5  | 521.9  | 521.9  | 531.1  | 531.1  | 535.8  |
| 27.5° | 2822.0 | 1376.4 | 623.5  | 554.2  | 512.7  | 498.8  | 494.2  | 494.2  | 503.4  | 508.1  | 512.7  |
| 30°   | 2974.4 | 1427.2 | 678.9  | 582.0  | 494.2  | 471.1  | 466.5  | 466.5  | 480.3  | 485.0  | 489.6  |
| 32.5° | 3149.9 | 1533.4 | 762.1  | 618.9  | 480.3  | 443.4  | 434.2  | 434.2  | 448.0  | 452.6  | 457.2  |
| 35°   | 3390.1 | 1699.7 | 872.9  | 651.2  | 489.6  | 415.7  | 397.2  | 397.2  | 406.4  | 415.7  | 420.3  |
| 37.5° | 3699.6 | 1972.2 | 1002.3 | 674.3  | 489.6  | 383.3  | 360.3  | 355.6  | 364.9  | 364.9  | 369.5  |
| 40°   | 4022.9 | 2327.8 | 1136.2 | 674.3  | 466.5  | 351.0  | 327.9  | 314.1  | 318.7  | 314.1  | 318.7  |
| 42.5° | 4203.0 | 2614.2 | 1251.7 | 632.8  | 438.8  | 318.7  | 295.6  | 277.1  | 272.5  | 263.3  | 267.9  |
| 45°   | 4304.6 | 2743.5 | 1219.3 | 586.6  | 411.1  | 295.6  | 267.9  | 244.8  | 235.6  | 221.7  | 221.7  |
| 47.5° | 4304.6 | 2757.3 | 1043.8 | 549.6  | 383.3  | 277.1  | 240.2  | 217.1  | 203.2  | 189.4  | 194.0  |
| 50°   | 4253.8 | 2632.6 | 826.7  | 512.7  | 351.0  | 258.6  | 217.1  | 198.6  | 180.1  | 170.9  | 170.9  |
| 52.5° | 4041.3 | 2226.2 | 632.8  | 466.5  | 314.1  | 235.6  | 194.0  | 175.5  | 157.0  | 152.4  | 152.4  |
| 55°   | 3676.5 | 1635.0 | 512.7  | 420.3  | 281.7  | 217.1  | 175.5  | 161.7  | 143.2  | 133.9  | 133.9  |
| 57.5° | 2988.3 | 1117.7 | 424.9  | 378.7  | 249.4  | 194.0  | 157.0  | 143.2  | 120.1  | 110.8  | 110.8  |
| 60°   | 2217.0 | 729.8  | 360.3  | 332.5  | 212.5  | 175.5  | 138.6  | 120.1  | 101.6  | 92.4   | 87.8   |
| 62.5° | 1496.5 | 494.2  | 300.2  | 263.3  | 180.1  | 152.4  | 120.1  | 101.6  | 78.5   | 60.0   | 60.0   |
| 65°   | 933.0  | 383.3  | 249.4  | 207.8  | 157.0  | 133.9  | 101.6  | 78.5   | 55.4   | 41.6   | 36.9   |
| 67.5° | 535.8  | 309.5  | 203.2  | 161.7  | 133.9  | 106.2  | 78.5   | 64.7   | 46.2   | 32.3   | 27.7   |
| 68°   | 494.2  | 295.6  | 189.4  | 152.4  | 124.7  | 101.6  | 73.9   | 60.0   | 41.6   | 27.7   | 27.7   |
| 70°   | 401.8  | 263.3  | 161.7  | 124.7  | 106.2  | 83.1   | 64.7   | 50.8   | 32.3   | 18.5   | 18.5   |
| 72.5° | 355.6  | 221.7  | 138.6  | 97.0   | 73.9   | 69.3   | 50.8   | 36.9   | 23.1   | 13.9   | 9.2    |
| 75°   | 291.0  | 175.5  | 110.8  | 73.9   | 50.8   | 50.8   | 36.9   | 23.1   | 9.2    | 0.0    | 0.0    |
| 77.5° | 189.4  | 129.3  | 87.8   | 46.2   | 27.7   | 32.3   | 23.1   | 9.2    | 0.0    | 0.0    | 0.0    |
| 80°   | 124.7  | 97.0   | 60.0   | 23.1   | 13.9   | 13.9   | 4.6    | 0.0    | 0.0    | 0.0    | 0.0    |
| 82.5° | 87.8   | 64.7   | 36.9   | 9.2    | 4.6    | 4.6    | 0.0    | 0.0    | 0.0    | 0.0    | 0.0    |
| 85°   | 55.4   | 27.7   | 13.9   | 4.6    | 0.0    | 0.0    | 0.0    | 0.0    | 0.0    | 0.0    | 0.0    |
| 87.5° | 23.1   | 9.2    | 4.6    | 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: SP1-2407-184-14

Test Date: 10/11/2024

Luminaire Tested: GSS-SB1A-930-U-5WQ

Data in this report applies to families of products including GSS-SB1A-930-U-5WQ

**Test Information**

Test Method: LM-79-2019  
 Report Number: SP1-2407-184-14  
 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-930-U-5WQ**  
 Description: GALLEON II SITE SLIM 1SQ 350MA 5WQ HIGH DENSITY LIGHTSQUARE WITH 90 CRI 3000K CCT 26 LEDS

**Spectral Parameters**

CCT (K): 2993  
 CIE u': 0.2501  
 CIE v': 0.5245  
 Duv: 0.0021  
 CIE x: 0.4406  
 CIE y: 0.4107  
 CIE z: 0.1487  
 Peak Wavelength (nm): 621  
 Dominant Wavelength (nm): 582  
 Purity: 55.53327  
 Rf: 92.6  
 Rg: 98.5

|           |      |      |      |
|-----------|------|------|------|
| CRI (Ra): | 92.4 |      |      |
| R1:       | 92.2 | R9:  | 58.2 |
| R2:       | 95.2 | R10: | 87.7 |
| R3:       | 97.0 | R11: | 93.5 |
| R4:       | 93.1 | R12: | 81.7 |
| R5:       | 91.7 | R13: | 92.9 |
| R6:       | 94.2 | R14: | 97.6 |
| R7:       | 93.3 | R15: | 88.1 |
| R8:       | 82.3 |      |      |



**Test Conditions**

Stabilization Time: 20M  
 Operation Time: 1H 20M  
 Sphere Temperature (°C): 25.2

REPORT NUMBER: SP1-2407-184-14

| 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: SP1-2407-184-14

CIE 1931 Chromaticity Diagram



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



CCT = 2993K  
 CIE x = 0.4406  
 CIE y = 0.4107  
 Duv = 0.0021

Point lies inside the ANSI 3000K 4-step quadrangle

REPORT NUMBER: SP1-2407-184-14

**Photopic Flux vs. Wavelength**



**Photopic Lumens: NR**

| 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    | 310                      | NR            | 620    | 998                      | NR            | 750    | 77                       | NR            | 880    | 2                        | NR            |
| 365    | 0                        | NR            | 495    | 347                      | NR            | 625    | 993                      | NR            | 755    | 66                       | NR            | 885    | 1                        | NR            |
| 370    | 0                        | NR            | 500    | 379                      | NR            | 630    | 983                      | NR            | 760    | 56                       | NR            | 890    | 1                        | NR            |
| 375    | 0                        | NR            | 505    | 412                      | NR            | 635    | 960                      | NR            | 765    | 48                       | NR            | 895    | 1                        | NR            |
| 380    | 0                        | NR            | 510    | 442                      | NR            | 640    | 930                      | NR            | 770    | 41                       | NR            | 900    | 1                        | NR            |
| 385    | 0                        | NR            | 515    | 475                      | NR            | 645    | 889                      | NR            | 775    | 35                       | NR            | 905    | 1                        | NR            |
| 390    | 0                        | NR            | 520    | 506                      | NR            | 650    | 846                      | NR            | 780    | 30                       | NR            | 910    | 1                        | NR            |
| 395    | 0                        | NR            | 525    | 535                      | NR            | 655    | 794                      | NR            | 785    | 26                       | NR            | 915    | 1                        | NR            |
| 400    | 1                        | NR            | 530    | 565                      | NR            | 660    | 740                      | NR            | 790    | 22                       | NR            | 920    | 1                        | NR            |
| 405    | 2                        | NR            | 535    | 592                      | NR            | 665    | 684                      | NR            | 795    | 19                       | NR            | 925    | 1                        | NR            |
| 410    | 6                        | NR            | 540    | 615                      | NR            | 670    | 624                      | NR            | 800    | 16                       | NR            | 930    | 0                        | NR            |
| 415    | 10                       | NR            | 545    | 638                      | NR            | 675    | 567                      | NR            | 805    | 14                       | NR            | 935    | 0                        | NR            |
| 420    | 20                       | NR            | 550    | 658                      | NR            | 680    | 513                      | NR            | 810    | 12                       | NR            | 940    | 0                        | NR            |
| 425    | 38                       | NR            | 555    | 678                      | NR            | 685    | 459                      | NR            | 815    | 10                       | NR            | 945    | 0                        | NR            |
| 430    | 70                       | NR            | 560    | 695                      | NR            | 690    | 412                      | NR            | 820    | 9                        | NR            | 950    | 0                        | NR            |
| 435    | 136                      | NR            | 565    | 716                      | NR            | 695    | 363                      | NR            | 825    | 8                        | NR            | 955    | 0                        | NR            |
| 440    | 262                      | NR            | 570    | 740                      | NR            | 700    | 320                      | NR            | 830    | 7                        | NR            | 960    | 0                        | NR            |
| 445    | 424                      | NR            | 575    | 765                      | NR            | 705    | 281                      | NR            | 835    | 6                        | NR            | 965    | 0                        | NR            |
| 450    | 406                      | NR            | 580    | 796                      | NR            | 710    | 245                      | NR            | 840    | 5                        | NR            | 970    | 0                        | NR            |
| 455    | 313                      | NR            | 585    | 827                      | NR            | 715    | 215                      | NR            | 845    | 4                        | NR            | 975    | 0                        | NR            |
| 460    | 294                      | NR            | 590    | 861                      | NR            | 720    | 188                      | NR            | 850    | 4                        | NR            | 980    | 0                        | NR            |
| 465    | 250                      | NR            | 595    | 894                      | NR            | 725    | 162                      | NR            | 855    | 3                        | NR            | 985    | 0                        | NR            |
| 470    | 217                      | NR            | 600    | 927                      | NR            | 730    | 140                      | NR            | 860    | 3                        | NR            | 990    | 0                        | NR            |
| 475    | 228                      | NR            | 605    | 954                      | NR            | 735    | 121                      | NR            | 865    | 2                        | NR            | 995    | 0                        | NR            |
| 480    | 249                      | NR            | 610    | 976                      | NR            | 740    | 104                      | NR            | 870    | 2                        | NR            | 1000   | 0                        | NR            |
| 485    | 276                      | NR            | 615    | 992                      | NR            | 745    | 89                       | NR            | 875    | 2                        | NR            |        |                          |               |

REPORT NUMBER: SP1-2407-184-14

**Scotopic Flux vs. Wavelength**



**Scotopic Lumens: NR**

**S/P: 1.39**

| $\lambda$ (nm) | Power W <sup>^</sup> /nm | Lumens ( $\phi$ /nm) | $\lambda$ (nm) | Power W <sup>^</sup> /nm | Lumens ( $\phi$ /nm) | $\lambda$ (nm) | Power W <sup>^</sup> /nm | Lumens ( $\phi$ /nm) | $\lambda$ (nm) | Power W <sup>^</sup> /nm | Lumens ( $\phi$ /nm) | $\lambda$ (nm) | Power W <sup>^</sup> /nm | Lumens ( $\phi$ /nm) |
|----------------|--------------------------|----------------------|----------------|--------------------------|----------------------|----------------|--------------------------|----------------------|----------------|--------------------------|----------------------|----------------|--------------------------|----------------------|
| 360            | 0                        | NR                   | 490            | 310                      | NR                   | 620            | 998                      | NR                   | 750            | 77                       | NR                   | 880            | 2                        | NR                   |
| 365            | 0                        | NR                   | 495            | 347                      | NR                   | 625            | 993                      | NR                   | 755            | 66                       | NR                   | 885            | 1                        | NR                   |
| 370            | 0                        | NR                   | 500            | 379                      | NR                   | 630            | 983                      | NR                   | 760            | 56                       | NR                   | 890            | 1                        | NR                   |
| 375            | 0                        | NR                   | 505            | 412                      | NR                   | 635            | 960                      | NR                   | 765            | 48                       | NR                   | 895            | 1                        | NR                   |
| 380            | 0                        | NR                   | 510            | 442                      | NR                   | 640            | 930                      | NR                   | 770            | 41                       | NR                   | 900            | 1                        | NR                   |
| 385            | 0                        | NR                   | 515            | 475                      | NR                   | 645            | 889                      | NR                   | 775            | 35                       | NR                   | 905            | 1                        | NR                   |
| 390            | 0                        | NR                   | 520            | 506                      | NR                   | 650            | 846                      | NR                   | 780            | 30                       | NR                   | 910            | 1                        | NR                   |
| 395            | 0                        | NR                   | 525            | 535                      | NR                   | 655            | 794                      | NR                   | 785            | 26                       | NR                   | 915            | 1                        | NR                   |
| 400            | 1                        | NR                   | 530            | 565                      | NR                   | 660            | 740                      | NR                   | 790            | 22                       | NR                   | 920            | 1                        | NR                   |
| 405            | 2                        | NR                   | 535            | 592                      | NR                   | 665            | 684                      | NR                   | 795            | 19                       | NR                   | 925            | 1                        | NR                   |
| 410            | 6                        | NR                   | 540            | 615                      | NR                   | 670            | 624                      | NR                   | 800            | 16                       | NR                   | 930            | 0                        | NR                   |
| 415            | 10                       | NR                   | 545            | 638                      | NR                   | 675            | 567                      | NR                   | 805            | 14                       | NR                   | 935            | 0                        | NR                   |
| 420            | 20                       | NR                   | 550            | 658                      | NR                   | 680            | 513                      | NR                   | 810            | 12                       | NR                   | 940            | 0                        | NR                   |
| 425            | 38                       | NR                   | 555            | 678                      | NR                   | 685            | 459                      | NR                   | 815            | 10                       | NR                   | 945            | 0                        | NR                   |
| 430            | 70                       | NR                   | 560            | 695                      | NR                   | 690            | 412                      | NR                   | 820            | 9                        | NR                   | 950            | 0                        | NR                   |
| 435            | 136                      | NR                   | 565            | 716                      | NR                   | 695            | 363                      | NR                   | 825            | 8                        | NR                   | 955            | 0                        | NR                   |
| 440            | 262                      | NR                   | 570            | 740                      | NR                   | 700            | 320                      | NR                   | 830            | 7                        | NR                   | 960            | 0                        | NR                   |
| 445            | 424                      | NR                   | 575            | 765                      | NR                   | 705            | 281                      | NR                   | 835            | 6                        | NR                   | 965            | 0                        | NR                   |
| 450            | 406                      | NR                   | 580            | 796                      | NR                   | 710            | 245                      | NR                   | 840            | 5                        | NR                   | 970            | 0                        | NR                   |
| 455            | 313                      | NR                   | 585            | 827                      | NR                   | 715            | 215                      | NR                   | 845            | 4                        | NR                   | 975            | 0                        | NR                   |
| 460            | 294                      | NR                   | 590            | 861                      | NR                   | 720            | 188                      | NR                   | 850            | 4                        | NR                   | 980            | 0                        | NR                   |
| 465            | 250                      | NR                   | 595            | 894                      | NR                   | 725            | 162                      | NR                   | 855            | 3                        | NR                   | 985            | 0                        | NR                   |
| 470            | 217                      | NR                   | 600            | 927                      | NR                   | 730            | 140                      | NR                   | 860            | 3                        | NR                   | 990            | 0                        | NR                   |
| 475            | 228                      | NR                   | 605            | 954                      | NR                   | 735            | 121                      | NR                   | 865            | 2                        | NR                   | 995            | 0                        | NR                   |
| 480            | 249                      | NR                   | 610            | 976                      | NR                   | 740            | 104                      | NR                   | 870            | 2                        | NR                   | 1000           | 0                        | NR                   |
| 485            | 276                      | NR                   | 615            | 992                      | NR                   | 745            | 89                       | NR                   | 875            | 2                        | NR                   |                |                          |                      |

REPORT NUMBER: SP1-2407-184-14

Melanopic Flux vs. Wavelength



Melanopic Lumens: NR

M/P: 2.69

| 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    | 310                      | NR            | 620    | 998                      | NR            | 750    | 77                       | NR            | 880    | 2                        | NR            |
| 365    | 0                        | NR            | 495    | 347                      | NR            | 625    | 993                      | NR            | 755    | 66                       | NR            | 885    | 1                        | NR            |
| 370    | 0                        | NR            | 500    | 379                      | NR            | 630    | 983                      | NR            | 760    | 56                       | NR            | 890    | 1                        | NR            |
| 375    | 0                        | NR            | 505    | 412                      | NR            | 635    | 960                      | NR            | 765    | 48                       | NR            | 895    | 1                        | NR            |
| 380    | 0                        | NR            | 510    | 442                      | NR            | 640    | 930                      | NR            | 770    | 41                       | NR            | 900    | 1                        | NR            |
| 385    | 0                        | NR            | 515    | 475                      | NR            | 645    | 889                      | NR            | 775    | 35                       | NR            | 905    | 1                        | NR            |
| 390    | 0                        | NR            | 520    | 506                      | NR            | 650    | 846                      | NR            | 780    | 30                       | NR            | 910    | 1                        | NR            |
| 395    | 0                        | NR            | 525    | 535                      | NR            | 655    | 794                      | NR            | 785    | 26                       | NR            | 915    | 1                        | NR            |
| 400    | 1                        | NR            | 530    | 565                      | NR            | 660    | 740                      | NR            | 790    | 22                       | NR            | 920    | 1                        | NR            |
| 405    | 2                        | NR            | 535    | 592                      | NR            | 665    | 684                      | NR            | 795    | 19                       | NR            | 925    | 1                        | NR            |
| 410    | 6                        | NR            | 540    | 615                      | NR            | 670    | 624                      | NR            | 800    | 16                       | NR            | 930    | 0                        | NR            |
| 415    | 10                       | NR            | 545    | 638                      | NR            | 675    | 567                      | NR            | 805    | 14                       | NR            | 935    | 0                        | NR            |
| 420    | 20                       | NR            | 550    | 658                      | NR            | 680    | 513                      | NR            | 810    | 12                       | NR            | 940    | 0                        | NR            |
| 425    | 38                       | NR            | 555    | 678                      | NR            | 685    | 459                      | NR            | 815    | 10                       | NR            | 945    | 0                        | NR            |
| 430    | 70                       | NR            | 560    | 695                      | NR            | 690    | 412                      | NR            | 820    | 9                        | NR            | 950    | 0                        | NR            |
| 435    | 136                      | NR            | 565    | 716                      | NR            | 695    | 363                      | NR            | 825    | 8                        | NR            | 955    | 0                        | NR            |
| 440    | 262                      | NR            | 570    | 740                      | NR            | 700    | 320                      | NR            | 830    | 7                        | NR            | 960    | 0                        | NR            |
| 445    | 424                      | NR            | 575    | 765                      | NR            | 705    | 281                      | NR            | 835    | 6                        | NR            | 965    | 0                        | NR            |
| 450    | 406                      | NR            | 580    | 796                      | NR            | 710    | 245                      | NR            | 840    | 5                        | NR            | 970    | 0                        | NR            |
| 455    | 313                      | NR            | 585    | 827                      | NR            | 715    | 215                      | NR            | 845    | 4                        | NR            | 975    | 0                        | NR            |
| 460    | 294                      | NR            | 590    | 861                      | NR            | 720    | 188                      | NR            | 850    | 4                        | NR            | 980    | 0                        | NR            |
| 465    | 250                      | NR            | 595    | 894                      | NR            | 725    | 162                      | NR            | 855    | 3                        | NR            | 985    | 0                        | NR            |
| 470    | 217                      | NR            | 600    | 927                      | NR            | 730    | 140                      | NR            | 860    | 3                        | NR            | 990    | 0                        | NR            |
| 475    | 228                      | NR            | 605    | 954                      | NR            | 735    | 121                      | NR            | 865    | 2                        | NR            | 995    | 0                        | NR            |
| 480    | 249                      | NR            | 610    | 976                      | NR            | 740    | 104                      | NR            | 870    | 2                        | NR            | 1000   | 0                        | NR            |
| 485    | 276                      | NR            | 615    | 992                      | NR            | 745    | 89                       | NR            | 875    | 2                        | NR            |        |                          |               |

**Summary**

$R_f = 92.6$   
 $R_g = 98.5$   
 $CIE R_a = 92.4$   
 $R_9 = 58.2$



**Color Vector Graphics**



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

|            |            |            |            |
|------------|------------|------------|------------|
| CES01 = 86 | CES26 = 94 | CES51 = 98 | CES76 = 90 |
| CES02 = 63 | CES27 = 94 | CES52 = 98 | CES77 = 91 |
| CES03 = 32 | CES28 = 97 | CES53 = 96 | CES78 = 88 |
| CES04 = 70 | CES29 = 95 | CES54 = 95 | CES79 = 94 |
| CES05 = 51 | CES30 = 97 | CES55 = 94 | CES80 = 94 |
| CES06 = 51 | CES31 = 96 | CES56 = 94 | CES81 = 84 |
| CES07 = 43 | CES32 = 91 | CES57 = 94 | CES82 = 97 |
| CES08 = 42 | CES33 = 98 | CES58 = 94 | CES83 = 97 |
| CES09 = 29 | CES34 = 96 | CES59 = 97 | CES84 = 95 |
| CES10 = 76 | CES35 = 97 | CES60 = 95 | CES85 = 85 |
| CES11 = 59 | CES36 = 87 | CES61 = 94 | CES86 = 84 |
| CES12 = 65 | CES37 = 95 | CES62 = 92 | CES87 = 92 |
| CES13 = 44 | CES38 = 93 | CES63 = 93 | CES88 = 95 |
| CES14 = 74 | CES39 = 99 | CES64 = 92 | CES89 = 86 |
| CES15 = 72 | CES40 = 98 | CES65 = 89 | CES90 = 96 |
| CES16 = 48 | CES41 = 98 | CES66 = 90 | CES91 = 82 |
| CES17 = 50 | CES42 = 97 | CES67 = 89 | CES92 = 81 |
| CES18 = 57 | CES43 = 97 | CES68 = 90 | CES93 = 89 |
| CES19 = 72 | CES44 = 99 | CES69 = 92 | CES94 = 80 |
| CES20 = 67 | CES45 = 99 | CES70 = 89 | CES95 = 86 |
| CES21 = 86 | CES46 = 96 | CES71 = 87 | CES96 = 92 |
| CES22 = 79 | CES47 = 95 | CES72 = 95 | CES97 = 96 |
| CES23 = 92 | CES48 = 93 | CES73 = 85 | CES98 = 94 |
| CES24 = 91 | CES49 = 97 | CES74 = 93 | CES99 = 91 |
| CES25 = 72 | CES50 = 98 | CES75 = 88 |            |



Color Rendition by Hue-Angle Bin



Measure Comparisons



(END OF REPORT)