

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: P1437444

Luminaire Tested: **GALN-SB5D-740-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: P1437444  
 Test Lab: INNOVATION CENTER(G1)  
 Issue Date: 03/27/202  
 Manufacturer: COOPER LIGHTING SOLUTIONS (FORMERLY EATON)  
 Product Line: McGRAW-EDISON  
 Catalog Number: GALN-SB5D-740-U-T3LG-HSS  
 Description: GALLEON II AREA AND ROADWAY HIGH DENSITY LUMINAIRE 900mA 5xLight  
 Square PACKAGE 70CRI 4000K FIXTURE w/ TYPE III LOW GLARE WITH HOUSE SIDE  
 SHIELD  
 Light Source: (130) 4000K 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               |

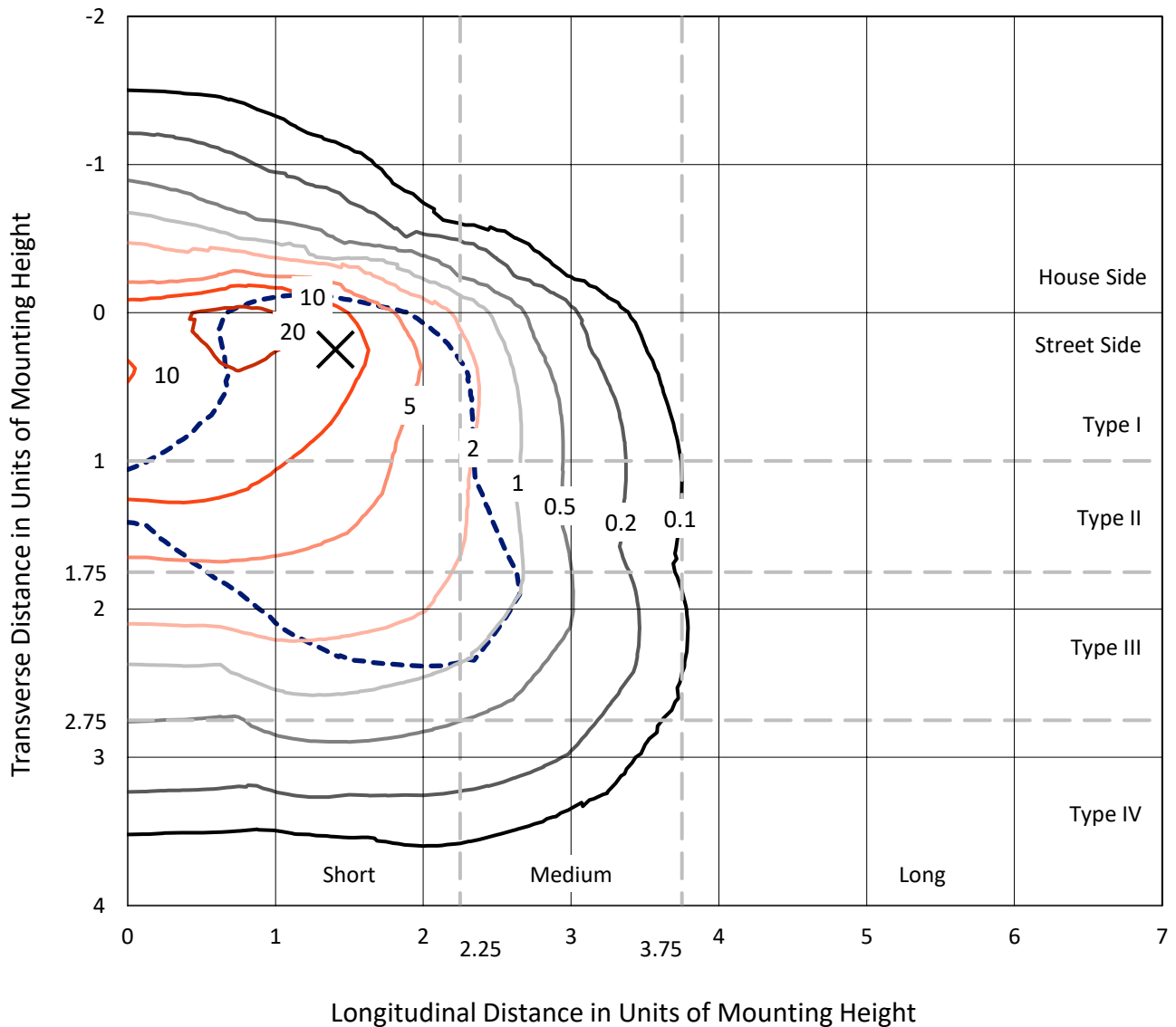
**Summary**

Lumens per Lamp: N/A  
 Luminaire Lumens: 41565.9 lumens  
 Efficiency: N/A  
 Efficacy: 113.9 lumens/watt  
 Luminous Opening: Rectangular (W 1.5' x L: 1' x H: 0')  
 IES Classification: Type III - Short  
 BUG Rating: B3 - U0 - G4  
  
 Input Watts (W): 364.9  
 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: P1437444  
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### Iso-Footcandle Lines of Horizontal Illumination

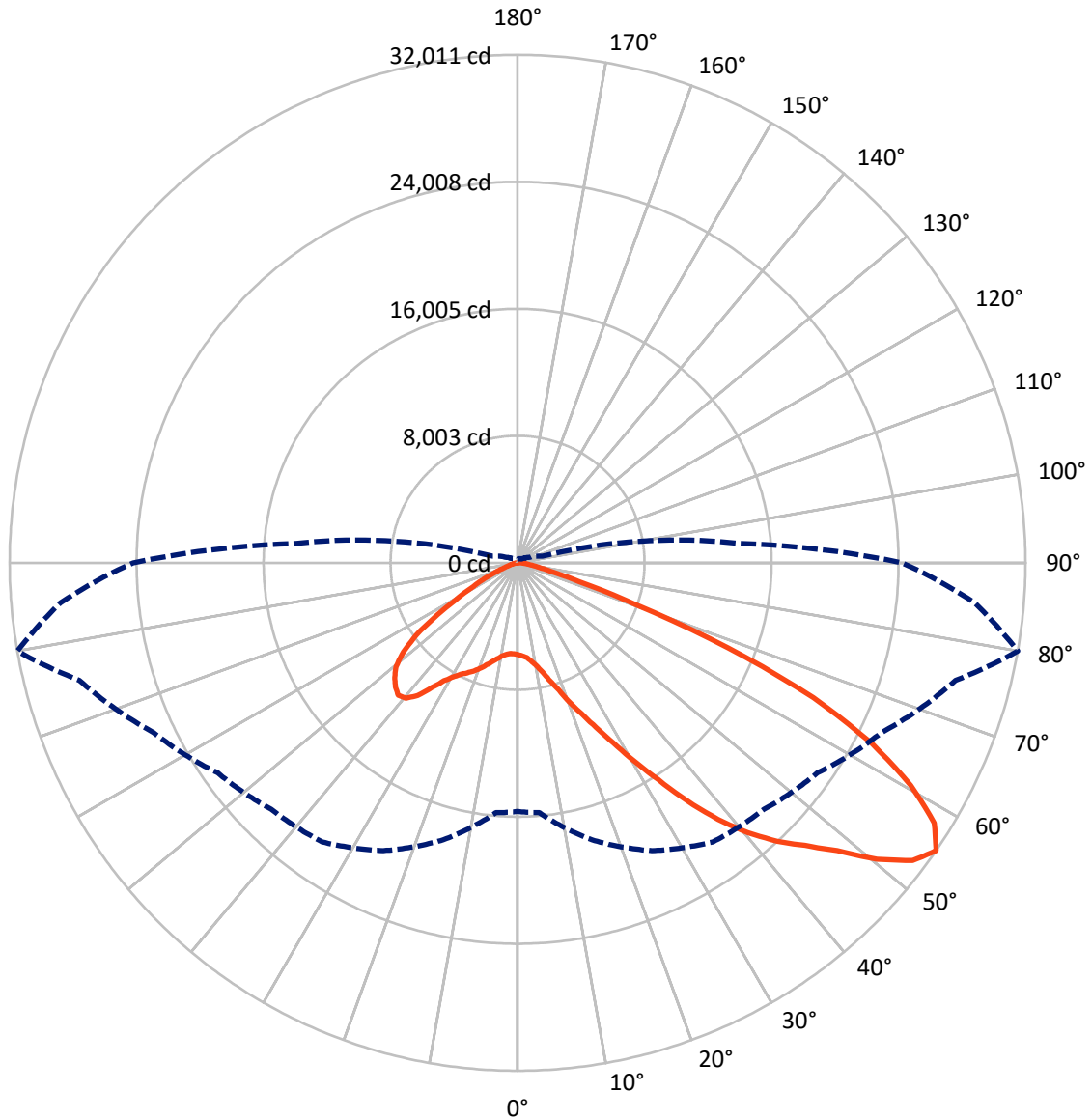
✕ Max cd  
 - - - 1/2 Max cd



Based on 20 foot mounting height. Maximum calculated value = 25.6 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    | 5052.8   | 0.0    | 5052.8  |
|                    | % Fixture | 12.2     | 0.0    | 12.2    |
| <b>Street Side</b> | Lumens    | 36513.1  | 0.0    | 36513.1 |
|                    | % Fixture | 87.8     | 0.0    | 87.8    |
| <b>Total</b>       | Lumens    | 41565.9  | 0.0    | 41565.9 |
|                    | % Fixture | 100.0    | 0.0    | 100.0   |

**Coefficient of Utilization**

**ZONAL LUMENS:**

| Zone      | Lumens  | % Fixture |
|-----------|---------|-----------|
| 0°-10°    | 485.9   | 1.2       |
| 10°-20°   | 1281.1  | 3.1       |
| 20°-30°   | 2507.9  | 6.0       |
| 30°-40°   | 5102.1  | 12.3      |
| 40°-50°   | 8601.4  | 20.7      |
| 50°-60°   | 10989.9 | 26.4      |
| 60°-70°   | 9382.8  | 22.6      |
| 70°-80°   | 2998.4  | 7.2       |
| 80°-90°   | 216.5   | 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°    | 41565.9 | 100.0     |
| 0°-180°   | 41565.9 | 100.0     |

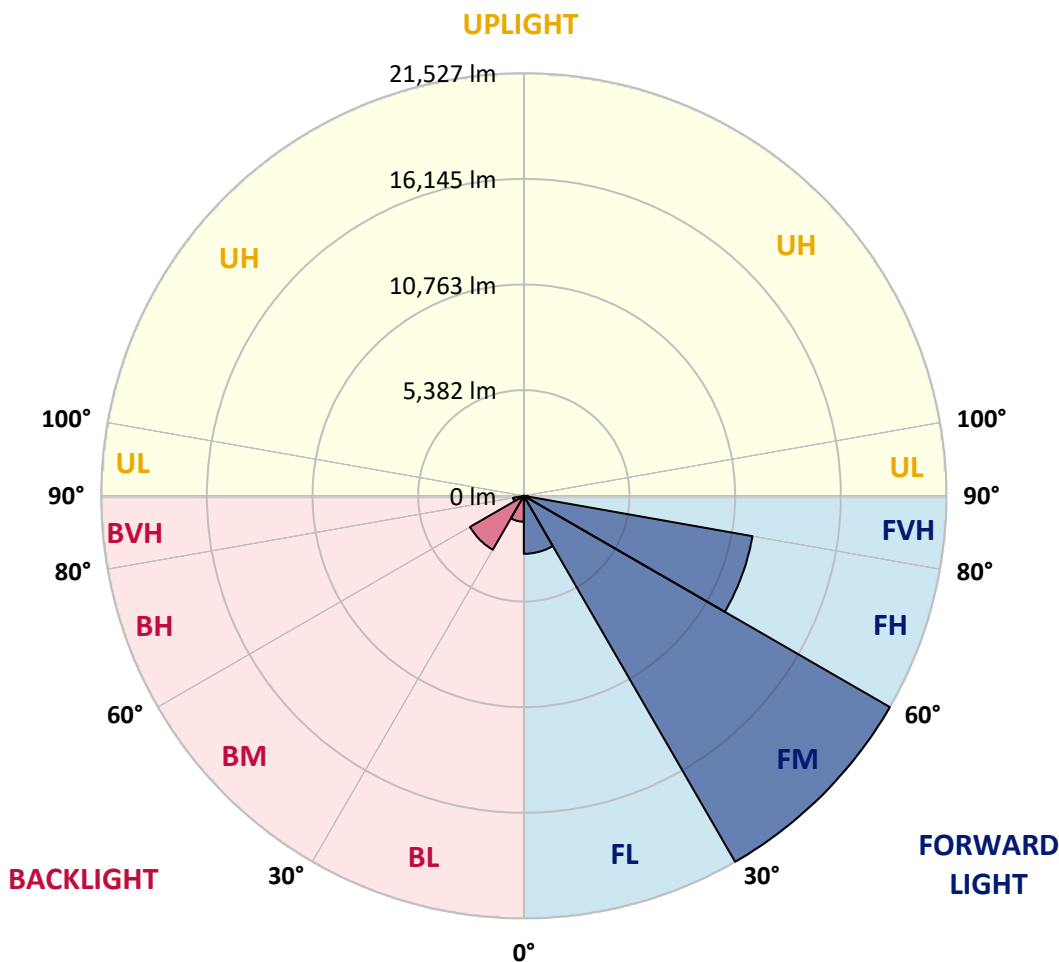


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**LUMINAIRE CLASSIFICATION SYSTEM LUMEN TABLE AND BUG RATING:**

| Zone           | Lumens  | % Fixture | Zone Rating/Lumen Limit |      |          |
|----------------|---------|-----------|-------------------------|------|----------|
|                |         |           | B                       | U    | G        |
| FL (0°-30°)    | 2955.4  | 7.1       |                         |      |          |
| FM (30°-60°)   | 21526.7 | 51.8      |                         |      |          |
| FH (60°-80°)   | 11825.8 | 28.5      |                         |      | G4/12000 |
| FVH (80°-90°)  | 205.2   | 0.5       |                         |      | G2/225   |
| BL (0°-30°)    | 1319.4  | 3.2       | B3/2500                 |      |          |
| BM (30°-60°)   | 3166.7  | 7.6       | B3/5000                 |      |          |
| BH (60°-80°)   | 555.3   | 1.3       | B2/1000                 |      | G2/1000  |
| BVH (80°-90°)  | 11.3    | 0.0       |                         |      | G1/100   |
| UL (90°-100°)  | 0.0     | 0.0       |                         | U0/0 |          |
| UH (100°-180°) | 0.0     | 0.0       |                         | U0/0 |          |

**BUG Rating: B3-U0-G4**  
 Type III Short





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**CANDELA DISTRIBUTION (FULL):**

|       | 0°      | 5°      | 15°     | 25°     | 35°     | 45°     | 55°     | 65°     | 75°     | 80°     | 85°     |
|-------|---------|---------|---------|---------|---------|---------|---------|---------|---------|---------|---------|
| 0°    | 5790.1  | 5790.1  | 5790.1  | 5790.1  | 5790.1  | 5790.1  | 5790.1  | 5790.1  | 5790.1  | 5790.1  | 5790.1  |
| 2.5°  | 5825.5  | 5837.3  | 5825.5  | 5837.3  | 5861.0  | 5849.1  | 5896.4  | 5884.6  | 5884.6  | 5872.8  | 5825.5  |
| 5°    | 5494.7  | 5506.5  | 5530.1  | 5589.2  | 5671.9  | 5754.6  | 5861.0  | 5931.9  | 6002.8  | 5990.9  | 5943.7  |
| 7.5°  | 4844.7  | 4868.4  | 4962.9  | 5081.1  | 5352.9  | 5601.0  | 5872.8  | 6050.0  | 6203.6  | 6250.9  | 6215.5  |
| 10°   | 4478.4  | 4502.1  | 4561.2  | 4679.3  | 4927.5  | 5341.0  | 5872.8  | 6239.1  | 6510.9  | 6605.4  | 6617.2  |
| 12.5° | 4443.0  | 4454.8  | 4502.1  | 4632.1  | 4844.7  | 5199.2  | 5861.0  | 6487.2  | 6948.1  | 7089.9  | 7137.1  |
| 15°   | 4466.6  | 4490.3  | 4537.5  | 4643.9  | 4892.0  | 5293.8  | 5955.5  | 6877.2  | 7527.1  | 7728.0  | 7739.8  |
| 17.5° | 4561.2  | 4584.8  | 4643.9  | 4762.0  | 5033.8  | 5541.9  | 6250.9  | 7278.9  | 8224.3  | 8448.8  | 8578.7  |
| 20°   | 4750.2  | 4762.0  | 4832.9  | 4986.5  | 5293.8  | 5849.1  | 6688.1  | 7822.5  | 9063.2  | 9394.1  | 9488.6  |
| 22.5° | 4998.4  | 5033.8  | 5128.3  | 5317.4  | 5707.3  | 6274.5  | 7290.8  | 8484.2  | 9984.9  | 10327.6 | 10493.0 |
| 25°   | 5270.1  | 5317.4  | 5459.2  | 5766.4  | 6262.7  | 6924.4  | 8035.2  | 9358.6  | 11072.0 | 11485.6 | 11710.1 |
| 27.5° | 5825.5  | 5837.3  | 5931.9  | 6321.8  | 6959.9  | 7775.2  | 8980.5  | 10481.2 | 12348.2 | 12832.7 | 13080.8 |
| 30°   | 7042.6  | 7054.4  | 6971.7  | 7078.1  | 7728.0  | 8779.6  | 10091.3 | 11792.8 | 13837.1 | 14510.6 | 14711.5 |
| 32.5° | 8531.5  | 8590.6  | 8578.7  | 8507.9  | 8803.3  | 9784.0  | 11414.7 | 13364.4 | 15585.9 | 16294.9 | 16484.0 |
| 35°   | 10221.2 | 10363.0 | 10327.6 | 10304.0 | 10339.4 | 11072.0 | 12927.2 | 15101.4 | 17571.1 | 18433.7 | 18587.3 |
| 37.5° | 11875.5 | 11911.0 | 12076.4 | 12277.3 | 12300.9 | 12809.0 | 14676.0 | 16944.8 | 19414.4 | 20513.4 | 20749.7 |
| 40°   | 13151.7 | 13269.9 | 13683.5 | 14085.2 | 14498.8 | 14900.6 | 16117.6 | 18433.7 | 20879.7 | 22356.7 | 22463.1 |
| 42.5° | 14144.3 | 14427.9 | 15030.5 | 15656.8 | 16495.8 | 16944.8 | 17488.4 | 19485.3 | 22073.1 | 23999.2 | 23952.0 |
| 45°   | 15349.6 | 15467.7 | 16318.5 | 17145.7 | 17996.5 | 18681.8 | 18670.0 | 20371.6 | 23006.6 | 25405.4 | 25110.0 |
| 47.5° | 16164.9 | 16306.7 | 17464.7 | 18433.7 | 19308.1 | 19650.8 | 19721.7 | 21328.7 | 24294.6 | 27107.0 | 26409.8 |
| 50°   | 16602.1 | 16850.3 | 18114.6 | 19343.5 | 20288.9 | 20395.2 | 20714.3 | 22581.3 | 25984.4 | 29363.9 | 28052.3 |
| 52.5° | 16649.4 | 16885.7 | 18339.1 | 19922.5 | 20950.6 | 21163.3 | 21706.8 | 23999.2 | 27626.9 | 31171.8 | 28997.6 |
| 55°   | 15668.6 | 15810.4 | 18067.4 | 20017.1 | 21470.5 | 21966.8 | 23077.5 | 25310.9 | 28584.0 | 32010.8 | 28914.9 |
| 57.5° | 14746.9 | 14888.7 | 16850.3 | 19851.7 | 22002.2 | 23018.5 | 24542.8 | 26208.9 | 27839.6 | 30970.9 | 27071.5 |
| 60°   | 13955.2 | 14026.1 | 15810.4 | 19083.6 | 22203.1 | 24046.5 | 25807.1 | 25322.7 | 25913.5 | 28477.7 | 23916.5 |
| 62.5° | 12466.4 | 12513.6 | 14628.8 | 17701.1 | 21801.4 | 24838.2 | 26244.4 | 23443.9 | 23798.3 | 25039.1 | 20206.1 |
| 65°   | 9417.7  | 9595.0  | 11532.9 | 16661.2 | 21139.6 | 25204.5 | 25228.1 | 21151.5 | 20785.2 | 20489.7 | 15893.1 |
| 67.5° | 6392.7  | 6593.6  | 7763.4  | 14983.3 | 20064.3 | 25358.1 | 23254.8 | 18185.5 | 15834.1 | 14309.7 | 10410.3 |
| 70°   | 5104.7  | 5104.7  | 5506.5  | 12041.0 | 17512.0 | 23396.6 | 20808.8 | 13730.7 | 10055.8 | 7905.2  | 5577.4  |
| 72.5° | 3355.9  | 3367.7  | 3745.8  | 7645.2  | 12419.1 | 17842.9 | 16968.4 | 7940.7  | 5222.9  | 4029.4  | 2753.2  |
| 75°   | 1217.1  | 1217.1  | 1642.5  | 3060.5  | 6570.0  | 10623.0 | 10339.4 | 3793.1  | 2836.0  | 2197.9  | 1666.1  |
| 77.5° | 649.9   | 673.5   | 791.7   | 1264.4  | 2516.9  | 4324.8  | 4041.2  | 1937.9  | 1607.0  | 1370.7  | 1039.8  |
| 80°   | 437.2   | 449.0   | 531.7   | 779.9   | 1217.1  | 1666.1  | 1299.8  | 1087.1  | 1087.1  | 921.7   | 697.2   |
| 82.5° | 236.3   | 248.1   | 354.5   | 508.1   | 649.9   | 779.9   | 626.3   | 638.1   | 768.1   | 626.3   | 401.8   |
| 85°   | 165.4   | 165.4   | 271.8   | 366.3   | 366.3   | 378.1   | 271.8   | 401.8   | 449.0   | 389.9   | 271.8   |
| 87.5° | 94.5    | 94.5    | 153.6   | 177.2   | 177.2   | 165.4   | 82.7    | 141.8   | 177.2   | 200.9   | 118.2   |
| 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: P1437444

CATALOG NUMBER: GALN-SB5D-740-U-T3LG-HSS

**CANDELA DISTRIBUTION (continued):**

|       | 90°     | 95°     | 105°   | 115°   | 125°   | 135°   | 145°   | 155°   | 165°   | 175°   | 180°   |
|-------|---------|---------|--------|--------|--------|--------|--------|--------|--------|--------|--------|
| 0°    | 5790.1  | 5790.1  | 5790.1 | 5790.1 | 5790.1 | 5790.1 | 5790.1 | 5790.1 | 5790.1 | 5790.1 | 5790.1 |
| 2.5°  | 5813.7  | 5778.2  | 5707.3 | 5565.6 | 5494.7 | 5400.1 | 5317.4 | 5211.1 | 5187.4 | 5175.6 | 5128.3 |
| 5°    | 5908.2  | 5837.3  | 5624.6 | 5317.4 | 5057.4 | 4809.3 | 4561.2 | 4419.4 | 4301.2 | 4242.1 | 4230.3 |
| 7.5°  | 6144.6  | 6002.8  | 5612.8 | 5069.3 | 4584.8 | 4159.4 | 3793.1 | 3474.0 | 3308.6 | 3166.8 | 3178.6 |
| 10°   | 6499.1  | 6274.5  | 5636.5 | 4832.9 | 4112.1 | 3426.8 | 2895.0 | 2434.2 | 2103.3 | 1949.7 | 1937.9 |
| 12.5° | 6971.7  | 6652.7  | 5719.2 | 4596.6 | 3533.1 | 2576.0 | 1902.4 | 1630.7 | 1559.8 | 1548.0 | 1536.1 |
| 15°   | 7550.7  | 7101.7  | 5801.9 | 4289.4 | 2753.2 | 1784.3 | 1548.0 | 1488.9 | 1477.1 | 1465.2 | 1465.2 |
| 17.5° | 8247.9  | 7621.6  | 5849.1 | 3769.5 | 2008.8 | 1536.1 | 1453.4 | 1418.0 | 1406.2 | 1394.3 | 1394.3 |
| 20°   | 9122.3  | 8200.6  | 5908.2 | 3107.7 | 1701.6 | 1477.1 | 1382.5 | 1335.3 | 1323.4 | 1323.4 | 1311.6 |
| 22.5° | 9984.9  | 8850.5  | 5861.0 | 2528.7 | 1642.5 | 1406.2 | 1299.8 | 1252.5 | 1228.9 | 1228.9 | 1217.1 |
| 25°   | 10977.5 | 9512.2  | 5719.2 | 2280.6 | 1630.7 | 1347.1 | 1217.1 | 1146.2 | 1110.7 | 1098.9 | 1098.9 |
| 27.5° | 12111.9 | 10268.5 | 5494.7 | 2292.4 | 1630.7 | 1299.8 | 1110.7 | 1016.2 | 992.6  | 968.9  | 968.9  |
| 30°   | 13411.7 | 11190.2 | 5329.2 | 2446.0 | 1654.3 | 1252.5 | 1016.2 | 898.1  | 862.6  | 839.0  | 850.8  |
| 32.5° | 14900.6 | 12218.2 | 5317.4 | 2694.2 | 1689.8 | 1181.6 | 909.9  | 779.9  | 744.4  | 732.6  | 744.4  |
| 35°   | 16590.3 | 13494.4 | 5589.2 | 2883.2 | 1595.2 | 1028.0 | 779.9  | 673.5  | 638.1  | 638.1  | 649.9  |
| 37.5° | 18469.1 | 14959.6 | 5955.5 | 2836.0 | 1288.0 | 815.3  | 673.5  | 590.8  | 555.4  | 567.2  | 579.0  |
| 40°   | 20182.5 | 16105.8 | 6014.6 | 2422.4 | 968.9  | 697.2  | 579.0  | 519.9  | 496.3  | 508.1  | 519.9  |
| 42.5° | 21482.3 | 17027.5 | 5447.4 | 1878.8 | 815.3  | 590.8  | 496.3  | 449.0  | 437.2  | 460.8  | 460.8  |
| 45°   | 22534.0 | 17393.8 | 4549.3 | 1394.3 | 720.8  | 508.1  | 437.2  | 413.6  | 389.9  | 401.8  | 401.8  |
| 47.5° | 23632.9 | 17452.9 | 3710.4 | 1122.6 | 638.1  | 460.8  | 401.8  | 378.1  | 354.5  | 354.5  | 354.5  |
| 50°   | 24696.4 | 17311.1 | 2836.0 | 992.6  | 590.8  | 413.6  | 366.3  | 342.7  | 319.0  | 307.2  | 307.2  |
| 52.5° | 24956.4 | 16176.7 | 2079.7 | 921.7  | 543.6  | 389.9  | 342.7  | 319.0  | 295.4  | 283.6  | 283.6  |
| 55°   | 24235.6 | 14026.1 | 1630.7 | 827.2  | 496.3  | 354.5  | 319.0  | 295.4  | 260.0  | 248.1  | 248.1  |
| 57.5° | 21860.4 | 10693.9 | 1299.8 | 709.0  | 449.0  | 342.7  | 295.4  | 271.8  | 236.3  | 224.5  | 224.5  |
| 60°   | 18776.4 | 7586.2  | 1051.7 | 579.0  | 413.6  | 307.2  | 271.8  | 236.3  | 212.7  | 189.1  | 189.1  |
| 62.5° | 15361.4 | 5447.4  | 850.8  | 484.5  | 389.9  | 271.8  | 248.1  | 212.7  | 165.4  | 130.0  | 130.0  |
| 65°   | 11781.0 | 3911.2  | 661.7  | 389.9  | 354.5  | 236.3  | 212.7  | 177.2  | 130.0  | 94.5   | 94.5   |
| 67.5° | 7621.6  | 2528.7  | 496.3  | 342.7  | 271.8  | 200.9  | 165.4  | 141.8  | 118.2  | 82.7   | 70.9   |
| 70°   | 4017.6  | 1477.1  | 366.3  | 295.4  | 200.9  | 153.6  | 141.8  | 118.2  | 94.5   | 59.1   | 59.1   |
| 72.5° | 2079.7  | 968.9   | 271.8  | 260.0  | 153.6  | 106.3  | 118.2  | 94.5   | 70.9   | 35.4   | 35.4   |
| 75°   | 1335.3  | 649.9   | 200.9  | 212.7  | 94.5   | 82.7   | 82.7   | 59.1   | 35.4   | 23.6   | 11.8   |
| 77.5° | 862.6   | 437.2   | 141.8  | 177.2  | 59.1   | 47.3   | 47.3   | 23.6   | 11.8   | 0.0    | 0.0    |
| 80°   | 508.1   | 271.8   | 94.5   | 118.2  | 23.6   | 23.6   | 11.8   | 0.0    | 0.0    | 0.0    | 0.0    |
| 82.5° | 260.0   | 141.8   | 47.3   | 47.3   | 11.8   | 0.0    | 0.0    | 0.0    | 0.0    | 0.0    | 0.0    |
| 85°   | 165.4   | 70.9    | 11.8   | 11.8   | 0.0    | 0.0    | 0.0    | 0.0    | 0.0    | 0.0    | 0.0    |
| 87.5° | 82.7    | 23.6    | 11.8   | 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: SP1-2407-184-1

Test Date: 10/09/2024

Luminaire Tested: GSS-SB1A-740-U-5WQ

Data in this report applies to families of products including GSS-SB1A-740-U-5WQ

**Test Information**

Test Method: LM-79-2019  
 Report Number: SP1-2407-184-1  
 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-740-U-5WQ**  
 Description: GALLEON II SITE SLIM 1SQ 350MA 5WQ HIGH DENSITY LIGHTSQUARE WITH 70 CRI 4000K CCT 26 LEDS

**Spectral Parameters**

CCT (K): 3949  
 CIE u': 0.2248  
 CIE v': 0.5053  
 Duv: 0.0022  
 CIE x: 0.3844  
 CIE y: 0.3840  
 CIE z: 0.2316  
 Peak Wavelength (nm): 440  
 Dominant Wavelength (nm): 578  
 Purity: 30.60026  
 Rf: 71.8  
 Rg: 96.5

|           |      |      |       |
|-----------|------|------|-------|
| CRI (Ra): | 70.7 |      |       |
| R1:       | 68.0 | R9:  | -36.7 |
| R2:       | 76.0 | R10: | 45.1  |
| R3:       | 84.3 | R11: | 70.7  |
| R4:       | 72.0 | R12: | 47.1  |
| R5:       | 68.6 | R13: | 68.5  |
| R6:       | 68.3 | R14: | 91.1  |
| R7:       | 77.9 | R15: | 58.7  |
| R8:       | 50.3 |      |       |



**Test Conditions**

Stabilization Time: 34M  
 Operation Time: 1H 34M  
 Sphere Temperature (°C): 25.2

REPORT NUMBER: SP1-2407-184-1

| 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           |

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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 4000K 4-step quadrangle

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**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    | 139                      | NR            | 620    | 607                      | NR            | 750    | 15                       | NR            | 880    | 0                        | NR            |
| 365    | 0                        | NR            | 495    | 198                      | NR            | 625    | 554                      | NR            | 755    | 13                       | NR            | 885    | 0                        | NR            |
| 370    | 0                        | NR            | 500    | 267                      | NR            | 630    | 504                      | NR            | 760    | 11                       | NR            | 890    | 0                        | NR            |
| 375    | 0                        | NR            | 505    | 343                      | NR            | 635    | 452                      | NR            | 765    | 10                       | NR            | 895    | 0                        | NR            |
| 380    | 0                        | NR            | 510    | 410                      | NR            | 640    | 403                      | NR            | 770    | 8                        | NR            | 900    | 0                        | NR            |
| 385    | 2                        | NR            | 515    | 470                      | NR            | 645    | 357                      | NR            | 775    | 7                        | NR            | 905    | 0                        | NR            |
| 390    | 4                        | NR            | 520    | 516                      | NR            | 650    | 314                      | NR            | 780    | 6                        | NR            | 910    | 0                        | NR            |
| 395    | 7                        | NR            | 525    | 550                      | NR            | 655    | 275                      | NR            | 785    | 5                        | NR            | 915    | 0                        | NR            |
| 400    | 10                       | NR            | 530    | 578                      | NR            | 660    | 240                      | NR            | 790    | 5                        | NR            | 920    | 0                        | NR            |
| 405    | 17                       | NR            | 535    | 601                      | NR            | 665    | 208                      | NR            | 795    | 4                        | NR            | 925    | 0                        | NR            |
| 410    | 35                       | NR            | 540    | 620                      | NR            | 670    | 179                      | NR            | 800    | 4                        | NR            | 930    | 0                        | NR            |
| 415    | 70                       | NR            | 545    | 641                      | NR            | 675    | 155                      | NR            | 805    | 3                        | NR            | 935    | 0                        | NR            |
| 420    | 147                      | NR            | 550    | 664                      | NR            | 680    | 133                      | NR            | 810    | 3                        | NR            | 940    | 0                        | NR            |
| 425    | 285                      | NR            | 555    | 689                      | NR            | 685    | 114                      | NR            | 815    | 2                        | NR            | 945    | 0                        | NR            |
| 430    | 487                      | NR            | 560    | 715                      | NR            | 690    | 98                       | NR            | 820    | 2                        | NR            | 950    | 0                        | NR            |
| 435    | 787                      | NR            | 565    | 743                      | NR            | 695    | 84                       | NR            | 825    | 2                        | NR            | 955    | 0                        | NR            |
| 440    | 1000                     | NR            | 570    | 771                      | NR            | 700    | 72                       | NR            | 830    | 2                        | NR            | 960    | 0                        | NR            |
| 445    | 783                      | NR            | 575    | 794                      | NR            | 705    | 61                       | NR            | 835    | 1                        | NR            | 965    | 0                        | NR            |
| 450    | 417                      | NR            | 580    | 811                      | NR            | 710    | 52                       | NR            | 840    | 1                        | NR            | 970    | 0                        | NR            |
| 455    | 261                      | NR            | 585    | 817                      | NR            | 715    | 45                       | NR            | 845    | 1                        | NR            | 975    | 0                        | NR            |
| 460    | 167                      | NR            | 590    | 815                      | NR            | 720    | 39                       | NR            | 850    | 1                        | NR            | 980    | 0                        | NR            |
| 465    | 104                      | NR            | 595    | 801                      | NR            | 725    | 33                       | NR            | 855    | 1                        | NR            | 985    | 0                        | NR            |
| 470    | 79                       | NR            | 600    | 777                      | NR            | 730    | 28                       | NR            | 860    | 1                        | NR            | 990    | 0                        | NR            |
| 475    | 73                       | NR            | 605    | 744                      | NR            | 735    | 24                       | NR            | 865    | 1                        | NR            | 995    | 0                        | NR            |
| 480    | 76                       | NR            | 610    | 704                      | NR            | 740    | 21                       | NR            | 870    | 1                        | NR            | 1000   | 0                        | NR            |
| 485    | 98                       | NR            | 615    | 657                      | NR            | 745    | 18                       | NR            | 875    | 1                        | NR            |        |                          |               |

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**Scotopic Flux vs. Wavelength**



**Scotopic Lumens: NR**

**S/P: 1.47**

| 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    | 139                      | NR            | 620    | 607                      | NR            | 750    | 15                       | NR            | 880    | 0                        | NR            |
| 365    | 0                        | NR            | 495    | 198                      | NR            | 625    | 554                      | NR            | 755    | 13                       | NR            | 885    | 0                        | NR            |
| 370    | 0                        | NR            | 500    | 267                      | NR            | 630    | 504                      | NR            | 760    | 11                       | NR            | 890    | 0                        | NR            |
| 375    | 0                        | NR            | 505    | 343                      | NR            | 635    | 452                      | NR            | 765    | 10                       | NR            | 895    | 0                        | NR            |
| 380    | 0                        | NR            | 510    | 410                      | NR            | 640    | 403                      | NR            | 770    | 8                        | NR            | 900    | 0                        | NR            |
| 385    | 2                        | NR            | 515    | 470                      | NR            | 645    | 357                      | NR            | 775    | 7                        | NR            | 905    | 0                        | NR            |
| 390    | 4                        | NR            | 520    | 516                      | NR            | 650    | 314                      | NR            | 780    | 6                        | NR            | 910    | 0                        | NR            |
| 395    | 7                        | NR            | 525    | 550                      | NR            | 655    | 275                      | NR            | 785    | 5                        | NR            | 915    | 0                        | NR            |
| 400    | 10                       | NR            | 530    | 578                      | NR            | 660    | 240                      | NR            | 790    | 5                        | NR            | 920    | 0                        | NR            |
| 405    | 17                       | NR            | 535    | 601                      | NR            | 665    | 208                      | NR            | 795    | 4                        | NR            | 925    | 0                        | NR            |
| 410    | 35                       | NR            | 540    | 620                      | NR            | 670    | 179                      | NR            | 800    | 4                        | NR            | 930    | 0                        | NR            |
| 415    | 70                       | NR            | 545    | 641                      | NR            | 675    | 155                      | NR            | 805    | 3                        | NR            | 935    | 0                        | NR            |
| 420    | 147                      | NR            | 550    | 664                      | NR            | 680    | 133                      | NR            | 810    | 3                        | NR            | 940    | 0                        | NR            |
| 425    | 285                      | NR            | 555    | 689                      | NR            | 685    | 114                      | NR            | 815    | 2                        | NR            | 945    | 0                        | NR            |
| 430    | 487                      | NR            | 560    | 715                      | NR            | 690    | 98                       | NR            | 820    | 2                        | NR            | 950    | 0                        | NR            |
| 435    | 787                      | NR            | 565    | 743                      | NR            | 695    | 84                       | NR            | 825    | 2                        | NR            | 955    | 0                        | NR            |
| 440    | 1000                     | NR            | 570    | 771                      | NR            | 700    | 72                       | NR            | 830    | 2                        | NR            | 960    | 0                        | NR            |
| 445    | 783                      | NR            | 575    | 794                      | NR            | 705    | 61                       | NR            | 835    | 1                        | NR            | 965    | 0                        | NR            |
| 450    | 417                      | NR            | 580    | 811                      | NR            | 710    | 52                       | NR            | 840    | 1                        | NR            | 970    | 0                        | NR            |
| 455    | 261                      | NR            | 585    | 817                      | NR            | 715    | 45                       | NR            | 845    | 1                        | NR            | 975    | 0                        | NR            |
| 460    | 167                      | NR            | 590    | 815                      | NR            | 720    | 39                       | NR            | 850    | 1                        | NR            | 980    | 0                        | NR            |
| 465    | 104                      | NR            | 595    | 801                      | NR            | 725    | 33                       | NR            | 855    | 1                        | NR            | 985    | 0                        | NR            |
| 470    | 79                       | NR            | 600    | 777                      | NR            | 730    | 28                       | NR            | 860    | 1                        | NR            | 990    | 0                        | NR            |
| 475    | 73                       | NR            | 605    | 744                      | NR            | 735    | 24                       | NR            | 865    | 1                        | NR            | 995    | 0                        | NR            |
| 480    | 76                       | NR            | 610    | 704                      | NR            | 740    | 21                       | NR            | 870    | 1                        | NR            | 1000   | 0                        | NR            |
| 485    | 98                       | NR            | 615    | 657                      | NR            | 745    | 18                       | NR            | 875    | 1                        | NR            |        |                          |               |

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Melanopic Flux vs. Wavelength



Melanopic Lumens: NR

M/P: 2.78

| 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    | 139                      | NR            | 620    | 607                      | NR            | 750    | 15                       | NR            | 880    | 0                        | NR            |
| 365    | 0                        | NR            | 495    | 198                      | NR            | 625    | 554                      | NR            | 755    | 13                       | NR            | 885    | 0                        | NR            |
| 370    | 0                        | NR            | 500    | 267                      | NR            | 630    | 504                      | NR            | 760    | 11                       | NR            | 890    | 0                        | NR            |
| 375    | 0                        | NR            | 505    | 343                      | NR            | 635    | 452                      | NR            | 765    | 10                       | NR            | 895    | 0                        | NR            |
| 380    | 0                        | NR            | 510    | 410                      | NR            | 640    | 403                      | NR            | 770    | 8                        | NR            | 900    | 0                        | NR            |
| 385    | 2                        | NR            | 515    | 470                      | NR            | 645    | 357                      | NR            | 775    | 7                        | NR            | 905    | 0                        | NR            |
| 390    | 4                        | NR            | 520    | 516                      | NR            | 650    | 314                      | NR            | 780    | 6                        | NR            | 910    | 0                        | NR            |
| 395    | 7                        | NR            | 525    | 550                      | NR            | 655    | 275                      | NR            | 785    | 5                        | NR            | 915    | 0                        | NR            |
| 400    | 10                       | NR            | 530    | 578                      | NR            | 660    | 240                      | NR            | 790    | 5                        | NR            | 920    | 0                        | NR            |
| 405    | 17                       | NR            | 535    | 601                      | NR            | 665    | 208                      | NR            | 795    | 4                        | NR            | 925    | 0                        | NR            |
| 410    | 35                       | NR            | 540    | 620                      | NR            | 670    | 179                      | NR            | 800    | 4                        | NR            | 930    | 0                        | NR            |
| 415    | 70                       | NR            | 545    | 641                      | NR            | 675    | 155                      | NR            | 805    | 3                        | NR            | 935    | 0                        | NR            |
| 420    | 147                      | NR            | 550    | 664                      | NR            | 680    | 133                      | NR            | 810    | 3                        | NR            | 940    | 0                        | NR            |
| 425    | 285                      | NR            | 555    | 689                      | NR            | 685    | 114                      | NR            | 815    | 2                        | NR            | 945    | 0                        | NR            |
| 430    | 487                      | NR            | 560    | 715                      | NR            | 690    | 98                       | NR            | 820    | 2                        | NR            | 950    | 0                        | NR            |
| 435    | 787                      | NR            | 565    | 743                      | NR            | 695    | 84                       | NR            | 825    | 2                        | NR            | 955    | 0                        | NR            |
| 440    | 1000                     | NR            | 570    | 771                      | NR            | 700    | 72                       | NR            | 830    | 2                        | NR            | 960    | 0                        | NR            |
| 445    | 783                      | NR            | 575    | 794                      | NR            | 705    | 61                       | NR            | 835    | 1                        | NR            | 965    | 0                        | NR            |
| 450    | 417                      | NR            | 580    | 811                      | NR            | 710    | 52                       | NR            | 840    | 1                        | NR            | 970    | 0                        | NR            |
| 455    | 261                      | NR            | 585    | 817                      | NR            | 715    | 45                       | NR            | 845    | 1                        | NR            | 975    | 0                        | NR            |
| 460    | 167                      | NR            | 590    | 815                      | NR            | 720    | 39                       | NR            | 850    | 1                        | NR            | 980    | 0                        | NR            |
| 465    | 104                      | NR            | 595    | 801                      | NR            | 725    | 33                       | NR            | 855    | 1                        | NR            | 985    | 0                        | NR            |
| 470    | 79                       | NR            | 600    | 777                      | NR            | 730    | 28                       | NR            | 860    | 1                        | NR            | 990    | 0                        | NR            |
| 475    | 73                       | NR            | 605    | 744                      | NR            | 735    | 24                       | NR            | 865    | 1                        | NR            | 995    | 0                        | NR            |
| 480    | 76                       | NR            | 610    | 704                      | NR            | 740    | 21                       | NR            | 870    | 1                        | NR            | 1000   | 0                        | NR            |
| 485    | 98                       | NR            | 615    | 657                      | NR            | 745    | 18                       | NR            | 875    | 1                        | NR            |        |                          |               |

**Summary**

$R_f = 71.8$   
 $R_g = 96.5$   
 $CIE R_a = 70.7$   
 $R_9 = -36.7$



**Color Vector Graphics**



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

|            |            |            |            |
|------------|------------|------------|------------|
| CES01 = 85 | CES26 = 56 | CES51 = 86 | CES76 = 48 |
| CES02 = 61 | CES27 = 79 | CES52 = 88 | CES77 = 71 |
| CES03 = 30 | CES28 = 80 | CES53 = 73 | CES78 = 52 |
| CES04 = 70 | CES29 = 49 | CES54 = 79 | CES79 = 79 |
| CES05 = 47 | CES30 = 53 | CES55 = 77 | CES80 = 77 |
| CES06 = 50 | CES31 = 55 | CES56 = 67 | CES81 = 75 |
| CES07 = 40 | CES32 = 53 | CES57 = 64 | CES82 = 90 |
| CES08 = 39 | CES33 = 59 | CES58 = 67 | CES83 = 84 |
| CES09 = 29 | CES34 = 67 | CES59 = 87 | CES84 = 89 |
| CES10 = 74 | CES35 = 82 | CES60 = 91 | CES85 = 86 |
| CES11 = 57 | CES36 = 86 | CES61 = 87 | CES86 = 71 |
| CES12 = 63 | CES37 = 76 | CES62 = 76 | CES87 = 78 |
| CES13 = 42 | CES38 = 62 | CES63 = 73 | CES88 = 76 |
| CES14 = 74 | CES39 = 91 | CES64 = 71 | CES89 = 72 |
| CES15 = 71 | CES40 = 84 | CES65 = 64 | CES90 = 72 |
| CES16 = 46 | CES41 = 81 | CES66 = 67 | CES91 = 97 |
| CES17 = 49 | CES42 = 76 | CES67 = 65 | CES92 = 66 |
| CES18 = 56 | CES43 = 71 | CES68 = 72 | CES93 = 81 |
| CES19 = 72 | CES44 = 98 | CES69 = 82 | CES94 = 55 |
| CES20 = 65 | CES45 = 80 | CES70 = 61 | CES95 = 73 |
| CES21 = 86 | CES46 = 76 | CES71 = 59 | CES96 = 78 |
| CES22 = 78 | CES47 = 71 | CES72 = 86 | CES97 = 83 |
| CES23 = 92 | CES48 = 61 | CES73 = 52 | CES98 = 72 |
| CES24 = 91 | CES49 = 76 | CES74 = 93 | CES99 = 60 |
| CES25 = 72 | CES50 = 84 | CES75 = 56 |            |



Color Rendition by Hue-Angle Bin



Measure Comparisons



(END OF REPORT)