

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: P1437562

Luminaire Tested: **GALN-SB8B-730-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: P1437562  
 Test Lab: INNOVATION CENTER(G1)  
 Issue Date: 03/27/202  
 Manufacturer: COOPER LIGHTING SOLUTIONS (FORMERLY EATON)  
 Product Line: McGRAW-EDISON  
 Catalog Number: GALN-SB8B-730-U-T3LG-HSS  
 Description: GALLEON II AREA AND ROADWAY HIGH DENSITY LUMINAIRE 450mA 8xLight Square PACKAGE 70CRI 3000K FIXTURE w/ TYPE III LOW GLARE WITH HOUSE SIDE SHIELD  
 Light Source: (208) 3000K 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**

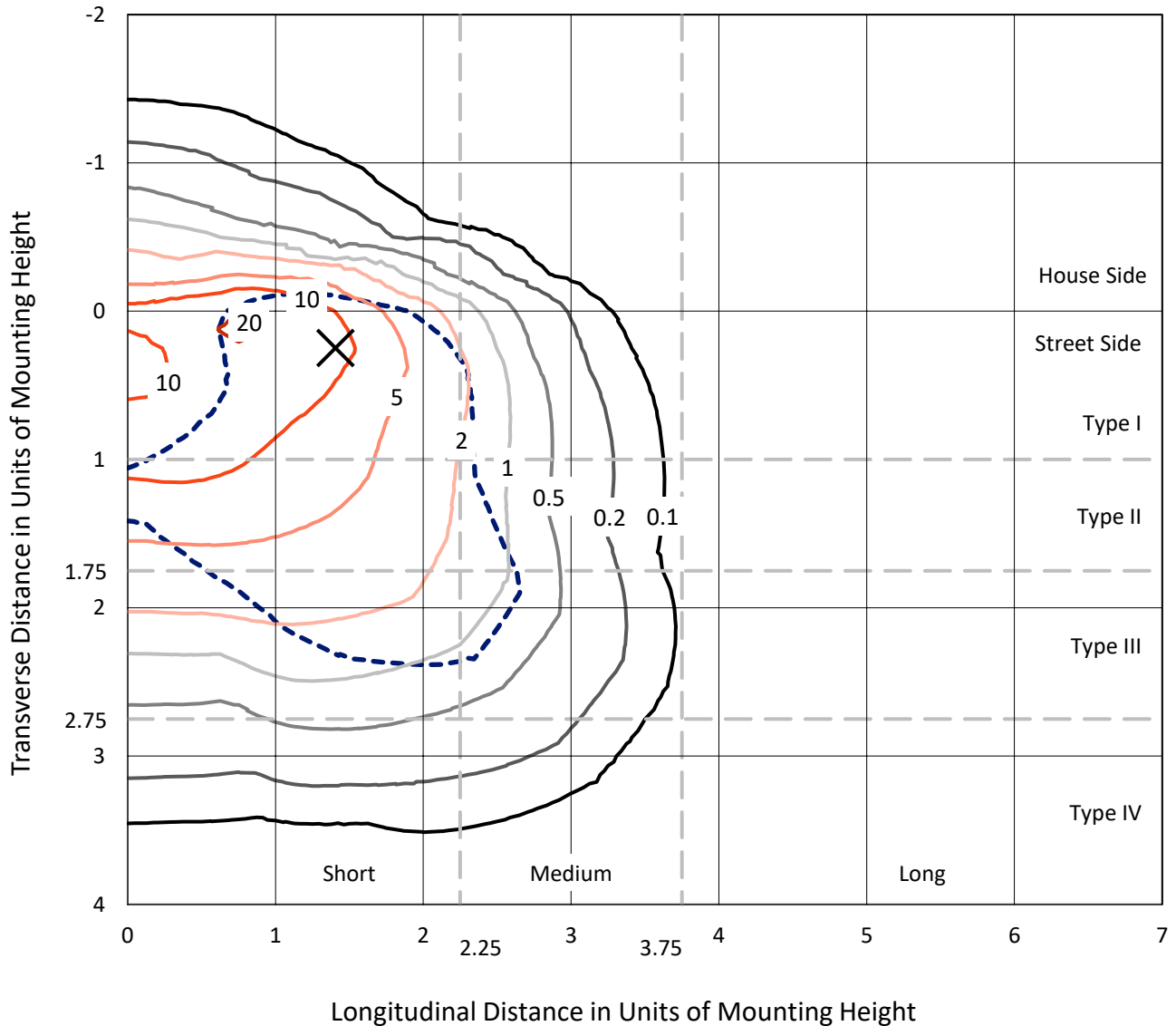
Lumens per Lamp: N/A  
 Luminaire Lumens: 34794.7 lumens  
 Efficiency: N/A  
 Efficacy: 118.8 lumens/watt  
 Luminous Opening: Rectangular (W 1.5' x L: 1.5' x H: 0')  
 IES Classification: Type III - Short  
 BUG Rating: B3 - U0 - G4

Input Watts (W): 292.8  
 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

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### Iso-Footcandle Lines of Horizontal Illumination

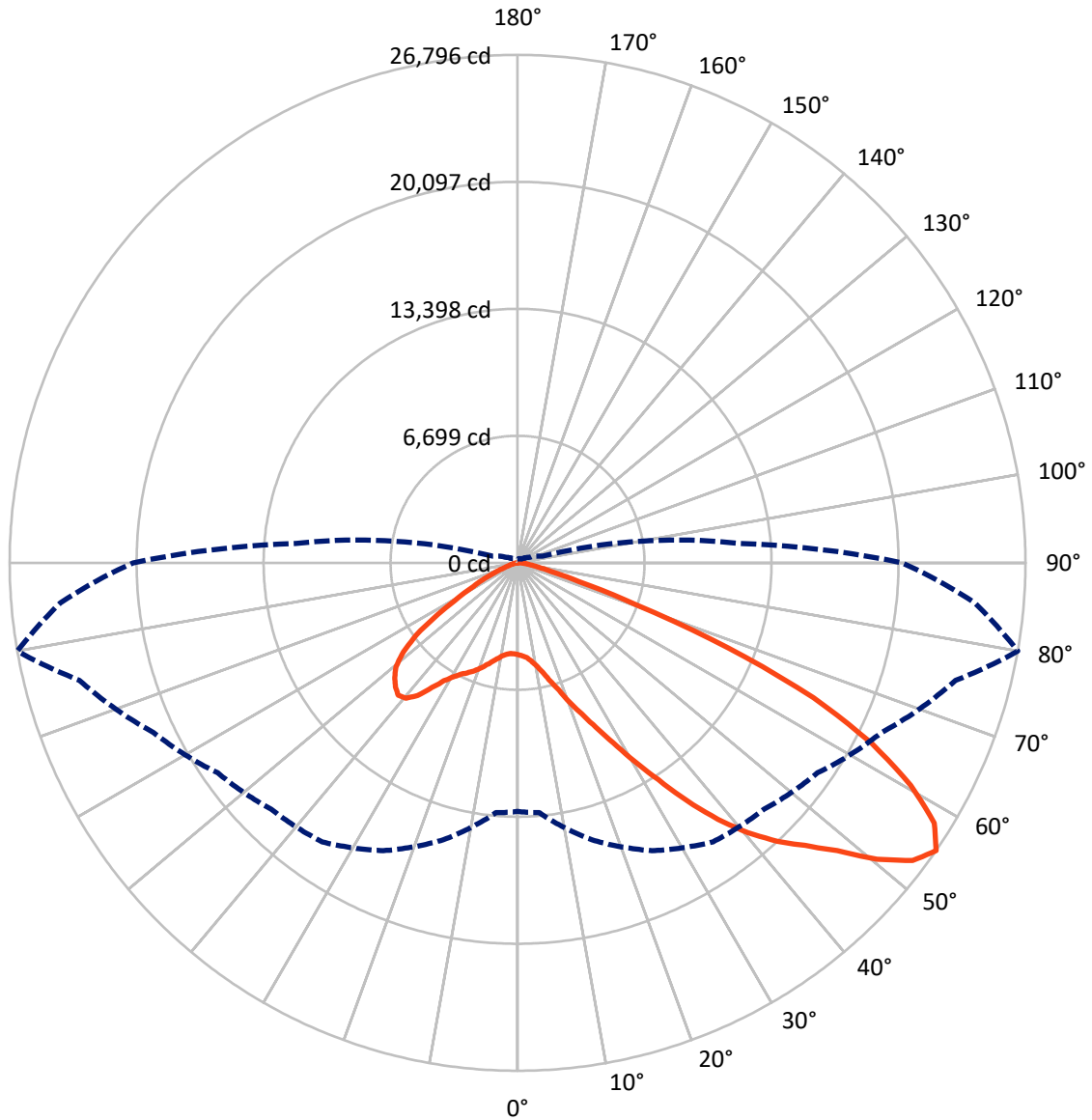
✕ Max cd  
 - - - 1/2 Max cd



Based on 20 foot mounting height. Maximum calculated value = 21.5 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    | 4229.7   | 0.0    | 4229.7  |
|                    | % Fixture | 12.2     | 0.0    | 12.2    |
| <b>Street Side</b> | Lumens    | 30565.1  | 0.0    | 30565.1 |
|                    | % Fixture | 87.8     | 0.0    | 87.8    |
| <b>Total</b>       | Lumens    | 34794.7  | 0.0    | 34794.7 |
|                    | % Fixture | 100.0    | 0.0    | 100.0   |

**Coefficient of Utilization**

**ZONAL LUMENS:**

| Zone      | Lumens  | % Fixture |
|-----------|---------|-----------|
| 0°-10°    | 406.8   | 1.2       |
| 10°-20°   | 1072.4  | 3.1       |
| 20°-30°   | 2099.3  | 6.0       |
| 30°-40°   | 4271.0  | 12.3      |
| 40°-50°   | 7200.2  | 20.7      |
| 50°-60°   | 9199.7  | 26.4      |
| 60°-70°   | 7854.3  | 22.6      |
| 70°-80°   | 2509.9  | 7.2       |
| 80°-90°   | 181.2   | 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°    | 34794.7 | 100.0     |
| 0°-180°   | 34794.7 | 100.0     |

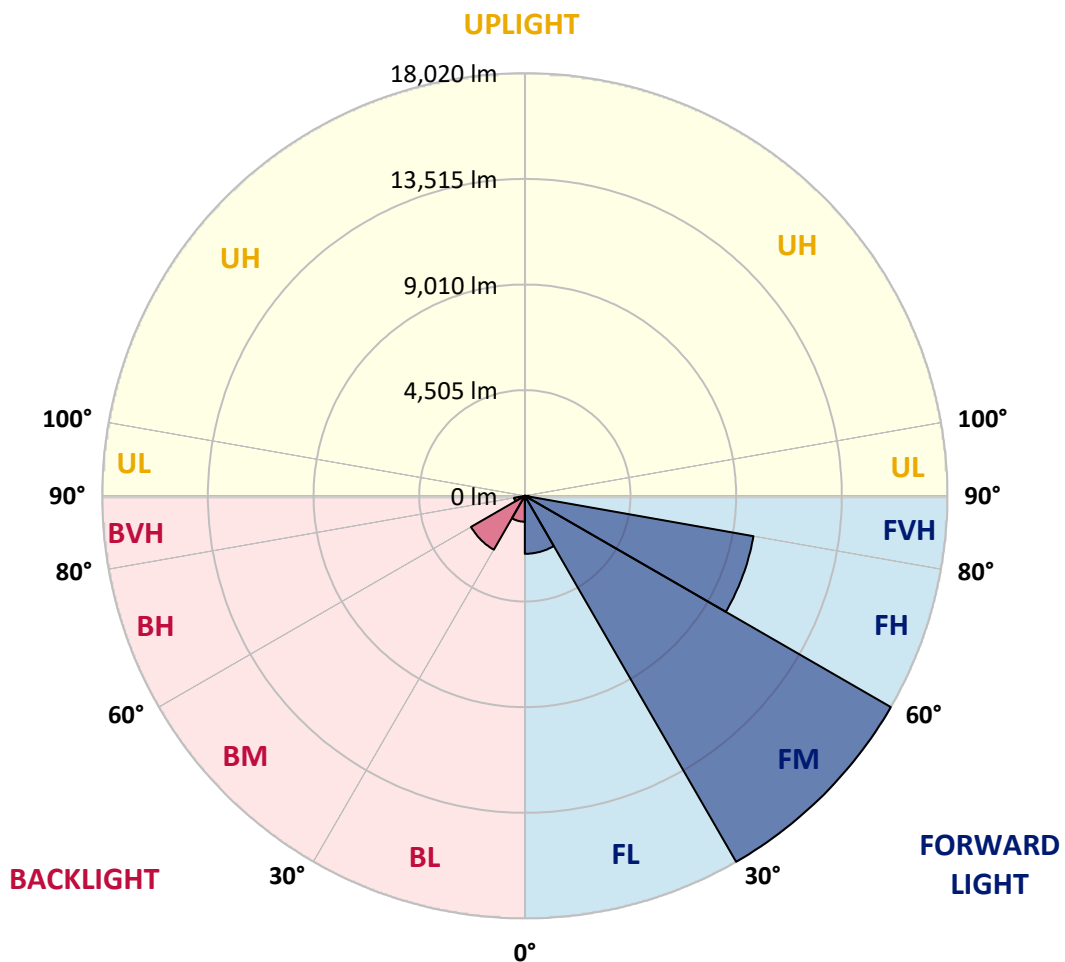


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**LUMINAIRE CLASSIFICATION SYSTEM LUMEN TABLE AND BUG RATING:**

| Zone           | Lumens  | % Fixture | Zone Rating/Lumen Limit |      |          |
|----------------|---------|-----------|-------------------------|------|----------|
|                |         |           | B                       | U    | G        |
| FL (0°-30°)    | 2474.0  | 7.1       |                         |      |          |
| FM (30°-60°)   | 18019.9 | 51.8      |                         |      |          |
| FH (60°-80°)   | 9899.4  | 28.5      |                         |      | G4/12000 |
| FVH (80°-90°)  | 171.8   | 0.5       |                         |      | G2/225   |
| BL (0°-30°)    | 1104.5  | 3.2       | B3/2500                 |      |          |
| BM (30°-60°)   | 2650.9  | 7.6       | B3/5000                 |      |          |
| BH (60°-80°)   | 464.9   | 1.3       | B1/500                  |      | G1/500   |
| BVH (80°-90°)  | 9.4     | 0.0       |                         |      | G0/10    |
| UL (90°-100°)  | 0.0     | 0.0       |                         | U0/0 |          |
| UH (100°-180°) | 0.0     | 0.0       |                         | U0/0 |          |

**BUG Rating: 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°    | 4846.9  | 4846.9  | 4846.9  | 4846.9  | 4846.9  | 4846.9  | 4846.9  | 4846.9  | 4846.9  | 4846.9  | 4846.9  |
| 2.5°  | 4876.5  | 4886.4  | 4876.5  | 4886.4  | 4906.2  | 4896.3  | 4935.9  | 4926.0  | 4926.0  | 4916.1  | 4876.5  |
| 5°    | 4599.6  | 4609.5  | 4629.2  | 4678.7  | 4747.9  | 4817.2  | 4906.2  | 4965.6  | 5024.9  | 5015.0  | 4975.4  |
| 7.5°  | 4055.5  | 4075.3  | 4154.4  | 4253.4  | 4480.9  | 4688.6  | 4916.1  | 5064.5  | 5193.1  | 5232.6  | 5203.0  |
| 10°   | 3748.9  | 3768.7  | 3818.1  | 3917.1  | 4124.8  | 4471.0  | 4916.1  | 5222.7  | 5450.2  | 5529.4  | 5539.3  |
| 12.5° | 3719.2  | 3729.1  | 3768.7  | 3877.5  | 4055.5  | 4352.3  | 4906.2  | 5430.5  | 5816.2  | 5934.9  | 5974.5  |
| 15°   | 3739.0  | 3758.8  | 3798.4  | 3887.4  | 4095.1  | 4431.4  | 4985.3  | 5756.9  | 6300.9  | 6469.1  | 6479.0  |
| 17.5° | 3818.1  | 3837.9  | 3887.4  | 3986.3  | 4213.8  | 4639.1  | 5232.6  | 6093.2  | 6884.5  | 7072.5  | 7181.3  |
| 20°   | 3976.4  | 3986.3  | 4045.6  | 4174.2  | 4431.4  | 4896.3  | 5598.6  | 6548.2  | 7586.8  | 7863.8  | 7942.9  |
| 22.5° | 4184.1  | 4213.8  | 4292.9  | 4451.2  | 4777.6  | 5252.4  | 6103.1  | 7102.1  | 8358.4  | 8645.2  | 8783.7  |
| 25°   | 4411.6  | 4451.2  | 4569.9  | 4827.1  | 5242.5  | 5796.4  | 6726.2  | 7834.1  | 9268.4  | 9614.6  | 9802.5  |
| 27.5° | 4876.5  | 4886.4  | 4965.6  | 5292.0  | 5826.1  | 6508.6  | 7517.6  | 8773.8  | 10336.7 | 10742.2 | 10949.9 |
| 30°   | 5895.4  | 5905.3  | 5836.0  | 5925.0  | 6469.1  | 7349.4  | 8447.4  | 9871.8  | 11583.0 | 12146.8 | 12315.0 |
| 32.5° | 7141.7  | 7191.2  | 7181.3  | 7121.9  | 7369.2  | 8190.2  | 9555.2  | 11187.3 | 13046.9 | 13640.4 | 13798.7 |
| 35°   | 8556.2  | 8674.9  | 8645.2  | 8625.4  | 8655.1  | 9268.4  | 10821.3 | 12641.4 | 14708.7 | 15430.8 | 15559.4 |
| 37.5° | 9941.0  | 9970.7  | 10109.2 | 10277.3 | 10297.1 | 10722.4 | 12285.3 | 14184.5 | 16251.8 | 17171.7 | 17369.5 |
| 40°   | 11009.3 | 11108.2 | 11454.4 | 11790.7 | 12136.9 | 12473.2 | 13492.1 | 15430.8 | 17478.4 | 18714.8 | 18803.8 |
| 42.5° | 11840.2 | 12077.6 | 12582.0 | 13106.3 | 13808.6 | 14184.5 | 14639.5 | 16311.2 | 18477.4 | 20089.7 | 20050.2 |
| 45°   | 12849.1 | 12948.0 | 13660.2 | 14352.6 | 15064.8 | 15638.5 | 15628.6 | 17053.0 | 19258.8 | 21266.8 | 21019.5 |
| 47.5° | 13531.6 | 13650.3 | 14619.7 | 15430.8 | 16162.8 | 16449.6 | 16509.0 | 17854.2 | 20337.0 | 22691.2 | 22107.6 |
| 50°   | 13897.6 | 14105.3 | 15163.7 | 16192.5 | 16983.8 | 17072.8 | 17339.9 | 18902.7 | 21751.5 | 24580.5 | 23482.5 |
| 52.5° | 13937.2 | 14135.0 | 15351.7 | 16677.1 | 17537.7 | 17715.8 | 18170.8 | 20089.7 | 23126.4 | 26093.9 | 24273.8 |
| 55°   | 13116.2 | 13234.9 | 15124.2 | 16756.3 | 17972.9 | 18388.4 | 19318.2 | 21187.7 | 23927.6 | 26796.2 | 24204.6 |
| 57.5° | 12344.6 | 12463.3 | 14105.3 | 16617.8 | 18418.1 | 19268.7 | 20544.7 | 21939.4 | 23304.5 | 25925.7 | 22661.5 |
| 60°   | 11681.9 | 11741.3 | 13234.9 | 15974.8 | 18586.2 | 20129.3 | 21603.1 | 21197.6 | 21692.2 | 23838.6 | 20020.5 |
| 62.5° | 10435.6 | 10475.1 | 12245.7 | 14817.5 | 18249.9 | 20792.0 | 21969.1 | 19624.8 | 19921.6 | 20960.2 | 16914.5 |
| 65°   | 7883.6  | 8031.9  | 9654.1  | 13947.1 | 17696.0 | 21098.7 | 21118.4 | 17705.9 | 17399.2 | 17151.9 | 13304.1 |
| 67.5° | 5351.3  | 5519.5  | 6498.7  | 12542.5 | 16795.8 | 21227.2 | 19466.6 | 15223.1 | 13254.7 | 11978.7 | 8714.4  |
| 70°   | 4273.1  | 4273.1  | 4609.5  | 10079.5 | 14659.3 | 19585.3 | 17419.0 | 11494.0 | 8417.7  | 6617.4  | 4668.8  |
| 72.5° | 2809.2  | 2819.1  | 3135.6  | 6399.8  | 10396.0 | 14936.2 | 14204.3 | 6647.1  | 4372.1  | 3373.0  | 2304.7  |
| 75°   | 1018.8  | 1018.8  | 1374.9  | 2561.9  | 5499.7  | 8892.5  | 8655.1  | 3175.2  | 2374.0  | 1839.8  | 1394.7  |
| 77.5° | 544.0   | 563.8   | 662.7   | 1058.4  | 2106.9  | 3620.3  | 3382.9  | 1622.2  | 1345.2  | 1147.4  | 870.5   |
| 80°   | 366.0   | 375.9   | 445.1   | 652.8   | 1018.8  | 1394.7  | 1088.1  | 910.0   | 910.0   | 771.5   | 583.6   |
| 82.5° | 197.8   | 207.7   | 296.7   | 425.3   | 544.0   | 652.8   | 524.3   | 534.1   | 643.0   | 524.3   | 336.3   |
| 85°   | 138.5   | 138.5   | 227.5   | 306.6   | 306.6   | 316.5   | 227.5   | 336.3   | 375.9   | 326.4   | 227.5   |
| 87.5° | 79.1    | 79.1    | 128.6   | 148.4   | 148.4   | 138.5   | 69.2    | 118.7   | 148.4   | 168.2   | 98.9    |
| 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: P1437562

CATALOG NUMBER: GALN-SB8B-730-U-T3LG-HSS

**CANDELA DISTRIBUTION (continued):**

|       | 90°     | 95°     | 105°   | 115°   | 125°   | 135°   | 145°   | 155°   | 165°   | 175°   | 180°   |
|-------|---------|---------|--------|--------|--------|--------|--------|--------|--------|--------|--------|
| 0°    | 4846.9  | 4846.9  | 4846.9 | 4846.9 | 4846.9 | 4846.9 | 4846.9 | 4846.9 | 4846.9 | 4846.9 | 4846.9 |
| 2.5°  | 4866.6  | 4837.0  | 4777.6 | 4658.9 | 4599.6 | 4520.4 | 4451.2 | 4362.2 | 4342.4 | 4332.5 | 4292.9 |
| 5°    | 4945.8  | 4886.4  | 4708.4 | 4451.2 | 4233.6 | 4025.9 | 3818.1 | 3699.4 | 3600.5 | 3551.1 | 3541.2 |
| 7.5°  | 5143.6  | 5024.9  | 4698.5 | 4243.5 | 3837.9 | 3481.8 | 3175.2 | 2908.1 | 2769.6 | 2650.9 | 2660.8 |
| 10°   | 5440.3  | 5252.4  | 4718.3 | 4045.6 | 3442.3 | 2868.5 | 2423.4 | 2037.7 | 1760.7 | 1632.1 | 1622.2 |
| 12.5° | 5836.0  | 5568.9  | 4787.5 | 3847.8 | 2957.6 | 2156.4 | 1592.5 | 1365.0 | 1305.7 | 1295.8 | 1285.9 |
| 15°   | 6320.7  | 5944.8  | 4856.7 | 3590.6 | 2304.7 | 1493.6 | 1295.8 | 1246.3 | 1236.4 | 1226.6 | 1226.6 |
| 17.5° | 6904.3  | 6380.0  | 4896.3 | 3155.4 | 1681.6 | 1285.9 | 1216.7 | 1187.0 | 1177.1 | 1167.2 | 1167.2 |
| 20°   | 7636.3  | 6864.7  | 4945.8 | 2601.5 | 1424.4 | 1236.4 | 1157.3 | 1117.7 | 1107.9 | 1107.9 | 1098.0 |
| 22.5° | 8358.4  | 7408.8  | 4906.2 | 2116.8 | 1374.9 | 1177.1 | 1088.1 | 1048.5 | 1028.7 | 1028.7 | 1018.8 |
| 25°   | 9189.2  | 7962.7  | 4787.5 | 1909.1 | 1365.0 | 1127.6 | 1018.8 | 959.5  | 929.8  | 919.9  | 919.9  |
| 27.5° | 10138.8 | 8595.7  | 4599.6 | 1919.0 | 1365.0 | 1088.1 | 929.8  | 850.7  | 830.9  | 811.1  | 811.1  |
| 30°   | 11226.9 | 9367.3  | 4461.1 | 2047.5 | 1384.8 | 1048.5 | 850.7  | 751.8  | 722.1  | 702.3  | 712.2  |
| 32.5° | 12473.2 | 10227.9 | 4451.2 | 2255.3 | 1414.5 | 989.2  | 761.6  | 652.8  | 623.2  | 613.3  | 623.2  |
| 35°   | 13887.7 | 11296.1 | 4678.7 | 2413.5 | 1335.4 | 860.6  | 652.8  | 563.8  | 534.1  | 534.1  | 544.0  |
| 37.5° | 15460.5 | 12522.7 | 4985.3 | 2374.0 | 1078.2 | 682.5  | 563.8  | 494.6  | 464.9  | 474.8  | 484.7  |
| 40°   | 16894.8 | 13482.2 | 5034.8 | 2027.8 | 811.1  | 583.6  | 484.7  | 435.2  | 415.4  | 425.3  | 435.2  |
| 42.5° | 17982.8 | 14253.7 | 4560.0 | 1572.8 | 682.5  | 494.6  | 415.4  | 375.9  | 366.0  | 385.8  | 385.8  |
| 45°   | 18863.2 | 14560.3 | 3808.2 | 1167.2 | 603.4  | 425.3  | 366.0  | 346.2  | 326.4  | 336.3  | 336.3  |
| 47.5° | 19783.1 | 14609.8 | 3105.9 | 939.7  | 534.1  | 385.8  | 336.3  | 316.5  | 296.7  | 296.7  | 296.7  |
| 50°   | 20673.3 | 14491.1 | 2374.0 | 830.9  | 494.6  | 346.2  | 306.6  | 286.9  | 267.1  | 257.2  | 257.2  |
| 52.5° | 20890.9 | 13541.5 | 1740.9 | 771.5  | 455.0  | 326.4  | 286.9  | 267.1  | 247.3  | 237.4  | 237.4  |
| 55°   | 20287.6 | 11741.3 | 1365.0 | 692.4  | 415.4  | 296.7  | 267.1  | 247.3  | 217.6  | 207.7  | 207.7  |
| 57.5° | 18299.4 | 8951.8  | 1088.1 | 593.5  | 375.9  | 286.9  | 247.3  | 227.5  | 197.8  | 187.9  | 187.9  |
| 60°   | 15717.7 | 6350.4  | 880.3  | 484.7  | 346.2  | 257.2  | 227.5  | 197.8  | 178.0  | 158.3  | 158.3  |
| 62.5° | 12859.0 | 4560.0  | 712.2  | 405.6  | 326.4  | 227.5  | 207.7  | 178.0  | 138.5  | 108.8  | 108.8  |
| 65°   | 9861.9  | 3274.1  | 553.9  | 326.4  | 296.7  | 197.8  | 178.0  | 148.4  | 108.8  | 79.1   | 79.1   |
| 67.5° | 6380.0  | 2116.8  | 415.4  | 286.9  | 227.5  | 168.2  | 138.5  | 118.7  | 98.9   | 69.2   | 59.3   |
| 70°   | 3363.1  | 1236.4  | 306.6  | 247.3  | 168.2  | 128.6  | 118.7  | 98.9   | 79.1   | 49.5   | 49.5   |
| 72.5° | 1740.9  | 811.1   | 227.5  | 217.6  | 128.6  | 89.0   | 98.9   | 79.1   | 59.3   | 29.7   | 29.7   |
| 75°   | 1117.7  | 544.0   | 168.2  | 178.0  | 79.1   | 69.2   | 69.2   | 49.5   | 29.7   | 19.8   | 9.9    |
| 77.5° | 722.1   | 366.0   | 118.7  | 148.4  | 49.5   | 39.6   | 39.6   | 19.8   | 9.9    | 0.0    | 0.0    |
| 80°   | 425.3   | 227.5   | 79.1   | 98.9   | 19.8   | 19.8   | 9.9    | 0.0    | 0.0    | 0.0    | 0.0    |
| 82.5° | 217.6   | 118.7   | 39.6   | 39.6   | 9.9    | 0.0    | 0.0    | 0.0    | 0.0    | 0.0    | 0.0    |
| 85°   | 138.5   | 59.3    | 9.9    | 9.9    | 0.0    | 0.0    | 0.0    | 0.0    | 0.0    | 0.0    | 0.0    |
| 87.5° | 69.2    | 19.8    | 9.9    | 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: SP1-2407-184-4

Test Date: 10/10/2024

Luminaire Tested: GSS-SB1A-730-U-5WQ

Data in this report applies to families of products including GSS-SB1A-730-U-5WQ

**Test Information**

Test Method: LM-79-2019  
 Report Number: SP1-2407-184-4  
 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-730-U-5WQ**  
 Description: GALLEON II SITE SLIM 1SQ 350MA 5WQ HIGH DENSITY LIGHTSQUARE WITH 70 CRI 3000K CCT 26 LEDS

**Spectral Parameters**

CCT (K): 2985  
 CIE u': 0.2504  
 CIE v': 0.5243  
 Duv: 0.0019  
 CIE x: 0.4408  
 CIE y: 0.4101  
 CIE z: 0.1491  
 Peak Wavelength (nm): 595  
 Dominant Wavelength (nm): 582  
 Purity: 55.41818  
 Rf: 73.8  
 Rg: 94.4

|           |      |      |       |
|-----------|------|------|-------|
| CRI (Ra): | 70.8 |      |       |
| R1:       | 66.3 | R9:  | -43.2 |
| R2:       | 80.6 | R10: | 57.6  |
| R3:       | 94.5 | R11: | 64.8  |
| R4:       | 68.2 | R12: | 53.5  |
| R5:       | 66.5 | R13: | 68.7  |
| R6:       | 74.7 | R14: | 97.0  |
| R7:       | 76.2 | R15: | 56.4  |
| R8:       | 39.6 |      |       |



**Test Conditions**

Stabilization Time: 36M  
 Operation Time: 1H 36M  
 Sphere Temperature (°C): 25.2

REPORT NUMBER: SP1-2407-184-4

| 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 3000K 4-step quadrangle

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**Photopic Flux vs. Wavelength**



Photopic Luminous Efficacy Function

**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    | 142                      | NR            | 620    | 803                      | NR            | 750    | 17                       | NR            | 880    | 0                        | NR            |
| 365    | 0                        | NR            | 495    | 189                      | NR            | 625    | 734                      | NR            | 755    | 15                       | NR            | 885    | 0                        | NR            |
| 370    | 0                        | NR            | 500    | 240                      | NR            | 630    | 670                      | NR            | 760    | 13                       | NR            | 890    | 0                        | NR            |
| 375    | 0                        | NR            | 505    | 290                      | NR            | 635    | 600                      | NR            | 765    | 11                       | NR            | 895    | 0                        | NR            |
| 380    | 0                        | NR            | 510    | 335                      | NR            | 640    | 535                      | NR            | 770    | 9                        | NR            | 900    | 0                        | NR            |
| 385    | 0                        | NR            | 515    | 375                      | NR            | 645    | 473                      | NR            | 775    | 8                        | NR            | 905    | 0                        | NR            |
| 390    | 1                        | NR            | 520    | 408                      | NR            | 650    | 415                      | NR            | 780    | 7                        | NR            | 910    | 0                        | NR            |
| 395    | 2                        | NR            | 525    | 434                      | NR            | 655    | 362                      | NR            | 785    | 6                        | NR            | 915    | 0                        | NR            |
| 400    | 4                        | NR            | 530    | 461                      | NR            | 660    | 313                      | NR            | 790    | 5                        | NR            | 920    | 0                        | NR            |
| 405    | 8                        | NR            | 535    | 486                      | NR            | 665    | 271                      | NR            | 795    | 4                        | NR            | 925    | 0                        | NR            |
| 410    | 16                       | NR            | 540    | 514                      | NR            | 670    | 231                      | NR            | 800    | 4                        | NR            | 930    | 0                        | NR            |
| 415    | 33                       | NR            | 545    | 549                      | NR            | 675    | 198                      | NR            | 805    | 3                        | NR            | 935    | 0                        | NR            |
| 420    | 69                       | NR            | 550    | 591                      | NR            | 680    | 169                      | NR            | 810    | 3                        | NR            | 940    | 0                        | NR            |
| 425    | 131                      | NR            | 555    | 640                      | NR            | 685    | 144                      | NR            | 815    | 2                        | NR            | 945    | 0                        | NR            |
| 430    | 227                      | NR            | 560    | 695                      | NR            | 690    | 123                      | NR            | 820    | 2                        | NR            | 950    | 0                        | NR            |
| 435    | 369                      | NR            | 565    | 757                      | NR            | 695    | 104                      | NR            | 825    | 2                        | NR            | 955    | 0                        | NR            |
| 440    | 517                      | NR            | 570    | 822                      | NR            | 700    | 88                       | NR            | 830    | 2                        | NR            | 960    | 0                        | NR            |
| 445    | 498                      | NR            | 575    | 882                      | NR            | 705    | 75                       | NR            | 835    | 1                        | NR            | 965    | 0                        | NR            |
| 450    | 315                      | NR            | 580    | 935                      | NR            | 710    | 63                       | NR            | 840    | 1                        | NR            | 970    | 0                        | NR            |
| 455    | 204                      | NR            | 585    | 972                      | NR            | 715    | 54                       | NR            | 845    | 1                        | NR            | 975    | 0                        | NR            |
| 460    | 145                      | NR            | 590    | 996                      | NR            | 720    | 46                       | NR            | 850    | 1                        | NR            | 980    | 0                        | NR            |
| 465    | 100                      | NR            | 595    | 1000                     | NR            | 725    | 39                       | NR            | 855    | 1                        | NR            | 985    | 0                        | NR            |
| 470    | 78                       | NR            | 600    | 989                      | NR            | 730    | 33                       | NR            | 860    | 1                        | NR            | 990    | 0                        | NR            |
| 475    | 76                       | NR            | 605    | 960                      | NR            | 735    | 28                       | NR            | 865    | 1                        | NR            | 995    | 0                        | NR            |
| 480    | 83                       | NR            | 610    | 918                      | NR            | 740    | 24                       | NR            | 870    | 1                        | NR            | 1000   | 0                        | NR            |
| 485    | 105                      | NR            | 615    | 864                      | NR            | 745    | 20                       | NR            | 875    | 1                        | NR            |        |                          |               |

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**Scotopic Flux vs. Wavelength**



**Scotopic Lumens: NR**

**S/P: 1.19**

| 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    | 142                      | NR            | 620    | 803                      | NR            | 750    | 17                       | NR            | 880    | 0                        | NR            |
| 365    | 0                        | NR            | 495    | 189                      | NR            | 625    | 734                      | NR            | 755    | 15                       | NR            | 885    | 0                        | NR            |
| 370    | 0                        | NR            | 500    | 240                      | NR            | 630    | 670                      | NR            | 760    | 13                       | NR            | 890    | 0                        | NR            |
| 375    | 0                        | NR            | 505    | 290                      | NR            | 635    | 600                      | NR            | 765    | 11                       | NR            | 895    | 0                        | NR            |
| 380    | 0                        | NR            | 510    | 335                      | NR            | 640    | 535                      | NR            | 770    | 9                        | NR            | 900    | 0                        | NR            |
| 385    | 0                        | NR            | 515    | 375                      | NR            | 645    | 473                      | NR            | 775    | 8                        | NR            | 905    | 0                        | NR            |
| 390    | 1                        | NR            | 520    | 408                      | NR            | 650    | 415                      | NR            | 780    | 7                        | NR            | 910    | 0                        | NR            |
| 395    | 2                        | NR            | 525    | 434                      | NR            | 655    | 362                      | NR            | 785    | 6                        | NR            | 915    | 0                        | NR            |
| 400    | 4                        | NR            | 530    | 461                      | NR            | 660    | 313                      | NR            | 790    | 5                        | NR            | 920    | 0                        | NR            |
| 405    | 8                        | NR            | 535    | 486                      | NR            | 665    | 271                      | NR            | 795    | 4                        | NR            | 925    | 0                        | NR            |
| 410    | 16                       | NR            | 540    | 514                      | NR            | 670    | 231                      | NR            | 800    | 4                        | NR            | 930    | 0                        | NR            |
| 415    | 33                       | NR            | 545    | 549                      | NR            | 675    | 198                      | NR            | 805    | 3                        | NR            | 935    | 0                        | NR            |
| 420    | 69                       | NR            | 550    | 591                      | NR            | 680    | 169                      | NR            | 810    | 3                        | NR            | 940    | 0                        | NR            |
| 425    | 131                      | NR            | 555    | 640                      | NR            | 685    | 144                      | NR            | 815    | 2                        | NR            | 945    | 0                        | NR            |
| 430    | 227                      | NR            | 560    | 695                      | NR            | 690    | 123                      | NR            | 820    | 2                        | NR            | 950    | 0                        | NR            |
| 435    | 369                      | NR            | 565    | 757                      | NR            | 695    | 104                      | NR            | 825    | 2                        | NR            | 955    | 0                        | NR            |
| 440    | 517                      | NR            | 570    | 822                      | NR            | 700    | 88                       | NR            | 830    | 2                        | NR            | 960    | 0                        | NR            |
| 445    | 498                      | NR            | 575    | 882                      | NR            | 705    | 75                       | NR            | 835    | 1                        | NR            | 965    | 0                        | NR            |
| 450    | 315                      | NR            | 580    | 935                      | NR            | 710    | 63                       | NR            | 840    | 1                        | NR            | 970    | 0                        | NR            |
| 455    | 204                      | NR            | 585    | 972                      | NR            | 715    | 54                       | NR            | 845    | 1                        | NR            | 975    | 0                        | NR            |
| 460    | 145                      | NR            | 590    | 996                      | NR            | 720    | 46                       | NR            | 850    | 1                        | NR            | 980    | 0                        | NR            |
| 465    | 100                      | NR            | 595    | 1000                     | NR            | 725    | 39                       | NR            | 855    | 1                        | NR            | 985    | 0                        | NR            |
| 470    | 78                       | NR            | 600    | 989                      | NR            | 730    | 33                       | NR            | 860    | 1                        | NR            | 990    | 0                        | NR            |
| 475    | 76                       | NR            | 605    | 960                      | NR            | 735    | 28                       | NR            | 865    | 1                        | NR            | 995    | 0                        | NR            |
| 480    | 83                       | NR            | 610    | 918                      | NR            | 740    | 24                       | NR            | 870    | 1                        | NR            | 1000   | 0                        | NR            |
| 485    | 105                      | NR            | 615    | 864                      | NR            | 745    | 20                       | NR            | 875    | 1                        | NR            |        |                          |               |

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Melanopic Flux vs. Wavelength



Melanopic Lumens: NR

M/P: 2.13

| 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    | 142                      | NR            | 620    | 803                      | NR            | 750    | 17                       | NR            | 880    | 0                        | NR            |
| 365    | 0                        | NR            | 495    | 189                      | NR            | 625    | 734                      | NR            | 755    | 15                       | NR            | 885    | 0                        | NR            |
| 370    | 0                        | NR            | 500    | 240                      | NR            | 630    | 670                      | NR            | 760    | 13                       | NR            | 890    | 0                        | NR            |
| 375    | 0                        | NR            | 505    | 290                      | NR            | 635    | 600                      | NR            | 765    | 11                       | NR            | 895    | 0                        | NR            |
| 380    | 0                        | NR            | 510    | 335                      | NR            | 640    | 535                      | NR            | 770    | 9                        | NR            | 900    | 0                        | NR            |
| 385    | 0                        | NR            | 515    | 375                      | NR            | 645    | 473                      | NR            | 775    | 8                        | NR            | 905    | 0                        | NR            |
| 390    | 1                        | NR            | 520    | 408                      | NR            | 650    | 415                      | NR            | 780    | 7                        | NR            | 910    | 0                        | NR            |
| 395    | 2                        | NR            | 525    | 434                      | NR            | 655    | 362                      | NR            | 785    | 6                        | NR            | 915    | 0                        | NR            |
| 400    | 4                        | NR            | 530    | 461                      | NR            | 660    | 313                      | NR            | 790    | 5                        | NR            | 920    | 0                        | NR            |
| 405    | 8                        | NR            | 535    | 486                      | NR            | 665    | 271                      | NR            | 795    | 4                        | NR            | 925    | 0                        | NR            |
| 410    | 16                       | NR            | 540    | 514                      | NR            | 670    | 231                      | NR            | 800    | 4                        | NR            | 930    | 0                        | NR            |
| 415    | 33                       | NR            | 545    | 549                      | NR            | 675    | 198                      | NR            | 805    | 3                        | NR            | 935    | 0                        | NR            |
| 420    | 69                       | NR            | 550    | 591                      | NR            | 680    | 169                      | NR            | 810    | 3                        | NR            | 940    | 0                        | NR            |
| 425    | 131                      | NR            | 555    | 640                      | NR            | 685    | 144                      | NR            | 815    | 2                        | NR            | 945    | 0                        | NR            |
| 430    | 227                      | NR            | 560    | 695                      | NR            | 690    | 123                      | NR            | 820    | 2                        | NR            | 950    | 0                        | NR            |
| 435    | 369                      | NR            | 565    | 757                      | NR            | 695    | 104                      | NR            | 825    | 2                        | NR            | 955    | 0                        | NR            |
| 440    | 517                      | NR            | 570    | 822                      | NR            | 700    | 88                       | NR            | 830    | 2                        | NR            | 960    | 0                        | NR            |
| 445    | 498                      | NR            | 575    | 882                      | NR            | 705    | 75                       | NR            | 835    | 1                        | NR            | 965    | 0                        | NR            |
| 450    | 315                      | NR            | 580    | 935                      | NR            | 710    | 63                       | NR            | 840    | 1                        | NR            | 970    | 0                        | NR            |
| 455    | 204                      | NR            | 585    | 972                      | NR            | 715    | 54                       | NR            | 845    | 1                        | NR            | 975    | 0                        | NR            |
| 460    | 145                      | NR            | 590    | 996                      | NR            | 720    | 46                       | NR            | 850    | 1                        | NR            | 980    | 0                        | NR            |
| 465    | 100                      | NR            | 595    | 1000                     | NR            | 725    | 39                       | NR            | 855    | 1                        | NR            | 985    | 0                        | NR            |
| 470    | 78                       | NR            | 600    | 989                      | NR            | 730    | 33                       | NR            | 860    | 1                        | NR            | 990    | 0                        | NR            |
| 475    | 76                       | NR            | 605    | 960                      | NR            | 735    | 28                       | NR            | 865    | 1                        | NR            | 995    | 0                        | NR            |
| 480    | 83                       | NR            | 610    | 918                      | NR            | 740    | 24                       | NR            | 870    | 1                        | NR            | 1000   | 0                        | NR            |
| 485    | 105                      | NR            | 615    | 864                      | NR            | 745    | 20                       | NR            | 875    | 1                        | NR            |        |                          |               |

**Summary**

$R_f = 73.8$   
 $R_g = 94.4$   
 CIE  $R_a = 70.8$   
 $R_9 = -43.2$



**Color Vector Graphics**



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

|            |            |            |            |
|------------|------------|------------|------------|
| CES01 = 86 | CES26 = 63 | CES51 = 86 | CES76 = 61 |
| CES02 = 62 | CES27 = 83 | CES52 = 86 | CES77 = 81 |
| CES03 = 31 | CES28 = 86 | CES53 = 75 | CES78 = 64 |
| CES04 = 71 | CES29 = 58 | CES54 = 81 | CES79 = 86 |
| CES05 = 49 | CES30 = 61 | CES55 = 80 | CES80 = 86 |
| CES06 = 51 | CES31 = 63 | CES56 = 71 | CES81 = 70 |
| CES07 = 41 | CES32 = 61 | CES57 = 69 | CES82 = 94 |
| CES08 = 40 | CES33 = 65 | CES58 = 72 | CES83 = 88 |
| CES09 = 29 | CES34 = 77 | CES59 = 85 | CES84 = 90 |
| CES10 = 76 | CES35 = 88 | CES60 = 93 | CES85 = 80 |
| CES11 = 59 | CES36 = 89 | CES61 = 86 | CES86 = 60 |
| CES12 = 65 | CES37 = 85 | CES62 = 81 | CES87 = 78 |
| CES13 = 43 | CES38 = 69 | CES63 = 73 | CES88 = 75 |
| CES14 = 74 | CES39 = 93 | CES64 = 72 | CES89 = 66 |
| CES15 = 71 | CES40 = 89 | CES65 = 67 | CES90 = 72 |
| CES16 = 47 | CES41 = 83 | CES66 = 70 | CES91 = 95 |
| CES17 = 50 | CES42 = 87 | CES67 = 68 | CES92 = 59 |
| CES18 = 56 | CES43 = 77 | CES68 = 73 | CES93 = 76 |
| CES19 = 73 | CES44 = 99 | CES69 = 83 | CES94 = 48 |
| CES20 = 66 | CES45 = 83 | CES70 = 66 | CES95 = 70 |
| CES21 = 87 | CES46 = 77 | CES71 = 66 | CES96 = 76 |
| CES22 = 79 | CES47 = 74 | CES72 = 88 | CES97 = 82 |
| CES23 = 92 | CES48 = 62 | CES73 = 59 | CES98 = 73 |
| CES24 = 91 | CES49 = 77 | CES74 = 93 | CES99 = 60 |
| CES25 = 73 | CES50 = 85 | CES75 = 67 |            |



Color Rendition by Hue-Angle Bin



Measure Comparisons



(END OF REPORT)