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: McGRAW-EDISON

Report Number: P1500668

Luminaire Tested: GSS-SB4D-735-U-T4LG

Issue Date: 07/20/2026

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

Scaled Data Report

**Test Information**

| | |
|---|---|
| Test Method: | LM-79-2024 |
| Report Number: | P1500668 |
| Test Lab: | INNOVATION CENTER(G1) |
| Issue Date: | 7/20/2026 |
| Manufacturer: | COOPER LIGHTING SOLUTIONS |
| Product Line: | McGRAW-EDISON |
| Catalog Number: | GSS-SB4D-735-U-T4LG |
| Description: | GALLEON II SLIM SITE HIGH DENSITY LED ARRAYS 4SQUARE 238W 70CRI 3500K FIXTURE w/ TYPE IV LOW GLARE DISTRIBUTION FIXTURE |
| Light Source: | (104) 3500K CCT, 70 CRI LEDS |
| Ballast/Driver: | ELECTRONIC DRIVER |

**Summary**

| | |
|---|---|
| Lumens per Lamp: | N/A |
| Luminaire Lumens: | 32099.8 lumens |
| Efficiency: | N/A |
| Efficacy: | 134.9 lumens/watt |
| Luminous Opening: | Rectangular (W 1.5' x L: 1' x H: 0') |
| IES Classification: | Type III - Short |
| BUG Rating: | B3 - U0 - G3 |

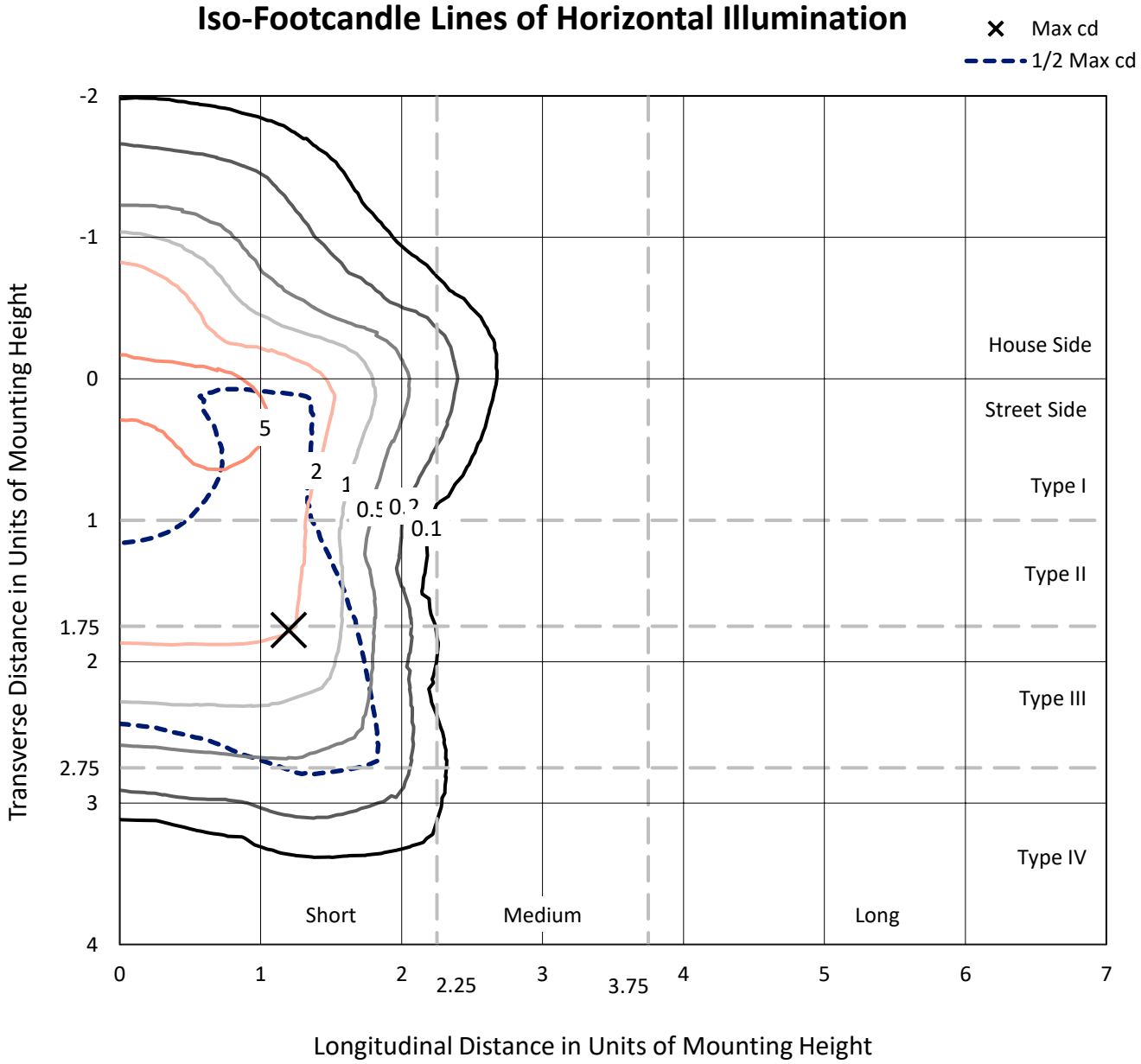
| | |
|---|---|
| Input Watts (W): | 238 |
| Input Voltage (V): | 120 |
| Input Current (Ain): | NR |
| Voltage Rise (V): | NR |
| Power Factor: | 0.98 |
| Total Harmonic Distortion (THDi): | -- |
| Frequency (hertz): | 60 |
| Stabilization Time: | NR |
| Operation Time: | NR |
| Ambient Temperature (°C): | NR |
| Test Distance: | 28.75 FT |

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Scaled Data Report

REPORT NUMBER: P1500668
CATALOG NUMBER: GSS-SB4D-735-U-T4LG

## Iso-Footcandle Lines of Horizontal Illumination



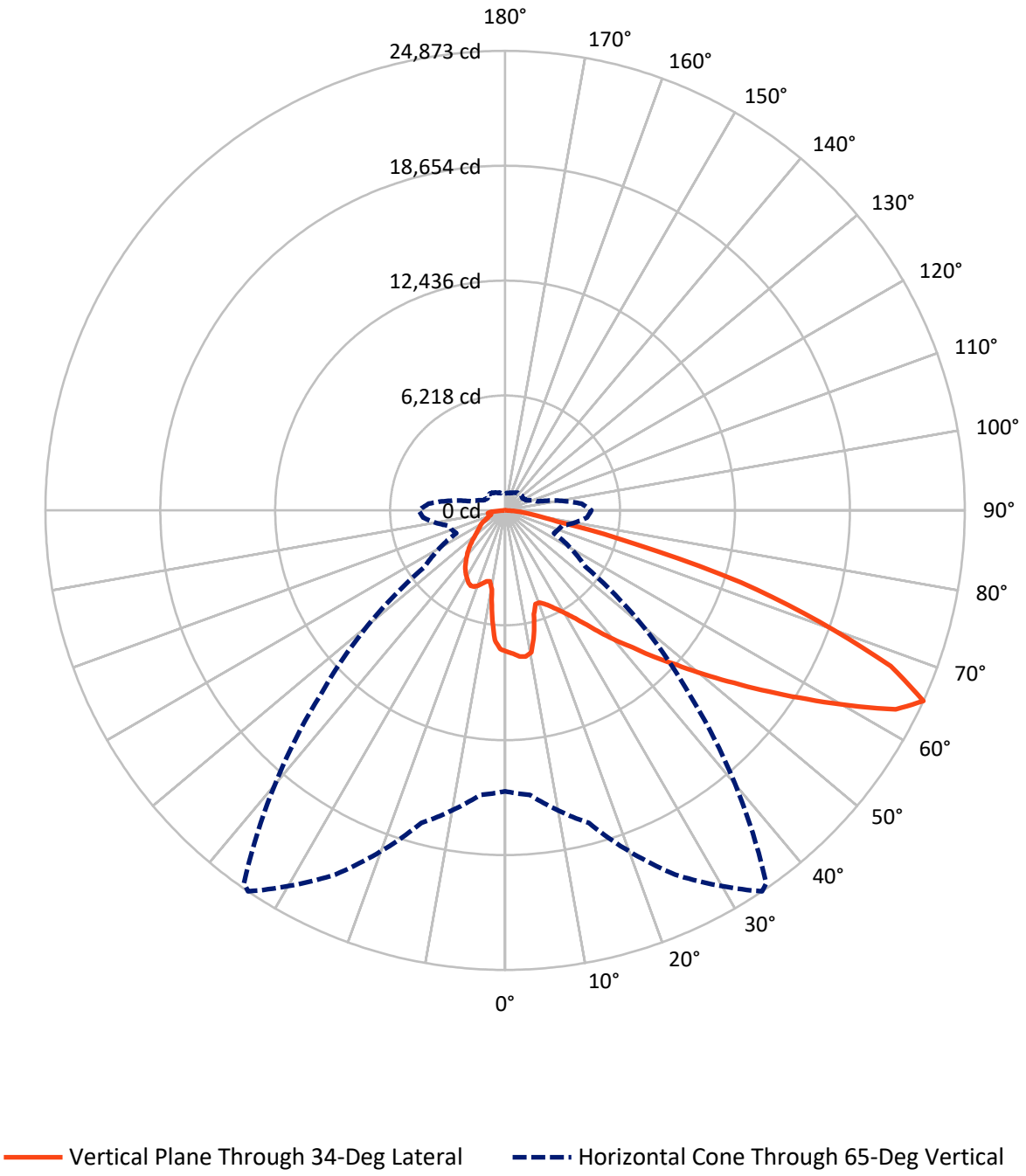

Based on 30 foot mounting height. Maximum calculated value = 9 fc
Type III - Short - N/A

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## Luminous Intensity Polar Plot



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Scaled Data Report

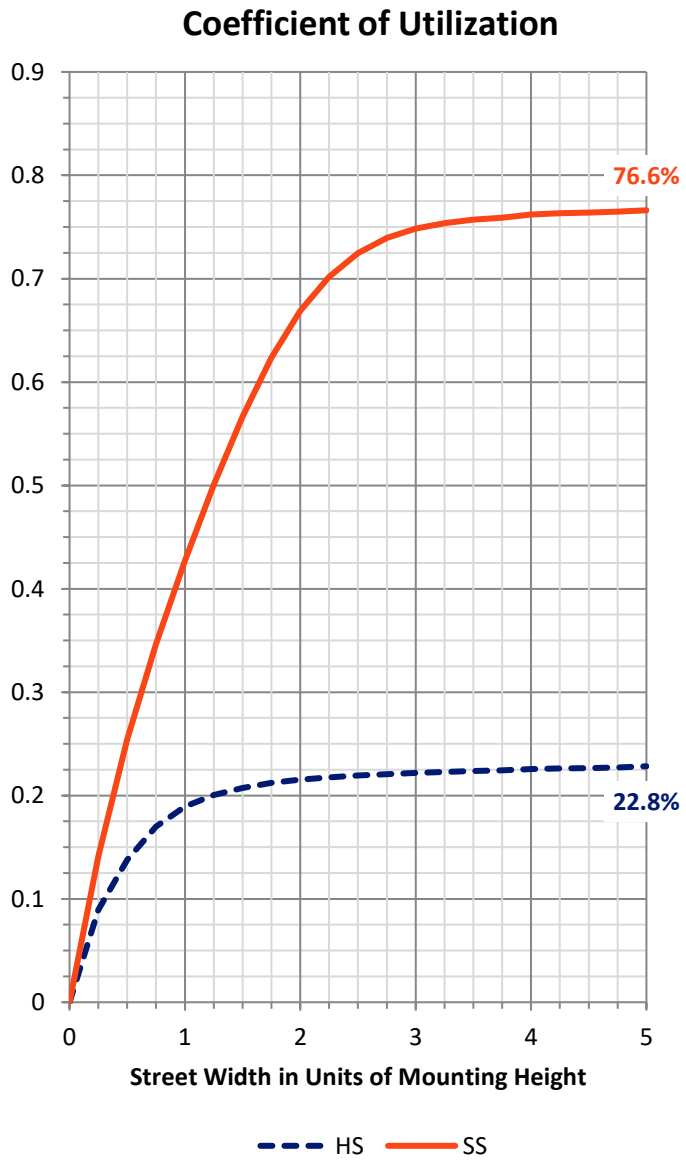
REPORT NUMBER: P1500668
CATALOG NUMBER: GSS-SB4D-735-U-T4LG

**FLUX DISTRIBUTION:**

| | | Downward | Upward | Total |
|---|---|---|---|---|
| **House Side** | Lumens | 7468.2 | 0.0 | 7468.2 |
| | % Fixture | 23.3 | 0.0 | 23.3 |
| **Street Side** | Lumens | 24631.6 | 0.0 | 24631.6 |
| | % Fixture | 76.7 | 0.0 | 76.7 |
| **Total** | Lumens | 32099.8 | 0.0 | 32099.8 |
| | % Fixture | 100.0 | 0.0 | 100.0 |

**ZONAL LUMENS:**

| Zone | Lumens | % Fixture |
|---|---|---|
| 0°-10° | 688.0 | 2.1 |
| 10°-20° | 1731.7 | 5.4 |
| 20°-30° | 2870.4 | 8.9 |
| 30°-40° | 4316.9 | 13.4 |
| 40°-50° | 6047.9 | 18.8 |
| 50°-60° | 7625.4 | 23.8 |
| 60°-70° | 6558.5 | 20.4 |
| 70°-80° | 1949.9 | 6.1 |
| 80°-90° | 311.1 | 1.0 |
| 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° | 32099.8 | 100.0 |
| 0°-180° | 32099.8 | 100.0 |



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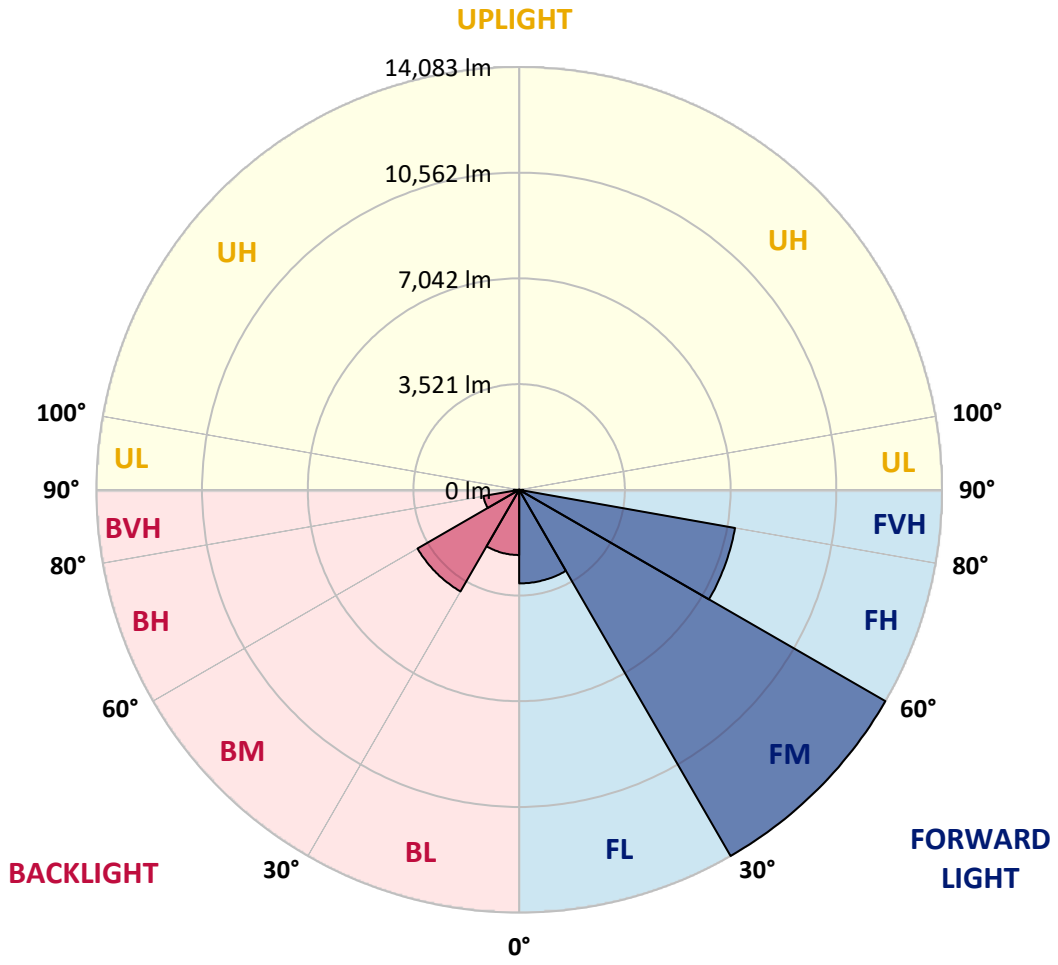
Scaled Data Report

REPORT NUMBER: P1500668
CATALOG NUMBER: GSS-SB4D-735-U-T4LG

## LUMINAIRE CLASSIFICATION SYSTEM LUMEN TABLE AND BUG RATING:

| Zone | | Lumens | % Fixture | Zone Rating/Lumen Limit B | U | G |
|---|---|---|---|---|---|---|
| FL | (0°-30°) | 3117.2 | 9.7 | | | |
| FM | (30°-60°) | 14083.1 | 43.9 | | | |
| FH | (60°-80°) | 7299.7 | 22.7 | | | G3/7500 |
| FVH | (80°-90°) | 131.6 | 0.4 | | | G2/225 |
| BL | (0°-30°) | 2172.9 | 6.8 | B3/2500 | | |
| BM | (30°-60°) | 3907.1 | 12.2 | B3/5000 | | |
| BH | (60°-80°) | 1208.7 | 3.8 | B3/2500 | | G3/2500 |
| BVH | (80°-90°) | 179.5 | 0.6 | | | G2/225 |
| UL | (90°-100°) | 0.0 | 0.0 | | U0/0 | |
| UH | (100°-180°) | 0.0 | 0.0 | | U0/0 | |

**BUG Rating: B3-U0-G3**
Type III Short



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**CANDELA DISTRIBUTION (FULL):**

| | 0° | 5° | 15° | 25° | 34° | 35° | 45° | 55° | 65° | 75° | 85° |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 0° | 7631.9 | 7631.9 | 7631.9 | 7631.9 | 7631.9 | 7631.9 | 7631.9 | 7631.9 | 7631.9 | 7631.9 | 7631.9 |
| 2.5° | 7777.2 | 7820.8 | 7770.0 | 7748.2 | 7755.4 | 7762.7 | 7726.4 | 7733.6 | 7690.0 | 7690.0 | 7653.7 |
| 5° | 7944.4 | 7951.7 | 7922.6 | 7944.4 | 7937.1 | 7929.9 | 7929.9 | 7922.6 | 7828.1 | 7806.3 | 7770.0 |
| 7.5° | 7849.9 | 7879.0 | 7893.5 | 7973.5 | 7995.3 | 8038.9 | 8068.0 | 8082.5 | 8009.8 | 7951.7 | 7857.2 |
| 10° | 6985.0 | 7006.8 | 7174.0 | 7537.4 | 7813.6 | 7864.5 | 8133.4 | 8286.0 | 8235.1 | 8206.1 | 8046.2 |
| 12.5° | 5582.2 | 5618.5 | 5807.5 | 6279.9 | 6926.8 | 7064.9 | 7922.6 | 8438.7 | 8555.0 | 8562.2 | 8329.6 |
| 15° | 4978.9 | 4978.9 | 5037.0 | 5306.0 | 5829.3 | 5938.3 | 7203.0 | 8482.3 | 8896.6 | 8947.5 | 8664.0 |
| 17.5° | 4855.3 | 4848.1 | 4884.4 | 5044.3 | 5320.5 | 5385.9 | 6374.4 | 8257.0 | 9303.6 | 9390.8 | 9027.4 |
| 20° | 4848.1 | 4826.2 | 4898.9 | 5080.6 | 5320.5 | 5378.6 | 5989.2 | 7864.5 | 9623.4 | 9899.6 | 9390.8 |
| 22.5° | 4855.3 | 4855.3 | 4957.1 | 5218.7 | 5494.9 | 5545.8 | 6061.9 | 7537.4 | 9885.1 | 10430.2 | 9776.1 |
| 25° | 4935.3 | 4920.7 | 5066.1 | 5385.9 | 5763.9 | 5800.2 | 6359.9 | 7522.8 | 10110.4 | 11026.2 | 10241.2 |
| 27.5° | 5066.1 | 5073.4 | 5269.6 | 5654.8 | 6083.7 | 6156.4 | 6774.2 | 7835.4 | 10386.6 | 11680.4 | 10691.9 |
| 30° | 5342.3 | 5349.6 | 5582.2 | 5974.7 | 6468.9 | 6563.4 | 7253.9 | 8300.6 | 10779.1 | 12385.4 | 11178.9 |
| 32.5° | 5654.8 | 5691.2 | 5974.7 | 6432.6 | 6963.2 | 7014.0 | 7842.7 | 8998.3 | 11367.8 | 13090.5 | 11702.2 |
| 35° | 6178.2 | 6214.5 | 6534.3 | 7014.0 | 7602.8 | 7675.5 | 8562.2 | 9805.1 | 12087.4 | 13802.8 | 12109.2 |
| 37.5° | 6854.1 | 6883.2 | 7195.8 | 7777.2 | 8402.3 | 8475.0 | 9361.8 | 10662.8 | 12814.3 | 14369.7 | 12472.7 |
| 40° | 7660.9 | 7726.4 | 8060.7 | 8627.6 | 9260.0 | 9303.6 | 10234.0 | 11491.4 | 13599.3 | 14762.2 | 12618.0 |
| 42.5° | 8540.4 | 8605.8 | 8947.5 | 9572.5 | 10154.0 | 10284.8 | 11178.9 | 12370.9 | 14238.9 | 14936.7 | 12501.7 |
| 45° | 9667.0 | 9652.5 | 9972.3 | 10626.5 | 11309.7 | 11360.6 | 12189.2 | 13097.7 | 14624.1 | 14791.3 | 12385.4 |
| 47.5° | 11033.5 | 11048.0 | 11251.6 | 11782.1 | 12487.2 | 12603.5 | 13243.1 | 13722.8 | 14849.4 | 14675.0 | 12254.6 |
| 50° | 12574.4 | 12610.8 | 12785.2 | 13170.4 | 13926.3 | 14006.3 | 14195.3 | 14158.9 | 14987.5 | 14427.9 | 12305.5 |
| 52.5° | 14115.3 | 14137.1 | 14369.7 | 14776.7 | 15510.9 | 15569.0 | 15154.7 | 14493.3 | 14471.5 | 13432.1 | 12196.4 |
| 55° | 15380.0 | 15372.8 | 15787.1 | 16412.1 | 17306.2 | 17269.8 | 16099.6 | 14238.9 | 12857.9 | 11883.9 | 11709.5 |
| 57.5° | 16477.6 | 16521.2 | 17059.0 | 18142.0 | 19268.6 | 19239.6 | 17109.9 | 12894.2 | 10502.9 | 10052.3 | 10917.2 |
| 60° | 17466.1 | 17567.8 | 18578.1 | 20199.0 | 21441.9 | 21267.5 | 17291.6 | 10866.3 | 8169.7 | 7871.7 | 9347.2 |
| 62.5° | 17037.2 | 17226.2 | 18847.1 | 22008.8 | 23716.9 | 23331.7 | 16172.3 | 8416.9 | 5531.3 | 5262.4 | 6607.0 |
| 65° | 15205.6 | 15460.0 | 17517.0 | 21747.2 | 24872.6 | 24632.8 | 14137.1 | 5291.4 | 2914.6 | 3198.1 | 4448.3 |
| 67.5° | 12770.7 | 13075.9 | 15300.1 | 19537.6 | 22503.1 | 21987.0 | 10982.6 | 2783.8 | 1359.2 | 2107.8 | 2762.0 |
| 70° | 6999.5 | 7755.4 | 11062.6 | 16615.7 | 18025.7 | 17306.2 | 6352.6 | 1315.6 | 988.5 | 1315.6 | 1649.9 |
| 72.5° | 2631.2 | 2812.9 | 4797.2 | 11171.6 | 13352.1 | 12465.4 | 2413.1 | 850.4 | 828.6 | 974.0 | 1192.0 |
| 75° | 1264.7 | 1351.9 | 2086.0 | 5080.6 | 7290.2 | 6796.0 | 1184.8 | 632.4 | 712.3 | 763.2 | 864.9 |
| 77.5° | 755.9 | 814.1 | 1301.1 | 2951.0 | 2871.0 | 2638.4 | 726.8 | 487.0 | 574.2 | 545.1 | 508.8 |
| 80° | 450.6 | 501.5 | 792.3 | 1679.0 | 1729.9 | 1533.6 | 443.4 | 341.6 | 399.8 | 348.9 | 312.5 |
| 82.5° | 261.7 | 283.5 | 414.3 | 755.9 | 1097.5 | 1010.3 | 254.4 | 203.5 | 290.7 | 232.6 | 174.4 |
| 85° | 130.8 | 138.1 | 189.0 | 327.1 | 545.1 | 414.3 | 109.0 | 94.5 | 138.1 | 101.8 | 58.1 |
| 87.5° | 29.1 | 29.1 | 29.1 | 36.3 | 50.9 | 50.9 | 14.5 | 7.3 | 7.3 | 7.3 | 7.3 |
| 90° | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |

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Scaled Data Report

REPORT NUMBER: P1500668
CATALOG NUMBER: GSS-SB4D-735-U-T4LG

**CANDELA DISTRIBUTION (continued):**

| | 90° | 95° | 105° | 115° | 125° | 135° | 145° | 155° | 165° | 175° | 180° |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 0° | 7631.9 | 7631.9 | 7631.9 | 7631.9 | 7631.9 | 7631.9 | 7631.9 | 7631.9 | 7631.9 | 7631.9 | 7631.9 |
| 2.5° | 7646.4 | 7660.9 | 7610.1 | 7551.9 | 7537.4 | 7493.8 | 7508.3 | 7479.2 | 7435.6 | 7442.9 | 7450.2 |
| 5° | 7719.1 | 7690.0 | 7588.3 | 7457.4 | 7341.1 | 7210.3 | 7057.7 | 6883.2 | 6759.7 | 6708.8 | 6752.4 |
| 7.5° | 7784.5 | 7755.4 | 7581.0 | 7290.2 | 6897.8 | 6352.6 | 5785.7 | 5269.6 | 4913.5 | 4782.6 | 4811.7 |
| 10° | 7966.2 | 7849.9 | 7530.1 | 6897.8 | 5960.1 | 4928.0 | 4353.8 | 4034.0 | 3925.0 | 3866.8 | 3874.1 |
| 12.5° | 8206.1 | 8046.2 | 7435.6 | 6214.5 | 4797.2 | 4143.0 | 3939.5 | 3866.8 | 3830.5 | 3815.9 | 3830.5 |
| 15° | 8496.8 | 8249.7 | 7210.3 | 5356.8 | 4259.3 | 4004.9 | 3961.3 | 3968.6 | 3968.6 | 3975.8 | 3975.8 |
| 17.5° | 8751.2 | 8366.0 | 6803.3 | 4739.0 | 4150.3 | 4077.6 | 4121.2 | 4157.6 | 4157.6 | 4164.8 | 4157.6 |
| 20° | 8983.8 | 8424.1 | 6279.9 | 4477.4 | 4172.1 | 4208.4 | 4310.2 | 4346.5 | 4353.8 | 4346.5 | 4346.5 |
| 22.5° | 9230.9 | 8460.5 | 5756.6 | 4332.0 | 4223.0 | 4332.0 | 4441.0 | 4491.9 | 4506.4 | 4513.7 | 4521.0 |
| 25° | 9470.8 | 8387.8 | 5327.8 | 4215.7 | 4201.2 | 4353.8 | 4477.4 | 4542.8 | 4557.3 | 4557.3 | 4564.6 |
| 27.5° | 9710.6 | 8366.0 | 5037.0 | 4063.1 | 4099.4 | 4223.0 | 4368.3 | 4455.6 | 4513.7 | 4521.0 | 4528.2 |
| 30° | 9986.8 | 8300.6 | 4760.8 | 3859.5 | 3874.1 | 4026.7 | 4179.4 | 4332.0 | 4448.3 | 4499.2 | 4499.2 |
| 32.5° | 10175.8 | 8235.1 | 4513.7 | 3641.5 | 3641.5 | 3801.4 | 3990.4 | 4179.4 | 4346.5 | 4448.3 | 4470.1 |
| 35° | 10357.5 | 8177.0 | 4295.7 | 3423.4 | 3430.7 | 3583.3 | 3779.6 | 3983.1 | 4193.9 | 4317.5 | 4375.6 |
| 37.5° | 10452.0 | 8118.9 | 4143.0 | 3256.3 | 3227.2 | 3387.1 | 3517.9 | 3685.1 | 3910.4 | 4113.9 | 4164.8 |
| 40° | 10473.8 | 8118.9 | 4128.5 | 3140.0 | 3016.4 | 3198.1 | 3256.3 | 3372.6 | 3576.1 | 3794.1 | 3874.1 |
| 42.5° | 10328.5 | 8038.9 | 4201.2 | 3067.3 | 2798.4 | 2929.2 | 2994.6 | 3052.7 | 3183.6 | 3365.3 | 3430.7 |
| 45° | 10154.0 | 7929.9 | 4266.6 | 2965.5 | 2529.4 | 2631.2 | 2732.9 | 2740.2 | 2798.4 | 2842.0 | 2885.6 |
| 47.5° | 10008.6 | 7813.6 | 4150.3 | 2776.5 | 2253.2 | 2325.9 | 2434.9 | 2434.9 | 2405.9 | 2318.6 | 2289.6 |
| 50° | 10124.9 | 7849.9 | 3954.0 | 2507.6 | 1998.8 | 2049.7 | 2166.0 | 2100.6 | 2035.2 | 1853.5 | 1831.6 |
| 52.5° | 10226.7 | 7988.0 | 3721.4 | 2245.9 | 1780.8 | 1831.6 | 1947.9 | 1846.2 | 1715.4 | 1570.0 | 1548.2 |
| 55° | 10059.5 | 7995.3 | 3292.6 | 1955.2 | 1628.1 | 1671.7 | 1780.8 | 1657.2 | 1533.6 | 1446.4 | 1431.9 |
| 57.5° | 9558.0 | 7777.2 | 2842.0 | 1729.9 | 1497.3 | 1540.9 | 1642.7 | 1519.1 | 1402.8 | 1395.5 | 1431.9 |
| 60° | 8453.2 | 7014.0 | 2427.7 | 1584.5 | 1373.7 | 1424.6 | 1526.4 | 1395.5 | 1242.9 | 1177.5 | 1199.3 |
| 62.5° | 6381.7 | 5393.2 | 2078.8 | 1417.3 | 1257.4 | 1322.9 | 1395.5 | 1184.8 | 1053.9 | 1024.9 | 995.8 |
| 65° | *4666.3* | *4143.0* | *1868.0* | *1286.5* | *1148.4* | *1228.4* | *1170.2* | *1053.9* | *966.7* | *937.6* | *923.1* |
| 67.5° | 3016.4 | 2812.9 | 1606.3 | 1163.0 | 1046.7 | 1112.1 | 1032.1 | 974.0 | 879.5 | 864.9 | 886.8 |
| 70° | 1846.2 | 1911.6 | 1344.7 | 1024.9 | 944.9 | 930.4 | 944.9 | 886.8 | 785.0 | 806.8 | 835.9 |
| 72.5° | 1308.3 | 1410.1 | 1155.7 | 894.0 | 806.8 | 777.7 | 843.1 | 806.8 | 734.1 | 755.9 | 785.0 |
| 75° | 937.6 | 1046.7 | 952.2 | 734.1 | 683.2 | 668.7 | 785.0 | 806.8 | 755.9 | 770.5 | 792.3 |
| 77.5° | 552.4 | 668.7 | 676.0 | 566.9 | 516.1 | 596.0 | 835.9 | 930.4 | 894.0 | 850.4 | 828.6 |
| 80° | 356.2 | 399.8 | 479.7 | 363.4 | 363.4 | 516.1 | 915.8 | 1133.9 | 974.0 | 864.9 | 850.4 |
| 82.5° | 181.7 | 210.8 | 312.5 | 232.6 | 218.1 | 385.2 | 901.3 | 1083.0 | 1075.7 | 959.4 | 937.6 |
| 85° | 50.9 | 65.4 | 145.4 | 101.8 | 87.2 | 203.5 | 676.0 | 814.1 | 726.8 | 530.6 | 537.9 |
| 87.5° | 7.3 | 7.3 | 0.0 | 0.0 | 7.3 | 29.1 | 80.0 | 14.5 | 14.5 | 14.5 | 14.5 |
| 90° | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |

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

Report Prepared for

Cooper Lighting Solutions

McGraw-Edison

Report Number: SP1-2407-184-5

Test Date: 10/10/2024

Luminaire Tested: GSS-SB1A-735-U-5WQ

Data in this report applies to families of products including GSS-SB1A-735-U-5WQ

Report Generated By FNC07603 / LDUCLS01DT446
Version: v7.04

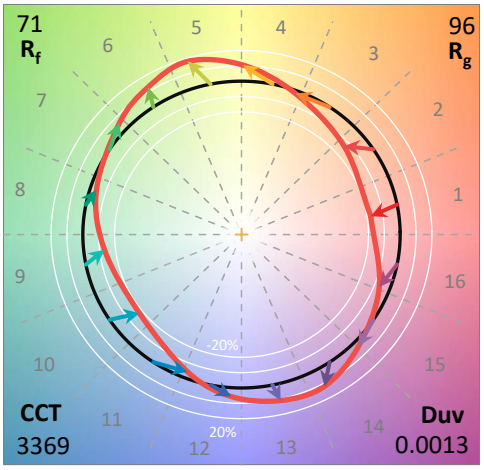
## Test Information

| | |
|---|---|
| Test Method: | LM-79-2019 |
| Report Number: | SP1-2407-184-5 |
| 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-735-U-5WQ** |
| Description: | GALLEON II SITE SLIM 1SQ 350MA 5WQ HIGH DENSITY LIGHTSQUARE WITH 70 CRI 3500K CCT 26 LEDS |

## Spectral Parameters

| | |
|---|---|
| CCT (K): | 3369 |
| CIE u': | 0.2386 |
| CIE v': | 0.5156 |
| Duv: | 0.0013 |
| CIE x: | 0.4143 |
| CIE y: | 0.3980 |
| CIE z: | 0.1877 |
| Peak Wavelength (nm): | 590 |
| Dominant Wavelength (nm): | 580 |
| Purity: | 43.80166 |
| Rf: | 71.4 |
| Rg: | 96 |

| | |
|---|---|
| CRI (Ra): | 70.1 |
| R1: | 66.6 |
| R2: | 77.6 |
| R3: | 88.5 |
| R4: | 69.5 |
| R5: | 66.4 |
| R6: | 69.6 |
| R7: | 77.5 |
| R8: | 44.9 |
| R9: | -40.2 |
| R10: | 49.1 |
| R11: | 66.3 |
| R12: | 45.7 |
| R13: | 68.0 |
| R14: | 93.4 |
| R15: | 57.6 |




## Test Conditions

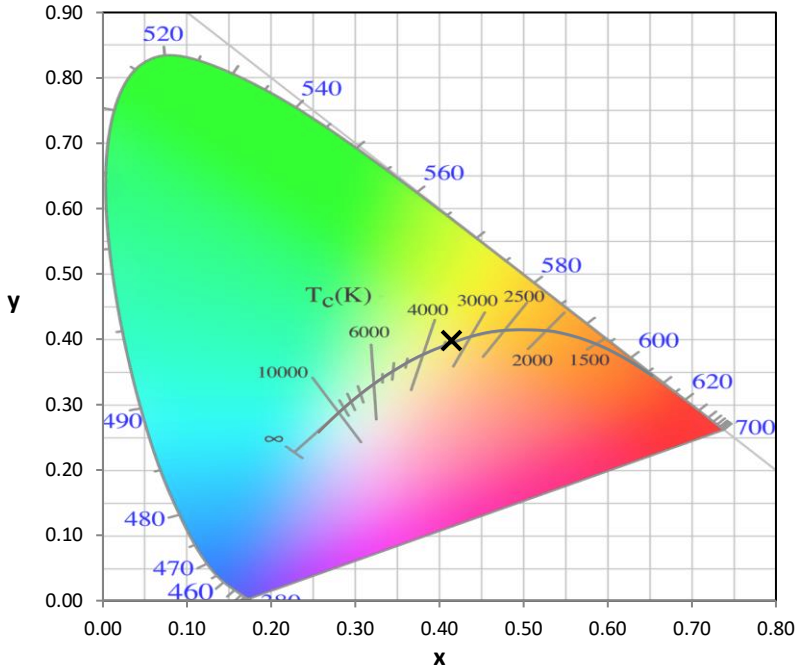
| | |
|---|---|
| Stabilization Time: | 21M |
| Operation Time: | 1H 21M |
| Sphere Temperature (°C): | 25.2 |

REPORT NUMBER: SP1-2407-184-5

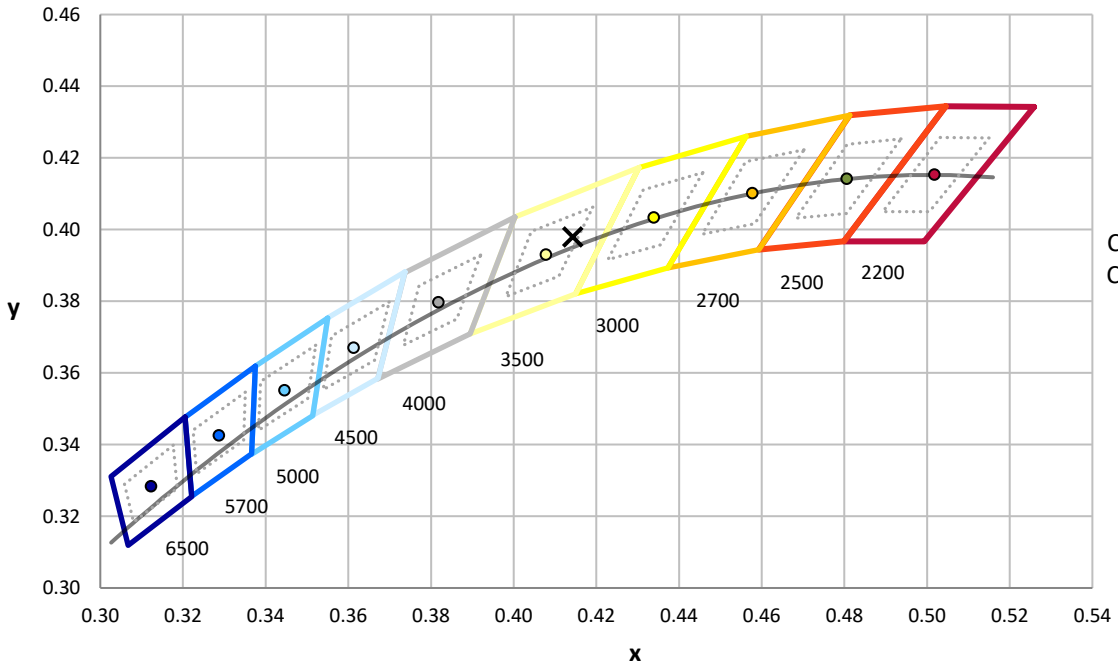
| Measurement and Test Equipment | | | |
|---|---|---|---|
| Instrument | Identification Number | Calibration Date | Calibration Due Date |
| Photometer | IN0058 | 6/18/2024 | 12/18/2024 |
| Power Meter | INXT2011004 | 2/8/2024 | 2/8/2025 |
| AC Power Source | IN0063 | 10/24/2023 | 10/24/2024 |
| DC 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: SP1-2407-184-5

**CIE 1931 Chromaticity Diagram**




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

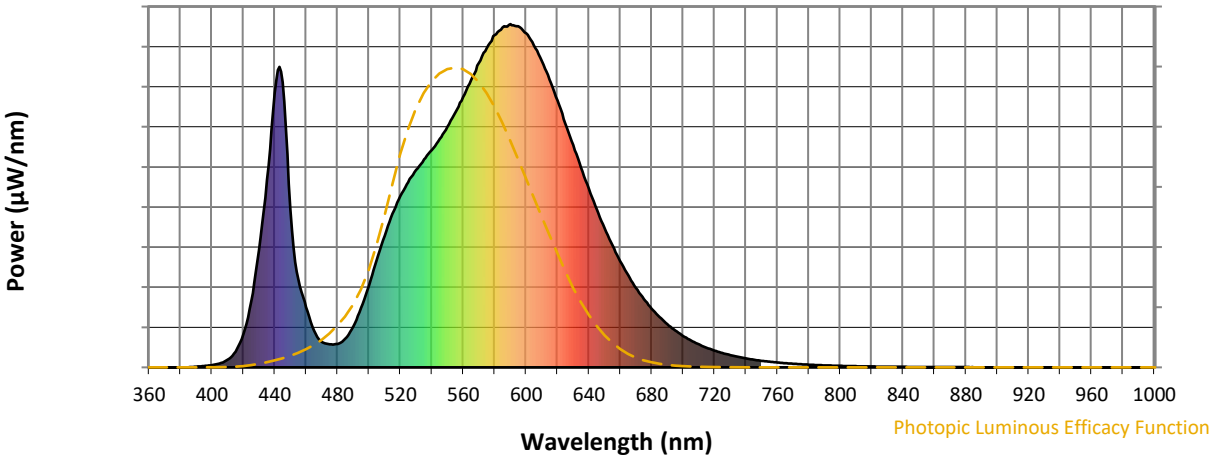



CCT = 3369K
CIE x = 0.4143
CIE y = 0.3980
Duv = 0.0013

Point lies inside the ANSI 3500K 4-step quadrangle

REPORT NUMBER: SP1-2407-184-5

## Photopic Flux vs. Wavelength

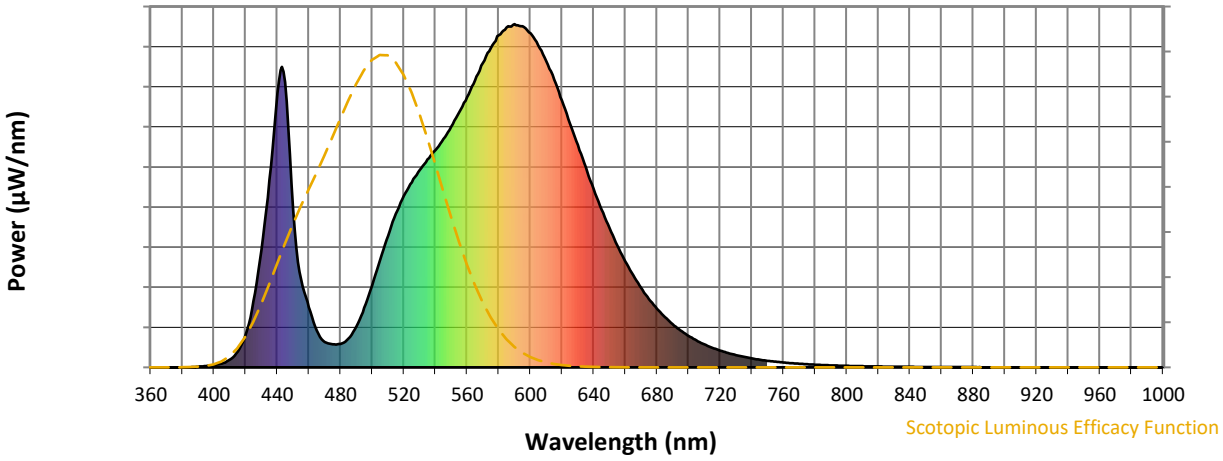



## Photopic Lumens: NR

| λ (nm) | Power W^/nm | Lumens (ϕ/nm) | λ (nm) | Power W^/nm | Lumens (ϕ/nm) | λ (nm) | Power W^/nm | Lumens (ϕ/nm) | λ (nm) | Power W^/nm | Lumens (ϕ/nm) | λ (nm) | Power W^/nm | Lumens (ϕ/nm) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 360 | 0 | NR | 490 | 119 | NR | 620 | 778 | NR | 750 | 19 | NR | 880 | 1 | NR |
| 365 | 0 | NR | 495 | 173 | NR | 625 | 711 | NR | 755 | 16 | NR | 885 | 0 | NR |
| 370 | 0 | NR | 500 | 239 | NR | 630 | 648 | NR | 760 | 14 | NR | 890 | 0 | NR |
| 375 | 0 | NR | 505 | 313 | NR | 635 | 582 | NR | 765 | 12 | NR | 895 | 0 | NR |
| 380 | 0 | NR | 510 | 383 | NR | 640 | 520 | NR | 770 | 11 | NR | 900 | 0 | NR |
| 385 | 0 | NR | 515 | 448 | NR | 645 | 460 | NR | 775 | 9 | NR | 905 | 0 | NR |
| 390 | 2 | NR | 520 | 500 | NR | 650 | 406 | NR | 780 | 8 | NR | 910 | 0 | NR |
| 395 | 4 | NR | 525 | 539 | NR | 655 | 355 | NR | 785 | 7 | NR | 915 | 0 | NR |
| 400 | 6 | NR | 530 | 575 | NR | 660 | 309 | NR | 790 | 6 | NR | 920 | 0 | NR |
| 405 | 11 | NR | 535 | 606 | NR | 665 | 269 | NR | 795 | 5 | NR | 925 | 0 | NR |
| 410 | 22 | NR | 540 | 633 | NR | 670 | 231 | NR | 800 | 4 | NR | 930 | 0 | NR |
| 415 | 45 | NR | 545 | 666 | NR | 675 | 199 | NR | 805 | 4 | NR | 935 | 0 | NR |
| 420 | 96 | NR | 550 | 701 | NR | 680 | 171 | NR | 810 | 3 | NR | 940 | 0 | NR |
| 425 | 193 | NR | 555 | 743 | NR | 685 | 147 | NR | 815 | 3 | NR | 945 | 0 | NR |
| 430 | 341 | NR | 560 | 788 | NR | 690 | 126 | NR | 820 | 3 | NR | 950 | 0 | NR |
| 435 | 547 | NR | 565 | 837 | NR | 695 | 107 | NR | 825 | 2 | NR | 955 | 0 | NR |
| 440 | 799 | NR | 570 | 887 | NR | 700 | 92 | NR | 830 | 2 | NR | 960 | 0 | NR |
| 445 | 831 | NR | 575 | 931 | NR | 705 | 78 | NR | 835 | 2 | NR | 965 | 0 | NR |
| 450 | 461 | NR | 580 | 967 | NR | 710 | 67 | NR | 840 | 2 | NR | 970 | 0 | NR |
| 455 | 256 | NR | 585 | 990 | NR | 715 | 57 | NR | 845 | 1 | NR | 975 | 0 | NR |
| 460 | 176 | NR | 590 | 1000 | NR | 720 | 49 | NR | 850 | 1 | NR | 980 | 0 | NR |
| 465 | 107 | NR | 595 | 994 | NR | 725 | 42 | NR | 855 | 1 | NR | 985 | 0 | NR |
| 470 | 74 | NR | 600 | 973 | NR | 730 | 36 | NR | 860 | 1 | NR | 990 | 0 | NR |
| 475 | 67 | NR | 605 | 938 | NR | 735 | 31 | NR | 865 | 1 | NR | 995 | 0 | NR |
| 480 | 68 | NR | 610 | 892 | NR | 740 | 26 | NR | 870 | 1 | NR | 1000 | 0 | NR |
| 485 | 84 | NR | 615 | 838 | NR | 745 | 22 | NR | 875 | 1 | NR | | | |

REPORT NUMBER: SP1-2407-184-5

## Scotopic Flux vs. Wavelength

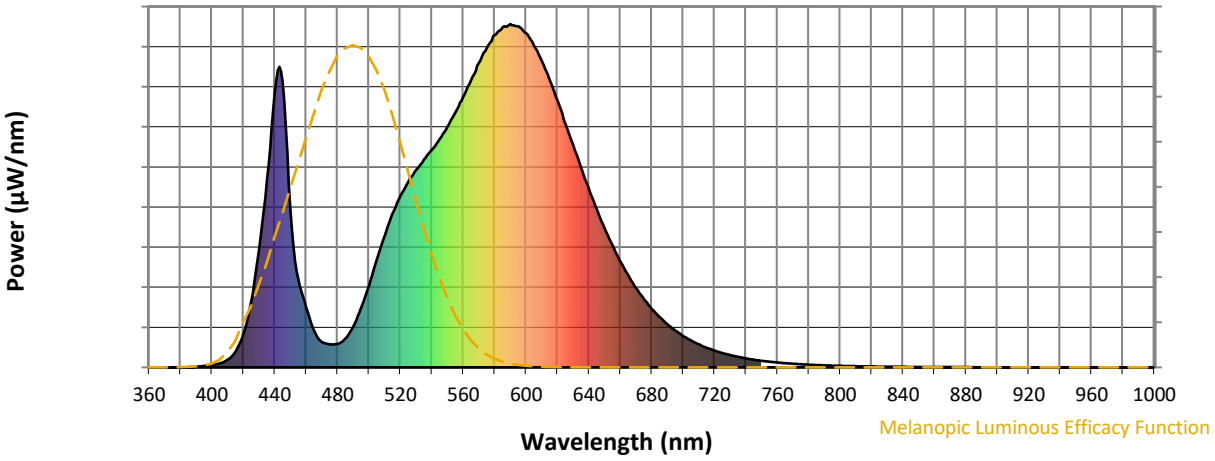



**Scotopic Lumens: NR** **S/P: 1.29**

| λ (nm) | Power W^/nm | Lumens (ϕ/nm) | λ (nm) | Power W^/nm | Lumens (ϕ/nm) | λ (nm) | Power W^/nm | Lumens (ϕ/nm) | λ (nm) | Power W^/nm | Lumens (ϕ/nm) | λ (nm) | Power W^/nm | Lumens (ϕ/nm) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 360 | 0 | NR | 490 | 119 | NR | 620 | 778 | NR | 750 | 19 | NR | 880 | 1 | NR |
| 365 | 0 | NR | 495 | 173 | NR | 625 | 711 | NR | 755 | 16 | NR | 885 | 0 | NR |
| 370 | 0 | NR | 500 | 239 | NR | 630 | 648 | NR | 760 | 14 | NR | 890 | 0 | NR |
| 375 | 0 | NR | 505 | 313 | NR | 635 | 582 | NR | 765 | 12 | NR | 895 | 0 | NR |
| 380 | 0 | NR | 510 | 383 | NR | 640 | 520 | NR | 770 | 11 | NR | 900 | 0 | NR |
| 385 | 0 | NR | 515 | 448 | NR | 645 | 460 | NR | 775 | 9 | NR | 905 | 0 | NR |
| 390 | 2 | NR | 520 | 500 | NR | 650 | 406 | NR | 780 | 8 | NR | 910 | 0 | NR |
| 395 | 4 | NR | 525 | 539 | NR | 655 | 355 | NR | 785 | 7 | NR | 915 | 0 | NR |
| 400 | 6 | NR | 530 | 575 | NR | 660 | 309 | NR | 790 | 6 | NR | 920 | 0 | NR |
| 405 | 11 | NR | 535 | 606 | NR | 665 | 269 | NR | 795 | 5 | NR | 925 | 0 | NR |
| 410 | 22 | NR | 540 | 633 | NR | 670 | 231 | NR | 800 | 4 | NR | 930 | 0 | NR |
| 415 | 45 | NR | 545 | 666 | NR | 675 | 199 | NR | 805 | 4 | NR | 935 | 0 | NR |
| 420 | 96 | NR | 550 | 701 | NR | 680 | 171 | NR | 810 | 3 | NR | 940 | 0 | NR |
| 425 | 193 | NR | 555 | 743 | NR | 685 | 147 | NR | 815 | 3 | NR | 945 | 0 | NR |
| 430 | 341 | NR | 560 | 788 | NR | 690 | 126 | NR | 820 | 3 | NR | 950 | 0 | NR |
| 435 | 547 | NR | 565 | 837 | NR | 695 | 107 | NR | 825 | 2 | NR | 955 | 0 | NR |
| 440 | 799 | NR | 570 | 887 | NR | 700 | 92 | NR | 830 | 2 | NR | 960 | 0 | NR |
| 445 | 831 | NR | 575 | 931 | NR | 705 | 78 | NR | 835 | 2 | NR | 965 | 0 | NR |
| 450 | 461 | NR | 580 | 967 | NR | 710 | 67 | NR | 840 | 2 | NR | 970 | 0 | NR |
| 455 | 256 | NR | 585 | 990 | NR | 715 | 57 | NR | 845 | 1 | NR | 975 | 0 | NR |
| 460 | 176 | NR | 590 | 1000 | NR | 720 | 49 | NR | 850 | 1 | NR | 980 | 0 | NR |
| 465 | 107 | NR | 595 | 994 | NR | 725 | 42 | NR | 855 | 1 | NR | 985 | 0 | NR |
| 470 | 74 | NR | 600 | 973 | NR | 730 | 36 | NR | 860 | 1 | NR | 990 | 0 | NR |
| 475 | 67 | NR | 605 | 938 | NR | 735 | 31 | NR | 865 | 1 | NR | 995 | 0 | NR |
| 480 | 68 | NR | 610 | 892 | NR | 740 | 26 | NR | 870 | 1 | NR | 1000 | 0 | NR |
| 485 | 84 | NR | 615 | 838 | NR | 745 | 22 | NR | 875 | 1 | NR | | | |

REPORT NUMBER: SP1-2407-184-5

## Melanopic Flux vs. Wavelength




**Melanopic Lumens: NR** **M/P: 2.36**

| λ (nm) | Power W^/nm | Lumens (ϕ/nm) | λ (nm) | Power W^/nm | Lumens (ϕ/nm) | λ (nm) | Power W^/nm | Lumens (ϕ/nm) | λ (nm) | Power W^/nm | Lumens (ϕ/nm) | λ (nm) | Power W^/nm | Lumens (ϕ/nm) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 360 | 0 | NR | 490 | 119 | NR | 620 | 778 | NR | 750 | 19 | NR | 880 | 1 | NR |
| 365 | 0 | NR | 495 | 173 | NR | 625 | 711 | NR | 755 | 16 | NR | 885 | 0 | NR |
| 370 | 0 | NR | 500 | 239 | NR | 630 | 648 | NR | 760 | 14 | NR | 890 | 0 | NR |
| 375 | 0 | NR | 505 | 313 | NR | 635 | 582 | NR | 765 | 12 | NR | 895 | 0 | NR |
| 380 | 0 | NR | 510 | 383 | NR | 640 | 520 | NR | 770 | 11 | NR | 900 | 0 | NR |
| 385 | 0 | NR | 515 | 448 | NR | 645 | 460 | NR | 775 | 9 | NR | 905 | 0 | NR |
| 390 | 2 | NR | 520 | 500 | NR | 650 | 406 | NR | 780 | 8 | NR | 910 | 0 | NR |
| 395 | 4 | NR | 525 | 539 | NR | 655 | 355 | NR | 785 | 7 | NR | 915 | 0 | NR |
| 400 | 6 | NR | 530 | 575 | NR | 660 | 309 | NR | 790 | 6 | NR | 920 | 0 | NR |
| 405 | 11 | NR | 535 | 606 | NR | 665 | 269 | NR | 795 | 5 | NR | 925 | 0 | NR |
| 410 | 22 | NR | 540 | 633 | NR | 670 | 231 | NR | 800 | 4 | NR | 930 | 0 | NR |
| 415 | 45 | NR | 545 | 666 | NR | 675 | 199 | NR | 805 | 4 | NR | 935 | 0 | NR |
| 420 | 96 | NR | 550 | 701 | NR | 680 | 171 | NR | 810 | 3 | NR | 940 | 0 | NR |
| 425 | 193 | NR | 555 | 743 | NR | 685 | 147 | NR | 815 | 3 | NR | 945 | 0 | NR |
| 430 | 341 | NR | 560 | 788 | NR | 690 | 126 | NR | 820 | 3 | NR | 950 | 0 | NR |
| 435 | 547 | NR | 565 | 837 | NR | 695 | 107 | NR | 825 | 2 | NR | 955 | 0 | NR |
| 440 | 799 | NR | 570 | 887 | NR | 700 | 92 | NR | 830 | 2 | NR | 960 | 0 | NR |
| 445 | 831 | NR | 575 | 931 | NR | 705 | 78 | NR | 835 | 2 | NR | 965 | 0 | NR |
| 450 | 461 | NR | 580 | 967 | NR | 710 | 67 | NR | 840 | 2 | NR | 970 | 0 | NR |
| 455 | 256 | NR | 585 | 990 | NR | 715 | 57 | NR | 845 | 1 | NR | 975 | 0 | NR |
| 460 | 176 | NR | 590 | 1000 | NR | 720 | 49 | NR | 850 | 1 | NR | 980 | 0 | NR |
| 465 | 107 | NR | 595 | 994 | NR | 725 | 42 | NR | 855 | 1 | NR | 985 | 0 | NR |
| 470 | 74 | NR | 600 | 973 | NR | 730 | 36 | NR | 860 | 1 | NR | 990 | 0 | NR |
| 475 | 67 | NR | 605 | 938 | NR | 735 | 31 | NR | 865 | 1 | NR | 995 | 0 | NR |
| 480 | 68 | NR | 610 | 892 | NR | 740 | 26 | NR | 870 | 1 | NR | 1000 | 0 | NR |
| 485 | 84 | NR | 615 | 838 | NR | 745 | 22 | NR | 875 | 1 | NR | | | |

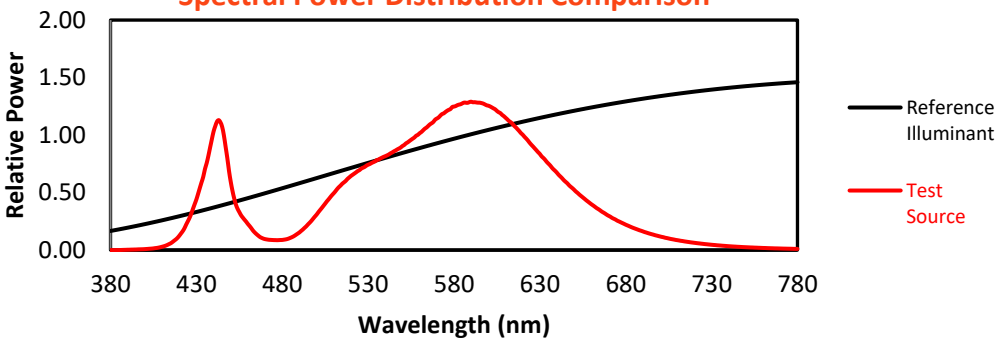
REPORT NUMBER: SP1-2407-184-5

# TM-30-18

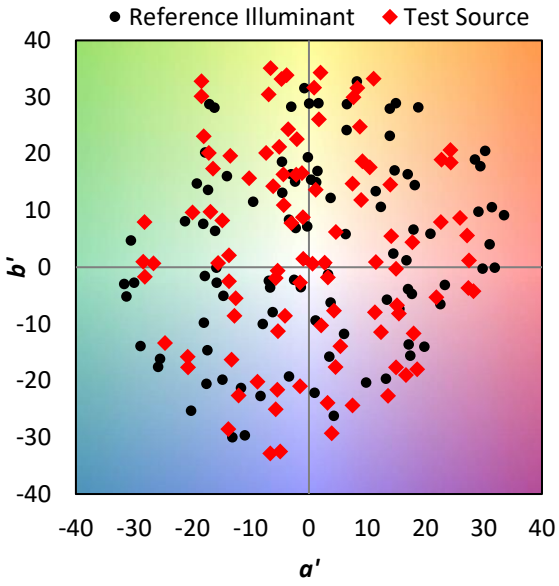
## Summary

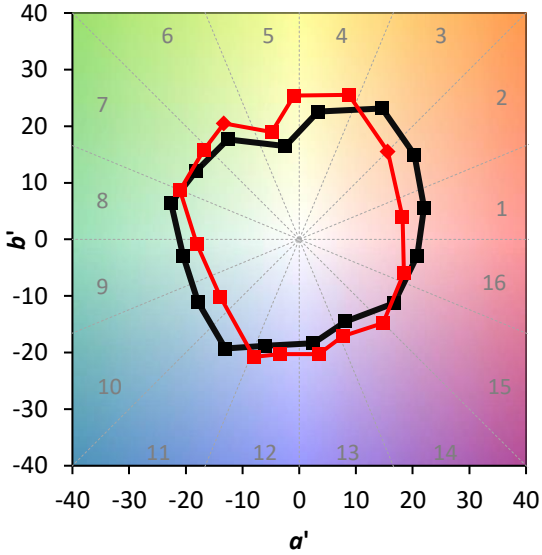
$R_f$ = 71.4
$R_g$ = 96
CIE $R_a$ = 70.1
$R_9$ = -40.2

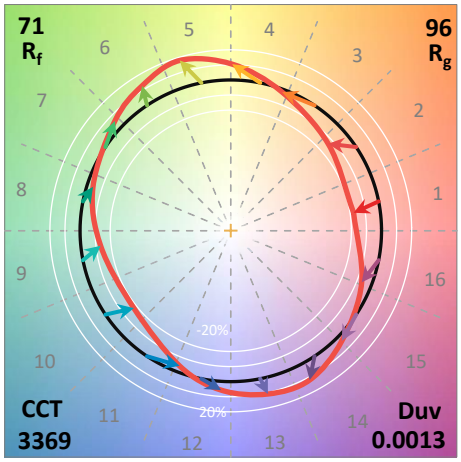
## Spectral Power Distribution Comparison

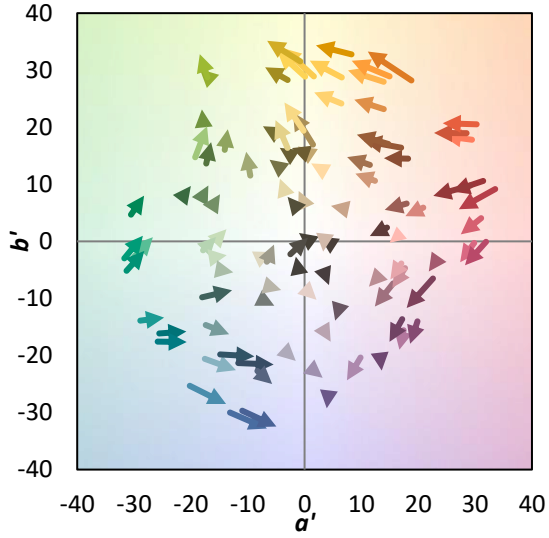



## Color Vector Graphics



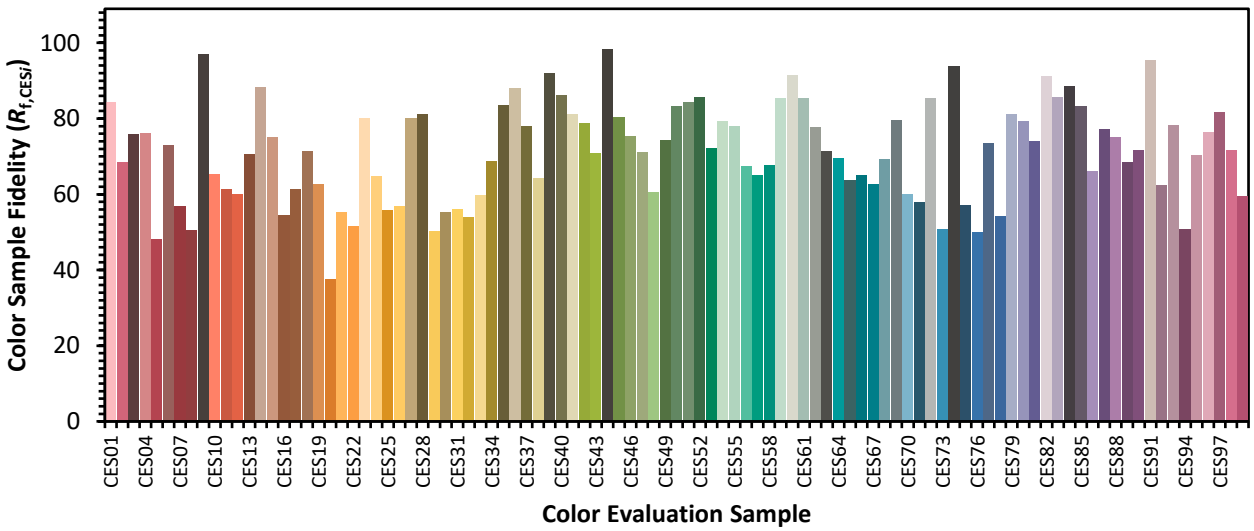



REPORT NUMBER: SP1-2407-184-5

# TM-30-18

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

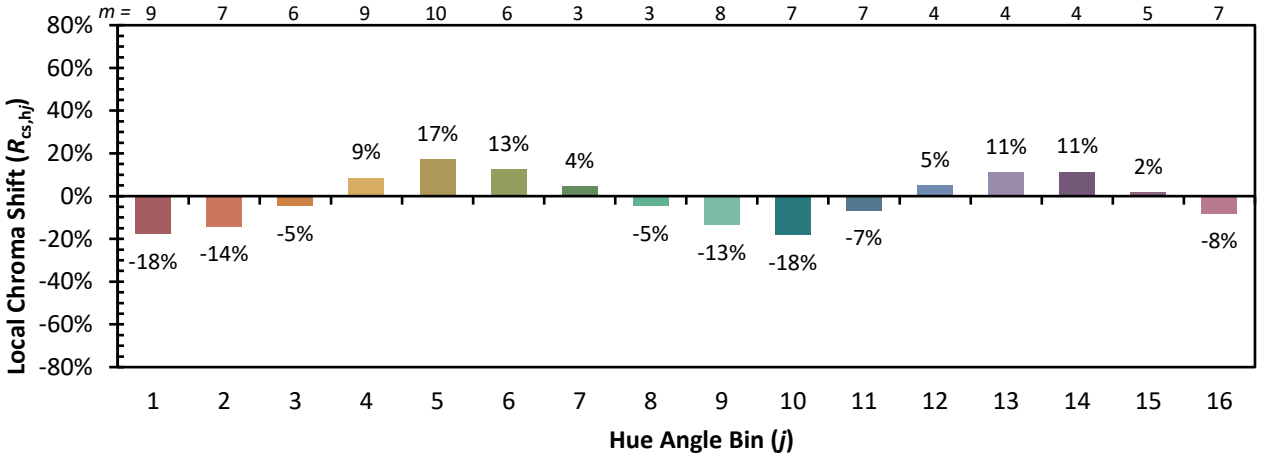
| | | | |
|---|---|---|---|
| CES01 = 86 | CES26 = 57 | CES51 = 84 | CES76 = 50 |
| CES02 = 62 | CES27 = 80 | CES52 = 86 | CES77 = 74 |
| CES03 = 31 | CES28 = 81 | CES53 = 72 | CES78 = 54 |
| CES04 = 70 | CES29 = 50 | CES54 = 79 | CES79 = 81 |
| CES05 = 48 | CES30 = 55 | CES55 = 78 | CES80 = 79 |
| CES06 = 51 | CES31 = 56 | CES56 = 67 | CES81 = 74 |
| CES07 = 40 | CES32 = 54 | CES57 = 65 | CES82 = 91 |
| CES08 = 39 | CES33 = 60 | CES58 = 68 | CES83 = 86 |
| CES09 = 29 | CES34 = 69 | CES59 = 85 | CES84 = 89 |
| CES10 = 75 | CES35 = 83 | CES60 = 91 | CES85 = 83 |
| CES11 = 58 | CES36 = 88 | CES61 = 85 | CES86 = 66 |
| CES12 = 64 | CES37 = 78 | CES62 = 78 | CES87 = 77 |
| CES13 = 43 | CES38 = 64 | CES63 = 71 | CES88 = 75 |
| CES14 = 74 | CES39 = 92 | CES64 = 70 | CES89 = 68 |
| CES15 = 71 | CES40 = 86 | CES65 = 64 | CES90 = 72 |
| CES16 = 47 | CES41 = 81 | CES66 = 65 | CES91 = 95 |
| CES17 = 50 | CES42 = 79 | CES67 = 63 | CES92 = 62 |
| CES18 = 56 | CES43 = 71 | CES68 = 69 | CES93 = 78 |
| CES19 = 72 | CES44 = 98 | CES69 = 80 | CES94 = 51 |
| CES20 = 65 | CES45 = 80 | CES70 = 60 | CES95 = 70 |
| CES21 = 87 | CES46 = 75 | CES71 = 58 | CES96 = 76 |
| CES22 = 79 | CES47 = 71 | CES72 = 85 | CES97 = 82 |
| CES23 = 92 | CES48 = 61 | CES73 = 51 | CES98 = 72 |
| CES24 = 91 | CES49 = 74 | CES74 = 94 | CES99 = 60 |
| CES25 = 72 | CES50 = 83 | CES75 = 57 | |

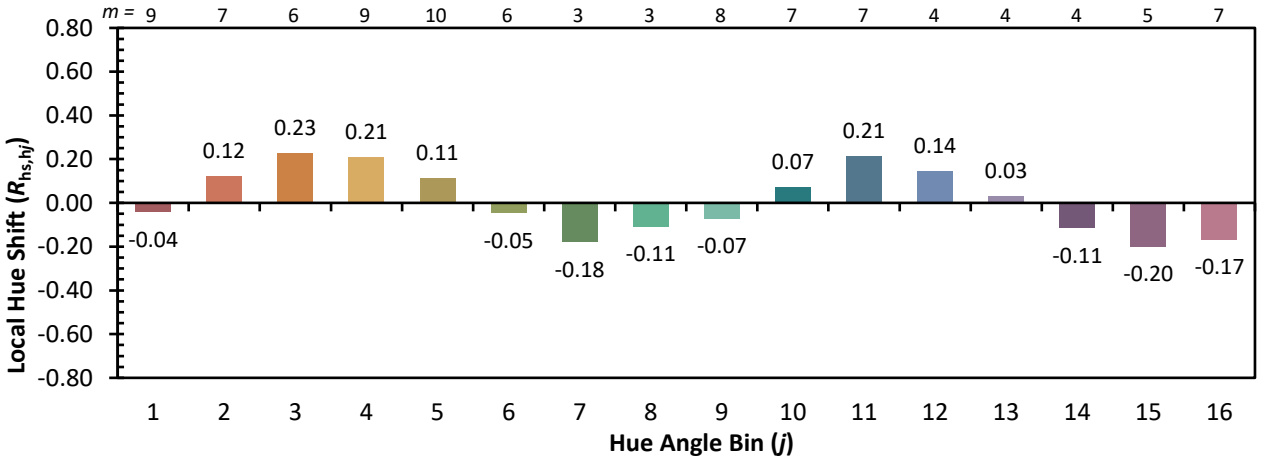


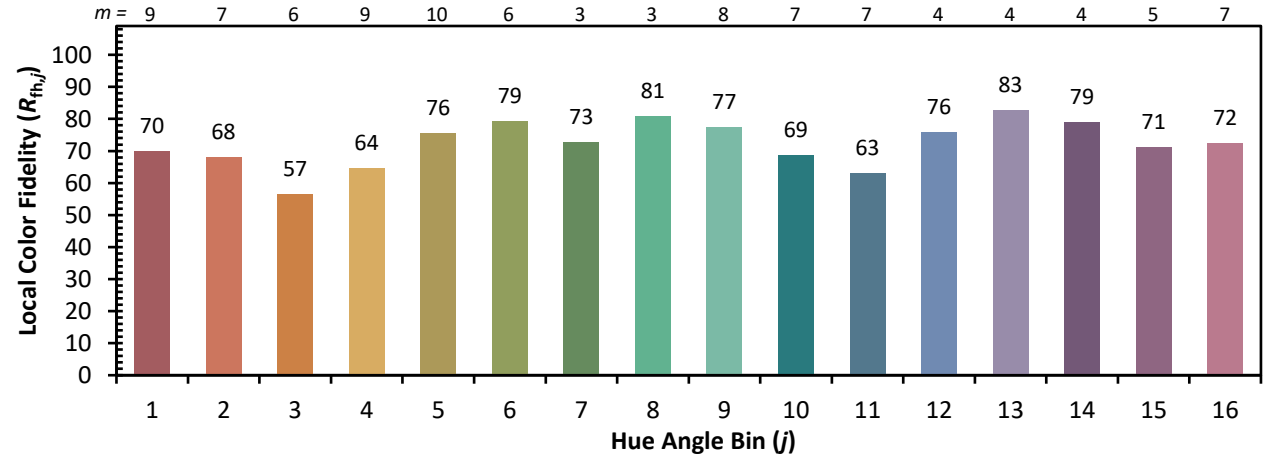
REPORT NUMBER: SP1-2407-184-5

**TM-30-18**

## Color Rendition by Hue-Angle Bin



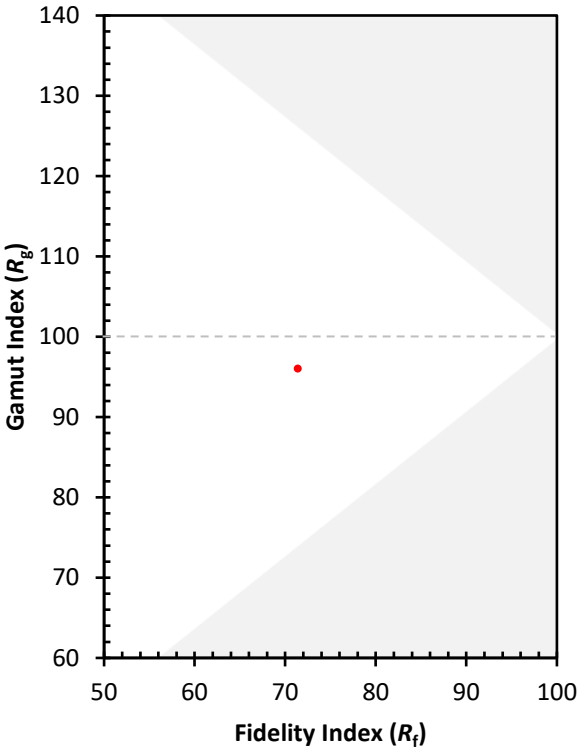



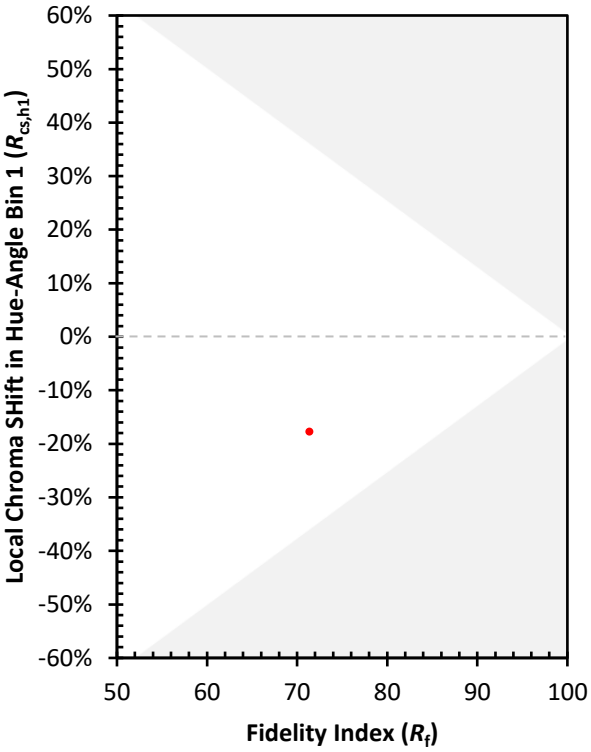



REPORT NUMBER: SP1-2407-184-5

# TM-30-18

## Measure Comparisons




(END OF REPORT)