

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: P322614

Luminaire Tested: **GLEON-SA0C-750-U-T4FT-HSS**

Issue Date: 3/3/2020

**Test Information**

Test Method: LM-79-08  
Report Number: P322614  
TEST IS SCALED FROM IESNA LM-79-08 TEST DATA (G2-1903-205-17)  
Test Lab: INNOVATION CENTER  
Issue Date: 3/3/2020  
Manufacturer: COOPER LIGHTING SOLUTIONS (FORMERLY EATON)  
Product Line: McGRAW-EDISON  
Catalog Number: GLEON-SA0C-750-U-T4FT-HSS  
Description: GALLEON AREA AND ROADWAY LUMINAIRE  
(10) 70 CRI, 5000K, 1050mA LIGHTSQUARES WITH 16 LEDS EACH AND TYPE IV  
FORWARD THROW OPTICS WITH HOUSE SIDE SHIELD  
Light Source: -  
Ballast/Driver: ELECTRONIC DRIVER

**Summary**

Lumens per Lamp: N/A  
Luminaire Lumens: 49717 lumens  
Efficiency: N/A  
Efficacy: 89.1 lumens/watt  
Luminous Opening: Rectangular (W 2.5' x L: 1' x H: 0')  
IES Classification: Type IV - Short  
BUG Rating: B3 - U0 - G5

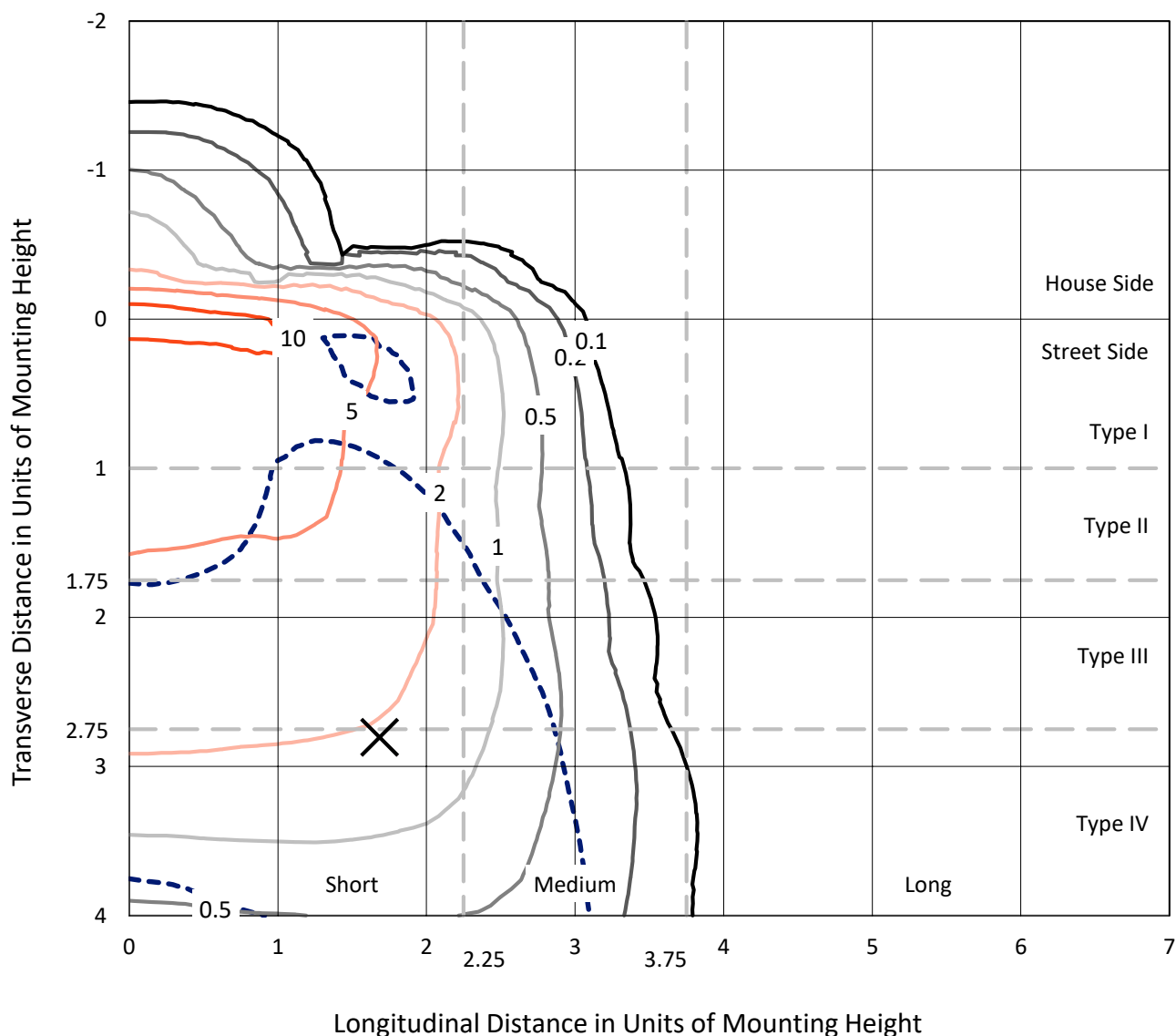
Input Watts (W): 558  
Input Voltage (V): NR  
Input Current (Ain): NR  
Voltage Rise (V): NR  
Power Factor: NR  
Total Harmonic Distortion (THDi): NR  
Frequency (hertz): 60  
Stabilization Time: NR  
Operation Time: NR  
Ambient Temperature (°C): NR  
Test Distance: 24 FT



REPORT NUMBER: P322614  
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## Iso-Footcandle Lines of Horizontal Illumination

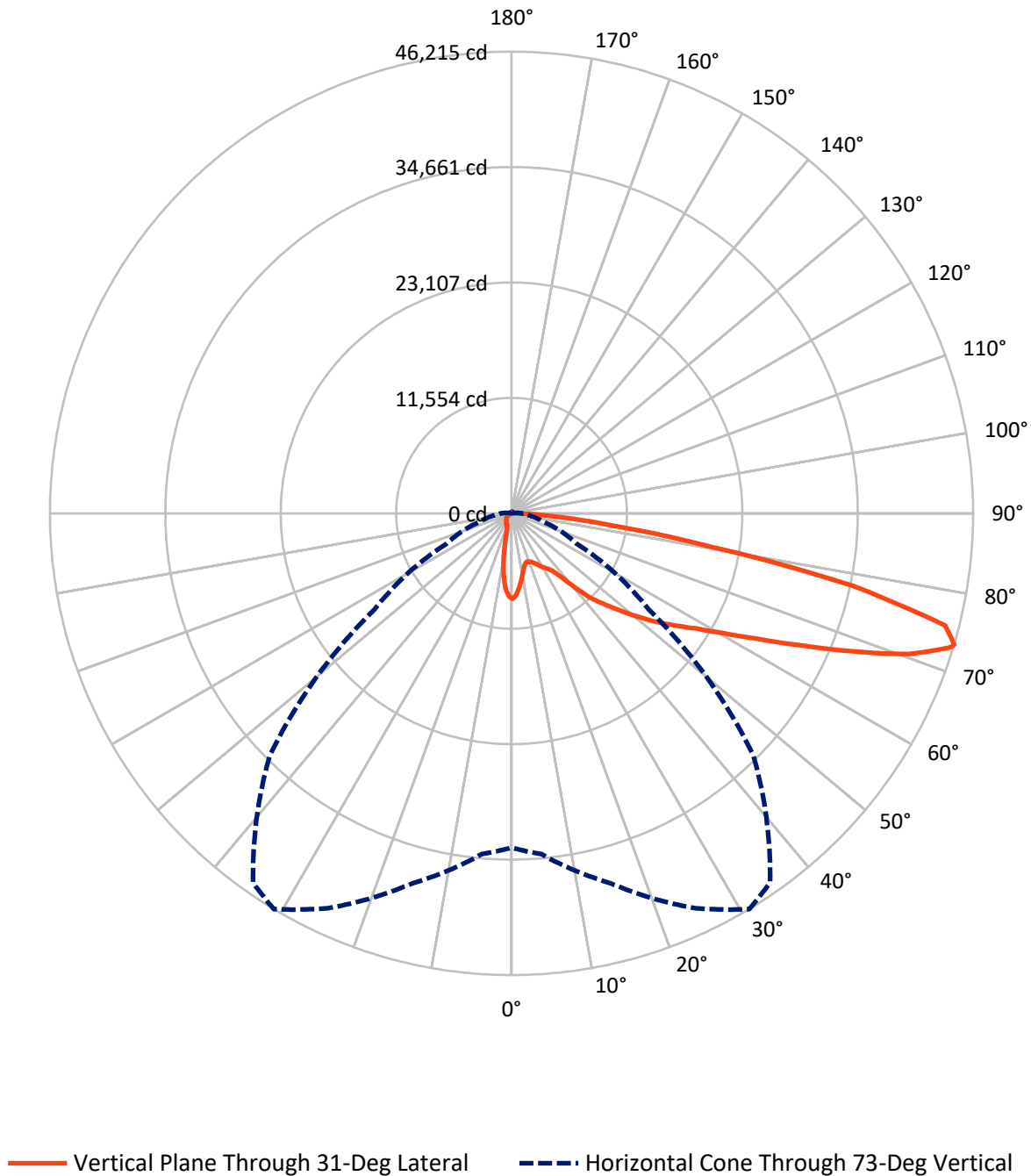
✕ Max cd  
 - - - 1/2 Max cd



Based on 25 foot mounting height. Maximum calculated value = 13.7 fc  
 Type IV - Short - N/A

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## Luminous Intensity Polar Plot



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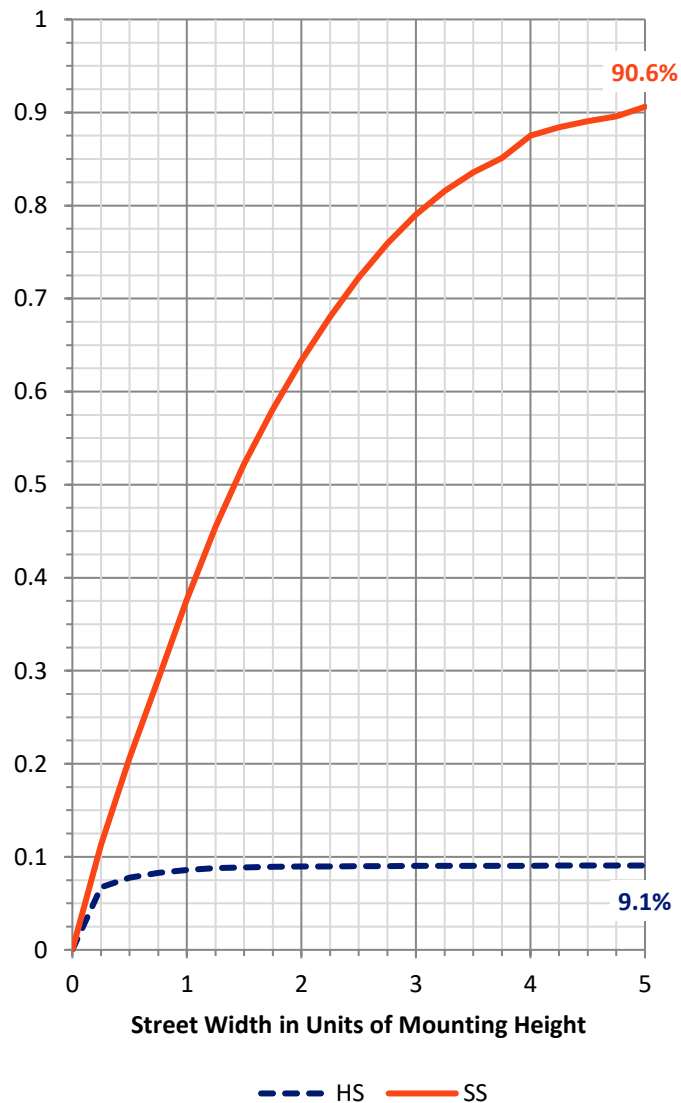
**FLUX DISTRIBUTION:**

|                    |           | Downward | Upward | Total   |
|--------------------|-----------|----------|--------|---------|
| <b>House Side</b>  | Lumens    | 4531.9   | 0.0    | 4531.9  |
|                    | % Fixture | 9.1      | 0.0    | 9.1     |
| <b>Street Side</b> | Lumens    | 45185.1  | 0.0    | 45185.1 |
|                    | % Fixture | 90.9     | 0.0    | 90.9    |
| <b>Total</b>       | Lumens    | 49717.0  | 0.0    | 49717.0 |
|                    | % Fixture | 100.0    | 0.0    | 100.0   |

**ZONAL LUMENS:**

| Zone      | Lumens  | % Fixture |
|-----------|---------|-----------|
| 0°-10°    | 709.2   | 1.4       |
| 10°-20°   | 1540.0  | 3.1       |
| 20°-30°   | 2307.3  | 4.6       |
| 30°-40°   | 3670.9  | 7.4       |
| 40°-50°   | 6555.3  | 13.2      |
| 50°-60°   | 10171.9 | 20.5      |
| 60°-70°   | 13522.2 | 27.2      |
| 70°-80°   | 10171.4 | 20.5      |
| 80°-90°   | 1068.8  | 2.1       |
| 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°    | 49717.0 | 100.0     |
| 0°-180°   | 49717.0 | 100.0     |

**Coefficient of Utilization**



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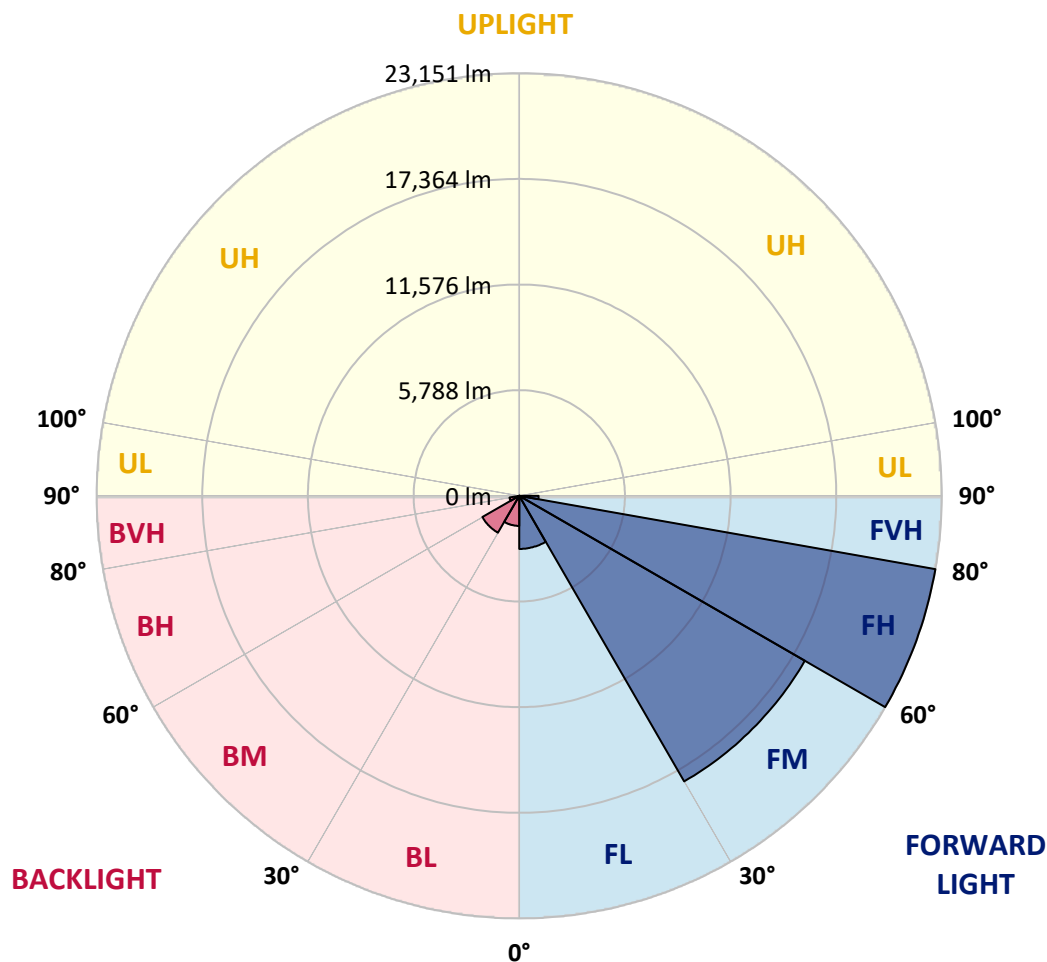
CATALOG NUMBER: GLEON-SA0C-750-U-T4FT-HSS

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

| Zone |             | Lumens  | % Fixture | Zone Rating/Lumen Limit |      |         |
|------|-------------|---------|-----------|-------------------------|------|---------|
|      |             |         |           | B                       | U    | G       |
| FL   | (0°-30°)    | 2908.5  | 5.9       |                         |      |         |
| FM   | (30°-60°)   | 18065.4 | 36.3      |                         |      |         |
| FH   | (60°-80°)   | 23151.4 | 46.6      |                         |      | G5      |
| FVH  | (80°-90°)   | 1059.8  | 2.1       |                         |      | G5      |
| BL   | (0°-30°)    | 1648.0  | 3.3       | B3/2500                 |      |         |
| BM   | (30°-60°)   | 2332.7  | 4.7       | B2/2500                 |      |         |
| BH   | (60°-80°)   | 542.2   | 1.1       | B2/1000                 |      | G2/1000 |
| BVH  | (80°-90°)   | 9.0     | 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-G5**

Type IV Short





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**CANDELA DISTRIBUTION (FULL):**

|       | 0°      | 5°      | 15°     | 25°     | 31°     | 35°     | 45°     | 55°     | 65°     | 75°     | 85°     |
|-------|---------|---------|---------|---------|---------|---------|---------|---------|---------|---------|---------|
| 0°    | 8553.9  | 8553.9  | 8553.9  | 8553.9  | 8553.9  | 8553.9  | 8553.9  | 8553.9  | 8553.9  | 8553.9  | 8553.9  |
| 2.5°  | 8106.3  | 8140.3  | 8176.8  | 8184.1  | 8244.9  | 8247.4  | 8335.0  | 8400.6  | 8466.3  | 8529.6  | 8551.5  |
| 5°    | 7274.2  | 7330.2  | 7395.9  | 7461.6  | 7590.5  | 7641.6  | 7855.7  | 8074.6  | 8283.9  | 8483.4  | 8580.7  |
| 7.5°  | 6386.2  | 6449.5  | 6541.9  | 6704.9  | 6848.5  | 6948.2  | 7286.4  | 7675.7  | 8064.9  | 8432.3  | 8643.9  |
| 10°   | 5576.1  | 5634.5  | 5731.8  | 5904.5  | 6125.9  | 6262.2  | 6717.1  | 7257.2  | 7828.9  | 8386.0  | 8738.8  |
| 12.5° | 5060.3  | 5092.0  | 5145.5  | 5330.4  | 5529.9  | 5683.1  | 6218.4  | 6887.4  | 7634.3  | 8383.6  | 8892.1  |
| 15°   | 4965.5  | 4975.2  | 4931.4  | 5014.1  | 5169.8  | 5318.2  | 5860.7  | 6588.2  | 7485.9  | 8422.5  | 9091.6  |
| 17.5° | 5116.3  | 5111.4  | 4965.5  | 4955.7  | 5079.8  | 5201.4  | 5685.6  | 6381.4  | 7381.3  | 8512.6  | 9349.5  |
| 20°   | 5345.0  | 5327.9  | 5074.9  | 5028.7  | 5160.1  | 5274.4  | 5673.4  | 6303.5  | 7342.4  | 8663.4  | 9663.3  |
| 22.5° | 5649.1  | 5619.9  | 5223.3  | 5174.7  | 5315.8  | 5435.0  | 5824.3  | 6378.9  | 7376.4  | 8865.3  | 10028.2 |
| 25°   | 6026.2  | 5982.4  | 5478.8  | 5425.3  | 5568.8  | 5688.0  | 6094.3  | 6595.5  | 7478.6  | 9111.0  | 10490.5 |
| 27.5° | 6451.9  | 6388.7  | 5887.5  | 5748.8  | 5911.8  | 6035.9  | 6454.4  | 6926.3  | 7639.2  | 9371.4  | 11057.3 |
| 30°   | 6853.3  | 6770.6  | 6318.1  | 6089.4  | 6288.9  | 6427.6  | 6843.6  | 7320.5  | 7897.0  | 9772.8  | 11833.4 |
| 32.5° | 7257.2  | 7164.8  | 6702.5  | 6430.0  | 6610.1  | 6760.9  | 7245.0  | 7863.0  | 8381.2  | 10385.9 | 12864.9 |
| 35°   | 8186.6  | 8089.2  | 7522.4  | 7072.3  | 7069.9  | 7155.0  | 7807.0  | 8605.0  | 9021.0  | 11239.8 | 14096.0 |
| 37.5° | 9750.9  | 9694.9  | 9154.8  | 8300.9  | 8072.2  | 7977.3  | 8573.4  | 9490.6  | 9940.6  | 12414.8 | 15485.1 |
| 40°   | 11463.6 | 11414.9 | 10809.2 | 10035.5 | 9687.6  | 9454.1  | 9673.0  | 10724.0 | 11239.8 | 13850.2 | 16903.5 |
| 42.5° | 13397.7 | 13166.6 | 12086.4 | 11855.3 | 11543.9 | 11366.3 | 11169.2 | 12244.5 | 12835.7 | 15412.1 | 18309.7 |
| 45°   | 15154.2 | 14765.0 | 13363.7 | 13013.3 | 12942.8 | 12986.6 | 13096.0 | 14288.1 | 14631.2 | 17268.4 | 19711.0 |
| 47.5° | 16200.4 | 15893.8 | 14818.5 | 14482.8 | 14463.3 | 14752.8 | 15580.0 | 16596.9 | 16419.3 | 18886.2 | 20944.4 |
| 50°   | 17195.4 | 16918.1 | 16025.2 | 16107.9 | 16197.9 | 16592.1 | 18399.7 | 18971.4 | 18051.8 | 20353.2 | 22075.7 |
| 52.5° | 18000.7 | 17577.4 | 17110.3 | 17574.9 | 18017.7 | 18652.7 | 21309.4 | 21102.6 | 19209.8 | 21521.0 | 23044.0 |
| 55°   | 18465.4 | 18273.2 | 18499.4 | 18966.5 | 19798.6 | 20830.1 | 24056.1 | 22876.1 | 20056.4 | 22586.6 | 23688.7 |
| 57.5° | 20168.4 | 19791.3 | 20241.3 | 20645.2 | 21730.2 | 23172.9 | 26408.6 | 24197.2 | 20667.1 | 23245.9 | 23837.1 |
| 60°   | 22229.0 | 21924.9 | 22190.1 | 22861.5 | 24326.1 | 26021.8 | 28607.9 | 25274.9 | 20985.8 | 23669.2 | 23452.7 |
| 62.5° | 25508.5 | 25107.0 | 24941.6 | 25693.4 | 27634.8 | 29486.2 | 30276.9 | 26021.8 | 20915.2 | 23481.9 | 22134.1 |
| 65°   | 29902.2 | 29486.2 | 28746.6 | 29427.8 | 31897.1 | 33203.6 | 32142.9 | 26179.9 | 20428.7 | 21966.2 | 18801.1 |
| 67.5° | 34403.0 | 34101.3 | 33468.8 | 34617.1 | 36845.6 | 37266.4 | 34115.9 | 25795.5 | 18861.9 | 17810.9 | 13283.4 |
| 70°   | 37375.9 | 37247.0 | 37658.1 | 40198.0 | 42185.7 | 42064.0 | 35925.9 | 23730.0 | 14701.7 | 10952.7 | 6571.1  |
| 72.5° | 35232.6 | 35850.5 | 38886.7 | 43492.1 | 45920.1 | 44927.5 | 34996.6 | 18222.1 | 8403.1  | 4213.7  | 1900.1  |
| 73°   | 33456.6 | 34247.3 | 38334.5 | 43616.2 | 46214.5 | 45127.0 | 34215.6 | 16725.9 | 7162.3  | 3325.7  | 1440.2  |
| 75°   | 23275.1 | 24245.8 | 31736.6 | 40621.3 | 44837.5 | 42995.8 | 28520.3 | 10237.4 | 3318.4  | 1474.3  | 581.5   |
| 77.5° | 11300.6 | 12018.3 | 17475.2 | 29349.9 | 34870.1 | 33592.8 | 17755.0 | 3814.7  | 1498.6  | 922.1   | 267.6   |
| 80°   | 4218.6  | 4690.5  | 7585.6  | 14937.7 | 20151.3 | 20679.3 | 7809.5  | 1442.7  | 997.5   | 742.0   | 136.2   |
| 82.5° | 1104.5  | 1231.0  | 2797.8  | 6661.2  | 10327.5 | 10809.2 | 2462.0  | 727.4   | 729.9   | 610.6   | 82.7    |
| 85°   | 352.8   | 403.9   | 873.4   | 2990.0  | 4865.7  | 4272.1  | 642.3   | 352.8   | 530.4   | 454.9   | 46.2    |
| 87.5° | 43.8    | 56.0    | 277.3   | 703.1   | 1072.9  | 596.0   | 99.7    | 104.6   | 226.3   | 253.0   | 26.8    |
| 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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CATALOG NUMBER: GLEON-SA0C-750-U-T4FT-HSS

**CANDELA DISTRIBUTION (continued):**

|       | 90°     | 95°     | 105°   | 115°   | 125°   | 135°   | 145°   | 155°   | 165°   | 175°   | 180°   |
|-------|---------|---------|--------|--------|--------|--------|--------|--------|--------|--------|--------|
| 0°    | 8553.9  | 8553.9  | 8553.9 | 8553.9 | 8553.9 | 8553.9 | 8553.9 | 8553.9 | 8553.9 | 8553.9 | 8553.9 |
| 2.5°  | 8573.4  | 8561.2  | 8563.6 | 8500.4 | 8459.0 | 8376.3 | 8291.2 | 8252.2 | 8210.9 | 8193.8 | 8210.9 |
| 5°    | 8617.2  | 8595.3  | 8532.0 | 8337.4 | 8130.6 | 7863.0 | 7612.4 | 7422.6 | 7184.2 | 7118.5 | 7186.6 |
| 7.5°  | 8685.3  | 8641.5  | 8456.6 | 8060.0 | 7600.2 | 7089.3 | 6515.2 | 6096.7 | 5753.7 | 5532.3 | 5612.6 |
| 10°   | 8785.0  | 8702.3  | 8330.1 | 7656.2 | 6833.9 | 5928.9 | 5113.9 | 4478.9 | 4028.8 | 3843.9 | 3836.6 |
| 12.5° | 8952.9  | 8797.2  | 8174.4 | 7130.7 | 5897.2 | 4690.5 | 3622.5 | 2934.0 | 2569.1 | 2333.1 | 2328.2 |
| 15°   | 9137.8  | 8909.1  | 7977.3 | 6500.6 | 4807.3 | 3359.8 | 2333.1 | 1810.0 | 1574.1 | 1498.6 | 1488.9 |
| 17.5° | 9364.1  | 9038.0  | 7721.9 | 5724.5 | 3666.3 | 2226.1 | 1523.0 | 1372.1 | 1362.4 | 1355.1 | 1355.1 |
| 20°   | 9648.7  | 9191.3  | 7393.4 | 4836.5 | 2600.7 | 1486.5 | 1294.3 | 1304.0 | 1308.9 | 1299.1 | 1301.6 |
| 22.5° | 9979.6  | 9347.0  | 7001.8 | 3882.8 | 1759.0 | 1243.2 | 1238.3 | 1250.5 | 1255.4 | 1250.5 | 1252.9 |
| 25°   | 10364.0 | 9527.1  | 6524.9 | 2882.9 | 1269.9 | 1179.9 | 1192.1 | 1209.1 | 1221.3 | 1221.3 | 1221.3 |
| 27.5° | 10840.8 | 9746.0  | 5950.8 | 2012.0 | 1097.2 | 1114.2 | 1148.3 | 1179.9 | 1197.0 | 1201.8 | 1201.8 |
| 30°   | 11461.2 | 10018.5 | 5262.3 | 1379.4 | 997.5  | 1026.7 | 1089.9 | 1150.7 | 1182.4 | 1187.2 | 1189.7 |
| 32.5° | 12244.5 | 10325.0 | 4464.3 | 1019.4 | 912.3  | 934.2  | 1002.3 | 1104.5 | 1165.3 | 1175.1 | 1175.1 |
| 35°   | 13142.3 | 10680.2 | 3605.5 | 888.0  | 851.5  | 858.8  | 912.3  | 1029.1 | 1136.1 | 1162.9 | 1165.3 |
| 37.5° | 14125.1 | 11030.6 | 2741.8 | 829.6  | 800.4  | 800.4  | 839.3  | 939.1  | 1065.6 | 1148.3 | 1158.0 |
| 40°   | 15042.3 | 11242.2 | 1922.0 | 783.4  | 754.2  | 754.2  | 788.2  | 861.2  | 980.4  | 1104.5 | 1131.3 |
| 42.5° | 15889.0 | 11315.2 | 1338.1 | 739.6  | 710.4  | 717.7  | 746.9  | 805.3  | 895.3  | 1019.4 | 1043.7 |
| 45°   | 16759.9 | 11303.0 | 975.6  | 688.5  | 666.6  | 688.5  | 710.4  | 754.2  | 819.9  | 890.4  | 895.3  |
| 47.5° | 17416.8 | 11200.9 | 773.6  | 639.8  | 625.2  | 654.4  | 673.9  | 703.1  | 739.6  | 734.7  | 734.7  |
| 50°   | 18032.3 | 10952.7 | 622.8  | 574.2  | 583.9  | 617.9  | 627.7  | 637.4  | 639.8  | 593.6  | 588.8  |
| 52.5° | 18499.4 | 10565.9 | 498.7  | 503.6  | 542.5  | 576.6  | 566.9  | 552.3  | 527.9  | 472.0  | 462.2  |
| 55°   | 18655.1 | 9821.4  | 391.7  | 416.0  | 481.7  | 525.5  | 489.0  | 457.4  | 411.2  | 364.9  | 355.2  |
| 57.5° | 18372.9 | 8860.5  | 318.7  | 323.6  | 406.3  | 442.8  | 401.4  | 364.9  | 313.8  | 274.9  | 267.6  |
| 60°   | 17774.4 | 7792.4  | 262.7  | 243.3  | 313.8  | 345.5  | 318.7  | 282.2  | 236.0  | 206.8  | 204.4  |
| 62.5° | 16587.2 | 6653.9  | 216.5  | 189.8  | 238.4  | 265.2  | 248.2  | 221.4  | 182.5  | 163.0  | 160.6  |
| 65°   | 14091.1 | 5323.1  | 175.2  | 153.3  | 184.9  | 206.8  | 192.2  | 172.7  | 143.5  | 128.9  | 126.5  |
| 67.5° | 9836.0  | 3598.2  | 143.5  | 126.5  | 146.0  | 163.0  | 150.8  | 141.1  | 114.3  | 111.9  | 114.3  |
| 70°   | 4744.1  | 1734.6  | 119.2  | 102.2  | 114.3  | 126.5  | 121.6  | 114.3  | 109.5  | 126.5  | 146.0  |
| 72.5° | 1360.0  | 581.5   | 94.9   | 85.1   | 92.4   | 99.7   | 104.6  | 102.2  | 119.2  | 153.3  | 177.6  |
| 73°   | 1046.1  | 469.5   | 90.0   | 80.3   | 87.6   | 97.3   | 102.2  | 99.7   | 121.6  | 155.7  | 177.6  |
| 75°   | 447.6   | 226.3   | 68.1   | 65.7   | 73.0   | 85.1   | 90.0   | 90.0   | 121.6  | 158.1  | 170.3  |
| 77.5° | 201.9   | 121.6   | 43.8   | 51.1   | 63.3   | 68.1   | 75.4   | 75.4   | 97.3   | 121.6  | 121.6  |
| 80°   | 114.3   | 65.7    | 34.1   | 38.9   | 46.2   | 46.2   | 46.2   | 41.4   | 43.8   | 48.7   | 53.5   |
| 82.5° | 73.0    | 43.8    | 26.8   | 31.6   | 29.2   | 24.3   | 19.5   | 19.5   | 17.0   | 19.5   | 24.3   |
| 85°   | 41.4    | 24.3    | 24.3   | 19.5   | 12.2   | 9.7    | 12.2   | 9.7    | 2.4    | 0.0    | 2.4    |
| 87.5° | 24.3    | 14.6    | 7.3    | 0.0    | 0.0    | 0.0    | 0.0    | 0.0    | 0.0    | 0.0    | 0.0    |
| 90°   | 0.0     | 0.0     | 0.0    | 0.0    | 0.0    | 0.0    | 0.0    | 0.0    | 0.0    | 0.0    | 0.0    |

LM-79-2008: Approved Method: Electrical and Photometric Measurements of Solid-  
State Lighting Products

Report Prepared for

Cooper Lighting Solutions

McGRAW-EDISON

Report Number: SP1-1908-441-4-R4

Test Date: 10/02/2019

Luminaire Tested: SA1C-750-U-5WQ

Data in this report applies to families of products SA1C-760-U-5WQ .

### Test Information

Test Method: LM-79-2008  
 Report Number: SP1-1908-441-4-R4  
 Test Lab: COOPER LIGHTING SOLUTIONS  
 Photometer: SP1 - 76IN SPHERE  
 Measurement Geometry:  $4\pi$   
 Issue Date: 10/28/2024  
 Manufacturer: COOPER LIGHTING SOLUTIONS  
 Product Line: MCGRAW-EDISON  
 Catalog Number: **SA1C-750-U-5WQ**  
 Description: MCGRAW EDISON ROADWAY AND AREA LUMINAIRE

\*\*\*THIS IS A REVISION OF SP1-1908-441-4-R3. TO UPDATE THE CATALOG INFORMATION.\*\*\*TESTED IN SITU. ROADWAY AND AREA LUMINAIRE. (1) 70 CRI, 5000K, 1050MA LIGHTSQUARE WITH 16 LEDS AND TYPE V WIDE OPTICS.

### Spectral Parameters

|                           |        |           |      |      |       |
|---------------------------|--------|-----------|------|------|-------|
| CCT (K):                  | 4884   | CRI (Ra): | 73.5 |      |       |
| CIE u':                   | 0.2101 | R1:       | 70.5 | R9:  | -28.4 |
| CIE v':                   | 0.4904 | R2:       | 77.7 | R10: | 48.6  |
| Duv:                      | 0.0037 | R3:       | 84.6 | R11: | 73.2  |
| CIE x:                    | 0.3493 | R4:       | 74.7 | R12: | 50.7  |
| CIE y:                    | 0.3624 | R5:       | 71.9 | R13: | 71.2  |
| CIE z:                    | 0.2884 | R6:       | 70.7 | R14: | 91.4  |
| Peak Wavelength (nm):     | 444    | R7:       | 81.2 |      |       |
| Dominant Wavelength (nm): | 571    | R8:       | 56.9 |      |       |
| Purity:                   | 13.7   |           |      |      |       |
| Rf:                       | 74.9   |           |      |      |       |
| Rg:                       | 96.3   |           |      |      |       |



### Test Conditions

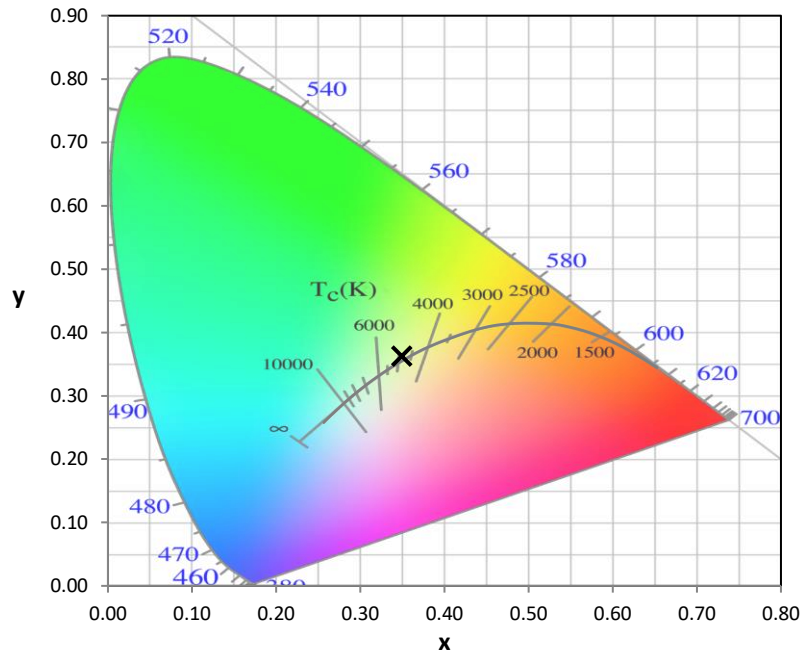
Stabilization Time: 240M  
 Operation Time: 12H  
 Room Temperature (°C) / RH%: 25.0./44%  
 Sphere Temperature (°C): 25.7

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| Measurement and Test Equipment |                       |                  |                      |
|--------------------------------|-----------------------|------------------|----------------------|
| Instrument                     | Identification Number | Calibration Date | Calibration Due Date |
| Photometer                     | IN0058                | 6/28/2019        | 12/28/2019           |
| Power Meter                    | IN0071                | 12/5/2018        | 12/5/2019            |
| AC Power Source                | IN0063                | 12/5/2018        | 12/5/2019            |
| DC Power Source                | IN0208                | 12/5/2018        | 12/5/2019            |
| Sphere Thermometer             | IN0085                | 12/5/2018        | 12/5/2019            |
| Room Thermometer               | IN0046                | 12/5/2018        | 12/5/2019            |

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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 5000K 4-step quadrangle

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**Photopic Flux vs. Wavelength**



#####

| λ<br>(nm) | Power<br>(μW/nm) | Lumens<br>(φ/nm) | λ<br>(nm) | Power<br>(μW/nm) | Lumens<br>(φ/nm) | λ<br>(nm) | Power<br>(μW/nm) | Lumens<br>(φ/nm) | λ<br>(nm) | Power<br>(μW/nm) | Lumens<br>(φ/nm) | λ<br>(nm) | Power<br>(μW/nm) | Lumens<br>(φ/nm) |
|-----------|------------------|------------------|-----------|------------------|------------------|-----------|------------------|------------------|-----------|------------------|------------------|-----------|------------------|------------------|
| 360       | 2945             | NR               | 490       | 37941            | NR               | 620       | 88803            | NR               | 750       | 3908             | NR               | 880       | 2997             | NR               |
| 365       | 2596             | NR               | 495       | 48525            | NR               | 625       | 80578            | NR               | 755       | 3988             | NR               | 885       | 2927             | NR               |
| 370       | 2732             | NR               | 500       | 60609            | NR               | 630       | 73127            | NR               | 760       | 3335             | NR               | 890       | 2649             | NR               |
| 375       | 2894             | NR               | 505       | 72036            | NR               | 635       | 66244            | NR               | 765       | 3438             | NR               | 895       | 2828             | NR               |
| 380       | 2822             | NR               | 510       | 82168            | NR               | 640       | 59440            | NR               | 770       | 3427             | NR               | 900       | 1407             | NR               |
| 385       | 2394             | NR               | 515       | 90898            | NR               | 645       | 52864            | NR               | 775       | 2759             | NR               | 905       | 2224             | NR               |
| 390       | 2370             | NR               | 520       | 97142            | NR               | 650       | 47085            | NR               | 780       | 2340             | NR               | 910       | 2905             | NR               |
| 395       | 2267             | NR               | 525       | 103255           | NR               | 655       | 41789            | NR               | 785       | 2412             | NR               | 915       | 3350             | NR               |
| 400       | 2262             | NR               | 530       | 106697           | NR               | 660       | 37064            | NR               | 790       | 1999             | NR               | 920       | 3114             | NR               |
| 405       | 3000             | NR               | 535       | 110081           | NR               | 665       | 32299            | NR               | 795       | 2054             | NR               | 925       | 2834             | NR               |
| 410       | 5324             | NR               | 540       | 112494           | NR               | 670       | 28142            | NR               | 800       | 2331             | NR               | 930       | 2271             | NR               |
| 415       | 10725            | NR               | 545       | 115513           | NR               | 675       | 24505            | NR               | 805       | 2648             | NR               | 935       | 2228             | NR               |
| 420       | 22128            | NR               | 550       | 117203           | NR               | 680       | 21162            | NR               | 810       | 2485             | NR               | 940       | 2833             | NR               |
| 425       | 44095            | NR               | 555       | 119753           | NR               | 685       | 18400            | NR               | 815       | 2409             | NR               | 945       | 2941             | NR               |
| 430       | 77002            | NR               | 560       | 122602           | NR               | 690       | 16065            | NR               | 820       | 2221             | NR               | 950       | 2323             | NR               |
| 435       | 119881           | NR               | 565       | 124314           | NR               | 695       | 13860            | NR               | 825       | 1562             | NR               | 955       | 1667             | NR               |
| 440       | 164454           | NR               | 570       | 126775           | NR               | 700       | 12177            | NR               | 830       | 2249             | NR               | 960       | 749              | NR               |
| 445       | 179997           | NR               | 575       | 127511           | NR               | 705       | 10757            | NR               | 835       | 2573             | NR               | 965       | 2669             | NR               |
| 450       | 142822           | NR               | 580       | 127577           | NR               | 710       | 9601             | NR               | 840       | 2764             | NR               | 970       | 3968             | NR               |
| 455       | 90008            | NR               | 585       | 126153           | NR               | 715       | 8944             | NR               | 845       | 3109             | NR               | 975       | 3886             | NR               |
| 460       | 60557            | NR               | 590       | 123678           | NR               | 720       | 7947             | NR               | 850       | 2963             | NR               | 980       | 2788             | NR               |
| 465       | 43305            | NR               | 595       | 119774           | NR               | 725       | 7062             | NR               | 855       | 2336             | NR               | 985       | 3496             | NR               |
| 470       | 31089            | NR               | 600       | 115733           | NR               | 730       | 6004             | NR               | 860       | 2118             | NR               | 990       | 2913             | NR               |
| 475       | 26278            | NR               | 605       | 109231           | NR               | 735       | 5594             | NR               | 865       | 3144             | NR               | 995       | 4659             | NR               |
| 480       | 27060            | NR               | 610       | 102408           | NR               | 740       | 5165             | NR               | 870       | 3069             | NR               | 1000      | 1308             | NR               |
| 485       | 30698            | NR               | 615       | 96015            | NR               | 745       | 4687             | NR               | 875       | 3311             | NR               |           |                  |                  |

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Scotopic Flux vs. Wavelength



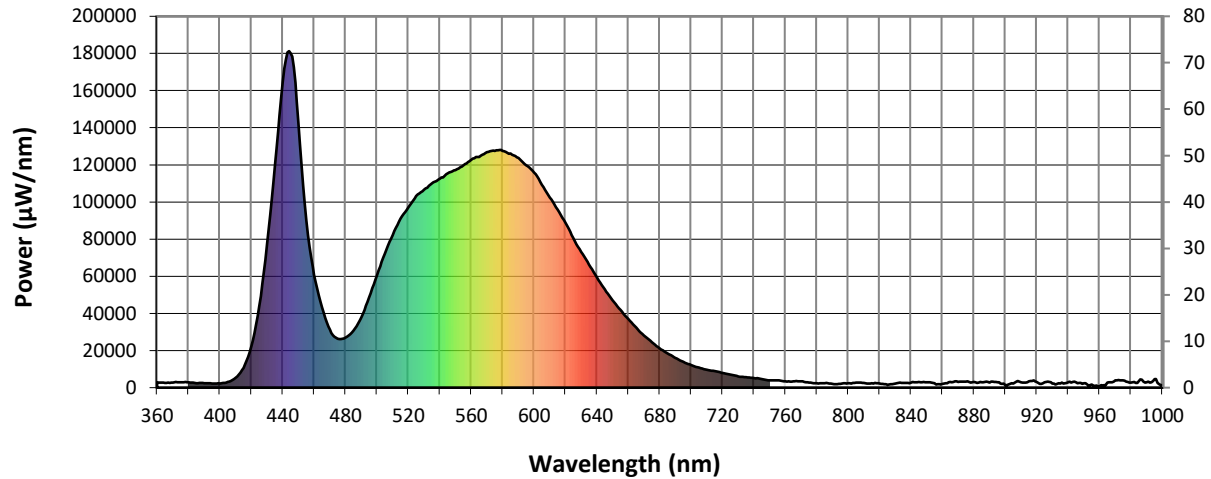
Scotopic Lumens: 13493.5

S/P: 1.77

| λ<br>(nm) | Power<br>(μW/nm) | Lumens<br>(Φ/nm) | λ<br>(nm) | Power<br>(μW/nm) | Lumens<br>(Φ/nm) | λ<br>(nm) | Power<br>(μW/nm) | Lumens<br>(Φ/nm) | λ<br>(nm) | Power<br>(μW/nm) | Lumens<br>(Φ/nm) | λ<br>(nm) | Power<br>(μW/nm) | Lumens<br>(Φ/nm) |
|-----------|------------------|------------------|-----------|------------------|------------------|-----------|------------------|------------------|-----------|------------------|------------------|-----------|------------------|------------------|
| 360       | 2945             | NR               | 490       | 37941            | NR               | 620       | 88803            | NR               | 750       | 3908             | NR               | 880       | 2997             | NR               |
| 365       | 2596             | NR               | 495       | 48525            | NR               | 625       | 80578            | NR               | 755       | 3988             | NR               | 885       | 2927             | NR               |
| 370       | 2732             | NR               | 500       | 60609            | NR               | 630       | 73127            | NR               | 760       | 3335             | NR               | 890       | 2649             | NR               |
| 375       | 2894             | NR               | 505       | 72036            | NR               | 635       | 66244            | NR               | 765       | 3438             | NR               | 895       | 2828             | NR               |
| 380       | 2822             | NR               | 510       | 82168            | NR               | 640       | 59440            | NR               | 770       | 3427             | NR               | 900       | 1407             | NR               |
| 385       | 2394             | NR               | 515       | 90898            | NR               | 645       | 52864            | NR               | 775       | 2759             | NR               | 905       | 2224             | NR               |
| 390       | 2370             | NR               | 520       | 97142            | NR               | 650       | 47085            | NR               | 780       | 2340             | NR               | 910       | 2905             | NR               |
| 395       | 2267             | NR               | 525       | 103255           | NR               | 655       | 41789            | NR               | 785       | 2412             | NR               | 915       | 3350             | NR               |
| 400       | 2262             | NR               | 530       | 106697           | NR               | 660       | 37064            | NR               | 790       | 1999             | NR               | 920       | 3114             | NR               |
| 405       | 3000             | NR               | 535       | 110081           | NR               | 665       | 32299            | NR               | 795       | 2054             | NR               | 925       | 2834             | NR               |
| 410       | 5324             | NR               | 540       | 112494           | NR               | 670       | 28142            | NR               | 800       | 2331             | NR               | 930       | 2271             | NR               |
| 415       | 10725            | NR               | 545       | 115513           | NR               | 675       | 24505            | NR               | 805       | 2648             | NR               | 935       | 2228             | NR               |
| 420       | 22128            | NR               | 550       | 117203           | NR               | 680       | 21162            | NR               | 810       | 2485             | NR               | 940       | 2833             | NR               |
| 425       | 44095            | NR               | 555       | 119753           | NR               | 685       | 18400            | NR               | 815       | 2409             | NR               | 945       | 2941             | NR               |
| 430       | 77002            | NR               | 560       | 122602           | NR               | 690       | 16065            | NR               | 820       | 2221             | NR               | 950       | 2323             | NR               |
| 435       | 119881           | NR               | 565       | 124314           | NR               | 695       | 13860            | NR               | 825       | 1562             | NR               | 955       | 1667             | NR               |
| 440       | 164454           | NR               | 570       | 126775           | NR               | 700       | 12177            | NR               | 830       | 2249             | NR               | 960       | 749              | NR               |
| 445       | 179997           | NR               | 575       | 127511           | NR               | 705       | 10757            | NR               | 835       | 2573             | NR               | 965       | 2669             | NR               |
| 450       | 142822           | NR               | 580       | 127577           | NR               | 710       | 9601             | NR               | 840       | 2764             | NR               | 970       | 3968             | NR               |
| 455       | 90008            | NR               | 585       | 126153           | NR               | 715       | 8944             | NR               | 845       | 3109             | NR               | 975       | 3886             | NR               |
| 460       | 60557            | NR               | 590       | 123678           | NR               | 720       | 7947             | NR               | 850       | 2963             | NR               | 980       | 2788             | NR               |
| 465       | 43305            | NR               | 595       | 119774           | NR               | 725       | 7062             | NR               | 855       | 2336             | NR               | 985       | 3496             | NR               |
| 470       | 31089            | NR               | 600       | 115733           | NR               | 730       | 6004             | NR               | 860       | 2118             | NR               | 990       | 2913             | NR               |
| 475       | 26278            | NR               | 605       | 109231           | NR               | 735       | 5594             | NR               | 865       | 3144             | NR               | 995       | 4659             | NR               |
| 480       | 27060            | NR               | 610       | 102408           | NR               | 740       | 5165             | NR               | 870       | 3069             | NR               | 1000      | 1308             | NR               |
| 485       | 30698            | NR               | 615       | 96015            | NR               | 745       | 4687             | NR               | 875       | 3311             | NR               |           |                  |                  |

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**Melanopic Flux vs. Wavelength**



**Melanopic Lumens: 5378.9**

**M/P: 0.71**

| λ<br>(nm) | Power<br>(μW/nm) | Lumens<br>(φ/nm) | λ<br>(nm) | Power<br>(μW/nm) | Lumens<br>(φ/nm) | λ<br>(nm) | Power<br>(μW/nm) | Lumens<br>(φ/nm) | λ<br>(nm) | Power<br>(μW/nm) | Lumens<br>(φ/nm) | λ<br>(nm) | Power<br>(μW/nm) | Lumens<br>(φ/nm) |
|-----------|------------------|------------------|-----------|------------------|------------------|-----------|------------------|------------------|-----------|------------------|------------------|-----------|------------------|------------------|
| 360       | 2945             | NR               | 490       | 37941            | NR               | 620       | 88803            | NR               | 750       | 3908             | NR               | 880       | 2997             | NR               |
| 365       | 2596             | NR               | 495       | 48525            | NR               | 625       | 80578            | NR               | 755       | 3988             | NR               | 885       | 2927             | NR               |
| 370       | 2732             | NR               | 500       | 60609            | NR               | 630       | 73127            | NR               | 760       | 3335             | NR               | 890       | 2649             | NR               |
| 375       | 2894             | NR               | 505       | 72036            | NR               | 635       | 66244            | NR               | 765       | 3438             | NR               | 895       | 2828             | NR               |
| 380       | 2822             | NR               | 510       | 82168            | NR               | 640       | 59440            | NR               | 770       | 3427             | NR               | 900       | 1407             | NR               |
| 385       | 2394             | NR               | 515       | 90898            | NR               | 645       | 52864            | NR               | 775       | 2759             | NR               | 905       | 2224             | NR               |
| 390       | 2370             | NR               | 520       | 97142            | NR               | 650       | 47085            | NR               | 780       | 2340             | NR               | 910       | 2905             | NR               |
| 395       | 2267             | NR               | 525       | 103255           | NR               | 655       | 41789            | NR               | 785       | 2412             | NR               | 915       | 3350             | NR               |
| 400       | 2262             | NR               | 530       | 106697           | NR               | 660       | 37064            | NR               | 790       | 1999             | NR               | 920       | 3114             | NR               |
| 405       | 3000             | NR               | 535       | 110081           | NR               | 665       | 32299            | NR               | 795       | 2054             | NR               | 925       | 2834             | NR               |
| 410       | 5324             | NR               | 540       | 112494           | NR               | 670       | 28142            | NR               | 800       | 2331             | NR               | 930       | 2271             | NR               |
| 415       | 10725            | NR               | 545       | 115513           | NR               | 675       | 24505            | NR               | 805       | 2648             | NR               | 935       | 2228             | NR               |
| 420       | 22128            | NR               | 550       | 117203           | NR               | 680       | 21162            | NR               | 810       | 2485             | NR               | 940       | 2833             | NR               |
| 425       | 44095            | NR               | 555       | 119753           | NR               | 685       | 18400            | NR               | 815       | 2409             | NR               | 945       | 2941             | NR               |
| 430       | 77002            | NR               | 560       | 122602           | NR               | 690       | 16065            | NR               | 820       | 2221             | NR               | 950       | 2323             | NR               |
| 435       | 119881           | NR               | 565       | 124314           | NR               | 695       | 13860            | NR               | 825       | 1562             | NR               | 955       | 1667             | NR               |
| 440       | 164454           | NR               | 570       | 126775           | NR               | 700       | 12177            | NR               | 830       | 2249             | NR               | 960       | 749              | NR               |
| 445       | 179997           | NR               | 575       | 127511           | NR               | 705       | 10757            | NR               | 835       | 2573             | NR               | 965       | 2669             | NR               |
| 450       | 142822           | NR               | 580       | 127577           | NR               | 710       | 9601             | NR               | 840       | 2764             | NR               | 970       | 3968             | NR               |
| 455       | 90008            | NR               | 585       | 126153           | NR               | 715       | 8944             | NR               | 845       | 3109             | NR               | 975       | 3886             | NR               |
| 460       | 60557            | NR               | 590       | 123678           | NR               | 720       | 7947             | NR               | 850       | 2963             | NR               | 980       | 2788             | NR               |
| 465       | 43305            | NR               | 595       | 119774           | NR               | 725       | 7062             | NR               | 855       | 2336             | NR               | 985       | 3496             | NR               |
| 470       | 31089            | NR               | 600       | 115733           | NR               | 730       | 6004             | NR               | 860       | 2118             | NR               | 990       | 2913             | NR               |
| 475       | 26278            | NR               | 605       | 109231           | NR               | 735       | 5594             | NR               | 865       | 3144             | NR               | 995       | 4659             | NR               |
| 480       | 27060            | NR               | 610       | 102408           | NR               | 740       | 5165             | NR               | 870       | 3069             | NR               | 1000      | 1308             | NR               |
| 485       | 30698            | NR               | 615       | 96015            | NR               | 745       | 4687             | NR               | 875       | 3311             | NR               |           |                  |                  |

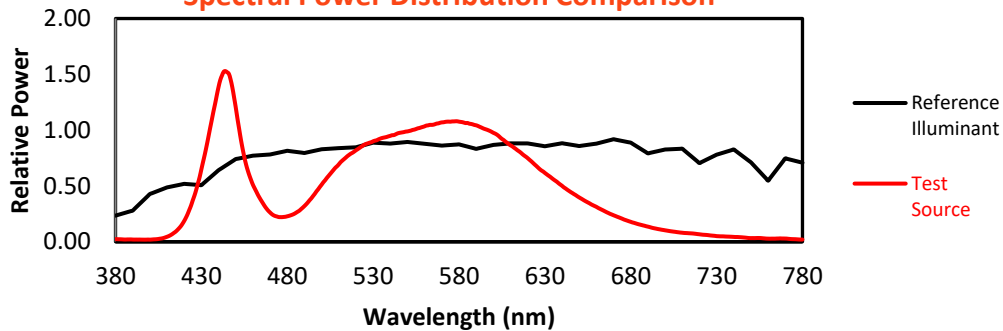
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**TM-30-18**

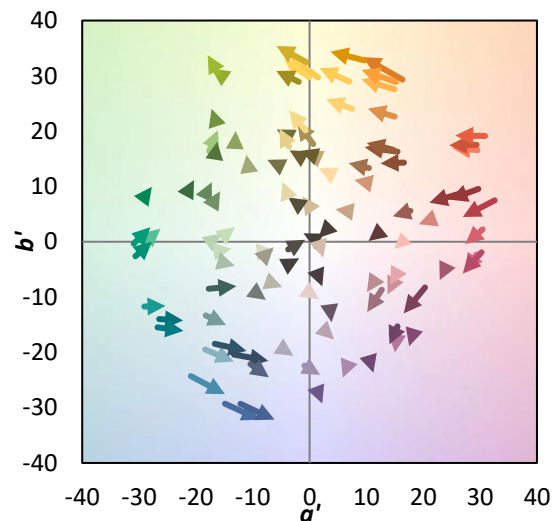
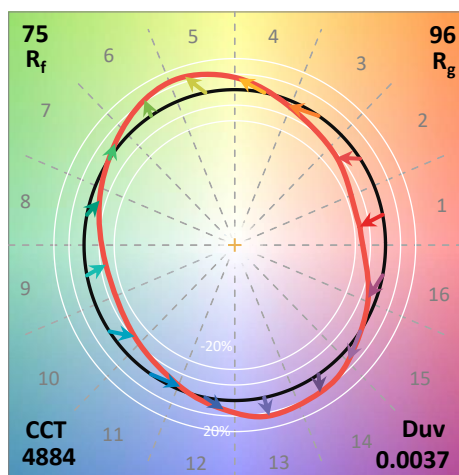
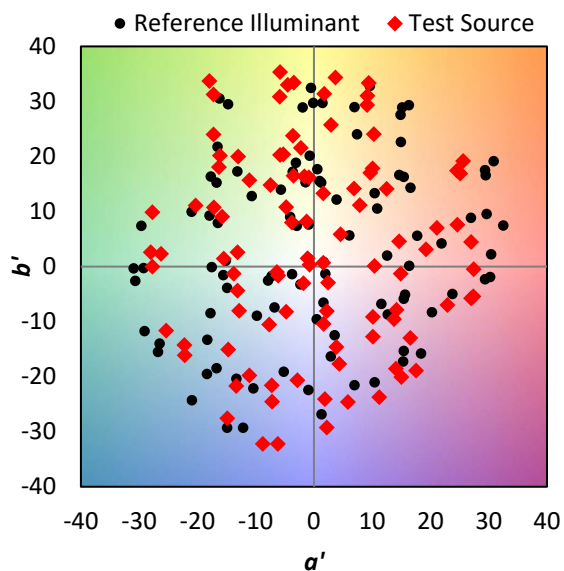
**Summary**

$R_f = 74.9$   
 $R_g = 96.3$   
 CIE  $R_a = 73.5$   
 $R_g = -28.4$

**Spectral Power Distribution Comparison**



**Color Vector Graphics**

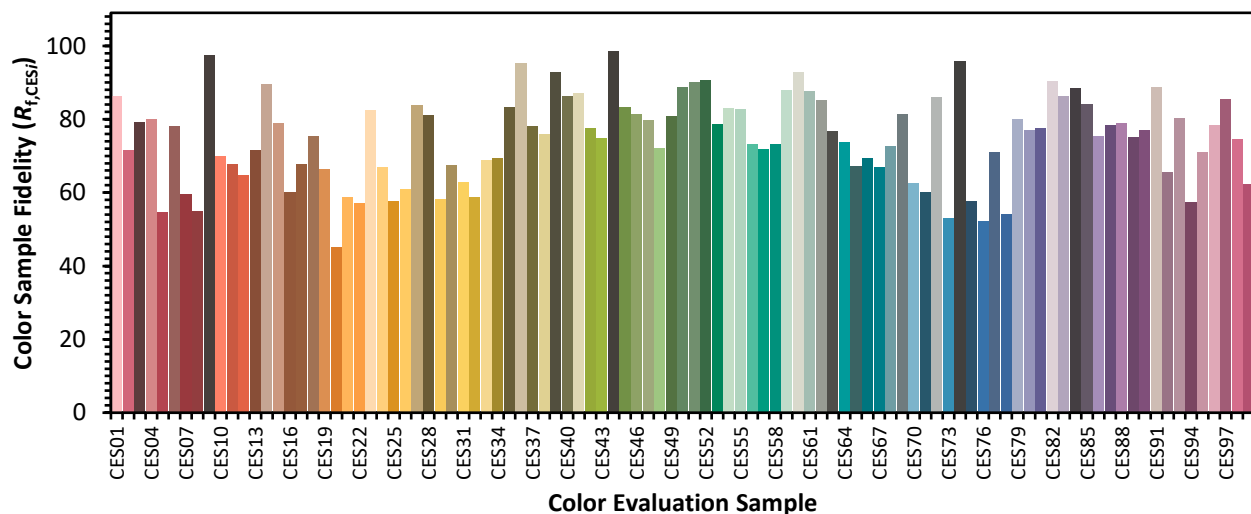


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**Individual Sample Fidelity Index ( $R_{f,i}$ )**

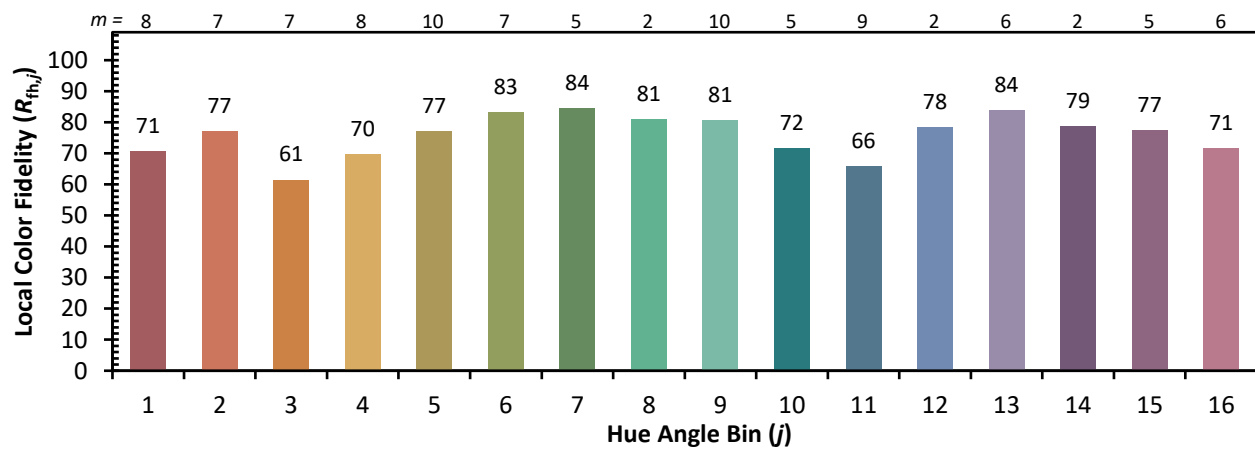
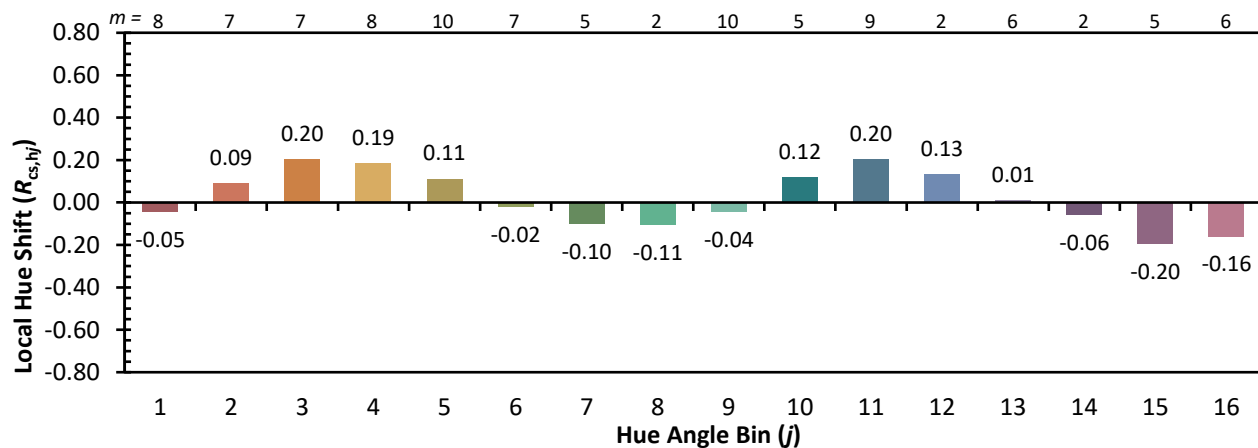
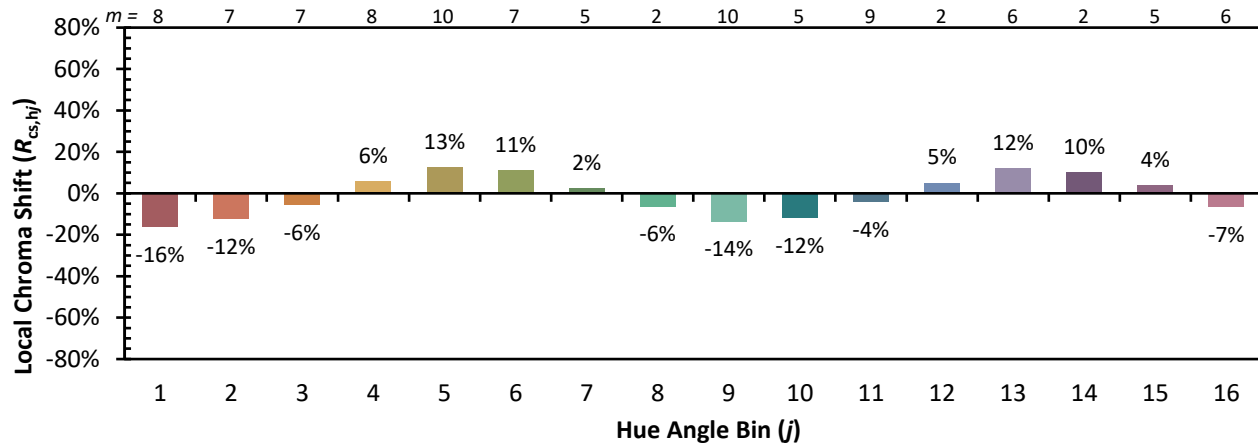
|            |            |            |            |
|------------|------------|------------|------------|
| CES01 = 85 | CES26 = 61 | CES51 = 90 | CES76 = 52 |
| CES02 = 60 | CES27 = 84 | CES52 = 91 | CES77 = 71 |
| CES03 = 30 | CES28 = 81 | CES53 = 79 | CES78 = 54 |
| CES04 = 69 | CES29 = 58 | CES54 = 83 | CES79 = 80 |
| CES05 = 46 | CES30 = 67 | CES55 = 83 | CES80 = 77 |
| CES06 = 50 | CES31 = 63 | CES56 = 73 | CES81 = 77 |
| CES07 = 39 | CES32 = 59 | CES57 = 72 | CES82 = 90 |
| CES08 = 38 | CES33 = 69 | CES58 = 73 | CES83 = 86 |
| CES09 = 29 | CES34 = 69 | CES59 = 88 | CES84 = 88 |
| CES10 = 73 | CES35 = 83 | CES60 = 93 | CES85 = 84 |
| CES11 = 56 | CES36 = 95 | CES61 = 88 | CES86 = 75 |
| CES12 = 61 | CES37 = 78 | CES62 = 85 | CES87 = 78 |
| CES13 = 41 | CES38 = 76 | CES63 = 77 | CES88 = 79 |
| CES14 = 74 | CES39 = 93 | CES64 = 74 | CES89 = 75 |
| CES15 = 70 | CES40 = 86 | CES65 = 67 | CES90 = 77 |
| CES16 = 46 | CES41 = 87 | CES66 = 69 | CES91 = 89 |
| CES17 = 49 | CES42 = 78 | CES67 = 67 | CES92 = 66 |
| CES18 = 55 | CES43 = 75 | CES68 = 73 | CES93 = 80 |
| CES19 = 71 | CES44 = 99 | CES69 = 81 | CES94 = 57 |
| CES20 = 64 | CES45 = 83 | CES70 = 63 | CES95 = 71 |
| CES21 = 85 | CES46 = 81 | CES71 = 60 | CES96 = 78 |
| CES22 = 77 | CES47 = 80 | CES72 = 86 | CES97 = 85 |
| CES23 = 91 | CES48 = 72 | CES73 = 53 | CES98 = 75 |
| CES24 = 90 | CES49 = 81 | CES74 = 96 | CES99 = 62 |
| CES25 = 71 | CES50 = 89 | CES75 = 58 |            |



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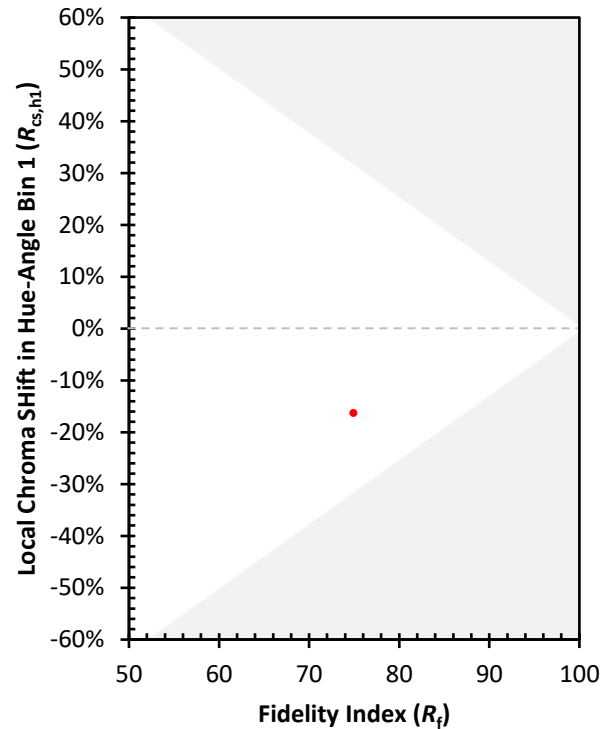
Color Rendition by Hue-Angle Bin



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**Measure Comparisons**



(END OF REPORT)