

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

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Peachtree City, GA 30269

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

Test Report Prepared for  
Cooper Lighting Solutions

Brand: STREETWORKS

Report Number: P1461902

Luminaire Tested: USSL-70-722-U-T2RE-HSS

Issue Date: 06/10/2026

**Test Information**

Test Method: LM-79-2024  
Report Number: P1461902  
Test Lab: INNOVATION CENTER(G3)  
Issue Date: 6/11/2026  
Manufacturer: COOPER LIGHTING SOLUTIONS  
Product Line: STREETWORKS  
Catalog Number: USSL-70-722-U-T2RE-HSS  
Description: USSL DISCRETE LED 1 SQUARE 70W 70CRI 2200K FIXTURE w/ TYPE II ROADWAY  
ILLUMINANCE DISTRIBUTION OPTIC AND HOUSE SIDE SHIELD  
Light Source: (40) 2200K CCT, 70 CRI LEDS  
Ballast/Driver: ELECTRONIC DRIVER

**Summary**

Lumens per Lamp: N/A  
Luminaire Lumens: 6987.6 lumens  
Efficiency: N/A  
Efficacy: 95.7 lumens/watt  
Luminous Opening: Rectangular (W 0.67' x L: 0.67' x H: 0')  
IES Classification: Type II - Short  
BUG Rating: B1 - U0 - G2

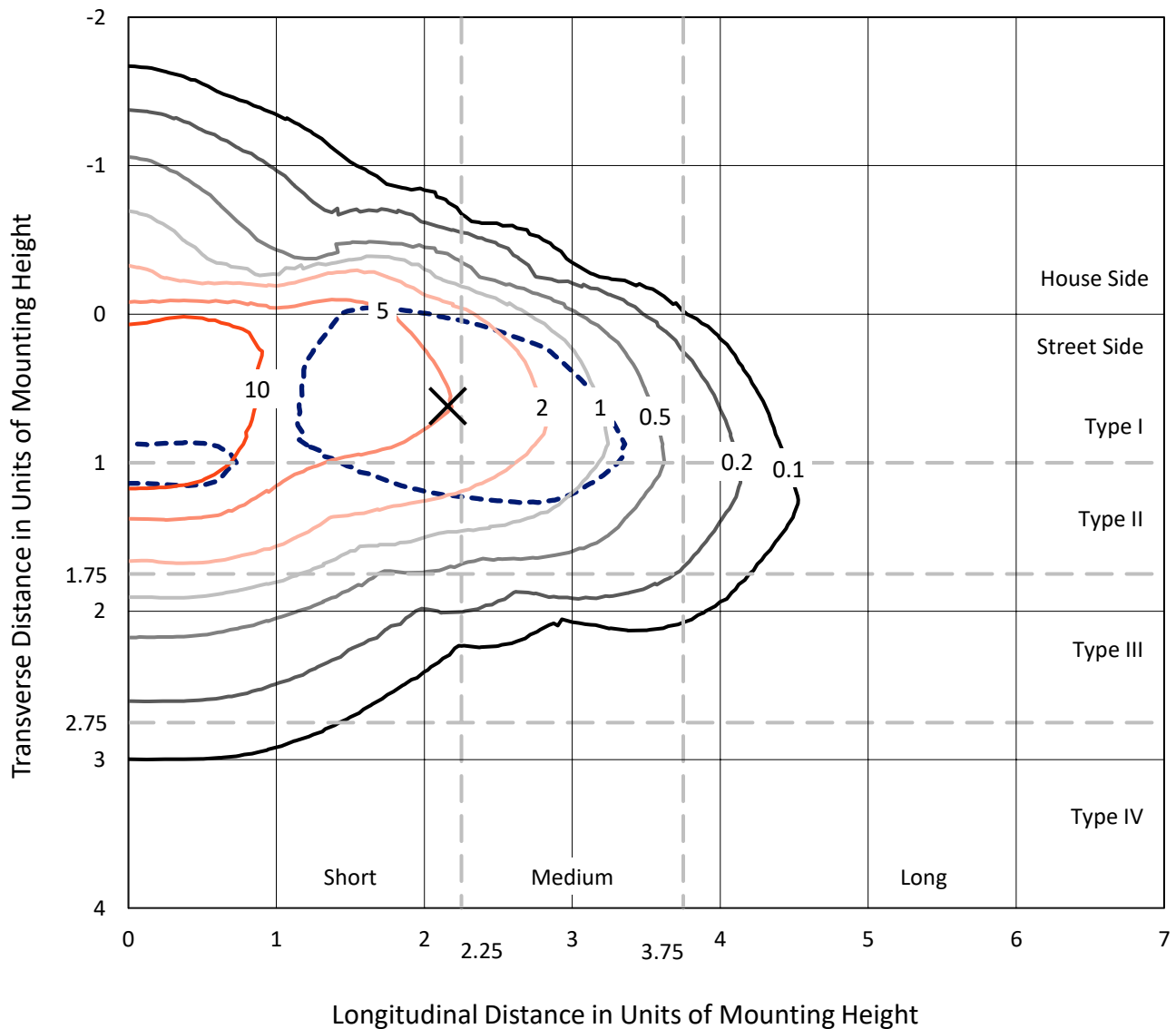
Input Watts (W): 73  
Input Voltage (V): 120  
Input Current (Ain): NR  
Voltage Rise (V): NR  
Power Factor: 0.98  
Total Harmonic Distortion (THDi): 2.73%  
Frequency (hertz): 60  
Stabilization Time: NR  
Operation Time: NR  
Ambient Temperature (°C): NR  
Test Distance: 28.75 FT

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## Iso-Footcandle Lines of Horizontal Illumination

× Max cd  
 - - - 1/2 Max cd

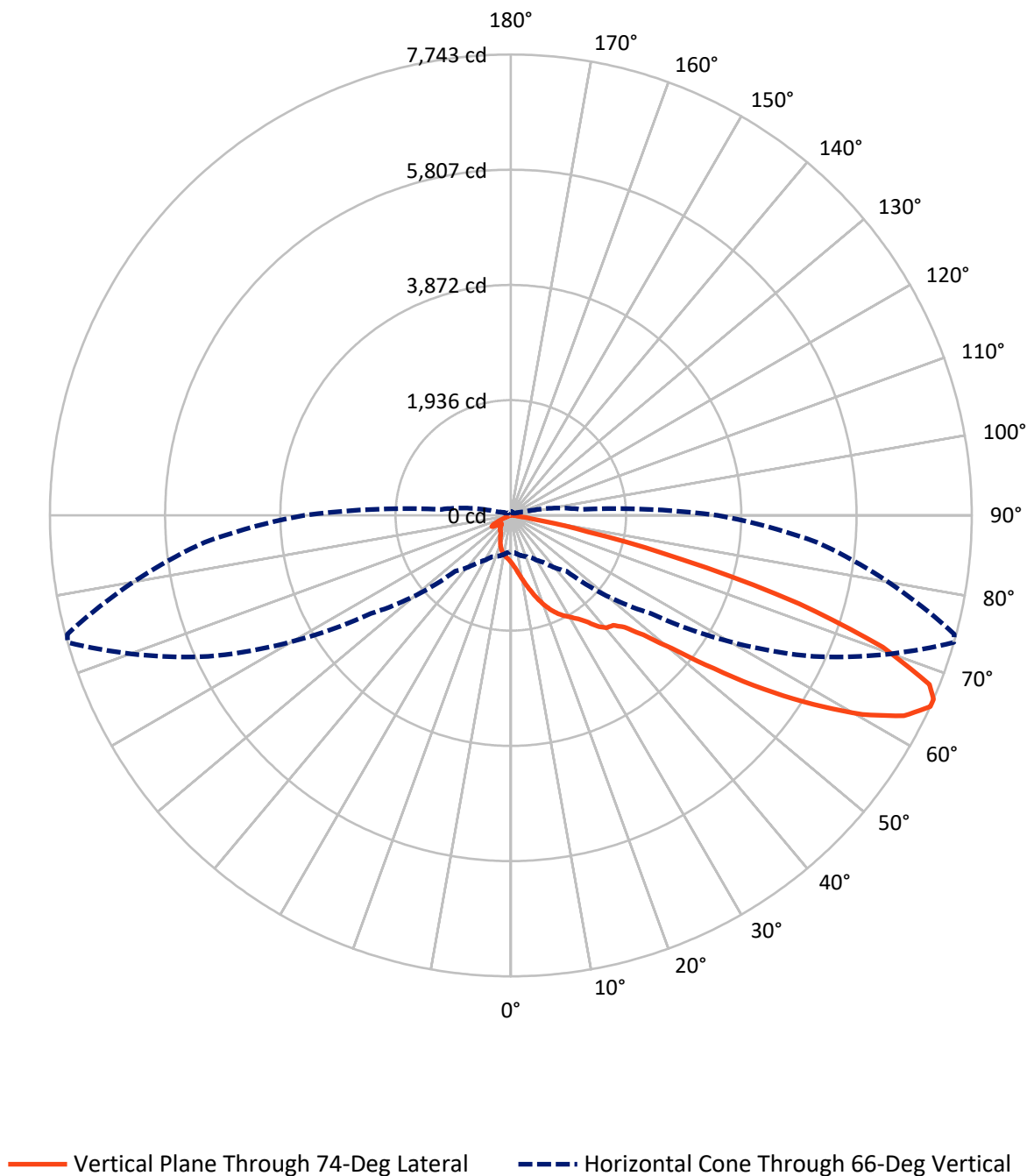


Based on 10 foot mounting height. Maximum calculated value = 16.4 fc  
 Type II - Short - N/A

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## Luminous Intensity Polar Plot



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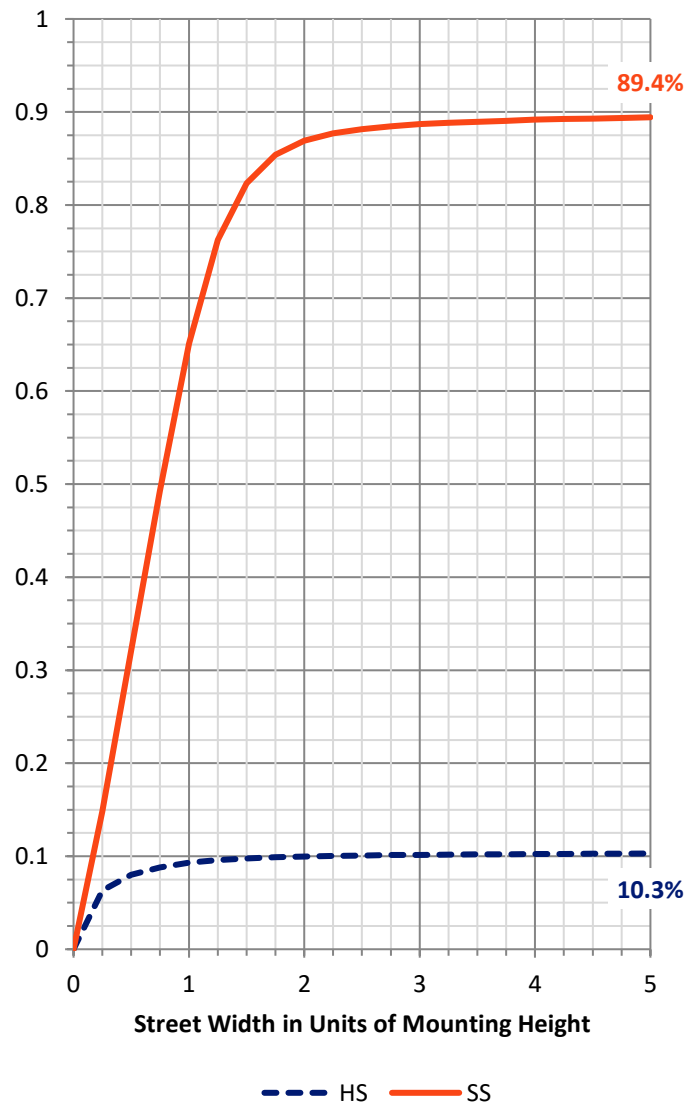
**FLUX DISTRIBUTION:**

|                    |           | Downward | Upward | Total  |
|--------------------|-----------|----------|--------|--------|
| <b>House Side</b>  | Lumens    | 725.6    | 0.0    | 725.6  |
|                    | % Fixture | 10.4     | 0.0    | 10.4   |
| <b>Street Side</b> | Lumens    | 6262.0   | 0.0    | 6262.0 |
|                    | % Fixture | 89.6     | 0.0    | 89.6   |
| <b>Total</b>       | Lumens    | 6987.6   | 0.0    | 6987.6 |
|                    | % Fixture | 100.0    | 0.0    | 100.0  |

**ZONAL LUMENS:**

| Zone      | Lumens | % Fixture |
|-----------|--------|-----------|
| 0°-10°    | 77.6   | 1.1       |
| 10°-20°   | 252.5  | 3.6       |
| 20°-30°   | 481.2  | 6.9       |
| 30°-40°   | 846.1  | 12.1      |
| 40°-50°   | 1375.4 | 19.7      |
| 50°-60°   | 1775.5 | 25.4      |
| 60°-70°   | 1577.8 | 22.6      |
| 70°-80°   | 555.1  | 7.9       |
| 80°-90°   | 46.5   | 0.7       |
| 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°    | 6987.6 | 100.0     |
| 0°-180°   | 6987.6 | 100.0     |

**Coefficient of Utilization**



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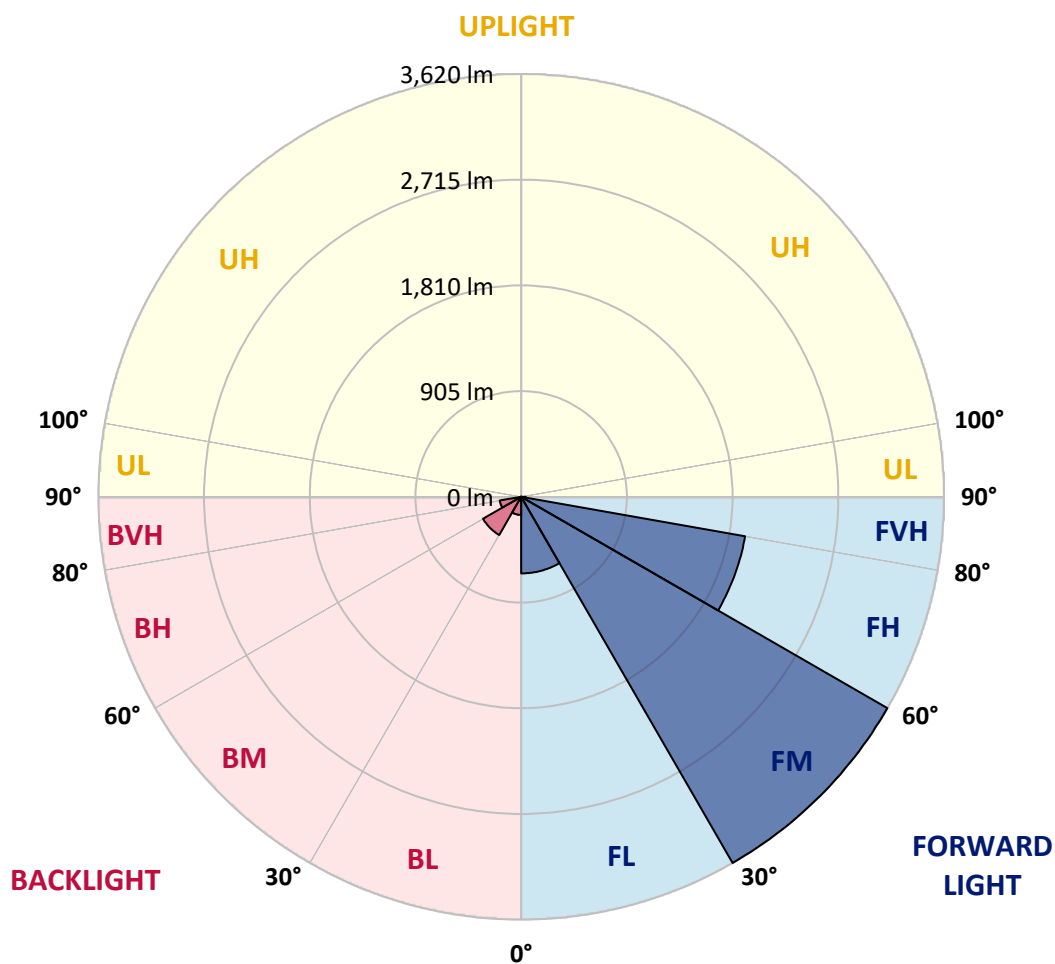
CATALOG NUMBER: USSL-70-722-U-T2RE-HSS

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

| Zone |             | Lumens | % Fixture | Zone Rating/Lumen Limit |      |         |
|------|-------------|--------|-----------|-------------------------|------|---------|
|      |             |        |           | B                       | U    | G       |
| FL   | (0°-30°)    | 655.9  | 9.4       |                         |      |         |
| FM   | (30°-60°)   | 3620.4 | 51.8      |                         |      |         |
| FH   | (60°-80°)   | 1946.8 | 27.9      |                         |      | G2/5000 |
| FVH  | (80°-90°)   | 38.9   | 0.6       |                         |      | G1/100  |
| BL   | (0°-30°)    | 155.3  | 2.2       | B1/500                  |      |         |
| BM   | (30°-60°)   | 376.6  | 5.4       | B1/1000                 |      |         |
| BH   | (60°-80°)   | 186.1  | 2.7       | B1/500                  |      | G1/500  |
| BVH  | (80°-90°)   | 7.6    | 0.1       |                         |      | G0/10   |
| UL   | (90°-100°)  | 0.0    | 0.0       |                         | U0/0 |         |
| UH   | (100°-180°) | 0.0    | 0.0       |                         | U0/0 |         |

**BUG Rating: B1-U0-G2**

Type II Short



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**CANDELA DISTRIBUTION (FULL):**

|       | 0°     | 5°     | 15°    | 25°    | 35°    | 45°    | 55°    | 65°    | 74°    | 75°    | 85°    |
|-------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|
| 0°    | 788.6  | 788.6  | 788.6  | 788.6  | 788.6  | 788.6  | 788.6  | 788.6  | 788.6  | 788.6  | 788.6  |
| 2.5°  | 971.1  | 972.9  | 961.0  | 951.8  | 935.8  | 917.9  | 895.9  | 867.0  | 837.7  | 838.1  | 810.2  |
| 5°    | 1153.1 | 1154.5 | 1145.8 | 1127.9 | 1107.7 | 1071.5 | 1024.7 | 967.9  | 908.3  | 907.4  | 844.6  |
| 7.5°  | 1204.9 | 1198.5 | 1202.6 | 1208.6 | 1209.5 | 1197.1 | 1161.8 | 1079.3 | 995.9  | 984.9  | 897.3  |
| 10°   | 1228.3 | 1220.5 | 1219.6 | 1224.2 | 1240.2 | 1262.7 | 1261.8 | 1203.1 | 1102.2 | 1093.1 | 959.6  |
| 12.5° | 1319.6 | 1317.7 | 1315.0 | 1304.9 | 1298.9 | 1305.3 | 1339.7 | 1321.4 | 1218.7 | 1210.0 | 1040.8 |
| 15°   | 1432.4 | 1422.7 | 1422.3 | 1416.8 | 1403.5 | 1382.4 | 1399.8 | 1434.2 | 1345.7 | 1333.8 | 1123.8 |
| 17.5° | 1527.3 | 1514.0 | 1517.6 | 1524.5 | 1513.0 | 1493.3 | 1481.0 | 1524.5 | 1477.7 | 1466.3 | 1215.9 |
| 20°   | 1599.2 | 1591.9 | 1606.1 | 1624.0 | 1625.4 | 1608.0 | 1584.6 | 1609.3 | 1607.0 | 1593.7 | 1318.2 |
| 22.5° | 1654.3 | 1645.1 | 1666.2 | 1702.9 | 1733.1 | 1726.7 | 1695.1 | 1685.0 | 1723.5 | 1719.4 | 1415.8 |
| 25°   | 1687.3 | 1678.1 | 1710.2 | 1767.1 | 1831.2 | 1851.0 | 1817.5 | 1776.2 | 1824.4 | 1828.5 | 1504.8 |
| 27.5° | 1757.4 | 1751.0 | 1777.6 | 1834.0 | 1908.7 | 1965.6 | 1942.2 | 1867.5 | 1911.0 | 1917.4 | 1591.4 |
| 30°   | 1963.8 | 1932.6 | 1952.7 | 1970.6 | 2010.1 | 2073.8 | 2063.7 | 1957.8 | 1982.5 | 1999.5 | 1675.8 |
| 32.5° | 2302.1 | 2265.4 | 2242.1 | 2213.6 | 2184.7 | 2204.0 | 2202.2 | 2067.8 | 2071.5 | 2087.1 | 1764.8 |
| 35°   | 2752.8 | 2732.2 | 2638.2 | 2523.6 | 2432.3 | 2383.3 | 2375.9 | 2222.8 | 2190.7 | 2211.3 | 1863.3 |
| 37.5° | 3228.7 | 3206.3 | 3095.8 | 2906.0 | 2731.3 | 2586.4 | 2563.0 | 2438.8 | 2362.2 | 2377.3 | 1966.0 |
| 40°   | 3686.8 | 3628.6 | 3532.7 | 3320.0 | 3032.5 | 2775.3 | 2671.2 | 2523.1 | 2480.5 | 2498.8 | 2040.8 |
| 42.5° | 4030.2 | 3998.6 | 3902.7 | 3699.2 | 3352.5 | 2961.0 | 2779.4 | 2565.8 | 2522.2 | 2557.5 | 2075.6 |
| 45°   | 4211.8 | 4177.4 | 4138.4 | 4026.5 | 3619.8 | 3172.4 | 2945.4 | 2726.2 | 2677.2 | 2712.9 | 2181.5 |
| 47.5° | 4077.9 | 4068.7 | 4190.7 | 4220.9 | 3842.7 | 3355.3 | 3136.1 | 2982.5 | 2998.1 | 3011.4 | 2423.6 |
| 50°   | 3571.2 | 3620.3 | 3879.4 | 4120.1 | 3947.2 | 3535.5 | 3373.2 | 3358.5 | 3505.2 | 3545.1 | 2927.1 |
| 52.5° | 2912.4 | 2917.4 | 3262.2 | 3734.9 | 3761.1 | 3597.8 | 3614.8 | 3848.2 | 4275.0 | 4273.7 | 3569.4 |
| 55°   | 2182.5 | 2259.5 | 2633.6 | 3111.4 | 3255.8 | 3438.3 | 3847.3 | 4479.1 | 5146.7 | 5137.0 | 4216.4 |
| 57.5° | 1670.8 | 1679.5 | 2070.1 | 2526.8 | 2695.5 | 3054.1 | 3920.2 | 5170.0 | 5990.7 | 5974.2 | 4841.3 |
| 60°   | 1285.2 | 1289.3 | 1573.6 | 1948.2 | 2276.4 | 2530.0 | 3803.7 | 5745.5 | 6786.2 | 6774.3 | 5226.4 |
| 62.5° | 959.2  | 972.9  | 1138.9 | 1337.0 | 1785.4 | 2094.4 | 3505.7 | 5999.5 | 7413.0 | 7384.1 | 5355.3 |
| 65°   | 710.7  | 711.6  | 798.7  | 904.2  | 1184.3 | 1553.4 | 3075.2 | 5846.8 | 7742.7 | 7708.3 | 5256.2 |
| 66°   | 614.8  | 626.3  | 701.5  | 769.8  | 963.3  | 1323.2 | 2873.0 | 5609.3 | 7743.1 | 7712.0 | 5158.1 |
| 67.5° | 517.2  | 521.8  | 577.7  | 625.9  | 720.8  | 938.1  | 2473.1 | 5234.2 | 7582.7 | 7512.0 | 4913.7 |
| 70°   | 378.3  | 388.8  | 425.0  | 443.8  | 456.2  | 543.8  | 1615.8 | 4418.6 | 6631.3 | 6586.8 | 4203.1 |
| 72.5° | 275.6  | 279.2  | 312.7  | 325.1  | 327.4  | 353.5  | 821.2  | 3504.3 | 5065.0 | 5043.9 | 2889.0 |
| 75°   | 212.7  | 216.4  | 231.5  | 231.1  | 234.3  | 245.8  | 376.9  | 2149.4 | 2993.5 | 3010.5 | 1387.0 |
| 77.5° | 171.5  | 177.0  | 181.6  | 168.7  | 169.6  | 172.4  | 224.7  | 918.4  | 1322.3 | 1251.2 | 376.9  |
| 80°   | 128.4  | 129.3  | 137.1  | 124.7  | 118.8  | 116.5  | 142.1  | 317.7  | 373.2  | 354.4  | 137.5  |
| 82.5° | 100.0  | 95.8   | 98.1   | 90.8   | 82.5   | 78.9   | 95.8   | 133.9  | 148.6  | 147.2  | 95.4   |
| 85°   | 66.9   | 65.6   | 60.5   | 57.3   | 51.4   | 47.7   | 62.8   | 75.7   | 91.7   | 94.9   | 71.1   |
| 87.5° | 30.3   | 30.3   | 31.2   | 28.4   | 26.1   | 23.8   | 31.2   | 40.8   | 47.2   | 47.2   | 27.1   |
| 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: USSL-70-722-U-T2RE-HSS

**CANDELA DISTRIBUTION (continued):**

|       | 90°    | 95°    | 105°  | 115°  | 125°  | 135°  | 145°  | 155°  | 165°  | 175°  | 180°  |
|-------|--------|--------|-------|-------|-------|-------|-------|-------|-------|-------|-------|
| 0°    | 788.6  | 788.6  | 788.6 | 788.6 | 788.6 | 788.6 | 788.6 | 788.6 | 788.6 | 788.6 | 788.6 |
| 2.5°  | 796.9  | 781.3  | 754.2 | 727.2 | 703.3 | 680.0 | 654.3 | 641.0 | 630.0 | 627.2 | 620.3 |
| 5°    | 817.5  | 787.7  | 728.1 | 668.5 | 609.8 | 566.7 | 523.1 | 490.6 | 467.2 | 460.3 | 455.3 |
| 7.5°  | 850.1  | 804.2  | 707.5 | 607.1 | 523.6 | 453.5 | 398.0 | 365.9 | 348.5 | 337.9 | 335.2 |
| 10°   | 895.9  | 828.0  | 683.6 | 544.7 | 432.4 | 354.9 | 315.9 | 297.6 | 285.6 | 282.9 | 283.4 |
| 12.5° | 951.8  | 858.8  | 660.2 | 475.5 | 355.8 | 297.1 | 274.6 | 267.3 | 265.9 | 264.6 | 264.6 |
| 15°   | 1014.2 | 887.2  | 628.6 | 411.3 | 296.2 | 260.4 | 254.0 | 252.2 | 250.8 | 250.8 | 251.3 |
| 17.5° | 1074.3 | 911.5  | 590.5 | 352.1 | 258.1 | 243.0 | 238.0 | 236.6 | 237.0 | 236.6 | 236.1 |
| 20°   | 1138.0 | 930.8  | 542.9 | 300.3 | 238.4 | 227.0 | 221.0 | 220.5 | 221.0 | 221.5 | 221.0 |
| 22.5° | 1193.5 | 940.4  | 493.8 | 260.9 | 222.8 | 211.4 | 205.9 | 205.4 | 204.9 | 205.4 | 205.4 |
| 25°   | 1245.3 | 942.2  | 444.3 | 236.6 | 207.7 | 197.2 | 191.7 | 191.2 | 191.7 | 193.0 | 193.0 |
| 27.5° | 1293.0 | 943.6  | 398.4 | 220.5 | 194.4 | 183.4 | 179.3 | 179.7 | 182.5 | 184.3 | 184.3 |
| 30°   | 1340.7 | 950.9  | 362.2 | 205.4 | 181.6 | 171.9 | 168.3 | 171.0 | 175.6 | 179.7 | 180.2 |
| 32.5° | 1393.8 | 964.7  | 336.5 | 193.9 | 170.1 | 162.8 | 160.9 | 166.0 | 173.8 | 179.7 | 180.6 |
| 35°   | 1456.7 | 981.2  | 323.2 | 184.8 | 161.9 | 154.5 | 156.3 | 164.1 | 173.8 | 179.7 | 181.1 |
| 37.5° | 1515.3 | 1000.0 | 315.0 | 177.0 | 154.1 | 147.6 | 151.8 | 162.3 | 172.4 | 178.8 | 179.7 |
| 40°   | 1554.3 | 1000.9 | 296.6 | 167.8 | 146.7 | 140.8 | 147.2 | 157.7 | 167.8 | 176.5 | 177.4 |
| 42.5° | 1575.4 | 991.3  | 265.5 | 159.1 | 140.3 | 134.3 | 140.8 | 147.6 | 159.1 | 171.5 | 173.8 |
| 45°   | 1684.1 | 1030.2 | 241.6 | 149.9 | 135.3 | 128.8 | 130.7 | 134.3 | 147.2 | 160.9 | 163.2 |
| 47.5° | 1956.0 | 1174.7 | 224.7 | 141.7 | 128.4 | 122.4 | 118.8 | 122.0 | 133.0 | 145.8 | 147.2 |
| 50°   | 2447.9 | 1470.9 | 218.2 | 134.8 | 122.0 | 113.2 | 107.7 | 110.0 | 116.0 | 125.6 | 128.4 |
| 52.5° | 3158.6 | 1956.0 | 237.0 | 128.4 | 114.6 | 105.0 | 97.2  | 94.5  | 100.4 | 107.7 | 108.2 |
| 55°   | 3846.8 | 2372.3 | 288.9 | 122.4 | 105.9 | 97.2  | 88.0  | 81.6  | 85.3  | 89.4  | 91.2  |
| 57.5° | 4402.5 | 2565.8 | 357.2 | 121.0 | 95.8  | 89.4  | 77.9  | 69.7  | 72.9  | 76.6  | 77.5  |
| 60°   | 4419.5 | 2352.6 | 398.0 | 121.0 | 90.8  | 81.2  | 68.8  | 61.9  | 66.5  | 70.2  | 70.6  |
| 62.5° | 4075.1 | 1851.9 | 360.4 | 112.8 | 81.2  | 70.2  | 63.3  | 57.3  | 63.3  | 68.3  | 69.2  |
| 65°   | 3624.4 | 1339.3 | 261.8 | 100.0 | 70.6  | 59.6  | 58.2  | 55.0  | 62.4  | 68.3  | 69.7  |
| 66°   | 3469.9 | 1167.8 | 216.9 | 94.0  | 66.5  | 56.4  | 55.9  | 55.0  | 61.9  | 67.9  | 69.2  |
| 67.5° | 3113.2 | 898.7  | 160.5 | 83.4  | 60.5  | 52.3  | 52.7  | 53.6  | 60.1  | 65.1  | 66.9  |
| 70°   | 2255.4 | 530.5  | 103.2 | 64.2  | 53.6  | 47.7  | 47.2  | 49.5  | 54.1  | 57.3  | 57.8  |
| 72.5° | 1386.5 | 264.6  | 75.7  | 47.7  | 47.7  | 45.8  | 41.7  | 43.6  | 47.2  | 49.1  | 49.1  |
| 75°   | 621.7  | 133.0  | 55.5  | 37.1  | 41.3  | 42.6  | 35.8  | 38.1  | 39.9  | 41.7  | 41.7  |
| 77.5° | 168.3  | 81.2   | 43.1  | 30.7  | 36.7  | 37.6  | 30.3  | 32.6  | 33.9  | 36.7  | 36.2  |
| 80°   | 93.1   | 63.7   | 31.2  | 25.2  | 28.4  | 32.6  | 26.1  | 28.4  | 26.6  | 24.8  | 28.9  |
| 82.5° | 77.0   | 43.6   | 21.1  | 19.7  | 21.1  | 26.1  | 21.1  | 19.7  | 16.5  | 9.6   | 11.0  |
| 85°   | 53.2   | 23.8   | 11.0  | 10.5  | 11.5  | 15.6  | 13.3  | 10.1  | 6.9   | 1.8   | 3.2   |
| 87.5° | 15.6   | 6.4    | 4.6   | 4.1   | 4.6   | 5.5   | 4.1   | 4.1   | 2.3   | 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-79-2019: Approved Method: Electrical and Photometric Measurements of Solid-State Lighting Products

Report Prepared for

Cooper Lighting Solutions

McGraw-Edison

Report Number: SP2-2501-321-2

Test Date: 04/09/2025

Luminaire Tested: GKO-PB1E-722-U-T4W

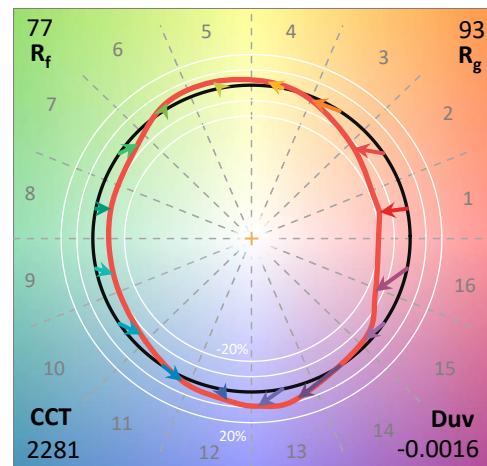
Data in this report applies to families of products including GKO-PB1E-722-U-T4W

### Test Information

Test Method: LM-79-2019  
 Report Number: SP2-2501-321-2  
 Test Lab: COOPER LIGHTING SOLUTIONS  
 Photometer: SP2 - 165CM SPHERE  
 Measurement Geometry:  $4\pi$   
 Issue Date: 04/10/2025  
 Manufacturer: COOPER LIGHTING SOLUTIONS  
 Product Line: McGraw-Edison  
 Catalog Number: **GKO-PB1E-722-U-T4W**  
 Description: Gekko Wedge Wall Pack Fixture 1 SQ w/ T4W distribution

### Spectral Parameters

|                           |          |           |      |      |       |
|---------------------------|----------|-----------|------|------|-------|
| CCT (K):                  | 2281     | CRI (Ra): | 70.6 |      |       |
| CIE u':                   | 0.2851   | R1:       | 68.4 | R9:  | -35.1 |
| CIE v':                   | 0.5324   | R2:       | 88.7 | R10: | 78.0  |
| Duv:                      | -0.0016  | R3:       | 85.7 | R11: | 60.2  |
| CIE x:                    | 0.4942   | R4:       | 63.2 | R12: | 73.8  |
| CIE y:                    | 0.4102   | R5:       | 69.0 | R13: | 72.8  |
| CIE z:                    | 0.0956   | R6:       | 88.6 | R14: | 92.4  |
| Peak Wavelength (nm):     | 602      | R7:       | 68.8 | R15: | 58.4  |
| Dominant Wavelength (nm): | 587      | R8:       | 32.6 |      |       |
| Purity:                   | 71.48321 |           |      |      |       |
| Rf:                       | 76.9     |           |      |      |       |
| Rg:                       | 92.6     |           |      |      |       |



### Test Conditions

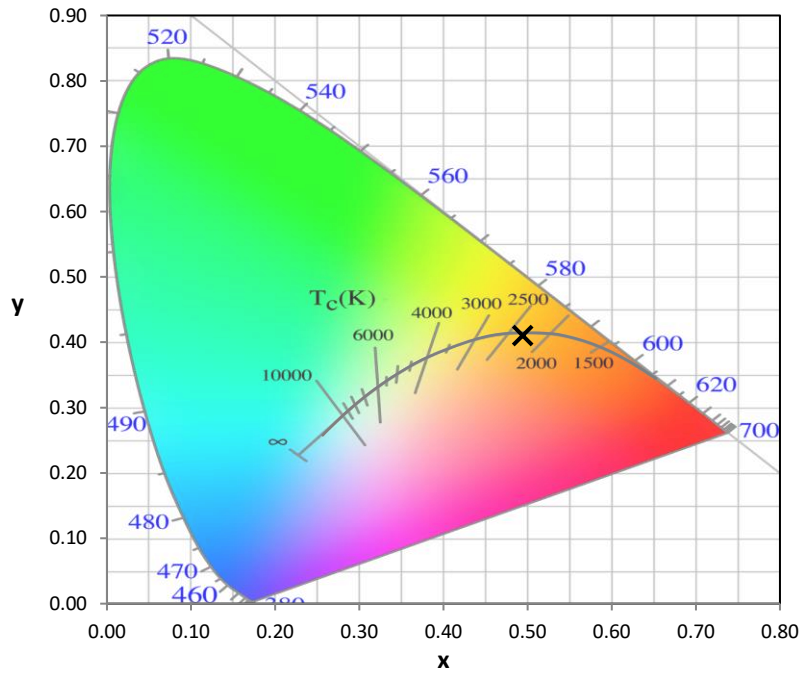
Stabilization Time: 40M  
 Operation Time: 1H 40M  
 Sphere Temperature (°C): 25.0

REPORT NUMBER: SP2-2501-321-2

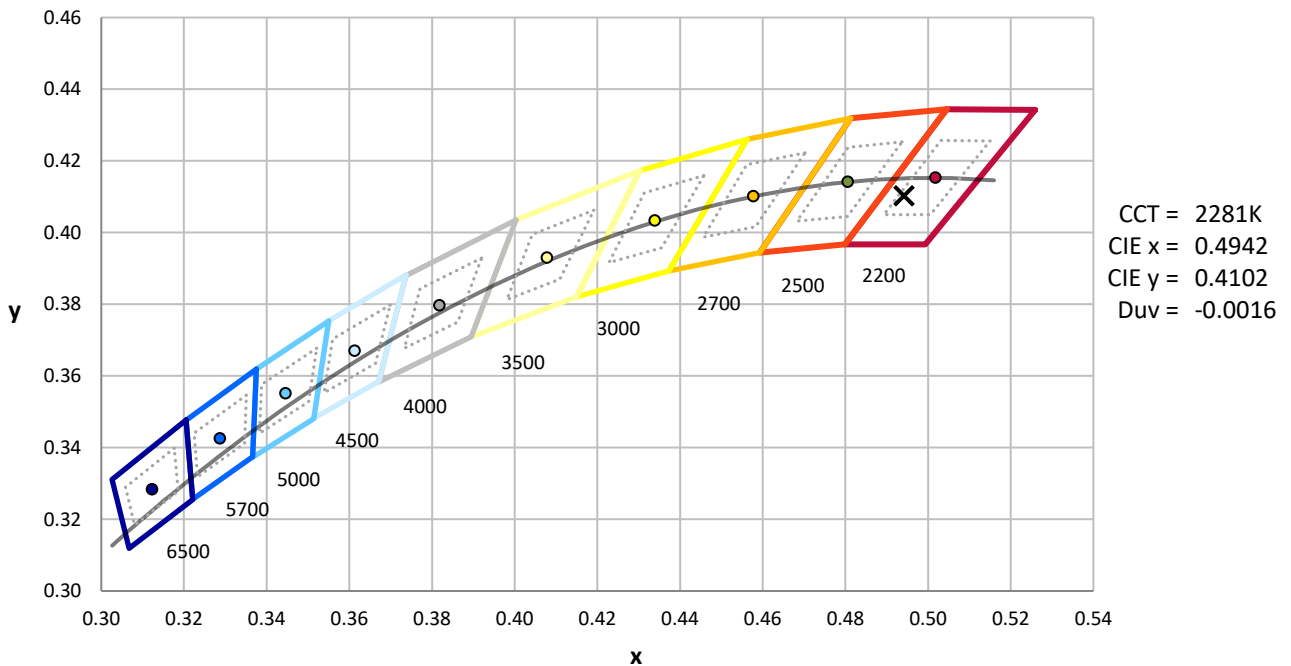
| Measurement and Test Equipment |                       |                  |                      |
|--------------------------------|-----------------------|------------------|----------------------|
| Instrument                     | Identification Number | Calibration Date | Calibration Due Date |
| Photometer                     | IN2187                | 1/6/2025         | 7/6/2025             |
| Power Meter                    | INXT2011002           | 1/21/2025        | 1/21/2026            |
| AC Power Source                | IN0458                | 10/22/2024       | 10/22/2025           |
| DC Power Source                | IN0212                | 10/22/2024       | 10/22/2025           |
| Sphere Thermometer             | IN4036B               | 10/22/2024       | 10/22/2025           |
| Room Thermometer               | IN0046                | 10/22/2024       | 10/22/2025           |

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**CIE 1931 Chromaticity Diagram**



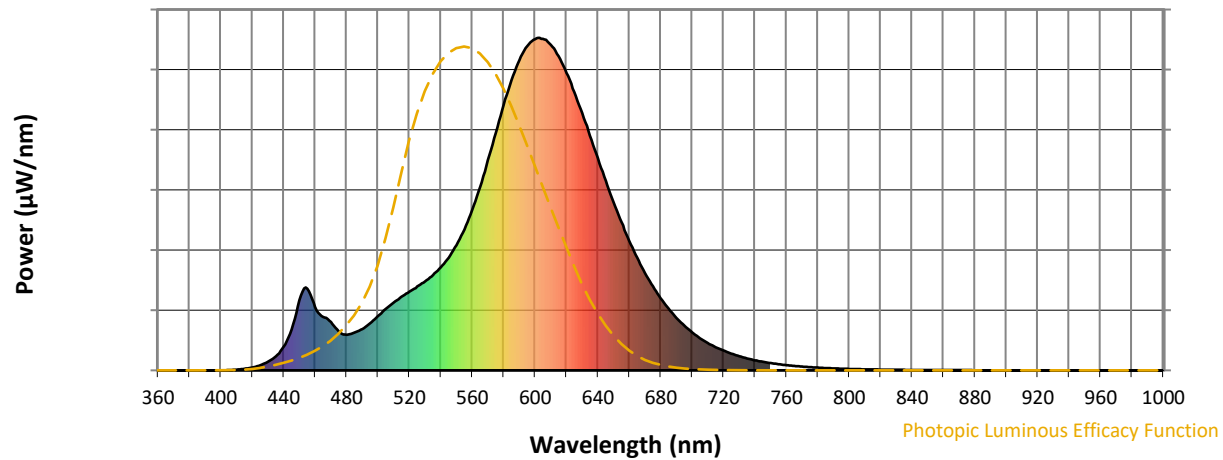
**CIE 1931 Chromaticity Diagram with 2017 ANSI 7-Step and 4-Step Quadrangles**



Point lies inside the ANSI 2200K 4-step quadrangle

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### Photopic Flux vs. Wavelength

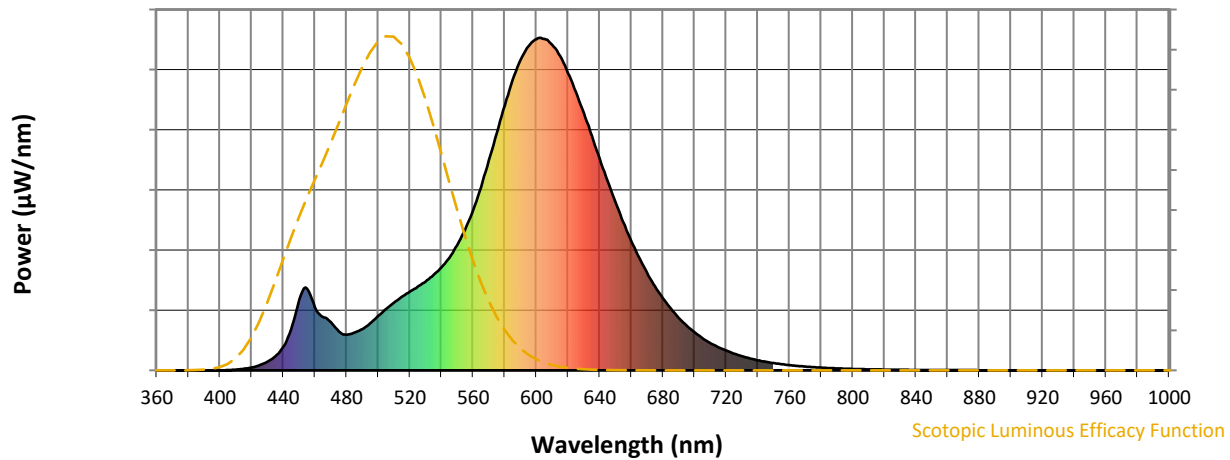


### Photopic Lumens: NR

| λ<br>(nm) | Power<br>W <sup>λ</sup> /nm | Lumens<br>(φ/nm) | λ<br>(nm) | Power<br>W <sup>λ</sup> /nm | Lumens<br>(φ/nm) | λ<br>(nm) | Power<br>W <sup>λ</sup> /nm | Lumens<br>(φ/nm) | λ<br>(nm) | Power<br>W <sup>λ</sup> /nm | Lumens<br>(φ/nm) | λ<br>(nm) | Power<br>W <sup>λ</sup> /nm | Lumens<br>(φ/nm) |
|-----------|-----------------------------|------------------|-----------|-----------------------------|------------------|-----------|-----------------------------|------------------|-----------|-----------------------------|------------------|-----------|-----------------------------|------------------|
| 360       | 0                           | NR               | 490       | 124                         | NR               | 620       | 894                         | NR               | 750       | 22                          | NR               | 880       | 0                           | NR               |
| 365       | 0                           | NR               | 495       | 141                         | NR               | 625       | 837                         | NR               | 755       | 19                          | NR               | 885       | 0                           | NR               |
| 370       | 0                           | NR               | 500       | 163                         | NR               | 630       | 774                         | NR               | 760       | 16                          | NR               | 890       | 0                           | NR               |
| 375       | 0                           | NR               | 505       | 184                         | NR               | 635       | 706                         | NR               | 765       | 13                          | NR               | 895       | 0                           | NR               |
| 380       | 0                           | NR               | 510       | 204                         | NR               | 640       | 638                         | NR               | 770       | 11                          | NR               | 900       | 0                           | NR               |
| 385       | 0                           | NR               | 515       | 221                         | NR               | 645       | 570                         | NR               | 775       | 10                          | NR               | 905       | 0                           | NR               |
| 390       | 0                           | NR               | 520       | 237                         | NR               | 650       | 505                         | NR               | 780       | 8                           | NR               | 910       | 0                           | NR               |
| 395       | 0                           | NR               | 525       | 252                         | NR               | 655       | 446                         | NR               | 785       | 7                           | NR               | 915       | 0                           | NR               |
| 400       | 0                           | NR               | 530       | 268                         | NR               | 660       | 389                         | NR               | 790       | 6                           | NR               | 920       | 0                           | NR               |
| 405       | 1                           | NR               | 535       | 287                         | NR               | 665       | 339                         | NR               | 795       | 5                           | NR               | 925       | 0                           | NR               |
| 410       | 2                           | NR               | 540       | 310                         | NR               | 670       | 292                         | NR               | 800       | 4                           | NR               | 930       | 0                           | NR               |
| 415       | 5                           | NR               | 545       | 339                         | NR               | 675       | 253                         | NR               | 805       | 4                           | NR               | 935       | 0                           | NR               |
| 420       | 9                           | NR               | 550       | 377                         | NR               | 680       | 217                         | NR               | 810       | 3                           | NR               | 940       | 0                           | NR               |
| 425       | 15                          | NR               | 555       | 424                         | NR               | 685       | 186                         | NR               | 815       | 3                           | NR               | 945       | 0                           | NR               |
| 430       | 26                          | NR               | 560       | 482                         | NR               | 690       | 158                         | NR               | 820       | 2                           | NR               | 950       | 0                           | NR               |
| 435       | 43                          | NR               | 565       | 551                         | NR               | 695       | 135                         | NR               | 825       | 2                           | NR               | 955       | 0                           | NR               |
| 440       | 71                          | NR               | 570       | 632                         | NR               | 700       | 114                         | NR               | 830       | 2                           | NR               | 960       | 0                           | NR               |
| 445       | 123                         | NR               | 575       | 714                         | NR               | 705       | 97                          | NR               | 835       | 2                           | NR               | 965       | 0                           | NR               |
| 450       | 210                         | NR               | 580       | 797                         | NR               | 710       | 82                          | NR               | 840       | 1                           | NR               | 970       | 0                           | NR               |
| 455       | 245                         | NR               | 585       | 873                         | NR               | 715       | 70                          | NR               | 845       | 1                           | NR               | 975       | 0                           | NR               |
| 460       | 190                         | NR               | 590       | 934                         | NR               | 720       | 59                          | NR               | 850       | 1                           | NR               | 980       | 0                           | NR               |
| 465       | 161                         | NR               | 595       | 975                         | NR               | 725       | 50                          | NR               | 855       | 1                           | NR               | 985       | 0                           | NR               |
| 470       | 145                         | NR               | 600       | 996                         | NR               | 730       | 43                          | NR               | 860       | 1                           | NR               | 990       | 0                           | NR               |
| 475       | 117                         | NR               | 605       | 997                         | NR               | 735       | 36                          | NR               | 865       | 1                           | NR               | 995       | 0                           | NR               |
| 480       | 107                         | NR               | 610       | 978                         | NR               | 740       | 30                          | NR               | 870       | 1                           | NR               | 1000      | 0                           | NR               |
| 485       | 113                         | NR               | 615       | 945                         | NR               | 745       | 26                          | NR               | 875       | 1                           | NR               |           |                             |                  |

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### Scotopic Flux vs. Wavelength



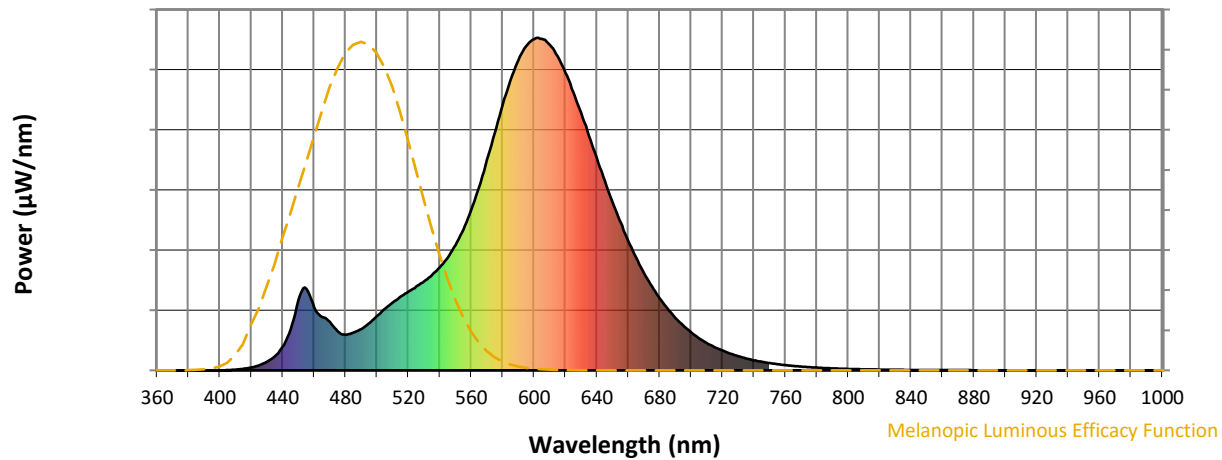
Scotopic Lumens: NR

S/P: 0.98

| λ<br>(nm) | Power<br>W <sup>λ</sup> /nm | Lumens<br>(Φ/nm) | λ<br>(nm) | Power<br>W <sup>λ</sup> /nm | Lumens<br>(Φ/nm) | λ<br>(nm) | Power<br>W <sup>λ</sup> /nm | Lumens<br>(Φ/nm) | λ<br>(nm) | Power<br>W <sup>λ</sup> /nm | Lumens<br>(Φ/nm) | λ<br>(nm) | Power<br>W <sup>λ</sup> /nm | Lumens<br>(Φ/nm) |
|-----------|-----------------------------|------------------|-----------|-----------------------------|------------------|-----------|-----------------------------|------------------|-----------|-----------------------------|------------------|-----------|-----------------------------|------------------|
| 360       | 0                           | NR               | 490       | 124                         | NR               | 620       | 894                         | NR               | 750       | 22                          | NR               | 880       | 0                           | NR               |
| 365       | 0                           | NR               | 495       | 141                         | NR               | 625       | 837                         | NR               | 755       | 19                          | NR               | 885       | 0                           | NR               |
| 370       | 0                           | NR               | 500       | 163                         | NR               | 630       | 774                         | NR               | 760       | 16                          | NR               | 890       | 0                           | NR               |
| 375       | 0                           | NR               | 505       | 184                         | NR               | 635       | 706                         | NR               | 765       | 13                          | NR               | 895       | 0                           | NR               |
| 380       | 0                           | NR               | 510       | 204                         | NR               | 640       | 638                         | NR               | 770       | 11                          | NR               | 900       | 0                           | NR               |
| 385       | 0                           | NR               | 515       | 221                         | NR               | 645       | 570                         | NR               | 775       | 10                          | NR               | 905       | 0                           | NR               |
| 390       | 0                           | NR               | 520       | 237                         | NR               | 650       | 505                         | NR               | 780       | 8                           | NR               | 910       | 0                           | NR               |
| 395       | 0                           | NR               | 525       | 252                         | NR               | 655       | 446                         | NR               | 785       | 7                           | NR               | 915       | 0                           | NR               |
| 400       | 0                           | NR               | 530       | 268                         | NR               | 660       | 389                         | NR               | 790       | 6                           | NR               | 920       | 0                           | NR               |
| 405       | 1                           | NR               | 535       | 287                         | NR               | 665       | 339                         | NR               | 795       | 5                           | NR               | 925       | 0                           | NR               |
| 410       | 2                           | NR               | 540       | 310                         | NR               | 670       | 292                         | NR               | 800       | 4                           | NR               | 930       | 0                           | NR               |
| 415       | 5                           | NR               | 545       | 339                         | NR               | 675       | 253                         | NR               | 805       | 4                           | NR               | 935       | 0                           | NR               |
| 420       | 9                           | NR               | 550       | 377                         | NR               | 680       | 217                         | NR               | 810       | 3                           | NR               | 940       | 0                           | NR               |
| 425       | 15                          | NR               | 555       | 424                         | NR               | 685       | 186                         | NR               | 815       | 3                           | NR               | 945       | 0                           | NR               |
| 430       | 26                          | NR               | 560       | 482                         | NR               | 690       | 158                         | NR               | 820       | 2                           | NR               | 950       | 0                           | NR               |
| 435       | 43                          | NR               | 565       | 551                         | NR               | 695       | 135                         | NR               | 825       | 2                           | NR               | 955       | 0                           | NR               |
| 440       | 71                          | NR               | 570       | 632                         | NR               | 700       | 114                         | NR               | 830       | 2                           | NR               | 960       | 0                           | NR               |
| 445       | 123                         | NR               | 575       | 714                         | NR               | 705       | 97                          | NR               | 835       | 2                           | NR               | 965       | 0                           | NR               |
| 450       | 210                         | NR               | 580       | 797                         | NR               | 710       | 82                          | NR               | 840       | 1                           | NR               | 970       | 0                           | NR               |
| 455       | 245                         | NR               | 585       | 873                         | NR               | 715       | 70                          | NR               | 845       | 1                           | NR               | 975       | 0                           | NR               |
| 460       | 190                         | NR               | 590       | 934                         | NR               | 720       | 59                          | NR               | 850       | 1                           | NR               | 980       | 0                           | NR               |
| 465       | 161                         | NR               | 595       | 975                         | NR               | 725       | 50                          | NR               | 855       | 1                           | NR               | 985       | 0                           | NR               |
| 470       | 145                         | NR               | 600       | 996                         | NR               | 730       | 43                          | NR               | 860       | 1                           | NR               | 990       | 0                           | NR               |
| 475       | 117                         | NR               | 605       | 997                         | NR               | 735       | 36                          | NR               | 865       | 1                           | NR               | 995       | 0                           | NR               |
| 480       | 107                         | NR               | 610       | 978                         | NR               | 740       | 30                          | NR               | 870       | 1                           | NR               | 1000      | 0                           | NR               |
| 485       | 113                         | NR               | 615       | 945                         | NR               | 745       | 26                          | NR               | 875       | 1                           | NR               |           |                             |                  |

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### Melanopic Flux vs. Wavelength



Melanopic Lumens: NR

M/P: 1.75

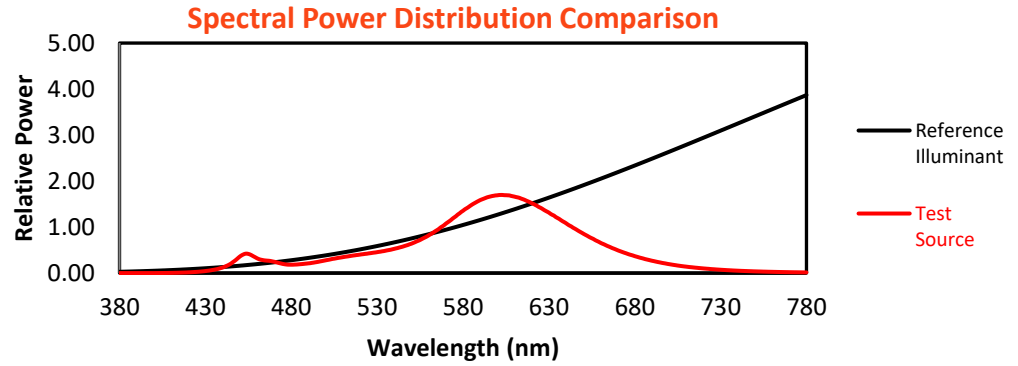
| λ<br>(nm) | Power<br>W <sup>λ</sup> /nm | Lumens<br>(φ/nm) | λ<br>(nm) | Power<br>W <sup>λ</sup> /nm | Lumens<br>(φ/nm) | λ<br>(nm) | Power<br>W <sup>λ</sup> /nm | Lumens<br>(φ/nm) | λ<br>(nm) | Power<br>W <sup>λ</sup> /nm | Lumens<br>(φ/nm) | λ<br>(nm) | Power<br>W <sup>λ</sup> /nm | Lumens<br>(φ/nm) |
|-----------|-----------------------------|------------------|-----------|-----------------------------|------------------|-----------|-----------------------------|------------------|-----------|-----------------------------|------------------|-----------|-----------------------------|------------------|
| 360       | 0                           | NR               | 490       | 124                         | NR               | 620       | 894                         | NR               | 750       | 22                          | NR               | 880       | 0                           | NR               |
| 365       | 0                           | NR               | 495       | 141                         | NR               | 625       | 837                         | NR               | 755       | 19                          | NR               | 885       | 0                           | NR               |
| 370       | 0                           | NR               | 500       | 163                         | NR               | 630       | 774                         | NR               | 760       | 16                          | NR               | 890       | 0                           | NR               |
| 375       | 0                           | NR               | 505       | 184                         | NR               | 635       | 706                         | NR               | 765       | 13                          | NR               | 895       | 0                           | NR               |
| 380       | 0                           | NR               | 510       | 204                         | NR               | 640       | 638                         | NR               | 770       | 11                          | NR               | 900       | 0                           | NR               |
| 385       | 0                           | NR               | 515       | 221                         | NR               | 645       | 570                         | NR               | 775       | 10                          | NR               | 905       | 0                           | NR               |
| 390       | 0                           | NR               | 520       | 237                         | NR               | 650       | 505                         | NR               | 780       | 8                           | NR               | 910       | 0                           | NR               |
| 395       | 0                           | NR               | 525       | 252                         | NR               | 655       | 446                         | NR               | 785       | 7                           | NR               | 915       | 0                           | NR               |
| 400       | 0                           | NR               | 530       | 268                         | NR               | 660       | 389                         | NR               | 790       | 6                           | NR               | 920       | 0                           | NR               |
| 405       | 1                           | NR               | 535       | 287                         | NR               | 665       | 339                         | NR               | 795       | 5                           | NR               | 925       | 0                           | NR               |
| 410       | 2                           | NR               | 540       | 310                         | NR               | 670       | 292                         | NR               | 800       | 4                           | NR               | 930       | 0                           | NR               |
| 415       | 5                           | NR               | 545       | 339                         | NR               | 675       | 253                         | NR               | 805       | 4                           | NR               | 935       | 0                           | NR               |
| 420       | 9                           | NR               | 550       | 377                         | NR               | 680       | 217                         | NR               | 810       | 3                           | NR               | 940       | 0                           | NR               |
| 425       | 15                          | NR               | 555       | 424                         | NR               | 685       | 186                         | NR               | 815       | 3                           | NR               | 945       | 0                           | NR               |
| 430       | 26                          | NR               | 560       | 482                         | NR               | 690       | 158                         | NR               | 820       | 2                           | NR               | 950       | 0                           | NR               |
| 435       | 43                          | NR               | 565       | 551                         | NR               | 695       | 135                         | NR               | 825       | 2                           | NR               | 955       | 0                           | NR               |
| 440       | 71                          | NR               | 570       | 632                         | NR               | 700       | 114                         | NR               | 830       | 2                           | NR               | 960       | 0                           | NR               |
| 445       | 123                         | NR               | 575       | 714                         | NR               | 705       | 97                          | NR               | 835       | 2                           | NR               | 965       | 0                           | NR               |
| 450       | 210                         | NR               | 580       | 797                         | NR               | 710       | 82                          | NR               | 840       | 1                           | NR               | 970       | 0                           | NR               |
| 455       | 245                         | NR               | 585       | 873                         | NR               | 715       | 70                          | NR               | 845       | 1                           | NR               | 975       | 0                           | NR               |
| 460       | 190                         | NR               | 590       | 934                         | NR               | 720       | 59                          | NR               | 850       | 1                           | NR               | 980       | 0                           | NR               |
| 465       | 161                         | NR               | 595       | 975                         | NR               | 725       | 50                          | NR               | 855       | 1                           | NR               | 985       | 0                           | NR               |
| 470       | 145                         | NR               | 600       | 996                         | NR               | 730       | 43                          | NR               | 860       | 1                           | NR               | 990       | 0                           | NR               |
| 475       | 117                         | NR               | 605       | 997                         | NR               | 735       | 36                          | NR               | 865       | 1                           | NR               | 995       | 0                           | NR               |
| 480       | 107                         | NR               | 610       | 978                         | NR               | 740       | 30                          | NR               | 870       | 1                           | NR               | 1000      | 0                           | NR               |
| 485       | 113                         | NR               | 615       | 945                         | NR               | 745       | 26                          | NR               | 875       | 1                           | NR               |           |                             |                  |

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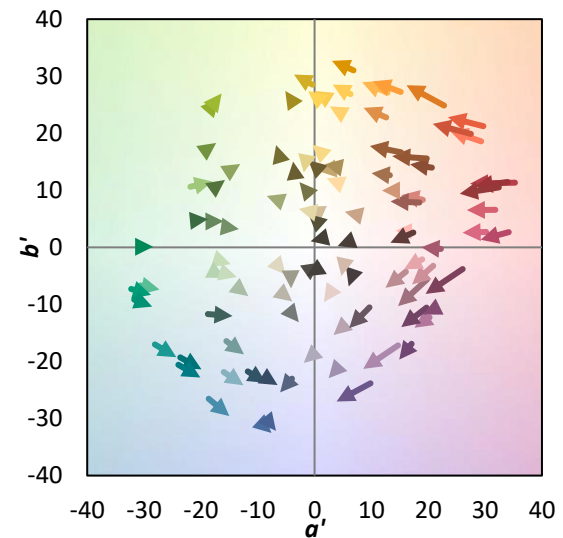
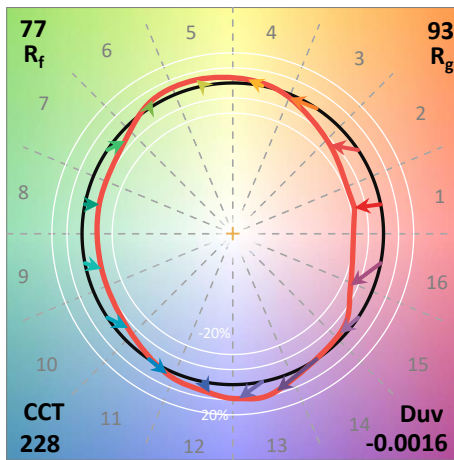
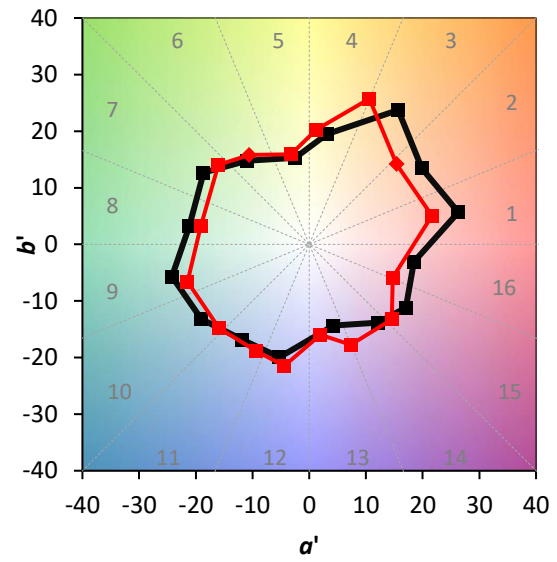
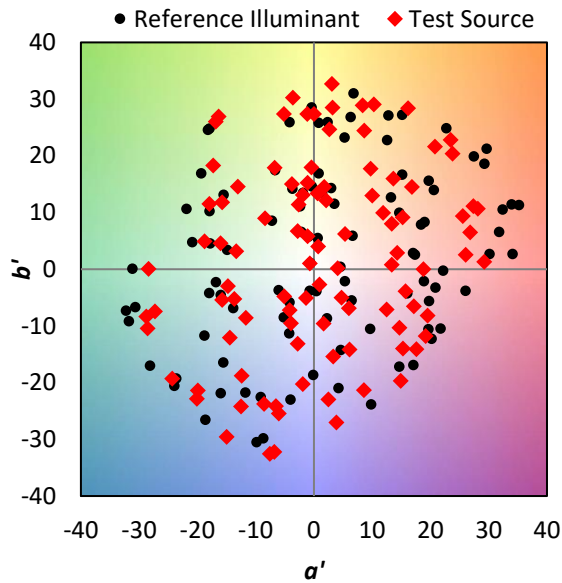
TM-30-18

### Summary

$R_f = 76.9$   
 $R_g = 92.6$   
 $CIE R_a = 70.6$   
 $R_g = -35.1$

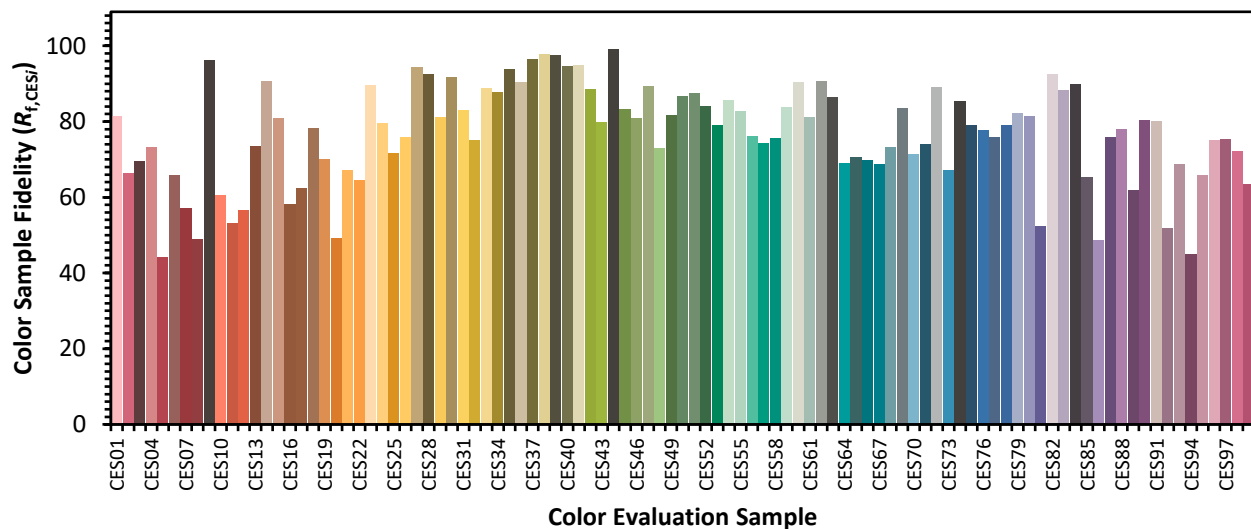


### Color Vector Graphics

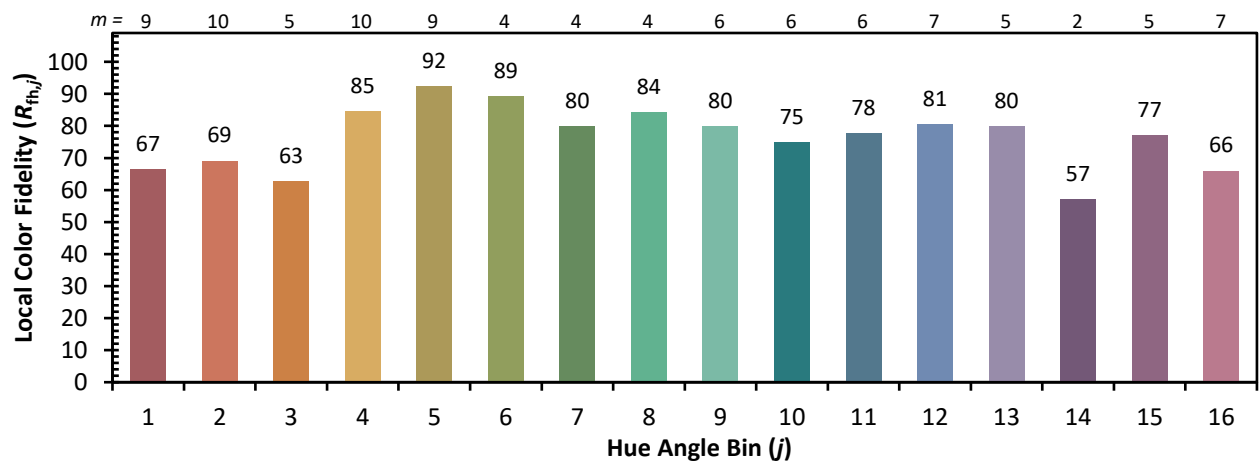
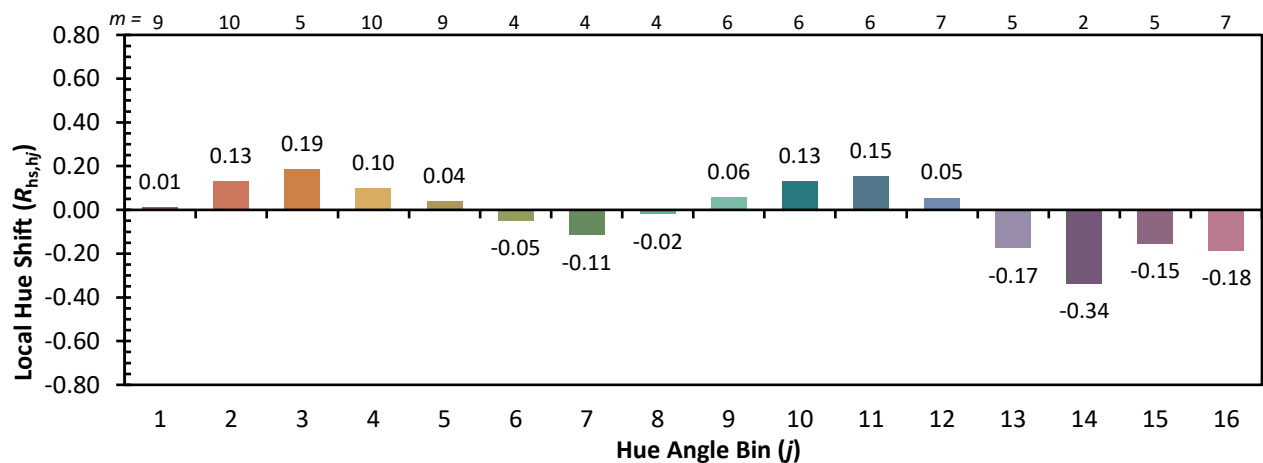
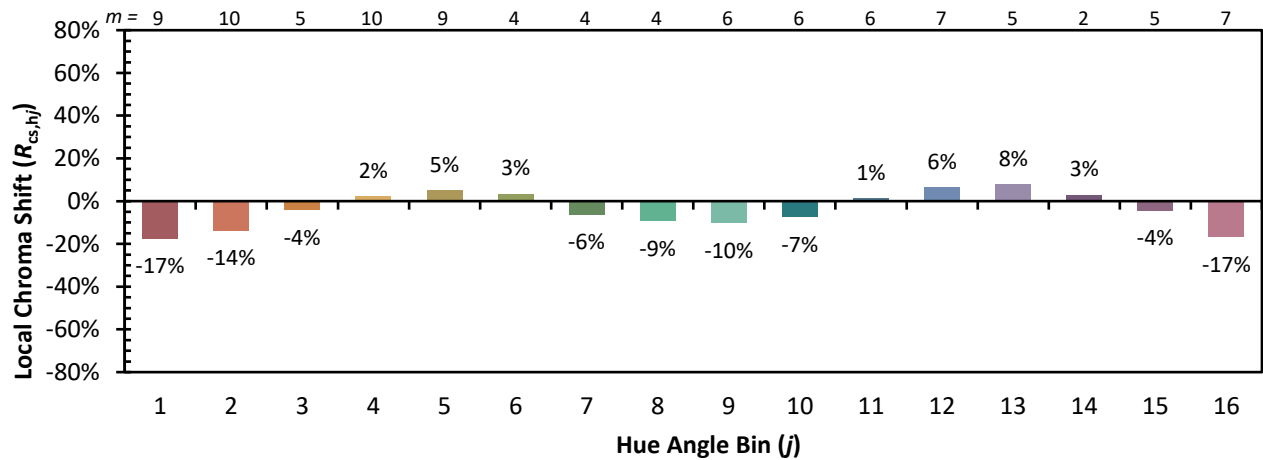


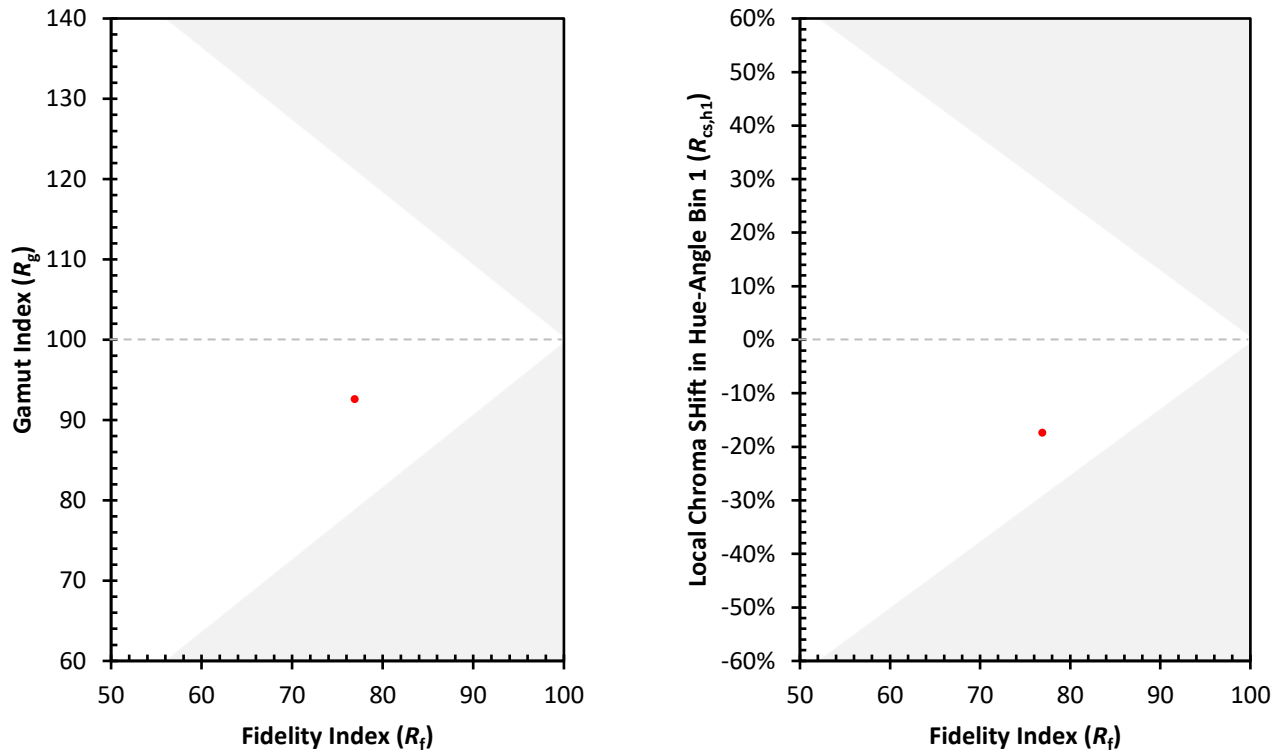
**Individual Sample Fidelity Index ( $R_{f,i}$ )**

|            |            |            |            |
|------------|------------|------------|------------|
| CES01 = 87 | CES26 = 76 | CES51 = 88 | CES76 = 78 |
| CES02 = 65 | CES27 = 94 | CES52 = 84 | CES77 = 76 |
| CES03 = 32 | CES28 = 93 | CES53 = 79 | CES78 = 79 |
| CES04 = 72 | CES29 = 81 | CES54 = 86 | CES79 = 82 |
| CES05 = 51 | CES30 = 92 | CES55 = 83 | CES80 = 81 |
| CES06 = 52 | CES31 = 83 | CES56 = 76 | CES81 = 52 |
| CES07 = 44 | CES32 = 75 | CES57 = 74 | CES82 = 92 |
| CES08 = 42 | CES33 = 89 | CES58 = 76 | CES83 = 88 |
| CES09 = 29 | CES34 = 88 | CES59 = 84 | CES84 = 90 |
| CES10 = 79 | CES35 = 94 | CES60 = 91 | CES85 = 65 |
| CES11 = 62 | CES36 = 90 | CES61 = 81 | CES86 = 49 |
| CES12 = 68 | CES37 = 96 | CES62 = 91 | CES87 = 76 |
| CES13 = 44 | CES38 = 98 | CES63 = 86 | CES88 = 78 |
| CES14 = 75 | CES39 = 98 | CES64 = 69 | CES89 = 62 |
| CES15 = 72 | CES40 = 95 | CES65 = 71 | CES90 = 80 |
| CES16 = 48 | CES41 = 95 | CES66 = 70 | CES91 = 80 |
| CES17 = 51 | CES42 = 89 | CES67 = 69 | CES92 = 52 |
| CES18 = 57 | CES43 = 80 | CES68 = 73 | CES93 = 69 |
| CES19 = 74 | CES44 = 99 | CES69 = 84 | CES94 = 45 |
| CES20 = 68 | CES45 = 83 | CES70 = 71 | CES95 = 66 |
| CES21 = 88 | CES46 = 81 | CES71 = 74 | CES96 = 75 |
| CES22 = 81 | CES47 = 89 | CES72 = 89 | CES97 = 75 |
| CES23 = 92 | CES48 = 73 | CES73 = 67 | CES98 = 72 |
| CES24 = 92 | CES49 = 82 | CES74 = 85 | CES99 = 64 |
| CES25 = 73 | CES50 = 87 | CES75 = 79 |            |



Color Rendition by Hue-Angle Bin



**Measure Comparisons**


(END OF REPORT)