

Signify Classified - Internal
Cooper Lighting Solutions Photometric Lab
1121 Highway 74 South
Peachtree City, GA 30269



Scaled data based on original data using
LM-79-08 Approved Method: Electrical and Photometric Measurements of Solid-
State Lighting Products

Test Report Prepared for
Cooper Lighting Solutions
(formerly Eaton)

Brand: INVUE

Report Number: P868998

Luminaire Tested: **EMM2-HSN-SA1A-750-U-T3-HSS**

Issue Date: 08/22/2024



Test Information

Test Method: LM-79-08
Report Number: P868998
Test Lab: INNOVATION CENTER(G3)
Issue Date: 08/22/2024
Manufacturer: COOPER LIGHTING SOLUTIONS (FORMERLY EATON)
Product Line: INVUE
Catalog Number: EMM2-HSN-SA1A-750-U-T3-HSS
Description: EPIC MODERN SHORT HOUSING DISCRETE LED ARRAYS 40W 70CRI 5000K
FIXTURE w/ TYPE III DISTRIBUTION OPTIC AND HOUSE SIDE SHIELD
Light Source: (10) 5000K CCT, 70 CRI LEDS
Ballast/Driver: ELECTRONIC DRIVER

Summary

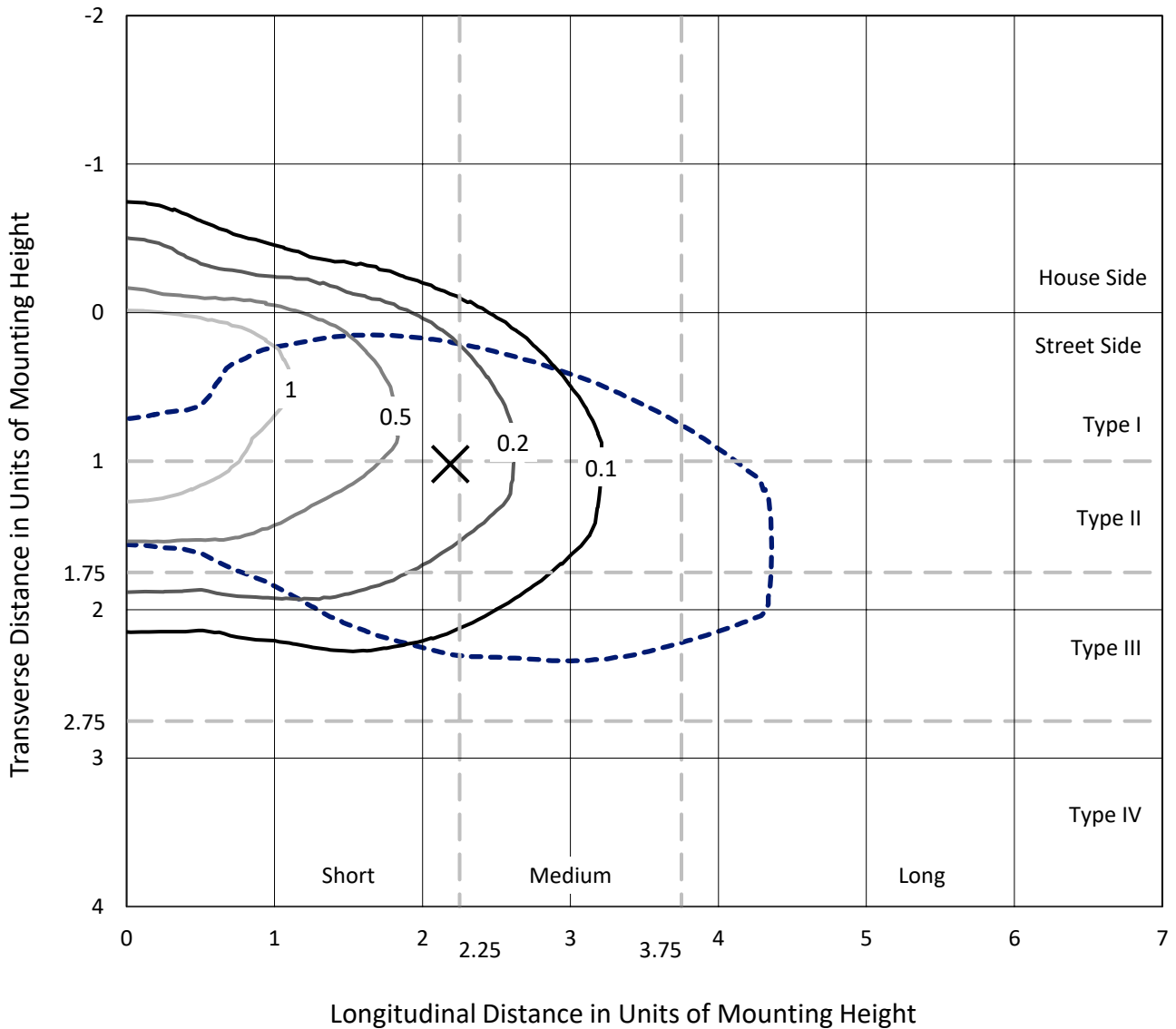
Lumens per Lamp: N/A
Luminaire Lumens: 3416.8 lumens
Efficiency: N/A
Efficacy: 104.2 lumens/watt
Luminous Opening: Rectangular (W 0.33' x L: 0.33' x H: 0')
IES Classification: Type III - Short
BUG Rating: B0 - U0 - G1

Input Watts (W): 32.8
Input Voltage (V): 120
Input Current (A_{in}): NR
Voltage Rise (V): NR
Power Factor: 0.99
Total Harmonic Distortion (THDi): 9.76%
Frequency (hertz): 60
Stabilization Time: NR
Operation Time: NR
Ambient Temperature (°C): NR
Test Distance: 24 FT

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Iso-Footcandle Lines of Horizontal Illumination

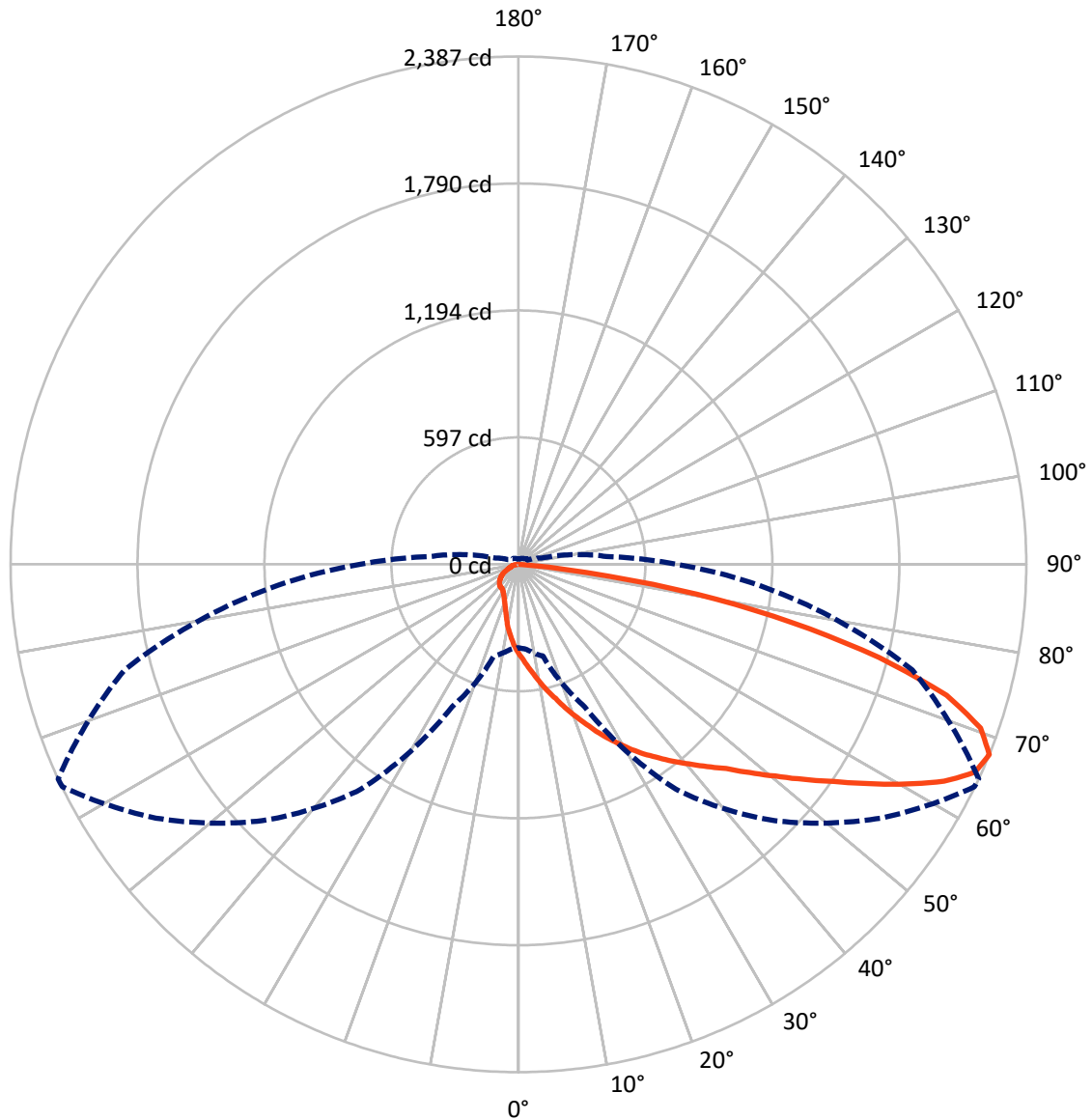
× Max cd
 - - - 1/2 Max cd



Based on 20 foot mounting height. Maximum calculated value = 2 fc
 Type III - Short - N/A

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Luminous Intensity Polar Plot



— Vertical Plane Through 65-Deg Lateral - - - Horizontal Cone Through 67.5-Deg Vertical

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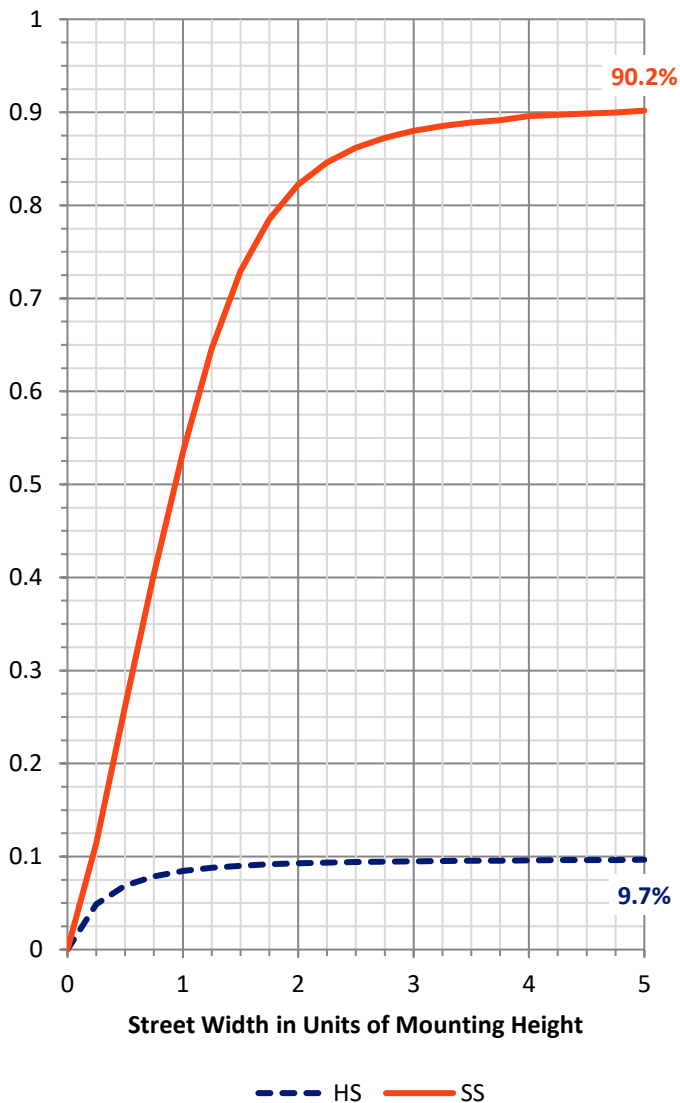
FLUX DISTRIBUTION:

| | | Downward | Upward | Total |
|--------------------|-----------|----------|--------|--------|
| House Side | Lumens | 332.6 | 0.0 | 332.6 |
| | % Fixture | 9.7 | 0.0 | 9.7 |
| Street Side | Lumens | 3084.2 | 0.0 | 3084.2 |
| | % Fixture | 90.3 | 0.0 | 90.3 |
| Total | Lumens | 3416.8 | 0.0 | 3416.8 |
| | % Fixture | 100.0 | 0.0 | 100.0 |

ZONAL LUMENS:

| Zone | Lumens | % Fixture |
|-----------|--------|-----------|
| 0°-10° | 41.3 | 1.2 |
| 10°-20° | 137.1 | 4.0 |
| 20°-30° | 249.5 | 7.3 |
| 30°-40° | 386.2 | 11.3 |
| 40°-50° | 583.8 | 17.1 |
| 50°-60° | 759.4 | 22.2 |
| 60°-70° | 749.2 | 21.9 |
| 70°-80° | 456.1 | 13.3 |
| 80°-90° | 54.2 | 1.6 |
| 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° | 3416.8 | 100.0 |
| 0°-180° | 3416.8 | 100.0 |

Coefficient of Utilization

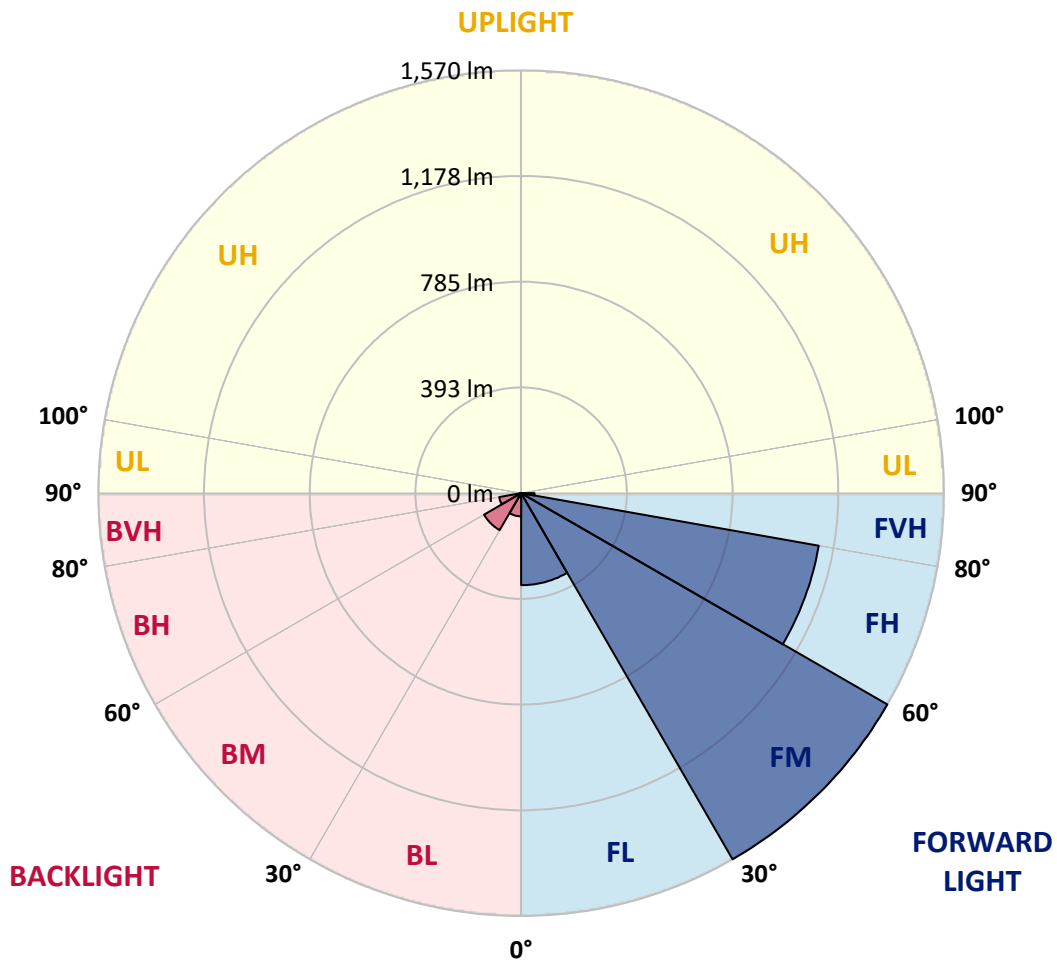


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LUMINAIRE CLASSIFICATION SYSTEM LUMEN TABLE AND BUG RATING:

| Zone | Lumens | % Fixture | Zone Rating/Lumen Limit | | |
|----------------|--------|-----------|-------------------------|------|---------|
| | | | B | U | G |
| FL (0°-30°) | 341.9 | 10.0 | | | |
| FM (30°-60°) | 1570.4 | 46.0 | | | |
| FH (60°-80°) | 1122.4 | 32.9 | | | G1/1800 |
| FVH (80°-90°) | 49.6 | 1.5 | | | G1/100 |
| BL (0°-30°) | 86.1 | 2.5 | B0/110 | | |
| BM (30°-60°) | 159.0 | 4.7 | B0/220 | | |
| BH (60°-80°) | 82.8 | 2.4 | B0/110 | | G0/110 |
| BVH (80°-90°) | 4.7 | 0.1 | | | G0/10 |
| UL (90°-100°) | 0.0 | 0.0 | | U0/0 | |
| UH (100°-180°) | 0.0 | 0.0 | | U0/0 | |

BUG Rating: B0-U0-G1
 Type III Short





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CANDELA DISTRIBUTION (FULL):

| | 0° | 5° | 15° | 25° | 35° | 45° | 55° | 64° | 65° | 75° | 85° |
|-------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|
| 0° | 422.2 | 422.2 | 422.2 | 422.2 | 422.2 | 422.2 | 422.2 | 422.2 | 422.2 | 422.2 | 422.2 |
| 2.5° | 493.4 | 489.5 | 492.4 | 485.6 | 477.8 | 471.9 | 460.2 | 450.5 | 449.5 | 439.8 | 429.0 |
| 5° | 588.0 | 575.3 | 576.3 | 562.6 | 546.0 | 528.5 | 510.0 | 485.6 | 485.6 | 462.2 | 437.8 |
| 7.5° | 672.8 | 670.8 | 662.1 | 640.6 | 621.1 | 593.8 | 559.7 | 528.5 | 521.7 | 485.6 | 447.6 |
| 10° | 754.7 | 751.8 | 744.0 | 727.4 | 694.2 | 664.0 | 621.1 | 574.3 | 565.5 | 513.9 | 459.3 |
| 12.5° | 820.0 | 821.0 | 812.2 | 798.6 | 769.3 | 733.2 | 676.7 | 618.2 | 610.4 | 541.2 | 471.0 |
| 15° | 877.6 | 876.6 | 874.6 | 862.9 | 834.7 | 801.5 | 735.2 | 666.9 | 654.3 | 570.4 | 482.7 |
| 17.5° | 921.4 | 919.5 | 915.6 | 905.8 | 892.2 | 860.0 | 796.6 | 718.6 | 707.9 | 604.5 | 496.3 |
| 20° | 934.1 | 933.1 | 933.1 | 940.0 | 934.1 | 914.6 | 858.1 | 772.3 | 760.6 | 640.6 | 514.8 |
| 22.5° | 957.5 | 956.5 | 955.6 | 962.4 | 966.3 | 964.3 | 915.6 | 826.9 | 816.1 | 682.5 | 538.2 |
| 25° | 987.7 | 985.8 | 982.9 | 989.7 | 994.6 | 1006.3 | 973.1 | 891.2 | 878.5 | 731.3 | 561.6 |
| 27.5° | 1027.7 | 1029.7 | 1025.8 | 1024.8 | 1024.8 | 1031.6 | 1023.8 | 948.7 | 937.0 | 778.1 | 588.9 |
| 30° | 1080.4 | 1083.3 | 1076.5 | 1071.6 | 1062.8 | 1061.8 | 1063.8 | 1013.1 | 996.5 | 828.8 | 617.2 |
| 32.5° | 1132.1 | 1135.0 | 1131.1 | 1124.2 | 1101.8 | 1093.0 | 1100.8 | 1067.7 | 1057.0 | 884.4 | 653.3 |
| 35° | 1174.0 | 1180.8 | 1180.8 | 1167.2 | 1136.0 | 1131.1 | 1143.8 | 1121.3 | 1113.5 | 949.7 | 696.2 |
| 37.5° | 1230.5 | 1234.4 | 1230.5 | 1205.2 | 1166.2 | 1172.0 | 1191.5 | 1177.9 | 1173.0 | 1019.9 | 746.9 |
| 40° | 1351.4 | 1356.3 | 1331.0 | 1270.5 | 1208.1 | 1214.9 | 1249.1 | 1241.3 | 1233.5 | 1089.1 | 793.7 |
| 42.5° | 1520.1 | 1508.4 | 1503.6 | 1369.0 | 1272.5 | 1268.6 | 1311.5 | 1300.7 | 1299.8 | 1159.4 | 836.6 |
| 45° | 1631.3 | 1635.2 | 1610.8 | 1483.1 | 1408.0 | 1334.9 | 1380.7 | 1376.8 | 1369.0 | 1230.5 | 888.3 |
| 47.5° | 1708.3 | 1699.5 | 1639.1 | 1577.7 | 1592.3 | 1421.6 | 1457.7 | 1467.5 | 1462.6 | 1311.5 | 951.7 |
| 50° | 1740.5 | 1731.7 | 1691.7 | 1650.8 | 1668.3 | 1521.1 | 1536.7 | 1568.9 | 1564.0 | 1393.4 | 1005.3 |
| 52.5° | 1700.5 | 1689.8 | 1692.7 | 1703.4 | 1694.7 | 1599.1 | 1634.2 | 1684.9 | 1679.1 | 1488.9 | 1067.7 |
| 55° | 1446.0 | 1474.3 | 1583.5 | 1692.7 | 1689.8 | 1658.6 | 1738.5 | 1812.6 | 1800.9 | 1588.4 | 1121.3 |
| 57.5° | 1166.2 | 1181.8 | 1320.2 | 1615.7 | 1674.2 | 1708.3 | 1857.5 | 1949.2 | 1945.3 | 1687.8 | 1170.1 |
| 60° | 927.3 | 943.9 | 1049.2 | 1455.8 | 1638.1 | 1760.0 | 1979.4 | 2100.3 | 2096.4 | 1788.3 | 1205.2 |
| 62.5° | 737.1 | 737.1 | 830.8 | 1225.7 | 1568.9 | 1790.2 | 2075.9 | 2252.4 | 2245.6 | 1869.2 | 1214.0 |
| 65° | 530.4 | 537.3 | 607.5 | 985.8 | 1456.7 | 1782.4 | 2122.7 | 2360.6 | 2356.7 | 1915.0 | 1195.4 |
| 67.5° | 392.0 | 399.8 | 446.6 | 739.1 | 1291.0 | 1704.4 | 2079.8 | 2385.0 | 2387.0 | 1916.0 | 1135.0 |
| 70° | 306.2 | 308.1 | 343.2 | 513.9 | 1057.9 | 1530.9 | 1918.9 | 2304.1 | 2304.1 | 1868.2 | 1045.3 |
| 72.5° | 233.0 | 235.0 | 265.2 | 350.0 | 779.1 | 1265.6 | 1678.1 | 2089.6 | 2104.2 | 1741.5 | 912.7 |
| 75° | 180.4 | 184.3 | 204.8 | 251.6 | 488.5 | 900.0 | 1378.7 | 1711.2 | 1751.2 | 1495.7 | 751.8 |
| 77.5° | 139.4 | 143.3 | 159.9 | 184.3 | 284.7 | 554.8 | 969.2 | 1279.3 | 1315.4 | 1177.9 | 580.2 |
| 80° | 112.1 | 114.1 | 124.8 | 138.5 | 172.6 | 285.7 | 591.9 | 840.5 | 851.2 | 800.5 | 384.2 |
| 82.5° | 51.7 | 55.6 | 67.3 | 76.1 | 85.8 | 132.6 | 252.5 | 311.0 | 324.7 | 317.9 | 158.0 |
| 85° | 5.9 | 5.9 | 6.8 | 7.8 | 8.8 | 13.7 | 17.6 | 15.6 | 15.6 | 18.5 | 16.6 |
| 87.5° | 0.0 | 0.0 | 0.0 | 1.0 | 2.0 | 2.0 | 2.9 | 2.9 | 2.9 | 2.9 | 2.9 |
| 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: EMM2-HSN-SA1A-750-U-T3-HSS

CANDELA DISTRIBUTION (continued):

| | 90° | 95° | 105° | 115° | 125° | 135° | 145° | 155° | 165° | 175° | 180° |
|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|
| 0° | 422.2 | 422.2 | 422.2 | 422.2 | 422.2 | 422.2 | 422.2 | 422.2 | 422.2 | 422.2 | 422.2 |
| 2.5° | 423.2 | 416.4 | 403.7 | 393.0 | 383.2 | 373.4 | 368.6 | 356.9 | 353.9 | 355.9 | 349.1 |
| 5° | 425.1 | 411.5 | 385.2 | 360.8 | 340.3 | 320.8 | 304.2 | 286.7 | 282.8 | 276.9 | 274.0 |
| 7.5° | 428.1 | 407.6 | 366.6 | 328.6 | 297.4 | 269.1 | 248.6 | 235.0 | 224.3 | 221.3 | 220.4 |
| 10° | 432.0 | 402.7 | 346.1 | 298.4 | 255.5 | 226.2 | 207.7 | 197.9 | 194.0 | 191.1 | 192.1 |
| 12.5° | 434.9 | 397.8 | 326.6 | 264.2 | 222.3 | 196.0 | 187.2 | 179.4 | 177.5 | 176.5 | 176.5 |
| 15° | 438.8 | 393.0 | 303.2 | 234.0 | 194.0 | 178.4 | 169.7 | 166.7 | 166.7 | 165.8 | 165.8 |
| 17.5° | 443.7 | 389.1 | 283.7 | 210.6 | 177.5 | 162.8 | 158.9 | 155.0 | 155.0 | 155.0 | 154.1 |
| 20° | 453.4 | 387.1 | 266.2 | 191.1 | 162.8 | 153.1 | 147.2 | 144.3 | 143.3 | 142.4 | 142.4 |
| 22.5° | 463.2 | 387.1 | 246.7 | 176.5 | 153.1 | 142.4 | 136.5 | 133.6 | 132.6 | 132.6 | 132.6 |
| 25° | 476.8 | 386.1 | 231.1 | 163.8 | 144.3 | 131.6 | 125.8 | 122.9 | 120.9 | 120.9 | 119.9 |
| 27.5° | 492.4 | 386.1 | 217.4 | 154.1 | 134.6 | 121.9 | 115.1 | 112.1 | 109.2 | 109.2 | 108.2 |
| 30° | 508.0 | 388.1 | 205.7 | 146.3 | 124.8 | 113.1 | 104.3 | 100.4 | 98.5 | 97.5 | 97.5 |
| 32.5° | 528.5 | 393.9 | 197.9 | 140.4 | 116.0 | 104.3 | 95.6 | 91.7 | 89.7 | 88.7 | 88.7 |
| 35° | 559.7 | 408.6 | 198.9 | 137.5 | 110.2 | 96.5 | 87.8 | 82.9 | 81.9 | 81.9 | 80.9 |
| 37.5° | 592.8 | 422.2 | 201.8 | 135.5 | 104.3 | 90.7 | 81.9 | 77.0 | 76.1 | 76.1 | 76.1 |
| 40° | 621.1 | 433.9 | 205.7 | 134.6 | 99.5 | 84.8 | 77.0 | 73.1 | 71.2 | 71.2 | 71.2 |
| 42.5° | 649.4 | 440.7 | 206.7 | 131.6 | 96.5 | 80.0 | 73.1 | 69.2 | 67.3 | 68.3 | 68.3 |
| 45° | 677.7 | 445.6 | 203.8 | 127.7 | 93.6 | 76.1 | 69.2 | 65.3 | 63.4 | 63.4 | 63.4 |
| 47.5° | 711.8 | 456.3 | 198.9 | 121.9 | 91.7 | 73.1 | 65.3 | 61.4 | 60.5 | 60.5 | 60.5 |
| 50° | 745.9 | 465.1 | 195.0 | 115.1 | 86.8 | 69.2 | 62.4 | 57.5 | 56.6 | 56.6 | 56.6 |
| 52.5° | 774.2 | 469.0 | 190.1 | 106.3 | 81.9 | 65.3 | 58.5 | 53.6 | 51.7 | 51.7 | 51.7 |
| 55° | 795.7 | 470.0 | 183.3 | 99.5 | 75.1 | 61.4 | 54.6 | 49.7 | 47.8 | 46.8 | 46.8 |
| 57.5° | 813.2 | 469.0 | 176.5 | 92.6 | 69.2 | 56.6 | 49.7 | 45.8 | 42.9 | 41.9 | 41.9 |
| 60° | 823.0 | 466.1 | 166.7 | 83.9 | 61.4 | 51.7 | 45.8 | 41.0 | 39.0 | 38.0 | 38.0 |
| 62.5° | 817.1 | 458.3 | 153.1 | 70.2 | 55.6 | 46.8 | 41.9 | 38.0 | 35.1 | 34.1 | 34.1 |
| 65° | 789.8 | 442.7 | 135.5 | 57.5 | 49.7 | 41.9 | 38.0 | 34.1 | 30.2 | 29.3 | 29.3 |
| 67.5° | 742.0 | 416.4 | 112.1 | 48.8 | 45.8 | 38.0 | 34.1 | 30.2 | 27.3 | 25.4 | 25.4 |
| 70° | 675.7 | 381.3 | 87.8 | 41.9 | 41.0 | 35.1 | 31.2 | 27.3 | 24.4 | 22.4 | 22.4 |
| 72.5° | 581.1 | 323.7 | 65.3 | 36.1 | 36.1 | 32.2 | 28.3 | 25.4 | 22.4 | 20.5 | 20.5 |
| 75° | 470.0 | 244.7 | 49.7 | 33.2 | 32.2 | 29.3 | 25.4 | 22.4 | 20.5 | 18.5 | 18.5 |
| 77.5° | 343.2 | 162.8 | 41.0 | 30.2 | 30.2 | 26.3 | 23.4 | 20.5 | 18.5 | 17.6 | 17.6 |
| 80° | 208.7 | 93.6 | 29.3 | 23.4 | 23.4 | 22.4 | 19.5 | 17.6 | 16.6 | 14.6 | 13.7 |
| 82.5° | 84.8 | 36.1 | 15.6 | 11.7 | 11.7 | 10.7 | 6.8 | 5.9 | 5.9 | 5.9 | 4.9 |
| 85° | 8.8 | 5.9 | 3.9 | 2.9 | 2.9 | 2.9 | 2.0 | 2.0 | 2.0 | 2.0 | 2.0 |
| 87.5° | 2.9 | 2.9 | 2.0 | 2.0 | 2.0 | 2.0 | 1.0 | 1.0 | 1.0 | 1.0 | 1.0 |
| 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

Streetworks

Report Number: SP1-2407-157-6

Test Date: 08/07/2024

Luminaire Tested: MEM2-HTN-SA-40-750-U-5WQ-2

Data in this report applies to families of products including MEM2-HTN-SA-40-750-U-5WQ-2

Test Information

Test Method: LM-79-2019
 Report Number: SP1-2407-157-6
 Test Lab: COOPER LIGHTING SOLUTIONS
 Photometer: SP1 - 76IN SPHERE
 Measurement Geometry: 4π
 Issue Date: 08/20/2024
 Manufacturer: COOPER LIGHTING SOLUTIONS
 Product Line: Streetworks
 Catalog Number: **MEM2-HTN-SA-40-750-U-5WQ-2**
 Description: Epic Modern Light Square 40W 5WQ Optic and Flare Trim

Spectral Parameters

CCT (K): 5094
 CIE u': 0.2082
 CIE v': 0.4867
 Duv: 0.0032
 CIE x: 0.3430
 CIE y: 0.3564
 CIE z: 0.3006
 Peak Wavelength (nm): 451
 Dominant Wavelength (nm): 568
 Purity: 9.86439
 Rf: 73.7
 Rg: 93

| | | | |
|-----------|------|------|-------|
| CRI (Ra): | 72.0 | | |
| R1: | 68.6 | R9: | -39.6 |
| R2: | 78.1 | R10: | 47.6 |
| R3: | 84.6 | R11: | 68.2 |
| R4: | 71.6 | R12: | 41.4 |
| R5: | 69.6 | R13: | 70.4 |
| R6: | 69.4 | R14: | 91.4 |
| R7: | 80.9 | R15: | 61.4 |
| R8: | 53.1 | | |



Test Conditions

Stabilization Time: 20M
 Operation Time: 1H 20M
 Sphere Temperature (°C): 24.2

REPORT NUMBER: SP1-2407-157-6

| 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: SP1-2407-157-6

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

REPORT NUMBER: SP1-2407-157-6

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 | 114 | NR | 620 | 361 | NR | 750 | 9 | NR | 880 | 0 | NR |
| 365 | 0 | NR | 495 | 145 | NR | 625 | 326 | NR | 755 | 8 | NR | 885 | 0 | NR |
| 370 | 0 | NR | 500 | 197 | NR | 630 | 294 | NR | 760 | 7 | NR | 890 | 0 | NR |
| 375 | 0 | NR | 505 | 259 | NR | 635 | 261 | NR | 765 | 6 | NR | 895 | 0 | NR |
| 380 | 0 | NR | 510 | 319 | NR | 640 | 232 | NR | 770 | 5 | NR | 900 | 0 | NR |
| 385 | 0 | NR | 515 | 373 | NR | 645 | 204 | NR | 775 | 4 | NR | 905 | 0 | NR |
| 390 | 0 | NR | 520 | 414 | NR | 650 | 179 | NR | 780 | 4 | NR | 910 | 0 | NR |
| 395 | 1 | NR | 525 | 445 | NR | 655 | 157 | NR | 785 | 3 | NR | 915 | 0 | NR |
| 400 | 3 | NR | 530 | 465 | NR | 660 | 136 | NR | 790 | 3 | NR | 920 | 0 | NR |
| 405 | 5 | NR | 535 | 482 | NR | 665 | 118 | NR | 795 | 2 | NR | 925 | 0 | NR |
| 410 | 9 | NR | 540 | 493 | NR | 670 | 102 | NR | 800 | 2 | NR | 930 | 0 | NR |
| 415 | 18 | NR | 545 | 505 | NR | 675 | 87 | NR | 805 | 2 | NR | 935 | 0 | NR |
| 420 | 36 | NR | 550 | 515 | NR | 680 | 75 | NR | 810 | 2 | NR | 940 | 0 | NR |
| 425 | 72 | NR | 555 | 527 | NR | 685 | 65 | NR | 815 | 1 | NR | 945 | 0 | NR |
| 430 | 134 | NR | 560 | 540 | NR | 690 | 56 | NR | 820 | 1 | NR | 950 | 0 | NR |
| 435 | 242 | NR | 565 | 550 | NR | 695 | 48 | NR | 825 | 1 | NR | 955 | 0 | NR |
| 440 | 407 | NR | 570 | 557 | NR | 700 | 41 | NR | 830 | 1 | NR | 960 | 0 | NR |
| 445 | 684 | NR | 575 | 561 | NR | 705 | 35 | NR | 835 | 1 | NR | 965 | 0 | NR |
| 450 | 988 | NR | 580 | 559 | NR | 710 | 30 | NR | 840 | 1 | NR | 970 | 0 | NR |
| 455 | 828 | NR | 585 | 551 | NR | 715 | 26 | NR | 845 | 1 | NR | 975 | 0 | NR |
| 460 | 473 | NR | 590 | 537 | NR | 720 | 22 | NR | 850 | 1 | NR | 980 | 0 | NR |
| 465 | 333 | NR | 595 | 516 | NR | 725 | 19 | NR | 855 | 0 | NR | 985 | 0 | NR |
| 470 | 232 | NR | 600 | 491 | NR | 730 | 16 | NR | 860 | 0 | NR | 990 | 0 | NR |
| 475 | 146 | NR | 605 | 461 | NR | 735 | 14 | NR | 865 | 0 | NR | 995 | 0 | NR |
| 480 | 113 | NR | 610 | 429 | NR | 740 | 12 | NR | 870 | 0 | NR | 1000 | 0 | NR |
| 485 | 106 | NR | 615 | 395 | NR | 745 | 10 | NR | 875 | 0 | NR | | | |

REPORT NUMBER: SP1-2407-157-6

Scotopic Flux vs. Wavelength



Scotopic Lumens: NR

S/P: 1.81

| 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 | 114 | NR | 620 | 361 | NR | 750 | 9 | NR | 880 | 0 | NR |
| 365 | 0 | NR | 495 | 145 | NR | 625 | 326 | NR | 755 | 8 | NR | 885 | 0 | NR |
| 370 | 0 | NR | 500 | 197 | NR | 630 | 294 | NR | 760 | 7 | NR | 890 | 0 | NR |
| 375 | 0 | NR | 505 | 259 | NR | 635 | 261 | NR | 765 | 6 | NR | 895 | 0 | NR |
| 380 | 0 | NR | 510 | 319 | NR | 640 | 232 | NR | 770 | 5 | NR | 900 | 0 | NR |
| 385 | 0 | NR | 515 | 373 | NR | 645 | 204 | NR | 775 | 4 | NR | 905 | 0 | NR |
| 390 | 0 | NR | 520 | 414 | NR | 650 | 179 | NR | 780 | 4 | NR | 910 | 0 | NR |
| 395 | 1 | NR | 525 | 445 | NR | 655 | 157 | NR | 785 | 3 | NR | 915 | 0 | NR |
| 400 | 3 | NR | 530 | 465 | NR | 660 | 136 | NR | 790 | 3 | NR | 920 | 0 | NR |
| 405 | 5 | NR | 535 | 482 | NR | 665 | 118 | NR | 795 | 2 | NR | 925 | 0 | NR |
| 410 | 9 | NR | 540 | 493 | NR | 670 | 102 | NR | 800 | 2 | NR | 930 | 0 | NR |
| 415 | 18 | NR | 545 | 505 | NR | 675 | 87 | NR | 805 | 2 | NR | 935 | 0 | NR |
| 420 | 36 | NR | 550 | 515 | NR | 680 | 75 | NR | 810 | 2 | NR | 940 | 0 | NR |
| 425 | 72 | NR | 555 | 527 | NR | 685 | 65 | NR | 815 | 1 | NR | 945 | 0 | NR |
| 430 | 134 | NR | 560 | 540 | NR | 690 | 56 | NR | 820 | 1 | NR | 950 | 0 | NR |
| 435 | 242 | NR | 565 | 550 | NR | 695 | 48 | NR | 825 | 1 | NR | 955 | 0 | NR |
| 440 | 407 | NR | 570 | 557 | NR | 700 | 41 | NR | 830 | 1 | NR | 960 | 0 | NR |
| 445 | 684 | NR | 575 | 561 | NR | 705 | 35 | NR | 835 | 1 | NR | 965 | 0 | NR |
| 450 | 988 | NR | 580 | 559 | NR | 710 | 30 | NR | 840 | 1 | NR | 970 | 0 | NR |
| 455 | 828 | NR | 585 | 551 | NR | 715 | 26 | NR | 845 | 1 | NR | 975 | 0 | NR |
| 460 | 473 | NR | 590 | 537 | NR | 720 | 22 | NR | 850 | 1 | NR | 980 | 0 | NR |
| 465 | 333 | NR | 595 | 516 | NR | 725 | 19 | NR | 855 | 0 | NR | 985 | 0 | NR |
| 470 | 232 | NR | 600 | 491 | NR | 730 | 16 | NR | 860 | 0 | NR | 990 | 0 | NR |
| 475 | 146 | NR | 605 | 461 | NR | 735 | 14 | NR | 865 | 0 | NR | 995 | 0 | NR |
| 480 | 113 | NR | 610 | 429 | NR | 740 | 12 | NR | 870 | 0 | NR | 1000 | 0 | NR |
| 485 | 106 | NR | 615 | 395 | NR | 745 | 10 | NR | 875 | 0 | NR | | | |

REPORT NUMBER: SP1-2407-157-6

Melanopic Flux vs. Wavelength



Melanopic Lumens: NR

M/P: 3.73

| 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 | 114 | NR | 620 | 361 | NR | 750 | 9 | NR | 880 | 0 | NR |
| 365 | 0 | NR | 495 | 145 | NR | 625 | 326 | NR | 755 | 8 | NR | 885 | 0 | NR |
| 370 | 0 | NR | 500 | 197 | NR | 630 | 294 | NR | 760 | 7 | NR | 890 | 0 | NR |
| 375 | 0 | NR | 505 | 259 | NR | 635 | 261 | NR | 765 | 6 | NR | 895 | 0 | NR |
| 380 | 0 | NR | 510 | 319 | NR | 640 | 232 | NR | 770 | 5 | NR | 900 | 0 | NR |
| 385 | 0 | NR | 515 | 373 | NR | 645 | 204 | NR | 775 | 4 | NR | 905 | 0 | NR |
| 390 | 0 | NR | 520 | 414 | NR | 650 | 179 | NR | 780 | 4 | NR | 910 | 0 | NR |
| 395 | 1 | NR | 525 | 445 | NR | 655 | 157 | NR | 785 | 3 | NR | 915 | 0 | NR |
| 400 | 3 | NR | 530 | 465 | NR | 660 | 136 | NR | 790 | 3 | NR | 920 | 0 | NR |
| 405 | 5 | NR | 535 | 482 | NR | 665 | 118 | NR | 795 | 2 | NR | 925 | 0 | NR |
| 410 | 9 | NR | 540 | 493 | NR | 670 | 102 | NR | 800 | 2 | NR | 930 | 0 | NR |
| 415 | 18 | NR | 545 | 505 | NR | 675 | 87 | NR | 805 | 2 | NR | 935 | 0 | NR |
| 420 | 36 | NR | 550 | 515 | NR | 680 | 75 | NR | 810 | 2 | NR | 940 | 0 | NR |
| 425 | 72 | NR | 555 | 527 | NR | 685 | 65 | NR | 815 | 1 | NR | 945 | 0 | NR |
| 430 | 134 | NR | 560 | 540 | NR | 690 | 56 | NR | 820 | 1 | NR | 950 | 0 | NR |
| 435 | 242 | NR | 565 | 550 | NR | 695 | 48 | NR | 825 | 1 | NR | 955 | 0 | NR |
| 440 | 407 | NR | 570 | 557 | NR | 700 | 41 | NR | 830 | 1 | NR | 960 | 0 | NR |
| 445 | 684 | NR | 575 | 561 | NR | 705 | 35 | NR | 835 | 1 | NR | 965 | 0 | NR |
| 450 | 988 | NR | 580 | 559 | NR | 710 | 30 | NR | 840 | 1 | NR | 970 | 0 | NR |
| 455 | 828 | NR | 585 | 551 | NR | 715 | 26 | NR | 845 | 1 | NR | 975 | 0 | NR |
| 460 | 473 | NR | 590 | 537 | NR | 720 | 22 | NR | 850 | 1 | NR | 980 | 0 | NR |
| 465 | 333 | NR | 595 | 516 | NR | 725 | 19 | NR | 855 | 0 | NR | 985 | 0 | NR |
| 470 | 232 | NR | 600 | 491 | NR | 730 | 16 | NR | 860 | 0 | NR | 990 | 0 | NR |
| 475 | 146 | NR | 605 | 461 | NR | 735 | 14 | NR | 865 | 0 | NR | 995 | 0 | NR |
| 480 | 113 | NR | 610 | 429 | NR | 740 | 12 | NR | 870 | 0 | NR | 1000 | 0 | NR |
| 485 | 106 | NR | 615 | 395 | NR | 745 | 10 | NR | 875 | 0 | NR | | | |

Summary

$R_f = 73.7$
 $R_g = 93$
 $CIE R_a = 72.0$
 $R_9 = -39.6$



Color Vector Graphics

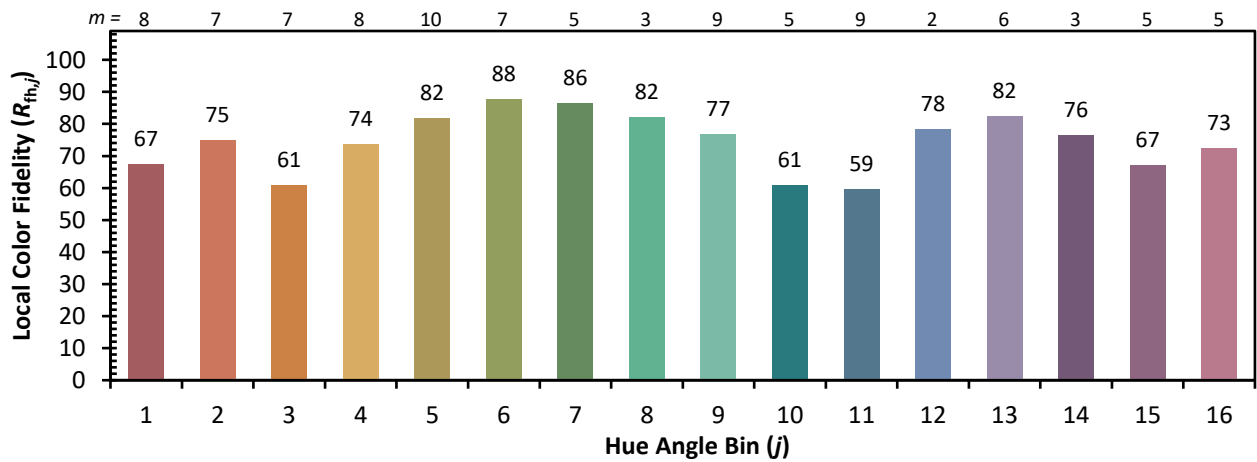
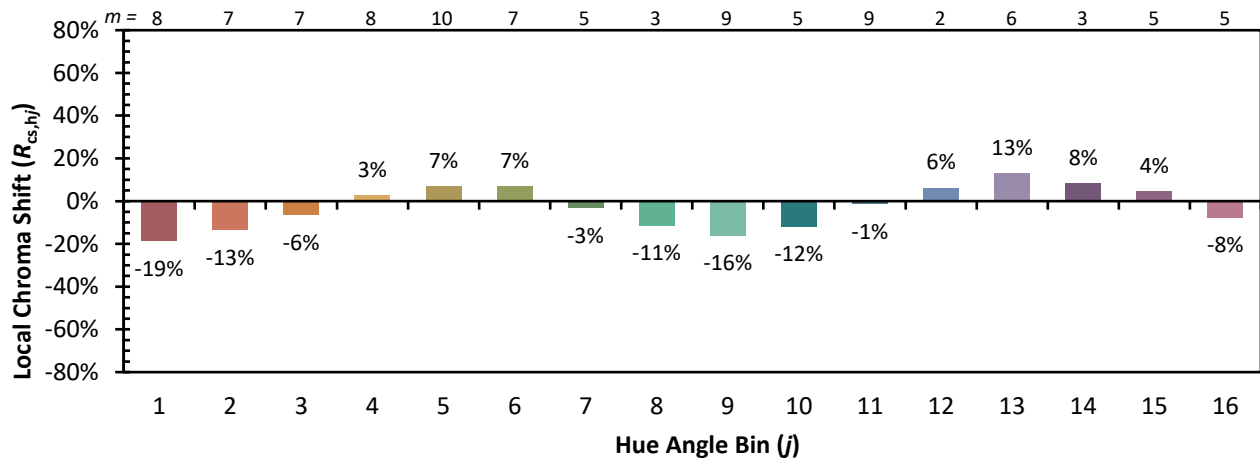


Individual Sample Fidelity Index ($R_{f,i}$)

| | | | |
|------------|------------|------------|------------|
| CES01 = 85 | CES26 = 62 | CES51 = 90 | CES76 = 50 |
| CES02 = 59 | CES27 = 88 | CES52 = 89 | CES77 = 67 |
| CES03 = 30 | CES28 = 80 | CES53 = 79 | CES78 = 53 |
| CES04 = 69 | CES29 = 69 | CES54 = 84 | CES79 = 80 |
| CES05 = 46 | CES30 = 88 | CES55 = 83 | CES80 = 77 |
| CES06 = 50 | CES31 = 72 | CES56 = 74 | CES81 = 78 |
| CES07 = 38 | CES32 = 62 | CES57 = 73 | CES82 = 90 |
| CES08 = 38 | CES33 = 82 | CES58 = 73 | CES83 = 90 |
| CES09 = 29 | CES34 = 69 | CES59 = 86 | CES84 = 85 |
| CES10 = 72 | CES35 = 83 | CES60 = 88 | CES85 = 77 |
| CES11 = 56 | CES36 = 87 | CES61 = 82 | CES86 = 75 |
| CES12 = 61 | CES37 = 78 | CES62 = 81 | CES87 = 76 |
| CES13 = 41 | CES38 = 98 | CES63 = 73 | CES88 = 81 |
| CES14 = 74 | CES39 = 96 | CES64 = 63 | CES89 = 72 |
| CES15 = 70 | CES40 = 91 | CES65 = 60 | CES90 = 80 |
| CES16 = 46 | CES41 = 96 | CES66 = 56 | CES91 = 71 |
| CES17 = 49 | CES42 = 79 | CES67 = 53 | CES92 = 58 |
| CES18 = 55 | CES43 = 78 | CES68 = 63 | CES93 = 74 |
| CES19 = 71 | CES44 = 99 | CES69 = 72 | CES94 = 52 |
| CES20 = 63 | CES45 = 86 | CES70 = 55 | CES95 = 64 |
| CES21 = 85 | CES46 = 85 | CES71 = 46 | CES96 = 76 |
| CES22 = 77 | CES47 = 89 | CES72 = 82 | CES97 = 86 |
| CES23 = 91 | CES48 = 80 | CES73 = 45 | CES98 = 76 |
| CES24 = 90 | CES49 = 83 | CES74 = 90 | CES99 = 62 |
| CES25 = 71 | CES50 = 89 | CES75 = 48 | |



Color Rendition by Hue-Angle Bin



Measure Comparisons



(END OF REPORT)