

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: STREETWORKS

Report Number: P868009

Luminaire Tested: **MEM2-HSN-SA-40-740-U-T2U-HSS**

Issue Date: 08/21/2024



Test Information

Test Method: LM-79-08
Report Number: P868009
Test Lab: INNOVATION CENTER(G3)
Issue Date: 08/21/2024
Manufacturer: COOPER LIGHTING SOLUTIONS (FORMERLY EATON)
Product Line: STREETWORKS
Catalog Number: MEM2-HSN-SA-40-740-U-T2U-HSS
Description: EPIC MODERN SHORT HOUSING DISCRETE LED ARRAYS 40W 70CRI 4000K
FIXTURE w/ TYPE II URBAN DISTRIBUTION OPTIC AND HOUSE SIDE SHIELD
Light Source: (10) 4000K CCT, 70 CRI LEDS
Ballast/Driver: ELECTRONIC DRIVER

Summary

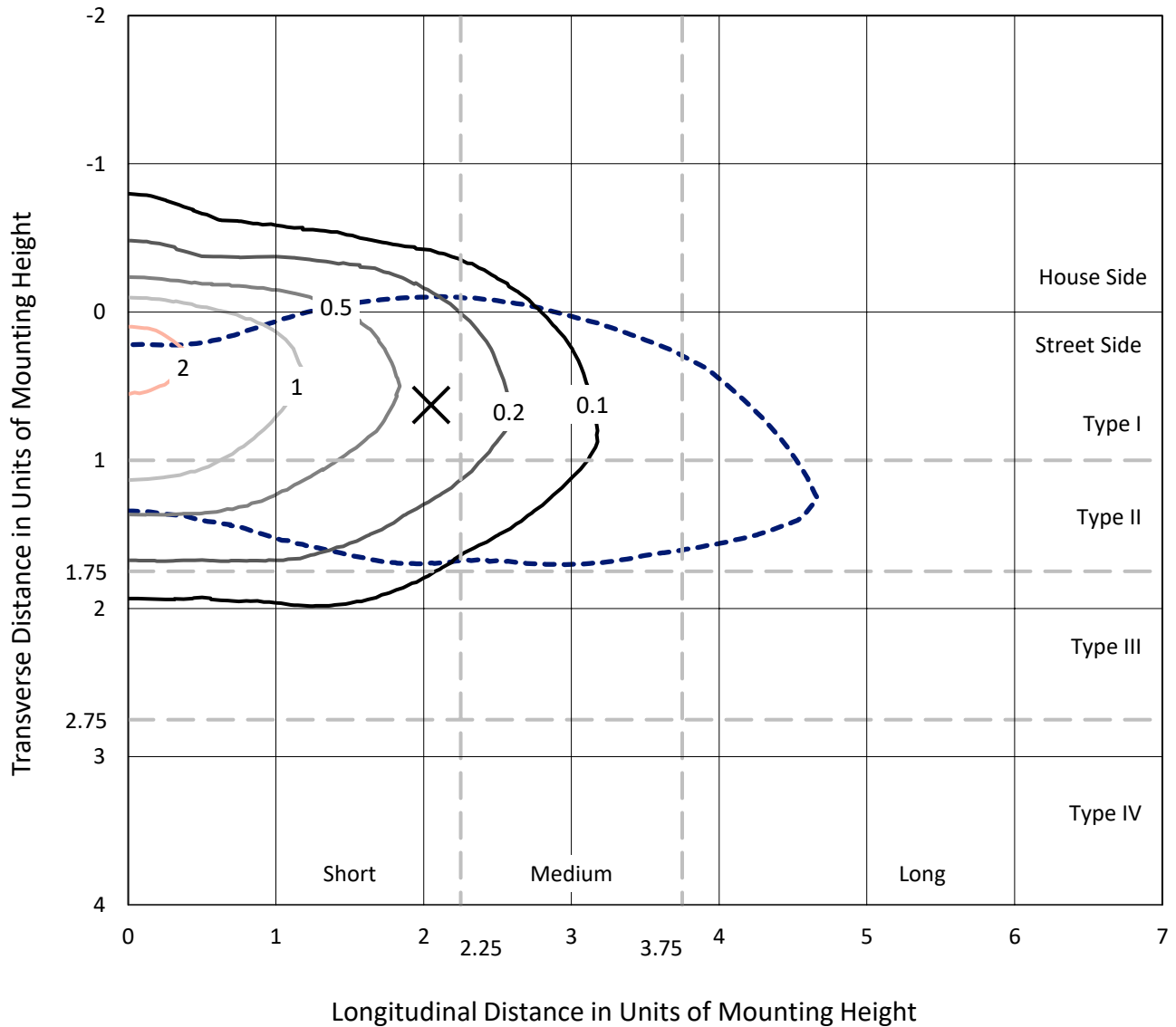
Lumens per Lamp: N/A
Luminaire Lumens: 3358.6 lumens
Efficiency: N/A
Efficacy: 102.4 lumens/watt
Luminous Opening: Rectangular (W 0.33' x L: 0.33' x H: 0')
IES Classification: Type II - Short
BUG Rating: B1 - U0 - G1

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

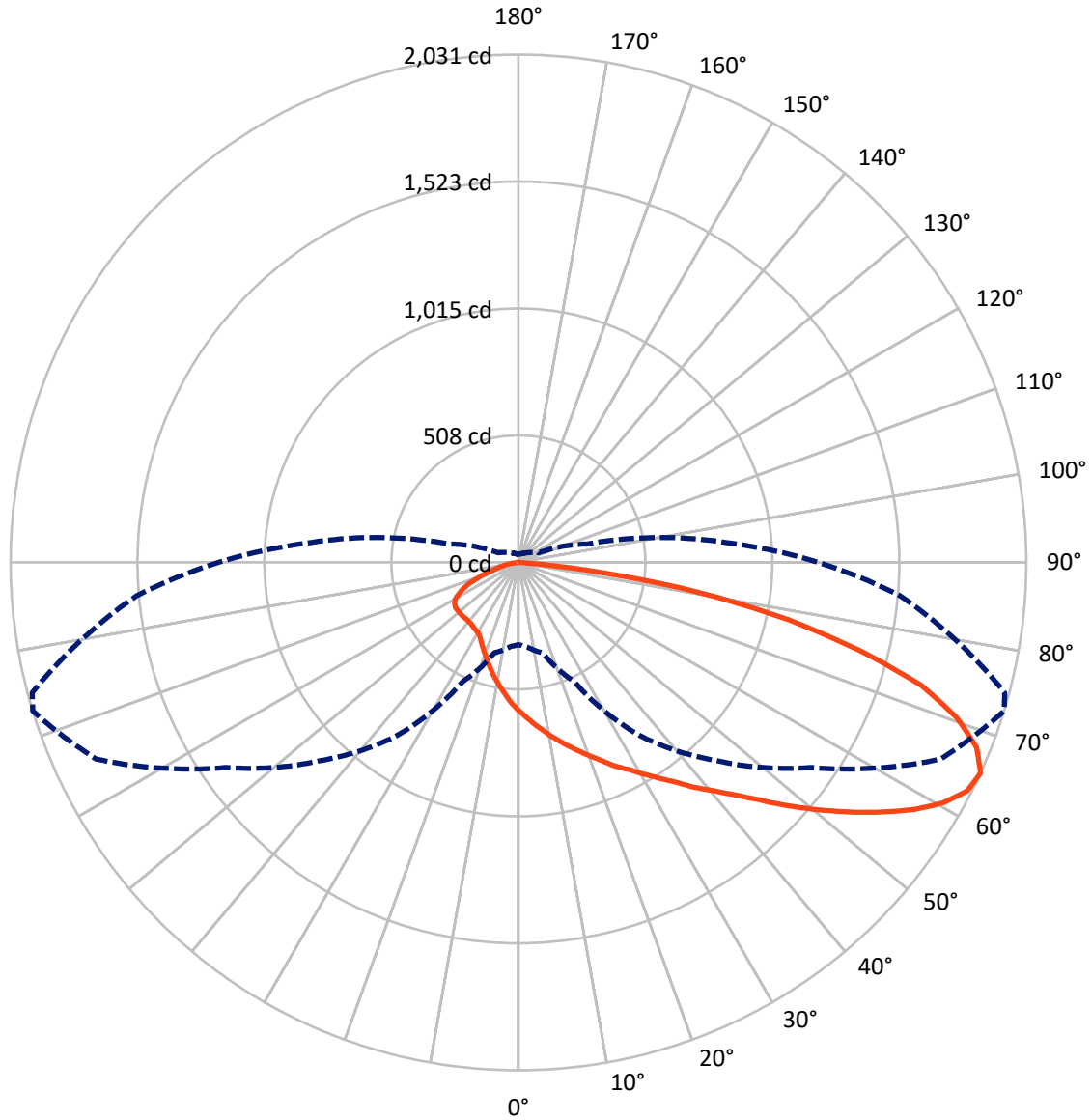
✕ Max cd
 - - - 1/2 Max cd



Based on 20 foot mounting height. Maximum calculated value = 2.4 fc
 Type II - Short - N/A

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Luminous Intensity Polar Plot



— Vertical Plane Through 73-Deg Lateral - - - Horizontal Cone Through 65-Deg Vertical

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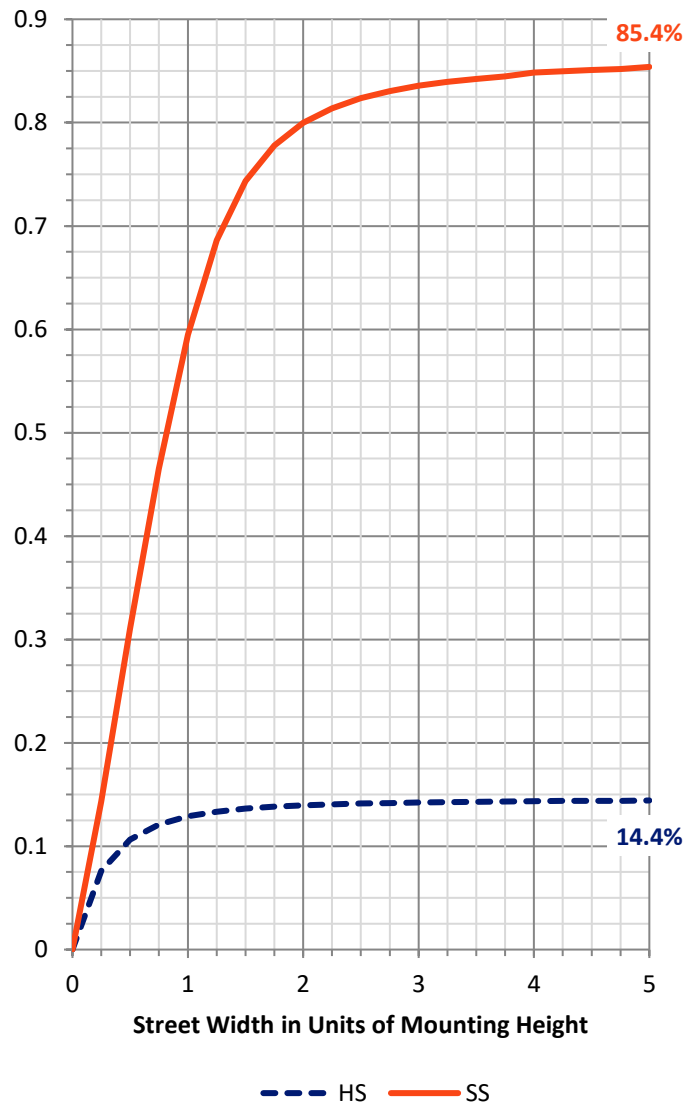
FLUX DISTRIBUTION:

| | | Downward | Upward | Total |
|--------------------|-----------|----------|--------|--------|
| House Side | Lumens | 488.4 | 0.0 | 488.4 |
| | % Fixture | 14.5 | 0.0 | 14.5 |
| Street Side | Lumens | 2870.2 | 0.0 | 2870.2 |
| | % Fixture | 85.5 | 0.0 | 85.5 |
| Total | Lumens | 3358.6 | 0.0 | 3358.6 |
| | % Fixture | 100.0 | 0.0 | 100.0 |

Coefficient of Utilization

ZONAL LUMENS:

| Zone | Lumens | % Fixture |
|-----------|--------|-----------|
| 0°-10° | 57.5 | 1.7 |
| 10°-20° | 174.8 | 5.2 |
| 20°-30° | 292.7 | 8.7 |
| 30°-40° | 441.6 | 13.1 |
| 40°-50° | 623.9 | 18.6 |
| 50°-60° | 702.1 | 20.9 |
| 60°-70° | 629.6 | 18.7 |
| 70°-80° | 382.9 | 11.4 |
| 80°-90° | 53.6 | 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° | 3358.6 | 100.0 |
| 0°-180° | 3358.6 | 100.0 |



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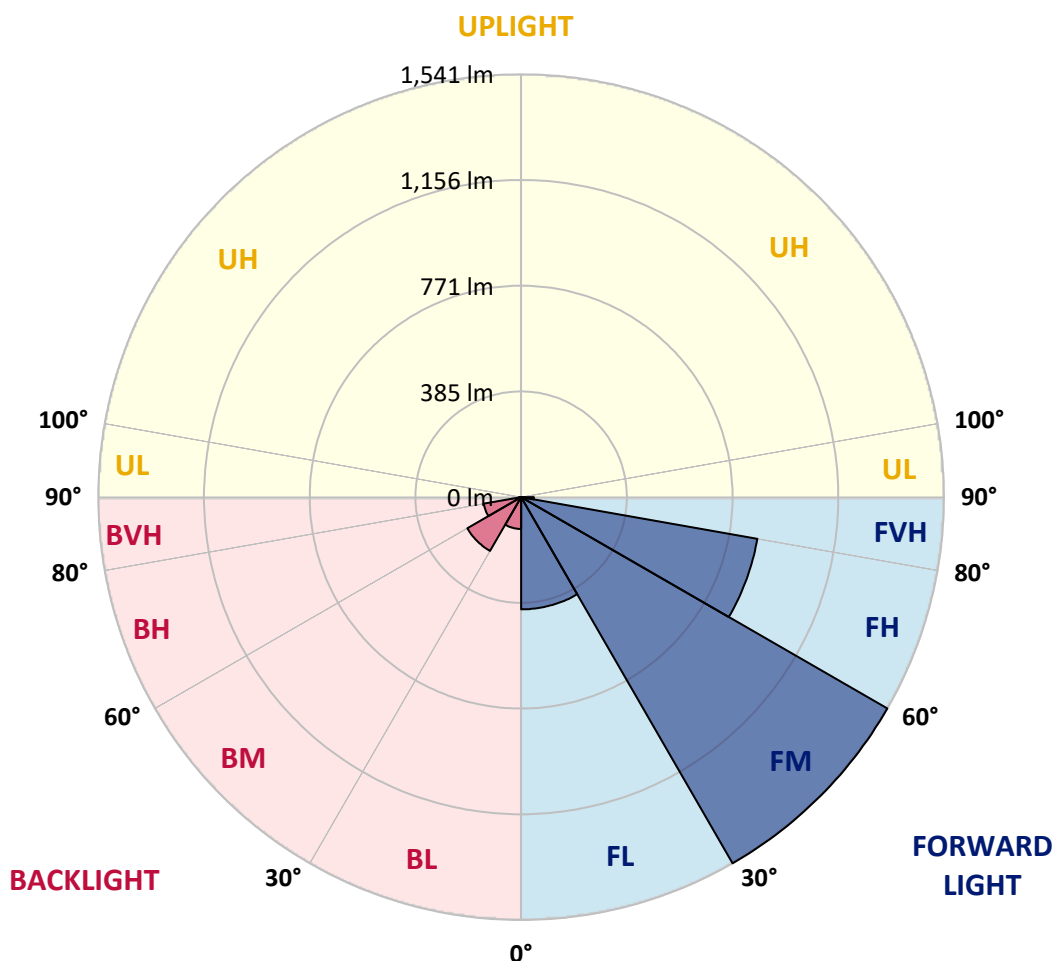
CATALOG NUMBER: MEM2-HSN-SA-40-740-U-T2U-HSS

LUMINAIRE CLASSIFICATION SYSTEM LUMEN TABLE AND BUG RATING:

| Zone | Lumens | % Fixture | Zone Rating/Lumen Limit | | |
|----------------|--------|-----------|-------------------------|------|---------|
| | | | B | U | G |
| FL (0°-30°) | 409.0 | 12.2 | | | |
| FM (30°-60°) | 1541.1 | 45.9 | | | |
| FH (60°-80°) | 874.1 | 26.0 | | | G1/1800 |
| FVH (80°-90°) | 46.0 | 1.4 | | | G1/100 |
| BL (0°-30°) | 116.0 | 3.5 | B1/500 | | |
| BM (30°-60°) | 226.5 | 6.7 | B1/1000 | | |
| BH (60°-80°) | 138.3 | 4.1 | B1/500 | | G1/500 |
| BVH (80°-90°) | 7.6 | 0.2 | | | G0/10 |
| UL (90°-100°) | 0.0 | 0.0 | | U0/0 | |
| UH (100°-180°) | 0.0 | 0.0 | | U0/0 | |

BUG Rating: B1-U0-G1

Type II Short





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CANDELA DISTRIBUTION (FULL):

| | 0° | 5° | 15° | 25° | 35° | 45° | 55° | 65° | 73° | 75° | 85° |
|-------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|
| 0° | 595.8 | 595.8 | 595.8 | 595.8 | 595.8 | 595.8 | 595.8 | 595.8 | 595.8 | 595.8 | 595.8 |
| 2.5° | 687.7 | 683.8 | 677.8 | 672.9 | 664.0 | 652.2 | 642.3 | 629.4 | 620.5 | 617.6 | 604.7 |
| 5° | 787.5 | 782.6 | 775.7 | 763.8 | 740.1 | 726.3 | 700.6 | 670.9 | 647.2 | 642.3 | 612.6 |
| 7.5° | 890.3 | 888.3 | 872.5 | 854.7 | 826.1 | 795.4 | 755.9 | 709.5 | 674.9 | 667.0 | 621.5 |
| 10° | 977.2 | 968.3 | 959.5 | 942.7 | 912.0 | 868.5 | 817.2 | 752.9 | 704.5 | 691.7 | 630.4 |
| 12.5° | 1029.6 | 1026.6 | 1018.7 | 999.0 | 969.3 | 931.8 | 870.5 | 795.4 | 733.2 | 715.4 | 639.3 |
| 15° | 1068.1 | 1071.1 | 1063.2 | 1050.4 | 1019.7 | 984.2 | 924.9 | 839.9 | 763.8 | 743.1 | 649.2 |
| 17.5° | 1104.7 | 1102.7 | 1101.7 | 1086.9 | 1059.3 | 1023.7 | 963.4 | 876.5 | 794.4 | 771.7 | 659.1 |
| 20° | 1125.5 | 1126.4 | 1124.5 | 1118.5 | 1091.9 | 1057.3 | 1001.0 | 919.9 | 828.0 | 802.3 | 671.9 |
| 22.5° | 1136.3 | 1140.3 | 1144.2 | 1143.2 | 1121.5 | 1094.8 | 1036.5 | 954.5 | 862.6 | 835.9 | 687.7 |
| 25° | 1143.2 | 1146.2 | 1155.1 | 1167.0 | 1147.2 | 1125.5 | 1076.0 | 996.0 | 903.1 | 872.5 | 706.5 |
| 27.5° | 1149.2 | 1153.1 | 1164.0 | 1181.8 | 1166.0 | 1153.1 | 1110.6 | 1031.6 | 937.7 | 910.0 | 728.2 |
| 30° | 1187.7 | 1192.6 | 1192.6 | 1201.5 | 1183.8 | 1180.8 | 1149.2 | 1074.1 | 981.2 | 951.5 | 755.9 |
| 32.5° | 1289.5 | 1279.6 | 1261.8 | 1252.9 | 1210.4 | 1211.4 | 1186.7 | 1116.6 | 1027.6 | 998.0 | 790.5 |
| 35° | 1377.4 | 1377.4 | 1355.7 | 1327.0 | 1258.8 | 1245.0 | 1230.2 | 1172.9 | 1078.0 | 1049.4 | 835.9 |
| 37.5° | 1462.4 | 1463.4 | 1440.7 | 1416.0 | 1337.9 | 1288.5 | 1280.6 | 1227.2 | 1140.3 | 1106.7 | 883.4 |
| 40° | 1515.8 | 1521.7 | 1515.8 | 1497.0 | 1421.9 | 1364.6 | 1330.0 | 1288.5 | 1199.6 | 1173.9 | 937.7 |
| 42.5° | 1524.6 | 1536.5 | 1558.2 | 1564.2 | 1483.1 | 1432.8 | 1393.2 | 1351.7 | 1270.7 | 1242.1 | 1000.0 |
| 45° | 1501.9 | 1505.9 | 1554.3 | 1561.2 | 1528.6 | 1487.1 | 1460.4 | 1425.8 | 1355.7 | 1331.0 | 1069.1 |
| 47.5° | 1439.7 | 1431.8 | 1448.6 | 1508.8 | 1521.7 | 1519.7 | 1526.6 | 1509.8 | 1454.5 | 1422.9 | 1145.2 |
| 50° | 1306.3 | 1309.2 | 1363.6 | 1436.7 | 1481.2 | 1531.6 | 1576.0 | 1594.8 | 1554.3 | 1522.7 | 1227.2 |
| 52.5° | 1063.2 | 1077.0 | 1180.8 | 1353.7 | 1430.8 | 1523.7 | 1611.6 | 1674.8 | 1658.0 | 1627.4 | 1308.3 |
| 55° | 873.5 | 894.2 | 998.0 | 1220.3 | 1361.6 | 1485.1 | 1632.4 | 1758.8 | 1761.8 | 1738.1 | 1382.4 |
| 57.5° | 683.8 | 700.6 | 810.2 | 1013.8 | 1262.8 | 1424.9 | 1635.3 | 1831.0 | 1864.6 | 1836.9 | 1447.6 |
| 60° | 535.6 | 547.4 | 611.6 | 844.8 | 1141.3 | 1338.9 | 1613.6 | 1888.3 | 1951.5 | 1930.8 | 1503.9 |
| 62.5° | 406.1 | 415.0 | 472.3 | 668.0 | 992.1 | 1238.1 | 1540.5 | 1909.0 | 2012.8 | 1993.0 | 1535.5 |
| 65° | 329.0 | 336.9 | 374.5 | 524.7 | 844.8 | 1121.5 | 1429.8 | 1861.6 | 2030.6 | 2012.8 | 1531.6 |
| 67.5° | 268.8 | 271.7 | 302.4 | 409.1 | 714.4 | 990.1 | 1267.7 | 1738.1 | 1976.2 | 1975.2 | 1486.1 |
| 70° | 217.4 | 225.3 | 251.0 | 326.1 | 593.9 | 838.9 | 1079.0 | 1544.4 | 1858.6 | 1868.5 | 1395.2 |
| 72.5° | 184.8 | 186.8 | 209.5 | 269.8 | 484.2 | 680.8 | 893.2 | 1321.1 | 1685.7 | 1693.6 | 1252.9 |
| 75° | 156.1 | 159.1 | 175.9 | 218.4 | 393.3 | 540.5 | 718.4 | 1067.2 | 1411.0 | 1444.6 | 1055.3 |
| 77.5° | 134.4 | 135.4 | 147.2 | 179.8 | 279.6 | 406.1 | 526.7 | 800.4 | 1104.7 | 1128.4 | 829.0 |
| 80° | 105.7 | 107.7 | 120.5 | 142.3 | 194.7 | 263.8 | 363.6 | 547.4 | 738.1 | 764.8 | 574.1 |
| 82.5° | 49.4 | 55.3 | 58.3 | 78.1 | 101.8 | 130.4 | 171.9 | 228.3 | 334.0 | 333.0 | 267.8 |
| 85° | 4.9 | 4.0 | 4.0 | 5.9 | 8.9 | 8.9 | 10.9 | 12.8 | 25.7 | 30.6 | 23.7 |
| 87.5° | 0.0 | 0.0 | 0.0 | 1.0 | 2.0 | 2.0 | 2.0 | 3.0 | 3.0 | 3.0 | 3.0 |
| 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: MEM2-HSN-SA-40-740-U-T2U-HSS

CANDELA DISTRIBUTION (continued):

| | 90° | 95° | 105° | 115° | 125° | 135° | 145° | 155° | 165° | 175° | 180° |
|-------|--------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|
| 0° | 595.8 | 595.8 | 595.8 | 595.8 | 595.8 | 595.8 | 595.8 | 595.8 | 595.8 | 595.8 | 595.8 |
| 2.5° | 598.8 | 589.9 | 574.1 | 559.3 | 549.4 | 541.5 | 528.6 | 520.7 | 514.8 | 506.9 | 505.9 |
| 5° | 596.8 | 581.0 | 549.4 | 522.7 | 497.0 | 475.3 | 452.6 | 438.7 | 423.9 | 417.0 | 422.9 |
| 7.5° | 598.8 | 573.1 | 523.7 | 483.2 | 444.6 | 410.1 | 380.4 | 361.6 | 347.8 | 340.9 | 341.9 |
| 10° | 599.8 | 566.2 | 502.0 | 445.6 | 396.2 | 355.7 | 322.1 | 296.4 | 279.6 | 275.7 | 270.7 |
| 12.5° | 597.8 | 557.3 | 480.2 | 409.1 | 349.8 | 305.3 | 265.8 | 246.0 | 229.2 | 221.3 | 221.3 |
| 15° | 599.8 | 550.4 | 457.5 | 375.5 | 308.3 | 256.9 | 223.3 | 201.6 | 191.7 | 184.8 | 185.8 |
| 17.5° | 599.8 | 544.4 | 435.8 | 342.9 | 267.8 | 220.3 | 189.7 | 171.9 | 162.0 | 158.1 | 157.1 |
| 20° | 606.7 | 539.5 | 415.0 | 312.2 | 232.2 | 187.7 | 163.0 | 149.2 | 141.3 | 137.3 | 135.4 |
| 22.5° | 611.6 | 535.6 | 396.2 | 282.6 | 202.6 | 164.0 | 143.3 | 130.4 | 124.5 | 122.5 | 122.5 |
| 25° | 620.5 | 534.6 | 379.4 | 253.9 | 178.8 | 146.2 | 127.5 | 117.6 | 112.6 | 110.7 | 110.7 |
| 27.5° | 633.4 | 536.5 | 363.6 | 229.2 | 161.1 | 128.5 | 114.6 | 106.7 | 103.8 | 102.8 | 101.8 |
| 30° | 652.2 | 545.4 | 353.7 | 210.5 | 144.3 | 117.6 | 104.7 | 99.8 | 97.8 | 96.8 | 96.8 |
| 32.5° | 676.9 | 561.2 | 349.8 | 200.6 | 134.4 | 108.7 | 97.8 | 93.9 | 91.9 | 91.9 | 90.9 |
| 35° | 707.5 | 579.0 | 346.8 | 191.7 | 127.5 | 102.8 | 92.9 | 88.9 | 87.9 | 87.9 | 87.9 |
| 37.5° | 744.0 | 597.8 | 341.9 | 185.8 | 123.5 | 97.8 | 88.9 | 85.0 | 85.0 | 85.0 | 85.0 |
| 40° | 784.6 | 625.5 | 340.9 | 181.8 | 120.5 | 94.9 | 85.0 | 81.0 | 81.0 | 81.0 | 81.0 |
| 42.5° | 830.0 | 655.1 | 339.9 | 178.8 | 118.6 | 92.9 | 81.0 | 77.1 | 77.1 | 77.1 | 77.1 |
| 45° | 885.3 | 692.7 | 341.9 | 176.9 | 118.6 | 90.9 | 78.1 | 73.1 | 72.1 | 72.1 | 72.1 |
| 47.5° | 939.7 | 728.2 | 343.9 | 174.9 | 116.6 | 87.9 | 74.1 | 69.2 | 68.2 | 67.2 | 67.2 |
| 50° | 998.0 | 764.8 | 343.9 | 172.9 | 114.6 | 85.0 | 71.1 | 64.2 | 63.2 | 62.3 | 62.3 |
| 52.5° | 1055.3 | 795.4 | 344.8 | 170.0 | 109.7 | 80.0 | 66.2 | 60.3 | 58.3 | 57.3 | 56.3 |
| 55° | 1110.6 | 828.0 | 345.8 | 165.0 | 103.8 | 75.1 | 63.2 | 56.3 | 53.4 | 51.4 | 51.4 |
| 57.5° | 1152.1 | 854.7 | 340.9 | 155.1 | 95.8 | 70.2 | 58.3 | 51.4 | 47.4 | 45.5 | 45.5 |
| 60° | 1191.7 | 871.5 | 332.0 | 140.3 | 87.9 | 65.2 | 54.3 | 46.4 | 42.5 | 40.5 | 40.5 |
| 62.5° | 1207.5 | 874.5 | 311.3 | 114.6 | 78.1 | 60.3 | 49.4 | 42.5 | 39.5 | 38.5 | 38.5 |
| 65° | 1198.6 | 861.6 | 283.6 | 90.9 | 69.2 | 54.3 | 45.5 | 39.5 | 35.6 | 32.6 | 32.6 |
| 67.5° | 1150.2 | 817.2 | 246.0 | 72.1 | 60.3 | 49.4 | 41.5 | 35.6 | 31.6 | 28.7 | 28.7 |
| 70° | 1058.3 | 746.0 | 191.7 | 57.3 | 52.4 | 43.5 | 37.5 | 32.6 | 28.7 | 25.7 | 25.7 |
| 72.5° | 922.9 | 647.2 | 139.3 | 48.4 | 45.5 | 38.5 | 33.6 | 29.6 | 25.7 | 23.7 | 23.7 |
| 75° | 760.8 | 499.0 | 98.8 | 41.5 | 40.5 | 34.6 | 30.6 | 26.7 | 23.7 | 21.7 | 21.7 |
| 77.5° | 571.1 | 347.8 | 77.1 | 36.6 | 35.6 | 31.6 | 27.7 | 24.7 | 21.7 | 20.8 | 19.8 |
| 80° | 380.4 | 215.4 | 58.3 | 27.7 | 26.7 | 24.7 | 22.7 | 20.8 | 17.8 | 15.8 | 15.8 |
| 82.5° | 170.0 | 90.9 | 29.6 | 15.8 | 13.8 | 11.9 | 9.9 | 6.9 | 6.9 | 5.9 | 5.9 |
| 85° | 17.8 | 11.9 | 5.9 | 4.0 | 4.0 | 3.0 | 3.0 | 3.0 | 2.0 | 2.0 | 2.0 |
| 87.5° | 3.0 | 3.0 | 2.0 | 2.0 | 2.0 | 1.0 | 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: SP1-2407-157-5

Test Date: 08/07/2024

Luminaire Tested: MEM2-HTN-SA-40-740-U-5WQ-2

Data in this report applies to families of products including MEM2-HTN-SA-40-740-U-5WQ-2

Test Information

Test Method: LM-79-2019
 Report Number: SP1-2407-157-5
 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-40-740-U-5WQ-2**
 Description: Epic Modern Light Square 40W 5WQ Optic and Flare Trim

Spectral Parameters

CCT (K): 3915
 CIE u': 0.2262
 CIE v': 0.5044
 Duv: 0.0010
 CIE x: 0.3850
 CIE y: 0.3816
 CIE z: 0.2334
 Peak Wavelength (nm): 449
 Dominant Wavelength (nm): 578
 Purity: 30.05482
 Rf: 73.2
 Rg: 93.9

| | | | |
|-----------|------|------|-------|
| CRI (Ra): | 71.0 | | |
| R1: | 67.6 | R9: | -38.4 |
| R2: | 78.3 | R10: | 48.9 |
| R3: | 87.1 | R11: | 65.3 |
| R4: | 69.7 | R12: | 40.4 |
| R5: | 67.4 | R13: | 69.3 |
| R6: | 69.3 | R14: | 92.6 |
| R7: | 79.7 | R15: | 59.9 |
| R8: | 48.7 | | |



Test Conditions

Stabilization Time: 21M
 Operation Time: 1H 21M
 Sphere Temperature (°C): 24.2

REPORT NUMBER: SP1-2407-157-5

| Measurement and Test Equipment | | | |
|--------------------------------|-----------------------|------------------|----------------------|
| Instrument | Identification Number | Calibration Date | Calibration Due Date |
| Photometer | IN0058 | 6/18/2024 | 12/18/2024 |
| Power Meter | INXT2011004 | 2/8/2024 | 2/8/2025 |
| AC Power Source | IN0063 | 10/24/2023 | 10/24/2024 |
| DC Power Source | IN0208 | 10/24/2023 | 10/24/2024 |
| Sphere Thermometer | IN0085 | 10/24/2023 | 10/24/2024 |
| Room Thermometer | IN0046 | 10/24/2023 | 10/24/2024 |

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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 4000K 4-step quadrangle

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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 | 112 | NR | 620 | 618 | NR | 750 | 15 | NR | 880 | 0 | NR |
| 365 | 0 | NR | 495 | 153 | NR | 625 | 563 | NR | 755 | 13 | NR | 885 | 0 | NR |
| 370 | 0 | NR | 500 | 216 | NR | 630 | 510 | NR | 760 | 11 | NR | 890 | 0 | NR |
| 375 | 0 | NR | 505 | 291 | NR | 635 | 456 | NR | 765 | 9 | NR | 895 | 0 | NR |
| 380 | 0 | NR | 510 | 366 | NR | 640 | 407 | NR | 770 | 8 | NR | 900 | 0 | NR |
| 385 | 0 | NR | 515 | 436 | NR | 645 | 359 | NR | 775 | 7 | NR | 905 | 0 | NR |
| 390 | 0 | NR | 520 | 492 | NR | 650 | 316 | NR | 780 | 6 | NR | 910 | 0 | NR |
| 395 | 2 | NR | 525 | 536 | NR | 655 | 277 | NR | 785 | 5 | NR | 915 | 0 | NR |
| 400 | 4 | NR | 530 | 567 | NR | 660 | 240 | NR | 790 | 4 | NR | 920 | 0 | NR |
| 405 | 7 | NR | 535 | 596 | NR | 665 | 208 | NR | 795 | 4 | NR | 925 | 0 | NR |
| 410 | 12 | NR | 540 | 619 | NR | 670 | 179 | NR | 800 | 3 | NR | 930 | 0 | NR |
| 415 | 25 | NR | 545 | 644 | NR | 675 | 154 | NR | 805 | 3 | NR | 935 | 0 | NR |
| 420 | 51 | NR | 550 | 671 | NR | 680 | 133 | NR | 810 | 3 | NR | 940 | 0 | NR |
| 425 | 100 | NR | 555 | 701 | NR | 685 | 114 | NR | 815 | 2 | NR | 945 | 0 | NR |
| 430 | 180 | NR | 560 | 735 | NR | 690 | 98 | NR | 820 | 2 | NR | 950 | 0 | NR |
| 435 | 315 | NR | 565 | 768 | NR | 695 | 83 | NR | 825 | 2 | NR | 955 | 0 | NR |
| 440 | 514 | NR | 570 | 798 | NR | 700 | 71 | NR | 830 | 1 | NR | 960 | 0 | NR |
| 445 | 828 | NR | 575 | 825 | NR | 705 | 61 | NR | 835 | 1 | NR | 965 | 0 | NR |
| 450 | 992 | NR | 580 | 843 | NR | 710 | 52 | NR | 840 | 1 | NR | 970 | 0 | NR |
| 455 | 652 | NR | 585 | 848 | NR | 715 | 44 | NR | 845 | 1 | NR | 975 | 0 | NR |
| 460 | 382 | NR | 590 | 844 | NR | 720 | 38 | NR | 850 | 1 | NR | 980 | 0 | NR |
| 465 | 282 | NR | 595 | 826 | NR | 725 | 32 | NR | 855 | 1 | NR | 985 | 0 | NR |
| 470 | 180 | NR | 600 | 800 | NR | 730 | 28 | NR | 860 | 1 | NR | 990 | 0 | NR |
| 475 | 119 | NR | 605 | 762 | NR | 735 | 24 | NR | 865 | 1 | NR | 995 | 0 | NR |
| 480 | 101 | NR | 610 | 719 | NR | 740 | 20 | NR | 870 | 1 | NR | 1000 | 0 | NR |
| 485 | 98 | NR | 615 | 669 | NR | 745 | 17 | NR | 875 | 0 | NR | | | |

REPORT NUMBER: SP1-2407-157-5

Scotopic Flux vs. Wavelength



Scotopic Lumens: NR

S/P: 1.49

| 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 | 112 | NR | 620 | 618 | NR | 750 | 15 | NR | 880 | 0 | NR |
| 365 | 0 | NR | 495 | 153 | NR | 625 | 563 | NR | 755 | 13 | NR | 885 | 0 | NR |
| 370 | 0 | NR | 500 | 216 | NR | 630 | 510 | NR | 760 | 11 | NR | 890 | 0 | NR |
| 375 | 0 | NR | 505 | 291 | NR | 635 | 456 | NR | 765 | 9 | NR | 895 | 0 | NR |
| 380 | 0 | NR | 510 | 366 | NR | 640 | 407 | NR | 770 | 8 | NR | 900 | 0 | NR |
| 385 | 0 | NR | 515 | 436 | NR | 645 | 359 | NR | 775 | 7 | NR | 905 | 0 | NR |
| 390 | 0 | NR | 520 | 492 | NR | 650 | 316 | NR | 780 | 6 | NR | 910 | 0 | NR |
| 395 | 2 | NR | 525 | 536 | NR | 655 | 277 | NR | 785 | 5 | NR | 915 | 0 | NR |
| 400 | 4 | NR | 530 | 567 | NR | 660 | 240 | NR | 790 | 4 | NR | 920 | 0 | NR |
| 405 | 7 | NR | 535 | 596 | NR | 665 | 208 | NR | 795 | 4 | NR | 925 | 0 | NR |
| 410 | 12 | NR | 540 | 619 | NR | 670 | 179 | NR | 800 | 3 | NR | 930 | 0 | NR |
| 415 | 25 | NR | 545 | 644 | NR | 675 | 154 | NR | 805 | 3 | NR | 935 | 0 | NR |
| 420 | 51 | NR | 550 | 671 | NR | 680 | 133 | NR | 810 | 3 | NR | 940 | 0 | NR |
| 425 | 100 | NR | 555 | 701 | NR | 685 | 114 | NR | 815 | 2 | NR | 945 | 0 | NR |
| 430 | 180 | NR | 560 | 735 | NR | 690 | 98 | NR | 820 | 2 | NR | 950 | 0 | NR |
| 435 | 315 | NR | 565 | 768 | NR | 695 | 83 | NR | 825 | 2 | NR | 955 | 0 | NR |
| 440 | 514 | NR | 570 | 798 | NR | 700 | 71 | NR | 830 | 1 | NR | 960 | 0 | NR |
| 445 | 828 | NR | 575 | 825 | NR | 705 | 61 | NR | 835 | 1 | NR | 965 | 0 | NR |
| 450 | 992 | NR | 580 | 843 | NR | 710 | 52 | NR | 840 | 1 | NR | 970 | 0 | NR |
| 455 | 652 | NR | 585 | 848 | NR | 715 | 44 | NR | 845 | 1 | NR | 975 | 0 | NR |
| 460 | 382 | NR | 590 | 844 | NR | 720 | 38 | NR | 850 | 1 | NR | 980 | 0 | NR |
| 465 | 282 | NR | 595 | 826 | NR | 725 | 32 | NR | 855 | 1 | NR | 985 | 0 | NR |
| 470 | 180 | NR | 600 | 800 | NR | 730 | 28 | NR | 860 | 1 | NR | 990 | 0 | NR |
| 475 | 119 | NR | 605 | 762 | NR | 735 | 24 | NR | 865 | 1 | NR | 995 | 0 | NR |
| 480 | 101 | NR | 610 | 719 | NR | 740 | 20 | NR | 870 | 1 | NR | 1000 | 0 | NR |
| 485 | 98 | NR | 615 | 669 | NR | 745 | 17 | NR | 875 | 0 | NR | | | |

REPORT NUMBER: SP1-2407-157-5

Melanopic Flux vs. Wavelength



Melanopic Lumens: NR

M/P: 2.88

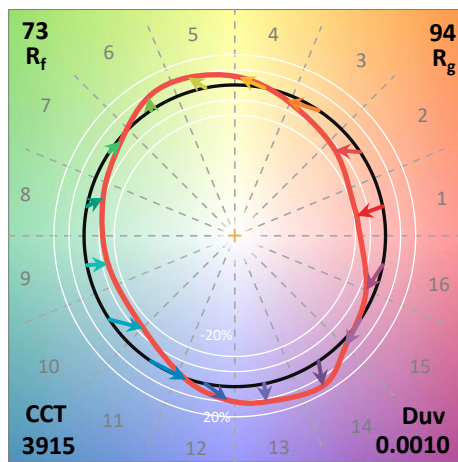
| λ (nm) | Power W [^] /nm | Lumens (φ/nm) | λ (nm) | Power W [^] /nm | Lumens (φ/nm) | λ (nm) | Power W [^] /nm | Lumens (φ/nm) | λ (nm) | Power W [^] /nm | Lumens (φ/nm) | λ (nm) | Power W [^] /nm | Lumens (φ/nm) |
|--------|--------------------------|---------------|--------|--------------------------|---------------|--------|--------------------------|---------------|--------|--------------------------|---------------|--------|--------------------------|---------------|
| 360 | 0 | NR | 490 | 112 | NR | 620 | 618 | NR | 750 | 15 | NR | 880 | 0 | NR |
| 365 | 0 | NR | 495 | 153 | NR | 625 | 563 | NR | 755 | 13 | NR | 885 | 0 | NR |
| 370 | 0 | NR | 500 | 216 | NR | 630 | 510 | NR | 760 | 11 | NR | 890 | 0 | NR |
| 375 | 0 | NR | 505 | 291 | NR | 635 | 456 | NR | 765 | 9 | NR | 895 | 0 | NR |
| 380 | 0 | NR | 510 | 366 | NR | 640 | 407 | NR | 770 | 8 | NR | 900 | 0 | NR |
| 385 | 0 | NR | 515 | 436 | NR | 645 | 359 | NR | 775 | 7 | NR | 905 | 0 | NR |
| 390 | 0 | NR | 520 | 492 | NR | 650 | 316 | NR | 780 | 6 | NR | 910 | 0 | NR |
| 395 | 2 | NR | 525 | 536 | NR | 655 | 277 | NR | 785 | 5 | NR | 915 | 0 | NR |
| 400 | 4 | NR | 530 | 567 | NR | 660 | 240 | NR | 790 | 4 | NR | 920 | 0 | NR |
| 405 | 7 | NR | 535 | 596 | NR | 665 | 208 | NR | 795 | 4 | NR | 925 | 0 | NR |
| 410 | 12 | NR | 540 | 619 | NR | 670 | 179 | NR | 800 | 3 | NR | 930 | 0 | NR |
| 415 | 25 | NR | 545 | 644 | NR | 675 | 154 | NR | 805 | 3 | NR | 935 | 0 | NR |
| 420 | 51 | NR | 550 | 671 | NR | 680 | 133 | NR | 810 | 3 | NR | 940 | 0 | NR |
| 425 | 100 | NR | 555 | 701 | NR | 685 | 114 | NR | 815 | 2 | NR | 945 | 0 | NR |
| 430 | 180 | NR | 560 | 735 | NR | 690 | 98 | NR | 820 | 2 | NR | 950 | 0 | NR |
| 435 | 315 | NR | 565 | 768 | NR | 695 | 83 | NR | 825 | 2 | NR | 955 | 0 | NR |
| 440 | 514 | NR | 570 | 798 | NR | 700 | 71 | NR | 830 | 1 | NR | 960 | 0 | NR |
| 445 | 828 | NR | 575 | 825 | NR | 705 | 61 | NR | 835 | 1 | NR | 965 | 0 | NR |
| 450 | 992 | NR | 580 | 843 | NR | 710 | 52 | NR | 840 | 1 | NR | 970 | 0 | NR |
| 455 | 652 | NR | 585 | 848 | NR | 715 | 44 | NR | 845 | 1 | NR | 975 | 0 | NR |
| 460 | 382 | NR | 590 | 844 | NR | 720 | 38 | NR | 850 | 1 | NR | 980 | 0 | NR |
| 465 | 282 | NR | 595 | 826 | NR | 725 | 32 | NR | 855 | 1 | NR | 985 | 0 | NR |
| 470 | 180 | NR | 600 | 800 | NR | 730 | 28 | NR | 860 | 1 | NR | 990 | 0 | NR |
| 475 | 119 | NR | 605 | 762 | NR | 735 | 24 | NR | 865 | 1 | NR | 995 | 0 | NR |
| 480 | 101 | NR | 610 | 719 | NR | 740 | 20 | NR | 870 | 1 | NR | 1000 | 0 | NR |
| 485 | 98 | NR | 615 | 669 | NR | 745 | 17 | NR | 875 | 0 | NR | | | |

Summary

$R_f = 73.2$
 $R_g = 93.9$
 $CIE R_a = 71.0$
 $R_g = -38.4$



Color Vector Graphics



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

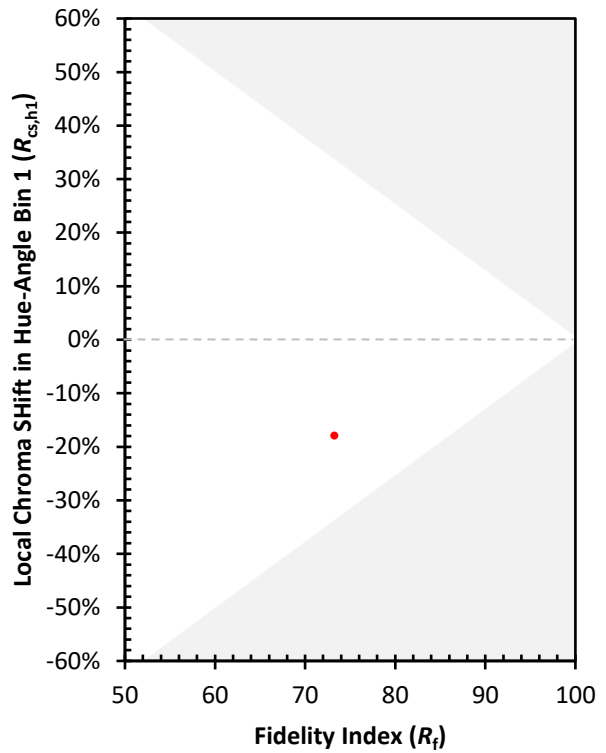
| | | | |
|------------|------------|------------|------------|
| CES01 = 85 | CES26 = 61 | CES51 = 88 | CES76 = 50 |
| CES02 = 61 | CES27 = 88 | CES52 = 87 | CES77 = 69 |
| CES03 = 30 | CES28 = 81 | CES53 = 77 | CES78 = 53 |
| CES04 = 70 | CES29 = 65 | CES54 = 84 | CES79 = 81 |
| CES05 = 47 | CES30 = 81 | CES55 = 83 | CES80 = 78 |
| CES06 = 50 | CES31 = 69 | CES56 = 73 | CES81 = 77 |
| CES07 = 40 | CES32 = 60 | CES57 = 72 | CES82 = 91 |
| CES08 = 39 | CES33 = 76 | CES58 = 73 | CES83 = 89 |
| CES09 = 29 | CES34 = 70 | CES59 = 85 | CES84 = 86 |
| CES10 = 74 | CES35 = 83 | CES60 = 89 | CES85 = 77 |
| CES11 = 57 | CES36 = 91 | CES61 = 81 | CES86 = 71 |
| CES12 = 63 | CES37 = 79 | CES62 = 85 | CES87 = 76 |
| CES13 = 42 | CES38 = 92 | CES63 = 72 | CES88 = 80 |
| CES14 = 74 | CES39 = 96 | CES64 = 64 | CES89 = 70 |
| CES15 = 71 | CES40 = 91 | CES65 = 61 | CES90 = 79 |
| CES16 = 46 | CES41 = 93 | CES66 = 57 | CES91 = 74 |
| CES17 = 49 | CES42 = 80 | CES67 = 54 | CES92 = 57 |
| CES18 = 56 | CES43 = 76 | CES68 = 63 | CES93 = 74 |
| CES19 = 72 | CES44 = 99 | CES69 = 73 | CES94 = 51 |
| CES20 = 65 | CES45 = 85 | CES70 = 55 | CES95 = 65 |
| CES21 = 86 | CES46 = 82 | CES71 = 48 | CES96 = 76 |
| CES22 = 78 | CES47 = 86 | CES72 = 83 | CES97 = 84 |
| CES23 = 92 | CES48 = 77 | CES73 = 45 | CES98 = 75 |
| CES24 = 91 | CES49 = 80 | CES74 = 93 | CES99 = 62 |
| CES25 = 72 | CES50 = 88 | CES75 = 51 | |



Color Rendition by Hue-Angle Bin



Measure Comparisons



(END OF REPORT)