

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: P870853

Luminaire Tested: **EMM2-HTN-SA1B-840-U-T4W**

Issue Date: 09/05/2024



Test Information

Test Method: LM-79-08
Report Number: P870853
Test Lab: INNOVATION CENTER(G3)
Issue Date: 09/05/2024
Manufacturer: COOPER LIGHTING SOLUTIONS (FORMERLY EATON)
Product Line: INVUE
Catalog Number: EMM2-HTN-SA1B-840-U-T4W
Description: EPIC MODERN TALL HOUSING DISCRETE LED ARRAYS 60W 80CRI 4000K
FIXTURE w/ TYPE IV WIDE DISTRIBUTION OPTIC
Light Source: (10) 4000K CCT, 80 CRI LEDS
Ballast/Driver: ELECTRONIC DRIVER

Summary

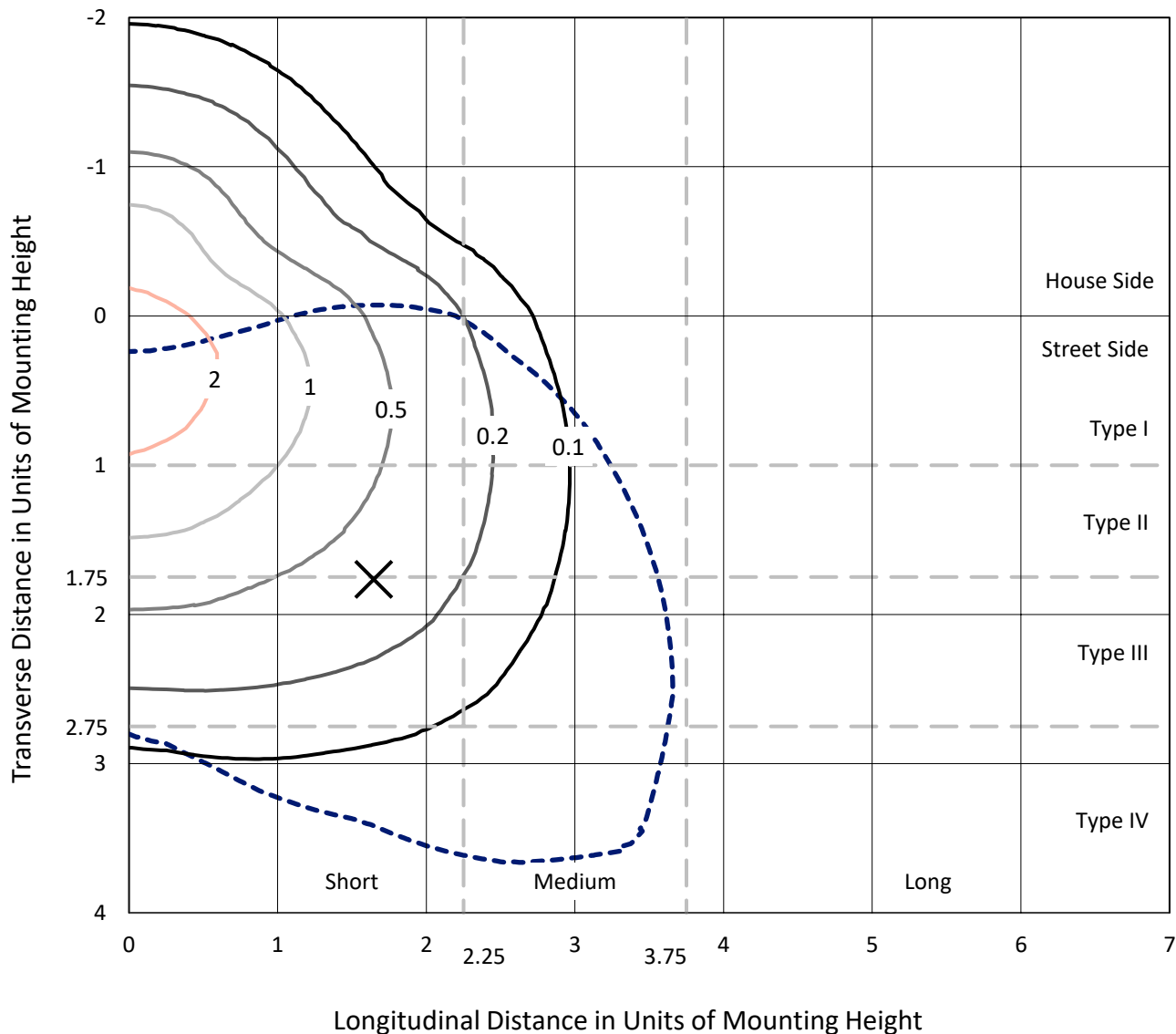
Lumens per Lamp: N/A
Luminaire Lumens: 5851.5 lumens
Efficiency: N/A
Efficacy: 133.0 lumens/watt
Luminous Opening: Rectangular (W 0.33' x L: 0.33' x H: 0')
IES Classification: Type IV - Short
BUG Rating: B1 - U0 - G1

Input Watts (W): 44
Input Voltage (V): 120
Input Current (A_{in}): NR
Voltage Rise (V): NR
Power Factor: 0.99
Total Harmonic Distortion (THDi): 6.91%
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

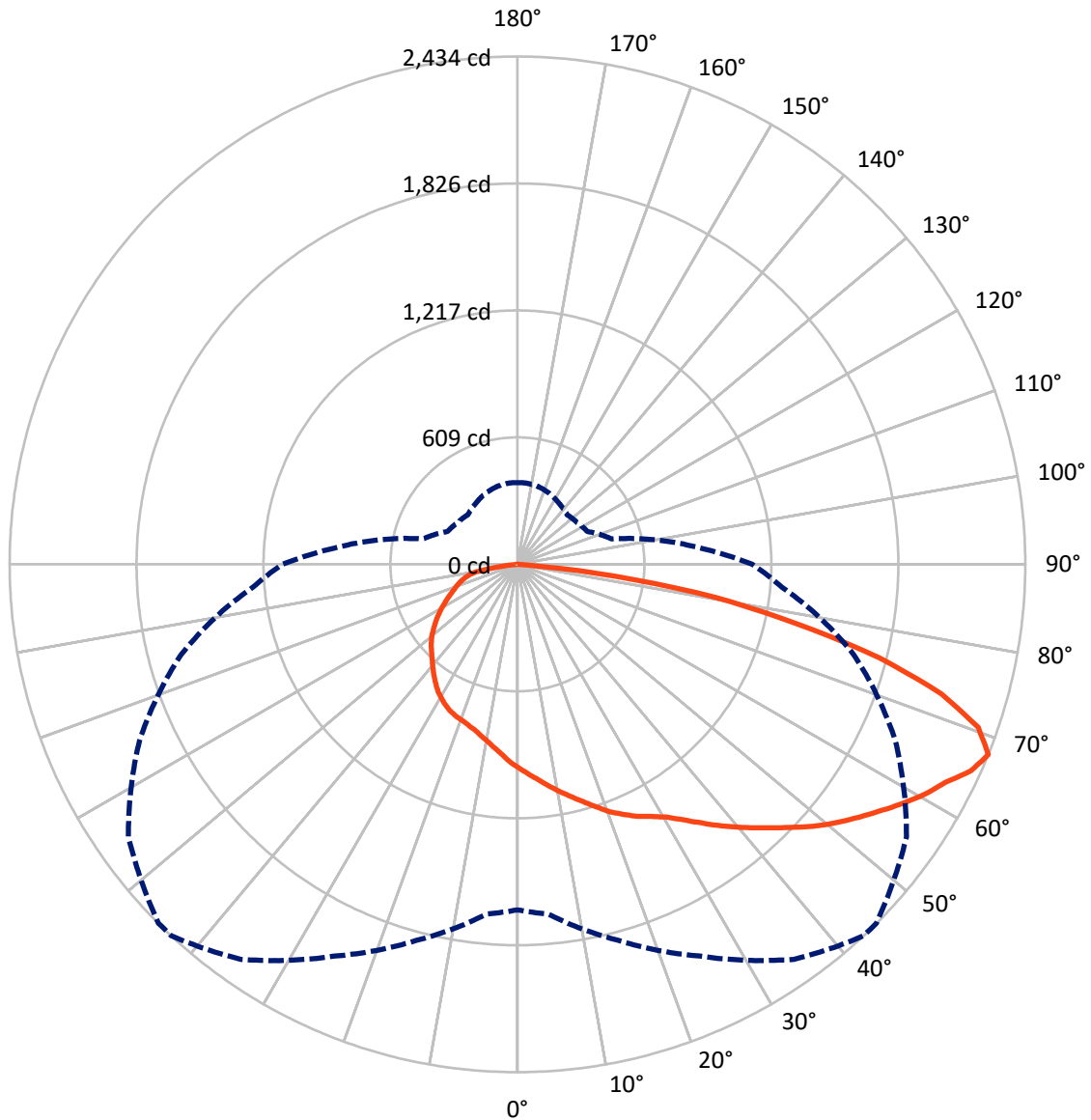
✕ Max cd
 - - - 1/2 Max cd



Based on 20 foot mounting height. Maximum calculated value = 2.8 fc
 Type IV - Short - N/A

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Luminous Intensity Polar Plot



— Vertical Plane Through 43-Deg Lateral - - - Horizontal Cone Through 67.5-Deg Vertical

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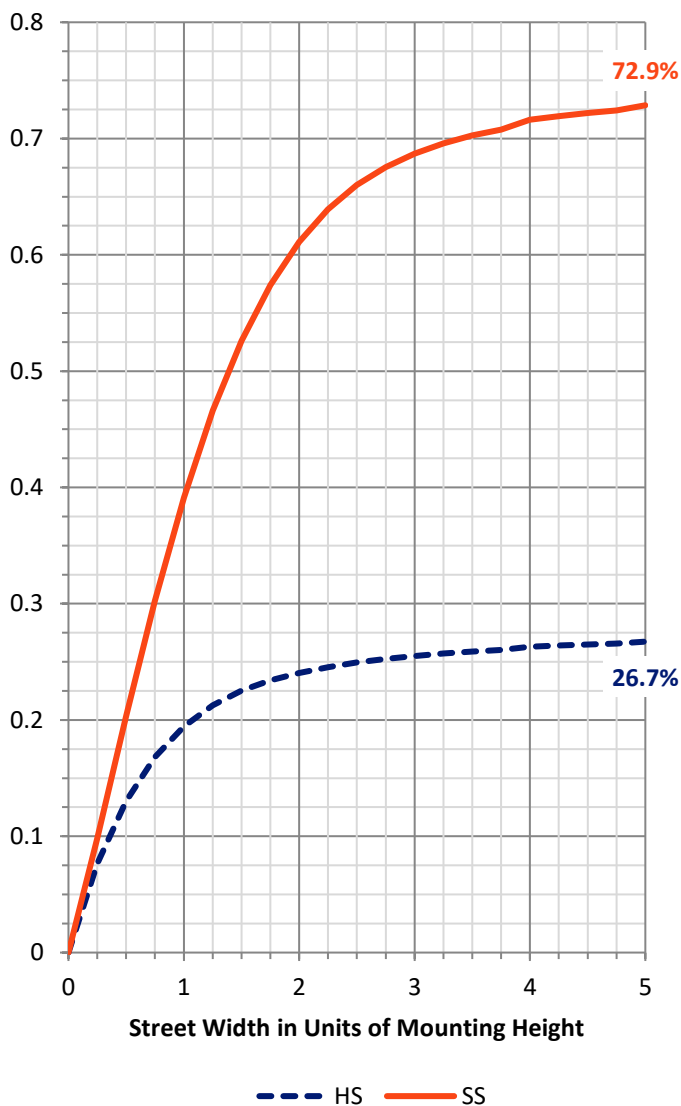
FLUX DISTRIBUTION:

| | | Downward | Upward | Total |
|--------------------|-----------|----------|--------|--------|
| House Side | Lumens | 1574.1 | 0.0 | 1574.1 |
| | % Fixture | 26.9 | 0.0 | 26.9 |
| Street Side | Lumens | 4277.4 | 0.0 | 4277.4 |
| | % Fixture | 73.1 | 0.0 | 73.1 |
| Total | Lumens | 5851.5 | 0.0 | 5851.5 |
| | % Fixture | 100.0 | 0.0 | 100.0 |

Coefficient of Utilization

ZONAL LUMENS:

| Zone | Lumens | % Fixture |
|-----------|--------|-----------|
| 0°-10° | 93.5 | 1.6 |
| 10°-20° | 285.5 | 4.9 |
| 20°-30° | 487.1 | 8.3 |
| 30°-40° | 710.4 | 12.1 |
| 40°-50° | 954.3 | 16.3 |
| 50°-60° | 1168.2 | 20.0 |
| 60°-70° | 1229.5 | 21.0 |
| 70°-80° | 802.7 | 13.7 |
| 80°-90° | 120.4 | 2.1 |
| 90°-100° | 0.0 | 0.0 |
| 100°-110° | 0.0 | 0.0 |
| 110°-120° | 0.0 | 0.0 |
| 120°-130° | 0.0 | 0.0 |
| 130°-140° | 0.0 | 0.0 |
| 140°-150° | 0.0 | 0.0 |
| 150°-160° | 0.0 | 0.0 |
| 160°-170° | 0.0 | 0.0 |
| 170°-180° | 0.0 | 0.0 |
| 0°-90° | 5851.5 | 100.0 |
| 0°-180° | 5851.5 | 100.0 |



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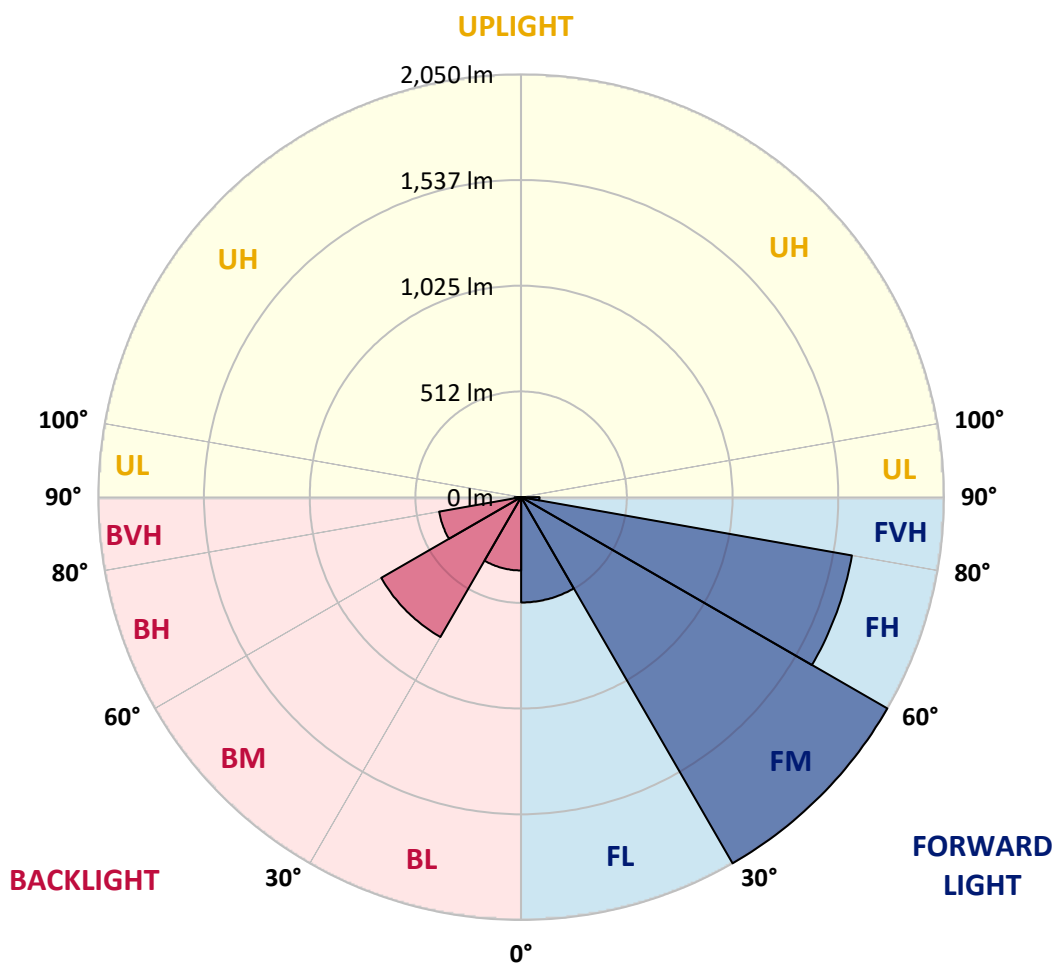
CATALOG NUMBER: EMM2-HTN-SA1B-840-U-T4W

LUMINAIRE CLASSIFICATION SYSTEM LUMEN TABLE AND BUG RATING:

| Zone | Lumens | % Fixture | Zone Rating/Lumen Limit | | |
|----------------|--------|-----------|-------------------------|------|---------|
| | | | B | U | G |
| FL (0°-30°) | 510.7 | 8.7 | | | |
| FM (30°-60°) | 2049.7 | 35.0 | | | |
| FH (60°-80°) | 1628.2 | 27.8 | | | G1/1800 |
| FVH (80°-90°) | 88.8 | 1.5 | | | G1/100 |
| BL (0°-30°) | 355.4 | 6.1 | B1/500 | | |
| BM (30°-60°) | 783.2 | 13.4 | B1/1000 | | |
| BH (60°-80°) | 404.0 | 6.9 | B1/500 | | G1/500 |
| BVH (80°-90°) | 31.6 | 0.5 | | | G1/100 |
| UL (90°-100°) | 0.0 | 0.0 | | U0/0 | |
| UH (100°-180°) | 0.0 | 0.0 | | U0/0 | |

BUG Rating: B1-U0-G1

Type IV Short





REPORT NUMBER: P870853

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CANDELA DISTRIBUTION (FULL):

| | 0° | 5° | 15° | 25° | 35° | 43° | 45° | 55° | 65° | 75° | 85° |
|-------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|
| 0° | 976.8 | 976.8 | 976.8 | 976.8 | 976.8 | 976.8 | 976.8 | 976.8 | 976.8 | 976.8 | 976.8 |
| 2.5° | 1021.8 | 1020.6 | 1017.0 | 1014.7 | 1007.6 | 1006.4 | 1006.4 | 999.3 | 991.0 | 986.3 | 981.5 |
| 5° | 1068.0 | 1062.0 | 1059.7 | 1054.9 | 1043.1 | 1036.0 | 1038.4 | 1025.3 | 1008.8 | 996.9 | 983.9 |
| 7.5° | 1109.4 | 1107.0 | 1098.7 | 1092.8 | 1078.6 | 1071.5 | 1069.1 | 1049.0 | 1027.7 | 1009.9 | 988.6 |
| 10° | 1159.1 | 1153.2 | 1148.5 | 1136.6 | 1117.7 | 1107.0 | 1103.5 | 1077.4 | 1050.2 | 1026.5 | 998.1 |
| 12.5° | 1204.1 | 1197.0 | 1191.1 | 1179.3 | 1160.3 | 1142.6 | 1137.8 | 1108.2 | 1073.9 | 1041.9 | 1006.4 |
| 15° | 1238.5 | 1239.6 | 1233.7 | 1223.1 | 1201.8 | 1180.4 | 1176.9 | 1137.8 | 1096.4 | 1057.3 | 1014.7 |
| 17.5° | 1270.4 | 1275.2 | 1271.6 | 1264.5 | 1243.2 | 1221.9 | 1218.3 | 1174.5 | 1124.8 | 1075.1 | 1024.2 |
| 20° | 1301.2 | 1301.2 | 1300.0 | 1295.3 | 1279.9 | 1265.7 | 1258.6 | 1214.8 | 1152.0 | 1094.0 | 1037.2 |
| 22.5° | 1319.0 | 1323.7 | 1323.7 | 1323.7 | 1314.2 | 1302.4 | 1300.0 | 1257.4 | 1188.7 | 1117.7 | 1049.0 |
| 25° | 1346.2 | 1352.1 | 1352.1 | 1349.8 | 1341.5 | 1337.9 | 1334.4 | 1294.1 | 1224.2 | 1144.9 | 1062.0 |
| 27.5° | 1404.2 | 1403.0 | 1393.6 | 1381.7 | 1369.9 | 1368.7 | 1364.0 | 1335.5 | 1265.7 | 1174.5 | 1079.8 |
| 30° | 1484.7 | 1487.1 | 1475.3 | 1438.6 | 1411.3 | 1405.4 | 1406.6 | 1381.7 | 1314.2 | 1208.9 | 1099.9 |
| 32.5° | 1607.9 | 1607.9 | 1561.7 | 1514.3 | 1475.3 | 1459.9 | 1456.3 | 1435.0 | 1364.0 | 1246.7 | 1122.4 |
| 35° | 1700.2 | 1696.7 | 1670.6 | 1615.0 | 1566.4 | 1522.6 | 1516.7 | 1488.3 | 1419.6 | 1289.4 | 1147.3 |
| 37.5° | 1770.1 | 1777.2 | 1757.0 | 1714.4 | 1667.1 | 1591.3 | 1579.4 | 1539.2 | 1470.5 | 1330.8 | 1172.2 |
| 40° | 1905.0 | 1887.3 | 1838.7 | 1799.7 | 1742.8 | 1658.8 | 1648.1 | 1598.4 | 1522.6 | 1377.0 | 1202.9 |
| 42.5° | 2003.3 | 1978.5 | 1922.8 | 1870.7 | 1799.7 | 1726.3 | 1716.8 | 1662.3 | 1583.0 | 1429.1 | 1234.9 |
| 45° | 2144.2 | 2088.6 | 2011.6 | 1965.4 | 1864.8 | 1799.7 | 1787.8 | 1728.6 | 1645.8 | 1484.7 | 1275.2 |
| 47.5° | 2280.4 | 2183.3 | 2101.6 | 2080.3 | 1935.8 | 1879.0 | 1869.5 | 1800.9 | 1713.2 | 1545.1 | 1314.2 |
| 50° | 2262.6 | 2198.7 | 2171.4 | 2151.3 | 1997.4 | 1953.6 | 1944.1 | 1874.3 | 1781.9 | 1609.0 | 1353.3 |
| 52.5° | 2217.6 | 2223.5 | 2224.7 | 2176.2 | 2055.4 | 2023.4 | 2014.0 | 1953.6 | 1852.9 | 1664.7 | 1391.2 |
| 55° | 2265.0 | 2272.1 | 2270.9 | 2197.5 | 2122.9 | 2093.3 | 2087.4 | 2034.1 | 1921.6 | 1716.8 | 1418.4 |
| 57.5° | 2337.2 | 2313.5 | 2310.0 | 2250.8 | 2195.1 | 2167.9 | 2160.8 | 2114.6 | 1979.6 | 1754.7 | 1439.7 |
| 60° | 2350.2 | 2302.9 | 2318.3 | 2262.6 | 2249.6 | 2241.3 | 2238.9 | 2184.5 | 2034.1 | 1785.5 | 1448.0 |
| 62.5° | 2204.6 | 2196.3 | 2256.7 | 2234.2 | 2278.0 | 2301.7 | 2302.9 | 2234.2 | 2063.7 | 1797.3 | 1439.7 |
| 65° | 1956.0 | 1989.1 | 2119.3 | 2184.5 | 2320.6 | 2388.1 | 2385.7 | 2263.8 | 2060.1 | 1763.0 | 1388.8 |
| 67.5° | 1656.4 | 1682.5 | 1866.0 | 2072.0 | 2311.2 | 2434.3 | 2433.1 | 2276.8 | 1998.6 | 1668.2 | 1274.0 |
| 70° | 1256.2 | 1337.9 | 1598.4 | 1869.5 | 2183.3 | 2343.1 | 2363.2 | 2203.4 | 1857.7 | 1495.4 | 1099.9 |
| 72.5° | 955.5 | 968.5 | 1283.4 | 1567.6 | 1954.8 | 2126.5 | 2122.9 | 1969.0 | 1622.1 | 1259.8 | 916.4 |
| 75° | 678.4 | 706.8 | 966.1 | 1214.8 | 1601.9 | 1792.6 | 1784.3 | 1615.0 | 1294.1 | 980.3 | 700.9 |
| 77.5° | 505.6 | 516.2 | 706.8 | 901.0 | 1198.2 | 1369.9 | 1366.3 | 1193.5 | 951.9 | 719.9 | 522.1 |
| 80° | 369.4 | 387.2 | 509.1 | 628.7 | 812.2 | 960.2 | 955.5 | 792.1 | 610.9 | 503.2 | 381.2 |
| 82.5° | 207.2 | 220.2 | 296.0 | 380.1 | 428.6 | 474.8 | 454.7 | 380.1 | 278.2 | 216.7 | 187.1 |
| 85° | 5.9 | 7.1 | 10.7 | 13.0 | 22.5 | 37.9 | 41.4 | 36.7 | 43.8 | 27.2 | 29.6 |
| 87.5° | 2.4 | 2.4 | 2.4 | 2.4 | 2.4 | 3.6 | 3.6 | 3.6 | 3.6 | 3.6 | 3.6 |
| 90° | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |



REPORT NUMBER: P870853

CATALOG NUMBER: EMM2-HTN-SA1B-840-U-T4W

CANDELA DISTRIBUTION (continued):

| | 90° | 95° | 105° | 115° | 125° | 135° | 145° | 155° | 165° | 175° | 180° |
|-------|--------|--------|-------|-------|-------|-------|-------|-------|-------|-------|-------|
| 0° | 976.8 | 976.8 | 976.8 | 976.8 | 976.8 | 976.8 | 976.8 | 976.8 | 976.8 | 976.8 | 976.8 |
| 2.5° | 979.2 | 974.4 | 965.0 | 959.0 | 955.5 | 950.7 | 943.6 | 938.9 | 935.4 | 940.1 | 938.9 |
| 5° | 978.0 | 968.5 | 951.9 | 940.1 | 928.3 | 918.8 | 908.1 | 899.8 | 895.1 | 897.5 | 896.3 |
| 7.5° | 978.0 | 966.1 | 940.1 | 921.1 | 903.4 | 889.2 | 877.3 | 866.7 | 861.9 | 863.1 | 861.9 |
| 10° | 982.7 | 966.1 | 931.8 | 904.6 | 880.9 | 864.3 | 851.3 | 841.8 | 838.3 | 841.8 | 843.0 |
| 12.5° | 987.5 | 966.1 | 924.7 | 890.4 | 859.6 | 841.8 | 830.0 | 824.1 | 826.4 | 827.6 | 828.8 |
| 15° | 989.8 | 965.0 | 917.6 | 873.8 | 839.5 | 820.5 | 813.4 | 812.2 | 818.1 | 824.1 | 825.2 |
| 17.5° | 995.7 | 963.8 | 906.9 | 857.2 | 821.7 | 806.3 | 802.7 | 807.5 | 819.3 | 827.6 | 830.0 |
| 20° | 1002.8 | 966.1 | 895.1 | 837.1 | 803.9 | 792.1 | 798.0 | 808.7 | 822.9 | 834.7 | 837.1 |
| 22.5° | 1009.9 | 967.3 | 884.4 | 819.3 | 785.0 | 782.6 | 795.6 | 811.0 | 827.6 | 839.5 | 841.8 |
| 25° | 1018.2 | 967.3 | 870.2 | 796.8 | 766.0 | 769.6 | 789.7 | 809.9 | 825.2 | 840.6 | 843.0 |
| 27.5° | 1026.5 | 969.7 | 854.8 | 772.0 | 742.4 | 753.0 | 777.9 | 802.7 | 819.3 | 834.7 | 838.3 |
| 30° | 1040.7 | 974.4 | 841.8 | 750.7 | 718.7 | 732.9 | 762.5 | 790.9 | 808.7 | 825.2 | 828.8 |
| 32.5° | 1054.9 | 981.5 | 831.2 | 728.2 | 695.0 | 711.6 | 744.7 | 776.7 | 795.6 | 811.0 | 813.4 |
| 35° | 1073.9 | 991.0 | 822.9 | 705.7 | 671.3 | 684.3 | 719.9 | 755.4 | 776.7 | 788.5 | 794.5 |
| 37.5° | 1094.0 | 1004.0 | 815.8 | 685.5 | 645.3 | 657.1 | 695.0 | 732.9 | 755.4 | 767.2 | 769.6 |
| 40° | 1118.9 | 1021.8 | 811.0 | 666.6 | 620.4 | 629.9 | 667.8 | 709.2 | 730.5 | 738.8 | 743.5 |
| 42.5° | 1146.1 | 1040.7 | 807.5 | 647.6 | 593.2 | 602.7 | 642.9 | 683.2 | 704.5 | 711.6 | 715.1 |
| 45° | 1180.4 | 1065.6 | 805.1 | 627.5 | 570.7 | 579.0 | 619.2 | 659.5 | 677.2 | 686.7 | 690.3 |
| 47.5° | 1212.4 | 1090.5 | 798.0 | 603.8 | 545.8 | 557.7 | 594.4 | 629.9 | 650.0 | 655.9 | 659.5 |
| 50° | 1244.4 | 1111.8 | 783.8 | 577.8 | 523.3 | 534.0 | 567.1 | 593.2 | 608.6 | 615.7 | 618.0 |
| 52.5° | 1275.2 | 1127.2 | 761.3 | 550.6 | 499.6 | 506.7 | 534.0 | 558.8 | 569.5 | 571.9 | 579.0 |
| 55° | 1295.3 | 1135.4 | 729.3 | 518.6 | 476.0 | 478.3 | 498.5 | 521.0 | 526.9 | 528.1 | 528.1 |
| 57.5° | 1309.5 | 1130.7 | 691.5 | 486.6 | 452.3 | 452.3 | 464.1 | 481.9 | 484.3 | 485.4 | 487.8 |
| 60° | 1311.9 | 1114.1 | 642.9 | 457.0 | 426.2 | 422.7 | 434.5 | 445.2 | 446.4 | 448.7 | 451.1 |
| 62.5° | 1294.1 | 1077.4 | 590.8 | 428.6 | 401.4 | 393.1 | 403.7 | 414.4 | 420.3 | 423.9 | 426.2 |
| 65° | 1239.6 | 1002.8 | 531.6 | 400.2 | 377.7 | 363.5 | 376.5 | 394.3 | 406.1 | 407.3 | 407.3 |
| 67.5° | 1126.0 | 882.1 | 468.9 | 370.6 | 349.3 | 336.3 | 352.8 | 371.8 | 386.0 | 391.9 | 390.7 |
| 70° | 954.3 | 748.3 | 410.8 | 339.8 | 320.9 | 312.6 | 330.3 | 351.6 | 363.5 | 368.2 | 370.6 |
| 72.5° | 768.4 | 599.1 | 359.9 | 309.0 | 296.0 | 291.3 | 309.0 | 330.3 | 346.9 | 354.0 | 355.2 |
| 75° | 597.9 | 471.2 | 317.3 | 277.1 | 266.4 | 267.6 | 286.5 | 307.8 | 325.6 | 329.2 | 318.5 |
| 77.5° | 464.1 | 375.3 | 277.1 | 239.2 | 233.2 | 241.5 | 260.5 | 283.0 | 293.6 | 297.2 | 290.1 |
| 80° | 335.1 | 287.7 | 223.8 | 188.3 | 188.3 | 201.3 | 217.9 | 243.9 | 247.5 | 242.7 | 245.1 |
| 82.5° | 158.7 | 139.7 | 110.1 | 91.2 | 85.2 | 94.7 | 100.6 | 108.9 | 118.4 | 120.8 | 114.8 |
| 85° | 21.3 | 14.2 | 10.7 | 11.8 | 10.7 | 7.1 | 4.7 | 4.7 | 4.7 | 3.6 | 3.6 |
| 87.5° | 3.6 | 3.6 | 2.4 | 2.4 | 2.4 | 2.4 | 2.4 | 2.4 | 1.2 | 1.2 | 1.2 |
| 90° | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |

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



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

Report Prepared for

Cooper Lighting Solutions

Streetworks

Report Number: SP1-2407-157-8

Test Date: 09/05/2024

Luminaire Tested: MEM2-HTN-SA-40-840-U-5WQ

Data in this report applies to families of products including MEM2-HTN-SA-40-840-U-5WQ

Test Information

Test Method: LM-79-2019
 Report Number: SP1-2407-157-8
 Test Lab: COOPER LIGHTING SOLUTIONS
 Photometer: SP1 - 76IN SPHERE
 Measurement Geometry: 4π
 Issue Date: 09/05/2024
 Manufacturer: COOPER LIGHTING SOLUTIONS
 Product Line: Streetworks
 Catalog Number: **MEM2-HTN-SA-40-840-U-5WQ**
 Description: Epic Modern Light Square 40W 5WQ Optic

Spectral Parameters

CCT (K): 3996
 CIE u': 0.2245
 CIE v': 0.5031
 Duv: 0.0012
 CIE x: 0.3815
 CIE y: 0.3799
 CIE z: 0.2386
 Peak Wavelength (nm): 449
 Dominant Wavelength (nm): 578
 Purity: 28.49233
 Rf: 82.6
 Rg: 95.1

| | | | |
|-----------|------|------|------|
| CRI (Ra): | 80.6 | | |
| R1: | 78.1 | R9: | -5.8 |
| R2: | 87.1 | R10: | 70.3 |
| R3: | 94.5 | R11: | 78.7 |
| R4: | 79.7 | R12: | 60.5 |
| R5: | 78.7 | R13: | 80.2 |
| R6: | 82.7 | R14: | 97.2 |
| R7: | 84.3 | R15: | 70.6 |
| R8: | 59.5 | | |



Test Conditions

Stabilization Time: 29M
 Operation Time: 1H 29M
 Sphere Temperature (°C): 24.3

REPORT NUMBER: SP1-2407-157-8

| 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 | 289 | NR | 620 | 725 | NR | 750 | 17 | NR | 880 | 0 | NR |
| 365 | 0 | NR | 495 | 351 | NR | 625 | 673 | NR | 755 | 15 | NR | 885 | 0 | NR |
| 370 | 0 | NR | 500 | 414 | NR | 630 | 619 | NR | 760 | 13 | NR | 890 | 0 | NR |
| 375 | 0 | NR | 505 | 470 | NR | 635 | 562 | NR | 765 | 11 | NR | 895 | 0 | NR |
| 380 | 0 | NR | 510 | 513 | NR | 640 | 506 | NR | 770 | 9 | NR | 900 | 0 | NR |
| 385 | 0 | NR | 515 | 546 | NR | 645 | 452 | NR | 775 | 8 | NR | 905 | 0 | NR |
| 390 | 0 | NR | 520 | 571 | NR | 650 | 400 | NR | 780 | 7 | NR | 910 | 0 | NR |
| 395 | 1 | NR | 525 | 592 | NR | 655 | 352 | NR | 785 | 6 | NR | 915 | 0 | NR |
| 400 | 3 | NR | 530 | 606 | NR | 660 | 307 | NR | 790 | 5 | NR | 920 | 0 | NR |
| 405 | 6 | NR | 535 | 624 | NR | 665 | 267 | NR | 795 | 4 | NR | 925 | 0 | NR |
| 410 | 12 | NR | 540 | 642 | NR | 670 | 231 | NR | 800 | 4 | NR | 930 | 0 | NR |
| 415 | 22 | NR | 545 | 663 | NR | 675 | 199 | NR | 805 | 3 | NR | 935 | 0 | NR |
| 420 | 44 | NR | 550 | 686 | NR | 680 | 171 | NR | 810 | 3 | NR | 940 | 0 | NR |
| 425 | 83 | NR | 555 | 713 | NR | 685 | 146 | NR | 815 | 2 | NR | 945 | 0 | NR |
| 430 | 150 | NR | 560 | 745 | NR | 690 | 125 | NR | 820 | 2 | NR | 950 | 0 | NR |
| 435 | 267 | NR | 565 | 774 | NR | 695 | 106 | NR | 825 | 2 | NR | 955 | 0 | NR |
| 440 | 466 | NR | 570 | 806 | NR | 700 | 90 | NR | 830 | 1 | NR | 960 | 0 | NR |
| 445 | 804 | NR | 575 | 835 | NR | 705 | 76 | NR | 835 | 1 | NR | 965 | 0 | NR |
| 450 | 1000 | NR | 580 | 858 | NR | 710 | 65 | NR | 840 | 1 | NR | 970 | 0 | NR |
| 455 | 715 | NR | 585 | 875 | NR | 715 | 55 | NR | 845 | 1 | NR | 975 | 0 | NR |
| 460 | 492 | NR | 590 | 884 | NR | 720 | 47 | NR | 850 | 1 | NR | 980 | 0 | NR |
| 465 | 402 | NR | 595 | 880 | NR | 725 | 40 | NR | 855 | 1 | NR | 985 | 0 | NR |
| 470 | 288 | NR | 600 | 868 | NR | 730 | 34 | NR | 860 | 1 | NR | 990 | 0 | NR |
| 475 | 226 | NR | 605 | 844 | NR | 735 | 28 | NR | 865 | 1 | NR | 995 | 0 | NR |
| 480 | 227 | NR | 610 | 814 | NR | 740 | 24 | NR | 870 | 0 | NR | 1000 | 0 | NR |
| 485 | 248 | NR | 615 | 771 | NR | 745 | 20 | NR | 875 | 0 | NR | | | |

REPORT NUMBER: SP1-2407-157-8

Scotopic Flux vs. Wavelength



Scotopic Lumens: NR

S/P: 1.66

| 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 | 289 | NR | 620 | 725 | NR | 750 | 17 | NR | 880 | 0 | NR |
| 365 | 0 | NR | 495 | 351 | NR | 625 | 673 | NR | 755 | 15 | NR | 885 | 0 | NR |
| 370 | 0 | NR | 500 | 414 | NR | 630 | 619 | NR | 760 | 13 | NR | 890 | 0 | NR |
| 375 | 0 | NR | 505 | 470 | NR | 635 | 562 | NR | 765 | 11 | NR | 895 | 0 | NR |
| 380 | 0 | NR | 510 | 513 | NR | 640 | 506 | NR | 770 | 9 | NR | 900 | 0 | NR |
| 385 | 0 | NR | 515 | 546 | NR | 645 | 452 | NR | 775 | 8 | NR | 905 | 0 | NR |
| 390 | 0 | NR | 520 | 571 | NR | 650 | 400 | NR | 780 | 7 | NR | 910 | 0 | NR |
| 395 | 1 | NR | 525 | 592 | NR | 655 | 352 | NR | 785 | 6 | NR | 915 | 0 | NR |
| 400 | 3 | NR | 530 | 606 | NR | 660 | 307 | NR | 790 | 5 | NR | 920 | 0 | NR |
| 405 | 6 | NR | 535 | 624 | NR | 665 | 267 | NR | 795 | 4 | NR | 925 | 0 | NR |
| 410 | 12 | NR | 540 | 642 | NR | 670 | 231 | NR | 800 | 4 | NR | 930 | 0 | NR |
| 415 | 22 | NR | 545 | 663 | NR | 675 | 199 | NR | 805 | 3 | NR | 935 | 0 | NR |
| 420 | 44 | NR | 550 | 686 | NR | 680 | 171 | NR | 810 | 3 | NR | 940 | 0 | NR |
| 425 | 83 | NR | 555 | 713 | NR | 685 | 146 | NR | 815 | 2 | NR | 945 | 0 | NR |
| 430 | 150 | NR | 560 | 745 | NR | 690 | 125 | NR | 820 | 2 | NR | 950 | 0 | NR |
| 435 | 267 | NR | 565 | 774 | NR | 695 | 106 | NR | 825 | 2 | NR | 955 | 0 | NR |
| 440 | 466 | NR | 570 | 806 | NR | 700 | 90 | NR | 830 | 1 | NR | 960 | 0 | NR |
| 445 | 804 | NR | 575 | 835 | NR | 705 | 76 | NR | 835 | 1 | NR | 965 | 0 | NR |
| 450 | 1000 | NR | 580 | 858 | NR | 710 | 65 | NR | 840 | 1 | NR | 970 | 0 | NR |
| 455 | 715 | NR | 585 | 875 | NR | 715 | 55 | NR | 845 | 1 | NR | 975 | 0 | NR |
| 460 | 492 | NR | 590 | 884 | NR | 720 | 47 | NR | 850 | 1 | NR | 980 | 0 | NR |
| 465 | 402 | NR | 595 | 880 | NR | 725 | 40 | NR | 855 | 1 | NR | 985 | 0 | NR |
| 470 | 288 | NR | 600 | 868 | NR | 730 | 34 | NR | 860 | 1 | NR | 990 | 0 | NR |
| 475 | 226 | NR | 605 | 844 | NR | 735 | 28 | NR | 865 | 1 | NR | 995 | 0 | NR |
| 480 | 227 | NR | 610 | 814 | NR | 740 | 24 | NR | 870 | 0 | NR | 1000 | 0 | NR |
| 485 | 248 | NR | 615 | 771 | NR | 745 | 20 | NR | 875 | 0 | NR | | | |

REPORT NUMBER: SP1-2407-157-8

Melanopic Flux vs. Wavelength



Melanopic Lumens: NR

M/P: 3.37

| 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 | 289 | NR | 620 | 725 | NR | 750 | 17 | NR | 880 | 0 | NR |
| 365 | 0 | NR | 495 | 351 | NR | 625 | 673 | NR | 755 | 15 | NR | 885 | 0 | NR |
| 370 | 0 | NR | 500 | 414 | NR | 630 | 619 | NR | 760 | 13 | NR | 890 | 0 | NR |
| 375 | 0 | NR | 505 | 470 | NR | 635 | 562 | NR | 765 | 11 | NR | 895 | 0 | NR |
| 380 | 0 | NR | 510 | 513 | NR | 640 | 506 | NR | 770 | 9 | NR | 900 | 0 | NR |
| 385 | 0 | NR | 515 | 546 | NR | 645 | 452 | NR | 775 | 8 | NR | 905 | 0 | NR |
| 390 | 0 | NR | 520 | 571 | NR | 650 | 400 | NR | 780 | 7 | NR | 910 | 0 | NR |
| 395 | 1 | NR | 525 | 592 | NR | 655 | 352 | NR | 785 | 6 | NR | 915 | 0 | NR |
| 400 | 3 | NR | 530 | 606 | NR | 660 | 307 | NR | 790 | 5 | NR | 920 | 0 | NR |
| 405 | 6 | NR | 535 | 624 | NR | 665 | 267 | NR | 795 | 4 | NR | 925 | 0 | NR |
| 410 | 12 | NR | 540 | 642 | NR | 670 | 231 | NR | 800 | 4 | NR | 930 | 0 | NR |
| 415 | 22 | NR | 545 | 663 | NR | 675 | 199 | NR | 805 | 3 | NR | 935 | 0 | NR |
| 420 | 44 | NR | 550 | 686 | NR | 680 | 171 | NR | 810 | 3 | NR | 940 | 0 | NR |
| 425 | 83 | NR | 555 | 713 | NR | 685 | 146 | NR | 815 | 2 | NR | 945 | 0 | NR |
| 430 | 150 | NR | 560 | 745 | NR | 690 | 125 | NR | 820 | 2 | NR | 950 | 0 | NR |
| 435 | 267 | NR | 565 | 774 | NR | 695 | 106 | NR | 825 | 2 | NR | 955 | 0 | NR |
| 440 | 466 | NR | 570 | 806 | NR | 700 | 90 | NR | 830 | 1 | NR | 960 | 0 | NR |
| 445 | 804 | NR | 575 | 835 | NR | 705 | 76 | NR | 835 | 1 | NR | 965 | 0 | NR |
| 450 | 1000 | NR | 580 | 858 | NR | 710 | 65 | NR | 840 | 1 | NR | 970 | 0 | NR |
| 455 | 715 | NR | 585 | 875 | NR | 715 | 55 | NR | 845 | 1 | NR | 975 | 0 | NR |
| 460 | 492 | NR | 590 | 884 | NR | 720 | 47 | NR | 850 | 1 | NR | 980 | 0 | NR |
| 465 | 402 | NR | 595 | 880 | NR | 725 | 40 | NR | 855 | 1 | NR | 985 | 0 | NR |
| 470 | 288 | NR | 600 | 868 | NR | 730 | 34 | NR | 860 | 1 | NR | 990 | 0 | NR |
| 475 | 226 | NR | 605 | 844 | NR | 735 | 28 | NR | 865 | 1 | NR | 995 | 0 | NR |
| 480 | 227 | NR | 610 | 814 | NR | 740 | 24 | NR | 870 | 0 | NR | 1000 | 0 | NR |
| 485 | 248 | NR | 615 | 771 | NR | 745 | 20 | NR | 875 | 0 | NR | | | |

Summary

$R_f = 82.6$
 $R_g = 95.1$
 CIE $R_a = 80.6$
 $R_9 = -5.8$



Color Vector Graphics



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

| | | | |
|------------|------------|------------|------------|
| CES01 = 85 | CES26 = 79 | CES51 = 94 | CES76 = 72 |
| CES02 = 61 | CES27 = 93 | CES52 = 94 | CES77 = 82 |
| CES03 = 31 | CES28 = 90 | CES53 = 88 | CES78 = 71 |
| CES04 = 69 | CES29 = 83 | CES54 = 89 | CES79 = 91 |
| CES05 = 48 | CES30 = 95 | CES55 = 88 | CES80 = 88 |
| CES06 = 50 | CES31 = 86 | CES56 = 84 | CES81 = 80 |
| CES07 = 40 | CES32 = 78 | CES57 = 84 | CES82 = 95 |
| CES08 = 39 | CES33 = 90 | CES58 = 84 | CES83 = 95 |
| CES09 = 29 | CES34 = 85 | CES59 = 90 | CES84 = 90 |
| CES10 = 74 | CES35 = 92 | CES60 = 91 | CES85 = 78 |
| CES11 = 57 | CES36 = 85 | CES61 = 87 | CES86 = 73 |
| CES12 = 63 | CES37 = 91 | CES62 = 87 | CES87 = 83 |
| CES13 = 42 | CES38 = 95 | CES63 = 84 | CES88 = 86 |
| CES14 = 74 | CES39 = 98 | CES64 = 78 | CES89 = 76 |
| CES15 = 71 | CES40 = 94 | CES65 = 75 | CES90 = 87 |
| CES16 = 46 | CES41 = 98 | CES66 = 75 | CES91 = 72 |
| CES17 = 49 | CES42 = 92 | CES67 = 73 | CES92 = 62 |
| CES18 = 56 | CES43 = 88 | CES68 = 77 | CES93 = 78 |
| CES19 = 71 | CES44 = 99 | CES69 = 82 | CES94 = 60 |
| CES20 = 65 | CES45 = 93 | CES70 = 72 | CES95 = 70 |
| CES21 = 86 | CES46 = 90 | CES71 = 67 | CES96 = 82 |
| CES22 = 78 | CES47 = 95 | CES72 = 89 | CES97 = 90 |
| CES23 = 91 | CES48 = 84 | CES73 = 65 | CES98 = 84 |
| CES24 = 90 | CES49 = 89 | CES74 = 93 | CES99 = 73 |
| CES25 = 71 | CES50 = 94 | CES75 = 69 | |



Color Rendition by Hue-Angle Bin



Measure Comparisons



(END OF REPORT)