

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: P868149

Luminaire Tested: **MEM2-HSN-SA-30-740-U-T4W-HSS**

Issue Date: 08/21/2024



Test Information

Test Method: LM-79-08
Report Number: P868149
Test Lab: INNOVATION CENTER(G3)
Issue Date: 08/21/2024
Manufacturer: COOPER LIGHTING SOLUTIONS (FORMERLY EATON)
Product Line: STREETWORKS
Catalog Number: MEM2-HSN-SA-30-740-U-T4W-HSS
Description: EPIC MODERN SHORT HOUSING DISCRETE LED ARRAYS 30W 70CRI 4000K
FIXTURE w/ TYPE IV WIDE DISTRIBUTION OPTIC AND HOUSE SIDE SHIELD
Light Source: (10) 4000K CCT, 70 CRI LEDs
Ballast/Driver: ELECTRONIC DRIVER

Summary

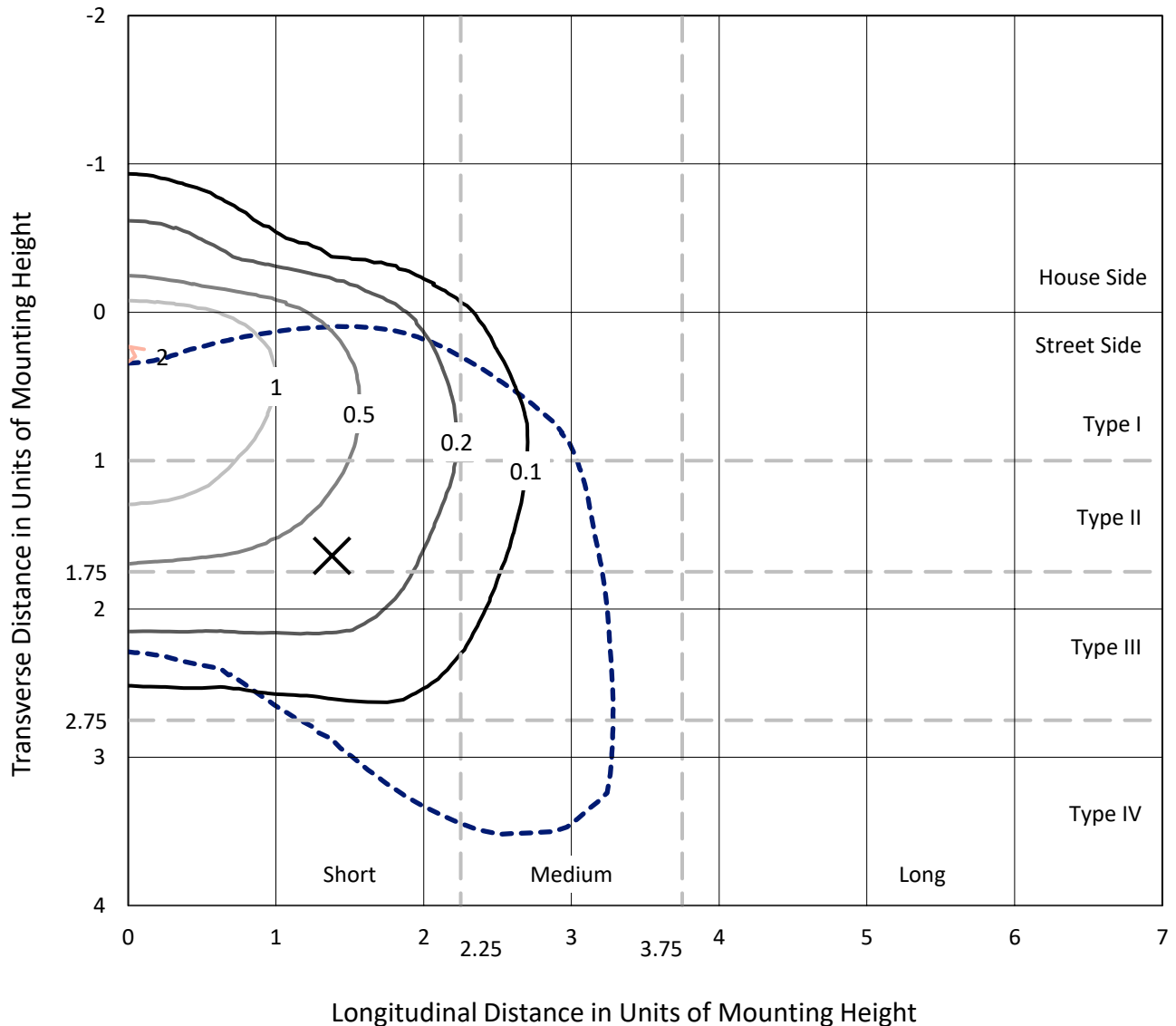
Lumens per Lamp: N/A
Luminaire Lumens: 3505.6 lumens
Efficiency: N/A
Efficacy: 106.9 lumens/watt
Luminous Opening: Rectangular (W 0.33' x L: 0.33' x H: 0')
IES Classification: Type IV - Short
BUG Rating: B1 - U0 - G1

Input Watts (W): 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

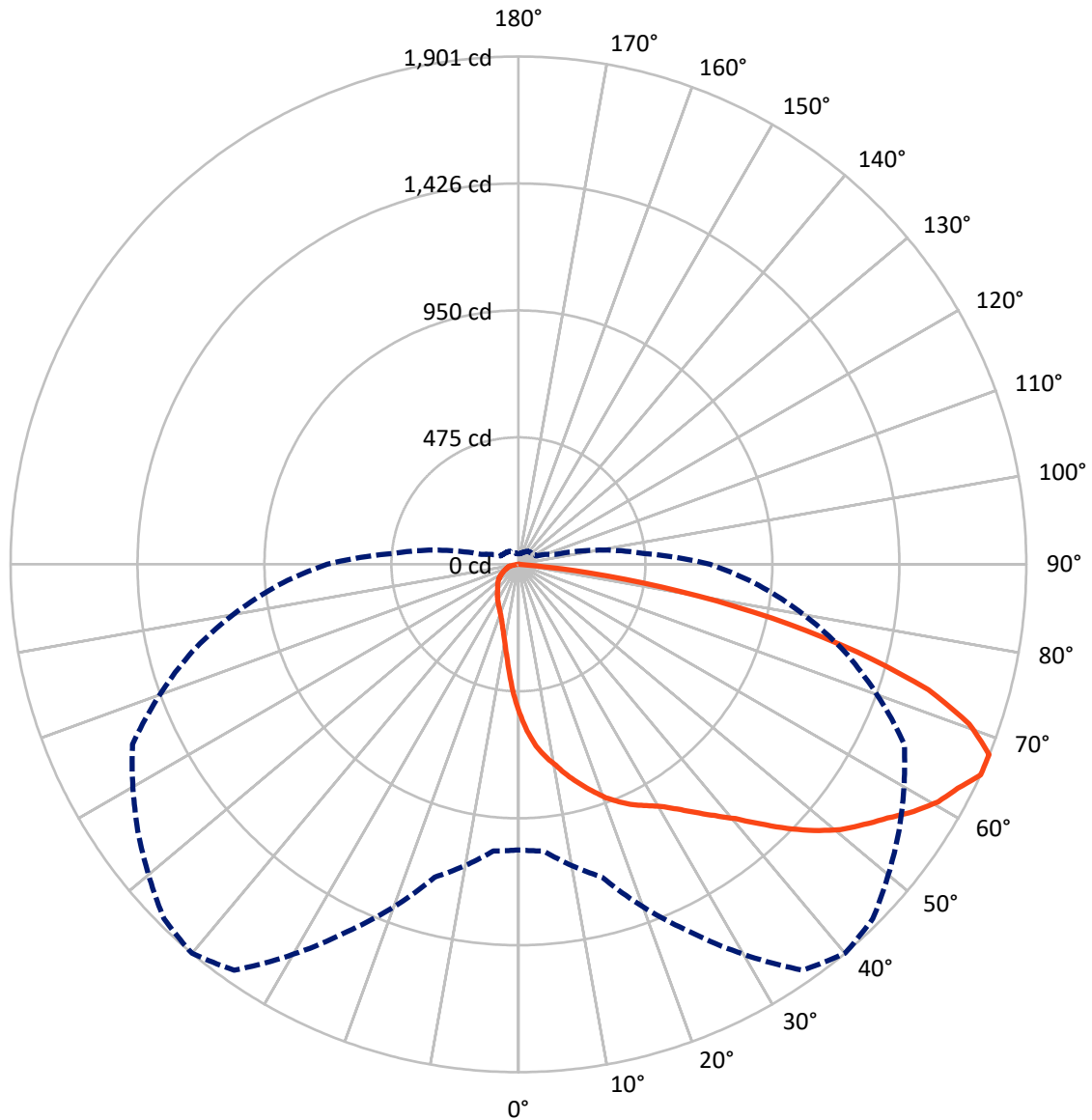
✕ Max cd
 - - - 1/2 Max cd



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

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Luminous Intensity Polar Plot



— Vertical Plane Through 40-Deg Lateral - - - Horizontal Cone Through 65-Deg Vertical

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FLUX DISTRIBUTION:

| | | Downward | Upward | Total |
|--------------------|-----------|----------|--------|--------|
| House Side | Lumens | 419.7 | 0.0 | 419.7 |
| | % Fixture | 12.0 | 0.0 | 12.0 |
| Street Side | Lumens | 3085.9 | 0.0 | 3085.9 |
| | % Fixture | 88.0 | 0.0 | 88.0 |
| Total | Lumens | 3505.6 | 0.0 | 3505.6 |
| | % Fixture | 100.0 | 0.0 | 100.0 |

Coefficient of Utilization

ZONAL LUMENS:

| Zone | Lumens | % Fixture |
|-----------|--------|-----------|
| 0°-10° | 52.2 | 1.5 |
| 10°-20° | 156.8 | 4.5 |
| 20°-30° | 269.8 | 7.7 |
| 30°-40° | 407.9 | 11.6 |
| 40°-50° | 596.4 | 17.0 |
| 50°-60° | 761.7 | 21.7 |
| 60°-70° | 760.2 | 21.7 |
| 70°-80° | 445.8 | 12.7 |
| 80°-90° | 54.9 | 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° | 3505.6 | 100.0 |
| 0°-180° | 3505.6 | 100.0 |



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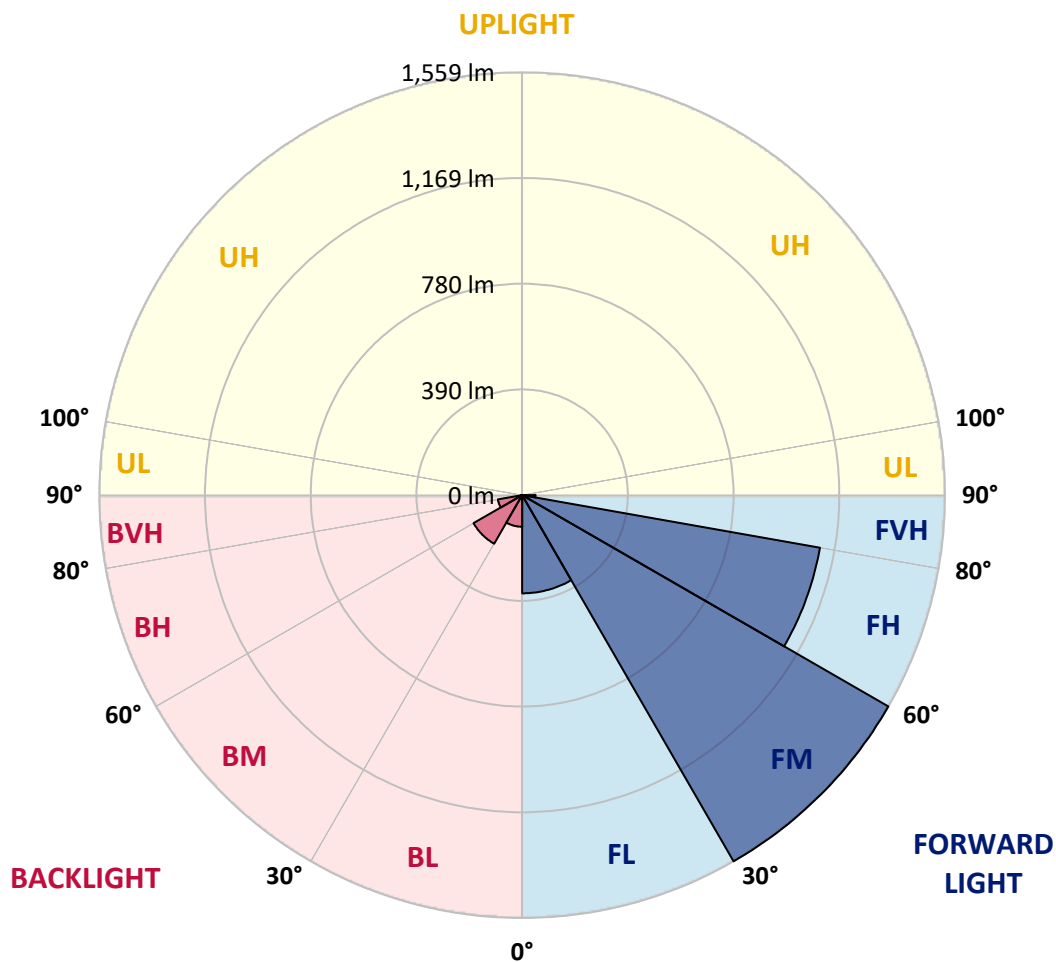
CATALOG NUMBER: MEM2-HSN-SA-30-740-U-T4W-HSS

LUMINAIRE CLASSIFICATION SYSTEM LUMEN TABLE AND BUG RATING:

| Zone | | Lumens | % Fixture | Zone Rating/Lumen Limit | | |
|------|-------------|--------|-----------|-------------------------|------|---------|
| | | | | B | U | G |
| FL | (0°-30°) | 362.1 | 10.3 | | | |
| FM | (30°-60°) | 1559.1 | 44.5 | | | |
| FH | (60°-80°) | 1115.1 | 31.8 | | | G1/1800 |
| FVH | (80°-90°) | 49.6 | 1.4 | | | G1/100 |
| BL | (0°-30°) | 116.7 | 3.3 | B1/500 | | |
| BM | (30°-60°) | 206.8 | 5.9 | B0/220 | | |
| BH | (60°-80°) | 90.9 | 2.6 | B0/110 | | G0/110 |
| BVH | (80°-90°) | 5.3 | 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 IV Short





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CANDELA DISTRIBUTION (FULL):

| | 0° | 5° | 15° | 25° | 35° | 40° | 45° | 55° | 65° | 75° | 85° |
|-------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|
| 0° | 557.2 | 557.2 | 557.2 | 557.2 | 557.2 | 557.2 | 557.2 | 557.2 | 557.2 | 557.2 | 557.2 |
| 2.5° | 650.1 | 647.2 | 641.2 | 636.3 | 629.4 | 623.4 | 617.5 | 606.6 | 592.8 | 581.0 | 566.1 |
| 5° | 714.3 | 709.4 | 705.4 | 699.5 | 687.7 | 682.7 | 678.8 | 656.0 | 632.3 | 607.6 | 575.0 |
| 7.5° | 759.8 | 763.7 | 755.8 | 746.9 | 732.1 | 726.2 | 720.3 | 697.5 | 667.9 | 632.3 | 585.9 |
| 10° | 812.2 | 813.1 | 803.3 | 792.4 | 776.6 | 764.7 | 756.8 | 729.2 | 696.6 | 657.0 | 597.8 |
| 12.5° | 862.5 | 862.5 | 856.6 | 840.8 | 820.1 | 809.2 | 795.4 | 763.7 | 724.2 | 677.8 | 611.6 |
| 15° | 903.0 | 905.0 | 900.1 | 888.2 | 865.5 | 850.7 | 836.9 | 800.3 | 749.9 | 701.5 | 622.5 |
| 17.5° | 939.6 | 938.6 | 935.7 | 924.8 | 903.0 | 891.2 | 877.4 | 836.9 | 779.5 | 720.3 | 639.2 |
| 20° | 964.3 | 964.3 | 963.3 | 957.4 | 941.6 | 932.7 | 915.9 | 873.4 | 812.2 | 747.9 | 657.0 |
| 22.5° | 983.1 | 982.1 | 982.1 | 983.1 | 974.2 | 965.3 | 958.4 | 915.9 | 845.7 | 771.6 | 674.8 |
| 25° | 998.9 | 997.9 | 1000.9 | 1002.8 | 998.9 | 996.9 | 989.0 | 956.4 | 887.2 | 799.3 | 692.6 |
| 27.5° | 1019.6 | 1022.6 | 1021.6 | 1021.6 | 1020.6 | 1022.6 | 1021.6 | 993.9 | 927.7 | 828.9 | 711.4 |
| 30° | 1052.2 | 1057.2 | 1054.2 | 1050.3 | 1050.3 | 1051.3 | 1056.2 | 1038.4 | 975.2 | 865.5 | 732.1 |
| 32.5° | 1128.3 | 1123.4 | 1102.6 | 1088.8 | 1090.8 | 1091.8 | 1096.7 | 1086.8 | 1022.6 | 907.0 | 753.9 |
| 35° | 1215.3 | 1209.3 | 1186.6 | 1155.0 | 1144.1 | 1140.2 | 1139.2 | 1133.3 | 1074.0 | 951.5 | 779.5 |
| 37.5° | 1327.9 | 1329.9 | 1296.3 | 1250.8 | 1218.2 | 1193.5 | 1188.6 | 1175.7 | 1118.4 | 992.0 | 806.2 |
| 40° | 1442.5 | 1434.6 | 1406.0 | 1361.5 | 1297.3 | 1251.8 | 1237.0 | 1219.2 | 1168.8 | 1034.5 | 831.9 |
| 42.5° | 1553.2 | 1538.3 | 1500.8 | 1452.4 | 1377.3 | 1327.9 | 1294.3 | 1271.6 | 1215.3 | 1080.9 | 856.6 |
| 45° | 1697.4 | 1654.9 | 1587.7 | 1544.3 | 1450.4 | 1409.9 | 1379.3 | 1328.9 | 1270.6 | 1127.3 | 886.3 |
| 47.5° | 1811.0 | 1729.0 | 1667.8 | 1649.0 | 1526.5 | 1488.9 | 1461.3 | 1391.1 | 1326.9 | 1179.7 | 916.9 |
| 50° | 1790.3 | 1739.9 | 1725.1 | 1708.3 | 1583.8 | 1561.1 | 1535.4 | 1462.3 | 1384.2 | 1235.0 | 946.5 |
| 52.5° | 1736.9 | 1742.9 | 1761.6 | 1733.0 | 1634.2 | 1618.4 | 1601.6 | 1538.3 | 1441.5 | 1280.5 | 973.2 |
| 55° | 1694.5 | 1706.3 | 1756.7 | 1747.8 | 1694.5 | 1676.7 | 1664.8 | 1613.4 | 1496.8 | 1322.0 | 995.9 |
| 57.5° | 1617.4 | 1607.5 | 1670.7 | 1773.5 | 1758.7 | 1744.8 | 1733.0 | 1692.5 | 1553.2 | 1351.6 | 1010.7 |
| 60° | 1495.9 | 1459.3 | 1544.3 | 1741.9 | 1803.1 | 1805.1 | 1798.2 | 1751.8 | 1598.6 | 1351.6 | 1002.8 |
| 62.5° | 1324.9 | 1290.4 | 1395.1 | 1636.2 | 1826.8 | 1845.6 | 1841.7 | 1772.5 | 1618.4 | 1322.0 | 972.2 |
| 65° | 1069.0 | 1076.9 | 1212.3 | 1516.6 | 1854.5 | 1900.9 | 1876.2 | 1738.9 | 1593.7 | 1264.7 | 903.0 |
| 67.5° | 853.6 | 877.4 | 998.9 | 1361.5 | 1841.7 | 1900.0 | 1865.4 | 1644.1 | 1488.0 | 1184.6 | 797.3 |
| 70° | 673.8 | 689.6 | 790.4 | 1152.0 | 1729.0 | 1790.3 | 1746.8 | 1498.8 | 1309.1 | 1061.1 | 663.0 |
| 72.5° | 526.6 | 541.4 | 627.4 | 921.8 | 1533.4 | 1604.5 | 1550.2 | 1303.2 | 1085.8 | 900.1 | 526.6 |
| 75° | 400.1 | 411.0 | 475.2 | 710.4 | 1221.2 | 1310.1 | 1270.6 | 1043.3 | 847.7 | 712.4 | 403.1 |
| 77.5° | 257.9 | 272.7 | 344.8 | 498.0 | 862.5 | 969.2 | 974.2 | 779.5 | 609.6 | 514.8 | 296.4 |
| 80° | 170.9 | 176.9 | 221.3 | 324.1 | 530.6 | 613.6 | 642.2 | 526.6 | 389.3 | 328.0 | 213.4 |
| 82.5° | 71.1 | 79.0 | 105.7 | 163.0 | 265.8 | 266.8 | 305.3 | 222.3 | 158.1 | 139.3 | 89.9 |
| 85° | 2.0 | 4.0 | 3.0 | 7.9 | 6.9 | 10.9 | 12.8 | 17.8 | 12.8 | 13.8 | 13.8 |
| 87.5° | 0.0 | 0.0 | 1.0 | 1.0 | 2.0 | 2.0 | 2.0 | 2.0 | 2.0 | 3.0 | 2.0 |
| 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-30-740-U-T4W-HSS

CANDELA DISTRIBUTION (continued):

| | 90° | 95° | 105° | 115° | 125° | 135° | 145° | 155° | 165° | 175° | 180° |
|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|
| 0° | 557.2 | 557.2 | 557.2 | 557.2 | 557.2 | 557.2 | 557.2 | 557.2 | 557.2 | 557.2 | 557.2 |
| 2.5° | 559.2 | 550.3 | 532.5 | 518.7 | 503.9 | 493.0 | 483.1 | 472.3 | 465.4 | 466.3 | 459.4 |
| 5° | 559.2 | 542.4 | 506.9 | 475.2 | 446.6 | 425.8 | 403.1 | 385.3 | 372.5 | 370.5 | 376.4 |
| 7.5° | 562.2 | 534.5 | 481.2 | 433.7 | 394.2 | 361.6 | 337.9 | 320.1 | 311.2 | 305.3 | 304.3 |
| 10° | 565.1 | 528.6 | 457.5 | 397.2 | 347.8 | 312.2 | 291.5 | 271.7 | 261.8 | 260.8 | 257.9 |
| 12.5° | 567.1 | 521.7 | 435.7 | 360.6 | 309.2 | 275.7 | 254.9 | 239.1 | 231.2 | 231.2 | 230.2 |
| 15° | 574.0 | 519.7 | 413.0 | 333.0 | 279.6 | 247.0 | 229.2 | 216.4 | 211.4 | 208.5 | 207.5 |
| 17.5° | 580.0 | 515.7 | 393.2 | 305.3 | 252.9 | 224.3 | 207.5 | 198.6 | 193.7 | 191.7 | 190.7 |
| 20° | 588.9 | 513.8 | 374.5 | 282.6 | 233.2 | 205.5 | 192.7 | 184.8 | 181.8 | 179.8 | 179.8 |
| 22.5° | 597.8 | 511.8 | 355.7 | 262.8 | 216.4 | 191.7 | 179.8 | 172.9 | 169.9 | 169.0 | 168.0 |
| 25° | 608.6 | 510.8 | 339.9 | 246.0 | 201.6 | 180.8 | 169.9 | 164.0 | 160.1 | 158.1 | 158.1 |
| 27.5° | 619.5 | 511.8 | 324.1 | 229.2 | 188.7 | 170.9 | 160.1 | 153.1 | 150.2 | 146.2 | 147.2 |
| 30° | 634.3 | 512.8 | 311.2 | 215.4 | 177.8 | 161.0 | 151.2 | 142.3 | 138.3 | 136.3 | 136.3 |
| 32.5° | 649.1 | 516.7 | 298.4 | 202.5 | 167.0 | 153.1 | 141.3 | 133.4 | 128.4 | 127.5 | 126.5 |
| 35° | 664.9 | 519.7 | 286.5 | 191.7 | 158.1 | 144.3 | 132.4 | 124.5 | 120.5 | 119.6 | 119.6 |
| 37.5° | 682.7 | 524.6 | 277.6 | 181.8 | 149.2 | 135.4 | 124.5 | 116.6 | 113.6 | 112.6 | 112.6 |
| 40° | 701.5 | 532.5 | 270.7 | 172.9 | 142.3 | 127.5 | 117.6 | 110.7 | 108.7 | 107.7 | 107.7 |
| 42.5° | 720.3 | 539.5 | 264.8 | 166.0 | 135.4 | 120.5 | 112.6 | 105.7 | 102.8 | 102.8 | 102.8 |
| 45° | 738.1 | 544.4 | 258.9 | 159.1 | 128.4 | 115.6 | 106.7 | 100.8 | 97.8 | 97.8 | 97.8 |
| 47.5° | 753.9 | 549.3 | 250.0 | 152.2 | 121.5 | 108.7 | 101.8 | 95.8 | 92.9 | 92.9 | 92.9 |
| 50° | 770.7 | 552.3 | 240.1 | 143.3 | 114.6 | 103.7 | 96.8 | 89.9 | 87.9 | 86.9 | 86.9 |
| 52.5° | 784.5 | 552.3 | 227.2 | 134.4 | 106.7 | 96.8 | 90.9 | 85.0 | 82.0 | 80.0 | 80.0 |
| 55° | 794.4 | 552.3 | 213.4 | 123.5 | 98.8 | 90.9 | 85.0 | 79.0 | 75.1 | 72.1 | 72.1 |
| 57.5° | 800.3 | 549.3 | 197.6 | 110.7 | 90.9 | 83.0 | 79.0 | 72.1 | 64.2 | 58.3 | 56.3 |
| 60° | 795.4 | 540.4 | 180.8 | 96.8 | 82.0 | 76.1 | 73.1 | 64.2 | 53.4 | 50.4 | 50.4 |
| 62.5° | 774.6 | 519.7 | 164.0 | 85.0 | 75.1 | 69.2 | 66.2 | 56.3 | 48.4 | 45.4 | 45.4 |
| 65° | 716.3 | 469.3 | 143.3 | 74.1 | 67.2 | 63.2 | 59.3 | 50.4 | 43.5 | 39.5 | 39.5 |
| 67.5° | 631.3 | 405.1 | 119.6 | 65.2 | 60.3 | 57.3 | 54.3 | 45.4 | 38.5 | 34.6 | 34.6 |
| 70° | 511.8 | 327.0 | 101.8 | 57.3 | 53.4 | 51.4 | 48.4 | 41.5 | 33.6 | 30.6 | 30.6 |
| 72.5° | 402.1 | 256.9 | 85.0 | 51.4 | 49.4 | 45.4 | 43.5 | 36.6 | 30.6 | 27.7 | 27.7 |
| 75° | 299.4 | 191.7 | 75.1 | 45.4 | 45.4 | 40.5 | 39.5 | 32.6 | 26.7 | 24.7 | 24.7 |
| 77.5° | 220.3 | 142.3 | 65.2 | 39.5 | 39.5 | 35.6 | 33.6 | 28.7 | 24.7 | 22.7 | 22.7 |
| 80° | 149.2 | 96.8 | 48.4 | 29.6 | 29.6 | 28.7 | 26.7 | 24.7 | 20.7 | 18.8 | 17.8 |
| 82.5° | 63.2 | 40.5 | 23.7 | 14.8 | 13.8 | 10.9 | 8.9 | 6.9 | 6.9 | 5.9 | 5.9 |
| 85° | 10.9 | 4.9 | 4.9 | 4.0 | 3.0 | 3.0 | 3.0 | 2.0 | 2.0 | 2.0 | 2.0 |
| 87.5° | 2.0 | 2.0 | 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: SP1-2407-157-5

Test Date: 08/07/2024

Luminaire Tested: MEM2-HTN-SA-30-740-U-5WQ-2

Data in this report applies to families of products including MEM2-HTN-SA-30-740-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-30-740-U-5WQ-2**
 Description: Epic Modern Light Square 30W 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)