

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: P868935

Luminaire Tested: **EMM2-HSN-SA1A-722-U-T3**

Issue Date: 08/22/2024



Test Information

Test Method: LM-79-08
Report Number: P868935
Test Lab: INNOVATION CENTER(G3)
Issue Date: 08/22/2024
Manufacturer: COOPER LIGHTING SOLUTIONS (FORMERLY EATON)
Product Line: INVUE
Catalog Number: EMM2-HSN-SA1A-722-U-T3
Description: EPIC MODERN SHORT HOUSING DISCRETE LED ARRAYS 40W 70CRI 2200K
FITXURE w/ TYPE III DISTRIBUTION OPTIC
Light Source: (10) 2200K CCT, 70 CRI LEDS
Ballast/Driver: ELECTRONIC DRIVER

Summary

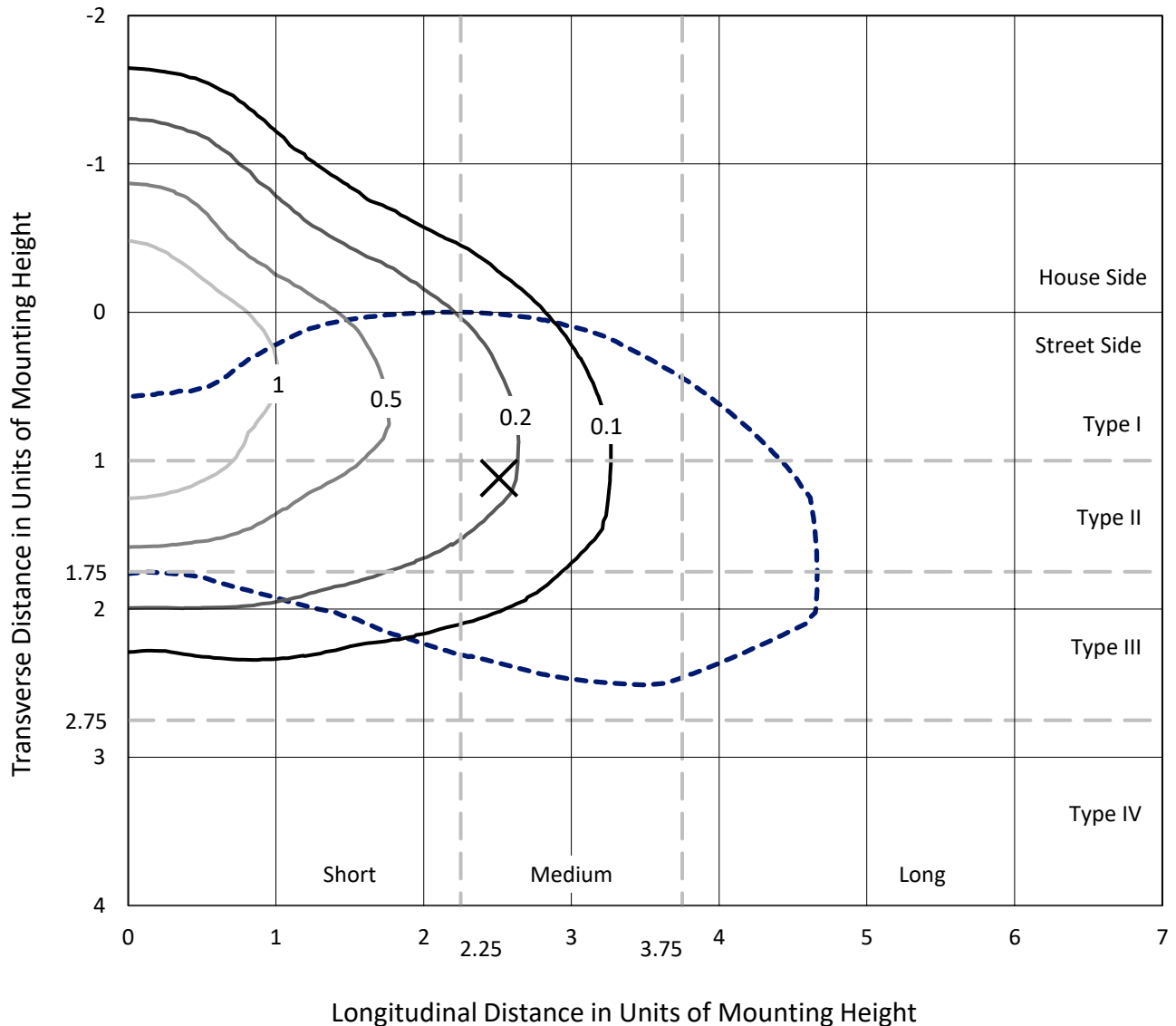
Lumens per Lamp: N/A
Luminaire Lumens: 4278.1 lumens
Efficiency: N/A
Efficacy: 130.4 lumens/watt
Luminous Opening: Rectangular (W 0.33' x L: 0.33' x H: 0')
IES Classification: Type III - Medium
BUG Rating: B1 - U0 - G1

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

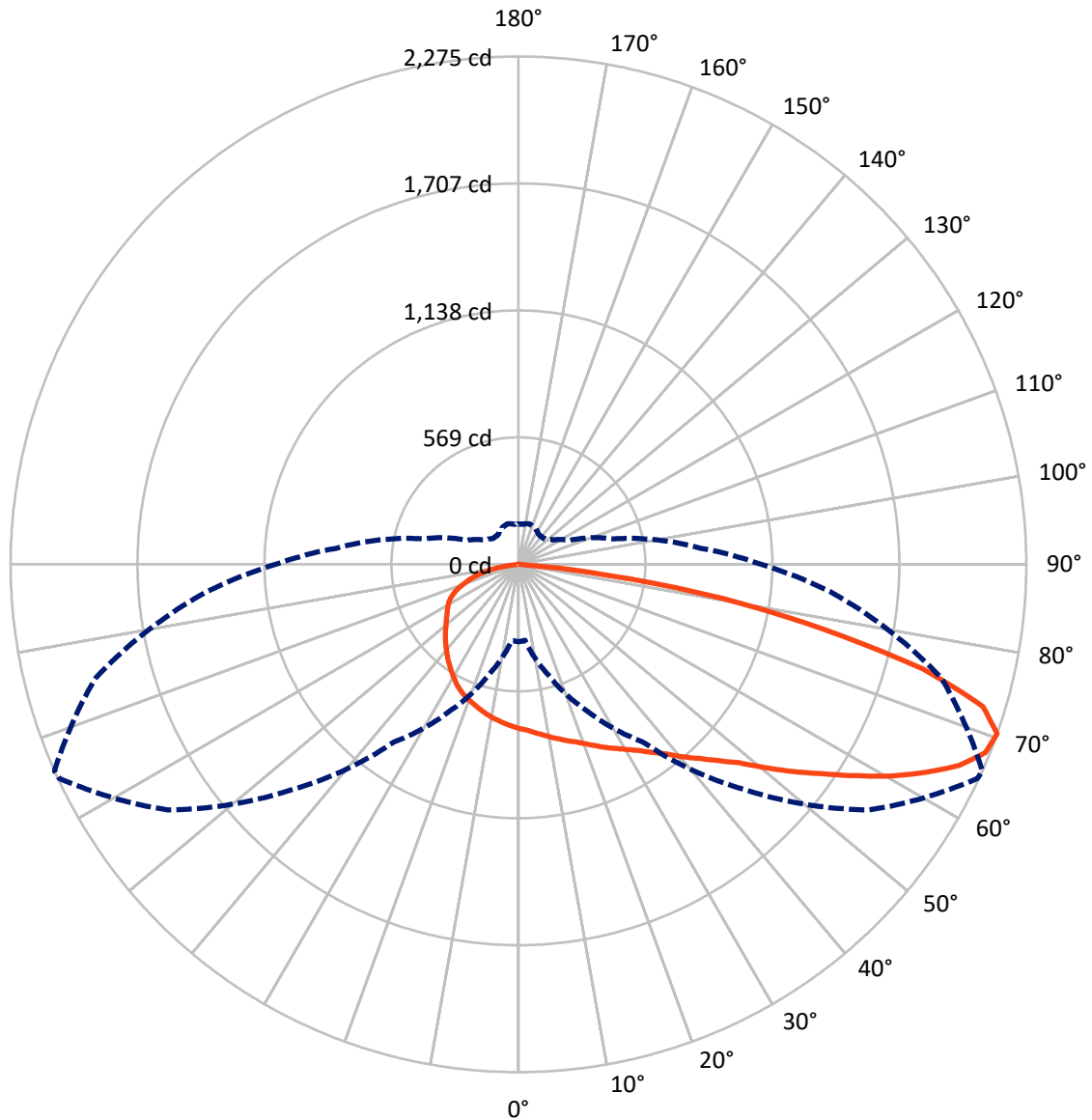
× Max cd
 - - - 1/2 Max cd



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

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Luminous Intensity Polar Plot



— Vertical Plane Through 66-Deg Lateral - - - Horizontal Cone Through 70-Deg Vertical

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FLUX DISTRIBUTION:

| | | Downward | Upward | Total |
|--------------------|-----------|----------|--------|--------|
| House Side | Lumens | 1102.5 | 0.0 | 1102.5 |
| | % Fixture | 25.8 | 0.0 | 25.8 |
| Street Side | Lumens | 3175.6 | 0.0 | 3175.6 |
| | % Fixture | 74.2 | 0.0 | 74.2 |
| Total | Lumens | 4278.1 | 0.0 | 4278.1 |
| | % Fixture | 100.0 | 0.0 | 100.0 |

Coefficient of Utilization

ZONAL LUMENS:

| Zone | Lumens | % Fixture |
|-----------|--------|-----------|
| 0°-10° | 70.4 | 1.6 |
| 10°-20° | 209.8 | 4.9 |
| 20°-30° | 352.4 | 8.2 |
| 30°-40° | 530.9 | 12.4 |
| 40°-50° | 720.8 | 16.8 |
| 50°-60° | 856.6 | 20.0 |
| 60°-70° | 874.2 | 20.4 |
| 70°-80° | 584.7 | 13.7 |
| 80°-90° | 78.2 | 1.8 |
| 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° | 4278.1 | 100.0 |
| 0°-180° | 4278.1 | 100.0 |



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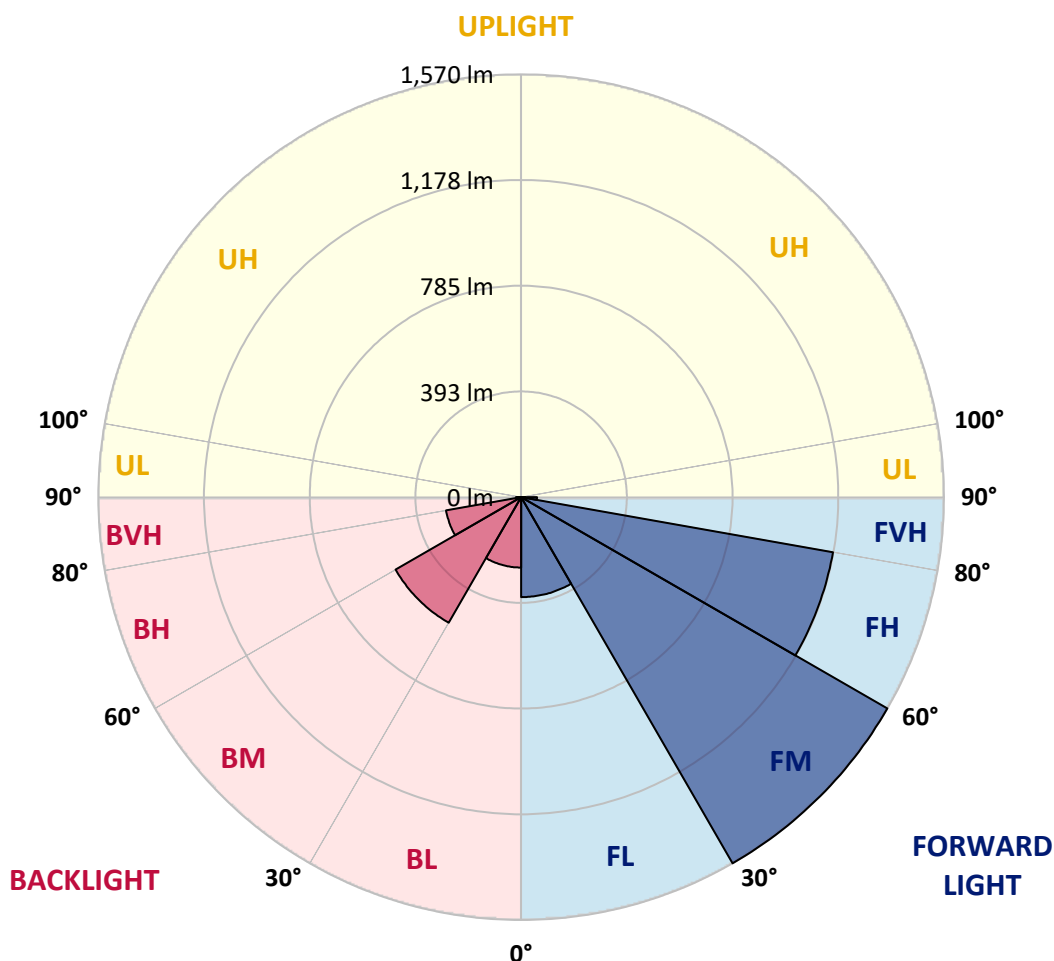
CATALOG NUMBER: EMM2-HSN-SA1A-722-U-T3

LUMINAIRE CLASSIFICATION SYSTEM LUMEN TABLE AND BUG RATING:

| Zone | Lumens | % Fixture | Zone Rating/Lumen Limit | | |
|----------------|--------|-----------|-------------------------|------|---------|
| | | | B | U | G |
| FL (0°-30°) | 371.3 | 8.7 | | | |
| FM (30°-60°) | 1570.0 | 36.7 | | | |
| FH (60°-80°) | 1175.8 | 27.5 | | | G1/1800 |
| FVH (80°-90°) | 58.6 | 1.4 | | | G1/100 |
| BL (0°-30°) | 261.4 | 6.1 | B1/500 | | |
| BM (30°-60°) | 538.3 | 12.6 | B1/1000 | | |
| BH (60°-80°) | 283.1 | 6.6 | B1/500 | | G1/500 |
| BVH (80°-90°) | 19.6 | 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 III Medium





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CANDELA DISTRIBUTION (FULL):

| | 0° | 5° | 15° | 25° | 35° | 45° | 55° | 65° | 66° | 75° | 85° |
|-------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|
| 0° | 736.1 | 736.1 | 736.1 | 736.1 | 736.1 | 736.1 | 736.1 | 736.1 | 736.1 | 736.1 | 736.1 |
| 2.5° | 762.4 | 759.0 | 756.5 | 758.2 | 753.1 | 754.8 | 748.8 | 744.6 | 743.7 | 742.0 | 740.3 |
| 5° | 786.2 | 786.2 | 782.0 | 782.0 | 776.0 | 775.2 | 766.7 | 757.3 | 757.3 | 751.4 | 744.6 |
| 7.5° | 811.7 | 810.0 | 804.9 | 804.1 | 797.3 | 795.6 | 786.2 | 771.8 | 770.9 | 759.9 | 749.7 |
| 10° | 829.6 | 830.4 | 827.0 | 827.0 | 821.9 | 817.7 | 804.1 | 788.8 | 787.1 | 772.6 | 756.5 |
| 12.5° | 843.2 | 844.9 | 844.0 | 844.0 | 839.8 | 839.8 | 824.5 | 804.1 | 802.4 | 783.7 | 760.7 |
| 15° | 857.6 | 856.8 | 859.3 | 860.2 | 858.5 | 855.9 | 844.9 | 821.1 | 820.2 | 795.6 | 766.7 |
| 17.5° | 870.4 | 869.5 | 870.4 | 874.6 | 875.5 | 875.5 | 864.4 | 839.8 | 836.4 | 810.0 | 771.8 |
| 20° | 878.0 | 879.7 | 883.1 | 888.2 | 890.8 | 897.6 | 888.2 | 861.9 | 858.5 | 825.3 | 782.8 |
| 22.5° | 906.9 | 901.8 | 904.4 | 907.8 | 911.2 | 920.5 | 912.0 | 884.8 | 882.3 | 848.3 | 795.6 |
| 25° | 956.2 | 956.2 | 950.3 | 944.3 | 940.1 | 944.3 | 937.5 | 911.2 | 909.5 | 868.7 | 810.0 |
| 27.5° | 1042.1 | 1042.1 | 1029.3 | 1007.2 | 979.2 | 971.5 | 966.4 | 939.2 | 934.1 | 890.8 | 819.4 |
| 30° | 1150.9 | 1154.3 | 1131.3 | 1093.9 | 1042.1 | 1008.1 | 995.3 | 965.6 | 963.0 | 912.9 | 833.8 |
| 32.5° | 1267.3 | 1274.1 | 1257.1 | 1202.7 | 1117.7 | 1051.4 | 1031.0 | 1000.4 | 994.5 | 939.2 | 852.5 |
| 35° | 1371.9 | 1378.7 | 1355.7 | 1304.7 | 1195.9 | 1114.3 | 1073.5 | 1038.7 | 1035.3 | 973.2 | 880.6 |
| 37.5° | 1456.9 | 1458.6 | 1444.1 | 1382.1 | 1261.4 | 1167.0 | 1126.2 | 1084.6 | 1077.8 | 1014.0 | 910.3 |
| 40° | 1547.0 | 1553.8 | 1539.3 | 1462.8 | 1320.9 | 1224.0 | 1178.9 | 1139.8 | 1133.9 | 1056.5 | 938.4 |
| 42.5° | 1641.3 | 1640.5 | 1640.5 | 1532.5 | 1380.4 | 1271.6 | 1235.9 | 1192.5 | 1189.1 | 1099.9 | 969.0 |
| 45° | 1699.1 | 1702.5 | 1693.2 | 1574.2 | 1467.9 | 1320.9 | 1291.1 | 1259.7 | 1253.7 | 1160.2 | 1008.9 |
| 47.5° | 1713.5 | 1705.9 | 1663.4 | 1606.5 | 1566.5 | 1371.9 | 1360.8 | 1342.1 | 1328.5 | 1226.5 | 1058.2 |
| 50° | 1694.0 | 1682.1 | 1657.5 | 1620.9 | 1603.1 | 1433.1 | 1431.4 | 1440.7 | 1431.4 | 1307.3 | 1115.2 |
| 52.5° | 1620.9 | 1619.2 | 1615.0 | 1623.5 | 1594.6 | 1481.5 | 1511.3 | 1543.6 | 1541.9 | 1389.7 | 1174.7 |
| 55° | 1467.1 | 1478.1 | 1529.1 | 1582.7 | 1562.3 | 1514.7 | 1600.5 | 1662.6 | 1655.8 | 1486.6 | 1235.9 |
| 57.5° | 1309.8 | 1320.9 | 1386.3 | 1513.8 | 1530.8 | 1550.4 | 1700.8 | 1797.7 | 1786.6 | 1592.0 | 1292.0 |
| 60° | 1173.0 | 1161.1 | 1226.5 | 1410.1 | 1486.6 | 1582.7 | 1800.2 | 1934.5 | 1925.2 | 1697.4 | 1349.8 |
| 62.5° | 956.2 | 968.1 | 1072.7 | 1258.8 | 1424.6 | 1603.1 | 1881.8 | 2058.6 | 2052.7 | 1794.3 | 1396.5 |
| 65° | 756.5 | 740.3 | 897.6 | 1099.9 | 1317.5 | 1596.3 | 1952.4 | 2175.1 | 2170.8 | 1889.5 | 1432.2 |
| 67.5° | 514.2 | 503.2 | 710.6 | 941.8 | 1172.1 | 1541.9 | 1968.5 | 2253.3 | 2255.0 | 1945.6 | 1441.6 |
| 70° | 346.8 | 341.7 | 510.8 | 724.2 | 970.7 | 1424.6 | 1918.4 | 2269.4 | 2275.4 | 1960.0 | 1399.9 |
| 72.5° | 255.8 | 255.0 | 374.0 | 516.8 | 722.5 | 1202.7 | 1781.5 | 2164.0 | 2175.1 | 1858.0 | 1277.5 |
| 75° | 201.4 | 204.0 | 266.9 | 367.2 | 481.9 | 889.9 | 1498.5 | 1855.5 | 1872.5 | 1604.8 | 1060.8 |
| 77.5° | 164.9 | 164.9 | 187.0 | 263.5 | 322.1 | 552.5 | 1077.8 | 1358.3 | 1392.3 | 1238.4 | 816.8 |
| 80° | 133.4 | 136.0 | 138.5 | 183.6 | 213.3 | 315.3 | 627.3 | 906.1 | 930.7 | 862.7 | 589.9 |
| 82.5° | 73.1 | 78.2 | 75.6 | 95.2 | 107.1 | 146.2 | 249.0 | 366.3 | 403.7 | 359.5 | 267.7 |
| 85° | 5.1 | 3.4 | 5.9 | 7.6 | 9.3 | 14.4 | 19.5 | 27.2 | 25.5 | 36.5 | 18.7 |
| 87.5° | 0.8 | 0.8 | 0.8 | 1.7 | 1.7 | 2.5 | 3.4 | 3.4 | 3.4 | 3.4 | 3.4 |
| 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: P868935

CATALOG NUMBER: EMM2-HSN-SA1A-722-U-T3

CANDELA DISTRIBUTION (continued):

| | 90° | 95° | 105° | 115° | 125° | 135° | 145° | 155° | 165° | 175° | 180° |
|-------|--------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|
| 0° | 736.1 | 736.1 | 736.1 | 736.1 | 736.1 | 736.1 | 736.1 | 736.1 | 736.1 | 736.1 | 736.1 |
| 2.5° | 739.5 | 735.2 | 728.4 | 726.7 | 724.2 | 720.8 | 717.4 | 712.3 | 710.6 | 712.3 | 714.0 |
| 5° | 740.3 | 734.4 | 723.3 | 716.5 | 709.7 | 703.8 | 697.0 | 690.2 | 685.9 | 686.8 | 690.2 |
| 7.5° | 742.9 | 734.4 | 717.4 | 706.3 | 695.3 | 685.9 | 674.9 | 667.2 | 662.1 | 663.0 | 665.5 |
| 10° | 746.3 | 734.4 | 714.0 | 695.3 | 680.0 | 666.4 | 655.3 | 646.0 | 640.9 | 640.0 | 640.9 |
| 12.5° | 747.1 | 733.5 | 706.3 | 683.4 | 664.7 | 646.8 | 634.9 | 626.4 | 621.3 | 618.8 | 620.5 |
| 15° | 749.7 | 731.0 | 698.7 | 670.6 | 647.7 | 629.0 | 614.5 | 604.3 | 600.9 | 599.2 | 598.4 |
| 17.5° | 753.1 | 730.1 | 691.9 | 657.9 | 630.7 | 609.4 | 596.7 | 586.5 | 582.2 | 580.5 | 582.2 |
| 20° | 758.2 | 731.0 | 684.2 | 645.1 | 615.4 | 594.1 | 579.7 | 569.5 | 566.1 | 565.2 | 564.4 |
| 22.5° | 765.0 | 732.7 | 678.3 | 633.2 | 598.4 | 577.1 | 562.7 | 555.9 | 553.3 | 554.2 | 554.2 |
| 25° | 771.8 | 734.4 | 669.8 | 617.1 | 580.5 | 558.4 | 548.2 | 543.1 | 544.8 | 548.2 | 548.2 |
| 27.5° | 777.7 | 733.5 | 657.9 | 600.1 | 559.3 | 538.9 | 531.2 | 532.1 | 536.3 | 542.3 | 543.1 |
| 30° | 785.4 | 733.5 | 645.1 | 578.8 | 535.5 | 515.9 | 514.2 | 521.0 | 527.8 | 533.8 | 533.8 |
| 32.5° | 797.3 | 738.6 | 634.9 | 557.6 | 510.8 | 495.5 | 503.2 | 512.5 | 520.2 | 526.1 | 527.8 |
| 35° | 817.7 | 749.7 | 628.1 | 536.3 | 487.0 | 476.0 | 490.4 | 505.7 | 510.8 | 515.1 | 515.9 |
| 37.5° | 837.2 | 759.9 | 619.6 | 515.9 | 462.4 | 458.1 | 477.7 | 493.8 | 494.7 | 497.2 | 497.2 |
| 40° | 855.9 | 767.5 | 608.6 | 493.8 | 438.6 | 438.6 | 461.5 | 475.1 | 473.4 | 470.9 | 471.7 |
| 42.5° | 876.3 | 771.8 | 595.8 | 473.4 | 419.0 | 419.0 | 437.7 | 449.6 | 448.8 | 452.2 | 454.7 |
| 45° | 901.0 | 780.3 | 578.8 | 454.7 | 398.6 | 395.2 | 410.5 | 420.7 | 433.5 | 448.8 | 453.0 |
| 47.5° | 935.0 | 792.2 | 565.2 | 434.3 | 381.6 | 369.7 | 375.7 | 396.9 | 411.4 | 424.1 | 425.8 |
| 50° | 970.7 | 809.2 | 553.3 | 413.1 | 361.2 | 340.0 | 345.1 | 368.9 | 377.4 | 382.5 | 385.0 |
| 52.5° | 1008.9 | 822.8 | 543.1 | 395.2 | 340.0 | 309.4 | 316.2 | 339.1 | 345.1 | 349.3 | 350.2 |
| 55° | 1042.1 | 833.8 | 530.4 | 378.2 | 317.0 | 280.5 | 289.0 | 311.1 | 317.0 | 322.1 | 322.1 |
| 57.5° | 1076.9 | 844.0 | 521.9 | 363.8 | 292.4 | 256.7 | 262.6 | 284.7 | 293.2 | 294.9 | 297.5 |
| 60° | 1105.8 | 853.4 | 514.2 | 350.2 | 269.4 | 235.4 | 239.7 | 259.2 | 269.4 | 270.3 | 272.0 |
| 62.5° | 1126.2 | 859.3 | 510.0 | 333.2 | 246.5 | 214.2 | 217.6 | 237.1 | 249.0 | 251.6 | 252.4 |
| 65° | 1139.0 | 862.7 | 502.3 | 311.1 | 226.9 | 196.3 | 196.3 | 215.9 | 227.8 | 233.7 | 235.4 |
| 67.5° | 1133.0 | 856.8 | 481.9 | 285.6 | 209.1 | 178.5 | 177.6 | 197.2 | 207.4 | 210.8 | 211.6 |
| 70° | 1087.1 | 821.9 | 440.3 | 254.1 | 190.4 | 162.3 | 160.6 | 178.5 | 187.8 | 180.2 | 181.0 |
| 72.5° | 993.6 | 742.9 | 383.3 | 222.7 | 170.8 | 147.0 | 145.3 | 160.6 | 161.5 | 161.5 | 160.6 |
| 75° | 837.2 | 606.9 | 306.0 | 189.5 | 150.4 | 130.9 | 131.7 | 143.6 | 144.5 | 148.7 | 146.2 |
| 77.5° | 641.7 | 449.6 | 238.8 | 151.3 | 127.5 | 116.4 | 120.7 | 124.9 | 130.9 | 136.8 | 130.9 |
| 80° | 466.6 | 310.2 | 165.7 | 113.0 | 98.6 | 98.6 | 100.3 | 104.5 | 113.0 | 119.0 | 113.0 |
| 82.5° | 199.7 | 136.8 | 76.5 | 56.1 | 48.4 | 47.6 | 48.4 | 48.4 | 59.5 | 61.2 | 53.5 |
| 85° | 15.3 | 12.7 | 9.3 | 9.3 | 7.6 | 4.2 | 4.2 | 3.4 | 2.5 | 2.5 | 2.5 |
| 87.5° | 3.4 | 2.5 | 2.5 | 2.5 | 1.7 | 1.7 | 1.7 | 1.7 | 1.7 | 1.7 | 1.7 |
| 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: SP1-2407-157-2

Test Date: 08/07/2024

Luminaire Tested: MEM2-HTN-SA-40-722-U-5WQ-2

Data in this report applies to families of products including MEM2-HTN-SA-40-722-U-5WQ-2

Test Information

Test Method: LM-79-2019
 Report Number: SP1-2407-157-2
 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-40-722-U-5WQ-2**
 Description: Epic Modern Light Square 40W 5WQ Optic and Flare Trim

Spectral Parameters

CCT (K): 2253
 CIE u': 0.2868
 CIE v': 0.5332
 Duv: -0.0014
 CIE x: 0.4974
 CIE y: 0.4110
 CIE z: 0.0915
 Peak Wavelength (nm): 603
 Dominant Wavelength (nm): 587
 Purity: 72.69432
 Rf: 76.9
 Rg: 92.7

CRI (Ra): 70.6
 R1: 68.4
 R2: 88.7
 R3: 85.4
 R4: 63.5
 R5: 69.0
 R6: 88.9
 R7: 68.5
 R8: 32.0
 R9: -36.0
 R10: 78.2
 R11: 61.0
 R12: 74.2
 R13: 72.8
 R14: 92.2
 R15: 58.0



Test Conditions

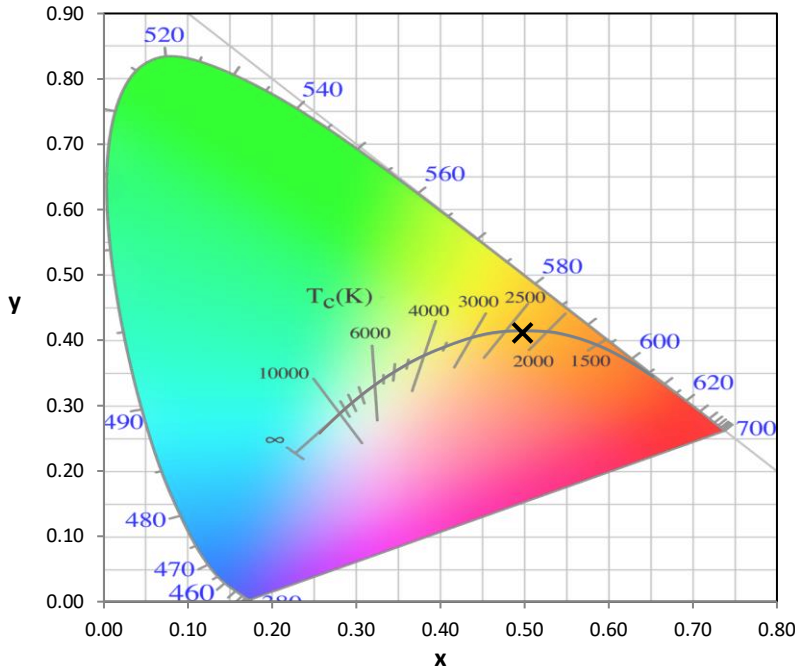
Stabilization Time: 29M
 Operation Time: 1H 29M
 Sphere Temperature (°C): 24.1

REPORT NUMBER: SP1-2407-157-2

| 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 2200K 4-step quadrangle

REPORT NUMBER: SP1-2407-157-2

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 | 117 | NR | 620 | 896 | NR | 750 | 20 | NR | 880 | 0 | NR |
| 365 | 0 | NR | 495 | 137 | NR | 625 | 838 | NR | 755 | 17 | NR | 885 | 0 | NR |
| 370 | 0 | NR | 500 | 160 | NR | 630 | 774 | NR | 760 | 14 | NR | 890 | 0 | NR |
| 375 | 0 | NR | 505 | 183 | NR | 635 | 704 | NR | 765 | 12 | NR | 895 | 0 | NR |
| 380 | 0 | NR | 510 | 202 | NR | 640 | 635 | NR | 770 | 10 | NR | 900 | 0 | NR |
| 385 | 0 | NR | 515 | 219 | NR | 645 | 565 | NR | 775 | 9 | NR | 905 | 0 | NR |
| 390 | 0 | NR | 520 | 235 | NR | 650 | 501 | NR | 780 | 7 | NR | 910 | 0 | NR |
| 395 | 0 | NR | 525 | 249 | NR | 655 | 440 | NR | 785 | 6 | NR | 915 | 0 | NR |
| 400 | 0 | NR | 530 | 263 | NR | 660 | 383 | NR | 790 | 5 | NR | 920 | 0 | NR |
| 405 | 0 | NR | 535 | 281 | NR | 665 | 332 | NR | 795 | 5 | NR | 925 | 0 | NR |
| 410 | 1 | NR | 540 | 302 | NR | 670 | 286 | NR | 800 | 4 | NR | 930 | 0 | NR |
| 415 | 3 | NR | 545 | 331 | NR | 675 | 245 | NR | 805 | 3 | NR | 935 | 0 | NR |
| 420 | 6 | NR | 550 | 366 | NR | 680 | 210 | NR | 810 | 3 | NR | 940 | 0 | NR |
| 425 | 12 | NR | 555 | 411 | NR | 685 | 178 | NR | 815 | 3 | NR | 945 | 0 | NR |
| 430 | 21 | NR | 560 | 469 | NR | 690 | 152 | NR | 820 | 2 | NR | 950 | 0 | NR |
| 435 | 38 | NR | 565 | 536 | NR | 695 | 129 | NR | 825 | 2 | NR | 955 | 0 | NR |
| 440 | 66 | NR | 570 | 614 | NR | 700 | 109 | NR | 830 | 2 | NR | 960 | 0 | NR |
| 445 | 122 | NR | 575 | 701 | NR | 705 | 92 | NR | 835 | 1 | NR | 965 | 0 | NR |
| 450 | 215 | NR | 580 | 785 | NR | 710 | 77 | NR | 840 | 1 | NR | 970 | 0 | NR |
| 455 | 236 | NR | 585 | 863 | NR | 715 | 66 | NR | 845 | 1 | NR | 975 | 0 | NR |
| 460 | 170 | NR | 590 | 928 | NR | 720 | 55 | NR | 850 | 1 | NR | 980 | 0 | NR |
| 465 | 148 | NR | 595 | 971 | NR | 725 | 47 | NR | 855 | 1 | NR | 985 | 0 | NR |
| 470 | 132 | NR | 600 | 994 | NR | 730 | 40 | NR | 860 | 1 | NR | 990 | 0 | NR |
| 475 | 104 | NR | 605 | 996 | NR | 735 | 33 | NR | 865 | 1 | NR | 995 | 0 | NR |
| 480 | 97 | NR | 610 | 979 | NR | 740 | 28 | NR | 870 | 1 | NR | 1000 | 0 | NR |
| 485 | 105 | NR | 615 | 943 | NR | 745 | 24 | NR | 875 | 0 | NR | | | |

REPORT NUMBER: SP1-2407-157-2

Scotopic Flux vs. Wavelength



Scotopic Lumens: NR

S/P: 0.96

| 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 | 117 | NR | 620 | 896 | NR | 750 | 20 | NR | 880 | 0 | NR |
| 365 | 0 | NR | 495 | 137 | NR | 625 | 838 | NR | 755 | 17 | NR | 885 | 0 | NR |
| 370 | 0 | NR | 500 | 160 | NR | 630 | 774 | NR | 760 | 14 | NR | 890 | 0 | NR |
| 375 | 0 | NR | 505 | 183 | NR | 635 | 704 | NR | 765 | 12 | NR | 895 | 0 | NR |
| 380 | 0 | NR | 510 | 202 | NR | 640 | 635 | NR | 770 | 10 | NR | 900 | 0 | NR |
| 385 | 0 | NR | 515 | 219 | NR | 645 | 565 | NR | 775 | 9 | NR | 905 | 0 | NR |
| 390 | 0 | NR | 520 | 235 | NR | 650 | 501 | NR | 780 | 7 | NR | 910 | 0 | NR |
| 395 | 0 | NR | 525 | 249 | NR | 655 | 440 | NR | 785 | 6 | NR | 915 | 0 | NR |
| 400 | 0 | NR | 530 | 263 | NR | 660 | 383 | NR | 790 | 5 | NR | 920 | 0 | NR |
| 405 | 0 | NR | 535 | 281 | NR | 665 | 332 | NR | 795 | 5 | NR | 925 | 0 | NR |
| 410 | 1 | NR | 540 | 302 | NR | 670 | 286 | NR | 800 | 4 | NR | 930 | 0 | NR |
| 415 | 3 | NR | 545 | 331 | NR | 675 | 245 | NR | 805 | 3 | NR | 935 | 0 | NR |
| 420 | 6 | NR | 550 | 366 | NR | 680 | 210 | NR | 810 | 3 | NR | 940 | 0 | NR |
| 425 | 12 | NR | 555 | 411 | NR | 685 | 178 | NR | 815 | 3 | NR | 945 | 0 | NR |
| 430 | 21 | NR | 560 | 469 | NR | 690 | 152 | NR | 820 | 2 | NR | 950 | 0 | NR |
| 435 | 38 | NR | 565 | 536 | NR | 695 | 129 | NR | 825 | 2 | NR | 955 | 0 | NR |
| 440 | 66 | NR | 570 | 614 | NR | 700 | 109 | NR | 830 | 2 | NR | 960 | 0 | NR |
| 445 | 122 | NR | 575 | 701 | NR | 705 | 92 | NR | 835 | 1 | NR | 965 | 0 | NR |
| 450 | 215 | NR | 580 | 785 | NR | 710 | 77 | NR | 840 | 1 | NR | 970 | 0 | NR |
| 455 | 236 | NR | 585 | 863 | NR | 715 | 66 | NR | 845 | 1 | NR | 975 | 0 | NR |
| 460 | 170 | NR | 590 | 928 | NR | 720 | 55 | NR | 850 | 1 | NR | 980 | 0 | NR |
| 465 | 148 | NR | 595 | 971 | NR | 725 | 47 | NR | 855 | 1 | NR | 985 | 0 | NR |
| 470 | 132 | NR | 600 | 994 | NR | 730 | 40 | NR | 860 | 1 | NR | 990 | 0 | NR |
| 475 | 104 | NR | 605 | 996 | NR | 735 | 33 | NR | 865 | 1 | NR | 995 | 0 | NR |
| 480 | 97 | NR | 610 | 979 | NR | 740 | 28 | NR | 870 | 1 | NR | 1000 | 0 | NR |
| 485 | 105 | NR | 615 | 943 | NR | 745 | 24 | NR | 875 | 0 | NR | | | |

REPORT NUMBER: SP1-2407-157-2

Melanopic Flux vs. Wavelength



Melanopic Lumens: NR

M/P: 1.71

| λ (nm) | Power W ² /nm | Lumens (φ/nm) | λ (nm) | Power W ² /nm | Lumens (φ/nm) | λ (nm) | Power W ² /nm | Lumens (φ/nm) | λ (nm) | Power W ² /nm | Lumens (φ/nm) | λ (nm) | Power W ² /nm | Lumens (φ/nm) |
|--------|--------------------------|---------------|--------|--------------------------|---------------|--------|--------------------------|---------------|--------|--------------------------|---------------|--------|--------------------------|---------------|
| 360 | 0 | NR | 490 | 117 | NR | 620 | 896 | NR | 750 | 20 | NR | 880 | 0 | NR |
| 365 | 0 | NR | 495 | 137 | NR | 625 | 838 | NR | 755 | 17 | NR | 885 | 0 | NR |
| 370 | 0 | NR | 500 | 160 | NR | 630 | 774 | NR | 760 | 14 | NR | 890 | 0 | NR |
| 375 | 0 | NR | 505 | 183 | NR | 635 | 704 | NR | 765 | 12 | NR | 895 | 0 | NR |
| 380 | 0 | NR | 510 | 202 | NR | 640 | 635 | NR | 770 | 10 | NR | 900 | 0 | NR |
| 385 | 0 | NR | 515 | 219 | NR | 645 | 565 | NR | 775 | 9 | NR | 905 | 0 | NR |
| 390 | 0 | NR | 520 | 235 | NR | 650 | 501 | NR | 780 | 7 | NR | 910 | 0 | NR |
| 395 | 0 | NR | 525 | 249 | NR | 655 | 440 | NR | 785 | 6 | NR | 915 | 0 | NR |
| 400 | 0 | NR | 530 | 263 | NR | 660 | 383 | NR | 790 | 5 | NR | 920 | 0 | NR |
| 405 | 0 | NR | 535 | 281 | NR | 665 | 332 | NR | 795 | 5 | NR | 925 | 0 | NR |
| 410 | 1 | NR | 540 | 302 | NR | 670 | 286 | NR | 800 | 4 | NR | 930 | 0 | NR |
| 415 | 3 | NR | 545 | 331 | NR | 675 | 245 | NR | 805 | 3 | NR | 935 | 0 | NR |
| 420 | 6 | NR | 550 | 366 | NR | 680 | 210 | NR | 810 | 3 | NR | 940 | 0 | NR |
| 425 | 12 | NR | 555 | 411 | NR | 685 | 178 | NR | 815 | 3 | NR | 945 | 0 | NR |
| 430 | 21 | NR | 560 | 469 | NR | 690 | 152 | NR | 820 | 2 | NR | 950 | 0 | NR |
| 435 | 38 | NR | 565 | 536 | NR | 695 | 129 | NR | 825 | 2 | NR | 955 | 0 | NR |
| 440 | 66 | NR | 570 | 614 | NR | 700 | 109 | NR | 830 | 2 | NR | 960 | 0 | NR |
| 445 | 122 | NR | 575 | 701 | NR | 705 | 92 | NR | 835 | 1 | NR | 965 | 0 | NR |
| 450 | 215 | NR | 580 | 785 | NR | 710 | 77 | NR | 840 | 1 | NR | 970 | 0 | NR |
| 455 | 236 | NR | 585 | 863 | NR | 715 | 66 | NR | 845 | 1 | NR | 975 | 0 | NR |
| 460 | 170 | NR | 590 | 928 | NR | 720 | 55 | NR | 850 | 1 | NR | 980 | 0 | NR |
| 465 | 148 | NR | 595 | 971 | NR | 725 | 47 | NR | 855 | 1 | NR | 985 | 0 | NR |
| 470 | 132 | NR | 600 | 994 | NR | 730 | 40 | NR | 860 | 1 | NR | 990 | 0 | NR |
| 475 | 104 | NR | 605 | 996 | NR | 735 | 33 | NR | 865 | 1 | NR | 995 | 0 | NR |
| 480 | 97 | NR | 610 | 979 | NR | 740 | 28 | NR | 870 | 1 | NR | 1000 | 0 | NR |
| 485 | 105 | NR | 615 | 943 | NR | 745 | 24 | NR | 875 | 0 | NR | | | |

Summary

$R_f = 76.9$
 $R_g = 92.7$
 CIE $R_a = 70.6$
 $R_9 = -36.0$



Color Vector Graphics



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

| | | | |
|------------|------------|------------|------------|
| CES01 = 87 | CES26 = 76 | CES51 = 88 | CES76 = 78 |
| CES02 = 65 | CES27 = 94 | CES52 = 85 | CES77 = 75 |
| CES03 = 32 | CES28 = 93 | CES53 = 80 | CES78 = 79 |
| CES04 = 72 | CES29 = 81 | CES54 = 86 | CES79 = 82 |
| CES05 = 51 | CES30 = 91 | CES55 = 83 | CES80 = 81 |
| CES06 = 52 | CES31 = 83 | CES56 = 77 | CES81 = 51 |
| CES07 = 44 | CES32 = 75 | CES57 = 75 | CES82 = 92 |
| CES08 = 42 | CES33 = 88 | CES58 = 76 | CES83 = 88 |
| CES09 = 29 | CES34 = 88 | CES59 = 84 | CES84 = 90 |
| CES10 = 79 | CES35 = 94 | CES60 = 91 | CES85 = 65 |
| CES11 = 62 | CES36 = 90 | CES61 = 82 | CES86 = 48 |
| CES12 = 68 | CES37 = 97 | CES62 = 91 | CES87 = 76 |
| CES13 = 45 | CES38 = 98 | CES63 = 86 | CES88 = 78 |
| CES14 = 75 | CES39 = 97 | CES64 = 70 | CES89 = 61 |
| CES15 = 72 | CES40 = 94 | CES65 = 71 | CES90 = 80 |
| CES16 = 48 | CES41 = 95 | CES66 = 71 | CES91 = 80 |
| CES17 = 51 | CES42 = 89 | CES67 = 70 | CES92 = 51 |
| CES18 = 57 | CES43 = 80 | CES68 = 74 | CES93 = 68 |
| CES19 = 74 | CES44 = 99 | CES69 = 84 | CES94 = 44 |
| CES20 = 68 | CES45 = 83 | CES70 = 72 | CES95 = 66 |
| CES21 = 88 | CES46 = 81 | CES71 = 75 | CES96 = 75 |
| CES22 = 81 | CES47 = 88 | CES72 = 89 | CES97 = 76 |
| CES23 = 92 | CES48 = 73 | CES73 = 68 | CES98 = 72 |
| CES24 = 92 | CES49 = 82 | CES74 = 85 | CES99 = 63 |
| CES25 = 73 | CES50 = 87 | CES75 = 80 | |



Color Rendition by Hue-Angle Bin



Measure Comparisons



(END OF REPORT)