

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: P867508

Luminaire Tested: **MEM2-HTN-SA-90-727-U-T2R-HSS**

Issue Date: 08/21/2024



Test Information

Test Method: LM-79-08
Report Number: P867508
Test Lab: INNOVATION CENTER(G3)
Issue Date: 08/21/2024
Manufacturer: COOPER LIGHTING SOLUTIONS (FORMERLY EATON)
Product Line: STREETWORKS
Catalog Number: MEM2-HTN-SA-90-727-U-T2R-HSS
Description: EPIC MODERN TALL HOUSING DISCRETE LED ARRAYS 90W 70CRI 2700K
FITXURE w/ TYPE II ROADWAY DISTRIBUTION OPTIC AND HOUSE SIDE SHIELD
Light Source: (20) 2700K CCT, 70 CRI LEDS
Ballast/Driver: ELECTRONIC DRIVER

Summary

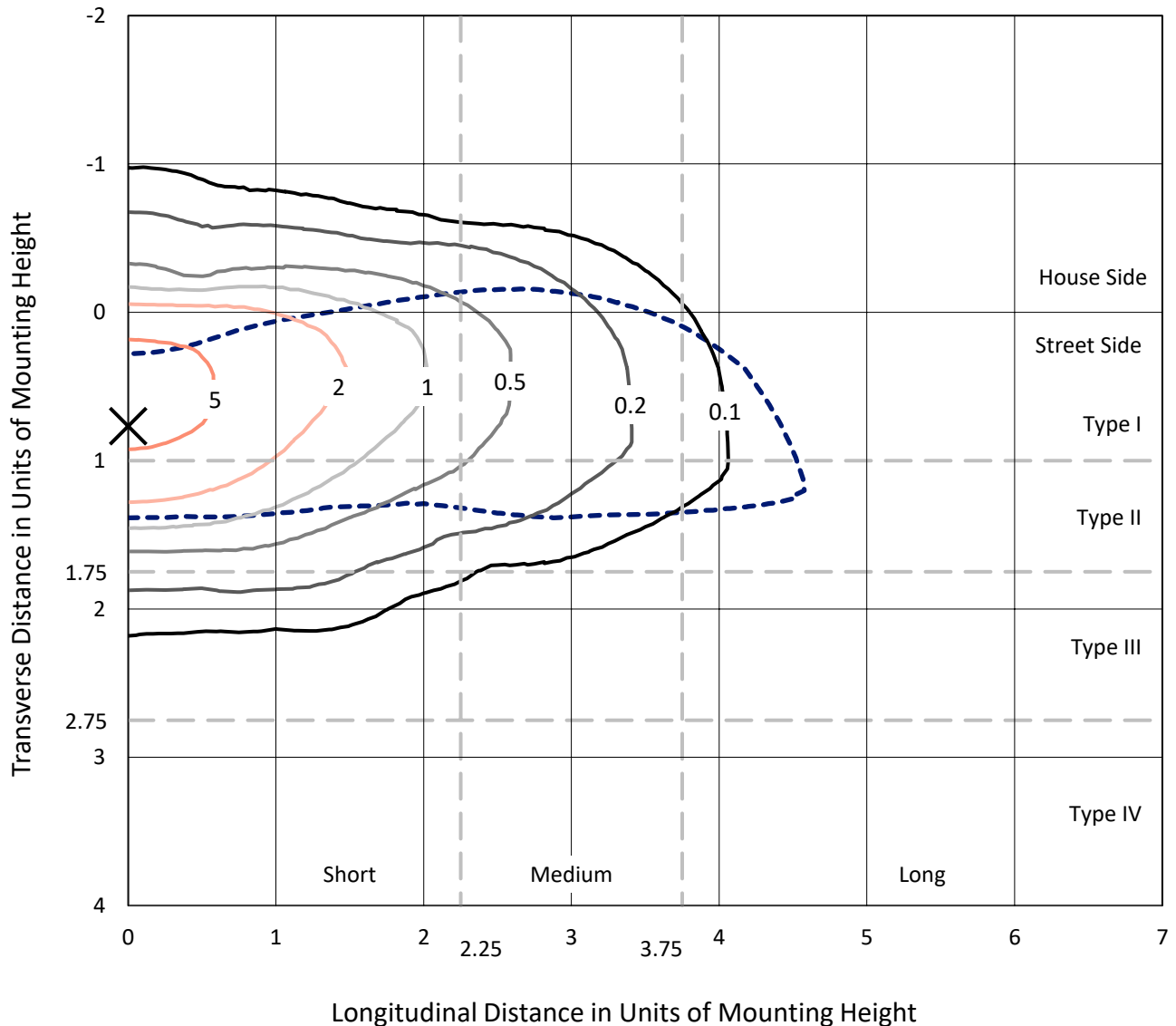
Lumens per Lamp: N/A
Luminaire Lumens: 8467.6 lumens
Efficiency: N/A
Efficacy: 94.1 lumens/watt
Luminous Opening: Rectangular (W 0.67' x L: 0.33' x H: 0')
IES Classification: Type II - Short
BUG Rating: B1 - U0 - G2

Input Watts (W): 90
Input Voltage (V): 120
Input Current (Ain): NR
Voltage Rise (V): NR
Power Factor: 0.99
Total Harmonic Distortion (THDi): 6.20%
Frequency (hertz): 60
Stabilization Time: NR
Operation Time: NR
Ambient Temperature (°C): NR
Test Distance: 24 FT

REPORT NUMBER: P867508
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Iso-Footcandle Lines of Horizontal Illumination

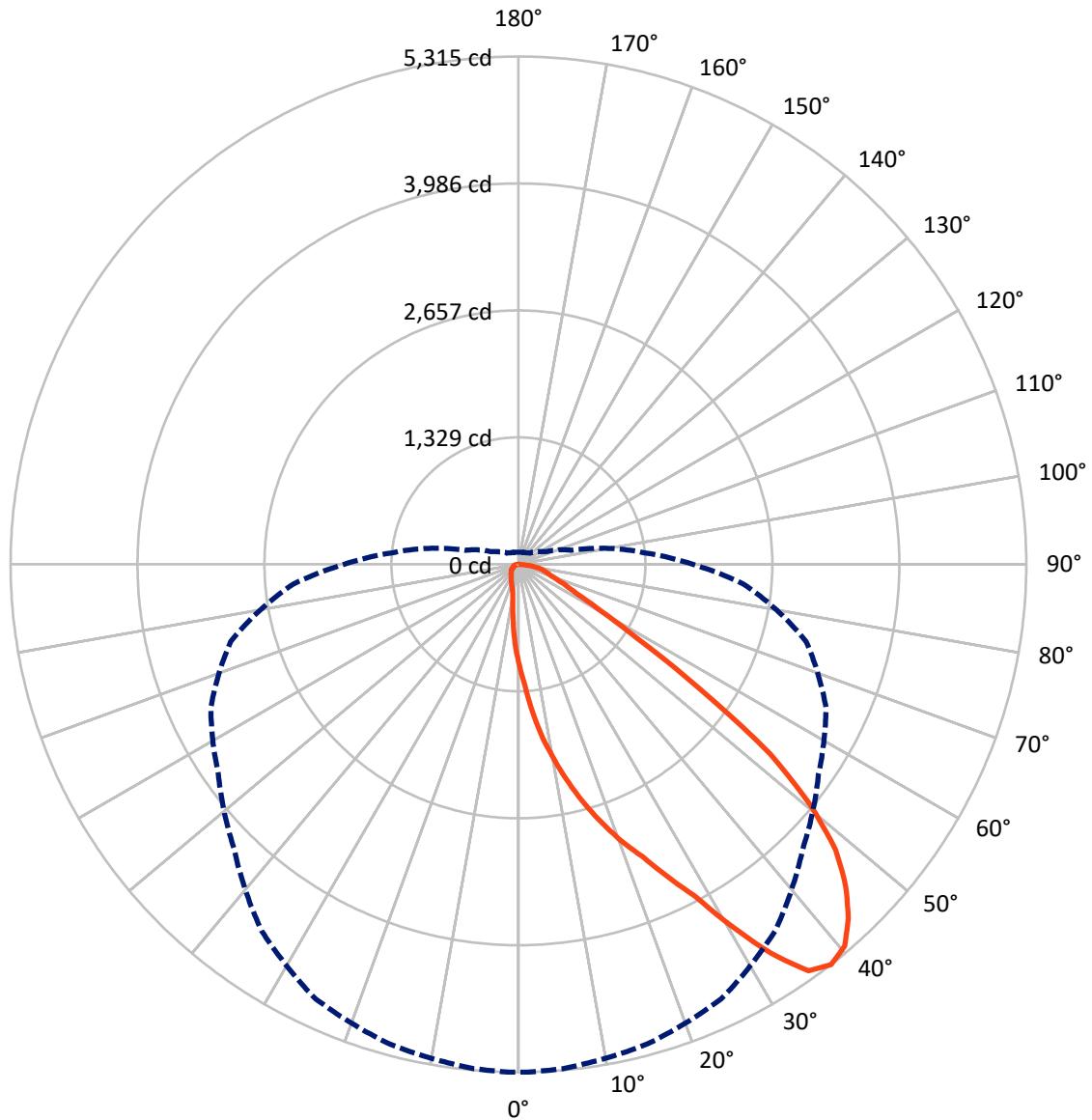
× Max cd
 - - - 1/2 Max cd



Based on 20 foot mounting height. Maximum calculated value = 7.3 fc
 Type II - Short - N/A

REPORT NUMBER: P867508
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Luminous Intensity Polar Plot



— Vertical Plane Through 0-Deg Lateral - - - Horizontal Cone Through 37.5-Deg Vertical

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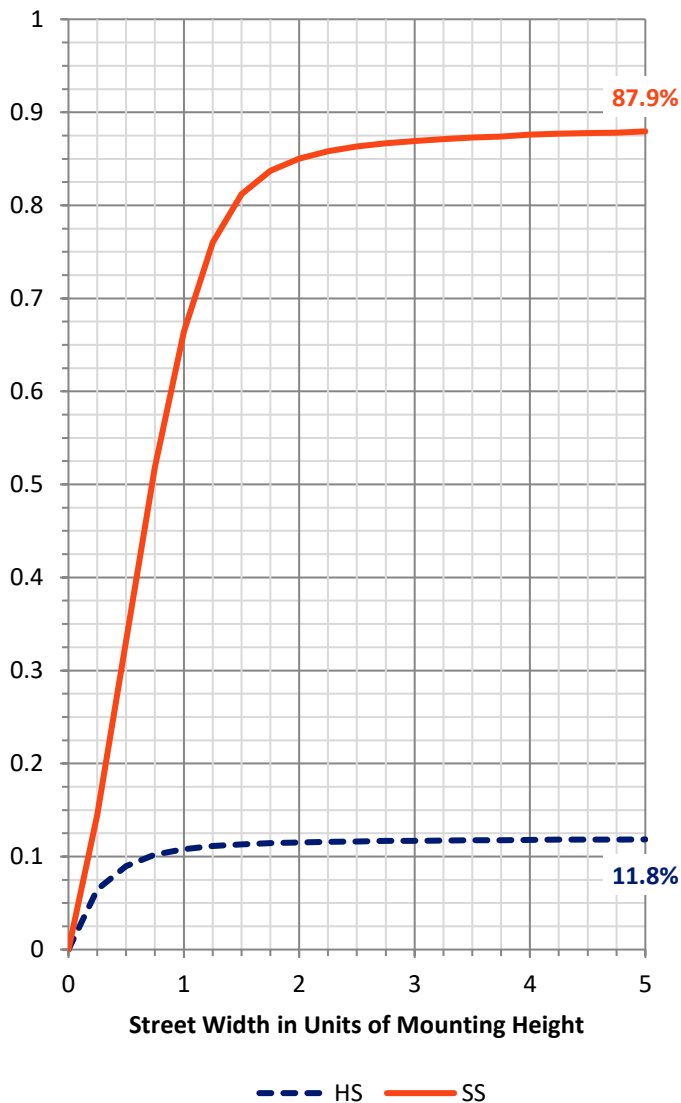
FLUX DISTRIBUTION:

| | | Downward | Upward | Total |
|--------------------|-----------|----------|--------|--------|
| House Side | Lumens | 1009.9 | 0.0 | 1009.9 |
| | % Fixture | 11.9 | 0.0 | 11.9 |
| Street Side | Lumens | 7457.7 | 0.0 | 7457.7 |
| | % Fixture | 88.1 | 0.0 | 88.1 |
| Total | Lumens | 8467.6 | 0.0 | 8467.6 |
| | % Fixture | 100.0 | 0.0 | 100.0 |

ZONAL LUMENS:

| Zone | Lumens | % Fixture |
|-----------|--------|-----------|
| 0°-10° | 105.3 | 1.2 |
| 10°-20° | 368.0 | 4.3 |
| 20°-30° | 759.2 | 9.0 |
| 30°-40° | 1335.8 | 15.8 |
| 40°-50° | 1813.8 | 21.4 |
| 50°-60° | 1797.0 | 21.2 |
| 60°-70° | 1383.5 | 16.3 |
| 70°-80° | 802.9 | 9.5 |
| 80°-90° | 102.1 | 1.2 |
| 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° | 8467.6 | 100.0 |
| 0°-180° | 8467.6 | 100.0 |

Coefficient of Utilization



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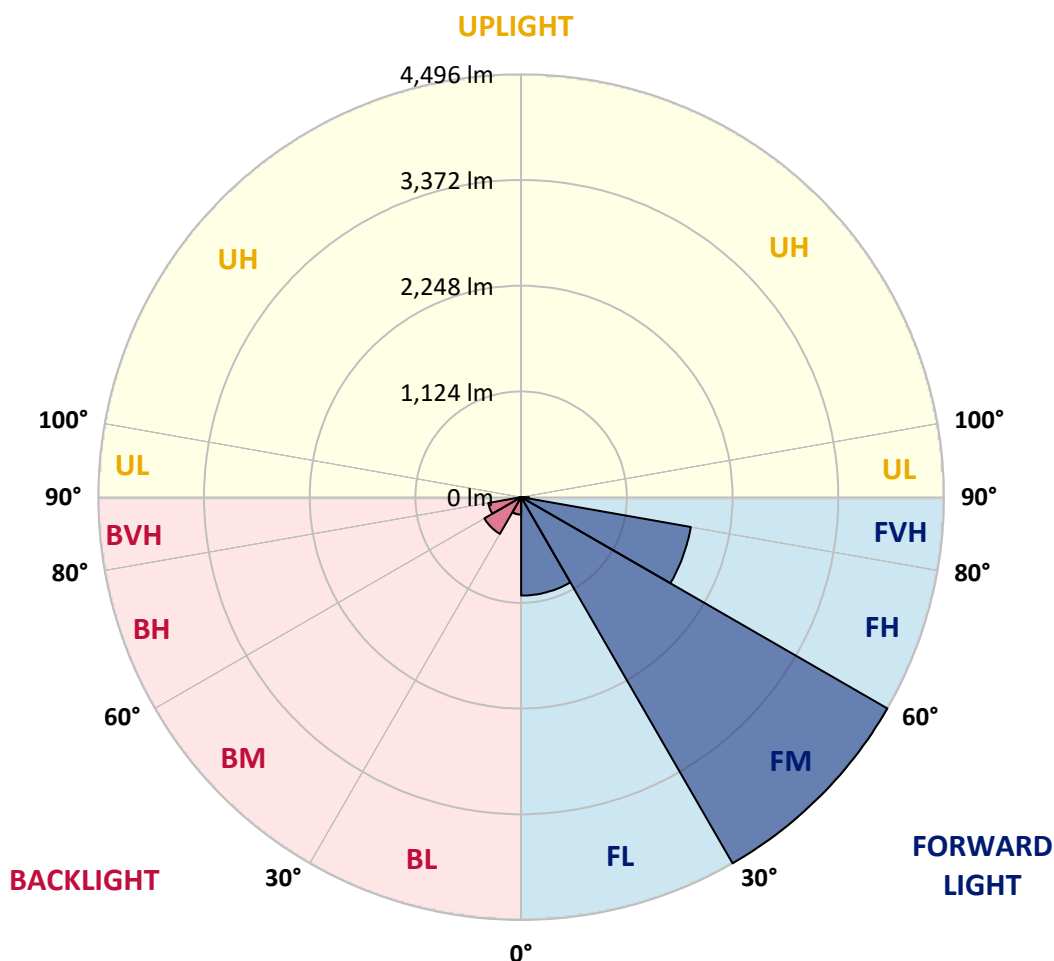
CATALOG NUMBER: MEM2-HTN-SA-90-727-U-T2R-HSS

LUMINAIRE CLASSIFICATION SYSTEM LUMEN TABLE AND BUG RATING:

| Zone | | Lumens | % Fixture | Zone Rating/Lumen Limit | | |
|------|-------------|--------|-----------|-------------------------|------|---------|
| | | | | B | U | G |
| FL | (0°-30°) | 1046.8 | 12.4 | | | |
| FM | (30°-60°) | 4495.6 | 53.1 | | | |
| FH | (60°-80°) | 1832.1 | 21.6 | | | G2/5000 |
| FVH | (80°-90°) | 83.3 | 1.0 | | | G1/100 |
| BL | (0°-30°) | 185.7 | 2.2 | B1/500 | | |
| BM | (30°-60°) | 451.1 | 5.3 | B1/1000 | | |
| BH | (60°-80°) | 354.3 | 4.2 | B1/500 | | G1/500 |
| BVH | (80°-90°) | 18.8 | 0.2 | | | G1/100 |
| UL | (90°-100°) | 0.0 | 0.0 | | U0/0 | |
| UH | (100°-180°) | 0.0 | 0.0 | | U0/0 | |

BUG Rating: B1-U0-G2

Type II Short





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CANDELA DISTRIBUTION (FULL):

| | 0° | 1° | 5° | 15° | 25° | 35° | 45° | 55° | 65° | 75° | 85° |
|-------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|
| 0° | 1049.3 | 1049.3 | 1049.3 | 1049.3 | 1049.3 | 1049.3 | 1049.3 | 1049.3 | 1049.3 | 1049.3 | 1049.3 |
| 2.5° | 1264.3 | 1283.2 | 1269.0 | 1257.2 | 1240.7 | 1224.1 | 1200.5 | 1174.5 | 1141.4 | 1101.2 | 1065.8 |
| 5° | 1550.3 | 1559.7 | 1555.0 | 1547.9 | 1495.9 | 1446.3 | 1396.6 | 1335.2 | 1250.1 | 1174.5 | 1094.2 |
| 7.5° | 1836.2 | 1831.5 | 1819.7 | 1798.4 | 1751.1 | 1694.4 | 1604.6 | 1503.0 | 1382.5 | 1250.1 | 1124.9 |
| 10° | 2086.7 | 2093.8 | 2084.3 | 2051.2 | 1992.2 | 1914.2 | 1805.5 | 1689.7 | 1526.6 | 1342.3 | 1167.4 |
| 12.5° | 2349.0 | 2353.7 | 2353.7 | 2282.8 | 2242.7 | 2122.1 | 2006.3 | 1850.4 | 1668.4 | 1455.7 | 1217.0 |
| 15° | 2606.6 | 2597.1 | 2597.1 | 2549.9 | 2479.0 | 2344.3 | 2214.3 | 2025.3 | 1819.7 | 1562.1 | 1273.8 |
| 17.5° | 2852.4 | 2857.1 | 2835.8 | 2783.8 | 2715.3 | 2585.3 | 2424.6 | 2216.7 | 1968.5 | 1689.7 | 1332.8 |
| 20° | 3095.8 | 3081.6 | 3072.1 | 3020.2 | 2946.9 | 2793.3 | 2639.7 | 2403.4 | 2143.4 | 1833.8 | 1415.6 |
| 22.5° | 3322.6 | 3329.7 | 3306.1 | 3223.4 | 3154.9 | 3015.4 | 2840.6 | 2623.1 | 2327.7 | 1978.0 | 1505.4 |
| 25° | 3615.7 | 3592.0 | 3613.3 | 3514.1 | 3407.7 | 3242.3 | 3043.8 | 2828.7 | 2528.6 | 2155.2 | 1616.4 |
| 27.5° | 3927.6 | 3941.8 | 3930.0 | 3821.3 | 3677.1 | 3455.0 | 3247.0 | 3017.8 | 2731.8 | 2323.0 | 1741.7 |
| 30° | 4393.2 | 4386.1 | 4388.4 | 4225.4 | 3986.7 | 3722.0 | 3466.8 | 3216.3 | 2935.1 | 2528.6 | 1888.2 |
| 32.5° | 4854.0 | 4880.0 | 4816.2 | 4672.0 | 4397.9 | 3998.5 | 3686.6 | 3407.7 | 3131.2 | 2705.9 | 2037.1 |
| 35° | 5225.0 | 5217.9 | 5191.9 | 5031.2 | 4759.5 | 4371.9 | 3937.1 | 3620.4 | 3339.2 | 2923.3 | 2202.5 |
| 37.5° | 5314.8 | 5314.8 | 5298.3 | 5199.0 | 5019.4 | 4683.8 | 4208.8 | 3833.1 | 3551.9 | 3117.0 | 2363.2 |
| 40° | 5255.7 | 5243.9 | 5234.5 | 5168.3 | 5071.4 | 4872.9 | 4494.8 | 4052.9 | 3778.7 | 3367.5 | 2540.4 |
| 42.5° | 5062.0 | 5064.3 | 5052.5 | 5014.7 | 4962.7 | 4887.1 | 4672.0 | 4286.8 | 4000.9 | 3603.9 | 2715.3 |
| 45° | 4802.0 | 4806.7 | 4792.5 | 4787.8 | 4761.8 | 4761.8 | 4712.2 | 4471.2 | 4211.2 | 3844.9 | 2906.7 |
| 47.5° | 4468.8 | 4466.4 | 4459.3 | 4447.5 | 4499.5 | 4556.2 | 4601.1 | 4575.1 | 4397.9 | 4104.9 | 3079.2 |
| 50° | 3960.7 | 3956.0 | 3977.2 | 4036.3 | 4163.9 | 4289.2 | 4421.5 | 4544.4 | 4532.6 | 4345.9 | 3287.2 |
| 52.5° | 3301.4 | 3270.7 | 3294.3 | 3476.3 | 3738.6 | 4017.4 | 4204.1 | 4397.9 | 4601.1 | 4601.1 | 3492.8 |
| 55° | 2308.8 | 2334.8 | 2349.0 | 2616.1 | 3133.6 | 3613.3 | 3941.8 | 4192.3 | 4575.1 | 4804.4 | 3719.7 |
| 57.5° | 1469.9 | 1479.4 | 1521.9 | 1810.2 | 2417.5 | 3017.8 | 3599.1 | 4010.3 | 4478.2 | 4974.5 | 3946.5 |
| 60° | 990.2 | 957.1 | 990.2 | 1155.6 | 1739.3 | 2367.9 | 3095.8 | 3781.1 | 4338.8 | 5097.4 | 4197.0 |
| 62.5° | 699.5 | 697.1 | 706.6 | 803.5 | 1240.7 | 1779.5 | 2464.8 | 3471.5 | 4227.7 | 5104.5 | 4383.7 |
| 65° | 564.8 | 548.3 | 555.3 | 609.7 | 831.8 | 1304.5 | 1807.8 | 2911.5 | 4128.5 | 4979.2 | 4475.9 |
| 67.5° | 453.7 | 446.6 | 451.4 | 486.8 | 623.9 | 980.7 | 1273.8 | 2214.3 | 3918.2 | 4766.6 | 4423.9 |
| 70° | 371.0 | 373.4 | 375.7 | 411.2 | 496.3 | 742.0 | 909.8 | 1519.5 | 3469.2 | 4525.5 | 4189.9 |
| 72.5° | 321.4 | 321.4 | 323.8 | 347.4 | 415.9 | 588.4 | 687.7 | 987.8 | 2807.5 | 4265.6 | 3759.8 |
| 75° | 283.6 | 283.6 | 283.6 | 304.9 | 354.5 | 472.6 | 534.1 | 675.9 | 2015.8 | 3783.5 | 3110.0 |
| 77.5° | 245.8 | 248.1 | 248.1 | 267.0 | 304.9 | 368.7 | 411.2 | 467.9 | 1285.6 | 2923.3 | 2353.7 |
| 80° | 189.1 | 189.1 | 191.4 | 212.7 | 260.0 | 288.3 | 302.5 | 330.8 | 675.9 | 1836.2 | 1493.5 |
| 82.5° | 132.3 | 134.7 | 134.7 | 137.1 | 174.9 | 177.2 | 163.1 | 165.4 | 245.8 | 609.7 | 567.2 |
| 85° | 14.2 | 16.5 | 18.9 | 18.9 | 30.7 | 37.8 | 40.2 | 37.8 | 40.2 | 70.9 | 70.9 |
| 87.5° | 0.0 | 0.0 | 0.0 | 0.0 | 2.4 | 4.7 | 4.7 | 7.1 | 7.1 | 7.1 | 7.1 |
| 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: P867508

CATALOG NUMBER: MEM2-HTN-SA-90-727-U-T2R-HSS

CANDELA DISTRIBUTION (continued):

| | 90° | 95° | 105° | 115° | 125° | 135° | 145° | 155° | 165° | 175° | 180° |
|-------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|
| 0° | 1049.3 | 1049.3 | 1049.3 | 1049.3 | 1049.3 | 1049.3 | 1049.3 | 1049.3 | 1049.3 | 1049.3 | 1049.3 |
| 2.5° | 1046.9 | 1030.4 | 994.9 | 964.2 | 935.8 | 912.2 | 895.6 | 874.4 | 857.8 | 857.8 | 867.3 |
| 5° | 1054.0 | 1016.2 | 942.9 | 874.4 | 820.0 | 768.0 | 720.8 | 690.1 | 666.4 | 652.2 | 652.2 |
| 7.5° | 1063.4 | 1006.7 | 895.6 | 791.7 | 706.6 | 623.9 | 550.6 | 515.2 | 479.7 | 467.9 | 470.3 |
| 10° | 1082.3 | 1002.0 | 853.1 | 718.4 | 590.8 | 486.8 | 415.9 | 378.1 | 359.2 | 349.8 | 349.8 |
| 12.5° | 1103.6 | 1002.0 | 808.2 | 635.7 | 486.8 | 380.5 | 337.9 | 309.6 | 300.1 | 295.4 | 290.7 |
| 15° | 1132.0 | 1006.7 | 770.4 | 548.3 | 397.0 | 321.4 | 290.7 | 274.1 | 264.7 | 260.0 | 260.0 |
| 17.5° | 1165.1 | 1011.4 | 730.2 | 477.4 | 337.9 | 283.6 | 260.0 | 248.1 | 238.7 | 234.0 | 234.0 |
| 20° | 1207.6 | 1023.3 | 690.1 | 413.6 | 295.4 | 260.0 | 238.7 | 226.9 | 217.4 | 215.1 | 212.7 |
| 22.5° | 1259.6 | 1042.2 | 649.9 | 361.6 | 267.0 | 236.3 | 217.4 | 208.0 | 200.9 | 196.1 | 196.1 |
| 25° | 1321.0 | 1065.8 | 619.2 | 323.8 | 245.8 | 219.8 | 203.2 | 191.4 | 184.3 | 182.0 | 182.0 |
| 27.5° | 1406.1 | 1106.0 | 588.4 | 295.4 | 229.2 | 203.2 | 186.7 | 177.2 | 170.1 | 167.8 | 165.4 |
| 30° | 1486.4 | 1155.6 | 574.3 | 288.3 | 217.4 | 189.1 | 177.2 | 165.4 | 158.3 | 156.0 | 153.6 |
| 32.5° | 1590.4 | 1212.3 | 564.8 | 288.3 | 212.7 | 179.6 | 165.4 | 156.0 | 148.9 | 146.5 | 144.2 |
| 35° | 1701.5 | 1278.5 | 564.8 | 297.8 | 215.1 | 172.5 | 156.0 | 146.5 | 139.4 | 134.7 | 134.7 |
| 37.5° | 1822.0 | 1344.7 | 569.5 | 311.9 | 222.1 | 167.8 | 146.5 | 137.1 | 130.0 | 127.6 | 127.6 |
| 40° | 1949.6 | 1434.5 | 579.0 | 323.8 | 229.2 | 165.4 | 137.1 | 130.0 | 122.9 | 118.2 | 118.2 |
| 42.5° | 2067.8 | 1505.4 | 595.5 | 337.9 | 234.0 | 163.1 | 130.0 | 122.9 | 115.8 | 113.4 | 113.4 |
| 45° | 2204.9 | 1583.3 | 609.7 | 347.4 | 234.0 | 156.0 | 122.9 | 115.8 | 111.1 | 108.7 | 106.3 |
| 47.5° | 2313.6 | 1647.1 | 616.8 | 352.1 | 229.2 | 148.9 | 115.8 | 111.1 | 106.3 | 101.6 | 104.0 |
| 50° | 2445.9 | 1715.7 | 628.6 | 354.5 | 219.8 | 139.4 | 111.1 | 104.0 | 99.3 | 96.9 | 96.9 |
| 52.5° | 2573.5 | 1784.2 | 638.1 | 349.8 | 208.0 | 127.6 | 104.0 | 99.3 | 94.5 | 89.8 | 89.8 |
| 55° | 2724.8 | 1859.8 | 652.2 | 342.7 | 189.1 | 115.8 | 96.9 | 92.2 | 85.1 | 82.7 | 80.3 |
| 57.5° | 2897.3 | 1959.1 | 664.1 | 328.5 | 165.4 | 104.0 | 92.2 | 85.1 | 75.6 | 70.9 | 70.9 |
| 60° | 3055.6 | 2072.5 | 673.5 | 293.0 | 144.2 | 96.9 | 85.1 | 78.0 | 68.5 | 66.2 | 66.2 |
| 62.5° | 3225.8 | 2190.7 | 673.5 | 231.6 | 122.9 | 87.4 | 80.3 | 73.3 | 63.8 | 61.4 | 61.4 |
| 65° | 3343.9 | 2297.0 | 652.2 | 172.5 | 104.0 | 82.7 | 78.0 | 68.5 | 59.1 | 56.7 | 56.7 |
| 67.5° | 3377.0 | 2363.2 | 593.2 | 122.9 | 89.8 | 78.0 | 73.3 | 63.8 | 56.7 | 52.0 | 52.0 |
| 70° | 3270.7 | 2311.2 | 484.5 | 94.5 | 78.0 | 70.9 | 66.2 | 59.1 | 52.0 | 49.6 | 49.6 |
| 72.5° | 2965.8 | 2112.7 | 361.6 | 80.3 | 68.5 | 66.2 | 61.4 | 54.4 | 49.6 | 47.3 | 47.3 |
| 75° | 2483.7 | 1755.9 | 255.2 | 70.9 | 63.8 | 59.1 | 54.4 | 49.6 | 44.9 | 44.9 | 44.9 |
| 77.5° | 1881.1 | 1269.0 | 158.3 | 63.8 | 54.4 | 54.4 | 49.6 | 44.9 | 42.5 | 40.2 | 40.2 |
| 80° | 1214.7 | 801.1 | 89.8 | 44.9 | 37.8 | 40.2 | 35.4 | 30.7 | 30.7 | 28.4 | 28.4 |
| 82.5° | 515.2 | 316.7 | 47.3 | 26.0 | 18.9 | 16.5 | 11.8 | 11.8 | 9.5 | 9.5 | 9.5 |
| 85° | 52.0 | 18.9 | 9.5 | 7.1 | 7.1 | 4.7 | 4.7 | 4.7 | 4.7 | 2.4 | 2.4 |
| 87.5° | 7.1 | 7.1 | 7.1 | 4.7 | 4.7 | 4.7 | 2.4 | 2.4 | 2.4 | 2.4 | 2.4 |
| 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: SP1-2407-157-3

Test Date: 08/07/2024

Luminaire Tested: MEM2-HTN-SA-30-727-U-5WQ-2

Data in this report applies to families of products including MEM2-HTN-SA-30-727-U-5WQ-2

Test Information

Test Method: LM-79-2019
 Report Number: SP1-2407-157-3
 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-30-727-U-5WQ-2**
 Description: Epic Modern Light Square 30W 5WQ Optic and Flare Trim

Spectral Parameters

CCT (K): 2747
 CIE u': 0.2606
 CIE v': 0.5257
 Duv: -0.0005
 CIE x: 0.4552
 CIE y: 0.4082
 CIE z: 0.1366
 Peak Wavelength (nm): 597
 Dominant Wavelength (nm): 584
 Purity: 59.16856
 Rf: 75.5
 Rg: 93.6

| | | | |
|-----------|------|------|-------|
| CRI (Ra): | 71.7 | | |
| R1: | 68.1 | R9: | -35.3 |
| R2: | 83.9 | R10: | 64.2 |
| R3: | 94.7 | R11: | 61.7 |
| R4: | 66.3 | R12: | 53.9 |
| R5: | 67.4 | R13: | 71.2 |
| R6: | 78.7 | R14: | 97.6 |
| R7: | 75.0 | R15: | 59.3 |
| R8: | 39.4 | | |



Test Conditions

Stabilization Time: 22M
 Operation Time: 1H 22M
 Sphere Temperature (°C): 24.2

REPORT NUMBER: SP1-2407-157-3

| 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



CCT = 2747K
 CIE x = 0.4552
 CIE y = 0.4082
 Duv = -0.0005

Point lies inside the ANSI 2700K 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 | 103 | NR | 620 | 846 | NR | 750 | 20 | NR | 880 | 0 | NR |
| 365 | 0 | NR | 495 | 130 | NR | 625 | 784 | NR | 755 | 17 | NR | 885 | 1 | NR |
| 370 | 0 | NR | 500 | 171 | NR | 630 | 720 | NR | 760 | 15 | NR | 890 | 0 | NR |
| 375 | 0 | NR | 505 | 221 | NR | 635 | 652 | NR | 765 | 13 | NR | 895 | 0 | NR |
| 380 | 0 | NR | 510 | 268 | NR | 640 | 587 | NR | 770 | 11 | NR | 900 | 0 | NR |
| 385 | 0 | NR | 515 | 313 | NR | 645 | 521 | NR | 775 | 9 | NR | 905 | 0 | NR |
| 390 | 0 | NR | 520 | 350 | NR | 650 | 461 | NR | 780 | 8 | NR | 910 | 0 | NR |
| 395 | 0 | NR | 525 | 381 | NR | 655 | 406 | NR | 785 | 7 | NR | 915 | 0 | NR |
| 400 | 0 | NR | 530 | 407 | NR | 660 | 353 | NR | 790 | 6 | NR | 920 | 0 | NR |
| 405 | 2 | NR | 535 | 435 | NR | 665 | 307 | NR | 795 | 5 | NR | 925 | 0 | NR |
| 410 | 4 | NR | 540 | 462 | NR | 670 | 264 | NR | 800 | 4 | NR | 930 | 0 | NR |
| 415 | 9 | NR | 545 | 496 | NR | 675 | 227 | NR | 805 | 4 | NR | 935 | 0 | NR |
| 420 | 20 | NR | 550 | 534 | NR | 680 | 196 | NR | 810 | 3 | NR | 940 | 0 | NR |
| 425 | 38 | NR | 555 | 582 | NR | 685 | 167 | NR | 815 | 3 | NR | 945 | 0 | NR |
| 430 | 69 | NR | 560 | 638 | NR | 690 | 144 | NR | 820 | 2 | NR | 950 | 0 | NR |
| 435 | 120 | NR | 565 | 700 | NR | 695 | 122 | NR | 825 | 2 | NR | 955 | 0 | NR |
| 440 | 193 | NR | 570 | 767 | NR | 700 | 103 | NR | 830 | 2 | NR | 960 | 0 | NR |
| 445 | 316 | NR | 575 | 836 | NR | 705 | 88 | NR | 835 | 2 | NR | 965 | 0 | NR |
| 450 | 469 | NR | 580 | 898 | NR | 710 | 74 | NR | 840 | 1 | NR | 970 | 0 | NR |
| 455 | 431 | NR | 585 | 947 | NR | 715 | 63 | NR | 845 | 1 | NR | 975 | 0 | NR |
| 460 | 264 | NR | 590 | 982 | NR | 720 | 54 | NR | 850 | 1 | NR | 980 | 0 | NR |
| 465 | 197 | NR | 595 | 997 | NR | 725 | 46 | NR | 855 | 1 | NR | 985 | 0 | NR |
| 470 | 155 | NR | 600 | 997 | NR | 730 | 39 | NR | 860 | 1 | NR | 990 | 0 | NR |
| 475 | 108 | NR | 605 | 978 | NR | 735 | 33 | NR | 865 | 1 | NR | 995 | 0 | NR |
| 480 | 90 | NR | 610 | 947 | NR | 740 | 28 | NR | 870 | 1 | NR | 1000 | 0 | NR |
| 485 | 92 | NR | 615 | 900 | NR | 745 | 24 | NR | 875 | 1 | NR | | | |

REPORT NUMBER: SP1-2407-157-3

Scotopic Flux vs. Wavelength



Scotopic Lumens: NR

S/P: 1.13

| 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 | 103 | NR | 620 | 846 | NR | 750 | 20 | NR | 880 | 0 | NR |
| 365 | 0 | NR | 495 | 130 | NR | 625 | 784 | NR | 755 | 17 | NR | 885 | 1 | NR |
| 370 | 0 | NR | 500 | 171 | NR | 630 | 720 | NR | 760 | 15 | NR | 890 | 0 | NR |
| 375 | 0 | NR | 505 | 221 | NR | 635 | 652 | NR | 765 | 13 | NR | 895 | 0 | NR |
| 380 | 0 | NR | 510 | 268 | NR | 640 | 587 | NR | 770 | 11 | NR | 900 | 0 | NR |
| 385 | 0 | NR | 515 | 313 | NR | 645 | 521 | NR | 775 | 9 | NR | 905 | 0 | NR |
| 390 | 0 | NR | 520 | 350 | NR | 650 | 461 | NR | 780 | 8 | NR | 910 | 0 | NR |
| 395 | 0 | NR | 525 | 381 | NR | 655 | 406 | NR | 785 | 7 | NR | 915 | 0 | NR |
| 400 | 0 | NR | 530 | 407 | NR | 660 | 353 | NR | 790 | 6 | NR | 920 | 0 | NR |
| 405 | 2 | NR | 535 | 435 | NR | 665 | 307 | NR | 795 | 5 | NR | 925 | 0 | NR |
| 410 | 4 | NR | 540 | 462 | NR | 670 | 264 | NR | 800 | 4 | NR | 930 | 0 | NR |
| 415 | 9 | NR | 545 | 496 | NR | 675 | 227 | NR | 805 | 4 | NR | 935 | 0 | NR |
| 420 | 20 | NR | 550 | 534 | NR | 680 | 196 | NR | 810 | 3 | NR | 940 | 0 | NR |
| 425 | 38 | NR | 555 | 582 | NR | 685 | 167 | NR | 815 | 3 | NR | 945 | 0 | NR |
| 430 | 69 | NR | 560 | 638 | NR | 690 | 144 | NR | 820 | 2 | NR | 950 | 0 | NR |
| 435 | 120 | NR | 565 | 700 | NR | 695 | 122 | NR | 825 | 2 | NR | 955 | 0 | NR |
| 440 | 193 | NR | 570 | 767 | NR | 700 | 103 | NR | 830 | 2 | NR | 960 | 0 | NR |
| 445 | 316 | NR | 575 | 836 | NR | 705 | 88 | NR | 835 | 2 | NR | 965 | 0 | NR |
| 450 | 469 | NR | 580 | 898 | NR | 710 | 74 | NR | 840 | 1 | NR | 970 | 0 | NR |
| 455 | 431 | NR | 585 | 947 | NR | 715 | 63 | NR | 845 | 1 | NR | 975 | 0 | NR |
| 460 | 264 | NR | 590 | 982 | NR | 720 | 54 | NR | 850 | 1 | NR | 980 | 0 | NR |
| 465 | 197 | NR | 595 | 997 | NR | 725 | 46 | NR | 855 | 1 | NR | 985 | 0 | NR |
| 470 | 155 | NR | 600 | 997 | NR | 730 | 39 | NR | 860 | 1 | NR | 990 | 0 | NR |
| 475 | 108 | NR | 605 | 978 | NR | 735 | 33 | NR | 865 | 1 | NR | 995 | 0 | NR |
| 480 | 90 | NR | 610 | 947 | NR | 740 | 28 | NR | 870 | 1 | NR | 1000 | 0 | NR |
| 485 | 92 | NR | 615 | 900 | NR | 745 | 24 | NR | 875 | 1 | NR | | | |

REPORT NUMBER: SP1-2407-157-3

Melanopic Flux vs. Wavelength



Melanopic Lumens: NR M/P: 2.04

| 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 | 103 | NR | 620 | 846 | NR | 750 | 20 | NR | 880 | 0 | NR |
| 365 | 0 | NR | 495 | 130 | NR | 625 | 784 | NR | 755 | 17 | NR | 885 | 1 | NR |
| 370 | 0 | NR | 500 | 171 | NR | 630 | 720 | NR | 760 | 15 | NR | 890 | 0 | NR |
| 375 | 0 | NR | 505 | 221 | NR | 635 | 652 | NR | 765 | 13 | NR | 895 | 0 | NR |
| 380 | 0 | NR | 510 | 268 | NR | 640 | 587 | NR | 770 | 11 | NR | 900 | 0 | NR |
| 385 | 0 | NR | 515 | 313 | NR | 645 | 521 | NR | 775 | 9 | NR | 905 | 0 | NR |
| 390 | 0 | NR | 520 | 350 | NR | 650 | 461 | NR | 780 | 8 | NR | 910 | 0 | NR |
| 395 | 0 | NR | 525 | 381 | NR | 655 | 406 | NR | 785 | 7 | NR | 915 | 0 | NR |
| 400 | 0 | NR | 530 | 407 | NR | 660 | 353 | NR | 790 | 6 | NR | 920 | 0 | NR |
| 405 | 2 | NR | 535 | 435 | NR | 665 | 307 | NR | 795 | 5 | NR | 925 | 0 | NR |
| 410 | 4 | NR | 540 | 462 | NR | 670 | 264 | NR | 800 | 4 | NR | 930 | 0 | NR |
| 415 | 9 | NR | 545 | 496 | NR | 675 | 227 | NR | 805 | 4 | NR | 935 | 0 | NR |
| 420 | 20 | NR | 550 | 534 | NR | 680 | 196 | NR | 810 | 3 | NR | 940 | 0 | NR |
| 425 | 38 | NR | 555 | 582 | NR | 685 | 167 | NR | 815 | 3 | NR | 945 | 0 | NR |
| 430 | 69 | NR | 560 | 638 | NR | 690 | 144 | NR | 820 | 2 | NR | 950 | 0 | NR |
| 435 | 120 | NR | 565 | 700 | NR | 695 | 122 | NR | 825 | 2 | NR | 955 | 0 | NR |
| 440 | 193 | NR | 570 | 767 | NR | 700 | 103 | NR | 830 | 2 | NR | 960 | 0 | NR |
| 445 | 316 | NR | 575 | 836 | NR | 705 | 88 | NR | 835 | 2 | NR | 965 | 0 | NR |
| 450 | 469 | NR | 580 | 898 | NR | 710 | 74 | NR | 840 | 1 | NR | 970 | 0 | NR |
| 455 | 431 | NR | 585 | 947 | NR | 715 | 63 | NR | 845 | 1 | NR | 975 | 0 | NR |
| 460 | 264 | NR | 590 | 982 | NR | 720 | 54 | NR | 850 | 1 | NR | 980 | 0 | NR |
| 465 | 197 | NR | 595 | 997 | NR | 725 | 46 | NR | 855 | 1 | NR | 985 | 0 | NR |
| 470 | 155 | NR | 600 | 997 | NR | 730 | 39 | NR | 860 | 1 | NR | 990 | 0 | NR |
| 475 | 108 | NR | 605 | 978 | NR | 735 | 33 | NR | 865 | 1 | NR | 995 | 0 | NR |
| 480 | 90 | NR | 610 | 947 | NR | 740 | 28 | NR | 870 | 1 | NR | 1000 | 0 | NR |
| 485 | 92 | NR | 615 | 900 | NR | 745 | 24 | NR | 875 | 1 | NR | | | |

Summary

$R_f = 75.5$
 $R_g = 93.6$
 $CIE R_a = 71.7$
 $R_g = -35.3$



Color Vector Graphics



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

| | | | |
|------------|------------|------------|------------|
| CES01 = 86 | CES26 = 68 | CES51 = 87 | CES76 = 63 |
| CES02 = 63 | CES27 = 90 | CES52 = 85 | CES77 = 79 |
| CES03 = 31 | CES28 = 87 | CES53 = 78 | CES78 = 66 |
| CES04 = 71 | CES29 = 71 | CES54 = 86 | CES79 = 87 |
| CES05 = 50 | CES30 = 85 | CES55 = 84 | CES80 = 85 |
| CES06 = 52 | CES31 = 74 | CES56 = 75 | CES81 = 67 |
| CES07 = 42 | CES32 = 66 | CES57 = 75 | CES82 = 93 |
| CES08 = 41 | CES33 = 80 | CES58 = 76 | CES83 = 91 |
| CES09 = 29 | CES34 = 79 | CES59 = 85 | CES84 = 89 |
| CES10 = 77 | CES35 = 89 | CES60 = 90 | CES85 = 72 |
| CES11 = 60 | CES36 = 93 | CES61 = 81 | CES86 = 59 |
| CES12 = 66 | CES37 = 88 | CES62 = 91 | CES87 = 77 |
| CES13 = 43 | CES38 = 93 | CES63 = 77 | CES88 = 79 |
| CES14 = 74 | CES39 = 97 | CES64 = 67 | CES89 = 65 |
| CES15 = 72 | CES40 = 93 | CES65 = 66 | CES90 = 80 |
| CES16 = 48 | CES41 = 93 | CES66 = 63 | CES91 = 80 |
| CES17 = 51 | CES42 = 89 | CES67 = 61 | CES92 = 55 |
| CES18 = 57 | CES43 = 78 | CES68 = 68 | CES93 = 72 |
| CES19 = 73 | CES44 = 99 | CES69 = 78 | CES94 = 48 |
| CES20 = 67 | CES45 = 85 | CES70 = 63 | CES95 = 66 |
| CES21 = 88 | CES46 = 81 | CES71 = 61 | CES96 = 76 |
| CES22 = 80 | CES47 = 86 | CES72 = 86 | CES97 = 81 |
| CES23 = 92 | CES48 = 74 | CES73 = 56 | CES98 = 76 |
| CES24 = 91 | CES49 = 79 | CES74 = 93 | CES99 = 64 |
| CES25 = 73 | CES50 = 86 | CES75 = 66 | |



Color Rendition by Hue-Angle Bin



Measure Comparisons



(END OF REPORT)