

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: P867594

Luminaire Tested: **MEM2-HTN-SA-110-740-U-T2U-HSS**

Issue Date: 08/21/2024



Test Information

Test Method: LM-79-08
Report Number: P867594
Test Lab: INNOVATION CENTER(G3)
Issue Date: 08/21/2024
Manufacturer: COOPER LIGHTING SOLUTIONS (FORMERLY EATON)
Product Line: STREETWORKS
Catalog Number: MEM2-HTN-SA-110-740-U-T2U-HSS
Description: EPIC MODERN TALL HOUSING DISCRETE LED ARRAYS 110W 70CRI 4000K
FIXTURE w/ TYPE II URBAN DISTRIBUTION OPTIC AND HOUSE SIDE SHIELD
Light Source: (30) 4000K CCT, 70 CRI LEDS
Ballast/Driver: ELECTRONIC DRIVER

Summary

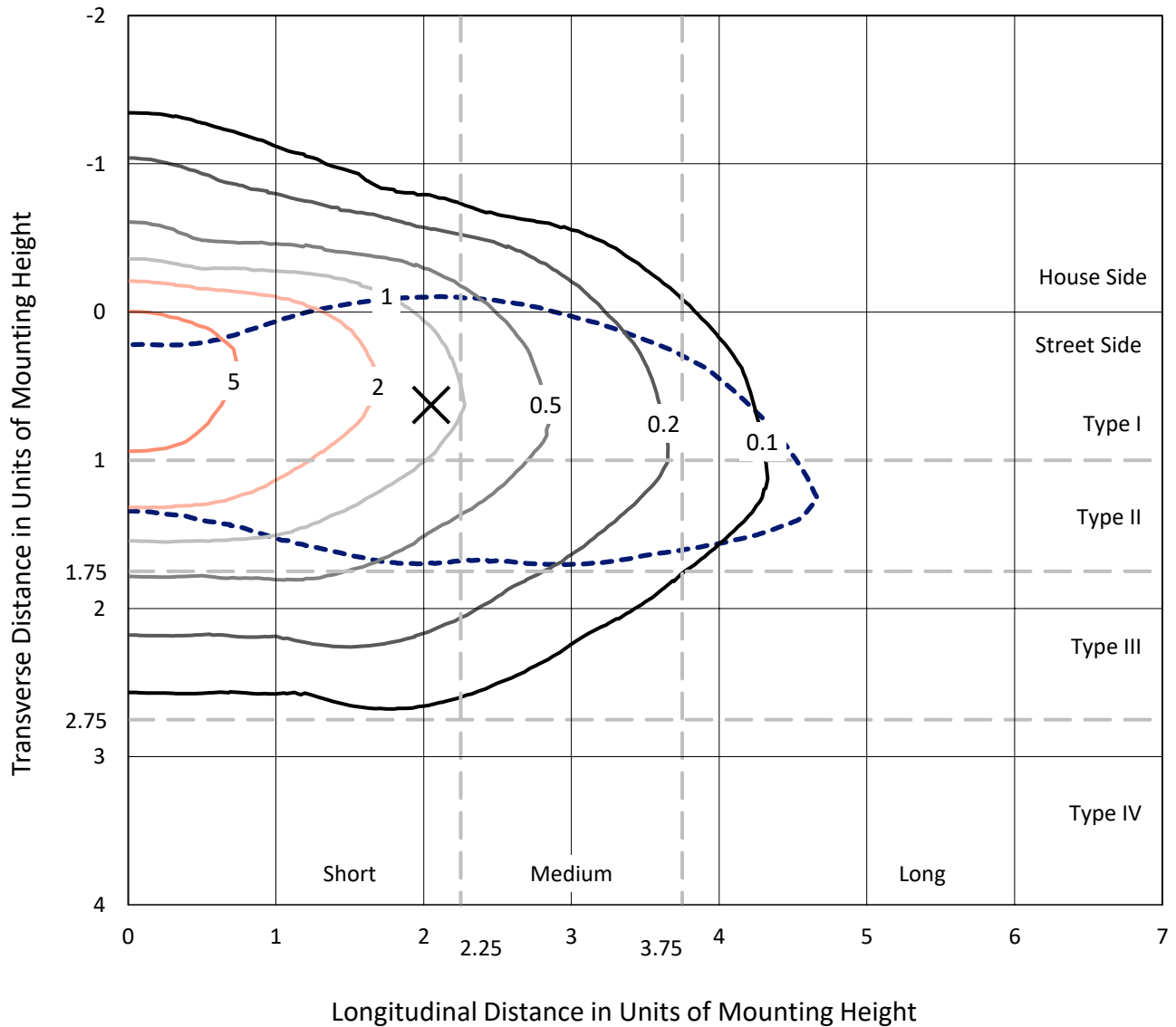
Lumens per Lamp: N/A
Luminaire Lumens: 11439.3 lumens
Efficiency: N/A
Efficacy: 101.2 lumens/watt
Luminous Opening: Rectangular (W 1' x L: 0.33' x H: 0')
IES Classification: Type II - Short
BUG Rating: B1 - U0 - G2

Input Watts (W): 113
Input Voltage (V): 120
Input Current (A_{in}): NR
Voltage Rise (V): NR
Power Factor: 0.99
Total Harmonic Distortion (THDi): 7.77%
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

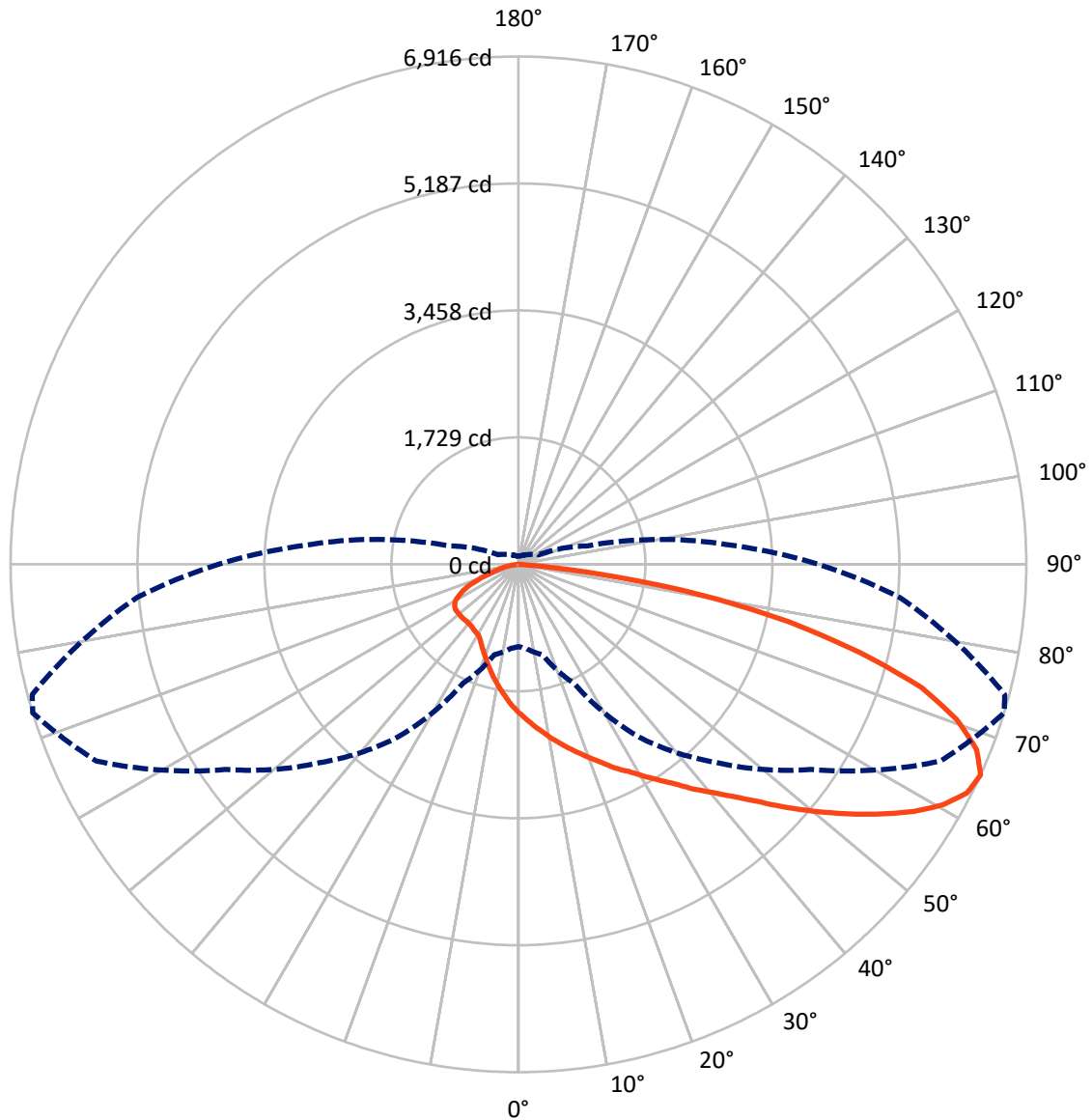
× Max cd
 - - - 1/2 Max cd



Based on 20 foot mounting height. Maximum calculated value = 8.2 fc
 Type II - Short - N/A

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Luminous Intensity Polar Plot



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

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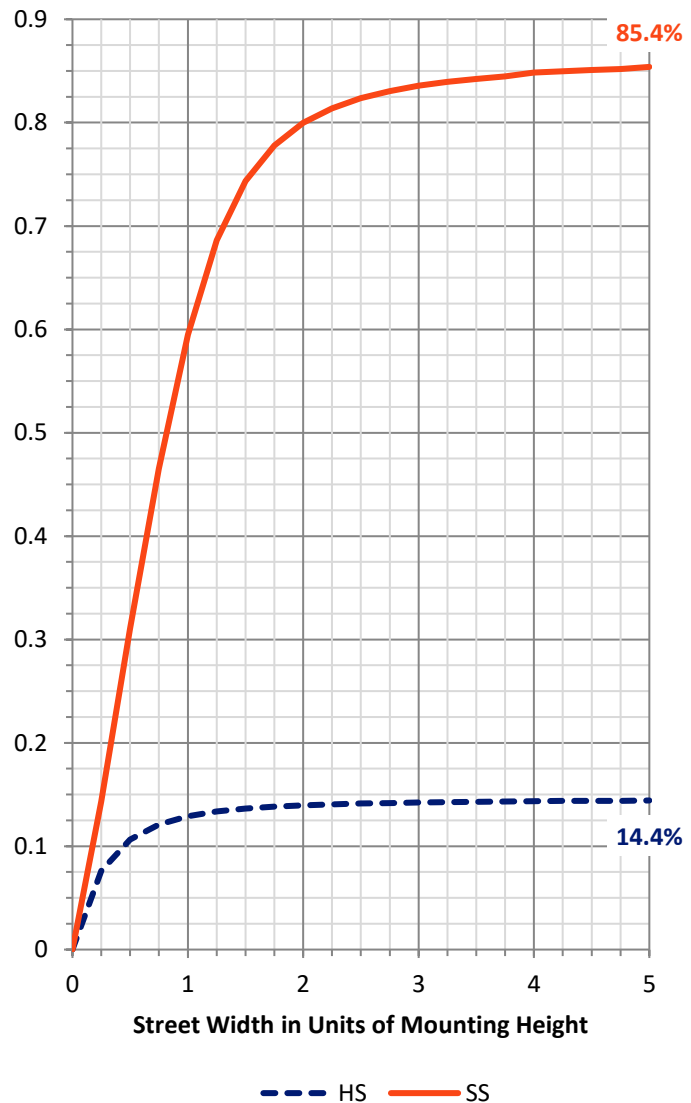
FLUX DISTRIBUTION:

| | | Downward | Upward | Total |
|--------------------|-----------|----------|--------|---------|
| House Side | Lumens | 1663.5 | 0.0 | 1663.5 |
| | % Fixture | 14.5 | 0.0 | 14.5 |
| Street Side | Lumens | 9775.9 | 0.0 | 9775.9 |
| | % Fixture | 85.5 | 0.0 | 85.5 |
| Total | Lumens | 11439.3 | 0.0 | 11439.3 |
| | % Fixture | 100.0 | 0.0 | 100.0 |

Coefficient of Utilization

ZONAL LUMENS:

| Zone | Lumens | % Fixture |
|-----------|---------|-----------|
| 0°-10° | 195.9 | 1.7 |
| 10°-20° | 595.3 | 5.2 |
| 20°-30° | 997.0 | 8.7 |
| 30°-40° | 1504.0 | 13.1 |
| 40°-50° | 2125.1 | 18.6 |
| 50°-60° | 2391.2 | 20.9 |
| 60°-70° | 2144.2 | 18.7 |
| 70°-80° | 1304.1 | 11.4 |
| 80°-90° | 182.5 | 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° | 11439.3 | 100.0 |
| 0°-180° | 11439.3 | 100.0 |



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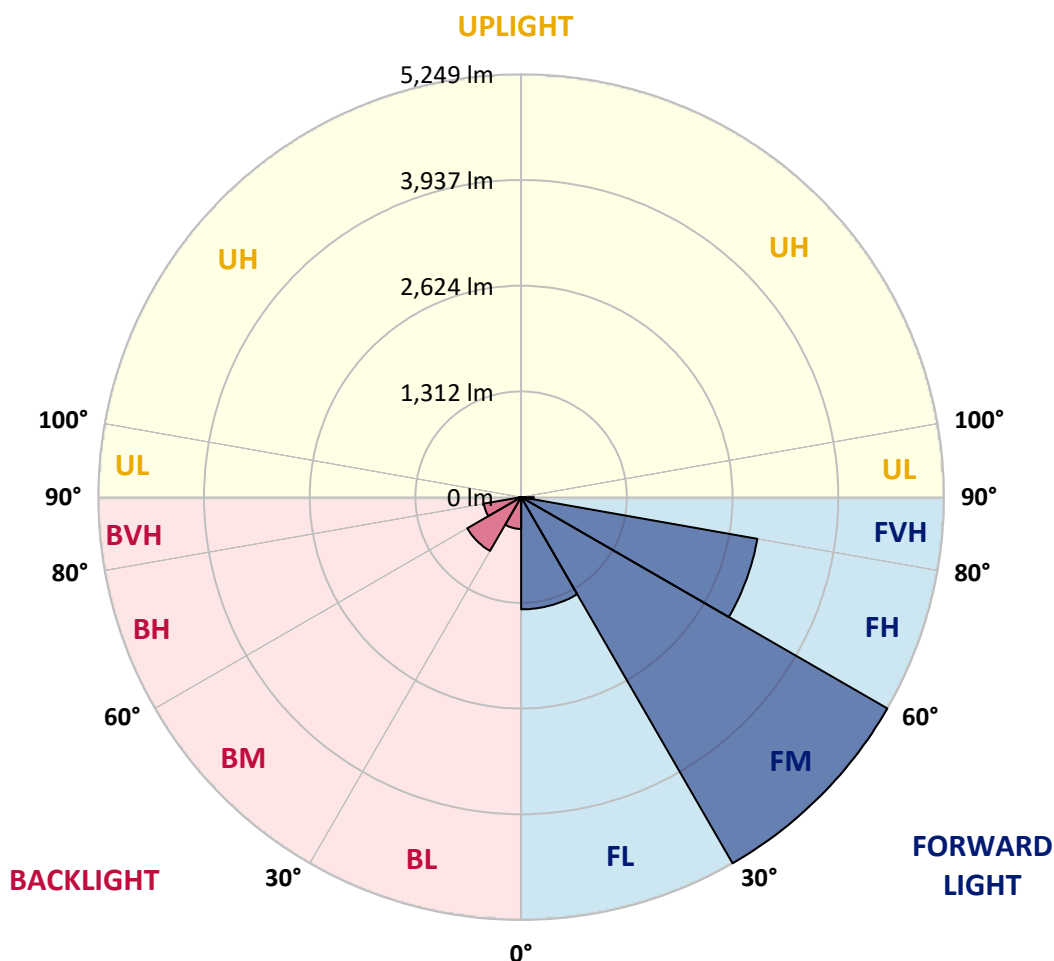
CATALOG NUMBER: MEM2-HTN-SA-110-740-U-T2U-HSS

LUMINAIRE CLASSIFICATION SYSTEM LUMEN TABLE AND BUG RATING:

| Zone | | Lumens | % Fixture | Zone Rating/Lumen Limit | | |
|------|-------------|--------|-----------|-------------------------|------|---------|
| | | | | B | U | G |
| FL | (0°-30°) | 1393.1 | 12.2 | | | |
| FM | (30°-60°) | 5248.9 | 45.9 | | | |
| FH | (60°-80°) | 2977.2 | 26.0 | | | G2/5000 |
| FVH | (80°-90°) | 156.8 | 1.4 | | | G2/225 |
| BL | (0°-30°) | 395.2 | 3.5 | B1/500 | | |
| BM | (30°-60°) | 771.4 | 6.7 | B1/1000 | | |
| BH | (60°-80°) | 471.2 | 4.1 | B1/500 | | G1/500 |
| BVH | (80°-90°) | 25.7 | 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





REPORT NUMBER: P867594

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CANDELA DISTRIBUTION (FULL):

| | 0° | 5° | 15° | 25° | 35° | 45° | 55° | 65° | 73° | 75° | 85° |
|-------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|
| 0° | 2029.4 | 2029.4 | 2029.4 | 2029.4 | 2029.4 | 2029.4 | 2029.4 | 2029.4 | 2029.4 | 2029.4 | 2029.4 |
| 2.5° | 2342.3 | 2328.9 | 2308.7 | 2291.9 | 2261.6 | 2221.2 | 2187.5 | 2143.8 | 2113.5 | 2103.4 | 2059.6 |
| 5° | 2682.2 | 2665.4 | 2641.9 | 2601.5 | 2520.7 | 2473.6 | 2386.1 | 2285.1 | 2204.4 | 2187.5 | 2086.6 |
| 7.5° | 3032.3 | 3025.5 | 2971.7 | 2911.1 | 2813.5 | 2709.2 | 2574.6 | 2416.4 | 2298.6 | 2271.7 | 2116.9 |
| 10° | 3328.4 | 3298.1 | 3267.8 | 3210.6 | 3106.3 | 2958.2 | 2783.2 | 2564.5 | 2399.6 | 2355.8 | 2147.1 |
| 12.5° | 3506.8 | 3496.7 | 3469.8 | 3402.5 | 3301.5 | 3173.6 | 2964.9 | 2709.2 | 2497.2 | 2436.6 | 2177.4 |
| 15° | 3638.0 | 3648.1 | 3621.2 | 3577.5 | 3473.1 | 3352.0 | 3150.0 | 2860.6 | 2601.5 | 2530.8 | 2211.1 |
| 17.5° | 3762.6 | 3755.8 | 3752.5 | 3702.0 | 3607.7 | 3486.6 | 3281.3 | 2985.1 | 2705.8 | 2628.4 | 2244.7 |
| 20° | 3833.2 | 3836.6 | 3829.9 | 3809.7 | 3718.8 | 3601.0 | 3409.2 | 3133.2 | 2820.2 | 2732.7 | 2288.5 |
| 22.5° | 3870.2 | 3883.7 | 3897.2 | 3893.8 | 3819.8 | 3728.9 | 3530.3 | 3251.0 | 2938.0 | 2847.2 | 2342.3 |
| 25° | 3893.8 | 3903.9 | 3934.2 | 3974.6 | 3907.3 | 3833.2 | 3665.0 | 3392.4 | 3076.0 | 2971.7 | 2406.3 |
| 27.5° | 3914.0 | 3927.5 | 3964.5 | 4025.1 | 3971.2 | 3927.5 | 3782.7 | 3513.5 | 3193.8 | 3099.6 | 2480.3 |
| 30° | 4045.2 | 4062.1 | 4062.1 | 4092.4 | 4031.8 | 4021.7 | 3914.0 | 3658.2 | 3341.9 | 3240.9 | 2574.6 |
| 32.5° | 4391.9 | 4358.2 | 4297.7 | 4267.4 | 4122.7 | 4126.0 | 4041.9 | 3802.9 | 3500.0 | 3399.1 | 2692.3 |
| 35° | 4691.4 | 4691.4 | 4617.4 | 4519.8 | 4287.6 | 4240.4 | 4190.0 | 3994.8 | 3671.7 | 3574.1 | 2847.2 |
| 37.5° | 4980.8 | 4984.2 | 4906.8 | 4822.7 | 4556.8 | 4388.5 | 4361.6 | 4179.9 | 3883.7 | 3769.3 | 3008.7 |
| 40° | 5162.6 | 5182.8 | 5162.6 | 5098.6 | 4842.9 | 4647.7 | 4529.9 | 4388.5 | 4085.6 | 3998.1 | 3193.8 |
| 42.5° | 5192.9 | 5233.2 | 5307.3 | 5327.5 | 5051.5 | 4879.9 | 4745.3 | 4603.9 | 4327.9 | 4230.3 | 3405.8 |
| 45° | 5115.5 | 5128.9 | 5293.8 | 5317.4 | 5206.3 | 5065.0 | 4974.1 | 4856.3 | 4617.4 | 4533.2 | 3641.4 |
| 47.5° | 4903.4 | 4876.5 | 4933.7 | 5139.0 | 5182.8 | 5176.0 | 5199.6 | 5142.4 | 4953.9 | 4846.2 | 3900.5 |
| 50° | 4449.1 | 4459.2 | 4644.3 | 4893.3 | 5044.8 | 5216.4 | 5367.9 | 5431.8 | 5293.8 | 5186.1 | 4179.9 |
| 52.5° | 3621.2 | 3668.3 | 4021.7 | 4610.6 | 4873.1 | 5189.5 | 5489.0 | 5704.4 | 5647.2 | 5542.9 | 4455.8 |
| 55° | 2975.0 | 3045.7 | 3399.1 | 4156.3 | 4637.6 | 5058.2 | 5559.7 | 5990.5 | 6000.6 | 5919.8 | 4708.2 |
| 57.5° | 2328.9 | 2386.1 | 2759.7 | 3452.9 | 4301.0 | 4853.0 | 5569.8 | 6236.1 | 6350.6 | 6256.3 | 4930.4 |
| 60° | 1824.1 | 1864.4 | 2083.2 | 2877.4 | 3887.1 | 4560.2 | 5495.8 | 6431.3 | 6646.7 | 6576.1 | 5122.2 |
| 62.5° | 1383.2 | 1413.5 | 1608.7 | 2275.0 | 3378.9 | 4216.9 | 5246.7 | 6502.0 | 6855.4 | 6788.1 | 5229.9 |
| 65° | 1120.7 | 1147.6 | 1275.5 | 1787.0 | 2877.4 | 3819.8 | 4869.8 | 6340.5 | 6916.0 | 6855.4 | 5216.4 |
| 67.5° | 915.4 | 925.5 | 1029.8 | 1393.3 | 2433.2 | 3372.2 | 4317.8 | 5919.8 | 6730.9 | 6727.5 | 5061.6 |
| 70° | 740.4 | 767.3 | 854.8 | 1110.6 | 2022.6 | 2857.3 | 3675.1 | 5260.2 | 6330.4 | 6364.0 | 4752.0 |
| 72.5° | 629.3 | 636.1 | 713.5 | 918.8 | 1649.1 | 2318.8 | 3042.4 | 4499.6 | 5741.4 | 5768.4 | 4267.4 |
| 75° | 531.7 | 541.8 | 599.0 | 743.8 | 1339.4 | 1840.9 | 2446.7 | 3634.7 | 4805.8 | 4920.3 | 3594.3 |
| 77.5° | 457.7 | 461.1 | 501.4 | 612.5 | 952.4 | 1383.2 | 1793.8 | 2726.0 | 3762.6 | 3843.3 | 2823.6 |
| 80° | 360.1 | 366.8 | 410.6 | 484.6 | 663.0 | 898.6 | 1238.5 | 1864.4 | 2514.0 | 2604.8 | 1955.3 |
| 82.5° | 168.3 | 188.5 | 198.6 | 265.9 | 346.6 | 444.2 | 585.6 | 777.4 | 1137.5 | 1134.2 | 912.0 |
| 85° | 16.8 | 13.5 | 13.5 | 20.2 | 30.3 | 30.3 | 37.0 | 43.8 | 87.5 | 104.3 | 80.8 |
| 87.5° | 0.0 | 0.0 | 0.0 | 3.4 | 6.7 | 6.7 | 6.7 | 10.1 | 10.1 | 10.1 | 10.1 |
| 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: P867594

CATALOG NUMBER: MEM2-HTN-SA-110-740-U-T2U-HSS

CANDELA DISTRIBUTION (continued):

| | 90° | 95° | 105° | 115° | 125° | 135° | 145° | 155° | 165° | 175° | 180° |
|-------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|
| 0° | 2029.4 | 2029.4 | 2029.4 | 2029.4 | 2029.4 | 2029.4 | 2029.4 | 2029.4 | 2029.4 | 2029.4 | 2029.4 |
| 2.5° | 2039.5 | 2009.2 | 1955.3 | 1904.8 | 1871.2 | 1844.3 | 1800.5 | 1773.6 | 1753.4 | 1726.5 | 1723.1 |
| 5° | 2032.7 | 1978.9 | 1871.2 | 1780.3 | 1692.8 | 1618.8 | 1541.4 | 1494.3 | 1443.8 | 1420.2 | 1440.4 |
| 7.5° | 2039.5 | 1952.0 | 1783.7 | 1645.7 | 1514.4 | 1396.7 | 1295.7 | 1231.7 | 1184.6 | 1161.1 | 1164.4 |
| 10° | 2042.8 | 1928.4 | 1709.6 | 1517.8 | 1349.5 | 1211.6 | 1097.1 | 1009.6 | 952.4 | 939.0 | 922.1 |
| 12.5° | 2036.1 | 1898.1 | 1635.6 | 1393.3 | 1191.4 | 1039.9 | 905.3 | 838.0 | 780.8 | 753.9 | 753.9 |
| 15° | 2042.8 | 1874.5 | 1558.2 | 1278.9 | 1050.0 | 875.0 | 760.6 | 686.5 | 652.9 | 629.3 | 632.7 |
| 17.5° | 2042.8 | 1854.4 | 1484.2 | 1167.8 | 912.0 | 750.5 | 646.2 | 585.6 | 551.9 | 538.5 | 535.1 |
| 20° | 2066.4 | 1837.5 | 1413.5 | 1063.5 | 790.9 | 639.4 | 555.3 | 508.2 | 481.3 | 467.8 | 461.1 |
| 22.5° | 2083.2 | 1824.1 | 1349.5 | 962.5 | 689.9 | 558.7 | 488.0 | 444.2 | 424.0 | 417.3 | 417.3 |
| 25° | 2113.5 | 1820.7 | 1292.3 | 864.9 | 609.1 | 498.1 | 434.1 | 400.5 | 383.7 | 376.9 | 376.9 |
| 27.5° | 2157.2 | 1827.4 | 1238.5 | 780.8 | 548.6 | 437.5 | 390.4 | 363.5 | 353.4 | 350.0 | 346.6 |
| 30° | 2221.2 | 1857.7 | 1204.8 | 716.8 | 491.4 | 400.5 | 356.7 | 339.9 | 333.2 | 329.8 | 329.8 |
| 32.5° | 2305.3 | 1911.6 | 1191.4 | 683.2 | 457.7 | 370.2 | 333.2 | 319.7 | 313.0 | 313.0 | 309.6 |
| 35° | 2409.6 | 1972.1 | 1181.3 | 652.9 | 434.1 | 350.0 | 316.4 | 302.9 | 299.5 | 299.5 | 299.5 |
| 37.5° | 2534.2 | 2036.1 | 1164.4 | 632.7 | 420.7 | 333.2 | 302.9 | 289.4 | 289.4 | 289.4 | 289.4 |
| 40° | 2672.2 | 2130.3 | 1161.1 | 619.2 | 410.6 | 323.1 | 289.4 | 276.0 | 276.0 | 276.0 | 276.0 |
| 42.5° | 2827.0 | 2231.3 | 1157.7 | 609.1 | 403.9 | 316.4 | 276.0 | 262.5 | 262.5 | 262.5 | 262.5 |
| 45° | 3015.4 | 2359.2 | 1164.4 | 602.4 | 403.9 | 309.6 | 265.9 | 249.0 | 245.7 | 245.7 | 245.7 |
| 47.5° | 3200.5 | 2480.3 | 1171.2 | 595.7 | 397.1 | 299.5 | 252.4 | 235.6 | 232.2 | 228.8 | 228.8 |
| 50° | 3399.1 | 2604.8 | 1171.2 | 589.0 | 390.4 | 289.4 | 242.3 | 218.8 | 215.4 | 212.0 | 212.0 |
| 52.5° | 3594.3 | 2709.2 | 1174.5 | 578.9 | 373.6 | 272.6 | 225.5 | 205.3 | 198.6 | 195.2 | 191.8 |
| 55° | 3782.7 | 2820.2 | 1177.9 | 562.0 | 353.4 | 255.8 | 215.4 | 191.8 | 181.7 | 175.0 | 175.0 |
| 57.5° | 3924.1 | 2911.1 | 1161.1 | 528.4 | 326.4 | 238.9 | 198.6 | 175.0 | 161.5 | 154.8 | 154.8 |
| 60° | 4058.7 | 2968.3 | 1130.8 | 477.9 | 299.5 | 222.1 | 185.1 | 158.2 | 144.7 | 138.0 | 138.0 |
| 62.5° | 4112.6 | 2978.4 | 1060.1 | 390.4 | 265.9 | 205.3 | 168.3 | 144.7 | 134.6 | 131.3 | 131.3 |
| 65° | 4082.3 | 2934.7 | 965.9 | 309.6 | 235.6 | 185.1 | 154.8 | 134.6 | 121.2 | 111.1 | 111.1 |
| 67.5° | 3917.4 | 2783.2 | 838.0 | 245.7 | 205.3 | 168.3 | 141.3 | 121.2 | 107.7 | 97.6 | 97.6 |
| 70° | 3604.4 | 2540.9 | 652.9 | 195.2 | 178.4 | 148.1 | 127.9 | 111.1 | 97.6 | 87.5 | 87.5 |
| 72.5° | 3143.3 | 2204.4 | 474.5 | 164.9 | 154.8 | 131.3 | 114.4 | 101.0 | 87.5 | 80.8 | 80.8 |
| 75° | 2591.4 | 1699.5 | 336.5 | 141.3 | 138.0 | 117.8 | 104.3 | 90.9 | 80.8 | 74.0 | 74.0 |
| 77.5° | 1945.2 | 1184.6 | 262.5 | 124.5 | 121.2 | 107.7 | 94.2 | 84.1 | 74.0 | 70.7 | 67.3 |
| 80° | 1295.7 | 733.7 | 198.6 | 94.2 | 90.9 | 84.1 | 77.4 | 70.7 | 60.6 | 53.8 | 53.8 |
| 82.5° | 578.9 | 309.6 | 101.0 | 53.8 | 47.1 | 40.4 | 33.7 | 23.6 | 23.6 | 20.2 | 20.2 |
| 85° | 60.6 | 40.4 | 20.2 | 13.5 | 13.5 | 10.1 | 10.1 | 10.1 | 6.7 | 6.7 | 6.7 |
| 87.5° | 10.1 | 10.1 | 6.7 | 6.7 | 6.7 | 3.4 | 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 |

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 |

REPORT NUMBER: SP1-2407-157-5

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

REPORT NUMBER: SP1-2407-157-5

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



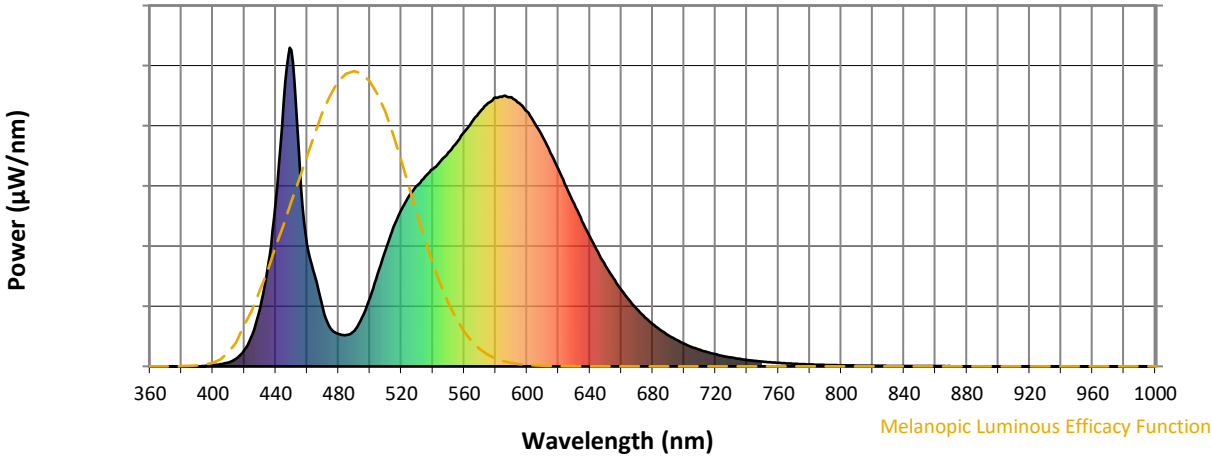
Scotopic Lumens: NR

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

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

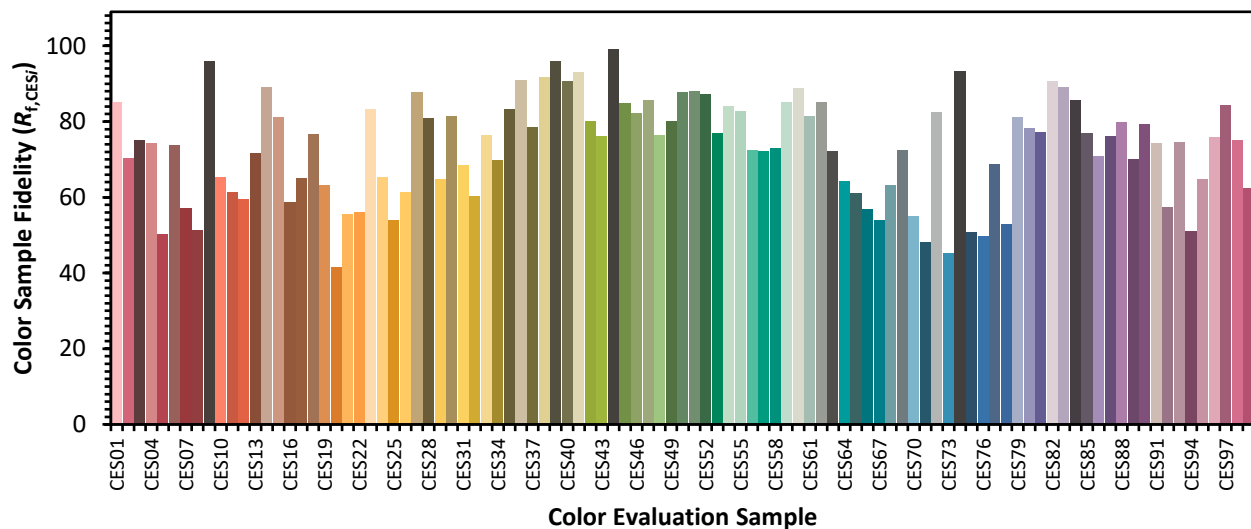


Color Vector Graphics

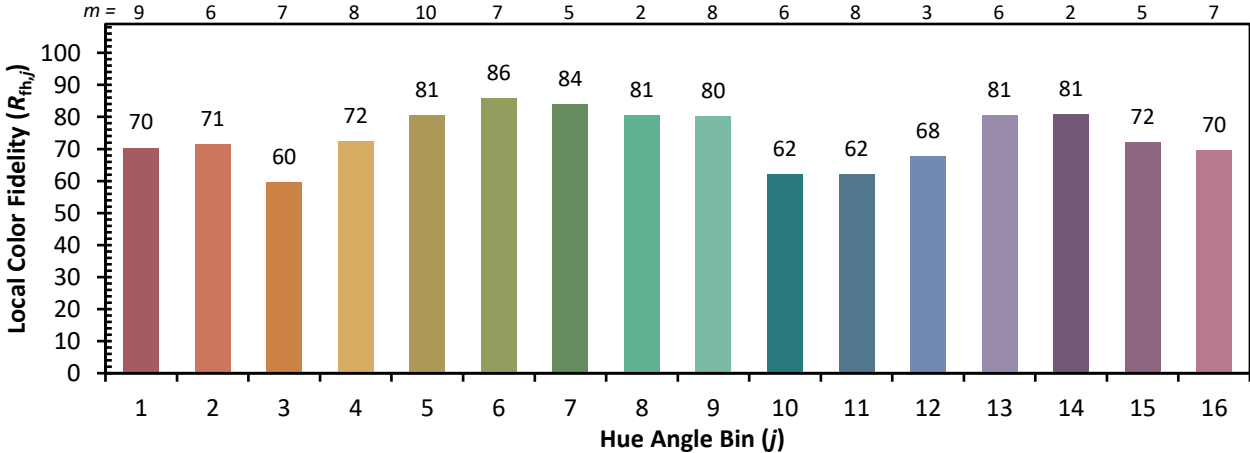
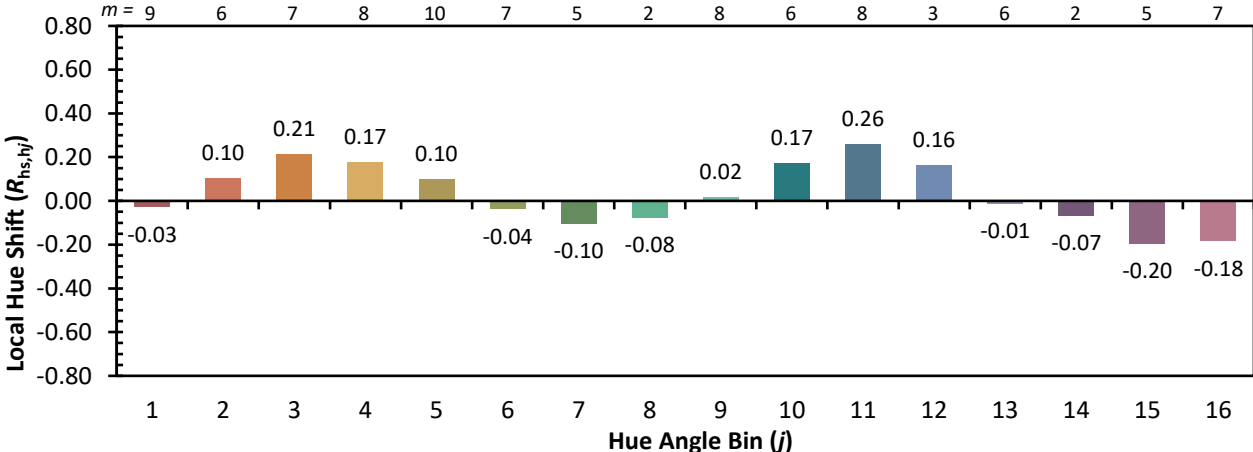
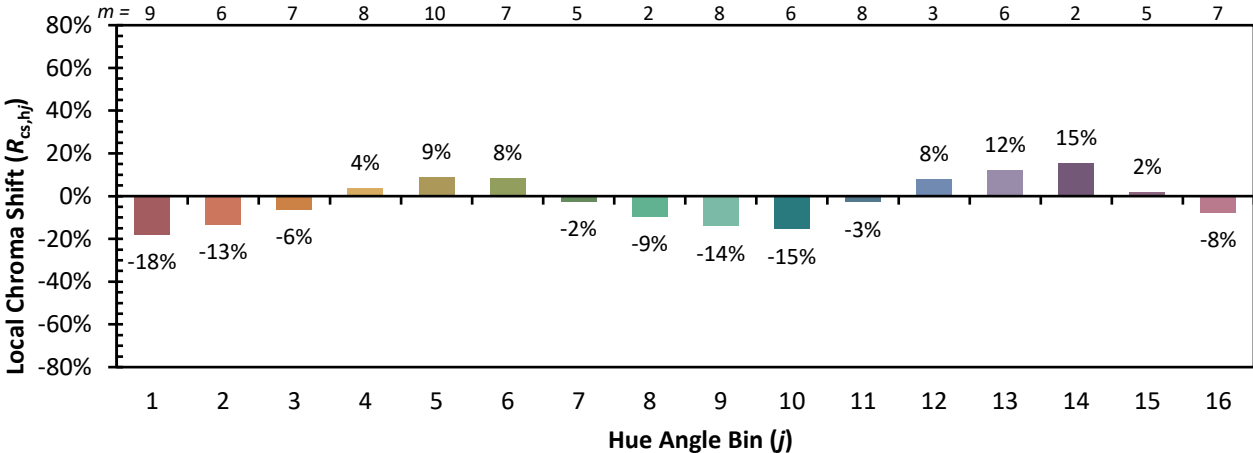


Individual Sample Fidelity Index ($R_{f,i}$)

| | | | |
|------------|------------|------------|------------|
| 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)