

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: P868576

Luminaire Tested: **EMM2-HTN-SA3A-740-U-T3-HSS**

Issue Date: 08/22/2024



Test Information

Test Method: LM-79-08
Report Number: P868576
Test Lab: INNOVATION CENTER(G3)
Issue Date: 08/22/2024
Manufacturer: COOPER LIGHTING SOLUTIONS (FORMERLY EATON)
Product Line: INVUE
Catalog Number: EMM2-HTN-SA3A-740-U-T3-HSS
Description: EPIC MODERN TALL HOUSING DISCRETE LED ARRAYS 130W 70CRI 4000K
FIXTURE w/ TYPE III DISTRIBUTION OPTIC AND HOUSE SIDE SHIELD
Light Source: (30) 4000K CCT, 70 CRI LEDS
Ballast/Driver: ELECTRONIC DRIVER

Summary

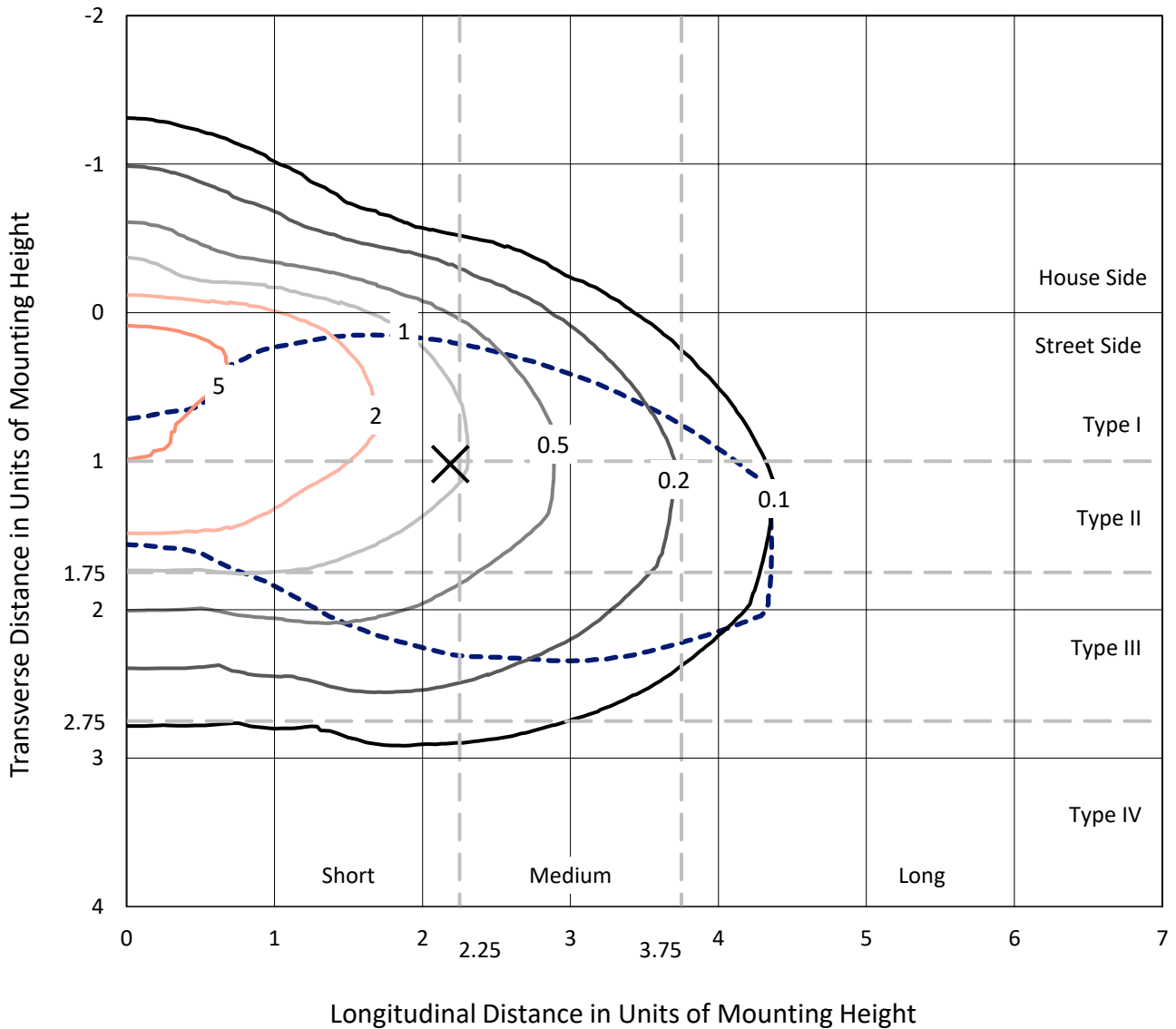
Lumens per Lamp: N/A
Luminaire Lumens: 11791.8 lumens
Efficiency: N/A
Efficacy: 104.4 lumens/watt
Luminous Opening: Rectangular (W 1' x L: 0.33' x H: 0')
IES Classification: Type III - Short
BUG Rating: B1 - U0 - G2

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

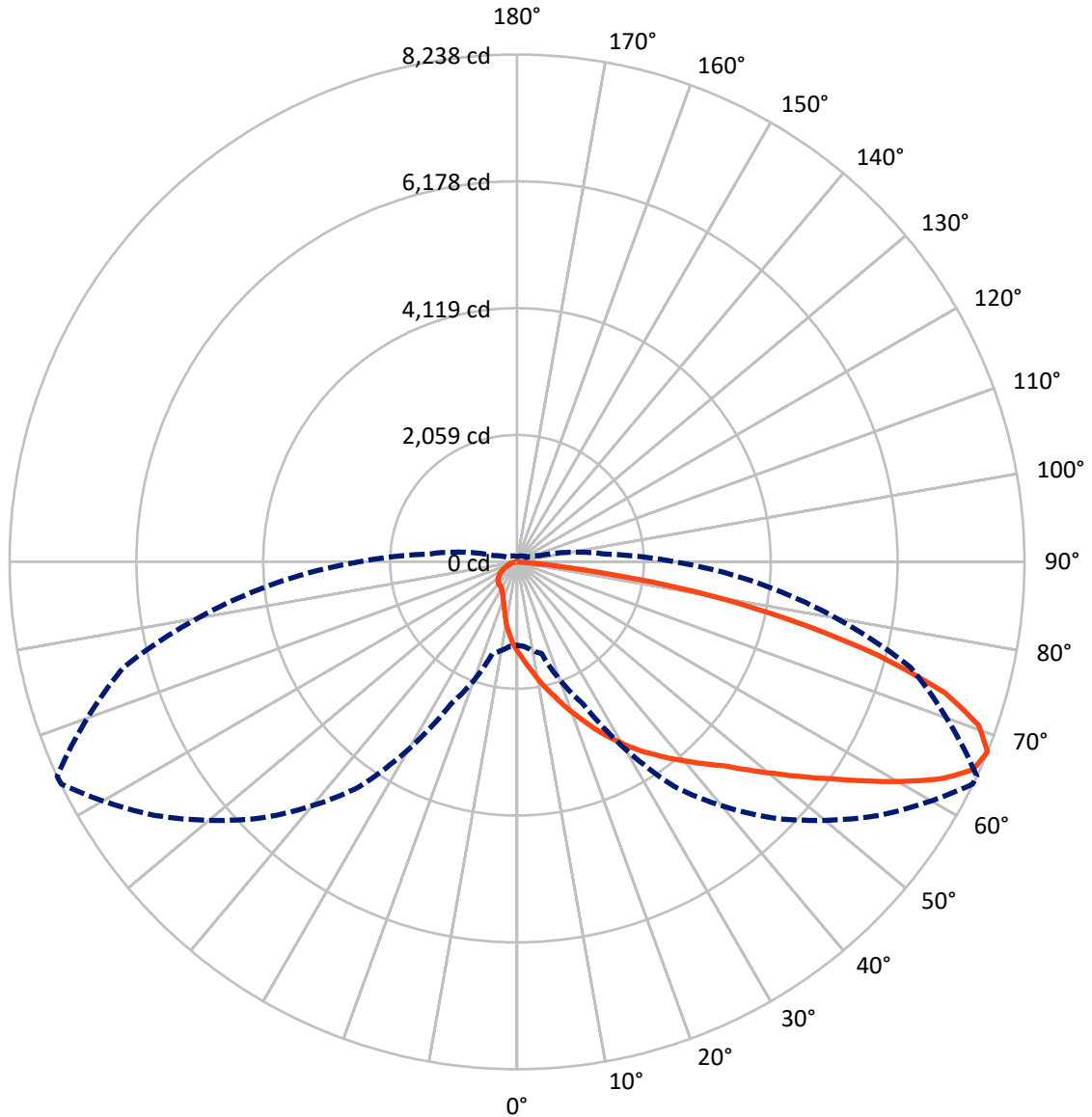
✕ Max cd
 - - - 1/2 Max cd



Based on 20 foot mounting height. Maximum calculated value = 6.7 fc
 Type III - Short - N/A

REPORT NUMBER: P868576
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Luminous Intensity Polar Plot



— Vertical Plane Through 65-Deg Lateral - - - Horizontal Cone Through 67.5-Deg Vertical

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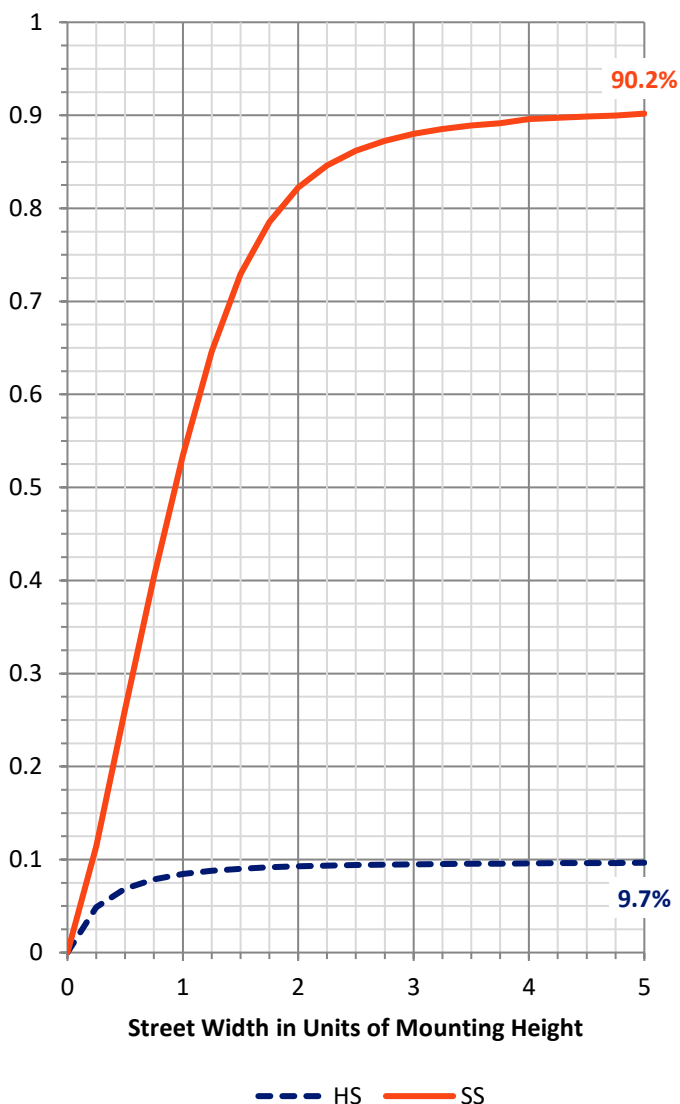
FLUX DISTRIBUTION:

| | | Downward | Upward | Total |
|--------------------|-----------|----------|--------|---------|
| House Side | Lumens | 1147.7 | 0.0 | 1147.7 |
| | % Fixture | 9.7 | 0.0 | 9.7 |
| Street Side | Lumens | 10644.1 | 0.0 | 10644.1 |
| | % Fixture | 90.3 | 0.0 | 90.3 |
| Total | Lumens | 11791.8 | 0.0 | 11791.8 |
| | % Fixture | 100.0 | 0.0 | 100.0 |

ZONAL LUMENS:

| Zone | Lumens | % Fixture |
|-----------|---------|-----------|
| 0°-10° | 142.6 | 1.2 |
| 10°-20° | 473.2 | 4.0 |
| 20°-30° | 861.2 | 7.3 |
| 30°-40° | 1332.7 | 11.3 |
| 40°-50° | 2014.7 | 17.1 |
| 50°-60° | 2621.0 | 22.2 |
| 60°-70° | 2585.6 | 21.9 |
| 70°-80° | 1573.9 | 13.3 |
| 80°-90° | 187.1 | 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° | 11791.8 | 100.0 |
| 0°-180° | 11791.8 | 100.0 |

Coefficient of Utilization



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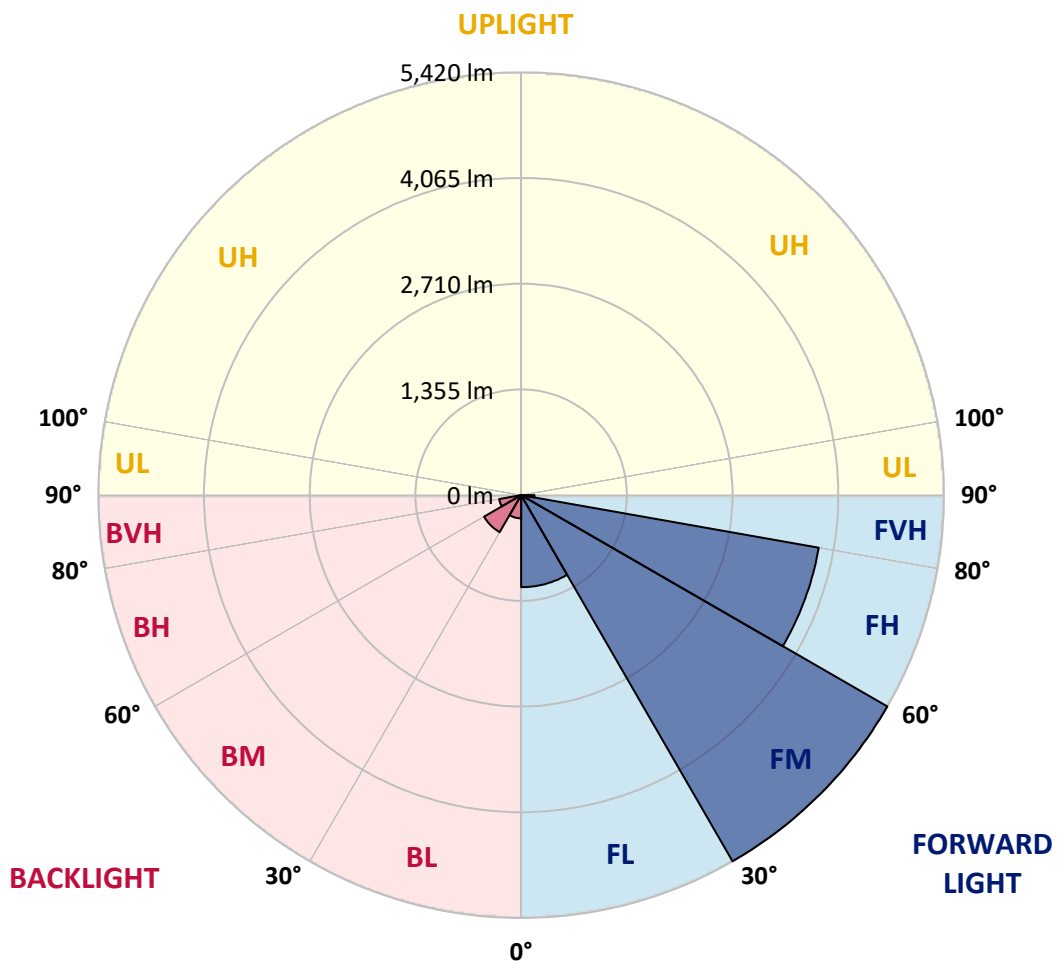
CATALOG NUMBER: EMM2-HTN-SA3A-740-U-T3-HSS

LUMINAIRE CLASSIFICATION SYSTEM LUMEN TABLE AND BUG RATING:

| Zone | | Lumens | % Fixture | Zone Rating/Lumen Limit | | |
|------|-------------|--------|-----------|-------------------------|------|---------|
| | | | | B | U | G |
| FL | (0°-30°) | 1179.9 | 10.0 | | | |
| FM | (30°-60°) | 5419.5 | 46.0 | | | |
| FH | (60°-80°) | 3873.7 | 32.9 | | | G2/5000 |
| FVH | (80°-90°) | 171.0 | 1.5 | | | G2/225 |
| BL | (0°-30°) | 297.0 | 2.5 | B1/500 | | |
| BM | (30°-60°) | 548.9 | 4.7 | B1/1000 | | |
| BH | (60°-80°) | 285.8 | 2.4 | B1/500 | | G1/500 |
| BVH | (80°-90°) | 16.1 | 0.1 | | | 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 III Short





REPORT NUMBER: P868576

CATALOG NUMBER: EMM2-HTN-SA3A-740-U-T3-HSS

CANDELA DISTRIBUTION (FULL):

| | 0° | 5° | 15° | 25° | 35° | 45° | 55° | 64° | 65° | 75° | 85° |
|-------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|
| 0° | 1457.1 | 1457.1 | 1457.1 | 1457.1 | 1457.1 | 1457.1 | 1457.1 | 1457.1 | 1457.1 | 1457.1 | 1457.1 |
| 2.5° | 1702.7 | 1689.3 | 1699.4 | 1675.8 | 1648.9 | 1628.7 | 1588.3 | 1554.7 | 1551.3 | 1517.7 | 1480.6 |
| 5° | 2029.2 | 1985.4 | 1988.8 | 1941.7 | 1884.5 | 1823.9 | 1759.9 | 1675.8 | 1675.8 | 1595.1 | 1510.9 |
| 7.5° | 2321.9 | 2315.2 | 2284.9 | 2210.9 | 2143.6 | 2049.3 | 1931.6 | 1823.9 | 1800.3 | 1675.8 | 1544.6 |
| 10° | 2604.6 | 2594.5 | 2567.6 | 2510.4 | 2395.9 | 2291.6 | 2143.6 | 1982.0 | 1951.8 | 1773.4 | 1585.0 |
| 12.5° | 2830.0 | 2833.4 | 2803.1 | 2756.0 | 2655.1 | 2530.6 | 2335.4 | 2133.5 | 2106.5 | 1867.6 | 1625.3 |
| 15° | 3028.6 | 3025.2 | 3018.5 | 2978.1 | 2880.5 | 2766.1 | 2537.3 | 2301.7 | 2258.0 | 1968.6 | 1665.7 |
| 17.5° | 3180.0 | 3173.3 | 3159.8 | 3126.2 | 3079.1 | 2968.0 | 2749.3 | 2480.1 | 2443.1 | 2086.4 | 1712.8 |
| 20° | 3223.8 | 3220.4 | 3220.4 | 3244.0 | 3223.8 | 3156.5 | 2961.3 | 2665.2 | 2624.8 | 2210.9 | 1776.8 |
| 22.5° | 3304.5 | 3301.2 | 3297.8 | 3321.3 | 3334.8 | 3328.1 | 3159.8 | 2853.6 | 2816.6 | 2355.6 | 1857.5 |
| 25° | 3408.8 | 3402.1 | 3392.0 | 3415.6 | 3432.4 | 3472.8 | 3358.4 | 3075.7 | 3031.9 | 2523.8 | 1938.3 |
| 27.5° | 3546.8 | 3553.5 | 3540.1 | 3536.7 | 3536.7 | 3560.3 | 3533.3 | 3274.2 | 3233.9 | 2685.3 | 2032.5 |
| 30° | 3728.5 | 3738.6 | 3715.1 | 3698.2 | 3668.0 | 3664.6 | 3671.3 | 3496.3 | 3439.1 | 2860.3 | 2130.1 |
| 32.5° | 3906.9 | 3917.0 | 3903.5 | 3880.0 | 3802.6 | 3772.3 | 3799.2 | 3684.8 | 3647.8 | 3052.1 | 2254.6 |
| 35° | 4051.6 | 4075.1 | 4075.1 | 4028.0 | 3920.3 | 3903.5 | 3947.3 | 3869.9 | 3842.9 | 3277.6 | 2402.7 |
| 37.5° | 4246.7 | 4260.2 | 4246.7 | 4159.3 | 4024.7 | 4044.8 | 4112.1 | 4065.0 | 4048.2 | 3519.9 | 2577.7 |
| 40° | 4664.0 | 4680.8 | 4593.4 | 4384.7 | 4169.4 | 4192.9 | 4310.7 | 4283.8 | 4256.8 | 3758.8 | 2739.2 |
| 42.5° | 5246.2 | 5205.8 | 5189.0 | 4724.6 | 4391.4 | 4378.0 | 4526.1 | 4489.0 | 4485.7 | 4001.1 | 2887.3 |
| 45° | 5629.8 | 5643.3 | 5559.1 | 5118.3 | 4859.2 | 4606.8 | 4765.0 | 4751.5 | 4724.6 | 4246.7 | 3065.6 |
| 47.5° | 5895.6 | 5865.4 | 5656.7 | 5444.7 | 5495.2 | 4906.3 | 5030.8 | 5064.5 | 5047.6 | 4526.1 | 3284.3 |
| 50° | 6006.7 | 5976.4 | 5838.4 | 5697.1 | 5757.7 | 5249.5 | 5303.4 | 5414.4 | 5397.6 | 4808.7 | 3469.4 |
| 52.5° | 5868.7 | 5831.7 | 5841.8 | 5878.8 | 5848.5 | 5518.8 | 5639.9 | 5814.9 | 5794.7 | 5138.5 | 3684.8 |
| 55° | 4990.4 | 5088.0 | 5464.9 | 5841.8 | 5831.7 | 5724.0 | 6000.0 | 6255.7 | 6215.3 | 5481.7 | 3869.9 |
| 57.5° | 4024.7 | 4078.5 | 4556.3 | 5576.0 | 5777.9 | 5895.6 | 6410.5 | 6726.8 | 6713.4 | 5825.0 | 4038.1 |
| 60° | 3200.2 | 3257.4 | 3620.8 | 5024.1 | 5653.4 | 6074.0 | 6831.1 | 7248.4 | 7235.0 | 6171.6 | 4159.3 |
| 62.5° | 2544.0 | 2544.0 | 2867.1 | 4229.9 | 5414.4 | 6178.3 | 7164.3 | 7773.4 | 7749.8 | 6450.9 | 4189.5 |
| 65° | 1830.6 | 1854.2 | 2096.5 | 3402.1 | 5027.5 | 6151.4 | 7325.8 | 8146.9 | 8133.4 | 6609.0 | 4125.6 |
| 67.5° | 1352.8 | 1379.7 | 1541.2 | 2550.7 | 4455.4 | 5882.2 | 7177.7 | 8231.0 | 8237.8 | 6612.4 | 3917.0 |
| 70° | 1056.6 | 1063.4 | 1184.5 | 1773.4 | 3651.1 | 5283.2 | 6622.5 | 7951.7 | 7951.7 | 6447.5 | 3607.4 |
| 72.5° | 804.3 | 811.0 | 915.3 | 1208.1 | 2688.7 | 4367.9 | 5791.3 | 7211.4 | 7261.9 | 6010.1 | 3149.7 |
| 75° | 622.5 | 636.0 | 706.7 | 868.2 | 1685.9 | 3106.0 | 4758.2 | 5905.7 | 6043.7 | 5162.1 | 2594.5 |
| 77.5° | 481.2 | 494.7 | 551.9 | 636.0 | 982.6 | 1914.7 | 3344.9 | 4415.0 | 4539.5 | 4065.0 | 2002.2 |
| 80° | 387.0 | 393.7 | 430.7 | 477.8 | 595.6 | 986.0 | 2042.6 | 2900.7 | 2937.7 | 2762.7 | 1325.8 |
| 82.5° | 178.3 | 191.8 | 232.2 | 262.5 | 296.1 | 457.7 | 871.6 | 1073.5 | 1120.6 | 1097.0 | 545.1 |
| 85° | 20.2 | 20.2 | 23.6 | 26.9 | 30.3 | 47.1 | 60.6 | 53.8 | 53.8 | 63.9 | 57.2 |
| 87.5° | 0.0 | 0.0 | 0.0 | 3.4 | 6.7 | 6.7 | 10.1 | 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: P868576

CATALOG NUMBER: EMM2-HTN-SA3A-740-U-T3-HSS

CANDELA DISTRIBUTION (continued):

| | 90° | 95° | 105° | 115° | 125° | 135° | 145° | 155° | 165° | 175° | 180° |
|-------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|
| 0° | 1457.1 | 1457.1 | 1457.1 | 1457.1 | 1457.1 | 1457.1 | 1457.1 | 1457.1 | 1457.1 | 1457.1 | 1457.1 |
| 2.5° | 1460.5 | 1436.9 | 1393.1 | 1356.1 | 1322.5 | 1288.8 | 1272.0 | 1231.6 | 1221.5 | 1228.3 | 1204.7 |
| 5° | 1467.2 | 1420.1 | 1329.2 | 1245.1 | 1174.4 | 1107.1 | 1049.9 | 989.3 | 975.9 | 955.7 | 945.6 |
| 7.5° | 1477.3 | 1406.6 | 1265.3 | 1134.0 | 1026.4 | 928.8 | 858.1 | 811.0 | 774.0 | 763.9 | 760.5 |
| 10° | 1490.7 | 1389.8 | 1194.6 | 1029.7 | 881.7 | 780.7 | 716.8 | 683.1 | 669.7 | 659.6 | 662.9 |
| 12.5° | 1500.8 | 1373.0 | 1127.3 | 911.9 | 767.2 | 676.4 | 646.1 | 619.2 | 612.4 | 609.1 | 609.1 |
| 15° | 1514.3 | 1356.1 | 1046.5 | 807.6 | 669.7 | 615.8 | 585.5 | 575.4 | 575.4 | 572.1 | 572.1 |
| 17.5° | 1531.1 | 1342.7 | 979.2 | 726.9 | 612.4 | 562.0 | 548.5 | 535.0 | 535.0 | 535.0 | 531.7 |
| 20° | 1564.8 | 1335.9 | 918.7 | 659.6 | 562.0 | 528.3 | 508.1 | 498.0 | 494.7 | 491.3 | 491.3 |
| 22.5° | 1598.4 | 1335.9 | 851.4 | 609.1 | 528.3 | 491.3 | 471.1 | 461.0 | 457.7 | 457.7 | 457.7 |
| 25° | 1645.5 | 1332.6 | 797.5 | 565.3 | 498.0 | 454.3 | 434.1 | 424.0 | 417.3 | 417.3 | 413.9 |
| 27.5° | 1699.4 | 1332.6 | 750.4 | 531.7 | 464.4 | 420.6 | 397.1 | 387.0 | 376.9 | 376.9 | 373.5 |
| 30° | 1753.2 | 1339.3 | 710.0 | 504.8 | 430.7 | 390.4 | 360.1 | 346.6 | 339.9 | 336.5 | 336.5 |
| 32.5° | 1823.9 | 1359.5 | 683.1 | 484.6 | 400.4 | 360.1 | 329.8 | 316.3 | 309.6 | 306.2 | 306.2 |
| 35° | 1931.6 | 1410.0 | 686.5 | 474.5 | 380.3 | 333.1 | 302.9 | 286.0 | 282.7 | 282.7 | 279.3 |
| 37.5° | 2046.0 | 1457.1 | 696.6 | 467.7 | 360.1 | 313.0 | 282.7 | 265.8 | 262.5 | 262.5 | 262.5 |
| 40° | 2143.6 | 1497.5 | 710.0 | 464.4 | 343.2 | 292.8 | 265.8 | 252.4 | 245.7 | 245.7 | 245.7 |
| 42.5° | 2241.2 | 1521.0 | 713.4 | 454.3 | 333.1 | 275.9 | 252.4 | 238.9 | 232.2 | 235.6 | 235.6 |
| 45° | 2338.7 | 1537.8 | 703.3 | 440.8 | 323.0 | 262.5 | 238.9 | 225.5 | 218.7 | 218.7 | 218.7 |
| 47.5° | 2456.5 | 1574.9 | 686.5 | 420.6 | 316.3 | 252.4 | 225.5 | 212.0 | 208.6 | 208.6 | 208.6 |
| 50° | 2574.3 | 1605.1 | 673.0 | 397.1 | 299.5 | 238.9 | 215.4 | 198.5 | 195.2 | 195.2 | 195.2 |
| 52.5° | 2671.9 | 1618.6 | 656.2 | 366.8 | 282.7 | 225.5 | 201.9 | 185.1 | 178.3 | 178.3 | 178.3 |
| 55° | 2745.9 | 1622.0 | 632.6 | 343.2 | 259.1 | 212.0 | 188.4 | 171.6 | 164.9 | 161.5 | 161.5 |
| 57.5° | 2806.5 | 1618.6 | 609.1 | 319.7 | 238.9 | 195.2 | 171.6 | 158.2 | 148.1 | 144.7 | 144.7 |
| 60° | 2840.1 | 1608.5 | 575.4 | 289.4 | 212.0 | 178.3 | 158.2 | 141.3 | 134.6 | 131.2 | 131.2 |
| 62.5° | 2819.9 | 1581.6 | 528.3 | 242.3 | 191.8 | 161.5 | 144.7 | 131.2 | 121.1 | 117.8 | 117.8 |
| 65° | 2725.7 | 1527.8 | 467.7 | 198.5 | 171.6 | 144.7 | 131.2 | 117.8 | 104.3 | 101.0 | 101.0 |
| 67.5° | 2560.8 | 1436.9 | 387.0 | 168.3 | 158.2 | 131.2 | 117.8 | 104.3 | 94.2 | 87.5 | 87.5 |
| 70° | 2332.0 | 1315.8 | 302.9 | 144.7 | 141.3 | 121.1 | 107.7 | 94.2 | 84.1 | 77.4 | 77.4 |
| 72.5° | 2005.6 | 1117.2 | 225.5 | 124.5 | 124.5 | 111.0 | 97.6 | 87.5 | 77.4 | 70.7 | 70.7 |
| 75° | 1622.0 | 844.6 | 171.6 | 114.4 | 111.0 | 101.0 | 87.5 | 77.4 | 70.7 | 63.9 | 63.9 |
| 77.5° | 1184.5 | 562.0 | 141.3 | 104.3 | 104.3 | 90.9 | 80.8 | 70.7 | 63.9 | 60.6 | 60.6 |
| 80° | 720.1 | 323.0 | 101.0 | 80.8 | 80.8 | 77.4 | 67.3 | 60.6 | 57.2 | 50.5 | 47.1 |
| 82.5° | 292.8 | 124.5 | 53.8 | 40.4 | 40.4 | 37.0 | 23.6 | 20.2 | 20.2 | 20.2 | 16.8 |
| 85° | 30.3 | 20.2 | 13.5 | 10.1 | 10.1 | 10.1 | 6.7 | 6.7 | 6.7 | 6.7 | 6.7 |
| 87.5° | 10.1 | 10.1 | 6.7 | 6.7 | 6.7 | 6.7 | 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-40-740-U-5WQ-2

Data in this report applies to families of products including MEM2-HTN-SA-40-740-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-40-740-U-5WQ-2**
 Description: Epic Modern Light Square 40W 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



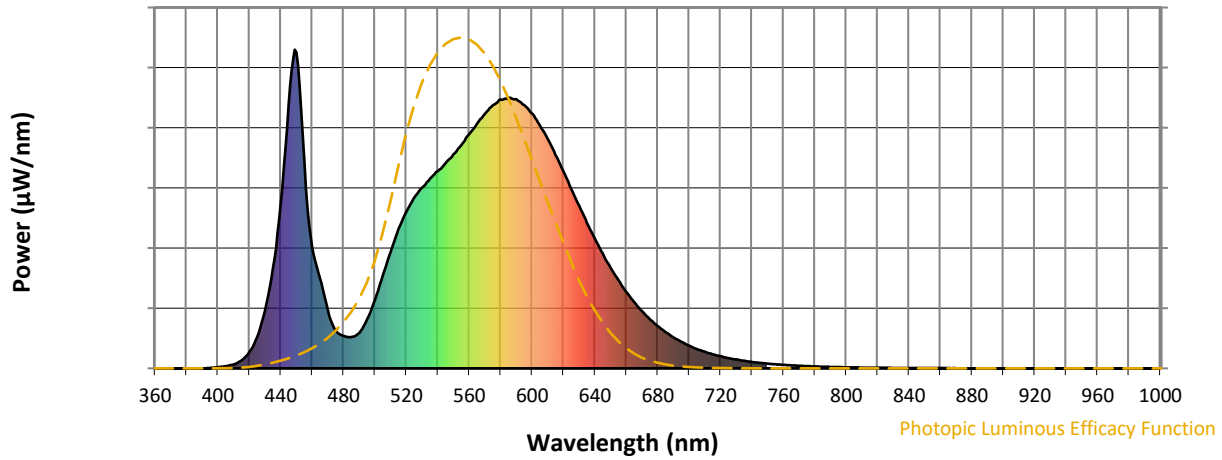
CIE 1931 Chromaticity Diagram with 2017 ANSI 7-Step and 4-Step Quadrangles



Point lies inside the ANSI 4000K 4-step quadrangle

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



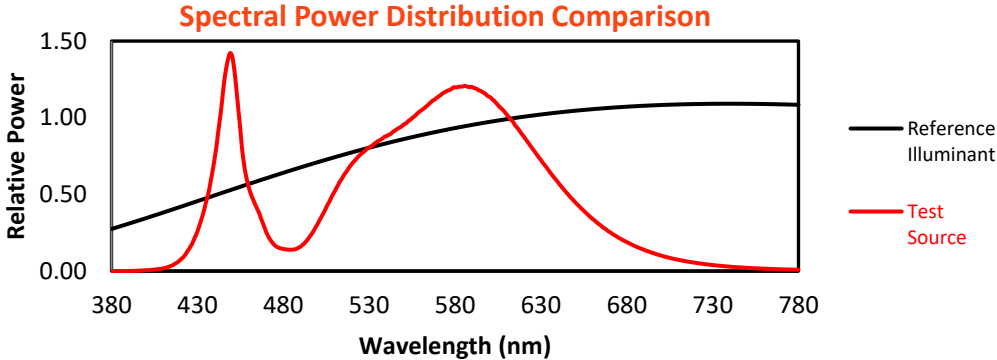
Melanopic Lumens: NR

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)