

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: P879740

Luminaire Tested: **EMM2-HSN-VA7-727-U-CQ**

Issue Date: 10/01/2024



**Test Information**

Test Method: LM-79-08  
Report Number: P879740  
Test Lab: INNOVATION CENTER(G3)  
Issue Date: 10/01/2024  
Manufacturer: COOPER LIGHTING SOLUTIONS (FORMERLY EATON)  
Product Line: INVUE  
Catalog Number: EMM2-HSN-VA7-727-U-CQ  
Description: EPIC MODERN SHORT HOUSING 7W 70CRI 2700K WAVESTREAM FIXTURE w/  
TYPE V CONCENTRATED DISTRIBUTION OPTIC  
Light Source: (1) 2700K CCT, 70 CRI LEDS  
Ballast/Driver: ELECTRONIC DRIVER

**Summary**

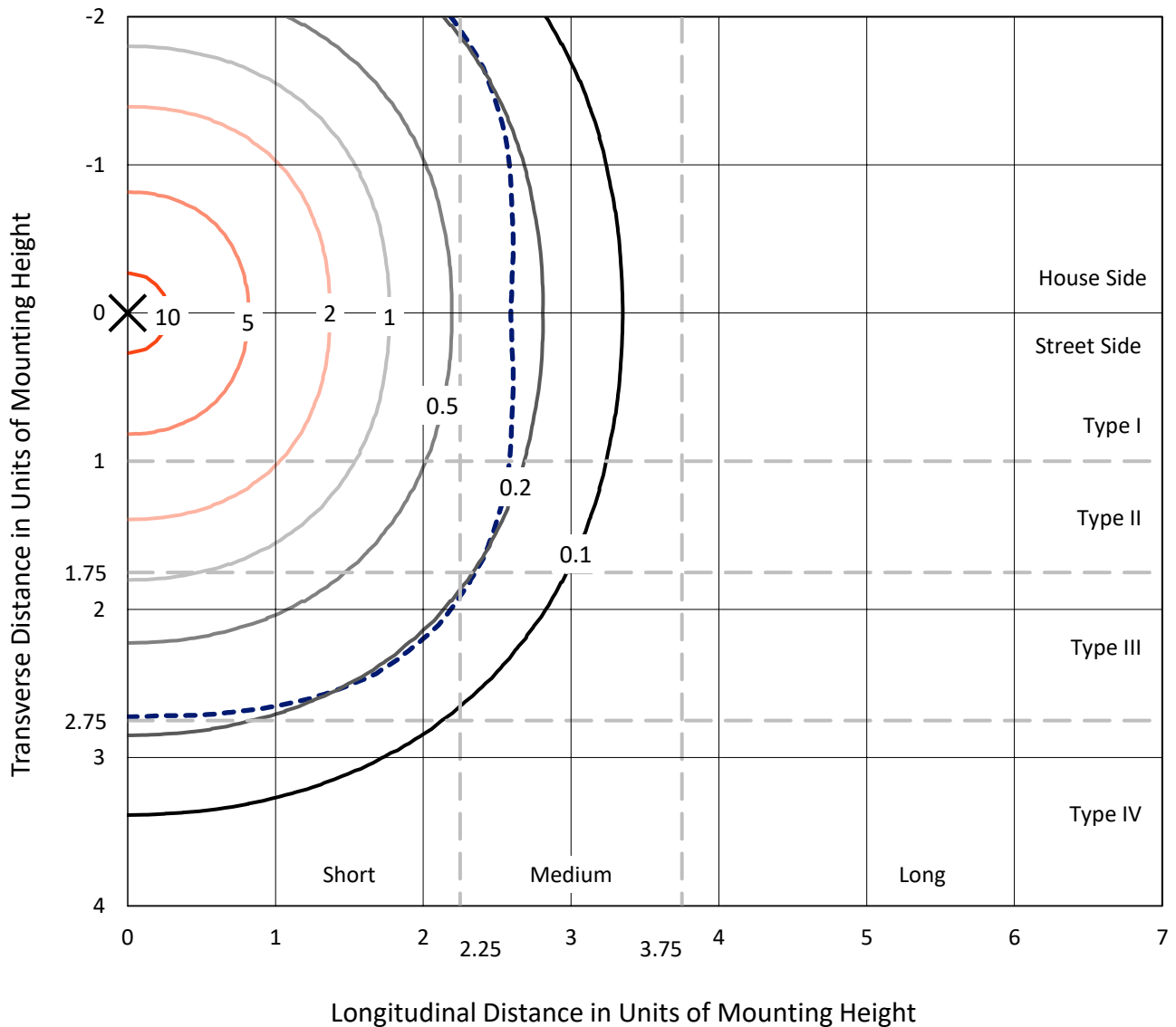
Lumens per Lamp: N/A  
Luminaire Lumens: 10478 lumens  
Efficiency: N/A  
Efficacy: 80.6 lumens/watt  
Luminous Opening: Circular (Dia: 1.12' x H: 0')  
IES Classification: Type V - Short  
BUG Rating: B3 - U0 - G2

Input Watts (W): 130  
Input Voltage (V): 120  
Input Current (Ain): NR  
Voltage Rise (V): NR  
Power Factor: 0.995  
Total Harmonic Distortion (THDi): 8.1%  
Frequency (hertz): 60  
Stabilization Time: NR  
Operation Time: NR  
Ambient Temperature (°C): NR  
Test Distance: 24 FT

REPORT NUMBER: P879740  
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### Iso-Footcandle Lines of Horizontal Illumination

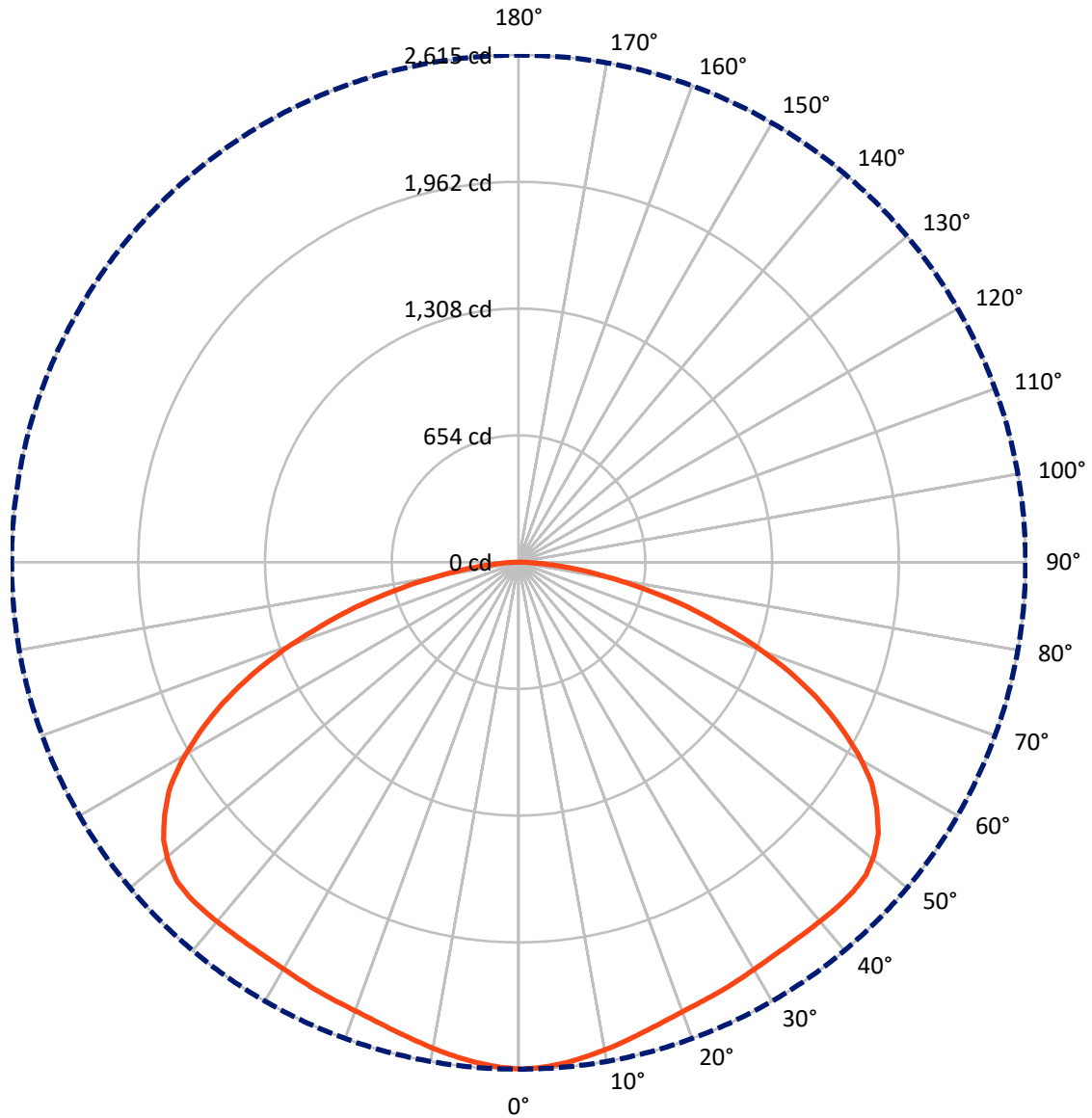
× Max cd  
 - - - 1/2 Max cd



Based on 15 foot mounting height. Maximum calculated value = 11.6 fc  
 Type V - Short - N/A

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### Luminous Intensity Polar Plot



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

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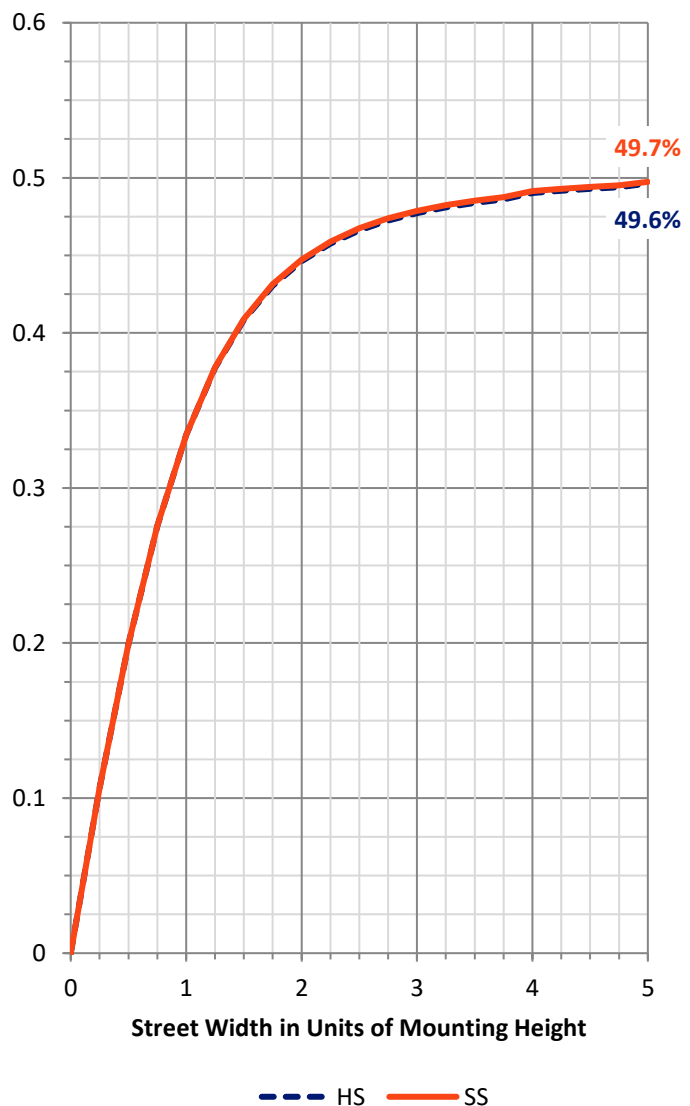
**FLUX DISTRIBUTION:**

|                    |           | Downward | Upward | Total   |
|--------------------|-----------|----------|--------|---------|
| <b>House Side</b>  | Lumens    | 5239.0   | 0.0    | 5239.0  |
|                    | % Fixture | 50.0     | 0.0    | 50.0    |
| <b>Street Side</b> | Lumens    | 5239.0   | 0.0    | 5239.0  |
|                    | % Fixture | 50.0     | 0.0    | 50.0    |
| <b>Total</b>       | Lumens    | 10478.0  | 0.0    | 10478.0 |
|                    | % Fixture | 100.0    | 0.0    | 100.0   |

**Coefficient of Utilization**

**ZONAL LUMENS:**

| Zone      | Lumens  | % Fixture |
|-----------|---------|-----------|
| 0°-10°    | 246.5   | 2.4       |
| 10°-20°   | 711.1   | 6.8       |
| 20°-30°   | 1138.6  | 10.9      |
| 30°-40°   | 1542.4  | 14.7      |
| 40°-50°   | 1904.7  | 18.2      |
| 50°-60°   | 2046.4  | 19.5      |
| 60°-70°   | 1720.9  | 16.4      |
| 70°-80°   | 960.9   | 9.2       |
| 80°-90°   | 206.5   | 2.0       |
| 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°    | 10478.0 | 100.0     |
| 0°-180°   | 10478.0 | 100.0     |



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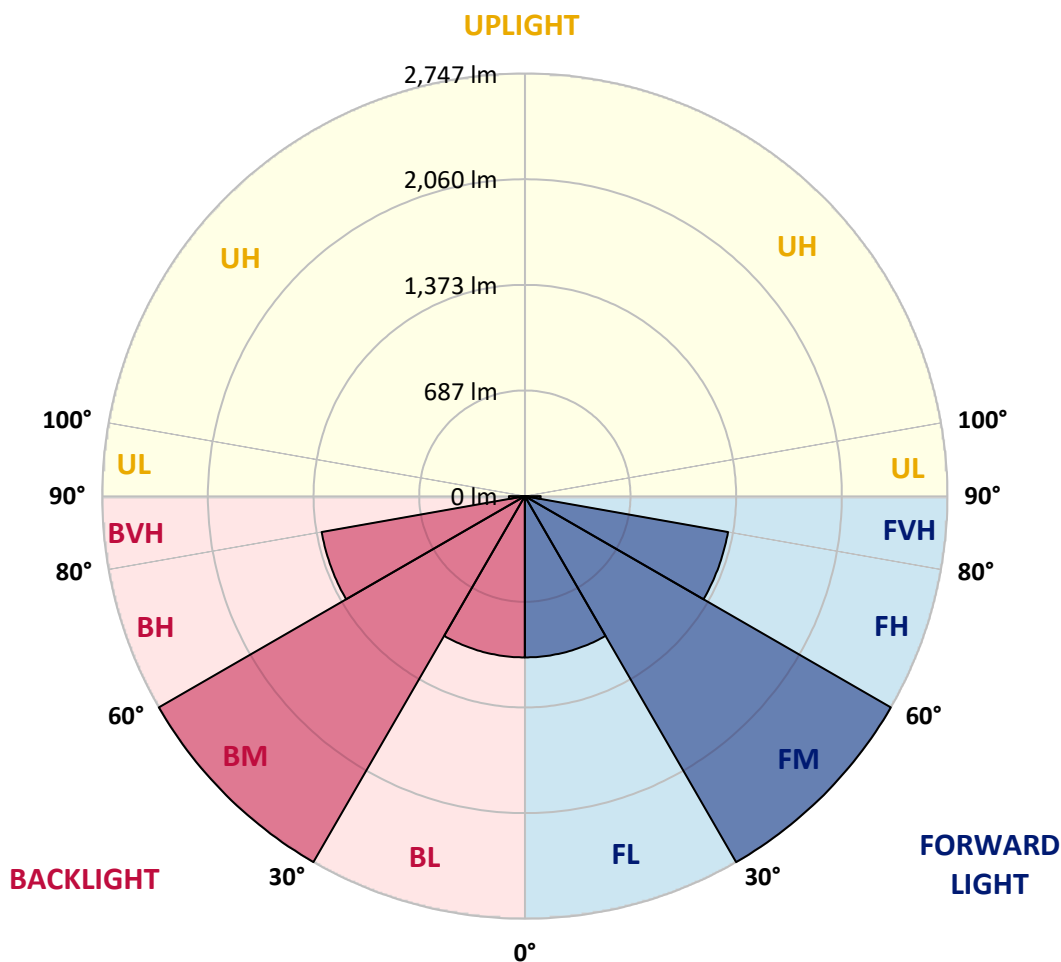
CATALOG NUMBER: EMM2-HSN-VA7-727-U-CQ

**LUMINAIRE CLASSIFICATION SYSTEM LUMEN TABLE AND BUG RATING:**

| Zone           | Lumens | % Fixture | Zone Rating/Lumen Limit |      |         |
|----------------|--------|-----------|-------------------------|------|---------|
|                |        |           | B                       | U    | G       |
| FL (0°-30°)    | 1048.1 | 10.0      |                         |      |         |
| FM (30°-60°)   | 2746.7 | 26.2      |                         |      |         |
| FH (60°-80°)   | 1340.9 | 12.8      |                         |      | G1/1800 |
| FVH (80°-90°)  | 103.2  | 1.0       |                         |      | G2/225  |
| BL (0°-30°)    | 1048.1 | 10.0      | B3/2500                 |      |         |
| BM (30°-60°)   | 2746.7 | 26.2      | B3/5000                 |      |         |
| BH (60°-80°)   | 1340.9 | 12.8      | B3/2500                 |      | G1/1800 |
| BVH (80°-90°)  | 103.2  | 1.0       |                         |      | G2/225  |
| UL (90°-100°)  | 0.0    | 0.0       |                         | U0/0 |         |
| UH (100°-180°) | 0.0    | 0.0       |                         | U0/0 |         |

**BUG Rating: B3-U0-G2**

Type V Short





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CATALOG NUMBER: EMM2-HSN-VA7-727-U-CQ

**CANDELA DISTRIBUTION (FULL):**

|       | 0°     | 5°     | 15°    | 25°    | 35°    | 45°    | 55°    | 65°    | 75°    | 85°    | 90°    |
|-------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|
| 0°    | 2615.4 | 2615.4 | 2615.4 | 2615.4 | 2615.4 | 2615.4 | 2615.4 | 2615.4 | 2615.4 | 2615.4 | 2615.4 |
| 2.5°  | 2607.6 | 2610.2 | 2609.6 | 2609.6 | 2609.6 | 2610.9 | 2610.9 | 2610.9 | 2611.5 | 2611.5 | 2612.2 |
| 5°    | 2592.7 | 2594.6 | 2594.6 | 2594.6 | 2595.9 | 2596.6 | 2596.6 | 2597.2 | 2598.5 | 2597.9 | 2597.2 |
| 7.5°  | 2572.5 | 2574.5 | 2574.5 | 2574.5 | 2575.8 | 2577.1 | 2577.1 | 2576.4 | 2578.4 | 2578.4 | 2577.7 |
| 10°   | 2551.1 | 2551.8 | 2552.4 | 2553.7 | 2555.7 | 2556.3 | 2555.7 | 2555.7 | 2555.0 | 2555.7 | 2555.7 |
| 12.5° | 2525.8 | 2529.0 | 2529.7 | 2531.0 | 2534.2 | 2534.9 | 2534.9 | 2534.2 | 2533.6 | 2533.6 | 2532.9 |
| 15°   | 2503.0 | 2504.3 | 2506.3 | 2508.9 | 2512.8 | 2514.1 | 2514.7 | 2512.8 | 2510.8 | 2510.2 | 2510.8 |
| 17.5° | 2482.2 | 2484.2 | 2486.8 | 2489.4 | 2494.6 | 2497.2 | 2497.2 | 2494.6 | 2492.0 | 2490.7 | 2490.7 |
| 20°   | 2465.4 | 2467.3 | 2470.6 | 2474.5 | 2481.6 | 2484.8 | 2483.5 | 2480.9 | 2476.4 | 2474.5 | 2475.1 |
| 22.5° | 2454.3 | 2456.9 | 2459.5 | 2465.4 | 2473.2 | 2477.0 | 2475.7 | 2471.2 | 2466.0 | 2462.8 | 2462.8 |
| 25°   | 2445.2 | 2447.2 | 2451.1 | 2458.9 | 2467.3 | 2471.9 | 2469.9 | 2464.1 | 2456.9 | 2453.0 | 2452.4 |
| 27.5° | 2434.8 | 2437.4 | 2442.6 | 2453.0 | 2463.4 | 2467.3 | 2466.0 | 2457.6 | 2449.1 | 2443.9 | 2442.6 |
| 30°   | 2425.1 | 2427.7 | 2434.8 | 2446.5 | 2459.5 | 2465.4 | 2462.1 | 2453.0 | 2442.6 | 2436.1 | 2435.5 |
| 32.5° | 2418.6 | 2421.8 | 2430.3 | 2445.2 | 2460.8 | 2469.3 | 2466.0 | 2455.0 | 2441.3 | 2432.9 | 2432.2 |
| 35°   | 2416.0 | 2419.2 | 2431.6 | 2449.8 | 2469.3 | 2480.9 | 2476.4 | 2462.8 | 2445.9 | 2435.5 | 2434.2 |
| 37.5° | 2416.6 | 2420.5 | 2436.1 | 2460.2 | 2484.8 | 2497.2 | 2491.3 | 2473.8 | 2452.4 | 2438.1 | 2436.1 |
| 40°   | 2419.2 | 2423.8 | 2443.9 | 2473.8 | 2503.0 | 2514.7 | 2505.6 | 2479.6 | 2450.4 | 2430.3 | 2426.4 |
| 42.5° | 2422.5 | 2429.6 | 2454.3 | 2489.4 | 2519.9 | 2529.7 | 2513.4 | 2475.1 | 2434.2 | 2408.2 | 2404.9 |
| 45°   | 2421.8 | 2427.7 | 2456.3 | 2497.8 | 2530.3 | 2535.5 | 2508.9 | 2460.8 | 2412.7 | 2379.0 | 2376.4 |
| 47.5° | 2410.8 | 2416.6 | 2449.1 | 2495.2 | 2527.1 | 2528.4 | 2496.5 | 2441.3 | 2384.8 | 2345.8 | 2341.9 |
| 50°   | 2376.4 | 2384.2 | 2420.5 | 2471.2 | 2506.9 | 2507.6 | 2472.5 | 2411.4 | 2345.8 | 2300.3 | 2293.9 |
| 52.5° | 2323.7 | 2329.6 | 2371.8 | 2426.4 | 2466.7 | 2471.9 | 2433.5 | 2362.7 | 2288.0 | 2239.3 | 2234.7 |
| 55°   | 2241.9 | 2253.6 | 2298.4 | 2355.6 | 2399.7 | 2405.6 | 2367.3 | 2290.6 | 2213.9 | 2158.1 | 2152.9 |
| 57.5° | 2147.0 | 2149.0 | 2196.4 | 2258.8 | 2304.9 | 2311.4 | 2269.8 | 2191.9 | 2112.0 | 2060.0 | 2047.0 |
| 60°   | 2013.2 | 2021.0 | 2065.8 | 2126.9 | 2175.6 | 2184.1 | 2144.4 | 2069.1 | 1985.9 | 1926.8 | 1926.2 |
| 62.5° | 1858.6 | 1867.7 | 1913.2 | 1978.1 | 2027.5 | 2035.9 | 1993.7 | 1920.3 | 1837.2 | 1786.5 | 1768.3 |
| 65°   | 1691.0 | 1693.6 | 1739.1 | 1803.4 | 1848.2 | 1852.8 | 1819.6 | 1750.1 | 1664.4 | 1612.4 | 1600.7 |
| 67.5° | 1502.6 | 1505.2 | 1540.3 | 1600.7 | 1648.8 | 1655.3 | 1621.5 | 1557.8 | 1480.5 | 1425.9 | 1420.1 |
| 70°   | 1294.1 | 1294.7 | 1329.1 | 1378.5 | 1426.6 | 1440.2 | 1409.7 | 1348.6 | 1274.6 | 1231.1 | 1219.4 |
| 72.5° | 1074.5 | 1080.3 | 1110.9 | 1162.2 | 1203.1 | 1206.4 | 1181.7 | 1129.1 | 1068.6 | 1032.9 | 1026.4 |
| 75°   | 873.8  | 869.9  | 895.8  | 927.0  | 958.9  | 969.3  | 949.1  | 913.4  | 857.5  | 826.3  | 832.8  |
| 77.5° | 656.1  | 657.4  | 677.6  | 706.2  | 726.3  | 744.5  | 721.7  | 704.9  | 660.0  | 624.3  | 625.6  |
| 80°   | 463.8  | 462.5  | 481.4  | 495.0  | 517.8  | 520.4  | 508.0  | 485.3  | 456.7  | 441.8  | 440.5  |
| 82.5° | 293.6  | 287.8  | 302.1  | 319.6  | 329.4  | 324.8  | 327.4  | 312.5  | 289.7  | 281.9  | 274.8  |
| 85°   | 150.1  | 148.8  | 156.6  | 163.1  | 170.2  | 170.2  | 166.3  | 154.6  | 150.1  | 141.0  | 138.4  |
| 87.5° | 51.3   | 53.3   | 55.9   | 53.9   | 57.2   | 55.9   | 54.6   | 46.1   | 40.9   | 38.3   | 35.7   |
| 90°   | 0.0    | 0.0    | 0.0    | 0.0    | 0.0    | 0.0    | 0.0    | 0.0    | 0.0    | 0.0    | 0.0    |

Cooper Lighting Solutions Photometric Lab  
1121 Highway 74 South  
Peachtree City, GA 30269



LM-79-2019: Approved Method: Electrical and Photometric Measurements of Solid-State Lighting Products

Report Prepared for

Cooper Lighting Solutions

Streetworks

Report Number: SP1-2407-176-12

Test Date: 10/23/2024

Luminaire Tested: MEM2-HTN-VA-130-727-U-RW

Data in this report applies to families of products including MEM2-HTN-VA-130-727-U-RW



**Test Information**

Test Method: LM-79-2019  
 Report Number: SP1-2407-176-12  
 Test Lab: COOPER LIGHTING SOLUTIONS  
 Photometer: SP1 - 76IN SPHERE  
 Measurement Geometry: 4π  
 Issue Date: 10/24/2024  
 Manufacturer: COOPER LIGHTING SOLUTIONS  
 Product Line: Streetworks  
 Catalog Number: **MEM2-HTN-VA-130-727-U-RW**  
 Description: EPIC MODERN VISUAL COMFORT 130W WAVESTREAM RECTANGULAR WIDE

**Spectral Parameters**

CCT (K): 2710  
 CIE u': 0.2616  
 CIE v': 0.5295  
 Duv: 0.0016  
 CIE x: 0.4619  
 CIE y: 0.4154  
 CIE z: 0.1227  
 Peak Wavelength (nm): 601  
 Dominant Wavelength (nm): 583  
 Purity: 63.3407  
 Rf: 70.4  
 Rg: 96.7

|           |      |      |       |
|-----------|------|------|-------|
| CRI (Ra): | 70.4 |      |       |
| R1:       | 67.3 | R9:  | -24.6 |
| R2:       | 79.1 | R10: | 51.3  |
| R3:       | 89.5 | R11: | 61.0  |
| R4:       | 67.6 | R12: | 41.2  |
| R5:       | 64.7 | R13: | 68.7  |
| R6:       | 69.6 | R14: | 93.5  |
| R7:       | 78.9 | R15: | 60.6  |
| R8:       | 46.2 |      |       |



**Test Conditions**

Stabilization Time: 47M  
 Operation Time: 1H 47M  
 Sphere Temperature (°C): 24.4

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| 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                | 10/22/2024       | 10/22/2025           |
| DC Power Source                | IN0208                | 10/22/2024       | 10/22/2025           |
| Sphere Thermometer             | IN0085                | 10/22/2024       | 10/22/2025           |
| Room Thermometer               | IN0046                | 10/22/2024       | 10/22/2025           |

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CIE 1931 Chromaticity Diagram



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



CCT = 2710K  
 CIE x = 0.4619  
 CIE y = 0.4154  
 Duv = 0.0016

Point lies inside the ANSI 2700K 4-step quadrangle

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**Photopic Flux vs. Wavelength**

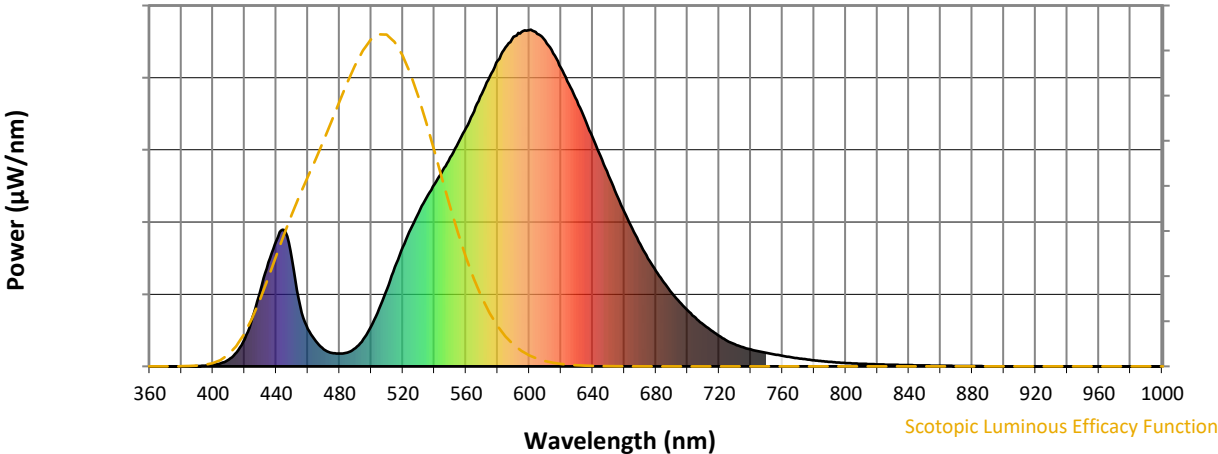


**Photopic Lumens: NR**

| $\lambda$<br>(nm) | Power<br>W <sup>^</sup> /nm | Lumens<br>( $\phi$ /nm) | $\lambda$<br>(nm) | Power<br>W <sup>^</sup> /nm | Lumens<br>( $\phi$ /nm) | $\lambda$<br>(nm) | Power<br>W <sup>^</sup> /nm | Lumens<br>( $\phi$ /nm) | $\lambda$<br>(nm) | Power<br>W <sup>^</sup> /nm | Lumens<br>( $\phi$ /nm) | $\lambda$<br>(nm) | Power<br>W <sup>^</sup> /nm | Lumens<br>( $\phi$ /nm) |
|-------------------|-----------------------------|-------------------------|-------------------|-----------------------------|-------------------------|-------------------|-----------------------------|-------------------------|-------------------|-----------------------------|-------------------------|-------------------|-----------------------------|-------------------------|
| 360               | 0                           | NR                      | 490               | 54                          | NR                      | 620               | 887                         | NR                      | 750               | 40                          | NR                      | 880               | 1                           | NR                      |
| 365               | 0                           | NR                      | 495               | 80                          | NR                      | 625               | 838                         | NR                      | 755               | 35                          | NR                      | 885               | 1                           | NR                      |
| 370               | 0                           | NR                      | 500               | 119                         | NR                      | 630               | 790                         | NR                      | 760               | 31                          | NR                      | 890               | 0                           | NR                      |
| 375               | 0                           | NR                      | 505               | 171                         | NR                      | 635               | 735                         | NR                      | 765               | 27                          | NR                      | 895               | 0                           | NR                      |
| 380               | 0                           | NR                      | 510               | 230                         | NR                      | 640               | 681                         | NR                      | 770               | 24                          | NR                      | 900               | 0                           | NR                      |
| 385               | 0                           | NR                      | 515               | 295                         | NR                      | 645               | 624                         | NR                      | 775               | 21                          | NR                      | 905               | 0                           | NR                      |
| 390               | 1                           | NR                      | 520               | 354                         | NR                      | 650               | 567                         | NR                      | 780               | 18                          | NR                      | 910               | 0                           | NR                      |
| 395               | 2                           | NR                      | 525               | 408                         | NR                      | 655               | 512                         | NR                      | 785               | 15                          | NR                      | 915               | 0                           | NR                      |
| 400               | 5                           | NR                      | 530               | 457                         | NR                      | 660               | 459                         | NR                      | 790               | 13                          | NR                      | 920               | 0                           | NR                      |
| 405               | 9                           | NR                      | 535               | 500                         | NR                      | 665               | 410                         | NR                      | 795               | 12                          | NR                      | 925               | 0                           | NR                      |
| 410               | 20                          | NR                      | 540               | 541                         | NR                      | 670               | 363                         | NR                      | 800               | 10                          | NR                      | 930               | 0                           | NR                      |
| 415               | 42                          | NR                      | 545               | 581                         | NR                      | 675               | 320                         | NR                      | 805               | 9                           | NR                      | 935               | 0                           | NR                      |
| 420               | 81                          | NR                      | 550               | 620                         | NR                      | 680               | 283                         | NR                      | 810               | 8                           | NR                      | 940               | 0                           | NR                      |
| 425               | 145                         | NR                      | 555               | 664                         | NR                      | 685               | 249                         | NR                      | 815               | 7                           | NR                      | 945               | 0                           | NR                      |
| 430               | 225                         | NR                      | 560               | 709                         | NR                      | 690               | 219                         | NR                      | 820               | 6                           | NR                      | 950               | 0                           | NR                      |
| 435               | 309                         | NR                      | 565               | 758                         | NR                      | 695               | 191                         | NR                      | 825               | 5                           | NR                      | 955               | 0                           | NR                      |
| 440               | 373                         | NR                      | 570               | 810                         | NR                      | 700               | 166                         | NR                      | 830               | 5                           | NR                      | 960               | 0                           | NR                      |
| 445               | 405                         | NR                      | 575               | 861                         | NR                      | 705               | 144                         | NR                      | 835               | 4                           | NR                      | 965               | 0                           | NR                      |
| 450               | 316                         | NR                      | 580               | 908                         | NR                      | 710               | 124                         | NR                      | 840               | 4                           | NR                      | 970               | 0                           | NR                      |
| 455               | 180                         | NR                      | 585               | 948                         | NR                      | 715               | 106                         | NR                      | 845               | 3                           | NR                      | 975               | 0                           | NR                      |
| 460               | 111                         | NR                      | 590               | 978                         | NR                      | 720               | 90                          | NR                      | 850               | 3                           | NR                      | 980               | 0                           | NR                      |
| 465               | 75                          | NR                      | 595               | 993                         | NR                      | 725               | 76                          | NR                      | 855               | 2                           | NR                      | 985               | 0                           | NR                      |
| 470               | 50                          | NR                      | 600               | 999                         | NR                      | 730               | 65                          | NR                      | 860               | 2                           | NR                      | 990               | 0                           | NR                      |
| 475               | 40                          | NR                      | 605               | 988                         | NR                      | 735               | 57                          | NR                      | 865               | 2                           | NR                      | 995               | 0                           | NR                      |
| 480               | 38                          | NR                      | 610               | 967                         | NR                      | 740               | 50                          | NR                      | 870               | 1                           | NR                      | 1000              | 0                           | NR                      |
| 485               | 41                          | NR                      | 615               | 930                         | NR                      | 745               | 45                          | NR                      | 875               | 1                           | NR                      |                   |                             |                         |

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**Scotopic Flux vs. Wavelength**



**Scotopic Lumens: NR**

**S/P: 1.02**

| $\lambda$ (nm) | Power W <sup>^</sup> /nm | Lumens ( $\phi$ /nm) | $\lambda$ (nm) | Power W <sup>^</sup> /nm | Lumens ( $\phi$ /nm) | $\lambda$ (nm) | Power W <sup>^</sup> /nm | Lumens ( $\phi$ /nm) | $\lambda$ (nm) | Power W <sup>^</sup> /nm | Lumens ( $\phi$ /nm) | $\lambda$ (nm) | Power W <sup>^</sup> /nm | Lumens ( $\phi$ /nm) |
|----------------|--------------------------|----------------------|----------------|--------------------------|----------------------|----------------|--------------------------|----------------------|----------------|--------------------------|----------------------|----------------|--------------------------|----------------------|
| 360            | 0                        | NR                   | 490            | 54                       | NR                   | 620            | 887                      | NR                   | 750            | 40                       | NR                   | 880            | 1                        | NR                   |
| 365            | 0                        | NR                   | 495            | 80                       | NR                   | 625            | 838                      | NR                   | 755            | 35                       | NR                   | 885            | 1                        | NR                   |
| 370            | 0                        | NR                   | 500            | 119                      | NR                   | 630            | 790                      | NR                   | 760            | 31                       | NR                   | 890            | 0                        | NR                   |
| 375            | 0                        | NR                   | 505            | 171                      | NR                   | 635            | 735                      | NR                   | 765            | 27                       | NR                   | 895            | 0                        | NR                   |
| 380            | 0                        | NR                   | 510            | 230                      | NR                   | 640            | 681                      | NR                   | 770            | 24                       | NR                   | 900            | 0                        | NR                   |
| 385            | 0                        | NR                   | 515            | 295                      | NR                   | 645            | 624                      | NR                   | 775            | 21                       | NR                   | 905            | 0                        | NR                   |
| 390            | 1                        | NR                   | 520            | 354                      | NR                   | 650            | 567                      | NR                   | 780            | 18                       | NR                   | 910            | 0                        | NR                   |
| 395            | 2                        | NR                   | 525            | 408                      | NR                   | 655            | 512                      | NR                   | 785            | 15                       | NR                   | 915            | 0                        | NR                   |
| 400            | 5                        | NR                   | 530            | 457                      | NR                   | 660            | 459                      | NR                   | 790            | 13                       | NR                   | 920            | 0                        | NR                   |
| 405            | 9                        | NR                   | 535            | 500                      | NR                   | 665            | 410                      | NR                   | 795            | 12                       | NR                   | 925            | 0                        | NR                   |
| 410            | 20                       | NR                   | 540            | 541                      | NR                   | 670            | 363                      | NR                   | 800            | 10                       | NR                   | 930            | 0                        | NR                   |
| 415            | 42                       | NR                   | 545            | 581                      | NR                   | 675            | 320                      | NR                   | 805            | 9                        | NR                   | 935            | 0                        | NR                   |
| 420            | 81                       | NR                   | 550            | 620                      | NR                   | 680            | 283                      | NR                   | 810            | 8                        | NR                   | 940            | 0                        | NR                   |
| 425            | 145                      | NR                   | 555            | 664                      | NR                   | 685            | 249                      | NR                   | 815            | 7                        | NR                   | 945            | 0                        | NR                   |
| 430            | 225                      | NR                   | 560            | 709                      | NR                   | 690            | 219                      | NR                   | 820            | 6                        | NR                   | 950            | 0                        | NR                   |
| 435            | 309                      | NR                   | 565            | 758                      | NR                   | 695            | 191                      | NR                   | 825            | 5                        | NR                   | 955            | 0                        | NR                   |
| 440            | 373                      | NR                   | 570            | 810                      | NR                   | 700            | 166                      | NR                   | 830            | 5                        | NR                   | 960            | 0                        | NR                   |
| 445            | 405                      | NR                   | 575            | 861                      | NR                   | 705            | 144                      | NR                   | 835            | 4                        | NR                   | 965            | 0                        | NR                   |
| 450            | 316                      | NR                   | 580            | 908                      | NR                   | 710            | 124                      | NR                   | 840            | 4                        | NR                   | 970            | 0                        | NR                   |
| 455            | 180                      | NR                   | 585            | 948                      | NR                   | 715            | 106                      | NR                   | 845            | 3                        | NR                   | 975            | 0                        | NR                   |
| 460            | 111                      | NR                   | 590            | 978                      | NR                   | 720            | 90                       | NR                   | 850            | 3                        | NR                   | 980            | 0                        | NR                   |
| 465            | 75                       | NR                   | 595            | 993                      | NR                   | 725            | 76                       | NR                   | 855            | 2                        | NR                   | 985            | 0                        | NR                   |
| 470            | 50                       | NR                   | 600            | 999                      | NR                   | 730            | 65                       | NR                   | 860            | 2                        | NR                   | 990            | 0                        | NR                   |
| 475            | 40                       | NR                   | 605            | 988                      | NR                   | 735            | 57                       | NR                   | 865            | 2                        | NR                   | 995            | 0                        | NR                   |
| 480            | 38                       | NR                   | 610            | 967                      | NR                   | 740            | 50                       | NR                   | 870            | 1                        | NR                   | 1000           | 0                        | NR                   |
| 485            | 41                       | NR                   | 615            | 930                      | NR                   | 745            | 45                       | NR                   | 875            | 1                        | NR                   |                |                          |                      |

REPORT NUMBER: SP1-2407-176-12

**Melanopic Flux vs. Wavelength**



**Melanopic Lumens: NR**

**M/P: 1.71**

| λ (nm) | Power W <sup>^</sup> /nm | Lumens (φ/nm) | λ (nm) | Power W <sup>^</sup> /nm | Lumens (φ/nm) | λ (nm) | Power W <sup>^</sup> /nm | Lumens (φ/nm) | λ (nm) | Power W <sup>^</sup> /nm | Lumens (φ/nm) | λ (nm) | Power W <sup>^</sup> /nm | Lumens (φ/nm) |
|--------|--------------------------|---------------|--------|--------------------------|---------------|--------|--------------------------|---------------|--------|--------------------------|---------------|--------|--------------------------|---------------|
| 360    | 0                        | NR            | 490    | 54                       | NR            | 620    | 887                      | NR            | 750    | 40                       | NR            | 880    | 1                        | NR            |
| 365    | 0                        | NR            | 495    | 80                       | NR            | 625    | 838                      | NR            | 755    | 35                       | NR            | 885    | 1                        | NR            |
| 370    | 0                        | NR            | 500    | 119                      | NR            | 630    | 790                      | NR            | 760    | 31                       | NR            | 890    | 0                        | NR            |
| 375    | 0                        | NR            | 505    | 171                      | NR            | 635    | 735                      | NR            | 765    | 27                       | NR            | 895    | 0                        | NR            |
| 380    | 0                        | NR            | 510    | 230                      | NR            | 640    | 681                      | NR            | 770    | 24                       | NR            | 900    | 0                        | NR            |
| 385    | 0                        | NR            | 515    | 295                      | NR            | 645    | 624                      | NR            | 775    | 21                       | NR            | 905    | 0                        | NR            |
| 390    | 1                        | NR            | 520    | 354                      | NR            | 650    | 567                      | NR            | 780    | 18                       | NR            | 910    | 0                        | NR            |
| 395    | 2                        | NR            | 525    | 408                      | NR            | 655    | 512                      | NR            | 785    | 15                       | NR            | 915    | 0                        | NR            |
| 400    | 5                        | NR            | 530    | 457                      | NR            | 660    | 459                      | NR            | 790    | 13                       | NR            | 920    | 0                        | NR            |
| 405    | 9                        | NR            | 535    | 500                      | NR            | 665    | 410                      | NR            | 795    | 12                       | NR            | 925    | 0                        | NR            |
| 410    | 20                       | NR            | 540    | 541                      | NR            | 670    | 363                      | NR            | 800    | 10                       | NR            | 930    | 0                        | NR            |
| 415    | 42                       | NR            | 545    | 581                      | NR            | 675    | 320                      | NR            | 805    | 9                        | NR            | 935    | 0                        | NR            |
| 420    | 81                       | NR            | 550    | 620                      | NR            | 680    | 283                      | NR            | 810    | 8                        | NR            | 940    | 0                        | NR            |
| 425    | 145                      | NR            | 555    | 664                      | NR            | 685    | 249                      | NR            | 815    | 7                        | NR            | 945    | 0                        | NR            |
| 430    | 225                      | NR            | 560    | 709                      | NR            | 690    | 219                      | NR            | 820    | 6                        | NR            | 950    | 0                        | NR            |
| 435    | 309                      | NR            | 565    | 758                      | NR            | 695    | 191                      | NR            | 825    | 5                        | NR            | 955    | 0                        | NR            |
| 440    | 373                      | NR            | 570    | 810                      | NR            | 700    | 166                      | NR            | 830    | 5                        | NR            | 960    | 0                        | NR            |
| 445    | 405                      | NR            | 575    | 861                      | NR            | 705    | 144                      | NR            | 835    | 4                        | NR            | 965    | 0                        | NR            |
| 450    | 316                      | NR            | 580    | 908                      | NR            | 710    | 124                      | NR            | 840    | 4                        | NR            | 970    | 0                        | NR            |
| 455    | 180                      | NR            | 585    | 948                      | NR            | 715    | 106                      | NR            | 845    | 3                        | NR            | 975    | 0                        | NR            |
| 460    | 111                      | NR            | 590    | 978                      | NR            | 720    | 90                       | NR            | 850    | 3                        | NR            | 980    | 0                        | NR            |
| 465    | 75                       | NR            | 595    | 993                      | NR            | 725    | 76                       | NR            | 855    | 2                        | NR            | 985    | 0                        | NR            |
| 470    | 50                       | NR            | 600    | 999                      | NR            | 730    | 65                       | NR            | 860    | 2                        | NR            | 990    | 0                        | NR            |
| 475    | 40                       | NR            | 605    | 988                      | NR            | 735    | 57                       | NR            | 865    | 2                        | NR            | 995    | 0                        | NR            |
| 480    | 38                       | NR            | 610    | 967                      | NR            | 740    | 50                       | NR            | 870    | 1                        | NR            | 1000   | 0                        | NR            |
| 485    | 41                       | NR            | 615    | 930                      | NR            | 745    | 45                       | NR            | 875    | 1                        | NR            |        |                          |               |

**Summary**

$R_f = 70.4$   
 $R_g = 96.7$   
 CIE  $R_a = 70.4$   
 $R_9 = -24.6$



**Color Vector Graphics**



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

|            |            |            |            |
|------------|------------|------------|------------|
| CES01 = 86 | CES26 = 56 | CES51 = 78 | CES76 = 50 |
| CES02 = 63 | CES27 = 77 | CES52 = 80 | CES77 = 76 |
| CES03 = 31 | CES28 = 81 | CES53 = 67 | CES78 = 57 |
| CES04 = 71 | CES29 = 48 | CES54 = 78 | CES79 = 82 |
| CES05 = 50 | CES30 = 52 | CES55 = 75 | CES80 = 82 |
| CES06 = 52 | CES31 = 54 | CES56 = 65 | CES81 = 72 |
| CES07 = 42 | CES32 = 52 | CES57 = 62 | CES82 = 92 |
| CES08 = 41 | CES33 = 57 | CES58 = 65 | CES83 = 85 |
| CES09 = 29 | CES34 = 69 | CES59 = 84 | CES84 = 90 |
| CES10 = 77 | CES35 = 84 | CES60 = 90 | CES85 = 84 |
| CES11 = 60 | CES36 = 82 | CES61 = 84 | CES86 = 63 |
| CES12 = 66 | CES37 = 77 | CES62 = 73 | CES87 = 78 |
| CES13 = 43 | CES38 = 59 | CES63 = 69 | CES88 = 74 |
| CES14 = 74 | CES39 = 92 | CES64 = 67 | CES89 = 66 |
| CES15 = 71 | CES40 = 87 | CES65 = 64 | CES90 = 69 |
| CES16 = 48 | CES41 = 78 | CES66 = 61 | CES91 = 95 |
| CES17 = 51 | CES42 = 79 | CES67 = 59 | CES92 = 67 |
| CES18 = 57 | CES43 = 68 | CES68 = 67 | CES93 = 80 |
| CES19 = 73 | CES44 = 98 | CES69 = 77 | CES94 = 54 |
| CES20 = 67 | CES45 = 77 | CES70 = 60 | CES95 = 75 |
| CES21 = 88 | CES46 = 71 | CES71 = 57 | CES96 = 78 |
| CES22 = 80 | CES47 = 66 | CES72 = 85 | CES97 = 79 |
| CES23 = 92 | CES48 = 54 | CES73 = 52 | CES98 = 71 |
| CES24 = 92 | CES49 = 69 | CES74 = 92 | CES99 = 63 |
| CES25 = 73 | CES50 = 78 | CES75 = 58 |            |

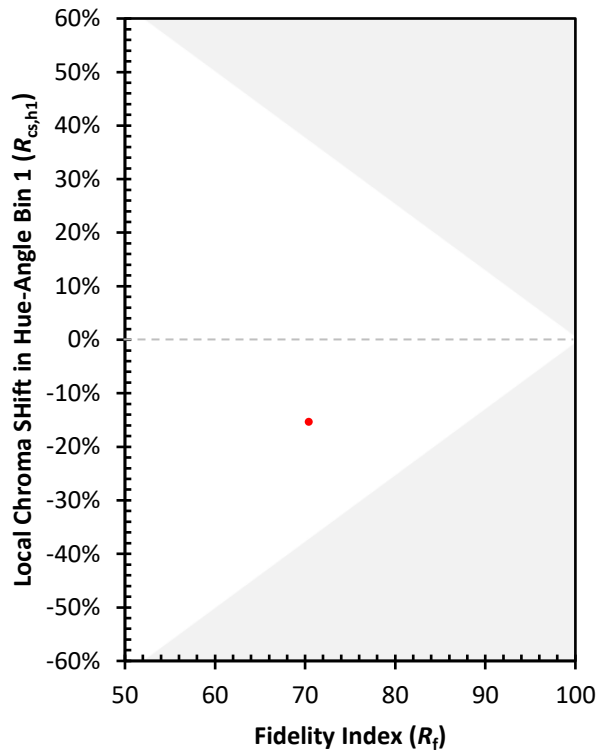




Color Rendition by Hue-Angle Bin



Measure Comparisons



(END OF REPORT)