

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: McGRAW-EDISON

Report Number: P437071

Luminaire Tested: **ISC-SA1A-827-U-T3**

Issue Date: 12/9/2020

Test Information

Test Method: LM-79-08
Report Number: P437071
TEST IS SCALED FROM IESNA LM-79-08 TEST DATA (G3-2011-074-8)
Test Lab: INNOVATION CENTER
Issue Date: 12/9/2020
Manufacturer: COOPER LIGHTING SOLUTIONS (FORMERLY EATON)
Product Line: McGRAW-EDISON
Catalog Number: ISC-SA1A-827-U-T3
Description: IMPACT ELITE LED CYLINDER LUMINAIRE
(1) 80 CRI, 2700K, 350mA LIGHTSQUARE WITH 16 LEDS AND TYPE III OPTICS
Light Source: -
Ballast/Driver: ELECTRONIC DRIVER

Summary

Lumens per Lamp: N/A
Luminaire Lumens: 2042 lumens
Efficiency: N/A
Efficacy: 101.6 lumens/watt
Luminous Opening: Rectangular (W 0.5' x L: 0.5' x H: 0')
IES Classification: Type III - Medium
BUG Rating: B1 - U0 - G1

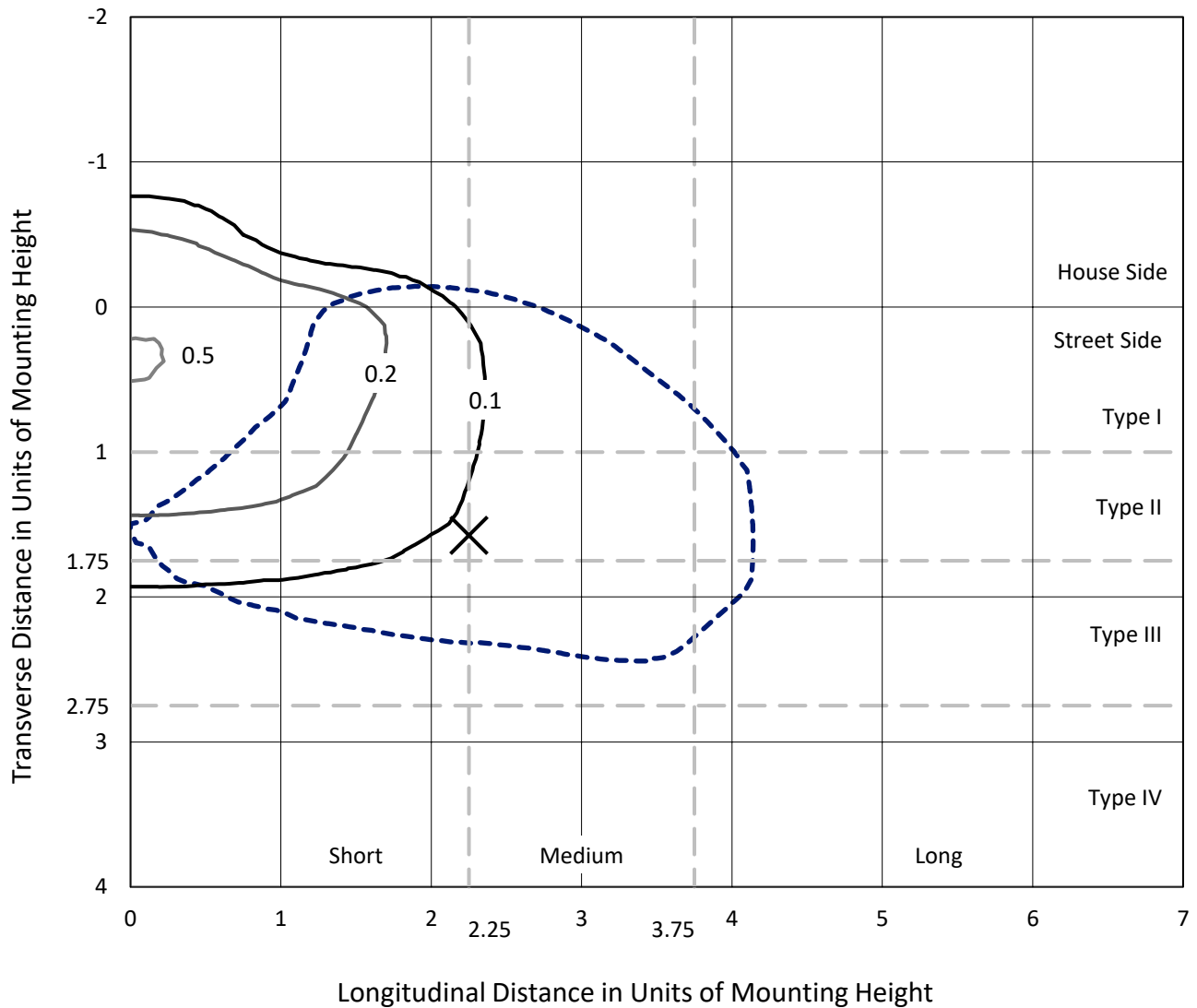
Input Watts (W): 20.1
Input Voltage (V): NR
Input Current (Ain): NR
Voltage Rise (V): NR
Power Factor: NR
Total Harmonic Distortion (THDi): NR
Frequency (hertz): 60
Stabilization Time: NR
Operation Time: NR
Ambient Temperature (°C): NR
Test Distance: 28.75 FT



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Iso-Footcandle Lines of Horizontal Illumination

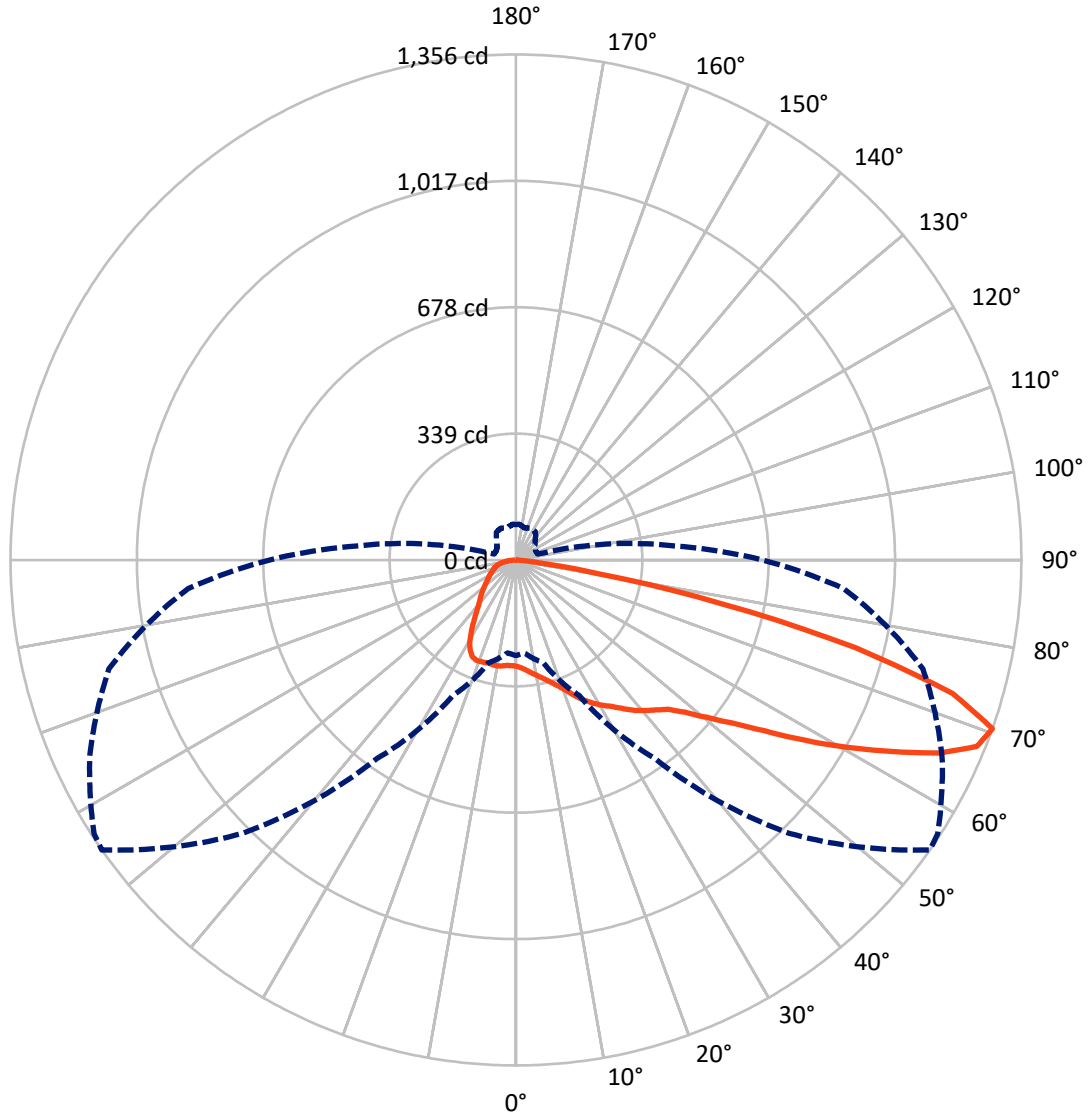
✕ Max cd
 - - - 1/2 Max cd



Based on 25 foot mounting height. Maximum calculated value = 0.5 fc
 Type III - Medium - N/A

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Luminous Intensity Polar Plot



— Vertical Plane Through 55-Deg Lateral - - - Horizontal Cone Through 70-Deg Vertical

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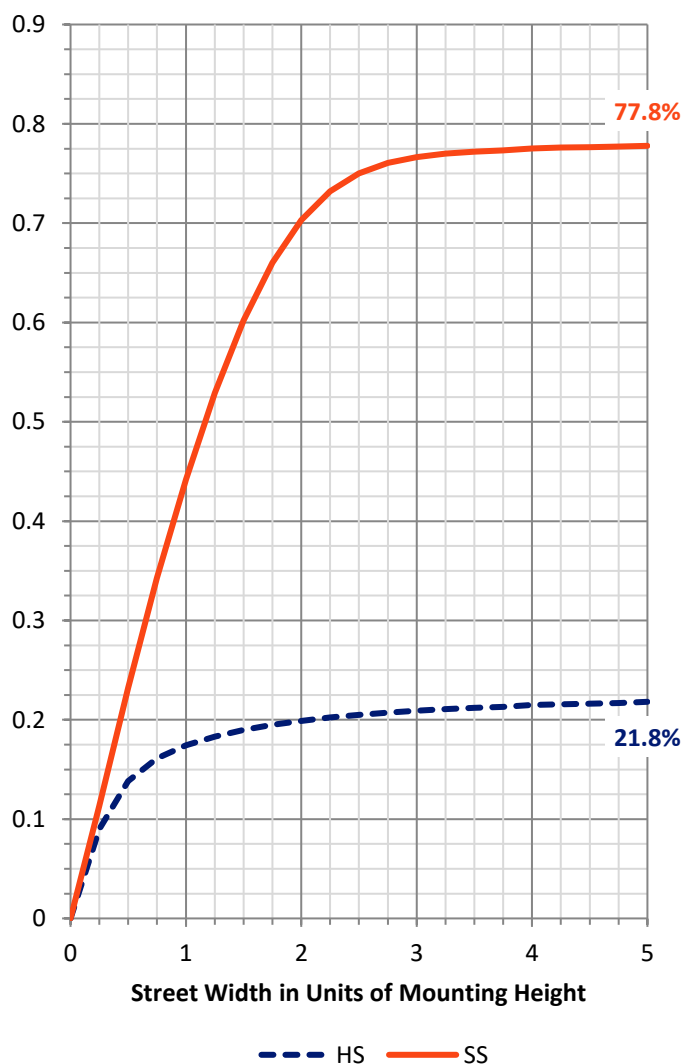
FLUX DISTRIBUTION:

| | | Downward | Upward | Total |
|--------------------|-----------|----------|--------|--------|
| House Side | Lumens | 451.7 | 0.0 | 451.7 |
| | % Fixture | 22.1 | 0.0 | 22.1 |
| Street Side | Lumens | 1590.3 | 0.0 | 1590.3 |
| | % Fixture | 77.9 | 0.0 | 77.9 |
| Total | Lumens | 2042.0 | 0.0 | 2042.0 |
| | % Fixture | 100.0 | 0.0 | 100.0 |

ZONAL LUMENS:

| Zone | Lumens | % Fixture |
|-----------|--------|-----------|
| 0°-10° | 28.1 | 1.4 |
| 10°-20° | 89.4 | 4.4 |
| 20°-30° | 155.5 | 7.6 |
| 30°-40° | 219.1 | 10.7 |
| 40°-50° | 290.4 | 14.2 |
| 50°-60° | 423.1 | 20.7 |
| 60°-70° | 528.0 | 25.9 |
| 70°-80° | 281.2 | 13.8 |
| 80°-90° | 27.1 | 1.3 |
| 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° | 2042.0 | 100.0 |
| 0°-180° | 2042.0 | 100.0 |

Coefficient of Utilization



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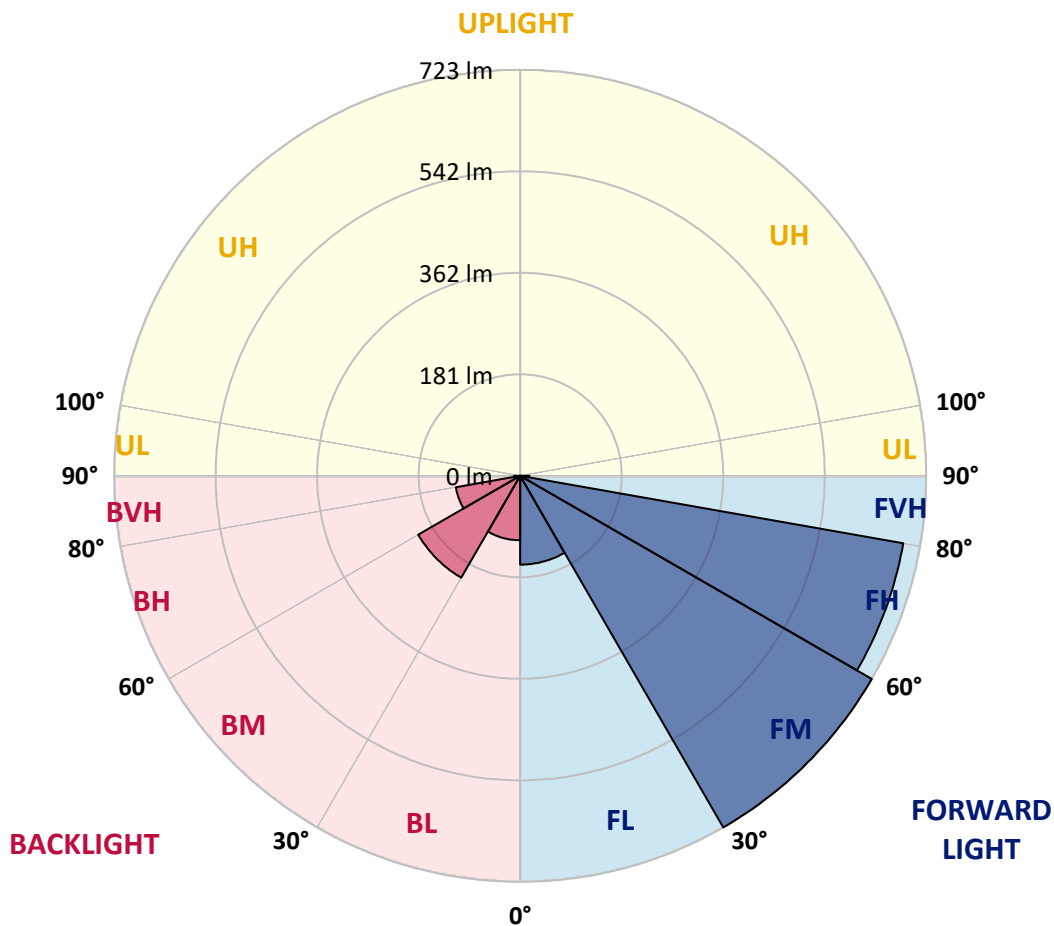
CATALOG NUMBER: ISC-SA1A-827-U-T3

LUMINAIRE CLASSIFICATION SYSTEM LUMEN TABLE AND BUG RATING:

| Zone | Lumens | % Fixture | Zone Rating/Lumen Limit | | |
|----------------|--------|-----------|-------------------------|------|---------|
| | | | B | U | G |
| FL (0°-30°) | 158.2 | 7.7 | | | |
| FM (30°-60°) | 723.1 | 35.4 | | | |
| FH (60°-80°) | 692.9 | 33.9 | | | G1/1800 |
| FVH (80°-90°) | 16.2 | 0.8 | | | G1/100 |
| BL (0°-30°) | 114.8 | 5.6 | B1/500 | | |
| BM (30°-60°) | 209.6 | 10.3 | B0/220 | | |
| BH (60°-80°) | 116.4 | 5.7 | B1/500 | | G1/500 |
| BVH (80°-90°) | 10.9 | 0.5 | | | G1/100 |
| UL (90°-100°) | 0.0 | 0.0 | | U0/0 | |
| UH (100°-180°) | 0.0 | 0.0 | | U0/0 | |

BUG Rating: B1-U0-G1

Type III Medium





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CANDELA DISTRIBUTION (FULL):

| | 0° | 5° | 15° | 25° | 35° | 45° | 55° | 57° | 65° | 75° | 85° |
|-------|-------|-------|-------|-------|-------|--------|--------|--------|--------|--------|--------|
| 0° | 285.2 | 285.2 | 285.2 | 285.2 | 285.2 | 285.2 | 285.2 | 285.2 | 285.2 | 285.2 | 285.2 |
| 2.5° | 294.7 | 294.0 | 294.0 | 293.3 | 292.5 | 291.8 | 290.3 | 288.8 | 288.8 | 287.4 | 287.4 |
| 5° | 302.1 | 300.6 | 301.3 | 300.6 | 300.6 | 299.1 | 296.9 | 296.9 | 296.2 | 292.5 | 289.6 |
| 7.5° | 309.4 | 308.7 | 308.7 | 309.4 | 308.7 | 307.2 | 306.5 | 305.8 | 302.8 | 298.4 | 294.0 |
| 10° | 319.7 | 319.7 | 319.7 | 319.0 | 319.0 | 317.5 | 315.3 | 315.3 | 311.6 | 306.5 | 301.3 |
| 12.5° | 335.2 | 334.4 | 333.7 | 333.7 | 331.5 | 328.5 | 326.3 | 326.3 | 324.1 | 316.0 | 309.4 |
| 15° | 352.8 | 350.6 | 349.1 | 349.1 | 346.2 | 341.0 | 338.8 | 339.6 | 337.4 | 327.8 | 318.2 |
| 17.5° | 370.4 | 370.4 | 369.0 | 365.3 | 361.6 | 357.9 | 352.8 | 354.3 | 352.1 | 342.5 | 330.0 |
| 20° | 386.6 | 385.1 | 385.1 | 382.9 | 377.8 | 373.4 | 370.4 | 369.7 | 368.2 | 357.9 | 343.2 |
| 22.5° | 404.2 | 403.5 | 401.3 | 399.8 | 396.2 | 394.0 | 392.5 | 392.5 | 386.6 | 372.6 | 353.5 |
| 25° | 425.6 | 424.8 | 424.8 | 418.9 | 416.0 | 412.3 | 414.5 | 412.3 | 409.4 | 388.8 | 364.6 |
| 27.5° | 446.9 | 446.9 | 446.1 | 443.2 | 435.1 | 432.9 | 434.4 | 432.9 | 432.2 | 404.2 | 374.8 |
| 30° | 469.7 | 468.9 | 466.7 | 466.0 | 457.9 | 452.0 | 451.3 | 448.3 | 448.3 | 418.2 | 382.2 |
| 32.5° | 488.8 | 488.0 | 489.5 | 486.6 | 481.4 | 473.3 | 468.2 | 468.2 | 463.0 | 432.2 | 391.0 |
| 35° | 506.4 | 507.9 | 507.9 | 506.4 | 502.0 | 493.9 | 488.8 | 490.2 | 482.9 | 444.7 | 402.0 |
| 37.5° | 526.2 | 524.8 | 522.6 | 521.1 | 515.2 | 511.5 | 511.5 | 513.0 | 502.0 | 457.9 | 416.7 |
| 40° | 530.7 | 534.3 | 539.5 | 533.6 | 530.7 | 529.9 | 531.4 | 527.7 | 516.7 | 478.5 | 441.7 |
| 42.5° | 539.5 | 542.4 | 552.0 | 549.8 | 547.6 | 549.8 | 549.8 | 544.6 | 539.5 | 506.4 | 475.5 |
| 45° | 561.5 | 566.7 | 574.0 | 574.8 | 574.0 | 577.7 | 571.1 | 570.3 | 569.6 | 546.8 | 521.1 |
| 47.5° | 585.8 | 591.7 | 608.6 | 606.4 | 614.4 | 621.8 | 610.0 | 609.3 | 611.5 | 600.5 | 579.2 |
| 50° | 614.4 | 620.3 | 641.6 | 649.7 | 671.8 | 685.0 | 663.7 | 654.1 | 669.6 | 668.8 | 652.7 |
| 52.5° | 647.5 | 654.9 | 669.6 | 697.5 | 735.0 | 748.9 | 726.2 | 718.1 | 736.5 | 745.3 | 730.6 |
| 55° | 670.3 | 676.2 | 699.0 | 742.3 | 803.3 | 821.7 | 808.5 | 801.1 | 821.0 | 828.3 | 812.9 |
| 57.5° | 678.4 | 679.9 | 713.7 | 782.0 | 866.5 | 913.6 | 911.4 | 906.2 | 898.1 | 916.5 | 912.1 |
| 60° | 664.4 | 672.5 | 715.9 | 799.7 | 923.1 | 1012.1 | 1020.2 | 1008.4 | 998.1 | 1002.5 | 987.8 |
| 62.5° | 646.0 | 652.7 | 698.2 | 801.9 | 961.4 | 1101.0 | 1131.1 | 1117.9 | 1092.2 | 1080.4 | 1045.9 |
| 65° | 581.4 | 581.4 | 626.2 | 757.0 | 954.7 | 1173.8 | 1248.0 | 1225.2 | 1178.2 | 1136.3 | 1043.7 |
| 67.5° | 444.7 | 442.5 | 485.8 | 621.8 | 861.4 | 1181.1 | 1334.0 | 1322.2 | 1246.5 | 1157.6 | 1002.5 |
| 70° | 256.5 | 249.9 | 285.9 | 401.3 | 650.5 | 1037.1 | 1356.0 | 1349.4 | 1262.0 | 1130.4 | 882.7 |
| 72.5° | 88.9 | 94.8 | 118.3 | 170.5 | 357.9 | 746.7 | 1225.2 | 1239.2 | 1188.5 | 1026.8 | 709.3 |
| 75° | 46.3 | 46.3 | 54.4 | 74.2 | 151.4 | 385.1 | 941.5 | 984.9 | 995.9 | 859.2 | 506.4 |
| 77.5° | 33.8 | 34.5 | 39.0 | 47.8 | 72.0 | 147.7 | 565.2 | 606.4 | 689.4 | 591.7 | 292.5 |
| 80° | 22.8 | 23.5 | 27.9 | 31.6 | 44.1 | 57.3 | 225.6 | 247.7 | 341.8 | 264.6 | 113.2 |
| 82.5° | 16.9 | 17.6 | 17.6 | 18.4 | 24.3 | 26.5 | 59.5 | 73.5 | 117.6 | 78.6 | 40.4 |
| 85° | 3.7 | 3.7 | 7.3 | 7.3 | 7.3 | 7.3 | 13.2 | 14.7 | 22.0 | 23.5 | 13.2 |
| 87.5° | 0.0 | 0.0 | 0.0 | 0.0 | 0.7 | 0.7 | 1.5 | 1.5 | 1.5 | 2.2 | 2.2 |
| 90° | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |



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CANDELA DISTRIBUTION (continued):

| | 90° | 95° | 105° | 115° | 125° | 135° | 145° | 155° | 165° | 175° | 180° |
|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|
| 0° | 285.2 | 285.2 | 285.2 | 285.2 | 285.2 | 285.2 | 285.2 | 285.2 | 285.2 | 285.2 | 285.2 |
| 2.5° | 286.6 | 285.9 | 285.2 | 284.4 | 283.7 | 283.0 | 282.2 | 283.0 | 283.0 | 284.4 | 285.2 |
| 5° | 288.8 | 286.6 | 285.9 | 284.4 | 283.7 | 283.7 | 283.7 | 284.4 | 285.2 | 285.9 | 286.6 |
| 7.5° | 292.5 | 291.8 | 289.6 | 286.6 | 285.9 | 285.9 | 284.4 | 284.4 | 284.4 | 285.9 | 285.9 |
| 10° | 299.1 | 296.9 | 294.0 | 291.1 | 288.8 | 284.4 | 280.8 | 277.8 | 279.3 | 281.5 | 281.5 |
| 12.5° | 306.5 | 302.8 | 299.1 | 294.0 | 288.1 | 280.8 | 277.1 | 277.8 | 277.8 | 280.0 | 280.8 |
| 15° | 316.0 | 313.1 | 305.0 | 296.2 | 285.9 | 280.0 | 278.6 | 277.1 | 277.1 | 278.6 | 280.0 |
| 17.5° | 326.3 | 321.2 | 310.9 | 297.7 | 287.4 | 280.8 | 277.8 | 271.9 | 269.0 | 268.3 | 269.7 |
| 20° | 335.9 | 330.0 | 316.0 | 299.1 | 288.8 | 280.0 | 269.7 | 260.2 | 252.8 | 251.4 | 249.9 |
| 22.5° | 344.0 | 336.6 | 319.7 | 302.1 | 288.8 | 272.7 | 255.0 | 241.1 | 230.8 | 227.8 | 229.3 |
| 25° | 352.8 | 341.8 | 324.1 | 305.0 | 283.7 | 258.0 | 233.7 | 216.8 | 206.5 | 202.1 | 202.1 |
| 27.5° | 360.1 | 349.1 | 328.5 | 302.8 | 270.5 | 238.1 | 210.2 | 193.3 | 185.2 | 180.8 | 180.1 |
| 30° | 366.8 | 355.0 | 337.4 | 296.2 | 251.4 | 210.9 | 186.7 | 174.9 | 169.8 | 164.6 | 165.4 |
| 32.5° | 375.6 | 365.3 | 344.0 | 282.2 | 225.6 | 186.0 | 167.6 | 161.7 | 156.6 | 152.9 | 154.3 |
| 35° | 388.1 | 382.2 | 346.2 | 264.6 | 199.2 | 168.3 | 155.8 | 149.2 | 144.8 | 139.6 | 139.6 |
| 37.5° | 405.7 | 400.6 | 338.8 | 238.1 | 175.7 | 155.1 | 146.3 | 137.4 | 130.1 | 124.2 | 122.7 |
| 40° | 427.0 | 419.7 | 326.3 | 208.7 | 157.3 | 146.3 | 138.2 | 127.2 | 116.9 | 108.8 | 107.3 |
| 42.5° | 460.8 | 439.5 | 308.0 | 178.6 | 144.1 | 138.9 | 127.9 | 113.9 | 103.6 | 97.8 | 96.3 |
| 45° | 496.8 | 462.3 | 281.5 | 152.9 | 133.8 | 130.1 | 117.6 | 103.6 | 96.3 | 91.9 | 91.1 |
| 47.5° | 542.4 | 487.3 | 256.5 | 133.8 | 122.0 | 121.3 | 106.6 | 97.8 | 91.9 | 88.9 | 88.2 |
| 50° | 602.7 | 518.9 | 231.5 | 119.1 | 111.7 | 109.5 | 101.4 | 94.1 | 89.7 | 87.5 | 86.7 |
| 52.5° | 672.5 | 555.6 | 211.7 | 108.0 | 102.2 | 100.7 | 98.5 | 92.6 | 89.7 | 87.5 | 86.7 |
| 55° | 738.7 | 593.9 | 190.4 | 97.8 | 94.1 | 95.5 | 97.0 | 92.6 | 90.4 | 88.9 | 87.5 |
| 57.5° | 811.4 | 626.2 | 166.1 | 89.7 | 87.5 | 91.1 | 95.5 | 93.3 | 91.9 | 89.7 | 88.9 |
| 60° | 856.3 | 649.0 | 133.8 | 82.3 | 82.3 | 87.5 | 93.3 | 91.9 | 88.9 | 88.9 | 88.9 |
| 62.5° | 876.1 | 645.3 | 105.8 | 75.0 | 76.4 | 83.1 | 89.7 | 88.2 | 86.0 | 89.7 | 89.7 |
| 65° | 850.4 | 603.4 | 86.0 | 68.4 | 70.6 | 77.2 | 86.0 | 86.0 | 86.0 | 91.9 | 91.9 |
| 67.5° | 783.5 | 540.2 | 70.6 | 62.5 | 64.7 | 72.8 | 86.0 | 91.1 | 90.4 | 97.0 | 97.0 |
| 70° | 661.5 | 428.5 | 61.0 | 58.1 | 61.0 | 72.8 | 91.1 | 94.1 | 88.9 | 96.3 | 94.8 |
| 72.5° | 504.2 | 299.1 | 54.4 | 53.7 | 57.3 | 70.6 | 91.9 | 90.4 | 83.8 | 86.0 | 83.8 |
| 75° | 331.5 | 181.5 | 47.8 | 49.2 | 50.7 | 62.5 | 87.5 | 84.5 | 76.4 | 75.0 | 73.5 |
| 77.5° | 182.3 | 91.1 | 41.9 | 44.1 | 44.1 | 52.9 | 79.4 | 72.8 | 66.1 | 62.5 | 61.0 |
| 80° | 72.8 | 46.3 | 36.7 | 39.0 | 36.0 | 42.6 | 59.5 | 56.6 | 50.7 | 47.8 | 46.3 |
| 82.5° | 33.1 | 25.7 | 30.9 | 32.3 | 27.2 | 31.6 | 44.1 | 42.6 | 38.2 | 33.1 | 31.6 |
| 85° | 12.5 | 14.7 | 23.5 | 22.0 | 19.1 | 18.4 | 25.0 | 22.8 | 18.4 | 14.7 | 14.7 |
| 87.5° | 1.5 | 2.9 | 5.9 | 8.1 | 4.4 | 2.9 | 1.5 | 0.7 | 0.7 | 0.0 | 0.0 |
| 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



Test Information

Test Method: LM-79-2019
 Report Number: SP1-2407-157-9
 Test Lab: COOPER LIGHTING SOLUTIONS
 Photometer: SP1 - 76IN SPHERE
 Measurement Geometry: 4π
 Issue Date: 10/03/2024
 Manufacturer: COOPER LIGHTING SOLUTIONS
 Product Line: Invue
 Catalog Number: **EMM2-HTN-SA1A-827-U-5WQ**
 Description: Epic Modern Light Square 40W 5WQ Optic

Spectral Parameters

CCT (K): 2764
 CIE u': 0.2591
 CIE v': 0.5290
 Duv: 0.0020
 CIE x: 0.4581
 CIE y: 0.4156
 CIE z: 0.1263
 Peak Wavelength (nm): 603
 Dominant Wavelength (nm): 583
 Purity: 62.2537
 Rf: 84.7
 Rg: 94.6

| | | | |
|-----------|------|------|------|
| CRI (Ra): | 80.9 | | |
| R1: | 78.8 | R9: | -1.5 |
| R2: | 89.9 | R10: | 77.9 |
| R3: | 96.2 | R11: | 78.9 |
| R4: | 79.1 | R12: | 71.6 |
| R5: | 79.1 | R13: | 81.2 |
| R6: | 88.8 | R14: | 98.5 |
| R7: | 81.3 | R15: | 69.9 |
| R8: | 54.3 | | |



Test Conditions

Stabilization Time: 81M
 Operation Time: 2H 21M
 Sphere Temperature (°C): 25.2

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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 | 10/24/2023 | 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 2700K 4-step quadrangle

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Photopic Flux vs. Wavelength



Photopic Lumens: 4337.9

| λ (nm) | Power ($\mu\text{W}/\text{nm}$) | Lumens (ϕ/nm) | λ (nm) | Power ($\mu\text{W}/\text{nm}$) | Lumens (ϕ/nm) | λ (nm) | Power ($\mu\text{W}/\text{nm}$) | Lumens (ϕ/nm) | λ (nm) | Power ($\mu\text{W}/\text{nm}$) | Lumens (ϕ/nm) | λ (nm) | Power ($\mu\text{W}/\text{nm}$) | Lumens (ϕ/nm) |
|-------------------|--------------------------------------|--------------------------------|-------------------|--------------------------------------|--------------------------------|-------------------|--------------------------------------|--------------------------------|-------------------|--------------------------------------|--------------------------------|-------------------|--------------------------------------|--------------------------------|
| 360 | 0 | 0.0 | 490 | 18018 | 2.6 | 620 | 87426 | 22.8 | 750 | 2680 | 0.0 | 880 | 58 | 0.0 |
| 365 | 0 | 0.0 | 495 | 22295 | 3.9 | 625 | 83013 | 18.2 | 755 | 2287 | 0.0 | 885 | 46 | 0.0 |
| 370 | 0 | 0.0 | 500 | 26478 | 5.8 | 630 | 78077 | 14.1 | 760 | 1944 | 0.0 | 890 | 45 | 0.0 |
| 375 | 0 | 0.0 | 505 | 30524 | 8.5 | 635 | 72080 | 10.7 | 765 | 1653 | 0.0 | 895 | 41 | 0.0 |
| 380 | 0 | 0.0 | 510 | 33611 | 11.5 | 640 | 66249 | 7.9 | 770 | 1413 | 0.0 | 900 | 38 | 0.0 |
| 385 | 0 | 0.0 | 515 | 36490 | 15.2 | 645 | 59973 | 5.7 | 775 | 1198 | 0.0 | 905 | 33 | 0.0 |
| 390 | 0 | 0.0 | 520 | 38610 | 18.7 | 650 | 53972 | 3.9 | 780 | 1025 | 0.0 | 910 | 30 | 0.0 |
| 395 | 0 | 0.0 | 525 | 40511 | 21.9 | 655 | 48369 | 2.7 | 785 | 874 | 0.0 | 915 | 23 | 0.0 |
| 400 | 48 | 0.0 | 530 | 42223 | 24.9 | 660 | 42641 | 1.8 | 790 | 747 | 0.0 | 920 | 24 | 0.0 |
| 405 | 201 | 0.0 | 535 | 44137 | 27.6 | 665 | 37602 | 1.1 | 795 | 639 | 0.0 | 925 | 22 | 0.0 |
| 410 | 457 | 0.0 | 540 | 46032 | 30.0 | 670 | 32798 | 0.7 | 800 | 547 | 0.0 | 930 | 22 | 0.0 |
| 415 | 925 | 0.0 | 545 | 48553 | 32.5 | 675 | 28558 | 0.5 | 805 | 473 | 0.0 | 935 | 17 | 0.0 |
| 420 | 1816 | 0.0 | 550 | 51408 | 34.9 | 680 | 24782 | 0.3 | 810 | 401 | 0.0 | 940 | 13 | 0.0 |
| 425 | 3217 | 0.0 | 555 | 54711 | 37.4 | 685 | 21386 | 0.2 | 815 | 351 | 0.0 | 945 | 6 | 0.0 |
| 430 | 5520 | 0.0 | 560 | 58847 | 40.0 | 690 | 18413 | 0.1 | 820 | 307 | 0.0 | 950 | 10 | 0.0 |
| 435 | 9225 | 0.1 | 565 | 63386 | 42.4 | 695 | 15721 | 0.1 | 825 | 261 | 0.0 | 955 | 11 | 0.0 |
| 440 | 15522 | 0.2 | 570 | 68196 | 44.3 | 700 | 13432 | 0.0 | 830 | 228 | 0.0 | 960 | 8 | 0.0 |
| 445 | 27642 | 0.6 | 575 | 73613 | 46.0 | 705 | 11513 | 0.0 | 835 | 193 | 0.0 | 965 | 12 | 0.0 |
| 450 | 36602 | 0.9 | 580 | 79207 | 47.1 | 710 | 9780 | 0.0 | 840 | 174 | 0.0 | 970 | 3 | 0.0 |
| 455 | 28292 | 0.9 | 585 | 84248 | 47.0 | 715 | 8356 | 0.0 | 845 | 151 | 0.0 | 975 | 8 | 0.0 |
| 460 | 21166 | 0.9 | 590 | 88397 | 45.7 | 720 | 7161 | 0.0 | 850 | 123 | 0.0 | 980 | 2 | 0.0 |
| 465 | 19092 | 1.0 | 595 | 91428 | 43.4 | 725 | 6067 | 0.0 | 855 | 106 | 0.0 | 985 | 13 | 0.0 |
| 470 | 14951 | 0.9 | 600 | 93452 | 40.3 | 730 | 5164 | 0.0 | 860 | 95 | 0.0 | 990 | 16 | 0.0 |
| 475 | 12606 | 1.0 | 605 | 93959 | 36.4 | 735 | 4393 | 0.0 | 865 | 82 | 0.0 | 995 | 20 | 0.0 |
| 480 | 13323 | 1.3 | 610 | 93079 | 32.0 | 740 | 3694 | 0.0 | 870 | 77 | 0.0 | 1000 | 0 | 0.0 |
| 485 | 15164 | 1.8 | 615 | 90707 | 27.3 | 745 | 3157 | 0.0 | 875 | 65 | 0.0 | | | |

REPORT NUMBER: SP1-2407-157-9

Scotopic Flux vs. Wavelength



Scotopic Lumens: 5286.7

S/P: 1.22

| λ (nm) | Power ($\mu\text{W}/\text{nm}$) | Lumens (ϕ/nm) | λ (nm) | Power ($\mu\text{W}/\text{nm}$) | Lumens (ϕ/nm) | λ (nm) | Power ($\mu\text{W}/\text{nm}$) | Lumens (ϕ/nm) | λ (nm) | Power ($\mu\text{W}/\text{nm}$) | Lumens (ϕ/nm) | λ (nm) | Power ($\mu\text{W}/\text{nm}$) | Lumens (ϕ/nm) |
|-------------------|--------------------------------------|--------------------------------|-------------------|--------------------------------------|--------------------------------|-------------------|--------------------------------------|--------------------------------|-------------------|--------------------------------------|--------------------------------|-------------------|--------------------------------------|--------------------------------|
| 360 | 0 | 0.0 | 490 | 18018 | 75.9 | 620 | 87426 | 0.4 | 750 | 2680 | 0.0 | 880 | 58 | 0.0 |
| 365 | 0 | 0.0 | 495 | 22295 | 93.2 | 625 | 83013 | 0.2 | 755 | 2287 | 0.0 | 885 | 46 | 0.0 |
| 370 | 0 | 0.0 | 500 | 26478 | 107.8 | 630 | 78077 | 0.1 | 760 | 1944 | 0.0 | 890 | 45 | 0.0 |
| 375 | 0 | 0.0 | 505 | 30524 | 118.7 | 635 | 72080 | 0.1 | 765 | 1653 | 0.0 | 895 | 41 | 0.0 |
| 380 | 0 | 0.0 | 510 | 33611 | 122.2 | 640 | 66249 | 0.1 | 770 | 1413 | 0.0 | 900 | 38 | 0.0 |
| 385 | 0 | 0.0 | 515 | 36490 | 120.8 | 645 | 59973 | 0.0 | 775 | 1198 | 0.0 | 905 | 33 | 0.0 |
| 390 | 0 | 0.0 | 520 | 38610 | 113.9 | 650 | 53972 | 0.0 | 780 | 1025 | 0.0 | 910 | 30 | 0.0 |
| 395 | 0 | 0.0 | 525 | 40511 | 104.1 | 655 | 48369 | 0.0 | 785 | 874 | 0.0 | 915 | 23 | 0.0 |
| 400 | 48 | 0.0 | 530 | 42223 | 92.4 | 660 | 42641 | 0.0 | 790 | 747 | 0.0 | 920 | 24 | 0.0 |
| 405 | 201 | 0.0 | 535 | 44137 | 80.5 | 665 | 37602 | 0.0 | 795 | 639 | 0.0 | 925 | 22 | 0.0 |
| 410 | 457 | 0.1 | 540 | 46032 | 68.2 | 670 | 32798 | 0.0 | 800 | 547 | 0.0 | 930 | 22 | 0.0 |
| 415 | 925 | 0.3 | 545 | 48553 | 57.1 | 675 | 28558 | 0.0 | 805 | 473 | 0.0 | 935 | 17 | 0.0 |
| 420 | 1816 | 1.1 | 550 | 51408 | 46.7 | 680 | 24782 | 0.0 | 810 | 401 | 0.0 | 940 | 13 | 0.0 |
| 425 | 3217 | 2.5 | 555 | 54711 | 37.4 | 685 | 21386 | 0.0 | 815 | 351 | 0.0 | 945 | 6 | 0.0 |
| 430 | 5520 | 5.9 | 560 | 58847 | 29.4 | 690 | 18413 | 0.0 | 820 | 307 | 0.0 | 950 | 10 | 0.0 |
| 435 | 9225 | 12.5 | 565 | 63386 | 22.5 | 695 | 15721 | 0.0 | 825 | 261 | 0.0 | 955 | 11 | 0.0 |
| 440 | 15522 | 26.3 | 570 | 68196 | 16.9 | 700 | 13432 | 0.0 | 830 | 228 | 0.0 | 960 | 8 | 0.0 |
| 445 | 27642 | 55.2 | 575 | 73613 | 12.4 | 705 | 11513 | 0.0 | 835 | 193 | 0.0 | 965 | 12 | 0.0 |
| 450 | 36602 | 85.4 | 580 | 79207 | 9.0 | 710 | 9780 | 0.0 | 840 | 174 | 0.0 | 970 | 3 | 0.0 |
| 455 | 28292 | 75.1 | 585 | 84248 | 6.3 | 715 | 8356 | 0.0 | 845 | 151 | 0.0 | 975 | 8 | 0.0 |
| 460 | 21166 | 63.2 | 590 | 88397 | 4.4 | 720 | 7161 | 0.0 | 850 | 123 | 0.0 | 980 | 2 | 0.0 |
| 465 | 19092 | 63.2 | 595 | 91428 | 3.0 | 725 | 6067 | 0.0 | 855 | 106 | 0.0 | 985 | 13 | 0.0 |
| 470 | 14951 | 54.2 | 600 | 93452 | 2.0 | 730 | 5164 | 0.0 | 860 | 95 | 0.0 | 990 | 16 | 0.0 |
| 475 | 12606 | 48.8 | 605 | 93959 | 1.3 | 735 | 4393 | 0.0 | 865 | 82 | 0.0 | 995 | 20 | 0.0 |
| 480 | 13323 | 54.2 | 610 | 93079 | 0.9 | 740 | 3694 | 0.0 | 870 | 77 | 0.0 | 1000 | 0 | 0.0 |
| 485 | 15164 | 63.3 | 615 | 90707 | 0.5 | 745 | 3157 | 0.0 | 875 | 65 | 0.0 | | | |

REPORT NUMBER: SP1-2407-157-9

Melanopic Flux vs. Wavelength



Melanopic Lumens: 9797

M/P: 2.26

| λ (nm) | Power (µW/nm) | Lumens (φ/nm) | λ (nm) | Power (µW/nm) | Lumens (φ/nm) | λ (nm) | Power (µW/nm) | Lumens (φ/nm) | λ (nm) | Power (µW/nm) | Lumens (φ/nm) | λ (nm) | Power (µW/nm) | Lumens (φ/nm) |
|--------|---------------|---------------|--------|---------------|---------------|--------|---------------|---------------|--------|---------------|---------------|--------|---------------|---------------|
| 360 | 0 | 0.0 | 490 | 18018 | 27.7 | 620 | 87426 | 1.1 | 750 | 2680 | 0.0 | 880 | 58 | 0.0 |
| 365 | 0 | 0.0 | 495 | 22295 | 36.0 | 625 | 83013 | 0.7 | 755 | 2287 | 0.0 | 885 | 46 | 0.0 |
| 370 | 0 | 0.0 | 500 | 26478 | 44.2 | 630 | 78077 | 0.4 | 760 | 1944 | 0.0 | 890 | 45 | 0.0 |
| 375 | 0 | 0.0 | 505 | 30524 | 51.8 | 635 | 72080 | 0.3 | 765 | 1653 | 0.0 | 895 | 41 | 0.0 |
| 380 | 0 | 0.0 | 510 | 33611 | 57.0 | 640 | 66249 | 0.2 | 770 | 1413 | 0.0 | 900 | 38 | 0.0 |
| 385 | 0 | 0.0 | 515 | 36490 | 60.5 | 645 | 59973 | 0.1 | 775 | 1198 | 0.0 | 905 | 33 | 0.0 |
| 390 | 0 | 0.0 | 520 | 38610 | 61.4 | 650 | 53972 | 0.1 | 780 | 1025 | 0.0 | 910 | 30 | 0.0 |
| 395 | 0 | 0.0 | 525 | 40511 | 60.6 | 655 | 48369 | 0.0 | 785 | 874 | 0.0 | 915 | 23 | 0.0 |
| 400 | 48 | 0.0 | 530 | 42223 | 58.2 | 660 | 42641 | 0.0 | 790 | 747 | 0.0 | 920 | 24 | 0.0 |
| 405 | 201 | 0.0 | 535 | 44137 | 55.0 | 665 | 37602 | 0.0 | 795 | 639 | 0.0 | 925 | 22 | 0.0 |
| 410 | 457 | 0.0 | 540 | 46032 | 50.9 | 670 | 32798 | 0.0 | 800 | 547 | 0.0 | 930 | 22 | 0.0 |
| 415 | 925 | 0.1 | 545 | 48553 | 46.6 | 675 | 28558 | 0.0 | 805 | 473 | 0.0 | 935 | 17 | 0.0 |
| 420 | 1816 | 0.3 | 550 | 51408 | 42.0 | 680 | 24782 | 0.0 | 810 | 401 | 0.0 | 940 | 13 | 0.0 |
| 425 | 3217 | 0.8 | 555 | 54711 | 37.4 | 685 | 21386 | 0.0 | 815 | 351 | 0.0 | 945 | 6 | 0.0 |
| 430 | 5520 | 1.9 | 560 | 58847 | 32.9 | 690 | 18413 | 0.0 | 820 | 307 | 0.0 | 950 | 10 | 0.0 |
| 435 | 9225 | 4.1 | 565 | 63386 | 28.4 | 695 | 15721 | 0.0 | 825 | 261 | 0.0 | 955 | 11 | 0.0 |
| 440 | 15522 | 8.7 | 570 | 68196 | 24.1 | 700 | 13432 | 0.0 | 830 | 228 | 0.0 | 960 | 8 | 0.0 |
| 445 | 27642 | 18.5 | 575 | 73613 | 20.0 | 705 | 11513 | 0.0 | 835 | 193 | 0.0 | 965 | 12 | 0.0 |
| 450 | 36602 | 28.3 | 580 | 79207 | 16.3 | 710 | 9780 | 0.0 | 840 | 174 | 0.0 | 970 | 3 | 0.0 |
| 455 | 28292 | 24.7 | 585 | 84248 | 12.9 | 715 | 8356 | 0.0 | 845 | 151 | 0.0 | 975 | 8 | 0.0 |
| 460 | 21166 | 20.4 | 590 | 88397 | 9.8 | 720 | 7161 | 0.0 | 850 | 123 | 0.0 | 980 | 2 | 0.0 |
| 465 | 19092 | 20.1 | 595 | 91428 | 7.3 | 725 | 6067 | 0.0 | 855 | 106 | 0.0 | 985 | 13 | 0.0 |
| 470 | 14951 | 17.2 | 600 | 93452 | 5.3 | 730 | 5164 | 0.0 | 860 | 95 | 0.0 | 990 | 16 | 0.0 |
| 475 | 12606 | 15.7 | 605 | 93959 | 3.7 | 735 | 4393 | 0.0 | 865 | 82 | 0.0 | 995 | 20 | 0.0 |
| 480 | 13323 | 18.0 | 610 | 93079 | 2.5 | 740 | 3694 | 0.0 | 870 | 77 | 0.0 | 1000 | 0 | 0.0 |
| 485 | 15164 | 21.9 | 615 | 90707 | 1.7 | 745 | 3157 | 0.0 | 875 | 65 | 0.0 | | | |

Summary

$R_f = 84.7$
 $R_g = 94.6$
 $CIE R_a = 80.9$
 $R_g = -1.5$



Color Vector Graphics



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

| | | | |
|------------|------------|------------|------------|
| CES01 = 86 | CES26 = 84 | CES51 = 95 | CES76 = 81 |
| CES02 = 63 | CES27 = 95 | CES52 = 94 | CES77 = 84 |
| CES03 = 31 | CES28 = 94 | CES53 = 89 | CES78 = 81 |
| CES04 = 71 | CES29 = 87 | CES54 = 91 | CES79 = 89 |
| CES05 = 50 | CES30 = 94 | CES55 = 90 | CES80 = 89 |
| CES06 = 52 | CES31 = 89 | CES56 = 86 | CES81 = 69 |
| CES07 = 43 | CES32 = 82 | CES57 = 85 | CES82 = 96 |
| CES08 = 41 | CES33 = 91 | CES58 = 86 | CES83 = 93 |
| CES09 = 29 | CES34 = 92 | CES59 = 91 | CES84 = 92 |
| CES10 = 77 | CES35 = 96 | CES60 = 94 | CES85 = 76 |
| CES11 = 60 | CES36 = 90 | CES61 = 89 | CES86 = 65 |
| CES12 = 66 | CES37 = 96 | CES62 = 94 | CES87 = 84 |
| CES13 = 44 | CES38 = 98 | CES63 = 87 | CES88 = 86 |
| CES14 = 74 | CES39 = 98 | CES64 = 82 | CES89 = 73 |
| CES15 = 72 | CES40 = 95 | CES65 = 78 | CES90 = 88 |
| CES16 = 48 | CES41 = 96 | CES66 = 81 | CES91 = 82 |
| CES17 = 50 | CES42 = 97 | CES67 = 80 | CES92 = 64 |
| CES18 = 57 | CES43 = 91 | CES68 = 83 | CES93 = 78 |
| CES19 = 73 | CES44 = 99 | CES69 = 88 | CES94 = 59 |
| CES20 = 67 | CES45 = 93 | CES70 = 80 | CES95 = 74 |
| CES21 = 87 | CES46 = 89 | CES71 = 79 | CES96 = 83 |
| CES22 = 79 | CES47 = 92 | CES72 = 92 | CES97 = 88 |
| CES23 = 92 | CES48 = 83 | CES73 = 75 | CES98 = 83 |
| CES24 = 91 | CES49 = 90 | CES74 = 91 | CES99 = 74 |
| CES25 = 72 | CES50 = 94 | CES75 = 81 | |



Color Rendition by Hue-Angle Bin



Measure Comparisons



(END OF REPORT)