

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: P436927

Luminaire Tested: **ISS-SA1A-722-U-SL3-HSS**

Issue Date: 12/9/2020

Test Information

Test Method: LM-79-08
Report Number: P436927
TEST IS SCALED FROM IESNA LM-79-08 TEST DATA (G3-2011-074-17)
Test Lab: INNOVATION CENTER
Issue Date: 12/9/2020
Manufacturer: COOPER LIGHTING SOLUTIONS (FORMERLY EATON)
Product Line: McGRAW-EDISON
Catalog Number: ISS-SA1A-722-U-SL3-HSS
Description: IMPACT ELITE LED QUARTER SPHERE LUMINAIRE
(1) 70 CRI, 2200K, 350mA LIGHTSQUARE WITH 16 LEDS AND TYPE III SPILL
LIGHT ELIMINATOR OPTICS WITH HOUSE SIDE SHIELD
Light Source: -
Ballast/Driver: ELECTRONIC DRIVER

Summary

Lumens per Lamp: N/A
Luminaire Lumens: 1708 lumens
Efficiency: N/A
Efficacy: 85.0 lumens/watt
Luminous Opening: Rectangular (W 0.5' x L: 0.5' x H: 0')
IES Classification: Type III - Short
BUG Rating: B0 - U0 - G1

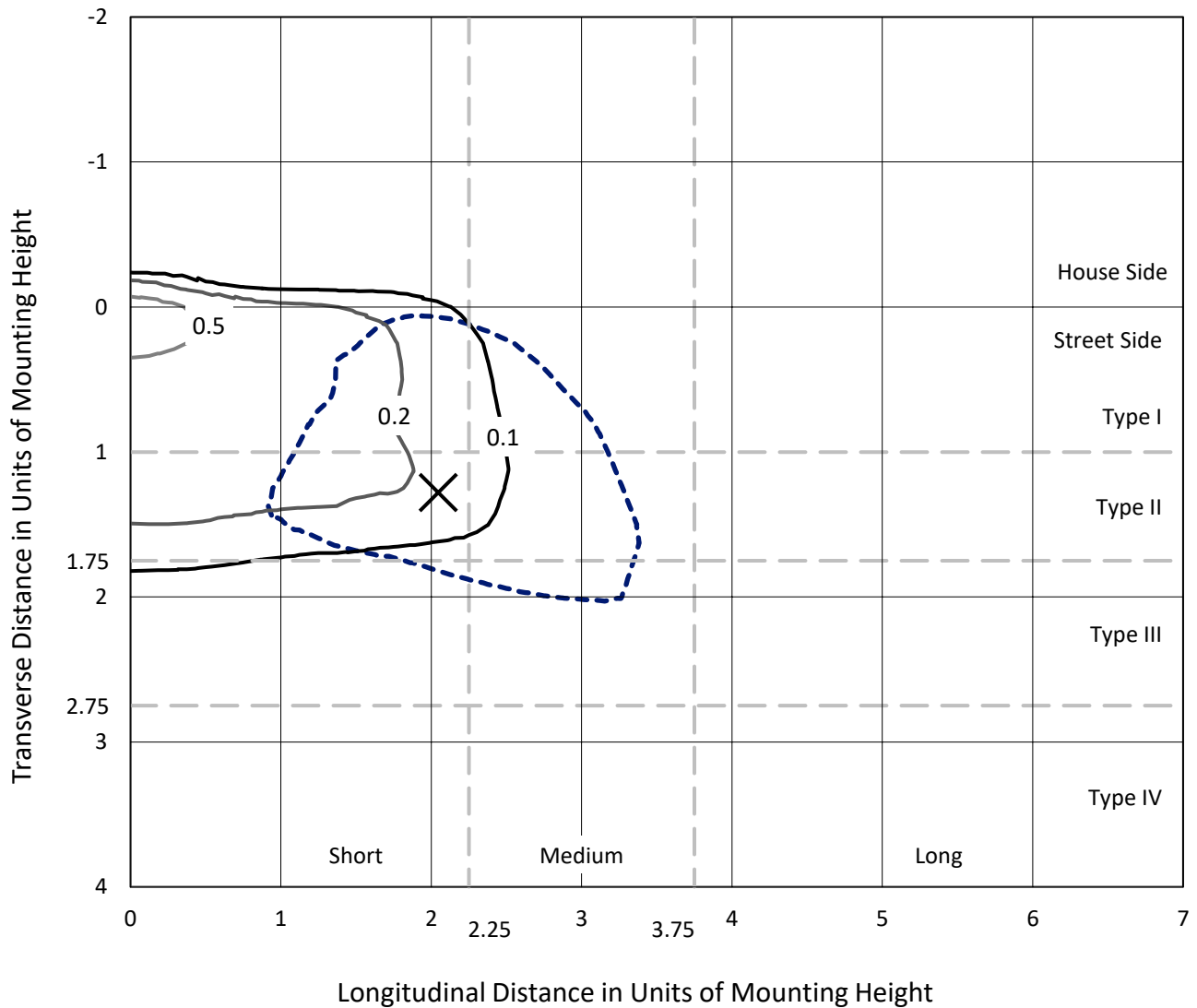
Input Watts (W): 20.1
Input Voltage (V): NR
Input Current (Ain): NR
Voltage Rise (V): NR
Power Factor: NR
Total Harmonic Distortion (THDi): NR
Frequency (hertz): 60
Stabilization Time: NR
Operation Time: NR
Ambient Temperature (°C): NR
Test Distance: 28.75 FT



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Iso-Footcandle Lines of Horizontal Illumination

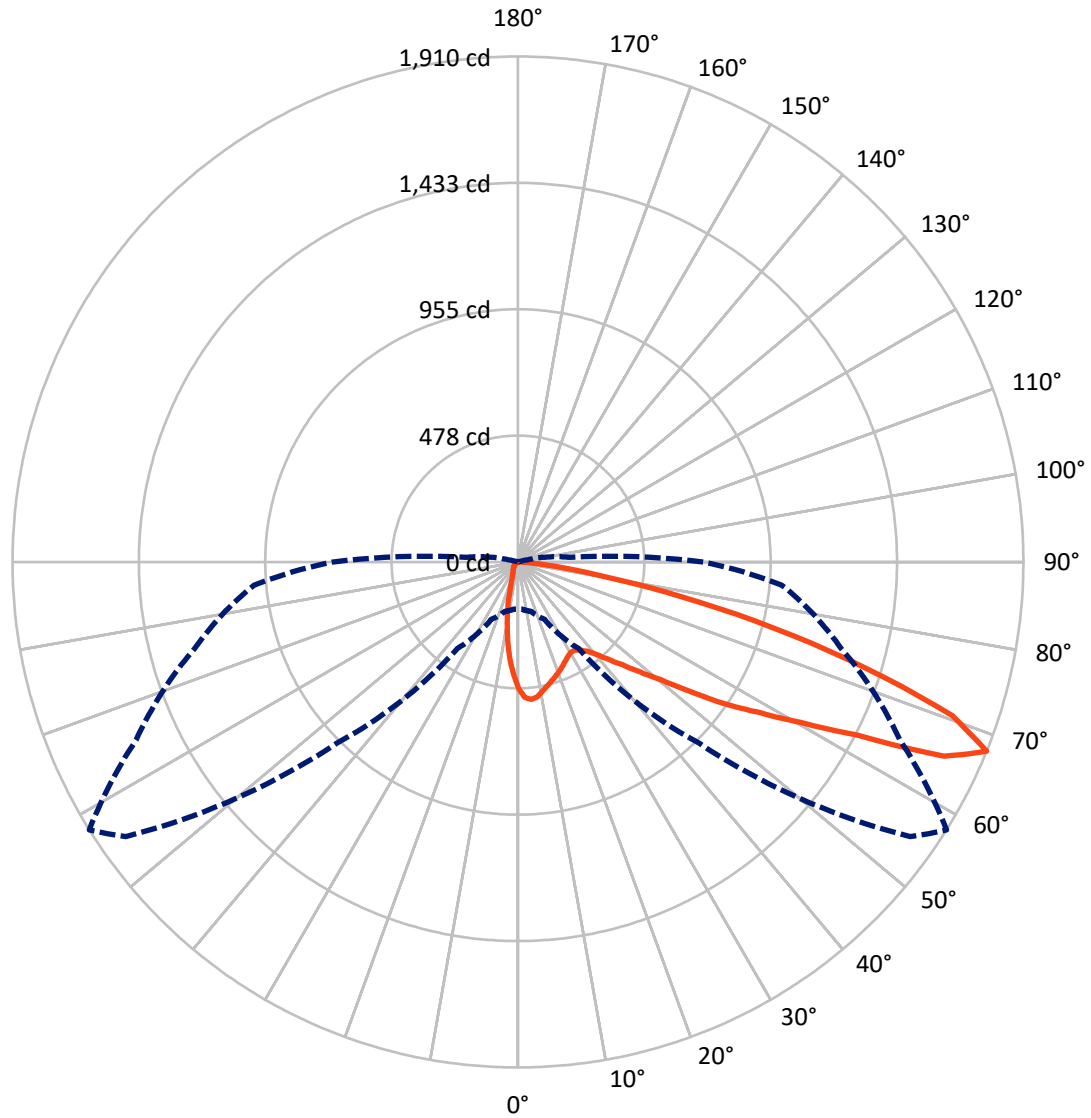
✕ Max cd
 - - - 1/2 Max cd



Based on 25 foot mounting height. Maximum calculated value = 0.8 fc
 Type III - Short - N/A

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Luminous Intensity Polar Plot



— Vertical Plane Through 58-Deg Lateral - - - Horizontal Cone Through 67.5-Deg Vertical

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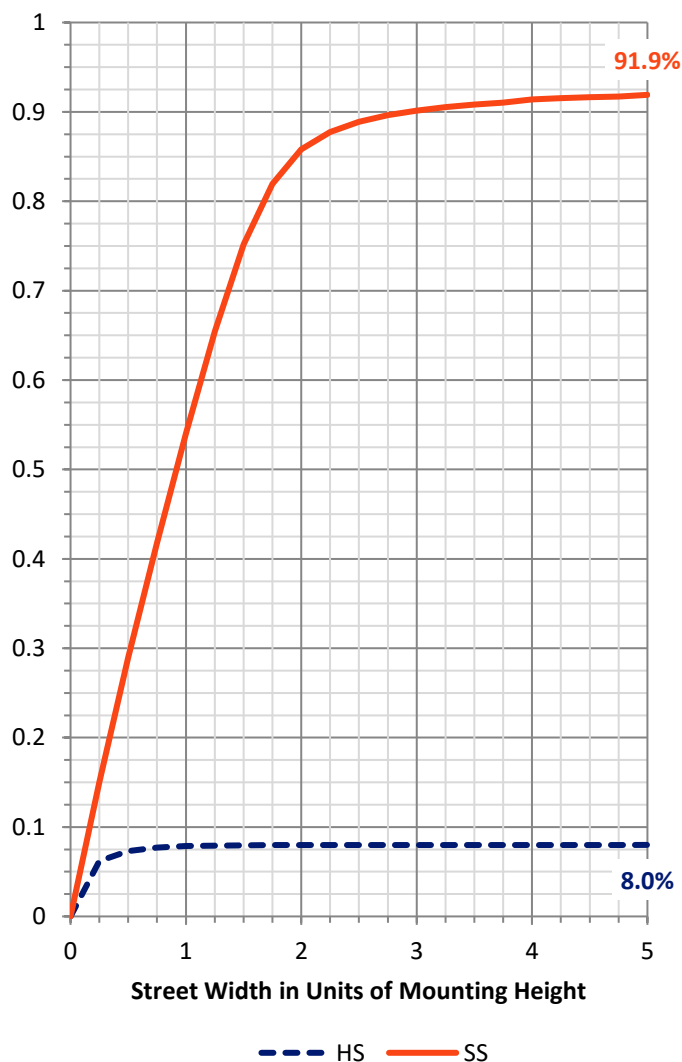
FLUX DISTRIBUTION:

| | | Downward | Upward | Total |
|--------------------|-----------|----------|--------|--------|
| House Side | Lumens | 137.7 | 0.0 | 137.7 |
| | % Fixture | 8.1 | 0.0 | 8.1 |
| Street Side | Lumens | 1570.3 | 0.0 | 1570.3 |
| | % Fixture | 91.9 | 0.0 | 91.9 |
| Total | Lumens | 1708.0 | 0.0 | 1708.0 |
| | % Fixture | 100.0 | 0.0 | 100.0 |

ZONAL LUMENS:

| Zone | Lumens | % Fixture |
|-----------|--------|-----------|
| 0°-10° | 38.5 | 2.3 |
| 10°-20° | 81.1 | 4.8 |
| 20°-30° | 109.8 | 6.4 |
| 30°-40° | 151.0 | 8.8 |
| 40°-50° | 236.4 | 13.8 |
| 50°-60° | 398.2 | 23.3 |
| 60°-70° | 472.6 | 27.7 |
| 70°-80° | 205.2 | 12.0 |
| 80°-90° | 15.1 | 0.9 |
| 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° | 1708.0 | 100.0 |
| 0°-180° | 1708.0 | 100.0 |

Coefficient of Utilization

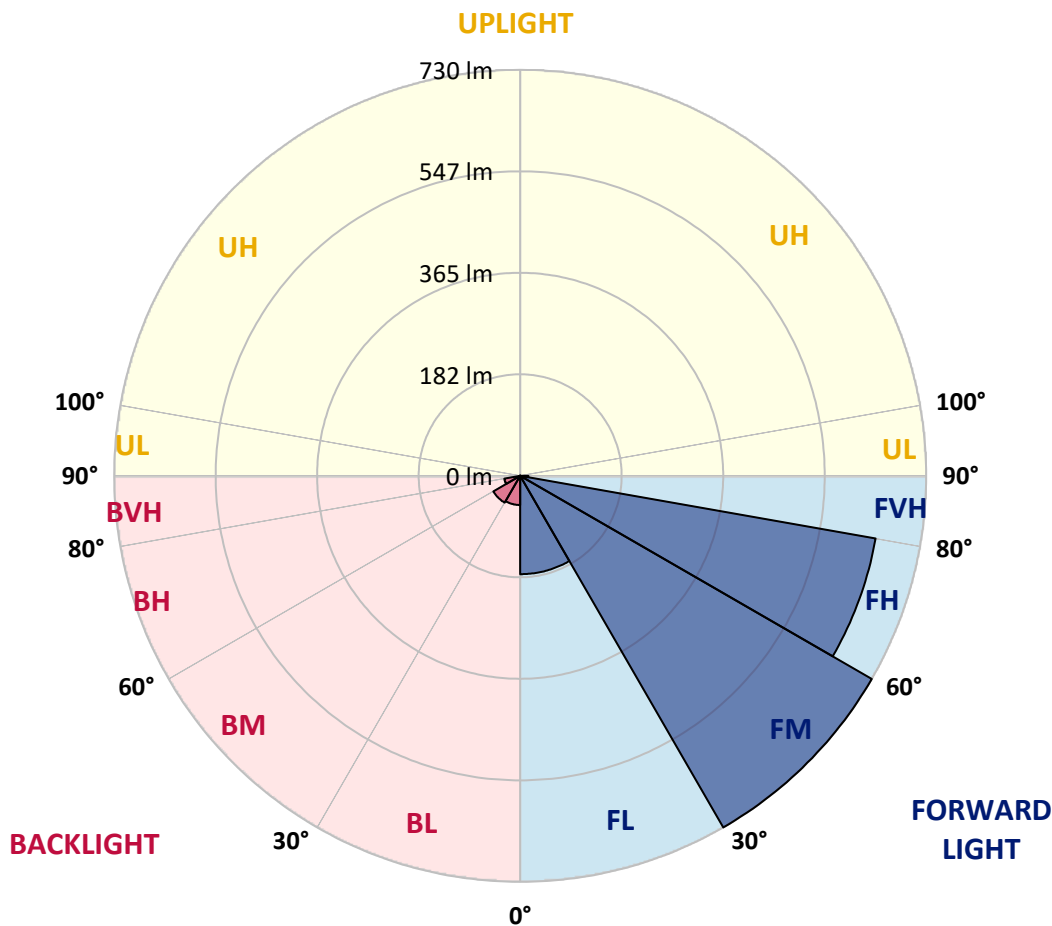


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LUMINAIRE CLASSIFICATION SYSTEM LUMEN TABLE AND BUG RATING:

| Zone | Lumens | % Fixture | Zone Rating/Lumen Limit | | |
|----------------|--------|-----------|-------------------------|------|--------|
| | | | B | U | G |
| FL (0°-30°) | 176.9 | 10.4 | | | |
| FM (30°-60°) | 729.9 | 42.7 | | | |
| FH (60°-80°) | 648.9 | 38.0 | | | G0/660 |
| FVH (80°-90°) | 14.6 | 0.9 | | | G1/100 |
| BL (0°-30°) | 52.6 | 3.1 | B0/110 | | |
| BM (30°-60°) | 55.7 | 3.3 | B0/220 | | |
| BH (60°-80°) | 29.0 | 1.7 | B0/110 | | G0/110 |
| BVH (80°-90°) | 0.5 | 0.0 | | | G0/10 |
| UL (90°-100°) | 0.0 | 0.0 | | U0/0 | |
| UH (100°-180°) | 0.0 | 0.0 | | U0/0 | |

BUG Rating: B0-U0-G1
 Type III Short





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CANDELA DISTRIBUTION (FULL):

| | 0° | 5° | 15° | 25° | 35° | 45° | 55° | 58° | 65° | 75° | 85° |
|-------|-------|-------|-------|-------|-------|--------|--------|--------|--------|--------|--------|
| 0° | 480.9 | 480.9 | 480.9 | 480.9 | 480.9 | 480.9 | 480.9 | 480.9 | 480.9 | 480.9 | 480.9 |
| 2.5° | 536.8 | 533.8 | 532.4 | 531.6 | 526.5 | 522.1 | 513.2 | 512.5 | 506.6 | 495.6 | 484.6 |
| 5° | 525.0 | 527.2 | 527.9 | 530.2 | 529.4 | 529.4 | 523.5 | 522.1 | 514.0 | 498.5 | 477.2 |
| 7.5° | 499.3 | 498.5 | 500.0 | 505.9 | 508.8 | 514.7 | 514.0 | 515.4 | 511.8 | 494.9 | 464.7 |
| 10° | 461.8 | 463.2 | 467.7 | 472.8 | 480.9 | 491.2 | 497.8 | 499.3 | 502.2 | 488.2 | 452.9 |
| 12.5° | 427.2 | 429.4 | 432.4 | 442.7 | 451.5 | 467.7 | 480.2 | 483.1 | 489.0 | 481.6 | 442.7 |
| 15° | 398.5 | 399.3 | 401.5 | 411.0 | 425.7 | 446.3 | 464.7 | 469.1 | 478.7 | 475.7 | 434.6 |
| 17.5° | 375.7 | 376.5 | 379.4 | 387.5 | 399.3 | 423.5 | 448.5 | 455.9 | 469.9 | 472.1 | 425.7 |
| 20° | 363.2 | 363.2 | 363.2 | 368.4 | 380.1 | 402.9 | 432.4 | 442.7 | 462.5 | 466.2 | 418.4 |
| 22.5° | 359.6 | 359.6 | 358.1 | 359.6 | 366.9 | 386.0 | 416.2 | 428.7 | 453.7 | 464.0 | 409.6 |
| 25° | 364.7 | 362.5 | 362.5 | 358.8 | 359.6 | 372.1 | 401.5 | 415.4 | 448.5 | 462.5 | 405.2 |
| 27.5° | 374.3 | 373.5 | 370.6 | 367.6 | 363.2 | 366.2 | 389.0 | 402.9 | 443.4 | 464.7 | 401.5 |
| 30° | 385.3 | 385.3 | 383.8 | 382.4 | 375.0 | 369.1 | 383.1 | 395.6 | 441.2 | 468.4 | 399.3 |
| 32.5° | 397.8 | 397.1 | 400.7 | 402.2 | 393.4 | 382.4 | 384.6 | 396.3 | 442.7 | 479.4 | 400.7 |
| 35° | 412.5 | 412.5 | 419.1 | 427.9 | 420.6 | 403.7 | 398.5 | 408.8 | 450.0 | 491.2 | 406.6 |
| 37.5° | 428.7 | 429.4 | 441.2 | 453.7 | 448.5 | 433.8 | 425.0 | 428.7 | 465.4 | 513.2 | 419.9 |
| 40° | 447.8 | 447.8 | 465.4 | 486.0 | 486.0 | 469.1 | 457.4 | 460.3 | 487.5 | 544.9 | 443.4 |
| 42.5° | 468.4 | 470.6 | 495.6 | 520.6 | 527.9 | 512.5 | 500.0 | 503.7 | 522.8 | 586.0 | 477.9 |
| 45° | 497.8 | 504.4 | 536.8 | 561.0 | 575.7 | 568.4 | 552.2 | 555.2 | 569.1 | 645.6 | 530.2 |
| 47.5° | 550.0 | 555.9 | 583.8 | 608.1 | 626.5 | 630.2 | 622.8 | 621.3 | 627.2 | 715.4 | 596.3 |
| 50° | 612.5 | 617.7 | 636.8 | 657.4 | 683.1 | 705.2 | 700.7 | 698.5 | 700.7 | 791.9 | 677.2 |
| 52.5° | 674.3 | 672.1 | 694.9 | 705.9 | 741.9 | 790.4 | 809.6 | 809.6 | 797.8 | 872.1 | 756.6 |
| 55° | 729.4 | 739.0 | 763.2 | 783.1 | 813.2 | 871.3 | 936.0 | 944.1 | 903.7 | 951.5 | 822.8 |
| 57.5° | 722.8 | 732.4 | 777.2 | 839.7 | 928.7 | 1007.4 | 1070.6 | 1072.1 | 1013.2 | 1012.5 | 904.4 |
| 60° | 645.6 | 646.3 | 706.6 | 801.5 | 979.4 | 1203.7 | 1240.5 | 1233.1 | 1108.8 | 1097.8 | 1016.9 |
| 62.5° | 454.4 | 451.5 | 529.4 | 650.0 | 903.7 | 1311.0 | 1497.8 | 1441.9 | 1267.7 | 1231.6 | 1122.1 |
| 65° | 264.7 | 263.2 | 293.4 | 388.2 | 684.6 | 1235.3 | 1761.0 | 1769.9 | 1476.5 | 1300.0 | 1100.0 |
| 67.5° | 177.9 | 179.4 | 193.4 | 239.7 | 399.3 | 969.1 | 1809.6 | 1910.3 | 1592.7 | 1264.7 | 1000.7 |
| 70° | 130.9 | 130.9 | 141.9 | 176.5 | 236.8 | 607.4 | 1580.9 | 1741.9 | 1615.5 | 1176.5 | 837.5 |
| 72.5° | 93.4 | 93.4 | 108.8 | 142.6 | 193.4 | 313.2 | 1175.0 | 1380.9 | 1364.0 | 976.5 | 579.4 |
| 75° | 59.6 | 61.0 | 77.9 | 116.9 | 176.5 | 200.7 | 797.1 | 1000.7 | 951.5 | 546.3 | 247.1 |
| 77.5° | 22.8 | 25.7 | 41.9 | 86.0 | 154.4 | 166.9 | 454.4 | 630.9 | 502.2 | 191.2 | 66.2 |
| 80° | 8.1 | 8.1 | 14.0 | 44.1 | 108.8 | 137.5 | 237.5 | 313.2 | 163.2 | 46.3 | 25.0 |
| 82.5° | 1.5 | 1.5 | 5.1 | 18.4 | 53.7 | 95.6 | 138.2 | 154.4 | 64.0 | 15.4 | 14.7 |
| 85° | 0.0 | 0.0 | 0.7 | 3.7 | 12.5 | 9.6 | 55.1 | 52.2 | 19.9 | 6.6 | 9.6 |
| 87.5° | 0.0 | 0.0 | 0.0 | 0.0 | 0.7 | 0.7 | 1.5 | 1.5 | 1.5 | 1.5 | 1.5 |
| 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° | 480.9 | 480.9 | 480.9 | 480.9 | 480.9 | 480.9 | 480.9 | 480.9 | 480.9 | 480.9 | 480.9 |
| 2.5° | 475.7 | 469.9 | 452.9 | 441.2 | 425.0 | 408.8 | 398.5 | 390.4 | 386.8 | 381.6 | 383.8 |
| 5° | 464.0 | 450.7 | 419.9 | 391.9 | 365.4 | 337.5 | 316.9 | 298.5 | 292.6 | 282.4 | 280.9 |
| 7.5° | 446.3 | 427.9 | 382.4 | 338.2 | 295.6 | 260.3 | 228.7 | 204.4 | 182.4 | 172.8 | 178.7 |
| 10° | 429.4 | 404.4 | 344.9 | 286.0 | 229.4 | 180.1 | 142.6 | 113.2 | 96.3 | 89.0 | 90.4 |
| 12.5° | 413.2 | 381.6 | 305.9 | 236.0 | 166.9 | 111.0 | 80.9 | 65.4 | 60.3 | 59.6 | 58.1 |
| 15° | 399.3 | 360.3 | 271.3 | 183.1 | 111.0 | 69.9 | 57.4 | 53.7 | 52.9 | 52.9 | 52.9 |
| 17.5° | 383.8 | 338.2 | 233.8 | 134.6 | 72.8 | 54.4 | 50.7 | 50.0 | 49.3 | 49.3 | 49.3 |
| 20° | 372.1 | 319.1 | 199.3 | 94.1 | 55.9 | 48.5 | 47.1 | 47.1 | 46.3 | 46.3 | 46.3 |
| 22.5° | 359.6 | 299.3 | 165.4 | 69.1 | 47.8 | 44.9 | 43.4 | 42.6 | 42.6 | 41.9 | 41.9 |
| 25° | 347.8 | 280.9 | 133.1 | 52.9 | 42.6 | 40.4 | 39.0 | 38.2 | 38.2 | 37.5 | 36.8 |
| 27.5° | 340.4 | 266.2 | 104.4 | 44.9 | 38.2 | 36.8 | 35.3 | 33.8 | 32.4 | 31.6 | 31.6 |
| 30° | 335.3 | 248.5 | 79.4 | 39.0 | 35.3 | 33.1 | 30.9 | 28.7 | 26.5 | 25.7 | 25.7 |
| 32.5° | 327.9 | 234.6 | 61.0 | 35.3 | 31.6 | 29.4 | 26.5 | 24.3 | 22.1 | 20.6 | 20.6 |
| 35° | 327.9 | 222.8 | 47.1 | 31.6 | 28.7 | 25.7 | 23.5 | 19.9 | 17.6 | 16.9 | 16.2 |
| 37.5° | 333.1 | 209.6 | 39.0 | 29.4 | 26.5 | 23.5 | 20.6 | 16.9 | 14.7 | 14.0 | 14.0 |
| 40° | 344.9 | 205.1 | 33.1 | 26.5 | 23.5 | 20.6 | 17.6 | 14.0 | 12.5 | 11.0 | 11.0 |
| 42.5° | 369.1 | 206.6 | 29.4 | 25.0 | 21.3 | 18.4 | 14.7 | 11.8 | 10.3 | 9.6 | 9.6 |
| 45° | 404.4 | 211.0 | 27.2 | 22.8 | 19.1 | 15.4 | 12.5 | 10.3 | 8.1 | 7.4 | 7.4 |
| 47.5° | 453.7 | 225.0 | 24.3 | 20.6 | 16.9 | 13.2 | 10.3 | 8.1 | 6.6 | 5.9 | 5.9 |
| 50° | 512.5 | 249.3 | 22.8 | 18.4 | 15.4 | 11.0 | 8.1 | 5.9 | 4.4 | 4.4 | 4.4 |
| 52.5° | 581.6 | 273.5 | 20.6 | 16.9 | 13.2 | 9.6 | 6.6 | 4.4 | 3.7 | 2.9 | 2.9 |
| 55° | 639.7 | 294.9 | 18.4 | 15.4 | 11.0 | 7.4 | 5.1 | 3.7 | 2.9 | 2.2 | 2.2 |
| 57.5° | 715.4 | 325.7 | 15.4 | 13.2 | 8.8 | 5.9 | 3.7 | 2.9 | 1.5 | 1.5 | 1.5 |
| 60° | 816.9 | 362.5 | 13.2 | 11.0 | 6.6 | 4.4 | 2.9 | 1.5 | 1.5 | 0.7 | 0.7 |
| 62.5° | 860.3 | 333.1 | 11.8 | 8.8 | 5.1 | 2.9 | 2.2 | 1.5 | 0.7 | 0.7 | 0.7 |
| 65° | 812.5 | 272.1 | 9.6 | 6.6 | 3.7 | 2.2 | 1.5 | 0.7 | 0.7 | 0.0 | 0.0 |
| 67.5° | 700.7 | 200.7 | 8.1 | 4.4 | 2.9 | 1.5 | 0.7 | 0.0 | 0.0 | 0.0 | 0.0 |
| 70° | 571.3 | 148.5 | 5.9 | 2.9 | 1.5 | 1.5 | 0.7 | 0.0 | 0.0 | 0.0 | 0.0 |
| 72.5° | 395.6 | 89.7 | 4.4 | 2.2 | 1.5 | 0.7 | 0.7 | 0.0 | 0.0 | 0.0 | 0.0 |
| 75° | 153.7 | 35.3 | 3.7 | 2.2 | 1.5 | 0.7 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| 77.5° | 43.4 | 12.5 | 2.9 | 1.5 | 1.5 | 0.7 | 0.7 | 0.0 | 0.0 | 0.0 | 0.0 |
| 80° | 17.6 | 6.6 | 2.2 | 1.5 | 1.5 | 1.5 | 0.7 | 0.7 | 0.0 | 0.0 | 0.0 |
| 82.5° | 11.0 | 3.7 | 1.5 | 0.7 | 0.7 | 0.7 | 0.7 | 0.0 | 0.0 | 0.0 | 0.0 |
| 85° | 7.4 | 2.2 | 1.5 | 0.7 | 0.7 | 0.0 | 0.0 | 0.0 | 0.0 | 0.7 | 0.7 |
| 87.5° | 1.5 | 1.5 | 0.7 | 0.7 | 0.7 | 0.7 | 0.0 | 0.0 | 0.0 | 0.0 | 0.7 |
| 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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1121 Highway 74 South
Peachtree City, GA 30269



Test Information

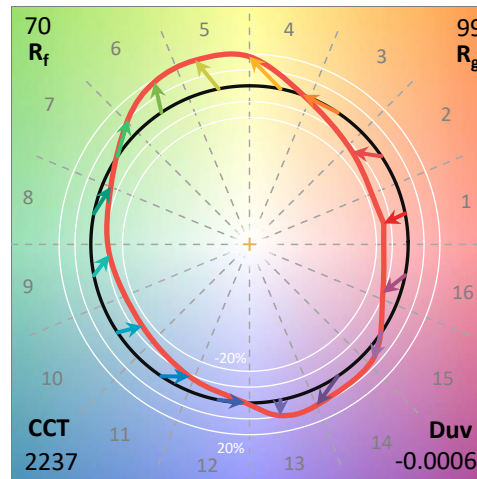
Test Method: LM-79-2008 Report
 Number: SP1-1908-441-10-R4
 Test Lab: COOPER LIGHTING SOLUTIONS
 Photometer: SP1 - 76IN SPHERE
 Measurement Geometry: 4π
 Issue Date: 10/28/2024
 Manufacturer: COOPER LIGHTING SOLUTIONS
 Product Line: McGRAW-EDISON
 Catalog Number: **SA1C-722-U-5WQ**
 Description: McGRAW EDISON ROADWAY AND AREA LUMINAIRE

THIS IS A REVISION OF SP1-1908-441-4-R3. TO UPDATE THE CATALOG INFORMATION.TESTED IN SITU. ROADWAY AND AREA LUMINAIRE. (1) 70 CRI, 5000K, 1050MA LIGHTSQUARE WITH 16 LEDS AND TYPE V WIDE OPTICS.

Spectral Parameters

CCT (K): 2237
 CIE u': 0.2876
 CIE v': 0.5346
 Duv: -0.0006
 CIE x: 0.5005
 CIE y: 0.4134
 CIE z: 0.0860
 Peak Wavelength (nm): 603
 Dominant Wavelength (nm): 587
 Purity: 74.5
 Rf: 69.8
 Rg: 99.2

| | | | |
|-----------|------|------|-------|
| CRI (Ra): | 72.0 | | |
| R1: | 68.9 | R9: | -17.4 |
| R2: | 83.0 | R10: | 61.3 |
| R3: | 95.2 | R11: | 59.8 |
| R4: | 66.2 | R12: | 50.5 |
| R5: | 65.9 | R13: | 71.1 |
| R6: | 76.3 | R14: | 96.9 |
| R7: | 76.7 | | |
| R8: | 43.8 | | |



Test Conditions

Stabilization Time: 71M
 Operation Time: 12H
 Room Temperature (°C) / RH%: 24.7/41%
 Sphere Temperature (°C): 25.6

REPORT NUMBER: SP1-1908-441-10-R4

| Measurement and Test Equipment | | | |
|--------------------------------|-----------------------|------------------|----------------------|
| Instrument | Identification Number | Calibration Date | Calibration Due Date |
| Photometer | IN0058 | 6/28/2019 | 12/28/2019 |
| Power Meter | IN0071 | 12/5/2018 | 12/5/2019 |
| AC Power Source | IN0063 | 12/5/2018 | 12/5/2019 |
| DC Power Source | IN0208 | 12/5/2018 | 12/5/2019 |
| Sphere Thermometer | IN0085 | 12/5/2018 | 12/5/2019 |
| Room Thermometer | IN0046 | 12/5/2018 | 12/5/2019 |

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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 2200K 4-step quadrangle

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Photopic Flux vs. Wavelength



#####

| 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 | 1768 | NR | 490 | 5206 | NR | 620 | 130919 | NR | 750 | 8553 | NR | 880 | 2713 | NR |
| 365 | 1569 | NR | 495 | 7286 | NR | 625 | 125335 | NR | 755 | 7696 | NR | 885 | 2316 | NR |
| 370 | 1594 | NR | 500 | 10654 | NR | 630 | 118388 | NR | 760 | 6978 | NR | 890 | 2539 | NR |
| 375 | 1744 | NR | 505 | 15189 | NR | 635 | 111855 | NR | 765 | 6377 | NR | 895 | 1933 | NR |
| 380 | 1659 | NR | 510 | 20541 | NR | 640 | 104062 | NR | 770 | 5600 | NR | 900 | 2216 | NR |
| 385 | 1504 | NR | 515 | 26492 | NR | 645 | 96365 | NR | 775 | 5000 | NR | 905 | 2067 | NR |
| 390 | 1541 | NR | 520 | 32294 | NR | 650 | 88651 | NR | 780 | 4709 | NR | 910 | 1959 | NR |
| 395 | 1355 | NR | 525 | 38123 | NR | 655 | 81152 | NR | 785 | 4305 | NR | 915 | 1874 | NR |
| 400 | 1243 | NR | 530 | 43232 | NR | 660 | 73523 | NR | 790 | 4040 | NR | 920 | 1484 | NR |
| 405 | 1417 | NR | 535 | 48012 | NR | 665 | 66123 | NR | 795 | 3642 | NR | 925 | 1914 | NR |
| 410 | 2147 | NR | 540 | 52623 | NR | 670 | 58677 | NR | 800 | 3594 | NR | 930 | 1948 | NR |
| 415 | 3837 | NR | 545 | 57516 | NR | 675 | 52349 | NR | 805 | 3190 | NR | 935 | 2079 | NR |
| 420 | 7159 | NR | 550 | 62613 | NR | 680 | 46159 | NR | 810 | 3241 | NR | 940 | 2263 | NR |
| 425 | 12599 | NR | 555 | 68554 | NR | 685 | 40525 | NR | 815 | 2732 | NR | 945 | 1688 | NR |
| 430 | 19019 | NR | 560 | 75325 | NR | 690 | 35615 | NR | 820 | 2612 | NR | 950 | 1560 | NR |
| 435 | 24875 | NR | 565 | 82533 | NR | 695 | 31158 | NR | 825 | 2966 | NR | 955 | 2826 | NR |
| 440 | 29103 | NR | 570 | 90909 | NR | 700 | 27409 | NR | 830 | 2574 | NR | 960 | 1477 | NR |
| 445 | 29901 | NR | 575 | 99621 | NR | 705 | 24204 | NR | 835 | 2633 | NR | 965 | 1568 | NR |
| 450 | 24862 | NR | 580 | 108484 | NR | 710 | 21558 | NR | 840 | 2526 | NR | 970 | 2030 | NR |
| 455 | 15942 | NR | 585 | 116679 | NR | 715 | 19222 | NR | 845 | 2631 | NR | 975 | 1986 | NR |
| 460 | 9916 | NR | 590 | 123752 | NR | 720 | 17310 | NR | 850 | 2079 | NR | 980 | 2540 | NR |
| 465 | 7051 | NR | 595 | 129324 | NR | 725 | 15280 | NR | 855 | 2309 | NR | 985 | 1139 | NR |
| 470 | 5227 | NR | 600 | 134082 | NR | 730 | 13282 | NR | 860 | 2528 | NR | 990 | 2018 | NR |
| 475 | 4257 | NR | 605 | 135698 | NR | 735 | 11753 | NR | 865 | 2121 | NR | 995 | 3445 | NR |
| 480 | 4052 | NR | 610 | 135144 | NR | 740 | 10654 | NR | 870 | 2751 | NR | 1000 | 3704 | NR |
| 485 | 4298 | NR | 615 | 134180 | NR | 745 | 9451 | NR | 875 | 2317 | NR | | | |

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Scotopic Flux vs. Wavelength



Scotopic Lumens: 4696.9

S/P: 0.85

| 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 | 1768 | NR | 490 | 5206 | NR | 620 | 130919 | NR | 750 | 8553 | NR | 880 | 2713 | NR |
| 365 | 1569 | NR | 495 | 7286 | NR | 625 | 125335 | NR | 755 | 7696 | NR | 885 | 2316 | NR |
| 370 | 1594 | NR | 500 | 10654 | NR | 630 | 118388 | NR | 760 | 6978 | NR | 890 | 2539 | NR |
| 375 | 1744 | NR | 505 | 15189 | NR | 635 | 111855 | NR | 765 | 6377 | NR | 895 | 1933 | NR |
| 380 | 1659 | NR | 510 | 20541 | NR | 640 | 104062 | NR | 770 | 5600 | NR | 900 | 2216 | NR |
| 385 | 1504 | NR | 515 | 26492 | NR | 645 | 96365 | NR | 775 | 5000 | NR | 905 | 2067 | NR |
| 390 | 1541 | NR | 520 | 32294 | NR | 650 | 88651 | NR | 780 | 4709 | NR | 910 | 1959 | NR |
| 395 | 1355 | NR | 525 | 38123 | NR | 655 | 81152 | NR | 785 | 4305 | NR | 915 | 1874 | NR |
| 400 | 1243 | NR | 530 | 43232 | NR | 660 | 73523 | NR | 790 | 4040 | NR | 920 | 1484 | NR |
| 405 | 1417 | NR | 535 | 48012 | NR | 665 | 66123 | NR | 795 | 3642 | NR | 925 | 1914 | NR |
| 410 | 2147 | NR | 540 | 52623 | NR | 670 | 58677 | NR | 800 | 3594 | NR | 930 | 1948 | NR |
| 415 | 3837 | NR | 545 | 57516 | NR | 675 | 52349 | NR | 805 | 3190 | NR | 935 | 2079 | NR |
| 420 | 7159 | NR | 550 | 62613 | NR | 680 | 46159 | NR | 810 | 3241 | NR | 940 | 2263 | NR |
| 425 | 12599 | NR | 555 | 68554 | NR | 685 | 40525 | NR | 815 | 2732 | NR | 945 | 1688 | NR |
| 430 | 19019 | NR | 560 | 75325 | NR | 690 | 35615 | NR | 820 | 2612 | NR | 950 | 1560 | NR |
| 435 | 24875 | NR | 565 | 82533 | NR | 695 | 31158 | NR | 825 | 2966 | NR | 955 | 2826 | NR |
| 440 | 29103 | NR | 570 | 90909 | NR | 700 | 27409 | NR | 830 | 2574 | NR | 960 | 1477 | NR |
| 445 | 29901 | NR | 575 | 99621 | NR | 705 | 24204 | NR | 835 | 2633 | NR | 965 | 1568 | NR |
| 450 | 24862 | NR | 580 | 108484 | NR | 710 | 21558 | NR | 840 | 2526 | NR | 970 | 2030 | NR |
| 455 | 15942 | NR | 585 | 116679 | NR | 715 | 19222 | NR | 845 | 2631 | NR | 975 | 1986 | NR |
| 460 | 9916 | NR | 590 | 123752 | NR | 720 | 17310 | NR | 850 | 2079 | NR | 980 | 2540 | NR |
| 465 | 7051 | NR | 595 | 129324 | NR | 725 | 15280 | NR | 855 | 2309 | NR | 985 | 1139 | NR |
| 470 | 5227 | NR | 600 | 134082 | NR | 730 | 13282 | NR | 860 | 2528 | NR | 990 | 2018 | NR |
| 475 | 4257 | NR | 605 | 135698 | NR | 735 | 11753 | NR | 865 | 2121 | NR | 995 | 3445 | NR |
| 480 | 4052 | NR | 610 | 135144 | NR | 740 | 10654 | NR | 870 | 2751 | NR | 1000 | 3704 | NR |
| 485 | 4298 | NR | 615 | 134180 | NR | 745 | 9451 | NR | 875 | 2317 | NR | | | |

REPORT NUMBER: SP1-1908-441-10-R4

Melanopic Flux vs. Wavelength



Melanopic Lumens: 1470.8 M/P: 0.27

| 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 | 1768 | NR | 490 | 5206 | NR | 620 | 130919 | NR | 750 | 8553 | NR | 880 | 2713 | NR |
| 365 | 1569 | NR | 495 | 7286 | NR | 625 | 125335 | NR | 755 | 7696 | NR | 885 | 2316 | NR |
| 370 | 1594 | NR | 500 | 10654 | NR | 630 | 118388 | NR | 760 | 6978 | NR | 890 | 2539 | NR |
| 375 | 1744 | NR | 505 | 15189 | NR | 635 | 111855 | NR | 765 | 6377 | NR | 895 | 1933 | NR |
| 380 | 1659 | NR | 510 | 20541 | NR | 640 | 104062 | NR | 770 | 5600 | NR | 900 | 2216 | NR |
| 385 | 1504 | NR | 515 | 26492 | NR | 645 | 96365 | NR | 775 | 5000 | NR | 905 | 2067 | NR |
| 390 | 1541 | NR | 520 | 32294 | NR | 650 | 88651 | NR | 780 | 4709 | NR | 910 | 1959 | NR |
| 395 | 1355 | NR | 525 | 38123 | NR | 655 | 81152 | NR | 785 | 4305 | NR | 915 | 1874 | NR |
| 400 | 1243 | NR | 530 | 43232 | NR | 660 | 73523 | NR | 790 | 4040 | NR | 920 | 1484 | NR |
| 405 | 1417 | NR | 535 | 48012 | NR | 665 | 66123 | NR | 795 | 3642 | NR | 925 | 1914 | NR |
| 410 | 2147 | NR | 540 | 52623 | NR | 670 | 58677 | NR | 800 | 3594 | NR | 930 | 1948 | NR |
| 415 | 3837 | NR | 545 | 57516 | NR | 675 | 52349 | NR | 805 | 3190 | NR | 935 | 2079 | NR |
| 420 | 7159 | NR | 550 | 62613 | NR | 680 | 46159 | NR | 810 | 3241 | NR | 940 | 2263 | NR |
| 425 | 12599 | NR | 555 | 68554 | NR | 685 | 40525 | NR | 815 | 2732 | NR | 945 | 1688 | NR |
| 430 | 19019 | NR | 560 | 75325 | NR | 690 | 35615 | NR | 820 | 2612 | NR | 950 | 1560 | NR |
| 435 | 24875 | NR | 565 | 82533 | NR | 695 | 31158 | NR | 825 | 2966 | NR | 955 | 2826 | NR |
| 440 | 29103 | NR | 570 | 90909 | NR | 700 | 27409 | NR | 830 | 2574 | NR | 960 | 1477 | NR |
| 445 | 29901 | NR | 575 | 99621 | NR | 705 | 24204 | NR | 835 | 2633 | NR | 965 | 1568 | NR |
| 450 | 24862 | NR | 580 | 108484 | NR | 710 | 21558 | NR | 840 | 2526 | NR | 970 | 2030 | NR |
| 455 | 15942 | NR | 585 | 116679 | NR | 715 | 19222 | NR | 845 | 2631 | NR | 975 | 1986 | NR |
| 460 | 9916 | NR | 590 | 123752 | NR | 720 | 17310 | NR | 850 | 2079 | NR | 980 | 2540 | NR |
| 465 | 7051 | NR | 595 | 129324 | NR | 725 | 15280 | NR | 855 | 2309 | NR | 985 | 1139 | NR |
| 470 | 5227 | NR | 600 | 134082 | NR | 730 | 13282 | NR | 860 | 2528 | NR | 990 | 2018 | NR |
| 475 | 4257 | NR | 605 | 135698 | NR | 735 | 11753 | NR | 865 | 2121 | NR | 995 | 3445 | NR |
| 480 | 4052 | NR | 610 | 135144 | NR | 740 | 10654 | NR | 870 | 2751 | NR | 1000 | 3704 | NR |
| 485 | 4298 | NR | 615 | 134180 | NR | 745 | 9451 | NR | 875 | 2317 | NR | | | |

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Summary

$R_f = 69.8$
 $R_g = 99.2$
 $CIE R_a = 72.0$
 $R_9 = -17.4$



Color Vector Graphics



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

| | | | |
|------------|------------|------------|------------|
| CES01 = 87 | CES26 = 56 | CES51 = 74 | CES76 = 56 |
| CES02 = 65 | CES27 = 76 | CES52 = 76 | CES77 = 81 |
| CES03 = 32 | CES28 = 83 | CES53 = 65 | CES78 = 63 |
| CES04 = 72 | CES29 = 46 | CES54 = 78 | CES79 = 84 |
| CES05 = 52 | CES30 = 48 | CES55 = 75 | CES80 = 84 |
| CES06 = 52 | CES31 = 51 | CES56 = 65 | CES81 = 63 |
| CES07 = 44 | CES32 = 51 | CES57 = 62 | CES82 = 92 |
| CES08 = 42 | CES33 = 53 | CES58 = 66 | CES83 = 83 |
| CES09 = 29 | CES34 = 70 | CES59 = 84 | CES84 = 92 |
| CES10 = 78 | CES35 = 85 | CES60 = 90 | CES85 = 81 |
| CES11 = 61 | CES36 = 78 | CES61 = 84 | CES86 = 56 |
| CES12 = 68 | CES37 = 80 | CES62 = 70 | CES87 = 78 |
| CES13 = 45 | CES38 = 53 | CES63 = 68 | CES88 = 72 |
| CES14 = 75 | CES39 = 90 | CES64 = 69 | CES89 = 62 |
| CES15 = 72 | CES40 = 84 | CES65 = 67 | CES90 = 67 |
| CES16 = 49 | CES41 = 75 | CES66 = 64 | CES91 = 90 |
| CES17 = 51 | CES42 = 79 | CES67 = 63 | CES92 = 67 |
| CES18 = 57 | CES43 = 64 | CES68 = 69 | CES93 = 79 |
| CES19 = 74 | CES44 = 98 | CES69 = 80 | CES94 = 52 |
| CES20 = 68 | CES45 = 73 | CES70 = 63 | CES95 = 76 |
| CES21 = 89 | CES46 = 67 | CES71 = 63 | CES96 = 78 |
| CES22 = 81 | CES47 = 60 | CES72 = 87 | CES97 = 77 |
| CES23 = 92 | CES48 = 48 | CES73 = 56 | CES98 = 71 |
| CES24 = 92 | CES49 = 64 | CES74 = 87 | CES99 = 65 |
| CES25 = 74 | CES50 = 74 | CES75 = 66 | |



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Color Rendition by Hue-Angle Bin



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Measure Comparisons



(END OF REPORT)