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

Scaled data based on original data using

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

Test Report Prepared for

Cooper Lighting Solutions

Brand: METALUX

Report Number: P976769

Luminaire Tested: 24SR-LD2-C-29-UNV-L930-CD1-MR-U

Issue Date: 03/18/2025

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

Scaled Data Report

**Test Information**

| | |
|---|---|
| Test Method: | LM-79-2019 |
| Report Number: | P976769 |
| Test Lab: | INNOVATION CENTER(P3) |
| Issue Date: | 03/18/2025 |
| Manufacturer: | COOPER LIGHTING SOLUTIONS |
| Product Line: | METALUX |
| Catalog Number: | 24SR-LD2-C-29-UNV-L930-CD1-MR-U |
| Description: | METALUX SKYRIDGE 2x4 2900LM PACKAGE 90CRI 3000K TROFFER with Medium Red SKYTRIM |
| Light Source: | 3000K CCT, 90+ CRI LEDS |
| Ballast/Driver: | - |

**Summary**

| | |
|---|---|
| Lumens per Lamp: | N/A |
| Luminaire Lumens: | 1578.0 lumens |
| Efficiency: | N/A |
| Efficacy: | 79.7 lumens/watt |
| Spacing Criteria (0/90/45): | 1.28 / 2.27 / 2.06 |
| Luminous Opening: | Rectangular (W 2' x L: 4' x H: 0') |
| CIE Type: | Direct |

| | |
|---|---|
| Input Watts (W): | 19.8 |
| Input Voltage (V): | 120 |
| 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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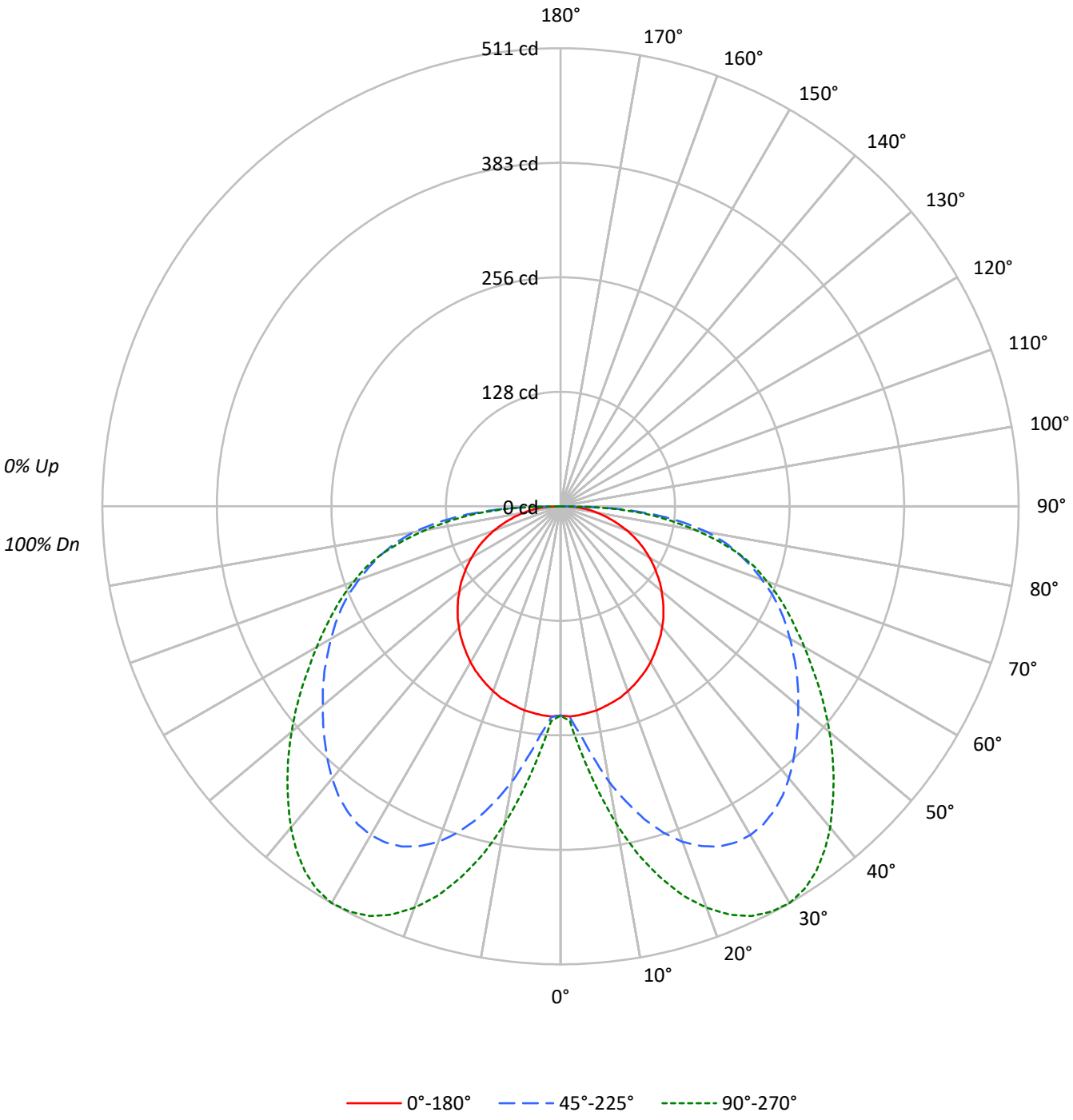
Scaled Data Report

TEST NUMBER: P976769
CATALOG NUMBER: 24SR-LD2-C-29-UNV-L930-CD1-MR-U

## Luminous Intensity Polar Plot



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TEST NUMBER: P976769
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## COEFFICIENT OF UTILIZATION - ZONAL CAVITY METHOD:

| RF | 20 | | | | 20 | | | | 20 | | | 20 | | | 20 | | | 20 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| RC | 80 | | | | 70 | | | | 50 | | | 30 | | | 10 | | | 0 |
| RW | 70 | 50 | 30 | 10 | 70 | 50 | 30 | 10 | 50 | 30 | 10 | 50 | 30 | 10 | 50 | 30 | 10 | 0 |
| RCR | | | | | | | | | | | | | | | | | | |
| 0 | 119 | 119 | 119 | 119 | 116 | 116 | 116 | 116 | 111 | 111 | 111 | 106 | 106 | 106 | 102 | 102 | 102 | 100 |
| 1 | 106 | 100 | 95 | 90 | 103 | 98 | 93 | 88 | 93 | 89 | 85 | 89 | 86 | 83 | 86 | 83 | 80 | 78 |
| 2 | 95 | 85 | 77 | 70 | 92 | 83 | 76 | 69 | 79 | 73 | 68 | 76 | 71 | 66 | 73 | 68 | 64 | 62 |
| 3 | 85 | 73 | 64 | 56 | 83 | 72 | 63 | 56 | 69 | 61 | 55 | 66 | 59 | 54 | 63 | 58 | 53 | 50 |
| 4 | 78 | 64 | 54 | 47 | 75 | 63 | 53 | 46 | 60 | 52 | 46 | 58 | 51 | 45 | 55 | 49 | 44 | 42 |
| 5 | 71 | 57 | 47 | 39 | 69 | 55 | 46 | 39 | 53 | 45 | 39 | 51 | 44 | 38 | 49 | 43 | 38 | 35 |
| 6 | 65 | 50 | 41 | 34 | 63 | 49 | 40 | 33 | 48 | 39 | 33 | 46 | 38 | 33 | 44 | 38 | 32 | 30 |
| 7 | 60 | 45 | 36 | 29 | 58 | 45 | 35 | 29 | 43 | 35 | 29 | 41 | 34 | 29 | 40 | 33 | 28 | 26 |
| 8 | 56 | 41 | 32 | 26 | 54 | 40 | 32 | 26 | 39 | 31 | 25 | 38 | 30 | 25 | 36 | 30 | 25 | 23 |
| 9 | 52 | 38 | 29 | 23 | 50 | 37 | 28 | 23 | 36 | 28 | 23 | 35 | 27 | 22 | 33 | 27 | 22 | 20 |
| 10 | 48 | 34 | 26 | 20 | 47 | 34 | 26 | 20 | 33 | 25 | 20 | 32 | 25 | 20 | 31 | 25 | 20 | 18 |

## AVERAGE LUMINANCE (cd/sqm):

| | 0° | 45° | 90° |
|---|---|---|---|
| 0° | 314 | 314 | 314 |
| 5° | 316 | 345 | 376 |
| 10° | 316 | 426 | 492 |
| 15° | 315 | 503 | 596 |
| 20° | 314 | 570 | 682 |
| 25° | 313 | 622 | 749 |
| 30° | 312 | 658 | 794 |
| 35° | 310 | 681 | 816 |
| 40° | 310 | 696 | 822 |
| 45° | 309 | 707 | 820 |
| 50° | 308 | 724 | 820 |
| 55° | 308 | 754 | 825 |
| 60° | 308 | 795 | 845 |
| 65° | 310 | 859 | 890 |
| 70° | 310 | 941 | 965 |
| 75° | 310 | 1071 | 1075 |
| 80° | 323 | 1289 | 1186 |
| 85° | 378 | 1616 | 1462 |

## MAXIMUM LUMINANCE 45°-90°:

Horizontal Angle: 40°
Vertical Angle: 87.5°
Luminance: 1983 cd/sqm

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TEST NUMBER: P976769
CATALOG NUMBER: 24SR-LD2-C-29-UNV-L930-CD1-MR-U

**ZONAL LUMENS:**

| Zone | Lumens | % Fixture |
|---|---|---|
| 0°-10° | 25.9 | 1.6 |
| 10°-20° | 98.1 | 6.2 |
| 20°-30° | 180.4 | 11.4 |
| 30°-40° | 240.4 | 15.2 |
| 40°-50° | 263.4 | 16.7 |
| 50°-60° | 259.0 | 16.4 |
| 60°-70° | 235.0 | 14.9 |
| 70°-80° | 187.1 | 11.9 |
| 80°-90° | 88.7 | 5.6 |
| 90°-100° | 0.0 | 0.0 |
| 100°-110° | 0.0 | 0.0 |
| 110°-120° | 0.0 | 0.0 |
| 120°-130° | 0.0 | 0.0 |
| 130°-140° | 0.0 | 0.0 |
| 140°-150° | 0.0 | 0.0 |
| 150°-160° | 0.0 | 0.0 |
| 160°-170° | 0.0 | 0.0 |
| 170°-180° | 0.0 | 0.0 |
| 0°-30° | 304.3 | 19.3 |
| 0°-40° | 544.7 | 34.5 |
| 0°-60° | 1067.2 | 67.6 |
| 0°-90° | 1578.0 | 100.0 |
| 90°-120° | 0.0 | 0.0 |
| 90°-150° | 0.0 | 0.0 |
| 90°-180° | 0.0 | 0.0 |
| 0°-180° | 1578.0 | 100.0 |

**CANDELA DISTRIBUTION:**

| | 0° | 22.5° | 45° | 67.5° | 90° | Flux |
|---|---|---|---|---|---|---|
| 0° | 233 | 233 | 233 | 233 | 233 | |
| 5° | 234 | 236 | 256 | 272 | 278 | 22 |
| 15° | 226 | 280 | 361 | 412 | 428 | 64 |
| 25° | 211 | 310 | 419 | 481 | 504 | 97 |
| 35° | 189 | 305 | 415 | 476 | 497 | 118 |
| 45° | 162 | 275 | 372 | 417 | 431 | 125 |
| 55° | 131 | 243 | 321 | 346 | 352 | 118 |
| 65° | 97 | 210 | 270 | 275 | 280 | 96 |
| 75° | 60 | 164 | 206 | 205 | 207 | 63 |
| 85° | 24 | 88 | 105 | 95 | 95 | 25 |
| 90° | 0 | 0 | 0 | 0 | 0 | |

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TEST NUMBER: P976769
CATALOG NUMBER: 24SR-LD2-C-29-UNV-L930-CD1-MR-U

**CANDELA DISTRIBUTION (FULL):**

| | 0° | 5° | 10° | 15° | 20° | 25° | 30° | 35° | 40° | 45° | 50° |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 0° | 233.3 | 233.3 | 233.3 | 233.3 | 233.3 | 233.3 | 233.3 | 233.3 | 233.3 | 233.3 | 233.3 |
| 2.5° | 234.6 | 234.6 | 233.9 | 233.9 | 233.9 | 233.3 | 233.3 | 233.9 | 234.6 | 235.2 | 235.9 |
| 5° | 233.9 | 233.9 | 233.9 | 233.9 | 234.6 | 237.3 | 240.6 | 245.2 | 249.1 | 255.8 | 259.1 |
| 7.5° | 232.6 | 232.6 | 233.3 | 235.2 | 240.6 | 247.8 | 256.5 | 266.4 | 274.4 | 283.0 | 290.9 |
| 10° | 231.3 | 231.3 | 232.6 | 239.2 | 249.9 | 262.4 | 275.0 | 287.6 | 298.8 | 312.1 | 322.0 |
| 12.5° | 228.6 | 228.6 | 232.6 | 244.5 | 260.5 | 276.4 | 292.2 | 308.8 | 323.4 | 337.3 | 351.2 |
| 15° | 226.0 | 226.0 | 233.9 | 250.5 | 270.4 | 289.6 | 308.1 | 327.4 | 344.6 | 361.2 | 375.7 |
| 17.5° | 223.4 | 224.0 | 235.9 | 257.1 | 279.0 | 301.5 | 323.4 | 344.0 | 363.1 | 381.7 | 398.3 |
| 20° | 219.4 | 220.7 | 237.3 | 261.7 | 286.3 | 311.5 | 334.7 | 357.2 | 378.4 | 398.3 | 415.5 |
| 22.5° | 215.3 | 218.0 | 237.9 | 265.1 | 292.2 | 319.4 | 344.0 | 367.2 | 389.6 | 410.2 | 428.1 |
| 25° | 210.7 | 214.1 | 238.5 | 267.1 | 296.2 | 324.1 | 349.9 | 374.4 | 397.6 | 418.8 | 436.7 |
| 27.5° | 206.1 | 210.7 | 237.3 | 267.1 | 297.6 | 326.7 | 352.5 | 377.8 | 402.2 | 422.8 | 442.0 |
| 30° | *200.8* | *206.8* | *235.2* | *266.4* | *297.6* | *326.0* | *352.5* | *378.4* | *402.2* | *423.4* | *442.0* |
| 32.5° | 194.8 | 202.8 | 231.9 | 263.8 | 294.9 | 324.1 | 350.6 | 375.7 | 399.6 | 420.8 | 438.7 |
| 35° | 188.8 | 197.5 | 228.0 | 259.8 | 290.9 | 319.4 | 345.2 | 370.5 | 393.7 | 414.9 | 432.7 |
| 37.5° | 182.9 | 192.9 | 223.4 | 255.1 | 284.9 | 312.7 | 338.6 | 363.9 | 386.3 | 406.9 | 423.4 |
| 40° | 176.3 | 186.9 | 217.4 | 248.5 | 278.3 | 304.8 | 330.7 | 354.5 | 376.4 | 396.3 | 412.2 |
| 42.5° | 169.7 | 180.9 | 210.7 | 241.9 | 270.4 | 296.9 | 322.0 | 345.2 | 366.4 | 384.4 | 398.9 |
| 45° | 162.3 | 174.3 | 204.1 | 233.9 | 261.7 | 288.3 | 312.7 | 334.7 | 355.2 | 371.8 | 385.0 |
| 47.5° | 155.0 | 167.7 | 196.8 | 226.7 | 253.8 | 279.7 | 303.5 | 324.7 | 343.3 | 359.1 | 371.8 |
| 50° | 147.1 | 160.4 | 189.6 | 218.7 | 245.8 | 271.0 | 294.2 | 314.1 | 332.0 | 345.9 | 357.9 |
| 52.5° | 139.9 | 153.8 | 182.2 | 211.4 | 237.9 | 263.1 | 285.6 | 304.2 | 320.8 | 334.0 | 344.0 |
| 55° | 131.2 | 146.5 | 175.6 | 204.1 | 230.6 | 255.1 | 276.4 | 294.2 | 309.4 | 321.4 | 330.1 |
| 57.5° | 123.3 | 139.2 | 168.3 | 196.8 | 222.7 | 247.2 | 267.1 | 284.3 | 297.6 | 308.1 | 316.1 |
| 60° | 114.6 | 131.8 | 161.0 | 189.6 | 215.3 | 239.2 | 258.4 | 274.4 | 287.0 | 295.5 | 302.2 |
| 62.5° | 106.1 | 123.9 | 154.4 | 182.2 | 207.4 | 230.0 | 248.5 | 263.1 | 274.4 | 283.0 | 287.0 |
| 65° | 97.4 | 116.0 | 146.5 | 174.9 | 199.5 | 220.7 | 238.5 | 252.4 | 262.4 | 269.7 | 272.3 |
| 67.5° | 88.1 | 108.0 | 138.5 | 165.6 | 190.2 | 210.7 | 227.3 | 240.6 | 249.1 | 255.1 | 256.5 |
| 70° | 78.9 | 98.7 | 129.3 | 156.4 | 179.6 | 198.8 | 215.3 | 226.7 | 235.2 | 239.2 | 240.6 |
| 72.5° | 69.0 | 89.5 | 120.0 | 145.8 | 167.7 | 186.9 | 201.4 | 213.4 | 220.7 | 223.4 | 223.4 |
| 75° | 59.7 | 79.5 | 109.4 | 133.9 | 155.0 | 173.0 | 186.9 | 197.5 | 204.1 | 206.1 | 205.4 |
| 77.5° | 50.4 | 70.2 | 98.0 | 121.3 | 140.5 | 157.1 | 170.3 | 180.3 | 186.3 | 188.2 | 187.5 |
| 80° | 41.7 | 60.3 | 84.8 | 106.7 | 123.9 | 139.2 | 151.1 | 161.7 | 167.0 | 166.4 | 162.3 |
| 82.5° | 33.1 | 49.1 | 70.9 | 90.1 | 105.3 | 119.3 | 131.2 | 137.8 | 139.9 | 137.8 | 133.9 |
| 85° | 24.5 | 37.1 | 55.0 | 70.2 | 82.9 | 94.1 | 101.4 | 106.1 | 106.7 | 104.7 | 101.4 |
| 87.5° | 14.5 | 21.9 | 32.5 | 41.7 | 51.0 | 56.3 | 60.3 | 63.6 | 64.3 | 62.3 | 60.9 |
| 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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Scaled Data Report

TEST NUMBER: P976769
CATALOG NUMBER: 24SR-LD2-C-29-UNV-L930-CD1-MR-U

**CANDELA DISTRIBUTION (continued):**

| | 55° | 60° | 65° | 70° | 75° | 80° | 85° | 90° |
|---|---|---|---|---|---|---|---|---|
| 0° | 233.3 | 233.3 | 233.3 | 233.3 | 233.3 | 233.3 | 233.3 | *233.3* |
| 2.5° | 236.6 | 237.3 | 237.9 | 239.2 | 238.5 | 239.2 | 239.2 | *239.9* |
| 5° | 263.8 | 267.7 | 270.4 | 274.4 | 274.4 | 276.4 | 277.0 | *278.3* |
| 7.5° | 296.9 | 302.2 | 308.1 | 314.1 | 314.8 | 318.1 | 319.4 | *319.4* |
| 10° | 330.7 | 338.0 | 345.2 | 351.9 | 353.9 | 357.9 | 359.8 | *359.8* |
| 12.5° | 361.2 | 369.1 | 379.0 | 386.3 | 389.0 | 393.7 | 396.3 | *397.0* |
| 15° | 387.7 | 397.6 | 407.6 | 415.5 | 420.1 | 424.8 | 427.5 | *428.1* |
| 17.5° | 410.2 | 422.1 | 432.7 | 440.7 | 446.0 | 451.3 | 454.6 | *455.3* |
| 20° | 428.1 | 441.4 | 452.0 | 460.6 | 466.5 | 473.1 | 475.8 | *476.4* |
| 22.5° | 442.0 | 454.6 | 466.5 | 475.8 | 482.4 | 489.1 | 492.4 | *493.0* |
| 25° | 451.3 | 464.6 | 476.4 | 486.4 | 493.7 | 499.6 | 503.0 | *504.3* |
| 27.5° | 456.6 | 470.5 | 482.4 | 491.7 | 499.0 | 505.6 | 508.9 | *509.6* |
| 30° | *457.3* | *471.2* | *483.1* | *492.4* | *499.6* | *506.3* | *509.6* | *511.0* |
| 32.5° | 454.0 | 467.9 | 479.1 | 488.4 | 495.7 | 501.7 | 505.0 | *506.3* |
| 35° | 447.4 | 460.6 | 471.8 | 480.4 | 487.0 | 492.4 | 496.3 | *497.0* |
| 37.5° | 438.1 | 450.7 | 460.6 | 468.5 | 475.2 | 480.4 | 483.7 | *483.7* |
| 40° | 425.4 | 437.4 | 446.0 | 453.2 | 459.9 | 463.9 | 467.9 | *467.9* |
| 42.5° | 411.5 | 422.8 | 430.8 | 437.4 | 442.0 | 446.6 | 449.3 | *449.3* |
| 45° | 397.0 | 406.2 | 414.2 | 419.5 | 424.2 | 427.5 | 430.8 | *430.8* |
| 47.5° | 382.4 | 390.4 | 396.3 | 401.6 | 405.6 | 408.9 | 411.5 | *411.5* |
| 50° | 367.2 | 374.4 | 379.0 | 383.7 | 387.1 | 389.6 | 391.7 | *391.7* |
| 52.5° | 351.9 | 357.9 | 361.2 | 365.1 | 367.8 | 370.5 | 371.8 | *371.8* |
| 55° | 337.3 | 341.3 | 344.0 | 347.3 | 349.2 | 350.6 | 351.9 | *351.9* |
| 57.5° | 321.4 | 324.1 | 326.7 | 328.7 | 330.1 | 331.3 | 332.6 | *332.0* |
| 60° | 305.5 | 307.5 | 309.4 | 310.8 | 312.1 | 313.5 | 314.1 | *314.1* |
| 62.5° | 289.6 | 290.3 | 290.9 | 293.6 | 294.9 | 295.5 | 296.2 | *296.2* |
| 65° | 273.7 | 273.7 | 274.4 | 276.4 | 277.7 | 279.0 | 279.7 | *279.7* |
| 67.5° | 256.5 | 257.1 | 257.8 | 259.8 | 260.5 | 261.7 | 263.1 | *263.1* |
| 70° | 239.2 | 239.9 | 239.9 | 241.9 | 242.5 | 243.9 | 245.2 | *245.2* |
| 72.5° | 222.7 | 222.7 | 222.7 | 224.0 | 225.3 | 226.7 | 228.0 | *228.0* |
| 75° | 204.1 | 204.1 | 204.1 | 205.4 | 205.4 | 206.1 | 207.4 | *206.8* |
| 77.5° | 184.2 | 182.2 | 180.3 | 179.6 | 179.6 | 180.3 | 180.9 | *180.9* |
| 80° | 158.4 | 155.7 | 154.4 | 153.1 | 152.4 | 153.1 | 153.8 | *153.1* |
| 82.5° | 131.2 | 127.9 | 126.0 | 125.2 | 125.2 | 125.2 | 126.0 | *124.6* |
| 85° | 99.4 | 96.1 | 94.7 | 94.7 | 94.1 | 94.1 | 94.1 | *94.7* |
| 87.5° | 59.7 | 57.6 | 55.7 | 56.3 | 55.7 | 55.0 | 55.7 | *57.0* |
| 90° | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | *0.0* |

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Scaled Data Report

TEST NUMBER: P976769
CATALOG NUMBER: 24SR-LD2-C-29-UNV-L930-CD1-MR-U

**CIE UGR TABLE:**

| Reflectances: | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | Ceiling | 0.7 | 0.7 | 0.5 | 0.5 | 0.3 | 0.7 | 0.7 | 0.5 | 0.5 | 0.3 |
| | Wall | 0.5 | 0.3 | 0.5 | 0.3 | 0.3 | 0.5 | 0.3 | 0.5 | 0.3 | 0.3 |
| | Reference plane | 0.2 | 0.2 | 0.2 | 0.2 | 0.2 | 0.2 | 0.2 | 0.2 | 0.2 | 0.2 |
| Room Dimensions | | Viewed crosswise | | | | | Viewed endwise | | | | |
| X=2H | Y=2H | 9.2 | 11.0 | 9.5 | 11.3 | 11.6 | 12.1 | 13.9 | 12.5 | 14.2 | 14.5 |
| | 3H | 11.2 | 12.8 | 11.5 | 13.1 | 13.5 | 14.7 | 16.3 | 15.0 | 16.6 | 17.0 |
| | 4H | 11.9 | 13.5 | 12.3 | 13.8 | 14.2 | 15.9 | 17.4 | 16.3 | 17.8 | 18.1 |
| | 6H | 12.5 | 14.0 | 13.0 | 14.4 | 14.7 | 17.0 | 18.4 | 17.4 | 18.8 | 19.2 |
| | 8H | 12.8 | 14.2 | 13.2 | 14.6 | 14.9 | 17.4 | 18.8 | 17.8 | 19.2 | 19.6 |
| | 12H | 12.9 | 14.3 | 13.4 | 14.7 | 15.1 | 17.8 | 19.2 | 18.3 | 19.6 | 20.0 |
| 4H | 2H | 10.9 | 12.5 | 11.3 | 12.8 | 13.2 | 12.9 | 14.5 | 13.3 | 14.8 | 15.2 |
| | 3H | 13.4 | 14.8 | 13.9 | 15.2 | 15.6 | 15.7 | 17.0 | 16.1 | 17.4 | 17.8 |
| | 4H | 14.5 | 15.8 | 15.0 | 16.2 | 16.6 | 17.1 | 18.3 | 17.5 | 18.7 | 19.2 |
| | 6H | 15.4 | 16.5 | 15.9 | 17.0 | 17.4 | 18.4 | 19.4 | 18.8 | 19.9 | 20.3 |
| | 8H | 15.8 | 16.8 | 16.2 | 17.2 | 17.7 | 18.9 | 19.9 | 19.4 | 20.4 | 20.8 |
| | 12H | 16.0 | 17.0 | 16.5 | 17.4 | 17.9 | 19.4 | 20.3 | 19.9 | 20.8 | 21.3 |
| 8H | 4H | 15.7 | 16.7 | 16.2 | 17.2 | 17.6 | 17.6 | 18.7 | 18.1 | 19.1 | 19.6 |
| | 6H | 17.1 | 17.9 | 17.5 | 18.4 | 18.9 | 19.1 | 20.0 | 19.6 | 20.5 | 20.9 |
| | 8H | 17.6 | 18.4 | 18.1 | 18.9 | 19.4 | 19.8 | 20.6 | 20.3 | 21.1 | 21.6 |
| | 12H | 18.1 | 18.8 | 18.6 | 19.3 | 19.8 | 20.5 | 21.2 | 21.0 | 21.7 | 22.2 |
| 12H | 4H | 15.9 | 16.9 | 16.4 | 17.3 | 17.8 | 17.8 | 18.7 | 18.2 | 19.2 | 19.6 |
| | 6H | 17.5 | 18.2 | 18.0 | 18.7 | 19.2 | 19.3 | 20.1 | 19.8 | 20.6 | 21.1 |
| | 8H | 18.2 | 18.9 | 18.7 | 19.4 | 19.9 | 20.1 | 20.8 | 20.6 | 21.3 | 21.8 |

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

Report Prepared for

Cooper Lighting Solutions

Metalux

Report Number: SP1-2506-457-5

Test Date: 07/02/2025

Luminaire Tested: 24SR-LD2-64-C-UNV-L930-CD1-U

Data in this report applies to families of products including 24SR-LD2-64-C-UNV-L930-CD1-U

Report Generated By FNC07603 / LDUCLS01DT446
Version: v7.04

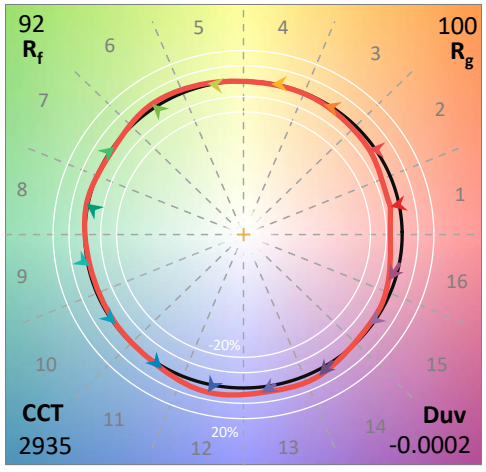
## Test Information

| | |
|---|---|
| Test Method: | LM-79-2019 |
| Report Number: | SP1-2506-457-5 |
| Test Lab: | COOPER LIGHTING SOLUTIONS |
| Photometer: | SP1 - 76IN SPHERE |
| Measurement Geometry: | 4π |
| Issue Date: | 07/02/2025 |
| Manufacturer: | COOPER LIGHTING SOLUTIONS |
| Product Line: | Metalux |
| Catalog Number: | **24SR-LD2-64-C-UNV-L930-CD1-U** |
| Description: | 2X4 SKYRIDGE 6400LM Fixture with new LTN chip |

## Spectral Parameters

| | |
|---|---|
| CCT (K): | 2935 |
| CIE u': | 0.2530 |
| CIE v': | 0.5224 |
| Duv: | -0.0002 |
| CIE x: | 0.4413 |
| CIE y: | 0.4049 |
| CIE z: | 0.1538 |
| Peak Wavelength (nm): | 630 |
| Dominant Wavelength (nm): | 583 |
| Purity: | 53.99297 |
| Rf: | 91.8 |
| Rg: | 99.6 |

| | | | | | |
|---|---|---|---|---|---|
| CRI (Ra): | 93.5 | | | | |
| R1: | 94.7 | R9: | 55.1 | | |
| R2: | 97.2 | R10: | 92.3 | | |
| R3: | 98.6 | R11: | 97.0 | | |
| R4: | 95.2 | R12: | 86.4 | | |
| R5: | 94.7 | R13: | 95.3 | | |
| R6: | 96.8 | R14: | 98.2 | | |
| R7: | 90.9 | R15: | 89.3 | | |
| R8: | 80.4 | | | | |




## Test Conditions

| | |
|---|---|
| Stabilization Time: | 40M |
| Operation Time: | 1H 40M |
| Sphere Temperature (°C): | 25.0 |

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| Measurement and Test Equipment | | | |
|---|---|---|---|
| Instrument | Identification Number | Calibration Date | Calibration Due Date |
| Photometer | 76INCH SPHERE IN0058 | 6/16/2025 | 12/16/2025 |
| Power Meter | XITRON INXT2011004 | 1/21/2025 | 1/21/2026 |
| AC Power Source | CHROMA 61603 IN0063 | 10/22/2024 | 10/22/2025 |
| DC Power Source | AGILENT E3634A IN0208 | 10/22/2024 | 10/22/2025 |
| Sphere Thermometer | ONSET IN0085 | 10/22/2024 | 10/22/2025 |
| Room Thermometer | ONSET IN0046 | 10/22/2024 | 10/22/2025 |

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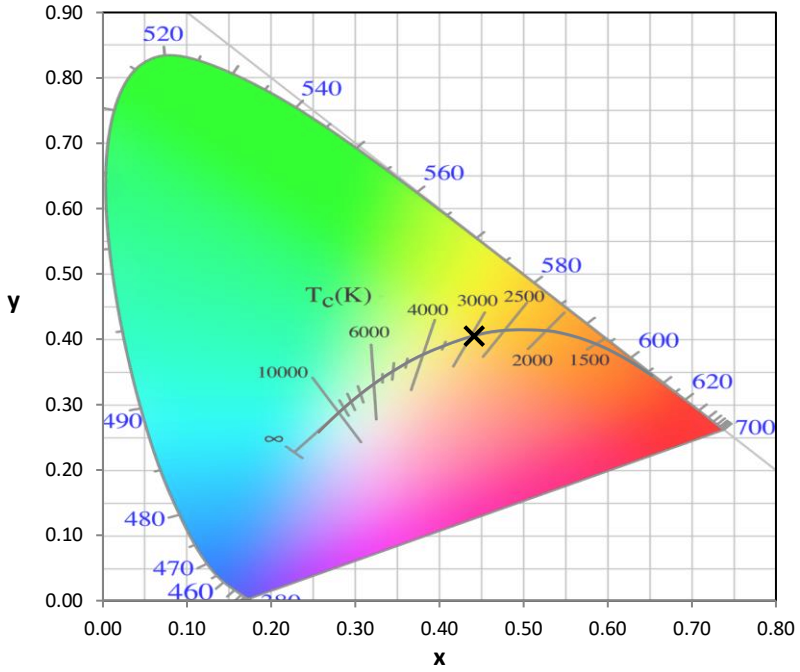
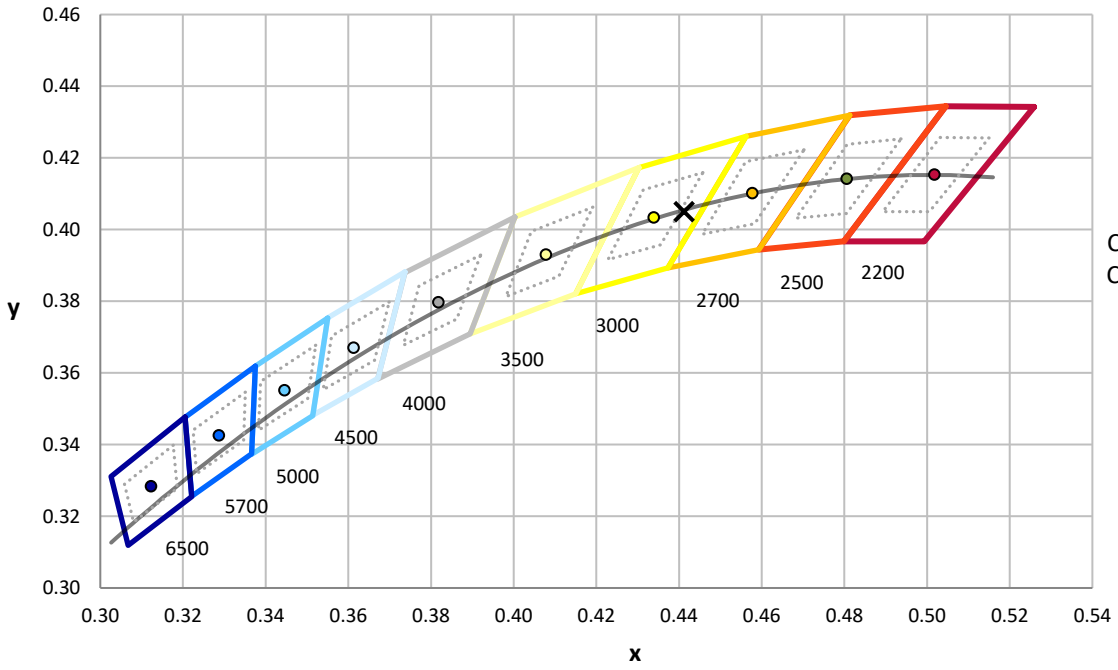
**CIE 1931 Chromaticity Diagram**




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




CCT = 2935K
CIE x = 0.4413
CIE y = 0.4049
Duv = -0.0002

Point lies inside the ANSI 3000K 7-step quadrangle

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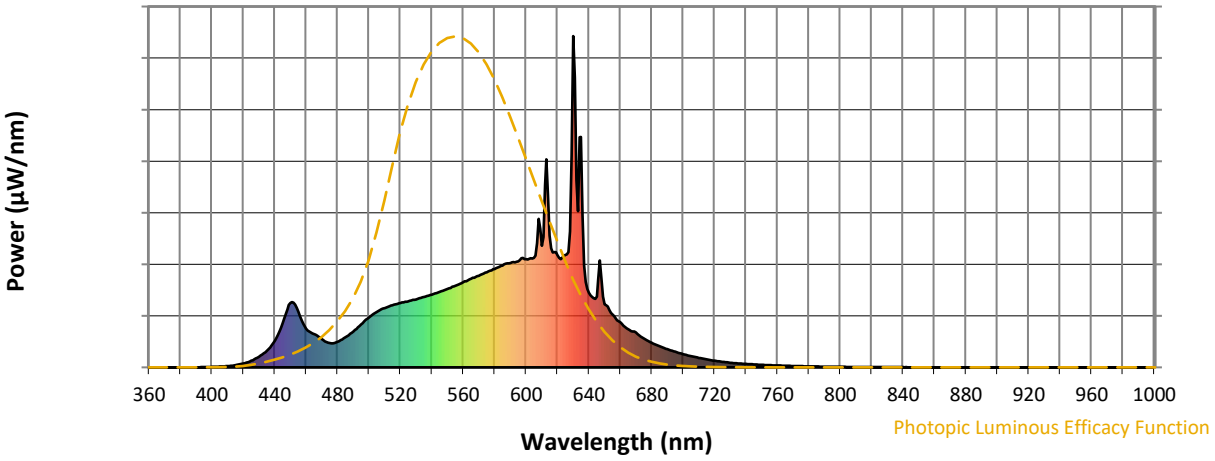
## Photopic Flux vs. Wavelength




## Photopic Lumens: NR

| λ (nm) | Power W^/nm | Lumens (ϕ/nm) | λ (nm) | Power W^/nm | Lumens (ϕ/nm) | λ (nm) | Power W^/nm | Lumens (ϕ/nm) | λ (nm) | Power W^/nm | Lumens (ϕ/nm) | λ (nm) | Power W^/nm | Lumens (ϕ/nm) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 360 | 0 | NR | 490 | 108 | NR | 620 | 338 | NR | 750 | 8 | NR | 880 | 0 | NR |
| 365 | 0 | NR | 495 | 129 | NR | 625 | 339 | NR | 755 | 7 | NR | 885 | 0 | NR |
| 370 | 0 | NR | 500 | 151 | NR | 630 | 1000 | NR | 760 | 6 | NR | 890 | 0 | NR |
| 375 | 0 | NR | 505 | 168 | NR | 635 | 695 | NR | 765 | 5 | NR | 895 | 0 | NR |
| 380 | 0 | NR | 510 | 179 | NR | 640 | 225 | NR | 770 | 4 | NR | 900 | 0 | NR |
| 385 | 0 | NR | 515 | 187 | NR | 645 | 214 | NR | 775 | 4 | NR | 905 | 0 | NR |
| 390 | 0 | NR | 520 | 194 | NR | 650 | 190 | NR | 780 | 3 | NR | 910 | 0 | NR |
| 395 | 1 | NR | 525 | 199 | NR | 655 | 160 | NR | 785 | 3 | NR | 915 | 0 | NR |
| 400 | 2 | NR | 530 | 205 | NR | 660 | 136 | NR | 790 | 2 | NR | 920 | 0 | NR |
| 405 | 2 | NR | 535 | 213 | NR | 665 | 115 | NR | 795 | 2 | NR | 925 | 0 | NR |
| 410 | 4 | NR | 540 | 219 | NR | 670 | 106 | NR | 800 | 2 | NR | 930 | 0 | NR |
| 415 | 7 | NR | 545 | 228 | NR | 675 | 87 | NR | 805 | 1 | NR | 935 | 0 | NR |
| 420 | 12 | NR | 550 | 236 | NR | 680 | 74 | NR | 810 | 1 | NR | 940 | 0 | NR |
| 425 | 20 | NR | 555 | 247 | NR | 685 | 64 | NR | 815 | 1 | NR | 945 | 0 | NR |
| 430 | 32 | NR | 560 | 257 | NR | 690 | 55 | NR | 820 | 1 | NR | 950 | 0 | NR |
| 435 | 50 | NR | 565 | 267 | NR | 695 | 47 | NR | 825 | 1 | NR | 955 | 0 | NR |
| 440 | 79 | NR | 570 | 277 | NR | 700 | 40 | NR | 830 | 1 | NR | 960 | 0 | NR |
| 445 | 133 | NR | 575 | 287 | NR | 705 | 34 | NR | 835 | 1 | NR | 965 | 0 | NR |
| 450 | 194 | NR | 580 | 297 | NR | 710 | 29 | NR | 840 | 1 | NR | 970 | 0 | NR |
| 455 | 168 | NR | 585 | 308 | NR | 715 | 24 | NR | 845 | 0 | NR | 975 | 0 | NR |
| 460 | 117 | NR | 590 | 315 | NR | 720 | 20 | NR | 850 | 0 | NR | 980 | 0 | NR |
| 465 | 101 | NR | 595 | 320 | NR | 725 | 17 | NR | 855 | 0 | NR | 985 | 0 | NR |
| 470 | 85 | NR | 600 | 327 | NR | 730 | 14 | NR | 860 | 0 | NR | 990 | 0 | NR |
| 475 | 73 | NR | 605 | 331 | NR | 735 | 12 | NR | 865 | 0 | NR | 995 | 0 | NR |
| 480 | 77 | NR | 610 | 367 | NR | 740 | 10 | NR | 870 | 0 | NR | 1000 | 0 | NR |
| 485 | 91 | NR | 615 | 398 | NR | 745 | 9 | NR | 875 | 0 | NR | | | |

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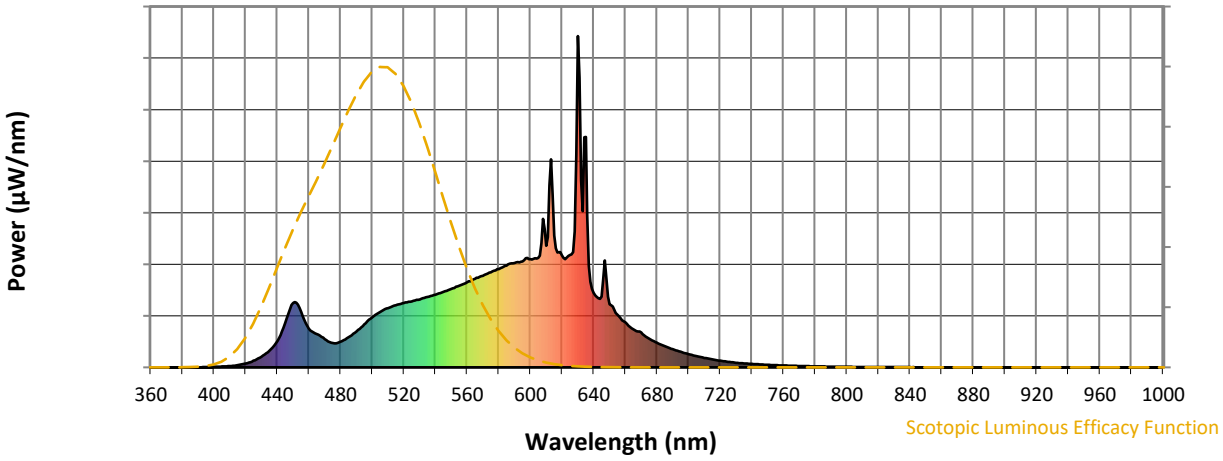
## Scotopic Flux vs. Wavelength




**Scotopic Lumens: NR** **S/P: 1.4**

| λ (nm) | Power W^/nm | Lumens (ϕ/nm) | λ (nm) | Power W^/nm | Lumens (ϕ/nm) | λ (nm) | Power W^/nm | Lumens (ϕ/nm) | λ (nm) | Power W^/nm | Lumens (ϕ/nm) | λ (nm) | Power W^/nm | Lumens (ϕ/nm) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 360 | 0 | NR | 490 | 108 | NR | 620 | 338 | NR | 750 | 8 | NR | 880 | 0 | NR |
| 365 | 0 | NR | 495 | 129 | NR | 625 | 339 | NR | 755 | 7 | NR | 885 | 0 | NR |
| 370 | 0 | NR | 500 | 151 | NR | 630 | 1000 | NR | 760 | 6 | NR | 890 | 0 | NR |
| 375 | 0 | NR | 505 | 168 | NR | 635 | 695 | NR | 765 | 5 | NR | 895 | 0 | NR |
| 380 | 0 | NR | 510 | 179 | NR | 640 | 225 | NR | 770 | 4 | NR | 900 | 0 | NR |
| 385 | 0 | NR | 515 | 187 | NR | 645 | 214 | NR | 775 | 4 | NR | 905 | 0 | NR |
| 390 | 0 | NR | 520 | 194 | NR | 650 | 190 | NR | 780 | 3 | NR | 910 | 0 | NR |
| 395 | 1 | NR | 525 | 199 | NR | 655 | 160 | NR | 785 | 3 | NR | 915 | 0 | NR |
| 400 | 2 | NR | 530 | 205 | NR | 660 | 136 | NR | 790 | 2 | NR | 920 | 0 | NR |
| 405 | 2 | NR | 535 | 213 | NR | 665 | 115 | NR | 795 | 2 | NR | 925 | 0 | NR |
| 410 | 4 | NR | 540 | 219 | NR | 670 | 106 | NR | 800 | 2 | NR | 930 | 0 | NR |
| 415 | 7 | NR | 545 | 228 | NR | 675 | 87 | NR | 805 | 1 | NR | 935 | 0 | NR |
| 420 | 12 | NR | 550 | 236 | NR | 680 | 74 | NR | 810 | 1 | NR | 940 | 0 | NR |
| 425 | 20 | NR | 555 | 247 | NR | 685 | 64 | NR | 815 | 1 | NR | 945 | 0 | NR |
| 430 | 32 | NR | 560 | 257 | NR | 690 | 55 | NR | 820 | 1 | NR | 950 | 0 | NR |
| 435 | 50 | NR | 565 | 267 | NR | 695 | 47 | NR | 825 | 1 | NR | 955 | 0 | NR |
| 440 | 79 | NR | 570 | 277 | NR | 700 | 40 | NR | 830 | 1 | NR | 960 | 0 | NR |
| 445 | 133 | NR | 575 | 287 | NR | 705 | 34 | NR | 835 | 1 | NR | 965 | 0 | NR |
| 450 | 194 | NR | 580 | 297 | NR | 710 | 29 | NR | 840 | 1 | NR | 970 | 0 | NR |
| 455 | 168 | NR | 585 | 308 | NR | 715 | 24 | NR | 845 | 0 | NR | 975 | 0 | NR |
| 460 | 117 | NR | 590 | 315 | NR | 720 | 20 | NR | 850 | 0 | NR | 980 | 0 | NR |
| 465 | 101 | NR | 595 | 320 | NR | 725 | 17 | NR | 855 | 0 | NR | 985 | 0 | NR |
| 470 | 85 | NR | 600 | 327 | NR | 730 | 14 | NR | 860 | 0 | NR | 990 | 0 | NR |
| 475 | 73 | NR | 605 | 331 | NR | 735 | 12 | NR | 865 | 0 | NR | 995 | 0 | NR |
| 480 | 77 | NR | 610 | 367 | NR | 740 | 10 | NR | 870 | 0 | NR | 1000 | 0 | NR |
| 485 | 91 | NR | 615 | 398 | NR | 745 | 9 | NR | 875 | 0 | NR | | | |

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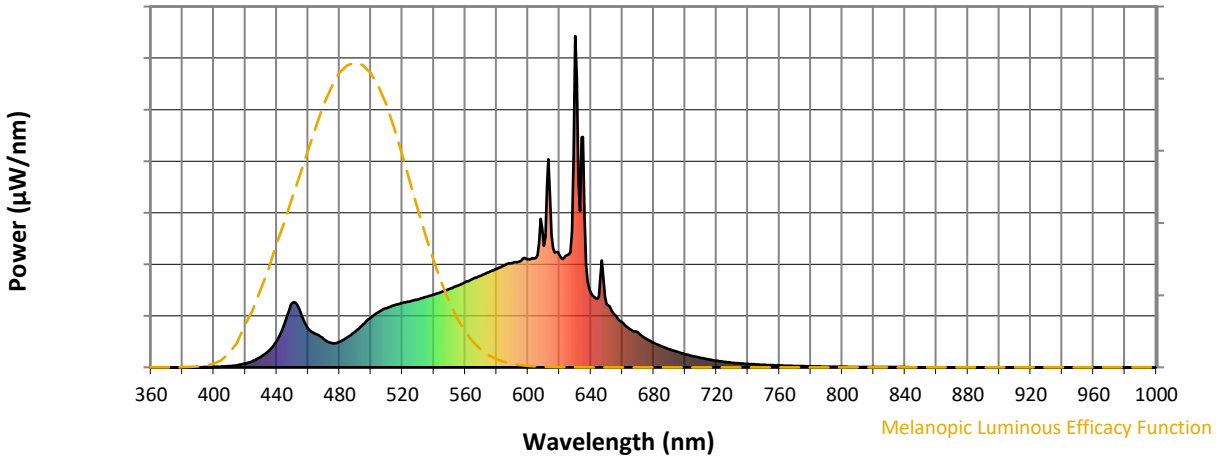
## Melanopic Flux vs. Wavelength




**Melanopic Lumens: NR** **M/P: 2.72**

| λ (nm) | Power W^/nm | Lumens (ϕ/nm) | λ (nm) | Power W^/nm | Lumens (ϕ/nm) | λ (nm) | Power W^/nm | Lumens (ϕ/nm) | λ (nm) | Power W^/nm | Lumens (ϕ/nm) | λ (nm) | Power W^/nm | Lumens (ϕ/nm) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 360 | 0 | NR | 490 | 108 | NR | 620 | 338 | NR | 750 | 8 | NR | 880 | 0 | NR |
| 365 | 0 | NR | 495 | 129 | NR | 625 | 339 | NR | 755 | 7 | NR | 885 | 0 | NR |
| 370 | 0 | NR | 500 | 151 | NR | 630 | 1000 | NR | 760 | 6 | NR | 890 | 0 | NR |
| 375 | 0 | NR | 505 | 168 | NR | 635 | 695 | NR | 765 | 5 | NR | 895 | 0 | NR |
| 380 | 0 | NR | 510 | 179 | NR | 640 | 225 | NR | 770 | 4 | NR | 900 | 0 | NR |
| 385 | 0 | NR | 515 | 187 | NR | 645 | 214 | NR | 775 | 4 | NR | 905 | 0 | NR |
| 390 | 0 | NR | 520 | 194 | NR | 650 | 190 | NR | 780 | 3 | NR | 910 | 0 | NR |
| 395 | 1 | NR | 525 | 199 | NR | 655 | 160 | NR | 785 | 3 | NR | 915 | 0 | NR |
| 400 | 2 | NR | 530 | 205 | NR | 660 | 136 | NR | 790 | 2 | NR | 920 | 0 | NR |
| 405 | 2 | NR | 535 | 213 | NR | 665 | 115 | NR | 795 | 2 | NR | 925 | 0 | NR |
| 410 | 4 | NR | 540 | 219 | NR | 670 | 106 | NR | 800 | 2 | NR | 930 | 0 | NR |
| 415 | 7 | NR | 545 | 228 | NR | 675 | 87 | NR | 805 | 1 | NR | 935 | 0 | NR |
| 420 | 12 | NR | 550 | 236 | NR | 680 | 74 | NR | 810 | 1 | NR | 940 | 0 | NR |
| 425 | 20 | NR | 555 | 247 | NR | 685 | 64 | NR | 815 | 1 | NR | 945 | 0 | NR |
| 430 | 32 | NR | 560 | 257 | NR | 690 | 55 | NR | 820 | 1 | NR | 950 | 0 | NR |
| 435 | 50 | NR | 565 | 267 | NR | 695 | 47 | NR | 825 | 1 | NR | 955 | 0 | NR |
| 440 | 79 | NR | 570 | 277 | NR | 700 | 40 | NR | 830 | 1 | NR | 960 | 0 | NR |
| 445 | 133 | NR | 575 | 287 | NR | 705 | 34 | NR | 835 | 1 | NR | 965 | 0 | NR |
| 450 | 194 | NR | 580 | 297 | NR | 710 | 29 | NR | 840 | 1 | NR | 970 | 0 | NR |
| 455 | 168 | NR | 585 | 308 | NR | 715 | 24 | NR | 845 | 0 | NR | 975 | 0 | NR |
| 460 | 117 | NR | 590 | 315 | NR | 720 | 20 | NR | 850 | 0 | NR | 980 | 0 | NR |
| 465 | 101 | NR | 595 | 320 | NR | 725 | 17 | NR | 855 | 0 | NR | 985 | 0 | NR |
| 470 | 85 | NR | 600 | 327 | NR | 730 | 14 | NR | 860 | 0 | NR | 990 | 0 | NR |
| 475 | 73 | NR | 605 | 331 | NR | 735 | 12 | NR | 865 | 0 | NR | 995 | 0 | NR |
| 480 | 77 | NR | 610 | 367 | NR | 740 | 10 | NR | 870 | 0 | NR | 1000 | 0 | NR |
| 485 | 91 | NR | 615 | 398 | NR | 745 | 9 | NR | 875 | 0 | NR | | | |

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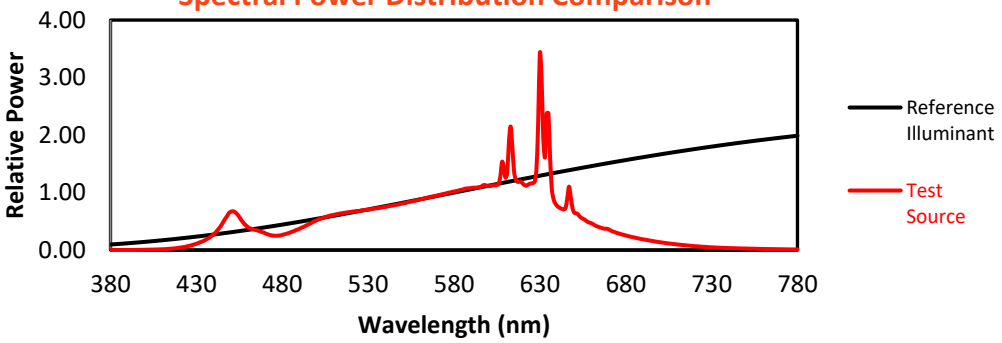
# TM-30-18

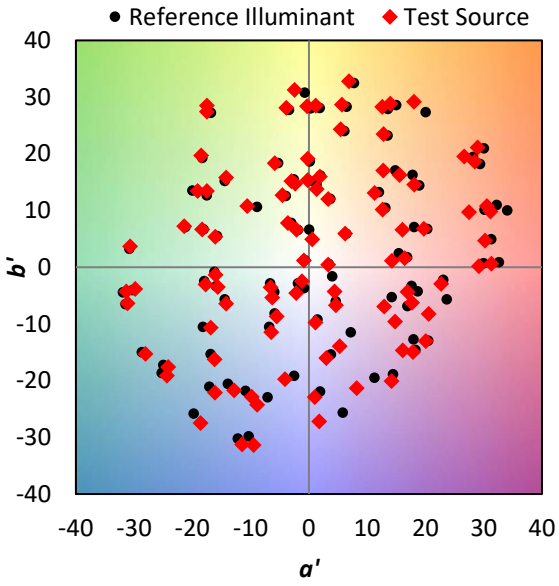
## Summary

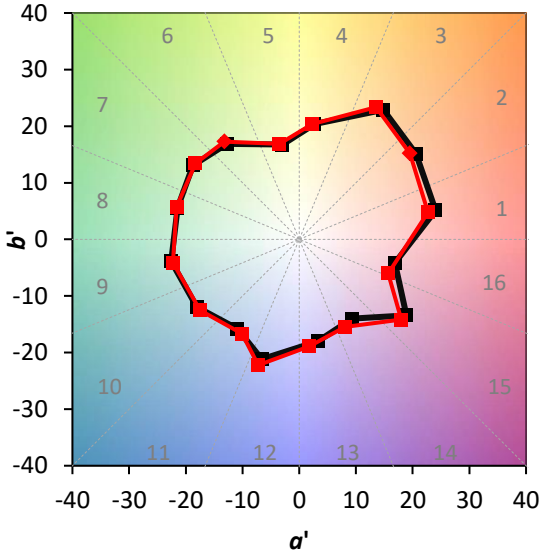
$R_f$ = 91.8
$R_g$ = 99.6
CIE $R_a$ = 93.5
$R_9$ = 55.1

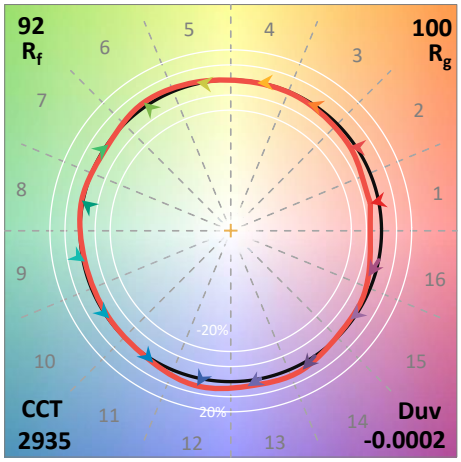
## Spectral Power Distribution Comparison

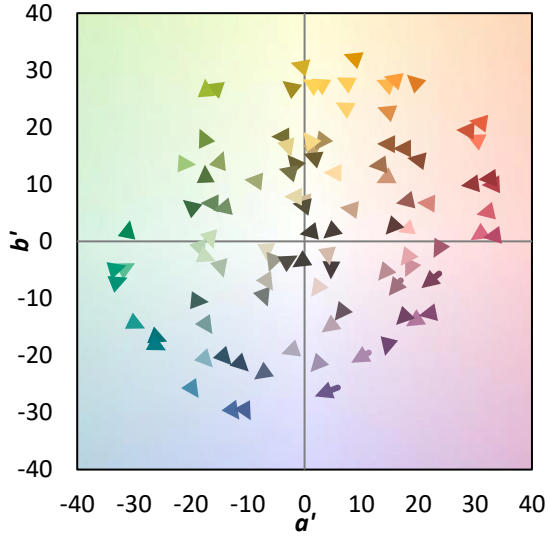



## Color Vector Graphics



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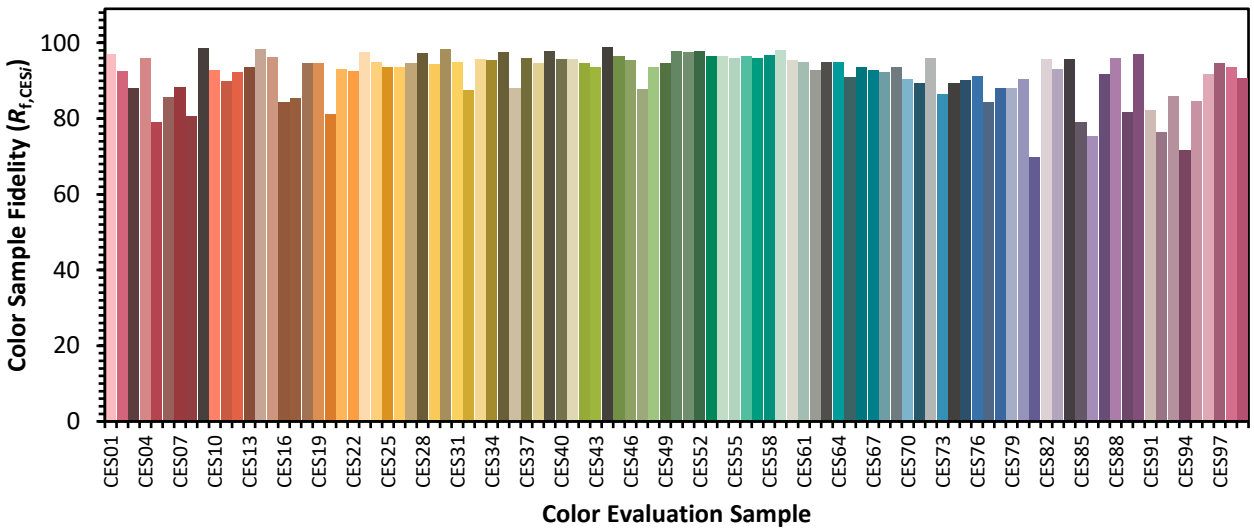
# TM-30-18

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

| | | | |
|---|---|---|---|
| CES01 = 86 | CES26 = 94 | CES51 = 97 | CES76 = 91 |
| CES02 = 63 | CES27 = 95 | CES52 = 98 | CES77 = 84 |
| CES03 = 32 | CES28 = 97 | CES53 = 97 | CES78 = 88 |
| CES04 = 70 | CES29 = 94 | CES54 = 96 | CES79 = 88 |
| CES05 = 51 | CES30 = 98 | CES55 = 96 | CES80 = 90 |
| CES06 = 51 | CES31 = 95 | CES56 = 97 | CES81 = 70 |
| CES07 = 44 | CES32 = 87 | CES57 = 96 | CES82 = 96 |
| CES08 = 42 | CES33 = 96 | CES58 = 97 | CES83 = 93 |
| CES09 = 29 | CES34 = 95 | CES59 = 98 | CES84 = 96 |
| CES10 = 76 | CES35 = 97 | CES60 = 95 | CES85 = 79 |
| CES11 = 59 | CES36 = 88 | CES61 = 95 | CES86 = 75 |
| CES12 = 65 | CES37 = 96 | CES62 = 93 | CES87 = 92 |
| CES13 = 44 | CES38 = 95 | CES63 = 95 | CES88 = 96 |
| CES14 = 74 | CES39 = 98 | CES64 = 95 | CES89 = 82 |
| CES15 = 72 | CES40 = 96 | CES65 = 91 | CES90 = 97 |
| CES16 = 48 | CES41 = 96 | CES66 = 94 | CES91 = 82 |
| CES17 = 50 | CES42 = 95 | CES67 = 93 | CES92 = 77 |
| CES18 = 57 | CES43 = 94 | CES68 = 92 | CES93 = 86 |
| CES19 = 72 | CES44 = 99 | CES69 = 93 | CES94 = 72 |
| CES20 = 67 | CES45 = 97 | CES70 = 91 | CES95 = 85 |
| CES21 = 86 | CES46 = 95 | CES71 = 89 | CES96 = 92 |
| CES22 = 79 | CES47 = 88 | CES72 = 96 | CES97 = 95 |
| CES23 = 92 | CES48 = 94 | CES73 = 86 | CES98 = 94 |
| CES24 = 91 | CES49 = 95 | CES74 = 89 | CES99 = 91 |
| CES25 = 72 | CES50 = 98 | CES75 = 90 | |



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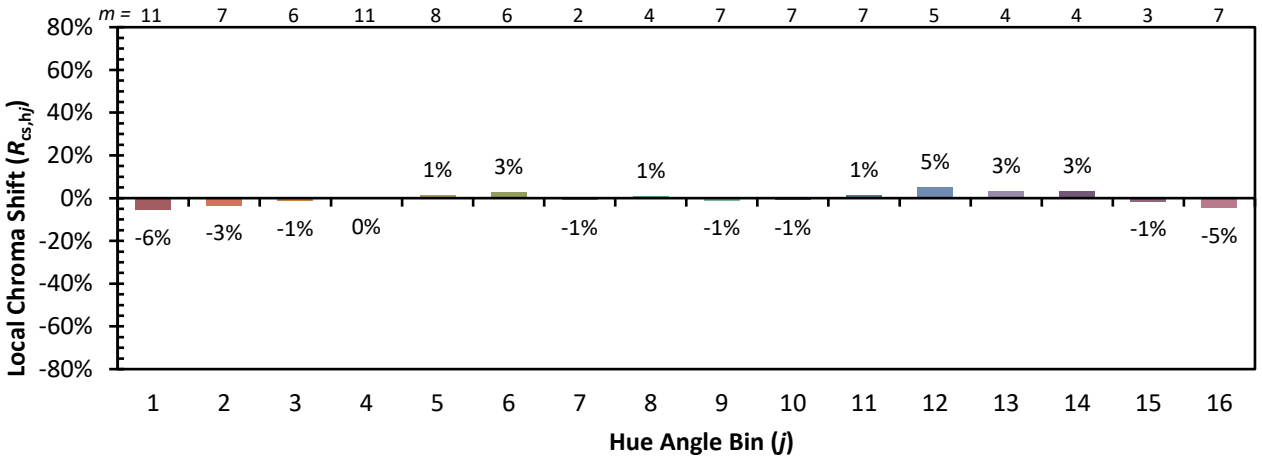
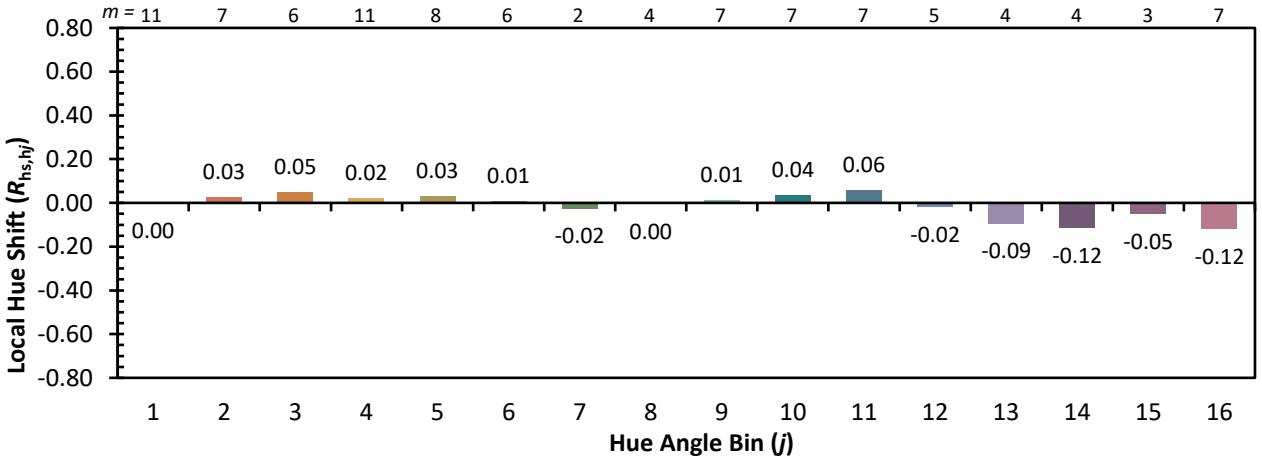
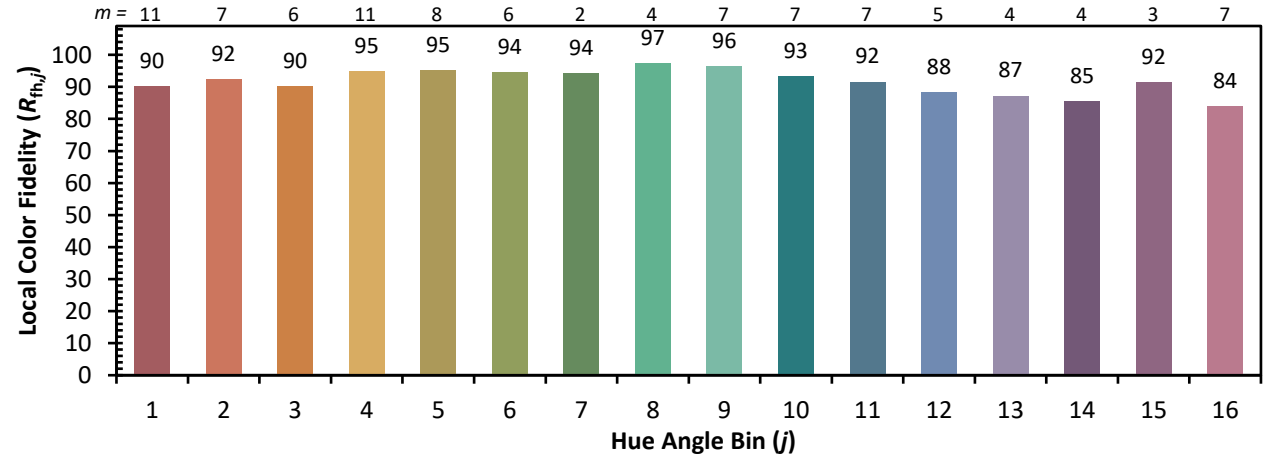
# TM-30-18

## Color Rendition by Hue-Angle Bin



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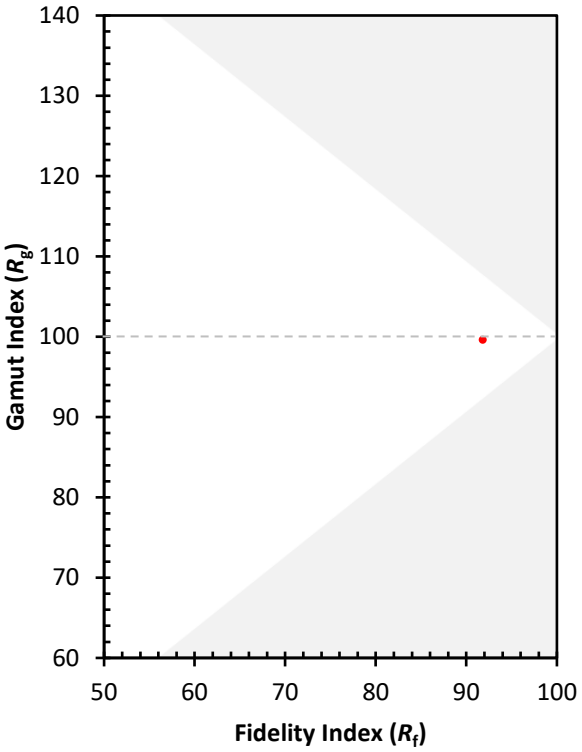
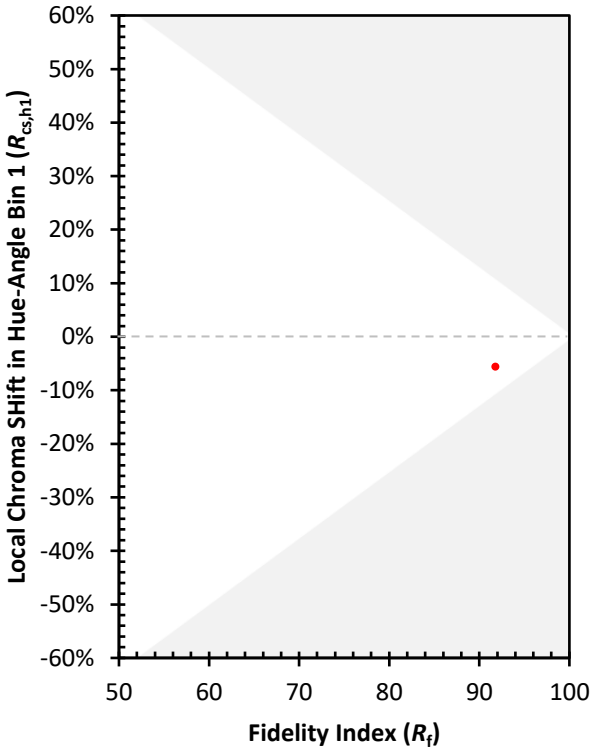
## TM-30-18

### Measure Comparisons




(END OF REPORT)