

Indoor Distribution Test Report

Spectrum Lighting Inc.

994 Jefferson Street
Fall River, MA 02721
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Spectrum Lighting Photometric Lab

Luminaire

SS4Mx TD10L E1 SDD4x 30K MW SO
Nom 4" square recessed downlight

Test Number

SP-00788_2

Test Date

The results contained in this report pertain only to this IES file.

Summary of Results

Power

| | |
|-------------|--------|
| Input Watts | 15.9 W |
|-------------|--------|

Lumen Output

| | |
|---------------|------------|
| Output Lumens | 714 |
| Efficacy | 44.91 lm/W |

Luminous Dimensions

| | |
|-----------------|------|
| 0° - 180° Size | 0.33 |
| 90° - 270° Size | 0.33 |
| Height | 0 |

Spacing Criterion

| | |
|---------------------------|------|
| Two luminaires, plane 0° | 1.03 |
| Two luminaires, plane 90° | 1.02 |
| Four luminaires | 1.07 |

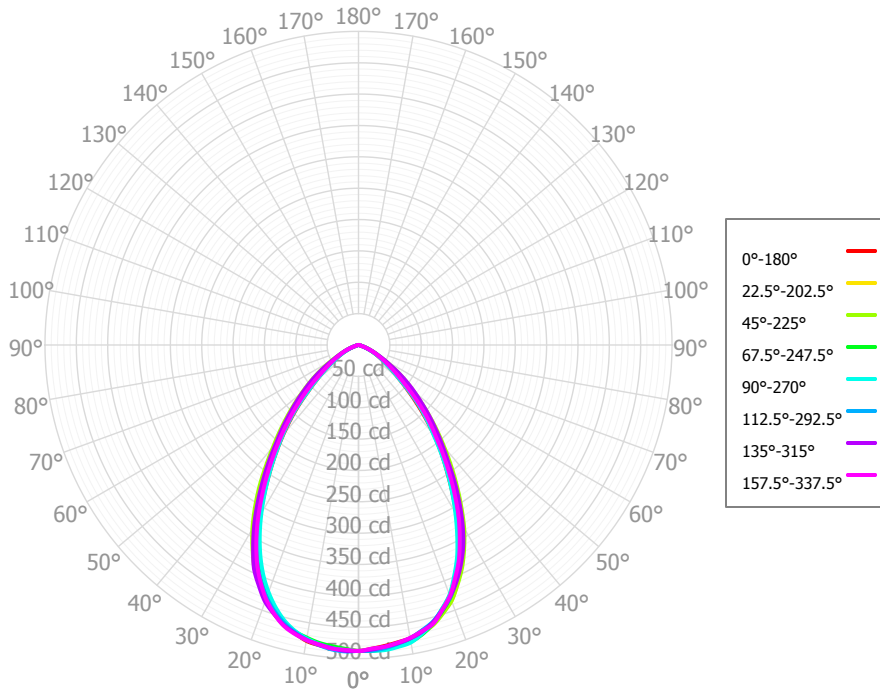
Full Beam Angle

| | |
|------------|-----|
| 0° - 180° | 70° |
| 90° - 270° | 70° |

IES File Header Contents

| Keyword | Value |
|-----------|---|
| TEST | SP-00788_2 |
| TESTLAB | Spectrum Lighting Photometric Lab, VLS-245-981 |
| MANUFAC | Spectrum Lighting |
| ISSUEDATE | 3/14/2019 |
| UPDATE | 4/23/2019 |
| LUMCAT | SS4Mx TD10L E1 SDD4x 30K MW SO |
| LUMINAIRE | Nom 4" square recessed downlight |
| OTHER | Beam Angle: 71 degrees |
| OTHER | Matte white trim; Solite lens |
| LAMPCAT | N/A |
| LAMP | N/A, White Light, CRI: 80 |
| OTHER | CCT Output Multipliers: N/A, only 3000K available |
| OTHER | Total luminaire wattages is approximate |
| OTHER | This report prepared by Spectrum Lighting |
| _CRI | 80 |
| _CCTMULT | only 30K available |
| _LAMPMULT | only 10L available |

Candela Polar Plot



Zonal Lumen Summary

| Zone | Lumens | % Fixture | Zone | Lumens | % Fixture |
|-----------------|--------|-----------|-------------------|--------|-----------|
| 0.00° - 10.00° | 46.72 | 6.54% | 90.00° - 100.00° | 0.09 | 0.01% |
| 10.00° - 20.00° | 128.60 | 18.01% | 100.00° - 110.00° | 0.00 | 0.00% |
| 20.00° - 30.00° | 173.91 | 24.35% | 100.00° - 120.00° | 0.00 | 0.00% |
| 30.00° - 40.00° | 160.87 | 22.53% | 120.00° - 130.00° | 0.00 | 0.00% |
| 40.00° - 50.00° | 112.88 | 15.81% | 130.00° - 140.00° | 0.00 | 0.00% |
| 50.00° - 60.00° | 60.44 | 8.46% | 140.00° - 150.00° | 0.00 | 0.00% |
| 60.00° - 70.00° | 25.00 | 3.50% | 150.00° - 160.00° | 0.00 | 0.00% |
| 70.00° - 80.00° | 4.48 | 0.63% | 160.00° - 170.00° | 0.00 | 0.00% |
| 80.00° - 90.00° | 1.05 | 0.15% | 170.00° - 180.00° | 0.00 | 0.00% |
| 0.00° - 90.00° | 713.96 | 99.99% | 0.00° - 180.00° | 714.05 | 100.00% |

Candela Distribution

| | 0.00° | 22.50° | 45.00° | 67.50° | 90.00° | 112.50° | 135.00° | 157.50° | 180.00° | 202.50° | 225.00° | 247.50° | 270.00° | 292.50° | 315.00° | 337.50° | 360.00° |
|---------|--------|--------|--------|--------|--------|---------|---------|---------|---------|---------|---------|---------|---------|---------|---------|---------|---------|
| 0.00° | 488.00 | 488.00 | 488.00 | 488.00 | 488.00 | 488.00 | 488.00 | 488.00 | 488.00 | 488.00 | 488.00 | 488.00 | 488.00 | 488.00 | 488.00 | 488.00 | 488.00 |
| 2.50° | 484.94 | 486.56 | 486.40 | 488.33 | 488.11 | 489.17 | 488.27 | 486.64 | 486.54 | 485.87 | 486.84 | 485.02 | 487.05 | 487.95 | 486.15 | 484.75 | 484.94 |
| 5.00° | 481.80 | 484.52 | 483.99 | 486.88 | 488.31 | 487.34 | 485.39 | 486.04 | 485.23 | 483.96 | 484.77 | 482.23 | 485.15 | 485.40 | 483.03 | 483.02 | 481.80 |
| 7.50° | 478.36 | 481.70 | 481.69 | 484.34 | 485.52 | 482.77 | 481.79 | 482.14 | 482.78 | 481.40 | 481.49 | 479.27 | 481.16 | 480.50 | 479.85 | 478.88 | 478.36 |
| 10.00° | 474.87 | 478.33 | 478.77 | 480.52 | 481.65 | 476.97 | 477.92 | 477.69 | 479.06 | 476.56 | 477.84 | 474.14 | 475.44 | 474.92 | 475.18 | 474.38 | 474.87 |
| 12.50° | 467.06 | 470.09 | 470.72 | 472.22 | 471.03 | 469.08 | 470.50 | 471.81 | 469.90 | 469.90 | 470.50 | 468.01 | 467.27 | 466.39 | 468.38 | 467.42 | 467.06 |
| 15.00° | 458.79 | 459.16 | 461.86 | 459.63 | 458.54 | 458.80 | 462.09 | 463.09 | 459.33 | 460.41 | 462.16 | 457.34 | 455.32 | 457.20 | 458.05 | 460.25 | 458.79 |
| 17.50° | 442.45 | 446.98 | 448.56 | 444.83 | 441.86 | 445.26 | 449.32 | 448.61 | 444.33 | 449.09 | 447.66 | 445.00 | 439.07 | 442.94 | 443.65 | 443.37 | 442.45 |
| 20.00° | 425.32 | 434.24 | 433.76 | 428.30 | 424.30 | 428.30 | 435.63 | 431.12 | 427.05 | 432.47 | 432.32 | 425.74 | 419.56 | 427.94 | 427.04 | 426.04 | 425.32 |
| 22.50° | 401.34 | 411.25 | 413.12 | 406.16 | 398.82 | 407.56 | 415.34 | 408.75 | 404.06 | 413.01 | 413.46 | 404.57 | 396.93 | 404.69 | 408.32 | 402.55 | 401.34 |
| 25.00° | 376.12 | 384.66 | 391.06 | 380.43 | 372.25 | 382.68 | 394.15 | 383.02 | 378.08 | 388.28 | 392.76 | 377.39 | 370.51 | 380.75 | 386.32 | 378.69 | 376.12 |
| 27.50° | 344.22 | 354.79 | 364.89 | 351.47 | 340.83 | 353.99 | 363.83 | 352.74 | 346.22 | 361.31 | 366.12 | 349.03 | 341.12 | 350.82 | 361.75 | 349.62 | 344.22 |
| 30.00° | 312.00 | 324.05 | 336.90 | 320.81 | 309.05 | 323.10 | 332.83 | 320.78 | 313.36 | 328.00 | 338.21 | 320.01 | 309.84 | 320.66 | 332.37 | 320.12 | 312.00 |
| 32.50° | 278.52 | 292.95 | 304.65 | 289.35 | 279.57 | 299.78 | 286.98 | 278.91 | 292.61 | 307.15 | 290.89 | 277.36 | 289.30 | 299.93 | 287.16 | 278.52 | |
| 35.00° | 246.13 | 261.77 | 272.89 | 257.55 | 246.19 | 259.02 | 266.73 | 254.48 | 246.23 | 261.34 | 275.28 | 258.45 | 246.19 | 258.11 | 267.41 | 254.46 | 246.13 |
| 37.50° | 217.00 | 230.82 | 242.05 | 227.85 | 215.67 | 228.05 | 235.16 | 223.12 | 215.85 | 231.12 | 241.85 | 225.77 | 215.69 | 229.13 | 234.84 | 223.15 | 217.00 |
| 40.00° | 187.91 | 199.90 | 212.66 | 198.82 | 185.61 | 200.00 | 204.12 | 194.04 | 187.03 | 202.65 | 211.14 | 199.06 | 188.36 | 200.46 | 207.37 | 193.20 | 187.91 |
| 42.50° | 158.88 | 172.95 | 185.42 | 172.13 | 161.07 | 173.37 | 179.42 | 166.65 | 159.89 | 174.49 | 184.81 | 172.50 | 162.32 | 174.19 | 182.00 | 168.26 | 158.88 |
| 45.00° | 131.45 | 146.26 | 159.69 | 146.02 | 136.37 | 148.31 | 155.19 | 141.82 | 133.62 | 148.99 | 160.00 | 147.05 | 135.76 | 148.56 | 158.65 | 143.14 | 131.45 |
| 47.50° | 106.92 | 122.28 | 135.83 | 122.32 | 110.55 | 123.87 | 134.29 | 118.52 | 108.12 | 123.78 | 137.19 | 121.86 | 109.02 | 126.22 | 135.93 | 117.51 | 106.92 |
| 50.00° | 85.84 | 98.52 | 114.71 | 99.04 | 86.36 | 102.06 | 113.88 | 97.09 | 88.14 | 102.78 | 116.40 | 99.58 | 88.80 | 104.27 | 116.20 | 94.64 | 85.84 |
| 52.50° | 69.97 | 80.72 | 96.33 | 81.23 | 69.92 | 81.04 | 95.80 | 76.56 | 72.18 | 82.02 | 97.74 | 78.40 | 70.17 | 83.77 | 97.19 | 77.95 | 69.97 |
| 55.00° | 56.56 | 63.49 | 78.22 | 63.99 | 55.18 | 66.89 | 77.82 | 62.28 | 58.30 | 67.68 | 80.18 | 64.60 | 56.64 | 65.53 | 78.89 | 63.05 | 56.56 |
| 57.50° | 46.17 | 52.36 | 60.32 | 52.18 | 46.32 | 54.23 | 60.19 | 50.45 | 45.66 | 53.58 | 63.60 | 51.28 | 43.97 | 53.76 | 60.71 | 51.29 | 46.17 |
| 60.00° | 37.35 | 41.69 | 46.19 | 40.66 | 37.70 | 43.15 | 44.87 | 41.17 | 37.05 | 43.77 | 48.92 | 40.22 | 36.12 | 42.89 | 47.56 | 41.04 | 37.35 |
| 62.50° | 30.11 | 34.03 | 34.65 | 31.97 | 29.71 | 32.32 | 35.33 | 32.65 | 30.29 | 34.30 | 35.54 | 30.38 | 28.72 | 34.00 | 34.93 | 33.00 | 30.11 |
| 65.00° | 23.20 | 26.45 | 25.49 | 23.44 | 22.12 | 25.71 | 26.48 | 25.85 | 23.54 | 26.76 | 25.65 | 23.50 | 21.40 | 25.58 | 26.05 | 25.32 | 23.20 |
| 67.50° | 16.56 | 19.27 | 17.64 | 17.80 | 15.38 | 19.04 | 18.54 | 19.15 | 16.76 | 19.57 | 17.17 | 17.17 | 15.13 | 18.00 | 17.35 | 18.05 | 16.56 |
| 70.00° | 10.39 | 12.47 | 11.57 | 12.16 | 9.46 | 11.74 | 11.73 | 11.82 | 9.73 | 12.88 | 11.53 | 11.28 | 10.68 | 11.37 | 12.00 | 11.64 | 10.39 |
| 72.50° | 4.54 | 6.85 | 6.27 | 6.53 | 4.92 | 5.99 | 6.26 | 6.23 | 4.95 | 6.83 | 6.83 | 6.11 | 5.10 | 6.03 | 6.94 | 6.02 | 4.54 |
| 75.00° | 2.33 | 3.04 | 3.50 | 2.19 | 2.26 | 2.32 | 3.28 | 2.67 | 2.40 | 3.06 | 3.42 | 2.95 | 2.05 | 3.08 | 4.09 | 3.12 | 2.33 |
| 77.50° | 1.50 | 1.92 | 1.49 | 1.61 | 1.52 | 1.88 | 1.98 | 1.82 | 1.90 | 2.01 | 1.92 | 1.60 | 1.64 | 1.82 | 2.13 | 1.65 | 1.50 |
| 80.00° | 1.47 | 1.55 | 1.19 | 1.30 | 1.44 | 1.44 | 1.42 | 1.60 | 1.51 | 1.81 | 1.74 | 1.39 | 1.47 | 1.64 | 1.60 | 1.26 | 1.47 |
| 82.50° | 1.43 | 1.53 | 1.04 | 1.20 | 1.43 | 1.23 | 1.59 | 1.32 | 1.41 | 1.41 | 1.20 | 1.13 | 1.37 | 1.53 | 1.25 | 1.17 | 1.43 |
| 85.00° | 1.42 | 1.71 | 1.07 | 1.16 | 1.07 | 1.28 | 0.76 | 1.66 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 1.34 | 1.10 | 1.32 | 1.42 |
| 87.50° | 1.66 | 1.09 | 1.23 | 1.40 | 1.12 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.92 | 1.21 | 1.22 | 1.66 |
| 90.00° | 0.99 | 1.29 | 1.59 | 1.31 | 1.18 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 1.06 | 1.33 | 1.32 | 0.99 |
| 92.50° | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 95.00° | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 97.50° | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 100.00° | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 102.50° | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 105.00° | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 107.50° | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 110.00° | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 112.50° | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |

Coefficients of Utilization – Zonal Cavity Method

Values are lumens delivered to the workplane.

| | | | | | | | | | | | | | | | | | | |
|------------|------------|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|
| RCR | pfc | 20% | 20% | 20% | 20% | 20% | 20% | 20% | 20% | 20% | 20% | 20% | 20% | 20% | 20% | 20% | 20% | 0% |
| | pcc | 80% | 80% | 80% | 80% | 70% | 70% | 70% | 70% | 50% | 50% | 50% | 30% | 30% | 30% | 10% | 10% | 0% |
| | pw | 70% | 50% | 30% | 10% | 70% | 50% | 30% | 10% | 50% | 30% | 10% | 50% | 30% | 10% | 50% | 30% | 30% |
| | 0 | 850 | 850 | 850 | 850 | 830 | 830 | 830 | 830 | 793 | 793 | 793 | 760 | 760 | 760 | 729 | 729 | 714 |
| | 1 | 801 | 777 | 755 | 736 | 782 | 761 | 741 | 724 | 732 | 716 | 701 | 705 | 692 | 680 | 680 | 670 | 656 |
| | 2 | 749 | 706 | 671 | 641 | 732 | 693 | 661 | 634 | 669 | 643 | 619 | 647 | 625 | 606 | 627 | 609 | 597 |
| | 3 | 700 | 643 | 599 | 564 | 684 | 632 | 592 | 560 | 613 | 578 | 550 | 595 | 566 | 541 | 578 | 553 | 542 |
| | 4 | 654 | 587 | 539 | 502 | 639 | 579 | 534 | 499 | 562 | 523 | 492 | 547 | 513 | 486 | 533 | 504 | 494 |
| | 5 | 611 | 539 | 488 | 450 | 598 | 531 | 484 | 448 | 517 | 476 | 444 | 505 | 468 | 439 | 493 | 461 | 452 |
| | 6 | 573 | 496 | 444 | 407 | 561 | 490 | 441 | 405 | 478 | 434 | 402 | 467 | 429 | 399 | 457 | 423 | 415 |
| | 7 | 538 | 458 | 406 | 370 | 527 | 453 | 404 | 369 | 443 | 399 | 367 | 433 | 394 | 365 | 425 | 389 | 382 |
| | 8 | 506 | 425 | 374 | 339 | 496 | 420 | 372 | 338 | 412 | 368 | 336 | 404 | 364 | 335 | 396 | 360 | 354 |
| | 9 | 477 | 395 | 345 | 312 | 468 | 391 | 344 | 311 | 384 | 340 | 310 | 377 | 337 | 309 | 370 | 334 | 329 |
| | 10 | 450 | 369 | 321 | 288 | 442 | 366 | 319 | 288 | 359 | 316 | 287 | 353 | 314 | 286 | 347 | 311 | 306 |

Cone of Light

| Mtg Height | Light Level | Beam Diameter |
|------------|-------------|---------------|
| 5.5 ft | 16.1 fc | 7.7 ft |
| 6.5 ft | 11.6 fc | 9.1 ft |
| 7.5 ft | 8.7 fc | 10.6 ft |
| 8.0 ft | 7.6 fc | 11.3 ft |
| 10.0 ft | 4.9 fc | 14.1 ft |
| 12.0 ft | 3.4 fc | 16.9 ft |
| 14.0 ft | 2.5 fc | 19.7 ft |
| 16.0 ft | 1.9 fc | 22.5 ft |
| 20.0 ft | 1.2 fc | 28.1 ft |
| 24.0 ft | 0.8 fc | 33.8 ft |
| 28.0 ft | 0.6 fc | 39.4 ft |

Average Luminaire Luminance [cd/m²]

| | 0.00° | 45.00° | 90.00° |
|---------------|--------|--------|--------|
| 0.00° | 48,235 | 48,235 | 48,235 |
| 45.00° | 18,374 | 22,322 | 19,062 |
| 55.00° | 9,747 | 13,479 | 9,509 |
| 65.00° | 5,425 | 5,961 | 5,173 |
| 75.00° | 890 | 1,338 | 864 |
| 85.00° | 1,613 | 1,210 | 1,217 |

UGR CIE 190:2010

| | | | | | | | | | | | |
|----------------------------|------------|-------------------------|------------|------------|------------|------------|-----------------------|------------|------------|------------|------------|
| Ceiling reflectance | | 0.7 | 0.7 | 0.5 | 0.5 | 0.3 | 0.7 | 0.7 | 0.5 | 0.5 | 0.3 |
| Wall reflectance | | 0.5 | 0.3 | 0.5 | 0.3 | 0.3 | 0.5 | 0.3 | 0.5 | 0.3 | 0.3 |
| Plane reflectance | | 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 | | | | |
| 2H | 2H | 17.4 | 18.7 | 17.8 | 19.0 | 19.3 | 17.5 | 18.8 | 17.9 | 19.1 | 19.4 |
| | 3H | 17.8 | 18.9 | 18.2 | 19.3 | 19.6 | 17.8 | 18.9 | 18.2 | 19.3 | 19.6 |
| | 4H | 17.8 | 18.8 | 18.2 | 19.1 | 19.5 | 17.8 | 18.8 | 18.2 | 19.2 | 19.6 |
| | 6H | 17.7 | 18.6 | 18.1 | 19.0 | 19.4 | 17.7 | 18.7 | 18.1 | 19.0 | 19.4 |
| | 8H | 17.6 | 18.5 | 18.1 | 18.9 | 19.3 | 17.7 | 18.6 | 18.1 | 19.0 | 19.4 |
| | 12H | 17.6 | 18.5 | 18.1 | 18.9 | 19.3 | 17.6 | 18.5 | 18.1 | 18.9 | 19.3 |
| 4H | 2H | 17.6 | 18.7 | 18.0 | 19.0 | 19.4 | 17.7 | 18.7 | 18.1 | 19.1 | 19.5 |
| | 3H | 18.1 | 18.9 | 18.5 | 19.3 | 19.7 | 18.1 | 18.9 | 18.5 | 19.3 | 19.7 |
| | 4H | 18.0 | 18.8 | 18.4 | 19.2 | 19.6 | 18.0 | 18.8 | 18.5 | 19.2 | 19.6 |
| | 6H | 17.9 | 18.6 | 18.4 | 19.0 | 19.5 | 18.0 | 18.6 | 18.4 | 19.0 | 19.5 |
| | 8H | 17.9 | 18.5 | 18.4 | 18.9 | 19.4 | 17.9 | 18.5 | 18.4 | 19.0 | 19.4 |
| | 12H | 17.9 | 18.4 | 18.4 | 18.9 | 19.4 | 17.9 | 18.4 | 18.4 | 18.9 | 19.4 |
| 8H | 4H | 17.9 | 18.5 | 18.4 | 19.0 | 19.4 | 17.9 | 18.5 | 18.4 | 19.0 | 19.4 |
| | 6H | 17.8 | 18.3 | 18.3 | 18.8 | 19.3 | 17.8 | 18.3 | 18.3 | 18.8 | 19.3 |
| | 8H | 17.8 | 18.2 | 18.3 | 18.7 | 19.2 | 17.8 | 18.2 | 18.3 | 18.7 | 19.2 |
| | 12H | 17.8 | 18.2 | 18.3 | 18.7 | 19.2 | 17.8 | 18.1 | 18.3 | 18.6 | 19.2 |
| 12H | 4H | 17.9 | 18.4 | 18.3 | 18.9 | 19.3 | 17.9 | 18.4 | 18.4 | 18.9 | 19.4 |
| | 6H | 17.8 | 18.2 | 18.3 | 18.7 | 19.2 | 17.8 | 18.2 | 18.3 | 18.7 | 19.2 |
| | 8H | 17.7 | 18.1 | 18.3 | 18.6 | 19.2 | 17.8 | 18.1 | 18.3 | 18.6 | 19.2 |

Corrected UGR values based on total output lumens

SHR = 1.0