

Indoor Distribution Test Report

Spectrum Lighting Inc.

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Spectrum Lighting Photometric Lab

Luminaire

SGECS4SQFX 10L 35HK XX CA4FX SO SG
Nom 4" square Chicago Plenum downlight, Solite lens, Soft glow finish

Test Number

SP-01184_M-10L

Test Date

6/16/2020

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

Summary of Results

Power

| | |
|-------------|-------|
| Input Watts | 8.1 W |
|-------------|-------|

Lumen Output

| | |
|---------------|-------------|
| Output Lumens | 820 |
| Efficacy | 101.23 lm/W |

Luminous Dimensions

| | |
|-----------------|-----|
| 0° - 180° Size | 0.3 |
| 90° - 270° Size | 0.3 |
| Height | 0 |

Spacing Criterion

| | |
|---------------------------|------|
| Two luminaires, plane 0° | 1.17 |
| Two luminaires, plane 90° | 1.17 |
| Four luminaires | 1.18 |

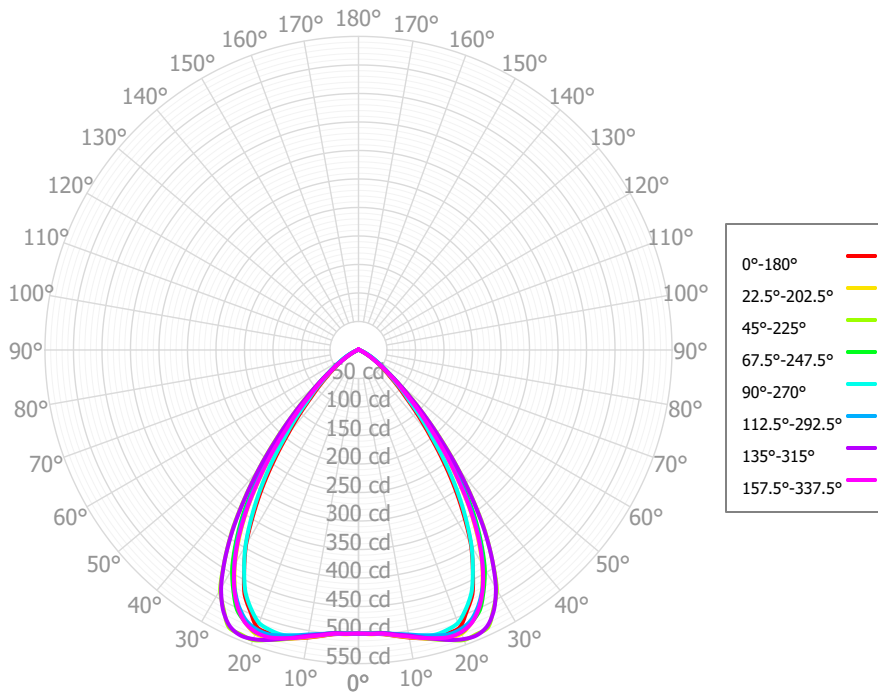
Full Beam Angle

| | |
|------------|-----|
| 0° - 180° | 72° |
| 90° - 270° | 73° |

IES File Header Contents

| Keyword | Value |
|-----------|---|
| TEST | SP-01184_M-10L |
| TESTLAB | Spectrum Lighting Photometric Lab, VLS-245-981 |
| MANUFAC | Spectrum Lighting |
| TESTDATE | 6/16/2020 |
| ISSUEDATE | 7/20/2020 |
| LUMCAT | SGECS4SQFX 10L 35HK XX CA4FX SO SG |
| LUMINAIRE | Nom 4" square Chicago Plenum downlight, Solite lens, Soft glow finish |
| OTHER | Beam angle: 71.8 deg |
| LAMPCAT | N/A |
| LAMP | N/A, 90CRI/35HK |
| OTHER | Total luminaire wattage is approximate |
| OTHER | CCT Output Multipliers: 27HK x 0.93, 30HK x 0.97, 35HK x 1.0, 40HK x 1.02 |
| OTHER | This report prepared by Spectrum Lighting, scaled from 20L, 27HK |

Candela Polar Plot



Zonal Lumen Summary

| Zone | Lumens | % Fixture | Zone | Lumens | % Fixture |
|-----------------|--------|-----------|-------------------|--------|-----------|
| 0.00° - 10.00° | 48.81 | 5.95% | 90.00° - 100.00° | 0.73 | 0.09% |
| 10.00° - 20.00° | 147.87 | 18.03% | 100.00° - 110.00° | 0.68 | 0.08% |
| 20.00° - 30.00° | 227.02 | 27.69% | 100.00° - 120.00° | 1.33 | 0.16% |
| 30.00° - 40.00° | 211.23 | 25.76% | 120.00° - 130.00° | 0.60 | 0.07% |
| 40.00° - 50.00° | 115.71 | 14.11% | 130.00° - 140.00° | 0.56 | 0.07% |
| 50.00° - 60.00° | 45.00 | 5.49% | 140.00° - 150.00° | 0.49 | 0.06% |
| 60.00° - 70.00° | 14.05 | 1.71% | 150.00° - 160.00° | 0.36 | 0.04% |
| 70.00° - 80.00° | 4.02 | 0.49% | 160.00° - 170.00° | 0.23 | 0.03% |
| 80.00° - 90.00° | 1.83 | 0.22% | 170.00° - 180.00° | 0.08 | 0.01% |
| 0.00° - 90.00° | 815.54 | 99.46% | 0.00° - 180.00° | 819.93 | 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° | 497.44 | 497.44 | 497.44 | 497.44 | 497.44 | 497.44 | 497.44 | 497.44 | 497.44 | 497.44 | 497.44 | 497.44 | 497.44 | 497.44 | 497.44 | 497.44 | 497.44 |
| 2.50° | 498.39 | 499.28 | 497.90 | 496.97 | 498.04 | 497.94 | 497.91 | 498.44 | 498.39 | 499.28 | 497.90 | 496.97 | 498.04 | 497.94 | 497.91 | 498.44 | 498.39 |
| 5.00° | 500.60 | 499.74 | 500.09 | 498.32 | 500.12 | 498.99 | 498.67 | 499.87 | 500.60 | 499.74 | 500.09 | 498.32 | 500.12 | 498.99 | 498.67 | 499.87 | 500.60 |
| 7.50° | 506.00 | 505.58 | 504.63 | 503.37 | 503.63 | 502.42 | 503.35 | 504.92 | 506.00 | 505.58 | 504.63 | 503.37 | 503.63 | 502.42 | 503.35 | 504.92 | 506.00 |
| 10.00° | 512.23 | 511.52 | 509.76 | 508.59 | 508.53 | 506.84 | 508.77 | 510.60 | 512.23 | 511.52 | 509.76 | 508.59 | 508.53 | 506.84 | 508.77 | 510.60 | 512.23 |
| 12.50° | 517.98 | 518.07 | 517.56 | 514.83 | 513.02 | 512.90 | 516.70 | 517.46 | 517.98 | 518.07 | 517.56 | 514.83 | 513.02 | 512.90 | 516.70 | 517.46 | 517.98 |
| 15.00° | 523.65 | 524.24 | 525.78 | 520.88 | 517.21 | 518.40 | 524.82 | 523.42 | 523.65 | 524.24 | 525.78 | 520.88 | 517.21 | 518.40 | 524.82 | 523.42 | 523.65 |
| 17.50° | 521.34 | 528.93 | 533.56 | 525.08 | 515.24 | 523.17 | 533.43 | 528.13 | 521.34 | 528.93 | 533.56 | 525.08 | 515.24 | 523.17 | 533.43 | 528.13 | 521.34 |
| 20.00° | 518.28 | 529.31 | 541.31 | 527.14 | 509.69 | 521.74 | 539.71 | 526.71 | 518.28 | 529.31 | 541.31 | 527.14 | 509.69 | 521.74 | 539.71 | 526.71 | 518.28 |
| 22.50° | 496.17 | 518.02 | 539.92 | 517.35 | 492.02 | 514.07 | 541.75 | 518.49 | 496.17 | 518.02 | 539.92 | 517.35 | 492.02 | 514.07 | 541.75 | 518.49 | 496.17 |
| 25.00° | 472.92 | 500.36 | 537.15 | 503.55 | 469.11 | 496.43 | 534.52 | 499.84 | 472.92 | 500.36 | 537.15 | 503.55 | 469.11 | 496.43 | 534.52 | 499.84 | 472.92 |
| 27.50° | 434.42 | 470.08 | 512.64 | 475.49 | 434.61 | 471.10 | 514.50 | 472.32 | 434.42 | 470.08 | 512.64 | 475.49 | 434.61 | 471.10 | 514.50 | 472.32 | 434.42 |
| 30.00° | 394.67 | 434.06 | 485.32 | 443.17 | 396.54 | 435.95 | 482.23 | 435.38 | 394.67 | 434.06 | 485.32 | 443.17 | 396.54 | 435.95 | 482.23 | 435.38 | 394.67 |
| 32.50° | 344.35 | 389.48 | 436.56 | 400.17 | 350.26 | 395.01 | 436.63 | 392.34 | 344.35 | 389.48 | 436.56 | 400.17 | 350.26 | 395.01 | 436.63 | 392.34 | 344.35 |
| 35.00° | 293.81 | 340.43 | 386.11 | 353.50 | 302.21 | 346.32 | 384.33 | 342.17 | 293.81 | 340.43 | 386.11 | 353.50 | 302.21 | 346.32 | 384.33 | 342.17 | 293.81 |
| 37.50° | 242.16 | 286.15 | 328.08 | 299.81 | 252.64 | 294.12 | 326.44 | 288.41 | 242.16 | 286.15 | 328.08 | 299.81 | 252.64 | 294.12 | 326.44 | 288.41 | 242.16 |
| 40.00° | 193.31 | 234.02 | 271.12 | 247.38 | 202.87 | 242.68 | 269.92 | 236.70 | 193.31 | 234.02 | 271.12 | 247.38 | 202.87 | 242.68 | 269.92 | 236.70 | 193.31 |
| 42.50° | 153.39 | 183.82 | 217.41 | 196.74 | 164.32 | 191.48 | 214.26 | 185.76 | 153.39 | 183.82 | 217.41 | 196.74 | 164.32 | 191.48 | 214.26 | 185.76 | 153.39 |
| 45.00° | 117.91 | 142.73 | 167.68 | 153.04 | 126.49 | 151.72 | 167.02 | 145.98 | 117.91 | 142.73 | 167.68 | 153.04 | 126.49 | 151.72 | 167.02 | 145.98 | 117.91 |
| 47.50° | 92.93 | 107.88 | 126.92 | 116.98 | 101.91 | 114.44 | 123.93 | 109.04 | 92.93 | 107.88 | 126.92 | 116.98 | 101.91 | 114.44 | 123.93 | 109.04 | 92.93 |
| 50.00° | 71.72 | 82.53 | 91.96 | 88.65 | 78.15 | 89.63 | 92.25 | 84.54 | 71.72 | 82.53 | 91.96 | 88.65 | 78.15 | 89.63 | 92.25 | 84.54 | 71.72 |
| 52.50° | 57.10 | 62.25 | 66.76 | 67.05 | 63.50 | 66.52 | 64.64 | 62.13 | 57.10 | 62.25 | 66.76 | 67.05 | 63.50 | 66.52 | 64.64 | 62.13 | 57.10 |
| 55.00° | 44.47 | 47.52 | 46.72 | 50.86 | 49.55 | 52.19 | 47.07 | 47.69 | 44.47 | 47.52 | 46.72 | 50.86 | 49.55 | 52.19 | 47.07 | 47.69 | 44.47 |
| 57.50° | 34.50 | 34.98 | 33.30 | 38.26 | 39.61 | 38.42 | 31.96 | 33.92 | 34.50 | 34.98 | 33.30 | 38.26 | 39.61 | 38.42 | 31.96 | 33.92 | 34.50 |
| 60.00° | 25.88 | 26.05 | 23.09 | 28.64 | 30.25 | 29.57 | 23.15 | 25.67 | 25.88 | 26.05 | 23.09 | 28.64 | 30.25 | 29.57 | 23.15 | 25.67 | 25.88 |
| 62.50° | 18.67 | 18.11 | 16.11 | 20.49 | 23.08 | 20.93 | 15.35 | 17.64 | 18.67 | 18.11 | 16.11 | 20.49 | 23.08 | 20.93 | 15.35 | 17.64 | 18.67 |
| 65.00° | 13.19 | 12.76 | 11.23 | 14.26 | 16.41 | 15.04 | 11.17 | 12.78 | 13.19 | 12.76 | 11.23 | 14.26 | 16.41 | 15.04 | 11.17 | 12.78 | 13.19 |
| 67.50° | 9.09 | 7.88 | 7.96 | 8.74 | 11.06 | 9.59 | 7.28 | 8.22 | 9.09 | 7.88 | 7.96 | 8.74 | 11.06 | 9.59 | 7.28 | 8.22 | 9.09 |
| 70.00° | 6.38 | 5.79 | 5.91 | 6.08 | 6.89 | 6.87 | 5.70 | 5.99 | 6.38 | 5.79 | 5.91 | 6.08 | 6.89 | 6.87 | 5.70 | 5.99 | 6.38 |
| 72.50° | 4.53 | 3.97 | 4.58 | 4.16 | 5.04 | 4.53 | 4.19 | 4.05 | 4.53 | 3.97 | 4.58 | 4.16 | 5.04 | 4.53 | 4.19 | 4.05 | 4.53 |
| 75.00° | 3.59 | 3.48 | 3.66 | 3.47 | 3.68 | 3.72 | 3.48 | 3.50 | 3.59 | 3.48 | 3.66 | 3.47 | 3.68 | 3.72 | 3.48 | 3.50 | 3.59 |
| 77.50° | 3.09 | 3.02 | 2.94 | 2.98 | 3.06 | 2.99 | 2.82 | 2.95 | 3.09 | 3.02 | 2.94 | 2.98 | 3.06 | 2.99 | 2.82 | 2.95 | 3.09 |
| 80.00° | 2.45 | 2.50 | 2.48 | 2.65 | 2.45 | 2.44 | 2.53 | 2.38 | 2.45 | 2.50 | 2.48 | 2.65 | 2.45 | 2.44 | 2.53 | 2.38 | 2.45 |
| 82.50° | 1.76 | 2.01 | 2.11 | 2.34 | 1.85 | 1.99 | 2.22 | 1.95 | 1.76 | 2.01 | 2.11 | 2.34 | 1.85 | 1.99 | 2.22 | 1.95 | 1.76 |
| 85.00° | 1.39 | 1.77 | 1.63 | 1.79 | 1.45 | 1.72 | 1.80 | 1.83 | 1.39 | 1.77 | 1.63 | 1.79 | 1.45 | 1.72 | 1.80 | 1.83 | 1.39 |
| 87.50° | 1.09 | 1.48 | 1.13 | 1.26 | 1.24 | 1.37 | 1.36 | 1.58 | 1.09 | 1.48 | 1.13 | 1.26 | 1.24 | 1.37 | 1.36 | 1.58 | 1.09 |
| 90.00° | 0.86 | 0.93 | 0.83 | 0.96 | 0.96 | 0.88 | 0.91 | 1.11 | 0.86 | 0.93 | 0.83 | 0.96 | 0.96 | 0.88 | 0.91 | 1.11 | 0.86 |
| 92.50° | 0.64 | 0.53 | 0.56 | 0.69 | 0.63 | 0.60 | 0.61 | 0.77 | 0.64 | 0.53 | 0.56 | 0.69 | 0.63 | 0.60 | 0.61 | 0.77 | 0.64 |
| 95.00° | 0.56 | 0.66 | 0.65 | 0.66 | 0.56 | 0.56 | 0.65 | 0.61 | 0.56 | 0.66 | 0.65 | 0.66 | 0.56 | 0.56 | 0.65 | 0.61 | 0.56 |
| 97.50° | 0.49 | 0.72 | 0.75 | 0.64 | 0.65 | 0.56 | 0.67 | 0.56 | 0.49 | 0.72 | 0.75 | 0.64 | 0.65 | 0.56 | 0.67 | 0.56 | 0.49 |
| 100.00° | 0.63 | 0.65 | 0.63 | 0.67 | 0.72 | 0.58 | 0.64 | 0.64 | 0.63 | 0.65 | 0.63 | 0.67 | 0.72 | 0.58 | 0.64 | 0.64 | 0.63 |
| 102.50° | 0.75 | 0.59 | 0.53 | 0.68 | 0.78 | 0.62 | 0.63 | 0.66 | 0.75 | 0.59 | 0.53 | 0.68 | 0.78 | 0.62 | 0.63 | 0.66 | 0.75 |
| 105.00° | 0.67 | 0.57 | 0.57 | 0.60 | 0.76 | 0.67 | 0.66 | 0.63 | 0.67 | 0.57 | 0.57 | 0.60 | 0.76 | 0.67 | 0.66 | 0.63 | 0.67 |
| 107.50° | 0.61 | 0.55 | 0.61 | 0.58 | 0.73 | 0.69 | 0.66 | 0.64 | 0.61 | 0.55 | 0.61 | 0.58 | 0.73 | 0.69 | 0.66 | 0.64 | 0.61 |
| 110.00° | 0.74 | 0.55 | 0.59 | 0.69 | 0.68 | 0.70 | 0.64 | 0.67 | 0.74 | 0.55 | 0.59 | 0.69 | 0.68 | 0.70 | 0.64 | 0.67 | 0.74 |
| 112.50° | 0.83 | 0.56 | 0.58 | 0.72 | 0.64 | 0.74 | 0.60 | 0.65 | 0.83 | 0.56 | 0.58 | 0.72 | 0.64 | 0.74 | 0.60 | 0.65 | 0.83 |

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 | 975 | 975 | 975 | 975 | 952 | 952 | 952 | 952 | 909 | 909 | 909 | 869 | 869 | 869 | 833 | 833 | 816 |
| | 1 | 921 | 894 | 870 | 849 | 900 | 876 | 854 | 835 | 841 | 824 | 808 | 810 | 796 | 783 | 781 | 770 | 754 |
| | 2 | 864 | 817 | 778 | 746 | 845 | 803 | 767 | 737 | 775 | 745 | 720 | 749 | 725 | 704 | 725 | 705 | 688 |
| | 3 | 810 | 748 | 700 | 662 | 793 | 736 | 692 | 656 | 713 | 675 | 645 | 692 | 660 | 634 | 672 | 646 | 632 |
| | 4 | 759 | 686 | 633 | 592 | 743 | 676 | 627 | 588 | 657 | 614 | 580 | 639 | 603 | 573 | 623 | 591 | 580 |
| | 5 | 712 | 631 | 575 | 533 | 697 | 623 | 570 | 531 | 607 | 561 | 525 | 592 | 552 | 520 | 578 | 543 | 532 |
| | 6 | 668 | 582 | 525 | 484 | 654 | 575 | 521 | 482 | 562 | 514 | 478 | 549 | 506 | 474 | 537 | 500 | 490 |
| | 7 | 628 | 539 | 481 | 441 | 615 | 533 | 478 | 440 | 521 | 472 | 437 | 510 | 466 | 434 | 500 | 461 | 453 |
| | 8 | 591 | 500 | 443 | 404 | 579 | 495 | 441 | 403 | 485 | 436 | 401 | 475 | 431 | 399 | 467 | 426 | 419 |
| | 9 | 557 | 465 | 410 | 372 | 547 | 461 | 407 | 371 | 452 | 403 | 369 | 444 | 399 | 368 | 436 | 396 | 389 |
| | 10 | 526 | 434 | 380 | 343 | 516 | 431 | 378 | 343 | 423 | 375 | 341 | 416 | 371 | 340 | 409 | 368 | 362 |

Cone of Light

| Mtg Height | Light Level | Beam Diameter |
|------------|-------------|---------------|
| 5.5 ft | 16.4 fc | 8.0 ft |
| 6.5 ft | 11.8 fc | 9.5 ft |
| 7.5 ft | 8.8 fc | 10.9 ft |
| 8.0 ft | 7.8 fc | 11.7 ft |
| 10.0 ft | 5.0 fc | 14.6 ft |
| 12.0 ft | 3.5 fc | 17.5 ft |
| 14.0 ft | 2.5 fc | 20.4 ft |
| 16.0 ft | 1.9 fc | 23.3 ft |
| 20.0 ft | 1.2 fc | 29.2 ft |
| 24.0 ft | 0.9 fc | 35.0 ft |
| 28.0 ft | 0.6 fc | 40.9 ft |

Average Luminaire Luminance [cd/m²]

| | 0.00° | 45.00° | 90.00° |
|---------------|--------|--------|--------|
| 0.00° | 59,493 | 59,493 | 59,493 |
| 45.00° | 19,944 | 28,361 | 21,394 |
| 55.00° | 9,273 | 9,742 | 10,331 |
| 65.00° | 3,732 | 3,177 | 4,645 |
| 75.00° | 1,661 | 1,693 | 1,700 |
| 85.00° | 1,904 | 2,237 | 1,994 |

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 | 15.0 | 16.1 | 15.3 | 16.5 | 16.8 | 15.7 | 16.9 | 16.1 | 17.2 | 17.6 |
| | 3H | 15.1 | 16.1 | 15.5 | 16.5 | 16.9 | 15.9 | 16.9 | 16.3 | 17.3 | 17.7 |
| | 4H | 15.1 | 16.1 | 15.5 | 16.4 | 16.8 | 15.9 | 16.9 | 16.3 | 17.2 | 17.6 |
| | 6H | 15.1 | 16.0 | 15.5 | 16.4 | 16.8 | 15.9 | 16.8 | 16.3 | 17.1 | 17.6 |
| | 8H | 15.1 | 15.9 | 15.5 | 16.3 | 16.8 | 15.9 | 16.7 | 16.3 | 17.1 | 17.5 |
| | 12H | 15.1 | 15.9 | 15.5 | 16.3 | 16.7 | 15.9 | 16.6 | 16.3 | 17.0 | 17.5 |
| 4H | 2H | 14.9 | 15.9 | 15.3 | 16.2 | 16.6 | 15.6 | 16.6 | 16.1 | 17.0 | 17.4 |
| | 3H | 15.1 | 15.9 | 15.5 | 16.3 | 16.7 | 15.9 | 16.6 | 16.3 | 17.1 | 17.5 |
| | 4H | 15.1 | 15.8 | 15.6 | 16.3 | 16.7 | 15.9 | 16.6 | 16.3 | 17.0 | 17.5 |
| | 6H | 15.2 | 15.8 | 15.7 | 16.2 | 16.7 | 15.9 | 16.5 | 16.4 | 17.0 | 17.4 |
| | 8H | 15.2 | 15.7 | 15.7 | 16.2 | 16.7 | 15.9 | 16.5 | 16.4 | 16.9 | 17.4 |
| | 12H | 15.2 | 15.7 | 15.7 | 16.2 | 16.7 | 15.9 | 16.4 | 16.4 | 16.9 | 17.4 |
| 8H | 4H | 15.1 | 15.6 | 15.5 | 16.1 | 16.5 | 15.8 | 16.3 | 16.3 | 16.8 | 17.3 |
| | 6H | 15.1 | 15.6 | 15.7 | 16.1 | 16.6 | 15.8 | 16.3 | 16.4 | 16.8 | 17.3 |
| | 8H | 15.2 | 15.6 | 15.7 | 16.1 | 16.6 | 15.9 | 16.3 | 16.4 | 16.8 | 17.3 |
| | 12H | 15.3 | 15.6 | 15.8 | 16.1 | 16.7 | 15.9 | 16.3 | 16.5 | 16.8 | 17.4 |
| 12H | 4H | 15.0 | 15.5 | 15.5 | 16.0 | 16.5 | 15.7 | 16.2 | 16.2 | 16.7 | 17.2 |
| | 6H | 15.1 | 15.5 | 15.7 | 16.0 | 16.6 | 15.8 | 16.2 | 16.3 | 16.7 | 17.2 |
| | 8H | 15.2 | 15.6 | 15.7 | 16.1 | 16.6 | 15.9 | 16.2 | 16.4 | 16.7 | 17.3 |

Corrected UGR values based on total output lumens

SHR = 1.0