

Indoor Distribution Test Report

Spectrum Lighting Inc.

994 Jefferson Street
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Spectrum Lighting Photometric Lab

Luminaire

EV320IND24OL 13L 35K EX DW XX MW
Evenlight 4.5" Wide x 24" linear surface or wall mount luminaire

Test Number

SP-00617_M-13L

Test Date

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

Summary of Results

Power

| | |
|-------------|--------|
| Input Watts | 20.1 W |
|-------------|--------|

Lumen Output

| | |
|---------------|-------------|
| Output Lumens | 2311 |
| Efficacy | 114.98 lm/W |

Luminous Dimensions

| | |
|-----------------|------|
| 0° - 180° Size | 2.17 |
| 90° - 270° Size | 0.42 |
| Height | 0.17 |

Spacing Criterion

| | |
|---------------------------|------|
| Two luminaires, plane 0° | 1.21 |
| Two luminaires, plane 90° | 1.39 |
| Four luminaires | 1.45 |

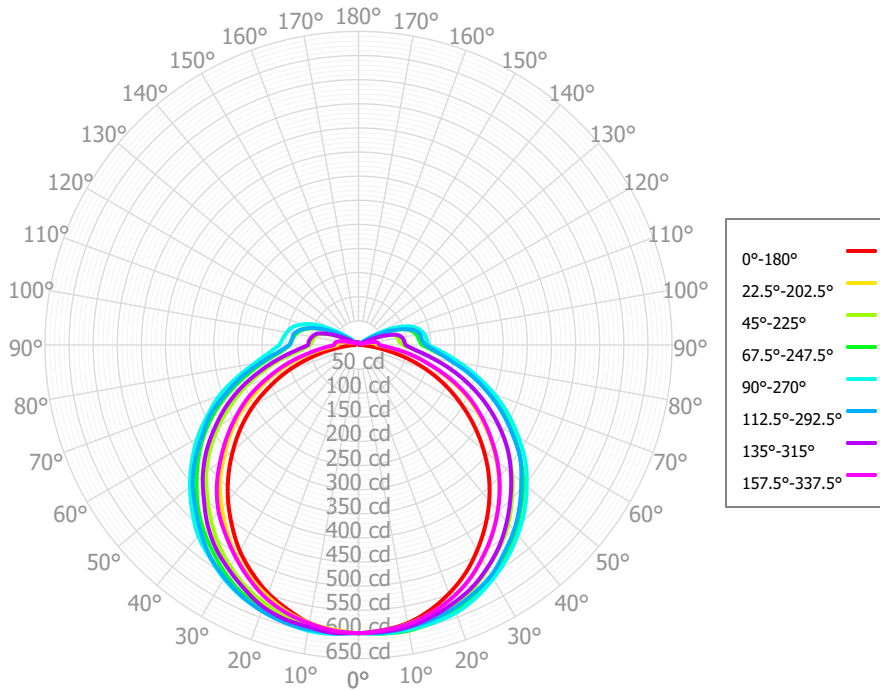
Full Beam Angle

| | |
|------------|------|
| 0° - 180° | 109° |
| 90° - 270° | 141° |

IES File Header Contents

| Keyword | Value |
|-----------|--|
| TEST | SP-00617_M-13L |
| TESTLAB | VLS-245-981 |
| MANUFAC | Spectrum Lighting |
| ISSUEDATE | 9/22/2017 |
| UPDATE | 3/9/2020 |
| LUMCAT | EV320IND24OL 13L 35K EX DW XX MW |
| LUMINAIRE | Evenlight 4.5" Wide x 24" linear surface or wall mount luminaire |
| OTHER | 24" Linear LED, Frosted Acrylic Lens |
| OTHER | Matte White finish |
| OTHER | 112 Degree Beam Angle |
| LAMPCAT | N/A |
| LAMP | N/A, 1363 Source Lms/Ft |
| OTHER | Total Luminaire Watts is approximate |
| OTHER | Tested CCT: 3500K |
| OTHER | CCT Output Multipliers: 30K x 0.972, 40K x 1.018, 50K x 1.087 |
| OTHER | This report prepared by Spectrum Lighting, scaled from 20L |

Candela Polar Plot



Zonal Lumen Summary

| Zone | Lumens | % Fixture | Zone | Lumens | % Fixture |
|-----------------|----------|-----------|-------------------|----------|-----------|
| 0.00° - 10.00° | 60.31 | 2.61% | 90.00° - 100.00° | 94.54 | 4.09% |
| 10.00° - 20.00° | 164.59 | 7.12% | 100.00° - 110.00° | 76.23 | 3.30% |
| 20.00° - 30.00° | 254.42 | 11.01% | 100.00° - 120.00° | 116.09 | 5.02% |
| 30.00° - 40.00° | 315.02 | 13.63% | 120.00° - 130.00° | 10.68 | 0.46% |
| 40.00° - 50.00° | 340.56 | 14.74% | 130.00° - 140.00° | 3.87 | 0.17% |
| 50.00° - 60.00° | 329.33 | 14.25% | 140.00° - 150.00° | 3.02 | 0.13% |
| 60.00° - 70.00° | 282.12 | 12.21% | 150.00° - 160.00° | 2.21 | 0.10% |
| 70.00° - 80.00° | 205.47 | 8.89% | 160.00° - 170.00° | 1.34 | 0.06% |
| 80.00° - 90.00° | 127.01 | 5.50% | 170.00° - 180.00° | 0.49 | 0.02% |
| 0.00° - 90.00° | 2,078.83 | 89.95% | 0.00° - 180.00° | 2,311.06 | 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° | 597.38 | 597.38 | 597.38 | 597.38 | 597.38 | 597.38 | 597.38 | 597.38 | 597.38 | 597.38 | 597.38 | 597.38 | 597.38 | 597.38 | 597.38 | 597.38 | 597.38 |
| 5.00° | 593.32 | 594.21 | 598.50 | 600.54 | 600.16 | 598.05 | 599.43 | 594.31 | 594.37 | 592.21 | 598.39 | 596.89 | 601.51 | 598.68 | 596.42 | 593.68 | 593.32 |
| 10.00° | 585.50 | 587.57 | 595.00 | 601.18 | 599.20 | 599.17 | 593.44 | 586.10 | 585.48 | 585.24 | 593.30 | 597.15 | 601.59 | 595.23 | 593.41 | 588.06 | 585.50 |
| 15.00° | 569.73 | 576.36 | 586.90 | 595.85 | 596.37 | 595.10 | 588.55 | 575.39 | 567.54 | 572.81 | 583.45 | 591.45 | 594.53 | 589.43 | 583.54 | 576.37 | 569.73 |
| 20.00° | 548.49 | 560.13 | 576.96 | 587.81 | 590.75 | 586.77 | 577.84 | 559.10 | 547.65 | 553.70 | 569.41 | 580.14 | 585.97 | 580.28 | 570.71 | 560.12 | 548.49 |
| 25.00° | 523.21 | 539.42 | 559.29 | 573.93 | 577.44 | 573.98 | 558.66 | 535.52 | 521.52 | 531.88 | 552.85 | 568.62 | 575.01 | 567.26 | 555.37 | 539.08 | 523.21 |
| 30.00° | 491.87 | 512.93 | 535.57 | 556.04 | 558.89 | 556.40 | 537.59 | 508.64 | 492.47 | 505.61 | 530.80 | 549.31 | 558.63 | 551.10 | 533.70 | 511.46 | 491.87 |
| 35.00° | 458.01 | 482.82 | 511.16 | 533.74 | 538.11 | 535.79 | 515.06 | 480.22 | 457.18 | 474.46 | 505.04 | 524.97 | 537.58 | 526.18 | 508.78 | 481.96 | 458.01 |
| 40.00° | 421.64 | 448.81 | 483.36 | 505.63 | 513.50 | 507.98 | 486.75 | 451.17 | 420.67 | 440.92 | 475.28 | 500.13 | 516.76 | 501.66 | 478.50 | 449.17 | 421.64 |
| 45.00° | 381.95 | 412.99 | 449.94 | 475.73 | 486.49 | 477.90 | 453.30 | 415.38 | 381.30 | 406.47 | 443.53 | 471.42 | 487.50 | 472.31 | 445.79 | 414.05 | 381.95 |
| 50.00° | 338.62 | 373.22 | 415.85 | 445.97 | 455.03 | 448.79 | 421.27 | 374.03 | 339.36 | 364.64 | 412.11 | 438.16 | 456.05 | 440.57 | 412.64 | 375.66 | 338.62 |
| 55.00° | 293.19 | 332.00 | 377.37 | 409.66 | 422.65 | 413.13 | 385.14 | 333.02 | 296.96 | 324.67 | 374.77 | 404.88 | 421.63 | 409.25 | 377.56 | 334.82 | 293.19 |
| 60.00° | 246.23 | 289.37 | 337.95 | 371.00 | 382.90 | 373.86 | 344.19 | 291.45 | 251.47 | 283.32 | 333.93 | 369.10 | 385.50 | 368.24 | 336.39 | 293.59 | 246.23 |
| 65.00° | 199.66 | 244.82 | 292.91 | 331.35 | 343.26 | 337.70 | 303.41 | 249.15 | 202.14 | 236.19 | 290.93 | 329.00 | 345.17 | 327.68 | 293.22 | 249.84 | 199.66 |
| 70.00° | 150.93 | 194.76 | 248.88 | 287.63 | 300.54 | 291.96 | 258.84 | 201.24 | 154.57 | 191.87 | 247.97 | 284.89 | 306.84 | 284.62 | 247.04 | 200.45 | 150.93 |
| 75.00° | 100.96 | 149.95 | 201.19 | 241.46 | 255.23 | 248.70 | 211.91 | 155.56 | 104.67 | 145.87 | 202.86 | 239.39 | 261.02 | 241.89 | 200.09 | 149.34 | 100.96 |
| 80.00° | 51.65 | 104.26 | 157.18 | 199.47 | 213.04 | 204.06 | 168.40 | 109.68 | 59.60 | 101.59 | 160.01 | 197.68 | 218.34 | 196.03 | 154.45 | 107.34 | 51.65 |
| 85.00° | 15.95 | 63.38 | 117.24 | 160.22 | 175.11 | 166.68 | 130.19 | 73.90 | 24.25 | 63.54 | 120.24 | 162.08 | 185.89 | 162.63 | 117.75 | 66.45 | 15.95 |
| 90.00° | 3.72 | 38.45 | 91.96 | 132.41 | 145.92 | 143.66 | 105.15 | 50.83 | 7.36 | 43.10 | 101.15 | 142.63 | 164.45 | 139.50 | 97.95 | 43.14 | 3.72 |
| 95.00° | 2.50 | 34.14 | 84.87 | 125.97 | 141.72 | 138.41 | 102.74 | 48.79 | 6.15 | 41.19 | 95.92 | 137.77 | 156.99 | 131.77 | 94.78 | 41.34 | 2.50 |
| 100.00° | 3.27 | 29.46 | 83.21 | 122.30 | 137.66 | 135.47 | 97.69 | 43.00 | 6.86 | 36.13 | 93.47 | 132.01 | 151.04 | 129.14 | 91.40 | 36.14 | 3.27 |
| 105.00° | 2.26 | 16.66 | 78.08 | 113.89 | 128.31 | 123.72 | 89.86 | 27.56 | 6.66 | 20.12 | 85.60 | 121.04 | 142.00 | 119.19 | 81.74 | 17.77 | 2.26 |
| 110.00° | 2.77 | 7.75 | 55.15 | 96.69 | 113.03 | 103.54 | 67.02 | 12.96 | 6.30 | 13.31 | 64.67 | 101.73 | 124.59 | 96.02 | 56.32 | 7.70 | 2.77 |
| 115.00° | 2.23 | 5.58 | 27.12 | 68.41 | 85.58 | 74.11 | 35.67 | 10.76 | 6.16 | 10.88 | 33.97 | 75.42 | 100.17 | 67.98 | 24.97 | 5.10 | 2.23 |
| 120.00° | 2.22 | 4.20 | 7.25 | 40.28 | 52.71 | 41.44 | 13.63 | 9.47 | 6.20 | 8.14 | 11.77 | 44.01 | 65.20 | 35.80 | 4.79 | 3.50 | 2.22 |
| 125.00° | 2.74 | 3.49 | 4.09 | 10.00 | 19.68 | 14.60 | 7.70 | 8.03 | 6.80 | 7.75 | 7.61 | 16.51 | 29.82 | 10.79 | 3.38 | 3.56 | 2.74 |
| 130.00° | 2.71 | 3.18 | 3.33 | 3.33 | 3.86 | 7.07 | 6.97 | 6.15 | 5.91 | 6.82 | 7.47 | 8.15 | 8.67 | 2.93 | 3.54 | 2.52 | 2.71 |
| 135.00° | 2.25 | 2.96 | 3.53 | 3.90 | 3.43 | 6.86 | 7.24 | 5.75 | 5.63 | 6.28 | 6.80 | 8.15 | 6.91 | 3.15 | 3.74 | 2.77 | 2.25 |
| 140.00° | 2.60 | 3.43 | 3.97 | 3.50 | 3.37 | 7.36 | 7.45 | 6.29 | 6.10 | 6.08 | 5.76 | 6.87 | 6.92 | 3.11 | 3.10 | 2.87 | 2.60 |
| 145.00° | 3.00 | 3.43 | 3.72 | 3.25 | 3.88 | 7.27 | 6.36 | 6.31 | 5.45 | 5.89 | 5.75 | 6.21 | 6.61 | 3.18 | 2.98 | 3.14 | 3.00 |
| 150.00° | 2.97 | 3.03 | 4.47 | 3.22 | 4.37 | 6.38 | 5.74 | 5.52 | 5.37 | 6.06 | 5.33 | 6.09 | 7.20 | 3.57 | 3.74 | 3.23 | 2.97 |
| 155.00° | 3.30 | 3.05 | 4.25 | 3.28 | 4.39 | 6.16 | 6.07 | 5.09 | 6.14 | 6.12 | 5.28 | 6.49 | 6.87 | 3.67 | 3.46 | 2.83 | 3.30 |
| 160.00° | 3.43 | 3.46 | 4.06 | 4.07 | 4.39 | 6.19 | 5.77 | 4.75 | 5.11 | 5.57 | 6.00 | 6.62 | 6.73 | 4.03 | 3.08 | 3.58 | 3.43 |
| 165.00° | 3.07 | 3.89 | 4.68 | 4.47 | 3.91 | 5.77 | 5.24 | 4.87 | 4.35 | 5.18 | 5.91 | 5.71 | 6.54 | 4.79 | 3.33 | 3.74 | 3.07 |
| 170.00° | 3.77 | 3.79 | 4.14 | 5.28 | 5.71 | 5.18 | 4.55 | 4.29 | 4.32 | 4.76 | 4.79 | 5.66 | 6.43 | 4.69 | 4.47 | 3.84 | 3.77 |
| 175.00° | 3.94 | 3.49 | 4.33 | 4.41 | 5.26 | 6.12 | 5.00 | 4.97 | 4.41 | 5.63 | 5.95 | 5.32 | 6.09 | 4.34 | 4.61 | 4.17 | 3.94 |
| 180.00° | 4.76 | 4.76 | 4.76 | 4.76 | 4.76 | 4.76 | 4.76 | 4.76 | 4.76 | 4.76 | 4.76 | 4.76 | 4.76 | 4.76 | 4.76 | 4.76 | 4.76 |

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% | 10% |
| | pw | 70% | 50% | 30% | 10% | 70% | 50% | 30% | 10% | 50% | 30% | 10% | 50% | 30% | 10% | 50% | 30% | 10% |
| | 0 | 2,696 | 2,696 | 2,696 | 2,696 | 2,606 | 2,606 | 2,606 | 2,606 | 2,439 | 2,439 | 2,439 | 2,286 | 2,286 | 2,286 | 2,145 | 2,145 | 2,145 |
| | 1 | 2,413 | 2,283 | 2,167 | 2,062 | 2,324 | 2,207 | 2,102 | 2,007 | 2,064 | 1,979 | 1,900 | 1,933 | 1,864 | 1,800 | 1,813 | 1,758 | 1,707 |
| | 2 | 2,174 | 1,963 | 1,788 | 1,641 | 2,089 | 1,898 | 1,739 | 1,603 | 1,777 | 1,644 | 1,530 | 1,665 | 1,556 | 1,460 | 1,561 | 1,473 | 1,393 |
| | 3 | 1,971 | 1,708 | 1,505 | 1,343 | 1,892 | 1,653 | 1,466 | 1,315 | 1,549 | 1,392 | 1,262 | 1,454 | 1,321 | 1,210 | 1,365 | 1,255 | 1,160 |
| | 4 | 1,797 | 1,503 | 1,288 | 1,124 | 1,724 | 1,456 | 1,257 | 1,103 | 1,368 | 1,197 | 1,062 | 1,285 | 1,140 | 1,023 | 1,209 | 1,086 | 984 |
| | 5 | 1,648 | 1,336 | 1,119 | 958 | 1,581 | 1,296 | 1,093 | 942 | 1,220 | 1,044 | 910 | 1,149 | 997 | 878 | 1,082 | 952 | 848 |
| | 6 | 1,518 | 1,198 | 983 | 829 | 1,458 | 1,163 | 962 | 816 | 1,098 | 921 | 790 | 1,036 | 882 | 765 | 978 | 845 | 740 |
| | 7 | 1,405 | 1,083 | 873 | 727 | 1,350 | 1,052 | 856 | 716 | 995 | 821 | 695 | 942 | 788 | 674 | 891 | 756 | 653 |
| | 8 | 1,306 | 985 | 783 | 644 | 1,256 | 959 | 768 | 635 | 909 | 739 | 617 | 862 | 710 | 600 | 817 | 683 | 583 |
| | 9 | 1,219 | 902 | 707 | 576 | 1,173 | 879 | 694 | 569 | 835 | 669 | 553 | 793 | 645 | 539 | 754 | 621 | 524 |
| | 10 | 1,141 | 830 | 644 | 520 | 1,100 | 810 | 632 | 513 | 771 | 611 | 500 | 734 | 590 | 487 | 699 | 569 | 475 |

Cone of Light

| Mtg Height | Light Level | Beam Diameter |
|------------|-------------|---------------|
| 5.5 ft | 19.7 fc | 22.7 ft |
| 6.5 ft | 14.1 fc | 26.8 ft |
| 7.5 ft | 10.6 fc | 31.0 ft |
| 8.0 ft | 9.3 fc | 33.0 ft |
| 10.0 ft | 6.0 fc | 41.3 ft |
| 12.0 ft | 4.1 fc | 49.5 ft |
| 14.0 ft | 3.0 fc | 57.8 ft |
| 16.0 ft | 2.3 fc | 66.0 ft |
| 20.0 ft | 1.5 fc | 82.6 ft |
| 24.0 ft | 1.0 fc | 99.1 ft |
| 28.0 ft | 0.8 fc | 115.6 ft |

Average Luminaire Luminance [cd/m²]

| | 0.00° | 45.00° | 90.00° |
|---------------|-------|--------|--------|
| 0.00° | 7,055 | 7,055 | 7,055 |
| 45.00° | 5,916 | 5,602 | 5,784 |
| 55.00° | 5,429 | 5,223 | 5,515 |
| 65.00° | 4,777 | 4,725 | 5,135 |
| 75.00° | 3,565 | 4,036 | 4,639 |
| 85.00° | 1,141 | 3,239 | 4,217 |

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 | 15.8 | 17.3 | 16.3 | 17.8 | 18.4 | 18.4 | 19.9 | 18.9 | 20.4 | 20.9 |
| | 3H | 17.3 | 18.7 | 17.8 | 19.2 | 19.8 | 20.8 | 22.2 | 21.4 | 22.7 | 23.3 |
| | 4H | 17.8 | 19.1 | 18.3 | 19.6 | 20.2 | 22.0 | 23.3 | 22.5 | 23.8 | 24.4 |
| | 6H | 18.0 | 19.2 | 18.6 | 19.8 | 20.4 | 23.1 | 24.3 | 23.7 | 24.9 | 25.5 |
| | 8H | 18.0 | 19.2 | 18.6 | 19.8 | 20.4 | 23.7 | 24.8 | 24.2 | 25.4 | 26.0 |
| | 12H | 18.0 | 19.2 | 18.6 | 19.7 | 20.4 | 24.3 | 25.4 | 24.8 | 25.9 | 26.6 |
| 4H | 2H | 16.8 | 18.1 | 17.4 | 18.7 | 19.3 | 18.8 | 20.1 | 19.4 | 20.6 | 21.3 |
| | 3H | 18.6 | 19.7 | 19.1 | 20.3 | 20.9 | 21.5 | 22.6 | 22.1 | 23.2 | 23.8 |
| | 4H | 19.2 | 20.2 | 19.7 | 20.8 | 21.4 | 22.8 | 23.8 | 23.4 | 24.4 | 25.1 |
| | 6H | 19.5 | 20.4 | 20.1 | 21.0 | 21.7 | 24.1 | 25.0 | 24.7 | 25.6 | 26.3 |
| | 8H | 19.6 | 20.5 | 20.2 | 21.1 | 21.8 | 24.8 | 25.6 | 25.4 | 26.2 | 26.9 |
| | 12H | 19.7 | 20.4 | 20.3 | 21.1 | 21.7 | 25.5 | 26.2 | 26.1 | 26.9 | 27.6 |
| 8H | 4H | 19.9 | 20.7 | 20.5 | 21.3 | 22.0 | 23.0 | 23.9 | 23.6 | 24.5 | 25.2 |
| | 6H | 20.4 | 21.2 | 21.1 | 21.8 | 22.5 | 24.5 | 25.2 | 25.1 | 25.9 | 26.5 |
| | 8H | 20.6 | 21.3 | 21.3 | 21.9 | 22.6 | 25.3 | 25.9 | 25.9 | 26.6 | 27.3 |
| | 12H | 20.7 | 21.3 | 21.4 | 21.9 | 22.7 | 26.1 | 26.7 | 26.8 | 27.4 | 28.1 |
| 12H | 4H | 20.1 | 20.8 | 20.7 | 21.5 | 22.2 | 23.0 | 23.8 | 23.7 | 24.4 | 25.1 |
| | 6H | 20.7 | 21.4 | 21.4 | 22.0 | 22.7 | 24.5 | 25.2 | 25.2 | 25.8 | 26.6 |
| | 8H | 21.0 | 21.6 | 21.6 | 22.2 | 23.0 | 25.4 | 26.0 | 26.0 | 26.6 | 27.4 |

Corrected UGR values based on total output lumens

SHR = 1.0