

Indoor Distribution Test Report

Spectrum Lighting Inc.

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

Luminaire

GPRF1600GV 15L 35K EX MW
Nom 16" Globe (Sphere) luminaire

Test Number

SP-00647_4_M-15L

Test Date

1/27/2020

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

Summary of Results

Power

| | |
|-------------|------|
| Input Watts | 10 W |
|-------------|------|

Lumen Output

| | |
|---------------|-------------|
| Output Lumens | 1238 |
| Efficacy | 123.82 lm/W |

Luminous Dimensions

| | |
|-----------------|-------|
| 0° - 180° Size | -1.33 |
| 90° - 270° Size | -1.33 |
| Height | 1.33 |

Spacing Criterion

| | |
|---------------------------|------|
| Two luminaires, plane 0° | 1.61 |
| Two luminaires, plane 90° | 1.56 |
| Four luminaires | 1.81 |

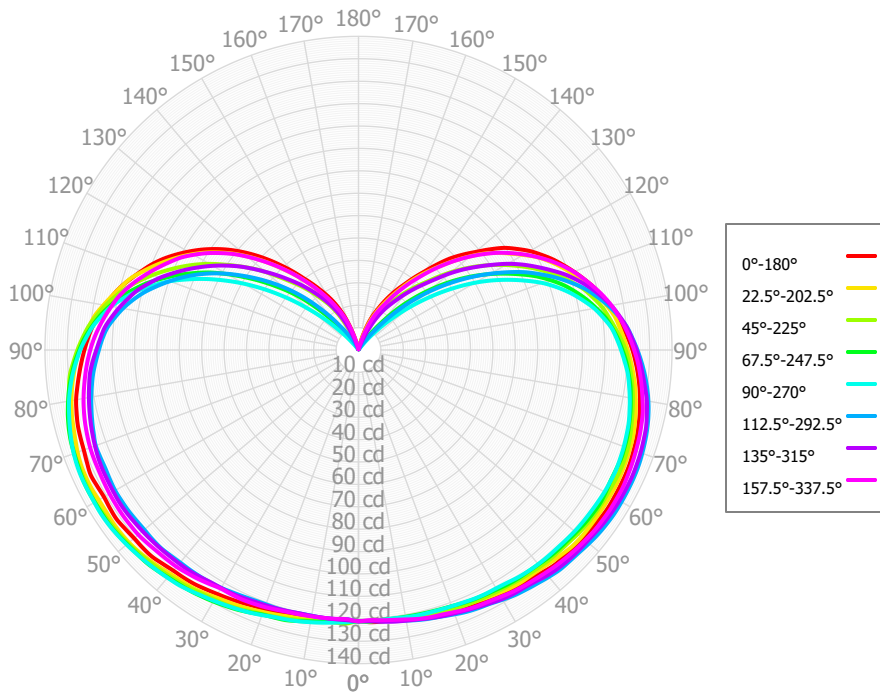
Full Beam Angle

| | |
|------------|------|
| 0° - 180° | 260° |
| 90° - 270° | 234° |

IES File Header Contents

| Keyword | Value |
|-----------|--|
| TEST | SP-00647_4_M-15L |
| TESTLAB | Spectrum Lighting Photometric Lab, VLS-245-981 |
| MANUFAC | Spectrum Lighting |
| TESTDATE | 1/27/2020 |
| ISSUEDATE | 1/29/2020 |
| LUMCAT | GPRF1600GV 15L 35K EX MW |
| LUMINAIRE | Nom 16" Globe (Sphere) luminaire |
| LAMPCAT | N/A |
| LAMP | N/A |
| OTHER | CCT Output Multipliers: 27K x 0.97, 30K x 0.99, 40K x 1.03 |
| OTHER | Total luminaire wattage is approximate |
| OTHER | This report prepared by Spectrum Lighting, scaled from 55L |

Candela Polar Plot



Zonal Lumen Summary

| Zone | Lumens | % Fixture | Zone | Lumens | % Fixture |
|-----------------|--------|-----------|-------------------|----------|-----------|
| 0.00° - 10.00° | 11.78 | 0.95% | 90.00° - 100.00° | 127.83 | 10.32% |
| 10.00° - 20.00° | 34.82 | 2.81% | 100.00° - 110.00° | 110.84 | 8.95% |
| 20.00° - 30.00° | 57.82 | 4.67% | 100.00° - 120.00° | 196.80 | 15.89% |
| 30.00° - 40.00° | 80.01 | 6.46% | 120.00° - 130.00° | 57.75 | 4.66% |
| 40.00° - 50.00° | 100.41 | 8.11% | 130.00° - 140.00° | 31.67 | 2.56% |
| 50.00° - 60.00° | 117.60 | 9.50% | 140.00° - 150.00° | 13.89 | 1.12% |
| 60.00° - 70.00° | 130.07 | 10.50% | 150.00° - 160.00° | 4.78 | 0.39% |
| 70.00° - 80.00° | 136.49 | 11.02% | 160.00° - 170.00° | 0.60 | 0.05% |
| 80.00° - 90.00° | 135.87 | 10.97% | 170.00° - 180.00° | 0.04 | 0.00% |
| 0.00° - 90.00° | 804.85 | 65.00% | 0.00° - 180.00° | 1,238.22 | 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° | 121.13 | 121.13 | 121.13 | 121.13 | 121.13 | 121.13 | 121.13 | 121.13 | 121.13 | 121.13 | 121.13 | 121.13 | 121.13 | 121.13 | 121.13 | 121.13 | 121.13 |
| 2.50° | 121.68 | 121.26 | 121.23 | 121.26 | 121.26 | 120.31 | 120.79 | 120.32 | 120.85 | 121.36 | 122.22 | 121.73 | 121.65 | 121.20 | 121.17 | 120.74 | 121.68 |
| 5.00° | 121.69 | 121.28 | 121.33 | 121.03 | 120.99 | 120.58 | 120.69 | 120.48 | 121.13 | 121.47 | 122.14 | 121.94 | 122.20 | 121.61 | 121.79 | 121.13 | 121.69 |
| 7.50° | 121.47 | 121.52 | 121.53 | 120.97 | 120.86 | 120.68 | 120.59 | 120.64 | 121.36 | 121.86 | 122.21 | 122.49 | 122.82 | 121.95 | 122.35 | 121.56 | 121.47 |
| 10.00° | 121.82 | 121.80 | 121.60 | 120.95 | 121.17 | 120.50 | 120.55 | 120.79 | 121.52 | 122.26 | 122.77 | 123.07 | 123.45 | 122.67 | 122.74 | 122.18 | 121.82 |
| 12.50° | 122.33 | 122.27 | 121.67 | 121.07 | 121.39 | 120.53 | 120.52 | 120.98 | 121.83 | 122.67 | 123.38 | 123.98 | 124.08 | 123.50 | 123.23 | 123.02 | 122.33 |
| 15.00° | 122.94 | 122.68 | 122.18 | 121.21 | 121.45 | 120.86 | 120.78 | 121.18 | 122.35 | 123.11 | 124.12 | 124.90 | 124.57 | 124.14 | 123.94 | 123.58 | 122.94 |
| 17.50° | 123.58 | 122.91 | 122.71 | 121.41 | 121.56 | 120.97 | 121.06 | 121.64 | 122.75 | 123.81 | 124.84 | 125.29 | 125.05 | 124.73 | 124.61 | 123.91 | 123.58 |
| 20.00° | 124.07 | 123.16 | 123.09 | 121.73 | 121.77 | 120.86 | 121.33 | 122.17 | 123.04 | 124.51 | 125.49 | 125.73 | 125.98 | 125.61 | 125.18 | 124.58 | 124.07 |
| 22.50° | 124.54 | 123.49 | 123.48 | 122.27 | 122.07 | 121.03 | 121.61 | 122.58 | 123.60 | 125.30 | 126.31 | 126.85 | 126.92 | 126.52 | 125.83 | 125.48 | 124.54 |
| 25.00° | 125.34 | 123.93 | 123.77 | 122.72 | 122.51 | 121.46 | 122.09 | 122.95 | 124.41 | 126.07 | 127.36 | 127.94 | 127.69 | 127.12 | 126.60 | 126.08 | 125.34 |
| 27.50° | 126.18 | 124.60 | 124.06 | 123.03 | 122.79 | 122.00 | 122.54 | 123.02 | 125.16 | 126.76 | 128.14 | 128.82 | 128.47 | 127.69 | 127.45 | 126.53 | 126.18 |
| 30.00° | 126.79 | 125.31 | 124.41 | 123.47 | 122.90 | 122.64 | 122.72 | 123.03 | 125.89 | 127.53 | 128.61 | 129.68 | 129.29 | 128.76 | 128.39 | 127.24 | 126.79 |
| 32.50° | 127.38 | 126.08 | 124.77 | 124.05 | 123.31 | 123.09 | 122.97 | 123.89 | 126.73 | 128.58 | 129.26 | 130.47 | 130.14 | 129.83 | 129.04 | 128.05 | 127.38 |
| 35.00° | 127.68 | 126.60 | 125.24 | 124.44 | 123.99 | 123.43 | 123.61 | 124.84 | 127.63 | 129.46 | 130.12 | 131.21 | 131.18 | 130.59 | 129.39 | 128.67 | 127.68 |
| 37.50° | 128.03 | 126.75 | 125.71 | 124.63 | 124.49 | 123.68 | 124.19 | 125.62 | 128.21 | 129.92 | 130.90 | 131.79 | 132.14 | 131.36 | 130.18 | 129.22 | 128.03 |
| 40.00° | 129.04 | 127.21 | 126.24 | 125.05 | 124.85 | 123.89 | 124.51 | 126.39 | 128.63 | 130.55 | 131.63 | 132.46 | 132.74 | 132.25 | 131.33 | 129.89 | 129.04 |
| 42.50° | 129.93 | 128.03 | 126.70 | 125.66 | 125.09 | 124.35 | 124.85 | 126.80 | 129.47 | 131.50 | 132.31 | 133.39 | 133.34 | 133.07 | 132.10 | 130.58 | 129.93 |
| 45.00° | 130.05 | 128.82 | 126.95 | 126.06 | 125.28 | 124.91 | 125.23 | 127.22 | 130.45 | 132.40 | 132.97 | 134.12 | 133.97 | 133.38 | 132.62 | 131.16 | 130.05 |
| 47.50° | 130.22 | 129.60 | 127.30 | 126.31 | 125.60 | 124.95 | 125.58 | 127.80 | 130.73 | 133.20 | 133.67 | 134.45 | 134.59 | 133.74 | 132.93 | 131.72 | 130.22 |
| 50.00° | 130.62 | 129.93 | 127.84 | 126.73 | 125.99 | 124.84 | 125.89 | 128.34 | 130.81 | 133.76 | 134.39 | 134.88 | 135.18 | 134.39 | 133.13 | 132.20 | 130.62 |
| 52.50° | 131.04 | 129.92 | 128.25 | 127.24 | 126.23 | 125.04 | 126.20 | 128.47 | 131.28 | 134.02 | 134.83 | 135.49 | 135.71 | 134.98 | 133.56 | 132.67 | 131.04 |
| 55.00° | 131.53 | 129.91 | 128.40 | 127.54 | 126.40 | 125.32 | 126.52 | 128.57 | 131.82 | 134.05 | 135.13 | 135.86 | 136.10 | 135.36 | 134.08 | 132.86 | 131.53 |
| 57.50° | 131.86 | 129.91 | 128.47 | 127.74 | 126.61 | 125.41 | 126.63 | 128.49 | 131.58 | 133.85 | 135.42 | 135.92 | 136.30 | 135.64 | 134.37 | 133.05 | 131.86 |
| 60.00° | 131.77 | 129.90 | 128.43 | 127.39 | 126.83 | 125.47 | 126.43 | 128.37 | 131.24 | 133.93 | 135.69 | 136.01 | 136.19 | 135.64 | 134.57 | 133.04 | 131.77 |
| 62.50° | 131.67 | 129.86 | 128.48 | 126.84 | 126.86 | 125.15 | 126.26 | 128.11 | 131.58 | 134.27 | 135.62 | 136.13 | 136.14 | 135.62 | 134.62 | 133.02 | 131.67 |
| 65.00° | 131.57 | 129.64 | 128.62 | 126.81 | 126.85 | 124.80 | 126.14 | 127.89 | 131.96 | 134.30 | 135.44 | 135.97 | 136.15 | 135.54 | 134.63 | 132.65 | 131.57 |
| 67.50° | 131.32 | 129.35 | 128.45 | 126.90 | 126.50 | 124.84 | 125.79 | 127.77 | 131.26 | 134.11 | 135.23 | 135.54 | 135.88 | 135.32 | 134.37 | 132.28 | 131.32 |
| 70.00° | 130.80 | 128.97 | 128.00 | 126.49 | 126.09 | 124.87 | 125.23 | 127.52 | 130.55 | 133.48 | 135.01 | 135.14 | 135.31 | 134.85 | 134.05 | 131.82 | 130.80 |
| 72.50° | 130.20 | 128.56 | 127.26 | 125.99 | 125.53 | 123.99 | 124.58 | 127.00 | 130.18 | 132.61 | 134.34 | 134.75 | 134.49 | 134.28 | 133.52 | 131.35 | 130.20 |
| 75.00° | 129.48 | 127.74 | 126.29 | 125.22 | 124.96 | 123.11 | 123.87 | 126.38 | 129.77 | 131.85 | 133.63 | 133.97 | 133.45 | 133.57 | 132.96 | 130.73 | 129.48 |
| 77.50° | 128.64 | 126.81 | 125.37 | 124.41 | 123.99 | 122.15 | 123.09 | 125.60 | 128.95 | 131.15 | 132.49 | 132.94 | 132.38 | 132.63 | 131.87 | 129.99 | 128.64 |
| 80.00° | 127.66 | 125.72 | 124.48 | 123.46 | 123.01 | 121.17 | 122.25 | 124.68 | 128.05 | 130.13 | 131.32 | 131.68 | 131.28 | 131.45 | 130.75 | 128.79 | 127.66 |
| 82.50° | 126.53 | 124.60 | 123.37 | 122.49 | 121.87 | 120.08 | 121.33 | 123.57 | 126.65 | 129.02 | 130.40 | 130.29 | 129.82 | 130.02 | 129.09 | 127.57 | 126.53 |
| 85.00° | 125.27 | 123.21 | 122.16 | 121.09 | 120.70 | 118.91 | 120.37 | 122.41 | 125.24 | 127.69 | 129.42 | 128.62 | 128.18 | 128.38 | 127.44 | 126.25 | 125.27 |
| 87.50° | 123.87 | 121.79 | 120.78 | 119.66 | 118.98 | 117.42 | 118.84 | 121.19 | 123.83 | 126.31 | 127.49 | 126.84 | 126.27 | 126.54 | 125.86 | 124.82 | 123.87 |
| 90.00° | 122.34 | 120.22 | 119.33 | 117.84 | 117.25 | 115.94 | 117.09 | 119.79 | 122.40 | 124.61 | 125.53 | 124.69 | 124.26 | 124.56 | 124.22 | 123.10 | 122.34 |
| 92.50° | 120.50 | 118.65 | 117.25 | 115.97 | 115.43 | 114.48 | 115.44 | 118.20 | 120.90 | 122.85 | 123.33 | 122.43 | 121.80 | 122.43 | 122.20 | 121.29 | 120.50 |
| 95.00° | 118.46 | 117.04 | 114.97 | 113.66 | 113.39 | 112.65 | 113.82 | 116.33 | 119.23 | 120.77 | 121.01 | 119.54 | 119.18 | 120.21 | 120.09 | 119.28 | 118.46 |
| 97.50° | 116.35 | 115.37 | 112.72 | 111.20 | 110.27 | 109.86 | 111.29 | 114.25 | 117.12 | 118.66 | 117.94 | 116.50 | 115.74 | 117.02 | 117.44 | 117.10 | 116.35 |
| 100.00° | 114.22 | 112.79 | 110.47 | 107.78 | 106.90 | 106.80 | 108.55 | 112.05 | 114.90 | 115.63 | 114.76 | 112.80 | 112.08 | 113.39 | 114.59 | 114.66 | 114.22 |
| 102.50° | 111.55 | 110.18 | 107.45 | 104.27 | 102.61 | 103.20 | 105.51 | 109.77 | 112.45 | 112.55 | 111.10 | 108.99 | 107.22 | 109.29 | 110.99 | 111.89 | 111.55 |
| 105.00° | 108.68 | 107.36 | 104.32 | 100.35 | 98.11 | 99.20 | 102.43 | 106.84 | 109.66 | 109.59 | 107.20 | 104.12 | 102.13 | 105.01 | 107.21 | 108.73 | 108.68 |
| 107.50° | 105.54 | 104.42 | 100.23 | 96.17 | 93.05 | 94.54 | 98.43 | 103.57 | 106.36 | 106.58 | 102.59 | 99.16 | 96.01 | 99.75 | 102.96 | 105.50 | 105.54 |
| 110.00° | 102.32 | 101.00 | 96.05 | 91.23 | 87.49 | 89.79 | 94.35 | 100.10 | 103.10 | 102.55 | 97.86 | 93.30 | 89.78 | 94.22 | 98.38 | 102.21 | 102.32 |
| 112.50° | 99.04 | 97.52 | 91.20 | 85.95 | 80.87 | 84.90 | 89.65 | 96.55 | 99.90 | 98.49 | 92.84 | 87.40 | 82.43 | 88.23 | 93.08 | 98.45 | 99.04 |

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% | 20% | 0% |
| | pcc | 80% | 80% | 80% | 80% | 70% | 70% | 70% | 70% | 50% | 50% | 50% | 30% | 30% | 30% | 10% | 10% | 10% | 0% |
| | pw | 70% | 50% | 30% | 10% | 70% | 50% | 30% | 10% | 50% | 30% | 10% | 50% | 30% | 10% | 50% | 30% | 10% | 30% |
| | 0 | 1,371 | 1,371 | 1,371 | 1,371 | 1,289 | 1,289 | 1,289 | 1,289 | 1,135 | 1,135 | 1,135 | 995 | 995 | 995 | 865 | 865 | 865 | 805 |
| | 1 | 1,185 | 1,102 | 1,027 | 959 | 1,104 | 1,030 | 963 | 903 | 896 | 843 | 795 | 773 | 732 | 693 | 660 | 628 | 598 | 576 |
| | 2 | 1,054 | 927 | 822 | 733 | 978 | 865 | 771 | 691 | 749 | 674 | 608 | 642 | 582 | 530 | 543 | 497 | 455 | 452 |
| | 3 | 947 | 794 | 676 | 583 | 877 | 741 | 635 | 549 | 641 | 555 | 484 | 548 | 479 | 421 | 462 | 407 | 361 | 369 |
| | 4 | 858 | 691 | 569 | 476 | 794 | 645 | 535 | 449 | 558 | 468 | 396 | 477 | 404 | 345 | 402 | 343 | 295 | 311 |
| | 5 | 783 | 609 | 487 | 398 | 724 | 569 | 458 | 375 | 493 | 401 | 331 | 422 | 347 | 289 | 356 | 295 | 247 | 267 |
| | 6 | 718 | 541 | 423 | 338 | 665 | 506 | 398 | 319 | 439 | 349 | 282 | 377 | 303 | 246 | 319 | 258 | 210 | 234 |
| | 7 | 662 | 485 | 371 | 291 | 613 | 454 | 349 | 275 | 396 | 308 | 243 | 341 | 267 | 213 | 289 | 229 | 182 | 207 |
| | 8 | 613 | 438 | 328 | 253 | 568 | 411 | 310 | 240 | 359 | 274 | 213 | 310 | 238 | 186 | 264 | 204 | 160 | 186 |
| | 9 | 570 | 398 | 294 | 223 | 529 | 374 | 277 | 211 | 328 | 245 | 188 | 284 | 214 | 165 | 243 | 185 | 142 | 168 |
| | 10 | 532 | 364 | 264 | 198 | 495 | 343 | 250 | 187 | 301 | 222 | 167 | 262 | 194 | 147 | 225 | 168 | 127 | 153 |

Cone of Light

| Mtg Height | Light Level | Beam Diameter |
|------------|-------------|---------------|
| 5.5 ft | 4.0 fc | -13.1 ft |
| 6.5 ft | 2.9 fc | -15.5 ft |
| 7.5 ft | 2.2 fc | -17.9 ft |
| 8.0 ft | 1.9 fc | -19.1 ft |
| 10.0 ft | 1.2 fc | -23.8 ft |
| 12.0 ft | 0.8 fc | -28.6 ft |
| 14.0 ft | 0.6 fc | -33.4 ft |
| 16.0 ft | 0.5 fc | -38.1 ft |
| 20.0 ft | 0.3 fc | -47.7 ft |
| 24.0 ft | 0.2 fc | -57.2 ft |
| 28.0 ft | 0.2 fc | -66.7 ft |

Average Luminaire Luminance [cd/m²]

| | 0.00° | 45.00° | 90.00° |
|--------|-------|--------|--------|
| 0.00° | 939 | 939 | 939 |
| 45.00° | 627 | 612 | 604 |
| 55.00° | 630 | 615 | 606 |
| 65.00° | 647 | 632 | 623 |
| 75.00° | 674 | 657 | 650 |
| 85.00° | 716 | 698 | 690 |

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 | - | - | - | - | - | - | - | - | - | - |
| | 3H | - | - | - | - | - | - | - | - | - | - |
| | 4H | - | - | - | - | - | - | - | - | - | - |
| | 6H | - | - | - | - | - | - | - | - | - | - |
| | 8H | - | - | - | - | - | - | - | - | - | - |
| | 12H | - | - | - | - | - | - | - | - | - | - |
| 4H | 2H | - | - | - | - | - | - | - | - | - | - |
| | 3H | - | - | - | - | - | - | - | - | - | - |
| | 4H | - | - | - | - | - | - | - | - | - | - |
| | 6H | - | - | - | - | - | - | - | - | - | - |
| | 8H | - | - | - | - | - | - | - | - | - | - |
| | 12H | - | - | - | - | - | - | - | - | - | - |
| 8H | 4H | - | - | - | - | - | - | - | - | - | - |
| | 6H | - | - | - | - | - | - | - | - | - | - |
| | 8H | - | - | - | - | - | - | - | - | - | - |
| | 12H | - | - | - | - | - | - | - | - | - | - |
| 12H | 4H | - | - | - | - | - | - | - | - | - | - |
| | 6H | - | - | - | - | - | - | - | - | - | - |
| | 8H | - | - | - | - | - | - | - | - | - | - |

Corrected UGR values based on total output lumens

SHR = 1.0