



UL LLC
1075 W Lambert Rd Suite B
Brea, CA 92821

Indoor Distribution Test Report

Relevant Standards
IES LM-79-2008
ANSI C82.77-2002

Prepared For
SONNEMAN - A WAY OF LIGHT

NICOLAS CARMICHAEL
106 PIERCES RD
NEWBURGH, NY 12550-9369
United States

Catalog Number

7216.98-WL

Order Number

11281216

Test Number

1253415

Test Date

2016-06-15

Prepared By

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Approved By

Eric Gaudreau, Senior Engineering Associate

The results contained in this report pertain only to the tested sample.
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Luminaire Description: Rectangular white formed aluminum housing with front/side frosted lens
Lamp: 81 White LEDs
Mounting: Surface/Wall
Ballast/Driver: One (1) ERP EBR015U-0350-42

Luminaire



Luminaire Characteristics

Luminous Length: 1.25 in.
Luminous Width: 7.000 in.
Luminous Height: 7.25 in.

Summary of Results

Total Luminaire Output: 768.3 Lumens
Luminaire Efficacy: 52.5 lm/w
Maximum Candela: 203 Candela

Test Conditions

Test Temperature: 25.7 °C
Voltage: 120.0 VAC
Current: 0.1232 A
Power: 14.64 W
Power Factor: 0.989
Frequency: 60 Hz
Current THD: 12.6 %

Laboratory results may not be representative of field performance
Ballast factors have not been applied



Distribution - Goniophotometer

Distribution Test Conditions

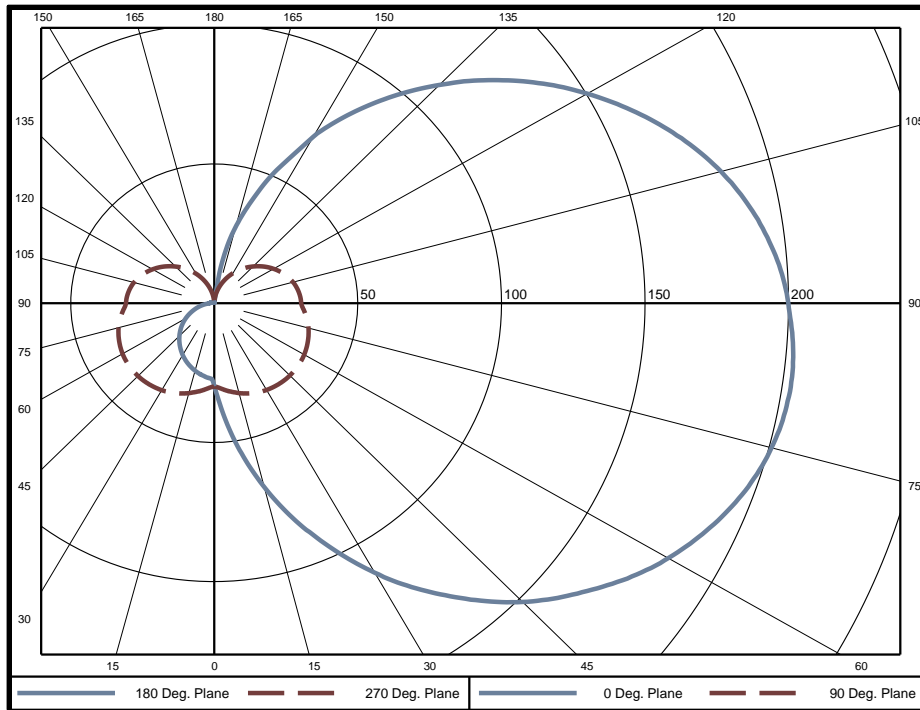
| Temperature | Voltage | Current | Power | Power Factor | Frequency | Current THD |
|-------------|-----------|----------|---------|--------------|-----------|-------------|
| 25.7 °C | 120.0 VAC | 0.1232 A | 14.64 W | 0.989 | 60 Hz | 12.6 % |

Summary of Results

Spacing Criteria
 0-180: 4.22
 90-270: 1.07

Total Lumen Output: 768.3 Lumens
Luminaire Efficacy: 52.5 lm/w
Maximum Candela: 203 Candela

Polar Plot



Zonal Lumen Summary

| Zone | Lumens | % of Luminaire | Zone | Lumens | % of Luminaire | Zone | Lumens | % of Luminaire |
|-------|--------|----------------|---------|--------|----------------|---------|--------|----------------|
| 0-5 | 0.76 | 0.1% | 60-65 | 37.22 | 4.8% | 120-125 | 25.62 | 3.3% |
| 5-10 | 2.54 | 0.3% | 65-70 | 39.33 | 5.1% | 125-130 | 22.00 | 2.9% |
| 10-15 | 4.77 | 0.6% | 70-75 | 40.89 | 5.3% | 130-135 | 18.37 | 2.4% |
| 15-20 | 7.42 | 1.0% | 75-80 | 41.81 | 5.4% | 135-140 | 14.90 | 1.9% |
| 20-25 | 10.43 | 1.4% | 80-85 | 42.00 | 5.5% | 140-145 | 11.63 | 1.5% |
| 25-30 | 13.73 | 1.8% | 85-90 | 41.48 | 5.4% | 145-150 | 8.63 | 1.1% |
| 30-35 | 17.25 | 2.2% | 90-95 | 40.78 | 5.3% | 150-155 | 5.97 | 0.8% |
| 35-40 | 20.88 | 2.7% | 95-100 | 39.59 | 5.2% | 155-160 | 3.79 | 0.5% |
| 40-45 | 24.57 | 3.2% | 100-105 | 37.77 | 4.9% | 160-165 | 2.09 | 0.3% |
| 45-50 | 28.15 | 3.7% | 105-110 | 35.32 | 4.6% | 165-170 | 0.83 | 0.1% |
| 50-55 | 31.50 | 4.1% | 110-115 | 32.41 | 4.2% | 170-175 | 0.16 | 0.0% |
| 55-60 | 34.60 | 4.5% | 115-120 | 29.11 | 3.8% | 175-180 | 0.01 | 0.0% |

| Zone | Lumens | % of Luminaire |
|--------|--------|----------------|
| 0-40 | 78 | 10.1% |
| 0-60 | 197 | 25.6% |
| 0-90 | 439 | 57.2% |
| 90-180 | 329 | 42.8% |



Candela Tabulation
Horizontal Angle (Degrees)

| | 0 | 22.5 | 45 | 67.5 | 90 | 112.5 | 135 | 157.5 | 180 | 202.5 | 225 | 247.5 | 270 | 292.5 | 315 | 337.5 |
|-----|-------|-------|-------|------|------|-------|------|-------|------|-------|------|-------|------|-------|-------|-------|
| 0 | 29.8 | 29.8 | 29.8 | 29.8 | 29.8 | 29.8 | 29.8 | 29.8 | 29.8 | 29.8 | 29.8 | 29.8 | 29.8 | 29.8 | 29.8 | 29.8 |
| 5 | 41.2 | 41.7 | 39.1 | 35.1 | 30.9 | 28.0 | 27.6 | 27.0 | 26.8 | 27.0 | 27.6 | 28.0 | 30.9 | 35.1 | 39.1 | 41.7 |
| 10 | 54.7 | 54.7 | 49.3 | 40.9 | 32.2 | 28.9 | 28.0 | 26.7 | 26.1 | 26.7 | 28.0 | 28.9 | 32.2 | 40.9 | 49.3 | 54.7 |
| 15 | 68.9 | 68.2 | 59.9 | 47.0 | 33.4 | 29.9 | 28.4 | 26.4 | 25.0 | 26.4 | 28.4 | 29.9 | 33.4 | 47.0 | 59.9 | 68.2 |
| 20 | 83.2 | 81.7 | 70.4 | 52.9 | 34.5 | 30.8 | 28.7 | 25.9 | 23.9 | 25.9 | 28.7 | 30.8 | 34.5 | 52.9 | 70.4 | 81.7 |
| 25 | 97.2 | 95.2 | 80.7 | 58.6 | 35.4 | 31.5 | 28.8 | 25.3 | 22.6 | 25.3 | 28.8 | 31.5 | 35.4 | 58.6 | 80.7 | 95.2 |
| 30 | 111.7 | 108.3 | 90.7 | 63.9 | 36.1 | 32.1 | 28.9 | 24.6 | 21.2 | 24.6 | 28.9 | 32.1 | 36.1 | 63.9 | 90.7 | 108.3 |
| 35 | 125.6 | 121.4 | 100.1 | 68.9 | 36.6 | 32.5 | 28.8 | 23.7 | 19.6 | 23.7 | 28.8 | 32.5 | 36.6 | 68.9 | 100.1 | 121.4 |
| 40 | 138.9 | 133.8 | 109.1 | 73.5 | 36.9 | 32.8 | 28.5 | 22.7 | 18.0 | 22.7 | 28.5 | 32.8 | 36.9 | 73.5 | 109.1 | 133.8 |
| 45 | 151.7 | 145.3 | 117.6 | 77.6 | 37.1 | 32.9 | 28.2 | 21.7 | 16.4 | 21.7 | 28.2 | 32.9 | 37.1 | 77.6 | 117.6 | 145.3 |
| 50 | 162.8 | 155.8 | 125.1 | 81.1 | 37.0 | 32.8 | 27.7 | 20.5 | 14.6 | 20.5 | 27.7 | 32.8 | 37.0 | 81.1 | 125.1 | 155.8 |
| 55 | 173.5 | 165.2 | 131.6 | 84.1 | 36.9 | 32.6 | 27.0 | 19.3 | 12.9 | 19.3 | 27.0 | 32.6 | 36.9 | 84.1 | 131.6 | 165.2 |
| 60 | 182.8 | 173.4 | 137.0 | 86.5 | 36.5 | 32.1 | 26.1 | 17.9 | 11.0 | 17.9 | 26.1 | 32.1 | 36.5 | 86.5 | 137.0 | 173.4 |
| 65 | 190.5 | 179.7 | 141.0 | 88.0 | 35.9 | 31.4 | 25.2 | 16.5 | 9.2 | 16.5 | 25.2 | 31.4 | 35.9 | 88.0 | 141.0 | 179.7 |
| 70 | 196.8 | 184.6 | 143.9 | 89.0 | 35.1 | 30.7 | 24.1 | 15.0 | 7.3 | 15.0 | 24.1 | 30.7 | 35.1 | 89.0 | 143.9 | 184.6 |
| 75 | 200.8 | 187.8 | 145.6 | 89.2 | 34.2 | 29.7 | 22.9 | 13.6 | 5.7 | 13.6 | 22.9 | 29.7 | 34.2 | 89.2 | 145.6 | 187.8 |
| 80 | 202.7 | 189.1 | 146.0 | 88.8 | 33.0 | 28.7 | 21.7 | 12.1 | 4.1 | 12.1 | 21.7 | 28.7 | 33.0 | 88.8 | 146.0 | 189.1 |
| 85 | 202.4 | 188.0 | 144.7 | 87.4 | 31.6 | 27.4 | 20.3 | 10.7 | 2.6 | 10.7 | 20.3 | 27.4 | 31.6 | 87.4 | 144.7 | 188.0 |
| 90 | 199.9 | 185.6 | 142.6 | 85.7 | 30.5 | 26.4 | 19.2 | 9.5 | 1.4 | 9.5 | 19.2 | 26.4 | 30.5 | 85.7 | 142.6 | 185.6 |
| 95 | 196.2 | 182.2 | 140.3 | 84.3 | 30.2 | 26.2 | 19.1 | 9.4 | 1.4 | 9.4 | 19.1 | 26.2 | 30.2 | 84.3 | 140.3 | 182.2 |
| 100 | 190.3 | 176.9 | 136.5 | 82.0 | 29.6 | 25.8 | 18.8 | 9.2 | 1.3 | 9.2 | 18.8 | 25.8 | 29.6 | 82.0 | 136.5 | 176.9 |
| 105 | 182.7 | 170.1 | 131.6 | 79.0 | 28.7 | 25.1 | 18.2 | 8.9 | 1.1 | 8.9 | 18.2 | 25.1 | 28.7 | 79.0 | 131.6 | 170.1 |
| 110 | 173.2 | 161.5 | 125.4 | 75.2 | 27.5 | 24.2 | 17.6 | 8.6 | 1.1 | 8.6 | 17.6 | 24.2 | 27.5 | 75.2 | 125.4 | 161.5 |
| 115 | 162.1 | 151.6 | 118.1 | 70.8 | 26.0 | 23.1 | 16.8 | 8.1 | 0.9 | 8.1 | 16.8 | 23.1 | 26.0 | 70.8 | 118.1 | 151.6 |
| 120 | 150.3 | 140.8 | 109.7 | 65.8 | 24.4 | 21.7 | 15.8 | 7.6 | 0.8 | 7.6 | 15.8 | 21.7 | 24.4 | 65.8 | 109.7 | 140.8 |
| 125 | 137.7 | 129.2 | 101.0 | 60.4 | 22.6 | 20.2 | 14.7 | 7.1 | 0.7 | 7.1 | 14.7 | 20.2 | 22.6 | 60.4 | 101.0 | 129.2 |
| 130 | 124.5 | 116.6 | 91.4 | 54.5 | 20.6 | 18.5 | 13.5 | 6.5 | 0.7 | 6.5 | 13.5 | 18.5 | 20.6 | 54.5 | 91.4 | 116.6 |
| 135 | 110.7 | 103.6 | 81.5 | 48.4 | 18.5 | 16.8 | 12.3 | 5.9 | 0.6 | 5.9 | 12.3 | 16.8 | 18.5 | 48.4 | 81.5 | 103.6 |
| 140 | 97.0 | 90.7 | 71.4 | 42.0 | 16.4 | 14.9 | 10.9 | 5.2 | 0.6 | 5.2 | 10.9 | 14.9 | 16.4 | 42.0 | 71.4 | 90.7 |
| 145 | 83.2 | 77.4 | 60.6 | 35.4 | 14.2 | 13.0 | 9.5 | 4.4 | 0.5 | 4.4 | 9.5 | 13.0 | 14.2 | 35.4 | 60.6 | 77.4 |
| 150 | 69.0 | 63.6 | 49.8 | 28.5 | 11.9 | 11.0 | 7.9 | 3.7 | 0.4 | 3.7 | 7.9 | 11.0 | 11.9 | 28.5 | 49.8 | 63.6 |
| 155 | 53.8 | 50.4 | 39.3 | 20.9 | 9.7 | 8.8 | 6.3 | 3.1 | 0.4 | 3.1 | 6.3 | 8.8 | 9.7 | 20.9 | 39.3 | 50.4 |
| 160 | 40.2 | 37.6 | 29.1 | 13.9 | 7.4 | 6.6 | 4.8 | 2.4 | 0.4 | 2.4 | 4.8 | 6.6 | 7.4 | 13.9 | 29.1 | 37.6 |
| 165 | 27.8 | 25.3 | 15.0 | 8.1 | 5.3 | 4.6 | 3.5 | 1.8 | 0.4 | 1.8 | 3.5 | 4.6 | 5.3 | 8.1 | 15.0 | 25.3 |
| 170 | 13.3 | 7.0 | 5.9 | 3.6 | 3.2 | 2.8 | 2.2 | 1.0 | 0.3 | 1.0 | 2.2 | 2.8 | 3.2 | 3.6 | 5.9 | 7.0 |
| 175 | 0.3 | 0.5 | 1.0 | 1.3 | 1.2 | 1.3 | 0.9 | 0.4 | 0.3 | 0.4 | 0.9 | 1.3 | 1.2 | 1.3 | 1.0 | 0.5 |
| 180 | 0.3 | 0.3 | 0.3 | 0.3 | 0.3 | 0.3 | 0.3 | 0.3 | 0.3 | 0.3 | 0.3 | 0.3 | 0.3 | 0.3 | 0.3 | 0.3 |

Average Luminance (cd/m²)
Horizontal Angle (Degrees)

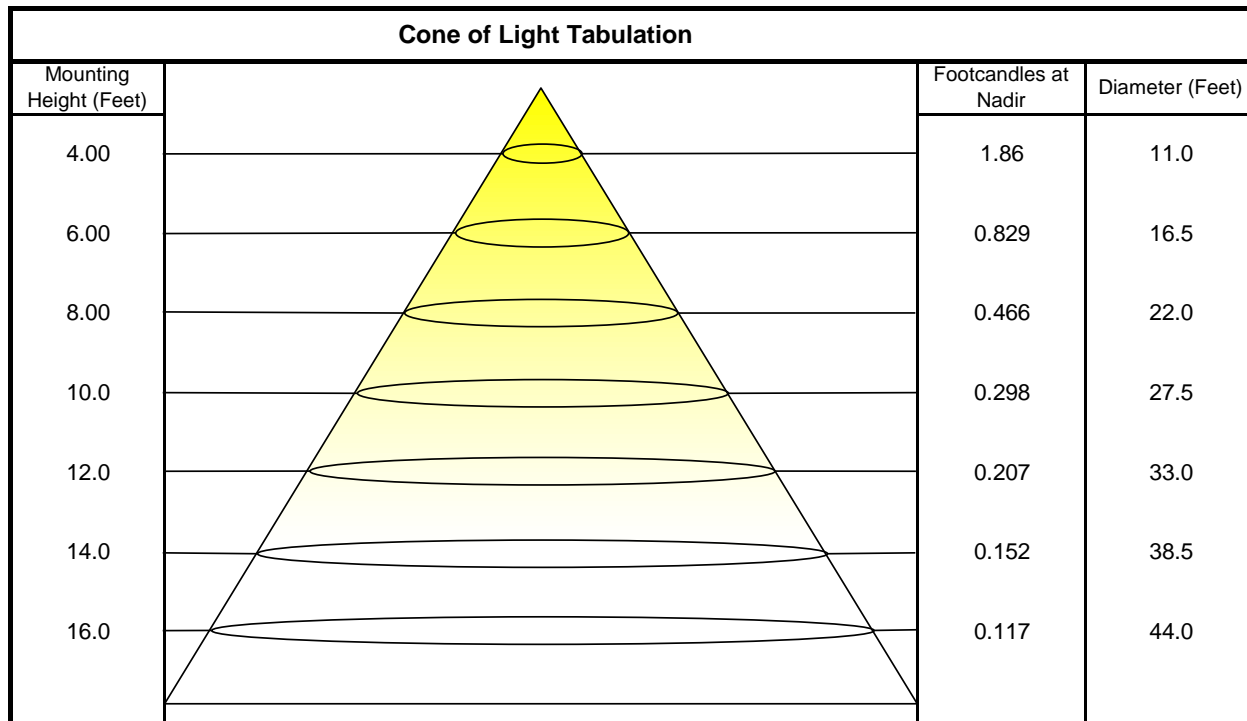
| | 0 | 45 | 90 |
|----|------|------|------|
| 0 | 5285 | 5285 | 5285 |
| 45 | 5588 | 5051 | 4565 |
| 55 | 5770 | 5144 | 4593 |
| 65 | 5942 | 5200 | 4670 |
| 75 | 6070 | 5233 | 4806 |
| 85 | 6112 | 5230 | 5002 |



Utilization of Lumens - Zonal Cavity Method

| Effective Floor Cavity Reflectance 20% | | | | | | | | | | | | | | | | | | |
|--|--|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|
| Ceiling Cavity Reflectance | 80 | | | | 70 | | | | 50 | | | 30 | | | 10 | | | 0 |
| Wall Reflectance | 70 | 50 | 30 | 10 | 70 | 50 | 30 | 10 | 50 | 30 | 10 | 50 | 30 | 10 | 50 | 30 | 10 | 0 |
| Room Cavity Ratio (RCR) | ** Values are expressed as Lumens delivered to the task surface ** | | | | | | | | | | | | | | | | | |
| 0 | 836 | 836 | 836 | 836 | 779 | 779 | 779 | 779 | 671 | 671 | 671 | 572 | 572 | 572 | 482 | 482 | 482 | 439 |
| 1 | 721 | 669 | 623 | 581 | 665 | 619 | 578 | 540 | 525 | 493 | 463 | 439 | 414 | 390 | 359 | 340 | 322 | 282 |
| 2 | 640 | 561 | 496 | 441 | 587 | 517 | 459 | 410 | 436 | 390 | 350 | 361 | 325 | 294 | 291 | 264 | 240 | 203 |
| 3 | 574 | 479 | 406 | 348 | 525 | 442 | 376 | 324 | 371 | 319 | 276 | 306 | 265 | 230 | 245 | 213 | 186 | 153 |
| 4 | 519 | 416 | 340 | 282 | 474 | 383 | 315 | 263 | 321 | 267 | 224 | 264 | 221 | 186 | 211 | 177 | 149 | 120 |
| 5 | 472 | 365 | 290 | 234 | 432 | 336 | 268 | 218 | 282 | 227 | 185 | 232 | 188 | 154 | 185 | 151 | 123 | 96 |
| 6 | 432 | 323 | 250 | 197 | 395 | 298 | 232 | 184 | 251 | 197 | 156 | 207 | 163 | 129 | 165 | 130 | 103 | 79 |
| 7 | 398 | 289 | 218 | 169 | 364 | 267 | 203 | 157 | 225 | 172 | 134 | 186 | 143 | 110 | 149 | 114 | 88 | 67 |
| 8 | 368 | 260 | 192 | 146 | 337 | 241 | 179 | 136 | 203 | 152 | 116 | 168 | 126 | 96 | 135 | 101 | 76 | 57 |
| 9 | 341 | 236 | 171 | 128 | 313 | 218 | 159 | 119 | 185 | 136 | 101 | 154 | 113 | 84 | 124 | 91 | 66 | 49 |
| 10 | 318 | 215 | 153 | 112 | 292 | 199 | 143 | 104 | 169 | 122 | 89 | 141 | 102 | 74 | 114 | 82 | 59 | 43 |

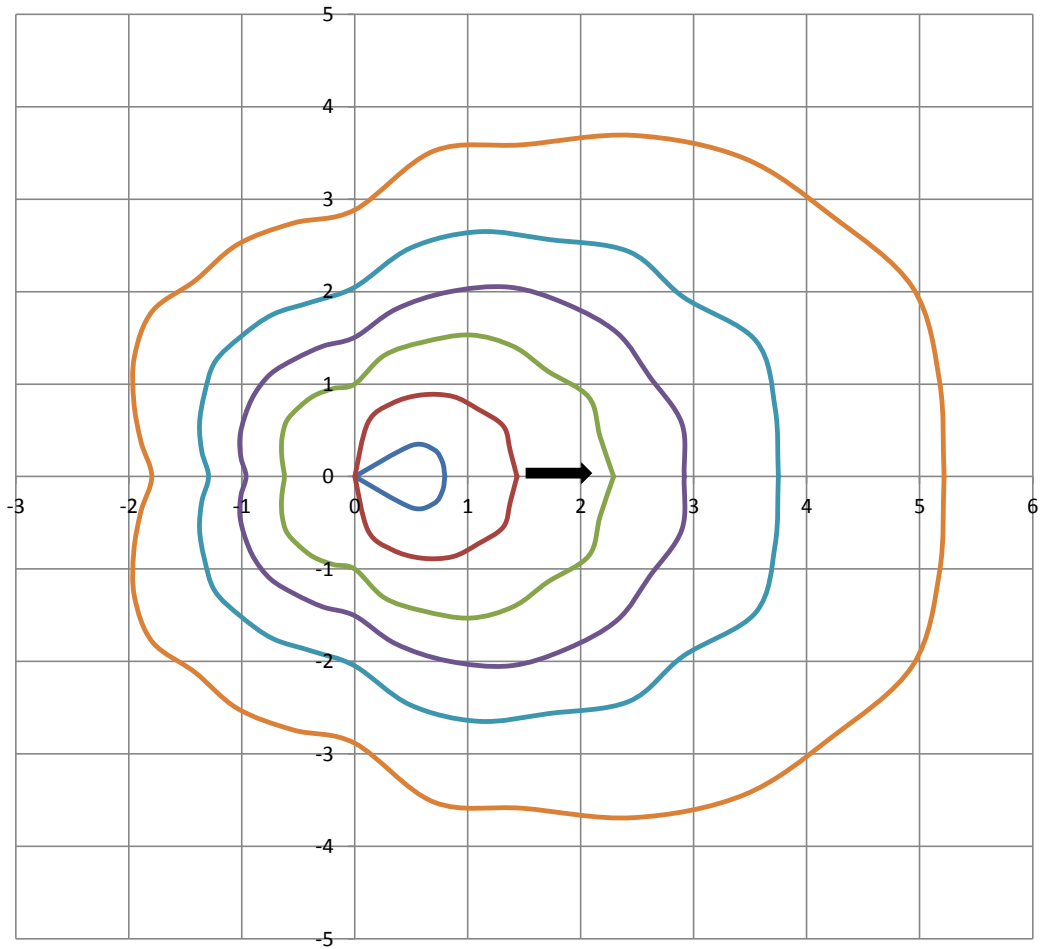
| Beam and Field Information | |
|----------------------------|-----------------|
| CIE Type: | Direct/Indirect |
| Center Beam Intensity: | 29.8 Candela |
| Central Cone Intensity: | 31 Candela |
| Beam Flux: | 750.1 Lumens |
| Beam Angle (0-180): | 218.6 Degrees |
| Beam Angle (90-270): | 286.7 Degrees |
| Field Angle (0-180): | 255.0 Degrees |
| Field Angle (90-270): | 341.0 Degrees |





ISOFootcandle Plot

Mounting Height - 8 Feet



Grid Lines in Units of Mounting Height

