



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**

**7222.98-WL**

Order Number

11281216

Test Number

1253418

Test Date

2016-07-08

Prepared By

Tony Rubio, Technician

Approved By

Eric Gaudreau, Senior Engineering Associate

The results contained in this report pertain only to the tested sample.  
This report shall not be reproduced, except in full, without written approval of Underwriters Laboratories.  
This report must not be used by the client to claim product certification, approval, or endorsement by  
NVLAP, NIST, or any agency of the Federal Government.



**Luminaire Description:** White aluminum housing with a clear plastic lens  
**Lamp:** One (1) White LEDs  
**Mounting:** Surface/Wall

**Luminaire**



**Luminaire Characteristics**  
Luminous Diameter: 1.75 in.

**Summary of Results**

|                         |              |
|-------------------------|--------------|
| Total Luminaire Output: | 324.4 Lumens |
| Luminaire Efficacy:     | 51.7 lm/w    |
| Maximum Candela:        | 857 Candela  |

**Test Conditions**

|                   |           |
|-------------------|-----------|
| Test Temperature: | 24.7 °C   |
| Voltage:          | 120.1 VAC |
| Current:          | 0.05580 A |
| Power:            | 6.271 W   |
| Power Factor:     | 0.924     |
| Frequency:        | 60 Hz     |
| Current THD:      | 2.23 %    |

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



## Distribution - Goniophotometer

### Distribution Test Conditions

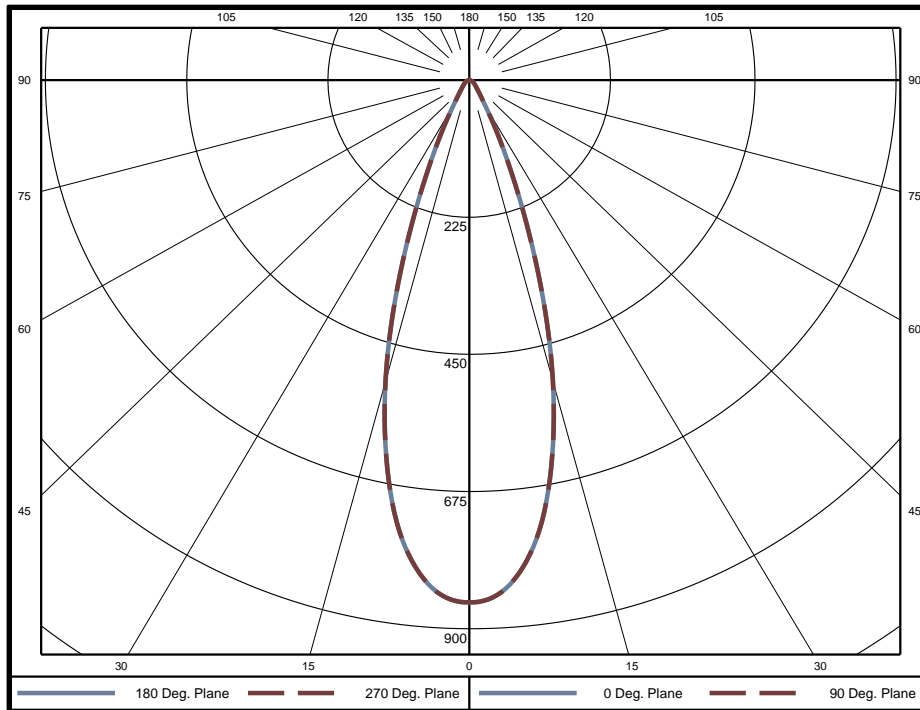
| Temperature | Voltage   | Current   | Power   | Power Factor | Frequency | Current THD |
|-------------|-----------|-----------|---------|--------------|-----------|-------------|
| 24.7 °C     | 120.1 VAC | 0.05580 A | 6.271 W | 0.924        | 60 Hz     | 2.23 %      |

### Summary of Results

**Spacing Criteria**  
 0-180: 0.56  
 90-270: 0.56

**Total Lumen Output:** 324.4 Lumens  
**Luminaire Efficacy:** 51.7 lm/w  
**Maximum Candela:** 857 Candela

### Polar Plot



### Zonal Lumen Summary

| Zone  | Lumens | % of Luminaire | Zone    | Lumens | % of Luminaire | Zone    | Lumens | % of Luminaire |
|-------|--------|----------------|---------|--------|----------------|---------|--------|----------------|
| 0-5   | 20.10  | 6.2%           | 60-65   | 3.03   | 0.9%           | 120-125 | 0      | 0.0%           |
| 5-10  | 54.61  | 16.8%          | 65-70   | 2.29   | 0.7%           | 125-130 | 0      | 0.0%           |
| 10-15 | 71.64  | 22.1%          | 70-75   | 1.34   | 0.4%           | 130-135 | 0      | 0.0%           |
| 15-20 | 65.26  | 20.1%          | 75-80   | 0.65   | 0.2%           | 135-140 | 0      | 0.0%           |
| 20-25 | 42.50  | 13.1%          | 80-85   | 0.22   | 0.1%           | 140-145 | 0      | 0.0%           |
| 25-30 | 22.78  | 7.0%           | 85-90   | 0.06   | 0.0%           | 145-150 | 0      | 0.0%           |
| 30-35 | 12.13  | 3.7%           | 90-95   | 0      | 0.0%           | 150-155 | 0      | 0.0%           |
| 35-40 | 8.15   | 2.5%           | 95-100  | 0      | 0.0%           | 155-160 | 0      | 0.0%           |
| 40-45 | 6.27   | 1.9%           | 100-105 | 0      | 0.0%           | 160-165 | 0      | 0.0%           |
| 45-50 | 5.21   | 1.6%           | 105-110 | 0      | 0.0%           | 165-170 | 0      | 0.0%           |
| 50-55 | 4.42   | 1.4%           | 110-115 | 0      | 0.0%           | 170-175 | 0      | 0.0%           |
| 55-60 | 3.70   | 1.1%           | 115-120 | 0      | 0.0%           | 175-180 | 0      | 0.0%           |

| Zone   | Lumens | % of Luminaire |
|--------|--------|----------------|
| 0-40   | 297    | 91.6%          |
| 0-60   | 317    | 97.6%          |
| 0-90   | 324    | 100.0%         |
| 90-180 | 0      | 0.0%           |



**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   | 856.5 | 856.5 | 856.5 | 856.5 | 856.5 | 856.5 | 856.5 | 856.5 | 856.5 | 856.5 | 856.5 | 856.5 | 856.5 | 856.5 | 856.5 | 856.5 |
| 5   | 821.6 | 821.6 | 821.6 | 821.6 | 821.6 | 821.6 | 821.6 | 821.6 | 821.6 | 821.6 | 821.6 | 821.6 | 821.6 | 821.6 | 821.6 | 821.6 |
| 10  | 702.0 | 702.0 | 702.0 | 702.0 | 702.0 | 702.0 | 702.0 | 702.0 | 702.0 | 702.0 | 702.0 | 702.0 | 702.0 | 702.0 | 702.0 | 702.0 |
| 15  | 510.7 | 510.7 | 510.7 | 510.7 | 510.7 | 510.7 | 510.7 | 510.7 | 510.7 | 510.7 | 510.7 | 510.7 | 510.7 | 510.7 | 510.7 | 510.7 |
| 20  | 292.5 | 292.5 | 292.5 | 292.5 | 292.5 | 292.5 | 292.5 | 292.5 | 292.5 | 292.5 | 292.5 | 292.5 | 292.5 | 292.5 | 292.5 | 292.5 |
| 25  | 134.5 | 134.5 | 134.5 | 134.5 | 134.5 | 134.5 | 134.5 | 134.5 | 134.5 | 134.5 | 134.5 | 134.5 | 134.5 | 134.5 | 134.5 | 134.5 |
| 30  | 57.5  | 57.5  | 57.5  | 57.5  | 57.5  | 57.5  | 57.5  | 57.5  | 57.5  | 57.5  | 57.5  | 57.5  | 57.5  | 57.5  | 57.5  | 57.5  |
| 35  | 30.6  | 30.6  | 30.6  | 30.6  | 30.6  | 30.6  | 30.6  | 30.6  | 30.6  | 30.6  | 30.6  | 30.6  | 30.6  | 30.6  | 30.6  | 30.6  |
| 40  | 19.9  | 19.9  | 19.9  | 19.9  | 19.9  | 19.9  | 19.9  | 19.9  | 19.9  | 19.9  | 19.9  | 19.9  | 19.9  | 19.9  | 19.9  | 19.9  |
| 45  | 14.6  | 14.6  | 14.6  | 14.6  | 14.6  | 14.6  | 14.6  | 14.6  | 14.6  | 14.6  | 14.6  | 14.6  | 14.6  | 14.6  | 14.6  | 14.6  |
| 50  | 11.4  | 11.4  | 11.4  | 11.4  | 11.4  | 11.4  | 11.4  | 11.4  | 11.4  | 11.4  | 11.4  | 11.4  | 11.4  | 11.4  | 11.4  | 11.4  |
| 55  | 9.0   | 9.0   | 9.0   | 9.0   | 9.0   | 9.0   | 9.0   | 9.0   | 9.0   | 9.0   | 9.0   | 9.0   | 9.0   | 9.0   | 9.0   | 9.0   |
| 60  | 7.1   | 7.1   | 7.1   | 7.1   | 7.1   | 7.1   | 7.1   | 7.1   | 7.1   | 7.1   | 7.1   | 7.1   | 7.1   | 7.1   | 7.1   | 7.1   |
| 65  | 5.4   | 5.4   | 5.4   | 5.4   | 5.4   | 5.4   | 5.4   | 5.4   | 5.4   | 5.4   | 5.4   | 5.4   | 5.4   | 5.4   | 5.4   | 5.4   |
| 70  | 3.5   | 3.5   | 3.5   | 3.5   | 3.5   | 3.5   | 3.5   | 3.5   | 3.5   | 3.5   | 3.5   | 3.5   | 3.5   | 3.5   | 3.5   | 3.5   |
| 75  | 1.8   | 1.8   | 1.8   | 1.8   | 1.8   | 1.8   | 1.8   | 1.8   | 1.8   | 1.8   | 1.8   | 1.8   | 1.8   | 1.8   | 1.8   | 1.8   |
| 80  | 0.7   | 0.7   | 0.7   | 0.7   | 0.7   | 0.7   | 0.7   | 0.7   | 0.7   | 0.7   | 0.7   | 0.7   | 0.7   | 0.7   | 0.7   | 0.7   |
| 85  | 0.2   | 0.2   | 0.2   | 0.2   | 0.2   | 0.2   | 0.2   | 0.2   | 0.2   | 0.2   | 0.2   | 0.2   | 0.2   | 0.2   | 0.2   | 0.2   |
| 90  | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   |
| 95  | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   |
| 100 | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   |
| 105 | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   |
| 110 | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   |
| 115 | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   |
| 120 | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   |
| 125 | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   |
| 130 | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   |
| 135 | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   |
| 140 | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   |
| 145 | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   |
| 150 | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   |
| 155 | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   |
| 160 | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   |
| 165 | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   |
| 170 | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   |
| 175 | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   |
| 180 | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   |

**Average Luminance (cd/m<sup>2</sup>)**

Horizontal Angle (Degrees)

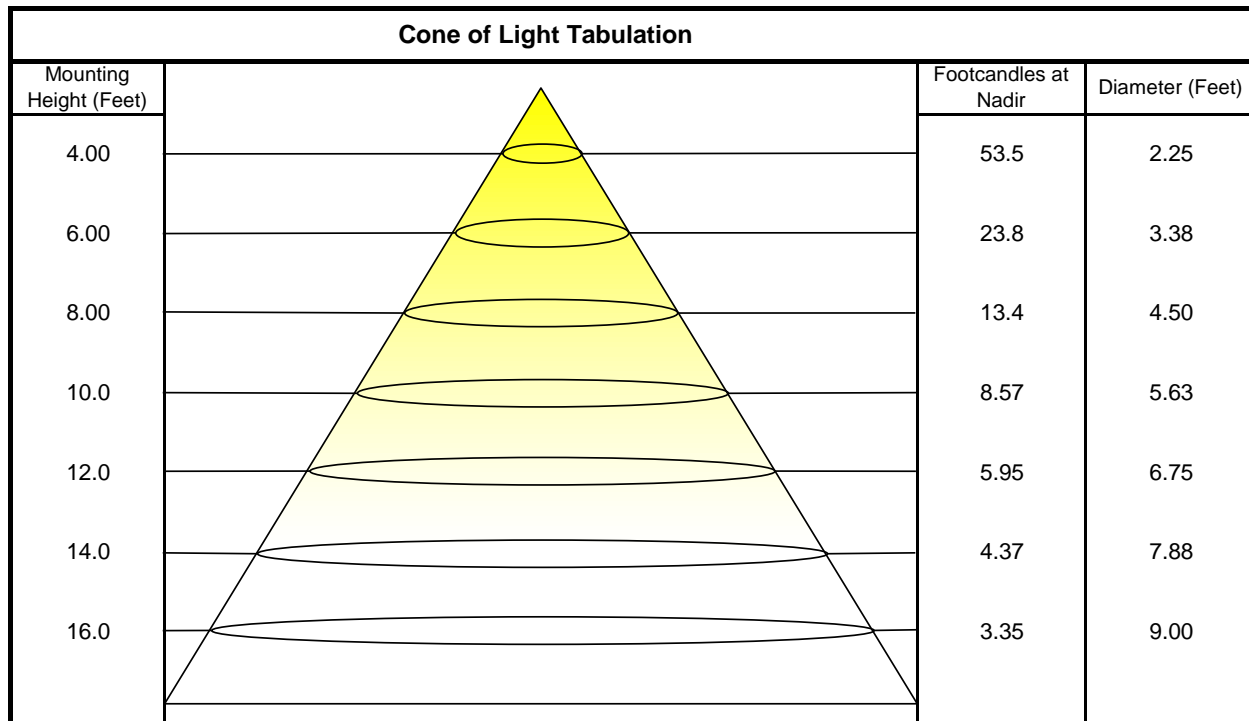
|    | 0      | 45     | 90     |
|----|--------|--------|--------|
| 0  | 552000 | 552000 | 552000 |
| 45 | 13330  | 13330  | 13330  |
| 55 | 10160  | 10160  | 10160  |
| 65 | 8287   | 8287   | 8287   |
| 75 | 4495   | 4495   | 4495   |
| 85 | 1381   | 1381   | 1381   |



### 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                                      | 386  | 386 | 386 | 386 | 377 | 377 | 377 | 377 | 360 | 360 | 360 | 345 | 345 | 345 | 331 | 331 | 331 | 324 |
| 1                                      | 370  | 362 | 354 | 348 | 362 | 355 | 348 | 342 | 342 | 337 | 332 | 330 | 326 | 322 | 319 | 316 | 313 | 307 |
| 2                                      | 354  | 340 | 328 | 319 | 347 | 335 | 324 | 315 | 324 | 316 | 308 | 315 | 308 | 302 | 306 | 300 | 295 | 290 |
| 3                                      | 340  | 321 | 307 | 296 | 333 | 317 | 304 | 293 | 309 | 298 | 289 | 301 | 292 | 284 | 294 | 286 | 280 | 275 |
| 4                                      | 326  | 305 | 289 | 277 | 321 | 301 | 287 | 276 | 295 | 282 | 273 | 288 | 278 | 269 | 282 | 274 | 266 | 262 |
| 5                                      | 313  | 290 | 274 | 262 | 308 | 287 | 272 | 261 | 282 | 269 | 259 | 277 | 265 | 256 | 272 | 262 | 254 | 250 |
| 6                                      | 302  | 277 | 261 | 249 | 297 | 275 | 259 | 248 | 270 | 256 | 246 | 266 | 254 | 245 | 262 | 251 | 243 | 239 |
| 7                                      | 291  | 265 | 249 | 237 | 287 | 263 | 248 | 237 | 259 | 246 | 235 | 256 | 243 | 234 | 252 | 241 | 233 | 229 |
| 8                                      | 280  | 254 | 238 | 227 | 277 | 253 | 237 | 227 | 250 | 236 | 226 | 246 | 234 | 225 | 244 | 232 | 224 | 220 |
| 9                                      | 271  | 245 | 229 | 218 | 268 | 243 | 228 | 218 | 240 | 227 | 217 | 238 | 225 | 216 | 235 | 224 | 216 | 212 |
| 10                                     | 262  | 236 | 220 | 210 | 259 | 234 | 220 | 209 | 232 | 218 | 209 | 230 | 217 | 208 | 228 | 216 | 208 | 204 |

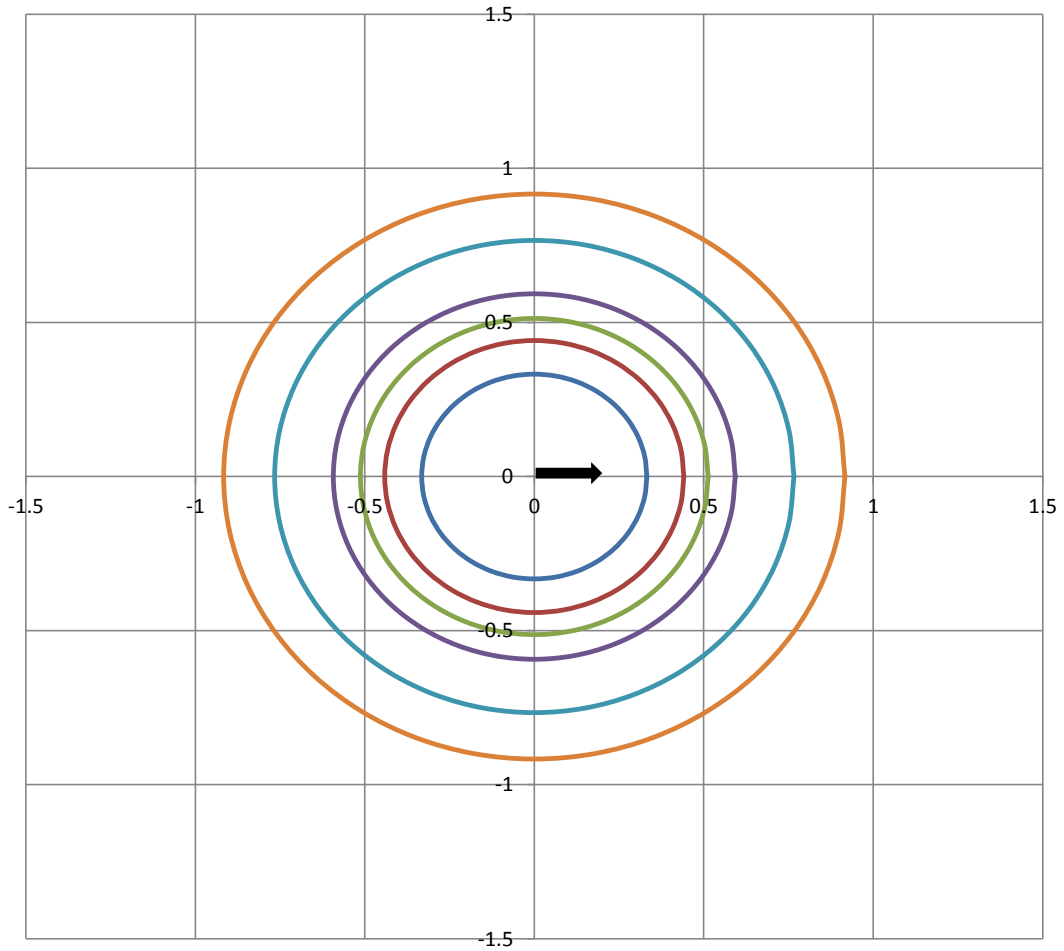
| Beam and Field Information |               |
|----------------------------|---------------|
| CIE Type:                  | Direct        |
| Center Beam Intensity:     | 856.5 Candela |
| Central Cone Intensity:    | 845 Candela   |
| Beam Flux:                 | 172.4 Lumens  |
| Beam Angle (0-180):        | 33.8 Degrees  |
| Beam Angle (90-270):       | 33.8 Degrees  |
| Field Angle (0-180):       | 55.4 Degrees  |
| Field Angle (90-270):      | 55.4 Degrees  |





### ISOFootcandle Plot

Mounting Height - 8 Feet



Grid Lines in Units of Mounting Height

