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Photometric Test Report

Relevant Standards
IES LM-79-2008, ANSI C82.77-10-2014, CIE 13.3-1995
CIE 15-2004, ANSI C78.377-2017, IES TM-30-2018

Prepared For
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Catalog Number
MX2UD-4-L8/835U/L8/835D-G/G
Order Number
13052732
Test Number
13052732.10

Test Date

2019-10-11 - 2019-10-16

Prepared By

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Approved By

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The results contained in this report pertain only to the tested sample.
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Laboratory results may not be representative of field performance
Ballast factors have not been applied

Testing was performed in a 2-meter integrating sphere using the 4π geometry method.
Absorption correction was employed for Sphere measurement



Luminaire Description: Formed White aluminum housing,frosted lens enclosures
Lamp: 288 White LEDs
Mounting: Pendant
Ballast/Driver: Two Philips XI040C110V054BST1 Driver

Luminaire



Luminaire Characteristics

Luminous Length: 48.00 in.
Luminous Width: 2.000 in.
Luminous Height: 4.00 in.

Summary of Results

Integrating Sphere

Luminous Flux: 5880 Lumens
Efficacy: 116.18 lm/w
CCT: 3436 K
CRI (Ra): 82.8

Distribution

Total Luminaire Output: 5664 Lumens
Luminaire Efficacy: 111.5 lm/w
Maximum Candela: 1107 Candela

Electrical Data at 120 VAC

Test Temperature: 25.7 °C
Voltage: 120.0 VAC
Current: 0.4249 A
Power: 50.61 W
Power Factor: 0.993
Frequency: 60 Hz
Current THD: 10.0 %



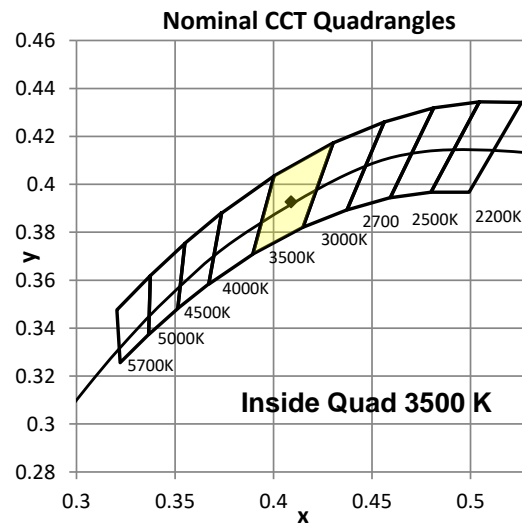
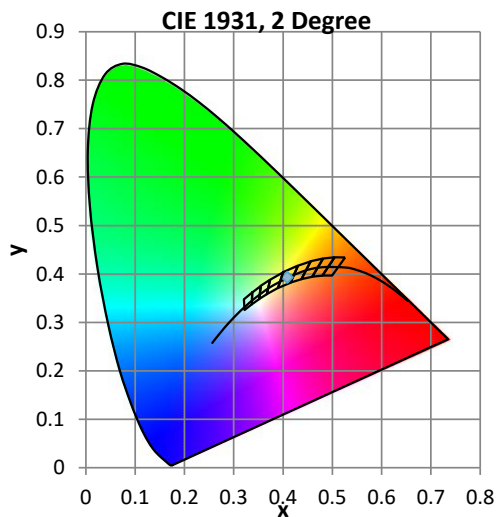
Color Quality - Integrating Sphere

Integrating Sphere Test Conditions

| Temperature | Voltage | Current | Power | Power Factor | Frequency | Current THD |
|-------------|-----------|----------|---------|--------------|-----------|-------------|
| 25.7 °C | 120.0 VAC | 0.4249 A | 50.61 W | 0.993 | 60 Hz | 10.0 % |

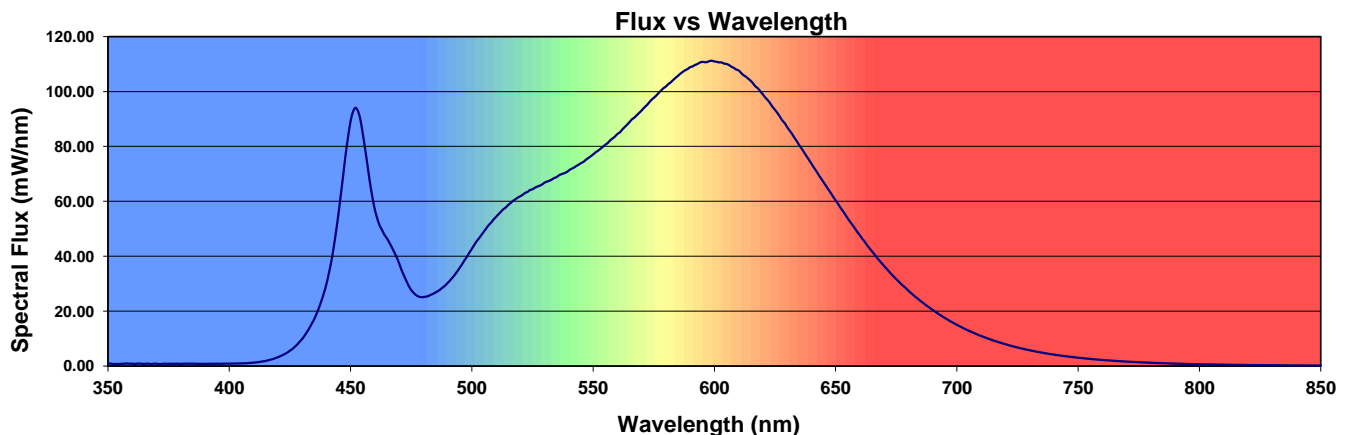
Summary of Results

| | | | |
|-----------------------------|-------------|---------------------------|--------|
| Total Output: | 5880 Lumens | Chromaticity (x): | 0.4089 |
| Efficacy: | 116.2 lm/w | Chromaticity (y): | 0.3927 |
| CCT: | 3436 K | Chromaticity (u'): | 0.2372 |
| CRI (Ra): | 82.8 | Chromaticity (v'): | 0.5126 |
| CRI (R9): | 6.9 | TM-30 Rf: | 84.3 |
| Peak Wavelength: | 599 nm | TM-30 Rg: | 95.4 |
| Dominant Wavelength: | 581 nm | Duv: | 0.0003 |
| S/P Ratio: | 1.51 | | |



Color Rendering Index Detail

| Ra (CRI) | R1 | R2 | R3 | R4 | R5 | R6 | R7 | R8 | R9 | R10 | R11 | R12 | R13 | R14 | R15 |
|----------|------|------|------|------|------|------|------|------|-----|------|------|------|------|------|------|
| 82.8 | 81.2 | 90.4 | 96.3 | 81.0 | 81.3 | 87.3 | 84.1 | 61.1 | 6.9 | 77.5 | 80.3 | 65.3 | 83.5 | 98.4 | 74.2 |





Distribution - Goniophotometer

Distribution Test Conditions

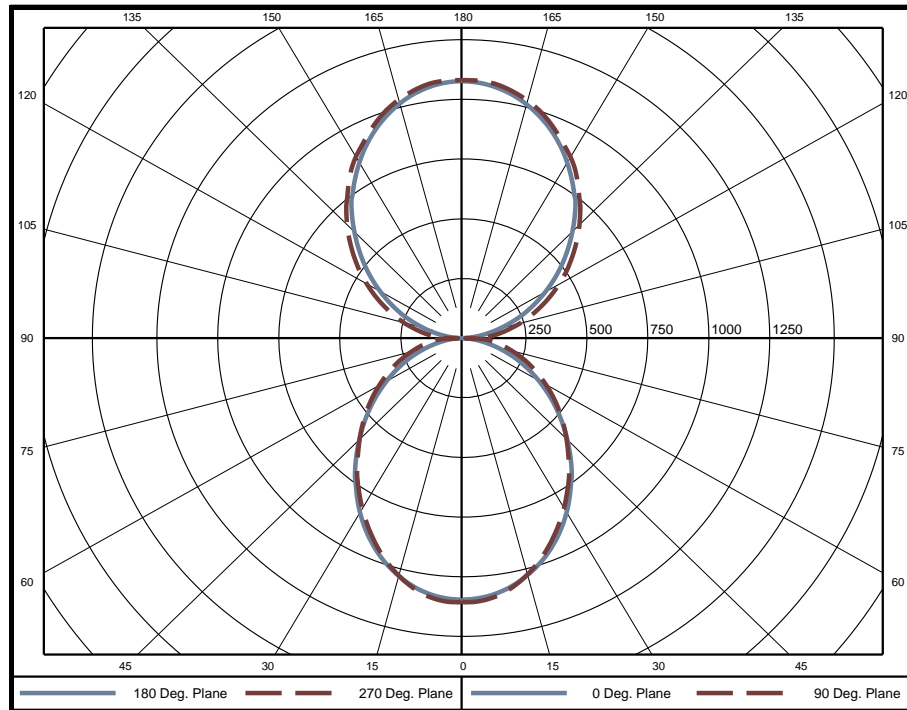
| Temperature | Voltage | Current | Power | Power Factor | Frequency | Current THD |
|-------------|-----------|----------|---------|--------------|-----------|-------------|
| 24.4 °C | 119.9 VAC | 0.4265 A | 50.80 W | 0.993 | 60 Hz | 10.0 % |

Summary of Results

Spacing Criteria
 0-180: 1.14
 90-270: 1.12

Total Lumen Output: 5664 Lumens
Luminaire Efficacy: 111.5 lm/w
Maximum Candela: 1107 Candela

Polar Plot



Zonal Lumen Summary

| Zone | Lumens | % of Luminaire | Zone | Lumens | % of Luminaire | Zone | Lumens | % of Luminaire |
|-------|--------|----------------|---------|--------|----------------|---------|--------|----------------|
| 0-5 | 26.3 | 0.5% | 60-65 | 167.1 | 3.0% | 120-125 | 212.2 | 3.7% |
| 5-10 | 77.5 | 1.4% | 65-70 | 140.5 | 2.5% | 125-130 | 232.5 | 4.1% |
| 10-15 | 124.5 | 2.2% | 70-75 | 112.0 | 2.0% | 130-135 | 246.9 | 4.4% |
| 15-20 | 165.0 | 2.9% | 75-80 | 83.4 | 1.5% | 135-140 | 254.5 | 4.5% |
| 20-25 | 197.3 | 3.5% | 80-85 | 56.7 | 1.0% | 140-145 | 253.4 | 4.5% |
| 25-30 | 220.6 | 3.9% | 85-90 | 26.9 | 0.5% | 145-150 | 244.1 | 4.3% |
| 30-35 | 234.3 | 4.1% | 90-95 | 39.1 | 0.7% | 150-155 | 225.9 | 4.0% |
| 35-40 | 239.6 | 4.2% | 95-100 | 64.2 | 1.1% | 155-160 | 199.5 | 3.5% |
| 40-45 | 236.1 | 4.2% | 100-105 | 94.0 | 1.7% | 160-165 | 165.1 | 2.9% |
| 45-50 | 226.3 | 4.0% | 105-110 | 126.0 | 2.2% | 165-170 | 123.4 | 2.2% |
| 50-55 | 211.2 | 3.7% | 110-115 | 157.7 | 2.8% | 170-175 | 76.2 | 1.3% |
| 55-60 | 191.1 | 3.4% | 115-120 | 186.8 | 3.3% | 175-180 | 25.7 | 0.5% |

| Zone | Lumens | % of Luminaire |
|--------|--------|----------------|
| 0-40 | 1285 | 22.7% |
| 0-60 | 2150 | 38.0% |
| 0-90 | 2736 | 48.3% |
| 90-180 | 2927 | 51.7% |



Candela Tabulation
Horizontal Angle (Degrees)

| Vertical 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 | 1103 | 1103 | 1103 | 1103 | 1103 | 1103 | 1103 | 1103 | 1103 | 1103 | 1103 | 1103 | 1103 | 1103 | 1103 |
| | 5 | 1088 | 1098 | 1093 | 1097 | 1101 | 1097 | 1093 | 1098 | 1088 | 1098 | 1093 | 1097 | 1101 | 1097 | 1093 |
| | 10 | 1065 | 1074 | 1068 | 1071 | 1072 | 1071 | 1068 | 1074 | 1065 | 1074 | 1068 | 1071 | 1072 | 1071 | 1068 |
| | 15 | 1026 | 1036 | 1027 | 1028 | 1023 | 1028 | 1027 | 1036 | 1026 | 1036 | 1027 | 1028 | 1023 | 1028 | 1027 |
| | 20 | 975 | 986 | 973 | 968 | 962 | 968 | 973 | 986 | 975 | 986 | 973 | 968 | 962 | 968 | 973 |
| | 25 | 912 | 923 | 908 | 900 | 892 | 900 | 908 | 923 | 912 | 923 | 908 | 900 | 892 | 900 | 908 |
| | 30 | 840 | 851 | 835 | 827 | 819 | 827 | 835 | 851 | 840 | 851 | 835 | 827 | 819 | 827 | 835 |
| | 35 | 760 | 771 | 758 | 749 | 744 | 749 | 758 | 771 | 760 | 771 | 758 | 749 | 744 | 749 | 758 |
| | 40 | 681 | 691 | 680 | 671 | 666 | 671 | 680 | 691 | 681 | 691 | 680 | 671 | 666 | 671 | 680 |
| | 45 | 596 | 608 | 599 | 595 | 592 | 595 | 599 | 608 | 596 | 608 | 599 | 595 | 592 | 595 | 599 |
| | 50 | 514 | 527 | 524 | 523 | 522 | 523 | 524 | 527 | 514 | 527 | 524 | 523 | 522 | 523 | 524 |
| | 55 | 433 | 448 | 451 | 455 | 455 | 455 | 451 | 448 | 433 | 448 | 451 | 455 | 455 | 455 | 451 |
| | 60 | 356 | 373 | 381 | 388 | 389 | 388 | 381 | 373 | 356 | 373 | 381 | 388 | 389 | 388 | 381 |
| | 65 | 282 | 300 | 313 | 324 | 326 | 324 | 313 | 300 | 282 | 300 | 313 | 324 | 326 | 324 | 313 |
| | 70 | 211 | 231 | 249 | 263 | 268 | 263 | 249 | 231 | 211 | 231 | 249 | 263 | 268 | 263 | 249 |
| | 75 | 144 | 166 | 188 | 205 | 210 | 205 | 188 | 166 | 144 | 166 | 188 | 205 | 210 | 205 | 188 |
| | 80 | 85 | 108 | 134 | 152 | 160 | 152 | 134 | 108 | 85 | 108 | 134 | 152 | 160 | 152 | 134 |
| | 85 | 37 | 60 | 85 | 104 | 113 | 104 | 85 | 60 | 37 | 60 | 85 | 104 | 113 | 104 | 85 |
| | 90 | 5 | 11 | 12 | 14 | 16 | 14 | 12 | 11 | 5 | 11 | 12 | 14 | 16 | 14 | 12 |
| | 95 | 43 | 68 | 97 | 120 | 128 | 120 | 97 | 68 | 43 | 68 | 97 | 120 | 128 | 120 | 97 |
| | 100 | 97 | 120 | 150 | 173 | 181 | 173 | 150 | 120 | 97 | 120 | 150 | 173 | 181 | 173 | 150 |
| | 105 | 161 | 184 | 211 | 234 | 243 | 234 | 211 | 184 | 161 | 184 | 211 | 234 | 243 | 234 | 211 |
| | 110 | 233 | 256 | 279 | 299 | 307 | 299 | 279 | 256 | 233 | 256 | 279 | 299 | 307 | 299 | 279 |
| | 115 | 309 | 328 | 351 | 370 | 376 | 370 | 351 | 328 | 309 | 328 | 351 | 370 | 376 | 370 | 351 |
| | 120 | 385 | 404 | 425 | 442 | 447 | 442 | 425 | 404 | 385 | 404 | 425 | 442 | 447 | 442 | 425 |
| | 125 | 465 | 482 | 499 | 514 | 521 | 514 | 499 | 482 | 465 | 482 | 499 | 514 | 521 | 514 | 499 |
| | 130 | 544 | 561 | 577 | 588 | 592 | 588 | 577 | 561 | 544 | 561 | 577 | 588 | 592 | 588 | 577 |
| | 135 | 625 | 641 | 651 | 660 | 665 | 660 | 651 | 641 | 625 | 641 | 651 | 660 | 665 | 660 | 651 |
| | 140 | 707 | 723 | 726 | 734 | 736 | 734 | 726 | 723 | 707 | 723 | 726 | 734 | 736 | 734 | 726 |
| | 145 | 777 | 791 | 796 | 803 | 806 | 803 | 796 | 791 | 777 | 791 | 796 | 803 | 806 | 803 | 796 |
| | 150 | 845 | 860 | 864 | 869 | 873 | 869 | 864 | 860 | 845 | 860 | 864 | 869 | 873 | 869 | 864 |
| | 155 | 910 | 923 | 925 | 927 | 928 | 927 | 925 | 923 | 910 | 923 | 925 | 927 | 928 | 927 | 925 |
| | 160 | 965 | 978 | 980 | 985 | 984 | 985 | 980 | 978 | 965 | 978 | 980 | 985 | 984 | 985 | 980 |
| | 165 | 1012 | 1023 | 1024 | 1029 | 1028 | 1029 | 1024 | 1023 | 1012 | 1023 | 1024 | 1029 | 1028 | 1029 | 1024 |
| | 170 | 1047 | 1056 | 1055 | 1060 | 1060 | 1060 | 1055 | 1056 | 1047 | 1056 | 1055 | 1060 | 1060 | 1060 | 1055 |
| | 175 | 1069 | 1075 | 1071 | 1076 | 1079 | 1076 | 1071 | 1075 | 1069 | 1075 | 1071 | 1076 | 1079 | 1076 | 1071 |
| | 180 | 1079 | 1079 | 1079 | 1079 | 1079 | 1079 | 1079 | 1079 | 1079 | 1079 | 1079 | 1079 | 1079 | 1079 | 1079 |

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

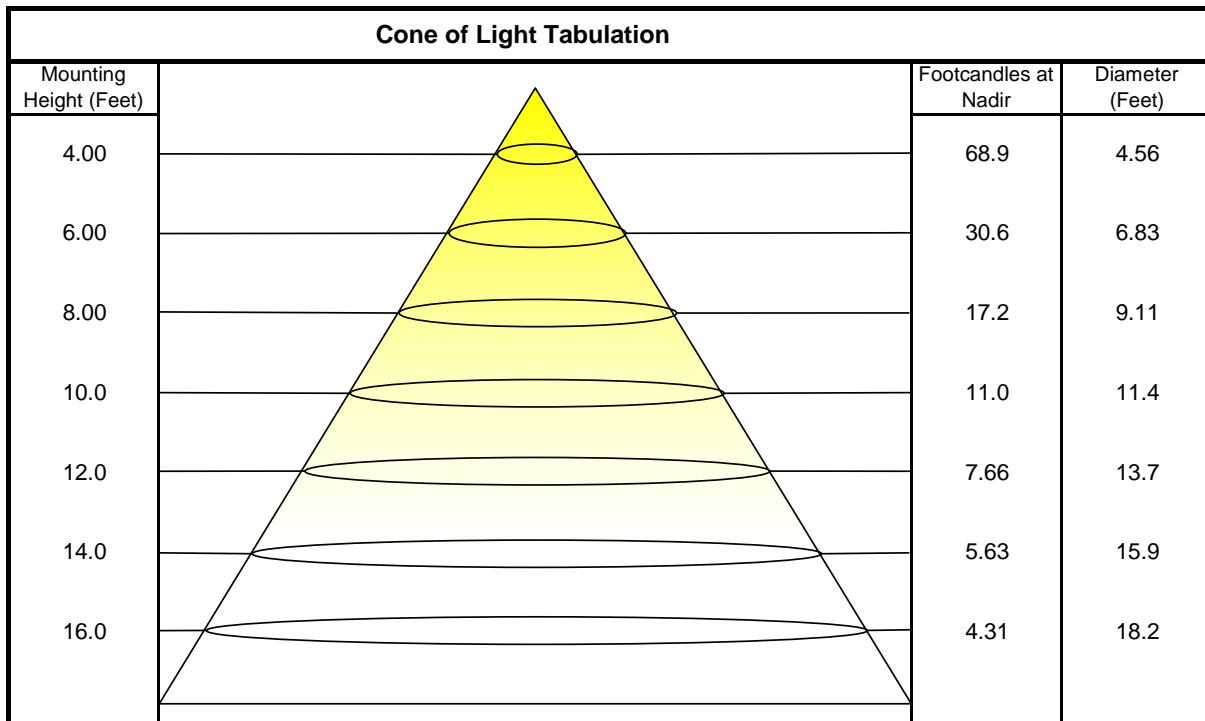
| Vertical Angle (Degrees) | 0 | 45 | 90 |
|--------------------------|----|-------|-------|
| | 0 | 17810 | 17810 |
| | 45 | 12550 | 4504 |
| | 55 | 10900 | 3319 |
| | 65 | 9127 | 2358 |
| | 75 | 6840 | 1547 |
| | 85 | 3549 | 874 |



Coefficients of Utilization - 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 percent of total lumen output delivered to the task surface ** | | | | | | | | | | | | | | | | | |
| 0 | 107 | 107 | 107 | 107 | 98 | 98 | 98 | 98 | 82 | 82 | 82 | 68 | 68 | 68 | 55 | 55 | 55 | 48 |
| 1 | 97 | 93 | 89 | 85 | 89 | 85 | 82 | 79 | 72 | 69 | 67 | 59 | 58 | 56 | 48 | 47 | 46 | 40 |
| 2 | 88 | 81 | 75 | 69 | 81 | 75 | 69 | 65 | 63 | 59 | 55 | 52 | 49 | 47 | 42 | 40 | 38 | 34 |
| 3 | 81 | 71 | 64 | 58 | 74 | 66 | 59 | 54 | 55 | 51 | 47 | 46 | 42 | 40 | 37 | 35 | 33 | 28 |
| 4 | 74 | 63 | 55 | 49 | 68 | 58 | 51 | 46 | 49 | 44 | 40 | 41 | 37 | 34 | 33 | 30 | 28 | 24 |
| 5 | 68 | 56 | 48 | 42 | 62 | 52 | 45 | 39 | 44 | 39 | 34 | 37 | 33 | 29 | 30 | 27 | 25 | 21 |
| 6 | 62 | 50 | 42 | 36 | 57 | 47 | 40 | 34 | 40 | 34 | 30 | 33 | 29 | 26 | 27 | 24 | 22 | 19 |
| 7 | 58 | 45 | 38 | 32 | 53 | 42 | 35 | 30 | 36 | 31 | 26 | 30 | 26 | 23 | 25 | 22 | 19 | 17 |
| 8 | 54 | 41 | 34 | 28 | 49 | 38 | 32 | 27 | 33 | 27 | 24 | 28 | 24 | 20 | 23 | 20 | 17 | 15 |
| 9 | 50 | 38 | 30 | 25 | 46 | 35 | 28 | 24 | 30 | 25 | 21 | 26 | 21 | 18 | 21 | 18 | 16 | 14 |
| 10 | 47 | 35 | 27 | 23 | 43 | 32 | 26 | 21 | 28 | 23 | 19 | 24 | 20 | 17 | 20 | 17 | 14 | 12 |

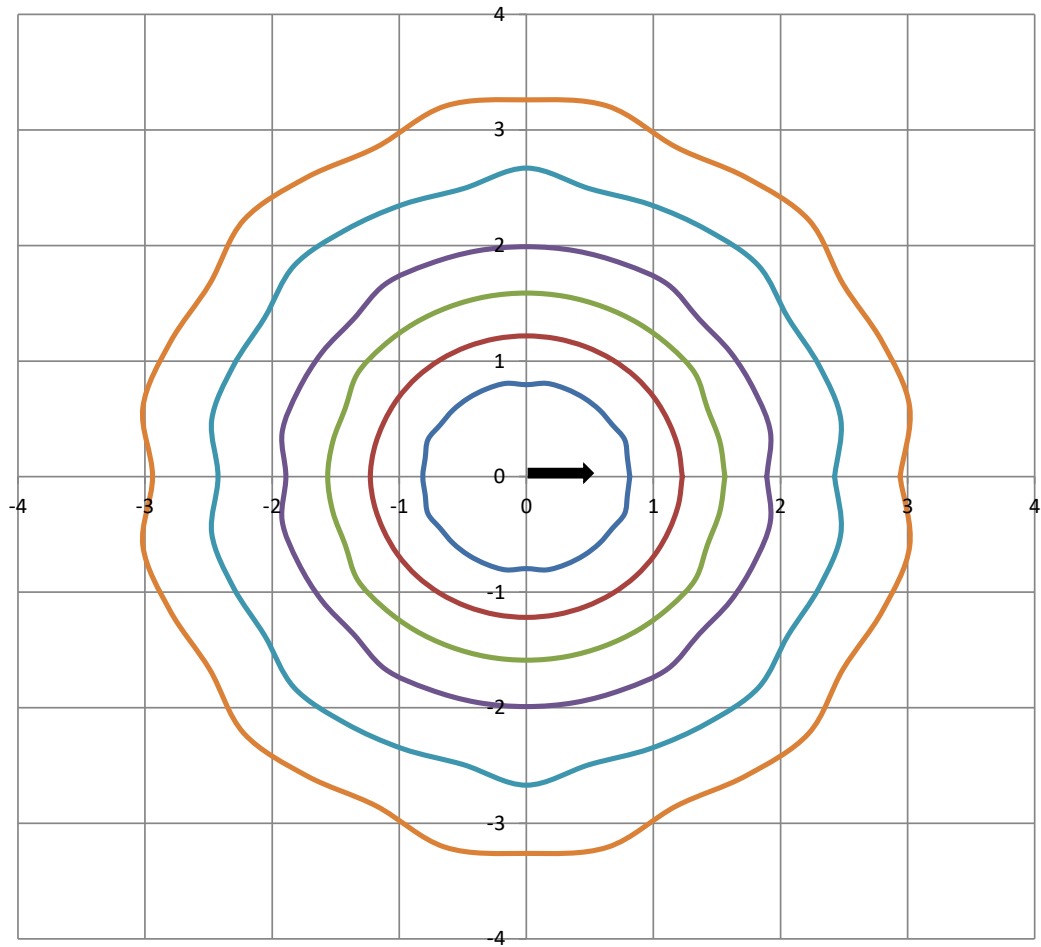
| Beam and Field Information | |
|----------------------------|-----------------|
| CIE Type: | Direct/Indirect |
| Center Beam Intensity: | 1103 Candela |
| Central Cone Intensity: | 1101 Candela |
| Beam Flux: | 3547.0 Lumens |
| Beam Angle (0-180): | 95.3 Degrees |
| Beam Angle (90-270): | 95.7 Degrees |
| Field Angle (0-180): | 155.4 Degrees |
| Field Angle (90-270): | 170.5 Degrees |





ISOFootcandle Plot

Mounting Height - 8 Feet



Grid Lines in Units of Mounting Height

5 fc 2 fc 1 fc 0.5 fc 0.2 fc 0.1 fc