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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-FW/R

Order Number

13052732

Test Number

13052732.19

Test Date

2019-10-04 - 2019-10-08

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 enclosure
Lamp: 288 White LEDs
Mounting: Pendant
Ballast/Driver: Two Philips XI040C110V054BST1 Drivers

Luminaire



Luminaire Characteristics

Luminous Length: 48.00 in.
Luminous Width: 2.000 in.
Luminous Height: 5.00 in.

Summary of Results

Integrating Sphere

Luminous Flux: 5802 Lumens
Efficacy: 114.22 lm/w
CCT: 3458 K
CRI (Ra): 82.8

Distribution

Total Luminaire Output: 5680 Lumens
Luminaire Efficacy: 111.7 lm/w
Maximum Candela: 1444 Candela

Electrical Data at 120 VAC

Test Temperature: 25.7 °C
Voltage: 120.0 VAC
Current: 0.4264 A
Power: 50.80 W
Power Factor: 0.993
Frequency: 60 Hz
Current THD: 9.92 %



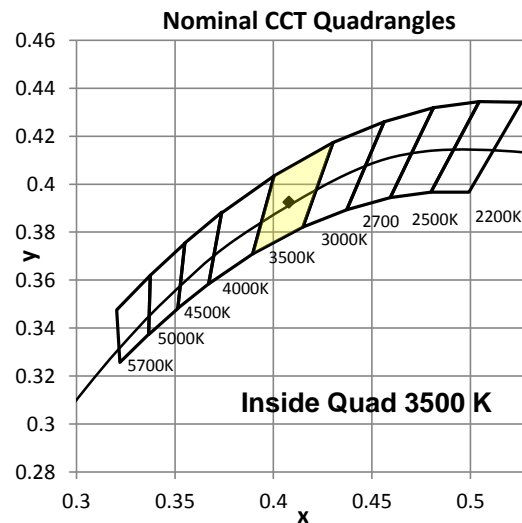
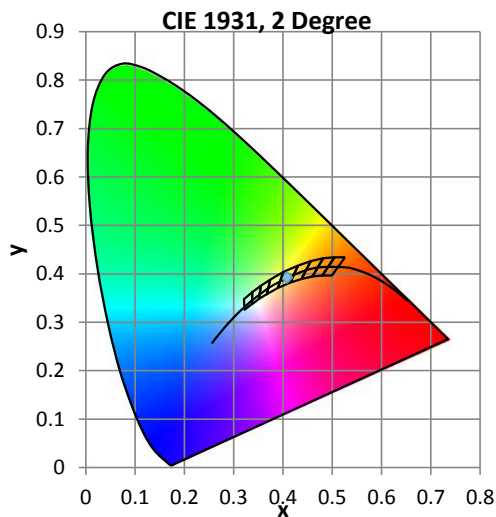
Color Quality - Integrating Sphere

Integrating Sphere Test Conditions

| Temperature | Voltage | Current | Power | Power Factor | Frequency | Current THD |
|-------------|-----------|----------|---------|--------------|-----------|-------------|
| 25.7 °C | 120.0 VAC | 0.4264 A | 50.80 W | 0.993 | 60 Hz | 9.92 % |

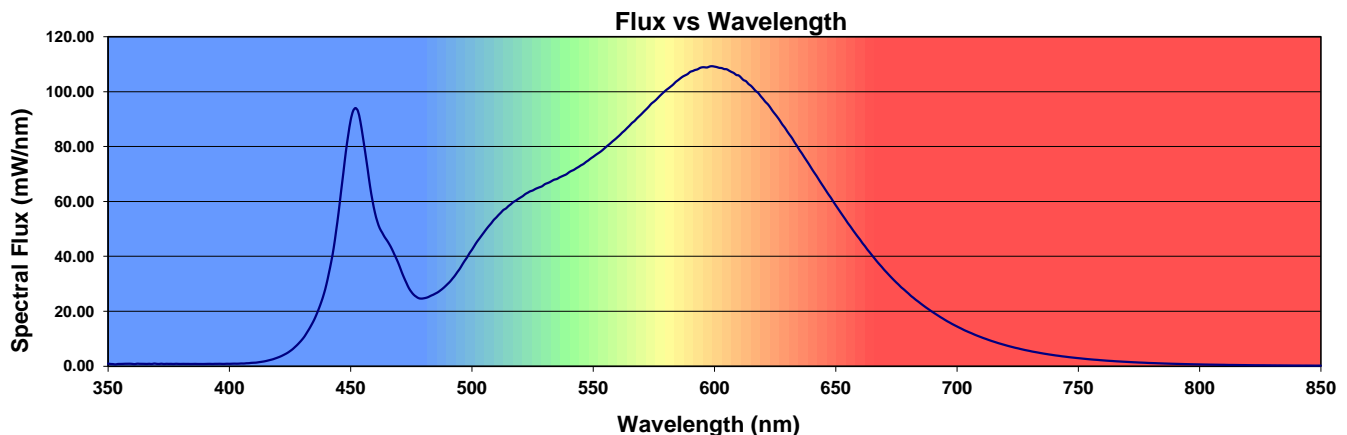
Summary of Results

| | | | |
|-----------------------------|-------------|---------------------------|--------|
| Total Output: | 5802 Lumens | Chromaticity (x): | 0.4078 |
| Efficacy: | 114.2 lm/w | Chromaticity (y): | 0.3925 |
| CCT: | 3458 K | Chromaticity (u'): | 0.2366 |
| CRI (Ra): | 82.8 | Chromaticity (v'): | 0.5124 |
| CRI (R9): | 6.4 | TM-30 Rf: | 84.3 |
| Peak Wavelength: | 599 nm | TM-30 Rg: | 95.2 |
| Dominant Wavelength: | 581 nm | Duv: | 0.0000 |
| S/P Ratio: | 1.52 | | |



Color Rendering Index Detail

| Ra (CRI) | R1 | R2 | R3 | R4 | R5 | R6 | R7 | R8 | R9 | R10 | R11 | R12 | R13 | R14 | R15 |
|----------|------|------|------|------|------|------|------|------|-----|------|------|------|------|------|------|
| 82.8 | 81.1 | 90.3 | 96.3 | 81.1 | 81.2 | 87.1 | 84.2 | 61.2 | 6.4 | 77.3 | 80.4 | 64.9 | 83.4 | 98.4 | 74.0 |





Distribution - Goniophotometer

Distribution Test Conditions

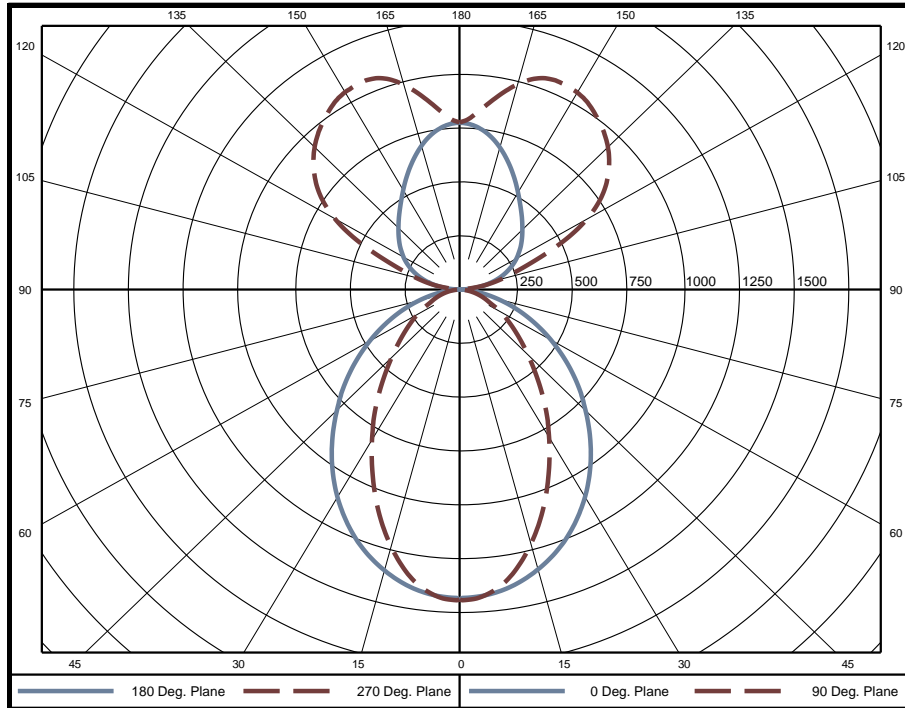
| Temperature | Voltage | Current | Power | Power Factor | Frequency | Current THD |
|-------------|-----------|----------|---------|--------------|-----------|-------------|
| 24.7 °C | 120.1 VAC | 0.4267 A | 50.86 W | 0.993 | 60 Hz | 9.95 % |

Summary of Results

Spacing Criteria
 0-180: 1.16
 90-270: 0.90

Total Lumen Output: 5680 Lumens
Luminaire Efficacy: 111.7 lm/w
Maximum Candela: 1444 Candela

Polar Plot



Zonal Lumen Summary

| Zone | Lumens | % of Luminaire | Zone | Lumens | % of Luminaire | Zone | Lumens | % of Luminaire |
|-------|--------|----------------|---------|--------|----------------|---------|--------|----------------|
| 0-5 | 34.3 | 0.6% | 60-65 | 125.6 | 2.2% | 120-125 | 264.9 | 4.7% |
| 5-10 | 99.9 | 1.8% | 65-70 | 95.6 | 1.7% | 125-130 | 283.5 | 5.0% |
| 10-15 | 157.4 | 2.8% | 70-75 | 68.6 | 1.2% | 130-135 | 289.7 | 5.1% |
| 15-20 | 202.9 | 3.6% | 75-80 | 44.4 | 0.8% | 135-140 | 285.6 | 5.0% |
| 20-25 | 234.4 | 4.1% | 80-85 | 23.5 | 0.4% | 140-145 | 272.5 | 4.8% |
| 25-30 | 252.0 | 4.4% | 85-90 | 6.6 | 0.1% | 145-150 | 250.8 | 4.4% |
| 30-35 | 256.4 | 4.5% | 90-95 | 8.5 | 0.1% | 150-155 | 220.9 | 3.9% |
| 35-40 | 249.1 | 4.4% | 95-100 | 39.9 | 0.7% | 155-160 | 184.5 | 3.2% |
| 40-45 | 232.5 | 4.1% | 100-105 | 83.0 | 1.5% | 160-165 | 143.2 | 2.5% |
| 45-50 | 210.3 | 3.7% | 105-110 | 129.6 | 2.3% | 165-170 | 99.9 | 1.8% |
| 50-55 | 184.3 | 3.2% | 110-115 | 182.2 | 3.2% | 170-175 | 57.9 | 1.0% |
| 55-60 | 155.8 | 2.7% | 115-120 | 231.4 | 4.1% | 175-180 | 18.8 | 0.3% |

| Zone | Lumens | % of Luminaire |
|--------|--------|----------------|
| 0-40 | 1486 | 26.2% |
| 0-60 | 2269 | 40.0% |
| 0-90 | 2634 | 46.4% |
| 90-180 | 3047 | 53.6% |



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 | 1441 | 1441 | 1441 | 1441 | 1441 | 1441 | 1441 | 1441 | 1441 | 1441 | 1441 | 1441 | 1441 | 1441 | 1441 |
| | 5 | 1423 | 1433 | 1420 | 1420 | 1420 | 1420 | 1433 | 1423 | 1433 | 1420 | 1420 | 1420 | 1420 | 1420 | 1433 |
| | 10 | 1394 | 1395 | 1367 | 1350 | 1342 | 1350 | 1367 | 1395 | 1394 | 1395 | 1367 | 1350 | 1342 | 1350 | 1367 |
| | 15 | 1345 | 1336 | 1280 | 1240 | 1220 | 1240 | 1280 | 1336 | 1345 | 1336 | 1280 | 1240 | 1220 | 1240 | 1280 |
| | 20 | 1281 | 1258 | 1170 | 1106 | 1079 | 1106 | 1170 | 1258 | 1281 | 1258 | 1170 | 1106 | 1079 | 1106 | 1170 |
| | 25 | 1202 | 1161 | 1046 | 964 | 930 | 964 | 1046 | 1161 | 1202 | 1161 | 1046 | 964 | 930 | 964 | 1046 |
| | 30 | 1110 | 1051 | 916 | 823 | 788 | 823 | 916 | 1051 | 1110 | 1051 | 916 | 823 | 788 | 823 | 916 |
| | 35 | 1006 | 932 | 785 | 690 | 655 | 690 | 785 | 932 | 1006 | 932 | 785 | 690 | 655 | 690 | 785 |
| | 40 | 897 | 809 | 662 | 562 | 529 | 562 | 662 | 809 | 897 | 809 | 662 | 562 | 529 | 562 | 662 |
| | 45 | 785 | 694 | 543 | 452 | 423 | 452 | 543 | 694 | 785 | 694 | 543 | 452 | 423 | 452 | 543 |
| | 50 | 678 | 579 | 438 | 359 | 338 | 359 | 438 | 579 | 678 | 579 | 438 | 359 | 338 | 359 | 438 |
| | 55 | 569 | 471 | 345 | 283 | 268 | 283 | 345 | 471 | 569 | 471 | 345 | 283 | 268 | 283 | 345 |
| | 60 | 464 | 369 | 263 | 219 | 208 | 219 | 263 | 369 | 464 | 369 | 263 | 219 | 208 | 219 | 263 |
| | 65 | 364 | 277 | 193 | 160 | 150 | 160 | 193 | 277 | 364 | 277 | 193 | 160 | 150 | 160 | 193 |
| | 70 | 270 | 194 | 132 | 117 | 114 | 117 | 132 | 194 | 270 | 194 | 132 | 117 | 114 | 117 | 132 |
| | 75 | 181 | 122 | 89 | 83 | 81 | 83 | 89 | 122 | 181 | 122 | 89 | 83 | 81 | 83 | 89 |
| | 80 | 103 | 62 | 54 | 52 | 50 | 52 | 54 | 62 | 103 | 62 | 54 | 52 | 50 | 52 | 54 |
| | 85 | 41 | 26 | 24 | 23 | 23 | 23 | 24 | 26 | 41 | 26 | 24 | 23 | 23 | 23 | 24 |
| | 90 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| | 95 | 53 | 46 | 35 | 23 | 22 | 23 | 35 | 46 | 53 | 46 | 35 | 23 | 22 | 23 | 35 |
| | 100 | 110 | 121 | 115 | 113 | 107 | 113 | 115 | 121 | 110 | 121 | 115 | 113 | 107 | 113 | 115 |
| | 105 | 163 | 193 | 224 | 199 | 194 | 199 | 224 | 193 | 163 | 193 | 224 | 199 | 194 | 199 | 224 |
| | 110 | 211 | 265 | 367 | 319 | 296 | 319 | 367 | 265 | 211 | 265 | 367 | 319 | 296 | 319 | 367 |
| | 115 | 253 | 336 | 492 | 496 | 464 | 496 | 492 | 336 | 253 | 336 | 492 | 496 | 464 | 496 | 492 |
| | 120 | 291 | 403 | 599 | 646 | 640 | 646 | 599 | 403 | 291 | 403 | 599 | 646 | 640 | 646 | 599 |
| | 125 | 325 | 469 | 690 | 757 | 768 | 757 | 690 | 469 | 325 | 469 | 690 | 757 | 768 | 757 | 690 |
| | 130 | 359 | 530 | 768 | 841 | 856 | 841 | 768 | 530 | 359 | 530 | 768 | 841 | 856 | 841 | 768 |
| | 135 | 392 | 586 | 832 | 908 | 925 | 908 | 832 | 586 | 392 | 586 | 832 | 908 | 925 | 908 | 832 |
| | 140 | 429 | 636 | 885 | 960 | 978 | 960 | 885 | 636 | 429 | 636 | 885 | 960 | 978 | 960 | 885 |
| | 145 | 469 | 675 | 923 | 1004 | 1020 | 1004 | 923 | 675 | 469 | 675 | 923 | 1004 | 1020 | 1004 | 923 |
| | 150 | 517 | 705 | 938 | 1032 | 1050 | 1032 | 938 | 705 | 517 | 705 | 938 | 1032 | 1050 | 1032 | 938 |
| | 155 | 572 | 728 | 935 | 1037 | 1059 | 1037 | 935 | 728 | 572 | 728 | 935 | 1037 | 1059 | 1037 | 935 |
| | 160 | 629 | 744 | 912 | 1017 | 1046 | 1017 | 912 | 744 | 629 | 744 | 912 | 1017 | 1046 | 1017 | 912 |
| | 165 | 685 | 757 | 874 | 960 | 987 | 960 | 874 | 757 | 685 | 757 | 874 | 960 | 987 | 960 | 874 |
| | 170 | 732 | 768 | 829 | 884 | 903 | 884 | 829 | 768 | 732 | 768 | 829 | 884 | 903 | 884 | 829 |
| | 175 | 763 | 776 | 791 | 812 | 821 | 812 | 791 | 776 | 763 | 776 | 791 | 812 | 821 | 812 | 791 |
| | 180 | 777 | 777 | 777 | 777 | 777 | 777 | 777 | 777 | 777 | 777 | 777 | 777 | 777 | 777 | 777 |

Average Luminance (cd/m²)

Horizontal Angle (Degrees)

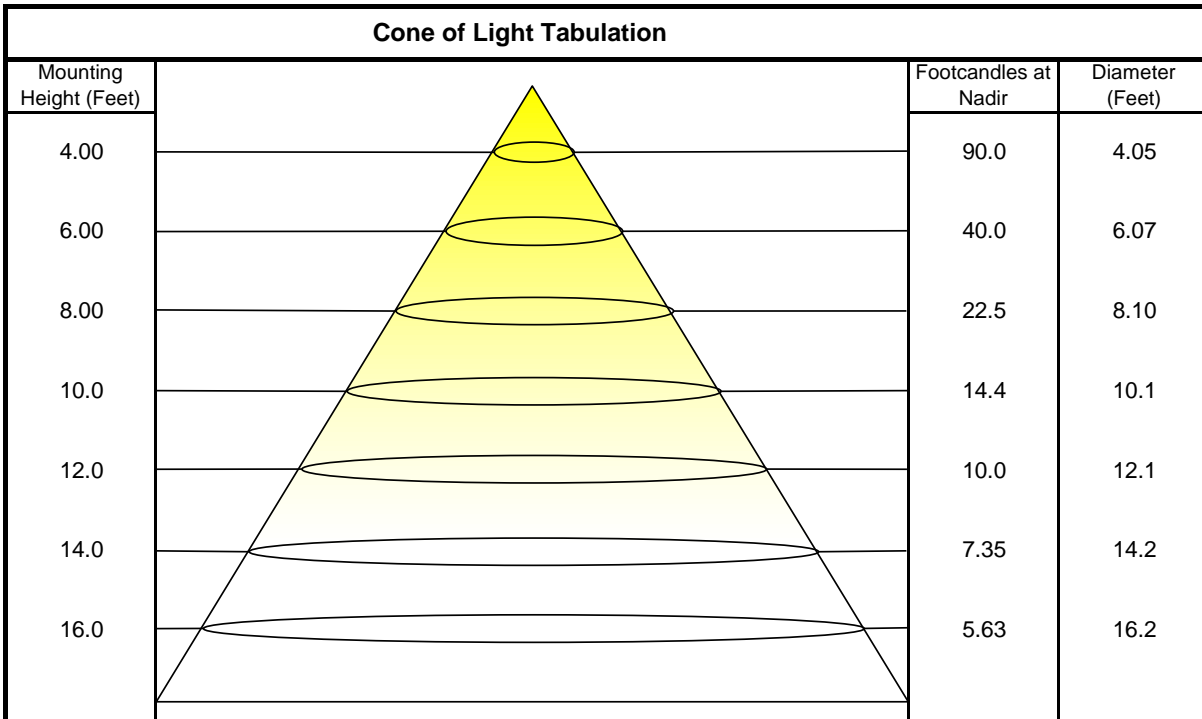
| Vertical Angle (Degrees) | 0 | 45 | 90 |
|--------------------------|----|-------|-------|
| | 0 | 23260 | 23260 |
| | 45 | 16220 | 2762 |
| | 55 | 13950 | 1652 |
| | 65 | 11350 | 899 |
| | 75 | 8146 | 490 |
| | 85 | 3472 | 141 |



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 | 106 | 106 | 106 | 106 | 98 | 98 | 98 | 98 | 81 | 81 | 81 | 66 | 66 | 66 | 53 | 53 | 53 | 46 |
| 1 | 98 | 93 | 90 | 87 | 89 | 86 | 83 | 80 | 72 | 70 | 68 | 59 | 58 | 56 | 48 | 47 | 46 | 40 |
| 2 | 89 | 82 | 77 | 72 | 82 | 76 | 71 | 67 | 64 | 60 | 57 | 53 | 50 | 48 | 43 | 41 | 39 | 35 |
| 3 | 82 | 73 | 66 | 60 | 75 | 67 | 61 | 56 | 57 | 52 | 49 | 47 | 44 | 41 | 38 | 36 | 34 | 30 |
| 4 | 75 | 65 | 57 | 52 | 69 | 60 | 53 | 48 | 51 | 46 | 42 | 42 | 39 | 36 | 35 | 32 | 30 | 26 |
| 5 | 69 | 58 | 50 | 45 | 64 | 54 | 47 | 42 | 46 | 41 | 37 | 38 | 35 | 32 | 32 | 29 | 27 | 23 |
| 6 | 64 | 52 | 45 | 39 | 59 | 49 | 42 | 37 | 42 | 36 | 32 | 35 | 31 | 28 | 29 | 26 | 24 | 21 |
| 7 | 59 | 48 | 40 | 34 | 54 | 44 | 37 | 33 | 38 | 33 | 29 | 32 | 28 | 25 | 27 | 24 | 21 | 19 |
| 8 | 55 | 43 | 36 | 31 | 51 | 40 | 34 | 29 | 35 | 30 | 26 | 29 | 25 | 23 | 25 | 22 | 19 | 17 |
| 9 | 51 | 40 | 32 | 28 | 47 | 37 | 31 | 26 | 32 | 27 | 23 | 27 | 23 | 20 | 23 | 20 | 18 | 16 |
| 10 | 48 | 36 | 29 | 25 | 44 | 34 | 28 | 24 | 30 | 25 | 21 | 25 | 21 | 19 | 21 | 18 | 16 | 14 |

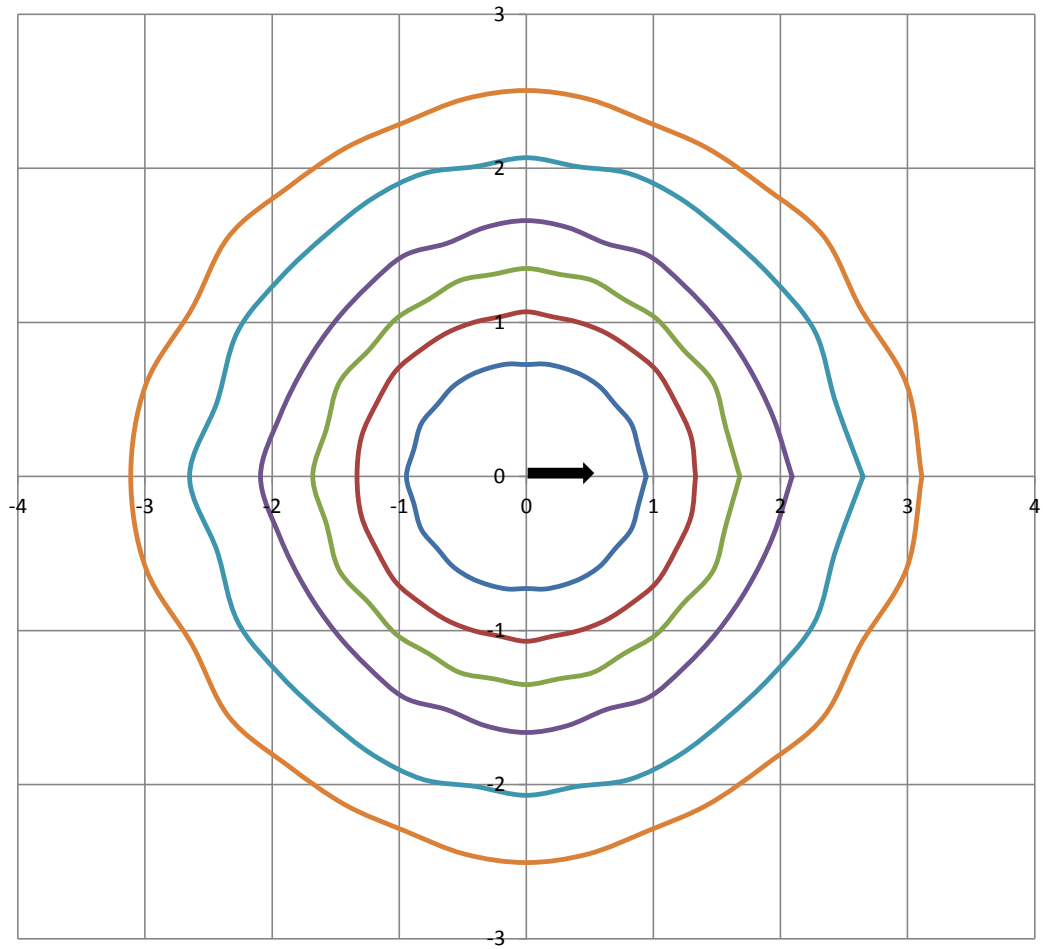
| Beam and Field Information | |
|----------------------------|-----------------|
| CIE Type: | Direct/Indirect |
| Center Beam Intensity: | 1441 Candela |
| Central Cone Intensity: | 1435 Candela |
| Beam Flux: | 3146.9 Lumens |
| Beam Angle (0-180): | 96.1 Degrees |
| Beam Angle (90-270): | 65.2 Degrees |
| Field Angle (0-180): | 154.6 Degrees |
| Field Angle (90-270): | 131.2 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