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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  
**Express Imaging Systems LLC dba Evluma**  
3600 Lind Ave SW Suite 140  
Renton, WA 98057  
United States

Catalog Number  
**OM-40-2k-MO**  
Order Number  
12914541  
Test Number  
12914541.01

Test Date

2019-06-17 - 2019-06-25

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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## Table of Contents

<b>Summary of Results</b>	Page 3
<b>Integrating Sphere Results</b>	Page 4
<b>Distribution Results</b>	
Conditions / Summary of Results / Polar Plot / Zonal Lumens	Page 5
Candela Tabulation / Average Luminance	Page 6
Coefficients of Utilization / Cone of Light	Page 7
ISOFootcandle Plot	Page 8

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  $4\pi$  geometry method.  
Absorption correction was employed for Sphere measurement



**Luminaire Description:** White plastic housing with diffuse lens  
**Lamp:** 96 White LEDs  
**Mounting:** VBD  
**Ballast/Driver:** Integrated

**Luminaire**



**Luminaire Characteristics**

Luminous Diameter: 3.50 in.  
Luminous Height: 1.500 in.

**Summary of Results**

**Integrating Sphere**

Luminous Flux: 3874 Lumens  
Efficacy: 95.45 lm/w  
CCT: 1988 K  
CRI (Ra): 82.3

**Distribution**

Total Luminaire Output: 3820 Lumens  
Luminaire Efficacy: 93.9 lm/w  
Maximum Candela: 407 Candela

**Electrical Data at 277 VAC**

Test Temperature: 24.8 °C  
Voltage: 277.0 VAC  
Current: 0.1543 A  
Power: 40.59 W  
Power Factor: 0.950  
Frequency: 60 Hz  
Current THD: 18.6 %



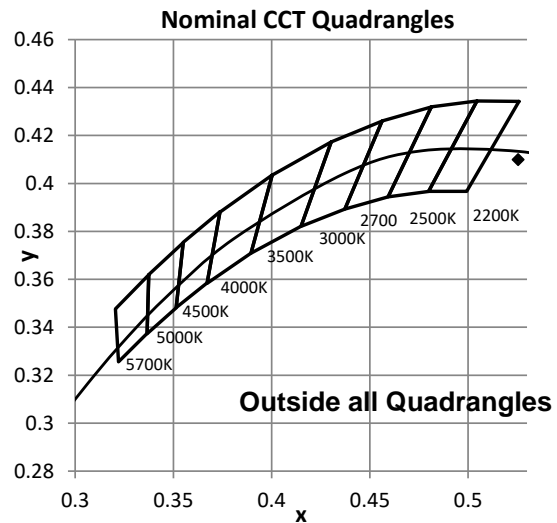
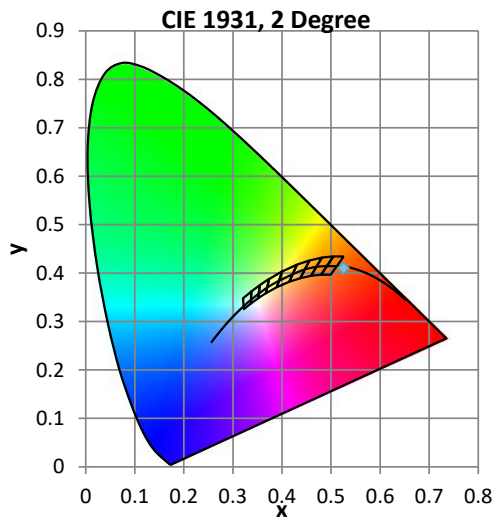
## Color Quality - Integrating Sphere

### Integrating Sphere Test Conditions

Temperature	Voltage	Current	Power	Power Factor	Frequency	Current THD
24.8 °C	277.0 VAC	0.1543 A	40.59 W	0.950	60 Hz	18.6 %

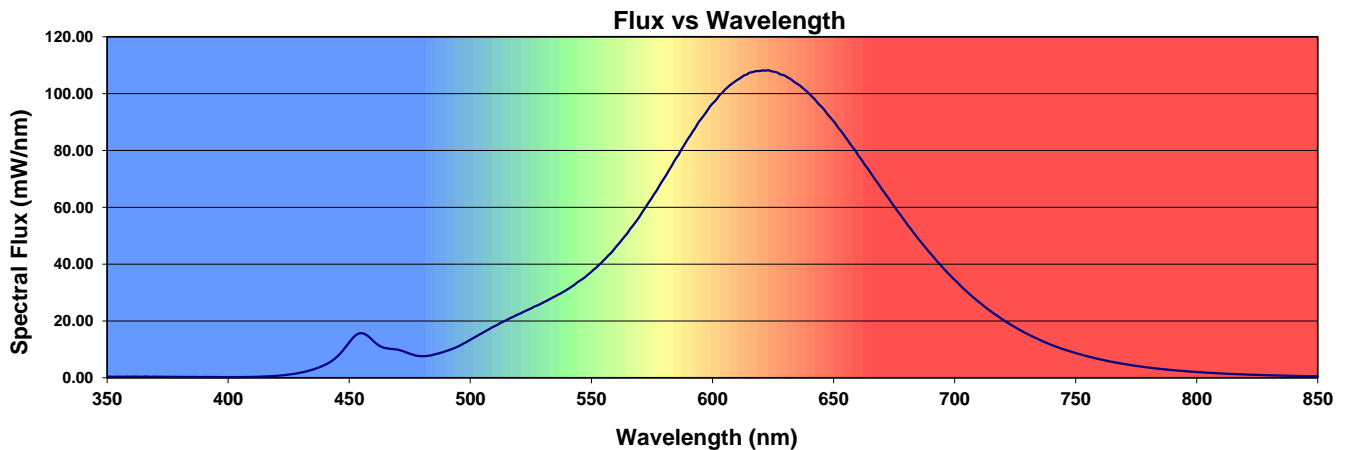
### Summary of Results

<b>Total Output:</b>	3874 Lumens	<b>Chromaticity (x):</b>	0.5255
<b>Efficacy:</b>	95.4 lm/w	<b>Chromaticity (y):</b>	0.4099
<b>CCT:</b>	1988 K	<b>Chromaticity (u'):</b>	0.3060
<b>CRI (Ra):</b>	82.3	<b>Chromaticity (v'):</b>	0.5372
<b>CRI (R9):</b>	19.2	<b>TM-30 Rf:</b>	84
<b>Peak Wavelength:</b>	622 nm	<b>TM-30 Rg:</b>	98
<b>Dominant Wavelength:</b>	589 nm	<b>Duv:</b>	-0.0010
<b>S/P Ratio:</b>	0.86		



### Color Rendering Index Detail

Ra (CRI)	R1	R2	R3	R4	R5	R6	R7	R8	R9	R10	R11	R12	R13	R14	R15
82.3	81.2	93.4	92.8	78.0	81.2	94.6	79.4	57.5	19.2	86.2	77.8	85.8	83.8	97.2	74.4





## Distribution - Goniophotometer

### Distribution Test Conditions

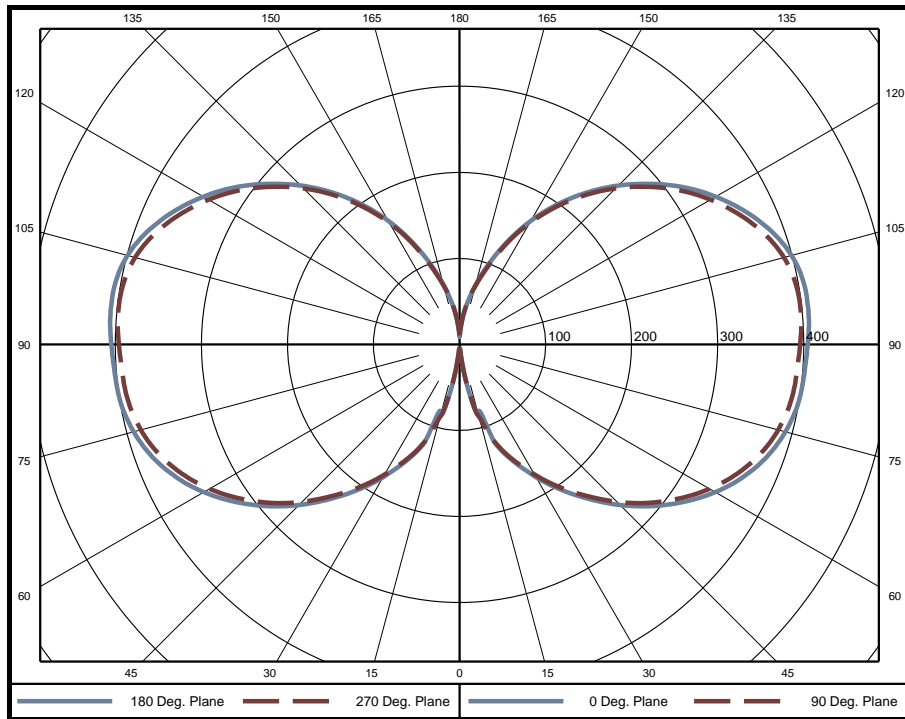
Temperature	Voltage	Current	Power	Power Factor	Frequency	Current THD
25.3 °C	277.1 VAC	0.1546 A	40.69 W	0.949	60 Hz	18.7 %

### Summary of Results

**Spacing Criteria**  
 0-180: 11.16  
 90-270: 11.07

**Total Lumen Output:** 3820 Lumens  
**Luminaire Efficacy:** 93.9 lm/w  
**Maximum Candela:** 407 Candela

### Polar Plot



### Zonal Lumen Summary

Zone	Lumens	% of Luminaire	Zone	Lumens	% of Luminaire	Zone	Lumens	% of Luminaire
0-5	0.1	0.0%	60-65	170.2	4.5%	120-125	151.8	4.0%
5-10	1.7	0.0%	65-70	186.4	4.9%	125-130	131.4	3.4%
10-15	8.1	0.2%	70-75	199.7	5.2%	130-135	110.7	2.9%
15-20	17.0	0.4%	75-80	209.4	5.5%	135-140	90.5	2.4%
20-25	28.7	0.8%	80-85	215.3	5.6%	140-145	71.2	1.9%
25-30	41.3	1.1%	85-90	218.2	5.7%	145-150	53.4	1.4%
30-35	56.1	1.5%	90-95	219.8	5.8%	150-155	37.6	1.0%
35-40	72.9	1.9%	95-100	218.6	5.7%	155-160	24.2	0.6%
40-45	91.4	2.4%	100-105	213.3	5.6%	160-165	14.0	0.4%
45-50	111.4	2.9%	105-110	203.0	5.3%	165-170	7.1	0.2%
50-55	131.6	3.4%	110-115	188.3	4.9%	170-175	2.7	0.1%
55-60	151.5	4.0%	115-120	170.9	4.5%	175-180	0.4	0.0%

Zone	Lumens	% of Luminaire
0-40	226	5.9%
0-60	712	18.6%
0-90	1911	50.0%
90-180	1909	50.0%



**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	4.4	4.4	4.4	4.4	4.4	4.4	4.4	4.4	4.4	4.4	4.4	4.4	4.4	4.4	4.4	4.4
5	4.8	4.5	4.7	4.6	4.6	4.6	4.7	4.5	4.8	4.5	4.7	4.6	4.6	4.6	4.7	4.5
10	44.6	45.8	42.7	43.2	43.1	43.2	42.7	45.8	44.6	45.8	42.7	43.2	43.1	43.2	42.7	45.8
15	84.3	85.4	84.5	85.0	86.9	85.0	84.5	85.4	84.3	85.4	84.5	85.0	86.9	85.0	84.5	85.4
20	123.0	124.1	123.2	120.5	121.4	120.5	123.2	124.1	123.0	124.1	123.2	120.5	121.4	120.5	123.2	124.1
25	150.5	150.4	149.6	148.8	148.3	148.8	149.6	150.4	150.5	150.4	149.6	148.8	148.3	148.8	149.6	150.4
30	178.2	177.2	176.0	175.4	174.7	175.4	176.0	177.2	178.2	177.2	176.0	175.4	174.7	175.4	176.0	177.2
35	205.9	205.1	204.1	203.1	202.3	203.1	204.1	205.1	205.9	205.1	204.1	203.1	202.3	203.1	204.1	205.1
40	234.4	233.3	232.0	231.1	229.7	231.1	232.0	233.3	234.4	233.3	232.0	231.1	229.7	231.1	232.0	233.3
45	263.6	262.5	261.1	259.9	258.6	259.9	261.1	262.5	263.6	262.5	261.1	259.9	258.6	259.9	261.1	262.5
50	292.1	291.0	289.5	287.9	286.4	287.9	289.5	291.0	292.1	291.0	289.5	287.9	286.4	287.9	289.5	291.0
55	318.6	317.3	315.5	313.6	311.9	313.6	315.5	317.3	318.6	317.3	315.5	313.6	311.9	313.6	315.5	317.3
60	343.0	341.4	339.5	337.4	335.5	337.4	339.5	341.4	343.0	341.4	339.5	337.4	335.5	337.4	339.5	341.4
65	363.8	361.8	359.5	357.3	355.7	357.3	359.5	361.8	363.8	361.8	359.5	357.3	355.7	357.3	359.5	361.8
70	380.4	378.2	375.7	373.4	371.9	373.4	375.7	378.2	380.4	378.2	375.7	373.4	371.9	373.4	375.7	378.2
75	391.9	389.7	387.1	384.7	383.2	384.7	387.1	389.7	391.9	389.7	387.1	384.7	383.2	384.7	387.1	389.7
80	399.2	396.9	394.6	391.6	390.1	391.6	394.6	396.9	399.2	396.9	394.6	391.6	390.1	391.6	394.6	396.9
85	402.0	399.9	397.3	394.5	393.0	394.5	397.3	399.9	402.0	399.9	397.3	394.5	393.0	394.5	397.3	399.9
90	404.6	402.6	400.0	397.1	395.6	397.1	400.0	402.6	404.6	402.6	400.0	397.1	395.6	397.1	400.0	402.6
95	407.1	405.2	402.2	399.4	398.2	399.4	402.2	405.2	407.1	405.2	402.2	399.4	398.2	399.4	402.2	405.2
100	406.4	404.5	401.2	398.3	397.1	398.3	401.2	404.5	406.4	404.5	401.2	398.3	397.1	398.3	401.2	404.5
105	399.6	397.5	394.3	391.5	390.2	391.5	394.3	397.5	399.6	397.5	394.3	391.5	390.2	391.5	394.3	397.5
110	385.6	383.8	380.7	377.9	376.9	377.9	380.7	383.8	385.6	383.8	380.7	377.9	376.9	377.9	380.7	383.8
115	366.4	364.8	361.9	359.3	358.3	359.3	361.9	364.8	366.4	364.8	361.9	359.3	358.3	359.3	361.9	364.8
120	343.9	342.7	340.4	337.8	336.7	337.8	340.4	342.7	343.9	342.7	340.4	337.8	336.7	337.8	340.4	342.7
125	318.8	317.8	315.9	313.5	312.4	313.5	315.9	317.8	318.8	317.8	315.9	313.5	312.4	313.5	315.9	317.8
130	290.9	290.0	288.2	286.1	285.2	286.1	288.2	290.0	290.9	290.0	288.2	286.1	285.2	286.1	288.2	290.0
135	261.7	260.8	259.3	257.6	256.8	257.6	259.3	260.8	261.7	260.8	259.3	257.6	256.8	257.6	259.3	260.8
140	231.3	230.1	228.8	227.5	226.7	227.5	228.8	230.1	231.3	230.1	228.8	227.5	226.7	227.5	228.8	230.1
145	199.6	197.9	196.9	196.1	195.4	196.1	196.9	197.9	199.6	197.9	196.9	196.1	195.4	196.1	196.9	197.9
150	166.7	165.4	164.2	163.9	163.2	163.9	164.2	165.4	166.7	165.4	164.2	163.9	163.2	163.9	164.2	165.4
155	132.8	132.3	130.3	130.3	129.9	130.3	130.3	132.3	132.8	132.3	130.3	130.3	129.9	130.3	130.3	132.3
160	100.5	100.2	98.6	97.6	96.8	97.6	98.6	100.2	100.5	100.2	98.6	97.6	96.8	97.6	98.6	100.2
165	71.5	71.8	71.6	71.0	70.5	71.0	71.6	71.8	71.5	71.8	71.6	71.0	70.5	71.0	71.6	71.8
170	47.0	47.4	47.7	47.7	47.8	47.7	47.7	47.4	47.0	47.4	47.7	47.7	47.8	47.7	47.7	47.4
175	24.7	25.1	25.2	25.0	24.8	25.0	25.2	25.1	24.7	25.1	25.2	25.0	24.8	25.0	25.2	25.1
180	10.5	10.5	10.5	10.5	10.5	10.5	10.5	10.5	10.5	10.5	10.5	10.5	10.5	10.5	10.5	10.5

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

	0	45	90
0	708	708	708
45	58430	57870	57310
55	71470	70780	69980
65	85260	84260	83360
75	98730	97520	96540
85	111900	110600	109400

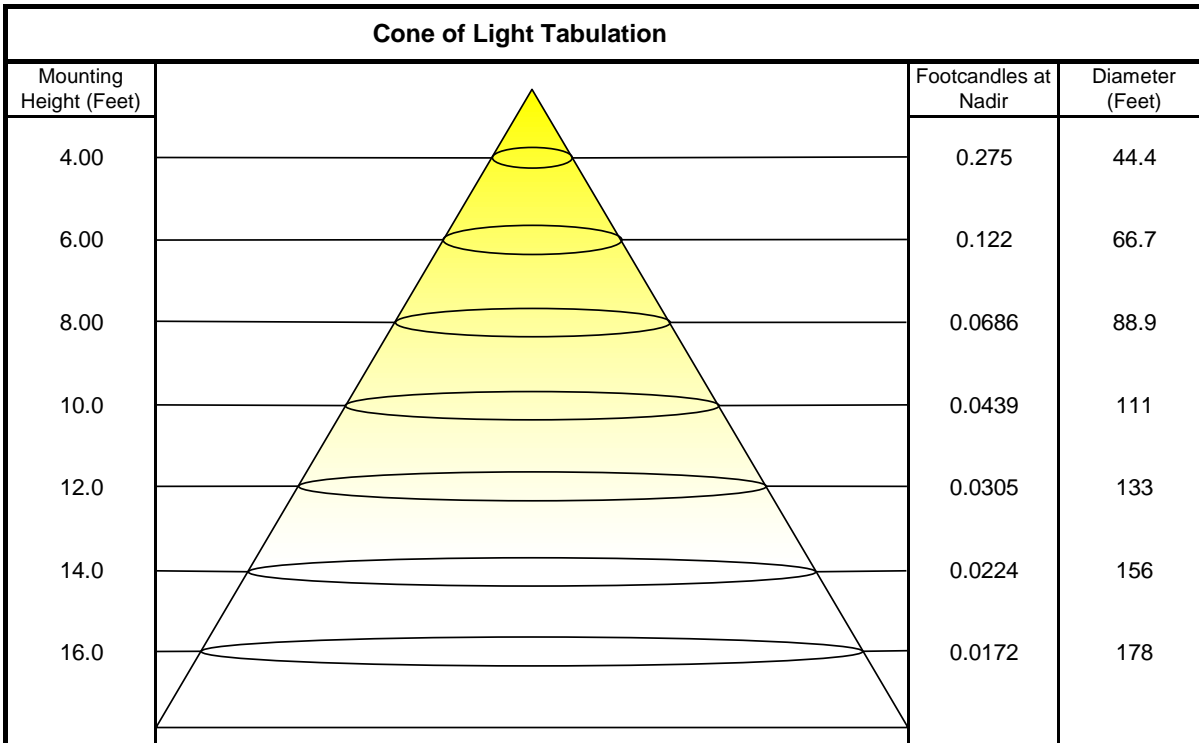


### Coefficients of Utilization - Zonal Cavity Method

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	99	99	99	99	83	83	83	69	69	69	56	56	56	50
1	92	85	79	73	84	78	72	68	64	60	56	52	49	46	40	38	36	30
2	81	71	63	55	74	65	57	51	53	47	42	42	38	34	32	29	26	21
3	73	61	51	43	66	55	47	40	45	38	33	35	30	26	27	23	19	15
4	66	52	43	35	59	48	39	32	39	32	26	30	25	21	23	19	15	11
5	60	46	36	29	54	42	33	26	34	27	22	27	21	17	20	16	12	9
6	55	41	31	24	49	37	28	22	30	23	18	24	18	14	18	13	10	7
7	50	36	27	21	45	33	25	19	27	20	15	21	16	12	16	12	8	6
8	46	32	24	18	42	30	22	16	24	18	13	19	14	10	14	10	7	5
9	43	29	21	15	39	27	19	14	22	16	11	17	12	9	13	9	6	4
10	40	27	19	13	36	24	17	12	20	14	10	16	11	8	12	8	5	3

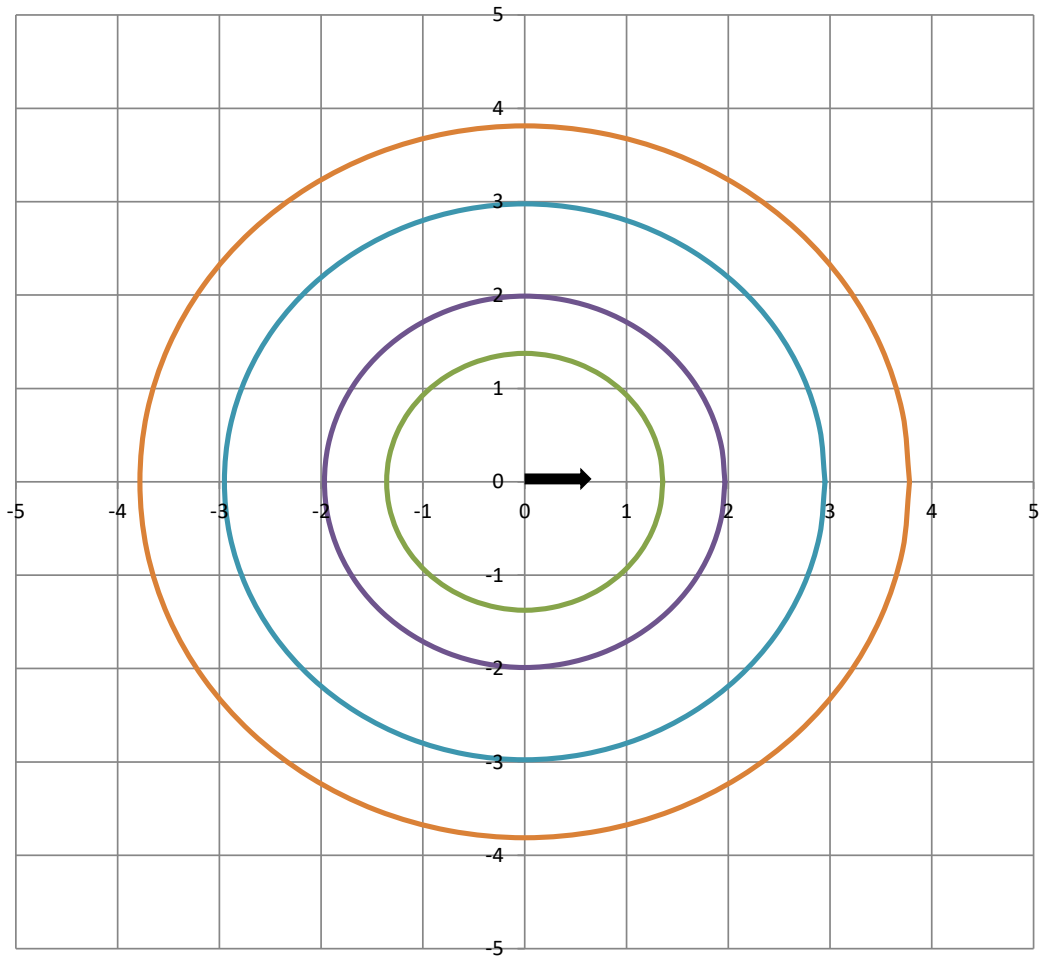
Beam and Field Information	
CIE Type:	Direct/Indirect
Center Beam Intensity:	4.4 Candela
Central Cone Intensity:	N/A Candela
Beam Flux:	3820.0 Lumens
Beam Angle (0-180):	N/A Degrees
Beam Angle (90-270):	N/A Degrees
Field Angle (0-180):	N/A Degrees
Field Angle (90-270):	N/A Degrees





# ISOFootcandle Plot

Mounting Height - 8 Feet



Grid Lines in Units of Mounting Height

