



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

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-70-2k-MO

Order Number
12914541

Test Number
12914541.03

Test Date

2019-06-17 - 2019-06-25

Prepared By

Austin Duff, Technician

Approved By

Eric Gaudreau, Engineering Leader

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.



Table of Contents

Summary of Results	Page 3
Integrating Sphere Results	Page 4
Distribution Results	
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 4π 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: 6048 Lumens
Efficacy: 89.22 lm/w
CCT: 1991 K
CRI (Ra): 82.1

Distribution

Total Luminaire Output: 5948 Lumens
Luminaire Efficacy: 87.7 lm/w
Maximum Candela: 627 Candela

Electrical Data at 277 VAC

Test Temperature: 25.4 °C
Voltage: 277.0 VAC
Current: 0.2502 A
Power: 67.79 W
Power Factor: 0.978
Frequency: 60 Hz
Current THD: 13.6 %



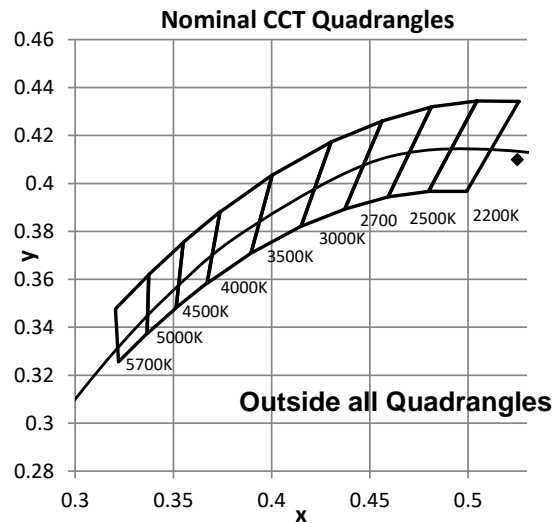
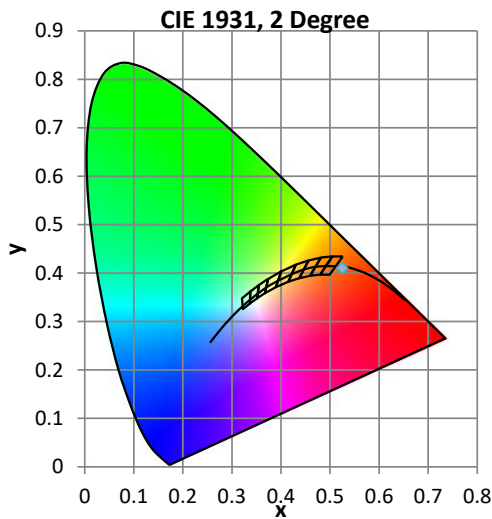
Color Quality - Integrating Sphere

Integrating Sphere Test Conditions

Temperature	Voltage	Current	Power	Power Factor	Frequency	Current THD
25.4 °C	277.0 VAC	0.2502 A	67.79 W	0.978	60 Hz	13.6 %

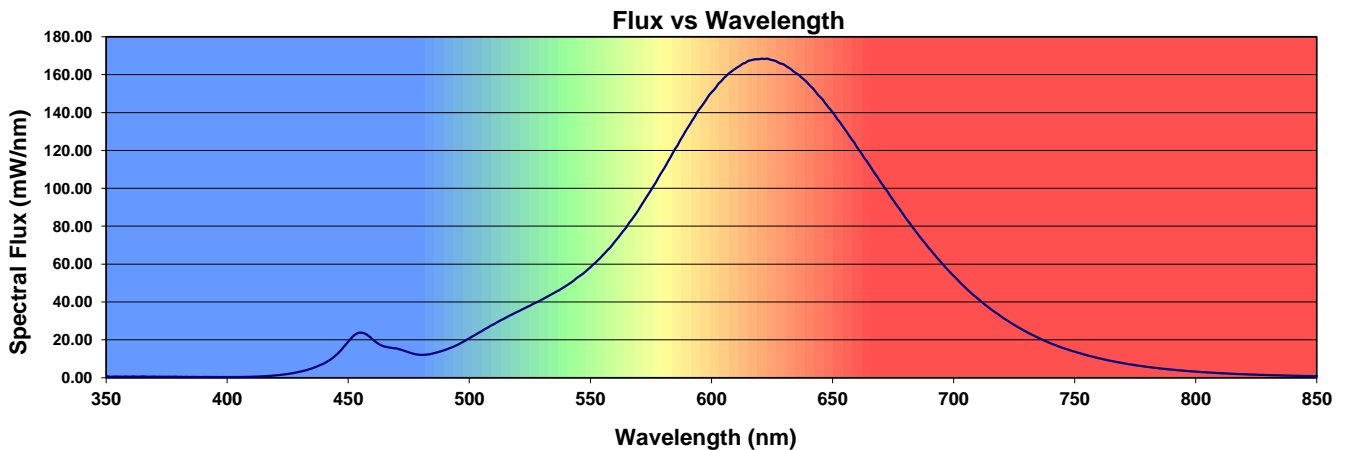
Summary of Results

Total Output:	6048 Lumens	Chromaticity (x):	0.5250
Efficacy:	89.2 lm/w	Chromaticity (y):	0.4099
CCT:	1991 K	Chromaticity (u'):	0.3058
CRI (Ra):	82.1	Chromaticity (v'):	0.5371
CRI (R9):	18.7	TM-30 Rf:	83.9
Peak Wavelength:	622 nm	TM-30 Rg:	98
Dominant Wavelength:	589 nm	Duv:	-0.0011
S/P Ratio:	0.86		



Color Rendering Index Detail

Ra (CRI)	R1	R2	R3	R4	R5	R6	R7	R8	R9	R10	R11	R12	R13	R14	R15
82.1	81.0	93.3	92.8	77.8	81.0	94.5	79.3	57.3	18.7	86.0	77.5	85.8	83.7	97.2	74.0





Distribution - Goniophotometer

Distribution Test Conditions

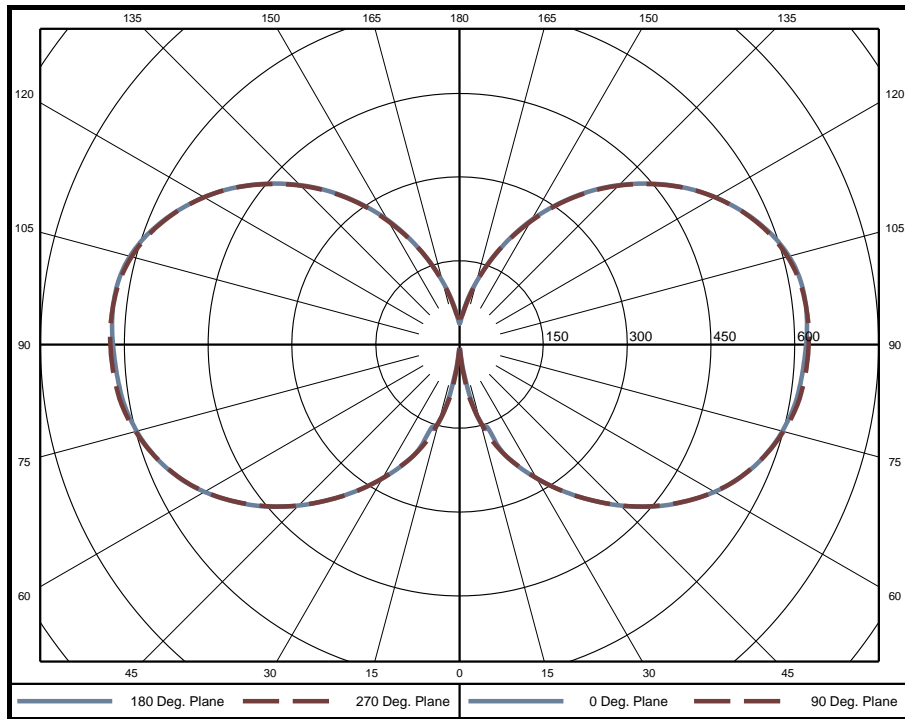
Temperature	Voltage	Current	Power	Power Factor	Frequency	Current THD
25.2 °C	277.1 VAC	0.2503 A	67.83 W	0.978	60 Hz	13.6 %

Summary of Results

Spacing Criteria
 0-180: 10.97
 90-270: 11.00

Total Lumen Output: 5948 Lumens
Luminaire Efficacy: 87.7 lm/w
Maximum Candela: 627 Candela

Polar Plot



Zonal Lumen Summary

Zone	Lumens	% of Luminaire	Zone	Lumens	% of Luminaire	Zone	Lumens	% of Luminaire
0-5	0.2	0.0%	60-65	264.2	4.4%	120-125	236.1	4.0%
5-10	3.5	0.1%	65-70	289.0	4.9%	125-130	204.5	3.4%
10-15	13.9	0.2%	70-75	309.5	5.2%	130-135	172.6	2.9%
15-20	27.2	0.5%	75-80	325.2	5.5%	135-140	141.3	2.4%
20-25	45.0	0.8%	80-85	335.4	5.6%	140-145	111.2	1.9%
25-30	64.8	1.1%	85-90	340.7	5.7%	145-150	83.5	1.4%
30-35	87.9	1.5%	90-95	342.4	5.8%	150-155	59.0	1.0%
35-40	113.9	1.9%	95-100	339.2	5.7%	155-160	38.7	0.7%
40-45	142.7	2.4%	100-105	330.1	5.5%	160-165	22.9	0.4%
45-50	173.6	2.9%	105-110	314.0	5.3%	165-170	11.8	0.2%
50-55	204.8	3.4%	110-115	291.9	4.9%	170-175	4.8	0.1%
55-60	235.5	4.0%	115-120	265.4	4.5%	175-180	1.2	0.0%

Zone	Lumens	% of Luminaire
0-40	356	6.0%
0-60	1113	18.7%
0-90	2977	50.1%
90-180	2971	49.9%



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	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	7.0
5	7.2	9.5	13.2	17.2	18.6	17.2	13.2	9.5	7.2	9.5	13.2	17.2	18.6	17.2	13.2	9.5
10	71.3	82.8	83.6	88.0	89.2	88.0	83.6	82.8	71.3	82.8	83.6	88.0	89.2	88.0	83.6	82.8
15	144.1	144.1	141.6	141.9	141.5	141.9	141.6	144.1	144.1	144.1	141.6	141.9	141.5	141.9	141.6	144.1
20	176.8	195.5	181.6	192.4	192.6	192.4	181.6	195.5	176.8	195.5	181.6	192.4	192.6	192.4	181.6	195.5
25	235.4	236.1	234.6	233.8	234.2	233.8	234.6	236.1	235.4	236.1	234.6	233.8	234.2	233.8	234.6	236.1
30	276.4	277.3	276.7	275.7	275.7	275.7	276.7	277.3	276.4	277.3	276.7	275.7	275.7	275.7	276.7	277.3
35	318.5	320.1	319.8	319.1	319.1	319.1	319.8	320.1	318.5	320.1	319.8	319.1	319.1	319.1	319.8	320.1
40	362.2	363.4	363.2	362.3	362.0	362.3	363.2	363.4	362.2	363.4	363.2	362.3	362.0	362.3	363.2	363.4
45	406.9	408.2	408.0	407.2	406.8	407.2	408.0	408.2	406.9	408.2	408.0	407.2	406.8	407.2	408.0	408.2
50	450.5	451.3	451.2	450.1	449.8	450.1	451.2	451.3	450.5	451.3	451.2	450.1	449.8	450.1	451.2	451.3
55	490.3	491.0	491.1	489.8	489.5	489.8	491.1	491.0	490.3	491.0	491.1	489.8	489.5	489.8	491.1	491.0
60	527.0	527.9	527.8	526.6	526.3	526.6	527.8	527.9	527.0	527.9	527.8	526.6	526.3	526.6	527.8	527.9
65	557.6	558.7	558.9	557.2	556.9	557.2	558.9	558.7	557.6	558.7	558.9	557.2	556.9	557.2	558.9	558.7
70	581.2	583.0	583.2	581.9	581.3	581.9	583.2	583.0	581.2	583.0	583.2	581.9	581.3	581.9	583.2	583.0
75	598.3	601.1	601.7	600.7	600.2	600.7	601.7	601.1	598.3	601.1	601.7	600.7	600.2	600.7	601.7	601.1
80	609.9	613.7	614.5	614.1	614.2	614.1	614.5	613.7	609.9	613.7	614.5	614.1	614.2	614.1	614.5	613.7
85	615.7	619.7	620.9	620.9	621.0	620.9	620.9	619.7	615.7	619.7	620.9	620.9	621.0	620.9	620.9	619.7
90	620.3	624.0	625.3	624.6	624.8	624.6	625.3	624.0	620.3	624.0	625.3	624.6	624.8	624.6	625.3	624.0
95	623.9	625.9	626.7	625.0	624.9	625.0	626.7	625.9	623.9	625.9	626.7	625.0	624.9	625.0	626.7	625.9
100	622.0	622.9	622.9	620.4	619.8	620.4	622.9	622.9	622.0	622.9	622.9	620.4	619.8	620.4	622.9	622.9
105	611.0	611.2	611.2	608.8	607.7	608.8	611.2	611.2	611.0	611.2	611.2	608.8	607.7	608.8	611.2	611.2
110	590.0	590.7	590.6	588.7	587.8	588.7	590.6	590.7	590.0	590.7	590.6	588.7	587.8	588.7	590.6	590.7
115	561.7	562.4	562.9	561.5	560.9	561.5	562.9	562.4	561.7	562.4	562.9	561.5	560.9	561.5	562.9	562.4
120	528.3	529.4	529.6	528.4	528.4	528.4	529.6	529.4	528.3	529.4	529.6	528.4	528.4	528.4	529.6	529.4
125	490.8	491.7	491.9	490.1	490.3	490.1	491.9	491.7	490.8	491.7	491.9	490.1	490.3	490.1	491.9	491.7
130	448.9	449.5	449.4	447.6	447.7	447.6	449.4	449.5	448.9	449.5	449.4	447.6	447.7	447.6	449.4	449.5
135	404.5	405.6	405.3	403.4	403.1	403.4	405.3	405.6	404.5	405.6	405.3	403.4	403.1	403.4	405.3	405.6
140	357.6	358.9	358.1	356.4	356.1	356.4	358.1	358.9	357.6	358.9	358.1	356.4	356.1	356.4	358.1	358.9
145	308.2	309.8	308.3	306.8	306.6	306.8	308.3	309.8	308.2	309.8	308.3	306.8	306.6	306.8	308.3	309.8
150	258.6	260.0	257.7	255.8	255.5	255.8	257.7	260.0	258.6	260.0	257.7	255.8	255.5	255.8	257.7	260.0
155	207.9	209.6	207.7	205.7	206.5	205.7	207.7	209.6	207.9	209.6	207.7	205.7	206.5	205.7	207.7	209.6
160	159.4	161.1	160.6	159.5	159.9	159.5	160.6	161.1	159.4	161.1	160.6	159.5	159.9	159.5	160.6	161.1
165	117.0	118.2	117.7	115.9	115.6	115.9	117.7	118.2	117.0	118.2	117.7	115.9	115.6	115.9	117.7	118.2
170	82.1	83.5	81.0	78.6	78.0	78.6	81.0	83.5	82.1	83.5	81.0	78.6	78.0	78.6	81.0	83.5
175	53.2	56.4	55.1	53.3	53.1	53.3	55.1	56.4	53.2	56.4	55.1	53.3	53.1	53.3	55.1	56.4
180	45.1	45.1	45.1	45.1	45.1	45.1	45.1	45.1	45.1	45.1	45.1	45.1	45.1	45.1	45.1	45.1

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

	0	45	90
0	1133	1133	1133
45	90170	90410	90160
55	110000	110200	109800
65	130700	131000	130500
75	150700	151600	151200
85	171400	172800	172800

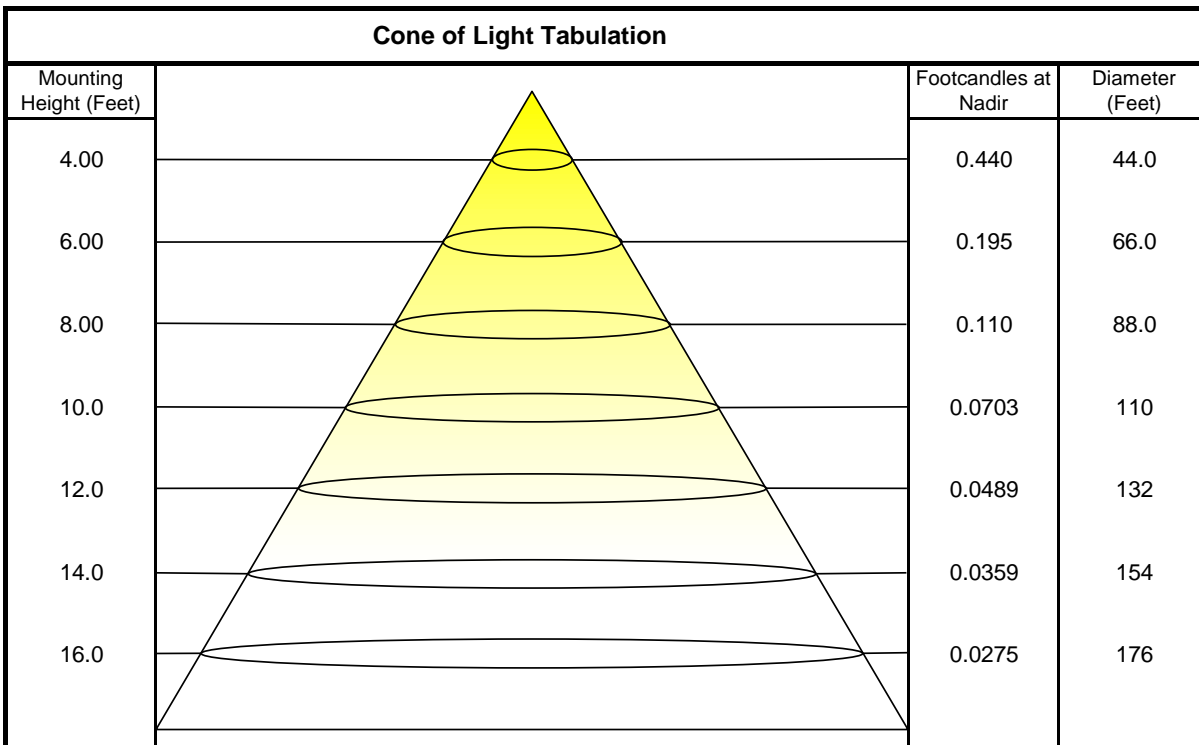


Coefficients of Utilization - Zonal Cavity Method

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	31	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	46	33	25	19	27	20	15	21	16	12	16	12	8	6
8	46	33	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	25	17	12	20	14	10	16	11	8	12	8	5	3

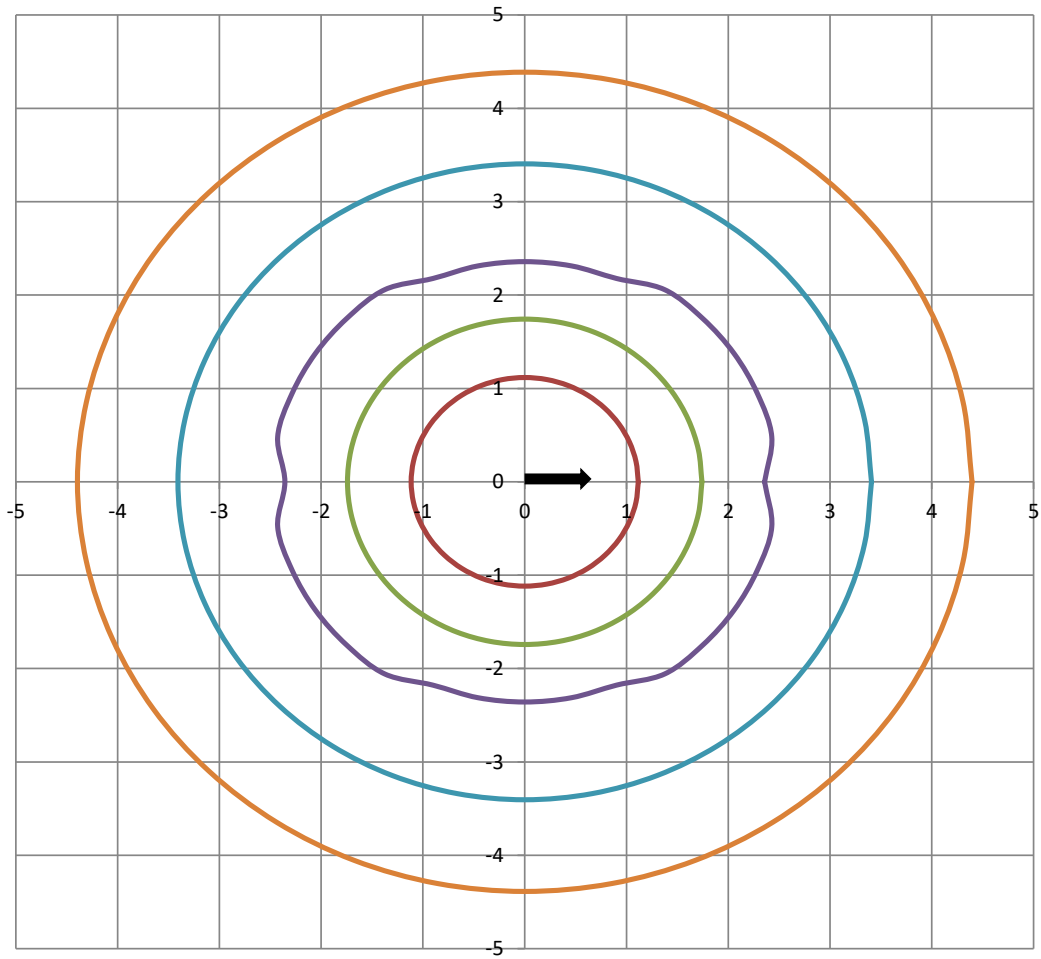
Beam and Field Information	
CIE Type:	Direct/Indirect
Center Beam Intensity:	7.0 Candela
Central Cone Intensity:	N/A Candela
Beam Flux:	5947.8 Lumens
Beam Angle (0-180):	N/A Degrees
Beam Angle (90-270):	N/A Degrees
Field Angle (0-180):	N/A Degrees
Field Angle (90-270):	N/A Degrees





ISOFootcandle Plot

Mounting Height - 8 Feet



Grid Lines in Units of Mounting Height

