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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-70-5K-MO
Order Number
12914541
Test Number
12914541.08

Test Date

2019-06-17 - 2019-06-25

Prepared By

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Approved By

Eric Gaudreau, Engineering Leader

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: 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: 9108 Lumens
Efficacy: 132.08 lm/w
CCT: 5166 K
CRI (Ra): 83.2

Distribution

Total Luminaire Output: 9160 Lumens
Luminaire Efficacy: 132.5 lm/w
Maximum Candela: 962 Candela

Electrical Data at 120 VAC

Test Temperature: 25.2 °C
Voltage: 120.1 VAC
Current: 0.5766 A
Power: 68.96 W
Power Factor: 0.996
Frequency: 60 Hz
Current THD: 8.42 %



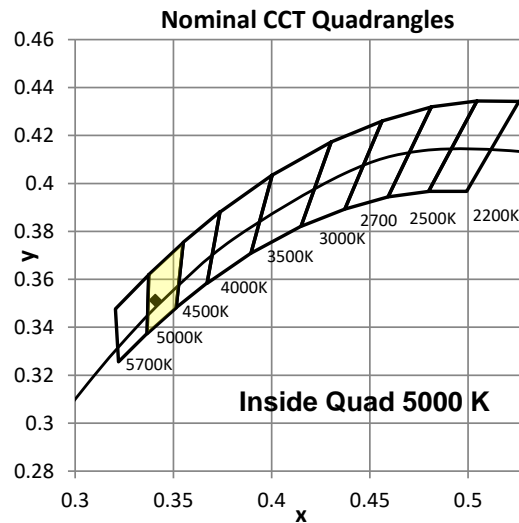
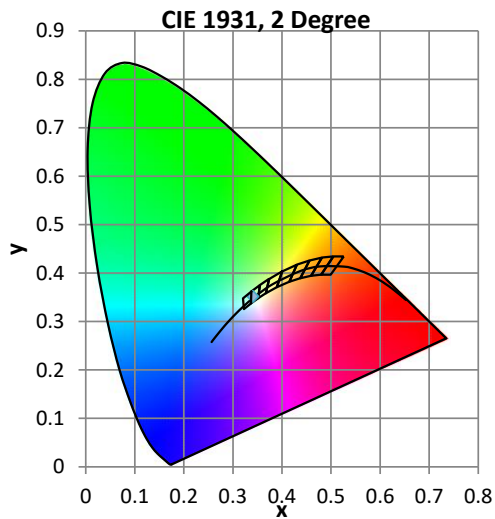
Color Quality - Integrating Sphere

Integrating Sphere Test Conditions

Temperature	Voltage	Current	Power	Power Factor	Frequency	Current THD
25.2 °C	120.1 VAC	0.5766 A	68.96 W	0.996	60 Hz	8.42 %

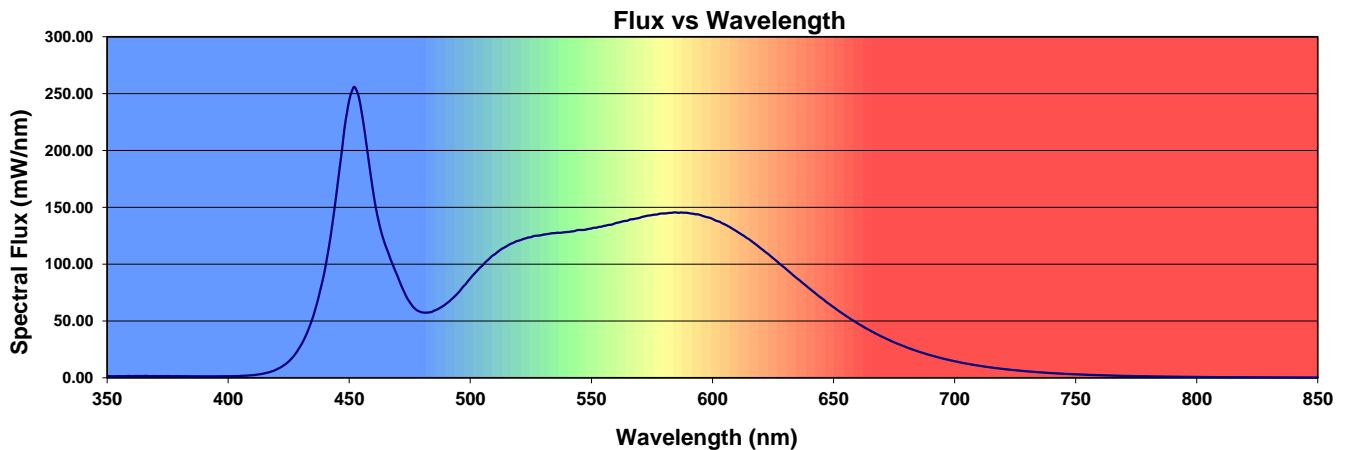
Summary of Results

Total Output:	9108 Lumens	Chromaticity (x):	0.3407
Efficacy:	132.1 lm/w	Chromaticity (y):	0.3513
CCT:	5166 K	Chromaticity (u'):	0.2086
CRI (Ra):	83.2	Chromaticity (v'):	0.4839
CRI (R9):	4.5	TM-30 Rf:	83.4
Peak Wavelength:	452 nm	TM-30 Rg:	95.4
Dominant Wavelength:	568 nm	Duv:	0.0011
S/P Ratio:	2		



Color Rendering Index Detail

Ra (CRI)	R1	R2	R3	R4	R5	R6	R7	R8	R9	R10	R11	R12	R13	R14	R15
83.2	81.7	88.8	93.1	83.0	82.4	83.9	86.3	66.2	4.5	73.1	82.7	60.9	83.8	96.6	75.6





Distribution - Goniophotometer

Distribution Test Conditions

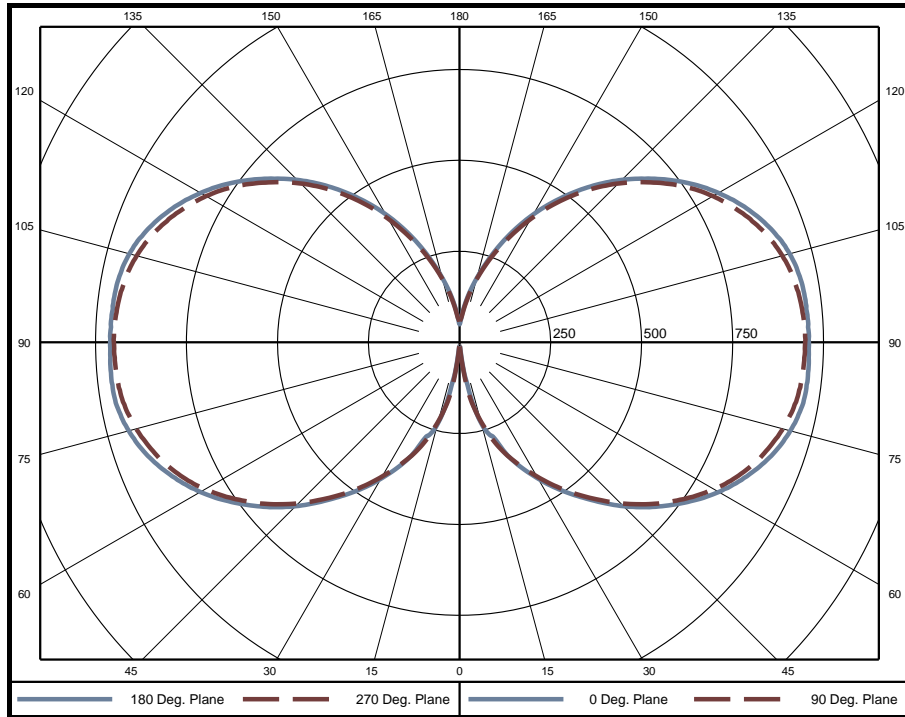
Temperature	Voltage	Current	Power	Power Factor	Frequency	Current THD
24.9 °C	120.1 VAC	0.5779 A	69.16 W	0.996	60 Hz	8.42 %

Summary of Results

Spacing Criteria
 0-180: 11.02
 90-270: 10.94

Total Lumen Output: 9160 Lumens
Luminaire Efficacy: 132.5 lm/w
Maximum Candela: 962 Candela

Polar Plot



Zonal Lumen Summary

Zone	Lumens	% of Luminaire	Zone	Lumens	% of Luminaire	Zone	Lumens	% of Luminaire
0-5	0.3	0.0%	60-65	408.7	4.5%	120-125	363.5	4.0%
5-10	5.2	0.1%	65-70	447.5	4.9%	125-130	315.6	3.4%
10-15	21.9	0.2%	70-75	479.4	5.2%	130-135	266.6	2.9%
15-20	42.8	0.5%	75-80	503.4	5.5%	135-140	218.6	2.4%
20-25	69.9	0.8%	80-85	517.9	5.7%	140-145	172.1	1.9%
25-30	100.7	1.1%	85-90	523.3	5.7%	145-150	129.3	1.4%
30-35	136.6	1.5%	90-95	523.1	5.7%	150-155	91.5	1.0%
35-40	177.0	1.9%	95-100	516.3	5.6%	155-160	60.0	0.7%
40-45	221.4	2.4%	100-105	502.1	5.5%	160-165	35.6	0.4%
45-50	269.0	2.9%	105-110	478.7	5.2%	165-170	18.3	0.2%
50-55	317.0	3.5%	110-115	446.5	4.9%	170-175	7.3	0.1%
55-60	364.2	4.0%	115-120	407.5	4.4%	175-180	1.6	0.0%

Zone	Lumens	% of Luminaire
0-40	554	6.1%
0-60	1726	18.8%
0-90	4606	50.3%
90-180	4554	49.7%



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	10.9	10.9	10.9	10.9	10.9	10.9	10.9	10.9	10.9	10.9	10.9	10.9	10.9	10.9	10.9	10.9
5	11.4	11.9	13.6	17.2	18.3	17.2	13.6	11.9	11.4	11.9	13.6	17.2	18.3	17.2	13.6	11.9
10	109.5	128.2	130.0	136.4	139.6	136.4	130.0	128.2	109.5	128.2	130.0	136.4	139.6	136.4	130.0	128.2
15	230.7	228.5	221.4	220.5	222.9	220.5	221.4	228.5	230.7	228.5	221.4	220.5	222.9	220.5	221.4	228.5
20	281.4	303.4	286.4	300.8	299.0	300.8	286.4	303.4	281.4	303.4	286.4	300.8	299.0	300.8	286.4	303.4
25	366.1	367.1	364.9	363.3	362.1	363.3	364.9	367.1	366.1	367.1	364.9	363.3	362.1	363.3	364.9	367.1
30	433.2	432.0	430.2	427.1	425.1	427.1	430.2	432.0	433.2	432.0	430.2	427.1	425.1	427.1	430.2	432.0
35	500.2	499.5	497.7	493.4	491.7	493.4	497.7	499.5	500.2	499.5	497.7	493.4	491.7	493.4	497.7	499.5
40	566.1	566.8	564.2	559.7	557.5	559.7	564.2	566.8	566.1	566.8	564.2	559.7	557.5	559.7	564.2	566.8
45	636.8	635.9	632.9	627.3	625.0	627.3	632.9	635.9	636.8	635.9	632.9	627.3	625.0	627.3	632.9	635.9
50	703.2	703.7	698.8	692.7	690.3	692.7	698.8	703.7	703.2	703.7	698.8	692.7	690.3	692.7	698.8	703.7
55	764.9	764.3	759.6	752.7	750.8	752.7	759.6	764.3	764.9	764.3	759.6	752.7	750.8	752.7	759.6	764.3
60	822.3	822.0	816.5	809.3	806.5	809.3	816.5	822.0	822.3	822.0	816.5	809.3	806.5	809.3	816.5	822.0
65	870.9	870.4	864.7	857.3	853.5	857.3	864.7	870.4	870.9	870.4	864.7	857.3	853.5	857.3	864.7	870.4
70	911.4	909.6	902.5	894.8	890.6	894.8	902.5	909.6	911.4	909.6	902.5	894.8	890.6	894.8	902.5	909.6
75	940.3	938.5	930.8	923.0	919.6	923.0	930.8	938.5	940.3	938.5	930.8	923.0	919.6	923.0	930.8	938.5
80	958.7	955.8	950.3	942.3	939.0	942.3	950.3	955.8	958.7	955.8	950.3	942.3	939.0	942.3	950.3	955.8
85	960.8	960.2	956.1	949.7	946.8	949.7	956.1	960.2	960.8	960.2	956.1	949.7	946.8	949.7	956.1	960.2
90	959.5	960.3	957.2	951.6	949.6	951.6	957.2	960.3	959.5	960.3	957.2	951.6	949.6	951.6	957.2	960.3
95	957.5	957.8	954.1	948.6	945.9	948.6	954.1	957.8	957.5	957.8	954.1	948.6	945.9	948.6	954.1	957.8
100	953.8	951.3	946.3	939.9	936.0	939.9	946.3	951.3	953.8	951.3	946.3	939.9	936.0	939.9	946.3	951.3
105	938.9	935.9	929.4	921.9	918.5	921.9	929.4	935.9	938.9	935.9	929.4	921.9	918.5	921.9	929.4	935.9
110	910.6	907.6	900.9	893.1	889.8	893.1	900.9	907.6	910.6	907.6	900.9	893.1	889.8	893.1	900.9	907.6
115	870.4	867.6	861.7	854.6	850.5	854.6	861.7	867.6	870.4	867.6	861.7	854.6	850.5	854.6	861.7	867.6
120	821.2	819.6	813.8	807.1	804.4	807.1	813.8	819.6	821.2	819.6	813.8	807.1	804.4	807.1	813.8	819.6
125	763.9	763.1	757.0	751.4	748.4	751.4	757.0	763.1	763.9	763.1	757.0	751.4	748.4	751.4	757.0	763.1
130	699.6	698.4	693.0	687.9	684.6	687.9	693.0	698.4	699.6	698.4	693.0	687.9	684.6	687.9	693.0	698.4
135	631.7	630.4	625.2	620.8	617.9	620.8	625.2	630.4	631.7	630.4	625.2	620.8	617.9	620.8	625.2	630.4
140	558.9	557.8	553.4	548.5	546.1	548.5	553.4	557.8	558.9	557.8	553.4	548.5	546.1	548.5	553.4	557.8
145	483.2	480.7	477.1	473.0	470.4	473.0	477.1	480.7	483.2	480.7	477.1	473.0	470.4	473.0	477.1	480.7
150	406.8	403.6	399.6	395.1	392.9	395.1	399.6	403.6	406.8	403.6	399.6	395.1	392.9	395.1	399.6	403.6
155	328.5	326.0	321.6	317.7	315.2	317.7	321.6	326.0	328.5	326.0	321.6	317.7	315.2	317.7	321.6	326.0
160	251.9	251.4	248.4	244.9	244.1	244.9	248.4	251.4	251.9	251.4	248.4	244.9	244.1	244.9	248.4	251.4
165	183.3	184.5	182.5	179.1	178.8	179.1	182.5	184.5	183.3	184.5	182.5	179.1	178.8	179.1	182.5	184.5
170	126.9	127.4	124.7	121.9	120.5	121.9	124.7	127.4	126.9	127.4	124.7	121.9	120.5	121.9	124.7	127.4
175	76.9	79.6	77.1	74.1	73.8	74.1	77.1	79.6	76.9	79.6	77.1	74.1	73.8	74.1	77.1	79.6
180	57.1	57.1	57.1	57.1	57.1	57.1	57.1	57.1	57.1	57.1	57.1	57.1	57.1	57.1	57.1	57.1

Average Luminance (cd/m²)

Horizontal Angle (Degrees)

	0	45	90
0	1760	1760	1760
45	141100	140300	138500
55	171600	170400	168400
65	204100	202700	200000
75	236900	234500	231600
85	267400	266100	263500

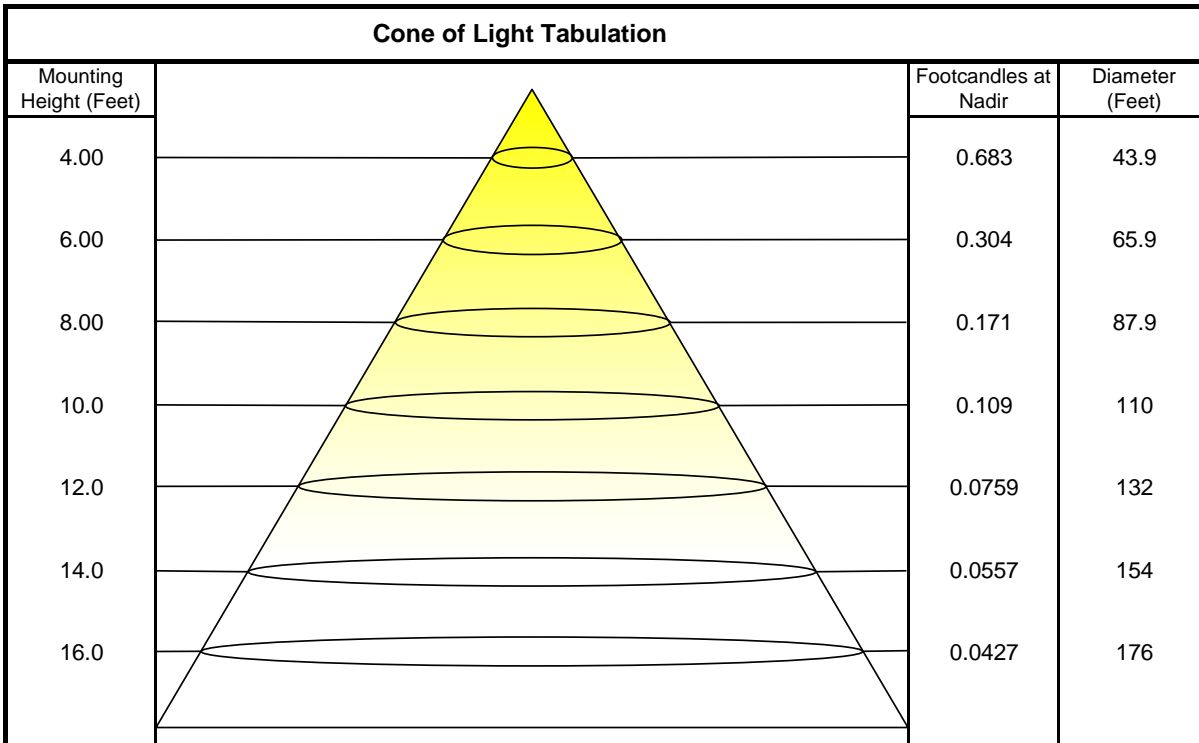


Coefficients of Utilization - Zonal Cavity Method

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	41	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	36	30	26	27	23	20	15
4	66	52	43	35	60	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	9	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

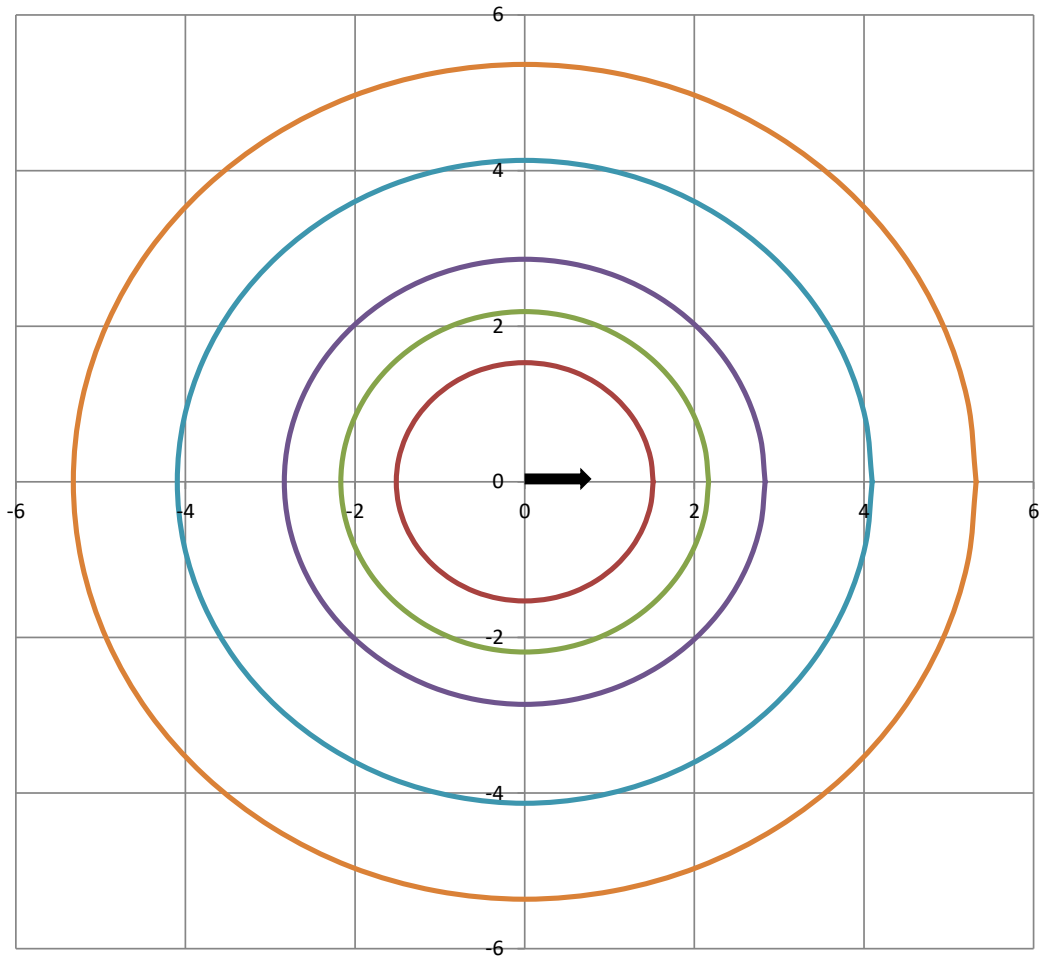
Beam and Field Information	
CIE Type:	Direct/Indirect
Center Beam Intensity:	10.9 Candela
Central Cone Intensity:	N/A Candela
Beam Flux:	9160.4 Lumens
Beam Angle (0-180):	N/A Degrees
Beam Angle (90-270):	N/A Degrees
Field Angle (0-180):	N/A Degrees
Field Angle (90-270):	N/A Degrees





ISOFootcandle Plot

Mounting Height - 8 Feet



Grid Lines in Units of Mounting Height

