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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-70-22-MO
Order Number
12914541
Test Number
12914541.04

Test Date

2019-06-18 - 2019-06-26

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: 6643 Lumens
Efficacy: 93.64 lm/w
CCT: 2270 K
CRI (Ra): 83.1

Distribution

Total Luminaire Output: 6604 Lumens
Luminaire Efficacy: 92.9 lm/w
Maximum Candela: 704 Candela

Electrical Data at 120 VAC

Test Temperature: 25.2 °C
Voltage: 120.1 VAC
Current: 0.5928 A
Power: 70.94 W
Power Factor: 0.996
Frequency: 60 Hz
Current THD: 8.03 %



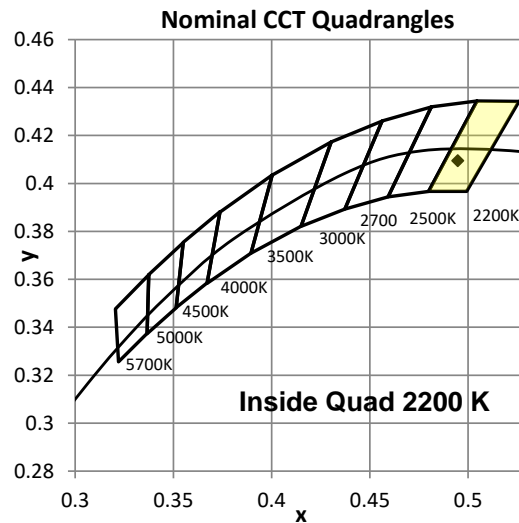
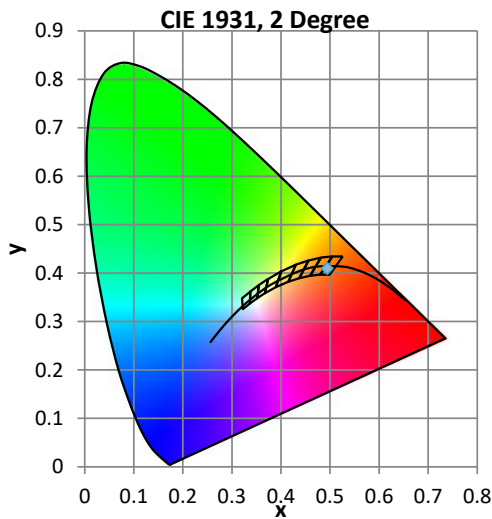
Color Quality - Integrating Sphere

Integrating Sphere Test Conditions

Temperature	Voltage	Current	Power	Power Factor	Frequency	Current THD
25.2 °C	120.1 VAC	0.5928 A	70.94 W	0.996	60 Hz	8.03 %

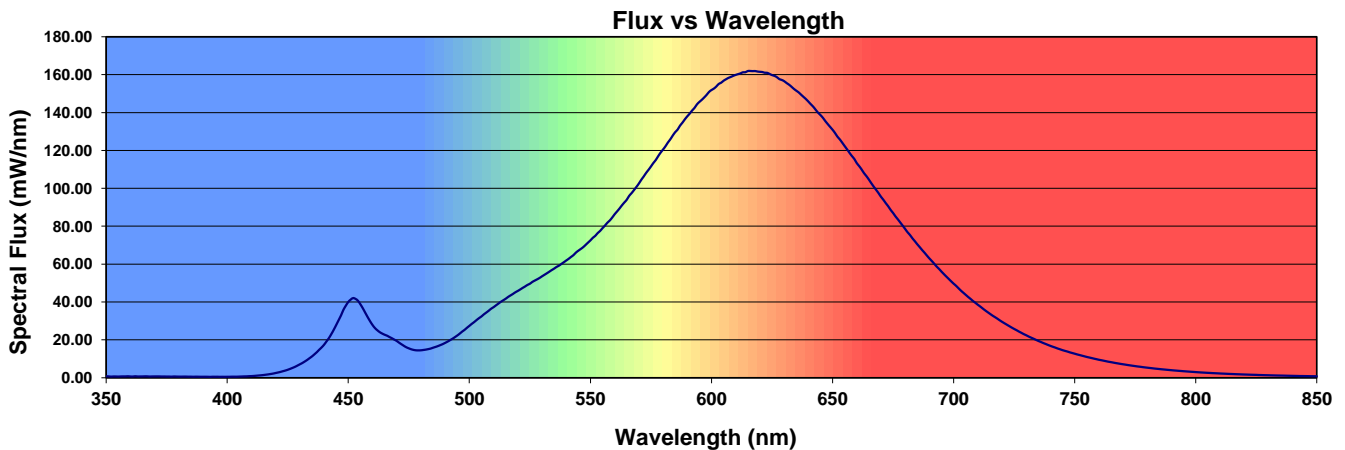
Summary of Results

Total Output:	6643 Lumens	Chromaticity (x):	0.4947
Efficacy:	93.6 lm/w	Chromaticity (y):	0.4095
CCT:	2270 K	Chromaticity (u'):	0.2857
CRI (Ra):	83.1	Chromaticity (v'):	0.5322
CRI (R9):	22.0	TM-30 Rf:	83.6
Peak Wavelength:	617 nm	TM-30 Rg:	100.4
Dominant Wavelength:	587 nm	Duv:	-0.0020
S/P Ratio:	1		



Color Rendering Index Detail

Ra (CRI)	R1	R2	R3	R4	R5	R6	R7	R8	R9	R10	R11	R12	R13	R14	R15
83.1	81.7	92.1	95.9	79.3	81.2	91.2	82.0	61.0	22.0	82.4	78.1	79.0	83.9	98.7	76.1





Distribution - Goniophotometer

Distribution Test Conditions

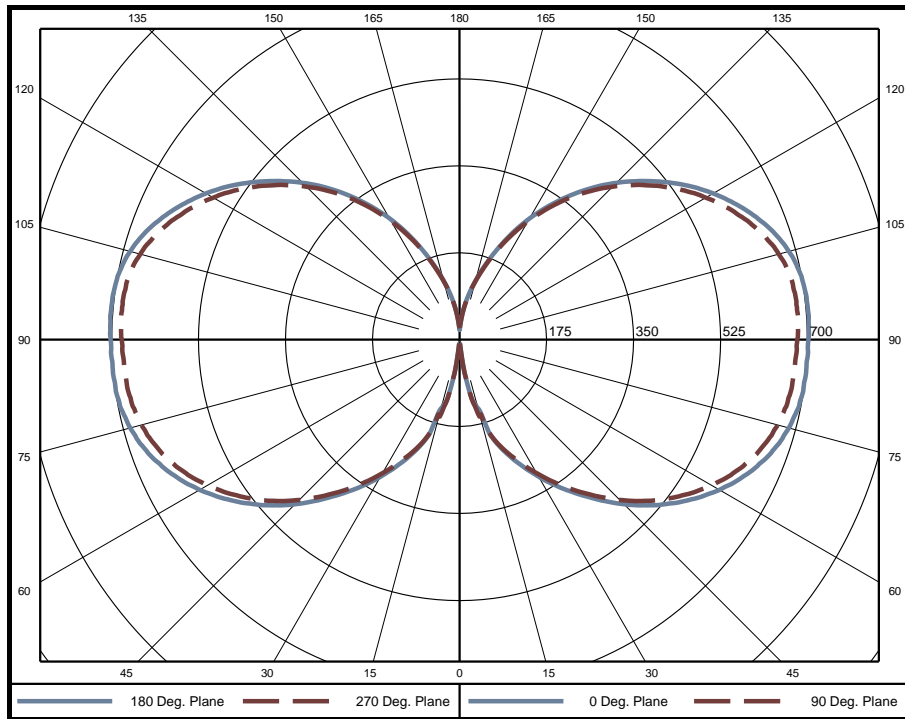
Temperature	Voltage	Current	Power	Power Factor	Frequency	Current THD
25.6 °C	120.1 VAC	0.5940 A	71.09 W	0.996	60 Hz	8.05 %

Summary of Results

Spacing Criteria
 0-180: 11.11
 90-270: 10.97

Total Lumen Output: 6604 Lumens
Luminaire Efficacy: 92.9 lm/w
Maximum Candela: 704 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	297.3	4.5%	120-125	258.8	3.9%
5-10	3.6	0.1%	65-70	324.9	4.9%	125-130	223.8	3.4%
10-15	15.5	0.2%	70-75	347.3	5.3%	130-135	188.5	2.9%
15-20	31.3	0.5%	75-80	363.3	5.5%	135-140	154.0	2.3%
20-25	51.5	0.8%	80-85	372.7	5.6%	140-145	120.9	1.8%
25-30	73.6	1.1%	85-90	376.9	5.7%	145-150	90.6	1.4%
30-35	99.6	1.5%	90-95	378.6	5.7%	150-155	63.7	1.0%
35-40	129.0	2.0%	95-100	375.5	5.7%	155-160	41.0	0.6%
40-45	161.5	2.4%	100-105	365.5	5.5%	160-165	23.9	0.4%
45-50	196.3	3.0%	105-110	347.2	5.3%	165-170	12.2	0.2%
50-55	231.5	3.5%	110-115	321.7	4.9%	170-175	4.6	0.1%
55-60	265.4	4.0%	115-120	291.6	4.4%	175-180	0.8	0.0%

Zone	Lumens	% of Luminaire
0-40	404	6.1%
0-60	1259	19.1%
0-90	3341	50.6%
90-180	3263	49.4%



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	7.8	7.8	7.8	7.8	7.8	7.8	7.8	7.8	7.8	7.8	7.8	7.8	7.8	7.8	7.8	7.8
5	8.2	7.8	8.0	8.1	8.1	8.1	8.0	7.8	8.2	7.8	8.0	8.1	8.1	8.1	8.0	7.8
10	90.9	97.2	94.1	90.9	85.6	90.9	94.1	97.2	90.9	97.2	94.1	90.9	85.6	90.9	94.1	97.2
15	142.2	154.3	159.7	158.7	156.8	158.7	159.7	154.3	142.2	154.3	159.7	158.7	156.8	158.7	159.7	154.3
20	223.4	220.9	221.7	221.0	220.4	221.0	221.7	220.9	223.4	220.9	221.7	221.0	220.4	221.0	221.7	220.9
25	270.4	268.7	267.3	265.5	264.1	265.5	267.3	268.7	270.4	268.7	267.3	265.5	264.1	265.5	267.3	268.7
30	317.7	315.7	313.7	311.2	309.6	311.2	313.7	315.7	317.7	315.7	313.7	311.2	309.6	311.2	313.7	315.7
35	366.3	364.6	361.9	358.8	357.7	358.8	361.9	364.6	366.3	364.6	361.9	358.8	357.7	358.8	361.9	364.6
40	415.6	413.3	410.9	406.8	405.6	406.8	410.9	413.3	415.6	413.3	410.9	406.8	405.6	406.8	410.9	413.3
45	467.6	464.8	460.7	456.7	455.8	456.7	460.7	464.8	467.6	464.8	460.7	456.7	455.8	456.7	460.7	464.8
50	517.5	513.6	509.6	504.7	503.7	504.7	509.6	513.6	517.5	513.6	509.6	504.7	503.7	504.7	509.6	513.6
55	562.2	558.6	553.5	548.3	546.0	548.3	553.5	558.6	562.2	558.6	553.5	548.3	546.0	548.3	553.5	558.6
60	603.7	599.0	593.0	588.3	586.1	588.3	593.0	599.0	603.7	599.0	593.0	588.3	586.1	588.3	593.0	599.0
65	638.5	633.5	627.0	621.3	618.4	621.3	627.0	633.5	638.5	633.5	627.0	621.3	618.4	621.3	627.0	633.5
70	666.6	660.7	653.2	647.1	644.1	647.1	653.2	660.7	666.6	660.7	653.2	647.1	644.1	647.1	653.2	660.7
75	685.8	679.6	671.6	665.8	662.7	665.8	671.6	679.6	685.8	679.6	671.6	665.8	662.7	665.8	671.6	679.6
80	696.3	690.9	683.4	677.0	672.0	677.0	683.4	690.9	696.3	690.9	683.4	677.0	672.0	677.0	683.4	690.9
85	700.0	693.8	685.9	680.0	676.8	680.0	685.9	693.8	700.0	693.8	685.9	680.0	676.8	680.0	685.9	693.8
90	701.9	696.6	689.1	682.1	679.4	682.1	689.1	696.6	701.9	696.6	689.1	682.1	679.4	682.1	689.1	696.6
95	703.5	698.5	691.8	684.8	681.6	684.8	691.8	698.5	703.5	698.5	691.8	684.8	681.6	684.8	691.8	698.5
100	699.9	695.7	688.0	681.6	679.3	681.6	688.0	695.7	699.9	695.7	688.0	681.6	679.3	681.6	688.0	695.7
105	686.1	682.1	674.8	668.4	665.1	668.4	674.8	682.1	686.1	682.1	674.8	668.4	665.1	668.4	674.8	682.1
110	661.6	657.3	650.4	644.4	641.6	644.4	650.4	657.3	661.6	657.3	650.4	644.4	641.6	644.4	650.4	657.3
115	628.1	624.4	617.8	612.2	609.9	612.2	617.8	624.4	628.1	624.4	617.8	612.2	609.9	612.2	617.8	624.4
120	589.2	585.9	580.1	575.2	572.2	575.2	580.1	585.9	589.2	585.9	580.1	575.2	572.2	575.2	580.1	585.9
125	545.4	542.7	537.5	533.3	531.2	533.3	537.5	542.7	545.4	542.7	537.5	533.3	531.2	533.3	537.5	542.7
130	496.9	494.3	490.1	486.5	484.5	486.5	490.1	494.3	496.9	494.3	490.1	486.5	484.5	486.5	490.1	494.3
135	446.6	444.4	440.8	437.9	435.9	437.9	440.8	444.4	446.6	444.4	440.8	437.9	435.9	437.9	440.8	444.4
140	393.9	391.8	389.2	386.3	385.3	386.3	389.2	391.8	393.9	391.8	389.2	386.3	385.3	386.3	389.2	391.8
145	338.4	336.6	334.5	332.1	331.2	332.1	334.5	336.6	338.4	336.6	334.5	332.1	331.2	332.1	334.5	336.6
150	282.5	281.1	279.7	277.1	275.6	277.1	279.7	281.1	282.5	281.1	279.7	277.1	275.6	277.1	279.7	281.1
155	224.7	223.5	223.0	220.2	220.1	220.2	223.0	223.5	224.7	223.5	223.0	220.2	220.1	220.2	223.0	223.5
160	170.1	168.8	168.3	166.4	166.8	166.4	168.3	168.8	170.1	168.8	168.3	166.4	166.8	166.4	168.3	168.8
165	122.4	122.6	121.6	121.7	121.2	121.7	121.6	122.6	122.4	122.6	121.6	121.7	121.2	121.7	121.6	122.6
170	82.2	81.8	81.6	81.6	81.4	81.6	81.6	81.8	82.2	81.8	81.6	81.6	81.4	81.6	81.6	81.8
175	44.6	44.4	44.0	44.1	44.2	44.1	44.0	44.4	44.6	44.4	44.0	44.1	44.2	44.1	44.0	44.4
180	23.1	23.1	23.1	23.1	23.1	23.1	23.1	23.1	23.1	23.1	23.1	23.1	23.1	23.1	23.1	23.1

Average Luminance (cd/m²)

Horizontal Angle (Degrees)

	0	45	90
0	1250	1250	1250
45	103600	102100	101000
55	126100	124200	122500
65	149700	147000	144900
75	172800	169200	166900
85	194800	190900	188300

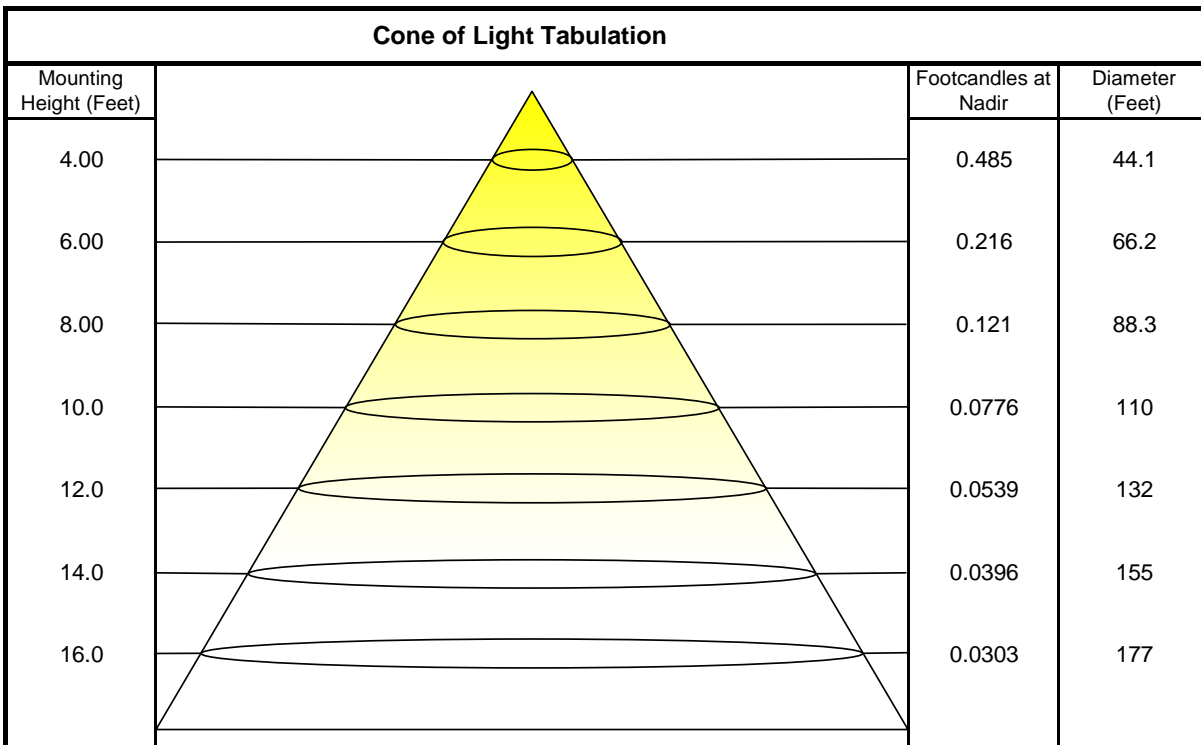


Coefficients of Utilization - Zonal Cavity Method

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	84	84	84	70	70	70	57	57	57	51
1	92	85	79	74	84	78	73	68	65	60	57	52	49	46	41	38	36	31
2	81	71	63	55	74	65	57	51	53	47	42	43	38	34	33	29	26	21
3	73	61	51	43	66	55	47	40	45	38	33	36	31	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	50	37	28	22	30	23	18	24	18	14	18	14	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	15	10	7	5
9	43	29	21	15	39	27	19	14	22	16	11	18	13	9	13	9	6	4
10	40	27	19	13	36	25	17	12	20	14	10	16	11	8	12	8	6	3

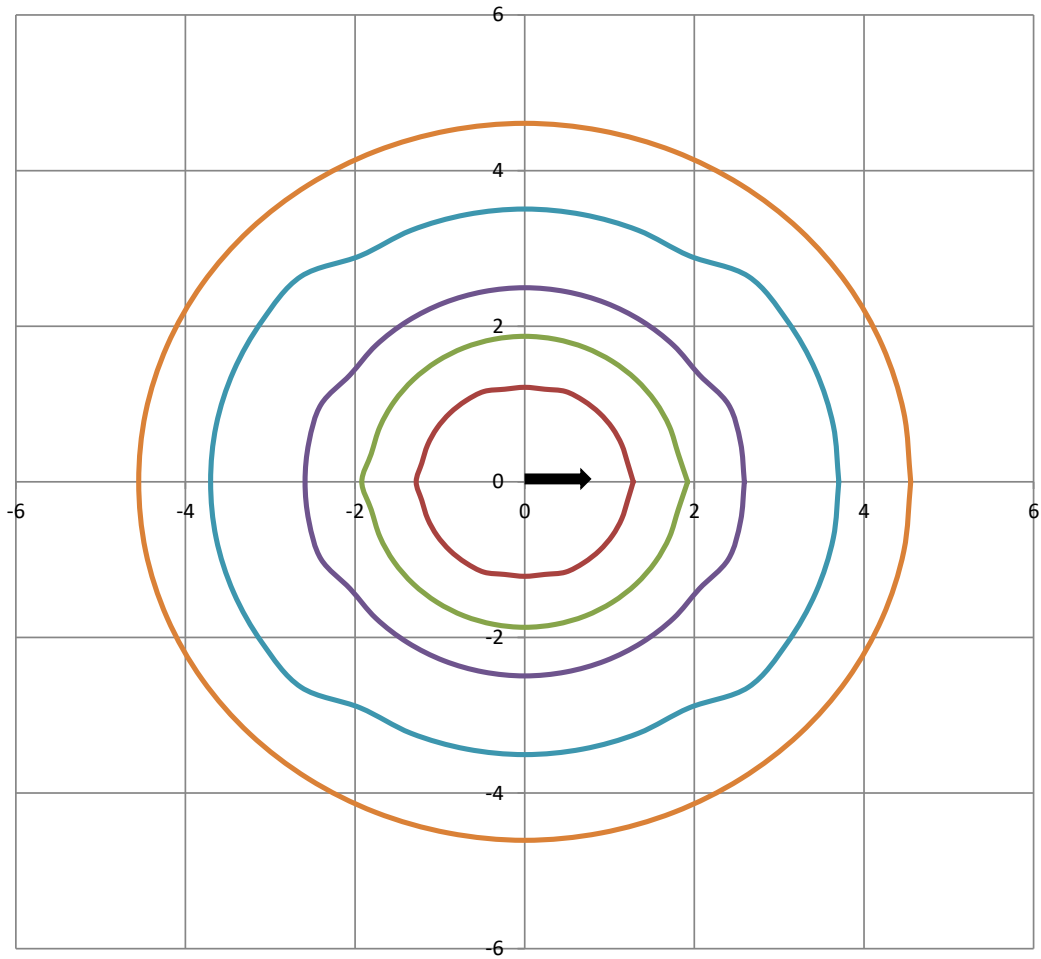
Beam and Field Information	
CIE Type:	Direct/Indirect
Center Beam Intensity:	7.8 Candela
Central Cone Intensity:	N/A Candela
Beam Flux:	6604.2 Lumens
Beam Angle (0-180):	N/A Degrees
Beam Angle (90-270):	N/A Degrees
Field Angle (0-180):	N/A Degrees
Field Angle (90-270):	N/A Degrees





ISOFootcandle Plot

Mounting Height - 8 Feet



Grid Lines in Units of Mounting Height

