



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-70-4K-MO
Order Number
12914541
Test Number
12914541.07

Test Date

2019-06-18 - 2019-06-27

Prepared By

Austin Duff, Technician

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: 9053 Lumens
Efficacy: 130.63 lm/w
CCT: 4003 K
CRI (Ra): 83.5

Distribution

Total Luminaire Output: 9085 Lumens
Luminaire Efficacy: 130.1 lm/w
Maximum Candela: 967 Candela

Electrical Data at 120 VAC

Test Temperature: 25.4 °C
Voltage: 120.1 VAC
Current: 0.5806 A
Power: 69.30 W
Power Factor: 0.994
Frequency: 60 Hz
Current THD: 10.6 %



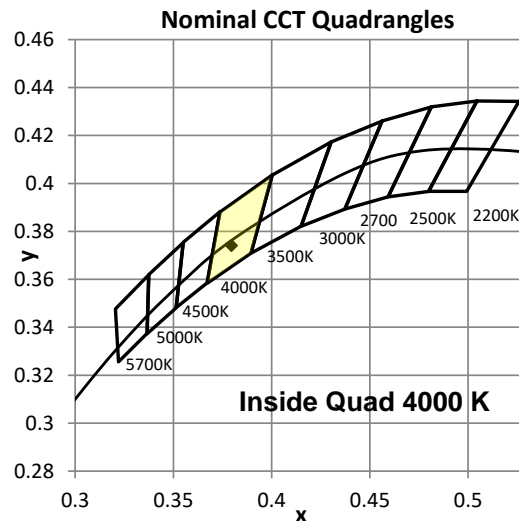
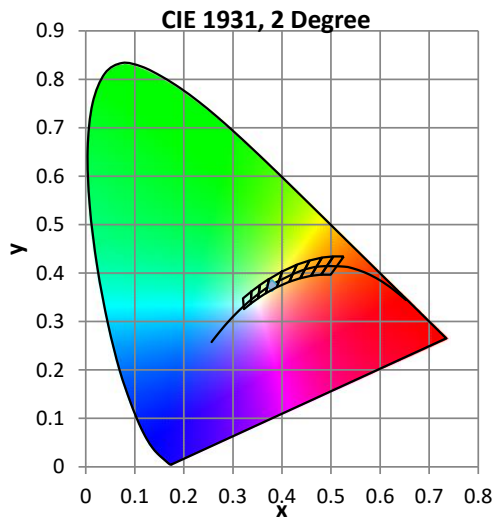
Color Quality - Integrating Sphere

Integrating Sphere Test Conditions

Temperature	Voltage	Current	Power	Power Factor	Frequency	Current THD
25.4 °C	120.1 VAC	0.5806 A	69.30 W	0.994	60 Hz	10.6 %

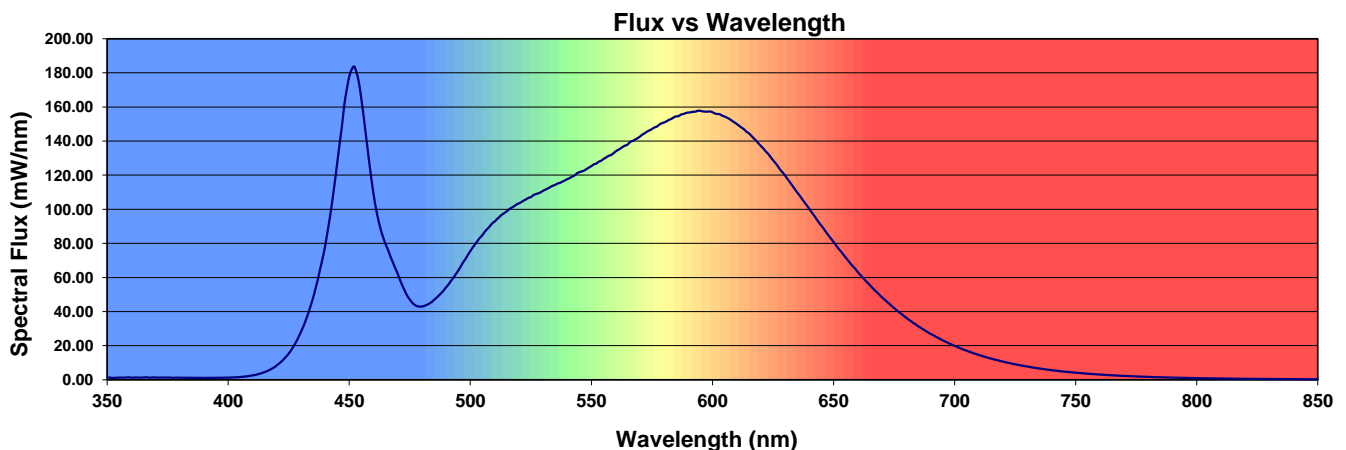
Summary of Results

Total Output:	9053 Lumens	Chromaticity (x):	0.3795
Efficacy:	130.6 lm/w	Chromaticity (y):	0.3741
CCT:	4003 K	Chromaticity (u'):	0.2256
CRI (Ra):	83.5	Chromaticity (v'):	0.5003
CRI (R9):	10.9	TM-30 Rf:	84.2
Peak Wavelength:	452 nm	TM-30 Rg:	96.2
Dominant Wavelength:	580 nm	Duv:	-0.0017
S/P Ratio:	1.69		



Color Rendering Index Detail

Ra (CRI)	R1	R2	R3	R4	R5	R6	R7	R8	R9	R10	R11	R12	R13	R14	R15
83.5	82.1	89.6	94.7	82.6	82.2	85.3	86.0	65.3	10.9	75.1	81.7	63.3	84.0	97.2	76.1





Distribution - Goniophotometer

Distribution Test Conditions

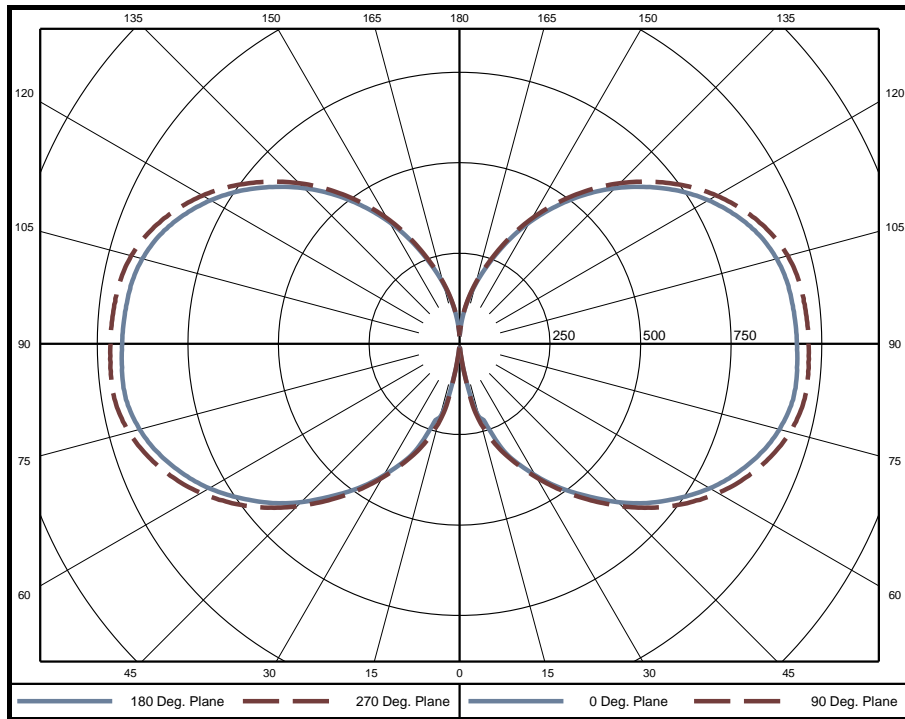
Temperature	Voltage	Current	Power	Power Factor	Frequency	Current THD
24.9 °C	120.1 VAC	0.5847 A	69.82 W	0.994	60 Hz	10.5 %

Summary of Results

Spacing Criteria
 0-180: 10.89
 90-270: 11.01

Total Lumen Output: 9085 Lumens
Luminaire Efficacy: 130.1 lm/w
Maximum Candela: 967 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	406.3	4.5%	120-125	360.0	4.0%
5-10	4.1	0.0%	65-70	445.4	4.9%	125-130	312.4	3.4%
10-15	20.6	0.2%	70-75	478.2	5.3%	130-135	263.9	2.9%
15-20	42.5	0.5%	75-80	502.4	5.5%	135-140	216.2	2.4%
20-25	68.7	0.8%	80-85	515.8	5.7%	140-145	170.2	1.9%
25-30	99.0	1.1%	85-90	519.4	5.7%	145-150	128.1	1.4%
30-35	134.8	1.5%	90-95	517.8	5.7%	150-155	90.5	1.0%
35-40	175.0	1.9%	95-100	511.3	5.6%	155-160	58.5	0.6%
40-45	219.2	2.4%	100-105	498.2	5.5%	160-165	34.2	0.4%
45-50	266.9	2.9%	105-110	475.4	5.2%	165-170	17.3	0.2%
50-55	315.1	3.5%	110-115	443.3	4.9%	170-175	6.4	0.1%
55-60	362.0	4.0%	115-120	404.0	4.4%	175-180	1.0	0.0%

Zone	Lumens	% of Luminaire
0-40	545	6.0%
0-60	1708	18.8%
0-90	4576	50.4%
90-180	4509	49.6%



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	11.0	11.0	11.0	11.0	11.0	11.0	11.0	11.0	11.0	11.0	11.0	11.0	11.0	11.0	11.0	11.0
5	12.2	11.2	11.3	11.3	11.3	11.3	11.3	11.2	12.2	11.2	11.3	11.3	11.3	11.3	11.3	11.2
10	97.3	99.2	101.4	100.5	105.2	100.5	101.4	99.2	97.3	99.2	101.4	100.5	105.2	100.5	101.4	99.2
15	209.5	220.6	224.1	228.0	229.6	228.0	224.1	220.6	209.5	220.6	224.1	228.0	229.6	228.0	224.1	220.6
20	269.0	293.4	295.3	298.1	298.9	298.1	295.3	293.4	269.0	293.4	295.3	298.1	298.9	298.1	295.3	293.4
25	355.5	356.4	358.1	360.7	361.8	360.7	358.1	356.4	355.5	356.4	358.1	360.7	361.8	360.7	358.1	356.4
30	420.3	419.9	423.3	425.8	426.8	425.8	423.3	419.9	420.3	419.9	423.3	425.8	426.8	425.8	423.3	419.9
35	486.4	486.1	491.0	494.4	495.4	494.4	491.0	486.1	486.4	486.1	491.0	494.4	495.4	494.4	491.0	486.1
40	549.3	551.9	557.7	561.9	564.3	561.9	557.7	551.9	549.3	551.9	557.7	561.9	564.3	561.9	557.7	551.9
45	618.4	619.6	626.2	632.2	633.9	632.2	626.2	619.6	618.4	619.6	626.2	632.2	633.9	632.2	626.2	619.6
50	683.2	684.9	693.8	700.8	703.6	700.8	693.8	684.9	683.2	684.9	693.8	700.8	703.6	700.8	693.8	684.9
55	741.7	744.7	754.3	763.2	767.3	763.2	754.3	744.7	741.7	744.7	754.3	763.2	767.3	763.2	754.3	744.7
60	797.8	800.3	811.2	819.4	823.4	819.4	811.2	800.3	797.8	800.3	811.2	819.4	823.4	819.4	811.2	800.3
65	844.9	847.7	859.5	868.5	872.4	868.5	859.5	847.7	844.9	847.7	859.5	868.5	872.4	868.5	859.5	847.7
70	883.8	887.1	898.8	908.8	913.4	908.8	898.8	887.1	883.8	887.1	898.8	908.8	913.4	908.8	898.8	887.1
75	914.5	916.8	929.3	939.2	944.6	939.2	929.3	916.8	914.5	916.8	929.3	939.2	944.6	939.2	929.3	916.8
80	931.5	934.6	947.8	957.1	962.6	957.1	947.8	934.6	931.5	934.6	947.8	957.1	962.6	957.1	947.8	934.6
85	934.9	936.9	950.5	960.7	966.4	960.7	950.5	936.9	934.9	936.9	950.5	960.7	966.4	960.7	950.5	936.9
90	931.0	934.0	947.6	958.2	963.2	958.2	947.6	934.0	931.0	934.0	947.6	958.2	963.2	958.2	947.6	934.0
95	927.5	931.1	944.3	954.7	959.9	954.7	944.3	931.1	927.5	931.1	944.3	954.7	959.9	954.7	944.3	931.1
100	922.1	924.9	937.7	948.6	953.7	948.6	937.7	924.9	922.1	924.9	937.7	948.6	953.7	948.6	937.7	924.9
105	906.9	910.3	922.2	933.4	938.6	933.4	922.2	910.3	906.9	910.3	922.2	933.4	938.6	933.4	922.2	910.3
110	880.0	882.7	894.8	905.2	908.9	905.2	894.8	882.7	880.0	882.7	894.8	905.2	908.9	905.2	894.8	882.7
115	841.2	843.8	854.5	864.7	868.3	864.7	854.5	843.8	841.2	843.8	854.5	864.7	868.3	864.7	854.5	843.8
120	793.3	796.1	805.8	816.0	818.6	816.0	805.8	796.1	793.3	796.1	805.8	816.0	818.6	816.0	805.8	796.1
125	737.7	740.2	749.4	759.2	760.9	759.2	749.4	740.2	737.7	740.2	749.4	759.2	760.9	759.2	749.4	740.2
130	673.8	677.3	686.3	694.4	695.9	694.4	686.3	677.3	673.8	677.3	686.3	694.4	695.9	694.4	686.3	677.3
135	608.1	611.4	619.0	626.3	627.3	626.3	619.0	611.4	608.1	611.4	619.0	626.3	627.3	626.3	619.0	611.4
140	537.6	540.9	547.4	553.4	554.1	553.4	547.4	540.9	537.6	540.9	547.4	553.4	554.1	553.4	547.4	540.9
145	463.2	467.0	472.3	477.5	477.8	477.5	472.3	467.0	463.2	467.0	472.3	477.5	477.8	477.5	472.3	467.0
150	388.9	392.0	395.7	401.1	400.3	401.1	395.7	392.0	388.9	392.0	395.7	401.1	400.3	401.1	395.7	392.0
155	311.0	313.7	316.5	321.2	320.2	321.2	316.5	313.7	311.0	313.7	316.5	321.2	320.2	321.2	316.5	313.7
160	235.6	237.6	239.8	243.1	242.9	243.1	239.8	237.6	235.6	237.6	239.8	243.1	242.9	243.1	239.8	237.6
165	170.9	172.0	173.8	176.1	176.9	176.1	173.8	172.0	170.9	172.0	173.8	176.1	176.9	176.1	173.8	172.0
170	112.5	113.4	114.8	116.4	116.9	116.4	114.8	113.4	112.5	113.4	114.8	116.4	116.9	116.4	114.8	113.4
175	58.9	58.5	58.5	59.6	60.3	59.6	58.5	58.5	58.9	58.5	58.5	59.6	60.3	59.6	58.5	58.5
180	21.8	21.8	21.8	21.8	21.8	21.8	21.8	21.8	21.8	21.8	21.8	21.8	21.8	21.8	21.8	21.8

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

	0	45	90
0	1770	1770	1770
45	137100	138800	140500
55	166400	169200	172100
65	198000	201500	204500
75	230400	234100	237900
85	260200	264500	269000

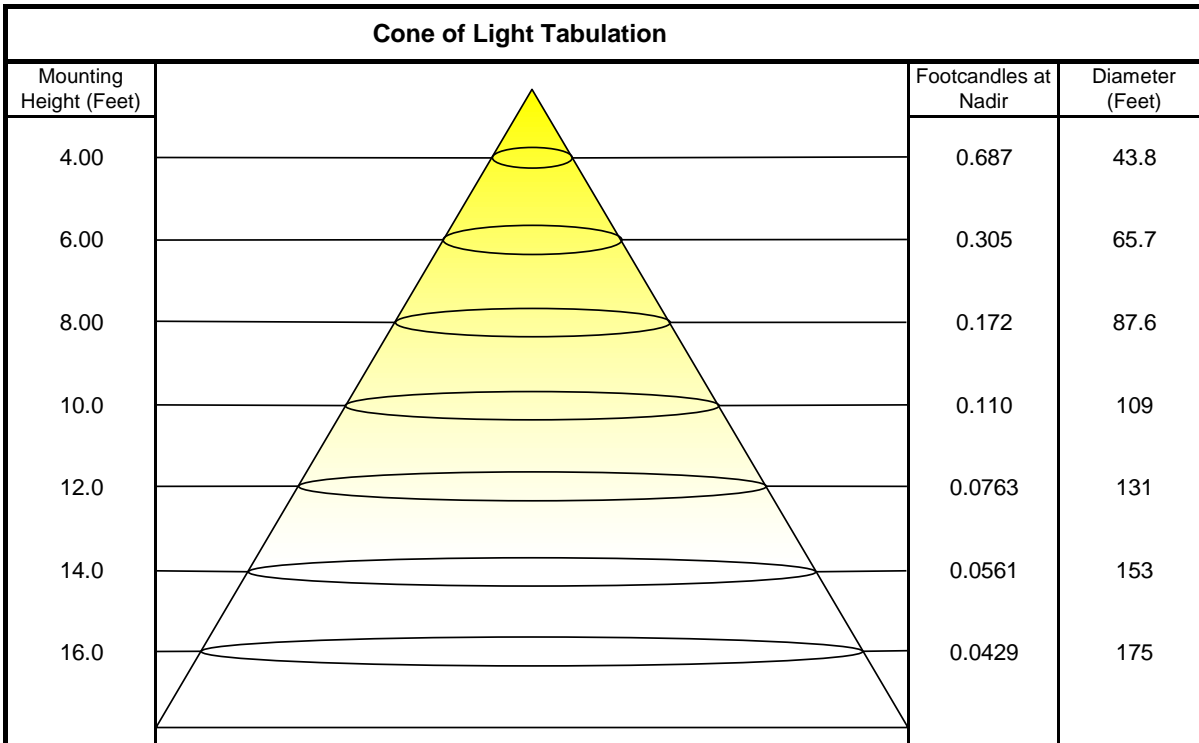


Coefficients of Utilization - Zonal Cavity Method

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	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	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	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	24	17	12	20	14	10	16	11	8	12	8	5	3

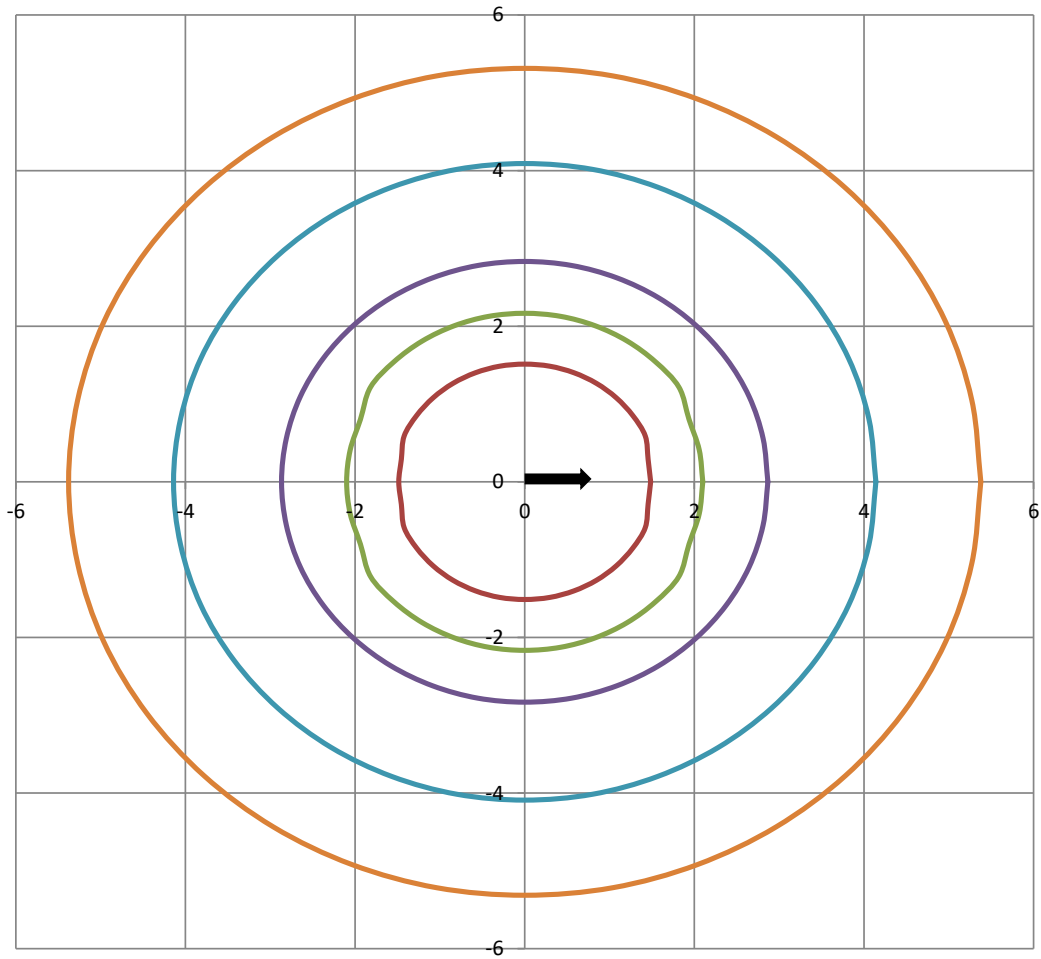
Beam and Field Information	
CIE Type:	Direct/Indirect
Center Beam Intensity:	11.0 Candela
Central Cone Intensity:	N/A Candela
Beam Flux:	9084.3 Lumens
Beam Angle (0-180):	N/A Degrees
Beam Angle (90-270):	N/A Degrees
Field Angle (0-180):	N/A Degrees
Field Angle (90-270):	N/A Degrees





ISOFootcandle Plot

Mounting Height - 8 Feet



Grid Lines in Units of Mounting Height

