Shenzhen Belling Efficiency Testing Laboratory Co.,Ltd.
www.bellingtest.com

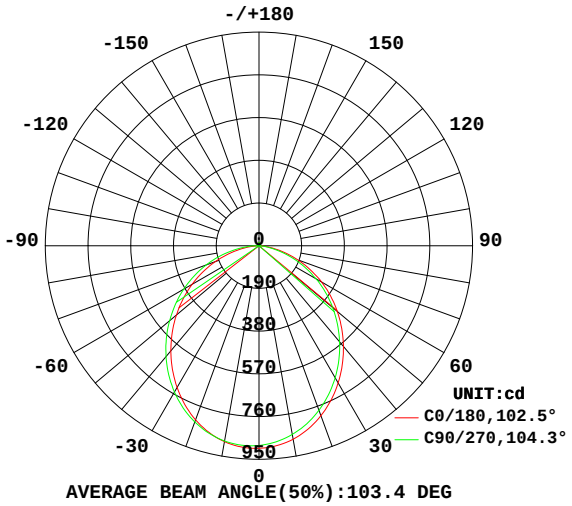
Tel:0755-21038430
Address:1 F,No.1 building,Meibaohe industrial park,Dalang street,Longhua district,Shenzhen,China

LUMINAIRE PHOTOMETRIC TEST REPORT

NAME:	TYPE:	WEIGHT:
DIM.:	SPEC.:	SERIAL No.:
MFR.:	SUR.:0.6x0.08X0.08	PROTECTION ANGLE:

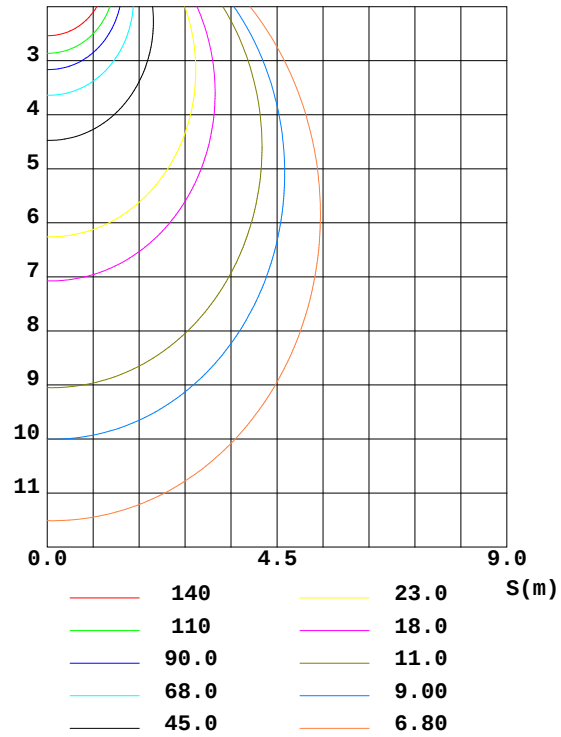
DATA OF LAMP		PHOTOMETRIC DATA Eff: 96.46 lm/W			
MODEL	HCP-602240 + HCP-603240	Imax(cd)	901.3	S/MH(C0/180)	1.21
NOMINAL POWER(W)	24	LOR(%)	100.0	S/MH(C90/270)	1.26
RATED VOLTAGE(V)	228	TOTAL FLUX(lm)	2339.0	η UP,DN(C0-180)	0.9,52.1
NOMINAL FLUX(lm)	2339	CIE CLASS	DIRECT	η UP,DN(C180-360)	0.8,46.2
LAMPS INSIDE	1	η up(%)	1.7	CIBSE SHR NOM	1.25
TEST VOLTAGE(V)	227.7	η down(%)	98.3	CIBSE SHR MAX	1.35

LUMINOUS INTENSITY DISTRIBUTION DIAGRAM



AVERAGE BEAM ANGLE(50%):103.4 DEG

C0 PLANE ISOLUX DIAGRAM (UNIT:lx)



C Range: 0 - 360DEG
C Interval: 22.5DEG
Test Speed: HIGH
Temperature:25.3DEG
Operators: ALLEN
Test Date:

γ Range: 0 - 180DEG
γ Interval: 1.0DEG
Test System:EVERFINE GO-2000B_V1 SYSTEM V2.0.266
Humidity:65.0%
Test Distance:9.680m [K=1.0000]
Remarks:

ZONAL FLUX DIAGRAM

ZONAL FLUX DIAGRAM:

γ	C0	C45	C90	C135	C180	C225	C270	C315	γ	Φ zone	Φ total	%lum,lamp
10	884.8	891.7	881.7	868.3	873.8	849.8	852.0	870.0	0- 10	84.18	84.18	3.6,3.6
20	824.6	849.5	834.3	805.5	804.8	770.4	779.2	809.6	10- 20	238.1	322.3	13.8,13.8
30	728.5	768.3	751.7	710.7	704.4	663.5	677.5	714.5	20- 30	352.4	674.7	28.8,28.8
40	610.2	659.2	643.6	595.1	584.6	540.6	557.7	597.1	30- 40	411.7	1086	46.4,46.4
50	479.2	533.2	519.1	467.6	455.0	410.2	428.0	467.6	40- 50	412.6	1499	64.1,64.1
60	343.8	399.6	386.8	334.7	320.9	272.9	291.9	333.1	50- 60	360.3	1859	79.5,79.5
70	206.9	262.1	250.5	199.9	183.5	141.3	157.1	194.5	60- 70	263.9	2123	90.8,90.8
80	77.44	126.1	115.8	73.19	60.74	30.14	40.69	69.62	70- 80	141.7	2265	96.8,96.8
90	1.614	19.60	14.79	1.980	1.197	1.594	1.476	1.442	80- 90	34.50	2300	98.3,98.3
100	2.580	2.041	2.273	2.660	2.312	2.865	2.780	2.204	90-100	2.710	2302	98.4,98.4
110	4.228	3.548	3.850	4.328	3.786	4.406	4.292	3.583	100-110	3.386	2306	98.6,98.6
120	6.031	5.236	5.586	6.106	5.437	6.094	5.919	5.144	110-120	4.775	2310	98.8,98.8
130	7.854	7.017	7.353	7.916	7.199	7.804	7.568	6.859	120-130	5.865	2316	99,99
140	9.566	8.786	9.008	9.547	8.958	9.436	9.190	8.576	130-140	6.400	2323	99.3,99.3
150	11.11	10.39	10.51	10.97	10.62	10.98	10.75	10.18	140-150	6.210	2329	99.6,99.6
160	12.48	11.89	11.90	12.14	12.24	12.46	12.22	11.71	150-160	5.255	2334	99.8,99.8
170	13.66	13.17	13.02	13.04	13.74	13.74	13.41	13.04	160-170	3.594	2338	99.9,99.9
180	14.31	14.02	13.72	13.57	14.38	14.12	13.74	13.62	170-180	1.294	2339	100,100
DEG	LUMINOUS INTENSITY:cd									UNIT:lm		

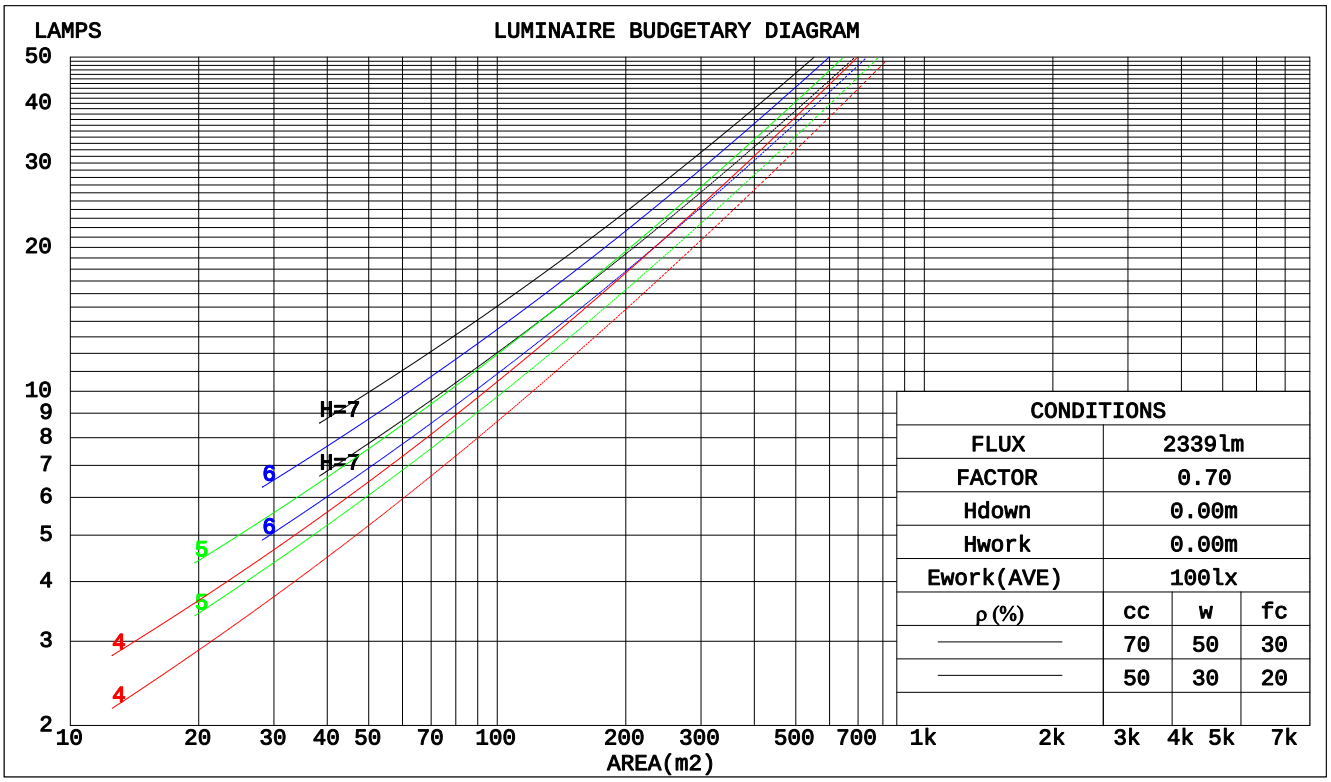
C Range: 0 - 360DEG
C Interval: 22.5DEG
Test Speed: HIGH
Temperature:25.3DEG
Operators: ALLEN
Test Date:

γ Range: 0 - 180DEG
γ Interval: 1.0DEG
Test System:EVERFINE GO-2000B_V1 SYSTEM V2.0.266
Humidity:65.0%
Test Distance:9.680m [K=1.0000]
Remarks:

CU AND LUMINAIRE BUDGETARY ESTIMATE DIAGRAM

NAME:	TYPE:	WEIGHT:
DIM.:	SPEC.:	SERIAL No.:
MFR.:	SUR.:0.6x0.08X0.08	PROTECTION ANGLE:

ρcc	80%			70%			50%			30%			10%			0
ρw	50%	30%	10%	50%	30%	10%	50%	30%	10%	50%	30%	10%	50%	30%	10%	0
ρfc	20%			20%			20%			20%			20%			0
RCR	RCR:Room Cavity Ratio			Coefficients of Utilization(CU)												
0.0	1.19	1.19	1.19	1.16	1.16	1.16	1.10	1.10	1.10	1.05	1.05	1.05	1.00	1.00	1.00	.98
1.0	1.04	1.00	.96	1.02	.98	.95	.97	.94	.91	.93	.90	.88	.89	.87	.85	.83
2.0	.91	.84	.79	.89	.83	.78	.85	.80	.76	.82	.78	.74	.79	.75	.72	.70
3.0	.80	.72	.66	.79	.71	.65	.75	.69	.64	.72	.67	.63	.70	.65	.61	.59
4.0	.71	.63	.56	.70	.62	.56	.67	.60	.55	.65	.59	.54	.62	.57	.53	.51
5.0	.64	.55	.48	.63	.54	.48	.60	.53	.47	.58	.52	.47	.56	.51	.46	.44
6.0	.58	.49	.42	.57	.48	.42	.55	.47	.42	.53	.46	.41	.51	.45	.41	.39
7.0	.52	.44	.38	.51	.43	.37	.50	.42	.37	.48	.42	.37	.47	.41	.36	.34
8.0	.48	.39	.34	.47	.39	.33	.46	.38	.33	.44	.38	.33	.43	.37	.33	.31
9.0	.44	.36	.30	.43	.35	.30	.42	.35	.30	.41	.34	.30	.40	.34	.29	.28
10.0	.41	.33	.28	.40	.32	.27	.39	.32	.27	.38	.31	.27	.37	.31	.27	.25



C Range: 0 - 360DEG
C Interval: 22.5DEG
Test Speed: HIGH
Temperature:25.3DEG
Operators: ALLEN
Test Date:

γ Range: 0 - 180DEG
γ Interval: 1.0DEG
Test System:EVERFINE GO-2000B_V1 SYSTEM V2.0.266
Humidity:65.0%
Test Distance:9.680m [K=1.0000]
Remarks:

WEC AND CCEC

NAME:	TYPE:	WEIGHT:
DIM.:	SPEC.:	SERIAL No.:
MFR.:	SUR.:0.6x0.08X0.08	PROTECTION ANGLE:

ρcc	80%			70%			50%			30%			10%			0
ρw	50%	30%	10%	50%	30%	10%	50%	30%	10%	50%	30%	10%	50%	30%	10%	0
ρfc	20%			20%			20%			20%			20%			0
RCR	RCR:Room Cavity Ratio						Wall Exitance Coeffcients(WEC)									
0.0																
1.0	.297	.169	.054	.289	.165	.052	.275	.158	.050	.262	.151	.049	.250	.145	.047	
2.0	.281	.154	.047	.275	.151	.047	.262	.146	.045	.251	.141	.044	.240	.136	.043	
3.0	.262	.139	.042	.256	.137	.041	.245	.133	.040	.234	.128	.039	.225	.124	.039	
4.0	.242	.126	.037	.237	.124	.037	.227	.120	.036	.218	.117	.035	.210	.114	.035	
5.0	.225	.114	.033	.220	.113	.033	.211	.110	.032	.203	.107	.032	.195	.104	.031	
6.0	.209	.105	.030	.205	.103	.030	.197	.101	.029	.189	.098	.029	.183	.096	.029	
7.0	.195	.096	.027	.191	.095	.027	.184	.093	.027	.177	.091	.026	.171	.089	.026	
8.0	.182	.089	.025	.179	.088	.025	.172	.086	.025	.166	.084	.024	.161	.083	.024	
9.0	.171	.083	.023	.168	.082	.023	.162	.080	.023	.157	.079	.022	.152	.077	.022	
10.0	.161	.077	.021	.158	.076	.021	.153	.075	.021	.148	.074	.021	.143	.072	.021	

ρcc	80%			70%			50%			30%			10%			0
ρw	50%	30%	10%	50%	30%	10%	50%	30%	10%	50%	30%	10%	50%	30%	10%	0
ρfc	20%			20%			20%			20%			20%			0
RCR	RCR:Room Cavity Ratio						Ceiling Cavity Exitance Coefficients(CCEC)									
0.0	.203	.203	.203	.174	.174	.174	.119	.119	.119	.068	.068	.068	.022	.022	.022	
1.0	.192	.169	.148	.165	.145	.128	.113	.100	.088	.065	.058	.051	.021	.019	.017	
2.0	.184	.145	.112	.158	.125	.097	.108	.086	.068	.062	.050	.040	.020	.016	.013	
3.0	.176	.127	.089	.151	.110	.077	.104	.076	.054	.060	.045	.032	.019	.014	.010	
4.0	.168	.114	.073	.144	.099	.063	.099	.069	.044	.057	.040	.026	.018	.013	.009	
5.0	.161	.104	.061	.138	.090	.053	.095	.063	.038	.055	.037	.022	.018	.012	.007	
6.0	.154	.095	.053	.132	.082	.046	.091	.058	.033	.053	.034	.019	.017	.011	.006	
7.0	.147	.088	.047	.127	.077	.041	.087	.054	.029	.051	.032	.017	.016	.010	.006	
8.0	.141	.083	.042	.121	.072	.037	.084	.050	.026	.049	.030	.016	.016	.010	.005	
9.0	.135	.078	.039	.116	.067	.034	.080	.047	.024	.047	.028	.014	.015	.009	.005	
10.0	.129	.073	.036	.111	.064	.031	.077	.045	.022	.045	.026	.013	.015	.009	.004	

C Range: 0 - 360DEG
C Interval: 22.5DEG
Test Speed: HIGH
Temperature:25.3DEG
Operators: ALLEN
Test Date:

γ Range: 0 - 180DEG
γ Interval: 1.0DEG
Test System:EVERFINE GO-2000B_V1 SYSTEM V2.0.266
Humidity:65.0%
Test Distance:9.680m [K=1.0000]
Remarks:

Uncorrected UGR Table

NAME:	TYPE:	WEIGHT:
DIM.:	SPEC.:	SERIAL No.:
MFR.:	SUR.:0.6x0.08X0.08	PROTECTION ANGLE:

ceiling/cavity	0.7	0.7	0.5	0.5	0.3	0.7	0.7	0.5	0.5	0.3
walls	0.5	0.3	0.5	0.3	0.3	0.5	0.3	0.5	0.3	0.3
working plane	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2
Room dimensions	Viewed crosswise					Viewed endwise				
x = 2H y = 2H	27.8	29.3	28.1	29.5	29.8	28.5	30.0	28.8	30.2	30.4
3H	29.2	30.5	29.5	30.8	31.1	30.1	31.5	30.4	31.7	32.0
4H	29.7	31.0	30.0	31.3	31.6	30.8	32.1	31.1	32.3	32.6
6H	30.0	31.2	30.4	31.5	31.9	31.3	32.5	31.7	32.8	33.1
8H	30.1	31.3	30.5	31.6	31.9	31.5	32.7	31.9	33.0	33.3
12H	30.1	31.3	30.5	31.6	31.9	31.6	32.7	32.0	33.1	33.4
4H 2H	28.6	29.9	28.9	30.2	30.5	29.1	30.4	29.5	30.7	31.0
3H	30.2	31.3	30.5	31.6	31.9	31.0	32.1	31.3	32.4	32.7
4H	30.8	31.8	31.2	32.1	32.5	31.8	32.8	32.2	33.2	33.5
6H	31.2	32.1	31.6	32.5	32.9	32.5	33.4	32.9	33.8	34.2
8H	31.3	32.2	31.8	32.6	33.0	32.7	33.6	33.2	34.0	34.4
12H	31.4	32.1	31.8	32.6	33.0	32.9	33.7	33.4	34.1	34.6
8H 4H	31.2	32.0	31.6	32.4	32.9	32.1	32.9	32.5	33.3	33.7
6H	31.8	32.5	32.3	32.9	33.4	33.0	33.7	33.4	34.1	34.6
8H	32.0	32.6	32.5	33.1	33.5	33.4	34.0	33.8	34.4	34.9
12H	32.1	32.6	32.6	33.1	33.6	33.7	34.2	34.2	34.7	35.2
12H 4H	31.3	32.0	31.7	32.4	32.9	32.1	32.9	32.5	33.3	33.7
6H	31.9	32.5	32.4	33.0	33.5	33.0	33.7	33.5	34.1	34.6
8H	32.2	32.7	32.7	33.2	33.7	33.5	34.0	34.0	34.5	35.0
Variations with the observer position at spacings:										
S = 1.0H	+ 0.2 / - 0.2					+ 0.1 / - 0.2				
1.5H	+ 0.2 / - 0.3					+ 0.2 / - 0.3				
2.0H	+ 0.1 / - 0.3					+ 0.2 / - 0.4				

CIE Pub.117 Corrected 2339 lm Total Lamp Luminous Flux.(8log(F/F0) = 3.0)

C Range: 0 - 360DEG
C Interval: 22.5DEG
Test Speed: HIGH
Temperature:25.3DEG
Operators: ALLEN
Test Date:

γ Range: 0 - 180DEG
γ Interval: 1.0DEG
Test System:EVERFINE GO-2000B_V1 SYSTEM V2.0.266
Humidity:65.0%
Test Distance:9.680m [K=1.0000]
Remarks:

UTILIZATION FACTORS TABLE

NAME:	TYPE:	WEIGHT:
DIM.:	SPEC.:	SERIAL No.:
MFR.:	SUR.:0.6x0.08X0.08	PROTECTION ANGLE:

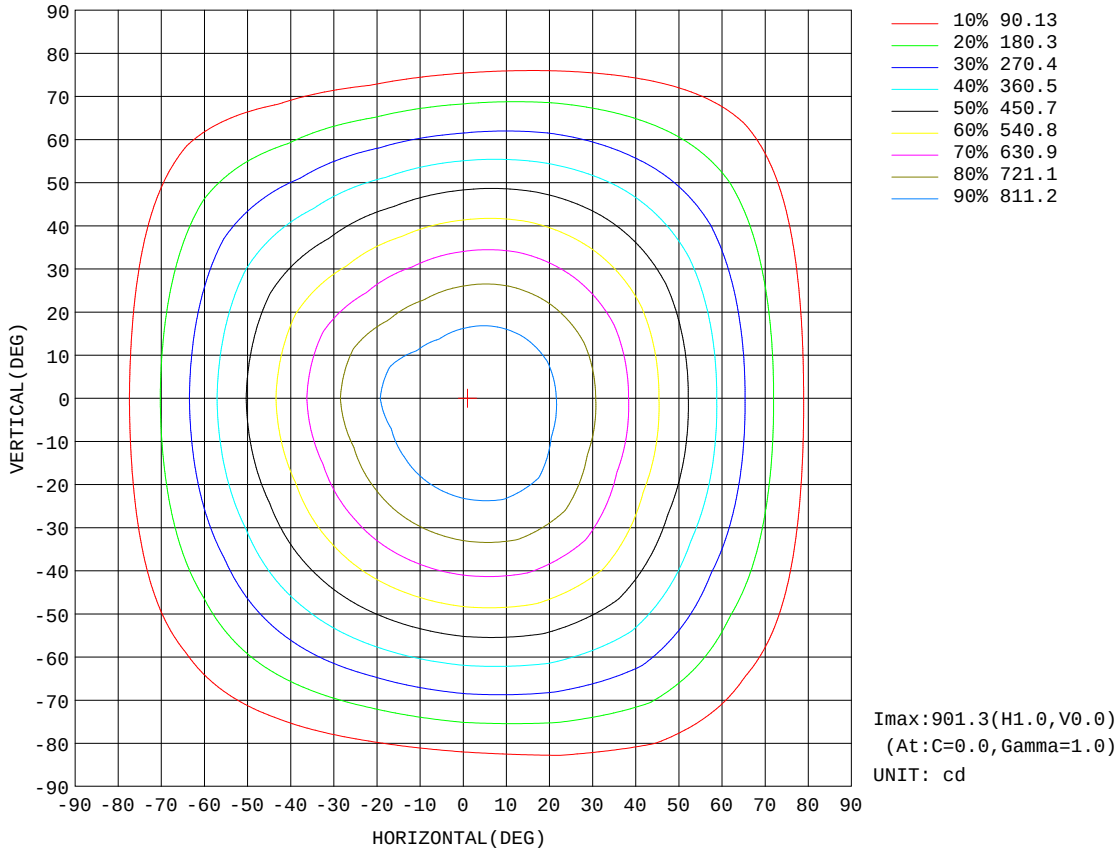
REFLECTANCE										
Ceiling	0.8	0.8	0.8	0.7	0.7	0.7	0.5	0.5	0.5	0
Walls	0.7	0.5	0.3	0.7	0.5	0.3	0.7	0.5	0.3	0
Working plane	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0
ROOM INDEX	UTILIZATION FACTORS(PERCENT) k(RI) x RCR = 5									
k = 0.60	59	47	40	58	47	40	56	46	40	34
0.80	69	57	50	67	57	50	66	56	49	43
1.00	77	66	59	76	65	59	73	67	58	51
1.25	84	74	67	82	73	66	79	71	65	58
1.50	89	79	72	87	78	72	84	76	71	63
2.00	95	87	81	94	86	80	90	83	78	70
2.50	99	92	86	97	90	85	93	87	83	74
3.00	102	96	91	100	94	89	96	91	87	78
4.00	106	101	96	104	99	95	99	95	92	83
5.00	109	104	100	106	102	98	101	98	95	86
ROOM INDEX	UF(total)									Direct
According to DIN EN 13032-2 2004				Suspended					SHRNOM = 1.25	

C Range: 0 - 360DEG
C Interval: 22.5DEG
Test Speed: HIGH
Temperature:25.3DEG
Operators: ALLEN
Test Date:

γ Range: 0 - 180DEG
γ Interval: 1.0DEG
Test System:EVERFINE GO-2000B_V1 SYSTEM V2.0.266
Humidity:65.0%
Test Distance:9.680m [K=1.0000]
Remarks:

ISOCANDELA DIAGRAM

NAME:	TYPE:	WEIGHT:
DIM.:	SPEC.:	SERIAL No.:
MFR.:	SUR.:0.6x0.08X0.08	PROTECTION ANGLE:



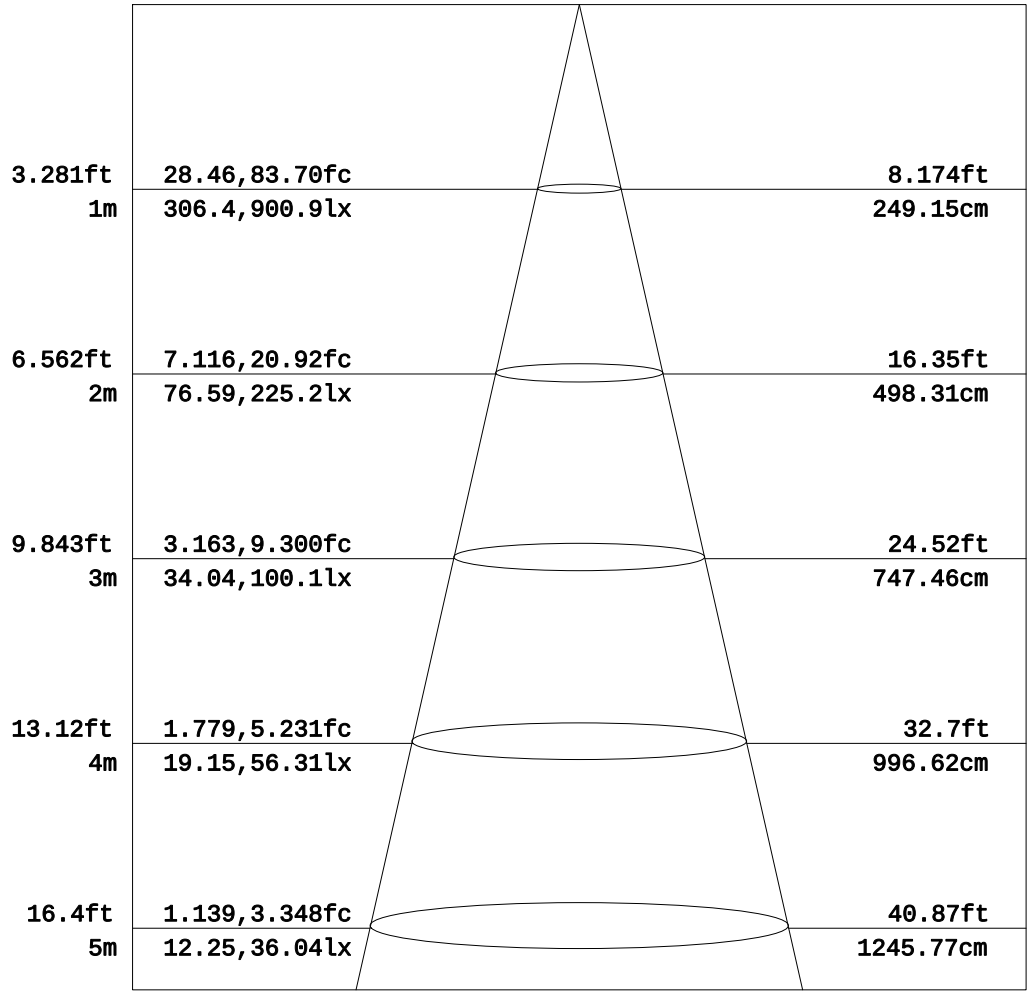
C Range: 0 - 360DEG
C Interval: 22.5DEG
Test Speed: HIGH
Temperature:25.3DEG
Operators: ALLEN
Test Date:

γ Range: 0 - 180DEG
γ Interval: 1.0DEG
Test System:EVERFINE GO-2000B_V1 SYSTEM V2.0.266
Humidity:65.0%
Test Distance:9.680m [K=1.0000]
Remarks:

AAI Figure

NAME:	TYPE:	WEIGHT:
DIM.:	SPEC.:	SERIAL No.:
MFR.:	SUR.:0.6x0.08X0.08	PROTECTION ANGLE:

Flux out:1577 lm



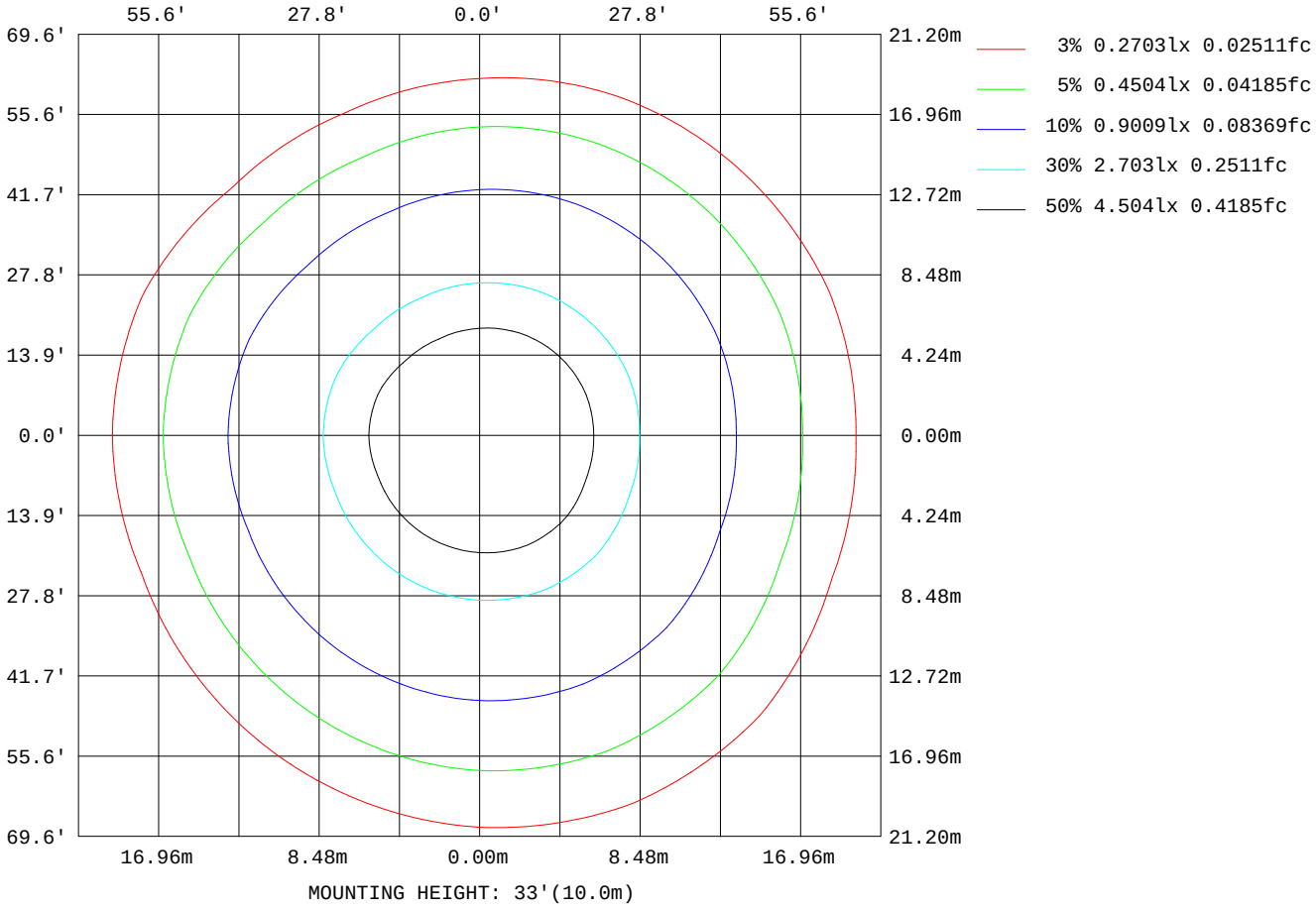
Note:The Curves indicate the illuminated area and the average illumination when the luminaire is at different distance.

C Range: 0 - 360DEG
C Interval: 22.5DEG
Test Speed: HIGH
Temperature:25.3DEG
Operators: ALLEN
Test Date:

γ Range: 0 - 180DEG
γ Interval: 1.0DEG
Test System:EVERFINE GO-2000B_V1 SYSTEM V2.0.266
Humidity:65.0%
Test Distance:9.680m [K=1.0000]
Remarks:

ISOLUX DIAGRAM

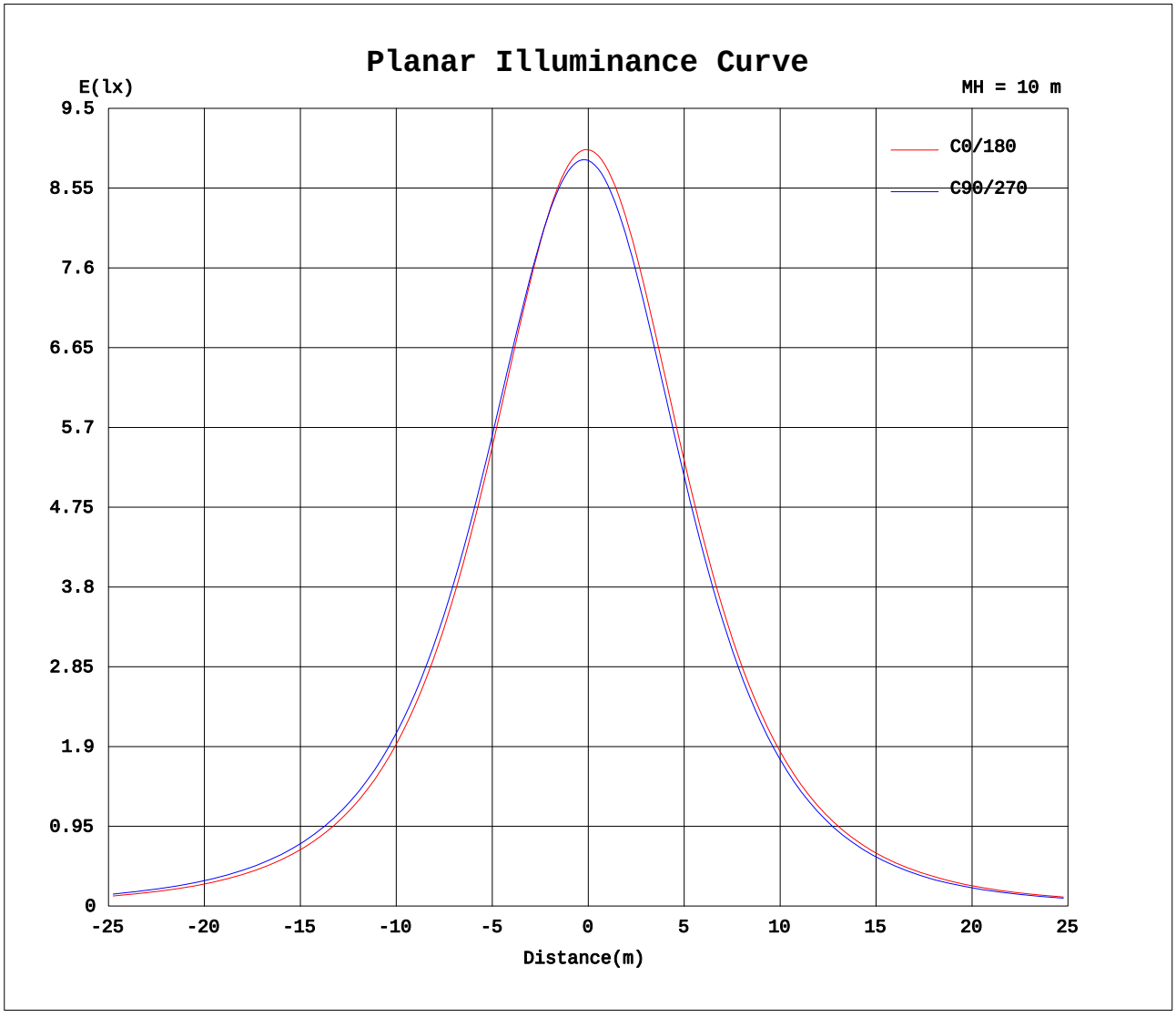
NAME:	TYPE:	WEIGHT:
DIM.:	SPEC.:	SERIAL No.:
MFR.:	SUR.:0.6x0.08X0.08	PROTECTION ANGLE:



C Range: 0 - 360DEG
C Interval: 22.5DEG
Test Speed: HIGH
Temperature:25.3DEG
Operators: ALLEN
Test Date:

γ Range: 0 - 180DEG
γ Interval: 1.0DEG
Test System:EVERFINE GO-2000B_V1 SYSTEM V2.0.266
Humidity:65.0%
Test Distance:9.680m [K=1.0000]
Remarks:

Planar Illuminance Curve



C Range: 0 - 360DEG
C Interval: 22.5DEG
Test Speed: HIGH
Temperature:25.3DEG
Operators: ALLEN
Test Date:

γ Range: 0 - 180DEG
γ Interval: 1.0DEG
Test System:EVERFINE GO-2000B_V1 SYSTEM V2.0.266
Humidity:65.0%
Test Distance:9.680m [K=1.0000]
Remarks:

LUMINOUS DISTRIBUTION INTENSITY DATA

NAME:	TYPE:	WEIGHT:
DIM.:	SPEC.:	SERIAL No.:
MFR.:	SUR.:0.6x0.08X0.08	PROTECTION ANGLE:

Table--1 UNIT: cd

C(DEG) / γ (DEG)	0	23	45	68	90	113	135	158	180	203	225	248	270	293	315	338			
0	901	899	892	888	888	889	891	892	901	899	892	888	888	889	891	892			
5	898	898	897	893	890	887	885	884	893	889	876	871	875	881	886	891			
10	885	886	892	888	882	875	868	864	874	869	850	845	852	861	870	878			
15	860	863	876	873	863	852	842	834	844	838	814	809	820	833	845	855			
20	825	829	850	847	834	820	806	795	805	798	770	766	779	795	810	821			
25	780	786	813	812	797	779	761	748	758	750	720	716	731	750	766	778			
30	728	736	768	770	752	731	711	696	704	697	663	660	677	698	714	728			
35	672	680	717	720	700	678	655	638	646	638	603	600	619	641	658	672			
40	610	619	659	664	644	619	595	577	585	576	541	538	558	581	597	611			
45	546	555	598	603	583	557	532	513	521	512	476	473	494	517	533	548			
50	479	490	533	539	519	493	468	448	455	446	410	407	428	451	468	482			
55	412	422	467	473	454	426	402	382	388	380	343	339	361	384	401	415			
60	344	354	400	406	387	360	335	315	321	312	273	271	292	316	333	347			
65	275	284	331	338	319	290	267	245	250	245	207	204	224	248	262	279			
70	207	215	262	265	250	221	200	179	183	178	141	137	157	180	195	211			
75	140	149	194	198	183	155	133	115	119	112	80.6	76.3	94.6	113	129	144			
80	77.4	86.2	126	132	116	93.0	73.2	58.0	60.7	55.0	30.1	27.2	40.7	56.0	69.6	81.8			
85	27.4	33.8	66.4	71.3	57.5	39.5	24.9	14.8	16.2	12.8	2.26	1.99	6.37	13.6	22.2	30.7			
90	1.61	2.96	19.6	23.1	14.8	5.59	1.98	1.67	1.20	1.36	1.59	1.59	1.48	1.37	1.44	1.98			
95	1.87	1.86	1.75	1.78	1.72	1.94	2.00	2.15	1.69	1.77	2.17	2.22	2.08	1.79	1.61	1.45			
100	2.58	2.52	2.04	2.10	2.27	2.52	2.66	2.88	2.31	2.40	2.87	2.92	2.78	2.41	2.20	1.98			
105	3.37	3.29	2.75	2.77	3.02	3.30	3.46	3.68	3.02	3.11	3.61	3.67	3.52	3.10	2.86	2.61			
110	4.23	4.13	3.55	3.56	3.85	4.14	4.33	4.53	3.79	3.87	4.41	4.44	4.29	3.84	3.58	3.31			
115	5.11	5.00	4.37	4.38	4.71	5.01	5.20	5.41	4.59	4.68	5.24	5.27	5.09	4.61	4.34	4.06			
120	6.03	5.89	5.24	5.24	5.59	5.90	6.11	6.31	5.44	5.53	6.09	6.11	5.92	5.42	5.14	4.85			
125	6.95	6.82	6.11	6.13	6.47	6.82	7.03	7.20	6.32	6.42	6.95	6.97	6.76	6.25	6.00	5.69			
130	7.85	7.73	7.02	7.03	7.35	7.72	7.92	8.07	7.20	7.31	7.80	7.81	7.57	7.09	6.86	6.56			
135	8.74	8.63	7.93	7.92	8.20	8.58	8.77	8.91	8.09	8.19	8.64	8.63	8.38	7.92	7.73	7.44			
140	9.57	9.49	8.79	8.77	9.01	9.40	9.55	9.68	8.96	9.06	9.44	9.44	9.19	8.76	8.58	8.32			
145	10.4	10.3	9.62	9.57	9.78	10.2	10.3	10.4	9.80	9.88	10.2	10.2	9.99	9.57	9.41	9.20			
150	11.1	11.1	10.4	10.3	10.5	10.9	11.0	11.1	10.6	10.6	11.0	10.9	10.7	10.3	10.2	10.0			
155	11.8	11.8	11.1	11.1	11.2	11.5	11.6	11.7	11.4	11.4	11.7	11.6	11.5	11.1	10.9	10.8			
160	12.5	12.5	11.9	11.8	11.9	12.1	12.1	12.3	12.2	12.2	12.5	12.3	12.2	11.8	11.7	11.7			
165	13.1	13.1	12.6	12.4	12.5	12.7	12.6	12.8	13.1	12.9	13.2	13.0	12.9	12.5	12.4	12.5			
170	13.7	13.6	13.2	13.0	13.0	13.2	13.0	13.2	13.7	13.5	13.7	13.4	13.4	13.1	13.0	13.1			
175	14.0	14.0	13.6	13.4	13.4	13.5	13.3	13.5	14.2	14.0	14.1	13.7	13.7	13.5	13.5	13.6			
180	14.3	14.2	14.0	13.8	13.7	13.7	13.6	13.7	14.4	14.2	14.1	13.7	13.7	13.7	13.6	13.7			

C Range: 0 - 360DEG
C Interval: 22.5DEG
Test Speed: HIGH
Temperature:25.3DEG
Operators: ALLEN
Test Date:

γ Range: 0 - 180DEG
γ Interval: 1.0DEG
Test System:EVERFINE GO-2000B_V1 SYSTEM V2.0.266
Humidity:65.0%
Test Distance:9.680m [K=1.0000]
Remarks: