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

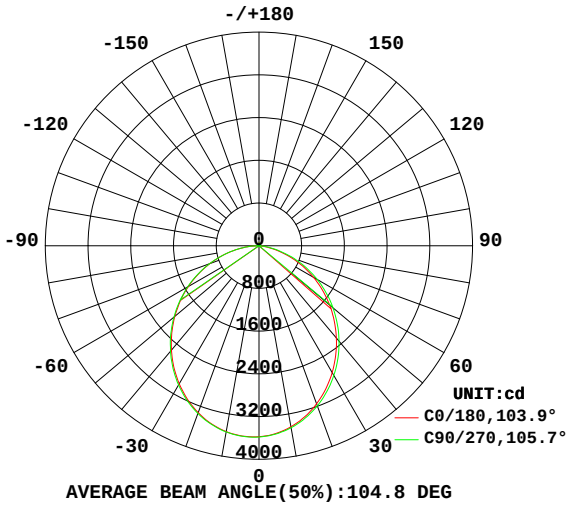
Tel:0755-21038430
Address:1 F,No.1 building,Meibaohe industrial park,Dalang street,Longhua district,Shenzhen,China

LUMINAIRE PHOTOMETRIC TEST REPORT

NAME:	TYPE:	WEIGHT:
DIM.:	SPEC.:	SERIAL No.:
MFR.:	SUR.:2.4X0.08X0.08	PROTECTION ANGLE:

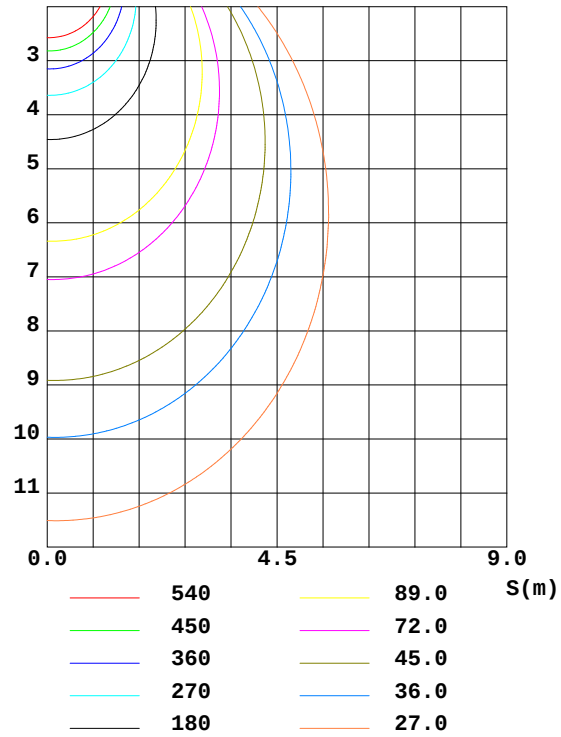
DATA OF LAMP		PHOTOMETRIC DATA Eff: 99.75 lm/W			
MODEL	HCP-602960 + HCP-603960	Imax(cd)	3588	S/MH(C0/180)	1.24
NOMINAL POWER(W)	96	LOR(%)	100.0	S/MH(C90/270)	1.25
RATED VOLTAGE(V)	230	TOTAL FLUX(lm)	9506.7	η UP,DN(C0-180)	0.8,53.0
NOMINAL FLUX(lm)	9510	CIE CLASS	DIRECT	η UP,DN(C180-360)	0.8,45.3
LAMPS INSIDE	1	η up(%)	1.6	CIBSE SHR NOM	1.25
TEST VOLTAGE(V)	229.8	η down(%)	98.3	CIBSE SHR MAX	1.35

LUMINOUS INTENSITY DISTRIBUTION DIAGRAM



AVERAGE BEAM ANGLE(50%):104.8 DEG

C0 PLANE ISOLUX DIAGRAM (UNIT:lx)



C Range: 0 - 360DEG
C Interval: 45.0DEG
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	3534	3547	3541	3529	3444	3448	3461	3474	0- 10	337.8	337.8	3.55,3.55
20	3328	3350	3343	3309	3152	3162	3192	3211	10- 20	956.9	1295	13.6,13.6
30	2987	3019	3011	2954	2741	2757	2804	2827	20- 30	1421	2715	28.6,28.6
40	2553	2585	2579	2500	2256	2273	2332	2361	30- 40	1668	4383	46.1,46.1
50	2058	2088	2080	1988	1727	1741	1809	1844	40- 50	1680	6063	63.8,63.8
60	1528	1555	1543	1445	1176	1185	1256	1296	50- 60	1473	7536	79.3,79.2
70	979.5	1004	985.3	888.7	626.9	633.0	698.7	741.9	60- 70	1084	8620	90.7,90.6
80	444.6	459.0	443.7	357.2	152.8	158.1	201.4	239.0	70- 80	585.2	9205	96.8,96.8
90	49.57	58.10	46.79	15.99	6.010	6.131	5.907	5.732	80- 90	146.2	9352	98.4,98.3
100	8.940	9.222	10.22	10.67	10.70	10.97	10.83	9.605	90-100	11.06	9363	98.5,98.5
110	14.85	15.06	16.51	16.97	16.40	16.75	16.60	15.08	100-110	13.76	9376	98.6,98.6
120	21.47	21.44	23.10	23.77	22.59	23.10	22.88	21.22	110-120	19.01	9395	98.8,98.8
130	28.26	28.17	29.70	30.53	28.93	29.55	29.46	27.77	120-130	23.04	9419	99.1,99
140	34.79	34.60	35.89	36.70	35.30	35.86	35.85	34.43	130-140	24.92	9443	99.3,99.3
150	40.94	40.67	41.46	42.44	41.52	41.59	41.68	40.64	140-150	24.08	9468	99.6,99.6
160	46.39	45.93	46.07	47.43	47.47	47.11	46.78	46.52	150-160	20.32	9488	99.8,99.8
170	51.38	50.20	49.79	51.23	53.27	51.90	51.07	51.58	160-170	13.86	9502	99.9,99.9
180	54.92	53.19	52.23	53.61	55.05	53.25	52.25	53.73	170-180	4.990	9507	100,100
DEG	LUMINOUS INTENSITY:cd									UNIT:lm		

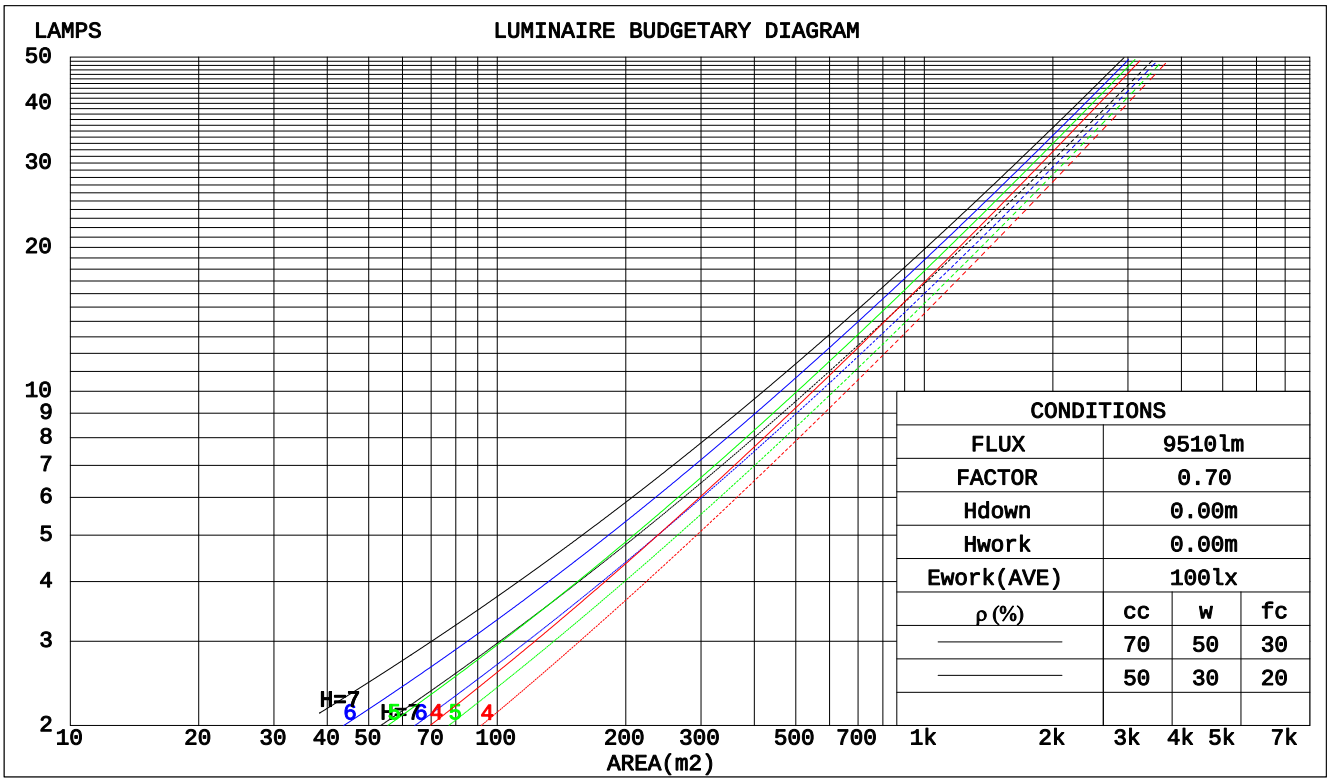
C Range: 0 - 360DEG
C Interval: 45.0DEG
Test Speed: HIGH
Temperature:25.3DEG
Operators: ALLEN
Test Date:

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.:2.4X0.08X0.08	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	1.01	1.01	1.01	.98
1.0	1.04	.00	.96	1.02	.98	.94	.97	.94	.91	.93	.90	.88	.89	.87	.85	.83
2.0	.91	.84	.79	.89	.83	.78	.85	.80	.76	.82	.77	.74	.78	.75	.72	.70
3.0	.80	.72	.66	.78	.71	.65	.75	.69	.64	.72	.67	.62	.69	.65	.61	.59
4.0	.71	.62	.56	.70	.62	.55	.67	.60	.54	.64	.58	.54	.62	.57	.53	.50
5.0	.64	.55	.48	.62	.54	.48	.60	.53	.47	.58	.52	.47	.56	.50	.46	.44
6.0	.57	.49	.42	.56	.48	.42	.54	.47	.41	.53	.46	.41	.51	.45	.40	.38
7.0	.52	.43	.37	.51	.43	.37	.50	.42	.37	.48	.41	.36	.46	.41	.36	.34
8.0	.48	.39	.33	.47	.39	.33	.45	.38	.33	.44	.37	.33	.43	.37	.32	.30
9.0	.44	.36	.30	.43	.35	.30	.42	.35	.30	.41	.34	.29	.39	.34	.29	.27
10.0	.40	.33	.27	.40	.32	.27	.39	.32	.27	.38	.31	.27	.37	.31	.27	.25



C Range: 0 - 360DEG
C Interval: 45.0DEG
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.:2.4X0.08X0.08	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	.299	.170	.054	.291	.166	.053	.277	.159	.051	.264	.152	.049	.252	.146	.047	
2.0	.283	.155	.048	.276	.152	.047	.263	.147	.046	.252	.141	.044	.241	.137	.043	
3.0	.263	.140	.042	.257	.137	.041	.246	.133	.040	.235	.129	.040	.226	.125	.039	
4.0	.243	.126	.037	.238	.124	.037	.228	.121	.036	.219	.118	.035	.210	.114	.035	
5.0	.225	.115	.033	.221	.113	.033	.212	.110	.032	.204	.107	.032	.196	.105	.031	
6.0	.209	.105	.030	.205	.104	.030	.197	.101	.029	.190	.099	.029	.183	.096	.029	
7.0	.195	.096	.027	.191	.095	.027	.184	.093	.027	.178	.091	.027	.172	.089	.026	
8.0	.182	.089	.025	.179	.088	.025	.173	.086	.025	.167	.085	.024	.161	.083	.024	
9.0	.171	.083	.023	.168	.082	.023	.163	.080	.023	.157	.079	.023	.152	.077	.022	
10.0	.161	.077	.021	.158	.077	.021	.153	.075	.021	.148	.074	.021	.144	.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	.173	.173	.173	.118	.118	.118	.068	.068	.068	.022	.022	.022	
1.0	.192	.169	.148	.164	.145	.127	.112	.100	.088	.065	.058	.051	.021	.019	.017	
2.0	.184	.145	.112	.157	.124	.097	.108	.086	.067	.062	.050	.039	.020	.016	.013	
3.0	.176	.127	.088	.151	.109	.076	.103	.076	.054	.060	.044	.032	.019	.014	.010	
4.0	.168	.114	.072	.144	.098	.062	.099	.068	.044	.057	.040	.026	.018	.013	.009	
5.0	.161	.103	.061	.138	.089	.053	.095	.062	.037	.055	.037	.022	.018	.012	.007	
6.0	.154	.095	.053	.132	.082	.046	.091	.057	.032	.053	.034	.019	.017	.011	.006	
7.0	.147	.088	.047	.126	.076	.041	.087	.053	.029	.051	.031	.017	.016	.010	.006	
8.0	.140	.082	.042	.121	.071	.037	.084	.050	.026	.049	.029	.015	.016	.010	.005	
9.0	.135	.077	.038	.116	.067	.034	.080	.047	.024	.047	.028	.014	.015	.009	.005	
10.0	.129	.073	.036	.111	.063	.031	.077	.045	.022	.045	.026	.013	.015	.009	.004	

C Range: 0 - 360DEG
C Interval: 45.0DEG
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.:2.4X0.08X0.08	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	25.0	26.5	25.3	26.7	27.0	25.1	26.5	25.4	26.8	27.0
3H	26.6	28.0	26.9	28.2	28.5	26.6	28.0	27.0	28.3	28.5
4H	27.3	28.5	27.6	28.8	29.1	27.3	28.6	27.6	28.9	29.1
6H	27.8	29.0	28.1	29.3	29.6	27.8	29.0	28.1	29.3	29.6
8H	27.9	29.1	28.3	29.4	29.7	28.0	29.1	28.3	29.4	29.8
12H	28.1	29.2	28.4	29.5	29.8	28.1	29.2	28.4	29.5	29.9
4H 2H	25.7	27.0	26.0	27.2	27.5	25.7	27.0	26.0	27.3	27.6
3H	27.4	28.6	27.8	28.9	29.2	27.5	28.6	27.8	28.9	29.3
4H	28.2	29.3	28.6	29.6	30.0	28.3	29.3	28.7	29.6	30.0
6H	28.9	29.8	29.3	30.1	30.5	28.9	29.8	29.3	30.2	30.6
8H	29.1	29.9	29.5	30.3	30.8	29.1	30.0	29.5	30.3	30.8
12H	29.3	30.0	29.7	30.5	30.9	29.3	30.1	29.7	30.5	30.9
8H 4H	28.5	29.4	29.0	29.8	30.2	28.6	29.4	29.0	29.8	30.2
6H	29.3	30.0	29.8	30.5	30.9	29.3	30.0	29.8	30.5	30.9
8H	29.7	30.3	30.1	30.7	31.2	29.7	30.3	30.2	30.7	31.2
12H	29.9	30.5	30.4	30.9	31.5	29.9	30.5	30.4	30.9	31.5
12H 4H	28.6	29.3	29.0	29.7	30.2	28.6	29.4	29.0	29.8	30.2
6H	29.4	30.0	29.9	30.5	31.0	29.4	30.0	29.9	30.5	31.0
8H	29.8	30.3	30.3	30.8	31.3	29.8	30.3	30.3	30.8	31.3
Variations with the observer position at spacings:										
S = 1.0H	+ 0.1 / - 0.2					+ 0.1 / - 0.2				
1.5H	+ 0.2 / - 0.3					+ 0.2 / - 0.3				
2.0H	+ 0.1 / - 0.3					+ 0.1 / - 0.3				

CIE Pub.117 Corrected 9510 lm Total Lamp Luminous Flux.(8log(F/F0) = 7.8)

C Range: 0 - 360DEG
C Interval: 45.0DEG
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.:2.4X0.08X0.08	PROTECTION ANGLE:

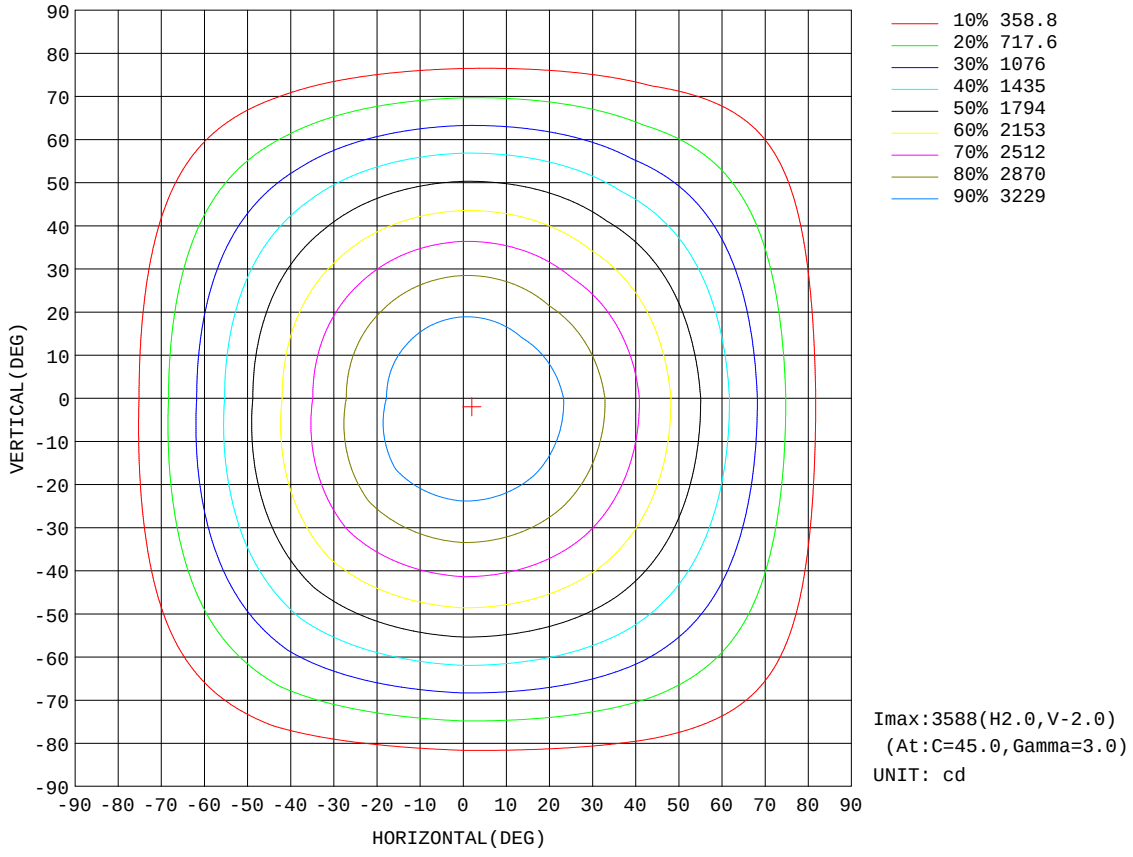
REFLECTANCE										
Ceiling	0.8	0.8	0.8	0.7	0.7	0.7	0.5	0.5	0.5	0
Walls	0.7	0.5	0.3	0.7	0.5	0.3	0.7	0.5	0.3	0
Working plane	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0
ROOM INDEX	UTILIZATION FACTORS(PERCENT) k(RI) x RCR = 5									
k = 0.60	58	47	40	58	47	40	56	46	40	33
0.80	68	57	50	67	56	50	65	56	49	42
1.00	77	66	59	75	65	58	73	66	58	51
1.25	84	73	66	82	73	66	79	71	65	58
1.50	89	79	72	87	78	72	84	76	70	63
2.00	95	87	81	93	86	80	90	83	78	70
2.50	99	92	86	97	90	85	93	87	83	74
3.00	102	96	90	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	85
ROOM INDEX	UF(total)									Direct
According to DIN EN 13032-2 2004				Suspended					SHRNOM = 1.25	

C Range: 0 - 360DEG
C Interval: 45.0DEG
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.:2.4X0.08X0.08	PROTECTION ANGLE:



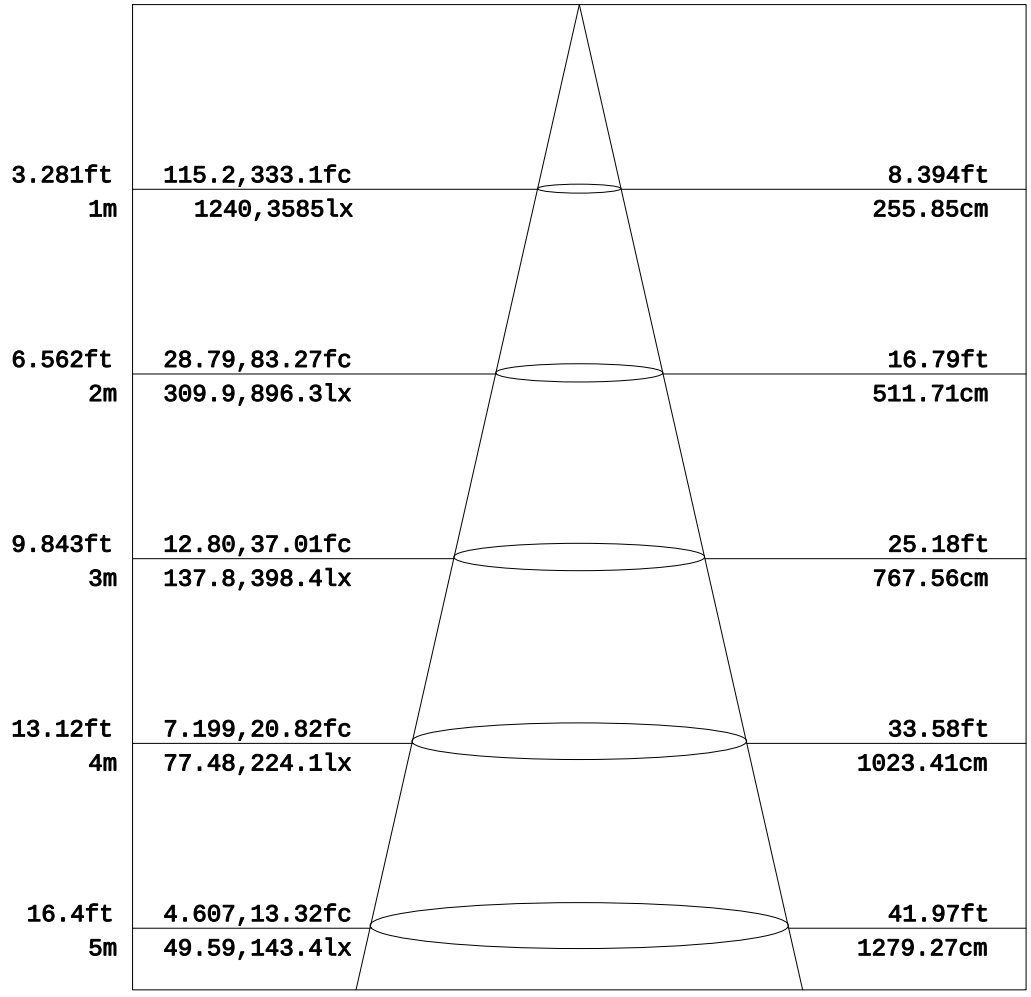
C Range: 0 - 360DEG
C Interval: 45.0DEG
Test Speed: HIGH
Temperature:25.3DEG
Operators: ALLEN
Test Date:

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.:2.4X0.08X0.08	PROTECTION ANGLE:

Flux out:6381 lm



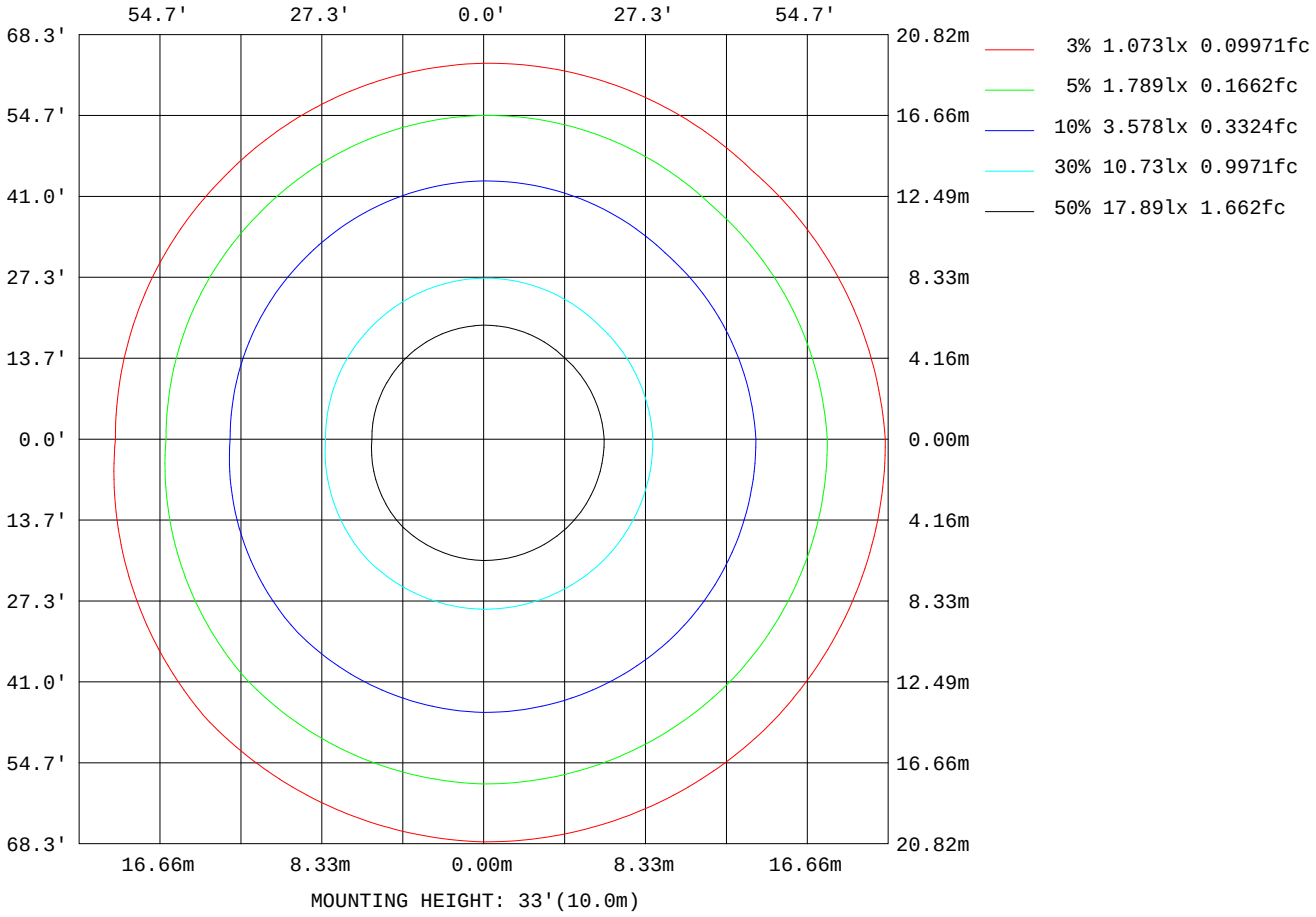
Note:The Curves indicate the illuminated area and the average illumination when the luminaire is at different distance.

C Range: 0 - 360DEG
C Interval: 45.0DEG
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

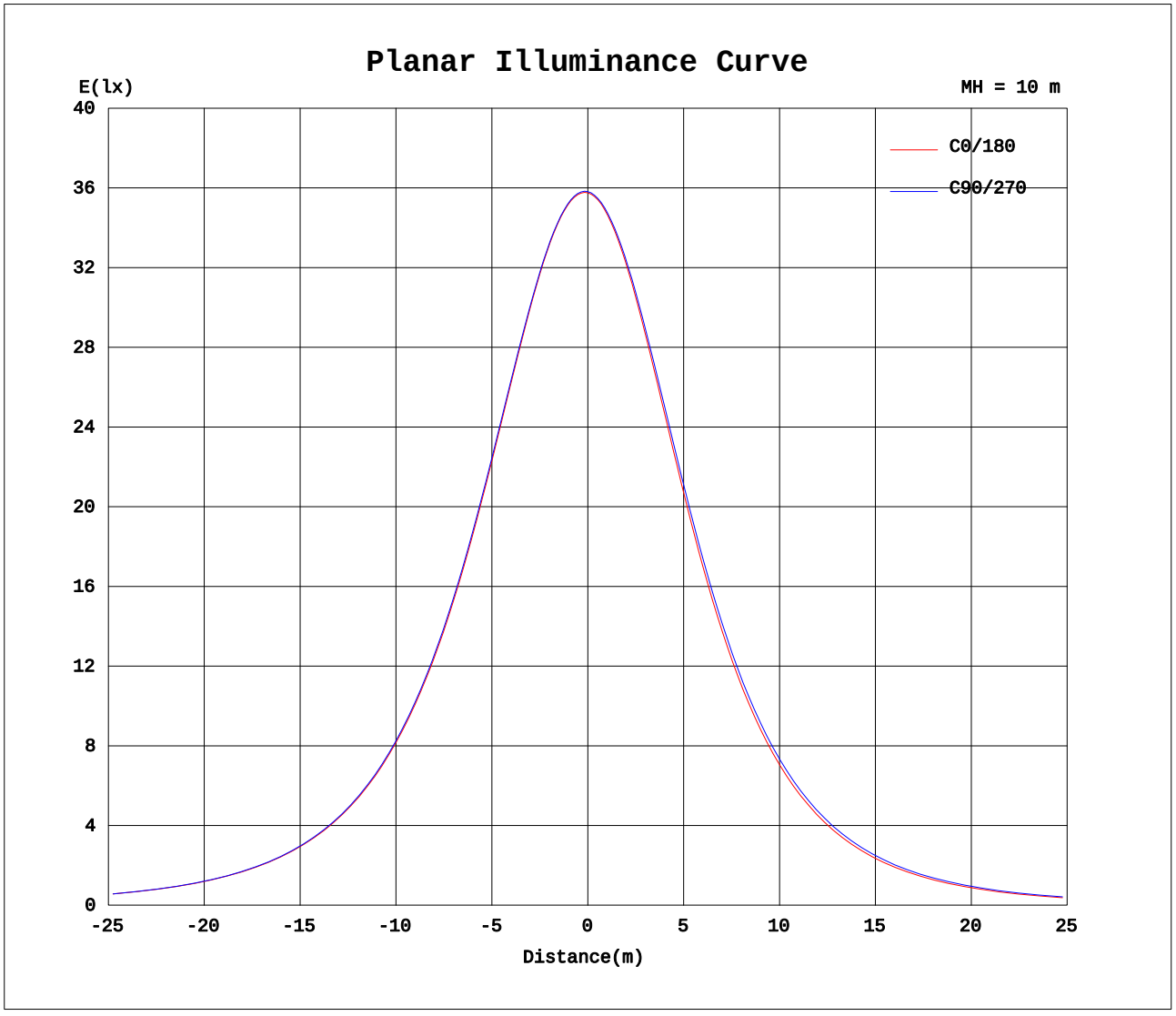
NAME:	TYPE:	WEIGHT:
DIM.:	SPEC.:	SERIAL No.:
MFR.:	SUR.:2.4X0.08X0.08	PROTECTION ANGLE:



C Range: 0 - 360DEG
C Interval: 45.0DEG
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: 45.0DEG
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.:2.4X0.08X0.08	PROTECTION ANGLE:

Table--1 UNIT: cd

γ (DEG) \ C(DEG)	0	45	90	135	180	225	270	315
0	3576	3581	3582	3585	3576	3581	3582	3585
5	3577	3584	3582	3578	3532	3536	3542	3550
10	3534	3547	3541	3529	3444	3448	3461	3474
15	3450	3467	3461	3438	3316	3322	3343	3359
20	3328	3350	3343	3309	3152	3162	3192	3211
25	3172	3199	3192	3146	2959	2972	3011	3031
30	2987	3019	3011	2954	2741	2757	2804	2827
35	2780	2812	2806	2737	2506	2522	2577	2602
40	2553	2585	2579	2500	2256	2273	2332	2361
45	2311	2343	2335	2250	1995	2011	2076	2107
50	2058	2088	2080	1988	1727	1741	1809	1844
55	1796	1825	1815	1719	1453	1465	1536	1572
60	1528	1555	1543	1445	1176	1185	1256	1296
65	1255	1281	1265	1167	899	907	976	1019
70	979	1004	985	889	627	633	699	742
75	706	729	710	618	367	376	429	475
80	445	459	444	357	153	158	201	239
85	212	226	208	145	17.9	21.2	44.8	62.9
90	49.6	58.1	46.8	16.0	6.01	6.13	5.91	5.73
95	6.65	6.96	7.39	7.87	8.18	8.37	8.22	7.25
100	8.94	9.22	10.2	10.7	10.7	11.0	10.8	9.61
105	11.8	12.0	13.3	13.7	13.5	13.8	13.6	12.2
110	14.8	15.1	16.5	17.0	16.4	16.8	16.6	15.1
115	18.1	18.2	19.8	20.3	19.4	19.9	19.7	18.1
120	21.5	21.4	23.1	23.8	22.6	23.1	22.9	21.2
125	24.9	24.8	26.4	27.2	25.7	26.3	26.2	24.5
130	28.3	28.2	29.7	30.5	28.9	29.5	29.5	27.8
135	31.6	31.5	32.9	33.7	32.2	32.7	32.7	31.1
140	34.8	34.6	35.9	36.7	35.3	35.9	35.8	34.4
145	37.9	37.7	38.8	39.6	38.5	38.8	38.9	37.6
150	40.9	40.7	41.5	42.4	41.5	41.6	41.7	40.6
155	43.8	43.4	43.9	45.0	44.4	44.3	44.2	43.6
160	46.4	45.9	46.1	47.4	47.5	47.1	46.8	46.5
165	49.1	48.2	48.1	49.6	50.6	49.7	49.1	49.2
170	51.4	50.2	49.8	51.2	53.3	51.9	51.1	51.6
175	53.3	51.8	51.1	52.6	54.8	53.1	52.2	53.1
180	54.9	53.2	52.2	53.6	55.0	53.3	52.3	53.7

C Range: 0 - 360DEG
C Interval: 45.0DEG
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: