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

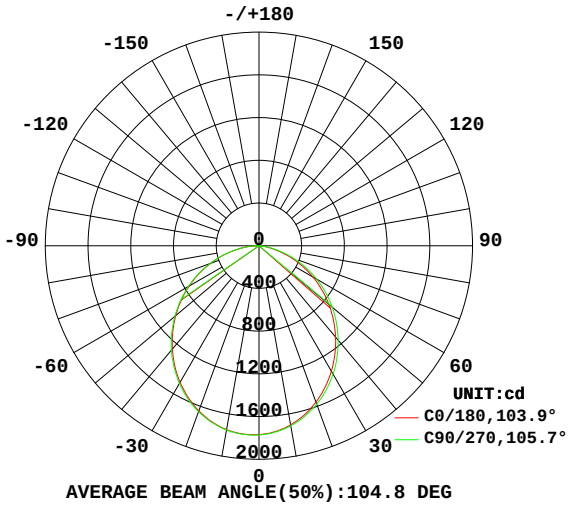
Tel:0755-21038430
Address:1 F,No.1 building,Meibaohe industrial park,Dalang street,Longhua district,Shenzhen,China

LUMINAIRE PHOTOMETRIC TEST REPORT

NAME:	TYPE:	WEIGHT:
DIM.:	SPEC.:	SERIAL No.:
MFR.:	SUR.:1.2X0.08X0.08	PROTECTION ANGLE:

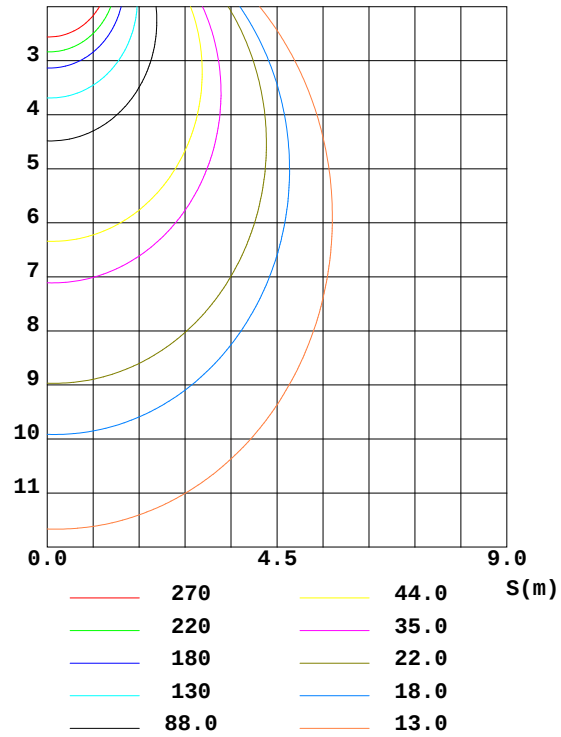
DATA OF LAMP		PHOTOMETRIC DATA Eff: 98.82 lm/W			
MODEL	HCP-602480 + HCP-603480	Imax(cd)	1775	S/MH(C0/180)	1.24
NOMINAL POWER(W)	48	LOR(%)	100.0	S/MH(C90/270)	1.25
RATED VOLTAGE(V)	230	TOTAL FLUX(lm)	4702.4	η UP,DN(C0-180)	0.8,53.0
NOMINAL FLUX(lm)	4704	CIE CLASS	DIRECT	η UP,DN(C180-360)	0.8,45.3
LAMPS 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	1748	1754	1752	1746	1703	1706	1712	1719	0- 10	167.1	167.1	3.55,3.55
20	1646	1657	1654	1637	1559	1564	1579	1588	10- 20	473.3	640.4	13.6,13.6
30	1478	1493	1490	1461	1356	1364	1387	1398	20- 30	702.7	1343	28.6,28.6
40	1263	1279	1276	1237	1116	1124	1154	1168	30- 40	825.0	2168	46.1,46.1
50	1018	1033	1029	983.3	854.0	861.2	894.9	912.1	40- 50	831.0	2999	63.8,63.8
60	755.9	769.4	763.3	714.9	581.8	586.3	621.3	641.3	50- 60	728.5	3727	79.3,79.2
70	484.5	496.4	487.4	439.6	310.1	313.1	345.6	367.0	60- 70	536.4	4264	90.7,90.6
80	219.9	227.1	219.5	176.7	75.60	78.18	99.64	118.2	70- 80	289.4	4553	96.8,96.8
90	24.52	28.74	23.14	7.909	2.973	3.033	2.922	2.835	80- 90	72.33	4626	98.4,98.3
100	4.422	4.561	5.057	5.277	5.291	5.429	5.359	4.751	90-100	5.473	4631	98.5,98.5
110	7.344	7.449	8.166	8.395	8.111	8.286	8.213	7.460	100-110	6.804	4638	98.6,98.6
120	10.62	10.60	11.42	11.76	11.17	11.43	11.32	10.50	110-120	9.405	4647	98.8,98.8
130	13.98	13.94	14.69	15.10	14.31	14.62	14.57	13.74	120-130	11.40	4659	99.1,99
140	17.21	17.11	17.75	18.15	17.46	17.74	17.73	17.03	130-140	12.33	4671	99.3,99.3
150	20.25	20.12	20.51	20.99	20.54	20.57	20.61	20.10	140-150	11.91	4683	99.6,99.6
160	22.95	22.72	22.79	23.46	23.48	23.30	23.14	23.01	150-160	10.05	4693	99.8,99.8
170	25.42	24.83	24.63	25.34	26.35	25.67	25.26	25.51	160-170	6.856	4700	99.9,99.9
180	27.16	26.31	25.83	26.52	27.23	26.34	25.85	26.58	170-180	2.468	4702	100,100
DEG	LUMINOUS INTENSITY:cd									UNIT:lm		

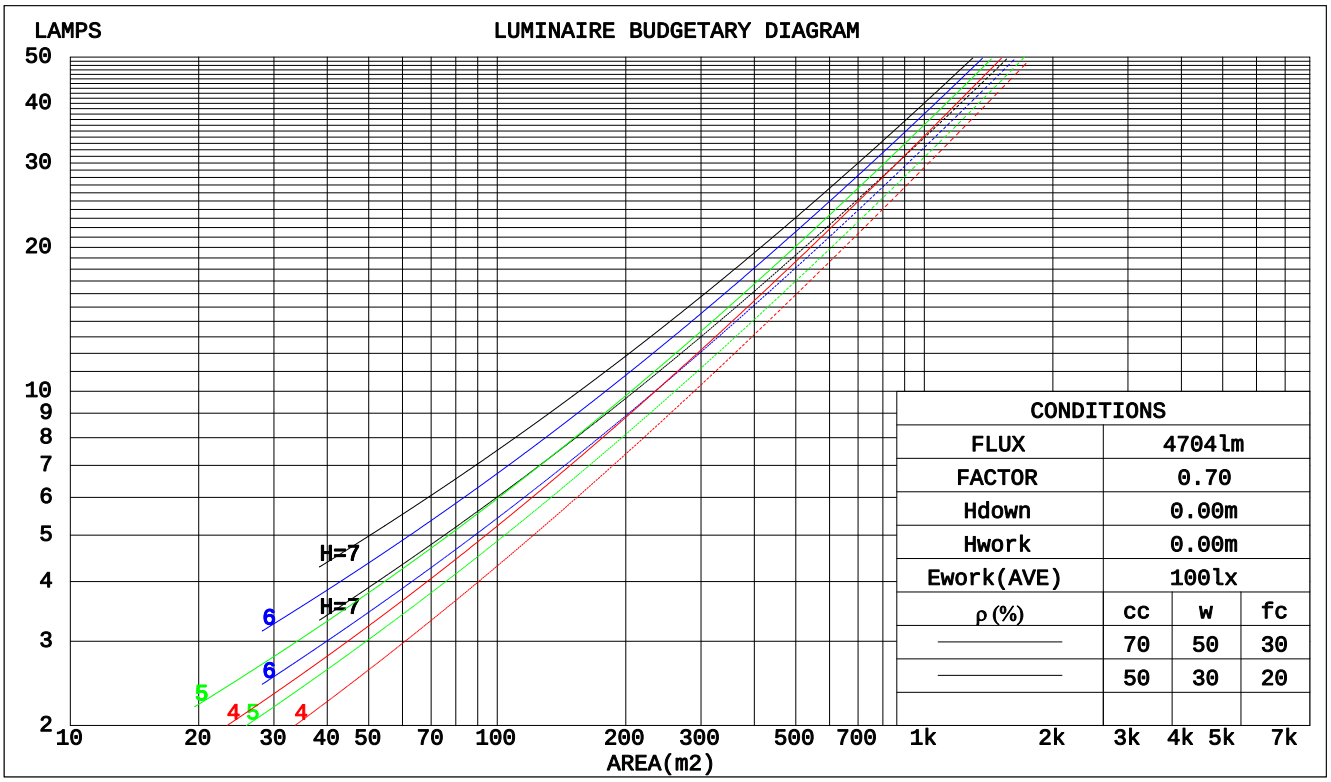
C Range: 0 - 360DEG
C Interval: 45.0DEG
Test Speed: HIGH
Temperature:25.3DEG
Operators: ALLEN
Test Date:

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.:1.2X0.08X0.08	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.:1.2X0.08X0.08	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.:1.2X0.08X0.08	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	30.6	32.1	30.9	32.3	32.5	30.6	32.1	30.9	32.3	32.6
	3H	32.2	33.5	32.5	33.8	34.0	32.2	33.6	32.5	33.8	34.1
	4H	32.8	34.1	33.2	34.4	34.7	32.8	34.1	33.2	34.4	34.7
	6H	33.3	34.5	33.7	34.8	35.1	33.3	34.6	33.7	34.9	35.2
	8H	33.5	34.7	33.9	35.0	35.3	33.5	34.7	33.9	35.0	35.3
	12H	33.6	34.7	34.0	35.1	35.4	33.6	34.7	34.0	35.1	35.4
4H	2H	31.2	32.5	31.6	32.8	33.1	31.3	32.5	31.6	32.8	33.1
	3H	33.0	34.1	33.4	34.4	34.8	33.0	34.1	33.4	34.5	34.8
	4H	33.8	34.8	34.2	35.2	35.5	33.8	34.8	34.2	35.2	35.5
	6H	34.4	35.3	34.8	35.7	36.1	34.4	35.3	34.9	35.7	36.1
	8H	34.6	35.5	35.1	35.9	36.3	34.7	35.5	35.1	35.9	36.3
	12H	34.8	35.6	35.3	36.0	36.5	34.8	35.6	35.3	36.0	36.5
8H	4H	34.1	34.9	34.5	35.3	35.7	34.1	35.0	34.5	35.4	35.8
	6H	34.9	35.6	35.4	36.0	36.5	34.9	35.6	35.4	36.0	36.5
	8H	35.2	35.8	35.7	36.3	36.8	35.2	35.8	35.7	36.3	36.8
	12H	35.5	36.0	36.0	36.5	37.0	35.5	36.0	36.0	36.5	37.0
12H	4H	34.1	34.9	34.6	35.3	35.7	34.1	34.9	34.6	35.3	35.8
	6H	35.0	35.6	35.4	36.0	36.5	35.0	35.6	35.5	36.1	36.5
	8H	35.3	35.9	35.8	36.3	36.9	35.4	35.9	35.9	36.4	36.9
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 4704 lm Total Lamp Luminous Flux.(8log(F/F0) = 5.4)

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.:1.2X0.08X0.08	PROTECTION ANGLE:

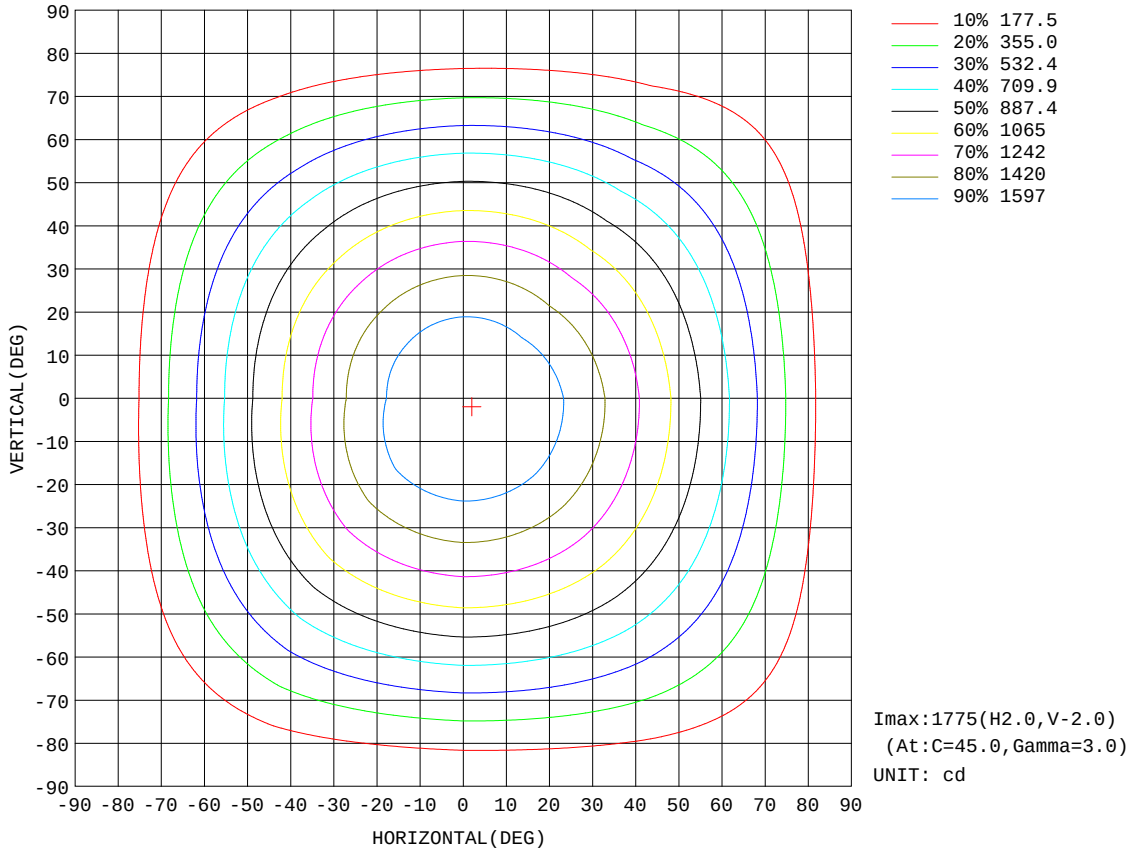
REFLECTANCE										
Ceiling	0.8	0.8	0.8	0.7	0.7	0.7	0.5	0.5	0.5	0
Walls	0.7	0.5	0.3	0.7	0.5	0.3	0.7	0.5	0.3	0
Working plane	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0
ROOM INDEX	UTILIZATION FACTORS(PERCENT) k(RI) x RCR = 5									
k = 0.60	58	47	40	58	47	40	56	46	40	33
0.80	68	57	50	67	56	50	65	56	49	42
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.:1.2X0.08X0.08	PROTECTION ANGLE:



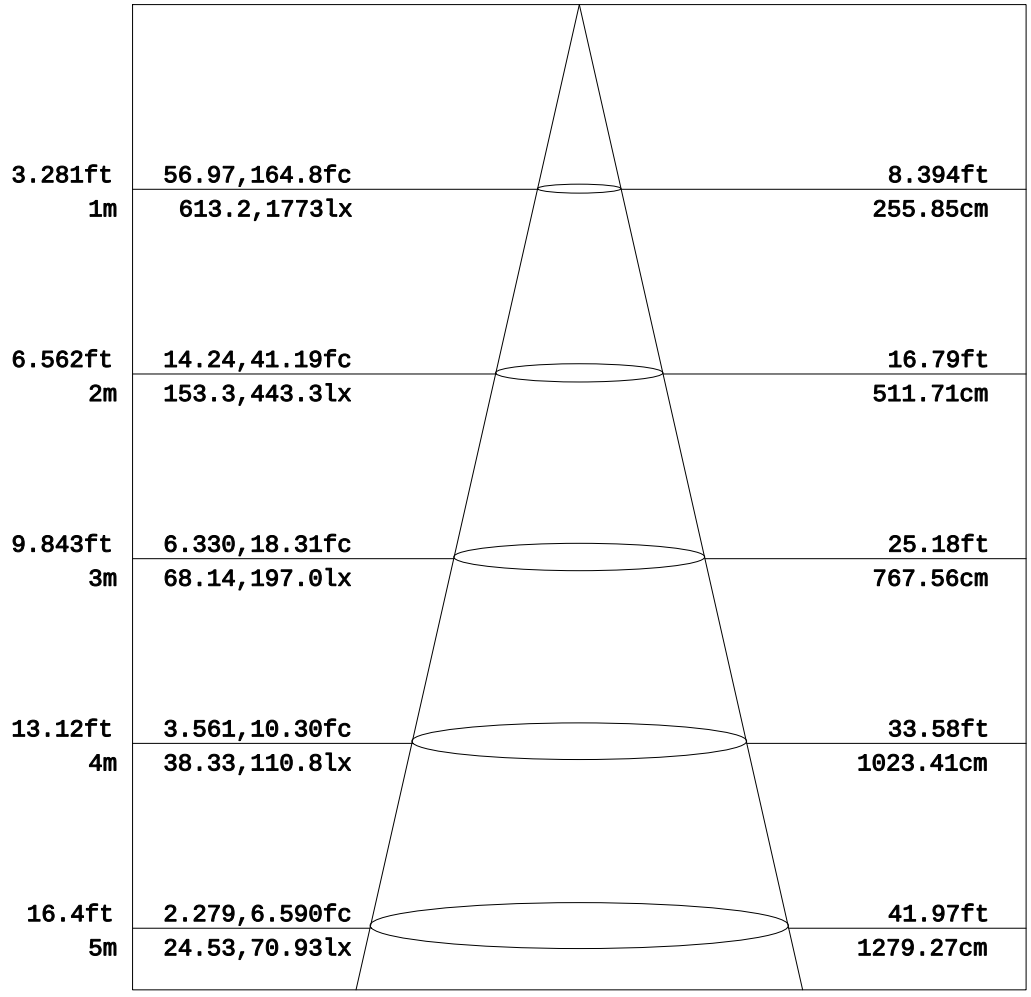
C Range: 0 - 360DEG
C Interval: 45.0DEG
Test Speed: HIGH
Temperature:25.3DEG
Operators: ALLEN
Test Date:

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.:1.2X0.08X0.08	PROTECTION ANGLE:

Flux out:3156 lm



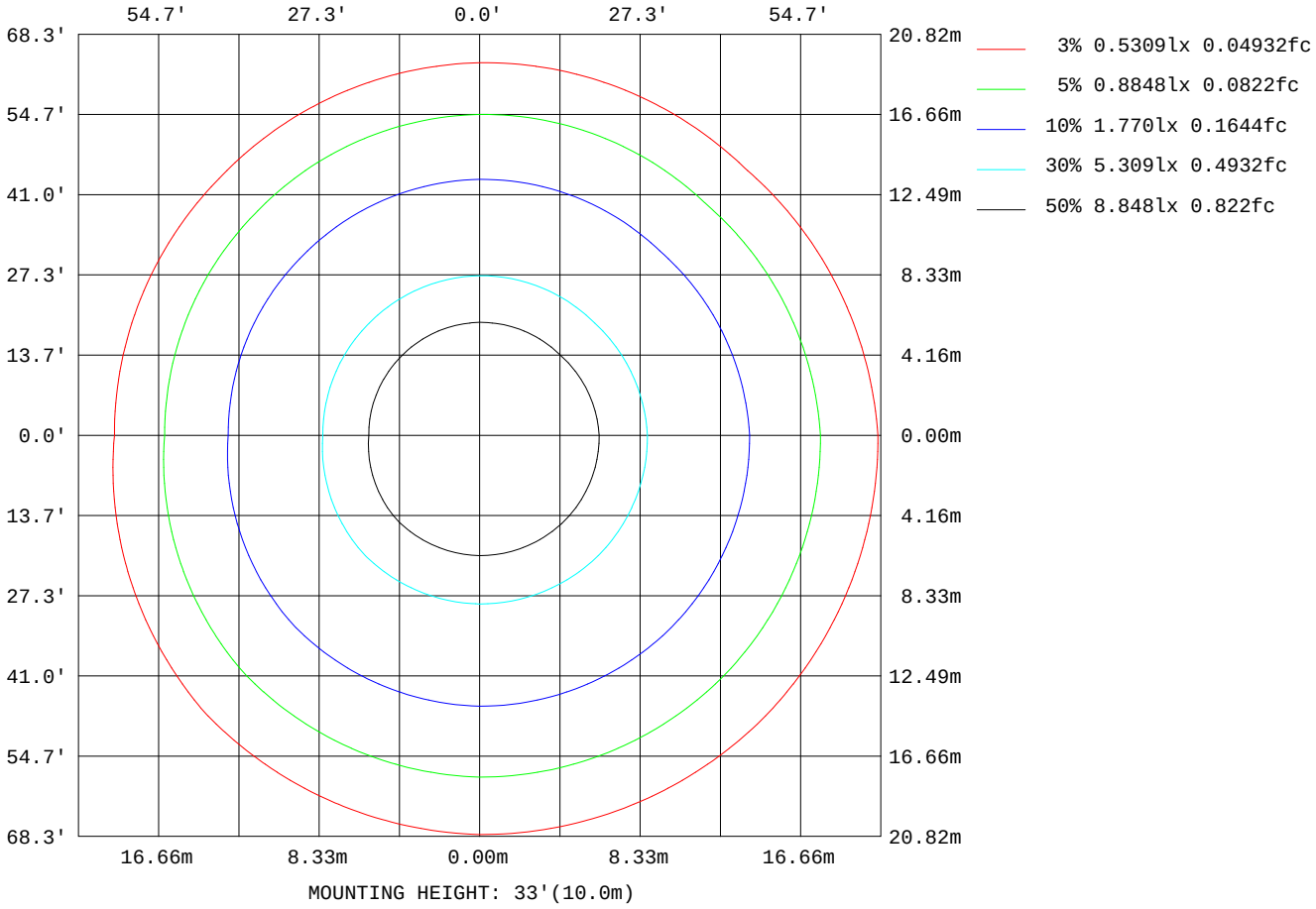
Note:The Curves indicate the illuminated area and the average illumination when the luminaire is at different distance.

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

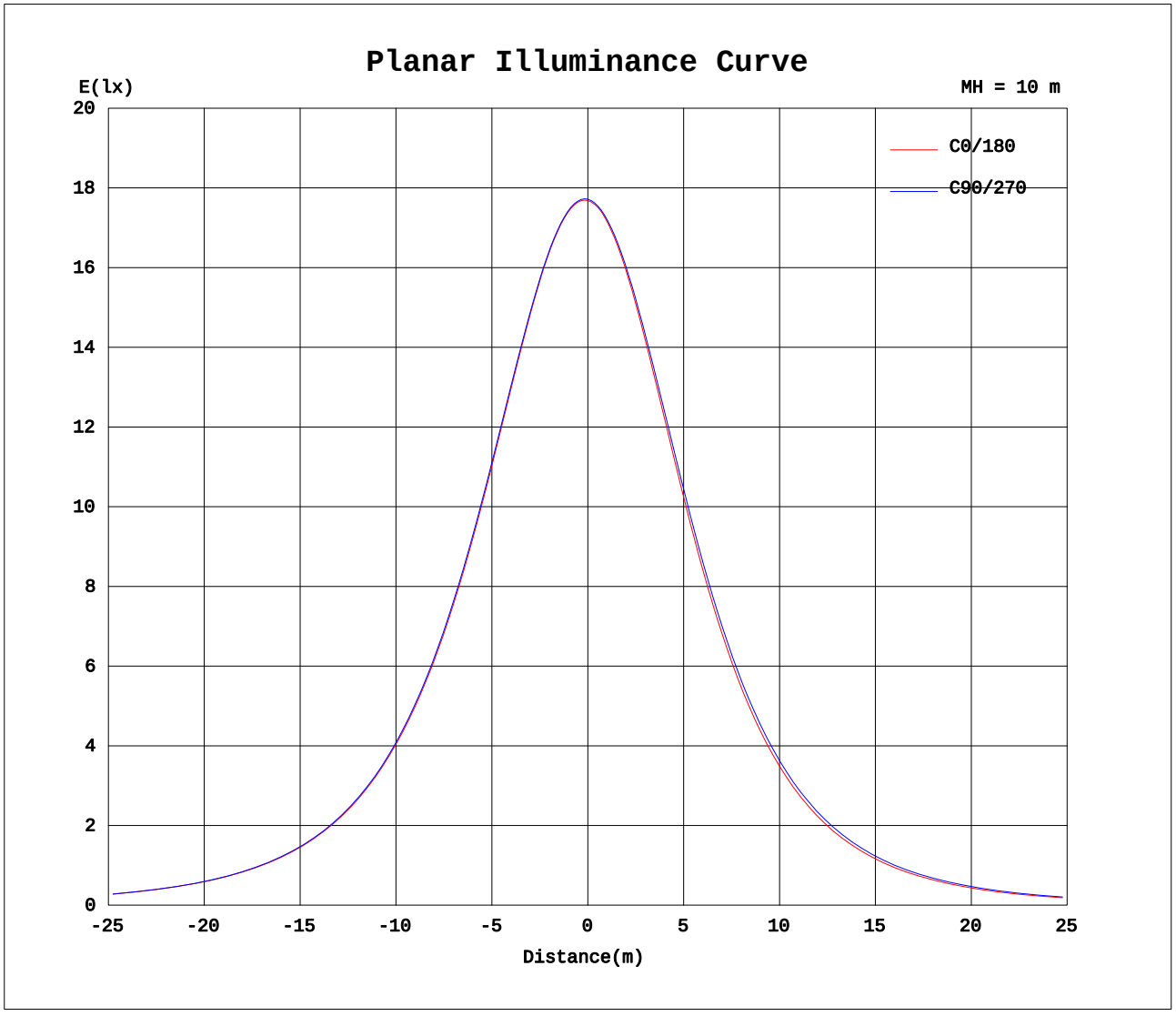
NAME:	TYPE:	WEIGHT:
DIM.:	SPEC.:	SERIAL No.:
MFR.:	SUR.:1.2X0.08X0.08	PROTECTION ANGLE:



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.:1.2X0.08X0.08	PROTECTION ANGLE:

Table--1 UNIT: cd

C(DEG) / γ (DEG)	0	45	90	135	180	225	270	315
0	1769	1771	1772	1773	1769	1771	1772	1773
5	1769	1773	1772	1770	1747	1749	1752	1756
10	1748	1754	1752	1746	1703	1706	1712	1719
15	1707	1715	1712	1700	1640	1643	1654	1661
20	1646	1657	1654	1637	1559	1564	1579	1588
25	1569	1582	1579	1556	1464	1470	1489	1499
30	1478	1493	1490	1461	1356	1364	1387	1398
35	1375	1391	1388	1354	1240	1248	1275	1287
40	1263	1279	1276	1237	1116	1124	1154	1168
45	1143	1159	1155	1113	987	994	1027	1042
50	1018	1033	1029	983	854	861	895	912
55	888	903	898	850	719	725	760	778
60	756	769	763	715	582	586	621	641
65	621	634	626	577	445	449	483	504
70	484	496	487	440	310	313	346	367
75	349	361	351	305	181	186	212	235
80	220	227	219	177	75.6	78.2	99.6	118
85	105	112	103	71.5	8.87	10.5	22.1	31.1
90	24.5	28.7	23.1	7.91	2.97	3.03	2.92	2.84
95	3.29	3.44	3.66	3.89	4.05	4.14	4.06	3.59
100	4.42	4.56	5.06	5.28	5.29	5.43	5.36	4.75
105	5.82	5.95	6.57	6.79	6.66	6.83	6.75	6.05
110	7.34	7.45	8.17	8.40	8.11	8.29	8.21	7.46
115	8.95	8.99	9.77	10.1	9.62	9.84	9.73	8.95
120	10.6	10.6	11.4	11.8	11.2	11.4	11.3	10.5
125	12.3	12.3	13.1	13.4	12.7	13.0	12.9	12.1
130	14.0	13.9	14.7	15.1	14.3	14.6	14.6	13.7
135	15.6	15.6	16.3	16.7	15.9	16.2	16.2	15.4
140	17.2	17.1	17.8	18.2	17.5	17.7	17.7	17.0
145	18.7	18.6	19.2	19.6	19.0	19.2	19.2	18.6
150	20.2	20.1	20.5	21.0	20.5	20.6	20.6	20.1
155	21.7	21.4	21.7	22.3	22.0	21.9	21.9	21.5
160	22.9	22.7	22.8	23.5	23.5	23.3	23.1	23.0
165	24.3	23.9	23.8	24.5	25.0	24.6	24.3	24.4
170	25.4	24.8	24.6	25.3	26.3	25.7	25.3	25.5
175	26.3	25.6	25.3	26.0	27.1	26.3	25.8	26.3
180	27.2	26.3	25.8	26.5	27.2	26.3	25.8	26.6

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: