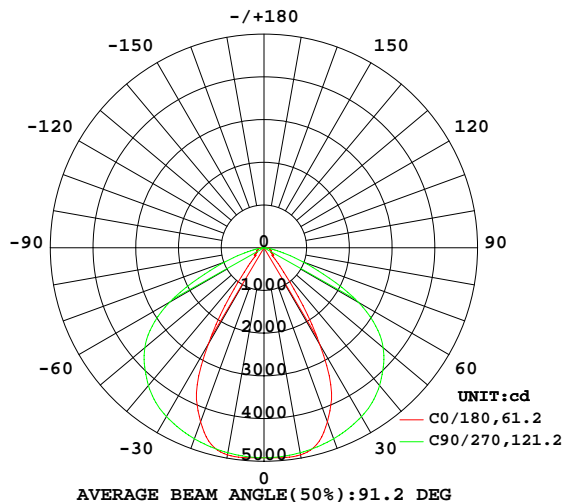


## LUMINAIRE PHOTOMETRIC TEST REPORT

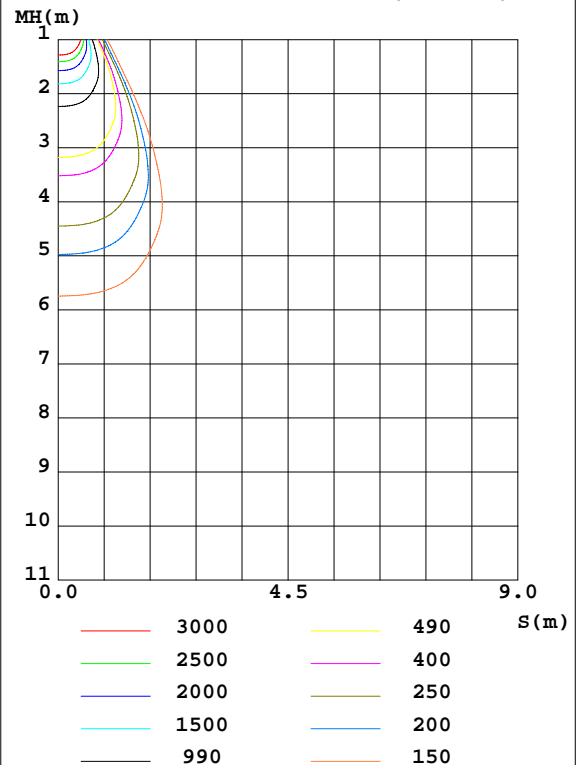
Test:U:220.1V I:0.3013A P:64.35W PF:0.9702 Lamp Flux:8328.15x1 lm		
NAME: LHB04-65	TYPE:65W	WEIGHT:
SPEC.:5000K Ra70 60*120DEG L00302	DIM.: 1.447*0.06*0.05	SERIAL No.:
MFR.:	SUR.:1.425*0.05	Shielding Angle:

DATA OF LAMP		PHOTOMETRIC DATA Eff: 129.42 lm/W			
MODEL	LHB04-65	Imax(cd)	4940	S/MH(C0/180)	0.90
NOMINAL POWER(W)	65	LOR(%)	100.0	S/MH(C90/270)	1.39
RATED VOLTAGE(V)	230	TOTAL FLUX(lm)	8328.1	$\eta$ UP,DN(C0-180)	0.0,50.2
NOMINAL FLUX(lm)	8328.15	CIE CLASS	DIRECT	$\eta$ UP,DN(C180-360)	0.0,49.8
LAMPS INSIDE	1	$\eta$ up(%)	0.0	CIBSE SHR NOM	1.00
TEST VOLTAGE(V)	230	$\eta$ down(%)	100.0	CIBSE SHR MAX	1.05

LUMINOUS INTENSITY DISTRIBUTION DIAGRAM



C0 PLANE ISOLUX DIAGRAM (UNIT:lx)



C Range: 0 - 360DEG  
C Interval: 10.0DEG  
Test Speed: HIGH  
Temperature:25.3DEG  
Operators:  
Test Date:2016-07-11

$\gamma$  Range: 0 - 90DEG  
 $\gamma$  Interval: 1.0DEG  
Test System:EVERFINE GO-2000A\_V1 SYSTEM V2.0.295  
Humidity:65.0%  
Test Distance:9.470m [K=1.0000]  
Remarks:

Checker:

Assessor:

## ZONAL FLUX DIAGRAM

## ZONAL FLUX DIAGRAM:

$\gamma$	C0	C45	C90	C135	C180	C225	C270	C315	$\gamma$	$\Phi$ zone	$\Phi$ total	%lum, lamp
10	4923	4918	4872	4918	4923	4921	4872	4921	0- 10	469.3	469.3	5.64,5.64
20	4337	4702	4759	4702	4337	4696	4759	4696	10- 20	1360	1829	22,22
30	2612	3819	4564	3819	2612	3789	4564	3789	20- 30	1953	3783	45.4,45.4
40	636.6	1884	4209	1884	636.6	1838	4209	1838	30- 40	1830	5612	67.4,67.4
50	269.8	671.8	3641	671.8	269.8	671.5	3641	671.5	40- 50	1254	6866	82.4,82.4
60	198.0	443.4	2549	443.4	198.0	445.6	2549	445.6	50- 60	786.5	7652	91.9,91.9
70	173.0	234.5	980.4	234.5	173.0	233.5	980.4	233.5	60- 70	430.7	8083	97.1,97.1
80	136.2	72.67	167.6	72.67	136.2	73.56	167.6	73.56	70- 80	197.0	8280	99.4,99.4
90	0.9218	1.628	3.304	1.628	0.9218	1.762	3.304	1.762	80- 90	48.03	8328	100,100
100									90-100			
110									100-110			
120									110-120			
130									120-130			
140									130-140			
150									140-150			
160									150-160			
170									160-170			
180									170-180			
DEG	LUMINOUS INTENSITY:cd									UNIT:lm		

Conical surface Flux(90deg): 6307.8 lm

%lum = 75.7%

%lamp = 75.7%

Conical surface Flux(120deg): 7652.4 lm

%lum = 91.9%

%lamp = 91.9%

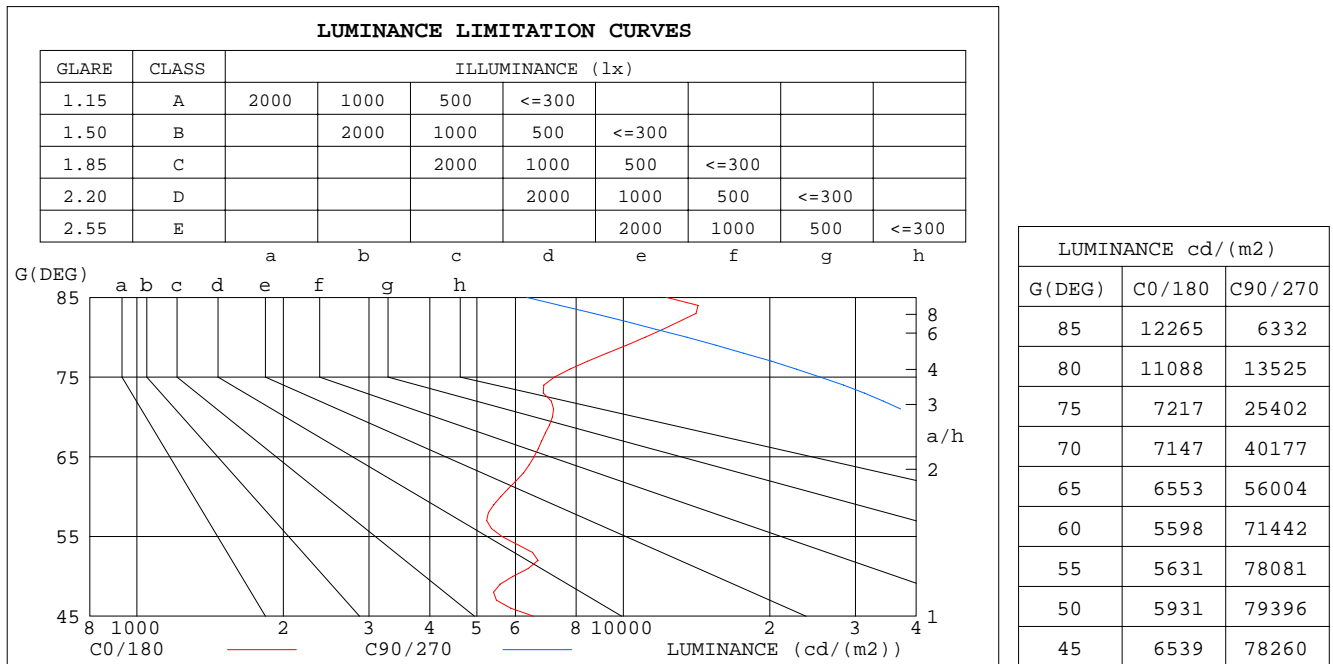
C Range: 0 - 360DEG  
 C Interval: 10.0DEG  
 Test Speed: HIGH  
 Temperature:25.3DEG  
 Operators:  
 Test Date:2016-07-11

Checker:

$\gamma$  Range: 0 - 90DEG  
 $\gamma$  Interval: 1.0DEG  
 Test System:EVERFINE GO-2000A\_V1 SYSTEM V2.0.295  
 Humidity:65.0%  
 Test Distance:9.470m [K=1.0000]  
 Remarks:

Assessor:

## LUMINANCE LIMITATION CURVES



C Range: 0 - 360°  
C Interval: 10.0°  
Test Speed: HIGH  
Temperature: 25.3°  
Operators:  
Test Date: 2016-07-11

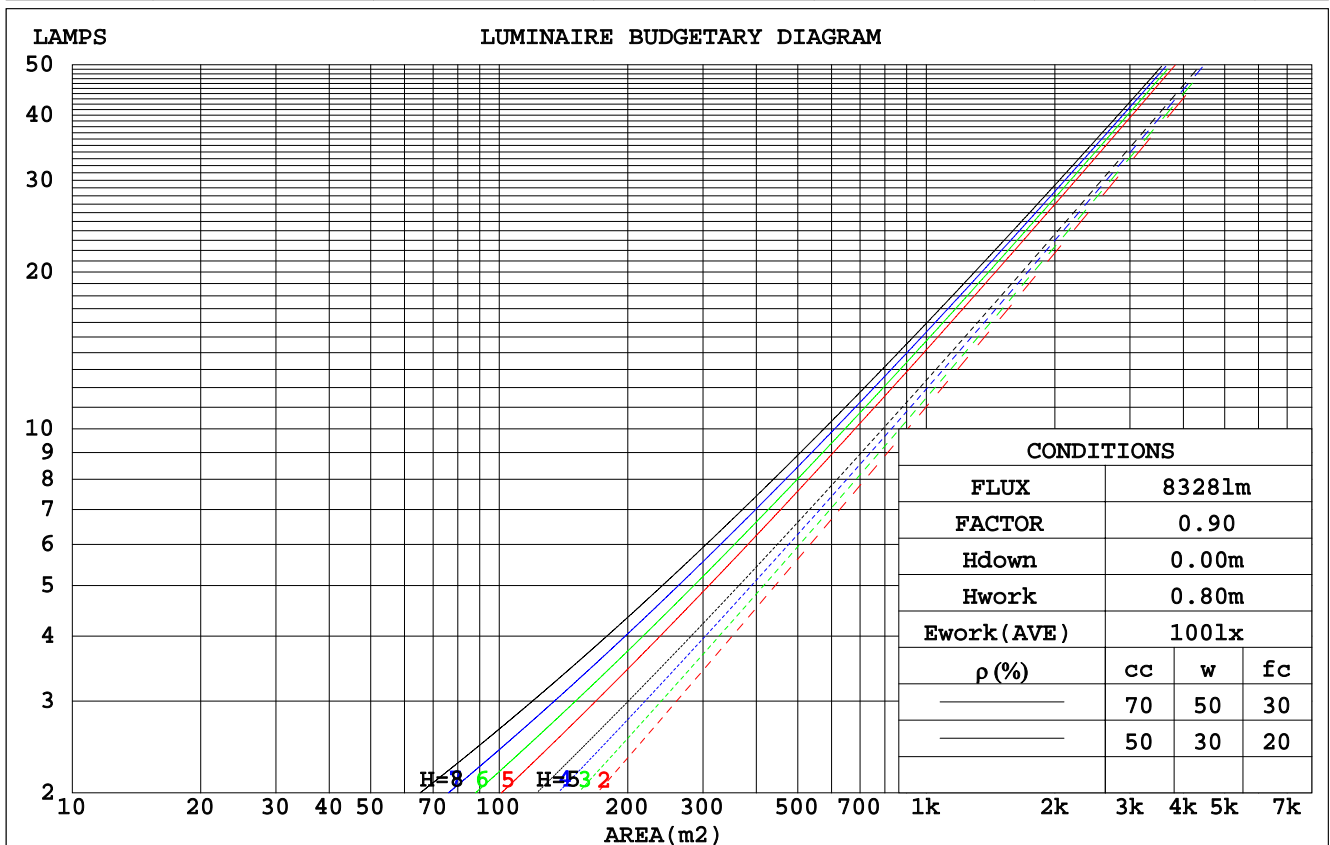
Checker:

γ Range: 0 - 90°  
γ Interval: 1.0°  
Test System: EVERFINE GO-2000A\_V1 SYSTEM V2.0.295  
Humidity: 65.0%  
Test Distance: 9.470m [K=1.0000]  
Remarks:

Assessor:

## CU AND LUMINAIRE BUDGETARY ESTIMATE DIAGRAM

pcc	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	1.11	1.11	1.11	1.06	1.06	1.06	1.02	1.02	1.02	1.00
1.0	1.08	1.04	1.01	1.05	1.02	.00	1.01	.99	.97	.98	.96	.94	.94	.92	.91	.89
2.0	.97	.92	.87	.95	.90	.86	.92	.88	.84	.89	.85	.82	.86	.83	.81	.79
3.0	.88	.81	.76	.86	.80	.75	.84	.78	.74	.81	.77	.73	.79	.75	.72	.70
4.0	.80	.73	.67	.79	.72	.67	.76	.71	.66	.74	.69	.65	.72	.68	.64	.62
5.0	.73	.65	.60	.72	.65	.60	.70	.64	.59	.68	.63	.58	.66	.62	.58	.56
6.0	.67	.59	.54	.66	.59	.54	.64	.58	.53	.63	.57	.53	.61	.56	.52	.51
7.0	.62	.54	.49	.61	.54	.49	.60	.53	.48	.58	.52	.48	.57	.52	.48	.46
8.0	.57	.50	.45	.56	.49	.44	.55	.49	.44	.54	.48	.44	.53	.48	.44	.42
9.0	.53	.46	.41	.52	.46	.41	.51	.45	.41	.50	.45	.40	.49	.44	.40	.39
10.0	.49	.42	.38	.49	.42	.38	.48	.42	.38	.47	.41	.37	.46	.41	.37	.36



C Range: 0 - 360DEG  
 C Interval: 10.0DEG  
 Test Speed: HIGH  
 Temperature: 25.3DEG  
 Operators:  
 Test Date: 2016-07-11

γ Range: 0 - 90DEG  
 γ Interval: 1.0DEG  
 Test System: EVERFINE GO-2000A\_V1 SYSTEM V2.0.295  
 Humidity: 65.0%  
 Test Distance: 9.470m [K=1.0000]  
 Remarks:

Checker:

Assessor:

## WEC AND CCEC

pcc	80%			70%			50%			30%			10%			0
pw	50%	30%	10%	50%	30%	10%	50%	30%	10%	50%	30%	10%	50%	30%	10%	0
pfc	20%			20%			20%			20%			20%			0
RCR	RCR:Room Cavity Ratio						Wall Exitance Coefficients(WEC)									
0.0																
1.0	.237	.135	.043	.230	.131	.042	.217	.124	.040	.205	.118	.038	.194	.113	.036	
2.0	.228	.125	.038	.222	.122	.038	.211	.117	.036	.200	.112	.035	.191	.108	.034	
3.0	.215	.115	.034	.210	.113	.034	.201	.109	.033	.192	.105	.032	.183	.101	.031	
4.0	.203	.105	.031	.198	.104	.031	.190	.101	.030	.182	.098	.029	.175	.095	.029	
5.0	.191	.097	.028	.187	.096	.028	.179	.093	.027	.172	.091	.027	.166	.089	.027	
6.0	.180	.090	.026	.176	.089	.026	.170	.087	.025	.163	.085	.025	.158	.083	.025	
7.0	.170	.084	.024	.167	.083	.024	.161	.081	.023	.155	.080	.023	.150	.078	.023	
8.0	.161	.078	.022	.158	.078	.022	.152	.076	.022	.147	.075	.022	.143	.073	.021	
9.0	.152	.074	.021	.150	.073	.020	.145	.072	.020	.140	.070	.020	.136	.069	.020	
10.0	.144	.069	.019	.142	.069	.019	.138	.068	.019	.134	.066	.019	.130	.065	.019	

pcc	80%			70%			50%			30%			10%			0
pw	50%	30%	10%	50%	30%	10%	50%	30%	10%	50%	30%	10%	50%	30%	10%	0
pfc	20%			20%			20%			20%			20%			0
RCR	RCR:Room Cavity Ratio						Ceiling Cavity Exitance Coefficients(CCEC)									
0.0	.190	.190	.190	.163	.163	.163	.111	.111	.111	.064	.064	.064	.020	.020	.020	
1.0	.175	.157	.140	.150	.135	.121	.103	.093	.083	.059	.054	.049	.019	.017	.016	
2.0	.164	.132	.106	.140	.114	.091	.096	.079	.064	.055	.046	.037	.018	.015	.012	
3.0	.154	.114	.082	.132	.098	.071	.091	.068	.050	.052	.040	.029	.017	.013	.010	
4.0	.145	.100	.065	.125	.086	.057	.086	.060	.040	.050	.035	.024	.016	.011	.008	
5.0	.138	.089	.053	.118	.077	.046	.081	.054	.033	.047	.032	.019	.015	.010	.006	
6.0	.131	.080	.044	.112	.070	.038	.078	.049	.027	.045	.029	.016	.015	.009	.005	
7.0	.124	.073	.037	.107	.063	.032	.074	.044	.023	.043	.026	.014	.014	.009	.005	
8.0	.119	.067	.032	.102	.058	.028	.071	.041	.020	.041	.024	.012	.013	.008	.004	
9.0	.113	.062	.028	.097	.054	.024	.068	.038	.017	.039	.022	.010	.013	.007	.003	
10.0	.108	.058	.025	.093	.050	.021	.065	.035	.015	.038	.021	.009	.012	.007	.003	

C Range: 0 - 360DEG  
C Interval: 10.0DEG  
Test Speed: HIGH  
Temperature:25.3DEG  
Operators:  
Test Date:2016-07-11

γ Range: 0 - 90DEG  
γ Interval: 1.0DEG  
Test System:EVERFINE GO-2000A\_V1 SYSTEM V2.0.295  
Humidity:65.0%  
Test Distance:9.470m [K=1.0000]  
Remarks:

Checker:

Assessor:

UGR(Unified Glare Rating) Table

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	16.8	18.0	17.0	18.2	18.4	26.8	28.1	27.1	28.2	28.4
3H	17.6	18.7	17.8	18.9	19.1	27.6	28.8	27.9	29.0	29.2
4H	18.0	19.1	18.3	19.3	19.5	27.8	28.9	28.1	29.2	29.4
6H	18.7	19.7	19.0	20.0	20.3	27.9	28.9	28.2	29.2	29.4
8H	19.3	20.3	19.6	20.5	20.8	27.9	28.9	28.2	29.1	29.4
12H	19.7	20.7	20.1	21.0	21.3	27.9	28.8	28.2	29.1	29.4
4H 2H	17.6	18.7	17.9	18.9	19.1	26.6	27.7	26.9	27.9	28.1
3H	18.5	19.4	18.8	19.7	20.0	27.4	28.4	27.8	28.7	29.0
4H	18.9	19.8	19.3	20.1	20.4	27.7	28.5	28.0	28.9	29.2
6H	19.7	20.5	20.1	20.8	21.2	27.8	28.6	28.2	28.9	29.3
8H	20.3	21.0	20.7	21.4	21.8	27.8	28.5	28.2	28.9	29.3
12H	20.9	21.6	21.3	21.9	22.3	27.8	28.4	28.2	28.8	29.2
8H 4H	19.2	19.9	19.6	20.3	20.7	27.6	28.3	28.0	28.6	29.0
6H	20.1	20.6	20.5	21.0	21.5	27.7	28.3	28.2	28.7	29.1
8H	20.8	21.3	21.2	21.7	22.1	27.8	28.3	28.2	28.7	29.1
12H	21.4	21.9	21.9	22.3	22.8	27.8	28.2	28.2	28.6	29.1
12H 4H	19.3	19.9	19.7	20.3	20.7	27.5	28.2	28.0	28.6	29.0
6H	20.1	20.6	20.6	21.0	21.5	27.7	28.2	28.1	28.6	29.1
8H	20.8	21.2	21.3	21.7	22.2	27.7	28.2	28.2	28.6	29.1
Variations with the observer position at spacings:										
S = 1.0H	+ 0.5 / - 0.6					+ 1.2 / - 1.8				
1.5H	+ 0.4 / - 0.6					+ 2.5 / - 4.2				
2.0H	+ 0.9 / - 0.5					+ 3.6 / - 5.5				

CIE Pub.117 Corrected 8328 lm Total Lamp Luminous Flux.(8log(F/F0) = 7.4)

C Range: 0 - 360DEG  
C Interval: 10.0DEG  
Test Speed: HIGH  
Temperature:25.3DEG  
Operators:  
Test Date:2016-07-11

γ Range: 0 - 90DEG  
γ Interval: 1.0DEG  
Test System:EVERFINE GO-2000A\_V1 SYSTEM V2.0.295  
Humidity:65.0%  
Test Distance:9.470m [K=1.0000]  
Remarks:

Checker:

Assessor:

### UTILIZATION FACTORS TABLE

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) $k(RI) \times RCR = 5$									
$k = 0.60$	71	62	56	70	62	56	69	61	56	51
0.80	80	71	66	80	71	66	78	70	65	60
1.00	87	79	74	86	79	73	85	79	73	67
1.25	93	86	80	92	85	80	90	84	79	73
1.50	97	90	85	96	89	84	93	88	83	77
2.00	102	96	91	101	95	91	98	93	89	83
2.50	105	99	95	103	98	94	100	95	92	85
3.00	107	102	98	105	101	97	102	98	95	88
4.00	110	106	103	108	104	101	104	101	99	91
5.00	112	108	106	110	107	104	105	103	101	93
ROOM INDEX	UF(total)									Direct
According to DIN EN 13032-2 2004			Suspended					SHRNOM = 1.25		

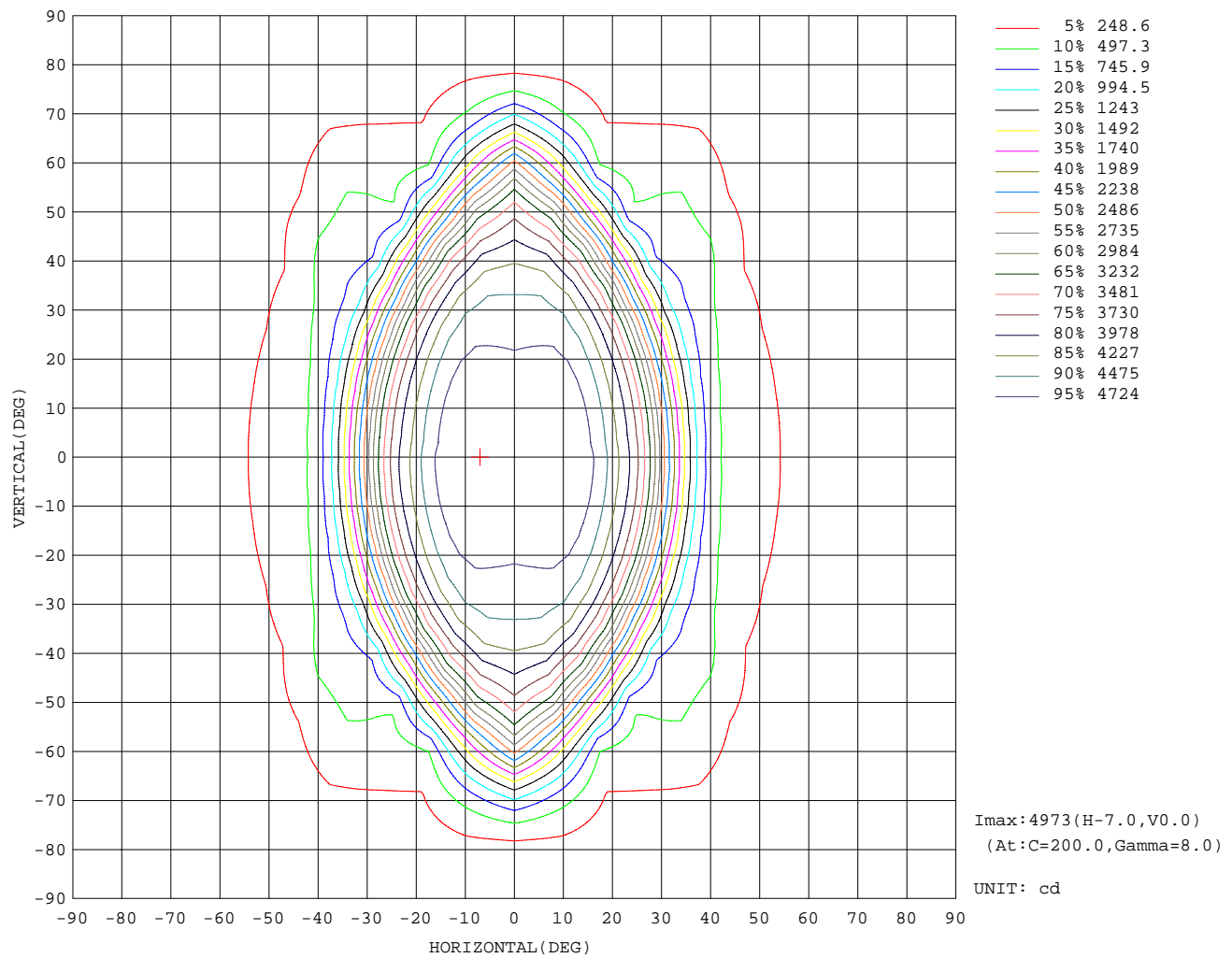
C Range: 0 - 360DEG  
 C Interval: 10.0DEG  
 Test Speed: HIGH  
 Temperature: 25.3DEG  
 Operators:  
 Test Date: 2016-07-11

Checker:

$\gamma$  Range: 0 - 90DEG  
 $\gamma$  Interval: 1.0DEG  
 Test System: EVERFINE GO-2000A\_V1 SYSTEM V2.0.295  
 Humidity: 65.0%  
 Test Distance: 9.470m [K=1.0000]  
 Remarks:

Assessor:

## ISOCANDELA DIAGRAM



C Range: 0 - 360DEG  
C Interval: 10.0DEG  
Test Speed: HIGH  
Temperature: 25.3DEG  
Operators:  
Test Date: 2016-07-11

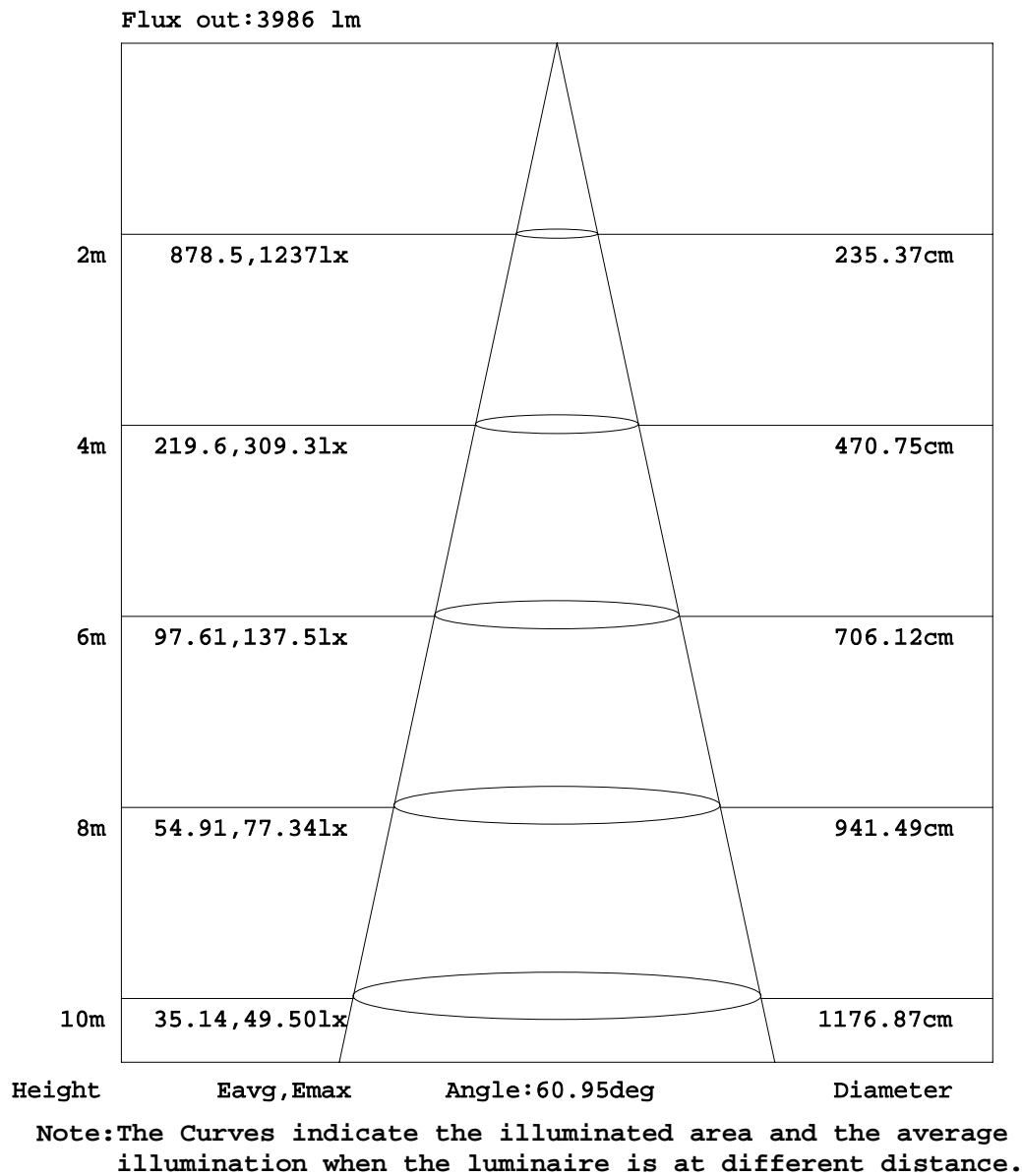
$\gamma$  Range: 0 - 90DEG  
 $\gamma$  Interval: 1.0DEG  
Test System: EVERFINE GO-2000A\_V1 SYSTEM V2.0.295  
Humidity: 65.0%  
Test Distance: 9.470m [K=1.0000]  
Remarks:

Checker:

Assessor:



AAI Figure



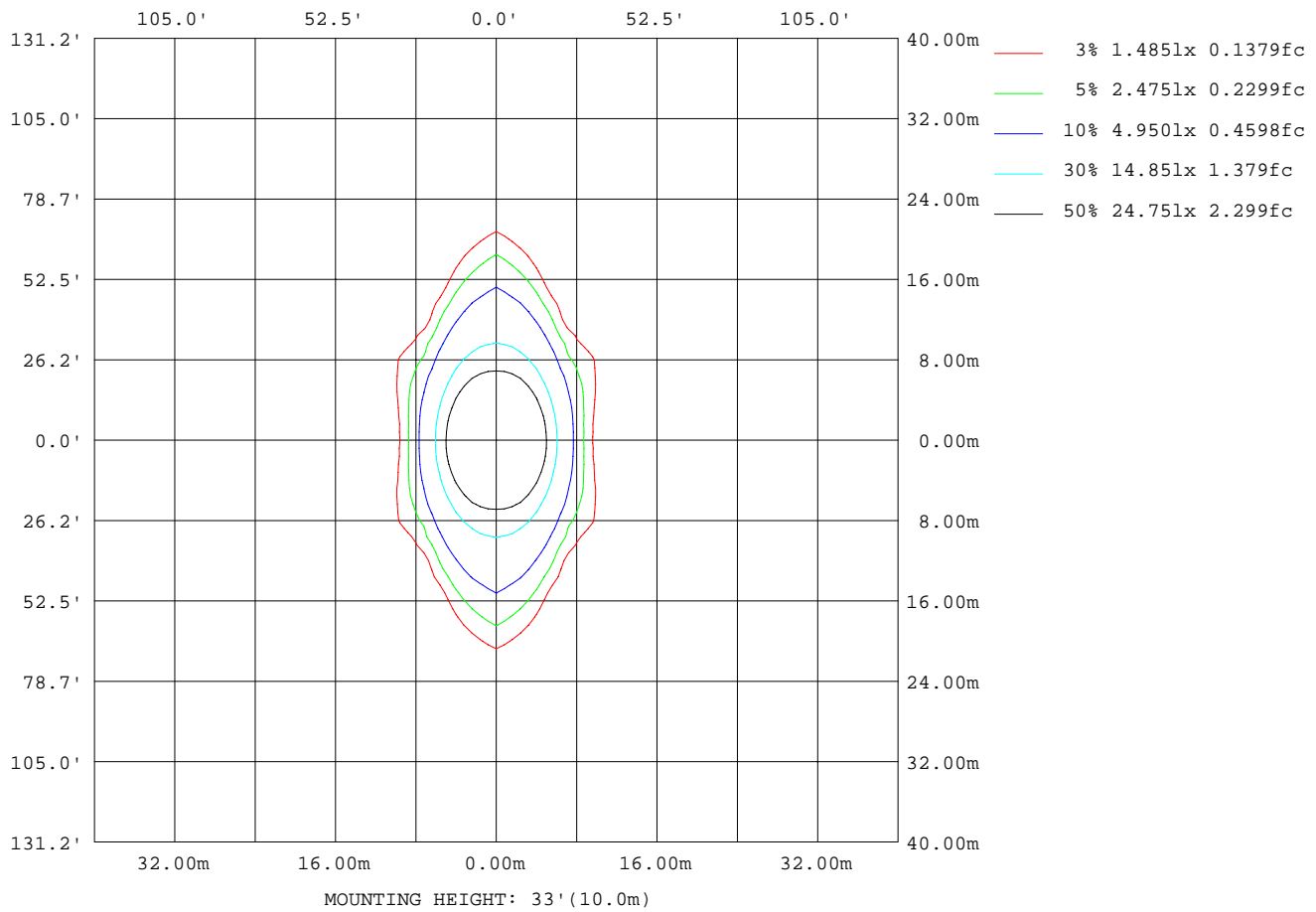
C Range: 0 - 360DEG  
C Interval: 10.0DEG  
Test Speed: HIGH  
Temperature: 25.3DEG  
Operators:  
Test Date: 2016-07-11

$\gamma$  Range: 0 - 90DEG  
 $\gamma$  Interval: 1.0DEG  
Test System: EVERFINE GO-2000A\_V1 SYSTEM V2.0.295  
Humidity: 65.0%  
Test Distance: 9.470m [K=1.0000]  
Remarks:

Checker:

Assessor:

## ISOLUX DIAGRAM



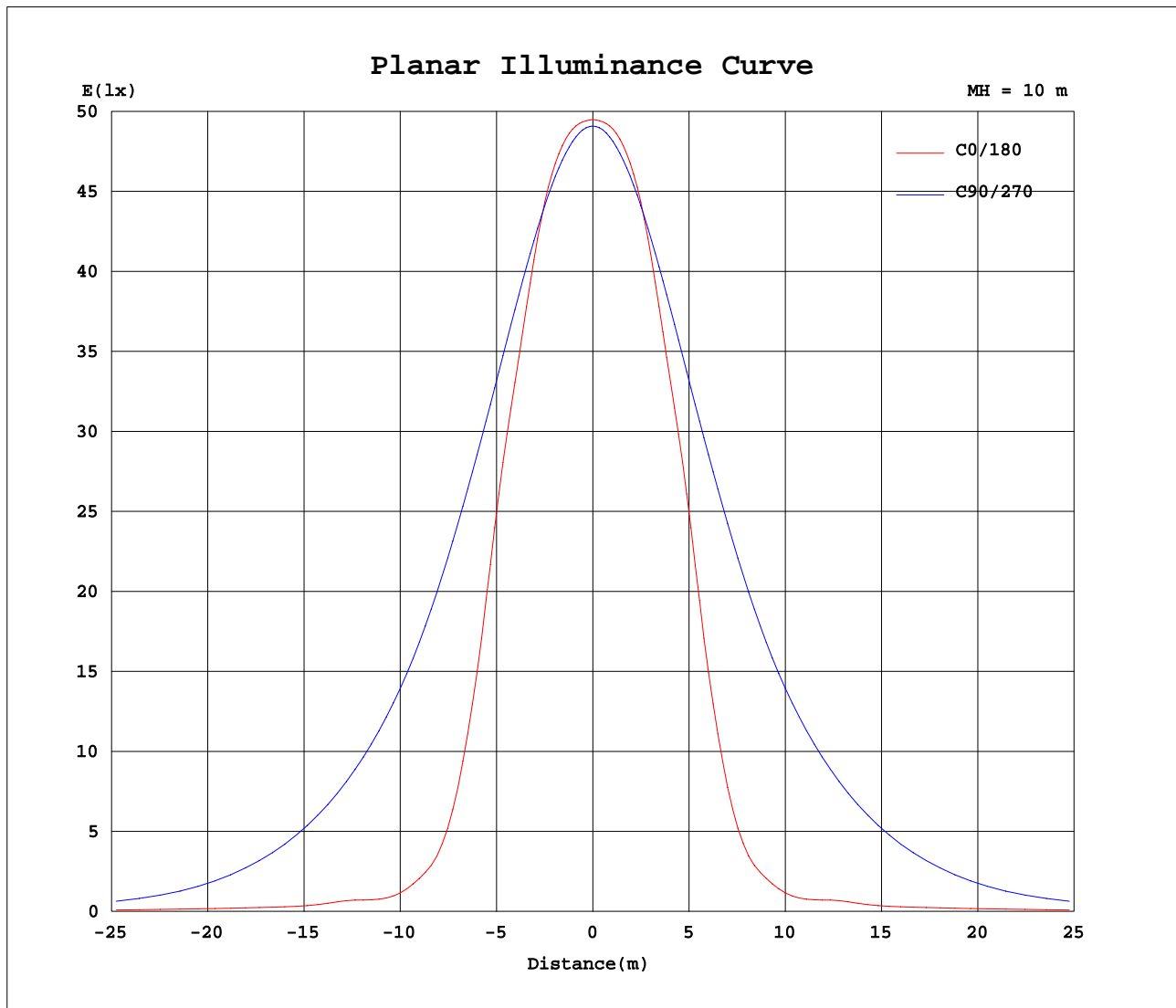
C Range: 0 - 360DEG  
C Interval: 10.0DEG  
Test Speed: HIGH  
Temperature: 25.3DEG  
Operators:  
Test Date: 2016-07-11

Checker:

$\gamma$  Range: 0 - 90DEG  
 $\gamma$  Interval: 1.0DEG  
Test System: EVERFINE GO-2000A\_V1 SYSTEM V2.0.295  
Humidity: 65.0%  
Test Distance: 9.470m [K=1.0000]  
Remarks:

Assessor:

## Planar Illuminance Curve



C Range: 0 - 360DEG  
C Interval: 10.0DEG  
Test Speed: HIGH  
Temperature: 25.3DEG  
Operators:  
Test Date: 2016-07-11

$\gamma$  Range: 0 - 90DEG  
 $\gamma$  Interval: 1.0DEG  
Test System: EVERFINE GO-2000A\_V1 SYSTEM V2.0.295  
Humidity: 65.0%  
Test Distance: 9.470m [K=1.0000]  
Remarks:

Checker:

Assessor:

**Assessor:**

**Assessor:**