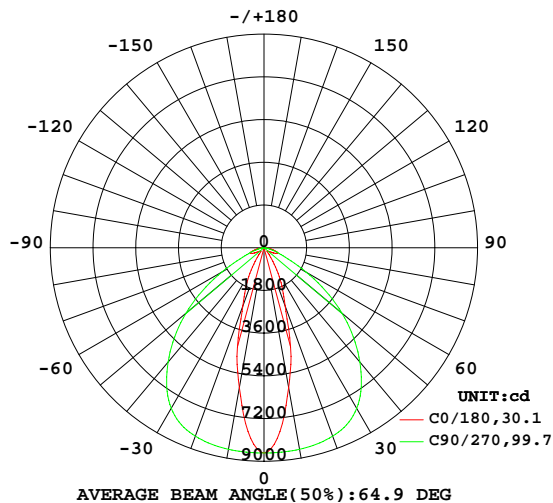


## LUMINAIRE PHOTOMETRIC TEST REPORT

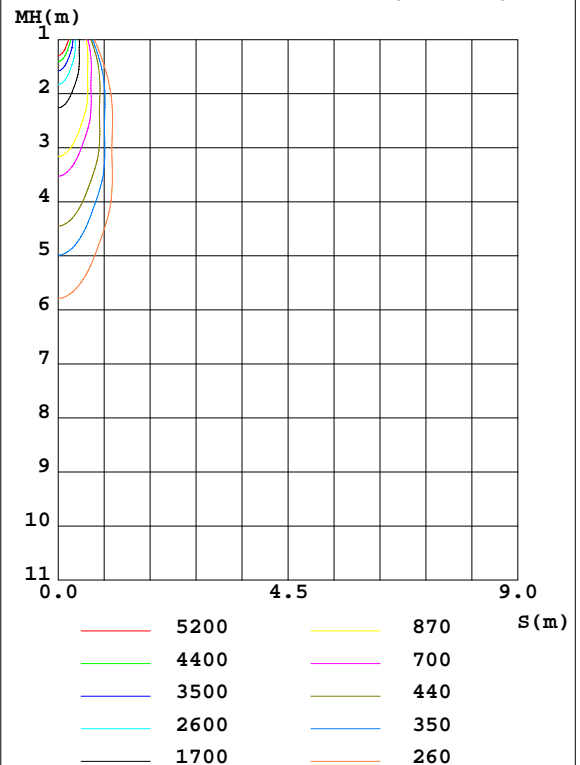
Test:U:220.1V I:0.3013A P:64.35W PF:0.9700 Lamp Flux:8308.97x1 lm		
NAME: LHB04-65	TYPE:65W	WEIGHT:
SPEC.:5000K Ra70 30*100DEG L00301	DIM.: 1.447*0.06*0.05	SERIAL No.:
MFR.:	SUR.:1.425*0.05	Shielding Angle:

DATA OF LAMP		PHOTOMETRIC DATA Eff: 129.13 lm/W			
MODEL	LHB04-65	Imax(cd)	8650	S/MH(C0/180)	0.50
NOMINAL POWER(W)	65	LOR(%)	100.0	S/MH(C90/270)	1.31
RATED VOLTAGE(V)	230	TOTAL FLUX(lm)	8309.0	$\eta$ UP,DN(C0-180)	0.0,50.0
NOMINAL FLUX(lm)	8308.97	CIE CLASS	DIRECT	$\eta$ UP,DN(C180-360)	0.0,50.0
LAMPS INSIDE	1	$\eta$ up(%)	0.0	CIBSE SHR NOM	0.50
TEST VOLTAGE(V)	230	$\eta$ down(%)	100.0	CIBSE SHR MAX	0.55

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

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:

## ZONAL FLUX DIAGRAM

## ZONAL FLUX DIAGRAM:

$\gamma$	C0	C45	C90	C135	C180	C225	C270	C315	$\gamma$	$\Phi$ zone	$\Phi$ total	%lum, lamp
10	5984	6980	8622	6980	5984	7003	8622	7003	0- 10	746.3	746.3	8.98,8.98
20	2606	4398	8450	4398	2606	4438	8450	4438	10- 20	1665	2411	29,29
30	1088	2100	7813	2100	1088	2106	7813	2106	20- 30	1784	4196	50.5,50.5
40	223.8	845.4	6289	845.4	223.8	844.6	6289	844.6	30- 40	1491	5687	68.4,68.4
50	235.1	224.0	4294	224.0	235.1	225.3	4294	225.3	40- 50	1045	6732	81,81
60	420.2	168.0	2045	168.0	420.2	168.0	2045	168.0	50- 60	690.8	7423	89.3,89.3
70	617.9	171.5	627.7	171.5	617.9	172.9	627.7	172.9	60- 70	483.3	7906	95.2,95.2
80	273.7	130.7	124.5	130.7	273.7	132.1	124.5	132.1	70- 80	321.2	8227	99,99
90	1.889	2.181	3.780	2.181	1.889	2.422	3.780	2.422	80- 90	81.56	8309	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): 6260.5 lm

%lum = 75.3%

%lamp = 75.3%

Conical surface Flux(120deg): 7422.9 lm

%lum = 89.3%

%lamp = 89.3%

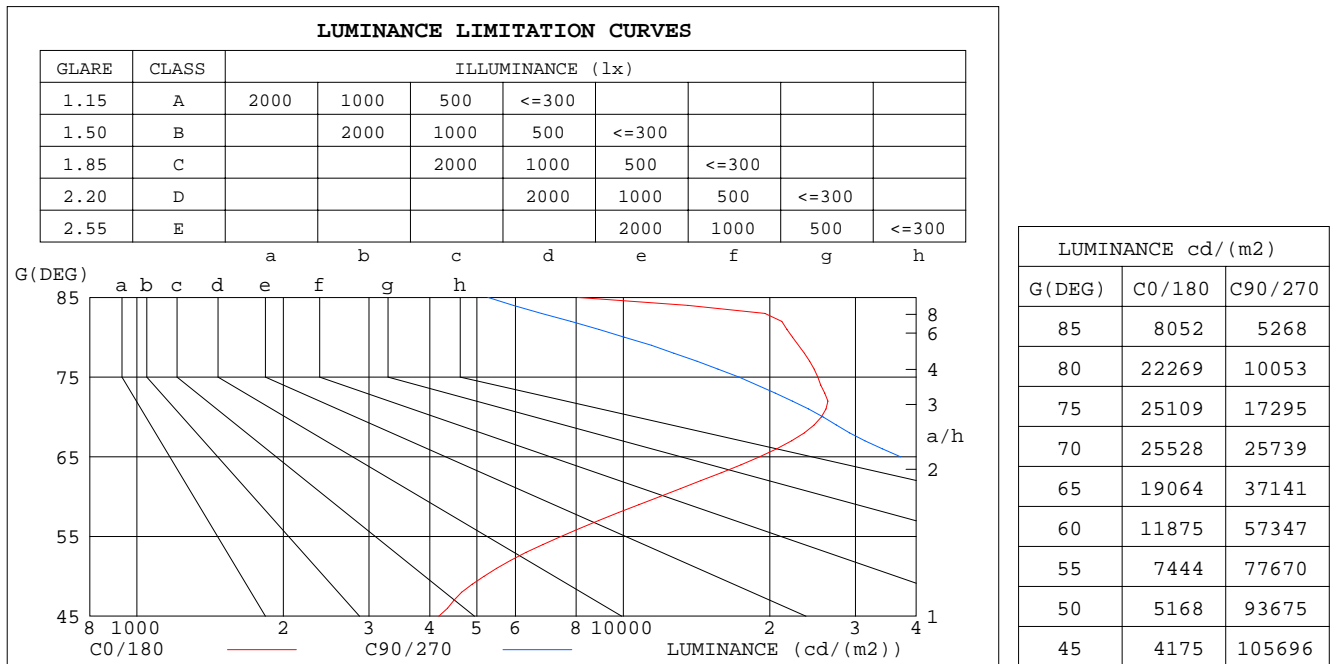
C Range: 0 - 360DEG  
 C Interval: 10.0DEG  
 Test Speed: HIGH  
 Temperature:25.3DEG  
 Operators:  
 Test Date:2016-07-11

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

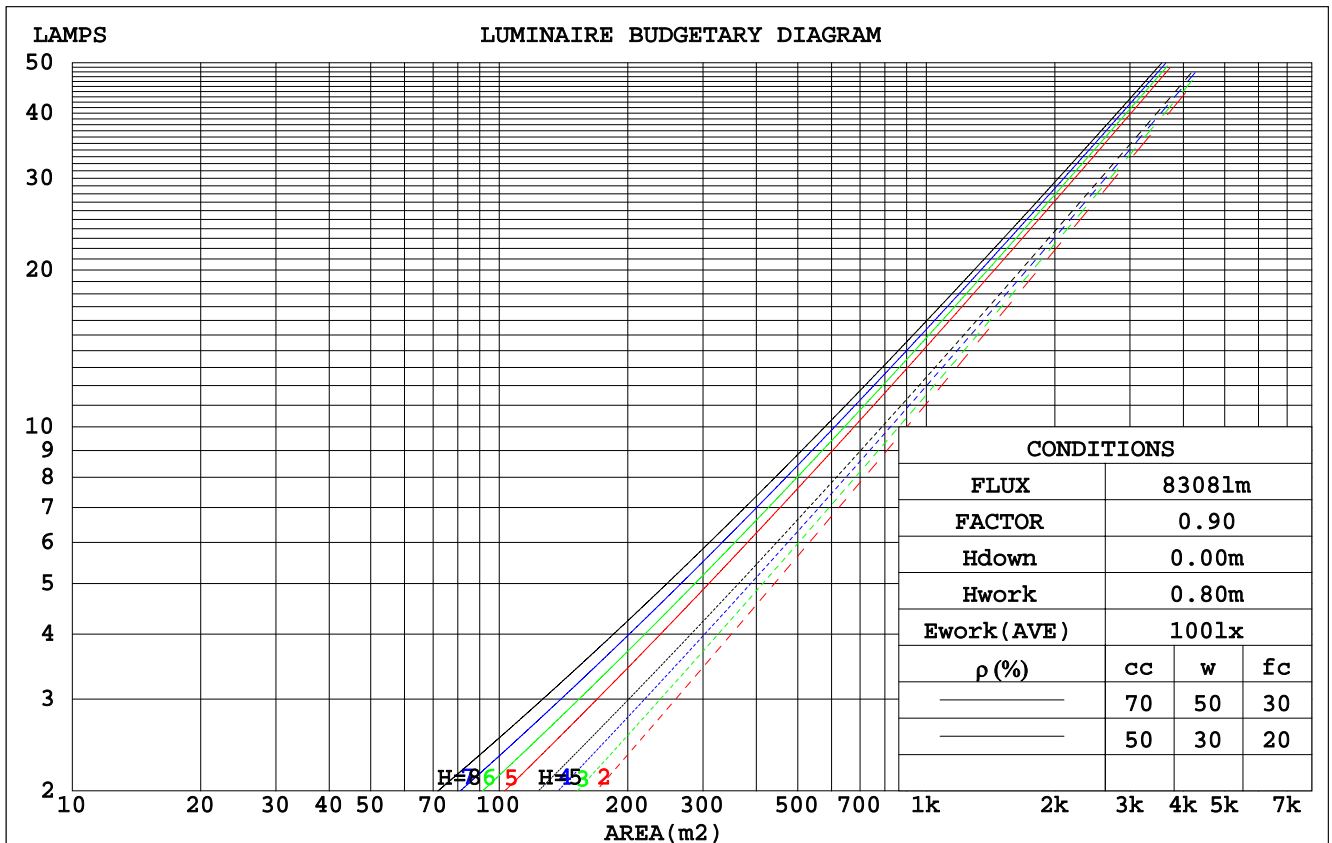
Checker:

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	1.07	1.04	1.01	1.05	1.02	.99	1.01	.99	.96	.97	.95	.93	.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	.82	.77	.87	.81	.76	.84	.79	.75	.81	.77	.73	.79	.75	.72	.70
4.0	.81	.74	.68	.79	.73	.68	.77	.71	.67	.75	.70	.66	.73	.69	.65	.63
5.0	.74	.67	.62	.73	.66	.61	.71	.65	.61	.69	.64	.60	.68	.63	.59	.58
6.0	.69	.61	.56	.68	.61	.56	.66	.60	.55	.65	.59	.55	.63	.58	.55	.53
7.0	.64	.57	.51	.63	.56	.51	.62	.55	.51	.60	.55	.51	.59	.54	.50	.49
8.0	.60	.52	.47	.59	.52	.47	.58	.52	.47	.57	.51	.47	.55	.50	.47	.45
9.0	.56	.49	.44	.55	.49	.44	.54	.48	.44	.53	.48	.44	.52	.47	.43	.42
10.0	.52	.46	.41	.52	.45	.41	.51	.45	.41	.50	.45	.41	.49	.44	.41	.39



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	.242	.137	.044	.235	.134	.043	.222	.127	.041	.210	.121	.039	.199	.115	.037	
2.0	.228	.125	.038	.222	.122	.038	.211	.117	.036	.201	.113	.035	.191	.108	.034	
3.0	.213	.113	.034	.208	.111	.034	.198	.108	.033	.189	.104	.032	.181	.100	.031	
4.0	.199	.103	.030	.194	.102	.030	.186	.099	.029	.178	.096	.029	.171	.093	.028	
5.0	.186	.095	.027	.182	.093	.027	.175	.091	.027	.168	.088	.026	.161	.086	.026	
6.0	.174	.087	.025	.171	.086	.025	.164	.084	.025	.158	.082	.024	.152	.080	.024	
7.0	.164	.081	.023	.161	.080	.023	.155	.078	.023	.150	.077	.022	.144	.075	.022	
8.0	.155	.076	.021	.152	.075	.021	.147	.073	.021	.142	.072	.021	.137	.070	.021	
9.0	.146	.071	.020	.144	.070	.020	.139	.069	.019	.135	.068	.019	.131	.066	.019	
10.0	.139	.066	.018	.136	.066	.018	.132	.065	.018	.128	.064	.018	.124	.063	.018	

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	.190	.190	.190	.163	.163	.163	.111	.111	.111	.064	.064	.064	.020	.020	.020	
1.0	.176	.157	.140	.150	.135	.120	.103	.093	.083	.059	.054	.048	.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	.090	.068	.050	.052	.040	.030	.017	.013	.010	
4.0	.144	.100	.066	.124	.086	.057	.085	.060	.040	.049	.035	.024	.016	.011	.008	
5.0	.136	.089	.054	.117	.077	.047	.081	.054	.033	.047	.032	.020	.015	.010	.006	
6.0	.129	.080	.045	.111	.069	.039	.076	.048	.028	.044	.029	.016	.014	.009	.005	
7.0	.122	.073	.038	.105	.063	.033	.073	.044	.023	.042	.026	.014	.014	.009	.005	
8.0	.116	.067	.033	.100	.058	.028	.069	.041	.020	.040	.024	.012	.013	.008	.004	
9.0	.111	.062	.028	.095	.053	.025	.066	.038	.018	.038	.022	.011	.012	.007	.003	
10.0	.105	.057	.025	.091	.050	.022	.063	.035	.016	.037	.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	15.6	16.8	15.9	17.0	17.2	27.1	28.3	27.3	28.4	28.6
3H	21.4	22.5	21.7	22.8	23.0	27.8	28.9	28.1	29.2	29.4
4H	23.3	24.4	23.6	24.6	24.8	28.1	29.1	28.4	29.4	29.6
6H	24.4	25.4	24.7	25.6	25.9	28.1	29.1	28.5	29.4	29.7
8H	24.7	25.7	25.0	25.9	26.2	28.1	29.1	28.4	29.3	29.6
12H	24.8	25.7	25.1	26.0	26.3	28.1	29.0	28.4	29.3	29.6
4H 2H	16.1	17.2	16.4	17.4	17.6	26.8	27.8	27.1	28.1	28.3
3H	22.0	22.9	22.3	23.2	23.5	27.6	28.5	27.9	28.8	29.1
4H	24.1	25.0	24.5	25.3	25.6	27.9	28.7	28.2	29.0	29.3
6H	25.5	26.2	25.9	26.6	26.9	28.0	28.8	28.4	29.1	29.4
8H	25.9	26.6	26.3	27.0	27.3	28.0	28.7	28.4	29.1	29.5
12H	26.0	26.6	26.4	27.0	27.4	28.0	28.6	28.4	29.0	29.4
8H 4H	24.2	24.9	24.6	25.3	25.6	27.8	28.5	28.2	28.8	29.2
6H	25.8	26.4	26.3	26.8	27.2	27.9	28.5	28.4	28.9	29.3
8H	26.5	27.0	26.9	27.4	27.8	28.0	28.5	28.4	28.9	29.4
12H	26.6	27.1	27.1	27.5	28.0	28.0	28.4	28.5	28.9	29.3
12H 4H	24.2	24.8	24.6	25.2	25.6	27.8	28.4	28.2	28.8	29.2
6H	25.8	26.3	26.3	26.8	27.2	28.0	28.5	28.4	28.9	29.3
8H	26.5	27.0	27.0	27.4	27.9	28.0	28.4	28.5	28.9	29.4
Variations with the observer position at spacings:										
S = 1.0H	+ 0.1 / - 0.1					+ 1.3 / - 1.1				
1.5H	+ 0.2 / - 0.2					+ 2.6 / - 3.4				
2.0H	+ 0.3 / - 0.2					+ 4.1 / - 5.0				

CIE Pub.117 Corrected 8309 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	72	63	58	71	63	58	70	62	57	52
0.80	81	72	67	80	72	66	79	71	66	61
1.00	88	79	74	86	79	73	85	79	73	67
1.25	93	85	80	92	85	80	90	83	79	73
1.50	97	90	84	96	89	84	93	87	83	77
2.00	102	95	91	100	94	90	97	92	88	82
2.50	105	99	94	103	97	93	99	95	91	84
3.00	107	102	98	105	100	97	101	98	94	87
4.00	110	106	102	108	104	101	104	101	98	90
5.00	112	108	105	109	106	104	105	103	101	92
ROOM INDEX	UF(total)									Direct
According to DIN EN 13032-2 2004				Suspended				SHRNOM = 1.25		

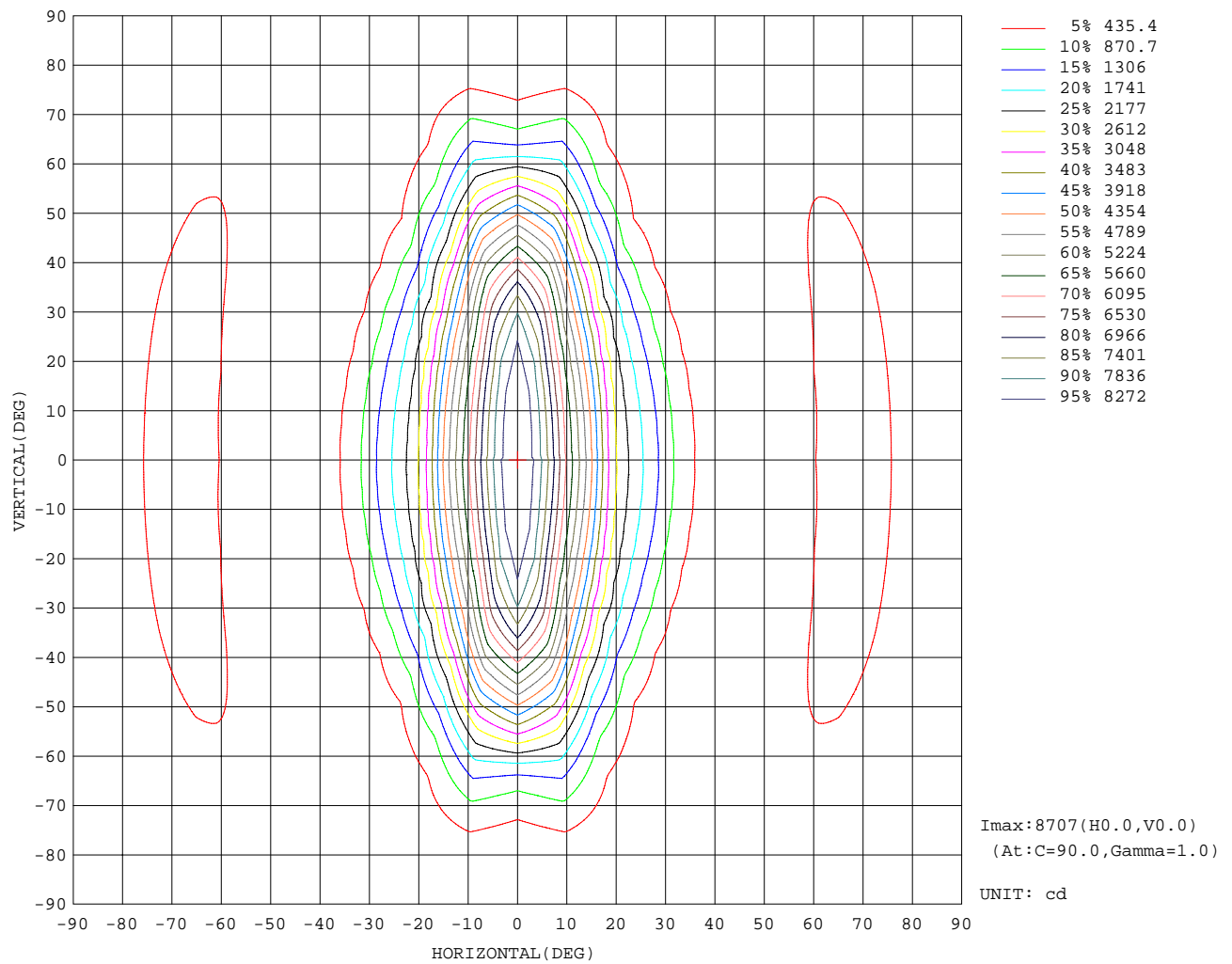
C Range: 0 - 360DEG  
 C Interval: 10.0DEG  
 Test Speed: HIGH  
 Temperature: 25.3DEG  
 Operators:  
 Test Date: 2016-07-11

Checker:

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:

Assessor:

## ISOCANDELA DIAGRAM



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

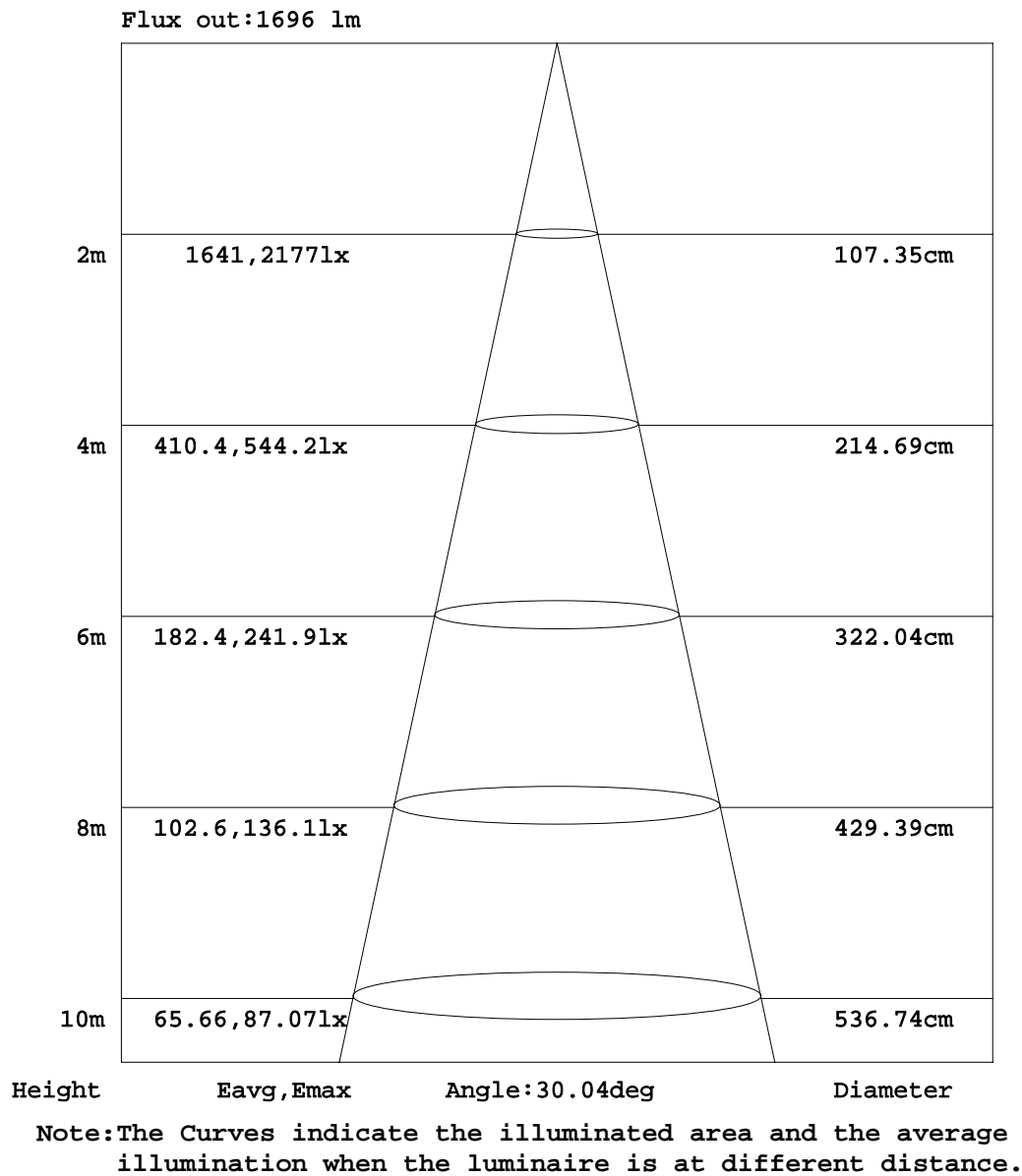
$\gamma$  Range: 0 - 90DEG  
 $\gamma$  Interval: 1.0DEG  
Test System: EVERFINE GO-2000A\_V1 SYSTEM V2.0.295  
Humidity: 65.0%  
Test Distance: 9.470m [K=1.0000]  
Remarks:

Checker:

Assessor:



AAI Figure



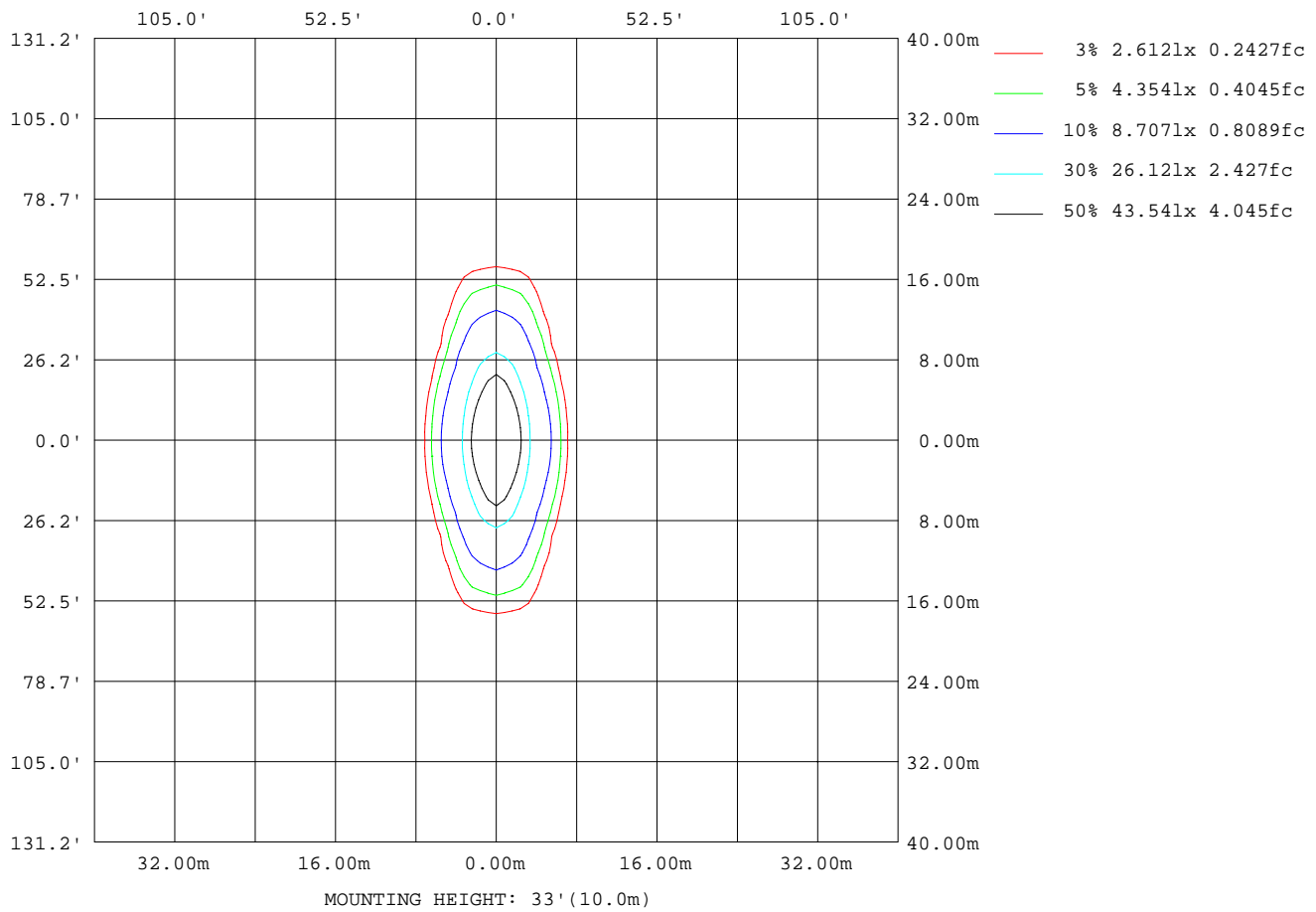
C Range: 0 - 360DEG  
C Interval: 10.0DEG  
Test Speed: HIGH  
Temperature:25.3DEG  
Operators:  
Test Date:2016-07-11

$\gamma$  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



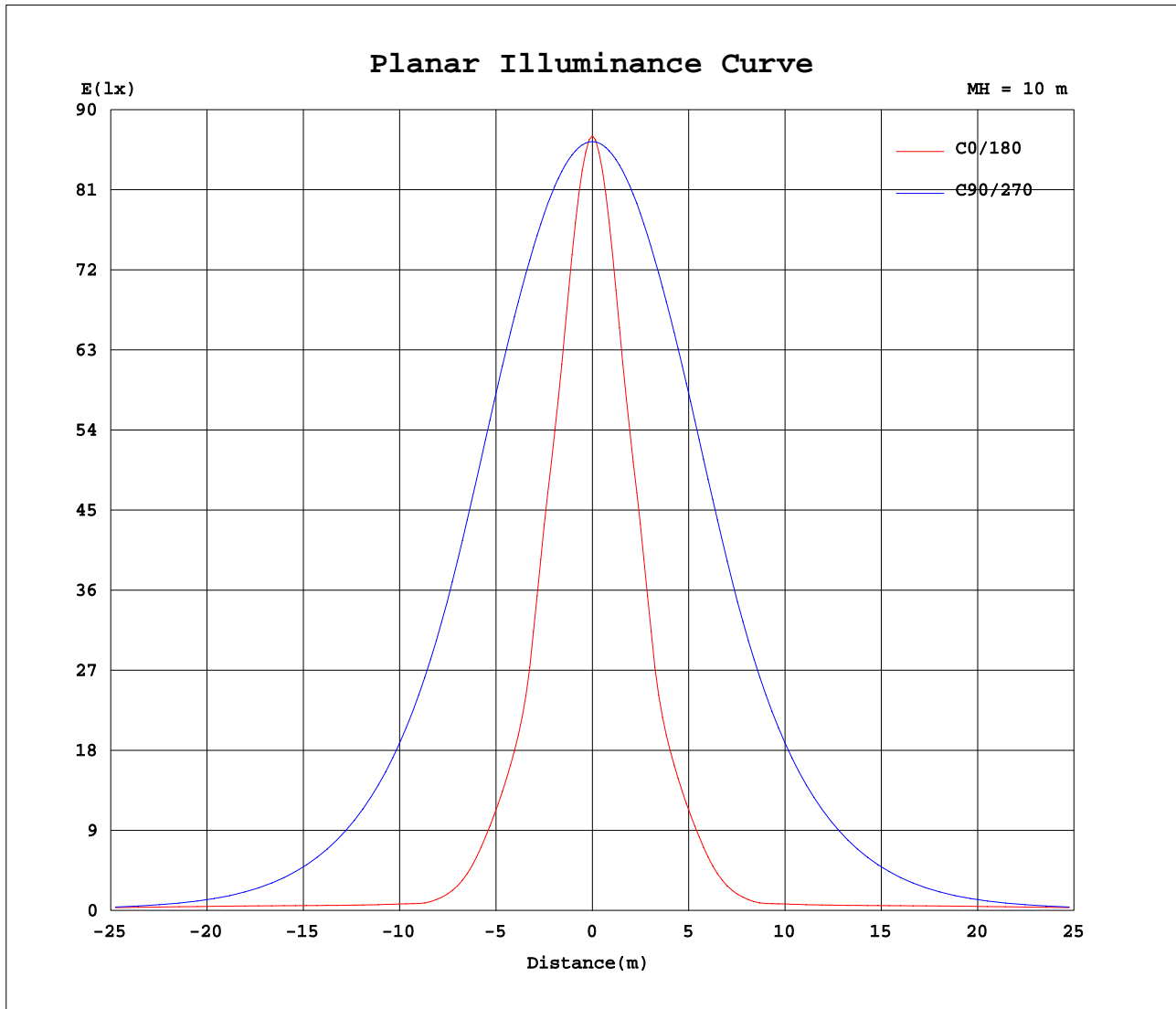
C Range: 0 - 360DEG  
C Interval: 10.0DEG  
Test Speed: HIGH  
Temperature: 25.3DEG  
Operators:  
Test Date: 2016-07-11

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:**