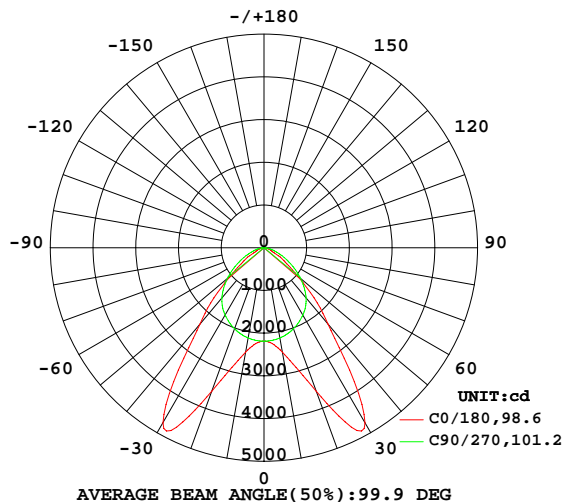


## LUMINAIRE PHOTOMETRIC TEST REPORT

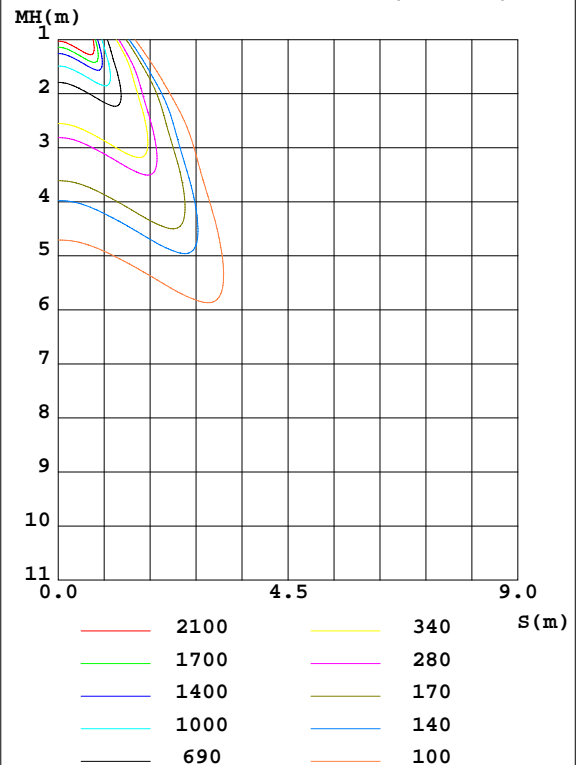
Test:U:220.1V I:0.3016A P:64.40W PF:0.9699 Lamp Flux:8164.77x1 lm		
NAME: LHB04-65	TYPE:65W	WEIGHT:
SPEC.:5000K Ra70 Double Asymmetric L00304	DIM.: 1.447*0.06*0.05	SERIAL No.:
MFR.:	SUR.:1.425*0.05	Shielding Angle:

DATA OF LAMP		PHOTOMETRIC DATA Eff: 126.77 lm/W			
MODEL	LHB04-65	Imax(cd)	4861	S/MH(C0/180)	1.44
NOMINAL POWER(W)	65	LOR(%)	100.0	S/MH(C90/270)	1.24
RATED VOLTAGE(V)	230	TOTAL FLUX(lm)	8164.8	$\eta$ UP,DN(C0-180)	0.0,50.2
NOMINAL FLUX(lm)	8164.77	CIE CLASS	DIRECT	$\eta$ UP,DN(C180-360)	0.0,49.8
LAMPS INSIDE	1	$\eta$ up(%)	0.0	CIBSE SHR NOM	0.75
TEST VOLTAGE(V)	230	$\eta$ down(%)	100.0	CIBSE SHR MAX	0.85

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	2483	2307	2145	2307	2483	2312	2145	2312	0- 10	214.5	214.5	2.63,2.63
20	3573	2737	2018	2737	3573	2756	2018	2756	10- 20	718.2	932.7	11.4,11.4
30	4731	3527	1820	3527	4731	3548	1820	3548	20- 30	1470	2402	29.4,29.4
40	2335	3979	1536	3979	2335	3974	1536	3974	30- 40	2016	4419	54.1,54.1
50	1028	2533	1120	2533	1028	2498	1120	2498	40- 50	1762	6181	75.7,75.7
60	441.4	833.2	682.9	833.2	441.4	793.2	682.9	793.2	50- 60	1127	7308	89.5,89.5
70	168.1	279.5	338.5	279.5	168.1	274.5	338.5	274.5	60- 70	561.2	7870	96.4,96.4
80	60.16	95.51	121.2	95.51	60.16	94.47	121.2	94.47	70- 80	240.7	8110	99.3,99.3
90	0.9166	1.986	2.811	1.986	0.9166	2.063	2.811	2.063	80- 90	54.52	8165	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): 5364.4 lm

%lum = 65.7%

%lamp = 65.7%

Conical surface Flux(120deg): 7308.4 lm

%lum = 89.5%

%lamp = 89.5%

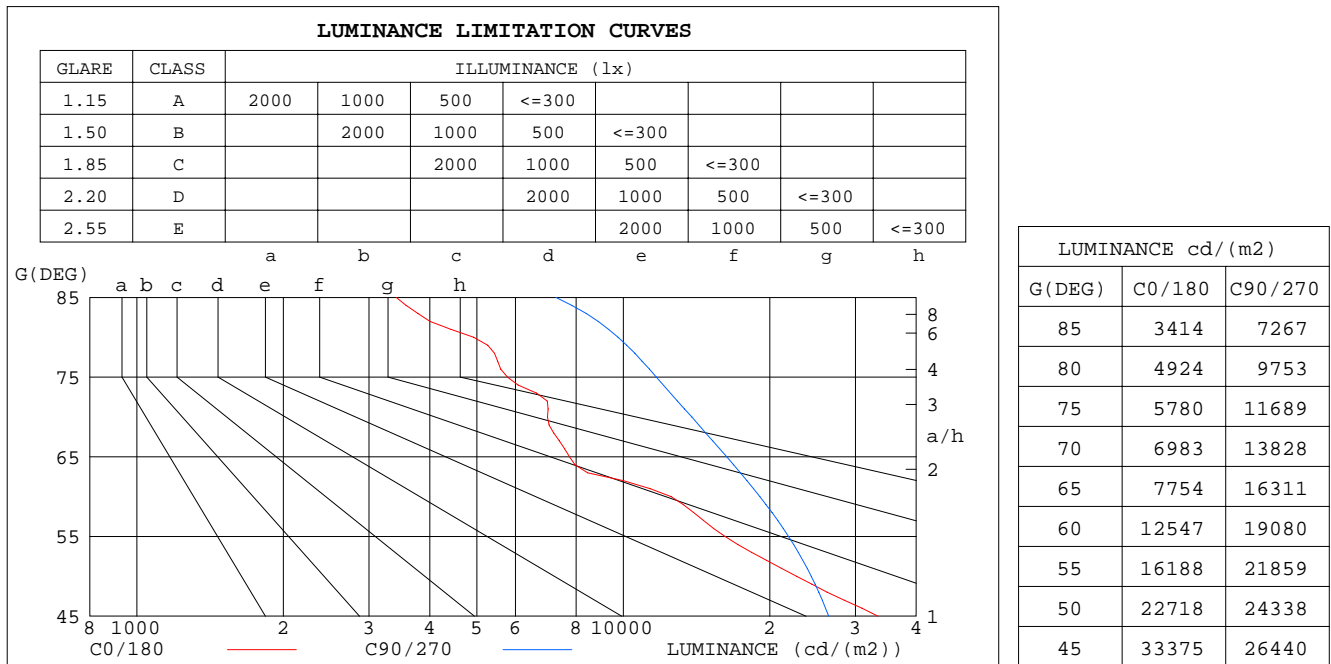
C Range: 0 - 360DEG  
 C Interval: 10.0DEG  
 Test Speed: HIGH  
 Temperature:25.3DEG  
 Operators:  
 Test Date:2016-07-11

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

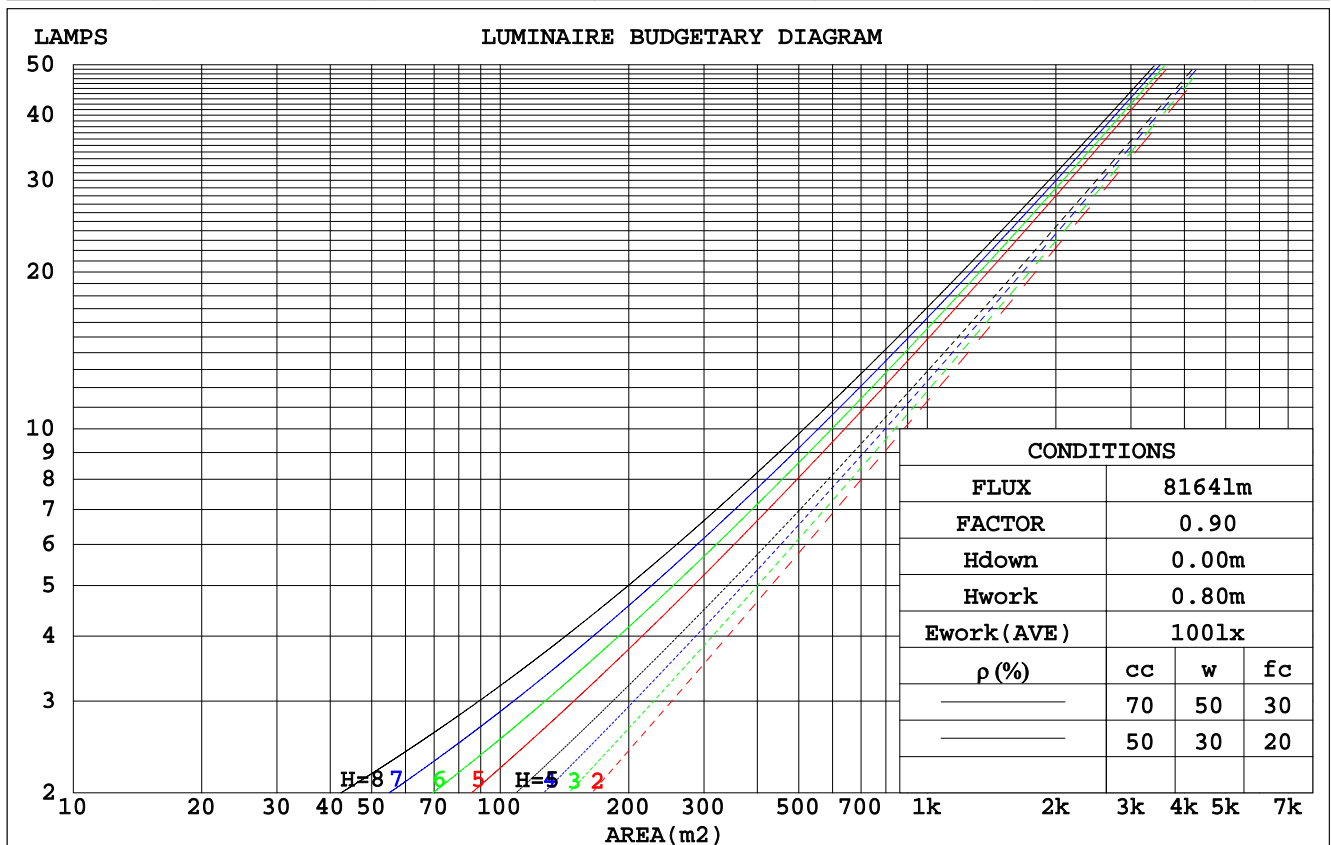
Checker:

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	1.06	1.03	.99	1.04	1.01	.98	.00	.97	.95	.96	.94	.92	.92	.91	.89	.87
2.0	.94	.88	.83	.92	.87	.82	.89	.84	.80	.86	.82	.79	.83	.80	.77	.75
3.0	.84	.76	.71	.82	.75	.70	.79	.74	.69	.77	.72	.68	.74	.70	.66	.64
4.0	.75	.67	.61	.73	.66	.60	.71	.65	.59	.69	.63	.59	.67	.62	.58	.56
5.0	.67	.59	.52	.66	.58	.52	.64	.57	.52	.62	.56	.51	.60	.55	.51	.49
6.0	.60	.52	.46	.60	.52	.46	.58	.51	.45	.56	.50	.45	.55	.49	.45	.43
7.0	.55	.46	.41	.54	.46	.40	.52	.45	.40	.51	.45	.40	.50	.44	.40	.38
8.0	.50	.42	.36	.49	.41	.36	.48	.41	.36	.47	.40	.36	.46	.40	.35	.33
9.0	.46	.38	.32	.45	.37	.32	.44	.37	.32	.43	.36	.32	.42	.36	.32	.30
10.0	.42	.34	.29	.41	.34	.29	.40	.34	.29	.39	.33	.29	.39	.33	.29	.27



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	.263	.150	.047	.256	.146	.046	.243	.140	.045	.231	.133	.043	.220	.128	.041	
2.0	.255	.140	.043	.249	.137	.042	.238	.132	.041	.227	.127	.040	.217	.123	.039	
3.0	.242	.129	.039	.236	.127	.038	.226	.123	.037	.217	.119	.036	.208	.115	.036	
4.0	.227	.118	.035	.223	.117	.034	.214	.113	.034	.206	.110	.033	.198	.108	.033	
5.0	.214	.109	.032	.209	.108	.031	.202	.105	.031	.194	.102	.030	.187	.100	.030	
6.0	.201	.101	.029	.197	.100	.029	.190	.097	.028	.183	.095	.028	.177	.093	.028	
7.0	.189	.093	.026	.186	.092	.026	.179	.091	.026	.173	.089	.026	.168	.087	.026	
8.0	.178	.087	.024	.175	.086	.024	.169	.085	.024	.164	.083	.024	.159	.082	.024	
9.0	.168	.081	.023	.165	.081	.023	.160	.079	.022	.155	.078	.022	.151	.077	.022	
10.0	.159	.076	.021	.157	.076	.021	.152	.074	.021	.148	.073	.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	.190	.190	.190	.163	.163	.163	.111	.111	.111	.064	.064	.064	.020	.020	.020	
1.0	.177	.157	.138	.152	.134	.119	.104	.092	.082	.060	.053	.048	.019	.017	.015	
2.0	.167	.132	.102	.143	.114	.089	.098	.079	.062	.057	.046	.036	.018	.015	.012	
3.0	.159	.114	.078	.136	.098	.068	.094	.068	.048	.054	.040	.028	.017	.013	.009	
4.0	.151	.101	.062	.130	.087	.053	.089	.061	.038	.052	.035	.022	.017	.012	.007	
5.0	.144	.090	.050	.124	.078	.043	.085	.054	.031	.050	.032	.018	.016	.010	.006	
6.0	.138	.081	.041	.119	.071	.036	.082	.049	.025	.047	.029	.015	.015	.009	.005	
7.0	.132	.075	.035	.113	.065	.030	.078	.045	.021	.045	.027	.013	.015	.009	.004	
8.0	.126	.069	.030	.108	.060	.026	.075	.042	.018	.044	.025	.011	.014	.008	.004	
9.0	.120	.064	.026	.104	.055	.023	.072	.039	.016	.042	.023	.010	.014	.008	.003	
10.0	.115	.060	.023	.099	.052	.020	.069	.036	.014	.040	.022	.008	.013	.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	23.4	24.8	23.7	25.0	25.2	26.0	27.5	26.3	27.6	27.8
3H	23.4	24.7	23.7	24.9	25.2	26.6	27.9	26.9	28.1	28.4
4H	23.4	24.6	23.7	24.9	25.1	26.7	28.0	27.0	28.2	28.5
6H	23.4	24.5	23.7	24.8	25.1	26.8	27.9	27.1	28.2	28.5
8H	23.3	24.4	23.7	24.7	25.0	26.8	27.9	27.1	28.2	28.4
12H	23.3	24.4	23.6	24.6	24.9	26.8	27.8	27.1	28.1	28.4
4H 2H	24.0	25.2	24.3	25.4	25.7	26.1	27.4	26.4	27.6	27.9
3H	24.0	25.1	24.4	25.4	25.7	27.1	28.1	27.4	28.4	28.7
4H	24.0	25.0	24.4	25.3	25.6	27.4	28.3	27.7	28.6	29.0
6H	24.0	24.9	24.4	25.2	25.6	27.5	28.4	27.9	28.7	29.1
8H	24.0	24.8	24.4	25.2	25.5	27.6	28.4	28.0	28.7	29.1
12H	24.0	24.7	24.4	25.1	25.5	27.6	28.3	28.0	28.7	29.1
8H 4H	24.2	25.0	24.6	25.4	25.8	27.3	28.1	27.7	28.5	28.9
6H	24.3	24.9	24.7	25.3	25.7	27.6	28.3	28.1	28.7	29.1
8H	24.3	24.8	24.7	25.3	25.7	27.7	28.3	28.2	28.7	29.2
12H	24.3	24.7	24.7	25.2	25.7	27.8	28.3	28.3	28.7	29.2
12H 4H	24.2	25.0	24.7	25.3	25.7	27.3	28.0	27.7	28.4	28.8
6H	24.3	24.9	24.8	25.3	25.7	27.6	28.2	28.1	28.6	29.0
8H	24.3	24.8	24.8	25.2	25.7	27.7	28.2	28.2	28.7	29.1
Variations with the observer position at spacings:										
S = 1.0H	+ 1.8 / - 2.9					+ 0.7 / - 0.6				
1.5H	+ 1.9 / - 2.2					+ 1.9 / - 2.1				
2.0H	+ 2.3 / - 2.7					+ 1.5 / - 3.0				

CIE Pub.117 Corrected 8165 lm Total Lamp Luminous Flux.(8log(F/F0) = 7.3)

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) $k(RI) \times RCR = 5$									
$k = 0.60$	63	52	45	62	52	45	61	51	45	39
0.80	73	63	56	72	62	56	70	61	55	49
1.00	82	72	65	81	71	65	78	72	65	58
1.25	89	79	73	87	79	73	85	77	72	66
1.50	93	85	79	92	84	78	89	82	77	71
2.00	99	92	87	98	91	86	94	89	84	77
2.50	102	96	91	101	95	90	97	92	88	81
3.00	105	100	95	103	98	94	99	95	92	84
4.00	109	104	100	106	102	99	102	99	96	88
5.00	110	106	103	108	104	101	104	101	98	90
ROOM INDEX	UF(total)									Direct
According to DIN EN 13032-2 2004				Suspended				SHRNOM = 1.25		

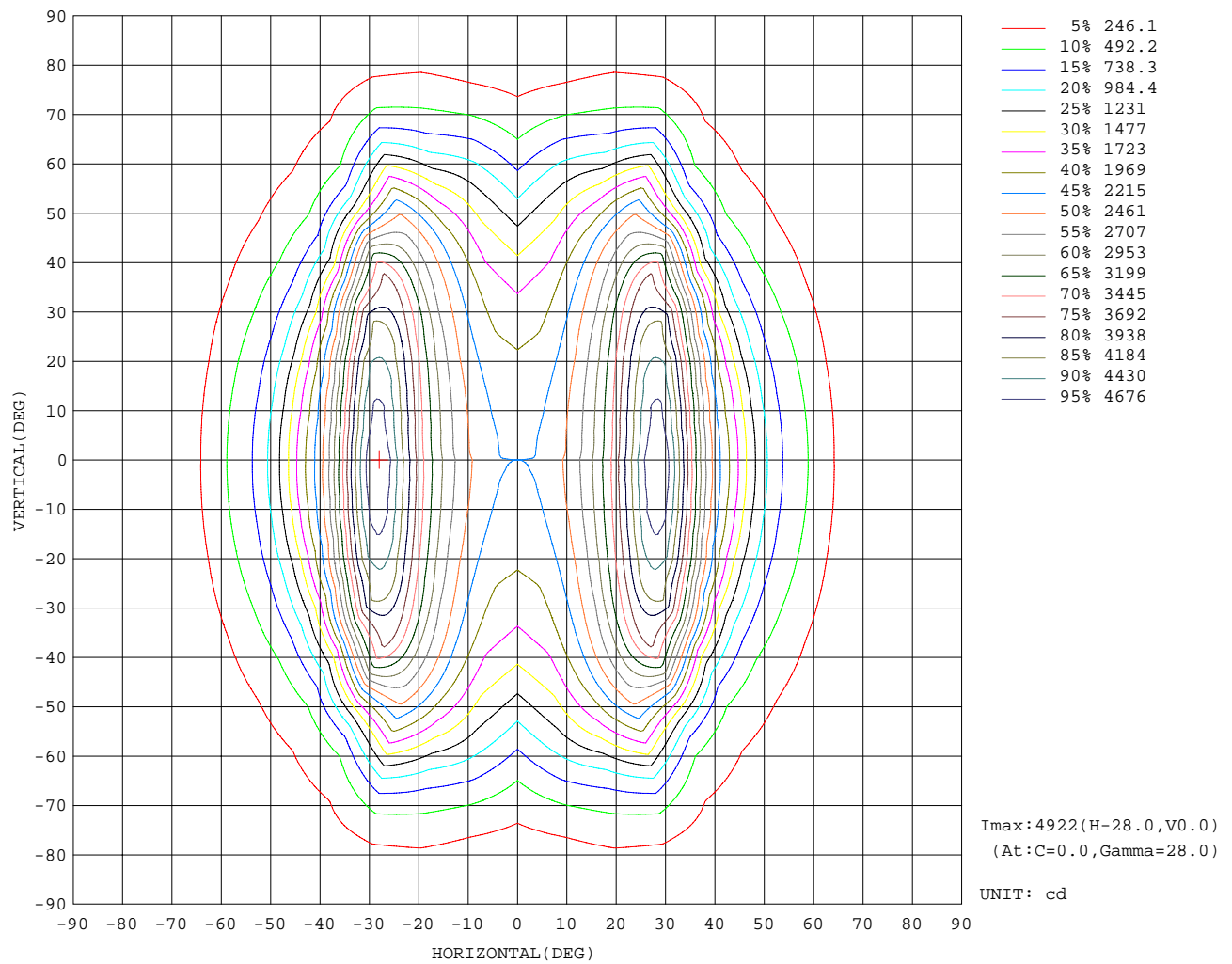
C Range: 0 - 360DEG  
 C Interval: 10.0DEG  
 Test Speed: HIGH  
 Temperature: 25.3DEG  
 Operators:  
 Test Date: 2016-07-11

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

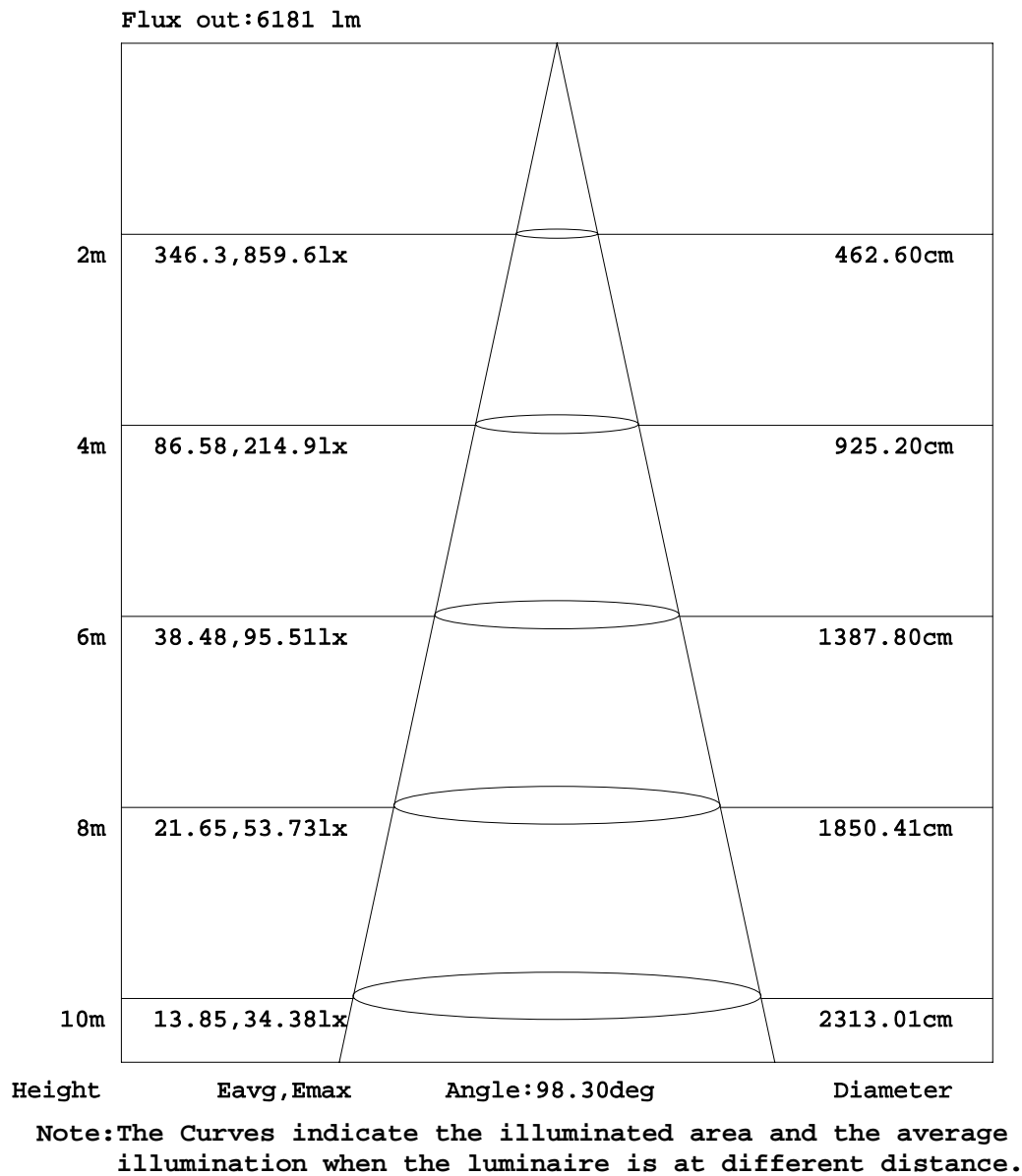
$\gamma$  Range: 0 - 90DEG  
 $\gamma$  Interval: 1.0DEG  
Test System: EVERFINE GO-2000A\_V1 SYSTEM V2.0.295  
Humidity: 65.0%  
Test Distance: 9.470m [K=1.0000]  
Remarks:

Checker:

Assessor:



AAI Figure



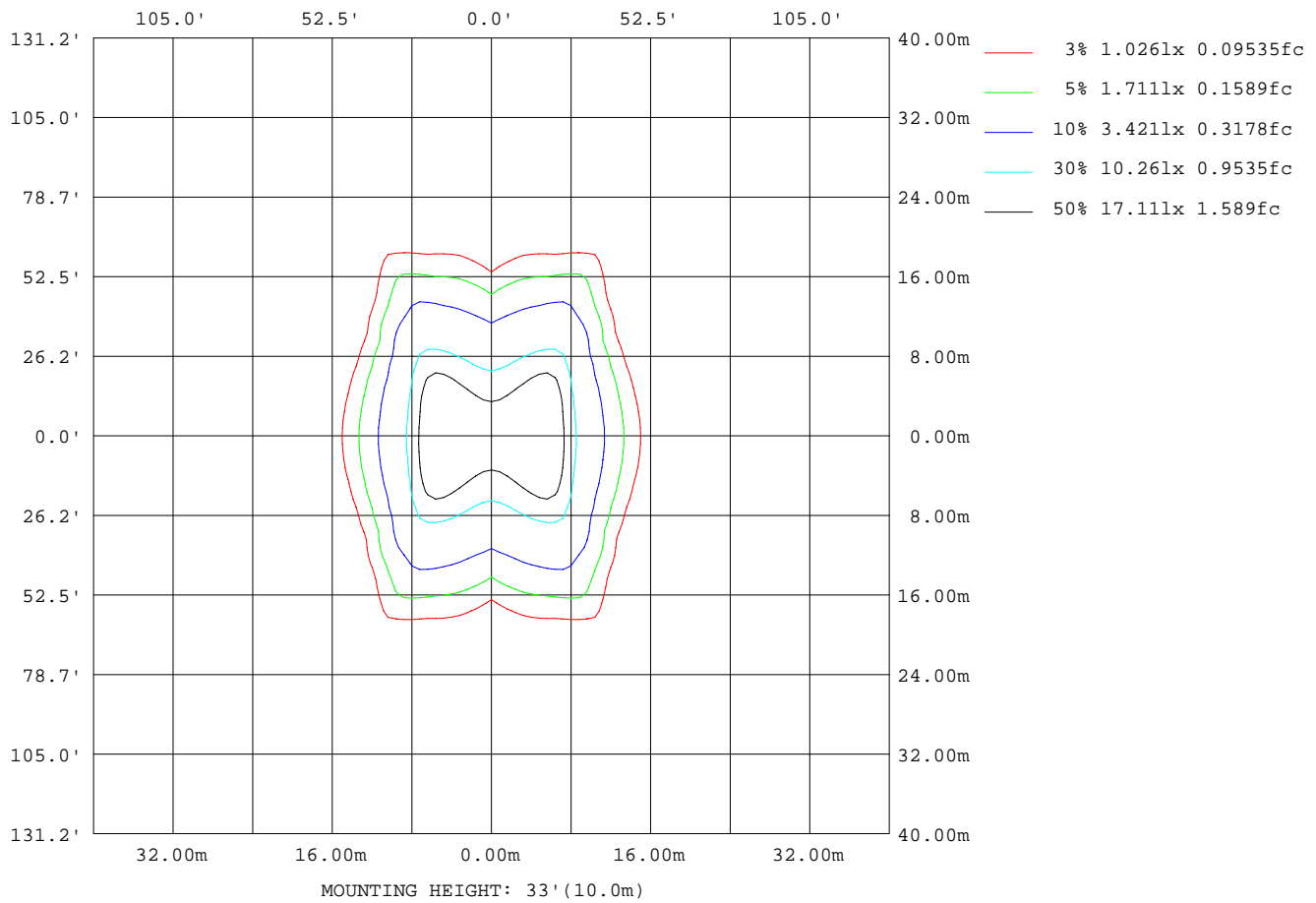
C Range: 0 - 360DEG  
 C Interval: 10.0DEG  
 Test Speed: HIGH  
 Temperature: 25.3DEG  
 Operators:  
 Test Date: 2016-07-11

$\gamma$  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



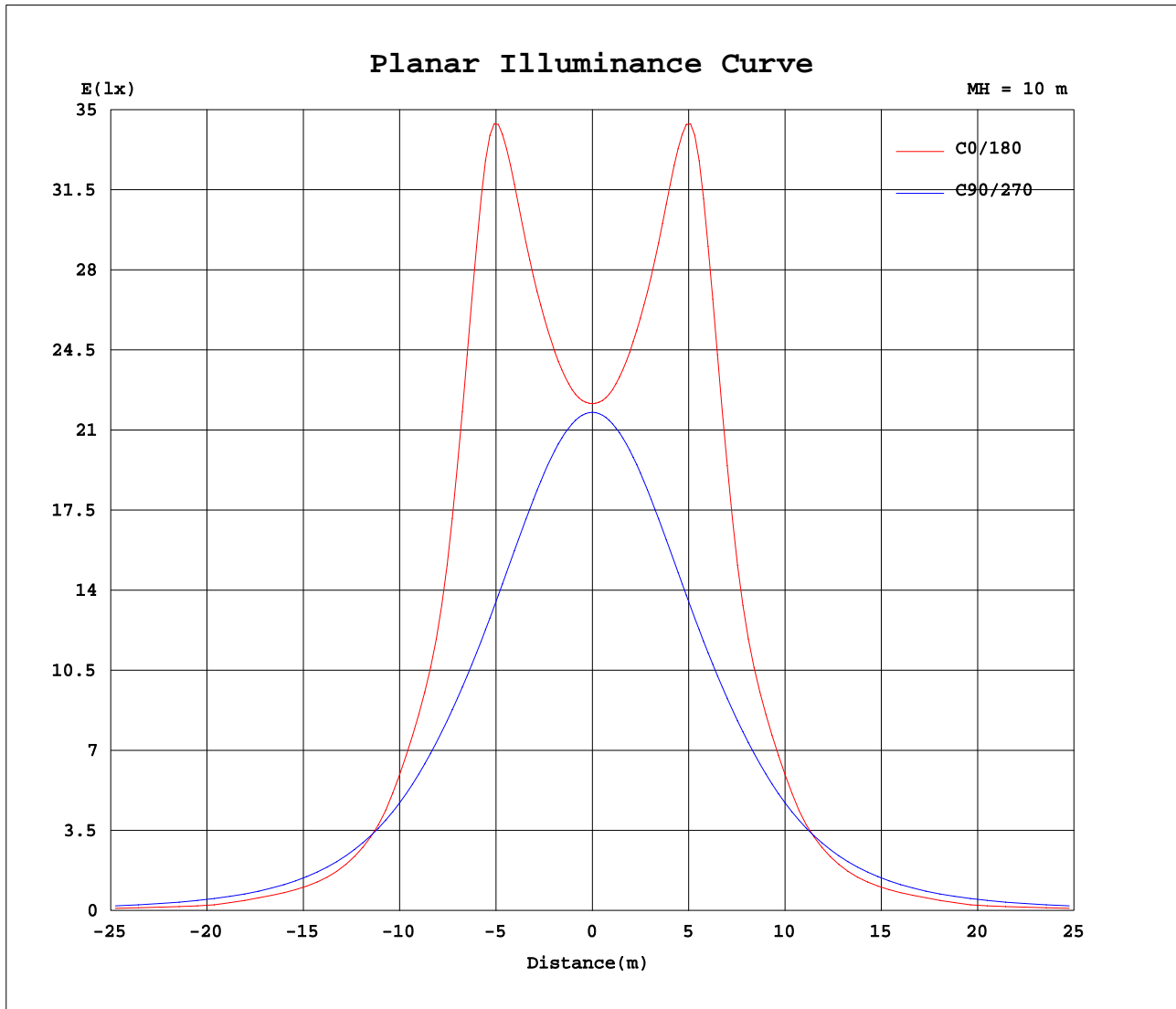
C Range: 0 - 360DEG  
C Interval: 10.0DEG  
Test Speed: HIGH  
Temperature: 25.3DEG  
Operators:  
Test Date: 2016-07-11

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:**