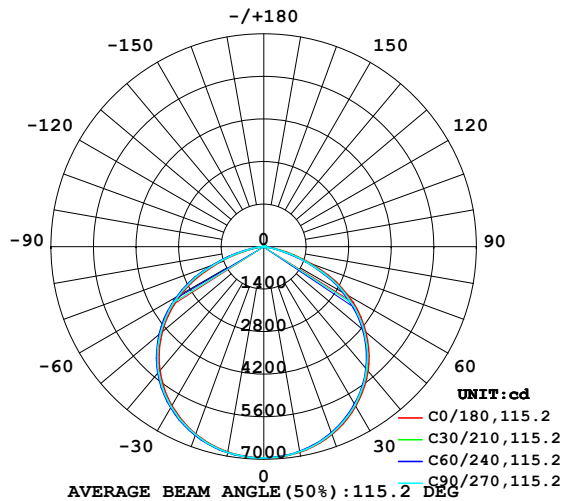


## LUMINAIRE PHOTOMETRIC TEST REPORT

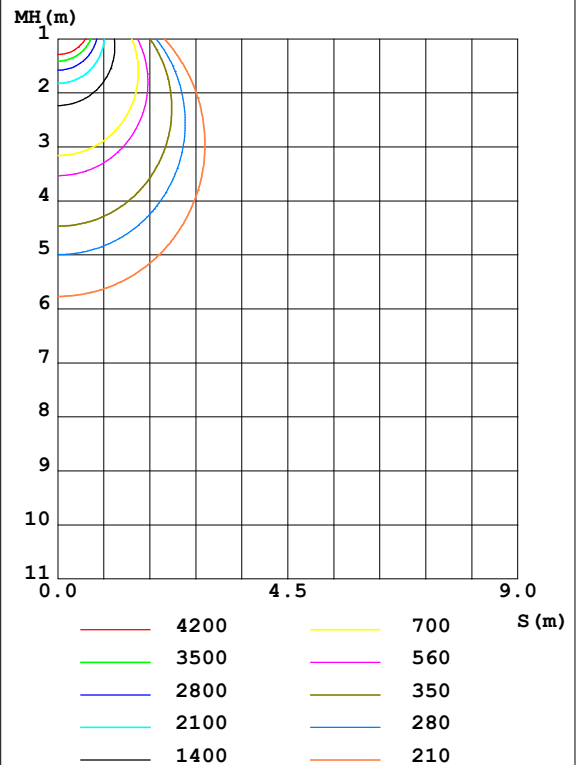
Test:U:229.8V I:0.6820A P:151.7W PF:0.9680 Lamp Flux:19815.1x1 lm		
NAME: HB08-150	TYPE:150W	WEIGHT:
SPEC.:5000K Ra70 120DEG H00A02	DIM.: 0.39*0.39*0.12	SERIAL No.:
MFR.:	SUR.:0.23*0.23	Shielding Angle:

DATA OF LAMP		PHOTOMETRIC DATA Eff: 130.62 lm/W			
MODEL	HB08-150	I <sub>max</sub> (cd)	6958	S/MH(C0/180)	1.29
NOMINAL POWER(W)	150	LOR(%)	100.0	S/MH(C90/270)	1.30
RATED VOLTAGE(V)	230	TOTAL FLUX(lm)	19815	η UP,DN(C0-180)	0.4,48.7
NOMINAL FLUX(lm)	19815.1	CIE CLASS	DIRECT	η UP,DN(C180-360)	0.4,50.5
LAMPS INSIDE	1	η up(%)	0.8	CIBSE SHR NOM	1.25
TEST VOLTAGE(V)	230	η down(%)	99.2	CIBSE SHR MAX	1.35

LUMINOUS INTENSITY DISTRIBUTION DIAGRAM



C0 PLANE ISOLUX DIAGRAM (UNIT:lx)



C Range: 0 - 360DEG  
C Interval: 30.0DEG  
Test Speed: HIGH  
Temperature:25.3DEG  
Operators:  
Test Date:2016-06-14

γ Range: 0 - 180DEG  
γ Interval: 2.0DEG  
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	6865	6844	6849	6851	6860	6878	6873	6876	0- 10	659.5	659.5	3.33,3.33
20	6573	6525	6536	6537	6556	6598	6586	6591	10- 20	1903	2563	12.9,12.9
30	6058	5993	6008	6012	6046	6107	6095	6095	20- 30	2920	5483	27.7,27.7
40	5343	5258	5270	5278	5321	5412	5393	5393	30- 40	3578	9061	45.7,45.7
50	4391	4275	4303	4307	4360	4473	4448	4445	40- 50	3764	12825	64.7,64.7
60	3186	3039	3073	3071	3132	3281	3255	3251	50- 60	3391	16216	81.8,81.8
70	1677	1511	1540	1546	1623	1782	1756	1745	60- 70	2406	18621	94,94
80	297.6	190.9	210.5	210.8	262.5	374.1	351.6	355.7	70- 80	969.1	19591	98.9,98.9
90	5.496	5.947	5.885	5.848	5.417	5.009	5.063	5.087	80- 90	66.14	19657	99.2,99.2
100	10.37	11.02	10.91	10.88	10.24	9.635	9.747	9.757	90-100	8.444	19665	99.2,99.2
110	16.72	17.48	17.36	17.32	16.54	15.81	15.95	15.96	100-110	14.16	19679	99.3,99.3
120	23.50	24.31	24.20	24.15	23.28	22.51	22.66	22.66	110-120	19.81	19699	99.4,99.4
130	30.67	31.51	31.41	31.37	30.47	29.65	29.80	29.80	120-130	24.13	19723	99.5,99.5
140	37.53	38.29	38.24	38.20	37.40	36.67	36.80	36.81	130-140	26.35	19750	99.7,99.7
150	43.30	43.92	43.88	43.84	43.18	42.62	42.69	42.71	140-150	25.35	19775	99.8,99.8
160	48.03	48.44	48.42	48.36	47.96	47.54	47.56	47.57	150-160	21.09	19796	99.9,99.9
170	51.53	51.75	51.77	51.71	51.59	51.31	51.27	51.29	160-170	14.08	19810	100,100
180	52.89	52.93	52.97	52.90	52.98	52.93	52.87	52.90	170-180	4.982	19815	100,100
DEG	LUMINOUS INTENSITY:cd									UNIT:lm		

Conical surface Flux(90deg): 11332 lm

%lum = 57.2%

%lamp = 57.2%

Conical surface Flux(120deg): 16216 lm

%lum = 81.8%

%lamp = 81.8%

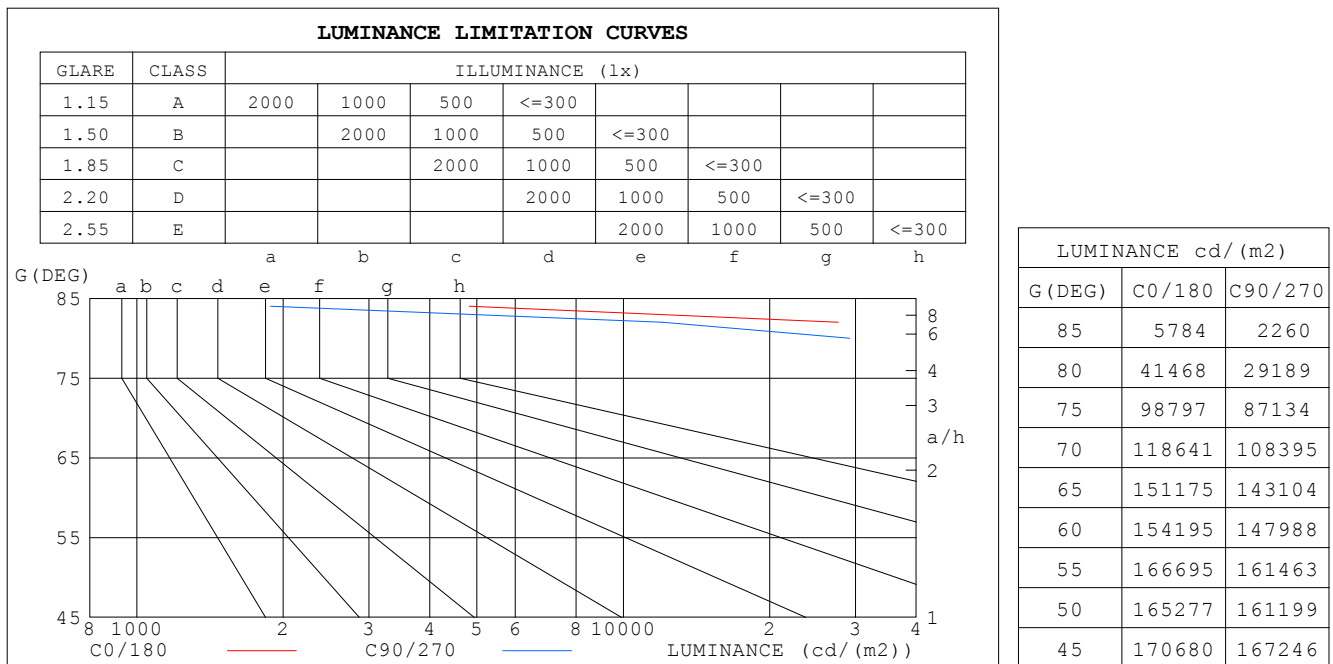
C Range: 0 - 360DEG  
 C Interval: 30.0DEG  
 Test Speed: HIGH  
 Temperature:25.3DEG  
 Operators:  
 Test Date:2016-06-14

Checker:

$\gamma$  Range: 0 - 180DEG  
 $\gamma$  Interval: 2.0DEG  
 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 - 360DEG  
C Interval: 30.0DEG  
Test Speed: HIGH  
Temperature: 25.3DEG  
Operators:  
Test Date: 2016-06-14

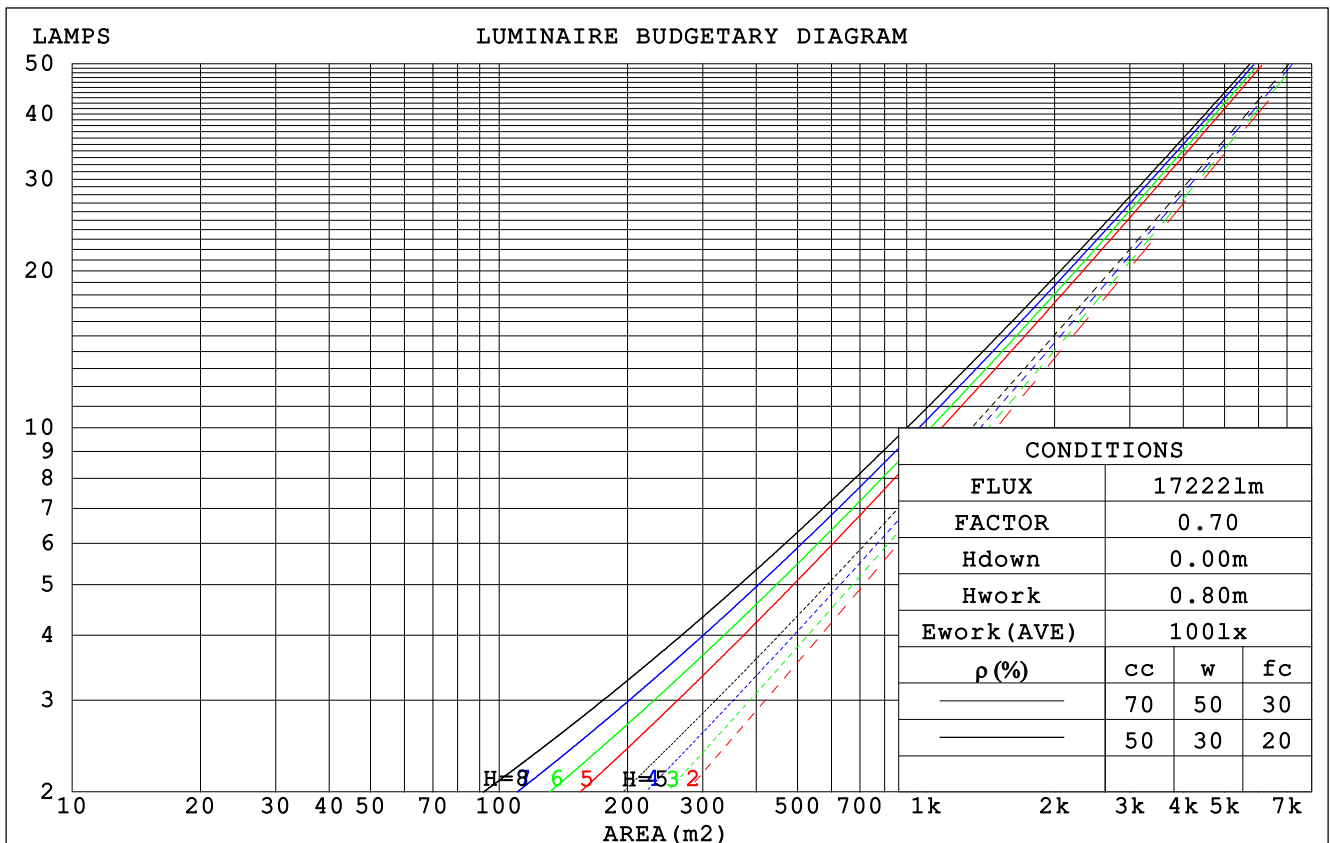
Checker:

γ Range: 0 - 180DEG  
γ Interval: 2.0DEG  
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
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			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	1.01	1.01	1.01	.99
1.0	1.05	1.01	.98	1.03	.99	.96	.98	.95	.93	.94	.92	.90	.91	.89	.87	.85
2.0	.92	.85	.80	.90	.84	.79	.86	.81	.77	.83	.79	.75	.80	.76	.73	.71
3.0	.81	.73	.67	.79	.72	.66	.76	.70	.65	.73	.68	.63	.71	.66	.62	.60
4.0	.72	.63	.56	.70	.62	.56	.68	.61	.55	.65	.59	.54	.63	.58	.54	.51
5.0	.64	.55	.49	.63	.54	.48	.61	.53	.48	.58	.52	.47	.57	.51	.46	.44
6.0	.57	.49	.42	.56	.48	.42	.55	.47	.42	.53	.46	.41	.51	.45	.41	.39
7.0	.52	.43	.37	.51	.43	.37	.50	.42	.37	.48	.41	.36	.47	.41	.36	.34
8.0	.47	.39	.33	.47	.39	.33	.45	.38	.33	.44	.37	.33	.43	.37	.32	.30
9.0	.43	.35	.30	.43	.35	.30	.42	.35	.29	.41	.34	.29	.39	.33	.29	.27
10.0	.40	.32	.27	.40	.32	.27	.38	.32	.27	.37	.31	.27	.37	.31	.26	.25



C Range: 0 - 360DEG  
 C Interval: 30.0DEG  
 Test Speed: HIGH  
 Temperature: 25.3DEG  
 Operators:  
 Test Date: 2016-06-14

γ Range: 0 - 180DEG  
 γ Interval: 2.0DEG  
 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	.284	.162	.051	.277	.158	.050	.263	.151	.048	.251	.145	.046	.239	.139	.045		
2.0	.276	.151	.046	.269	.148	.046	.257	.143	.044	.246	.138	.043	.236	.134	.042		
3.0	.259	.138	.041	.254	.136	.041	.243	.132	.040	.233	.128	.039	.224	.124	.038		
4.0	.242	.126	.037	.237	.124	.037	.227	.121	.036	.219	.117	.035	.211	.114	.035		
5.0	.225	.115	.033	.221	.113	.033	.212	.111	.033	.204	.108	.032	.197	.105	.032		
6.0	.210	.105	.030	.206	.104	.030	.198	.102	.030	.191	.099	.029	.185	.097	.029		
7.0	.196	.097	.027	.192	.096	.027	.186	.094	.027	.179	.092	.027	.173	.090	.026		
8.0	.183	.090	.025	.180	.089	.025	.174	.087	.025	.169	.085	.025	.163	.084	.024		
9.0	.172	.083	.023	.169	.083	.023	.164	.081	.023	.159	.080	.023	.154	.078	.023		
10.0	.162	.078	.022	.160	.077	.022	.155	.076	.021	.150	.074	.021	.146	.073	.021		

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	.197	.197	.197	.168	.168	.168	.115	.115	.115	.066	.066	.066	.021	.021	.021		
1.0	.185	.163	.143	.158	.139	.123	.108	.096	.085	.062	.056	.049	.020	.018	.016		
2.0	.176	.138	.106	.151	.119	.092	.103	.082	.064	.060	.048	.038	.019	.015	.012		
3.0	.169	.120	.082	.145	.104	.071	.099	.072	.050	.057	.042	.029	.018	.014	.010		
4.0	.161	.107	.066	.138	.093	.057	.095	.064	.040	.055	.038	.024	.018	.012	.008		
5.0	.154	.097	.054	.132	.084	.047	.091	.058	.033	.053	.034	.020	.017	.011	.007		
6.0	.147	.088	.046	.127	.076	.040	.087	.054	.028	.051	.031	.017	.016	.010	.006		
7.0	.141	.081	.040	.121	.071	.035	.084	.049	.025	.049	.029	.015	.016	.010	.005		
8.0	.134	.076	.035	.116	.066	.031	.080	.046	.022	.047	.027	.013	.015	.009	.004		
9.0	.128	.071	.032	.111	.061	.028	.077	.043	.020	.045	.025	.012	.014	.008	.004		
10.0	.123	.066	.029	.106	.058	.025	.073	.041	.018	.043	.024	.011	.014	.008	.004		

C Range: 0 - 360DEG  
C Interval: 30.0DEG  
Test Speed: HIGH  
Temperature:25.3DEG  
Operators:  
Test Date:2016-06-14

γ Range: 0 - 180DEG  
γ Interval: 2.0DEG  
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	30.6	32.0	30.8	32.3	32.5	30.4	31.9	30.7	32.1	32.3
3H	31.7	33.1	32.1	33.4	33.6	31.5	32.8	31.8	33.1	33.3
4H	32.0	33.3	32.3	33.6	33.8	31.7	33.0	32.0	33.3	33.5
6H	32.0	33.3	32.4	33.5	33.8	31.7	32.9	32.0	33.2	33.5
8H	32.0	33.2	32.4	33.5	33.8	31.6	32.8	32.0	33.1	33.4
12H	32.0	33.1	32.3	33.4	33.7	31.6	32.7	32.0	33.0	33.3
4H 2H	31.0	32.3	31.4	32.6	32.9	30.9	32.2	31.2	32.5	32.7
3H	32.3	33.5	32.7	33.8	34.1	32.1	33.2	32.5	33.5	33.8
4H	32.7	33.7	33.0	34.0	34.4	32.4	33.4	32.8	33.7	34.1
6H	32.7	33.6	33.1	34.0	34.4	32.4	33.3	32.8	33.6	34.0
8H	32.7	33.5	33.1	33.9	34.3	32.3	33.2	32.8	33.6	34.0
12H	32.6	33.4	33.1	33.8	34.2	32.3	33.1	32.7	33.5	33.9
8H 4H	32.7	33.5	33.1	33.9	34.3	32.4	33.2	32.8	33.6	34.0
6H	32.8	33.5	33.2	33.9	34.3	32.4	33.1	32.9	33.6	34.0
8H	32.8	33.4	33.2	33.8	34.3	32.4	33.0	32.9	33.5	33.9
12H	32.7	33.2	33.2	33.7	34.2	32.4	32.9	32.9	33.4	33.8
12H 4H	32.6	33.4	33.1	33.8	34.2	32.4	33.1	32.8	33.5	34.0
6H	32.7	33.3	33.2	33.8	34.2	32.4	33.0	32.9	33.5	33.9
8H	32.7	33.2	33.2	33.7	34.2	32.4	32.9	32.9	33.4	33.9
Variations with the observer position at spacings:										
S = 1.0H	+ 0.2 / - 0.3					+ 0.2 / - 0.3				
1.5H	+ 0.2 / - 0.4					+ 0.3 / - 0.5				
2.0H	+ 0.4 / - 0.5					+ 0.4 / - 0.5				

CIE Pub.117 Corrected 19815 lm Total Lamp Luminous Flux.(8log(F/F0) = 10.4)

C Range: 0 - 360DEG  
C Interval: 30.0DEG  
Test Speed: HIGH  
Temperature:25.3DEG  
Operators:  
Test Date:2016-06-14

γ Range: 0 - 180DEG  
γ Interval: 2.0DEG  
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) $k(RI) \times RCR = 5$									
$k = 0.60$	58	46	39	57	46	39	56	46	39	33
0.80	68	57	50	67	56	49	65	55	49	42
1.00	77	66	59	76	65	59	73	67	58	51
1.25	84	74	67	83	73	67	80	72	66	59
1.50	89	80	73	88	79	72	84	77	71	64
2.00	96	88	82	94	87	81	91	84	79	72
2.50	100	93	87	98	91	86	94	88	84	76
3.00	103	97	92	101	95	90	97	92	88	80
4.00	107	102	97	105	100	96	100	97	93	84
5.00	109	105	101	107	103	100	102	99	96	87
ROOM INDEX	UF (total)									Direct
According to DIN EN 13032-2 2004			Suspended					SHRNOM = 1.25		

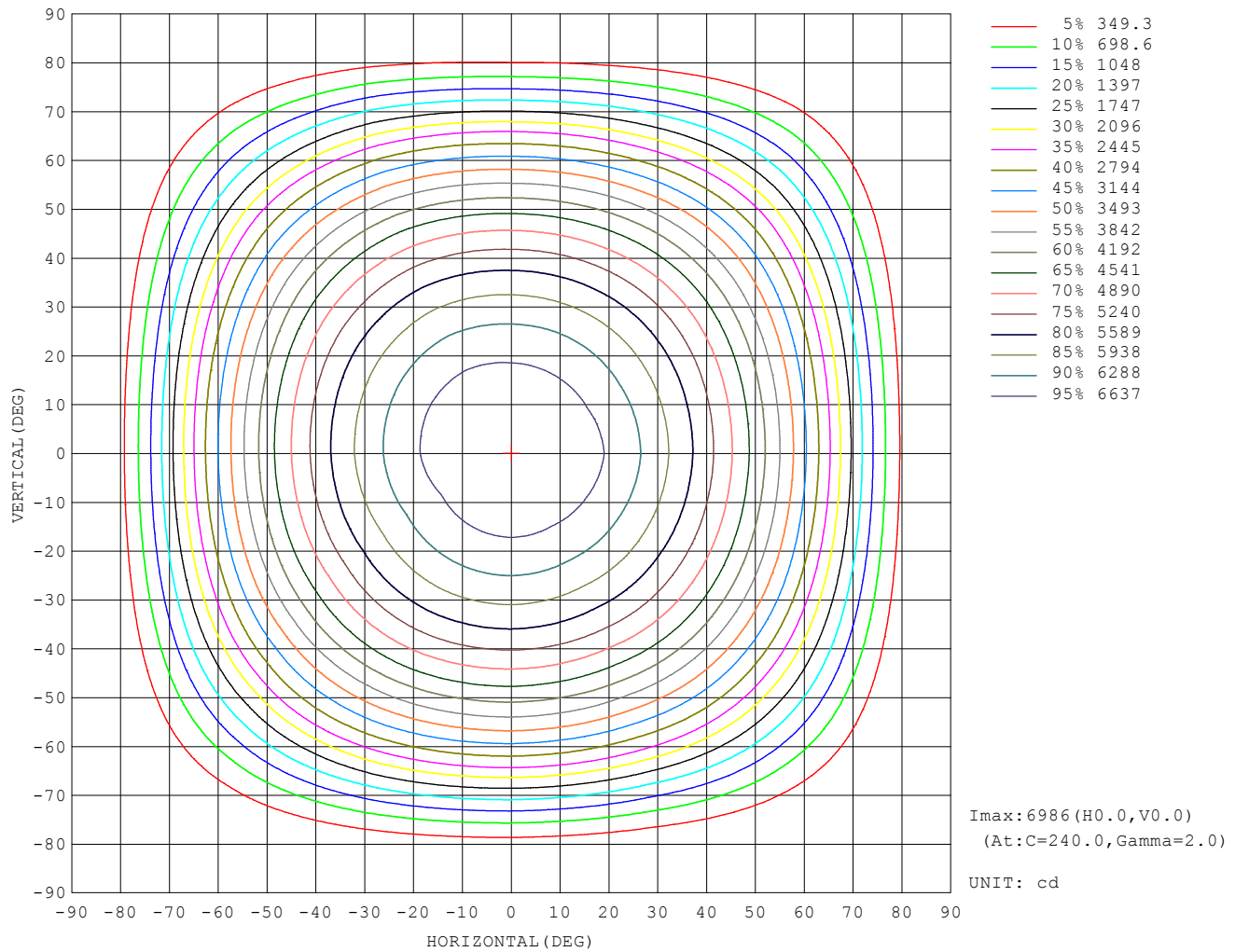
C Range: 0 - 360DEG  
 C Interval: 30.0DEG  
 Test Speed: HIGH  
 Temperature: 25.3DEG  
 Operators:  
 Test Date: 2016-06-14

Checker:

$\gamma$  Range: 0 - 180DEG  
 $\gamma$  Interval: 2.0DEG  
 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: 30.0DEG  
Test Speed: HIGH  
Temperature: 25.3DEG  
Operators:  
Test Date: 2016-06-14

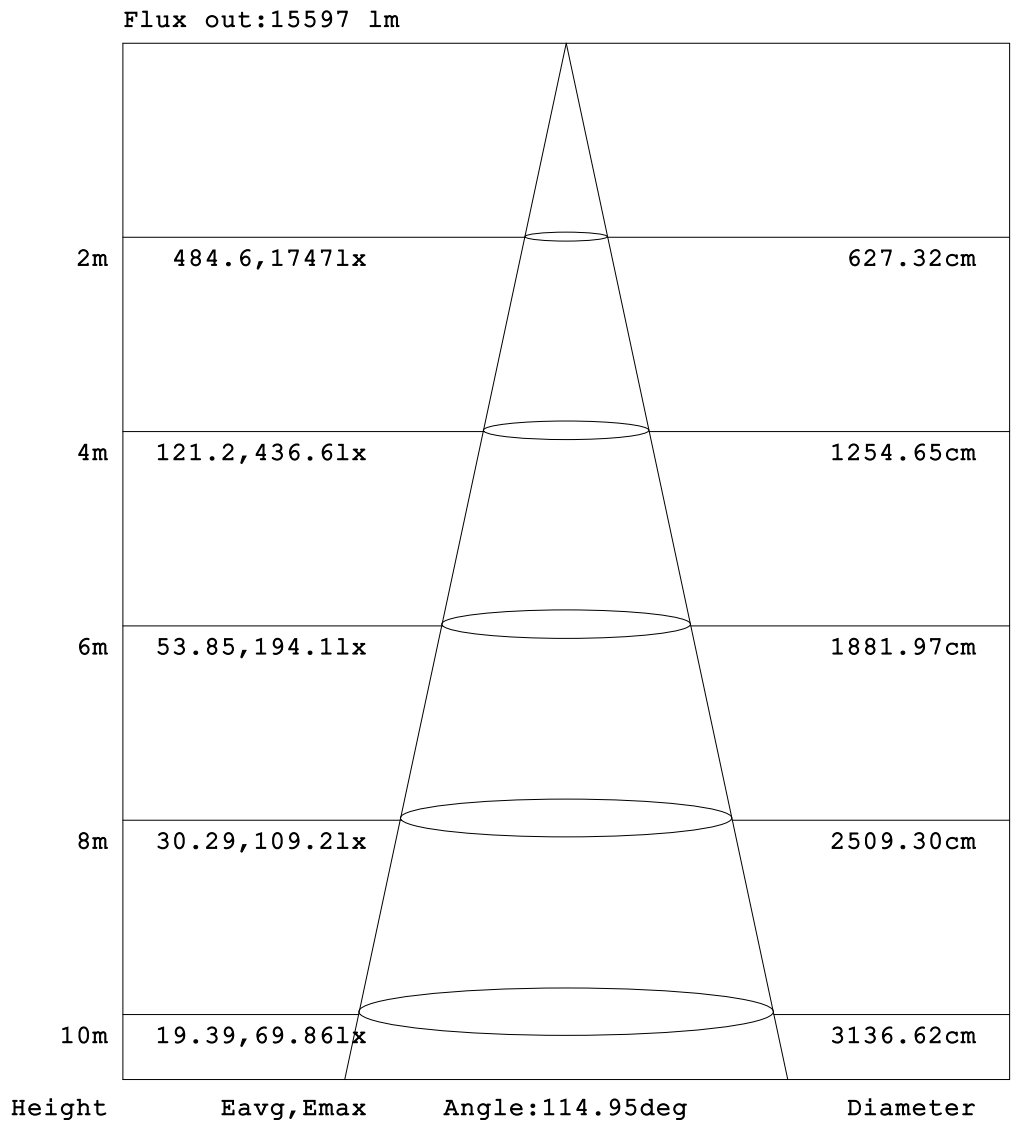
$\gamma$  Range: 0 - 180DEG  
 $\gamma$  Interval: 2.0DEG  
Test System: EVERFINE GO-2000A\_V1 SYSTEM V2.0.295  
Humidity: 65.0%  
Test Distance: 9.470m [K=1.0000]  
Remarks:

Checker:

Assessor:



## AAI Figure



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

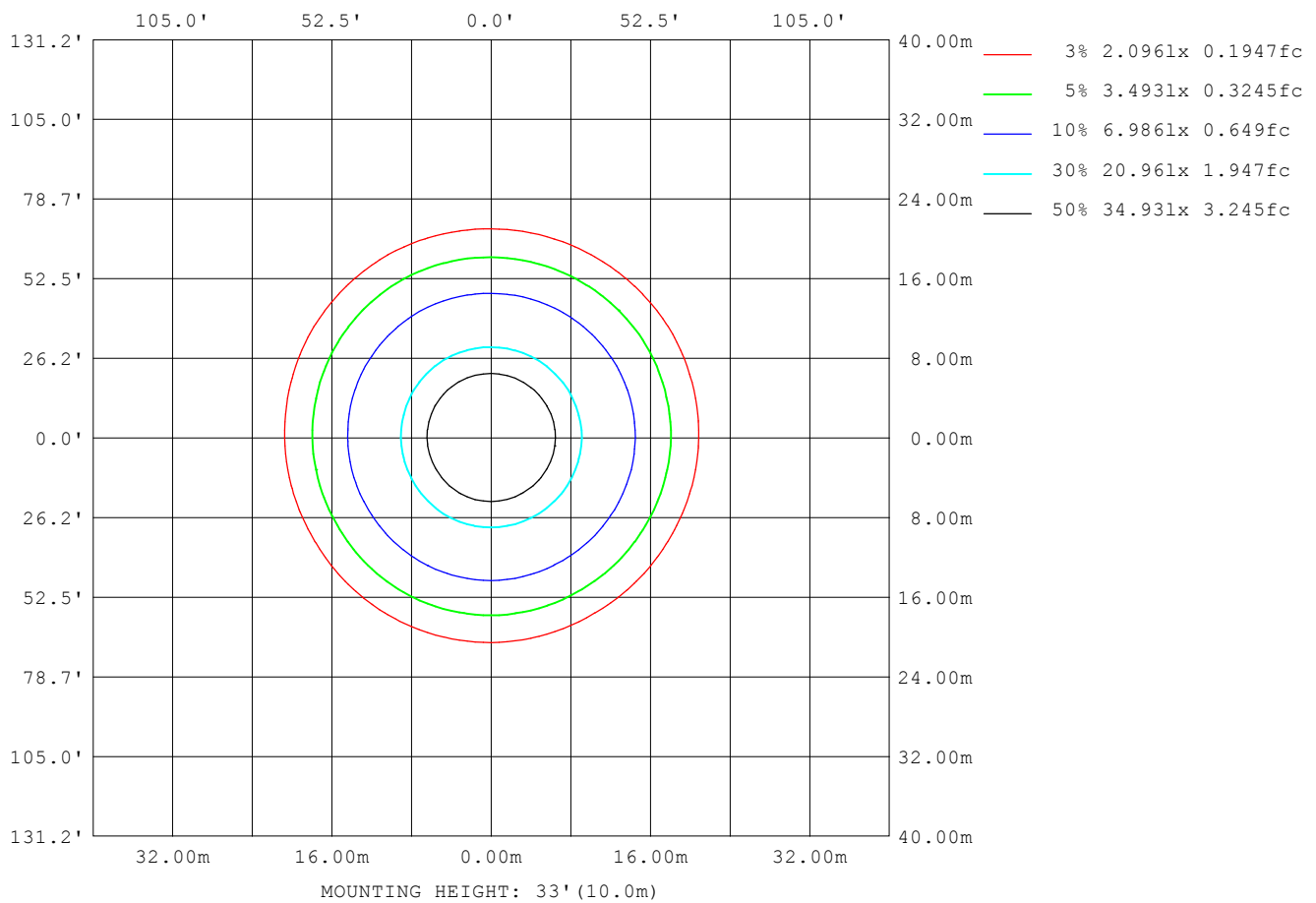
C Range: 0 - 360DEG  
C Interval: 30.0DEG  
Test Speed: HIGH  
Temperature:25.3DEG  
Operators:  
Test Date:2016-06-14

γ Range: 0 - 180DEG  
γ Interval: 2.0DEG  
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



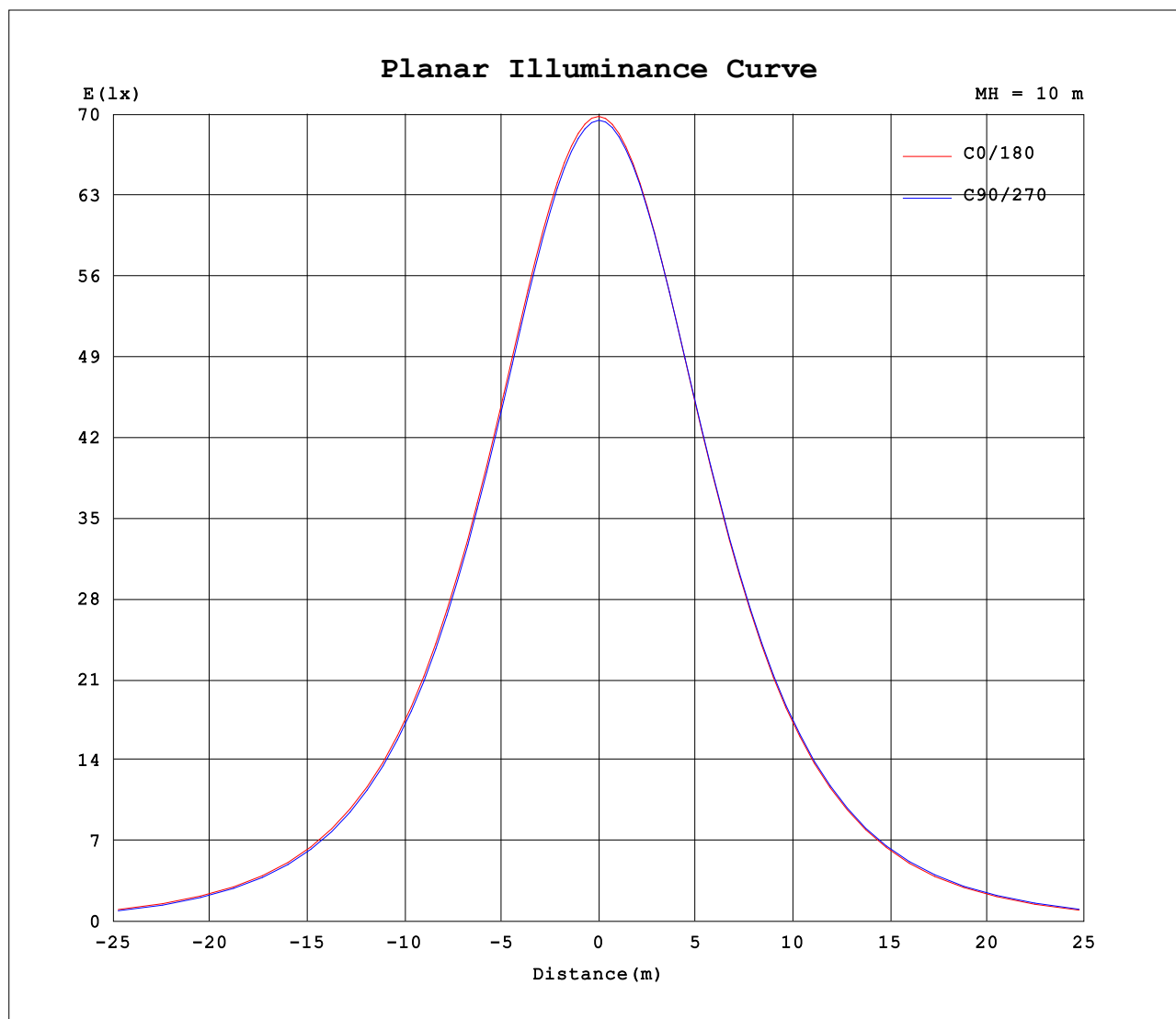
C Range: 0 - 360DEG  
 C Interval: 30.0DEG  
 Test Speed: HIGH  
 Temperature: 25.3DEG  
 Operators:  
 Test Date: 2016-06-14

γ Range: 0 - 180DEG  
 γ Interval: 2.0DEG  
 Test System: EVERFINE GO-2000A\_V1 SYSTEM V2.0.295  
 Humidity: 65.0%  
 Test Distance: 9.470m [K=1.0000]  
 Remarks:

Checker:

Assessor:

## Planar Illuminance Curve



C Range: 0 - 360DEG  
C Interval: 30.0DEG  
Test Speed: HIGH  
Temperature: 25.3DEG  
Operators:  
Test Date: 2016-06-14

$\gamma$  Range: 0 - 180DEG  
 $\gamma$  Interval: 2.0DEG  
Test System: EVERFINE GO-2000A\_V1 SYSTEM V2.0.295  
Humidity: 65.0%  
Test Distance: 9.470m [K=1.0000]  
Remarks:

Checker:

Assessor:

## LUMINOUS DISTRIBUTION INTENSITY DATA

Table--1

UNIT: cd

C (DEG) γ (DEG)	0	30	60	90	120	150	180	210	240	270	300	330						
0	6957	6957	6957	6957	6957	6957	6957	6957	6957	6957	6957	6957						
5	6942	6935	6931	6935	6936	6936	6939	6945	6949	6944	6944	6948						
10	6865	6848	6839	6849	6852	6850	6860	6875	6881	6873	6874	6878						
15	6774	6747	6734	6749	6752	6749	6765	6788	6799	6784	6785	6790						
20	6573	6534	6516	6536	6538	6536	6556	6590	6607	6586	6588	6594						
25	6393	6348	6325	6348	6354	6349	6377	6414	6437	6415	6418	6420						
30	6058	6009	5978	6008	6017	6008	6046	6092	6122	6095	6094	6095						
35	5797	5741	5708	5738	5749	5741	5783	5838	5871	5840	5835	5839						
40	5343	5277	5238	5270	5283	5273	5321	5395	5430	5393	5389	5397						
45	4988	4919	4870	4912	4926	4910	4967	5050	5088	5046	5040	5045						
50	4391	4298	4251	4303	4313	4300	4360	4450	4497	4448	4440	4451						
55	3951	3840	3789	3846	3856	3843	3912	4007	4061	3997	3997	4008						
60	3186	3064	3014	3073	3087	3056	3132	3253	3310	3255	3239	3262						
65	2640	2513	2456	2512	2531	2512	2587	2712	2766	2714	2698	2723						
70	1677	1547	1476	1540	1558	1534	1623	1748	1817	1756	1735	1756						
75	1057	942	884	937	954	930	1013	1130	1216	1136	1131	1141						
80	298	209	173	211	216	206	263	349	399	352	358	354						
85	20.8	7.95	7.30	8.18	8.45	7.78	12.1	38.5	61.8	43.1	36.9	39.5						
90	5.50	5.87	6.03	5.89	5.81	5.89	5.42	5.08	4.94	5.06	5.12	5.05						
95	7.22	7.65	7.86	7.67	7.59	7.68	7.12	6.71	6.52	6.70	6.75	6.68						
100	10.4	10.9	11.2	10.9	10.8	10.9	10.2	9.76	9.51	9.75	9.79	9.72						
105	12.8	13.4	13.7	13.4	13.3	13.4	12.6	12.1	11.8	12.1	12.1	12.1						
110	16.7	17.3	17.6	17.4	17.3	17.4	16.5	16.0	15.7	16.0	16.0	15.9						
115	19.4	20.0	20.3	20.1	20.0	20.1	19.2	18.6	18.3	18.6	18.7	18.6						
120	23.5	24.1	24.5	24.2	24.1	24.2	23.3	22.7	22.4	22.7	22.7	22.6						
125	26.3	27.0	27.3	27.0	26.9	27.1	26.1	25.5	25.2	25.5	25.5	25.4						
130	30.7	31.3	31.7	31.4	31.3	31.4	30.5	29.8	29.5	29.8	29.9	29.7						
135	33.5	34.2	34.5	34.3	34.2	34.3	33.3	32.7	32.4	32.7	32.8	32.6						
140	37.5	38.1	38.4	38.2	38.1	38.3	37.4	36.8	36.5	36.8	36.9	36.8						
145	40.0	40.5	40.8	40.6	40.5	40.7	39.8	39.3	39.1	39.3	39.4	39.2						
150	43.3	43.8	44.0	43.9	43.8	43.9	43.2	42.7	42.5	42.7	42.8	42.7						
155	45.3	45.8	45.9	45.8	45.7	45.8	45.2	44.8	44.6	44.8	44.8	44.7						
160	48.0	48.4	48.5	48.4	48.3	48.4	48.0	47.6	47.5	47.6	47.6	47.5						
165	49.6	49.9	49.9	49.9	49.8	49.9	49.6	49.2	49.2	49.2	49.3	49.2						
170	51.5	51.8	51.7	51.8	51.7	51.8	51.6	51.3	51.3	51.3	51.3	51.2						
175	52.4	52.6	52.5	52.6	52.4	52.6	52.4	52.2	52.3	52.2	52.3	52.2						
180	52.9	53.0	52.9	53.0	52.9	52.9	53.0	52.9	53.0	52.9	52.9	52.8						

C Range: 0 - 360DEG  
C Interval: 30.0DEG  
Test Speed: HIGH  
Temperature:25.3DEG  
Operators:  
Test Date:2016-06-14

γ Range: 0 - 180DEG  
γ Interval: 2.0DEG  
Test System:EVERFINE GO-2000A\_V1 SYSTEM V2.0.295  
Humidity:65.0%  
Test Distance:9.470m [K=1.0000]  
Remarks:

Checker:

Assessor: