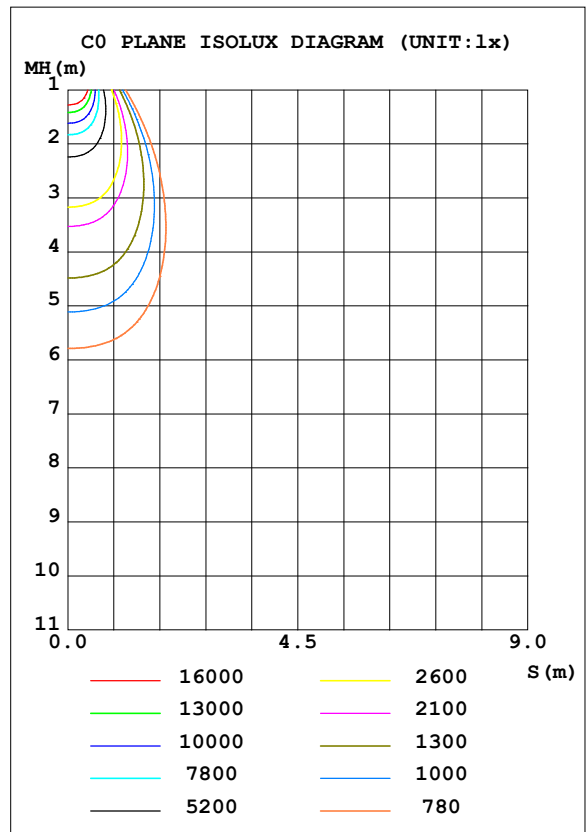
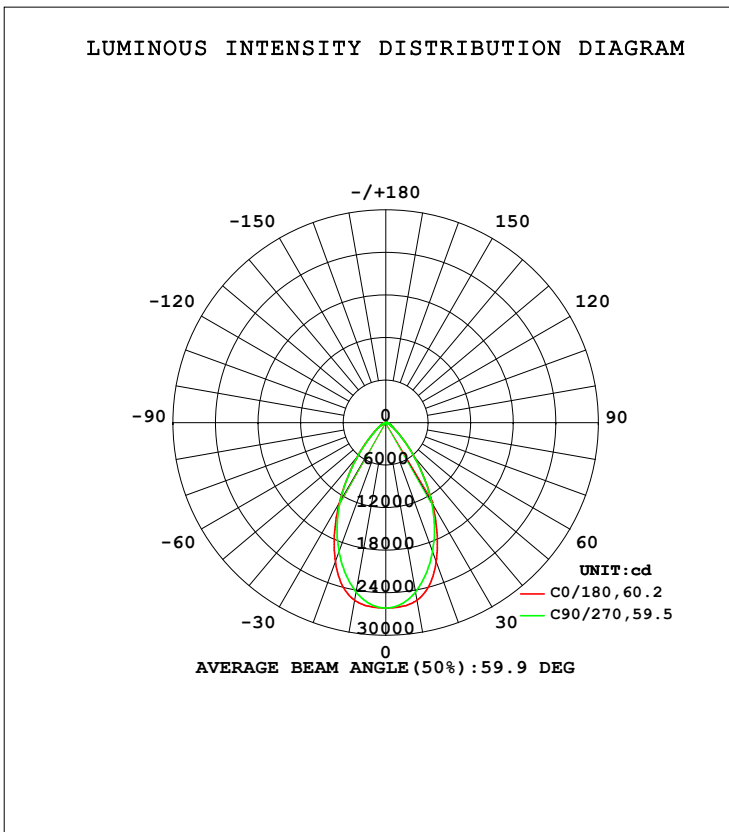


LUMINAIRE PHOTOMETRIC TEST REPORT

Test:U:230.0V I:0.9012A P:201.8W PF:0.9733 Lamp Flux:27696.5x1 lm		
NAME: FL13-200	TYPE:200W	WEIGHT:
SPEC.:5000K Ra70 F06006	DIM.: 0.285*0.135*08	SERIAL No.:
MFR.:	SUR.:0.255*0.105	Shielding Angle:

DATA OF LAMP		PHOTOMETRIC DATA Eff: 137.27 lm/W			
MODEL	SEOUL5050	I <sub>max</sub> (cd)	26133	S/MH (C0/180)	0.91
NOMINAL POWER (W)	200	LOR (%)	100.0	S/MH (C90/270)	0.88
RATED VOLTAGE (V)	230	TOTAL FLUX (lm)	27696	η UP, DN (C0-180)	0.0, 50.0
NOMINAL FLUX (lm)	27696.5	CIE CLASS	DIRECT	η UP, DN (C180-360)	0.0, 50.0
LAMPS INSIDE	1	η up (%)	0.0	CIBSE SHR NOM	0.75
TEST VOLTAGE (V)	230	η down (%)	100.0	CIBSE SHR MAX	0.95



C Range: 0 - 360DEG  
 C Interval: 2.5DEG  
 Test Speed: HIGH  
 Temperature: 25.3DEG  
 Operators:  
 Test Date: 2018-06-08

γ Range: 0 - 90DEG  
 γ Interval: 0.5DEG  
 Test System: EVERFINE GO-2000A\_V1 SYSTEM V2.0.295  
 Humidity: 65.0%  
 Test Distance: 9.500m [K=1.0000]  
 Remarks:

Checker: LI

Assessor:

ZONAL FLUX DIAGRAM

ZONAL FLUX DIAGRAM:

γ	C0	C45	C90	C135	C180	C225	C270	C315	γ	Φ zone	Φ total	%lum, lamp
5	2603	2590	2566	2589	2603	2589	2566	2590	0- 5	621.8	621.8	2.25,2.25
10	2543	2516	2424	2513	2543	2513	2424	2516	5- 10	1821	2443	8.82,8.82
15	2375	2359	2204	2356	2375	2356	2204	2359	10- 15	2867	5310	19.2,19.2
20	2083	2086	1933	2085	2083	2085	1933	2086	15- 20	3609	8919	32.2,32.2
25	1713	1715	1629	1715	1713	1715	1629	1715	20- 25	3924	12844	46.4,46.4
30	1317	1316	1291	1319	1317	1319	1291	1316	25- 30	3794	16637	60.1,60.1
35	942.4	946.6	935.3	950.5	942.4	950.5	935.3	946.6	30- 35	3304	19941	72,72
40	621.9	626.4	614.5	630.5	621.9	630.5	614.5	626.4	35- 40	2589	22530	81.3,81.3
45	382.4	383.3	373.3	387.6	382.4	387.6	373.3	383.3	40- 45	1828	24358	87.9,87.9
50	228.6	227.7	218.8	231.1	228.6	231.1	218.8	227.7	45- 50	1199	25557	92.3,92.3
55	139.4	138.5	131.7	140.1	139.4	140.1	131.7	138.5	50- 55	771.3	26329	95.1,95.1
60	88.71	86.05	82.14	86.79	88.71	86.79	82.14	86.05	55- 60	504.5	26833	96.9,96.9
65	59.17	55.38	52.94	55.66	59.17	55.66	52.94	55.38	60- 65	339.5	27173	98.1,98.1
70	40.51	35.86	34.36	35.96	40.51	35.96	34.36	35.86	65- 70	231.2	27404	98.9,98.9
75	26.52	22.53	20.59	22.59	26.52	22.59	20.59	22.53	70- 75	154.7	27559	99.5,99.5
80	15.29	11.31	10.01	11.25	15.29	11.25	10.01	11.31	75- 80	92.81	27651	99.8,99.8
85	5.469	2.729	1.769	2.671	5.469	2.671	1.769	2.729	80- 85	39.49	27691	100,100
90	0	0	0	0	0	0	0	0	85- 90	5.558	27696	100,100
95									90- 95			
100									95-100			
105									100-105			
110									105-110			
115									110-115			
120									115-120			
125									120-125			
130									125-130			
135									130-135			
140									135-140			
145									140-145			
150									145-150			
155									150-155			
160									155-160			
165									160-165			
170									165-170			
175									170-175			
180									175-180			
DEG	LUMINOUS INTENSITY:×10cd								UNIT:lm			

Conical surface Flux(90deg): 24358 lm

%lum = 87.9%  
 %lamp = 87.9%

Conical surface Flux(120deg): 26833 lm

%lum = 96.9%  
 %lamp = 96.9%

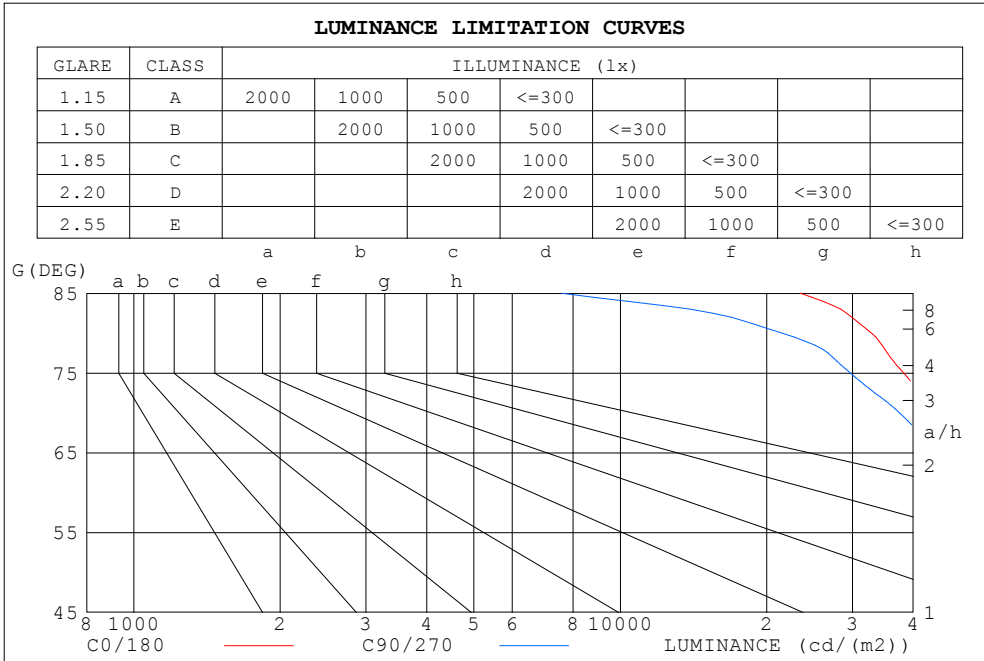
C Range: 0 - 360DEG  
 C Interval: 2.5DEG  
 Test Speed: HIGH  
 Temperature:25.3DEG  
 Operators:  
 Test Date:2018-06-08

γ Range: 0 - 90DEG  
 γ Interval: 0.5DEG  
 Test System:EVERFINE GO-2000A\_V1 SYSTEM V2.0.295  
 Humidity:65.0%  
 Test Distance:9.500m [K=1.0000]  
 Remarks:

Checker: LI

Assessor:

LUMINANCE LIMITATION CURVES



LUMINANCE cd/(m2)		
G (DEG)	C0/180	C90/270
85	23435	7582
80	32884	21540
75	38264	29713
70	44232	37521
65	52295	46783
60	66264	61355
55	90798	85728
50	132804	127133
45	201990	197197

C Range: 0 - 360DEG  
 C Interval: 2.5DEG  
 Test Speed: HIGH  
 Temperature: 25.3DEG  
 Operators:  
 Test Date: 2018-06-08

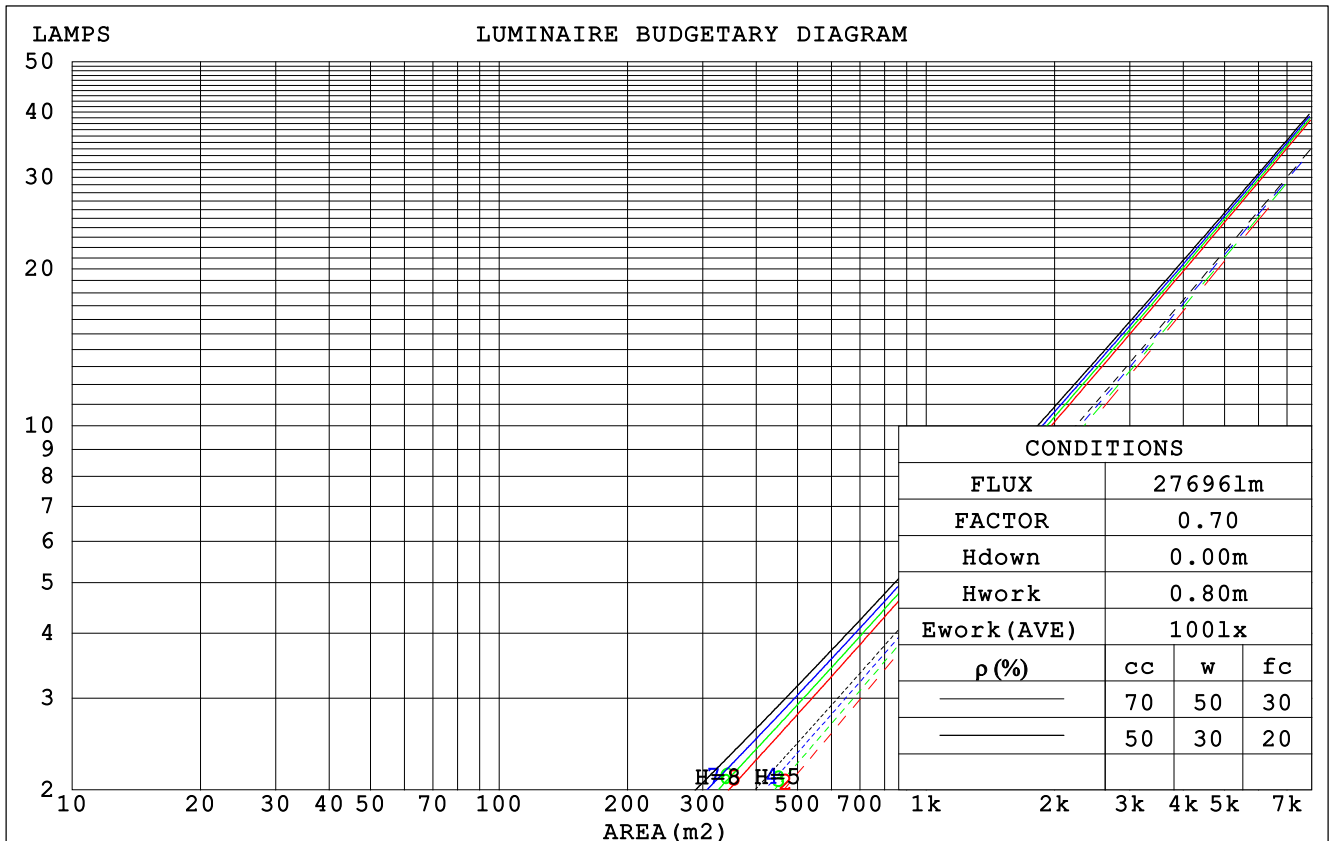
γ Range: 0 - 90DEG  
 γ Interval: 0.5DEG  
 Test System: EVERFINE GO-2000A\_V1 SYSTEM V2.0.295  
 Humidity: 65.0%  
 Test Distance: 9.500m [K=1.0000]  
 Remarks:

Checker: LI

Assessor:

CU AND LUMINAIRE BUDGETARY ESTIMATE DIAGRAM

$\rho_{cc}$	80%			70%			50%			30%			10%			0
$\rho_w$	50%	30%	10%	50%	30%	10%	50%	30%	10%	50%	30%	10%	50%	30%	10%	0
$\rho_{fc}$	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	.00
1.0	1.10	1.07	1.04	1.07	1.05	1.03	1.03	1.01	.99	.00	.98	.96	.96	.95	.94	.92
2.0	1.01	.96	.92	.99	.95	.91	.96	.92	.89	.93	.90	.87	.90	.88	.86	.84
3.0	.93	.87	.83	.91	.86	.82	.89	.84	.81	.86	.83	.79	.84	.81	.78	.77
4.0	.86	.80	.75	.85	.79	.74	.82	.77	.74	.80	.76	.73	.78	.75	.72	.70
5.0	.80	.73	.68	.79	.73	.68	.77	.71	.67	.75	.70	.67	.73	.69	.66	.65
6.0	.74	.67	.63	.73	.67	.62	.72	.66	.62	.70	.65	.62	.69	.64	.61	.60
7.0	.69	.62	.58	.68	.62	.58	.67	.61	.57	.66	.61	.57	.65	.60	.57	.55
8.0	.65	.58	.54	.64	.58	.53	.63	.57	.53	.62	.57	.53	.61	.56	.53	.51
9.0	.61	.54	.50	.60	.54	.50	.59	.54	.50	.58	.53	.49	.57	.53	.49	.48
10.0	.57	.51	.47	.57	.51	.47	.56	.50	.46	.55	.50	.46	.54	.50	.46	.45



C Range: 0 - 360DEG  
 C Interval: 2.5DEG  
 Test Speed: HIGH  
 Temperature: 25.3DEG  
 Operators:  
 Test Date: 2018-06-08

$\gamma$  Range: 0 - 90DEG  
 $\gamma$  Interval: 0.5DEG  
 Test System: EVERFINE GO-2000A\_V1 SYSTEM V2.0.295  
 Humidity: 65.0%  
 Test Distance: 9.500m [K=1.0000]  
 Remarks:

Checker: LI

Assessor:

**WEC AND CCEC**

$\rho_{cc}$	80%			70%			50%			30%			10%			0
$\rho_w$	50%	30%	10%	50%	30%	10%	50%	30%	10%	50%	30%	10%	50%	30%	10%	0
$\rho_{fc}$	20%			20%			20%			20%			20%			0
RCR	RCR:Room Cavity Ratio						Wall Exitance Coefficients(WEC)									
0.0																
1.0	.200	.114	.036	.193	.110	.035	.181	.104	.033	.169	.098	.031	.158	.092	.030	
2.0	.193	.106	.032	.187	.103	.032	.176	.098	.030	.166	.093	.029	.157	.089	.028	
3.0	.184	.098	.029	.179	.096	.029	.169	.092	.028	.161	.088	.027	.153	.085	.026	
4.0	.174	.091	.027	.170	.089	.026	.162	.086	.026	.154	.083	.025	.147	.080	.024	
5.0	.165	.084	.024	.162	.083	.024	.154	.080	.024	.148	.078	.023	.142	.076	.023	
6.0	.157	.079	.023	.154	.078	.022	.147	.076	.022	.142	.074	.022	.136	.072	.021	
7.0	.149	.074	.021	.146	.073	.021	.141	.071	.021	.136	.070	.020	.131	.068	.020	
8.0	.142	.069	.020	.140	.069	.019	.135	.067	.019	.130	.066	.019	.125	.064	.019	
9.0	.136	.066	.018	.133	.065	.018	.129	.064	.018	.125	.062	.018	.121	.061	.018	
10.0	.129	.062	.017	.127	.062	.017	.123	.060	.017	.119	.059	.017	.116	.058	.017	

$\rho_{cc}$	80%			70%			50%			30%			10%			0
$\rho_w$	50%	30%	10%	50%	30%	10%	50%	30%	10%	50%	30%	10%	50%	30%	10%	0
$\rho_{fc}$	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	.173	.157	.143	.148	.135	.123	.101	.093	.085	.058	.054	.050	.019	.017	.016	
2.0	.159	.132	.110	.136	.114	.095	.093	.079	.066	.054	.046	.039	.017	.015	.013	
3.0	.148	.114	.087	.127	.098	.075	.087	.068	.053	.050	.040	.031	.016	.013	.010	
4.0	.138	.099	.069	.119	.086	.060	.082	.060	.042	.047	.035	.025	.015	.011	.008	
5.0	.130	.088	.057	.112	.076	.049	.077	.053	.035	.045	.031	.021	.014	.010	.007	
6.0	.123	.079	.047	.106	.068	.041	.073	.048	.029	.042	.028	.017	.014	.009	.006	
7.0	.117	.072	.040	.100	.062	.035	.069	.044	.025	.040	.026	.015	.013	.008	.005	
8.0	.111	.066	.034	.096	.057	.030	.066	.040	.021	.038	.024	.013	.012	.008	.004	
9.0	.106	.060	.030	.091	.052	.026	.063	.037	.018	.037	.022	.011	.012	.007	.004	
10.0	.101	.056	.026	.087	.049	.023	.060	.034	.016	.035	.020	.010	.011	.007	.003	

C Range: 0 - 360DEG  
 C Interval: 2.5DEG  
 Test Speed: HIGH  
 Temperature:25.3DEG  
 Operators:  
 Test Date:2018-06-08

$\gamma$  Range: 0 - 90DEG  
 $\gamma$  Interval: 0.5DEG  
 Test System:EVERFINE GO-2000A\_V1 SYSTEM V2.0.295  
 Humidity:65.0%  
 Test Distance:9.500m [K=1.0000]  
 Remarks:

Checker: LI

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	27.1	28.2	27.4	28.4	28.6	27.0	28.1	27.2	28.2	28.4
3H	27.3	28.2	27.5	28.4	28.7	27.0	28.0	27.3	28.2	28.4
4H	27.3	28.2	27.6	28.5	28.7	27.0	28.0	27.3	28.2	28.4
6H	27.3	28.2	27.6	28.4	28.7	27.0	27.9	27.3	28.1	28.4
8H	27.3	28.1	27.6	28.4	28.7	27.0	27.8	27.3	28.1	28.3
12H	27.3	28.1	27.6	28.4	28.6	26.9	27.7	27.3	28.0	28.3
4H 2H	27.1	28.0	27.3	28.2	28.5	26.9	27.8	27.2	28.1	28.3
3H	27.3	28.1	27.6	28.3	28.6	27.1	27.9	27.4	28.1	28.4
4H	27.4	28.1	27.7	28.4	28.7	27.1	27.8	27.4	28.1	28.4
6H	27.4	28.1	27.8	28.4	28.7	27.1	27.7	27.5	28.1	28.4
8H	27.4	28.0	27.8	28.4	28.7	27.1	27.7	27.5	28.0	28.4
12H	27.4	28.0	27.8	28.3	28.7	27.0	27.6	27.4	27.9	28.3
8H 4H	27.3	27.9	27.7	28.2	28.6	27.0	27.6	27.4	28.0	28.4
6H	27.4	27.9	27.8	28.3	28.7	27.1	27.6	27.5	27.9	28.4
8H	27.4	27.8	27.9	28.3	28.7	27.0	27.5	27.5	27.9	28.3
12H	27.4	27.8	27.9	28.2	28.7	27.0	27.4	27.5	27.8	28.3
12H 4H	27.3	27.8	27.7	28.2	28.6	27.0	27.5	27.4	27.9	28.3
6H	27.4	27.8	27.8	28.2	28.6	27.0	27.5	27.5	27.9	28.3
8H	27.4	27.8	27.9	28.2	28.7	27.0	27.4	27.5	27.8	28.3
Variations with the observer position at spacings:										
S = 1.0H	+ 1.5 / - 2.6					+ 1.7 / - 3.1				
1.5H	+ 2.5 / - 2.2					+ 2.6 / - 2.5				
2.0H	+ 3.1 / - 2.2					+ 3.3 / - 2.5				

CIE Pub.117 Corrected 27696 lm Total Lamp Luminous Flux. (8log(F/F0) = 11.5)

C Range: 0 - 360DEG  
 C Interval: 2.5DEG  
 Test Speed: HIGH  
 Temperature:25.3DEG  
 Operators:  
 Test Date:2018-06-08

γ Range: 0 - 90DEG  
 γ Interval: 0.5DEG  
 Test System:EVERFINE GO-2000A\_V1 SYSTEM V2.0.295  
 Humidity:65.0%  
 Test Distance:9.500m [K=1.0000]  
 Remarks:

Checker: LI

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) $k(RI) \times RCR = 5$									
$k = 0.60$	80	72	67	79	72	67	78	71	67	63
0.80	88	81	76	87	81	76	86	80	76	71
1.00	94	87	83	93	87	83	91	87	82	77
1.25	99	93	88	98	92	88	96	91	87	82
1.50	102	96	92	101	96	92	99	94	91	86
2.00	106	101	97	104	100	96	102	98	95	89
2.50	108	103	100	106	102	99	103	100	97	91
3.00	110	106	103	108	104	102	105	102	99	93
4.00	112	109	106	110	107	105	106	104	102	95
5.00	114	111	109	112	109	107	107	106	104	96
ROOM INDEX	UF(total)									Direct
According to DIN EN 13032-2 2004			Suspended				SHRNOM = 1.25			

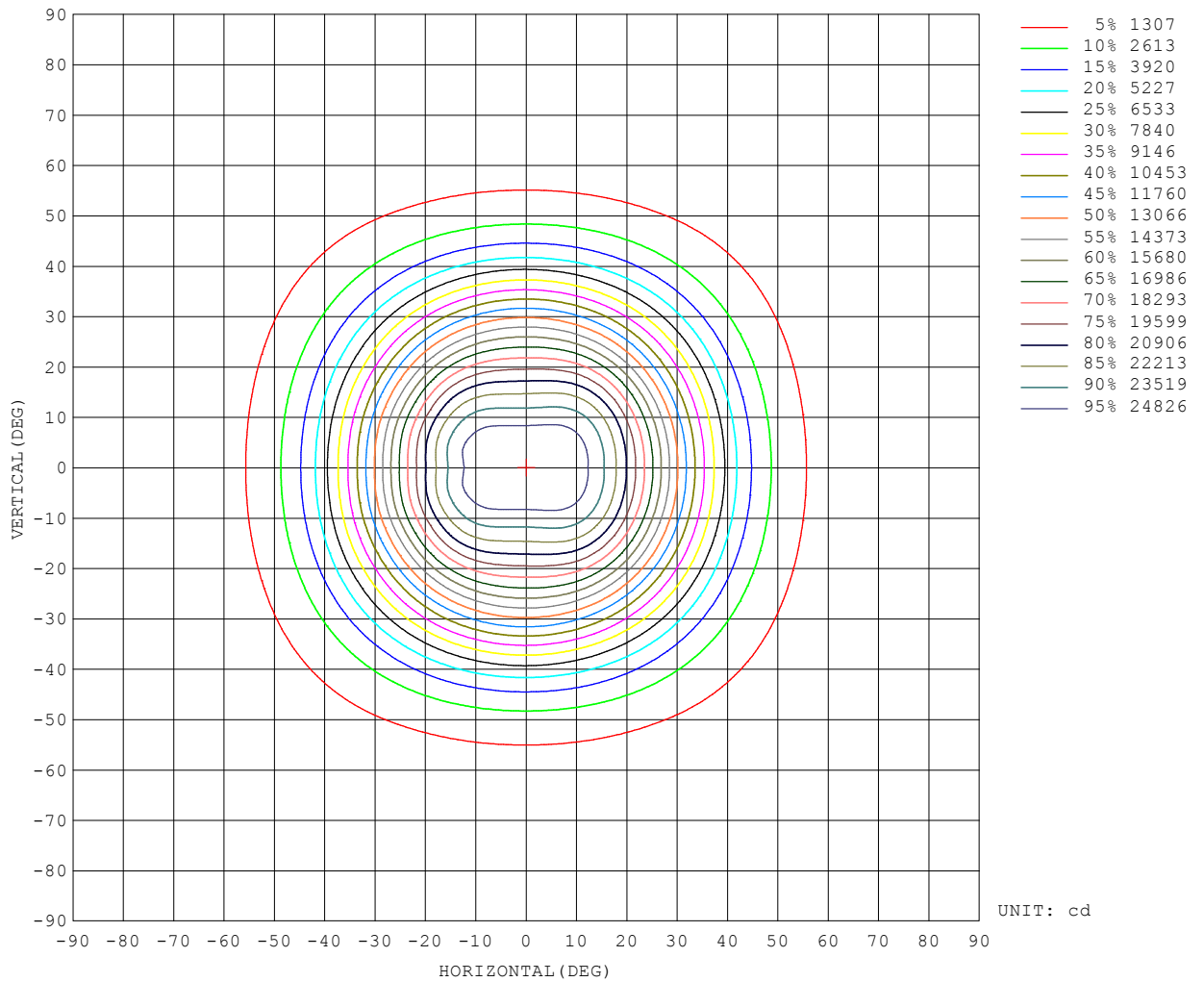
C Range: 0 - 360DEG  
 C Interval: 2.5DEG  
 Test Speed: HIGH  
 Temperature: 25.3DEG  
 Operators:  
 Test Date: 2018-06-08

$\gamma$  Range: 0 - 90DEG  
 $\gamma$  Interval: 0.5DEG  
 Test System: EVERFINE GO-2000A\_V1 SYSTEM V2.0.295  
 Humidity: 65.0%  
 Test Distance: 9.500m [K=1.0000]  
 Remarks:

Checker: LI

Assessor:

ISOCANDELA DIAGRAM



C Range: 0 - 360DEG  
 C Interval: 2.5DEG  
 Test Speed: HIGH  
 Temperature: 25.3DEG  
 Operators:  
 Test Date: 2018-06-08

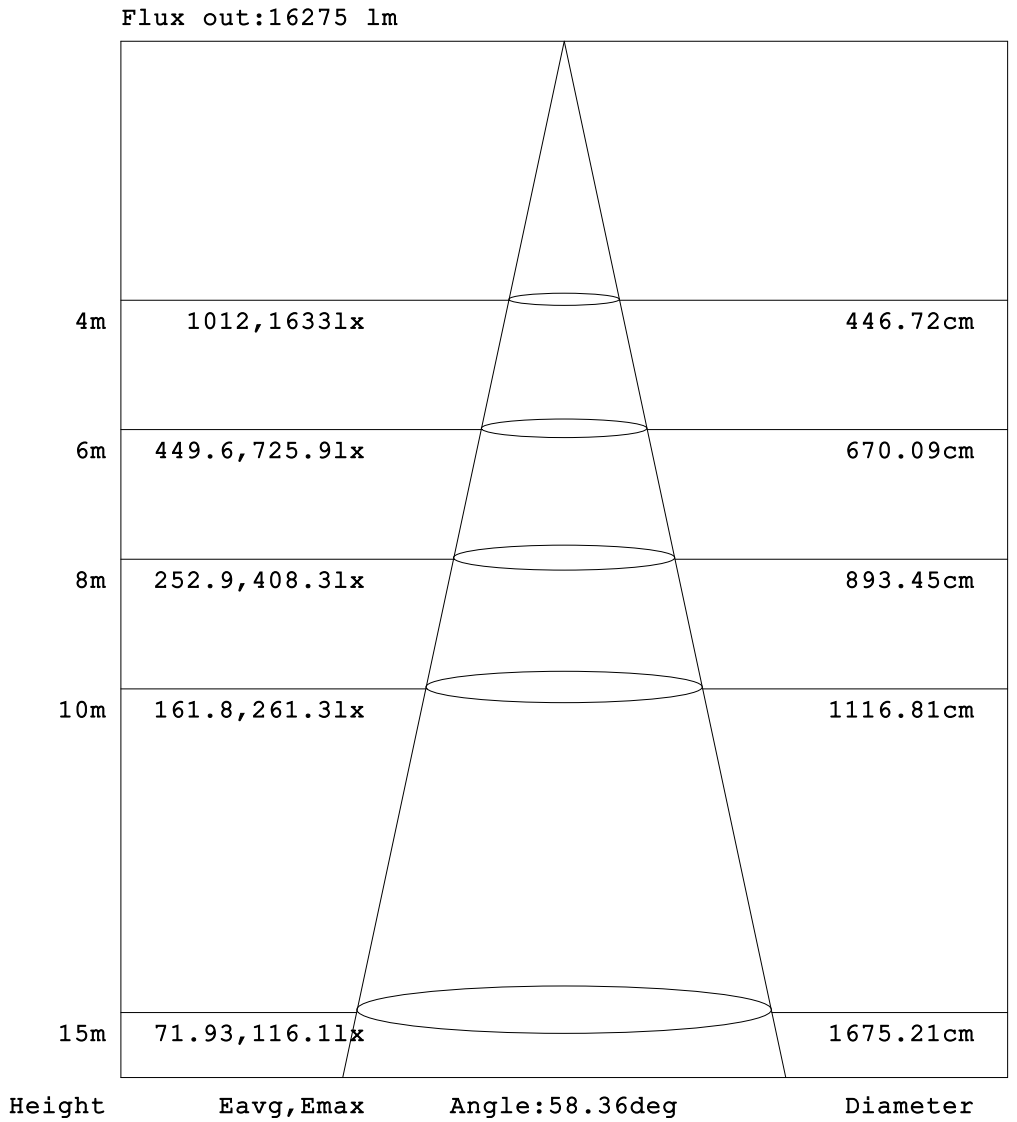
$\gamma$  Range: 0 - 90DEG  
 $\gamma$  Interval: 0.5DEG  
 Test System: EVERFINE GO-2000A\_V1 SYSTEM V2.0.295  
 Humidity: 65.0%  
 Test Distance: 9.500m [K=1.0000]  
 Remarks:

Checker: LI

Assessor:



AAI Figure



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

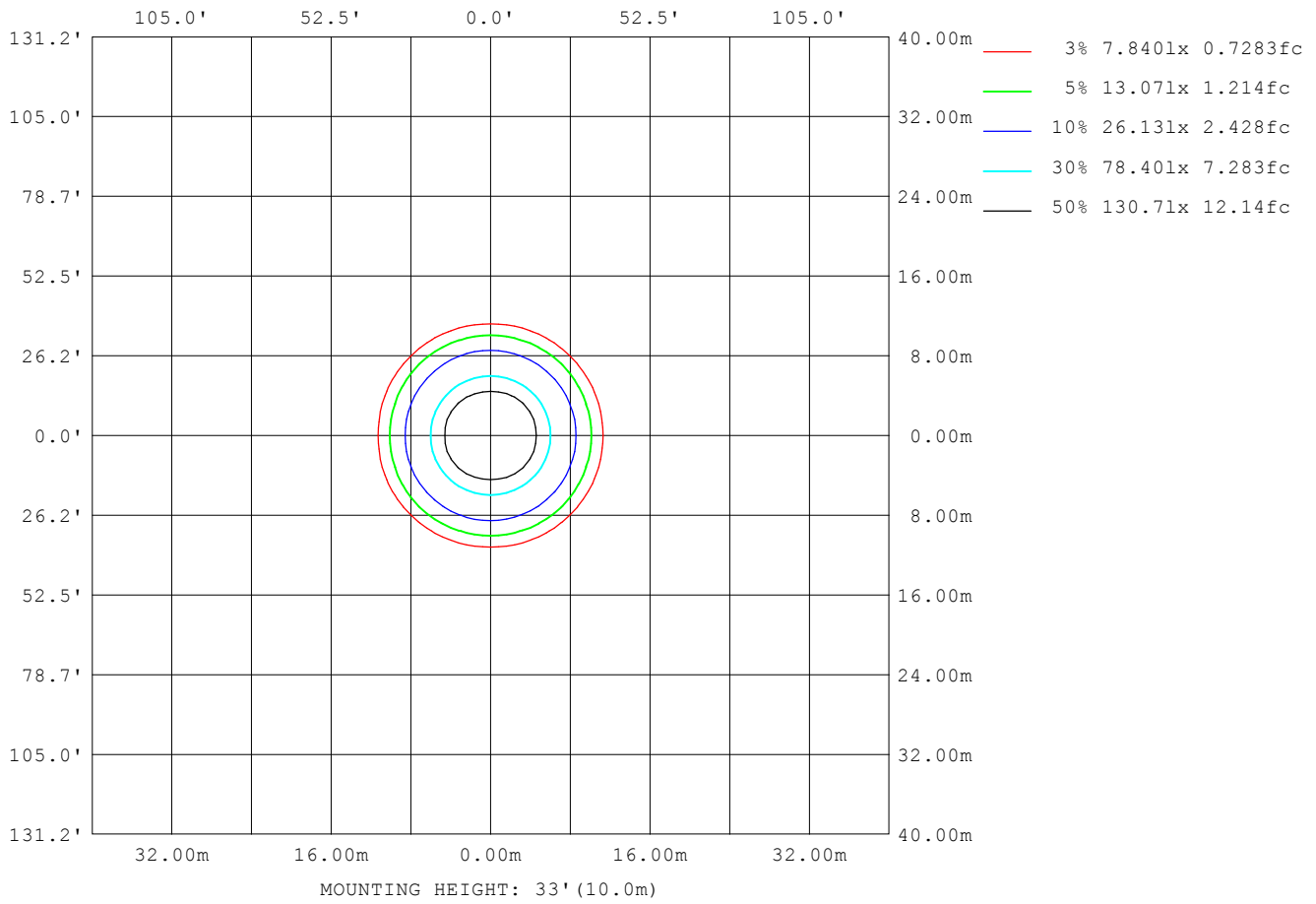
C Range: 0 - 360DEG  
 C Interval: 2.5DEG  
 Test Speed: HIGH  
 Temperature: 25.3DEG  
 Operators:  
 Test Date: 2018-06-08

γ Range: 0 - 90DEG  
 γ Interval: 0.5DEG  
 Test System: EVERFINE GO-2000A\_V1 SYSTEM V2.0.295  
 Humidity: 65.0%  
 Test Distance: 9.500m [K=1.0000]  
 Remarks:

Checker: LI

Assessor:

**ISOLUX DIAGRAM**



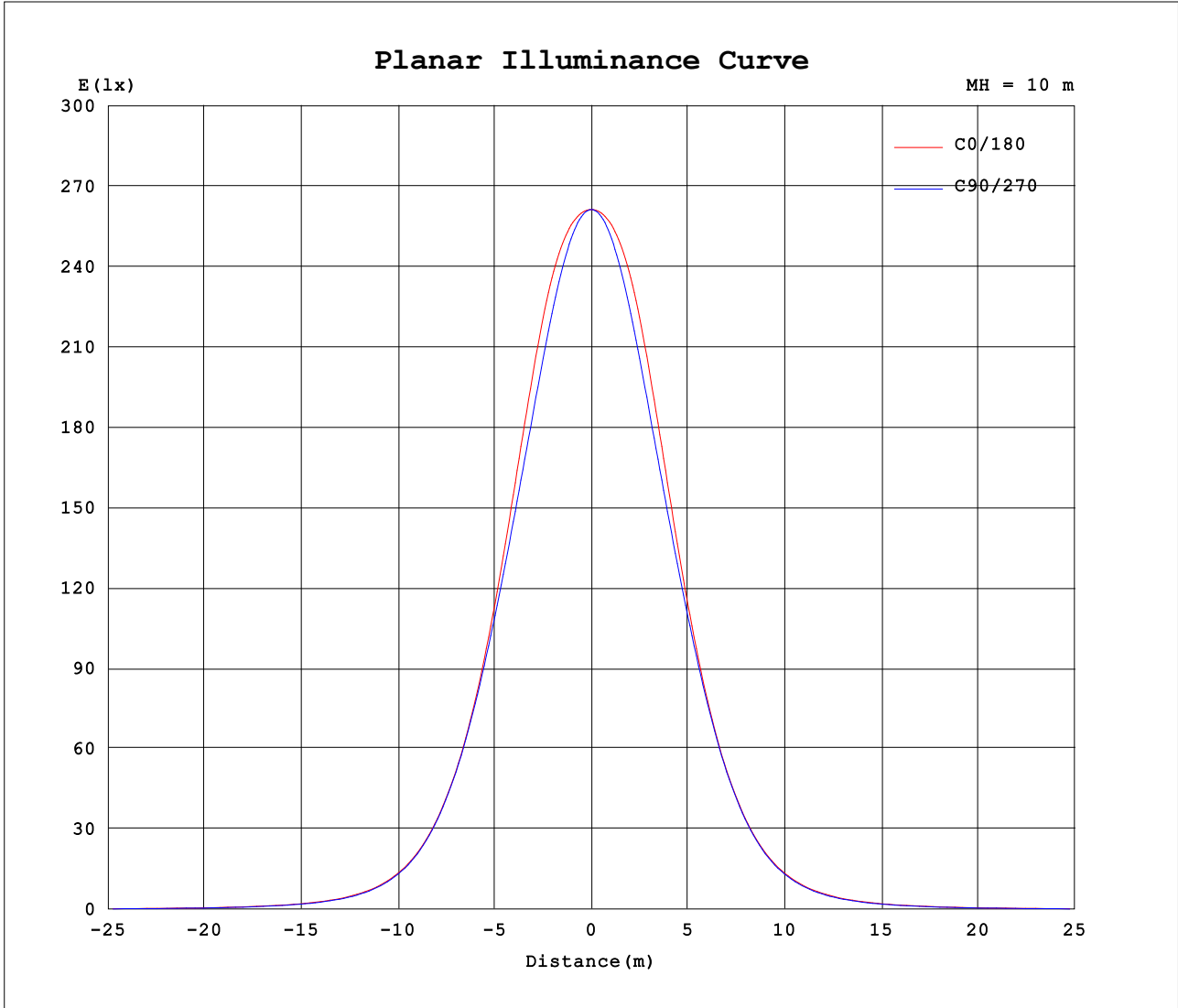
C Range: 0 - 360DEG  
 C Interval: 2.5DEG  
 Test Speed: HIGH  
 Temperature: 25.3DEG  
 Operators:  
 Test Date: 2018-06-08

$\gamma$  Range: 0 - 90DEG  
 $\gamma$  Interval: 0.5DEG  
 Test System: EVERFINE GO-2000A\_V1 SYSTEM V2.0.295  
 Humidity: 65.0%  
 Test Distance: 9.500m [K=1.0000]  
 Remarks:

Checker: LI

Assessor:

Planar Illuminance Curve



C Range: 0 - 360DEG  
 C Interval: 2.5DEG  
 Test Speed: HIGH  
 Temperature: 25.3DEG  
 Operators:  
 Test Date: 2018-06-08

γ Range: 0 - 90DEG  
 γ Interval: 0.5DEG  
 Test System: EVERFINE GO-2000A\_V1 SYSTEM V2.0.295  
 Humidity: 65.0%  
 Test Distance: 9.500m [K=1.0000]  
 Remarks:

Checker: LI

Assessor:

















