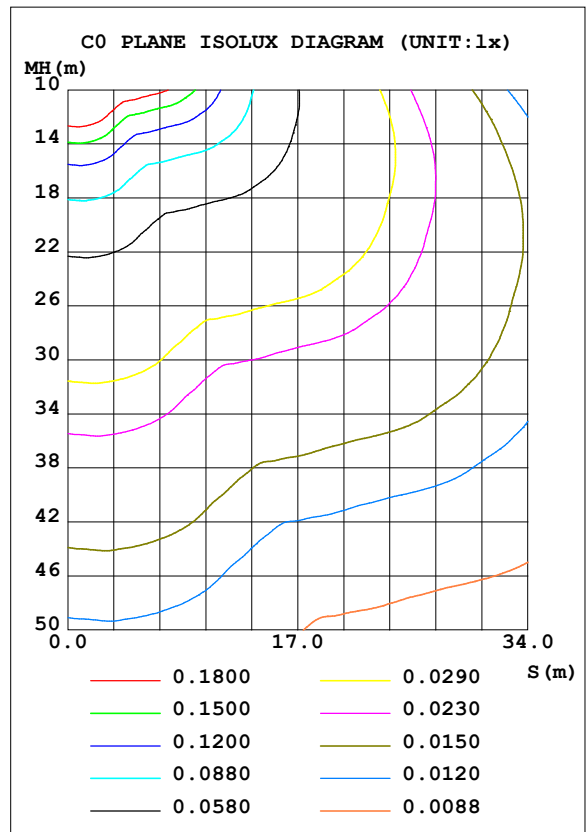
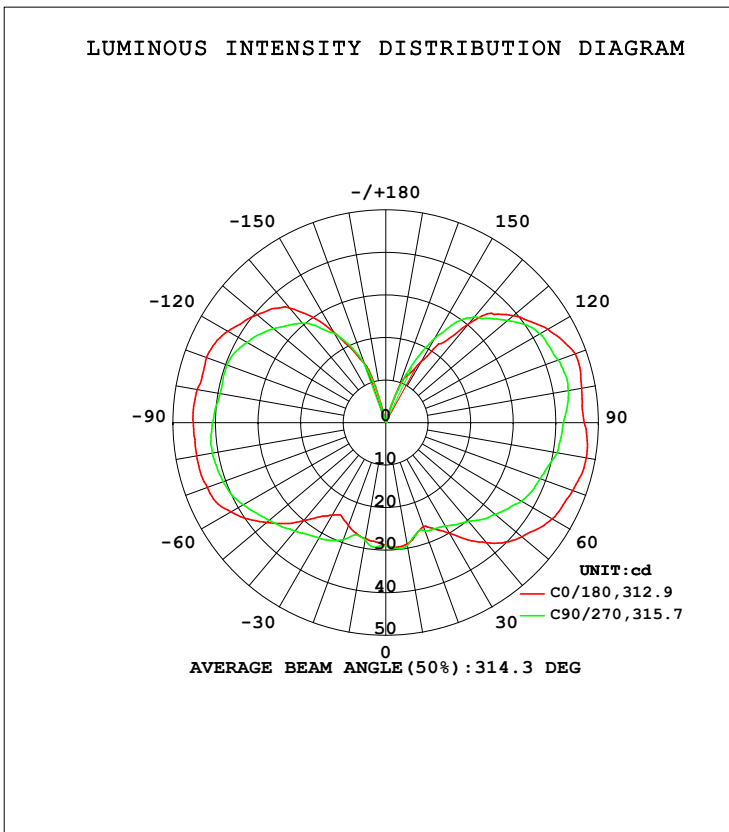


LUMINAIRE PHOTOMETRIC TEST REPORT

Test:U:12.95V I:0.0439A P:4.900W PF:0.7671 Freq:59.98Hz Lamp Flux:473.357x1 lm		
NAME: A19.	TYPE:	WEIGHT:
SPEC.:	DIM.:	SERIAL No.:
MFR.: tospo	SUR.:	Shielding Angle:

DATA OF LAMP		PHOTOMETRIC DATA			
MODEL		Imax (cd)	53.18	S/MH (C0/180)	1.49
NOMINAL POWER (W)		LOR (%)	100.0	S/MH (C90/270)	1.73
RATED VOLTAGE (V)	120	TOTAL FLUX (lm)	473.36	η UP, DN (C0-180)	25.0, 25.5
NOMINAL FLUX (lm)	473.357	CIE CLASS	DIFFUSE	η UP, DN (C180-360)	23.8, 25.7
LAMPS INSIDE	1	η up (%)	48.8	CIBSE SHR NOM	2.00
TEST VOLTAGE (V)	120	η down (%)	51.2	CIBSE SHR MAX	2.00



C Range: 0 - 360DEG
 C Interval: 22.5DEG
 Test Speed: HIGH
 Temperature: 25.3DEG
 Operators: Testing Room
 Test Date: 2017-10-13

γ Range: 0 - 180DEG
 γ Interval: 1.0DEG
 Test System: EVERFINE GO-3000H_V1 SYSTEM V2.0.361
 Humidity: 65.0%
 Test Distance: 11.330m [K=1.0000]
 Remarks:

ZONAL FLUX DIAGRAM

ZONAL FLUX DIAGRAM:

γ	C0	C45	C90	C135	C180	C225	C270	C315	γ	Φ zone	Φ total	%lum,lamp
10	29.01	30.36	29.34	28.02	27.66	28.83	27.97	28.29	0- 10	2.772	2.772	0.59,0.59
20	25.98	27.62	27.05	27.58	25.73	27.02	29.29	29.80	10- 20	7.861	10.63	2.25,2.25
30	30.06	27.55	28.02	29.67	25.10	27.42	31.37	30.72	20- 30	12.95	23.58	4.98,4.98
40	36.81	30.43	30.31	31.96	30.12	30.85	33.31	33.72	30- 40	19.15	42.73	9.03,9.03
50	41.78	35.86	33.63	35.68	36.55	37.17	35.79	37.25	40- 50	27.04	69.77	14.7,14.7
60	45.21	40.99	36.84	38.19	41.97	41.03	38.67	40.69	50- 60	34.90	104.7	22.1,22.1
70	46.77	45.05	38.59	40.27	44.64	44.64	40.71	42.57	60- 70	41.73	146.4	30.9,30.9
80	47.86	47.14	40.86	41.99	45.13	46.86	41.37	43.28	70- 80	46.68	193.1	40.8,40.8
90	46.69	47.33	41.77	43.97	45.26	48.57	40.75	42.45	80- 90	49.20	242.3	51.2,51.2
100	46.74	46.58	43.55	45.90	44.99	48.80	39.60	40.76	90-100	49.02	291.3	61.5,61.5
110	47.39	45.57	43.13	47.77	44.85	47.18	39.69	38.65	100-110	47.18	338.5	71.5,71.5
120	44.00	42.69	41.78	47.60	42.92	45.12	37.72	36.76	110-120	43.10	381.6	80.6,80.6
130	39.14	39.23	37.40	44.91	39.47	40.18	34.43	35.29	120-130	36.58	418.2	88.3,88.3
140	30.37	34.45	32.54	39.02	35.23	34.14	30.59	33.77	130-140	28.28	446.5	94.3,94.3
150	16.69	19.66	22.66	24.01	24.60	26.09	24.26	18.84	140-150	18.04	464.5	98.1,98.1
160	8.583	5.322	7.556	10.18	14.84	16.05	14.55	6.034	150-160	7.709	472.2	99.8,99.8
170	0.2145	0.2077	0.2215	0.2284	0.1928	0.1937	0.1975	0.2000	160-170	1.139	473.3	100,100
180	0.1868	0.1868	0.1937	0.1937	0.1868	0.1868	0.1868	0.1868	170-180	0.0188	473.4	100,100
DEG	LUMINOUS INTENSITY:cd									UNIT:lm		

Conical surface Flux(90deg): 55.216 lm

%lum = 11.7%

%lamp = 11.7%

Conical surface Flux(120deg): 104.67 lm

%lum = 22.1%

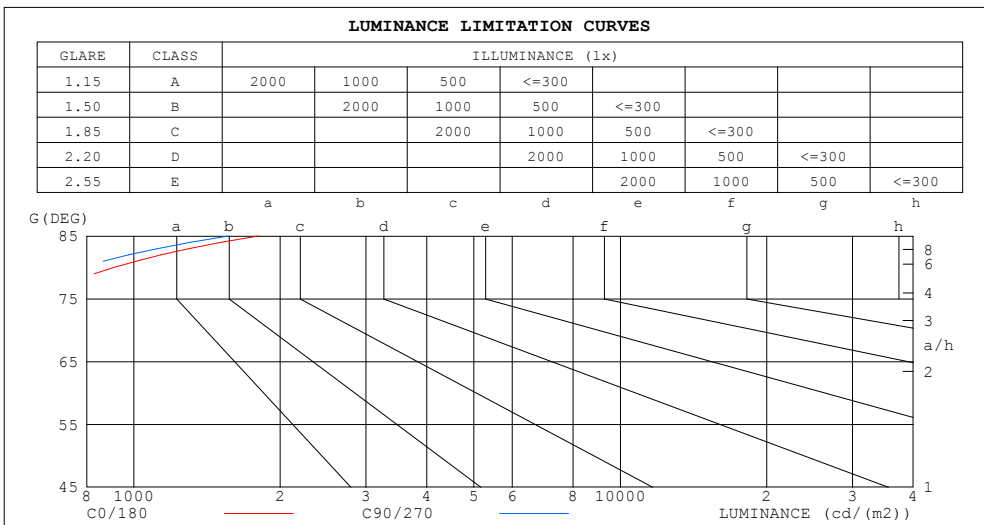
%lamp = 22.1%

C Range: 0 - 360DEG
 C Interval: 22.5DEG
 Test Speed: HIGH
 Temperature:25.3DEG
 Operators:Testing Room
 Test Date:2017-10-13

γ Range: 0 - 180DEG
 γ Interval: 1.0DEG
 Test System:EVERFINE GO-3000H_V1 SYSTEM V2.0.361
 Humidity:65.0%
 Test Distance:11.330m [K=1.0000]
 Remarks:

LUMINANCE LIMITATION CURVES

Test:U:12.95V I:0.0439A P:4.900W PF:0.7671 Freq:59.98Hz Lamp Flux:473.357x1 lm		
NAME: A19.	TYPE:	WEIGHT:
SPEC.:	DIM.:	SERIAL No.:
MFR.: tospo	SUR.:	Shielding Angle:



LUMINANCE cd/(m2)		
G (DEG)	C0/180	C90/270
85	1803	1567
80	911	778
75	608	505
70	452	373
65	359	297
60	299	244
55	251	203
50	215	173
45	186	150

C Range: 0 - 360DEG
 C Interval: 22.5DEG
 Test Speed: HIGH
 Temperature:25.3DEG
 Operators:Testing Room
 Test Date:2017-10-13

γ Range: 0 - 180DEG
 γ Interval: 1.0DEG
 Test System:EVERFINE GO-3000H_V1 SYSTEM V2.0.361
 Humidity:65.0%
 Test Distance:11.330m [K=1.0000]
 Remarks:

WEC AND CCEC

Test:U:12.95V I:0.0439A P:4.900W PF:0.7671 Freq:59.98Hz Lamp Flux:473.357x1 lm		
NAME: A19.	TYPE:	WEIGHT:
SPEC.:	DIM.:	SERIAL No.:
MFR.: tospo	SUR.:	Shielding Angle:

ρ _{cc}	80%			70%			50%			30%			10%			0
ρ _w	50%	30%	10%	50%	30%	10%	50%	30%	10%	50%	30%	10%	50%	30%	10%	0
ρ _{fc}	20%			20%			20%			20%			20%			0
RCR	RCR:Room Cavity Ratio						Wall Exitance Coefficients (WEC)									
0.0																
1.0	.423	.240	.076	.401	.228	.073	.359	.206	.066	.321	.185	.059	.286	.166	.053	
2.0	.350	.192	.059	.330	.182	.056	.292	.162	.050	.257	.144	.045	.225	.127	.040	
3.0	.304	.162	.048	.286	.153	.046	.251	.136	.041	.219	.120	.037	.189	.105	.032	
4.0	.270	.140	.041	.253	.132	.039	.221	.117	.035	.192	.103	.031	.164	.089	.027	
5.0	.243	.124	.036	.227	.117	.034	.198	.103	.030	.171	.090	.027	.146	.078	.023	
6.0	.221	.111	.032	.207	.104	.030	.180	.092	.027	.155	.080	.024	.131	.069	.020	
7.0	.203	.100	.028	.189	.094	.027	.165	.083	.024	.141	.072	.021	.119	.062	.018	
8.0	.187	.091	.026	.175	.086	.024	.152	.076	.022	.130	.066	.019	.110	.056	.016	
9.0	.174	.084	.023	.162	.079	.022	.141	.070	.020	.121	.060	.017	.101	.051	.015	
10.0	.162	.078	.022	.152	.073	.020	.131	.064	.018	.112	.056	.016	.094	.047	.014	

ρ _{cc}	80%			70%			50%			30%			10%			0
ρ _w	50%	30%	10%	50%	30%	10%	50%	30%	10%	50%	30%	10%	50%	30%	10%	0
ρ _{fc}	20%			20%			20%			20%			20%			0
RCR	RCR:Room Cavity Ratio						Ceiling Cavity Exitance Coefficients (CCEC)									
0.0	.562	.562	.562	.481	.481	.481	.328	.328	.328	.188	.188	.188	.060	.060	.060	
1.0	.563	.530	.500	.482	.455	.431	.330	.313	.298	.190	.181	.173	.061	.058	.056	
2.0	.558	.509	.468	.478	.438	.405	.327	.303	.282	.189	.176	.166	.061	.057	.054	
3.0	.551	.494	.449	.472	.426	.389	.324	.296	.273	.187	.173	.161	.060	.056	.053	
4.0	.543	.483	.436	.466	.417	.379	.321	.291	.267	.185	.170	.158	.060	.055	.052	
5.0	.536	.474	.428	.460	.410	.372	.317	.286	.263	.184	.168	.156	.059	.055	.051	
6.0	.528	.466	.422	.454	.404	.367	.313	.283	.260	.182	.166	.154	.059	.054	.051	
7.0	.521	.460	.417	.449	.399	.364	.310	.280	.258	.180	.165	.153	.058	.054	.051	
8.0	.515	.455	.414	.443	.395	.361	.307	.277	.256	.178	.163	.153	.058	.054	.051	
9.0	.509	.451	.411	.438	.391	.359	.304	.275	.255	.177	.162	.152	.057	.053	.050	
10.0	.503	.447	.409	.434	.388	.357	.301	.273	.254	.175	.161	.151	.057	.053	.050	

C Range: 0 - 360DEG
 C Interval: 22.5DEG
 Test Speed: HIGH
 Temperature:25.3DEG
 Operators:Testing Room
 Test Date:2017-10-13

γ Range: 0 - 180DEG
 γ Interval: 1.0DEG
 Test System:EVERFINE GO-3000H_V1 SYSTEM V2.0.361
 Humidity:65.0%
 Test Distance:11.330m [K=1.0000]
 Remarks:

UGR(Unified Glare Rating) Table

Test:U:12.95V I:0.0439A P:4.900W PF:0.7671 Freq:59.98Hz Lamp Flux:473.357x1 lm										
NAME: A19.					TYPE:			WEIGHT:		
SPEC.:					DIM.:			SERIAL No.:		
MFR.: tospo					SUR.:			Shielding Angle:		
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	8.0	9.1	8.9	10.0	11.2	6.8	7.9	7.6	8.8	9.9
3H	11.6	12.6	12.4	13.5	14.6	10.2	11.2	11.1	12.1	13.3
4H	13.5	14.4	14.4	15.4	16.5	12.1	13.1	13.0	14.0	15.2
6H	15.6	16.5	16.5	17.4	18.6	14.3	15.2	15.2	16.1	17.3
8H	16.7	17.6	17.6	18.5	19.8	15.5	16.3	16.4	17.3	18.5
12H	18.0	18.9	18.9	19.8	21.0	16.8	17.7	17.7	18.6	19.8
4H 2H	9.0	9.9	9.8	10.8	12.0	8.1	9.1	9.0	10.0	11.2
3H	12.7	13.5	13.6	14.5	15.7	11.6	12.4	12.5	13.4	14.6
4H	14.8	15.5	15.7	16.5	17.8	13.6	14.3	14.5	15.3	16.5
6H	17.1	17.8	18.0	18.7	20.0	15.8	16.5	16.8	17.5	18.7
8H	18.3	19.0	19.3	19.9	21.2	17.1	17.7	18.0	18.7	20.0
12H	19.7	20.3	20.7	21.3	22.6	18.5	19.1	19.5	20.1	21.4
8H 4H	15.4	16.1	16.4	17.1	18.4	14.5	15.2	15.5	16.2	17.4
6H	18.1	18.6	19.0	19.6	20.9	17.0	17.5	18.0	18.5	19.8
8H	19.5	20.0	20.5	21.0	22.4	18.4	18.9	19.4	19.9	21.2
12H	21.2	21.6	22.2	22.6	24.0	20.0	20.4	21.0	21.4	22.8
12H 4H	15.6	16.2	16.6	17.2	18.5	14.8	15.4	15.8	16.4	17.7
6H	18.3	18.8	19.3	19.8	21.2	17.4	17.9	18.4	18.9	20.2
8H	19.9	20.4	20.9	21.4	22.7	18.9	19.3	19.9	20.4	21.7
Variations with the observer position at spacings:										
S = 1.0H	+ 0.1 / - 0.1					+ 0.1 / - 0.1				
1.5H	+ 0.2 / - 0.3					+ 0.2 / - 0.3				
2.0H	+ 0.3 / - 0.4					+ 0.3 / - 0.4				

CIE Pub.117, 473.4 lm Total Lamp Luminous Flux Correct (8log(F/F0) = -2.6)

C Range: 0 - 360DEG
 C Interval: 22.5DEG
 Test Speed: HIGH
 Temperature:25.3DEG
 Operators:Testing Room
 Test Date:2017-10-13

γ Range: 0 - 180DEG
 γ Interval: 1.0DEG
 Test System:EVERFINE GO-3000H_V1 SYSTEM V2.0.361
 Humidity:65.0%
 Test Distance:11.330m [K=1.0000]
 Remarks:

UTILIZATION FACTORS TABLE

Test:U:12.95V I:0.0439A P:4.900W PF:0.7671 Freq:59.98Hz Lamp Flux:473.357x1 lm		
NAME: A19.	TYPE:	WEIGHT:
SPEC.:	DIM.:	SERIAL No.:
MFR.: tospo	SUR.:	Shielding Angle:

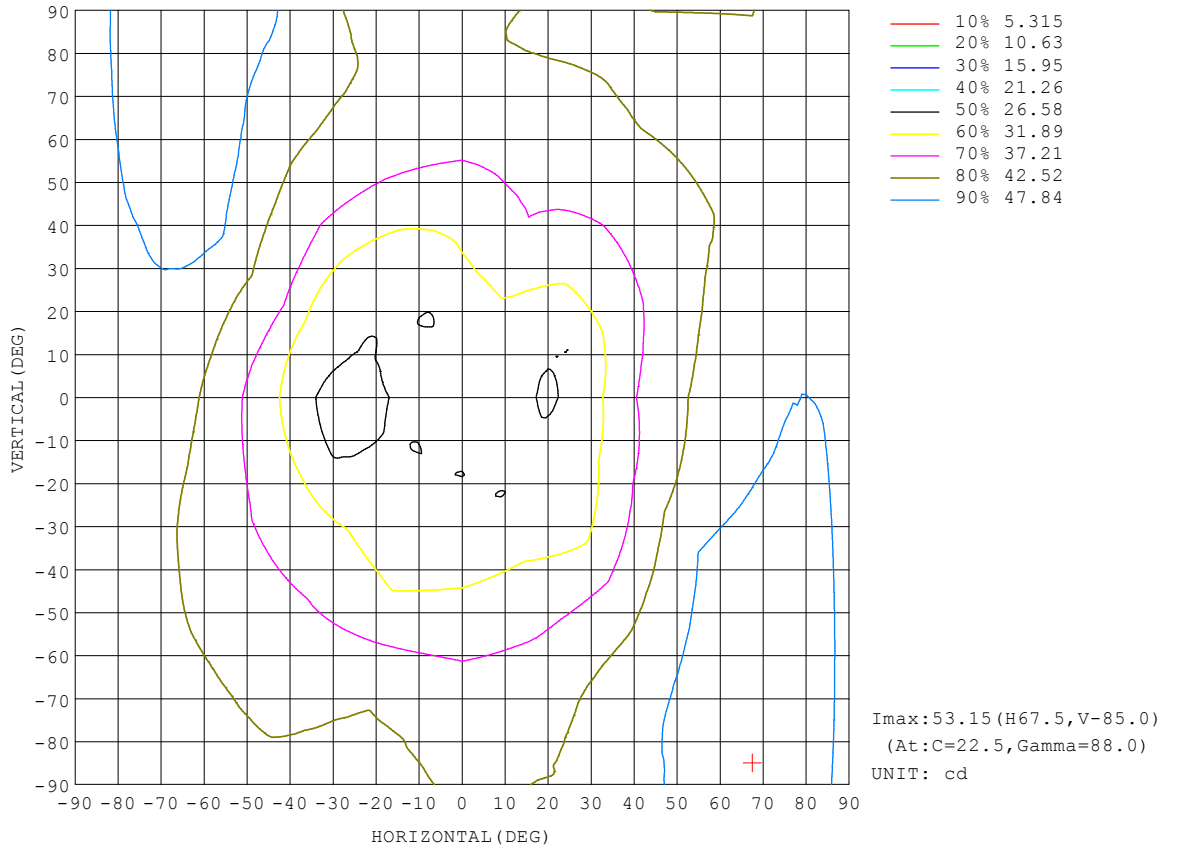
REFLECTANCE										
Ceiling	0.8	0.8	0.8	0.7	0.7	0.7	0.5	0.5	0.5	0
Walls	0.7	0.5	0.3	0.7	0.5	0.3	0.7	0.5	0.3	0
Working plane	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0
ROOM INDEX	UTILIZATION FACTORS (PERCENT) $k(RI) \times RCR = 5$									
k = 0.60	35	23	15	34	22	15	30	20	14	6
0.80	44	30	21	41	28	20	36	25	18	9
1.00	51	36	27	48	34	26	42	33	23	12
1.25	58	43	34	54	41	32	46	36	28	15
1.50	63	49	39	59	46	37	50	40	32	17
2.00	71	58	48	66	54	45	56	47	39	21
2.50	76	64	54	70	59	51	60	51	44	24
3.00	80	69	60	74	64	56	63	55	48	27
4.00	86	76	68	79	70	63	67	60	54	31
5.00	89	80	73	82	74	68	69	63	58	33
ROOM INDEX	UF(total)									Direct
According to DIN EN 13032-2 2004			Suspended				SHRNOM = 1.25			

C Range: 0 - 360DEG
 C Interval: 22.5DEG
 Test Speed: HIGH
 Temperature:25.3DEG
 Operators:Testing Room
 Test Date:2017-10-13

γ Range: 0 - 180DEG
 γ Interval: 1.0DEG
 Test System:EVERFINE GO-3000H_V1 SYSTEM V2.0.361
 Humidity:65.0%
 Test Distance:11.330m [K=1.0000]
 Remarks:

ISOCANDELA DIAGRAM

Test:U:12.95V I:0.0439A P:4.900W PF:0.7671 Freq:59.98Hz Lamp Flux:473.357x1 lm		
NAME: A19.	TYPE:	WEIGHT:
SPEC.:	DIM.:	SERIAL No.:
MFR.: tospo	SUR.:	Shielding Angle:

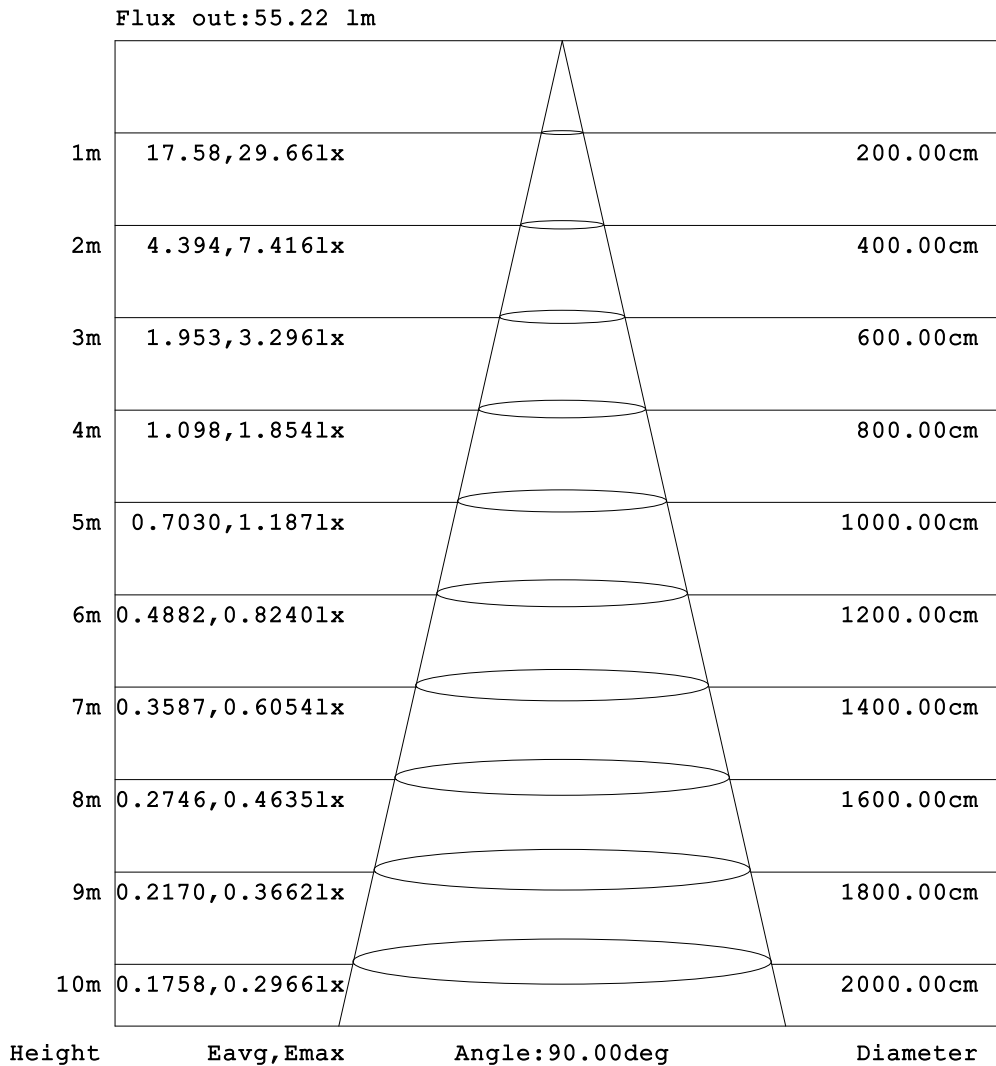


C Range: 0 - 360DEG
 C Interval: 22.5DEG
 Test Speed: HIGH
 Temperature:25.3DEG
 Operators:Testing Room
 Test Date:2017-10-13

γ Range: 0 - 180DEG
 γ Interval: 1.0DEG
 Test System:EVERFINE GO-3000H_V1 SYSTEM V2.0.361
 Humidity:65.0%
 Test Distance:11.330m [K=1.0000]
 Remarks:

AAI Figure

Test:U:12.95V I:0.0439A P:4.900W PF:0.7671 Freq:59.98Hz Lamp Flux:473.357x1 lm		
NAME: A19.	TYPE:	WEIGHT:
SPEC.:	DIM.:	SERIAL No.:
MFR.: tospo	SUR.:	Shielding Angle:

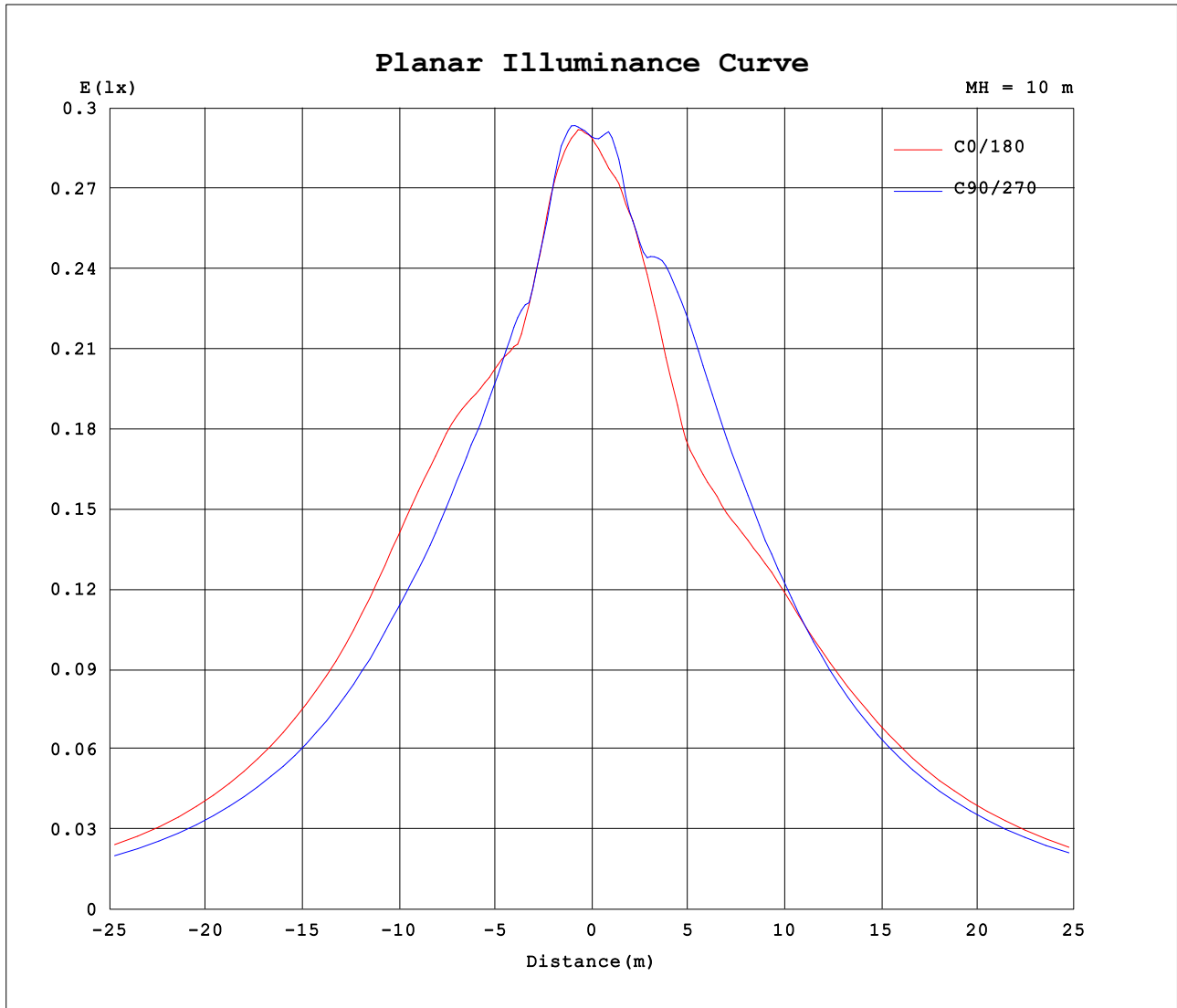


Note: The Curves indicate the illuminated area and the average illumination when the luminaire is at different distance.

C Range: 0 - 360DEG
 C Interval: 22.5DEG
 Test Speed: HIGH
 Temperature: 25.3DEG
 Operators: Testing Room
 Test Date: 2017-10-13

γ Range: 0 - 180DEG
 γ Interval: 1.0DEG
 Test System: EVERFINE GO-3000H_V1 SYSTEM V2.0.361
 Humidity: 65.0%
 Test Distance: 11.330m [K=1.0000]
 Remarks:

Planar Illuminance Curve



C Range: 0 - 360DEG
 C Interval: 22.5DEG
 Test Speed: HIGH
 Temperature: 25.3DEG
 Operators: Testing Room
 Test Date: 2017-10-13

γ Range: 0 - 180DEG
 γ Interval: 1.0DEG
 Test System: EVERFINE GO-3000H_V1 SYSTEM V2.0.361
 Humidity: 65.0%
 Test Distance: 11.330m [K=1.0000]
 Remarks:

LUMINOUS DISTRIBUTION INTENSITY DATA

Test:U:12.95V I:0.0439A P:4.900W PF:0.7671 Freq:59.98Hz Lamp Flux:473.357x1 lm		
NAME: A19.	TYPE:	WEIGHT:
SPEC.:	DIM.:	SERIAL No.:
MFR.: tospo	SUR.:	Shielding Angle:

Table--1

UNIT: cd

C (DEG) \ γ (DEG)	0	22.5	45	67.5	90	112.5	135	157.5	180	202.5	225	247.5	270	292.5	315	337.5			
0	28.9	28.9	29.0	29.0	28.9	28.9	28.9	28.9	28.9	28.9	29.0	29.0	28.9	28.9	28.9	28.9			
5	29.4	29.7	29.9	30.0	29.7	29.2	28.9	28.5	28.1	28.2	28.8	29.4	29.5	29.2	29.0	29.1			
10	29.0	29.6	30.4	30.2	29.3	28.5	28.0	28.1	27.7	28.2	28.8	28.8	28.0	27.4	28.3	28.7			
15	27.2	27.7	29.2	29.0	27.3	26.9	26.5	27.2	27.0	27.8	27.6	27.2	27.3	28.3	28.1	27.8			
20	26.0	27.0	27.6	27.8	27.0	27.5	27.6	26.5	25.7	26.8	27.0	26.2	29.3	30.5	29.8	26.8			
25	27.7	28.8	27.7	26.6	27.5	28.3	29.1	26.0	24.4	26.4	26.8	27.5	30.6	32.0	30.4	26.6			
30	30.1	29.8	27.6	27.4	28.0	28.9	29.7	26.2	25.1	27.9	27.4	27.7	31.4	33.4	30.7	27.9			
35	33.6	32.0	28.2	29.0	29.2	30.8	30.6	27.5	27.0	29.5	28.2	28.4	32.1	35.0	31.9	31.4			
40	36.8	34.5	30.4	31.7	30.3	30.8	32.0	31.2	30.1	31.9	30.8	31.1	33.3	36.6	33.7	34.4			
45	39.8	37.9	33.1	33.8	32.1	31.4	33.7	34.1	33.6	36.4	34.5	34.2	34.6	37.3	35.5	36.5			
50	41.8	41.0	35.9	35.5	33.6	32.7	35.7	36.0	36.6	40.4	37.2	36.1	35.8	38.1	37.3	38.7			
55	43.5	44.3	38.4	36.7	35.2	34.9	36.9	37.3	39.6	42.7	39.3	37.9	37.2	38.7	39.6	40.3			
60	45.2	46.9	41.0	37.9	36.8	37.7	38.2	38.2	42.0	46.1	41.0	39.1	38.7	39.0	40.7	41.4			
65	45.9	48.8	43.3	39.5	37.9	39.9	39.3	39.5	44.1	48.7	42.9	39.9	40.0	39.8	41.5	42.2			
70	46.8	50.1	45.0	40.9	38.6	41.4	40.3	41.0	44.6	50.6	44.6	40.8	40.7	40.4	42.6	43.1			
75	47.6	51.4	46.3	41.5	39.5	42.7	41.2	42.6	45.1	51.4	45.8	41.7	41.1	41.5	43.2	43.7			
80	47.9	52.6	47.1	42.1	40.9	43.6	42.0	44.1	45.1	51.8	46.9	42.0	41.4	42.8	43.3	43.9			
85	47.5	53.0	47.4	42.6	41.3	44.0	43.3	45.2	45.0	52.4	47.8	41.6	41.3	44.0	43.1	43.1			
90	46.7	53.0	47.3	42.8	41.8	44.4	44.0	45.4	45.3	52.3	48.6	40.7	40.8	43.7	42.5	42.4			
95	46.3	52.1	47.0	43.7	42.8	44.3	44.7	45.4	45.3	51.8	48.6	39.9	40.2	43.3	41.4	42.2			
100	46.7	51.4	46.6	44.4	43.6	43.6	45.9	45.8	45.0	50.6	48.8	39.4	39.6	42.8	40.8	42.0			
105	47.4	50.4	46.3	45.4	43.7	42.9	47.1	46.4	44.6	48.7	48.6	38.9	39.6	42.2	39.9	42.2			
110	47.4	49.1	45.6	46.1	43.1	41.6	47.8	47.1	44.8	47.5	47.2	38.7	39.7	42.3	38.6	42.0			
115	45.9	47.3	43.7	46.3	42.4	40.3	48.1	47.4	44.3	46.1	46.2	38.1	39.1	41.6	37.3	41.1			
120	44.0	44.6	42.7	45.6	41.8	39.0	47.6	47.2	42.9	44.1	45.1	37.8	37.7	40.4	36.8	40.4			
125	41.5	42.2	41.1	44.3	40.2	37.5	46.7	46.0	41.1	41.9	43.0	37.1	36.2	38.6	36.3	39.2			
130	39.1	39.4	39.2	42.3	37.4	36.1	44.9	44.5	39.5	39.4	40.2	36.2	34.4	35.8	35.3	37.7			
135	36.0	35.3	36.2	39.9	34.7	34.4	42.3	42.7	37.9	36.8	37.0	34.9	32.4	33.0	34.2	36.8			
140	30.4	29.8	34.5	34.1	32.5	33.5	39.0	40.4	35.2	33.5	34.1	33.6	30.6	31.0	33.8	34.6			
145	22.8	26.1	26.8	27.0	28.8	31.5	33.9	33.5	30.6	29.3	30.1	30.1	27.3	28.8	31.3	23.6			
150	16.7	16.8	19.7	20.8	22.7	23.5	24.0	25.8	24.6	24.4	26.1	24.9	24.3	26.2	18.8	10.3			
155	12.4	11.2	13.2	14.4	15.6	16.4	18.5	19.1	19.2	18.9	20.8	20.8	20.0	18.9	11.2	12.8			
160	8.58	6.33	5.32	6.92	7.56	7.10	10.2	13.7	14.8	14.5	16.0	16.1	14.5	12.9	6.03	10.0			
165	0.29	0.22	0.30	0.23	0.34	0.35	1.63	2.70	4.02	3.73	3.69	3.09	2.33	2.42	0.24	0.56			
170	0.21	0.19	0.21	0.20	0.22	0.20	0.23	0.20	0.19	0.24	0.19	0.23	0.20	0.21	0.20	0.21			
175	0.19	0.19	0.19	0.19	0.19	0.19	0.19	0.19	0.19	0.19	0.19	0.19	0.19	0.19	0.19	0.19			
180	0.19	0.19	0.19	0.19	0.19	0.19	0.19	0.19	0.19	0.19	0.19	0.19	0.19	0.19	0.19	0.19			

C Range: 0 - 360DEG
 C Interval: 22.5DEG
 Test Speed: HIGH
 Temperature:25.3DEG
 Operators:Testing Room
 Test Date:2017-10-13

γ Range: 0 - 180DEG
 γ Interval: 1.0DEG
 Test System:EVERFINE GO-3000H_V1 SYSTEM V2.0.361
 Humidity:65.0%
 Test Distance:11.330m [K=1.0000]
 Remarks: