



ATC MIDDLE EAST FZCO

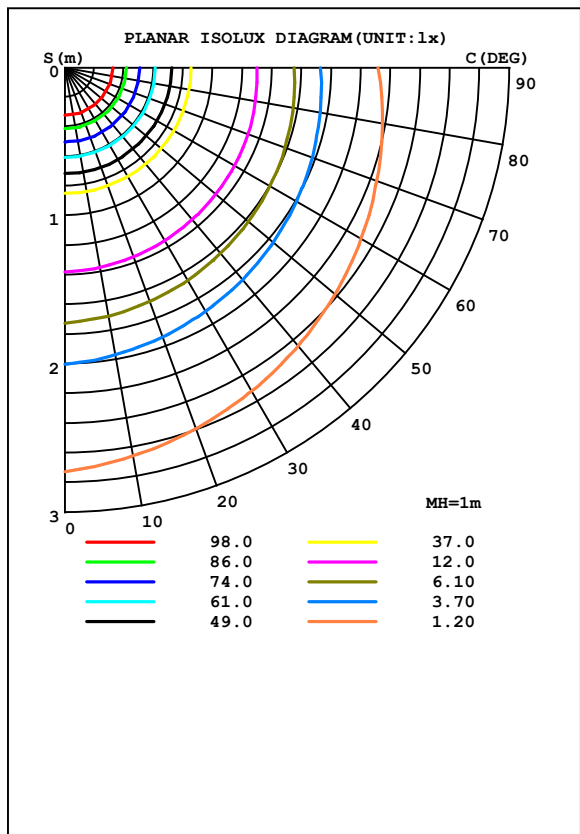
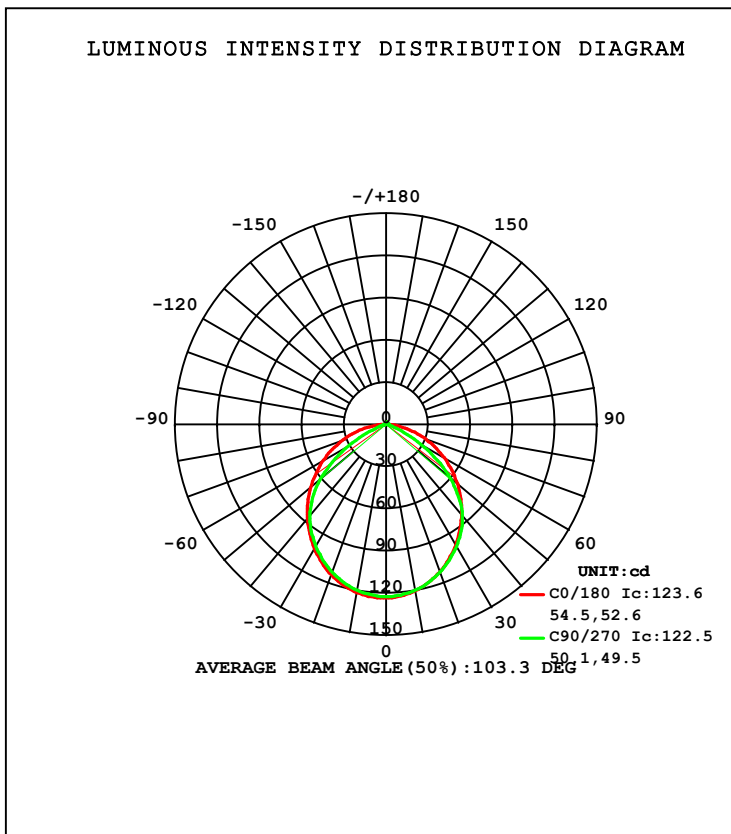


 rafeed<sup>®</sup>  
LED  
**E**series  
2022  
OUR BEAUTIFUL WORLD WITH  
**LIGHTS.**

## LUMINAIRE PHOTOMETRIC TEST REPORT

Test:U:230.28V I:0.020A P:4.21W PF:0.8972 Freq:49.99Hz Lamp Flux:304.52lx1 lm		
NAME: Panel Down light 4.5W	TYPE:	WEIGHT:
SPEC.:	DIM.:	SERIAL No.:
MFR.: ATC	SUR.:	Shielding Angle:

DATA OF LAMP		PHOTOMETRIC DATA <span style="float: right;">Eff: 72.30 lm/W</span>			
MODEL	Panel Down light 4.5W	I <sub>max</sub> (cd)	123.6	S/MH (C0/180)	1.23
NOMINAL POWER (W)	4.5	LOR (%)	100.0	S/MH (C90/270)	1.22
RATED VOLTAGE (V)	230	TOTAL FLUX (lm)	304.52	η UP, DN (C0-180)	0.8, 48.3
NOMINAL FLUX (lm)	304.521	CIE CLASS	DIRECT	η UP, DN (C180-360)	0.7, 50.2
LAMPS INSIDE	1	η up (%)	1.5	CIBSE SHR NOM	1.25
TEST VOLTAGE (V)	230	η down (%)	98.5	CIBSE SHR MAX	1.35



C Range: 0 - 360DEG  
 C Interval: 90.0DEG  
 Test Speed: HIGH  
 Temperature: 25.3DEG  
 Operators: ATC

γ Range: 0 - 180DEG  
 γ Interval: 1.0DEG  
 Test System: EVERFINE GO-2000A\_V1 SYSTEM V2.0.366  
 Humidity: 60%  
 Test Distance: 7.630m [K=1.0000]  
 Remarks:

## ZONAL FLUX DIAGRAM

ZONAL FLUX DIAGRAM:

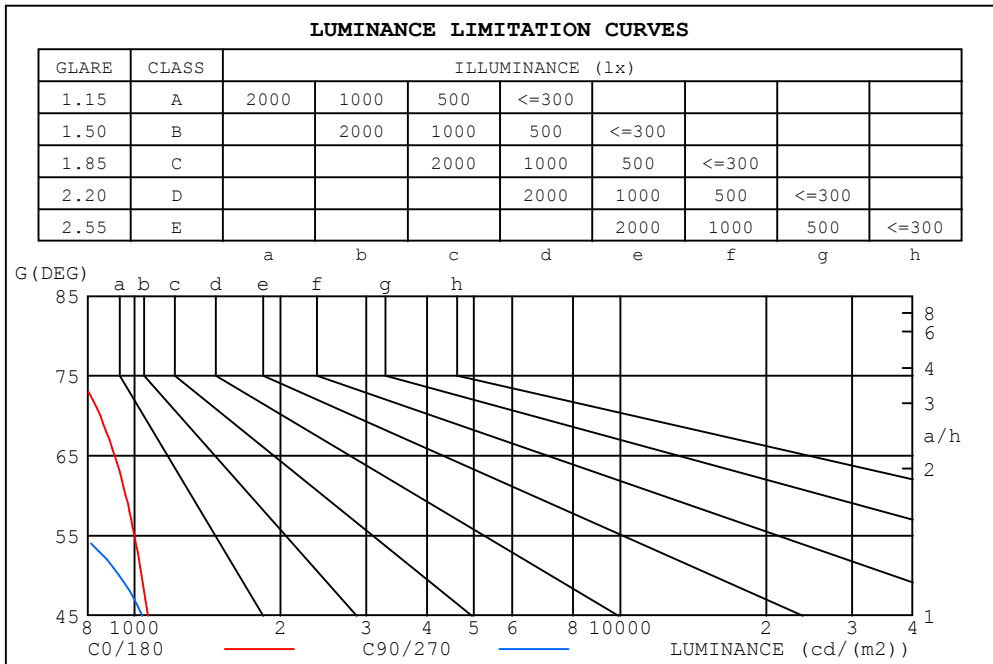
γ	C0	C90	C180	C270					γ	Φ zone	Φ total	%lum, lamp
10	120.2	119.8	121.4	119.8					0- 10	11.61	11.61	3.81,3.81
20	111.7	112.1	113.9	112.0					10- 20	32.98	44.60	14.6,14.6
30	99.20	100.3	102.1	100.0					20- 30	49.23	93.82	30.8,30.8
40	83.82	84.57	87.22	84.75					30- 40	58.26	152.1	49.9,49.9
50	66.46	59.85	70.07	61.48					40- 50	58.00	210.1	69,69
60	47.97	28.83	51.66	30.82					50- 60	46.74	256.8	84.3,84.3
70	29.07	4.928	32.80	5.242					60- 70	27.79	284.6	93.5,93.5
80	10.15	1.808	14.07	1.645					70- 80	12.66	297.3	97.6,97.6
90	0.2888	0.1849	0.1502	0.0890					80- 90	2.687	300.0	98.5,98.5
100	0.4157	0.2965	0.2390	0.1462					90-100	0.2393	300.2	98.6,98.6
110	0.6157	0.5237	0.4085	0.3575					100-110	0.3974	300.6	98.7,98.7
120	0.8392	0.8013	0.5973	0.5920					110-120	0.5792	301.2	98.9,98.9
130	1.039	1.090	0.7973	0.8501					120-130	0.7422	301.9	99.1,99.1
140	1.186	1.145	0.9745	0.9782					130-140	0.7940	302.7	99.4,99.4
150	1.282	1.255	1.140	1.082					140-150	0.7079	303.4	99.6,99.6
160	1.374	1.378	1.271	1.255					150-160	0.5800	304.0	99.8,99.8
170	1.432	1.425	1.382	1.363					160-170	0.3859	304.4	100,100
180	1.440	1.444	1.448	1.436					170-180	0.1353	304.5	100,100
DEG	LUMINOUS INTENSITY:cd Less than 35% Percent = 11.1 %									UNIT:lm		

0 - 60 DEG Zonal Flux:256.82      %lum: 84.3%  
 0 - 45 DEG Zonal Flux:181.8      %lum: 59.7%  
 @35% Iavg: 5.7%  
 @50% Iavg: 8.0%

C Range: 0 - 360DEG  
 C Interval: 90.0DEG Test  
 Speed: HIGH  
 Temperature:25.3DEG  
 Operators:ATC

γ Range: 0 - 180DEG  
 γ Interval: 1.0DEG  
 Test System:EVERFINE GO-2000A\_V1 SYSTEM V2.0.366  
 Humidity:60%  
 Test Distance:7.630m [K=1.0000]  
 Remarks:

## LUMINANCE LIMITATION CURVES



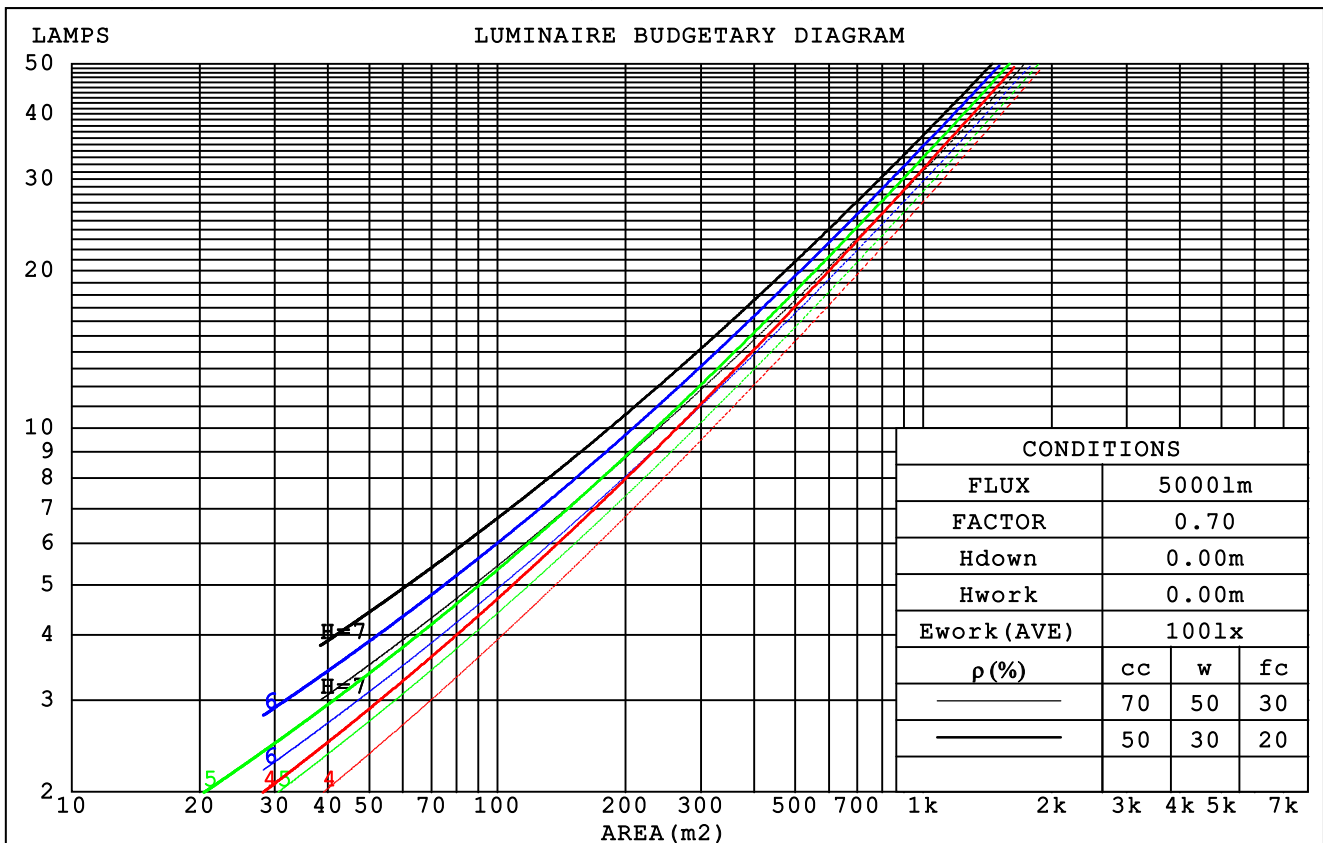
LUMINANCE cd/ (m <sup>2</sup> )		
G (DEG)	C0/180	C90/270
85	150	65
80	585	104
75	750	83
70	850	144
65	910	342
60	959	577
55	1000	780
50	1034	931
45	1065	1036

C Range: 0 - 360DEG  
 C Interval: 90.0DEG  
 Test Speed: HIGH  
 Temperature: 25.3DEG  
 Operators: ATC

$\gamma$  Range: 0 - 180DEG  
 $\gamma$  Interval: 1.0DEG  
 Test System: EVERFINE GO-2000A\_V1 SYSTEM V2.0.366  
 Humidity: 60%  
 Test Distance: 7.630m [K=1.0000]  
 Remarks:

### CU AND LUMINAIRE BUDGETARY ESTIMATE DIAGRAM

<b>ρcc</b>	80%			70%			50%			30%			10%			0
<b>ρw</b>	50%	30%	10%	50%	30%	10%	50%	30%	10%	50%	30%	10%	50%	30%	10%	0
<b>ρfc</b>	20%			20%			20%			20%			20%			0
<b>RCR</b>	RCR:Room Cavity Ratio						Coefficients of Utilization(CU)									
0.0	1.19	1.19	1.19	1.16	1.16	1.16	1.10	1.10	1.10	1.05	1.05	1.05	1.01	1.01	1.01	.99
1.0	1.05	1.01	.98	1.03	.99	.96	.98	.96	.93	.94	.92	.90	.91	.89	.87	.85
2.0	.93	.87	.81	.91	.85	.80	.87	.82	.78	.84	.80	.76	.81	.77	.74	.72
3.0	.82	.75	.69	.81	.74	.68	.78	.72	.67	.75	.70	.65	.72	.68	.64	.62
4.0	.73	.65	.59	.72	.64	.58	.69	.63	.57	.67	.61	.57	.65	.60	.56	.53
5.0	.66	.57	.51	.65	.57	.51	.62	.55	.50	.60	.54	.49	.58	.53	.49	.47
6.0	.60	.51	.45	.59	.50	.45	.57	.49	.44	.55	.48	.44	.53	.48	.43	.41
7.0	.54	.46	.40	.53	.45	.40	.52	.44	.39	.50	.44	.39	.49	.43	.39	.37
8.0	.49	.41	.36	.49	.41	.36	.47	.40	.35	.46	.40	.35	.45	.39	.35	.33
9.0	.45	.38	.32	.45	.37	.32	.44	.37	.32	.42	.36	.32	.41	.36	.31	.30
10.0	.42	.34	.29	.41	.34	.29	.40	.34	.29	.39	.33	.29	.38	.33	.29	.27



C Range: 0 - 360DEG  
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γ Range: 0 - 180DEG  
 γ Interval: 1.0DEG  
 Test System: EVERFINE GO-2000A\_V1 SYSTEM V2.0.366  
 Humidity: 60%  
 Test Distance: 7.630m [K=1.0000]  
 Remarks:

### 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	.276	.157	.050	.268	.153	.049	.254	.146	.047	.241	.139	.045	.230	.133	.043	
2.0	.265	.145	.045	.258	.142	.044	.246	.137	.042	.235	.132	.041	.224	.127	.040	
3.0	.249	.132	.040	.243	.130	.039	.232	.126	.038	.222	.122	.037	.213	.118	.036	
4.0	.232	.121	.035	.227	.119	.035	.218	.115	.034	.209	.112	.034	.200	.109	.033	
5.0	.217	.110	.032	.212	.109	.032	.204	.106	.031	.196	.103	.031	.188	.101	.030	
6.0	.203	.102	.029	.199	.100	.029	.191	.098	.028	.184	.095	.028	.177	.093	.028	
7.0	.190	.094	.027	.186	.093	.026	.179	.091	.026	.173	.089	.026	.167	.087	.025	
8.0	.178	.087	.024	.175	.086	.024	.169	.084	.024	.163	.082	.024	.157	.081	.024	
9.0	.168	.081	.023	.165	.080	.023	.159	.079	.022	.154	.077	.022	.149	.076	.022	
10.0	.158	.076	.021	.155	.075	.021	.150	.074	.021	.146	.072	.021	.141	.071	.020	

$\rho_{cc}$	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	.202	.202	.202	.173	.173	.173	.118	.118	.118	.068	.068	.068	.022	.022	.022	
1.0	.189	.168	.149	.162	.144	.128	.111	.099	.088	.064	.057	.051	.020	.018	.017	
2.0	.180	.144	.113	.154	.124	.098	.106	.086	.068	.061	.050	.040	.020	.016	.013	
3.0	.172	.126	.089	.147	.109	.077	.101	.075	.054	.058	.044	.032	.019	.014	.010	
4.0	.164	.112	.073	.141	.097	.063	.097	.068	.044	.056	.040	.026	.018	.013	.009	
5.0	.157	.102	.061	.135	.088	.053	.093	.062	.037	.054	.036	.022	.017	.012	.007	
6.0	.150	.093	.053	.129	.081	.046	.089	.057	.032	.052	.033	.019	.017	.011	.006	
7.0	.144	.086	.046	.124	.075	.040	.085	.053	.029	.050	.031	.017	.016	.010	.006	
8.0	.138	.081	.041	.118	.070	.036	.082	.049	.026	.048	.029	.015	.015	.009	.005	
9.0	.132	.076	.038	.114	.066	.033	.079	.046	.023	.046	.027	.014	.015	.009	.005	
10.0	.126	.071	.035	.109	.062	.030	.076	.044	.022	.044	.026	.013	.014	.008	.004	

C Range: 0 - 360DEG  
 C Interval: 90.0DEG  
 Test Speed: HIGH  
 Temperature: 25.3DEG  
 Operators: ATC

$\gamma$  Range: 0 - 180DEG  
 $\gamma$  Interval: 1.0DEG  
 Test System: EVERFINE GO-2000A\_V1 SYSTEM V2.0.366  
 Humidity: 60%  
 Test Distance: 7.630m [K=1.0000]  
 Remarks:

**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	12.6	14.0	12.9	14.3	14.5	11.4	12.9	11.7	13.1	13.3
3H	14.0	15.3	14.3	15.5	15.8	11.6	12.9	11.9	13.2	13.4
4H	14.5	15.7	14.8	16.0	16.3	11.5	12.8	11.9	13.1	13.3
6H	14.8	16.0	15.1	16.2	16.6	11.5	12.7	11.8	12.9	13.2
8H	14.9	16.0	15.2	16.3	16.6	11.5	12.6	11.8	12.9	13.2
12H	14.8	15.9	15.2	16.2	16.5	11.4	12.5	11.8	12.8	13.1
4H 2H	12.9	14.1	13.2	14.4	14.7	11.9	13.1	12.2	13.4	13.7
3H	14.3	15.4	14.7	15.7	16.1	12.2	13.3	12.6	13.6	13.9
4H	15.0	15.9	15.3	16.3	16.6	12.2	13.2	12.6	13.5	13.9
6H	15.4	16.3	15.8	16.6	17.0	12.2	13.1	12.6	13.5	13.8
8H	15.5	16.3	15.9	16.7	17.1	12.2	13.0	12.6	13.4	13.8
12H	15.5	16.2	15.9	16.6	17.1	12.2	12.9	12.6	13.3	13.7
8H 4H	15.0	15.8	15.4	16.2	16.6	12.4	13.2	12.9	13.6	14.0
6H	15.5	16.2	16.0	16.6	17.0	12.5	13.2	13.0	13.6	14.1
8H	15.6	16.2	16.1	16.7	17.2	12.5	13.1	13.0	13.6	14.1
12H	15.7	16.1	16.2	16.6	17.1	12.5	13.0	13.0	13.5	14.0
12H 4H	14.9	15.7	15.4	16.1	16.5	12.4	13.2	12.9	13.6	14.0
6H	15.5	16.1	16.0	16.5	17.0	12.6	13.1	13.0	13.6	14.1
8H	15.6	16.1	16.1	16.6	17.1	12.6	13.1	13.1	13.6	14.1
Variations with the observer position at spacings:										
S = 1.0H	+ 0.2 / - 0.2					+ 0.5 / - 0.6				
1.5H	+ 0.2 / - 0.3					+ 0.3 / - 0.7				
2.0H	+ 0.5 / - 0.6					+ 0.9 / - 1.4				

CIE Pub.117, 304.5 lm Total Lamp Luminous Flux Corrected ( $8\log(F/F_0) = -4.1$ )

C Range: 0 - 360DEG  
 C Interval: 90.0DEG  
 Test Speed: HIGH  
 Temperature:25.3DEG  
 Operators:ATC

$\gamma$  Range: 0 - 180DEG  
 $\gamma$  Interval: 1.0DEG  
 Test System:EVERFINE GO-2000A\_V1 SYSTEM V2.0.366  
 Humidity:60%  
 Test Distance:7.630m [K=1.0000]  
 Remarks:

### UTILIZATION FACTORS TABLE

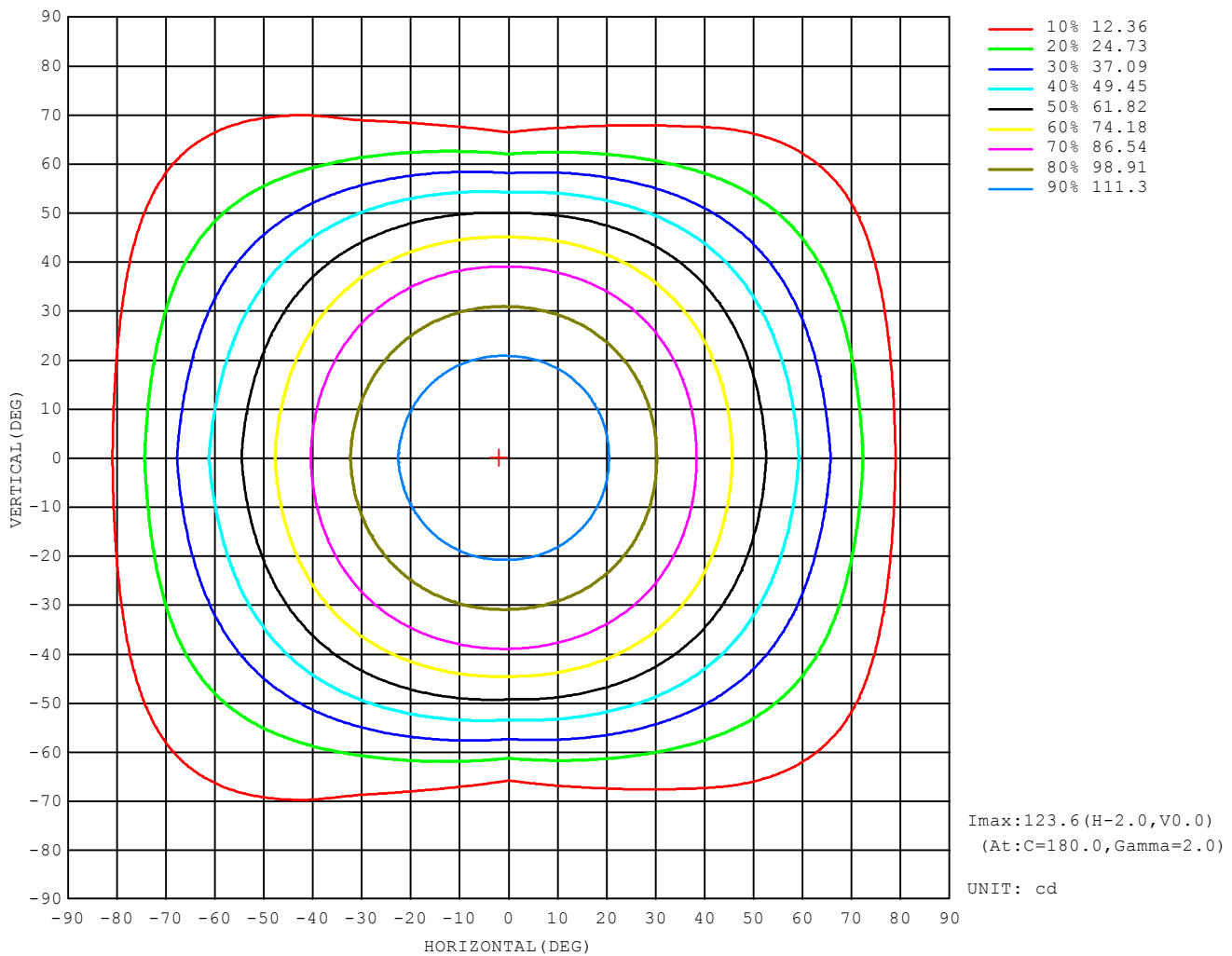
REFLECTANCE										
Ceiling	0.8	0.8	0.8	0.7	0.7	0.7	0.5	0.5	0.5	0
Walls	0.7	0.5	0.3	0.7	0.5	0.3	0.7	0.5	0.3	0
Working plane	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0
ROOM INDEX	UTILIZATION FACTORS (PERCENT) $k(RI) \times RCR = 5$									
k = 0.60	60	49	43	59	49	42	58	48	42	36
0.80	71	60	53	69	59	53	68	58	52	45
1.00	79	69	62	78	68	62	76	69	61	54
1.25	86	76	70	85	76	69	82	74	69	62
1.50	91	82	75	89	81	75	86	79	74	66
2.00	97	90	84	95	88	83	92	86	81	74
2.50	101	94	88	99	92	87	95	89	85	77
3.00	104	98	93	102	96	92	97	93	89	81
4.00	107	102	98	105	100	97	101	97	94	85
5.00	110	105	102	107	103	100	102	99	97	87
ROOM INDEX	UF(total)									Direct
According to DIN EN 13032-2 2004			Suspended				SHRNOM = 1.25			

C Range: 0 - 360DEG  
 C Interval: 90.0DEG  
 Test Speed: HIGH  
 Temperature: 25.3DEG  
 Operators: ATC

$\gamma$  Range: 0 - 180DEG  
 $\gamma$  Interval: 1.0DEG  
 Test System: EVERFINE GO-2000A\_V1 SYSTEM V2.0.366  
 Humidity: 60%  
 Test Distance: 7.630m [K=1.0000]  
 Remarks:



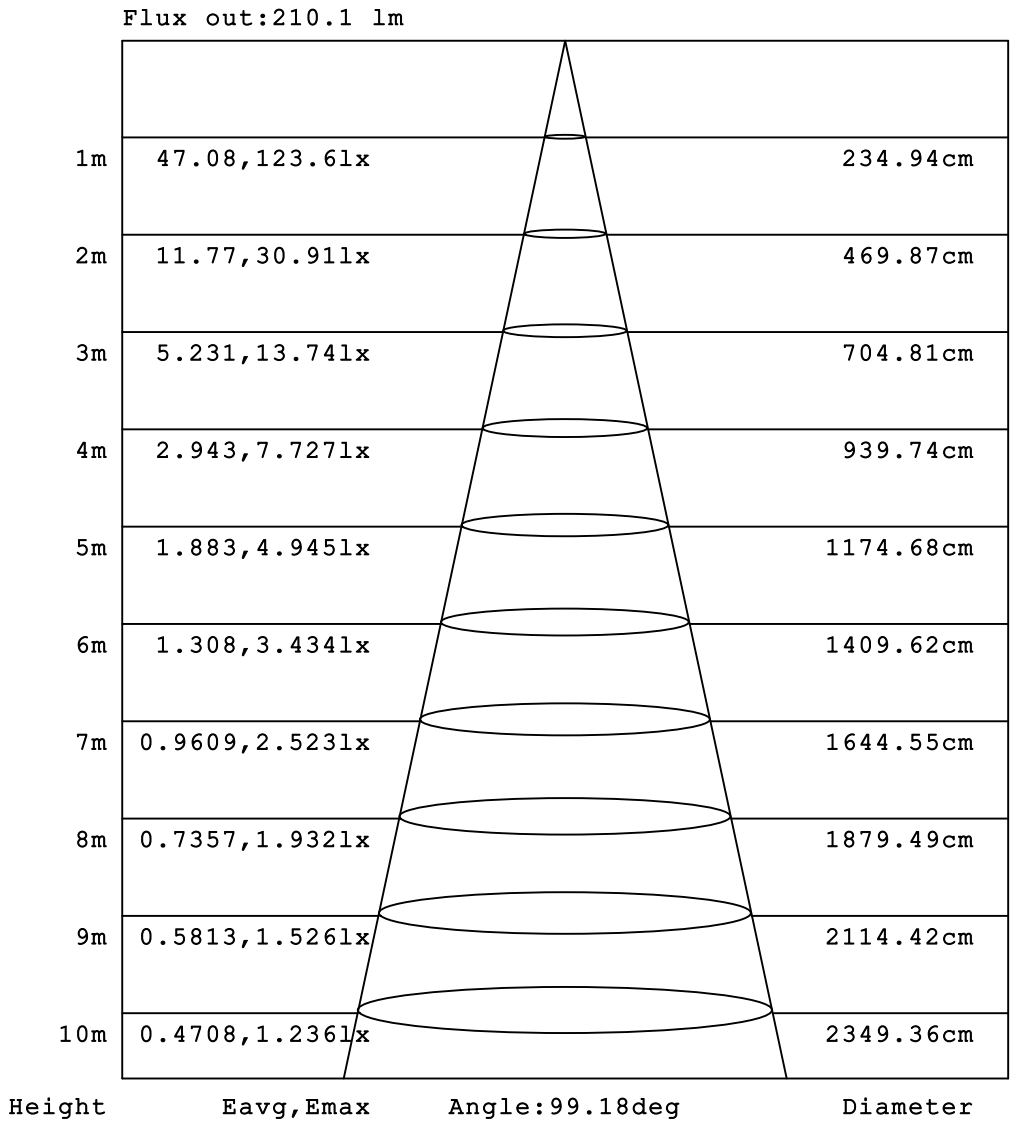
### ISOCANDELA DIAGRAM



C Range: 0 - 360DEG  
 C Interval: 90.0DEG  
 Test Speed: HIGH  
 Temperature:25.3DEG  
 Operators:ATC

$\gamma$  Range: 0 - 180DEG  
 $\gamma$  Interval: 1.0DEG  
 Test System:EVERFINE GO-2000A\_V1 SYSTEM V2.0.366  
 Humidity:60%  
 Test Distance:7.630m [K=1.0000]  
 Remarks:

### AAI Figure

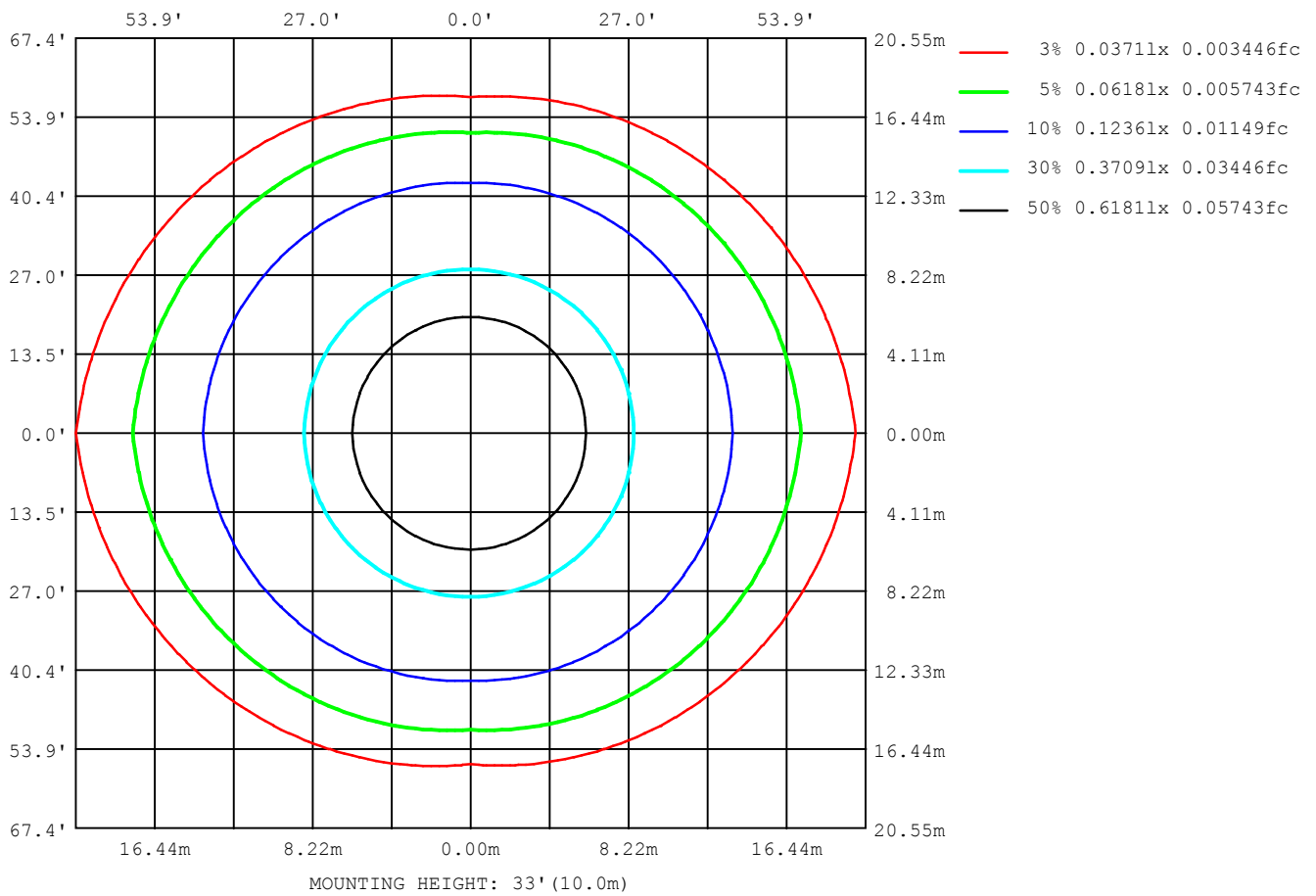


Note: The Curves indicate the illuminated area and the average illumination when the luminaire is at different distance.

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 C Interval: 90.0DEG  
 Test Speed: HIGH  
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 Operators: ATC

$\gamma$  Range: 0 - 180DEG  
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### ISOLUX DIAGRAM



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 $\gamma$  Interval: 1.0DEG  
 Test System: EVERFINE GO-2000A\_V1 SYSTEM V2.0.366  
 Humidity: 60%  
 Test Distance: 7.630m [K=1.0000]  
 Remarks:

### LED Avg.L Report

Test:U:230.28V I:0.020A P:4.21W PF:0.8972 Freq:49.99Hz Lamp Flux:304.521x1 lm		
NAME: DL3D 4.5W 6000K	TYPE:	WEIGHT:
SPEC.:	DIM.:	SERIAL No.:
MFR.: ATC	SUR.:	Shielding Angle:

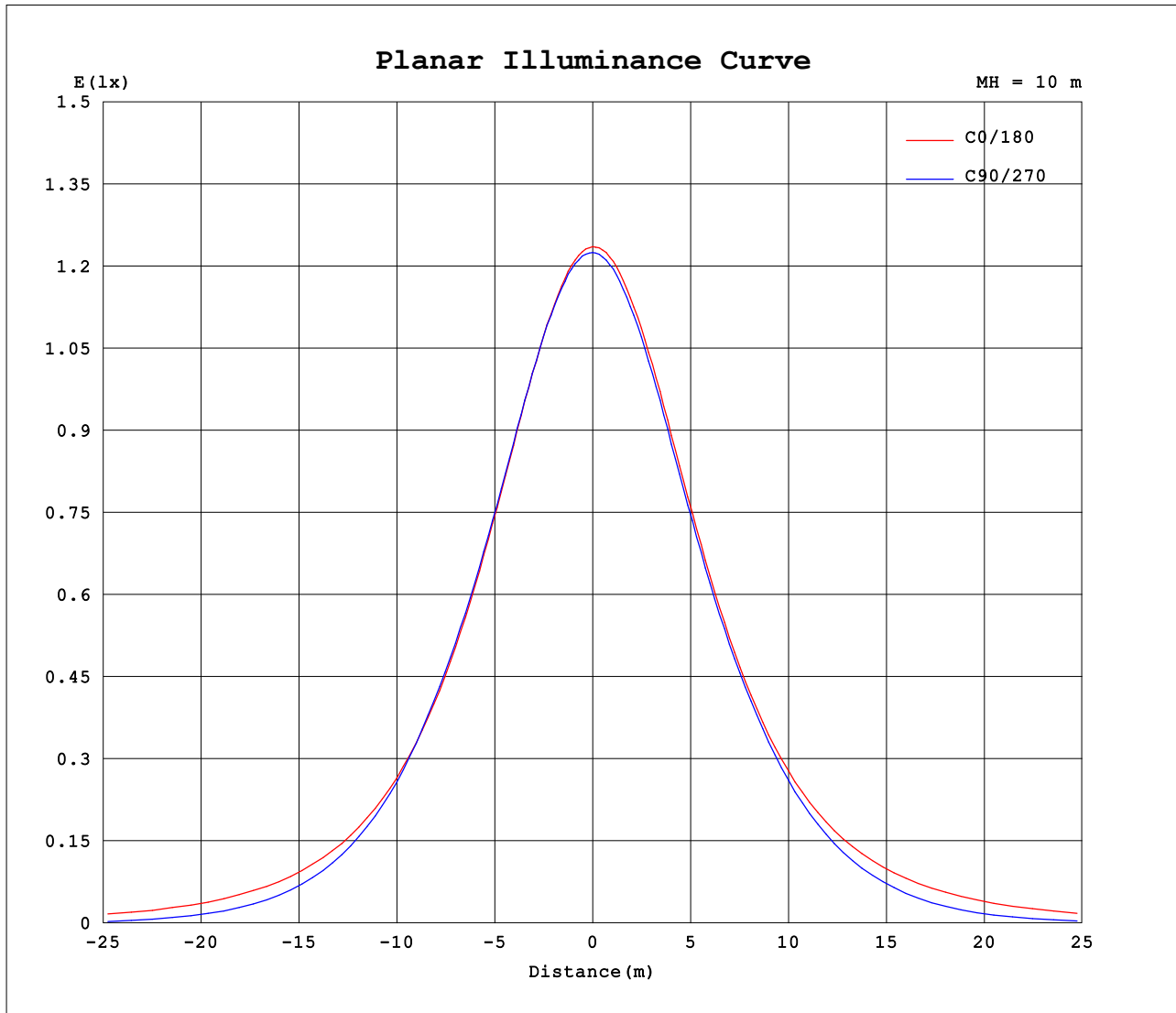
AvgL	cd/m2
L_0~180 (65) av	955
L_0~180 (75) av	828
L_0~180 (85) av	287
L_90~270 (65) av	358
L_90~270 (75) av	84
L_90~270 (85) av	60
L_45 (65) av	584
L_45 (75) av	368
L_45 (85) av	153

Standard: GB/T 29293-2012

C Range: 0 - 360DEG  
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 Temperature:25.3DEG  
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 $\gamma$  Interval: 1.0DEG  
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 Remarks:

### Planar Illuminance Curve



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 Operators: ATC

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 Humidity: 60%  
 Test Distance: 7.630m [K=1.0000]  
 Remarks:



---

## ATC MIDDLE EAST FZCO

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