



ATC MIDDLE EAST FZCO



 rafeed<sup>®</sup>  
LED  
**E**series

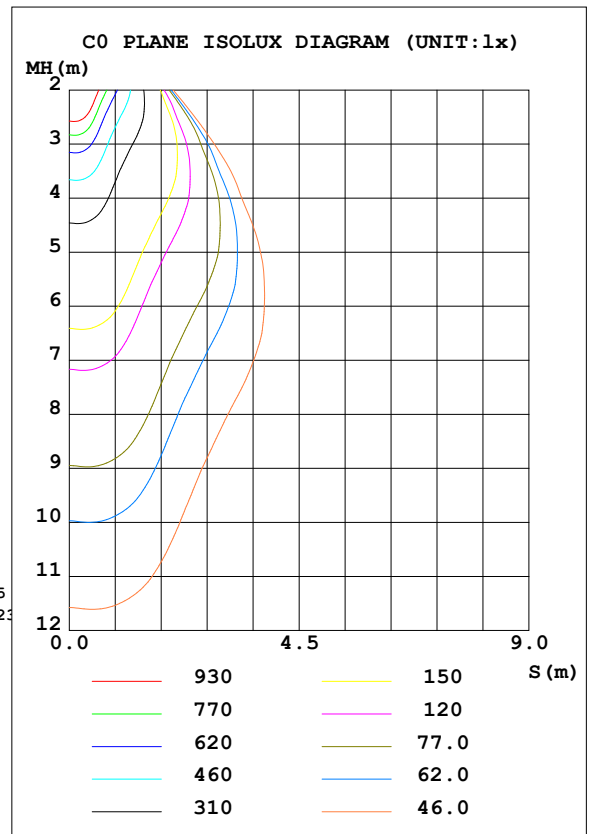
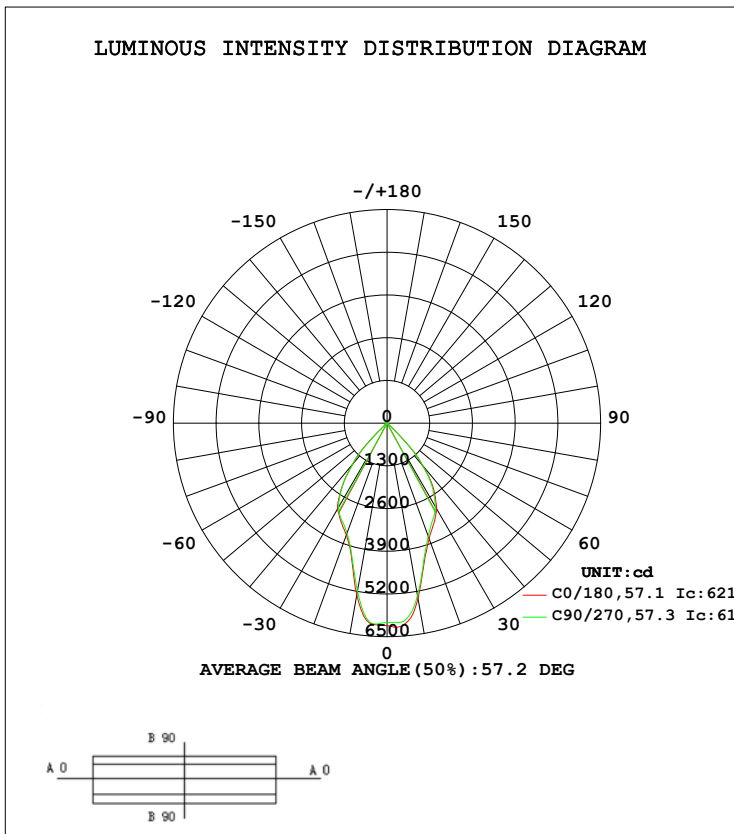
2022

OUR BEAUTIFUL WORLD WITH  
**LIGHTS.**

### LUMINAIRE PHOTOMETRIC TEST REPORT

Test:U:230.1V I:0.2678A P:60.83W PF:0.9872 Freq:50.00Hz Lamp Flux:5519.84x1 lm		
NAME: Down Light 60W	TYPE:--	WEIGHT:--
SPEC.:AR60036-1	DIM.: --	SERIAL No.: FTS21020203L-01
MFR: ATC	SUR.:155mm	Shielding Angle:--

DATA OF LAMP		PHOTOMETRIC DATA			
MODEL	Down Light 60W	Imax(cd)	6215	S/MH(C0/180)	0.71
NOMINAL POWER(W)	--	LOR(%)	100.0	S/MH(C90/270)	0.71
RATED VOLTAGE(V)	--	TOTAL FLUX(lm)	5519.8	$\eta$ UP, DN(C0-180)	0.9, 49.8
NOMINAL FLUX(lm)	5519.84	CIE CLASS	DIRECT	$\eta$ UP, DN(C180-360)	0.5, 48.8
LAMPS INSIDE	1	$\eta$ up (%)	1.4	CIBSE SHR NOM	0.75
TEST VOLTAGE(V)	--	$\eta$ down (%)	98.6	CIBSE SHR MAX	0.85



C Range: 0 - 360DEG  
 C Interval: 10.0DEG  
 Test Speed: HIGH  
 Temperature: 25.2DEG  
 Operators: ATC

$\gamma$  Range: 0 - 180DEG  
 $\gamma$  Interval: 1.0DEG  
 Test System: EVERFINE GO-2000H\_V1 SYSTEM V2.0.404.7  
 Humidity: 59.7%  
 Test Distance: 13.650m [K=1.0000]  
 Remarks: ---

## ZONAL FLUX DIAGRAM

ZONAL FLUX DIAGRAM:

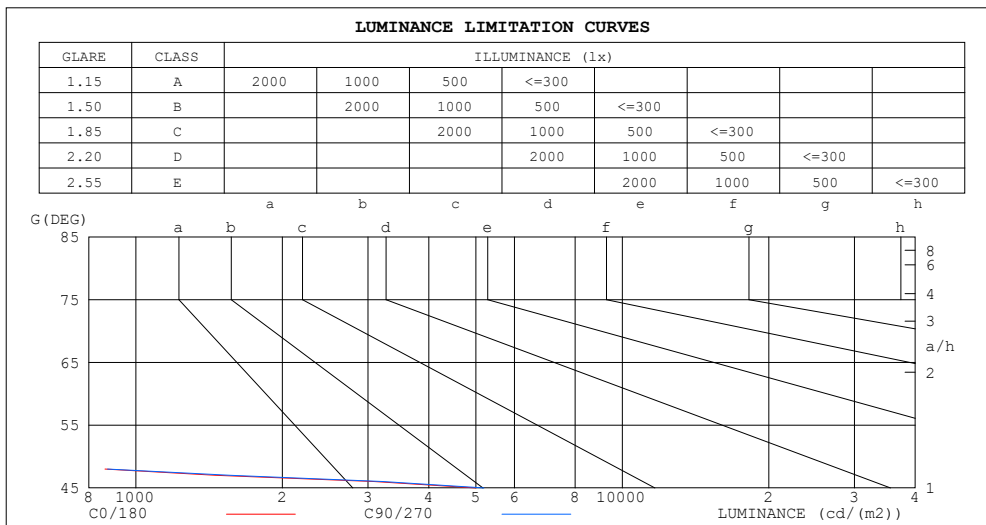
$\gamma$	C0	C45	C90	C135	C180	C225	C270	C315	$\gamma$	$\Phi$ zone	$\Phi$ total	%lum, lamp
10	5422	5371	5337	5311	5312	5274	5191	5266	0- 10	553.8	553.8	10,10
20	3748	3711	3670	3645	3624	3550	3569	3624	10- 20	1202	1756	31.8,31.8
30	3014	3004	2947	2932	3017	2993	2957	2953	20- 30	1514	3270	59.2,59.2
40	1680	1702	1681	1674	1624	1640	1620	1629	30- 40	1480	4749	86,86
50	76.06	74.12	76.36	74.27	95.00	78.67	74.56	74.91	40- 50	537.3	5287	95.8,95.8
60	64.02	64.46	64.51	64.86	69.39	68.19	66.21	66.45	50- 60	62.69	5349	96.9,96.9
70	46.30	48.01	46.74	48.30	50.36	49.10	47.25	47.77	60- 70	56.56	5406	97.9,97.9
80	13.24	13.18	12.94	13.95	15.44	15.52	14.23	14.08	70- 80	32.04	5438	98.5,98.5
90	0.6481	0.5391	0.5108	0.5258	0.1518	0.1520	0.1658	0.1528	80- 90	5.145	5443	98.6,98.6
100	4.785	4.868	4.891	4.923	0.2901	0.2827	0.3029	0.2898	90-100	1.451	5444	98.6,98.6
110	9.234	9.219	9.188	9.184	1.559	1.546	1.583	1.531	100-110	4.158	5449	98.7,98.7
120	13.80	13.56	13.64	13.82	4.556	4.497	4.495	4.440	110-120	7.021	5456	98.8,98.8
130	21.06	20.87	20.95	21.11	9.047	8.977	8.851	8.854	120-130	10.58	5466	99,99
140	28.60	28.43	28.36	28.40	14.33	14.12	14.21	14.03	130-140	14.05	5480	99.3,99.3
150	32.25	32.02	31.91	32.05	19.71	19.40	19.42	19.11	140-150	14.83	5495	99.6,99.6
160	34.36	34.46	34.13	34.29	25.02	24.85	24.75	24.63	150-160	12.66	5508	99.8,99.8
170	36.85	36.95	36.53	36.37	29.51	29.14	29.24	29.12	160-170	8.846	5517	99.9,99.9
180	35.48	35.40	34.90	34.96	35.55	35.41	34.89	34.95	170-180	3.236	5520	100,100
DEG	LUMINOUS INTENSITY:cd									UNIT:lm		

C Range: 0 - 360DEG  
 C Interval: 10.0DEG  
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 Temperature:25.2DEG  
 Operators: ATC

$\gamma$  Range: 0 - 180DEG  
 $\gamma$  Interval: 1.0DEG  
 Test System:EVERFINE GO-2000H\_V1 SYSTEM V2.0.404.7  
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### LUMINANCE LIMITATION CURVES

Test:U:230.1V I:0.2678A P:60.83W PF:0.9872 Freq:50.00Hz Lamp Flux:5519.84x1 lm		
NAME: LED Down Light	TYPE:--	WEIGHT:--
SPEC.:AR60036-1	DIM.: --	SERIAL No.:FTS21020203L-01
MFR: ATC	SUR.:155mm	Shielding Angle:--



LUMINANCE cd/(m2)		
G (DEG)	C0/180	C90/270
85	152	154
80	404	395
75	597	621
70	718	725
65	714	688
60	679	684
55	627	629
50	627	630
45	4999	5192

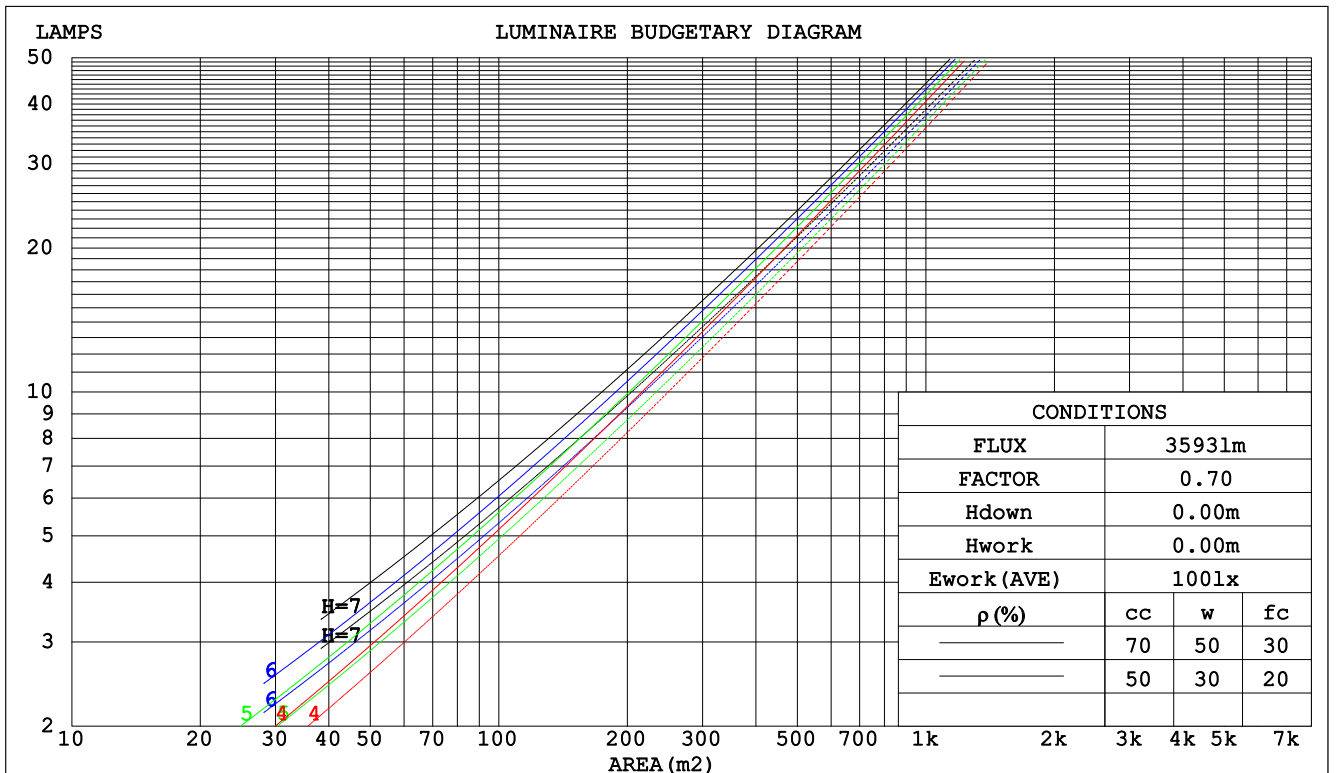
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### CU AND LUMINAIRE BUDGETARY ESTIMATE DIAGRAM

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MFR: ATC	SUR.:155mm	Shielding Angle:--

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						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	1.10	1.07	1.05	1.07	1.05	1.03	1.03	1.01	.99	.99	.98	.96	.95	.94	.93	.91
2.0	1.01	.97	.93	.99	.95	.92	.96	.93	.90	.93	.90	.88	.90	.88	.86	.84
3.0	.94	.88	.84	.92	.87	.83	.89	.85	.82	.87	.83	.80	.84	.81	.79	.77
4.0	.87	.81	.76	.86	.80	.76	.83	.79	.75	.81	.77	.74	.79	.76	.73	.71
5.0	.81	.75	.70	.80	.74	.70	.78	.73	.69	.76	.71	.68	.74	.70	.67	.66
6.0	.75	.69	.64	.74	.68	.64	.73	.67	.63	.71	.66	.63	.70	.66	.62	.61
7.0	.70	.64	.59	.70	.64	.59	.68	.63	.59	.67	.62	.58	.66	.61	.58	.56
8.0	.66	.59	.55	.65	.59	.55	.64	.59	.55	.63	.58	.54	.62	.57	.54	.53
9.0	.62	.56	.51	.61	.55	.51	.60	.55	.51	.59	.54	.51	.58	.54	.50	.49
10.0	.58	.52	.48	.58	.52	.48	.57	.51	.48	.56	.51	.47	.55	.50	.47	.46



C Range: 0 - 360DEG  
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 Temperature:25.2DEG  
 Operators: ATC

γ Range: 0 - 180DEG  
 γ Interval: 1.0DEG  
 Test System:EVERFINE GO-2000H\_V1 SYSTEM V2.0.404.7  
 Humidity:59.7%  
 Test Distance:13.650m [K=1.0000]  
 Remarks: ---

### WEC AND CCEC

Test:U:230.1V I:0.2678A P:60.83W PF:0.9872 Freq:50.00Hz Lamp Flux:5519.84x1 lm									
NAME: LED Down Light					TYPE:--			WEIGHT:--	
SPEC.:AR60036-1					DIM.: --			SERIAL No.:FTS21020203L-01	
MFR: ATC					SUR.:155mm			Shielding Angle:--	

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						Wall Exitance Coefficients(WEC)									
0.0																
1.0	.192	.109	.035	.185	.105	.033	.171	.098	.031	.159	.092	.029	.147	.085	.028	
2.0	.184	.101	.031	.178	.098	.030	.167	.093	.029	.156	.088	.027	.147	.083	.026	
3.0	.176	.094	.028	.171	.091	.027	.161	.087	.026	.152	.083	.025	.143	.079	.025	
4.0	.167	.087	.026	.163	.085	.025	.154	.082	.024	.146	.078	.024	.139	.075	.023	
5.0	.159	.081	.024	.155	.080	.023	.148	.077	.023	.141	.074	.022	.134	.072	.022	
6.0	.152	.076	.022	.148	.075	.022	.142	.073	.021	.135	.070	.021	.129	.068	.020	
7.0	.145	.072	.020	.142	.071	.020	.136	.069	.020	.130	.067	.019	.125	.065	.019	
8.0	.138	.068	.019	.136	.067	.019	.130	.065	.019	.125	.063	.018	.120	.062	.018	
9.0	.132	.064	.018	.130	.063	.018	.125	.062	.018	.120	.060	.017	.116	.059	.017	
10.0	.127	.061	.017	.124	.060	.017	.120	.059	.017	.116	.057	.016	.112	.056	.016	

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	.201	.201	.201	.172	.172	.172	.117	.117	.117	.067	.067	.067	.022	.022	.022	
1.0	.183	.168	.154	.156	.144	.133	.107	.099	.092	.062	.057	.053	.020	.018	.017	
2.0	.169	.143	.122	.144	.123	.105	.099	.085	.073	.057	.050	.043	.018	.016	.014	
3.0	.157	.124	.098	.135	.107	.085	.093	.075	.060	.053	.044	.035	.017	.014	.012	
4.0	.148	.110	.081	.127	.095	.071	.087	.066	.050	.050	.039	.029	.016	.013	.010	
5.0	.139	.099	.069	.120	.085	.060	.082	.060	.042	.048	.035	.025	.015	.011	.008	
6.0	.132	.090	.059	.114	.078	.051	.078	.054	.036	.046	.032	.022	.015	.010	.007	
7.0	.126	.082	.052	.108	.071	.045	.075	.050	.032	.044	.029	.019	.014	.010	.006	
8.0	.120	.076	.046	.104	.066	.040	.072	.046	.028	.042	.027	.017	.014	.009	.006	
9.0	.115	.071	.041	.099	.062	.036	.069	.043	.025	.040	.026	.015	.013	.008	.005	
10.0	.111	.067	.037	.096	.058	.033	.066	.041	.023	.039	.024	.014	.013	.008	.005	

C Range: 0 - 360DEG  
 C Interval: 10.0DEG  
 Test Speed: HIGH  
 Temperature:25.2DEG  
 Operators:ATC

γ Range: 0 - 180DEG  
 γ Interval: 1.0DEG  
 Test System:EVERFINE GO-2000H\_V1 SYSTEM V2.0.404.7  
 Humidity:59.7%  
 Test Distance:13.650m [K=1.0000]  
 Remarks: ---

### UGR(Unified Glare Rating) Table

Test:U:230.1V I:0.2678A P:60.83W PF:0.9872 Freq:50.00Hz Lamp Flux:5519.84x1 lm		
NAME: LED Down Light	TYPE:--	WEIGHT:--
SPEC.:AR60036-1	DIM.: --	SERIAL No.:FTS21020203L-01
MFR: ATC	SUR.:155mm	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	9.0	10.0	9.3	10.2	10.4	8.9	9.9	9.2	10.1	10.3
3H	8.9	9.9	9.2	10.1	10.3	8.8	9.7	9.1	10.0	10.2
4H	8.9	9.8	9.2	10.0	10.3	8.8	9.7	9.1	9.9	10.2
6H	8.8	9.6	9.1	9.9	10.2	8.7	9.5	9.0	9.8	10.1
8H	8.8	9.6	9.1	9.8	10.1	8.7	9.5	9.0	9.7	10.0
12H	8.7	9.5	9.1	9.8	10.1	8.6	9.4	9.0	9.7	10.0
4H 2H	8.8	9.7	9.1	9.9	10.2	8.7	9.6	9.0	9.8	10.1
3H	8.7	9.5	9.1	9.8	10.1	8.6	9.4	9.0	9.7	10.0
4H	8.7	9.4	9.1	9.7	10.0	8.6	9.3	9.0	9.6	9.9
6H	8.6	9.2	9.0	9.6	10.0	8.5	9.1	8.9	9.5	9.9
8H	8.6	9.1	9.0	9.5	9.9	8.5	9.0	8.9	9.4	9.8
12H	8.5	9.0	9.0	9.4	9.9	8.4	8.9	8.9	9.3	9.8
8H 4H	8.6	9.1	9.0	9.5	9.9	8.5	9.0	8.9	9.4	9.8
6H	8.5	9.0	9.0	9.4	9.8	8.4	8.9	8.9	9.3	9.8
8H	8.5	8.9	9.0	9.3	9.8	8.4	8.8	8.9	9.2	9.7
12H	8.4	8.8	8.9	9.2	9.7	8.3	8.7	8.8	9.2	9.7
12H 4H	8.5	9.0	9.0	9.4	9.8	8.4	8.9	8.9	9.3	9.8
6H	8.5	8.9	8.9	9.3	9.8	8.4	8.8	8.9	9.2	9.7
8H	8.4	8.8	8.9	9.2	9.7	8.3	8.7	8.8	9.2	9.7
Variations with the observer position at spacings:										
S = 1.0H	+ 2.4 / - 8.2					+ 2.3 / - 8.1				
1.5H	+ 4.8 / - 8.5					+ 4.7 / - 8.4				
2.0H	+ 7.2 / - 2.4					+ 7.3 / - 2.5				

CIE Pub.117, 5520 lm Total Lamp Luminous Flux Correct (8log(F/F0) = 5.9)

C Range: 0 - 360DEG  
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 Test Speed: HIGH  
 Temperature:25.2DEG  
 Operators:ATC

γ Range: 0 - 180DEG  
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 Test System:EVERFINE GO-2000H\_V1 SYSTEM V2.0.404.7  
 Humidity:59.7%  
 Test Distance:13.650m [K=1.0000]  
 Remarks: ---

### UTILIZATION FACTORS TABLE

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MFR: ATC	SUR.:155mm	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	83	76	72	82	76	72	81	75	71	67
0.80	91	84	80	90	84	80	89	83	80	75
1.00	96	90	86	95	89	85	93	89	85	80
1.25	101	95	91	99	94	90	97	93	90	85
1.50	104	98	95	102	97	94	100	96	93	88
2.00	107	102	99	105	101	98	102	99	96	90
2.50	109	104	101	107	103	100	104	101	98	92
3.00	110	107	104	108	105	102	105	102	100	93
4.00	113	110	107	110	108	106	106	104	103	95
5.00	114	111	109	112	109	108	107	106	104	96
ROOM INDEX	UF(total)									Direct
According to DIN EN 13032-2 2004			Suspended				SHRNOM = 1.25			

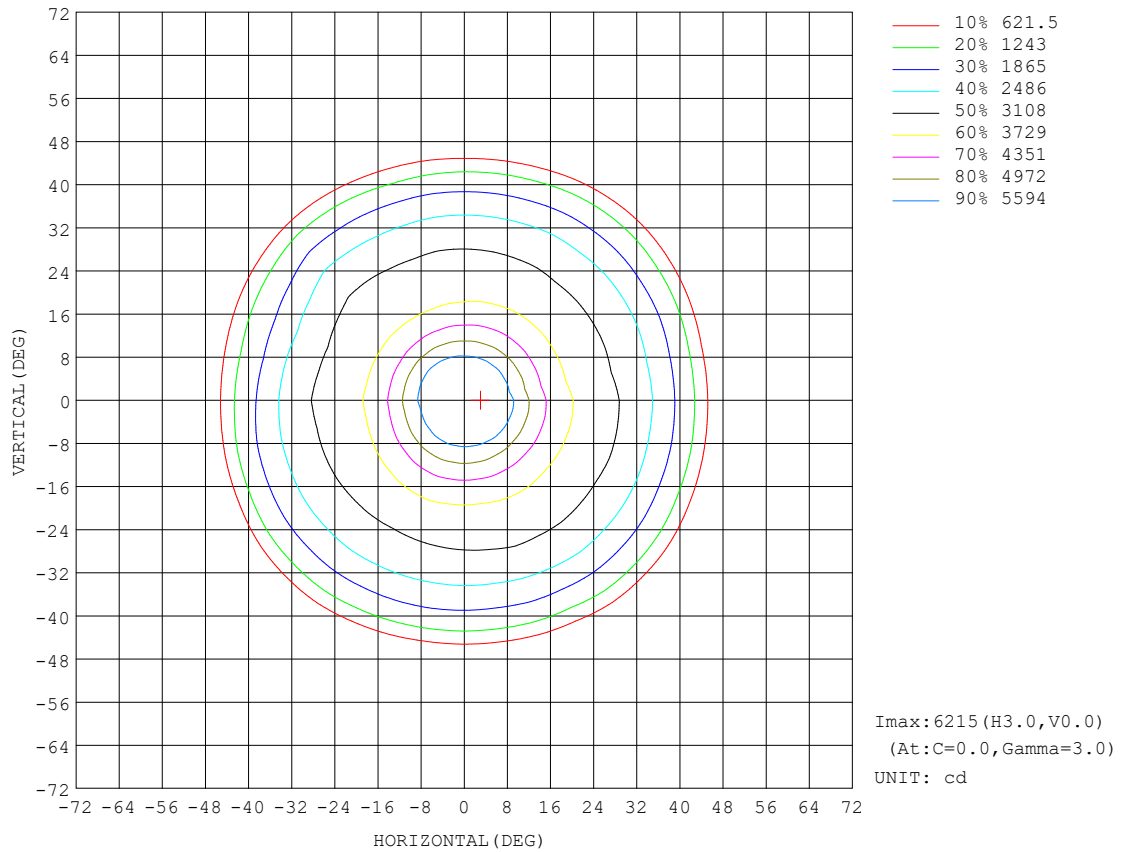
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### ISOCANDELA DIAGRAM

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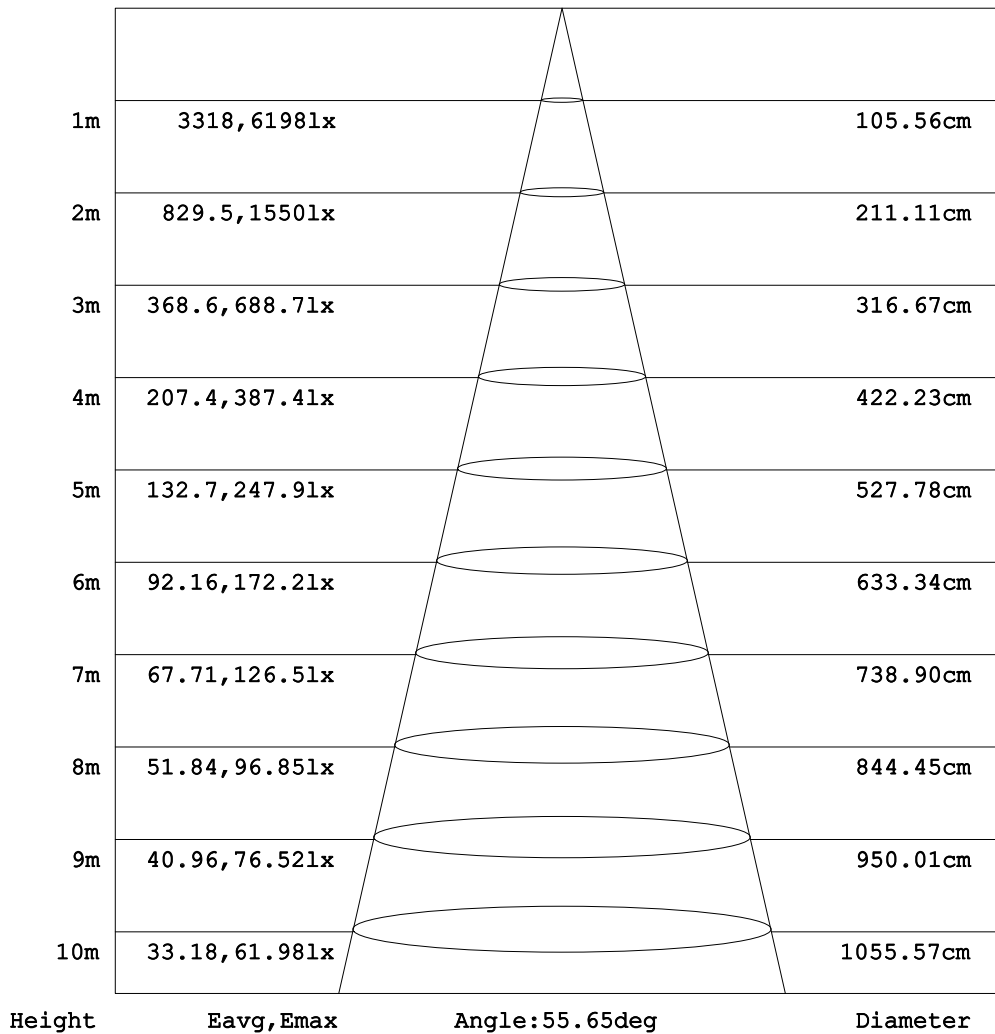
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### AAI Figure

Test:U:230.1V I:0.2678A P:60.83W PF:0.9872 Freq:50.00Hz Lamp Flux:5519.84x1 lm		
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MFR: ATC	SUR.:155mm	Shielding Angle:--

Flux out:2947 lm



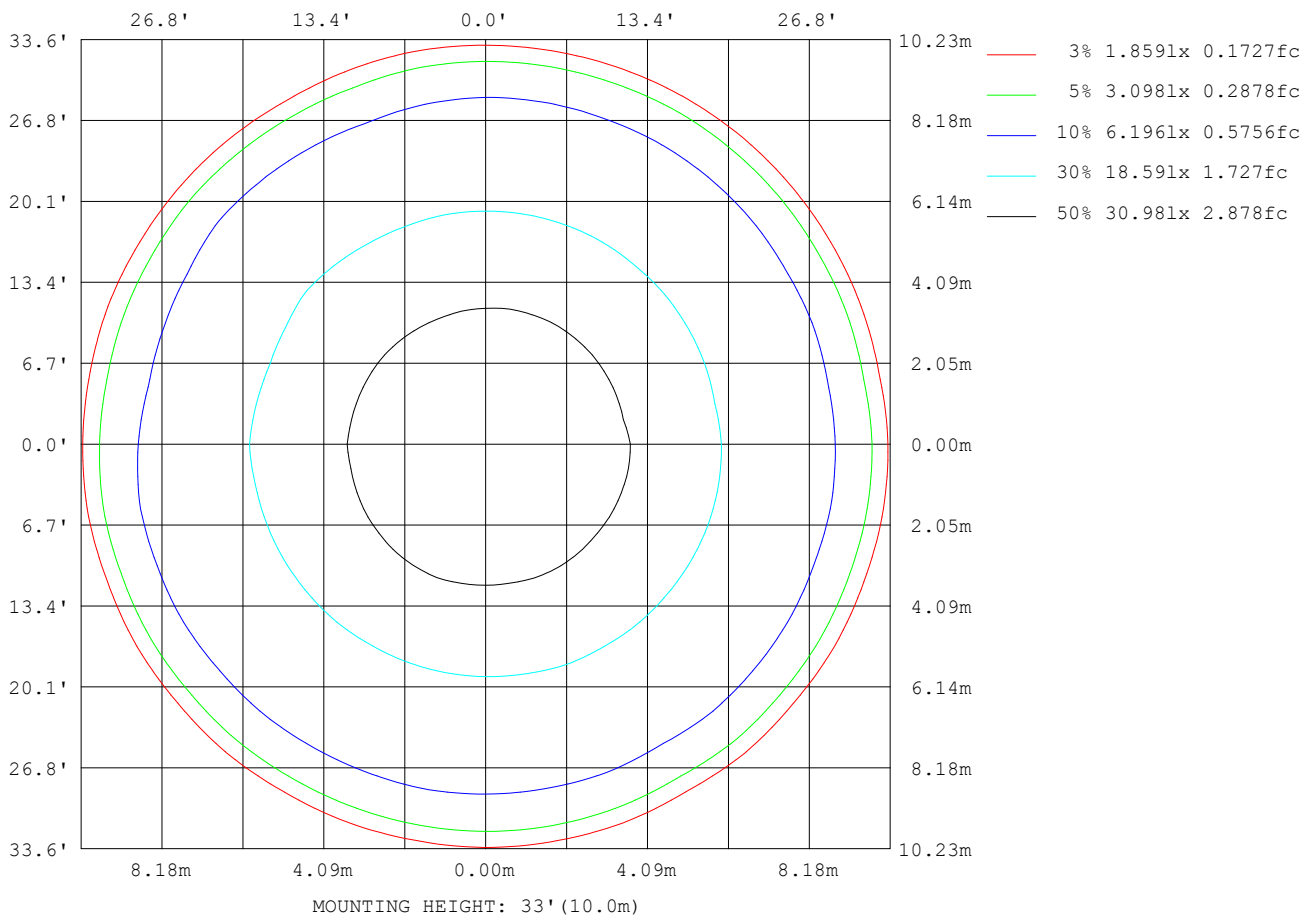
Note: The Curves indicate the illuminated area and the average illumination when the luminaire is at different distance.

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### ISOLUX DIAGRAM

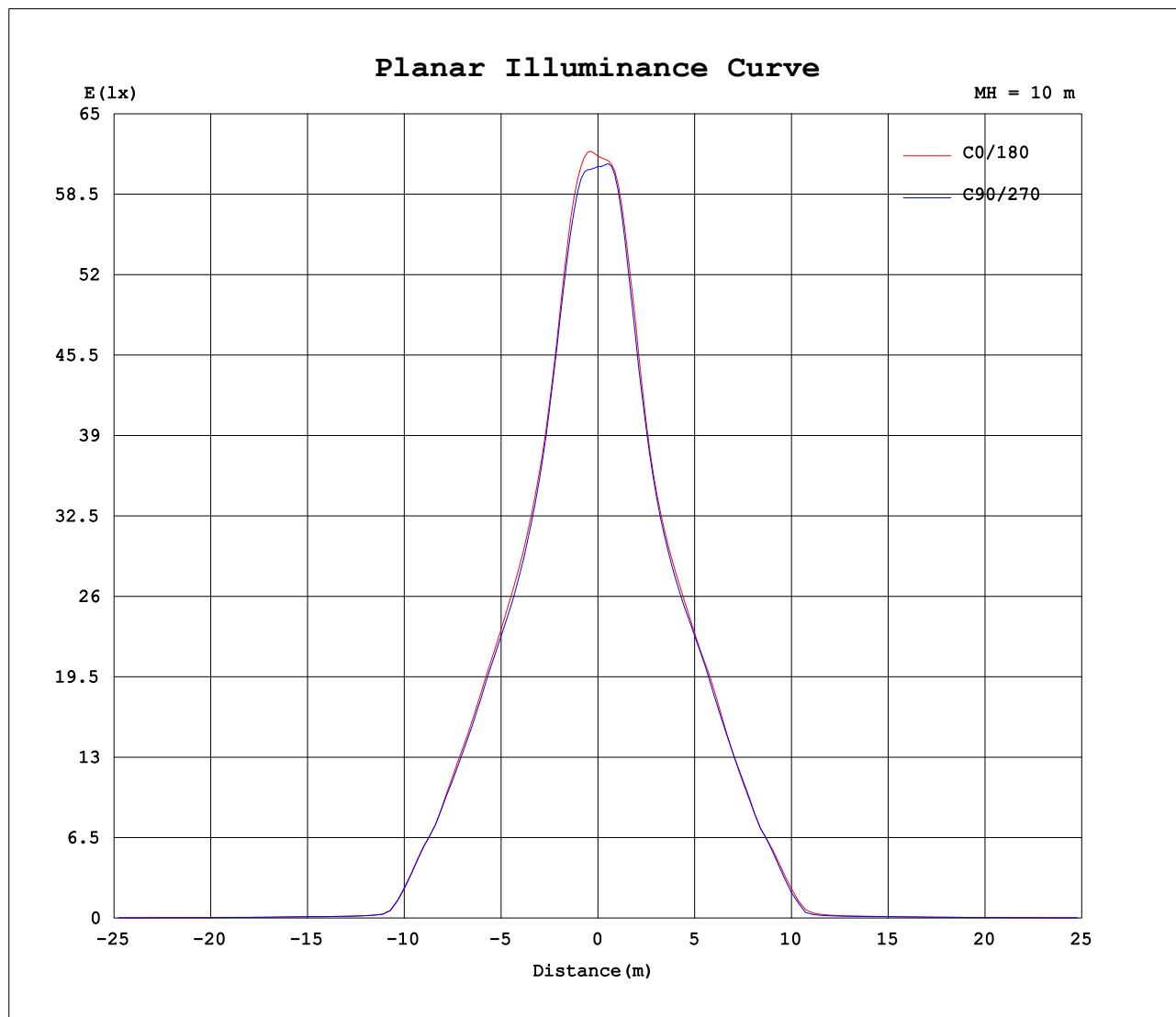
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$\gamma$  Range: 0 - 180DEG  
 $\gamma$  Interval: 1.0DEG  
 Test System:EVERFINE GO-2000H\_V1 SYSTEM V2.0.404.7  
 Humidity:59.7%  
 Test Distance:13.650m [K=1.0000]  
 Remarks: ---

### Planar Illuminance Curve



C Range: 0 - 360DEG  
 C Interval: 10.0DEG  
 Test Speed: HIGH  
 Temperature: 25.2DEG  
 Operators: ATC

γ Range: 0 - 180DEG  
 γ Interval: 1.0DEG  
 Test System: EVERFINE GO-2000H\_V1 SYSTEM V2.0.404.7  
 Humidity: 59.7%  
 Test Distance: 13.650m [K=1.0000]  
 Remarks: ---



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## ATC MIDDLE EAST FZCO

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