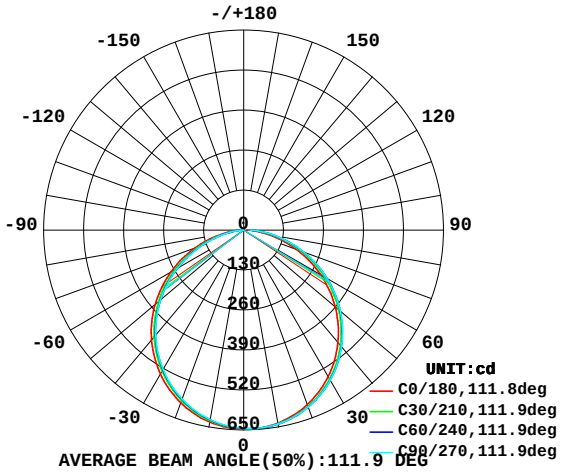
LUMINAIRE PHOTOMETRIC TEST REPORT

Test:U:231.1V I:0.0880A P:19.20W PF:0.9420 Lamp Flux:1839.89x1 lm		
NAME: UP-AL28-12-18W-5700K-D	TYPE:18W	WEIGHT:
DIM.:	SPEC.:5700K	SERIAL No.:1
MFR.:	SUR.:0.05596	PROTECTION ANGLE:

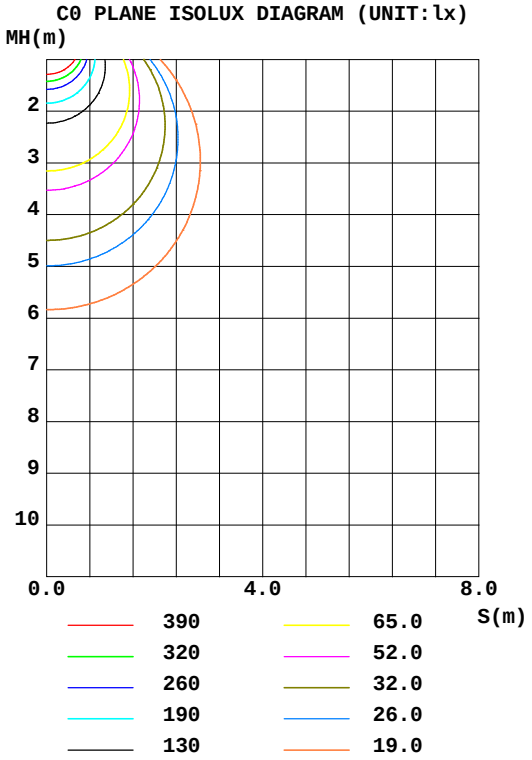
DATA OF LAMP		PHOTOMETRIC DATA Eff: 95.83 lm/W			
MODEUP-AL28-12-18W-5700K-D		Imax(cd)	647.2	S/MH(C0/180)	1.26
NOMINAL POWER(W)	20	LOR(%)	100.0	S/MH(C90/270)	1.30
RATED VOLTAGE(V)	232	TOTAL FLUX(lm)	1839.9	η UP,DN(C0-180)	0.0,52.8
NOMINAL FLUX(lm)	1839.89	CIE CLASS	DIRECT	η UP,DN(C180-360)	0.0,47.2
LAMPS INSIDE	1	η up(%)	0.0	CIBSE SHR NOM	1.25
TEST VOLTAGE(V)	231.1	η down(%)	100.0	CIBSE SHR MAX	1.35

LUMINOUS INTENSITY DISTRIBUTION DIAGRAM



AVERAGE BEAM ANGLE(50%):111.9 DEG

C0 PLANE ISOLUX DIAGRAM (UNIT:lx)



C Range: 0 - 360DEG
C Interval: 30.0DEG
Test Speed: HIGH
Temperature:25.3DEG
Operators:DAMIN
Test Date:2017-05-11

γ Range: 0 - 90DEG
γ Interval: 1.0DEG
Test System:EVERFINE GO-2000A_V1 SYSTEM V2.0.276
Humidity:65.0%
Test Distance:9.700m [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	637.0	640.3	640.1	635.6	633.9	628.2	626.0	628.7	0- 10	61.03	61.03	3.32,3.32
20	604.1	611.4	612.3	604.2	597.9	588.1	584.9	591.2	10- 20	174.7	235.7	12.8,12.8
30	549.7	561.0	563.0	552.1	541.1	528.0	523.9	533.2	20- 30	264.5	500.2	27.2,27.2
40	477.0	491.8	494.8	481.5	466.4	450.5	445.5	457.6	30- 40	318.5	818.8	44.5,44.5
50	389.0	406.4	410.6	395.3	375.9	357.7	353.0	366.3	40- 50	329.9	1149	62.4,62.4
60	288.4	307.6	312.0	296.0	274.4	254.6	249.2	264.2	50- 60	296.9	1446	78.6,78.6
70	181.0	201.3	206.4	189.8	167.6	147.4	141.6	156.8	60- 70	225.1	1671	90.8,90.8
80	78.64	96.50	101.5	86.68	67.65	51.24	47.12	58.67	70- 80	129.0	1800	97.8,97.8
90	10.61	19.16	21.17	15.63	6.622	1.806	1.686	4.160	80- 90	40.24	1840	100,100
100									90-100			
110									100-110			
120									110-120			
130									120-130			
140									130-140			
150									140-150			
160									150-160			
170									160-170			
180									170-180			
DEG	LUMINOUS INTENSITY:cd									UNIT:lm		

C Range: 0 - 360DEG
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γ Range: 0 - 90DEG
γ Interval: 1.0DEG
Test System:EVERFINE GO-2000A_V1 SYSTEM V2.0.276
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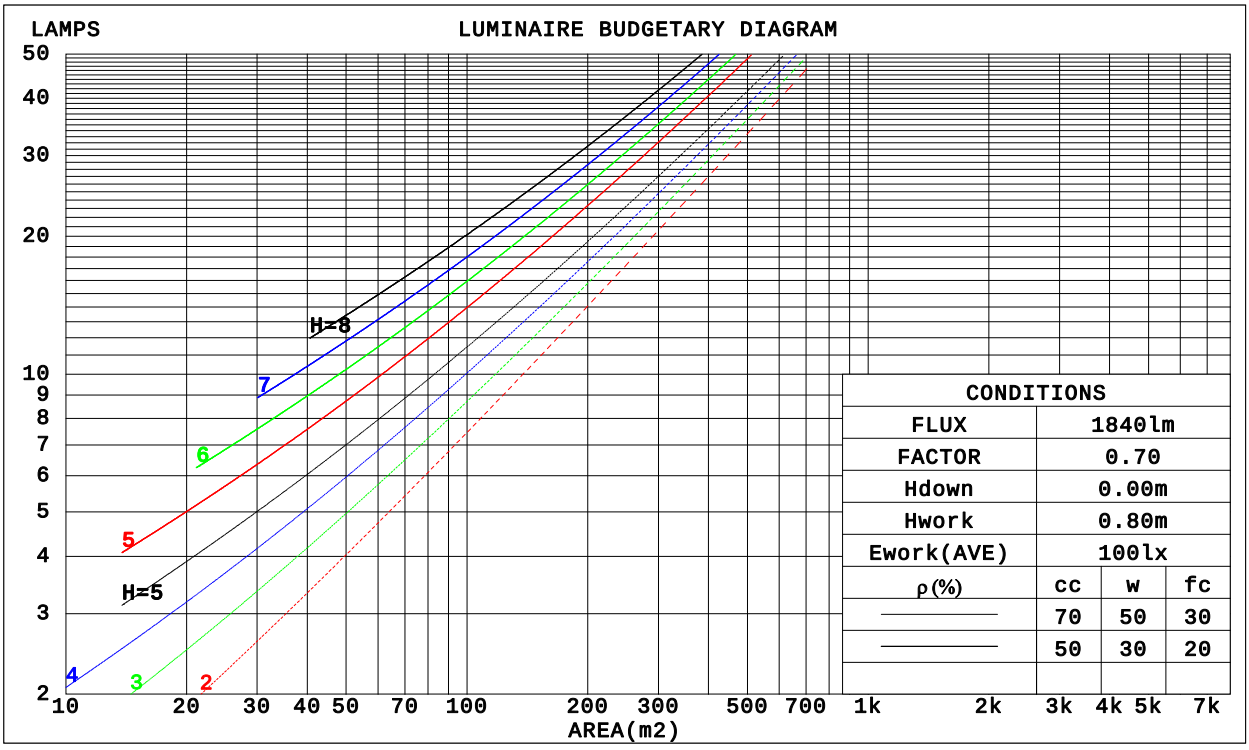
Test Distance:9.700m [K=1.0000]
Remarks:

CU AND LUMINAIRE BUDGETARY ESTIMATE DIAGRAM

Test:U:231.1V I:0.0880A P:19.20W PF:0.9420 Lamp Flux:1839.89x1 lm		
NAME: UP-AL28-12-18W-5700K-D	TYPE:18W	WEIGHT:
DIM.:	SPEC.:5700K	SERIAL No.:1
MFR.:	SUR.:0.05596	PROTECTION 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	1.11	1.11	1.11	1.06	1.06	1.06	1.02	1.02	1.02	.00
1.0	1.04	.99	.95	1.01	.97	.94	.97	.94	.91	.93	.91	.88	.90	.88	.85	.83
2.0	.90	.83	.78	.88	.82	.77	.85	.79	.75	.82	.77	.73	.79	.75	.71	.69
3.0	.79	.71	.64	.78	.70	.64	.75	.68	.63	.72	.66	.62	.69	.65	.61	.58
4.0	.70	.61	.55	.69	.61	.54	.66	.59	.53	.64	.58	.53	.62	.56	.52	.50
5.0	.63	.54	.47	.62	.53	.47	.59	.52	.46	.57	.51	.46	.56	.50	.45	.43
6.0	.56	.47	.41	.55	.47	.41	.54	.46	.40	.52	.45	.40	.50	.44	.40	.38
7.0	.51	.42	.36	.50	.42	.36	.49	.41	.36	.47	.40	.35	.46	.40	.35	.33
8.0	.47	.38	.32	.46	.38	.32	.45	.37	.32	.43	.37	.32	.42	.36	.31	.30
9.0	.43	.35	.29	.42	.34	.29	.41	.34	.29	.40	.33	.29	.39	.33	.28	.27
10.0	.39	.32	.26	.39	.31	.26	.38	.31	.26	.37	.30	.26	.36	.30	.26	.24



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Test Date:2017-05-11

γ Range: 0 - 90DEG
γ Interval: 1.0DEG
Test System:EVERFINE GO-2000A_V1 SYSTEM V2.0.276
Humidity:65.0%
Test Distance:9.700m [K=1.0000]
Remarks:

WEC AND CCEC

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DIM.:	SPEC.:5700K	SERIAL No.:1
MFR.:	SUR.:0.05596	PROTECTION 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 Coeffcients(WEC)									
0.0																
1.0	.313	.178	.056	.306	.174	.055	.292	.168	.054	.280	.162	.052	.269	.156	.050	
2.0	.293	.161	.049	.287	.158	.049	.275	.153	.048	.264	.148	.046	.254	.144	.045	
3.0	.271	.144	.043	.265	.142	.043	.255	.138	.042	.245	.134	.041	.236	.131	.041	
4.0	.250	.130	.038	.245	.128	.038	.236	.125	.037	.227	.122	.037	.219	.119	.036	
5.0	.231	.118	.034	.226	.116	.034	.218	.114	.033	.211	.111	.033	.204	.109	.033	
6.0	.214	.107	.031	.210	.106	.031	.203	.104	.030	.196	.102	.030	.190	.100	.030	
7.0	.199	.098	.028	.196	.097	.028	.189	.096	.028	.183	.094	.027	.177	.092	.027	
8.0	.186	.091	.026	.183	.090	.025	.177	.088	.025	.172	.087	.025	.166	.085	.025	
9.0	.174	.084	.024	.171	.084	.023	.166	.082	.023	.161	.081	.023	.157	.080	.023	
10.0	.164	.079	.022	.161	.078	.022	.157	.077	.022	.152	.076	.021	.148	.074	.021	

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	.190	.190	.190	.163	.163	.163	.111	.111	.111	.064	.064	.064	.020	.020	.020	
1.0	.181	.156	.134	.154	.134	.115	.106	.092	.080	.061	.053	.046	.019	.017	.015	
2.0	.172	.132	.098	.148	.114	.085	.101	.079	.059	.058	.046	.035	.019	.015	.011	
3.0	.165	.114	.074	.141	.099	.064	.097	.069	.045	.056	.040	.027	.018	.013	.009	
4.0	.157	.101	.058	.135	.087	.051	.093	.061	.036	.054	.036	.021	.017	.012	.007	
5.0	.150	.091	.047	.128	.078	.041	.088	.055	.029	.051	.032	.017	.017	.010	.006	
6.0	.142	.082	.039	.122	.071	.034	.084	.050	.024	.049	.029	.014	.016	.010	.005	
7.0	.136	.075	.033	.117	.065	.029	.081	.046	.020	.047	.027	.012	.015	.009	.004	
8.0	.129	.070	.029	.111	.060	.025	.077	.042	.018	.045	.025	.011	.014	.008	.003	
9.0	.123	.065	.025	.106	.056	.022	.073	.039	.016	.043	.023	.009	.014	.008	.003	
10.0	.117	.060	.022	.101	.052	.020	.070	.037	.014	.041	.022	.008	.013	.007	.003	

C Range: 0 - 360DEG
C Interval: 30.0DEG
Test Speed: HIGH
Temperature:25.3DEG
Operators:DAMIN
Test Date:2017-05-11

γ Range: 0 - 90DEG
γ Interval: 1.0DEG
Test System:EVERFINE GO-2000A_V1 SYSTEM V2.0.276
Humidity:65.0%
Test Distance:9.700m [K=1.0000]
Remarks:

Uncorrected UGR Table

Test:U:231.1V I:0.0880A P:19.20W PF:0.9420 Lamp Flux:1839.89x1 lm		
NAME: UP-AL28-12-18W-5700K-D	TYPE:18W	WEIGHT:
DIM.:	SPEC.:5700K	SERIAL No.:1
MFR.:	SUR.:0.05596	PROTECTION 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	21.3	22.8	21.6	23.1	23.3	21.6	23.1	21.9	23.3	23.5
	3H	22.9	24.3	23.2	24.5	24.8	23.3	24.7	23.6	24.9	25.2
	4H	23.5	24.8	23.8	25.1	25.3	24.0	25.4	24.3	25.6	25.9
	6H	23.9	25.2	24.3	25.5	25.8	24.6	25.9	24.9	26.1	26.4
	8H	24.1	25.3	24.4	25.6	25.9	24.8	26.1	25.2	26.3	26.6
	12H	24.2	25.4	24.6	25.7	26.0	25.0	26.2	25.4	26.5	26.8
4H	2H	22.0	23.4	22.3	23.6	23.9	22.2	23.6	22.6	23.8	24.1
	3H	23.8	25.0	24.1	25.2	25.6	24.1	25.3	24.5	25.6	25.9
	4H	24.5	25.6	24.9	25.9	26.3	25.0	26.1	25.4	26.4	26.7
	6H	25.1	26.1	25.5	26.4	26.8	25.7	26.7	26.1	27.0	27.4
	8H	25.3	26.2	25.8	26.6	27.0	26.0	26.9	26.5	27.3	27.7
	12H	25.5	26.3	25.9	26.7	27.1	26.3	27.1	26.7	27.5	27.9
8H	4H	24.9	25.8	25.3	26.2	26.5	25.3	26.2	25.7	26.6	26.9
	6H	25.7	26.4	26.1	26.8	27.3	26.2	27.0	26.7	27.4	27.8
	8H	26.0	26.7	26.5	27.1	27.5	26.6	27.3	27.1	27.7	28.2
	12H	26.3	26.8	26.7	27.3	27.8	27.0	27.6	27.5	28.0	28.5
12H	4H	24.9	25.8	25.4	26.1	26.6	25.3	26.1	25.7	26.5	26.9
	6H	25.8	26.4	26.3	26.9	27.3	26.3	27.0	26.8	27.4	27.8
	8H	26.2	26.7	26.6	27.2	27.7	26.8	27.3	27.3	27.8	28.3
Variations with the observer position at spacings:											
S = 1.0H		+ 0.1 / - 0.2					+ 0.1 / - 0.2				
1.5H		+ 0.2 / - 0.3					+ 0.2 / - 0.3				
2.0H		+ 0.1 / - 0.4					+ 0.1 / - 0.3				

CIE Pub.117 Corrected 1840 lm Total Lamp Luminous Flux.(8log(F/F0) = 2.1)

C Range: 0 - 360DEG
C Interval: 30.0DEG
Test Speed: HIGH
Temperature:25.3DEG
Operators:DAMIN
Test Date:2017-05-11

γ Range: 0 - 90DEG
γ Interval: 1.0DEG
Test System:EVERFINE GO-2000A_V1 SYSTEM V2.0.276
Humidity:65.0%
Test Distance:9.700m [K=1.0000]
Remarks:

UTILIZATION FACTORS TABLE

Test:U:231.1V I:0.0880A P:19.20W PF:0.9420 Lamp Flux:1839.89x1 lm		
NAME: UP-AL28-12-18W-5700K-D	TYPE:18W	WEIGHT:
DIM.:	SPEC.:5700K	SERIAL No.:1
MFR.:	SUR.:0.05596	PROTECTION 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) x RCR = 5									
k = 0.60	57	46	39	57	46	39	56	45	39	32
0.80	67	56	48	66	55	48	65	55	48	41
1.00	76	65	57	75	64	57	72	66	57	49
1.25	83	72	65	82	72	65	79	70	64	57
1.50	88	78	71	86	77	71	83	75	69	62
2.00	95	86	80	93	85	79	89	83	77	70
2.50	99	91	85	97	90	84	93	87	82	74
3.00	102	95	90	100	94	89	96	91	86	78
4.00	106	100	96	104	99	94	99	95	92	83
5.00	109	104	100	106	102	98	102	98	95	86
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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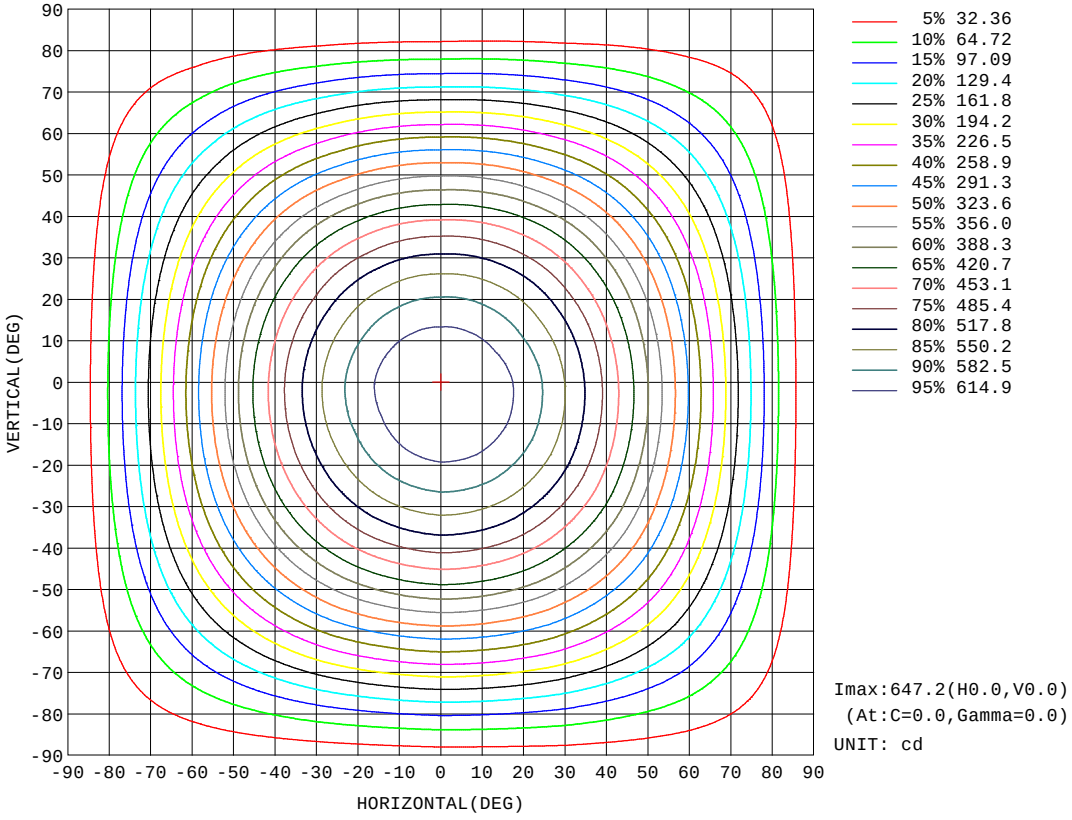
MFR.:	SUR.:0.05596	PROTECTION ANGLE:



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AAI Figure

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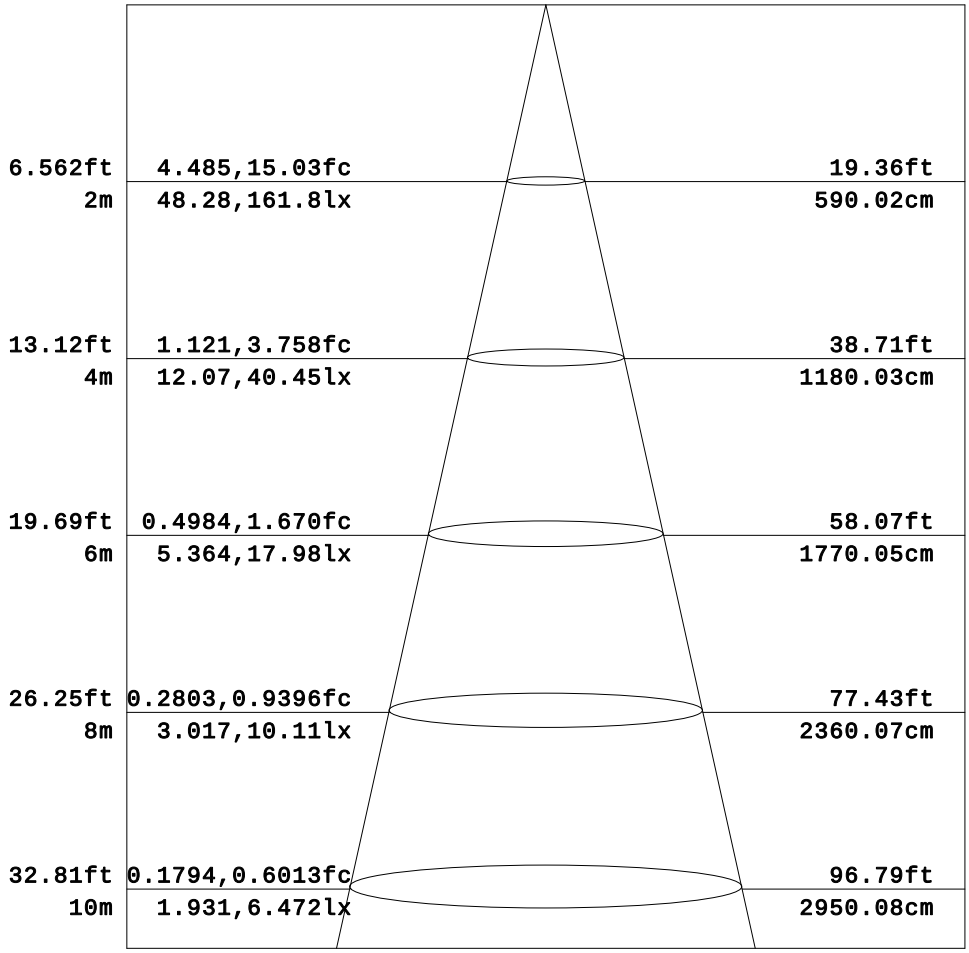
DIM.:	SPEC.:5700K	SERIAL No.:1
MFR.:	SUR.:0.05596	PROTECTION ANGLE:

Flux out:1333 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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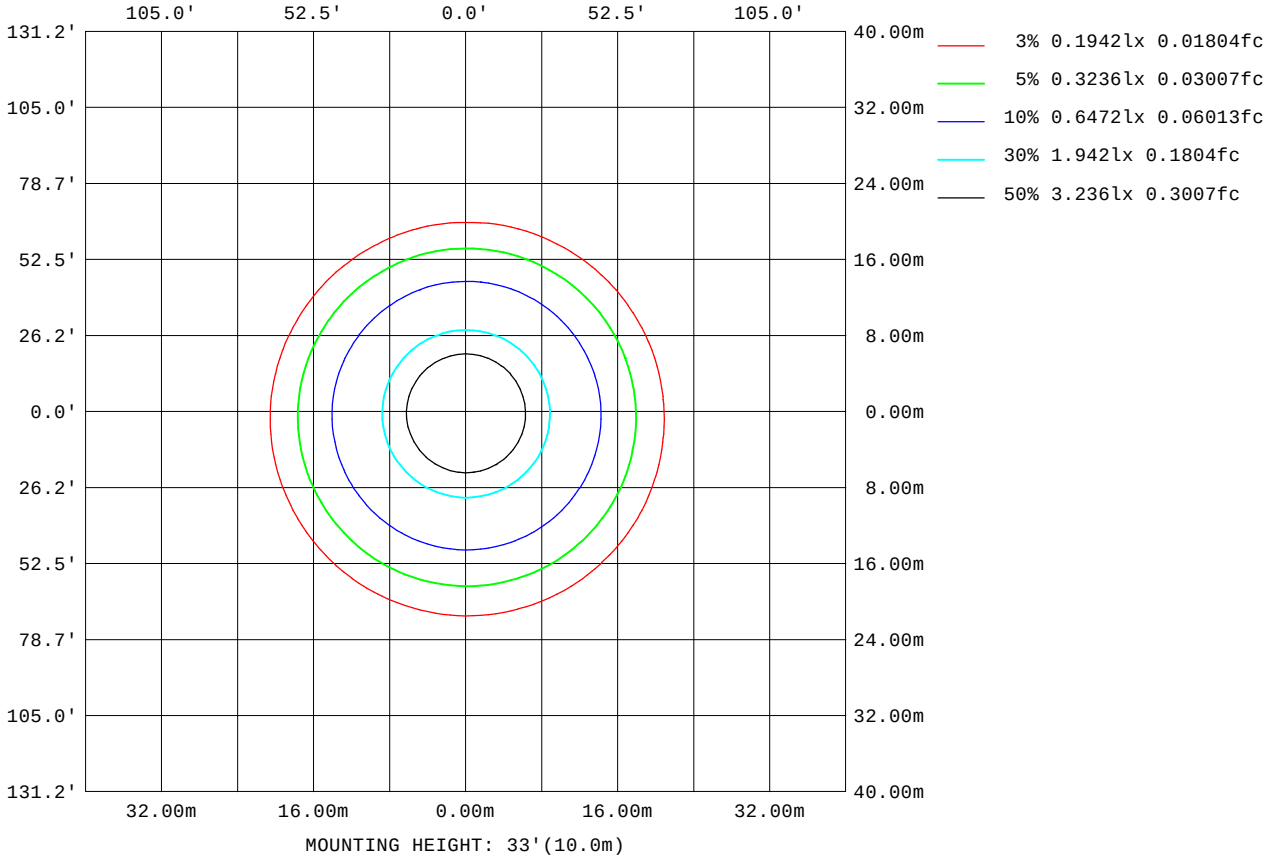
DIM.:	SPEC.:5700K	SERIAL No.:1
MFR.:	SUR.:0.05596	PROTECTION ANGLE:



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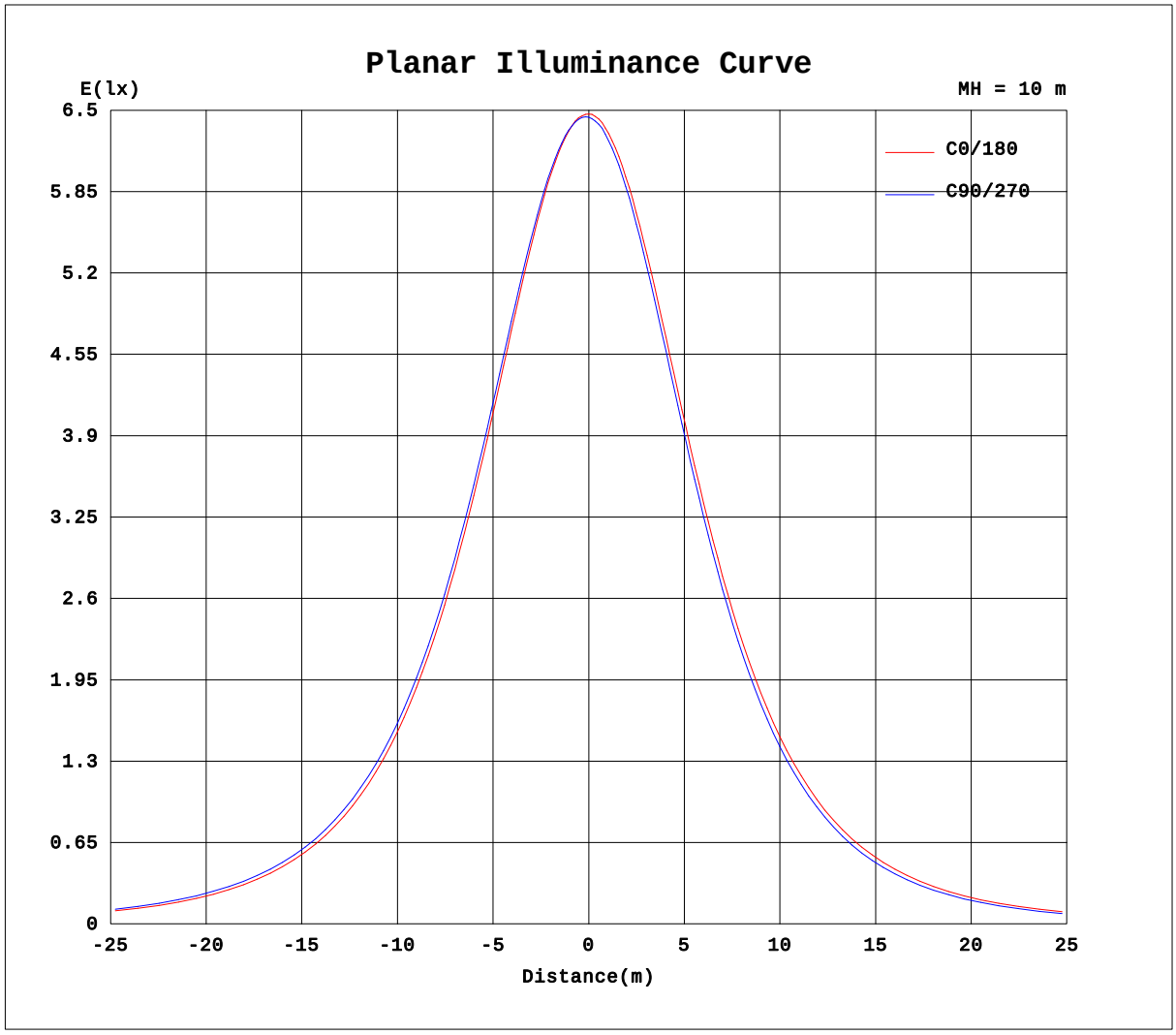
Remarks:

Planar Illuminance Curve



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LUMINOUS DISTRIBUTION INTENSITY DATA

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NAME: UP-AL28-12-18W-5700K-D	TYPE:18W	WEIGHT:
DIM.:	SPEC.:5700K	SERIAL No.:1
MFR.:	SUR.:0.05596	PROTECTION ANGLE:

Table--1 UNIT: cd

γ (DEG) \ C(DEG)	0	30	60	90	120	150	180	210	240	270	300	330
0	647	646	646	645	644	644	647	646	646	645	644	644
5	645	646	646	645	644	641	643	641	639	638	639	640
10	637	640	641	640	637	634	634	629	627	626	627	630
15	623	628	630	629	625	620	618	613	609	608	611	615
20	604	610	613	612	608	601	598	590	586	585	589	594
25	580	587	591	590	585	577	572	563	558	557	561	568
30	550	559	563	563	557	547	541	531	525	524	529	537
35	516	526	531	531	524	514	506	494	488	487	493	502
40	477	489	495	495	487	476	466	454	447	446	453	463
45	435	448	454	455	446	434	424	410	402	401	409	419
50	389	403	410	411	402	389	376	362	353	353	360	373
55	340	354	362	362	354	339	326	312	303	302	310	323
60	288	303	312	312	304	288	274	259	250	249	257	271
65	235	250	260	260	251	236	221	205	196	195	203	218
70	181	197	206	206	197	182	168	152	143	142	150	164
75	128	143	152	153	143	130	116	100	92.6	91.1	98.7	112
80	78.6	92.7	100	101	92.7	80.7	67.6	54.3	48.2	47.1	53.0	64.3
85	37.0	47.5	54.3	55.2	47.8	38.7	29.5	21.8	16.9	16.3	21.6	27.4
90	10.6	17.6	20.7	21.2	18.8	12.4	6.62	2.08	1.53	1.69	2.10	6.22

C Range: 0 - 360DEG
C Interval: 30.0DEG
Test Speed: HIGH
Temperature:25.3DEG
Operators:DAMIN
Test Date:2017-05-11

γ Range: 0 - 90DEG
γ Interval: 1.0DEG
Test System:EVERFINE GO-2000A_V1 SYSTEM V2.0.276
Humidity:65.0%
Test Distance:9.700m [K=1.0000]
Remarks: