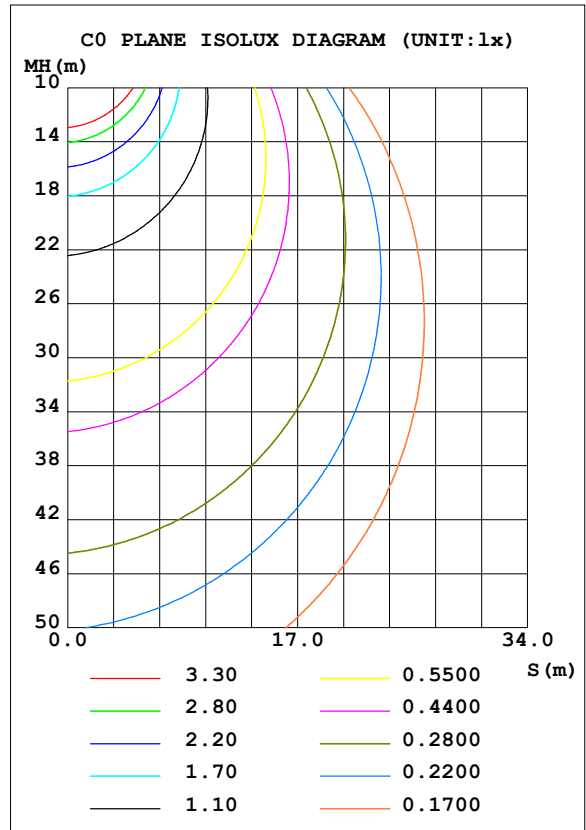
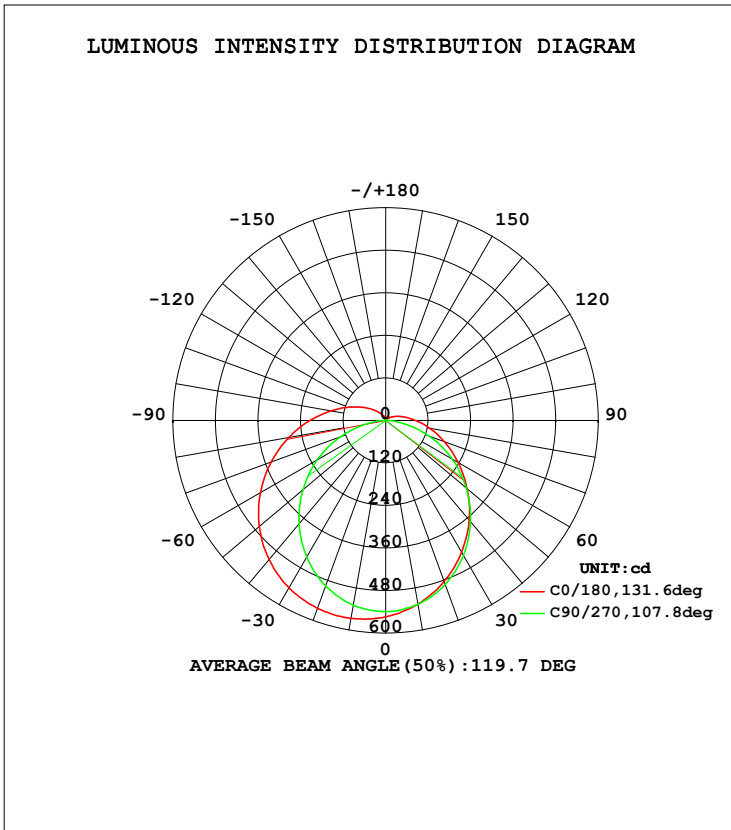


LUMINAIRE PHOTOMETRIC TEST REPORT

Test:U:230.4V I:0.0803A P:17.73W PF:0.9588 Lamp Flux:1971.97x1 lm		
NAME: T82A12-18W	TYPE:LED 2835	WEIGHT:
SPEC: LED TUBE T8	DIM.: 1200*26MM	SERIAL No.:1
MFR.: Integratech	SUR.:	PROTECTION ANGLE:

DATA OF LAMP		PHOTOMETRIC DATA Eff: 111.25 lm/W			
MODEL		I <sub>max</sub> (cd)	567.6	S/MH (C0/180)	1.46
NOMINAL POWER (W)	18	LOR (%)	100.0	S/MH (C90/270)	1.23
RATED VOLTAGE (V)	230.0	TOTAL FLUX (lm)	1972.0	η UP, DN (C0-180)	4.0, 43.5
NOMINAL FLUX (lm)	1971.97	CIE CLASS	DIRECT	η UP, DN (C180-360)	5.4, 47.2
LAMPS INSIDE	1	η up (%)	9.4	CIBSE SHR NOM	1.25
TEST VOLTAGE (V)	230	η down (%)	90.6	CIBSE SHR MAX	1.35



C Range: 0 - 360DEG  
 C Interval: 22.5DEG  
 Test Speed: HIGH  
 Temperature: 25.3DEG  
 Operators:  
 Test Date: 2015-10-20

γ Range: 0 - 180DEG  
 γ Interval: 1.0DEG  
 Test System: EVERFINE GO-2000B\_V1 SYSTEM V2.0.290  
 Humidity: 65.0%  
 Test Distance: 11.550m [K=1.0000]  
 Remarks:

**ZONAL FLUX DIAGRAM**

ZONAL FLUX DIAGRAM:

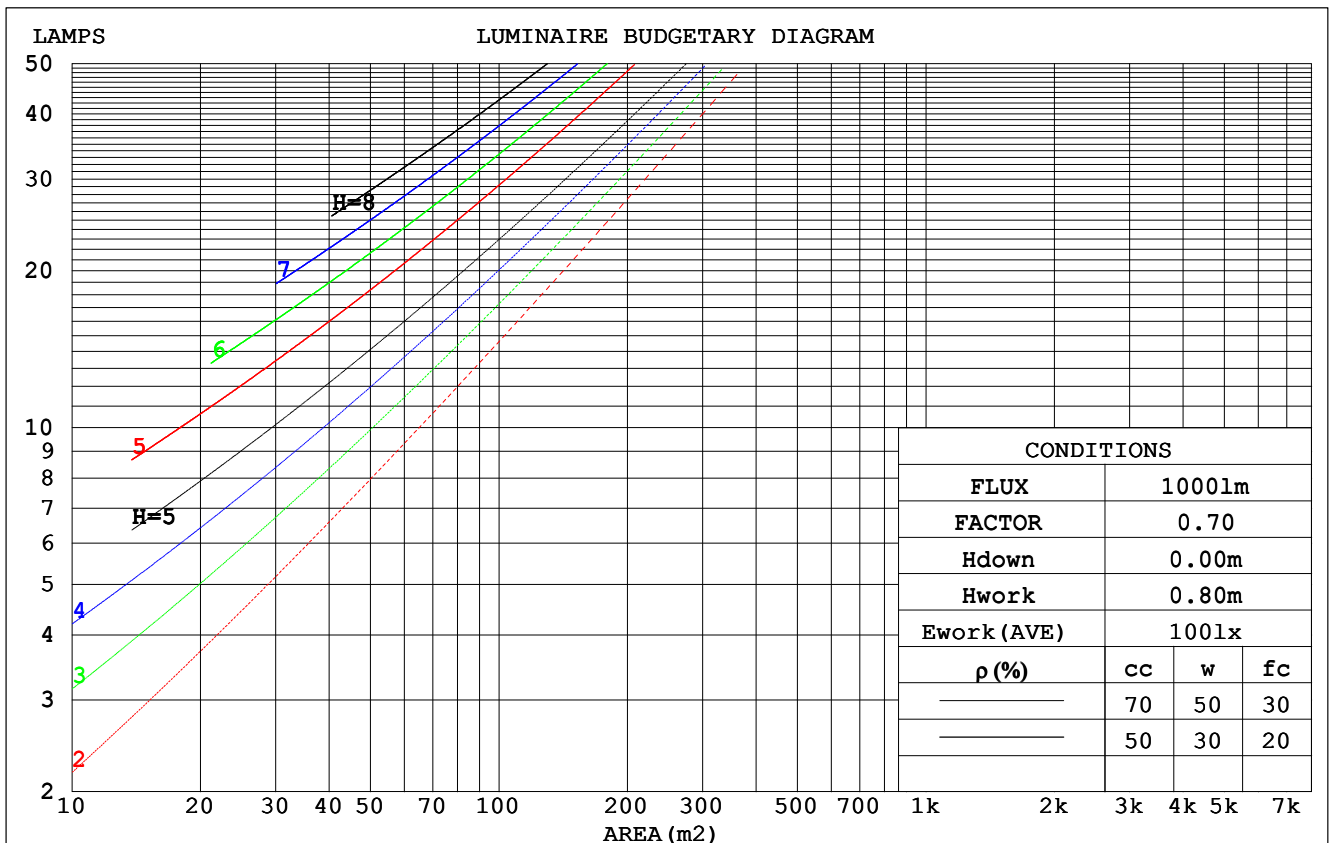
$\gamma$	C0	C45	C90	C135	C180	C225	C270	C315	$\gamma$	$\Phi$ zone	$\Phi$ total	%lum,lamp
10	525.9	521.1	525.9	540.6	566.6	549.6	528.7	517.3	0- 10	51.43	51.43	2.61,2.61
20	483.0	480.3	491.8	523.5	563.8	535.7	496.7	478.0	10- 20	147.4	198.9	10.1,10.1
30	428.9	425.1	439.1	489.9	545.2	504.7	445.4	423.9	20- 30	224.1	423.0	21.4,21.4
40	366.4	359.7	372.3	441.2	511.9	458.9	380.2	359.4	30- 40	272.7	695.6	35.3,35.3
50	300.2	289.3	297.1	381.5	465.6	401.2	305.0	289.1	40- 50	289.0	984.7	49.9,49.9
60	235.9	219.1	216.3	315.1	408.3	335.7	223.1	218.1	50- 60	274.2	1259	63.8,63.8
70	176.3	153.5	131.5	247.0	344.1	266.0	137.2	151.6	60- 70	233.8	1493	75.7,75.7
80	125.8	98.53	49.57	180.2	277.8	197.7	53.86	94.76	70- 80	176.8	1669	84.7,84.7
90	84.43	58.42	2.133	120.6	214.0	137.3	2.222	54.05	80- 90	118.0	1787	90.6,90.6
100	56.07	33.50	1.353	76.87	157.5	90.52	1.060	28.57	90-100	74.87	1862	94.4,94.4
110	35.64	18.84	1.202	48.11	111.0	57.86	1.079	15.11	100-110	47.09	1909	96.8,96.8
120	20.68	10.44	1.194	30.60	75.02	36.75	1.127	8.817	110-120	28.66	1938	98.3,98.3
130	12.93	5.332	1.239	20.05	48.69	23.77	1.236	4.622	120-130	16.70	1955	99.1,99.1
140	6.886	2.908	1.336	13.50	30.45	15.55	1.361	2.503	130-140	9.187	1964	99.6,99.6
150	3.342	1.637	1.478	9.104	18.26	10.26	1.586	1.444	140-150	4.700	1969	99.8,99.8
160	1.479	1.252	1.653	5.947	10.34	6.533	1.762	1.169	150-160	2.210	1971	99.9,99.9
170	1.286	1.251	1.812	3.592	5.256	3.838	1.879	1.219	160-170	0.8870	1972	100,100
180	1.661	1.937	1.920	1.920	1.661	1.954	1.937	1.912	170-180	0.2101	1972	100,100
DEG	LUMINOUS INTENSITY:cd									UNIT:lm		

C Range: 0 - 360DEG  
 C Interval: 22.5DEG  
 Test Speed: HIGH  
 Temperature:25.3DEG  
 Operators:  
 Test Date:2015-10-20

$\gamma$  Range: 0 - 180DEG  
 $\gamma$  Interval: 1.0DEG  
 Test System:EVERFINE GO-2000B\_V1 SYSTEM V2.0.290  
 Humidity:65.0%  
 Test Distance:11.550m [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	1.17	1.17	1.17	1.13	1.13	1.13	1.06	1.06	1.06	.99	.99	.99	.93	.93	.93	.91
1.0	.99	.94	.89	.96	.91	.87	.89	.86	.82	.84	.81	.78	.79	.76	.74	.71
2.0	.85	.77	.71	.82	.75	.69	.77	.71	.66	.72	.68	.63	.68	.64	.61	.58
3.0	.74	.65	.58	.72	.64	.57	.67	.60	.55	.63	.58	.53	.60	.55	.51	.48
4.0	.65	.56	.49	.63	.55	.48	.60	.52	.46	.56	.50	.45	.53	.47	.43	.40
5.0	.58	.49	.42	.56	.48	.41	.53	.46	.40	.50	.44	.38	.47	.42	.37	.35
6.0	.52	.43	.36	.51	.42	.36	.48	.40	.35	.45	.39	.34	.43	.37	.32	.30
7.0	.47	.38	.32	.46	.37	.31	.43	.36	.30	.41	.35	.30	.39	.33	.29	.27
8.0	.43	.34	.28	.42	.34	.28	.40	.32	.27	.38	.31	.26	.36	.30	.26	.24
9.0	.39	.31	.25	.38	.30	.25	.36	.29	.24	.35	.28	.24	.33	.27	.23	.21
10.0	.36	.28	.23	.35	.28	.23	.34	.27	.22	.32	.26	.21	.31	.25	.21	.19



C Range: 0 - 360DEG  
 C Interval: 22.5DEG  
 Test Speed: HIGH  
 Temperature:25.3DEG  
 Operators:  
 Test Date:2015-10-20

γ Range: 0 - 180DEG  
 γ Interval: 1.0DEG  
 Test System:EVERFINE GO-2000B\_V1 SYSTEM V2.0.290  
 Humidity:65.0%  
 Test Distance:11.550m [K=1.0000]  
 Remarks:

WEC AND CCEC

pcc	80%			70%			50%			30%			10%			0
pw	50%	30%	10%	50%	30%	10%	50%	30%	10%	50%	30%	10%	50%	30%	10%	0
pfc	20%			20%			20%			20%			20%			0
RCR	RCR:Room Cavity Ratio						Wall Exitance Coefficients(WEC)									
0.0																
1.0	.365	.207	.066	.355	.202	.064	.336	.193	.062	.318	.184	.059	.302	.175	.057	
2.0	.322	.177	.054	.313	.173	.053	.296	.165	.051	.281	.158	.049	.266	.151	.048	
3.0	.289	.154	.046	.281	.151	.045	.266	.144	.044	.252	.138	.042	.239	.132	.041	
4.0	.262	.136	.040	.255	.133	.039	.241	.128	.038	.229	.123	.037	.217	.118	.036	
5.0	.240	.122	.035	.233	.120	.035	.221	.115	.034	.209	.110	.033	.199	.106	.032	
6.0	.220	.110	.032	.214	.108	.031	.203	.104	.030	.193	.100	.029	.183	.096	.029	
7.0	.204	.101	.029	.198	.099	.028	.188	.095	.027	.179	.092	.027	.170	.088	.026	
8.0	.189	.092	.026	.184	.091	.026	.175	.088	.025	.167	.084	.024	.158	.081	.024	
9.0	.177	.085	.024	.172	.084	.024	.164	.081	.023	.156	.078	.022	.149	.075	.022	
10.0	.166	.079	.022	.162	.078	.022	.154	.075	.021	.147	.073	.021	.140	.070	.020	

pcc	80%			70%			50%			30%			10%			0
pw	50%	30%	10%	50%	30%	10%	50%	30%	10%	50%	30%	10%	50%	30%	10%	0
pfc	20%			20%			20%			20%			20%			0
RCR	RCR:Room Cavity Ratio						Ceiling Cavity Exitance Coefficients(CCEC)									
0.0	.262	.262	.262	.224	.224	.224	.153	.153	.153	.088	.088	.088	.028	.028	.028	
1.0	.256	.228	.202	.219	.195	.174	.150	.134	.120	.086	.078	.070	.028	.025	.023	
2.0	.249	.204	.167	.213	.176	.144	.146	.122	.100	.084	.071	.059	.027	.023	.019	
3.0	.241	.187	.144	.207	.161	.125	.142	.112	.088	.082	.066	.052	.026	.021	.017	
4.0	.233	.174	.129	.200	.151	.112	.138	.105	.079	.080	.061	.047	.026	.020	.015	
5.0	.225	.164	.119	.194	.142	.104	.133	.099	.073	.077	.058	.043	.025	.019	.014	
6.0	.218	.156	.112	.187	.135	.097	.129	.095	.069	.075	.056	.041	.024	.018	.014	
7.0	.211	.149	.106	.181	.130	.093	.125	.091	.066	.073	.053	.039	.024	.018	.013	
8.0	.204	.144	.102	.176	.125	.089	.122	.088	.063	.071	.052	.038	.023	.017	.012	
9.0	.198	.139	.099	.171	.121	.086	.118	.085	.061	.069	.050	.037	.022	.016	.012	
10.0	.192	.135	.096	.166	.117	.084	.115	.082	.060	.067	.049	.036	.022	.016	.012	

C Range: 0 - 360DEG  
 C Interval: 22.5DEG  
 Test Speed: HIGH  
 Temperature:25.3DEG  
 Operators:  
 Test Date:2015-10-20

γ Range: 0 - 180DEG  
 γ Interval: 1.0DEG  
 Test System:EVERFINE GO-2000B\_V1 SYSTEM V2.0.290  
 Humidity:65.0%  
 Test Distance:11.550m [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	9.1	10.5	9.5	10.9	11.3	8.6	10.1	9.0	10.4	10.8
3H	11.0	12.4	11.5	12.8	13.2	10.1	11.4	10.5	11.8	12.3
4H	12.1	13.4	12.5	13.8	14.2	10.6	11.9	11.1	12.3	12.8
6H	13.2	14.4	13.7	14.9	15.3	11.0	12.2	11.5	12.7	13.2
8H	13.8	15.0	14.3	15.4	15.9	11.1	12.3	11.6	12.8	13.3
12H	14.5	15.7	15.0	16.1	16.6	11.2	12.3	11.7	12.8	13.3
4H 2H	9.6	10.9	10.1	11.3	11.8	9.3	10.5	9.7	11.0	11.4
3H	11.8	13.0	12.3	13.4	13.9	10.9	12.0	11.4	12.5	13.0
4H	13.1	14.1	13.6	14.6	15.1	11.6	12.7	12.1	13.2	13.7
6H	14.4	15.3	14.9	15.8	16.4	12.2	13.1	12.7	13.6	14.2
8H	15.1	16.0	15.7	16.5	17.1	12.4	13.2	12.9	13.8	14.3
12H	16.0	16.8	16.5	17.3	17.9	12.5	13.3	13.0	13.8	14.4
8H 4H	13.4	14.2	13.9	14.8	15.4	12.1	13.0	12.7	13.5	14.1
6H	15.0	15.7	15.5	16.3	16.9	12.9	13.7	13.5	14.2	14.9
8H	15.9	16.6	16.5	17.1	17.8	13.3	13.9	13.9	14.5	15.2
12H	17.0	17.6	17.6	18.2	18.8	13.5	14.1	14.1	14.7	15.4
12H 4H	13.4	14.2	13.9	14.7	15.3	12.3	13.1	12.8	13.6	14.2
6H	15.1	15.7	15.7	16.3	17.0	13.2	13.9	13.8	14.5	15.1
8H	16.1	16.7	16.7	17.3	17.9	13.7	14.2	14.3	14.8	15.5
Variations with the observer position at spacings:										
S = 1.0H	+ 0.1 / - 0.1					+ 0.1 / - 0.2				
1.5H	+ 0.2 / - 0.3					+ 0.1 / - 0.2				
2.0H	+ 0.2 / - 0.3					+ 0.1 / - 0.2				

CIE Pub.117 Corrected 1972 lm Total Lamp Luminous Flux. (8log(F/F0) = 2.4)

C Range: 0 - 360DEG  
 C Interval: 22.5DEG  
 Test Speed: HIGH  
 Temperature:25.3DEG  
 Operators:  
 Test Date:2015-10-20

γ Range: 0 - 180DEG  
 γ Interval: 1.0DEG  
 Test System:EVERFINE GO-2000B\_V1 SYSTEM V2.0.290  
 Humidity:65.0%  
 Test Distance:11.550m [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) $k(RI) \times RCR = 5$									
$k = 0.60$	52	40	33	51	39	32	49	39	32	25
0.80	61	49	41	60	48	41	58	47	40	33
1.00	69	57	49	68	56	49	65	57	48	40
1.25	76	64	56	74	63	56	71	61	54	46
1.50	81	70	62	79	69	61	75	66	59	50
2.00	88	78	70	86	76	69	81	73	67	57
2.50	93	83	76	90	81	75	85	78	72	61
3.00	96	88	81	93	86	79	88	82	76	65
4.00	101	93	87	97	91	86	92	86	82	70
5.00	103	97	92	100	95	90	94	90	86	73
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:  
 Test Date: 2015-10-20

$\gamma$  Range: 0 - 180DEG  
 $\gamma$  Interval: 1.0DEG  
 Test System: EVERFINE GO-2000B\_V1 SYSTEM V2.0.290  
 Humidity: 65.0%  
 Test Distance: 11.550m [K=1.0000]  
 Remarks:

**ISOCANDELA DIAGRAM**

Conical surface Flux(90deg):

840.14 lm

%lum = 42.6%

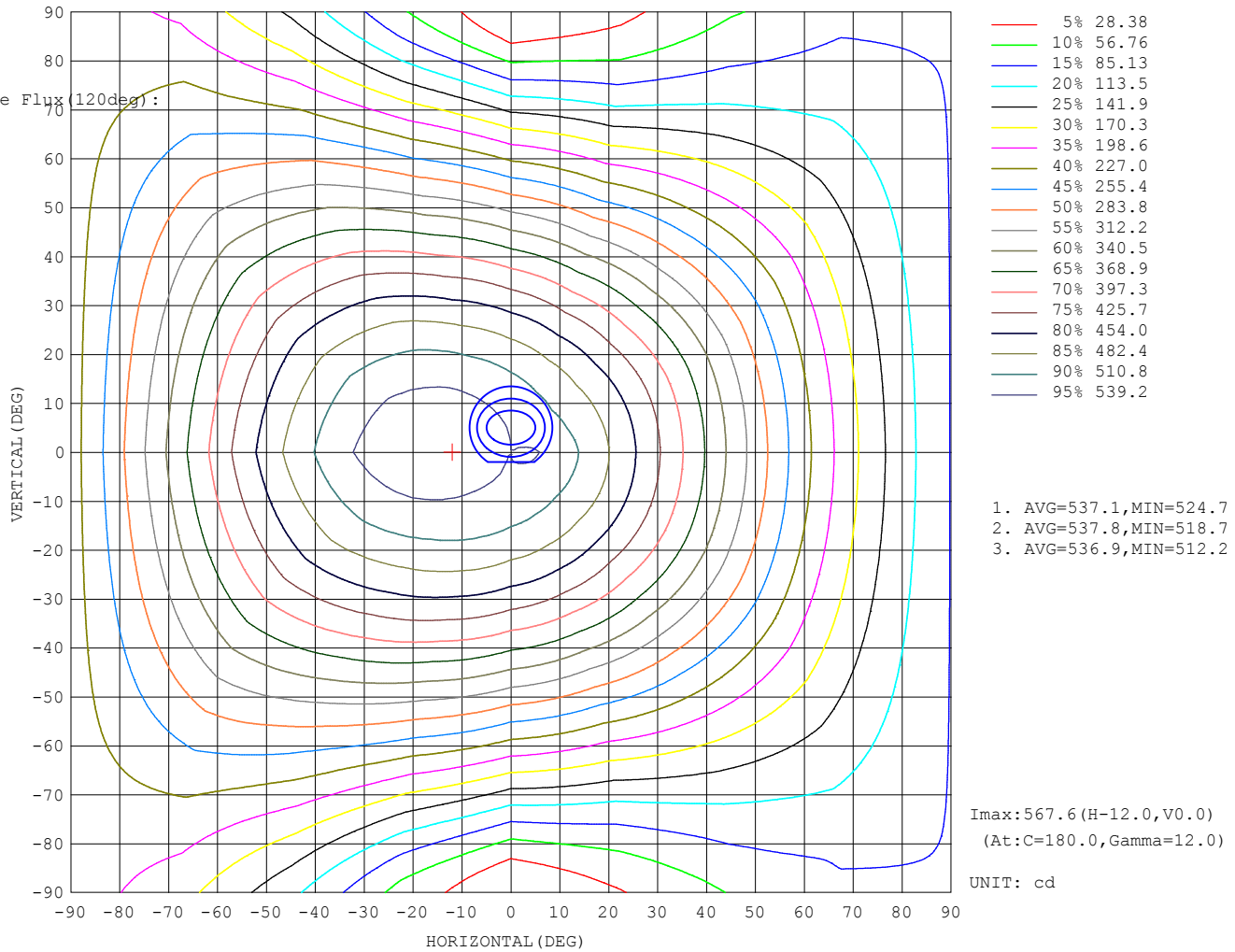
%lamp = 42.6%

Conical surface Flux(120deg):

1258.9 lm

%lum = 63.8%

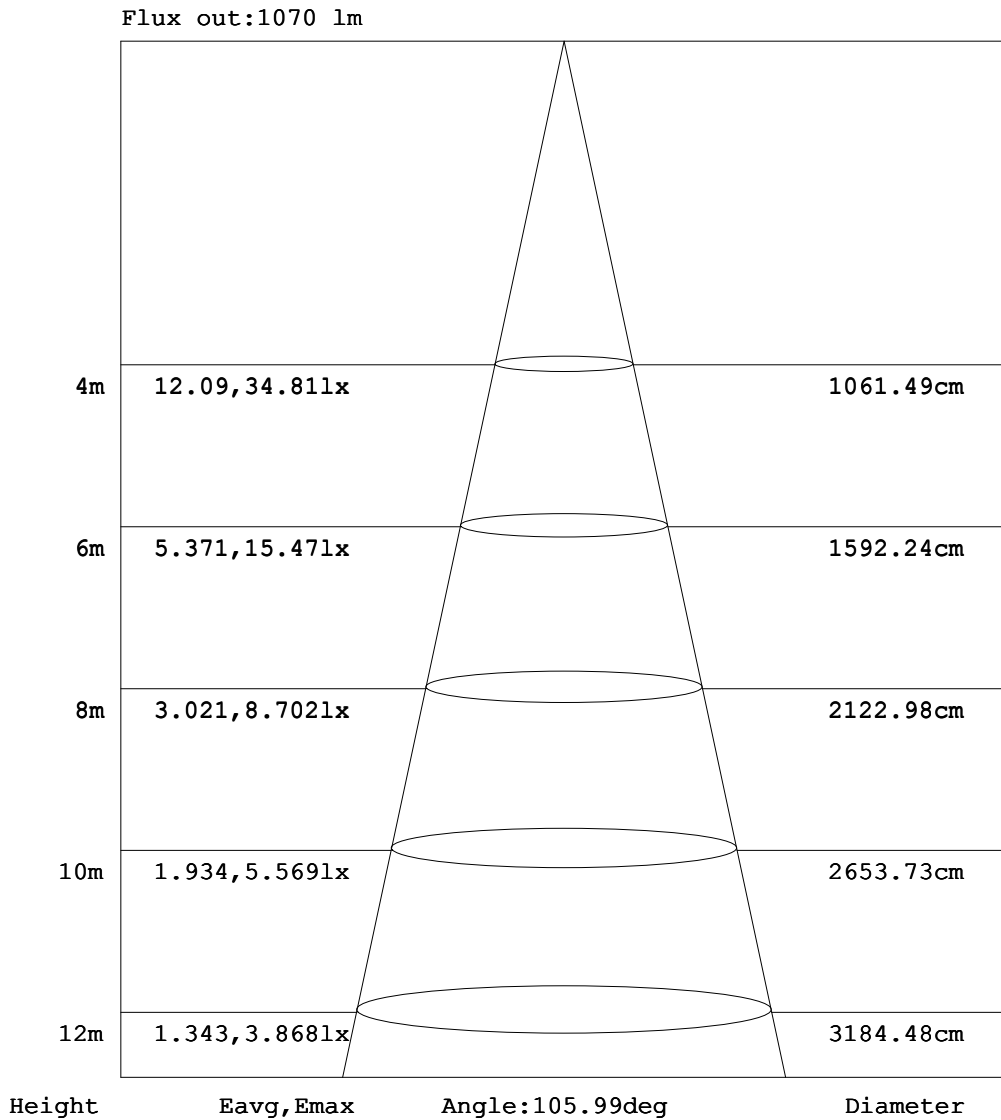
%lamp = 63.8%



C Range: 0 - 360DEG  
 C Interval: 22.5DEG  
 Test Speed: HIGH  
 Temperature:25.3DEG  
 Operators:  
 Test Date:2015-10-20

γ Range: 0 - 180DEG  
 γ Interval: 1.0DEG  
 Test System:EVERFINE GO-2000B\_V1 SYSTEM V2.0.290  
 Humidity:65.0%  
 Test Distance:11.550m [K=1.0000]  
 Remarks:

AAI Figure



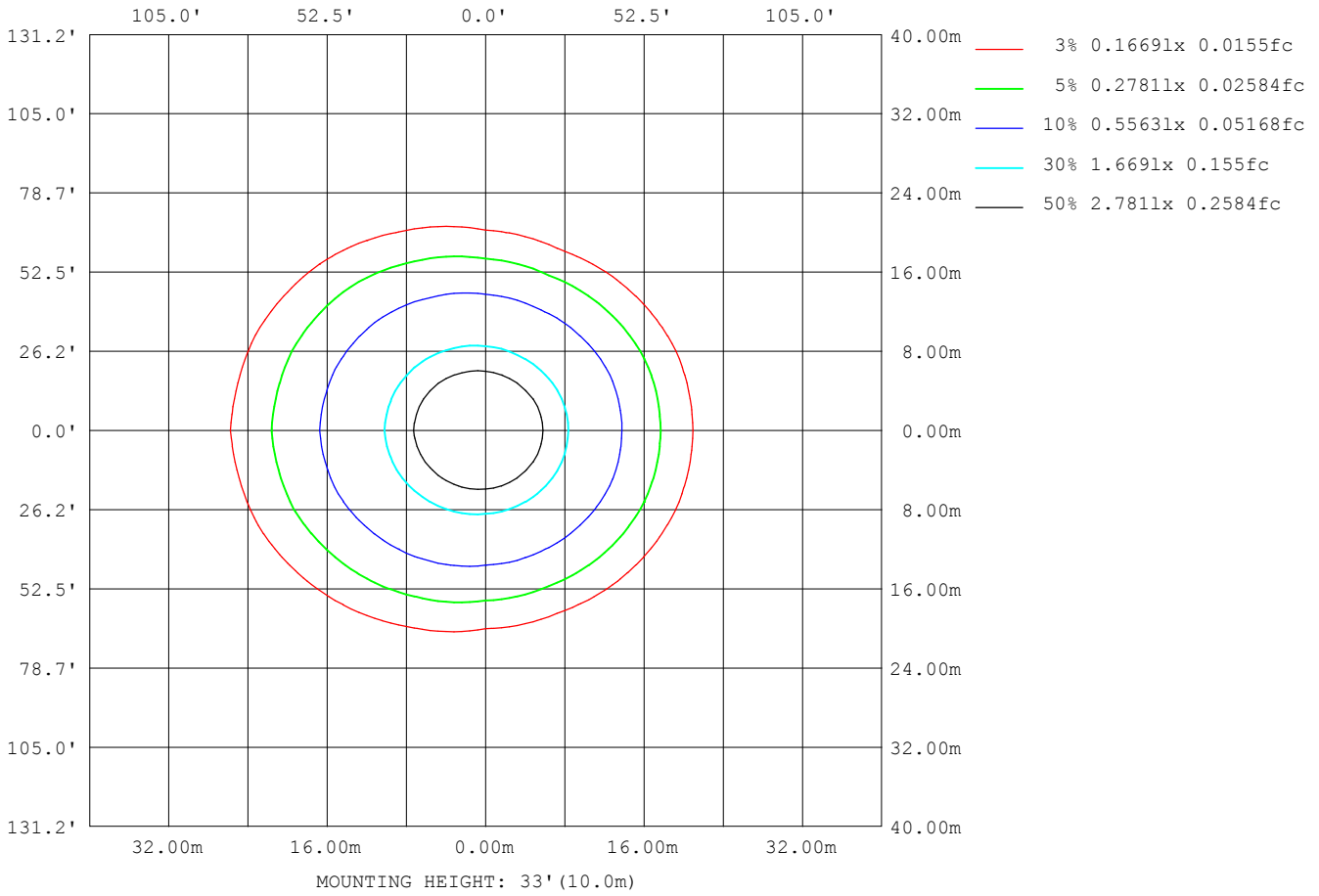
Note:The Curves indicate the illuminated area and the average illumination when the luminaire is at different distance.

C Range: 0 - 360DEG  
 C Interval: 22.5DEG  
 Test Speed: HIGH  
 Temperature:25.3DEG  
 Operators:  
 Test Date:2015-10-20

γ Range: 0 - 180DEG  
 γ Interval: 1.0DEG  
 Test System:EVERFINE GO-2000B\_V1 SYSTEM V2.0.290  
 Humidity:65.0%  
 Test Distance:11.550m [K=1.0000]  
 Remarks:



**ISOLUX DIAGRAM**



C Range: 0 - 360DEG  
 C Interval: 22.5DEG  
 Test Speed: HIGH  
 Temperature: 25.3DEG  
 Operators:  
 Test Date: 2015-10-20

$\gamma$  Range: 0 - 180DEG  
 $\gamma$  Interval: 1.0DEG  
 Test System: EVERFINE GO-2000B\_V1 SYSTEM V2.0.290  
 Humidity: 65.0%  
 Test Distance: 11.550m [K=1.0000]  
 Remarks:

**LED Avg.L Report**

Test:U:230.4V I:0.0803A P:17.73W PF:0.9588 Lamp Flux:1971.97x1 lm		
NAME: T82A12-18W	TYPE:LED 2835	WEIGHT:
SPEC: LED TUBE T8	DIM.: 1200*26MM	SERIAL No.:1
MFR.: Integratech	SUR.:	PROTECTION ANGLE:

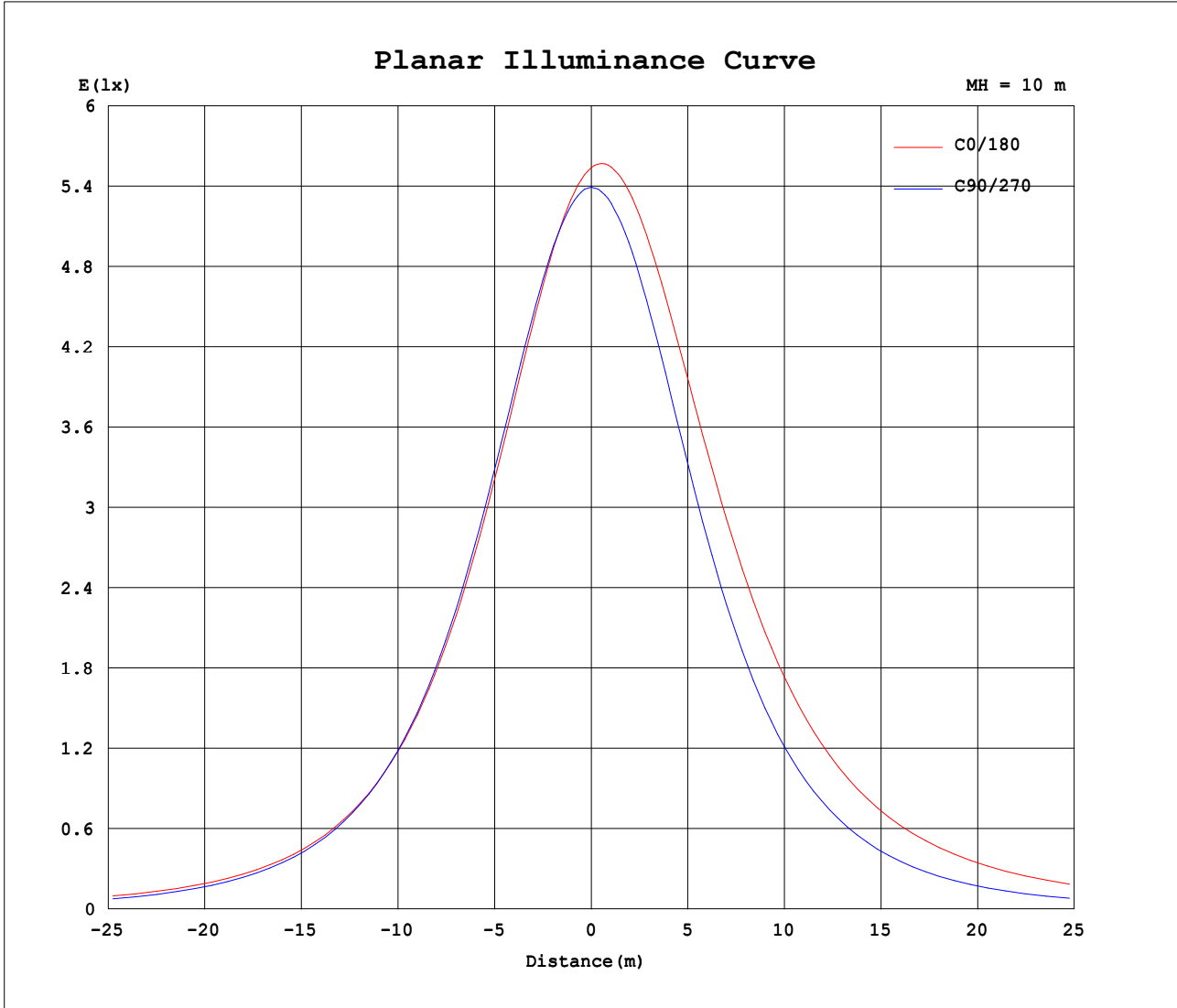
AvgL	cd/m2
L_0~180 (65) av	689
L_0~180 (75) av	890
L_0~180 (85) av	2006
L_90~270 (65) av	420
L_90~270 (75) av	355
L_90~270 (85) av	214
L_45 (65) av	563
L_45 (75) av	668
L_45 (85) av	1330

Standard: GB/T 29293-2012

C Range: 0 - 360DEG  
 C Interval: 22.5DEG  
 Test Speed: HIGH  
 Temperature:25.3DEG  
 Operators:  
 Test Date:2015-10-20

γ Range: 0 - 180DEG  
 γ Interval: 1.0DEG  
 Test System:EVERFINE GO-2000B\_V1 SYSTEM V2.0.290  
 Humidity:65.0%  
 Test Distance:11.550m [K=1.0000]  
 Remarks:

Planar Illuminance Curve



C Range: 0 - 360DEG  
 C Interval: 22.5DEG  
 Test Speed: HIGH  
 Temperature: 25.3DEG  
 Operators:  
 Test Date: 2015-10-20

γ Range: 0 - 180DEG  
 γ Interval: 1.0DEG  
 Test System: EVERFINE GO-2000B\_V1 SYSTEM V2.0.290  
 Humidity: 65.0%  
 Test Distance: 11.550m [K=1.0000]  
 Remarks:

LUMINOUS DISTRIBUTION INTENSITY DATA

Table--1

UNIT: cd

C (DEG) \ γ (DEG)	0	23	45	68	90	113	135	158	180	203	225	248	270	293	315	338			
0	554	549	545	541	539	538	538	544	554	549	545	541	539	538	538	544			
5	541	538	535	535	535	539	542	550	562	556	550	542	537	533	530	534			
10	526	523	521	523	526	533	541	552	567	559	550	538	529	521	517	519			
15	506	504	503	505	512	522	534	550	567	558	545	529	515	505	500	501			
20	483	482	480	484	492	507	524	544	564	553	536	514	497	484	478	480			
25	457	456	455	458	468	487	509	534	556	544	522	494	473	458	453	455			
30	429	428	425	429	439	462	490	521	545	531	505	471	445	428	424	427			
35	398	397	393	396	407	434	467	504	531	515	484	444	414	396	393	398			
40	366	365	360	361	372	403	441	484	512	494	459	414	380	361	359	366			
45	334	332	325	324	336	369	412	461	490	471	431	381	343	324	324	333			
50	300	299	289	286	297	334	382	435	466	445	401	346	305	285	289	300			
55	267	265	253	247	257	296	349	406	438	416	369	309	265	245	253	266			
60	236	232	219	208	216	258	315	375	408	386	336	271	223	206	218	234			
65	205	201	185	169	174	219	281	344	377	354	301	233	181	166	184	202			
70	176	171	154	132	131	179	247	310	344	321	266	194	137	128	152	171			
75	150	145	124	98.2	89.4	140	214	276	311	287	231	155	94.3	93.0	122	143			
80	126	120	98.5	68.4	49.6	103	180	242	278	254	198	118	53.9	61.8	94.8	119			
85	104	98.6	76.8	44.2	17.2	70.8	149	210	245	224	166	85.9	20.0	37.3	72.3	96.9			
90	84.4	79.3	58.4	26.9	2.13	46.2	121	180	214	193	137	60.2	2.22	21.2	54.1	76.0			
95	69.5	64.0	44.3	16.8	1.53	30.0	96.6	153	185	165	112	41.7	1.14	10.2	37.1	61.0			
100	56.1	51.5	33.5	10.8	1.35	20.2	76.9	128	158	139	90.5	29.4	1.06	6.69	28.6	46.7			
105	44.9	37.3	24.7	7.38	1.25	14.7	60.8	106	133	116	72.7	21.5	1.05	4.81	21.4	37.5			
110	35.6	32.2	18.8	5.29	1.20	11.4	48.1	87.3	111	96.2	57.9	16.5	1.08	3.47	15.1	26.2			
115	26.9	24.6	14.4	3.85	1.18	9.39	38.2	71.2	91.7	78.9	46.0	13.3	1.10	2.59	12.1	22.9			
120	20.7	18.7	10.4	2.87	1.19	8.06	30.6	57.5	75.0	64.1	36.8	11.0	1.13	1.98	8.82	17.4			
125	16.7	14.5	7.50	2.26	1.22	7.12	24.7	46.3	60.7	51.5	29.5	9.37	1.19	1.54	6.27	13.8			
130	12.9	11.3	5.33	1.80	1.24	6.41	20.0	37.0	48.7	41.1	23.8	8.18	1.24	1.27	4.62	10.3			
135	9.53	8.42	3.94	1.49	1.29	5.82	16.4	29.4	38.7	32.6	19.2	7.21	1.29	1.12	3.40	7.26			
140	6.89	5.72	2.91	1.31	1.34	5.25	13.5	23.3	30.5	25.7	15.5	6.39	1.36	1.03	2.50	4.95			
145	4.85	3.75	2.14	1.23	1.40	4.79	11.1	18.3	23.7	20.1	12.6	5.69	1.47	1.06	1.85	3.47			
150	3.34	2.50	1.64	1.23	1.48	4.36	9.10	14.3	18.3	15.5	10.3	5.04	1.59	1.09	1.44	2.38			
155	2.07	1.72	1.34	1.25	1.57	3.92	7.42	11.0	13.9	11.9	8.26	4.43	1.67	1.13	1.21	1.67			
160	1.48	1.33	1.25	1.24	1.65	3.49	5.95	8.40	10.3	9.00	6.53	3.86	1.76	1.15	1.17	1.29			
165	1.29	1.25	1.24	1.25	1.74	3.01	4.68	6.23	7.33	6.64	5.07	3.32	1.82	1.21	1.20	1.22			
170	1.29	1.25	1.25	1.37	1.81	2.60	3.59	4.45	5.26	4.73	3.84	2.74	1.88	1.39	1.22	1.24			
175	1.33	1.37	1.43	1.87	1.88	2.22	2.61	2.95	2.34	3.13	2.73	2.30	1.92	1.63	1.43	1.34			
180	1.66	2.00	1.94	1.95	1.92	1.92	1.92	1.94	1.66	1.99	1.95	1.95	1.94	1.92	1.91	1.93			

C Range: 0 - 360DEG  
 C Interval: 22.5DEG  
 Test Speed: HIGH  
 Temperature:25.3DEG  
 Operators:  
 Test Date:2015-10-20

γ Range: 0 - 180DEG  
 γ Interval: 1.0DEG  
 Test System:EVERFINE GO-2000B\_V1 SYSTEM V2.0.290  
 Humidity:65.0%  
 Test Distance:11.550m [K=1.0000]  
 Remarks: