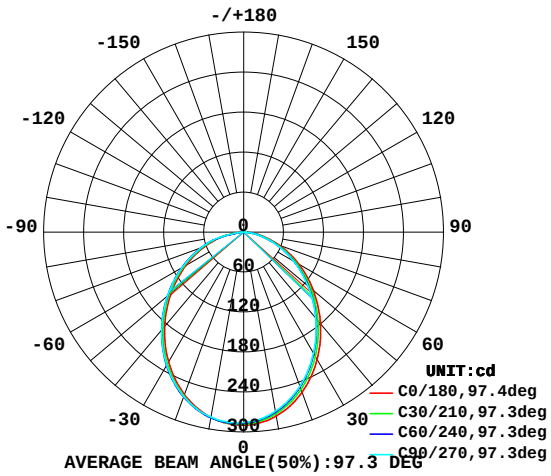
LUMINAIRE PHOTOMETRIC TEST REPORT

Test:U:230.3V I:0.0440A P:9.630W PF:0.9470 Lamp Flux:691.009x1 lm		
NAME: CL88-10W-3000K	TYPE:10W	WEIGHT:
DIM.:	SPEC.:5700K	SERIAL No.:
MFR.: factory	SUR.:0.0475	PROTECTION ANGLE:

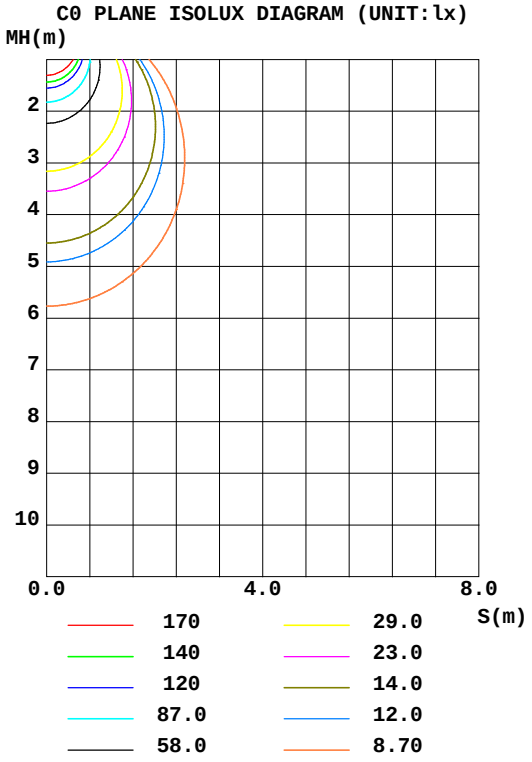
DATA OF LAMP		PHOTOMETRIC DATA		Eff: 71.76 lm/W	
MODEL	CL88-10W-3000K	Imax(cd)	289.7	S/MH(C0/180)	1.15
NOMINAL POWER(W)	10	LOR(%)	100.0	S/MH(C90/270)	1.11
RATED VOLTAGE(V)	230	TOTAL FLUX(lm)	691.01	η UP,DN(C0-180)	0.0,47.4
NOMINAL FLUX(lm)	691.009	CIE CLASS	DIRECT	η UP,DN(C180-360)	0.0,52.6
LAMPS INSIDE	1	η up(%)	0.0	CIBSE SHR NOM	1.25
TEST VOLTAGE(V)	230.3	η down(%)	100.0	CIBSE SHR MAX	1.30

LUMINOUS INTENSITY DISTRIBUTION DIAGRAM



AVERAGE BEAM ANGLE(50%):97.3 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:2015-10-12

γ Range: 0 - 90DEG
γ Interval: 1.0DEG
Test System:EVERFINE GO-2000A_V1 SYSTEM V2.0.276
Humidity:65.0%
Test Distance:9.580m [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	280.4	275.8	273.3	273.4	282.3	283.0	282.2	279.2	0- 10	26.97	26.97	3.9,3.9
20	256.0	249.5	246.3	248.0	259.7	262.6	262.7	258.6	10- 20	75.59	102.6	14.8,14.8
30	220.7	212.9	209.7	212.2	225.4	230.1	230.9	226.0	20- 30	110.0	212.5	30.8,30.8
40	179.3	171.4	168.2	171.4	184.7	190.2	191.4	186.4	30- 40	125.6	338.2	48.9,48.9
50	136.6	129.2	126.4	129.6	142.0	147.7	149.2	144.3	40- 50	122.7	460.9	66.7,66.7
60	95.12	88.51	86.14	89.36	100.2	105.7	107.1	102.8	50- 60	104.8	565.7	81.9,81.9
70	55.98	50.59	48.75	51.66	60.70	65.91	67.03	63.11	60- 70	76.26	642.0	92.9,92.9
80	22.05	18.42	17.31	15.36	22.58	18.35	20.04	27.56	70- 80	41.72	683.7	98.9,98.9
90	2.245	2.217	2.190	2.211	2.628	2.917	2.945	2.604	80- 90	7.328	691.0	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		

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γ Range: 0 - 90DEG
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Humidity:65.0%
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Remarks:

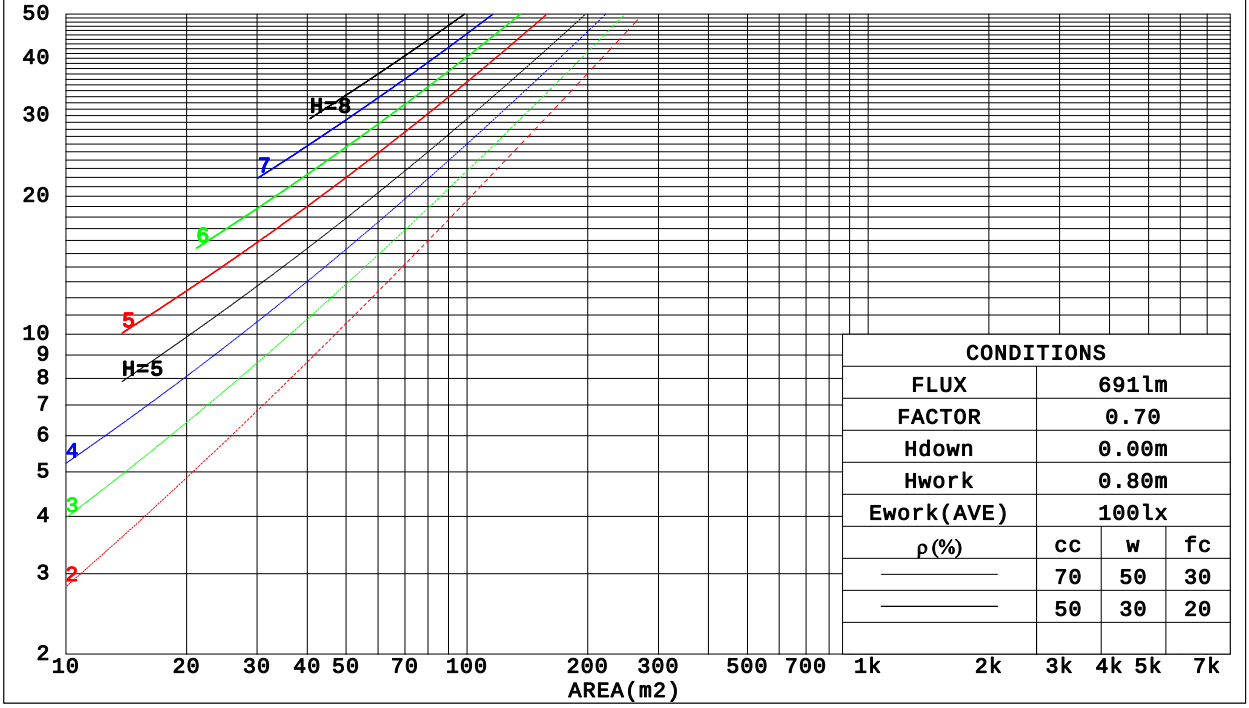
CU AND LUMINAIRE BUDGETARY ESTIMATE DIAGRAM

Test:U:230.3V I:0.0440A P:9.630W PF:0.9470 Lamp Flux:691.009x1 lm		
NAME: CL88-10W-3000K	TYPE:10W	WEIGHT:
DIM.:	SPEC.:5700K	SERIAL No.:
MFR.: factory	SUR.:0.0475	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	1.05	1.01	.97	1.03	.99	.96	.98	.95	.93	.95	.92	.90	.91	.89	.87	.85
2.0	.92	.86	.80	.90	.84	.79	.87	.82	.77	.83	.79	.75	.80	.77	.74	.72
3.0	.81	.73	.67	.80	.72	.67	.77	.71	.65	.74	.69	.64	.71	.67	.63	.61
4.0	.72	.64	.57	.71	.63	.57	.69	.62	.56	.66	.60	.55	.64	.59	.55	.53
5.0	.65	.56	.50	.64	.56	.49	.62	.54	.49	.60	.53	.48	.58	.52	.48	.46
6.0	.59	.50	.44	.58	.49	.43	.56	.49	.43	.54	.48	.43	.53	.47	.42	.40
7.0	.53	.45	.39	.53	.44	.39	.51	.44	.38	.50	.43	.38	.48	.42	.38	.36
8.0	.49	.40	.35	.48	.40	.35	.47	.40	.34	.46	.39	.34	.44	.38	.34	.32
9.0	.45	.37	.31	.44	.37	.31	.43	.36	.31	.42	.36	.31	.41	.35	.31	.29
10.0	.42	.34	.29	.41	.34	.29	.40	.33	.28	.39	.33	.28	.38	.32	.28	.26

LAMPS

LUMINAIRE BUDGETARY DIAGRAM



CONDITIONS			
FLUX	691lm		
FACTOR	0.70		
Hdown	0.00m		
Hwork	0.80m		
Ework(AVE)	100lx		
ρ(%)	cc	w	fc
————	70	50	30
————	50	30	20

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Test System:EVERFINE GO-2000A_V1 SYSTEM V2.0.276
Humidity:65.0%
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Remarks:

WEC AND CCEC

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DIM.:	SPEC.:5700K	SERIAL No.:
MFR.: factory	SUR.:0.0475	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	.290	.165	.052	.283	.161	.051	.270	.155	.049	.258	.149	.048	.246	.143	.046	
2.0	.277	.152	.046	.270	.149	.046	.259	.144	.045	.248	.139	.044	.238	.135	.042	
3.0	.258	.137	.041	.252	.135	.041	.242	.131	.040	.233	.128	.039	.224	.124	.038	
4.0	.239	.124	.037	.234	.123	.036	.225	.120	.036	.217	.117	.035	.209	.114	.035	
5.0	.222	.113	.033	.218	.112	.033	.210	.109	.032	.202	.107	.032	.195	.104	.031	
6.0	.207	.104	.030	.203	.102	.029	.196	.100	.029	.189	.098	.029	.183	.096	.029	
7.0	.193	.095	.027	.190	.094	.027	.183	.093	.027	.177	.091	.026	.172	.089	.026	
8.0	.181	.088	.025	.178	.087	.025	.172	.086	.025	.167	.084	.024	.161	.083	.024	
9.0	.170	.082	.023	.167	.081	.023	.162	.080	.023	.157	.079	.023	.152	.077	.022	
10.0	.160	.077	.021	.157	.076	.021	.153	.075	.021	.148	.074	.021	.144	.073	.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	.179	.156	.136	.153	.134	.117	.105	.092	.081	.060	.053	.047	.019	.017	.015	
2.0	.170	.132	.100	.146	.114	.086	.100	.079	.060	.058	.046	.035	.018	.015	.012	
3.0	.162	.114	.076	.139	.099	.066	.095	.068	.046	.055	.040	.027	.018	.013	.009	
4.0	.154	.101	.060	.132	.087	.052	.091	.061	.037	.053	.036	.022	.017	.012	.007	
5.0	.147	.090	.048	.126	.078	.042	.087	.055	.030	.050	.032	.018	.016	.010	.006	
6.0	.140	.082	.040	.120	.071	.035	.083	.050	.025	.048	.029	.015	.016	.010	.005	
7.0	.133	.075	.034	.115	.065	.030	.079	.045	.021	.046	.027	.013	.015	.009	.004	
8.0	.127	.069	.029	.109	.060	.026	.076	.042	.018	.044	.025	.011	.014	.008	.004	
9.0	.121	.064	.026	.104	.056	.022	.072	.039	.016	.042	.023	.010	.014	.008	.003	
10.0	.115	.060	.023	.099	.052	.020	.069	.037	.014	.040	.022	.008	.013	.007	.003	

C Range: 0 - 360DEG
C Interval: 30.0DEG
Test Speed: HIGH
Temperature:25.3DEG
Operators:DAMIN
Test Date:2015-10-12

γ Range: 0 - 90DEG
γ Interval: 1.0DEG
Test System:EVERFINE GO-2000A_V1 SYSTEM V2.0.276
Humidity:65.0%
Test Distance:9.580m [K=1.0000]
Remarks:

Uncorrected UGR Table

Test:U:230.3V I:0.0440A P:9.630W PF:0.9470 Lamp Flux:691.009x1 lm		
NAME: CL88-10W-3000K	TYPE:10W	WEIGHT:
DIM.:	SPEC.:5700K	SERIAL No.:
MFR.: factory	SUR.:0.0475	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	24.1	25.6	24.4	25.8	26.0	23.7	25.2	24.0	25.4	25.6
	3H	25.4	26.8	25.7	27.0	27.3	24.9	26.3	25.2	26.5	26.8
	4H	25.9	27.2	26.3	27.5	27.7	25.4	26.7	25.7	26.9	27.2
	6H	26.3	27.5	26.6	27.8	28.0	25.6	26.8	26.0	27.1	27.4
	8H	26.4	27.6	26.7	27.8	28.1	25.7	26.8	26.0	27.1	27.4
	12H	26.4	27.5	26.7	27.8	28.1	25.6	26.7	26.0	27.0	27.3
4H	2H	24.6	25.9	24.9	26.1	26.4	24.3	25.6	24.6	25.8	26.1
	3H	26.1	27.2	26.4	27.5	27.8	25.7	26.8	26.0	27.1	27.4
	4H	26.7	27.7	27.1	28.0	28.4	26.2	27.2	26.6	27.5	27.9
	6H	27.2	28.1	27.6	28.4	28.8	26.6	27.5	27.0	27.8	28.2
	8H	27.3	28.2	27.7	28.5	28.9	26.6	27.4	27.0	27.8	28.2
	12H	27.3	28.1	27.8	28.5	28.9	26.6	27.3	27.0	27.7	28.1
8H	4H	26.9	27.7	27.3	28.1	28.5	26.4	27.2	26.8	27.6	28.0
	6H	27.4	28.1	27.9	28.5	29.0	26.9	27.6	27.3	28.0	28.4
	8H	27.6	28.3	28.1	28.7	29.1	27.0	27.6	27.4	28.0	28.4
	12H	27.7	28.2	28.2	28.7	29.2	26.9	27.5	27.4	27.9	28.4
12H	4H	26.9	27.6	27.3	28.0	28.4	26.4	27.2	26.8	27.6	28.0
	6H	27.5	28.1	27.9	28.5	28.9	26.9	27.5	27.4	28.0	28.4
	8H	27.7	28.2	28.2	28.7	29.1	27.0	27.5	27.5	28.0	28.4

Variations with the observer position at spacings:		
S = 1.0H	+ 0.2 / - 0.2	+ 0.2 / - 0.3
1.5H	+ 0.1 / - 0.2	+ 0.1 / - 0.3
2.0H	+ 0.3 / - 0.3	+ 0.3 / - 0.3

CIE Pub.117 Corrected 691.0 lm Total Lamp Luminous Flux.(8log(F/F0) = -1.3)

C Range: 0 - 360DEG
C Interval: 30.0DEG
Test Speed: HIGH
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Operators:DAMIN
Test Date:2015-10-12

γ Range: 0 - 90DEG
γ Interval: 1.0DEG
Test System:EVERFINE GO-2000A_V1 SYSTEM V2.0.276
Humidity:65.0%
Test Distance:9.580m [K=1.0000]
Remarks:

UTILIZATION FACTORS TABLE

Test:U:230.3V I:0.0440A P:9.630W PF:0.9470 Lamp Flux:691.009x1 lm		
NAME: CL88-10W-3000K	TYPE:10W	WEIGHT:
DIM.:	SPEC.:5700K	SERIAL No.:
MFR.: factory	SUR.:0.0475	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	60	49	42	59	49	42	58	48	42	36
0.80	70	59	52	69	58	52	67	58	51	45
1.00	78	68	61	77	67	60	75	68	60	53
1.25	85	75	68	84	75	68	81	73	67	60
1.50	90	81	74	88	80	74	85	78	73	65
2.00	97	89	82	95	87	82	91	85	80	73
2.50	100	93	87	98	92	86	94	89	84	76
3.00	103	97	92	101	95	91	97	93	89	80
4.00	107	102	98	105	100	96	101	97	94	85
5.00	109	105	101	107	103	100	103	99	97	88
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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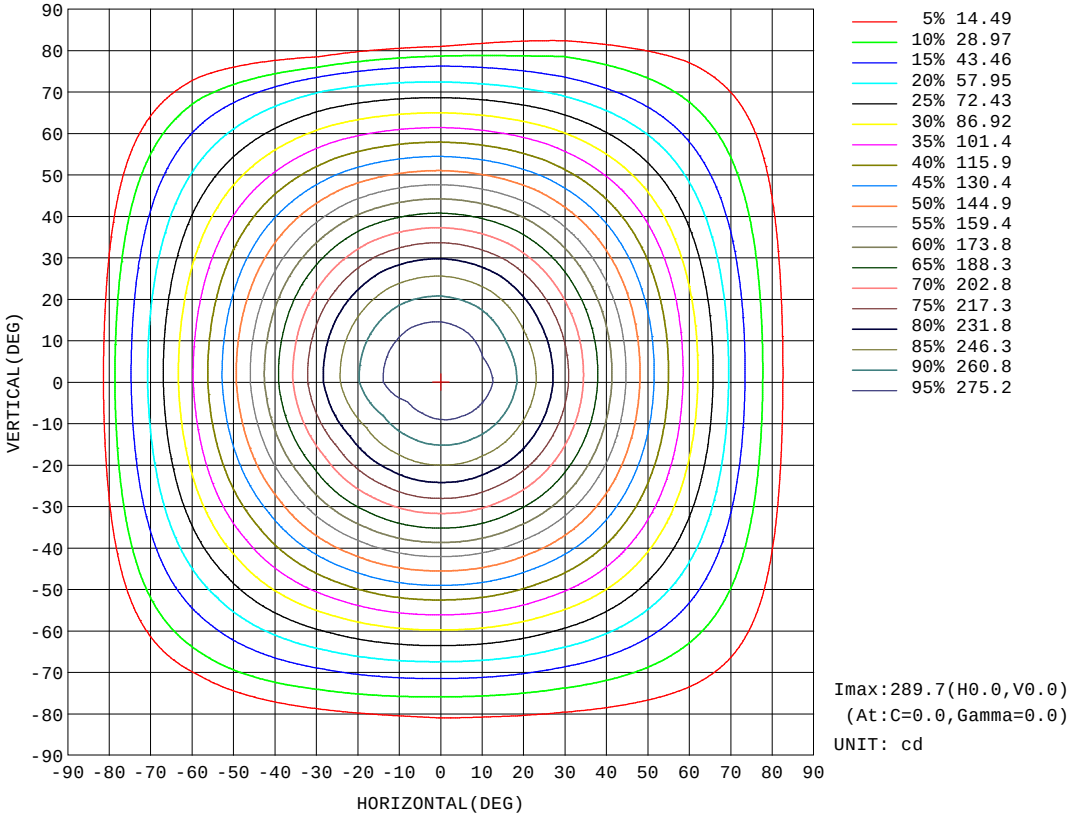
MFR.: factory	SUR.:0.0475	PROTECTION ANGLE:



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AAI Figure

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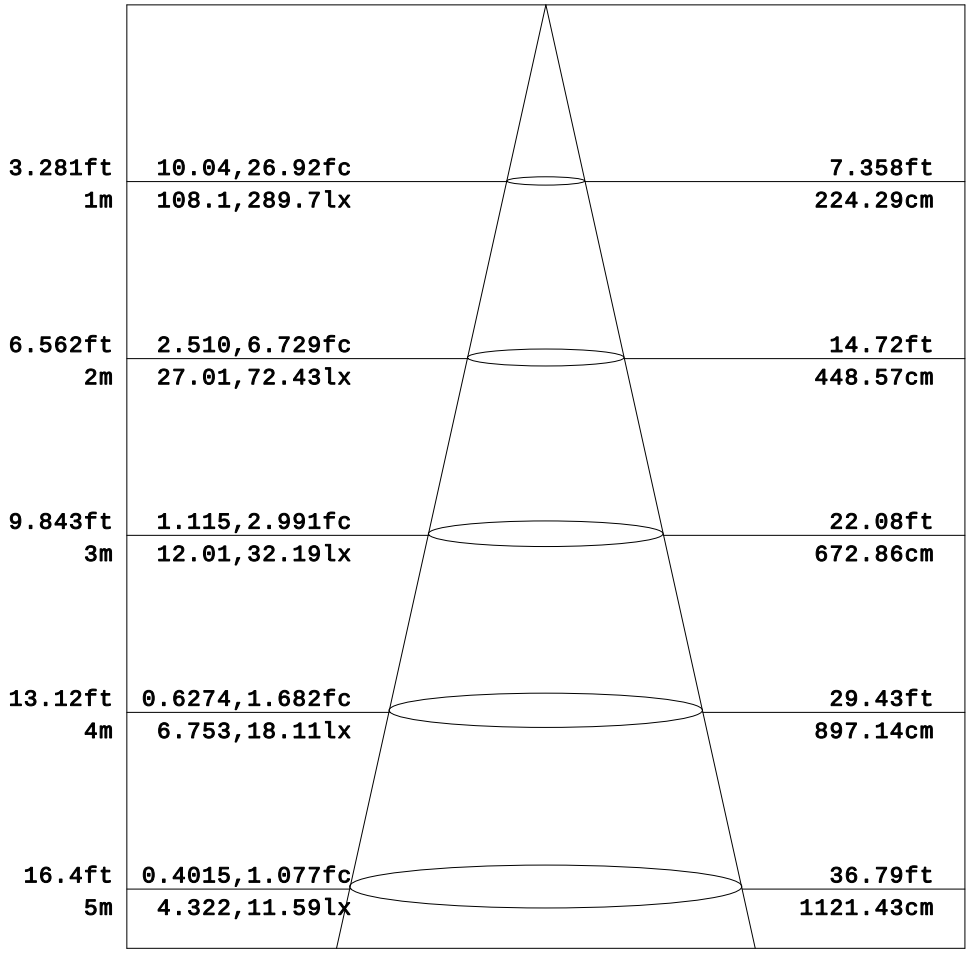
NAME: CL88-10W-3000K	TYPE:10W	WEIGHT:
DIM.:	SPEC.:5700K	SERIAL No.:
MFR.: factory	SUR.:0.0475	PROTECTION ANGLE:

Flux out:449.2 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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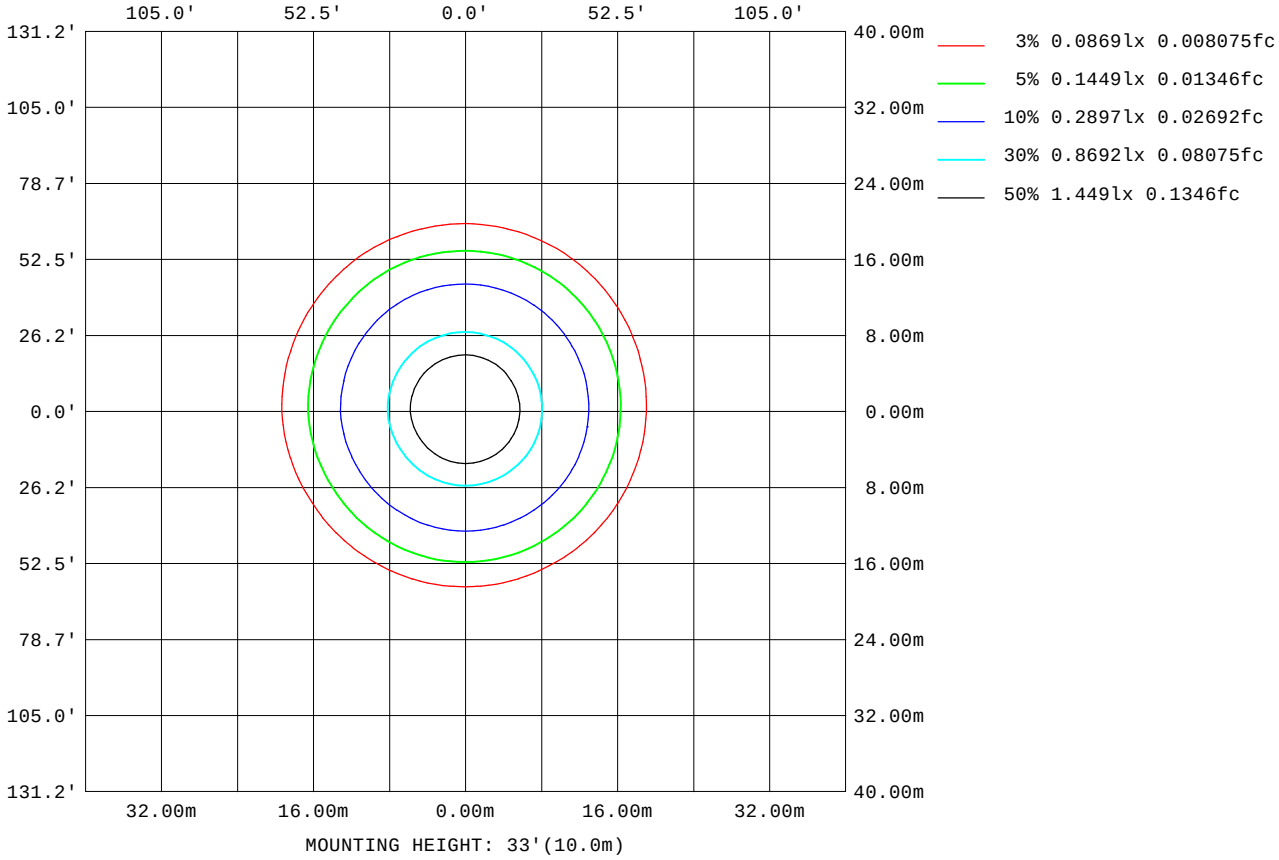
DIM.:	SPEC.:5700K	SERIAL No.:
MFR.: factory	SUR.:0.0475	PROTECTION ANGLE:



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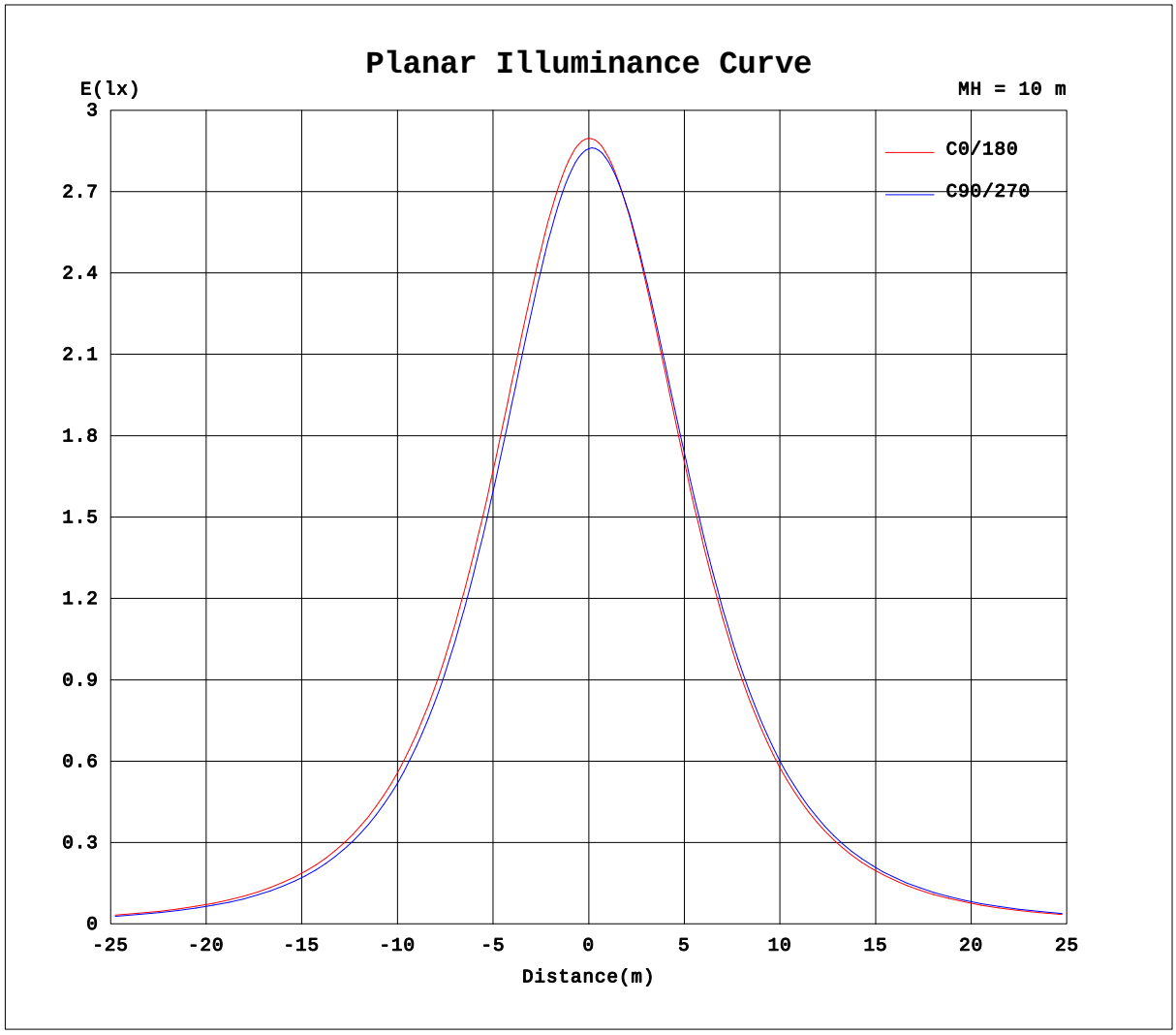
Remarks:

Planar Illuminance Curve



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LUMINOUS DISTRIBUTION INTENSITY DATA

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NAME: CL88-10W-3000K	TYPE:10W	WEIGHT:
DIM.:	SPEC.:5700K	SERIAL No.:
MFR.: factory	SUR.:0.0475	PROTECTION ANGLE:

Table--1 UNIT: cd

γ (DEG) \ C(DEG)	0	30	60	90	120	150	180	210	240	270	300	330
0	290	288	287	286	285	284	290	288	287	286	285	284
5	287	285	283	282	281	281	288	288	287	286	285	283
10	280	277	275	273	273	274	282	283	283	282	281	278
15	270	266	263	261	261	263	273	274	275	274	272	269
20	256	251	248	246	247	249	260	262	263	263	261	257
25	239	234	230	229	229	233	244	247	249	248	246	241
30	221	215	211	210	210	214	225	229	231	231	229	223
35	200	195	190	189	190	194	206	209	212	212	210	204
40	179	174	169	168	169	174	185	189	192	191	189	184
45	158	152	148	147	148	153	163	167	171	170	168	163
50	137	131	127	126	127	132	142	146	149	149	147	142
55	116	111	107	106	107	111	121	125	128	128	126	121
60	95.1	90.4	86.6	86.1	87.3	91.4	100	104	107	107	105	100
65	75.2	70.8	67.4	67.0	68.2	72.0	80.1	83.8	87.0	86.7	84.9	80.4
70	56.0	52.1	49.1	48.7	49.9	53.5	60.7	64.3	67.6	67.0	65.2	61.0
75	37.9	34.6	32.1	31.8	32.9	36.1	42.4	45.9	48.1	48.4	46.4	42.6
80	22.0	19.4	17.4	17.3	16.1	14.6	22.6	22.5	14.2	20.0	29.2	26.0
85	4.64	4.17	2.55	2.47	2.43	2.52	3.02	3.14	4.05	3.45	6.19	7.54
90	2.24	2.22	2.21	2.19	2.20	2.22	2.63	2.71	3.13	2.94	2.63	2.58

C Range: 0 - 360DEG
C Interval: 30.0DEG
Test Speed: HIGH
Temperature:25.3DEG
Operators:DAMIN
Test Date:2015-10-12

γ Range: 0 - 90DEG
γ Interval: 1.0DEG
Test System:EVERFINE GO-2000A_V1 SYSTEM V2.0.276
Humidity:65.0%
Test Distance:9.580m [K=1.0000]
Remarks: