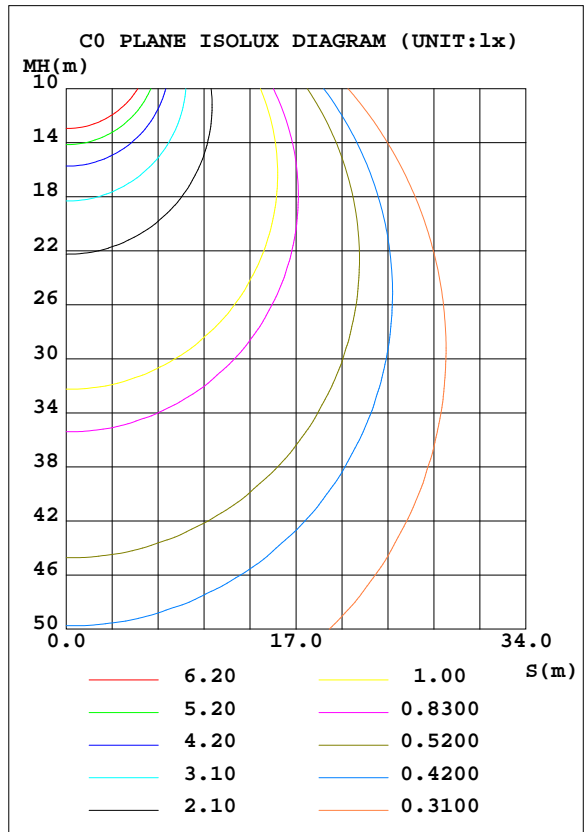
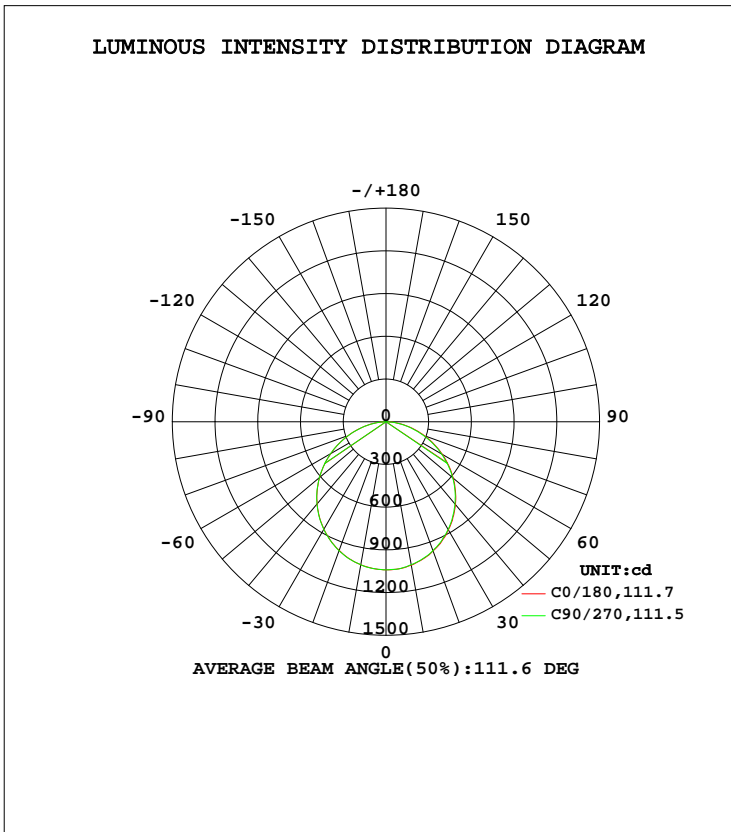


LUMINAIRE PHOTOMETRIC TEST REPORT

Test:U:230.12V I:0.1241A P:28.165W PF:0.9865 Freq:50.01Hz Lamp Flux:2957.06x1 lm		
NAME:	TYPE:LED	WEIGHT:N/A
SPEC.:N/A	DIM.:	SERIAL No.:N/A
MFR.: Shenzhen Hairun Optoelectronics Co., Ltd	SUR.:	Shielding Angle:N/A

DATA OF LAMP		PHOTOMETRIC DATA Eff: 104.99 lm/W			
MODEL	HR-PLF045-30	I _{max} (cd)	1040	S/MH(C0/180)	1.25
NOMINAL POWER(W)	30	LOR(%)	100.0	S/MH(C90/270)	1.25
RATED VOLTAGE(V)	230	TOTAL FLUX(lm)	2957.1	η UP, DN(C0-180)	0.0,49.9
NOMINAL FLUX(lm)	2957.06	CIE CLASS	DIRECT	η UP, DN(C180-360)	0.1,49.9
LAMPS INSIDE	1	η up(%)	0.1	CIBSE SHR NOM	1.25
TEST VOLTAGE(V)	230	η down(%)	99.9	CIBSE SHR MAX	1.35



C Range: 0 - 360DEG
 C Interval: 22.5DEG
 Test Speed: HIGH
 Temperature:24.5DEG
 Operators:William
 Test Date:2019-09-02

γ Range: 0 - 180DEG
 γ Interval: 1.0DEG
 Test System:EVERFINE GO-R5000_V2 SYSTEM V2.0.366
 Humidity:65.7%
 Test Distance:26.000m [K=1.3952]
 Remarks:

ZONAL FLUX DIAGRAM

ZONAL FLUX DIAGRAM:

γ	C0	C45	C90	C135	C180	C225	C270	C315	γ	Φ zone	Φ total	%lum, lamp
10	1023	1020	1019	1019	1020	1019	1020	1021	0- 10	98.34	98.34	3.33,3.33
20	965.5	964.6	964.3	962.4	962.3	961.0	963.9	966.0	10- 20	281.2	379.5	12.8,12.8
30	876.3	874.7	872.6	871.3	872.0	869.6	873.0	876.3	20- 30	425.0	804.5	27.2,27.2
40	759.6	754.9	753.7	751.7	753.0	750.5	754.3	758.8	30- 40	511.1	1316	44.5,44.5
50	617.1	613.9	611.3	608.8	609.0	607.1	610.6	616.1	40- 50	528.8	1844	62.4,62.4
60	456.1	452.5	449.8	448.7	448.5	445.9	450.2	456.0	50- 60	476.2	2321	78.5,78.5
70	287.5	282.5	279.7	279.7	280.5	277.1	280.2	287.4	60- 70	362.8	2683	90.7,90.7
80	127.0	121.9	118.7	119.9	121.5	116.9	118.4	126.8	70- 80	210.7	2894	97.9,97.9
90	0.3758	0.3956	0.3825	0.4172	0.2238	0.1480	0.1483	0.2955	80- 90	59.16	2953	99.9,99.9
100	0.0739	0.0738	0.0740	0.1480	0.2955	0.2214	0.2243	0.2978	90-100	0.2058	2953	99.9,99.9
110	0.0739	0.0738	0.0740	0.1480	0.5198	0.3694	0.5178	0.4441	100-110	0.2411	2954	99.9,99.9
120	0.0739	0.0738	0.0740	0.1480	0.8864	0.5167	0.5917	0.5919	110-120	0.3408	2954	99.9,99.9
130	0.0739	0.0738	0.1458	0.1480	1.034	0.6645	0.8136	0.8138	120-130	0.3582	2954	99.9,99.9
140	0.8835	0.4420	0.8865	0.5145	1.256	0.8120	1.112	0.9618	130-140	0.4671	2955	99.9,99.9
150	1.330	1.181	1.331	1.184	1.625	1.550	1.553	1.406	140-150	0.7675	2956	100,100
160	1.403	1.181	1.553	1.258	2.069	1.993	2.001	1.853	150-160	0.7239	2956	100,100
170	1.628	1.623	1.701	1.628	2.364	2.362	2.293	2.072	160-170	0.5085	2957	100,100
180	2.438	2.214	2.293	1.924	2.511	2.510	2.293	2.072	170-180	0.2040	2957	100,100
DEG	LUMINOUS INTENSITY:cd									UNIT:lm		

Conical surface Flux(90deg): 1582.2 lm

%lum = 53.5%
%lamp = 53.5%

Conical surface Flux(120deg): 2320.6 lm

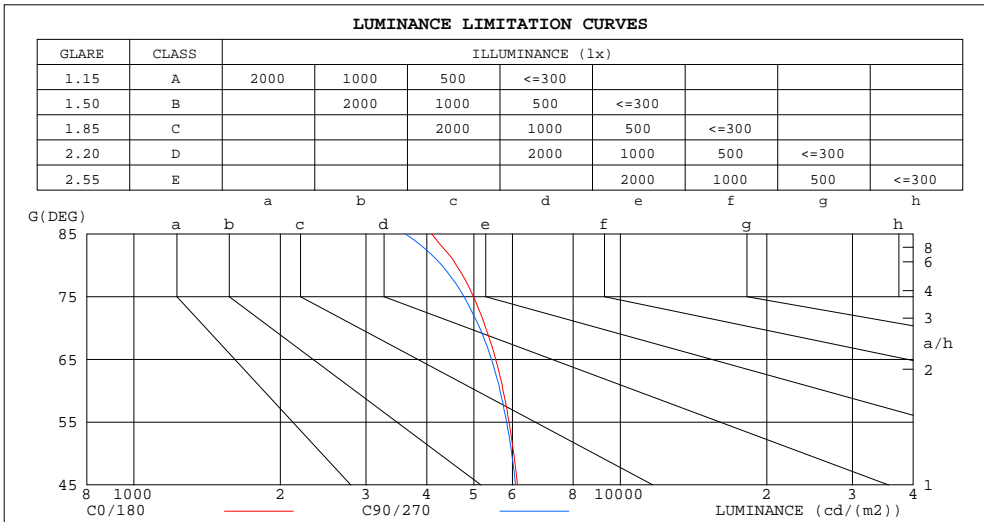
%lum = 78.5%
%lamp = 78.5%

C Range: 0 - 360DEG
C Interval: 22.5DEG
Test Speed: HIGH
Temperature:24.5DEG
Operators:William
Test Date:2019-09-02

γ Range: 0 - 180DEG
γ Interval: 1.0DEG
Test System:EVERFINE GO-R5000_V2 SYSTEM V2.0.366
Humidity:65.7%
Test Distance:26.000m [K=1.3952]
Remarks:

LUMINANCE LIMITATION CURVES

Test:U:230.12V I:0.1241A P:28.165W PF:0.9865 Freq:50.01Hz Lamp Flux:2957.06x1 lm		
NAME:	TYPE:LED	WEIGHT:N/A
SPEC.:N/A	DIM.:	SERIAL No.:N/A
MFR.: Shenzhen Hairun Optoelectronics Co., Ltd	SUR.:	Shielding Angle:N/A



LUMINANCE cd/(m2)		
G(DEG)	C0/180	C90/270
85	4094	3612
80	4600	4298
75	4988	4770
70	5287	5143
65	5541	5434
60	5738	5656
55	5906	5842
50	6039	5979
45	6145	6090

C Range: 0 - 360DEG
 C Interval: 22.5DEG
 Test Speed: HIGH
 Temperature: 24.5DEG
 Operators: William
 Test Date: 2019-09-02

γ Range: 0 - 180DEG
 γ Interval: 1.0DEG
 Test System: EVERFINE GO-R5000_V2 SYSTEM V2.0.366
 Humidity: 65.7%
 Test Distance: 26.000m [K=1.3952]
 Remarks:

WEC AND CCEC

Test:U:230.12V I:0.1241A P:28.165W PF:0.9865 Freq:50.01Hz Lamp Flux:2957.06x1 lm		
NAME:	TYPE:LED	WEIGHT:N/A
SPEC.:N/A	DIM.:	SERIAL No.:N/A
MFR.: Shenzhen Hairun Optoelectronics Co., Ltd	SUR.:	Shielding Angle:N/A

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	.311	.177	.056	.304	.174	.055	.291	.167	.053	.279	.161	.052	.267	.155	.050	
2.0	.293	.160	.049	.286	.158	.049	.275	.153	.047	.264	.148	.046	.254	.143	.045	
3.0	.271	.144	.043	.265	.142	.043	.255	.138	.042	.245	.134	.041	.236	.131	.040	
4.0	.250	.130	.038	.245	.128	.038	.235	.125	.037	.227	.122	.037	.219	.119	.036	
5.0	.231	.118	.034	.226	.116	.034	.218	.114	.033	.210	.111	.033	.203	.109	.033	
6.0	.214	.107	.031	.210	.106	.031	.203	.104	.030	.196	.102	.030	.189	.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	.171	.087	.025	.166	.085	.025	
9.0	.174	.084	.024	.171	.084	.023	.166	.082	.023	.161	.081	.023	.156	.079	.023	
10.0	.164	.078	.022	.161	.078	.022	.156	.077	.022	.152	.075	.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	.191	.191	.191	.164	.164	.164	.112	.112	.112	.064	.064	.064	.021	.021	.021	
1.0	.181	.157	.135	.155	.135	.116	.106	.093	.080	.061	.054	.047	.020	.017	.015	
2.0	.173	.133	.099	.148	.114	.085	.102	.079	.060	.059	.046	.035	.019	.015	.011	
3.0	.166	.115	.075	.142	.099	.065	.097	.069	.046	.056	.040	.027	.018	.013	.009	
4.0	.158	.102	.059	.136	.088	.051	.093	.061	.036	.054	.036	.021	.017	.012	.007	
5.0	.150	.092	.048	.129	.079	.042	.089	.055	.030	.052	.033	.018	.017	.011	.006	
6.0	.143	.083	.040	.123	.072	.035	.085	.050	.025	.049	.030	.015	.016	.010	.005	
7.0	.136	.076	.034	.117	.066	.030	.081	.046	.021	.047	.027	.013	.015	.009	.004	
8.0	.130	.071	.030	.112	.061	.026	.077	.043	.018	.045	.025	.011	.015	.008	.004	
9.0	.124	.066	.026	.107	.057	.023	.074	.040	.016	.043	.024	.010	.014	.008	.003	
10.0	.118	.061	.023	.102	.053	.020	.071	.037	.015	.041	.022	.009	.013	.007	.003	

C Range: 0 - 360DEG
 C Interval: 22.5DEG
 Test Speed: HIGH
 Temperature:24.5DEG
 Operators:William
 Test Date:2019-09-02

γ Range: 0 - 180DEG
 γ Interval: 1.0DEG
 Test System:EVERFINE GO-R5000_V2 SYSTEM V2.0.366
 Humidity:65.7%
 Test Distance:26.000m [K=1.3952]
 Remarks:

UGR(Unified Glare Rating) Table

Test:U:230.12V I:0.1241A P:28.165W PF:0.9865 Freq:50.01Hz Lamp Flux:2957.06x1 lm										
NAME:					TYPE:LED			WEIGHT:N/A		
SPEC.:N/A					DIM.:			SERIAL No.:N/A		
MFR.: Shenzhen Hairun Optoelectronics Co., Ltd					SUR.:			Shielding Angle:N/A		
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	19.0	20.6	19.3	20.8	21.0	19.0	20.5	19.3	20.7	20.9
3H	20.6	22.0	20.9	22.2	22.5	20.5	21.9	20.8	22.1	22.4
4H	21.2	22.6	21.5	22.8	23.1	21.1	22.4	21.4	22.7	22.9
6H	21.7	22.9	22.0	23.2	23.5	21.5	22.8	21.9	23.1	23.3
8H	21.8	23.1	22.2	23.3	23.6	21.7	22.9	22.0	23.2	23.5
12H	21.9	23.1	22.3	23.4	23.7	21.7	22.9	22.1	23.2	23.5
4H 2H	19.7	21.0	20.0	21.2	21.5	19.6	20.9	19.9	21.2	21.5
3H	21.4	22.6	21.7	22.8	23.2	21.3	22.5	21.6	22.8	23.1
4H	22.1	23.2	22.5	23.5	23.9	22.0	23.1	22.4	23.4	23.8
6H	22.7	23.7	23.1	24.0	24.4	22.6	23.5	23.0	23.9	24.3
8H	23.0	23.8	23.4	24.2	24.6	22.8	23.7	23.2	24.0	24.4
12H	23.1	23.9	23.5	24.3	24.7	22.9	23.7	23.3	24.1	24.5
8H 4H	22.4	23.3	22.8	23.7	24.0	22.3	23.2	22.7	23.6	23.9
6H	23.2	23.9	23.6	24.3	24.7	23.0	23.7	23.4	24.2	24.6
8H	23.5	24.1	23.9	24.5	25.0	23.3	23.9	23.7	24.4	24.8
12H	23.7	24.3	24.2	24.7	25.2	23.5	24.0	24.0	24.5	25.0
12H 4H	22.4	23.2	22.8	23.6	24.0	22.3	23.1	22.7	23.5	23.9
6H	23.2	23.9	23.7	24.3	24.8	23.1	23.7	23.5	24.2	24.6
8H	23.6	24.1	24.0	24.6	25.1	23.4	23.9	23.9	24.4	24.9
Variations with the observer position at spacings:										
S = 1.0H	+ 0.2 / - 0.2					+ 0.2 / - 0.2				
1.5H	+ 0.2 / - 0.3					+ 0.2 / - 0.3				
2.0H	+ 0.2 / - 0.3					+ 0.2 / - 0.3				

CIE Pub.117, 2957 lm Total Lamp Luminous Flux Corrected (8log(F/F0) = 3.8)

C Range: 0 - 360DEG
 C Interval: 22.5DEG
 Test Speed: HIGH
 Temperature:24.5DEG
 Operators:William
 Test Date:2019-09-02

γ Range: 0 - 180DEG
 γ Interval: 1.0DEG
 Test System:EVERFINE GO-R5000_V2 SYSTEM V2.0.366
 Humidity:65.7%
 Test Distance:26.000m [K=1.3952]
 Remarks:

UTILIZATION FACTORS TABLE

Test:U:230.12V I:0.1241A P:28.165W PF:0.9865 Freq:50.01Hz Lamp Flux:2957.06x1 lm		
NAME:	TYPE:LED	WEIGHT:N/A
SPEC.:N/A	DIM.:	SERIAL No.:N/A
MFR.: Shenzhen Hairun Optoelectronics Co., Ltd	SUR.:	Shielding Angle:N/A

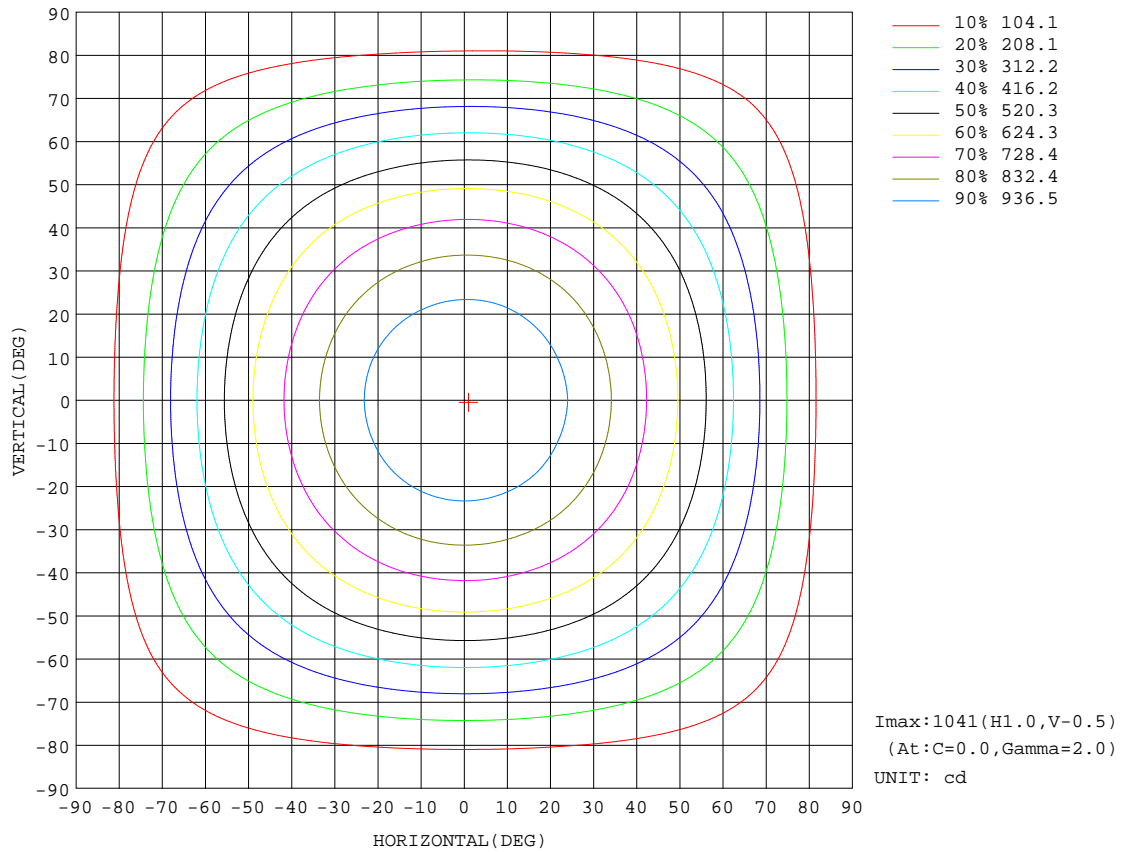
REFLECTANCE										
Ceiling	0.8	0.8	0.8	0.7	0.7	0.7	0.5	0.5	0.5	0
Walls	0.7	0.5	0.3	0.7	0.5	0.3	0.7	0.5	0.3	0
Working plane	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0
ROOM INDEX	UTILIZATION FACTORS(PERCENT) $k(RI) \times RCR = 5$									
k = 0.60	57	46	39	57	46	39	56	45	39	32
0.80	67	56	48	66	55	48	65	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			

C Range: 0 - 360DEG
 C Interval: 22.5DEG
 Test Speed: HIGH
 Temperature:24.5DEG
 Operators:William
 Test Date:2019-09-02

γ Range: 0 - 180DEG
 γ Interval: 1.0DEG
 Test System:EVERFINE GO-R5000_V2 SYSTEM V2.0.366
 Humidity:65.7%
 Test Distance:26.000m [K=1.3952]
 Remarks:

ISOCANDELA DIAGRAM

Test:U:230.12V I:0.1241A P:28.165W PF:0.9865 Freq:50.01Hz Lamp Flux:2957.06x1 lm		
NAME:	TYPE:LED	WEIGHT:N/A
SPEC.:N/A	DIM.:	SERIAL No.:N/A
MFR.: Shenzhen Hairun Optoelectronics Co., Ltd	SUR.:	Shielding Angle:N/A

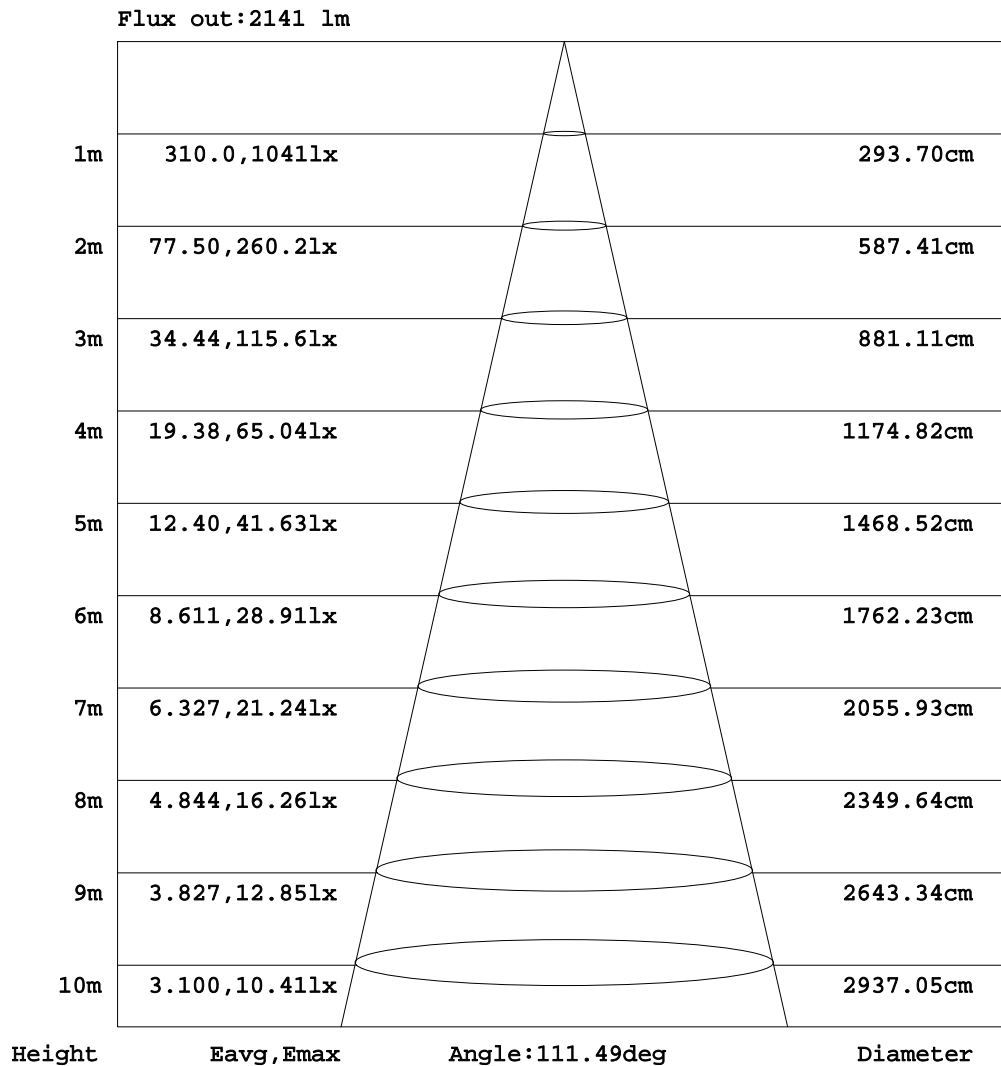


C Range: 0 - 360DEG
 C Interval: 22.5DEG
 Test Speed: HIGH
 Temperature: 24.5DEG
 Operators: William
 Test Date: 2019-09-02

γ Range: 0 - 180DEG
 γ Interval: 1.0DEG
 Test System: EVERFINE GO-R5000_V2 SYSTEM V2.0.366
 Humidity: 65.7%
 Test Distance: 26.000m [K=1.3952]
 Remarks:

AAI Figure

Test:U:230.12V I:0.1241A P:28.165W PF:0.9865 Freq:50.01Hz Lamp Flux:2957.06x1 lm		
NAME:	TYPE:LED	WEIGHT:N/A
SPEC.:N/A	DIM.:	SERIAL No.:N/A
MFR.: Shenzhen Hairun Optoelectronics Co., Ltd	SUR.:	Shielding Angle:N/A

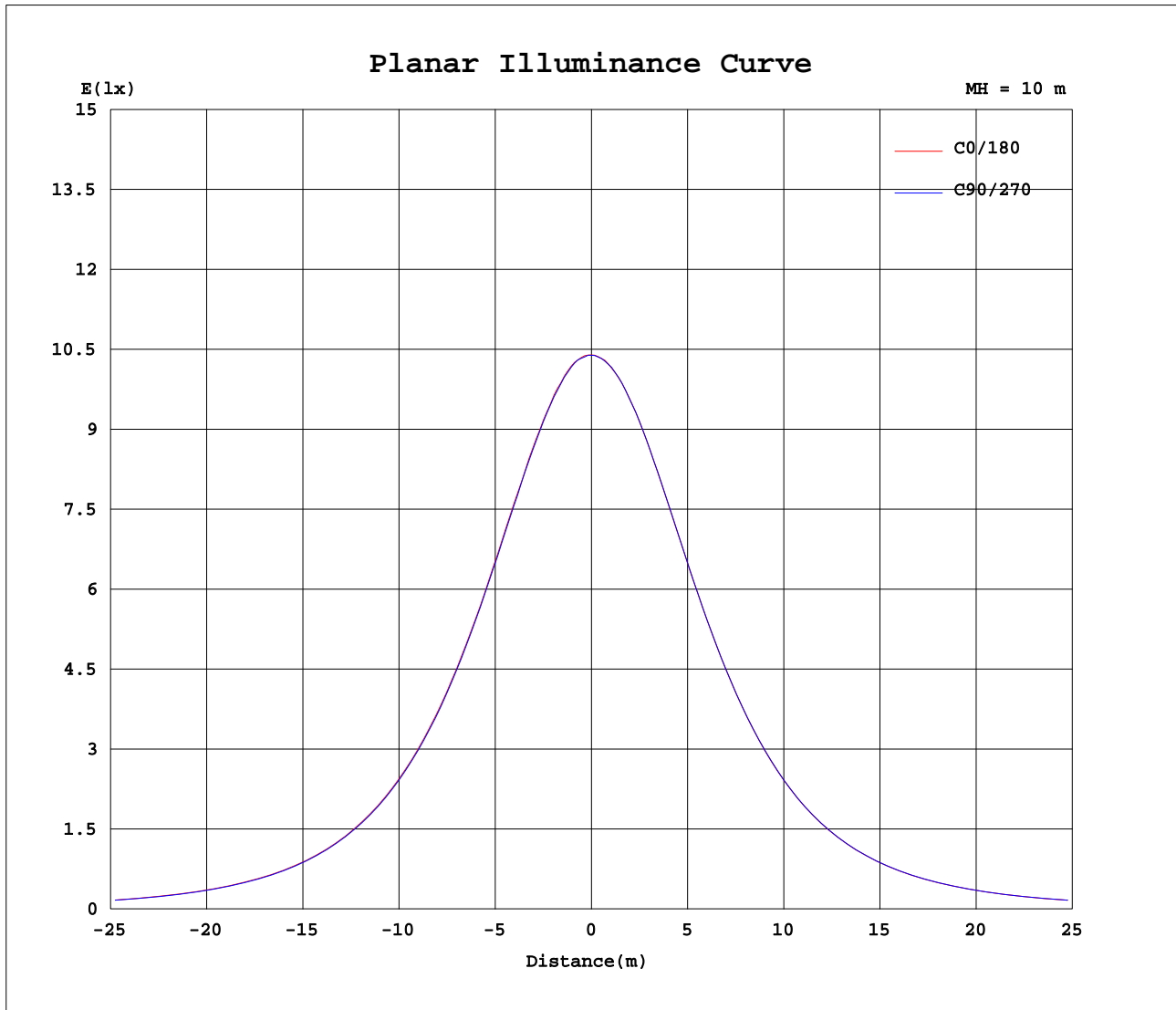


Note:The Curves indicate the illuminated area and the average illumination when the luminaire is at different distance.

C Range: 0 - 360DEG
 C Interval: 22.5DEG
 Test Speed: HIGH
 Temperature:24.5DEG
 Operators:William
 Test Date:2019-09-02

γ Range: 0 - 180DEG
 γ Interval: 1.0DEG
 Test System:EVERFINE GO-R5000_V2 SYSTEM V2.0.366
 Humidity:65.7%
 Test Distance:26.000m [K=1.3952]
 Remarks:

Planar Illuminance Curve



C Range: 0 - 360DEG
C Interval: 22.5DEG
Test Speed: HIGH
Temperature: 24.5DEG
Operators: William
Test Date: 2019-09-02

γ Range: 0 - 180DEG
 γ Interval: 1.0DEG
Test System: EVERFINE GO-R5000_V2 SYSTEM V2.0.366
Humidity: 65.7%
Test Distance: 26.000m [K=1.3952]
Remarks:

LUMINOUS DISTRIBUTION INTENSITY DATA

Test:U:230.12V I:0.1241A P:28.165W PF:0.9865 Freq:50.01Hz Lamp Flux:2957.06x1 lm		
NAME:	TYPE:LED	WEIGHT:N/A
SPEC.:N/A	DIM.:	SERIAL No.:N/A
MFR.: Shenzhen Hairun Optoelectronics Co., Ltd	SUR.:	Shielding Angle:N/A

Table--1

UNIT: cd

C(DEG) γ (DEG)	0	22.5	45	67.5	90	112.5	135	157.5	180	202.5	225	247.5	270	292.5	315	337.5			
0	1040	1040	1040	1040	1040	1040	1040	1040	1040	1040	1040	1040	1040	1040	1040	1040			
5	1037	1036	1035	1035	1037	1036	1035	1035	1035	1035	1033	1033	1034	1036	1035	1034			
10	1023	1020	1020	1020	1019	1021	1019	1019	1020	1019	1019	1020	1020	1021	1021	1021			
15	999	997	996	996	996	998	996	994	997	995	995	996	997	998	999	999			
20	966	965	965	963	964	964	962	962	962	961	961	962	964	964	966	966			
25	927	924	924	922	923	922	921	920	922	919	918	921	922	924	925	925			
30	876	875	875	873	873	874	871	870	872	870	870	871	873	874	876	878			
35	821	819	818	816	817	816	815	815	816	813	813	815	817	819	821	822			
40	760	757	755	754	754	752	752	751	753	751	750	752	754	757	759	759			
45	691	689	687	686	685	684	683	683	684	682	682	683	685	689	690	691			
50	617	616	614	612	611	611	609	609	609	607	607	608	611	613	616	617			
55	539	537	534	533	533	532	531	530	531	529	529	529	532	536	538	539			
60	456	454	453	451	450	449	449	448	448	446	446	448	450	453	456	458			
65	372	370	368	366	365	365	364	363	365	362	362	363	366	369	372	374			
70	287	286	283	281	280	279	280	279	281	278	277	277	280	284	287	290			
75	205	203	200	197	196	197	197	197	198	196	194	194	196	200	204	207			
80	127	125	122	119	119	119	120	120	121	120	117	116	118	123	127	129			
85	56.7	55.6	53.2	51.1	50.1	49.9	50.3	50.2	52.6	50.8	49.0	47.8	49.5	52.5	56.1	58.9			
90	0.38	0.31	0.40	0.52	0.38	0.43	0.42	0.43	0.22	0.22	0.15	0.22	0.15	0.22	0.30	0.29			
95	0.15	0.15	0.22	0.15	0.15	0.08	0.15	0.15	0.22	0.22	0.15	0.22	0.15	0.15	0.22	0.22			
100	0.07	0.15	0.07	0.15	0.07	0.07	0.15	0.07	0.30	0.22	0.22	0.22	0.22	0.22	0.30	0.22			
105	0.07	0.15	0.07	0.15	0.07	0.07	0.15	0.07	0.44	0.37	0.30	0.30	0.37	0.30	0.30	0.37			
110	0.07	0.15	0.07	0.15	0.07	0.07	0.15	0.07	0.52	0.52	0.37	0.52	0.52	0.37	0.44	0.45			
115	0.07	0.15	0.07	0.15	0.07	0.07	0.15	0.07	0.74	0.67	0.52	0.67	0.59	0.44	0.59	0.66			
120	0.07	0.15	0.07	0.15	0.07	0.07	0.15	0.07	0.89	0.74	0.52	0.67	0.59	0.44	0.59	0.59			
125	0.07	0.15	0.07	0.15	0.07	0.07	0.15	0.15	0.89	0.81	0.59	0.67	0.59	0.45	0.59	0.74			
130	0.07	0.15	0.07	0.15	0.15	0.07	0.15	0.15	1.03	0.81	0.66	0.74	0.81	0.67	0.81	0.81			
135	0.22	0.29	0.22	0.30	0.30	0.22	0.15	0.22	1.11	0.89	0.66	0.96	1.04	0.89	0.89	1.03			
140	0.88	0.73	0.44	0.74	0.89	0.59	0.51	0.73	1.26	1.10	0.81	1.18	1.11	0.96	0.96	1.18			
145	1.25	1.40	1.03	1.33	1.33	1.33	1.11	1.18	1.48	1.26	1.04	1.48	1.48	1.33	1.18	1.33			
150	1.33	1.40	1.18	1.26	1.33	1.33	1.18	1.33	1.63	1.62	1.55	1.63	1.55	1.63	1.41	1.48			
155	1.40	1.55	1.18	1.26	1.48	1.33	1.26	1.33	1.92	1.85	1.77	1.85	1.78	1.85	1.63	1.78			
160	1.40	1.48	1.18	1.26	1.55	1.33	1.26	1.48	2.07	2.07	1.99	2.00	2.00	1.93	1.85	1.92			
165	1.48	1.55	1.40	1.40	1.63	1.41	1.40	1.55	2.14	2.14	2.14	2.07	2.15	2.22	2.07	1.92			
170	1.63	1.70	1.62	1.77	1.70	1.55	1.63	1.85	2.36	2.29	2.36	2.22	2.29	2.29	2.07	1.92			
175	2.51	2.29	2.06	2.22	2.37	2.07	1.78	2.52	2.59	2.51	2.51	2.22	2.29	2.29	2.07	1.92			
180	2.44	2.44	2.21	2.29	2.29	2.07	1.92	2.51	2.51	2.44	2.51	2.22	2.29	2.29	2.07	1.92			

C Range: 0 - 360DEG
 C Interval: 22.5DEG
 Test Speed: HIGH
 Temperature:24.5DEG
 Operators:William
 Test Date:2019-09-02

γ Range: 0 - 180DEG
 γ Interval: 1.0DEG
 Test System:EVERFINE GO-R5000_V2 SYSTEM V2.0.366
 Humidity:65.7%
 Test Distance:26.000m [K=1.3952]
 Remarks: