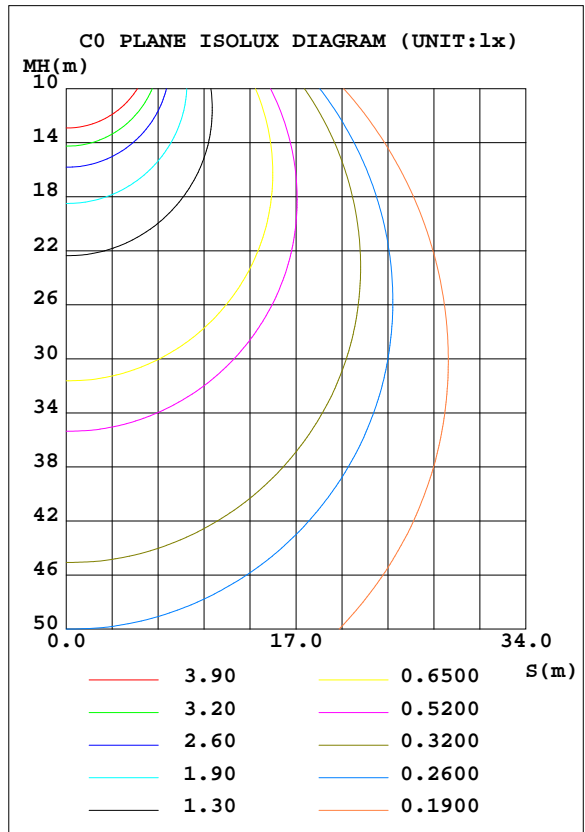
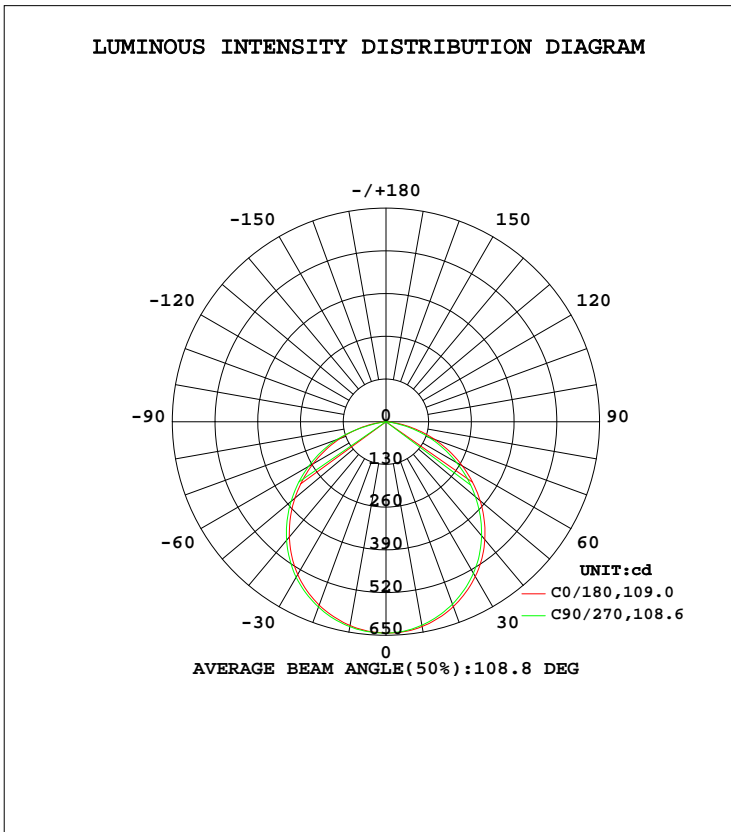


LUMINAIRE PHOTOMETRIC TEST REPORT

Test:U:220.04V I:0.2074A P:24.253W PF:0.5314 Freq:50.01Hz Lamp Flux:1734.21x1 lm		
NAME: LED Downlight	TYPE:LED	WEIGHT:N/A
SPEC.:N/A	DIM.:	SERIAL No.:N/A
MFR.: Futlight Optoelectronics Co.,Ltd	SUR.:	Shielding Angle:N/A

DATA OF LAMP		PHOTOMETRIC DATA			
MODEL	FUT060	Imax(cd)	643.0	S/MH(C0/180)	1.24
NOMINAL POWER(W)	25	LOR(%)	100.0	S/MH(C90/270)	1.26
RATED VOLTAGE(V)	100-240	TOTAL FLUX(lm)	1734.2	$\eta$ UP, DN(C0-180)	0.0,49.1
NOMINAL FLUX(lm)	1734.21	CIE CLASS	DIRECT	$\eta$ UP, DN(C180-360)	0.1,50.8
LAMPS INSIDE	1	$\eta$ up(%)	0.1	CIBSE SHR NOM	1.25
TEST VOLTAGE(V)	220	$\eta$ 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:2019-12-26

$\gamma$  Range: 0 - 180DEG  
 $\gamma$  Interval: 1.0DEG  
 Test System:EVERFINE GO-R5000\_V2 SYSTEM V2.0.366  
 Humidity:56.4%  
 Test Distance:26.000m [K=1.3890]  
 Remarks:

ZONAL FLUX DIAGRAM

ZONAL FLUX DIAGRAM:

γ	C0	C45	C90	C135	C180	C225	C270	C315	γ	Φ zone	Φ total	%lum, lamp
10	632.8	630.8	628.5	628.5	629.7	631.9	633.2	633.6	0- 10	60.82	60.82	3.51,3.51
20	598.7	594.6	590.9	589.7	593.8	597.8	600.1	601.1	10- 20	173.9	234.7	13.5,13.5
30	543.6	538.2	532.0	531.1	537.1	543.3	546.6	547.8	20- 30	262.8	497.5	28.7,28.7
40	467.9	460.3	452.4	450.9	457.5	465.9	470.9	472.3	30- 40	314.9	812.4	46.8,46.8
50	373.9	365.3	355.6	353.5	361.8	371.0	377.3	377.8	40- 50	320.9	1133	65.4,65.4
60	268.0	258.3	248.5	246.2	256.8	266.8	272.3	273.7	50- 60	281.4	1415	81.6,81.6
70	157.8	149.0	139.3	137.5	147.7	157.8	160.0	161.5	60- 70	204.3	1619	93.4,93.4
80	51.92	42.62	30.34	34.76	43.98	47.50	27.73	51.29	70- 80	101.1	1720	99.2,99.2
90	0.0145	0.0731	0.0071	0.0048	0	0	0	0	80- 90	12.79	1733	99.9,99.9
100	0	0	0	0	0	0	0	0	90-100	0.0004	1733	99.9,99.9
110	0	0	0	0	0.1448	0.0729	0	0.0014	100-110	0.0039	1733	99.9,99.9
120	0	0	0	0	0.2172	0.2187	0.2200	0.2214	110-120	0.0722	1733	99.9,99.9
130	0	0	0	0	0.2927	0.2187	0.2953	0.2951	120-130	0.1089	1733	99.9,99.9
140	0.0724	0	0.0733	0.0738	0.5780	0.3685	0.5134	0.5165	130-140	0.1478	1733	99.9,99.9
150	0.3607	0.3644	0.3683	0.3689	0.7241	0.7288	0.8792	0.8116	140-150	0.2535	1733	100,100
160	0.4345	0.7263	0.5867	0.5165	0.8689	1.094	1.175	1.181	150-160	0.3192	1734	100,100
170	0.7971	1.307	1.098	1.105	1.159	1.239	1.320	1.254	160-170	0.2731	1734	100,100
180	1.229	1.531	1.247	1.476	1.448	1.166	1.320	1.254	170-180	0.1194	1734	100,100
DEG	LUMINOUS INTENSITY:cd									UNIT:lm		

Conical surface Flux(90deg): 975.04 lm

%lum = 56.2%  
%lamp = 56.2%

Conical surface Flux(120deg): 1414.7 lm

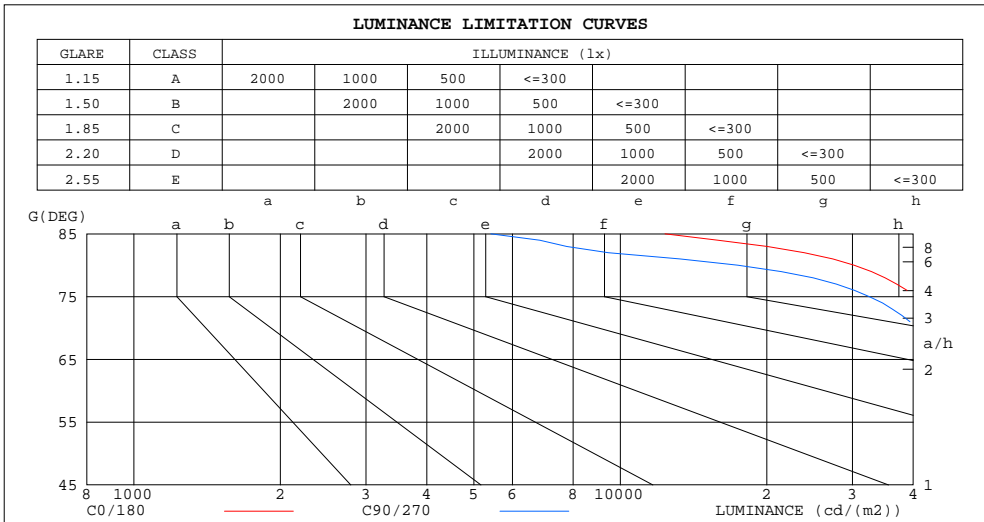
%lum = 81.6%  
%lamp = 81.6%

C Range: 0 - 360DEG  
C Interval: 22.5DEG  
Test Speed: HIGH  
Temperature:24.5DEG  
Operators:William  
Test Date:2019-12-26

γ Range: 0 - 180DEG  
γ Interval: 1.0DEG  
Test System:EVERFINE GO-R5000\_V2 SYSTEM V2.0.366  
Humidity:56.4%  
Test Distance:26.000m [K=1.3890]  
Remarks:

LUMINANCE LIMITATION CURVES

Test:U:220.04V I:0.2074A P:24.253W PF:0.5314 Freq:50.01Hz Lamp Flux:1734.21x1 lm		
NAME: LED Downlight	TYPE:LED	WEIGHT:N/A
SPEC.:N/A	DIM.:	SERIAL No.:N/A
MFR.: Futlight Optoelectronics Co.,Ltd	SUR.:	Shielding Angle:N/A



LUMINANCE cd/(m2)		
G(DEG)	C0/180	C90/270
85	12354	5417
80	30224	17441
75	40421	32467
70	46651	40651
65	50910	45790
60	54177	49604
55	56758	52694
50	58806	55209
45	60440	57250

C Range: 0 - 360DEG  
 C Interval: 22.5DEG  
 Test Speed: HIGH  
 Temperature:24.5DEG  
 Operators:William  
 Test Date:2019-12-26

$\gamma$  Range: 0 - 180DEG  
 $\gamma$  Interval: 1.0DEG  
 Test System:EVERFINE GO-R5000\_V2 SYSTEM V2.0.366  
 Humidity:56.4%  
 Test Distance:26.000m [K=1.3890]  
 Remarks:

WEC AND CCEC

Test:U:220.04V I:0.2074A P:24.253W PF:0.5314 Freq:50.01Hz Lamp Flux:1734.21x1 lm		
NAME: LED Downlight	TYPE:LED	WEIGHT:N/A
SPEC.:N/A	DIM.:	SERIAL No.:N/A
MFR.: Futlight 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	.290	.165	.052	.283	.161	.051	.270	.155	.049	.258	.149	.048	.247	.143	.046	
2.0	.279	.153	.047	.273	.150	.046	.261	.145	.045	.250	.140	.044	.240	.136	.043	
3.0	.261	.139	.042	.255	.137	.041	.245	.133	.040	.236	.129	.040	.227	.126	.039	
4.0	.242	.126	.037	.238	.124	.037	.228	.121	.036	.220	.118	.036	.212	.115	.035	
5.0	.225	.115	.033	.221	.113	.033	.213	.111	.033	.205	.108	.032	.198	.106	.032	
6.0	.209	.105	.030	.206	.104	.030	.198	.102	.030	.192	.100	.029	.185	.098	.029	
7.0	.195	.097	.027	.192	.096	.027	.186	.094	.027	.180	.092	.027	.174	.090	.027	
8.0	.183	.089	.025	.180	.089	.025	.174	.087	.025	.169	.085	.025	.164	.084	.024	
9.0	.172	.083	.023	.169	.082	.023	.164	.081	.023	.159	.080	.023	.154	.078	.023	
10.0	.162	.078	.022	.159	.077	.021	.155	.076	.021	.150	.075	.021	.146	.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	.191	.191	.191	.163	.163	.163	.111	.111	.111	.064	.064	.064	.020	.020	.020	
1.0	.180	.157	.136	.154	.135	.117	.105	.093	.081	.060	.054	.047	.019	.017	.015	
2.0	.171	.133	.100	.147	.114	.087	.100	.079	.060	.058	.046	.035	.019	.015	.012	
3.0	.163	.115	.076	.140	.099	.066	.096	.069	.046	.056	.040	.027	.018	.013	.009	
4.0	.156	.101	.060	.134	.088	.052	.092	.061	.037	.053	.036	.022	.017	.012	.007	
5.0	.148	.091	.049	.127	.079	.042	.088	.055	.030	.051	.032	.018	.016	.011	.006	
6.0	.141	.083	.040	.122	.072	.035	.084	.050	.025	.049	.029	.015	.016	.010	.005	
7.0	.135	.076	.034	.116	.066	.030	.080	.046	.021	.047	.027	.013	.015	.009	.004	
8.0	.128	.070	.030	.111	.061	.026	.076	.043	.018	.044	.025	.011	.014	.008	.004	
9.0	.122	.065	.026	.105	.056	.023	.073	.040	.016	.043	.023	.010	.014	.008	.003	
10.0	.117	.061	.023	.101	.053	.020	.070	.037	.014	.041	.022	.009	.013	.007	.003	

C Range: 0 - 360DEG  
 C Interval: 22.5DEG  
 Test Speed: HIGH  
 Temperature:24.5DEG  
 Operators:William  
 Test Date:2019-12-26

γ Range: 0 - 180DEG  
 γ Interval: 1.0DEG  
 Test System:EVERFINE GO-R5000\_V2 SYSTEM V2.0.366  
 Humidity:56.4%  
 Test Distance:26.000m [K=1.3890]  
 Remarks:

UGR(Unified Glare Rating) Table

Test:U:220.04V I:0.2074A P:24.253W PF:0.5314 Freq:50.01Hz Lamp Flux:1734.2lx1 lm										
NAME: LED Downlight					TYPE:LED			WEIGHT:N/A		
SPEC.:N/A					DIM.:			SERIAL No.:N/A		
MFR.: Futlight 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	26.9	28.4	27.2	28.6	28.8	26.6	28.1	26.9	28.3	28.5
3H	28.3	29.7	28.6	29.9	30.1	27.8	29.2	28.1	29.4	29.7
4H	28.8	30.1	29.1	30.3	30.6	28.2	29.5	28.5	29.8	30.0
6H	29.0	30.3	29.4	30.5	30.8	28.3	29.6	28.7	29.8	30.1
8H	29.1	30.3	29.4	30.5	30.8	28.3	29.5	28.7	29.8	30.1
12H	29.0	30.2	29.4	30.5	30.8	28.3	29.4	28.6	29.7	30.0
4H 2H	27.4	28.7	27.7	29.0	29.2	27.2	28.5	27.5	28.7	29.0
3H	29.0	30.1	29.3	30.4	30.7	28.6	29.7	28.9	30.0	30.3
4H	29.6	30.6	29.9	30.9	31.3	29.1	30.1	29.4	30.4	30.8
6H	29.9	30.8	30.3	31.2	31.6	29.3	30.2	29.7	30.5	30.9
8H	30.0	30.8	30.4	31.2	31.6	29.2	30.1	29.7	30.5	30.8
12H	30.0	30.7	30.4	31.1	31.5	29.2	30.0	29.6	30.4	30.8
8H 4H	29.7	30.6	30.1	30.9	31.3	29.3	30.1	29.7	30.5	30.9
6H	30.2	30.9	30.6	31.3	31.7	29.5	30.2	30.0	30.6	31.1
8H	30.3	30.9	30.7	31.3	31.7	29.5	30.1	30.0	30.6	31.0
12H	30.3	30.8	30.7	31.2	31.7	29.5	30.0	30.0	30.5	31.0
12H 4H	29.7	30.5	30.1	30.9	31.3	29.3	30.0	29.7	30.4	30.8
6H	30.2	30.8	30.6	31.2	31.6	29.5	30.2	30.0	30.6	31.0
8H	30.3	30.8	30.7	31.2	31.7	29.5	30.1	30.0	30.5	31.0
Variations with the observer position at spacings:										
S = 1.0H	+ 0.2 / - 0.2					+ 0.2 / - 0.3				
1.5H	+ 0.2 / - 0.3					+ 0.2 / - 0.4				
2.0H	+ 0.3 / - 0.3					+ 0.3 / - 0.4				

CIE Pub.117, 1734 lm Total Lamp Luminous Flux Corrected ( $8\log(F/F_0) = 1.9$ )

C Range: 0 - 360DEG  
 C Interval: 22.5DEG  
 Test Speed: HIGH  
 Temperature:24.5DEG  
 Operators:William  
 Test Date:2019-12-26

$\gamma$  Range: 0 - 180DEG  
 $\gamma$  Interval: 1.0DEG  
 Test System:EVERFINE GO-R5000\_V2 SYSTEM V2.0.366  
 Humidity:56.4%  
 Test Distance:26.000m [K=1.3890]  
 Remarks:

UTILIZATION FACTORS TABLE

Test:U:220.04V I:0.2074A P:24.253W PF:0.5314 Freq:50.01Hz Lamp Flux:1734.21x1 lm		
NAME: LED Downlight	TYPE:LED	WEIGHT:N/A
SPEC.:N/A	DIM.:	SERIAL No.:N/A
MFR.: Futlight Optoelectronics Co.,Ltd	SUR.:	Shielding Angle:N/A

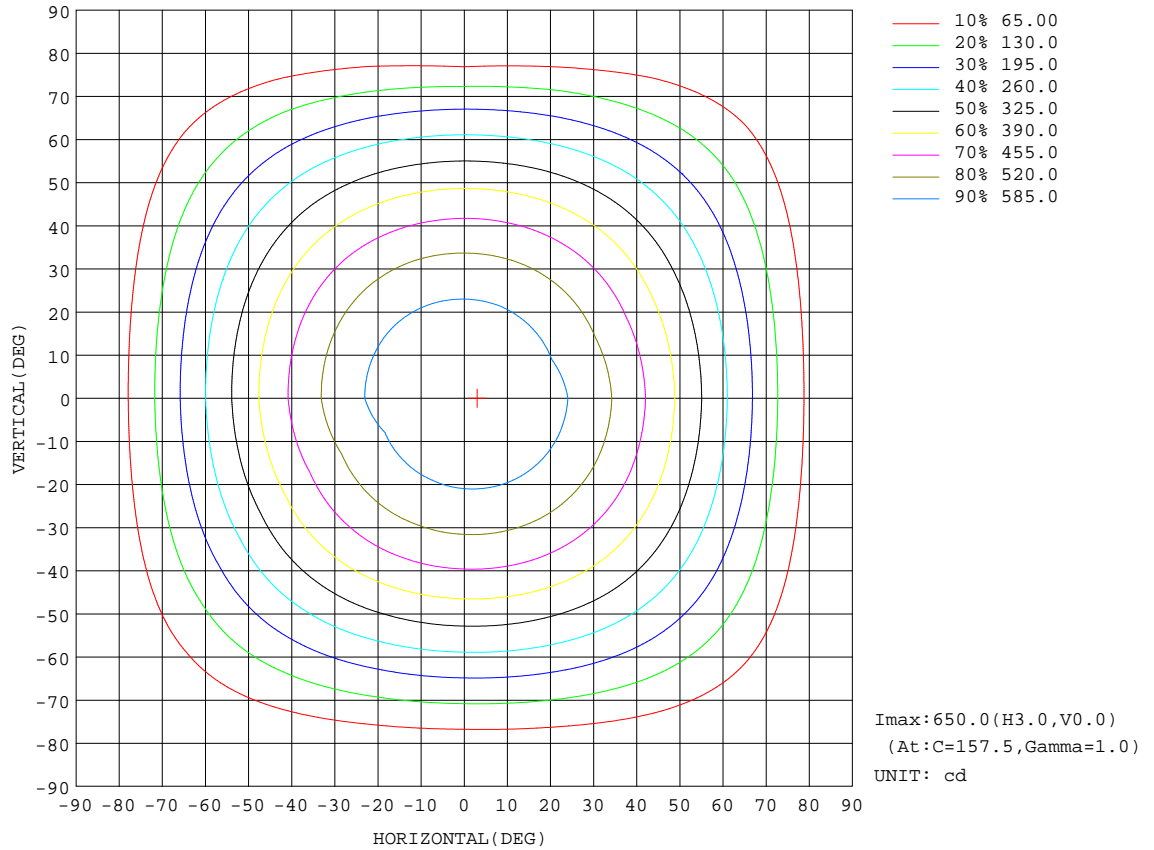
REFLECTANCE										
Ceiling	0.8	0.8	0.8	0.7	0.7	0.7	0.5	0.5	0.5	0
Walls	0.7	0.5	0.3	0.7	0.5	0.3	0.7	0.5	0.3	0
Working plane	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0
ROOM INDEX	UTILIZATION FACTORS(PERCENT) $k(RI) \times RCR = 5$									
k = 0.60	59	47	40	58	47	40	57	47	40	34
0.80	69	57	50	68	57	50	66	56	50	43
1.00	77	67	59	76	66	59	74	67	59	52
1.25	84	74	67	83	74	67	80	72	66	59
1.50	89	80	73	88	79	73	85	77	72	64
2.00	96	88	82	94	87	81	91	85	80	72
2.50	100	93	87	98	91	86	94	89	84	76
3.00	103	97	92	101	95	90	97	92	88	80
4.00	107	102	97	105	100	96	101	97	93	85
5.00	109	105	101	107	103	100	103	99	96	87
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:2019-12-26

$\gamma$  Range: 0 - 180DEG  
 $\gamma$  Interval: 1.0DEG  
 Test System:EVERFINE GO-R5000\_V2 SYSTEM V2.0.366  
 Humidity:56.4%  
 Test Distance:26.000m [K=1.3890]  
 Remarks:

ISOCANDELA DIAGRAM

Test:U:220.04V I:0.2074A P:24.253W PF:0.5314 Freq:50.01Hz Lamp Flux:1734.21x1 lm		
NAME: LED Downlight	TYPE:LED	WEIGHT:N/A
SPEC.:N/A	DIM.:	SERIAL No.:N/A
MFR.: Futlight Optoelectronics Co.,Ltd	SUR.:	Shielding Angle:N/A

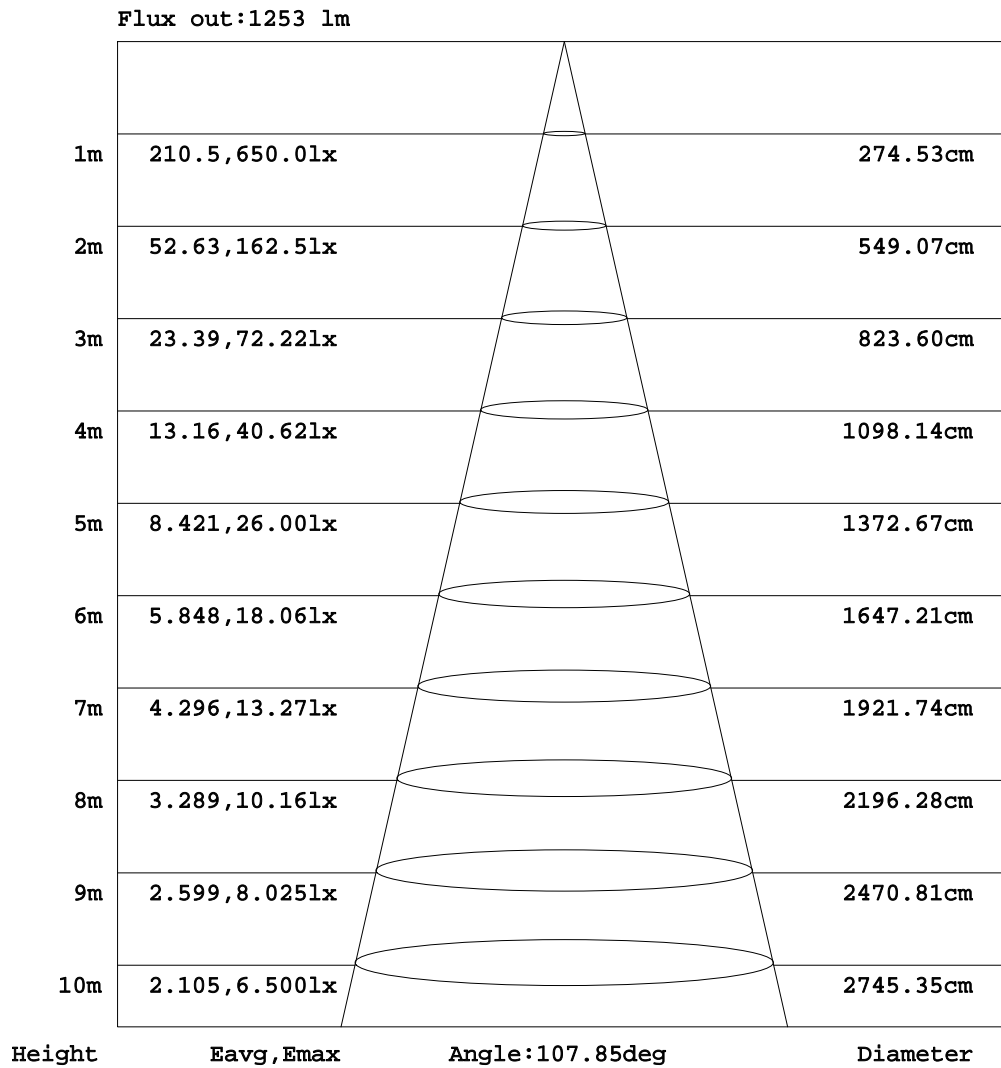


C Range: 0 - 360DEG  
 C Interval: 22.5DEG  
 Test Speed: HIGH  
 Temperature: 24.5DEG  
 Operators: William  
 Test Date: 2019-12-26

γ Range: 0 - 180DEG  
 γ Interval: 1.0DEG  
 Test System: EVERFINE GO-R5000\_V2 SYSTEM V2.0.366  
 Humidity: 56.4%  
 Test Distance: 26.000m [K=1.3890]  
 Remarks:

AAI Figure

Test:U:220.04V I:0.2074A P:24.253W PF:0.5314 Freq:50.01Hz Lamp Flux:1734.21x1 lm		
NAME: LED Downlight	TYPE:LED	WEIGHT:N/A
SPEC.:N/A	DIM.:	SERIAL No.:N/A
MFR.: Futlight Optoelectronics Co.,Ltd	SUR.:	Shielding Angle:N/A



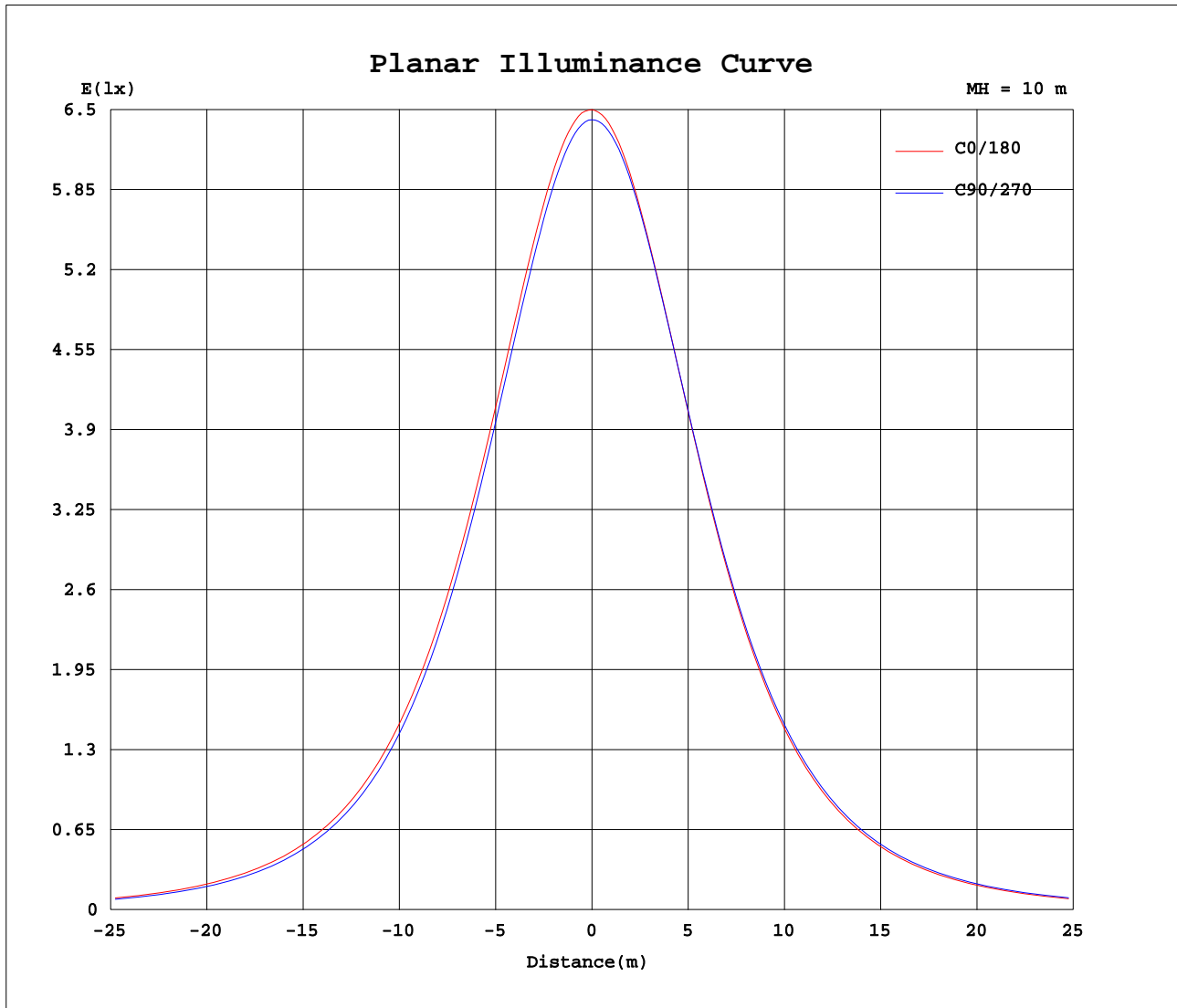
Note: The Curves indicate the illuminated area and the average illumination when the luminaire is at different distance.

C Range: 0 - 360DEG  
 C Interval: 22.5DEG  
 Test Speed: HIGH  
 Temperature: 24.5DEG  
 Operators: William  
 Test Date: 2019-12-26

γ Range: 0 - 180DEG  
 γ Interval: 1.0DEG  
 Test System: EVERFINE GO-R5000\_V2 SYSTEM V2.0.366  
 Humidity: 56.4%  
 Test Distance: 26.000m [K=1.3890]  
 Remarks:



Planar Illuminance Curve



C Range: 0 - 360DEG  
C Interval: 22.5DEG  
Test Speed: HIGH  
Temperature: 24.5DEG  
Operators: William  
Test Date: 2019-12-26

$\gamma$  Range: 0 - 180DEG  
 $\gamma$  Interval: 1.0DEG  
Test System: EVERFINE GO-R5000\_V2 SYSTEM V2.0.366  
Humidity: 56.4%  
Test Distance: 26.000m [K=1.3890]  
Remarks:

LUMINOUS DISTRIBUTION INTENSITY DATA

Test:U:220.04V I:0.2074A P:24.253W PF:0.5314 Freq:50.01Hz Lamp Flux:1734.21x1 lm		
NAME: LED Downlight	TYPE:LED	WEIGHT:N/A
SPEC.:N/A	DIM.:	SERIAL No.:N/A
MFR.: Futlight 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	643	643	643	643	643	643	643	643	643	643	643	643	643	643	643	643			
5	641	641	640	640	639	639	640	639	639	640	640	640	641	641	641	641			
10	633	632	631	629	629	628	628	629	630	631	632	632	633	633	634	634			
15	618	617	615	614	612	612	612	612	614	616	618	618	620	620	621	620			
20	599	597	595	593	591	590	590	591	594	595	598	599	600	601	601	601			
25	573	572	569	566	564	563	563	564	568	570	573	574	576	577	577	577			
30	544	541	538	535	532	531	531	532	537	540	543	545	547	548	548	548			
35	509	506	502	498	495	494	494	495	500	504	507	509	511	513	513	512			
40	468	465	460	456	452	451	451	452	458	462	466	469	471	473	472	471			
45	423	419	415	410	406	404	404	406	411	416	420	423	426	427	427	426			
50	374	370	365	360	356	353	353	356	362	366	371	375	377	378	378	377			
55	322	318	313	307	303	301	301	303	310	315	320	323	326	327	327	326			
60	268	264	258	253	248	246	246	249	257	262	267	270	272	274	274	273			
65	213	209	204	198	194	191	192	194	202	207	212	216	218	219	219	218			
70	158	154	149	144	139	137	138	140	148	153	158	161	160	163	161	163			
75	103	99.8	95.1	88.7	84.2	83.3	84.8	87.3	94.2	98.9	103	98.6	92.0	102	107	109			
80	51.9	48.5	42.6	34.8	30.3	31.1	34.8	37.9	44.0	48.3	47.5	41.3	27.7	39.1	51.3	57.0			
85	10.7	9.05	7.13	5.50	4.73	4.93	5.73	7.08	8.20	8.77	6.97	5.60	3.58	5.34	8.09	12.6			
90	0.01	0.01	0.07	0.00	0.01	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00			
95	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00			
100	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00			
105	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00			
110	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.14	0.00	0.07	0.07	0.00	0.00	0.00	0.00			
115	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.29	0.08	0.15	0.15	0.07	0.15	0.22	0.15			
120	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.22	0.22	0.22	0.15	0.22	0.22	0.22	0.15			
125	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.29	0.29	0.22	0.15	0.22	0.22	0.30	0.22			
130	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.29	0.29	0.22	0.22	0.30	0.30	0.30	0.30			
135	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.36	0.29	0.29	0.29	0.37	0.44	0.37	0.37			
140	0.07	0.07	0.00	0.00	0.07	0.00	0.07	0.00	0.58	0.51	0.37	0.51	0.51	0.59	0.52	0.52			
145	0.29	0.22	0.15	0.22	0.29	0.22	0.15	0.15	0.51	0.58	0.51	0.51	0.66	0.66	0.59	0.74			
150	0.36	0.36	0.36	0.44	0.37	0.37	0.37	0.37	0.72	0.87	0.73	0.80	0.88	0.81	0.81	0.81			
155	0.36	0.58	0.44	0.44	0.44	0.44	0.44	0.37	0.87	1.02	0.95	0.88	1.03	0.96	0.96	0.96			
160	0.43	0.51	0.73	0.51	0.59	0.73	0.52	0.52	0.87	1.09	1.09	0.95	1.18	1.18	1.18	1.11			
165	0.80	0.65	0.80	0.73	0.88	1.03	0.96	0.59	0.87	1.16	1.17	1.10	1.25	1.25	1.25	1.18			
170	0.80	0.87	1.31	1.17	1.10	1.10	1.11	0.96	1.16	1.16	1.24	1.39	1.32	1.25	1.25	1.33			
175	1.09	1.16	1.45	1.32	1.32	1.32	1.40	1.26	1.45	1.16	1.24	1.46	1.32	1.25	1.25	1.41			
180	1.23	1.16	1.53	1.32	1.25	1.25	1.48	1.33	1.45	1.08	1.17	1.53	1.32	1.25	1.25	1.48			

C Range: 0 - 360DEG  
 C Interval: 22.5DEG  
 Test Speed: HIGH  
 Temperature:24.5DEG  
 Operators:William  
 Test Date:2019-12-26

γ Range: 0 - 180DEG  
 γ Interval: 1.0DEG  
 Test System:EVERFINE GO-R5000\_V2 SYSTEM V2.0.366  
 Humidity:56.4%  
 Test Distance:26.000m [K=1.3890]  
 Remarks: