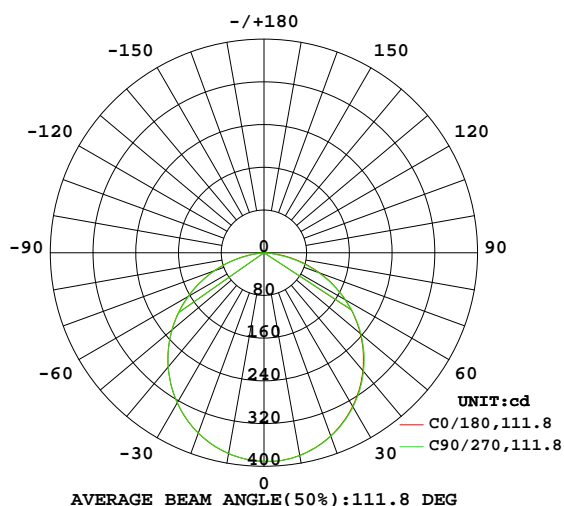


LUMINAIRE PHOTOMETRIC TEST REPORT

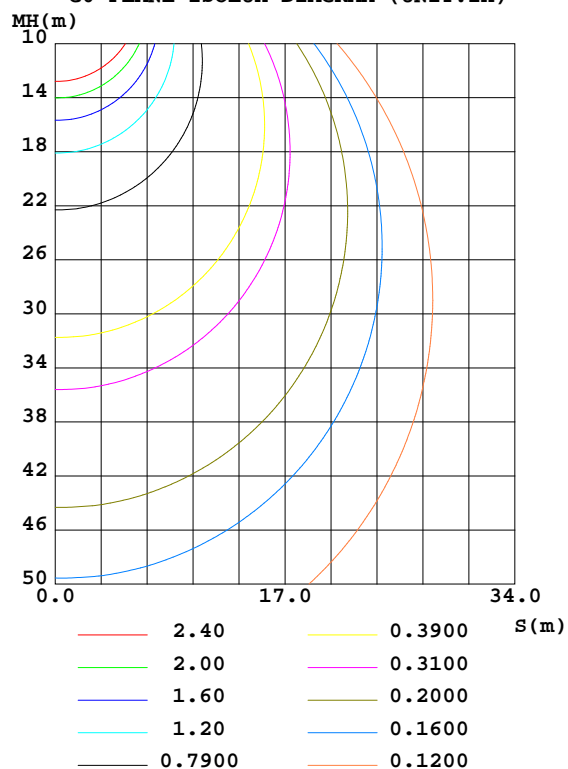
Test:U:220.07V I:0.1642A P:18.260W PF:0.5054 Freq:50.01Hz Lamp Flux:1095.62x1 lm		
NAME: LED Downlight	TYPE:LED	WEIGHT:N/A
SPEC.:N/A	DIM.:	SERIAL No.:N/A
MFR.: Futlight Optoelectronics Co.,Ltd	SUR.:	Shielding Angle:N/A

DATA OF LAMP		PHOTOMETRIC DATA Eff: 60.00 lm/W			
MODEL	FUT065	Imax(cd)	391.0	S/MH(C0/180)	1.24
NOMINAL POWER(W)	18	LOR(%)	100.0	S/MH(C90/270)	1.24
RATED VOLTAGE(V)	100-240	TOTAL FLUX(lm)	1095.6	η UP,DN(C0-180)	0.0,51.0
NOMINAL FLUX(lm)	1095.62	CIE CLASS	DIRECT	η UP,DN(C180-360)	0.0,49.0
LAMPS INSIDE	1	η up(%)	0.0	CIBSE SHR NOM	1.25
TEST VOLTAGE(V)	220	η down(%)	100.0	CIBSE SHR MAX	1.35

LUMINOUS INTENSITY DISTRIBUTION DIAGRAM



C0 PLANE ISOLUX DIAGRAM (UNIT:lx)



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:

ZONAL FLUX DIAGRAM

ZONAL FLUX DIAGRAM:

γ	C0	C45	C90	C135	C180	C225	C270	C315	γ	Φ zone	Φ total	%lum, lamp
10	385.3	386.4	385.7	384.1	382.0	381.2	381.6	383.3	0- 10	36.96	36.96	3.37,3.37
20	365.1	367.1	365.9	362.6	359.5	358.3	359.3	362.3	10- 20	105.7	142.7	13,13
30	332.1	335.2	333.6	328.6	324.7	322.9	324.5	328.4	20- 30	159.9	302.6	27.6,27.6
40	288.2	292.1	290.2	283.9	279.3	277.1	279.1	284.0	30- 40	192.4	495.1	45.2,45.2
50	235.4	239.8	237.2	229.9	225.2	222.5	224.4	230.4	40- 50	199.3	694.3	63.4,63.4
60	175.4	180.0	175.9	169.4	164.3	161.3	163.3	170.1	50- 60	179.5	873.9	79.8,79.8
70	111.3	114.3	108.1	103.6	99.52	96.37	98.63	105.6	60- 70	136.1	1010	92.2,92.2
80	44.59	43.93	36.46	35.13	33.34	28.47	27.45	38.66	70- 80	74.54	1084	99,99
90	0.0008	0	0.0020	0	0	0	0	0	80- 90	10.99	1095	100,100
100	0	0	0	0	0	0	0	0	90-100	0.0000	1095	100,100
110	0	0	0	0	0	0	0	0	100-110	0	1095	100,100
120	0	0	0	0	0	0	0	0	110-120	0	1095	100,100
130	0	0	0	0	0	0	0	0	120-130	0.0006	1095	100,100
140	0	0	0	0	0.1457	0.0731	0.0733	0.0750	130-140	0.0232	1096	100,100
150	0	0	0	0.0747	0.1457	0.2193	0.0733	0.1471	140-150	0.0410	1096	100,100
160	0.0747	0.0731	0.0733	0.0735	0.1457	0.2193	0.0733	0.0735	150-160	0.0416	1096	100,100
170	0.0728	0.0731	0.0733	0.0735	0.1457	0.1462	0.0733	0.0735	160-170	0.0276	1096	100,100
180	0.0728	0.0731	0.0733	0.0735	0.1457	0.1462	0.0733	0.0735	170-180	0.0083	1096	100,100
DEG	LUMINOUS INTENSITY:cd									UNIT:lm		

Conical surface Flux(90deg): 595.54 lm

%lum = 54.4%

%lamp = 54.4%

Conical surface Flux(120deg): 873.89 lm

%lum = 79.8%

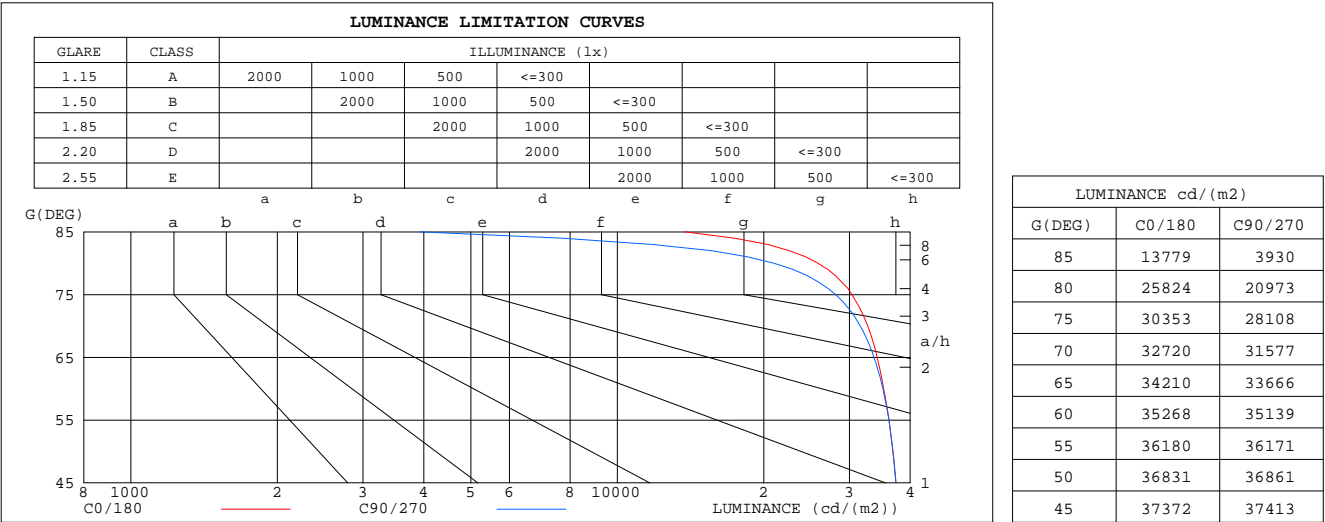
%lamp = 79.8%

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:220.07V I:0.1642A P:18.260W PF:0.5054 Freq:50.01Hz Lamp Flux:1095.62x1 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:

WEC AND CCEC

Test:U:220.07V I:0.1642A P:18.260W PF:0.5054 Freq:50.01Hz Lamp Flux:1095.62x1 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

pcc	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	.300	.171	.054	.293	.167	.053	.280	.160	.051	.267	.154	.050	.256	.149	.048		
2.0	.286	.157	.048	.280	.154	.048	.269	.149	.046	.258	.145	.045	.248	.140	.044		
3.0	.267	.142	.043	.261	.140	.042	.251	.136	.041	.241	.132	.041	.232	.129	.040		
4.0	.247	.128	.038	.242	.127	.037	.233	.124	.037	.224	.121	.036	.217	.118	.036		
5.0	.229	.117	.034	.224	.115	.034	.216	.113	.033	.209	.110	.033	.202	.108	.032		
6.0	.212	.106	.030	.209	.105	.030	.201	.103	.030	.195	.101	.030	.188	.099	.029		
7.0	.198	.098	.028	.194	.097	.028	.188	.095	.027	.182	.093	.027	.176	.092	.027		
8.0	.185	.090	.025	.182	.090	.025	.176	.088	.025	.171	.086	.025	.166	.085	.025		
9.0	.173	.084	.023	.171	.083	.023	.165	.082	.023	.161	.081	.023	.156	.079	.023		
10.0	.163	.078	.022	.161	.078	.022	.156	.076	.022	.152	.075	.021	.147	.074	.021		

pcc	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	.156	.135	.154	.134	.116	.105	.092	.081	.061	.053	.047	.019	.017	.015	
2.0	.172	.132	.099	.147	.114	.085	.101	.079	.060	.058	.046	.035	.019	.015	.011	
3.0	.164	.114	.075	.141	.099	.065	.096	.069	.046	.056	.040	.027	.018	.013	.009	
4.0	.156	.101	.059	.134	.087	.051	.092	.061	.036	.053	.036	.021	.017	.012	.007	
5.0	.149	.091	.048	.128	.078	.041	.088	.055	.029	.051	.032	.017	.016	.010	.006	
6.0	.142	.082	.039	.122	.071	.034	.084	.050	.024	.049	.029	.014	.016	.010	.005	
7.0	.135	.075	.033	.116	.065	.029	.080	.046	.021	.047	.027	.012	.015	.009	.004	
8.0	.129	.070	.029	.111	.060	.025	.077	.042	.018	.045	.025	.011	.014	.008	.004	
9.0	.123	.065	.025	.106	.056	.022	.073	.039	.016	.043	.023	.009	.014	.008	.003	
10.0	.117	.060	.023	.101	.052	.020	.070	.037	.014	.041	.022	.008	.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:220.07V I:0.1642A P:18.260W PF:0.5054 Freq:50.01Hz Lamp Flux:1095.62x1 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	25.6	27.1	25.8	27.3	27.5	25.6	27.1	25.8	27.3	27.5	
	3H	27.1	28.5	27.4	28.8	29.0	27.1	28.5	27.4	28.7	28.9
	4H	27.8	29.1	28.1	29.3	29.6	27.6	29.0	27.9	29.2	29.5
	6H	28.2	29.4	28.5	29.7	30.0	27.9	29.2	28.3	29.5	29.7
	8H	28.3	29.5	28.6	29.8	30.1	28.0	29.2	28.3	29.5	29.8
	12H	28.3	29.5	28.7	29.8	30.1	27.9	29.1	28.3	29.4	29.7
4H	2H	26.2	27.5	26.5	27.8	28.1	26.2	27.5	26.5	27.8	28.0
	3H	28.0	29.1	28.3	29.4	29.7	27.9	29.1	28.3	29.4	29.7
	4H	28.7	29.8	29.1	30.1	30.4	28.6	29.6	29.0	30.0	30.3
	6H	29.3	30.2	29.7	30.6	30.9	29.0	29.9	29.4	30.3	30.7
	8H	29.4	30.3	29.8	30.7	31.0	29.1	29.9	29.5	30.3	30.7
	12H	29.5	30.3	29.9	30.7	31.1	29.0	29.8	29.5	30.2	30.6
8H	4H	29.0	29.9	29.4	30.2	30.6	28.9	29.7	29.3	30.1	30.5
	6H	29.7	30.4	30.1	30.8	31.2	29.4	30.1	29.9	30.5	31.0
	8H	29.9	30.5	30.4	31.0	31.4	29.5	30.2	30.0	30.6	31.0
	12H	30.0	30.5	30.5	31.0	31.5	29.5	30.1	30.0	30.5	31.0
12H	4H	29.0	29.8	29.4	30.2	30.6	28.9	29.7	29.3	30.1	30.5
	6H	29.7	30.4	30.2	30.8	31.2	29.5	30.1	29.9	30.5	31.0
	8H	30.0	30.5	30.4	30.9	31.4	29.6	30.1	30.1	30.6	31.1
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, 1096 lm Total Lamp Luminous Flux Corrected ($8\log(F/F_0) = 0.3$)

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:

UTILIZATION FACTORS TABLE

Test:U:220.07V I:0.1642A P:18.260W PF:0.5054 Freq:50.01Hz Lamp Flux:1095.62x1 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

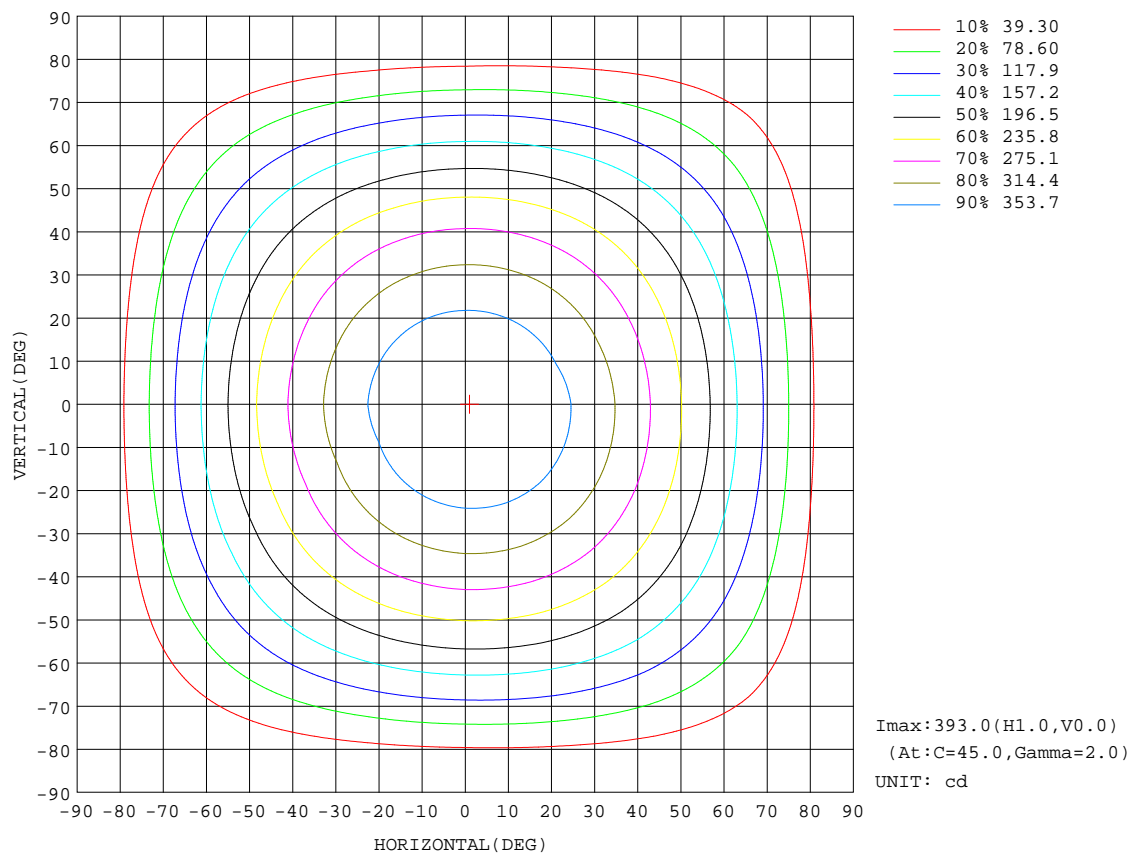
REFLECTANCE										
Ceiling	0.8	0.8	0.8	0.7	0.7	0.7	0.5	0.5	0.5	0
Walls	0.7	0.5	0.3	0.7	0.5	0.3	0.7	0.5	0.3	0
Working plane	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0
ROOM INDEX	UTILIZATION FACTORS(PERCENT) $k(RI) \times RCR = 5$									
k = 0.60	58	46	39	57	46	39	56	46	39	33
0.80	68	56	49	67	56	49	65	55	48	42
1.00	76	65	58	75	65	58	73	66	57	50
1.25	84	73	66	82	72	66	79	71	65	58
1.50	89	79	72	87	78	71	84	76	70	63
2.00	95	87	81	94	86	80	90	84	78	71
2.50	99	92	86	97	90	85	93	88	83	75
3.00	103	96	91	101	94	89	97	91	87	79
4.00	107	101	97	104	99	95	100	96	93	84
5.00	109	104	100	107	102	99	102	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

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:

ISOCANDELA DIAGRAM

Test:U:220.07V I:0.1642A P:18.260W PF:0.5054 Freq:50.01Hz Lamp Flux:1095.62x1 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

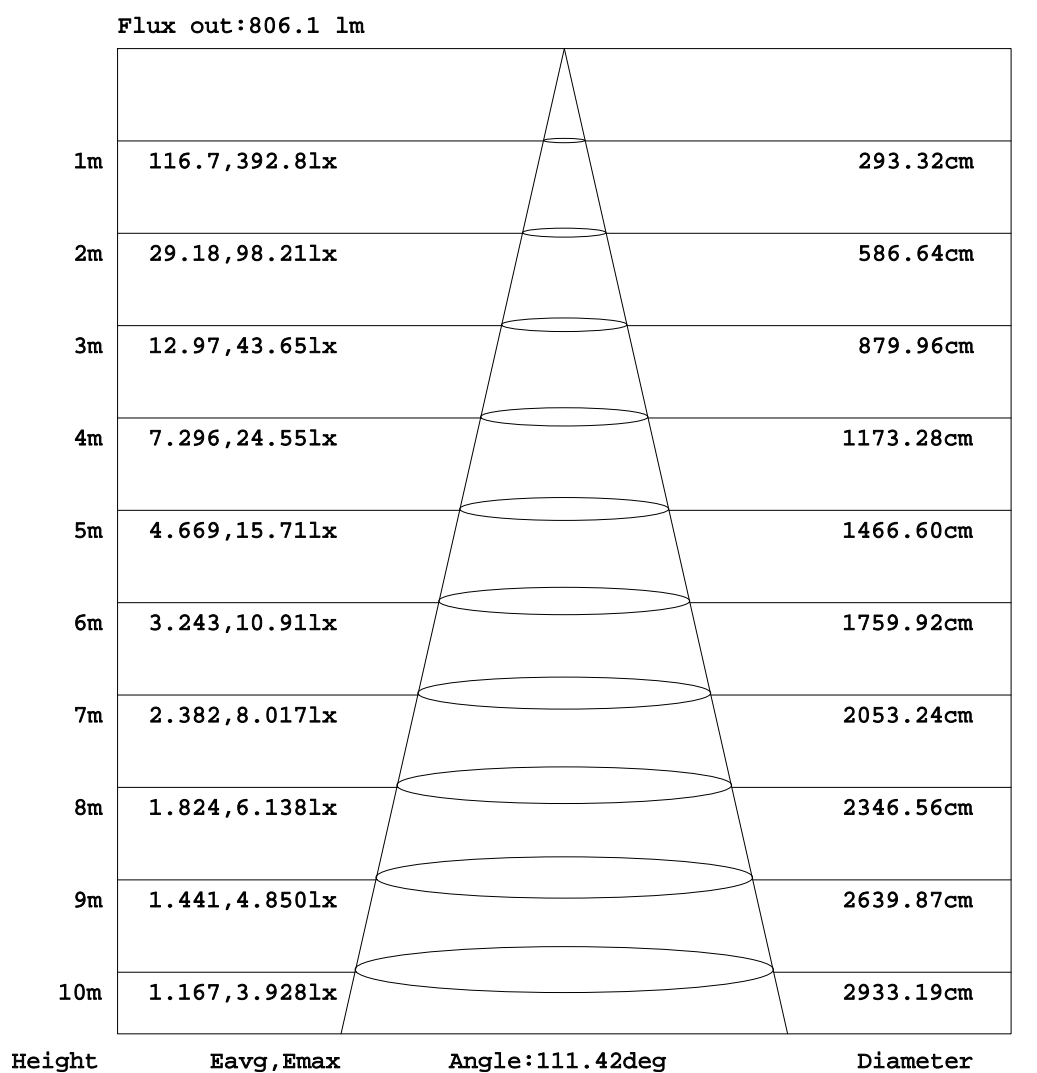


C Range: 0 - 360DEG
C Interval: 22.5DEG
Test Speed: HIGH
Temperature: 24.5DEG
Operators: William
Test Date: 2019-12-26

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:220.07V I:0.1642A P:18.260W PF:0.5054 Freq:50.01Hz Lamp Flux:1095.62x1 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

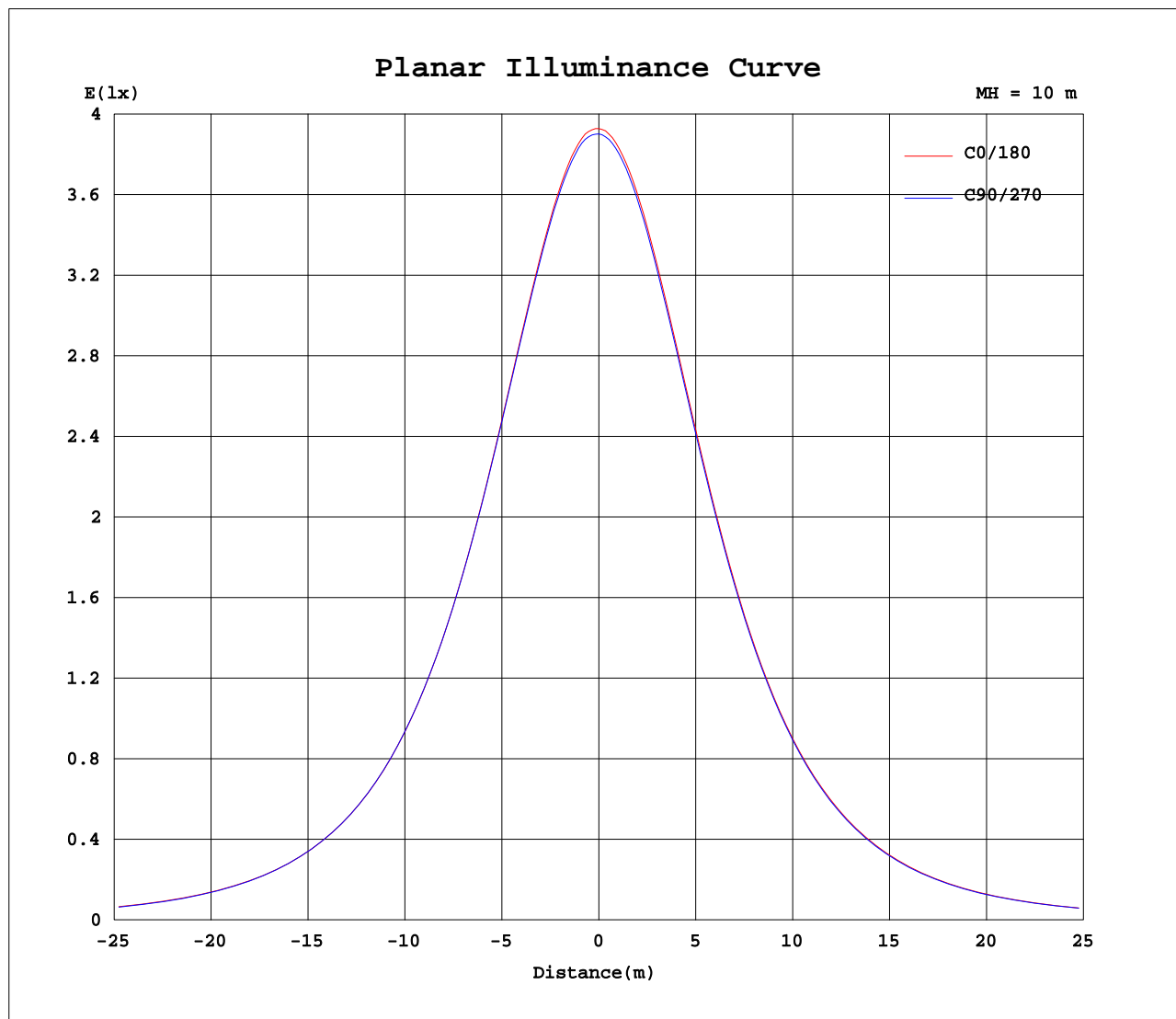


Note:The Curves indicate the illuminated area and the average illumination when the luminaire is at different distance.

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

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:

LUMINOUS DISTRIBUTION INTENSITY DATA

Test:U:220.07V I:0.1642A P:18.260W PF:0.5054 Freq:50.01Hz Lamp Flux:1095.62x1 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	391	391	391	391	391	391	391	391	391	391	391	391	391	391	391	391			
5	390	390	391	391	390	390	389	389	388	388	388	388	388	388	389	389			
10	385	386	386	386	386	385	384	383	382	381	381	381	382	382	383	384			
15	377	378	378	378	377	376	375	373	372	371	371	371	372	373	374	376			
20	365	366	367	367	366	364	363	361	360	358	358	358	359	361	362	364			
25	350	352	353	352	351	349	347	345	344	342	342	342	343	345	347	349			
30	332	334	335	335	334	331	329	326	325	323	323	323	324	326	328	331			
35	311	313	315	315	313	311	307	304	303	301	301	302	303	305	307	310			
40	288	291	292	292	290	287	284	280	279	277	277	278	279	281	284	287			
45	263	265	267	267	265	262	258	254	253	251	251	251	253	255	258	261			
50	235	238	240	239	237	234	230	226	225	223	222	223	224	227	230	234			
55	206	209	211	210	208	204	200	196	195	193	193	193	195	197	201	205			
60	175	179	180	179	176	173	169	165	164	162	161	161	163	166	170	174			
65	144	147	148	146	142	140	137	133	132	130	129	129	131	134	138	142			
70	111	114	114	111	108	106	104	101	99.5	97.3	96.4	96.8	98.6	102	106	110			
75	78.1	81.1	79.7	76.2	72.8	70.8	69.8	67.8	66.7	64.1	62.9	62.5	64.0	67.8	72.9	77.2			
80	44.6	46.7	43.9	39.8	36.5	35.1	35.1	34.1	33.3	30.7	28.5	26.6	27.4	32.1	38.7	44.0			
85	11.9	13.0	8.58	4.41	3.43	3.43	4.05	3.41	2.63	1.29	0.50	0.14	0.36	0.86	5.03	11.1			
90	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			
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	0.00	0.00	0.00	0.00	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	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00			
120	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			
125	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			
130	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	0.07			
135	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.07	0.00	0.07	0.07	0.07	0.07	0.07			
140	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.15	0.07	0.07	0.15	0.07	0.07	0.08	0.15			
145	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.15	0.15	0.15	0.15	0.07	0.07	0.15	0.15			
150	0.00	0.00	0.00	0.00	0.00	0.00	0.07	0.00	0.15	0.15	0.22	0.15	0.07	0.07	0.15	0.15			
155	0.00	0.07	0.07	0.07	0.07	0.00	0.07	0.00	0.15	0.15	0.22	0.15	0.07	0.07	0.15	0.07			
160	0.07	0.15	0.07	0.07	0.07	0.07	0.07	0.00	0.15	0.15	0.22	0.15	0.07	0.07	0.07	0.07			
165	0.07	0.15	0.07	0.07	0.07	0.07	0.07	0.07	0.15	0.15	0.22	0.15	0.07	0.07	0.07	0.07			
170	0.07	0.15	0.07	0.07	0.07	0.07	0.07	0.07	0.15	0.07	0.15	0.07	0.07	0.07	0.07	0.07			
175	0.07	0.15	0.07	0.07	0.07	0.07	0.07	0.07	0.15	0.07	0.15	0.07	0.07	0.07	0.07	0.07			
180	0.07	0.15	0.07	0.07	0.07	0.07	0.07	0.07	0.15	0.07	0.15	0.07	0.07	0.07	0.07	0.07			

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: