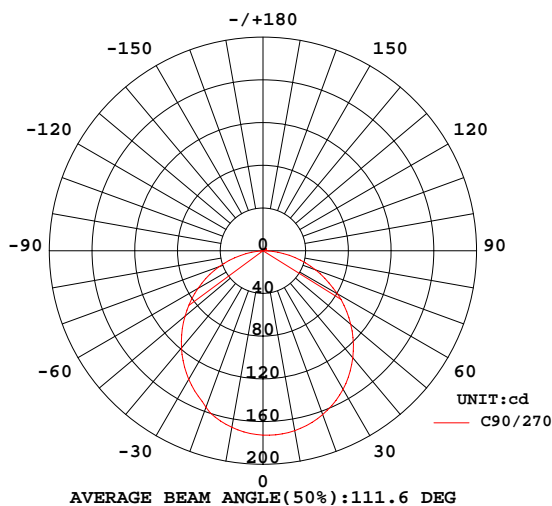


LUMINAIRE PHOTOMETRIC TEST REPORT

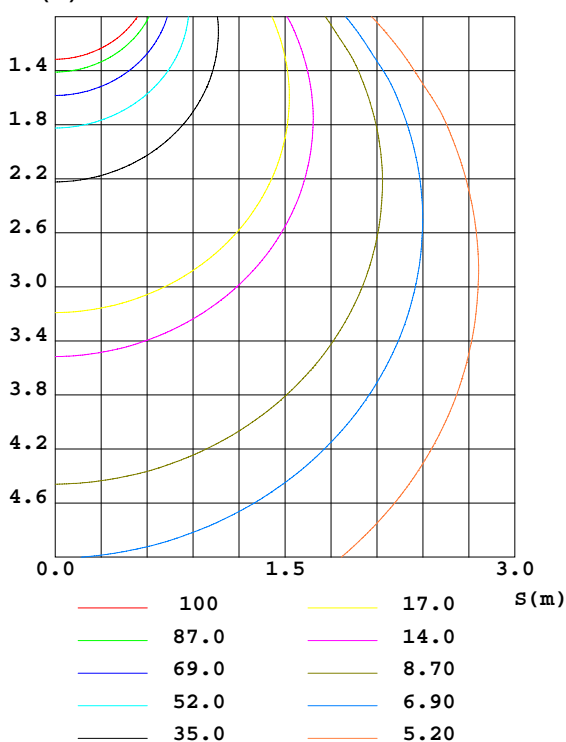
NAME: C-SFR-F23B-VB-24CV-22K-WM-144-80-9W-83.3	WEIGHT:0.132kg/m	
DIM.: 10*10mm	SPEC.:	SERIAL No.:
MFR.: CLEAR	SUR.:10*1000mm	PROTECTION ANGLE:

DATA OF LAMP		PHOTOMETRIC DATA Eff: 57.72 lm/W			
MODEL	3015	I <sub>max</sub> (cd)	173.0	S/MH(C0/180)	1.24
NOMINAL POWER(W)	9	LOR(%)	128.8	S/MH(C90/270)	1.21
RATED VOLTAGE(V)	24	TOTAL FLUX(lm)	502.13	η UP,DN(C0-180)	0.5,61.0
NOMINAL FLUX(lm)	390	CIE CLASS	DIRECT	η UP,DN(C180-360)	1.2,66.2
LAMPS INSIDE	1	η up(%)	1.6	CIBSE SHR NOM	1.25
TEST VOLTAGE(V)	24	η down(%)	127.1	CIBSE SHR MAX	1.35

LUMINOUS INTENSITY DISTRIBUTION DIAGRAM



C0 PLANE ISOLUX DIAGRAM (UNIT:lx)



C Range: 0 - 360DEG  
C Interval: 30.0DEG  
Test Speed: HIGH  
Temperature:21.5DEG  
Operators:Eileen Yang  
Test Date:2020-04-20

γ Range: 0 - 180DEG  
γ Interval: 2.0DEG  
Test System:EVERFINE GO-2000B\_V1 SYSTEM V1.0.257  
Humidity:49%  
Test Distance:6.950m [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	168.5	167.7	167.9	169.3	170.4	171.5	171.1	169.8	0- 10	16.33	16.33	3.25,4.19
20	158.4	156.1	156.0	159.7	162.0	164.0	163.3	160.6	10- 20	46.73	63.06	12.6,16.2
30	142.8	139.5	139.1	143.6	145.6	149.6	149.9	144.9	20- 30	70.35	133.4	26.6,34.2
40	122.9	119.2	118.8	124.0	126.9	131.3	130.9	125.7	30- 40	84.57	218.0	43.4,55.9
50	99.79	95.76	95.42	101.0	104.7	109.0	107.2	102.6	40- 50	87.83	305.8	60.9,78.4
60	73.32	69.80	70.14	75.20	80.06	83.60	80.28	76.04	50- 60	79.88	385.7	76.8,98.9
70	47.30	43.54	43.78	48.98	53.98	56.09	52.42	49.20	60- 70	62.16	447.8	89.2,115
80	20.19	16.12	16.23	21.51	26.61	28.07	25.01	21.27	70- 80	37.69	485.5	96.7,124
90	0.0023	0.0091	0.0260	0.0489	0.7609	2.672	3.851	1.510	80- 90	10.28	495.8	98.7,127
100	0	0.2347	0.3938	0.1212	0	1.104	2.028	1.104	90-100	0.7734	496.6	98.9,127
110	0.0488	0.6285	1.108	0.4197	0.0157	1.278	3.325	1.642	100-110	0.8177	497.4	99.1,128
120	0.2008	0.9283	1.420	0.5238	0.1367	1.629	3.599	2.034	110-120	1.229	498.6	99.3,128
130	0.3476	0.9038	1.074	0.5170	0.2836	1.391	3.032	1.946	120-130	1.117	499.8	99.5,128
140	0.4661	0.9643	1.050	0.5686	0.4252	1.112	2.394	1.677	130-140	0.8744	500.6	99.7,128
150	0.6516	1.008	1.079	0.6695	0.6158	0.9810	1.793	1.462	140-150	0.6597	501.3	99.8,129
160	0.8473	0.9927	0.8974	0.7650	0.7910	0.9979	1.020	1.361	150-160	0.4714	501.8	99.9,129
170	0.9299	0.9219	0.7037	0.8671	0.9094	1.061	0.9469	1.182	160-170	0.2760	502.0	100,129
180	0.9840	0.9798	0.8071	0.9783	0.9943	0.9902	0.7994	0.9796	170-180	0.0908	502.1	100,129
DEG	LUMINOUS INTENSITY:cd									UNIT:lm		

C Range: 0 - 360DEG  
C Interval: 30.0DEG  
Test Speed: HIGH  
Temperature:21.5DEG  
Operators:Eileen Yang  
Test Date:2020-04-20

$\gamma$  Range: 0 - 180DEG  
 $\gamma$  Interval: 2.0DEG  
Test System:EVERFINE GO-2000B\_V1 SYSTEM V1.0.257  
Humidity:49%  
Test Distance:6.950m [K=1.0000]  
Remarks:



WEC AND CCEC

NAME: C-SFR-F23B-VB-24CV-22K-WM-144-80-9W-83.3	TYPE:	WEIGHT:0.132kg/m
DIM.: 10*10mm	SPEC.:	SERIAL No.:
MFR.: CLEAR	SUR.:10*1000mm	PROTECTION ANGLE:

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	.405	.230	.073	.395	.225	.072	.377	.216	.069	.361	.208	.067	.345	.200	.065		
2.0	.380	.208	.064	.371	.204	.063	.355	.198	.061	.341	.191	.060	.327	.185	.058		
3.0	.350	.187	.056	.343	.184	.055	.329	.178	.054	.316	.173	.053	.304	.168	.052		
4.0	.323	.168	.049	.316	.165	.049	.304	.161	.048	.292	.157	.047	.281	.153	.047		
5.0	.298	.152	.044	.292	.150	.044	.281	.146	.043	.270	.143	.042	.261	.139	.042		
6.0	.276	.138	.040	.271	.137	.039	.261	.134	.039	.251	.131	.038	.243	.128	.038		
7.0	.257	.127	.036	.252	.126	.036	.243	.123	.035	.235	.120	.035	.227	.118	.035		
8.0	.240	.117	.033	.235	.116	.033	.227	.114	.032	.220	.111	.032	.213	.109	.032		
9.0	.224	.109	.030	.221	.108	.030	.213	.105	.030	.207	.104	.030	.200	.102	.029		
10.0	.211	.101	.028	.207	.100	.028	.201	.098	.028	.195	.097	.027	.189	.095	.027		

ρ <sub>cc</sub>	80%			70%			50%			30%			10%			0
ρ <sub>w</sub>	50%	30%	10%	50%	30%	10%	50%	30%	10%	50%	30%	10%	50%	30%	10%	0
ρ <sub>fc</sub>	20%			20%			20%			20%			20%			0
RCR	RCR:Room Cavity Ratio						Ceiling Cavity Exitance Coefficients(CCEC)									
0.0	.258	.258	.258	.220	.220	.220	.150	.150	.150	.086	.086	.086	.028	.028	.028	
1.0	.245	.213	.185	.210	.183	.159	.143	.126	.110	.083	.073	.064	.026	.023	.021	
2.0	.235	.182	.138	.201	.157	.119	.138	.109	.083	.079	.063	.049	.025	.020	.016	
3.0	.225	.160	.108	.193	.138	.093	.132	.096	.066	.076	.056	.039	.025	.018	.013	
4.0	.215	.143	.087	.185	.123	.076	.127	.086	.053	.073	.050	.032	.024	.016	.010	
5.0	.205	.129	.073	.176	.112	.064	.122	.078	.045	.070	.046	.027	.023	.015	.009	
6.0	.196	.119	.063	.169	.103	.055	.116	.072	.039	.068	.042	.023	.022	.014	.008	
7.0	.187	.110	.055	.161	.095	.048	.111	.067	.034	.065	.039	.020	.021	.013	.007	
8.0	.179	.102	.050	.154	.089	.043	.107	.062	.031	.062	.037	.018	.020	.012	.006	
9.0	.171	.096	.045	.147	.083	.039	.102	.059	.028	.060	.035	.017	.019	.011	.006	
10.0	.164	.090	.042	.141	.079	.036	.098	.055	.026	.057	.033	.015	.019	.011	.005	

C Range: 0 - 360DEG  
C Interval: 30.0DEG  
Test Speed: HIGH  
Temperature:21.5DEG  
Operators:Eileen Yang  
Test Date:2020-04-20

γ Range: 0 - 180DEG  
γ Interval: 2.0DEG  
Test System:EVERFINE GO-2000B\_V1 SYSTEM V1.0.257  
Humidity:49%  
Test Distance:6.950m [K=1.0000]  
Remarks:

Uncorrected UGR Table

NAME: C-SFR-F23B-VB-24CV-22K-WM-144-80-9W-TYPE:						WEIGHT:0.132kg/m					
DIM.: 10*10mm						SPEC.:			SERIAL No.:		
MFR.: CLEAR						SUR.:10*1000mm			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	22.0	23.5	22.3	23.7	24.0	21.8	23.3	22.1	23.5	23.8	
	3H	23.6	25.0	23.9	25.2	25.5	23.3	24.7	23.6	24.9	25.2
	4H	24.2	25.6	24.6	25.8	26.1	23.9	25.2	24.2	25.5	25.8
	6H	24.7	25.9	25.0	26.2	26.5	24.2	25.5	24.6	25.8	26.1
	8H	24.8	26.0	25.2	26.3	26.6	24.3	25.5	24.6	25.8	26.1
	12H	24.8	26.0	25.2	26.3	26.7	24.3	25.4	24.6	25.7	26.1
4H	2H	22.5	23.9	22.9	24.2	24.4	22.4	23.7	22.7	24.0	24.3
	3H	24.3	25.5	24.7	25.8	26.1	24.1	25.2	24.4	25.5	25.9
	4H	25.1	26.1	25.5	26.5	26.8	24.8	25.8	25.1	26.2	26.5
	6H	25.7	26.6	26.1	27.0	27.4	25.2	26.1	25.6	26.5	26.9
	8H	25.8	26.7	26.2	27.1	27.5	25.3	26.2	25.7	26.6	27.0
	12H	25.9	26.7	26.3	27.1	27.5	25.3	26.1	25.7	26.5	26.9
8H	4H	25.3	26.2	25.7	26.6	27.0	25.0	25.9	25.4	26.3	26.7
	6H	26.0	26.7	26.4	27.1	27.6	25.5	26.3	26.0	26.7	27.2
	8H	26.2	26.9	26.7	27.3	27.8	25.7	26.3	26.1	26.8	27.2
	12H	26.3	26.9	26.8	27.3	27.8	25.7	26.3	26.2	26.7	27.2
12H	4H	25.3	26.1	25.7	26.5	26.9	25.0	25.8	25.4	26.2	26.7
	6H	26.0	26.7	26.5	27.1	27.6	25.6	26.2	26.1	26.7	27.2
	8H	26.2	26.8	26.7	27.3	27.8	25.7	26.3	26.2	26.7	27.3
Variations with the observer position at spacings:											
S = 1.0H	+ 0.1 / - 0.2					+ 0.2 / - 0.2					
1.5H	+ 0.1 / - 0.3					+ 0.2 / - 0.3					
2.0H	+ 0.2 / - 0.2					+ 0.2 / - 0.2					

CIE Pub.117 Corrected 390.0 lm Total Lamp Luminous Flux.(8log(F/F0) = -3.3)

C Range: 0 - 360DEG  
C Interval: 30.0DEG  
Test Speed: HIGH  
Temperature:21.5DEG  
Operators:Eileen Yang  
Test Date:2020-04-20

γ Range: 0 - 180DEG  
γ Interval: 2.0DEG  
Test System:EVERFINE GO-2000B\_V1 SYSTEM V1.0.257  
Humidity:49%  
Test Distance:6.950m [K=1.0000]  
Remarks:

UTILIZATION FACTORS TABLE

NAME: C-SFR-F23B-VB-24CV-22K-WM-144-80-9W-83.3	TYPE:	WEIGHT:0.132kg/m
DIM.: 10*10mm	SPEC.:	SERIAL No.:
MFR.: CLEAR	SUR.:10*1000mm	PROTECTION ANGLE:

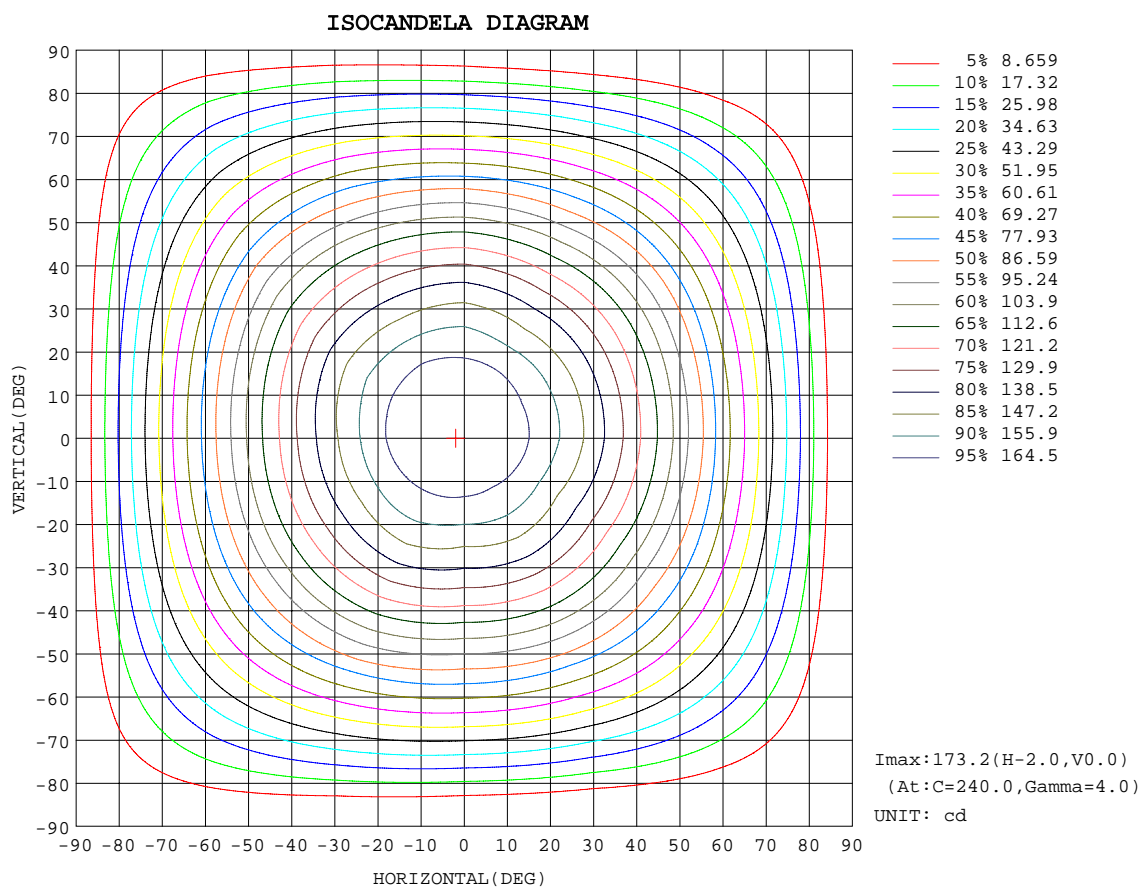
REFLECTANCE										
Ceiling	0.8	0.8	0.8	0.7	0.7	0.7	0.5	0.5	0.5	0
Walls	0.7	0.5	0.3	0.7	0.5	0.3	0.7	0.5	0.3	0
Working plane	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0
ROOM INDEX	UTILIZATION FACTORS(PERCENT)    k(RI) x RCR = 5									
k = 0.60	73	58	49	72	58	49	71	57	49	40
0.80	86	71	61	85	70	61	82	69	61	51
1.00	97	82	73	95	81	72	92	83	72	62
1.25	106	92	83	104	91	82	100	89	81	71
1.50	112	99	90	110	98	90	106	96	88	78
2.00	121	110	102	119	108	100	114	105	98	88
2.50	126	116	108	124	114	107	118	111	104	93
3.00	131	122	114	128	120	113	122	116	110	99
4.00	136	129	122	133	126	120	127	122	117	105
5.00	139	133	127	136	130	125	130	125	121	109
ROOM INDEX	UF(total)									Direct
According to DIN EN 13032-2 2004										
Suspended										
SHRNOM = 1.25										

C Range: 0 - 360DEG  
C Interval: 30.0DEG  
Test Speed: HIGH  
Temperature:21.5DEG  
Operators:Eileen Yang  
Test Date:2020-04-20

$\gamma$  Range: 0 - 180DEG  
 $\gamma$  Interval: 2.0DEG  
Test System:EVERFINE GO-2000B\_V1 SYSTEM V1.0.257  
Humidity:49%  
Test Distance:6.950m [K=1.0000]  
Remarks:

### ISOCANDELA DIAGRAM

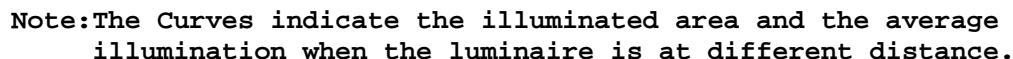
NAME: C-SFR-F23B-VB-24CV-22K-WM-144-80-9W-150ES	TYPE:	WEIGHT:0.132kg/m
DIM.: 10*10mm	SPEC.:	SERIAL No.:
MFR.: CLEAR	SUR.:10*1000mm	PROTECTION ANGLE:



C Range: 0 - 360DEG  
C Interval: 30.0DEG  
Test Speed: HIGH  
Temperature:21.5DEG  
Operators:Eileen Yang  
Test Date:2020-04-20

$\gamma$  Range: 0 - 180DEG  
 $\gamma$  Interval: 2.0DEG  
Test System:EVERFINE GO-2000B\_V1 SYSTEM V1.0.257  
Humidity:49%  
Test Distance:6.950m [K=1.0000]  
Remarks:

NAME: C-SFR-F23B-VB-24CV-22K-WM-144-80-9W-TPES:	WEIGHT:0.132kg/m
DIM.: 10*10mm	SERIAL No.:
MFR.: CLEAR	PROTECTION ANGLE:



```

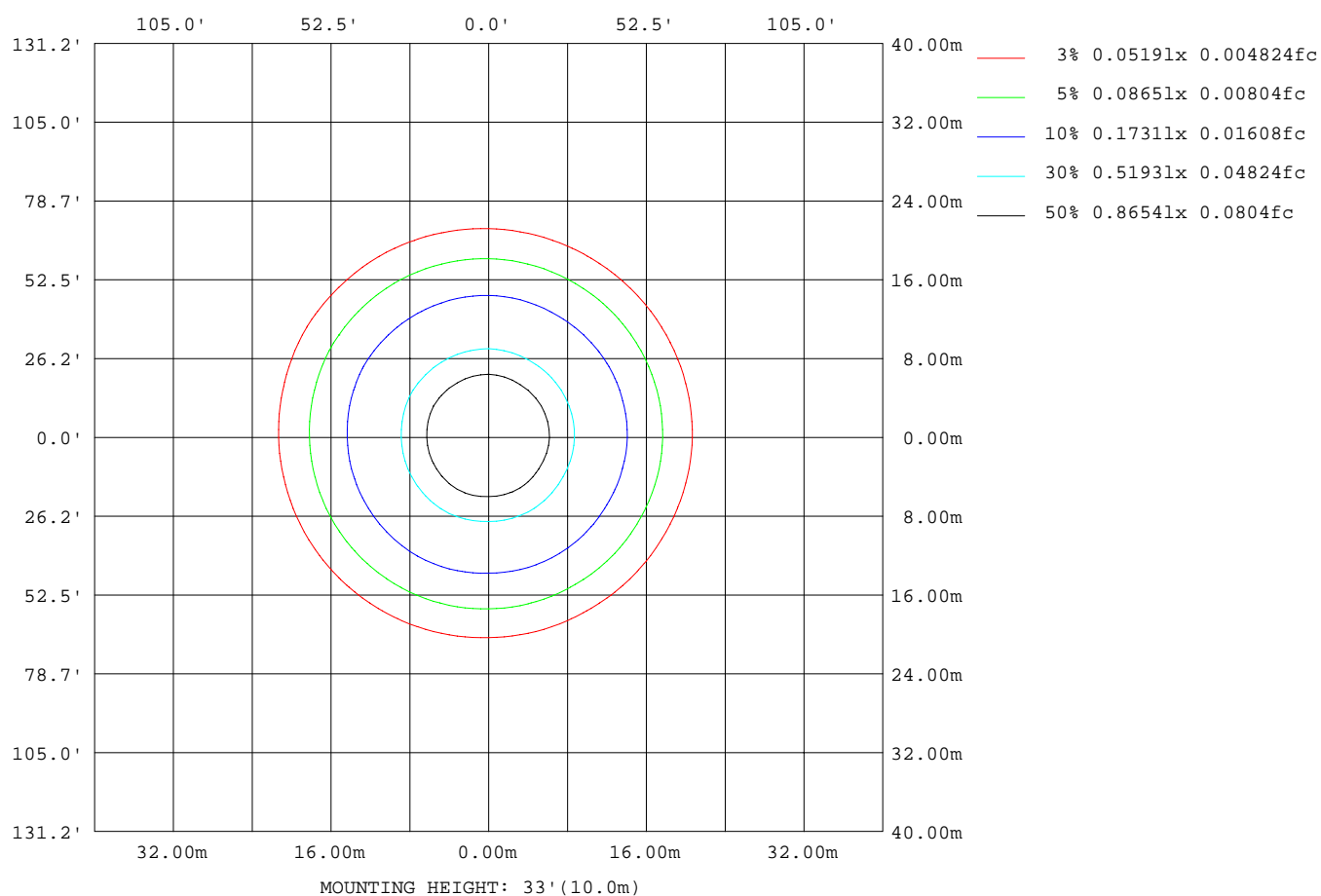
γ Range: 0 - 180DEG
γ Interval: 2.0DEG
Test System:EVERFINE GO-2000B_V1 SYSTEM V1.0.257
Humidity:49%
Test Distance:6.950m [K=1.0000]
Remarks:

```



ISOLUX DIAGRAM

NAME: C-SFR-F23B-VB-24CV-22K-WM-144-80-9W-1000mm	TYPE:	WEIGHT: 0.132kg/m
DIM.: 10*10mm	SPEC.:	SERIAL No.:
MFR.: CLEAR	SUR.: 10*1000mm	PROTECTION ANGLE:



C Range: 0 - 360DEG  
C Interval: 30.0DEG  
Test Speed: HIGH  
Temperature: 21.5DEG  
Operators: Eileen Yang  
Test Date: 2020-04-20

$\gamma$  Range: 0 - 180DEG  
 $\gamma$  Interval: 2.0DEG  
Test System: EVERFINE GO-2000B\_V1 SYSTEM V1.0.257  
Humidity: 49%  
Test Distance: 6.950m [K=1.0000]  
Remarks:

**Average Luminance Table(CIBSE)**

NAME: C-SFR-F23B-VB-24CV-22K-WM-144-80-9W-TYPE:	WEIGHT:0.132kg/m
DIM.: 10*10mm	SPEC.: SERIAL No.:
MFR.: CLEAR	SUR.:10*1000mm PROTECTION ANGLE:

Parameter description for average Luminance	Symbol	Value	Unit
Luminance in Azimuth Plane	Bc	refer Table 2	cd/sq.m.
Intensity at angle Gamma in given azimuth plane	I	from data	cd/klm
Number of lamps	N	1	
Output of each lamp(initial lumens as specified)	F	390	lm
Multiplying factor	K	1	
Luminous area in horizontal plane used in calculations	A	0.01	sq.m.
Angle to the downward vertical from light centre	Gamma	from data	deg

Table 1. Calculation parameters for determination of CIBSE LG3:1996 Average Luminance

G	C plane(deg)																		
deg	0	10	20	30	40	50	60	70	80	90	100	110	120	130	140	150	160	170	180
55	15260	14935	14683	14504	14423	14397	14406	14379	14392	14466	14713	14999	15280	15422	15536	15645	15792	15961	16159
60	14664	14439	14248	14092	13962	13872	13827	13844	13912	14028	14207	14422	14662	14914	15168	15416	15609	15803	16013
65	14308	14034	13801	13609	13448	13335	13278	13295	13373	13512	13727	13986	14275	14574	14878	15173	15423	15659	15889
70	13829	13495	13206	12962	12745	12586	12499	12521	12623	12801	13064	13382	13740	14126	14518	14899	15214	15507	15783
75	13117	12681	12295	11957	11636	11389	11243	11269	11411	11657	12005	12429	12908	13442	13985	14508	14927	15304	15650
80	11625	10982	10400	9879	9355	8939	8682	8734	8965	9347	9829	10423	11114	11959	12830	13664	14297	14845	15324
85	7655	6518	5557	4772	4121	3679	3473	3641	4029	4588	5157	5882	6799	8133	9589	11061	12339	13491	14487

Table 2. Average Luminance(cd/sq.m.) for defined C plane,Gamma angle

CIBSE Category	Gamma (deg)	Average Luminance		Patch Luminance	
		maximum calculated	specified maximum	maximum measured	specified maximum
Category 1	55 to 90	16159	200	---	500
Category 2	65 to 90	15889	200	---	500
Category 3	75 to 90	15650	200	---	500

Table 3. Tabulation of Average and Patch Luminance(cd/sq.m.) for defined CIBSE categories

No match

C Range: 0 - 360DEG  
C Interval: 30.0DEG  
Test Speed: HIGH  
Temperature:21.5DEG  
Operators:Eileen Yang  
Test Date:2020-04-20

γ Range: 0 - 180DEG  
γ Interval: 2.0DEG  
Test System:EVERFINE GO-2000B\_V1 SYSTEM V1.0.257  
Humidity:49%  
Test Distance:6.950m [K=1.0000]  
Remarks:

LUMINOUS DISTRIBUTION INTENSITY DATA

NAME: C-SFR-F23B-VB-24CV-22K-WM-144-80-9W-142-152	WEIGHT: 0.132kg/m
DIM.: 10*10mm	SPEC.: SERIAL No.:
MFR.: CLEAR	SUR.: 10*1000mm PROTECTION ANGLE:

Table--1

UNIT: cd

C( DEG) γ (DEG)	0	30	60	90	120	150	180	210	240	270	300	330							
0	173	173	173	173	173	173	173	173	173	173	173	173							
5	172	171	171	172	172	172	173	173	173	173	172	172							
10	169	168	168	168	169	170	170	171	172	171	170	169							
15	165	164	164	164	165	167	168	169	170	169	168	166							
20	158	156	156	156	159	161	162	164	164	163	162	160							
25	153	149	150	149	153	153	156	159	160	159	154	154							
30	143	139	140	139	143	144	146	150	149	150	145	145							
35	135	131	132	131	136	137	139	143	142	143	138	137							
40	123	119	120	119	123	125	127	132	131	131	126	125							
45	114	110	110	110	114	116	118	123	122	122	117	116							
50	99.8	95.5	96.0	95.4	100	102	105	110	108	107	103	102							
55	89.9	85.6	86.0	85.4	90.1	92.2	95.2	100	98.4	97.0	92.8	92.3							
60	73.3	70.5	69.1	70.1	73.3	77.1	80.1	84.6	82.6	80.3	77.0	75.1							
65	63.0	60.1	58.7	59.7	62.9	66.7	69.8	72.9	71.8	68.8	66.2	64.7							
70	47.3	44.3	42.8	43.8	47.0	51.0	54.0	56.8	55.4	52.4	49.8	48.6							
75	36.6	33.7	31.9	33.0	36.2	40.3	43.2	45.7	44.2	41.5	38.7	37.6							
80	20.2	17.2	15.1	16.2	19.3	23.7	26.6	28.7	27.5	25.0	22.0	20.5							
85	9.19	6.46	4.94	5.98	8.33	12.4	15.4	17.1	16.3	14.1	11.2	9.18							
90	0.00	0.00	0.02	0.03	0.04	0.06	0.76	1.94	3.40	3.85	2.45	0.57							
95	0.00	0.01	0.06	0.10	0.02	0.00	0.00	0.55	2.23	2.50	2.01	0.66							
100	0.00	0.10	0.37	0.39	0.21	0.03	0.00	0.55	1.66	2.03	1.62	0.59							
105	0.00	0.20	0.58	0.68	0.37	0.09	0.00	0.53	1.44	2.26	1.62	0.62							
110	0.05	0.35	0.91	1.11	0.68	0.16	0.02	0.59	1.97	3.33	2.43	0.86							
115	0.10	0.47	1.12	1.32	0.83	0.18	0.06	0.70	2.53	3.74	2.86	1.12							
120	0.20	0.69	1.17	1.42	0.76	0.29	0.14	0.85	2.41	3.60	2.75	1.32							
125	0.26	0.77	1.09	1.26	0.66	0.37	0.21	0.84	2.17	3.36	2.66	1.39							
130	0.35	0.80	1.01	1.07	0.61	0.43	0.28	0.85	1.93	3.03	2.50	1.39							
135	0.39	0.83	0.99	1.06	0.59	0.47	0.34	0.82	1.72	2.76	2.34	1.35							
140	0.47	0.87	1.05	1.05	0.63	0.50	0.43	0.82	1.40	2.39	2.05	1.31							
145	0.54	0.89	1.12	1.08	0.66	0.54	0.49	0.83	1.21	2.13	1.85	1.29							
150	0.65	0.90	1.12	1.08	0.69	0.65	0.62	0.91	1.06	1.79	1.64	1.28							
155	0.73	0.90	1.11	1.03	0.69	0.74	0.69	0.96	1.01	1.61	1.58	1.28							
160	0.85	0.89	1.09	0.90	0.71	0.82	0.79	1.03	0.96	1.02	1.49	1.23							
165	0.88	0.88	1.05	0.74	0.77	0.84	0.84	1.06	1.02	0.99	1.42	1.19							
170	0.93	0.90	0.94	0.70	0.87	0.87	0.91	1.04	1.08	0.95	1.27	1.10							
175	0.96	0.92	0.92	0.72	0.89	0.90	0.95	1.02	1.05	0.88	1.13	1.03							
180	0.98	0.98	0.98	0.81	0.97	0.99	0.99	0.99	0.99	0.80	0.97	0.99							

C Range: 0 - 360DEG  
C Interval: 30.0DEG  
Test Speed: HIGH  
Temperature: 21.5DEG  
Operators: Eileen Yang  
Test Date: 2020-04-20

γ Range: 0 - 180DEG  
γ Interval: 2.0DEG  
Test System: EVERFINE GO-2000B\_V1 SYSTEM V1.0.257  
Humidity: 49%  
Test Distance: 6.950m [K=1.0000]  
Remarks: