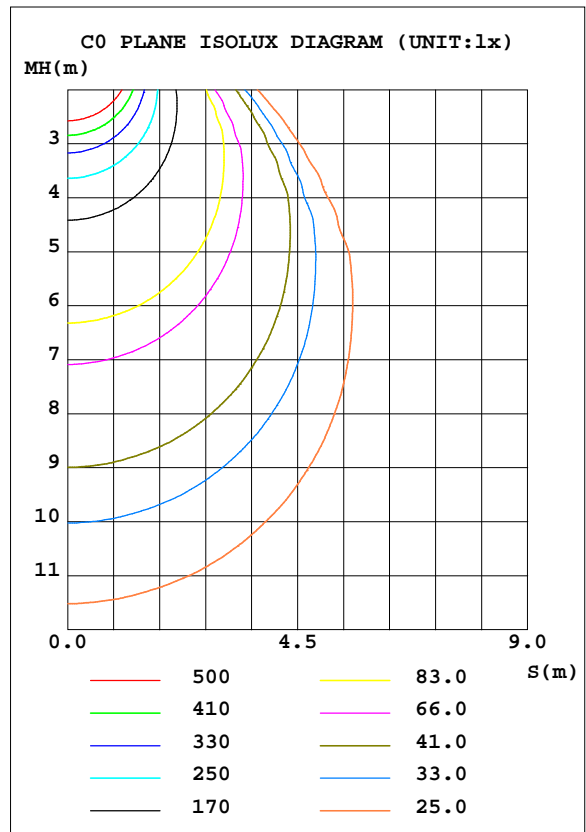
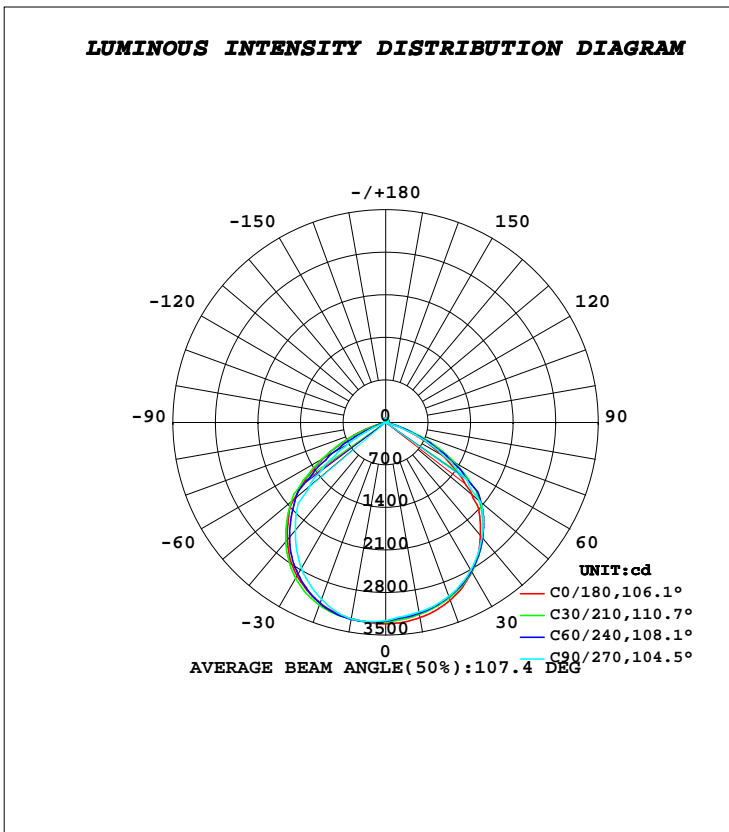


LUMINAIRE PHOTOMETRIC TEST REPORT

Test:U:220.8V I:0.4460A P:96.30W PF:0.9770 Lamp Flux:8384.85x1 lm		
NAME: GFL-100W-5730	TYPE:LED	
DIM.: 350*295MM	SUR.:215*165MM	
MFR.: GRANDOL INDUSTRY LIMITED		

DATA OF LAMP		PHOTOMETRIC DATA Eff: 87.07 lm/W			
MODEL	GFL-100W-5730	I _{max} (cd)	3315	S/MH(C0/180)	1.27
NOMINAL POWER(W)	100	LOR(%)	100.0	S/MH(C90/270)	1.28
RATED VOLTAGE(V)	220	TOTAL FLUX(lm)	8384.8	η UP, DN(C0-180)	1.3,49.8
NOMINAL FLUX(lm)	8384.85	CIE CLASS	DIRECT	η UP, DN(C180-360)	1.5,47.4
LAMPS INSIDE	1	η up(%)	2.8	CIBSE SHR NOM	1.25
TEST VOLTAGE(V)	220.8	η down(%)	97.2	CIBSE SHR MAX	1.35



C Range: 0 - 360DEG
C Interval: 30.0DEG
Test Speed: HIGH
Temperature:25.3DEG
Operators:DAMIN
Test Date:2016-11-03

γ Range: 0 - 180DEG
γ Interval: 1.0DEG
Test System:EVERFINE GO-2000B_V1 SYSTEM V2.0.267
Humidity:65.0%
Test Distance:8.000m [K=0.7063]
Remarks:

ZONAL FLUX DIAGRAM

ZONAL FLUX DIAGRAM:

γ	C0	C45	C90	C135	C180	C225	C270	C315	γ	Φ zone	Φ total	%lum,lamp
10	3260	3197	3169	3149	3276	3286	3278	3236	0- 10	310.0	310.0	3.7,3.7
20	3109	3061	3042	3017	3159	3182	3095	3081	10- 20	896.2	1206	14.4,14.4
30	2841	2829	2805	2800	2916	2924	2775	2800	20- 30	1373	2579	30.8,30.8
40	2427	2482	2466	2469	2519	2509	2313	2385	30- 40	1663	4242	50.6,50.6
50	1850	2035	2039	2033	1977	1982	1640	1880	40- 50	1709	5951	71,71
60	1060	1244	1108	1296	1201	1133	721.3	999.0	50- 60	1381	7331	87.4,87.4
70	320.2	419.3	302.2	457.1	421.6	253.4	33.40	196.5	60- 70	693.9	8025	95.7,95.7
80	17.05	18.94	21.21	20.06	24.02	21.44	20.22	21.26	70- 80	109.3	8134	97,97
90	13.18	12.36	11.77	12.18	17.08	17.75	17.63	18.12	80- 90	18.55	8153	97.2,97.2
100	19.63	17.64	15.40	16.42	22.58	23.35	23.67	23.70	90-100	18.87	8172	97.5,97.5
110	28.02	25.86	23.23	23.97	30.38	30.96	31.26	30.94	100-110	25.44	8197	97.8,97.8
120	36.67	34.52	32.24	32.09	38.61	38.72	39.16	38.23	110-120	31.80	8229	98.1,98.1
130	44.30	42.91	40.94	39.86	45.99	45.68	46.17	44.64	120-130	35.83	8265	98.6,98.6
140	50.64	49.82	47.91	46.11	51.64	50.89	50.66	49.22	130-140	36.04	8301	99,99
150	56.81	56.01	54.13	52.11	56.85	55.78	55.07	53.76	140-150	32.64	8334	99.4,99.4
160	63.24	62.42	60.72	58.59	62.82	61.44	60.71	59.57	150-160	26.70	8360	99.7,99.7
170	69.52	68.37	66.36	64.79	68.85	67.24	66.29	65.30	160-170	18.05	8378	99.9,99.9
180	72.09	70.68	68.96	67.74	72.68	70.67	68.61	67.76	170-180	6.510	8385	100,100
DEG	LUMINOUS INTENSITY:cd									UNIT:lm		

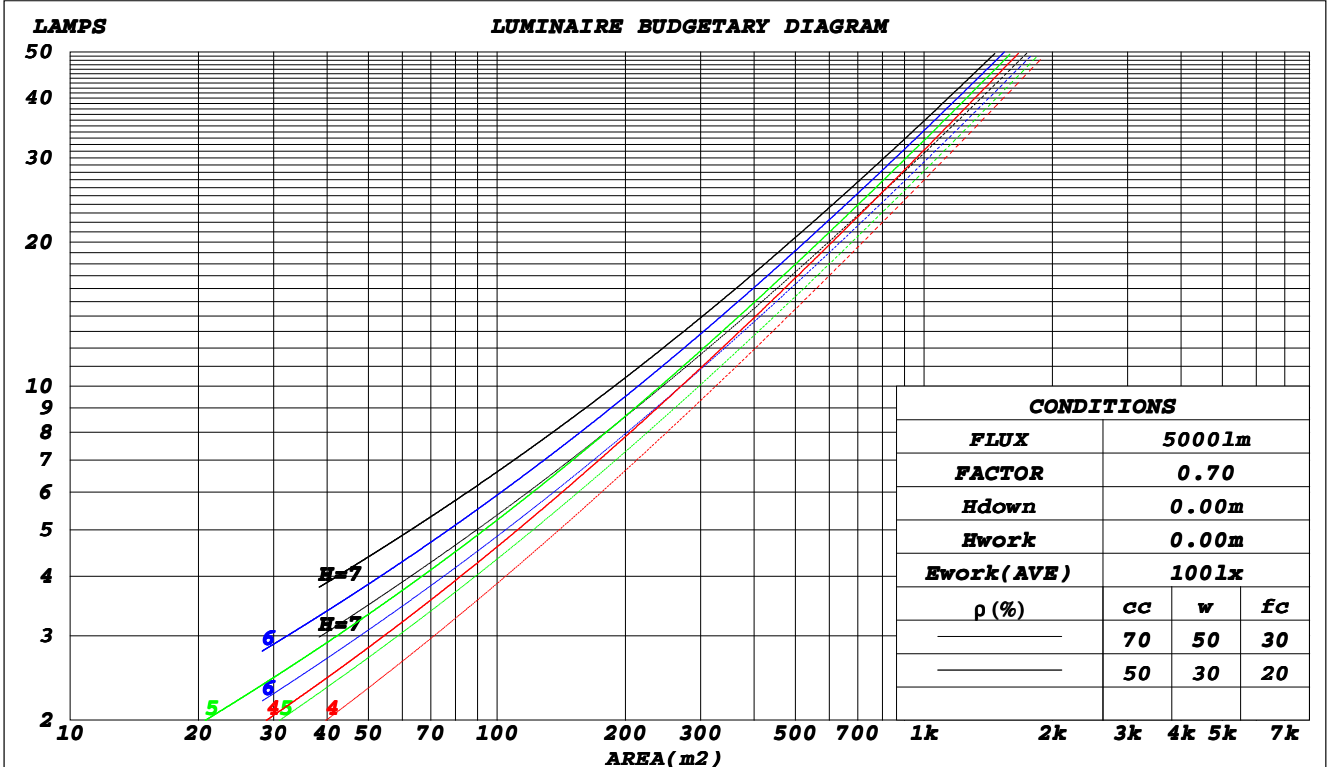
C Range: 0 - 360DEG
C Interval: 30.0DEG
Test Speed: HIGH
Temperature:25.3DEG
Operators:DAMIN
Test Date:2016-11-03

γ Range: 0 - 180DEG
 γ Interval: 1.0DEG
Test System:EVERFINE GO-2000B_V1 SYSTEM V2.0.267
Humidity:65.0%
Test Distance:8.000m [K=0.7063]
Remarks:

CU AND LUMINAIRE BUDGETARY ESTIMATE DIAGRAM

Test:U:220.8V I:0.4460A P:96.30W PF:0.9770 Lamp Flux:8384.85x1 lm		
NAME: GFL-100W-5730	TYPE:LED	
DIM.: 350*295MM	SUR.:215*165MM	
MFR.: GRANDOL INDUSTRY LIMITED		

ρ_{cc}	80%			70%			50%			30%			10%			0														
ρ_w	50%	30%	10%	50%	30%	10%	50%	30%	10%	50%	30%	10%	50%	30%	10%	0														
ρ_{fc}	20%			20%			20%			20%			20%			0														
RCR	RCR:Room Cavity Ratio															Coefficients of Utilization(CU)														
0.0	1.18	1.18	1.18	1.15	1.15	1.15	1.10	1.10	1.10	1.04	1.04	1.04	.00	.00	.00	.97														
1.0	1.06	1.03	.99	1.04	1.00	.97	.99	.96	.94	.95	.93	.91	.91	.89	.87	.85														
2.0	.94	.88	.83	.92	.87	.82	.88	.84	.80	.85	.81	.78	.81	.78	.76	.73														
3.0	.84	.76	.71	.82	.75	.70	.79	.73	.68	.76	.71	.67	.73	.69	.65	.63														
4.0	.75	.67	.61	.73	.66	.60	.70	.64	.59	.68	.62	.58	.65	.61	.57	.55														
5.0	.67	.59	.53	.66	.58	.52	.63	.57	.51	.61	.55	.51	.59	.54	.50	.48														
6.0	.60	.52	.46	.59	.51	.46	.57	.50	.45	.55	.49	.45	.54	.48	.44	.42														
7.0	.55	.47	.41	.54	.46	.41	.52	.45	.40	.51	.44	.40	.49	.43	.39	.37														
8.0	.50	.42	.36	.49	.42	.36	.48	.41	.36	.46	.40	.35	.45	.39	.35	.33														
9.0	.46	.38	.33	.45	.38	.33	.44	.37	.32	.43	.36	.32	.42	.36	.32	.30														
10.0	.42	.35	.30	.42	.34	.30	.41	.34	.29	.40	.33	.29	.38	.33	.29	.27														



C Range: 0 - 360DEG
 C Interval: 30.0DEG
 Test Speed: HIGH
 Temperature:25.3DEG
 Operators:DAMIN
 Test Date:2016-11-03

γ Range: 0 - 180DEG
 γ Interval: 1.0DEG
 Test System:EVERFINE GO-2000B_V1 SYSTEM V2.0.267
 Humidity:65.0%
 Test Distance:8.000m [K=0.7063]
 Remarks:

WEC AND CCEC

Test:U:220.8V I:0.4460A P:96.30W PF:0.9770 Lamp Flux:8384.85x1 lm		
NAME: GFL-100W-5730	TYPE:LED	
DIM.: 350*295MM	SUR.:215*165MM	
MFR.: GRANDOL INDUSTRY LIMITED		

ρ_{cc}	80%			70%			50%			30%			10%			0
ρ_w	50%	30%	10%	50%	30%	10%	50%	30%	10%	50%	30%	10%	50%	30%	10%	0
ρ_{fc}	20%			20%			20%			20%			20%			0
RCR	RCR:Room Cavity Ratio						Wall Exitance Coefficients(WEC)									
0.0																
1.0	.255	.145	.046	.247	.141	.045	.232	.133	.043	.219	.126	.041	.207	.120	.039	
2.0	.250	.137	.042	.243	.134	.041	.230	.128	.040	.219	.123	.038	.208	.118	.037	
3.0	.238	.127	.038	.232	.124	.037	.221	.120	.036	.211	.115	.035	.201	.111	.034	
4.0	.225	.117	.034	.220	.115	.034	.210	.111	.033	.200	.107	.032	.191	.104	.032	
5.0	.212	.108	.031	.207	.106	.031	.198	.103	.030	.189	.100	.030	.181	.097	.029	
6.0	.199	.100	.029	.194	.098	.028	.186	.095	.028	.179	.093	.027	.172	.090	.027	
7.0	.187	.092	.026	.183	.091	.026	.176	.089	.026	.169	.087	.025	.162	.084	.025	
8.0	.176	.086	.024	.172	.085	.024	.166	.083	.024	.160	.081	.023	.154	.079	.023	
9.0	.166	.080	.022	.163	.079	.022	.157	.077	.022	.151	.076	.022	.146	.074	.021	
10.0	.157	.075	.021	.154	.074	.021	.148	.073	.020	.143	.071	.020	.138	.070	.020	

ρ_{cc}	80%			70%			50%			30%			10%			0
ρ_w	50%	30%	10%	50%	30%	10%	50%	30%	10%	50%	30%	10%	50%	30%	10%	0
ρ_{fc}	20%			20%			20%			20%			20%			0
RCR	RCR:Room Cavity Ratio						Ceiling Cavity Exitance Coefficients(CCEC)									
0.0																
1.0	.212	.212	.212	.181	.181	.181	.123	.123	.123	.071	.071	.071	.023	.023	.023	
2.0	.198	.178	.160	.169	.153	.138	.116	.105	.095	.067	.061	.055	.021	.020	.018	
3.0	.188	.153	.124	.161	.132	.108	.110	.091	.075	.064	.053	.044	.020	.017	.014	
4.0	.180	.136	.100	.154	.117	.087	.106	.081	.061	.061	.047	.036	.020	.015	.012	
5.0	.172	.122	.084	.148	.105	.073	.102	.073	.051	.059	.043	.030	.019	.014	.010	
6.0	.166	.112	.072	.142	.096	.062	.098	.067	.044	.057	.040	.026	.018	.013	.009	
7.0	.159	.103	.063	.137	.089	.055	.094	.062	.039	.055	.037	.023	.018	.012	.008	
8.0	.153	.096	.057	.131	.083	.049	.091	.058	.035	.053	.034	.021	.017	.011	.007	
9.0	.147	.090	.052	.126	.078	.045	.087	.055	.032	.051	.032	.019	.016	.011	.006	
10.0	.141	.086	.048	.122	.074	.042	.084	.052	.030	.049	.031	.018	.016	.010	.006	
10.0	.136	.081	.045	.117	.071	.039	.081	.050	.028	.047	.029	.017	.015	.010	.006	

C Range: 0 - 360DEG
 C Interval: 30.0DEG
 Test Speed: HIGH
 Temperature:25.3DEG
 Operators:DAMIN
 Test Date:2016-11-03

γ Range: 0 - 180DEG
 γ Interval: 1.0DEG
 Test System:EVERFINE GO-2000B_V1 SYSTEM V2.0.267
 Humidity:65.0%
 Test Distance:8.000m [K=0.7063]
 Remarks:

Uncorrected UGR Table

Test:U:220.8V I:0.4460A P:96.30W PF:0.9770 Lamp Flux:8384.85x1 lm		
NAME: GFL-100W-5730	TYPE:LED	
DIM.: 350*295MM	SUR.:215*165MM	
MFR.: GRANDOL INDUSTRY LIMITED		

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	28.0	29.3	28.3	29.6	29.8	28.1	29.5	28.4	29.7	29.9
3H	28.4	29.6	28.7	29.9	30.2	28.4	29.7	28.8	30.0	30.2
4H	28.3	29.5	28.7	29.8	30.1	28.3	29.5	28.7	29.8	30.1
6H	28.2	29.3	28.6	29.6	30.0	28.2	29.3	28.6	29.6	30.0
8H	28.2	29.2	28.5	29.6	29.9	28.2	29.2	28.6	29.6	29.9
12H	28.1	29.1	28.5	29.5	29.8	28.1	29.1	28.5	29.5	29.8
4H 2H	28.3	29.5	28.7	29.8	30.1	28.4	29.6	28.8	29.9	30.2
3H	28.9	29.9	29.2	30.2	30.6	28.8	29.8	29.2	30.2	30.5
4H	28.8	29.7	29.2	30.1	30.5	28.7	29.7	29.1	30.0	30.4
6H	28.7	29.5	29.2	29.9	30.3	28.6	29.4	29.1	29.8	30.3
8H	28.7	29.4	29.1	29.8	30.3	28.6	29.3	29.0	29.8	30.2
12H	28.6	29.3	29.1	29.7	30.2	28.6	29.2	29.0	29.7	30.1
8H 4H	28.7	29.5	29.2	29.9	30.3	28.6	29.4	29.1	29.8	30.2
6H	28.6	29.2	29.1	29.7	30.2	28.6	29.2	29.0	29.6	30.1
8H	28.6	29.1	29.1	29.6	30.1	28.5	29.1	29.0	29.5	30.0
12H	28.5	29.0	29.1	29.5	30.0	28.5	28.9	29.0	29.4	30.0
12H 4H	28.7	29.3	29.1	29.8	30.2	28.6	29.3	29.1	29.7	30.2
6H	28.6	29.1	29.1	29.6	30.1	28.5	29.0	29.0	29.5	30.0
8H	28.5	29.0	29.1	29.5	30.0	28.5	28.9	29.0	29.4	30.0
Variations with the observer position at spacings:										
S = 1.0H	+ 0.5 / - 0.6					+ 0.7 / - 0.7				
1.5H	+ 0.6 / - 1.0					+ 0.6 / - 1.0				
2.0H	+ 0.7 / - 1.4					+ 0.9 / - 1.3				

CIE Pub.117 Corrected 8385 lm Total Lamp Luminous Flux.(8log(F/F0) = 7.4)

C Range: 0 - 360DEG
 C Interval: 30.0DEG
 Test Speed: HIGH
 Temperature:25.3DEG
 Operators:DAMIN
 Test Date:2016-11-03

γ Range: 0 - 180DEG
 γ Interval: 1.0DEG
 Test System:EVERFINE GO-2000B_V1 SYSTEM V2.0.267
 Humidity:65.0%
 Test Distance:8.000m [K=0.7063]
 Remarks:

UTILIZATION FACTORS TABLE

Test:U:220.8V I:0.4460A P:96.30W PF:0.9770 Lamp Flux:8384.85x1 lm		
NAME: GFL-100W-5730	TYPE:LED	
DIM.: 350*295MM	SUR.:215*165MM	
MFR.: GRANDOL INDUSTRY LIMITED		

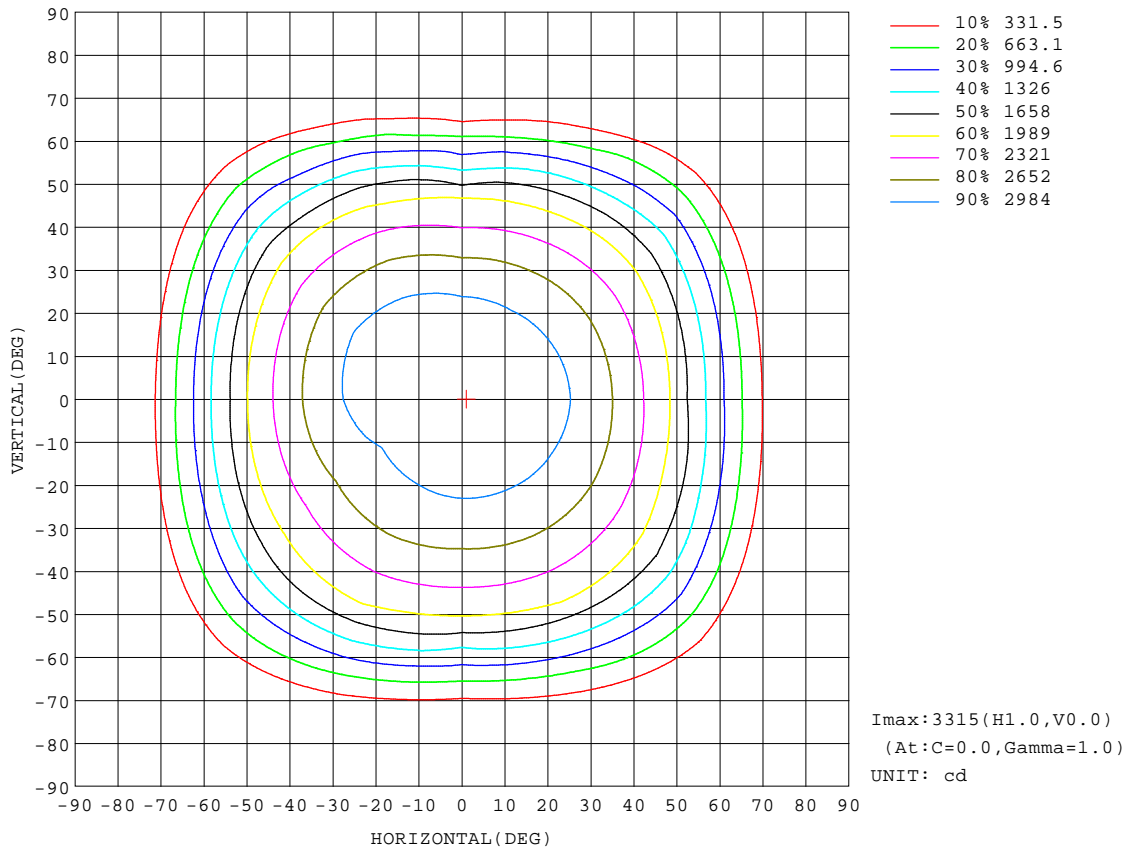
REFLECTANCE										
Ceiling	0.8	0.8	0.8	0.7	0.7	0.7	0.5	0.5	0.5	0
Walls	0.7	0.5	0.3	0.7	0.5	0.3	0.7	0.5	0.3	0
Working plane	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0
ROOM INDEX	UTILIZATION FACTORS(PERCENT) $k(RI) \times RCR = 5$									
k = 0.60	60	49	42	59	49	42	58	48	42	36
0.80	71	60	53	70	60	53	68	59	53	46
1.00	80	70	63	79	69	63	76	70	62	55
1.25	87	78	71	85	77	71	83	75	70	63
1.50	92	83	77	90	82	76	87	80	75	68
2.00	98	91	85	96	90	84	93	87	83	75
2.50	102	95	90	99	93	89	95	90	86	78
3.00	105	99	94	102	97	93	98	94	90	82
4.00	108	103	99	105	101	98	101	97	94	85
5.00	110	106	102	107	104	101	102	100	97	87
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:25.3DEG
Operators:DAMIN
Test Date:2016-11-03

γ Range: 0 - 180DEG
 γ Interval: 1.0DEG
Test System:EVERFINE GO-2000B_V1 SYSTEM V2.0.267
Humidity:65.0%
Test Distance:8.000m [K=0.7063]
Remarks:

ISOCANDELA DIAGRAM

Test:U:220.8V I:0.4460A P:96.30W PF:0.9770 Lamp Flux:8384.85x1 lm		
NAME: GFL-100W-5730	TYPE:LED	
DIM.: 350*295MM	SUR.:215*165MM	
MFR.: GRANDOL INDUSTRY LIMITED		



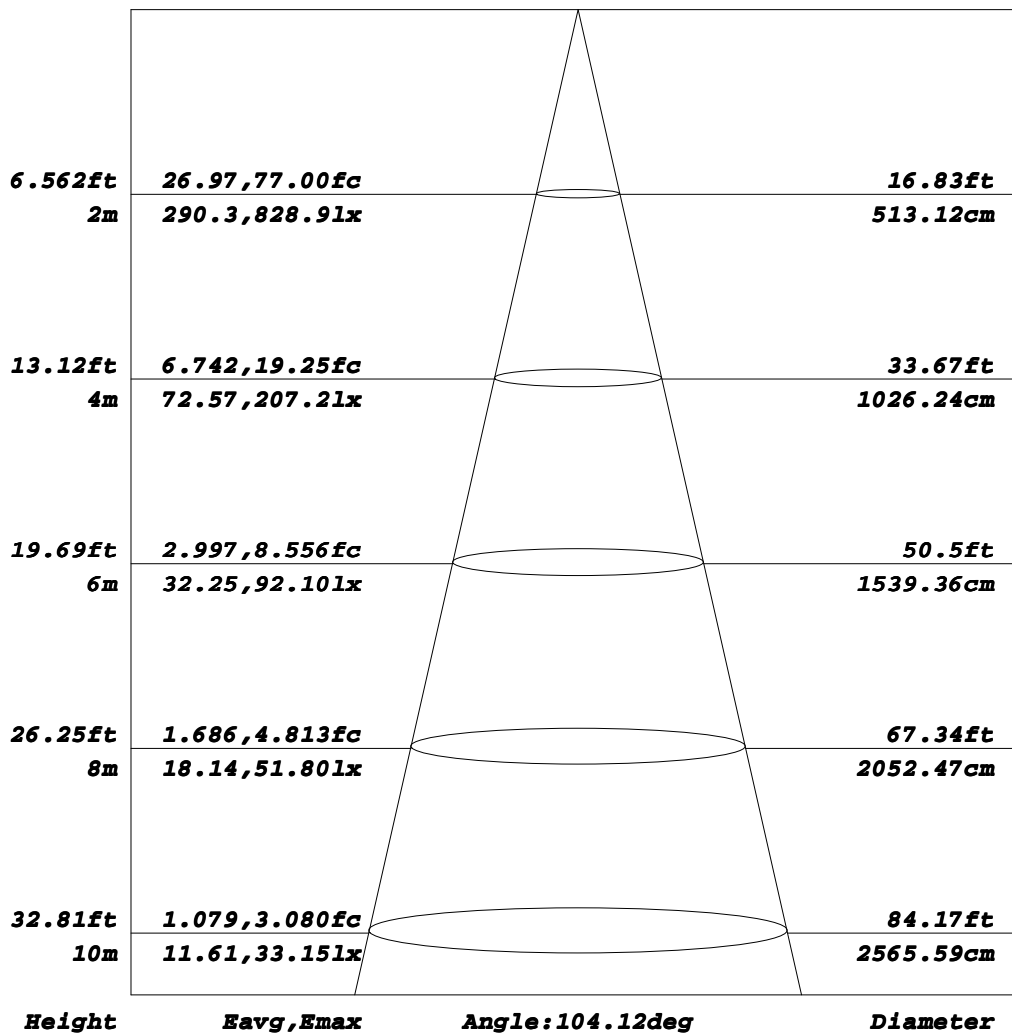
C Range: 0 - 360DEG
C Interval: 30.0DEG
Test Speed: HIGH
Temperature: 25.3DEG
Operators: DAMIN
Test Date: 2016-11-03

γ Range: 0 - 180DEG
γ Interval: 1.0DEG
Test System: EVERFINE GO-2000B_V1 SYSTEM V2.0.267
Humidity: 65.0%
Test Distance: 8.000m [K=0.7063]
Remarks:

AAI Figure

Test:U:220.8V I:0.4460A P:96.30W PF:0.9770 Lamp Flux:8384.85x1 lm		
NAME: GFL-100W-5730	TYPE:LED	
DIM.: 350*295MM	SUR.:215*165MM	
MFR.: GRANDOL INDUSTRY LIMITED		

Flux out:6424 lm



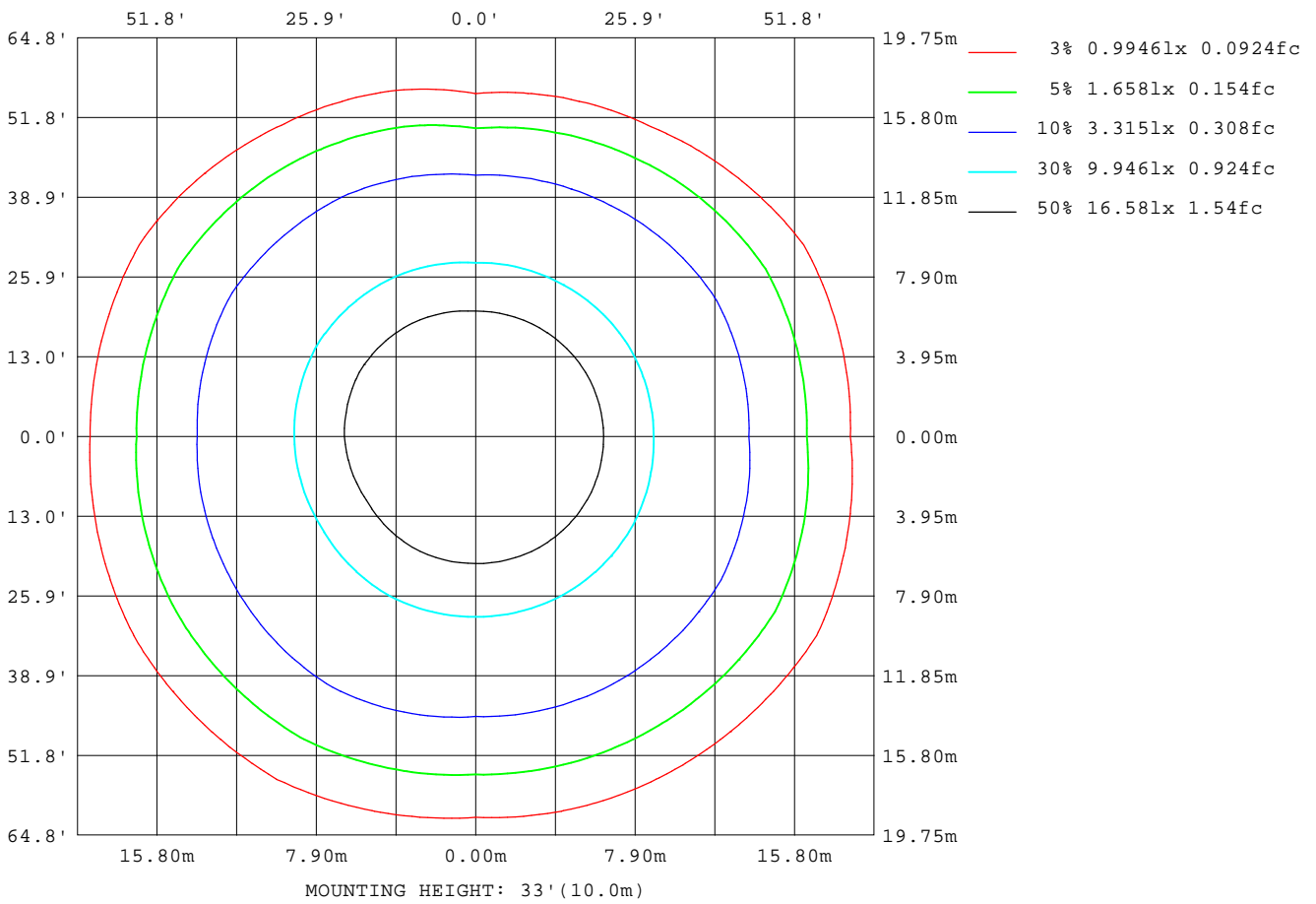
Note: The Curves indicate the illuminated area and the average illumination when the luminaire is at different distance.

C Range: 0 - 360DEG
C Interval: 30.0DEG
Test Speed: HIGH
Temperature: 25.3DEG
Operators: DAMIN
Test Date: 2016-11-03

γ Range: 0 - 180DEG
γ Interval: 1.0DEG
Test System: EVERFINE GO-2000B_V1 SYSTEM V2.0.267
Humidity: 65.0%
Test Distance: 8.000m [K=0.7063]
Remarks:

ISOLUX DIAGRAM

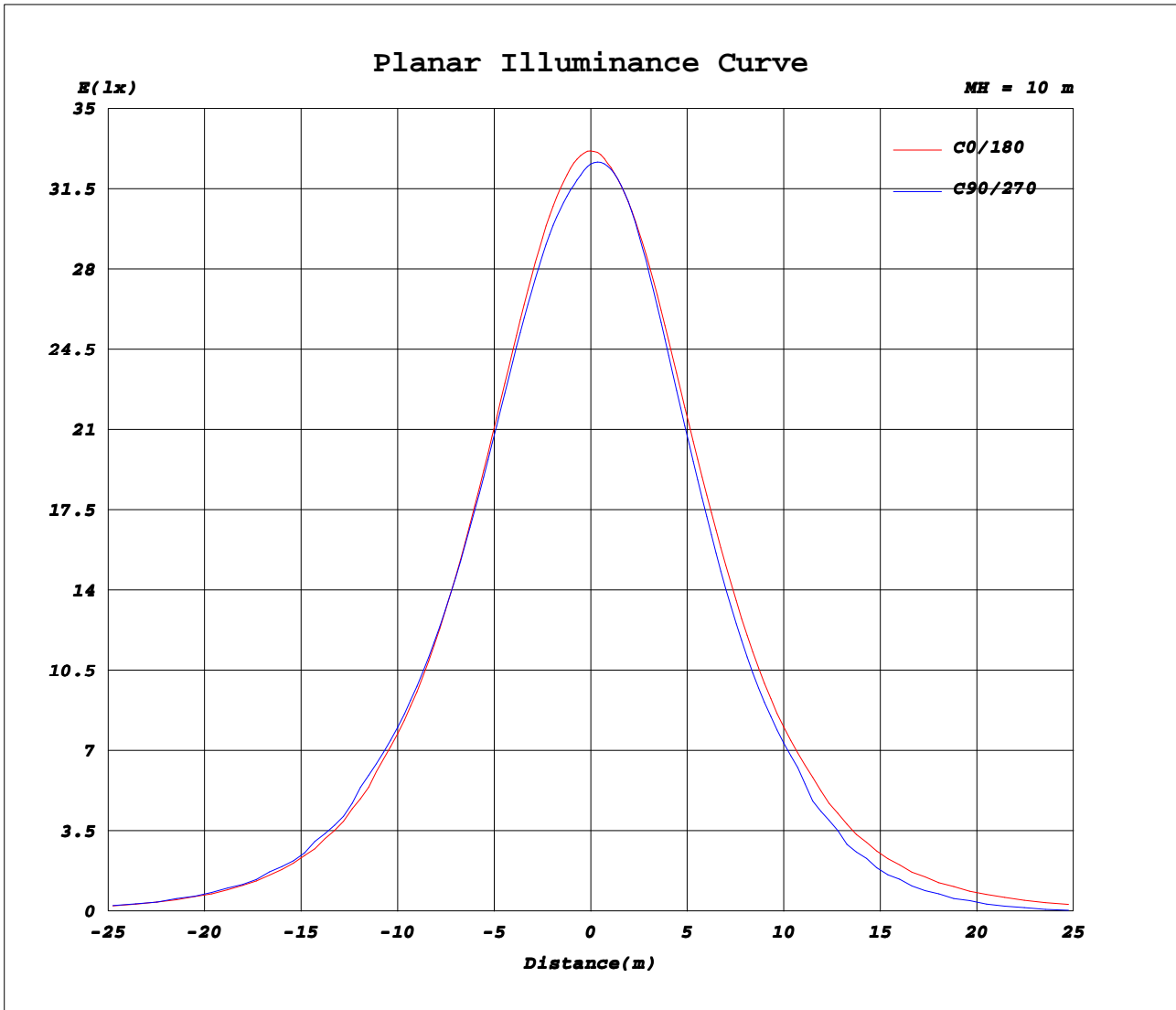
Test:U:220.8V I:0.4460A P:96.30W PF:0.9770 Lamp Flux:8384.85x1 lm		
NAME: GFL-100W-5730	TYPE:LED	
DIM.: 350*295MM	SUR.:215*165MM	
MFR.: GRANDOL INDUSTRY LIMITED		



C Range: 0 - 360DEG
C Interval: 30.0DEG
Test Speed: HIGH
Temperature:25.3DEG
Operators:DAMIN
Test Date:2016-11-03

γ Range: 0 - 180DEG
γ Interval: 1.0DEG
Test System:EVERFINE GO-2000B_V1 SYSTEM V2.0.267
Humidity:65.0%
Test Distance:8.000m [K=0.7063]
Remarks:

Planar Illuminance Curve



C Range: 0 - 360DEG
C Interval: 30.0DEG
Test Speed: HIGH
Temperature: 25.3DEG
Operators: DAMIN
Test Date: 2016-11-03

γ Range: 0 - 180DEG
γ Interval: 1.0DEG
Test System: EVERFINE GO-2000B_V1 SYSTEM V2.0.267
Humidity: 65.0%
Test Distance: 8.000m [K=0.7063]
Remarks:

LUMINOUS DISTRIBUTION INTENSITY DATA

Test:U:220.8V I:0.4460A P:96.30W PF:0.9770 Lamp Flux:8384.85x1 lm		
NAME: GFL-100W-5730	TYPE:LED	
DIM.: 350*295MM	SUR.:215*165MM	
MFR.: GRANDOL INDUSTRY LIMITED		

Table--1

UNIT: cd

C (DEG) \ γ (DEG)	0	30	60	90	120	150	180	210	240	270	300	330							
0	3315	3286	3269	3258	3249	3247	3315	3286	3269	3258	3249	3247							
5	3301	3252	3226	3203	3192	3205	3300	3296	3296	3287	3276	3252							
10	3260	3208	3186	3169	3140	3158	3276	3283	3288	3278	3255	3216							
15	3200	3149	3129	3119	3088	3097	3237	3258	3249	3212	3186	3166							
20	3109	3070	3051	3042	3020	3014	3159	3198	3166	3095	3075	3087							
25	2992	2966	2952	2938	2928	2912	3052	3101	3043	2948	2942	2969							
30	2841	2834	2824	2805	2812	2788	2916	2964	2885	2775	2781	2819							
35	2652	2674	2667	2644	2662	2636	2745	2779	2697	2556	2588	2635							
40	2427	2481	2483	2466	2487	2451	2519	2557	2461	2313	2351	2420							
45	2190	2258	2284	2270	2288	2229	2273	2302	2196	2077	2096	2177							
50	1850	2018	2052	2039	2073	1993	1977	2032	1932	1640	1846	1914							
55	1446	1679	1634	1614	1783	1665	1593	1661	1471	1223	1386	1549							
60	1060	1284	1204	1108	1304	1287	1201	1231	1036	721	863	1135							
65	676	891	821	731	860	903	796	798	567	298	441	695							
70	320	457	381	302	423	491	422	353	154	33.4	99.7	293							
75	61.5	135	40.5	30.7	82.0	162	113	78.0	26.8	25.0	26.4	55.9							
80	17.1	17.8	20.1	21.2	21.1	19.0	24.0	21.7	21.2	20.2	20.8	21.7							
85	14.5	14.4	15.0	15.6	15.5	14.8	20.2	18.8	18.3	17.6	18.2	18.7							
90	13.2	12.5	12.3	11.8	12.2	12.1	17.1	17.7	17.8	17.6	18.1	18.1							
95	16.1	15.1	13.8	12.6	13.0	14.1	19.5	20.1	20.2	20.2	20.6	20.5							
100	19.6	18.5	16.8	15.4	15.8	17.0	22.6	23.3	23.4	23.7	23.9	23.5							
105	23.7	22.4	20.6	19.1	19.4	20.6	26.3	27.0	27.3	27.5	27.6	27.0							
110	28.0	26.7	25.0	23.2	23.4	24.5	30.4	30.8	31.1	31.3	31.3	30.6							
115	32.4	31.1	29.3	27.7	27.6	28.5	34.5	34.8	34.9	35.2	34.9	34.3							
120	36.7	35.3	33.7	32.2	31.8	32.3	38.6	38.6	38.8	39.2	38.6	37.9							
125	40.7	39.4	38.3	36.7	36.1	36.1	42.5	42.2	42.7	42.9	42.2	41.1							
130	44.3	43.3	42.5	40.9	40.0	39.7	46.0	45.4	46.0	46.2	45.5	43.8							
135	47.5	46.9	46.2	44.7	43.4	42.9	48.9	48.3	48.5	48.7	47.9	46.2							
140	50.6	50.3	49.4	47.9	46.4	45.9	51.6	51.0	50.8	50.7	49.9	48.5							
145	53.7	53.4	52.3	50.9	49.3	48.7	54.2	53.4	53.1	52.7	51.8	50.8							
150	56.8	56.6	55.4	54.1	52.5	51.7	56.9	56.0	55.6	55.1	54.2	53.3							
155	60.0	59.8	58.6	57.5	55.8	54.9	59.7	58.7	58.3	57.9	57.1	56.0							
160	63.2	63.0	61.8	60.7	59.0	58.1	62.8	61.6	61.3	60.7	60.2	59.0							
165	66.5	66.1	64.8	63.6	62.1	61.5	65.9	64.5	64.3	63.6	63.1	62.0							
170	69.5	69.1	67.6	66.4	65.0	64.6	68.8	67.4	67.1	66.3	65.7	64.9							
175	71.6	71.0	69.4	68.3	67.0	66.8	71.6	69.7	69.0	67.8	67.4	66.7							
180	72.1	71.6	69.8	69.0	67.8	67.6	72.7	71.1	70.2	68.6	68.1	67.5							

C Range: 0 - 360DEG
C Interval: 30.0DEG
Test Speed: HIGH
Temperature:25.3DEG
Operators:DAMIN
Test Date:2016-11-03

γ Range: 0 - 180DEG
γ Interval: 1.0DEG
Test System:EVERFINE GO-2000B_V1 SYSTEM V2.0.267
Humidity:65.0%
Test Distance:8.000m [K=0.7063]
Remarks: