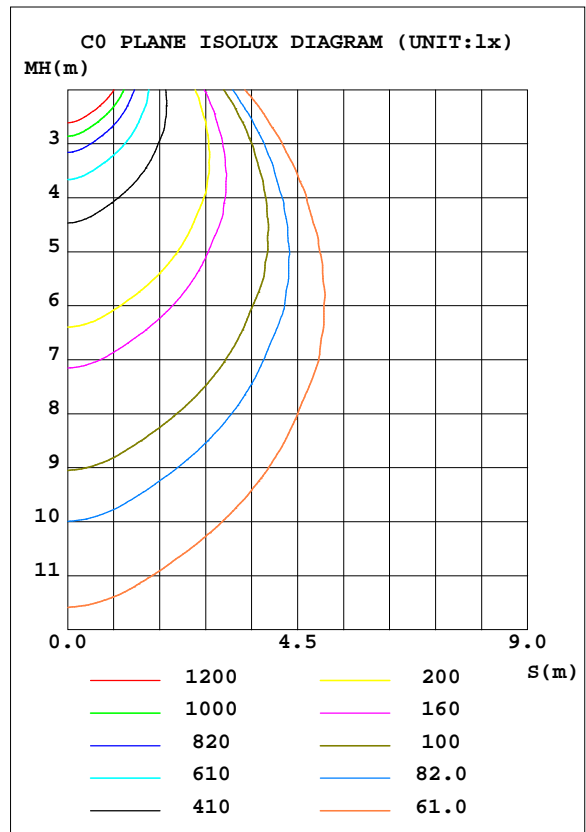
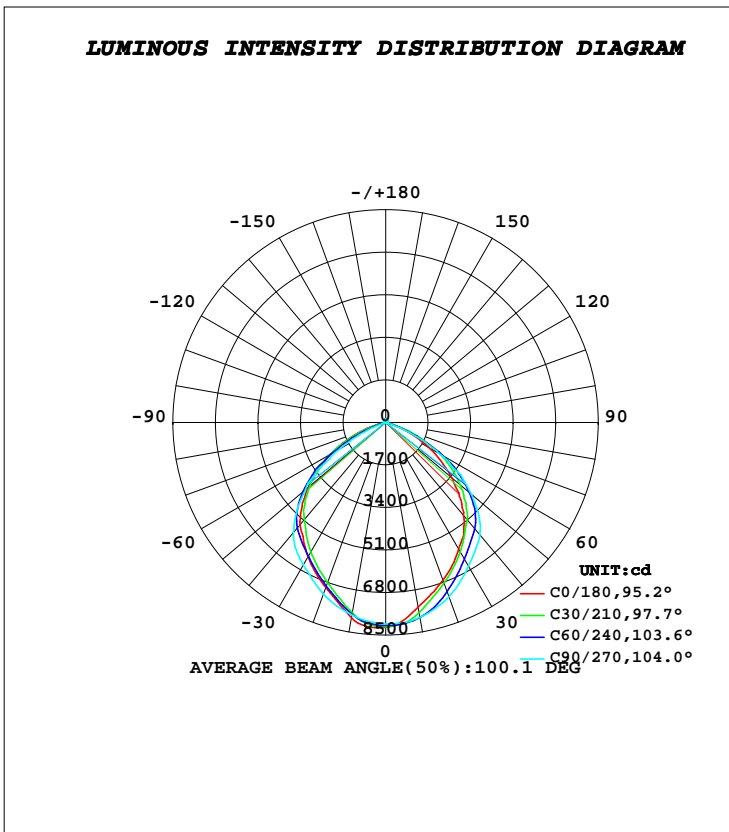


LUMINAIRE PHOTOMETRIC TEST REPORT

Test:U:220.7V I:0.9460A P:204.0W PF:0.9770 Lamp Flux:18333.4x1 lm		
NAME: GFL-200W-SMD	TYPE:LED	
DIM.: 455*385MM	SUR.:375*245MM	
MFR.: GRANDOL INDUSTRY LIMITED		

DATA OF LAMP		PHOTOMETRIC DATA Eff: 89.87 lm/W			
MODEL	GFL-200W-SMD	I _{max} (cd)	8215	S/MH(C0/180)	1.08
NOMINAL POWER(W)	200	LOR(%)	100.0	S/MH(C90/270)	1.23
RATED VOLTAGE(V)	220	TOTAL FLUX(lm)	18333	η UP, DN(C0-180)	1.3, 48.4
NOMINAL FLUX(lm)	18333.4	CIE CLASS	DIRECT	η UP, DN(C180-360)	1.4, 48.9
LAMPS INSIDE	1	η up(%)	2.7	CIBSE SHR NOM	1.25
TEST VOLTAGE(V)	220.7	η down(%)	97.3	CIBSE SHR MAX	1.30



C Range: 0 - 360DEG
C Interval: 30.0DEG
Test Speed: HIGH
Temperature:25.3DEG
Operators:DAMIN
Test Date:2016-11-07

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	7501	7814	7905	7540	7925	7750	7804	7679	0- 10	755.4	755.4	4.12,4.12
20	6715	7010	7402	6764	7016	6884	7295	6858	10- 20	2070	2825	15.4,15.4
30	5830	6131	6624	5976	6210	6079	6585	6023	20- 30	3020	5845	31.9,31.9
40	4846	5301	5863	5141	5335	5281	5744	5226	30- 40	3587	9432	51.4,51.4
50	3487	4151	4476	4070	4044	4138	4198	4057	40- 50	3655	13087	71.4,71.4
60	1961	2541	2437	2584	2518	2562	2069	2364	50- 60	2939	16026	87.4,87.4
70	578.9	733.5	526.6	838.4	1050	749.4	277.4	686.3	60- 70	1513	17539	95.7,95.7
80	48.75	43.27	40.40	47.54	95.37	61.65	53.95	58.41	70- 80	257.0	17796	97.1,97.1
90	29.23	27.88	26.61	27.18	37.11	39.22	39.12	39.46	80- 90	42.30	17838	97.3,97.3
100	42.95	40.65	38.71	39.50	47.26	50.27	50.94	50.46	90-100	42.23	17880	97.5,97.5
110	60.11	58.34	57.65	57.82	62.14	65.39	66.69	64.69	100-110	56.22	17936	97.8,97.8
120	77.78	75.92	76.30	74.44	78.07	80.36	81.80	78.79	110-120	69.37	18006	98.2,98.2
130	92.87	90.51	90.89	87.94	93.16	95.29	96.86	92.64	120-130	76.11	18082	98.6,98.6
140	104.8	103.9	103.5	100.9	104.7	107.0	108.4	102.9	130-140	76.16	18158	99,99
150	116.8	116.3	114.8	112.8	115.2	116.6	114.9	111.8	140-150	68.59	18227	99.4,99.4
160	130.0	130.0	128.4	125.5	127.6	127.2	125.4	122.6	150-160	55.64	18282	99.7,99.7
170	143.5	143.0	139.9	137.2	141.2	138.8	136.4	134.8	160-170	37.56	18320	99.9,99.9
180	146.6	145.4	142.1	140.6	147.4	145.4	141.5	140.6	170-180	13.50	18333	100,100
DEG	LUMINOUS INTENSITY:cd									UNIT:lm		

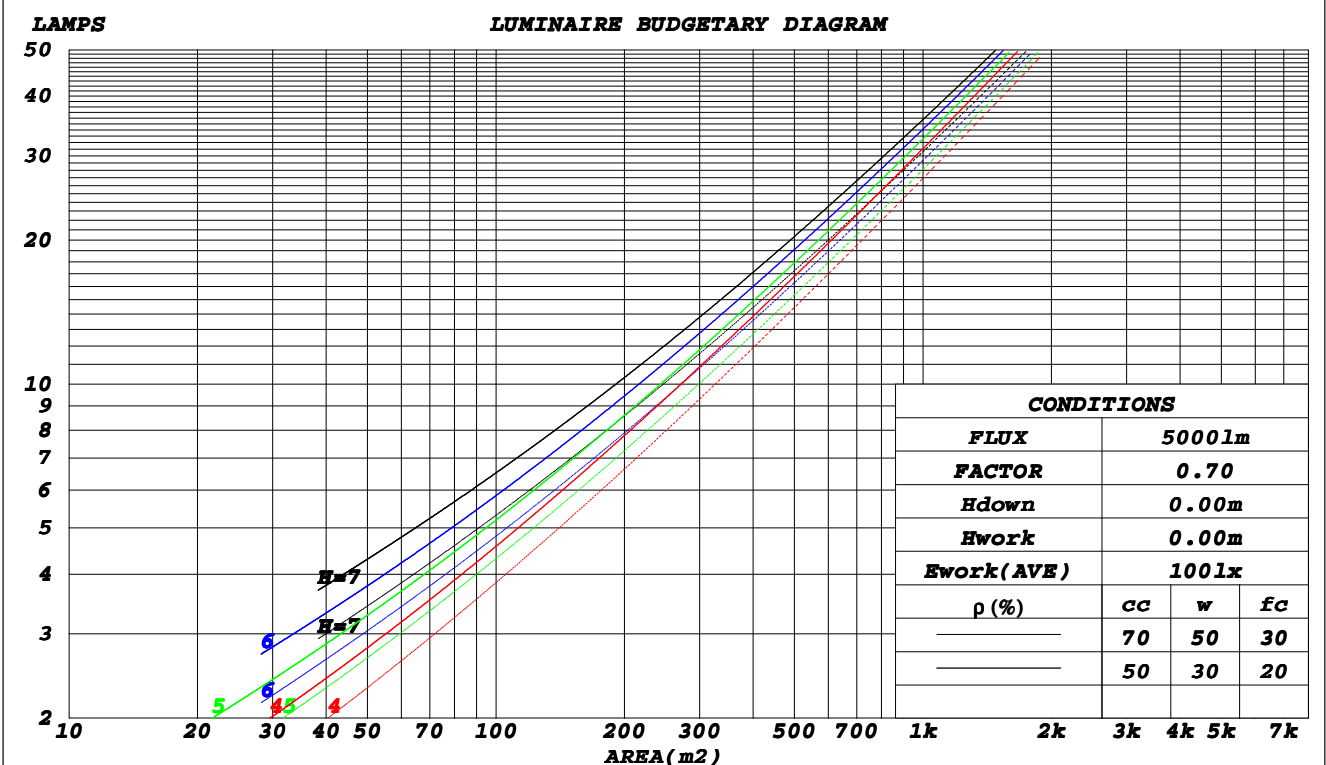
C Range: 0 - 360DEG
 C Interval: 30.0DEG
 Test Speed: HIGH
 Temperature:25.3DEG
 Operators:DAMIN
 Test Date:2016-11-07

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:220.7V I:0.9460A P:204.0W PF:0.9770 Lamp Flux:18333.4x1 lm		
NAME: GFL-200W-SMD	TYPE:LED	
DIM.: 455*385MM	SUR.:375*245MM	
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	.98	.99	.96	.94	.95	.93	.91	.91	.89	.88	.85
2.0	.94	.88	.84	.92	.87	.82	.88	.84	.80	.85	.81	.78	.81	.78	.76	.74
3.0	.84	.77	.71	.82	.75	.70	.79	.73	.69	.76	.71	.67	.73	.69	.66	.64
4.0	.75	.67	.61	.73	.66	.60	.71	.64	.59	.68	.63	.58	.66	.61	.57	.55
5.0	.67	.59	.53	.66	.58	.53	.64	.57	.52	.62	.56	.51	.60	.54	.50	.48
6.0	.61	.53	.47	.60	.52	.46	.58	.51	.46	.56	.50	.45	.54	.49	.45	.43
7.0	.55	.47	.41	.54	.47	.41	.53	.46	.41	.51	.45	.40	.50	.44	.40	.38
8.0	.51	.43	.37	.50	.42	.37	.48	.41	.37	.47	.41	.36	.46	.40	.36	.34
9.0	.47	.39	.33	.46	.38	.33	.45	.38	.33	.43	.37	.33	.42	.37	.32	.31
10.0	.43	.35	.30	.42	.35	.30	.41	.35	.30	.40	.34	.30	.39	.34	.30	.28



C Range: 0 - 360DEG
 C Interval: 30.0DEG
 Test Speed: HIGH
 Temperature:25.3DEG
 Operators:DAMIN
 Test Date:2016-11-07

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:220.7V I:0.9460A P:204.0W PF:0.9770 Lamp Flux:18333.4x1 lm		
NAME: GFL-200W-SMD	TYPE:LED	
DIM.: 455*385MM	SUR.:375*245MM	
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	.254	.144	.046	.246	.140	.045	.231	.133	.042	.218	.126	.040	.206	.119	.038	
2.0	.249	.136	.042	.242	.133	.041	.229	.127	.040	.217	.122	.038	.206	.117	.037	
3.0	.237	.126	.038	.231	.124	.037	.220	.119	.036	.209	.115	.035	.199	.110	.034	
4.0	.223	.116	.034	.218	.114	.034	.208	.110	.033	.199	.107	.032	.190	.103	.031	
5.0	.210	.107	.031	.205	.105	.031	.196	.102	.030	.188	.099	.029	.180	.096	.029	
6.0	.197	.099	.028	.193	.097	.028	.185	.095	.028	.177	.092	.027	.170	.090	.027	
7.0	.185	.092	.026	.182	.090	.026	.174	.088	.025	.168	.086	.025	.161	.084	.025	
8.0	.175	.085	.024	.171	.084	.024	.165	.082	.023	.158	.080	.023	.153	.078	.023	
9.0	.165	.080	.022	.161	.079	.022	.156	.077	.022	.150	.075	.022	.145	.073	.021	
10.0	.156	.075	.021	.153	.074	.021	.147	.072	.020	.142	.071	.020	.137	.069	.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	.211	.211	.211	.180	.180	.180	.123	.123	.123	.071	.071	.071	.023	.023	.023	
2.0	.187	.153	.124	.160	.132	.107	.110	.091	.075	.063	.053	.044	.020	.017	.014	
3.0	.179	.135	.100	.154	.117	.087	.105	.081	.061	.061	.047	.036	.020	.015	.012	
4.0	.172	.122	.083	.147	.105	.072	.101	.073	.051	.059	.043	.030	.019	.014	.010	
5.0	.165	.111	.071	.141	.096	.062	.097	.067	.044	.056	.039	.026	.018	.013	.009	
6.0	.158	.103	.063	.136	.089	.055	.094	.062	.039	.054	.037	.023	.018	.012	.008	
7.0	.152	.096	.056	.130	.083	.049	.090	.058	.035	.052	.034	.021	.017	.011	.007	
8.0	.146	.090	.051	.125	.078	.045	.087	.055	.032	.050	.032	.019	.016	.011	.006	
9.0	.140	.085	.048	.121	.074	.042	.084	.052	.030	.049	.031	.018	.016	.010	.006	
10.0	.135	.081	.045	.116	.070	.039	.081	.049	.028	.047	.029	.017	.015	.010	.005	

C Range: 0 - 360DEG
 C Interval: 30.0DEG
 Test Speed: HIGH
 Temperature:25.3DEG
 Operators:DAMIN
 Test Date:2016-11-07

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:220.7V I:0.9460A P:204.0W PF:0.9770 Lamp Flux:18333.4x1 lm		
NAME: GFL-200W-SMD	TYPE:LED	
DIM.: 455*385MM	SUR.:375*245MM	
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	26.5	27.9	26.8	28.1	28.4	27.4	28.8	27.7	29.0	29.3
3H	26.9	28.1	27.2	28.4	28.7	27.6	28.9	28.0	29.2	29.4
4H	26.8	28.0	27.2	28.3	28.6	27.5	28.7	27.9	29.0	29.3
6H	26.7	27.8	27.1	28.1	28.5	27.4	28.5	27.8	28.8	29.2
8H	26.7	27.7	27.1	28.1	28.4	27.4	28.4	27.7	28.8	29.1
12H	26.6	27.6	27.0	28.0	28.3	27.3	28.3	27.7	28.7	29.0
4H 2H	26.9	28.1	27.3	28.4	28.7	27.7	28.8	28.0	29.1	29.4
3H	27.4	28.4	27.8	28.7	29.1	27.9	28.9	28.3	29.3	29.6
4H	27.3	28.3	27.8	28.6	29.0	27.8	28.7	28.2	29.1	29.5
6H	27.3	28.1	27.7	28.5	28.9	27.7	28.5	28.1	28.9	29.3
8H	27.2	28.0	27.7	28.4	28.8	27.7	28.4	28.1	28.8	29.3
12H	27.2	27.8	27.6	28.3	28.7	27.6	28.3	28.1	28.7	29.2
8H 4H	27.2	28.0	27.7	28.4	28.8	27.7	28.4	28.2	28.9	29.3
6H	27.2	27.8	27.6	28.2	28.7	27.6	28.2	28.1	28.7	29.1
8H	27.1	27.6	27.6	28.1	28.6	27.6	28.1	28.1	28.6	29.1
12H	27.1	27.5	27.6	28.0	28.5	27.5	28.0	28.0	28.5	29.0
12H 4H	27.2	27.9	27.7	28.3	28.7	27.7	28.3	28.1	28.8	29.2
6H	27.1	27.6	27.6	28.1	28.6	27.6	28.1	28.1	28.6	29.1
8H	27.1	27.5	27.6	28.0	28.5	27.5	28.0	28.0	28.5	29.0
Variations with the observer position at spacings:										
S = 1.0H	+ 0.5 / - 0.7					+ 0.5 / - 0.7				
1.5H	+ 0.5 / - 0.8					+ 0.6 / - 0.9				
2.0H	+ 0.6 / - 1.7					+ 1.1 / - 1.5				

CIE Pub.117 Corrected 18333 lm Total Lamp Luminous Flux.(8log(F/F0) = 10.1)

C Range: 0 - 360DEG
C Interval: 30.0DEG
Test Speed: HIGH
Temperature:25.3DEG
Operators:DAMIN
Test Date:2016-11-07

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:220.7V I:0.9460A P:204.0W PF:0.9770 Lamp Flux:18333.4x1 lm		
NAME: GFL-200W-SMD	TYPE:LED	
DIM.: 455*385MM	SUR.:375*245MM	
MFR.: GRANDOL INDUSTRY LIMITED		

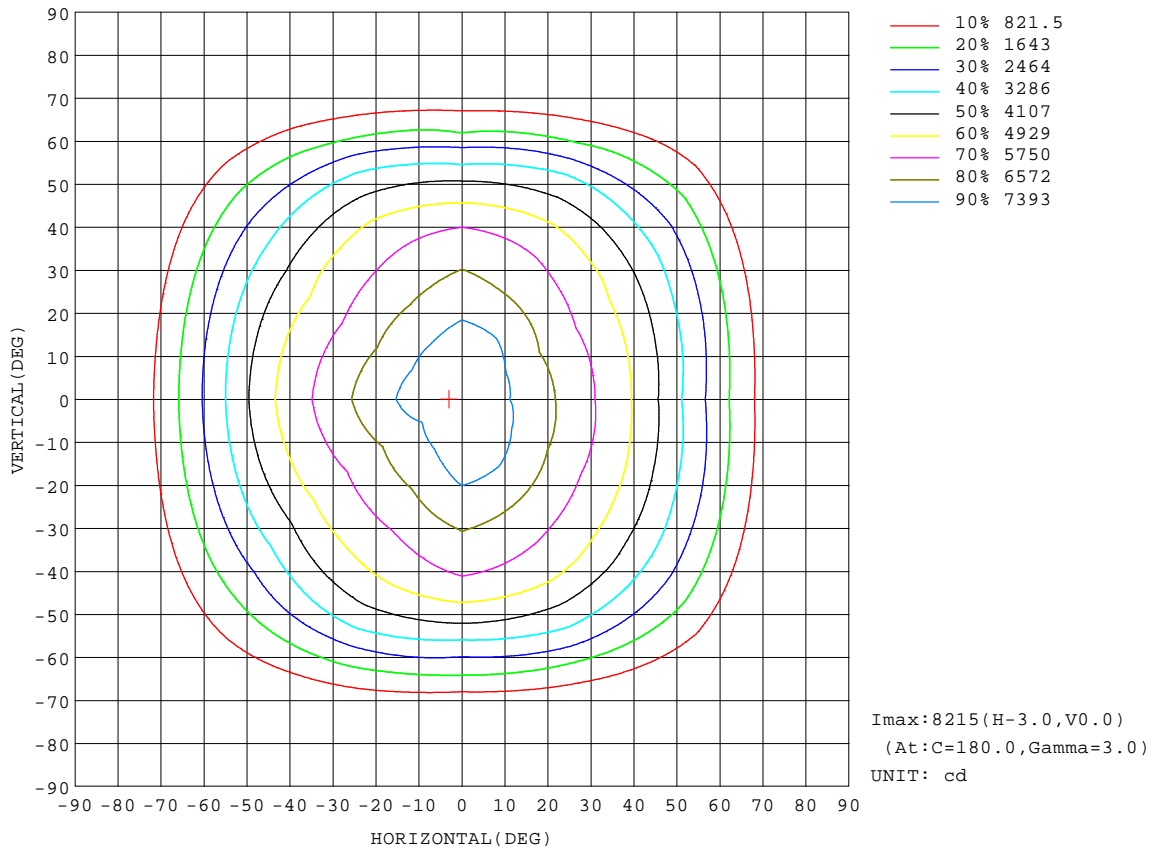
REFLECTANCE										
Ceiling	0.8	0.8	0.8	0.7	0.7	0.7	0.5	0.5	0.5	0
Walls	0.7	0.5	0.3	0.7	0.5	0.3	0.7	0.5	0.3	0
Working plane	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0
ROOM INDEX	UTILIZATION FACTORS(PERCENT) $k(RI) \times RCR = 5$									
k = 0.60	61	50	43	60	49	43	59	49	43	37
0.80	71	61	54	70	60	54	68	59	53	47
1.00	80	70	64	79	70	63	77	70	63	56
1.25	87	78	72	86	77	71	83	76	70	63
1.50	92	83	77	90	82	77	87	80	75	68
2.00	98	91	86	96	90	85	93	87	83	75
2.50	102	95	90	100	94	89	96	91	87	79
3.00	105	99	94	102	97	93	98	94	90	82
4.00	108	103	99	105	101	98	101	98	95	86
5.00	110	106	102	107	104	101	103	100	97	88
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:2016-11-07

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:220.7V I:0.9460A P:204.0W PF:0.9770 Lamp Flux:18333.4x1 lm		
NAME: GFL-200W-SMD	TYPE:LED	
DIM.: 455*385MM	SUR.:375*245MM	
MFR.: GRANDOL INDUSTRY LIMITED		



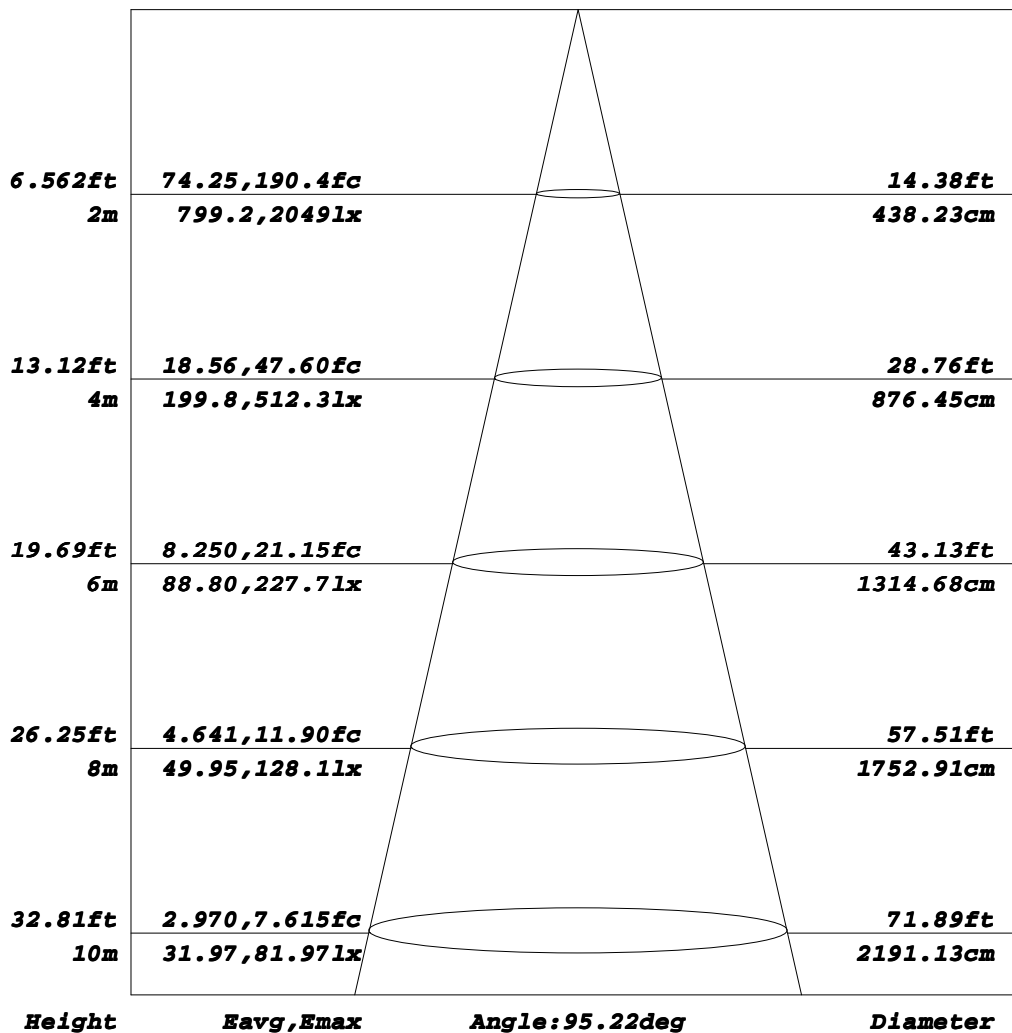
C Range: 0 - 360DEG
C Interval: 30.0DEG
Test Speed: HIGH
Temperature:25.3DEG
Operators:DAMIN
Test Date:2016-11-07

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:220.7V I:0.9460A P:204.0W PF:0.9770 Lamp Flux:18333.4x1 lm		
NAME: GFL-200W-SMD	TYPE:LED	
DIM.: 455*385MM	SUR.:375*245MM	
MFR.: GRANDOL INDUSTRY LIMITED		

Flux out:12388 lm



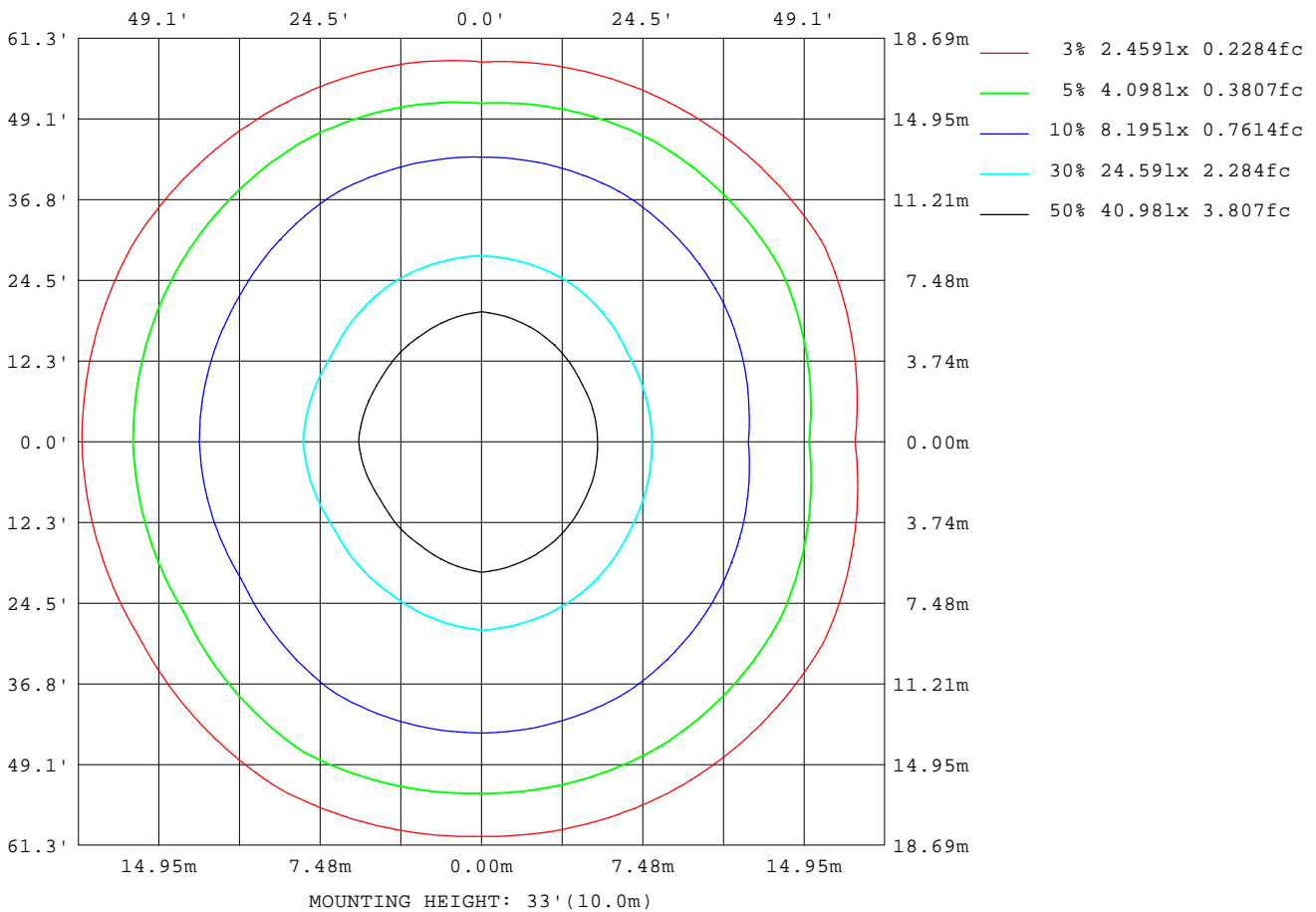
Note: The Curves indicate the illuminated area and the average illumination when the luminaire is at different distance.

C Range: 0 - 360DEG
 C Interval: 30.0DEG
 Test Speed: HIGH
 Temperature: 25.3DEG
 Operators: DAMIN
 Test Date: 2016-11-07

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

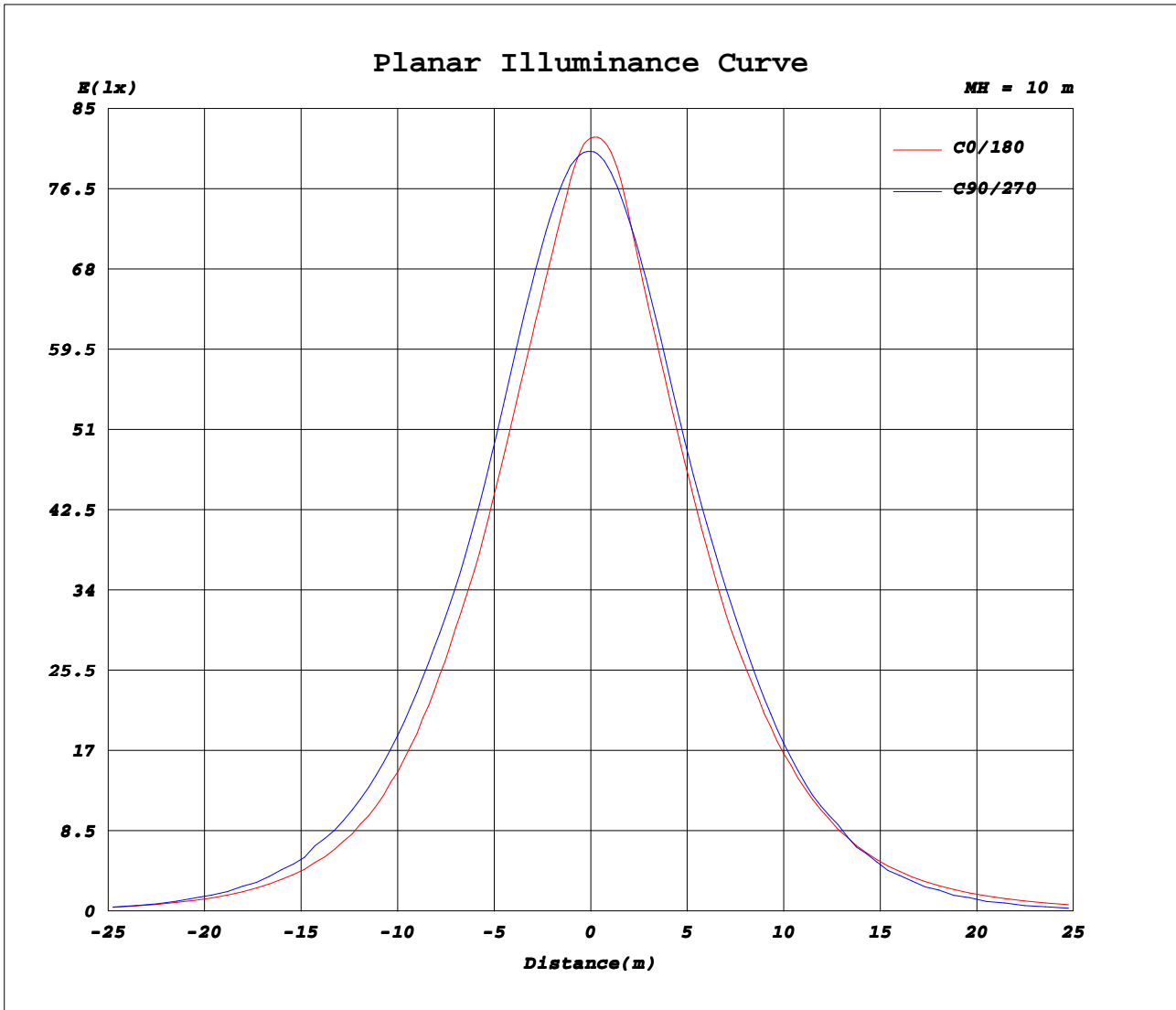
Test:U:220.7V I:0.9460A P:204.0W PF:0.9770 Lamp Flux:18333.4x1 lm		
NAME: GFL-200W-SMD	TYPE:LED	
DIM.: 455*385MM	SUR.:375*245MM	
MFR.: GRANDOL INDUSTRY LIMITED		



C Range: 0 - 360DEG
C Interval: 30.0DEG
Test Speed: HIGH
Temperature:25.3DEG
Operators:DAMIN
Test Date:2016-11-07

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: 2016-11-07

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:220.7V I:0.9460A P:204.0W PF:0.9770 Lamp Flux:18333.4x1 lm		
NAME: GFL-200W-SMD	TYPE:LED	
DIM.: 455*385MM	SUR.:375*245MM	
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	8187	8163	8113	8047	8020	7992	8187	8163	8113	8047	8020	7992							
5	7955	8059	8074	8032	7927	7859	8199	8095	8043	7979	7971	7898							
10	7501	7718	7910	7905	7629	7450	7925	7717	7783	7804	7789	7569							
15	7091	7248	7610	7689	7244	7046	7425	7240	7365	7586	7490	7085							
20	6715	6825	7194	7402	6855	6672	7016	6811	6957	7295	7064	6652							
25	6298	6405	6742	7032	6477	6285	6625	6403	6563	6928	6611	6251							
30	5830	5968	6295	6624	6090	5861	6210	5982	6176	6585	6212	5833							
35	5459	5495	5898	6246	5684	5394	5734	5527	5842	6234	5868	5382							
40	4846	5067	5535	5863	5292	4990	5335	5064	5497	5744	5483	4968							
45	4168	4540	5062	5269	4895	4431	4720	4561	5008	5033	4929	4490							
50	3487	3914	4388	4476	4338	3802	4044	3953	4323	4198	4228	3886							
55	2729	3218	3568	3671	3659	3090	3286	3326	3523	3225	3464	3172							
60	1961	2468	2614	2437	2783	2384	2518	2575	2548	2069	2303	2426							
65	1249	1661	1518	1432	1680	1672	1770	1762	1482	1157	1320	1639							
70	579	872	595	527	719	958	1050	913	586	277	541	831							
75	97.4	243	62.0	62.1	85.8	302	413	300	79.8	75.3	75.6	252							
80	48.8	48.1	38.5	40.4	39.5	55.6	95.4	67.9	55.4	54.0	53.1	63.7							
85	26.8	28.1	27.9	28.5	28.1	29.5	52.1	43.8	42.5	42.1	41.6	42.7							
90	29.2	28.3	27.5	26.6	27.2	27.2	37.1	39.0	39.4	39.1	39.5	39.4							
95	35.4	34.1	32.9	31.9	32.5	32.8	41.2	43.7	44.3	44.1	44.6	44.0							
100	43.0	41.5	39.8	38.7	39.3	39.7	47.3	49.8	50.8	50.9	51.1	49.9							
105	51.3	49.9	48.4	47.7	47.8	48.3	54.4	56.9	58.7	58.9	58.7	56.6							
110	60.1	58.9	57.7	57.7	57.7	58.0	62.1	64.4	66.4	66.7	65.8	63.6							
115	69.3	68.6	67.7	68.1	67.7	67.3	70.0	72.0	73.8	74.3	72.7	70.8							
120	77.8	76.6	75.2	76.3	74.8	74.1	78.1	79.5	81.2	81.8	79.7	77.9							
125	85.8	83.3	81.8	83.3	80.9	80.1	86.0	87.6	88.8	89.9	86.7	85.4							
130	92.9	90.8	90.2	90.9	88.8	87.1	93.2	94.5	96.1	96.9	93.7	91.5							
135	99.2	97.8	97.5	97.7	95.3	93.9	99.2	101	103	103	100.0	96.8							
140	105	104	104	103	101	101	105	106	108	108	105	101							
145	111	110	109	109	107	107	110	111	112	112	108	106							
150	117	117	115	115	113	112	115	117	117	115	113	111							
155	123	124	122	121	120	118	121	122	122	120	117	116							
160	130	131	129	128	126	125	128	127	127	125	123	122							
165	137	138	137	135	133	131	134	133	133	131	129	128							
170	143	144	142	140	138	137	141	139	138	136	135	134							
175	147	147	145	143	141	141	146	144	142	140	139	137							
180	147	147	144	142	141	140	147	146	144	142	141	140							

C Range: 0 - 360DEG
C Interval: 30.0DEG
Test Speed: HIGH
Temperature:25.3DEG
Operators:DAMIN
Test Date:2016-11-07

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: