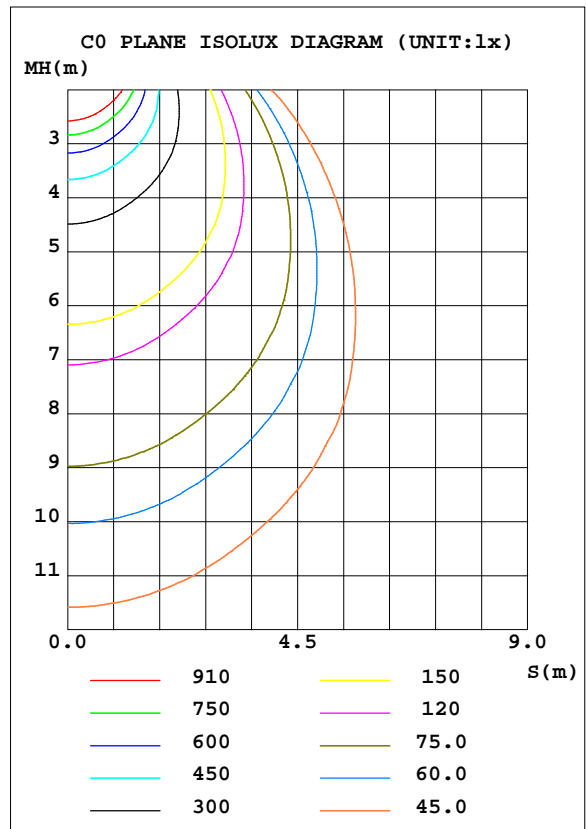
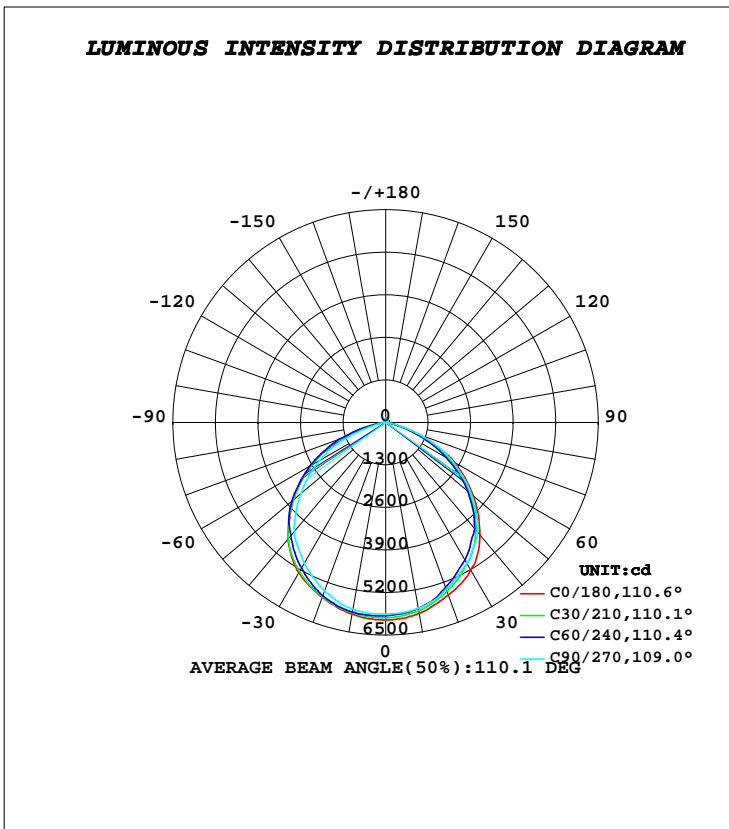


LUMINAIRE PHOTOMETRIC TEST REPORT

Test:U:220.2V I:0.8180A P:179.1W PF:0.9940 Lamp Flux:16167x1 lm		
NAME: DFL-200W	TYPE:LED	
MFR.: GRANDOL INDUSTRY LTD		

DATA OF LAMP		PHOTOMETRIC DATA			
MODEL	DFL-200W	Imax(cd)	6039	S/MH(C0/180)	1.29
NOMINAL POWER(W)	200	LOR(%)	100.0	S/MH(C90/270)	1.26
RATED VOLTAGE(V)	220	TOTAL FLUX(lm)	16167	η UP, DN(C0-180)	1.3,47.6
NOMINAL FLUX(lm)	16167	CIE CLASS	DIRECT	η UP, DN(C180-360)	1.4,49.7
LAMPS INSIDE	1	η up(%)	2.7	CIBSE SHR NOM	1.25
TEST VOLTAGE(V)	220.0	η down(%)	97.3	CIBSE SHR MAX	1.35



C Range: 0 - 360DEG
C Interval: 30.0DEG
Test Speed: HIGH
Temperature:25.3DEG
Operators:DAMIN
Test Date:2018-05-17

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	5922	5806	5765	5695	5949	5892	5797	5717	0- 10	558.3	558.3	3.45,3.45
20	5612	5424	5410	5409	5686	5656	5472	5400	10- 20	1602	2161	13.4,13.4
30	5207	4914	4971	4948	5307	5205	4977	4922	20- 30	2436	4596	28.4,28.4
40	4476	4258	4374	4318	4639	4574	4342	4284	30- 40	2966	7562	46.8,46.8
50	3500	3299	3417	3463	3697	3708	3381	3382	40- 50	3051	10613	65.6,65.6
60	2419	2179	2336	2400	2611	2652	2337	2308	50- 60	2633	13246	81.9,81.9
70	1108	933.5	1137	1211	1289	1461	1073	1094	60- 70	1776	15023	92.9,92.9
80	137.7	72.61	114.4	188.1	247.4	303.9	70.40	137.9	70- 80	639.6	15662	96.9,96.9
90	28.81	29.20	26.25	26.16	39.81	38.50	38.61	38.92	80- 90	60.63	15723	97.3,97.3
100	40.44	41.09	37.24	36.83	48.86	46.54	47.83	48.15	90-100	41.36	15764	97.5,97.5
110	54.17	54.77	51.07	49.96	61.32	58.41	60.25	60.26	100-110	52.42	15817	97.8,97.8
120	67.59	67.88	64.39	63.10	74.59	71.28	72.57	72.45	110-120	62.15	15879	98.2,98.2
130	79.87	79.56	76.38	75.25	85.91	82.61	83.00	82.74	120-130	67.02	15946	98.6,98.6
140	91.70	91.00	87.90	86.82	96.22	92.96	92.72	92.24	130-140	66.35	16012	99,99
150	103.1	102.1	99.85	98.35	106.1	103.2	102.5	101.7	140-150	60.50	16073	99.4,99.4
160	114.7	112.8	111.3	109.3	115.7	113.3	112.5	111.1	150-160	49.41	16122	99.7,99.7
170	123.0	121.7	120.8	118.6	123.9	121.9	121.3	119.3	160-170	33.01	16155	99.9,99.9
180	126.2	125.6	125.5	122.4	127.6	125.5	124.7	122.5	170-180	11.71	16167	100,100
DEG	LUMINOUS INTENSITY:cd									UNIT:lm		

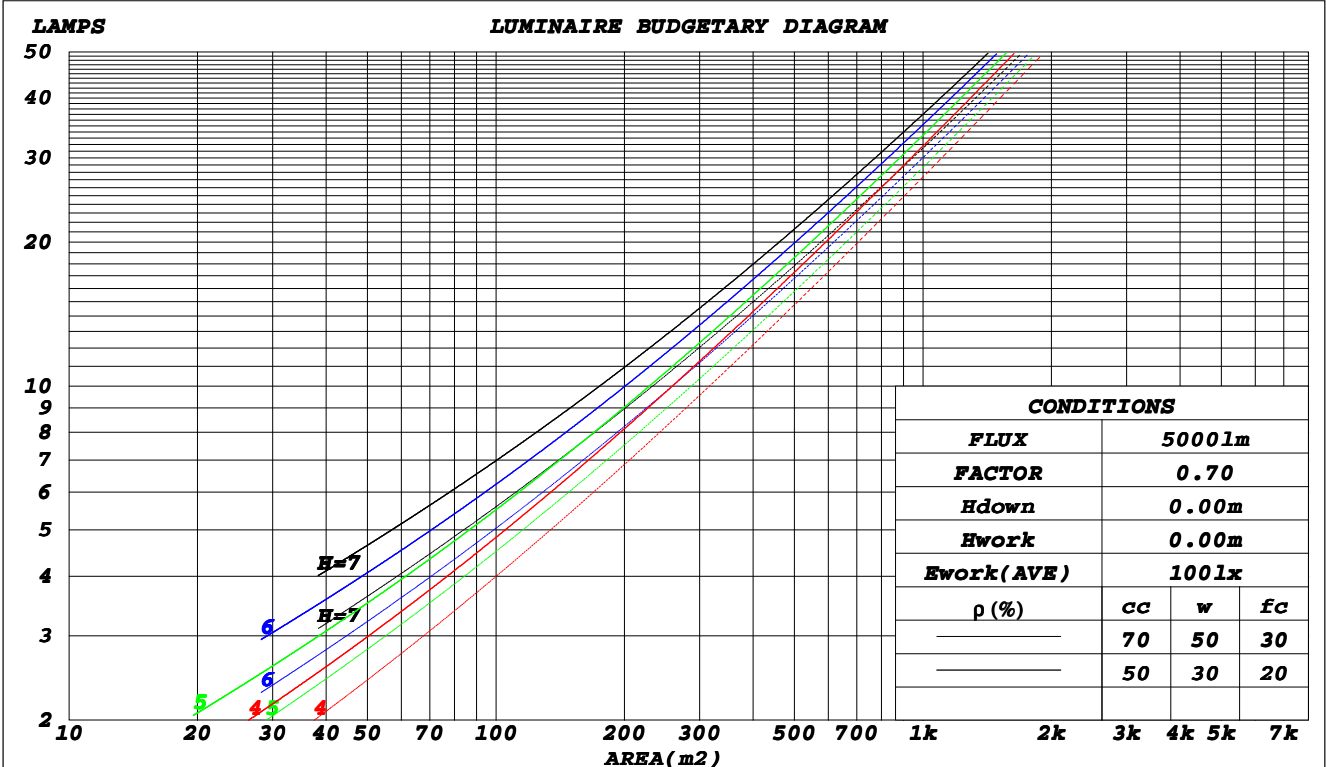
C Range: 0 - 360DEG
C Interval: 30.0DEG
Test Speed: HIGH
Temperature:25.3DEG
Operators:DAMIN
Test Date:2018-05-17

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:220.2V I:0.8180A P:179.1W PF:0.9940 Lamp Flux:16167x1 lm		
NAME: DFL-200W	TYPE:LED	
MFR.: GRANDOL INDUSTRY LTD		

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	1.05	1.01	.98	1.02	.99	.96	.98	.95	.92	.93	.91	.89	.89	.88	.86	.84
2.0	.92	.86	.81	.90	.84	.79	.86	.81	.77	.83	.79	.75	.79	.76	.73	.71
3.0	.81	.74	.67	.80	.72	.67	.76	.70	.65	.73	.68	.64	.70	.66	.62	.60
4.0	.72	.64	.57	.71	.63	.57	.68	.61	.56	.65	.59	.55	.63	.58	.54	.52
5.0	.65	.56	.50	.63	.55	.49	.61	.54	.48	.59	.52	.48	.57	.51	.47	.45
6.0	.58	.50	.43	.57	.49	.43	.55	.48	.42	.53	.47	.42	.51	.46	.41	.39
7.0	.53	.44	.38	.52	.44	.38	.50	.43	.38	.48	.42	.37	.47	.41	.37	.35
8.0	.48	.40	.34	.47	.39	.34	.46	.39	.34	.44	.38	.33	.43	.37	.33	.31
9.0	.44	.36	.31	.43	.36	.31	.42	.35	.30	.41	.34	.30	.40	.34	.30	.28
10.0	.41	.33	.28	.40	.33	.28	.39	.32	.27	.38	.32	.27	.37	.31	.27	.25



C Range: 0 - 360DEG
 C Interval: 30.0DEG
 Test Speed: HIGH
 Temperature: 25.3DEG
 Operators: DAMIN
 Test Date: 2018-05-17

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:220.2V I:0.8180A P:179.1W PF:0.9940 Lamp Flux:16167x1 lm		
NAME: DFL-200W	TYPE:LED	
MFR.: GRANDOL INDUSTRY LTD		

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	.277	.157	.050	.269	.153	.049	.254	.146	.047	.241	.139	.045	.228	.132	.043	
2.0	.268	.147	.045	.262	.144	.044	.249	.138	.043	.237	.133	.042	.226	.128	.040	
3.0	.253	.135	.040	.247	.132	.040	.235	.128	.039	.225	.123	.038	.215	.119	.037	
4.0	.236	.123	.036	.231	.121	.036	.221	.117	.035	.211	.113	.034	.202	.110	.033	
5.0	.221	.112	.033	.216	.111	.032	.207	.108	.032	.198	.104	.031	.190	.102	.031	
6.0	.206	.103	.030	.202	.102	.029	.193	.099	.029	.186	.096	.028	.178	.094	.028	
7.0	.193	.095	.027	.189	.094	.027	.181	.092	.026	.174	.089	.026	.168	.087	.026	
8.0	.181	.088	.025	.177	.087	.025	.170	.085	.024	.164	.083	.024	.158	.081	.024	
9.0	.170	.082	.023	.167	.081	.023	.161	.079	.023	.155	.078	.022	.149	.076	.022	
10.0	.160	.077	.021	.157	.076	.021	.152	.074	.021	.146	.073	.021	.142	.071	.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	.181	.181	.181	.123	.123	.123	.071	.071	.071	.023	.023	.023	
2.0	.199	.178	.158	.170	.152	.136	.117	.105	.094	.067	.061	.055	.021	.020	.018	
3.0	.190	.153	.122	.163	.132	.106	.112	.091	.074	.064	.053	.043	.021	.017	.014	
4.0	.183	.136	.098	.157	.117	.085	.107	.081	.060	.062	.047	.035	.020	.015	.012	
5.0	.175	.122	.082	.150	.106	.071	.103	.074	.050	.060	.043	.030	.019	.014	.010	
6.0	.168	.112	.070	.144	.097	.061	.099	.068	.043	.058	.040	.026	.019	.013	.008	
7.0	.161	.103	.062	.139	.090	.054	.096	.063	.038	.055	.037	.023	.018	.012	.007	
8.0	.155	.096	.056	.133	.084	.049	.092	.059	.034	.053	.035	.020	.017	.011	.007	
9.0	.149	.091	.051	.128	.079	.044	.088	.055	.032	.051	.033	.019	.017	.011	.006	
10.0	.143	.086	.047	.123	.074	.041	.085	.052	.029	.050	.031	.018	.016	.010	.006	
10.0	.137	.082	.045	.118	.071	.039	.082	.050	.028	.048	.029	.016	.016	.010	.005	

C Range: 0 - 360DEG
 C Interval: 30.0DEG
 Test Speed: HIGH
 Temperature:25.3DEG
 Operators:DAMIN
 Test Date:2018-05-17

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:220.2V I:0.8180A P:179.1W PF:0.9940 Lamp Flux:16167x1 lm										
NAME: DFL-200W					TYPE:LED					
MFR.: GRANDOL INDUSTRY LTD										

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	29.5	30.9	29.8	31.1	31.4	29.2	30.7	29.6	30.9	31.2
3H	30.4	31.7	30.7	31.9	32.2	30.2	31.5	30.5	31.8	32.1
4H	30.5	31.7	30.8	32.0	32.3	30.4	31.6	30.7	31.9	32.2
6H	30.5	31.6	30.8	31.9	32.3	30.3	31.5	30.7	31.8	32.1
8H	30.4	31.5	30.8	31.9	32.2	30.3	31.4	30.6	31.7	32.0
12H	30.4	31.4	30.7	31.8	32.1	30.2	31.3	30.6	31.6	32.0
4H 2H	29.8	31.0	30.2	31.3	31.7	29.6	30.9	30.0	31.2	31.5
3H	30.8	31.9	31.2	32.2	32.6	30.6	31.7	31.0	32.1	32.4
4H	31.0	32.0	31.4	32.3	32.7	30.8	31.8	31.2	32.2	32.5
6H	31.0	31.8	31.4	32.2	32.6	30.8	31.6	31.2	32.0	32.5
8H	30.9	31.7	31.4	32.1	32.6	30.7	31.5	31.2	31.9	32.4
12H	30.9	31.6	31.3	32.0	32.5	30.7	31.4	31.2	31.9	32.3
8H 4H	30.9	31.7	31.4	32.1	32.6	30.8	31.6	31.2	32.0	32.4
6H	30.9	31.6	31.4	32.0	32.5	30.8	31.4	31.2	31.9	32.3
8H	30.9	31.5	31.4	32.0	32.5	30.7	31.3	31.2	31.8	32.3
12H	30.9	31.4	31.4	31.9	32.4	30.7	31.2	31.2	31.7	32.2
12H 4H	30.9	31.6	31.4	32.0	32.5	30.7	31.5	31.2	31.9	32.4
6H	30.9	31.5	31.4	31.9	32.5	30.7	31.3	31.2	31.8	32.3
8H	30.9	31.4	31.4	31.8	32.4	30.7	31.2	31.2	31.7	32.2
Variations with the observer position at spacings:										
S = 1.0H	+ 0.3 / - 0.4					+ 0.3 / - 0.4				
1.5H	+ 0.3 / - 0.3					+ 0.3 / - 0.4				
2.0H	+ 0.6 / - 0.7					+ 0.7 / - 0.8				

CIE Pub.117 Corrected 16167 lm Total Lamp Luminous Flux.(8log(F/F0) = 9.7)

C Range: 0 - 360DEG
C Interval: 30.0DEG
Test Speed: HIGH
Temperature:25.3DEG
Operators:DAMIN
Test Date:2018-05-17

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:220.2V I:0.8180A P:179.1W PF:0.9940 Lamp Flux:16167x1 lm		
NAME: DFL-200W	TYPE:LED	
MFR.: GRANDOL INDUSTRY LTD		

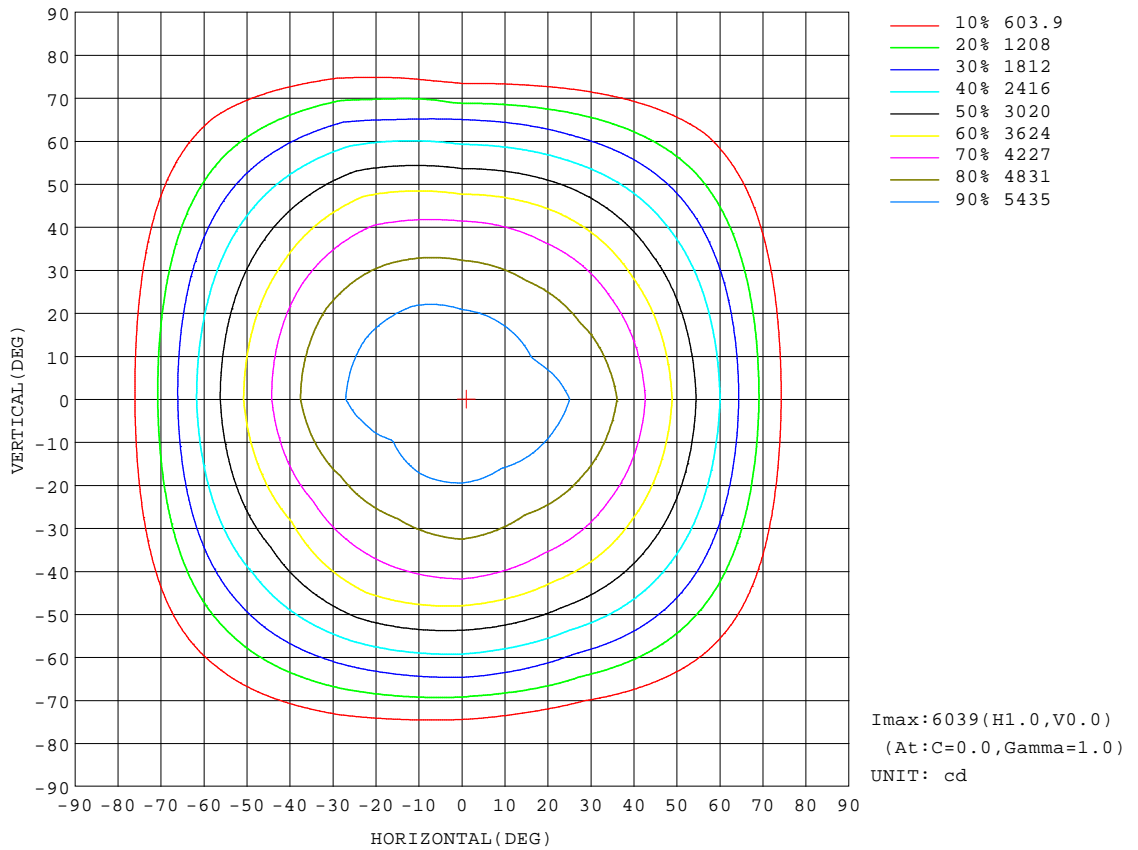
REFLECTANCE										
Ceiling	0.8	0.8	0.8	0.7	0.7	0.7	0.5	0.5	0.5	0
Walls	0.7	0.5	0.3	0.7	0.5	0.3	0.7	0.5	0.3	0
Working plane	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0
ROOM INDEX	UTILIZATION FACTORS(PERCENT) $k(RI) \times RCR = 5$									
k = 0.60	58	47	40	58	47	40	56	46	40	34
0.80	69	57	50	68	57	50	66	56	50	43
1.00	77	67	60	76	66	59	74	67	59	52
1.25	85	75	68	83	74	67	80	72	66	59
1.50	89	80	74	88	79	73	84	77	72	64
2.00	96	88	82	94	87	81	91	84	80	72
2.50	100	93	87	98	91	86	94	88	84	75
3.00	103	97	92	101	95	90	96	92	88	79
4.00	107	102	97	104	100	96	100	96	93	83
5.00	109	105	101	106	103	99	102	99	96	86
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:2018-05-17

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:220.2V I:0.8180A P:179.1W PF:0.9940 Lamp Flux:16167x1 lm		
NAME: DFL-200W	TYPE:LED	
MFR.: GRANDOL INDUSTRY LTD		



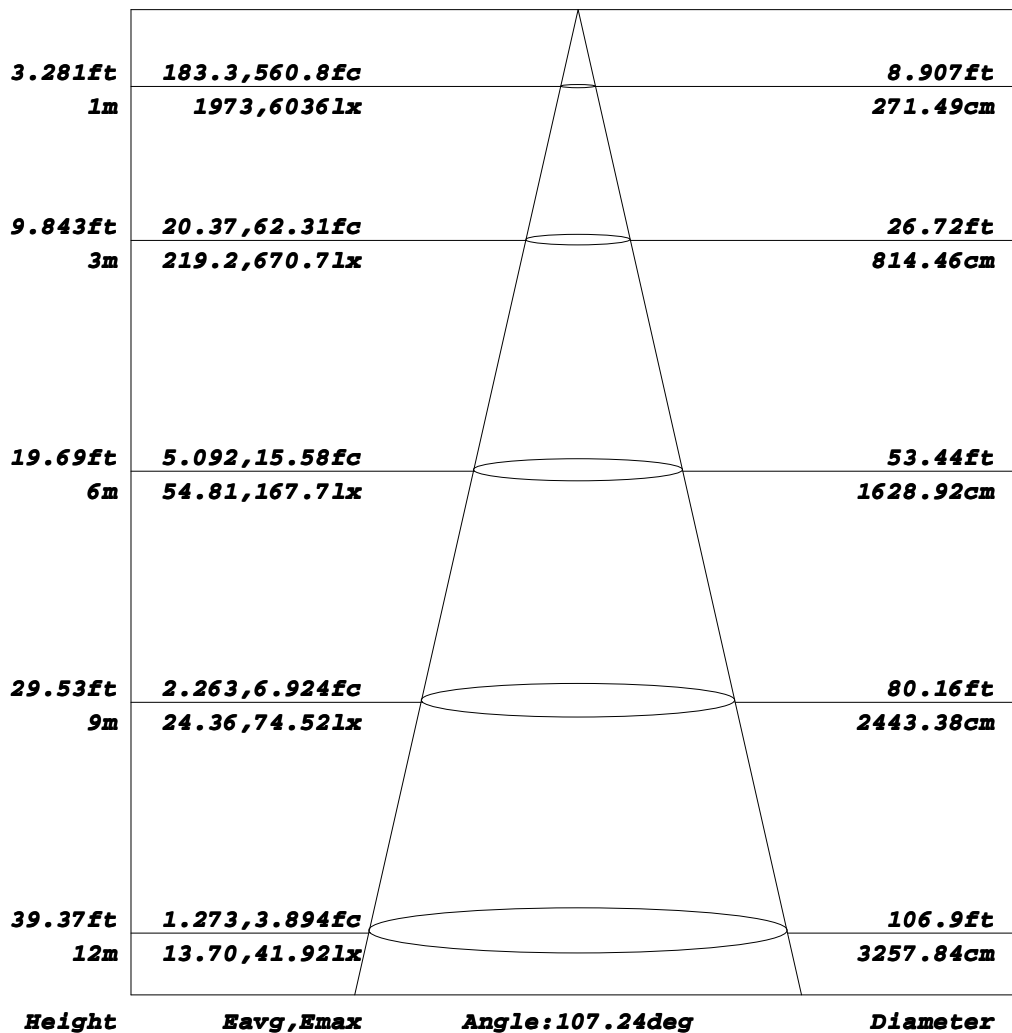
C Range: 0 - 360DEG
C Interval: 30.0DEG
Test Speed: HIGH
Temperature:25.3DEG
Operators:DAMIN
Test Date:2018-05-17

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:220.2V I:0.8180A P:179.1W PF:0.9940 Lamp Flux:16167x1 lm		
NAME: DFL-200W	TYPE:LED	
MFR.: GRANDOL INDUSTRY LTD		

Flux out:11743 lm



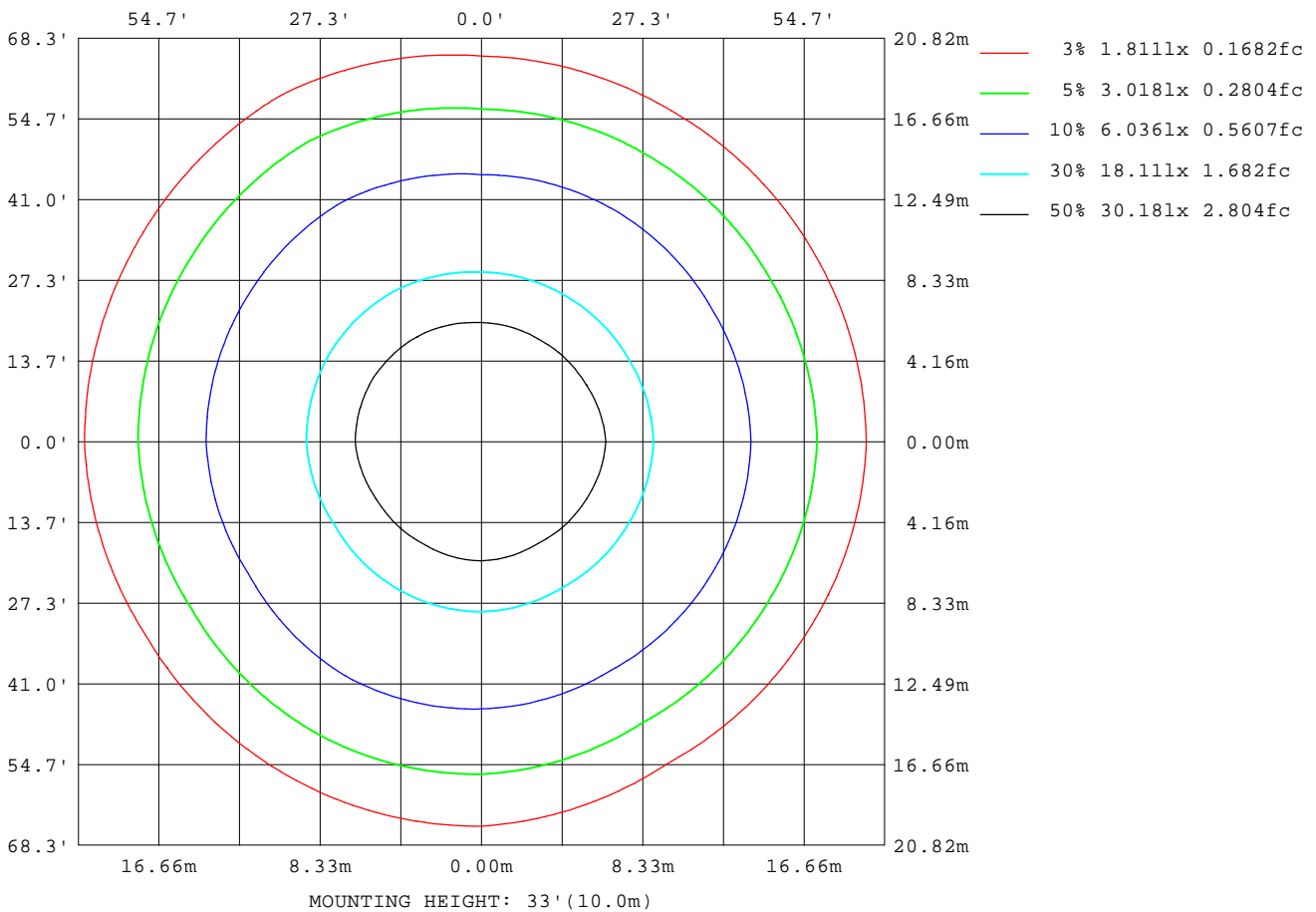
Note: The Curves indicate the illuminated area and the average illumination when the luminaire is at different distance.

C Range: 0 - 360DEG
 C Interval: 30.0DEG
 Test Speed: HIGH
 Temperature: 25.3DEG
 Operators: DAMIN
 Test Date: 2018-05-17

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

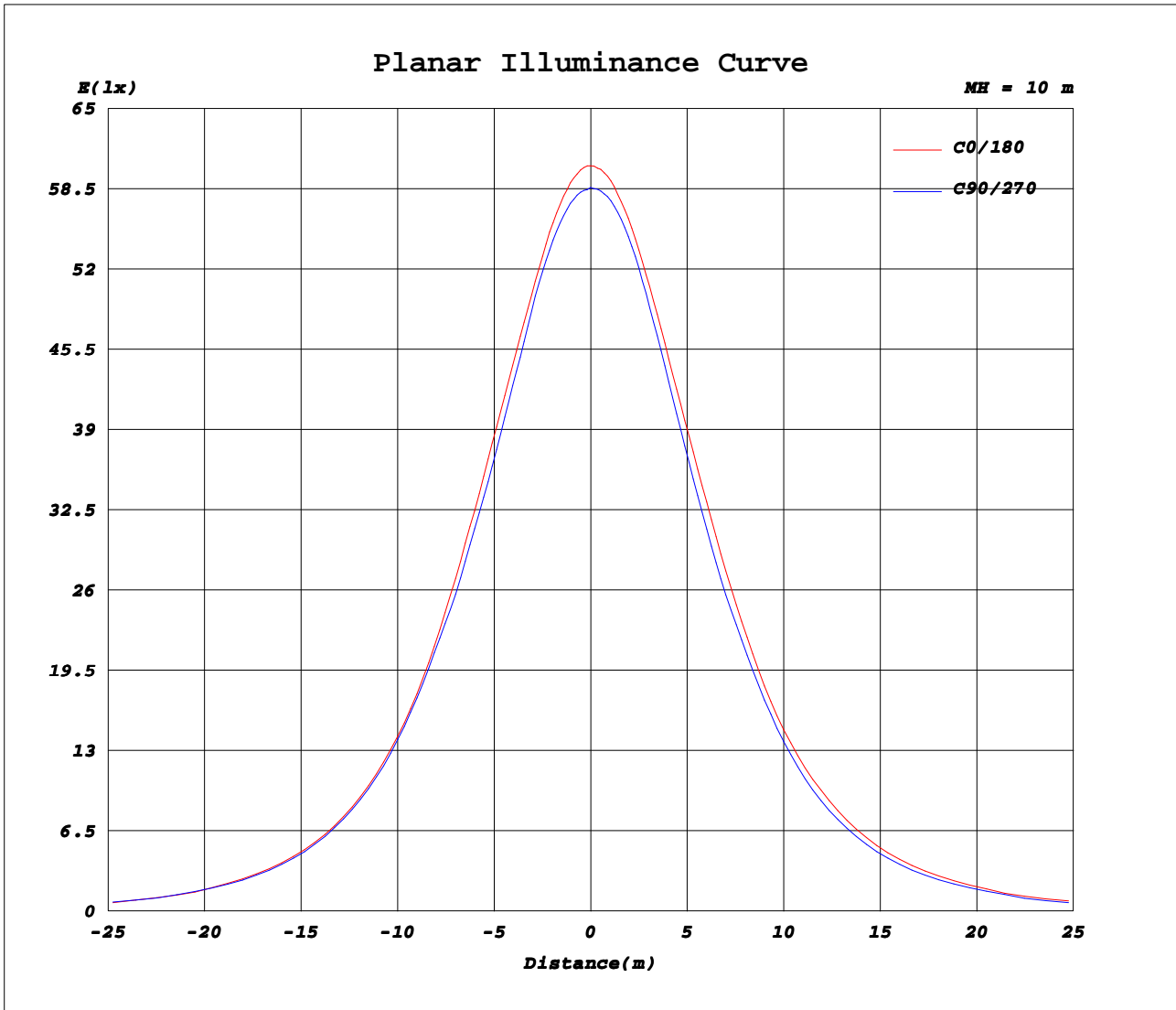
Test:U:220.2V I:0.8180A P:179.1W PF:0.9940 Lamp Flux:16167x1 lm		
NAME: DFL-200W	TYPE:LED	
MFR.: GRANDOL INDUSTRY LTD		



C Range: 0 - 360DEG
C Interval: 30.0DEG
Test Speed: HIGH
Temperature: 25.3DEG
Operators: DAMIN
Test Date: 2018-05-17

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: 2018-05-17

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:220.2V I:0.8180A P:179.1W PF:0.9940 Lamp Flux:16167x1 lm		
NAME: DFL-200W	TYPE:LED	
MFR.: GRANDOL INDUSTRY LTD		

Table--1

UNIT: cd

C (DEG) \ γ (DEG)	0	30	60	90	120	150	180	210	240	270	300	330							
0	6036	5968	5907	5860	5807	5760	6036	5968	5907	5860	5807	5760							
5	6007	5933	5860	5833	5782	5734	6021	5960	5911	5853	5801	5751							
10	5922	5843	5770	5765	5722	5668	5949	5901	5882	5797	5744	5691							
15	5778	5686	5619	5645	5594	5545	5836	5814	5790	5664	5614	5557							
20	5612	5486	5363	5410	5427	5390	5686	5679	5634	5472	5420	5379							
25	5438	5258	5103	5195	5156	5203	5517	5490	5404	5241	5174	5193							
30	5207	4978	4850	4971	4902	4994	5307	5270	5141	4977	4890	4954							
35	4905	4680	4526	4671	4641	4698	5017	4990	4850	4662	4571	4666							
40	4476	4289	4228	4374	4325	4311	4639	4635	4514	4342	4264	4304							
45	4009	3838	3780	3931	3999	3858	4155	4193	4194	3884	3885	3851							
50	3500	3321	3278	3417	3536	3390	3697	3674	3743	3381	3407	3358							
55	2961	2821	2722	2878	3002	2907	3157	3159	3216	2876	2866	2843							
60	2419	2233	2125	2336	2403	2398	2611	2617	2688	2337	2300	2316							
65	1743	1639	1550	1770	1828	1843	1935	2041	2083	1812	1739	1745							
70	1108	963	904	1137	1212	1209	1289	1393	1530	1073	1056	1133							
75	515	447	359	543	654	637	701	836	820	429	482	593							
80	138	93.6	51.7	114	179	197	247	336	272	70.4	103	173							
85	28.0	27.2	26.0	27.1	29.0	28.7	42.7	59.3	43.0	38.7	39.2	39.8							
90	28.8	29.5	28.9	26.2	25.9	26.4	39.8	38.8	38.2	38.6	39.1	38.7							
95	34.2	35.0	34.4	31.2	30.7	31.3	43.7	42.2	41.3	42.7	43.3	42.9							
100	40.4	41.4	40.8	37.2	36.5	37.2	48.9	47.1	46.0	47.8	48.4	47.9							
105	47.3	48.2	47.6	44.0	43.0	43.5	54.8	52.7	51.7	53.8	54.3	53.7							
110	54.2	55.1	54.4	51.1	49.6	50.3	61.3	58.9	57.9	60.3	60.7	59.8							
115	61.0	61.9	61.1	57.9	56.3	57.0	68.1	65.4	64.5	66.6	67.2	65.9							
120	67.6	68.3	67.5	64.4	62.8	63.4	74.6	71.7	70.9	72.6	73.2	71.7							
125	73.7	74.2	73.3	70.6	68.9	69.5	80.3	77.6	76.7	78.0	78.6	77.0							
130	79.9	80.1	79.0	76.4	75.0	75.5	85.9	82.9	82.3	83.0	83.6	81.9							
135	85.8	85.9	84.6	82.1	80.9	81.2	91.1	88.1	87.5	87.9	88.2	86.6							
140	91.7	91.8	90.2	87.9	86.6	87.1	96.2	93.1	92.8	92.7	93.3	91.2							
145	97.5	97.4	95.8	93.8	92.4	93.0	101	98.2	97.9	97.4	98.1	95.8							
150	103	103	101	99.8	98.1	98.6	106	103	103	102	103	101							
155	109	109	106	106	104	104	111	108	108	108	108	105							
160	115	114	112	111	109	110	116	113	113	112	112	110							
165	119	119	117	117	115	115	120	118	118	117	116	115							
170	123	123	121	121	119	118	124	122	122	121	120	118							
175	125	125	123	124	121	121	127	124	125	124	123	121							
180	126	126	125	125	123	122	128	125	126	125	124	121							

C Range: 0 - 360DEG
C Interval: 30.0DEG
Test Speed: HIGH
Temperature: 25.3DEG
Operators: DAMIN
Test Date: 2018-05-17

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: