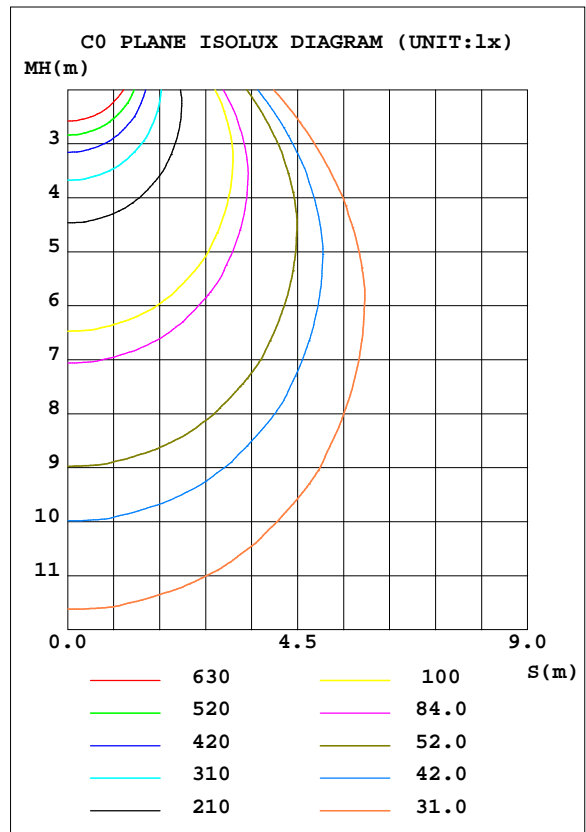
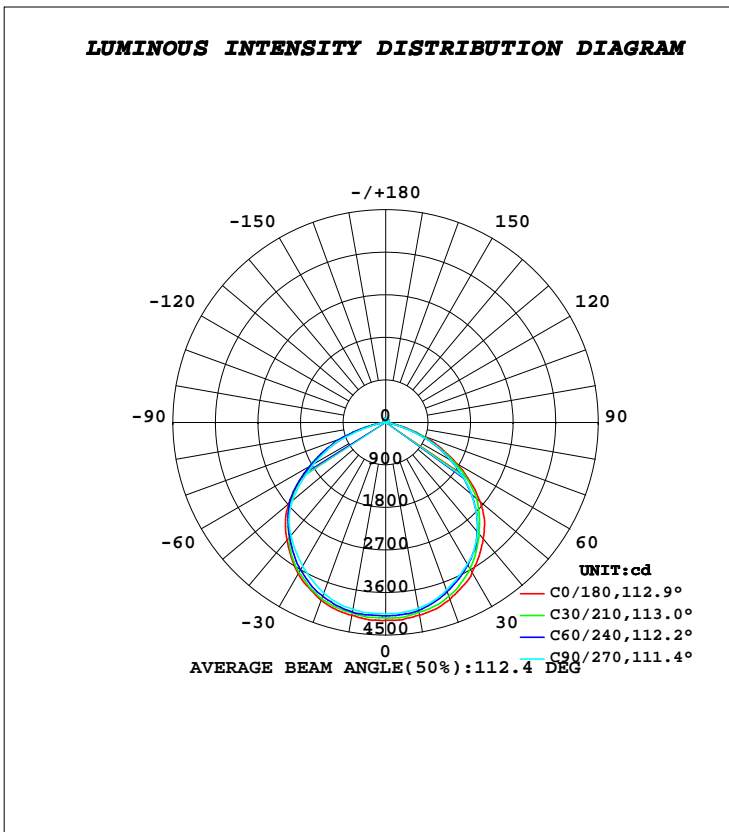


LUMINAIRE PHOTOMETRIC TEST REPORT

Test:U:220.1V I:0.6370A P:139.7W PF:0.9960 Lamp Flux:11507.5x1 lm		
NAME: DFL-150W	TYPE:LED	
MFR.: GRANDOL INDUSTRY LTD		

DATA OF LAMP		PHOTOMETRIC DATA Eff: 82.37 lm/W			
MODEL	DFL-150W	I _{max} (cd)	4193	S/MH(C0/180)	1.30
NOMINAL POWER(W)	150	LOR(%)	100.0	S/MH(C90/270)	1.28
RATED VOLTAGE(V)	220	TOTAL FLUX(lm)	11508	η UP, DN(C0-180)	1.3, 47.3
NOMINAL FLUX(lm)	11507.5	CIE CLASS	DIRECT	η UP, DN(C180-360)	1.4, 49.9
LAMPS INSIDE	1	η up(%)	2.8	CIBSE SHR NOM	1.25
TEST VOLTAGE(V)	220.1	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: 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	4140	4057	3994	3946	4140	4084	4017	3962	0- 10	387.4	387.4	3.37,3.37	
20	3983	3862	3767	3782	3997	3941	3843	3806	10- 20	1120	1508	13.1,13.1	
30	3660	3525	3456	3463	3704	3635	3514	3492	20- 30	1714	3222	28,28	
40	3213	3047	3022	3003	3250	3174	3122	3043	30- 40	2088	5310	46.1,46.1	
50	2609	2443	2371	2425	2681	2641	2581	2517	40- 50	2181	7491	65.1,65.1	
60	1733	1627	1592	1645	1811	1865	1758	1733	50- 60	1908	9399	81.7,81.7	
70	819.4	771.9	732.2	815.1	955.0	1009	895.7	913.5	60- 70	1280	10679	92.8,92.8	
80	102.4	73.36	34.25	99.16	143.9	174.5	104.6	144.2	70- 80	467.4	11147	96.9,96.9	
90	20.13	20.39	19.51	19.14	28.51	27.70	26.94	27.26	80- 90	42.06	11189	97.2,97.2	
100	28.51	28.84	27.76	27.09	35.40	33.97	33.28	33.74	90-100	29.57	11218	97.5,97.5	
110	38.46	38.67	37.68	36.59	44.70	42.72	42.14	42.42	100-110	37.60	11256	97.8,97.8	
120	48.25	48.17	47.28	46.02	54.20	52.01	51.22	51.40	110-120	44.69	11301	98.2,98.2	
130	57.10	56.65	55.64	54.68	62.36	60.09	58.75	58.88	120-130	48.23	11349	98.6,98.6	
140	65.64	64.80	63.88	62.99	69.72	67.37	65.75	65.63	130-140	47.71	11397	99,99	
150	74.02	72.89	72.31	71.12	76.84	74.58	72.77	72.35	140-150	43.46	11440	99.4,99.4	
160	81.76	80.64	80.42	78.68	83.42	81.40	79.91	78.93	150-160	35.45	11476	99.7,99.7	
170	88.46	87.39	87.15	85.22	89.05	87.38	86.25	84.66	160-170	23.63	11499	99.9,99.9	
180	90.08	89.31	89.22	86.88	91.10	89.29	88.52	86.91	170-180	8.370	11508	100,100	
DEG	LUMINOUS INTENSITY:cd									UNIT:lm			

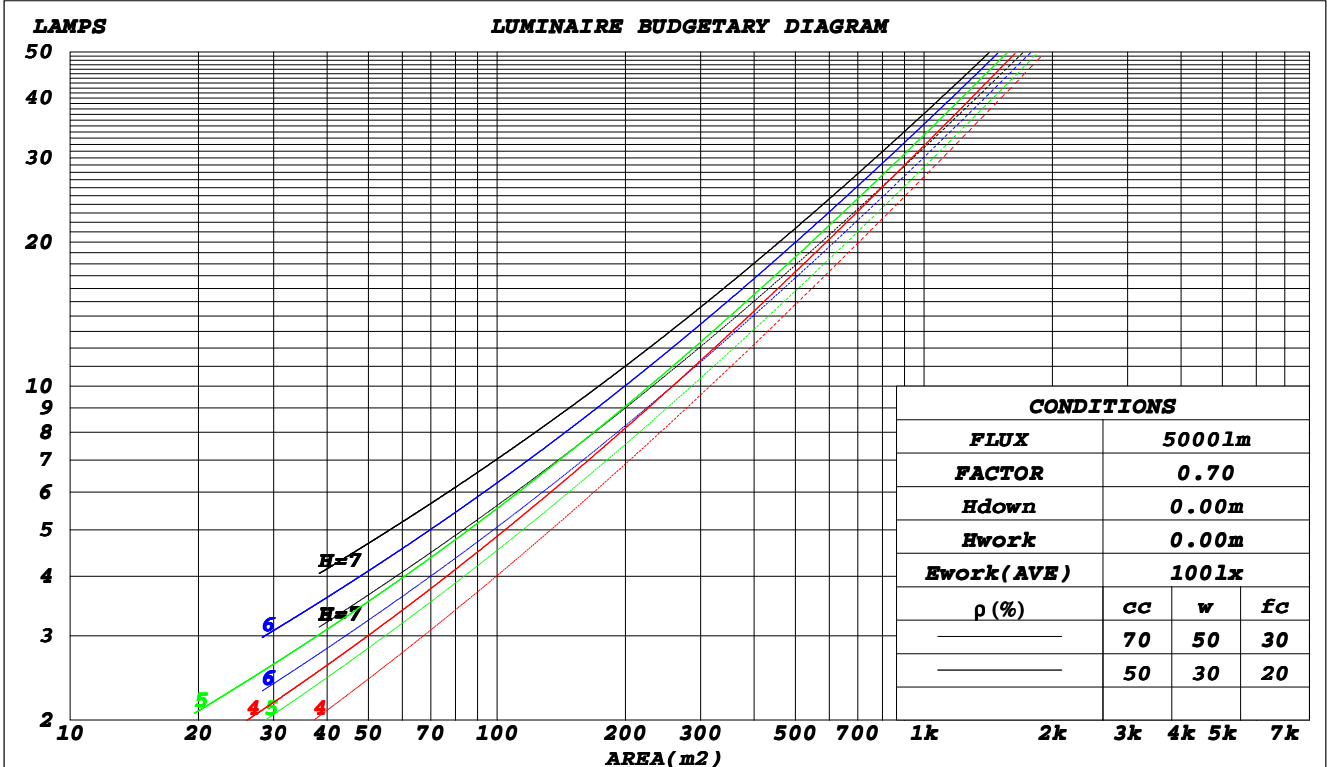
C Range: 0 - 360DEG
C Interval: 30.0DEG
Test Speed: HIGH
Temperature:25.3DEG
Operators:DAMIN
Test Date:2018-05-17

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:220.1V I:0.6370A P:139.7W PF:0.9960 Lamp Flux:11507.5x1 lm		
NAME: DFL-150W	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	.99	.99	.99	.97
1.0	1.05	1.01	.98	1.02	.99	.96	.98	.95	.92	.93	.91	.89	.89	.87	.86	.84
2.0	.92	.86	.80	.90	.84	.79	.86	.81	.77	.82	.78	.75	.79	.76	.73	.71
3.0	.81	.73	.67	.79	.72	.66	.76	.70	.65	.73	.68	.63	.70	.66	.62	.60
4.0	.72	.64	.57	.71	.63	.57	.68	.61	.56	.65	.59	.54	.63	.58	.53	.51
5.0	.64	.56	.49	.63	.55	.49	.61	.54	.48	.58	.52	.47	.56	.51	.47	.44
6.0	.58	.49	.43	.57	.49	.43	.55	.47	.42	.53	.46	.41	.51	.45	.41	.39
7.0	.52	.44	.38	.52	.43	.38	.50	.42	.37	.48	.42	.37	.47	.41	.36	.34
8.0	.48	.40	.34	.47	.39	.34	.45	.38	.33	.44	.38	.33	.43	.37	.32	.31
9.0	.44	.36	.30	.43	.35	.30	.42	.35	.30	.41	.34	.30	.39	.34	.29	.27
10.0	.40	.33	.27	.40	.32	.27	.39	.32	.27	.38	.31	.27	.36	.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:220.1V I:0.6370A P:139.7W PF:0.9960 Lamp Flux:11507.5x1 lm		
NAME: DFL-150W	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	.278	.158	.050	.270	.154	.049	.255	.147	.047	.242	.140	.045	.229	.133	.043	
2.0	.270	.148	.045	.263	.145	.045	.250	.139	.043	.238	.134	.042	.227	.128	.040	
3.0	.254	.135	.041	.248	.133	.040	.237	.128	.039	.226	.124	.038	.216	.120	.037	
4.0	.238	.123	.036	.232	.121	.036	.222	.118	.035	.212	.114	.034	.203	.111	.034	
5.0	.222	.113	.033	.217	.111	.032	.207	.108	.032	.199	.105	.031	.191	.102	.031	
6.0	.207	.104	.030	.202	.102	.029	.194	.100	.029	.186	.097	.028	.179	.094	.028	
7.0	.193	.096	.027	.189	.094	.027	.182	.092	.027	.175	.090	.026	.169	.088	.026	
8.0	.181	.089	.025	.178	.088	.025	.171	.085	.024	.165	.083	.024	.159	.082	.024	
9.0	.170	.082	.023	.167	.081	.023	.161	.080	.023	.155	.078	.022	.150	.076	.022	
10.0	.161	.077	.021	.158	.076	.021	.152	.075	.021	.147	.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	.212	.212	.212	.181	.181	.181	.123	.123	.123	.071	.071	.071	.023	.023	.023	
2.0	.199	.178	.158	.171	.153	.136	.117	.105	.094	.067	.061	.055	.022	.020	.018	
3.0	.191	.153	.122	.163	.132	.106	.112	.091	.074	.065	.053	.043	.021	.017	.014	
4.0	.183	.136	.098	.157	.117	.085	.108	.081	.060	.062	.048	.035	.020	.015	.012	
5.0	.176	.122	.082	.151	.106	.071	.104	.074	.050	.060	.043	.030	.019	.014	.010	
6.0	.169	.112	.070	.145	.097	.061	.100	.068	.043	.058	.040	.026	.019	.013	.008	
7.0	.162	.104	.062	.139	.090	.054	.096	.063	.038	.056	.037	.023	.018	.012	.007	
8.0	.155	.097	.056	.133	.084	.049	.092	.059	.034	.054	.035	.020	.017	.011	.007	
9.0	.149	.091	.051	.128	.079	.045	.089	.055	.032	.052	.033	.019	.017	.011	.006	
10.0	.143	.086	.048	.123	.075	.041	.085	.053	.029	.050	.031	.018	.016	.010	.006	
10.0	.138	.082	.045	.119	.071	.039	.082	.050	.028	.048	.030	.017	.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:220.1V I:0.6370A P:139.7W PF:0.9960 Lamp Flux:11507.5x1 lm		
NAME: DFL-150W	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	28.5	29.9	28.8	30.2	30.4	28.1	29.5	28.4	29.8	30.0
3H	29.5	30.8	29.8	31.1	31.4	29.0	30.3	29.4	30.6	30.9
4H	29.7	30.9	30.0	31.2	31.5	29.1	30.4	29.5	30.7	31.0
6H	29.6	30.8	30.0	31.1	31.5	29.0	30.2	29.4	30.5	30.9
8H	29.6	30.7	30.0	31.0	31.4	29.0	30.1	29.4	30.4	30.8
12H	29.5	30.6	29.9	31.0	31.3	28.9	30.0	29.3	30.3	30.7
4H 2H	28.9	30.1	29.2	30.4	30.7	28.6	29.8	28.9	30.1	30.4
3H	30.0	31.1	30.4	31.4	31.8	29.6	30.7	30.0	31.0	31.4
4H	30.2	31.2	30.6	31.6	32.0	29.7	30.7	30.1	31.0	31.4
6H	30.2	31.1	30.7	31.5	31.9	29.6	30.5	30.1	30.9	31.3
8H	30.2	31.0	30.6	31.4	31.8	29.6	30.4	30.0	30.8	31.2
12H	30.1	30.9	30.6	31.3	31.8	29.5	30.3	30.0	30.7	31.2
8H 4H	30.2	31.0	30.7	31.4	31.9	29.7	30.5	30.2	30.9	31.4
6H	30.2	30.9	30.7	31.3	31.8	29.7	30.3	30.1	30.8	31.3
8H	30.2	30.8	30.7	31.2	31.7	29.6	30.2	30.1	30.7	31.2
12H	30.2	30.6	30.7	31.1	31.7	29.6	30.1	30.1	30.6	31.1
12H 4H	30.2	30.9	30.6	31.3	31.8	29.7	30.4	30.1	30.8	31.3
6H	30.2	30.8	30.7	31.2	31.7	29.6	30.2	30.1	30.7	31.2
8H	30.2	30.6	30.7	31.1	31.7	29.6	30.1	30.1	30.6	31.1
Variations with the observer position at spacings:										
S = 1.0H	+ 0.2 / - 0.3					+ 0.3 / - 0.4				
1.5H	+ 0.3 / - 0.5					+ 0.3 / - 0.5				
2.0H	+ 0.6 / - 0.7					+ 0.6 / - 0.5				

CIE Pub.117 Corrected 11508 lm Total Lamp Luminous Flux.(8log(F/F0) = 8.5)

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:220.1V I:0.6370A P:139.7W PF:0.9960 Lamp Flux:11507.5x1 lm		
NAME: DFL-150W	TYPE:LED	
MFR.: GRANDOL INDUSTRY LTD		

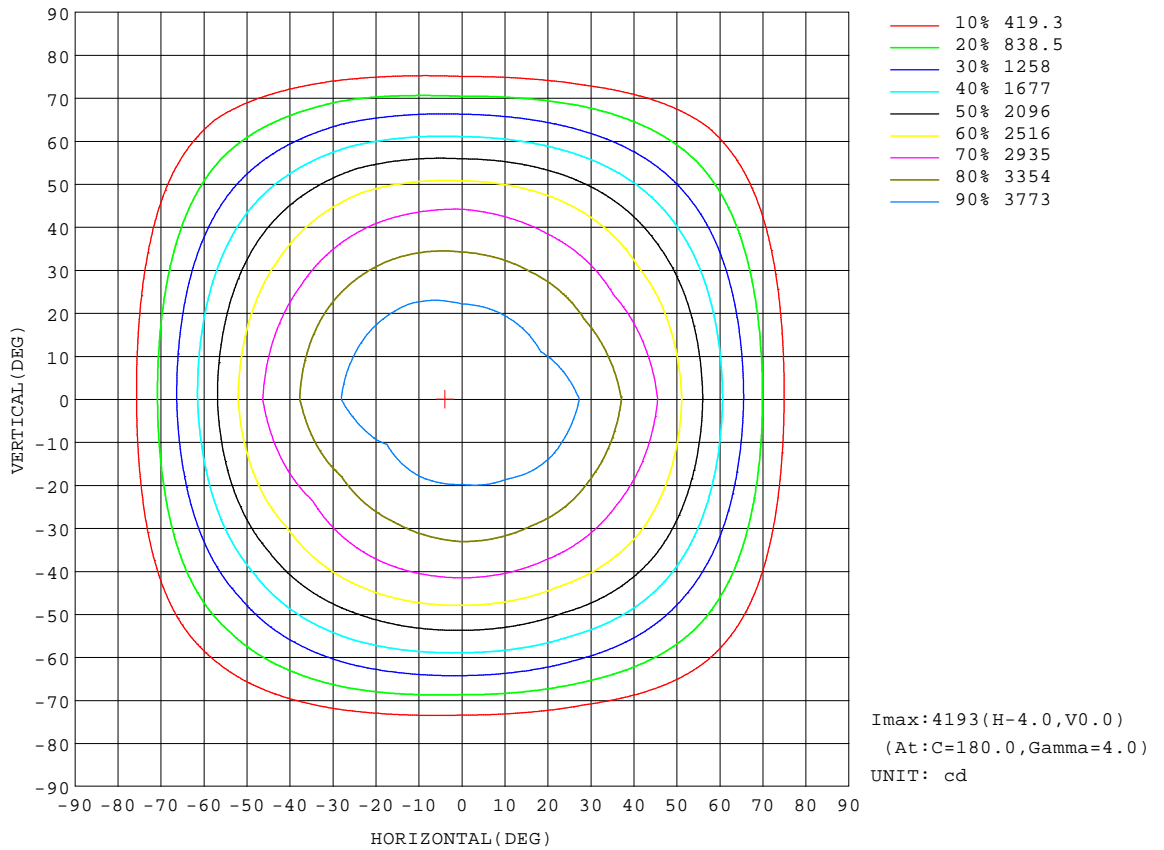
REFLECTANCE										
Ceiling	0.8	0.8	0.8	0.7	0.7	0.7	0.5	0.5	0.5	0
Walls	0.7	0.5	0.3	0.7	0.5	0.3	0.7	0.5	0.3	0
Working plane	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0
ROOM INDEX	UTILIZATION FACTORS(PERCENT) $k(RI) \times RCR = 5$									
k = 0.60	58	47	40	57	46	40	56	46	39	33
0.80	68	57	50	67	57	50	65	56	49	42
1.00	77	66	59	76	66	59	73	67	58	51
1.25	84	74	67	83	73	67	80	72	66	59
1.50	89	80	73	87	79	73	84	77	71	64
2.00	96	88	82	94	87	81	90	84	79	71
2.50	100	93	87	98	91	86	93	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	102	99	102	98	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:220.1V I:0.6370A P:139.7W PF:0.9960 Lamp Flux:11507.5x1 lm		
NAME: DFL-150W	TYPE:LED	
MFR.: GRANDOL INDUSTRY LTD		



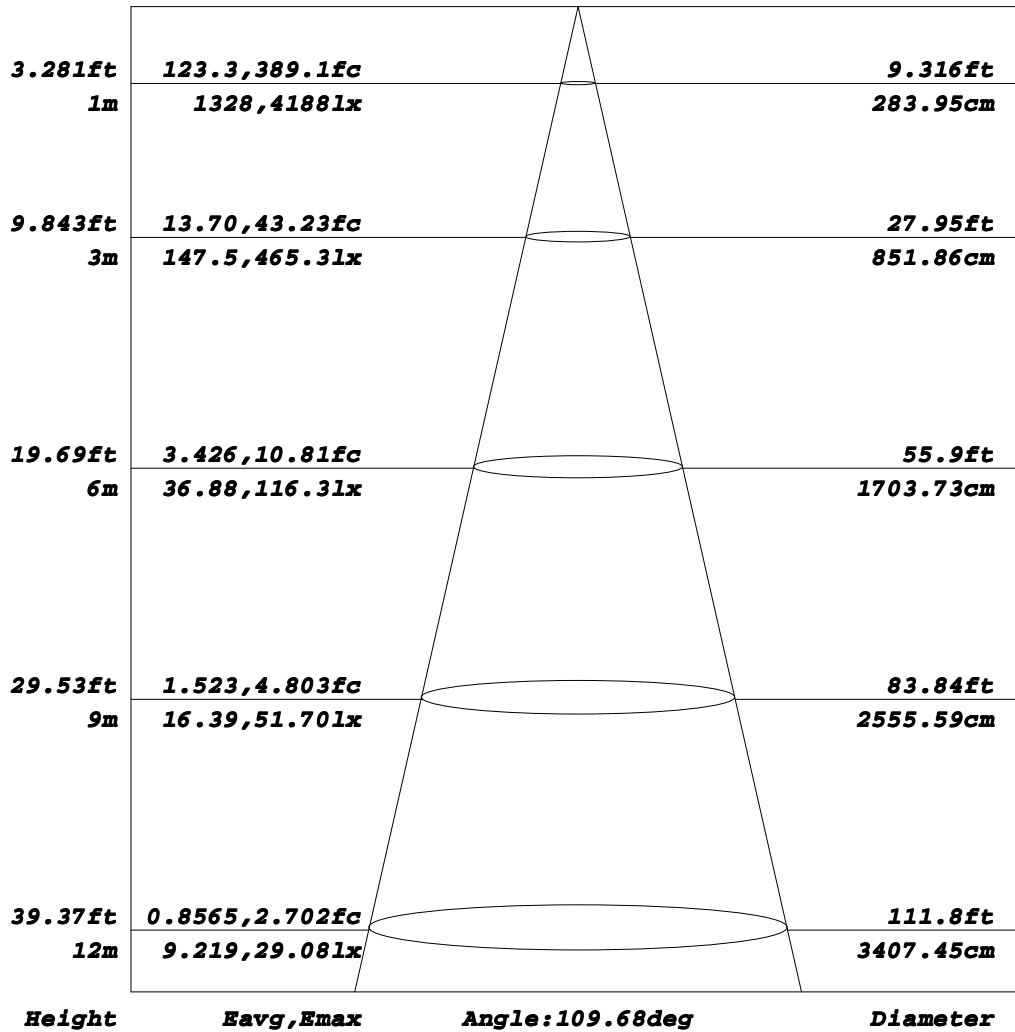
C Range: 0 - 360DEG
C Interval: 30.0DEG
Test Speed: HIGH
Temperature:25.3DEG
Operators:DAMIN
Test Date:2018-05-17

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:220.1V I:0.6370A P:139.7W PF:0.9960 Lamp Flux:11507.5x1 lm		
NAME: DFL-150W	TYPE:LED	
MFR.: GRANDOL INDUSTRY LTD		

Flux out:8507 lm



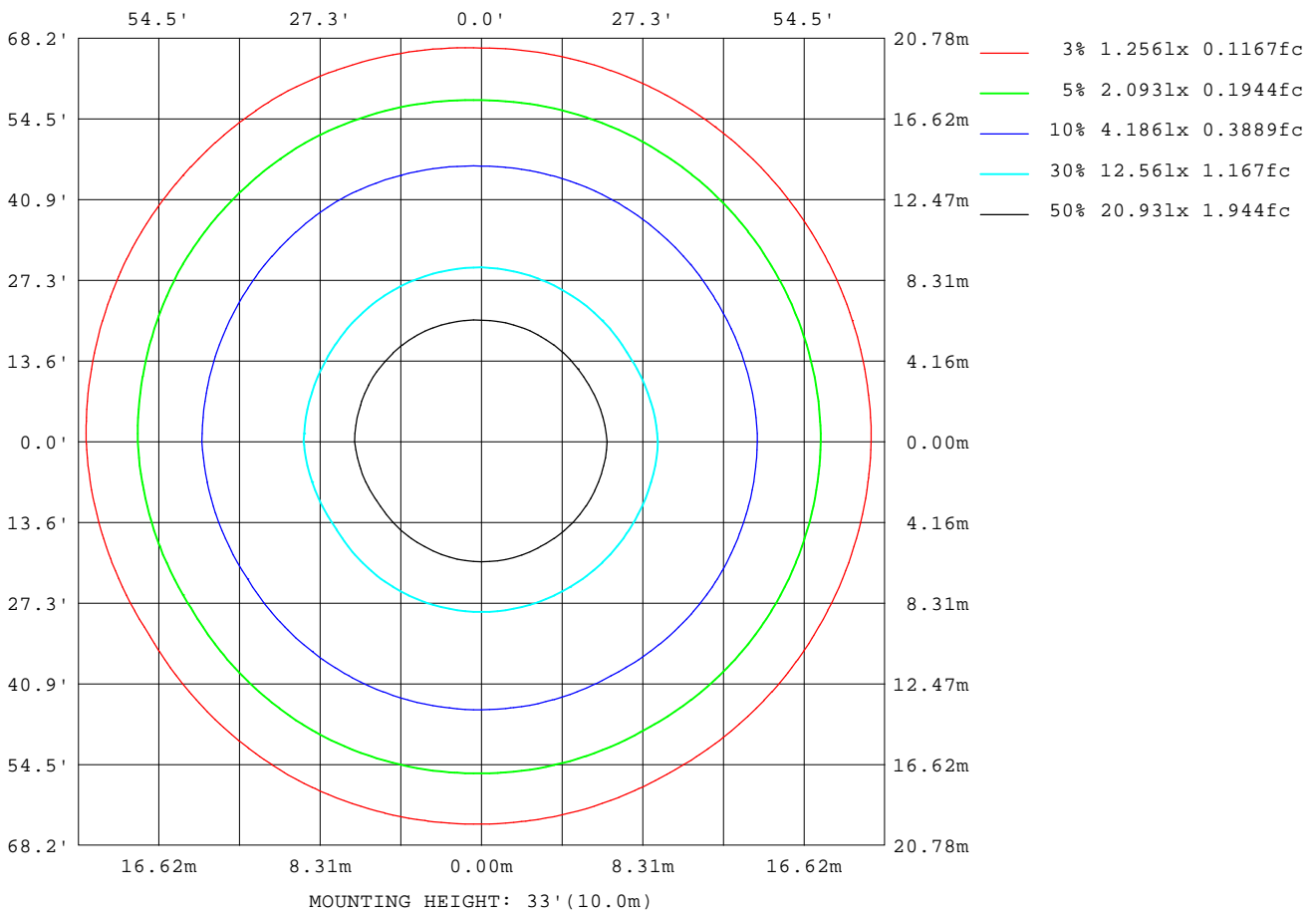
Note: The Curves indicate the illuminated area and the average illumination when the luminaire is at different distance.

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

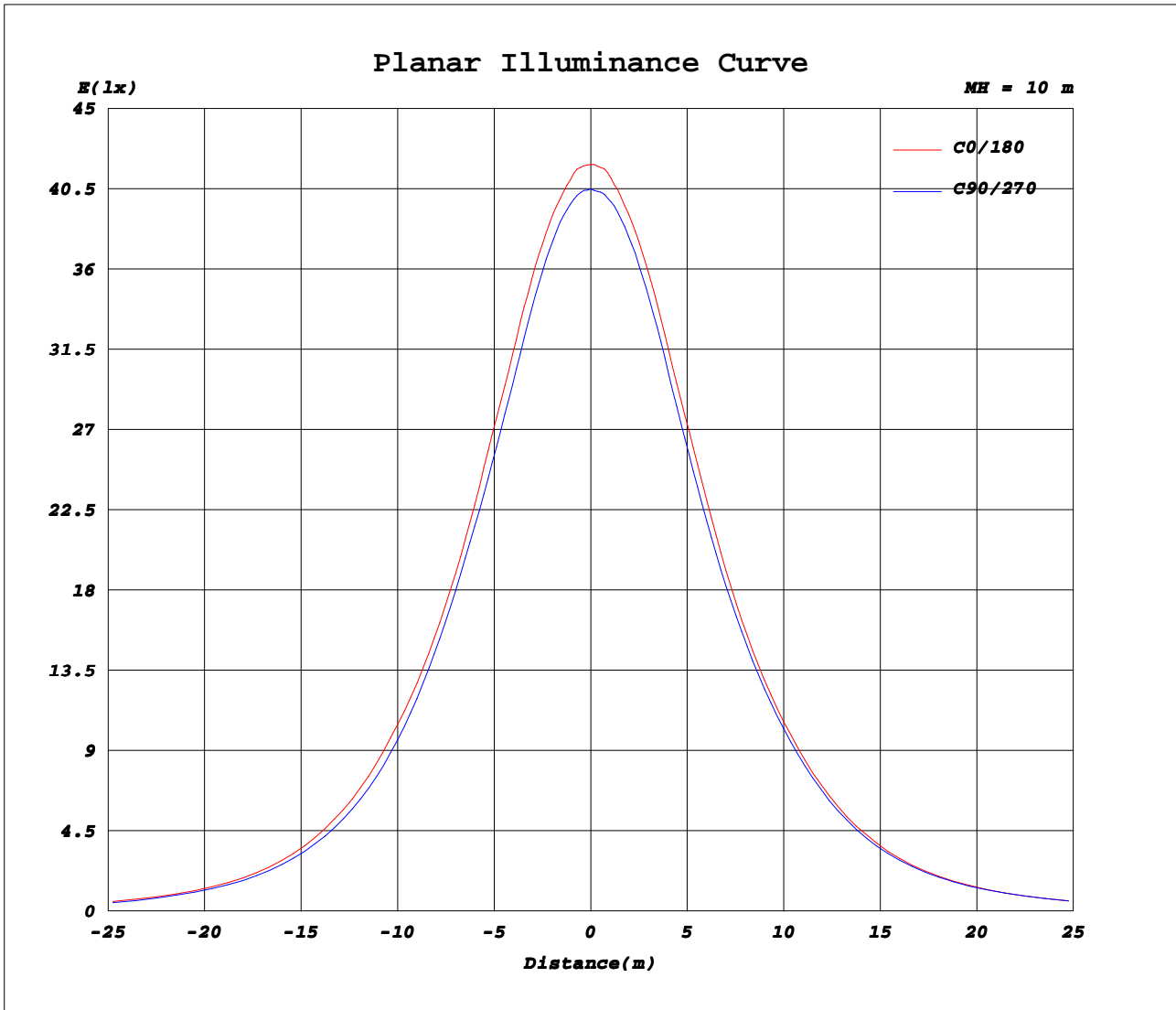
Test:U:220.1V I:0.6370A P:139.7W PF:0.9960 Lamp Flux:11507.5x1 lm		
NAME: DFL-150W	TYPE:LED	
MFR.: GRANDOL INDUSTRY LTD		



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:220.1V I:0.6370A P:139.7W PF:0.9960 Lamp Flux:11507.5x1 lm		
NAME: DFL-150W	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	4186	4136	4088	4049	4005	3979	4186	4136	4088	4049	4005	3979							
5	4185	4139	4077	4037	4008	3977	4188	4137	4089	4045	4009	3986							
10	4140	4076	4038	3994	3964	3928	4140	4095	4072	4017	3987	3937							
15	4089	4021	3943	3908	3880	3875	4096	4050	4012	3951	3917	3888							
20	3983	3914	3809	3767	3785	3780	3997	3974	3909	3843	3809	3803							
25	3837	3760	3656	3618	3618	3634	3859	3834	3778	3683	3663	3666							
30	3660	3570	3480	3456	3453	3473	3704	3668	3602	3514	3491	3493							
35	3446	3336	3280	3269	3241	3257	3481	3459	3397	3322	3279	3282							
40	3213	3079	3016	3022	3014	2992	3250	3187	3162	3122	3052	3034							
45	2965	2799	2718	2717	2736	2739	3002	2918	2920	2893	2816	2770							
50	2609	2515	2371	2371	2404	2445	2681	2621	2660	2581	2541	2492							
55	2185	2116	1989	2002	2028	2078	2278	2269	2296	2171	2156	2135							
60	1733	1667	1586	1592	1644	1645	1811	1872	1859	1758	1743	1722							
65	1301	1207	1181	1200	1234	1213	1367	1420	1441	1353	1325	1303							
70	819	808	735	732	803	827	955	987	1031	896	927	900							
75	414	380	295	294	370	397	489	541	535	420	426	482							
80	102	93.8	52.9	34.2	76.9	121	144	186	163	105	128	161							
85	21.2	21.3	19.8	19.0	20.9	21.3	30.9	33.3	31.3	29.6	30.9	31.7							
90	20.1	20.5	20.3	19.5	19.1	19.1	28.5	27.9	27.5	26.9	27.3	27.2							
95	24.0	24.4	24.2	23.3	22.8	22.8	31.6	30.7	30.1	29.8	30.2	30.2							
100	28.5	29.0	28.7	27.8	27.1	27.1	35.4	34.4	33.5	33.3	33.7	33.8							
105	33.4	33.8	33.6	32.6	31.8	31.7	39.8	38.6	37.7	37.5	37.9	37.9							
110	38.5	38.9	38.5	37.7	36.6	36.6	44.7	43.2	42.3	42.1	42.4	42.4							
115	43.5	43.7	43.4	42.6	41.4	41.4	49.6	47.9	47.0	46.8	47.2	46.9							
120	48.2	48.3	48.0	47.3	46.1	45.9	54.2	52.5	51.6	51.2	51.6	51.2							
125	52.7	52.7	52.2	51.6	50.4	50.3	58.4	56.6	55.7	55.2	55.6	55.0							
130	57.1	56.9	56.4	55.6	54.8	54.6	62.4	60.5	59.7	58.8	59.3	58.5							
135	61.4	61.1	60.4	59.7	59.0	58.7	66.0	64.2	63.3	62.3	62.6	61.9							
140	65.6	65.3	64.3	63.9	63.1	62.9	69.7	67.7	67.0	65.8	66.1	65.2							
145	69.9	69.4	68.3	68.0	67.2	67.0	73.2	71.2	70.5	69.1	69.4	68.5							
150	74.0	73.5	72.3	72.3	71.3	71.0	76.8	74.9	74.3	72.8	72.9	71.9							
155	77.9	77.4	76.1	76.4	75.1	74.8	80.3	78.4	77.9	76.5	76.3	75.2							
160	81.8	81.3	80.0	80.4	78.8	78.6	83.4	81.6	81.2	79.9	79.5	78.4							
165	85.5	85.0	83.6	84.1	82.4	82.1	86.4	84.6	84.4	83.3	82.5	81.5							
170	88.5	88.2	86.6	87.1	85.4	85.0	89.0	87.3	87.4	86.3	85.2	84.1							
175	89.7	89.5	88.2	88.9	86.9	86.3	90.3	88.6	88.9	88.0	86.9	85.3							
180	90.1	90.1	88.6	89.2	87.1	86.6	91.1	89.2	89.4	88.5	87.8	86.1							

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: