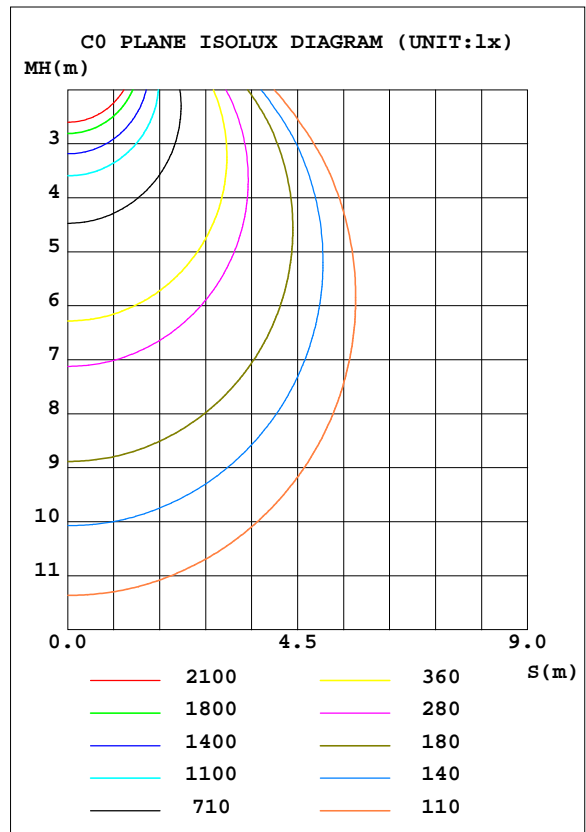
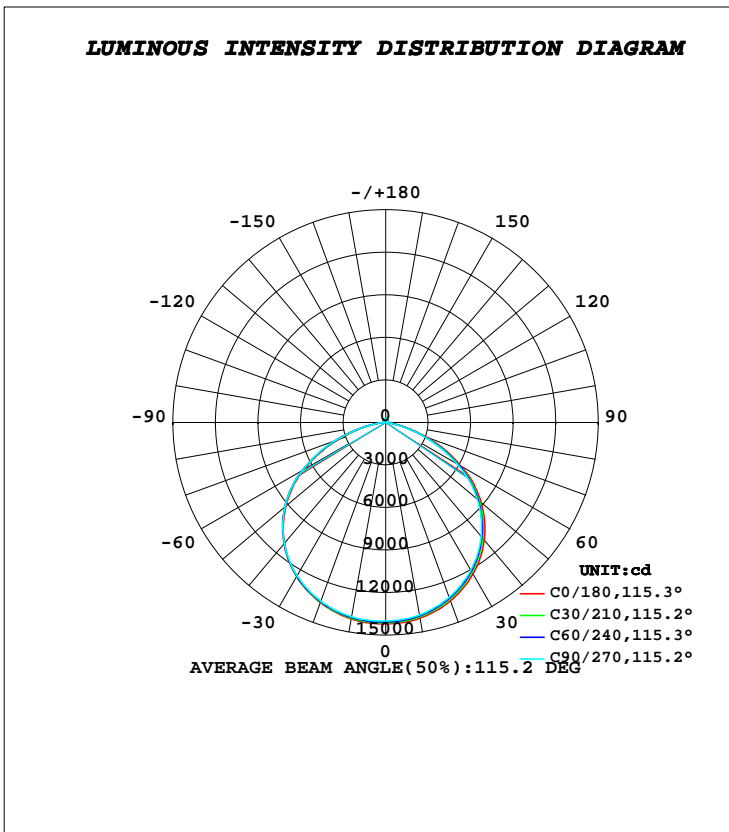


LUMINAIRE PHOTOMETRIC TEST REPORT

Test:U:220.1V I:1.385A P:303.2W PF:0.9880 Lamp Flux:41095.9x1 lm		
NAME: GKU-300W	TYPE:LED	
DIM.: 460*460mm	SUR.:310*310mm	
MFR.: GRANDOL INDUSTRY LTD		

DATA OF LAMP		PHOTOMETRIC DATA Eff: 135.54 lm/W			
MODEL	IMSYLHU300WDL	I _{max} (cd)	14205	S/MH(C0/180)	1.29
NOMINAL POWER(W)	300	LOR(%)	100.0	S/MH(C90/270)	1.28
RATED VOLTAGE(V)	220	TOTAL FLUX(lm)	41096	η UP, DN(C0-180)	1.3, 46.3
NOMINAL FLUX(lm)	41095.9	CIE CLASS	DIRECT	η UP, DN(C180-360)	1.4, 51.0
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:2017-09-21

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=0.7100]
Remarks:

ZONAL FLUX DIAGRAM

ZONAL FLUX DIAGRAM:

γ	C0	C45	C90	C135	C180	C225	C270	C315	γ	Φ zone	Φ total	%lum,lamp
10	1401	1388	1378	1369	1408	1399	1391	1383	0- 10	1333	1333	3.24,3.24
20	1338	1322	1311	1303	1352	1347	1341	1334	10- 20	3852	5186	12.6,12.6
30	1233	1215	1202	1195	1255	1254	1250	1243	20- 30	5925	11110	27,27
40	1081	1061	1047	1041	1111	1115	1113	1107	30- 40	7271	18381	44.7,44.7
50	880.2	857.7	844.7	838.3	921.1	927.7	928.4	925.6	40- 50	7647	26029	63.3,63.3
60	609.4	588.7	576.3	569.6	664.3	677.9	681.4	681.6	50- 60	6863	32891	80,80
70	309.2	287.0	276.4	272.0	359.2	378.3	385.2	386.1	60- 70	4775	37667	91.7,91.7
80	59.30	48.55	43.77	41.56	90.88	103.0	107.0	109.2	70- 80	2038	39704	96.6,96.6
90	6.977	7.109	7.152	7.104	11.33	11.11	10.97	10.86	80- 90	283.8	39988	97.3,97.3
100	9.794	9.964	10.02	9.958	13.36	13.08	12.91	12.79	90-100	111.4	40099	97.6,97.6
110	12.99	13.14	13.18	13.13	16.12	15.74	15.53	15.43	100-110	136.3	40236	97.9,97.9
120	16.13	16.26	16.27	16.24	19.15	18.75	18.50	18.41	110-120	158.0	40394	98.3,98.3
130	18.86	18.96	18.97	18.94	21.70	21.31	21.05	20.97	120-130	168.5	40562	98.7,98.7
140	21.21	21.31	21.33	21.25	23.63	23.27	22.97	22.92	130-140	163.7	40726	99.1,99.1
150	23.65	23.69	23.71	23.61	25.43	25.09	24.76	24.72	140-150	145.8	40872	99.5,99.5
160	26.34	26.37	26.37	26.25	27.46	27.13	26.79	26.73	150-160	117.5	40989	99.7,99.7
170	29.05	29.06	29.00	28.83	29.51	29.20	28.91	28.81	160-170	78.70	41068	99.9,99.9
180	30.18	30.12	30.00	29.76	30.30	30.12	29.90	29.76	170-180	28.14	41096	100,100
DEG	LUMINOUS INTENSITY:×10cd									UNIT:lm		

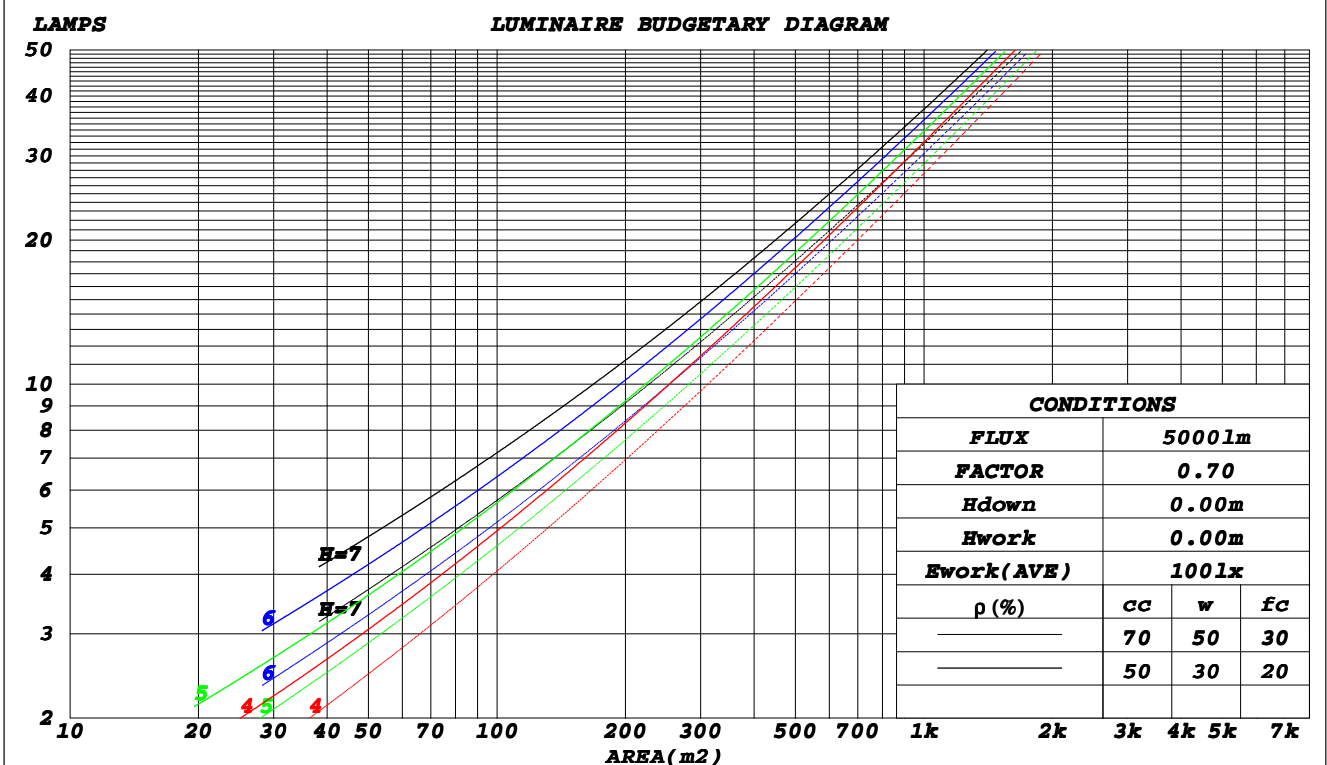
C Range: 0 - 360DEG
C Interval: 30.0DEG
Test Speed: HIGH
Temperature:25.3DEG
Operators:DAMIN
Test Date:2017-09-21

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=0.7100]
Remarks:

CU AND LUMINAIRE BUDGETARY ESTIMATE DIAGRAM

Test:U:220.1V I:1.385A P:303.2W PF:0.9880 Lamp Flux:41095.9x1 lm		
NAME: GKU-300W	TYPE:LED	
DIM.: 460*460mm	SUR.:310*310mm	
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	1.04	1.00	.97	1.02	.98	.95	.97	.94	.91	.93	.90	.88	.89	.87	.85	.83
2.0	.91	.85	.79	.89	.83	.78	.85	.80	.76	.82	.77	.74	.78	.75	.72	.70
3.0	.80	.72	.66	.79	.71	.65	.75	.69	.64	.72	.67	.62	.69	.65	.61	.59
4.0	.71	.63	.56	.70	.62	.55	.67	.60	.54	.64	.58	.53	.62	.57	.52	.50
5.0	.64	.55	.48	.62	.54	.48	.60	.53	.47	.58	.51	.46	.55	.50	.46	.43
6.0	.57	.48	.42	.56	.48	.42	.54	.47	.41	.52	.45	.41	.50	.44	.40	.38
7.0	.52	.43	.37	.51	.43	.37	.49	.42	.36	.47	.41	.36	.46	.40	.35	.33
8.0	.47	.39	.33	.46	.38	.33	.45	.38	.32	.43	.37	.32	.42	.36	.32	.30
9.0	.43	.35	.30	.42	.35	.29	.41	.34	.29	.40	.33	.29	.39	.33	.29	.27
10.0	.40	.32	.27	.39	.32	.27	.38	.31	.26	.37	.31	.26	.36	.30	.26	.24



C Range: 0 - 360DEG
 C Interval: 30.0DEG
 Test Speed: HIGH
 Temperature: 25.3DEG
 Operators: DAMIN
 Test Date: 2017-09-21

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=0.7100]
 Remarks:

WEC AND CCEC

Test:U:220.1V I:1.385A P:303.2W PF:0.9880 Lamp Flux:41095.9x1 lm		
NAME: GKU-300W	TYPE:LED	
DIM.: 460*460mm	SUR.:310*310mm	
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	.287	.163	.052	.280	.160	.051	.265	.152	.049	.251	.145	.047	.239	.139	.045	
2.0	.277	.152	.047	.270	.149	.046	.257	.143	.044	.245	.138	.043	.234	.132	.042	
3.0	.260	.138	.041	.254	.136	.041	.242	.131	.040	.231	.127	.039	.221	.123	.038	
4.0	.242	.126	.037	.236	.124	.037	.226	.120	.036	.216	.116	.035	.208	.113	.034	
5.0	.225	.115	.033	.220	.113	.033	.211	.110	.032	.202	.107	.032	.194	.104	.031	
6.0	.209	.105	.030	.205	.104	.030	.197	.101	.029	.189	.098	.029	.182	.096	.028	
7.0	.196	.097	.027	.192	.095	.027	.184	.093	.027	.177	.091	.026	.171	.089	.026	
8.0	.183	.089	.025	.180	.088	.025	.173	.086	.025	.167	.084	.024	.161	.082	.024	
9.0	.172	.083	.023	.169	.082	.023	.163	.080	.023	.157	.079	.023	.151	.077	.022	
10.0	.162	.078	.022	.159	.077	.021	.153	.075	.021	.148	.074	.021	.143	.072	.021	

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	.199	.177	.157	.171	.152	.135	.117	.105	.093	.067	.060	.054	.022	.019	.018	
3.0	.191	.153	.121	.164	.132	.104	.112	.091	.073	.065	.053	.043	.021	.017	.014	
4.0	.183	.135	.097	.157	.117	.084	.108	.081	.059	.062	.047	.035	.020	.015	.011	
5.0	.176	.122	.080	.151	.105	.070	.104	.073	.049	.060	.043	.029	.019	.014	.010	
6.0	.169	.111	.069	.145	.096	.060	.100	.067	.042	.058	.040	.025	.019	.013	.008	
7.0	.162	.103	.061	.139	.089	.053	.096	.063	.038	.056	.037	.022	.018	.012	.007	
8.0	.155	.096	.055	.134	.083	.048	.092	.059	.034	.054	.034	.020	.017	.011	.007	
9.0	.149	.091	.050	.128	.079	.044	.089	.055	.031	.052	.033	.019	.017	.011	.006	
10.0	.143	.086	.047	.123	.074	.041	.085	.052	.029	.050	.031	.017	.016	.010	.006	
10.0	.138	.081	.044	.119	.071	.038	.082	.050	.027	.048	.029	.016	.016	.010	.005	

C Range: 0 - 360DEG
C Interval: 30.0DEG
Test Speed: HIGH
Temperature:25.3DEG
Operators:DAMIN
Test Date:2017-09-21

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=0.7100]
Remarks:

Uncorrected UGR Table

Test:U:220.1V I:1.385A P:303.2W PF:0.9880 Lamp Flux:41095.9x1 lm		
NAME: GKU-300W	TYPE:LED	
DIM.: 460*460mm	SUR.:310*310mm	
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	29.7	31.2	30.0	31.4	31.7	29.5	31.0	29.8	31.2	31.5
3H	30.8	32.2	31.2	32.4	32.7	30.5	31.9	30.9	32.1	32.4
4H	31.1	32.3	31.4	32.6	32.9	30.7	32.0	31.1	32.3	32.6
6H	31.1	32.3	31.5	32.6	32.9	30.7	31.9	31.1	32.2	32.5
8H	31.1	32.2	31.4	32.5	32.9	30.7	31.8	31.0	32.1	32.5
12H	31.0	32.1	31.4	32.4	32.8	30.6	31.7	31.0	32.1	32.4
4H 2H	30.2	31.5	30.5	31.8	32.1	30.0	31.3	30.4	31.6	31.9
3H	31.4	32.5	31.8	32.8	33.2	31.1	32.2	31.5	32.6	32.9
4H	31.7	32.7	32.1	33.0	33.4	31.4	32.4	31.8	32.7	33.1
6H	31.8	32.6	32.2	33.0	33.5	31.4	32.3	31.8	32.7	33.1
8H	31.7	32.5	32.2	33.0	33.4	31.4	32.2	31.8	32.6	33.0
12H	31.7	32.4	32.2	32.9	33.3	31.3	32.1	31.8	32.5	33.0
8H 4H	31.7	32.5	32.2	32.9	33.4	31.4	32.2	31.9	32.6	33.1
6H	31.8	32.5	32.3	32.9	33.4	31.5	32.2	32.0	32.6	33.1
8H	31.8	32.4	32.3	32.9	33.4	31.5	32.0	32.0	32.5	33.0
12H	31.8	32.3	32.3	32.8	33.3	31.4	31.9	31.9	32.4	33.0
12H 4H	31.7	32.4	32.1	32.8	33.3	31.4	32.1	31.8	32.6	33.0
6H	31.8	32.4	32.3	32.8	33.4	31.4	32.0	31.9	32.5	33.0
8H	31.8	32.3	32.3	32.8	33.3	31.4	31.9	31.9	32.4	33.0
Variations with the observer position at spacings:										
S = 1.0H	+ 0.2 / - 0.3					+ 0.3 / - 0.4				
1.5H	+ 0.3 / - 0.4					+ 0.3 / - 0.5				
2.0H	+ 0.5 / - 0.5					+ 0.5 / - 0.5				

CIE Pub.117 Corrected 41096 lm Total Lamp Luminous Flux.(8log(F/F0) = 12.9)

C Range: 0 - 360DEG
C Interval: 30.0DEG
Test Speed: HIGH
Temperature:25.3DEG
Operators:DAMIN
Test Date:2017-09-21

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=0.7100]
Remarks:

UTILIZATION FACTORS TABLE

Test:U:220.1V I:1.385A P:303.2W PF:0.9880 Lamp Flux:41095.9x1 lm		
NAME: GKU-300W	TYPE:LED	
DIM.: 460*460mm	SUR.:310*310mm	
MFR.: GRANDOL INDUSTRY LTD		

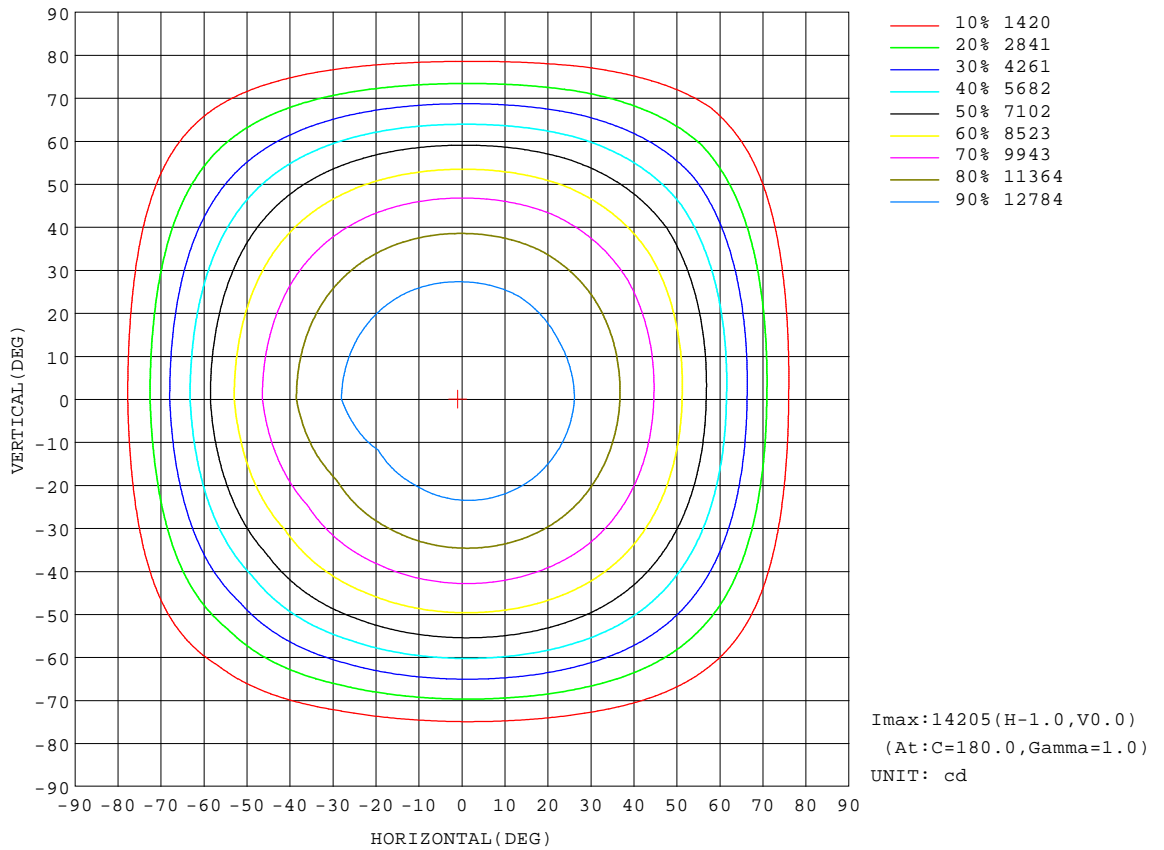
REFLECTANCE										
Ceiling	0.8	0.8	0.8	0.7	0.7	0.7	0.5	0.5	0.5	0
Walls	0.7	0.5	0.3	0.7	0.5	0.3	0.7	0.5	0.3	0
Working plane	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0
ROOM INDEX	UTILIZATION FACTORS(PERCENT) $k(RI) \times RCR = 5$									
k = 0.60	57	46	39	56	45	39	55	45	38	32
0.80	68	56	49	66	56	49	64	55	48	41
1.00	76	65	58	75	65	58	72	66	57	50
1.25	83	73	66	82	72	66	79	71	65	57
1.50	88	79	72	87	78	71	83	76	70	62
2.00	95	87	81	93	86	80	90	83	78	70
2.50	99	92	86	97	90	85	93	87	83	74
3.00	102	96	91	100	94	89	96	91	87	78
4.00	106	101	97	104	99	95	99	95	92	82
5.00	109	104	100	106	102	98	101	98	95	85
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:2017-09-21

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=0.7100]
Remarks:

ISOCANDELA DIAGRAM

Test:U:220.1V I:1.385A P:303.2W PF:0.9880 Lamp Flux:41095.9x1 lm		
NAME: GKU-300W	TYPE:LED	
DIM.: 460*460mm	SUR.:310*310mm	
MFR.: GRANDOL INDUSTRY LTD		



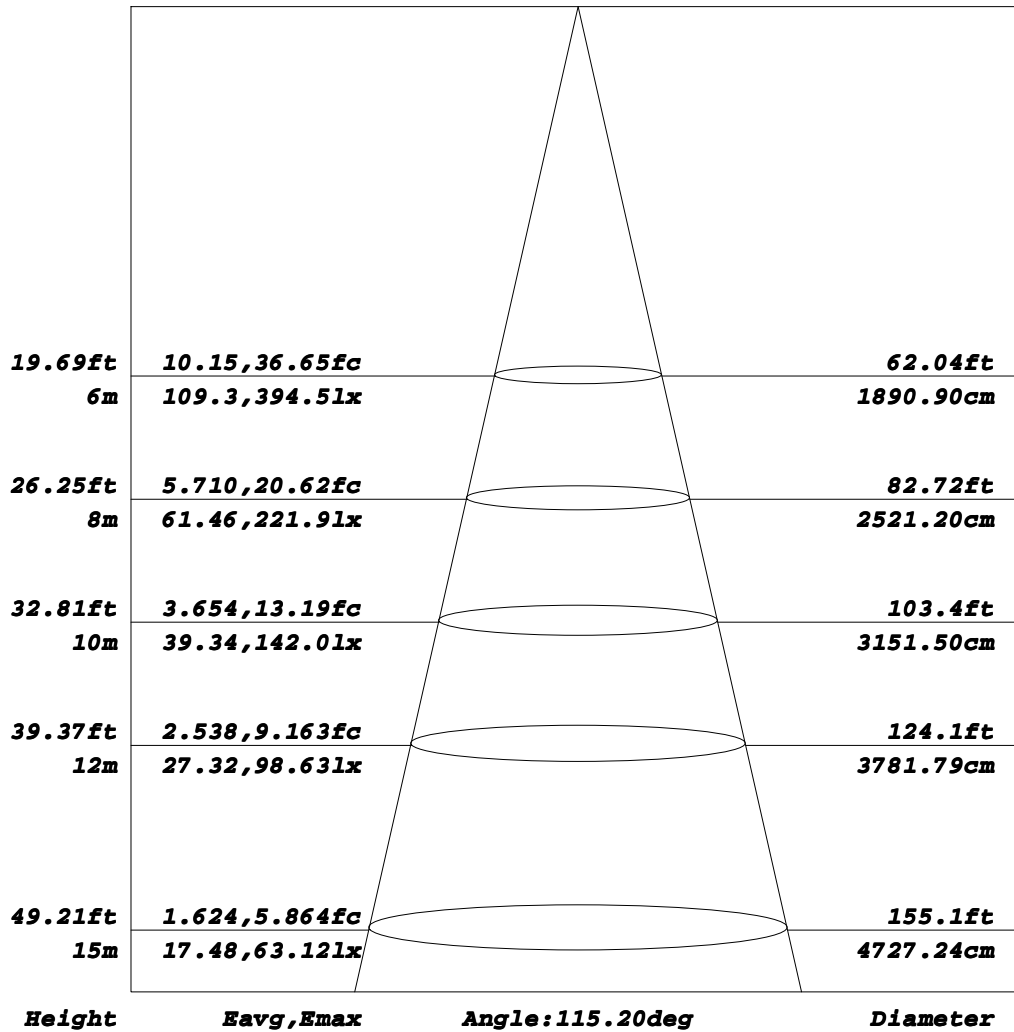
C Range: 0 - 360DEG
C Interval: 30.0DEG
Test Speed: HIGH
Temperature:25.3DEG
Operators:DAMIN
Test Date:2017-09-21

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=0.7100]
Remarks:

AAI Figure

Test:U:220.1V I:1.385A P:303.2W PF:0.9880 Lamp Flux:41095.9x1 lm		
NAME: GKU-300W	TYPE:LED	
DIM.: 460*460mm	SUR.:310*310mm	
MFR.: GRANDOL INDUSTRY LTD		

Flux out:31649 lm



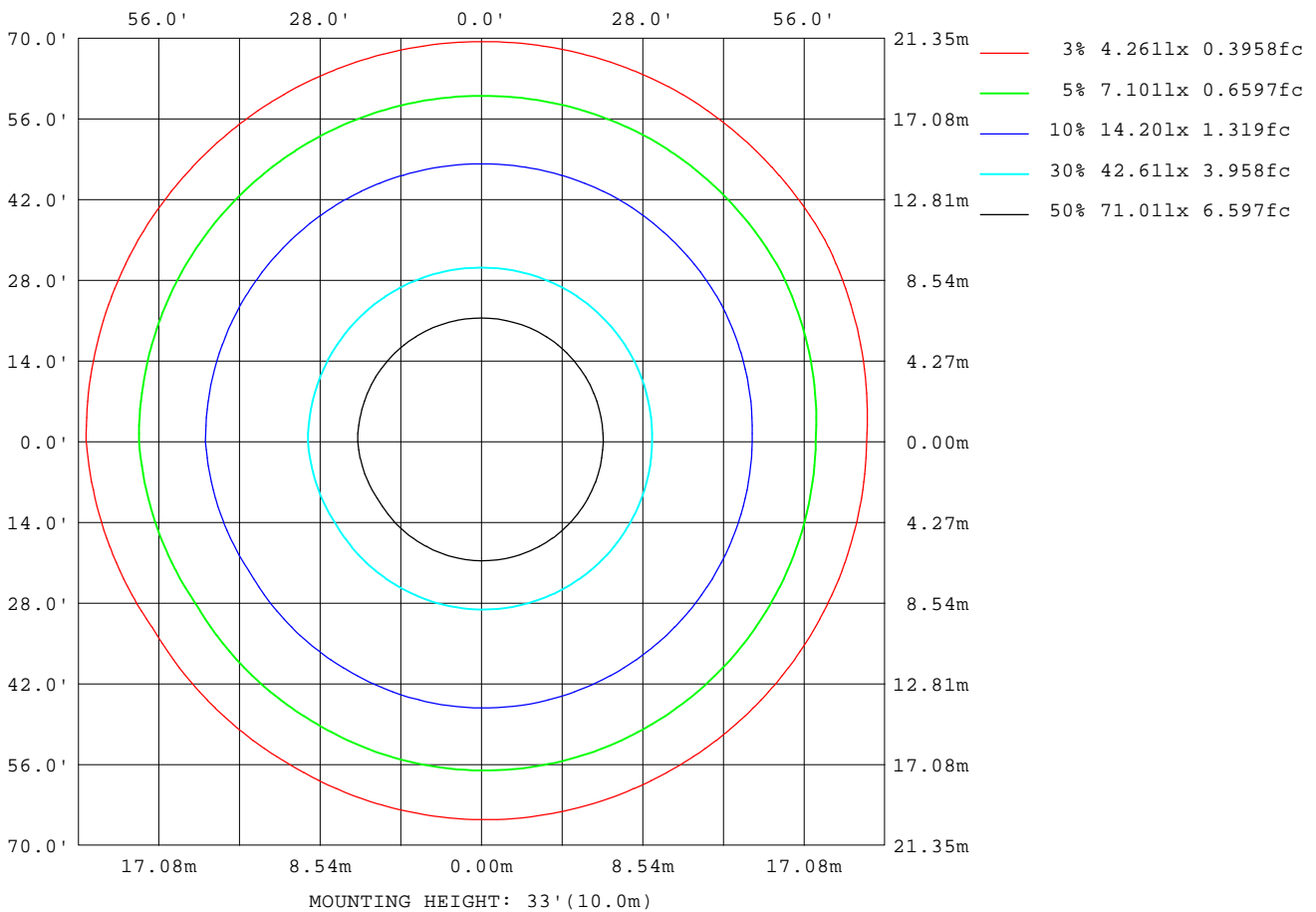
Note: The Curves indicate the illuminated area and the average illumination when the luminaire is at different distance.

C Range: 0 - 360DEG
 C Interval: 30.0DEG
 Test Speed: HIGH
 Temperature: 25.3DEG
 Operators: DAMIN
 Test Date: 2017-09-21

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=0.7100]
 Remarks:

ISOLUX DIAGRAM

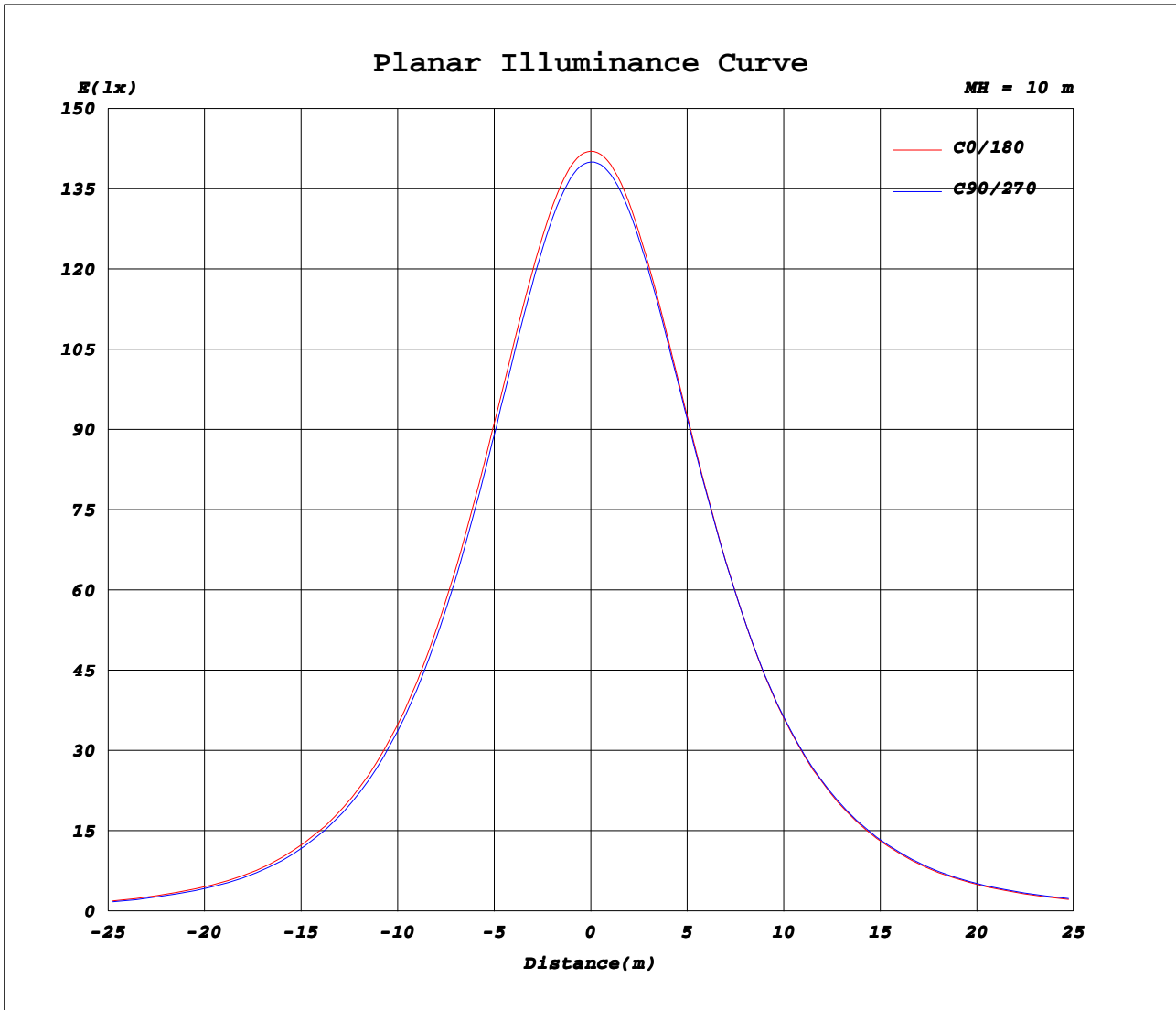
Test:U:220.1V I:1.385A P:303.2W PF:0.9880 Lamp Flux:41095.9x1 lm		
NAME: GKU-300W	TYPE:LED	
DIM.: 460*460mm	SUR.:310*310mm	
MFR.: GRANDOL INDUSTRY LTD		



C Range: 0 - 360DEG
C Interval: 30.0DEG
Test Speed: HIGH
Temperature:25.3DEG
Operators:DAMIN
Test Date:2017-09-21

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=0.7100]
Remarks:

Planar Illuminance Curve



C Range: 0 - 360DEG
C Interval: 30.0DEG
Test Speed: HIGH
Temperature: 25.3DEG
Operators: DAMIN
Test Date: 2017-09-21

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=0.7100]
Remarks:

LUMINOUS DISTRIBUTION INTENSITY DATA

Test:U:220.1V I:1.385A P:303.2W PF:0.9880 Lamp Flux:41095.9x1 lm		
NAME: GKU-300W	TYPE:LED	
DIM.: 460*460mm	SUR.: 310*310mm	
MFR.: GRANDOL INDUSTRY LTD		

Table--1

UNIT: x10cd

C(DEG) γ (DEG)	0	30	60	90	120	150	180	210	240	270	300	330							
0	1420	1413	1406	1400	1395	1389	1420	1413	1406	1400	1395	1389							
5	1416	1408	1401	1394	1388	1384	1419	1412	1406	1400	1394	1389							
10	1401	1391	1384	1378	1371	1367	1408	1402	1397	1391	1387	1380							
15	1375	1364	1357	1350	1342	1340	1384	1381	1376	1371	1368	1360							
20	1338	1326	1318	1311	1303	1302	1352	1349	1345	1341	1338	1330							
25	1291	1278	1270	1264	1254	1255	1309	1307	1304	1301	1298	1289							
30	1233	1219	1210	1202	1194	1195	1255	1255	1253	1250	1248	1238							
35	1163	1148	1139	1130	1123	1125	1189	1191	1190	1187	1186	1175							
40	1081	1066	1055	1047	1038	1043	1111	1115	1116	1113	1113	1102							
45	986	971	959	953	943	948	1022	1027	1029	1027	1029	1016							
50	880	864	852	845	835	842	921	927	929	928	933	918							
55	760	741	730	723	713	721	803	811	816	815	821	805							
60	609	593	584	576	564	575	664	675	680	681	689	675							
65	466	447	436	429	419	429	515	530	535	537	543	531							
70	309	292	282	276	267	277	359	375	381	385	393	379							
75	168	153	145	141	132	143	212	226	232	235	244	230							
80	59.3	50.7	46.4	43.8	38.8	44.3	90.9	100	106	107	114	105							
85	9.10	7.84	7.68	7.46	7.14	7.35	21.2	24.6	26.6	27.4	30.7	26.6							
90	6.98	7.12	7.10	7.15	7.15	7.06	11.3	11.1	11.1	11.0	10.9	10.9							
95	8.31	8.48	8.46	8.53	8.51	8.42	12.2	12.0	11.9	11.8	11.7	11.7							
100	9.79	9.98	9.95	10.0	10.0	9.91	13.4	13.1	13.0	12.9	12.8	12.8							
105	11.3	11.5	11.5	11.6	11.6	11.5	14.7	14.4	14.3	14.2	14.0	14.1							
110	13.0	13.1	13.1	13.2	13.2	13.1	16.1	15.8	15.7	15.5	15.4	15.5							
115	14.6	14.7	14.7	14.8	14.8	14.7	17.7	17.3	17.2	17.0	16.9	17.0							
120	16.1	16.3	16.2	16.3	16.3	16.2	19.2	18.8	18.7	18.5	18.4	18.4							
125	17.6	17.7	17.6	17.7	17.7	17.6	20.5	20.2	20.0	19.9	19.8	19.8							
130	18.9	19.0	18.9	19.0	19.0	18.9	21.7	21.4	21.2	21.1	21.0	21.0							
135	20.0	20.2	20.1	20.2	20.2	20.0	22.7	22.4	22.2	22.1	22.0	22.0							
140	21.2	21.4	21.3	21.3	21.3	21.2	23.6	23.4	23.2	23.0	22.9	22.9							
145	22.4	22.5	22.4	22.5	22.5	22.4	24.5	24.2	24.1	23.8	23.8	23.8							
150	23.7	23.7	23.7	23.7	23.6	23.6	25.4	25.1	25.0	24.8	24.7	24.7							
155	24.9	25.0	24.9	25.0	24.9	24.8	26.4	26.1	26.0	25.7	25.7	25.7							
160	26.3	26.4	26.3	26.4	26.3	26.2	27.5	27.2	27.1	26.8	26.8	26.7							
165	27.8	27.8	27.7	27.8	27.7	27.6	28.5	28.3	28.2	27.9	27.9	27.8							
170	29.1	29.1	29.0	29.0	28.9	28.8	29.5	29.2	29.2	28.9	28.9	28.8							
175	29.8	29.9	29.7	29.7	29.5	29.4	30.0	29.9	29.8	29.6	29.5	29.4							
180	30.2	30.2	30.0	30.0	29.8	29.8	30.3	30.1	30.1	29.9	29.9	29.7							

C Range: 0 - 360DEG
C Interval: 30.0DEG
Test Speed: HIGH
Temperature:25.3DEG
Operators:DAMIN
Test Date:2017-09-21

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=0.7100]
Remarks: