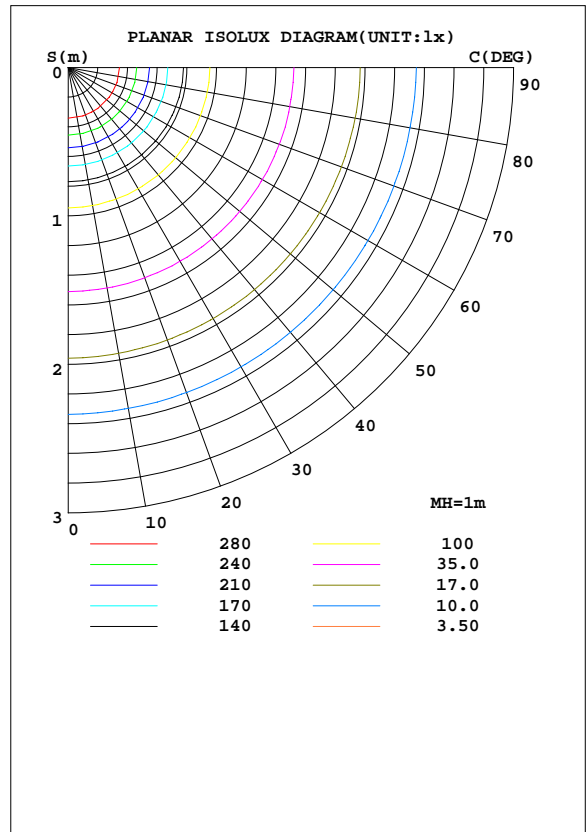
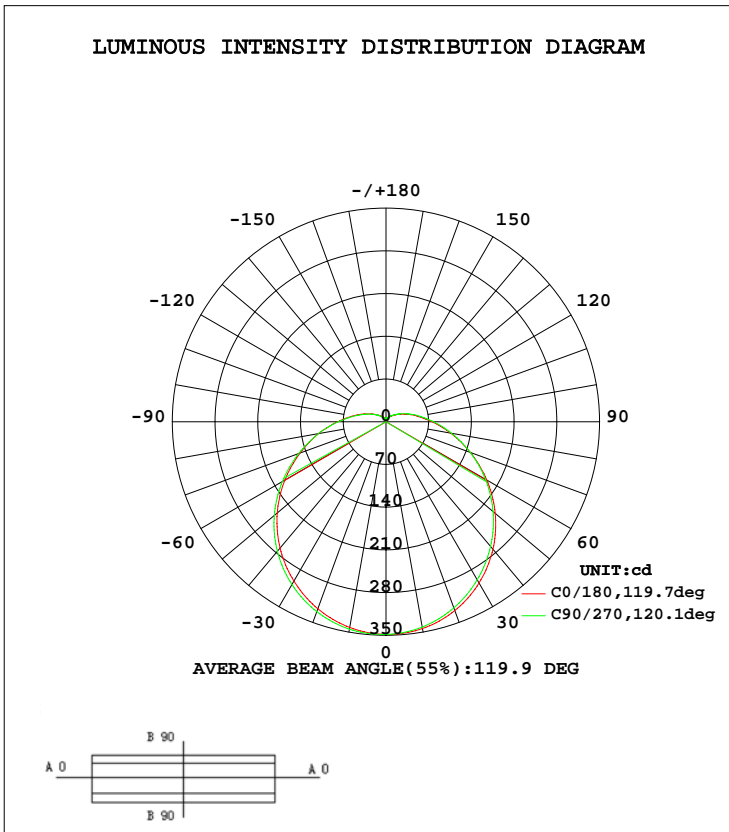


LUMINAIRE PHOTOMETRIC TEST REPORT

Test:U:120.3V I:0.1023A P:12.03W PF:0.9778 Lamp Flux:1439.62x1 lm		
NAME: LED Retrofit Kit	TYPE:	WEIGHT:
DIM.:	SPEC.:	SERIAL No.:
MFR.: Kili-LED Lighting Limited	SUR.:	PROTECTION ANGLE:

DATA OF LAMP		PHOTOMETRIC DATA Eff: 119.64 lm/W			
MODEL	KLCN13	I _{max} (cd)	348.6	S/MH(C0/180)	1.29
NOMINAL POWER(W)	12	LOR(%)	100.0	S/MH(C90/270)	1.32
RATED VOLTAGE(V)	120	TOTAL FLUX(lm)	1439.6	η UP, DN(C0-180)	6.6, 43.6
NOMINAL FLUX(lm)	1439.62	CIE CLASS	SEMI-D.	η UP, DN(C180-360)	6.8, 43.0
LAMPS INSIDE	1	η up(%)	13.3	CIBSE SHR NOM	1.50
TEST VOLTAGE(V)	120.3	η down(%)	86.7	CIBSE SHR MAX	1.50



C Range: 0 - 360DEG
 C Interval: 45.0DEG
 Test Speed: HIGH
 Temperature:31DEG
 Operators:01
 Test Date:2017-08-8

γ Range: 0 - 180DEG
 γ Interval: 1.0DEG
 Test System:EVERFINE GO-2000A_V1 SYSTEM V2.0.276
 Humidity: %
 Test Distance:9.190m [K=0.9684]
 Remarks:

ZONAL FLUX DIAGRAM

ZONAL FLUX DIAGRAM:

γ	C0	C45	C90	C135	C180	C225	C270	C315	γ	Φ zone	Φ total	lum, lamp
10	342.3	343.3	345.0	344.8	344.1	343.1	341.6	341.8	0- 10	33.01	33.01	2.29,2.29
20	326.2	328.0	331.2	330.7	329.3	327.4	324.6	325.2	10- 20	95.11	128.1	8.9,8.9
30	301.7	303.7	308.2	307.5	305.0	302.7	299.1	300.0	20- 30	146.1	274.2	19,19
40	270.1	271.7	276.9	276.0	272.6	270.8	266.7	267.7	30- 40	180.6	454.8	31.6,31.6
50	232.6	233.7	238.9	237.6	233.6	233.0	229.0	230.1	40- 50	195.5	650.3	45.2,45.2
60	191.4	191.4	196.1	194.5	190.6	191.6	188.0	189.1	50- 60	190.5	840.8	58.4,58.4
70	149.6	148.6	152.1	150.2	147.0	149.5	146.8	147.8	60- 70	168.6	1009	70.1,70.1
80	112.3	110.6	112.4	110.7	107.5	110.7	109.1	109.9	70- 80	136.5	1146	79.6,79.6
90	79.33	77.36	78.29	77.19	75.58	78.75	77.93	78.38	80- 90	101.9	1248	86.7,86.7
100	55.08	53.31	53.62	52.95	52.84	55.31	55.03	55.26	90-100	71.27	1319	91.6,91.6
110	37.59	36.27	36.33	35.94	36.23	38.35	38.14	38.07	100-110	48.02	1367	95,95
120	25.42	24.51	24.52	24.23	24.81	26.29	26.13	26.04	110-120	30.65	1398	97.1,97.1
130	17.07	16.47	16.47	16.23	17.05	17.99	17.90	17.82	120-130	18.85	1417	98.4,98.4
140	11.46	11.08	11.01	10.88	11.76	12.34	12.32	12.26	130-140	11.06	1428	99.2,99.2
150	8.185	7.850	7.736	7.672	8.387	8.784	8.857	8.841	140-150	6.197	1434	99.6,99.6
160	7.036	6.742	6.450	6.417	6.774	7.121	7.359	7.403	150-160	3.464	1437	99.8,99.8
170	6.284	5.904	5.775	5.710	5.855	6.240	6.473	6.540	160-170	1.903	1439	100,100
180	1.868	1.860	1.876	1.875	1.884	1.876	1.876	1.875	170-180	0.4271	1440	100,100
DEG	LUMINOUS INTENSITY:cd									UNIT:lm		

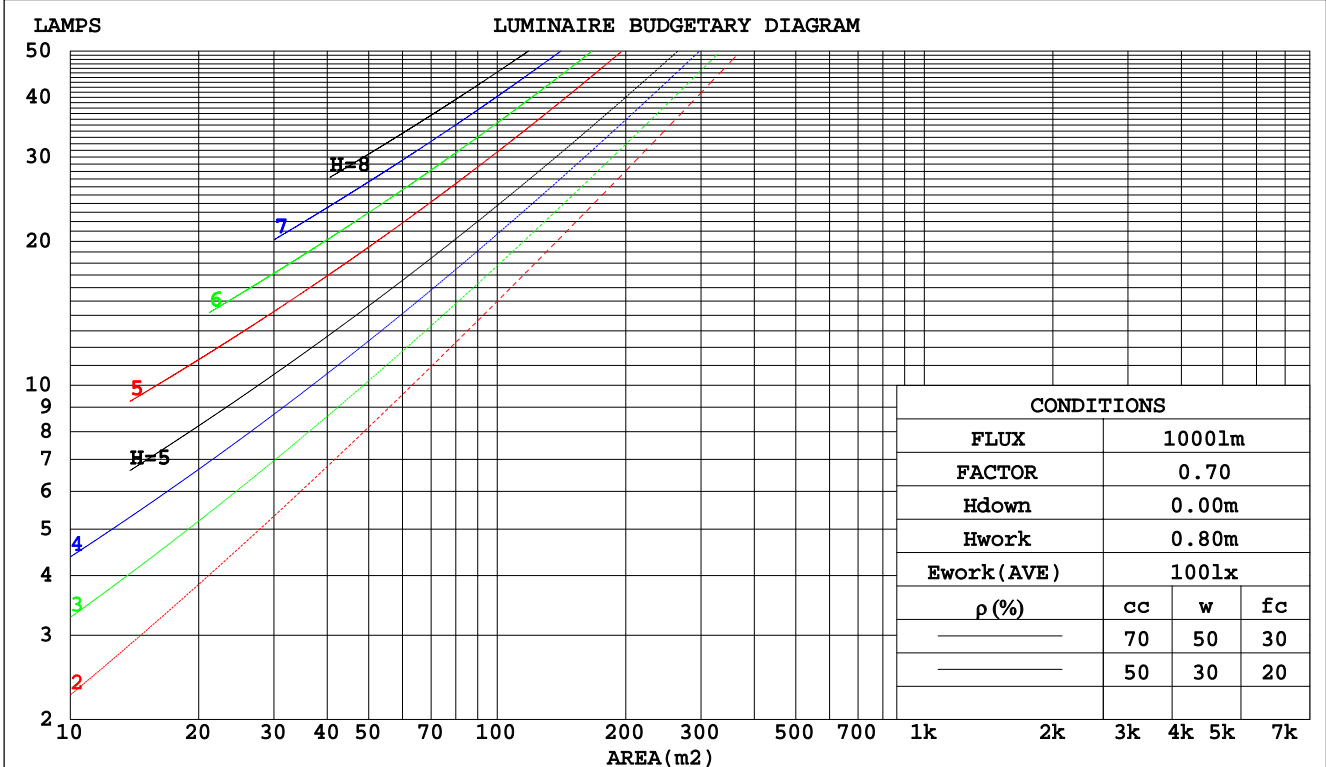
C Range: 0 - 360DEG
 C Interval: 45.0DEG
 Test Speed: HIGH
 Temperature:31DEG
 Operators:01
 Test Date:2017-08-8

γ Range: 0 - 180DEG
 γ Interval: 1.0DEG
 Test System:EVERFINE GO-2000A_V1 SYSTEM V2.0.276
 Humidity:%
 Test Distance:9.190m [K=0.9684]
 Remarks:

CU AND LUMINAIRE BUDGETARY ESTIMATE DIAGRAM

Test:U:120.3V I:0.1023A P:12.03W PF:0.9778 Lamp Flux:1439.62x1 lm		
NAME: LED Retrofit Kit	TYPE:	WEIGHT:
DIM.:	SPEC.:	SERIAL No.:
MFR.: Kili-LED Lighting Limited	SUR.:	PROTECTION ANGLE:

pcc	80%			70%			50%			30%			10%			0
	50%	30%	10%	50%	30%	10%	50%	30%	10%	50%	30%	10%	50%	30%	10%	0
pw																0
pfc	20%			20%			20%			20%			20%			0
RCR	RCR:Room Cavity Ratio Coefficients of Utilization(CU)															
0.0	1.16	1.16	1.16	1.12	1.12	1.12	1.04	1.04	1.04	.96	.96	.96	.90	.90	.90	.87
1.0	.97	.92	.87	.93	.89	.84	.87	.83	.79	.80	.77	.74	.75	.72	.70	.67
2.0	.83	.75	.69	.80	.73	.67	.74	.68	.63	.69	.64	.60	.64	.60	.57	.53
3.0	.72	.63	.56	.70	.61	.55	.65	.58	.52	.60	.54	.49	.56	.51	.47	.44
4.0	.63	.54	.47	.61	.52	.46	.57	.50	.44	.53	.47	.42	.49	.44	.40	.37
5.0	.56	.47	.40	.54	.46	.39	.51	.43	.37	.47	.41	.36	.44	.39	.34	.32
6.0	.51	.41	.34	.49	.40	.34	.46	.38	.32	.43	.36	.31	.40	.34	.30	.27
7.0	.46	.37	.30	.44	.36	.30	.41	.34	.28	.39	.32	.27	.36	.31	.26	.24
8.0	.41	.33	.27	.40	.32	.26	.38	.30	.25	.35	.29	.24	.33	.28	.23	.21
9.0	.38	.30	.24	.37	.29	.23	.35	.28	.23	.33	.26	.22	.31	.25	.21	.19
10.0	.35	.27	.21	.34	.26	.21	.32	.25	.20	.30	.24	.20	.28	.23	.19	.17



C Range: 0 - 360DEG
 C Interval: 45.0DEG
 Test Speed: HIGH
 Temperature: 31DEG
 Operators: 01
 Test Date: 2017-08-8

γ Range: 0 - 180DEG
 γ Interval: 1.0DEG
 Test System: EVERFINE GO-2000A_V1 SYSTEM V2.0.276
 Humidity: %
 Test Distance: 9.190m [K=0.9684]
 Remarks:

WEC AND CCEC

Test:U:120.3V I:0.1023A P:12.03W PF:0.9778 Lamp Flux:1439.62x1 lm									
NAME: LED Retrofit Kit					TYPE:			WEIGHT:	
DIM.:					SPEC.:			SERIAL No.:	
MFR.: Kili-LED Lighting Limited					SUR.:			PROTECTION ANGLE:	

ρcc	80%			70%			50%			30%			10%			0
ρw	50%	30%	10%	50%	30%	10%	50%	30%	10%	50%	30%	10%	50%	30%	10%	0
ρfc	20%			20%			20%			20%			20%			0
RCR	RCR:Room Cavity Ratio						Wall Exitance Coefficients(WEC)									
0.0																
1.0	.380	.216	.068	.369	.210	.067	.348	.199	.064	.328	.189	.061	.310	.180	.058	
2.0	.331	.182	.056	.321	.177	.054	.302	.168	.052	.284	.160	.050	.268	.152	.048	
3.0	.295	.157	.047	.286	.153	.046	.269	.146	.044	.253	.139	.043	.238	.132	.041	
4.0	.266	.138	.041	.258	.135	.040	.242	.129	.038	.228	.122	.037	.215	.117	.036	
5.0	.242	.123	.036	.235	.121	.035	.221	.115	.034	.208	.110	.033	.196	.105	.031	
6.0	.222	.111	.032	.216	.109	.031	.203	.104	.030	.191	.099	.029	.180	.095	.028	
7.0	.205	.101	.029	.199	.099	.028	.187	.095	.027	.177	.090	.026	.166	.086	.025	
8.0	.190	.093	.026	.185	.091	.026	.174	.087	.025	.164	.083	.024	.155	.079	.023	
9.0	.177	.086	.024	.172	.084	.024	.163	.080	.023	.153	.077	.022	.145	.074	.021	
10.0	.166	.080	.022	.161	.078	.022	.153	.075	.021	.144	.072	.020	.136	.068	.020	

ρcc	80%			70%			50%			30%			10%			0
ρw	50%	30%	10%	50%	30%	10%	50%	30%	10%	50%	30%	10%	50%	30%	10%	0
ρfc	20%			20%			20%			20%			20%			0
RCR	RCR:Room Cavity Ratio						Ceiling Cavity Exitance Coefficients(CCEC)									
0.0	.292	.292	.292	.250	.250	.250	.170	.170	.170	.098	.098	.098	.031	.031	.031	
1.0	.288	.258	.231	.246	.221	.199	.168	.152	.138	.097	.088	.080	.031	.028	.026	
2.0	.281	.235	.196	.240	.202	.170	.165	.140	.118	.095	.081	.069	.030	.026	.023	
3.0	.273	.218	.174	.234	.188	.151	.161	.131	.106	.093	.076	.062	.030	.025	.020	
4.0	.265	.205	.160	.227	.178	.139	.156	.124	.098	.090	.072	.058	.029	.024	.019	
5.0	.257	.195	.150	.221	.169	.130	.152	.118	.092	.088	.069	.055	.028	.023	.018	
6.0	.250	.187	.143	.215	.162	.124	.148	.114	.088	.086	.067	.052	.028	.022	.017	
7.0	.243	.181	.137	.209	.157	.120	.144	.110	.085	.084	.065	.050	.027	.021	.017	
8.0	.236	.175	.133	.203	.152	.116	.141	.107	.082	.082	.063	.049	.026	.021	.016	
9.0	.230	.170	.130	.198	.148	.114	.137	.104	.081	.080	.061	.048	.026	.020	.016	
10.0	.224	.166	.128	.193	.144	.111	.134	.102	.079	.078	.060	.047	.025	.020	.016	

C Range: 0 - 360DEG
 C Interval: 45.0DEG
 Test Speed: HIGH
 Temperature:31DEG
 Operators:01
 Test Date:2017-08-8

γ Range: 0 - 180DEG
 γ Interval: 1.0DEG
 Test System:EVERFINE GO-2000A_V1 SYSTEM V2.0.276
 Humidity:%
 Test Distance:9.190m [K=0.9684]
 Remarks:

Uncorrected UGR Table

Test:U:120.3V I:0.1023A P:12.03W PF:0.9778 Lamp Flux:1439.62x1 lm										
NAME: LED Retrofit Kit					TYPE:			WEIGHT:		
DIM.:					SPEC.:			SERIAL No.:		
MFR.: Kili-LED Lighting Limited					SUR.:			PROTECTION ANGLE:		
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	32.6	34.0	33.1	34.5	35.0	32.7	34.1	33.1	34.5	35.0
3H	34.8	36.1	35.3	36.6	37.1	34.8	36.2	35.3	36.6	37.1
4H	35.9	37.2	36.4	37.7	38.2	36.0	37.2	36.5	37.7	38.2
6H	37.2	38.4	37.7	38.9	39.4	37.2	38.4	37.7	38.9	39.4
8H	37.8	39.0	38.4	39.5	40.1	37.8	39.0	38.4	39.5	40.1
12H	38.6	39.7	39.2	40.2	40.8	38.6	39.7	39.1	40.2	40.8
4H 2H	33.4	34.6	33.9	35.1	35.6	33.4	34.7	33.9	35.1	35.7
3H	35.7	36.8	36.3	37.4	37.9	35.8	36.9	36.3	37.4	38.0
4H	37.0	38.0	37.6	38.6	39.2	37.1	38.1	37.6	38.6	39.2
6H	38.5	39.4	39.1	39.9	40.6	38.5	39.4	39.1	40.0	40.6
8H	39.2	40.1	39.8	40.7	41.4	39.2	40.1	39.8	40.7	41.4
12H	40.1	40.9	40.8	41.5	42.2	40.1	40.9	40.7	41.5	42.2
8H 4H	37.5	38.4	38.1	39.0	39.6	37.6	38.4	38.2	39.0	39.7
6H	39.2	40.0	39.9	40.6	41.3	39.2	40.0	39.9	40.6	41.3
8H	40.2	40.9	40.9	41.5	42.2	40.2	40.8	40.8	41.5	42.2
12H	41.3	41.9	42.0	42.5	43.3	41.3	41.9	42.0	42.5	43.3
12H 4H	37.6	38.4	38.3	39.0	39.7	37.7	38.5	38.3	39.1	39.7
6H	39.5	40.1	40.1	40.7	41.5	39.5	40.1	40.1	40.7	41.5
8H	40.5	41.1	41.2	41.8	42.5	40.5	41.1	41.2	41.7	42.5
Variations with the observer position at spacings:										
S = 1.0H	+ 0.1 / - 0.1					+ 0.1 / - 0.1				
1.5H	+ 0.2 / - 0.3					+ 0.2 / - 0.3				
2.0H	+ 0.2 / - 0.4					+ 0.2 / - 0.3				

CIE Pub.117 Corrected 1440 lm Total Lamp Luminous Flux.(8log(F/F0) = 1.3)

C Range: 0 - 360DEG
 C Interval: 45.0DEG
 Test Speed: HIGH
 Temperature:31DEG
 Operators:01
 Test Date:2017-08-8

γ Range: 0 - 180DEG
 γ Interval: 1.0DEG
 Test System:EVERFINE GO-2000A_V1 SYSTEM V2.0.276
 Humidity:%
 Test Distance:9.190m [K=0.9684]
 Remarks:

UTILIZATION FACTORS TABLE

Test:U:120.3V I:0.1023A P:12.03W PF:0.9778 Lamp Flux:1439.62x1 lm		
NAME: LED Retrofit Kit	TYPE:	WEIGHT:
DIM.:	SPEC.:	SERIAL No.:
MFR.: Kili-LED Lighting Limited	SUR.:	PROTECTION ANGLE:

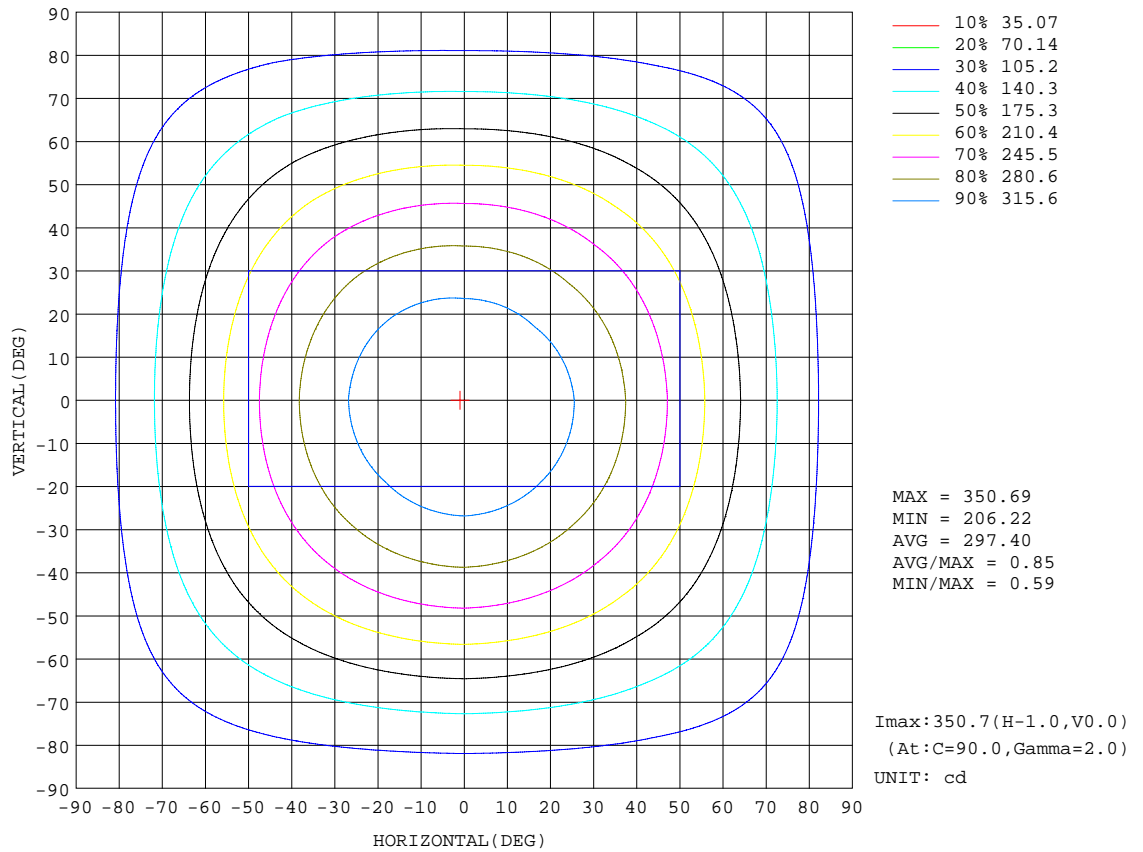
REFLECTANCE										
Ceiling	0.8	0.8	0.8	0.7	0.7	0.7	0.5	0.5	0.5	0
Walls	0.7	0.5	0.3	0.7	0.5	0.3	0.7	0.5	0.3	0
Working plane	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0
ROOM INDEX	UTILIZATION FACTORS(PERCENT) $k(RI) \times RCR = 5$									
k = 0.60	50	37	30	49	37	30	47	36	29	23
0.80	59	46	38	57	45	38	55	44	37	29
1.00	67	54	46	65	53	45	62	54	44	36
1.25	74	61	53	72	60	52	68	58	51	42
1.50	79	67	58	76	65	58	72	63	56	46
2.00	86	75	67	83	73	66	78	70	63	53
2.50	90	80	73	87	78	71	82	74	68	57
3.00	94	85	78	91	83	76	85	78	73	60
4.00	99	91	85	95	88	82	89	83	78	65
5.00	102	95	89	98	92	87	91	86	82	68
ROOM INDEX	UF(total)									Direct
According to DIN EN 13032-2 2004			Suspended				SHRNOM = 1.25			

C Range: 0 - 360DEG
 C Interval: 45.0DEG
 Test Speed: HIGH
 Temperature:31DEG
 Operators:01
 Test Date:2017-08-8

γ Range: 0 - 180DEG
 γ Interval: 1.0DEG
 Test System:EVERFINE GO-2000A_V1 SYSTEM V2.0.276
 Humidity:%
 Test Distance:9.190m [K=0.9684]
 Remarks:

ISOCANDELA DIAGRAM

Test:U:120.3V I:0.1023A P:12.03W PF:0.9778 Lamp Flux:1439.62x1 lm		
NAME: LED Retrofit Kit	TYPE:	WEIGHT:
DIM.:	SPEC.:	SERIAL No.:
MFR.: Kili-LED Lighting Limited	SUR.:	PROTECTION ANGLE:

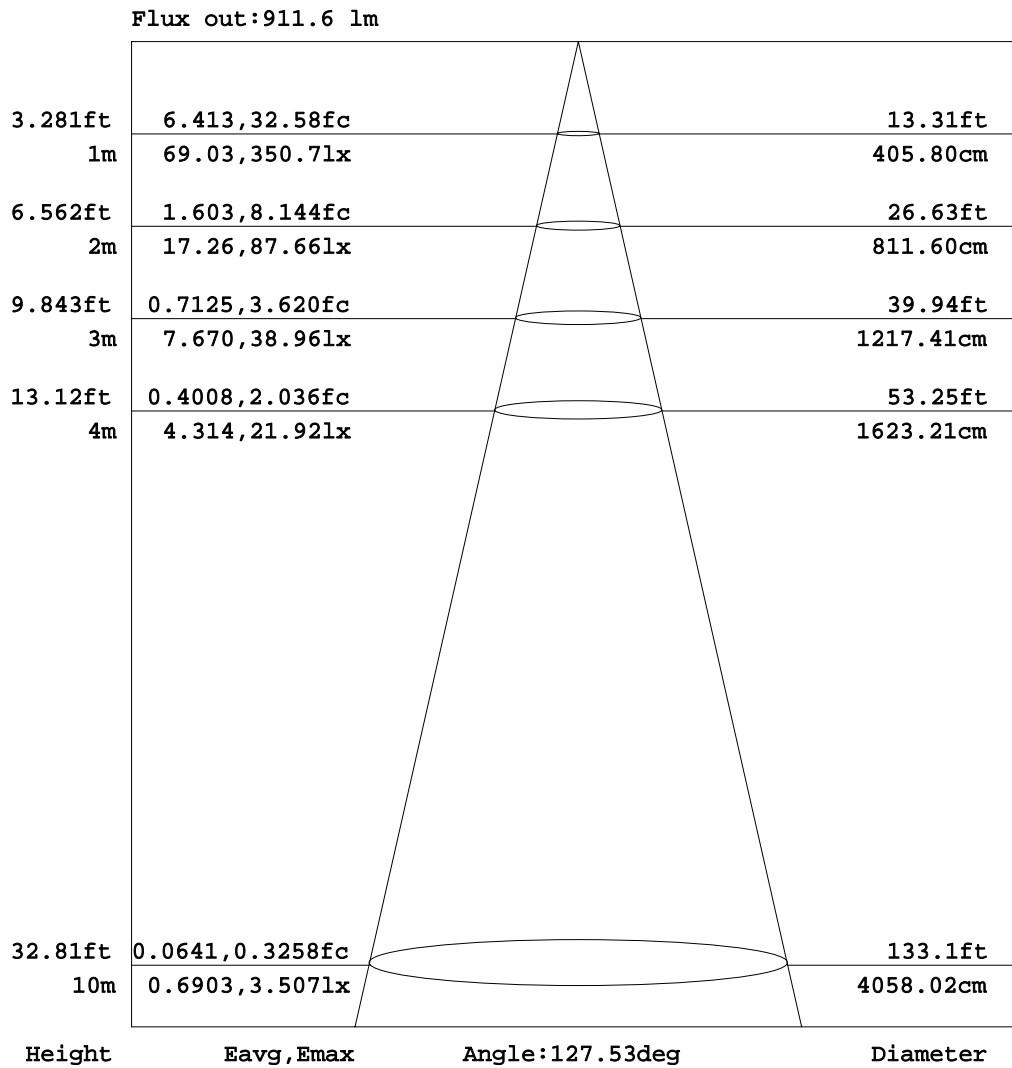


C Range: 0 - 360DEG
 C Interval: 45.0DEG
 Test Speed: HIGH
 Temperature: 31DEG
 Operators: 01
 Test Date: 2017-08-8

γ Range: 0 - 180DEG
 γ Interval: 1.0DEG
 Test System: EVERFINE GO-2000A_V1 SYSTEM V2.0.276
 Humidity: %
 Test Distance: 9.190m [K=0.9684]
 Remarks:

AAI Figure

Test:U:120.3V I:0.1023A P:12.03W PF:0.9778 Lamp Flux:1439.62x1 lm		
NAME: LED Retrofit Kit	TYPE:	WEIGHT:
DIM.:	SPEC.:	SERIAL No.:
MFR.: Kili-LED Lighting Limited	SUR.:	PROTECTION ANGLE:



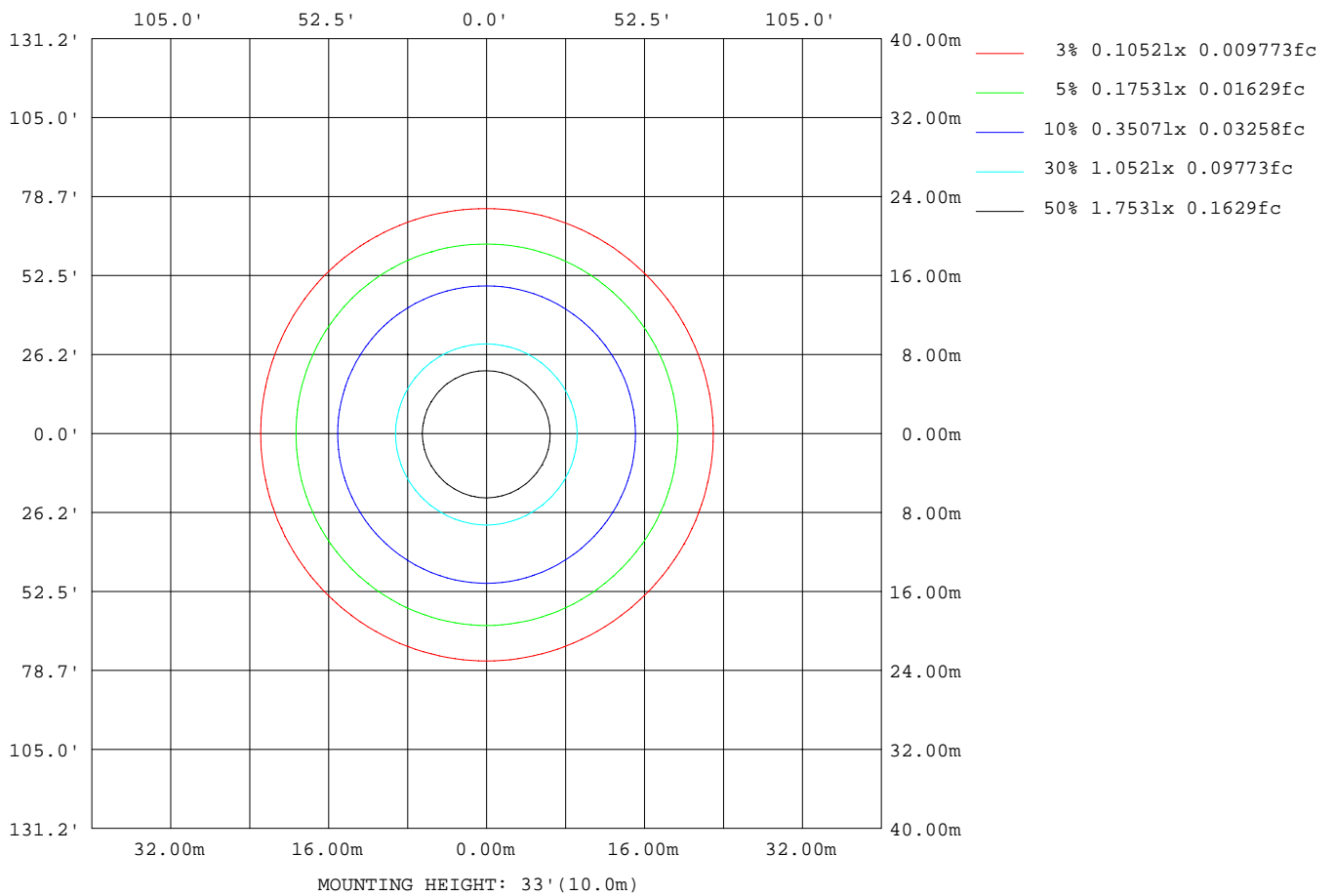
Note:The Curves indicate the illuminated area and the average illumination when the luminaire is at different distance.

C Range: 0 - 360DEG
 C Interval: 45.0DEG
 Test Speed: HIGH
 Temperature:31DEG
 Operators:01
 Test Date:2017-08-8

γ Range: 0 - 180DEG
 γ Interval: 1.0DEG
 Test System:EVERFINE GO-2000A_V1 SYSTEM V2.0.276
 Humidity:%
 Test Distance:9.190m [K=0.9684]
 Remarks:

ISOLUX DIAGRAM

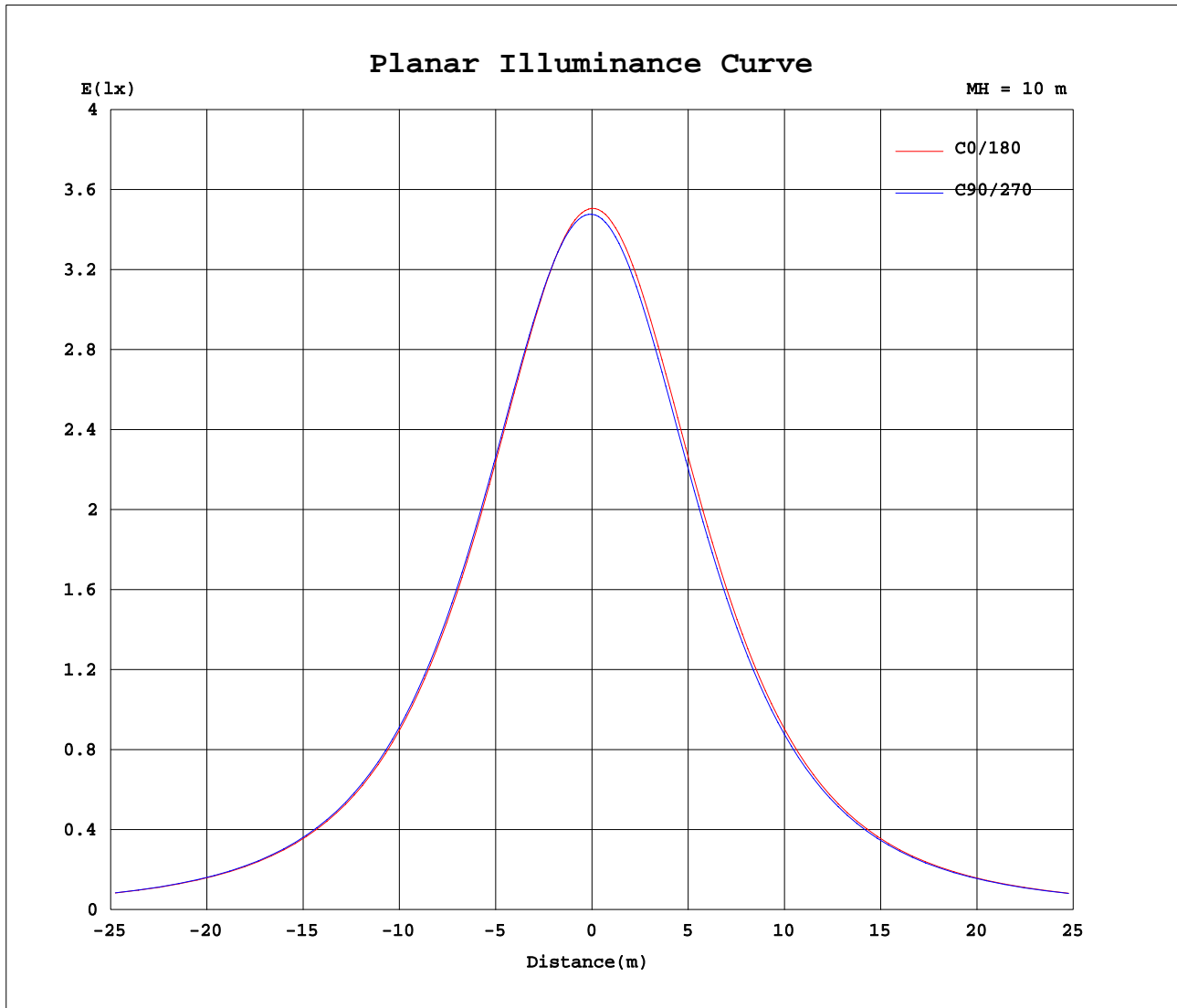
Test:U:120.3V I:0.1023A P:12.03W PF:0.9778 Lamp Flux:1439.62x1 lm		
NAME: LED Retrofit Kit	TYPE:	WEIGHT:
DIM.:	SPEC.:	SERIAL No.:
MFR.: Kili-LED Lighting Limited	SUR.:	PROTECTION ANGLE:



C Range: 0 - 360DEG
 C Interval: 45.0DEG
 Test Speed: HIGH
 Temperature: 31DEG
 Operators: 01
 Test Date: 2017-08-8

γ Range: 0 - 180DEG
 γ Interval: 1.0DEG
 Test System: EVERFINE GO-2000A_V1 SYSTEM V2.0.276
 Humidity: %
 Test Distance: 9.190m [K=0.9684]
 Remarks:

Planar Illuminance Curve



C Range: 0 - 360DEG
 C Interval: 45.0DEG
 Test Speed: HIGH
 Temperature: 31DEG
 Operators: 01
 Test Date: 2017-08-8

γ Range: 0 - 180DEG
 γ Interval: 1.0DEG
 Test System: EVERFINE GO-2000A_V1 SYSTEM V2.0.276
 Humidity: %
 Test Distance: 9.190m [K=0.9684]
 Remarks:

LUMINOUS DISTRIBUTION INTENSITY DATA

Test:U:120.3V I:0.1023A P:12.03W PF:0.9778 Lamp Flux:1439.62x1 lm		
NAME: LED Retrofit Kit	TYPE:	WEIGHT:
DIM.:	SPEC.:	SERIAL No.:
MFR.: Kili-LED Lighting Limited	SUR.:	PROTECTION ANGLE:

Table--1

UNIT: cd

C(DEG)\ γ (DEG)	0	45	90	135	180	225	270	315											
0	348	348	348	348	348	348	348	348											
5	347	347	348	348	348	347	346	346											
10	342	343	345	345	344	343	342	342											
15	335	337	339	339	338	336	334	335											
20	326	328	331	331	329	327	325	325											
25	315	317	321	320	318	316	313	314											
30	302	304	308	307	305	303	299	300											
35	287	289	294	293	290	288	284	285											
40	270	272	277	276	273	271	267	268											
45	252	253	259	258	254	253	248	249											
50	233	234	239	238	234	233	229	230											
55	212	213	218	216	212	213	209	210											
60	191	191	196	194	191	192	188	189											
65	170	170	174	172	169	170	167	168											
70	150	149	152	150	147	149	147	148											
75	130	129	131	129	126	129	127	128											
80	112	111	112	111	107	111	109	110											
85	94.7	92.8	94.3	93.1	90.5	93.7	92.5	93.2											
90	79.3	77.4	78.3	77.2	75.6	78.8	77.9	78.4											
95	66.3	64.3	64.9	64.0	63.0	65.9	65.4	65.7											
100	55.1	53.3	53.6	52.9	52.8	55.3	55.0	55.3											
105	45.6	44.0	44.2	43.7	44.3	46.9	46.4	46.4											
110	37.6	36.3	36.3	35.9	36.2	38.3	38.1	38.1											
115	30.9	29.9	29.9	29.5	30.0	31.7	31.5	31.4											
120	25.4	24.5	24.5	24.2	24.8	26.3	26.1	26.0											
125	20.8	20.1	20.1	19.8	20.6	21.8	21.6	21.5											
130	17.1	16.5	16.5	16.2	17.1	18.0	17.9	17.8											
135	14.0	13.5	13.5	13.3	14.2	14.9	14.8	14.8											
140	11.5	11.1	11.0	10.9	11.8	12.3	12.3	12.3											
145	9.55	9.21	9.13	9.02	9.84	10.3	10.3	10.3											
150	8.18	7.85	7.74	7.67	8.39	8.78	8.86	8.84											
155	7.34	7.00	6.83	6.81	7.37	7.75	7.86	7.89											
160	7.04	6.74	6.45	6.42	6.77	7.12	7.36	7.40											
165	6.95	6.64	6.44	6.31	6.50	6.87	7.21	7.20											
170	6.28	5.90	5.77	5.71	5.86	6.24	6.47	6.54											
175	1.93	1.86	1.93	1.88	3.49	3.92	3.80	3.40											
180	1.87	1.86	1.88	1.87	1.88	1.88	1.88	1.87											

C Range: 0 - 360DEG
 C Interval: 45.0DEG
 Test Speed: HIGH
 Temperature:31DEG
 Operators:01
 Test Date:2017-08-8

γ Range: 0 - 180DEG
 γ Interval: 1.0DEG
 Test System:EVERFINE GO-2000A_V1 SYSTEM V2.0.276
 Humidity:%
 Test Distance:9.190m [K=0.9684]
 Remarks: