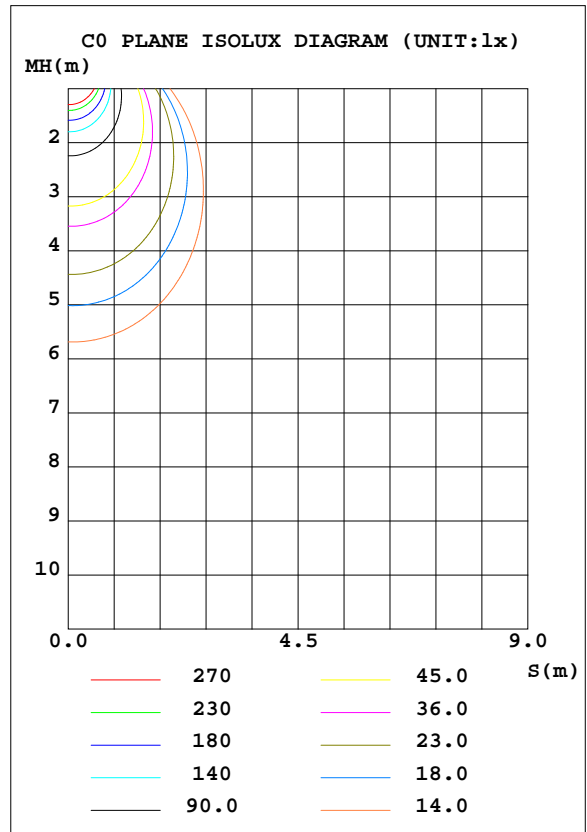
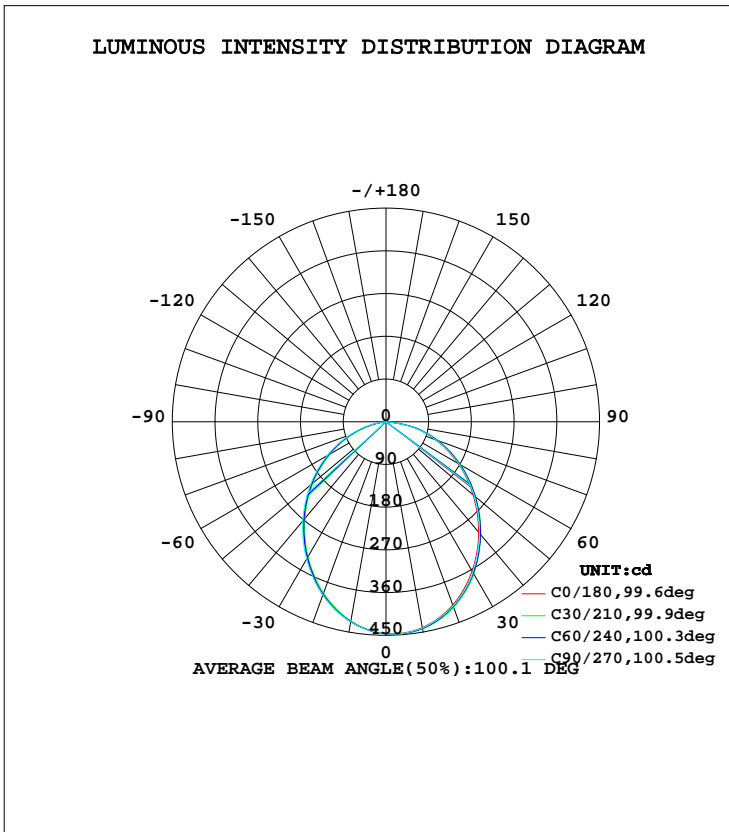


LUMINAIRE PHOTOMETRIC TEST REPORT

Test:U:240.5V I:0.0550A P:12.90W PF:0.9780 Lamp Flux:1101.92x1 lm		
NAME: LED-DL13W-CW-BC	TYPE:13W	WEIGHT:
DIM.:	SPEC.:5700K	SERIAL No.:
MFR.:	SUR.:0.04	PROTECTION ANGLE:

DATA OF LAMP		PHOTOMETRIC DATA Eff: 85.42 lm/W			
MODEL	LED-DL13W-CW-BC	I _{max} (cd)	448.2	S/MH(C0/180)	1.21
NOMINAL POWER(W)	13	LOR(%)	100.0	S/MH(C90/270)	1.22
RATED VOLTAGE(V)	240	TOTAL FLUX(lm)	1101.9	η UP, DN(C0-180)	0.0, 53.3
NOMINAL FLUX(lm)	1101.92	CIE CLASS	DIRECT	η UP, DN(C180-360)	0.0, 46.7
LAMPS INSIDE	1	η up(%)	0.0	CIBSE SHR NOM	1.25
TEST VOLTAGE(V)	240.5	η down(%)	100.0	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 - 90DEG
 γ Interval: 1.0DEG
 Test System:EVERFINE GO-2000A_V1 SYSTEM V2.0.276
 Humidity:65.0%
 Test Distance:9.600m [K=1.0000]
 Remarks:

ZONAL FLUX DIAGRAM

ZONAL FLUX DIAGRAM:

γ	C0	C45	C90	C135	C180	C225	C270	C315	γ	Φ zone	Φ total	lum, lamp
10	440.2	442.7	441.1	436.6	428.1	426.8	427.9	432.2	0- 10	42.05	42.05	3.82,3.82
20	411.0	415.1	413.0	404.0	388.5	385.5	388.7	396.0	10- 20	118.2	160.3	14.5,14.5
30	362.9	369.3	365.7	353.3	332.1	329.8	334.3	343.1	20- 30	173.1	333.4	30.3,30.3
40	303.7	310.1	306.5	293.0	269.6	267.1	272.7	282.0	30- 40	199.5	533.0	48.4,48.4
50	239.5	246.2	242.5	228.5	204.8	202.6	208.3	218.0	40- 50	197.6	730.5	66.3,66.3
60	174.6	180.8	177.2	163.1	140.3	137.7	143.4	153.6	50- 60	171.1	901.6	81.8,81.8
70	111.1	116.3	112.2	98.78	76.41	74.30	80.10	90.54	60- 70	125.4	1027	93.2,93.2
80	46.98	49.47	42.54	28.76	16.18	17.37	21.89	32.06	70- 80	67.56	1095	99.3,99.3
90	0.3540	0.3354	0.3348	0.3810	0.4761	0.4924	0.4712	0.4185	80- 90	7.331	1102	100,100
100									90-100			
110									100-110			
120									110-120			
130									120-130			
140									130-140			
150									140-150			
160									150-160			
170									160-170			
180									170-180			
DEG	LUMINOUS INTENSITY:cd									UNIT:lm		

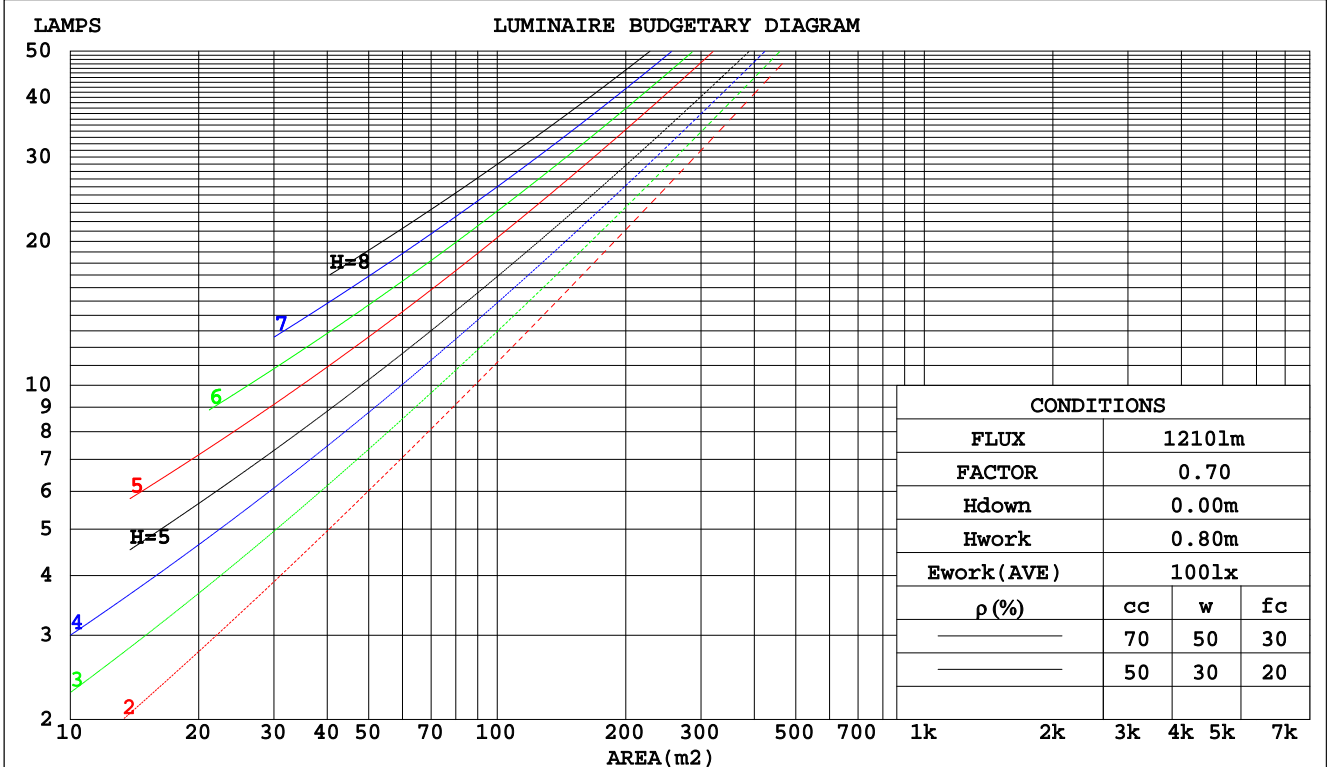
C Range: 0 - 360DEG
 C Interval: 30.0DEG
 Test Speed: HIGH
 Temperature:25.3DEG
 Operators:DAMIN
 Test Date:2017-09-21

γ Range: 0 - 90DEG
 γ Interval: 1.0DEG
 Test System:EVERFINE GO-2000A_V1 SYSTEM V2.0.276
 Humidity:65.0%
 Test Distance:9.600m [K=1.0000]
 Remarks:

CU AND LUMINAIRE BUDGETARY ESTIMATE DIAGRAM

Test:U:240.5V I:0.0550A P:12.90W PF:0.9780 Lamp Flux:1101.92x1 lm		
NAME: LED-DL13W-CW-BC	TYPE:13W	WEIGHT:
DIM.:	SPEC.:5700K	SERIAL No.:
MFR.:	SUR.:0.04	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																
pfc	20%			20%			20%			20%			20%			0
RCR	RCR:Room Cavity Ratio															
	Coefficients of Utilization(CU)															
0.0	1.19	1.19	1.19	1.16	1.16	1.16	1.11	1.11	1.11	1.06	1.06	1.06	1.02	1.02	1.02	1.00
1.0	1.05	1.01	.97	1.03	.99	.96	.99	.96	.93	.95	.92	.90	.91	.89	.87	.85
2.0	.92	.86	.80	.90	.84	.79	.87	.82	.77	.83	.79	.76	.80	.77	.74	.72
3.0	.81	.73	.67	.80	.72	.66	.77	.70	.65	.74	.69	.64	.71	.67	.63	.61
4.0	.72	.64	.57	.71	.63	.57	.68	.61	.56	.66	.60	.55	.64	.59	.54	.52
5.0	.65	.56	.49	.64	.55	.49	.61	.54	.49	.60	.53	.48	.58	.52	.48	.46
6.0	.58	.50	.43	.57	.49	.43	.56	.48	.43	.54	.47	.42	.52	.47	.42	.40
7.0	.53	.45	.39	.52	.44	.38	.51	.43	.38	.49	.43	.38	.48	.42	.38	.36
8.0	.49	.40	.34	.48	.40	.34	.47	.39	.34	.45	.39	.34	.44	.38	.34	.32
9.0	.45	.37	.31	.44	.36	.31	.43	.36	.31	.42	.35	.31	.41	.35	.31	.29
10.0	.41	.34	.28	.41	.33	.28	.40	.33	.28	.39	.32	.28	.38	.32	.28	.26



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

γ Range: 0 - 90DEG
 γ Interval: 1.0DEG
 Test System:EVERFINE GO-2000A_V1 SYSTEM V2.0.276
 Humidity:65.0%
 Test Distance:9.600m [K=1.0000]
 Remarks:

WEC AND CCEC

Test:U:240.5V I:0.0550A P:12.90W PF:0.9780 Lamp Flux:1101.92x1 lm		
NAME: LED-DL13W-CW-BC	TYPE:13W	WEIGHT:
DIM.:	SPEC.:5700K	SERIAL No.:
MFR.:	SUR.:0.04	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	.288	.164	.052	.281	.160	.051	.268	.154	.049	.256	.147	.047	.244	.142	.046	
2.0	.276	.151	.046	.270	.149	.046	.259	.144	.045	.248	.139	.044	.238	.135	.042	
3.0	.258	.137	.041	.253	.135	.041	.243	.132	.040	.233	.128	.039	.224	.124	.038	
4.0	.240	.125	.037	.235	.123	.036	.226	.120	.036	.218	.117	.035	.210	.114	.035	
5.0	.223	.114	.033	.219	.112	.033	.211	.110	.032	.203	.107	.032	.196	.105	.031	
6.0	.207	.104	.030	.204	.103	.030	.196	.101	.029	.190	.099	.029	.184	.097	.029	
7.0	.194	.096	.027	.190	.095	.027	.184	.093	.027	.178	.091	.027	.172	.089	.026	
8.0	.181	.089	.025	.178	.088	.025	.172	.086	.025	.167	.085	.024	.162	.083	.024	
9.0	.170	.082	.023	.167	.082	.023	.162	.080	.023	.157	.079	.023	.153	.078	.022	
10.0	.160	.077	.021	.158	.076	.021	.153	.075	.021	.149	.074	.021	.145	.073	.021	

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	.190	.190	.190	.163	.163	.163	.111	.111	.111	.064	.064	.064	.020	.020	.020	
1.0	.179	.156	.136	.153	.134	.117	.105	.092	.081	.060	.053	.047	.019	.017	.015	
2.0	.170	.132	.100	.146	.114	.086	.100	.079	.060	.058	.046	.035	.018	.015	.012	
3.0	.162	.114	.076	.139	.099	.066	.095	.068	.046	.055	.040	.027	.018	.013	.009	
4.0	.155	.101	.060	.133	.087	.052	.091	.061	.037	.053	.036	.022	.017	.012	.007	
5.0	.147	.090	.048	.126	.078	.042	.087	.055	.030	.050	.032	.018	.016	.010	.006	
6.0	.140	.082	.040	.120	.071	.035	.083	.050	.025	.048	.029	.015	.016	.010	.005	
7.0	.133	.075	.034	.115	.065	.030	.079	.046	.021	.046	.027	.012	.015	.009	.004	
8.0	.127	.069	.029	.109	.060	.026	.076	.042	.018	.044	.025	.011	.014	.008	.004	
9.0	.121	.064	.026	.104	.056	.022	.072	.039	.016	.042	.023	.009	.014	.008	.003	
10.0	.116	.060	.023	.100	.052	.020	.069	.037	.014	.040	.022	.008	.013	.007	.003	

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

γ Range: 0 - 90DEG
 γ Interval: 1.0DEG
 Test System:EVERFINE GO-2000A_V1 SYSTEM V2.0.276
 Humidity:65.0%
 Test Distance:9.600m [K=1.0000]
 Remarks:

Uncorrected UGR Table

Test:U:240.5V I:0.0550A P:12.90W PF:0.9780 Lamp Flux:1101.92x1 lm										
NAME: LED-DL13W-CW-BC					TYPE:13W			WEIGHT:		
DIM.:					SPEC.:5700K			SERIAL No.:		
MFR.:					SUR.:0.04			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	28.1	29.6	28.4	29.8	30.0	28.1	29.5	28.3	29.7	29.9
3H	29.7	31.0	30.0	31.3	31.5	29.6	31.0	29.9	31.2	31.4
4H	30.3	31.6	30.6	31.8	32.1	30.2	31.5	30.5	31.8	32.0
6H	30.8	32.0	31.1	32.3	32.5	30.7	31.9	31.0	32.2	32.4
8H	30.8	32.0	31.2	32.3	32.6	30.7	31.9	31.0	32.1	32.4
12H	30.8	31.9	31.2	32.2	32.5	30.6	31.8	31.0	32.1	32.4
4H 2H	28.8	30.0	29.1	30.3	30.6	28.7	30.0	29.0	30.3	30.5
3H	30.5	31.6	30.9	31.9	32.2	30.4	31.6	30.8	31.9	32.2
4H	31.3	32.3	31.7	32.6	33.0	31.2	32.2	31.6	32.6	32.9
6H	31.9	32.8	32.3	33.2	33.5	31.8	32.7	32.2	33.0	33.4
8H	32.0	32.9	32.4	33.2	33.6	31.8	32.7	32.2	33.0	33.4
12H	32.0	32.8	32.4	33.1	33.5	31.8	32.6	32.2	32.9	33.3
8H 4H	31.6	32.5	32.0	32.8	33.2	31.5	32.4	31.9	32.7	33.1
6H	32.4	33.1	32.8	33.5	33.9	32.2	32.9	32.7	33.3	33.8
8H	32.5	33.1	33.0	33.6	34.0	32.3	32.9	32.8	33.3	33.8
12H	32.5	33.0	33.0	33.5	33.9	32.3	32.8	32.7	33.2	33.7
12H 4H	31.6	32.4	32.1	32.8	33.2	31.6	32.3	32.0	32.7	33.1
6H	32.4	33.0	32.9	33.5	33.9	32.3	32.9	32.7	33.3	33.8
8H	32.6	33.1	33.0	33.5	34.0	32.4	32.9	32.8	33.3	33.8
Variations with the observer position at spacings:										
S = 1.0H	+ 0.2 / - 0.2					+ 0.2 / - 0.2				
1.5H	+ 0.2 / - 0.3					+ 0.2 / - 0.3				
2.0H	+ 0.2 / - 0.3					+ 0.2 / - 0.3				

CIE Pub.117 Corrected 1102 lm Total Lamp Luminous Flux.(8log(F/F0) = 0.3)

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

γ Range: 0 - 90DEG
 γ Interval: 1.0DEG
 Test System:EVERFINE GO-2000A_V1 SYSTEM V2.0.276
 Humidity:65.0%
 Test Distance:9.600m [K=1.0000]
 Remarks:

UTILIZATION FACTORS TABLE

Test:U:240.5V I:0.0550A P:12.90W PF:0.9780 Lamp Flux:1101.92x1 lm		
NAME: LED-DL13W-CW-BC	TYPE:13W	WEIGHT:
DIM.:	SPEC.:5700K	SERIAL No.:
MFR.:	SUR.:0.04	PROTECTION ANGLE:

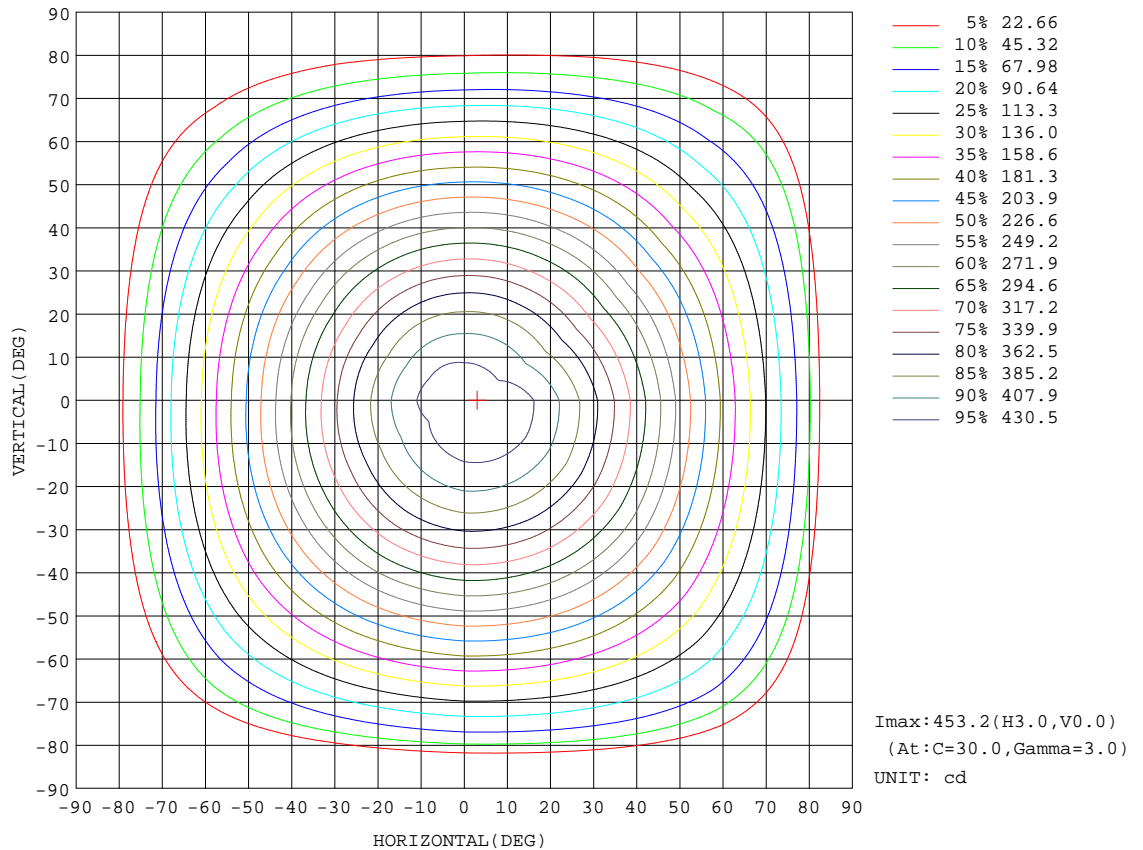
REFLECTANCE										
Ceiling	0.8	0.8	0.8	0.7	0.7	0.7	0.5	0.5	0.5	0
Walls	0.7	0.5	0.3	0.7	0.5	0.3	0.7	0.5	0.3	0
Working plane	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0
ROOM INDEX	UTILIZATION FACTORS(PERCENT) $k(RI) \times RCR = 5$									
k = 0.60	60	48	42	59	48	42	58	48	41	35
0.80	70	59	51	69	58	51	67	57	51	44
1.00	78	67	60	77	67	60	75	68	60	53
1.25	85	75	68	84	74	68	81	73	67	60
1.50	90	81	74	88	80	73	85	78	72	65
2.00	97	88	82	95	87	82	91	85	80	73
2.50	100	93	87	98	92	86	94	89	84	76
3.00	103	97	92	101	95	91	97	93	89	80
4.00	107	102	98	105	100	96	101	97	94	85
5.00	110	105	101	107	103	100	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:2017-09-21

γ Range: 0 - 90DEG
 γ Interval: 1.0DEG
 Test System:EVERFINE GO-2000A_V1 SYSTEM V2.0.276
 Humidity:65.0%
 Test Distance:9.600m [K=1.0000]
 Remarks:

ISOCANDELA DIAGRAM

Test:U:240.5V I:0.0550A P:12.90W PF:0.9780 Lamp Flux:1101.92x1 lm		
NAME: LED-DL13W-CW-BC	TYPE:13W	WEIGHT:
DIM.:	SPEC.:5700K	SERIAL No.:
MFR.:	SUR.:0.04	PROTECTION ANGLE:

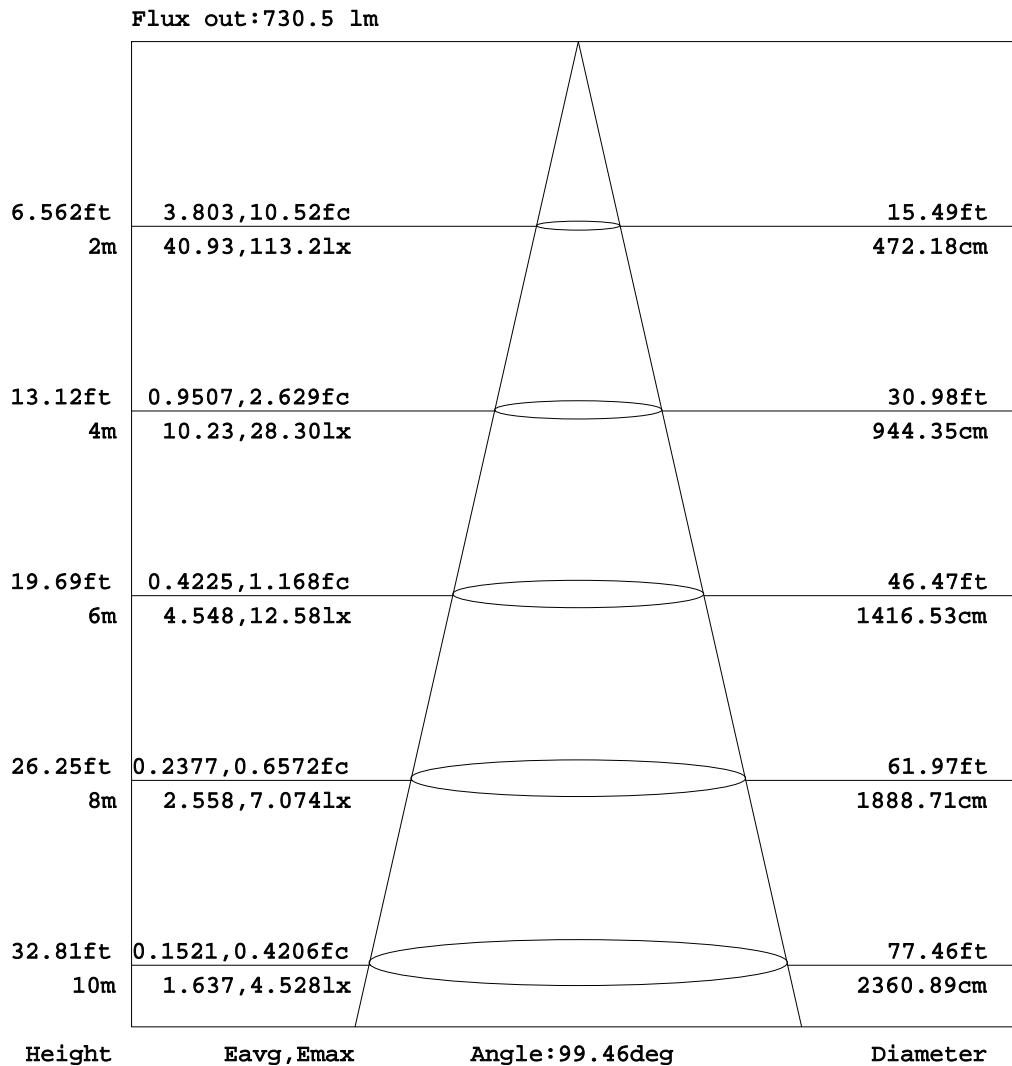


C Range: 0 - 360DEG
 C Interval: 30.0DEG
 Test Speed: HIGH
 Temperature: 25.3DEG
 Operators: DAMIN
 Test Date: 2017-09-21

γ Range: 0 - 90DEG
 γ Interval: 1.0DEG
 Test System: EVERFINE GO-2000A_V1 SYSTEM V2.0.276
 Humidity: 65.0%
 Test Distance: 9.600m [K=1.0000]
 Remarks:

AAI Figure

Test:U:240.5V I:0.0550A P:12.90W PF:0.9780 Lamp Flux:1101.92x1 lm		
NAME: LED-DL13W-CW-BC	TYPE:13W	WEIGHT:
DIM.:	SPEC.:5700K	SERIAL No.:
MFR.:	SUR.:0.04	PROTECTION ANGLE:



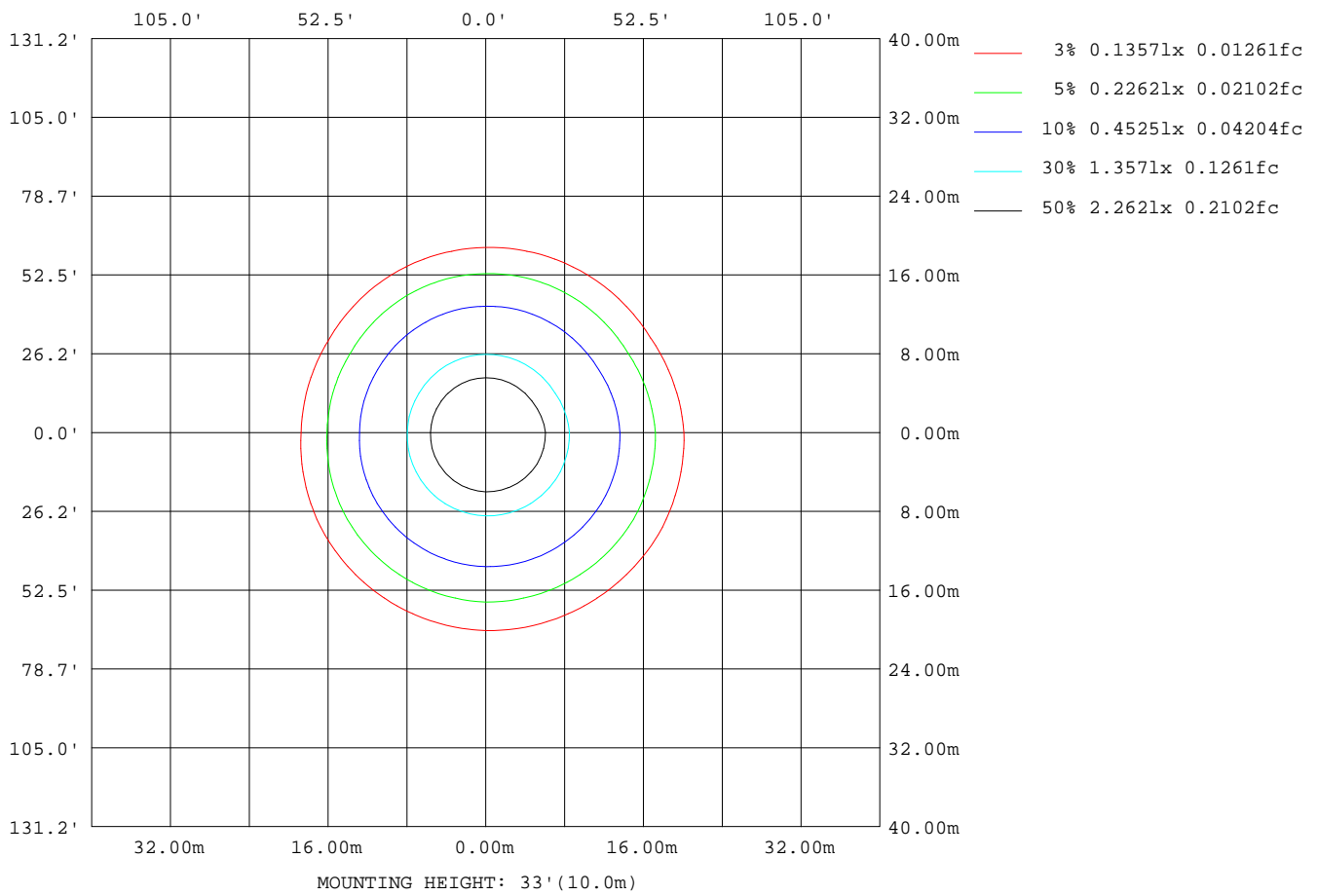
Note:The Curves indicate the illuminated area and the average illumination when the luminaire is at different distance.

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

γ Range: 0 - 90DEG
 γ Interval: 1.0DEG
 Test System:EVERFINE GO-2000A_V1 SYSTEM V2.0.276
 Humidity:65.0%
 Test Distance:9.600m [K=1.0000]
 Remarks:

ISOLUX DIAGRAM

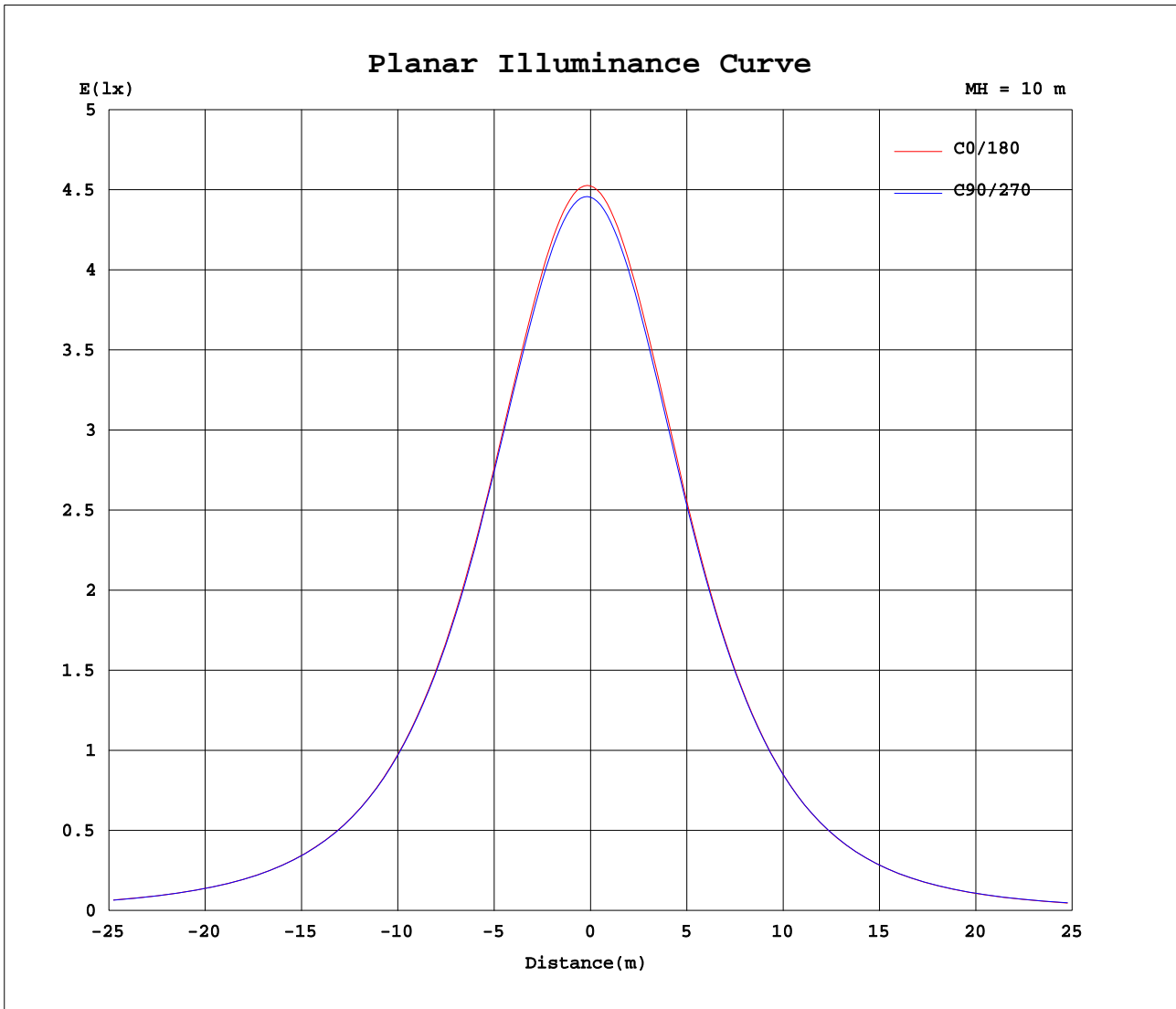
Test:U:240.5V I:0.0550A P:12.90W PF:0.9780 Lamp Flux:1101.92x1 lm		
NAME: LED-DL13W-CW-BC	TYPE:13W	WEIGHT:
DIM.:	SPEC.:5700K	SERIAL No.:
MFR.:	SUR.:0.04	PROTECTION ANGLE:



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

γ Range: 0 - 90DEG
 γ Interval: 1.0DEG
 Test System:EVERFINE GO-2000A_V1 SYSTEM V2.0.276
 Humidity:65.0%
 Test Distance:9.600m [K=1.0000]
 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 - 90DEG
 γ Interval: 1.0DEG
 Test System: EVERFINE GO-2000A_V1 SYSTEM V2.0.276
 Humidity: 65.0%
 Test Distance: 9.600m [K=1.0000]
 Remarks:

