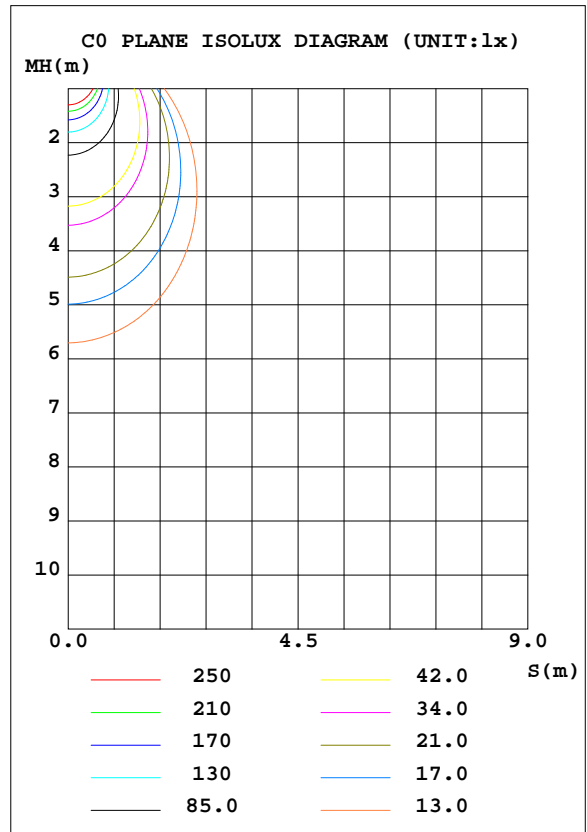
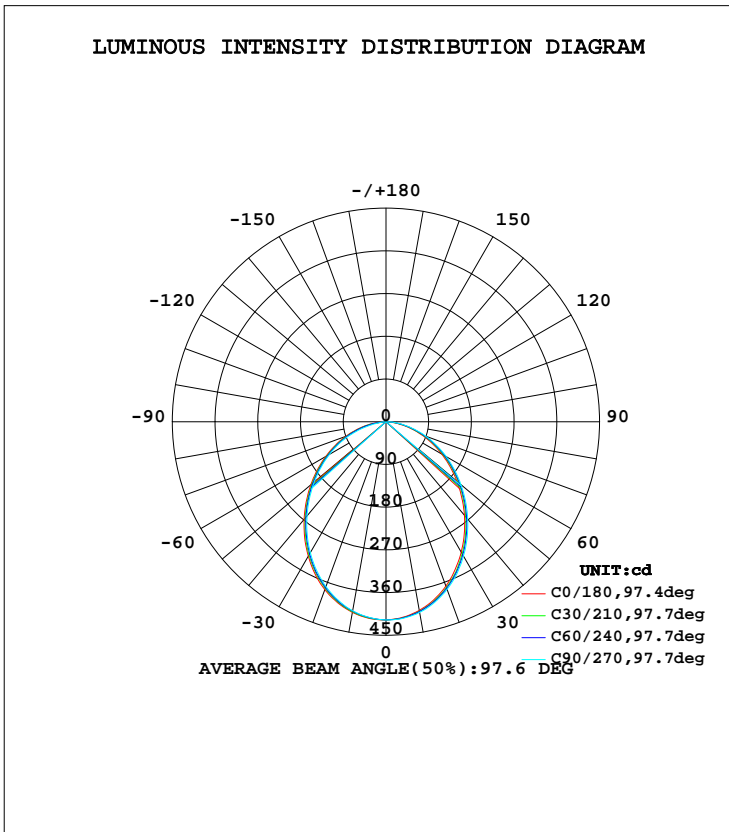


LUMINAIRE PHOTOMETRIC TEST REPORT

Test:U:240.7V I:0.0560A P:13.20W PF:0.9820 Lamp Flux:1010.37x1 lm		
NAME: LED-DL13W-NW-BC	TYPE:13W	WEIGHT:
DIM.:	SPEC.:4000K	SERIAL No.:1
MFR.:	SUR.:0.035	PROTECTION ANGLE:

DATA OF LAMP		PHOTOMETRIC DATA Eff: 76.54 lm/W			
MODEL	LED-DL13W-NW-BC	I _{max} (cd)	417.5	S/MH(C0/180)	1.15
NOMINAL POWER(W)	13	LOR(%)	100.0	S/MH(C90/270)	1.17
RATED VOLTAGE(V)	240	TOTAL FLUX(lm)	1010.4	η UP, DN(C0-180)	0.0, 50.5
NOMINAL FLUX(lm)	1010.37	CIE CLASS	DIRECT	η UP, DN(C180-360)	0.0, 49.5
LAMPS INSIDE	1	η up(%)	0.0	CIBSE SHR NOM	1.25
TEST VOLTAGE(V)	240.7	η down(%)	100.0	CIBSE SHR MAX	1.30



C Range: 0 - 360DEG
 C Interval: 30.0DEG
 Test Speed: HIGH
 Temperature:25.3DEG
 Operators:DAMIN
 Test Date:2017-03-16

γ Range: 0 - 90DEG
 γ Interval: 1.0DEG
 Test System:EVERFINE GO-2000A_V1 SYSTEM V2.0.276
 Humidity:65.0%
 Test Distance:9.580m [K=1.0000]
 Remarks:

ZONAL FLUX DIAGRAM

ZONAL FLUX DIAGRAM:

γ	C0	C45	C90	C135	C180	C225	C270	C315	γ	Φ zone	Φ total	Φ lum,lamp
10	403.5	405.8	407.8	407.6	407.8	405.9	404.5	404.0	0- 10	39.29	39.29	3.89,3.89
20	368.6	372.6	376.0	376.0	376.5	373.0	369.5	369.1	10- 20	110.3	149.6	14.8,14.8
30	317.0	322.4	326.8	326.6	327.3	323.0	318.8	317.6	20- 30	160.7	310.3	30.7,30.7
40	257.1	263.0	267.9	267.7	268.5	263.8	258.9	257.6	30- 40	183.4	493.7	48.9,48.9
50	194.9	201.2	206.2	205.9	206.9	202.2	197.3	195.9	40- 50	179.1	672.7	66.6,66.6
60	135.3	141.2	146.2	146.1	147.1	142.4	137.7	136.1	50- 60	153.0	825.7	81.7,81.7
70	79.12	84.50	89.26	89.21	90.29	85.76	78.13	74.77	60- 70	111.3	937.0	92.7,92.7
80	29.37	33.66	37.78	35.40	38.88	34.17	21.54	19.07	70- 80	59.56	996.6	98.6,98.6
90	2.894	3.243	3.521	3.027	3.861	3.812	3.768	3.771	80- 90	13.78	1010	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		

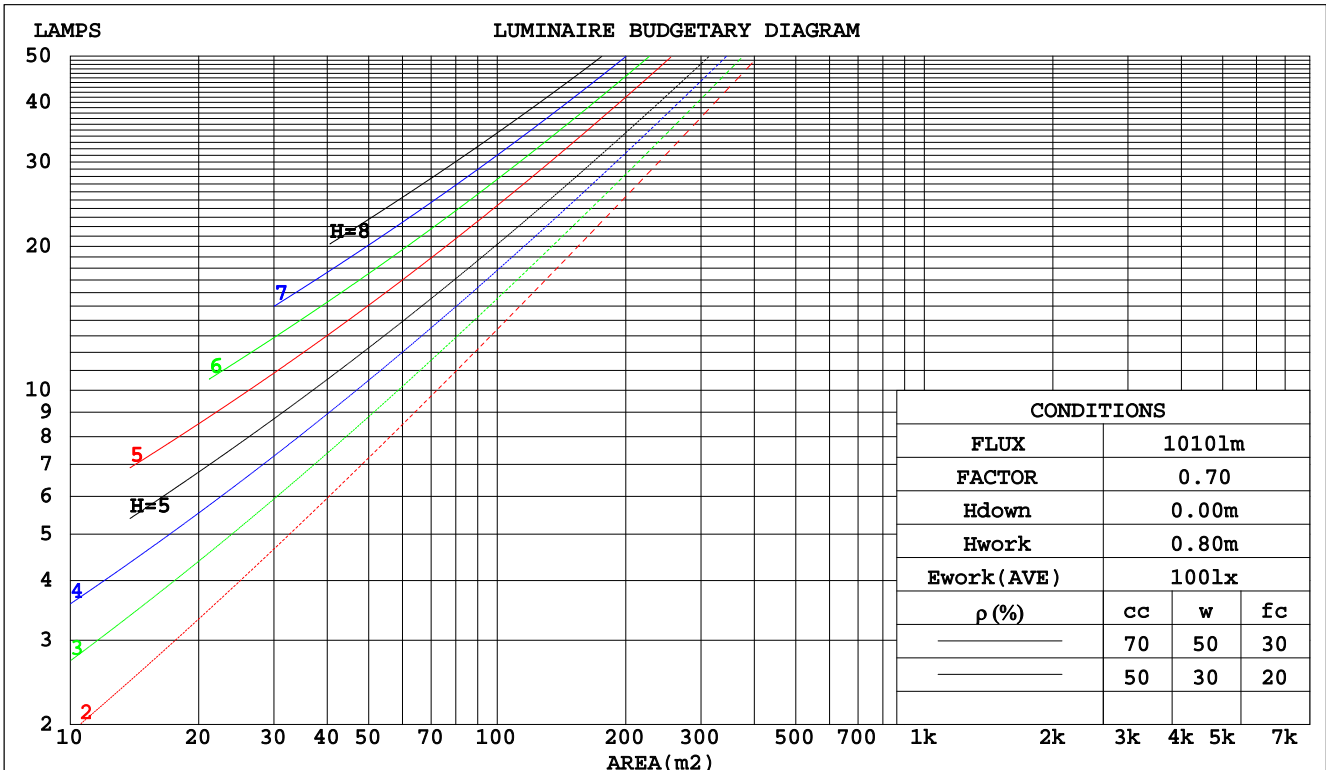
C Range: 0 - 360DEG
 C Interval: 30.0DEG
 Test Speed: HIGH
 Temperature:25.3DEG
 Operators:DAMIN
 Test Date:2017-03-16

γ Range: 0 - 90DEG
 γ Interval: 1.0DEG
 Test System:EVERFINE GO-2000A_V1 SYSTEM V2.0.276
 Humidity:65.0%
 Test Distance:9.580m [K=1.0000]
 Remarks:

CU AND LUMINAIRE BUDGETARY ESTIMATE DIAGRAM

Test:U:240.7V I:0.0560A P:13.20W PF:0.9820 Lamp Flux:1010.37x1 lm		
NAME: LED-DL13W-NW-BC	TYPE:13W	WEIGHT:
DIM.:	SPEC.:4000K	SERIAL No.:1
MFR.:	SUR.:0.035	PROTECTION ANGLE:

pcc	80%			70%			50%			30%			10%			0
pw	50%	30%	10%	50%	30%	10%	50%	30%	10%	50%	30%	10%	50%	30%	10%	0
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	.95	.98	.95	.92	.94	.92	.90	.91	.89	.87	.85
2.0	.92	.85	.80	.90	.84	.79	.87	.81	.77	.83	.79	.75	.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	.62	.56	.66	.60	.55	.64	.59	.55	.52
5.0	.65	.56	.50	.64	.56	.49	.62	.54	.49	.60	.53	.48	.58	.52	.48	.46
6.0	.59	.50	.44	.58	.49	.43	.56	.49	.43	.54	.48	.43	.53	.47	.42	.40
7.0	.53	.45	.39	.52	.44	.39	.51	.44	.38	.50	.43	.38	.48	.42	.38	.36
8.0	.49	.40	.35	.48	.40	.35	.47	.40	.34	.46	.39	.34	.44	.38	.34	.32
9.0	.45	.37	.31	.44	.37	.31	.43	.36	.31	.42	.36	.31	.41	.35	.31	.29
10.0	.41	.34	.29	.41	.34	.29	.40	.33	.28	.39	.33	.28	.38	.32	.28	.26



C Range: 0 - 360DEG
 C Interval: 30.0DEG
 Test Speed: HIGH
 Temperature: 25.3DEG
 Operators: DAMIN
 Test Date: 2017-03-16

γ Range: 0 - 90DEG
 γ Interval: 1.0DEG
 Test System: EVERFINE GO-2000A_V1 SYSTEM V2.0.276
 Humidity: 65.0%
 Test Distance: 9.580m [K=1.0000]
 Remarks:

WEC AND CCEC

Test:U:240.7V I:0.0560A P:13.20W PF:0.9820 Lamp Flux:1010.37x1 lm		
NAME: LED-DL13W-NW-BC	TYPE:13W	WEIGHT:
DIM.:	SPEC.:4000K	SERIAL No.:1
MFR.:	SUR.:0.035	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	.292	.166	.053	.285	.163	.052	.272	.156	.050	.260	.150	.048	.249	.144	.046	
2.0	.278	.152	.047	.271	.149	.046	.260	.144	.045	.249	.140	.044	.239	.135	.043	
3.0	.258	.138	.041	.253	.135	.041	.243	.132	.040	.233	.128	.039	.225	.124	.038	
4.0	.240	.124	.037	.235	.123	.036	.226	.120	.036	.217	.117	.035	.210	.114	.035	
5.0	.222	.113	.033	.218	.112	.033	.210	.109	.032	.203	.107	.032	.196	.105	.031	
6.0	.207	.104	.030	.203	.103	.030	.196	.100	.029	.189	.098	.029	.183	.096	.029	
7.0	.193	.095	.027	.190	.094	.027	.183	.093	.027	.177	.091	.026	.172	.089	.026	
8.0	.181	.088	.025	.178	.087	.025	.172	.086	.025	.167	.084	.024	.162	.083	.024	
9.0	.170	.082	.023	.167	.081	.023	.162	.080	.023	.157	.079	.023	.152	.077	.022	
10.0	.160	.077	.021	.157	.076	.021	.153	.075	.021	.148	.074	.021	.144	.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	.011	
3.0	.162	.114	.076	.139	.099	.066	.095	.068	.046	.055	.040	.027	.018	.013	.009	
4.0	.154	.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	.115	.060	.023	.099	.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:2017-03-16

γ Range: 0 - 90DEG
 γ Interval: 1.0DEG
 Test System:EVERFINE GO-2000A_V1 SYSTEM V2.0.276
 Humidity:65.0%
 Test Distance:9.580m [K=1.0000]
 Remarks:

Uncorrected UGR Table

Test:U:240.7V I:0.0560A P:13.20W PF:0.9820 Lamp Flux:1010.37x1 lm										
NAME: LED-DL13W-NW-BC					TYPE:13W			WEIGHT:		
DIM.:					SPEC.:4000K			SERIAL No.:1		
MFR.:					SUR.:0.035			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	27.8	29.2	28.0	29.4	29.6	28.0	29.4	28.2	29.6	29.8
3H	29.1	30.4	29.4	30.6	30.9	29.4	30.7	29.7	30.9	31.2
4H	29.5	30.8	29.9	31.1	31.3	29.9	31.2	30.2	31.5	31.7
6H	29.9	31.1	30.2	31.3	31.6	30.3	31.5	30.7	31.8	32.1
8H	29.9	31.1	30.3	31.4	31.7	30.5	31.6	30.8	31.9	32.2
12H	30.0	31.1	30.3	31.4	31.7	30.6	31.7	30.9	32.0	32.3
4H 2H	28.3	29.6	28.6	29.9	30.1	28.5	29.8	28.8	30.0	30.3
3H	29.8	31.0	30.2	31.2	31.5	30.1	31.2	30.4	31.5	31.8
4H	30.4	31.5	30.8	31.8	32.1	30.8	31.8	31.1	32.1	32.4
6H	30.9	31.8	31.3	32.1	32.5	31.3	32.2	31.7	32.6	32.9
8H	31.0	31.8	31.4	32.2	32.6	31.5	32.3	31.9	32.7	33.1
12H	31.0	31.8	31.5	32.2	32.6	31.6	32.4	32.0	32.8	33.2
8H 4H	30.7	31.5	31.1	31.9	32.3	31.0	31.8	31.4	32.2	32.6
6H	31.2	31.9	31.7	32.3	32.8	31.6	32.3	32.1	32.7	33.2
8H	31.4	32.0	31.9	32.5	32.9	31.9	32.5	32.4	33.0	33.4
12H	31.6	32.1	32.0	32.5	33.0	32.1	32.7	32.6	33.1	33.6
12H 4H	30.7	31.5	31.1	31.9	32.3	31.0	31.8	31.4	32.1	32.5
6H	31.3	31.9	31.7	32.3	32.8	31.7	32.3	32.1	32.7	33.2
8H	31.5	32.0	32.0	32.5	33.0	32.0	32.5	32.5	33.0	33.4
Variations with the observer position at spacings:										
S = 1.0H	+ 0.2 / - 0.3					+ 0.2 / - 0.2				
1.5H	+ 0.2 / - 0.3					+ 0.1 / - 0.3				
2.0H	+ 0.2 / - 0.3					+ 0.2 / - 0.3				

CIE Pub.117 Corrected 1010 lm Total Lamp Luminous Flux.(8log(F/F0) = 0.0)

C Range: 0 - 360DEG
 C Interval: 30.0DEG
 Test Speed: HIGH
 Temperature:25.3DEG
 Operators:DAMIN
 Test Date:2017-03-16

γ Range: 0 - 90DEG
 γ Interval: 1.0DEG
 Test System:EVERFINE GO-2000A_V1 SYSTEM V2.0.276
 Humidity:65.0%
 Test Distance:9.580m [K=1.0000]
 Remarks:

UTILIZATION FACTORS TABLE

Test:U:240.7V I:0.0560A P:13.20W PF:0.9820 Lamp Flux:1010.37x1 lm		
NAME: LED-DL13W-NW-BC	TYPE:13W	WEIGHT:
DIM.:	SPEC.:4000K	SERIAL No.:1
MFR.:	SUR.:0.035	PROTECTION ANGLE:

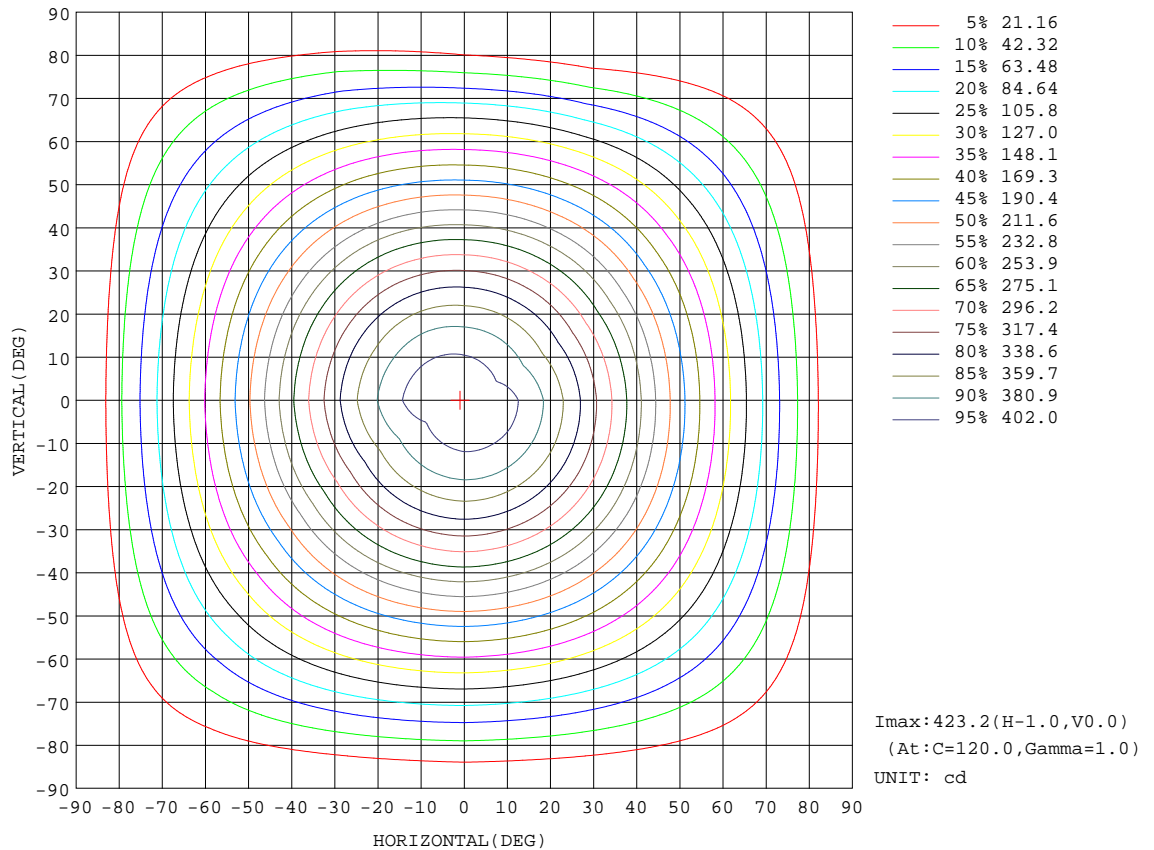
REFLECTANCE										
Ceiling	0.8	0.8	0.8	0.7	0.7	0.7	0.5	0.5	0.5	0
Walls	0.7	0.5	0.3	0.7	0.5	0.3	0.7	0.5	0.3	0
Working plane	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0
ROOM INDEX	UTILIZATION FACTORS(PERCENT) $k(RI) \times RCR = 5$									
k = 0.60	60	49	42	59	49	42	58	48	42	36
0.80	70	59	52	69	58	52	67	58	51	45
1.00	78	68	61	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	96	88	82	95	87	82	91	85	80	72
2.50	100	93	87	98	91	86	94	89	84	76
3.00	103	97	92	101	95	91	97	92	88	80
4.00	107	102	97	105	100	96	101	97	93	85
5.00	109	105	101	107	103	99	103	99	96	87
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:2017-03-16

γ Range: 0 - 90DEG
 γ Interval: 1.0DEG
 Test System:EVERFINE GO-2000A_V1 SYSTEM V2.0.276
 Humidity:65.0%
 Test Distance:9.580m [K=1.0000]
 Remarks:

ISOCANDELA DIAGRAM

Test:U:240.7V I:0.0560A P:13.20W PF:0.9820 Lamp Flux:1010.37x1 lm		
NAME: LED-DL13W-NW-BC	TYPE:13W	WEIGHT:
DIM.:	SPEC.:4000K	SERIAL No.:1
MFR.:	SUR.:0.035	PROTECTION ANGLE:

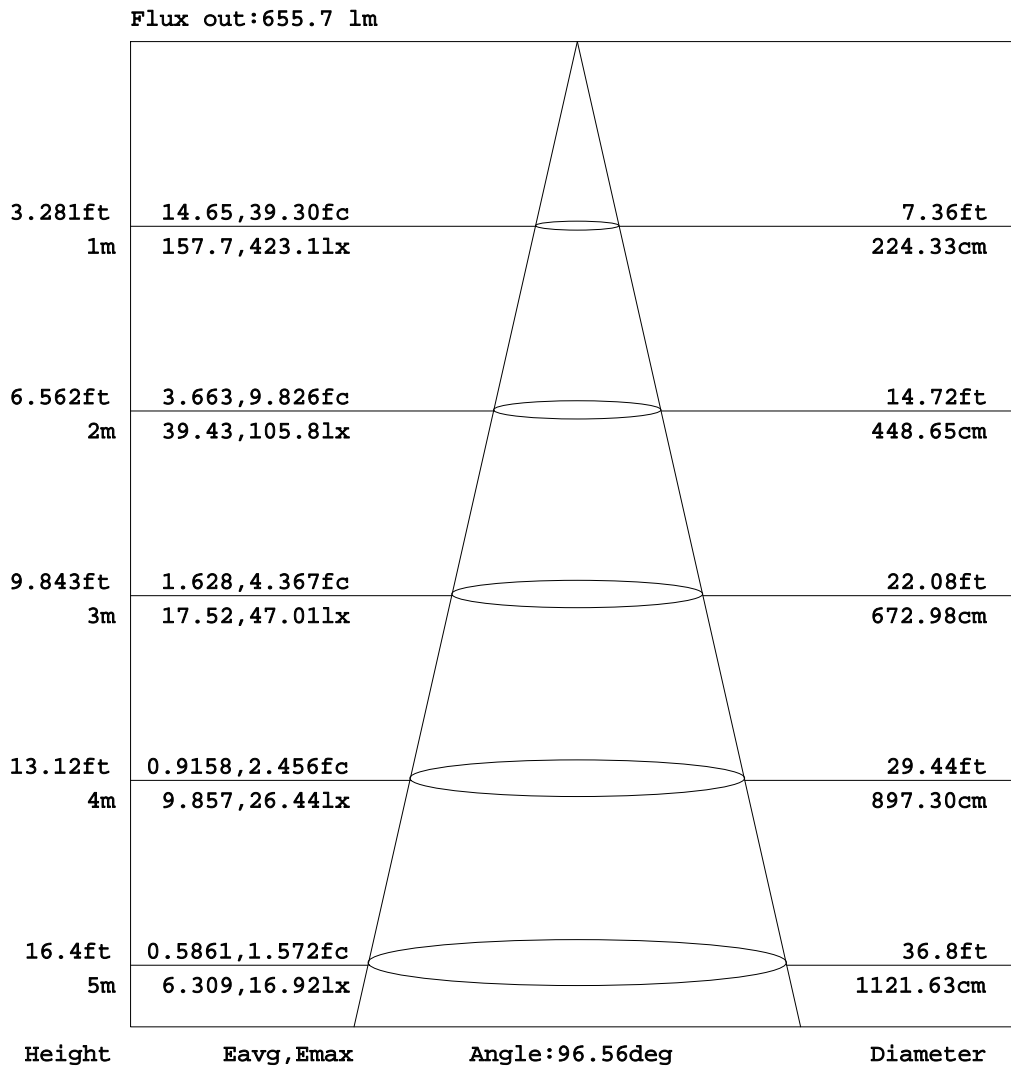


C Range: 0 - 360DEG
 C Interval: 30.0DEG
 Test Speed: HIGH
 Temperature: 25.3DEG
 Operators: DAMIN
 Test Date: 2017-03-16

γ Range: 0 - 90DEG
 γ Interval: 1.0DEG
 Test System: EVERFINE GO-2000A_V1 SYSTEM V2.0.276
 Humidity: 65.0%
 Test Distance: 9.580m [K=1.0000]
 Remarks:

AAI Figure

Test:U:240.7V I:0.0560A P:13.20W PF:0.9820 Lamp Flux:1010.37x1 lm		
NAME: LED-DL13W-NW-BC	TYPE:13W	WEIGHT:
DIM.:	SPEC.:4000K	SERIAL No.:1
MFR.:	SUR.:0.035	PROTECTION ANGLE:



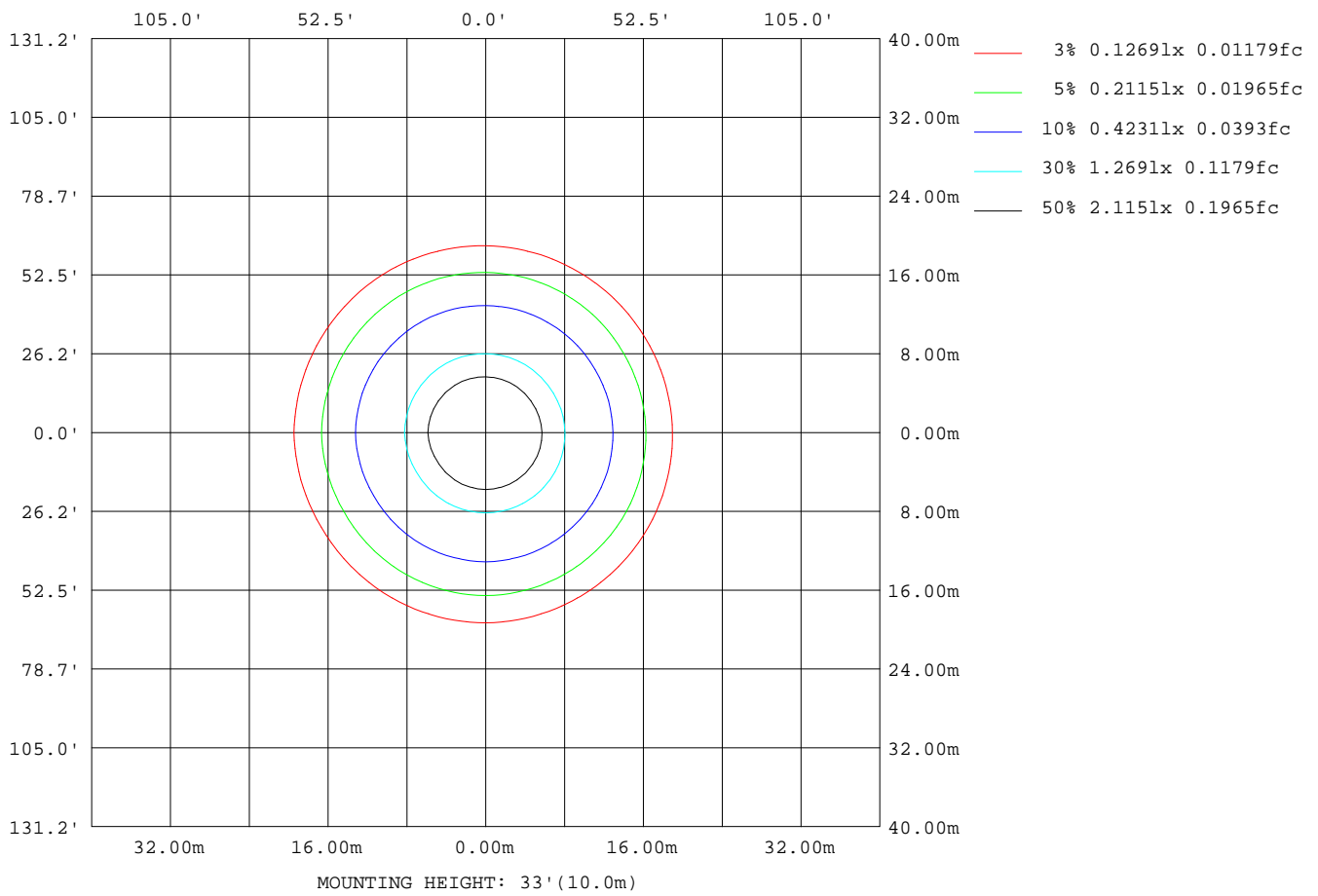
Note:The Curves indicate the illuminated area and the average illumination when the luminaire is at different distance.

C Range: 0 - 360DEG
 C Interval: 30.0DEG
 Test Speed: HIGH
 Temperature:25.3DEG
 Operators:DAMIN
 Test Date:2017-03-16

γ Range: 0 - 90DEG
 γ Interval: 1.0DEG
 Test System:EVERFINE GO-2000A_V1 SYSTEM V2.0.276
 Humidity:65.0%
 Test Distance:9.580m [K=1.0000]
 Remarks:

ISOLUX DIAGRAM

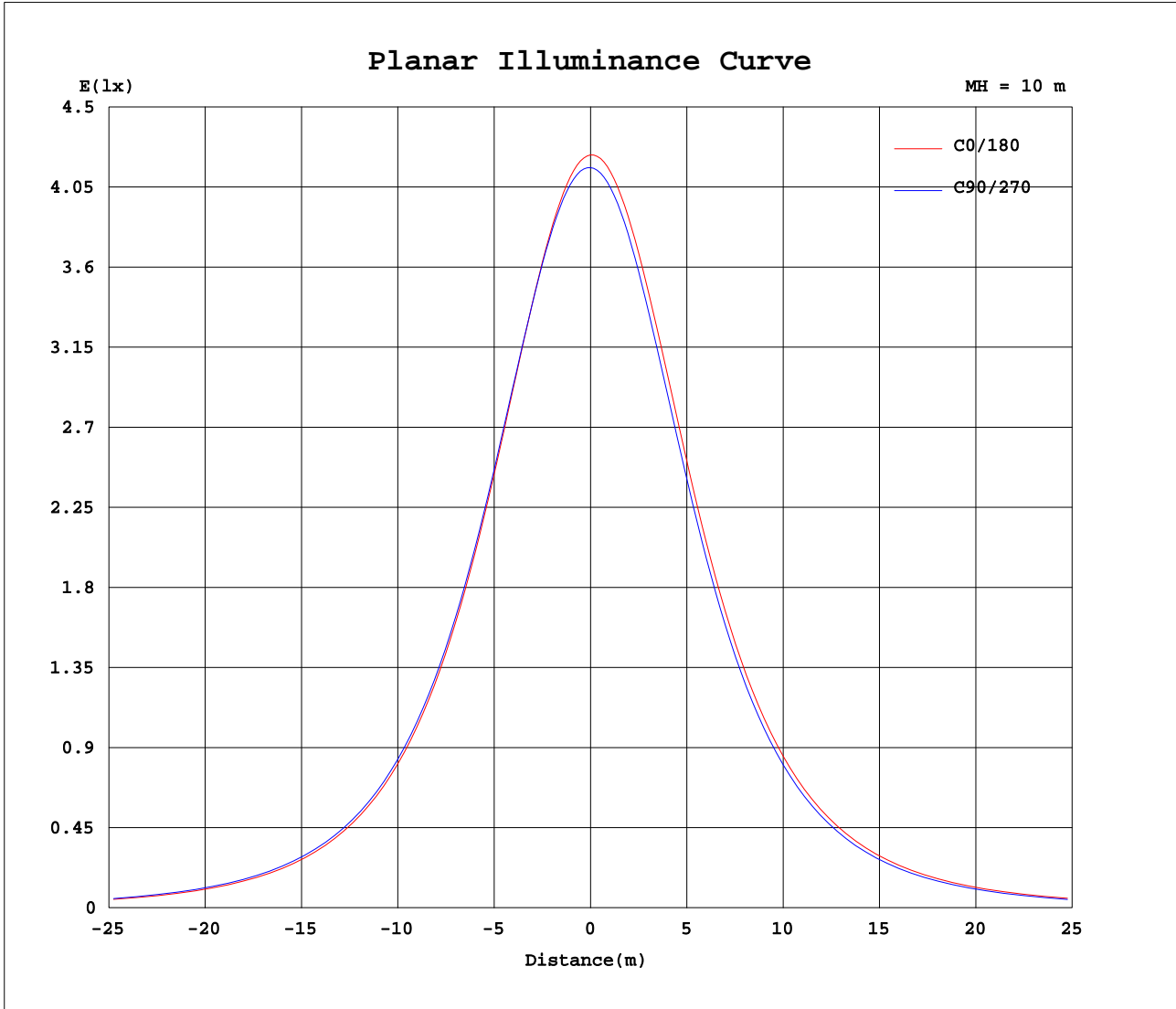
Test:U:240.7V I:0.0560A P:13.20W PF:0.9820 Lamp Flux:1010.37x1 lm		
NAME: LED-DL13W-NW-BC	TYPE:13W	WEIGHT:
DIM.:	SPEC.:4000K	SERIAL No.:1
MFR.:	SUR.:0.035	PROTECTION ANGLE:



C Range: 0 - 360DEG
 C Interval: 30.0DEG
 Test Speed: HIGH
 Temperature:25.3DEG
 Operators:DAMIN
 Test Date:2017-03-16

γ Range: 0 - 90DEG
 γ Interval: 1.0DEG
 Test System:EVERFINE GO-2000A_V1 SYSTEM V2.0.276
 Humidity:65.0%
 Test Distance:9.580m [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: 2017-03-16

γ Range: 0 - 90DEG
 γ Interval: 1.0DEG
 Test System: EVERFINE GO-2000A_V1 SYSTEM V2.0.276
 Humidity: 65.0%
 Test Distance: 9.580m [K=1.0000]
 Remarks:

LUMINOUS DISTRIBUTION INTENSITY DATA

Test:U:240.7V I:0.0560A P:13.20W PF:0.9820 Lamp Flux:1010.37x1 lm		
NAME: LED-DL13W-NW-BC	TYPE:13W	WEIGHT:
DIM.:	SPEC.:4000K	SERIAL No.:1
MFR.:	SUR.:0.035	PROTECTION ANGLE:

Table--1

UNIT: cd

γ (DEG) \ C (DEG)	0	30	60	90	120	150	180	210	240	270	300	330							
0	417	417	417	417	417	417	417	417	417	417	417	417							
5	413	414	415	416	415	415	416	415	414	414	413	414							
10	404	406	406	408	408	408	408	407	405	405	404	404							
15	389	391	392	395	394	395	395	393	391	389	389	389							
20	369	372	374	376	376	376	377	374	372	370	369	369							
25	344	349	350	353	353	353	354	351	349	346	345	345							
30	317	321	324	327	327	326	327	324	322	319	317	318							
35	288	292	295	298	298	298	299	296	293	289	288	288							
40	257	261	265	268	268	267	268	265	262	259	258	258							
45	226	230	234	237	237	236	238	234	231	228	227	227							
50	195	200	203	206	206	206	207	204	201	197	196	196							
55	165	169	172	176	176	175	177	173	171	167	166	165							
60	135	140	143	146	146	146	147	144	141	138	136	136							
65	107	111	114	117	117	117	118	115	112	109	105	106							
70	79.1	83.1	85.9	89.3	89.3	89.1	90.3	87.0	84.5	78.1	72.8	76.8							
75	53.0	56.4	59.2	62.4	61.7	61.2	63.5	60.3	57.8	47.8	41.5	47.7							
80	29.4	32.4	34.9	37.8	35.9	34.9	38.9	36.0	32.4	21.5	15.3	22.8							
85	11.1	13.2	15.3	17.4	14.5	9.54	8.14	5.20	4.87	4.35	4.26	8.15							
90	2.89	2.98	3.51	3.52	3.22	2.83	3.86	3.81	3.81	3.77	3.77	3.77							

C Range: 0 - 360DEG
 C Interval: 30.0DEG
 Test Speed: HIGH
 Temperature:25.3DEG
 Operators:DAMIN
 Test Date:2017-03-16

γ Range: 0 - 90DEG
 γ Interval: 1.0DEG
 Test System:EVERFINE GO-2000A_V1 SYSTEM V2.0.276
 Humidity:65.0%
 Test Distance:9.580m [K=1.0000]
 Remarks: