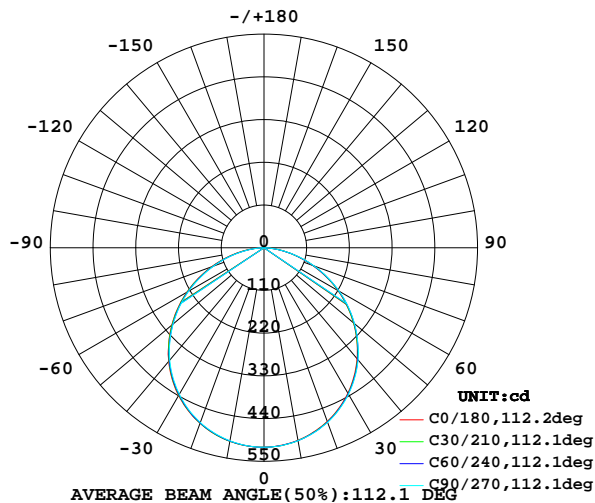


LUMINAIRE PHOTOMETRIC TEST REPORT

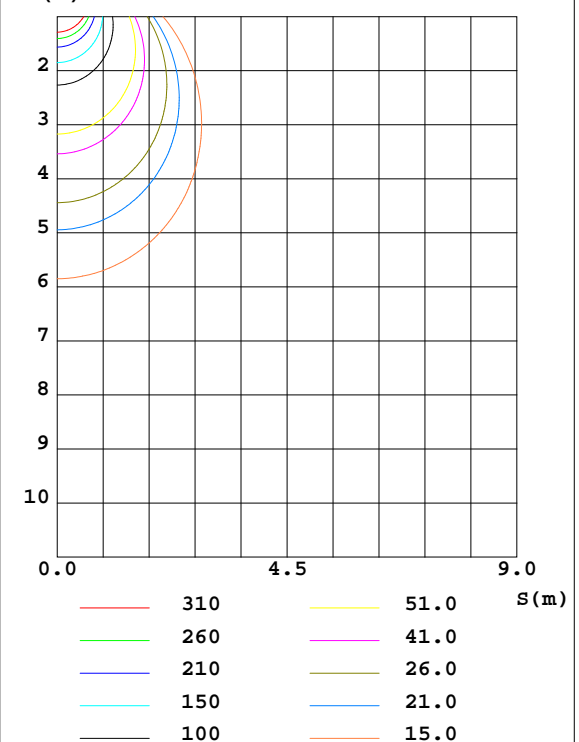
Test:U:230.1V I:0.0580A P:12.80W PF:0.9500 Lamp Flux:1464.06x1 lm		
NAME: UP-DL222-8-13W-C3-4000K	TYPE:13W	WEIGHT:
DIM.:	SPEC.:4000K	SERIAL No.:1
MFR.:	SUR.:0.0232	PROTECTION ANGLE:

DATA OF LAMP		PHOTOMETRIC DATA Eff: 114.38 lm/W			
MODEL:UP-DL222-8-13W-C3-4000K		I _{max} (cd)	513.8	S/MH(C0/180)	1.25
NOMINAL POWER(W)	12	LOR(%)	100.0	S/MH(C90/270)	1.26
RATED VOLTAGE(V)	230	TOTAL FLUX(lm)	1464.1	η UP,DN(C0-180)	0.0,49.8
NOMINAL FLUX(lm)	1464.06	CIE CLASS	DIRECT	η UP,DN(C180-360)	0.0,50.2
LAMPS INSIDE	1	η up(%)	0.0	CIBSE SHR NOM	1.25
TEST VOLTAGE(V)	230.1	η down(%)	100.0	CIBSE SHR MAX	1.35

LUMINOUS INTENSITY DISTRIBUTION DIAGRAM



C0 PLANE ISOLUX DIAGRAM (UNIT:lx)



C Range: 0 - 360DEG
C Interval: 30.0DEG
Test Speed: HIGH
Temperature:25.3DEG
Operators:DAMIN
Test Date:2019-06-05

γ Range: 0 - 90DEG
γ Interval: 1.0DEG
Test System:EVERFINE GO-2000A_V1 SYSTEM V2.0.276
Humidity:65.0%
Test Distance:9.443m [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	503.4	504.1	504.6	505.1	506.1	505.7	504.8	504.0	0- 10	48.60	48.60	3.32,3.32
20	476.1	477.5	478.7	479.8	481.3	480.5	479.2	477.5	10- 20	139.4	188.0	12.8,12.8
30	432.3	433.8	435.3	437.0	439.4	438.0	435.9	434.0	20- 30	211.7	399.7	27.3,27.3
40	372.8	375.0	377.1	379.3	382.0	380.1	377.5	375.3	30- 40	255.4	655.0	44.7,44.7
50	300.9	302.4	304.2	307.4	310.2	307.9	305.5	303.1	40- 50	264.1	919.2	62.8,62.8
60	219.6	221.2	223.4	226.8	229.6	226.8	224.6	222.3	50- 60	237.3	1156	79,79
70	133.6	135.3	137.8	140.9	144.1	140.6	137.9	136.5	60- 70	179.4	1336	91.2,91.2
80	53.61	53.65	54.83	58.67	62.50	58.74	55.70	55.37	70- 80	101.9	1438	98.2,98.2
90	0.5448	0.5477	0.5325	0.5262	0.9160	0.6841	0.6821	0.7086	80- 90	26.19	1464	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		

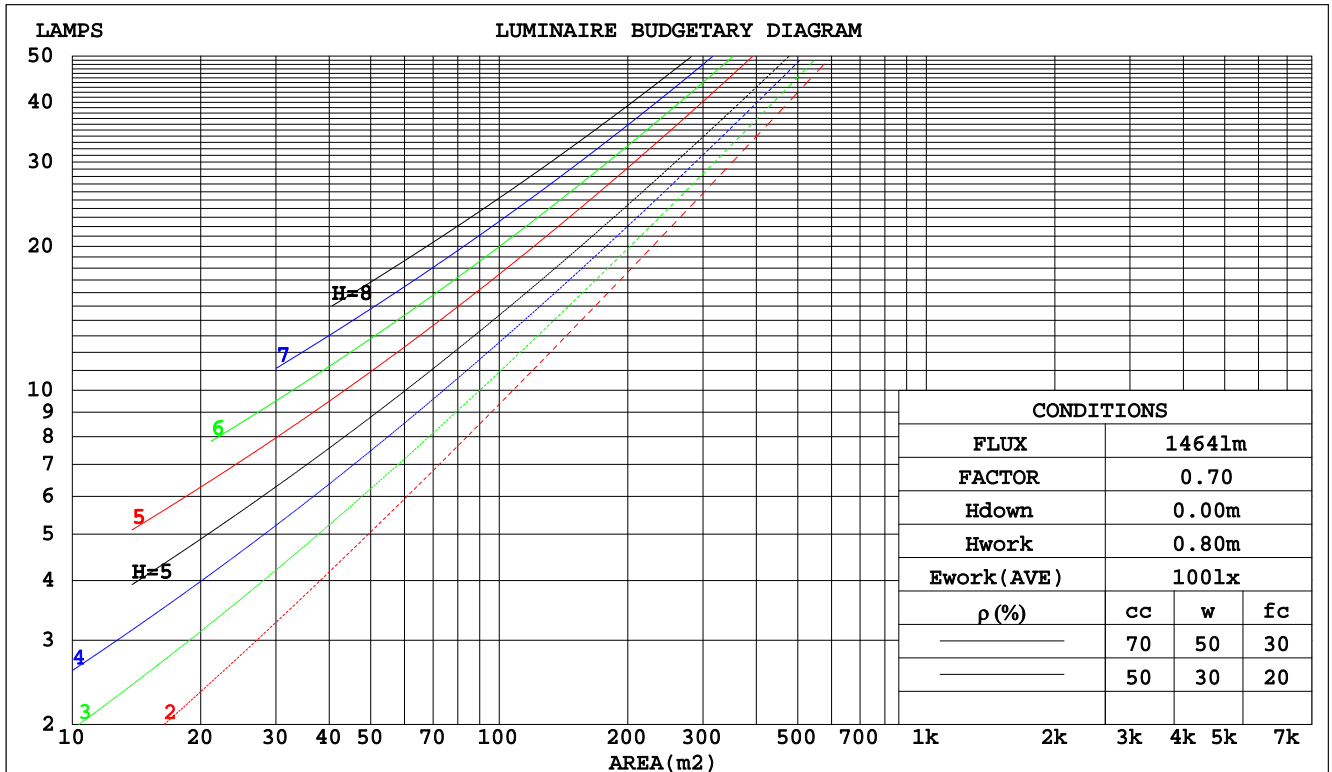
C Range: 0 - 360DEG
C Interval: 30.0DEG
Test Speed: HIGH
Temperature:25.3DEG
Operators:DAMIN
Test Date:2019-06-05

γ Range: 0 - 90DEG
 γ Interval: 1.0DEG
Test System:EVERFINE GO-2000A_V1 SYSTEM V2.0.276
Humidity:65.0%
Test Distance:9.443m [K=1.0000]
Remarks:

CU AND LUMINAIRE BUDGETARY ESTIMATE DIAGRAM

Test:U:230.1V I:0.0580A P:12.80W PF:0.9500 Lamp Flux:1464.06x1 lm		
NAME: UP-DL222-8-13W-C3-4000K	TYPE:13W	WEIGHT:
DIM.:	SPEC.:4000K	SERIAL No.:1
MFR.:	SUR.:0.0232	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	1.04	.00	.96	1.02	.98	.94	.97	.94	.91	.93	.91	.88	.90	.88	.86	.84														
2.0	.91	.84	.78	.89	.82	.77	.85	.80	.75	.82	.77	.73	.79	.75	.72	.70														
3.0	.79	.71	.65	.78	.70	.64	.75	.68	.63	.72	.67	.62	.70	.65	.61	.59														
4.0	.70	.62	.55	.69	.61	.54	.66	.59	.54	.64	.58	.53	.62	.57	.52	.50														
5.0	.63	.54	.47	.62	.53	.47	.60	.52	.46	.58	.51	.46	.56	.50	.45	.43														
6.0	.57	.48	.41	.56	.47	.41	.54	.46	.41	.52	.45	.40	.50	.44	.40	.38														
7.0	.51	.42	.36	.50	.42	.36	.49	.41	.36	.47	.41	.36	.46	.40	.35	.33														
8.0	.47	.38	.32	.46	.38	.32	.45	.37	.32	.43	.37	.32	.42	.36	.32	.30														
9.0	.43	.35	.29	.42	.34	.29	.41	.34	.29	.40	.33	.29	.39	.33	.29	.27														
10.0	.40	.32	.26	.39	.31	.26	.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:2019-06-05

γ Range: 0 - 90DEG
 γ Interval: 1.0DEG
 Test System:EVERFINE GO-2000A_V1 SYSTEM V2.0.276
 Humidity:65.0%
 Test Distance:9.443m [K=1.0000]
 Remarks:

WEC AND CCEC

Test:U:230.1V I:0.0580A P:12.80W PF:0.9500 Lamp Flux:1464.06x1 lm								
NAME: UP-DL222-8-13W-C3-4000K				TYPE:13W			WEIGHT:	
DIM.:				SPEC.:4000K			SERIAL No.:1	
MFR.:				SUR.:0.0232			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						Wall Exitance Coefficients(WEC)									
0.0																
1.0	.308	.175	.056	.301	.172	.055	.288	.165	.053	.276	.159	.051	.265	.153	.049	
2.0	.291	.159	.049	.285	.157	.048	.273	.152	.047	.262	.147	.046	.252	.143	.045	
3.0	.269	.143	.043	.264	.141	.043	.254	.137	.042	.244	.134	.041	.235	.130	.040	
4.0	.249	.129	.038	.244	.128	.038	.235	.125	.037	.226	.122	.037	.218	.119	.036	
5.0	.230	.117	.034	.226	.116	.034	.218	.113	.033	.210	.111	.033	.203	.108	.033	
6.0	.213	.107	.031	.210	.106	.030	.202	.104	.030	.196	.102	.030	.189	.100	.030	
7.0	.199	.098	.028	.195	.097	.028	.189	.095	.027	.183	.094	.027	.177	.092	.027	
8.0	.186	.091	.025	.183	.090	.025	.177	.088	.025	.171	.087	.025	.166	.085	.025	
9.0	.174	.084	.023	.171	.083	.023	.166	.082	.023	.161	.081	.023	.156	.079	.023	
10.0	.164	.078	.022	.161	.078	.022	.156	.077	.022	.152	.075	.021	.148	.074	.021	

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						Ceiling Cavity Exitance Coefficients(CCEC)									
0.0	.190	.190	.190	.163	.163	.163	.111	.111	.111	.064	.064	.064	.020	.020	.020	
1.0	.180	.156	.134	.154	.134	.116	.105	.092	.080	.061	.053	.047	.019	.017	.015	
2.0	.172	.132	.098	.147	.114	.085	.101	.079	.059	.058	.046	.035	.019	.015	.011	
3.0	.164	.114	.074	.141	.099	.064	.097	.068	.045	.056	.040	.027	.018	.013	.009	
4.0	.157	.101	.058	.135	.087	.051	.093	.061	.036	.054	.036	.021	.017	.012	.007	
5.0	.149	.091	.047	.128	.078	.041	.088	.055	.029	.051	.032	.017	.016	.010	.006	
6.0	.142	.082	.039	.122	.071	.034	.084	.050	.024	.049	.029	.014	.016	.010	.005	
7.0	.135	.075	.033	.116	.065	.029	.080	.046	.021	.047	.027	.012	.015	.009	.004	
8.0	.129	.070	.029	.111	.060	.025	.077	.042	.018	.045	.025	.011	.014	.008	.004	
9.0	.123	.065	.025	.106	.056	.022	.073	.039	.016	.043	.023	.009	.014	.008	.003	
10.0	.117	.060	.022	.101	.052	.020	.070	.037	.014	.041	.022	.008	.013	.007	.003	

C Range: 0 - 360DEG
C Interval: 30.0DEG
Test Speed: HIGH
Temperature:25.3DEG
Operators:DAMIN
Test Date:2019-06-05

γ Range: 0 - 90DEG
γ Interval: 1.0DEG
Test System:EVERFINE GO-2000A_V1 SYSTEM V2.0.276
Humidity:65.0%
Test Distance:9.443m [K=1.0000]
Remarks:

Uncorrected UGR Table

Test:U:230.1V I:0.0580A P:12.80W PF:0.9500 Lamp Flux:1464.06x1 lm											
NAME: UP-DL222-8-13W-C3-4000K					TYPE:13W			WEIGHT:			
DIM.:					SPEC.:4000K			SERIAL No.:1			
MFR.:					SUR.:0.0232			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	23.2	24.7	23.4	24.9	25.1	23.2	24.8	23.5	25.0	25.2	
	3H	24.6	26.0	24.9	26.3	26.5	24.7	26.1	25.0	26.4	26.6
	4H	25.2	26.5	25.5	26.8	27.0	25.3	26.6	25.6	26.9	27.1
	6H	25.6	26.8	25.9	27.1	27.4	25.7	26.9	26.0	27.2	27.5
	8H	25.7	26.9	26.0	27.2	27.5	25.8	27.0	26.1	27.3	27.6
	12H	25.7	26.9	26.1	27.2	27.5	25.8	27.0	26.2	27.3	27.6
4H	2H	23.8	25.1	24.1	25.4	25.6	23.8	25.2	24.1	25.4	25.7
	3H	25.4	26.6	25.8	26.9	27.2	25.5	26.7	25.8	26.9	27.2
	4H	26.1	27.2	26.5	27.5	27.8	26.2	27.2	26.6	27.6	27.9
	6H	26.6	27.5	27.0	27.9	28.3	26.7	27.6	27.1	28.0	28.3
	8H	26.7	27.6	27.2	28.0	28.4	26.8	27.7	27.2	28.1	28.5
	12H	26.8	27.6	27.2	28.0	28.4	26.9	27.7	27.3	28.1	28.5
8H	4H	26.3	27.2	26.7	27.6	28.0	26.4	27.3	26.8	27.7	28.1
	6H	27.0	27.7	27.4	28.1	28.5	27.0	27.8	27.5	28.2	28.6
	8H	27.2	27.9	27.7	28.3	28.7	27.3	27.9	27.7	28.3	28.8
	12H	27.3	27.9	27.8	28.4	28.8	27.4	28.0	27.9	28.4	28.9
12H	4H	26.3	27.2	26.8	27.5	27.9	26.4	27.2	26.8	27.6	28.0
	6H	27.0	27.7	27.5	28.1	28.5	27.1	27.7	27.6	28.2	28.6
	8H	27.3	27.8	27.8	28.3	28.8	27.3	27.9	27.8	28.3	28.8
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 1464 lm Total Lamp Luminous Flux.(8log(F/F0) = 1.3)

C Range: 0 - 360DEG
C Interval: 30.0DEG
Test Speed: HIGH
Temperature:25.3DEG
Operators:DAMIN
Test Date:2019-06-05

γ Range: 0 - 90DEG
γ Interval: 1.0DEG
Test System:EVERFINE GO-2000A_V1 SYSTEM V2.0.276
Humidity:65.0%
Test Distance:9.443m [K=1.0000]
Remarks:

UTILIZATION FACTORS TABLE

Test:U:230.1V I:0.0580A P:12.80W PF:0.9500 Lamp Flux:1464.06x1 lm		
NAME: UP-DL222-8-13W-C3-4000K	TYPE:13W	WEIGHT:
DIM.:	SPEC.:4000K	SERIAL No.:1
MFR.:	SUR.:0.0232	PROTECTION ANGLE:

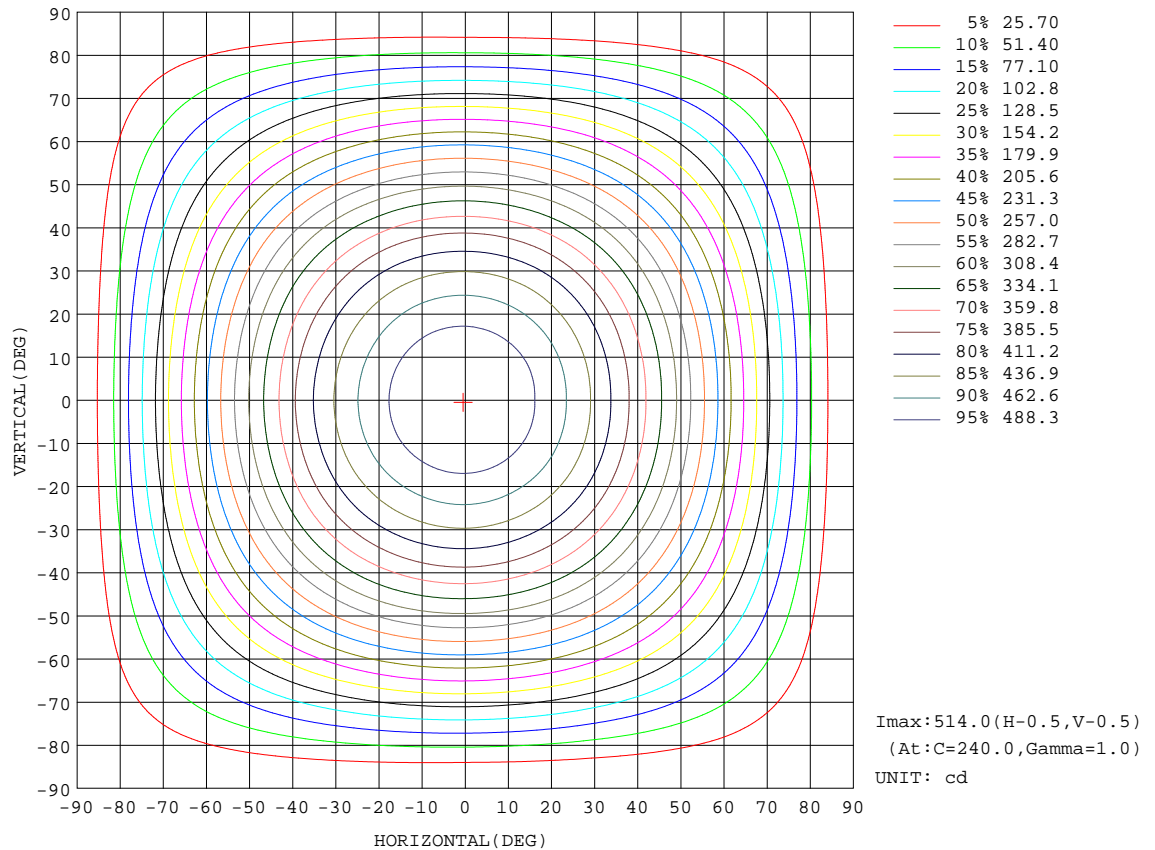
REFLECTANCE										
Ceiling	0.8	0.8	0.8	0.7	0.7	0.7	0.5	0.5	0.5	0
Walls	0.7	0.5	0.3	0.7	0.5	0.3	0.7	0.5	0.3	0
Working plane	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0
ROOM INDEX	UTILIZATION FACTORS(PERCENT) k(RI) x RCR = 5									
k = 0.60	58	46	39	57	46	39	56	45	39	32
0.80	68	56	49	67	56	48	65	55	48	41
1.00	76	65	58	75	64	57	73	66	57	50
1.25	83	73	66	82	72	65	79	71	64	57
1.50	88	78	71	86	77	71	83	76	70	62
2.00	95	87	80	93	85	79	90	83	78	70
2.50	99	91	85	97	90	84	93	87	82	74
3.00	102	95	90	100	94	89	96	91	87	78
4.00	106	101	96	104	99	95	100	95	92	83
5.00	109	104	100	106	102	98	102	98	95	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:2019-06-05

γ Range: 0 - 90DEG
 γ Interval: 1.0DEG
Test System:EVERFINE GO-2000A_V1 SYSTEM V2.0.276
Humidity:65.0%
Test Distance:9.443m [K=1.0000]
Remarks:

ISOCANDELA DIAGRAM

Test:U:230.1V I:0.0580A P:12.80W PF:0.9500 Lamp Flux:1464.06x1 lm		
NAME: UP-DL222-8-13W-C3-4000K	TYPE:13W	WEIGHT:
DIM.:	SPEC.:4000K	SERIAL No.:1
MFR.:	SUR.:0.0232	PROTECTION ANGLE:

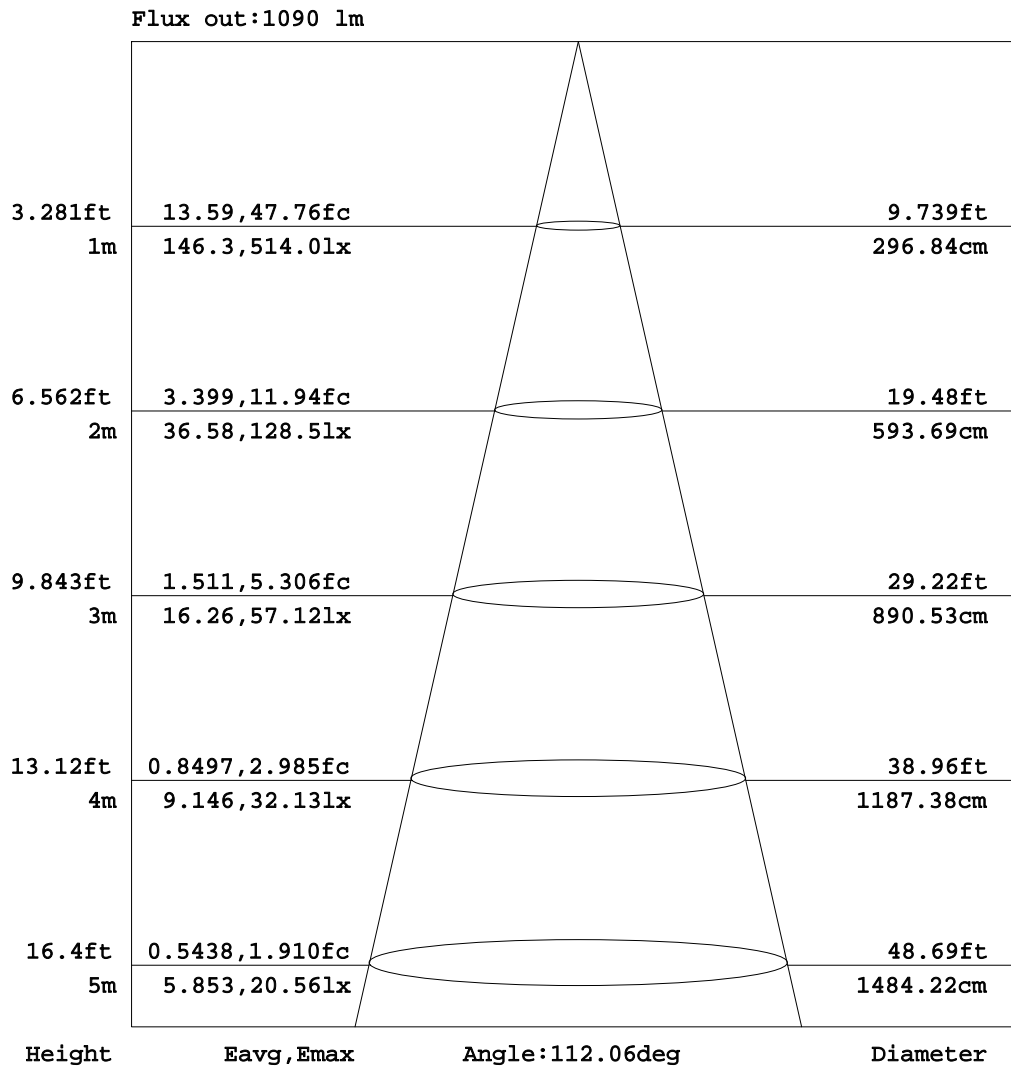


C Range: 0 - 360DEG
C Interval: 30.0DEG
Test Speed: HIGH
Temperature:25.3DEG
Operators:DAMIN
Test Date:2019-06-05

γ Range: 0 - 90DEG
 γ Interval: 1.0DEG
Test System:EVERFINE GO-2000A_V1 SYSTEM V2.0.276
Humidity:65.0%
Test Distance:9.443m [K=1.0000]
Remarks:

AAI Figure

Test:U:230.1V I:0.0580A P:12.80W PF:0.9500 Lamp Flux:1464.06x1 lm		
NAME: UP-DL222-8-13W-C3-4000K	TYPE:13W	WEIGHT:
DIM.:	SPEC.:4000K	SERIAL No.:1
MFR.:	SUR.:0.0232	PROTECTION ANGLE:



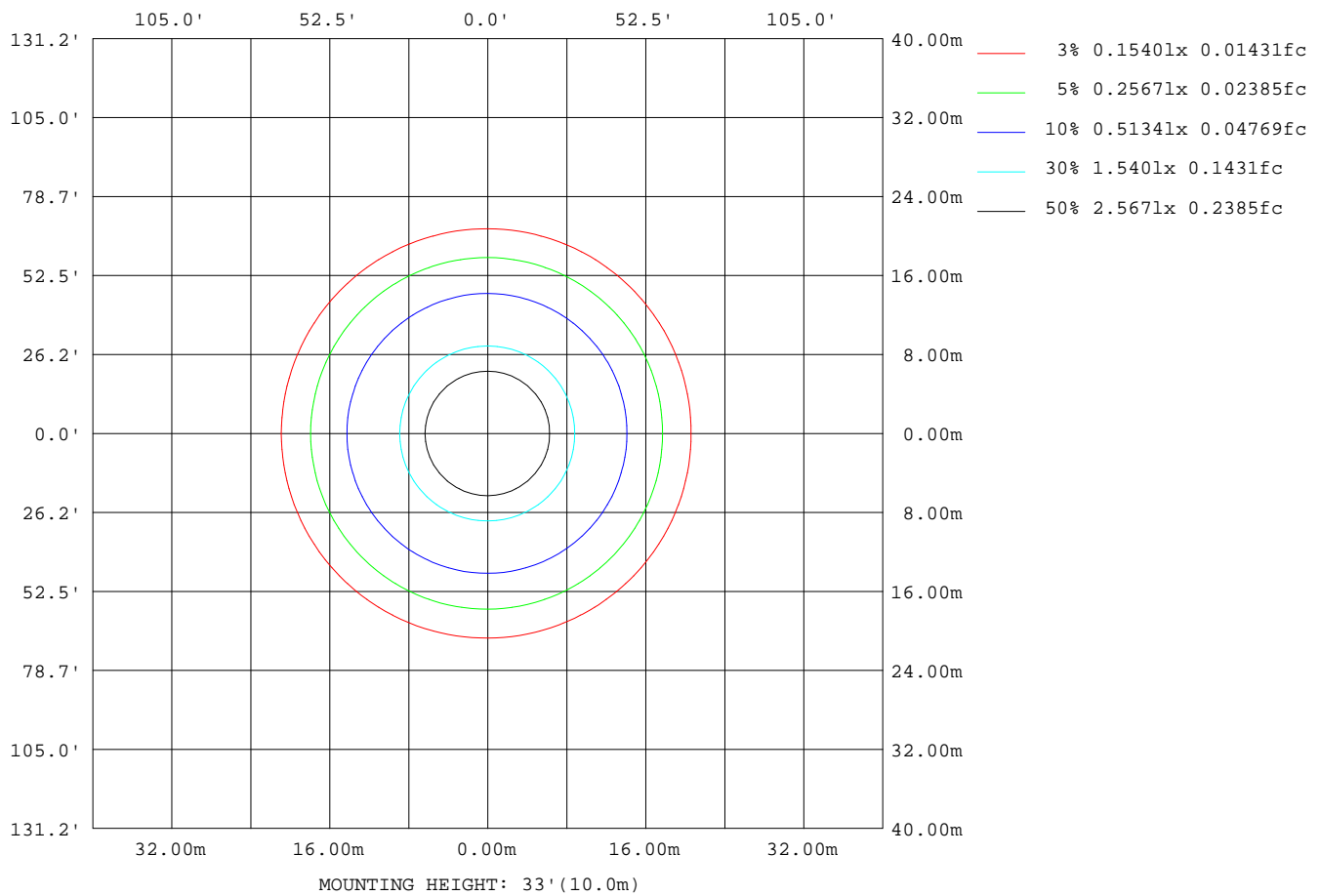
Note:The Curves indicate the illuminated area and the average illumination when the luminaire is at different distance.

C Range: 0 - 360DEG
C Interval: 30.0DEG
Test Speed: HIGH
Temperature:25.3DEG
Operators:DAMIN
Test Date:2019-06-05

γ Range: 0 - 90DEG
γ Interval: 1.0DEG
Test System:EVERFINE GO-2000A_V1 SYSTEM V2.0.276
Humidity:65.0%
Test Distance:9.443m [K=1.0000]
Remarks:

ISOLUX DIAGRAM

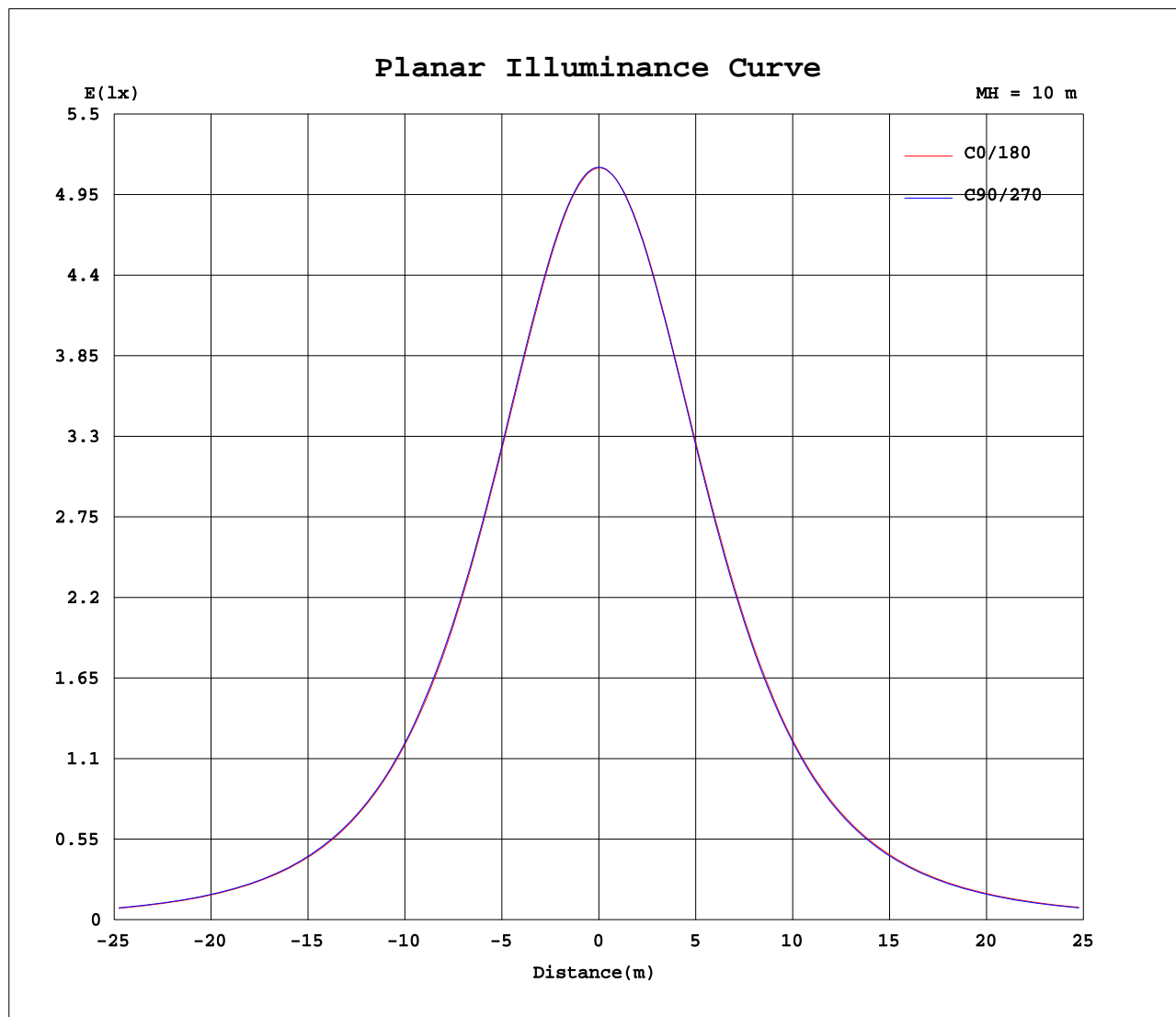
Test:U:230.1V I:0.0580A P:12.80W PF:0.9500 Lamp Flux:1464.06x1 lm		
NAME: UP-DL222-8-13W-C3-4000K	TYPE:13W	WEIGHT:
DIM.:	SPEC.:4000K	SERIAL No.:1
MFR.:	SUR.:0.0232	PROTECTION ANGLE:



C Range: 0 - 360DEG
C Interval: 30.0DEG
Test Speed: HIGH
Temperature:25.3DEG
Operators:DAMIN
Test Date:2019-06-05

γ Range: 0 - 90DEG
 γ Interval: 1.0DEG
Test System:EVERFINE GO-2000A_V1 SYSTEM V2.0.276
Humidity:65.0%
Test Distance:9.443m [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: 2019-06-05

γ Range: 0 - 90DEG
 γ Interval: 1.0DEG
Test System: EVERFINE GO-2000A_V1 SYSTEM V2.0.276
Humidity: 65.0%
Test Distance: 9.443m [K=1.0000]
Remarks:

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γ Range: 0 - 90DEG
γ Interval: 1.0DEG
Test System:EVERFINE GO-2000A_V1 SYSTEM V2.0.276
Humidity:65.0%
Test Distance:9.443m [K=1.0000]
Remarks:

```