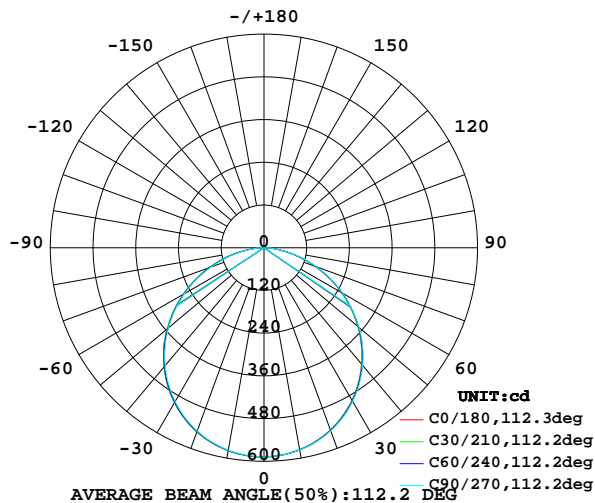


## LUMINAIRE PHOTOMETRIC TEST REPORT

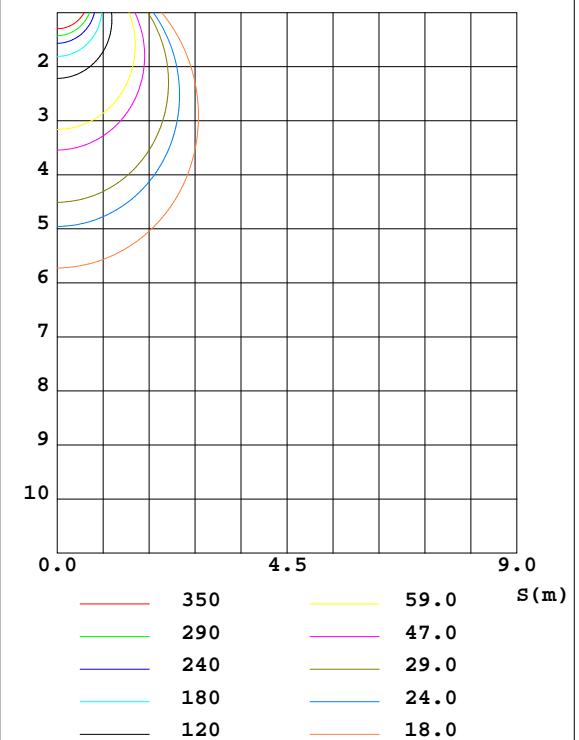
Test:U:230.1V I:0.0750A P:16.80W PF:0.9650 Lamp Flux:1676.44x1 lm		
NAME: UP-DL222-8-16W-C3-3000K	TYPE:16W	WEIGHT:
DIM.:	SPEC.:3000K	SERIAL No.:1
MFR.:	SUR.:0.0232	PROTECTION ANGLE:

DATA OF LAMP		PHOTOMETRIC DATA Eff: 99.79 lm/W			
MODEL:UP-DL222-8-16W-C3-3000K		I <sub>max</sub> (cd)	587.7	S/MH(C0/180)	1.25
NOMINAL POWER(W)	16	LOR(%)	100.0	S/MH(C90/270)	1.26
RATED VOLTAGE(V)	230	TOTAL FLUX(lm)	1676.4	η UP,DN(C0-180)	0.0,49.7
NOMINAL FLUX(lm)	1676.44	CIE CLASS	DIRECT	η UP,DN(C180-360)	0.0,50.3
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:

$\gamma$	C0	C45	C90	C135	C180	C225	C270	C315	$\gamma$	$\Phi$ zone	$\Phi$ total	%lum, lamp
10	575.7	576.6	577.2	577.9	579.0	578.6	577.4	576.9	0- 10	55.60	55.60	3.32,3.32
20	544.6	546.1	547.3	548.9	550.7	549.8	547.8	546.5	10- 20	159.5	215.1	12.8,12.8
30	494.4	496.4	498.3	500.3	503.2	501.6	498.8	497.0	20- 30	242.2	457.3	27.3,27.3
40	426.3	428.8	431.2	433.9	437.3	435.1	431.9	429.7	30- 40	292.3	749.6	44.7,44.7
50	344.0	345.9	348.1	351.8	355.8	353.0	350.3	347.3	40- 50	302.7	1052	62.8,62.8
60	251.1	252.8	255.4	259.4	263.1	260.3	257.4	254.7	50- 60	271.7	1324	79,79
70	152.8	154.5	157.4	161.2	165.2	161.6	158.2	156.6	60- 70	205.6	1530	91.2,91.2
80	61.28	61.02	62.49	67.04	71.77	67.81	64.23	63.64	70- 80	116.8	1646	98.2,98.2
90	0.7390	0.7144	0.6887	0.6958	1.257	0.9107	0.8743	0.9177	80- 90	30.08	1676	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		

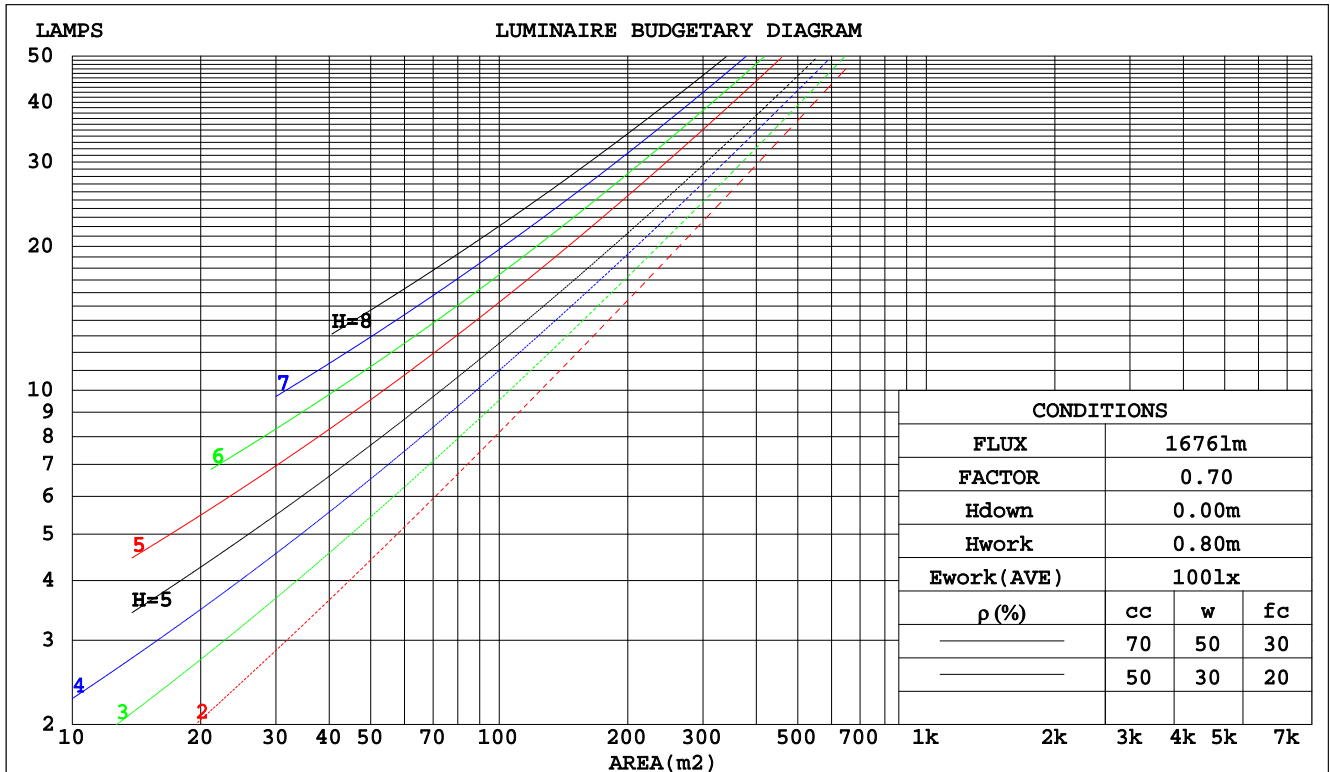
C Range: 0 - 360DEG  
 C Interval: 30.0DEG  
 Test Speed: HIGH  
 Temperature:25.3DEG  
 Operators:DAMIN  
 Test Date:2019-06-05

$\gamma$  Range: 0 - 90DEG  
 $\gamma$  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:0.0750A P:16.80W PF:0.9650 Lamp Flux:1676.44x1 lm		
NAME: UP-DL222-8-16W-C3-3000K	TYPE:16W	WEIGHT:
DIM.:	SPEC.:3000K	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	.61	.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	.28	.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:0.0750A P:16.80W PF:0.9650 Lamp Flux:1676.44x1 lm					
NAME: UP-DL222-8-16W-C3-3000K			TYPE:16W		WEIGHT:
DIM.:			SPEC.:3000K		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	.309	.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	.270	.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	.026	.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	.157	.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:0.0750A P:16.80W PF:0.9650 Lamp Flux:1676.44x1 lm											
NAME: UP-DL222-8-16W-C3-3000K						TYPE:16W			WEIGHT:		
DIM.:						SPEC.:3000K			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		23.6	25.2	23.9	25.4	25.6	23.7	25.2	24.0	25.4	25.6
3H		25.1	26.5	25.4	26.7	27.0	25.2	26.6	25.5	26.8	27.0
4H		25.7	27.0	26.0	27.3	27.5	25.7	27.1	26.1	27.3	27.6
6H		26.0	27.3	26.4	27.6	27.9	26.1	27.4	26.5	27.7	27.9
8H		26.2	27.4	26.5	27.7	27.9	26.2	27.5	26.6	27.7	28.0
12H		26.2	27.4	26.5	27.7	28.0	26.3	27.4	26.6	27.7	28.0
4H 2H		24.2	25.6	24.6	25.8	26.1	24.3	25.6	24.6	25.9	26.1
3H		25.9	27.1	26.2	27.3	27.7	25.9	27.1	26.3	27.4	27.7
4H		26.6	27.6	26.9	28.0	28.3	26.6	27.7	27.0	28.0	28.4
6H		27.1	28.0	27.5	28.4	28.7	27.1	28.1	27.5	28.4	28.8
8H		27.2	28.1	27.6	28.5	28.9	27.3	28.2	27.7	28.5	28.9
12H		27.3	28.1	27.7	28.5	28.9	27.3	28.2	27.8	28.5	29.0
8H 4H		26.8	27.7	27.2	28.1	28.5	26.9	27.8	27.3	28.1	28.5
6H		27.4	28.2	27.9	28.6	29.0	27.5	28.2	27.9	28.6	29.1
8H		27.7	28.3	28.1	28.8	29.2	27.7	28.4	28.2	28.8	29.2
12H		27.8	28.4	28.3	28.8	29.3	27.8	28.4	28.3	28.8	29.3
12H 4H		26.8	27.6	27.2	28.0	28.4	26.9	27.7	27.3	28.1	28.5
6H		27.5	28.1	28.0	28.6	29.0	27.5	28.2	28.0	28.6	29.1
8H		27.8	28.3	28.2	28.8	29.2	27.8	28.3	28.3	28.8	29.3
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 1676 lm Total Lamp Luminous Flux.(8log(F/F0) = 1.8)

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:0.0750A P:16.80W PF:0.9650 Lamp Flux:1676.44x1 lm		
NAME: UP-DL222-8-16W-C3-3000K	TYPE:16W	WEIGHT:
DIM.:	SPEC.:3000K	SERIAL No.:1
MFR.:	SUR.:0.0232	PROTECTION ANGLE:

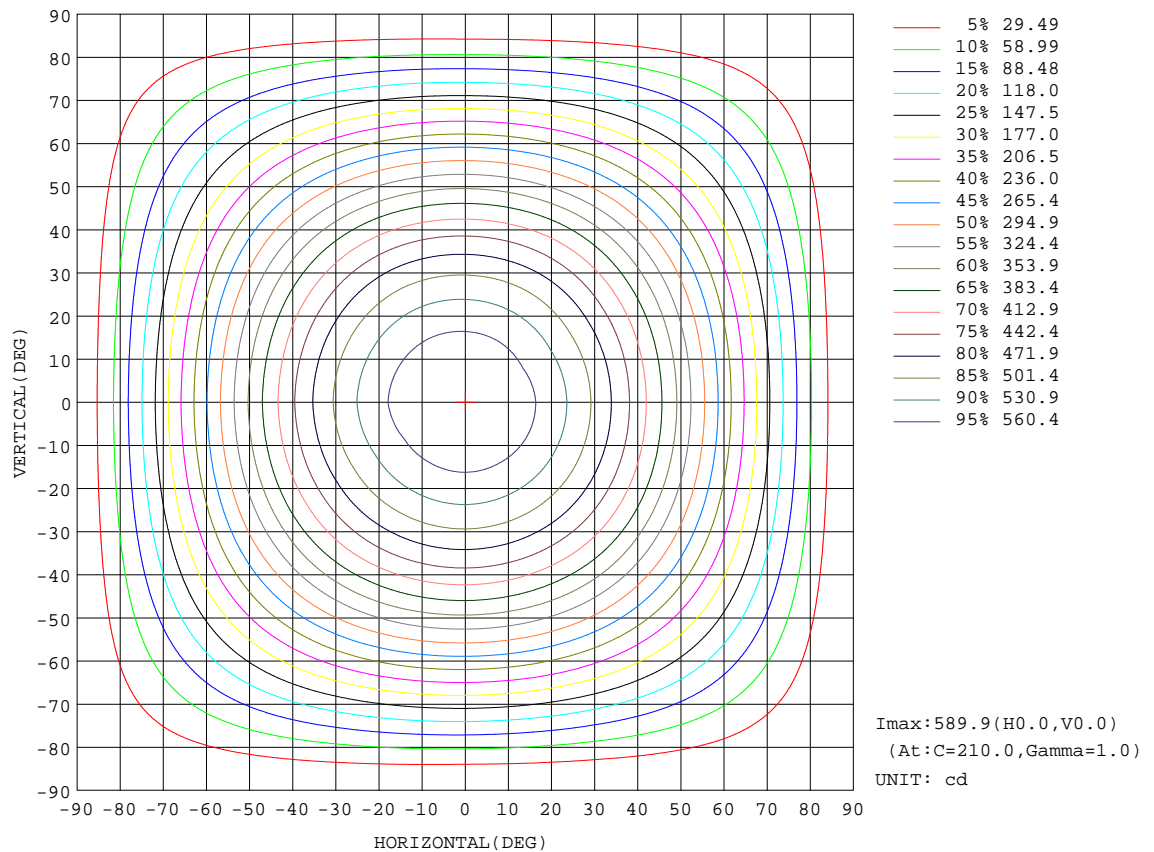
REFLECTANCE										
Ceiling	0.8	0.8	0.8	0.7	0.7	0.7	0.5	0.5	0.5	0
Walls	0.7	0.5	0.3	0.7	0.5	0.3	0.7	0.5	0.3	0
Working plane	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0
ROOM INDEX	UTILIZATION FACTORS(PERCENT)    k(RI) x RCR = 5									
k = 0.60	58	46	39	57	46	39	56	45	39	32
0.80	68	56	49	67	56	48	65	55	48	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	86	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

$\gamma$  Range: 0 - 90DEG  
 $\gamma$  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:0.0750A P:16.80W PF:0.9650 Lamp Flux:1676.44x1 lm		
NAME: UP-DL222-8-16W-C3-3000K	TYPE:16W	WEIGHT:
DIM.:	SPEC.:3000K	SERIAL No.:1
MFR.:	SUR.:0.0232	PROTECTION ANGLE:

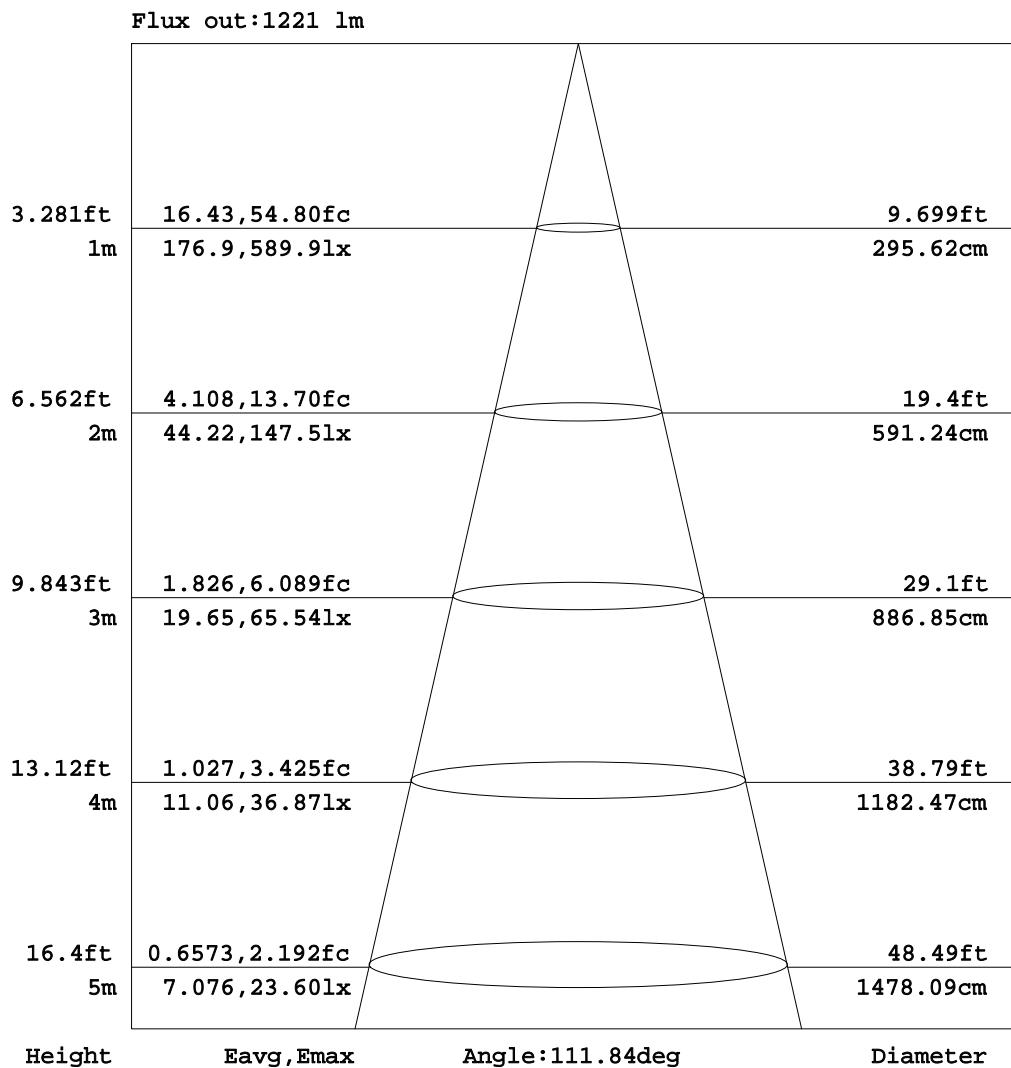


C Range: 0 - 360DEG  
C Interval: 30.0DEG  
Test Speed: HIGH  
Temperature:25.3DEG  
Operators:DAMIN  
Test Date:2019-06-05

$\gamma$  Range: 0 - 90DEG  
 $\gamma$  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:0.0750A P:16.80W PF:0.9650 Lamp Flux:1676.44x1 lm		
NAME: UP-DL222-8-16W-C3-3000K	TYPE:16W	WEIGHT:
DIM.:	SPEC.:3000K	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.

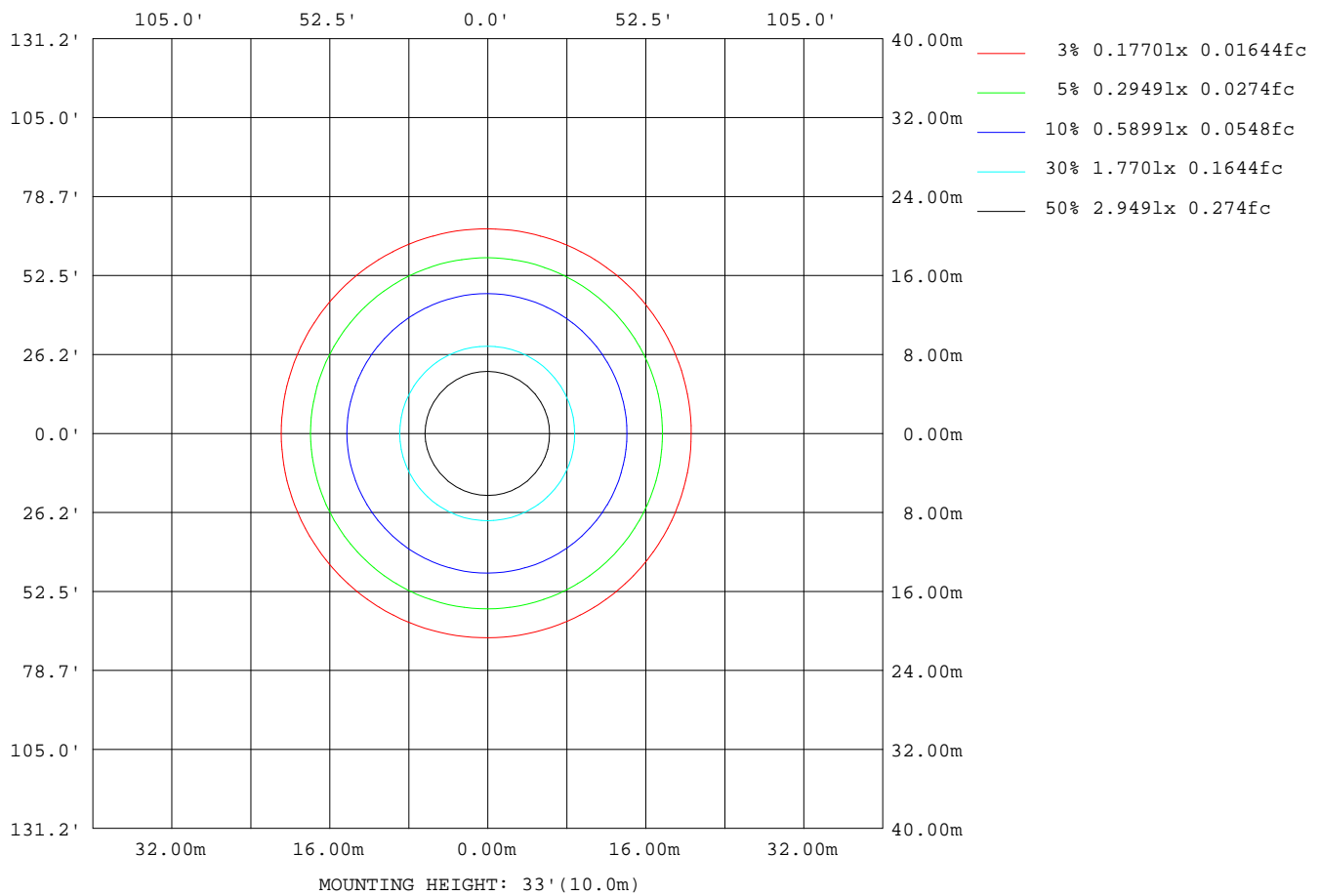
C Range: 0 - 360DEG  
C Interval: 30.0DEG  
Test Speed: HIGH  
Temperature:25.3DEG  
Operators:DAMIN  
Test Date:2019-06-05

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

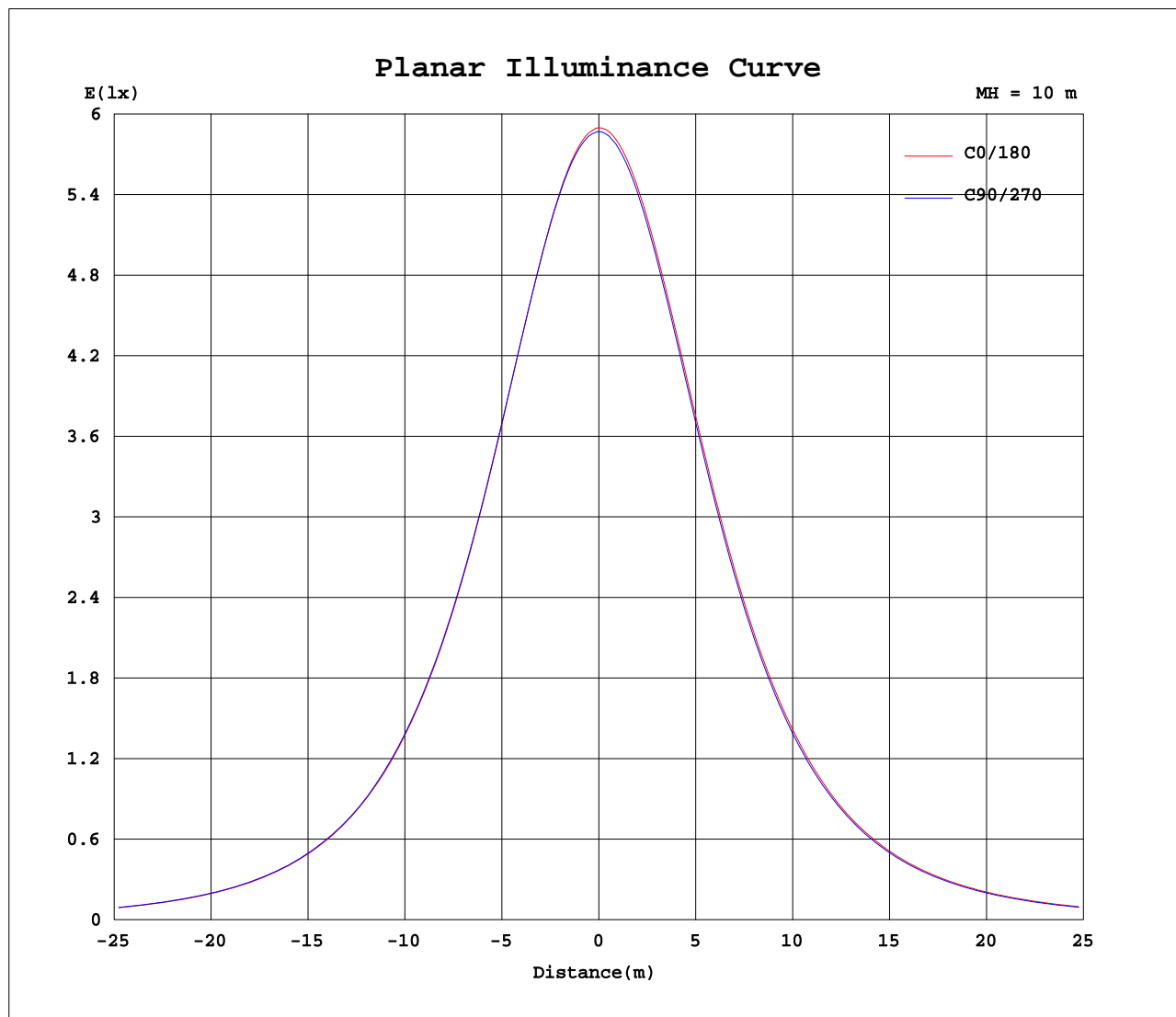
Test:U:230.1V I:0.0750A P:16.80W PF:0.9650 Lamp Flux:1676.44x1 lm		
NAME: UP-DL222-8-16W-C3-3000K	TYPE:16W	WEIGHT:
DIM.:	SPEC.:3000K	SERIAL No.:1
MFR.:	SUR.:0.0232	PROTECTION ANGLE:



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

$\gamma$  Range: 0 - 90DEG  
 $\gamma$  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

$\gamma$  Range: 0 - 90DEG  
 $\gamma$  Interval: 1.0DEG  
Test System: EVERFINE GO-2000A\_V1 SYSTEM V2.0.276  
Humidity: 65.0%  
Test Distance: 9.443m [K=1.0000]  
Remarks:

```

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:

```