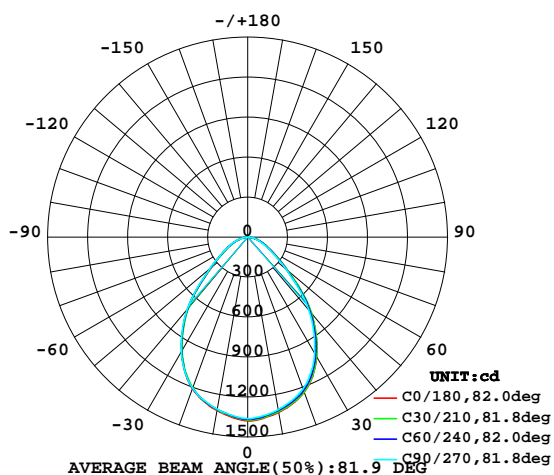


## LUMINAIRE PHOTOMETRIC TEST REPORT

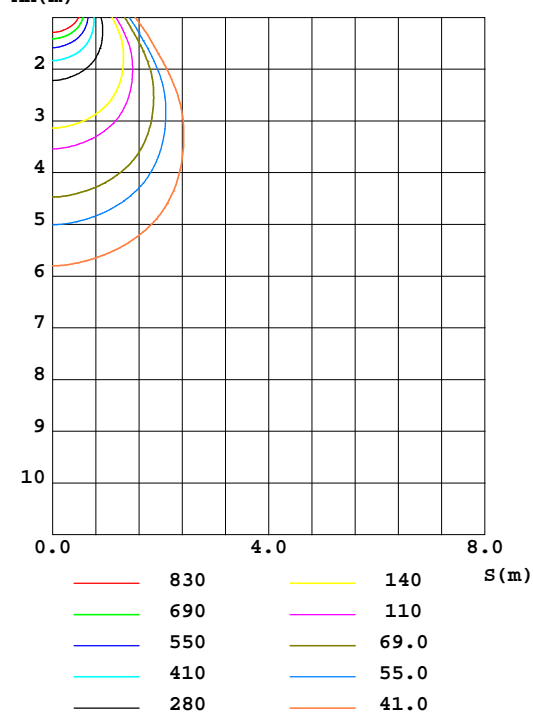
Test:U:240.5V I:0.1230A P:28.20W PF:0.9480 Lamp Flux:2428.92x1 lm		
NAME: LPA-DR-HAL8-25-827-D90-C3	TYPE:25W	WEIGHT:
DIM.:	SPEC.:2700K	SERIAL No.:
MFR.:	SUR.:0.0289382	PROTECTION ANGLE:

DATA OF LAMP		PHOTOMETRIC DATA Eff: 86.13 lm/W			
MODEL		I <sub>max</sub> (cd)	1379	S/MH(C0/180)	1.14
NOMINAL POWER(W)	25	LOR(%)	100.0	S/MH(C90/270)	1.12
RATED VOLTAGE(V)	240	TOTAL FLUX(lm)	2428.9	η UP,DN(C0-180)	0.0,50.2
NOMINAL FLUX(lm)	2428.92	CIE CLASS	DIRECT	η UP,DN(C180-360)	0.0,49.8
LAMPS INSIDE	1	η up(%)	0.0	CIBSE SHR NOM	1.00
TEST VOLTAGE(V)	240.5	η down(%)	100.0	CIBSE SHR MAX	1.15

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:2017-07-03

γ Range: 0 - 90DEG  
γ Interval: 1.0DEG  
Test System:EVERFINE GO-2000A\_V1 SYSTEM V2.0.276  
Humidity:65.0%  
Test Distance:9.700m [K=1.0000]  
Remarks:

## ZONAL FLUX DIAGRAM

## ZONAL FLUX DIAGRAM:

$\gamma$	C0	C45	C90	C135	C180	C225	C270	C315	$\gamma$	$\Phi$ zone	$\Phi$ total	$\Phi$ lum, lamp
10	1336	1326	1315	1301	1323	1315	1312	1310	0- 10	127.6	127.6	5.25,5.25
20	1240	1231	1214	1192	1212	1207	1207	1210	10- 20	358.5	486.1	20,20
30	1035	1027	1004	979.4	990.7	988.8	996.2	1011	20- 30	514.4	1000	41.2,41.2
40	744.9	736.6	715.0	694.5	700.3	695.8	706.3	729.4	30- 40	537.9	1538	63.3,63.3
50	392.3	390.3	376.8	351.4	358.5	368.2	375.4	385.3	40- 50	413.4	1952	80.4,80.4
60	206.8	201.7	193.6	185.7	189.4	191.5	195.9	202.1	50- 60	244.8	2196	90.4,90.4
70	109.6	106.7	99.95	95.29	98.08	100.2	103.3	107.5	60- 70	143.8	2340	96.3,96.3
80	38.96	38.01	34.13	31.76	34.10	33.22	35.48	38.13	70- 80	71.01	2411	99.3,99.3
90	4.609	3.614	3.409	2.440	3.516	3.879	2.601	4.031	80- 90	17.66	2429	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		

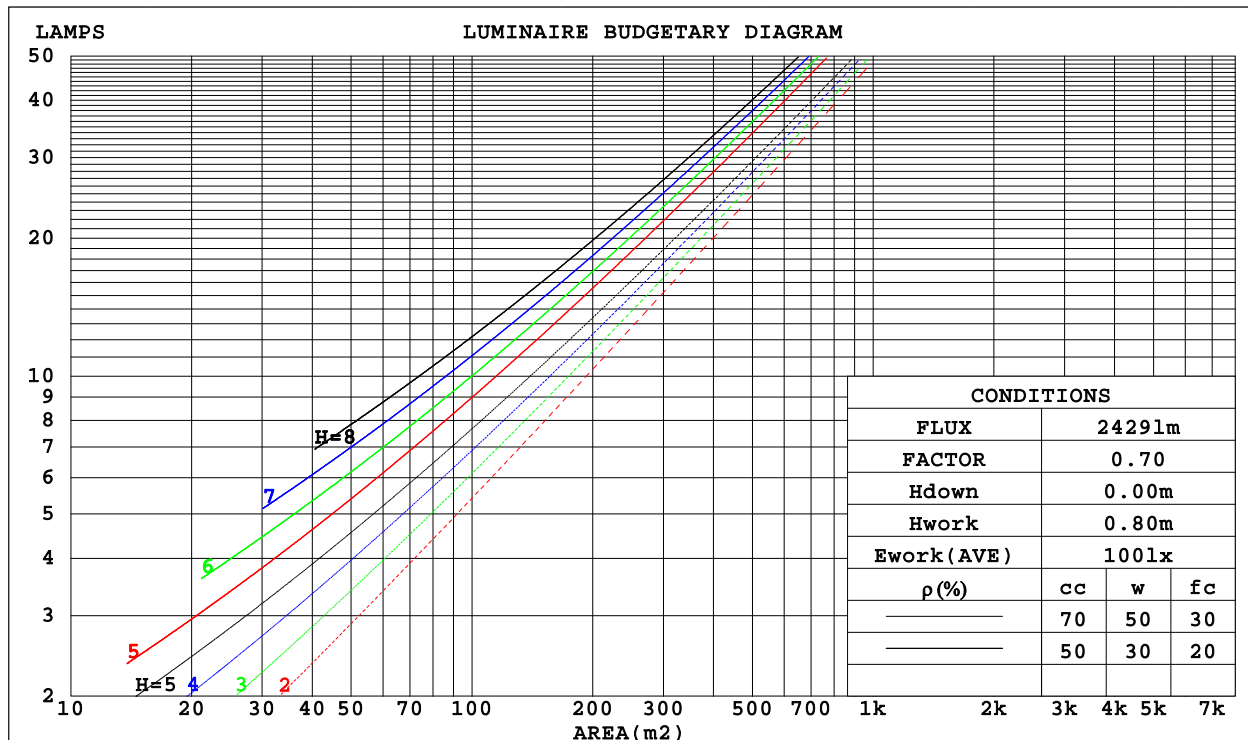
C Range: 0 - 360DEG  
 C Interval: 30.0DEG  
 Test Speed: HIGH  
 Temperature:25.3DEG  
 Operators:DAMIN  
 Test Date:2017-07-03

$\gamma$  Range: 0 - 90DEG  
 $\gamma$  Interval: 1.0DEG  
 Test System:EVERFINE GO-2000A\_V1 SYSTEM V2.0.276  
 Humidity:65.0%  
 Test Distance:9.700m [K=1.0000]  
 Remarks:

## CU AND LUMINAIRE BUDGETARY ESTIMATE DIAGRAM

Test:U:240.5V I:0.1230A P:28.20W PF:0.9480 Lamp Flux:2428.92x1 lm		
NAME: LPA-DR-HAL8-25-827-D90-C3	TYPE:25W	WEIGHT:
DIM.:	SPEC.:2700K	SERIAL No.:
MFR.:	SUR.:0.0289382	PROTECTION ANGLE:

$\rho_{cc}$	80%			70%			50%			30%			10%			0
$\rho_w$	50%	30%	10%	50%	30%	10%	50%	30%	10%	50%	30%	10%	50%	30%	10%	0
$\rho_{fc}$	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	1.07	1.04	1.01	1.05	1.02	.99	1.01	.98	.96	.97	.95	.93	.93	.92	.90	.88
2.0	.96	.91	.86	.94	.89	.85	.91	.87	.83	.88	.84	.81	.85	.82	.79	.77
3.0	.87	.80	.74	.85	.79	.74	.82	.77	.72	.80	.75	.71	.77	.73	.70	.68
4.0	.78	.71	.65	.77	.70	.65	.75	.69	.64	.73	.67	.63	.71	.66	.62	.60
5.0	.71	.64	.58	.70	.63	.58	.68	.62	.57	.66	.61	.56	.65	.60	.56	.54
6.0	.65	.57	.52	.64	.57	.52	.63	.56	.51	.61	.55	.51	.60	.54	.50	.49
7.0	.60	.52	.47	.59	.52	.47	.58	.51	.46	.56	.50	.46	.55	.50	.46	.44
8.0	.55	.48	.42	.55	.47	.42	.53	.47	.42	.52	.46	.42	.51	.46	.42	.40
9.0	.51	.44	.39	.51	.44	.39	.50	.43	.39	.49	.43	.38	.48	.42	.38	.37
10.0	.48	.40	.36	.47	.40	.36	.46	.40	.35	.45	.39	.35	.44	.39	.35	.34



C Range: 0 - 360DEG  
 C Interval: 30.0DEG  
 Test Speed: HIGH  
 Temperature:25.3DEG  
 Operators:DAMIN  
 Test Date:2017-07-03

$\gamma$  Range: 0 - 90DEG  
 $\gamma$  Interval: 1.0DEG  
 Test System:EVERFINE GO-2000A\_V1 SYSTEM V2.0.276  
 Humidity:65.0%  
 Test Distance:9.700m [K=1.0000]  
 Remarks:

## WEC AND CCEC

Test:U:240.5V I:0.1230A P:28.20W PF:0.9480 Lamp Flux:2428.92x1 lm		
NAME: LPA-DR-HAL8-25-827-D90-C3	TYPE:25W	WEIGHT:
DIM.:	SPEC.:2700K	SERIAL No.:
MFR.:	SUR.:0.0289382	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	.247	.140	.044	.240	.137	.043	.227	.130	.042	.215	.124	.040	.204	.118	.038		
2.0	.237	.130	.040	.231	.127	.039	.220	.122	.038	.209	.117	.037	.200	.113	.036		
3.0	.224	.119	.036	.218	.117	.035	.209	.113	.034	.199	.109	.034	.191	.106	.033		
4.0	.210	.109	.032	.205	.107	.032	.197	.104	.031	.189	.101	.031	.181	.099	.030		
5.0	.197	.100	.029	.193	.099	.029	.186	.097	.028	.178	.094	.028	.172	.092	.028		
6.0	.185	.093	.027	.182	.092	.026	.175	.090	.026	.169	.088	.026	.163	.086	.025		
7.0	.175	.086	.024	.172	.085	.024	.166	.084	.024	.160	.082	.024	.155	.080	.024		
8.0	.165	.081	.023	.162	.080	.023	.157	.078	.022	.152	.077	.022	.147	.075	.022		
9.0	.156	.075	.021	.154	.075	.021	.149	.073	.021	.144	.072	.021	.140	.071	.021		
10.0	.148	.071	.020	.146	.070	.020	.141	.069	.019	.137	.068	.019	.133	.067	.019		

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	.176	.157	.139	.151	.134	.120	.103	.093	.083	.059	.054	.048	.019	.017	.016		
2.0	.165	.132	.105	.141	.114	.090	.097	.079	.063	.056	.046	.037	.018	.015	.012		
3.0	.156	.114	.081	.133	.098	.070	.092	.068	.049	.053	.040	.029	.017	.013	.009		
4.0	.147	.100	.064	.126	.087	.056	.087	.060	.039	.050	.035	.023	.016	.011	.008		
5.0	.140	.089	.052	.120	.077	.045	.083	.054	.032	.048	.032	.019	.015	.010	.006		
6.0	.133	.081	.043	.114	.070	.038	.079	.049	.027	.046	.029	.016	.015	.009	.005		
7.0	.126	.074	.036	.109	.064	.032	.075	.045	.023	.044	.026	.013	.014	.009	.004		
8.0	.120	.068	.031	.104	.059	.027	.072	.041	.019	.042	.024	.012	.013	.008	.004		
9.0	.115	.063	.027	.099	.054	.024	.069	.038	.017	.040	.023	.010	.013	.007	.003		
10.0	.110	.058	.024	.095	.051	.021	.066	.036	.015	.038	.021	.009	.012	.007	.003		

C Range: 0 - 360DEG  
 C Interval: 30.0DEG  
 Test Speed: HIGH  
 Temperature:25.3DEG  
 Operators:DAMIN  
 Test Date:2017-07-03

γ Range: 0 - 90DEG  
 γ Interval: 1.0DEG  
 Test System:EVERFINE GO-2000A\_V1 SYSTEM V2.0.276  
 Humidity:65.0%  
 Test Distance:9.700m [K=1.0000]  
 Remarks:

### Uncorrected UGR Table

Test:U:240.5V I:0.1230A P:28.20W PF:0.9480 Lamp Flux:2428.92x1 lm											
NAME: LPA-DR-HAL8-25-827-D90-C3					TYPE:25W			WEIGHT:			
DIM.:					SPEC.:2700K			SERIAL No.:			
MFR.:					SUR.:0.0289382			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	22.1	23.4	22.3	23.6	23.7	21.9	23.2	22.1	23.3	23.5	
	3H	22.7	23.9	23.0	24.2	24.4	22.5	23.7	22.8	23.9	24.1
	4H	23.0	24.1	23.3	24.4	24.6	22.7	23.8	23.0	24.1	24.3
	6H	23.2	24.2	23.5	24.5	24.8	22.8	23.9	23.2	24.1	24.4
	8H	23.2	24.2	23.5	24.5	24.8	22.9	23.9	23.2	24.1	24.4
	12H	23.2	24.2	23.6	24.5	24.8	22.8	23.8	23.2	24.1	24.4
4H	2H	22.3	23.4	22.6	23.6	23.9	22.1	23.2	22.4	23.5	23.7
	3H	23.2	24.1	23.5	24.4	24.7	22.9	23.9	23.2	24.2	24.5
	4H	23.5	24.4	23.9	24.7	25.1	23.2	24.1	23.6	24.4	24.8
	6H	23.8	24.6	24.2	24.9	25.3	23.5	24.3	23.9	24.6	24.9
	8H	23.9	24.6	24.3	24.9	25.3	23.5	24.2	23.9	24.6	25.0
	12H	23.9	24.6	24.3	24.9	25.3	23.5	24.2	24.0	24.6	25.0
8H	4H	23.6	24.4	24.0	24.7	25.1	23.4	24.1	23.8	24.4	24.8
	6H	24.0	24.6	24.4	25.0	25.4	23.7	24.3	24.1	24.7	25.1
	8H	24.1	24.6	24.6	25.0	25.5	23.8	24.3	24.2	24.7	25.2
	12H	24.2	24.6	24.6	25.1	25.5	23.8	24.3	24.3	24.7	25.2
12H	4H	23.6	24.3	24.0	24.7	25.1	23.3	24.0	23.8	24.4	24.8
	6H	24.0	24.5	24.4	24.9	25.4	23.7	24.2	24.1	24.6	25.1
	8H	24.1	24.6	24.6	25.0	25.5	23.8	24.3	24.3	24.7	25.2
Variations with the observer position at spacings:											
S = 1.0H	+ 0.6 / - 0.8					+ 0.7 / - 0.8					
1.5H	+ 0.5 / - 0.5					+ 0.6 / - 0.5					
2.0H	+ 1.4 / - 0.9					+ 1.4 / - 0.9					

CIE Pub.117 Corrected 2429 lm Total Lamp Luminous Flux.(8log(F/F0) = 3.1)

C Range: 0 - 360DEG  
C Interval: 30.0DEG  
Test Speed: HIGH  
Temperature:25.3DEG  
Operators:DAMIN  
Test Date:2017-07-03

γ Range: 0 - 90DEG  
γ Interval: 1.0DEG  
Test System:EVERFINE GO-2000A\_V1 SYSTEM V2.0.276  
Humidity:65.0%  
Test Distance:9.700m [K=1.0000]  
Remarks:

## UTILIZATION FACTORS TABLE

Test:U:240.5V I:0.1230A P:28.20W PF:0.9480 Lamp Flux:2428.92x1 lm		
NAME: LPA-DR-HAL8-25-827-D90-C3	TYPE:25W	WEIGHT:
DIM.:	SPEC.:2700K	SERIAL No.:
MFR.:	SUR.:0.0289382	PROTECTION ANGLE:

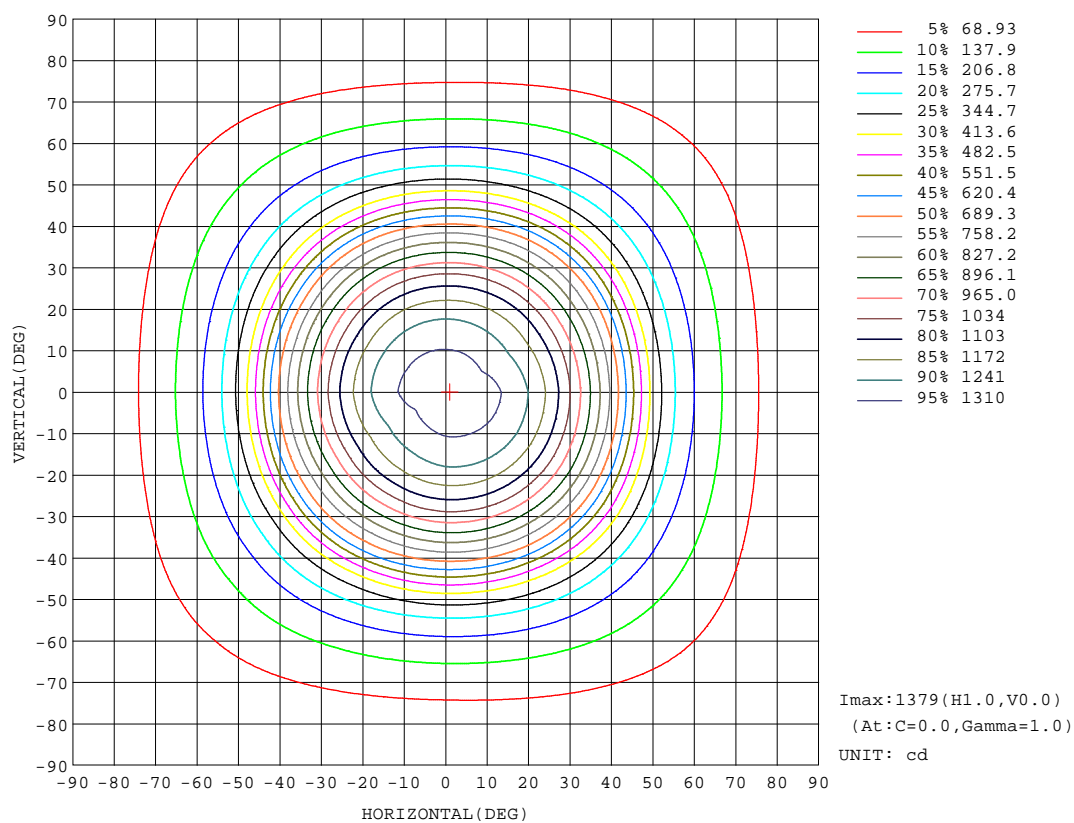
REFLECTANCE										
Ceiling	0.8	0.8	0.8	0.7	0.7	0.7	0.5	0.5	0.5	0
Walls	0.7	0.5	0.3	0.7	0.5	0.3	0.7	0.5	0.3	0
Working plane	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0
ROOM INDEX	UTILIZATION FACTORS(PERCENT) $k(RI) \times RCR = 5$									
k = 0.60	69	59	53	68	59	53	67	58	53	48
0.80	78	69	63	77	68	63	76	68	62	57
1.00	86	77	71	85	76	71	83	77	70	64
1.25	92	84	78	90	83	78	88	82	77	71
1.50	96	88	83	94	87	82	92	86	81	75
2.00	101	95	90	100	93	89	96	91	87	81
2.50	104	98	93	102	97	93	99	94	91	83
3.00	107	101	97	105	100	96	101	97	94	86
4.00	110	105	102	107	104	100	103	100	98	90
5.00	111	108	105	109	106	103	105	102	100	92
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:2017-07-03

γ Range: 0 - 90DEG  
 γ Interval: 1.0DEG  
 Test System:EVERFINE GO-2000A\_V1 SYSTEM V2.0.276  
 Humidity:65.0%  
 Test Distance:9.700m [K=1.0000]  
 Remarks:

## ISOCANDELA DIAGRAM

Test:U:240.5V I:0.1230A P:28.20W PF:0.9480 Lamp Flux:2428.92x1 lm		
NAME: LPA-DR-HAL8-25-827-D90-C3	TYPE:25W	WEIGHT:
DIM.:	SPEC.:2700K	SERIAL No.:
MFR.:	SUR.:0.0289382	PROTECTION ANGLE:

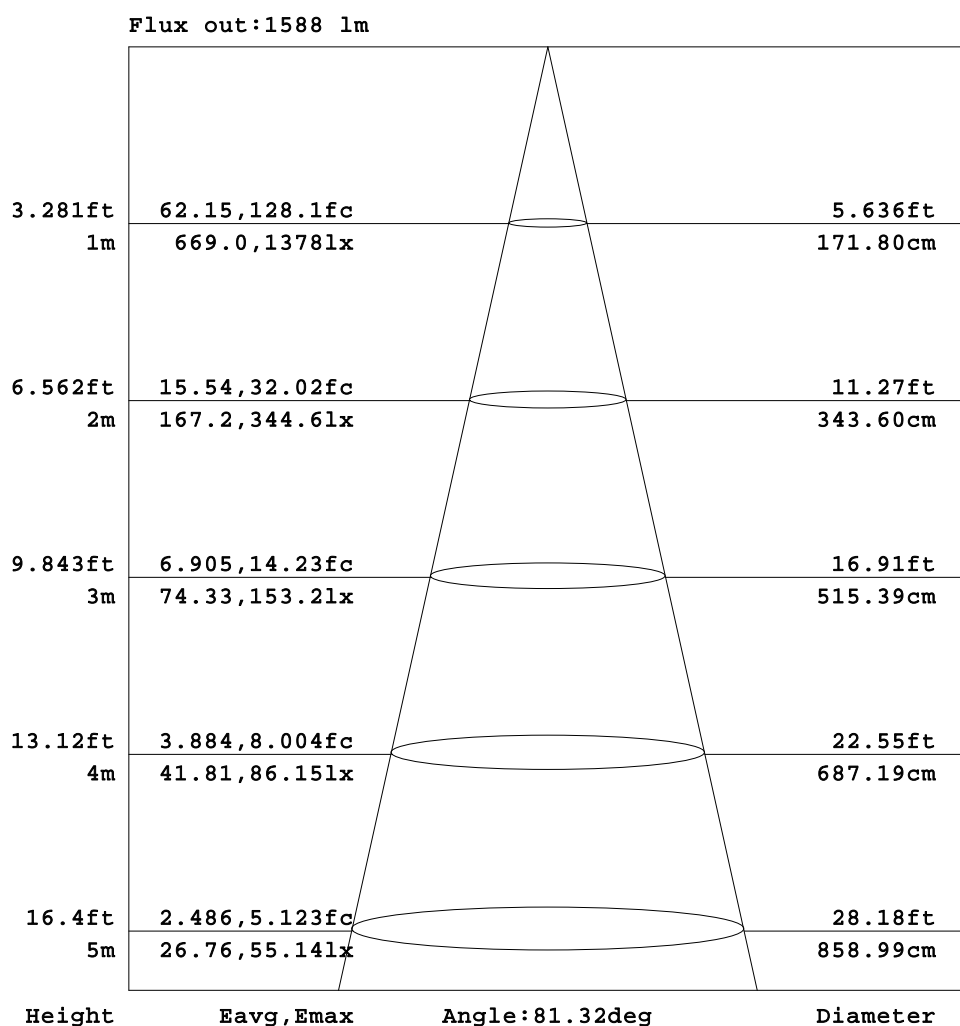


C Range: 0 - 360DEG  
C Interval: 30.0DEG  
Test Speed: HIGH  
Temperature:25.3DEG  
Operators:DAMIN  
Test Date:2017-07-03

$\gamma$  Range: 0 - 90DEG  
 $\gamma$  Interval: 1.0DEG  
Test System:EVERFINE GO-2000A\_V1 SYSTEM V2.0.276  
Humidity:65.0%  
Test Distance:9.700m [K=1.0000]  
Remarks:

### AAI Figure

Test:U:240.5V I:0.1230A P:28.20W PF:0.9480 Lamp Flux:2428.92x1 lm		
NAME: LPA-DR-HAL8-25-827-D90-C3	TYPE:25W	WEIGHT:
DIM.:	SPEC.:2700K	SERIAL No.:
MFR.:	SUR.:0.0289382	PROTECTION ANGLE:



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

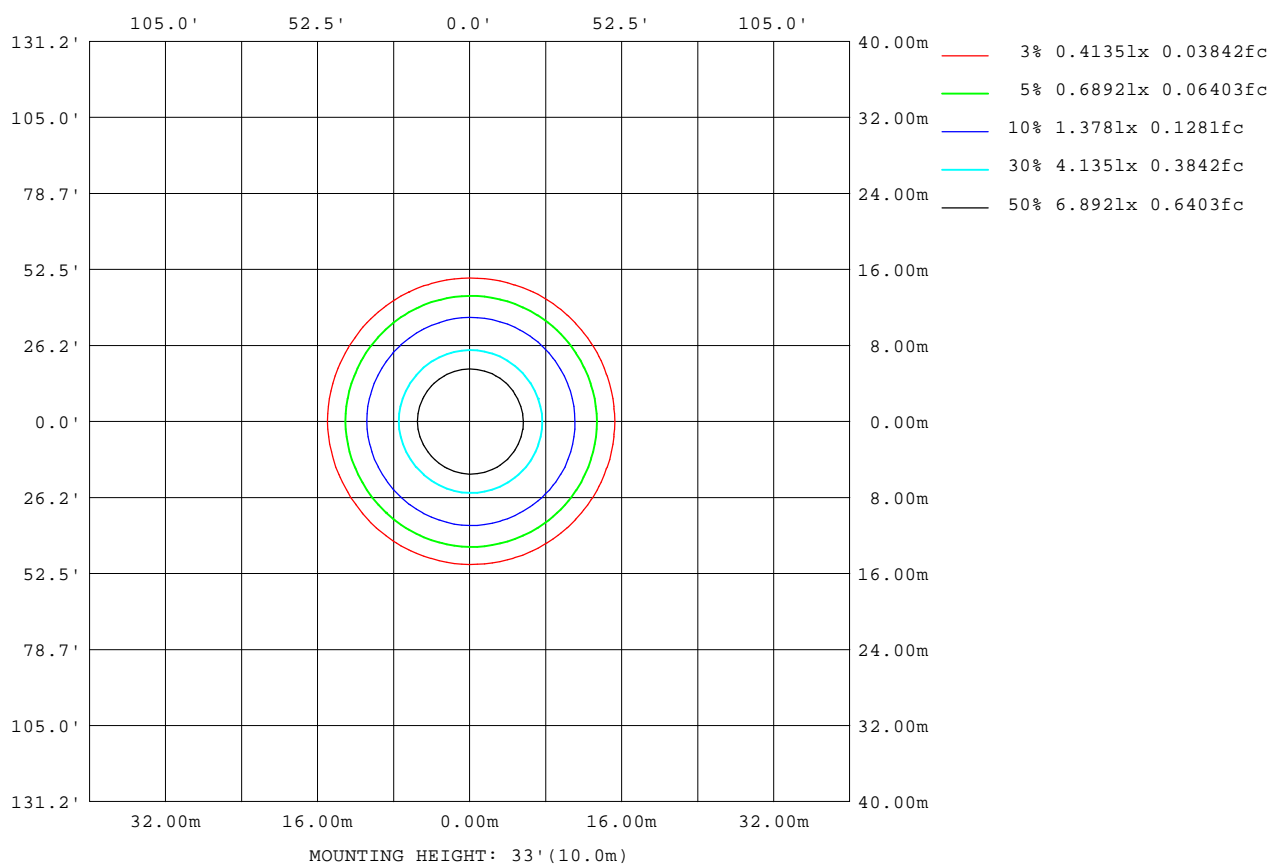
C Range: 0 - 360DEG  
C Interval: 30.0DEG  
Test Speed: HIGH  
Temperature:25.3DEG  
Operators:DAMIN  
Test Date:2017-07-03

γ Range: 0 - 90DEG  
γ Interval: 1.0DEG  
Test System:EVERFINE GO-2000A\_V1 SYSTEM V2.0.276  
Humidity:65.0%  
Test Distance:9.700m [K=1.0000]  
Remarks:



## ISOLUX DIAGRAM

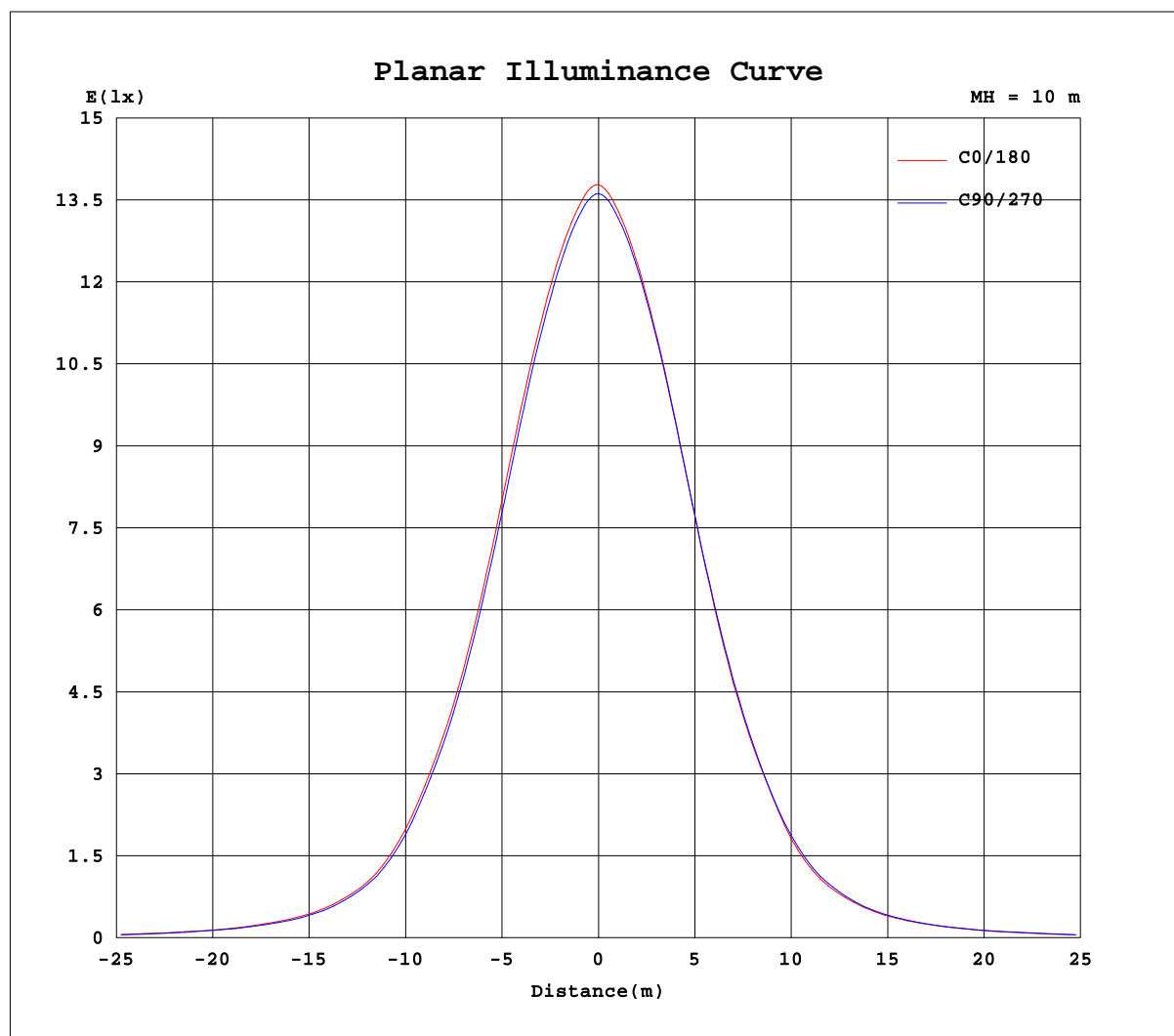
Test:U:240.5V I:0.1230A P:28.20W PF:0.9480 Lamp Flux:2428.92x1 lm		
NAME: LPA-DR-HAL8-25-827-D90-C3	TYPE:25W	WEIGHT:
DIM.:	SPEC.:2700K	SERIAL No.:
MFR.:	SUR.:0.0289382	PROTECTION ANGLE:



C Range: 0 - 360DEG  
C Interval: 30.0DEG  
Test Speed: HIGH  
Temperature:25.3DEG  
Operators:DAMIN  
Test Date:2017-07-03

$\gamma$  Range: 0 - 90DEG  
 $\gamma$  Interval: 1.0DEG  
Test System:EVERFINE GO-2000A\_V1 SYSTEM V2.0.276  
Humidity:65.0%  
Test Distance:9.700m [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: 2017-07-03

$\gamma$  Range: 0 - 90DEG  
 $\gamma$  Interval: 1.0DEG  
Test System: EVERFINE GO-2000A\_V1 SYSTEM V2.0.276  
Humidity: 65.0%  
Test Distance: 9.700m [K=1.0000]  
Remarks:

Test:U:240.5V I:0.1230A P:28.20W PF:0.9480 Lamp Flux:2428.92x1 1m		
NAME: LPA-DR-HAL8-25-827-D90-C3	TYPE:25W	WEIGHT:
DIM.:	SPEC.:2700K	SERIAL No.:
MFR.:	SUR.:0.0289382	PROTECTION ANGLE:

UNIT: cd

C Range: 0 - 360DEG  
C Interval: 30.0DEG  
Test Speed: HIGH  
Temperature: 25.3DEG  
Operators: DAMIN  
Test Date: 2017-07-03

```

γ Range: 0 - 90DEG
γ Interval: 1.0DEG
Test System: EVERFINE GO-2000A_V1 SYSTEM V2.0.276
Humidity: 65.0%
Test Distance: 9.700m [K=1.0000]
Remarks:

```