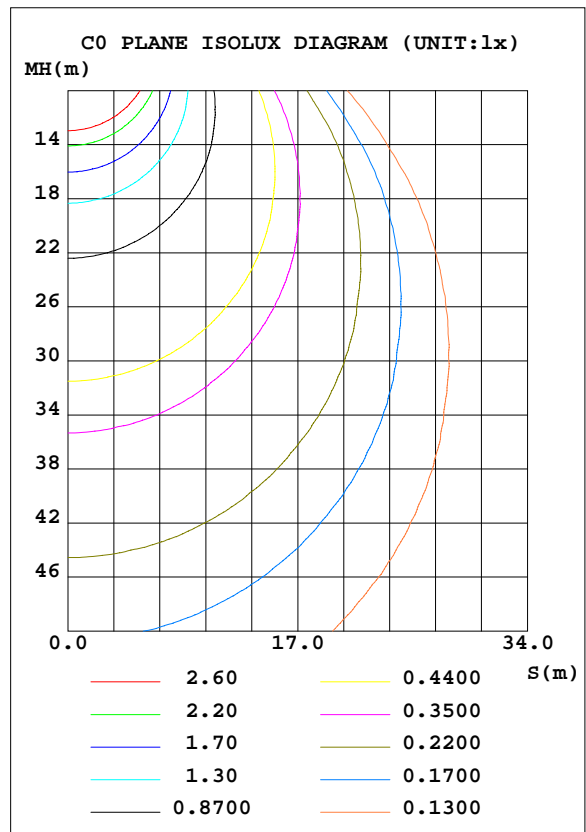
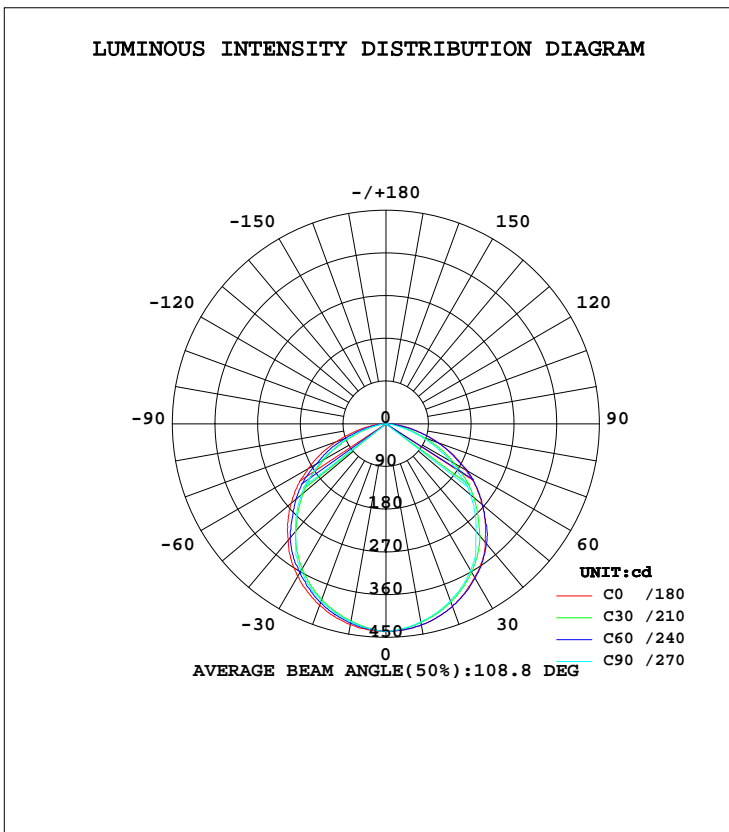


LUMINAIRE PHOTOMETRIC TEST REPORT

NAME: LED 2D 12W	TYPE:	WEIGHT:
DIMENSION:	SPECIFICATION:	SERIAL No.:3
MANUFACTURER: MICATRON		

DATA OF LAMP		PHOTOMETRIC DATA Eff: 90.12 lm/W			
MODEL	LED 2D 12W	Imax(cd)	438.0	S/MH(C0/180)	1.26
NOMINAL POWER(W)	12	EFFICIENCY(%)	115.5	S/MH(C90/270)	1.22
RATED VOLTAGE(V)	240	TOTAL FLUX(lm)	1155.3	η UP(C0-180)	0.0
NOMINAL FLUX(lm)	1000.0	CIE CLASS	DIRECT	η DN(C0-180)	57.7
LAMPS INSIDE	1	η up(%)	0.0	η UP(C180-360)	0.0
TEST VOLTAGE(V)	239.1	η down(%)	115.5	η DN(C180-360)	57.8



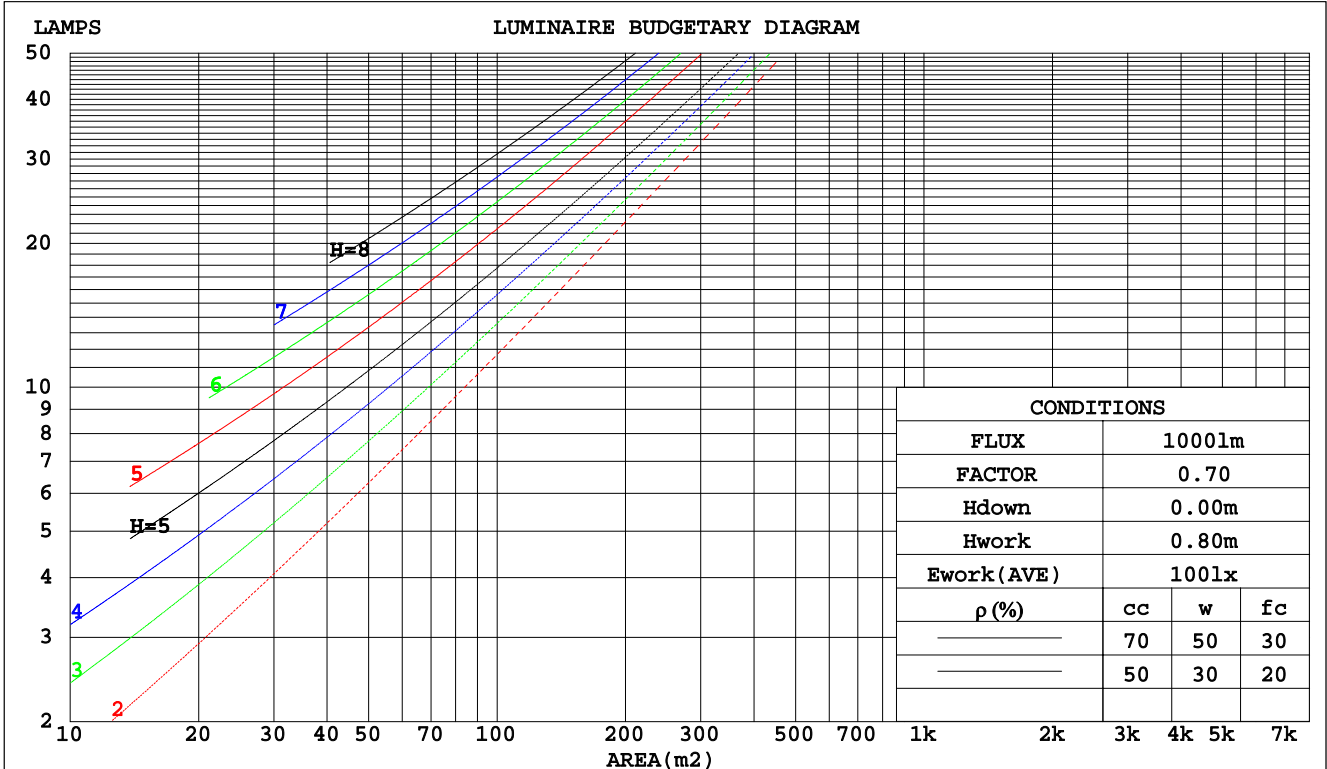
C Range: 0 - 360DEG
 C Interval: 10.0DEG
 Test Speed: MEDIUM
 Temperature:25.3DEG
 Operators:CKS
 Test Date:2010-04-19

γ Range: 0 - 90DEG
 γ Interval: 0.5DEG
 Test System: GO1900 SYSTEM
 Humidity:65.0%
 Test Distance:9.525m [K=1.0000]
 Remarks: without luminaire

CU AND LUMINAIRE BUDGETARY ESTIMATE DIAGRAM

NAME: LED 2D 12W	TYPE:	WEIGHT:
DIMENSION:	SPECIFICATION:	SERIAL No.:3
MANUFACTURER: MICATRON		

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	1.38	1.38	1.38	1.34	1.34	1.34	1.28	1.28	1.28	1.23	1.23	1.23	1.18	1.18	1.18	1.16
1.0	1.21	1.17	1.12	1.19	1.14	1.11	1.14	1.10	1.07	1.09	1.06	1.04	1.05	1.03	1.01	.98
2.0	1.06	.99	.92	1.04	.97	.91	.90	.94	.89	.96	.91	.87	.93	.89	.85	.83
3.0	.94	.84	.77	.92	.83	.77	.88	.81	.75	.85	.79	.74	.82	.77	.73	.70
4.0	.83	.73	.66	.82	.72	.65	.79	.71	.64	.76	.69	.63	.74	.68	.63	.60
5.0	.74	.64	.57	.73	.64	.56	.71	.62	.56	.68	.61	.55	.66	.60	.55	.52
6.0	.67	.57	.50	.66	.56	.49	.64	.55	.49	.62	.54	.49	.60	.53	.48	.46
7.0	.61	.51	.44	.60	.50	.44	.58	.50	.43	.56	.49	.43	.55	.48	.43	.40
8.0	.56	.46	.39	.55	.45	.39	.53	.45	.39	.52	.44	.39	.50	.44	.38	.36
9.0	.51	.42	.35	.50	.41	.35	.49	.41	.35	.48	.40	.35	.47	.40	.35	.33
10.0	.47	.38	.32	.46	.38	.32	.45	.37	.32	.44	.37	.32	.43	.36	.31	.29



C Range: 0 - 360DEG
 C Interval: 10.0DEG
 Test Speed: MEDIUM
 Temperature: 25.3DEG
 Operators: CKS
 Test Date: 2010-04-19

γ Range: 0 - 90DEG
 γ Interval: 0.5DEG
 Test System: GO1900 SYSTEM
 Humidity: 65.0%
 Test Distance: 9.525m [K=1.0000]
 Remarks: without luminaire

ZONAL FLUX DIAGRAM

ZONAL FLUX DIAGRAM:

γ	C0	C45	C90	C135	C180	C225	C270	C315	γ	Φ zone	Φ total	%
5	435.6	433.3	432.7	434.6	435.9	434.6	432.7	433.3	0- 5	10.41	10.41	0.90
10	429.9	424.8	424.1	427.8	430.8	427.8	424.1	424.8	5- 10	30.77	41.18	3.56
15	420.1	412.6	412.4	417.6	421.5	417.6	412.4	412.6	10- 15	49.94	91.12	7.89
20	407.1	397.8	398.3	404.1	409.2	404.1	398.3	397.8	15- 20	67.35	158.5	13.72
25	390.6	379.2	378.8	387.5	393.9	387.5	378.8	379.2	20- 25	82.39	240.9	20.85
30	371.5	357.4	356.9	367.6	374.2	367.6	356.9	357.4	25- 30	94.58	335.4	29.03
35	348.4	333.6	329.9	345.0	353.6	345.0	329.9	333.6	30- 35	103.6	439.1	38.00
40	320.1	305.2	296.4	319.2	325.8	319.2	296.4	305.2	35- 40	108.6	547.6	47.40
45	291.6	271.5	266.1	288.3	296.2	288.3	266.1	271.5	40- 45	109.1	656.8	56.85
50	261.1	234.5	233.4	253.6	264.7	253.6	233.4	234.5	45- 50	106.0	762.8	66.02
55	227.2	199.2	192.7	216.6	232.9	216.6	192.7	199.2	50- 55	99.34	862.1	74.62
60	188.4	160.7	156.6	181.1	195.0	181.1	156.6	160.7	55- 60	88.35	950.4	82.27
65	151.3	121.3	115.3	142.0	158.5	142.0	115.3	121.3	60- 65	74.01	1024	88.67
70	111.5	80.81	77.32	100.7	118.6	100.7	77.32	80.81	65- 70	57.08	1082	93.61
75	71.95	45.88	43.97	64.29	79.95	64.29	43.97	45.88	70- 75	39.14	1121	97.00
80	41.18	21.25	19.58	33.59	45.83	33.59	19.58	21.25	75- 80	22.50	1143	98.95
85	14.89	4.871	3.736	12.98	18.57	12.98	3.736	4.871	80- 85	9.897	1153	99.81
90	0.6062	1.206	1.024	1.815	1.078	1.815	1.024	1.206	85- 90	2.233	1155	100.00
95									90- 95			
100									95-100			
105									100-105			
110									105-110			
115									110-115			
120									115-120			
125									120-125			
130									125-130			
135									130-135			
140									135-140			
145									140-145			
150									145-150			
155									150-155			
160									155-160			
165									160-165			
170									165-170			
175									170-175			
180									175-180			
DEG	LUMINOUS INTENSITY:cd								UNIT:lm			

C Range: 0 - 360DEG
C Interval: 10.0DEG
Test Speed: MEDIUM
Temperature:25.3DEG
Operators:CKS
Test Date:2010-04-19

γ Range: 0 - 90DEG
 γ Interval: 0.5DEG
Test System: GO1900 SYSTEM
Humidity:65.0%
Test Distance:9.525m [K=1.0000]
Remarks: without luminaire

WEC AND CCEC

NAME: LED 2D 12W	TYPE:	WEIGHT:
DIMENSION:	SPECIFICATION:	SERIAL No.:3
MANUFACTURER: MICATRON		

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	.335	.190	.060	.327	.186	.059	.311	.179	.057	.297	.172	.055	.284	.165	.053	
2.0	.320	.176	.054	.313	.173	.053	.300	.167	.052	.288	.161	.050	.276	.156	.049	
3.0	.300	.159	.048	.293	.157	.047	.281	.153	.046	.271	.148	.045	.260	.144	.045	
4.0	.278	.145	.043	.273	.143	.042	.262	.139	.042	.253	.136	.041	.244	.132	.040	
5.0	.259	.132	.038	.254	.130	.038	.245	.127	.037	.236	.125	.037	.228	.122	.037	
6.0	.241	.121	.035	.237	.120	.034	.228	.117	.034	.221	.115	.034	.213	.112	.033	
7.0	.225	.111	.032	.221	.110	.031	.214	.108	.031	.207	.106	.031	.200	.104	.031	
8.0	.211	.103	.029	.207	.102	.029	.201	.100	.029	.194	.098	.028	.188	.097	.028	
9.0	.198	.096	.027	.195	.095	.027	.189	.093	.026	.183	.092	.026	.178	.090	.026	
10.0	.186	.089	.025	.184	.089	.025	.178	.087	.025	.173	.086	.024	.168	.085	.024	

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	.220	.220	.220	.188	.188	.188	.128	.128	.128	.074	.074	.074	.024	.024	.024	
1.0	.207	.181	.157	.177	.155	.135	.121	.107	.093	.070	.062	.054	.022	.020	.018	
2.0	.197	.152	.115	.169	.131	.100	.115	.091	.069	.067	.053	.041	.021	.017	.013	
3.0	.188	.132	.088	.161	.114	.076	.110	.079	.053	.064	.046	.031	.020	.015	.010	
4.0	.179	.116	.069	.154	.101	.060	.106	.070	.042	.061	.041	.025	.020	.013	.008	
5.0	.170	.104	.056	.146	.090	.048	.101	.063	.034	.058	.037	.020	.019	.012	.007	
6.0	.162	.095	.046	.140	.082	.040	.096	.057	.028	.056	.034	.017	.018	.011	.006	
7.0	.155	.087	.039	.133	.075	.034	.092	.053	.024	.053	.031	.014	.017	.010	.005	
8.0	.147	.080	.034	.127	.069	.029	.088	.049	.021	.051	.029	.012	.017	.009	.004	
9.0	.141	.074	.029	.121	.064	.026	.084	.045	.018	.049	.027	.011	.016	.009	.004	
10.0	.134	.069	.026	.116	.060	.023	.080	.042	.016	.047	.025	.010	.015	.008	.003	

C Range: 0 - 360DEG
 C Interval: 10.0DEG
 Test Speed: MEDIUM
 Temperature:25.3DEG
 Operators:CKS
 Test Date:2010-04-19

γ Range: 0 - 90DEG
 γ Interval: 0.5DEG
 Test System: GO1900 SYSTEM
 Humidity:65.0%
 Test Distance:9.525m [K=1.0000]
 Remarks: without luminaire

Uncorrected UGR Table

NAME: LED 2D 12W		TYPE:					WEIGHT:				
DIMENSION:		SPECIFICATION:					SERIAL No.:3				
MANUFACTURER: MICATRON											
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		17.2	18.7	17.5	18.9	19.1	17.1	18.5	17.3	18.7	18.9
	3H	18.4	19.8	18.7	20.0	20.3	18.2	19.6	18.5	19.8	20.1
	4H	18.8	20.1	19.1	20.3	20.6	18.6	19.9	18.9	20.2	20.4
	6H	19.0	20.2	19.3	20.5	20.8	18.8	20.0	19.2	20.3	20.6
	8H	19.0	20.2	19.4	20.5	20.8	18.8	20.0	19.2	20.3	20.6
	12H	19.0	20.2	19.4	20.5	20.8	18.8	20.0	19.2	20.2	20.5
	4H 2H	17.6	18.9	17.9	19.2	19.4	17.5	18.8	17.8	19.1	19.3
	3H	19.0	20.1	19.3	20.4	20.7	18.8	19.9	19.1	20.2	20.5
	4H	19.5	20.5	19.8	20.8	21.1	19.2	20.3	19.6	20.6	20.9
	6H	19.7	20.7	20.1	21.0	21.4	19.5	20.4	19.9	20.7	21.1
	8H	19.8	20.7	20.2	21.0	21.4	19.5	20.4	19.9	20.7	21.1
	12H	19.8	20.6	20.2	21.0	21.4	19.5	20.3	20.0	20.7	21.1
	8H 4H	19.5	20.4	19.9	20.7	21.1	19.3	20.2	19.7	20.5	20.9
	6H	19.9	20.6	20.3	21.0	21.4	19.6	20.3	20.0	20.7	21.1
	8H	20.0	20.6	20.5	21.0	21.5	19.7	20.3	20.2	20.7	21.2
	12H	20.0	20.6	20.5	21.0	21.5	19.7	20.3	20.2	20.7	21.2
	12H 4H	19.5	20.3	19.9	20.7	21.1	19.3	20.1	19.7	20.4	20.8
	6H	19.9	20.5	20.3	20.9	21.4	19.6	20.2	20.1	20.6	21.1
	8H	20.0	20.5	20.5	21.0	21.4	19.7	20.2	20.2	20.7	21.2
Variations with the observer position at spacings:											
S = 1.0H		+ 0.3 / - 0.2					+ 0.4 / - 0.7				
1.5H		+ 0.3 / - 0.4					+ 0.4 / - 0.9				
2.0H		+ 0.7 / - 0.9					+ 0.6 / - 0.6				

CIE Pub.117 Corrected 1000 lm Total Lamp Luminous Flux. (8log(F/F0) = 0.0)

C Range: 0 - 360DEG
 C Interval: 10.0DEG
 Test Speed: MEDIUM
 Temperature: 25.3DEG
 Operators: CKS
 Test Date: 2010-04-19

γ Range: 0 - 90DEG
 γ Interval: 0.5DEG
 Test System: GO1900 SYSTEM
 Humidity: 65.0%
 Test Distance: 9.525m [K=1.0000]
 Remarks: without luminaire

UTILIZATION FACTORS TABLE

NAME: LED 2D 12W	TYPE:	WEIGHT:
DIMENSION:	SPECIFICATION:	SERIAL No.:3
MANUFACTURER: MICATRON		

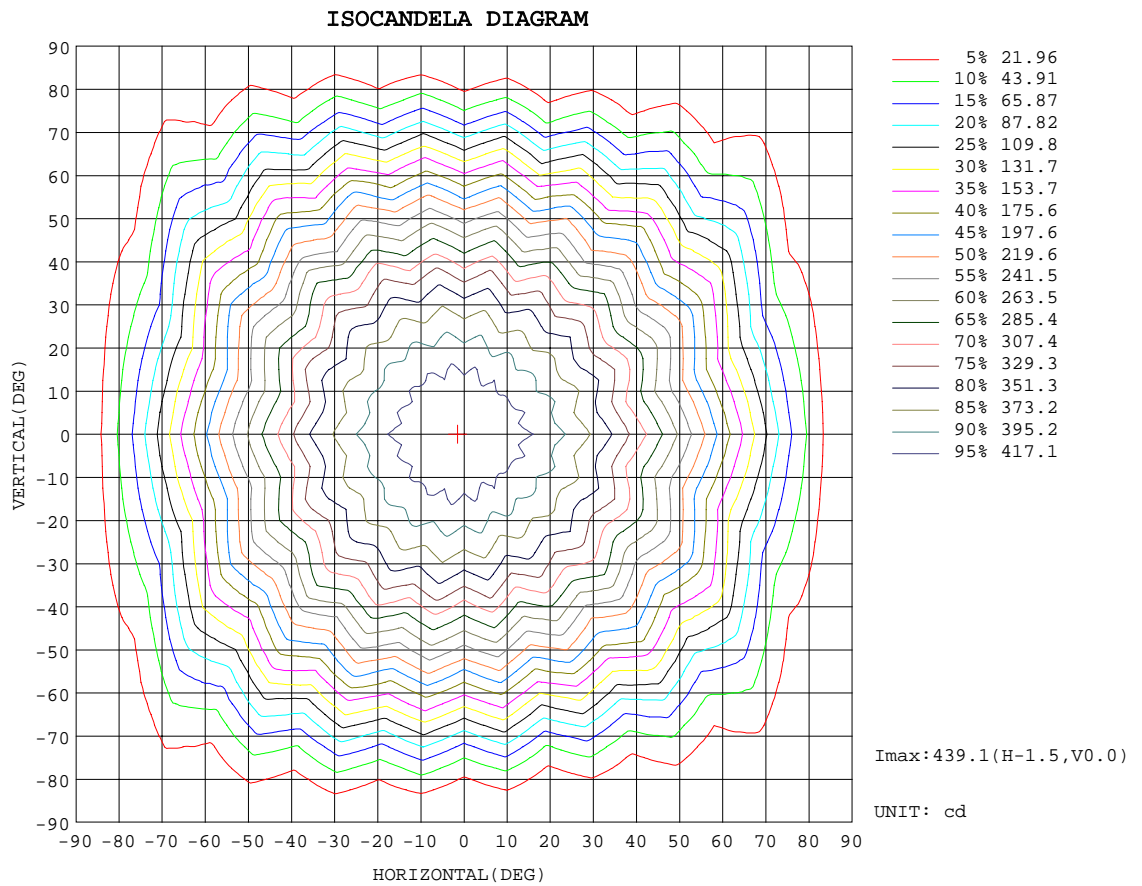
REFLECTANCE										
Ceiling	0.8	0.8	0.8	0.7	0.7	0.7	0.5	0.5	0.5	0
Walls	0.7	0.5	0.3	0.7	0.5	0.3	0.7	0.5	0.3	0
Working plane	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0
ROOM INDEX	UTILIZATION FACTORS(PERCENT) $k(RI) \times RCR = 5$									
$k = 0.60$	68	55	47	67	55	47	66	54	47	39
0.80	80	67	59	79	66	58	77	65	58	50
1.00	90	77	69	88	77	69	86	78	68	60
1.25	98	86	78	96	86	78	93	84	77	69
1.50	104	93	85	102	92	84	98	90	83	75
2.00	111	102	95	109	101	94	105	98	92	84
2.50	116	107	101	113	106	100	109	103	97	88
3.00	119	112	106	117	110	105	112	107	102	93
4.00	124	118	113	121	116	111	116	112	108	98
5.00	126	121	117	124	119	115	119	115	111	101
ROOM INDEX	UF(total)									Direct
According to DIN EN 13032-2 2004			Suspended				SHRNOM = 1.25			

C Range: 0 - 360DEG
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ISOCANDELA DIAGRAM

NAME: LED 2D 12W	TYPE:	WEIGHT:
DIMENSION:	SPECIFICATION:	SERIAL No.:3
MANUFACTURER: MICATRON		

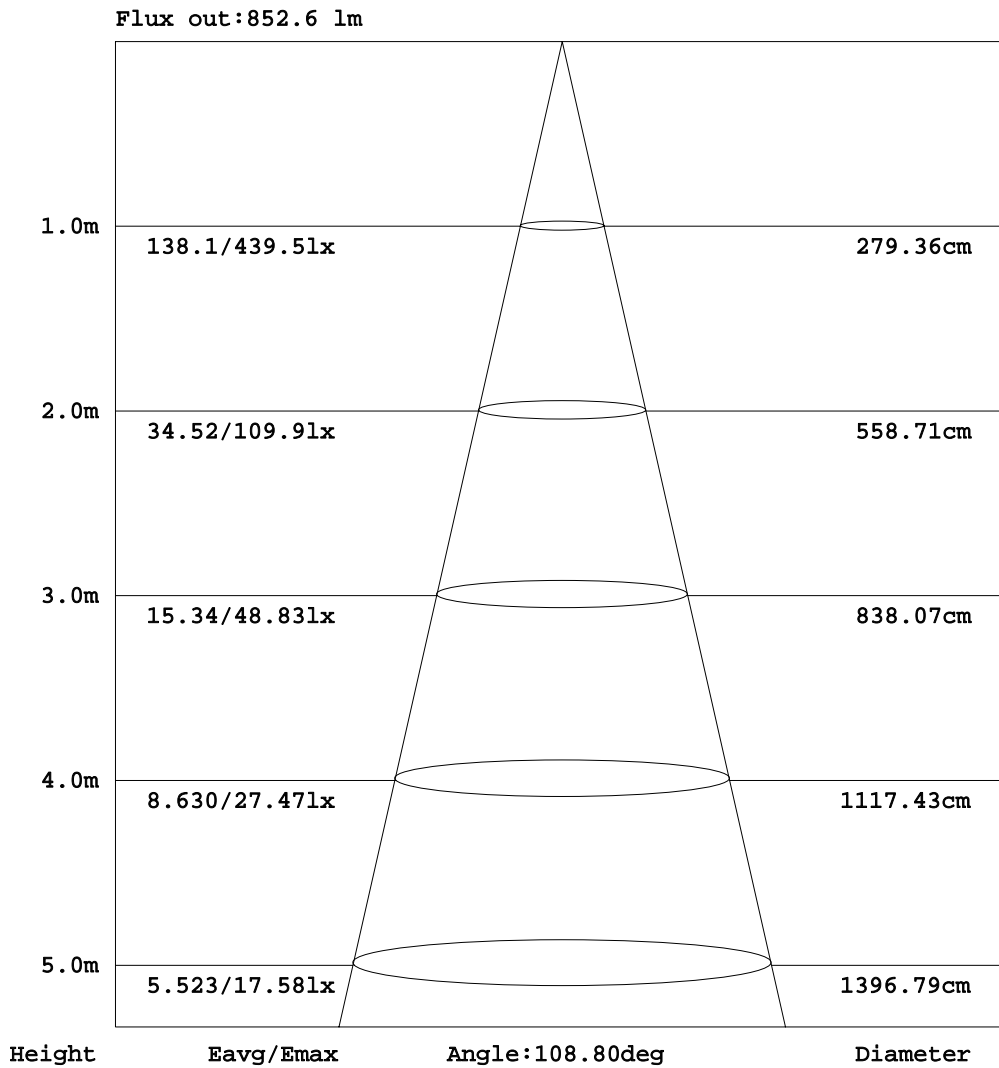


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AAI Figure

NAME: LED 2D 12W	TYPE:	WEIGHT:
DIMENSION:	SPECIFICATION:	SERIAL No.:3
MANUFACTURER: MICATRON		



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

C Range: 0 - 360DEG
 C Interval: 10.0DEG
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