

LED Downlight FUSION Series FF1-2W-930-24D



Light Output Ratio:	100.0%	
Luminaire Power:	3.099 W	
SHR Nominal:	0.00	Calculated using the TM5
SHR Maximum:	1.00	fine grid method.

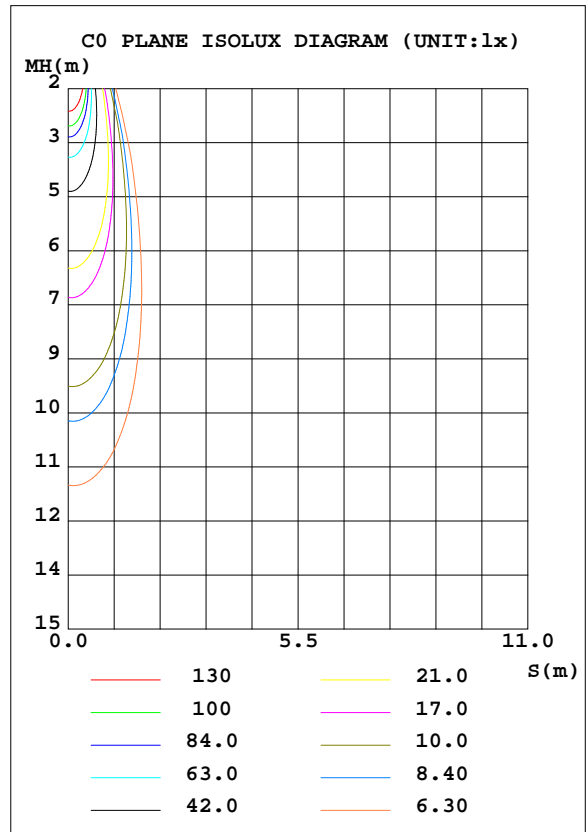
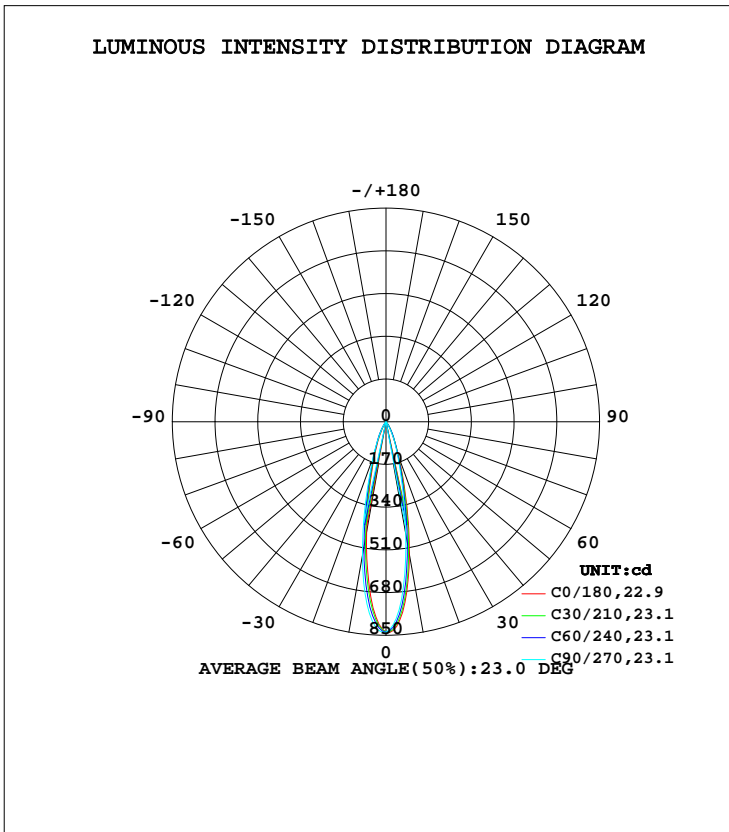
C Range: 0 - 360DEG  
C Interval: 15.0DEG  
Test Speed: HIGH  
Temperature: 25.3DEG  
Operators: Jason Long  
Test Date: 2019-09-28

$\gamma$  Range: 0 - 90DEG  
 $\gamma$  Interval: 1.0DEG  
Test System: EVERFINE GO-2000B\_V1 SYSTEM V2.0.362  
Humidity: 56%  
Test Distance: 5.850m [K=1.0000]  
Remarks:

**LUMINAIRE PHOTOMETRIC TEST REPORT**

Test:U:220.7V I:0.0199A P:3.099W PF:0.7069 Freq:50.00Hz Lamp Flux:184.06lx1 lm		
NAME: FF1-2W-930-24D	TYPE:Downlight	SERIAL No.:
SPEC.:3000K	DIM.: L45mm*W45mm*H60mm	
MFR.: NEKO LIGHTING AG		

DATA OF LAMP		PHOTOMETRIC DATA			
MODEL	OSRAM-3000K	Imax(cd)	842.8	S/MH(C0/180)	0.36
NOMINAL POWER(W)	3	LOR(%)	100.0	S/MH(C90/270)	0.42
RATED VOLTAGE(V)	6	TOTAL FLUX(lm)	184.06	η UP, DN(C0-180)	0.0,48.3
NOMINAL FLUX(lm)	184.061	CIE CLASS	DIRECT	η UP, DN(C180-360)	0.0,51.7
LAMPS INSIDE	1	η up(%)	0.0	CIBSE SHR NOM	0.00
TEST VOLTAGE(V)	3.51	η down(%)	100.0	CIBSE SHR MAX	1.00



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γ Interval: 1.0DEG  
Test System:EVERFINE GO-2000B\_V1 SYSTEM V2.0.362  
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Remarks:

**ZONAL FLUX DIAGRAM**

ZONAL FLUX DIAGRAM:

γ	C0	C45	C90	C135	C180	C225	C270	C315	γ	Φ zone	Φ total	%lum, lamp
10	536.1	512.8	453.9	432.6	446.2	481.8	541.1	553.7	0- 10	62.13	62.13	33.8,33.8
20	147.1	145.6	129.5	126.8	124.1	135.6	149.7	156.6	10- 20	75.83	138.0	75,75
30	36.67	45.69	29.06	38.74	25.01	41.78	35.63	47.20	20- 30	34.36	172.3	93.6,93.6
40	1.723	8.669	2.248	5.570	1.243	6.841	2.475	9.890	30- 40	10.65	183.0	99.4,99.4
50	0.0634	0.1543	0.0569	0.0414	0.0415	0.0790	0.0393	0.4221	40- 50	0.9959	184.0	100,100
60	0.0284	0.0153	0.0263	0.0197	0.0305	0.0350	0.0087	0.0284	50- 60	0.0329	184.0	100,100
70	0.0197	0.0153	0.0197	0.0175	0.0240	0.0284	0.0087	0.0175	60- 70	0.0212	184.0	100,100
80	0.0175	0.0153	0.0110	0.0175	0.0240	0.0241	0.0087	0.0131	70- 80	0.0191	184.0	100,100
90	0.0153	0.0153	0.0109	0.0109	0.0131	0.0241	0.0087	0.0109	80- 90	0.0181	184.1	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		

Conical surface Flux(90deg): 183.83 lm

%lum = 99.9%  
%lamp = 99.9%

Conical surface Flux(120deg): 184 lm

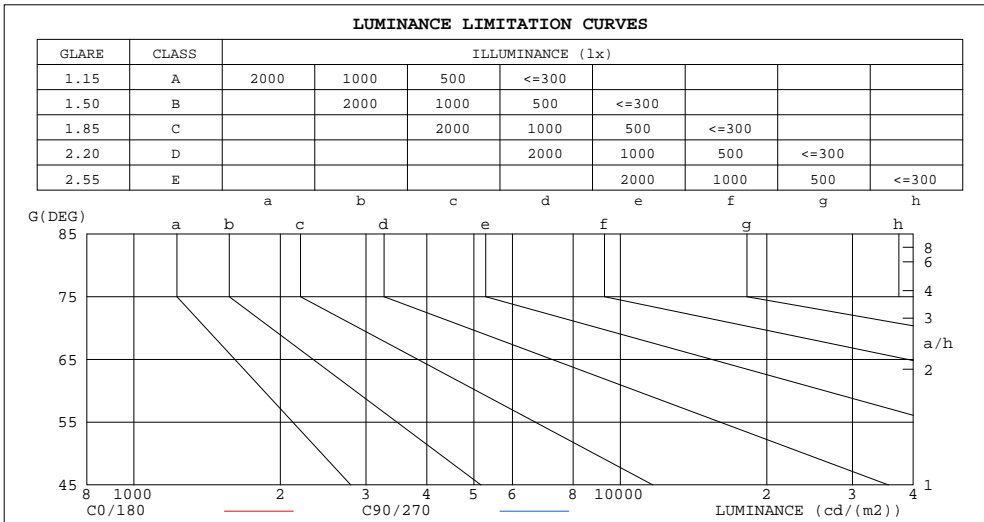
%lum = 100.0%  
%lamp = 100.0%

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γ Range: 0 - 90DEG  
γ Interval: 1.0DEG  
Test System:EVERFINE GO-2000B\_V1 SYSTEM V2.0.362  
Humidity:56%  
Test Distance:5.850m [K=1.0000]  
Remarks:

**LUMINANCE LIMITATION CURVES**

Test:U:220.7V I:0.0199A P:3.099W PF:0.7069 Freq:50.00Hz Lamp Flux:184.06lx1 lm		
NAME: FF1-2W-930-24D	TYPE:Downlight	SERIAL No.:
SPEC.:3000K	DIM.: L45mm*W45mm*H60mm	
MFR.: NEKO LIGHTING AG		



LUMINANCE cd/(m2)		
G (DEG)	C0/180	C90/270
85	87	62
80	50	31
75	33	25
70	28	28
65	26	23
60	28	26
55	36	30
50	49	44
45	78	462

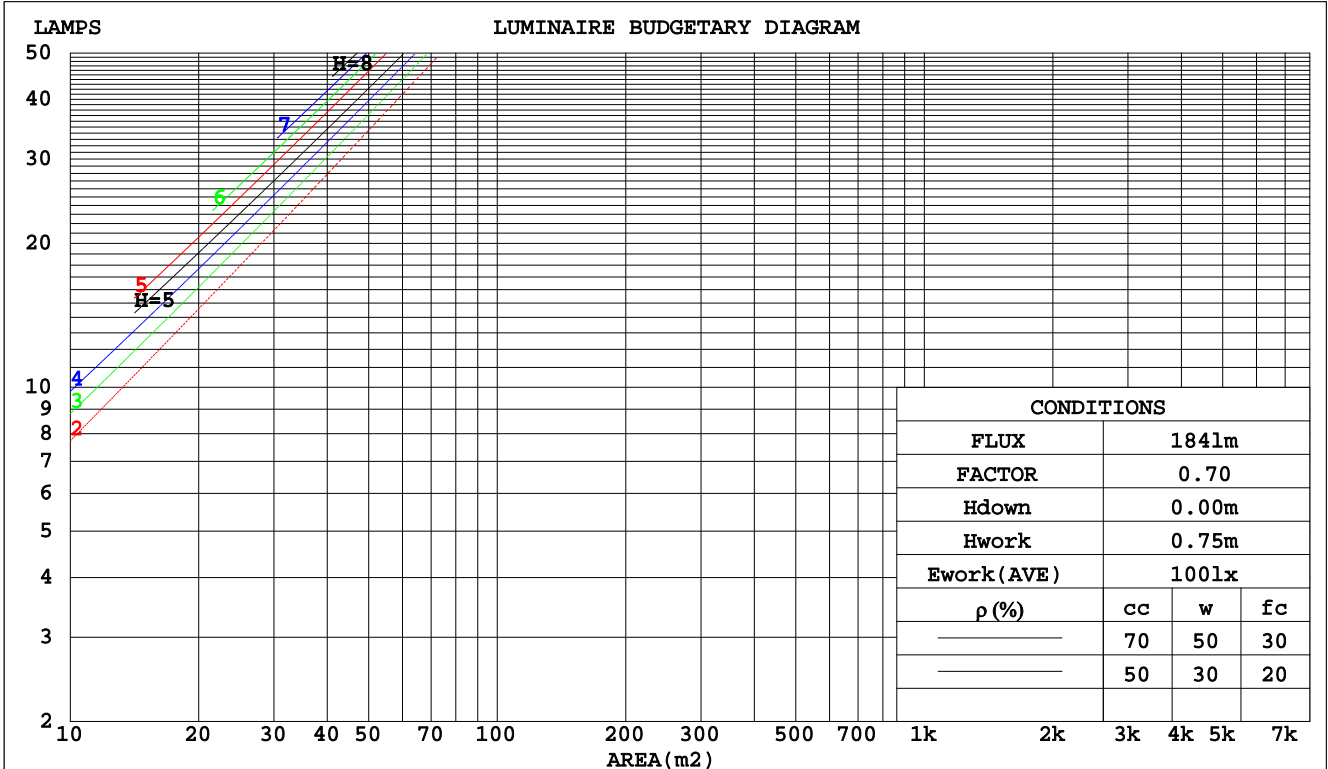
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**CU AND LUMINAIRE BUDGETARY ESTIMATE DIAGRAM**

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pcc	80%			70%			50%			30%			10%			0
	50%	30%	10%	50%	30%	10%	50%	30%	10%	50%	30%	10%	50%	30%	10%	0
pw																
pfc																
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	1.13	1.11	1.09	1.11	1.09	1.07	1.07	1.05	1.04	1.03	1.02	1.01	.00	.99	.98	.96
2.0	1.07	1.04	1.02	1.06	1.03	1.01	1.03	1.00	.98	.00	.98	.96	.97	.96	.94	.93
3.0	1.03	.99	.96	1.01	.98	.95	.99	.96	.94	.97	.94	.92	.94	.93	.91	.90
4.0	.98	.94	.91	.97	.94	.91	.95	.92	.90	.94	.91	.89	.92	.90	.88	.87
5.0	.95	.90	.87	.94	.90	.87	.92	.89	.86	.91	.88	.86	.89	.87	.85	.84
6.0	.91	.87	.84	.91	.87	.84	.89	.86	.83	.88	.85	.83	.87	.84	.82	.81
7.0	.88	.84	.81	.88	.83	.81	.86	.83	.80	.85	.82	.80	.84	.82	.79	.78
8.0	.85	.81	.78	.85	.81	.78	.84	.80	.78	.83	.80	.77	.82	.79	.77	.76
9.0	.83	.78	.76	.82	.78	.75	.81	.78	.75	.81	.77	.75	.80	.77	.75	.74
10.0	.80	.76	.73	.80	.76	.73	.79	.75	.73	.78	.75	.73	.78	.75	.73	.72



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WEC AND CCEC

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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	.139	.079	.025	.132	.076	.024	.120	.069	.022	.109	.063	.020	.098	.057	.018	
2.0	.129	.071	.022	.124	.068	.021	.114	.063	.020	.104	.058	.018	.095	.054	.017	
3.0	.121	.064	.019	.116	.062	.019	.108	.058	.018	.100	.055	.017	.092	.051	.016	
4.0	.114	.059	.017	.110	.057	.017	.102	.054	.016	.096	.051	.016	.090	.049	.015	
5.0	.107	.055	.016	.104	.053	.016	.098	.051	.015	.092	.049	.014	.087	.046	.014	
6.0	.102	.051	.015	.099	.050	.014	.094	.048	.014	.089	.046	.014	.084	.044	.013	
7.0	.097	.048	.014	.094	.047	.013	.090	.045	.013	.085	.044	.013	.081	.042	.012	
8.0	.092	.045	.013	.090	.044	.013	.086	.043	.012	.082	.042	.012	.079	.040	.012	
9.0	.088	.043	.012	.086	.042	.012	.083	.041	.012	.079	.040	.011	.076	.039	.011	
10.0	.085	.041	.011	.083	.040	.011	.080	.039	.011	.077	.038	.011	.074	.037	.011	

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	.168	.158	.148	.144	.135	.127	.099	.093	.088	.057	.054	.051	.018	.017	.017	
2.0	.151	.133	.118	.129	.114	.102	.088	.079	.071	.051	.046	.042	.016	.015	.014	
3.0	.136	.113	.095	.116	.098	.083	.080	.068	.058	.046	.040	.034	.015	.013	.011	
4.0	.123	.098	.079	.106	.085	.068	.073	.059	.048	.042	.035	.028	.014	.011	.009	
5.0	.113	.086	.065	.097	.074	.057	.067	.052	.040	.039	.030	.024	.012	.010	.008	
6.0	.104	.076	.055	.090	.066	.048	.062	.046	.034	.036	.027	.020	.012	.009	.007	
7.0	.097	.068	.047	.083	.059	.041	.058	.041	.029	.033	.024	.017	.011	.008	.006	
8.0	.090	.061	.041	.078	.053	.035	.054	.037	.025	.031	.022	.015	.010	.007	.005	
9.0	.085	.055	.035	.073	.048	.031	.051	.034	.022	.030	.020	.013	.010	.007	.004	
10.0	.080	.051	.031	.069	.044	.027	.048	.031	.019	.028	.018	.011	.009	.006	.004	

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γ Range: 0 - 90DEG  
 γ Interval: 1.0DEG  
 Test System:EVERFINE GO-2000B\_V1 SYSTEM V2.0.362  
 Humidity:56%  
 Test Distance:5.850m [K=1.0000]  
 Remarks:

UGR(Unified Glare Rating) Table

Test:U:220.7V I:0.0199A P:3.099W PF:0.7069 Freq:50.00Hz Lamp Flux:184.061x1 lm		
NAME: FF1-2W-930-24D	TYPE:Downlight	SERIAL No.:
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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	13.4	14.1	13.6	14.2	14.4	12.1	12.8	12.3	12.9	13.1
3H	13.3	13.9	13.5	14.1	14.3	11.9	12.6	12.2	12.8	12.9
4H	13.2	13.8	13.4	14.0	14.2	11.9	12.5	12.1	12.7	12.9
6H	13.1	13.7	13.4	13.9	14.1	11.8	12.3	12.1	12.6	12.8
8H	13.0	13.6	13.3	13.8	14.1	11.7	12.3	12.0	12.5	12.8
12H	13.0	13.5	13.3	13.8	14.0	11.7	12.2	12.0	12.5	12.7
4H 2H	13.2	13.8	13.4	14.0	14.2	11.9	12.5	12.1	12.7	12.9
3H	13.0	13.5	13.3	13.8	14.0	11.7	12.2	12.0	12.5	12.7
4H	12.9	13.4	13.2	13.7	14.0	11.6	12.1	11.9	12.4	12.7
6H	12.8	13.2	13.2	13.6	13.9	11.5	11.9	11.9	12.2	12.6
8H	12.8	13.1	13.1	13.5	13.9	11.4	11.8	11.8	12.2	12.5
12H	12.7	13.1	13.1	13.4	13.8	11.4	11.7	11.8	12.1	12.5
8H 4H	12.8	13.1	13.1	13.5	13.9	11.4	11.8	11.8	12.2	12.5
6H	12.6	13.0	13.1	13.4	13.8	11.3	11.7	11.8	12.0	12.5
8H	12.6	12.9	13.0	13.3	13.7	11.3	11.6	11.7	12.0	12.4
12H	12.5	12.8	13.0	13.2	13.7	11.2	11.5	11.7	11.9	12.4
12H 4H	12.7	13.1	13.1	13.4	13.8	11.4	11.7	11.8	12.1	12.5
6H	12.6	12.9	13.0	13.3	13.7	11.3	11.6	11.7	12.0	12.4
8H	12.5	12.8	13.0	13.2	13.7	11.2	11.5	11.7	11.9	12.4
Variations with the observer position at spacings:										
S = 1.0H	+ 3.8 / -20.4					+ 3.1 / -19.7				
1.5H	+ 6.6 / -20.2					+ 5.9 / -19.5				
2.0H	+ 6.7 / - 2.4					+ 9.4 / - 3.1				

CIE Pub.117, 184.1 lm Total Lamp Luminous Flux Correct (8log(F/F0) = -5.9)

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UTILIZATION FACTORS TABLE

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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	91	86	82	91	85	82	90	85	82	79
0.80	98	93	90	98	93	90	96	92	89	86
1.00	102	97	94	101	96	93	100	96	93	89
1.25	105	101	98	104	100	97	102	99	97	93
1.50	108	104	101	107	103	100	104	101	99	95
2.00	110	106	103	109	105	103	106	103	101	96
2.50	111	108	105	110	107	104	107	104	102	97
3.00	113	110	107	111	108	106	108	106	104	98
4.00	115	112	110	113	110	109	109	107	106	99
5.00	116	114	112	114	112	111	110	109	107	100
ROOM INDEX	UF(total)									Direct
According to DIN EN 13032-2 2004			Suspended				SHRNOM = 1.25			

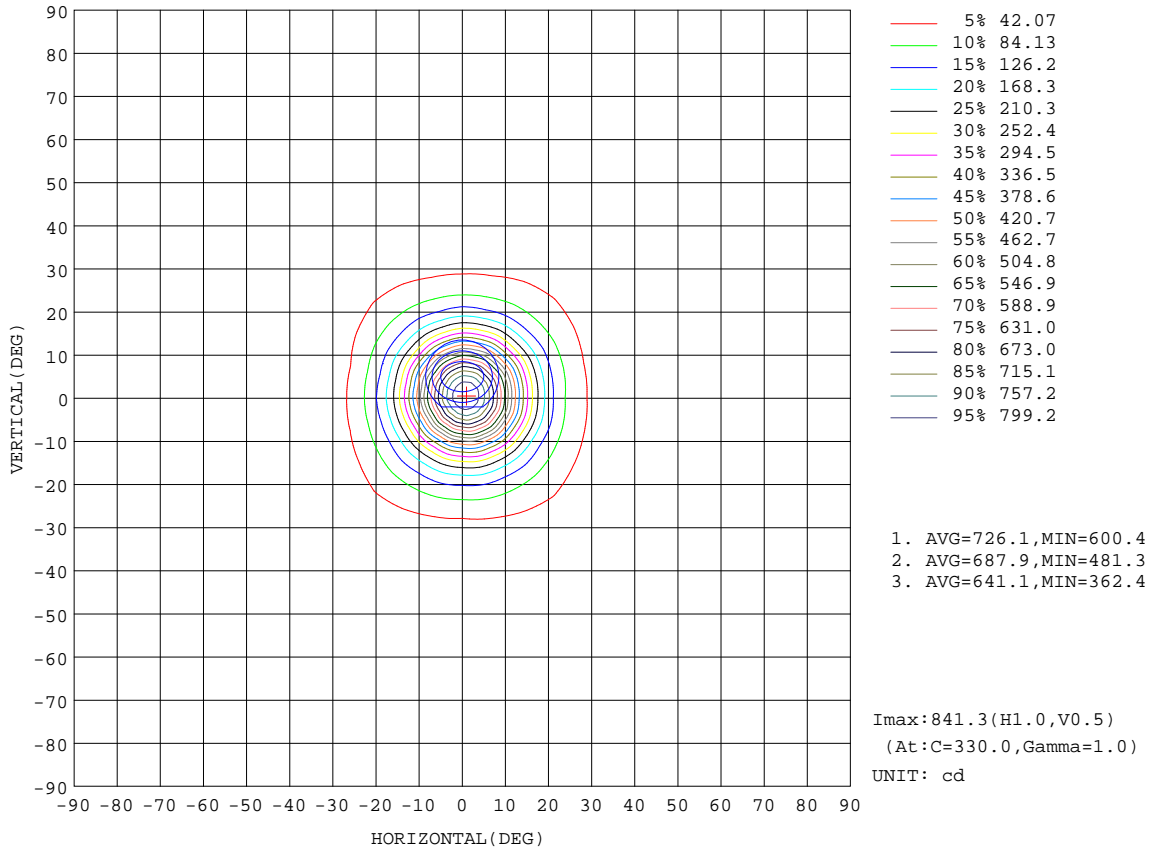
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ISOCANDELA DIAGRAM

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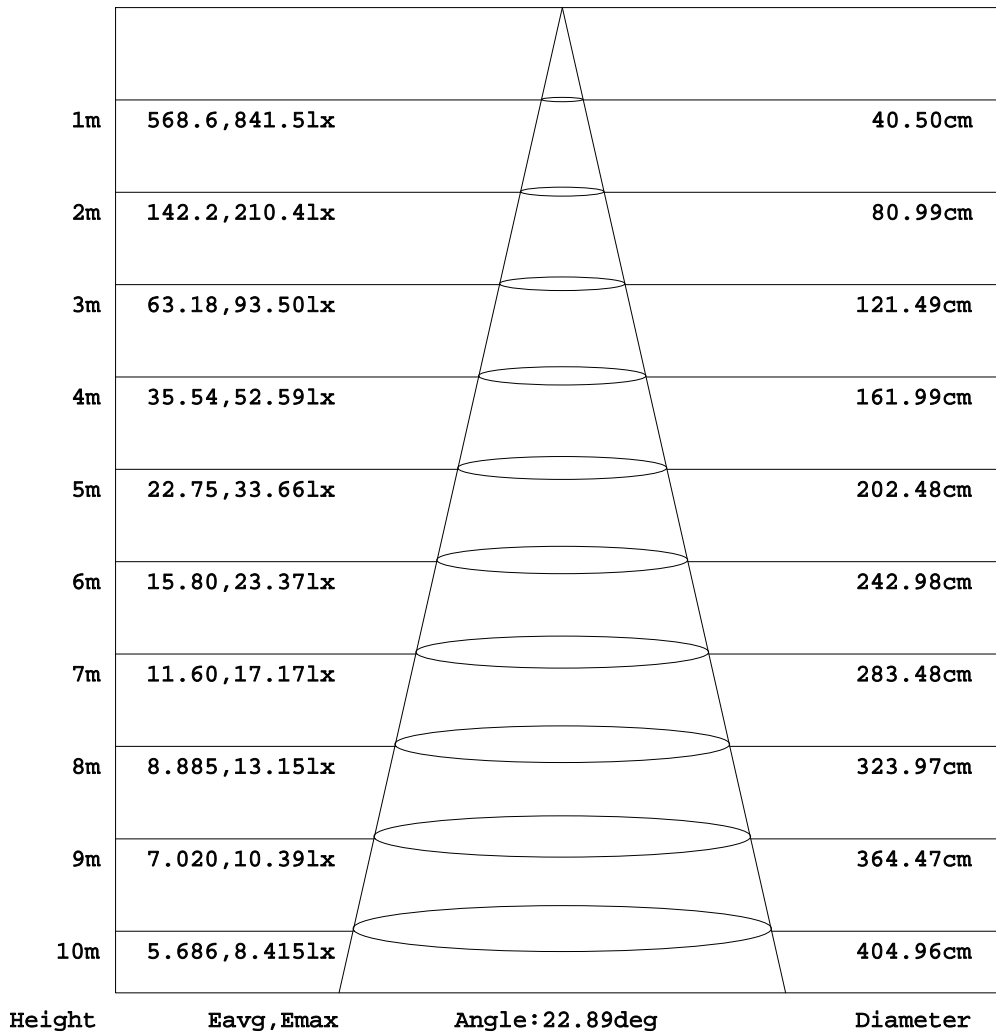
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**AAI Figure**

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Flux out:80.71 lm



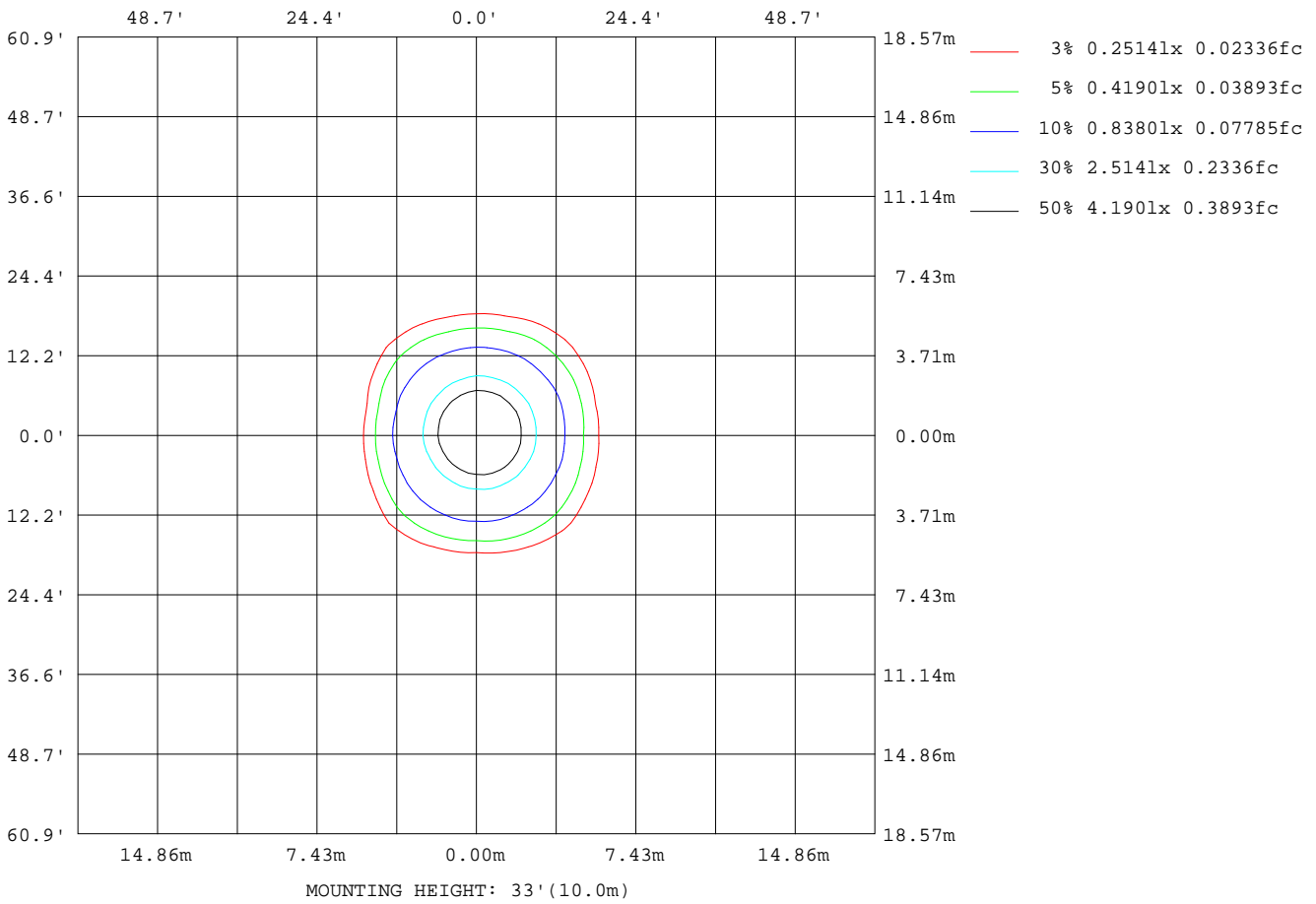
Note:The Curves indicate the illuminated area and the average illumination when the luminaire is at different distance.

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**ISOLUX DIAGRAM**

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LED Avg.L Report

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SPEC.:3000K	DIM.: L45mm*W45mm*H60mm	
MFR.: NEKO LIGHTING AG		

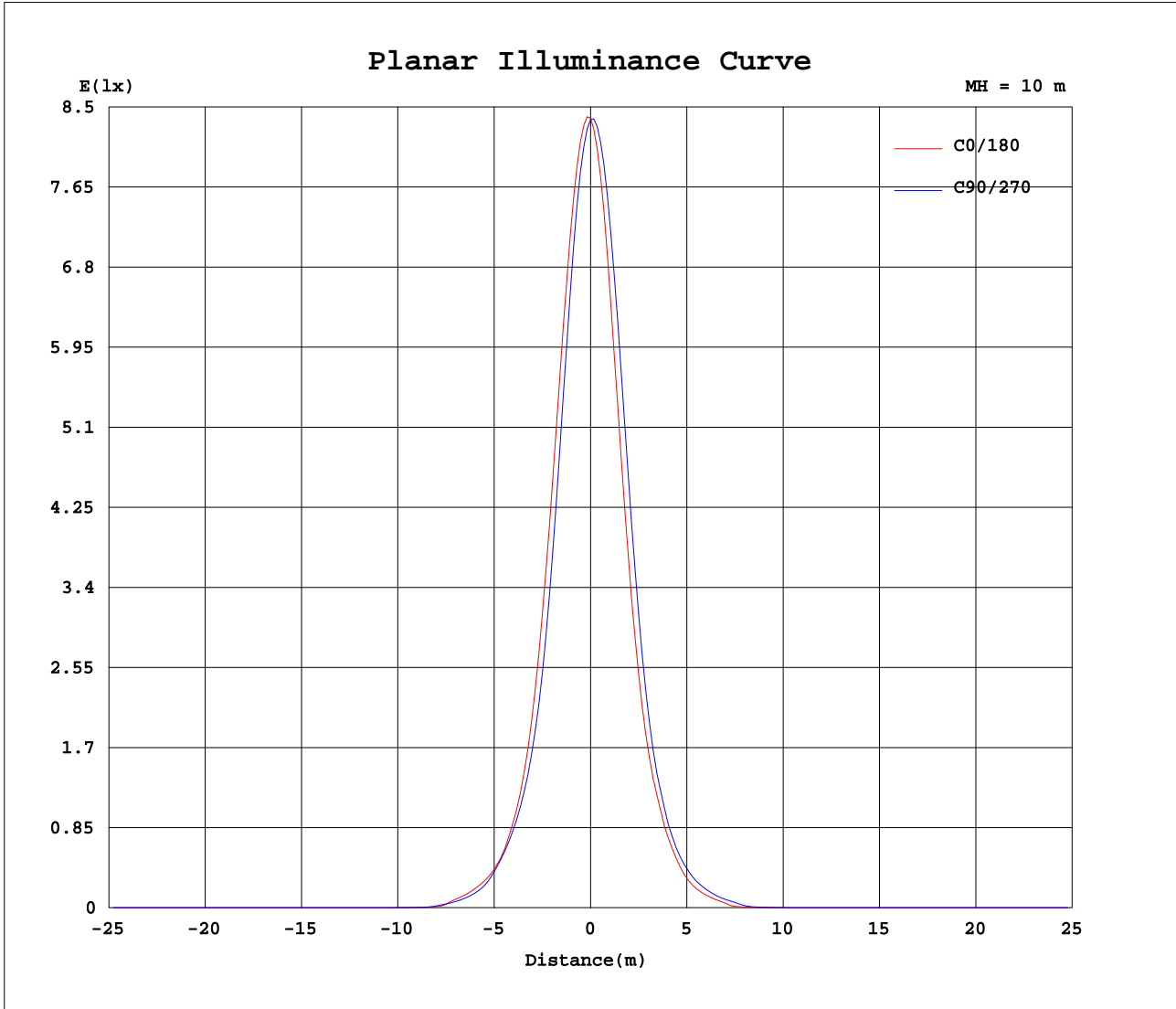
AvgL	cd/m2
L_0~180(65)av	28
L_0~180(75)av	40
L_0~180(85)av	105
L_90~270(65)av	17
L_90~270(75)av	21
L_90~270(85)av	56
L_45(65)av	25
L_45(75)av	35
L_45(85)av	99

Standard: GB/T 29293-2012

C Range: 0 - 360DEG  
C Interval: 15.0DEG  
Test Speed: HIGH  
Temperature:25.3DEG  
Operators:Jason Long  
Test Date:2019-09-28

$\gamma$  Range: 0 - 90DEG  
 $\gamma$  Interval: 1.0DEG  
Test System:EVERFINE GO-2000B\_V1 SYSTEM V2.0.362  
Humidity:56%  
Test Distance:5.850m [K=1.0000]  
Remarks:

Planar Illuminance Curve



C Range: 0 - 360DEG  
 C Interval: 15.0DEG  
 Test Speed: HIGH  
 Temperature: 25.3DEG  
 Operators: Jason Long  
 Test Date: 2019-09-28

γ Range: 0 - 90DEG  
 γ Interval: 1.0DEG  
 Test System: EVERFINE GO-2000B\_V1 SYSTEM V2.0.362  
 Humidity: 56%  
 Test Distance: 5.850m [K=1.0000]  
 Remarks:



