

LED Downlight FUSION Series FF2-4W-940-40D



Light Output Ratio:	100.0%	
Luminaire Power:	5.331 W	
SHR Nominal:	0.50	Calculated using the TM5
SHR Maximum:	0.65	fine grid method.

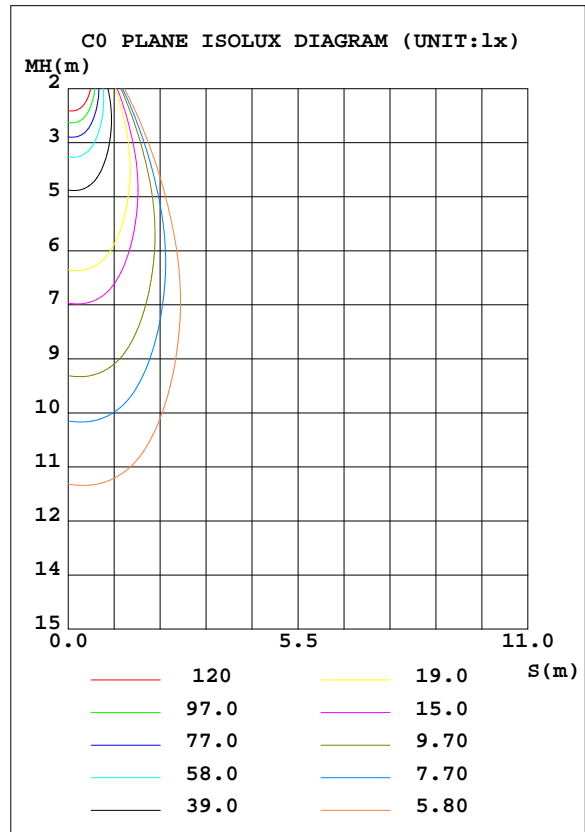
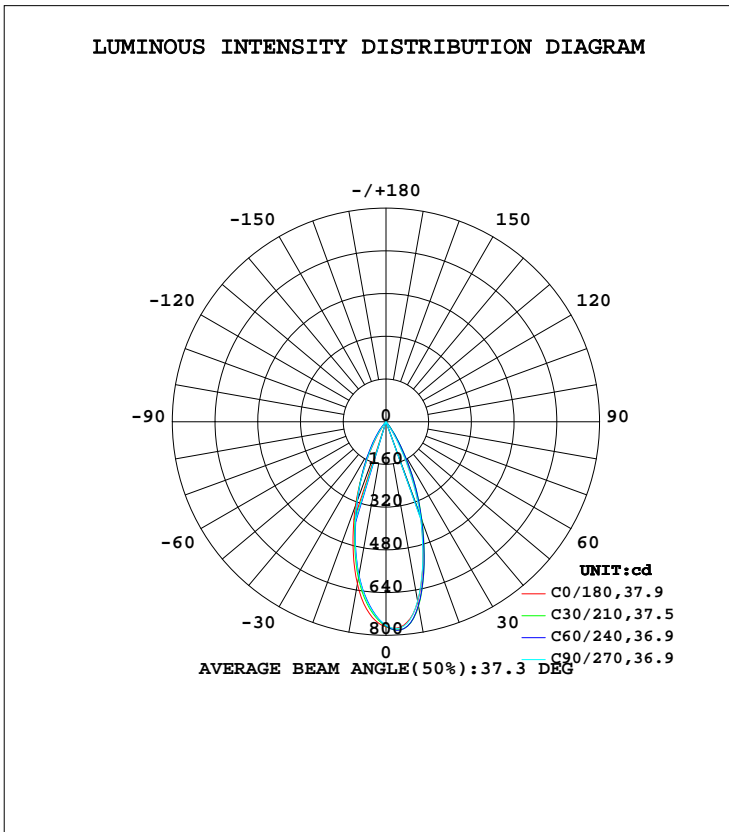
C Range: 0 - 360DEG
C Interval: 15.0DEG
Test Speed: HIGH
Temperature: 25.3DEG
Operators: Myles
Test Date: 2018-06-08

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:

LUMINAIRE PHOTOMETRIC TEST REPORT

Test:U:220.3V I:0.0311A P:5.331W PF:0.7752 Freq:49.90Hz Lamp Flux:337.40lx1 lm		
NAME: FF2-4W-940-40D	TYPE:Downlight	SERIAL No.:
SPEC.:4000K	DIM.: L70mm*W45mm*H60mm	
MFR.: NEKO LIGHTING AG		

DATA OF LAMP		PHOTOMETRIC DATA			
MODEL	OSRAM-4000K	Imax(cd)	782.7	S/MH(C0/180)	0.59
NOMINAL POWER(W)	6	LOR(%)	100.0	S/MH(C90/270)	0.57
RATED VOLTAGE(V)	220	TOTAL FLUX(lm)	337.40	η UP, DN(C0-180)	0.0,51.9
NOMINAL FLUX(lm)	337.401	CIE CLASS	DIRECT	η UP, DN(C180-360)	0.0,48.1
LAMPS INSIDE	1	η up(%)	0.0	CIBSE SHR NOM	0.50
TEST VOLTAGE(V)	220	η down(%)	100.0	CIBSE SHR MAX	0.65



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ZONAL FLUX DIAGRAM

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γ	C0	C45	C90	C135	C180	C225	C270	C315	γ	Φ zone	Φ total	%lum,lamp
10	684.4	706.0	682.6	650.3	617.5	585.1	585.7	629.5	0- 10	67.21	67.21	19.9,19.9
20	380.3	397.3	376.8	353.7	334.6	312.3	317.1	344.0	10- 20	136.8	204.0	60.5,60.5
30	101.0	154.4	87.97	134.3	93.11	128.2	102.8	137.8	20- 30	100.5	304.5	90.2,90.2
40	3.697	19.12	3.144	19.53	4.221	28.18	6.221	27.64	30- 40	30.48	335.0	99.3,99.3
50	0.2737	0.4854	0.2167	0.4045	0.2401	0.6312	0.2009	0.6668	40- 50	2.263	337.2	99.9,99.9
60	0.0985	0.0415	0.0854	0.0349	0.0611	0.0591	0.0633	0.0591	50- 60	0.1135	337.3	100,100
70	0.0415	0.0131	0.0415	0.0131	0.0087	0.0263	0.0218	0.0306	60- 70	0.0404	337.4	100,100
80	0.0175	0.0109	0.0197	0.0109	0.0044	0.0153	0.0044	0.0175	70- 80	0.0171	337.4	100,100
90	0.0109	0.0109	0.0131	0.0109	0.0044	0.0044	0.0044	0.0066	80- 90	0.0110	337.4	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): 336.9 lm

%lum = 99.9%
%lamp = 99.9%

Conical surface Flux(120deg): 337.33 lm

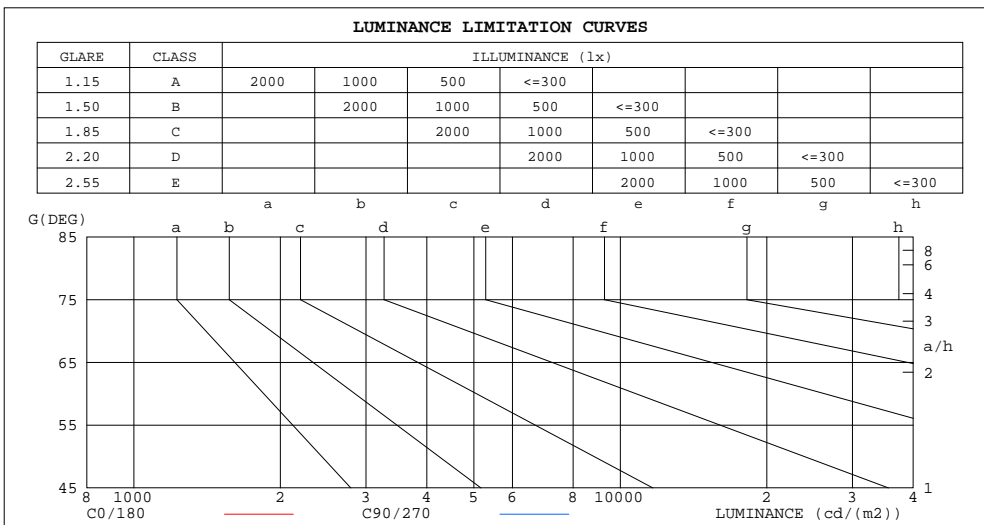
%lum = 100.0%
%lamp = 100.0%

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LUMINANCE LIMITATION CURVES

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LUMINANCE cd/(m2)		
G(DEG)	C0/180	C90/270
85	40	56
80	32	36
75	32	35
70	39	39
65	46	44
60	63	54
55	87	75
50	135	107
45	210	167

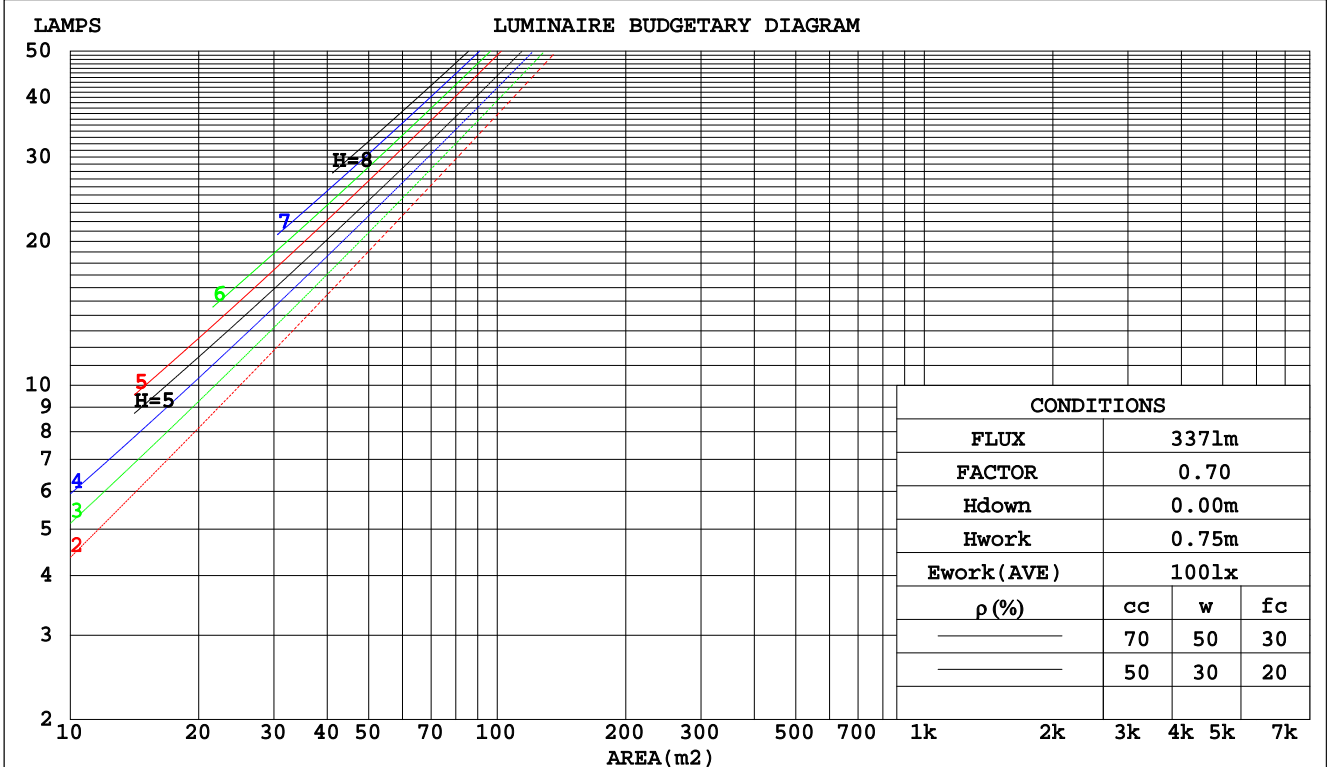
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CU AND LUMINAIRE BUDGETARY ESTIMATE DIAGRAM

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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	1.12	1.10	1.08	1.10	1.08	1.06	1.06	1.04	1.03	1.02	1.01	.00	.99	.98	.97	.95
2.0	1.06	1.02	.00	1.04	1.01	.99	1.01	.99	.96	.98	.96	.94	.95	.94	.92	.91
3.0	1.00	.96	.93	.99	.95	.92	.96	.93	.91	.94	.92	.89	.92	.90	.88	.87
4.0	.95	.91	.87	.94	.90	.87	.92	.89	.86	.90	.87	.85	.89	.86	.84	.83
5.0	.91	.86	.82	.90	.85	.82	.88	.84	.81	.87	.83	.81	.85	.82	.80	.79
6.0	.87	.82	.78	.86	.81	.78	.84	.80	.77	.83	.80	.77	.82	.79	.76	.75
7.0	.83	.78	.74	.82	.78	.74	.81	.77	.74	.80	.76	.73	.79	.76	.73	.72
8.0	.79	.74	.71	.79	.74	.71	.78	.74	.71	.77	.73	.70	.76	.73	.70	.69
9.0	.76	.71	.68	.76	.71	.68	.75	.71	.68	.74	.70	.67	.73	.70	.67	.66
10.0	.73	.68	.65	.73	.68	.65	.72	.68	.65	.71	.67	.65	.71	.67	.64	.63



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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	.153	.087	.028	.146	.083	.027	.134	.077	.025	.122	.071	.023	.112	.065	.021	
2.0	.144	.079	.024	.138	.076	.023	.128	.071	.022	.118	.066	.021	.110	.062	.020	
3.0	.136	.072	.022	.131	.070	.021	.122	.066	.020	.114	.063	.019	.107	.059	.018	
4.0	.129	.067	.020	.125	.065	.019	.117	.062	.019	.110	.059	.018	.104	.056	.017	
5.0	.122	.062	.018	.119	.061	.018	.112	.059	.017	.106	.056	.017	.101	.054	.016	
6.0	.117	.058	.017	.114	.057	.017	.108	.055	.016	.103	.053	.016	.098	.052	.015	
7.0	.111	.055	.016	.109	.054	.015	.104	.053	.015	.099	.051	.015	.095	.049	.015	
8.0	.107	.052	.015	.104	.051	.015	.100	.050	.014	.096	.049	.014	.092	.047	.014	
9.0	.102	.050	.014	.100	.049	.014	.097	.048	.014	.093	.047	.013	.090	.045	.013	
10.0	.099	.047	.013	.097	.047	.013	.093	.046	.013	.090	.045	.013	.087	.044	.013	

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	.169	.158	.147	.145	.135	.126	.099	.093	.087	.057	.054	.051	.018	.017	.016	
2.0	.153	.133	.116	.131	.114	.100	.090	.079	.070	.052	.046	.041	.017	.015	.013	
3.0	.139	.113	.093	.119	.098	.081	.082	.068	.057	.047	.040	.033	.015	.013	.011	
4.0	.127	.098	.076	.109	.085	.066	.075	.059	.047	.043	.035	.028	.014	.011	.009	
5.0	.117	.086	.063	.101	.075	.055	.070	.052	.039	.040	.031	.023	.013	.010	.008	
6.0	.109	.077	.053	.094	.066	.046	.065	.046	.033	.038	.027	.019	.012	.009	.006	
7.0	.102	.069	.045	.088	.060	.039	.061	.042	.028	.035	.025	.017	.011	.008	.005	
8.0	.096	.062	.039	.083	.054	.034	.057	.038	.024	.033	.022	.014	.011	.007	.005	
9.0	.091	.057	.034	.079	.049	.029	.054	.035	.021	.032	.020	.012	.010	.007	.004	
10.0	.087	.052	.029	.075	.045	.026	.052	.032	.018	.030	.019	.011	.010	.006	.004	

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 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

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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	13.6	14.3	13.8	14.5	14.7	12.7	13.5	12.9	13.6	13.8
3H	13.4	14.1	13.7	14.3	14.5	12.5	13.3	12.8	13.5	13.6
4H	13.3	14.0	13.6	14.2	14.4	12.5	13.1	12.7	13.4	13.6
6H	13.2	13.9	13.5	14.1	14.4	12.4	13.0	12.7	13.2	13.5
8H	13.2	13.8	13.5	14.1	14.3	12.3	12.9	12.6	13.2	13.4
12H	13.2	13.7	13.5	14.0	14.3	12.3	12.9	12.6	13.1	13.4
4H 2H	13.3	14.0	13.6	14.2	14.4	12.5	13.1	12.7	13.4	13.6
3H	13.2	13.7	13.5	14.0	14.3	12.3	12.9	12.6	13.1	13.4
4H	13.1	13.6	13.4	13.9	14.2	12.2	12.7	12.5	13.0	13.3
6H	13.0	13.4	13.3	13.8	14.1	12.1	12.6	12.5	12.9	13.2
8H	12.9	13.3	13.3	13.7	14.1	12.0	12.5	12.4	12.8	13.2
12H	12.9	13.3	13.3	13.6	14.0	12.0	12.4	12.4	12.8	13.1
8H 4H	12.9	13.3	13.3	13.7	14.1	12.0	12.5	12.4	12.8	13.2
6H	12.8	13.2	13.2	13.6	14.0	11.9	12.3	12.4	12.7	13.1
8H	12.7	13.1	13.2	13.5	13.9	11.9	12.2	12.3	12.6	13.0
12H	12.7	13.0	13.1	13.4	13.9	11.8	12.1	12.3	12.5	13.0
12H 4H	12.9	13.3	13.3	13.6	14.0	12.0	12.4	12.4	12.8	13.1
6H	12.7	13.1	13.2	13.5	13.9	11.9	12.2	12.3	12.6	13.0
8H	12.7	13.0	13.1	13.4	13.9	11.8	12.1	12.3	12.5	13.0
Variations with the observer position at spacings:										
S = 1.0H	+ 3.0 / -20.4					+ 2.9 / -19.7				
1.5H	+ 5.7 / -19.3					+ 5.7 / -18.2				
2.0H	+ 4.3 / - 4.0					+ 3.8 / - 2.9				

CIE Pub.117, 337.4 lm Total Lamp Luminous Flux Correct (8log(F/F0) = -3.8)

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UTILIZATION FACTORS TABLE

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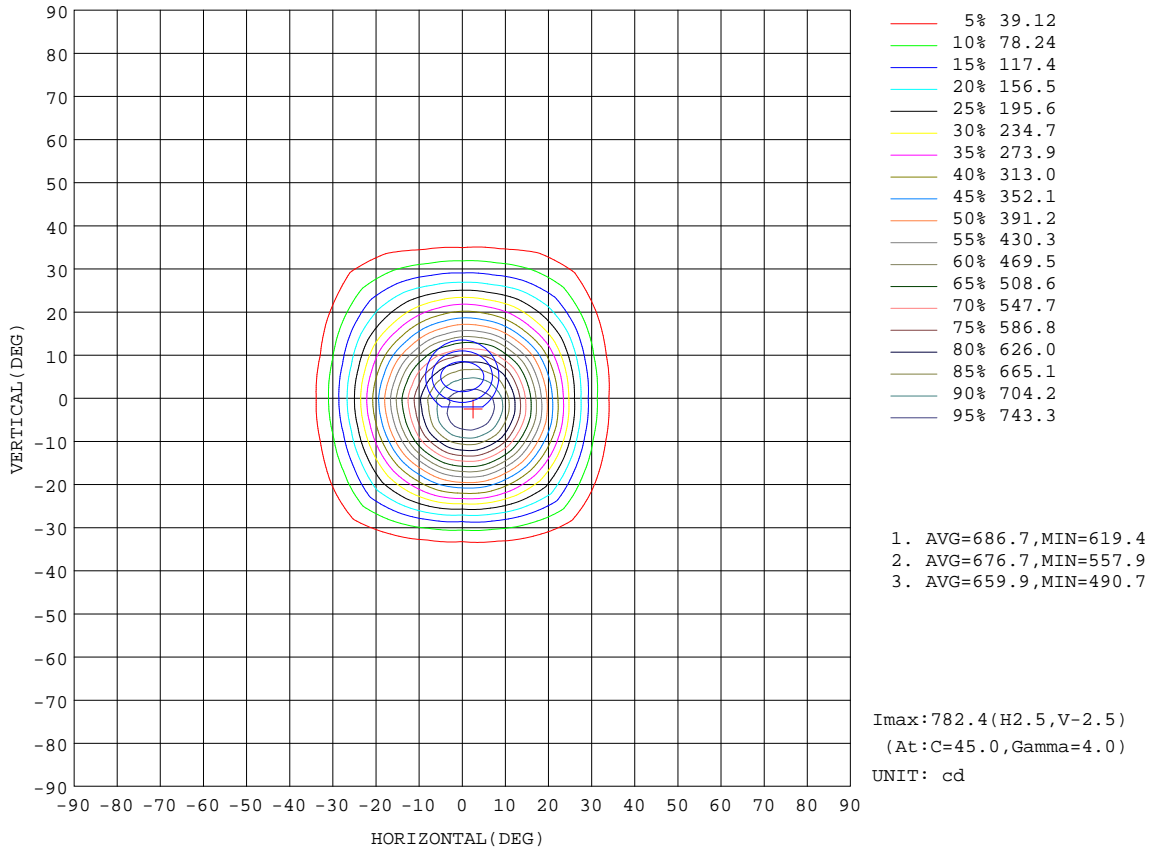
REFLECTANCE										
Ceiling	0.8	0.8	0.8	0.7	0.7	0.7	0.5	0.5	0.5	0
Walls	0.7	0.5	0.3	0.7	0.5	0.3	0.7	0.5	0.3	0
Working plane	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0
ROOM INDEX	UTILIZATION FACTORS(PERCENT) $k(RI) \times RCR = 5$									
k = 0.60	91	85	82	91	85	82	90	85	82	79
0.80	98	93	90	97	93	89	96	92	89	86
1.00	102	97	94	101	96	93	99	96	93	89
1.25	105	101	98	104	100	97	102	99	96	93
1.50	108	104	101	107	103	100	104	101	99	95
2.00	110	106	103	108	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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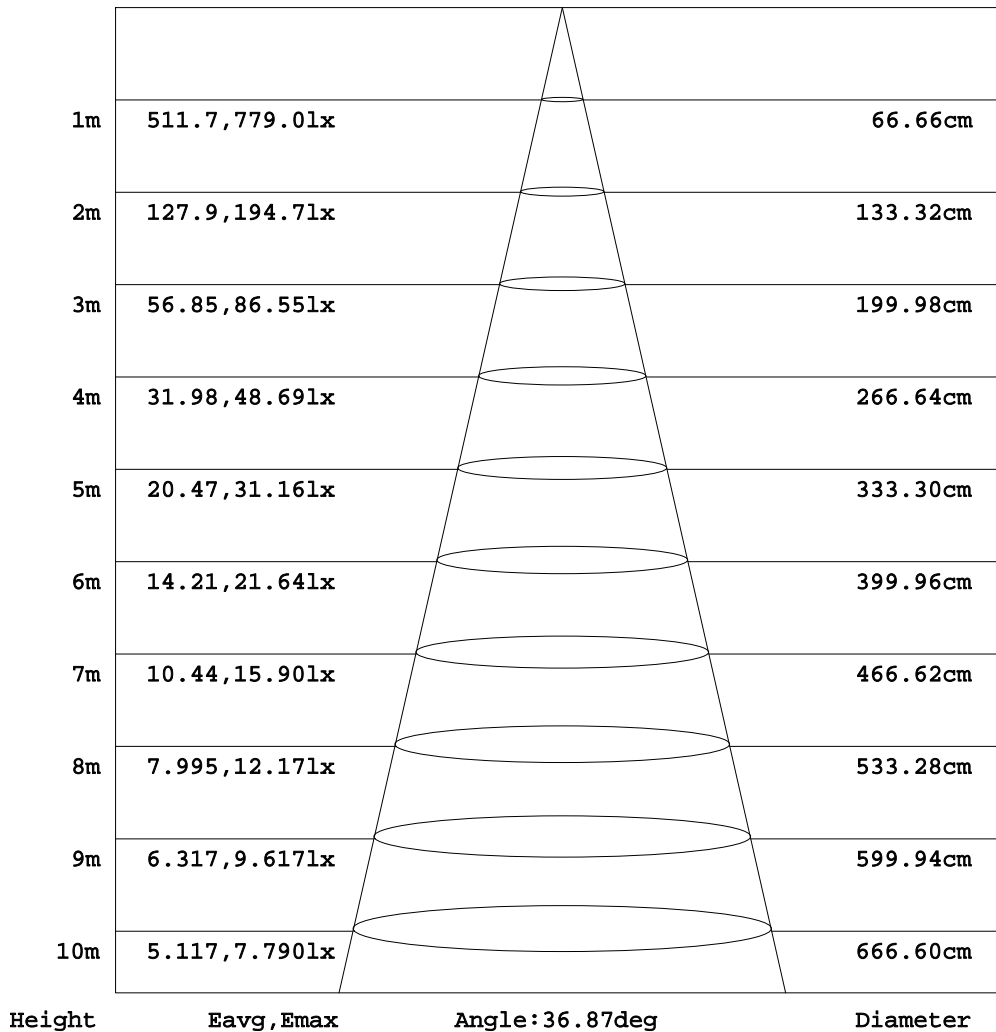
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AAI Figure

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Flux out:190.6 lm



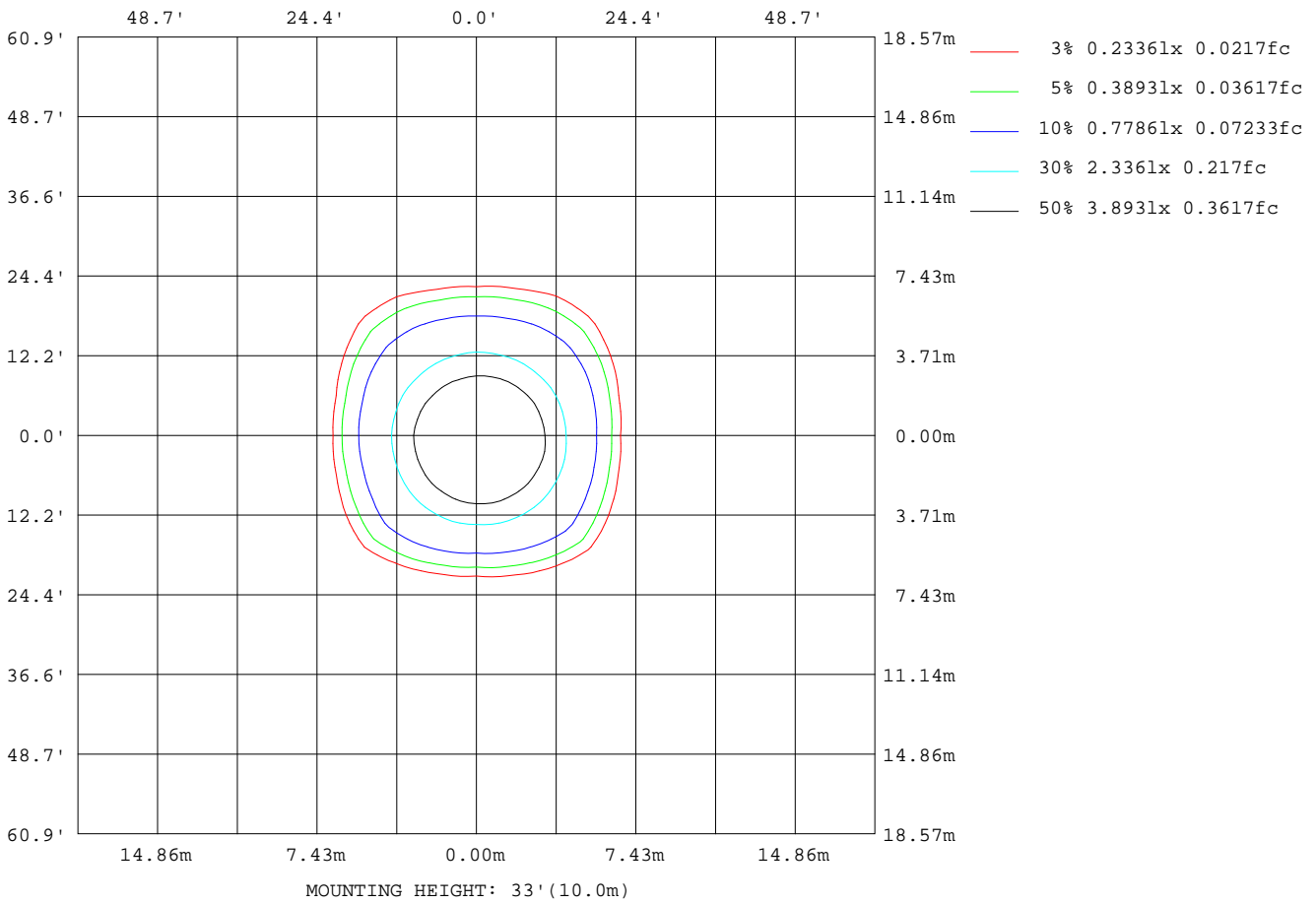
Note:The Curves indicate the illuminated area and the average illumination when the luminaire is at different distance.

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ISOLUX DIAGRAM

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LED Avg.L Report

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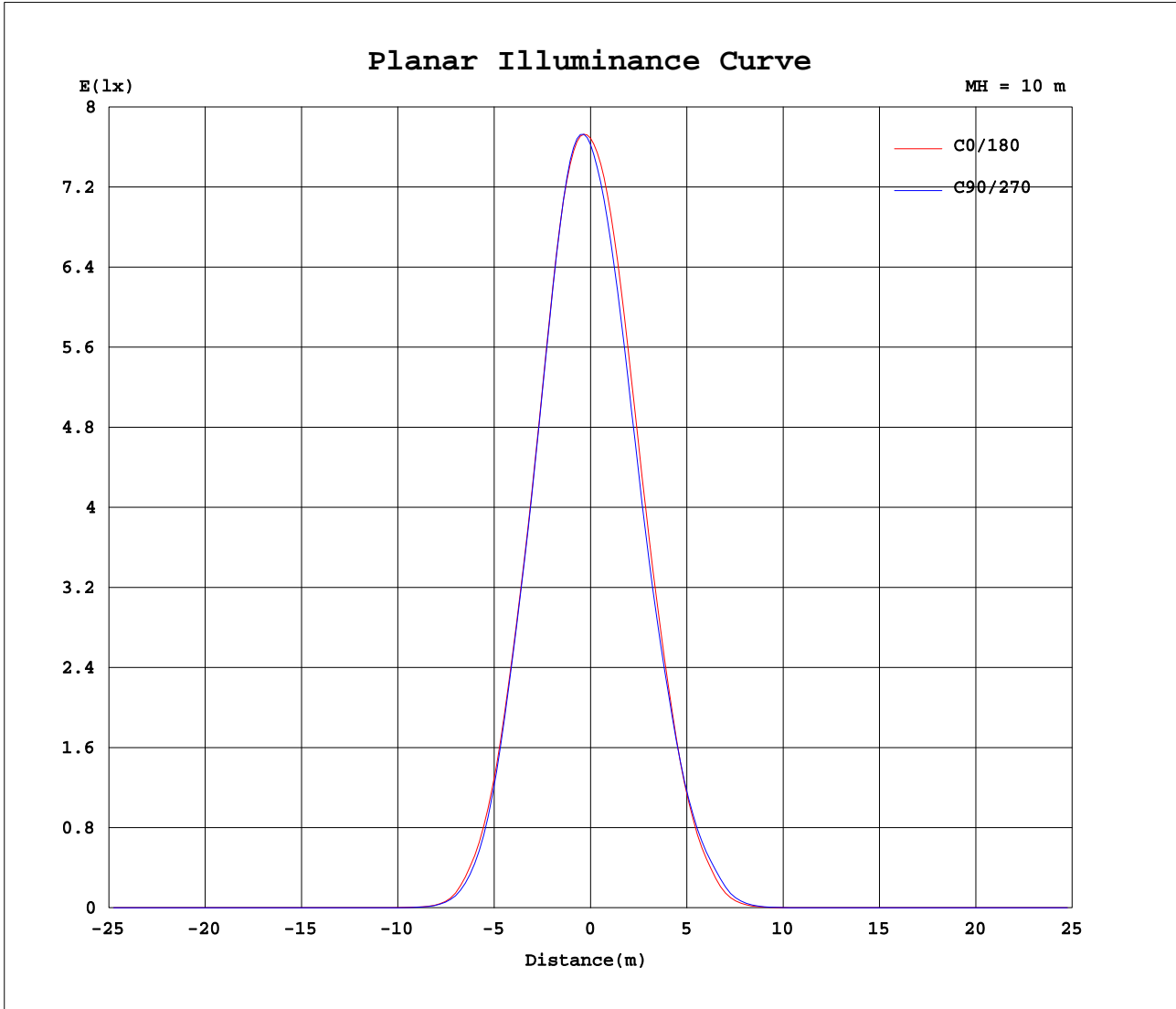
AvgL	cd/m2
L_0~180(65)av	34
L_0~180(75)av	19
L_0~180(85)av	28
L_90~270(65)av	35
L_90~270(75)av	23
L_90~270(85)av	36
L_45(65)av	24
L_45(75)av	19
L_45(85)av	38

Standard: GB/T 29293-2012

C Range: 0 - 360DEG
C Interval: 15.0DEG
Test Speed: HIGH
Temperature:25.3DEG
Operators:Myles
Test Date:2018-06-08

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:

Planar Illuminance Curve



C Range: 0 - 360DEG
 C Interval: 15.0DEG
 Test Speed: HIGH
 Temperature: 25.3DEG
 Operators: Myles
 Test Date: 2018-06-08

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:

