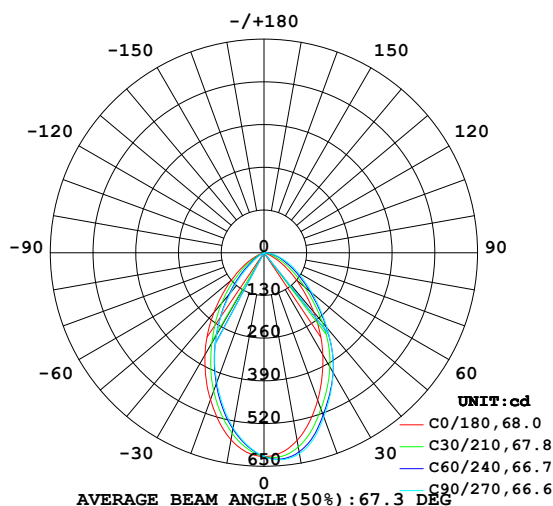


LUMINAIRE PHOTOMETRIC TEST REPORT

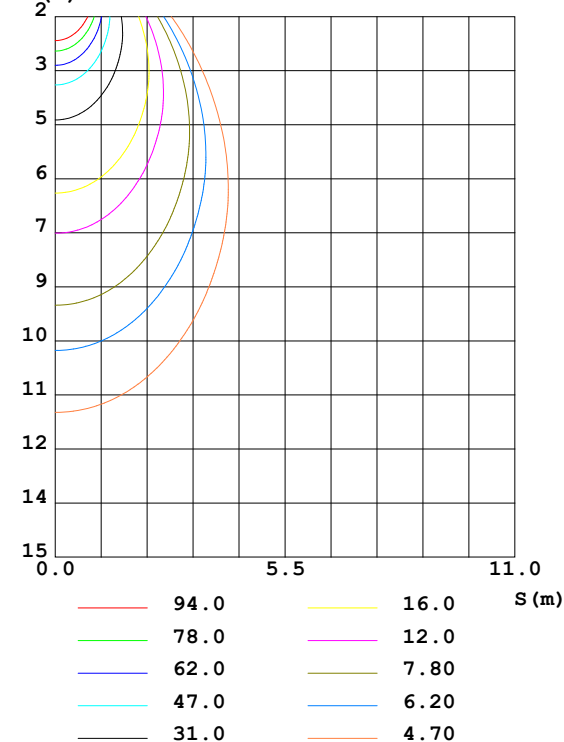
Test:U:220.7V I:0.0708A P:14.34W PF:0.9178 Freq:50.00Hz Lamp Flux:860.185x1 lm		
NAME: VW68-13W-940-WW	TYPE:Downlight	SERIAL No.:
SPEC.:4000K	DIM.: $\phi$ 77mm*H100mm	
MFR.: NEKO LIGHTING AG		

DATA OF LAMP		PHOTOMETRIC DATA Eff: 60.00 lm/W			
MODEL	CITIZEN-4000K	I <sub>max</sub> (cd)	632.4	S/MH (C0/180)	0.94
NOMINAL POWER (W)	15	LOR (%)	100.0	S/MH (C90/270)	0.82
RATED VOLTAGE (V)	220	TOTAL FLUX (lm)	860.18	$\eta$ UP, DN (C0-180)	0.0, 60.1
NOMINAL FLUX (lm)	860.185	CIE CLASS	DIRECT	$\eta$ UP, DN (C180-360)	0.0, 39.9
LAMPS INSIDE	1	$\eta$ up (%)	0.0	CIBSE SHR NOM	1.00
TEST VOLTAGE (V)	220	$\eta$ down (%)	100.0	CIBSE SHR MAX	1.05

LUMINOUS INTENSITY DISTRIBUTION DIAGRAM



C0 PLANE ISOLUX DIAGRAM (UNIT:lx)



C Range: 0 - 360DEG  
 C Interval: 15.0DEG  
 Test Speed: HIGH  
 Temperature: 25.3DEG  
 Operators: Meng Yongjian  
 Test Date: 2019-06-10

$\gamma$  Range: 0 - 90DEG  
 $\gamma$  Interval: 1.0DEG  
 Test System: EVERFINE GO-2000B\_V1 SYSTEM V2.0.288  
 Humidity: 52%  
 Test Distance: 5.850m [K=1.0000]  
 Remarks:

### ZONAL FLUX DIAGRAM

#### ZONAL FLUX DIAGRAM:

γ	C0	C45	C90	C135	C180	C225	C270	C315	γ	Φ zone	Φ total	%lum, lamp
10	580.0	610.1	620.8	607.9	577.9	549.7	541.1	553.0	0- 10	57.26	57.26	6.66,6.66
20	478.1	519.7	531.9	516.7	475.9	432.7	419.7	438.9	10- 20	149.2	206.4	24,24
30	358.1	414.7	421.0	411.7	359.4	299.1	290.1	304.5	20- 30	191.7	398.1	46.3,46.3
40	235.9	287.3	298.5	286.5	236.7	180.3	157.8	178.8	30- 40	184.1	582.2	67.7,67.7
50	129.2	172.9	190.9	175.0	130.2	86.09	53.97	84.00	40- 50	136.5	718.7	83.6,83.6
60	54.93	96.45	117.8	100.5	56.29	24.70	12.57	22.86	50- 60	81.78	800.5	93.1,93.1
70	8.285	46.94	66.03	52.72	10.65	0.6861	0.7911	1.300	60- 70	39.41	839.9	97.6,97.6
80	0.2642	17.67	27.43	19.45	1.045	0.2642	0.4240	0.8186	70- 80	16.47	856.4	99.6,99.6
90	0.0739	0.0633	0.0612	0.0570	0.0435	0.1026	0.1421	0.1360	80- 90	3.830	860.2	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): 657.68 lm

%lum = 76.5%

%lamp = 76.5%

Conical surface Flux(120deg): 800.48 lm

%lum = 93.1%

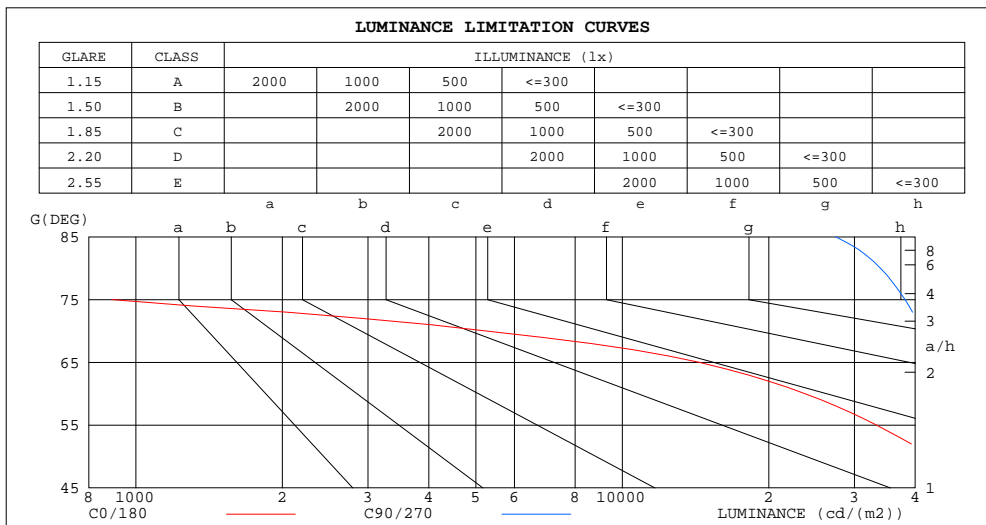
%lamp = 93.1%

C Range: 0 - 360DEG  
C Interval: 15.0DEG  
Test Speed: HIGH  
Temperature:25.3DEG  
Operators:Meng Yongjian  
Test Date:2019-06-10

γ Range: 0 - 90DEG  
γ Interval: 1.0DEG  
Test System:EVERFINE GO-2000B\_V1 SYSTEM V2.0.288  
Humidity:52%  
Test Distance:5.850m [K=1.0000]  
Remarks:

**LUMINANCE LIMITATION CURVES**

Test:U:220.7V I:0.0708A P:14.34W PF:0.9178 Freq:50.00Hz Lamp Flux:860.185x1 lm		
NAME: VW68-13W-940-WW	TYPE:Downlight	SERIAL No.:
SPEC.:4000K	DIM.: $\phi$ 77mm*H100mm	
MFR.: NEKO LIGHTING AG		



LUMINANCE cd/(m2)		
G(DEG)	C0/180	C90/270
85	329	27462
80	329	33931
75	892	38128
70	5233	41472
65	14392	45791
60	23731	50598
55	33276	56348
50	43401	63791
45	54576	73031

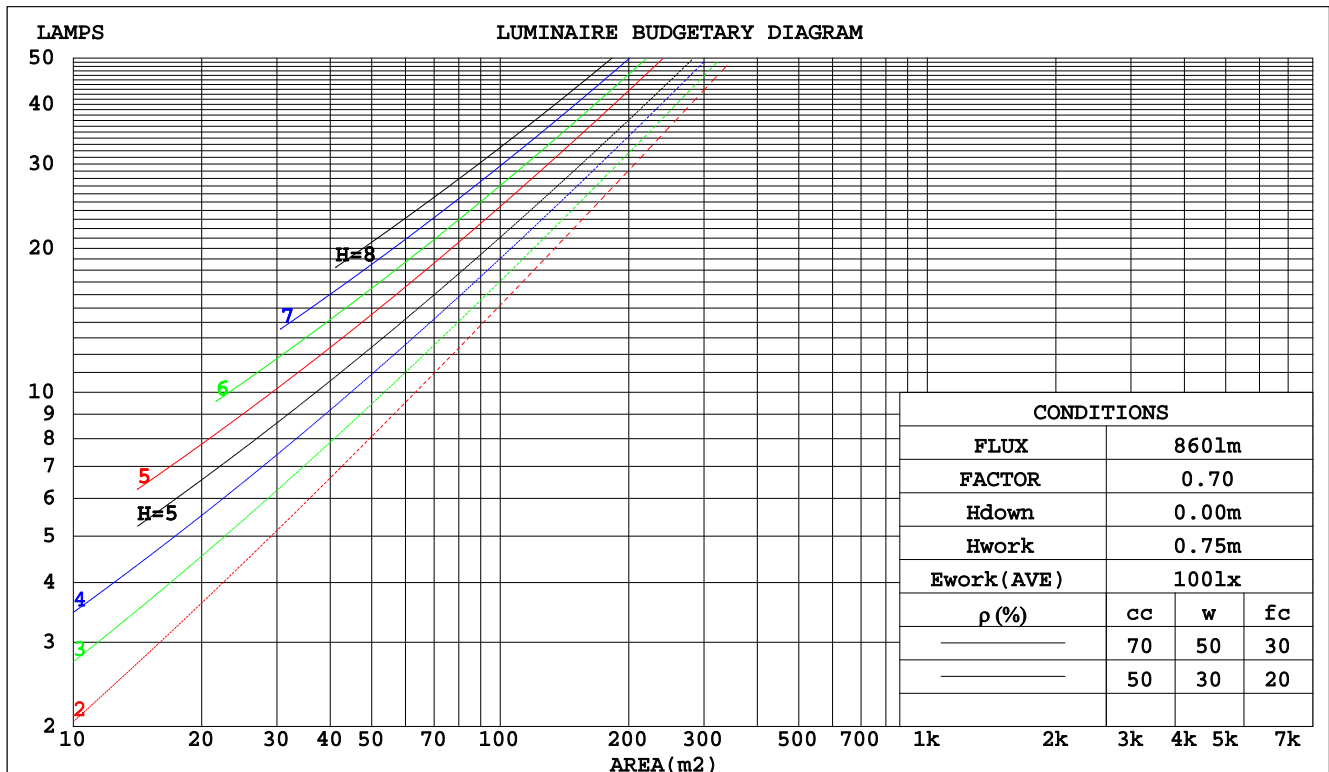
C Range: 0 - 360DEG  
C Interval: 15.0DEG  
Test Speed: HIGH  
Temperature:25.3DEG  
Operators:Meng Yongjian  
Test Date:2019-06-10

$\gamma$  Range: 0 - 90DEG  
 $\gamma$  Interval: 1.0DEG  
Test System:EVERFINE GO-2000B\_V1 SYSTEM V2.0.288  
Humidity:52%  
Test Distance:5.850m [K=1.0000]  
Remarks:

**CU AND LUMINAIRE BUDGETARY ESTIMATE DIAGRAM**

Test:U:220.7V I:0.0708A P:14.34W PF:0.9178 Freq:50.00Hz Lamp Flux:860.185x1 lm		
NAME: VW68-13W-940-WW	TYPE:Downlight	SERIAL No.:
SPEC.:4000K	DIM.: $\phi$ 77mm*H100mm	
MFR.: NEKO LIGHTING AG		

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	1.08	1.05	1.02	1.06	1.03	1.00	1.02	.99	.97	.98	.96	.94	.94	.93	.91	.90
2.0	.98	.92	.88	.96	.91	.87	.92	.88	.85	.89	.86	.83	.86	.84	.81	.80
3.0	.89	.82	.77	.87	.81	.76	.84	.79	.75	.82	.77	.74	.79	.76	.73	.71
4.0	.81	.74	.68	.79	.73	.68	.77	.71	.67	.75	.70	.66	.73	.69	.65	.63
5.0	.74	.66	.61	.73	.66	.61	.71	.65	.60	.69	.64	.59	.67	.63	.59	.57
6.0	.68	.60	.55	.67	.60	.55	.65	.59	.54	.64	.58	.54	.62	.57	.54	.52
7.0	.63	.55	.50	.62	.55	.50	.60	.54	.49	.59	.53	.49	.58	.53	.49	.47
8.0	.58	.51	.46	.57	.50	.46	.56	.50	.45	.55	.49	.45	.54	.49	.45	.43
9.0	.54	.47	.42	.53	.47	.42	.52	.46	.42	.51	.46	.42	.50	.45	.41	.40
10.0	.50	.43	.39	.50	.43	.39	.49	.43	.39	.48	.42	.39	.47	.42	.38	.37



C Range: 0 - 360DEG  
C Interval: 15.0DEG  
Test Speed: HIGH  
Temperature:25.3DEG  
Operators:Meng Yongjian  
Test Date:2019-06-10

$\gamma$  Range: 0 - 90DEG  
 $\gamma$  Interval: 1.0DEG  
Test System:EVERFINE GO-2000B\_V1 SYSTEM V2.0.288  
Humidity:52%  
Test Distance:5.850m [K=1.0000]  
Remarks:

## WEC AND CCEC

Test:U:220.7V I:0.0708A P:14.34W PF:0.9178 Freq:50.00Hz Lamp Flux:860.185x1 lm		
NAME: VW68-13W-940-WW	TYPE:Downlight	SERIAL No.:
SPEC.:4000K	DIM.: $\phi$ 77mm*H100mm	
MFR.: NEKO LIGHTING AG		

$\rho_{cc}$	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						Wall Exitance Coefficients(WEC)										
0.0																	
1.0	.231	.131	.042	.224	.128	.041	.211	.121	.039	.199	.115	.037	.188	.109	.035		
2.0	.223	.122	.037	.217	.119	.037	.206	.114	.036	.195	.110	.034	.186	.105	.033		
3.0	.211	.112	.034	.206	.110	.033	.196	.106	.032	.187	.103	.031	.179	.099	.031		
4.0	.199	.103	.030	.195	.102	.030	.186	.099	.029	.178	.096	.029	.171	.093	.028		
5.0	.188	.096	.028	.184	.094	.027	.176	.092	.027	.169	.089	.027	.163	.087	.026		
6.0	.177	.089	.025	.174	.088	.025	.167	.086	.025	.161	.084	.025	.155	.082	.024		
7.0	.167	.083	.023	.164	.082	.023	.158	.080	.023	.153	.078	.023	.148	.077	.023		
8.0	.158	.077	.022	.156	.077	.022	.150	.075	.021	.145	.074	.021	.141	.072	.021		
9.0	.150	.073	.020	.148	.072	.020	.143	.071	.020	.138	.069	.020	.134	.068	.020		
10.0	.143	.068	.019	.140	.068	.019	.136	.067	.019	.132	.066	.019	.128	.064	.018		

$\rho_{cc}$	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						Ceiling Cavity Exitance Coefficients(CCEC)									
0.0	.190	.190	.190	.163	.163	.163	.111	.111	.111	.064	.064	.064	.020	.020	.020	
1.0	.175	.157	.141	.150	.135	.121	.102	.093	.084	.059	.054	.049	.019	.017	.016	
2.0	.163	.132	.106	.140	.114	.092	.096	.079	.064	.055	.046	.038	.018	.015	.012	
3.0	.153	.114	.083	.131	.098	.072	.090	.068	.050	.052	.040	.030	.017	.013	.010	
4.0	.145	.100	.066	.124	.086	.057	.085	.060	.040	.049	.035	.024	.016	.011	.008	
5.0	.137	.089	.054	.118	.077	.047	.081	.054	.033	.047	.032	.019	.015	.010	.006	
6.0	.130	.080	.044	.112	.069	.039	.077	.049	.027	.045	.029	.016	.014	.009	.005	
7.0	.124	.073	.038	.106	.063	.033	.073	.044	.023	.043	.026	.014	.014	.009	.005	
8.0	.118	.067	.032	.101	.058	.028	.070	.041	.020	.041	.024	.012	.013	.008	.004	
9.0	.112	.062	.028	.097	.054	.024	.067	.038	.017	.039	.022	.010	.013	.007	.003	
10.0	.107	.058	.025	.092	.050	.022	.064	.035	.015	.037	.021	.009	.012	.007	.003	

C Range: 0 - 360DEG  
C Interval: 15.0DEG  
Test Speed: HIGH  
Temperature:25.3DEG  
Operators:Meng Yongjian  
Test Date:2019-06-10

$\gamma$  Range: 0 - 90DEG  
 $\gamma$  Interval: 1.0DEG  
Test System:EVERFINE GO-2000B\_V1 SYSTEM V2.0.288  
Humidity:52%  
Test Distance:5.850m [K=1.0000]  
Remarks:

## UGR(Unified Glare Rating) Table

Test:U:220.7V I:0.0708A P:14.34W PF:0.9178 Freq:50.00Hz Lamp Flux:860.185x1 lm										
NAME: VW68-13W-940-WW					TYPE:Downlight			SERIAL No.:		
SPEC.:4000K					DIM.: $\phi 77\text{mm} \times \text{H}100\text{mm}$					
MFR.: NEKO LIGHTING AG										
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	25.6	26.9	25.9	27.0	27.2	27.4	28.7	27.7	28.8	29.0
3H	25.7	26.9	26.0	27.1	27.3	28.5	29.6	28.7	29.8	30.0
4H	25.7	26.7	26.0	27.0	27.2	28.9	30.0	29.2	30.2	30.4
6H	25.6	26.6	25.9	26.8	27.1	29.2	30.2	29.5	30.5	30.8
8H	25.5	26.5	25.9	26.8	27.0	29.3	30.3	29.7	30.6	30.8
12H	25.5	26.4	25.8	26.7	27.0	29.4	30.3	29.7	30.6	30.9
4H 2H	26.1	27.2	26.4	27.4	27.6	27.6	28.7	27.9	28.9	29.2
3H	26.4	27.3	26.7	27.6	27.9	28.9	29.8	29.2	30.1	30.3
4H	26.4	27.3	26.8	27.6	27.9	29.4	30.3	29.8	30.6	30.9
6H	26.4	27.1	26.7	27.4	27.8	29.9	30.6	30.3	31.0	31.3
8H	26.3	27.0	26.7	27.4	27.7	30.1	30.7	30.5	31.1	31.5
12H	26.3	26.9	26.7	27.3	27.7	30.2	30.8	30.6	31.2	31.5
8H 4H	26.7	27.4	27.1	27.7	28.1	29.5	30.2	29.9	30.5	30.9
6H	26.7	27.3	27.2	27.7	28.1	30.0	30.6	30.5	31.0	31.4
8H	26.7	27.2	27.2	27.6	28.1	30.3	30.8	30.7	31.2	31.6
12H	26.7	27.1	27.1	27.5	28.0	30.4	30.9	30.9	31.3	31.8
12H 4H	26.7	27.4	27.1	27.7	28.1	29.4	30.1	29.8	30.4	30.8
6H	26.8	27.3	27.3	27.7	28.2	30.0	30.5	30.5	30.9	31.4
8H	26.8	27.2	27.3	27.7	28.1	30.3	30.7	30.8	31.1	31.6
Variations with the observer position at spacings:										
S = 1.0H	+ 0.9 / - 1.1					+ 0.3 / - 0.4				
1.5H	+ 0.4 / - 0.9					+ 0.2 / - 0.2				
2.0H	+ 1.2 / - 2.1					+ 0.7 / - 0.6				

CIE Pub.117, 860.2 lm Total Lamp Luminous Flux Correct ( $8\log(F/F_0) = -0.5$ )

C Range: 0 - 360DEG  
C Interval: 15.0DEG  
Test Speed: HIGH  
Temperature:25.3DEG  
Operators:Meng Yongjian  
Test Date:2019-06-10

$\gamma$  Range: 0 - 90DEG  
 $\gamma$  Interval: 1.0DEG  
Test System:EVERFINE GO-2000B\_V1 SYSTEM V2.0.288  
Humidity:52%  
Test Distance:5.850m [K=1.0000]  
Remarks:

### UTILIZATION FACTORS TABLE

Test:U:220.7V I:0.0708A P:14.34W PF:0.9178 Freq:50.00Hz Lamp Flux:860.185x1 lm		
NAME: VW68-13W-940-WW	TYPE:Downlight	SERIAL No.:
SPEC.:4000K	DIM.: $\varnothing 77\text{mm} \times H100\text{mm}$	
MFR.: NEKO LIGHTING AG		

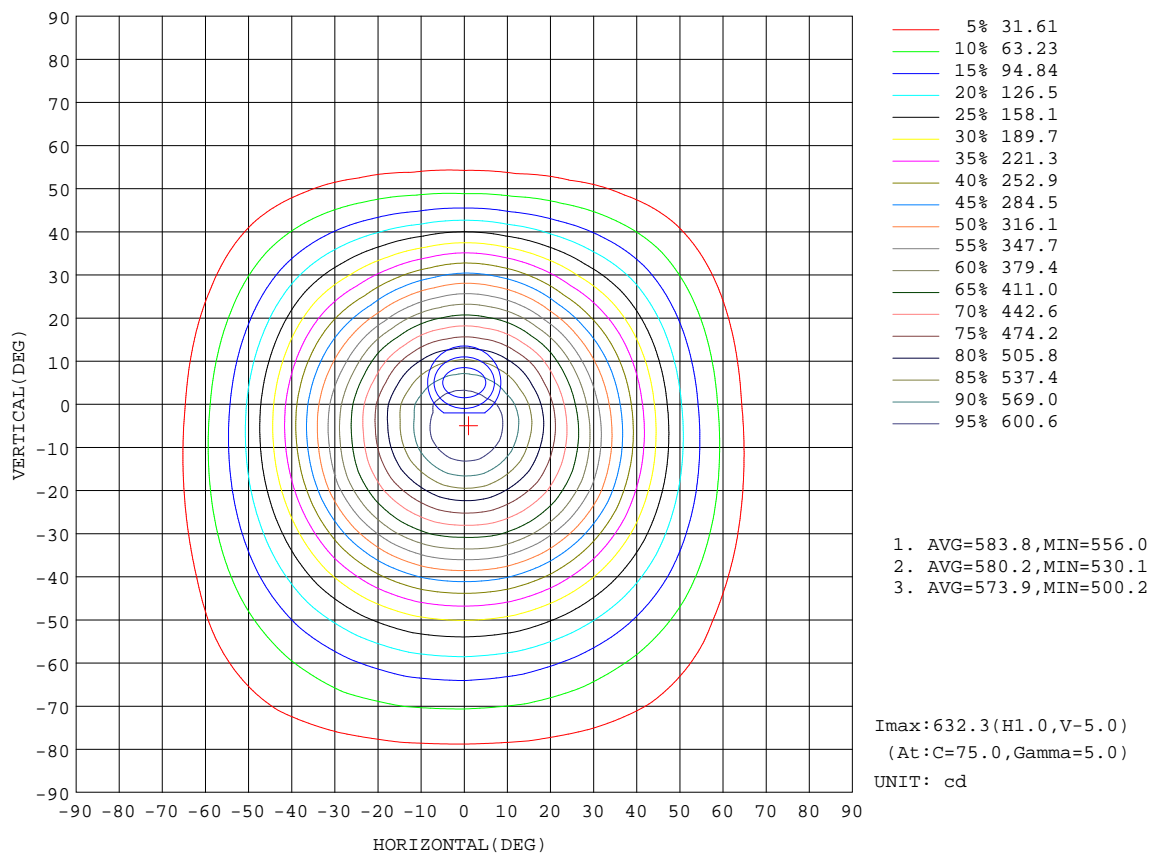
REFLECTANCE										
Ceiling	0.8	0.8	0.8	0.7	0.7	0.7	0.5	0.5	0.5	0
Walls	0.7	0.5	0.3	0.7	0.5	0.3	0.7	0.5	0.3	0
Working plane	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0
ROOM INDEX	UTILIZATION FACTORS(PERCENT) $k(RI) \times RCR = 5$									
$k = 0.60$	71	62	56	70	62	56	69	61	56	51
0.80	81	72	66	80	71	66	78	71	66	60
1.00	88	80	74	87	79	74	85	80	73	68
1.25	94	86	81	92	85	80	90	84	80	74
1.50	98	91	86	96	90	85	94	88	84	78
2.00	103	96	92	101	95	91	98	93	90	83
2.50	105	100	95	103	98	94	100	96	93	86
3.00	108	103	99	106	101	98	102	98	95	88
4.00	110	106	103	108	105	102	104	101	99	91
5.00	112	109	106	110	107	104	106	103	101	93
ROOM INDEX	UF(total)									Direct
According to DIN EN 13032-2 2004			Suspended					SHRNOM = 1.25		

C Range: 0 - 360DEG  
 C Interval: 15.0DEG  
 Test Speed: HIGH  
 Temperature:25.3DEG  
 Operators:Meng Yongjian  
 Test Date:2019-06-10

$\gamma$  Range: 0 - 90DEG  
 $\gamma$  Interval: 1.0DEG  
 Test System:EVERFINE GO-2000B\_V1 SYSTEM V2.0.288  
 Humidity:52%  
 Test Distance:5.850m [K=1.0000]  
 Remarks:

# ISOCANDELA DIAGRAM

Test:U:220.7V I:0.0708A P:14.34W PF:0.9178 Freq:50.00Hz Lamp Flux:860.185x1 lm		
NAME: VW68-13W-940-WW	TYPE:Downlight	SERIAL No.:
SPEC.:4000K	DIM.: $\phi$ 77mm*H100mm	
MFR.: NEKO LIGHTING AG		



C Range: 0 - 360DEG  
C Interval: 15.0DEG  
Test Speed: HIGH  
Temperature:25.3DEG  
Operators:Meng Yongjian  
Test Date:2019-06-10

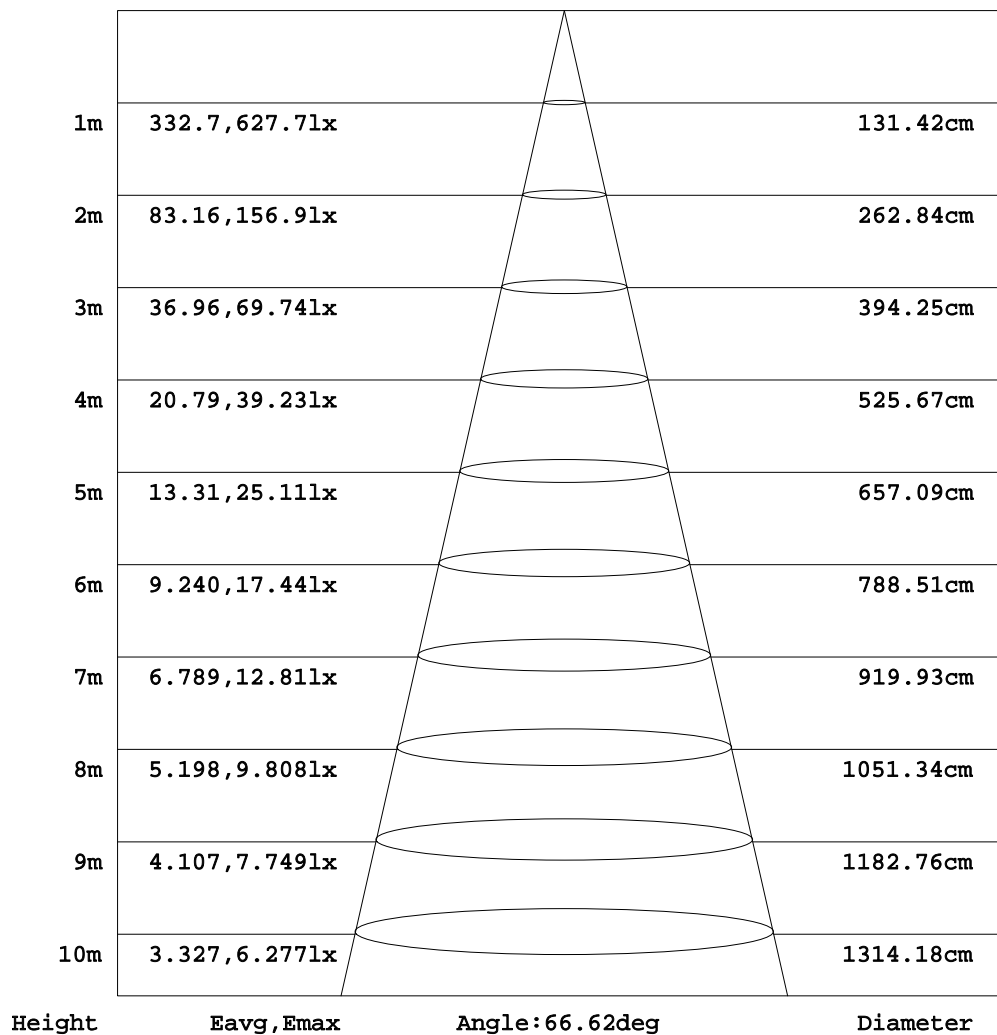
$\gamma$  Range: 0 - 90DEG  
 $\gamma$  Interval: 1.0DEG  
Test System:EVERFINE GO-2000B\_V1 SYSTEM V2.0.288  
Humidity:52%  
Test Distance:5.850m [K=1.0000]  
Remarks:



**AAI Figure**

Test:U:220.7V I:0.0708A P:14.34W PF:0.9178 Freq:50.00Hz Lamp Flux:860.185x1 lm		
NAME: VW68-13W-940-WW	TYPE:Downlight	SERIAL No.:
SPEC.:4000K	DIM.: $\phi 77\text{mm} \times H100\text{mm}$	
MFR.: NEKO LIGHTING AG		

Flux out:475.5 lm



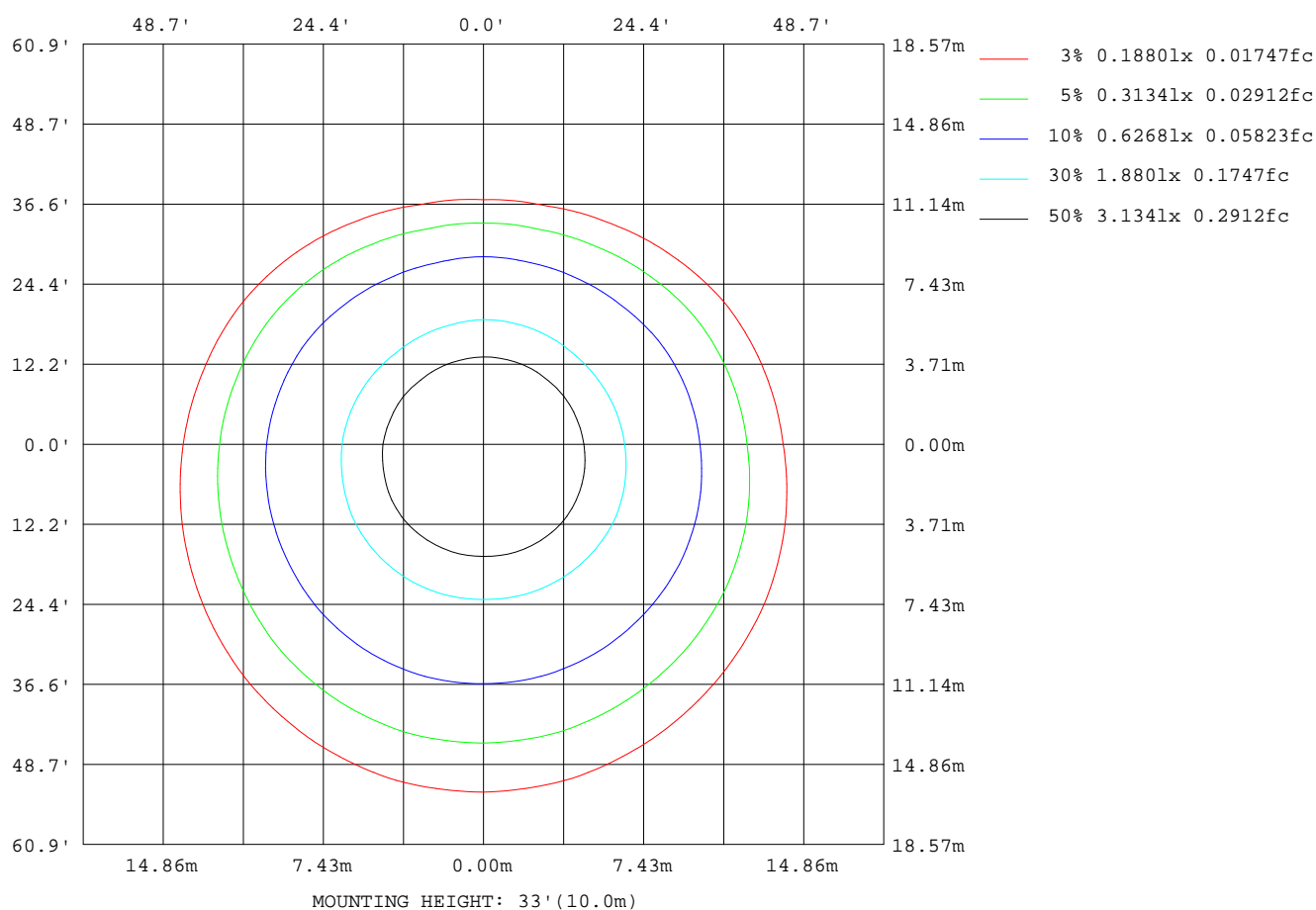
Note: The Curves indicate the illuminated area and the average illumination when the luminaire is at different distance.

C Range: 0 - 360DEG  
C Interval: 15.0DEG  
Test Speed: HIGH  
Temperature: 25.3DEG  
Operators: Meng Yongjian  
Test Date: 2019-06-10

$\gamma$  Range: 0 - 90DEG  
 $\gamma$  Interval: 1.0DEG  
Test System: EVERFINE GO-2000B\_V1 SYSTEM V2.0.288  
Humidity: 52%  
Test Distance: 5.850m [K=1.0000]  
Remarks:

**ISOLUX DIAGRAM**

Test:U:220.7V I:0.0708A P:14.34W PF:0.9178 Freq:50.00Hz Lamp Flux:860.185x1 lm		
NAME: VW68-13W-940-WW	TYPE:Downlight	SERIAL No.:
SPEC.:4000K	DIM.: $\phi 77\text{mm} \times \text{H}100\text{mm}$	
MFR.: NEKO LIGHTING AG		



C Range: 0 - 360DEG  
C Interval: 15.0DEG  
Test Speed: HIGH  
Temperature: 25.3DEG  
Operators: Meng Yongjian  
Test Date: 2019-06-10

$\gamma$  Range: 0 - 90DEG  
 $\gamma$  Interval: 1.0DEG  
Test System: EVERFINE GO-2000B\_V1 SYSTEM V2.0.288  
Humidity: 52%  
Test Distance: 5.850m [K=1.0000]  
Remarks:

### LED Avg.L Report

Test:U:220.7V I:0.0708A P:14.34W PF:0.9178 Freq:50.00Hz Lamp Flux:860.185x1 lm		
NAME: VW68-13W-940-WW	TYPE:Downlight	SERIAL No.:
SPEC.:4000K	DIM.: $\phi$ 77mm*H100mm	
MFR.: NEKO LIGHTING AG		

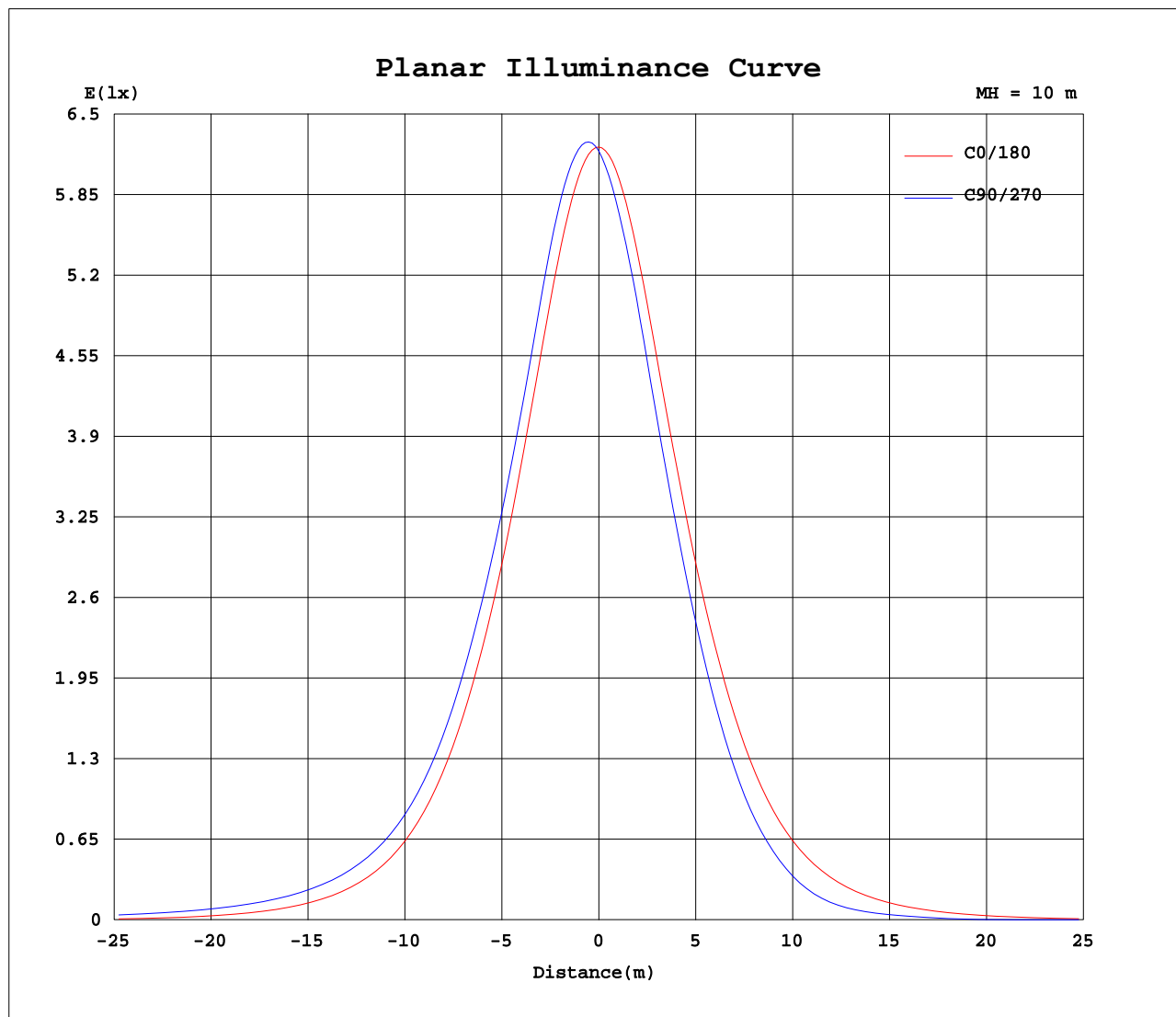
AvgL	cd/m2
L_0~180 (65) av	14730
L_0~180 (75) av	1689
L_0~180 (85) av	420
L_90~270 (65) av	23196
L_90~270 (75) av	19305
L_90~270 (85) av	14110
L_45 (65) av	19781
L_45 (75) av	14326
L_45 (85) av	8357

Standard: GB/T 29293-2012

C Range: 0 - 360DEG  
C Interval: 15.0DEG  
Test Speed: HIGH  
Temperature:25.3DEG  
Operators:Meng Yongjian  
Test Date:2019-06-10

$\gamma$  Range: 0 - 90DEG  
 $\gamma$  Interval: 1.0DEG  
Test System:EVERFINE GO-2000B\_V1 SYSTEM V2.0.288  
Humidity:52%  
Test Distance:5.850m [K=1.0000]  
Remarks:

### Planar Illuminance Curve



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C Interval: 15.0DEG  
Test Speed: HIGH  
Temperature: 25.3DEG  
Operators: Meng Yongjian  
Test Date: 2019-06-10

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Test System: EVERFINE GO-2000B\_V1 SYSTEM V2.0.288  
Humidity: 52%  
Test Distance: 5.850m [K=1.0000]  
Remarks:

```

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γ Interval: 1.0DEG
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Remarks:

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Humidity:52%
Test Distance:5.850m [K=1.0000]
Remarks:

```