

# 4

## 4.1

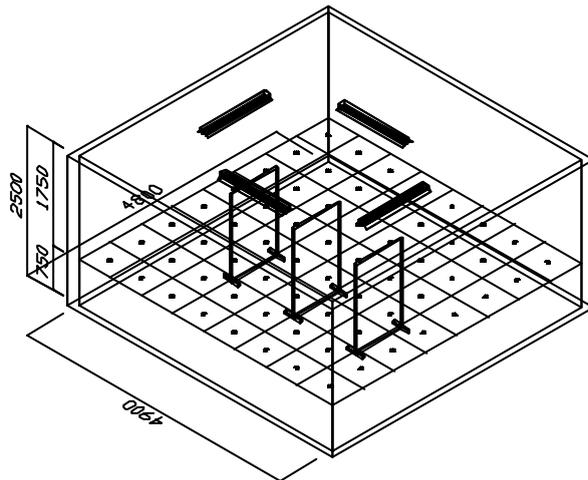
### 4.1.1

(1) : H 2

(2) :

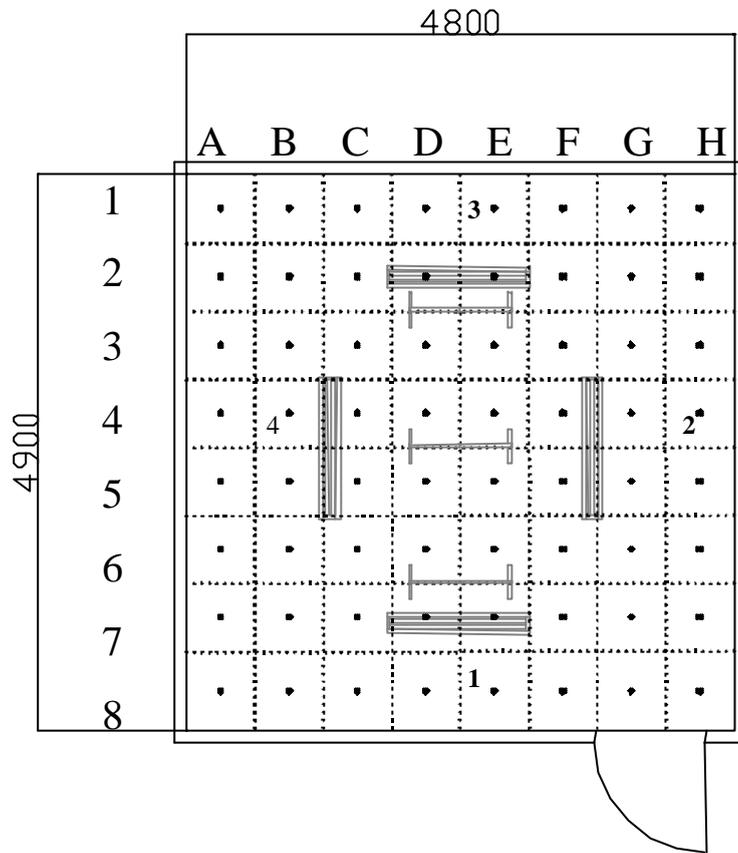
[ 4.1]

, [ 4.2] [ 4.3]

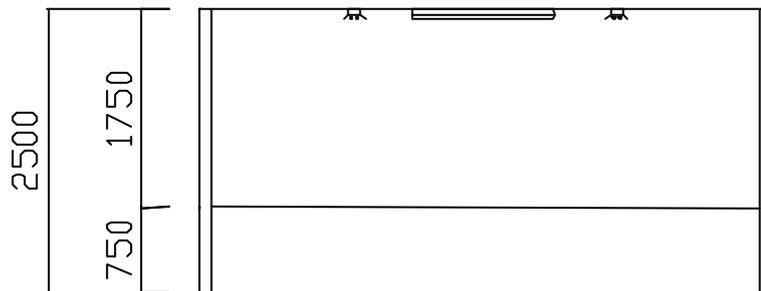


[ 4.1]

3



[ 4.2]



[ 4.3]



[ 4.1] .

[ 4.1]

---

---

,	(sandwich panel)	0.63
	40 mm	0.75
		0.90
		0.42

---

### 4.1.3

[ 4.2] .

[ 4.2]

---

●	(Hioki 3422) 1
●	(Minolta LS110 1/3 ° ) 1
●	FL40 2                      4
●	1
●	1

---

[ 4.5] .



(a)



(b)

[ 4.5]

4.1.4

가

가

1

100 , 1000 , 10000

[ 4.6]

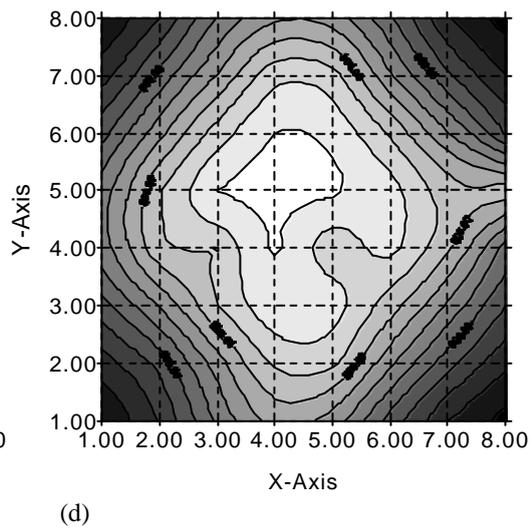
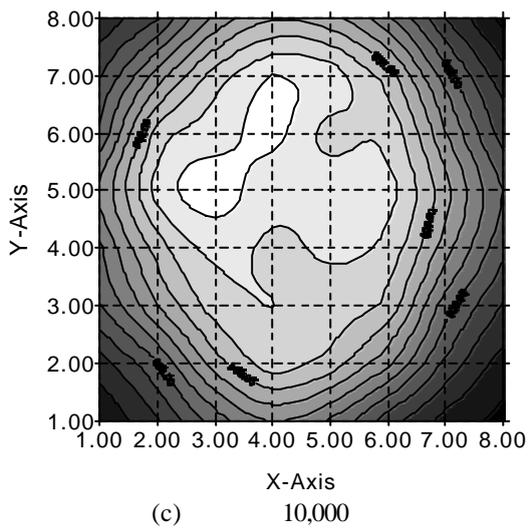
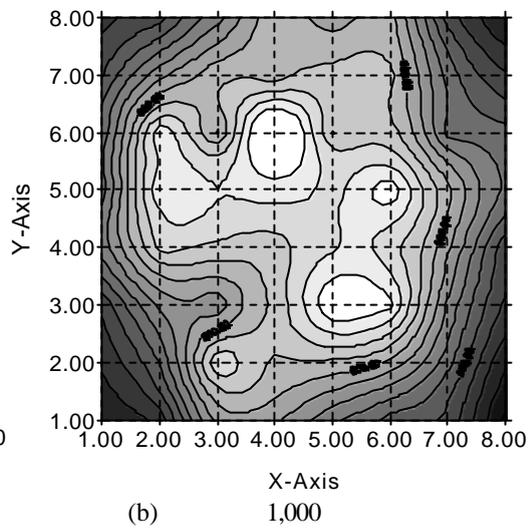
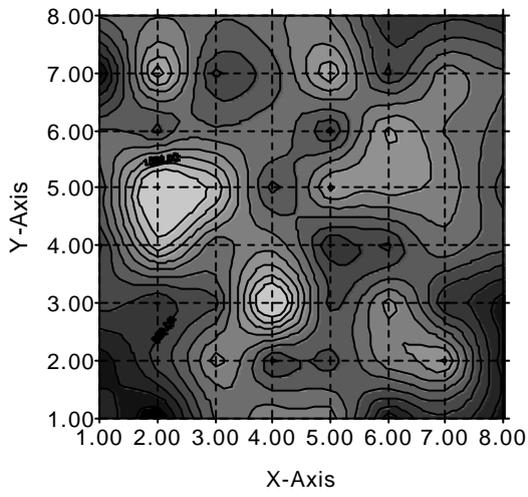
가

가

10,000

[ 4.6] (c)가

(d)



[ 4.6]

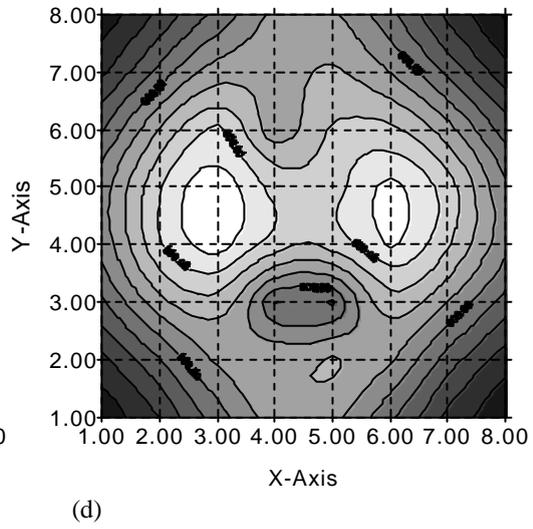
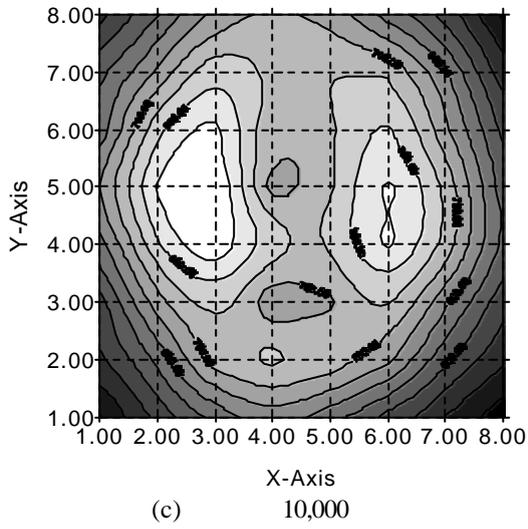
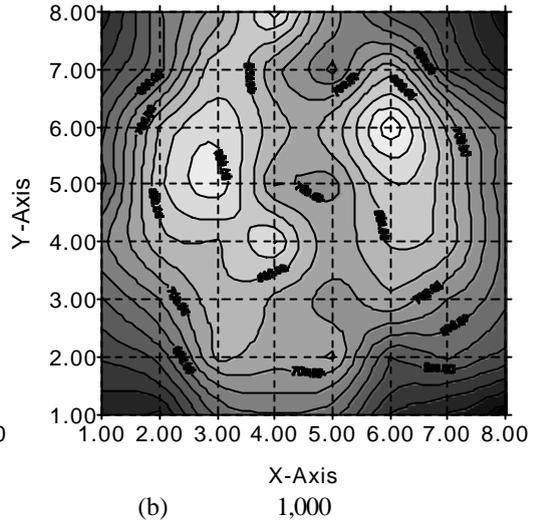
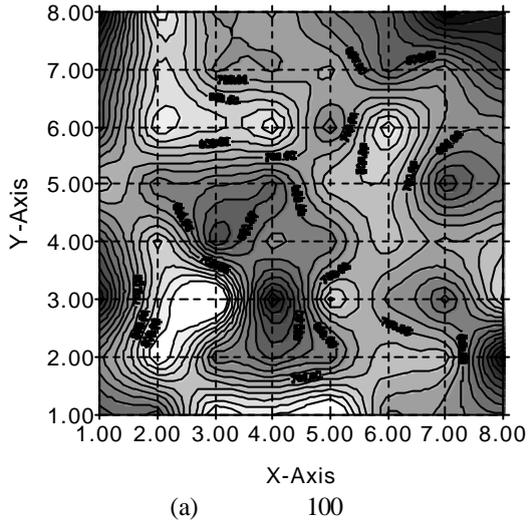
가

( )

가 , [ 4.7]

가  
10000

[ 4.7] (c)가 (d)



[ 4.7] 가 ( )

#### 4.1.5

[ 4.8]  
 . [ 4.9] [ 4.10] 4 D  
 .  
 4 815.50lx  
 10,000 8 80,000  
 791.96lx . 2.89% 가 .  
 D 882.88lx 874.10lx  
 0.99% 가 .

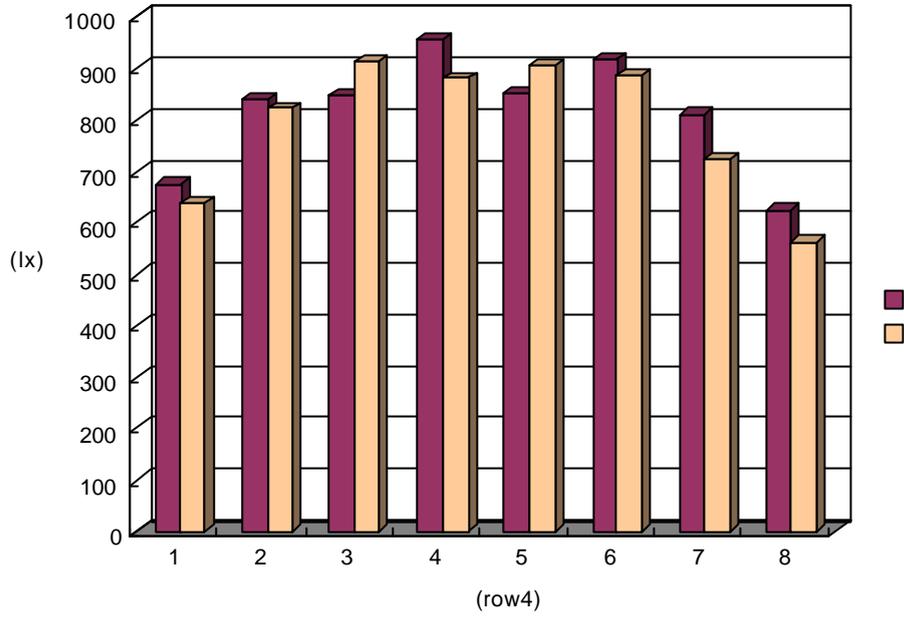


[ 4.8] ( )

( 4.2) .

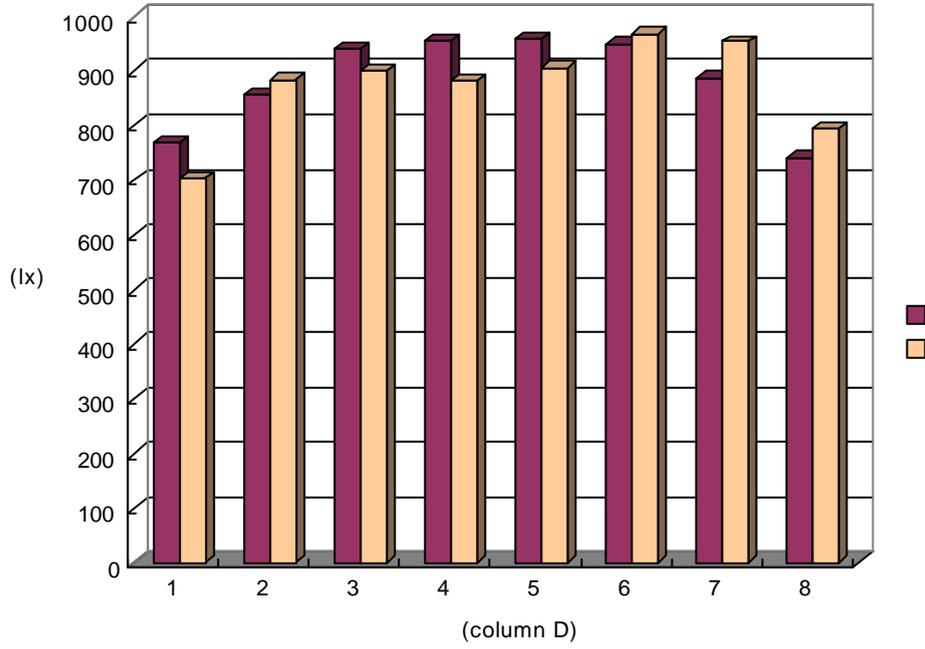
$$= \frac{\quad - \quad}{\quad} \times 100 \text{ [%]}$$

( 4.2)



[ 4.9]

( 4 )



[ 4.10]

( D )

#### 4.1.6

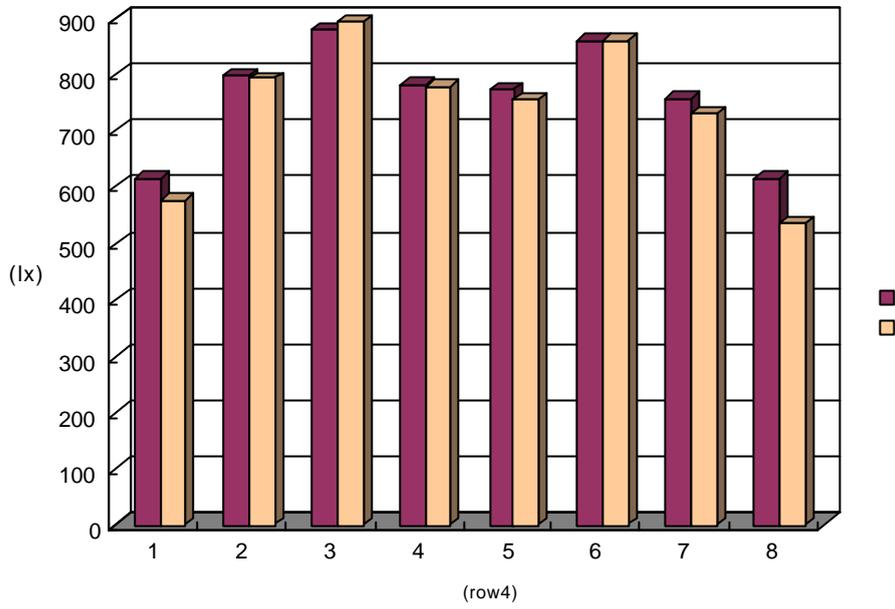
4.11] [

4.12] [ 4.13] 4 D

4 759.75lx  
10,000 8 80,000  
740.12lx 2.58%가  
D 685lx 706.37lx 3.12%가

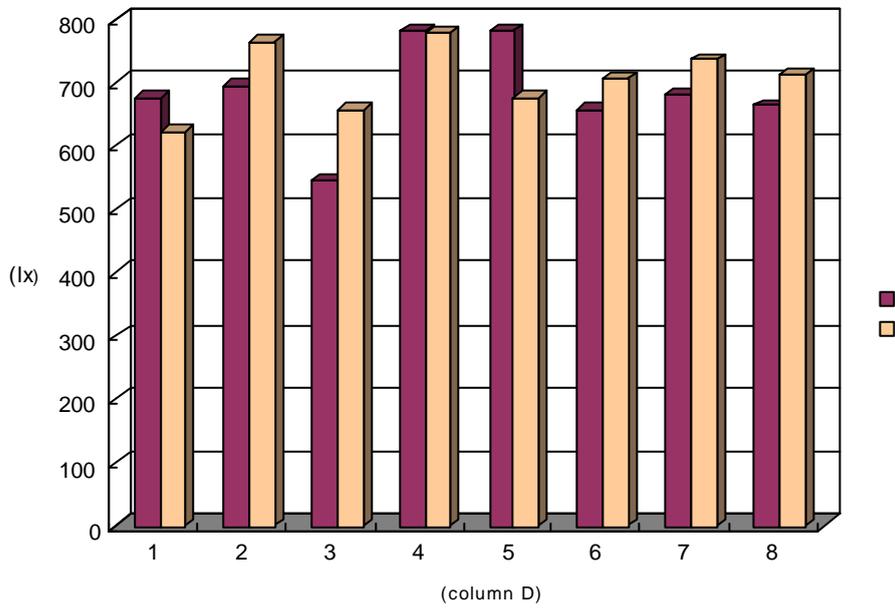


[ 4.11] ( )



[ 4.12]

( 4 )



[ 4.13]

( D )

## 4.2

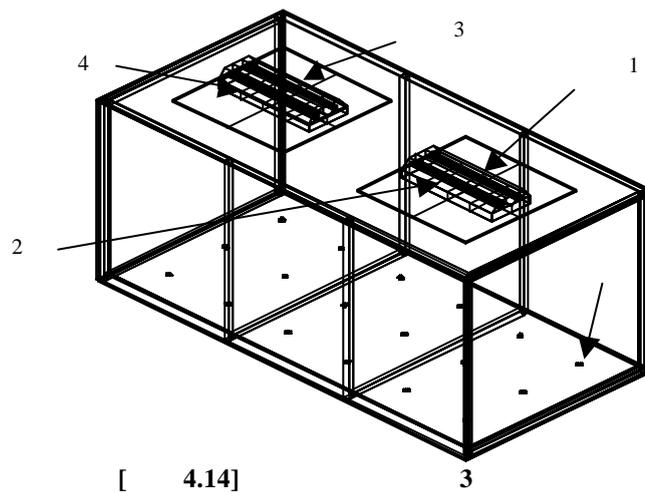
### 4.2.1

2 . [ 4.14]

[ 4.15]

. [ 4.16]

. [ 4.17]

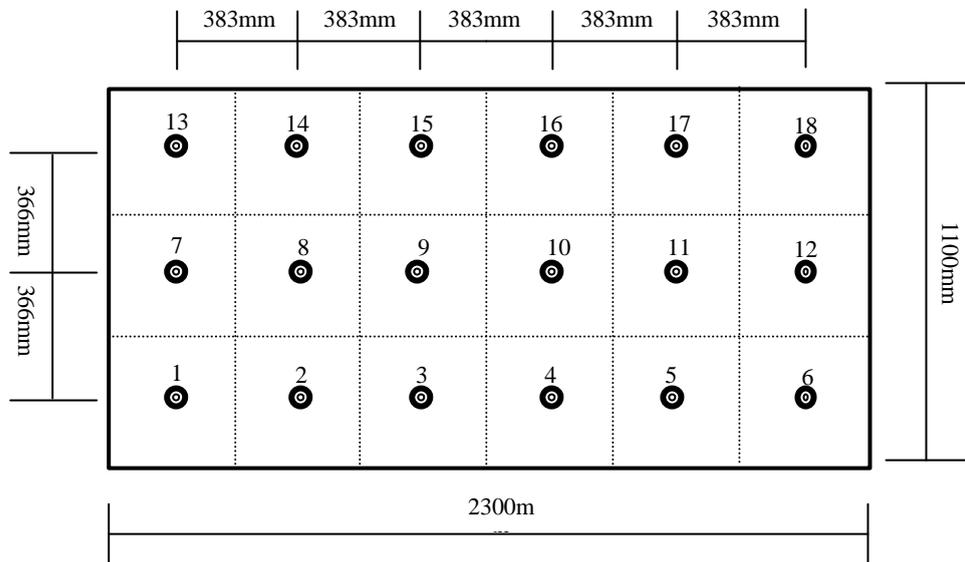


[ 4.14]

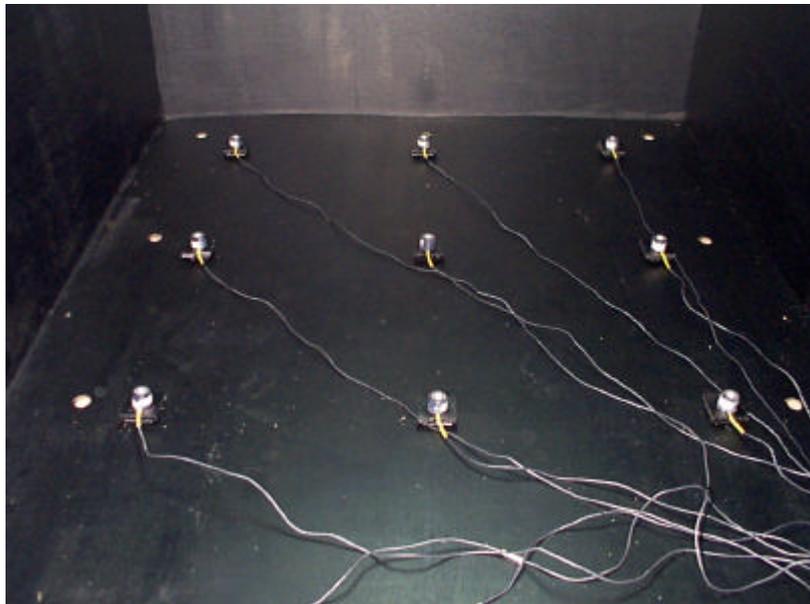
3



[ 4.15]



[ 4.16]



[ 4.17]

## 4.2.2

12mm                      5mm                      2

가                      1.2m×2.4m×1.2m

3×6                      가 36.7cm×38.3cm

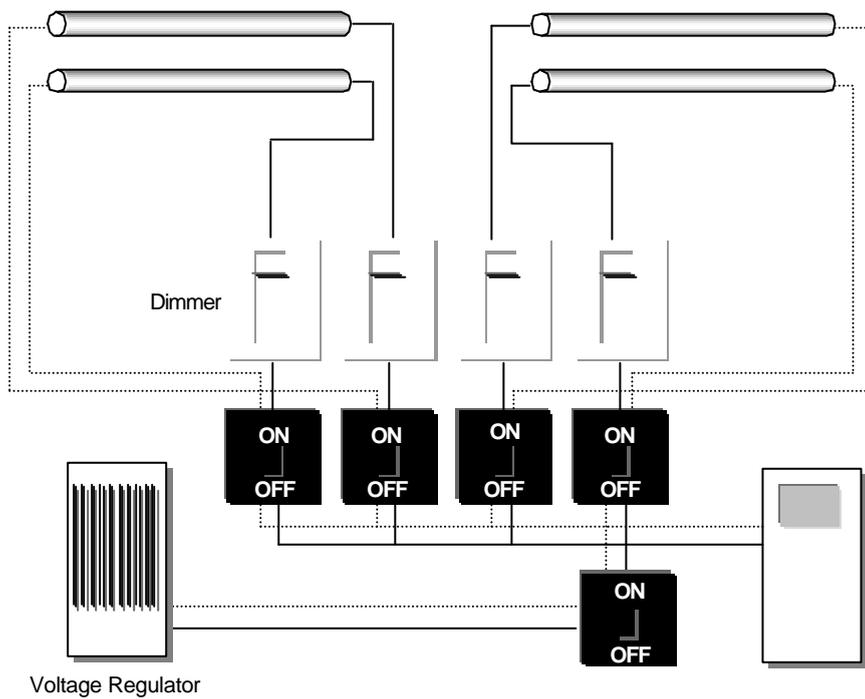
2                      20W                      (Osram, :1120lm )2

가                      가                      가

(                      )                      (Lutron)

가                      (LCD Multimeter)

[ 4.18]



[ 4.18]

[ 4.19]

가



[ 4.19]

4.1

[ 4.3]

[ 4.3]

---

	5 mm	0.14
	5 mm	0.14
		0.83
		0.35

---

[ 4.20]



[ 4.20]

### 4.2.3

[ 4.4]

[ 4.4]

- 
- LI-210SA 18
  - DATASCAN 1
  - LCD Multimeter RMS M-3850M
  - (Hioki 3422) 1
  - (Minolta LS110 1/3 ° ) 1
  - 486DX<sub>2</sub> 50 1
-

[ 4.21]



(a)

[ 4.21] (a)



(b)

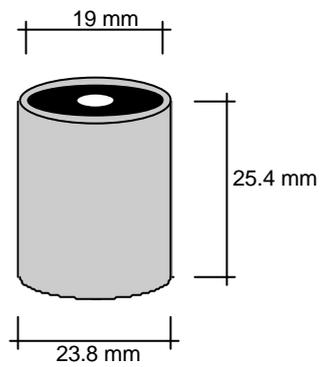
(b)

[ 4.22]



(a)

[ 4.22]



(b)

[ 4.5]

[ 4.5]

	[ $\mu\text{A}/100\text{k}\Omega$ ]		[ $\mu\text{V}$ ]
1	35.12	$35.12 \mu\text{A}/100000\Omega \times 604 = -0.2121248 [\mu\text{V}/\Omega]$	4.7142
2	32.68	$32.68 \mu\text{A}/100000\Omega \times 604 = -0.1973872 [\mu\text{V}/\Omega]$	5.0662
3	34.57	$34.57 \mu\text{A}/100000\Omega \times 604 = -0.2088028 [\mu\text{V}/\Omega]$	4.7892
4	32.70	$32.70 \mu\text{A}/100000\Omega \times 604 = -0.1975080 [\mu\text{V}/\Omega]$	5.0631
5	34.11	$34.11 \mu\text{A}/100000\Omega \times 604 = -0.2060244 [\mu\text{V}/\Omega]$	4.8538
6	29.54	$29.54 \mu\text{A}/100000\Omega \times 604 = -0.1784216 [\mu\text{V}/\Omega]$	5.6047
7	31.68	$31.68 \mu\text{A}/100000\Omega \times 604 = -0.1913472 [\mu\text{V}/\Omega]$	5.2261
8	34.11	$34.11 \mu\text{A}/100000\Omega \times 604 = -0.2060244 [\mu\text{V}/\Omega]$	4.8538
9	33.10	$33.10 \mu\text{A}/100000\Omega \times 604 = -0.1999240 [\mu\text{V}/\Omega]$	5.0019
10	33.41	$33.41 \mu\text{A}/100000\Omega \times 604 = -0.2017964 [\mu\text{V}/\Omega]$	4.9555
11	33.48	$33.48 \mu\text{A}/100000\Omega \times 604 = -0.2022192 [\mu\text{V}/\Omega]$	4.9451
12	35.59	$35.59 \mu\text{A}/100000\Omega \times 604 = -0.2149636 [\mu\text{V}/\Omega]$	4.6520
13	31.58	$33.41 \mu\text{A}/100000\Omega \times 604 = -0.2017964 [\mu\text{V}/\Omega]$	4.9555
14	31.96	$31.96 \mu\text{A}/100000\Omega \times 604 = -0.1930384 [\mu\text{V}/\Omega]$	5.1803
15	32.64	$32.64 \mu\text{A}/100000\Omega \times 604 = -0.1971456 [\mu\text{V}/\Omega]$	5.0724
16	35.59	$35.59 \mu\text{A}/100000\Omega \times 604 = -0.2149636 [\mu\text{V}/\Omega]$	4.6520
17	31.22	$31.22 \mu\text{A}/100000\Omega \times 604 = -0.1885688 [\mu\text{V}/\Omega]$	5.3031
18	32.42	$32.42 \mu\text{A}/100000\Omega \times 604 = -0.1958168 [\mu\text{V}/\Omega]$	5.1068

4.2.4

(Chen, et al.,1998).

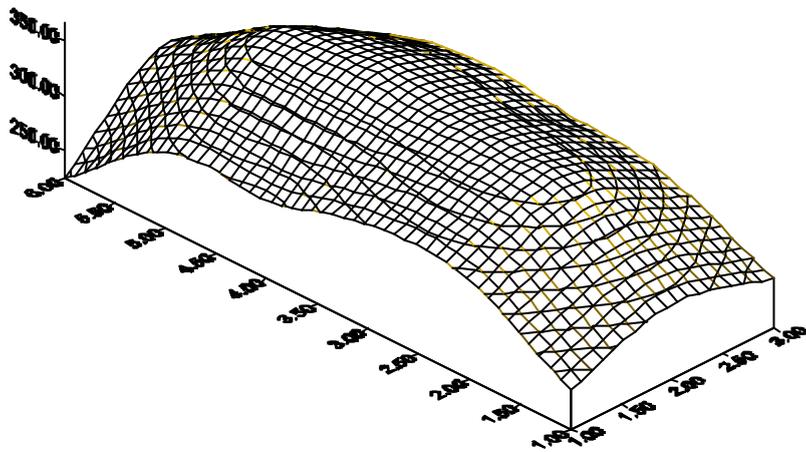
가

가

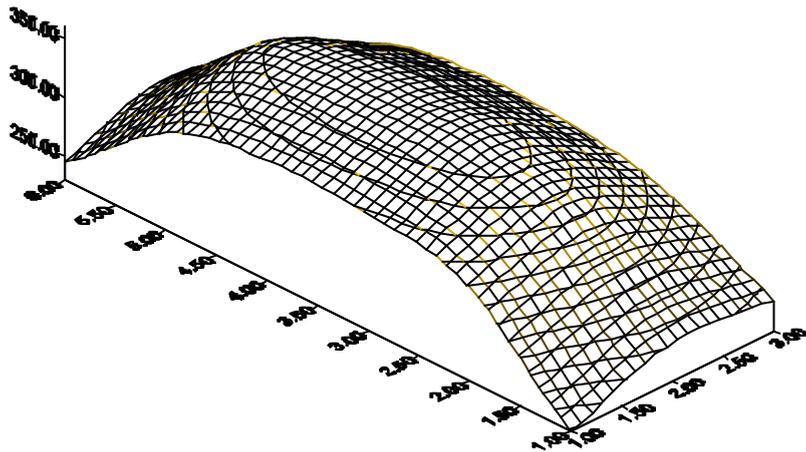
[ 4.23] [ 4.24]

. [ 4.6]

가 5.20%

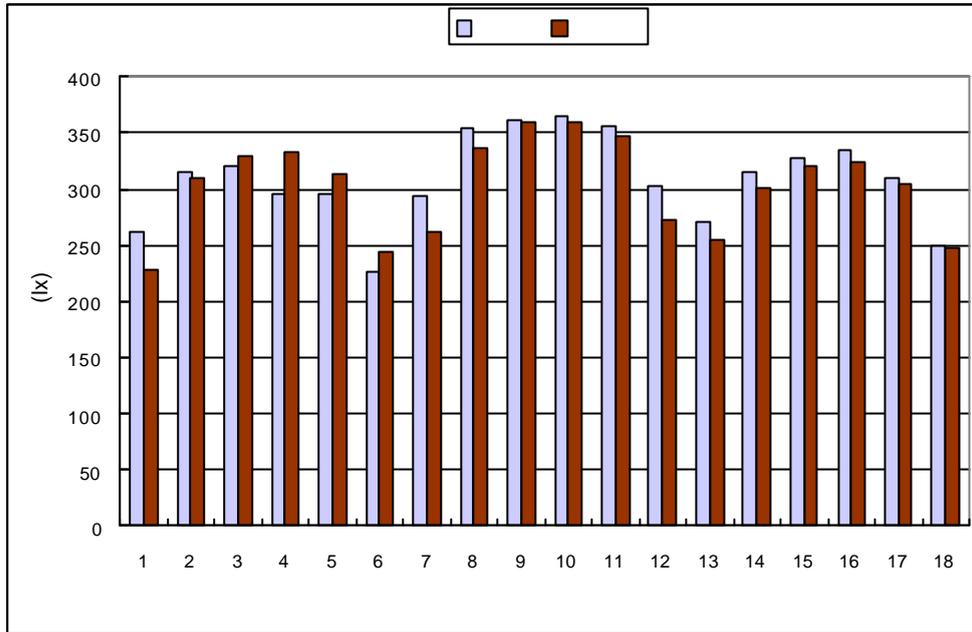


(a)



(b) ( 400,000 )

[ 4.23] 3 ( )



[ 4.24] ( )

[ 4.6] ( )

	(lx)	(lx)	(%)
1	261.60	229.07	12.43
2	315.80	309.54	1.98
3	320.38	328.93	2.67
4	296.34	332.14	12.08
5	295.20	312.86	5.98
6	225.80	244.93	8.47
7	294.00	261.54	11.04
8	354.24	336.21	5.09
9	361.22	360.11	0.31
10	365.42	359.68	1.57
11	357.12	346.71	2.91
12	301.70	273.11	9.48
13	271.23	254.68	6.10
14	315.06	300.43	4.64
15	327.76	319.71	2.45
16	335.96	323.36	3.75
17	310.39	303.43	2.24
18	248.47	247.39	0.43
			5.20

### 4.2.5

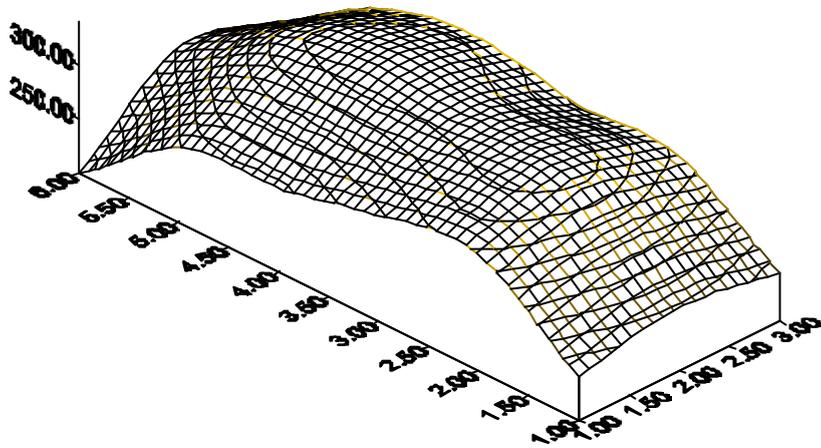
[ 4.25] [ 4.26]

. [ 4.7]

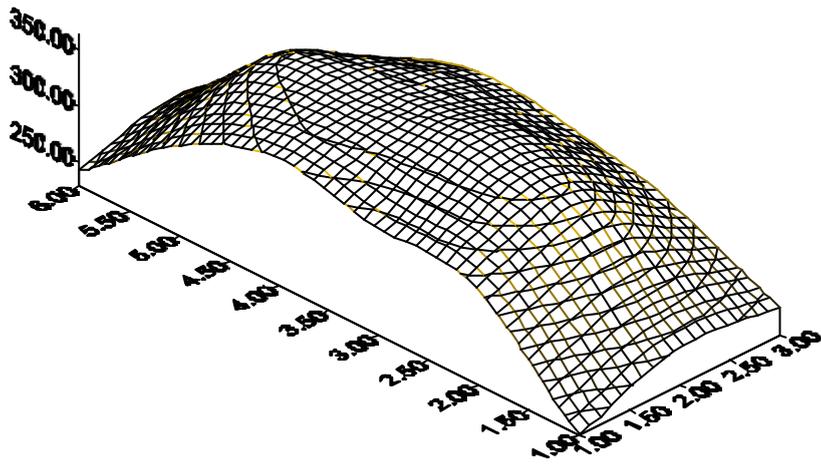
가 6.68%

가

가 .



(a)



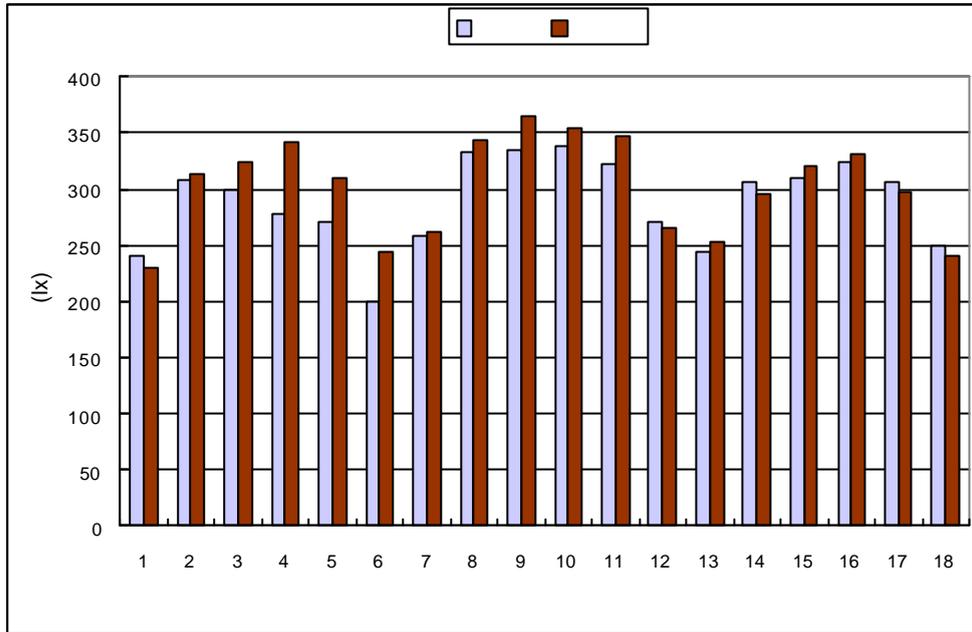
(b)

( 400,000 )

[ 4.25]

3

( )



[ 4.26] ( )

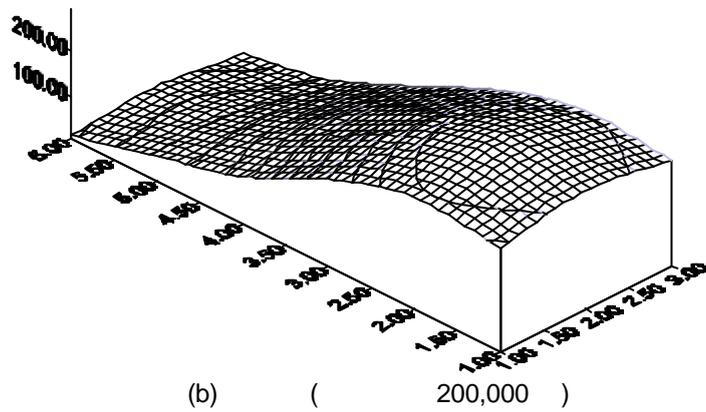
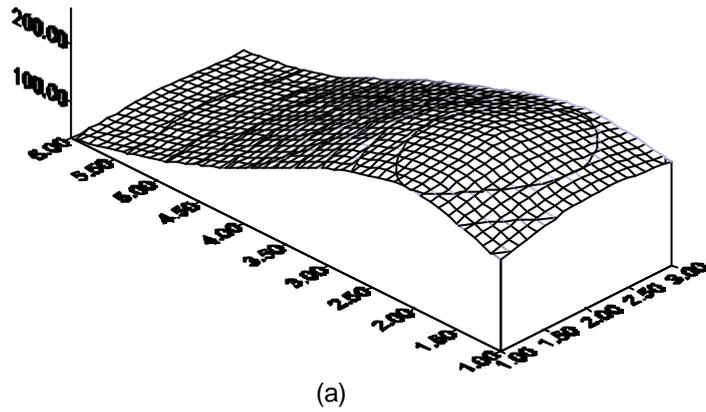
[ 4.7] ( )

	(lx)	(lx)	(%)
1	240.09	229.39	4.45
2	308.12	313.50	1.75
3	298.53	323.68	8.42
4	277.12	341.79	23.34
5	269.34	309.64	14.96
6	200.23	243.00	21.36
7	258.24	261.32	1.19
8	332.10	344.14	3.63
9	334.61	364.29	8.87
10	339.06	354.11	4.44
11	323.28	346.61	7.22
12	270.73	265.93	1.77
13	244.87	253.29	3.44
14	307.17	295.29	3.87
15	308.50	320.04	3.74
16	325.34	330.11	1.46
17	306.37	297.11	3.02
18	248.47	240.32	3.28
			6.68

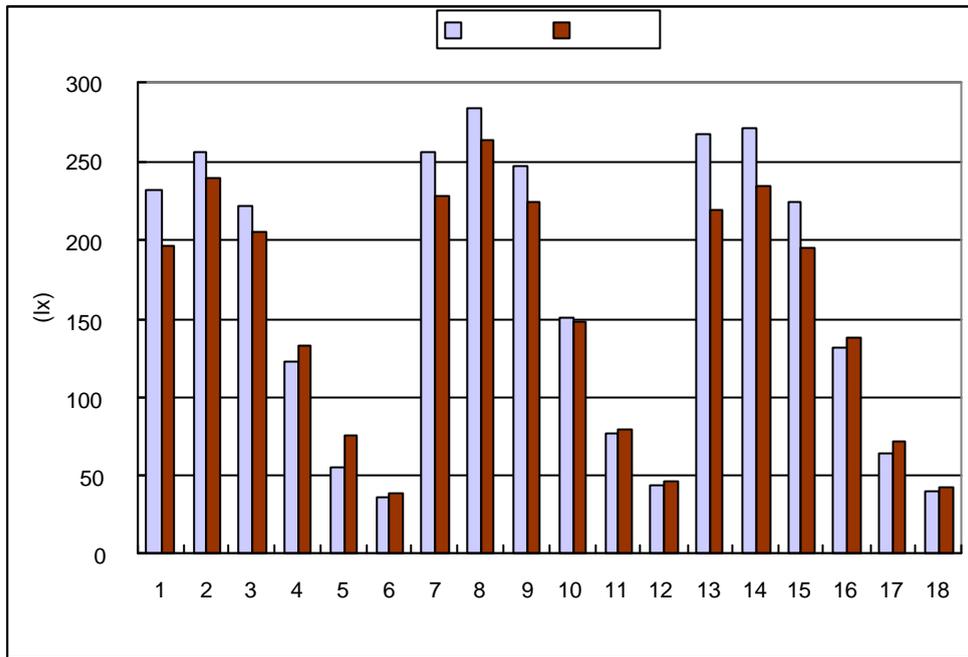
## 4.2.6

2

[ 4.27] [ 4.28] 가 1 2



[ 4.27] 3 ( : 1,2)



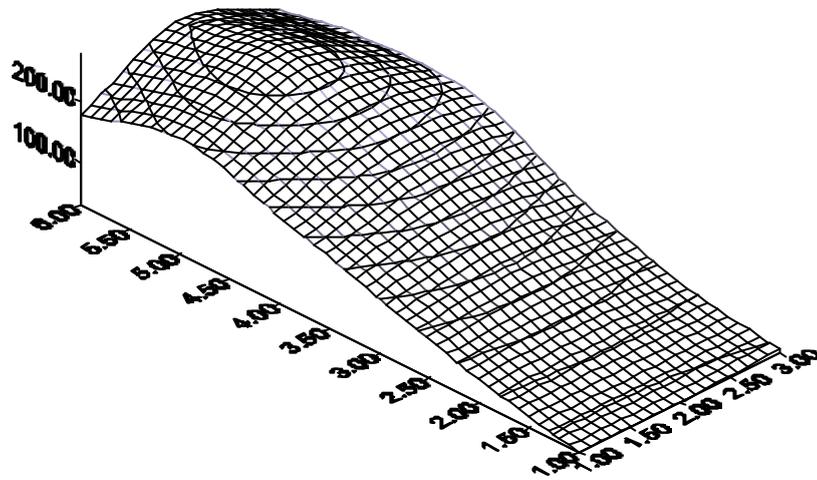
[ 4.28] ( : 1,2)

[ 4.8] ( : 1,2)

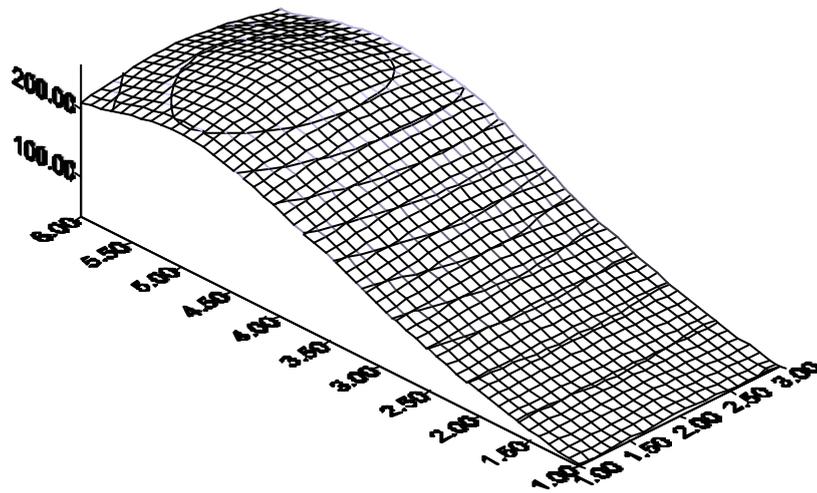
	(lx)	(lx)	(%)
1	231.54	196.61	15.09
2	256.52	239.89	6.48
3	222.06	205.29	7.55
4	123.17	132.86	7.86
5	55.32	74.89	35.37
6	37.03	38.89	5.03
7	256.04	228.00	10.95
8	284.70	263.25	7.53
9	247.16	223.39	9.62
10	150.67	147.86	1.87
11	76.37	79.50	4.10
12	43.24	47.14	9.03
13	267.44	218.57	18.27
14	271.43	235.07	13.40
15	223.66	195.32	12.67
16	130.84	138.43	5.80
17	64.51	72.64	12.61
18	39.38	42.21	7.20
			10.58

[ 4.29] [ 4.30] 가 3 4

[ 4.9] 8.3%  
 1, 4, 6, 12, 14 가

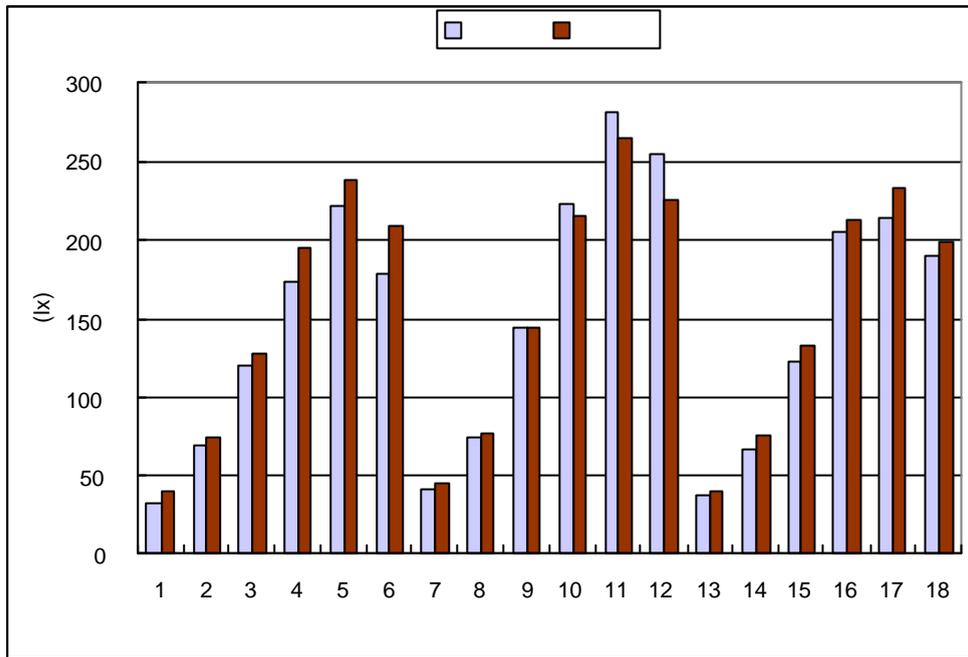


(a)



(b) ( 200,000 )

[ 4.29] 3 ( : 3,4)



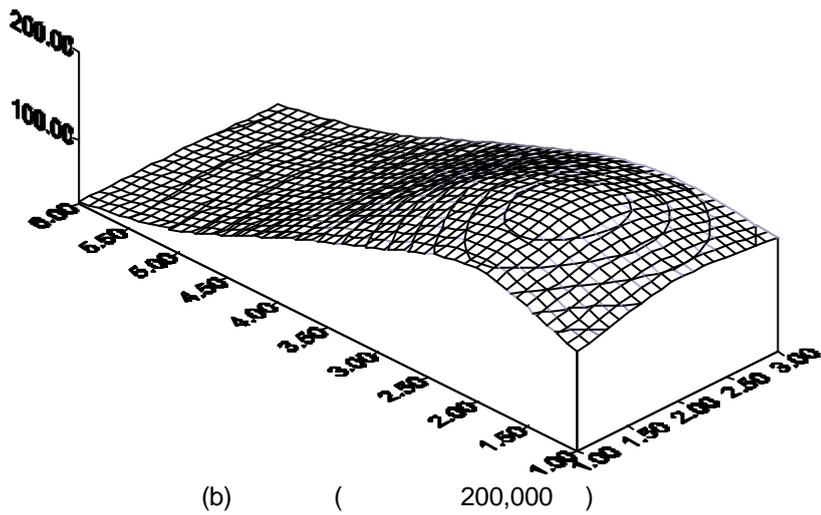
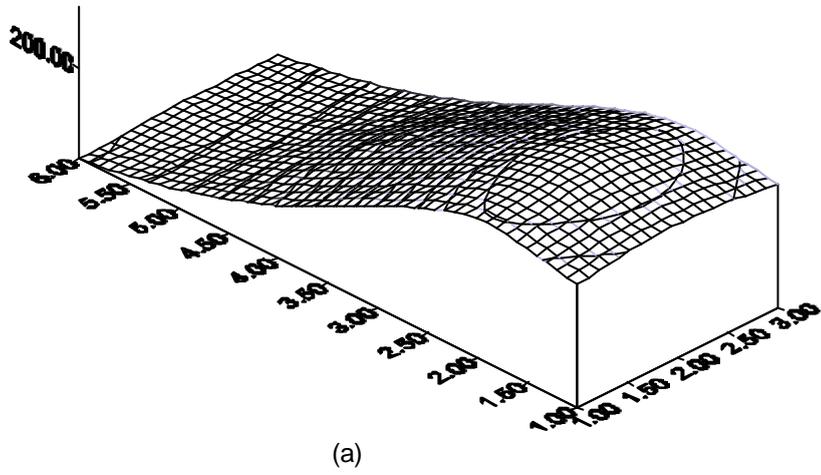
[ 4.30] ( : 3,4)

[ 4.9] ( : 3,4)

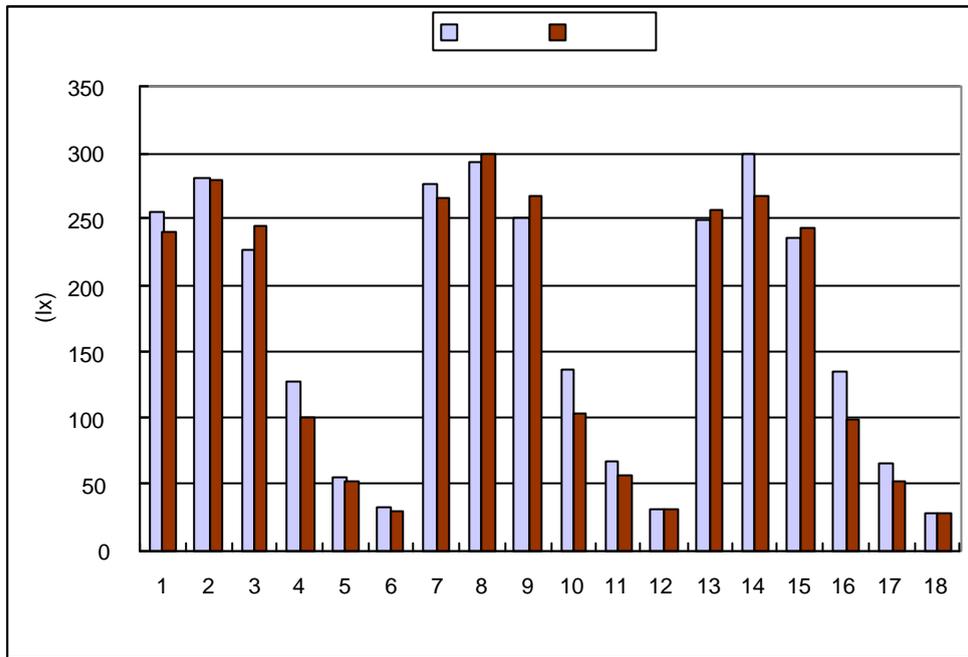
	(lx)	(lx)	(%)
1	32.23	39.86	23.68
2	69.30	74.46	7.45
3	120.14	127.39	6.04
4	173.17	195.54	12.92
5	221.37	237.54	7.30
6	178.95	208.82	16.69
7	41.76	45.21	8.27
8	73.79	77.25	4.69
9	144.47	144.64	0.12
10	222.26	215.57	3.01
11	281.94	265.29	5.91
12	255.27	226.07	11.44
13	37.67	39.21	4.10
14	66.94	74.89	11.88
15	123.40	133.50	8.19
16	205.12	213.00	3.84
17	213.65	232.71	8.92
18	190.22	199.61	4.93
			8.3

[ 4.31] [ 4.32] 1 2

[ 4.10] 9.09% 가 . 4, 10, 14, 16,  
17



[ 4.31] 3 ( : 1,2)

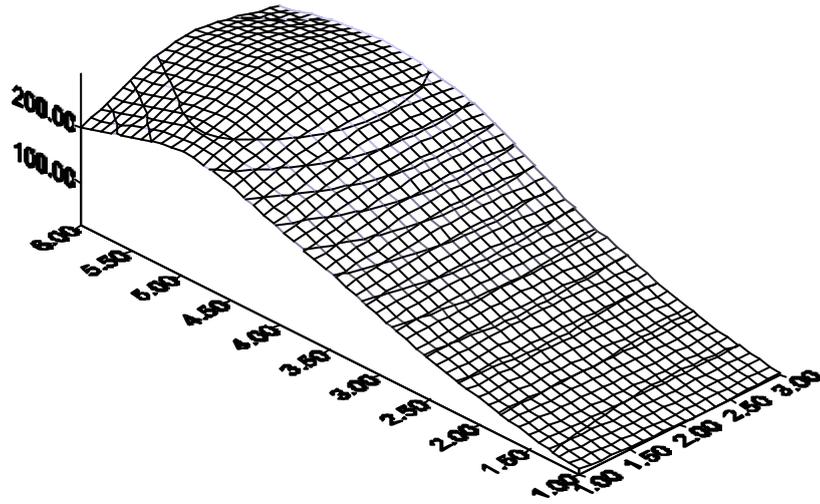


[ 4.32] ( : 1,2)

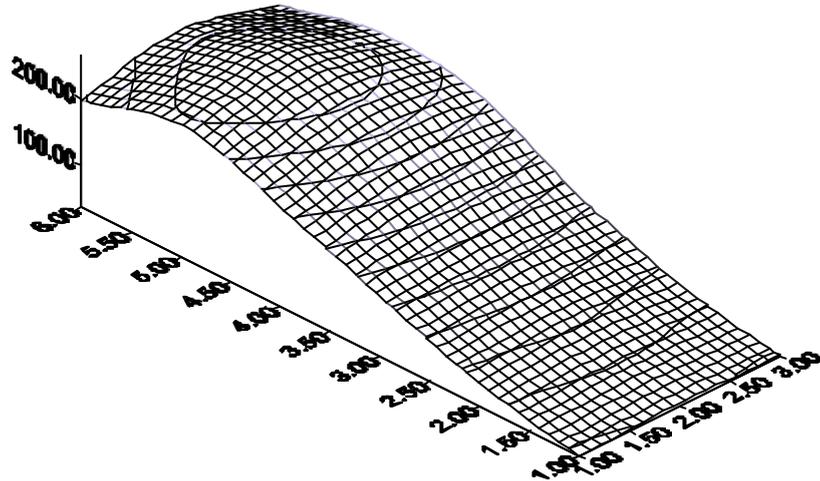
[ 4.10] ( : 1,2)

	(lx)	(lx)	(%)
1	255.20	240.96	5.58
2	280.40	278.72	0.60
3	225.72	245.60	8.81
4	127.01	101.44	20.13
5	55.32	53.28	3.70
6	32.74	30.64	6.41
7	276.04	266.32	3.52
8	292.99	300.00	2.39
9	250.95	266.96	6.38
10	137.67	103.44	24.86
11	67.65	57.04	15.68
12	30.93	31.12	0.63
13	248.78	256.40	3.06
14	299.28	267.52	10.61
15	235.19	242.88	3.27
16	134.36	98.16	26.94
17	64.51	52.96	17.90
18	29.39	28.48	3.10
			9.09

[ 4.33] [ 4.34] 3 4  
 7, 8,  
 11, 12, 16, 17, 18 10% 가 [ 4.11]  
 9.23% 가

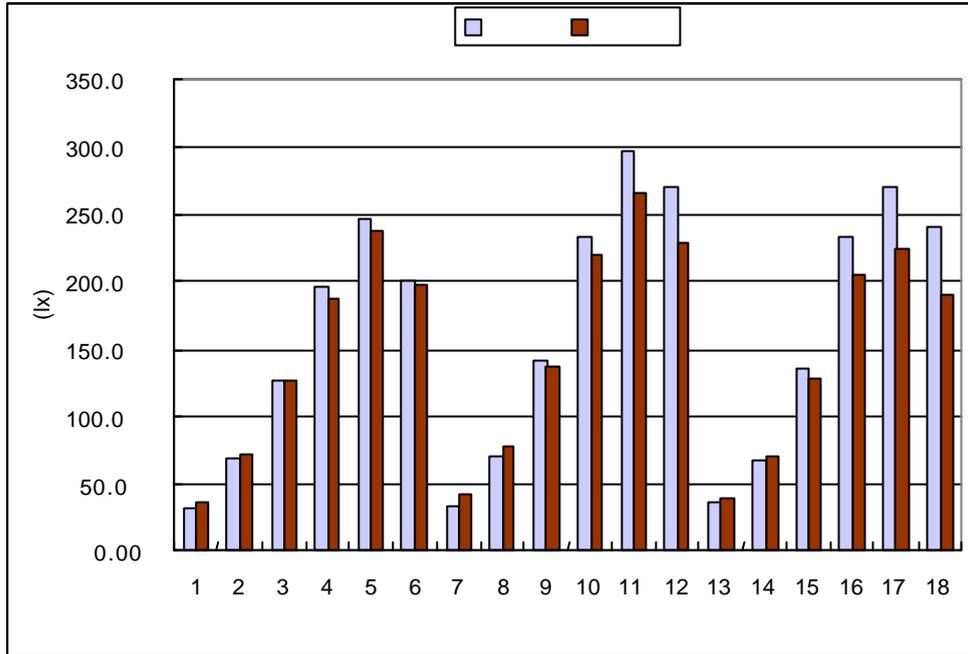


(a)



(b) ( 200,000 )

[ 4.33] 3 ( : 3,4)



[ 4.2.21] ( : 3,4)

[ 4.11] ( : 3,4)

	(lx)	(lx)	(%)
1	32.23	37.18	15.37
2	69.30	71.25	2.81
3	127.40	126.86	0.42
4	196.27	187.82	4.30
5	247.20	236.79	4.21
6	200.23	197.79	1.22
7	33.80	41.89	23.94
8	70.08	78.54	12.07
9	140.68	136.50	2.97
10	233.56	220.07	5.78
11	296.97	266.14	10.38
12	270.73	228.54	15.59
13	36.33	38.68	6.46
14	66.94	70.50	5.32
15	134.93	127.61	5.43
16	233.40	204.86	12.23
17	270.08	224.57	16.85
18	240.69	191.14	20.59
			9.23

### 4.3

가  
가

1)

, [ 4.12] 가 5%  
가 10,000  
가 2%

[ 4.12] 가

		(lx)	(lx)	(%)
100		706.09	674.15	4.52
( 800 )		625.69	645.70	3.19
1,000		706.09	732.42	3.73
( 8,000 )		625.69	638.93	2.11
10,000		706.09	712.22	0.89
( 80,000 )		625.69	637.60	1.90

2)

가 5.20%  
6.68%

3)

[ 4.13]

[ 4.13]

		(%)
1,2		10.58
( 200,000 )		8.3
3.4		9.09
( 200,000 )		9.23