

2. Alignment and Adjustments

2-1 When entering the service mode;

1. Turn on the TV, and then select "DYNAMIC" on the picture adjustment mode.
2. Turn off the TV(STAND-BY).
3. Enter the service mode by pressing the remote control keys in the following sequence:
POWER OFF INFO MENU MUTE POWER ON

Note : If necessary, re-do steps 1~3.

Initial display when the service mode is switched.

2-1-1 WHEN A RF SIGNAL IS RECEIVED

[Europe/cis]

```

DEFLECTION
Def.      480P
Def.      1080I
Def.      576P
VIDEO ADJUST 1
VIDEO ADJUST 2
VIDEO ADJUST 3
VIDEO ADJUST 4
YC DELAY
OPTION (83h 05h)
CHECK SUM 0000
RESET
T-OM2PEU - 0000  YY.DD.MM

```

[Middle-Asia]

```

DEFLECTION
Def.      480P
Def.      1080I
Def.      576P
VIDEO ADJUST 1
VIDEO ADJUST 2
VIDEO ADJUST 3
VIDEO ADJUST 4
YC DELAY
OPTION (59 5C 18)
CHECK SUM 0000
RESET
T-OM2PMA - 0000  YY.DD.MM

```

[China]/[East-Asia]

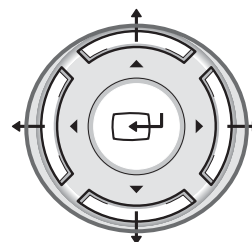
```

DEFLECTION
480 offset
1080i offset
576p 50Hz
Covergence NR
VIDEO ADJUST 1
VIDEO ADJUST 1 1080i
VIDEO ADJUST 2
VIDEO ADJUST 3
VIDEO ADJUST 4
OPTION (DE 0D 18)
YC DELAY
CHECK SUM 0000
RESET
T-OM2PCH - 0000  YY.DD.MM

```

2-1-2 SERVICE MODE CONTROL KEYS

MAIN MENU	MENU DISPLAY
UP / DOWN	Select item by moving cursor
RIGHT / LEFT	Decrease or increase the adjustment values



[Navigation Key]

PRECAUTIONS

1. When EEPROM IC (IC902) is replaced, first connect the power cord and wait for about 4~5 seconds.
2. After replacing EEPROM IC (IC902), enter the Service mode. Next, enter the standard data or the previous EEPROM IC data before replacement. And then check and adjust any items related to Geometric, Picture, Option.

2-2 FACTORY MODE MENU(EUROPE/CIS/MIDDLE-ASIA)

2-2-1 DEFLECTION (EUROPE/CIS)

No	Item	Range	EEP- ROM Copy Data		Note
			4:3	WIDE	
1	V Amp	0~63	27	33	Variable
2	V Shift	0~63	31	31	Default
3	H EW	0~63	38	50	Variable
4	H Shift	0~63	26	26	Default
5	V Linearity	0~15	7		Default
6	Upper Linearity	0~15	0		Default
7	Lower Linearity	0~15	0		Default
8	V SC	0~15	7		Default
9	H Parabola	0~63	3	9	Default
10	Upper Corner	0~63	31		Default
11	Lower Corner	0~63	31		Default
12	H Trapezium	0~63	31		Default
13	Bow	0~63	31		Default
14	Angle	0~63	31		Default
15	V Position	0~63	31		Default
16	UP UGC	0~3	0		Default
17	Lo UGC	0~3	0		Default
18	CXA Left Blk	0~63	50		Default
19	CXA Right Blk	0~63	25		Default
20	CG HAO	0~63	0		Default
21	CG VAO	0~63	5		Default
22	V Blk UP	0~63	0		Default
23	V Blk Low	0~63	4		Default

2-2-2 DEFLECTION (Middle-Asia)

No	Item	Range	EEP-ROM Copy Data	Note
1	V Amp	0~63	33	Variable
2	V Shift	0~63	26	Default
3	H EW	0~63	28	Variable
4	H Shift	0~63	24	Default
5	V Linearity	0~15	7	Default
6	Upper Linearity	0~15	0	Default
7	Lower Linearity	0~15	0	Default
8	V SC	0~15	7	Default
9	H Parabola	0~63	3	Default
10	Upper Corner	0~63	36	Default
11	Lower Corner	0~63	36	Default
12	H Trapezium	0~63	31	Default
13	Bow	0~63	31	Default
14	Angle	0~63	31	Default
15	V Position	0~63	31	Default
16	UP UGC	0~3	0	Default
17	Lo UGC	0~3	0	Default
18	CXA Left Blk	0~63	45	Default
19	CXA Right Blk	0~63	20	Default
20	CG HAO	0~63	0	Default
21	CG VAO	0~63	5	Default
22	V Blk UP	0~63	- 8	Default
23	V Blk Low	0~63	8	Default

2-2-3 480 offset

No	Item	Range	EEP-ROM Copy Data	Note
1	V Amp	0~63	0	Variable
2	V Shift	0~63	0	Default
3	H EW	0~63	0	Variable
4	H Shift	0~63	2	Default
5	V Linearity	0~15	0	Default
6	Upper Linearity	0~15	0	Default
7	Lower Linearity	0~15	0	Default
8	V SC	0~15	0	Default
9	H Parabola	0~63	0	Default
10	Upper Corner	0~63	1	Default
11	Lower Corner	0~63	1	Default
12	H Trapezium	0~63	0	Default
13	Bow	0~63	0	Default
14	Angle	0~63	0	Default
15	V Position	0~63	0	Default
16	UP UGC	0~3	0	Default
17	Lo UGC	0~3	0	Default
18	CXA Left Blk	0~63	50	Default
19	CXA Right Blk	0~63	25	Default
20	CG HAO	0~63	0	Default
21	CG VAO	0~63	5	Default
22	V Blk UP	0~63	0	Default
23	V Blk Low	0~63	0	Default

2-2-4 1080i/50Hz offset

No	Item	Range	EEP- ROM Copy Data		Note
1	V Amp	0~63	- 10	-7	Variable
2	V Shift	0~63	0	0	Default
3	H EW	0~63	-9	-7	Variable
4	H Shift	0~63	5	6	Default
5	V Linearity	0~15	0		Default
6	Upper Linearity	0~15	0		Default
7	Lower Linearity	0~15	0		Default
8	V SC	0~15	0		Default
9	H Parabola	0~63	2		Default
10	Upper Corner	0~63	0		Default
11	Lower Corner	0~63	0		Default
12	H Trapezium	0~63	0		Default
13	Bow	0~63	0		Default
14	Angle	0~63	0		Default
15	V Position	0~63	- 3		Default
16	UP UGC	0~3	0		Default
17	Lo UGC	0~3	0		Default
18	CXA Left Blk	0~63	50		Default
19	CXA Right Blk	0~63	25		Default
20	CG HAO	0~63	10		Default
21	CG VAO	0~63	5		Default
22	V Blk UP	0~63	0		Default
23	V Blk Low	0~63	0		Default

2-2-5 576p offset

No	Item	Range	EEP-ROM Copy Data	Note
1	V Amp	0~63	0	Variable
2	V Shift	0~63	0	Default
3	H EW	0~63	0	Variable
4	H Shift	0~63	3	Default
5	V Linearity	0~15	0	Default
6	Upper Linearity	0~15	0	Default
7	Lower Linearity	0~15	0	Default
8	V SC	0~15	0	Default
9	H Parabola	0~63	0	Default
10	Upper Corner	0~63	1	Default
11	Lower Corner	0~63	2	Default
12	H Trapezium	0~63	0	Default
13	Bow	0~63	0	Default
14	Angle	0~63	0	Default
15	V Position	0~63	2	Default
16	UP UGC	0~3	0	Default
17	Lo UGC	0~3	0	Default
18	CXA Left Blk	0~63	50	Default
19	CXA Right Blk	0~63	25	Default
20	CG HAO	0~63	0	Default
21	CG VAO	0~63	5	Default
22	V Blk UP	0~63	0	Default
23	V Blk Low	0~63	0	Default

2-2-6 VIDEO ADJUST1

No	Item	Range	EEP- ROM Copy Data	Note
1	R Cutoff	0~63	25	Variable
2	G Cutoff	0~63	25	Variable
3	B Cutoff	0~63	25	Variable
4	COLOR On/Off	0~1	1	Variable
5	CR Offset	0~63	32	Variable
6	CB Offset	0~63	32	Variable
7	R Drive	0~63	25	Variable
8	G Drive	0~63	25	Variable
9	B Drive	0~63	25	Variable
10	Sub Bright	0~63	15	Variable
11	Sub Contrast	0~15	7	Variable
12	Sub Color	0~23	15	Default
13	Sub Tint	0~13	31	Default
14	CTI Level	0~3	1	Default
15	COL AXIS	0~3	1	Default
16	LTI Level	0~3	1	Default
17	LTI Mode	0~3	1	Default
18	System	0~3	1	Default

2-2-7 VIDEO ADJUST[1080i]

No	Item	Range	EEP-ROM Copy Data	Note
1	R Cutoff	0~63	25	Variable
2	G Cutoff	0~63	25	Variable
3	B Cutoff	0~63	25	Variable
4	COLOR On/Off	0~1	1	Variable
5	CR Offset	0~63	32	Variable
6	CB Offset	0~63	32	Variable
7	R Drive	0~63	25	Variable
8	G Drive	0~63	25	Variable
9	B Drive	0~63	25	Variable
10	Sub Bright	0~63	15	Variable
11	Sub Contrast	0~15	7	Variable
12	Sub Color	0~23	12	Default
13	Sub Tint	0~13	31	Default
14	CTI Level	0~3	1	Default
15	COL AXIS	0~3	1	Default
16	LTI Level	0~3	0	Default
17	LTI Mode	0~3	1	Default
18	System	0~3	2	Default

2-2-8 VIDEO ADJUST2

No	Item	Range	EEP- ROM Copy Data		Note
			RF	1080i	
1	ABL Mode	0~3	3(Wide:2)	3	Default
2	Gamma	0~3	1		Default
3	DPIC Level(DNP)	0~3	2	3	Default
4	DC Tran	0~3	2	2	Default
5	ABL TH	0~15	15		Default
6	VM Level	0~3	1		Default
7	VM Coring	0~3	0	0	Default
8	VM f0	0~3	2	1	Default
9	VM Limit	0~3	2	2	Default
10	VM Delay	0~3	3	0	Default
11	SHP C D	0~3	1		Default
12	SHP f0	0~1	1	1	Default
13	SHP f1 & P/O	0~15	13		Default
14	AKB Time	0~31	13		Default
15	BandPass 9407	0~7	24		Default
16	HighPass 9407	0~7	40		Default
17	S ABL	0~3	3(Middle- Asia:0)		Default
18	P ABL	0~15	4		Default

2-2-9(A) VIDEO ADJUST3(EUROPE/CIS)

No	Item	Range	EEP-ROM Copy Data	Note
1	H Comp	0~15	1	Default
2	V Comp	0~15	8	Default
3	Pin Comp	0~7	0	Default
4	AFC Comp	0~7	1	Default
5	Sync Phase	0~1	0	Default
6	NR Off Value	0~9	6	Default
7	NR High Ref	0~127	40	Default
8	NR Low Ref	0~127	2	Default
9	NR High Value	- 128~127	17	Default
10	NR Low Value	- 128~127	51	Default
11	Pixel Shift	0~5	1	Default
12	P-Shift Timer	1/30/60	60	Default
13	NR Read M/S	4	0	Default

2-2-9(B) VIDEO ADJUST3(Middle-Asia)

No	Item	Range	EEP-ROM Copy Data	Note
1	H Comp	0~15	1	Default
2	V Comp	0~15	8	Default
3	Pin Comp	0~7	0	Default
4	AFC Comp	0~7	1	Default
5	Sync Phase	0~1	0	Default
6	NR Off Value	0~9	6	Default
7	NR High Ref	0~127	40	Default
8	NR Low Ref	0~127	2	Default
9	NR High Value	- 128~127	17	Default
10	NR Low Value	- 128~127	51	Default
11	NR High Ref(s)	0~127	20	Default
12	NR Low Ref(s)	0~127	0	Default
13	NR High Value(s)	- 128~127	17	Default
14	NR Low Value(s)	- 128~127	51	Default
15	Pixel Shift	0~5	1	Default
16	P-Shift Timer	1/30/60	60	Default
17	NR Read M/S	4	0	Default

2-2-10 VIDEO ADJUST4

No	Item	Range	EEP-ROM Copy Data	Note
1	SECAM Color Main	0~255	28	Default
2	SECAM Color Pip	0~255	28	Default
3	Picture Limit	0~3	3	Default
4	OSD Contrast	0~15	10(Middle- Asia:3)	Default
5	TTX Contrast	0~15	3	Default
6	NR Band Pass	0~127	0	Default
7	NR High Pass	0~127	0	Default
8	Noise Thresh	0~127	35	Default
9	Melody Volume	0~20	7	Default
10	V SU	0~10	2	Default
11	Real Time(H)	0~255	72	Default
12	RF_ PK LU	0~255	67	Default
13	RF_ PK LV	0~255	91	Default
14	Comp_USA	0~63	27	Default
15	Comp_USA	0~63	26	Default

2-2-11 OPTION(EUROPE/CIS)

No	Item	Range	EEP- ROM Copy Data	Note
1	SYSTEM	CW <-> CS	C W	
2	SOUND	VIRTUAL DOLBY DOLBY PROLOGIC A2/ NICAM	Virtual Dolby	Default
3	ASPECT	WIDE <-> 4;3	Wide, 4:3	Default
4	X-RAY	ON <-> OFF	ON	Default
5	AUTO FM	ON <-> OFF	ON	Default
6	LNA	ON <-> OFF	ON	Default
7	LETTER BOX	ON <-> OFF	ON	Default
8	AGC	ON <-> OFF	OFF	Default
9	Natural Zoom	ON <-> OFF	OFF	Default
10	Help	ON <-> OFF	ON	Default
11	Txt Group	West EU	West EU->East EU-> ->Russian<->Grk-Turk-> ->Arabic<->Farsi ->Arab-Hbrw->OSD Lang	Variable

2-2-12 OPTION(Middle-Asia)

No	Item	Range	EEP-ROM Copy Data	Note
1	LANGUAGE	ONLY ENGLISH ENG+ MIDDLE	ENG + MIDDLE	Default
2	SOUND	VIRTUAL DOLBY DOLBY PROLOGIC A2/NICAM	Virtual Dolby	Default
3	CRT	WIDE 4;3	Wide, 4:3	Default
4	CHANNEL	100- CHANNEL 200- CHANNEL 250- CHANNEL	200- Channel	Default
5	X- RAY	ON <-> OFF	ON	Default
6	TTX	ON <-> OFF	ON	Default
7	AUTO FM	ON <-> OFF	ON	Default
8	LNA	ON <-> OFF	ON	Default
9	HIGH DEV	ON <-> OFF	ON	Default
10	SCART	RCA+DVD RCA+1SCART+DVD	RCA+1SCART+DVD	Default
11	LETTER BOX	ON <-> OFF	ON	Default
12	LIST PRIOR	ON <-> OFF	OFF	Default
13	TEXT LANG	WEST- EUROPE EAST- EUROPE RUSSIAN GREEK- TURKEY ARABIC FARSI ARAB- HEBREW	ARABIC	Default
14	AGC		OFF	Default
15	AV MEMORY		OFF	Default
16	AUSTRALIA		OFF	Default
17	CG_BRIGHT		OFF	Default

2-2-13 YC DELAY(EUROPE/CIS)

No	Item	Range	EEP-ROM Copy Data	Note
1	P.YC (AV) DELAY	- 16~15	1	Default
2	S.YC (AV) DELAY	- 16~15	- 5	Default
3	N.YC (AV) DELAY	- 16~15	1	Default
4	P.BG.YC DELAY	- 16~15	0	Default
5	P.DK.YC DELAY	- 16~15	1	Default
6	P.I.YC DELAY	- 16~15	2	Default
7	P.M.YC DELAY	- 16~15	0	Default
8	P.L.YC DELAY	- 16~15	0	Default
9	S.BG.YC DELAY	- 16~15	0	Default
10	S.DK.YC DELAY	- 16~15	0	Default
11	S.I.YC DELAY	- 16~15	0	Default
12	S.M.YC DELAY	- 16~15	0	Default
13	S.L.YC DELAY	- 16~15	0	Default
14	N.M.YC DELAY	- 16~15	3	Default

2-2-14 YC DELAY(MIDDLE ASIA)

No	Item	Range	EEP- ROM Copy Data	Note
1	P.YC (AV) DELAY	- 16~15	1	Default
2	S.YC (AV) DELAY	- 16~15	- 5	Default
3	N.YC (AV) DELAY	- 16~15	1	Default
4	P.BG.YC DELAY	- 16~15	1	Default
5	P.DK.YC DELAY	- 16~15	- 2	Default
6	P.I.YC DELAY	- 16~15	- 2	Default
7	P.M.YC DELAY	- 16~15	0	Default
8	P.L.YC DELAY	- 16~15	0	Default
9	S.BG.YC DELAY	- 16~15	- 7	Default
10	S.DK.YC DELAY	- 16~15	- 10	Default
11	S.I.YC DELAY	- 16~15	- 9	Default
12	S.M.YC DELAY	- 16~15	- 7	Default
13	S.L.YC DELAY	- 16~15	- 10	Default
14	N.M.YC DELAY	- 16~15	0	Default
15	N.4.43.YC DELAY	- 16~15	- 1	Default

2-3 FACTORY MODE MENU(CHINA/EAST-ASIA)

2-3-1 DEFLECTION

No	Item	Range	EEP-ROM Copy Data	Note
1	V Amp	0~63	33	Variable
2	V Shift	0~63	26	Default
3	H EW	0~63	28	Variable
4	H Shift	0~63	24	Default
5	V Linearity	0~15	7	Default
6	Upper Linearity	0~15	0	Default
7	Lower Linearity	0~15	0	Default
8	V SC	0~15	7	Default
9	H Parabola	0~63	3	Default
10	Upper Corner	0~63	36	Default
11	Lower Corner	0~63	36	Default
12	H Trapezium	0~63	31	Default
13	Bow	0~63	31	Default
14	Angle	0~63	31	Default
15	V Position	0~63	31	Default
16	UP UGC	0~3	0	Default
17	Lo UGC	0~3	0	Default
18	CXA Left Blk	0~63	45	Default
19	CXA Right Blk	0~63	20	Default

2-3-2 480p offset

No	Item	Range	EEP-ROM Copy Data	Note
1	V Amp	0~63	- 3	Variable
2	V Shift	0~63	- 1	Variable
3	H EW	0~63	- 8	Variable
4	H Shift	0~63	2	Variable
5	V Linearity	0~15	0	Default
6	Upper Linearity	0~15	0	Default
7	Lower Linearity	0~15	0	Default
8	V SC	0~15	0	Default
9	H Parabola	0~63	0	Default
10	Upper Corner	0~63	0	Default
11	Lower Corner	0~63	0	Default
12	H Trapezium	0~63	0	Default
13	Bow	0~63	0	Default
14	Angle	0~63	0	Default
15	V Position	0~63	0	Default
16	UP UGC	0~3	0	Default
17	Lo UGC	0~3	0	Default
18	CXA Left Blk	0~63	0	Default
19	CXA Right Blk	0~63	0	Default

2-3-3 1080i offset

No	Item	Range	EEP- ROM Copy Data	Note
1	V Amp	0~63	- 12	Variable
2	V Shift	0~63	- 2	Variable
3	H EW	0~63	- 6	Variable
4	H Shift	0~63	- 4	Variable
5	V Linearity	0~15	0	Default
6	Upper Linearity	0~15	0	Default
7	Lower Linearity	0~15	0	Default
8	V SC	0~15	0	Default
9	H Parabola	0~63	0	Default
10	Upper Corner	0~63	0	Default
11	Lower Corner	0~63	0	Default
12	H Trapezium	0~63	0	Default
13	Bow	0~63	0	Default
14	Angle	0~63	0	Default
15	V Position	0~63	0	Default
16	UP UGC	0~3	0	Default
17	Lo UGC	0~3	0	Default
18	CXA Left Blk	0~63	0	Default
19	CXA Right Blk	0~63	0	Default

2-3-4 576p offset

No	Item	Range	EEP- ROM Copy Data	Note
1	V Amp	0~63	2	Variable
2	V Shift	0~63	2	Variable
3	H EW	0~63	- 1	Variable
4	H Shift	0~63	17	Variable
5	V Linearity	0~15	0	Default
6	Upper Linearity	0~15	0	Default
7	Lower Linearity	0~15	0	Default
8	V SC	0~15	0	Default
9	H Parabola	0~63	0	Default
10	Upper Corner	0~63	0	Default
11	Lower Corner	0~63	0	Default
12	H Trapezium	0~63	0	Default
13	Bow	0~63	0	Default
14	Angle	0~63	0	Default
15	V Position	0~63	0	Default
16	UP UGC	0~3	0	Default
17	Lo UGC	0~3	0	Default
18	CXA Left Blk	0~63	- 6	Default
19	CXA Right Blk	0~63	- 12	Default

2-3-5 Convergence NR

No	Item	Range	EEP-ROM Copy Data	Note
1	Offset Enable	0 ~ 1	0	Default
2	V Amp	-63~63	5	Default
3	V Shift	-63~63	0	Default
4	H EW	-63~63	0	Default
5	V Amp 1080i	-63~63	5	Default
6	V Shift 1080i	-63~63	0	Default
7	H EW 1080i	-63~63	5	Default
8	NR High Ref	0~127	40	Default
9	NR Low Ref	0~127	5	Default
10	NR High Value	-128~127	17	Default
11	NR Low Value	-128~127	51	Default
12	NR High Ref(s)	0~127	20	Default
13	NR Low Ref(s)	0~127	0	Default
14	NR High Value(s)	-128~127	17	Default
15	NR Low Value(s)	-128~127	51	Default
16	V Up Blk 1080i	0~15	-8	Default
17	V Low Blk 1080i	0~15	8	Default
18	NR Off Value	0~9	6	Default

2-3-6 Video Adjust1

No	Item	Range	EEP-ROM Copy Data	Note
1	R Cutoff	0~63	25	Variable
2	G Cutoff	0~63	25	Variable
3	B Cutoff	0~63	25	Variable
4	COLOR On/Off	0~1	1	Variable
5	CR Offset	0~63	32	Variable
6	CB Offset	0~63	32	Variable
7	R Drive	0~63	25	Variable
8	G Drive	0~63	30	Variable
9	B Drive	0~63	25	Variable
10	Sub Bright	0~63	15	Variable
11	Sub Contrast	0~15	7	Variable
12	Sub Color	0~23	15	Default
13	Sub Tint	0~13	31	Default
14	CTI Level	0~3	0	Default
15	C OL AXIS	0~3	2	Default
16	LTI Level	0~3	1	Default
17	VSU	0~15	2	Default
18	Melody Volume	0~20	4	Default
19	LTI Mode	0~3	1	Default
20	System	0~3	1	Default

2-3-7 Video Adjust1 1080i

No	Item	Range	EEP- ROM Copy Data	Note
1	R Cutoff	0~63	25	Variable
2	G Cutoff	0~63	25	Variable
3	B Cutoff	0~63	25	Variable
4	COLOR On/Off	0~1	1	Variable
5	CR Offset	0~63	32	Variable
6	CB Offset	0~63	32	Variable
7	R Drive	0~63	25	Variable
8	G Drive	0~63	35	Variable
9	B Drive	0~63	25	Variable
10	Sub Bright	0~63	15	Variable
11	Sub Contrast	0~15	7	Variable
12	Sub Color	0~23	15	Default
13	Sub Tint	0~13	31	Default
14	CTI Level	0~3	0	Default
15	COL AXIS	0~3	0	Default
16	LTI Level	0~3	3	Default
17	V SU	0~15	4	Default
18	Melody Volume	0~20	1	Default
19	LTI Mode	0~3	1	Default
20	System	0~3	2	Default

2-3-8 Video Adjust2

No	Item	Range	EEP-ROM Copy Data		Note
			RF	1080i	
1	ABL Mode	0~3	2		Default
2	Gamma	0~3	1		Default
3	DPIC Level (DNP)	0~3	2	2	Default
4	DC Tran	0~3	2	2	Default
5	ABL TH	0~15	15		Default
6	VM Level	0~3	2		Default
7	VM Coring	0~3	0	1	Default
8	VM f0	0~3	1	0	Default
9	VM Limit	0~3	0	1	Default
10	VM Delay	0~3	1	1	Default
11	SHP CD	0~3	1		Default
12	SHP f0	0~1	1	1	Default
13	SHP f1 & P/O	0~15	13		Default
14	AKB Time	0~31	16		Default
15	BandPass 9407	0~7	24		Default
16	HighPass 9407	0~7	40		Default
17	S ABL	0~3	0		Default
18	P ABL	0~15	4		Default

2-3-9 Video Adjust3

No	Item	Range	EEP- ROM Copy Data	Note
1	H Comp	0~15	1	Default
2	V Comp	0~15	8	Default
3	Pin Comp	0~7	0	Default
4	AFC Comp	0~7	1	Default
5	Sync Phase	0~1	0	Default
6	Real Time(Hour)	0~255	72	Default

2-3-10 Video Adjust 4

No	Item	Range	EEP- ROM Copy Data	Note
1	SECAM Color Main	0~255	28	Default
2	SECAM Color Pip	0~255	28	Default
3	Picture Limit	0~3	3	Default
4	OSD Contrast	0~15	3	Default
5	TTX Contrast	0~15	3	Default
6	PIXELSHIFT	0~5	1	Default
7	PS Time(MIN)	1/30/60	60	Default
8	HPF_VSG	0 ~ 3	3	Default
9	BPF_VSD	0 ~ 3	1	Default
10	VSD9407_1E_DATA1	0 ~ 15	15	Default
11	VSD9407_1E_DATA2	0 ~ 15	15	Default
12	VSD9407_1E_DATA3	0 ~ 15	14	Default

2-3-11(A) Option(China)

No	Item	Range	EEP-ROM Copy Data	Note
1	LANGUAGE	ONLY ENGLISH ENG + CHINA ENG + THAI ENG + MIDDLE	Eng + China	Default
2	SOUND	VIRTUAL DOLBY DOLBY PROLOGIC A2/NICAM	Virtual Dolby	Default
3	CRT	WIDE<-> 4:3	Wide, 4:3	Default
4	CHANNEL	100 - CHANNEL 200 - CHANNEL 250 - CHANNEL	200- Channel	Default
5	X-RAY	ON <-> OFF	ON	Default
6	TTX	ON <-> OFF	OFF	Default
7	AUTO FM	ON <-> OFF	ON	Default
8	LNA	ON <-> OFF	ON	Default
9	HIGH DEV	ON <-> OFF	ON	Default
10	SCART	RCA+DVD RCA+1SCART+DVD	RCA+DVD	Default
11	LETTER BOX	ON <-> OFF	ON	Default
12	LIST PRIOR	ON <-> OFF	OFF	Default
13	TEXT LANG	WEST- EUROPE EAST- EUROPE RUSSIAN GREEK- TURKEY ARABIC FARSI ARAB - HEBREW	WEST- EUROPE	Default
14	AGC	ON <-> OFF	OFF	Default
15	AV MEMORY	ON <-> OFF	OFF	Default
16	AUSTRALIA	ON <-> OFF	OFF	Default
17	CG_BRIGHT	ON <-> OFF	OFF	Default

2-3-11(B)Option(East-AISA)

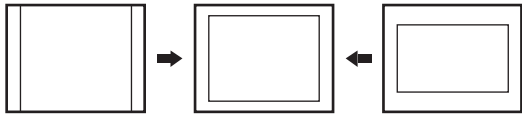
No	Item	Range	EEP- ROM Copy Data	Note
1	LANGUAGE	ONLY ENGLISH ENG + CHINA ENG + THAI ENG + MIDDLE	ONLY ENGLISH ENG + THAI	Default
2	SOUND	VIRTUAL DOLBY DOLBY PROLOGIC A2/NICAM	Virtual Dolby	Default
3	CRT	WIDE <-> 4;3	Wide, 4:3	Default
4	CHANNEL	100 - CHANNEL 200 - CHANNEL 250 - CHANNEL	100-CHANNEL	Default
5	X- RAY	ON <-> OFF	ON	Default
6	TTX	ON <-> OFF	ON	Default
7	AUTO FM	ON <-> OFF	ON	Default
8	LNA	ON <-> OFF	ON	Default
9	HIGH DEV	ON <-> OFF	ON	Default
10	SCART	RCA+DVD RCA+1SCART+DVD	RCA+DVD	Default
11	LETTER BOX	ON <-> OFF	ON	Default
12	LIST PRIOR	ON <-> OFF	OFF	Default
13	TEXT LANG	WEST- EUROPE EAST- EUROPE RUSSIAN GREEK- TURKEY ARABIC FARSI ARAB- HEBREW	WEST - EUROPE	Default
14	AGC	ON <-> OFF	OFF	Default
15	AV MEMORY	ON <-> OFF	OFF	Default
16	AUSTRALIA	ON <-> OFF	OFF	Default
17	CG_BRIGHT	ON <-> OFF	OFF	Default

2-3-12 YC DELAY

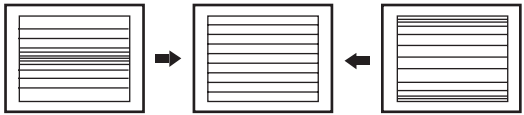
No	Item	Range	EEP- ROM Copy Data	Note
1	P.YC (AV) DELAY	- 16~15	1	Default
2	S.YC (AV) DELAY	- 16~15	- 5	Default
3	N.YC (AV) DELAY	- 16~15	1	Default
4	P.BG.YC DELAY	- 16~15	1	Default
5	P.DK.YC DELAY	- 16~15	- 2	Default
6	P.I.YC DELAY	- 16~15	- 2	Default
7	P.M.YC DELAY	- 16~15	0	Default
8	P.L.YC DELAY	- 16~15	0	Default
9	S.BG.YC DELAY	- 16~15	- 7	Default
10	S.DK.YC DELAY	- 16~15	- 10	Default
11	S.I.YC DELAY	- 16~15	- 9	Default
12	S.M.YC DELAY	- 16~15	- 7	Default
13	S.L.YC DELAY	- 16~15	- 10	Default
14	N.M.YC DELAY	- 16~15	0	Default
15	N.4.43.YC DELAY	- 16~15	- 1	Default

2-4 Screen Change (When Adjusting I²C Bus Geometric Items)

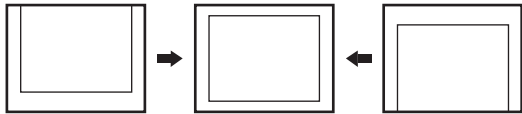
1 V AMP



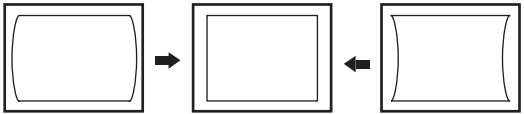
6 V - S - CORRECTION



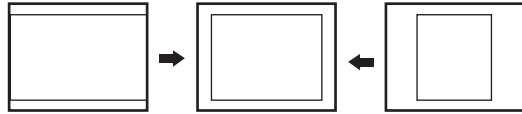
2 V SHIFT



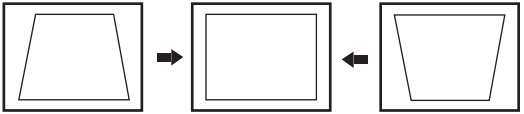
7 H Parabola



3 H EW



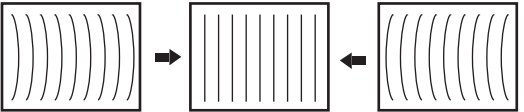
8 H Trapezium



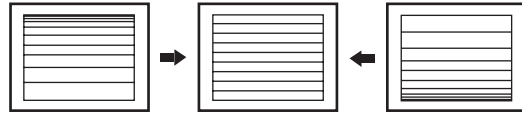
4 H SHIFT



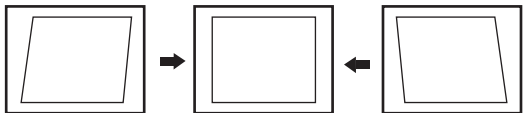
9 BOW



5 V LINEARITY



10 ANGLE



2-5 Other Adjustments

2-5-1 Screen Adjustment

1. Warm up the TV for at least 30 minutes.
2. Select the "DYNAMIC" Video mode.
3. Trun to the Video Mode(No Signal) using a remote-control.
4. Connect an oscilloscope to RK, GK, BK.
5. Adjust the VR (Focus Pack) screen so that RK, GK, BK pulse is 20Vp-p each. (Turn the R,G,B VR screen fully counterclockwise in the area of each flyback line.)

2-5-2 White Balance Adjustment

1. Select the "DYNAMIC" video mode.
2. Input 100% white pattern.
3. In the stand-by mode, press the remote-control keys in the following sequence:
Info Menu Mute Power ON
4. Warm up the TV for at least 30 minutes.
5. Input a 10-step signal.
6. R-cut off, B-cut off, and off by pressing the Direction keys. ▲▼◀▶
7. Adjust the low light with viewing the dark side of the screen.
8. Select R-drive, and B-drive by pressing Direction keys. ▲▼◀▶
9. Adjust the high light with viewing the light side of the screen.
10. If necessary, redo adjustments 6-9.
11. Press the Menu key to exit.

2-5-3 Sub-Brightness Adjustment

1. Input a sub-brightness adjustment signal. (TOSHIBA PATTERN)
2. In the stand-by mode, press the remote-control keys in the following sequence :

Disply Menu Mute Power ON

3. Select Sub-Bright by pressing the Deletion ▲▼◀▶ Keys.
4. Adjust so that the 63 step on the right side of the screen is not seen (Use the ▲▼◀▶
5. Press the Menu key to exit.

2-5-4 Static Focus Adjustment

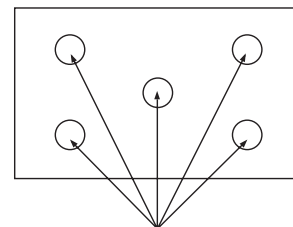
PRECAUTION

1. Select the "DYNAMIC" video mode.
2. Input a crosshatch pattern.
3. Cover the lenses that are not being adjusted.
4. Connect a convergence jig and read data.
5. Adjust the lens for best focus. (See Fig. 4-1)

STATIC FOCUS (CONTINUED)

Vary the focus pack VR (Red, Blue) on the front cabinet. Adjust the TV for best possible focus around the center of the crosshatch pattern, without losing overall screen balance.

Figure Crosshatch Pattern
Examine these points together.



Examine these points together

Fig. 4-1 Crosshatch Pattern.

2-5-5 Lens Focus Adjustment

PRECAUTIONS

1. Do this adjustment after the static focus adjustment and the tilt adjustment.
2. Select the "STANDARD" video mode.
(Contrast:100, Brightness:50)
3. Input a crosshatch pattern.

ADJUSTMENT

1. Loosen the lens screws.
2. Cover the two lenses that are not being adjusted.
3. Adjust the lens, observing the color aberration vertically and horizontally within 3 blocks of the center of the crosshatch pattern.
4. When the lens is turned clockwise, the color aberration will change as follows:

Lens Color Aberration Change

R	Orange - Crimson
G	Blue - Red
B	Purple - Green

5. Green lens adjustment:
Set the lens at the point where Blue just changes to Red. If the color aberration is irregular throughout the picture screen, adjust the lens to show Red color aberration (approximately 1~3 mm area) within a 3-block grid around the horizontal center-line. If the color aberration is irregular, adjust the lens as shown in the diagram below. (Accurate alignment of Green is important for overall color quality.)
6. Red lens adjustment
Set the Red lens at the point where Orange becomes Crimson.
7. Blue lens adjustment
Set the Blue lens at the point where Purple becomes Green.

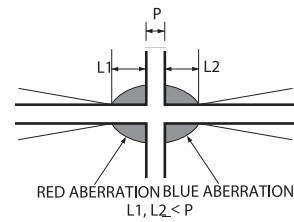


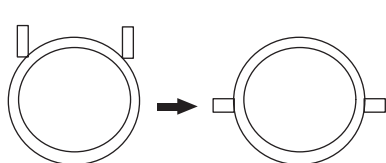
Fig. 4-2 Color Aberration

2-6 Beam alignment Adjustments

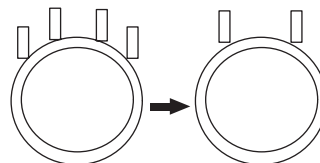
1. Select the "STANDARD" video mode.
2. Warm up the set at least for 10 minutes.
3. Enter the Convergence mode by pressing the remote control buttons in the following sequence :



4. Set the Beam Alignment Adjustment CY to Zero magnetic field area.

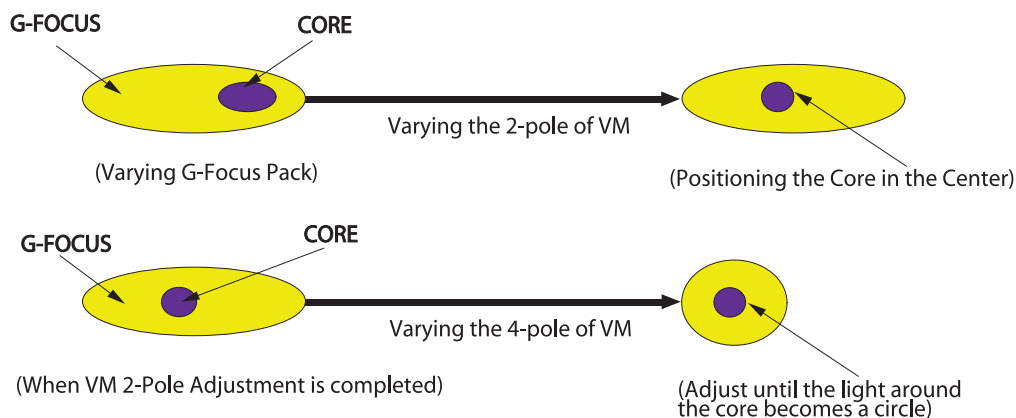


(Creation of CPM Zero Magnet)



(Creation of the 2-pole/4-pole zero magnets)

5. Check the squarewave at the point where the focus is misaligned.
6. Press the 7 button on the remote control during 3~5 sec and vibrating dot-pattern appears.
7. Adjust the Focus-pack VR for defocusing.
8. Mute the other patterns (R/B) other than G-PATTERN.
(Use / TV buttons on the remote control.)



9. Adjust the 2, 4 polarities of VM-COIL as shown in figure below.
10. Adjust the G-Focus until any light around the core disappears.
11. Adjust G-Focus so that the surrounding flash can disappear from the spot.
12. After G-Focus adjustments are complete, adjust R-Focus as above procedures.
13. The B-CRT adjustments can be omitted because the variance of beam focus is small.
(Only Vm-coil is mounted.)
14. Adjust the Focus-pack VR for fine focusing.
15. Press the 7 button on the remote control, and the mode changes to the Convergence Adjustment mode.
16. Press the button on the remote control to return to normal viewing.

2-7 High Voltage Part

2-7-1 PWM REG Circuit

For the existing high voltage REG circuit (input voltage variation type), a dynamic REG response is not provided. So it is difficult for both beam linearity and uniformity in screen size to be maintained on the screen with rapidly changing beams.

A PWM (Pulse Width Modulation) type of high voltage, however, provides the maintenance of beam linearity and uniformity in screen size via a quick response to beam change by performing sync lock every 1H line, and detecting beam fluctuation at 1H line, and then controlling the IC current of high voltage output circuit.

1. High Voltage Fluctuation Detect (DC Detect)

FBT pin 11 detects DC high voltage fluctuation. The detected DC high voltage value is input to PWM IC471 pin1 through R473, VR471, R471, and then it is input to a differential AMP circuit that differentiates the gap after comparing with the reference voltage input to pin2.

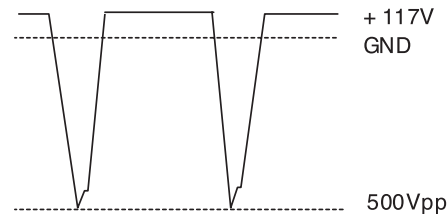
2. High Voltage Fluctuation Detect (AC Detect)

To check AC high voltage fluctuation, the output from FBT is detected by using a capacitor inside the high voltage distributor. The detection of AC high voltage fluctuation, a detection of dynamic beam current change is required in order to keep beam linearity and uniformity in size. Regarding the capacitor, a capacity of less than 3000P should be applied to a PWM type. (The existing type needs a capacity of about 6000P.) AC detect circuit eliminates unnecessary high frequency by using C476, D472. Also, AC gain is limited to $\pm 0.7V$ (D472). This AC gain is combined with the detection value of DC high voltage fluctuation by using C478.

3. PWM IC OSC Sync Lock

A PWM type IC needs sync lock for PWM pulse and horizontal scan line. The standard time constant of OSC circuit is determined by C487, R475 (PWM IC pins 5 and 6). And the standard OSC frequency is about 27 kHz. The horizontal frequency of scan line is 31.5kHz(NT), 31.25kHz(PAL), so sync lock for this horizontal frequency should be performed using sync lock circuit. The sync lock

circuit consists of Q481(Tr KSC815-Y), D479, D478, and C492. The input AFC signal is connected to PWM IC pin 5 through D479 so that it can be negative Trig.



4. Dead Time (HV Protect)

Dead Time (PWM IN pin4) consists of C481, delays high voltage for a certain time to soft start in power on, a x-ray protection circuit. The voltage of Dead Time is detected by FBT pin7 and through DC Feedback. The normal voltage of Dead Time is +27V. When high voltage increases, however, detected voltage is in proportion to high voltage. Then, the detected voltage is applied to ICR01S(TL431).

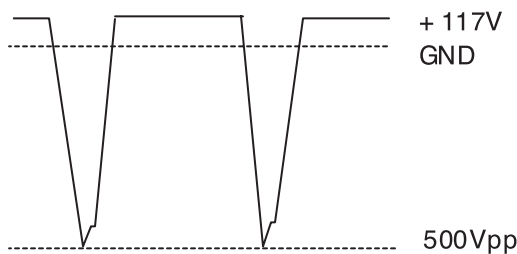
If the voltage is over 2.5V (normal: about 2.25V), TL431 turns ON, the base port of QR401S becomes low, and then an emitter current flows. At this time, a high voltage protection point is set. When QR401S turns ON, high voltage is applied to PWM IC pin4 and then muted.

5. Output Circuit

The voltages, which are detected from an error detection circuit of PWM IC (Differential AMP) and Dead Time, each is applied to PWM comparator. Due to these detection voltages, Q1, Q2 (Output TR) parallel operate. Q482 (External TR), however, functions as a buffer; matches impedance between the output port of PWM IC and the final output TR(IRFS640). The PWM pulse (applied to the final output FET (IRFS640 GATE) varies the IC current of high voltage TR(Q473) by adjusting the load impedance of storage Trans (T431). Due to this variation of current, the gain for Q473 emitter pulse changes T444(FBT) makes this emitter pulse become high voltage. Such change keeps both dynamic and static changes fixed. The output waveform of high voltage TR emitter is as shown in the figure below.

5. Output Circuit

The voltages, which are detected from an error detection circuit of PWM IC (Differential AMP) and Dead Time, each is applied to PWM comparator. Due to these detection voltages, Q1, Q2 (Output TR) parallel operate. Q482 (External TR), however, functions as a buffer; matches impedance between the output port of PWM IC and the final output TR (IRFS640). The PWM pulse (applied to the final output FET (IRFS640 GATE) varies the IC current of high voltage TR (Q473) by adjusting the load impedance of storage Trans (T431). Due to this variation of current, the gain for Q473 emitter pulse changes T444 (FBT) makes this emitter pulse become high voltage. Such change keeps both dynamic and static changes fixed. The output waveform of high voltage TR emitter is as shown in the figure below.



6. Parameters according to beam

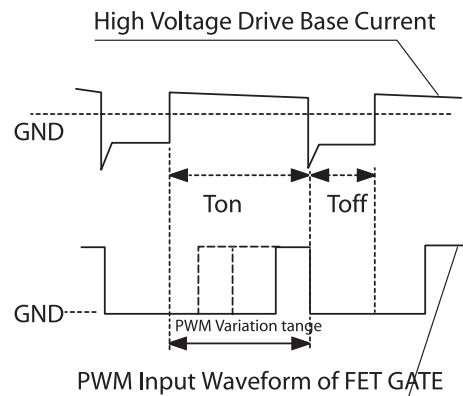
To maintain the set high voltage value (31kV), parameters such as +Ve (DC), Vcp High Voltage change (See the table below).

Factor of high voltage change	Parameters			
	Width of FET Gate Pulse	+ Ve (DC)	Vcp	High Voltage
Beam ↓ (High voltage ↑)	↓	↑	↓	↓
Beam ↓ (High voltage ↑)	↑	↓	↑	↑

7. Response Waveform

To reduce unstable high voltage fluctuation, the existing high voltage type REG circuit controls dynamic fluctuation by using C-block capacitor. But, it can't detect actual dynamic fluctuation. Also, its velocity of response to static fluctuation is late because +B power supply changes per about 1V. A PWM modulation type REG detects static, dynamic high voltage fluctuation for only Ton Time (when the current of the output TR collector flows) each 1H, and modulates the width of PWM pulse. So, this PWM type has better improvement in the characteristic of high voltage

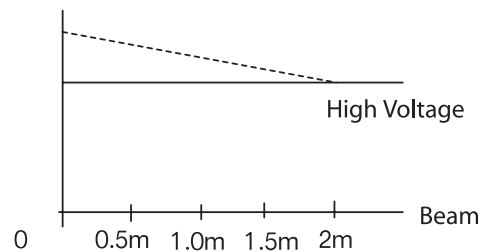
REG as compared to the existing type.



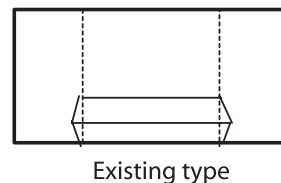
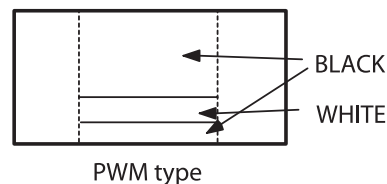
8. Application Effects

- 1) Improvement of horizontal size fluctuation
- 2) Linearity improved
- 3) Embodiment of X-ray protection circuit

The figures below show characteristics when a PWM high voltage REG circuit is applied.



----- High Voltage OFF
 ——— High Voltage REG ON

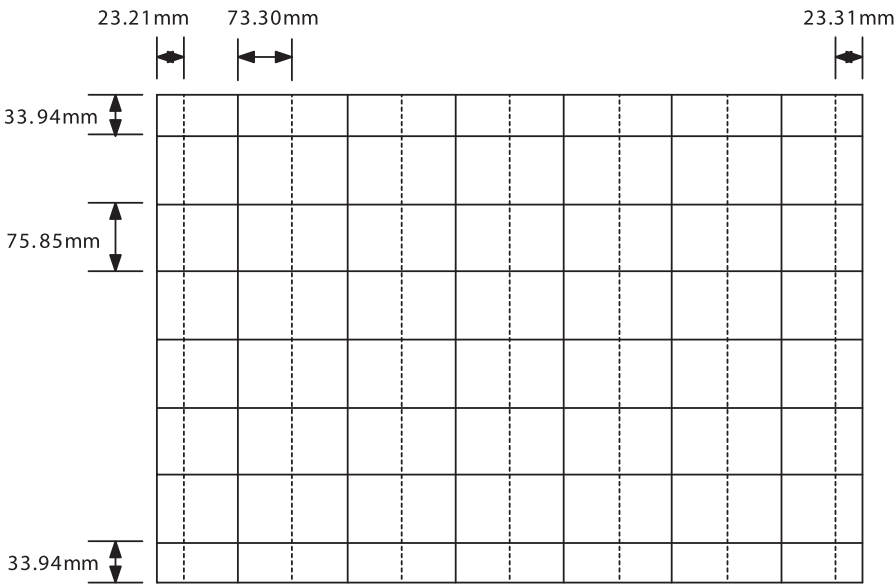


When a Toshiba Pattern is received, the screen is displayed as shown in figure side

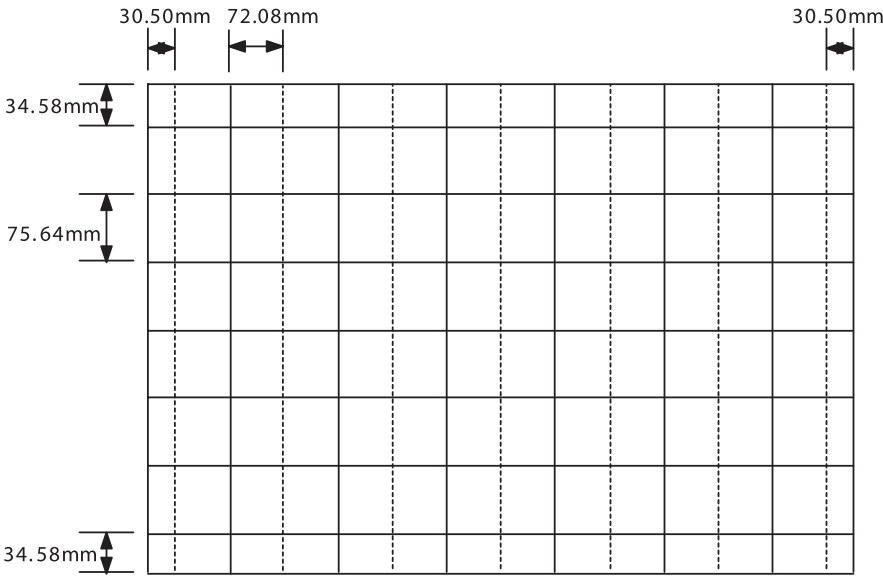
2-8 SCREEN-JIG

2-8-1 42Q2

(1) RF 100i Mode

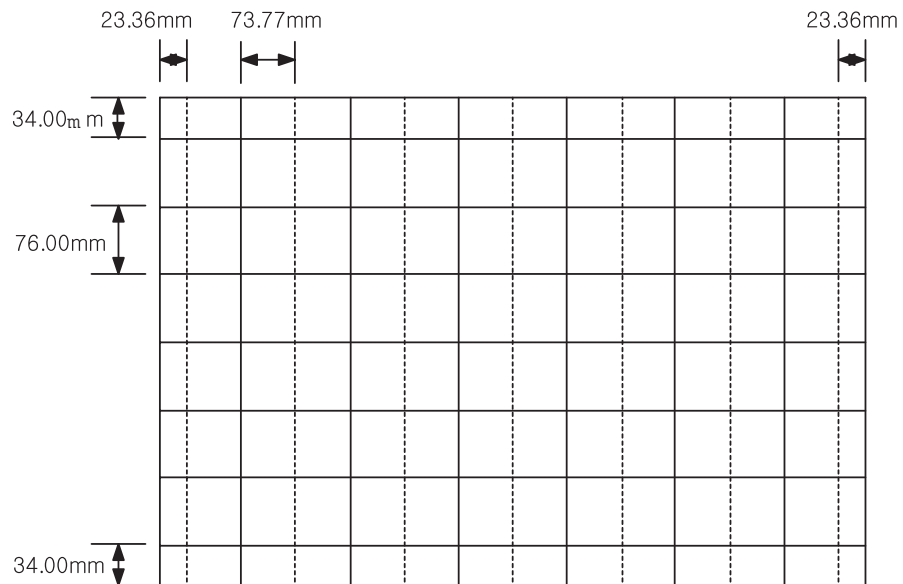


(2) DTV 50i Mode

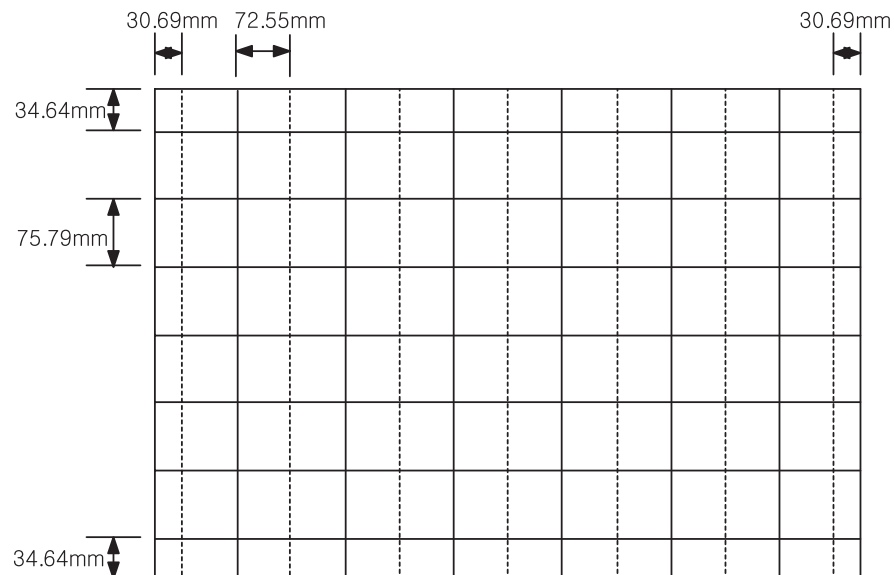


2-8-2 42W4,42W5

(1) RF 100i Mode

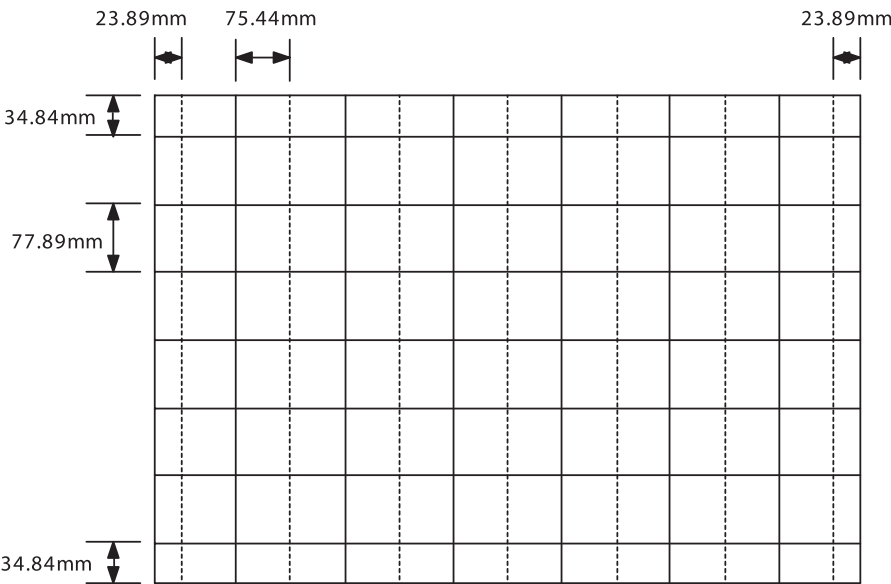


(2) DTV 50i Mode

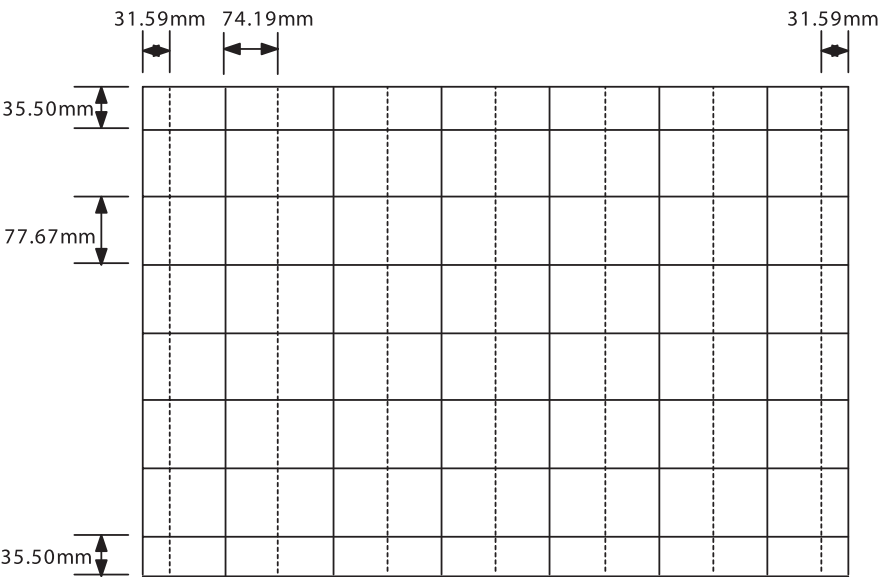


2-8-3 43W6 / 43Q5

(1) RF 100i Mode

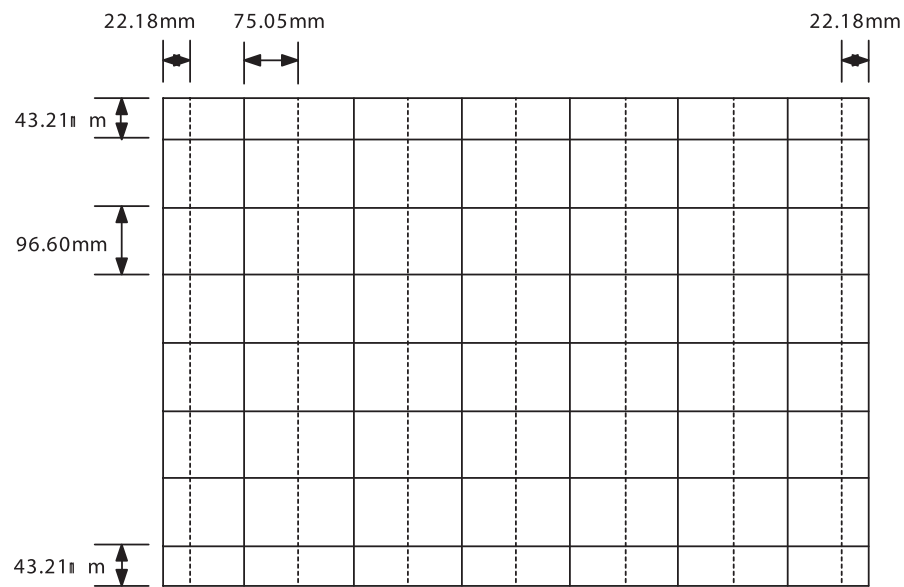


(2) DTV 50i Mode

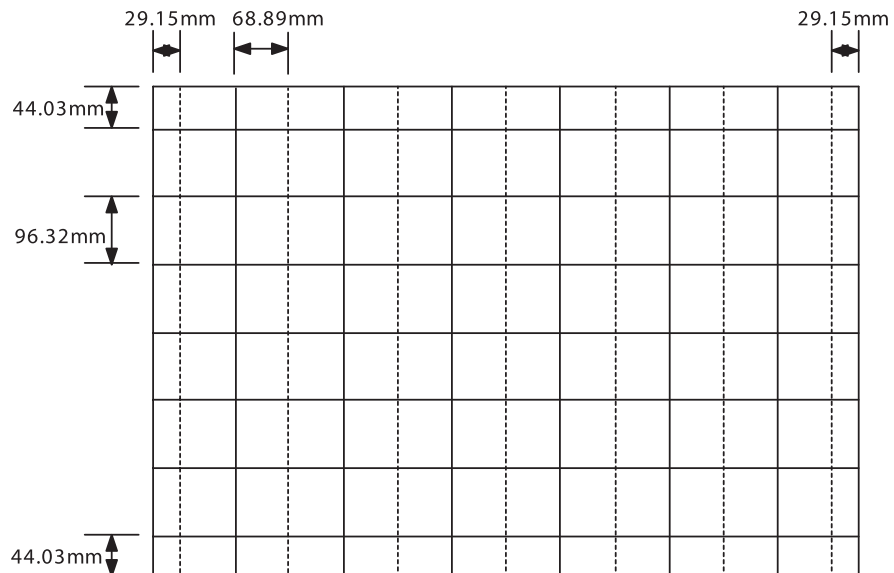


2-8-4 43T7,43T8

(1) RF 100i Mode

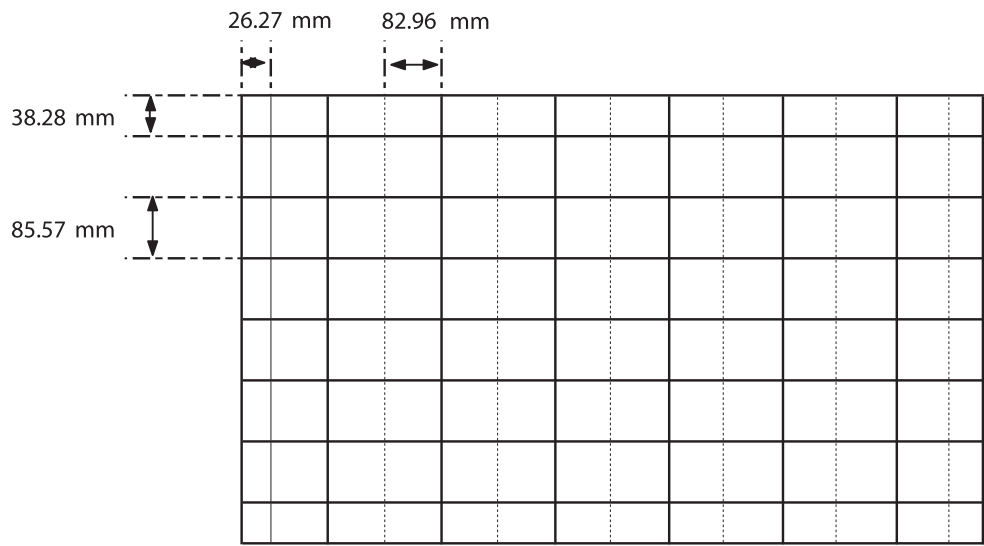


(2) DTV 50i Mode

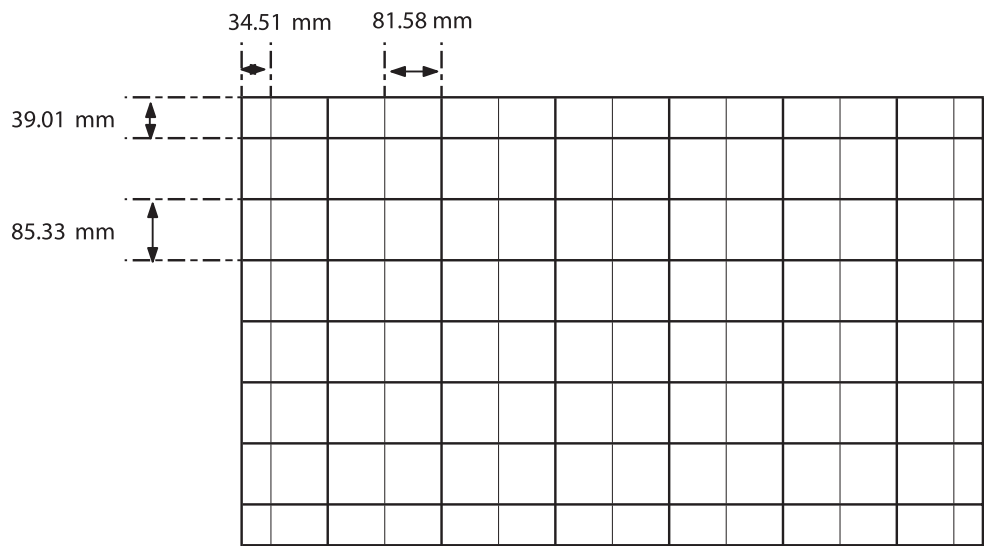


2-8-5 47Q5,47Q7

(1) RF 100i Mode

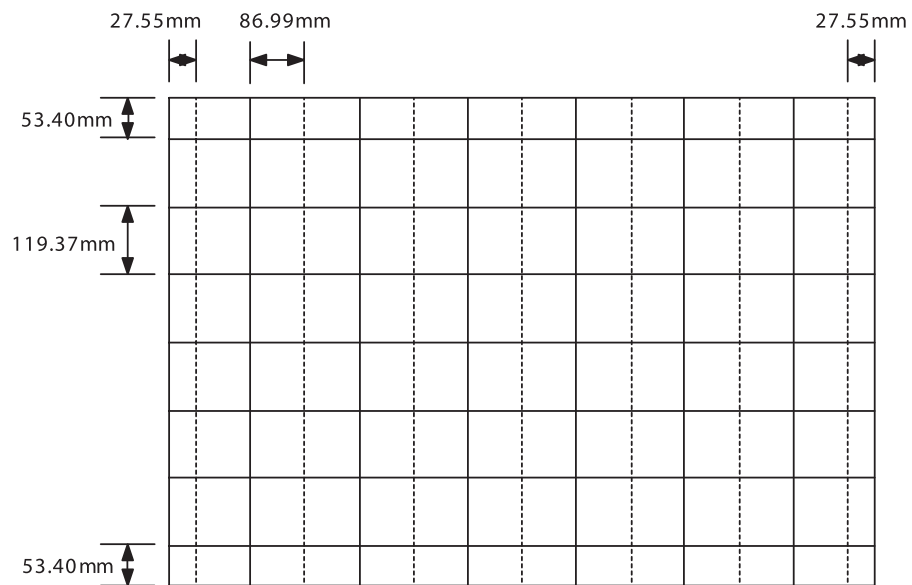


(2) DTV 50i Mode

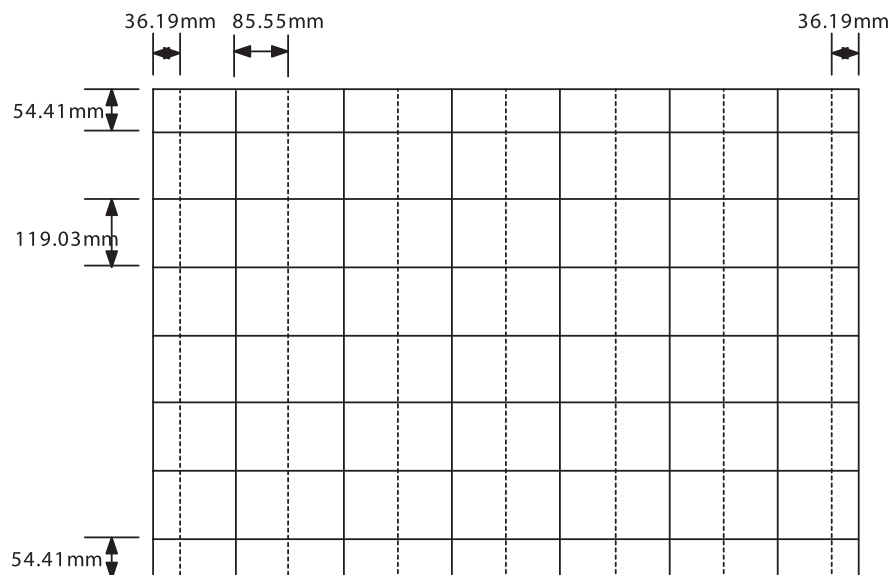


2-8-6 54T8

(1) RF 100i Mode

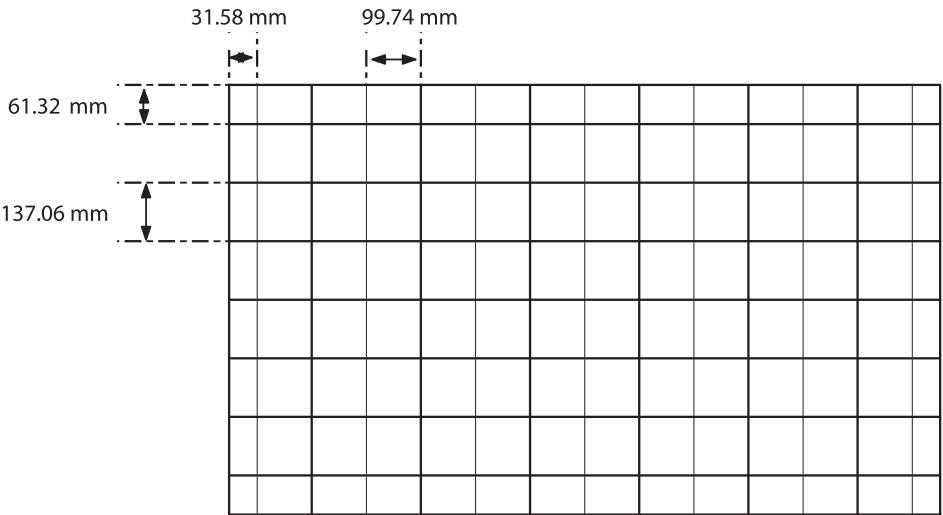


(2) DTV 50i Mode

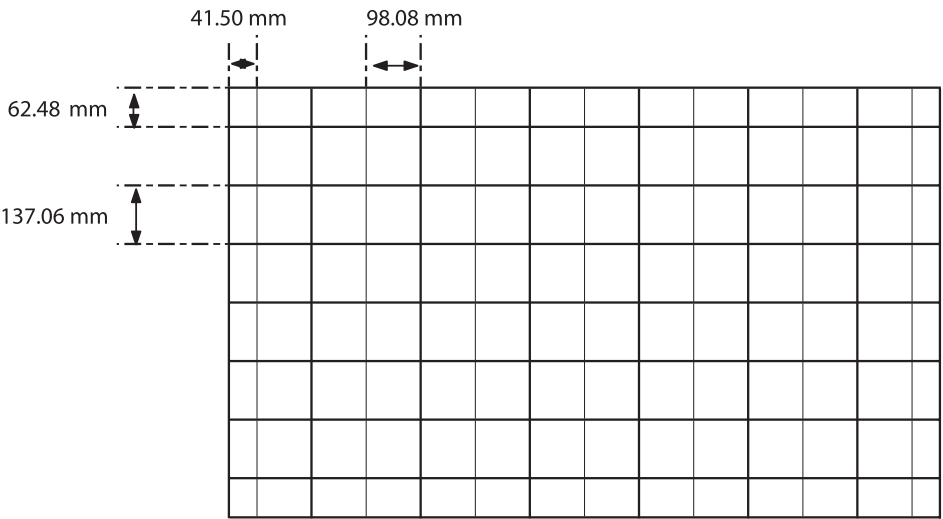


2-8-7 62t8

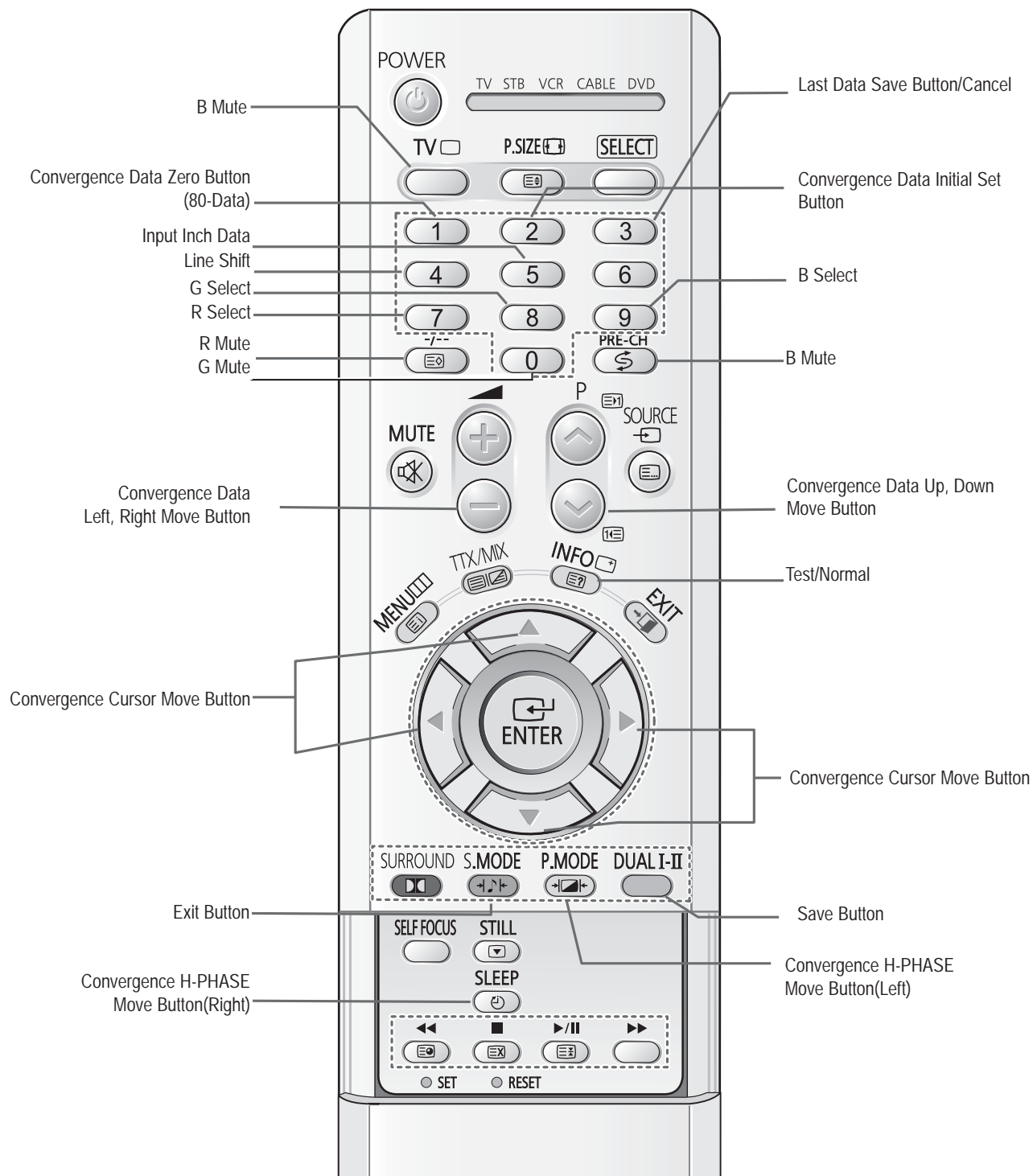
(1) RF 100i Mode



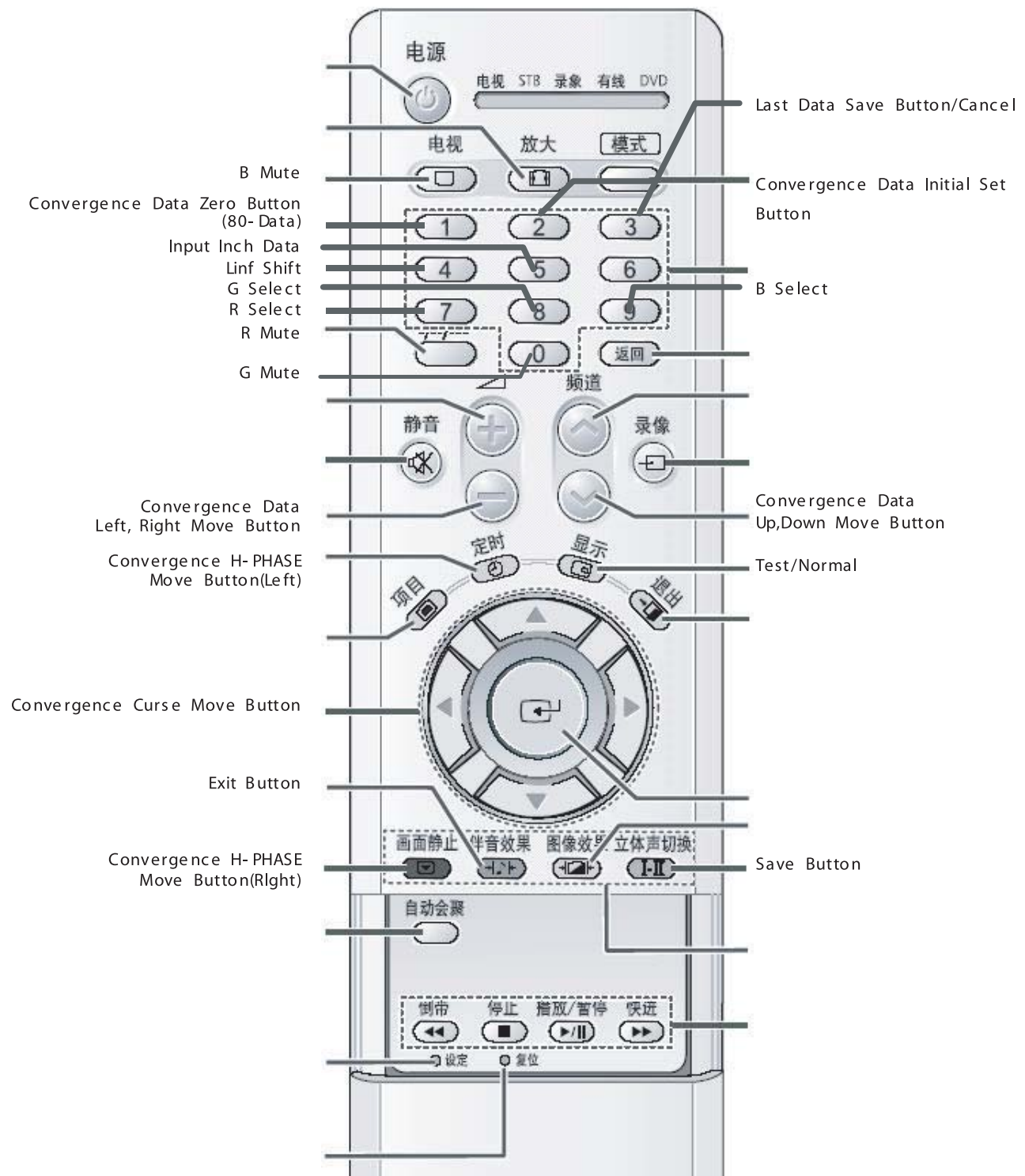
(2) DTV 50i Mode















2-9(A) Remote Control for Servicing(Convergence Mode)



2-9(B) Remote Control for Servicing(Convergence Mode/CHINA)

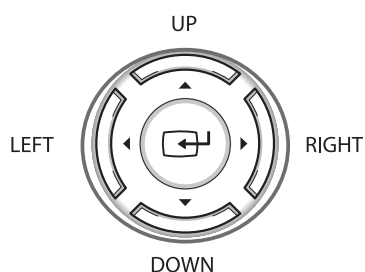


2-9-1 KEY Function

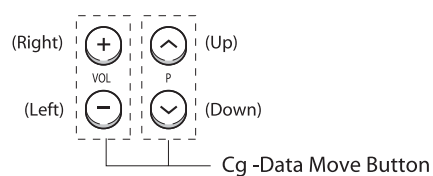
1. R-SELECT 
Press to select RED color.
2. G-SELECT 
Press to select GREEN color.
3. B-SELECT 
Press to select BLUE color.
4. R-MUTE 
Press to mute RED color.
5. G-MUTE 
Press to mute GREEN color.
6. B-MUTE 
Press to mute BLUE color.
7. CANCEL KEY 
Press to revert to the previous data during the Convergence Adjustment.
8. TEST/NORMAL 
Press to check TV mode in the Convergence Mode.
9. LINE SHIFT 
Press to move a line up/down or left/right.
10. FACTORY DATA SELECT BUTTON 
Press to call the factory default values.
11. SAVE BUTTON 
After the Convergence Adjustments are completed, press to save data.
12. EXIT BUTTON 
After the Convergence adjustments are completed, press to exit to TV mode.

13. CURSOR MOVE BUTTON

Press to move the cursor up/down or right/left.



14. CONVERGENCE PICTURE MOVE BUTTON



15. CONVERGENCE MOVE BUTTON


Press to move the convergence right (Sleep 画面静止 or P.MODE 定时), up/down ()

16. CONVERGENCE DATA ZERO BUTTON ①

Press to zero the convergence correction data.

17. INITIAL DATA SET BUTTON ②

Changes when applying Almighty-Cg, Module (How to extract the basic Cg Data)

18. Data shift Button  Press to transmit data(PAL Mode/NTSC Mode/1080i 50Hz).

2-10 Convergence Adjustment

2-10-1 Convergence Adjustment



Special Notes

A sensor is attached on the center of each side of the Convergence Mode pattern (see figure below). The sensors are required for normal Perfect Focus function.

Use a screen jig to do the convergence adjustments correctly (Especially, perform correct convergence adjustments on the center of each side where a sensor is located.)

Do the convergence adjustments correctly. Otherwise, any Perfect Focus error can happen.


1. Warm up the TV for a least 30 minutes.
2. Input an PAL Signal.(Use an antenna or AV source.)

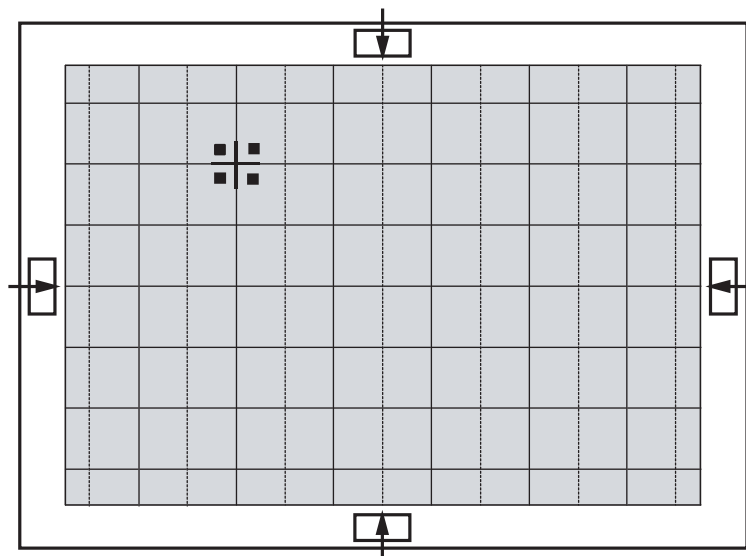


Make sure that deflection yoke are properly adjusted so that the center of Green, Red, Blue pattern is aligned on the center of screen jig.

3. Enter the Convergence Mode by Pressing the remote control keys in the following sequence:





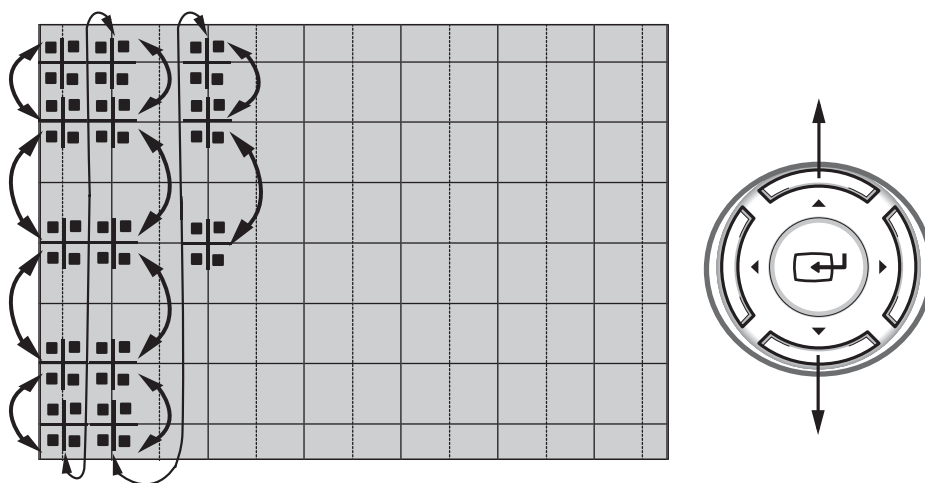
If OSD displayed as shown in figure below, press the  key to exit. Then, redo step 3 to enter the Convergence Mode. After entering the Convergence Mode, Stand by for about five seconds before doing the adjustments.



4. To adjust GREEN, first press the   and the   keys, and then press the  key.

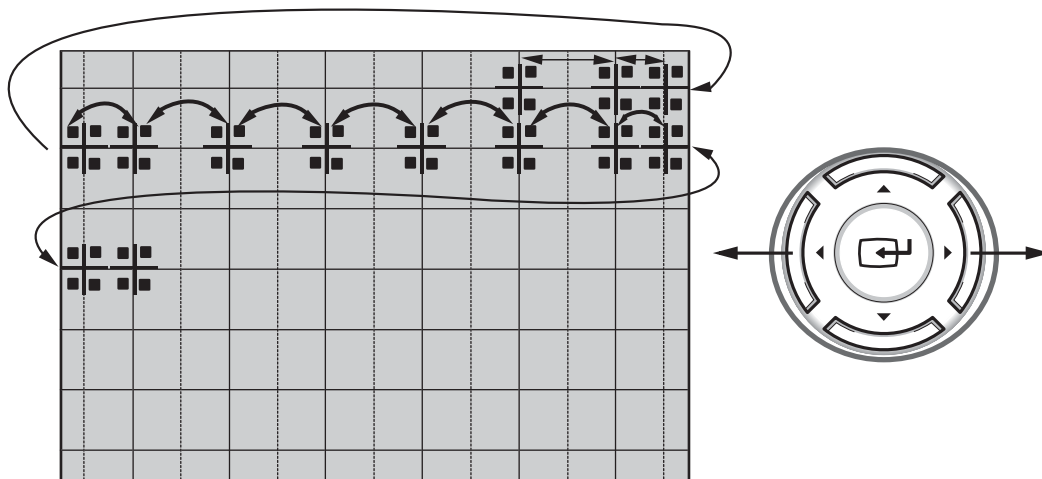


5. The   key moves the cursor horizontally or vertically

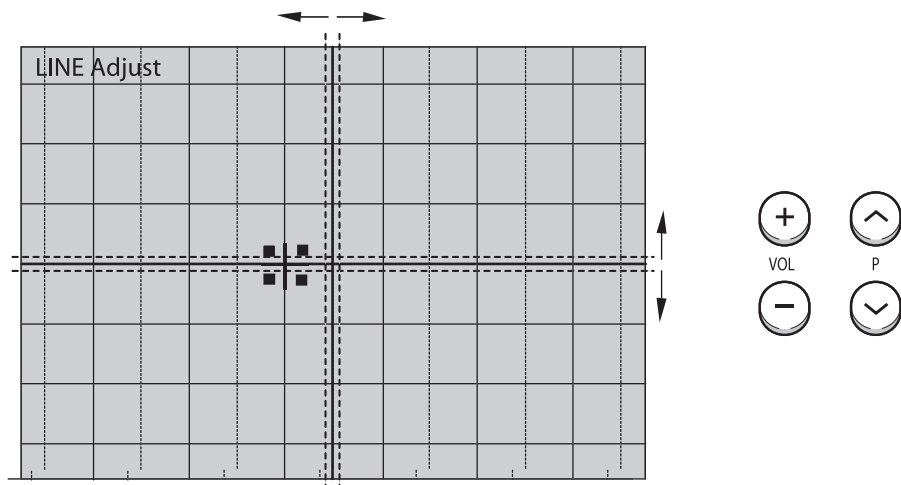


When the   key is pressed once again, the cursor moves horizontally.

6. The  key moves the cursor right, and the   key moves the cursor left.



7. Use the **4** key for overall balance.

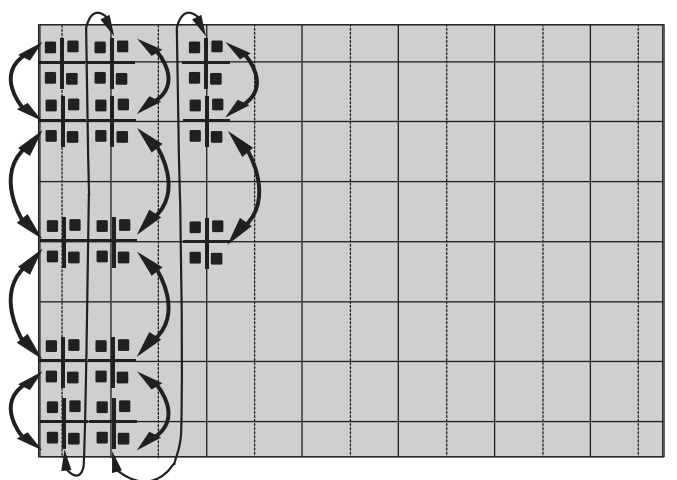


8. After the Line Shift is cancelled by pressing the **4** key, use the Channel and Volume keys (Up/Down/Right/Left) to make big adjustments.








9. After the green convergence adjustments are completed, press the **DUAL I-II 立体声切换** key to save the data.

10. Superimpose the Red and Green colors by pressing the **Menu** **./-** and the **7** keys.

11. To adjust RED, redo steps 5~7.

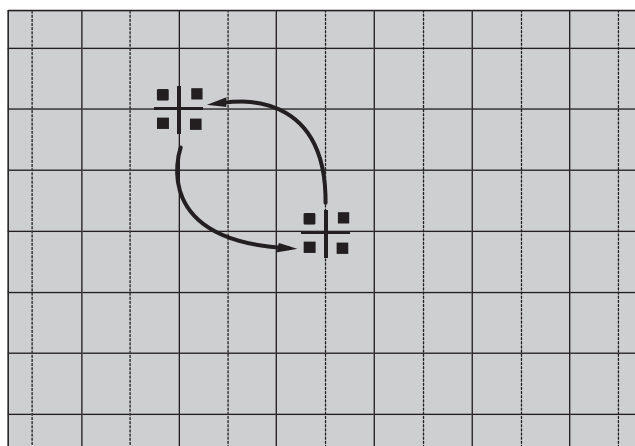


When the cursor moves vertically **Menu** **项目** **./-** **7**

12. To superimpose the blue and green colors, press (1) the   key for R-Mute, (2) the   key to cancel the B-Mute, and (3) the  key for B-select.
13. To adjust BLUE, redo steps 5 ~ 7, 13.
14. If any color is not properly adjusted when displaying the red, blue and green colors, readjust the color.
15. After the color adjustments are completed, press the   key to save the data.



The cursor moves to center, and then automatically moves up and to the left about five seconds later.



MEMO