SERVICE MANUAL 3P51 CHASSIS



Design and specifications are subject to change without prior notice. (ONLY REFERRENCE)

ENGINEER BY:	CHECKED BY:	PPROVED BY:

1 Please notice the following before debug and equipment:

- 1-1 <u>The main power is $90 \sim 260 V/50/60 Hz$ </u>, Please be careful when you debug and equip.
- 1-2 Don't short any two soldering points, which should not be shorted and don't touch any components, which should not be touched.
- 1-3 Please pull out plug before equipment.
- 1-4 For safety reasons, all components equipped or replaced should be identical with BOM.
- 1-5 Must be warm up for 30 minutes or more and degauss CRT thoroughly with demagnetizer before alignment.
- 1-6 The data of EEPROM must be stored before the adjustment for main chassis.

2. Tools and equipments for adjustment:

- 2-1 small " " screwdriver
- 2-2 screwdriver without inductance
- 2-3 Pattern Generator
- 2-4 DC Regulated power supply
- 2-5 Digital Voltmeter
- 2-6 Sweep Signal Generator
- 2-7 20MHz 2-channel Oscilloscope
- 2-8 Signal condition

3P51 ADJUST MENU

1.FACTORY MODE:

(1)Assembly line adjust mode: Press S.M., (DISPLAY) and I/Π keys in turn to enter this mode.

(2)Engineer adjust mode: Press CLOCK, P.M. and ^(j)keys in turn to enter this mode. This

mode is usually for R&D and engineering department use.

(3)Press digital keys to enter every adjust page, use PROG+/- keys to pick adjust items, use VOL+/- keys to adjust the value.

(4)Press DISPLAY to quit factory mode.

2.B+ VOLTAGE ADJUST

Measure C600A + voltage, adjust VR641 to get proper B+ voltage according to CRT assembly list requirement.

3. RF AGC VOLTAGE ADJUST

(1)Receive 294.25MHz,60dBcolor bar signal.

(2)Enter factory mode and press digital key "4".

(3)Measure tuner AGC point voltage, adjust AGC item till the voltage is 2.4V,or till picture noise just disappears. Usually the AGC value is fixed to 27.

4, FINE ADJUST:

(1) FOCUS ADJUST

- a. Receive cross-hatch pattern signal $_{\circ}$
- b. Set picture to " RICH" mode.
- c. Adjust FBT's FOCUS knob till picture is clear.

(2) SCREEN VOLTAGE ADJUST(KEY 0):

a. Set picture to "STANDARD" mode, without signal input;

b. Enter factory mode and press digital key"0"

c. Adjust FBT's SCREEN knob till VG2 voltage flag changes between "LOW" and "HIGH", press PROG+ key to enter other menu $_{\circ}$

(3) HORIZON ADJUST(KEY 1):

- a. Receive 50HZ monoscope PATTERN. Set TV to standard mode. Press KEY1 to enter factory mode
- b. Adjust 5HSH(for 60Hz picture, its is 6HSH)to set picture horizontal center to CRT horizontal center.
- c. Receive 60HZ monoscope PATTERN, repeat above b item

(4)VERTICAL&YUV/RGB HORIZON ADJUST(KEY2):

5VSL	50HZ vertical linearity	5SCL	50Hz vertical slope correction
5VSH	50Hz vertical center	5VAM	50Hz vertical size
6VSL	60HZ vertical linearity	6SCL	60HZ vertical slope correction
6VSH	60HZ vertical center	6VAM	60HZ vertical size

- a. Receive 50Hz cross hatch signal, set TV to STANDARD mode, press digital key "2" after enter factory mode, adjust 5VSL so that picture's vertical line is just at the bottom of the half picture.
- b. Adjust 5VSH to set picture vertical center to CRT center.
- c. Adjust 5SCL to set proper vertical linearity
- d. Adjust 5VAM to obtain picture's vertical re-display ratio more than 90% .
- e. If necessary, fine adjust above items.

f. Receive 50HZ RGB or YUV cross hatch signal,set TV to STANDARD mode,adjust 5RGH till picture horizontal center is at the CRT center.(OPTION)

g.

h. Receive 60Hz cross hatch signal, repeat above a,b.

f.Receive 60HZ RGB or YUV cross hatch signal, repeat above items. (OPTION)

(5) **OSD POSITION:**

- 4-6-1 Menu OSD position adjustment: Receive 50/60HZ cross hatch pattern. Set TV standard status. Press <u>KEY 2</u> in factory mode, adjust 5VOF/6VOF and HOF item, to obtain menu OSD at the center of CRT screen;
- 4-6-2 LOGO position adjustment: Receive 50/60HZ cross hatch pattern. Set TV standard status. Press <u>KEY 7</u> in factory mode, adjust XMIN,XMAX,YMIN, and YMAX item, to obtain LOGO at the center upto 1/3 of CRT screen.
- 4-6-3 TELETEXT OSD position adjustment: Receive 50/60HZ TELETEXT signal. Set TV standard status. Press <u>KEY 7</u> in factory mode, adjust TXMI and 5TYM/6TYM item, to obtain INDEX at the center of CRT screen.

4-2 White Balance Adjustment (Applied in factory) (KEY 3)

Normally, this chassis can auto adjust white balance, but for some CRT need to adjust white balance carefully by hand, Set BRIGHTNESS and CONTRAST at normal status, receive GREY SCAL and entering factory mode press KEY 3, set WPR at 31, adjust WPG and WPR to obtain white balance.

4-3 **RF.AGC ADJUSTMENT(KEY 4)**

- 4-3-1 Receive 60dB RF signal. Connect Digital voltmeter positive terminal to tuner AGC terminal and negative terminal to GND.
- 4-3-2 Enter the AGC item in factory mode by the REMOTE CONTROL.

Method: Press key S.M., \square^+ , I/Π in turn to enter factory mode, then

press key "4" and select AGC item by PROG+/-.

4-3-3 Adjust "VOL+" and "VOL-" keys to obtain 2.4V Digital voltage meter reading or just no NOISE on screen.

Press key "⁺" to exit factory mode!.

5 E2PROM INITIALIZTION

(1) E2PROM initialization (**KEY 8**):

- We can use an empty E2PROM when making the sample TV or repairing, also can use the E2PROM which has been full of data, but you must follow the steps below to initialize the E2PROM.
- Press the keys CLOCK, P.M., (i) in turn to enter the factory mode. Press KEY

8,VOL +/- in turn, you may see the OSD"BUSY" after the "INIT" on the screen \circ About a while, the character" BUSY "will disappear, then POWER OFF and ON the TV, the initialization is completed \circ

(2) FUNCTION SETTING (KEY 5)

Press the keys "CLOCK", "P.M.", "^(j)" in turn to enter the factory mode。 Press KEY 5 to

enter the setting menu $_{\circ}$

- b.Set values to OPTION 1- OPTION 7
- c.LOGO setting when powered on or no signal: Press key **CLOCK** in factory menu to enter the LOGO edit mode, there are two rows, the 1st can set the customer's name etc, and the 2nd row can set to display the customer's e-mail, phone.... Press the keys "PROG +/- "to select the character to edit, use keys "VOL+/-" to choose the charater.

The detailed instruction of 3P51

Some items displayed but not mentioned below is not used in 3P51 chassis.

Item	Storage	Display	Range (Index value)		Default	
	address	string			value	
Information of the factory many			Software	laraian	Fixed, not	
mormation of the factory ment	l	RELEASE2.0,	Soltware	version	changeable	
Drect key "8"						
			initialize	1	0	
IIIIIaiizalion			uninitialize	0	0	
		Press key "VOL +",	you can see th	e character	"INIT BUSY" is	
		active, Exit the menu and turn off the TV after the character				
Instruction		disappearing, reop	en it can have a	a success to	innitialize. Then	
		the program has been storaged in the memorizer, and then need				
		to readjust the parameter of the factory menu.				

ltem St ad	orage dress	Display string	Range (Index value)	Default value		
Drect key "0"						
Screen Voltage A level bright line						
		Adjust the screen vo	Adjust the screen voltage under Tv standard mode and no signal			
Instruction		input, just can see	the line is ok.			
Drect key "1"						
Horizontal paralellogram 50Hz	29	5PAR	0-63	31		
Horizontal bow 50Hz	2A	5BOW	0-63	31		
Instruction		The above value be	$adjusted \pm 10~{\rm can}~{\rm be}~0{\rm K},$ the c	lefault value is31		
Horizontal shift 50Hz	2B	5HSH	0-63	19		
EW width 50Hz	2C	5EWW	0-63	33		
EW parabola/width 50Hz	2D	5EWP	0-63	19		
EW upper corner parabola 50Hz	2E	5UCR	0-63	33		
EW lower corner parabola 50Hz	2F	5LCR	0-63	18		
EW trapezium 50Hz	30	5EWT	0-63	43		
Horizontal paralellogram 60Hz	37	6PAR	0-63	31		
Horizontal bow 60Hz	38	6BOW	0-63	31		
Horizontal shift 60Hz	39	6HSH	0-63	31		
Instruction		The above value be adjusted $\pm10\mathrm{can}\mathrm{be}0\text{K}$,the default value is31				
EW width 60Hz	ЗA	6EWW	0-63	33		
EW parabola/width 60Hz	3B	6EWP	0-63	19		
EW upper corner parabola 60Hz	3C	6UCR	0-63	44		
EW lower corner parabola 60Hz 3I		6LCR	0-63	10		
EW trapezium 60Hz 3E		6EWT	0-63	44		
Drect key "2"						
Vertical slope 50Hz	31	5VSL	0-63	31		
Vertical amplitude 50Hz	32	5VAM	0-63	10		
S-correction 50Hz	33	5SCL	0-63	31		
Instruction		generally ,SCL can	be setted to be31。			
Vertical shift 50Hz	34	5VSH	0-63	22		
Horizontal shift 50Hz on RGB mode	35	5RGH	0-63	38		
OSD vertical position offset 50Hz	36	5VOF	0-63	38		
Instruction		Horizontal shift on RGB mode generally between 30 to 42, the direct way is to connect the two Ty's SCART. Adjust the Value				
Vertical slope 60Hz	3F	6VSL	0-63	31		
Vertical amplitude 60Hz	40	6VAM	0-63	11		
S-correction 60Hz	41	6SCL	0-63	31		
Vertical shift 60Hz	42	6VSH	0-63	23		
Horizontal shift 60Hz on RGB mode	43	6RGH	0-63	38		
OSD vertical position offset 60Hz	44	6VOF	0-63	31		
OSD horizontal position offset	45	HOF	0-63	42		

ltem	Item Storage		Range (Index value)	Default		
	address	string		value		
Vertical zoom	46	VX	0-63	32		
	<u> </u>	Adjust this item whe	Adjust this item when lack of vertical amplitude will lead to t			
Instruction		picture can't be fu	ull of the screen,then nee	d to adjust the		
		resistance's(R318,R	319) value.			
Direct Key "3"						
Black level off-set R		RED	0-63	32		
Black level off-set G		GRN	0-63	32		
White point R (Direct Key "Red	")	WPR	0-63	31		
White point G (Direct Ke"Green	")	WPG	0-63	31		
White point B (Direct Key "Blue	e")	WPB	0-63	45		
	·	The white balance	e can be adjusted autom	natically on this		
		machine, only or	ne or two tube need to be adj	usted, generally		
Instruction		the value of RE	ED and GRN between 23	to 39,if adjust		
mstruction		excessively will lea	ad the picture faded。 (Rem	nark: because of		
		the higher colour	temperature, it's normal that	at you feel a little		
		red。)				
Luminance delay time PAL		YDFP	0-15	8		
		This item has the function to adjust the luminance and colour				
Instruction		delay, change the NO. on P card, make the boundary of central				
	•	green and purple ac	cord with the border of abov	e gray pane.		
Y delay time NTSC		YDFN	0-15	8		
Y delay time SECAM		YDFS	0-15	8		
Y delay time AV		YDAV	0-15	8		
Teletext contrast		TTBR	0-15	15		
Mute delay time while swi	tch		0.00	40		
program		MUTD	0-20	13		
Instruction			•			
Instruction						
Direct Key "4"						
AGC take-over		AGC	0-63	27		
UOC Volume		VOL	0-63	56		
Instruction		Input standard RF signal with 1KHz sound ,measure UOC				
		amplitude(location i	s W101) of output audio R	MS value,adjust		
		VOL till it reaches to 0.5Vrms.				
SUB HUE control		SHUE	0-63	35		
IE fraguenou			38.9MHz 2	0		
іг пециенсу		IFFS	38.0MHz 3	2		
Cathode drive level		HDOL	0-15	2		

Item	Storage address	Display string	Range (Index value)		Default value
Instruction		Adjust "HDOL" can change the voltage of "R.G.B" obviously adjust too high may lead to fade badly, reverse maybe lead to of luminance, so should be careful. Generally it's ok when the no black screen or picture faded change the channel under maximal beam current			3"obviously,but aybe lead to lack ok when there is nnel under the
IF AGC speed		SPD	0.7X Normal 3X 6X	0.7X 0 Normal 1 3X 2 6X 3	
VG2 Brightness		VG2B	0-63	3	31
TELETEXT brightness control		TRBI	0-63	3	25
Direct Key "6"					
Contrast –Min pre-set		1CON	0-10	0	10
Brightness –Min pre-set		1BRI	0-10	0	10
Colour –Min pre-set		1COL	0-10	0	0
Sharpness –Min pre-set		1SHP	0-10	0	0
Contrast –Middle pre-set		2CON	0-10	0	60
Brightness – Middle pre-set		2BRI	0-100		40
Colour – Middle pre-set		2COL	0-100		45
Sharpness – Middle pre-set	65	2SHP	0-100		60
Contrast – Rich pre-set	66	3CON	0-100		100
Brightness – Rich pre-set	67	3BRI	0-10	0	100
Colour – Rich pre-set	68	3COL	0-10	0	100
Sharpness – Rich pre-set	69	3SHP	0-100		100
		VL05			40
		VL20			65
Volume inflexion Pre-set		VL40			83
		VL60			88
		VL80			95
If VOL05 set to 40,it means when VOLUME is set user,the internal Volume is 40.This function is used speaker sound level-VOLUME OSD curve		is set to 05 by s used to adjust			
opening time control		RGBL	0-25	5	8
Direct Key "7"					
Screen saver / Logo Left positio	n 6A	XMIN	0-25	5	44
Screen saver Right position	6B	XMAX	0-255		186
Screen saver Top position	6C	YMIN	0-63		4
Screen saver Bottom position	6D	YMAX	0-63	3	37
Teletext Horizontal position	6E	TXMI	0-25	5	40

Item	Sto	rage	Display	/	Range (Index value)		Default
	add	ress	string				value
Teletext Vertical position	n 50Hz	6F	5TYM			0-63	38
Teletext Vertical position	n 60Hz	70	6TYM		0-63		38
Instruction							
Direct Key "5"							
NVM option 1		71	OP1		0	1	18
VG2 Alignment mode			Bit 0		AVG	VSD	0
			VG2 is usual	ly set	to 0.Receive	e 49.75MHZ PHI	LIPS signal.
			press key "P	M" to se	et picture to	standard mode,	adjust FBT's
lastrusti	on		SCREEN VC	LTAGE	E knob, if the	screen voltage	is too high, the
แกรแนะแ	011		OSD "high" a	ppears	, oppositely,	OSD "low" appe	ears, when you
			see the chara	acters "	HIGH" and '	'LOW" display by	/ turns, it means
			VG2 is well s	et.			
YUV or Yprpb			Bit 1		YUV	Yprpb	1
WIDE BAND SOUND P	LL		Bit 2		off	on	0
BLACK STRETCH AMC	UNT		Bit 3		10%	20%	0
AV2			Bit 4		off	on	1
SVHS			Bit 5		off	on	0
BLACK STRETCH DEPTH		Bit 6	20IRE		30IRE	0	
XX		Bit 7		off	on	0	
NVM option 2 72		OP2		0	1	11	
AVL		Bit 0		off	On	1	
Auto sound in autosearch mode		Bit 1		off	On	1	
Pan Europe Teletext set	t		Bit 2		Off	On	0
Cyrillic Teletext set			Bit 3		Off	On	1
Farsi Teletext set			Bit 4		Off	On	0
Arabic Teletext set			Bit 5		Off	On	0
Sync On Y (YUV/Yprpb	mode)		Bit 6		off	on	0
Slicing lever			Bit 7	deper	ndent on	Fixed	0
•				noise			<u> </u>
NVM option 3		73	OP3		0	1	255
SW1	SW2		Bit 0		Off	On	1
English Menu	English Me	nu					
Farsi Menu	Farsi Mer	าน	Bit 1		Off	On	1
Arabic Menu	Arabic Menu		Bit 2		Off	On	1
Turkey menu	Serbian Menu		Bit 3		Off	On	1
France Menu	Bulgaria Menu		Bit 4		Off	On	1
German menu	German me	enu	Bit 5		Off	On	1
Itality Menu	Itality Me	enu	Bit 6		Off	On	1
Russia Menu	Russia Mei	nu	Bit 7		off	on	1
NVM option 4		74	OP4		0	1	114
Narrow-band sound PLL	_ window		Bit 0		small	large	0
Power mode		Bit 1	st	andby	Last Memory	1	

ltem	Storage	Display	y Range (Index value)		Default	
Coordination	auuress	String		off	On	value
		BIL Z		off	On	0
EUT tracking mode			V	OII		0
		Dit 4	V			1
Search tung mode sensitivity		Bit 5	N		Reduced	1
		Bit 6		ОП 	Un	1
		Bit 7		OT	on	0
NVM option 5	75	OP5		0	1	223
Sound system DK		Bit 0		Off	on	1
Sound system BG		Bit 1		Off	On	1
Sound system I		Bit 2		Off	On	1
CORING0		Bit 3		Off	On	1
CORING1		Bit 4		Off	On	1
AV3		Bit 5		off	On	0
Switch-off in vertical overscan		Bit 6	Un	defined	Vert.	1
		Bit o		donnou	overscan	
Power on to last status		Bit 7		Off	On	1
NVM option 6	76	OP6		0	1	218
"No signal" OSD when no signation when no signation when here are a signation of the signation of the signature of the signat	al	Bit 0		off	On	0
Blue screen or black screen		Bit 1		Black	Blue	1
16:9 mode		Bit 2		off	On	0
Child lock (Lock local key)		Bit 3		Off	On	1
Top & bottom bar on Menu		Bit 4		Off	On	1
Hotel mode		Bit 5		Off	On	No use
Set "POC" bit when no signal		Bit 6		Off	On	1
Game		Bit 7		off	on	1
Instruction		OP6 general	ly fixed	to 218		
NVM option 7	77	OP7		0	1	196
AV1		Bit 0		off	on	0
Instruction		Because of AV1 is back AV, if SCART needed, no back AV				
Instruction		need to set AV1 0.				
XX		Bit 1		0	1	0
TV and monitor out select		Bit 2		Monitor	TV	1
lastavetisa		Because the	output	of SCART a	lways follow TV,	when back AV is
Instruction		SCART, the value set t		set to1。		
LISTEN PRESET		Bit 3		off	on	0
Deven en elvere				See OP4		
Power on always		Bit 4		bit 1	Direct On	0
Noise Reduce Off		Bit 5				0
Noise Reduce On		Bit 6		See	i able 1	1
NTSC-M Control switch		Bit 7		1(FM)	0(QSS)	1
TrueBass control	78	BASS		off	On	0
Comb-filter Control	79	COMB		Off	On	0

Item	Storage address	Display string	Range (I	ndex value)	 Default value
NICAM control	7A	NICA	Off	On	0
RGB Control	7B	RGB	Off	On	1
YUV Control	7C	YUV	Off	On	0
NTSC-M Control	7D	М	off	on	0
Direct Key "CLOCK"					
Logo edit (7 chars. & 2 lines)		Logo Text	English letter & number etc		
Instruction	The LOGO edit function will take effect when Bit3 in OP4 set 1,				
instruction		choose ASC II charater			

Table 1 : Noise Reduce Setting for PAL

Noise Reduce On	Noise Reduce Off	OP7 Bit 5	OP5 Bit 6
2.7MHz	3.1MHz	0	0
2.7MHz	3.5MHz	1	0
3.1MHz	3.5MHz	0	1
3.1MHz	3.5MHz	1	1

* Remark : NTSC system preset to 2.7 -> 3.1MHz.

Purity and Convergence Adjustment

COLOR PURITY ADJUSTMENT

- (1) Before color purity adjustment, warm up the TV set over 15 minutes and fully degauss.
- (2) Receive pure white signal in AV status and set the TV receiver dynamic.
- (3) Go to factory mod MENU2. After write down the values of R-BIAS and B-BIAS, set the values of R-BIAS and B-BIAS zero.
- (4) Loosen the clamp screw of the deflection yoke and pull the deflection yoke towards color purity Magnetic loop.
- (5) Adjust color purity magnetic loop to make the green area at the center of CRT screen.
- (6) Slowly push the deflection yoke toward the front of CRT and set it where a uniform green field is Obtained. Tighten the clamp screw of the deflection yoke.
- (7) Restore the values of R-BIAS, G-BIAS AND B-BIAS.

CONVERGENCE ADJUSTMENT

- (1) Receive a dotted pattern. Set the TV receiver dynamic.
- (2) Loose the convergence magnet clamperrrr and align red with blu dots at the center of the screen by rotating(R,B) static convergence magnets.
- (3) Align Red/Blue with green dots at the center of the screen by rotating(RB-G) static convergence magnet.
- (4) Remove the DY wedges and slightly tilt the deflection yoke horizontally and vertically to obtain the good

