

General Information

1995

Chassis: EE3

CRT: A51EAL55X01

Remote Control:

290P054070

Door Flap - TV: 752C600030

Door Flap - Sat: 752C603020

Door Catch: 761C550010

Main Power Button:

754C600010

Matrix

Item See Model

Safety Precautions Mitsubishi CT-14MS1
Text Diagram Mitsubishi CT-28AV1B

Specifications

Reception System: CCIR-I PAL
Reception Frequency: UHF 470MHz - 862MHz
Mains Input: AC 230v 50Hz
Power Consumption: 92W (21AV1B)
Aerial Input: 75 ohm
Intermediate Frequency: Video: 39.5MHz
Sound: 33.5MHz
Audio Output: 12W + 12W (21AV1B, 25AV1B)
(Music Power) 12W + 12W + 15W (28AV1B)
Speaker: 2x (10cm dia + 4cm dia)

Recommended Safety Parts

Item	Part No.	Description
	255P801020	CRT A51EAL155X01 (21)
	255P807010	CRT A66EGW83X101 (28)
	255P914030	CRT A59EAK71X11 (25)
	409P564040	Degaussing Coil (25)
	409P564050	Degaussing Coil (28)
	409P564060	Degaussing Coil (21)
	920A415001	ASSY-PWB-Main (25)
	920A415007	ASSY-PWB-Main (21)
	920A415013	ASSY-PWB-Main (28)
	930C899001	SA-PWB-VM CRT (21, 25)
	930C899003	SA-PWB-VM CRT (28)
	930C900001	SA PWB Power SUB
	930C901001	SA-PWB-LED
	930C904001	ASSY-PWB-Audio-PWR (28)
	930C909001	SA-PWB-Text
	930C910001	SA-PWB-Sound (21, 25)
	930C910009	SA-PWB-Sound (28)
	246C162010	AC-Power Cord (UK-Plug)
	700A600060	ASSY Backcover (25)
	700C600060	ASSY Backcover (21)
	700C604040	ASSY Backcover (28)
F991	283D047040	Fuse T2A
J601	449C126010	CRT Socket 33055044
PC951	268P068010	Photo Coupler TCDT1124G
R352, R353	103P378060	R-Fuse 1/4W 3.3-J
R3B01, R3B02	103P378060	R-Fuse 1/4W 3.3-J (28)
R406	103P397090	R-Fuse 1/2W 0.82-J (25)
R512	103P442020	R-Fuse-Metal 1W 560-K-OR-J

Service Adjustments

Service and Adjustment Procedures

1: Introduction

Most service adjustments to these models are made using the remote control (fig. 1) with the TV in service mode. The adjustment data is stored in an EEPROM.

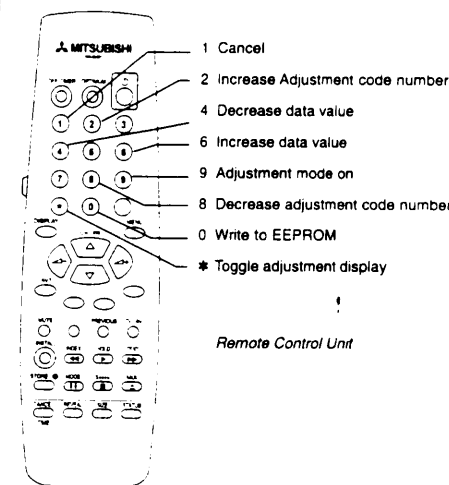
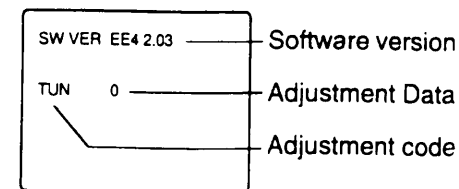


Fig 1.

Basic Adjustment Procedure

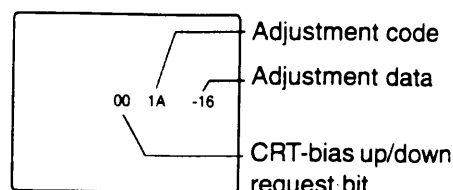
- Turn the power on. With a small screwdriver, press the Service Switch (S701, next to the aerial socket) and then button "9" within 5 seconds to enter service mode.

- Press the QUAS button to select either the VCJ or OPTION adjustment display (fig. 2 and 3).



Options adjustment display

Fig 2.



VCJ adjustment display

Fig 3.

- Press buttons "2" or "8" to increase or decrease the adjustment code number. Press buttons "6" or "4" to increase or decrease the data value.
- After completing your adjustments, press button "0" to write the adjustment data to the EEPROM.

To cancel a change, press button "1" (or the standby button) before writing the adjustment to the EEPROM. All data adjusted since the last EEPROM write will be reset.

2: Initialising the EEPROM

If you have replaced the EEPROM (IC702) or if for any reason the adjustment data has become corrupted it will be necessary to initialise the EEPROM.

- If necessary, switch off by the Main switch.
- Hold the service switch (S701, next to the aerial socket) while switching on by the Main switch.
- Release the service switch after 3 seconds.

- Switch off by the Main switch.
- Press the QUAS button to select the OPTIONS adjustment display.
- Press buttons "2" or "8" on the remote control to select the adjustment code.
- Adjust data value for each code using buttons "2" or "4" on the remote control according to the table below:

(Other adjustment codes will be displayed but need not be changed on these models).

CODE	TUN	ATS	STD	SYS	AVI	FFT
21AV1B	0	1	1	2	2	1
25AV1B	0	0	1	2	2	1
28AV1B	0	1	1	2	2	1

Data values for the OPTIONS adjustments.

- Press the "0" button to write the changes to the EEPROM.
- Press the QUAS button to select the VCJ adjustment display.
- Press buttons "2" or "8" on the remote control to select the adjustment code.
- Adjust the data value of each code using buttons "2" or "4" on the remote control according to the table below:

(Other adjustment codes will be displayed but need not be changed on these models).

CODE	07	11	12	19	1B	1C
21AV1B	-7	001	111	-1	-13	00
25AV1B	-7	001	111	-3	-11	-2
28AV1B	-7	001	111	-2	-9	-3

Data values for the VCJ adjustments.

- Press the "0" button to write the changes to the EEPROM.

EEPROM Default Data Values

These values are adequate to allow the set to be adjusted.

VCJ Data Values		
Code	Function	Data Value
00	V-AMP	-16
01	V-CORRECT	-31
02	P-AMP	+05
03	TILT	-12
04	V-LIN	+23
05	C-CORRECT	-09
06	H-AMP	-22
07	16x9 - SW.RGB-MATRIX	-7
08	V-SHIFT	+02
09	H-PHASE	+10
0A	B-DRIVE	=01
0B	G-DRIVE	+01
0C	R-DRIVE	+01
0D	CONTRAST	+14
0E	BRIGHT	+01
0F	COLOUR-SAT	+10
10	NTSC-TINT	00
11	SHARP	111
12	PAL LUMA-DELAY	111
13	SECAM LUMA-DELAY	111
14	V-AMP-60	00
15	P-AMP	00
16	H-AMP-60	00
17	V-SHIFT-60	00
18	H-PHASE-60	00
19	H-PHASE-TEXT	00
1A	H-PHASE SECAM	00
1B	H-PHASE RGB	00
1C	P-AMP-16:9	00
1D	358NTSC-LUMA DELAY	111
1E	443 NTSC-LUMA DELAY	111

Options Data Values		
Item	Description	Data Value
TUN	Tuner Type	0
SAT	Satellite Enable	0
AUD	Audio System	0
ATS	Auto Tuning Sort	0
STD	Reception Standard	0
SYS	Colour System	0
AV1	No. of AV Inputs	0
AVD	AV Dubbing	-
EEX	Chassis Type	-
SPK	Speaker SW Enabled	1
EEP	EEPROM Size	-
TXT	Teletext Type	-
FFT	FAST TOP Text	0

3: VIF Circuits

RF-AGC VR101 (adjacent to the tuner)

- Connect an RF signal such as an off-air broadcast.
- Check the AFT is on for the Current channel.
- Adjust VR101 so that the picture and sound exhibit no noise, beat or intermodulation distortion.

4: Deflection Circuits

Before making any adjustments, if you have

changed the CRT, FLYBACK TRANSFORMER or made any changes in the deflection circuits; adjust the CRT bias as described in Video Circuits - Screen Control steps 1 -6).

Check the VERTICAL BREATHING CORRECTION as follows:

- Select the VCJ adjustment display.
- Set the adjustment code to "01" with buttons "2" or "8" on the remote control.
- If necessary, adjust the data value to "-31" using buttons "4" or "6" on the remote control.

Horizontal Centre

Code 09 (H-PHASE)

- Connect a VCR and play a PAL-Monoscope alignment tape.
- Select the VCJ adjustment display.
- Set the adjustment code to "09" with buttons "2" or "8" on the remote control.
- Adjust the horizontal position with buttons "4" or "6" on the remote control.

Horizontal Width (25AV1B/28AV1B only)

Code 06 (H-AMP)

- Connect a VCR and play a PAL-Monoscope alignment tape.
- Select the VCJ adjustment display.
- Set the adjustment code to "06" with buttons "2" or "8" on the remote control.
- Adjust horizontal width with the buttons "4" or "6" on the remote control.

East-West PCC (25AV1B/28AV1B only)

Code 05 (CORNER CORRECTION)

Code 03 (PARABOLA TILT)

Code 02 (PARABOLA AMP)

- Connect an RF PAL Crosshatch signal.
- Select the VCJ adjustment display.
- Set the adjustment code to "05" with buttons "2" or "8" on the remote control.
- Adjust the data value to "-25" with buttons "4" or "6" on the remote control.
- Set the adjustment code to "03" with buttons "2" or "8" on the remote control.
- Watching the second vertical line in from both sides of the screen (fig. 4), make any upper or lower distortion symmetrical using buttons "4" or "6" on the remote control.
- Set the adjustment code to "02" with buttons "2" or "8" on the remote control.
- Adjust the straightness of both vertical lines (fig. 5) using buttons "4" or "6" on the remote control.
- repeat steps 1 to 8 if necessary.
- Connect a VCR and play a PAL-Monoscope alignment tape.
- Make sure the horizontal width and horizontal centre are correct. If necessary re-adjust Horizontal Centre ("09") and Horizontal Width ("06") again.

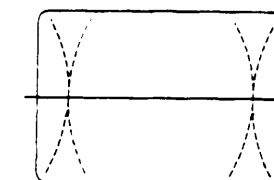


Fig 4.

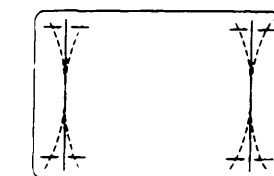


Fig 5.

Recommended Safety Parts

Item	Part No.	Description
R513	103P398040	R-Fuse 1 2W 2.2-J
R514, R516	103P397090	R-Fuse 1/2W 0.82-J
R671	103P447080	R-Fuse-Metal 1W 0.68-K-OR-J (28)
R671	103P448040	R-Fuse-Metal 1W 2.2-K-OR-J (25)
R671	103P448060	R-Fuse-Metal 1W 3.3-K-OR-J (21)
R6B1, R6B7	103P370010	R-Fuse 1/4W 10-J (28)
R6B4, R6B8	103P392050	R-Fuse 1 2W 1.0K-J (28)
R6B6	103P370050	R-Fuse 1 4W 22-J (28)
R981, R982	109D021020	R-Composition 1 2W 6.8M-K
S991	432C048010	SW-Push AC250V 5A 80A S
T551	334P232030	Trans-Flyback (21)
T551	334P243010	Trans-Flyback (28)
T551	334P244010	Trans-Flyback (25)
T901	350P646010	Trans-Power SMT41 (25)
T901	350P646020	Trans-Power SMT47 (28)
T901	350P664010	Trans-Power SMT4 (21)
Z552	299P193010	Protector 2000 (25, 28)
Z951	299P193010	Protector 2000
Z952	299P193070	Protector 5000
Z953	299P193000	Protector 1600

Note: numbers in brackets indicates model

Service Adjustments Cont'd.

Height and Linearity

Code 00 (V-AMP)
Code 04 (V-LIN)

- 1: Connect a VCR and play a PAL-Monoscope alignment tape.
- 2: Select the VCJ adjustment display.
- 3: Set the adjustment code to "00" (V-AMP) with buttons "2" or "8" on the remote control.
- 4: Adjust the circle to a true circle with buttons "4" or "6" on the remote control.
- 5: Set the adjustment code to "04" (V-LIN) with buttons "2" or "8" on the remote control.
- 6: Adjust the linearity to be the same for the top and bottom halves of the circle using buttons "4" or "6" on the remote control.
- 7: Set the adjustment code to "00" (V-AMP) with buttons "2" or "8" on the remote control.
- 8: Re-adjust V-AMP with buttons "4" or "6".
- 9: repeat the steps above if necessary.

Vertical Centre

Code 08 (V-SHIFT)

- 1: Connect a VCR and play a PAL-Monoscope alignment tape.
- 2: Select the VCJ adjustment display.
- 3: Set the adjustment code to "08" (V-SHIFT) with buttons "2" or "8" on the remote control.
- 4: Adjust the centre line of picture to be within +/- 3mm from the vertical centre on the screen using buttons "4" or "6" on the remote control.

60Hz Deflection Circuit Offsets

Code 14 (V-AMP 60)
Code 15 (P-AMP 60)
Code 16 (H-AMP 60)
Code 17 (V-SHIFT 60)
Code 18 (H-PHASE 60)

- 1: Connect an RF 60Hz Crosshatch signal.
- 2: Select the VCJ adjustment display.
- 3: Select each adjustment code in turn with buttons "2" or "8" on the remote control and adjust each item to the figures shown in the table below using buttons "4" or "6" on the remote control.

Adjustment Code

	14	15	16	17	18
21AV1B	+7	00	00	+9	-6
25AV1B	+8	+1	-2	+14	-4
28AV1B	+7	+2	-2	+8	-5

5: CRT Circuits

White Balance

Code 0A (B-DRIVE)
Code 0B (G-DRIVE)
Code 0C (R-DRIVE)

- 1: Connect a VCR and play a PAL-Monoscope alignment tape.
- 2: Select the VCJ adjustment display.
- 3: Set the adjustment codes "0A", "0B" and "0C" in turn and pre-adjust each to "0".
- 4: Adjust codes "0A" and "0C" to adjust the white balance.

Focus

Focus control on the Flyback Transformer.

- 1: Connect an RF signal such as an off-air broadcast.
- 2: Adjust the FOCUS control for best overall focus.

6: Video Circuits

Perform the following adjustments after adjusting the Deflection circuits. Allow the TV to warm up for 20 minutes before proceeding.

Brightness and Contrast

SCREEN control on the Flyback Transformer

Code 0F (COLOUR SATURATION)

Code 0E (BRIGHTNESS)

Code 0D (CONTRAST)

BEAM CURRENT (using connector TP adjacent to the Flyback Transformer).

- 1: Connect an RF Crosshatch signal.
- 2: Select the VCJ adjustment display.
- 3: Make sure that the Screen Up/Down Request Bit is set to "00". If not, adjust the SCREEN control on the Flyback Transformer.
- 4: Change the external signal to a Colour-bar.
- 5: Re-adjust the SCREEN control to give "00".
- 6: Repeat steps 1 to 5 until the Screen Up/Down Request Bit is "00" for both signals.
- 7: Connect an RF Colour-bar signal.
- 8: Set the adjustment code "0F" with buttons "2" or "8" on the remote control.
- 9: Adjust the data value to "-32" with buttons "4" or "6" on the remote control.
- 10: Set the adjustment code to "0E" with buttons "2" or "8" on the remote control. Adjust using buttons "4" or "6" so that a slight difference in brightness can be seen between blue and black areas.
- 11: Set the adjustment code to "0D" with buttons "2" or "8" on the remote control.
- 12: Connect a DC ammeter's "+" lead to connector TP pin 1 on the MAIN-PCB and the "-" lead to connector TP pin 2.
- 13: Adjust the beam current using buttons "4" or "6" on the remote control to 1300±20mA for 28AV1B, 1000±20mA for 25AV1B or 950±20mA for 21AV1B.
- 14: Check, and if necessary, readjust the BRIGHTNESS code "0E".
- 15: Check that the Screen Up/Down Request Bit is "00". If not repeat steps 1 to 13 above.
- 16: Now proceed to the Colour Output adjustment.

Colour Output

Make this adjustment only after adjusting the White Balance, Brightness and Contrast.

Code 0F (COLOUR SATURATION)

- 1: Connect an RF Colour-bar signal.
- 2: Select the VCJ adjustment display.
- 3: Set the adjustment code of "0F" with buttons "2" or "8" on the remote control.
- 4: Connect an oscilloscope to the junction of R673 and IC660 Pin 9 (BLUE-OUT) on the CRT PCB.
- 5: Make adjustments using buttons "4" or "6" on the remote control until the waveform is as shown in fig. 6.
- 6: Increase the resulting data value by five steps.

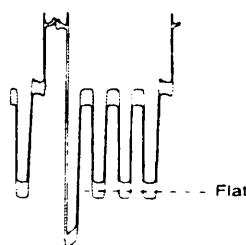


Fig 6.

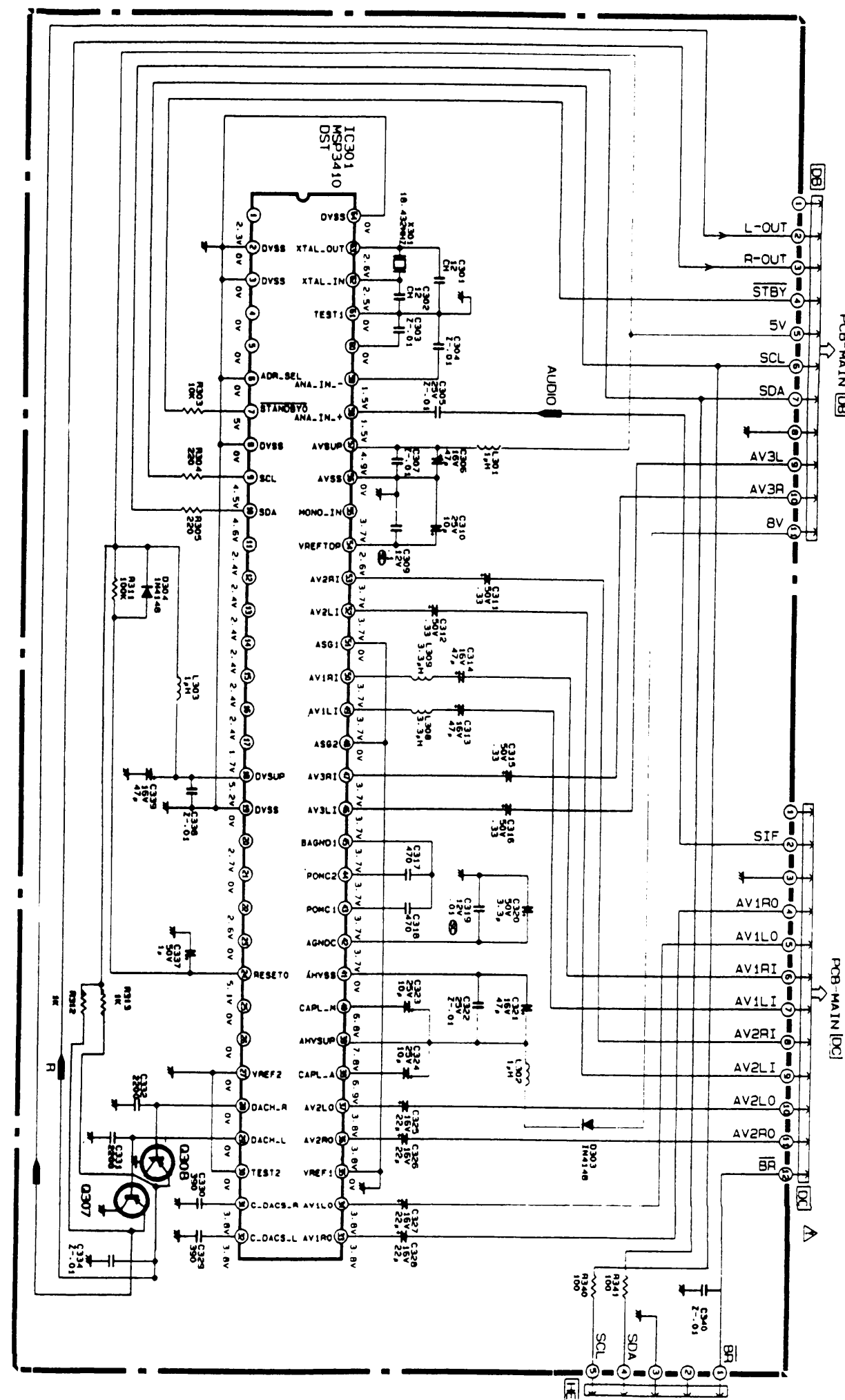
7: Power Circuit

B4 Voltage

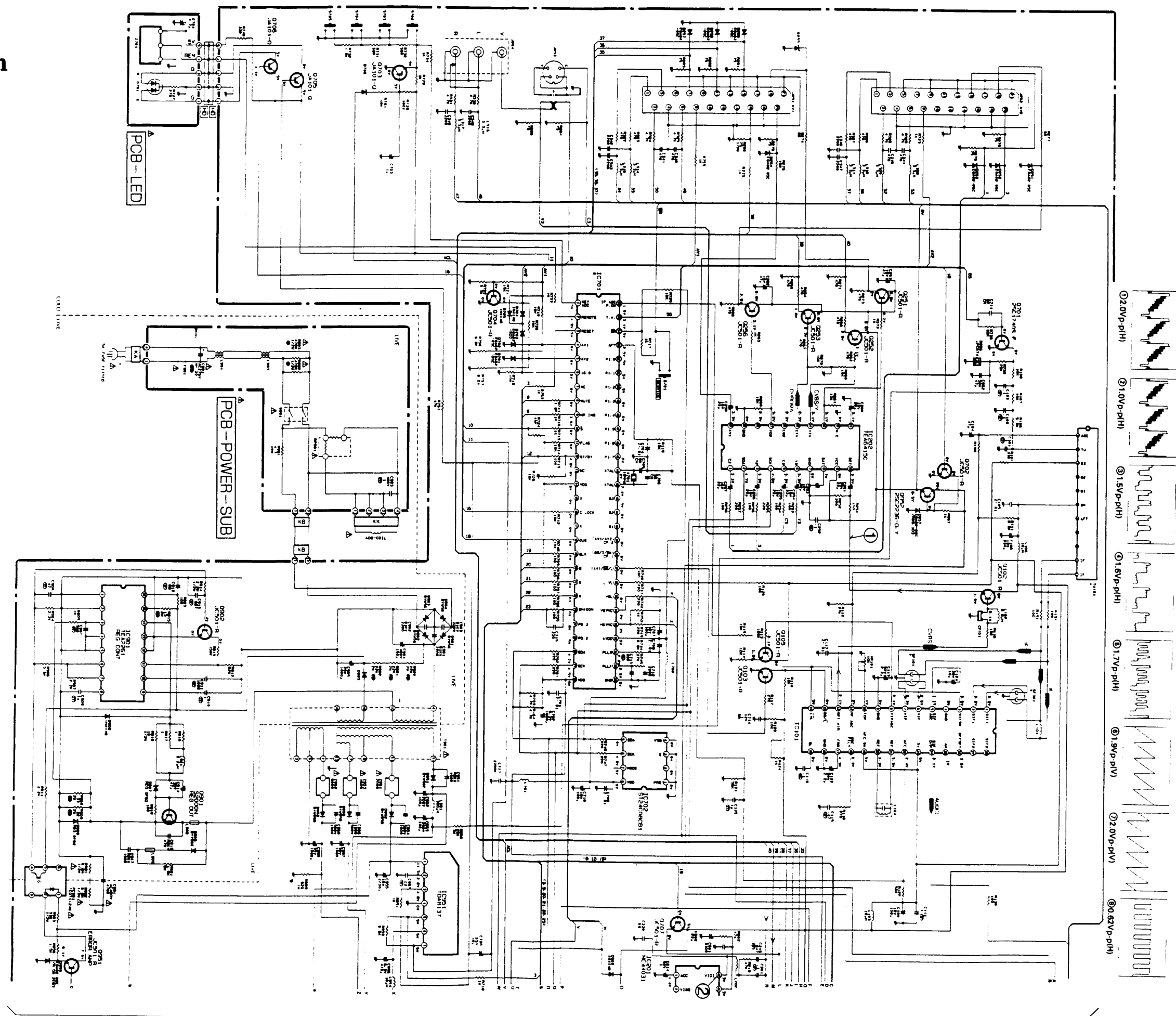
VR951 (on main PCB next to the SMT)

- 1: Connect a VCR and play a PAL-Monoscope alignment tape.
- 2: Push the OPTIMUM button on the remote control.
- 3: Connect a DC voltmeter's "+" lead to TP91 on the MAIN PCB and the "-" lead to GROUND.
- 4: Adjust VR951 so that the voltage is 145±2V for 28AV1B and 25AV1B or 122±2V for 21AV1B.

Sound Diagram



Main Diagram

Continued at **1**

Main Diagram Cont'd.

1

