TEAC®

SERVICE MANUAL

CTM5100

51CM CTV

APR03

SERVCTM5100

Contents:

*** FOR INFORMATION ONLY**

SERVICE MANUAL FOR M17+TB1238N

PART I. Servicing Precautions

When working, the unit is with high voltage about 25KV inside. So, to avoid the risk of electric shock, be careful to adjust the chassis!

1. Only qualified personnel should perform service procedures.

2. All specification must be met over line voltage ranger of 110V AC to 240V AC 50Hz/60Hz.

3. Do not operate in WET/DAMP conditions.

4. Portions of the power supply board are hot ground. The remaining boards are cold ground.

5. Discharge of CRT anode should be done only to CRT ground strap.

6. When fuse blow, ensure to replace a fuse with the same type and specification.

7. Keep the wires away from the components with high temperature or high voltage.

8. When replacing the resister with high power, keep it over the PCB about 10mm.

9. The CRT anode high voltage has been adjusted and set in the factory. When repairing the chassis, do not make the high voltage exceed 27.5KV (The beam current is 0uA). Generally, the high voltage is set on 25.5KV±1.5KV (The beam current is 700uA).
***** The values of parameters above are for information only.

10. Before return the fixed unit, do check all the covering of wires to ensure that not fold or not short with any metal components. Check the entire protection units, such as control knobs, rear cabinet & front panel, insulation resister & capacitor, mechanical insulators and so on.

11. There are some mechanical and electrical parts associating with safety (EMC) features (Generally related to high voltage or high temperature or electric shock), these features cannot be found out from the outside. When replace these components, perhaps the voltage and power suit the requirements, but efficient X-ray protection may not be provided. All these components are marked with △ in the schematic diagram. When replace these, you'd better look up the components listed in this manual. If the component you replaced not has the same safety (EMC) performance, harmful X-ray may be produced.

PART II. Product Specification

1. Ambient conditions:

1.1 Ambient temperatures:
a. Operating: -10℃ ~ +40℃
b. Storage: -15℃ ~ +45℃

1.2 Humidity
a. Operation: < 80%
b. Storage: < 90%

1.3 Air pressure: 86kpa ~ 106kpa

2. General specification

2.1 CPU: TMP87PS38N M17

2.2 TV broadcasting system
a. PAL DK/BG
b. SECAM BG/DK
c. NTSC M
d. NTSC 3.579/4.43 (AV mode)
***** According to the model of TV sets, not all systems above will be adopted.

2.3 Receiving channels:
a. 48.25MHz ─ 463.25MHz (Hyper band)
b. 471.25MHz ─ 855.25MHz (UHF)

2.4 Scanning lines and frequencies:
525/625 lines 15.625kHz/15.75kHz 50/60Hz

2.5 Color sub carrier: 4.433MHz/3.579MHz

2.6 Intermediate frequencies:
a. Picture: 38.0MHz or 38.9MHz*
b. Sound: 4.5/5.5/6.0/6.5MHz
* The IF (picture & sound) may vary with the model of TV sets.

2.7 Power consumption: ≤80W

2.8 Power source: AC 110V ~ 240V 50/60Hz

2.9 Audio output power (7% THD): 21" 4W+4W (R+L)

2.10 Aerial input impedance: 75Ω unbalanced din jack ant.input75

2.11 Product safety requirement: IEC65

2.12 Product EMC/EMI requirement: IEC106

3. Basic features of controller

3.1 Channel tuning method: Voltage synthesizer (V.S.)

3.2 Presetable program: 100 programs

3.3 Tuning for VHF and UHF bands:
a. Auto search
b. Manual tuning
c. Fine tuning

3.4 Picture and sound adjustment
a. Bright, contrast, color and volume control
b. Tint control (NTSC)
c. Sharpness control

3.5 On screen display: General features*
* OSD General feature of CPU:
Volume, Brightness, Contrast, Color, Program, Band, Auto search, Manual, Tune, Muting, AV and sleep timer

3.6 Sleep timer: 10-20 minutes with 10M.increment

3.7 Auto off when no broadcasting signal: 15 minutes

4. Construction of front panel
a. Main power switch
b. Remote sensor
c. Standby indicator
d. Menu select
e. TV/AV select
f. Program volume up/down
g. RCA socket（Optional）

5. Construction of rear panel
a. 75Ω Antenna terminal
b. RCA socket A-R+L in/out, V-in/out

6. Audio input and output: RCA socket

Specification	Scart	RCA
Video input 75 Ω	1Vp-p	1Vp-p
Audio input 10k Ω (R+L)	0.5Vrms	0.5Vrms
Video output 75 Ω	1Vp-p	1Vp-p
Audio output 1k Ω (R+L)	0.5Vrms	0.5Vrms
RGB input 75 Ω	0.7Vp-p	
Audio line output 1k Ω	1Vp-p	

***** Design and specifications are subject to change without prior notice for the purpose of performance improvement.

PART III. Brief Introduction on Chassis

The circuit of M17+TB1238 mainly consists of the following parts: tuner, IF channel, video detector, color decoding, luminance & matrix circuit, demodulation & power amplification for sound, sync separation, horizontal & vertical scan, microcontroller, remote control receiver & transmitter, EHT generated circuit, switched-mode regulated power supply, flat square self-convergence color tube. (See Fig.1)

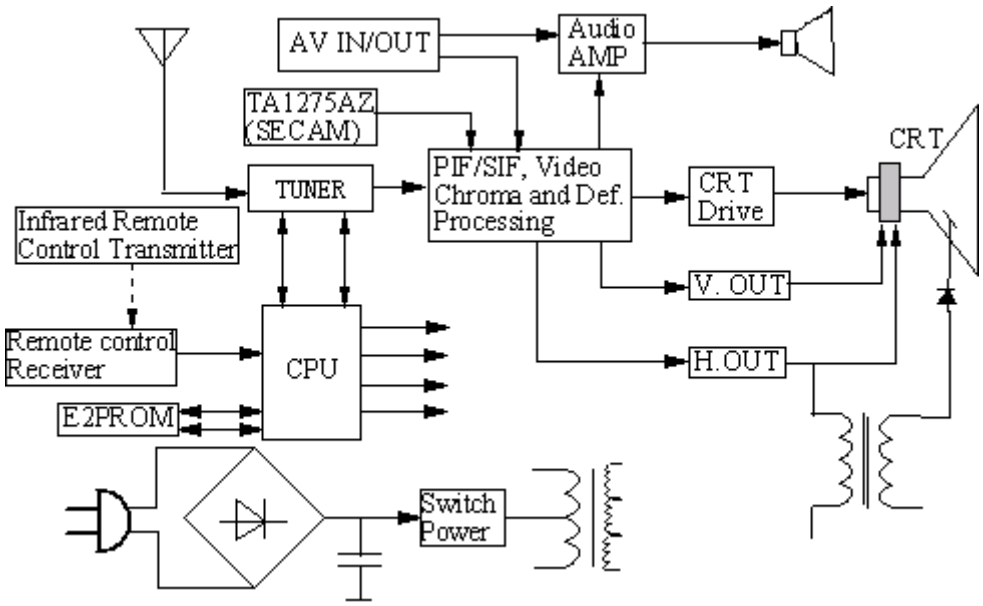


Fig.1 M17+TB1238N

(1) Tuner

The function of the tuner is to select the channel to be received and suppress the interference, to amplify the high frequency signal, to improve the receiving sensitivity and SNR, to generate PIF signal through frequency conversion.

(2) IF Channel

The IF Channel mainly ensures the sensitivity and selectivity of the complete machine. The IF AMP integrated in TB1238N is made up of the third-stage dual-differential amplifier with gain value above 70db, SNR of 55dB and bandwidth of 7MHZ. The video demodulation circuit is made from the built-in PLL Sync Detector. The spectrum of the demodulation carrier is unitary and not affected by the content of the video signal. The tuner features stable receptivity while the signal output from the video detector features high fidelity.

PLL built-in TB1238N generates 38.0MHZ or 38.9MHz demodulation reference signal for sync detector to demodulate the video signal, which is called 'PLL sync demodulation'.

(3) Chroma Signal Decoding Circuit

Through the external BPF (band-pass filter) to single out the chroma signal and burst signal within

the range of fsc+1.3MHZ from among the composite signals output from the video detector. After being amplified by ACC, the chroma signal is fed into the synchronous detector to be demodulated to obtain the color difference signal.

(4) Luminance Channel and Matrix Circuit

The luminance channel of TB1238N has the black stretch circuit to make the 'darkish' ingredient of the picture turn 'atrous', thus improve the contrast and depth perception of the picture. It also has the delayed definition-enhanced circuit to enable the details of the picture more vivid. The luminance signal (Y) is sent into the matrix circuit after being delayed for 0.6μs and composes R/G/B signal combined with three color-difference signals (B-Y, R-Y, G-Y).

(5) Sync Separation and Deflection Processing Circuit

TB1238N has the 32fh PLL (fh = horizontal frequency). In accordance with the frequency and phase information carried by composite sync signal, PLL generates scan clock signal with 32fh and horizontal drive pulse will be obtained through 32fh countdown. Use integrating circuit to extract vertical sync signal from the composite sync pulse to control the counter for vertical countdown. The counter countdown the 32fh clock signal, thus vertical frequency sync pulses under various systems can be obtained.

TB1238 includes the vertical SW former (sawtooth wave former) and can control the gain and linear of SW (sawtooth wave). Therefore, the vertical amplitude control and the linearity correction of the scanning raster can be achieved by setting the data with remote controller via I^2C bus input.

(6) Sound Channel

Use external ceramic filter to select the second SIF signal for the sound channel of TB1238N from the signal output from the video detector. Obtain audio signal after limiting amplification and demodulation by frequency detector for SIF signal, and then output the audio signal to IC TA8213K to drive the speaker to restore the sound. Built in the TB1238N, both frequency detector and volume-control attenuator are set and adjusted via I^2C bus.

(7) Remote Control System

The MCU (TMP87PS38N) of an 8-bit CPU and the software TCLM17 constitute the control core of the remote control system, mainly accomplishing the following functions: decoding remote control commands; auto search memory; displaying characters & patterns; switching the signal source between AV and TV.

Infrared remote control transmitter is composed of the special single chip (TC-9028F) and the keyboard system. The transmitter translates the commands represented by R/C keys into function codes, and separately demodulates the 37.9KHZ carrier and 940nm infrared ray twice to generate remote infrared transmitting signal delivered by infrared LED. The remote control distance isn't

less than 8 meters.

With infrared LED the remote control system converse the optical signal into electrical signal, which will be amplified and decoded to restore the codes of the remote control commands for MCU to analyze and execute.

The remote control system has three operating modes: user-controlled mode (U-mode), service mode (S-mode) and factory default mode (D-mode). U-mode includes the following functions: channel search and memory; teleview and channel selecting; volume control, brightness adjustment, contrast and color adjustment. S-mode and D-mode are mainly used in production, checking & repairing, including the following functions: horizontal & vertical centering control, vertical amplitude and linearity adjustment; setting the adjusting range for volume, contrast, brightness, tint and color; geometric adjustment and white balance adjustment.

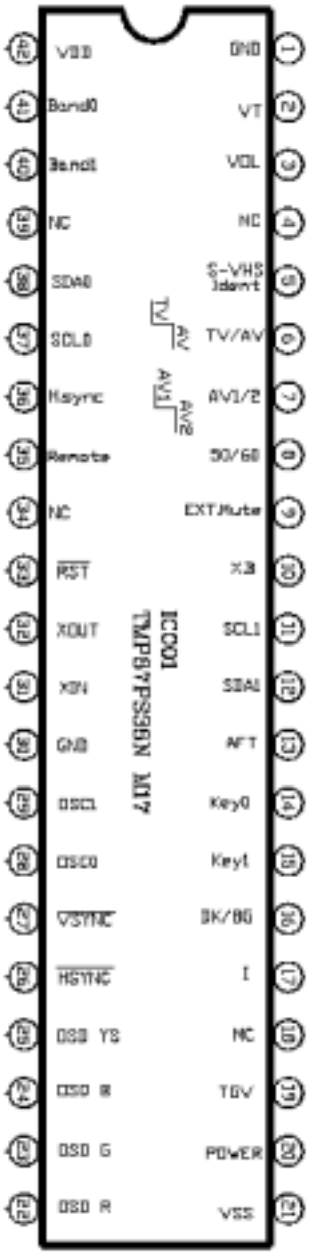
(8) CRT Drive Circuit

Adopting the cascode to amplify both voltage and current of R/G/B signal, the CRT drive circuit is able to demodulate the cathode beam current of the CRT. The R/G/ B signal input into the cascode circuit is of negative polarity.

(9) Power Supply Circuit

To supply various stabilized operating voltages and safeguard protections.

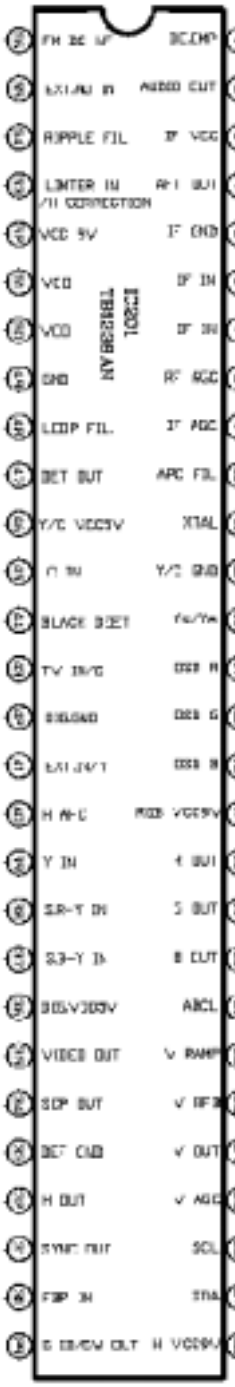
PART IV. IC Pin Description



Pin Description (TMP87PS38N M17)

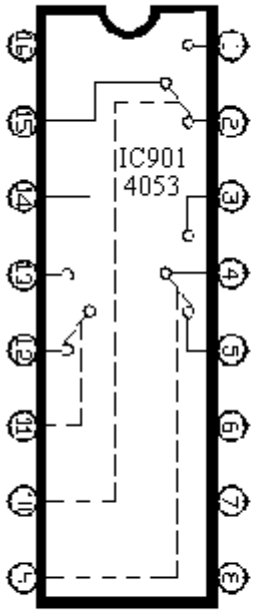
No.	Pin name	Signal name	I/O	Function
1	VSS	VSS	-	Connection to GND
2	P40(PWM0)	VT	OUT	VT OUT
3	P41(PWM1)	VOL	OUT	Volume out
4	P42(PWM2)	N.C	-	N/A
5	P43(PWM3)	S-VIDEO	IN	S-video indent
6	P44(PWM4)	AV/TV	OUT	AV or TV Switch
7	P45(PWM5)	AV1/AV2	OUT	AV1 or AV2 Switch
8	P46(PWM6)	50/60	OUT	50Hz or 60Hz Switch
9	P47(PWM7)	EX-MUTE	OUT	Extern Mute
10	P50	N.C	-	N/A
11	P51	SCL1	OUT	I2C bus clock output 1
12	P52	SDA1	OUT	I2C bus data output 1
13	P53(AIN0)	AFT	IN	AFT input
14	P54(AIN1)	KEY_IN0	IN	Local key input detection 0
15	P55(AIN2)	KEY_IN1	IN	Local key input detection 1
16	P56(AIN3)	BG/DK	OUT	Sound Switch
17	P60(AIN4)	I	OUT	Sound Switch
18	P61(AIN5)	M	OUT	Sound Switch
19	P62(CSOUT)	TGV	OUT	Test signal output
20	P63	POWER	OUT	Power control and check
21	VSS	VSS	-	Connection to GND
22	P64(R)	R	OUT	OSD R signal output
23	P65(G)	G	OUT	OSD G signal output
24	P66(B)	B	OUT	OSD B signal output
25	P67(Y/BL)	Y	OUT	OSD Y signal output
26	P70(HD)	HD	IN	OSD HD signal input
27	P71(VD)	VD	IN	OSD VD signal input
28	OSC1	OSC1	IN	Connection to OSD oscillator
29	OSC2	OSC2	OUT	Connection to OSD oscillator
30	TEST	TEST	IN	Connection to GND
31	XIN	XIN	IN	Connection to 8MHz oscillator
32	XOUT	XOUT	OUT	Connection to 8MHz oscillator
33	RESET	RESET	IN	Reset signal input
34	P20	N.C	-	N/A
35	P30(RXIN)	REMOTE	IN	Input signal from remote control
36	P31	H.SYNC	IN	Horizontal sync signal input
37	P34	SCL0	OUT	I2C bus clock output 0
38	P35	SDA0	OUT	I2C bus data output 0
39	P57	N.C	-	N/A
40	P32	BAND1	OUT	BAND1 output
41	P33	BAND0	OUT	BAND0 output
42	VDD	VDD	IN	Connection to 5V power supply

PIN Description (TB1238)

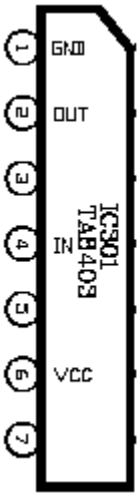


No.	PIN NAME	FUNCTION	No.	PIN NAME	FUNCTION
1	DE.EMP	Connected with capacitor for de-emphasis	29	S ID/C# OUT	PAL/NTSC ID output and SECAM ID input. And chroma sub-carrier frequency is switched by bus.
2	AUDIO OUT	Audio output	30	FBP IN	FBP input
3	IF VCC	Vcc of PIF circuit	31	SYNC OUT	Composite sync. output
4	AFT OUT	AFT output	32	H OUT	Output of horizontal driver signal
5	IF GND	GND of PIF circuit	33	DEF GND	GND of deflection circuit
6	IF IN	IF signal input	34	SCP OUT	Sand Castle Pulse output
7	IF IN	IF signal input	35	VIDEO OUT	Video switch output
8	RF AGC	RF AGC output	36	DIG.VDD5V	VDD of digital block
9	IF AGC	Connected with IF AGC filter	37	S.B-Y IN	SECAM B-Y input
10	APC FIL	Connected with APC filter	38	S.R-Y IN	SECAM R-Y input
11	XTAL	Connected with 4.43MHz X'tal oscillator	39	Y IN	Y input
12	Y/C GND	GND of Y/C circuit	40	H.AFC	Connected with H.AFC filter
13	Ys/Ym	Switching of Half Tone/ Analog RGB Mode/AKB mode	41	EXT.IN/Y	Input of composite signal or Y signal from TV's ext. jack
14	OSD R	Analog R signal input	42	DIG.GND	GND of digital block
15	OSD G	Analog G signal input	43	TV IN/C	Input of composite video signal from PIF Det. output
16	OSD B	Analog B signal input	44	BLACK DET	Connected with Black Det. filter
17	RGB Vcc9V	Vcc of OSD circuit	45	C.IN	Input of chroma signal from TV's ext.jack
18	R OUT	Analog R signal output	46	Y/C Vcc5V	Vcc of Y/C circuit
19	G OUT	Analog G signal output	47	IF DET OUT	Output of composite video signal and SIF signal detected in IF circuit
20	B OUT	Analog B signal output	48	LOOP FIL.	Connected with loop filter for IF PLL
21	ABCL	ABL/ACL control	49	GND	GND of VCO and SIF circuit
22	V.RAMP	Connected with a capacitor to make V. RAMp signal	50	VCO	Connected with a tank coil for IF VCO
23	V.NFB	Input of V.sawteeth signal feedback	51	VCO	Connected with a tank coil for IF VCO
24	V.OUT	Output of Vertical driver signal	52	Vcc 9V	Vcc of IF VCO and SIF
25	V.AGC	V.AGC keeps V.RAMP amplitude constant	53	LIMI IN	SIF signal input and H. curve correction
26	SCL	Input of I2C bus clock	54	RIPPLE FIL.	Stabilize the performance of SIF injection-lock circuit
27	SDA	Input/Output of I2C bus data	55	EXT.AU IN	Input of audio signal from TV's ext.jack
28	H.Vcc9V	Vcc of deflection circuit	56	FM DC NF	FM DC Negative Feedback

Pin Description (4053)



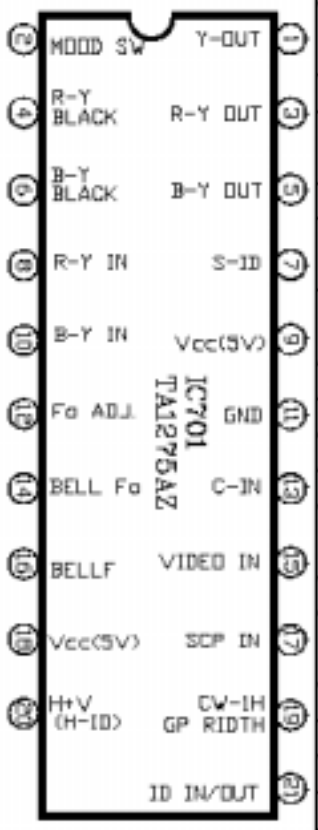
No.	Pin Name	Function
1	1Y	1Y input
2	0Y	0Y input
3	1Z	1Z input
4	Z-COMMON	Z common output
5	0Z	0Z input
6	INH	INHibit terminal. When high level, all switch down
7	Vee	Negative supply
8	Vss	Ground
9	C	Control terminal
10	B	Control terminal
11	A	Control terminal
12	0X	0X input
13	1X	1X input
14	X-COMMON	X common output
15	Y-COMMON	Y common output
16	Vdd	Power supply



Pin Description (TA8403K)

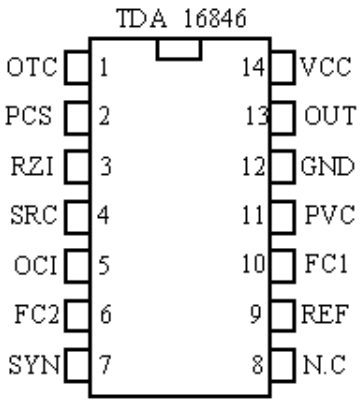
No.	Ping Name	Function
1	GND	Ground
2	OUT	Vertical Output
3		Pump-up Power Supply
4	IN	Input
5		Phase Compensation
6	VCC	Power Supply
7		Pump-up Output

Pin Description (TA1275AZ)

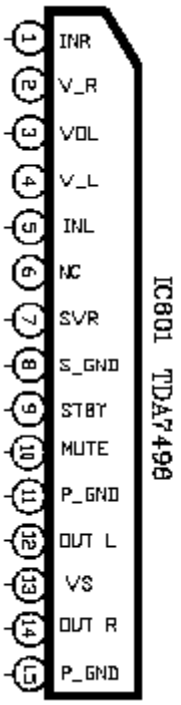


No.	Pin Name	Function
1	Y OUT	The output pin for Y signal
2	MODE SW	The pin for controlling the Y processing mode
3	R-Y OUT	The output pin for demodulated R-Y signal
4	R-Y BLACK CONTROL	The pin for controlling the black offset level
5	B-Y OUT	The output pin for demodulated B-Y signal
6	B-Y BLACK CONTROL	The pin for controlling the black offset level
7	S-ID FILTER (killer OFF)	The pin for connecting the SECAM ident filter capacitor
8	EXT.R-Y IN	The input pin for externat R-Y signal
9	VCC 5V	The Vcc pin for Y/C processing block
10	EXT.B-Y IN	The input pin for external B-Y signal
11	GND	The GND pin
12	FO-ADJ.FILTER	The pin for connecting a capacitor for automatic adjusting circuit
13	C IN	The chroma signal input pin
14	BELL ADJ. FILTER	The pin for connecting the filter capacitor for the bell filter f0, 4.286MHz
15	Y IN	The Y signal input pin
16	BELL CONTROL	The pin for selecting the bell filter f0
17	S.C.P IN	The pin for input the sand castle pulse, SCP
18	VCC 5V	Vcc pin for logic block
19	4.43MHz CW-IN	The pin for input 4.43MHz of carrier wave for self adjustment circuit
20	ID SW	The switch pin for selecting the ID detection mode
21	SECAM ID I/O (killer OFF)	The interface pin to the main processor

Pin Description (TDA 16846)



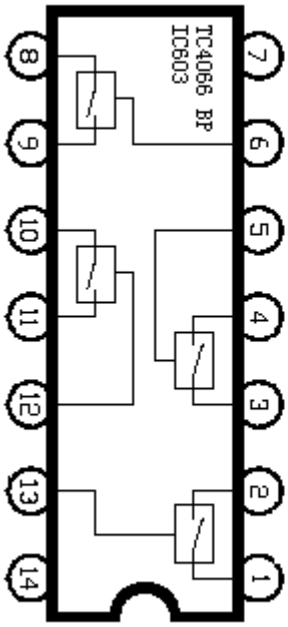
No.	Pin Name	Function
1	OTC	Off Time Circuit
2	PCS	Primary Current Simulation
3	RZ1	Regulation and Zero Crossing Input
4	SRC	Soft-Start and Regulation Capacitor
5	OC1	Opto Coupler Input
6	FC2	Fault Comparator 2
7	SYN	Synchronization Input
8		N.C.
9	REF	Reference Voltage and Current
10	FC1	Fault Comparator 1
11	PVC	Primary Voltage Check
12	GND	Ground
13	OUT	Output
14	VCC	Supply Voltage



Pin Description (TDA 7496)

No.	PIN NAME	FUNCTION
1	INR	R channel input
2	VAROUT_R	Variable output of R channel
3	VOLUME	Volume
4	VAROUT_L	Variable output of L channel
5	INL	L channel input
6	NC	NC
7	SVR	Connected with capacitor for supply voltage rejection
8	S_GND	GND of Signal
9	STBY	Stand-by
10	MUTE	Mute
11	PW_GND	GND of power AMP circuit
12	OUT L	L channel signal output
13	VS	Supply voltage
14	OUT R	R channel signal output
15	PW_GND	GND of power AMP circuit

Pin Description (4066)



NO.	Function
1	SW1 input/output
2	SW1 input/output
3	SW2 input/output
4	SW2 input/output
5	SW2 control. When level high, switch on
6	SW3 control. When level high, switch on
7	Ground
8	SW3 input/output
9	SW3 input/output
10	SW4 input/output
11	SW4 input/output
12	SW4 control. When level high, switch on
13	SW1 control. When level high, switch on
14	Power Supply Vcc

PART V. Adjusting Description

1. Adjusting item

(1) Parameters adjusted via I^2C bus and the items set via I^2C bus

The parameters adjusted via I^2C bus and items set via I^2C bus are all included in the following tables related to adjustment.

Method to enable D-mode:

Press 'D-mod' key on the factory-default R/C, the character 'D' in red displays on the right up screen.

Method to enable S-mode:

Press the 'VOL-' key on the panel until the volume is set to 00, at the same time hold the DISPLAY button on the R/C, on the right up screen will display the character 'C' in red.

Method to exit S-mode（or D-mode）:

Press the POWER button on main unit to turn off the TV and turn on the TV again.

The adjusting item in U-mode (operation for watching TV) is operated according to the owner's manual.

E^2PROM has been adjusted and set in the factory. If there's no necessary, don't change and initialize the data as one likes.

Table 1

1) Contrast Unit

CNTX	MENU 8	0~3FH	Max. Contrast level (Max. Y peak—peak value) control
CNTC	MENU 9	0~3FH	Sub contrast adjustment
CNTN	MENU 8	0~3FH	Min. Contrast level (Min. Y peak—peak value) control
SCNT	MENU 8	0~0FH	Subsidiary contrast adjustment

2) Brightness Unit

BRTX	MENU 8	0~7FH	Max. Brightness level setting
BRTC	MENU 9	0~7FH	Sub brightness adjustment
BRTN	MENU 8	0~7FH	Min. Brightness level setting
BRTS	MENU 9	0~7FH	SECAM system sub brightness setting
S-R-Y	MENU 6	0~0FH	R－Y blanking level adjustment (SECAM)
S-B-Y	MENU 6	0~0FH	B－Y blanking level adjustment (SECAM)

3) Chroma Unit

COLX	MENU 8	0~7FH	Max. Color level setting
COLC	MENU 9	0~7FH	Sub color (sub saturation) adjustment (NTSC)
COLN	MENU 8	0~7FH	Min. Color level setting
COLS	MENU 9	0~7FH	SECAM signal's sub color adjustment
COLP	MENU 9	0~7FH	Sub color adjustment (PAL)

4) Tint Unit

TNTX	MENU 0	0~7FH	Upper limit setting for tint control range
TNTC	MENU 9	0~7FH	Sub tint value adjustment (NTSC)
TNTN	MENU 0	0~7FH	Lower limit setting for tint control range

5) Sharpness Unit

SHPX	MENU 4	0~3FH	Sharpness' upper limit setting
SHPN	MENU 4	0~3FH	Sharpness' lower limit setting
SHPTV3	MENU 4	0~3FH	TV sub sharpness setting (3.58MHZ sub carrier)
SHPAV3	MENU 4	0~3FH	AV sub sharpness setting (3.58MHZ sub carrier)
SHPTV4	MENU 4	0~3FH	TV sub sharpness setting (4.43MHZ sub carrier)
SHPAV4	MENU 4	0~3FH	AV sub sharpness setting (4.43MHZ sub carrier)

6) OSD Unit

TXCX	MENU 0	0~3FH	Max. OSD contrast setting
RGCN	MENU 0	0~3FH	Min. OSD contrast setting
OSD	MENU 0	0~3FH	OSD horizontal adjustment
OSDV50	MENU 2	0~FFH	OSD vertical adjustment (Vertical frequency=50HZ)
OSDV60	MENU 3	0~FFH	OSD vertical adjustment (Vertical frequency=60HZ)

7) Horizon & Vertical Unit

HPOS50	MENU 2	0~1FH	Horizontal centering adjustment (FV=50Hz)
HPOS60	MENU3	0~1FH	Horizontal centering adjustment (FV=60Hz)
VPOS50	MENU 2	0~07H	Vertical centering adjustment (FV=50Hz)
VPOS60	MENU3	0~07H	Vertical centering adjustment (FV=60Hz)
HIGH50	MENU 2	0~3FH	Vertical amplitude adjustment (FV=50Hz)
HIGH60	MENU3	0~3FH	Vertical amplitude adjustment (FV=60Hz)
VLIN50	MENU 2	0~0FH	Vertical linearity adjustment (FV=50Hz)
VLIN60	MENU3	0~0FH	Vertical linearity adjustment (FV=60Hz)
VSC50	MENU 2	0~0FH	Vertical S-correction (FV=50Hz)
VSC60	MENU3	0~0FH	Vertical S-correction (FV=60Hz)
HAFC	MENU 6	0~03H	1/2 AFT data setting

8) Self-adjustment Unit

SELF-ADJ	MENU 10	0~03H	Self-adjustment mode select
PIFAFT	MENU 6	0~FFH	VCO setting, according to PIF-VCO
RFAGC	MENU 6	0~3FH	AGC setting, according to RFAGC
SELF-VCO	MENU 10	0~FFH	VCO self-adjustment object

9) White-balance Unit

RCUT	MENU 1	0~FFH	Red cutoff voltage adjustment
BCUT	MENU 1	0~FFH	Blue cutoff voltage adjustment
GCUT	MENU 1	0~FFH	Green cutoff voltage adjustment
BDRV	MENU 1	0~7FH	Blue drive gain adjustment
GDRV	MENU 1	0~7FH	Green drive gain adjustment

(2)Non bus-controlled adjusting item

The items not adjusted via I^2C bus mainly including the B+ voltage adjustment of switched-mode regulated power supply, IF PLL VCO coil adjustment and focusing control.

2. Adjusting Method

(1) B+ voltage adjustment

This adjustment is aiming to make the switched-mode regulated power supply enter in the stabilized power supply status meeting the demands of the design. The circuit design of the switched-mode stabilized power supply ensures that only if the B+ (+112V) voltage adjustment is correct, voltages output from +18V, +8V and +9V will reach within the error range of stabilized voltage simultaneously.

Adjusting procedure:

①Set the control point of VR801 to the central position before switched-on

②Switching in voltmeter at the output point of B+ voltage (the point is between the positive pin of C827 and GND)

③Turn on the TV set, receive the color TV test card signal

④Set the brightness and contrast to 50 (central), the corresponding beam current is about 0.8mA

⑤Adjust VR801 to make the voltmeter reading 112±0. 5V

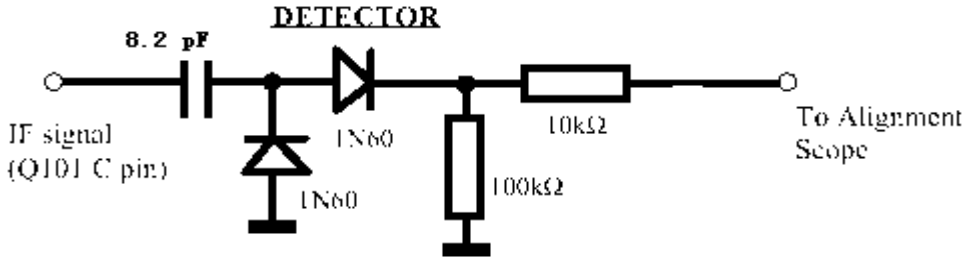
⑥Disconnect the voltmeter, fix the adjusted point there for VR801

(2) IF VCO adjustment

This adjustment is aiming to enable the oscillation frequency of the IF VCO up to 38.0MHZ or 38.9MHz. (For the chassis with TB1238N, there's no need adjusting the IF VCO)

(3) RF AGC adjustment

This adjustment is aiming to make sure the delayed quantity of RF AGC's starting control. It's usually expected that RF AGC start control to improve the SNR of the complete machine when the IF AGC make the PIF gain drop down to the minimum. The data of RF AGC is stored in E^2PROM and has been well adjusted before the chassis leaves the factory. Generally speaking, it's unnecessary to adjust RF AGC when checking & repairing. If it should be adjusted for some reason, do it in line with the following principles: when receiving the local channel with the strongest TV signal, provided that there's no distortion in picture, do the adjustment to find out the minimal value of RF AGC voltage. The RF AGC voltage output from TB1238N is adjustable within the range of 0.2~9V, its optimum voltage setting is related to the adopted tuner. For example, the high-frequency gain is the maximal when the AGC voltage of TELE4-801A is at about +4.0±0.1V. So in order to enable the tuner operating on the mode that the high-frequency gain is the maximal, the voltage of RF AGC should be at 4V or so.



With applying a 471.25MHz RF signal (amplitude > 70dB), adjust RFAGC to set the voltage peak-peak value of waveform to 0.8 Vp-p.

Specific adjusting method:

①Tuning the TV to the local channel with the strongest signal, usually the signal strength is not less than 65dBμ. (Generally, the signal field strength at the CATV user exit can meet this demand)

②Enter S-mode

③Select MENU 3, press PRO△/▽ key to set the data of RAGC, first set the data to minimum, then increase the data slowly till the snowy dots on the screen have just disappeared.

④Exit S-mode (or D-mode)

(4) Sub color (NTSC, PAL) and sub tint (NTSC) adjustment

The dark & light of picture color is determined by the color saturation. From the point of chroma signal, saturation represents the amplitude size of chroma signal. If the amplitude of chroma signal is too big, limited by ACL and CRT modulation's non-linearity, distortion will occur to the tint of picture; on the contrary, when the amplitude of chroma signal is too small, the picture color becomes dark, and the tint is also not correct.

Sub color adjustment is to adjust the gain of the sub color circuit to ensure no color distortion in the picture redisplayed on the screen when the color (saturation) is set to 50 (central).

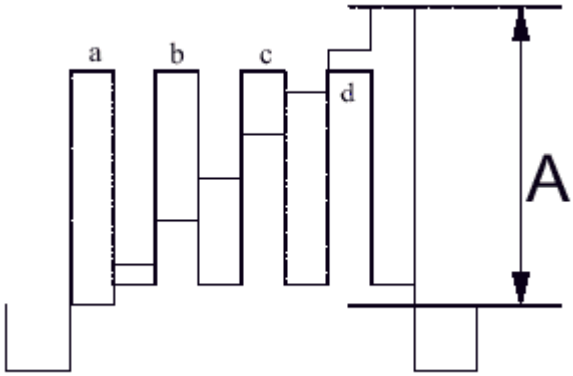
The sub color adjustment for NTSC (3.58MHZ sub carrier) signal and PAL (4.43MHZ sub carrier) signal should be done separately and sent to the sub address [Vnicolor] of TB1238N via I^2C bus so as to ensure no distortion in the picture under the two different systems.

Adjusting method:

1.Apply the Grey-scale/Color-bar (NTSC) to the AV input, in normal status.

2.Enter D-mode, and switch in the oscilloprobe at one terminal of R217 close to IC201 (B-OUT)

3.Select CNTC to adjust the sub-contrast, until the amplitude ‘A’ is 2.5Vp-p as show below



4.Select MENU 3, move the cursor to COLC. Press VOL △/▽ key to select COLC data to make the waveform a and d aligned.

5.Press VOL △/▽ key to select TNTC data to make the waveform b and c aligned.

6.Apply the Grey-scale/Color-bar (PAL) to the AV input, in normal status.

7.Re-enter D-mode, and Switch in the oscilloprobe at one terminal of R217 close to IC201 (B-OUT)

8.Press VOL △/▽ key to select COLP data to make the waveform a, b, c and d aligned

(5) Sub brightness adjustment

The function of sub brightness circuit is to control the DC level of Y signal. The aim of the Sub brightness adjustment is to make the dynamic linearity range of R/G/B signal maximal so as to ensure no distortion in the highlight brightness zone and low light brightness zone. When the DC level of Y signal is too high, the DC level of the combined R/G/B signal via matrix circuit will be too low.

This will result in that the CRT beam current is too big so that the ABL circuit will activate to limit the electron beam, therefore produce clipping distortion in the lower part of the R/G/B signal.

When the DC level of Y signal is too low, the DC level of R/G/B signal will be too high to cause the CRT cut off, thus clipping distortion occurs in the upper part of the R/G/B signal.

Adjusting method:

①Receive color test card signal .

②Set TV's brightness, contrast and color to 50(central)

③Enter S-mode (or D-mode), call out MENU 3, move the cursor to BRTC item.

④Adjust the BRTC data to make the second staircase (sub black staircase) just visible so that there's no demitint in the highlight brightness zone while it is not too dark in the lowlight brightness zone.

⑤ When receiving common TV signal, adjust the data of BRTC to make it that there's no demitint in the highlight brightness zone while it is really ‘atrous' in the dark black zone, rich and clear scene displays in the picture.

(6) Sub contrast control

The aim of this adjustment is when selecting mid value (= 50) for contrast, to make the dynamic linearity range of R/G/B maximal so as to ensure the picture with rich and clear gradation.
Therefore, there's a close connection between the contrast control and picture quality.
When receiving the color TV test card signal transmitted by TV stations, operate according to the following procedure:
①Enter S-mode (or D-mode)
②Select MENU 3, press VOL△/▽ key to select CNTC data to make the gradation of gray scale clearly display on the screen.
③Set the contrast to the maximum, check the test card grayscale displaying on the screen, and adjust the CNTC data to make the gradation clearer.
④Exit the S-mod (or D-mod)

(7) Focusing Control

Focusing control is required to ensure that the picture is clear-cut after the CRT or the FBT has been replaced.
It should apply the black or white crosshatch signal for focusing adjustment, and the chassis itself has this kind of signal source (or observe the OSD directly).
Adjusting method:
①Set the contrast to 100 (max) and the brightness to 50 (central).
②Enter S-mode (or D-mode), press TV/AV key to select the black or white cross-hatch signal from among the testing signal source integrated in 87Ck38.
③Adjust the focus VR knob (‘FOCUS’) on T402, first rotate the knob counter-clockwise to the extreme, then rotate the knob clockwise slowly until the horizontal line on the center of the screen shines the clearest.
④Exit S-mode (or D-mode).

(8) White Balance Adjustment

The data for adjusting white balance is stored in E^2PROM and has been precisely adjusted before the chassis leaves the factory, so usually it’s not necessary to adjust these data.
The cutoff voltage and white balance should be calibrated again after the CRT or the video AMP board has been replaced.
Adjusting method:
①Receive the color testing signal or any TV signal.
②Set the brightness, contrast and color (saturation) to 50 (central)
③Enter S-mode (or D-mode) to select the MENU 1. Use PRO △/▽ key to select the item RCUT, BCUT and GCUT, then set them all to mid value 80H separately.
④Rotate the Screen VR on T402 (FBT) counter-clockwise to the extreme.
⑤Press the '10×' key on the R/C to stop vertical scan. Rotate the Screen VR on T402 clockwise

slowly till a slight colored horizontal line is just visible on screen. Fixed the Screen VR there, don't adjust it thereafter.

⑥Press the '10×' key to restore the normal vertical scan so that the menu on the screen is visible. According to the color of the horizontal line, call out the cutoff level menu of the two other colors which did not light in the above step (or RCUT, or GCUT, or BCUT).Press the '10×'key again to stop vertical scan, and use VOL△/▽ key to adjust the data of the two selected items until the shining horizontal line becomes white, which indicates the 'black balance' adjustment has been performed.

⑦Press the ‘10×’ key again to exit white line mode and restore the normal scan raster.

⑧Set the contrast and saturation to 50, and set the brightness to 100. According to the color displaying on the screen, select GDRV and BDRV, use VOL△/▽ key to adjust the data of the two items, don't stop the ‘bright balance’ adjustment until the raster on the highlight brightness zone of picture becomes white.

⑨Inspect the white balance in various statuses by adjusting the brightness and contrast from max to min. If there's something abnormal with white balance, it is required to do the black and bright balance adjustment repeatedly to ensure good white balance can be obtained both during lowlights brightness and highlight brightness.

⑩Exit the S-mode (or D-mode).

(9) Geometrical Adjustment

Receive the color TV test card signal, in normal status.

①Enter S-mode (or D-mode), call out MENU 2.

②Select HOPS50, VPOS50, HIGH50 to adjust PAL horizontal center, PAL vertical center and PAL vertical amplitude.

③Adjust the data of the items with the VOL △/▽ key to make the picture's horizontal and vertical center, vertical amplitude closest to the geometric center of the screen, and the picture touch both the upper and lower edges of screen.

④Select VLIN50(PAL vertical linearity adjustment) and VSC50(PAL vertical scan S-correction), adjust the data corresponding to the item to make the pattern's distortion minimal.

⑤The adjusting method(NTSC) is the same as PAL, but there's a slight difference in menu, which can be selected according to table 1.

PART VI. Troubleshooting

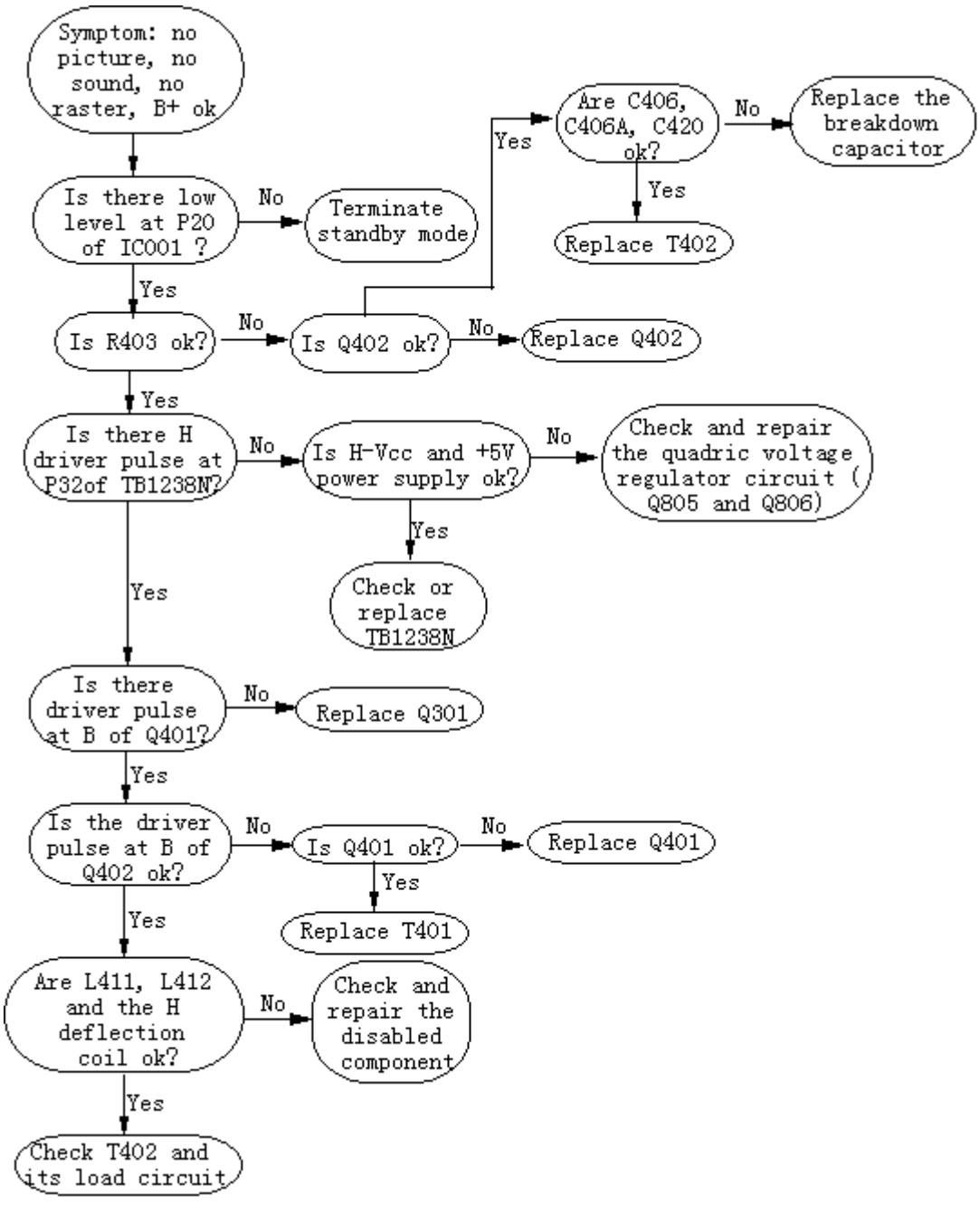


Fig.1 No picture, no sound, no raster and +B ok

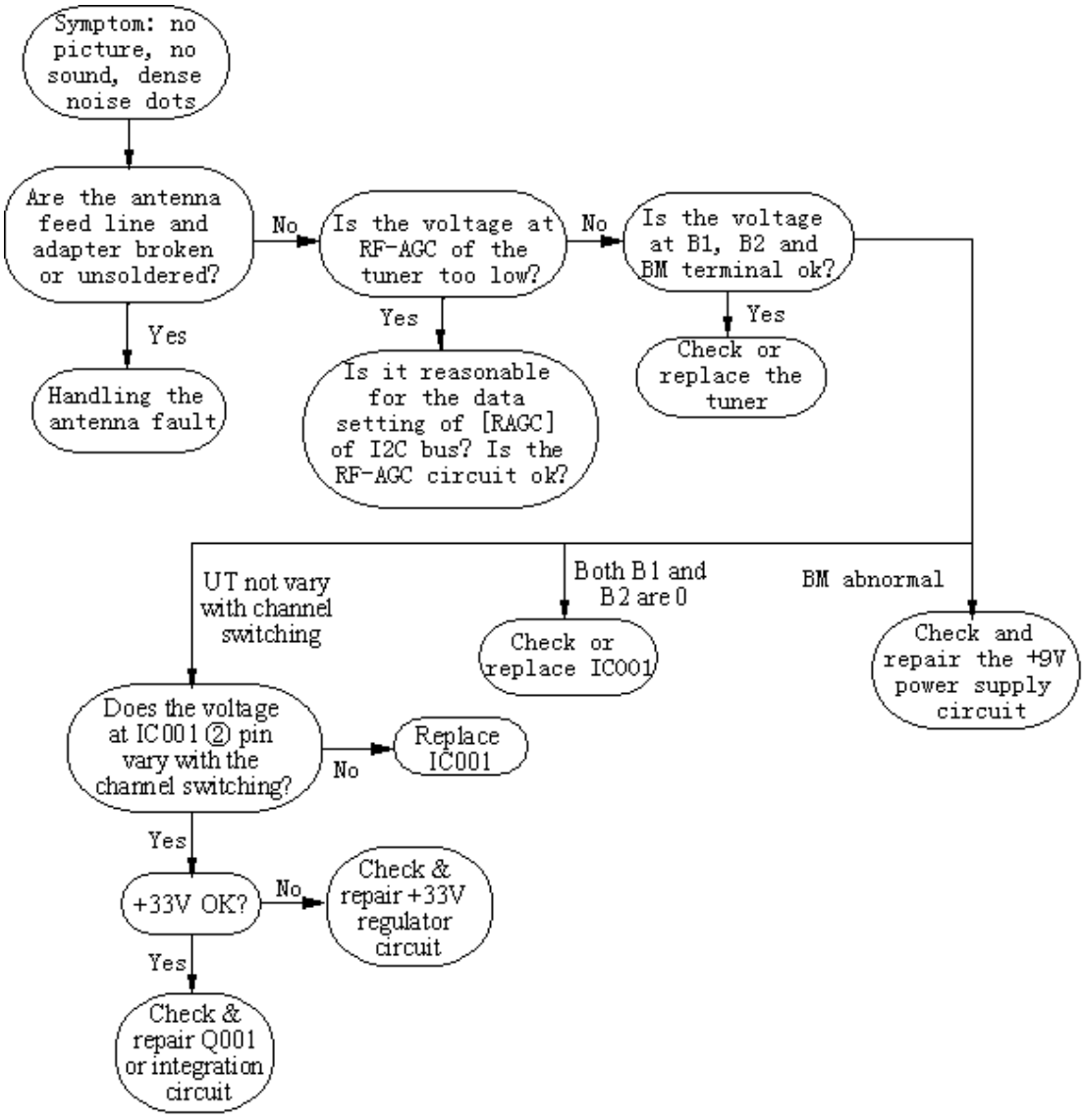


Fig.2 No picture, no sound, dense noise dots

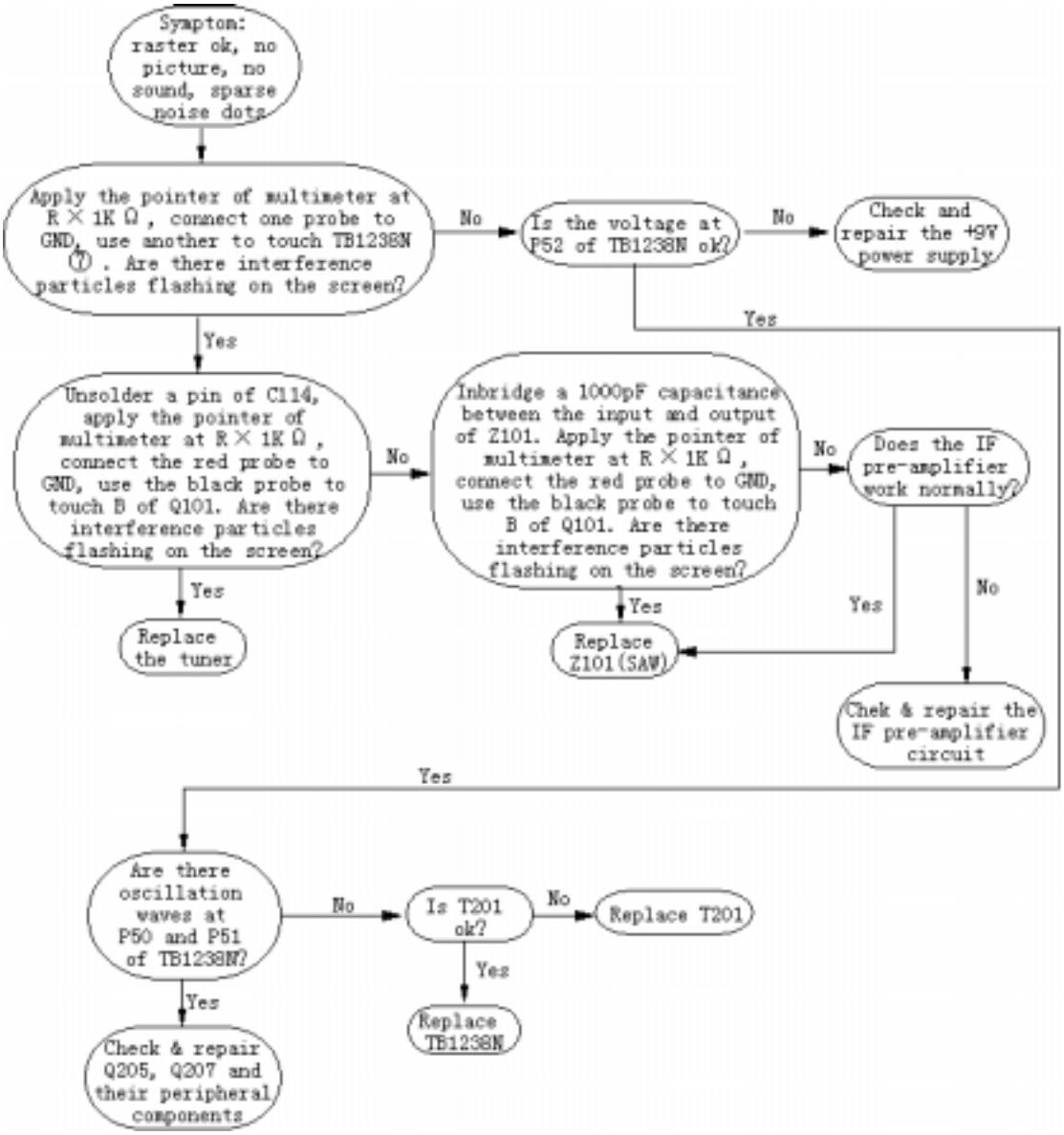


Fig.3 Raster ok, no picture, no sound, sparse noise dots

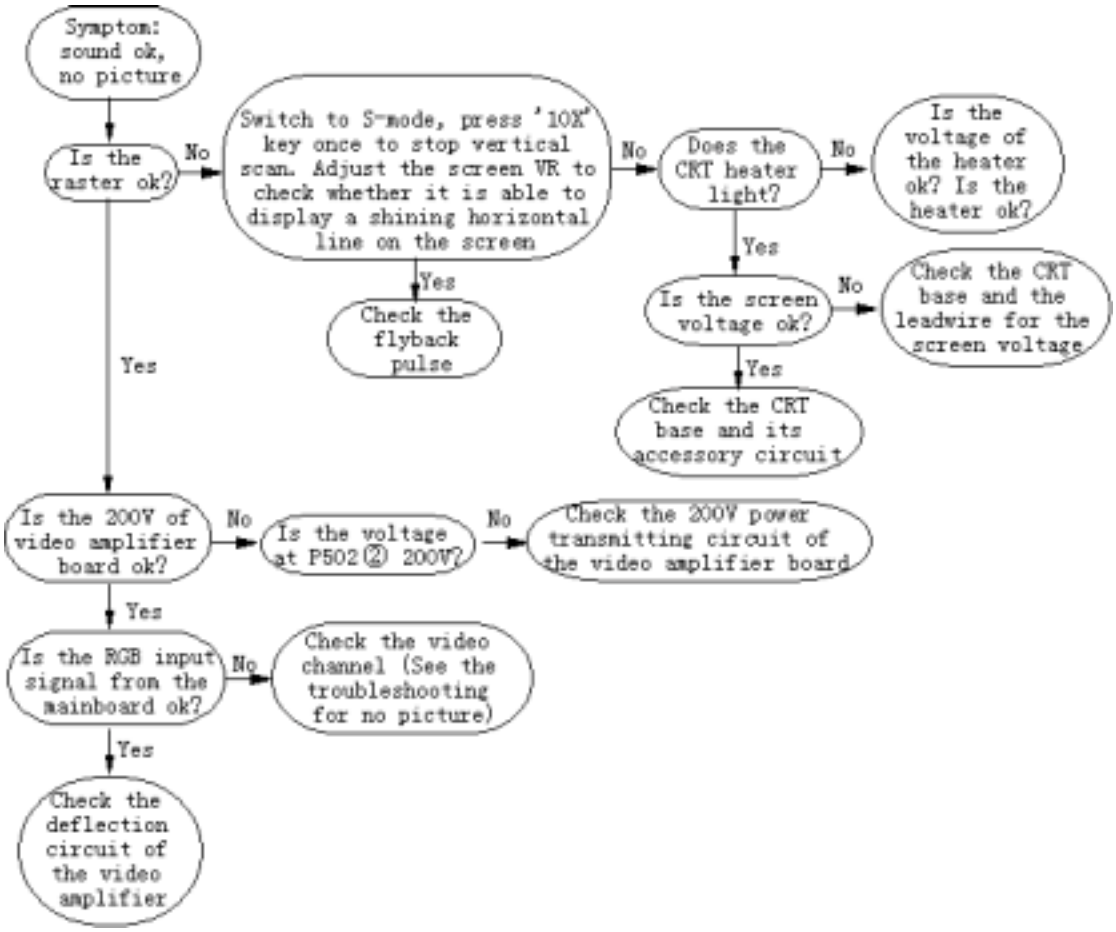


Fig.4 Sound ok, no picture

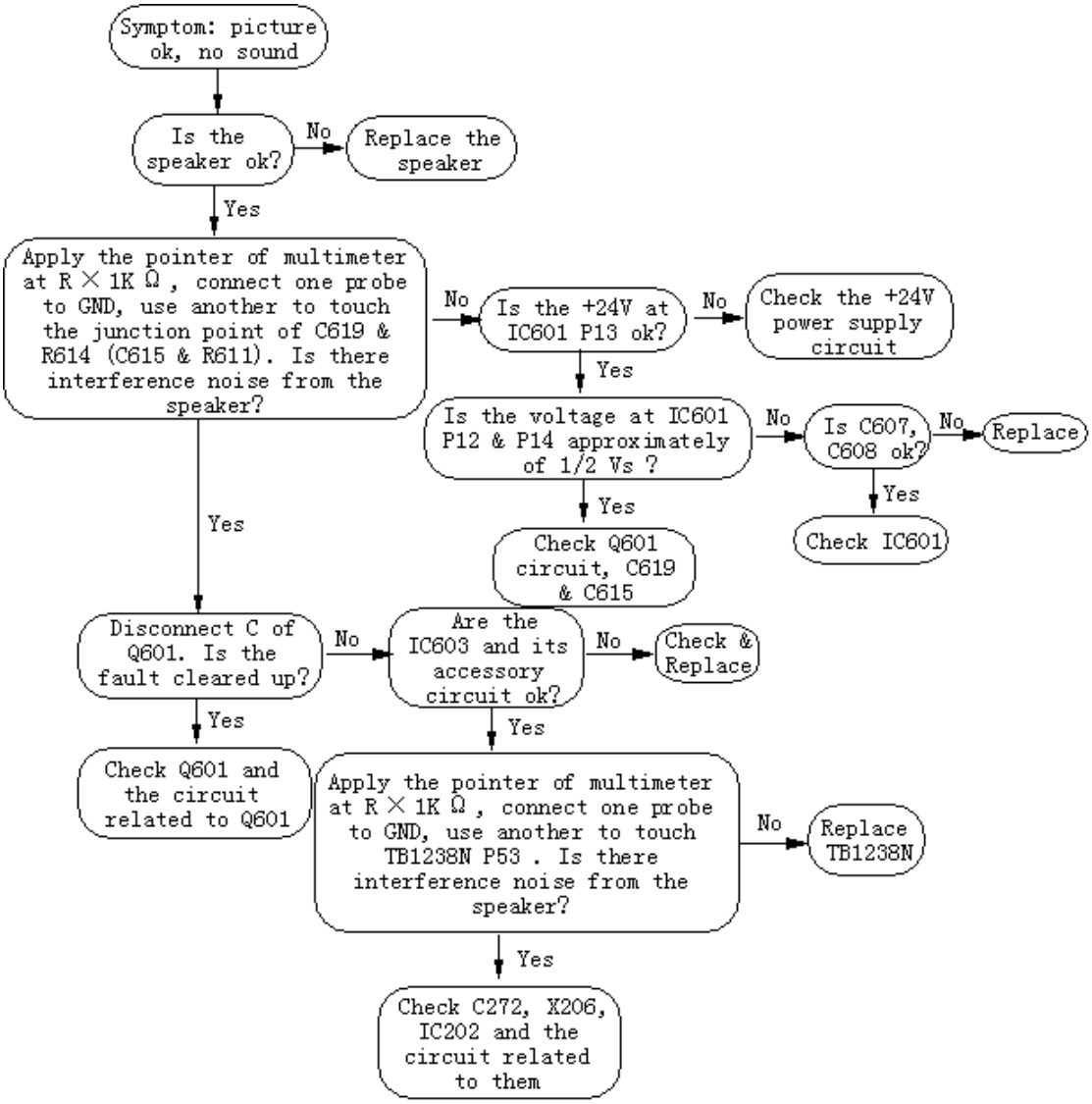


Fig.5 Picture ok, no sound

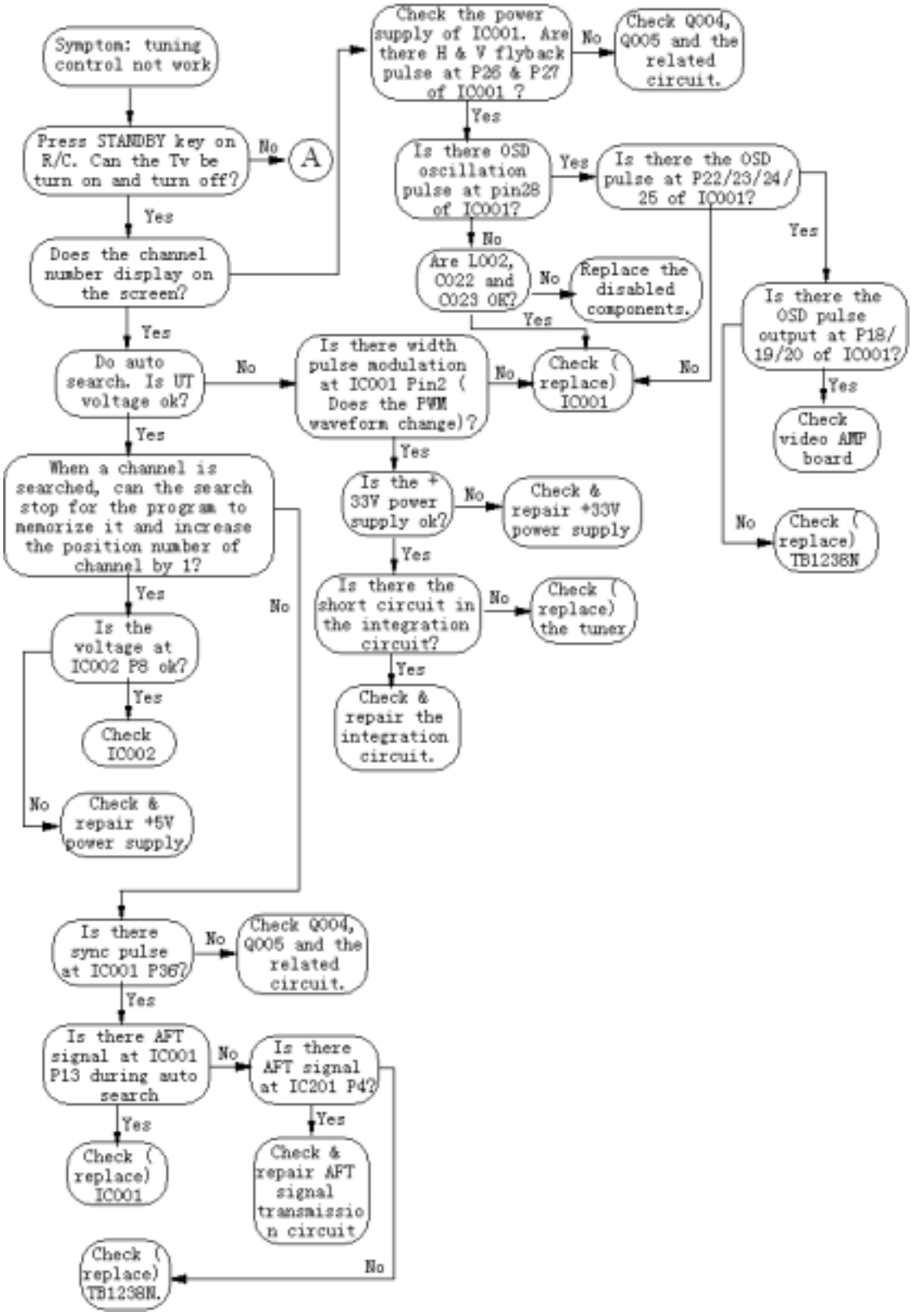


Fig.6 Tuning control not working (1)

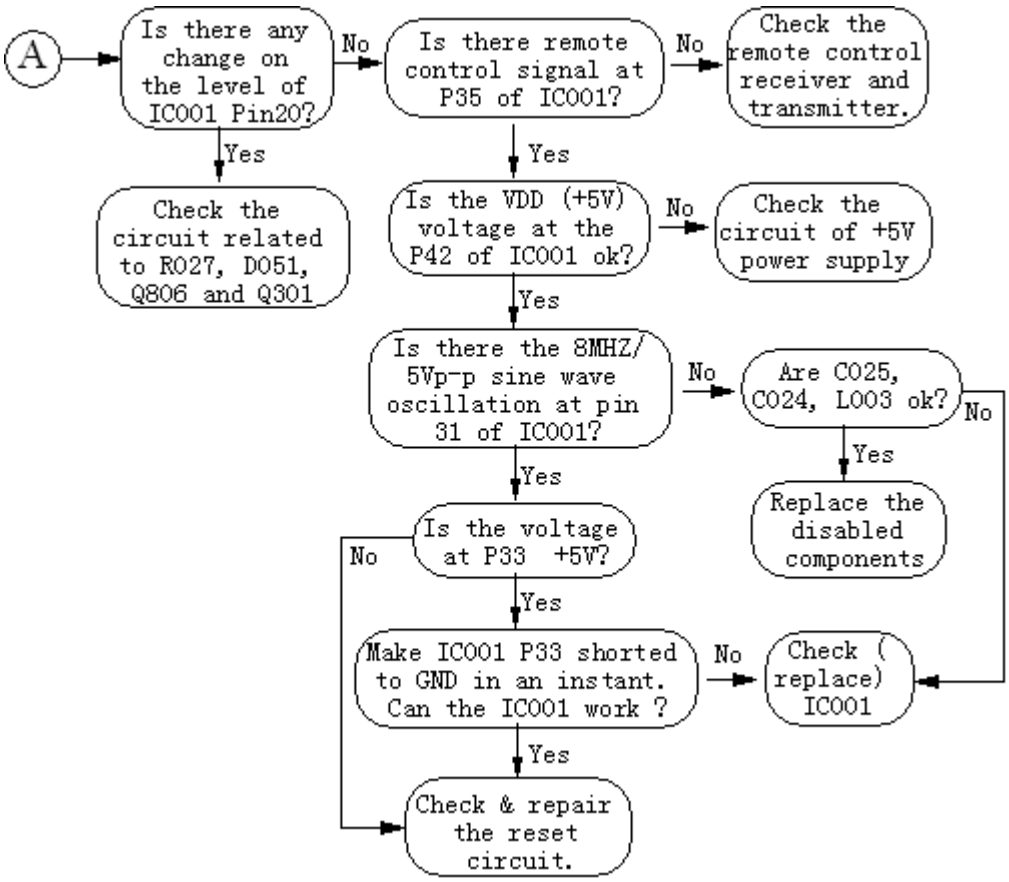
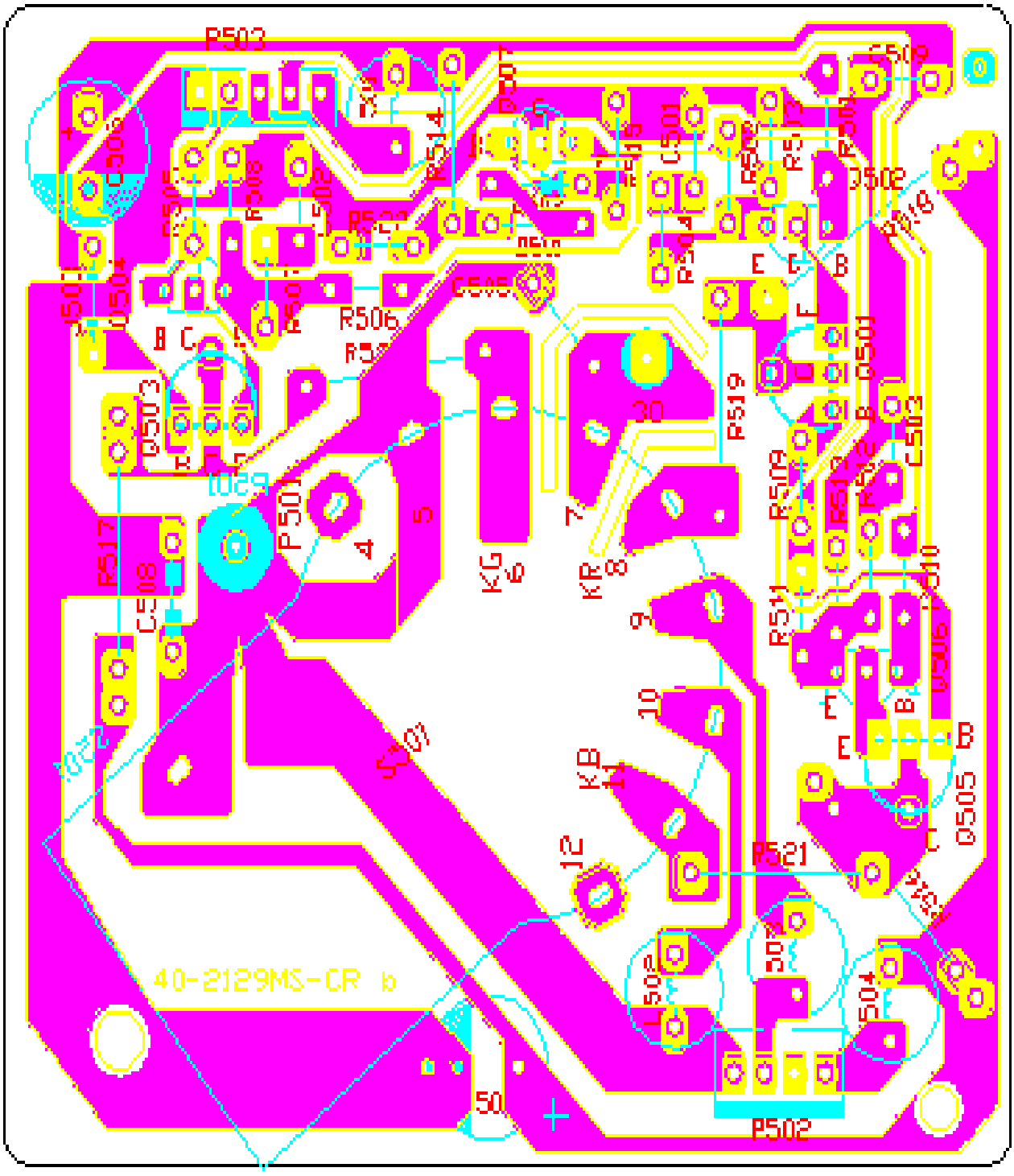


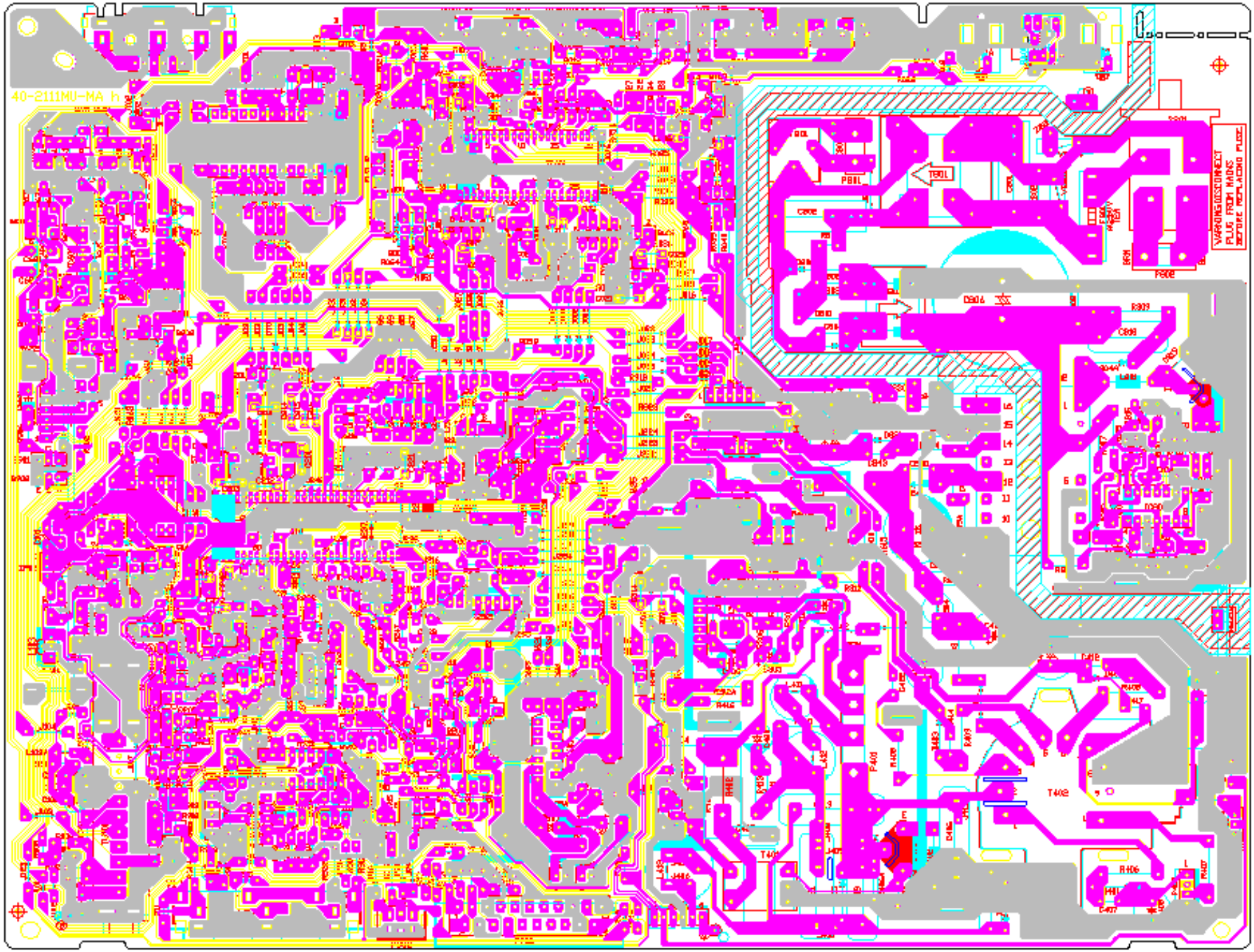
Fig.7 Tuning control not working (2)

PART VII. CRT--PCB Layout Diagram



PART VII. Main Board--PCB Layout Diagram

(PLEASE FIND THE ATTACHMENT)


40-2111MU-MA h
WARNING!DISCONNECT
PLUG FROM MAINS
BEFORE REPLACING FUSE

MODEL: TV-21" PAL B/G (NTSC 3.58/4.43AV) AV (INX2)

CIRCUIT CONSTANTS AND CIRCUIT ITSELF ARE SUBJECT TO CHANGE WITHOUT NOTICE

HITACHI: A51JSY63X13

CRT BD: 40-2129MS-CR

IC002 24C04

IC001 TMP87PS38N M17

IC601 TDA7496

IC201 TB1238AN

IC301 TA8403

IC603 TC4066BP

IC901 4053

IC101 78L05

IC801 TDA16846

IC401 7809

IC402 L7805

KSS1850-XX

T802 36-TRF020-XX1

T801 36-284180-002

T803 36-215530-002

T402 JF0501-1909A

TU101 UV1355-BK2

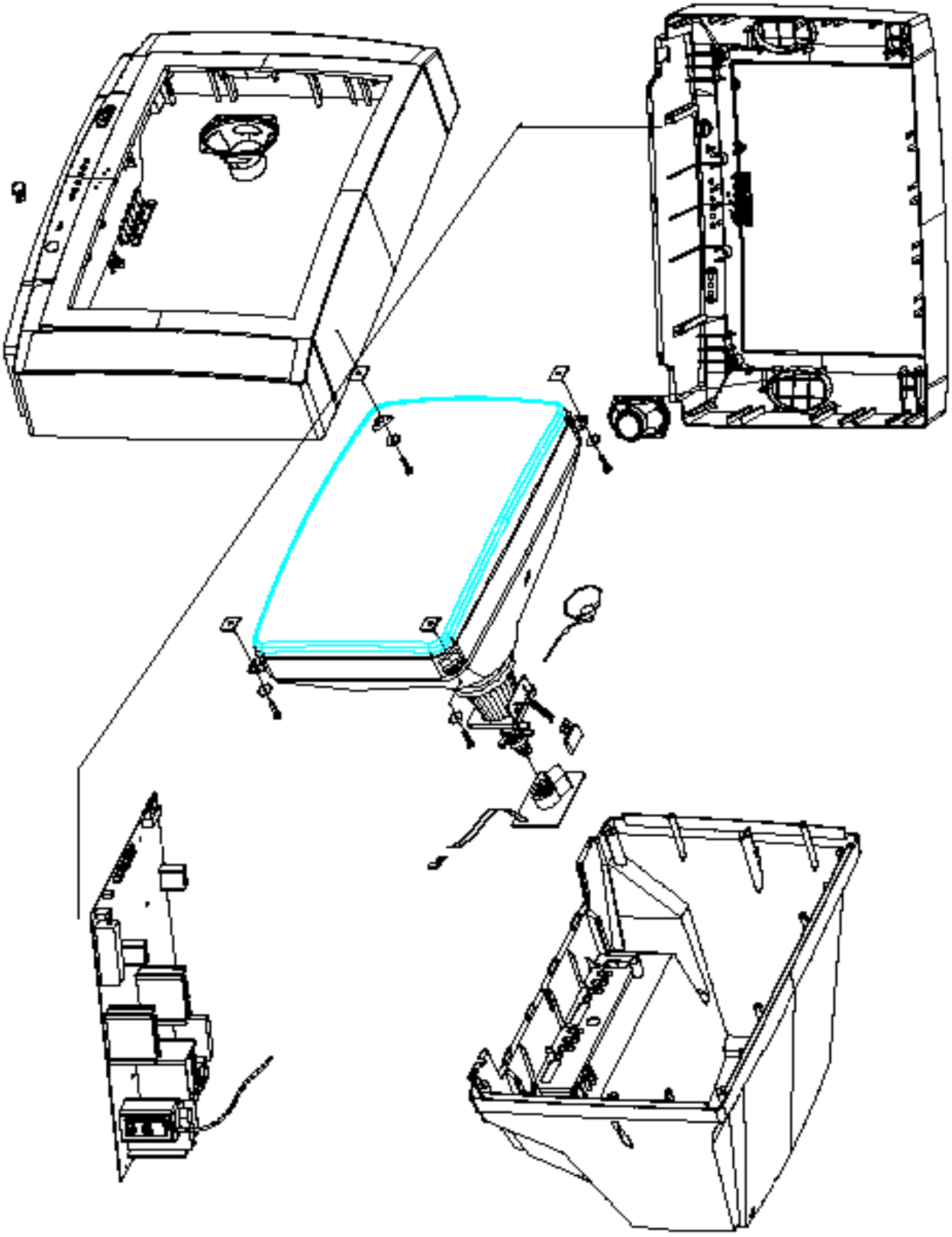
AC110V-240V

REMAKS:
- ▵ ONLY FOR SUPER RECEIVE
- ✱ ONLY FOR TELETEXT
- ○ ONLY FOR LIGHTNING PROTECTION
- # ONLY FOR SECAM

SCHEM: 01-21184U-M31

2002-10-29

PART IX. Exploded View



PART X. Spare Parts List

The contents of this list may vary with the model of TV sets

* For information only

CMPITM	ITMDSC	AH	QTYPER	REMAR1	REMAR2	REMAR3	REMAR4	REMAR5
08-M2111U-MAY	**ASS'Y - MAIN BD AI**		**1**					
10-0001H8-EB1	DIODE 1H8 (FAST RECOVERY)	AI	1	D804A				
10-0FR104-EB1	DIODE FR104 (FAST RECOVERY)	AI	4	D401	D402	D403	D806	
10-1N4001-EB1	DIODE 1N4001 (RECTIFIER)	AI	1	D301				
10-1N4002-EB1	DIODE 1N4002 (RECTIFIER)	AI	1	D411				
10-1N4148-AB1	DIODE 1N4148 (SWITCHING)	AI	5	D005	D006	D007	D008	D009
10-1N4148-AB1	DIODE 1N4148 (SWITCHING)	AI	5	D206	D206A	D312	D313	D314
10-1N4148-AB1	DIODE 1N4148 (SWITCHING)	AI	3	D315	D601	D316		
10-1N4148-AB1	DIODE 1N4148 (SWITCHING)	AI	2	D832	D807			
10-1SS110-AB1	DIODE 1SS110 (SWITCHING)	AI	1	D160				
10-79C4V7-DB1	DIODE ZENER 4V7 1/2W 5%	S	1	D208 Refer to H99-06-014				
10-79C5V1-DB1	DIODE ZENER 5V1 1/2W 5%	AI	1	D004				
10-79C8V2-DB1	DIODE ZENER 8V2 1/2W 5%	AI	1	D833				
10-79C9V1-DB1	DIODE ZENER 9V1 1/2W 5%	AI	1	D404				
11-2N3904-0B1	TRANSISTOR 2N3904	AI	1	Q001				
11-SA1015-YB1	TRANSISTOR 2SA1015Y	AI	4	Q007	Q601	Q203	Q205	
11-SC1815-YB1	TRANSISTOR 2SC1815Y	AI	5	Q006	Q005	Q004	Q204	Q902
11-SC1815-YB1	TRANSISTOR 2SC1815Y	AI	5	Q206	Q903	Q603	Q901	Q605
11-SC1815-YB1	TRANSISTOR 2SC1815Y	AI	5	Q905	Q160	Q202	Q610	Q611
11-SC1815-YB1	TRANSISTOR 2SC1815Y	AI	1	Q806				
11-SC1815-YB1	TRANSISTOR 2SC1815Y	AI	3	Q208	Q904	Q201		
11-SC2482-0B1	TRANSISTOR 2SC2482	AI	1	Q401				
11-SC3779-DB1	TRANSISTOR 2SC3779D (RF AMPL)	AI	1	Q101				
11-SK2541-0B1	FET 2SK2541 (N-CHANNEL)	AI	1	Q161				
11-TA124E-SB1	TRANSISTOR DTA124ES (TP)	AI	2	Q304	Q213			
11-TC144E-SB1	TRANSISTOR DTC144ES (TP)	AI	5	Q002	Q102	Q209	Q210	Q301
11-TC144E-SB1	TRANSISTOR DTC144ES (TP)	AI	2	Q606	Q607			
11-TC144E-SB1	TRANSISTOR DTC144ES (TP)	AI	1	Q211				
18-CB0101-JNX	RES. C.F. 100 OHM 1/6W +/-5%	AI	4	R238	R251	R048	R049	
18-CB0102-JNX	RES. C.F. 1K OHM 1/6W +/-5%	AI	5	R028	R032	R041	R059	R129
18-CB0102-JNX	RES. C.F. 1K OHM 1/6W +/-5%	AI	5	R226	R227	R234	R236	R267
18-CB0102-JNX	RES. C.F. 1K OHM 1/6W +/-5%	AI	5	R268	R269	R283	R289	R301
18-CB0102-JNX	RES. C.F. 1K OHM 1/6W +/-5%	AI	5	R302	R411	R903	R910	R912
18-CB0102-JNX	RES. C.F. 1K OHM 1/6W +/-5%	AI	2	R622	R637			
18-CB0102-JNX	RES. C.F. 1K OHM 1/6W +/-5%	AI	1	R829				

18-CB0102-JNX	RES. C.F. 1K OHM 1/6W +/-5%	AI	4	R208	R211	R905	R907	
18-CB0103-JNX	RES. C.F. 10K OHM 1/6W +/-5%	AI	5	R001	R011	R012	R017	R019
18-CB0103-JNX	RES. C.F. 10K OHM 1/6W +/-5%	AI	5	R020	R033	R034	R038	R043
18-CB0103-JNX	RES. C.F. 10K OHM 1/6W +/-5%	AI	5	R161	R162	R202	R222	R415
18-CB0103-JNX	RES. C.F. 10K OHM 1/6W +/-5%	AI	5	R607	R602	R604	R605	R633
18-CB0103-JNX	RES. C.F. 10K OHM 1/6W +/-5%	AI	2	R636	R915			
18-CB0103-JNX	RES. C.F. 10K OHM 1/6W +/-5%	AI	5	R025	R051	R052	R916	R917
18-CB0103-JNX	RES. C.F. 10K OHM 1/6W +/-5%	AI	2	R918	R228			
18-CB0104-JNX	RES. C.F. 100K OHM 1/6W +/-5%	AI	3	R035	R037	R042		
18-CB0106-JNX	RES. C.F. 10M OHM 1/6W +/-5%	AI	1	R134				
18-CB0123-JNX	RES. C.F. 12K OHM 1/6W +/-5%	AI	1	R231				
18-CB0151-JNX	RES. C.F. 150 OHM 1/6W +/-5%	AI	2	R107	R109			
18-CB0152-JNX	RES. C.F. 1.5K OHM 1/6W +/-5%	AI	3	R023	R611	R614		
18-CB0153-JNX	RES. C.F. 15K OHM 1/6W +/-5%	AI	5	R014	R016	R046	R054	R316
18-CB0182-JNX	RES. C.F. 1.8K OHM 1/6W +/-5%	AI	1	R606				
18-CB0183-JNX	RES. C.F. 18K OHM 1/6W +/-5%	AI	1	R922A				
18-CB0220-JNX	RES. C.F. 22 OHM 1/6W +/-5%	AI	1	R901				
18-CB0221-JNX	RES. C.F. 220 OHM 1/6W +/-5%	AI	2	R024	R291			
18-CB0221-JNX	RES. C.F. 220 OHM 1/6W +/-5%	AI	1	R292				
18-CB0222-JNX	RES. C.F. 2.2K OHM 1/6W +/-5%	AI	4	R022	R230	R613	R620	
18-CB0222-JNX	RES. C.F. 2.2K OHM 1/6W +/-5%	AI	1	R827				
18-CB0223-JNX	RES. C.F. 22K OHM 1/6W +/-5%	AI	1	R218				
18-CB0224-JNX	RES. C.F. 220K OHM 1/6W +/-5%	AI	1	R232				
18-CB0271-JNX	RES. C.F. 270 OHM 1/6W +/-5%	AI	4	R215	R216	R217	R273	
18-CB0272-JNX	RES. C.F. 2.7K OHM 1/6W +/-5%	AI	1	R266				
18-CB0273-JNX	RES. C.F. 27K OHM 1/6W +/-5%	AI	2	R612	R619			
18-CB0303-JNX	RES. C.F. 30K OHM 1/6W +/-5%	AI	1	R210				
18-CB0331-JNX	RES. C.F. 330 OHM 1/6W +/-5%	AI	3	R282	R284	R287		
18-CB0332-JNX	RES. C.F. 3.3K OHM 1/6W +/-5%	AI	2	R018	R021			
18-CB0333-JNX	RES. C.F. 33K OHM 1/6W +/-5%	AI	4	R005	R006	R922	R004	
18-CB0362-JNX	RES. C.F. 3K6 OHM 1/6W +/-5%	AI	1	R642				
18-CB0363-JNX	RES. C.F. 36K OHM 1/6W +/-5%	AI	1	R304				
18-CB0391-JNX	RES. C.F. 390 OHM 1/6W +/-5%	AI	2	R219	R220			
18-CB0392-JNX	RES. C.F. 3.9K OHM 1/6W +/-5%	AI	2	R610	R618			
18-CB0393-JNX	RES. C.F. 39K OHM 1/6W +/-5%	AI	2	R209	R294			
18-CB0470-JNX	RES. C.F. 47 OHM 1/6W +/-5%	AI	4	R061	R026	R009	R010	
18-CB0470-JNX	RES. C.F. 47 OHM 1/6W +/-5%	AI	1	R826A				
18-CB0471-JNX	RES. C.F. 470 OHM 1/6W +/-5%	AI	5	R027	R110	R908	R906	R923
18-CB0471-JNX	RES. C.F. 470 OHM 1/6W +/-5%	AI	2	R401	R239			
18-CB0472-JNX	RES. C.F. 4.7K OHM 1/6W +/-5%	AI	5	R031	R008	R013	R015	R029
18-CB0472-JNX	RES. C.F. 4.7K OHM 1/6W +/-5%	AI	5	R030	R047	R050	R063	R163

18-CB0472-JNX	RES. C.F. 4.7K OHM 1/6W +/-5%	AI	2	R826	R828			
18-CB0472-JNX	RES. C.F. 4.7K OHM 1/6W +/-5%	AI	1	R007				
18-CB0473-JNX	RES. C.F. 47K OHM 1/6W +/-5%	AI	5	R036	R164	R165	R902	R924
18-CB0473-JNX	RES. C.F. 47K OHM 1/6W +/-5%	AI	4	R925	R926	R927	R315	
18-CB0473-JNX	RES. C.F. 47K OHM 1/6W +/-5%	AI	5	R306	R928	R929	R930	R931
18-CB0560-JNX	RES. C.F. 56 OHM 1/6W +/-5%	AI	1	R112				
18-CB0561-JNX	RES. C.F. 560 OHM 1/6W +/-5%	AI	1	R247				
18-CB0563-JNX	RES. C.F. 56K OHM 1/6W +/-5%	AI	2	R812	R806			
18-CB0622-JNX	RES. C.F. 6.2K OHM 1/6W +/-5%	AI	1	R224				
18-CB0681-JNX	RES. C.F. 680 OHM 1/6W +/-5%	AI	1	R040				
18-CB0682-JNX	RES. C.F. 6.8K OHM 1/6W +/-5%	AI	2	R609	R617			
18-CB0683-JNX	RES. C.F. 68K OHM 1/6W +/-5%	AI	1	R307				
18-CB0750-JNX	RES. C.F. 75 OHM 1/6W +/-5%	AI	2	R235	R904			
18-CB0752-JNX	RES. C.F. 7.5K OHM 1/6W +/-5%	AI	1	R810				
18-CB0820-JNX	RES. C.F. 82 OHM 1/6W +/-5%	AI	1	R914				
18-CB0820-JNX	RES. C.F. 82 OHM 1/6W +/-5%	AI	1	R909				
18-CB0912-JNX	RES. C.F. 9.1K OHM 1/6W +/-5%	AI	1	R225				
18-CD0100-JNX	RES. C.F. 10 OHM 1/4W +/-5%	AI	1	R039				
18-CD0101-JNX	RES. C.F. 100 OHM 1/4W +/-5%	AI	1	R808				
18-CD0103-JNX	RES. C.F. 10K OHM 1/4W +/-5%	AI	1	R616				
18-CD0153-JNX	RES. C.F. 15K OHM 1/4W +/-5%	AI	1	R003				
18-CD0153-JNX	RES. C.F. 15K OHM 1/4W +/-5%	AI	1	R811				
18-CD0183-JNX	RES. C.F. 18K OHM 1/4W +/-5%	AI	1	R412A				
18-CD0331-JNX	RES. C.F. 330 OHM 1/4W +/-5%	AI	1	R615				
18-CD0470-JNX	RES. C.F. 47 OHM 1/4W +/-5%	AI	1	R808A				
18-CE0102-JNX	RES. C.F. 1K OHM 1/2W +/-5%	AI	1	R808B				
18-CE0109-JNX	RES. C.F. 1 OHM 1/2W +/-5%	AI	1	R303				
18-CE0121-JNX	RES. C.F. 120 OHM 1/2W +/-5%	AI	1	R221				
18-CE0331-JNX	RES. C.F. 330 OHM 1/2W +/-5%	AI	1	R414				
18-CE0479-JNX	RES. C.F. 4.7 OHM 1/2W +/-5%	AI	1	R640				
18-FE0120-JNX	RES. M.0. 12 OHM 1/2W +/-5%	AI	1	R825				
25-BCB100-M11	CAP. ELEC 10 UF 16V +/-20%	AI	3	C041	C217	C245		
25-BCB101-M11	CAP. ELEC 100 UF 16V +/-20%	AI	5	C030	C205	C225	C236	C426
25-BCB101-M11	CAP. ELEC 100 UF 16V +/-20%	AI	1	C609				
25-BCB101-M11	CAP. ELEC 100 UF 16V +/-20%	AI	2	C901	C101			
25-BCB220-M11	CAP. ELEC 22 UF 16V +/-20%	AI	2	C903	C909			
25-BCB220-M11	CAP. ELEC 22 UF 16V +/-20%	AI	2	C246	C906			
25-BCB221-M11	CAP. ELEC 220 UF 16V +/-20%	AI	2	C102	C224			
25-BCB470-M11	CAP. ELEC 47 UF 16V +/-20%	AI	5	C028	C015	C202	C241	C273
25-BCB471-M11	CAP. ELEC 470 UF 16V +/-20%	AI	5	C418	C423	C304A	C607	C608
25-BDB470-M11	CAP. ELEC 47 UF 25V +/-20%	AI	1	C816				

25-BEB101-M11	CAP. ELEC 100 UF 35V +/-20%	AI	2	C308	C320			
25-BEB470-M11	CAP. ELEC 47 UF 35V +/-20%	AI	1	C613				
25-BFB100-M11	CAP. ELEC 10 UF 50V +/-20%	AI	1	C219				
25-BFB109-K1A	CAP. ELEC 1 UF 50V +/-10%CEC-K	AI	1	C220				
25-BFB109-M11	CAP. ELEC 1 UF 50V +/-20%	AI	5	C211	C234	C602	C615	C619
25-BFB109-M11	CAP. ELEC 1 UF 50V +/-20%	AI	1	C624				
25-BFB109-M11	CAP. ELEC 1 UF 50V +/-20%	AI	5	C904	C905	C907	C908	C622
25-BFB229-K1A	CAP. ELEC 2.2 UF 50V 10% CEC-K	AI	1	C305				
25-BFB229-M11	CAP. ELEC 2.2 UF 50V +/-20%	AI	2	C003	C612			
25-BFB478-M11	CAP. ELEC 0.47 UF 50V +/-20%	AI	2	C213	C230			
25-BFB479-M11	CAP. ELEC 4.7 UF 50V +/-20%	AI	1	C104				
26-AIC102-KBX	CAP. CER 1000PF 500V +/-10% B	AI	1	C401				
26-AIC221-KBX	CAP. CER 220 PF 500V +/-10% B	AI	2	C840	C843			
26-AIC332-KBX	CAP. CER 3300PF 500V +/-10% B	AI	2	C405	C403			
26-AIC391-KBX	CAP. CER 390 PF 500V +/-10% B	AI	3	C407	C412	C414		
26-EBP101-JC1	CAP. CER 100 PF 50V +/-5% CH	AI	5	C002	C016	C017	C018	C019
26-EBP101-JC1	CAP. CER 100 PF 50V +/-5% CH	AI	4	C031	C239	C038	C039	
26-EBP102-KB1	CAP. CER 1000PF 50V +/-10% B	AI	5	C033	C221	C309	C404	C032
26-EBP102-KB1	CAP. CER 1000PF 50V +/-10% B	AI	1	C272				
26-EBP103-ZF1	CAP. CER 0.01UF 50V +80%~-20%F	AI	5	C021	C026	C027	C029	C042
26-EBP103-ZF1	CAP. CER 0.01UF 50V +80%~-20%F	AI	5	C112	C113	C114	C203	C204
26-EBP103-ZF1	CAP. CER 0.01UF 50V +80%~-20%F	AI	5	C210	C218	C223	C226	C237
26-EBP103-ZF1	CAP. CER 0.01UF 50V +80%~-20%F	AI	5	C242	C244	C415	C417	C425
26-EBP103-ZF1	CAP. CER 0.01UF 50V +80%~-20%F	AI	3	C605	C636	C931		
26-EBP103-ZF1	CAP. CER 0.01UF 50V +80%~-20%F	AI	3	C848	C841	C844		
26-EBP103-ZF1	CAP. CER 0.01UF 50V +80%~-20%F	AI	1	C902				
26-EBP104-ZF1	CAP. CER 0.1 UF 50V +/-5% F	AI	4	C036	C214	C215	C216	
26-EBP120-JC1	CAP. CER 12 PF 50V +/-5% CH	AI	1	C201				
26-EBP150-JC1	CAP. CER 15 PF 50V +/-5% CH	AI	1	C270				
26-EBP220-JC1	CAP. CER 22 PF 50V +/-5% CH	AI	1	C269				
26-EBP220-JZ1	CAP. CER 22 PF 50V +/-5% SL TU	AI	2	C022	C023			
26-EBP220-JZ1	CAP. CER 22 PF 50V +/-5% SL TU	AI	1	C810				
26-EBP221-JC1	CAP. CER 220 PF 50V +/-5% CH	AI	2	C004	C010			
26-EBP222-KB1	CAP. CER 2200PF 50V +/-10% B	AI	1	C212				
26-EBP300-JZ1	CAP. CER 30 PF 50V +/-5% SL	AI	2	C025	C024			
26-EBP470-JZ1	CAP. CER 47 PF 50V +/-5% SL	AI	1	C001				
26-EBP471-JC1	CAP. CER 470 PF 50V +/-5% CH	AI	1	C044				
26-EBP472-KB1	CAP. CER 4700PF 50V +/-10% B	AI	1	C235				

26-EBP473-ZF1	CAP. CER 0.047UF 50V+80%~-20%F	AI	1	C314				
26-EBP561-JC1	CAP. CER 560 PF 50V +/-5% CH	AI	2	C815	C888			
26-EBP829-JC1	CAP. CER 8.2PF 50V +/-5% CH	AI	1	C020				
27-MBC104-J01	CAP. M.P.E 0.1 UF 50V +/-5%	AI	5	C005	C006	C007	C232	C238
27-MBC104-J01	CAP. M.P.E 0.1 UF 50V +/-5%	AI	3	C251	C313	C233		
27-MBC104-J01	CAP. M.P.E 0.1 UF 50V +/-5%	AI	2	C227	C228			
27-MBC224-J01	CAP. M.P.E 0.22 UF 50V +/-5%	AI	1	C229				
27-MBC224-J01	CAP. M.P.E 0.22 UF 50V +/-5%	AI	1	C814				
27-MBC474-J01	CAP. M.P.E 0.47 UF 50V +/-5%	AI	1	C222				
27-MBC474-J01	CAP. M.P.E 0.47 UF 50V +/-5%	AI	1	C837				
27-PBC102-J01	CAP. P.E 0.001UF 50V +/-5%	AI	1	C811				
27-PBC103-J01	CAP. P.E 0.01 UF 50V +/-5%	AI	2	C817	C812			
27-PBC152-J01	CAP. P.E 0.0015UF 50V +/-5%	AI	2	C601	C603			
27-PBC152-J01	CAP. P.E 0.0015UF 50V +/-5%	AI	1	C311				
27-PBC222-J01	CAP. P.E 0.0022UF 50V +/-5%	AI	1	C257				
27-PBC472-J01	CAP. P.E 0.0047UF 50V +/-5%	AI	1	C231				
27-PBC562-J01	CAP. P.E 0.0056UF 50V +/-5%	AI	1	C422				
34-A109K0-1IX	COIL CHOKE 1 UH +/-10%	AI	1	L102				
34-R100J2-0EX	COIL PL - 10 UH +/-5%	AI	1	L208				
34-R120J2-0EX	COIL PL - 12 UH +/-5%	AI	1	L209				
34-R220J2-0EX	COIL PL - 22 UH +/-5%	AI	3	L001	L002	L403		
34-R229J2-0EX	COIL PL - 2.2 UH +/-5%	AI	1	L003				
34-R330J2-0EX	COIL PL - 33 UH +/-5%	AI	3	L202	L203	L210		
34-R829J2-0EX	COIL PL - 8.2 UH +/-5%	AI	1	L212				
40-2111MU-MAC	P.C.B MAIN BD	AI	1					
41-WJ0050-B00	WIRE BARE JUMPER 5MM	AI	5	L201	L204	L205	L206	L207
41-WJ0050-B00	WIRE BARE JUMPER 5MM	AI	5	J043	C621	C623	J044	J045
41-WJ0050-B00	WIRE BARE JUMPER 5MM	AI	1	FOR Q602 (B-E)				
41-WJ0050-B00	WIRE BARE JUMPER 5MM	AI	1	FOR Q604 (B-E)				
41-WJ0060-B00	WIRE BARE JUMPER 6MM	AI	5	J005	J009	J012	J102	J105
41-WJ0060-B00	WIRE BARE JUMPER 6MM	AI	5	J112	J113	J114	J116	J239
41-WJ0060-B00	WIRE BARE JUMPER 6MM	AI	5	J243	J604	J906	J908	R002
41-WJ0060-B00	WIRE BARE JUMPER 6MM	AI	3	R044	J608	J251		
41-WJ0060-B00	WIRE BARE JUMPER 6MM	AI	4	J903	J110	J628	J629	
41-WJ0065-B00	WIRE BARE JUMPER 6.5MM	AI	5	R133	J607	J210	J211	J918
41-WJ0065-B00	WIRE BARE JUMPER 6.5MM	AI	1	J214				
41-WJ0070-B00	WIRE BARE JUMPER 7MM	AI	4	J101	J109	J233	J917	
41-WJ0075-B00	WIRE BARE JUMPER 7.5MM	AI	5	D311	J003	J004	J007	J010
41-WJ0075-B00	WIRE BARE JUMPER 7.5MM	AI	5	J017	J018	J020	J019	J234
41-WJ0075-B00	WIRE BARE JUMPER 7.5MM	AI	5	J304	J610	J611	J907	R920
41-WJ0075-B00	WIRE BARE JUMPER 7.5MM	AI	4	J201	J205	J216	J253	

41-WJ0075-B00	WIRE BARE JUMPER 7.5MM	AI	1	J802				
41-WJ0075-B00	WIRE BARE JUMPER 7.5MM	AI	2	J213	J609			
41-WJ0080-B00	WIRE BARE JUMPER 8 MM	AI	4	J602	J603	J245	J244	
41-WJ0085-B00	WIRE BARE JUMPER 8.5MM	AI	5	J002	J204	J207	J232	J237
41-WJ0090-B00	WIRE BARE JUMPER 9MM	AI	3	J215	J404	J905		
41-WJ0100-B00	WIRE BARE JUMPER 10MM	AI	5	J006	J008	J021	J028	J029
41-WJ0100-B00	WIRE BARE JUMPER 10MM	AI	5	J034	J119	J121	J122	J123
41-WJ0100-B00	WIRE BARE JUMPER 10MM	AI	5	J209	J226	J231	J235	J238
41-WJ0100-B00	WIRE BARE JUMPER 10MM	AI	5	J241	J605	J606	J615	J624
41-WJ0100-B00	WIRE BARE JUMPER 10MM	AI	3	J904	JT02	L904		
41-WJ0100-B00	WIRE BARE JUMPER 10MM	AI	1	J035				
41-WJ0110-B00	WIRE BARE JUMPER 11MM	AI	2	J027	J107			
41-WJ0115-B00	WIRE BARE JUMPER 11.5MM	AI	2	J246	J104			
41-WJ0125-B00	WIRE BARE JUMPER 12.5MM	AI	5	J011	J117	J120	J208	J236
41-WJ0125-B00	WIRE BARE JUMPER 12.5MM	AI	5	J302	J401	J402	J601	J616
41-WJ0125-B00	WIRE BARE JUMPER 12.5MM	AI	4	J618	J619	J203	R601	
41-WJ0125-B00	WIRE BARE JUMPER 12.5MM	AI	4	D406	J617	R310	J249	
41-WJ0130-B00	WIRE BARE JUMPER 13MM	AI	3	J118	J621	J622		
41-WJ0135-B00	WIRE BARE JUMPER 13.5MM	AI	1	J229				
41-WJ0140-B00	WIRE BARE JUMPER 14MM	AI	5	J230	J228	J227	J625	J626
41-WJ0140-B00	WIRE BARE JUMPER 14MM	AI	1	J806				
41-WJ0150-B00	WIRE BARE JUMPER 15MM	AI	5	J015	J022	J023	J024	J025
41-WJ0150-B00	WIRE BARE JUMPER 15MM	AI	5	J026	J242	J247	J303	J614
41-WJ0150-B00	WIRE BARE JUMPER 15MM	AI	5	R410	J030	J031	J032	J033
41-WJ0150-B00	WIRE BARE JUMPER 15MM	AI	2	J801	J803			
41-WJ0155-B00	WIRE BARE JUMPER 15.5MM	AI	1	J016				
41-WJ0165-B00	WIRE BARE JUMPER 16.5MM	AI	1	J217				
41-WJ0170-B00	WIRE BARE JUMPER 17MM	AI	1	J036				
41-WJ0170-B00	WIRE BARE JUMPER 17MM	AI	1	J037				
41-WJ0175-B00	WIRE BARE JUMPER 17.5MM	AI	1	J046				
41-WJ0180-B00	WIRE BARE JUMPER 18MM	AI	2	J224	J223			
41-WJ0190-B00	WIRE BARE JUMPER 19MM	AI	2	J222	J403			
41-WJ0200-B00	WIRE BARE JUMPER 20MM	AI	2	J219	J218			
08-M2111U-MAY	**ASS'Y - MAIN BD HI**		**1**					
07-UV1355-SLB2	TUNER UV1355/SLB-2(DK IEC 5V)	HI	1	TU101				
10-00RU3C-E01	DIODE RU3C (FAST RECTIFIER)	HI	1	D824				
10-0FR104-EB1	DIODE FR104 (FAST RECOVERY)	HI	2	D831	D830			
10-0RL255-EB1	DIODE RL255 (RECTIFIER)	HI	4	D801	D802	D803	D804	
10-PC574J-DJ1	DIODE ZENER UPC 574J	HI	1	D001				
11-KSD882-0A1	TRANSISTOR KSD882 (POWER)	HI	1	Q608				
11-KSD882-0A1	TRANSISTOR KSD882 (POWER)	HI	1	Q805				

13-000040-53P	IC 4053 (ANALOG SW)	HI	1	IC901				
13-000040-66P	IC 4066 (ANALOG SW.)	HI	1	IC603				
13-00LA79-75S	IC LA7975 SIF CONVERTER	HI	1	IC202				
13-00MC78-09S	IC MC7809C LINEAR +9V 1A	HI	1	IC401				
13-0AN78L-05A	IC 78L05 VOLT REGULATOR 0.5A	HI	1	IC101				
13IC TMP87CS38N M3 TSB CPU (OTP)		HI	1	IC001				
13-L7805C-VAP	IC L7805CV 1.5A (REGULATOR)	HI	1	IC402				
13-M24C04-00P	IC M24C04 EEPROM 4K	HI	1	IC002				
13-TB1238-ANP	IC TB1238AN (P/SIF/VCD) CH/JP	HI	1	IC201				
13-TDA168-46P	IC TDA16846 (Q67000-A9377)	HI	1	IC801				
18-DF0229-JGX	RES. M.F. 2.2 OHM 1W +/-5%	HI	1	R603				
18-EF0109-JG1	RES. FUS. 1 OHM 1W +/-5% (LS)	HI	4	R403	R405	R406	R409	
18-EF0109-JG1	RES. FUS. 1 OHM 1W +/-5% (LS)	HI	1	R407				
18-EF0228-JG1	RES. FUS. 0.22 OHM 1W +/-5%	HI	2	R834	R836			
18-FF0100-JGX	RES. M.O. 10 OHM 1W +/-5%	HI	1	R410A				
18-FF0103-JGX	RES. M.O. 10K OHM 1W +/-5%	HI	1	R413				
18-FF0122-JGX	RES. M.O. 1.2K OHM 1W +/-5%	HI	1	R441				
18-FF0153-JGX	RES. M.O. 15K OHM 1W +/-5%	HI	1	R404				
18-FF0189-JGX	RES. M.O. 1.8 OHM 1W +/-5%	HI	1	R305				
18-FF0331-JGX	RES. M.O. 330 OHM 1W +/-5%	HI	1	R336				
18-FF0472-JGX	RES. M.O. 4.7K OHM 1W +/-5%	HI	1	R408				
18-FG0121-JHX	RES. M.O. 120 OHM 2W +/-5%	HI	1	R819A				
18-FG0153-JHX	RES. M.O. 15K OHM 2W +/-5%	HI	1	R824				
18-FG0563-JHX	RES. M.O. 56K OHM 2W +/-5%	HI	1	R809				
18-FH0472-JIX	RES. M.O. 4.7K OHM 3W +/-5%	HI	1	R402				
18-KE0105-JN1	VOLTAGE RES. C.C 1M OHM 1/2W	HI	2	R802	R807			
18-KE0475-JN1	VOLTAGE RES. C.C 4.7M 1/2W 5%	HI	3	R805	R835	R835A		
20-TR05HC-521	TRIMMER B5K HORIZ TYPE WDC	HI	1	VR801				
22-00S236-503	NTC RISISTOR S236-5.0M	HI	1	R801				
22-51C360-N21	POSISTOR PTH451C360N21 (14~21)	HI	1	RT801				
25-315130-M11	CAP. ELEC 330UF 400V +/-20%	HI	1	C806				
25-BCA102-M11	CAP. ELEC 1000 UF 16V +/-20%	HI	2	C416	C635			
25-BDA102-M11	CAP. ELEC 1000 UF 25V +/-20%	HI	1	C606				
25-BDA222-M1B	CAP. ELEC 2200 UF 25V +/-20%	HI	1	C845				
25-BDA471-M11	CAP. ELEC 470 UF 25V +/-20%	HI	2	C306	C604			
25-BDA471-M11	CAP. ELEC 470 UF 25V +/-20%	HI	1	C842				
25-BEA471-M11	CAP. ELEC 470 UF 35V +/-20%	HI	1	C413				
25-BHA100-M11	CAP. ELEC 10 UF 100V +/-20%	HI	1	C420				

25-BJA470-M11	CAP. ELEC 47 UF 160V +/-20%	HI	1	C411	
25-BJG221-M11	CAP. ELEC 220 UF 160V +/-20%	HI	1	C827	
25-BLA100-M11	CAP. ELEC 10 UF 250V +/-20%	HI	1	C408	
25-FFB229-M11	CAP. ELEC 2.2UF 50V NP	HI	2	C610	C614
26-AIM103-KBX	CAP. CER 0.01 UF 500V +/-10% B	HI	2	C826	C808
26-AMM221-JZ1	CAP. CER 220 PF 2KV +/-10% SL	HI	2	C819	C839
26-AMM331-JZ1	CAP. CER 330 PF 2KV +/-5% SL	HI	1	C830	
26-AMM331-JZ1	CAP. CER 330 PF 2KV +/-5% SL	HI	1	C406A	
26-APK102-MEJ	CAP. CER 1000PF 400VAC +/-20%E	HI	2	C835	C824
26-AQK472-ZF1	CAP.CER 4700PF 250VAC +80~-20F	HI	2	C804	C805
27-AHR394-J01	CAP. M.PP 0.39 UF 400V +/-5%	HI	1	C421	
27-ALR103-J01	CAP. M.PP 0.01 UF 1.6KV +/-5%	HI	1	C406	
27-AQT224-MV1	CAP. M.PP 0.22UF 250VAC +/-20%	HI	2	C802	C801
27-MHM104-K01	CAP. M.P.E 0.1 UF 400V +/-10%	HI	1	C803	
27-MQW683-M01	CAP.M.PE 0.068UF 250VAC +/-20%	HI	1	C818	
27-RHQ563-J01	CAP. PP 0.056UF 400V	HI	1	C410	
34-A608K6-1BX	COIL CHOKE 0.6 UH +/-10%	HI	1	L402	
34-R101K2-1B3	COIL CHOKE 100 UH +/-10%	HI	1	L804	
35-139730-00X	FERR. BEAD BF60	HI	2	FOR L801	
35-139730-00X	FERR. BEAD BF60	HI	2	FOR D831 (L810 & L811)	
35-139730-00X	FERR. BEAD BF60	HI	2	FOR D830 (L808 & L809)	
35-237250-00X	FERR. BEAD HF70	HI	2	FOR D824 (L806 & L807)	
36-107483-A02	TRNASFORMER HORIZ DRIVE CORE	HI	1	T401	
36-215530-A02	LINE FILTER	HI	1	T803	
36-272270-00X	COIL WIDTH 64 UH	HI	1	L411	
36-284180-A02	LINE FILTER (TB1231N)	HI	1	T801	
36-333680-A02	TRANSFORMER EC-40(BCK-4001-34B	HI	1	T802	
36-LIN390-XX1	COIL LINEARITY 39 UH	HI	1	L412	
38-236560-000	COIL I.F.T. 236560 FOR VCO	HI	1	T201	
41-AJ0125-BEE	WIRE BARE JUMPER 12.5MM	HI	1	L801 FOR FERR. BEAD BF60 X2	
41-BF0230-9BB	WIRE UL 1007 #24 230MM WHITE	HI	1	FOR "A" - "A"	
41-WJ0025-B00	WIRE BARE JUMPER 2.5MM	HI	1	FOR Q609 (B - C)	
41-WJ0025-B00	WIRE BARE JUMPER 2.5MM	HI	1	FOR Q403 (C-E)	
45-107190-100	CRYSTAL 4.43 MHZ	HI	1	X202	
45-108780-401	CER. FILTER 6.0MHZ	HI	1	X206	
45-130380-600	CER. TRAP TPS 4.5MC (3 PIN)	HI	1	X207	
45-130390-600	CER. TRAP 6.5 MHZ	HI	1	X203	
45-135070-600	CER. TRAP TPS 5.5MHZ	HI	1	X204	
45-141710-100	RESONATOR CSB503F2	HI	1	X205	
45-252300-101	CRYSTAL 8 MHZ	HI	1	X001	
45-COS1M5-0Y0	CERAMIC RESONATOR 1.5MHZ	HI	1	X201	

45-SAW38M-0N1	SAW FILTER K6265K	HI	1	Z101
45-TRA32M-0Y0	CERAMIC TRAP 32MHZ	HI	1	Z102
46-10960W-047	PIN BASE *4 TJC3-4A	HI	1	P402 FOR 46-30615H-047 (CRT BD P502)
46-10962W-027	PIN BASE *2 TJC2-2A	HI	1	P801 FOR DEGAUSSING COIL
46-10964W-067	PIN BASE TJC3-6A	HI	1	P101 FOR W.BAL. ADJUST
46-12866W-027	PIN BASE *2 TJC3-2A	HI	1	P602 FOR 46-14026H-027 (SPK L)
46-12866W-027	PIN BASE *2 TJC3-2A	HI	1	P001 FOR AGING TEST
46-12866W-02X	PIN BASE *2 S11-02W	HI	1	P601 FOR 46-14026H-02X (SPK R)
46-13541W-057	PIN BASE *5 TJC3-5A	HI	1	P201 FOR 46-27240H-057 (CRT BD P503)
46-20598W-047	PIN BASE *4 TJC1-4A	HI	1	P401 FOR DY CONNECTOR
46-27404W-082	PIN BASE *8 TJC8-8Y	HI	1	S202 FOR 46-27403H-082 (SECAM BD)
46-28559W-028	PIN BASE *2 TJC1-2A	HI	1	P802
46-31532H-067	HS 6P24 F/W 240 SCN/SCN-6Y	HI	1	FOR P904 TO P906
48-231010-00B	SW. TACT VERT. (H=4MM L=6.4MM)	HI	5	S001 S002 S003 S004 S005
48-231010-00B	SW. TACT VERT. (H=4MM L=6.4MM)	HI	1	S006
48-256460-0C0	SW. POWER TV8 (PCB MOUNTING)	HI	1	S801
64-P3006X-104	M/C SCREW P 3 X 6	HI	2	FOR IC401 & IC402
66-20516X-0B0	FUSE HOLDER	HI	2	FOR F801
67-H10918-4M2	HEAT SINK	HI	1	FOR IC402
67-H24249-2M2	HEAT SINK	HI	1	FOR IC401
90-269080-000	CLEAN COATING TC-131L 14KG/CASK	HI	0.0001	
08-M2111U-MAY	**ASS'Y - MAIN BD SKD**		**1**	
02-296220-000	IR RECEIVER MODULE GP1U281U	S	1	IR001
11-BUZ91A-0A1	TRANSISTOR BUZ91A	S	1	Q801
11-DD1555-0A2	TRANSISTOR 3DD1555 (HORIZ)	S	1	Q402
13-0TA840-3KS	IC TA8403K (VERT. OUTPUT)	S	1	IC301
13-0TDA74-96S	IC TDA7496 (AUDIO)	S	1	IC601
14-309800-LR1	LED (SUPER RED) GB333HRD-3	S	1	D051A
26-AMM221-JZ1	CAP. CER 220 PF 2KV +/-10% SL	S	1	SOLDER ON C819
37-050119-09A	FLYBACK JF0501-1909A	S	1	T402
47-318350-00G	RCA JACK 6P RED/SW. WHT, YEL	S	1	P901
47-322870-00G	RCA JACK 3PH YEL,WHT,RED/SW	S	1	P905
50-26930D-1VS	FUSE 2.0AT 250VAC 5X20MM BELL	S	1	F801
51-DC0243-0CH	POWER CORD PLUG W/PIN TERM.VDE	S	1	
54-343210-000	MICA SHEET (21MMX16MMX0.1MM)	S	1	FOR Q801
62-10654X-00F	UNI - TIE (2.5MMX95MM)	S	6	
62-226920-0HA	LED HOLDER (LED)	S	1	
62-291630-0HH	MTG SPACER FBT & H.SINK 1701AS	S	1	FOR FBT & H.SINK

63-B4015X-AB2	S/T SCREW B 4 X 15 AB	S	1	MTG FBT & H.SINK
64-B3008X-104	M/C SCREW B 3 X 8	S	1	FOR IC601
64-P3010X-104	M/C SCREW P 3 X 10	S	2	FOR IC301 & Q402
65-Z3005X-23M	NUT M 3	S	3	FOR IC301 & Q402 & IC601
67-339070-1E7	SPRING CLIP	S	1	MTG Q801
67-H28649-3A0	HEAT SINK	S	1	FOR Q801
67-H30752-1A0	HEAT SINK	S	2	FOR IC301 & Q402
67-H34423-8A0	HEAT SINK	S	1	FOR IC601
70-271510-00A	SERVICE CARD	S	1	FOR PRODUCTION USE
71-221930-0AA	LABEL FUSE REPLACEMENT	S	1	STICK ON POWER SW.
71-242640-0A2	LABEL WARNING LIVE PARTS	S	1	STICK ON POWER H.SINK
71-270870-0A9	LABEL SERIAL NO. (M.BD)	S	3	
74-010050-40C	POLYBAG FOR POWER (10CMX50CM)	S	1	
90-209770-000	SILICONE GREASE G-746 (1KG/TIN)	S	0.0003	FOR Q402 & IC601
90-209770-000	SILICONE GREASE G-746 (1KG/TIN)	S	0.0003	FOR Q801
08-316660-RMN	**R/C MODULE**		**1**	
02-HS45E0-M1701	ASS'Y - IR HANDSET (GGI)		1	
55-HS45EB-0HAAC	CASE LOWER - REMOTE HANDSET		1	
55-HS45ED-0HAAC	DOOR BATT. - REMOTE HANDSET		1	
55-HS45ET-1HABB	CASE UPPER - REMOTE HANDSET		1	
56-HS45EK-1HABE	KEY KNOB (OVAL)		1	
56-HS45EK-1HABF	KEY KNOB (OVAL)		1	
56-HS45EK-2HABE	KEY KNOB (OVAL)		1	
56-HS45EK-2HABF	KEY KNOB (OVAL)		1	
58-HS45E0-KUIAD	INLAY IR TRANSMITTER BD		1	
08-HS45E0-RM4	**R/C MODULE "E"**		**1**	
11-0BC337-0B1	TRANSISTOR (NPN) BC337-40		1	Q1501
13-9028F0-22P	IC TC9028F-022 (IR TRANS.)		1	IC1501
15-TSAL62-00D	IR EMITTING DIODE TSAL6200 5MM		1	D1501
18-CB0109-JNX	RES. C.F. 1 OHM 1/6W +/-5%		1	R1501
18-CB0682-JNX	RES. C.F. 6.8K OHM 1/6W +/-5%		1	R1502
25-297410-M11	CAP. ELEC 47UF 10V 20%		1	C1502
26-EBP101-JC1	CAP. CER 100 PF 50V +/-5% CH		2	C1503 C1504
40-2118MC-RMA	P.C.B. HANDSET HANDSET		1	
41-WJ0060-B00	WIRE BARE JUMPER 6MM		1	J1501
45-120550-201	CER. RESONATOR 455KHZ		1	X1501
49-HS45E0-00XAA	RUBBER PAD KEYS		1	
54-302000-00X	FELT TAPE (15CMX4CM)		1	
67-26968X-0E2	BATT. TERMINAL (+/-)		1	
67-296810-0E2	BATTERY CONTACT SPRING (-)		1	
67-296820-0E2	BATTERY CONTACT SPRING (+)		1	

74-009022-60C	POLYBAG HANDSET (9CMX22CM)		1					
08-02111U-CR1	**ASS'Y - CRT BD (S.S) HI**		**1**					
10-1N4148-AB1	DIODE 1N4148 (SWITCHING)	AI	2	D501	D502			
18-CB0102-JNX	RES. C.F. 1K OHM 1/6W +/-5%	AI	1	R515				
18-CB0272-JNX	RES. C.F. 2.7K OHM 1/6W +/-5%	AI	1	R514				
18-CB0561-JNX	RES. C.F. 560 OHM 1/6W +/-5%	AI	5	R501	R505	R510	R503	R508
18-CB0561-JNX	RES. C.F. 560 OHM 1/6W +/-5%	AI	1	R513				
18-CB0681-JNX	RES. C.F. 680 OHM 1/6W +/-5%	AI	5	R502	R506	R509	R511	R522
26-EBP102-KB1	CAP. CER 1000PF 50V +/-10% B	AI	1	C509				
26-EBP391-JC1	CAP. CER. 390PF 50V +/-5% CH	AI	3	C501	C502	C503		
40-2129MS-CRA	P.C.B. CRT BD	AI	1					
41-WJ0050-B00	JUMPER 5MM	AI	1	L503				
41-WJ0050-B00	WIRE BARE JUMPER 5MM	AI	2	L501	L504			
41-WJ0060-B00	WIRE BARE JUMPER 6MM	AI	3	R507	R504	R512		
41-WJ0075-B00	WIRE BARE JUMPER 7.5MM	AI	1	J503				
08-02111U-CR1	**ASS'Y - CRT BD (S.S) HI**		**1**					
11-A562TM-0B1	TRANSISTOR 2SA562TM-0	HI	1	Q507				
11-SC1815-YB1	TRANSISTOR 2SC1815Y	HI	3	Q502	Q504	Q506		
11-SC2482-0B1	TRANSISTOR 2SC2482	HI	3	Q501	Q503	Q505		
18-BE0272-KN1	RES. C.C. 2.7K OHM 1/2W +/-10%	HI	3	R519	R520	R521		
18-FG0153-JHX	RES. M.O. 15K OHM 2W +/-5%	HI	3	R516	R517	R518		
25-BCB471-M11	CAP. ELEC 470 UF 16V +/-20%	HI	1	C506				
25-BLA100-M11	CAP. ELEC 10 UF 250V +/-20%	HI	1	C504				
26-AMK102-KR1	CAP. CER 1000PF 2KV +/-10% R	HI	1	C505				
26-EBP102-KB1	CAP. CER 1000PF 50V +/-10% B	HI	1	C508				
34-R100K2-1B3	COIL CHOKE 10 UH +/-10%	HI	1	L502				
35-139730-00X	FERR. BEAD BF60	HI	2	FOR C508 (L505 & L506)				
46-10967W-017	PIN BASE *1 TJC1-1A	HI	1	FOR CRT GROUNDING				
46-27240H-057	HS 5P24 450 F/W TJC3-5Y/SCN-5	HI	1	P503 FOR 46-13541W-057 (M.BD P201)				
46-30615H-047	HS 4P24 460 F/W TJC3-4Y/SCN-4	HI	1	P502 FOR 46-10960W-047 (M.BD P402)				
47-265540-0U7	SOCKET CRT GZS10-2-4 B (C.B.)	HI	1	S501				
62-10654X-00F	UNI - TIE (2.5MMX95MM)	HI	2					
08-02111U-SEY	**ASS'Y - SECAM BD HI**		**1**					
18-CB0203-JNX	RES. C.F. 20K OHM 1/6W +/-5%	AI	1	R708				
18-CB0331-JNX	RES. C.F. 330 OHM 1/6W +/-5%	AI	1	R701				
18-CB0332-JNX	RES. C.F. 3.3K OHM 1/6W +/-5%	AI	1	R702				
26-EBP103-ZF1	CAP. CER 0.01UF 50V +80%~-20%F	AI	3	C702	C706	C707		
26-EBP470-JC1	CAP. CER 47 PF 50V +/-5% CH	AI	2	C703	C711			
40-2111MU-SMC	P.C.B. SECAM BD	AI	1					
41-WJ0060-B00	WIRE BARE JUMPER 6MM	AI	1	J704				
41-WJ0075-B00	WIRE BARE JUMPER 7.5MM	AI	3	J703	J705	J701		

08-02111U-SEY	**ASS'Y - SECAM BD HI**		**1**	
13-TA1275-AZ0	IC TA1275AZ (SECAM)	HI	1	IC701
25-BCB101-M11	CAP. ELEC 100 UF 16V +/-20%	HI	2	C701 C708
25-BFB109-M11	CAP. ELEC 1 UF 50V +/-20%	HI	3	C709 C710 C704
27-PBC333-J01	CAP. P.E 0.033 UF 50V +/-5%	HI	1	C705
34-R100J2-0EX	COIL PL - 10 UH +/-5%	HI	2	L701 L702
34-R270J2-0EX	COIL PL - 27 UH +/-5%	HI	1	L703
46-27403H-082	HS 8P TJC8-8A (RIGHT ANGLE)	HI	1	P202 FOR 46-27404W-082 (M.BD S202)
08-02136U-FCY	**ASS'Y - FRONT CABINET**		**1**	
02-271360-00X	ASS'Y CRT GND WIRE & HOUS 21"		1	FOR CRT GROUNDING
36-204121-00X	DEGAUSSING COIL 2600+20MM(21")		1	
42-51208E-XX0A	SPEAKER 50MMX120MM 8 OHM 6W		2	W601 W602
46-14026H-027	HS 2P24 570/7 F/W TJC3-2Y		1	P602H FOR 46-12866W-027 (M.BD)
46-14026H-02X	HS 2P24 570/5 F/W S11-02H		1	P601H FOR 46-12866W-02X (M.BD)
46-26514H-047	HS 4P A/B 500/13 TJC1-4Y		1	FOR D.Y
54-113971-0UE	PVC TUBE #6 L=160MM		2	FOR SPK HOUSING
54-271620-000	SPACER CRT MOUNTING T=1MM		4	MTG CRT & F. CABINET
59-130460-00X	RUBBER PAD (25MMX7MM)		2	STICK ON F.CAB. (FOOTING)
62-10654X-00F	UNI - TIE (2.5MMX95MM)		4	FOR DEGAUSSING COIL
62-216340-0UA	HOLDER POWER CORD		1	
62-227680-0UA	HOLDER CABLE FOR FBT (2)		1	
62-262660-0HA	POWER SW. ADAPTER		1	
63-B2608X-AB4	S/T SCREW B 2.6 X 8 AB		3	MTG PUSH BUTTON & F. CABINET
63-B2608X-AB4	S/T SCREW B 2.6 X 8 AB		1	MTG LENS & F. CABINET
63-H5025X-0B4	S/T SCREW H 5 X 25 B (1701)		4	MTG CRT & F. CABINET
63-W3012X-AB4	S/T SCREW W 3 X 12 AB		8	MTG SPK & F. CABINET
65-A5020X-20E	WASHER 5 X 20 X 2MM		4	MTG CRT
67-126680-0E0	SPRING CRT 6X40X0.5MM		1	
67-249700-0E0	SPRING POWER KNOB		1	
89-242040-002	DOUBLE SIDED TAPES 1/4"		0.0036	STICK ON LOGO
08-316670-FCN	**FRONT CABINET MODULE**		**1**	
44-21OFLN-SG2A	CRT A51JSY63X13(C)(ASIN)		1	CRT01
55-2136FC-0CAAK	FRONT CABINET		1	
56-2136FB-0HAAC	PUSH BUTTON		1	
56-2136LS-0HCAA	LENS - LED & SENSOR		1	
56-2136PK-0HAAC	POWER KNOB		1	
58-2136FI-3UIAD	INLAY FRONT AV BD		1	
62-238130-0HA	LOGO HOLDER BRAND		1	

67-13461S-0A0BU	LOGO (DIAMOND CUT) (GGI)	1	
08-02136U-RCY	**ASS'Y - REAR CABINET**	**1**	
54-114000-00X	FELT TAPE (150MMX19MM)	10	STICK ON REAR CABINET
59-130460-00X	RUBBER PAD (25MMX7MM)	2	STICK ON REAR CABINET
62-301490-0UN	SUPPORTER	1	
63-B4020X-AB2	S/T SCREW B 4 X 20 AB	7	MTG FRONT & REAR CABINET
63-W3010X-AB4	S/T SCREW W 3 X 10 AB	2	MTG SUPPORTER BKT
08-316680-RCN	**REAR CABINET MODULE**	**1**	
55-2136RC-0CNAD	REAR CABINET	1	
58-2101RI-7UIAH	INLAY TERMINAL	1	
58-2136MP-0UIAU	PLATE MODEL NO.	1	
63-F3010X-BT3	S/T SCREW F 3 X 10 BT	2	MTG RCA JACK & REAR CAB.
08-316690-PAN	**PACKAGE MODULE**	**1**	
01-2136TU-MA1AA	SCHEMATIC DIAGRAM	1	
71-349010-0A0AN	LABEL SERIAL NO.	3	
72-2136UT-E12AA	OPERATION MANUAL	1	
74-022032-6WE	POLYBAG (22CMX32CMX0.06CM)	1	
74-104088-6YCAA	POLYBAG W/SUFFOCATION WARNING	1	
75-2136LL-CC0	POLYFOAM "LL"	1	
75-2136LR-CC0	POLYFOAM "LR"	1	
75-2136UL-CC0	POLYFOAM "UL"	1	
75-2136UR-CC0	POLYFOAM "UR"	1	
76-002136-0ATAC	CARTON BOX (GGI)	1	

PART XI. Safety & EMC Components

In order to guarantee the safety & EMC of the product, ensure to replace the following components with ones that have the same type and specification.

Safety Component

No.	Name	Location No.
1	Isolating Resistor	R835 R835A
2	Isolating Capacitor	C835
4	Degaussing Coil	L803
5	Switch Transformer	T801 T802
6	Flyback Transformer	T402
7	CRT Base	S501
8	Fuse	F801
9	Power Switch	S801
10	Power Cord	P801
11	PCB	PCB

EMC Component

No.	Name	Location No.
1	Tuner	TU101
2	Oscillator	T201
3	Rectifier Diode	D830 D831 D824
4	Power Filter	T801
5	SAW Filter	Z101
6	Switch Transformer	T802
7	Ferrite	L801

PART XII. Change Record

CHANGE RECORD						
REV	DATE	PAGE	ITEM	CHANGE CONTENT	REASON	APPLY