

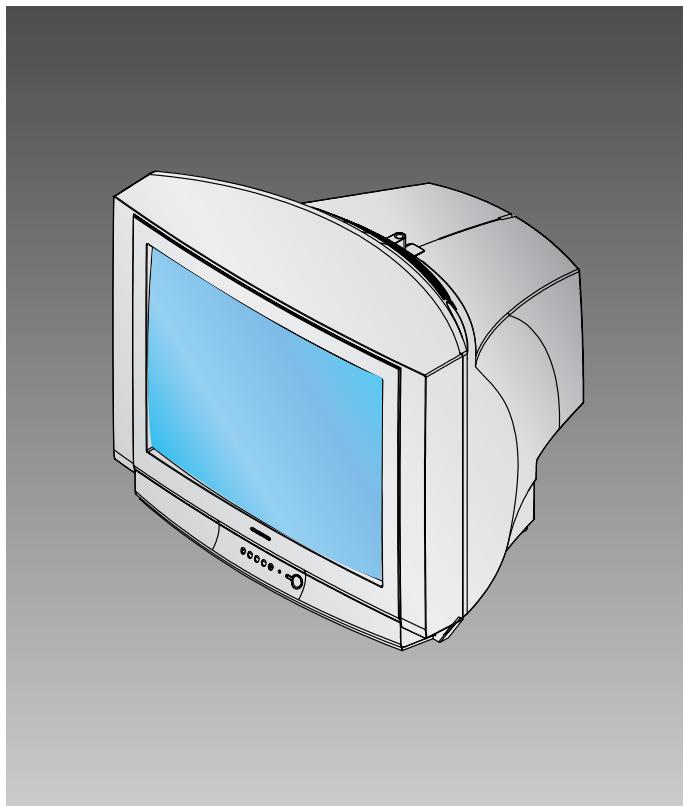
SAMSUNG

COLOR TELEVISION RECEIVER

Chassis : KS1A(P)_Rev.1
Model : CZ20F42TSXXEH
CZ21D83NSXXEH
CZ21D83NSXXEC

SERVICE Manual

COLOR TELEVISION RECEIVER



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1. Precautions

Follow these safety, servicing and ESD precautions to prevent damage and protect against potential hazards such as electrical shock and X-rays.

1-1 Safety Precautions

1. Be sure that all of the built-in protective devices are replaced. Restore any missing protective shields.
2. When reinstalling the chassis and its assemblies, be sure to restore all protective devices, including: nonmetallic control knobs and compartment covers.
3. Make sure that there are no cabinet openings through which people—particularly children—might insert fingers and contact dangerous voltages. Such openings include the spacing between the picture tube and the cabinet mask, excessively wide cabinet ventilation slots, and improperly fitted back covers.

If the measured resistance is less than 1.0 megohm or greater than 5.2 megohms, an abnormality exists that must be corrected before the unit is returned to the customer.

4. Leakage Current Hot Check (Figure 1-1): Warning: Do not use an isolation transformer during this test. Use a leakage-current tester or a metering system that complies with American National Standards Institute (ANIS C101.1, Leakage Current for Appliances), and Underwriters Laboratories (UL Publication UL1410, 59.7).
5. With the unit completely reassembled, plug the AC line cord directly into the power outlet. With the unit's AC switch first in the ON position and then OFF, measure the current between a known earth ground (metal water pipe, conduit, etc.) and all exposed metal parts, including: antennas, handle brackets, metal cabinets, screwheads and control shafts. The current measured should not exceed 0.5 milliamp. Reverse the power-plug prongs in the AC outlet and repeat the test.

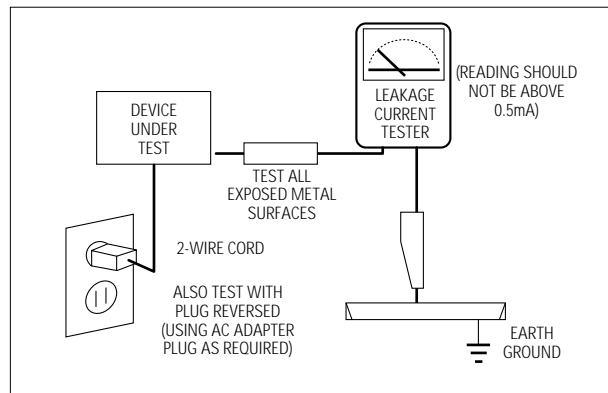


Fig. 1-1 AC Leakage Test

6. Antenna Cold Check: With the unit's AC plug disconnected from the AC source, connect an electrical jumper across the two AC prongs. Connect one lead of the ohmmeter to an AC prong. Connect the other lead to the coaxial connector.
7. X-ray Limits: The picture tube is especially designed to prohibit X-ray emissions. To ensure continued X-ray protection, replace the picture tube only with one that is the same type as the original. Carefully reinstall the picture tube shields and mounting hardware; these also provide X-ray protection.
8. High Voltage Limits: High voltage must be measured each time servicing is done on the B+, horizontal deflection or high voltage circuits. Correct operation of the X-ray protection circuits must be reconfirmed whenever they are serviced. (X-ray protection circuits also may be called "horizontal disable" or "hold-down".) Heed the high voltage limits. These include the X-ray Protection Specifications Label, and the Product Safety and X-ray Warning Note on the service data schematic.

1-1 Safety Precautions (Continued)

9. High voltage is maintained within specified limits by close-tolerance, safety-related components and adjustments. If the high voltage exceeds the specified limits, check each of the special components.
10. Design Alteration Warning:
Never alter or add to the mechanical or electrical design of this unit. Example: Do not add auxiliary audio or video connectors. Such alterations might create a safety hazard. Also, any design changes or additions will void the manufacturer's warranty.
11. Hot Chassis Warning:
Some TV receiver chassis are electrically connected directly to one conductor of the AC power cord. If an isolation transformer is not used, these units may be safely serviced only if the AC power plug is inserted so that the chassis is connected to the ground side of the AC source.

To confirm that the AC power plug is inserted correctly, do the following: Using an AC voltmeter, measure the voltage between the chassis and a known earth ground. If the reading is greater than 1.0V, remove the AC power plug, reverse its polarity and reinsert. Re-measure the voltage between the chassis and ground.
12. Some TV chassis are designed to operate with 85 volts AC between chassis and ground, regardless of the AC plug polarity. These units can be safely serviced only if an isolation transformer is inserted between the receiver and the power source.
13. Some TV chassis have a secondary ground system in addition to the main chassis ground. This secondary ground system is not isolated from the AC power line. The two ground systems are electrically separated by insulating material that must not be defeated or altered.
14. Components, parts and wiring that appear to have overheated or that are otherwise damaged should be replaced with parts that meet the original specifications. Always determine the cause of damage or overheating, and correct any potential hazards.
15. Observe the original lead dress, especially near the following areas: Antenna wiring, sharp edges, and especially the AC and high voltage power supplies. Always inspect for pinched, out-of-place, or frayed wiring. Do not change the spacing between components and the printed circuit board. Check the AC power cord for damage. Make sure that leads and components do not touch thermally hot parts.
16. Picture Tube Implosion Warning:
The picture tube in this receiver employs "integral implosion" protection. To ensure continued implosion protection, make sure that the replacement picture tube is the same as the original.
17. Do not remove, install or handle the picture tube without first putting on shatterproof goggles equipped with side shields. Never handle the picture tube by its neck. Some "in-line" picture tubes are equipped with a permanently attached deflection yoke; do not try to remove such "permanently attached" yokes from the picture tube.
18. Product Safety Notice:
Some electrical and mechanical parts have special safety-related characteristics which might not be obvious from visual inspection. These safety features and the protection they give might be lost if the replacement component differs from the original—even if the replacement is rated for higher voltage, wattage, etc.

Components that are critical for safety are indicated in the circuit diagram by shading, (or). Use replacement components that have the same ratings, especially for flame resistance and dielectric strength specifications. A replacement part that does not have the same safety characteristics as the original might create shock, fire or other hazards.

1-2 Servicing Precautions

Warning1: First read the "Safety Precautions" section of this manual. If some unforeseen circumstance creates a conflict between the servicing and safety precautions, always follow the safety precautions.

Warning2: An electrolytic capacitor installed with the wrong polarity might explode.

1. Servicing precautions are printed on the cabinet. Follow them.
2. Always unplug the unit's AC power cord from the AC power source before attempting to: (a) Remove or reinstall any component or assembly, (b) Disconnect an electrical plug or connector, (c) Connect a test component in parallel with an electrolytic capacitor.
3. Some components are raised above the printed circuit board for safety. An insulation tube or tape is sometimes used. The internal wiring is sometimes clamped to prevent contact with thermally hot components. Reinstall all such elements to their original position.
4. After servicing, always check that the screws, components and wiring have been correctly reinstalled. Make sure that the portion around the serviced part has not been damaged.
5. Check the insulation between the blades of the AC plug and accessible conductive parts (examples: metal panels, input terminals and earphone jacks).
6. Insulation Checking Procedure: Disconnect the power cord from the AC source and turn the power switch ON. Connect an insulation resistance meter (500V) to the blades of the AC plug.

The insulation resistance between each blade of the AC plug and accessible conductive parts (see above) should be greater than 1 megohm.
7. Never defeat any of the B+ voltage interlocks. Do not apply AC power to the unit (or any of its assemblies) unless all solid-state heat sinks are correctly installed.
8. Always connect a test instrument's ground lead to the instrument chassis ground before connecting the positive lead; always remove the instrument's ground lead last.

1-3 Precautions for Electrostatically Sensitive Devices (ESDs)

1. Some semiconductor (“solid state”) devices are easily damaged by static electricity. Such components are called Electrostatically Sensitive Devices (ESDs); examples include integrated circuits and some field-effect transistors. The following techniques will reduce the occurrence of component damage caused by static electricity.
2. Immediately before handling any semiconductor components or assemblies, drain the electrostatic charge from your body by touching a known earth ground. Alternatively, wear a discharging wrist-strap device. (Be sure to remove it prior to applying power—this is an electric shock precaution.)
3. After removing an ESD-equipped assembly, place it on a conductive surface such as aluminum foil to prevent accumulation of electrostatic charge.
4. Do not use freon-propelled chemicals. These can generate electrical charges that damage ESDs.
5. Use only a grounded-tip soldering iron when soldering or unsoldering ESDs.
6. Use only an anti-static solder removal device. Many solder removal devices are not rated as “anti-static”; these can accumulate sufficient electrical charge to damage ESDs.
7. Do not remove a replacement ESD from its protective package until you are ready to install it. Most replacement ESDs are packaged with leads that are electrically shorted together by conductive foam, aluminum foil or other conductive materials.
8. Immediately before removing the protective material from the leads of a replacement ESD, touch the protective material to the chassis or circuit assembly into which the device will be installed.
9. Minimize body motions when handling unpackaged replacement ESDs. Motions such as brushing clothes together, or lifting a foot from a carpeted floor can generate enough static electricity to damage an ESD.

2. Specifications and IC Data

2-1 Specifications

Television System:

MODEL	SYSTEM
CI	PAL-I (UHF)
CII	PAL-I (VHF/UHF)
CX	PAL-B/G, SECAM-B/G
CK	PAL-B/G, D/K, SECAM-B/G, D/K
CW	PAL-B/G, D/K, SECAM-B/G, D/K, NT 4.43
CS	PAL-B/G, D/K, SECAM-B/G, D/K, NT4.43, NT3.58

Channels:

System Band	PAL/SECAM- B/G,I	PAL, SECAM- D/K	SECAM-K1, PAL-D	NTSC - M
VHF	2 - 12	1 - 13	2 - 9	2 - 13
UHF	21 - 69	21 - 69	13 - 57	14-69

Intermediate Frequencies (MHz) :

SYSTEM IF Carrier Frequency	PAL/ SECAM- B/G	PAL/SECAM-D/K, SECAM-K1	PAL - I	NTSC - M
Picture IF Carrier	38.90	38.90	38.90	38.90
Sound IF Carrier	33.40	32.40	32.90	34.40
Color Sub Carrier	34.47	34.47	34.47	35.32

Picture Tube:

14 Inch	A34KQV42X	Quick start, in-line-gun, Black stripe, 90°degree deflection
20 Inch	A48KRD82X(H)	
21 Inch	A51KQJ63X	

Power Requirements:

AC 100~240V, 50/60Hz

Antenna Input Impedance:

VHF, UHF : Telescopic dipole antenna (75 ohm unbalanced type)

Speaker Impedance

8 ohm, 5W+5W (Dual Type)
16 ohm, 3W (Monitor Type & Dual Type)

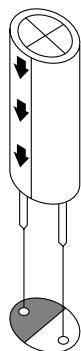
2-2 IC Line Up

Table 2-1 IC Line-Up

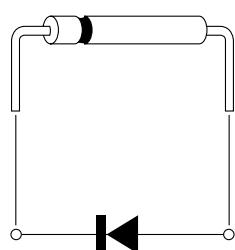
Loc. No	Specification	Description	Remark
HC101	PAP103	IF PRE-AMP	
IC201S	SPM802ER	TTX, English/Croatian/Romanian/Hungarian/Polish/Czech/ Bulgarian/Russian/Portugal	Philips
	SPM802ERN	W/O TTX, English/Croatian/Romanian/Hungarian/Polish/Czech/ Bulgarian/Russian/Portugal	
IC301	LA7840	VERTICAL OUTPUT	Sanyo
IC501	TDA6107Q	RGB DRIVE AMP	Philips
IC601	TDA7266S	SOUND-AMP (3W x 1CH or 3W x 2CH or 5W x 2CH)	
IC801S	KA500765R	POWER IC (STR)	
IC802	KA7632	CUSTOM REGULATOR (5V, 8V, 3.3V)	
IC902	24C08/KS28C040	EEPROM	
PC801S	TCET1108 / LTV817B	PHOTO COUPLER	
IC101	U4468B	SIF - IC	TEMIC

2-3 Semiconductor Base Diagrams

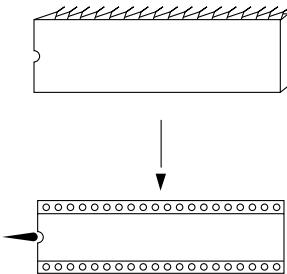
ELECTROLYTIC-CONDENSER



DIODE

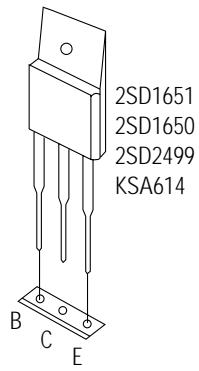


IC

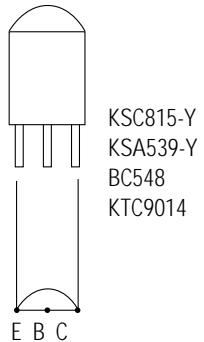


SPM-802ERN(Pin 64)
SPM-802ER(Pin 64)
X24C08P(Pin 8)
KS24C080(Pin 8)
U4468B(Pin 16)

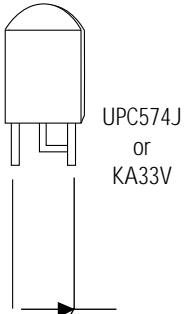
TRANSISTOR



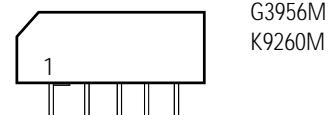
TRANSISTOR



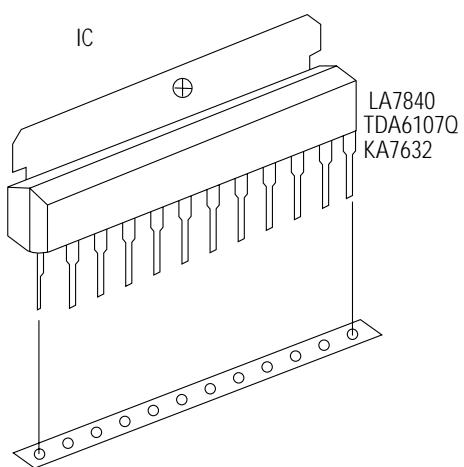
IC



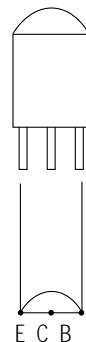
SAW-FILTER



IC



TRANSISTOR

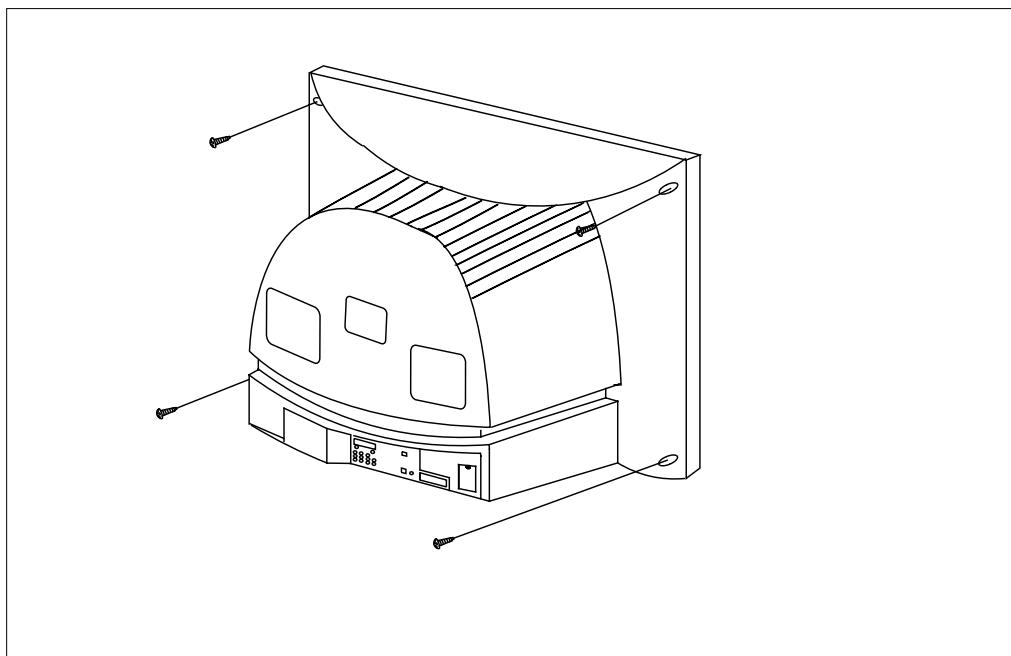


KSR1012
KSR1010
KSR2010
KTD863-Y
KSC2331-Y

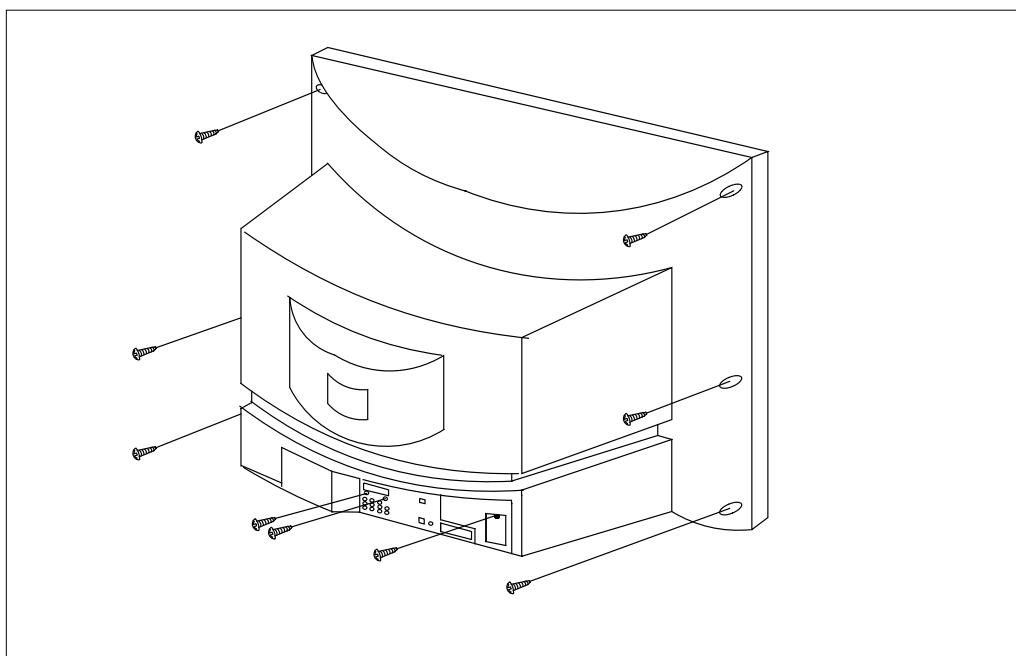
MEMO

3. Disassembly and Reassembly

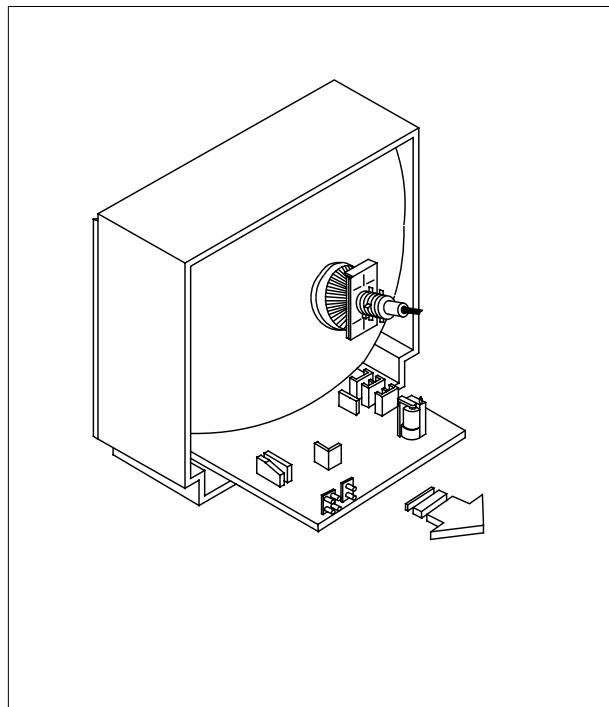
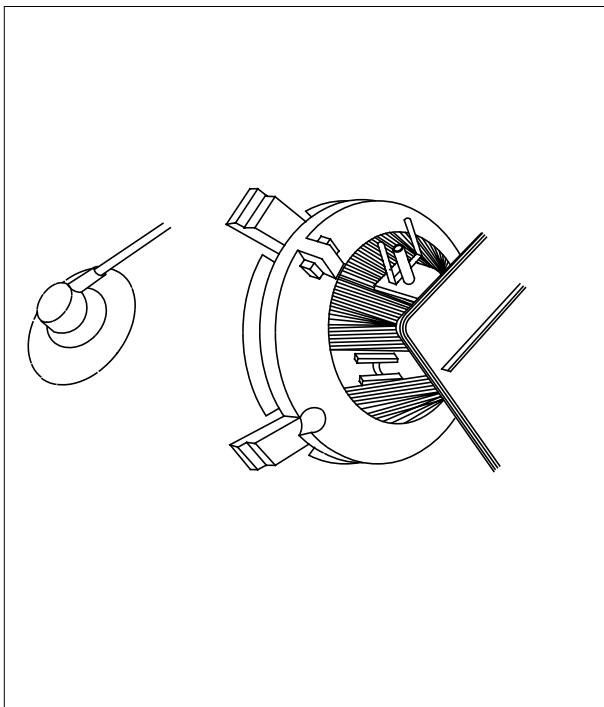
3-1 Back Cover Removal



1. After removing the screws, press the tension rib and pull the cabinet backwards.
2. To reassemble, press the tension rib (see diagram).



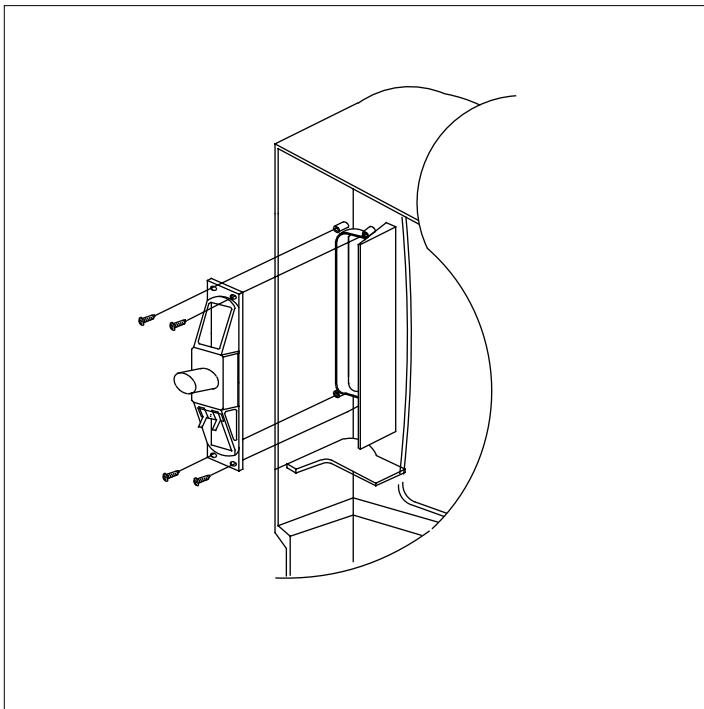
3-2 Main Board Removal



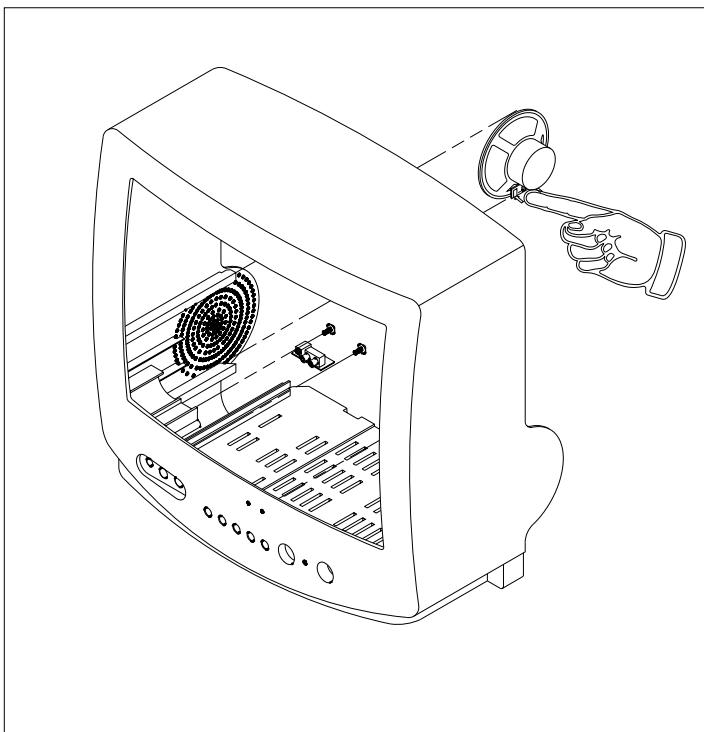
1. Separate the socket board from the CRT neck.
2. Remove the Anode Cap from the CRT.
3. Remove the main board by pulling it with both hands.

Warning: The FBT is charged with high voltage.
Before removing the Anode Cap, discharge the voltage
through one of the heat sinks on the main board.

3-3 Speaker Removal

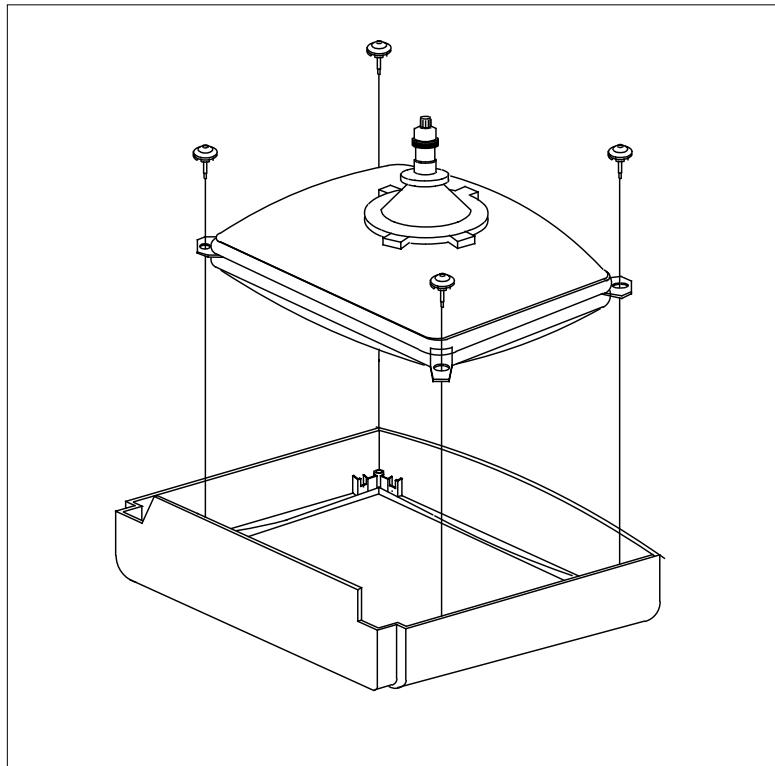


1. Remove the speaker by pressing the tension rib.



1. Remove the screws.
2. Remove the speaker by pressing the tension rib.

3-4 CRT Removal



1. Spread a soft mat on the floor. Place the TV set face down.
2. Remove the 4 nuts mounting the CRT to the front cabinet. Lift the CRT.
3. Caution: Because of the high vacuum and large surface area of the picture tube, be careful while handling it: (1) Always lift the picture tube by grasping it firmly around the faceplate, (2) Never lift the tube by its neck. (3) Do not scratch the picture tube or apply excessive pressure. Fractures of the glass may cause an implosion.

4. Alignment and Adjustments

4-1 Preadjustment

4-1-1 Factory Mode

1. Do not attempt these adjustments in the Video Mode.
2. The Factory Mode adjustments are necessary when either the EEPROM (IC902) or the CRT is replaced.
3. Do not tamper with the "Adjustment" screen of the Factory Mode menu. This screen is intended only for factory use.

4-1-2 When EEPROM (IC902) Is Replaced

1. When IC902 is replaced all adjustment data revert to initial values. It is necessary to re-program this data.
2. After IC902 is replaced, warm up the TV for 10 seconds.

4-1-3 When CRT Is Replaced

1. Make the following adjustments AFTER setting up after setting up purity and convergence :
 - White Balance
 - Sub-Brightness
 - Vertical Center
 - Vertical Size
 - Horizontal Size
 - Fail Safe (This adjustment must be the last step).
2. If the EEPROM or CRT is replaced, set PVA to 40 (factory mode) and set SC as follows.
 - 14 inch : 0
 - 20 inch : 9
 - 21 inch : 9

4-2 Factory/Service Mode

4-2-1 Procedure for the "Adjustment" Mode

1. This mode uses the standard remote control. The Service Mode is activated by entering the following remote-control sequence :
 - (1) DISPLAY→FACTORY.
 - (2) STAND-BY→DISPLAY→MENU→MUTE →POWER ON.
2. The "SERVICE (FACTORY)" message will be displayed. The Service Mode has four components: ADJUST, OPTION and Reset.
3. Access the Adjustment Mode by pressing the "VOLUME" keys (Up or Down). The adjustment parameters are listed in the accompanying table, and selected by pressing the CHANNEL keys (\blacktriangle , \blacktriangledown).

4. Selection sequences for the all system:

DOWN or UP key:
 SCT>SBT>BLR>BLB>RG>GG>BG>VSL>
 VS>VA>HS>SC>SDL>STT>SSP>PDL>
 NDL>PSR>NSR>AGC>VOL>LCO>TXP

5. The VOLUME keys increase or decrease the adjustment values (stored in the non-volatile memory) when Adjustment Mode is cancelled.
6. Cancel the Adjustment Mode by re-pressing the "FACTORY" or "Power OFF" keys.

4-2-2 Main Adjustment Parameter

OSD	FUNCTION	RANGE	INITIAL DATA	REMARK
SCT	Sub Contrast	0 ~ 23	13	
SBT	Sub Brightness	0 ~ 23	9	
BLR	Black Level offset Blue	0 ~ 15	9	
BLB	Black Level offset Red	0 ~ 15	7	
RG	Red Gain	0 ~ 63	32	
GG	Green Gain	0 ~ 63	25(Fix)	
BG	Blue Gain	0 ~ 63	31	
VSL	Vertical Slope	0 ~ 63	19	
VS	Vertical Shift	0 ~ 63	38	
VA	Vertical Amplitude	0 ~ 63	40(Fix)	
HS	Horizontal Shift	0 ~ 63	30	
SC	S-Correction	0 ~ 63	9	
CDL	Cathode Drive Level	0 ~ 15	9	
STT	Sub Tint	0 ~ 7	3	
SSP	Sub Sharpness	0 ~ 7	0	
PDL	PAL Delay	0 ~ 15	15(Fix)	
NDL	NTSC Delay	0 ~ 15	10	
PSR	PAL Sub color	0 ~ 23	2	
NSR	NTSC Sub color	0 ~ 23	5	
AGC	Automatic Gain Control	0 ~ 63	23	
VOL	Volume pre setting	0 ~ 63	10	
LCO	SECAM-L Vision IF	0 ~ 1	0	
TXP	TTX Position	0 ~ 15	9	

NOTE : PVS,PVA, PHS, parameters must be aligned using the 50Hz vertical-field rates.

4-2-3 Option Bytes

In the Service Mode, various can be selected via the Option Table. Example:

Option Table : xx xx xx xx

1	LNA	ON
2	SYSTEM	CZ
3	AUDIO	MONO
4	JACK	RCA
5	ZOOM	NOR/ZOOM/16:9
6	AUTO POWER	ON
7	SBL	OFF
8	2nd SIF	ON
9	HOTEL MODE	OFF
10	BKS	ON

4-2-4 RESET

The Reset Mode is used during factory inspection.

Function Reset:

1. Picture	Custom
2. Auto Volume	Off
3. Color System	Auto (option)
4. Sound System	D/K (option)
5. Blue Screen	Off
6. Low Noise AMP	Off (option)
7. Volume	10
8. CH. Skip	Erased
9. CH. Lock	Off
10. Timer	Off

4-3 Other Adjustments

4-3-1 General

1. Usually, a color TV needs only slight touch-up adjustment upon installation. Check the basic characteristics such as height, horizontal and vertical sync and focus.
2. The picture should have good black and white details. There should be no objectionable color shading; if color shading is present, perform the purity and convergence adjustments described below.
3. Use the specified test equipment or its equivalent.
4. Correct impedance matching is essential.
5. Avoid overload. Excessive signal from a sweep generator might overload the front-end of the TV. When inserting signal markers, do not allow the marker generator to distort test results.
6. Connect the TV only to an AC power source with voltage and frequency as specified on the backcover nameplate.
7. Do not attempt to connect or disconnect any wires while the TV is turned on. Make sure that the power cord is disconnected before replacing any parts.
8. To protect against shock hazard, use an isolation transformer.

4-3-2 Automatic Degaussing

A degaussing coil is mounted around the picture tube, so that external degaussing after moving the TV should be unnecessary. But the receiver must be properly degaussed upon installation.

The degaussing coil operates for about 1 second after the power is switched ON. If the set has been moved or turned in a different direction, disconnect its AC power for at least 30 minutes.

If the chassis or parts of the cabinet become magnetized, poor color purity will result. If this happens, use an external degaussing coil. Slowly move the degaussing coil around the faceplate of the picture tube and the sides and front of the receiver. Slowly withdraw the coil to a distance of about 6 feet before removing power.

4-3-3 High Voltage Check

CAUTION: There is no high voltage adjustment on this chassis. The B+ power supply must be set to +125 volts (Full color bar input and normal picture level).

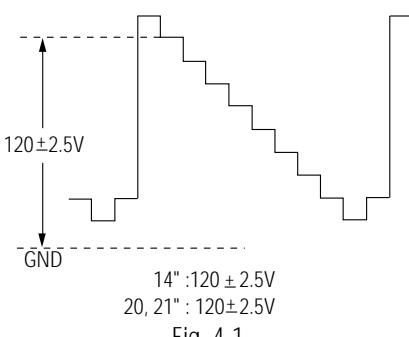
1. Connect a digital voltmeter to the second anode of the picture tube.
2. Turn on the TV. Set the Brightness and Contrast controls to minimum (zero beam current).
3. The high voltage should not exceed 27.5KV.
4. Adjust the Brightness and contrast controls to both extremes. Ensure that the high voltage does not exceed 27.5KV under any conditions.

4-3-4 FOCUS Adjustment

1. Input a black and white signal.
2. Adjust the tuning control for the clearest picture.
3. Adjust the FOCUS control for well defined scanning lines in the center area of the screen.

4-3-5 Cathode Voltage Adjustment (Screen Adjustment)

1. Connect CRT socket pin GK to an oscilloscope probe.
2. Input a gray scale pattern. (Use a pattern generator, PM5518)
3. Use the P mode key (on the remote control) for the STANDARD picture.
4. Adjust the Screen VR (on the FBT) so that the voltage on the oscilloscope becomes $120 \pm 2.5V$ (See Fig. 4-1).



4-3-6 Purity Adjustment

1. Warm up the receiver for at least 20 minutes.
2. Plug in the CRT deflection yoke and tighten the clamp screw.
3. Plug the convergence yoke into the CRT and set in as shown in Fig. 4-2.
4. Input a black and white signal.
5. Fully demagnetize the receiver by applying an external degaussing coil.
6. Turn the CONTRAST and BRIGHTNESS controls to maximum.
7. Loosen the clamp screw holding the yoke. Slide the yoke backward or forward to provide vertical green belt. (Fig. 4-3).
8. Tighten the convergence yoke.
9. Slowly move the deflection yoke forward, and adjust for the best overall green screen.
10. Temporarily tighten the deflection yoke.
11. Produce blue and red rasters by adjusting the low-light controls. Check for good purity in each field.
12. Tighten the deflection yoke.

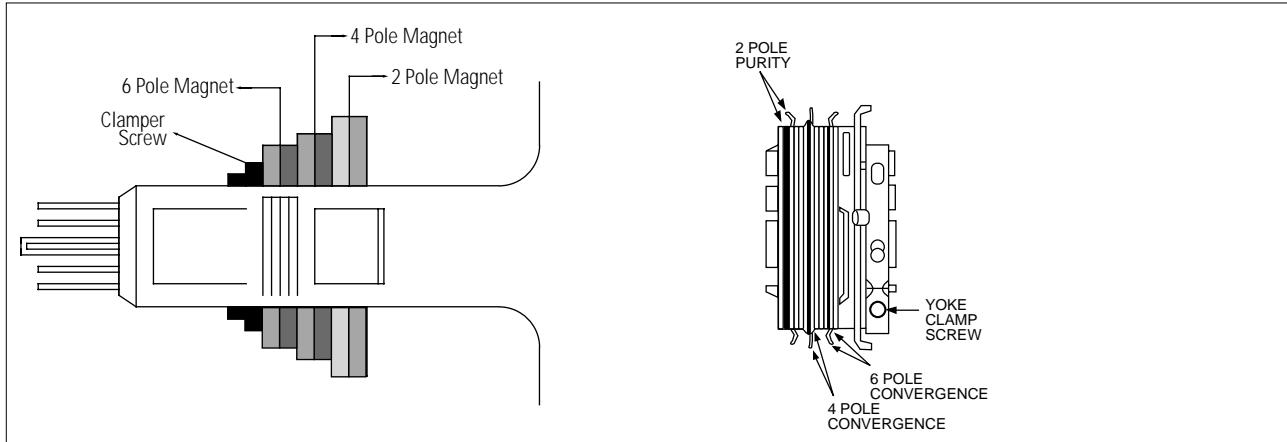


Fig. 4-2 Convergence Magnet Assembly

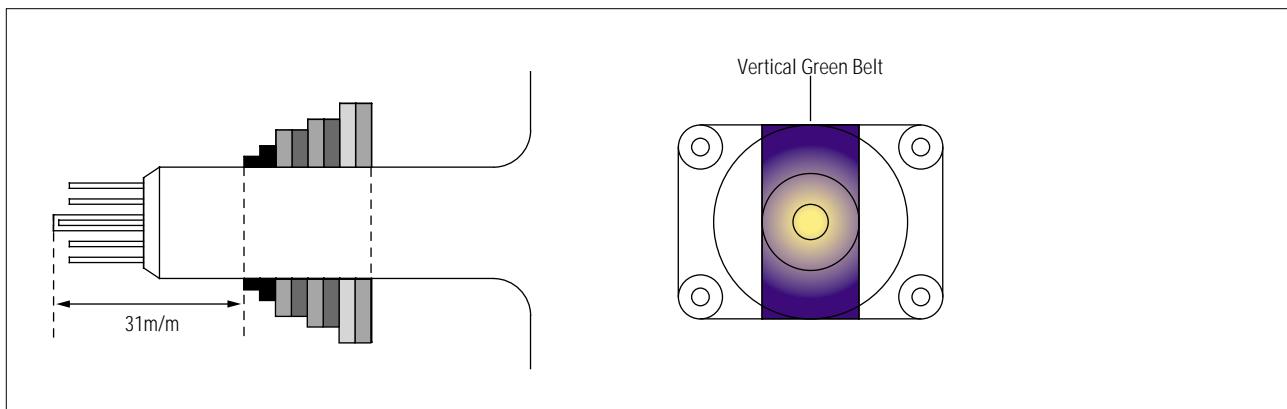


Fig. 4-3 Center Convergence Adjustment

4-3-7 White Balance Adjustment

(a) Set up

1. Warm up the TV for at least 30 minutes in the Aging Mode (OSD White). This mode is displayed by entering the following sequence:

DISPLAY →FACTORY → FACTORY

2. Input a Toshiba pattern.

(b) Low-Light Adjustment

1. Set SBT to 3.5 ± 0.5 fL in the Factory Service Mode with using CA100. See Fig. 4-4 ②.
2. Adjust RG,BG so that the levels are suitable to each local area.

(c) High-Light Adjustment

1. Set SCT to 55 FL (20", 21"), 65 FL(14") in the Factory Service Mode with using CA100. See Fig. 4-4 ①.

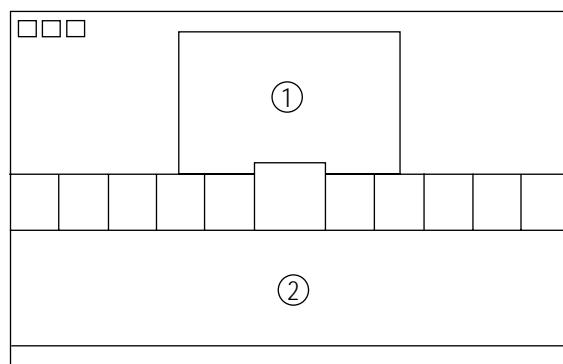


Fig. 4-4

4-3-8 Center Convergence Adjustment

1. Warm up the receiver for at least 20 minutes.
2. Adjust the two tabs of the 4 pole magnets to change the angle between them. Superimpose the red and blue vertical lines in the center area of the screen.
3. Adjust the Brightness and Contrast controls for a well defined picture.
4. Adjust the two-tab pairs of the 4 pole magnets, and change the angle between them. Superimpose the red and the blue vertical lines in the center area of the screen.
5. Turn the both tabs at the same time, keeping the angle constant, and superimpose the red and blue horizontal line in the center of the screen.
6. Adjust the two-tab pairs of the 6-pole magnets to superimpose the red and blue line onto the green. (Changing the angle affects the vertical lines, and rotating both magnets affects the horizontal lines.)
7. Repeat adjustments 2~6, if necessary.
8. Since the 4-pole magnets and 6-pole magnets interact, the dot movement is complex (Fig. 4-5).

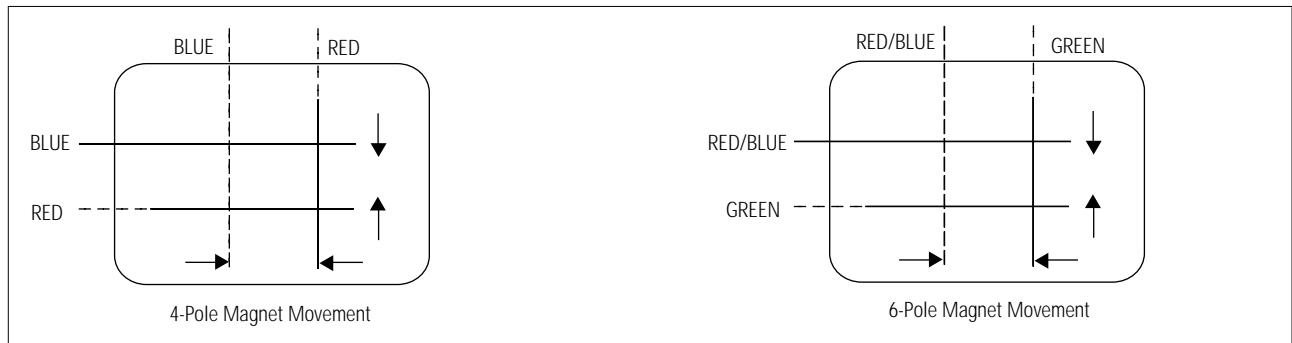


Fig. 4-5 Center Convergence Adjustment

4-3-9 RF AGC Adjustment

Set the AGC data to 23 (Factory Mode).

4-3-10 Sub-Color Adjustment

Set $\frac{\text{PSR}}{\text{NSR}}$ data to $\frac{2}{5}$ (Factory Mode).

4-3-11 Geometry Adjustment

SC → VS → VSL → HS

1. Input a lion head pattern (in the PAL channel).
2. Set the SC (S-Correction) as follows : 9 (21"), 9 (20"), 0 (14") and VA 40 so that the lion head circle becomes oval.
3. Adjust with VSL (Vertical-Slope) so that the bottom margin of the picture is 4.

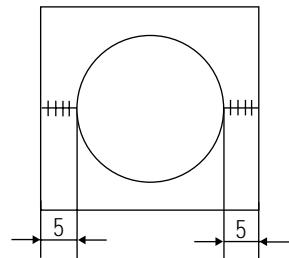


Fig. 4-9

6. Adjust HS (using the width coil) so that the left and right margins of the picture are 5.

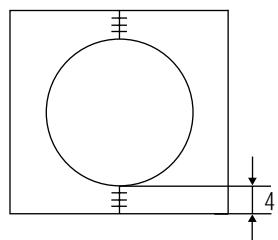


Fig. 4-7

4. Adjust with VS (Vertical shift) so that the top margin of the picture is 4.

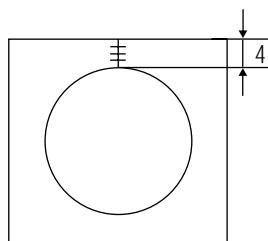
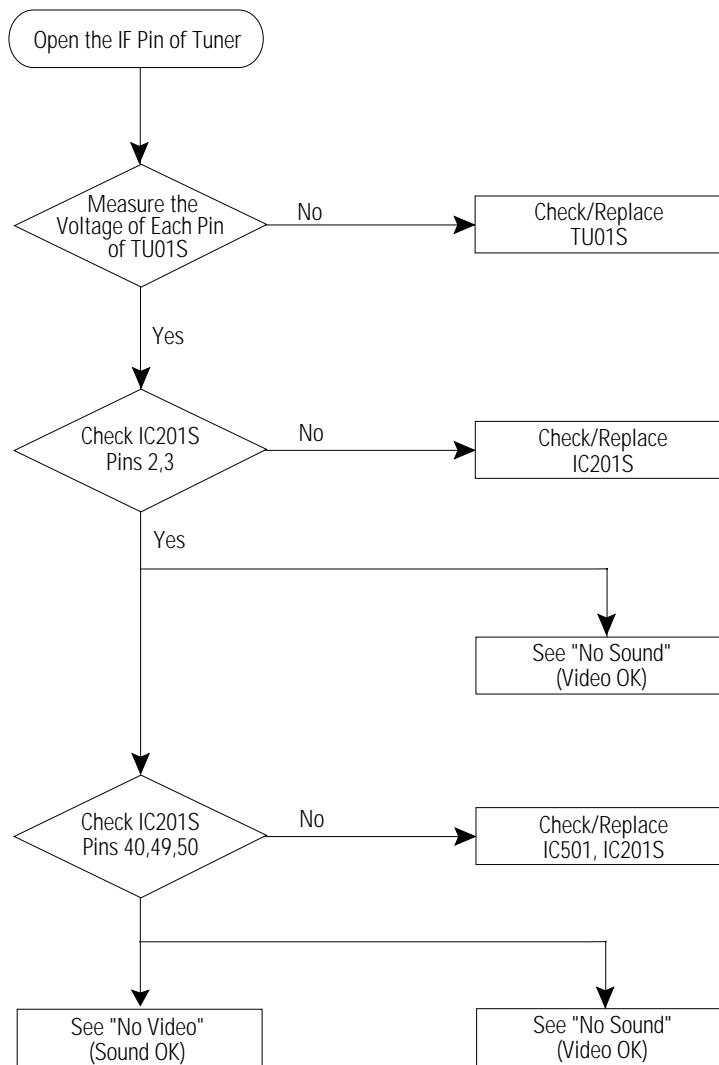


Fig. 4-8

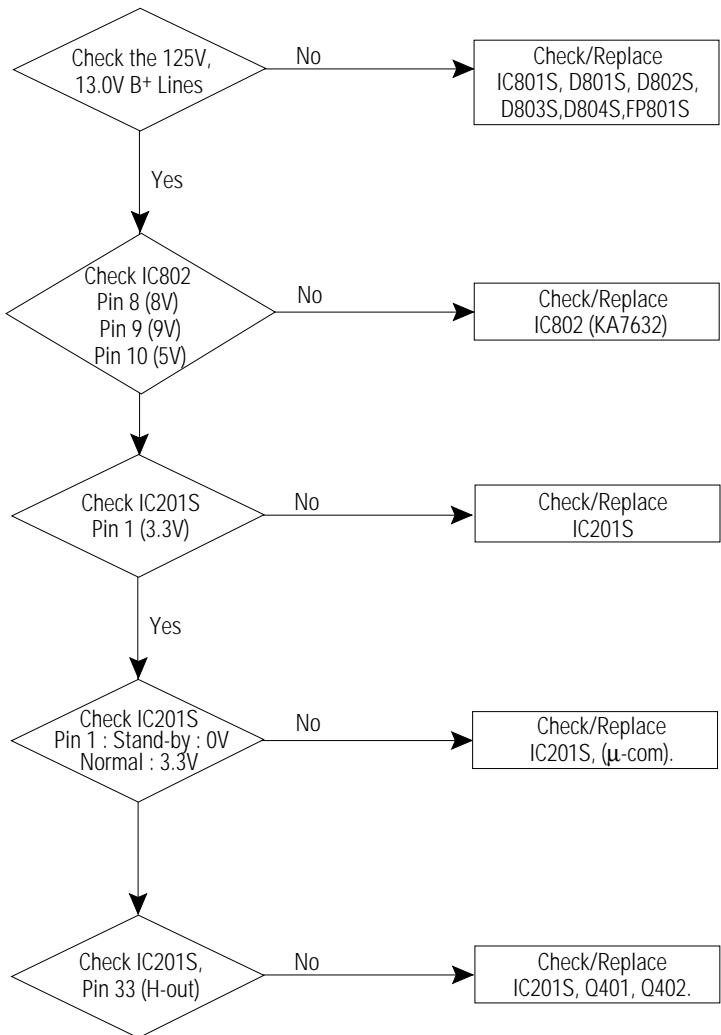
5. Adjust with HS (Horizontal Shift) so that the lion-head pattern and CRT centers are aligned.

5. Troubleshooting

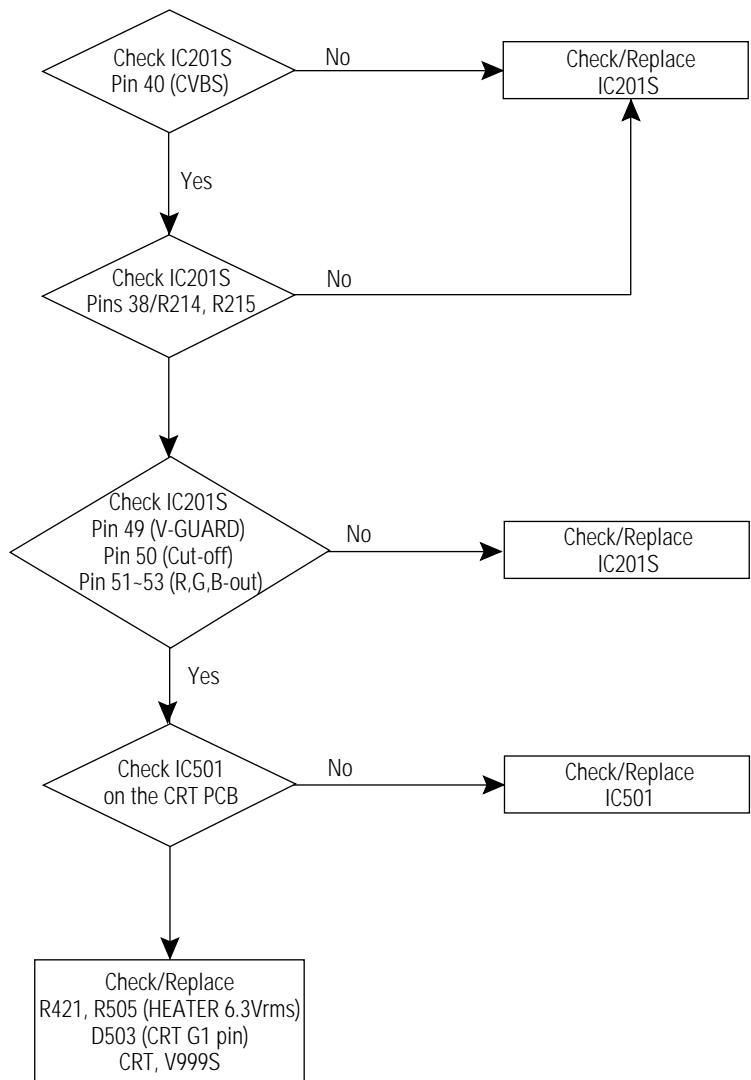
5-1 No Video (Raster On, No Sound)



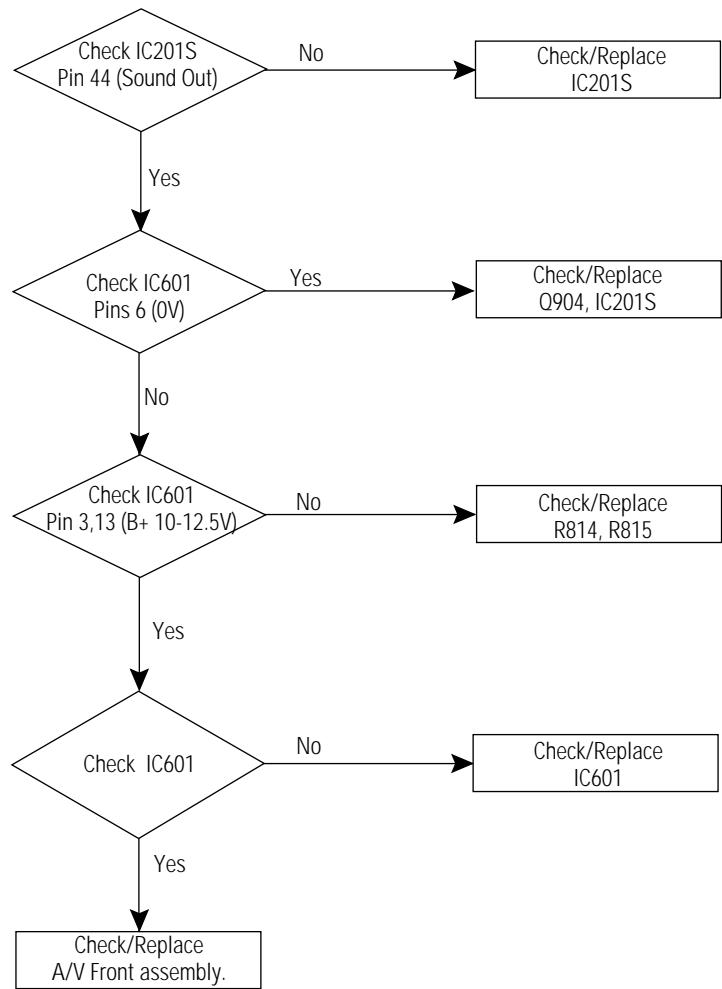
5-2 No Power



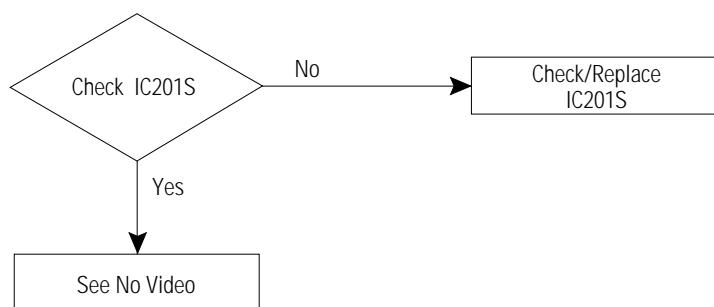
5-3 No Video (Sound OK)



5-4 No Sound (Video OK)



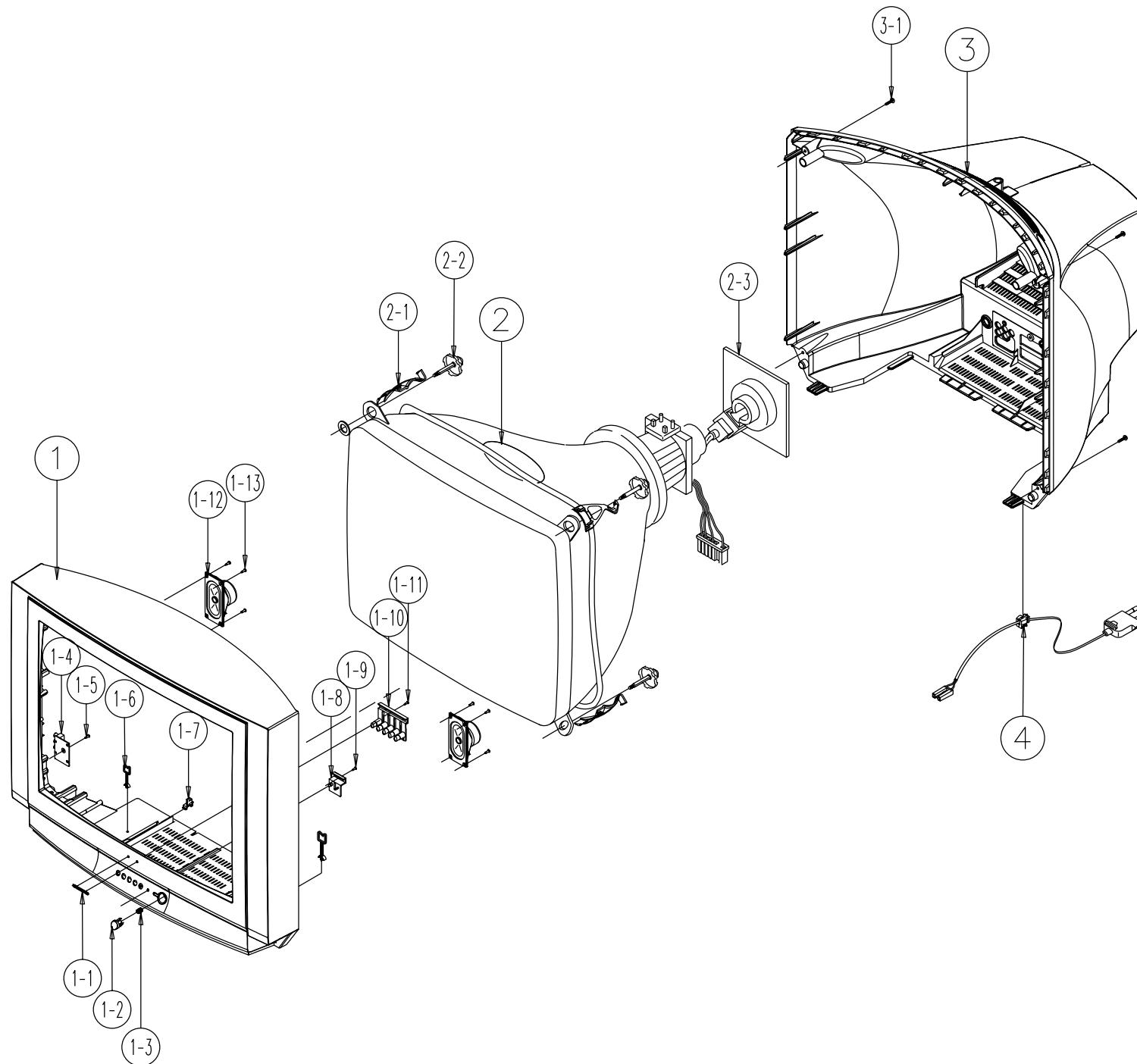
5-5 No TTX



6. Exploded View & Parts List

6-1 CZ20F42TSXXEH

No	Code No	Description	Specification	Q'ty	Remark
1	HA91-00889A	ASSYCABINETFRONT;20F4,SV-011P-II		1	
1*	AA64-02396A	CABINET-FRONT;20F4,HIPS,HB,SV-012P-II,GR		1	
1-1	AA64-70127F	BADGE-BRAND;NEW,AL,-,-,L40,R800,SILVER,S		1	
1-2	AA64-02491A	KNOB POWER;20H3,HIPS,HB,BLK		1	
1-3	HA64-01339A	WINDOW-REMOCON;WINDOW-REMOCON;20H3,PC,VI		1	
1-4	HA64-01340A	INDICATOR-LED;INDICATOR-LED;20H3,ACRYL,		1	
1-5	AA61-60003T	SPRING-CS;-,SUS304,-,-,OD7,N5,OD7,-,-,-		1	
1-6	HA61-00494A	HOLDER-AV;HOLDER-AV;TOOL,20F4,-,-,-,MO		1	
1-7	AA95-01478A	ASSY-PCB,A/V SIDE;20F4,KS1A		1	
1-7	AA95-00946A	ASSY-A/V SIDE;-,20F4,S15A,PAL,-,MONO		1	
1-8	6003-001024	SCREW-TAPITTE;RWH,+,B,M4,L12,ZPC(YEL),SW		2	PCB+HO
1-9		STOPPER-PCB			
1-10	AA64-02452A	KNOB CONTROL;20H3,HIPS,HB,BLK		1	
1-11	6002-000515	SCREW-TAPPING;RH,+,2,M4,L15,ZPC(WHT),SWR		1	KC+CF
1-12	AA96-00852A	ASSY SPEAKER;160HM,3W,3001-001039,700/3		1	
1-13	6002-000515	SCREW-TAPPING;RH,+,2,M4,L15,ZPC(WHT),SWR		8	SPK+CF
2	AA94-05856A	ASSY CRT;A48ECR43X,+400MG,20,90DEG		1	
2-1	AA65-30107A	CLAMP-D,COIL;20~22 INCH,NYLON 66,V2,-,NT		4	
2-2	AA60-10050Q	SCREW-ASSY;-,SWRCH18A,M5,L26.5,HH,+,WC,-		4	CRT+CF
2-3	3704-001105	SOCKET-CRT;11P,20PI,26.5PI,NI,-		1	V999S
3	HA64-02382A	CABINETBACK;20F4,HIPS,HB,GRY		1	
3-1	6002-000515	SCREW-TAPPING;RH,+,2,M4,L15,ZPC(WHT),SWR		4	CB+CF
3-2	AA96-20122A	ASSY-POWER,CORD;-,CP2/NO(4.0),H/C250,KKJ		1	

6-2 CZ21D83NSXXEC

No	Code No	Description	Specification	Q'ty	Remark
1	HA91-04034A	ASSY CABINET FRONT;HIPS,HB,SV-012P-II,21		1	
1*	AA64-02310A	CABINET-FRONT;21D8(SEH),HIPS,HB,SV012P-I		1	
1-1	AA64-70010B	BADGE-BRAND;-,AL,-,L50,-,SILVER,SS R20		1	
1-2	AA64-02866A	KNOB POWER;21D8,HIPS,HB,GRY		1	
1-3	AA61-60003J	SPRING-CS;-,SUS304,--,OD6,N7,OD6,--,--,		1	
1-4	AA95-01709A	ASSY—PCB,A/V SIDE;21D8,KS1A,STEREO		1	
1-5	6003-001019	SCREW-TAPITI;RH,+,B,M4,L12,ZPC(BLK),SWR		1	CF+PCB
1-6	AA65-30105A	CLAMP-WIRE;ALL MODEL, NYLON 66,V2, -,NTR,1		1	
1-7	AA61-40113A	STOPPER-PCB;501H,HIPS,--,HB,NTR,-		1	
1-8	HA64-02314A	WINDOW-RMC,LED;21D8(SEH),PC,CLR		1	
1-9	6003-001019	SCREW-TAPITI;RH,+,B,M4,L12,ZPC(BLK),SWR		1	WR+CF
1-10	AA64-02868A	KNOB CONTROL;25D8,HIPS,HB,GRY		1	
1-11	6003-001019	SCREW-TAPITI;RH,+,B,M4,L12,ZPC(BLK),SWR		1	KC+CF
1-12	3001-000274	SPEAKER;5W,8ohm,90dB,160Hz		2	
1-13	6003-001019	SCREW-TAPITI;RH,+,B,M4,L12,ZPC(BLK),SWR		8	SPK+CF
2	AA94-05859A	ASSY CRT;A51EER31X,+400MG,21		1	
2-1	AA65-30107A	CLAMP-D,COIL;20~22 INCH, NYLON 66,V2, -,NT		4	
2-2	AA60-10050Q	SCREW-ASSY;-,SWRCH18A,M5,L26.5,HH,+,WC,-		4	CRT+CF
2-3	3704-001105	SOCKET-CRT;11P,20PI,26.5PI,NI,-		1	V999S
3	HA64-02311A	CABINET-BACK;21D8(SEH),HIPS,HB,GRY		1	
3-1	6002-000515	SCREW-TAPPING;RH,+,2,M4,L15,ZPC(WHT),SWR		4	CB+CF
4	AA96-20122A	ASSY-POWER,CORD;-,CP2/NO(4.0),H/C250,KKJ		1	

Level	Loc. No.	Code No.	Description ; Specification	Remark	Level	Loc. No.	Code No.	Description ; Specification	Remark
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2 JE01 3812-000219 WIRE-NO SHEATH CU;TCWA,300V,52mm(TAPING)
 2 PCB AA41-00567A PCB-SIDE AV;CS21D8,FR-1,1L,A,1.6T,245X24
 2 CN704A 3711-002642 CONNECTOR-HEADER;BOX,3P,1R,2.5mm,STRAIGH
 2 JE601 3722-000143 JACK-PHONE;1P(VER),3.4Pi,AG,BLK,NO
 2 JR01 3722-001031 JACK-PIN;P3.6mm,#18,AU
 2 CN702 AA39-20461C LEAD CONNECTOR-ASSY;11P,YBNH250-11,6709
 2 0202-000008 SOLDER-WIRE;S63S-W3.0,S63S,D3.63Sn/37Pb,
 2 0202-000187 SOLDER-WIRE FLUX;-,RS60S,D1.2,63Sn/37Pb
 2 0204-000442 SOLVENT;1M-1000,C3H7OH,Hg,-
 2 0204-001024 FLUX;DF-98TVS,-,20%,-

1 * AA94-05765A ASSY ACCESSORY;20-21,KS1A,XEC
 2 HA68-02125A LABEL;A/P120(G),70.69,ALLXEC,BLAC
 2 4301-000120 BATTERY-MN;1.5V,AA,14.5x50mm,-
 2 HA83-00047A LP-TAPE ACETATE;T0.1MM,W20MM,L200MM
 2 HA69-00276A VINYL-BAG;HDPE,T0.025,L400,W240,-,W/O LO
 2 HA68-00336B CARD-WARRANTY;A/P100(G),A5,NEW VERSION,I

ASSY ACCESSORY

ASSY CABINET FRONT

1 * HA91-04034A ASSY CABINET FRONT;HIPS,HB,SV-012P-II,21
 2 KC+CF 6003-001019 SCREW-TAPITITE;RH,+,B,M4,L12,ZPC(BLK),SWR
 2 SPK+CF 6003-001019 SCREW-TAPITITE;RH,+,B,M4,L12,ZPC(BLK),SWR
 2 WR+CF 6003-001019 SCREW-TAPITITE;RH,+,B,M4,L12,ZPC(BLK),SWR
 2 AA61-60003J SPRING-CS;-,SUS304,-,OD6,N7,OD6,-,-,
 2 AA64-02866A KNOB POWER;21D8,HIPS,HB,GRY
 3 HA83-00040A LP-MARKING PAINT;METALLIC SILVER,SV-012
 3 HA83-00011A LP-RESIN;M BATCH,WILSON 6007-GY-60,GRY
 3 HA83-00006A LP-RESIN HIPS;-,BASF495F,NTR,HB
 2 AA64-70010B BADGE-BRAND;-,AL,-,L50,-,SILVER,SS R20
 2 AA65-30105A CLAMP-WIRE;ALL MODEL, NYLON 66,V2,-,NTR,1
 2 AA64-02868A KNOB CONTROL;25D8,HIPS,HB,GRY
 3 HA83-00006A LP-RESIN HIPS;-,BASF495F,NTR,HB
 3 HA83-00011A LP-RESIN;M BATCH,WILSON 6007-GY-60,GRY
 3 HA83-00040A LP-MARKING PAINT;METALLIC SILVER,SV-012
 2 AA64-02310A CABINET-FRONT;21D8(SEH);HIPS,HB,SV012P-I
 3 HA83-00040A LP-MARKING PAINT;METALLIC SILVER,SV-012
 3 HA83-00021A LP-MARKING PAINT;WHITE,TPC180
 3 HA83-00006A LP-RESIN HIPS;-,BASF495F,NTR,HB
 3 HA83-00011A LP-RESIN;M BATCH,WILSON 6007-GY-60,GRY
 2 HA83-00049A LP-ADHESIVE-HM;12MM,NTR
 2 3001-000274 SPEAKER;5W,8ohm,90dB,160Hz
 2 AA39-20505M LEAD CONNECTOR-ASSY;4PYSH025-04,REC,35
 2 HA64-02314A WINDOW-RMC,LED,21D8(SEH),PC,CLR
 3 HA83-00009A LP-RESIN PC;LEXAN 121R,VIOLET
 2 0203-00043Z TAPE-ACETATE;#156A,T0.25MM,W19MM,L30M,WH
 2 AA64-01309H INLAY AV;PS SHEET,21D8,T0.3,-,-,S15A
 2 HA61-00721B HOLDER-RAIL;21F5,HIPS,HB,GRY
 3 HA83-00006A LP-RESIN HIPS;-,BASF495F,NTR,HB
 3 HA83-00011A LP-RESIN;M BATCH,WILSON 6007-GY-60,GRY
 2 AA61-40113A STOPPER-PCB;501H,HIPS,-,HB,NTR,-

1 * AA90-03210A ASSY PACKING;21D8

2 HA69-01730A PACKING CASE;21D8,645,560,537,YEL
 2 AA60-40006A PIN-STAPLE;-,H18,33X17.8X24,-,AUTO
 2 AA69-30032E BAG-SHEET;HDPE+PE FOAM;-,W1300,H1300,-,
 2 HA69-01732A CUSHION-SET;21D8,PS,C-0.02
 2 HA68-02178A LABEL-BOX;LABEL-BOX;250MM,89MM,WHITE
 2 HA83-00046A LP-TAPE INK;,,WIDTH 105 MM

ASSY-POWER,CORD

1 * AA96-20122A ASSY-POWER,CORD;-,CP2/NQ(4.0),H/C250,KKJ

REMOCON

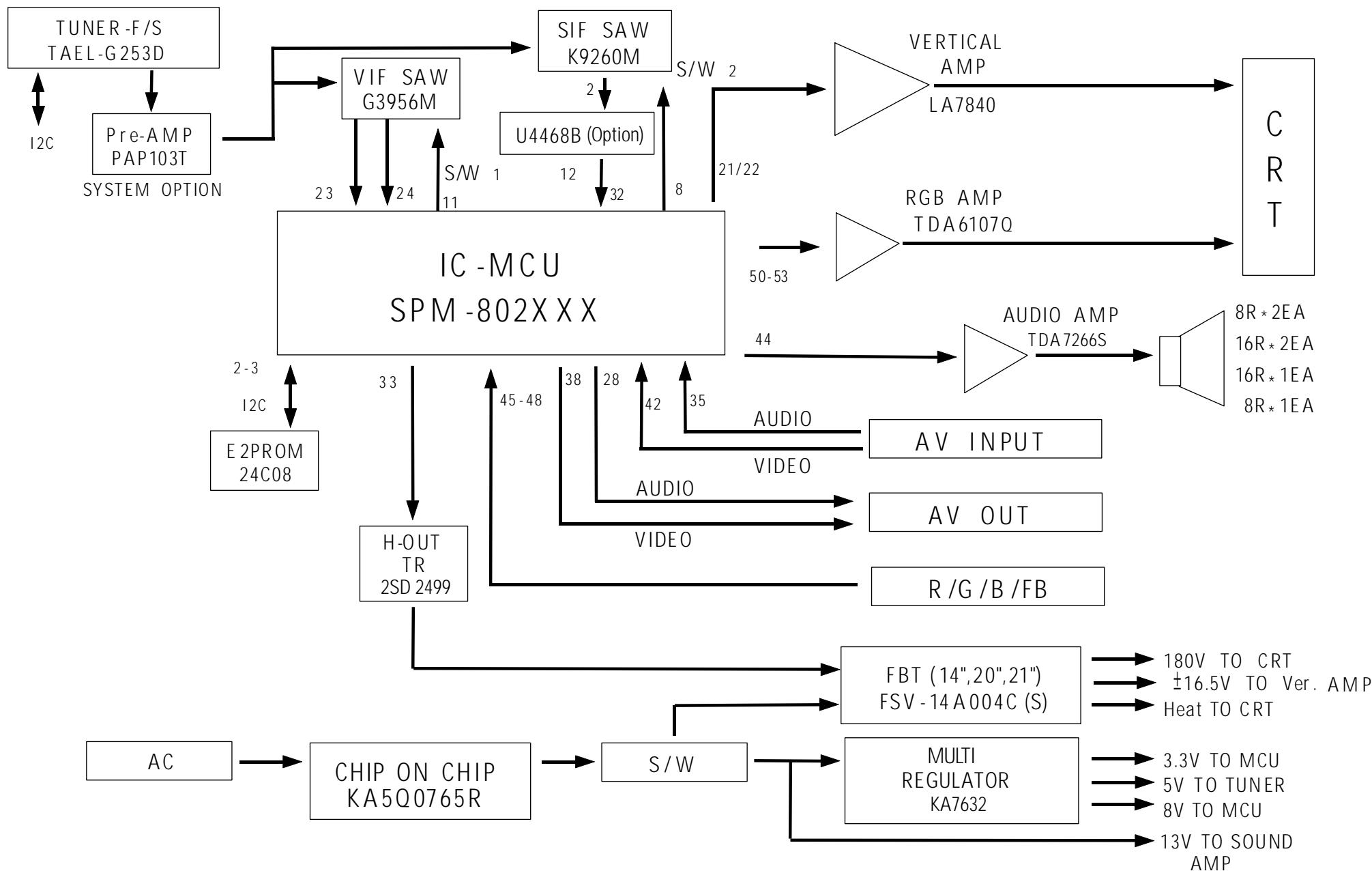
1 * AA59-00104K REMOCON;-,TM59,DREAM,29,L/GRAY,PAL-TTX

ASSY-CABINET(COM)

1 * AA90-03207A ASSY-CABINET(COM);KS1A,21D8
 2 CB+CF 6002-000515 SCREW-TAPPING;RH,+,2,M4,L15,ZPC(WHT),SWR
 2 CB+SCR 6002-000515 SCREW-TAPPING;RH,+,2,M4,L15,ZPC(WHT),SWR
 2 CRT+CF AA60-10050Q SCREW-ASSY;-,SWRCH18A,M5,L26.5,HH,+,WC,-
 2 HA64-02311A CABINET-BACK;21D8(SEH);HIPS,HB,GRY
 3 HA83-00013A LP-RESIN HIPS;NTR,HB,DOW A-TECH,IEC65
 3 HA83-00011A LP-RESIN;M BATCH,WILSON 6007-GY-60,GRY
 2 HA68-02179A LABEL-RATING;LABEL-RATING;58MM,53MM,WHITE
 2 HA83-00052A LP-TAPE-INK;,,WIDTH 55 MM
 2 HA68-02177A LABEL-POS;LABEL-POS;135MM,34MM,WHITE
 2 HA83-00046A LP-TAPE INK;,,WIDTH 105 MM
 2 AA65-30008A CLAMP-CORD;-,PE,HB,-,BLK,-
 2 AA65-30009A CLAMP-FBT;-,ABS,V0,-,BLK,-
 2 AA65-30018A CLAMP-WIRE;DONG-A, NYLON-66,-,-,DATL-60
 2 AA65-30104B CLAMP-WIRE;ALL MODEL, NYLON 66,V2,-,BLK,W
 2 CF+PCB 6003-001019 SCREW-TAPITITE;RH,+,B,M4,L12,ZPC(BLK),SWR

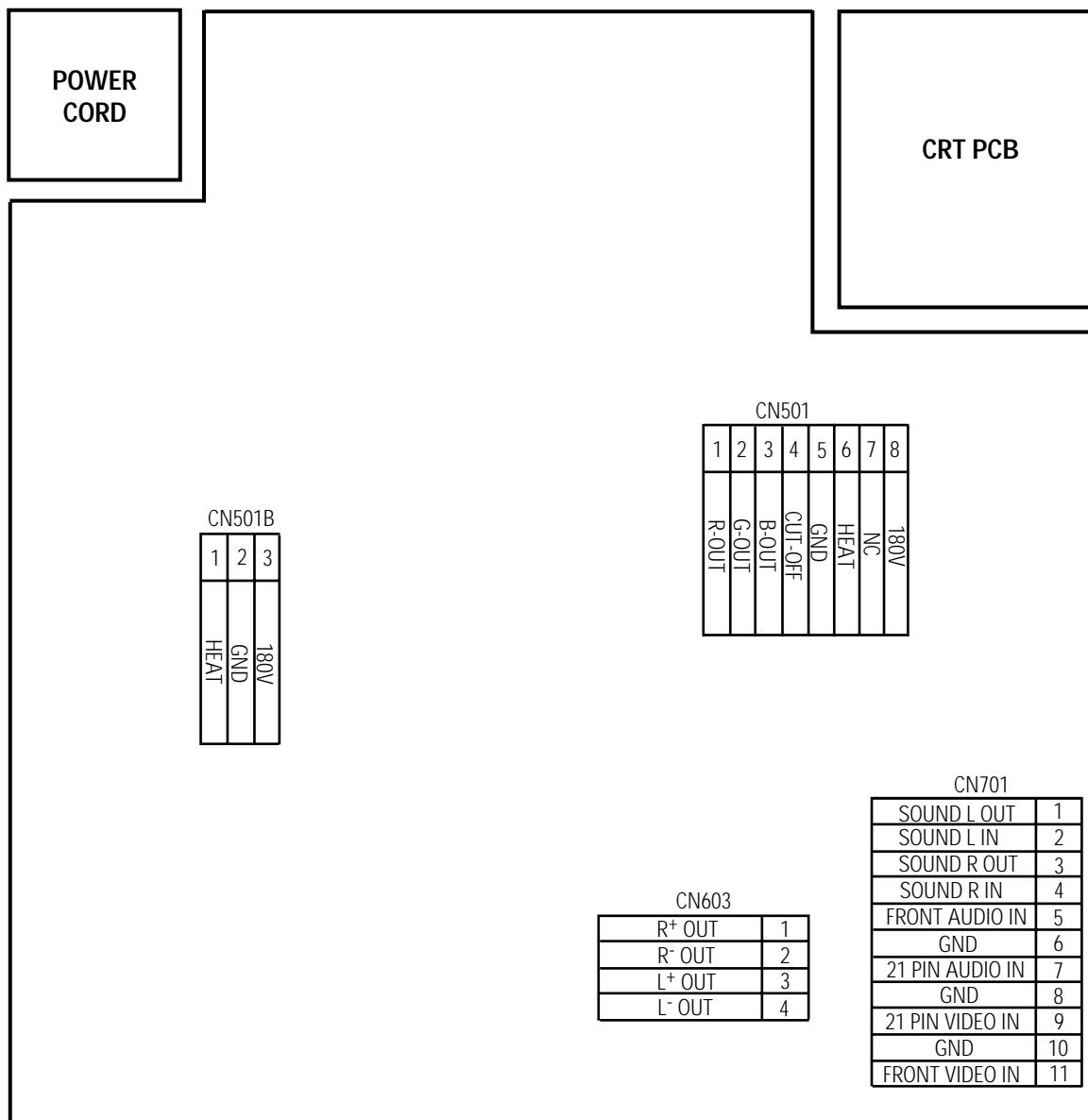
8. Block Diagram

8-1 KS1A



9. Wiring Diagram

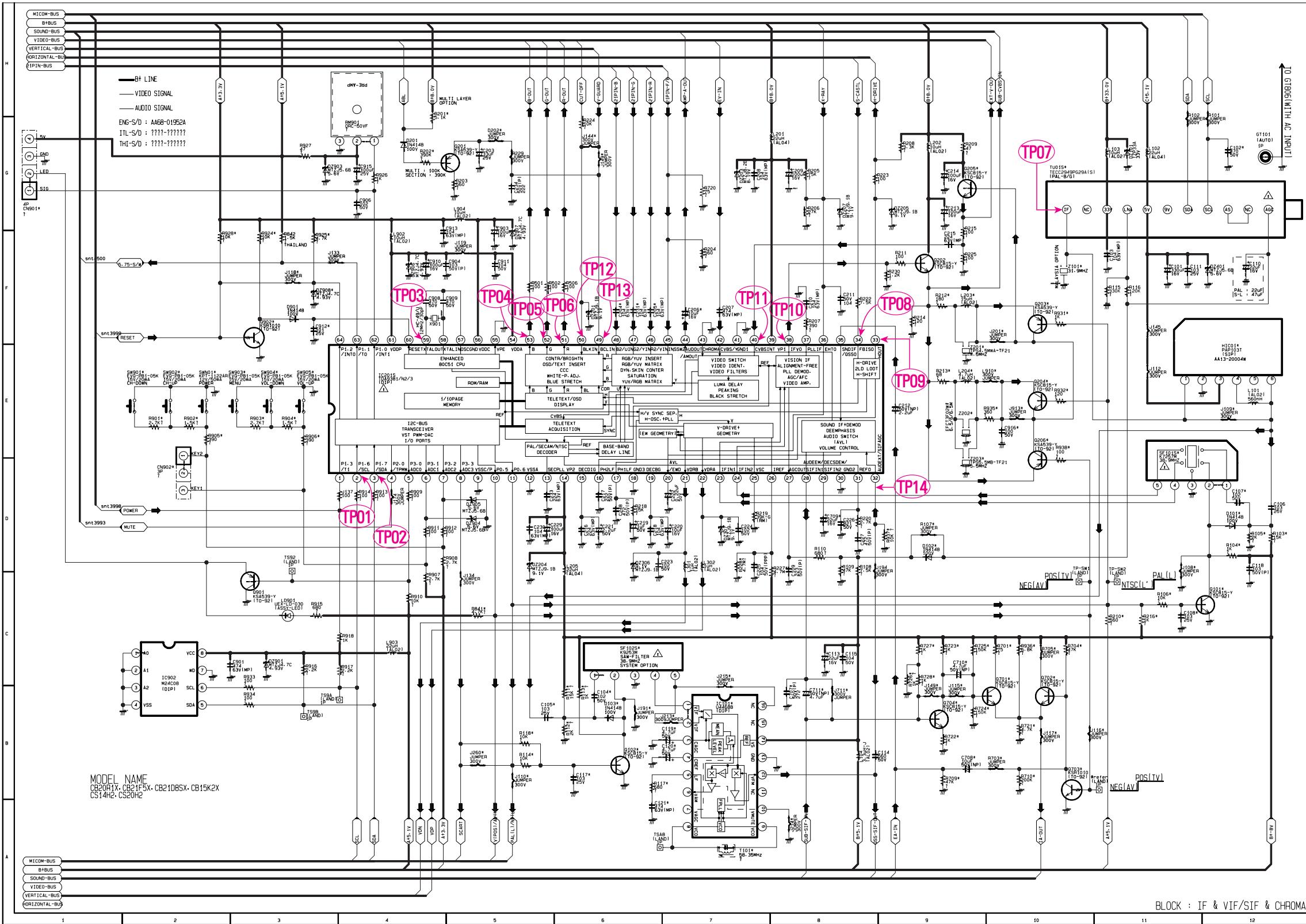
9-1 KS1A



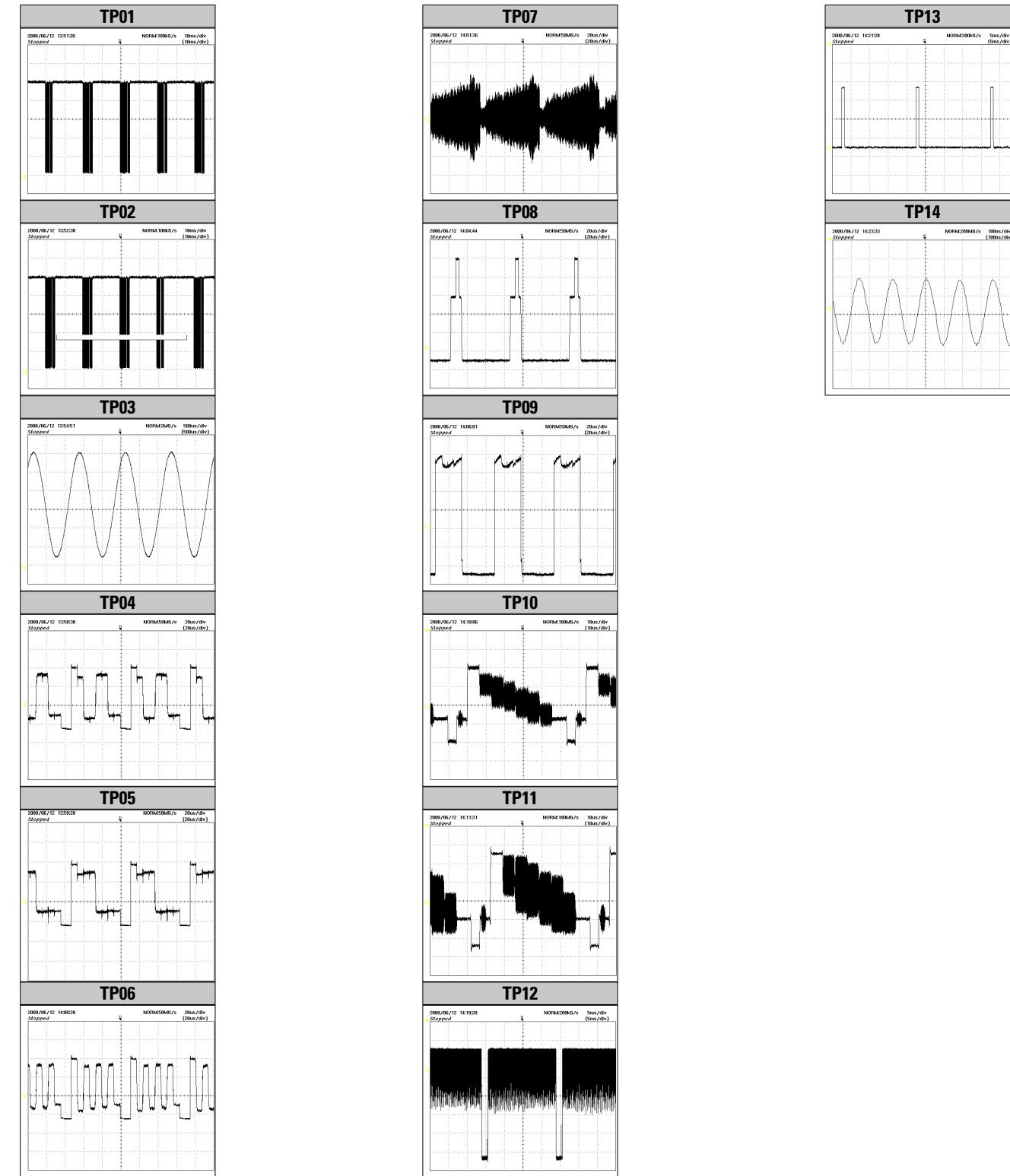
MEMO

10. Schematic Diagrams

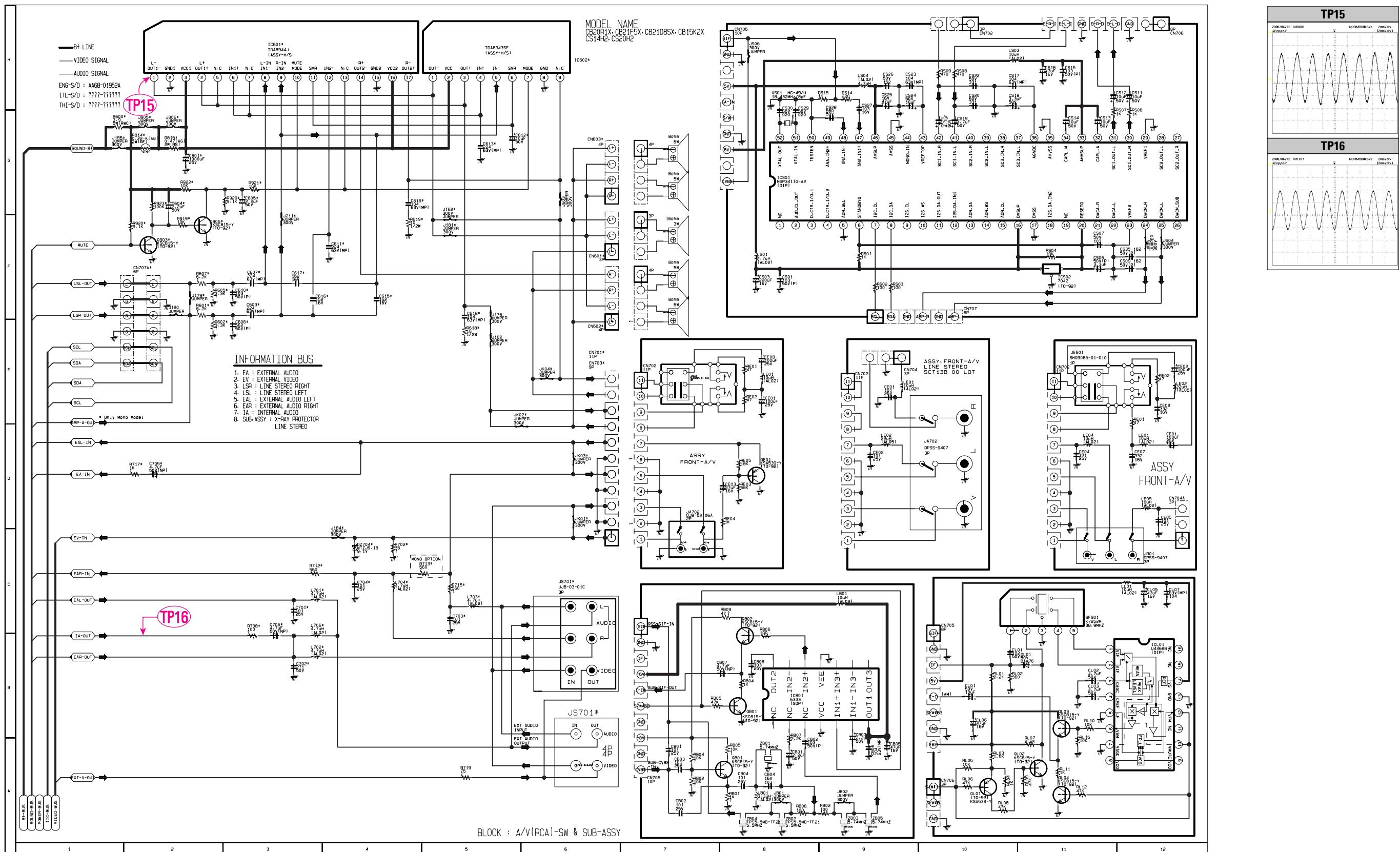
10-1 IF & VIF/SIF & CHROMA



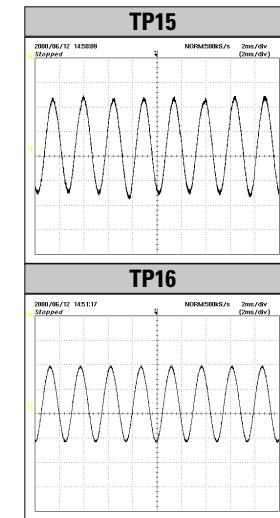
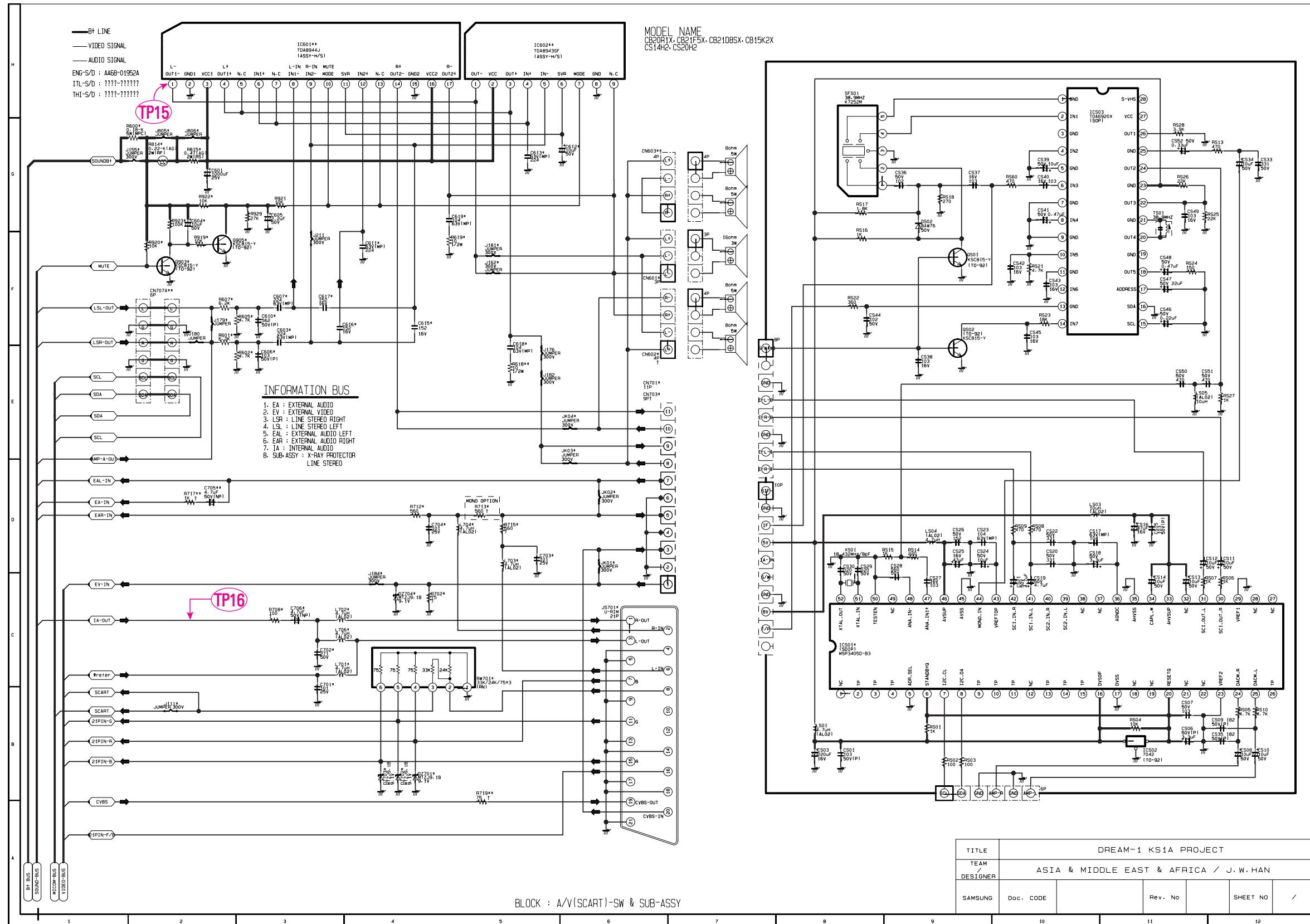
10-1-1 IF & VIF/SIF & CHROMA WAVEFORMS



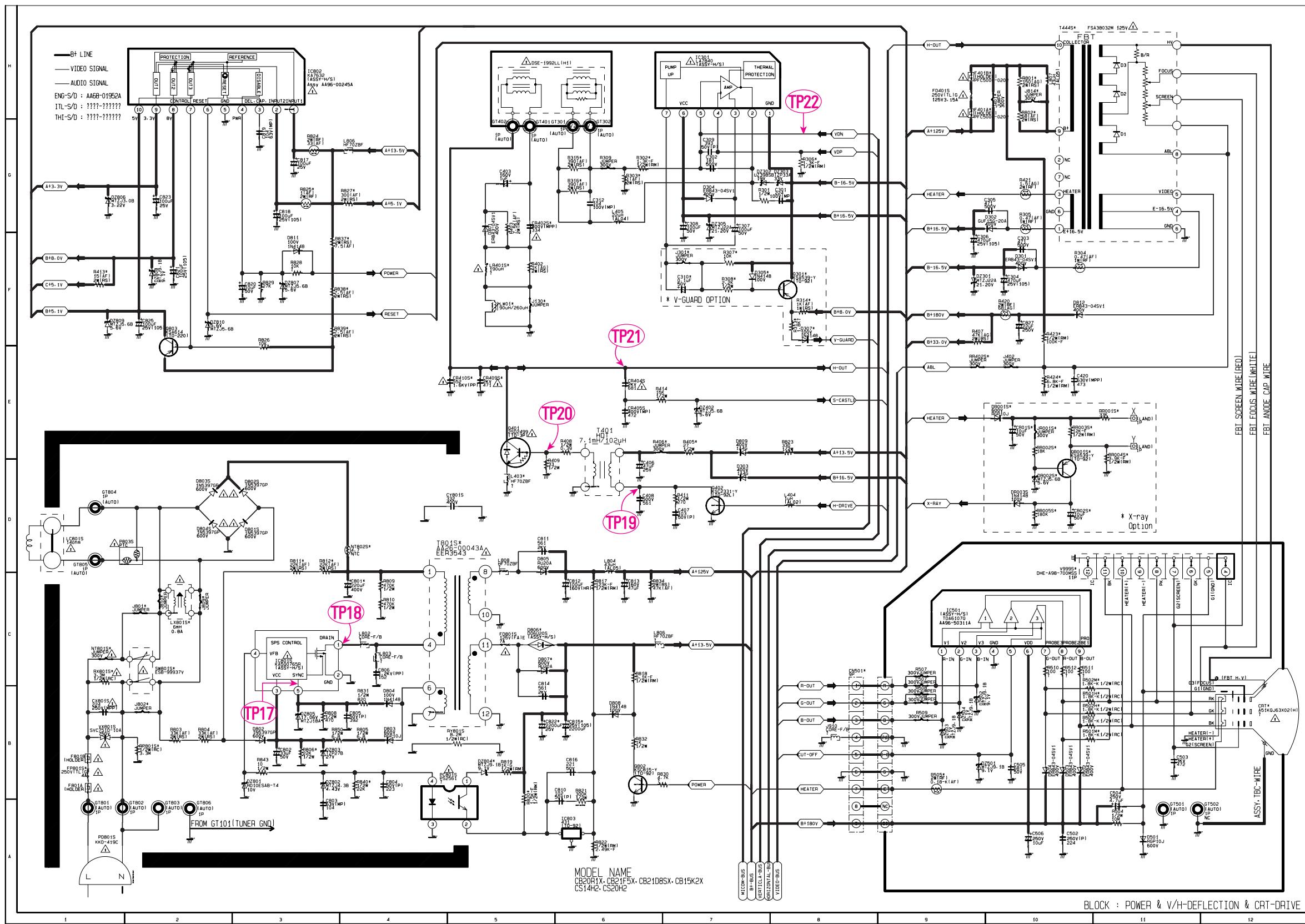
10-2 A/V(RCA)-SW & SUB ASSY



10-3 A/V(SCART)-SW & SUB-ASSY



10-4 POWER & V/H-DEFLECTION & CRT





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