

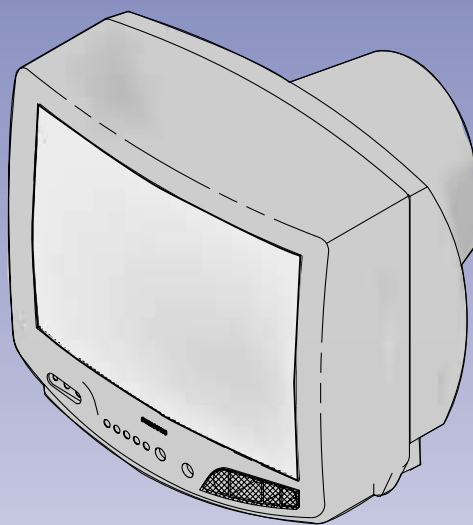
SAMSUNG

COLOR TELEVISION RECEIVER

Chassis : K15A
Model : CT21D8L6X/XTC
CT5038G6X/XAP

SERVICE *Manual*

COLOR TELEVISION RECEIVER



4. Alignment and Adjustments

4-1 Service Mode Adjustments

4-1-1 Service Mode Menus

Since there are no VRs in the K15A chassis, all adjustments after parts replacement must be done in the Service Mode. Service Mode adjustments are necessary when either the EEPROM (IC902) or the CRT is replaced.

4-1-2 Entering the Service Mode

Press the following transmitter keys while in STAND-BY mode:

MUTE—>1—>8—>2—>POWER
“Factory Mode Menu” is displayed

ADJUSTMENT	<---selected (violet)
PATTERN	
OPTION	
RESET	

Enter Service Mode using the Volume +, - keys. Service Mode Menu:

AGC	XX	RC	XXX
VCO	XX	GC	XXX
SBT	XX	BC	XX
SCT	XX	VA	XX
SCR	XX	VS	XX
STT	XXX	HS	XX
GG	XXX	SS	XX
BG	XXX	SVC : MUTE	

Select a mode to be adjusted, using the channel down key. Example: VCO.

AGC	XX	RC	XXX
VCO	XX	GC	XXX
SBT	XX	BC	XX
SCT	XX	VA	XX
SCR	XX	VS	XX
STT	XXX	HS	XX
GG	XXX	SS	XX
BG	XXX	SVC : MUTE	

Change the data with “Volume +, -” keys.

VCO	71
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Return to the Service mode by pressing MENU.

AGC	XX	RC	XXX
VCO	XX	GC	XXX
SBT	XX	BC	XX
SCT	XX	VA	XX
SCR	XX	VS	XX
STT	XXX	HS	XX
GG	XXX	SS	XX
BG	XXX	SVC : MUTE	

Return to the Factory mode via the MENU key.

ADJUSTMENT
PATTERN
OPTION
RESET

Press POWER to enter the Stand-by mode.

4-1-3 Adjustment in Option Mode

This adjustment is necessary whenever the EEPROM is replaced. Input data (as marked on the back cabinet).

ADJUSTMENT
PATTERN
OPTION
RESET

Select "SET OPTION" by pressing the Channel ▼ key twice.

ADJUSTMENT
PATTERN
OPTION
RESET

Press the Volume +, - keys to enter the set Option mode.

BYTE 0:00

Press MENU to go back to the factory mode.

ADJUSTMENT
PATTERN
OPTION
RESET

Select RESET with channel ▼ key.

ADJUSTMENT
PATTERN
OPTION
RESET

Press volume + key.

POWER
OFF

4-1-4 Service Mode Adjustments

ADJUSTMENT
PATTERN
OPTION
RESET

1. The Pattern Adjustment is done only in the factory. Do not attempt to readjust it.
2. Refer to 4-2 for other adjustments.
3. Set OPTION data.

4-1-5 Service Mode Adjustment Ratings

No	Item	Function	Range	Initialized MICOM Data
1	AGC	RF AGC Adjustment	0~63	50
2	VCO	PIF VCO Adjustment	0~127	63
3	SCT	SUB-CONTRAST Adjustment	0~63	48
4	SCR	SUB-COLOR Adjustment	0~27	13
5	STT	SUB-TINT Adjustment	0~27	7
6	RC	RED-CUT OFF Adjustment	0~255	0
7	GC	GREEN-CUT OFF Adjustment	0~255	0
8	BC	BLUE-CUT OFF Adjustment	0~255	0
9	SVC	Input a Horiz line pattern		
10	GG	GREEN-GAIN Adjustment	0~255	127
11	BG	BLUE-GAIN Adjustment	0~255	127
12	SBT	SUB-BRIGHTNESS Adjustment	0~63	31
13	VA	VERTICAL SIZE Adjustment	0~63	39
14	VS	VERTICAL CENTER Adjustment	0	0
15	HS	HORIZONTAL Phase Adjustment	0~31	15
16	SS	SUB-SHARPNESS Adjustment	0~31	4

Note : The initial MICOM data values take effect when IC902 is replaced.


4-2 Alignment and Adjustment

4-2-1 General Alignment Instructions

1. Usually, a color TV needs only slight touch-up adjustment upon installation. Check the basic characteristics such as picture height, focus and a horizontal and vertical sync.
2. Observe the picture and check for good back and white details. There should be no objectionable color shading; If color shading is present, demagnetize the receiver. If color shading persists, perform purity and convergence adjustments described below.
3. To protect against shock hazard, use an isolation transformer.

4-2-2 Power Supply Check

Check the following:

- A: Power plug is connected; "Stand-by" mode
 B: Power On when "Power ON" button is pressed
 C: Power On by FBT Each supply is marked on its lead-in wire. ()

4-2-3 Focus Adjustment

Adjust the focus control on the FBT for well defined scanning lines.

4-2-4 Fail Safe Circuit Check (FS) (OPTION)

1. The failsafe check must be the final step in servicing.
2. Turn the power switch ON and adjust customer controls for normal operation.
3. Temporarily short pin X to pin R on the main board (RX06, RX04) with a jumper wire. Raster will disappear.
4. The TV must remain in this state even after removing the jumper wire. This shows that the failsafe circuit is working properly.
5. To recover picture and sound, temporarily turn off the TV and allow the failsafe circuit more than 30 seconds to reset. Then switch power ON to produce normal picture and sound.

4-2-5 IC902 Replacement

1. When IC902 is replaced, all values are reset to "Initialized MICOM Data" and readjustment is necessary.
2. Press the POWER button 10 seconds after plug-in.
3. To enter the Service Mode, refer to Fig. 4-1 (Service Mode Adjustment).

4-2-6 PIF VCO Adjustment

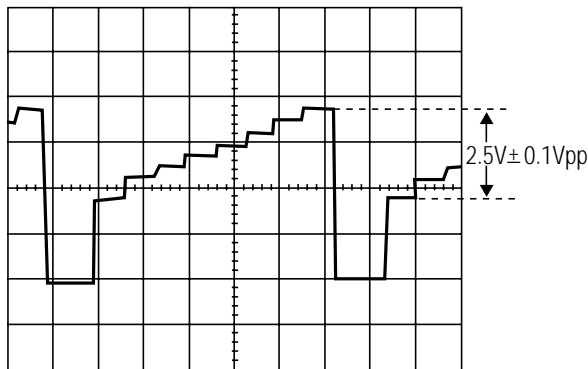
1. Use a Pattern Generator or an off-air signal.
2. Open pin 11 of Micom (IC901) or one side of lead pin for R237.
3. Adjust VCO in the service mode to set IC101 Pin 44 (AFT) to $2.5V \pm 0.4V$.
4. Connect the opened site.

4-2-7 RF-AGC Adjustment

1. Input a PHILLIPS pattern.
2. Set the input signal to 60 dB.
3. Enter into the AGC in the service mode.
4. Adjust AGC until color bar noise disappears.

4-2-8 Sub-Contrast Adjustment

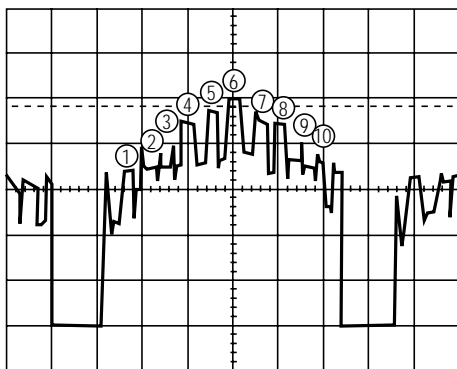
1. Input a gray scale pattern. Use a pattern generator (PM5518).
2. Short D208 to switch off the ABL feed-back.
3. Check CN201 R-OUT with an oscilloscope.
4. Set RC, BC, GC data to 0 in the Service Mode.
5. Adjust SCT to $2.40 \pm 0.1\text{Vp-p}$



6. Remove the short across D208 and restore ABL.

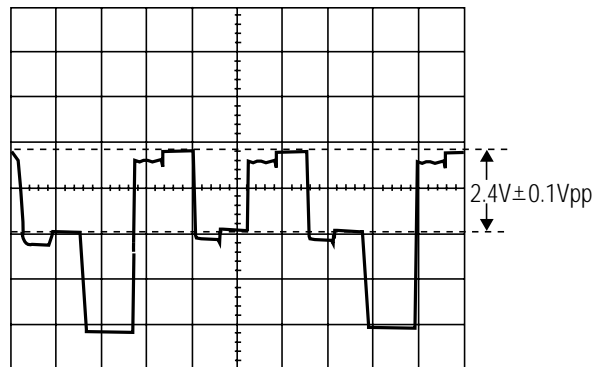
4-2-9 Sub-Tint Adjustment

1. Input a rainbow pattern.
2. Check CN201 B-OUT with an oscilloscope.
3. Adjust STT in the service mode until the 6th peak is the highest and the 5th and 7th peaks have equal heights.



4-2-10 Sub-Color Adjustment

1. Do sub-color adjustment after the Sub-Contrast and Sub-Tint adjustments.
2. D208 should still be shorted. The ABL should still be switched OFF.
3. Input a color bar pattern. Use a pattern generator (PM5518).
4. Check CN201 R-OUT (use an oscilloscope).
5. Ensure that the RC, GC and BC data are 0. BG are 140 and GG should be 90.
6. Adjust SCR to $2.4 \pm 0.1\text{Vp-p}$ (black and red levels).
7. Remove the short across D208 and restore ABL.



4-2-11 White Balance Adjustment

4-2-11 (A) LOW-LIGHT ADJUSTMENTS

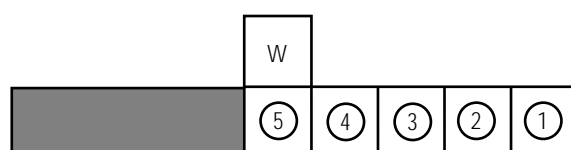
1. Input either a lion head or “pure white” color pattern.
2. Operate the receiver for 30 minutes.
3. Check the data in the service mode:
RC, GC, BC are 0 and SB is 16;
Steps BG are 90 and GG are 140.
4. Enter the horizontal line mode by pressing the MUTE key.
5. Adjust the screen VR on the FBT until a dim colored line (red, green or blue) appears on the screen.
6. After pressing the MUTE key, go to RC, BC or GC with channel ▲, ▼ keys. After putting a dim colored line (red, green or blue) in the horizontal line with MUTE key, adjust color with volume ▲, ▼ keys.
7. Exit the horizontal line via the MUTE key.

4-2-11 (B) HIGH-LIGHT ADJUSTMENTS

1. Input a high-light pattern
2. Adjust GG, BG in the Service Mode.
3. Recheck in low light.

4-2-12 Sub-Brightness Adjustment

1. Input a Toshiba pattern.
2. Warm up the receiver for 10 minutes.
3. Enter the Service Mode and set SB to the point where the 5th point is brighter in the gray scale.



4-2-13 Vertical Size Adjustment

1. Input a lion head pattern.
2. After the vertical center adjustment, enter into the service mode.
3. Adjust VA so that the each top and bottom of the screen is 4.0. If the top and bottom values are different, adjust VA so that the sum of the two values is 8.0.

4-2-14 Horizontal Size Adjustment

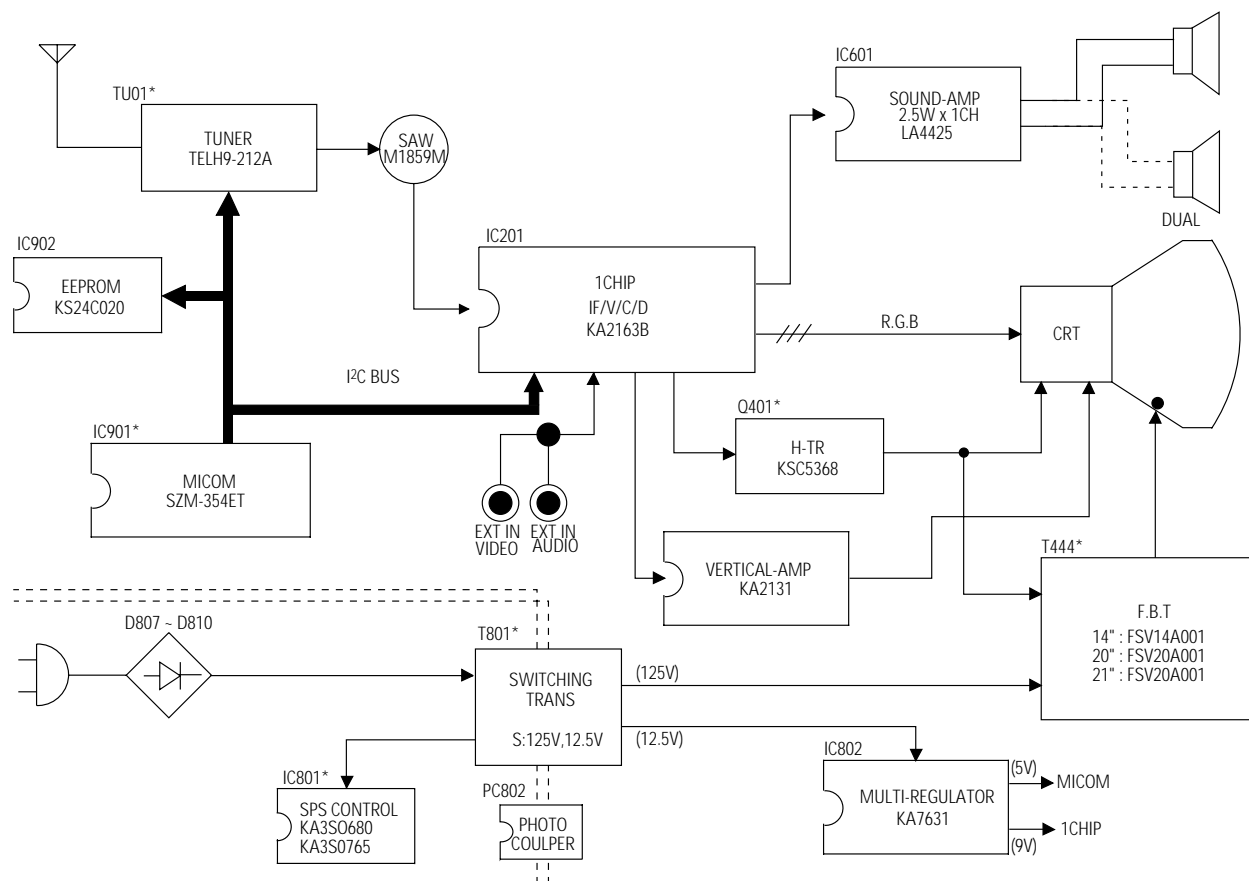
1. Receive a lion head pattern.
2. Enter into the service mode.
3. Adjust HS to symmetrized right and left.

4-2-15 When CRT Is Replaced

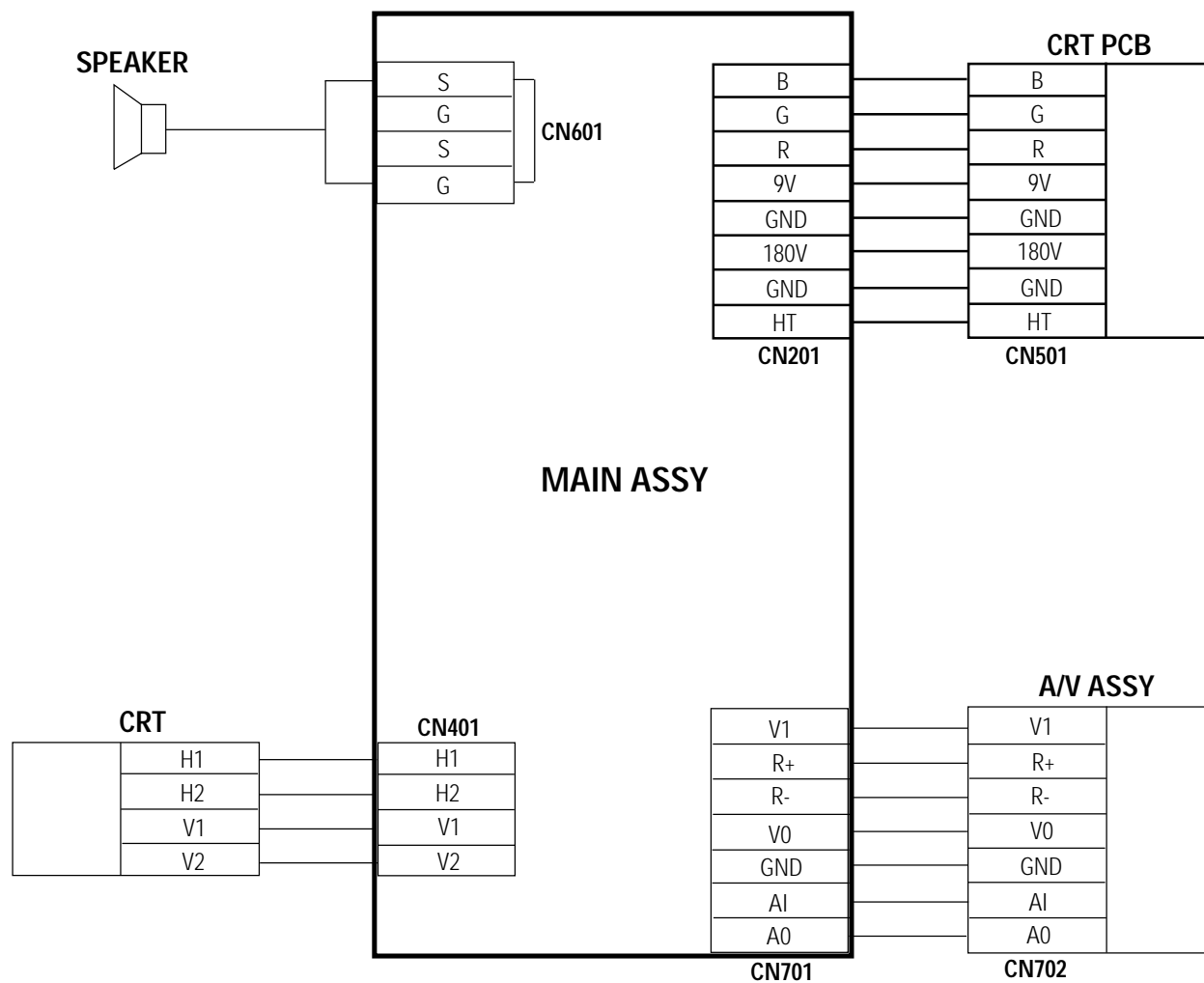
Do the following adjustments after the basic purity and convergence adjustments.

1. White Balance
2. Sub-brightness
3. Vertical Size
4. Horizontal Size
5. Fail safe (should be the final step).

8. Block Diagram

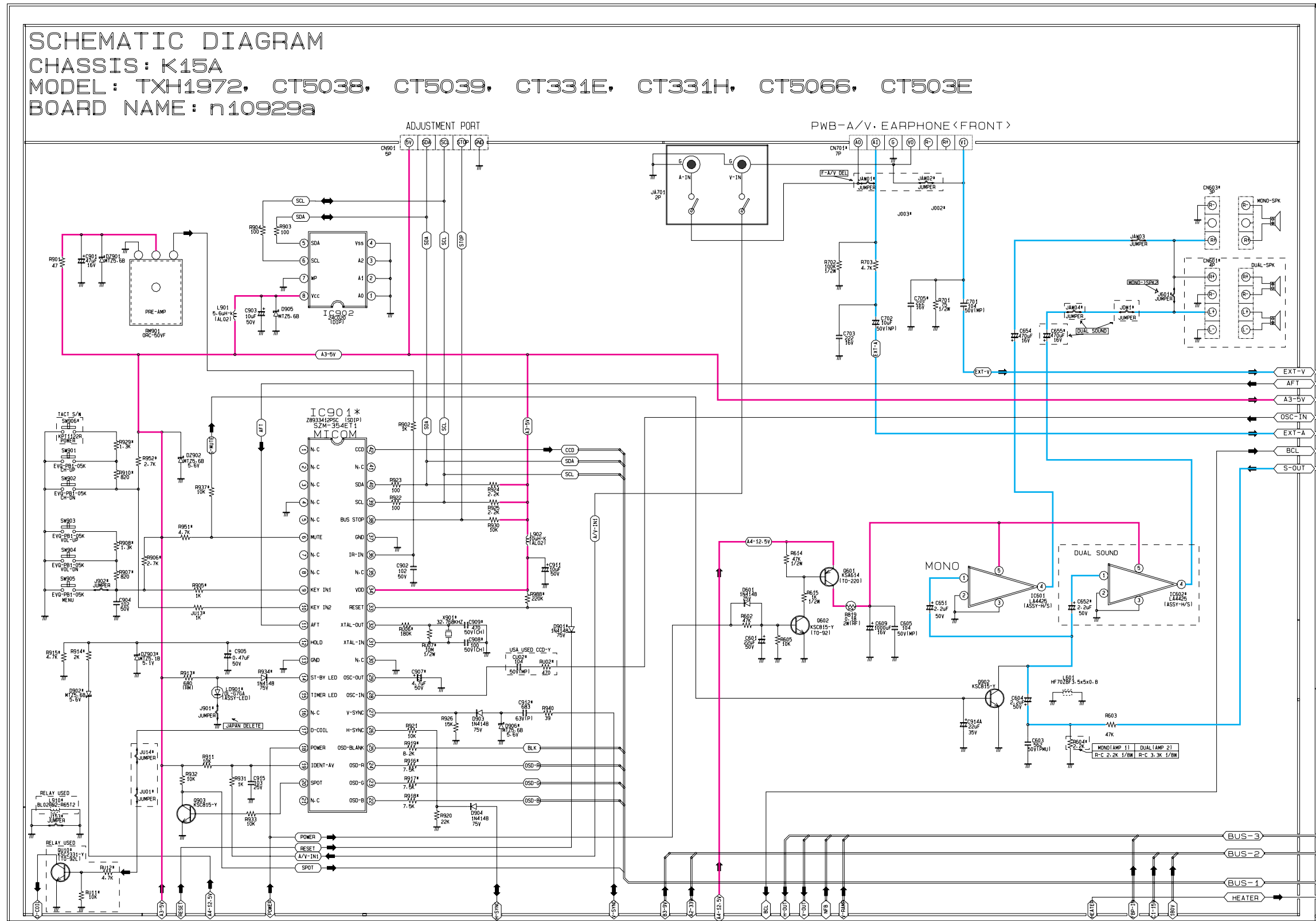


10. Wiring Diagram

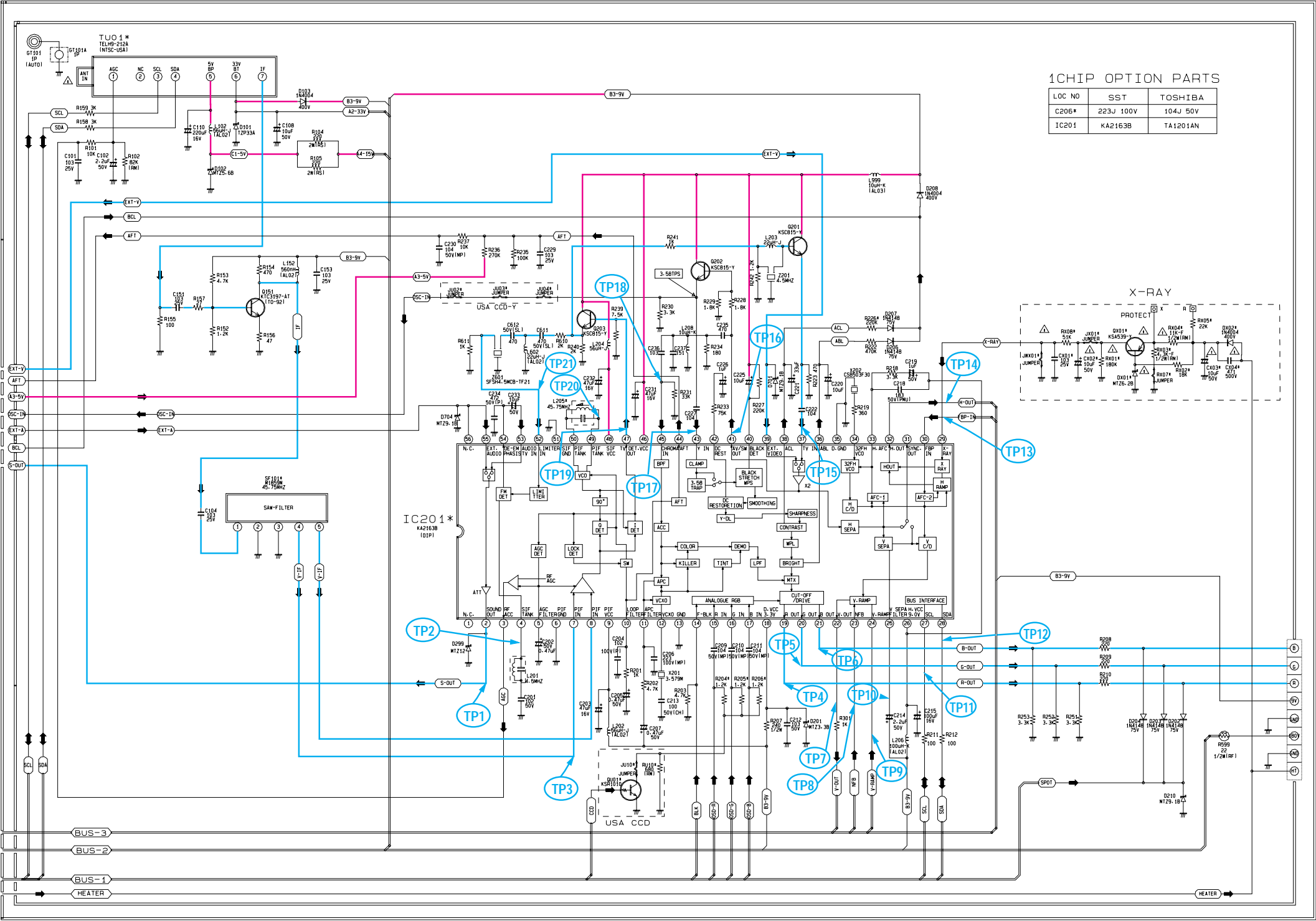


11. Schematic Diagrams

11-1 MAIN 1/4

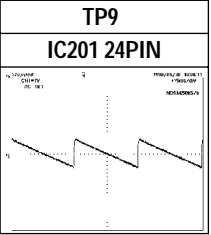
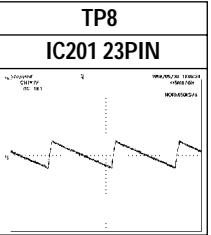
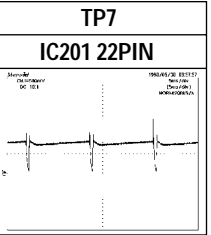
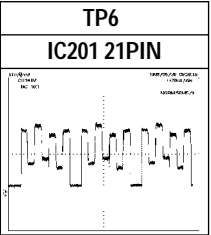
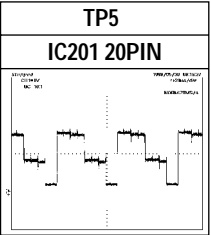
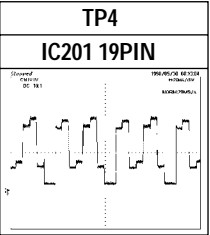
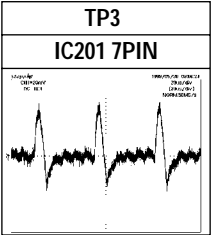
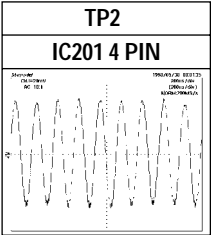
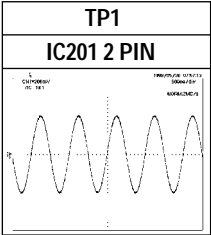
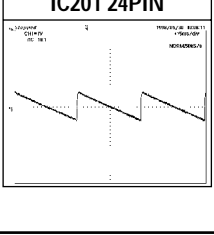
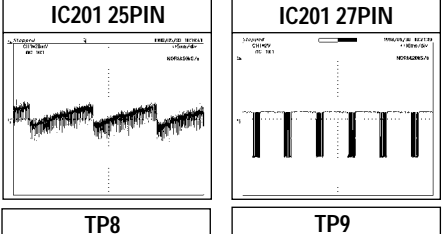
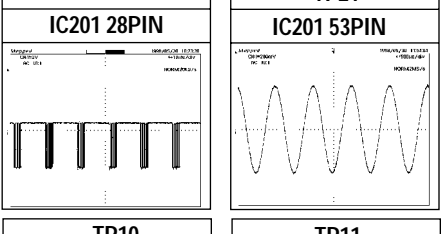
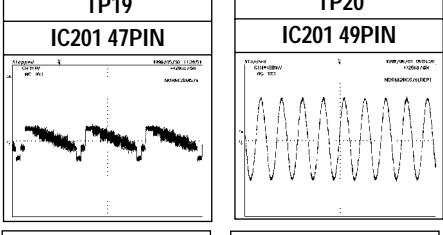
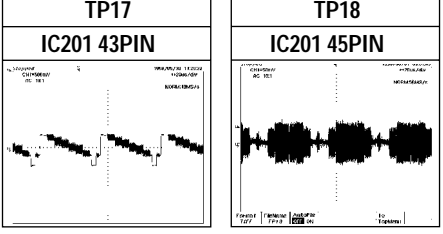
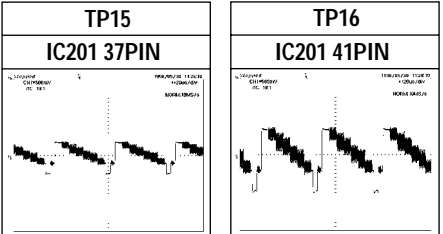
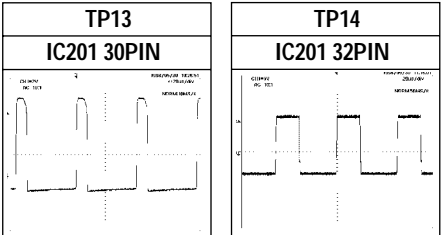


11-2 MAIN 2/4



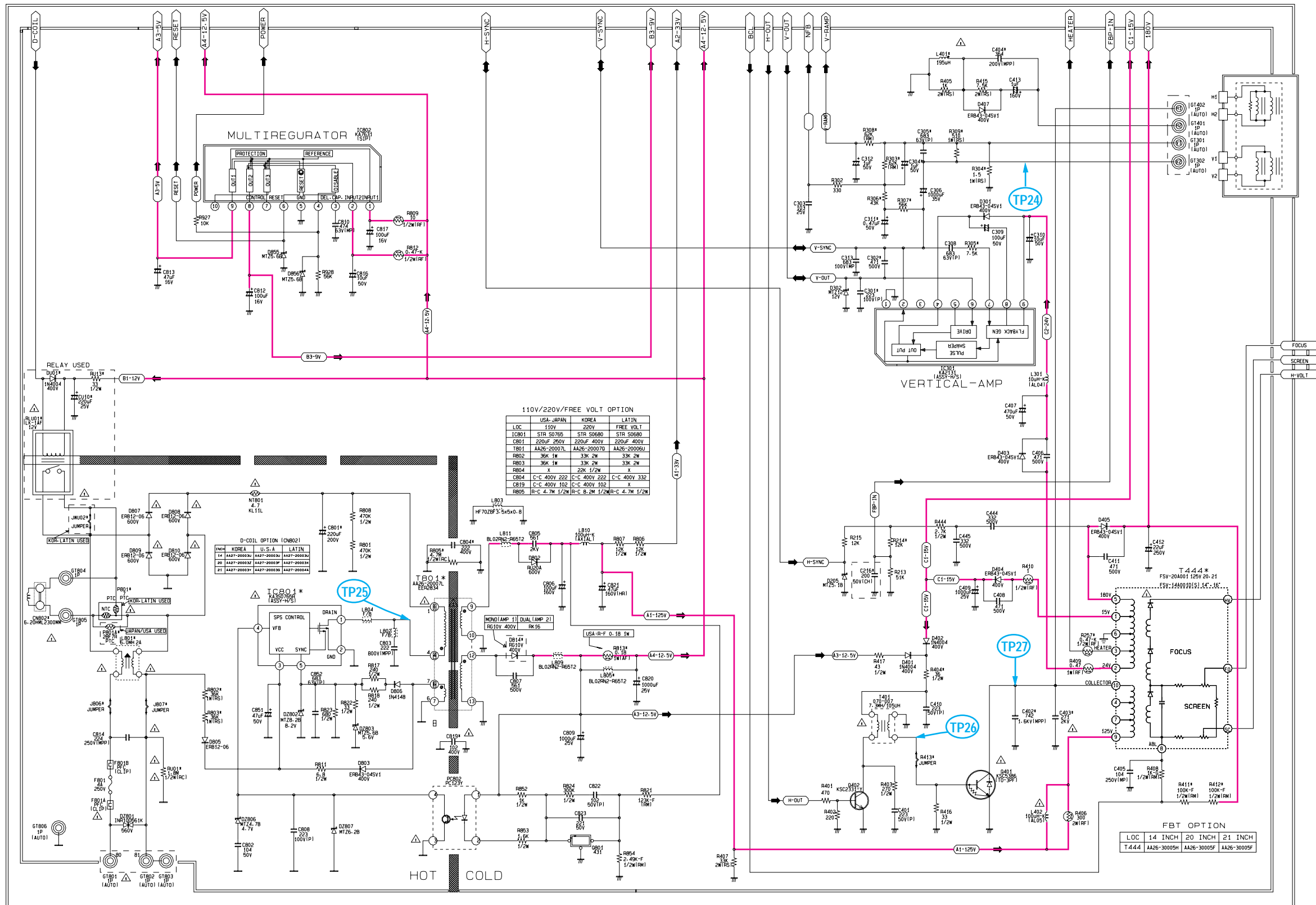
1CHIP OPTION PARTS

LOC NO	SST	TOSHIBA
C206*	223J 100V	104J 50V
IC201	KA2163B	TA1201AN

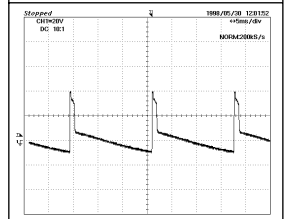


Power Line
Signal Line

11-3 MAIN 3/4

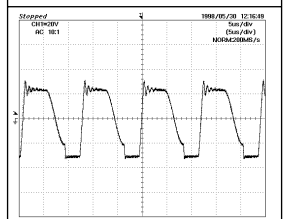


TP24

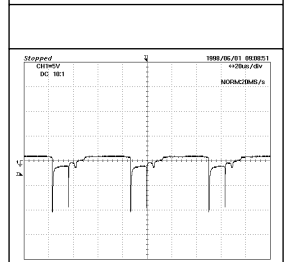


TP25

IC801 1 PIN

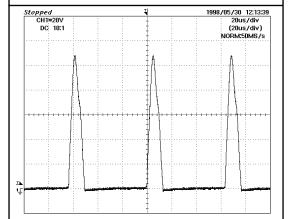


TP26



TP27

T444 10 PIN



: Power Line

11-4 MAIN 4/4

