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COLOR TV
SERVICE MANUAL

CHASSIS : CW91A

MODEL : 29FU1RL/RG

MODEL : 29FU1RL/RG-TK

CAUTION
BEFORE SERVICING THE CHASSIS,
READ THE SAFETY PRECAUTIONS IN THIS MANUAL.

LG Electronics Inc.

P/NO : MFL62077307 May, 2010
Printed in China

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SAFETY PRECAUTIONS

IMPORTANT SAFETY NOTICE

Many electrical and mechanical parts in this chassis have special safety-related characteristics. These parts are identified by ⚠ in the Schematic Diagram and Replacement Parts List.
It is essential that these special safety parts should be replaced with the same components as recommended in this manual to prevent X-RADIATION, Shock, Fire, or other Hazards.
Do not modify the original design without permission of manufacturer.

General Guidance

An **isolation Transformer should always be used** during the servicing of a receiver whose chassis is not isolated from the AC power line. Use a transformer of adequate power rating as this protects the technician from accidents resulting in personal injury from electrical shocks.

It will also protect the receiver and it's components from being damaged by accidental shorts of the circuitry that may be inadvertently introduced during the service operation.

If any fuse (or Fusible Resistor) in this TV receiver is blown, replace it with the specified.

When replacing a high wattage resistor (Oxide Metal Film Resistor, over 1W), keep the resistor 10mm away from PCB.

Keep wires away from high voltage or high temperature parts.

Due to high vacuum and large surface area of picture tube, extreme care should be used in **handling the Picture Tube**. Do not lift the Picture tube by it's Neck.

X-RAY Radiation

Warning:

The source of X-RAY RADIATION in this TV receiver is the High Voltage Section and the Picture Tube.
For continued X-RAY RADIATION protection, the replacement tube must be the same type tube as specified in the Replacement Parts List.

To determine the presence of high voltage, use an accurate high impedance HV meter.

Adjust brightness, color, contrast controls to minimum.
Measure the high voltage.
The meter reading should indicate
23.5 ± 1.5KV: 14 -19 inch, 26 ± 1.5KV: 19-21 inch,
29.0 ± 1.5KV: 25-29 inch, 30.0 ± 1.5KV: 32 inch
If the meter indication is out of tolerance, immediate service and correction is required to prevent the possibility of premature component failure.

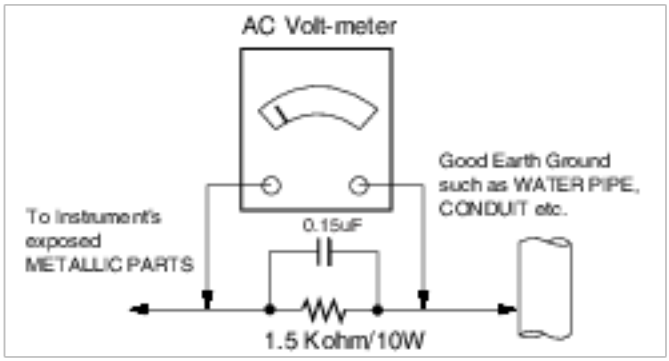
Before returning the receiver to the customer,

always perform an **AC leakage current check** on the exposed metallic parts of the cabinet, such as antennas, terminals, etc., to be sure the set is safe to operate without damage of electrical shock.

Leakage Current Cold Check(Antenna Cold Check)
With the instrument AC plug removed from AC source, connect an electrical jumper across the two AC plug prongs. Place the AC switch in the on position, connect one lead of ohm-meter to the AC plug prongs tied together and touch other ohm-meter lead in turn to each exposed metallic parts such as antenna terminals, phone jacks, etc.
If the exposed metallic part has a return path to the chassis, the measured resistance should be between 1MΩ and 5.2MΩ.
When the exposed metal has no return path to the chassis the reading must be infinite.
An other abnormality exists that must be corrected before the receiver is returned to the customer.

Leakage Current Hot Check (See below Figure)
Plug the AC cord directly into the AC outlet.
Do not use a line Isolation Transformer during this check.
Connect 1.5K/10watt resistor in parallel with a 0.15uF capacitor between a known good earth ground (Water Pipe, Conduit, etc.) and the exposed metallic parts.
Measure the AC voltage across the resistor using AC voltmeter with 1000 ohms/volt or more sensitivity.
Reverse plug the AC cord into the AC outlet and repeat AC voltage measurements for each exposed metallic part. Any voltage measured must not exceed 0.75 volt RMS which is corresponds to 0.5mA.
In case any measurement is out of the limits specified, there is possibility of shock hazard and the set must be checked and repaired before it is returned to the customer.

Leakage Current Hot Check circuit



SPECIFICATIONS

Note : Specification and others are subject to change without notice for improvement.

■ Scope

This specification applies to CTV models based on chassis CW91A.

■ SPECIFIC

Testing should be done at given condition if no condition is specified

1) Ambient Temperature : 25±5°C (CST 40±5°C)
2) Ambient Humidity : 65±10%
3) Input Voltage : Standard input voltage (110~240V ac 50/60Hz)
4) All BOM mentioned component should be same quality standard as mentioned in specs./ drawing of that particular Part No.
5) Testing should be done after 20 minute heat run.
6) Power Voltage

Market Place	Band	Standard Input Voltage	Remarks
Middle East/Africa	LG	AC110 ~240V 50/60Hz	

■ Testing and Inspection Method

1) Performance Testing --- According to LG TV Testing Standard
2) Required Regulations

Market Place	Compliance	Remarks
Middle East/Africa ids	Safety : CB(IEC60065) EMC : CE(EN55020,EN55013)	

■ General Specification

No	Item	Specification	Remark
1	Receiving System	PAL BG.DK.I / NTSC M(AV3.58/4.43)	China / Indonesia/ Thai/ Vietnam
		PAL BG.DK.I / NTSC M(AV3.58/4.43) SECAM DK	CIS
		PAL NM / NTSC M(AV3.58)	L.America/ Philippine/Taiwan
		PAL BG,DK,I / NTSC M(AV3.58/4.43) SECAM BG,DK,L	Asia/Middle East/Africa
2	Available Channel	VHF : E2 ~ E12 UHF : E21 ~ E69 CATV : S1 ~ S20 HYPER : S21 ~ S41	PAL Model
		VHF : 2~13CH(12CH) UHF : 14~69CH(56CH) CATV : 1 ~ 125CH(113CH)	NTSC Model
3	Input Voltage	AC 220Vac 50/60Hz AC 110~240V 50/60Hz	Asia Others
4	Market	Latin America, China, Indonesia Philippines, Taiwan, Thai, Vietnam, Asia/Africa,CIS	
5	Screen Size	29inch Flat / Super slim	
6	Aspect Ratio	4:3	
7	Display Method	CRT	
8	Tuning System	FVS FS	PAL Model NTSC
9	Operating Environment	1)Temp : 0 ~ 40 deg 2)Humidity : ~ 85 %	
10	Storage Environment	3)Temp : -20 ~ 60 deg 4)Humidity : ~ 90 %	

ADJUSTMENT INSTRUCTIONS

1. Scope of Application

These adjustment instructions are applicable to CW91A Chassis whether SET(0), SKD(0), or CKD(0).

2. Notes

2.1 Because this is a cold chassis, it is not necessary to use an isolation transformer. However,operating it using a transformer between the power supply line and chassis input to prevent electric shock and to protect the test instrument.

2.2 All adjustments must be done in correct sequence. However, for better productivity, it can be changed in a pre-permitted range.

2.3 Environment conditions: If not specified, it must be done in following conditions.

1) Temperature: 25°C ±5°C
2) Humidity : 65%±10%

2.4 Power supply of SET

1) NTSC
Latin America/Philippines Market:100~240V ±10%,50/60Hz
Korea Market : 220V ±10%,60Hz
Taiwan Market : 110V ±10%,60Hz
Japan Market : 100V ±10%,50/60Hz
2) PAL/SECAM
China/Indonesia/Thailand/Vietnam/CIS Market :
100~240V ±10%, 50/60Hz

2.5 If not specified, the receiver must be operated for more than 20 minutes prior to the adjustment.

2.6 Signal: Received the standard color signal. (65dB±1dBuV)
NTSC: LG standard signal means the digital pattern 13CH(480NC).
PAL/SECAM: LG standard signal means the digital pattern PAL-B/Gz 05CH

2.7 If not specified, APC ON is APC CLEAR (DYNAMIC).

3. Adjustment content

3.1. Screen Voltage Adjustment

3.1.1.Adjustment (Use factory remote control)
(1) Input in the 75Ω cable LG standard signal (Digital Pattern,480NC)
(2) Press IN-START KEY and ADJ KEY of SVC T/X generate horizontal line for Screen adjust.
(3).Turn the screen volume on the FBT clockwise until the horizontal line is visible and turn it counterclockwise until horizontal line faintly visible.
(Exit screen voltage adjustment by press "Exit" key of SVC T/X.)

3.2. Purity and Convergence Adjustment

3.2.1. Purity adjustment
(1). Adjustment Preparation
a. Received Red Raster Pattern for purity adjustment (51CH).
b. Demagnetize the CPT and Cabinet with a degaussing coil.
(2). Adjustment
a. Pre-adjust the static convergence(STC) with the 4 and 6-pole magnet.
b. If the horizontal Line is inline with CPT Mark,2-Pole magnet should direct 3-9 o'clock direction.
c. If not,direct 2-Pole magnet handle toward 6-12 o'clock direction and adjust the Horizontal Line to fall onto the mark opening the magnet at an angle.
d.Push the DY(deflection yoke) all the way to the CPT funnel.
e.Turn the purity magnet(2-pole magnet) so that the "green" color portion of left side and the "blue" color portion on the right side have equal amount of color.

f.Pull the DY slowly backward and fix it when the whole screen becomes red.
(The specified torque for fixing DY screw should be 10Kg/cm.)

3.2.2. Convergence adjustment
(1). Necessary Instrument
a. Degaussing Coil
b. Convergence fixing instrument(special tools)
(2). Adjustment Preparation
a. Operate the unit at the least 15 minutes before adjustment.
b. Using degaussing coil,remove the stains on CPT & Cabinet.
c. Received the Cross Hatch Pattern for Convergence (09ch).
d. Let the Contrast in normal luminance level.
(3). Static Convergence (STC) Adjustment
a. Received the Cross Hatch Pattern for Convergence (09ch).
b. Before adjusting Static Convergence(STC),adjust the focus first seeing to it that the WHITE color picture quality is sharp enough.
c. Converge the RED vertical line and BLUE vertical line in unity(same line) by changing the angle between the 2 tabs of 4-pole magnet.
d. Converge the RED horizontal and BLUE horizontal line unity(same line) by turning the 2 tabs of the 4-pole magnet. At this time,do not change the angle between the 2 tabs.
e. Converge the R,G,B vertical line in unity(same line) by changing the angle between the 2 tabs of the 6-pole magnet.
f. Converge the R,G,B horizontal line in unity(same line) by turning the 2 tabs of the 6-pole magnet. At this time, do not change the angle between the 2 tabs.
(4). Dynamic Convergence (DYC) Adjustment
a. Y-Axis Adjustment :Adjust convergence of Y-axis(vertical) by moving the deflection yoke(DY) left and right.
b. X-axis Adjustment : Adjust convergence of X-axis(horizontal) by moving the deflection yoke(DY) up and down.

3.3. White Balance Adjustment

3.3.1. Necessary Instrument
(1). Auto white balance meter (Low/High Light Pattern generator)
(2). CRT Color Analyzer, CA-100 :1 set
(3). Factory Remote control

3.3.2. Adjustment preparation : Prior to this adjustment, the Screen Voltage adjustment should be finished.

3.3.3. Auto Adjustment
(1). Adjust using Auto White Balance Meter.
(2).Enter **CPU OFF** mode by press the "IN-START" &"MUTE" key of factory remote control in turn before adjustment. Exit **CPU OFF** mode by press the "MUTE" key of factory remote control after adjustment finished.
※ In case there is excess RED color at screen voltage adjustment, adjust it using "Volume -(◀)"Key of factory remote control until the RED color disappear.

3.3.4. Manual Adjustment

(1). Adjust using white balance meter and factory remote control.

(2). Enter white balance adjustment mode by press "IN-START" key of factory remote control.

(3). Use the CH▲, CH▼ key to choose adjustment item.

(4). Use the VOL◄,VOL► Key to change item data.

(5). Adjustment Procedure

a. Make the picture luminance 45Ft-L by change the "CONTRAST" and "BRIGHTNESS".

b. Adjust X data of high light with R DRIVE and Y data of high light with B DRIVE to have color temperature as shown below.

c. Make the picture luminance 4.5Ft-L by change the "CONTRAST" and "BRIGHTNESS".

d. Adjust X data of low light with R BIAS and Y data of low light with B BIAS to have color temperature as shown below.

e. Repeat steps a~d until both low and high light have same reading as shown below.

3.3.5. CW91A WHITE BALANCE IIC PARAMETER

(1) W/B auto adjust machine setting Table

	NAME	MAKER	NOTE
VDC IC			
EEPROM			
Algorithm			

(2) White balance IIC Parameter (Address)

Program	Win3t_wb	TWB		Win9t_wb	TWB	Speed	Delay
VCD Slave		8A	Eeprom_Slave		A2	1	30

	(R)_Amp		(R)_Cut		G_Amp		G_Cut	
Program	Win3t_wb	TWB	Win3t_wb	TWB	Win3t_wb	TWB	Win3t_wb	TWB
Sub Add		20		17		21		18
Start Bit		5		5		5		5
Stop Bit		0		0		0		0
Offset		0		0		0		0
Polarity		1		1		0		0
EPRom_S		72		6A		68		6B

Speed/Plus	2	2	2	2

(3) Color coordinate

Tolerance Range : Adjust within ±5 for each X,Y coordinate

ITEM	EU	N-EU	Taiwan	Latin America	Philippines
X	288	268	267	282	266
Y	295	273	276	288	282
Color Temperature	9000°K	13000°K	13000°K	10000°K	13000°K

(4) White Balance default setting data

	ITEM	Range	Default setting data		remark
			PAL	NTSC	
LOW LIGHT	BLO R(R CUT)	0-63	32	32	
	BLO G(G CUT)	0-63	32	32	
	BLO B(B CUT)	0-63	32	32	Fixed
HIGH LIGHT	RG(R DRIVE)	0-63	32	32	
	GG(G DRIVE)	0-63	32	32	
	BG(B DRIVE)	0-63	32	32	Fixed

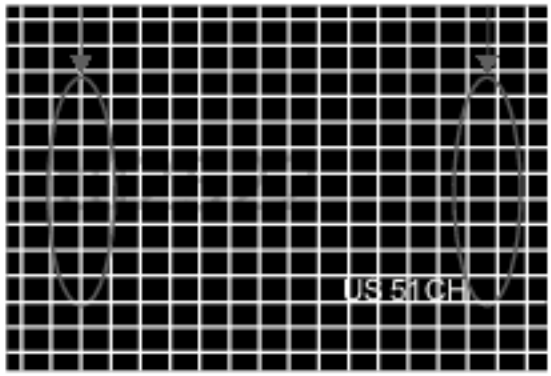
3.5. Focus Voltage Adjustment

Adjustment must be done after operating the TV set receiver sufficiently.

3.5.1. Adjustment Preparation

Received the LG standard pattern (PAL :Digital Pattern,480NC,13CH, NTSC: Crosshatch pattern, Ch.09) and set the picture condition on "APC ON" (CLEAR) mode.

3.5.2. Adjustment Turn the focus volume on the FBT upper direction to have the best focus vertical line and horizontal line as shown below.



[Fig 1] Cross-Hatch Pattern(NTSC:US 51CH, PAL:C-8 CH)

3.6. SUB-BRIGHTNESS Adjustment (Do not adjust)

This adjustment must be done after the White balance Adjustment

3.6.1. Adjustment preparation

(1).NTSC

-. Received LG standard Mono scope pattern (CH14).

-. Set the picture condition on "APC ON" (CLEAR) mode.

(2). PAL

-. Received PAL B/G 5CH pattern.

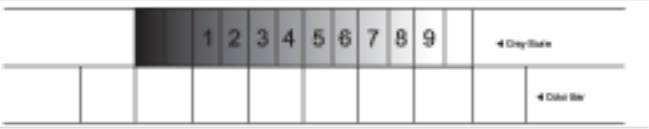
-. Set the picture condition on "PSM ON" (DYNAMIC) mode.

3.6.2. Adjustment

(1). Press the "ADJ" key of the factory remote control twice to enter to "**SUB-BRIGHTNESS**" adjustment mode.

(2). NTSC MODEL: Change the Sub-Brightness data by pressing the VOL◄,VOL► KEY so that the number 1 in gray scale of mono scope pattern almost disappear. **In the ultra slim, Do until the number "1" completely disappear.** (See figure 2)

(3). PAL MODEL: Change the Sub-Brightness data by pressing the VOL◄,VOL► KEY so that the 1th, 2th Black Level in gray scale of PAL B/G 05CH pattern have a little bit of difference. (See figure 3)



[figure 2] MONO SCOPE Pattern signal

[figure 3] PAL B/G 05CH signal

3.6.3. Sub-Tint Adjustment (Do not adjust)

This adjustment has to be done only if the picture has bad tint otherwise, it can be omitted if the picture has good tint.

(1). Received LG standard pattern signal (SMPTE, 2CH).
(2). Set the picture condition on "APC ON" (CLEAR) mode.
(3). Press the "ADJ" key of the factory remote control three times to enter to "**SUB-TINT**" adjustment mode.
(4). Change the Sub-Tint data by pressing the VOL◀,VOL▶ Key until the upper and lower CYAN color becomes same color.

3.7. Deflection Setting Data Adjustment

These adjustment will be done by Auto Adjustment Equipment. For manual adjustment, it is also possible by the following procedure.

3.7.1. Adjustment Preparation

(1) Deflection setting data adjustment can be done only with remote control.
(2) Press the "INSTART" Key on the factory remote control continuously to enter to Deflection Adjustment mode.
(3) Press the CH▲,▼ Key to select adjustment item.
(4) Press the VOL◀,▶ Key to change the data.

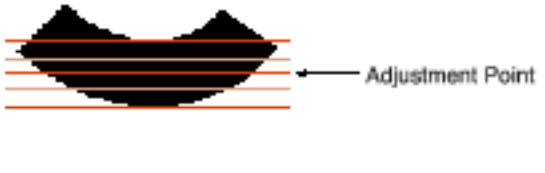
3.7.2. Adjustment

(1) V SLOPE
Half of the picture (bottom part) changed to blank.
Adjust so that half blanked- Picture bottom line in accord with geometric vertical center of the CPT.

(2) V SHIFT (Vertical Shift)
Adjust so that the horizontal center line of a digital circle pattern is in accord with geometric horizontal center of the CPT.

(3) V LINEAR (Vertical Linearity)
Adjust so that the boundary line between upper and lower half is in accord with eometric horizontal center of the CPT

(4) V AMPLIT (Vertical Amplitude)
Adjust so that the circle of a digital circle pattern may be located within the effective screen of the CPT.



(5) H SHIFT (Horizontal Shift)
Adjust so that the Horizontal center line of a digital circle pattern is in accord with geometric vertical center of the CPT.

(6) EW WIDTH (Horizontal Width)
Adjust to that a digital circle pattern looks like exact circle.

[Figure] PAL Digital Pattern

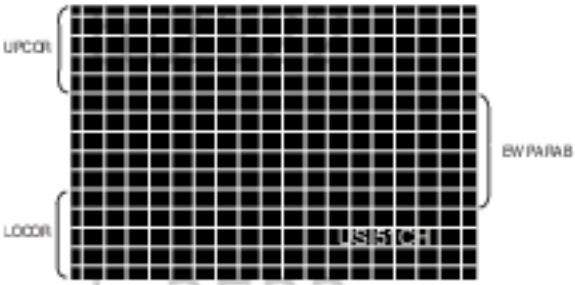
[Figure] NTSC Digital Pattern (US13CH)

(7) EW PARAB (East-west PARABOLA)
Adjust so that middle portion of the outer most left and right vertical line looks like parallel with vertical lines of the CPT.

(8) EW TRAPE (East-west TRAPEZOID)
Adjust to make the length of top horizontal line same with it of the bottom horizontal line.

(9) EW UPCOR
Adjust until symmetries upper corner of the screen.

(10) EW LOCOR
Adjust until symmetries upper corner of the screen.



[Figure] Cross-Hatch Pattern (NTSC:US 51CH, PAL:C-8 CH)

(11) H BOW
Adjust the left and right crooked line on upper and lower side.

(12) H PARALL(ANGLE)
Adjust the vertical slope.

(13) SCORRECT (S-CORRECTION)
Adjust so that all distance between each Vertical lines are to be the same.
* Pre-settled according to the CPT.

(14) V SCROLL
* Recommend initial setting data

(15) V ZOOM (Vertical Zoom)
* Pre-settled according to the CPT

3.8. Deflection setting Initial data (SERVICE 2)

- Adjust : It is possible to adjust data.
- Recommend : It is recommended, if necessary it is possible to adjust.
- FIX : Don't change data.

ITEM	Description	29" TS Slim	29" Slim	29" FLAT (AK)	29" Slim AK2	Remarks
V SLOPE	Vertical slope		17	14	19	adj.
V SHIFT	Vertical shift		41	43	31	adj.
V LINEAR	Vertical linearity		43	37	23	adj.
V AMPLIT	Vertical amplitude		40	33	18	adj.
H-SHIFT	Horizontal shift		29	32	24	adj.
EW WIDTH	EW width		48	17	28	adj.
EW PARAB	Parabola adj		24	16	28	adj.
EW TRAPE	Trapezoid adj		32	40	29	adj.
EW UPCOR	Upper corner adj		46	33	43	adj.
EW LOCOR	Lower corner adj		47	34	44	adj.
H BOW	Horizontal Bow		38	37	42	adj.
H PARALL	Horizontal parallelogram		26	38	26	adj.
SCORRECT	S correction		32	41	32	Recommend
V SCROLL	Vertical Scroll		21	21	21	Recommend
V ZOOM	Vertical zoom		25	25	25	Recommend
WBR	Timing of Wide Blanking		7	7	7	Recommend
WBF	Timing of Wide Blanking		2	2	2	Recommend
V SYNSLI	Vertical slicing level		0	0	0	Recommend

3.9. SVC Adjustment data table

3.9.1. Picture Setting SVC DATA1 (SERVICE 1)

ITEM	Description		CPT	
			Flat (LPDK)	Slim
AGC	AGC take over		21	21
RG	Red Gain		32	32
GG	Green Gain		32	32
BG	Blue Gain		32	32
BLO-R	Black level offset Red		32	32
BLO-G	Black level offset Green		32	32
BLO-B	Black level offset Blue		32	32
CDL	Cathode Drive Level		9	9
L-DLY	Luminance delay time		8	8
RGB-BRI	OSD/TEXT BRIGHTNESS		15	15
SUB-BRI	OSD/TEXT BRIGHTNESS		15	15
SCR-BRI	OSD/TEXT BRIGHTNESS		30	30

3.9.2. Picture Setting SVC DATA1 (SERVICE 3)

ITEM	Description	PAL	NTSC	Remarks
FMWS	FM window size	2		
MONO	FM demodulator	1		
DSG	Audio in out gain	1		
AGN	FM Sound output gain	0		FM Prescaler(Stereo L/R)
BPB	Bypass BPF(for mono demodulator)	0		
AVLE	Enable AVL on EW pin	0		
AMLOW	AM sound output gain	0		
BPB2	Bypass second BPF	1		
FFI	Fast filter IF-PLL	0		
DCXO AVL	DCXO value	1		

3.9.3. Picture Setting SVC DATA3 (SERVICE 4)

ITEM	Description	Slim	Flat	Remarks
WS	White stretch	1	1	
BKS	Black stretch	1	1	
BSD	Black stretch depth	0	0	
DSK	Dynamic Skin Control	1	1	
COR	Coring (Peaking)	3	3	
PF	Peaking corner freq.& delay	0	0	
RPO	Ratio pre & over shoot	3	3	
RPA	Ratio pre & after shoot	1	1	
PWLDAC	Peak white limiting	3	3	
IFOFF	IF demodulator offset	45	45	
CHSE	Chroma sensitivity	1	1	
ACL	Automatic color limiting	1	1	
BLOC	Black level offset control	5	5	
TEXT-V	Text V position	28	28	
TEXT-H	Text H position	5	5	
VGUARD	Vertical guard	1	0	
TFR	Black level shift	1	1	
GAMMA	OSD Gamma correction	1	1	
OSDHPOS	OSD Horizontal Position	3	3	

3.10. OPTION Adjustment data Table

3.10.1. Preparation for Adjustment

(1) This decides function in accordance with model.
Press the SVC TX adjustment button (IN-START button) at SVC mode, then adjust the option at OPTION 1, 2, 3, 4 mode.

(2) Mark the option adjustment data like (0,128,65,96) in BOM.

♦ Mark of BOM

LEVEL	PART NO.	SPECIFICATION	DESCRIPTION	JOP EXP.
1.	EBT30431523	MAIN, CW91A	CHASSIS ASSY	(0,128,65,96)

The OPTION 1 data is 90, the OPTION 2 data is 96, the OPTION 3 data is 4, the OPTION 4 data is 17 in this model.

3.10.2. Adjustment Method

(1) Input data directly by the buttons corresponded with OPTION 1 ?? (0~255), OPTION 2 ?? (0~255),OPTION 3 ?? (0~255), OPTION 4 ?? (0~255).

(2) Select each OPTION function by the CH UP/DOWN button and then set up each OPTION by the VOL UP/DOWN button.

3.10.3. OPTION1 Function

OPTION	CODE	FUNCTION	REMARK
CHASSIS	0	CW81A	
	1	CW81C	
	2	RESERVED	
	3	RESERVED	
INCH	0	29INCH	
	1	21INCH	
PIP	0	WITHOUT PIP	
	1	WITH PIP	

3.10.4. OPTION2 Function

OPTION	CODE	FUNCTION	REMARK
VOL CURL	0	LOW CURVE	
	1	HIGH CURVE	
DUAL	0	WITHOUT DUAL SAVING	
	1	WITH DUAL SAVING	
HIDEV	0	FM NORMAL DEMODULATION	
	1	FM HIGH DEVIATION DEMO-	
A2STEREO	0	WITHOUT A2STEREO	
	1	WITH A2STEREO	

3.10.5. OPTION2 Function

OPTION	CODE	FUNCTION	REMARK
SCART	0	WITHOUT SCART	
	1	WITH SCART	
DVD	0	WITHOUT DVD	
	1	WITH DVD	
SAV	0	WITHOUT SIDE A/V	
	1	WITH SIDE A/V	
4KEY	0	6KEY	
	1	4KEY	
EYE	0	WITHOUT EYE	
	1	WITH EYE	
GAME	0	WITHOUTGAME MODULE	
	1	WITH GAME MODULE	
XWAVE	0	WITHOUT X-WAVE	
	1	WITH X-WAVE	
DEGAUSS	0	WITHOUT DEGAUSS	
	1	WITH DEGAUSS	

3.10.6. OPTION4 Function

OPTION	CODE	FUNCTION		REMARK
OSD LANG	0	ENGLISH	ENGLISH	
	1	NIGERIAN	EASTASIA	
	2	RESERVED	RESERVED	
	3	RESERVED	RESERVED	
	4	RESERVED	RESERVED	
	5	RESERVED	RESERVED	
	6	RESERVED	RESERVED	
	7	RESERVED	RESERVED	
TXT LANG	0			
	1			
	2			
	3			
	4			
	5			
	6			
	7			
TELE TEXT	0			
	1			

3.11. IN STOP Mode setting

No.	ITEM	Status	REMARK
1	Power	OFF	
2	Input	TV	
3	LAST CHANNEL	03CH	
4	MEMORY CHANNEL	VHF: 2~13CH	
		UHF : 14, 30. 51. 55, 63CH	
		CATV : 15,16,17,55, 95CH	
5	SOUND	30 STEPS	
6	CSM	Standard	
7	MUTE	OFF	
8	TORBO SOUND	OFF	
9	XD	ON	
10	PSM	Dynamic	
11	SSM	FLAT	OPTION
12	BOOSTER	OFF	
13	CHILD LOCK	OFF	
14	AUTO SLEEP	OFF	
15	AVL	OFF	
16	BALANCE	0	OPTION
17	EYE	OFF	
18	DEGAUSS	OFF	

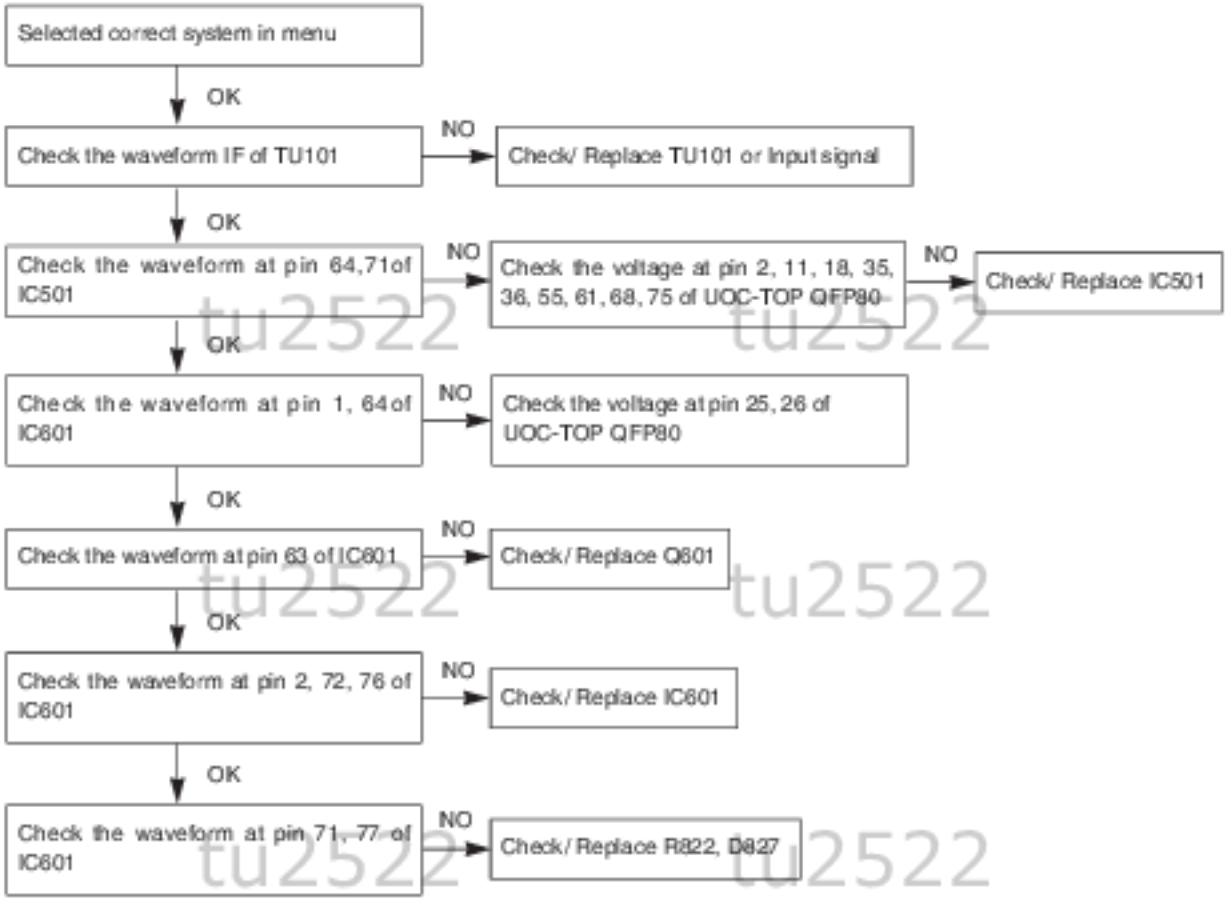
3.12. TV/CABLE TV CHANNEL Operation Condition

1. Necessary parts and instruments
   (1) Remote controller (with AIR/CABLE TV button)
2. Checking
   (1) Check receiver channel operation for some abnormality by pressing AIR/CABLE TV button continuously.

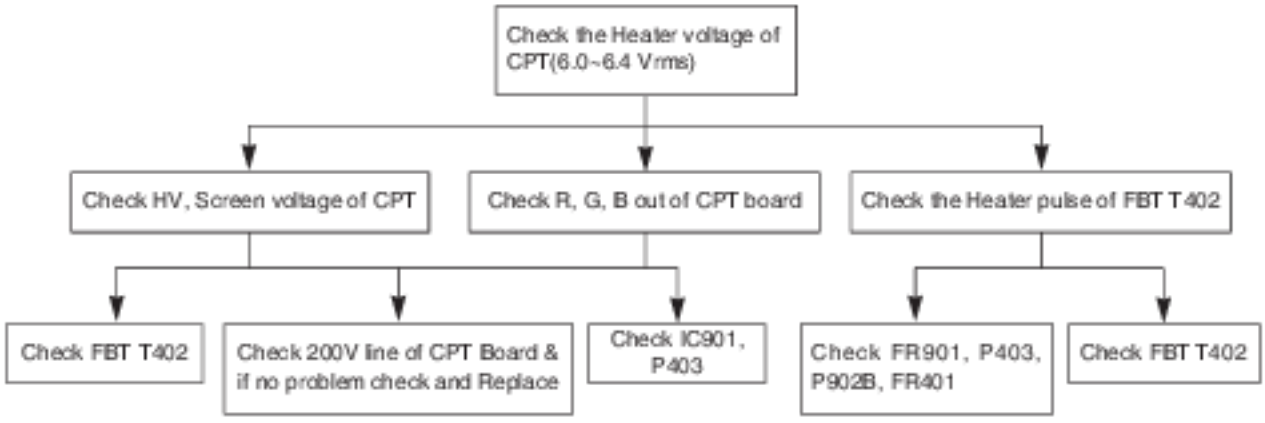
TROUBLE SHOOTING

1. RF-STEREO MODEL

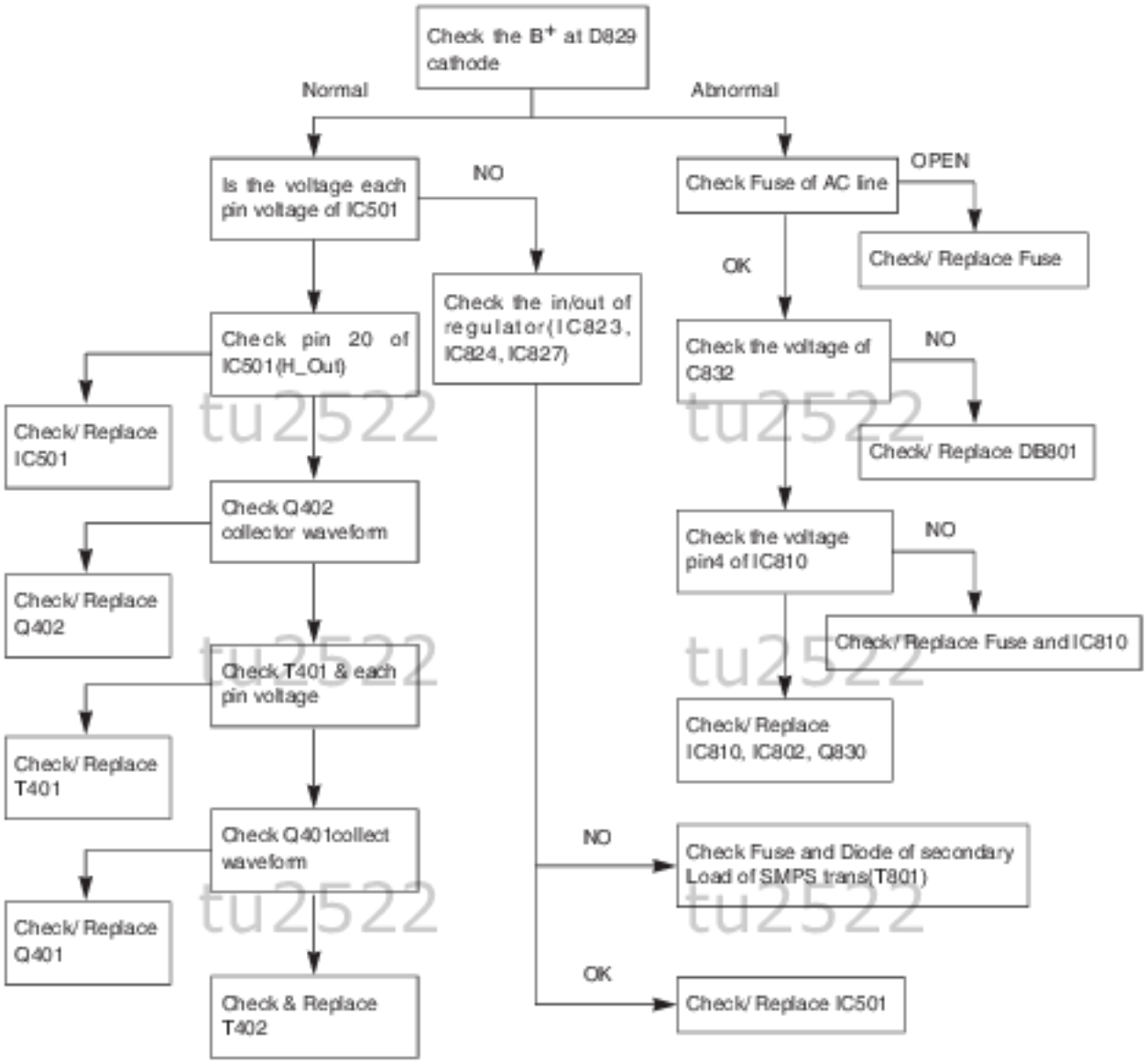
1) PICTURE OK / NO SOUND



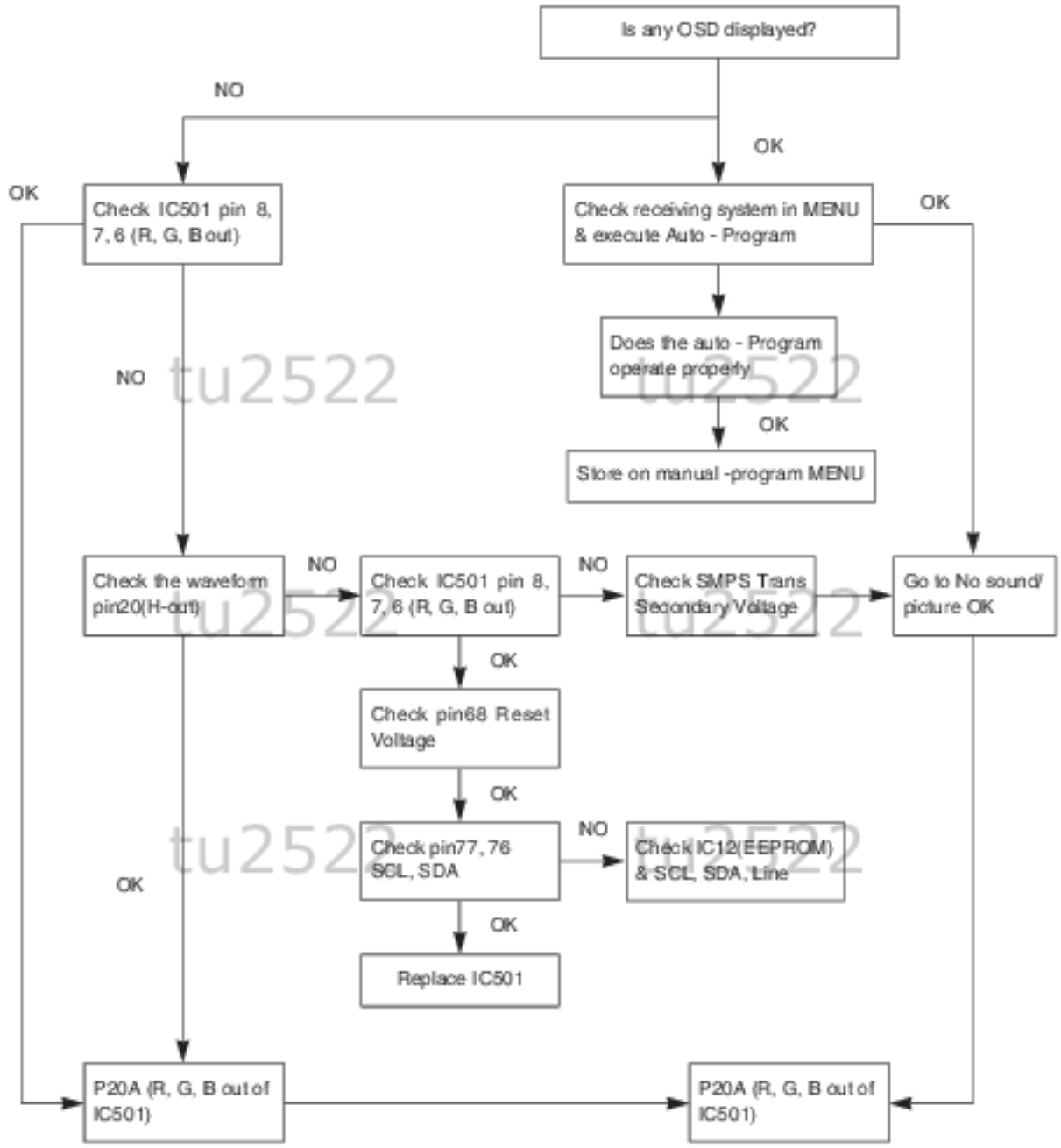
2) No Raster / Sound OK(1/2)



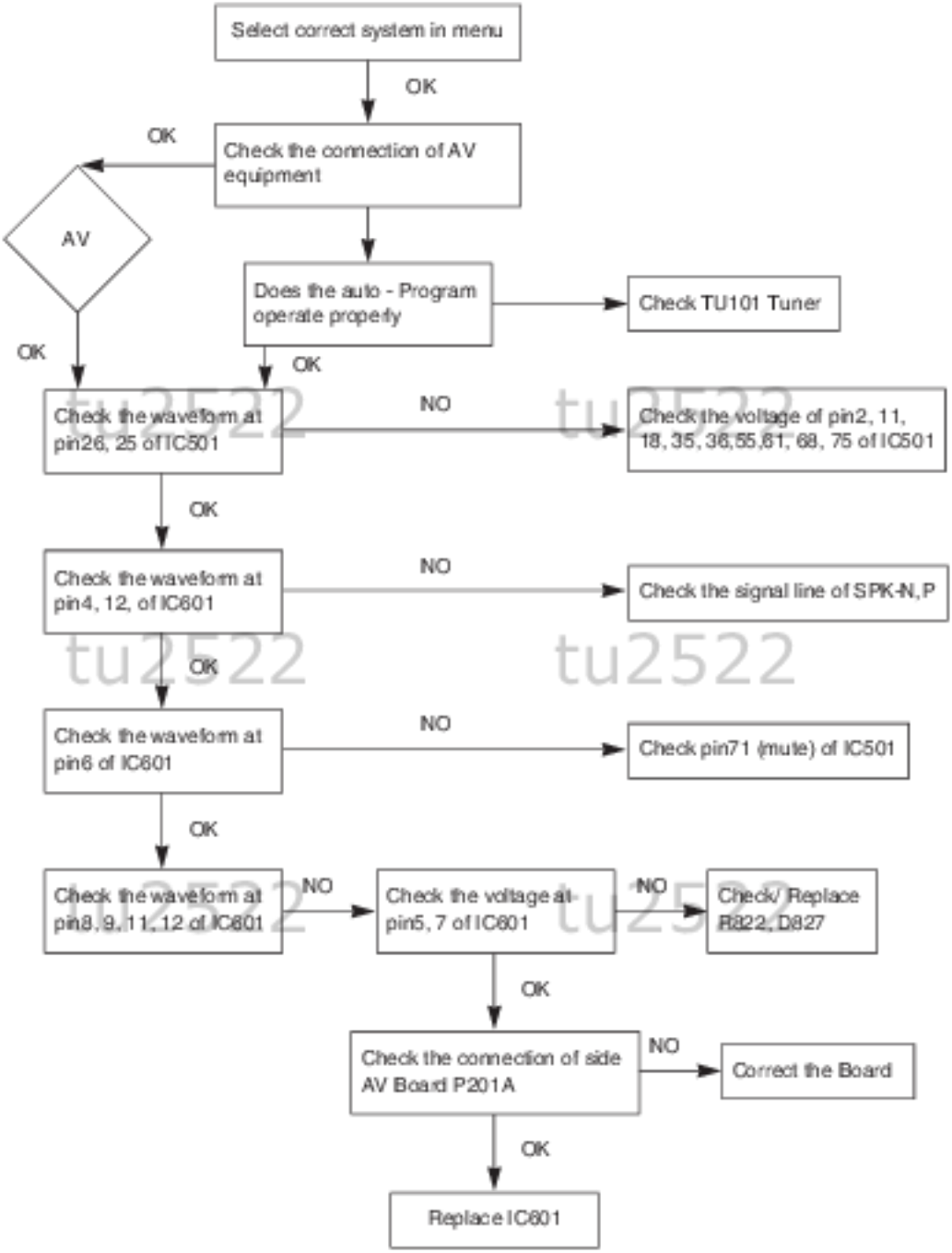
3) No Raster (2/2)



4) No Picture/ No Sound

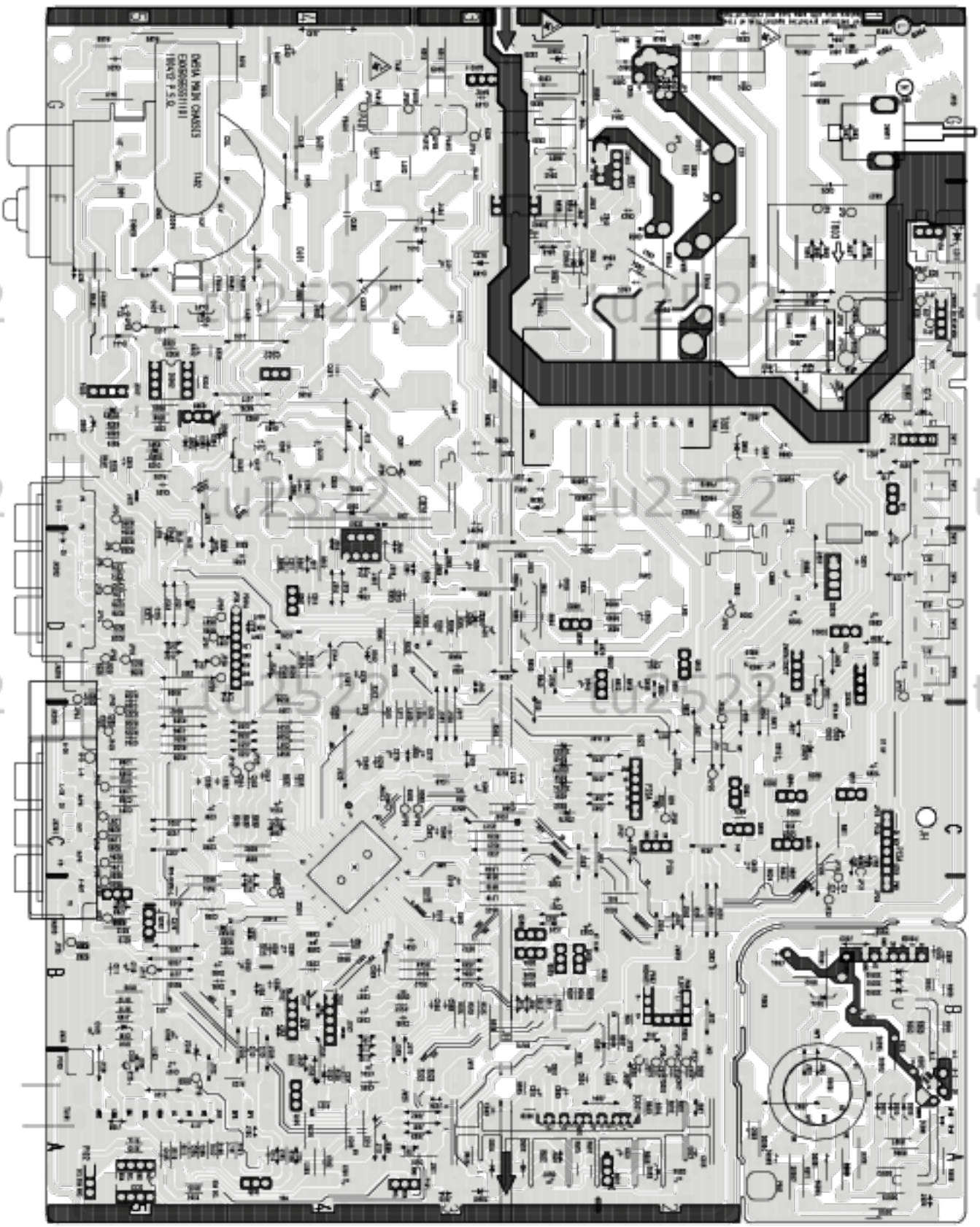


2. AV STEREO/ MONO MODEL

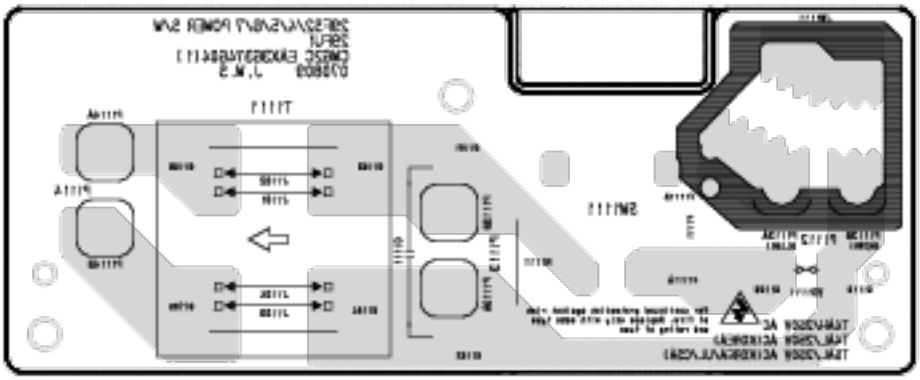


PRINTED CIRCUIT BOARD

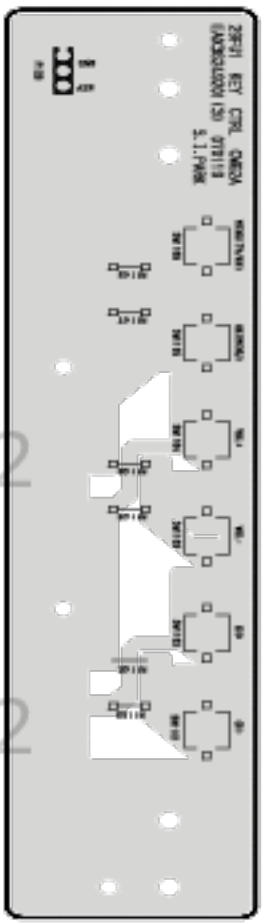
MAIN



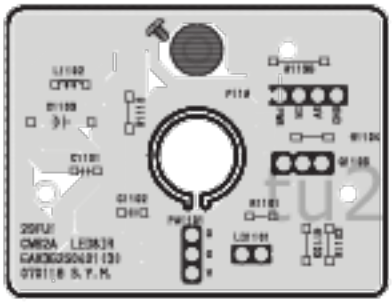
Power



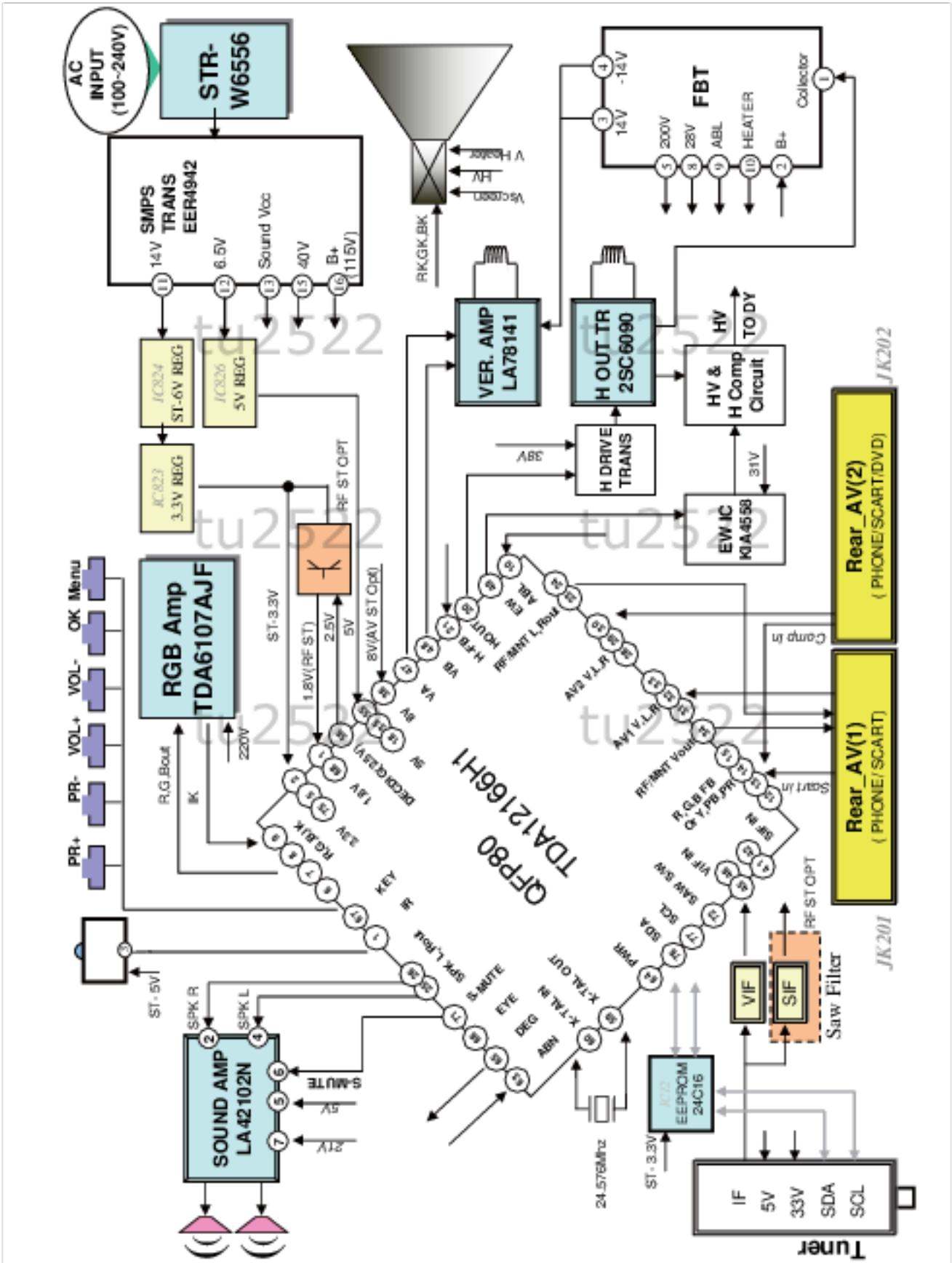
CONTROL



LED



BLOCK DIAGRAM

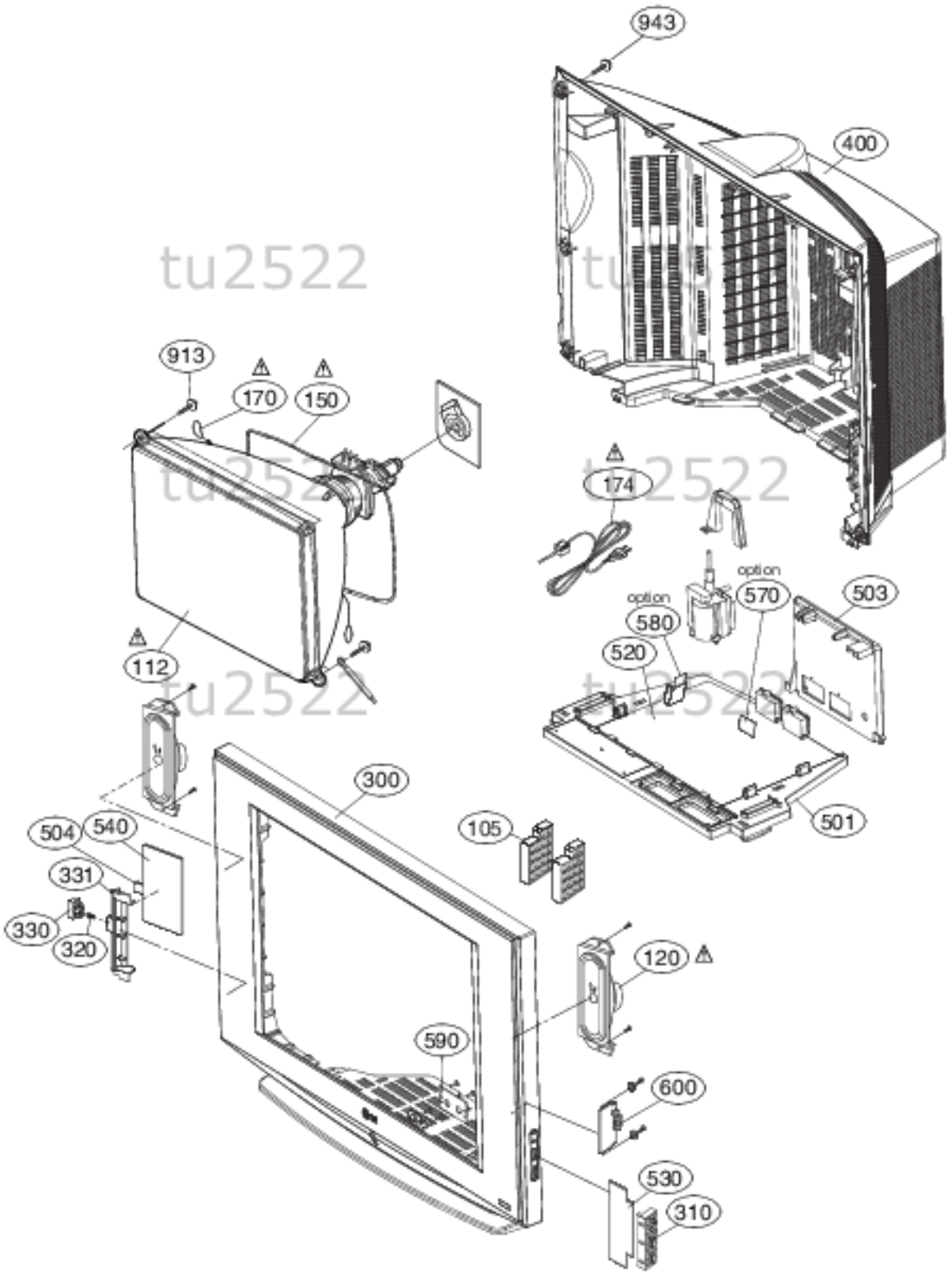


MEMO

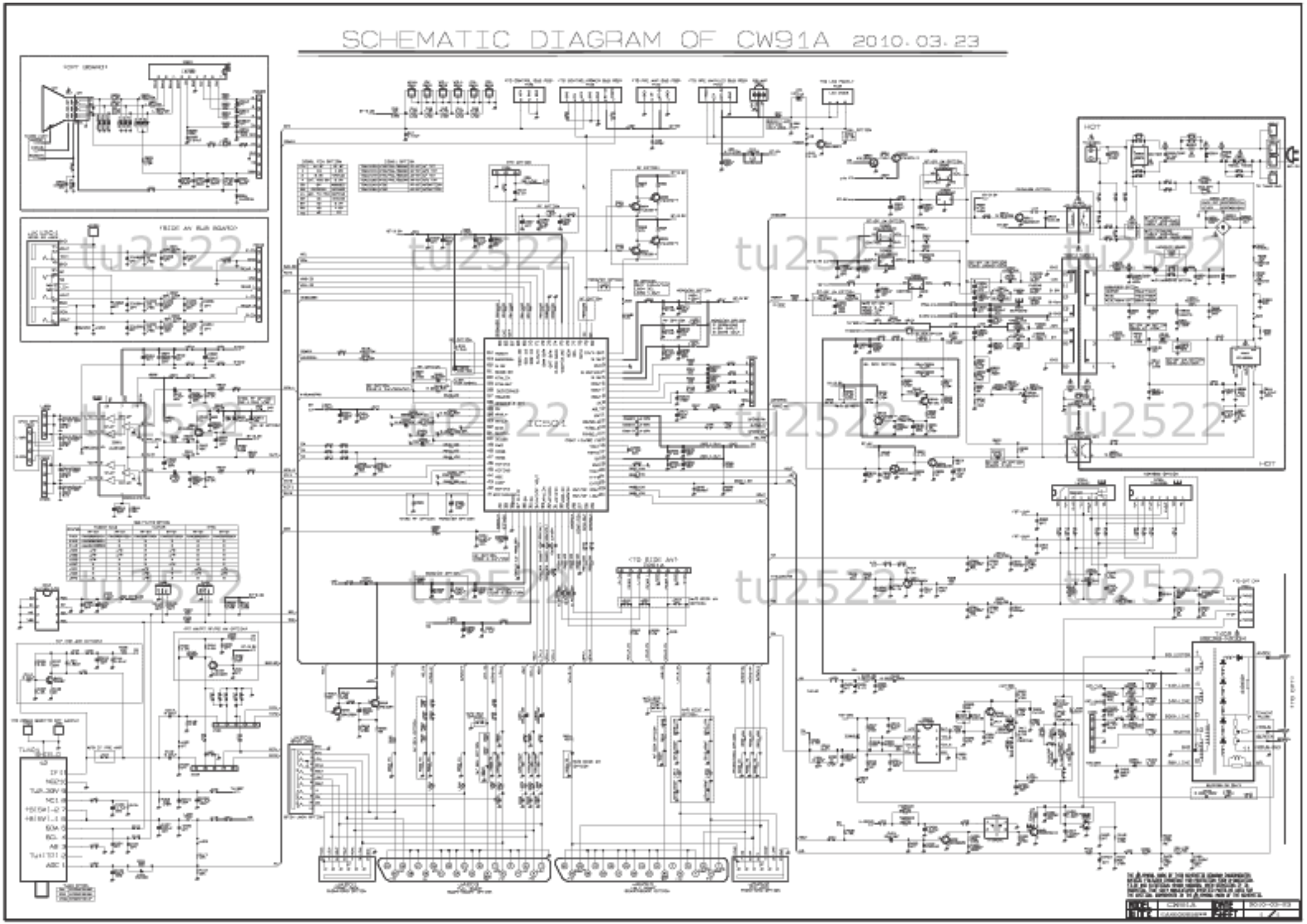
EXPLODED VIEW

IMPORTANT SAFETY NOTICE

Many electrical and mechanical parts in this chassis have special safety-related characteristics. These parts are identified by ⚠ in the Schematic Diagrams and EXPLODED VIEW.
It is essential that these special safety parts should be replaced with the same components as recommended in this manual to prevent X-RADIATION, Shock, Fire, or other Hazards.
Do not modify the original design without permission of manufacturer.



SCHEMATIC DIAGRAM OF CW91A 2010.03.23



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SVC. SHEET : 3854VA0196H-S