

Service Service Service



22PFL5557/V7
24PFL5557/V7
32PFL5537/V7
22PFL5957/V7
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29PFL5937/V7
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Service Manual

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1. SAFETY PRECAUTION

Caution :

Use of controls, adjustments or procedures other than those specified herein may result in hazardous radiation exposure.



CAUTION
RISK OF ELECTRIC
SHOCK DO NOT OPEN.



CAUTION: TO REDUCE THE RISK OF ELECTRICAL SHOCK, DO NOT REMOVE COVER (OR BACK). NO USER SERVICEABLE PARTS INSIDE. REFER SERVICING TO QUALIFIED SERVICE PERSONNEL.



The lighting flash with arrowhead symbol, with an equilateral triangle is intended to alert the user to the presence of uninsulated "dangerous voltage" within the product's enclosure that may be of sufficient magnitude to constitute a risk of electric shock to the person.



The exclamation point within an equilateral triangle is intended to alert the user to the presence of important operating and maintenance (servicing) instructions in the literature accompanying the appliance.

**WARNING: TO REDUCE RISK OF FIRE OR ELECTRIC SHOCK, DO NOT
EXPOSE THIS APPLIANCE TO RAIN OR MOISTURE.**

IMPORTANT SAFETY INSTRUCTIONS

CAUTION:

Read all of these instructions. Save these instructions for later use. Follow all Warnings and Instructions marked on the audio equipment.

1. Read Instructions- All the safety and operating instructions should be read before the product is operated.
2. Retain Instructions- The safety and operating instructions should be retained for future reference.
3. Heed Warnings- All warnings on the product and in the operating instructions should be adhered to.
4. Follow Instructions- All operating and use instructions should be followed.

FOR YOUR PERSONAL SAFETY

1. When the power cord or plug is damaged or frayed, unplug this television set from the wall outlet and refer servicing to qualified service personnel.
2. Do not overload wall outlets and extension cords as this can result in fire or electric shock.
3. Do not allow anything to rest on or roll over the power cord, and do not place the TV where power cord is subject to traffic or abuse. This may result in a shock or fire hazard.
4. Do not attempt to service this television set yourself as opening or removing covers may expose you to dangerous voltage or other hazards. Refer all servicing to qualified service personnel.
5. Never push objects of any kind into this television set through cabinet slots as they may touch dangerous voltage points or short out parts that could result in a fire or electric shock. Never spill liquid of any kind on the television set.
6. If the television set has been dropped or the cabinet has been damaged, unplug this television set from the wall outlet and refer servicing to qualified service personnel.
7. If liquid has been spilled into the television set, unplug this television set from the wall outlet and refer servicing to qualified service personnel.
8. Do not subject your television set to impact of any kind. Be particularly careful not to damage the picture tube surface.
9. Unplug this television set from the wall outlet before cleaning. Do not use liquid cleaners or aerosol cleaners. Use a damp cloth for cleaning.
- 10.1. Do not place this television set on an unstable cart, stand, or table. The television set may fall, causing serious injury to a child or an adult, and serious damage to the appliance. Use only with a cart or stand recommended by the manufacturer, or sold with the television set. Wall or shelf mounting should follow the manufacturer's instructions, and should use a mounting kit approved by the manufacturer.
- 10.2. An appliance and cart combination should be moved with care. Quick stops, excessive force, and uneven surfaces may cause the appliance and cart combination to overturn.



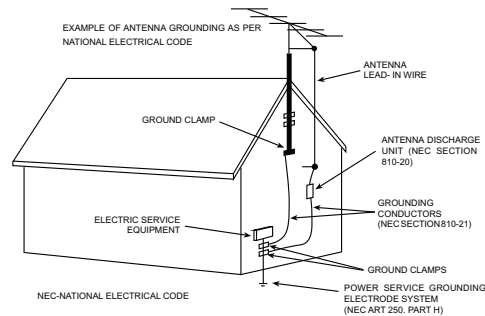
PROTECTION AND LOCATION OF YOUR SET

11.
 - Do not use this television set near water ... for example, near a bathtub, washbowl, kitchen sink, or laundry tub, in a wet basement, or near a swimming pool, etc.
 - Never expose the set to rain or water. If the set has been exposed to rain or water, unplug the set from the wall outlet and refer servicing to qualified service personnel.
12. Choose a place where light (artificial or sunlight) does not shine directly on the screen.
13. Avoid dusty places, since piling up of dust inside TV chassis may cause failure of the set when high humidity persists.
14. The set has slots, or openings in the cabinet for ventilation purposes, to provide reliable operation of the receiver, to protect it from overheating. These openings must not be blocked or covered.
 - Never cover the slots or openings with cloth or other material.
 - Never block the bottom ventilation slots of the set by placing it on a bed, sofa, rug, etc.
 - Never place the set near or over a radiator or heat register.
 - Never place the set in a "built-in" enclosure, unless proper ventilation is provided.

PROTECTION AND LOCATION OF YOUR SET

- 15.1. If an outside antenna is connected to the television set, be sure the antenna system is grounded so as to provide some protection against voltage surges and built up static charges, Section 810 of the National Electrical Code, NFPA No. 70-1975, provides information with respect to proper grounding of the mast and supporting structure, grounding of the lead-in wire to an antenna discharge unit, size of grounding conductors, location of antenna discharge unit, connection to grounding electrode, and requirements for the grounding electrode.

EXAMPLE OF ANTENNA GROUNDING AS PER NATIONAL ELECTRICAL CODE INSTRUCTIONS



- 15.2. Note to CATV system installer : (Only for the television set with CATV reception)

This reminder is provided to call the CATV system installer's attention to Article 820-40 of the NEC that provides guidelines for proper grounding and, in particular, specifies that the cable ground shall be connected to the grounding system of the building, as close to the point of cable entry as practical.

16. An outside antenna system should not be located in the vicinity of overhead power lines or other electric lights or power circuits, or where it can fall into such power lines or circuits. When installing an outside antenna system, extreme care should be taken to keep from touching such power lines or circuits as contact with them might be fatal.
17. For added protection for this television set during a lightning storm, or when it is left unattended and unused for long periods of time, unplug it from the wall outlet and disconnect the antenna. This will prevent damage due to lightning and power-line surges.

OPERATION OF YOUR SET

18. This television set should be operated only from the type of power source indicated on the marking label. If you are not sure of the type of power supply at your home, consult your television dealer or local power company. For television sets designed to operate from battery power, refer to the operating instructions.
19. If the television set does not operate normally by following the operating instructions, unplug this television set from the wall outlet and refer servicing to qualified service personnel. Adjust only those controls that are covered in the operating instructions as improper adjustment of other controls may result in damage and will often require extensive work by a qualified technician to restore the television set to normal operation.
20. When going on a holiday : If your television set is to remain unused for a period of time, for instance, when you go on a holiday, turn the television set " off " and unplug the television set from the wall outlet.

IF THE SET DOES NOT OPERATE PROPERLY

21. If you are unable to restore normal operation by following the detailed procedure in your operating instructions, do not attempt any further adjustment. Unplug the set and call your dealer or service technician.
22. Whenever the television set is damaged or fails, or a distinct change in performance indicates a need for service, unplug the set and have it checked by a professional service technician.
23. It is normal for some TV sets to make occasional snapping or popping sounds, particularly when being turned on or off. If the snapping or popping is continuous or frequent, unplug the set and consult your dealer or service technician.

FOR SERVICE AND MODIFICATION

24. Do not use attachments not recommended by the television set manufacturer as they may cause hazards.
25. When replacement parts are required, be sure the service technician has used replacement parts specified by the manufacturer that have the same characteristics as the original part. Unauthorized substitutions may result in fire, electric shock, or other hazards.
26. Upon completion of any service or repairs to the television set, ask the service technician to perform routine safety checks to determine that the television is in safe operating condition.

2. Service Procedure

2.1. Factory Menu

Follow the below steps to pop-up the Factory Menu in case of “**Factory Key**” is disabled:

- press Remote Control key “**MENU**” to display main menu.
- press the subsequence Remote Control keys “**2**”, “**5**”, “**8**” and “**0**”.
- Press Remote Control “**OK**” key to enter the submenu.
- Press Remote Control “**Menu**” key to go back to the previous menu.
- Press Remote Control “**RIGHT**” or “**LEFT**” key to change the values.
- Press Remote Control “**OK**” key run the function. (OK: Current source has been calibrated)

2.2.“Factory Menu” Definition

1). ADC ADJUST

Item	Sub-item	Value	Note
ADC ADJUST	MODE	RGB	Get the signal from the PC.
		YPbPr(SD)	Get the signal from the YPbPr, and the signal is standard definition.
		YPbPr(HD)	Get the signal from the YPbPr, and the signal is high definition.
	R-GAIN		For fine tune ADC manually.
	G-GAIN		
	B-GAIN		
	R-OFFSET		
	G-OFFSET		
	B-OFFSET		
	AUTO ADC	FAIL OR SUCCESS	FAIL: Current source has not been calibrated , SUCCESS: Current source has been calibrated.

2). Smart Picture

Item	Sub-item	Value/Sub-item	Note
PICTURE MODE	MODE	Vivid/Cinema/Personal/Bright	Select the signal from the source.
	BRIGHTNESS	0~100	Adjust the picture brightness from 0 to 100.
	CONTRAST	0~100	Adjust the picture contrast from 0 to 100.
	COLOR	0~100	Adjust the picture color from 0 to 100.
	SHARPNESS	0~100	Adjust the picture sharpness from 0 to 100.
	TINT	0~100	Adjust the picture TINT from 0 to 100.
	COPY ALL		

3). W/B ADJUST

Item	Sub-item	Value/Sub-item	Note
W/B ADJUST	MODE	TV/AV/YPbPr/VGA/HDMI1/HDMI2	Select the signal from the source.
	TEMPERATURE	Normal/Warm/Cool/Personal	Select the temperature mode.
	R-GAIN		R White balance
	G-GAIN		G White balance
	B-GAIN		B White balance
	R-OFFSET		R Gray balance
	G-OFFSET		G Gray balance
	B-OFFSET		B Gray balance
	COPY ALL		

4). SSC

Item	Sub-item	Value/Sub-item	Note
SSC	MIU Enable	0/1	
	MIU Span	20KHz to 40KHz	
	MIU Step	0.1% to 2.0%	
	LVDS Enable	0/1	
	LVDS Span	0.0KHz to 50KHz	
	LVDS Step	0.0% to 3.0%	

5). SPECIAL SET

Item	Sub-item	Value/Sub-item	Note
SPECIAL SET	2HOUR OFF	ON/OFF	The switch to close TV after 2 hours.
	WHITE PATTERN	OFF/White/Red/Green/Blue/Black	Send out the five pattern picture.
	Factory Settings		
	Power	OFF/ON/Last	The PM mode select.
	Aging	ON/OFF	The factory mode select.
	Software Update(USB)		
	OSD Language	English	

6). VIF

Item	Sub-item	Sub-item	NOTE
VIF	VIF 1	AFEC_D4	0/1/2/3/4/5/6/7/8/9/A/B/C/D/E
		AFEC_D5[2]	0/1
		AFEC_D8[3:0]	0/1/2/3/4/5/6/7/8/9
		AFEC_D9[0]	0/1
		AFEC_A0_A1	1020/BC6A/AE5E/9A35/9020/8204
		AFEC_66[7:6]	0/1/2/3
		AFEC_6E[7:4]	0/1/2/3/4/5/6/7/8/9/A/B/C/D/E/F
		AFEC_6E[3:0]	0/1/2/3/4/5/6/7/8/9/A/B/C/D/E/F
		AFEC_D7_LOW_BO..	18
		AFEC_D8_HIGH_BO..	C
		AFEC_43	14/74
		AFEC_44	0 to FF
		AFEC_CB	0 to FF
		AFEC_CF_BIT2	0/1
		AFEC_4E_BIT7	0/1
		AFEC_4F	55 to 68
	VIF 2	VIF_TOP	0 to F
		VIF_VGAMAXIMUM	0/800/1000/1800/2000/2800/3000/3800/4000/ 4800/5000/5800/6000/6800/7000/7800/8000/ 8800/9000/9800/A000/A800/B000/B800/C000/ C800/D000/D800/E000/E800/F000/F800
		China_DESCRAMBLE..	0 to B
		VIF_CR_KP_KI	104/205/306/407/508/609/70A
		VIF_CR_THR	0/100/200/300/400/500/600/700/800/900/ A00/B00/C00/D00/E00/F00/1000 to 3F00
		VIF CR KP KI ADJ..	0/1
		VIF CLAMPGAIN GA..	0 to FFFF
		VIF OVER MODUL..	0/1
		VIF ASIA SIGNAL ..	0/1
		VIF CR LOCK THR	10/20/30
		VIF AGC VGA BA..	0 to FF
		Audio HIDEV MODE	OFF/HIDEVL1/HIDEVL2/HIDEVL3
	VIF 3	AUDIO NR THR	0 to FF
		SCAN DELAY	0 to FFFF
		COMBPATCH	0/1
		VERSION	VIF_E_12_00_111227
		AFEC_DSP_Version	2393

7). SW INFORMATION

Item	Sub-item		Note
SW INFORMATION	VERSION 6666-001-00B-04-01-01-02-0000..		
	BUILD TIME	MAY 23 2012, 19:04:12	
	MIU0 DQS0	11	
	MIU0 DQS1	12	

8). UART DEBUG

Item	Value	Note
UART DEBUG	None/HK/AEON/VDEC	

9). PEQ

Item	Value	Note
PEQ	OFF/ON	

10). OVERSACN

Item	Sub-item	Value	Note
OVERSACN	OVERSCAN-HPOSITI..	0	
	OVERSCAN-HSIZE	0	
	OVERSCAN-VPOSITI..	0	
	OVERSCAN-VSIZE	0	

11). NONLINEAR

Item	Sub-item	Value/Sub-item	Note
NONLINEAR	MODE	HDMI1/HDMI2/USB/ TV/AV/YPbPr/VGA	
	PICTURE MODE	Vivid/Cinema/ Personal/Bright/	
	Brightness Curve	OSD_0	0 to 255
		OSD_25	0 to 255
		OSD_50	0 to 255
		OSD_75	0 to 255
		OSD_100	0 to 255
	Contrast Curve	OSD_0	0 to 255
		OSD_25	0 to 255
		OSD_50	0 to 255
		OSD_75	0 to 255
		OSD_100	0 to 255
	Saturation Curve	OSD_0	0 to 255
		OSD_25	0 to 255
		OSD_50	0 to 255
		OSD_75	0 to 255
		OSD_100	0 to 255
	Hue Curve	OSD_0	0 to 255
		OSD_25	0 to 255
		OSD_50	0 to 255
		OSD_75	0 to 255
		OSD_100	0 to 255
	Sharpness Curve	OSD_0	0 to 255
		OSD_25	0 to 255
		OSD_50	0 to 255
		OSD_75	0 to 255
		OSD_100	0 to 255
	Volume Curve	OSD_0	0 to 255
		OSD_25	0 to 255
		OSD_50	0 to 255
		OSD_75	0 to 255
		OSD_100	0 to 255

12). USB CLONE

Item	Sub-item	Note
USB CLONE	BACKUP	
	RESTORE	

13). CH Table

14). PANNEL OPTION

Item	Sub-item	Value	Note
PANNEL OPTION	TI MODE	0 to 21	
	SWAP PORT	0/1	

3. Software Upgrade

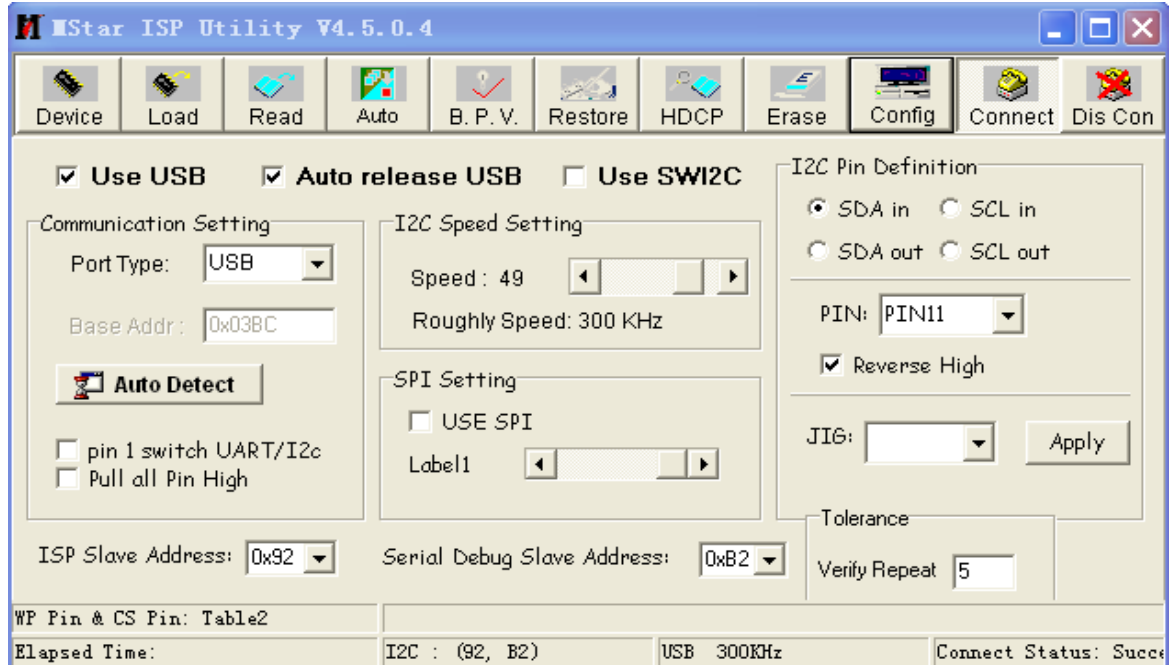
METHOD - 1 :

1. Save the new software file(*.bin) in the root directory of USB, and modify it's name as **MERGE.pkg**.
2. Plug in the USB.
3. Power on the set.
4. Connect the USB to TV set.
5. To enter into **FACTORY MENU** go to **USER MENU**, press the subsequence remote control keys "2","5","8","0".
6. Go to **Software Update(USB)**, press **OK** button of Remote, then press **left** button to select update the software.
7. After upgrading the software, you should Switch on the TV set by the remote control or the key-press.

METHOD - 2 :

Prepare Mstar ISP Utility tool for update.

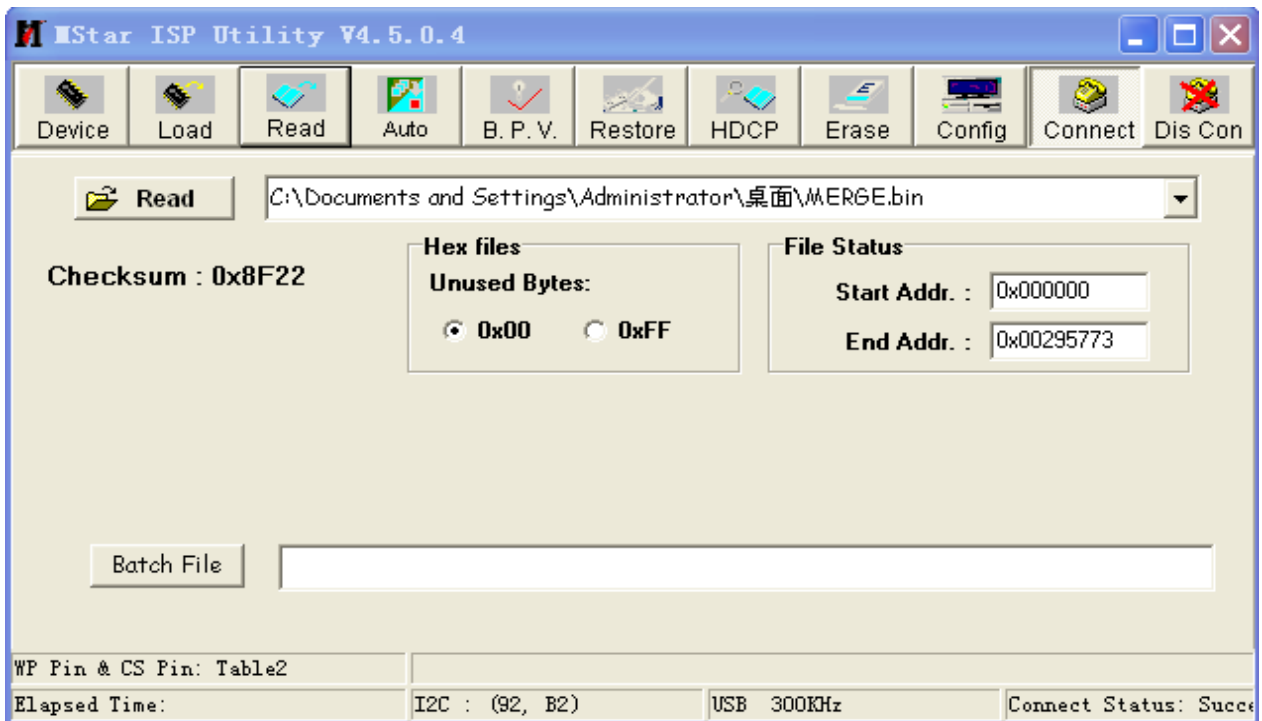
1. Connect the PC to the serial connector on board using a special serial device (USB or COMx);
2. Provide the a correct voltage to the board;
3. Start "**MStar_ISP.exe**", and set the parameters as picture 1 ;
(Notice:select Port Type: USB, the ISP Slave address: 0x92, Serial Debug Slave Address: 0xB2);



Picture 1

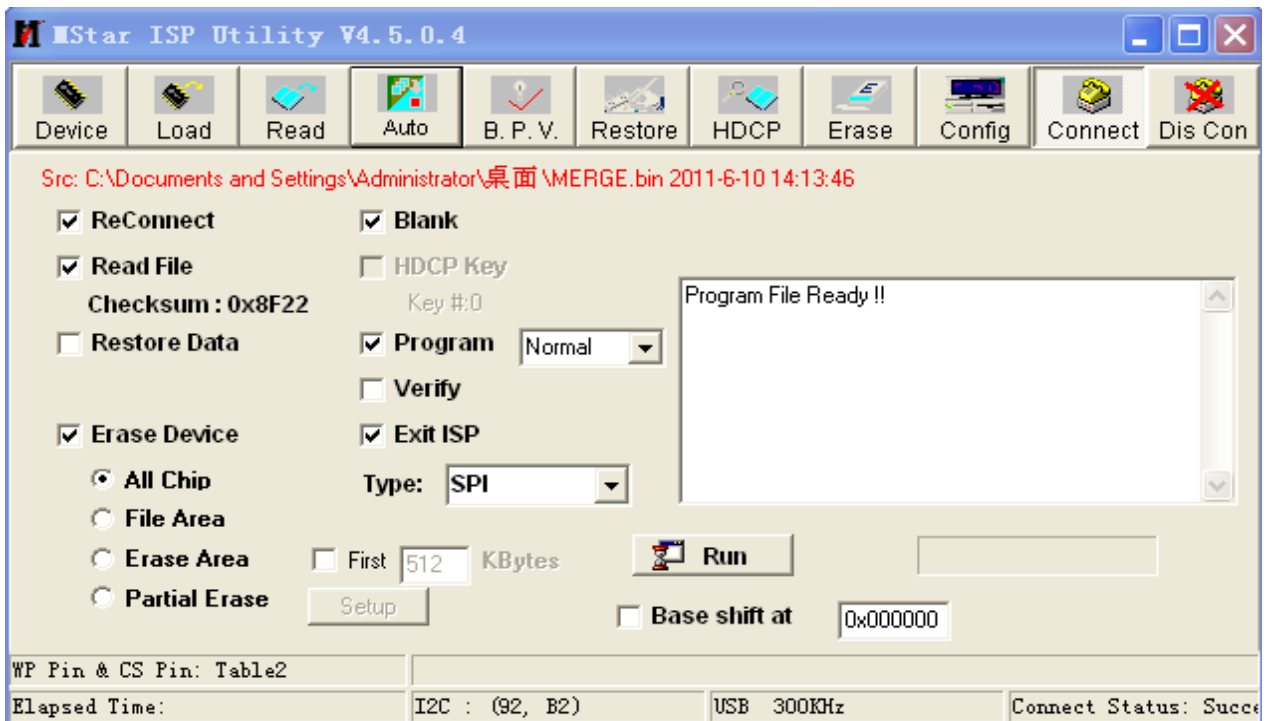
4. Press "Connect" button to connect the communication between the PC and TV set as picture 1;

5. Press “Read” button to select the SW that you want to update as the picture 2;



Picture 2

6. Press “Auto” and "Run" button to update the SW as the picture 3, and then wait it finish, it is about four minute.



Picture 3

4. Voltage Measurement

INFO:

All tests and measurements mentioned hereafter have to be carried out at a normal mains voltage (**220 ~ 240 VAC**),

All voltages have to be measured with respect to ground, unless otherwise stated,

All final tests have to be done on a complete set including LED panel in a room with temperature of **25+/-7°C**,

The White Balance (color temperature) has to be performed into subdued lighted room after at least **1 hour** of warm-up/burn-in. This is applicable for both Alignment and Picture Performance evaluation at OQA in order to be set free of any temperature drift (colorimetry vs time).

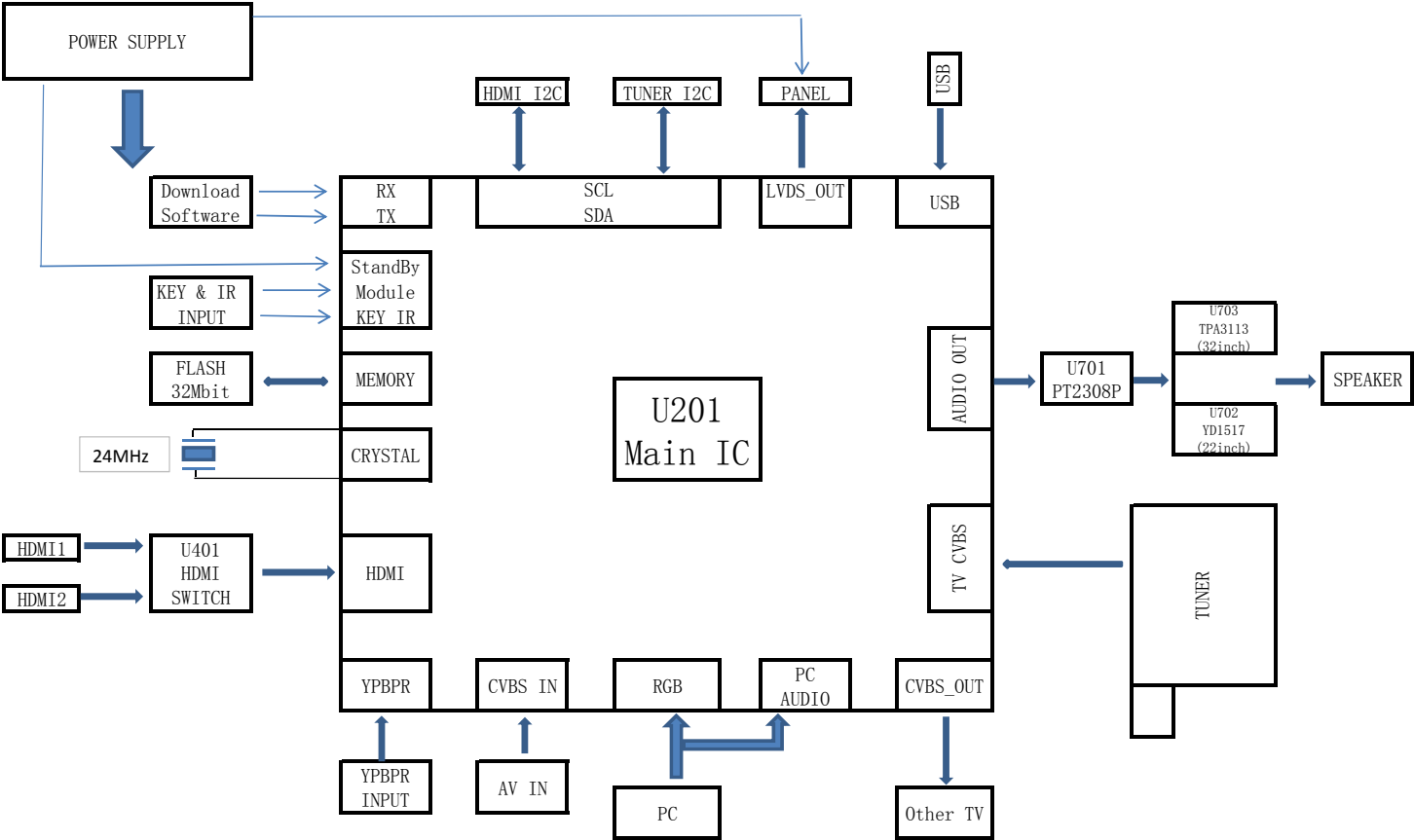
1.1. *Preconditions – DC/DC Check*

Before power on, please check the board according to the relevant block diagram and circuit diagram, and make sure that no serious error should destroy the board. For example, the output of DC/DC and LDO should not be shorted to ground. Supply a suited voltage and power on, then check the voltage according to the relevant block diagram , circuit diagram and voltage spec. the error should less than 5% .For example, the voltage for main chip(3.3V, 2.5V,1.8V,8V,etc.), the voltage for DDR2 , the voltage for amplifier ,etc.

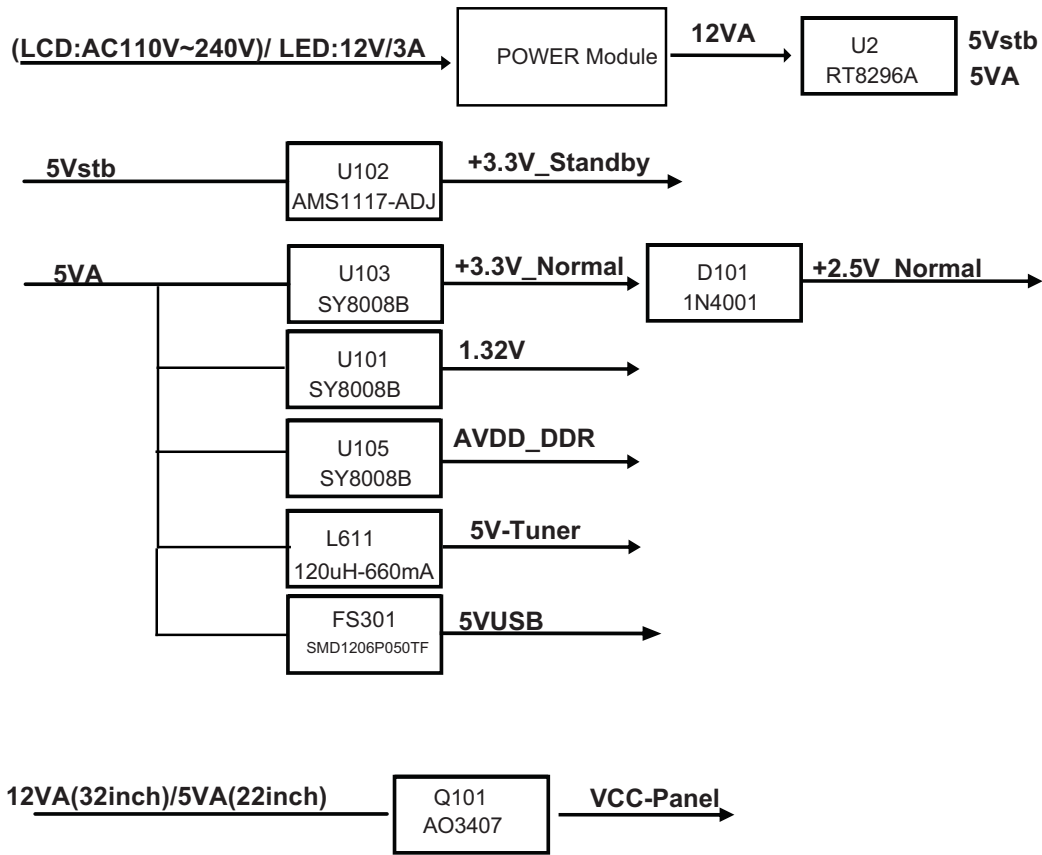
1.2. *Panel ID check and modify*

There is different ID stored in the NVM depended on different Panels. It can be checked and modified in **Factory menu -> SW INFO**.

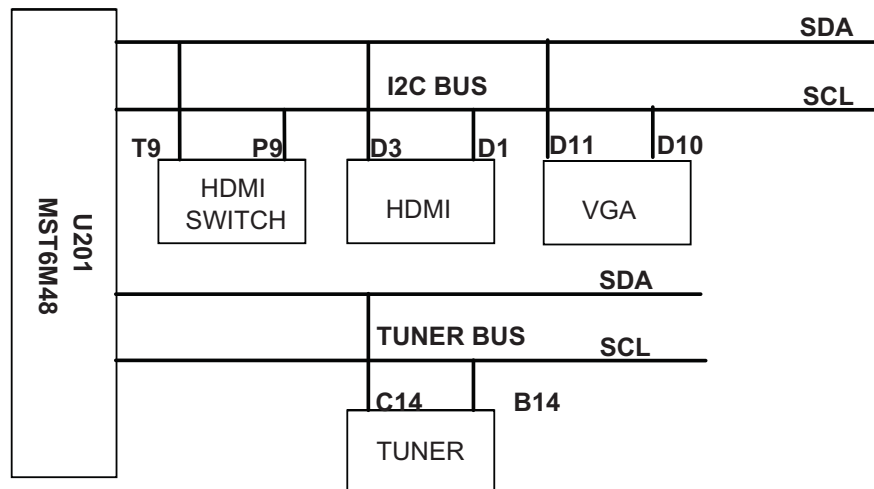
5. Block Diagram



Power Supply Flow Diagram

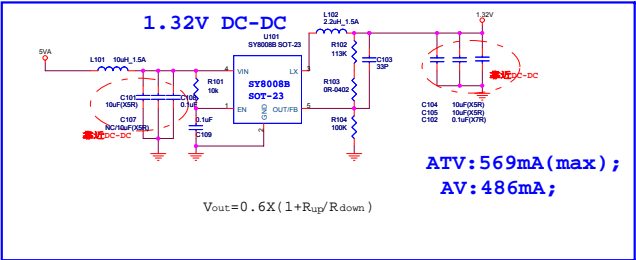


I2C BUS Flow Diagram

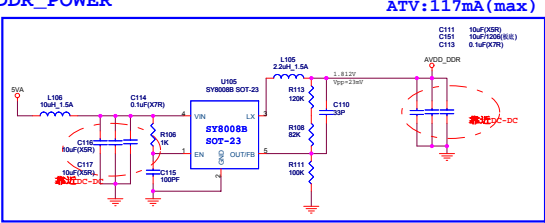


6. Main Board Circuit Diagram

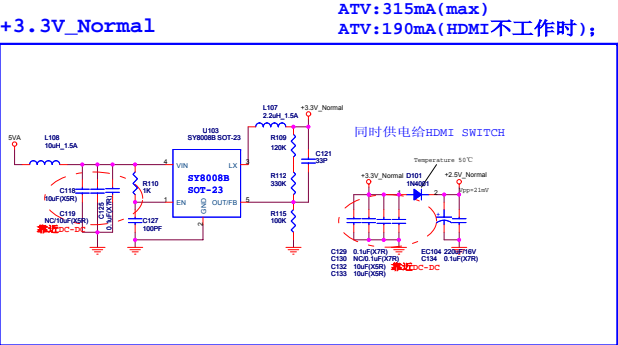
Main Chip POWER



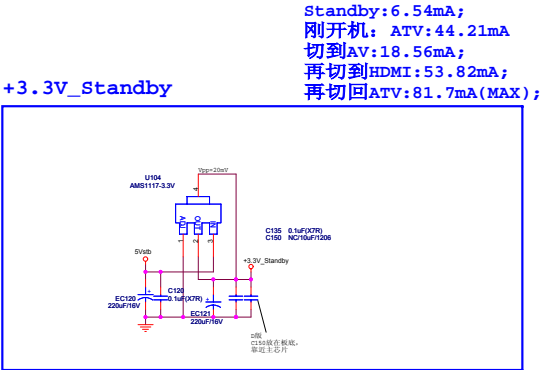
DDR_POWER



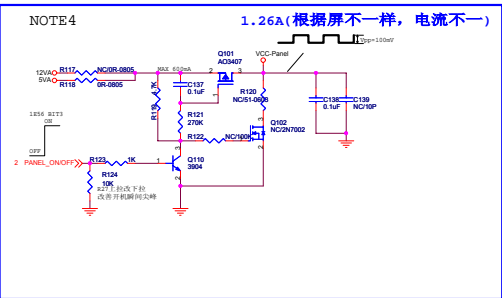
+3.3V_Normal



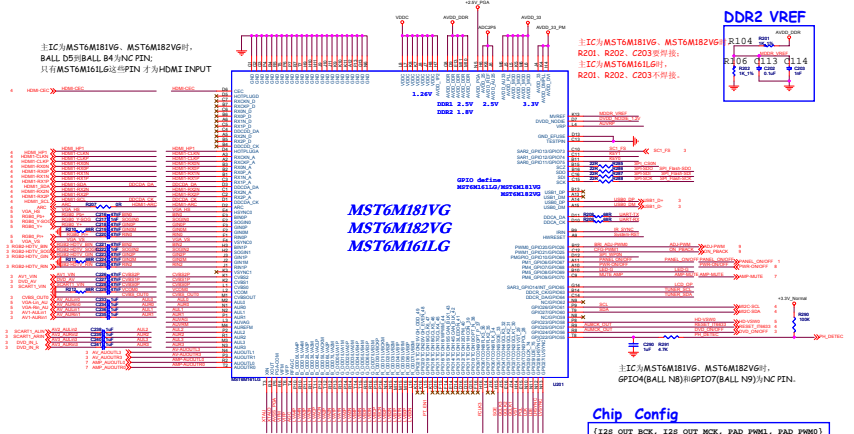
+3.3V_Standby



PANEL POWER

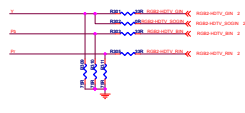
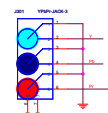


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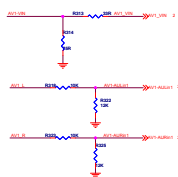
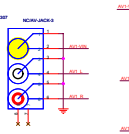
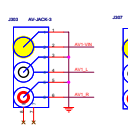


AV & YPBPR INPUT

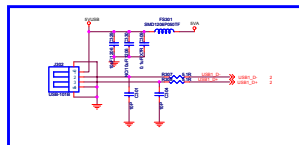
J301为卧式;



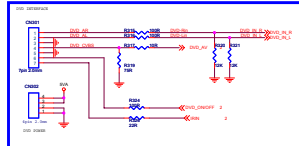
J303为立式, J307为卧式;



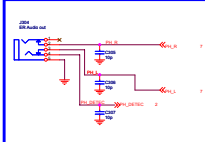
USB Interface



DVD INPUT

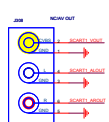
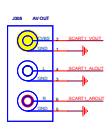


Head Phone



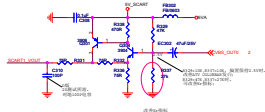
AV OUT & SCART

J305为立式, J308为卧式;



VIDEO OUT

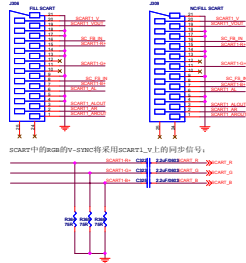
2倍放大



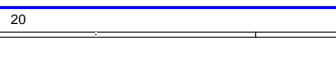
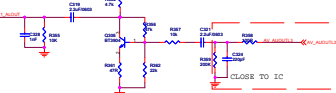
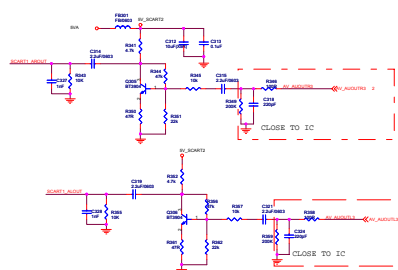
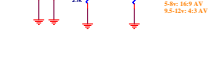
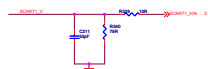
J306为立式, J309为卧式;

FULL SCART

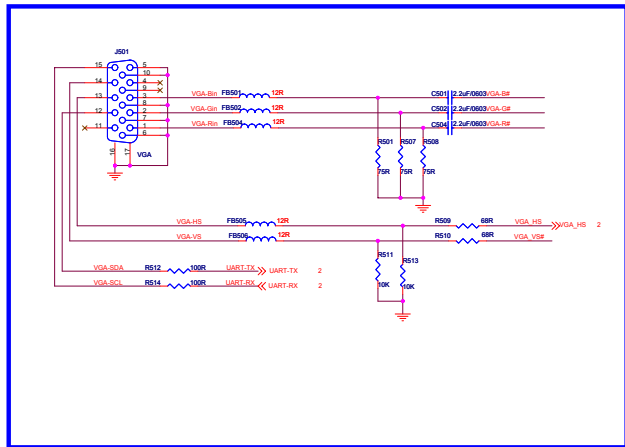
Keep ACSD trace with signal
Keep spacing for L/R



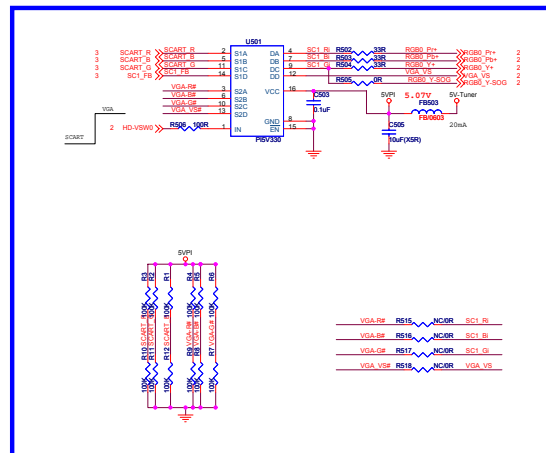
SCART中的Hsync信号采用SCART_V上的同步信号;



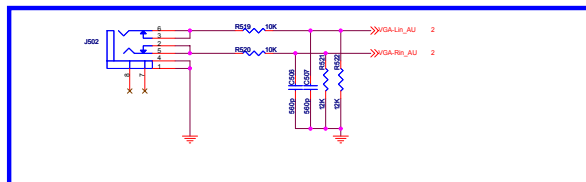
VGA IN



RGB SWITCH



VGA Audio IN



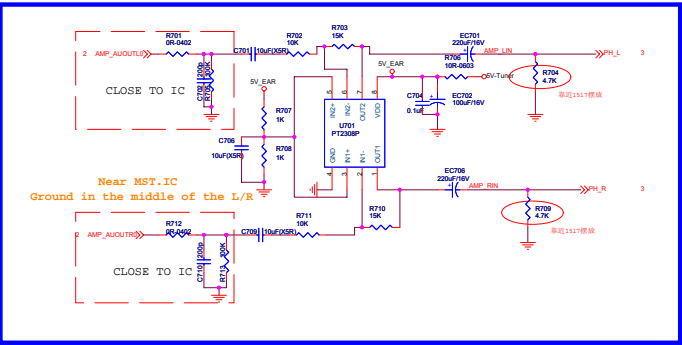
[illegible]

使用CDT-35P512-36时, C364、C367、C359和L32
L-件, C357=0.1uF, C365=0.1uF, R313=33K,
R314=33R, R312=51R, R315=51R

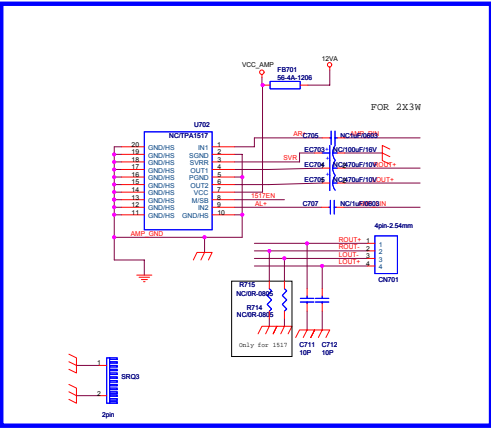
BPF FOR 38.9MHZ OR 38MHZ



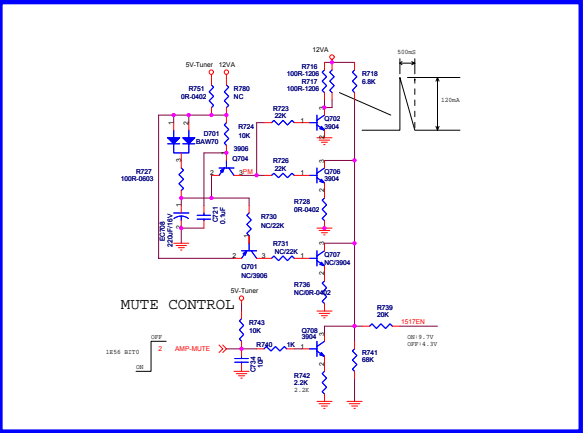
PRE-AMP:PT2308



TDA1517

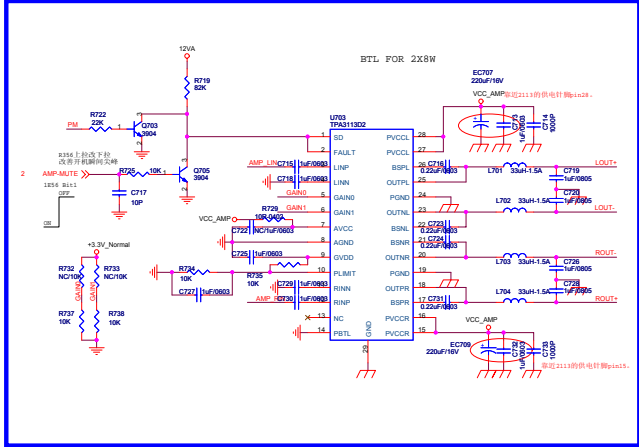


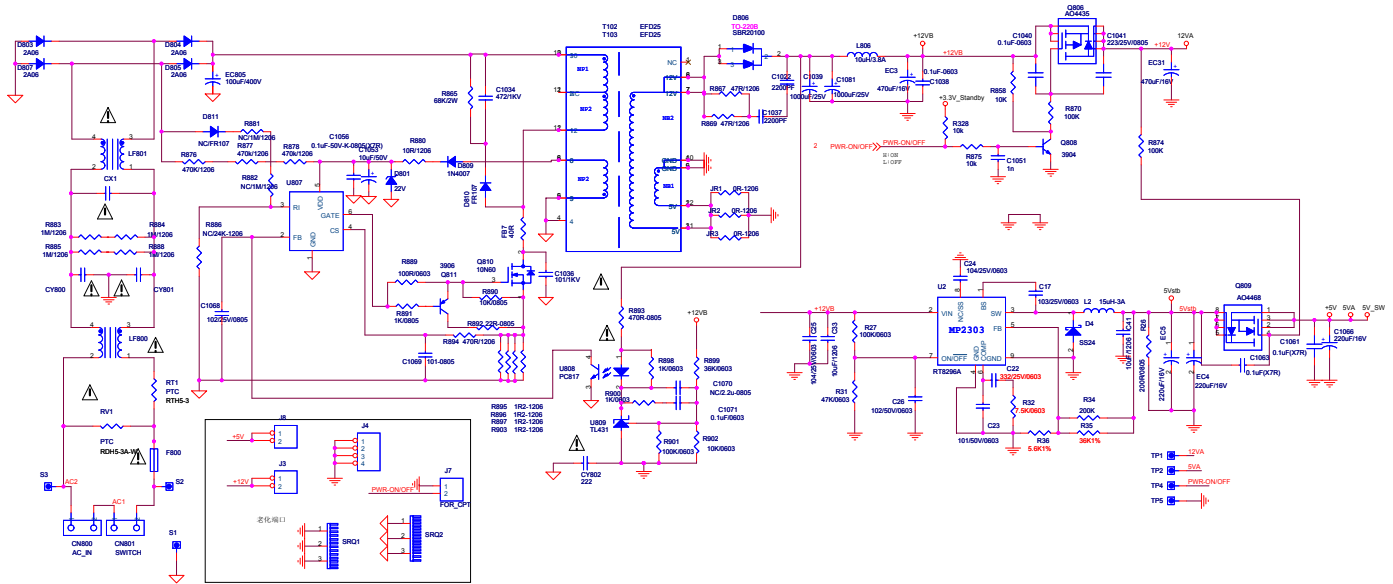
MUTE CONTROL

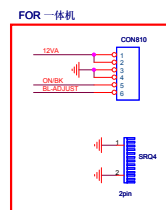


3113(3110)/2113/9108

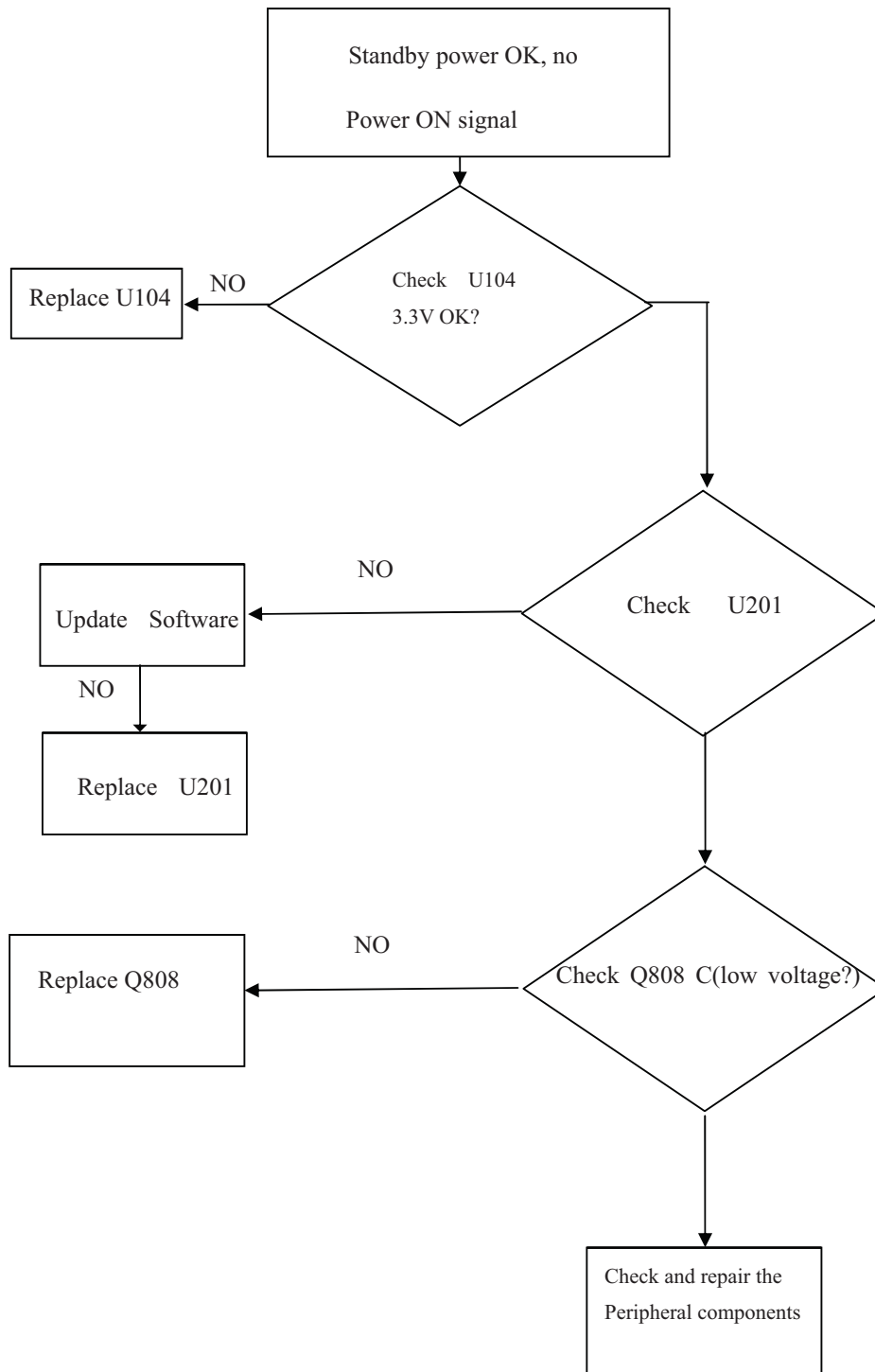
使用TDA1517时，删除了以下物料：
L701,L702,L703,L704,C719,C720,C726,C728,C715,C730,R719。

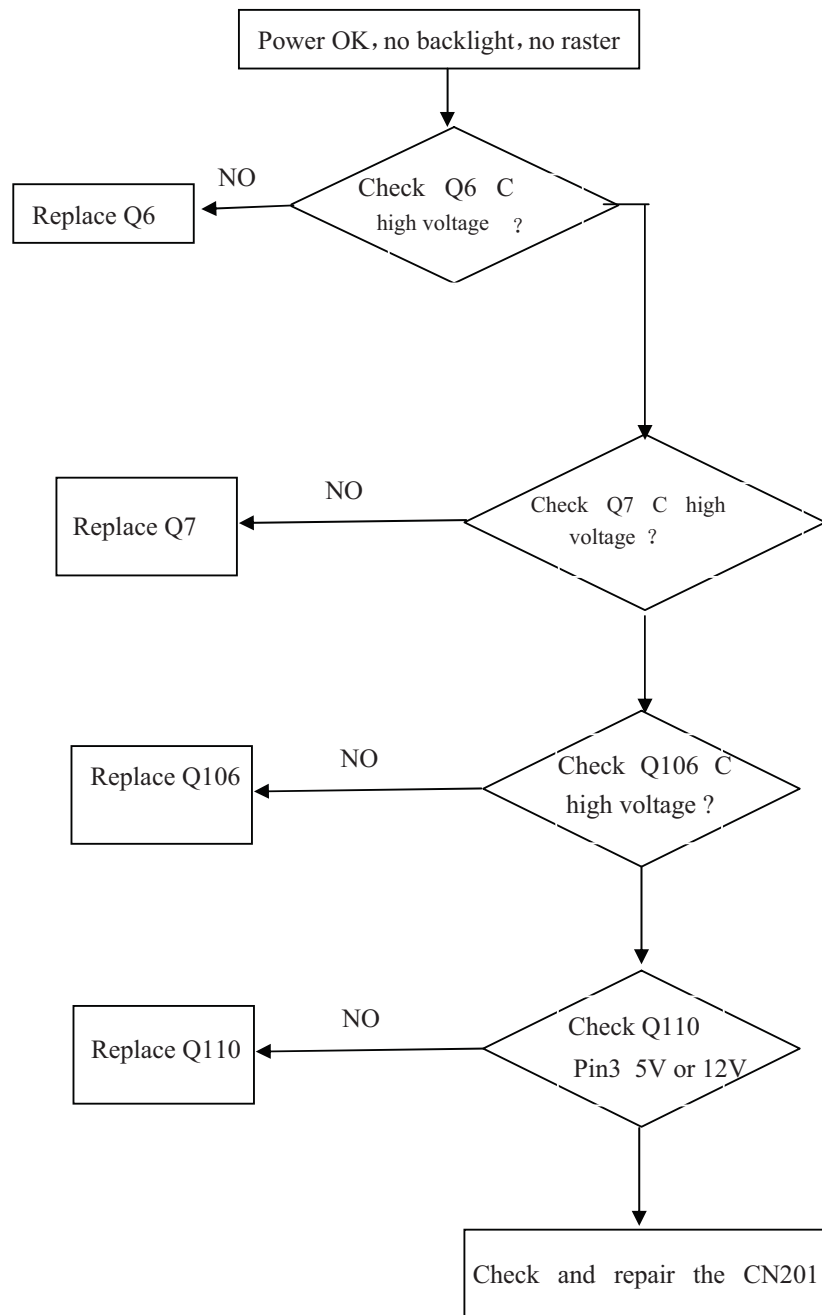


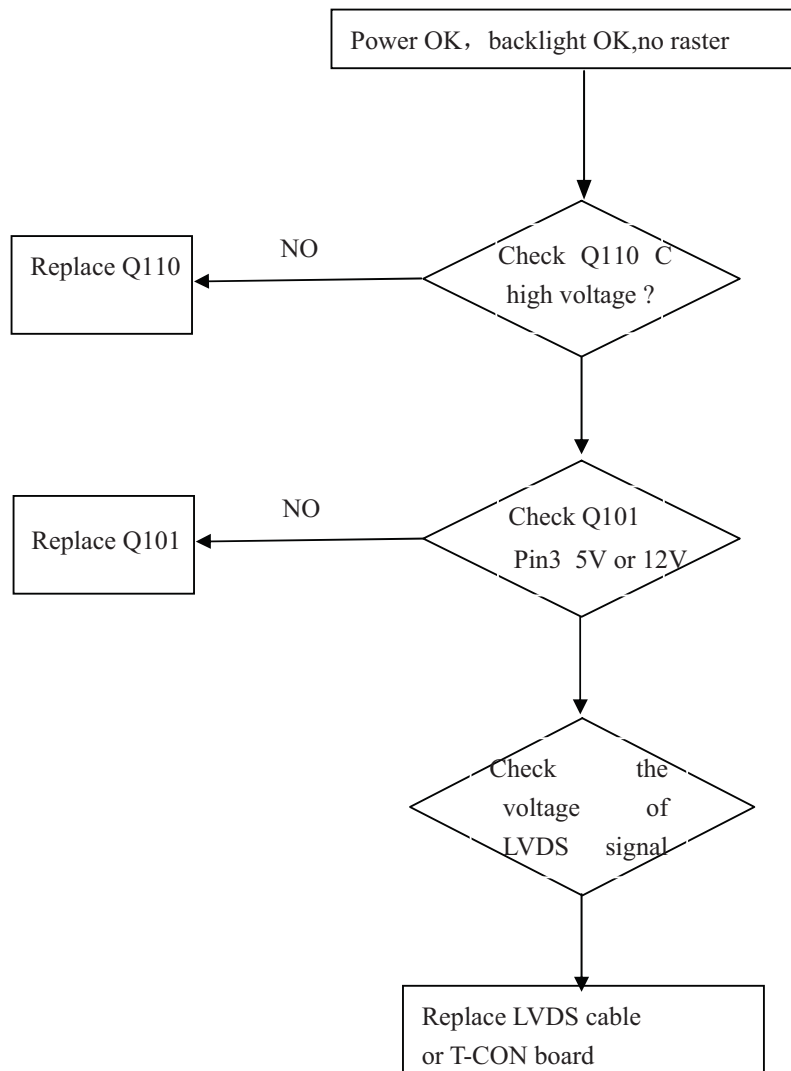


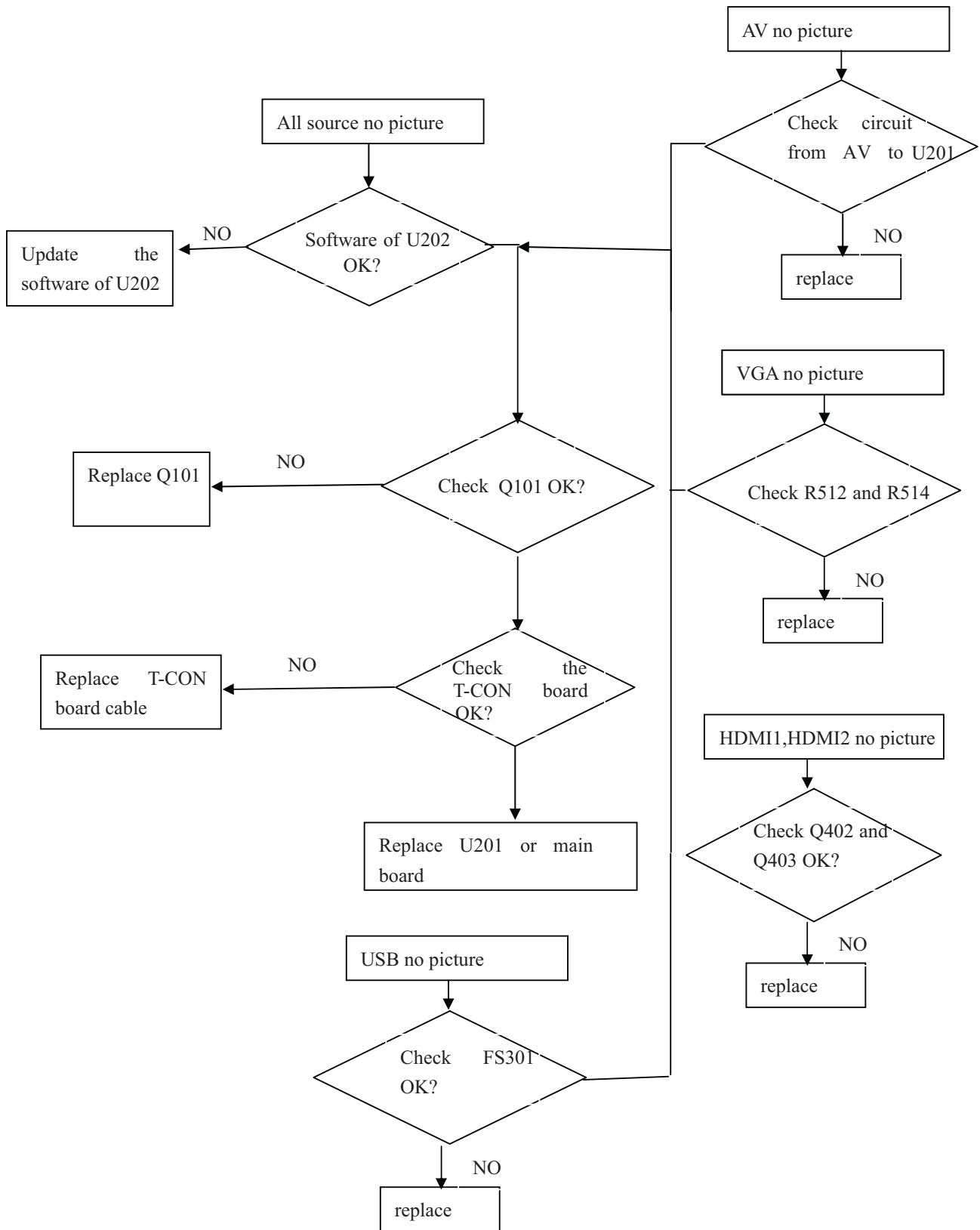


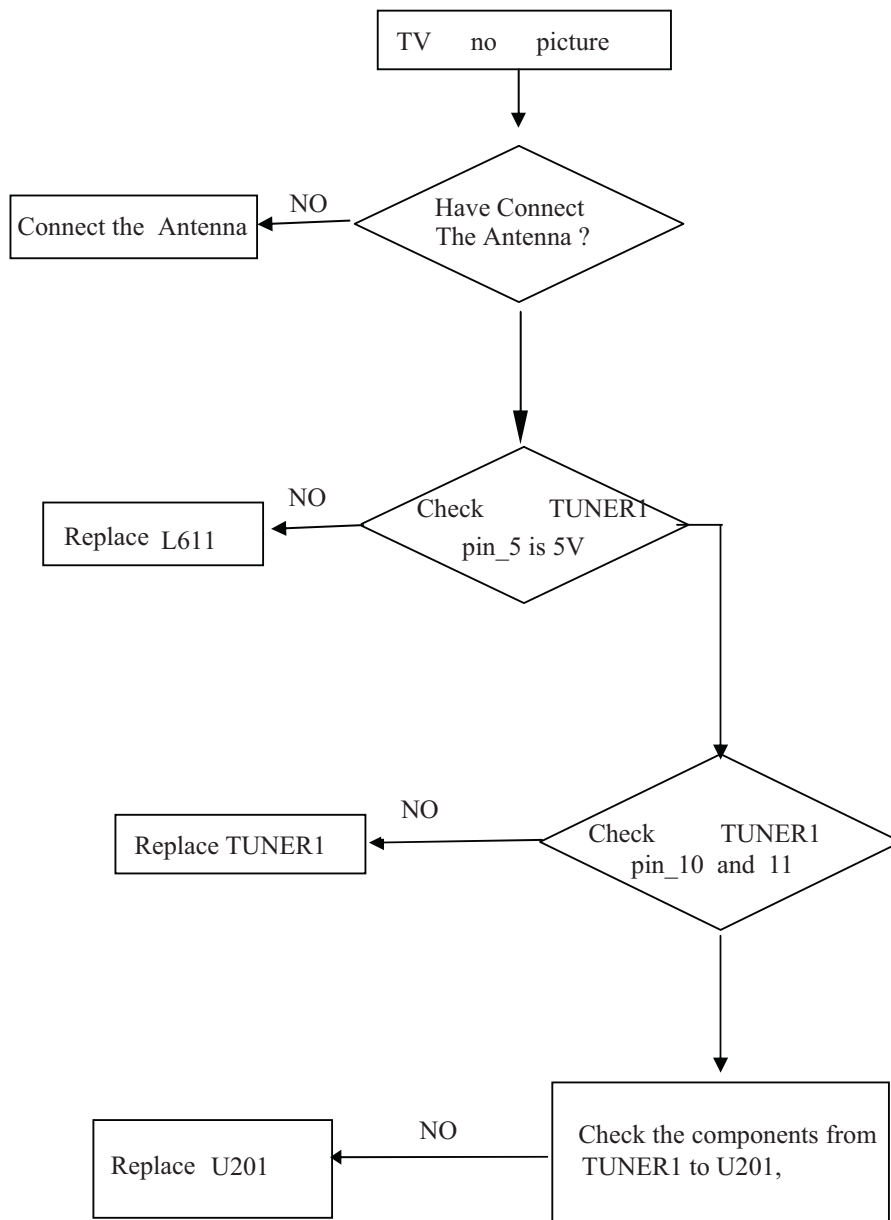
7. Troubleshooting

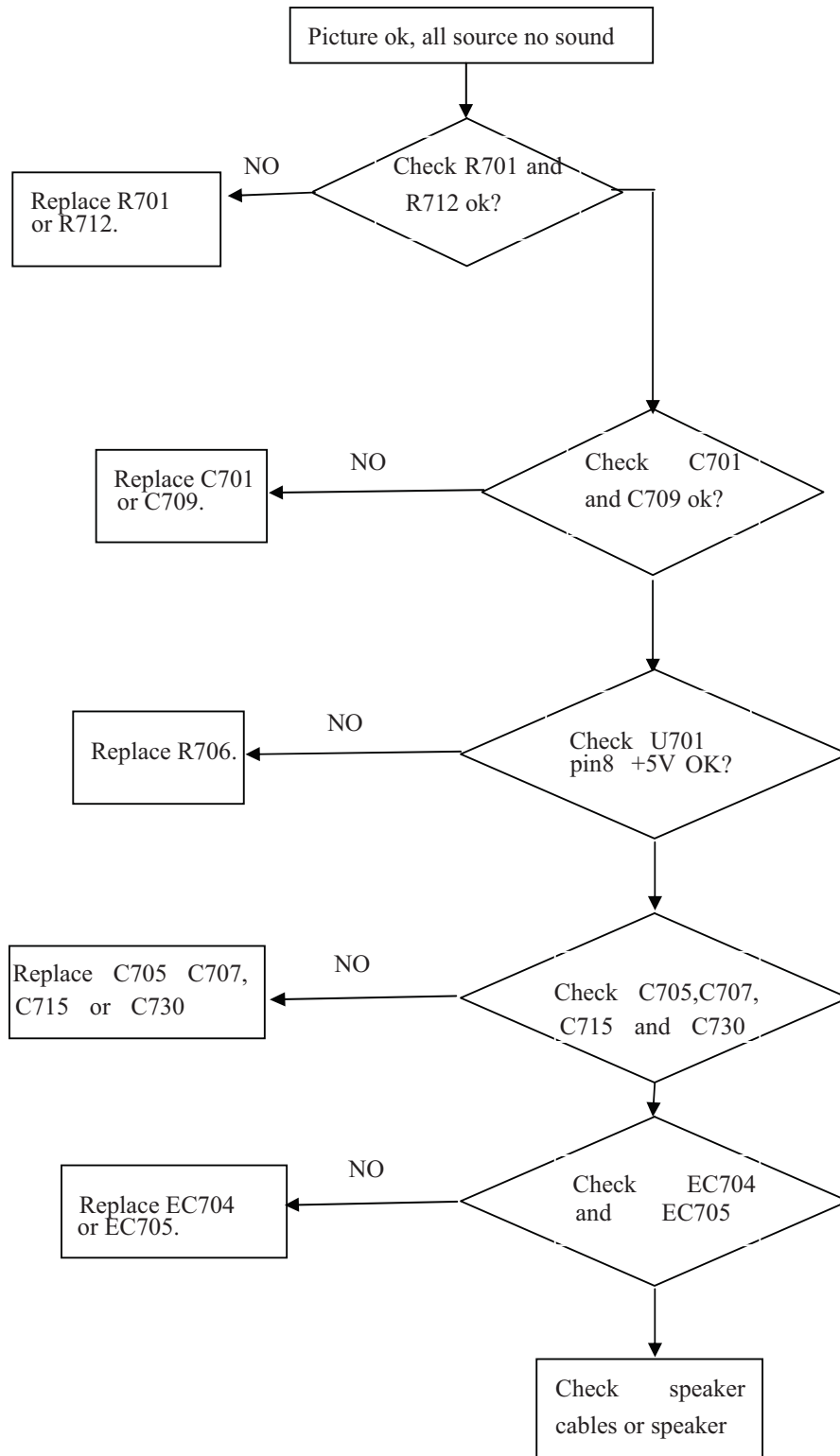






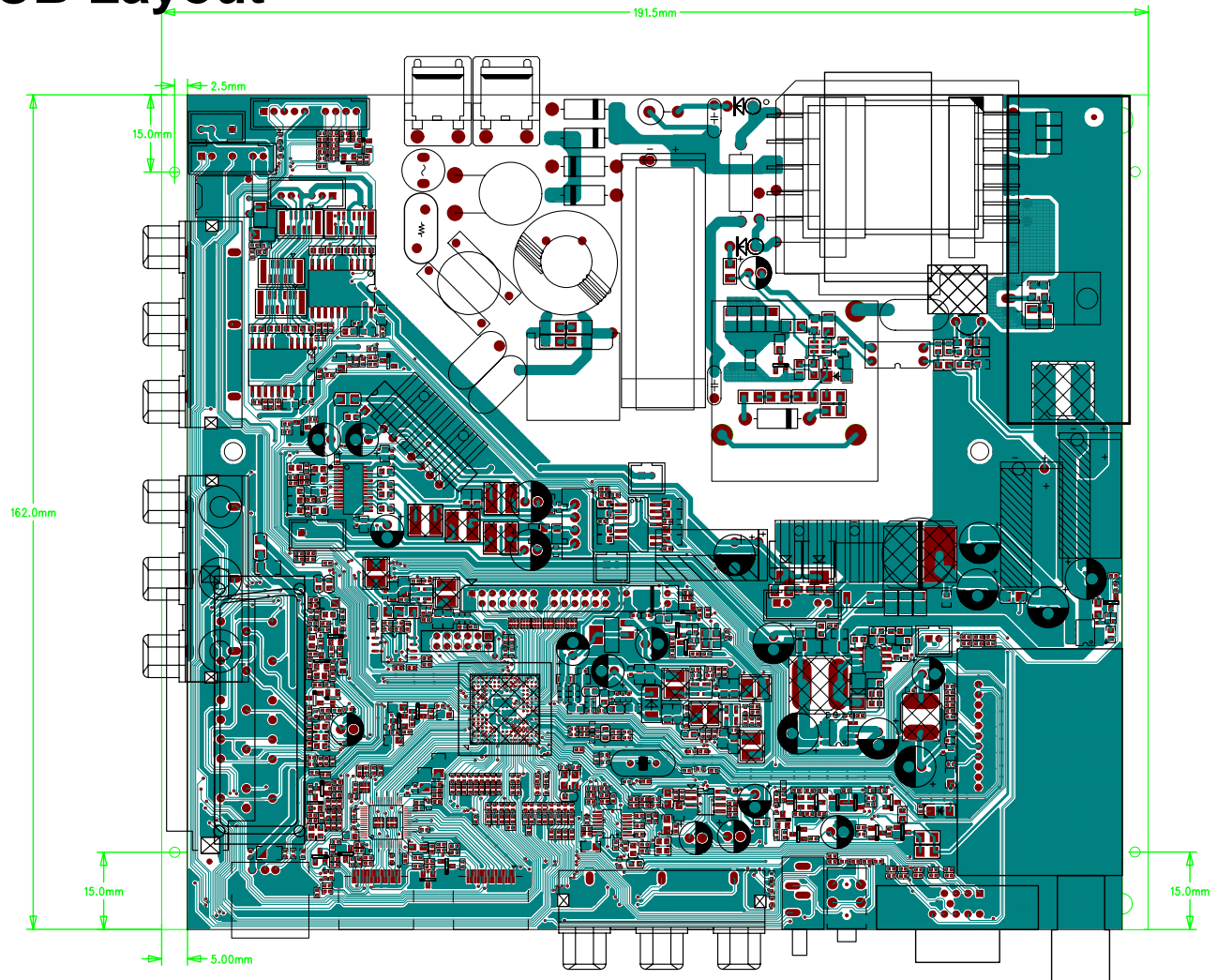




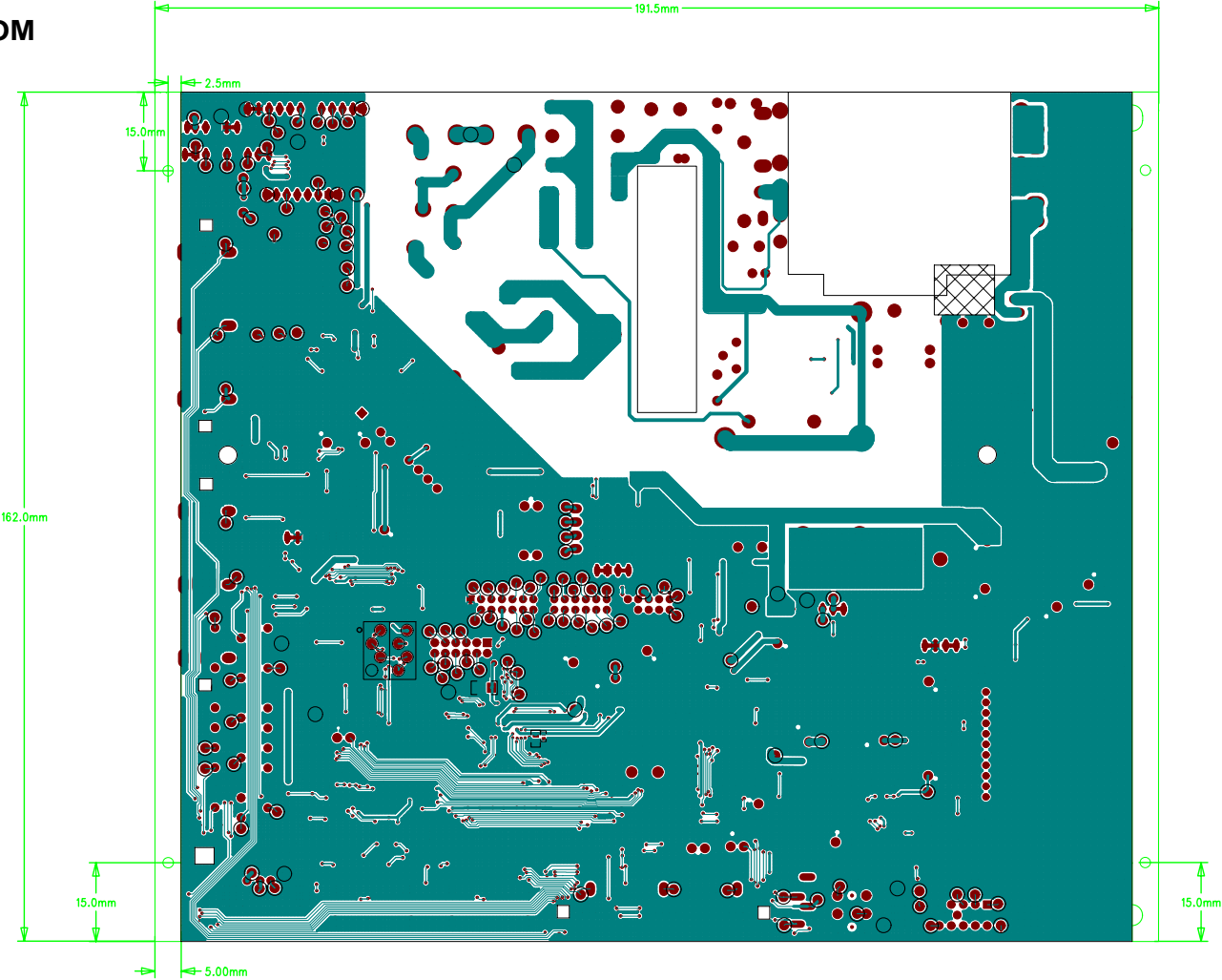


8. PCB Layout

TOP

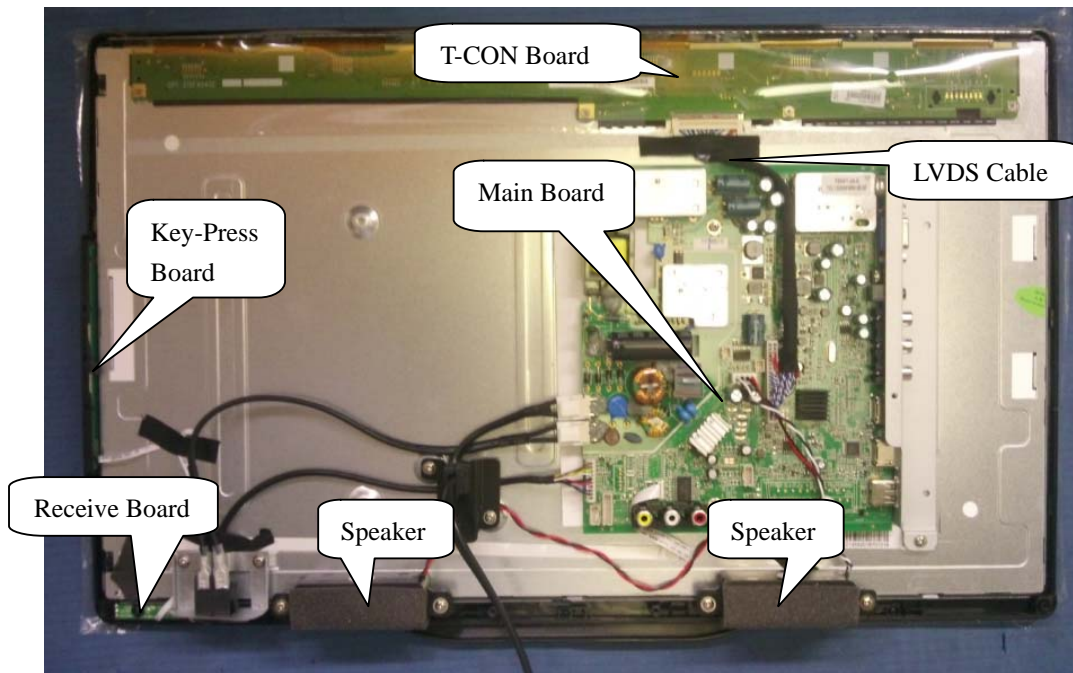


BOTTOM

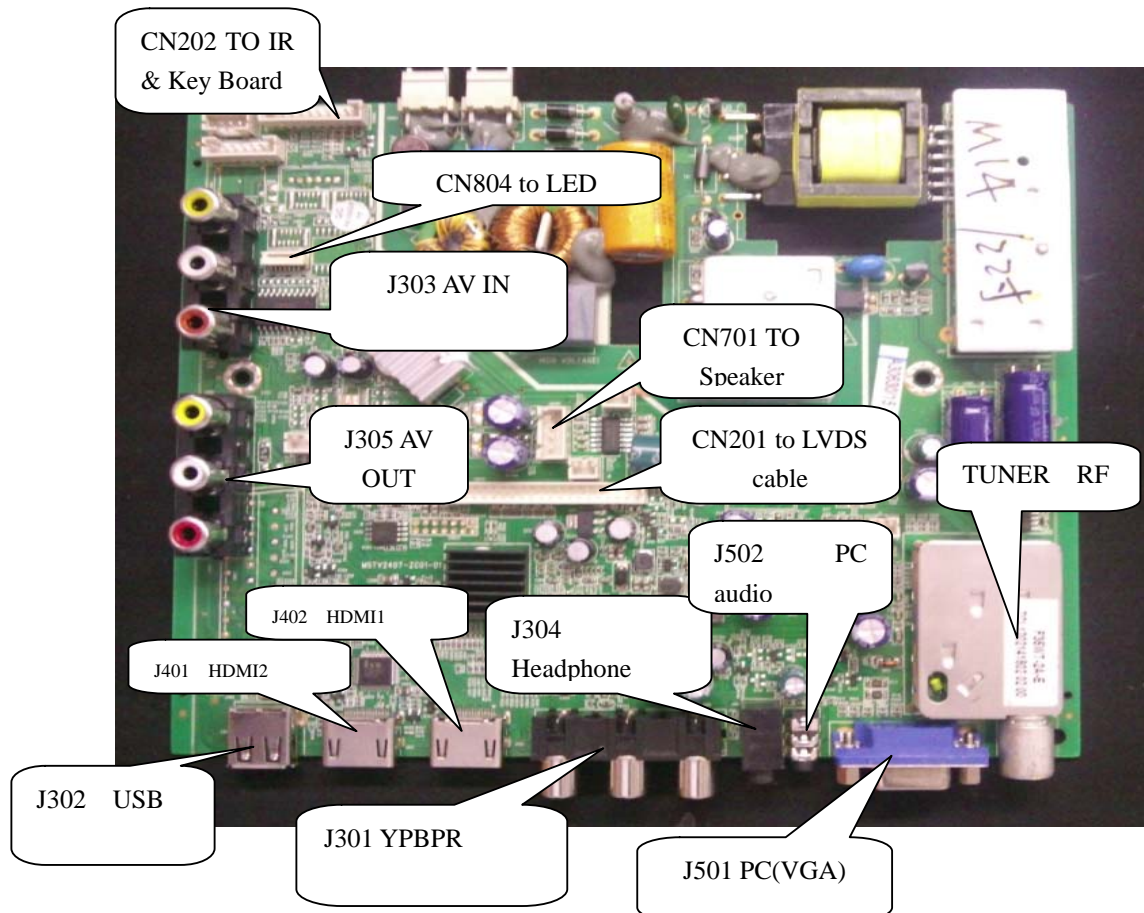


9. Exploded View

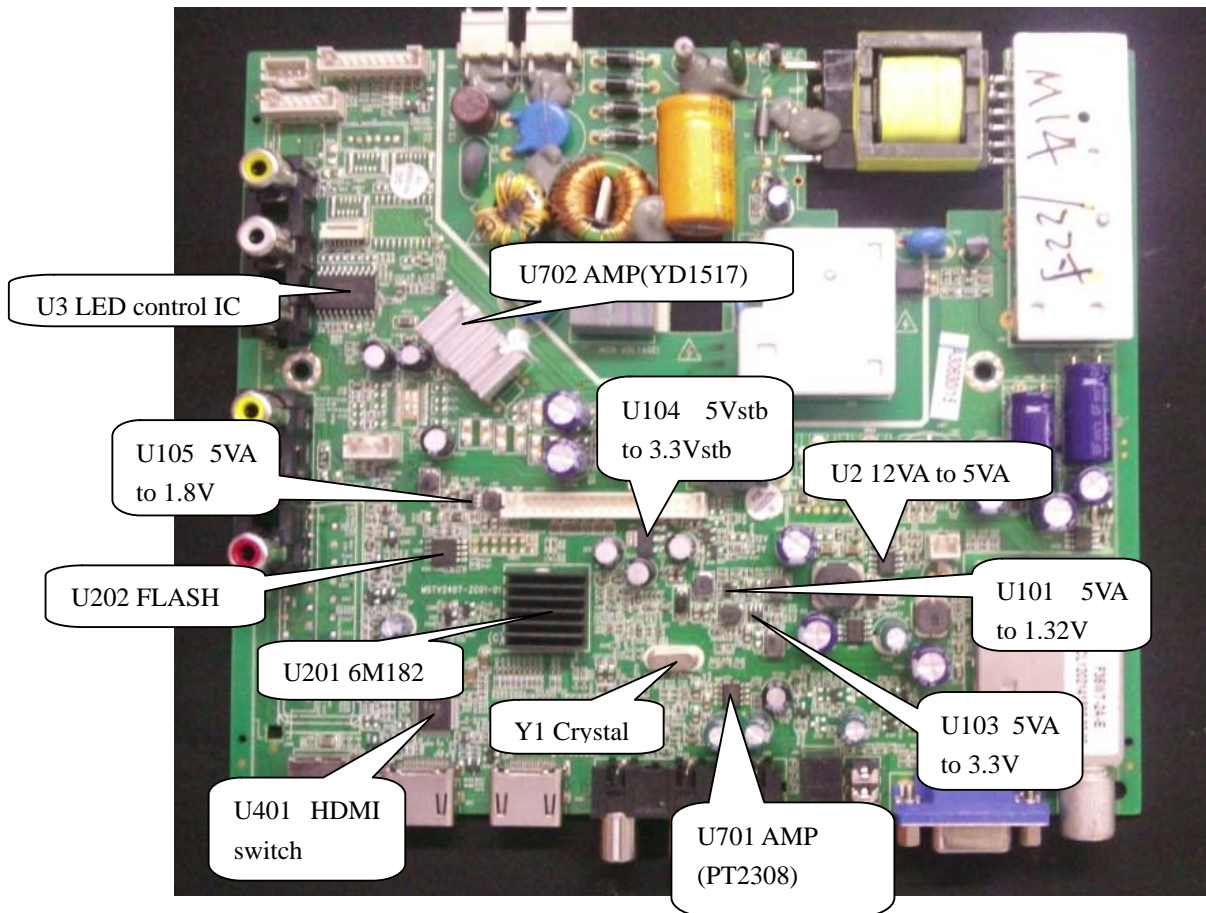
9.1 22LED TV set introduction



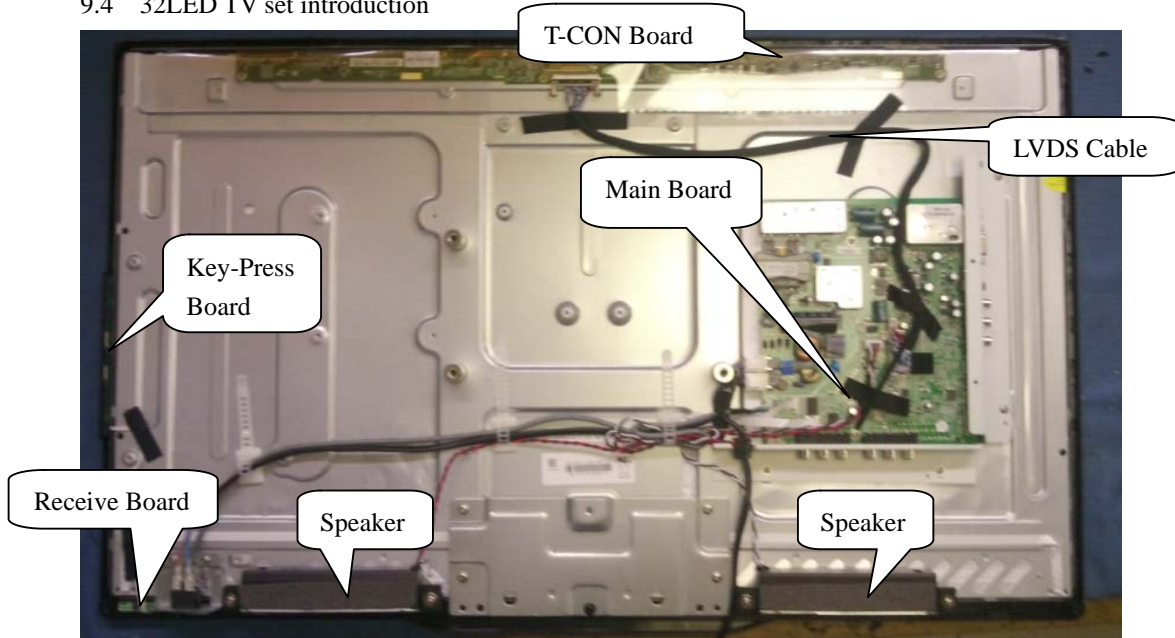
9.2 22LED Main board sockets introduction



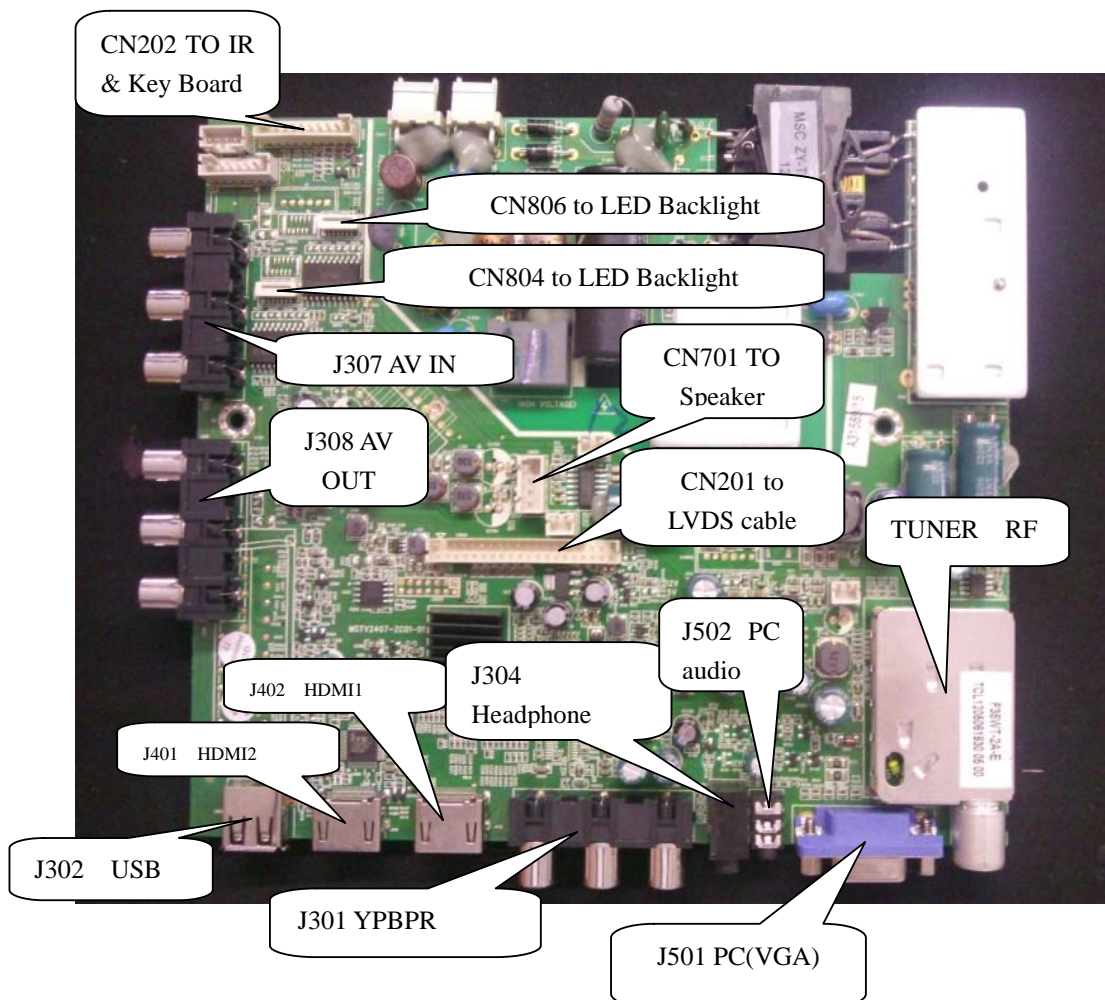
9.3 22LED Main board IC introduction



9.4 32LED TV set introduction



9.5 32LED Main board sockets introduction



Control IC

Control IC

05 5VA 1.8V

2 FLASH

U702 AMP(YD1517)

U104 5Vstb to 3.3Vstb

U2 12VA to 5VA

U101 5VA to 1.32V

U103 5VA to 3.3V

U701 AMP (PT2308)

Y1 Crystal

U201 6M182

U401 HDMI switch