

LCD Television Service Manual

Chassis: MTK5653

Product:

LTDN43K351WT

Ver 1.0

November, 2015

Contents

Contents	- 2 -
Service Manual	- 3 -
1. Precautions and notices.....	- 3 -
1.1 Warning.....	- 4 -
1.2 Notes	- 7 -
2. Product Function Specifications	- 9 -
2.1 TV Layout.....	- 9 -
2.2 Main board layout.....	- 11 -
2.3 Specification	- 13 -
3. Factory/Service OSD Menu and Adjustment.....	- 14 -
3.1 How to enter the Factory OSD Menu	- 14 -
3.2 Factory OSD Menu	- 17 -
4. Software Upgrading.....	- 19 -
Before upgrading, read the following.	- 19 -
4.1 USB Software Upgrading directly	- 20 -
4.2 USB upgrade defeat.....	- 20 -
4.3 Upgrading with the FlashTool V0.6.0.exe	- 22 -
4.4 Software update	- 27 -
5. Trouble shooting	- 33 -
5.1 Troubleshooting for Remote Control	- 34 -
5.2 Troubleshooting for Function Key.....	- 35 -
5.3 TV won't Power On.....	- 36 -
5.4 Troubleshooting for Audio.....	- 37 -
5.5 Troubleshooting for TV/VGA/HDMI input.....	- 38 -
5.6 Troubleshooting for YPbPr input.....	- 39 -
5.7 Troubleshooting for Video input.....	- 40 -
6. Signals Block Diagram and power assign:	- 40 -
7. Schematic circuit diagram	- 40 -
8. Explode View.....	- 40 -

Service Manual

1. Precautions and notices

BEFORE SERVICING THE LCD TV, READ THE SAFETY PRECAUTIONS IN THIS MANUAL.

USE ONLY MANUFACTURER SPECIFIED REPLACEMENT PARTS WHEN SERVICING.

USE OF NON-AUTHORIZED PARTS WILL VOID THE MANUFACTURE'S WARRANTY

Proper service and repair is important to the safe, reliable operation of all Hisense Equipment. The service procedures recommended by Hisense and described in this Service Guide are effective methods of performing service operations. Some of these service operations require the use of tools specially designed for the purpose. The special tools should be used when and as recommended.

It is important to note that this manual contains various CAUTIONS and NOTICES which should be carefully read in order to minimize the risk of personal injury to service personnel. The possibility exists that improper service methods may damage the equipment and pose risk of personal injury

. It is also important to understand that these CAUTIONS and NOTICES ARE NOT EXHAUSTIVE. Service should only be performed by an experienced electronics

technician trained in the proper Television safety and service methods and procedures
Hereafter throughout this manual, HISENSE will be referred to.

1.1 Warning

1.1.1

Critical components having special safety characteristics are identified with a ▲ by the Ref. No. in the parts list. Use of non-manufacturer's recommended parts may create shock, fire, or other hazards. Under no circumstances should the original design be modified or altered without written permission from RCA. Hisense Eassumes no liability, express or implied, arising out of any unauthorized modification of design. Servicetech assumes all liability.

DANGER CAUTION

TO ENSURE THE CONTINUED RELIABILITY OF THIS PRODUCT, USE ONLY ORIGINAL MANUFACTURER'S REPLACEMENT PARTS, WHICH ARE LISTED WITH THEIR PART NUMBERS IN THE PARTS LIST SECTION OF THIS SERVICE GUIDE.

1.1.2.

All ICs and many other semiconductors are susceptible to electrostatic discharges (ESD). Careless handling during repair can reduce life drastically. When repairing, be sure to use anti-static table mats and properly use a grounding wrist stra. Keep components and tools also at this same potential.

IMPORTANT:

Always disconnect the power cord from AC outlet before replacing parts or modules.

1.1.3

To prevent electrical shock, use only a properly grounded 3 prong outlet or extension cord.

1.1.4

When replacement parts are required, be sure to use replacement parts specified by the manufacturer or have the same characteristics as the original part. Unauthorized substitutions may result in fire, electric shock, or other hazards and will void the manufacturer's warranty.

1.1.5

Safety regulations require that after a repair the set must be returned in its original condition. In addition, prior to closing set, check that:

-Note:

>All wire harnesses and flex cables are properly routed and secured with factory tape and/or mounted cable clamps.

> All cables and connectors are properly insulated and do not have any bare wires/lead exposed

1.1.6

(1) Do not supply a voltage higher than that specified to this product. This may

damage the product and may cause a fire.

(2) Do not use this product:

> High humidity areas

> In an area where any water could enter or splash into the unit.

High humidity and water could damage the product and cause fire.

(3) If a foreign substance (such as water, metal, or liquid) gets inside the panel module, immediately turn off the power. Continuing to use the product may cause fire or electric shock.

(4) If the product emits smoke, and abnormal smell, or makes an abnormal sound, immediately turn off the power. Continuing to use the product, it may cause fire or electric shock.

(5) Do not pull out or insert the power cable from/to an outlet with wet hands. It may cause electric shock.

(6) Do not damage or modify the power cable. It may cause fire or electric shock.

(7) If the power cable is damaged, or if the connector is loose, do not use the product: otherwise, this can lead to fire or electric shock.

(8) If the power connector or the connector of the power cable becomes dirty or dusty, wipe it with a dry cloth. Otherwise, this can lead to fire.

(9) Use only with the cart, stand, tripod, bracket, or table specified by the manufacturer, or sold with the apparatus. When a cart is used, use caution when moving the cart/apparatus combination to avoid injury from tip-over

1.2 Notes

Notes on Safe Handling of the LCD panel and during service

The work procedures shown with the Note indication are important for ensuring the safety of the product and the servicing work. Be sure to follow these instructions.

- Before starting the work, secure a sufficient working space.
- At all times other than when adjusting and checking the product, be sure to turn OFF the POWER Button and disconnect the power cable from the power source of the TV during servicing.
- To prevent electric shock and breakage of PC board, start the servicing work at least 30 seconds after the main power has been turned off. Especially when installing and removing the power board, start servicing at least 2 minutes after the main power has been turned off.
- While the main power is on, do not touch any parts or circuits other than the ones specified. If any connection other than the one specified is made between the measuring equipment and the high voltage power supply block, it can result in electric shock or may trip the main circuit breaker When installing the LCD module in, and removing it from the packing carton, be sure to have at least two persons perform the work.
- When the surface of the panel comes into contact with the cushioning materials, be sure to confirm that there is no foreign matter on top of the cushioning materials before the surface of the panel comes into contact with the cushioning materials. Failure to observe this precaution may result in, the surface of the panel being scratched by foreign

matter.

- Be sure to handle the circuit board by holding the large parts as the heat sink or transformer. Failure to observe this precaution may result in the occurrence of an abnormality in the soldered areas.
- Do not stack the circuit boards. Failure to observe this precaution may result in problems resulting from scratches on the parts, the deformation of parts, and short-circuits due to residual electric charge.
- Perform a safety check when servicing is completed. Verify that the peripherals of the serviced points have not undergone any deterioration during servicing. Also verify that the screws, parts and cables removed for servicing purposes have all been returned to their proper locations in accordance with the original setup.



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

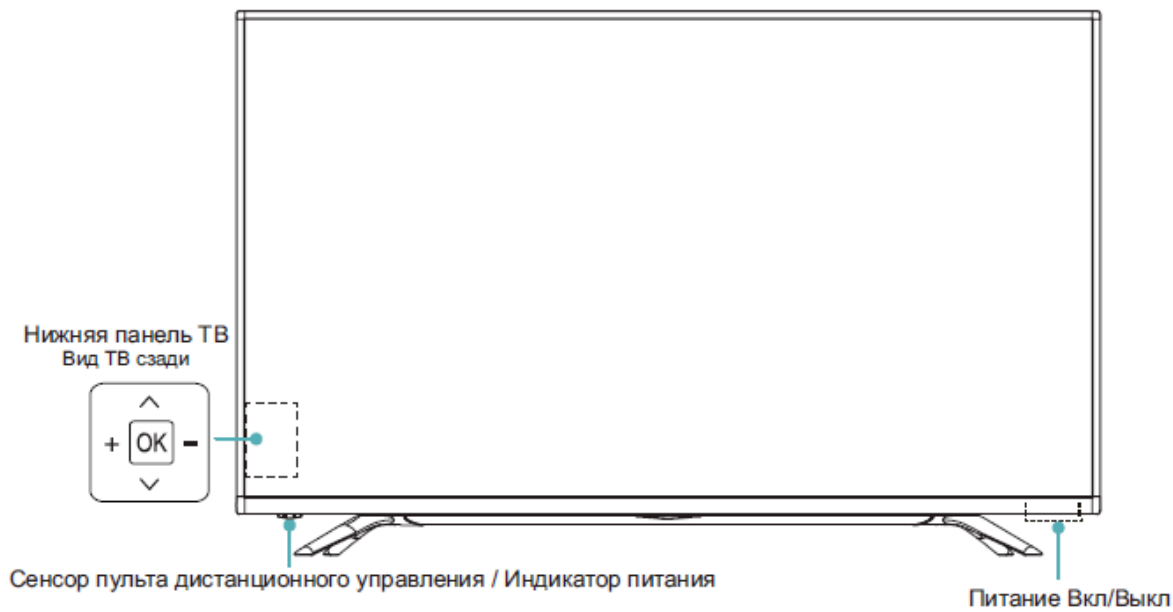



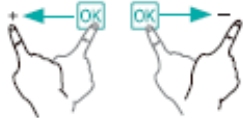
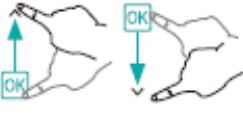
The exclamation point within an equilateral triangle is intended to alert the user to the presence of important operating and maintenance (servicing) instructions in the literature accompanying the set.

2. Product Function Specifications

2.1 TV Layout

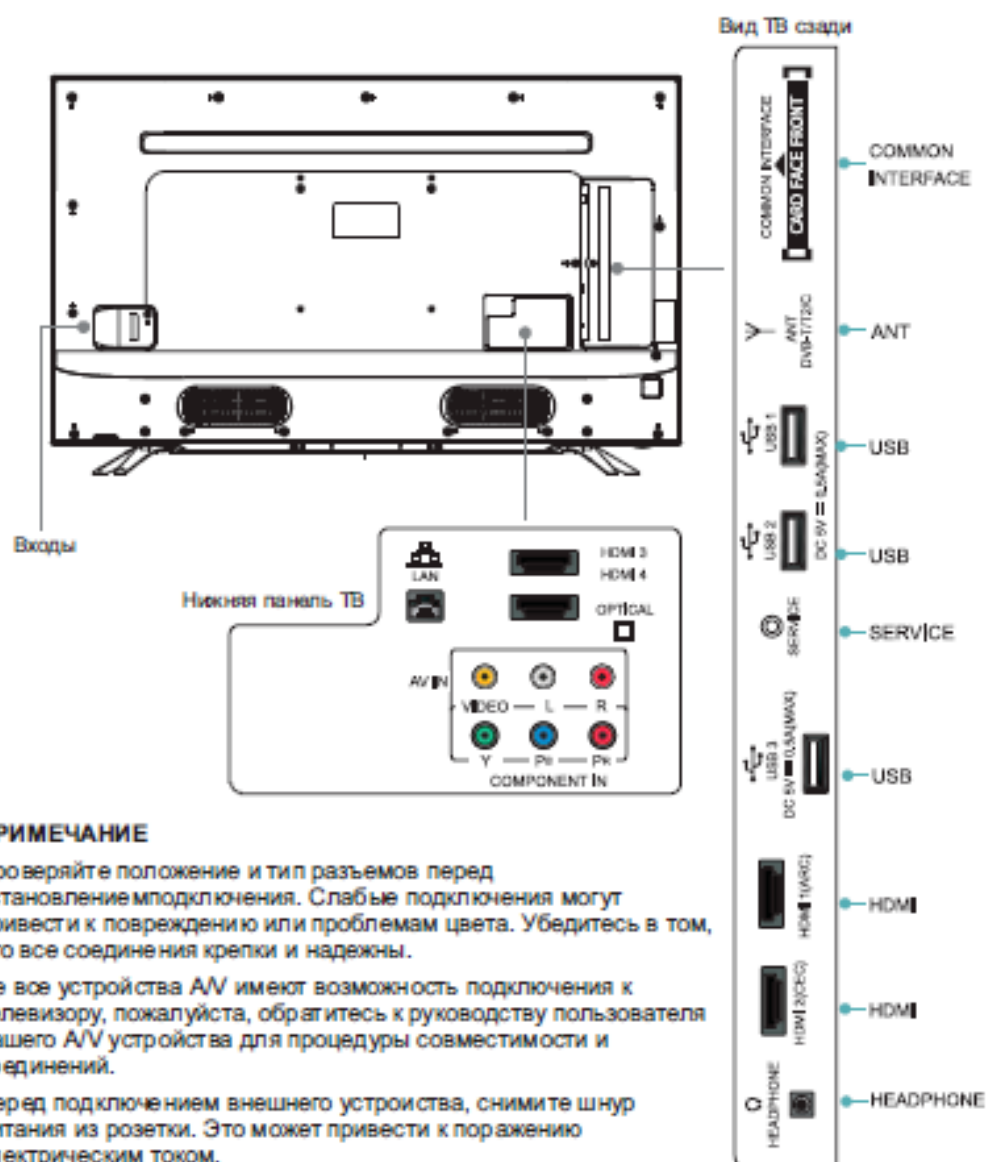
LTDN43K351WT mould



Пункт	Описание
Переключатель питания	Включения или выключения главного питания.
Сенсор пульта дистанционного управления	Предназначен для приема сигналов от пульта дистанционного управления. Не кладите ничего возле датчика, так как это может повлиять на его функционирование.
Индикатор питания	Когда включен горит синий цвет и в режиме ожидания когда горит красный цвет.
	Выберите тип входного сигнала среди различных входного сигнала или поставьте телевизор в режим ожидания, или вы можете включить телевизор, если телевизор находится в режим ожидания.
	Нажмите кнопку OK влево и вправо для регулировки громкости.
	Нажмите кнопку OK вверх и вниз для выбора канала.

📌 ПРИМЕЧАНИЕ

- Рисунки только для справки.
- Чтобы загрузить программу телевизор будет включаться несколько секунд. Быстрое отключение телевизора может привести к некорректной работе ТВ.



⚠ ПРИМЕЧАНИЕ

- Проверьте положение и тип разъемов перед установлением подключения. Слабые подключения могут привести к повреждению или проблемам цвета. Убедитесь в том, что все соединения крепки и надежны.
- Не все устройства A/V имеют возможность подключения к телевизору, пожалуйста, обратитесь к руководству пользователя вашего A/V устройства для процедуры совместимости и соединений.
- Перед подключением внешнего устройства, снимите шнур питания из розетки. Это может привести к поражению электрическим током.

► **ANT** Подключение внешней VHF/UHF антенны или кабеля.

2.2 Main board layout

Model	Main board、Power board	LVDS cable(Main-panel)	Panel Model
LTDN43K351WT	MB : RSAG2. 908. 6450\ROH 、 PB : RSAG2. 908. 5687-25\ROH	HX2-2×22KLB350P-LG\350\ROH	HE426HF-B51

Main board :6450 (LTDN43K351WT)

The TOP of 6450



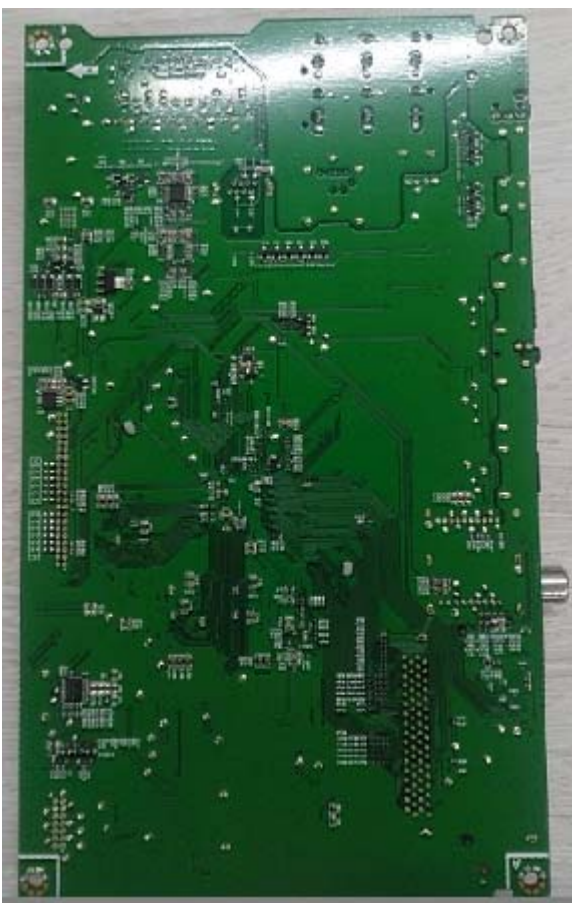
Note:

The detail terminals function see the Page 10 please.

Side viewing of 6450 (LTDN43K351WT)



Rear viewing of 6450 (LTDN43K351WT)



2.3 Specification

Технические характеристики

Модель		F43B8000H
Размеры	С подставкой	Ширина: 37.9 дюймов (963 мм) Высота: 22.6 дюймов (573 мм) Глубина: 2.4 дюймов (60 мм)
	Без подставки	Ширина: 37.9 дюймов (963 мм) Высота: 23.9 дюймов (607 мм) Глубина: 7.2 дюймов (183 мм)
Вес	С подставкой	27.3 фунтов (12.4 кг)
	Без подставки	28.2 фунтов (12.8 кг)
Размер LED панели (диагональ)		43 дюйма
Разрешение экрана		1920x1080
Мощность звуковой частоты		8W + 8W
Удельная мощность рабочего режима		0.022 Вт/см ²
Потребляемая мощность в режиме ожидания		0.35 Вт
Потребляемая мощность в выключенном состоянии		0 Вт
Энергопотребление в режиме ожидания		<0.5 Вт
Энергопотребление в выключенном состоянии		0 Вт
Принимаемые системы	Аналоговая	PAL-D/K, B/G, I SECAM-D/K, B/G, L/L'
	Цифровая	DVB-T, DVB-T2, DVB-C
Рабочие условия		Температура: 41°F - 95°F (5°C - 35°C) Влажность: 20% - 80% RH (относительная влажность) Атмосферное давление: 86 кПа - 106 кПа

3. Factory/Service OSD Menu and Adjustment


3.1 How to enter the Factory OSD Menu

Remote control picture as below

Note: The picture is only for reference, detail image see the User Manual, Please.



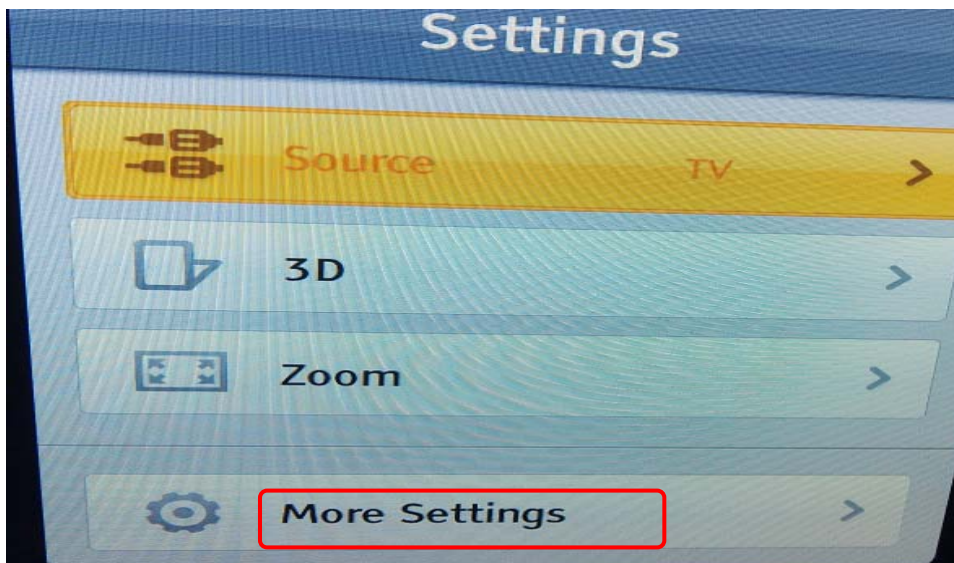
. With user's RC

1. Power TV On
2. Press  button and call up "Setting" Menu.
3. Setting -> More setting then press "Ok" button on RC.
4. Select Sound-> Speaker setting -> Balance
5. when Balance is "0" ,Enter 1->9->6->9 in sequence.

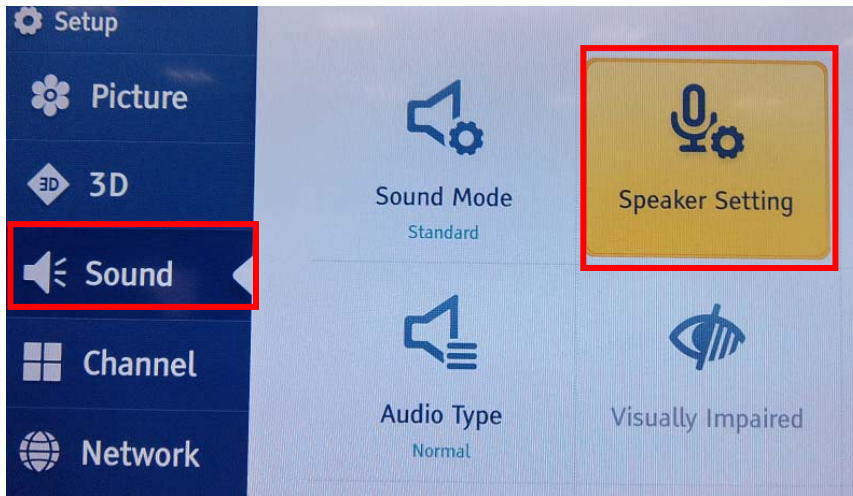
Note: If necessary, re-enter number keys.

6. Factory OSD appears.
7. DC turn off and turn on the TV, which can exit the factory OSD.

Figures as following:



Next



When Balance is “0” , Enter 1->9->6->9 in sequence. Then enter Factory Mode.
Appear “M” in the screen.



3.2 Factory OSD Menu

(Take LTDN43K351WT for example)

Factory OSD Menu includes factory menu and Design menu. The data of TV software has written already in Hisense, need not to reset and adjust.

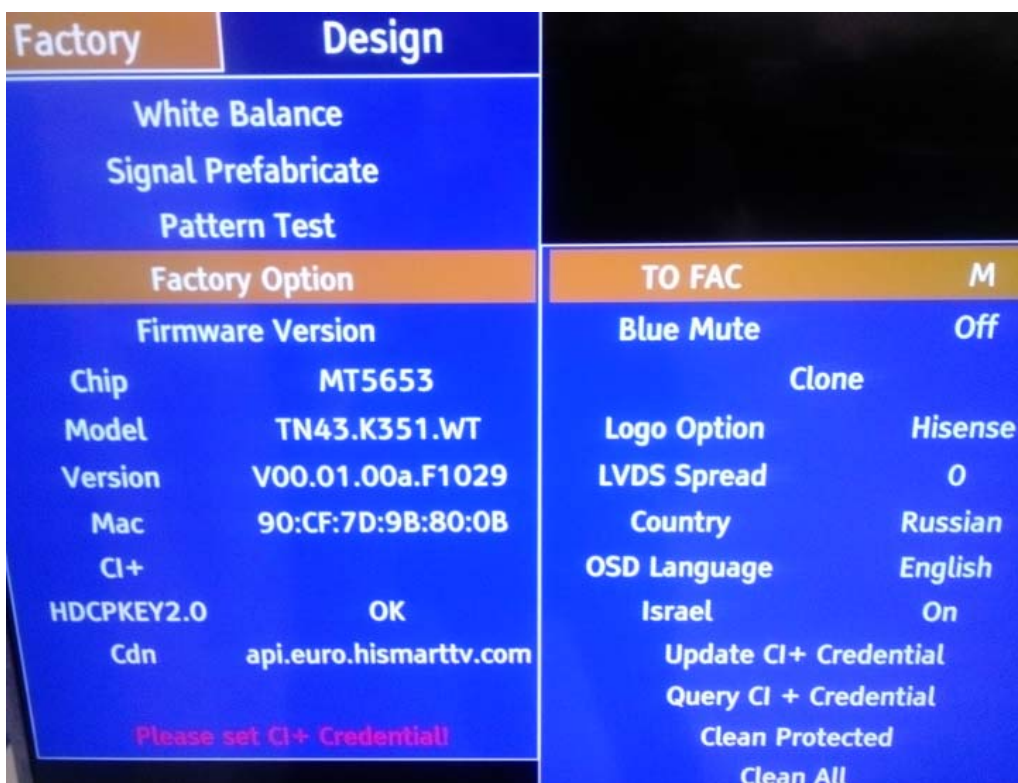
3.2.1 White Balance

Note: Different source has different WB values. Before adjusting, please change to desired source.

Factory	Design	
White Balance		Panel type B1
Signal Prefabricate		R Gain 128
Pattern Test		G Gain 128
Factory Option		B Gain 128
Firmware Version		R Offset 128
Chip	MT5653	G Offset 128
Model	TN43.K351.WT	B Offset 128
Version	V00.01.00a.F1029	
Mac	90:CF:7D:9B:80:0B	
CI+		
HDCPKEY2.0	OK	
Cdn	api.euro.hismarttv.com	
Please set CI+ Credential!		

3.2.1 Signal prefabricate

Factory	Design	
White Balance		
Signal Prefabricate		Huang Dao (old)
Pattern Test		Huang Dao (new)
Factory Option		Qing Dao
Firmware Version		Gui Yang
Chip	MT5653	Jiang Men
Model	TN43.K351.WT	Egypt
Version	V00.01.00a.F1029	South Africa
Mac	90:CF:7D:9B:80:0B	Algeria
CI+		Syria
HDCPKEY2.0	OK	Malaysia
Cdn	api.euro.hismarttv.com	Iran
Please set CI+ Credential!		Indonesia
		Russia
		Poland



	Item	Default	Options	Notes
1	MODE	M	M, U	<p>M-Can enter factory mode with factory RC or user RC.</p> <p>U-Can enter factory mode only with user' s RC.</p>

Note: MODE “M” is only used for factory production.

Clear the EEPROM

Item	Meaning	Note
Clean Protected	Clear partly	
Clean All	Clear completely	Clean all data

Factory		Design	
White Balance			
Signal Prefabricate			
Pattern Test			
Factory Option			
Firmware Version		Soft num	003
Chip	MT5653	Version	V00.01.00a.F1029
Model	TN43.K351.WT	Panel Info	HE426HF-B51 FHD
Version	V00.01.00a.F1029		
Mac	90:CF:7D:9B:80:0B		
CI+			
HDCPKEY2.0	OK		
Cdn	api.euro.hismarttv.com		
Please set CI+ Credential!			

3.2.4 Firmware Version

Note: The factory menu data varies according to different sources. In case changing the factory data by error, you can choose to “Clean Protected”, by which you can resume the default value.

To clear the EEPROM:

- Select the item “Clean all” .
- Press VOL+ button to clear the EEPROM data.
- Close the OSD menu after 5 seconds.
- Restart the TV.

Note:

Above “Factory/Service OSD Menu” is reference for chassis MTK5653 , please refer to the actual units to determine the appearances.

4. Software Upgrading

Before upgrading, read the following.

First: Upgrade the software.

Second: To clear the EEPROM .

- Select the item “Clear Unprotected”.
- Press VOL+ button to clear the EEPROM data.
- Close the OSD menu after 5 seconds.
- Restart the TV.

Last: After the operation above all, necessarily, Re-search the channels for the users

4.1 USB Software Upgrading directly

The software can be upgraded by USB Disk.

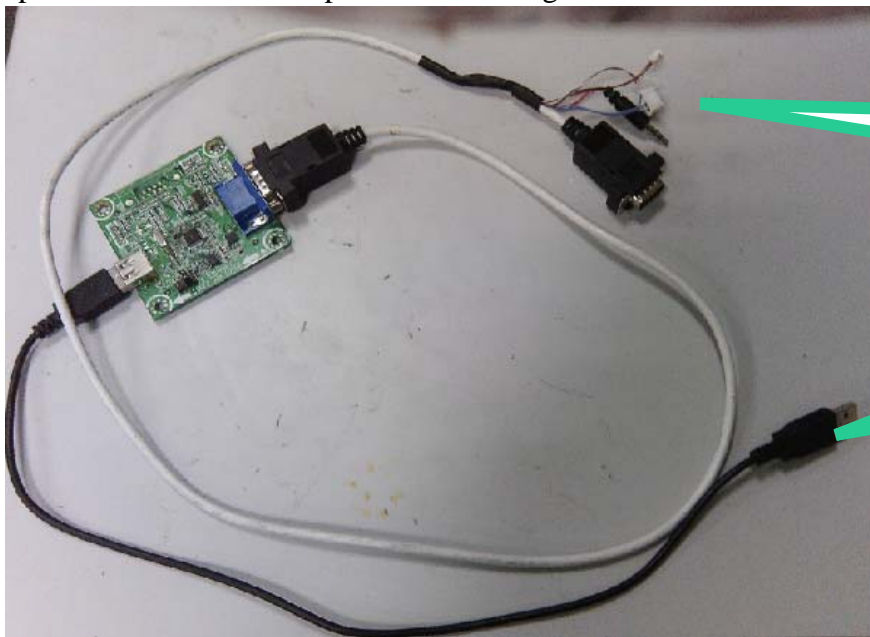
- First, copy the upgrade_loader.pkg file to USB Disk;.
- Second, make sure there is no other .pkg file in the root directory of USB Disk .
- Insert USB Disk to USB port, and then turn on the TV.
- The TV will identify the software and upgrade automatically.

4.2 USB upgrade defeat

If USB upgrading defeat, then need burning the emmc flash program file“ *.bin ”to the flash IC.

Hardware connecting

Connect the unit to your pc with a USB-to-serial port cable. USB port connects to your PC and serial port to the TV's RS232 port. As following



Connect to
the TV RS232
port

USB Connect to
the PC

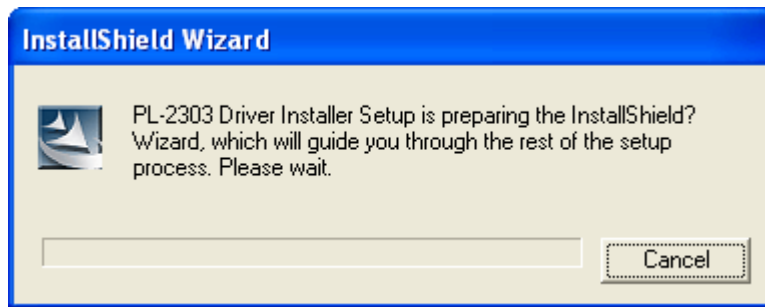
4.2.1 Install the driver

Double click the icon



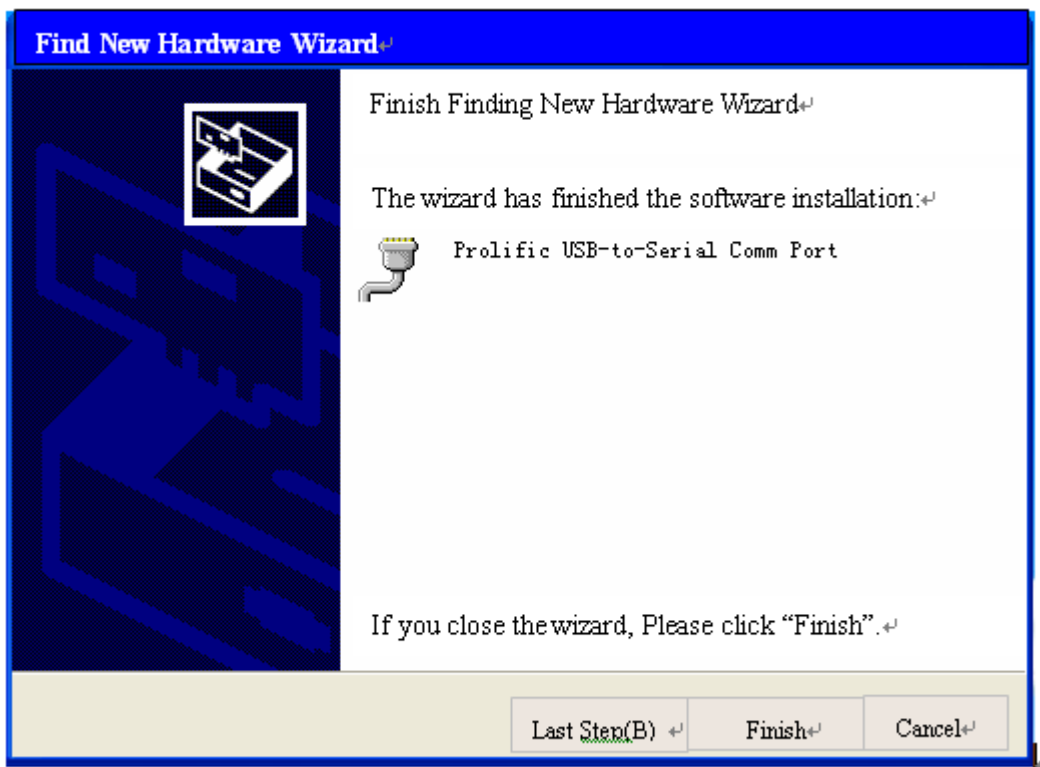
PL-2303 Driver
Installer.exe

, install the driver.



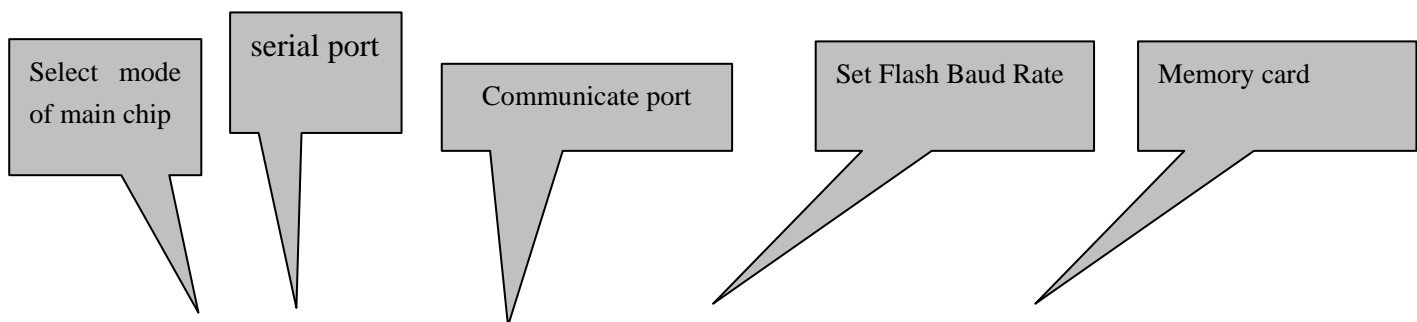
Select the default value, the driver will be installed step by step.

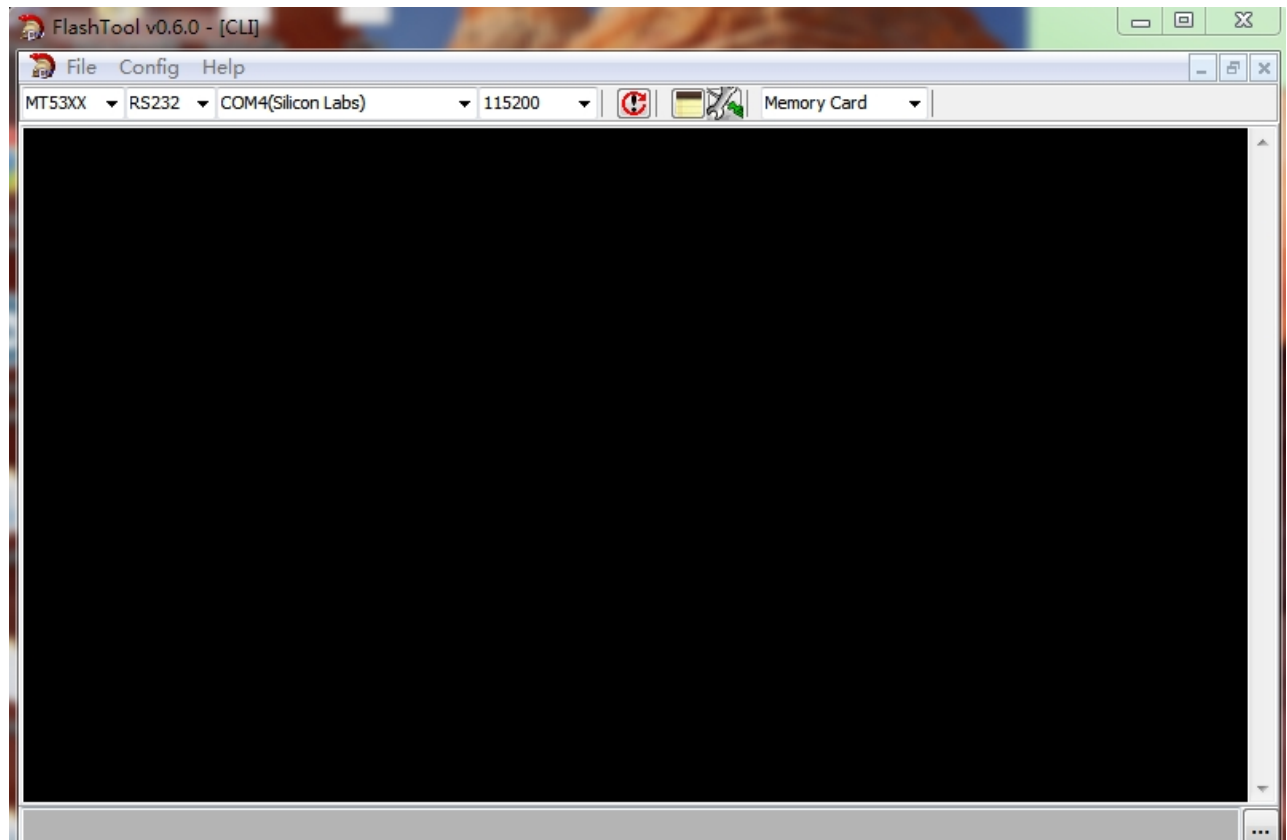




4.3 Upgrading with the FlashTool V0.6.0.exe

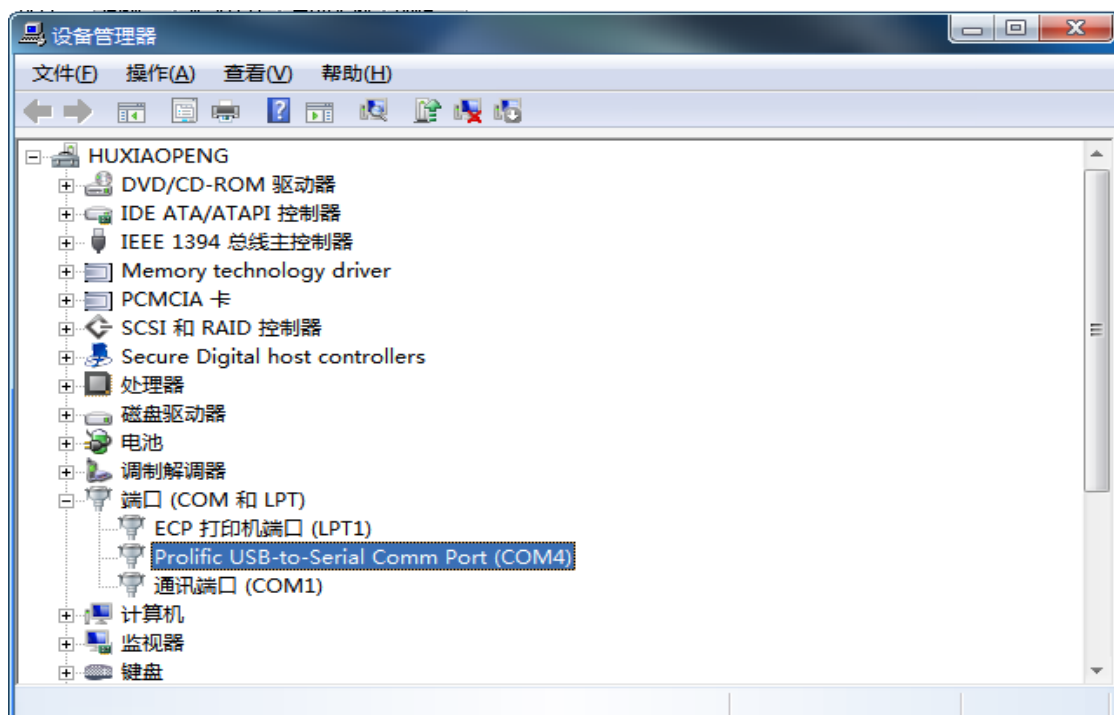
1、FlashTool is a green program needing no installation. After Connect the unit to your pc with a USB-to-serial port cable, run FlashTool0.6.0.exe. Please refer to the following steps to set.








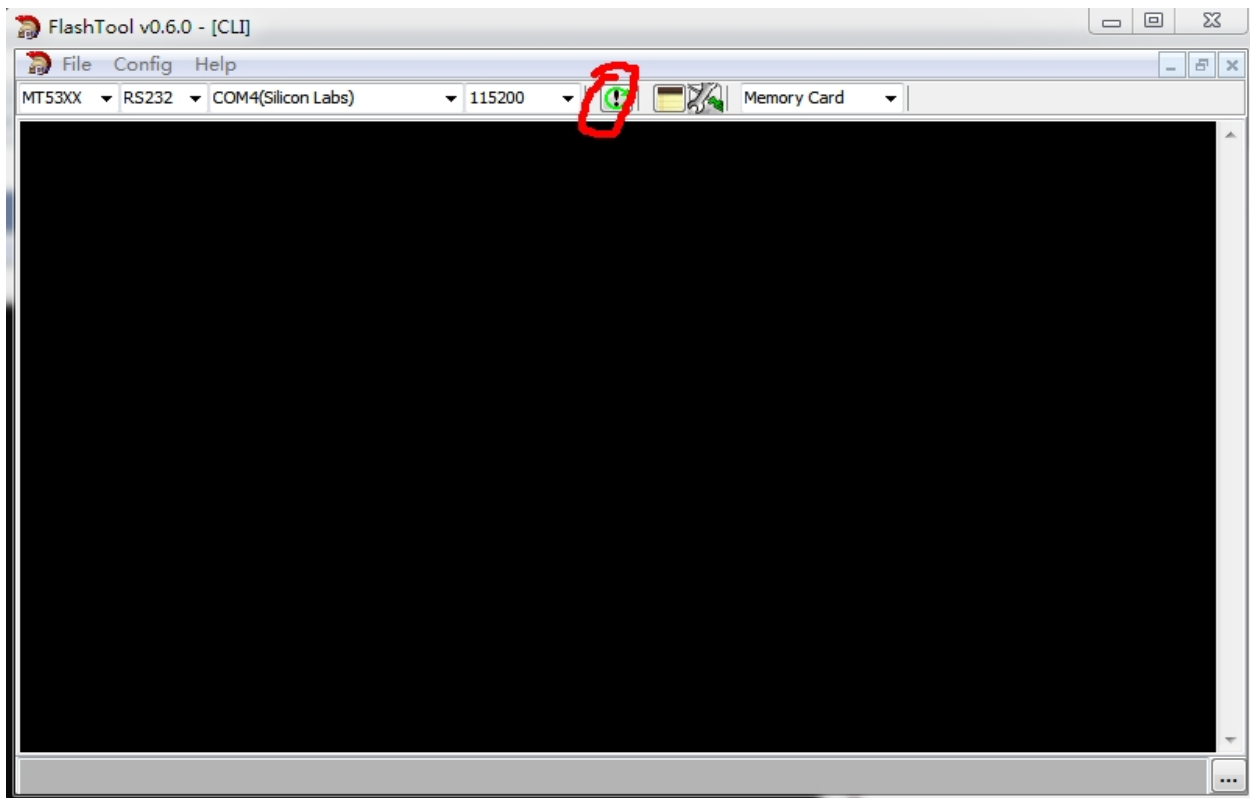
How to choose Communicate port and flash baud rate?


See the following instruction..

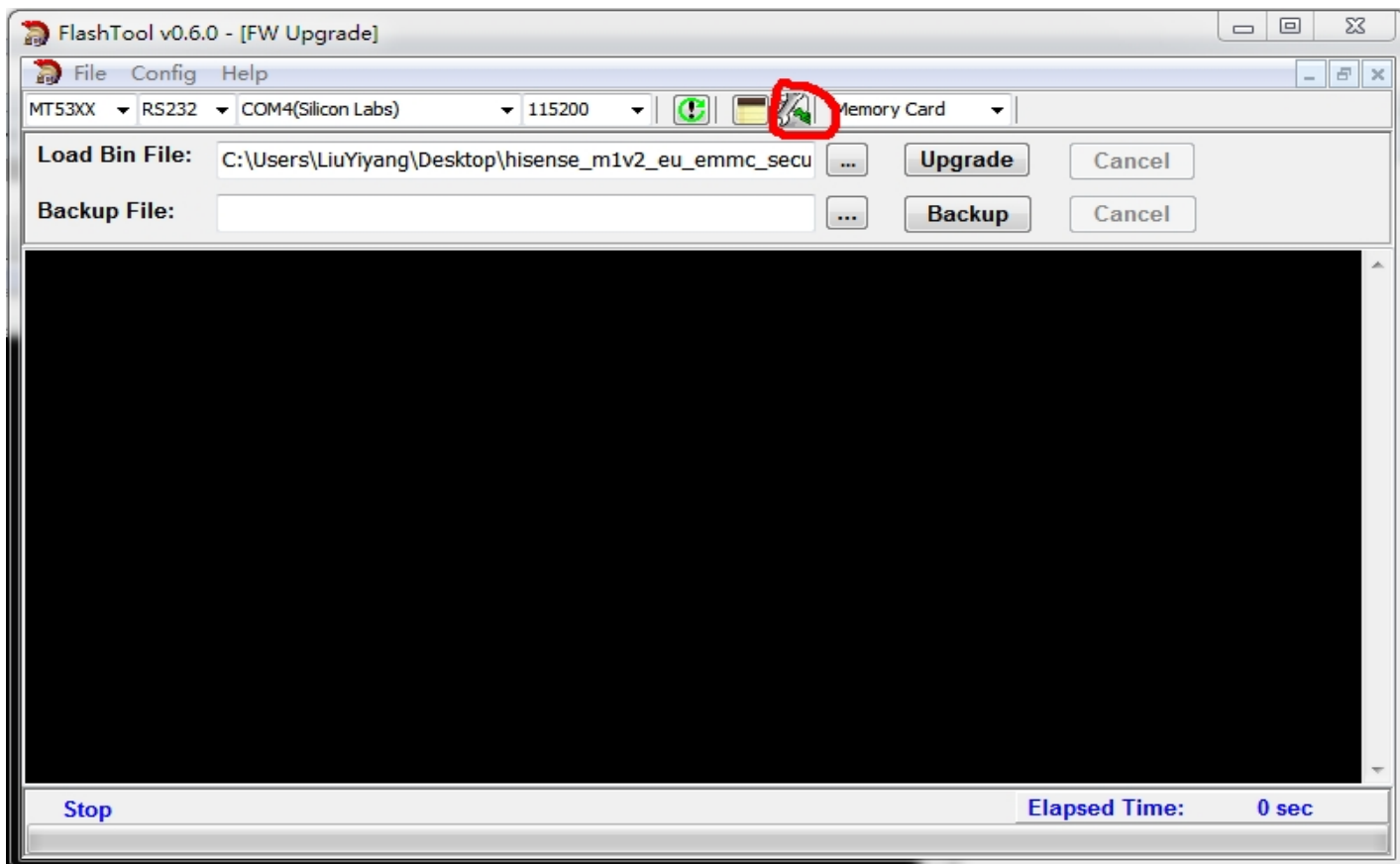


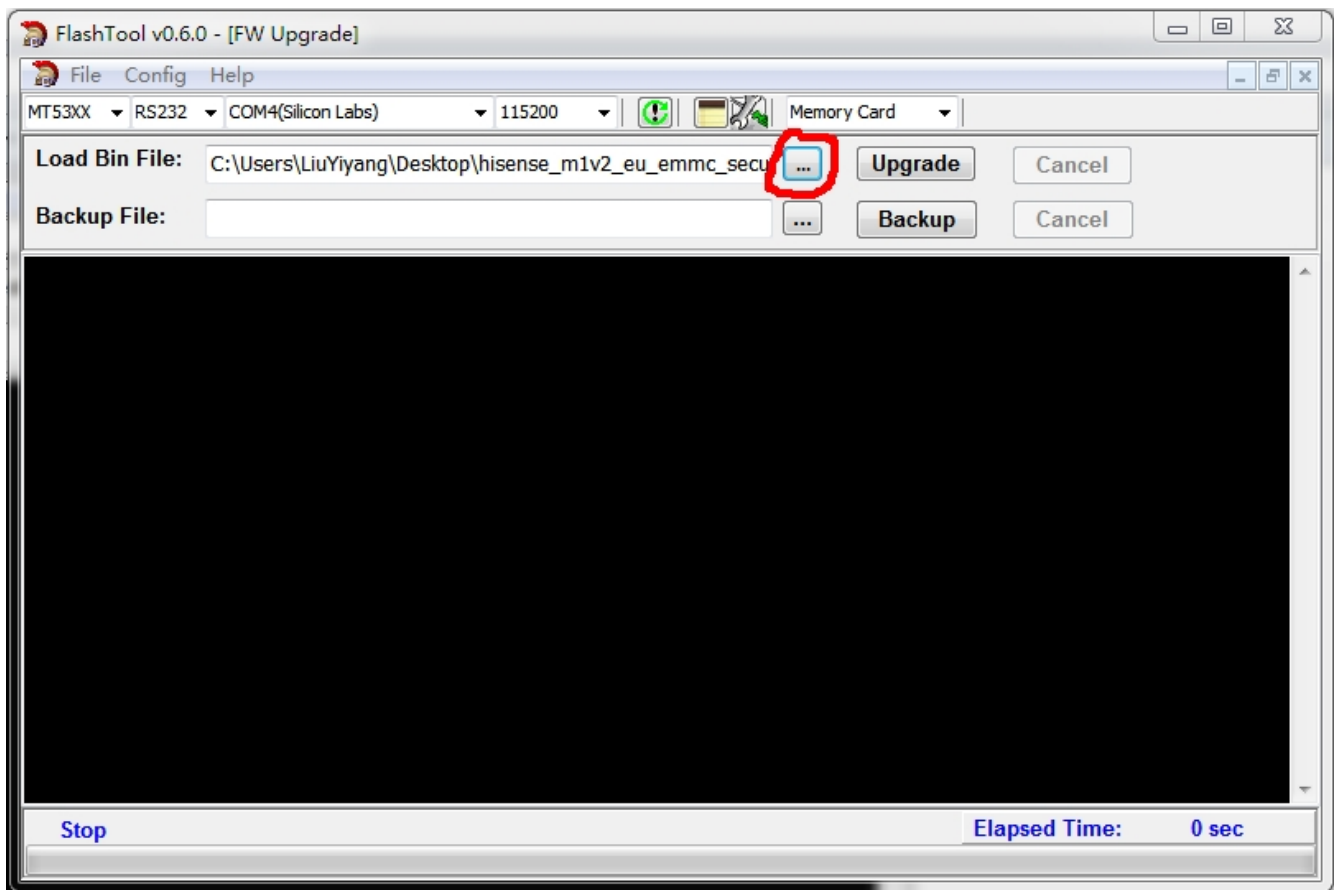
Open “Device Manager” and find which port is connected with the TV. In above picture, COM4 is connected to the TV, so, select “COM4” and if COM6 is connected to the TV, so select “COM6”. Select the right baud rate according to chip model. For this unit(chip model is MT5651), select 115200.

2、 Click  to connect, if connect successfully then button  from red turn green .

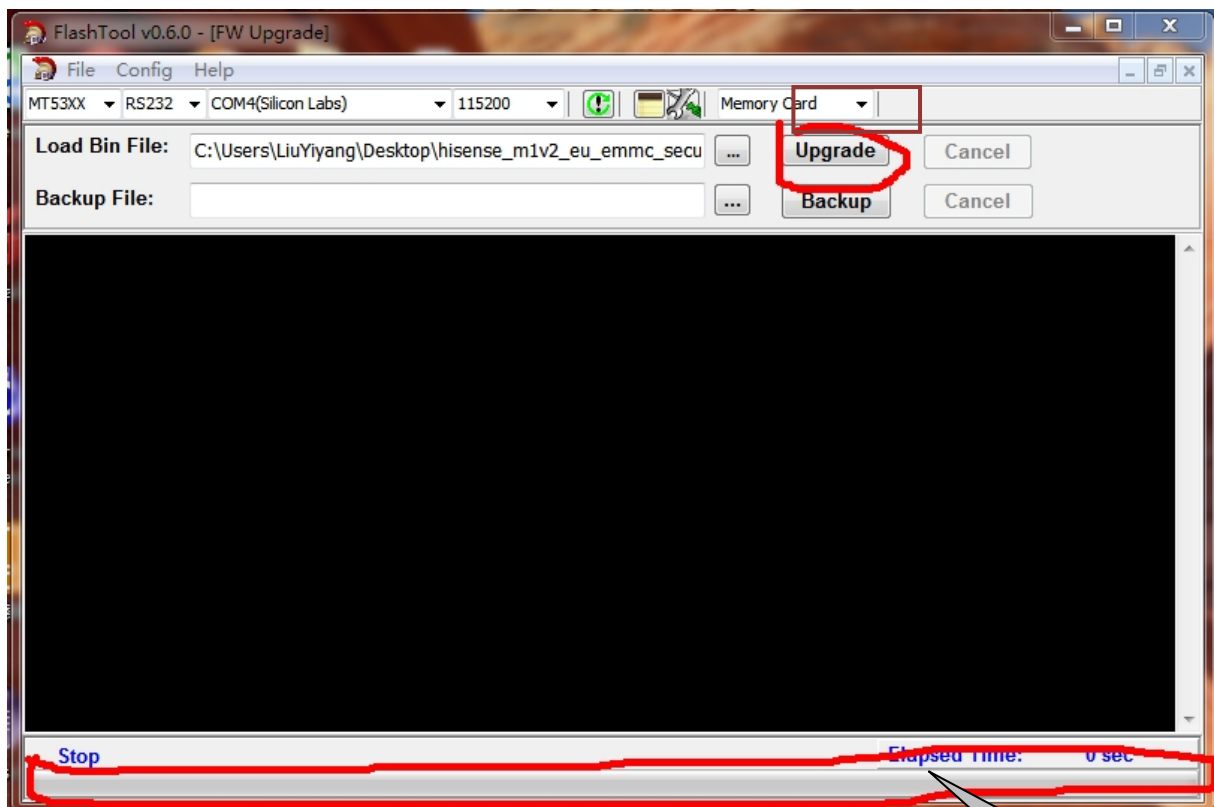


Click , bounce the following dialog box. Load Bin File: find the upgrading program file, and select it. for example:hisense_m1v2_EU_emmc_secure_emmcboot.bin. Press “Upgrade” button and start upgrading., if update defeat, try again.





Last .click upgrade button to start upgrade.



4.4 Software update

Software update comprises three ways

USB、Internet and Auto Upgrade

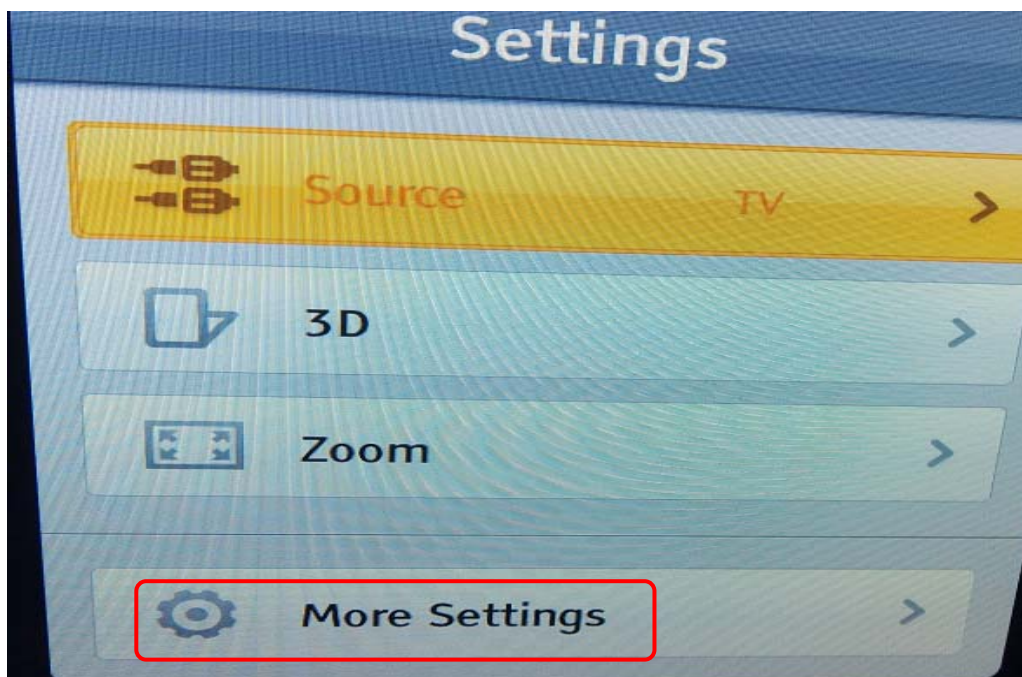
1、 USB update

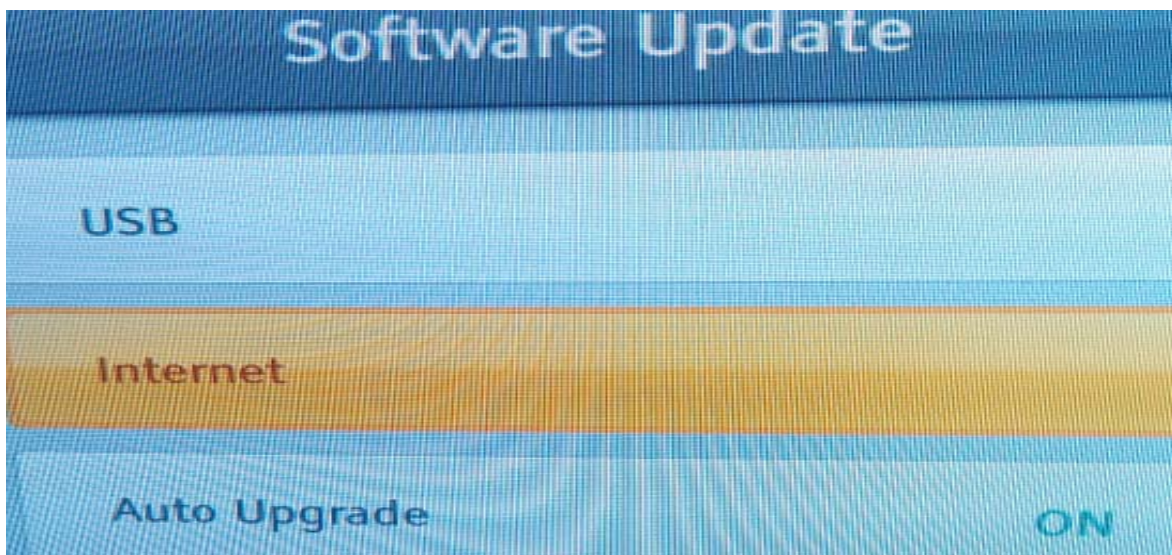
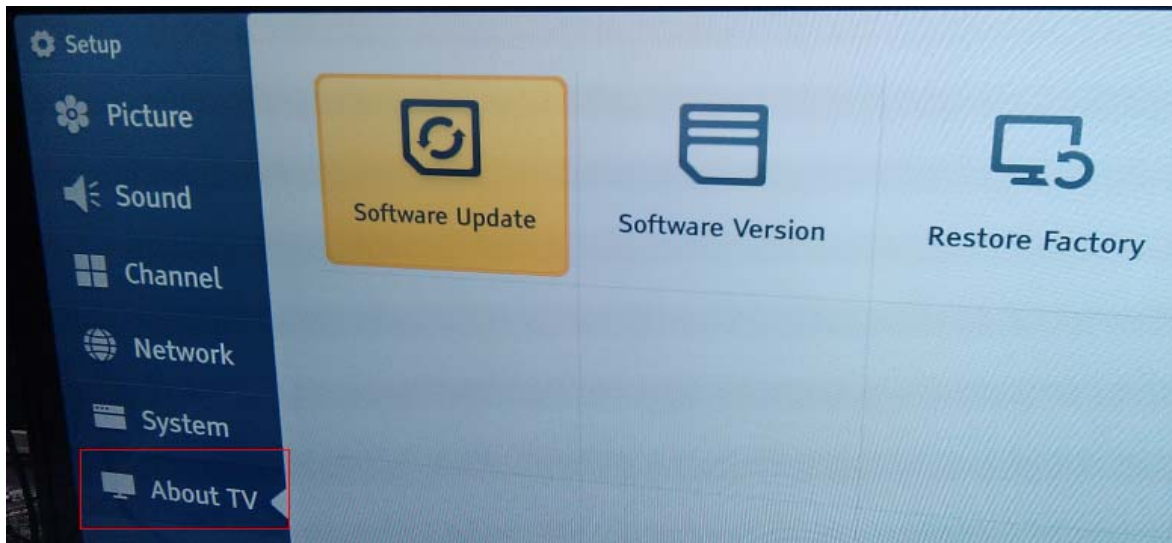
- First, copy the upgrade_loader.pkg file to USB Disk;.
- Second, make sure there is no other .pkg file in the root directory of USB Disk .
- Insert USB Disk to USB port, About TV->**Software Update** select **USB**.
- The TV will identify the software and upgrade automatically.

2、 Internet update

First, TV connects with internet.

Diagram figures as following:

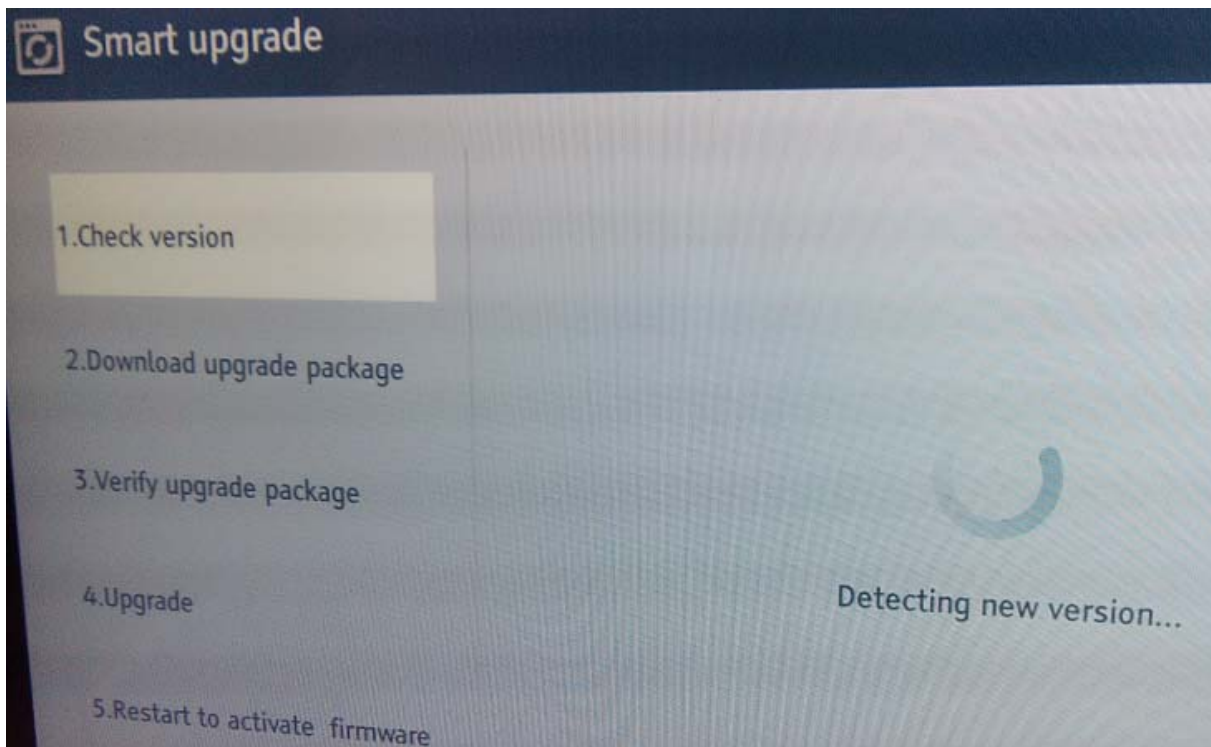




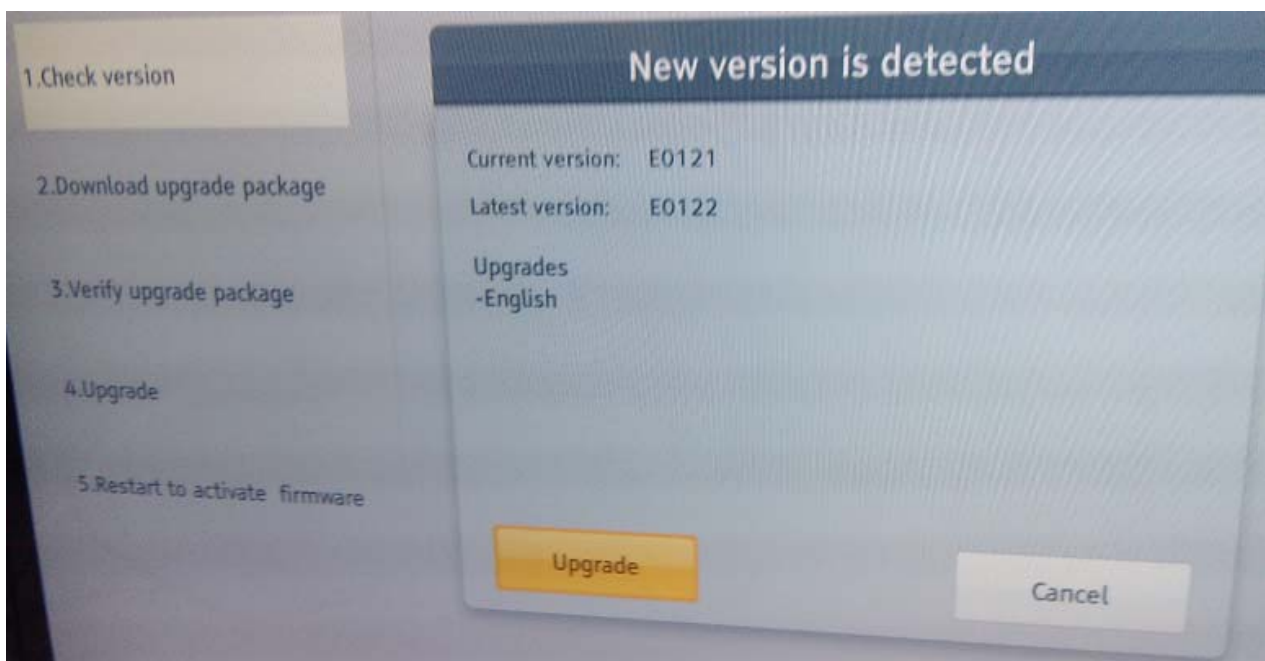
Press **ok** button, then appear “Smart upgrade” interface. Comprise five parts.

It can process step by step. See next processing figures. Please.

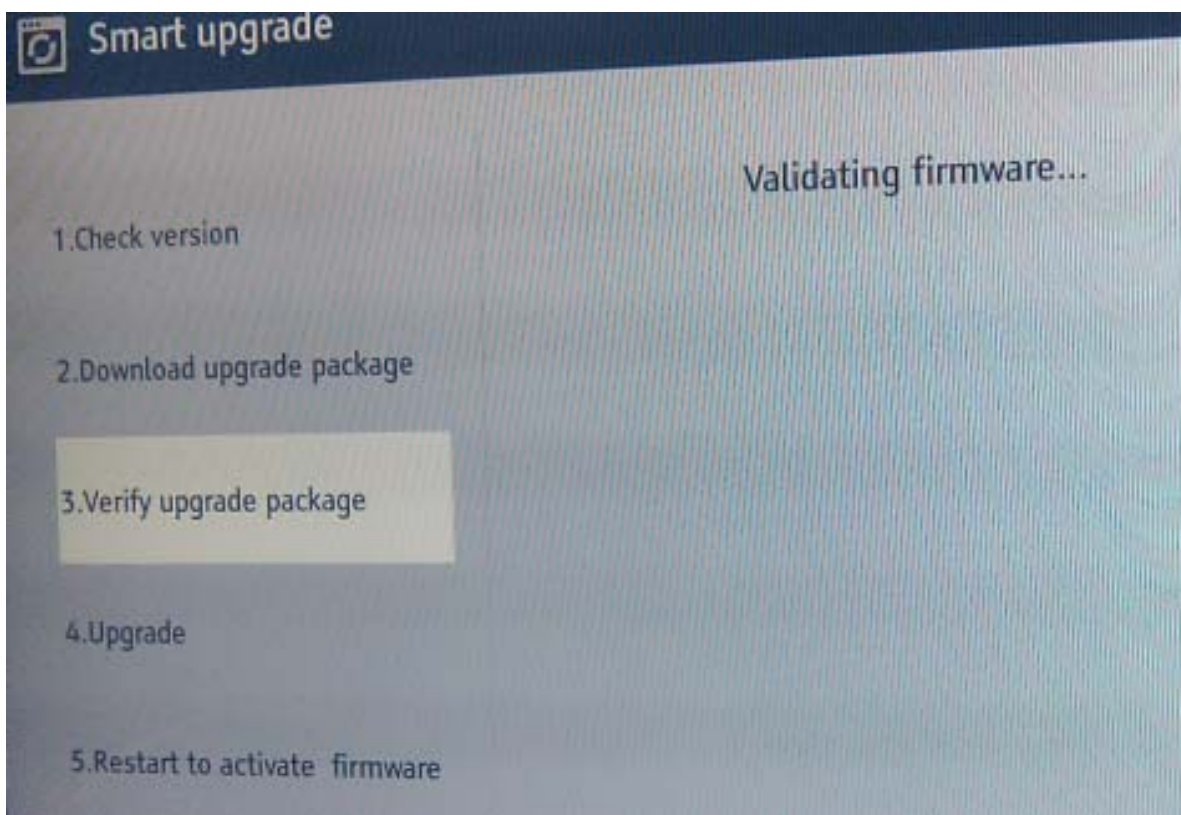
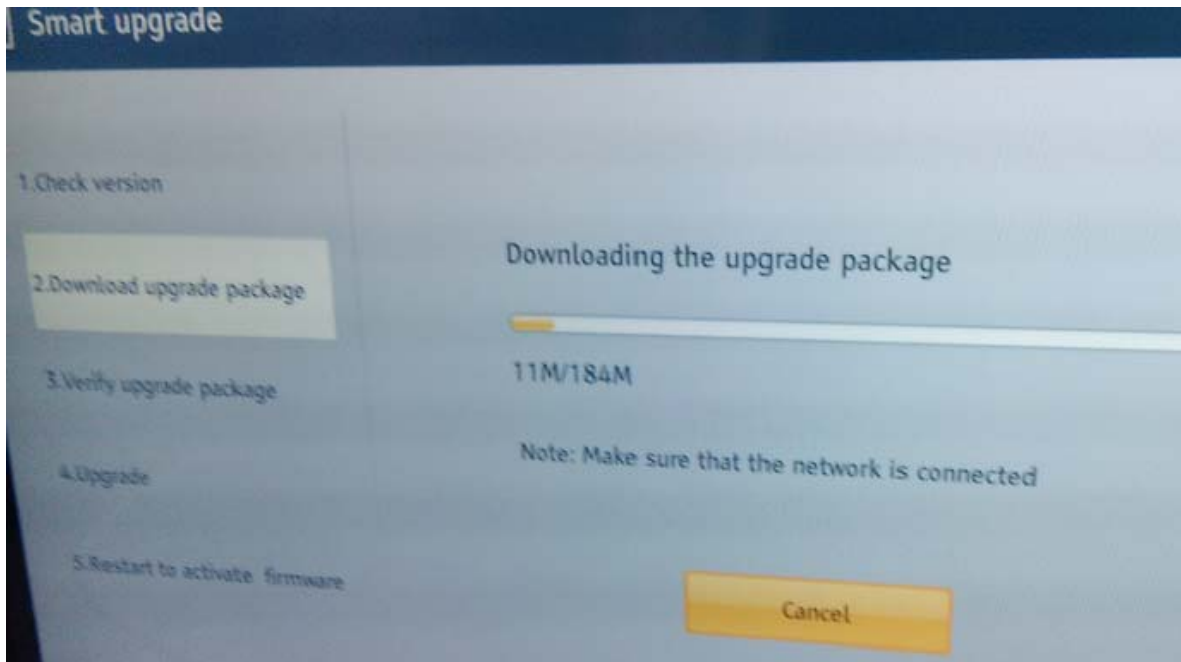
- 1、 Check Version
- 2、 Download upgrade package
- 3、 Verify upgrade package
- 4、 Upgrade
- 5、 Restart active firmware

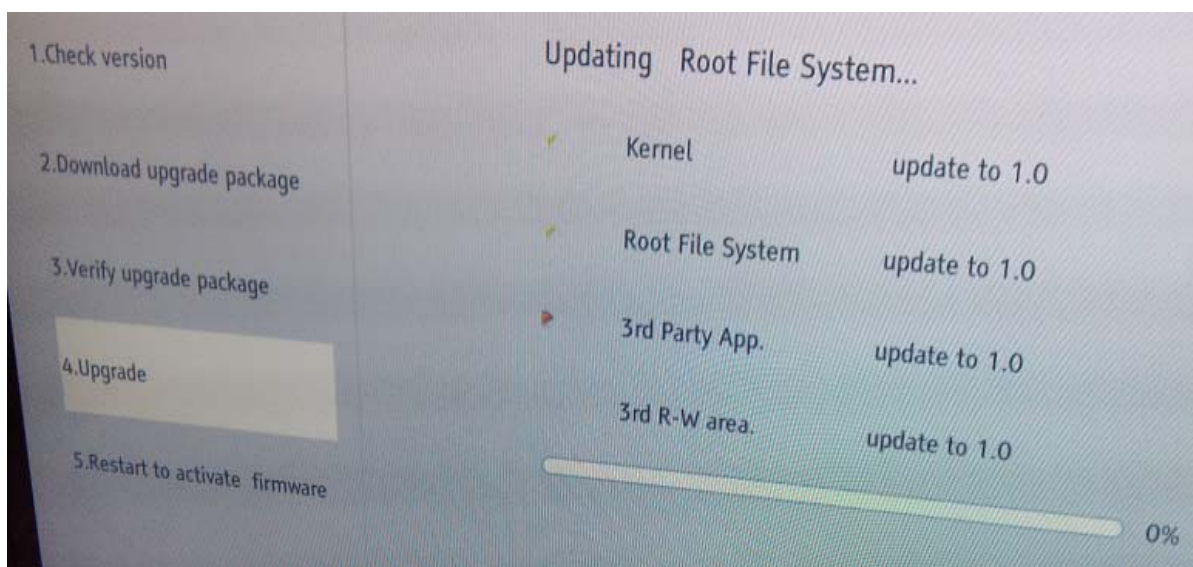
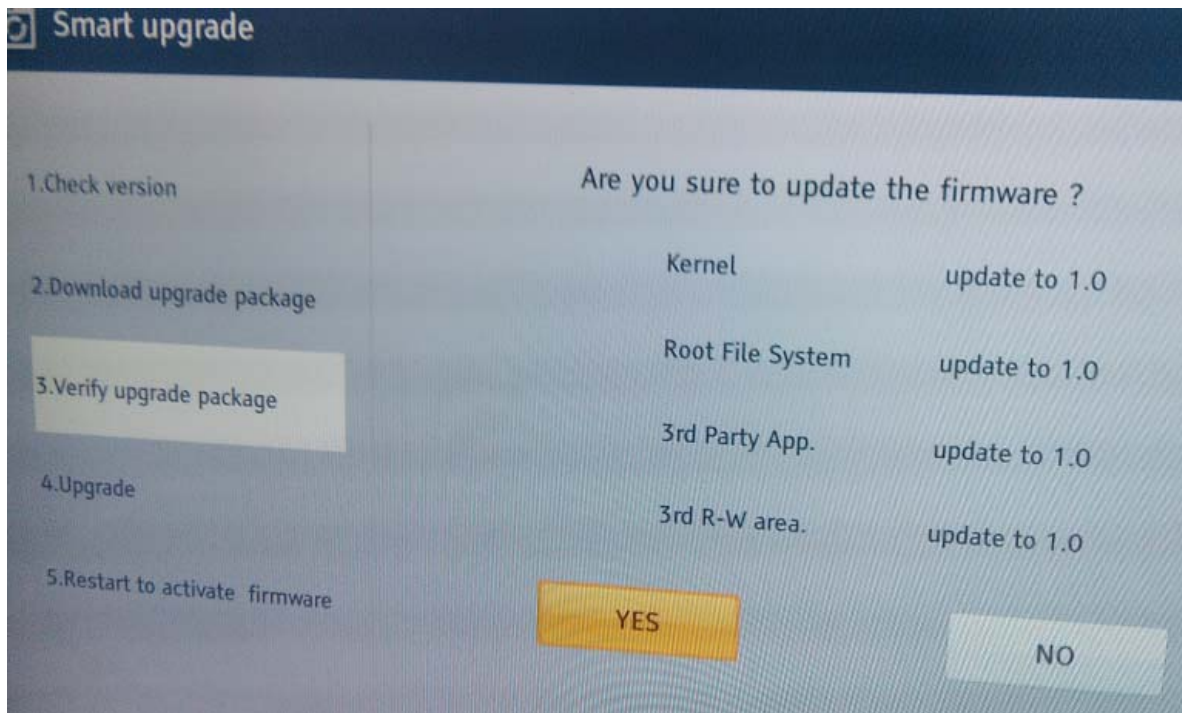


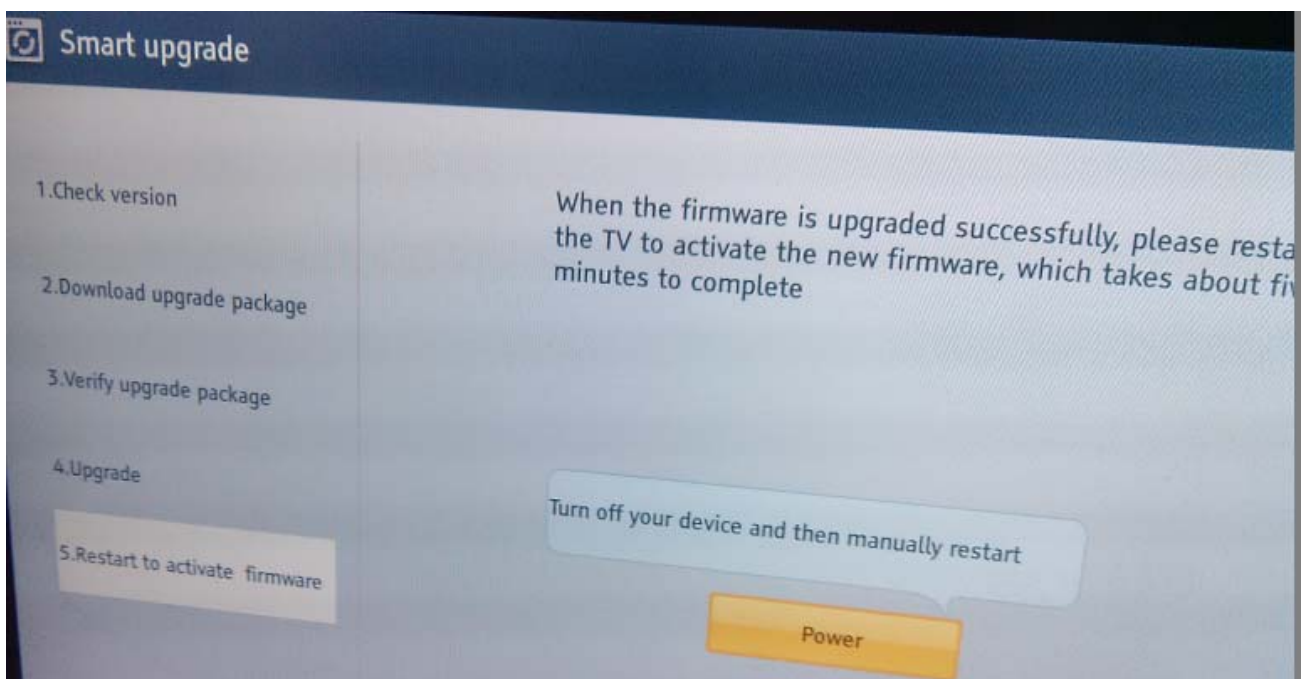
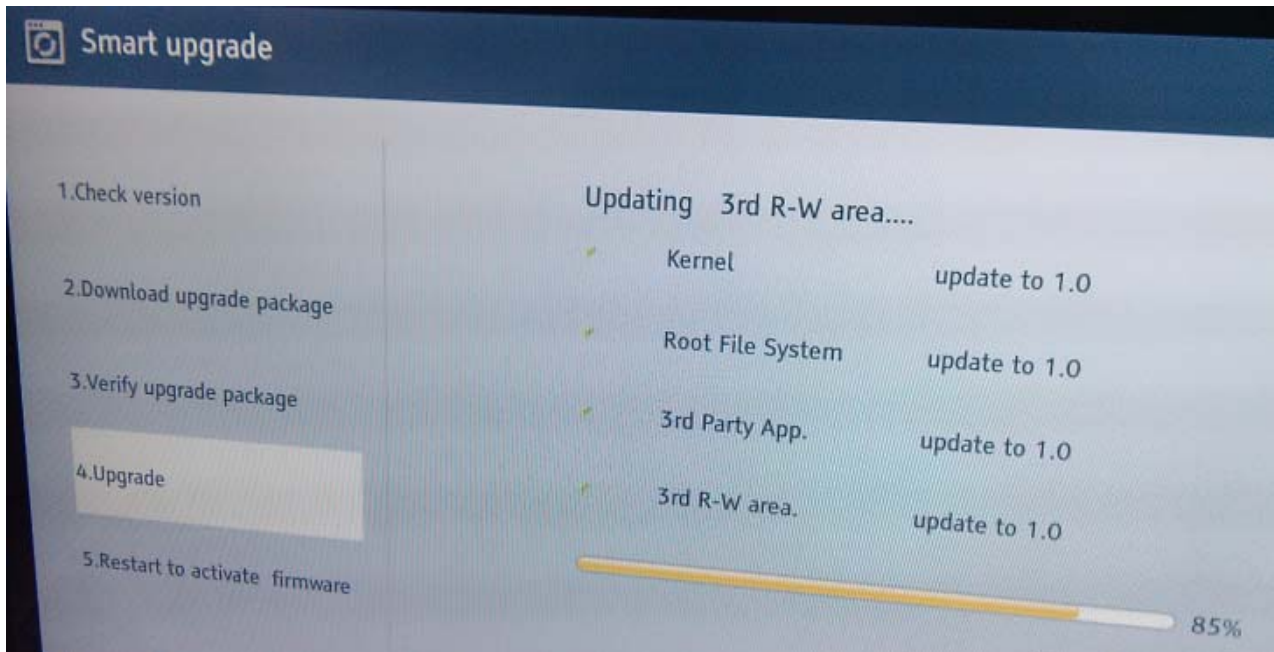
next



next







3、 Auto Upgrade

First, TV connects with internet correctly.

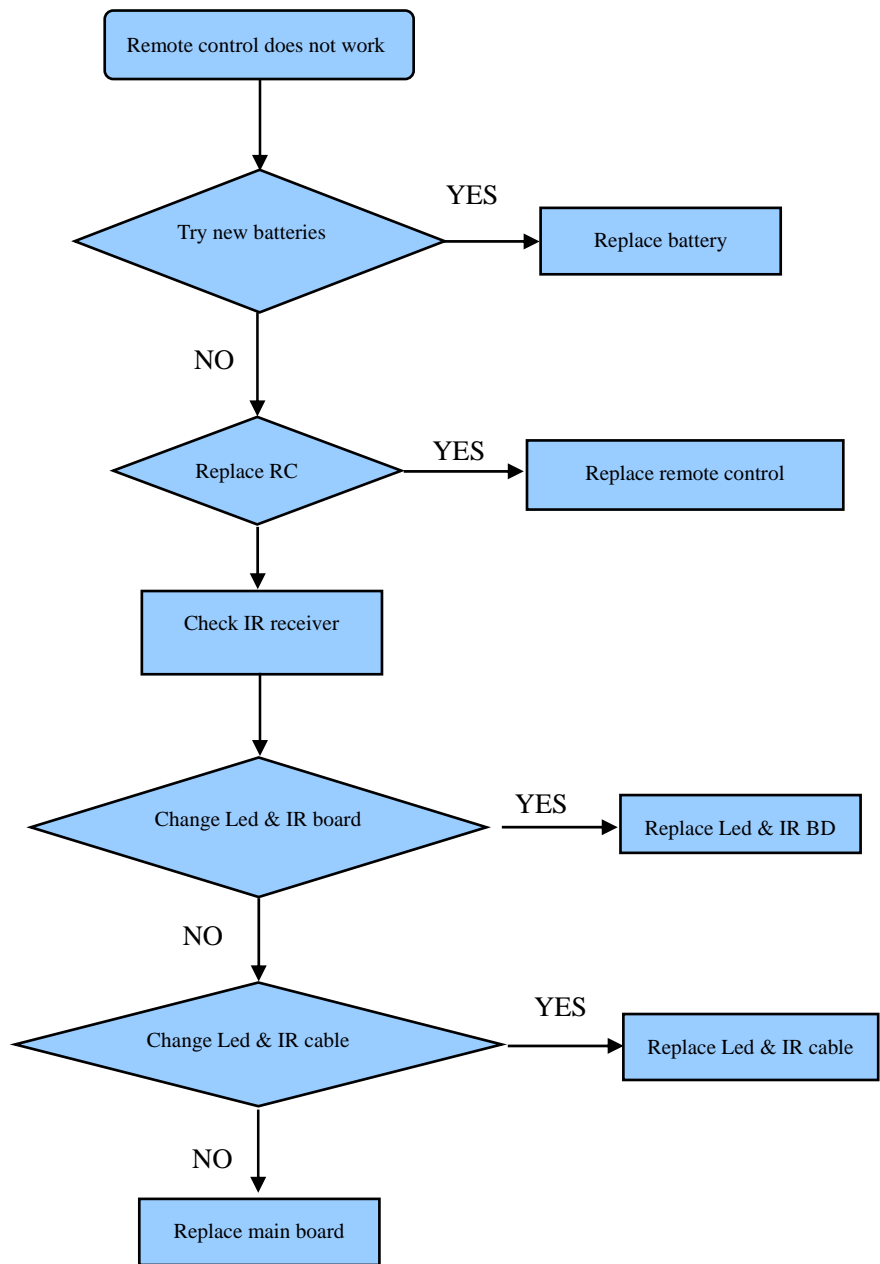
Second, according to the indication, TV can automatically upgrade.

5. Trouble shooting

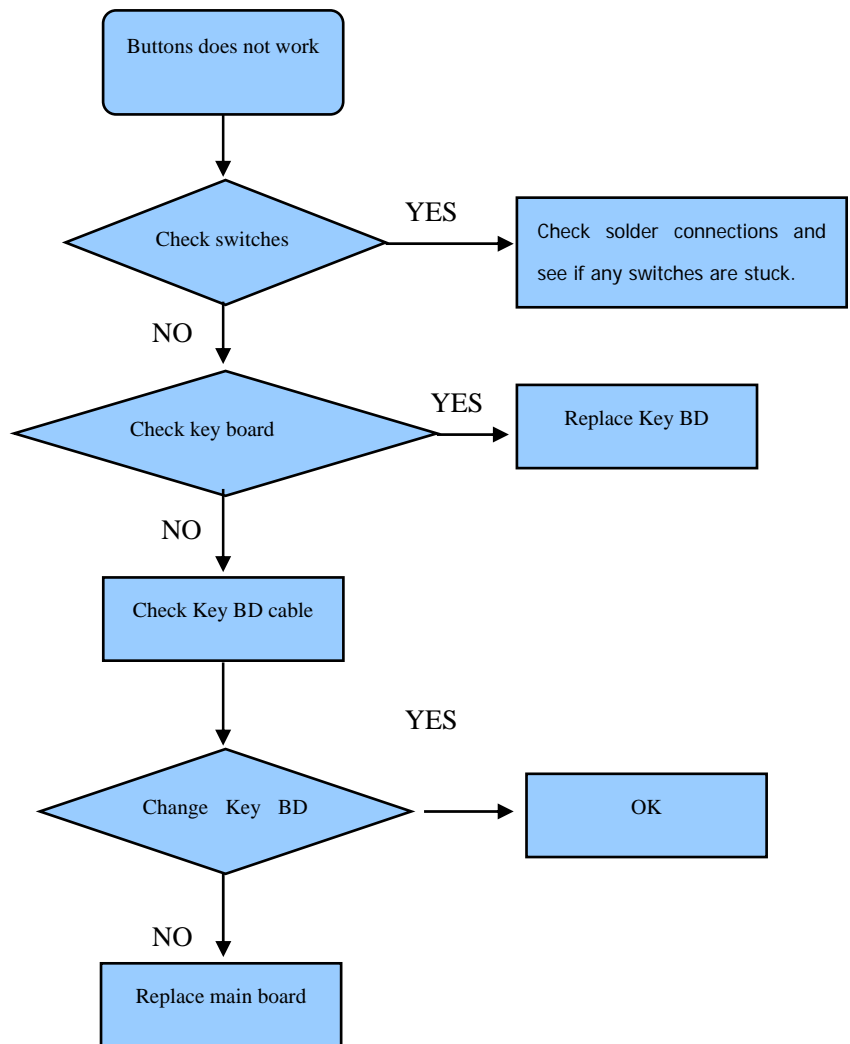
When there is something wrong with your TV, you can try turning off the TV and then restart it. You can also operate according to the follow chart. If the problems still can't be solved, please contact the profession technician.

No sound or picture	<ol style="list-style-type: none">1. Check if the power line is in the outlet and if it has electricity.2. Check if you have pressed Power button on the TV or Power button on the remote control3. Check the setting of picture brightness and contrast.4. Check the volume.
The picture is normal but there is no sound	<ol style="list-style-type: none">1. Check the volume.2. Check if Mute mode is set.
No picture and white or black picture	<ol style="list-style-type: none">1. Adjust Picture Setting.2. Check Color System.
The sound and picture are interfered	<ol style="list-style-type: none">1 Try to find the appliance affecting TV set, and move it far away from the TV set.2. Try to insert the power plug of the TV set into another outlet.
Unclear picture or picture with snow	<ol style="list-style-type: none">1. Check the direction, position and connection of your antenna.2. Adjust the direction of your antenna or reset or fine tune the channel
The remote control does not work	<ol style="list-style-type: none">1. Change the batteries in the remote control.2. Clean the upper side of the remote control (radiating window)3. Check the contacting points of the batteries.4. Check if there is obstruction between the remote control and the monitor.5. Check if the batteries are correctly installed.
H/V strip or the picture shaking	Check if there is an interfering source nearby, such as appliance or electric tools.
The cabinet of the TV makes "Click" sound	makes "Click" sound"Sometimes the room temperature change can cause the television cabinet to inflate or contra, which makes this sound. This does not mean the TV breaks down.

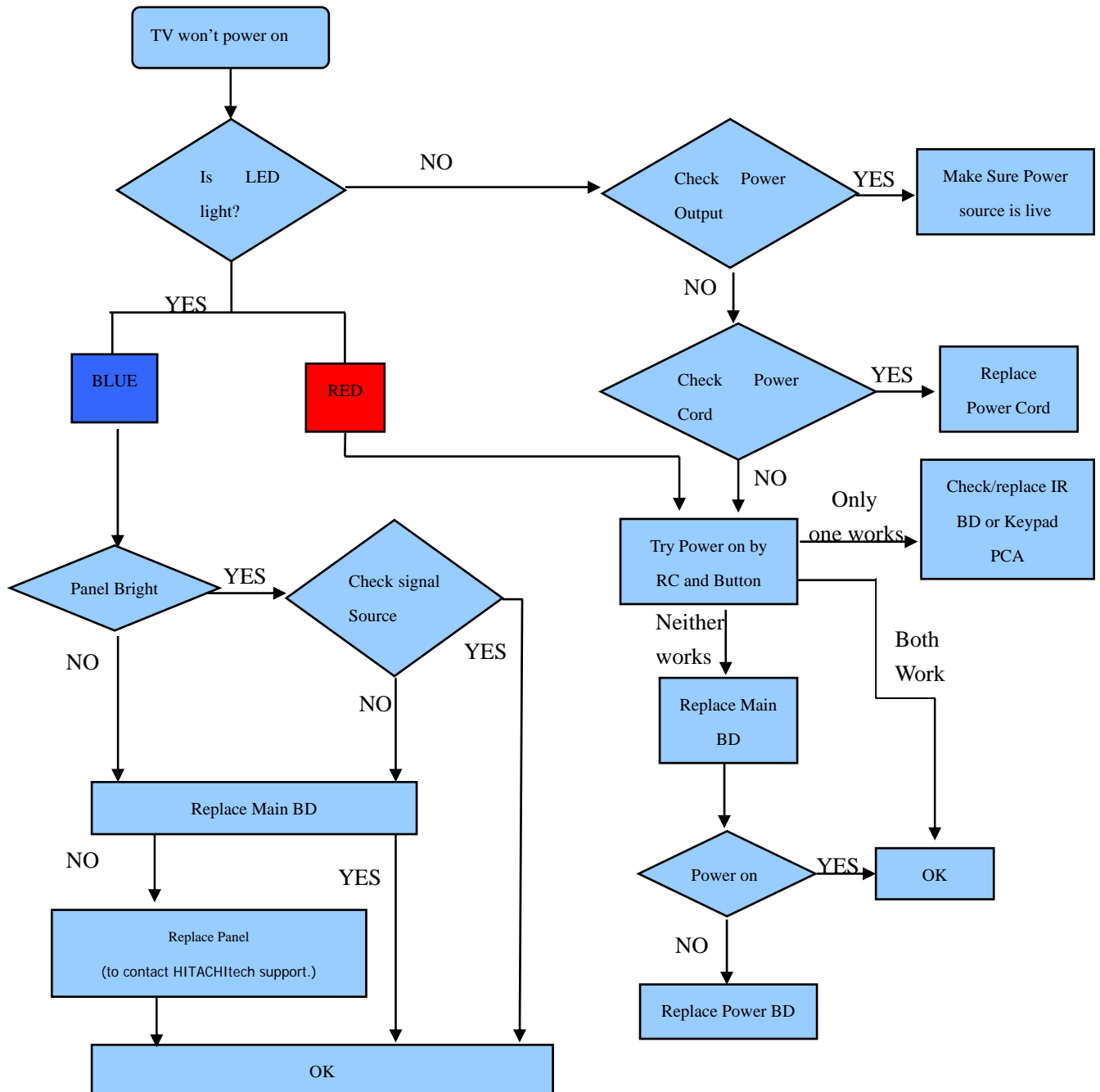
5.1 Troubleshooting for Remote Control



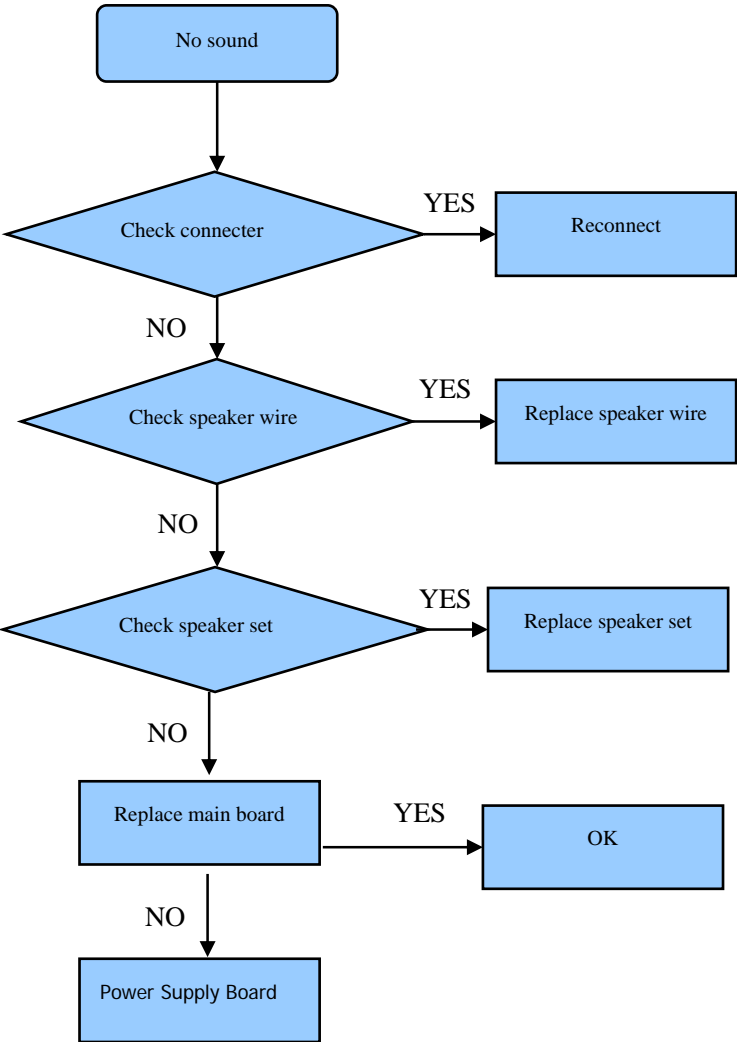
5.2 Troubleshooting for Function Key



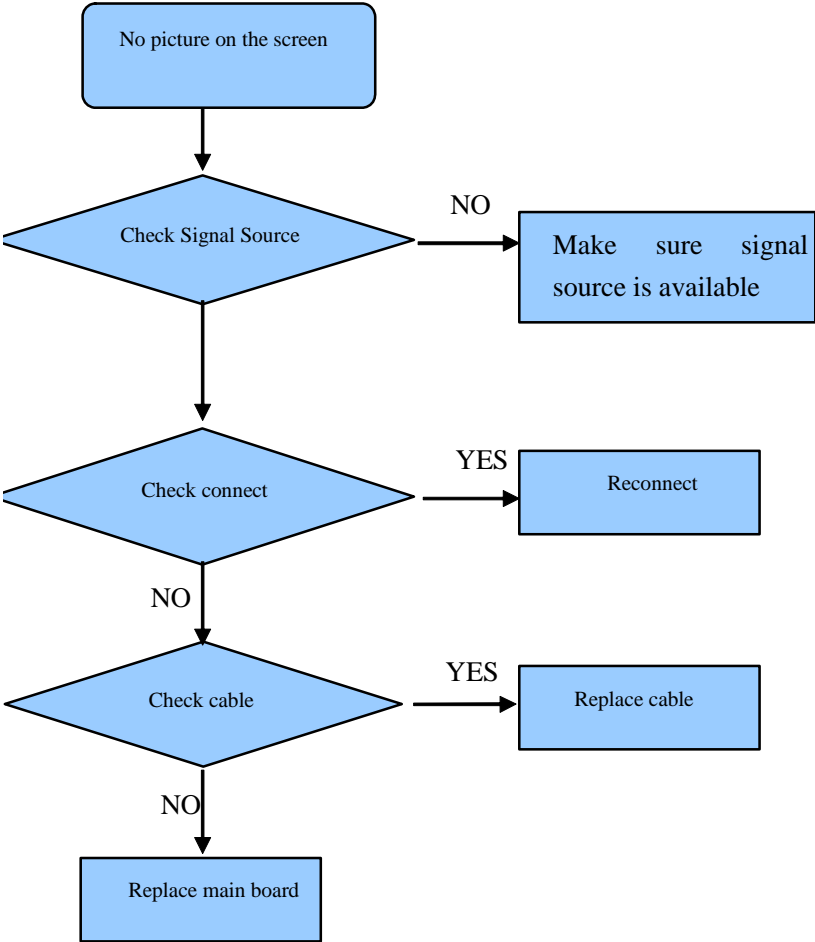
5.3 TV won't Power On



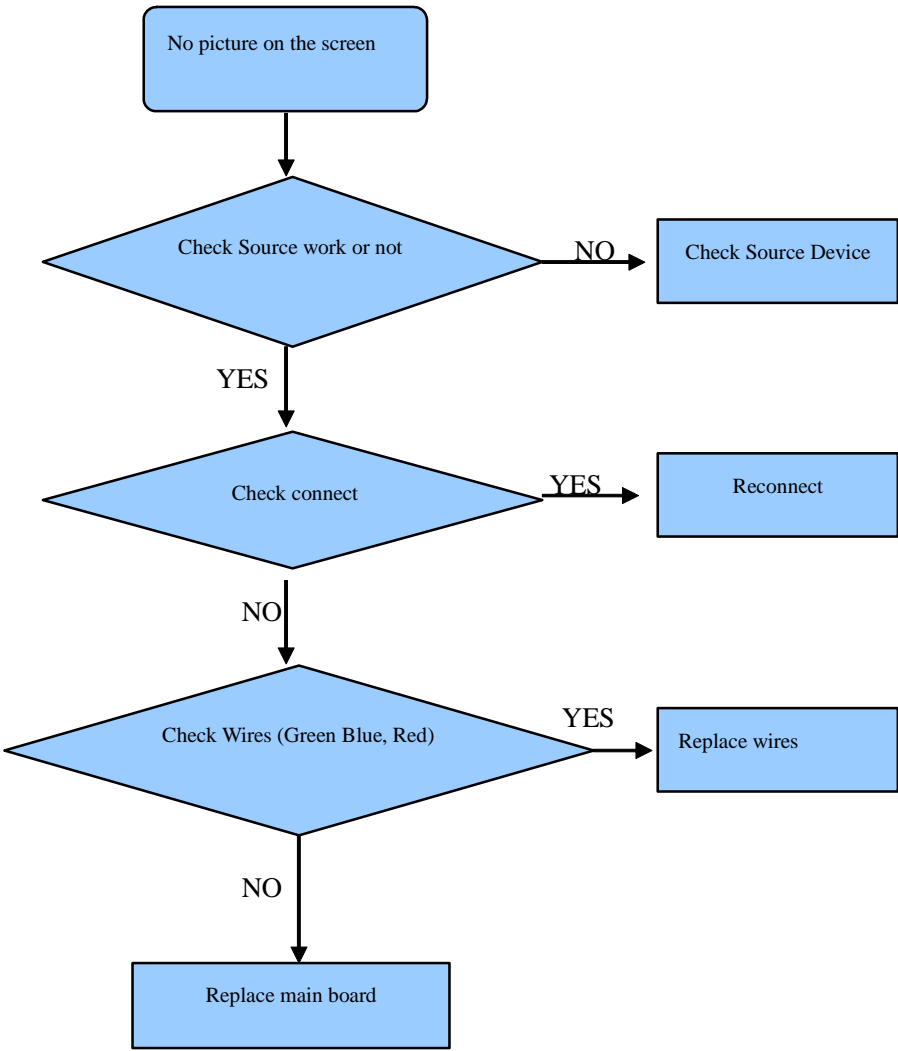
5.4 Troubleshooting for Audio



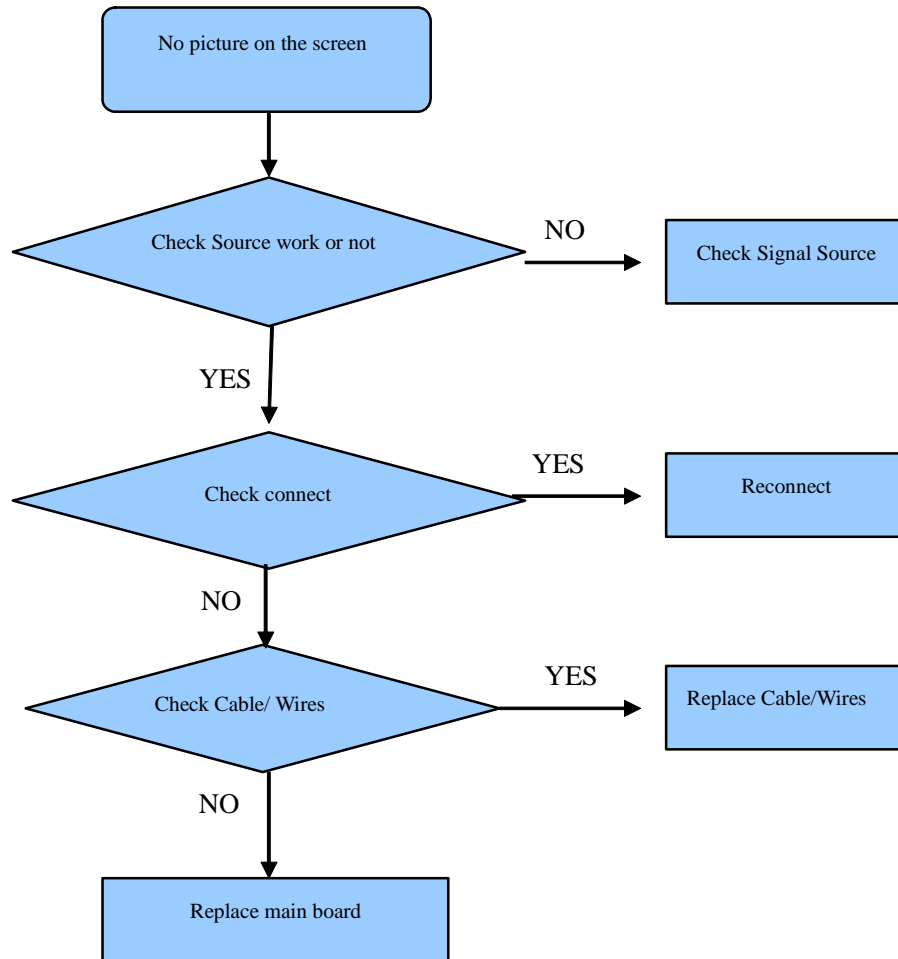
5.5 Troubleshooting for TV/VGA/HDMI input



5.6 Troubleshooting for YPbPr input



5.7 Troubleshooting for Video input

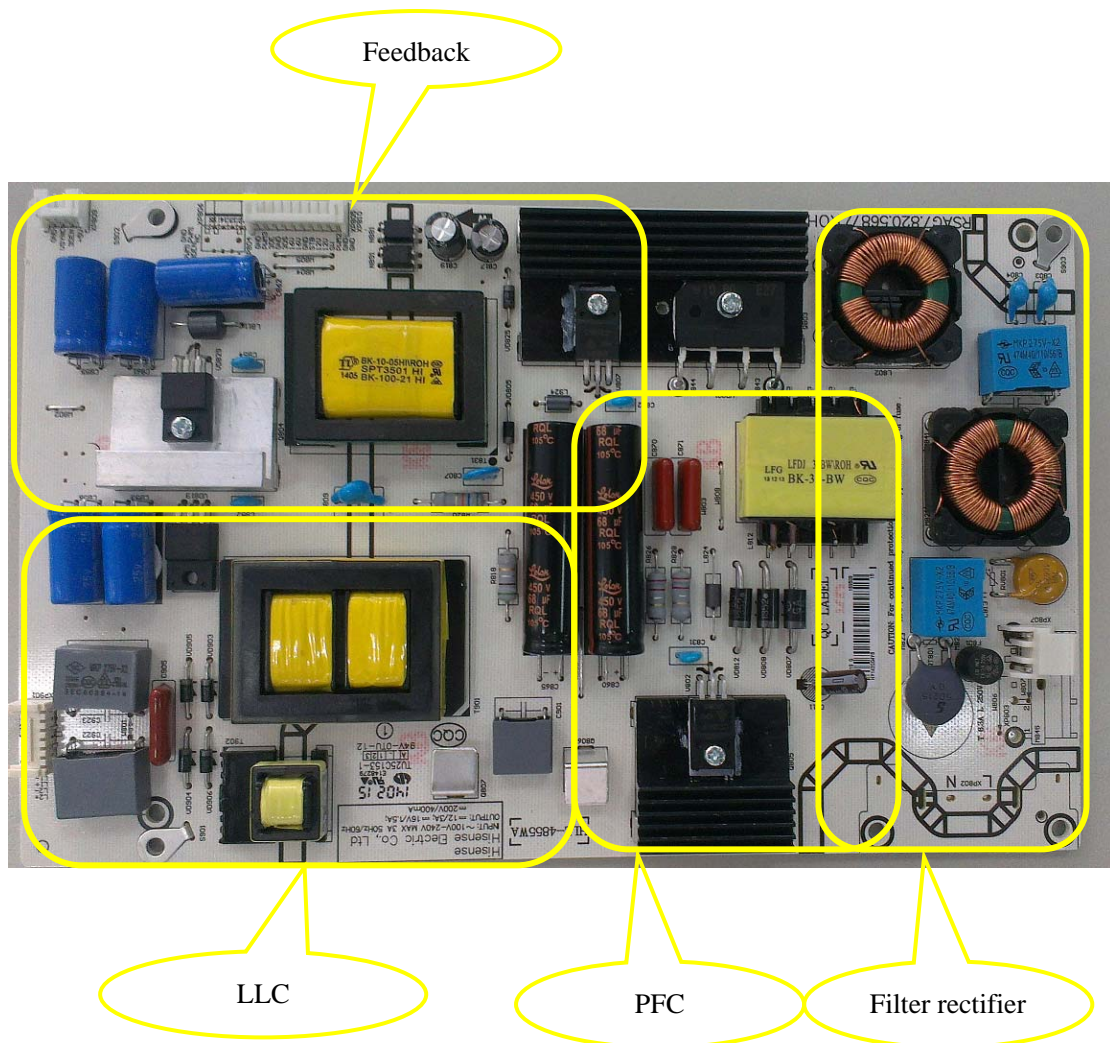


6. Signals Block Diagram and power assign:

7. Schematic circuit diagram

8. Explode View

(一)、power board:5687 :



(二)、Specification:

5687 power board input AC 100V-240V, and output four voltages:

12V to main board, 18V to AMP IC and two output voltages for LED driver.

- 1、Power output: AC 100V~240V 50Hz/60Hz
- 2、Max. power current output: $P_{out}=130W$
- 3、Rating Power output: $P_{out}=110W$

Output voltage:

Voltage out(v)	Fluctuated range (stability)	Voltage wave	Output current(A)		
			Min	Type	Max
18V	-0.5V~+2V	300 mV	0A	0.5A	1.5A
12V	$\pm 0.5V$	100mV	0A	1.5A	3A
LED Driver	—	—	0mA	180mA	200mA

三、 Power board 5687 configure assign block:

