

# LCD Television

# Service Manual

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Chassis: MT9618

Version: V 1.0

Hisense Visual Technology Co., Ltd.

November 19, 2021

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REVISION HISTORY			
Version	Revise content	Reviser	Date
V1.00	First issued	Chenchaojie	2022-11-16

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# 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

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technician trained in the proper Television safety and service methods and procedures Hereafter throughout this manual.

## **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 assumes no liability, express or implied, arising out of any unauthorized modification of design. Service tech assumes all liability.

### 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.

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#### 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.

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(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

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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.



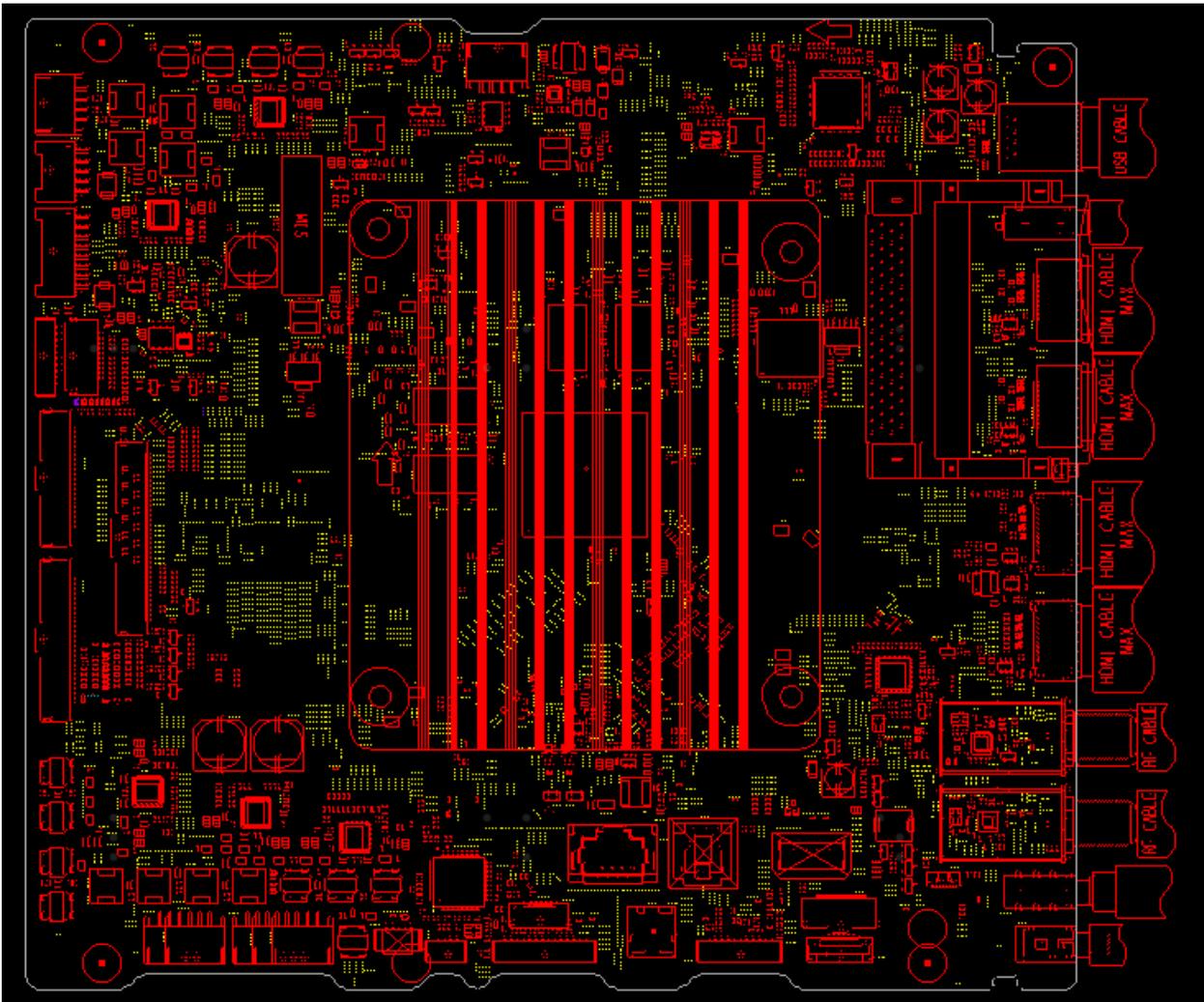
The exclamation point within an equilateral triangle is intended to alert the service personnel to important safety information in the service literature. .

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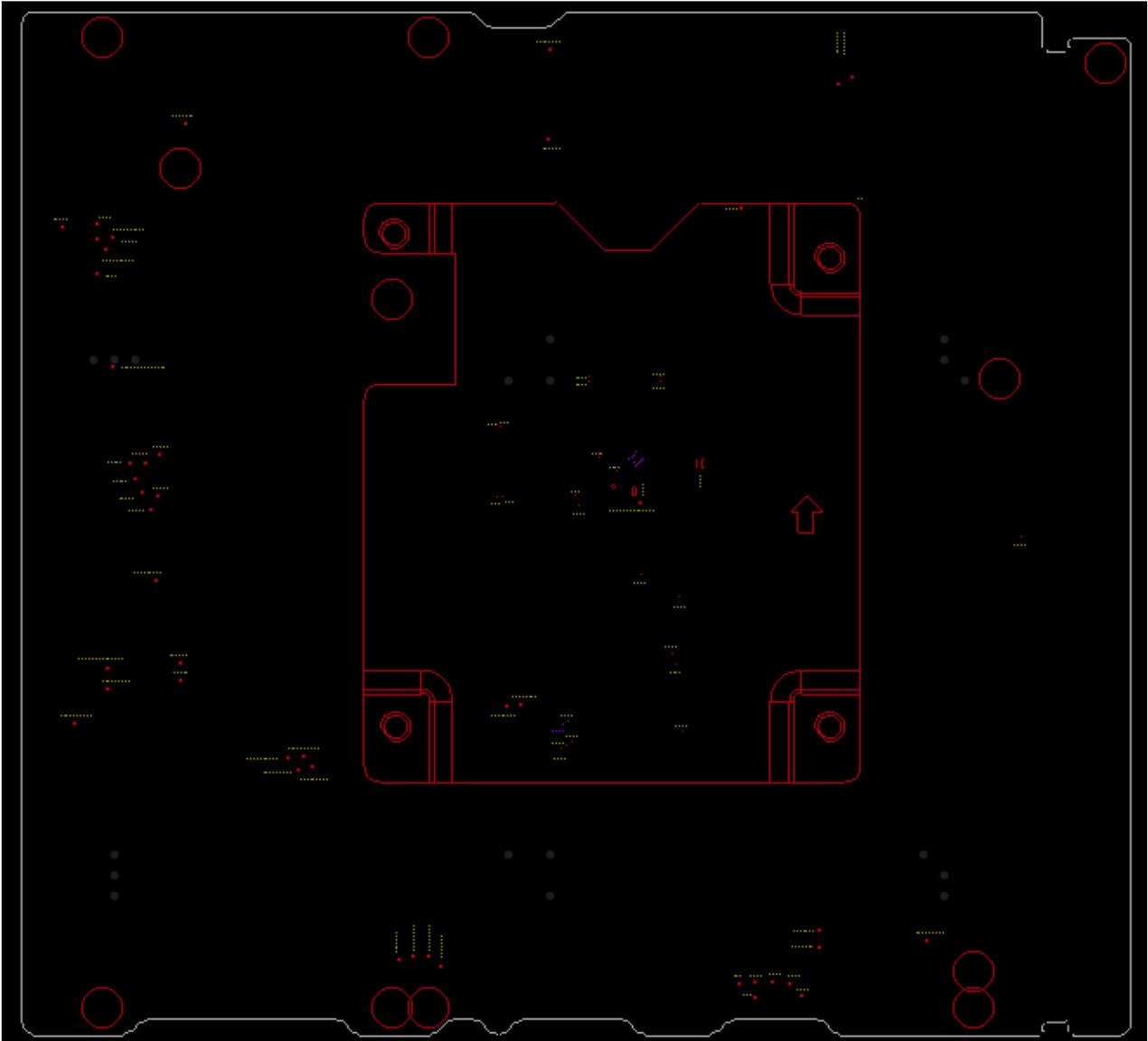
## 2. TV boards:

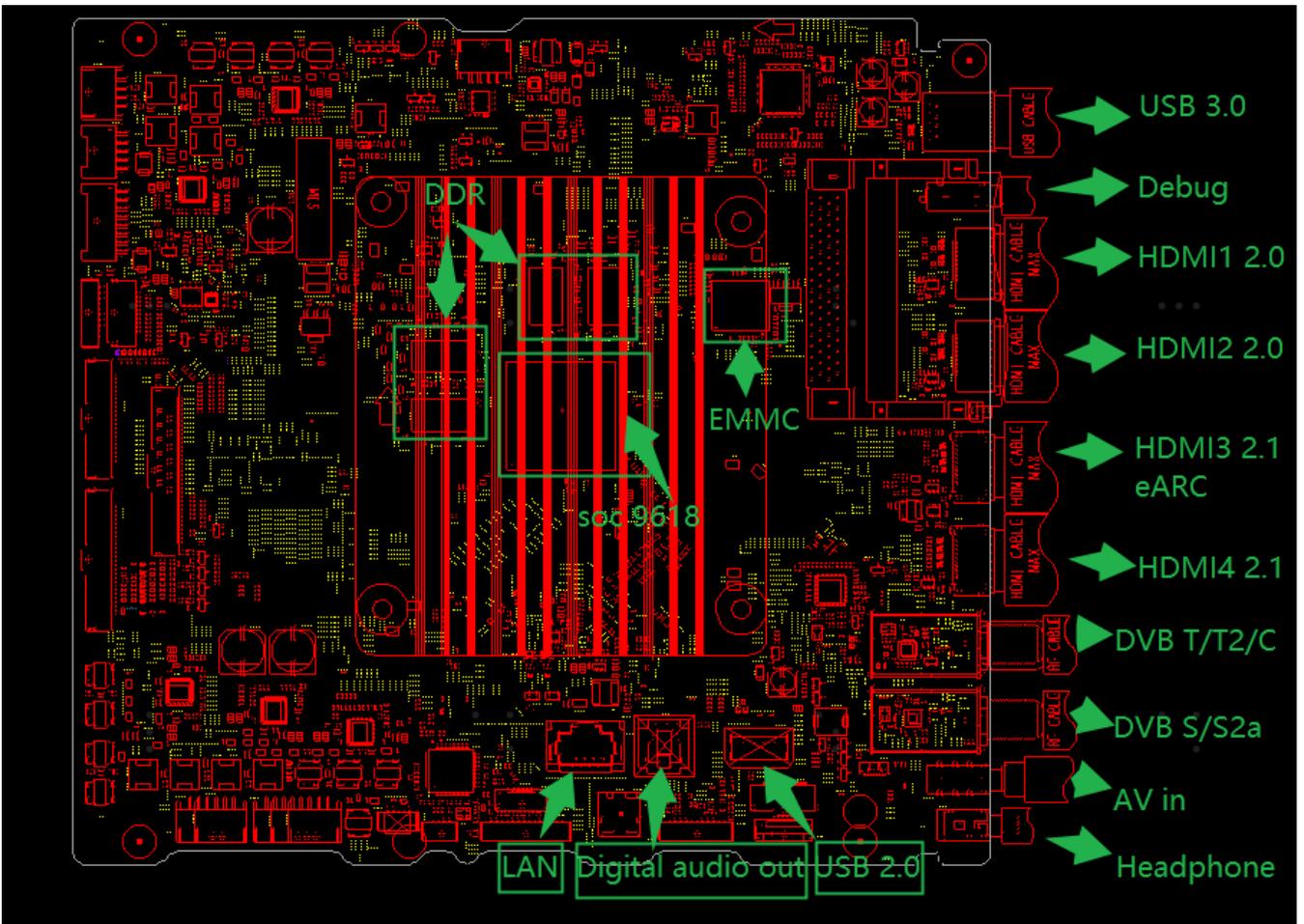
### 2.1 Main board layout

#### 2.1.1 The top of main board (RSAG7.820.12771)

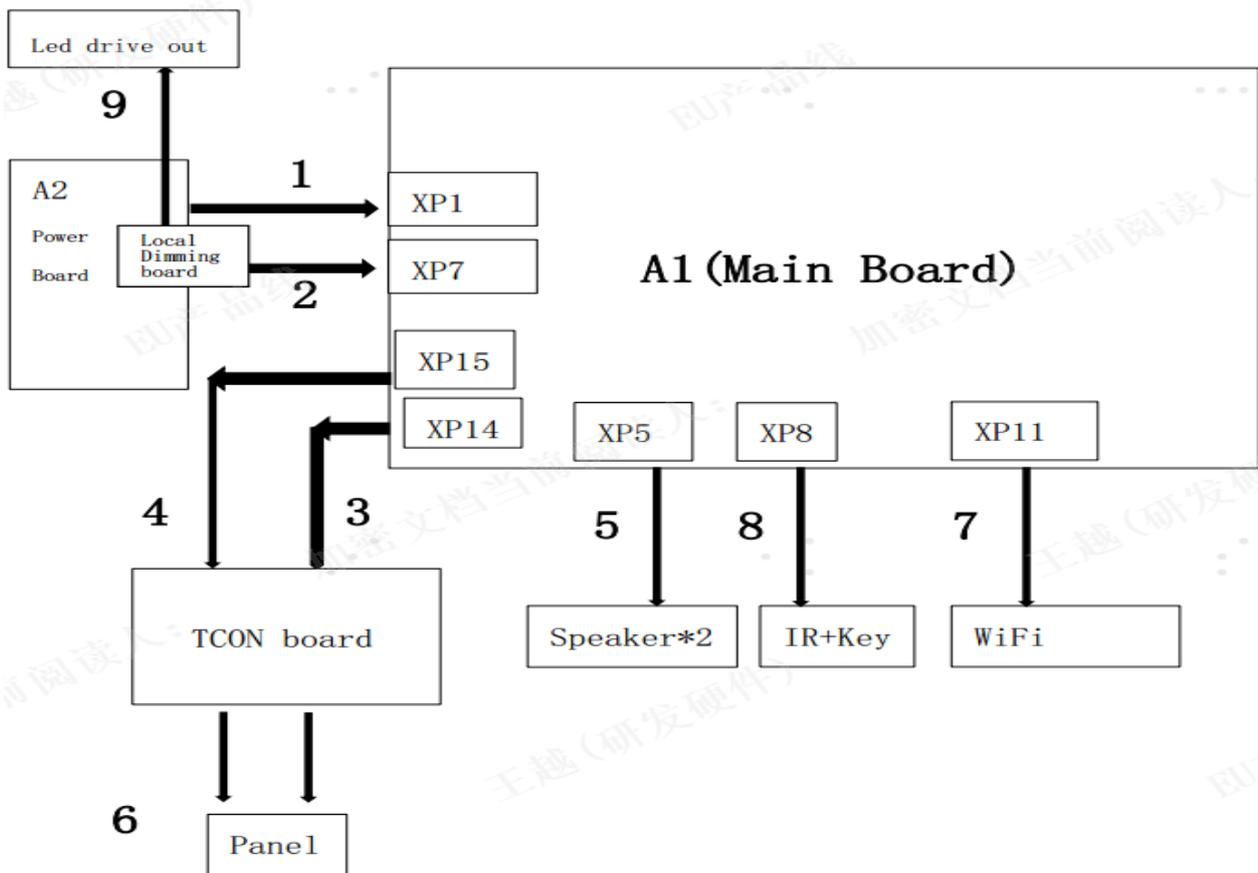


#### The rear of main board (RSAG7.820.12771)





## 2.2 Wiring diagram( example for 65A67GEVS):



XP1: Power for main board jacket

Main board terminal		Power board terminal	
Pin	definition	Pin	definition
1	GND	15	GND
2	BL_EN/SW	16	BL_EN/SW1
3	DIMMING2/PWM2	13	DIMMING2/DIM1
4	DIMMING/PWM	14	DIMMING/PWM1
5	VCC_A	11	VCC_A/ VCCA1
6	GND	12	GND
7	VCC_A	9	VCC_A/ VCCA1
8	GND	10	GND
9	GND	7	GND
10	3DEN-NC	8	NC
11	PWR-ON/OFF/ STB	5	POWER ON/OFF/ STB1

12	GND	6	GND
13	12VS/ VCC2	3	12VS/ VCC3
14	12VS/ VCC1	4	12VS/ VCC2
15	12VS/ VCC2	1	12VS/ VCC3
16	NC	2	NC

**XP22: 68pin P2P to Tcon board**

Tcon			Main board	
Pin	定义	说明	Pin	Config
68	STV0	T-con control pin	1	CTRL7
67	CLK3	T-con control pin	2	CTRL7
66	CLK4	T-con control pin	3	CTRL7
65	LC	T-con control pin	4	CTRL7
64	CLK2	T-con control pin	5	CTRL7
63	CLK1	T-con control pin	6	CTRL7
62	STV1	T-con control pin	7	CTRL7
61	GND	Ground	8	GND
60	P2P1P	P2P lane 1+	9	X0B_0P
59	P2P1N	P2P lane 1-	10	X0B_0N
58	GND	Ground	11	GND
57	P2P2P	P2P lane 2+	12	X0B_1P
56	P2P2N	P2P lane 2-	13	X0B_1N
55	GND	Ground	14	GND
54	P2P3P	P2P lane 3+	15	X0B_2P
53	P2P3N	P2P lane 3-	16	X0B_2N
52	GND	Ground	17	GND
51	P2P4P	P2P lane 4+	18	X0B_3P
50	P2P4N	P2P lane 4-	19	X0B_3N
49	GND	Ground	20	GND
48	P2P5P	P2P lane 5+	21	X0B_4P
47	P2P5N	P2P lane 5-	22	X0B_4N
46	GND	Ground	23	GND
45	P2P6P	P2P lane 6+	24	X0B_5P
44	P2P6N	P2P lane 6-	25	X0B_5N
43	GND	Ground	26	GND
42	P2P7P	P2P lane 7+	27	X0B_6P
41	P2P7N	P2P lane 7-	28	X0B_6N
40	GND	Ground	29	GND
39	P2P8P	P2P lane 8+	30	X0B_7P
38	P2P8N	P2P lane 8-	31	X0B_7N

37	GND	Ground	32	GND
36	P2P9P	P2P lane 9+	33	X0B_8P
35	P2P9N	P2P lane 9-	34	X0B_8N
34	GND	Ground	35	GND
33	P2P10 P	P2P lane 10+	36	X0B_9P
32	P2P10 N	P2P lane 10-	37	X0B_9N
31	GND	Ground	38	GND
30	P2P11 P	P2P lane 11+	39	X0B_10P
29	P2P11 N	P2P lane 11-	40	X0B_10N
28	GND	Ground	41	GND
27	P2P12 P	P2P lane 12+	42	X0B_11P
26	P2P12 N	P2P lane 12-	43	X0B_11N
25	GND	Ground	44	GND
24	P2P_L OCK	LOCKN	45	P2P_LOCK
23	GND	Ground	46	GND
22	NC	Not connected	47	SPI_PANEL_MISO
21	NC	Not connected	48	SPI_PANEL_MOSI
20	NC	Not connected	49	SPI_PANEL_CLK
19	NC	Not connected	50	SPI_Demura_CS
18	GND	Ground	51	GND
17	nWR	WP,H : protected ; L : writeable	52	T_nWR
16	SCL	I2C CLK	53	T_SCL
15	SDA	I2C DATA	54	T_SDA
14	GND	Ground	55	GND
13	GND	Ground	56	GND
12	GND	Ground	57	GND
11	GND	Ground	58	GND
10	GND	Ground	59	GND
9	NC	Ground	60	NC
8	VCC_P ANEL	Power Supply Input Voltage	61	12V_PANEL
7	VCC_P ANEL	Power Supply Input Voltage	62	12V_PANEL
6	VCC_P	Power Supply Input Voltage	63	12V_PANEL

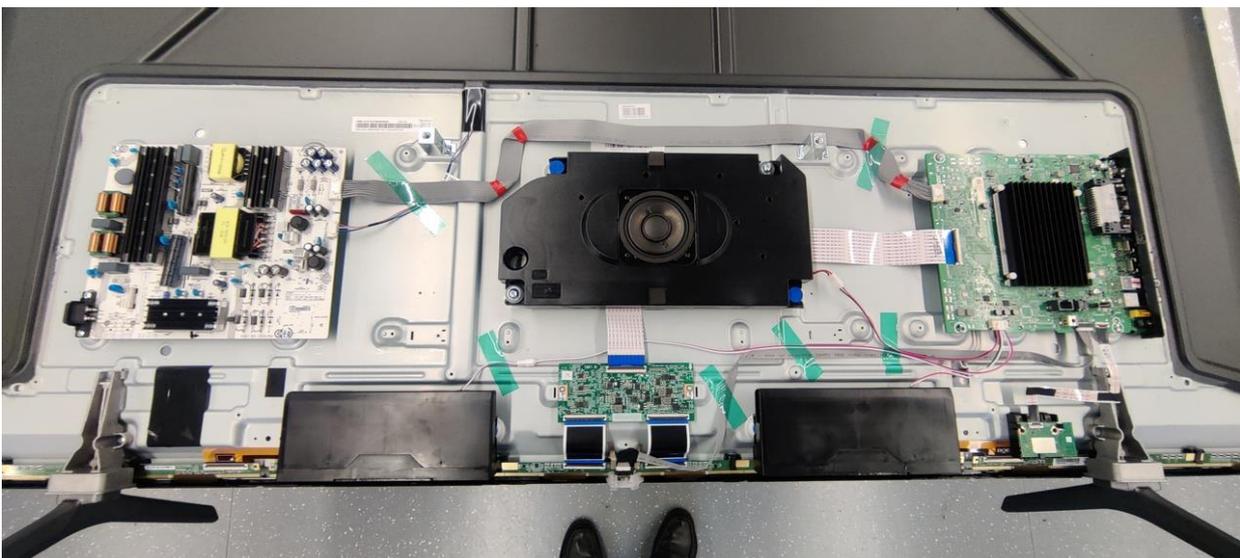
	ANEL			
5	VCC_P ANEL	Power Supply Input Voltage	64	12V_PANEL
4	VCC_P ANEL	Power Supply Input Voltage	65	12V_PANEL
3	VCC_P ANEL	Power Supply Input Voltage	66	12V_PANEL
2	VCC_P ANEL	Power Supply Input Voltage	67	12V_PANEL
1	VCC_P ANEL	Power Supply Input Voltage	68	12V_PANEL

### XP13: Speaker jacket

Pin	definition	illustration	Wire color
1	Woofer-	Woofer speaker negative wire	BLACK
2	Woofer+	Woofer speaker positive wire	RED
3	L+	Left speaker positive wire	BLACK
4	L-	Left speaker negative wire	WHITE
5	R-	Right speaker negative wire	WHITE
6	R+	Right speaker positive wire	RED

### 2.3 Ties,clamps and tapes:

To show the positions where ties and clamps and tapes should be, for checking after servicing. Before disassemble the TV ,besure to take photos for the TV assembly example for 65A67GEVS.



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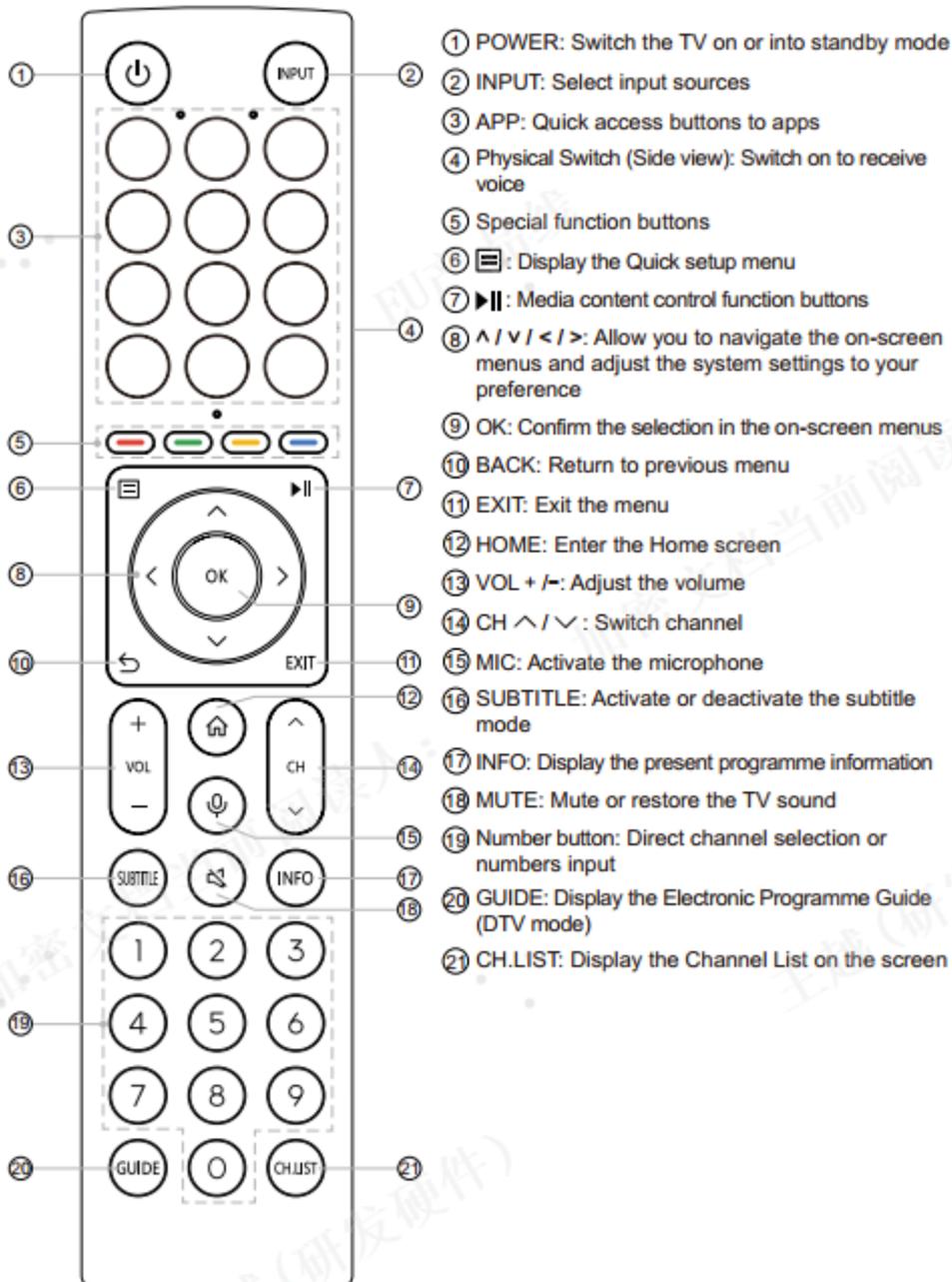
## 2.2 TV boards part list

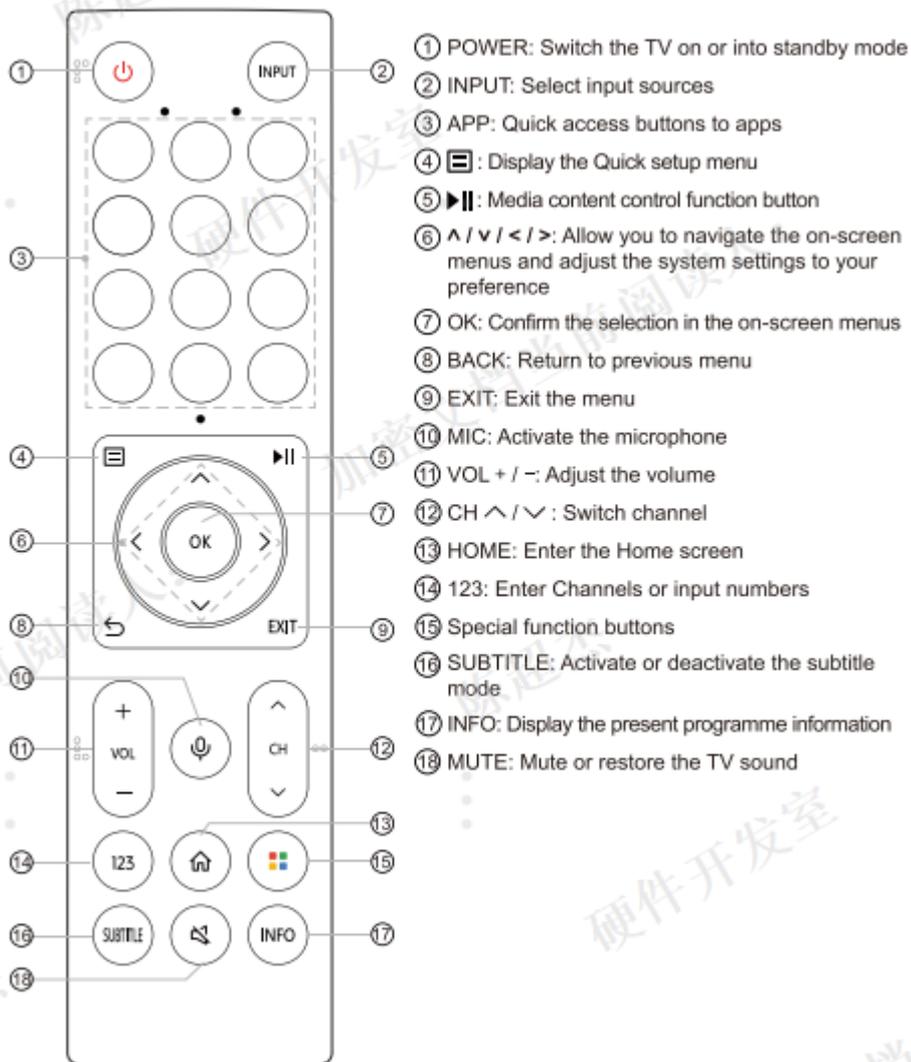
Main board	Boards function difference	Main chassis type	For Series
RSAG7.820.12771\VE R.C\ROH	1. Lateral terminal and vertical terminal. 2. Different AMP design 3. Adapt different panel, such as OLED and LCD	MT9618	65A67GEVS
RSAG7.820.12848\VE R.A\ROH	1. Lateral terminal and vertical terminal. 2. Different AMP design 3. Adapt different panel, such as OLED and Mini LED 4. Add FRC HV8107.	MT9618	65U70KEVS\

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## 3. Factory/Service OSD Menu and Adjustment

### 3.1 Remote Control





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## 3.2 Factory OSD Menu

Factory

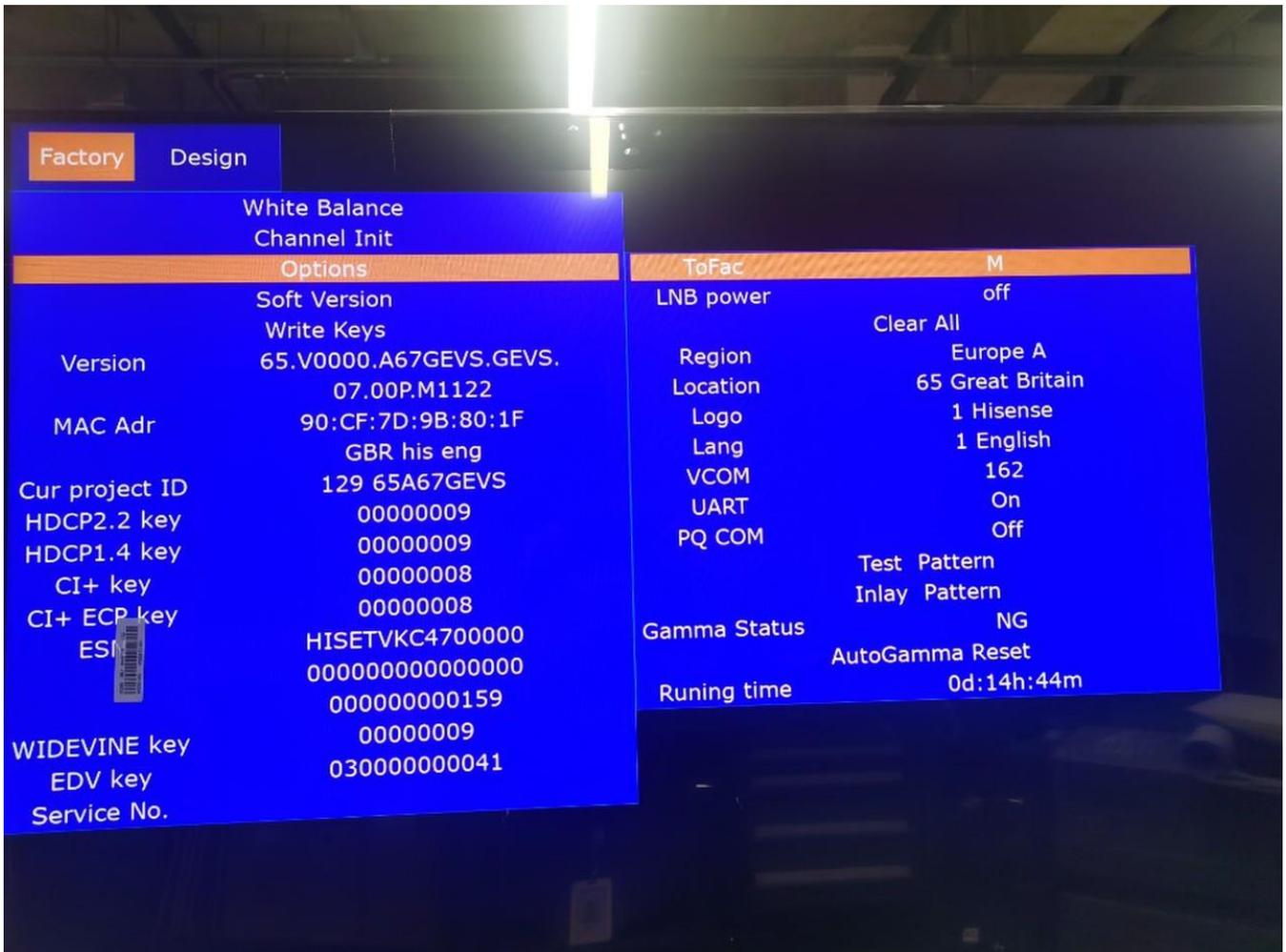
Design

White Balance  
Channel Init  
Options  
Soft Version  
Write Keys  
Version 65.V0000.A67GEVS.GEVS.  
07.00P.M1122  
MAC Adr 90:CF:7D:9B:80:1F  
GBR his eng  
Cur project ID 129 65A67GEVS  
HDCP2.2 key 00000009  
HDCP1.4 key 00000009  
CI+ key 00000008  
CI+ ECP key 00000008  
ESI  HISETVKC4700000  
0000000000000000  
000000000159  
WIDEVINE key 00000009  
EDV key 030000000041  
Service No.

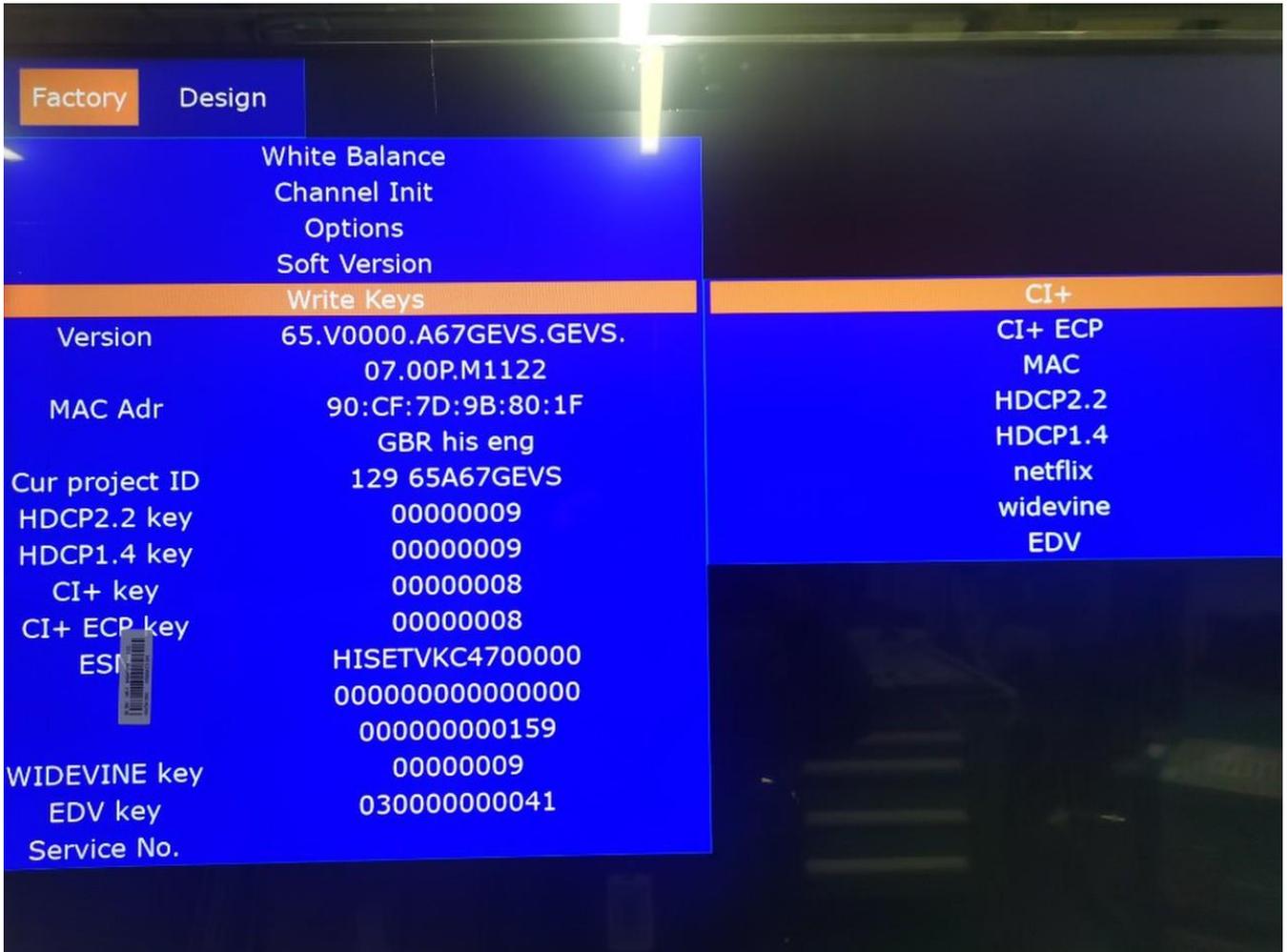
figure -1

Factory OSD menu list: if you want to learn more about TV, you'd better read it but would not adjust the value please. The Factory menu may be have difference for diverse market and customer. Take 65A67GEVS for example.

**Options:**



**Write keys:**



**Note:**

Check whether the Key information under the current Version is OK, if appears “NG” or such as following red surround irregular information then need rewrite the key.

	<b>Factory menu</b>	<b>Description</b>	<b>Remark</b>
Menu	<b>White Balance</b>	White Balance data adjusting, different source has different WB values. Before adjusting, please change to desired source.	
	<b>channel init</b>	TV Produce signal preset, during the factory produce using.	
	<b>Option</b>	Items can choose	
	<b>Clear all</b>	initial the TV , EEPROM reset	
	<b>Soft version</b>	current software version information	
	<b>Version</b>	Software Version information	
	<b>MAC Adr</b>	MAC address information	
	<b>HDCP2.2 key</b>	HDCP2.2 key information	
	<b>ESN</b>	The TV's electronic Serial number	
	<b>WIDEVINE key</b>	<b>WIDEVINE</b> key code	
	<b>Service No.</b>	LTDNXXXXXXXXY-P0001	

<b>White Balance</b>	BIN      B1 	can choose B1/B2/B3/B4/B5/B6
	R Gain  128	High Brightness Red
	G Gain  128	High Brightness Green
	B Gain  128	High Brightness Blue
	R Offset  128	Low Brightness Red
	G Offset  128	Low Brightness Green
	B Offset  128	Low Brightness Blue

<b>Channel init</b>	huangdao old	
	Qing Dao	TV Produce signal preset, during the factory produce using.
	huangdao new	
	.....	

Option	ToFAC M/U	"M" used in factory product. "U" used in user state.
	LNB power	13/14;18/19;Power off
	Region	Region choose
	country	Country choose
	Logo	Customer logo choose
	Language	Language choose
	VCOM	Panel voltage,
	UART	On/off (when choose "on" then can serial port connect with Tool successfully)
	PQ COM	On/off
<b>Write keys</b>	CI+	If CI+ key code lost, you can write.
	MAC	If MAC key code lost, you can write.
	HDCP2.2	If HDCP key code lost, you can write .
	Netflix	If Netflix key code lost, you can write .
	Widevine	If Widevine key code lost, you can write .

**Note:**

The Factory menu maybe have difference for diverse market and customer, above Factory menu only for reference.

The factory menu data varies according to different sources. Incase changing the factory data by error, you can choose to “Clear all”, by which you can resume the default value.

To clean the EEPROM:

- a. Select the item “**Option**”--“**Clear all**” in Factory mode.
- b. Press  button to clear the EEPROM data.
- c. Close the OSD menu after 5 seconds.

- 
- d. Restart the TV.
  - e. Also the Keys information must be checked, if appear “NG”, then must rewrite key code.

## 4. Software Upgrading

### 4.1 USB Upgrade

#### Main software upgrade directly with USB

The main software can be upgraded with USB disk. It includes two modes: user mode、 factory mode. Take **65A67GEVS** for example.

##### 4.1.1 TV in user mode:

- a. Decompress MTK\_9618\_EU\_pkg\_YYYYMMDD.tar.gz (YYYYMMDD is the year/month/day when the software is being built, such as MTK\_9618\_EU\_pkg\_20221116.tar.gz) and copy usb\_MTK\_9618\_EU.bin file to the USB root directory. Please make sure there are no other “\*.bin” files in the root directory of USB disk .
- b. AC power off the TV, insert the USB disk to the USB 2.0 port, TV in standby status,next long press the “power key . If “Usb Upgrade Checking” is shown on TV, it means TV successfully enters upgrading status..
- c. Waiting TV is trying to load the software and it will spend about 2 minutes. After that “Usb Upgrade Checking” will be displayed and upgrade process bar will indicate the progress. It needs about 5 minutes to complete the whole software upgrade.
- d. After upgrade, TV can automatically reboot.
- e. Enter the Factory OSD Menu to check the main software version, and then choose “option”◇“Clear All” to do clean up.

##### 4.1.2 TV in factory mode:

- a. If TV is in Factory mode, only have difference from chapter 4.1.1 b. as following. others are same.
- b. TV is in factory mode, only AC power off TV and insert the USB disk, next AC power on, TV can identify automatically to update, till call up “Usb Upgrade Checking” interface , update process bar is 1%.

**4.1.3 If the above USB upgrade methods fail, you can rename the upgrade software to upgrade\_image.pkg, next use serical “cu -full” to update**

**4.1.4 When upgrade successfully, We must ensure the TV mode of running correctly.**

**Paths: Factory---Design –Project ID**

**Once choose another TV mode , must AC power off and power on the TV to reboot.**

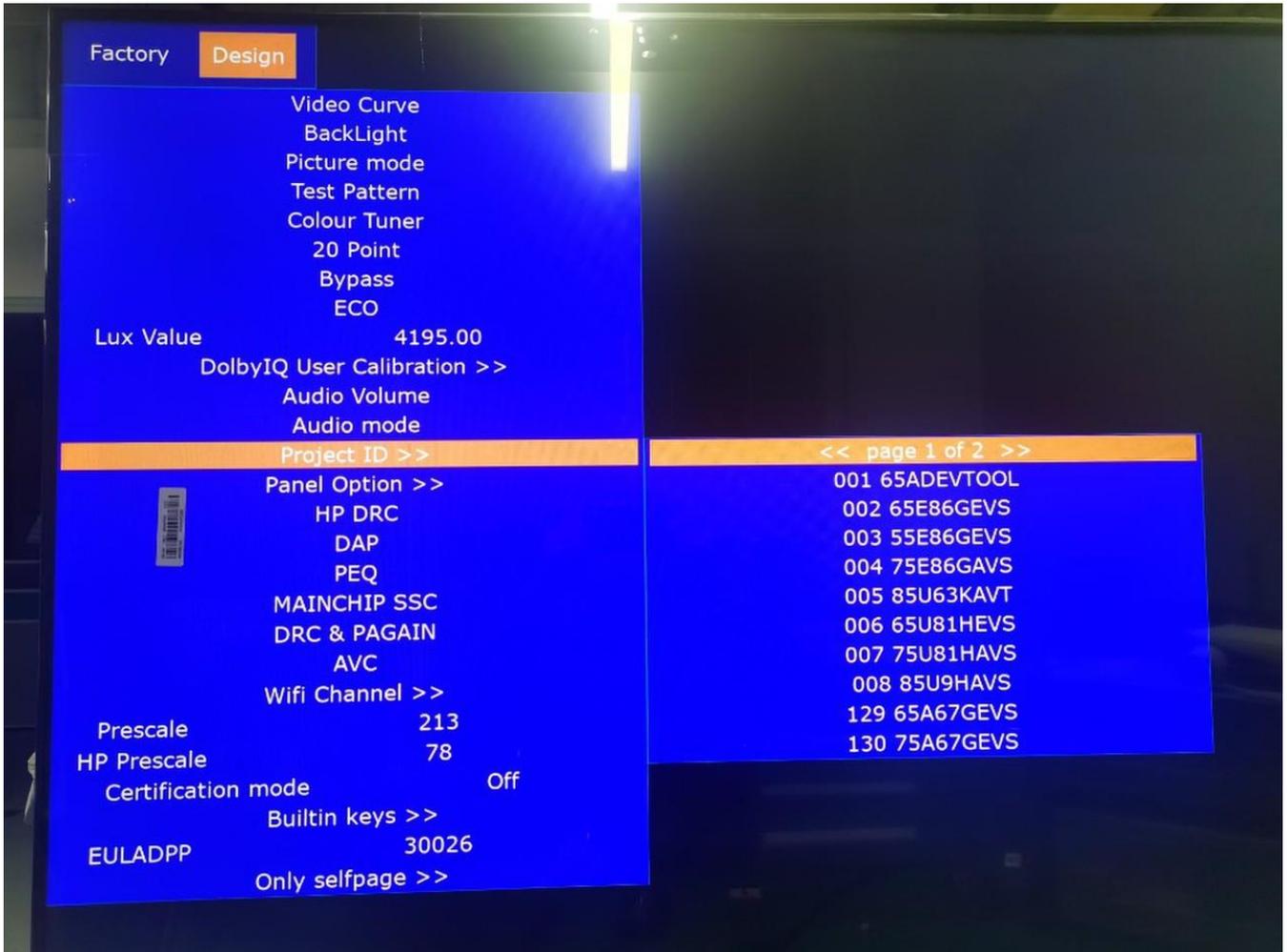


Figure-1: Upgrading software

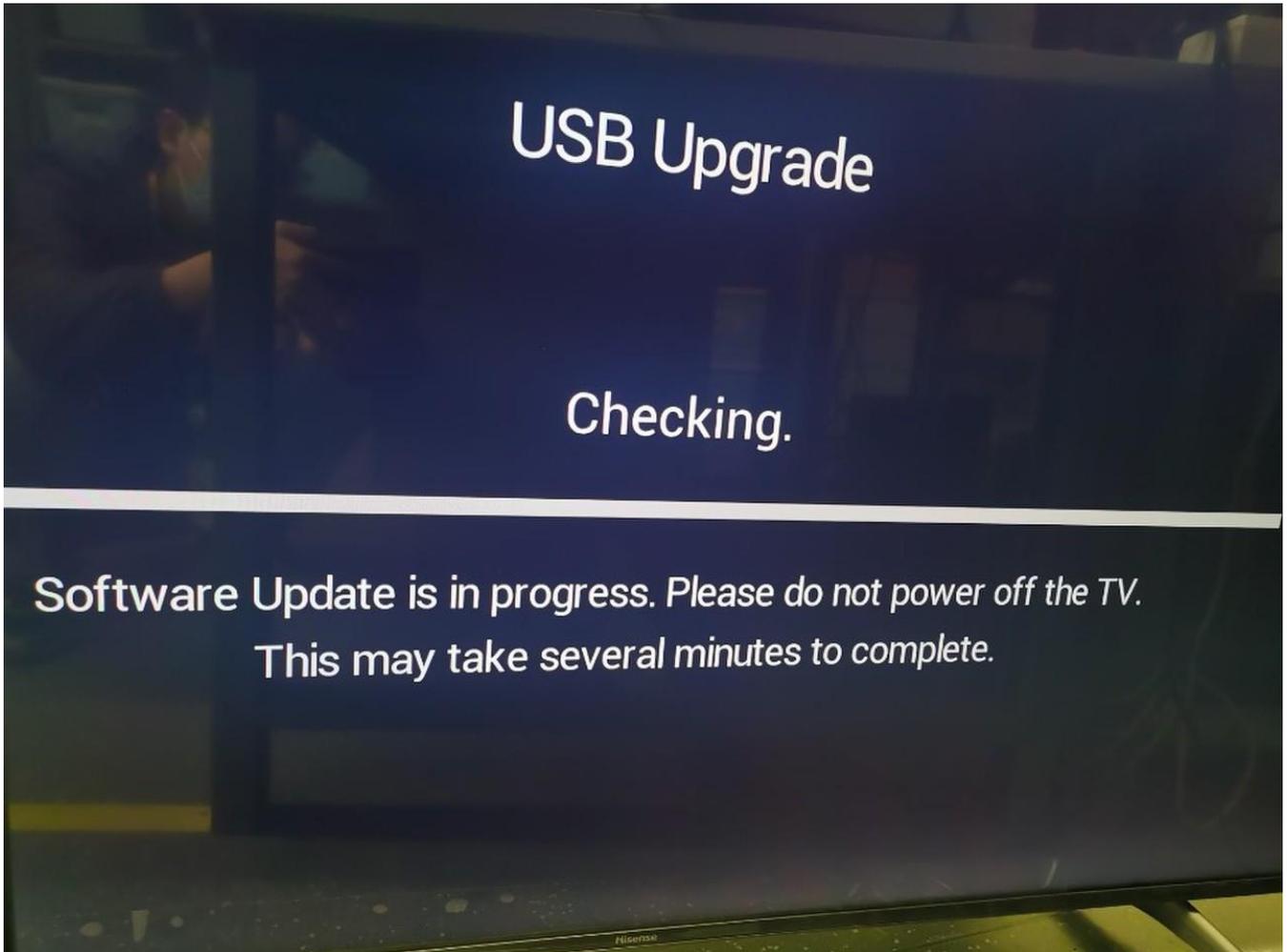


Figure-1

## 4.2 Flash Tool upgrading

First set program or if USB upgrades failure ,may causing TV crashed and SecureCRT no print message. If the above measures cannot use, repairers need to burn the boot program . Then USB disk to upgrade the “ mboot.bin, rom\_emmc\_boot.bin” file from dailybuild in MTK\_9618\_EU\_bootloader.tar.gz.

Using the following bootstrap program.



boot\_speed\_up.r  
ar

### 4.2.1

TV needs to be linked serial port. And you should stop the serial port tool on the PC(like securecrt and putty). Open flashtool.

Decompress the following firmware and install it on drive C.

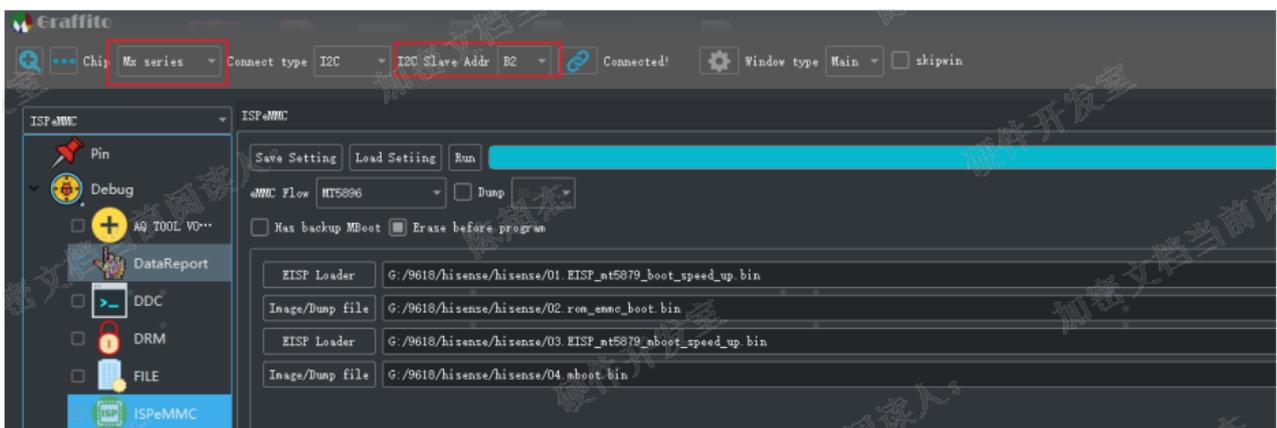
GraffitoInstaller\_2  
.0.3.rar



Register and log in your email, you need verify the capTcha sent from MTK the first time.



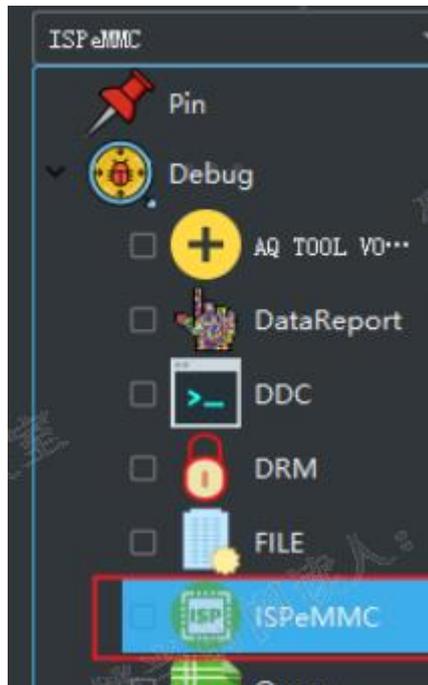
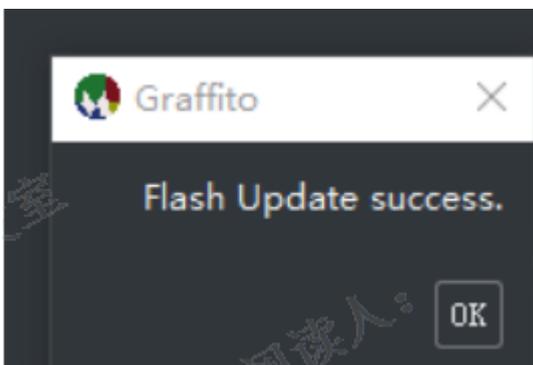
Get linked using the following setting.



If the mainboard already has burned boot,you may need the input “du” using the serial port.

```
-sh-3.2$ 输入00112233  
-sh-3.2$ 最后个3不显示, log会  
-sh-3.2$ 停  
-sh-3.2$ 0011223
```

Then click the “...”, “Flash update mode” .





#### 4.2.1

USB disk to upgrade the “usb\_MTK\_9618\_EU.bin” file. The file needs to be changed name as ‘upgrade\_image.pkg’. Then open the TV and Open the SecureCRT in the meanwhile. click 'Enter' into bootloader, =>

```

=>
=> set dbtable_init 0
Unknown command 'set' - try 'help'
=> << M7332 >># set dbtable_init 0
Unknown command '<<' - try 'help'
=>
  
```

set: cu -full

When the program finished, we need to change projectID

Execute the following orders in =>

- 1). Hisense projectid list //show all the models
- 2). Hisense projectid update \*\*\* //change projectID to 65A67GEVS(129 for example)
3. reset //Reboot the TV

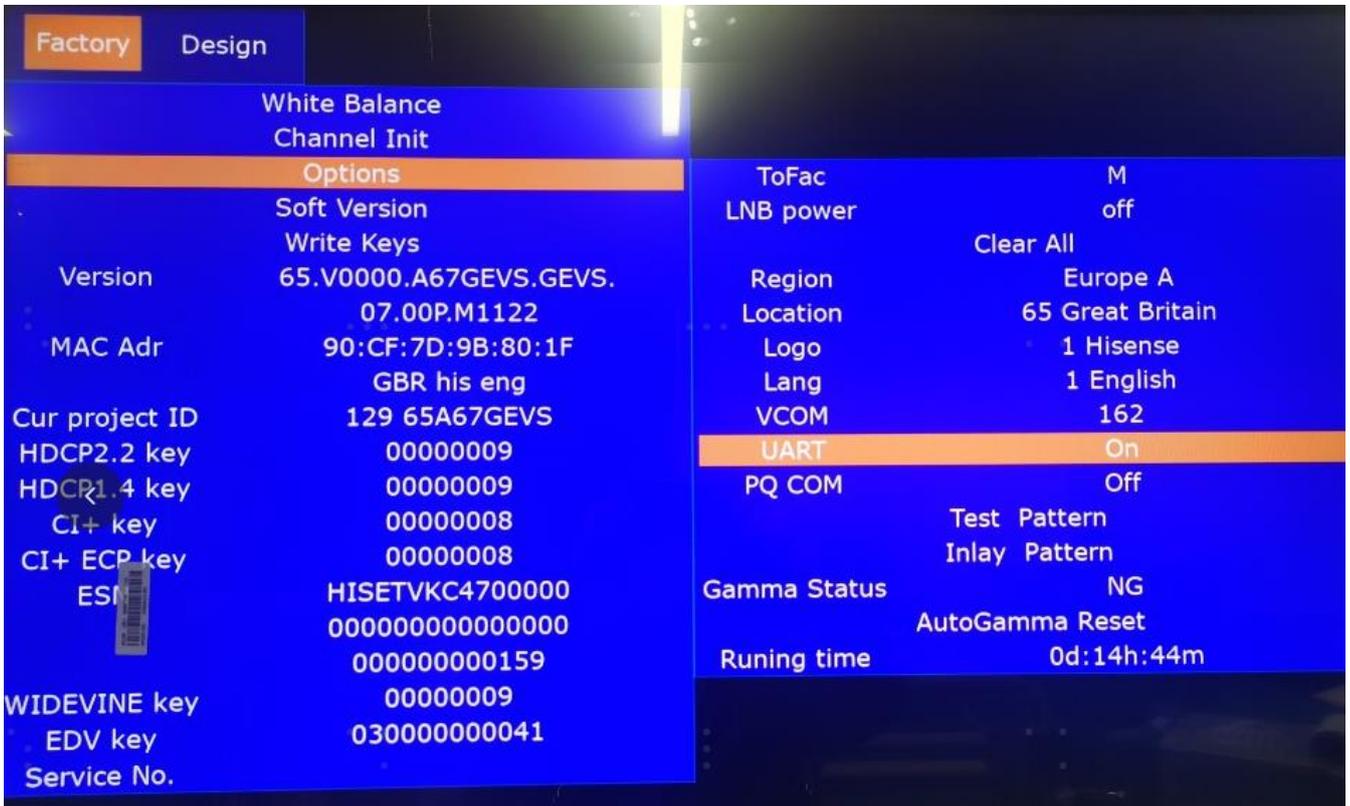
Some remarks:

1. Get boot from dailybuild in MTK\_9618\_EU\_bootloader.tar.gz.

2. Open the UART serial option

UART serial choose "on"

Menu: Factory-->Options-->UART-->on

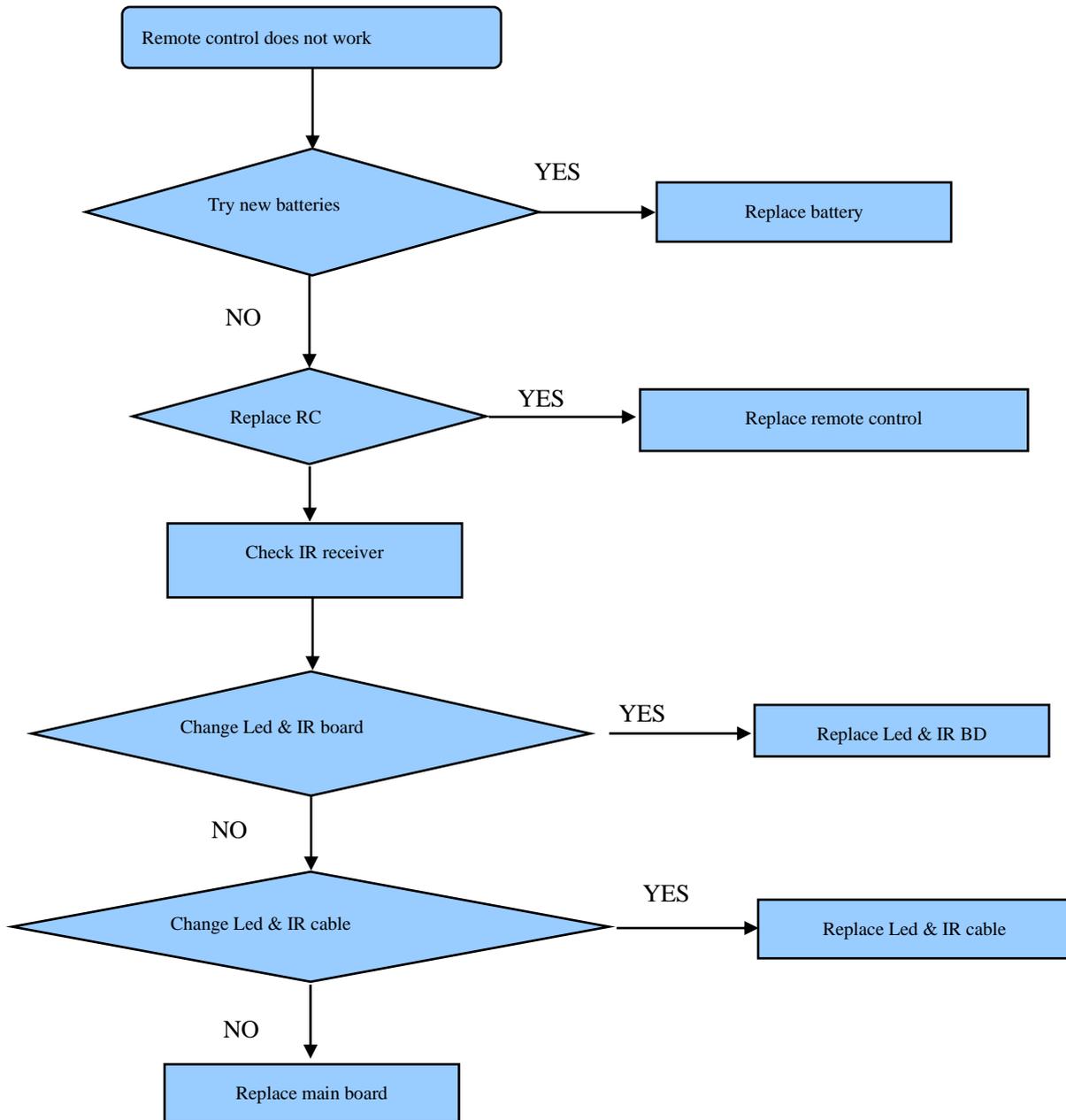


If finish the updating and data adjust UART serial, UART choose "off"

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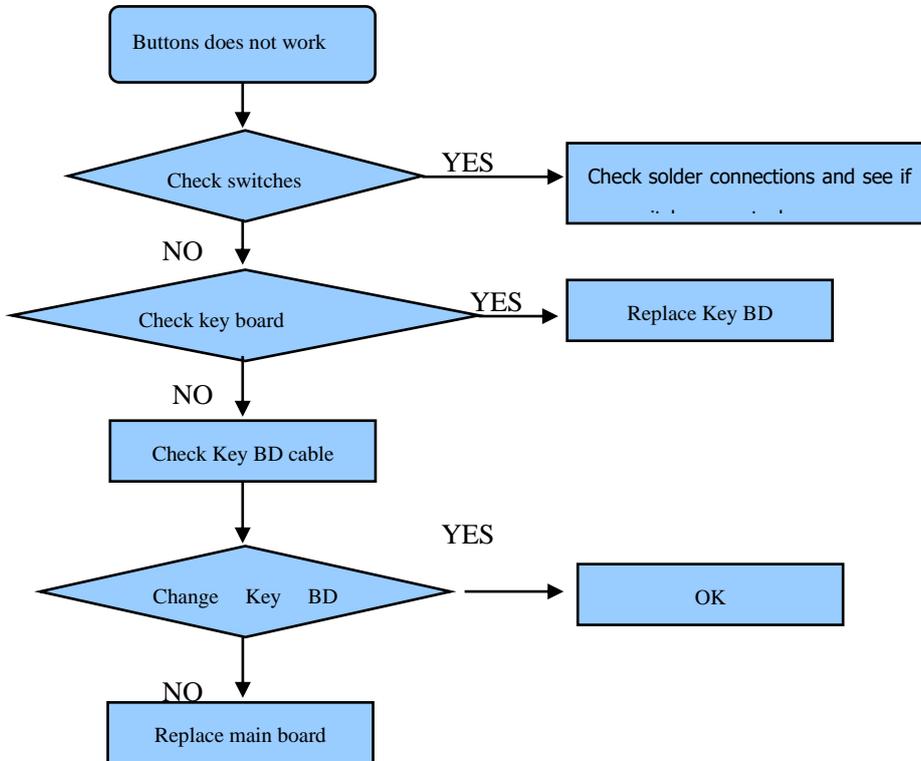
## 5. Trouble shooting

### 5.1 Troubleshooting for Remote Control

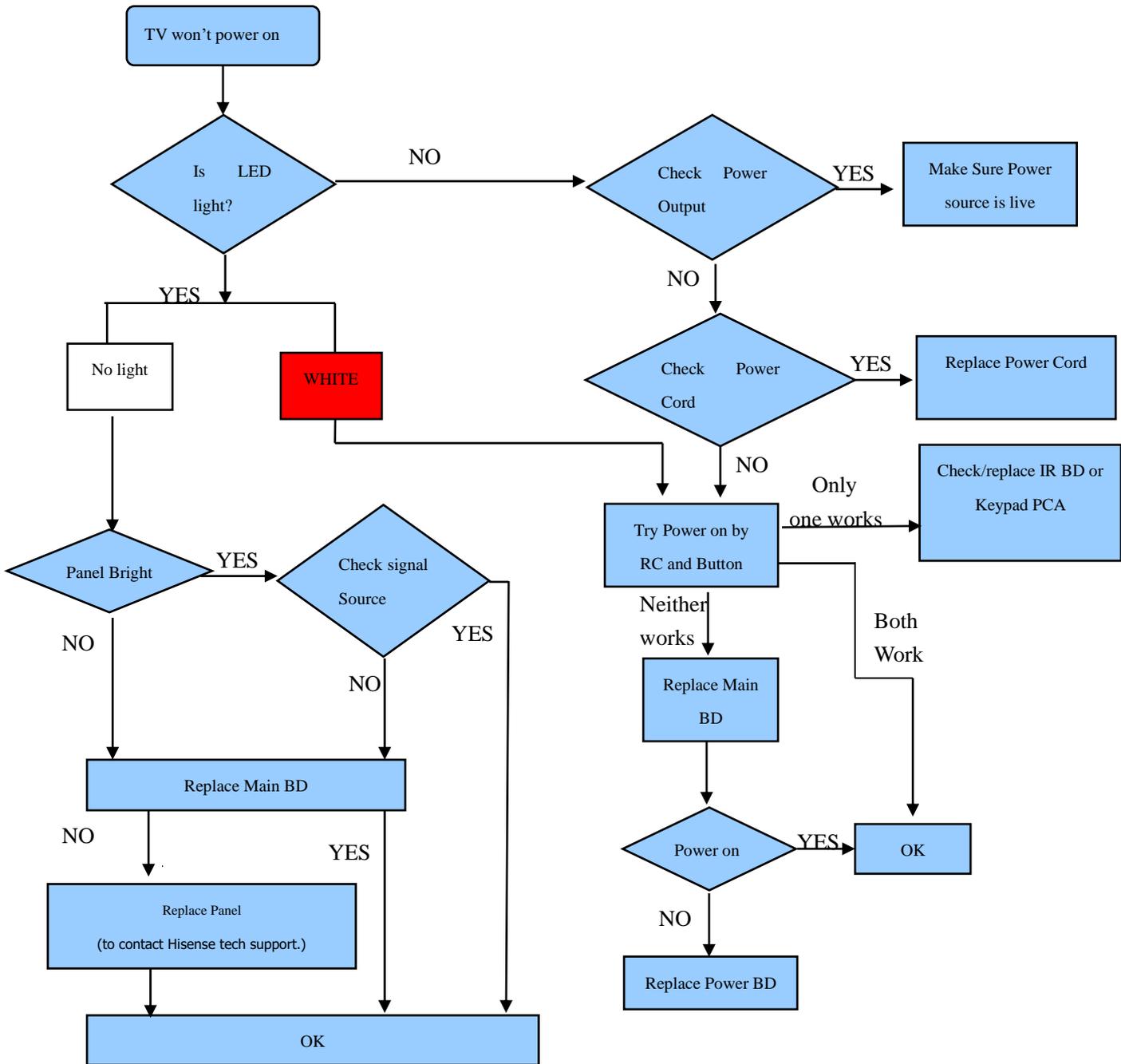


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## 5.2 Troubleshooting for Function Key



### 5.3 TV won't Power On

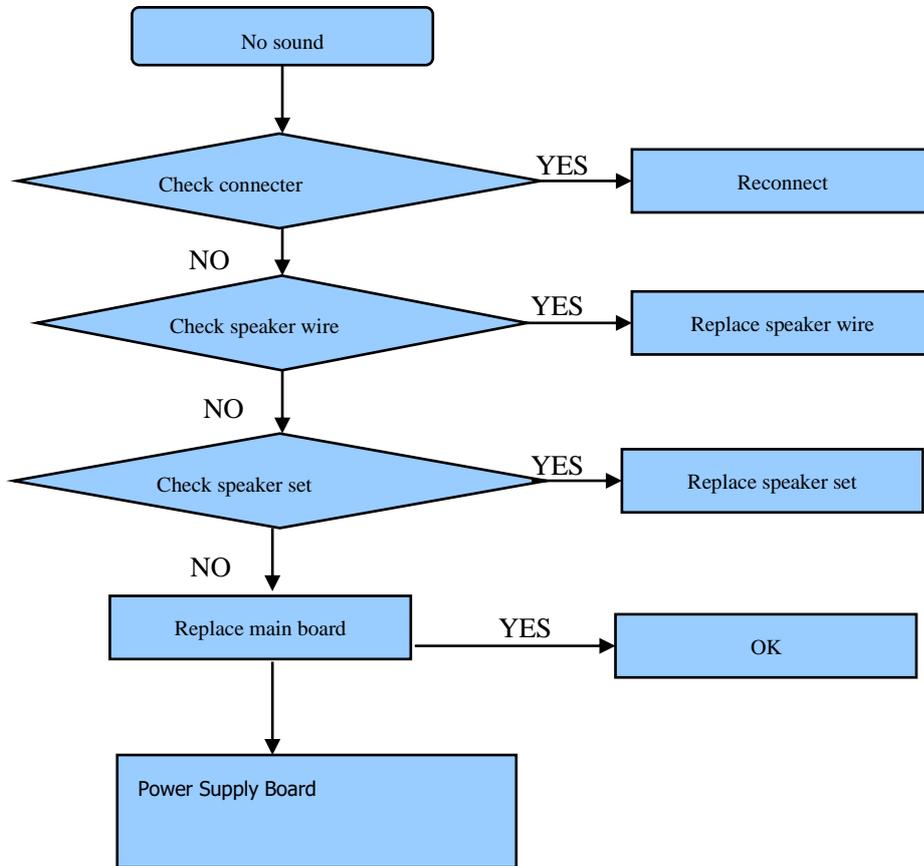


**Notice:**

MT9618 Europe market:  
 TV work normally indication led is no light.  
 TV standby indication led is white.

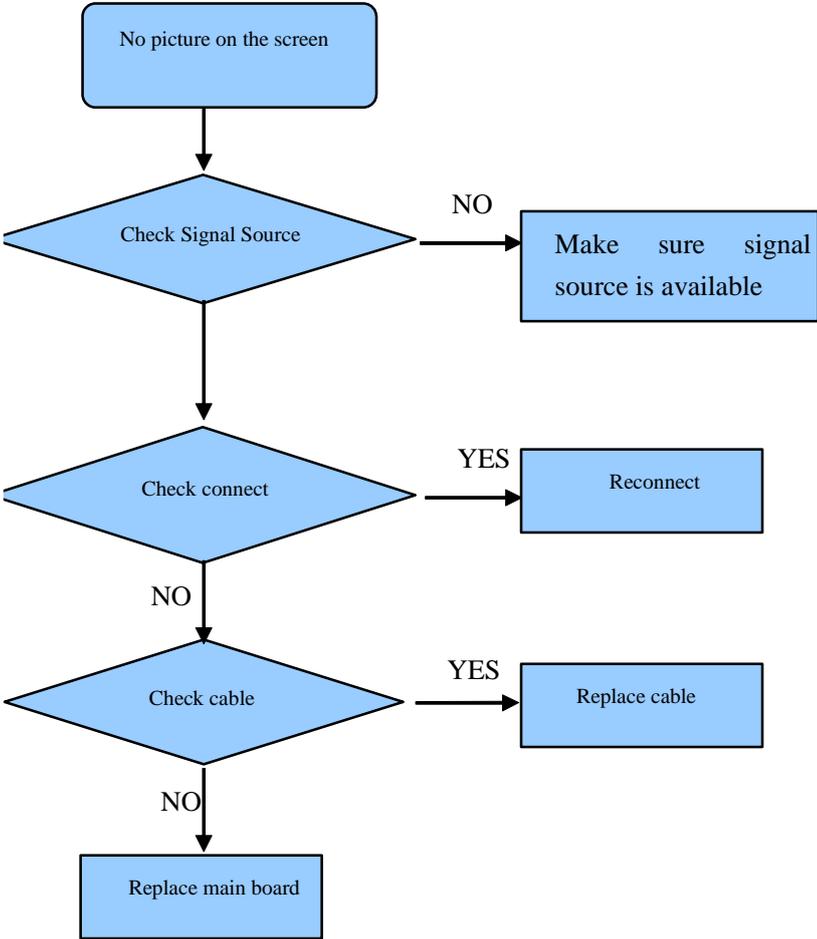
---

## 5.4 Troubleshooting for Audio



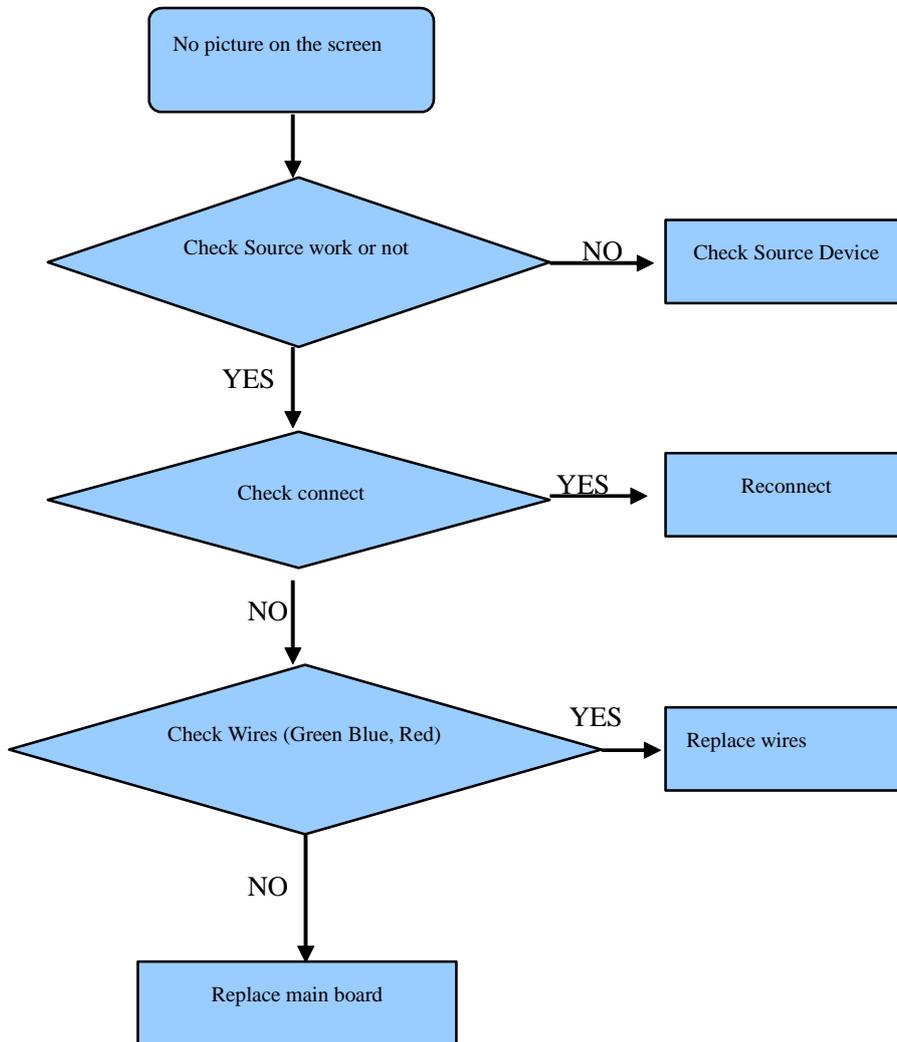
---

## 5.5 Troubleshooting for TV/VGA/HDMI input



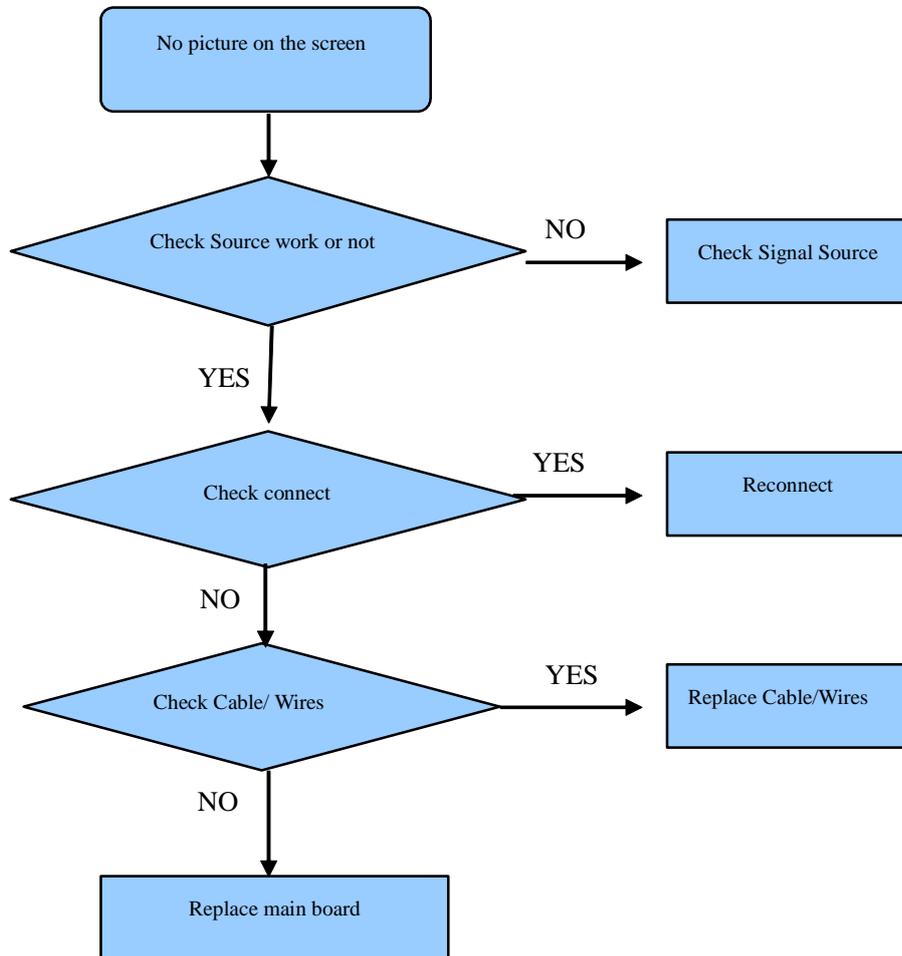
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## 5.6 Troubleshooting for YPbPr input



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## 5.7 Troubleshooting for Video input



## 6. Signals Block Diagram & power assign & schematic diagram

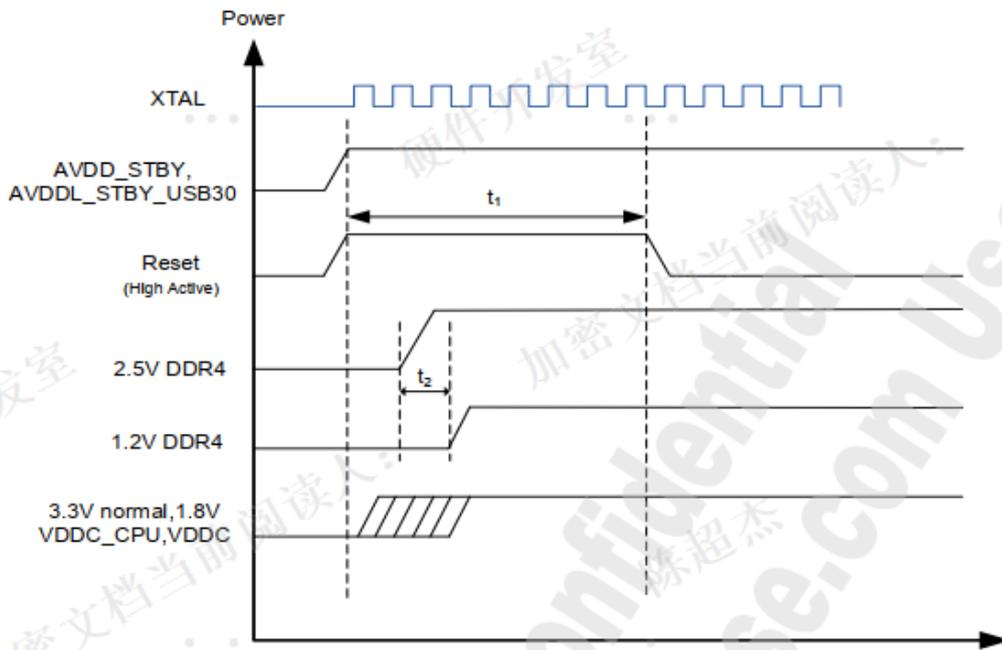


Figure 7-2. Power on Sequence

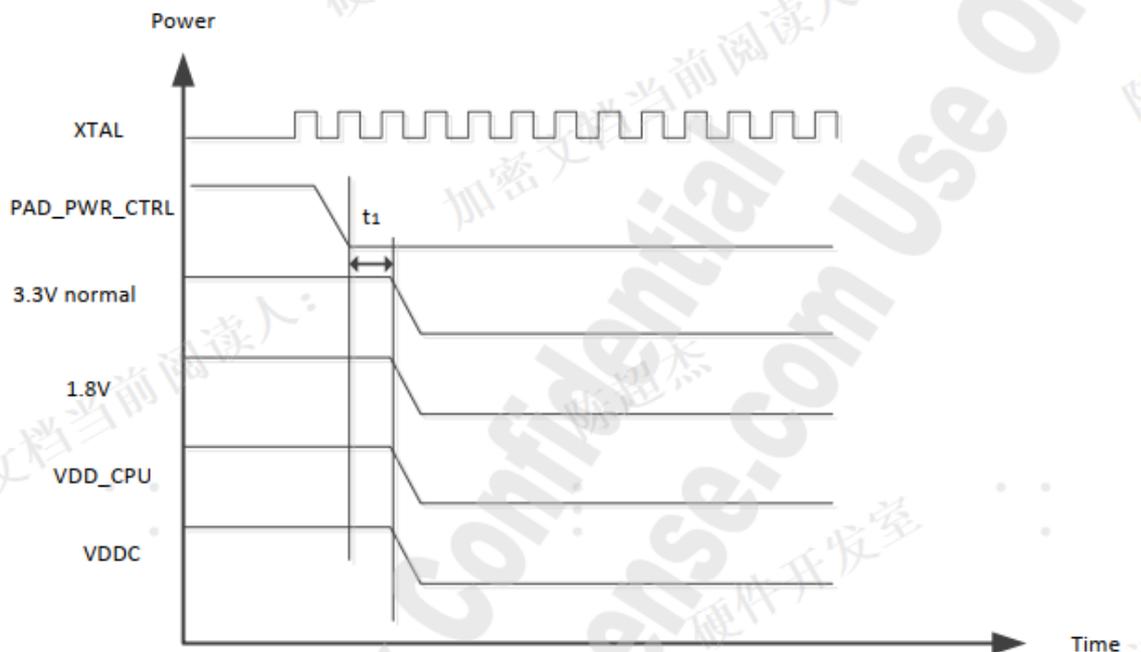


Figure 7-3. DC off Sequence

