LCD Television

Service Manual

Chassis： NT72671

Version: V 1.0

Hisense Visual Technology Co.，Ltd.

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REVISION HISTORY			
Version	Revise content	Reviser	Date
V1.00	First issued	Zhangxue	2020-12-4

Contents

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

techician 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 Eassumes no liability, express or implied, arising out of any unauthorized modification of design. Servicetech 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.

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.

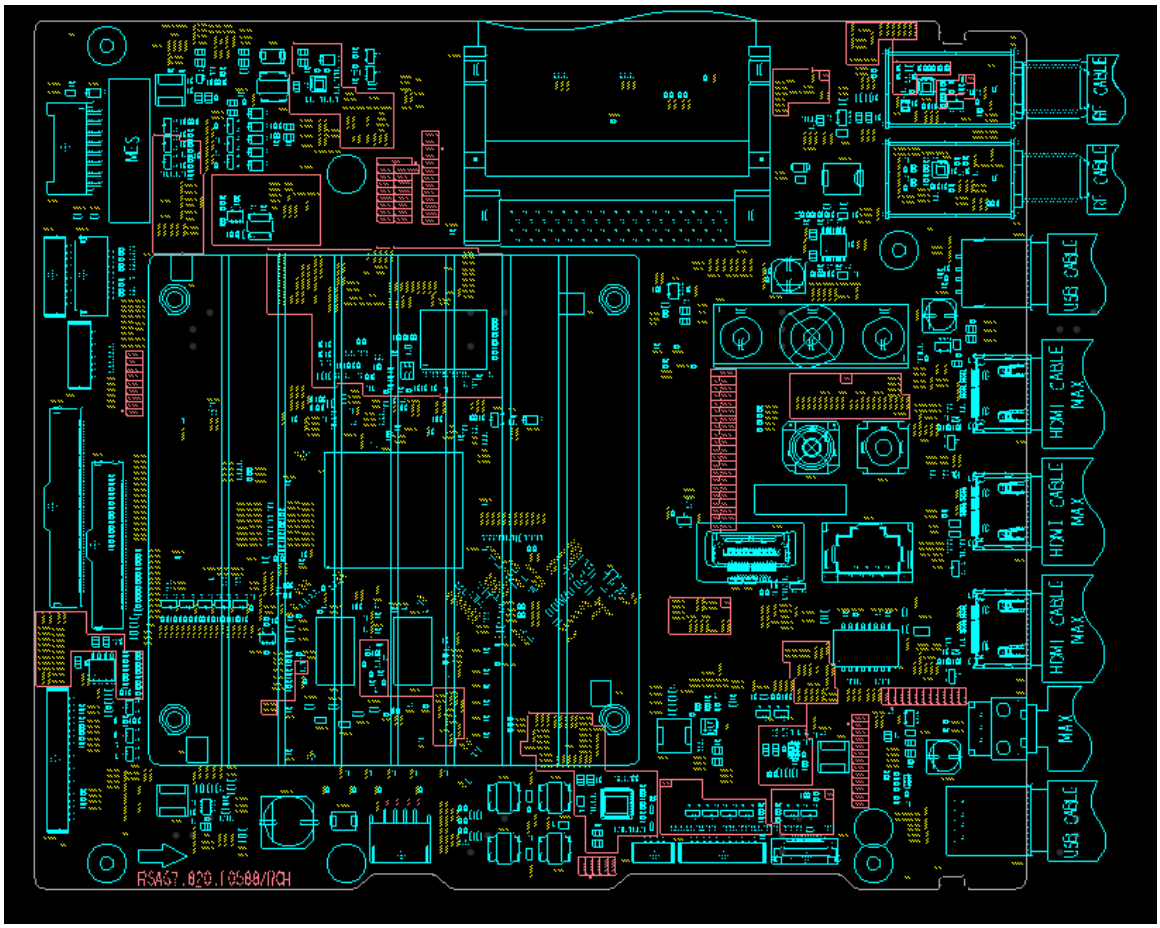
The lightning flash with arrowhead symbol, within an equilateral triangle is intended to alert the user to the presence of uninsulated dangerous voltage within the products enclosure that may be of sufficient magnitude to constitute a risk of electric shock.

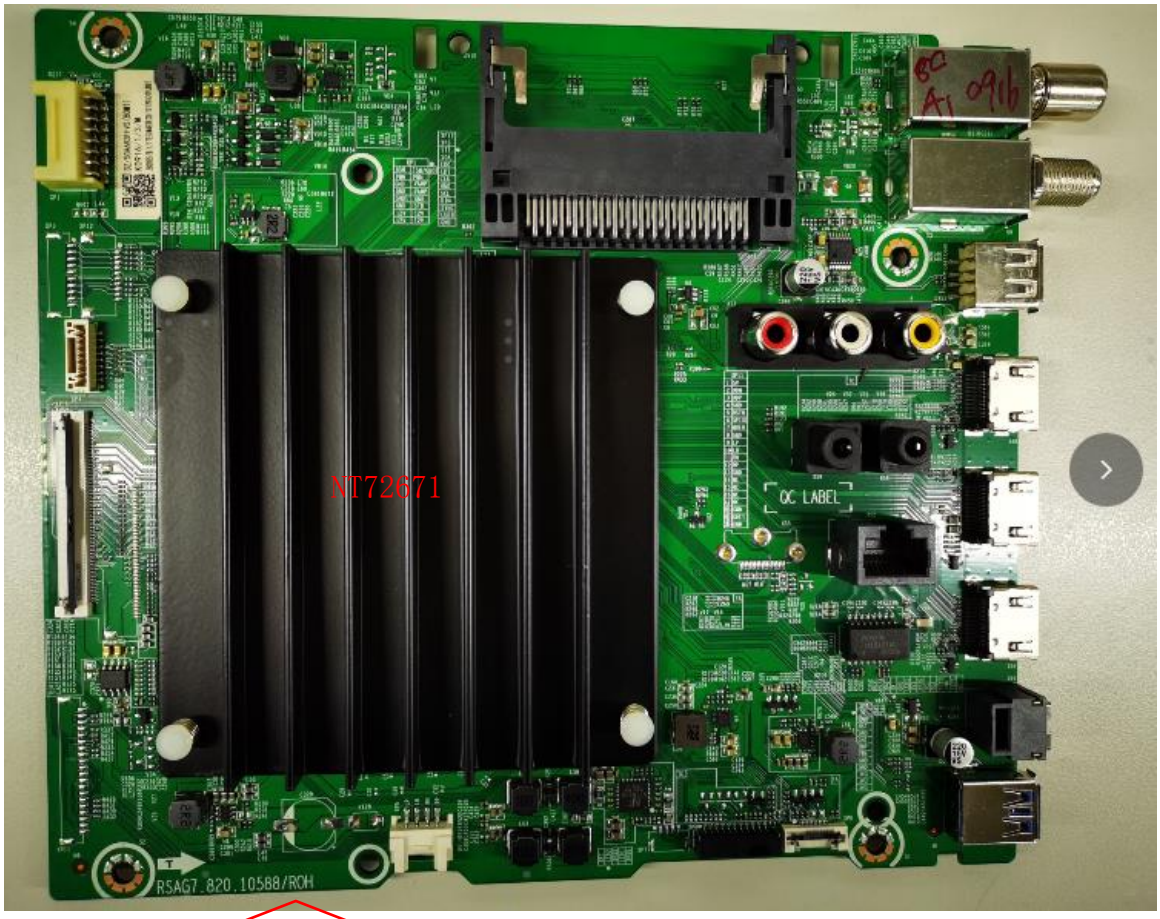
The exclamation point within an equilateral triangle is intended to alert the service personnel to important safety information in the service literature. .

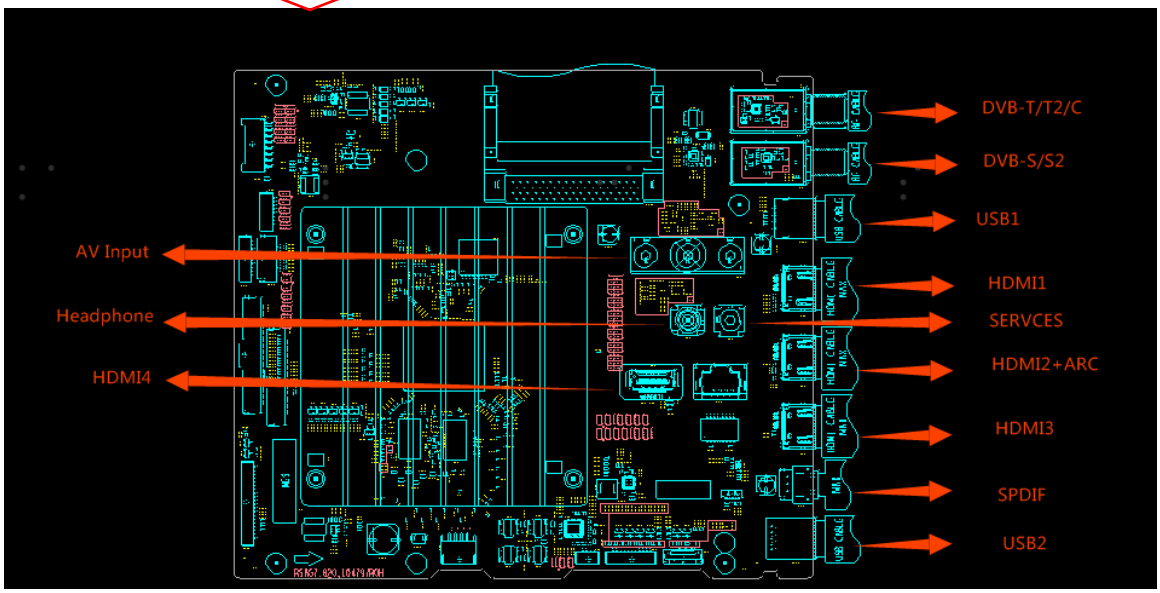
2. TV boards:

2.1 Main board layout

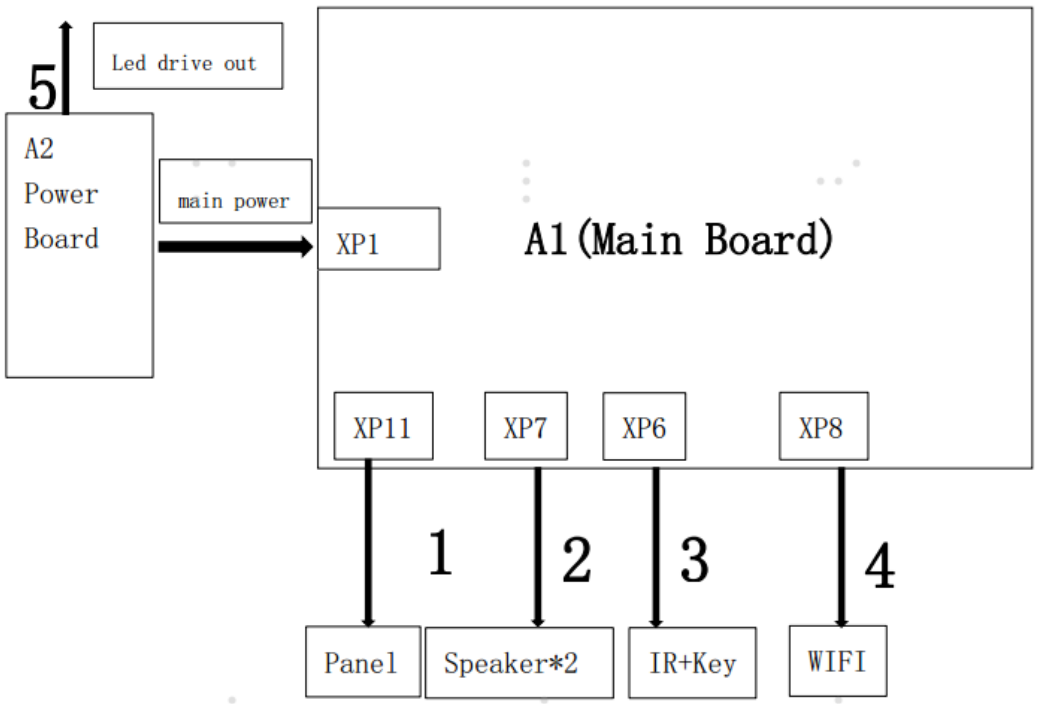
2.1.1 The top of main board (RSAG7.820.10588/ROH)




NT72671
QC LABEL
RSAG7.820.10588/ROH


DVB-T/T2/C
DVB-S/S2
USB1
HDMI1
SERVCES
HDMI2+ARC
HDMI3
SPDIF
USB2
AV Input
Headphone
HDMI4

2.2 Wiring diagram(example for 50A683FEVS):



XP1： Power for main board jacket

Main board terminal		Power board terminal	
Pin	definition	Pin	definition
1	GND	1	GND
2	BL_EN/SW	2	BL_EN/SW1
3	DIMMING2/PWM2	3	DIMMING2/DIM1
4	DIMMING/PWM	4	DIMMING/PWM1
5	VCC_A	5	VCC_A/ VCCA1
6	GND	6	GND
7	VCC_A	7	VCC_A/ VCCA1
8	GND	8	GND
9	GND	9	GND
10	3DEN-NC	10	NC
11	PWR-ON/OFF/ STB	11	POWER ON/OFF/ STB1
12	GND	12	GND
13	12VS/ VCC2	13	12VS/ VCC3

14	12VS/ VCC1	14	12VS/ VCC2
15	12VS/ VCC2	15	12VS/ VCC3
16	GND	16	GND

XP11：68pin ISP jacket

Panel terminal jacket definition			Main board terminal jacket definition	
Pin	definition	illustration	Pin	Config
68	NC		1	NC
67	NC		2	TER_CHOT
66	NC		3	ISP_RST
65	TEND		4	TER
64	VCE		5	X0B_YCLK
63	LC		6	X0B_LC
62	YDIO1		7	YDIO1
61	GND		8	GND
60	P2P12N		9	X0B_1P
59	P2P12P		10	X0B_1N
58	GND		11	GND
57	P2P11N		12	X0B_2P
56	P2P11P		13	X0B_2N
55	GND		14	GND
54	P2P10N		15	X0B_3P
53	P2P10P		16	X0B_3N
52	GND		17	GND
51	P2P9N		18	X0B_4P
50	P2P9P		19	X0B_4N
49	GND		20	GND
48	P2P8N		21	X0B_5P
47	P2P8P		22	X0B_5N
46	GND		23	GND
45	P2P7N		24	X0B_6P
44	P2P7P		25	X0B_6N
43	GND		26	GND
42	P2P6N		27	X0B_7P
41	P2P6P		28	X0B_7N
40	GND		29	GND
39	P2P5N		30	X0B_8P
38	P2P5P		31	X0B_8N

37	GND		32	GND
36	P2P4N		33	X0B_9P
35	P2P4P		34	X0B_9N
34	GND		35	GND
33	P2P3N		36	X0B_10P
32	P2P3P		37	X0B_10N
31	GND		38	GND
30	P2P2N		39	X0B_11P
29	P2P2P		40	X0B_11N
28	GND		41	GND
27	P2P1N		42	X0B_12P
26	P2P1P		43	X0B_12N
25	GND		44	GND
24	P2P_LOCK		45	P2P_LOCK
23	GND		46	GND
22	MISO		47	SPI_PANEL_MISO
21	MOSI		48	SPI_PANEL_MOSI
20	SCLK		49	SPI_PANEL_CLK
19	CS		50	SPI_Demura_CS
18	GND		51	GND
17	NC		52	T_nWR
16	S_SCL	I2C_CLK	53	T_SCL
15	S_SDA	I2C_DATE	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	No Connection	60	NC
8	VCC_PANEL	Power Supply Input Voltage	61	12V-Panel
7	VCC_PANEL	Power Supply Input Voltage	62	12V-Panel
6	VCC_PANEL	Power Supply Input Voltage	63	12V-Panel
5	VCC_PANEL	Power Supply Input Voltage	64	12V-Panel
4	VCC_PANEL	Power Supply Input Voltage	65	12V-Panel
3	VCC_PANEL	Power Supply Input Voltage	66	12V-Panel
2	VCC_PANEL	Power Supply Input	67	12V-Panel

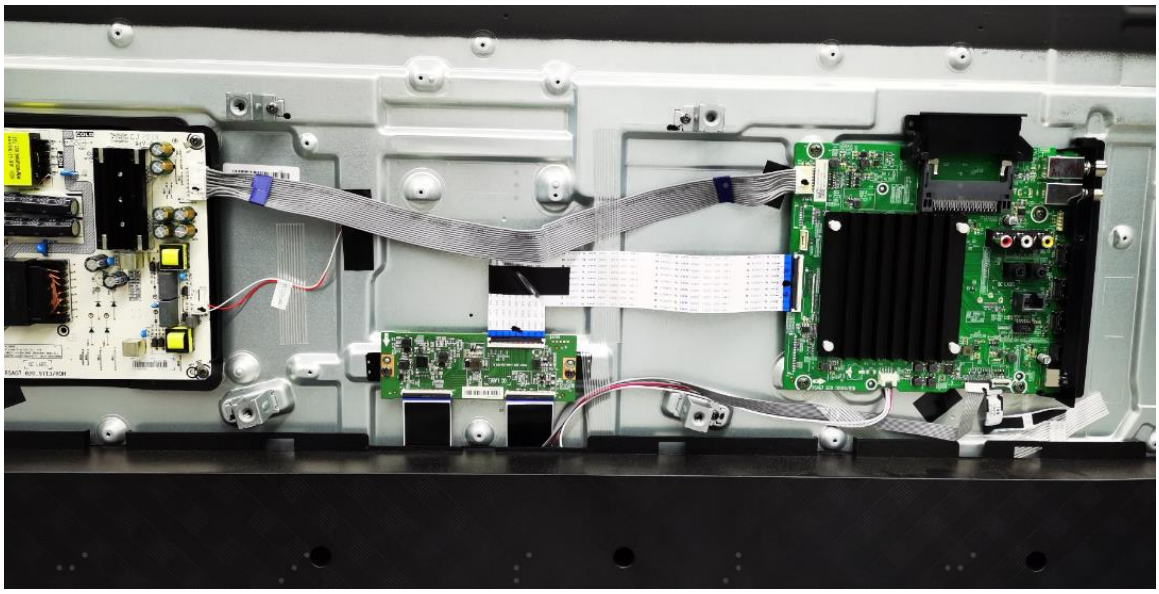
		Voltage		
1	VCC_PANEL	Power Supply Input Voltage	68	12V-Panel

XP7：Speaker jacket

Pin	definition	illustration	Wire color
1	L+	Left speaker positive wire	红
2	L-	Left speaker negative wire	白
3	R-	right speaker negative wire	白
4	R+	Right speaker positive wire	红

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 photes for the TV assembly example for 50A683FEVS.

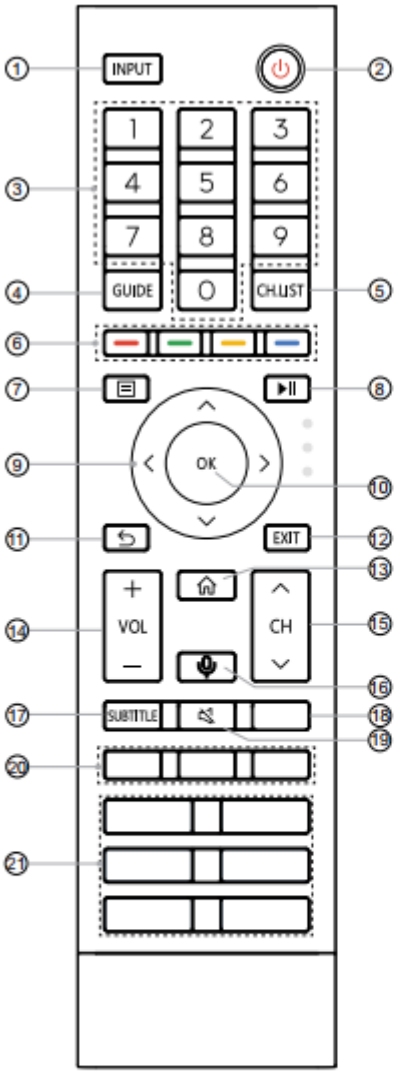


2.2 TV boards part list

Main board	Boards function difference	Main chassis type	For Series
RSAG7.820.10588/ROH	1. Lateral terminal and vertical terminal. 2. TCON part on the board.	NT72671	50A683FEVS

3. Factory/Service OSD Menu and Adjustment

3.1 Remote Control

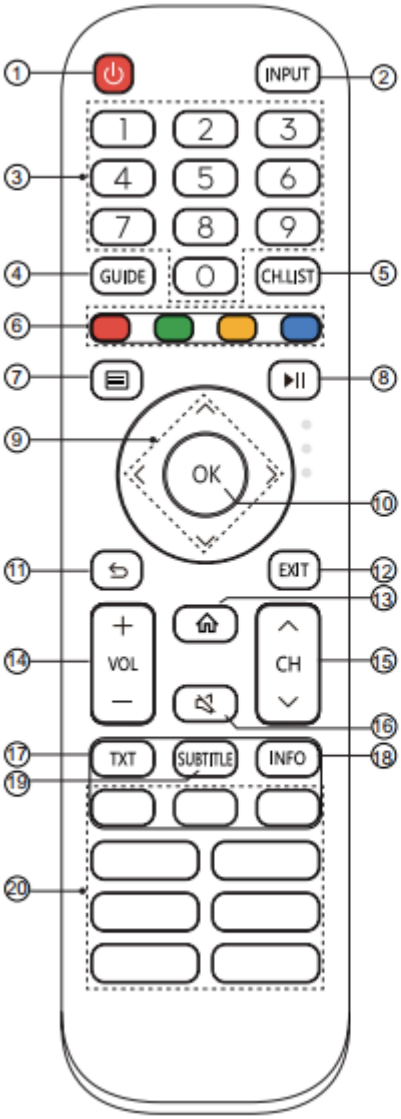


① INPUT: Select input sources
② POWER: Switch the TV on or into standby mode
③ Number button: Direct channel selection or numbers input
④ GUIDE: Display the Electronic Program Guide (DTV mode)
⑤ CH.LIST: Display the Channel List on the screen
⑥ Special function buttons
⑦ : Display the Quick setup menu
⑧ : Media content control function buttons
⑨ ^ / v / < / >: Allow you to navigate the OSD menus and adjust the system settings to your preference
⑩ OK: Confirm the selection in the OSD menus
⑪ BACK: Return to previous menu
⑫ EXIT: Exit the menu
⑬ HOME: Enter the Home screen
⑭ VOL + /–: Adjust the volume
⑮ CH ^ / v : Switch channel
⑯ MIC: Activate the microphone
⑰ SUBTITLE: Activate or deactivate the subtitle mode
⑱ INFO: Display the present programme information
TEXT: Turn on/off the teletext function
⑲ MUTE: Mute or restore the TV sound
⑳ APP: Quick access to the app
: Custom button to launch input or apps quickly
㉑ APP: Quick access buttons to apps
MEDIA: Enter the media mode

Bluetooth remote control module specifications

WNF171
Frequency Range: 2.400GHz~2.4835GHz
Output Power(Max.): +4.5dBm

NOTE: The included remote control will vary depending on model, countries/regions. Check information according to the actual remote control in the accessory bag.



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⑩ OK: Confirm the selection in the OSD menus
⑪ BACK: Return to previous menu
⑫ EXIT: Exit the menu
⑬ HOME: Enter the Home screen
⑭ VOL + /−: Adjust the volume
⑮ CH ^ / v : Switch channel
⑯ MUTE: Mute or restore the TV sound
⑰ TXT: Turn on/off the teletext function
⑱ INFO: Display the present programme information
⑲ SUBTITLE: Activate or deactivate the subtitle mode
⑳ APP: Quick access buttons to apps
MEDIA: Enter the media mode
▦: All Apps
BROWSER: Enter into BROWSER

3.2 Factory OSD Menu

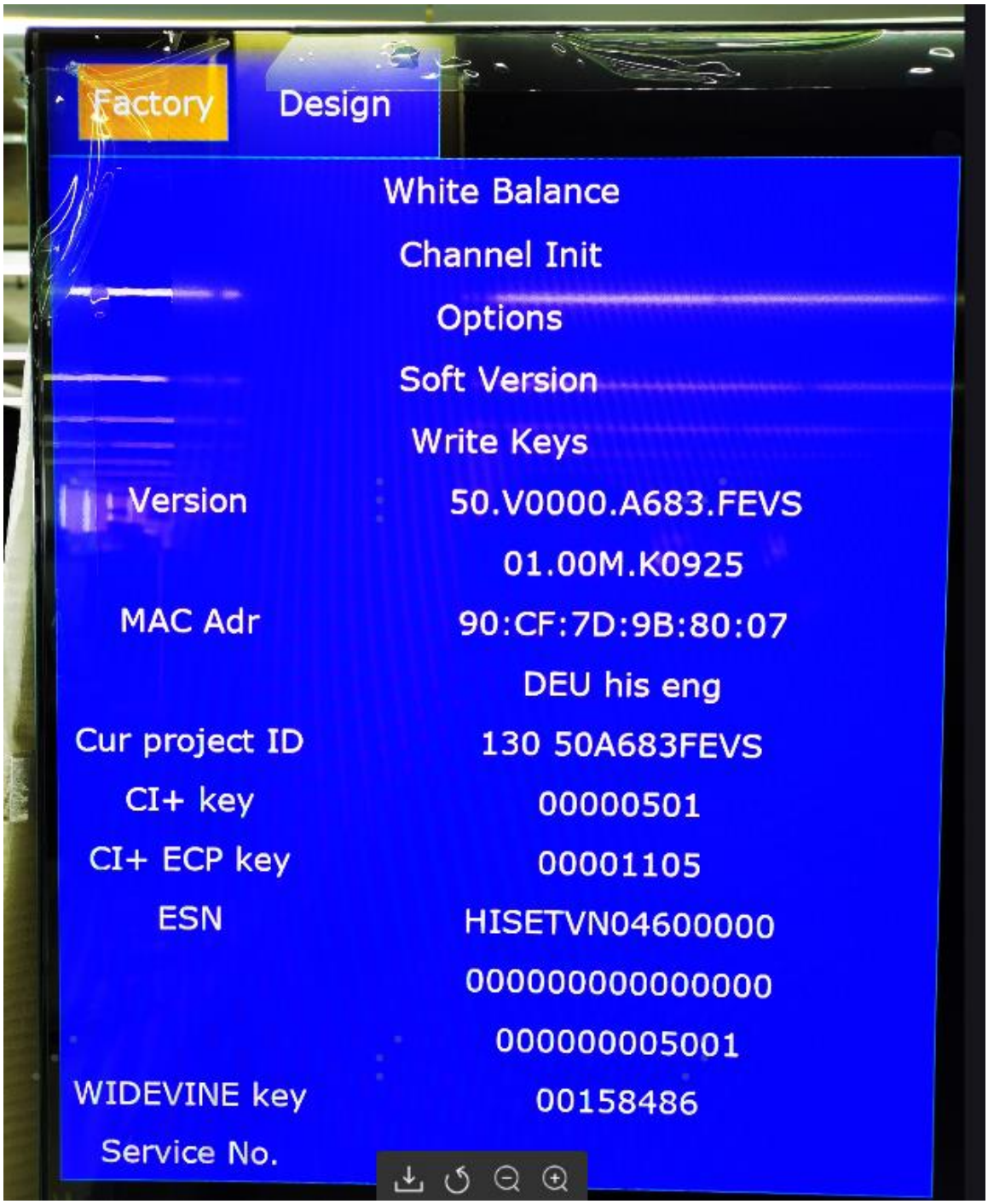
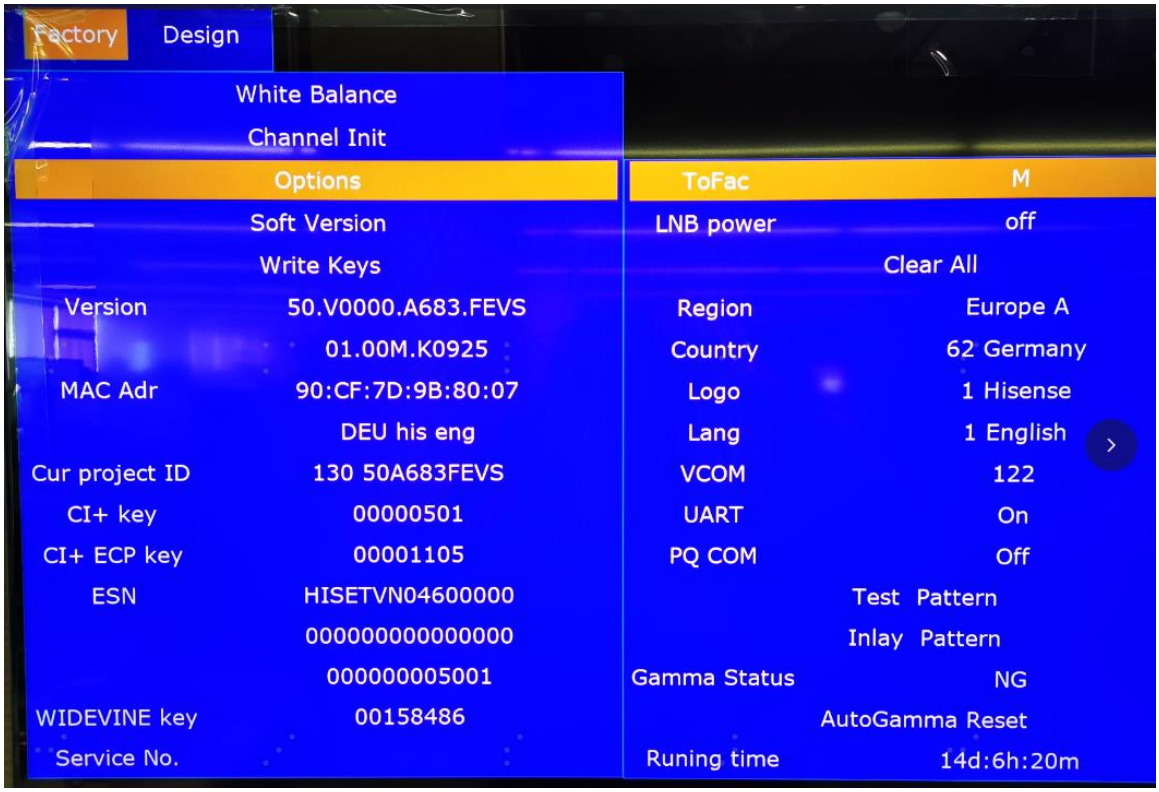


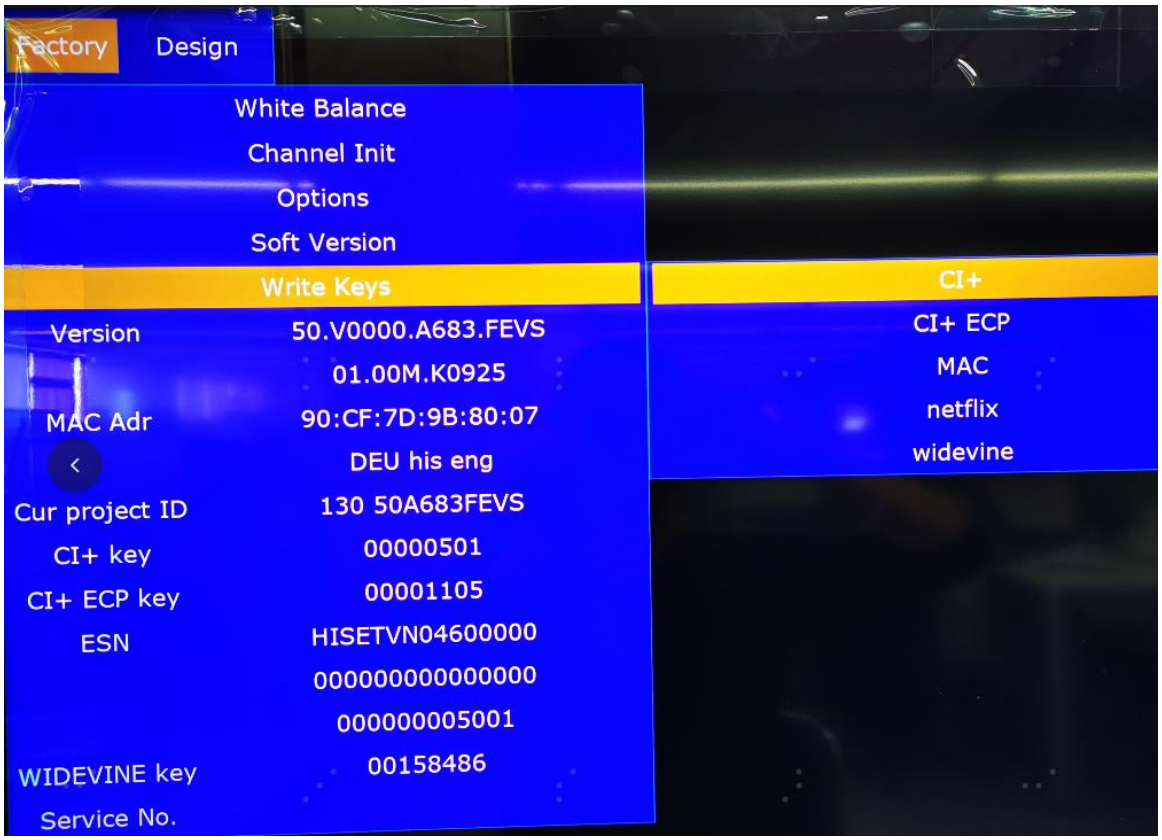
figure -1

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 HE55A7000EUWTS 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.

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

White Balance	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

Channel init	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	North America
	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
Write keys	CI+	
	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 may be 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 been 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 50A683FEvS for example.

4.1.1 TV in user mode：

a. Decompress NOVATEK_DEV_EU_pkg_YYYYMMDD.tar.gz (YYYYMMDD is the year/month/day when the software is being built, such as NOVATEK_DEV_EU_pkg_20201130.tar.gz) and copy usb_NOVATEK_DEV_EU.bin file to the USB root directory. Please make sure the USB disk format is Fat32，and 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 “Loading data……” 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 “UPGRADING SOFTWARE, PLEASE DO NOT TURN OFF” will be displayed and upgrade process bar will indicate the progress. It needs about s5 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 “Loading data……” interface , update process bar is 1%.

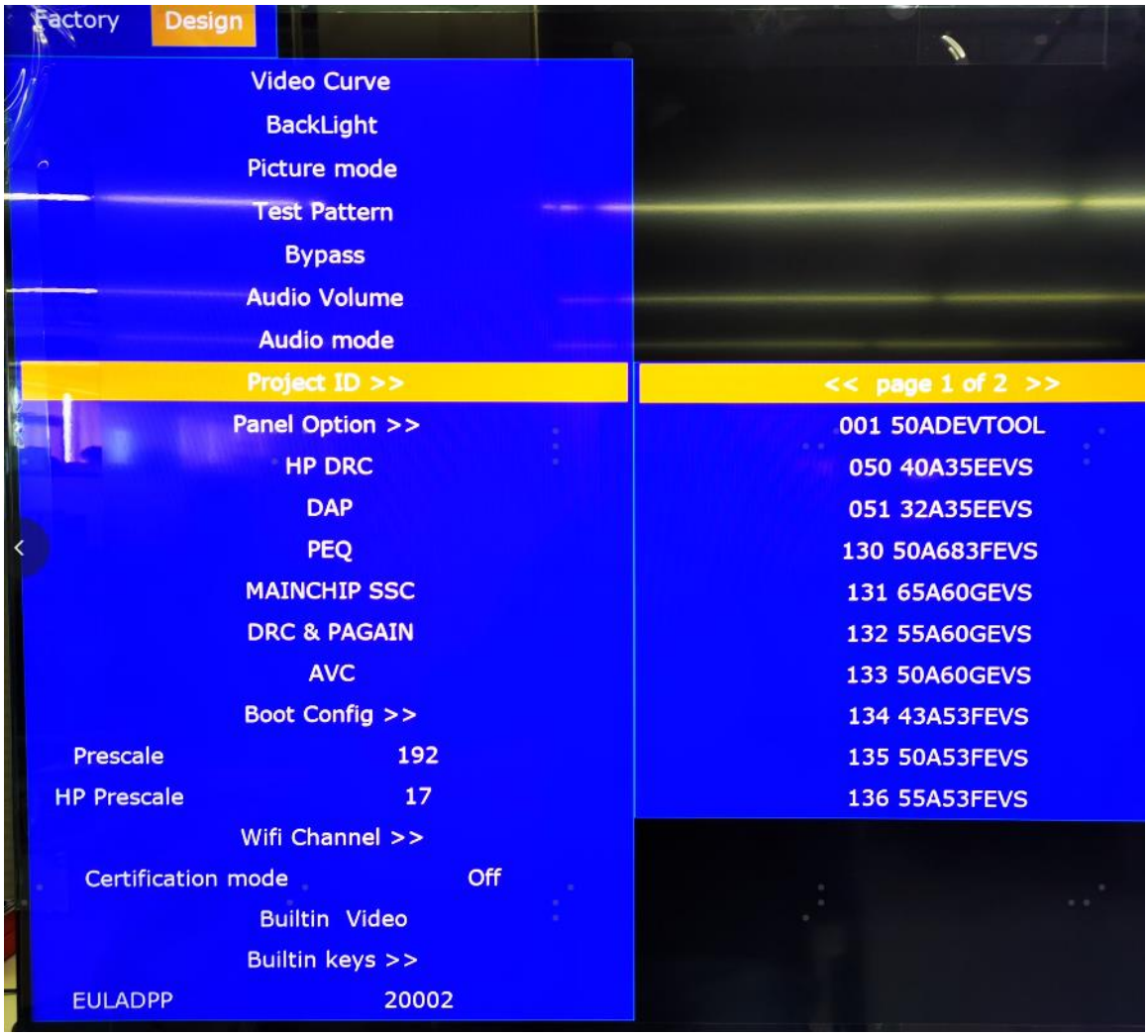
4.1.3 If the above USB upgrade methods fail, you can rename the upgrade software to

usb_NOVATEK_DEV_EU.bin,next use serical “cu” 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.



Firgure-1: Upgrading software

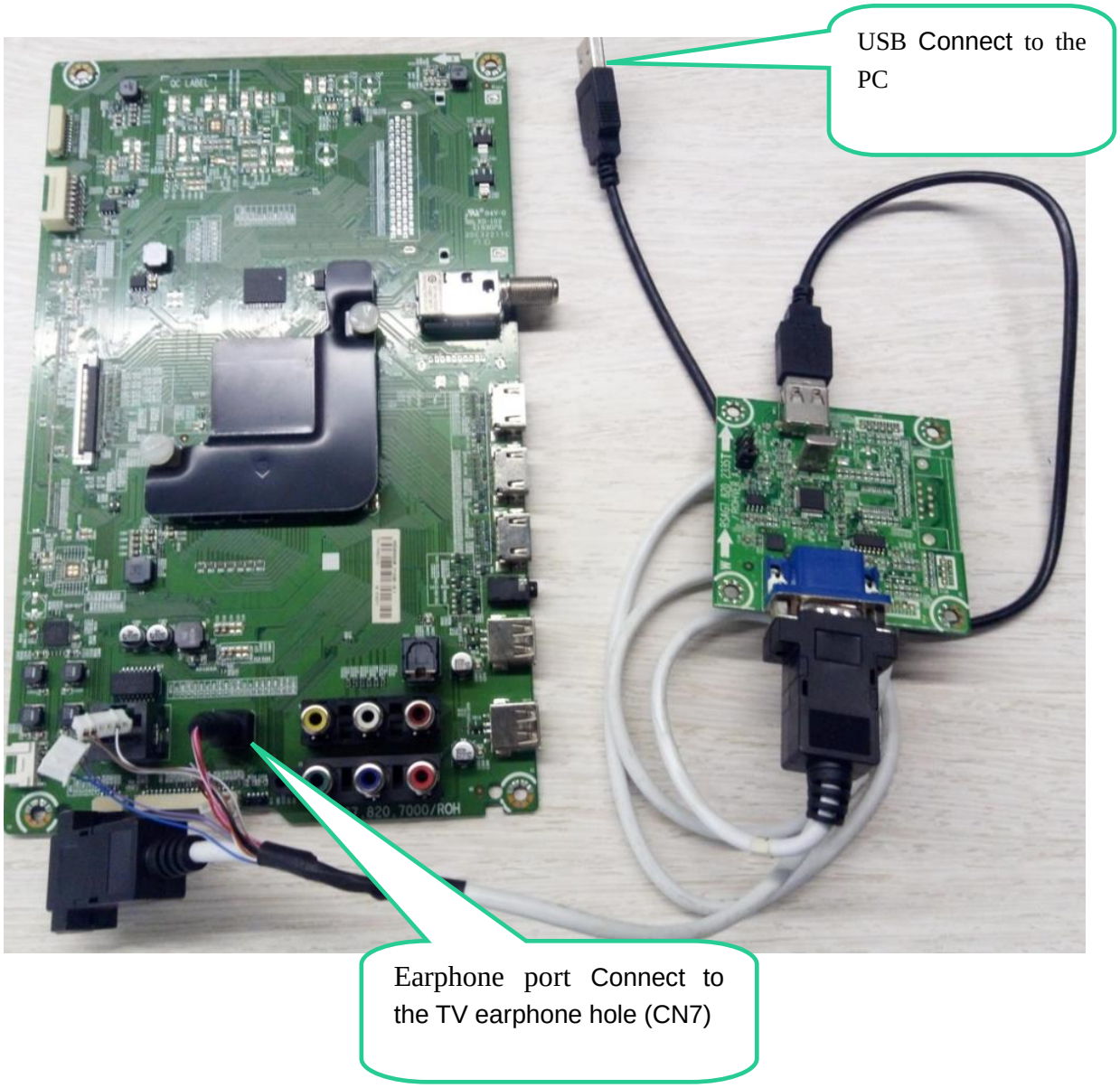
Firgure-1

4.2 Novatek Tool upgrading

If USB upgrades failure, TV crashed and SecureCRT no print message. Repairer must read IC device ID code 、 decipher& burn the Mboot program the EMMC flash first. then USB disk to upgrade the "usb_NOVATEK_DEV_EU.bin" file.

Hardware connecting

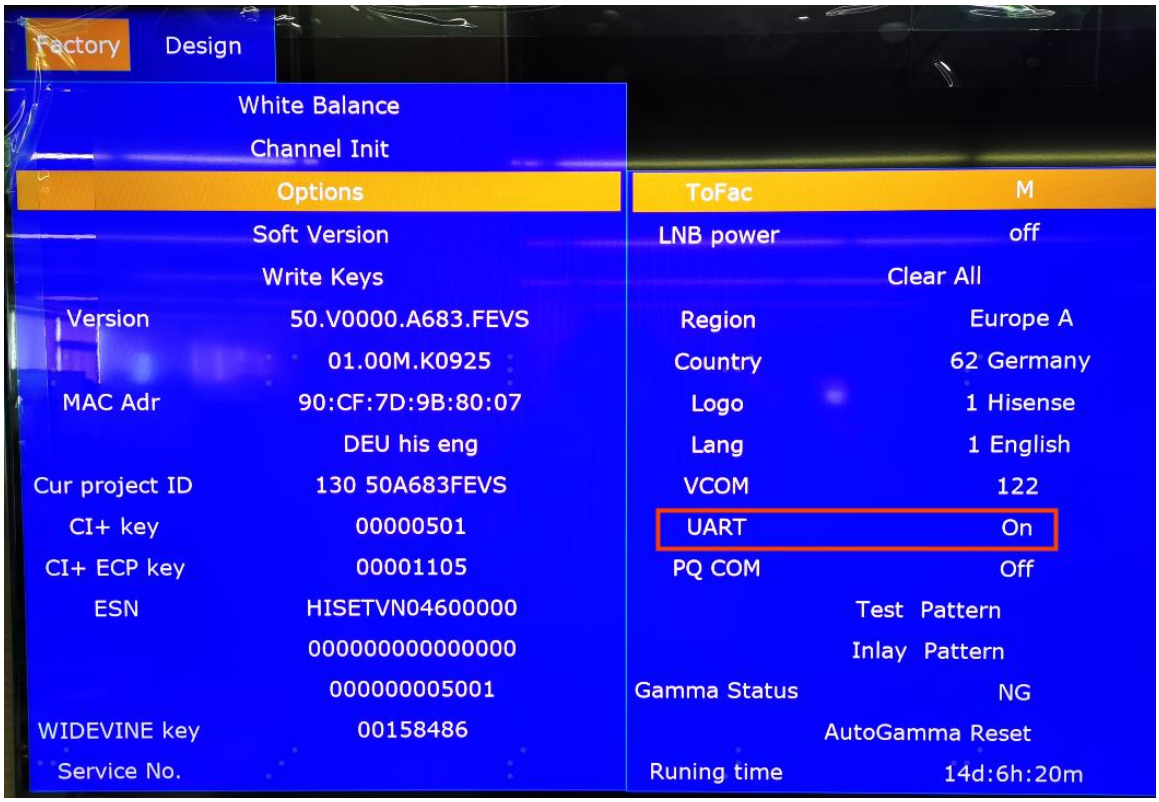
Connect the unit to your pc with Hisense USB-serial port cable. USB port connects to your PC and earphone port to TV's CN7(earphone hole). As following.



4.2.1 Open the UART serial option

UAR serial choose “on “

Menu: Factory-->Options–>UART–>on



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

4.2.2 Novatek USB-serial driver

It’s the same as Mstar bebug Tool.

If First use Mstar bebug Tool, you have to install drive software for bebug board.

If your PC is Windows XP system:

First install FTCUNIN.EXE of FTC100103(MSTAR) rar file in your PC.

This is a drive software of Mstar

Another:
If your PC is Win7 system, you will have to install CDM20802_Setup_WIN7 rar file，and then open the software of SecureCRT in your PC.

4.2.3 Stop board serial connect with SecureCRT

Run SecureCRT,printing information includes three status:Mboot\Supernova\no print information.
Current steps:

1) Run SecureCRT.exe
2) TV power on.
3) SecureCR tool print information can appear or not.

How to distribute the three status?

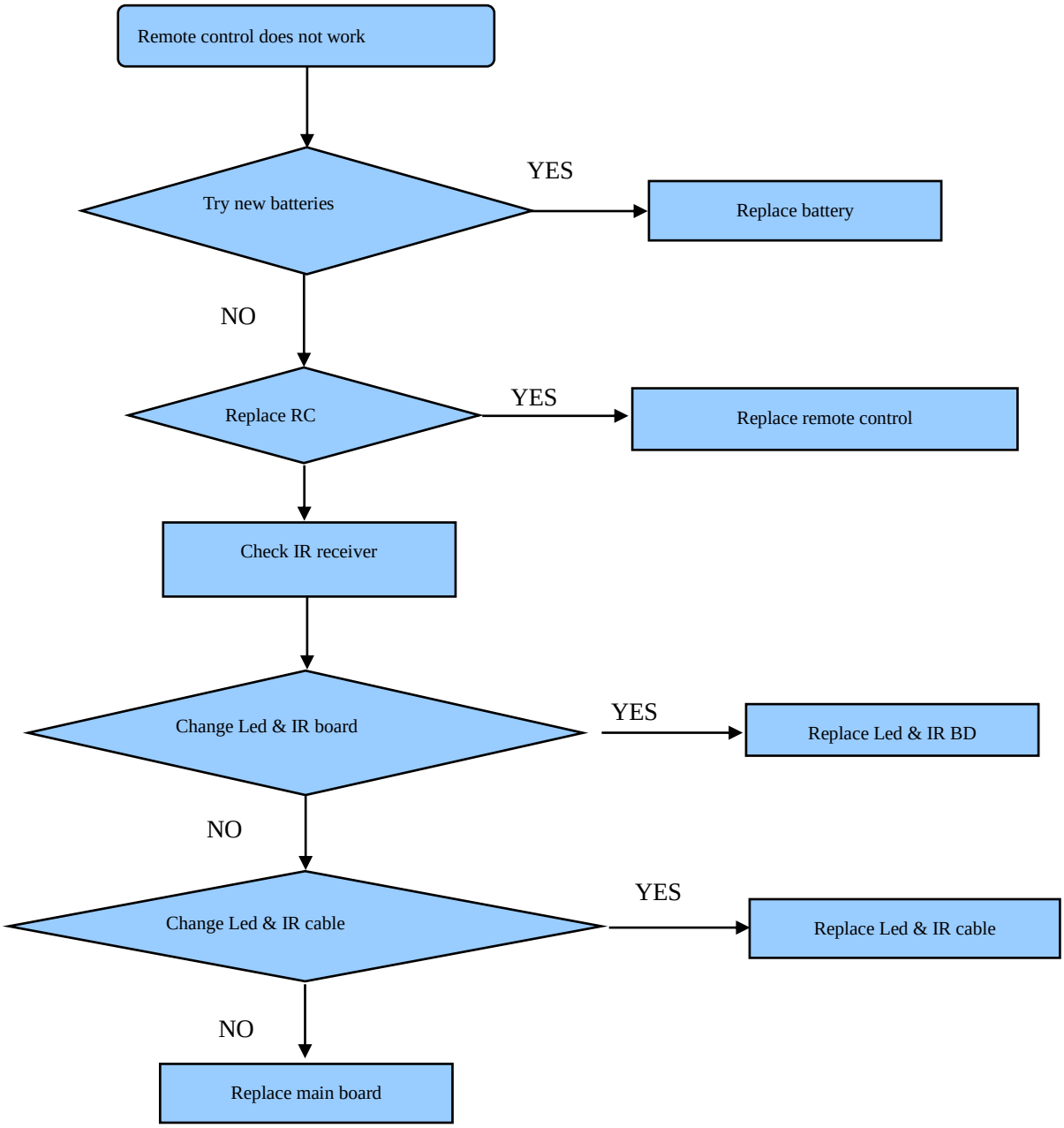
1) appearing "N62020_A32_SEC>" that meaning is in Mboot status;
2) Rolling many informmation automatically that meaning is in Supernova status;
3) No any print information that meaning the eMMC of board is no program.

Stop board serial with SecureCRT

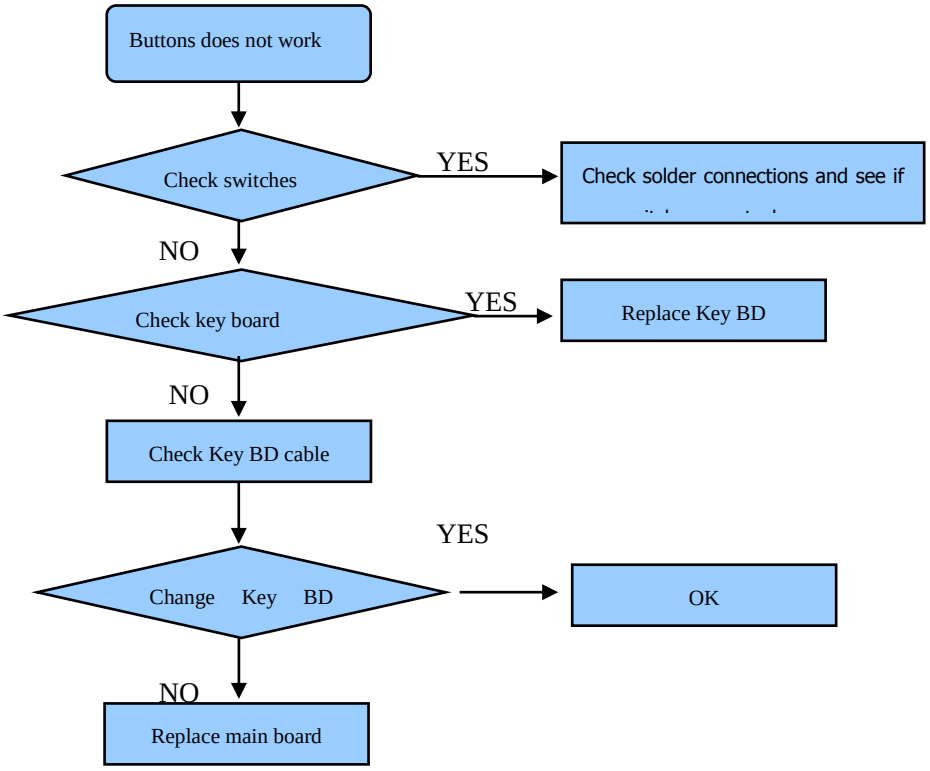
1) In mboot status:
   N62020_A32_SEC>
   Input "shift" and "~" key to ensure, then close the SecureCRT window.
2) If no any print information with SecureCRT,then can directly close the SecureCRT window.

5. Trouble shooting

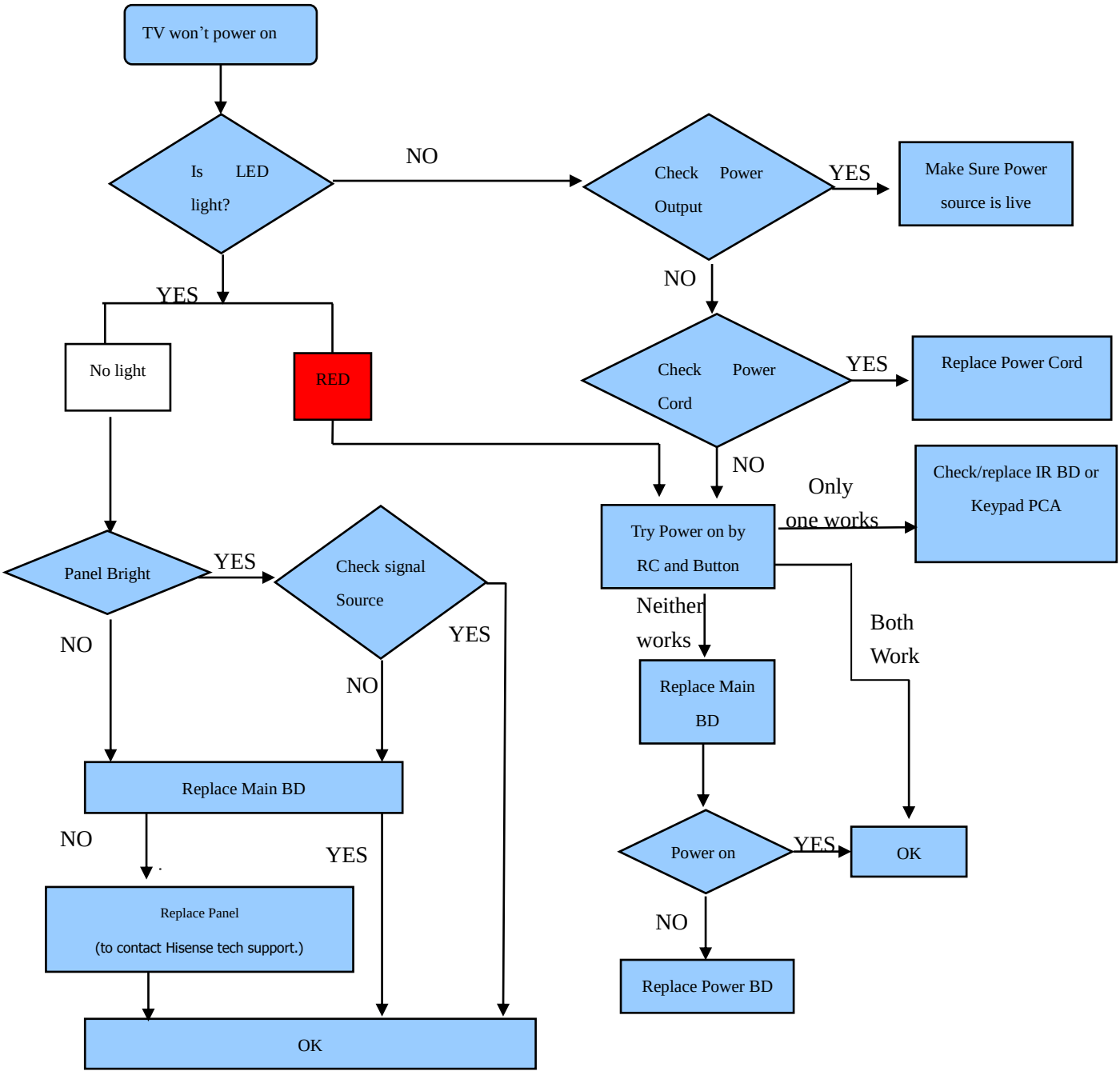
5.1 Troubleshooting for Remote Control



5.2 Troubleshooting for Function Key



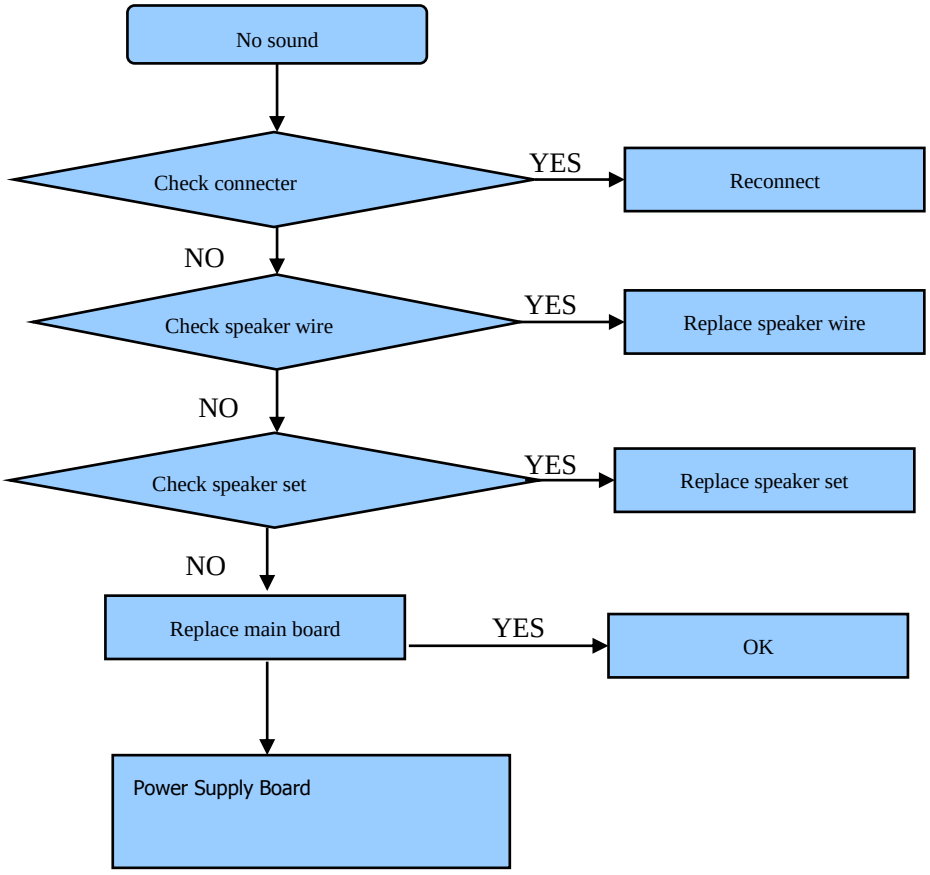
5.3 TV won’t Power On



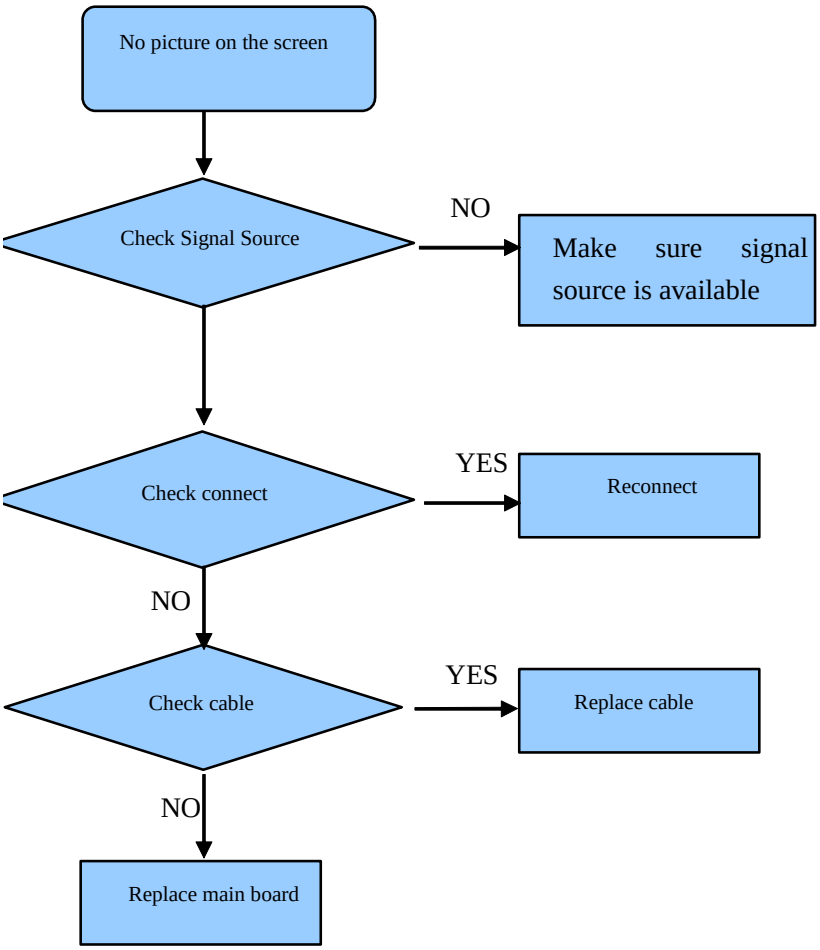
Notice:

MSD6586 Europe market：
TV work normally indication led is no light.
TV standby indication led is red.

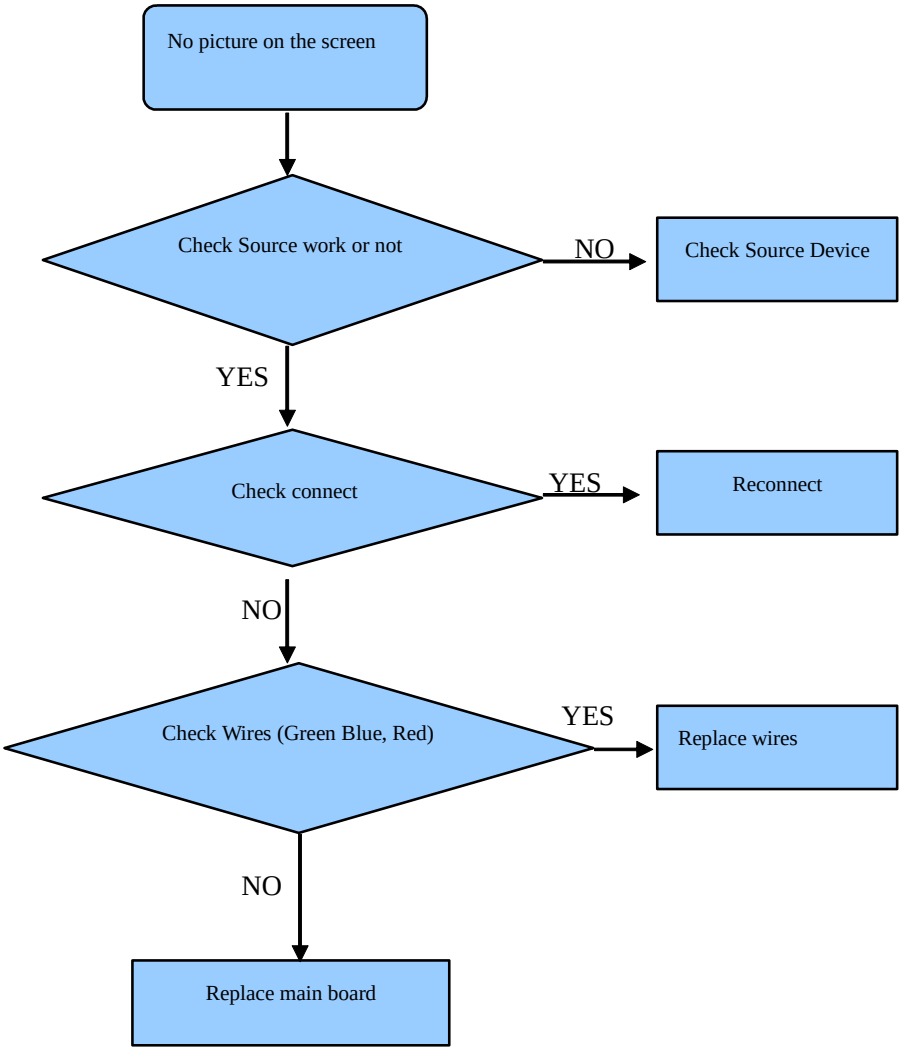
5.4 Troubleshooting for Audio



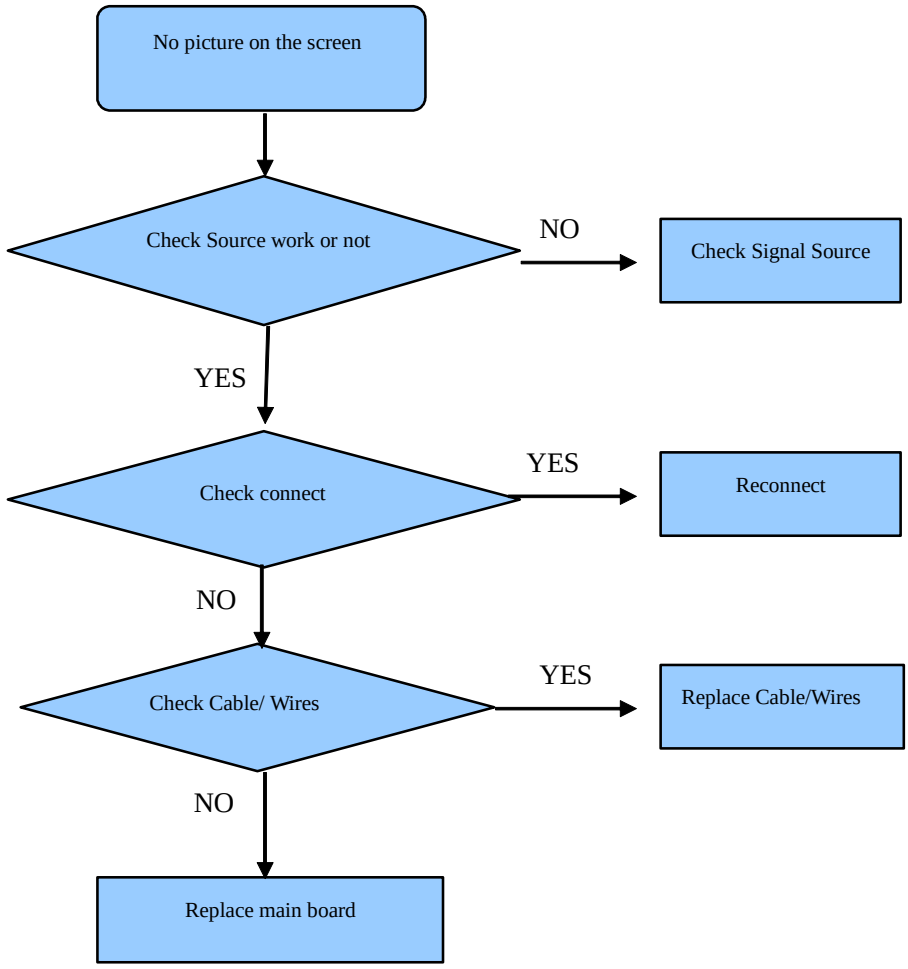
5.5 Troubleshooting for TV/VGA/HDMI input



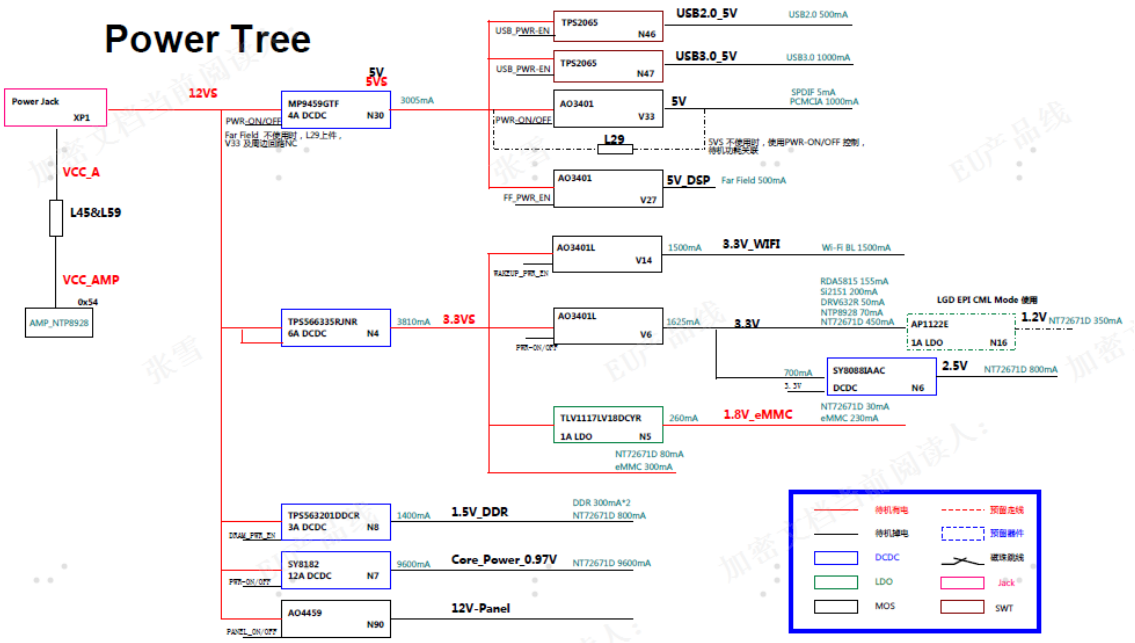
5.6 Troubleshooting for YPbPr input

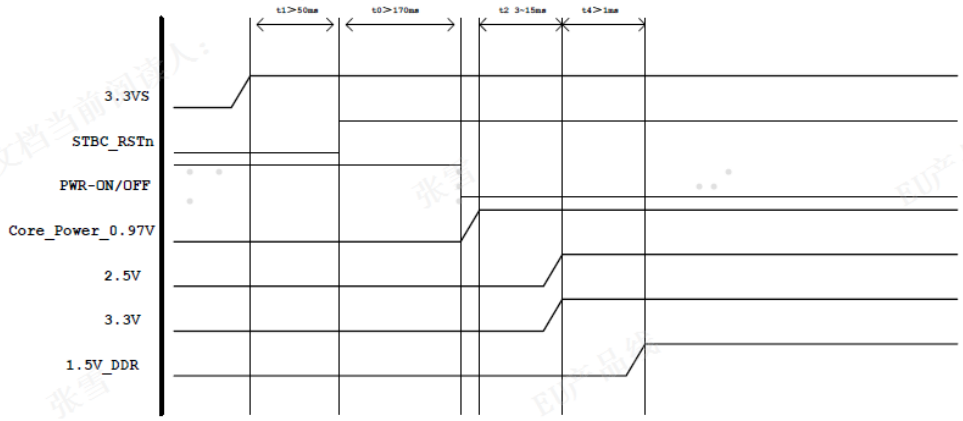


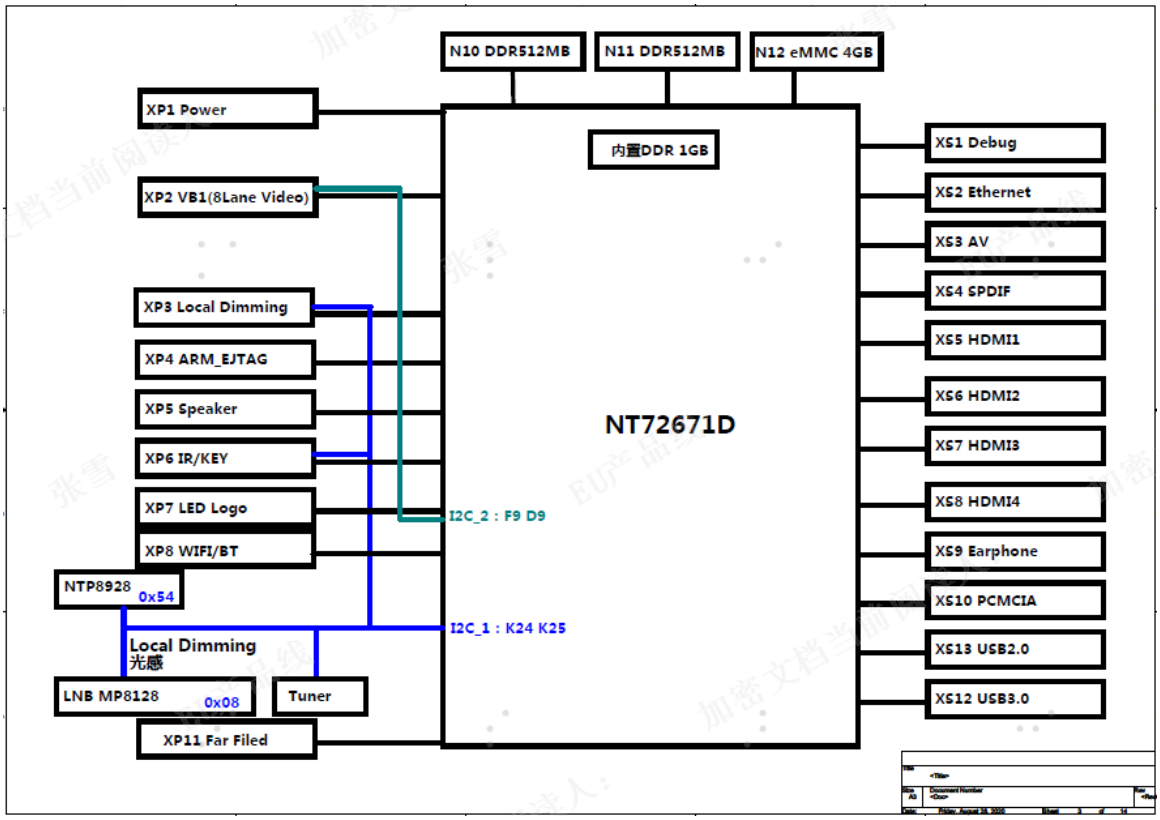
5.7 Troubleshooting for Video input



6. Signals Block Diagram & power assign & schematic diagram






N10 DDR512MB
N11 DDR512MB
N12 eMMC 4GB
XP1 Power
XP2 VB1(8Lane Video)
XP3 Local Dimming
XP4 ARM_EJTAG
XP5 Speaker
XP6 IR/KEY
XP7 LED Logo
XP8 WIFI/BT
NTP8928
0x54
Local Dimming
光感
LNB MP8128
0x08
Tuner
XP11 Far Filed
内置DDR 1GB
NT72671D
I2C_2 : F9 D9
I2C_1 : K24 K25
XS1 Debug
XS2 Ethernet
XS3 AV
XS4 SPDIF
XS5 HDMI1
XS6 HDMI2
XS7 HDMI3
XS8 HDMI4
XS9 Earphone
XS10 PCMCIA
XS13 USB2.0
XS12 USB3.0