

# **LCD Television**

## **Service Manual**

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**Chassis: MTK5657**

**Product: AM NEWSAN TV**

**Ver 1.0**

**Hisense Electric Co., Ltd.**

**May 11, 2016**

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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, HISENSE will be referred to.

## **1.1 Warning**

### **1.1.1**

Critical components having special safety characteristics are identified with a **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 strap. Keep components and tools also at this same potential.

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## **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

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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

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## 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

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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.

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## 2. Product Function

TV basic parts

Hisense Model	Panel Model	Main board	Power board
LTDN50K5500UWAM	HE500IU-B51\S0	RSAG2.908.6591-28	RSAG2.908.6635\ROH
LTDN55K5500UWAM	HE550IU-B81	RSAG2.908.6591-06\ROH	RSAG2.908.6635\ROH

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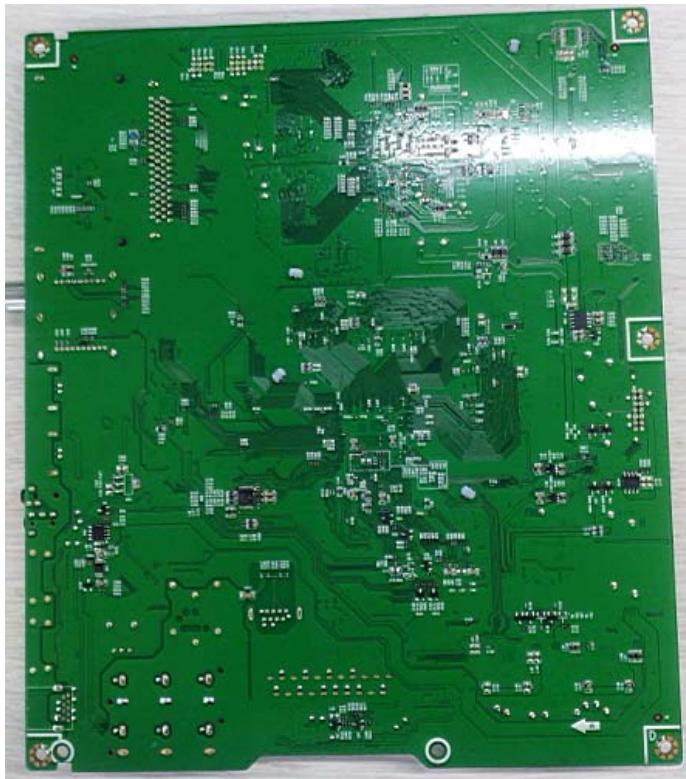
## Main board :RSAG7.820. 6107 image

The TOP of 6107:



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The Bottom of 6107:



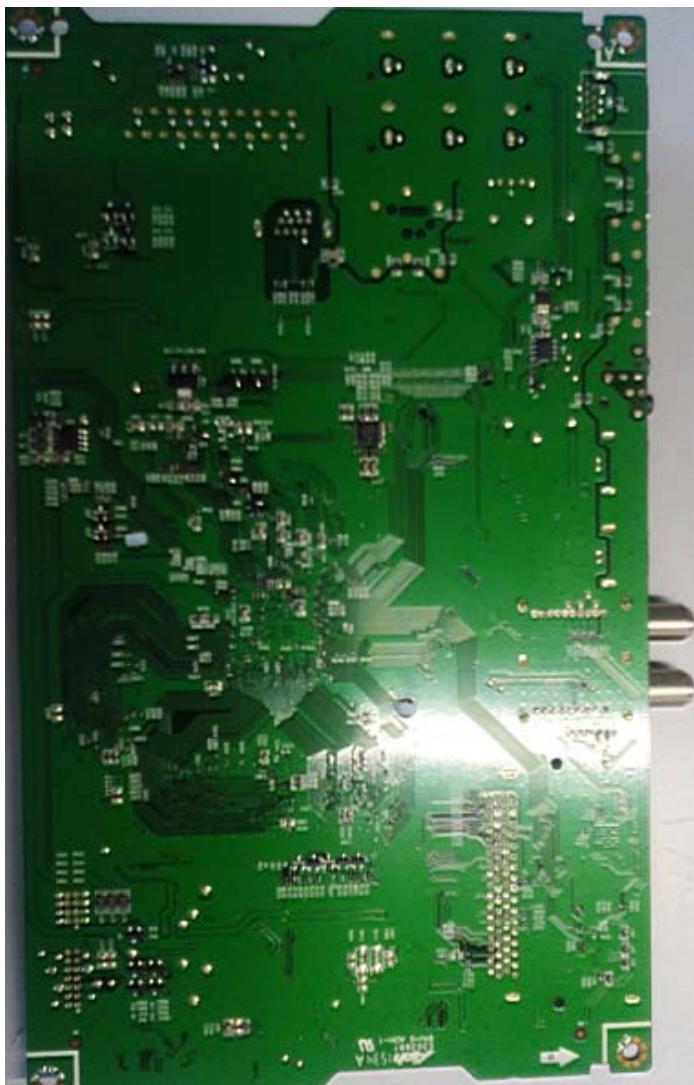
Main board :RSAG7.820. 6591 image

The TOP of 6591



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The bottom of 6591



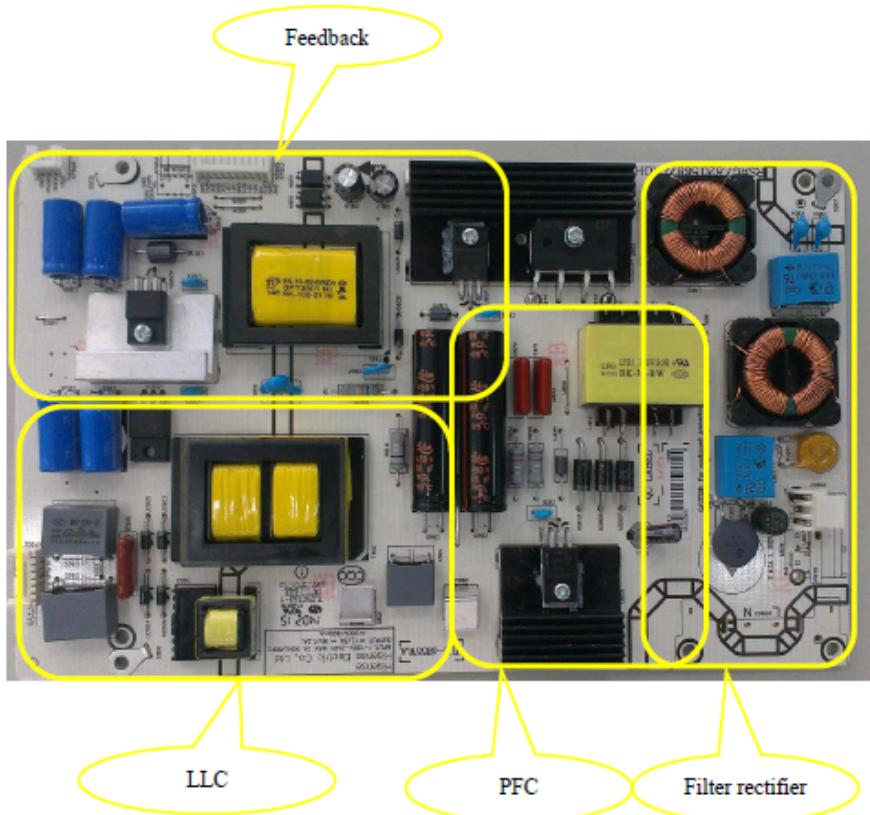
Side connectors 6591:



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## Power board : RSAG7.820.5687/ROH image

power board:5687 :



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**Power board:RSAG7.820.6106/ROH image**



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### 3. Factory/Service OSD Menu and Adjustment

#### 3.1 How to enter the Factory OSD Menu

##### . With user's RC

1. Power TV on
2. Press  button on RC and call up “**Quick Setup**” Menu.
3. **Quick Setup -> Audio Only**, press “Ok” button to ensure on RC.
4. Select **Sound-> Advanced Audio setting -> Balance**
5. When Balance is “0”, Input 1->9->6->9 in sequence.

Note: If necessary, re-enter number keys.

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

##### Figures as following:



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Next

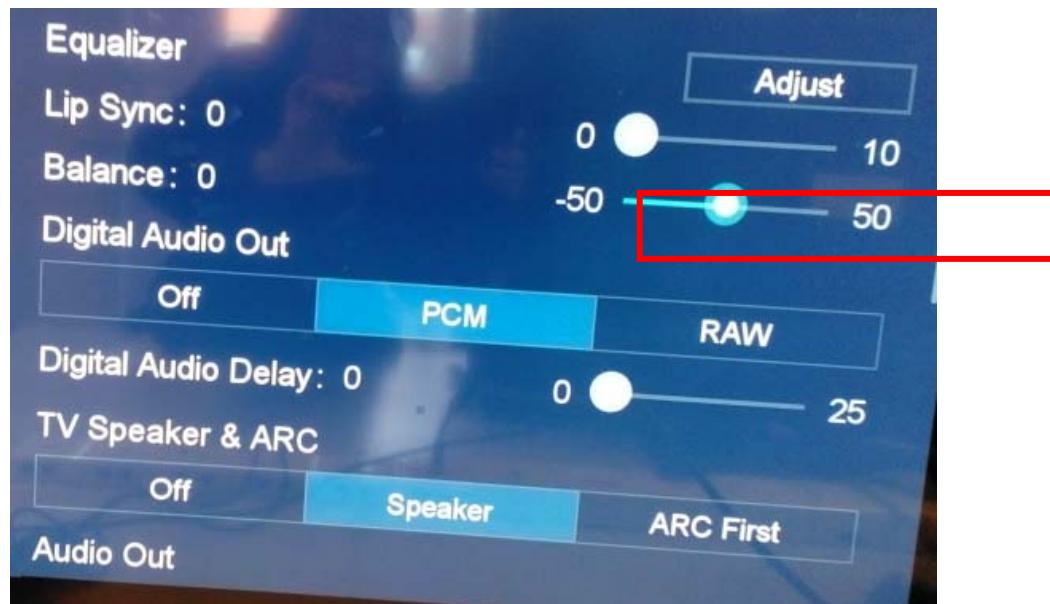


Next



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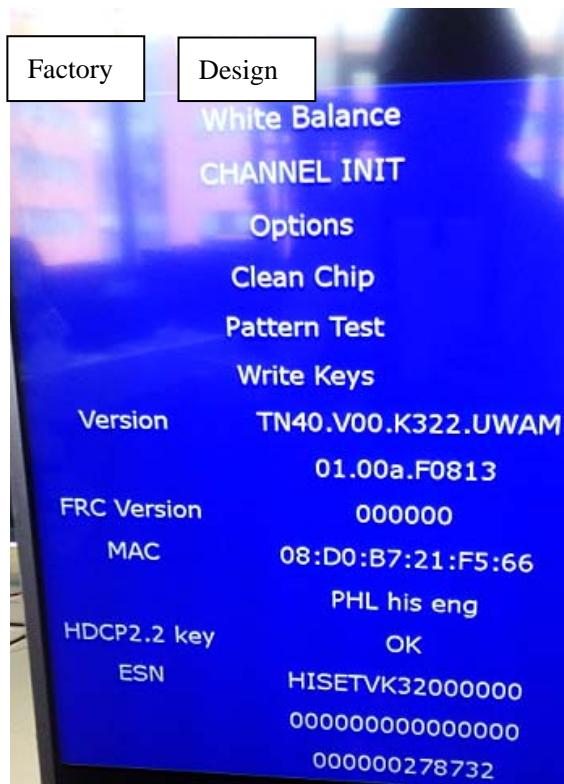
## Next



When Balance is “0” ,Enter 1->9->6->9 in sequence.

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## 3.2 Factory OSD Menu



Factory menu: if you want to know more about TV, you'd better read it but can't adjust the value.

	Factory menu	Description	Remark
Meun	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	can choose	
	Clean Chip	intialize the factory signal , EEPROM reset	
	Automatic	auto color adjust with Component and VGA channels.	
	Test Pattern	red\blue\white\green\black five colors,for factory panel testing.	
	soft version	current software version information	
	inside pattern	Factory white balance adjust	
	Version for example : E58. V0000. K220. 00. 30. 20A. E1114	software Version information	Software information
	MAC adr:C8: 16: BD:B2: 34: 69 country , language, Logo	MAC address information	
	HDCP2.2 key	HDCP key information	
	CI key	CI key information	
	ESN	ESN information	
	KMS Device ID code		
	Customer service code : 23 bit . for example 00000000000001K5R140031		

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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 exit factory state,
LNB POWER		Not all the chassis that must support the satellite signal for example: Europe TV :13V ,18V ,OFF ; Japan : 15V
country		country choose
Language		language choose
Logo		region logo choose
power mode memory		remember mode;Power on mode;standby mode
set MAC		set MAC address
USB upgrade		If the TV has the function of USB disk upgrade directly in the factory menu then can use the item.
FRC upgrade		FRC upgrade
driver upgrade		Led backlight driver upgrade
PQ upgrade		if the panel parameter of smart TV is not right then can USB upgrade directly .
URAT on/off		when choose "on" then can serial port connect with Tool

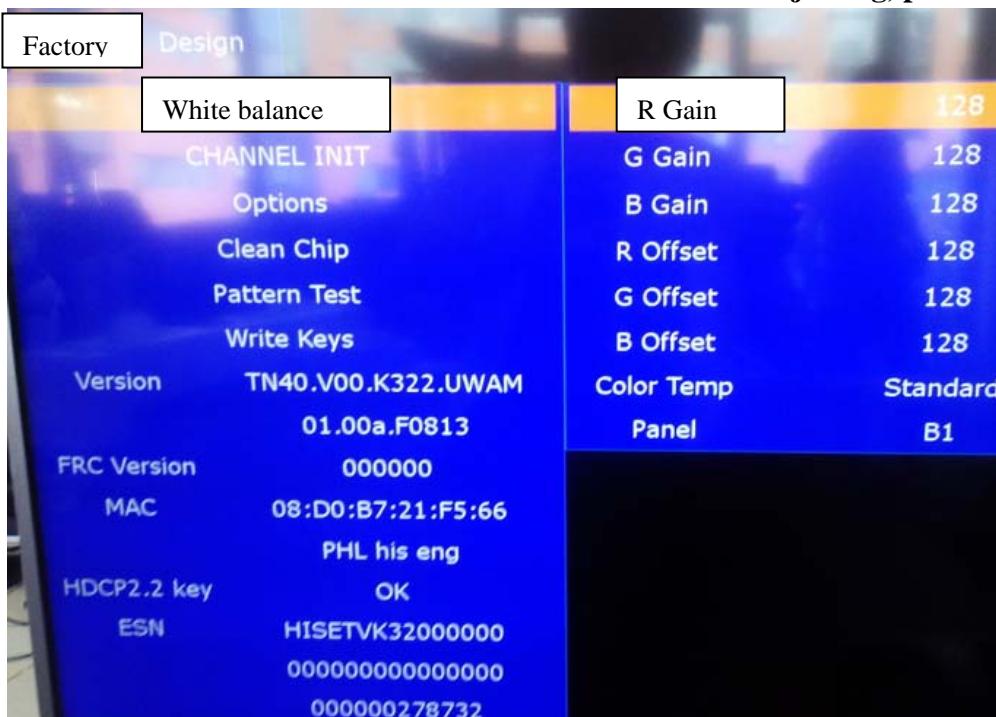
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	PVR Record all	PVR Record function
	Mirror enable	
	Flip enable	for panel testing

<b>soft version</b>	soft version: E58.V0000.K220.00.30.20A.E1114	soft version information
	date: 2014-11-14 04:47:50	The date of current version
	TV Code: 00000000000001K5R140031	TV code information
	MAC version: C8: 16: BD:B2: 34: 69	MAC version information
	FRC version:	FRC version: if no FRC function then can ignore.

### 3.2.1 White Balance

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

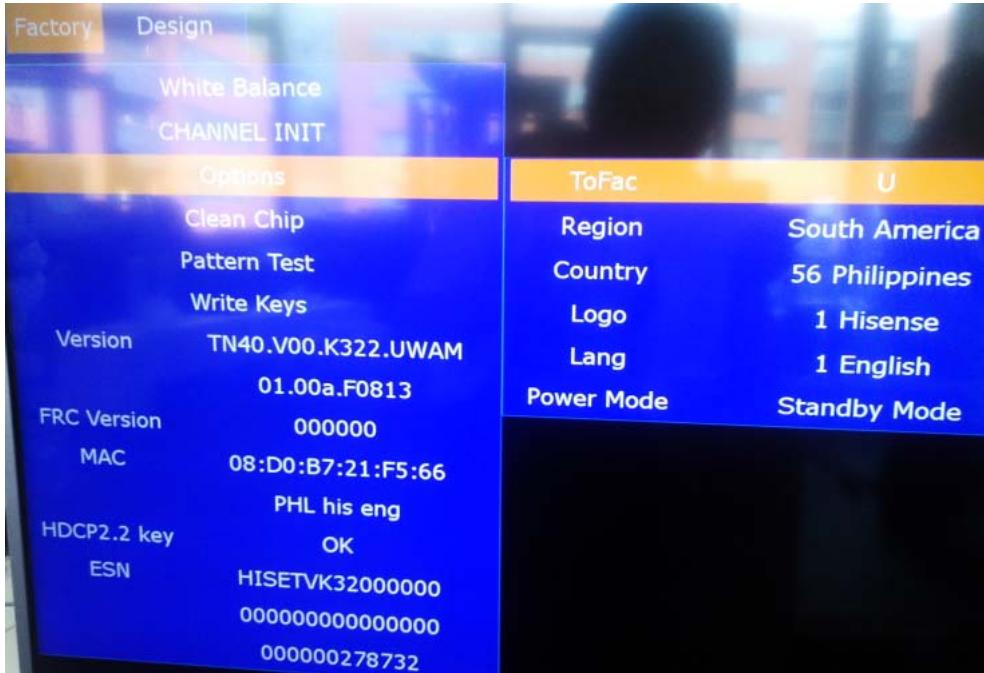


### 3.2.2

#### Channel init---Signal prefabricate

channel init	huangdao old
	Qing Dao
	huangdao new
	.....

### 3.2.3 Factory Option



	Item	Default	Options	Notes
1	TOFAC	M	M, U	M—Can enter factory mode with factory RC or user RC. U—Can enter factory mode only with user's RC. MODE "M" is only used for factory production.
2	Logo	English	More languages	Customer order demand
3	Power mode	Standby mode	Standby mode/power on mode/power off mode	

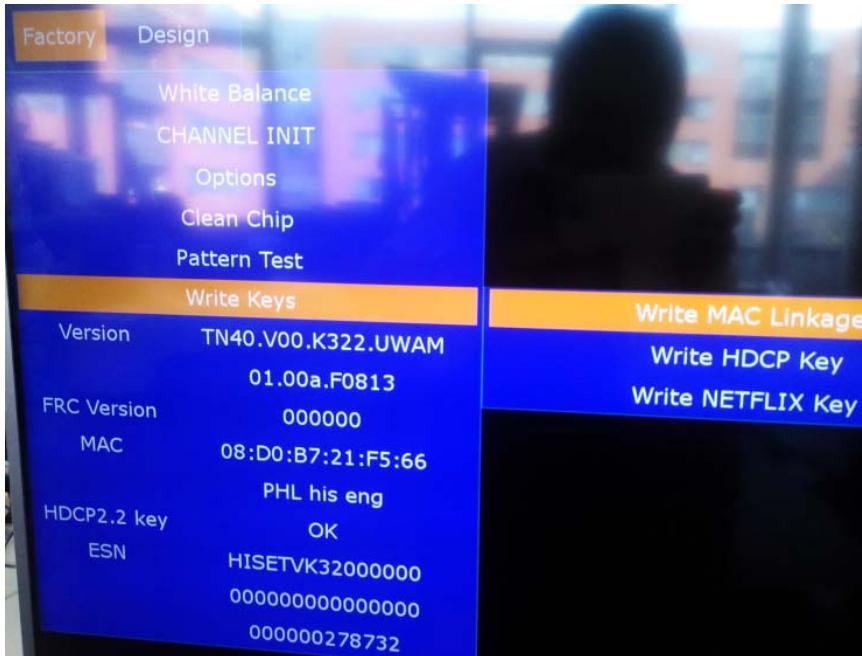
## Clean Chip

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

### To clear the EEPROM:

- a. Select the item “**Clean chip**” .
- b. Press VOL+ button to clear the EEPROM data.
- c. Close the OSD menu after 5 seconds.
- d. Restart the TV.

## Write keys



Notice: Above “Factory/Service OSD Menu” is reference for chassis MTK5657 , please refer to the actual units to determine the appearances.

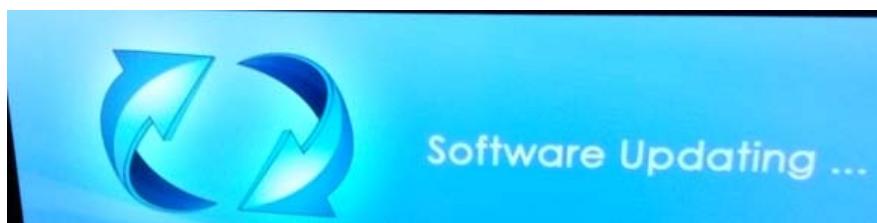
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## 4. Software Upgrading

### 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 TV USB port, and then power on the TV. at the same time press any one button on the remote control for about 5-10s,until pop the following update interface.



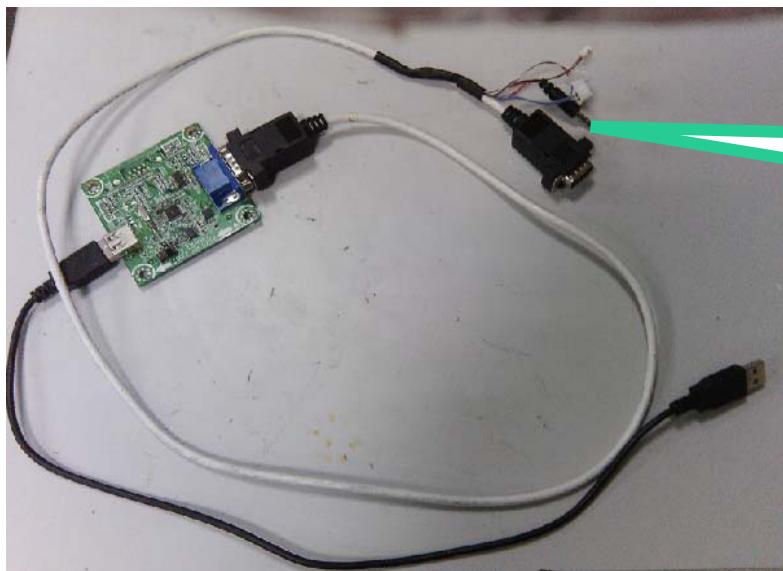
- The TV will identify the software and upgrade automatically.
- After update success, TV can automatically start.

### 4.2 USB upgrade defeat

If USB upgrading defeat, TV crashed. We must burn the emmc flash program file“ \*.bin ”to the flash IC first. second USB disk to upgrade the **upgrade\_loader.pkg** file.

#### 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



#### 4.2.1 Install the driver

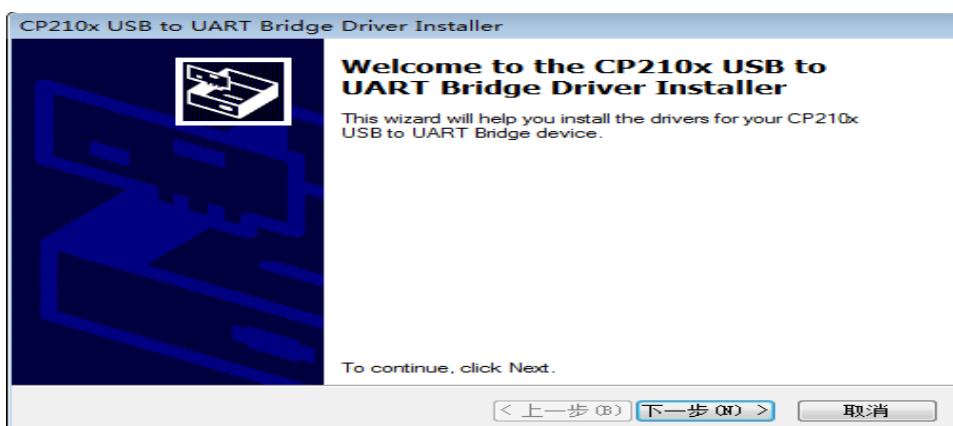
##### 4.2.1 Install the bebug board driver for first use MTK FlashTool.

Double click the icon  CP210xVCPInstaller\_x64.exe  CP210xVCPInstaller\_x86.exe, install the driver.

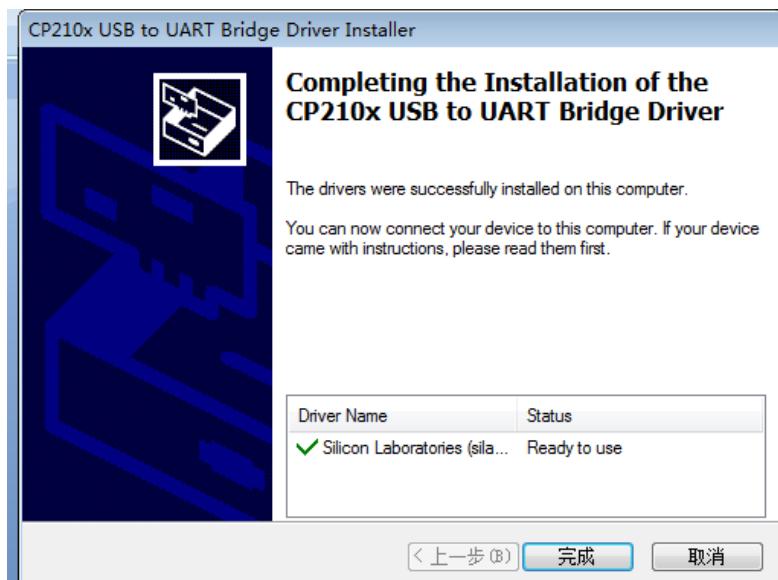
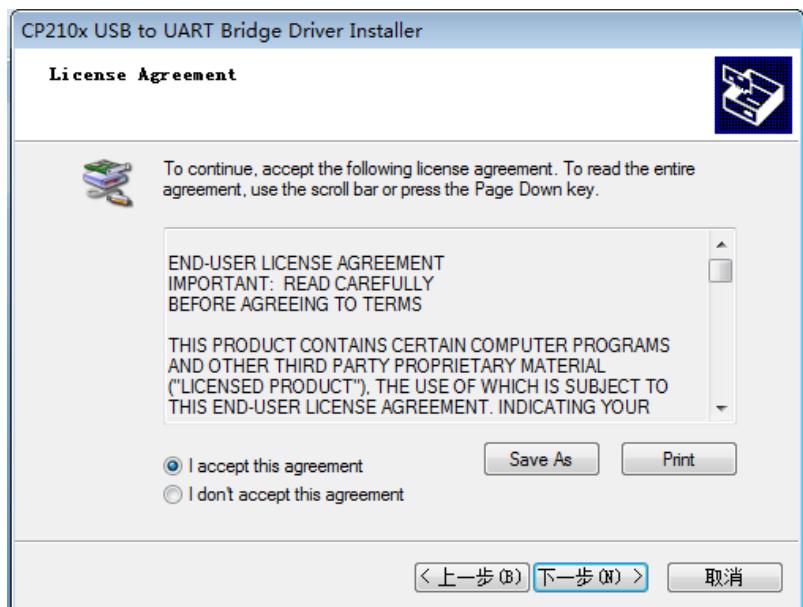
##### Note:

X64.exe is fit for 64bit system configure of the computer.

X86.exe is fit for 32bit system configure of the computer.

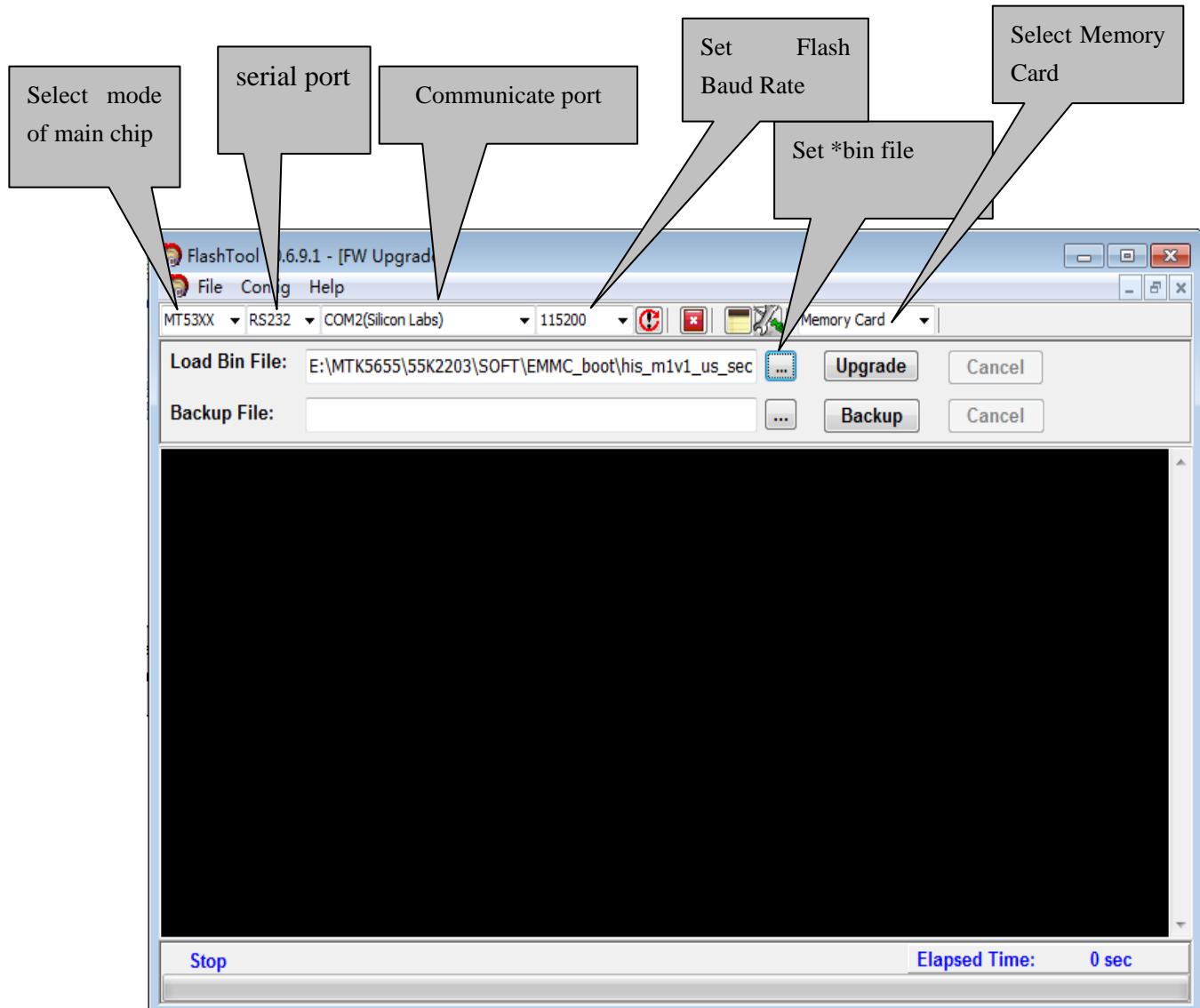


Select the default value, the driver will be installed step by step.

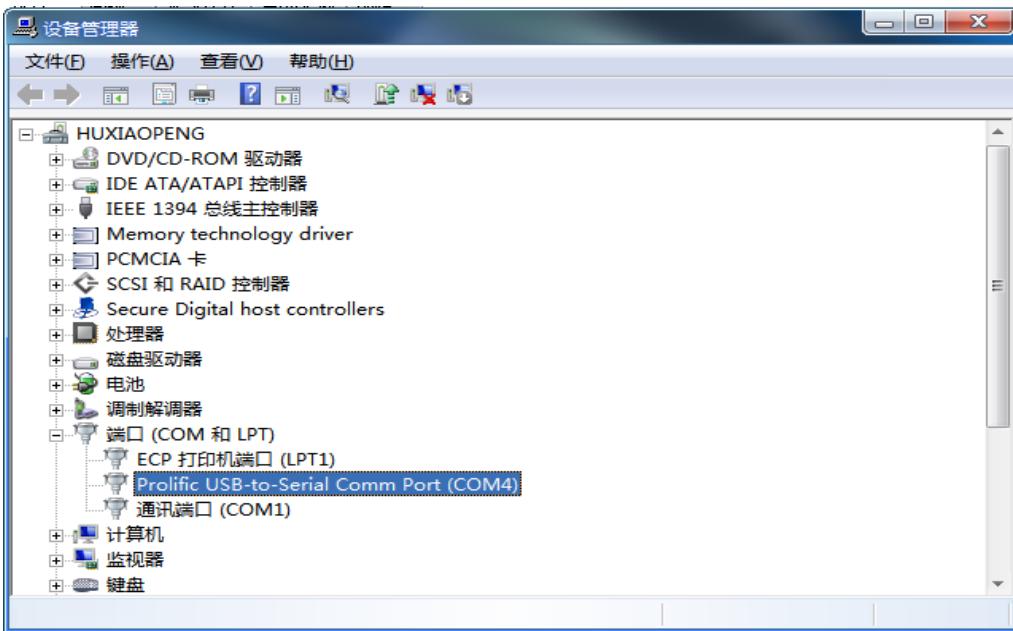


## 4.3 Upgrading with the FlashTool v0.6.9.1.exe

1、FlashTool is a green program needing no installation. After Connect the unit to your pc with a USB-to-serial port cable, run FlashTool v0.6.9.1.exe. Please refer to the following steps to set.



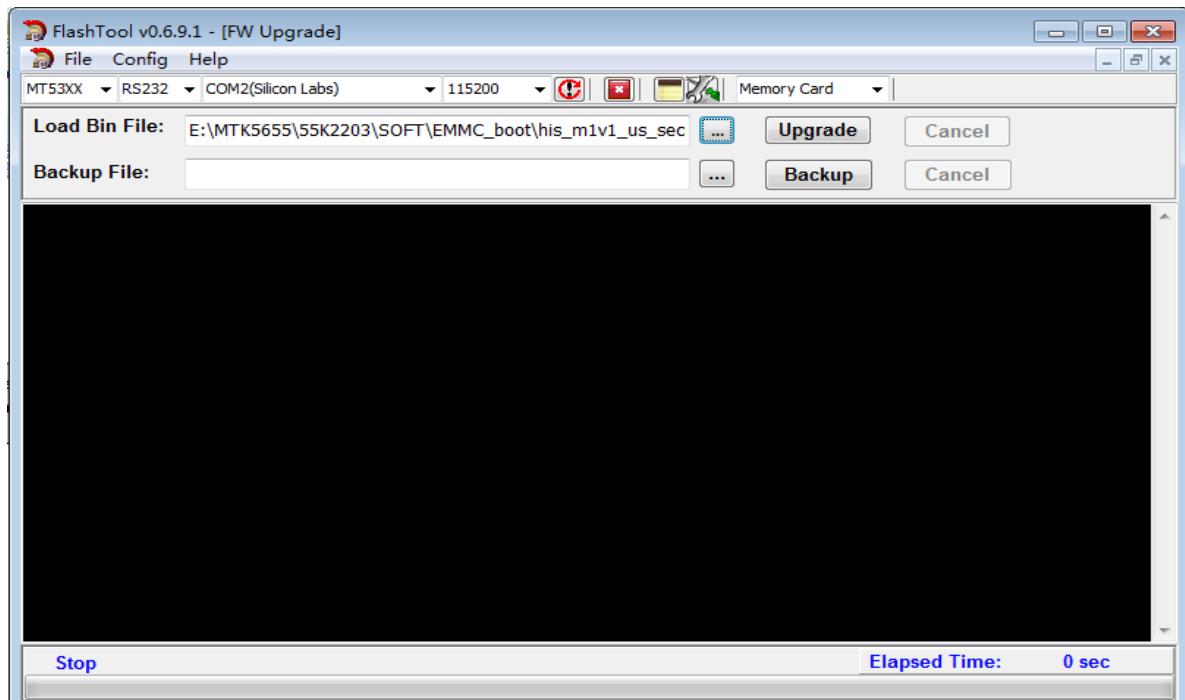
How to choose Communicate port and flash baud rate? See the following instruction..



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 MT5659), select 115200.

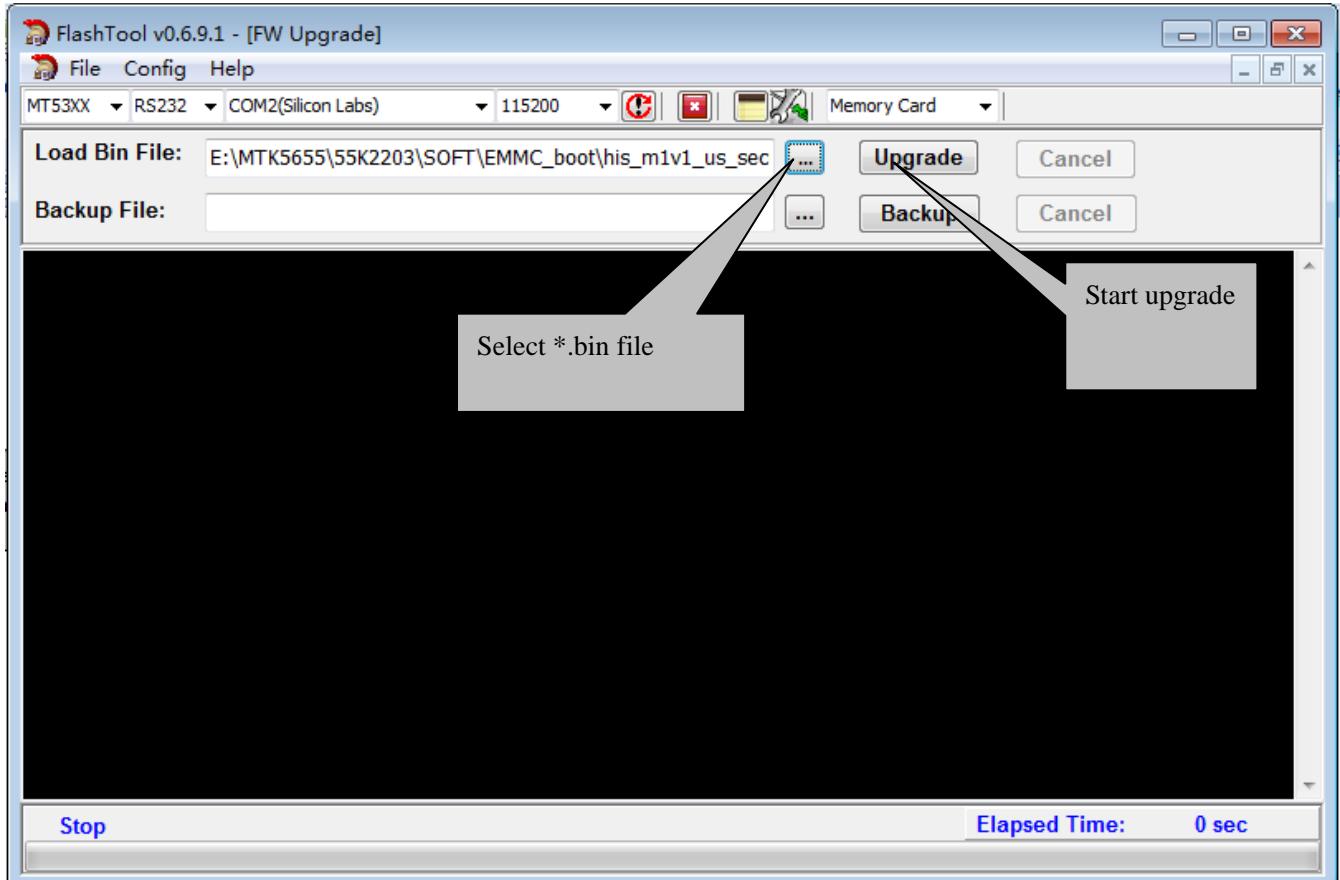
2、power on the TV ,then Click to connect, if connect successfully then button

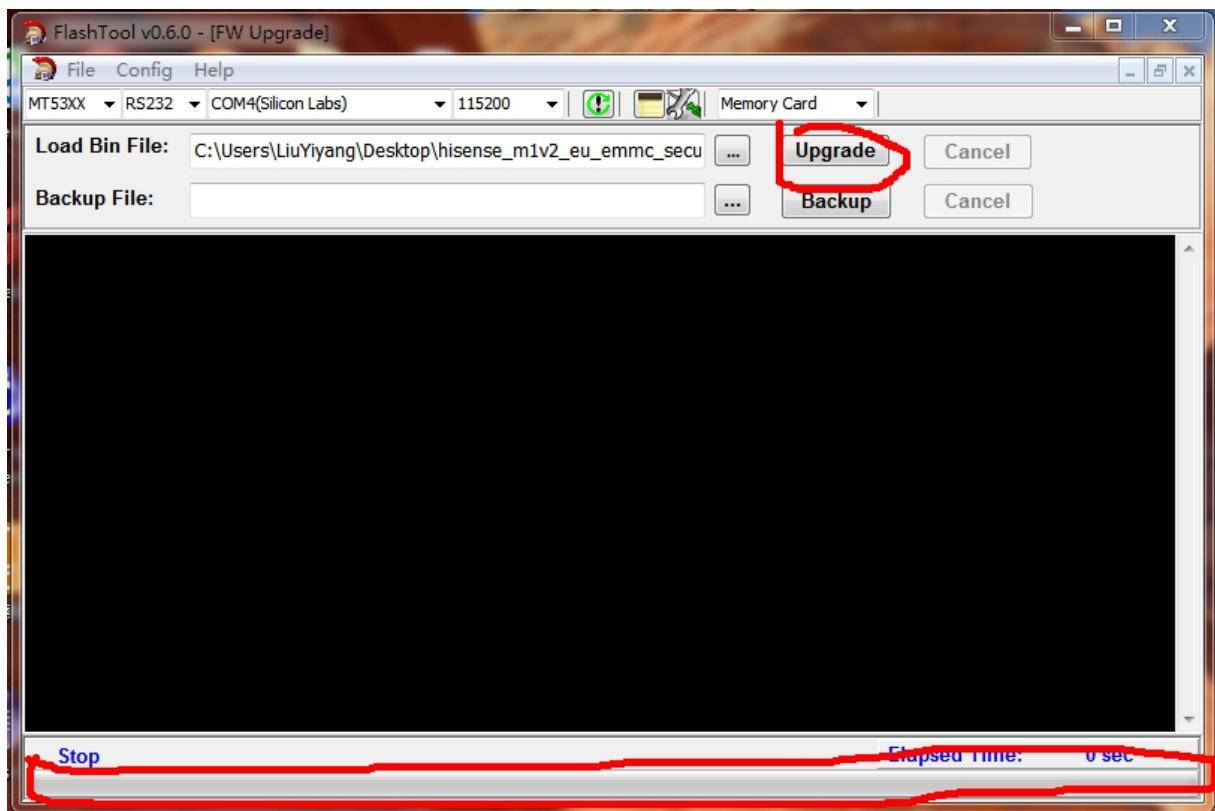
from red turn green .



Click , bounce the following dialog box. Load Bin File: find the upgrading program file, his\_m1v1\_us\_secure\_emmcboot.bin.

Press “Upgrade” button and start upgrading., if update defeat, try again.





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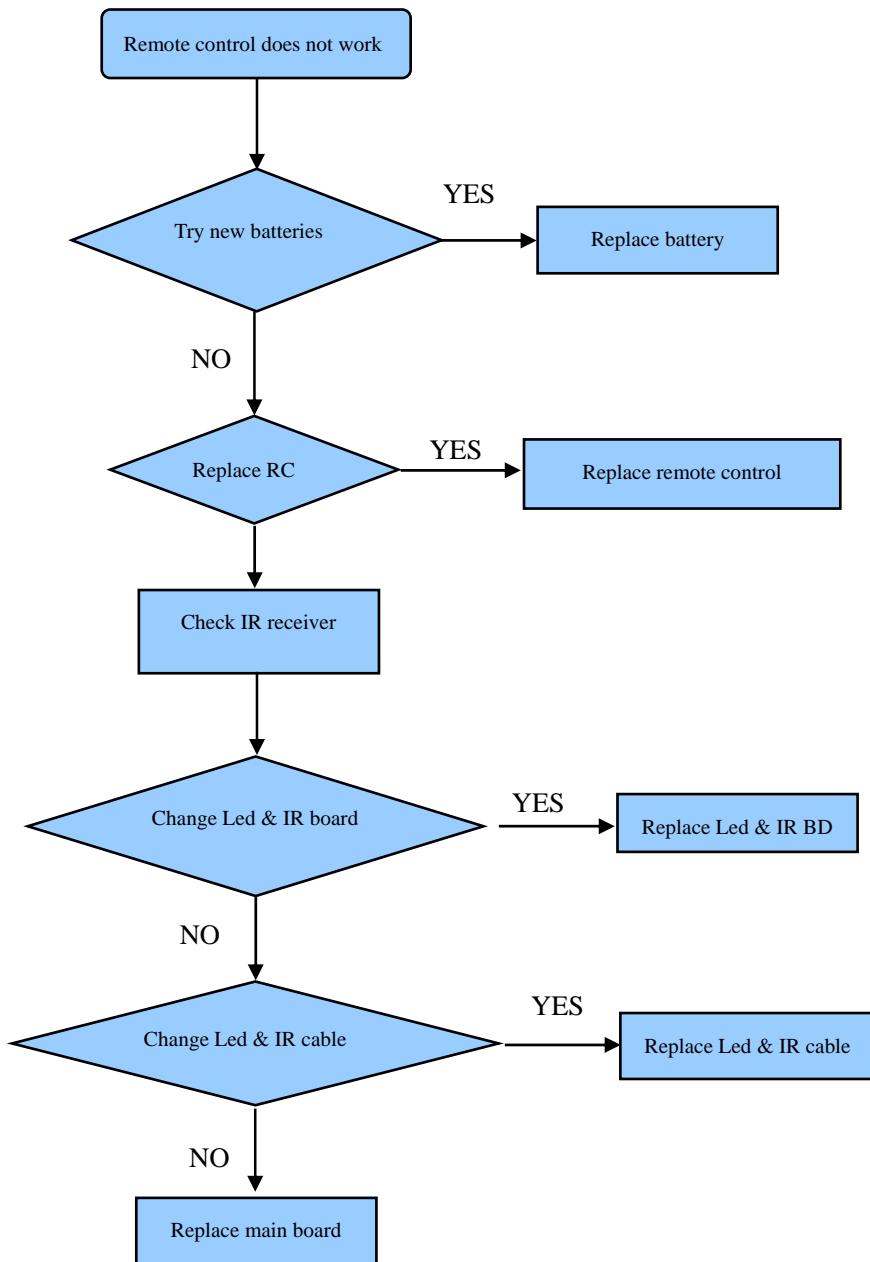
## 5. Trouble shooting

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 cann't be solved, please contact the profession technician.

No sound or picture	<ol style="list-style-type: none"><li>1. Check if the power line is in the outlet and if it has electricity.</li><li>2. Check if you have pressed Power button on the TV or Power button on the remote control</li><li>3. Check the setting of picture brightness and contrast.</li><li>4. Check the volume.</li></ol>
The picture is normal but there is no sound	<ol style="list-style-type: none"><li>1. Check the volume.</li><li>2. Check if Mute mode is set.</li></ol>
No picture and white or black picture	<ol style="list-style-type: none"><li>1. Adjust Picture Setting.</li><li>2. Check Color System.</li></ol>
The sound and picture are interfered	<ol style="list-style-type: none"><li>1 Try to find the appliance affecting TV set, and move it far away from the TV set.</li><li>2. Try to insert the power plug of the TV set into another outlet.</li></ol>
Unclear picture or picture with snow	<ol style="list-style-type: none"><li>1. Check the direction, position and connection of your antenna.</li><li>2. Adjust the direction of your antenna or reset or fine tune the channel</li></ol>
The remote control does not work	<ol style="list-style-type: none"><li>1. Change the batteries in the remote control.</li><li>2. Clean the upper side of the remote control (radiating window)</li><li>3. Check the contacting points of the batteries.</li><li>4. Check if there is obstruction between the remote control and the monitor.</li><li>5. Check if the batteries are correctly installed.</li></ol>
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.

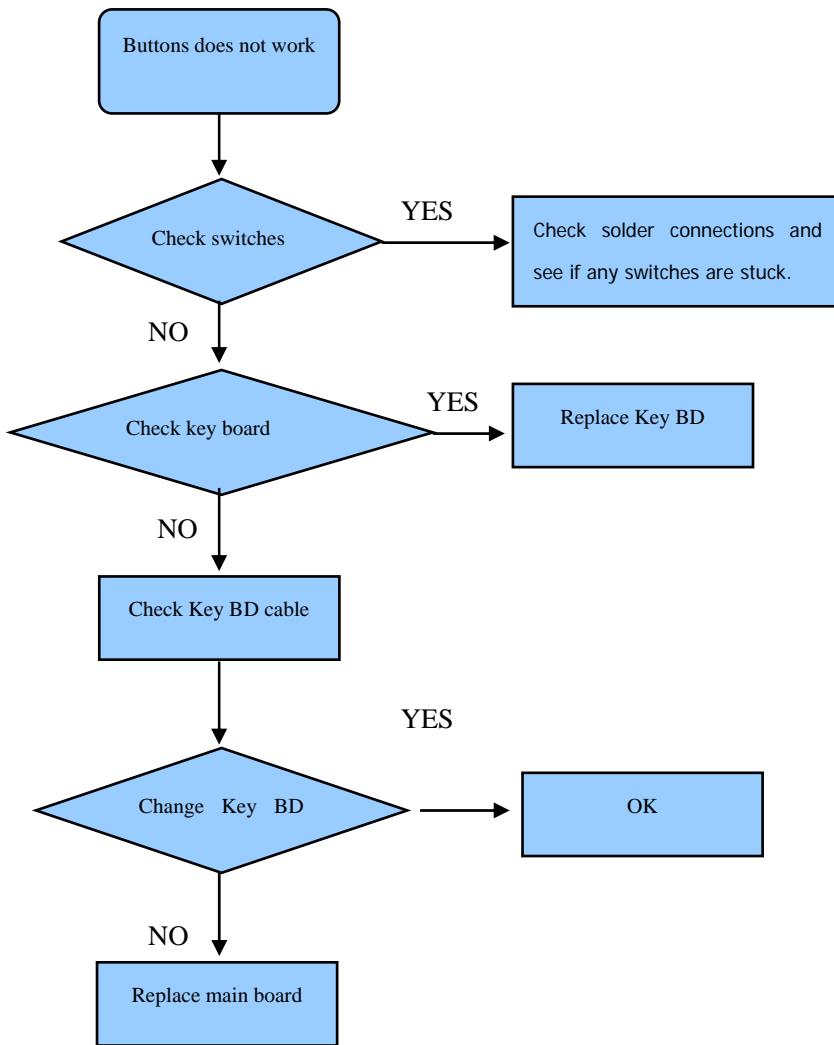
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## 5.1 Troubleshooting for Remote Control

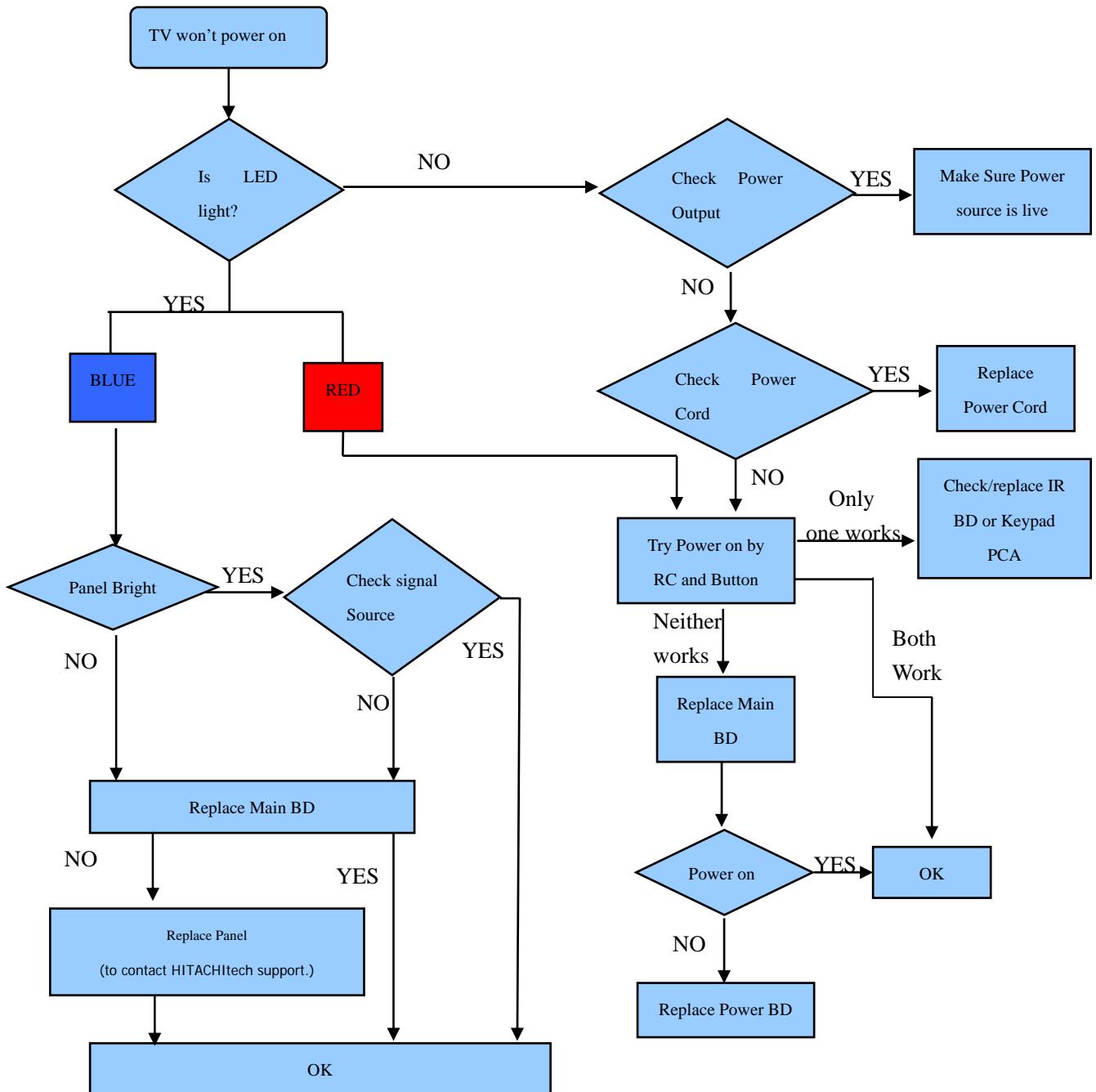


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## 5.2 Troubleshooting for Function Key



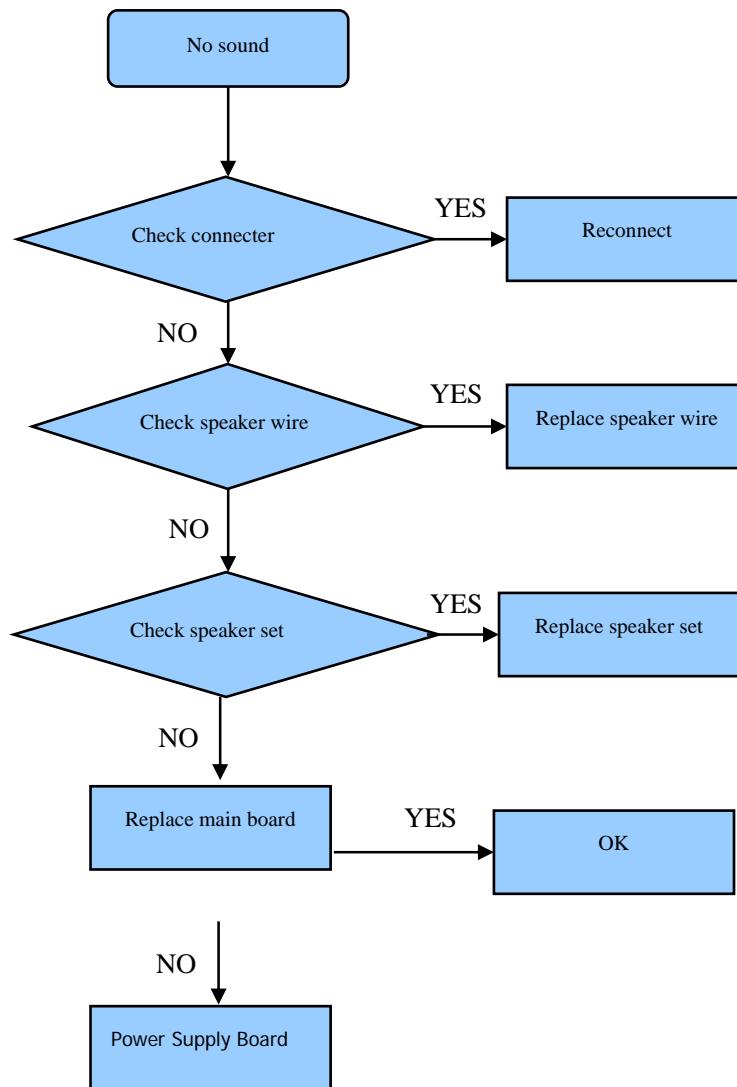
## 5.3 TV won't Power On



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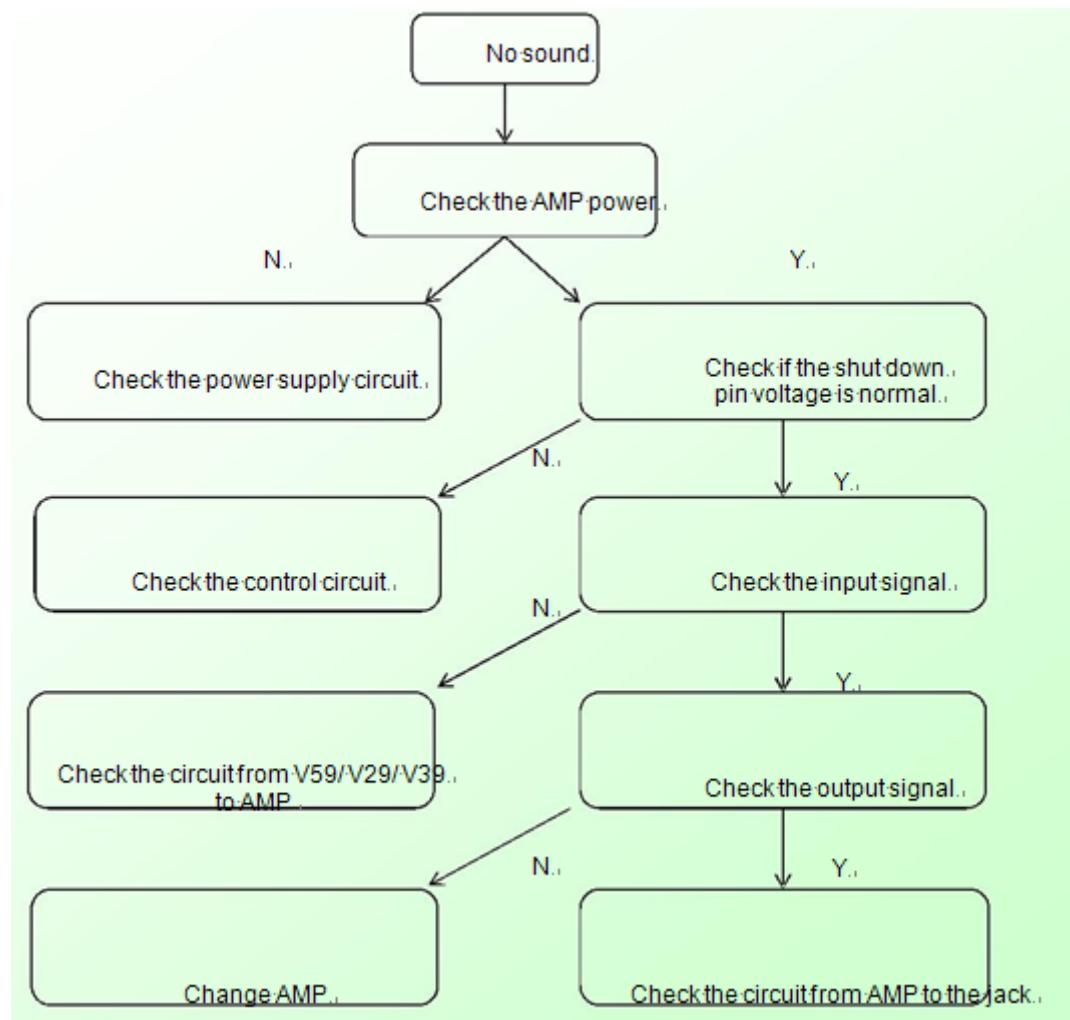
## 5.4 Troubleshooting for Audio

### Solution-1



## 5.5 Troubleshooting for Audio

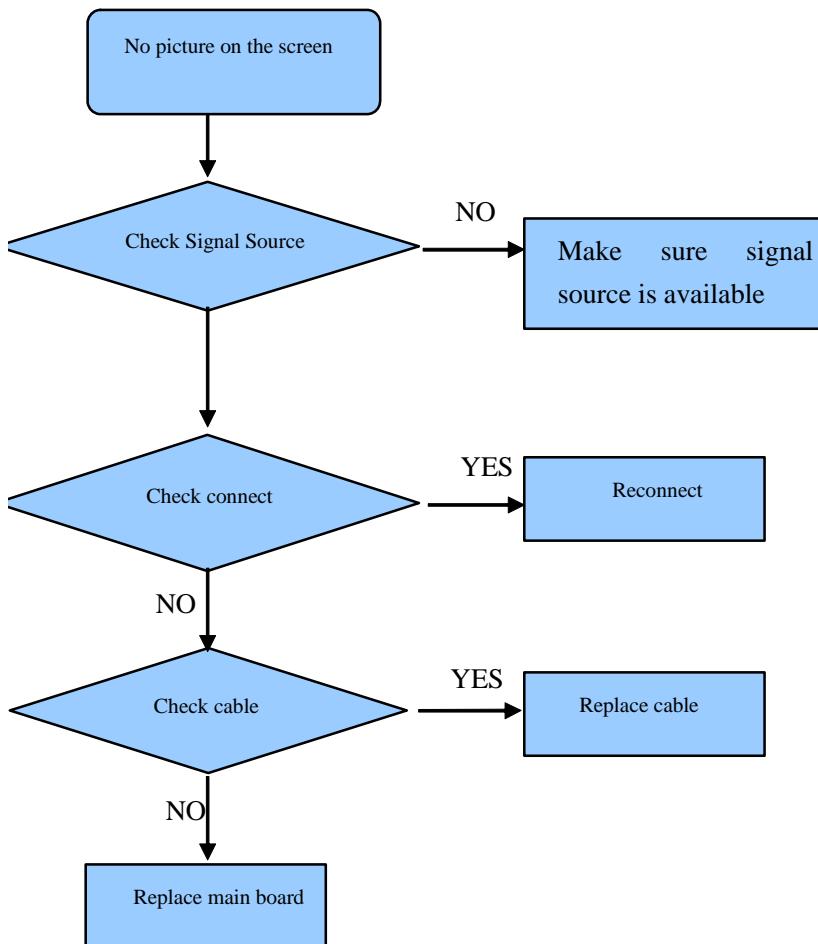
### Solution-2



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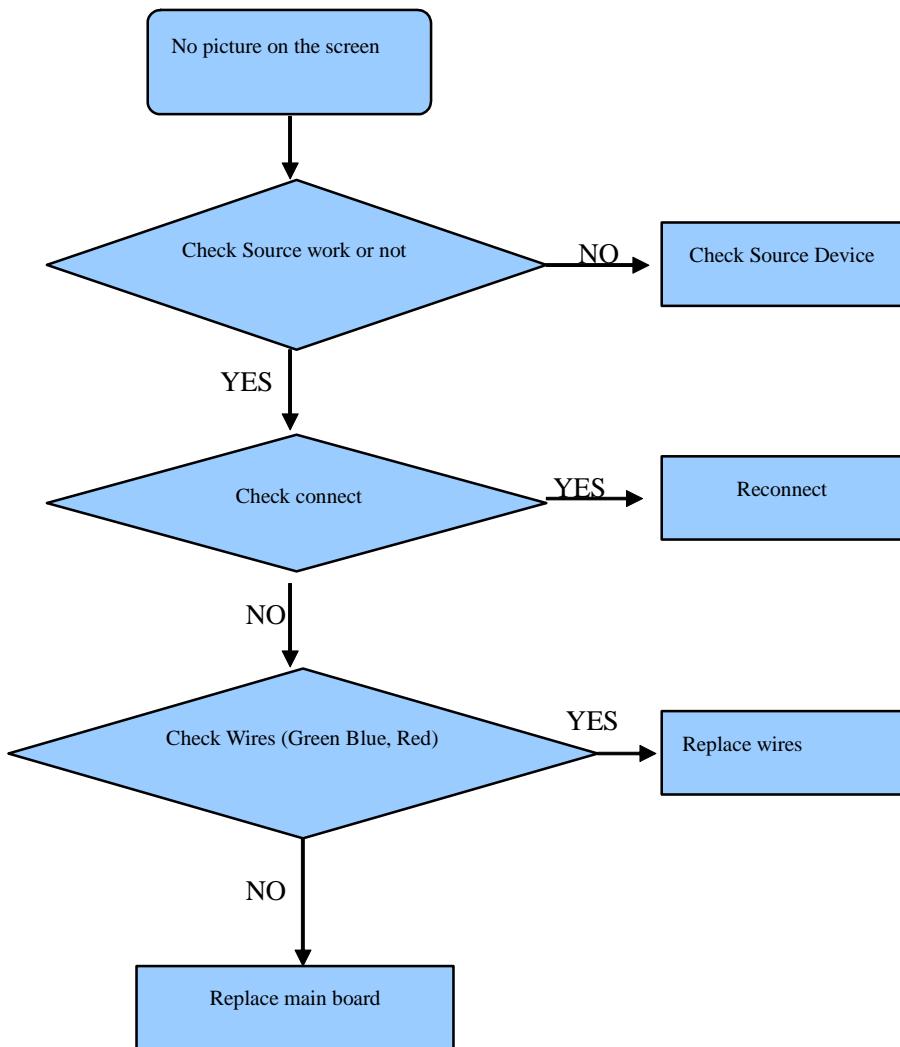
## 5.5 Troubleshooting for TV/VGA/HDMI input

Note: chassis MTK5657 has no VGA channel.



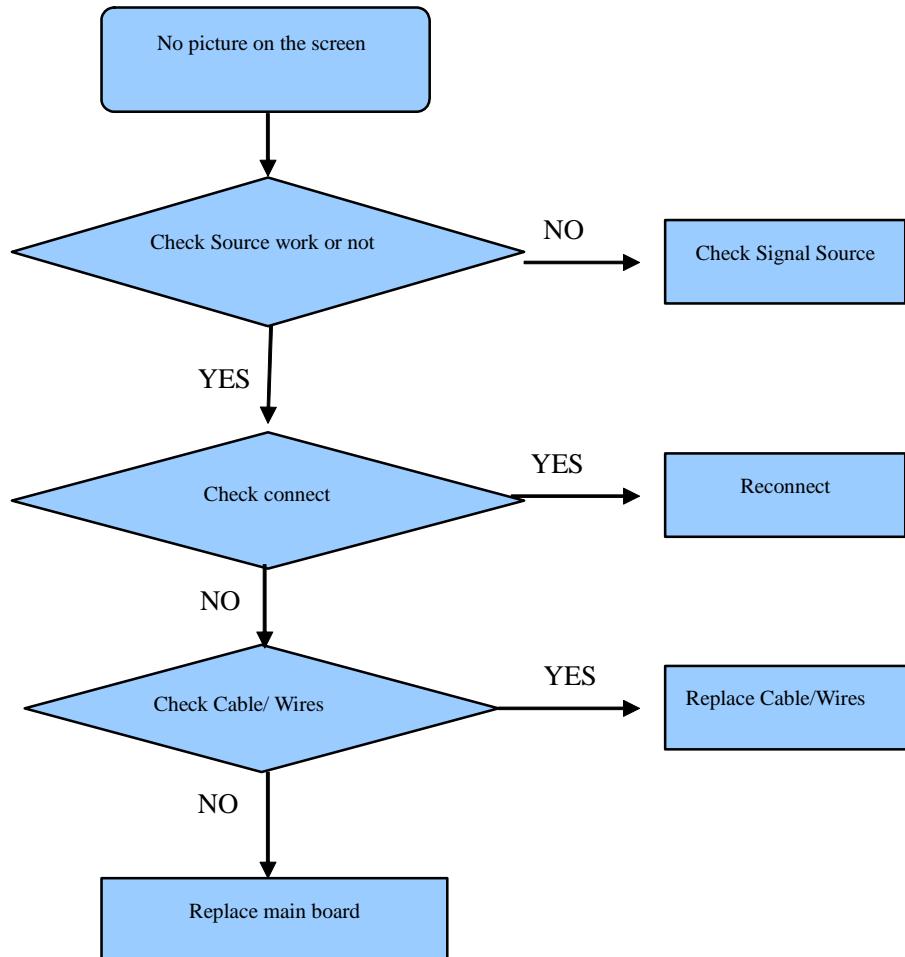
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## 5.6 Troubleshooting for YPbPr input



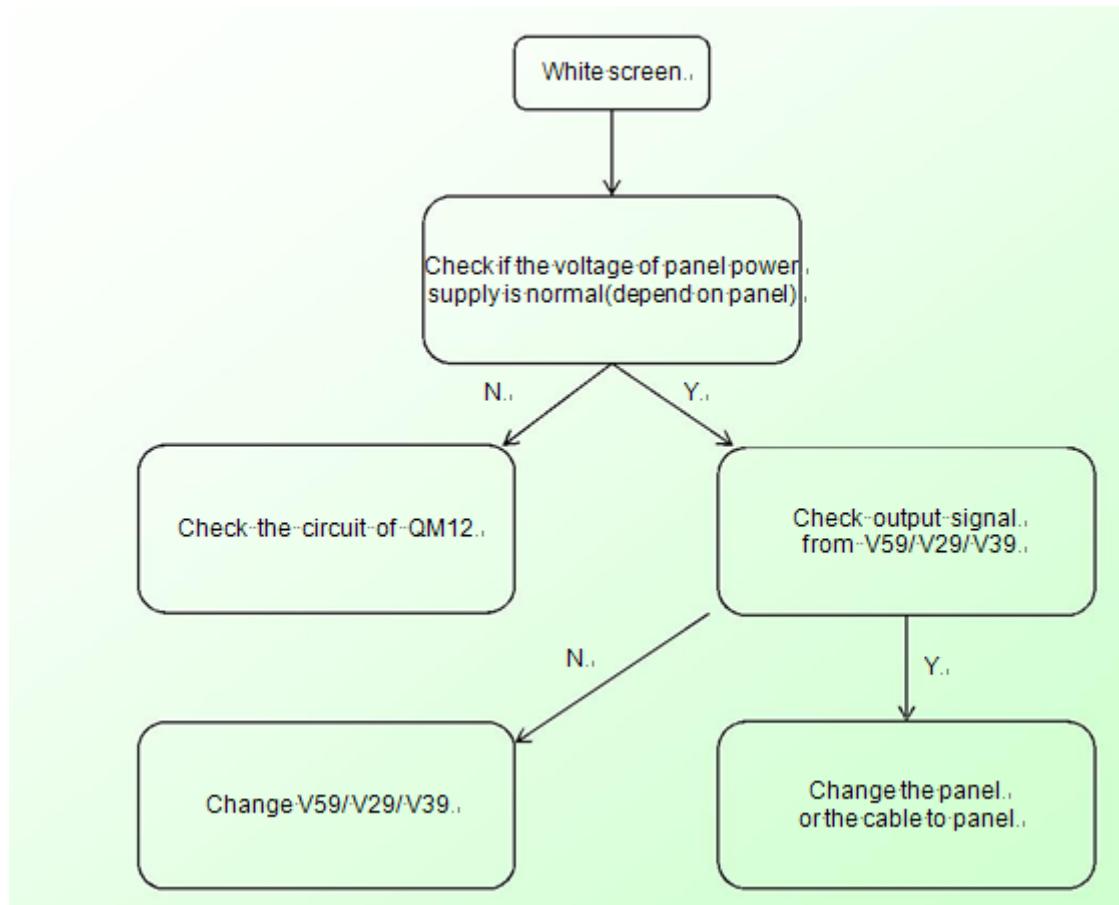
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## 5.7 Troubleshooting for Video input



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## 5.8 Display trouble(white screen)

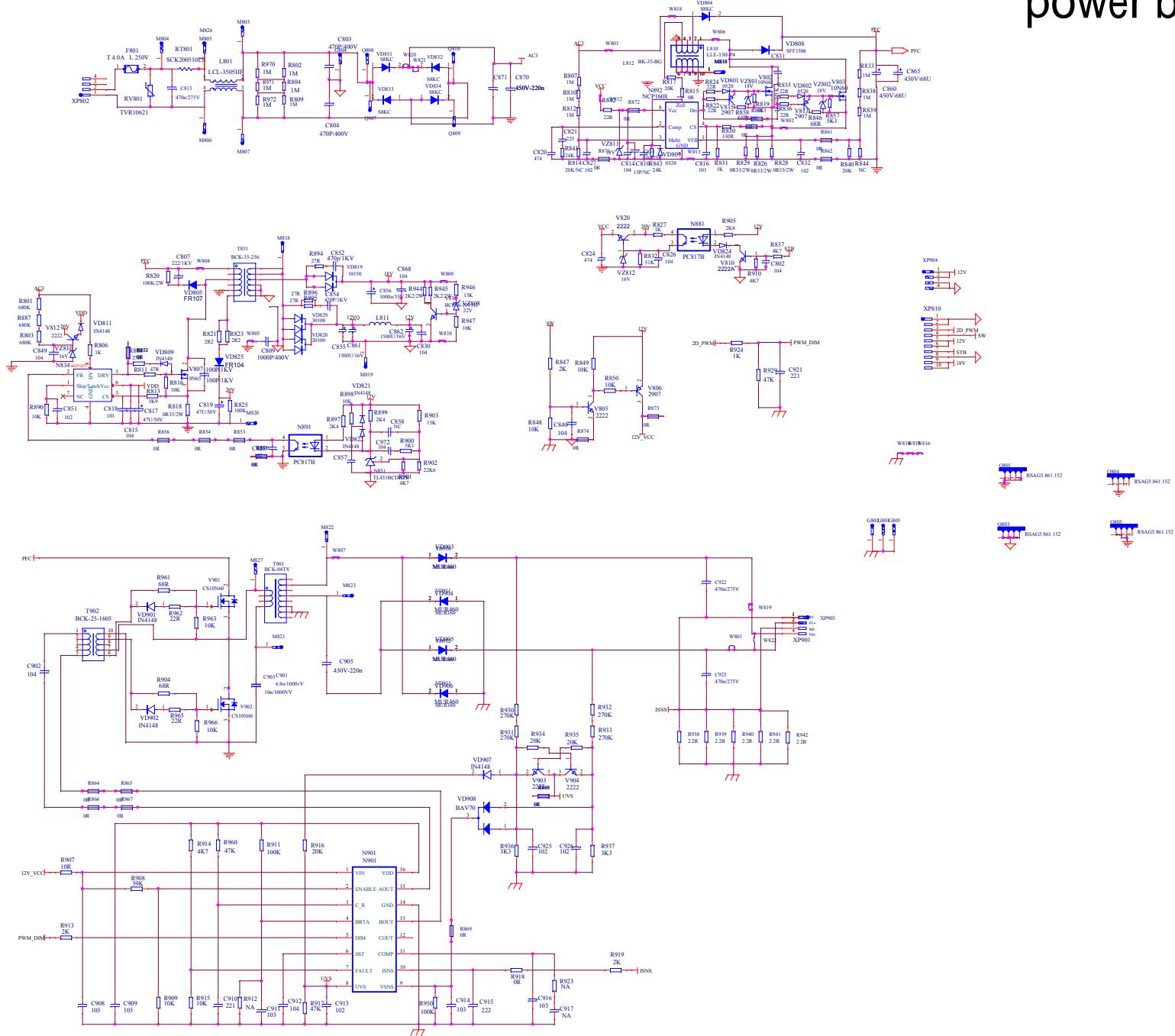


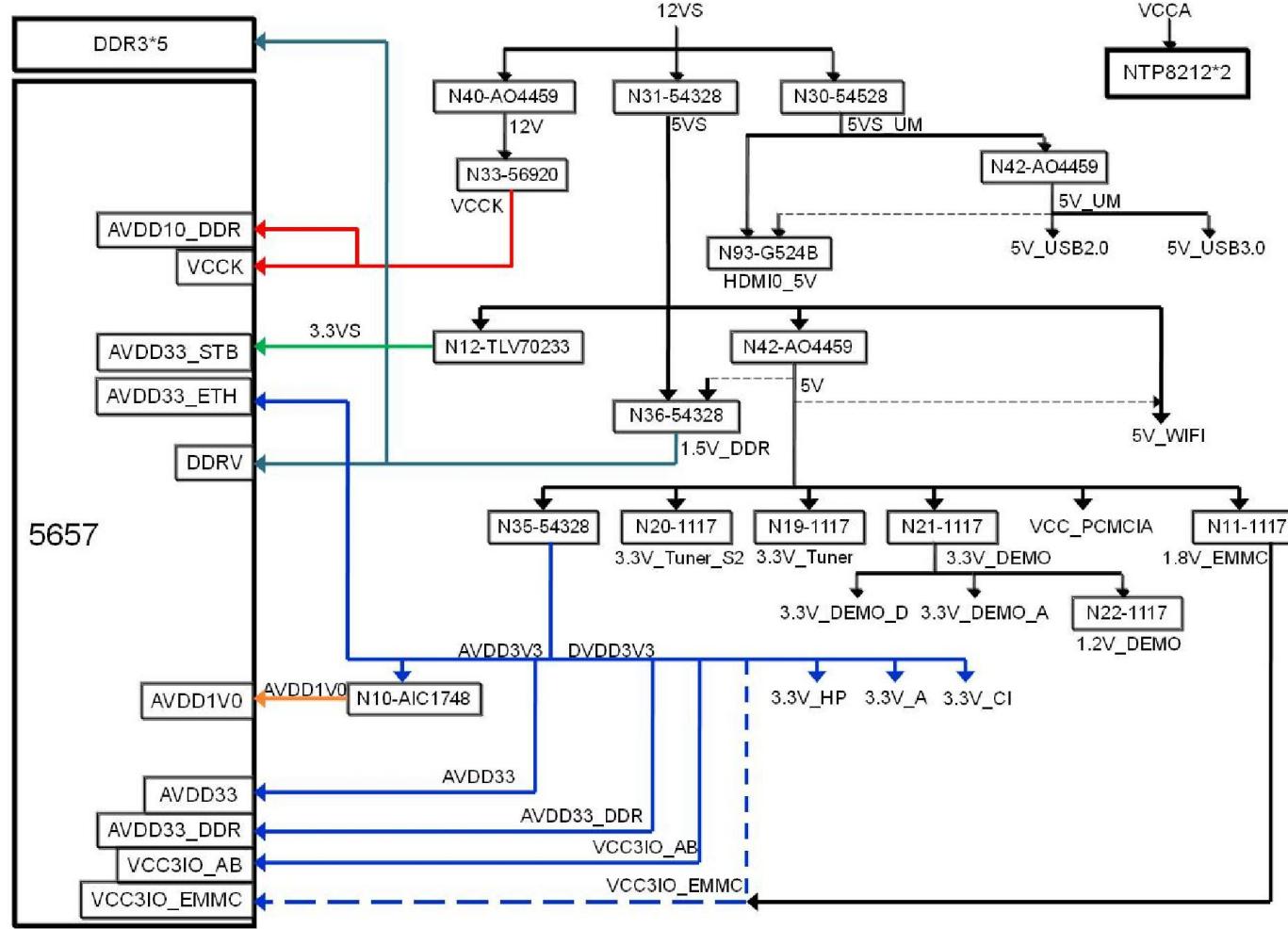
## 6. Signals Block Diagram and power assign:

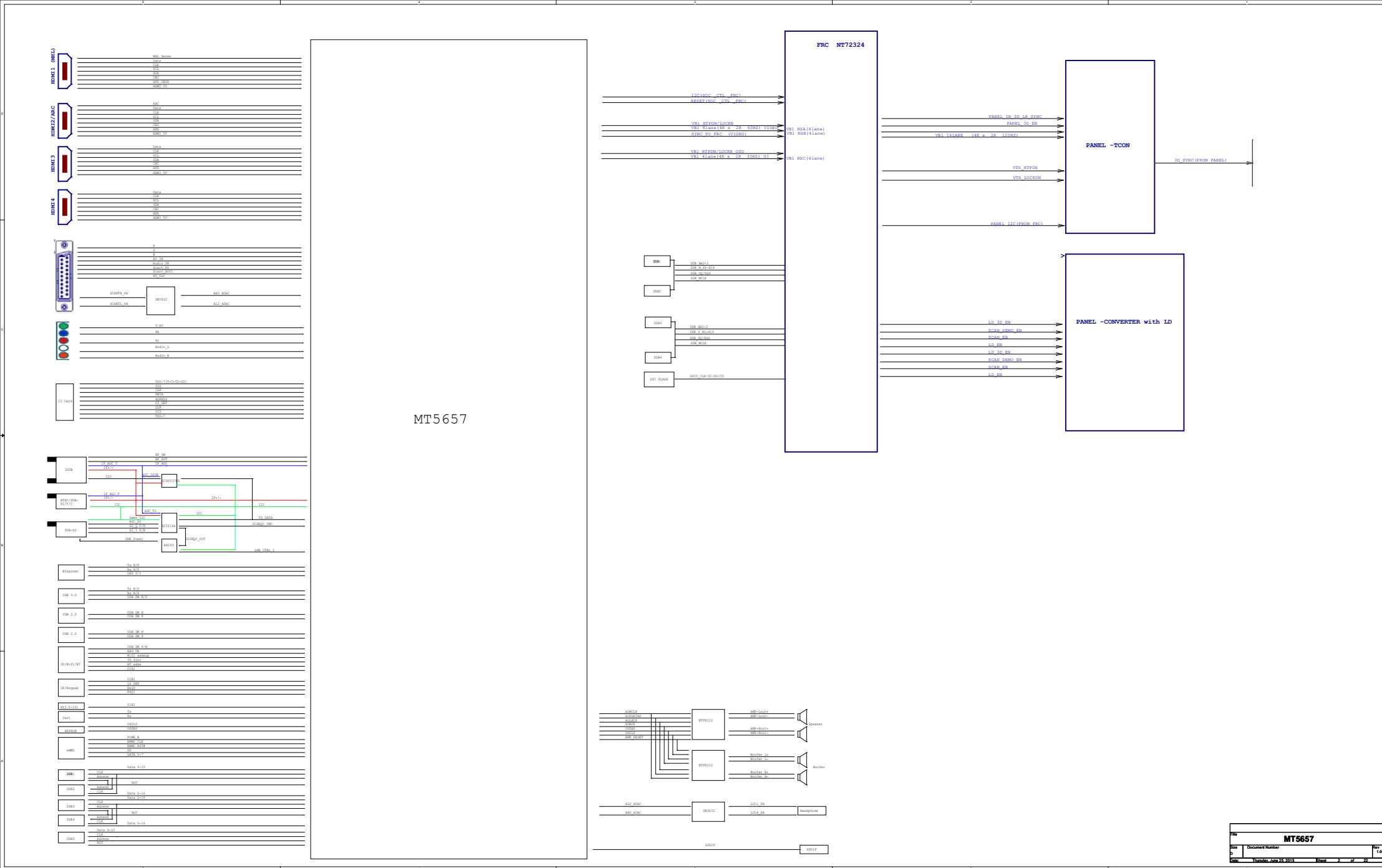
## 7. Schematic circuit diagram

## 8. Explode View

# power board :6635







## GPIO LIST

PIN NAME	Function Definition	GPIO Function
CI_A0	CI Interface	CI_A0 (GPIO_0)
CI_A1	CI Interface	CI_A1 (GPIO_1)
CI_A2	CI Interface	CI_A2 (GPIO_2)
CI_A3	CI Interface	CI_A3 (GPIO_3)
CI_A4	CI Interface	CI_A4 (GPIO_4)
CI_A5	CI Interface	CI_A5 (GPIO_5)
CI_A6	CI Interface	CI_A6 (GPIO_6)
CI_A7	CI Interface	CI_A7 (GPIO_7)
CI_A8	CI Interface	CI_A8 (GPIO_8)
CI_A9	CI Interface	CI_A9 (GPIO_9)
CI_A10	CI Interface	CI_A10 (GPIO_10)
CI_A11	CI Interface	CI_A11 (GPIO_11)
CI_A12	CI Interface	CI_A12 (GPIO_12)
CI_A13	CI Interface	CI_A13 (GPIO_13)
CI_A14	CI Interface	CI_A14 (GPIO_14)
CI_MCLKI	CI Interface	CI_MCLKI (GPIO_15)
CI_MIVAL	CI Interface	CI_MIVAL (GPIO_16)
CI_MISTRT	CI Interface	CI_MISTRT (GPIO_17)
CI_MDI0	CI Interface	CI_MDI0 (GPIO_18)
CI_MDI1	CI Interface	CI_MDI1 (GPIO_19)
CI_MDI2	CI Interface	CI_MDI2 (GPIO_20)
CI_MDI3	CI Interface	CI_MDI3 (GPIO_21)
CI_MDI4	CI Interface	CI_MDI4 (GPIO_22)
CI_MDI5	CI Interface	CI_MDI5 (GPIO_23)
CI_MDI6	CI Interface	CI_MDI6 (GPIO_24)
CI_MDI7	CI Interface	CI_MDI7 (GPIO_25)
CI_D0	CI Interface	CI_D0 (GPIO_26)
CI_D1	CI Interface	CI_D1 (GPIO_27)
CI_D2	CI Interface	CI_D2 (GPIO_28)
CI_D3	CI Interface	CI_D3 (GPIO_29)
CI_D4	CI Interface	CI_D4 (GPIO_30)
CI_D5	CI Interface	CI_D5 (GPIO_31)
CI_D6	CI Interface	CI_D6 (GPIO_32)
CI_D7	CI Interface	CI_D7 (GPIO_33)
CI_MDO0	CI Interface	CI_MDO0 (GPIO_34)
CI_MDO1	CI Interface	CI_MDO1 (GPIO_35)
CI_MDO2	CI Interface	CI_MDO2 (GPIO_36)
CI_MDO3	CI Interface	CI_MDO3 (GPIO_37)
CI_MDO4	CI Interface	CI_MDO4 (GPIO_38)
CI_MDO5	CI Interface	CI_MDO5 (GPIO_39)
CI_MDO6	CI Interface	CI_MDO6 (GPIO_40)
CI_MDO7	CI Interface	CI_MDO7 (GPIO_41)
GPIO_42	CI Over Current Protect	CI_OCP
GPIO_43	USB Power Enable	USB_PWR_EN1
GPIO_44	USB Power Enable	USB_PWR_EN2
GPIO_45	—	—
GPIO_46	SYSTEM EEPROM write protect	SYS_EEPROM_WP
GPIO_47	CI Interface	CI_RESET
GPIO_48	CI POWER CONTROL	CI_POWER_EN
GPIO_49	—	—
GPIO_50	VB1	VB1_REQ
GPIO_51	—	—
GPIO_52	—	—
GPIO_53	VB1	VB1_HTPDN OSD
GPIO_54	VB1	VB1_LOCKN OSD
GPIO_55	—	—
GPIO_56	JTAG	JTDO
GPIO_57	JTAG	JTCK
GPIO_58	JTAG	JTMS
GPIO_59	JTAG	JTDI
GPIO_60	JTAG	JTRST#
GPIO_61	—	—
GPIO_62	—	—
GPIO_63	SDIO POWER CONTROL	SDIO_PWR_CTRL
GPIO_64	—	—
GPIO_65	—	—
GPIO_66	USB Power Enable	USB_PWR_EN0

PCBA version ID

PCBA version ID

PIN NAME	Function define	GPIO Function
ADIN0_SRV	Function Select	SCART_FS
ADIN1_SRV	KEY_PAD	KEY_PAD0
ADIN2_SRV	KEY_PAD	KEY_PAD1
ADIN3_SRV	MHL Over Current Protect	USB_MHL_OC
ADIN4_SRV	USB over current detect	USB_OC_P0/P1
ADIN5_SRV	USB over current detect	USB_OC_P2/P3
ADIN6_SRV	Demod	RF_ACI
ADIN7_SRV	SD Card Detect	SD_DET
ADIN8_SRV	—	—
ADIN9_SRV	—	—

PIN NAME	Function define	GPIO Function
OPWM0	—	—
OPWM1	Backlight DIMMING	BL_DIMMING
OPWM2	LNA AGC switch	LNASW_AGCSW
OPWM3	—	—
OPWM4	—	—
OPWM5	—	—
OPWM6	—	—
OPWM7	—	—
OPWM8	—	—

PIN NAME	Function define	GPIO Function
LED_PWM0	Strapping / Standby mode LED	Strap[3] / LED_PWM0
LED_PWM1	Strapping / Power On LED	Strap[2] / LED_PWM1
LED_PWM2	Strapping	Strap[1]
LED_PWM3	—	—

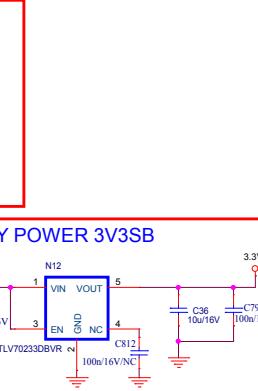
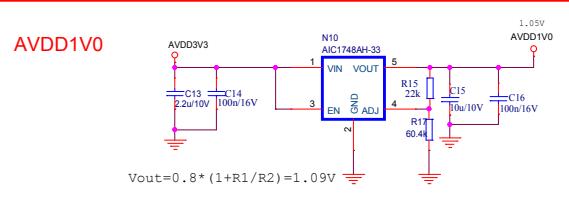
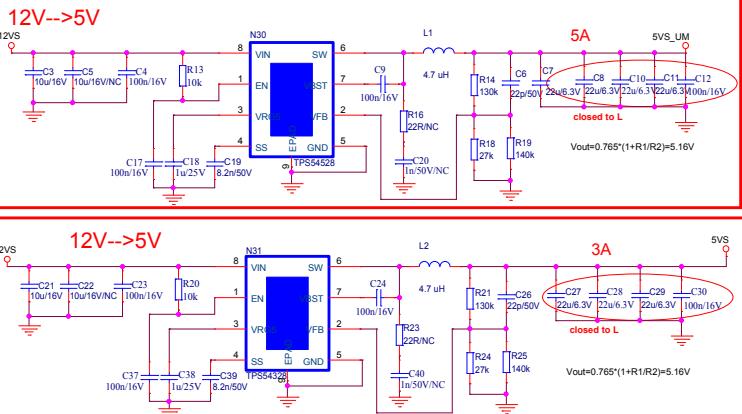
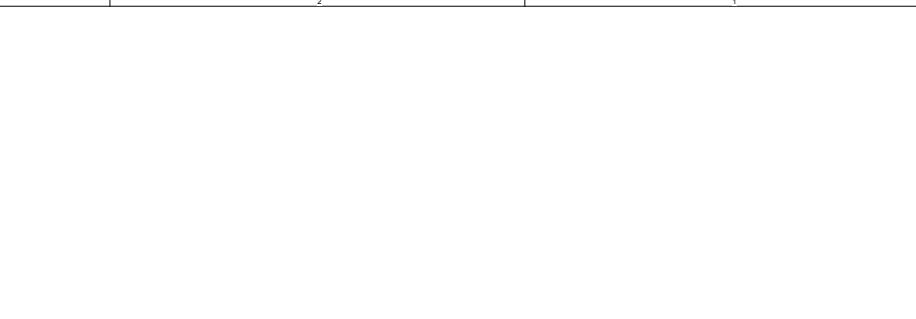
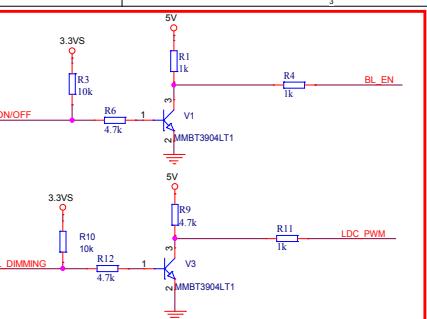
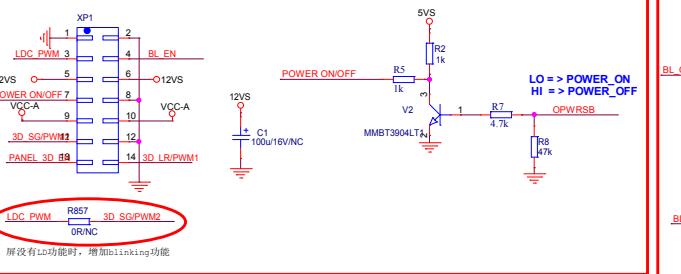
PIN NAME	Function define	GPIO Function
OPCTRL0	PHY LED	PHYLED2
OPCTRL1	PHY LED	PHYLED3
OPCTRL2	SCART	AV_LINK
OPCTRL3	Fast Boot Control	FB_PWR_CTRL
OPCTRL4	Backlight Control	BL_ON/OFF
OPCTRL5	PWM AMP MUTE	AMP_MUTE
OPCTRL6	Headphone Detect	HP_DET
OPCTRL7	—	—
OPCTRL8	MHL_PWR_EN	MHL_PWR_EN
OPCTRL9	LVDS Power Control	LVDS_PWR_EN
OPCTRL10	USB Power Enable	USB_PWR_EN3
OPCTRL11	Audio Mute Control	MUTE_CTL

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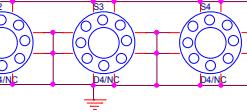
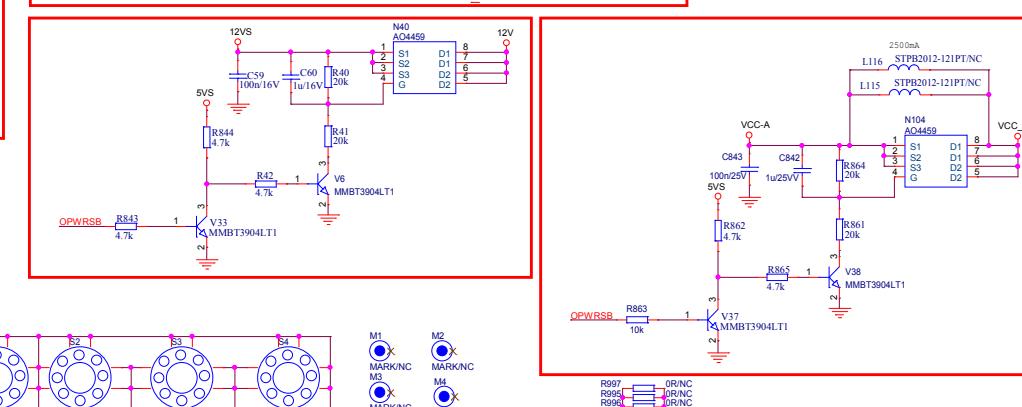
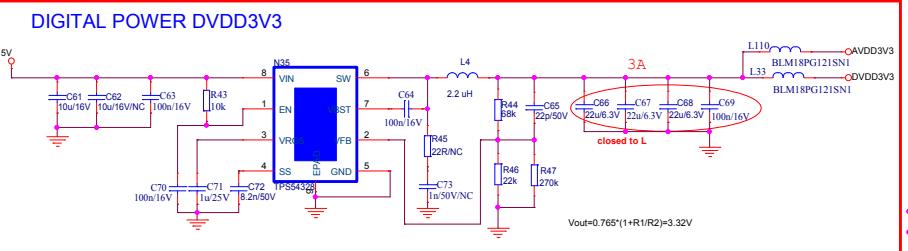
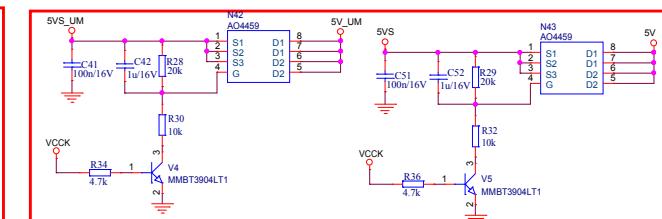
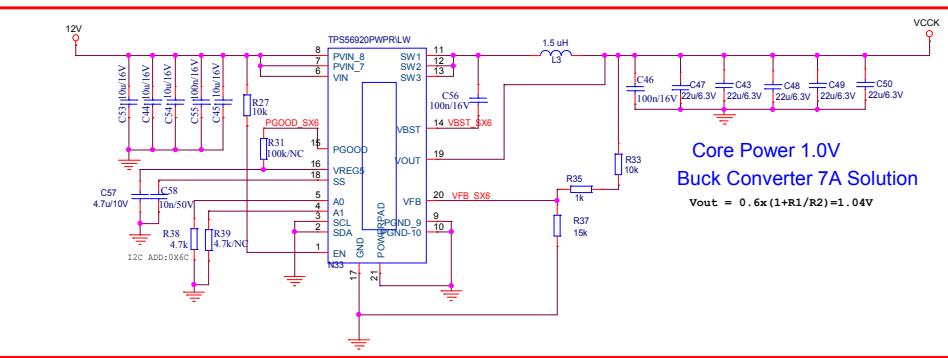
## MAIN POWER



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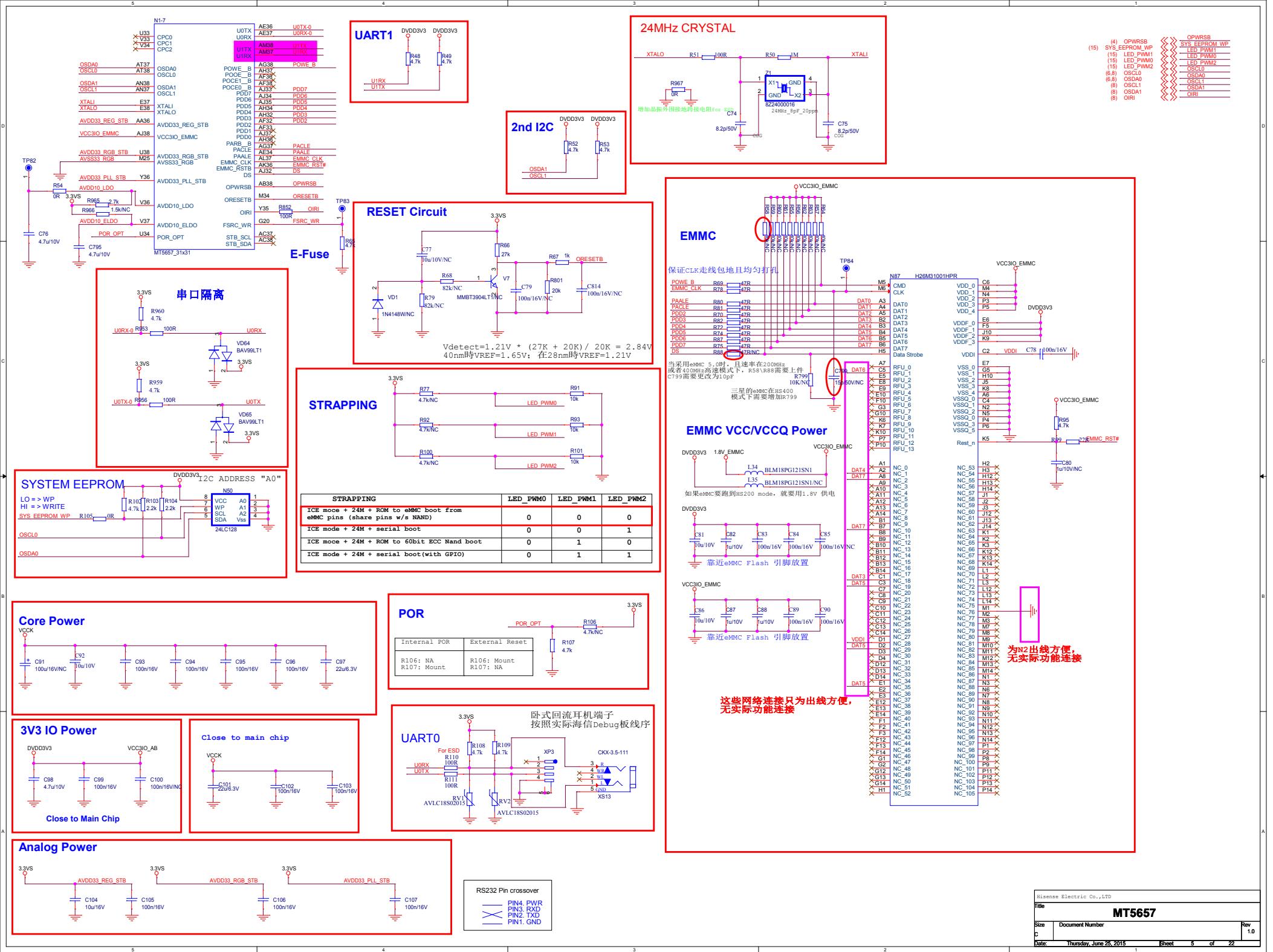
- (1) BL\_DIMMING
- (1) BL\_ON/OFF
- (1) OPWRSB
- (2) 3D SG/PWM2
- (8) 3D SG/PWM1
- (8) PANEL 3D EN
- (3) 3D LR/PWM1
- (8) 3D LR/PWM2
- (1) LDC\_PWM

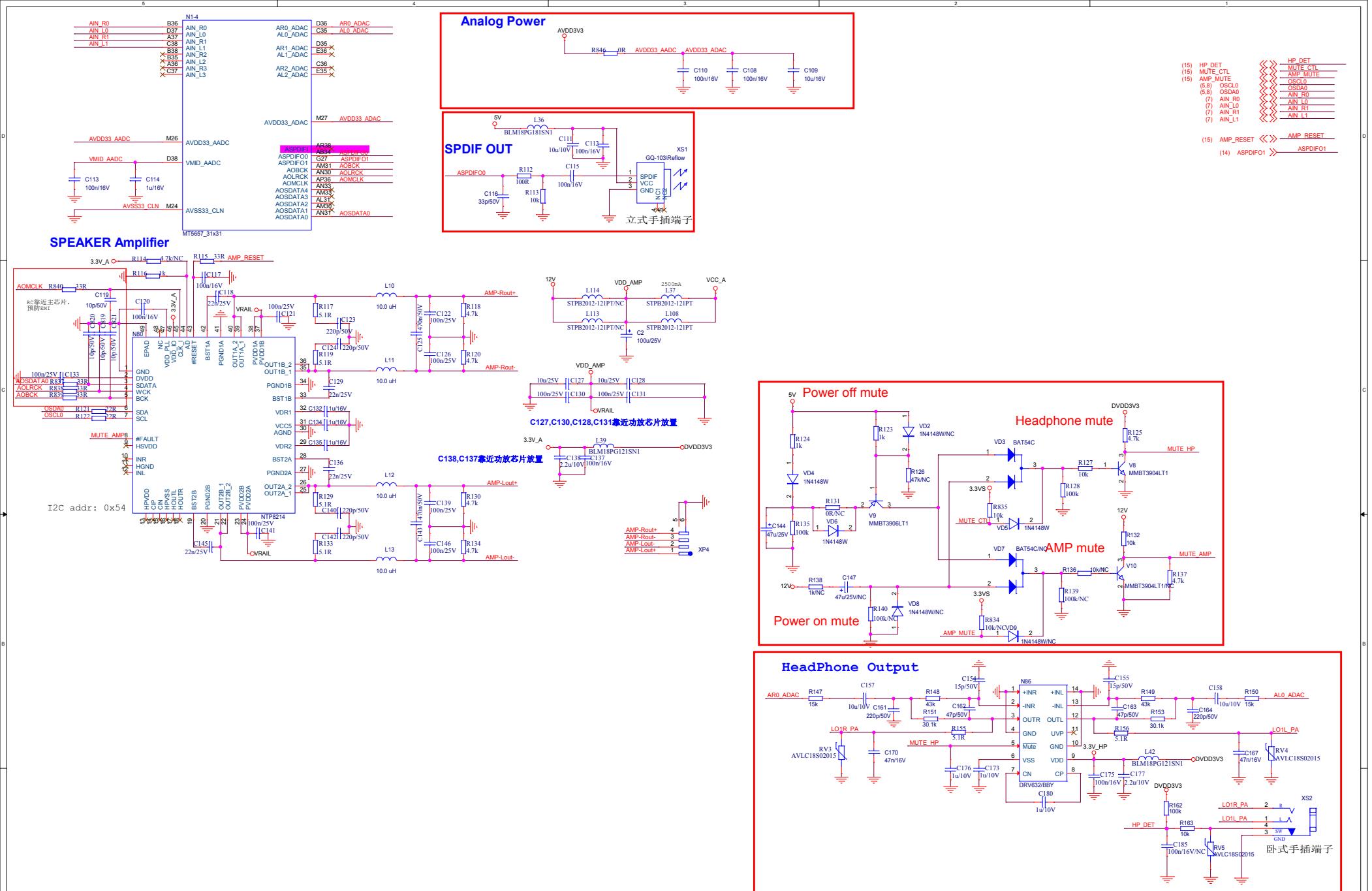
注：没有LDC功能时，增加Blinking功能



SMcontacts  
E1 RSAG7.308.0256  
散热器贴N1(主芯片)上

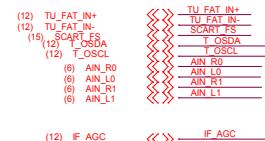
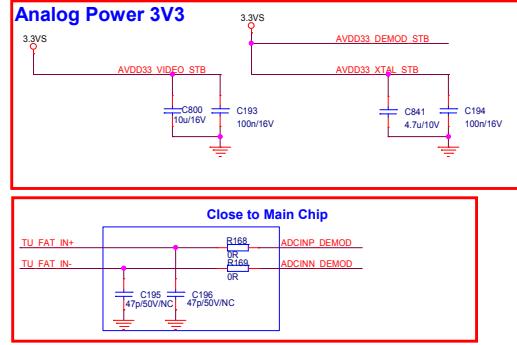
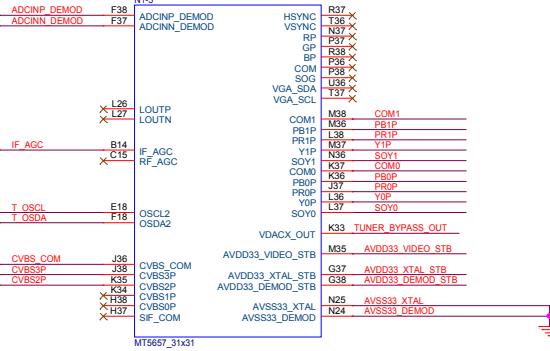
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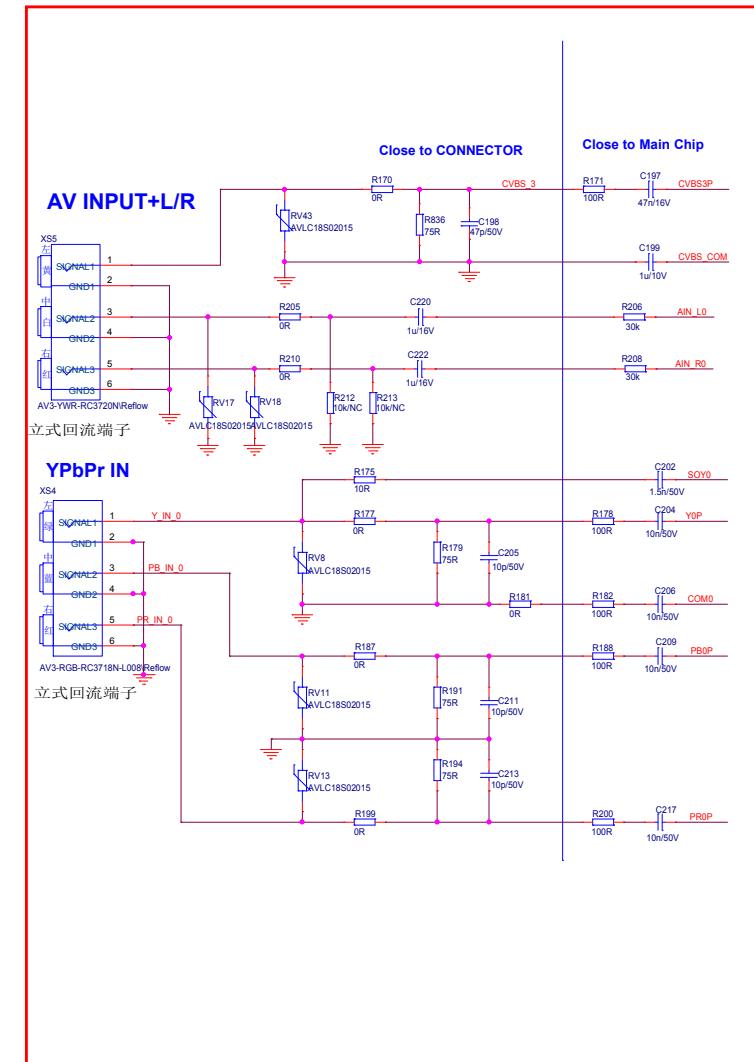
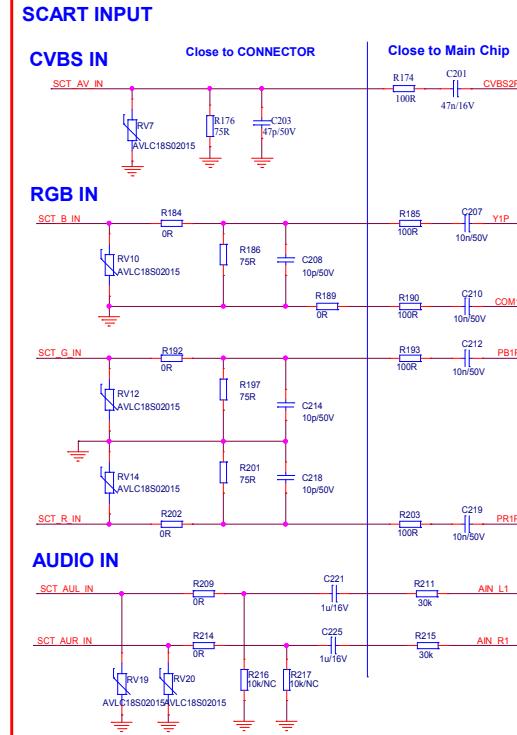
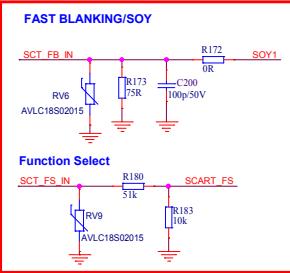
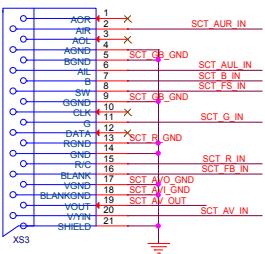


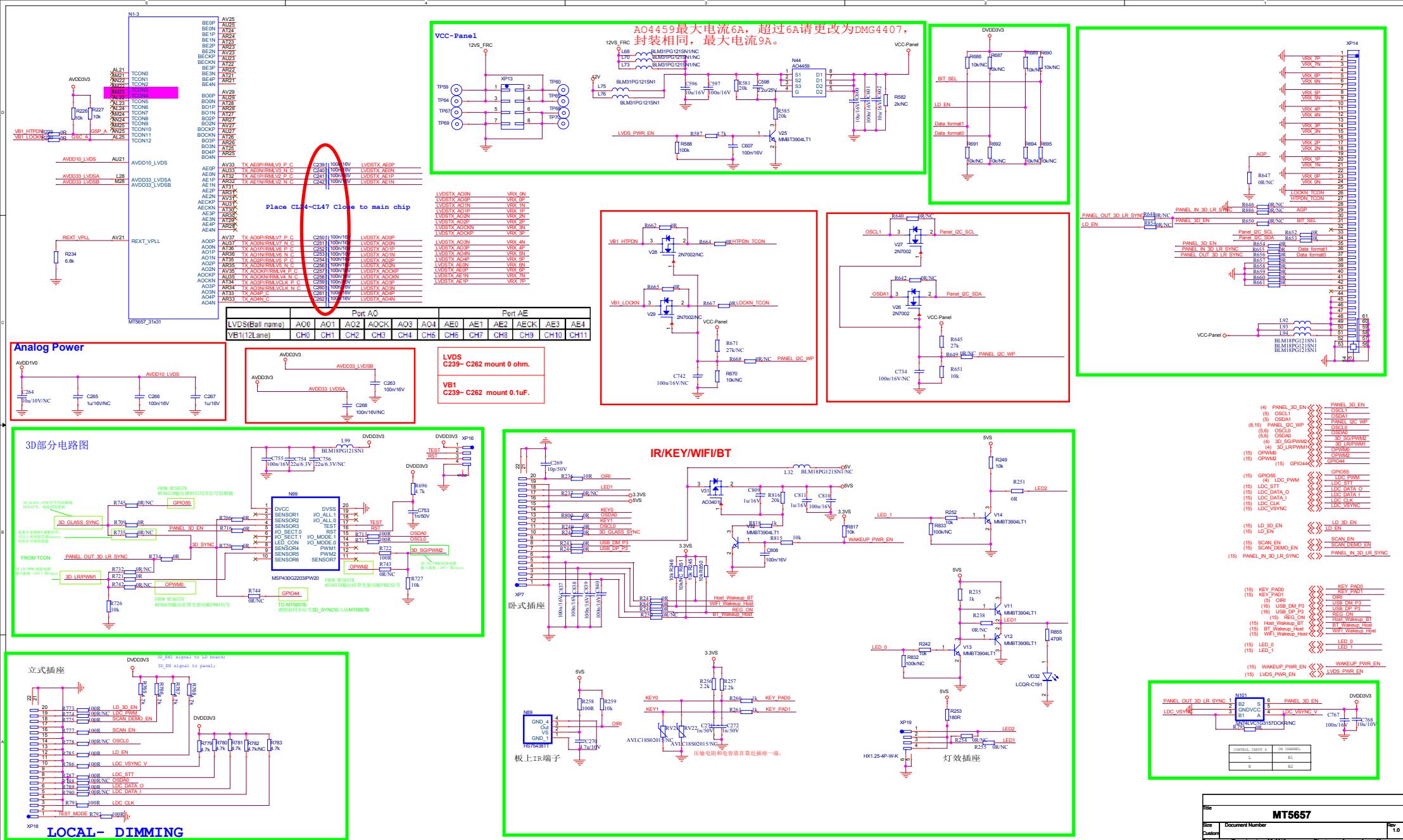
Rizhao Electronic Co., Ltd.

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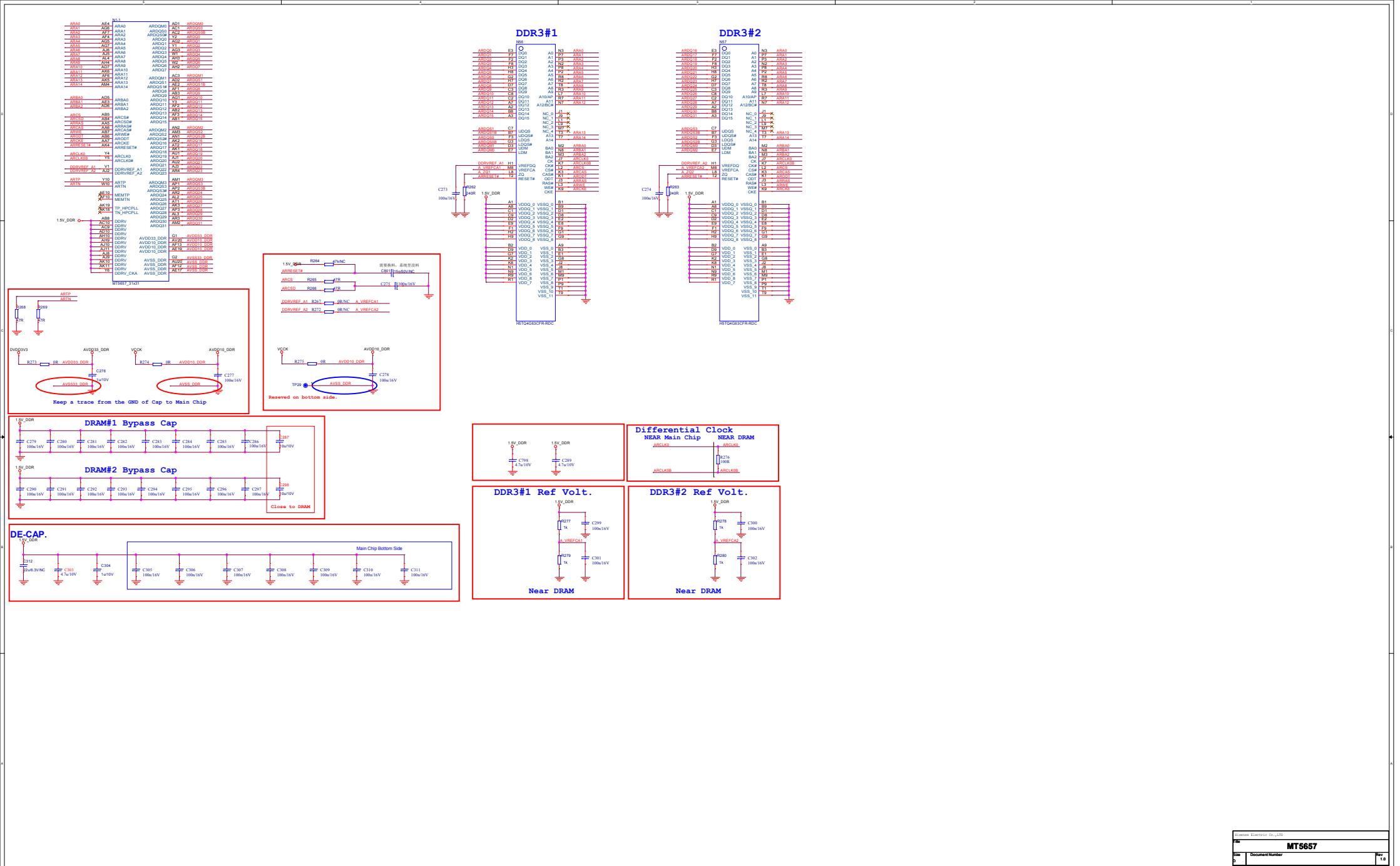
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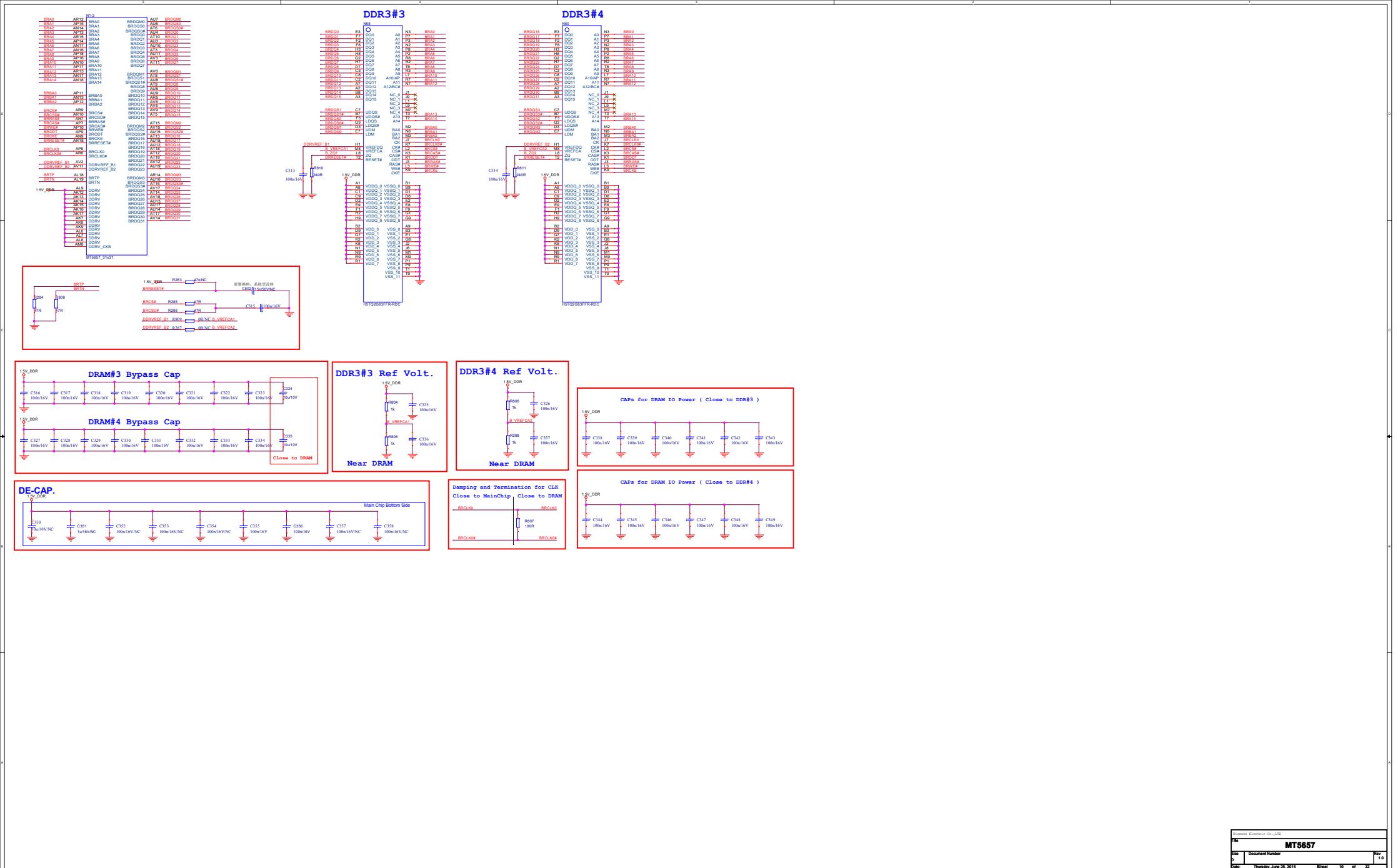


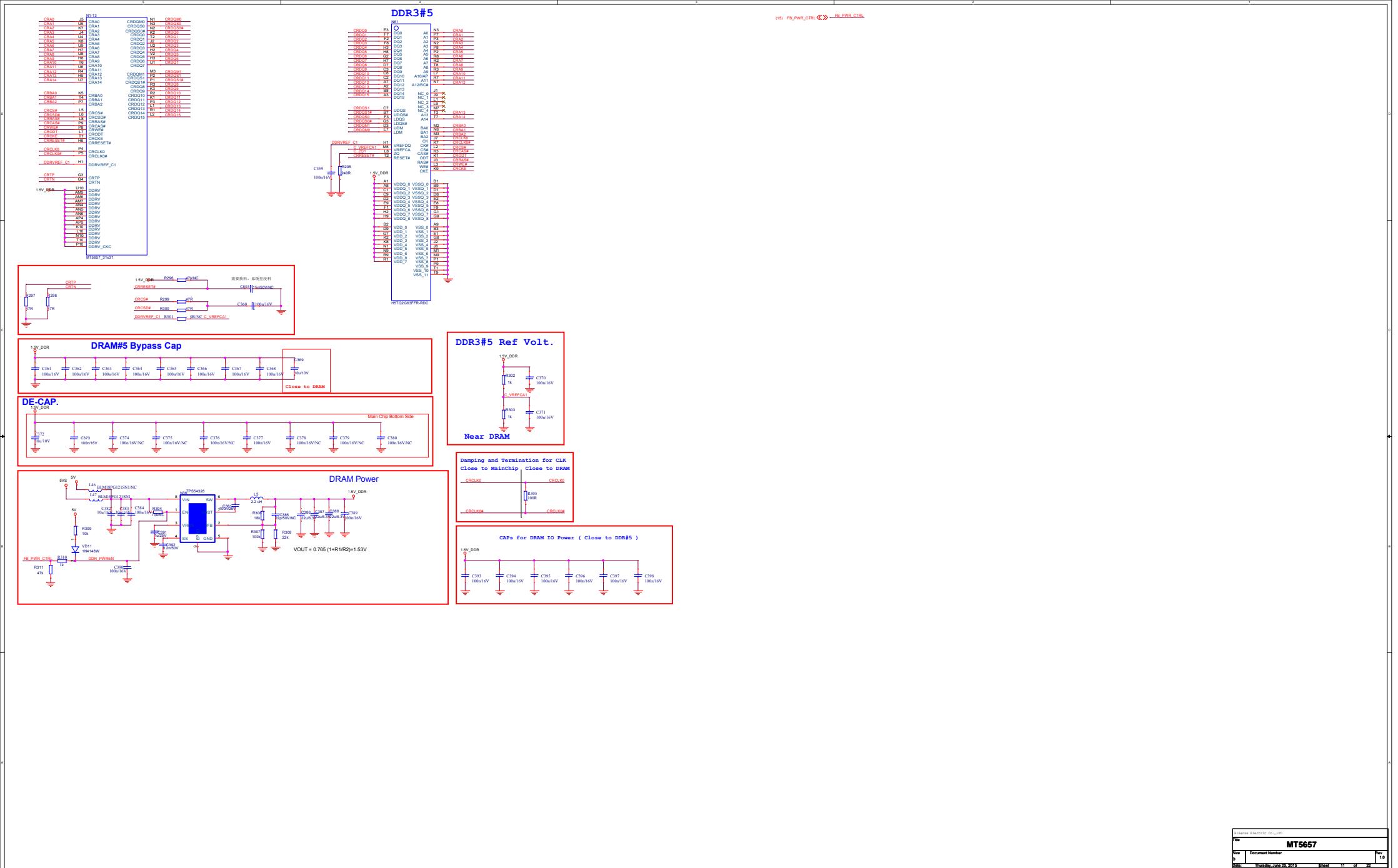


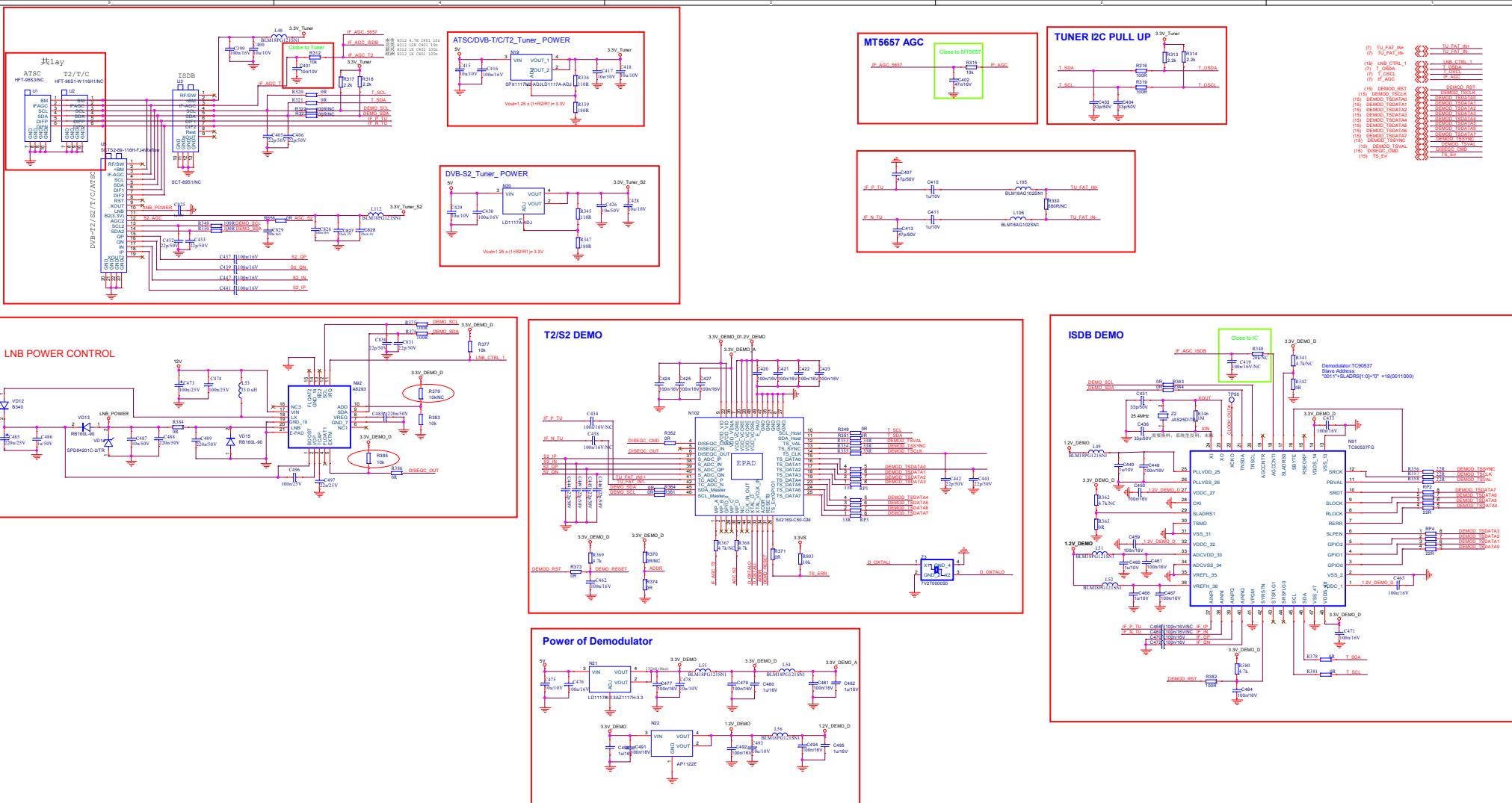
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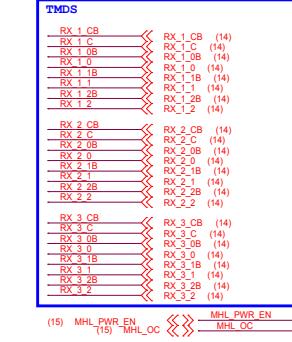
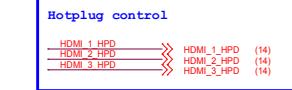
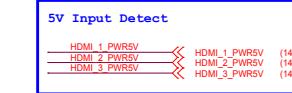
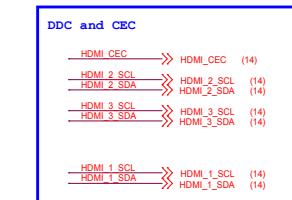
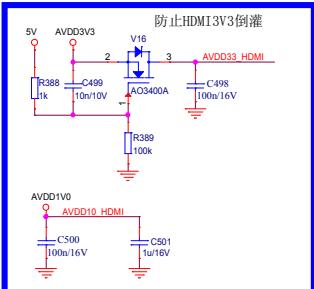
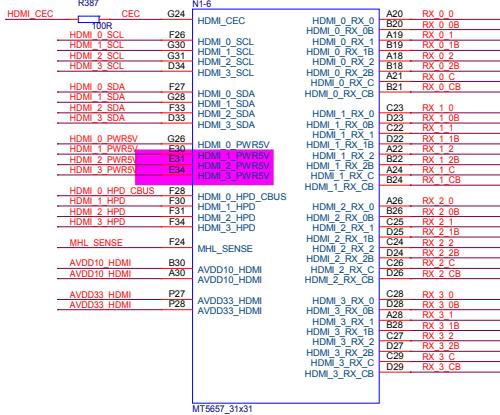
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## HDMI1(MHL)

