

LCD Television

Service Manual

Chassis: MTK5657

Product: Europe TV

Ver 1.02

Hisense Electric Co., Ltd.

January, 2017

REVISION HISTROY			
Version	Revise content	Reviser	Date
V1.00	First issued		2016-3-14
V1.01	2.2 Main board difference	Zhangshujuan	2016-5-17
V1.02	2.1 add main board:7454	Zhangshujuan	2017-2-05

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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

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.



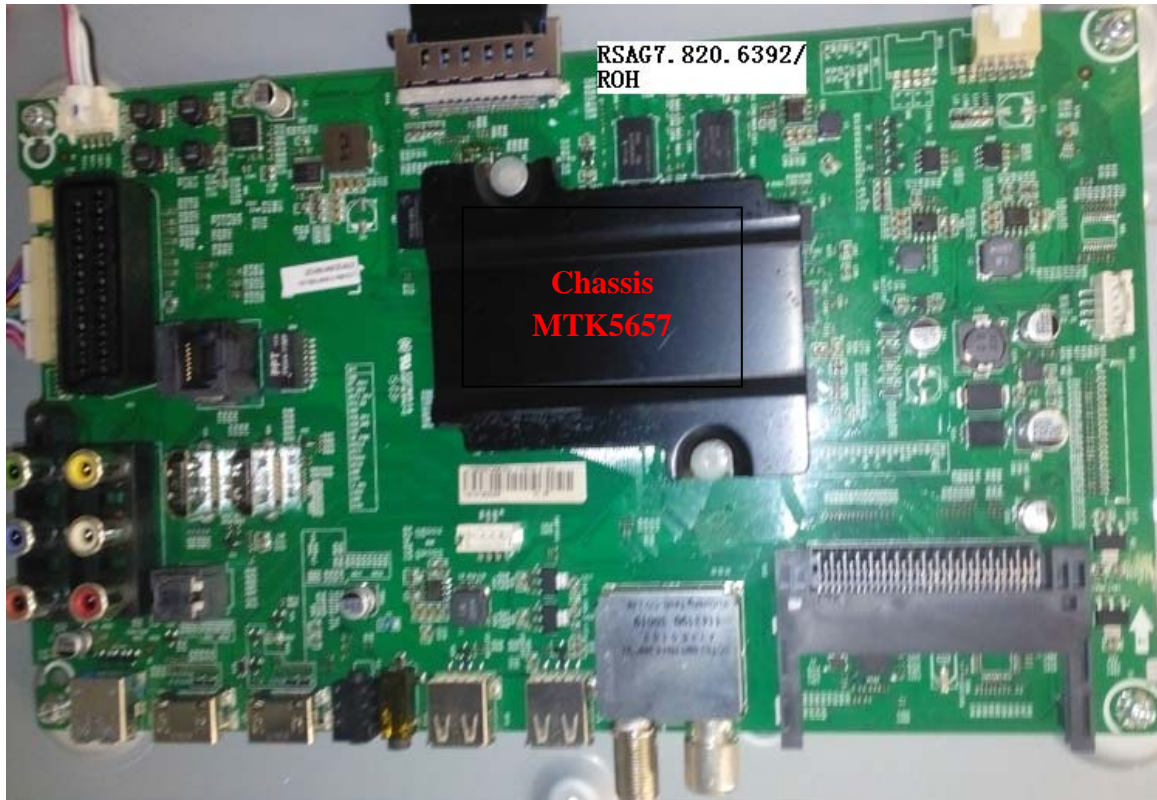
The exclamation point within an equilateral triangle is intended to alert the service personnel to important safety information in the service literature. .

2. TV boards:

2.1 Main board layout

Main board :RSAG7.820. 6392/ROH layout:

The TOP of 6392:



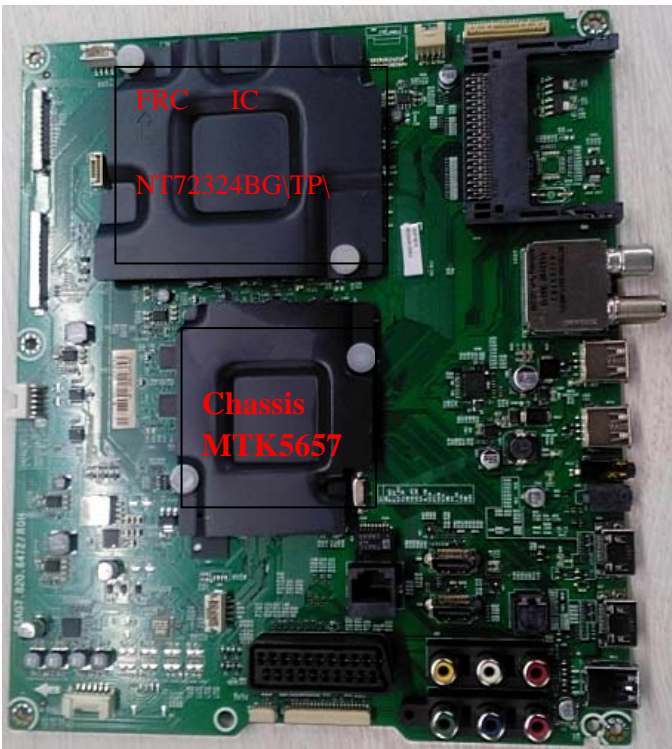
Bottom connectors of 6392:



Side connectors of 6392:



Main board :RSAG7.820. 6472/ROH layout:



Bottom connectors of 6472



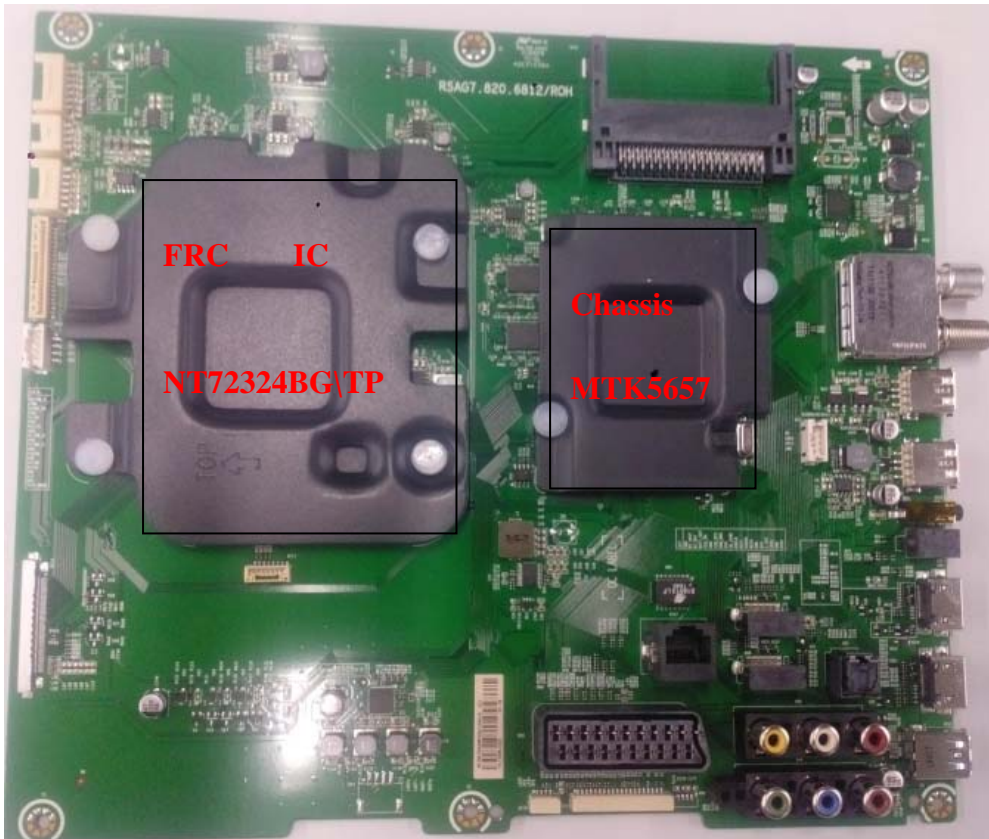
Main board :RSAG7.820. 6470/ROH layout:



Side connectors of 6470



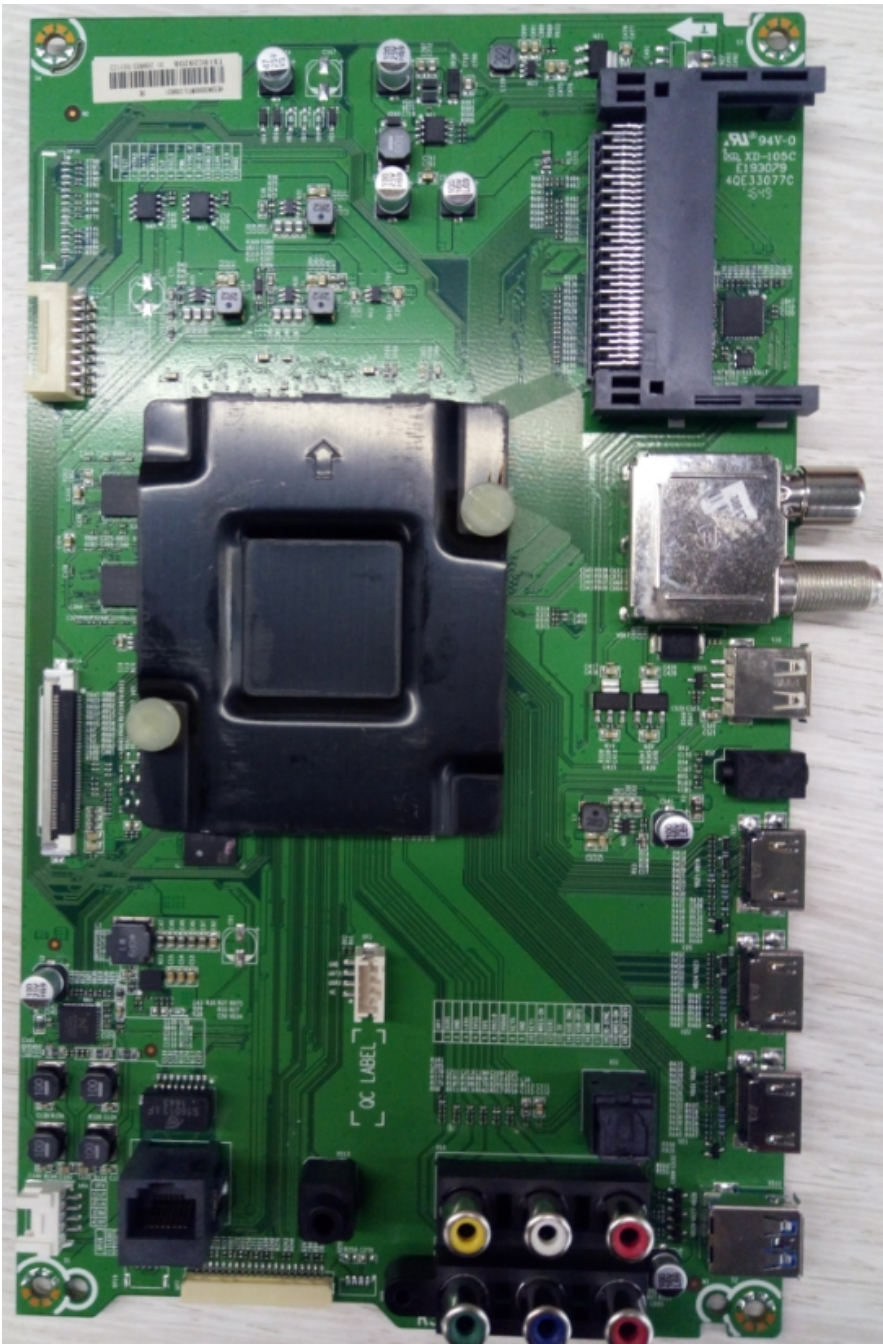
Main board :RSAG7.820. 6812/ROH layout:
The top of 6812:



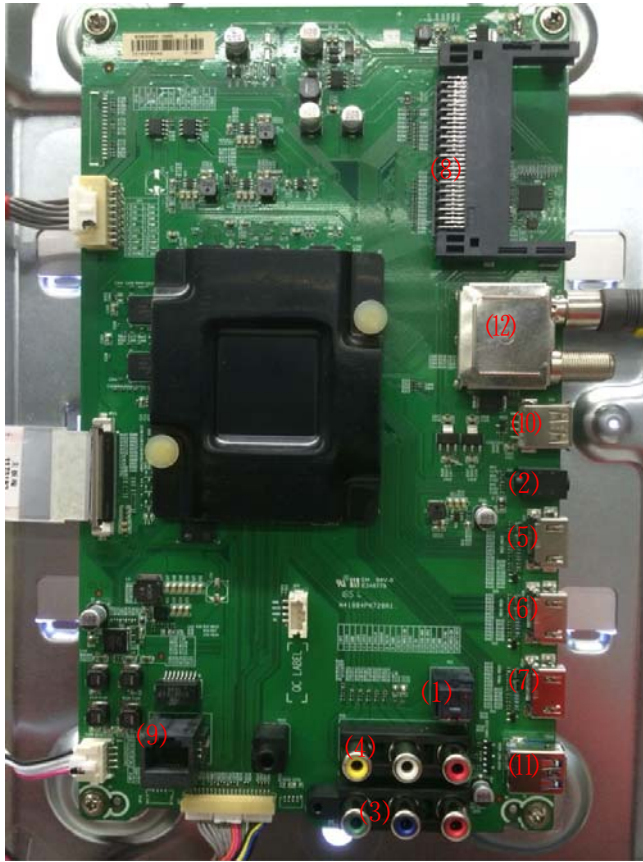
The side of 6812:



**Main board :RSAG7.820. 7454/ROH layout:
The top of 7454**



7454 board externals description



No.	Reference	Introduction	Remark
1	XS1	optical	
2	XS2	Headphone/Audio out	optional
3	XS4	COMPONENT Video input	
4	XS5	COMPOSITE input/COMPONENT Audio input	optional
5	XS7	HDMI1/ARC input	
6	XS8	HDMI2 input	
7	XS14	HDMI3 input	
8	XS10	PCMCIA card	
9	XS12	Ethernet	
10	XS9	USB1 (2.0)	
11	XS11	USB2 (3.0)	
12	U3	Tuner	


2.2 Main board difference

Main board	Boards function difference	For Cabinet Series
6392	No FRC function, Side terminals and vertical terminals.	55k720\K320\K321\K720\K300\K5500\K5510\K3300\K3310\K5502
6472	Have FRC function, Side terminals and vertical terminals.	65K720 \ 65XT910\55M7000\65M7000
6470	No FRC function,, Side terminals and vertical terminals.	58K700\ 65K700
6812	Have FRC function, Side terminals and vertical terminals.	75K700UXWTS3D
7454	No FRC function, Side terminals and vertical terminals. change from 6392. Del one USB、one HDMI、Scart, several sockets terminals move position.	N300 series: HE43N3000UWTS\HE50N3000UWTS\HE55N3000UWTS

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** -> **ALL**-> then press “>” 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.

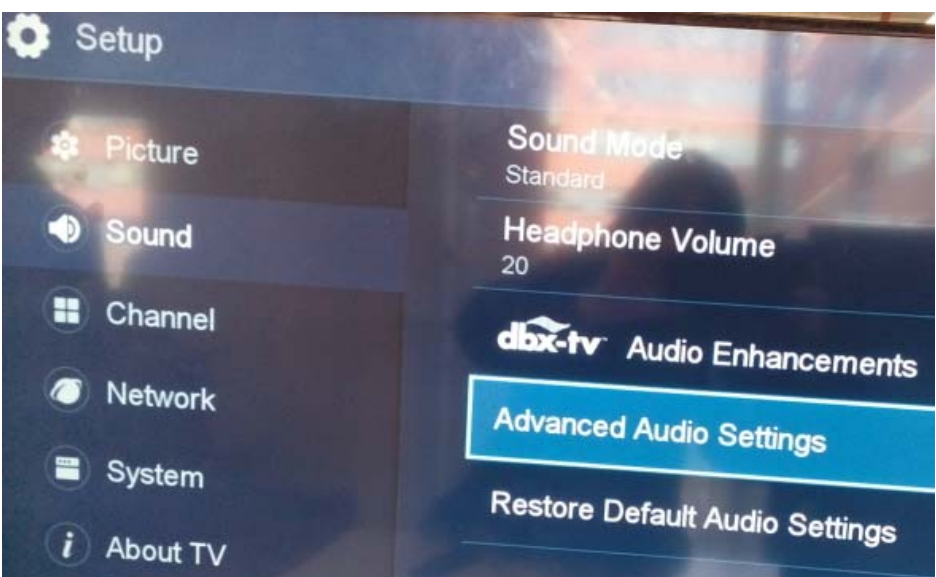
Figures as following:



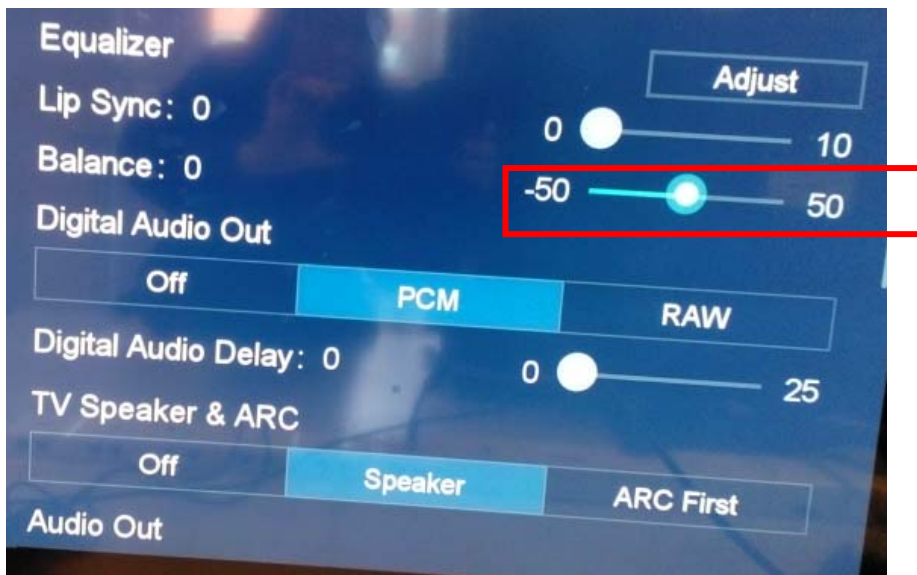
Next



Next



Next

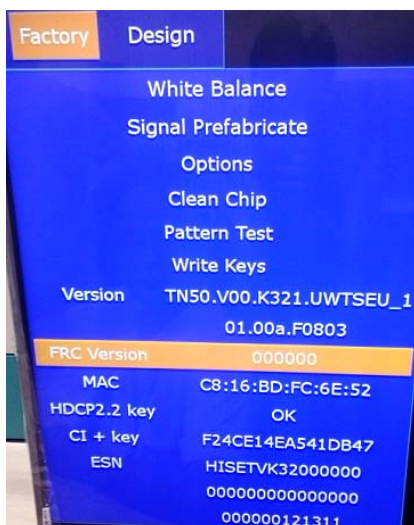


Next








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












3.2 Factory OSD Menu

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 different market and customer.



	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 000000000000001K5R140031		

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

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

soft version	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: 000000000000001K5R140031	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.

Note:

The Factory menu may be have difference for different market and customer above only for reference.

3.2.1 White Balance

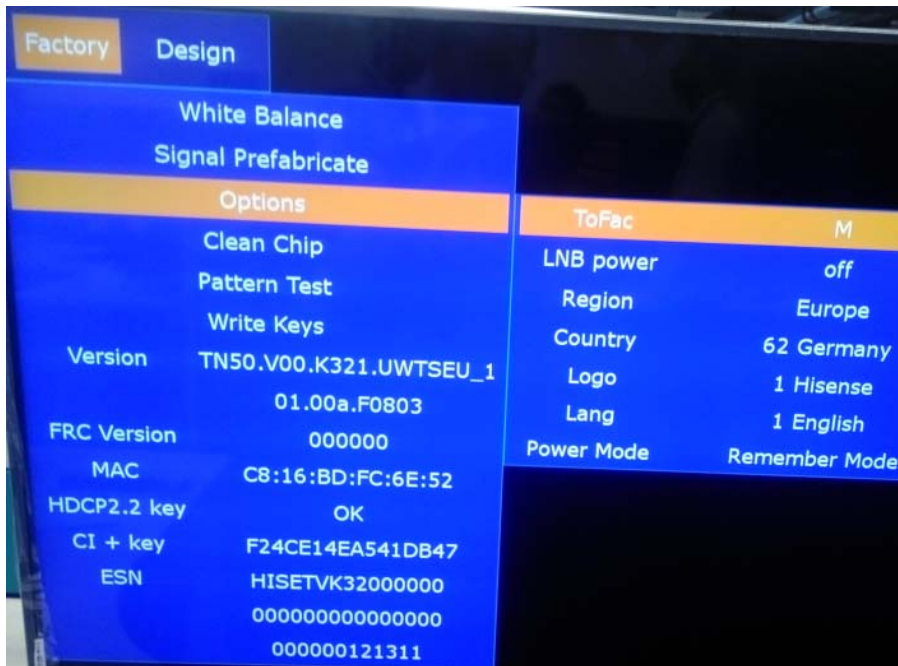
Note: Different source has different WB values. Before adjusting, please change to desired source.

Factory	Design	
White Balance		
Signal Prefabricate		R Gain 128
Options		G Gain 128
Clean Chip		B Gain 128
Pattern Test		R Offset 128
Write Keys		G Offset 128
Version TN50.V00.K321.UWTSEU_1		B Offset 128
01.00a.F0803		Color Temp Standard
FRC Version 000000		Panel B1
MAC C8:16:BD:FC:6E:52		
HDCP2.2 key OK		
CI + key F24CE14EA541DB47		
ESN HISETVK32000000		
0000000000000000		
000000121311		

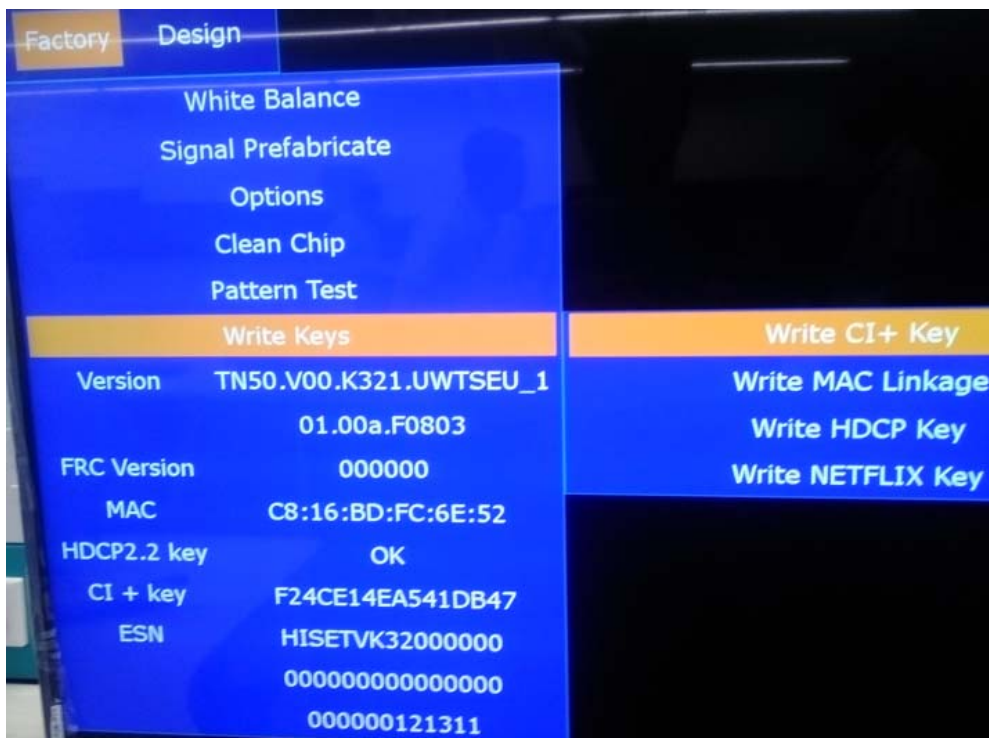
3.2.1 Signal prefabricate

Factory	Design	
White Balance		
Signal Prefabricate		Huang Dao
Options		Huang Dao New
Clean Chip		Qing Dao
Pattern Test		Gui Yang
Write Keys		Jiang Men
Version TN50.V00.K321.UWTSEU_1		Egypt
01.00a.F0803		South Africa
FRC Version 000000		Algeria
MAC C8:16:BD:FC:6E:52		Syria
HDCP2.2 key OK		Malaysia
CI + key F24CE14EA541DB47		Iran
ESN HISETVK32000000		Russia
0000000000000000		Poland
000000121311		

3.2.3 Factory Option



Write keys



Note: The factory menu date 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:

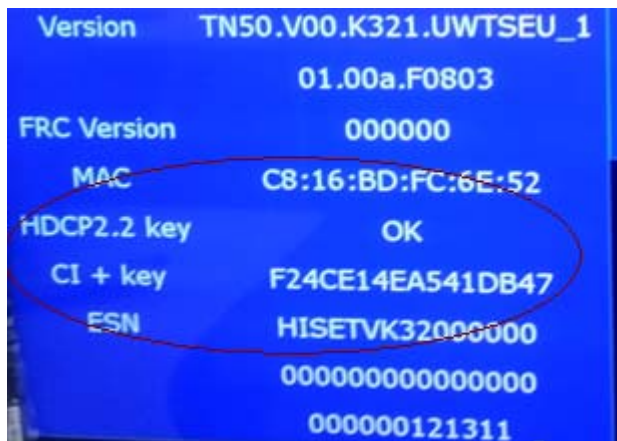
- Select the item "Clean chip".

-
- b. Press VOL+ button to clear the EEPROM data.
 - c. Close the OSD menu after 5 seconds.
 - d. Restart the TV.
 - e. TV restart, better enter TV factory OSD Menu to ensure the new software Version and TCON (FRC)Version information.

Also the Keys information must been checked, if appear “NG”, then must rewrite key code.

Note:

check whether the Key information under the Version is OK, if appear “NG” then need rewrite the key.




4. Software Upgrading

4.1 USB Upgrading

4.1.1 USB main software upgrading directly

The main 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 ,and no TCON software ,such for: 6M40.bin ; 6M50.bin ; FRC.bin.

- Insert USB Disk to TV USB port, and then power on the TV. at the same time press standby 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.


4.1.2 USB TCON software upgrading directly

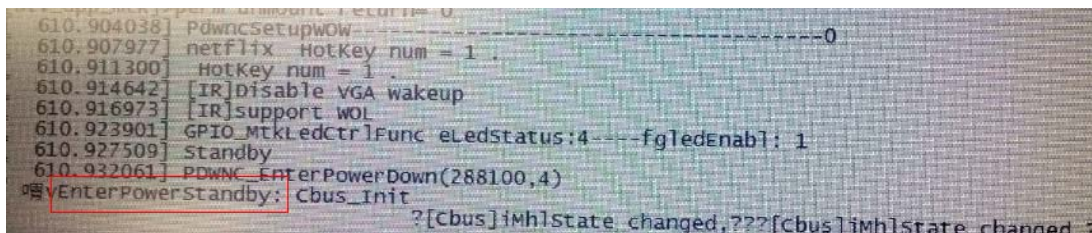
1、 Chassis MTK5657 TCON upgrading includes three named modes : 6M40.bin、 6M50.bin and

FRC.bin. for example: the K321 series TCON software name as following.

Factory model	TCON software name
LTDN40K321UWTSEU	6M50. bin
LTDN50K321UWTSEU	6M50. bin
LTDN55K321UWTSEU	6M50. bin

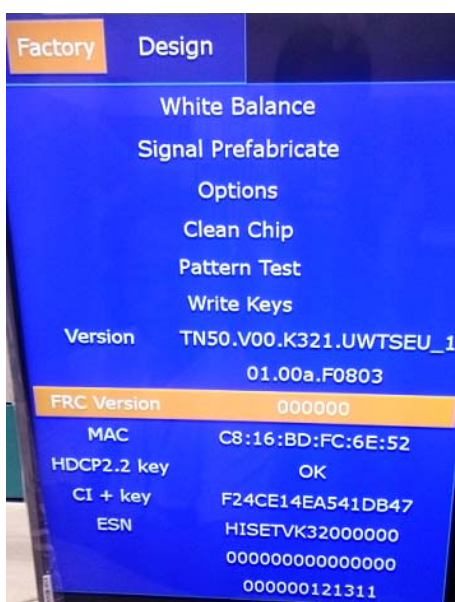
-
- 2、 If the TV need upgrade the main software and TCON software respectively, then the two upgrade softwares must be saved in two different USB disks that no other of the same name in .
- 3 、 Connect the TV and PC with debug serial Tool and run up SecureCR Tool to watch the current printing message.

4、 Insert the USB disk to TV USB port, and then AC power on the TV. at the same time press  on the remote control for about 5-10s. During updating , TV Panel is black and backlight is light and the SecureCRT print information is rolling up. After appearing information "enter Power standby" on the screen of PC, it indicates that software updating has finished and TV is in standby state. next DC power on the TV.



```
610.904038] PdwncSetupWow-----0
610.907977] netflix HotKey num = 1 .
610.911300] HotKey num = 1 .
610.914642] [IR]Disable vga wakeup
610.916973] [IR]support WOL
610.923901] GPIO_MtkLedCtrlFunc eLedStatus:4---fgledenabl: 1
610.927509] Standby
610.932061] PDWNC_EnterPowerStandby: Cbus_Init
? [Cbus]imhlstate changed,??? [Cbus]imhlstate changed.?
```

- 5、 Enter the Factory OSD Menu and ensure the TCON version



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 earphone port. As following

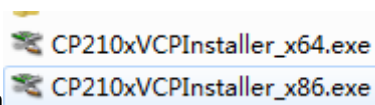



Connect to the TV earphone port

USB Connect to the PC

4.2.1 Install the driver

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



Double click the icon , install the driver.

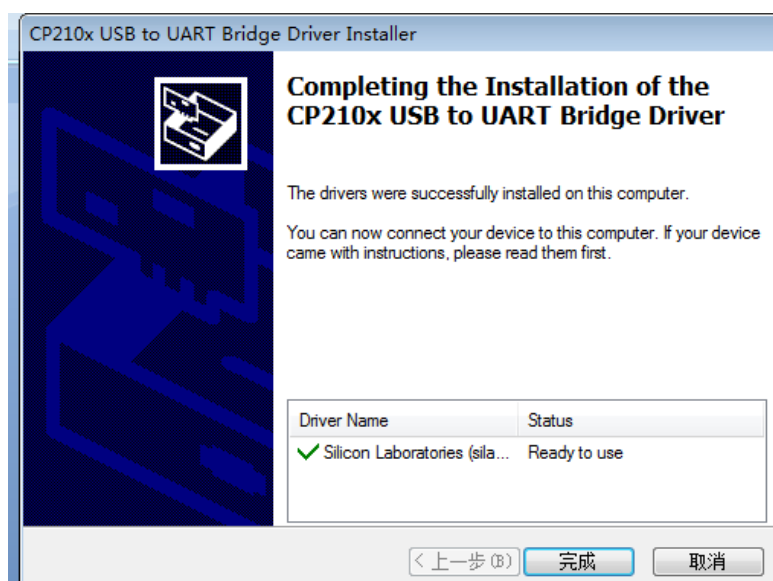
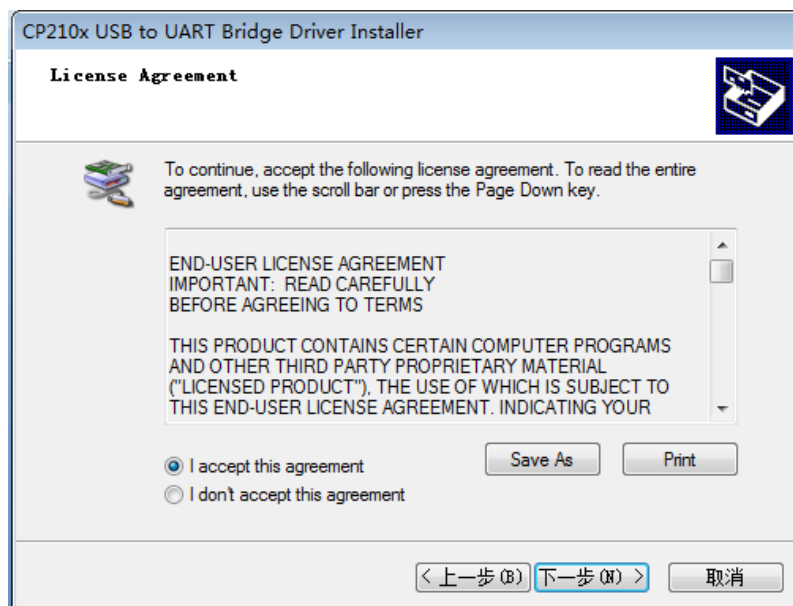
Note:

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

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

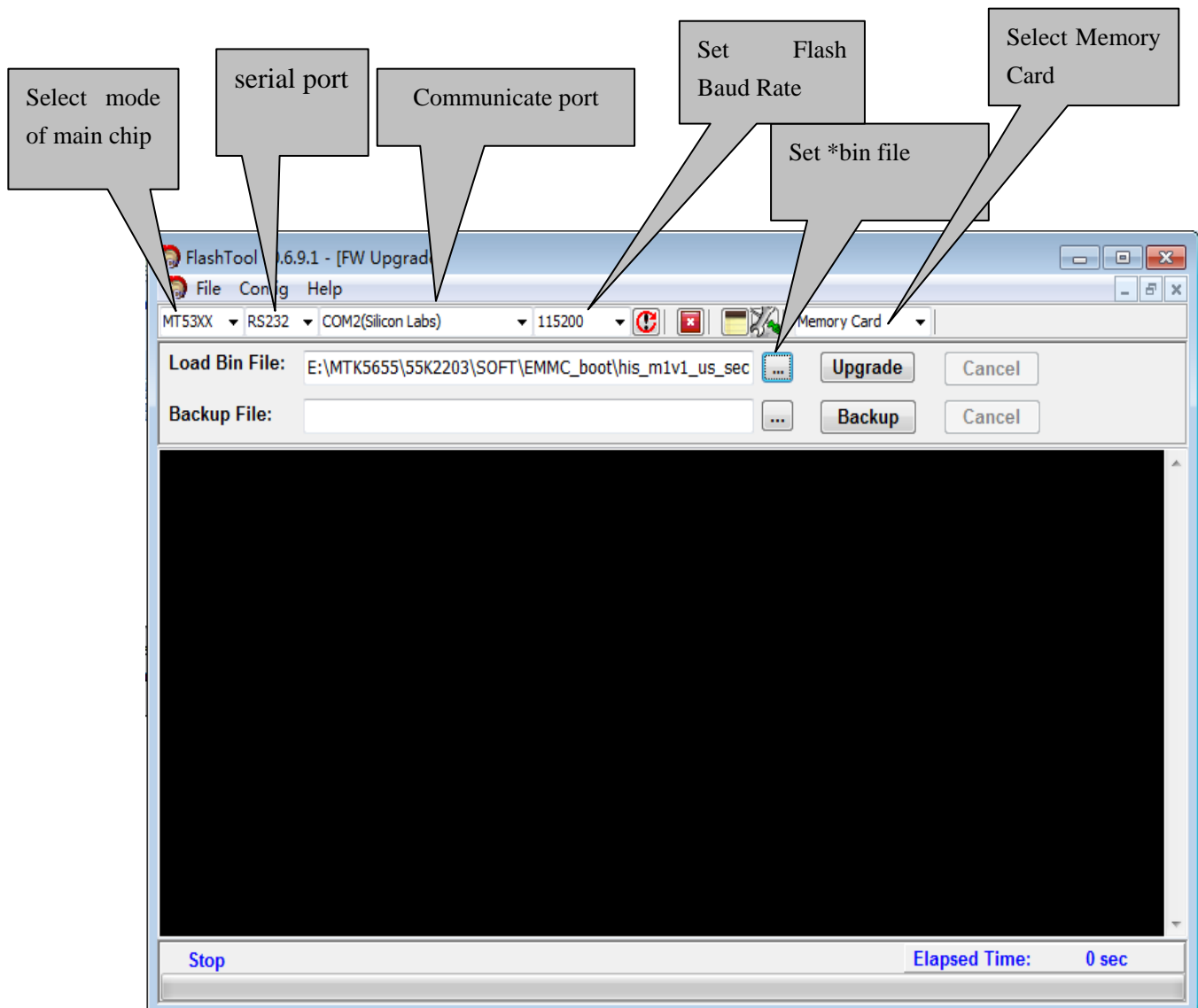


Select the default value, the driver will be installed step by step.

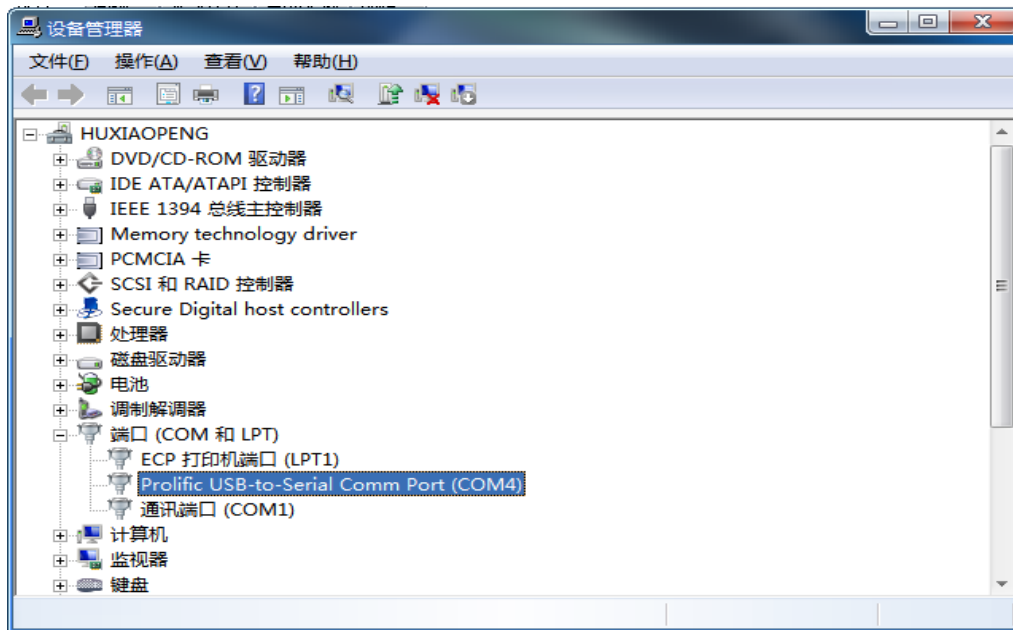


4.3 Upgrading with the FlashTool v0.6.9.1.exe




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.

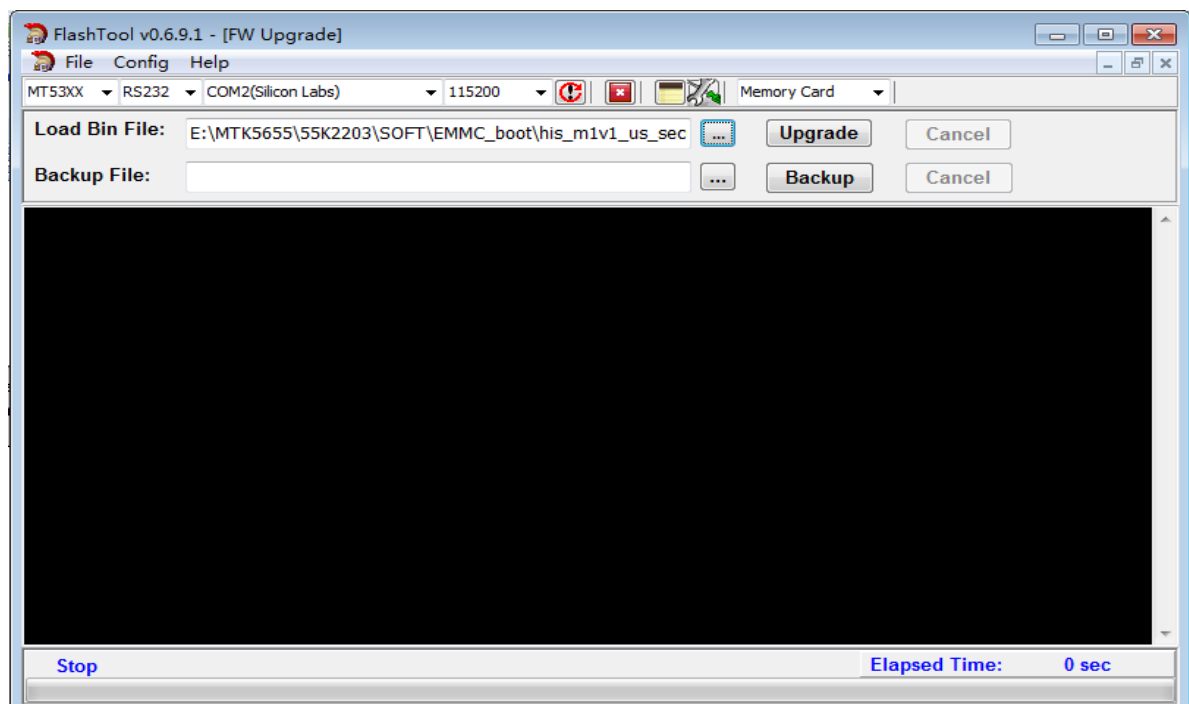



How to choose Communicate port and flash baud rate? See the following instruction..



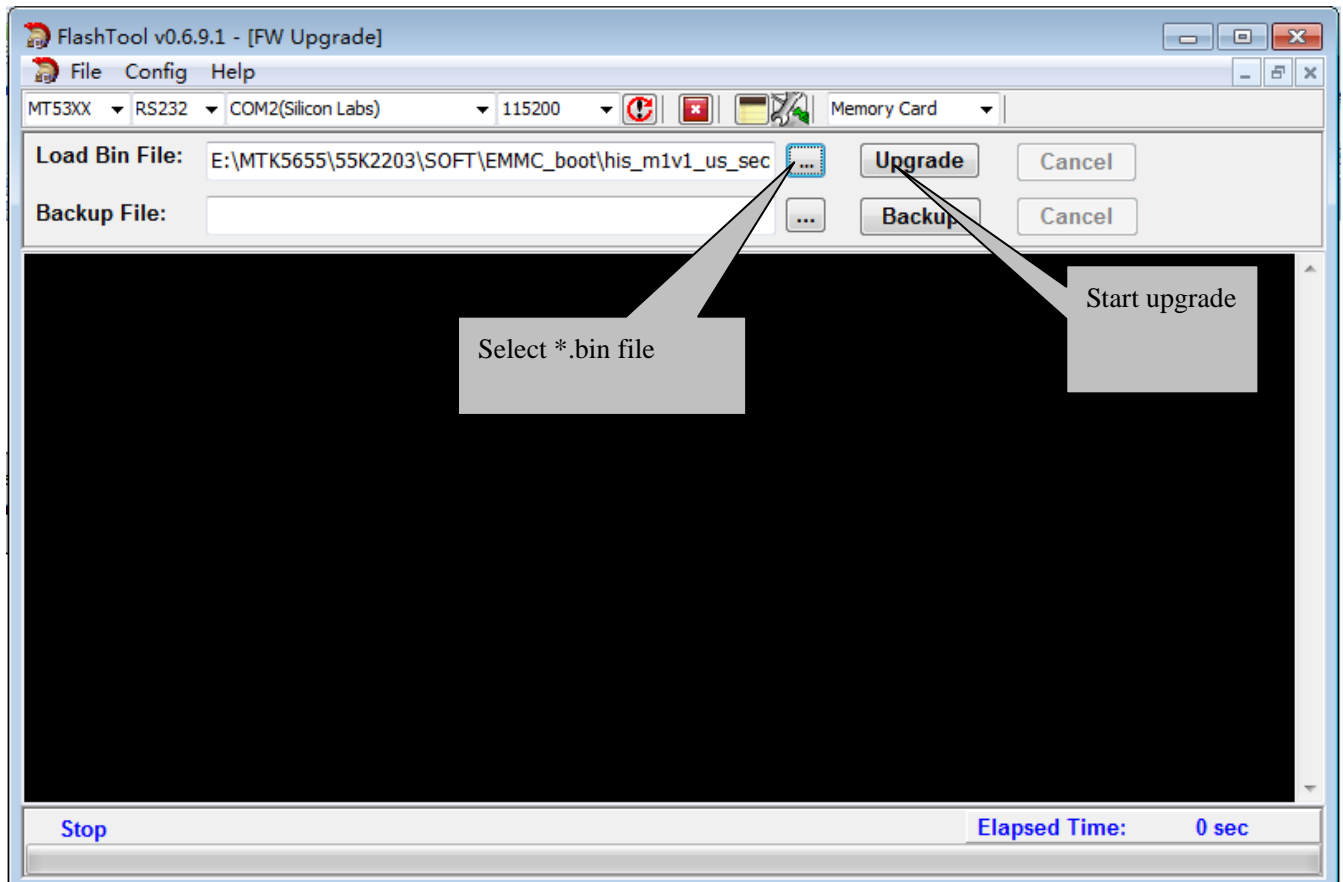
Open “Device Manager” and find which port is connected with the TV. In above picture, COM4 is connected to the TV, so, select “COM4” and if COM6 is connected to the TV, so select “COM6”. Select the right baud rate according to chip model. For this unit(chip model is MT5657), select 115200.

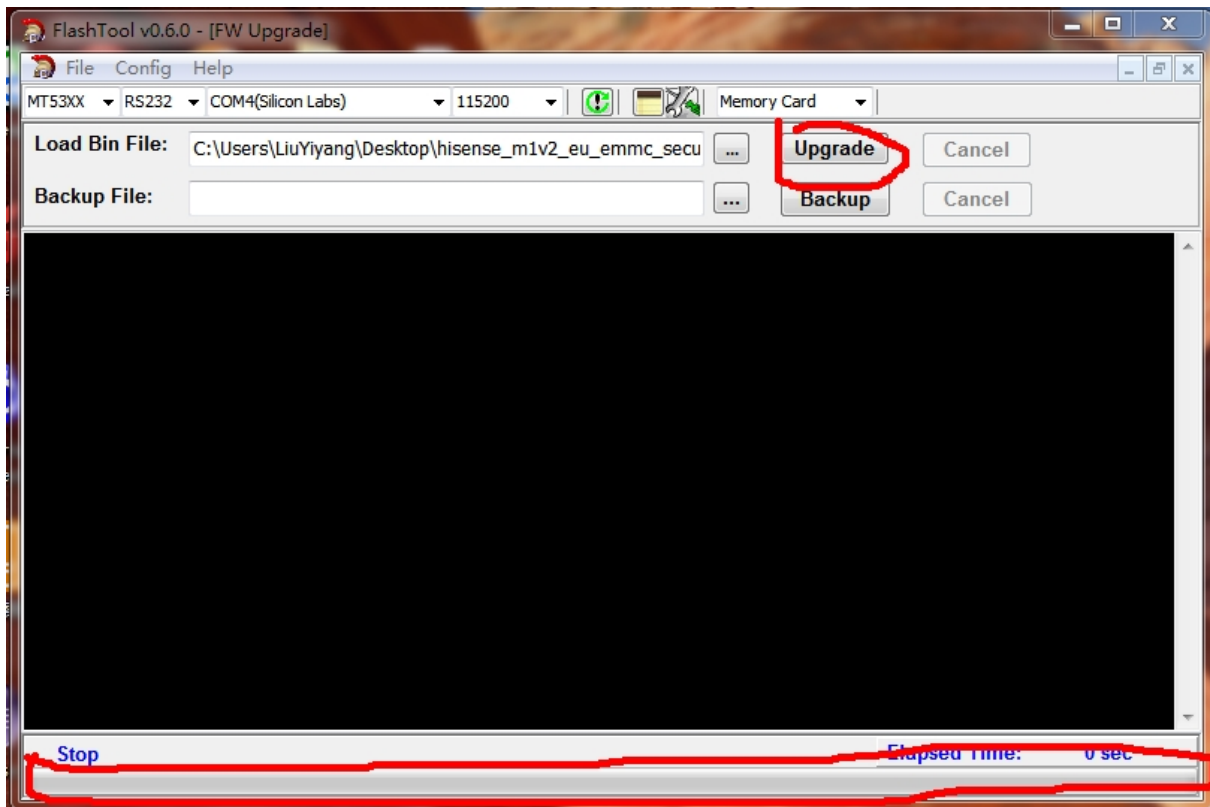
2、AC power on the TV ,then Click  to connect, if connect successfully then button  from red turn green .



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.



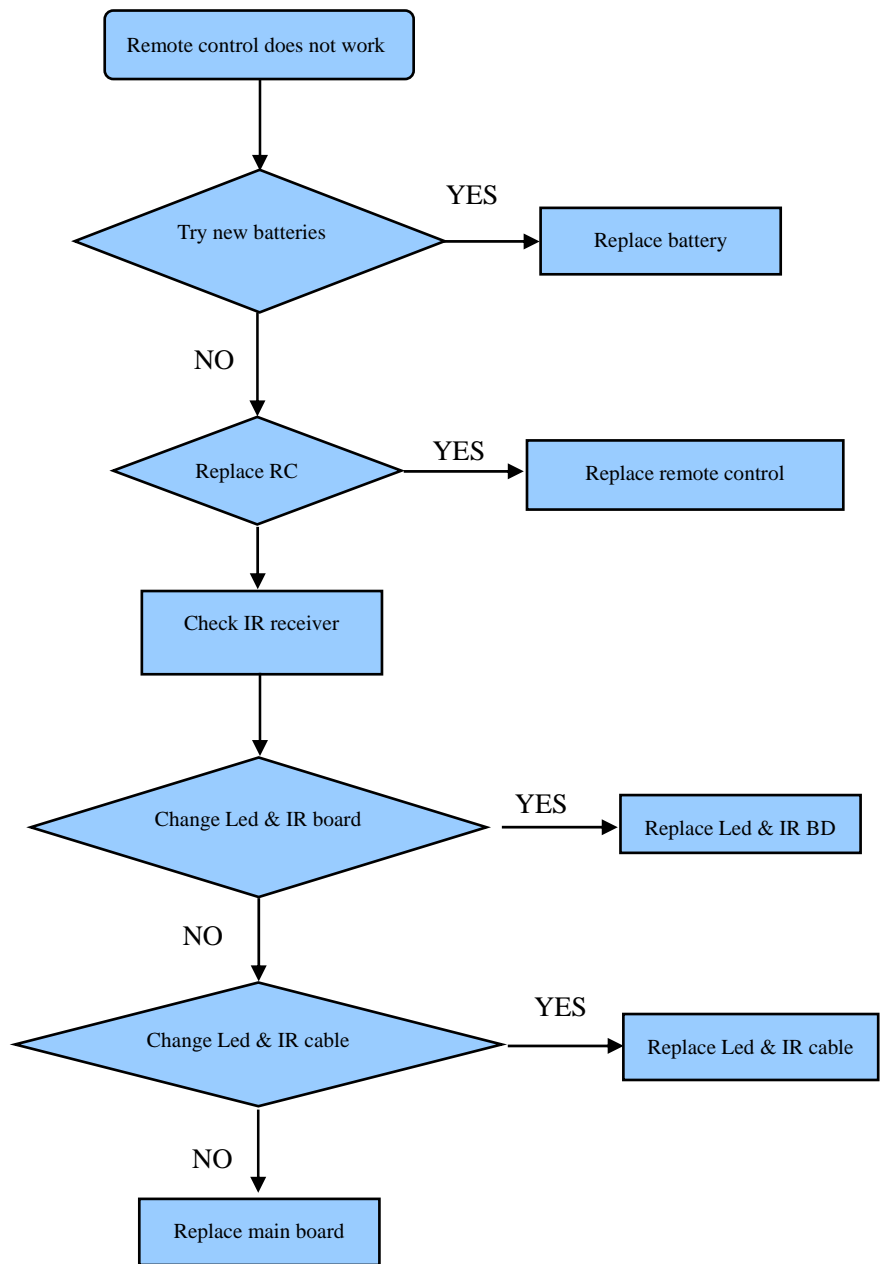


5. Trouble shooting

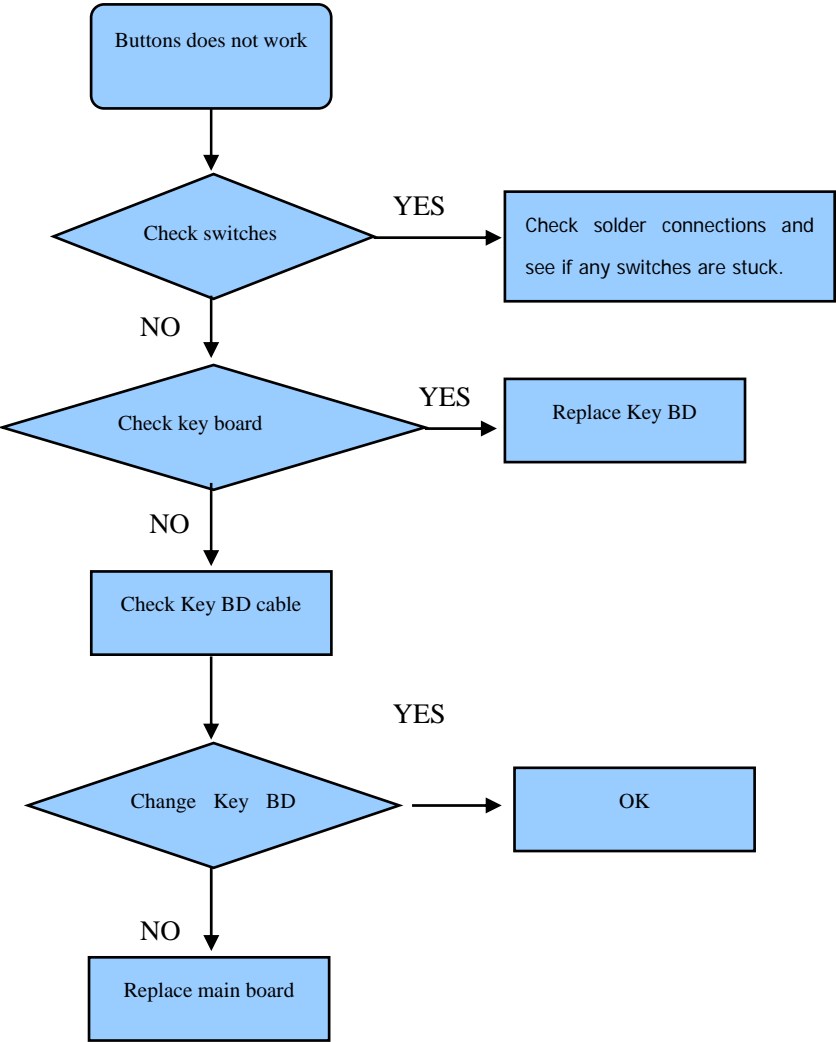
When there is something wrong with your TV, you can try turning off the TV and then restart it. You can also operate according to the follow chart. If the problems still can't be solved, please contact the profession technician.

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.

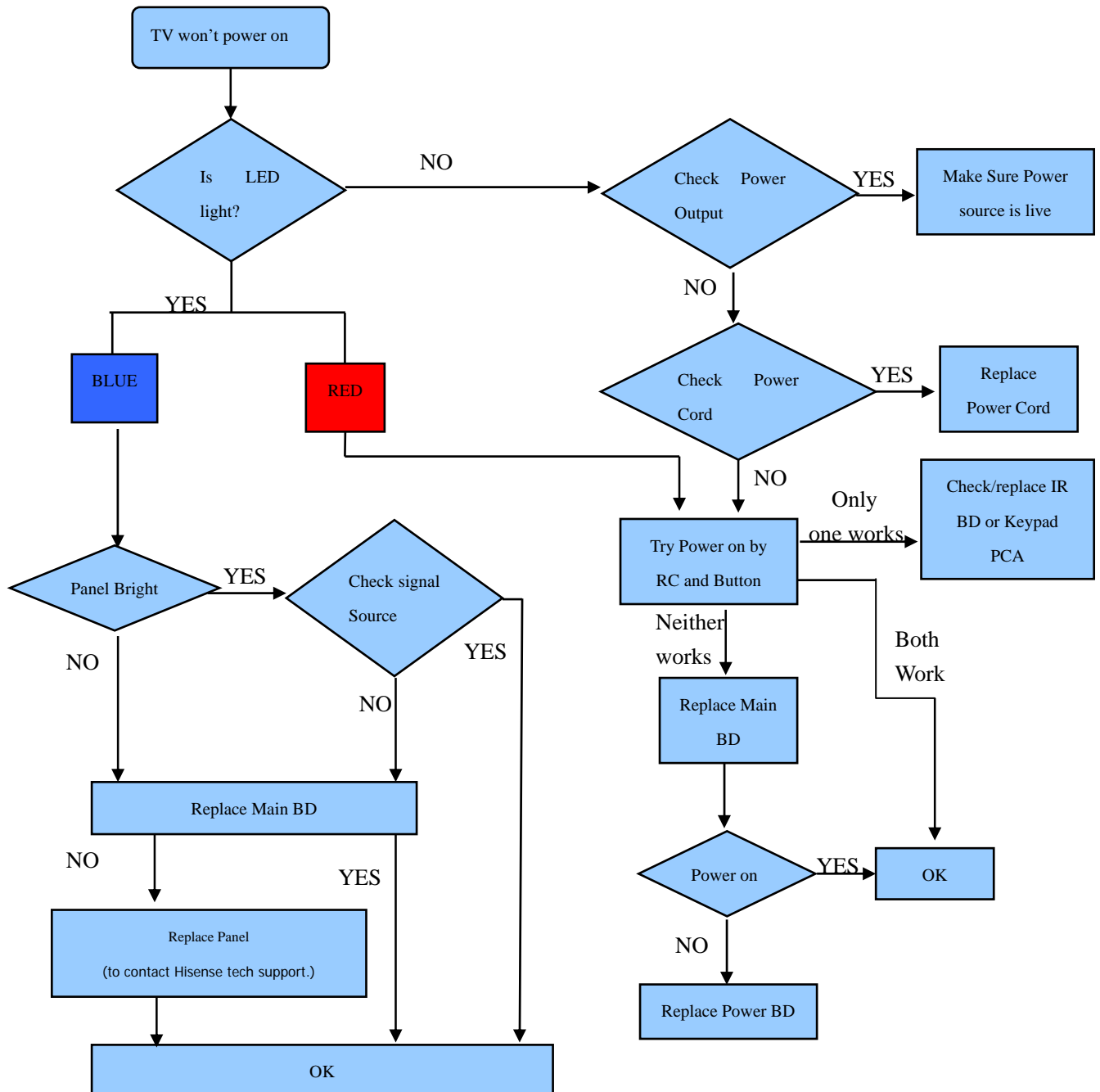
5.1 Troubleshooting for Remote Control



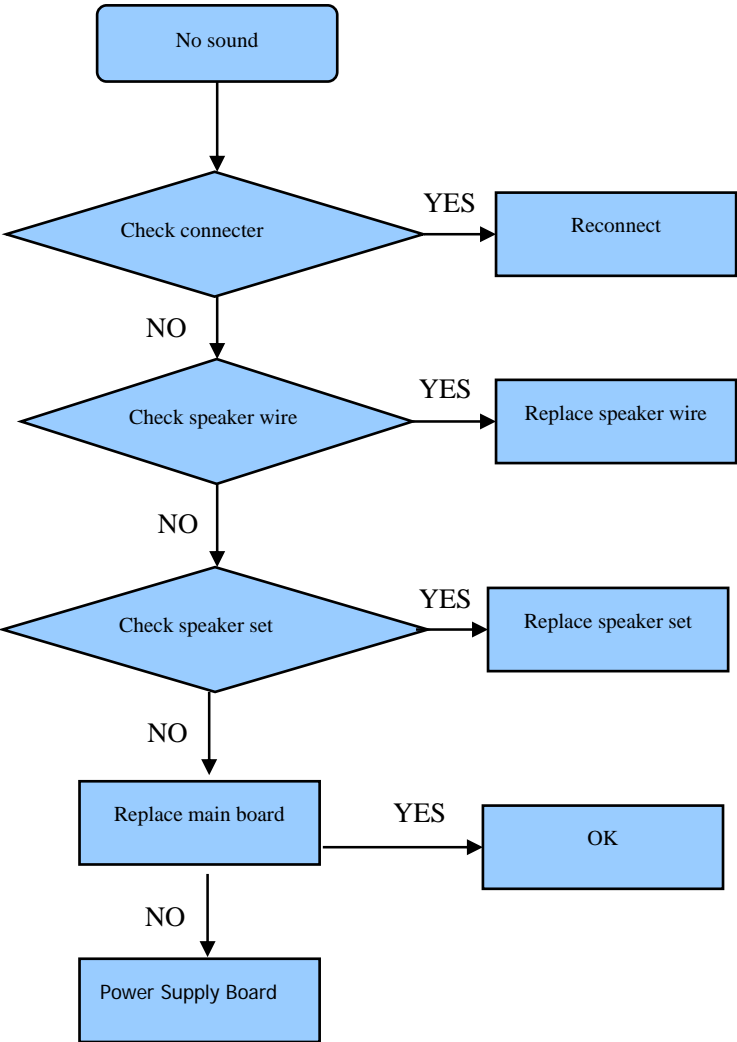
5.2 Troubleshooting for Function Key



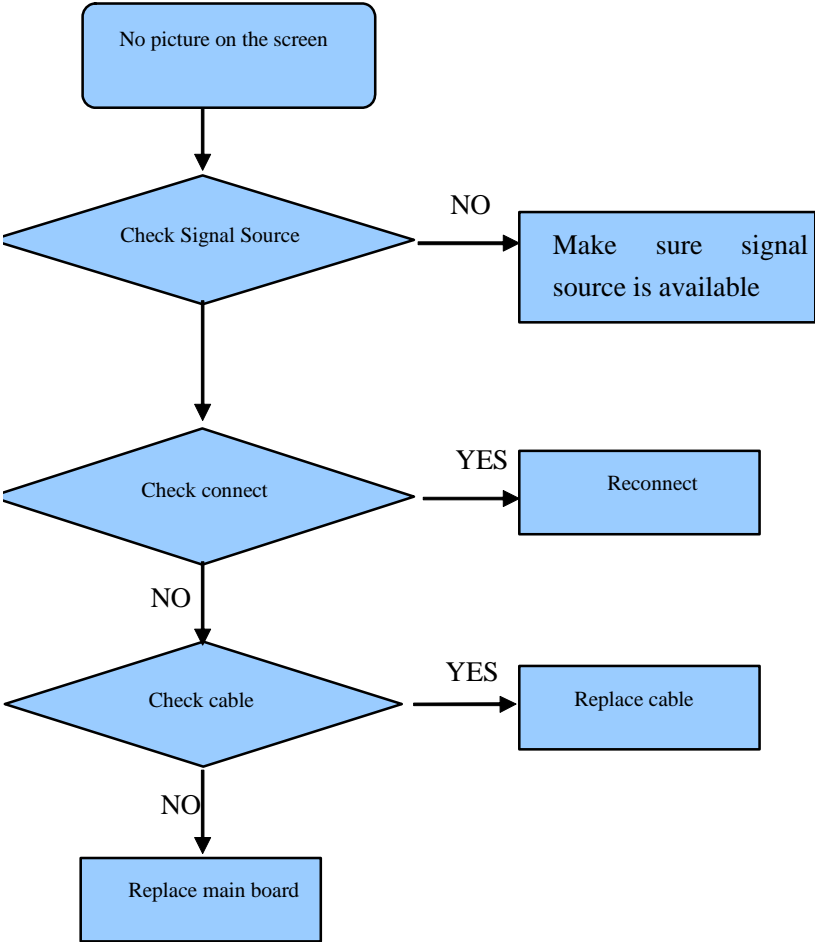
5.3 TV won't Power On



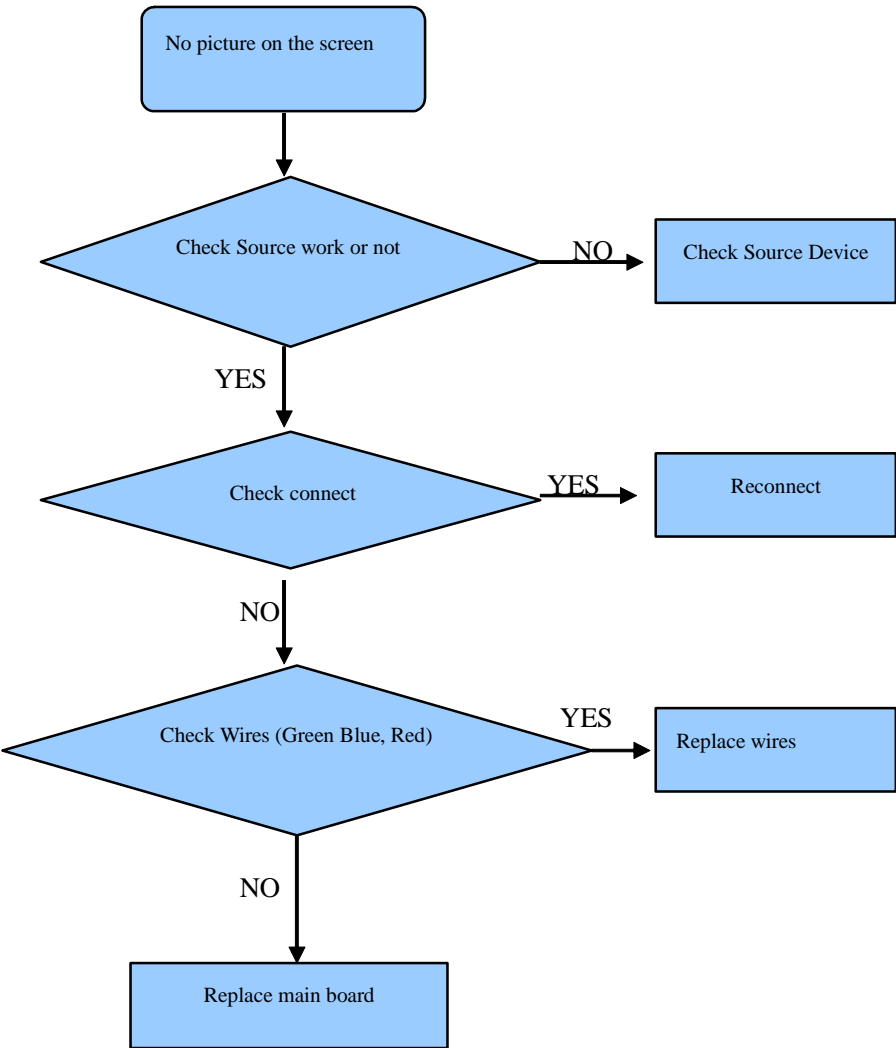
5.4 Troubleshooting for Audio



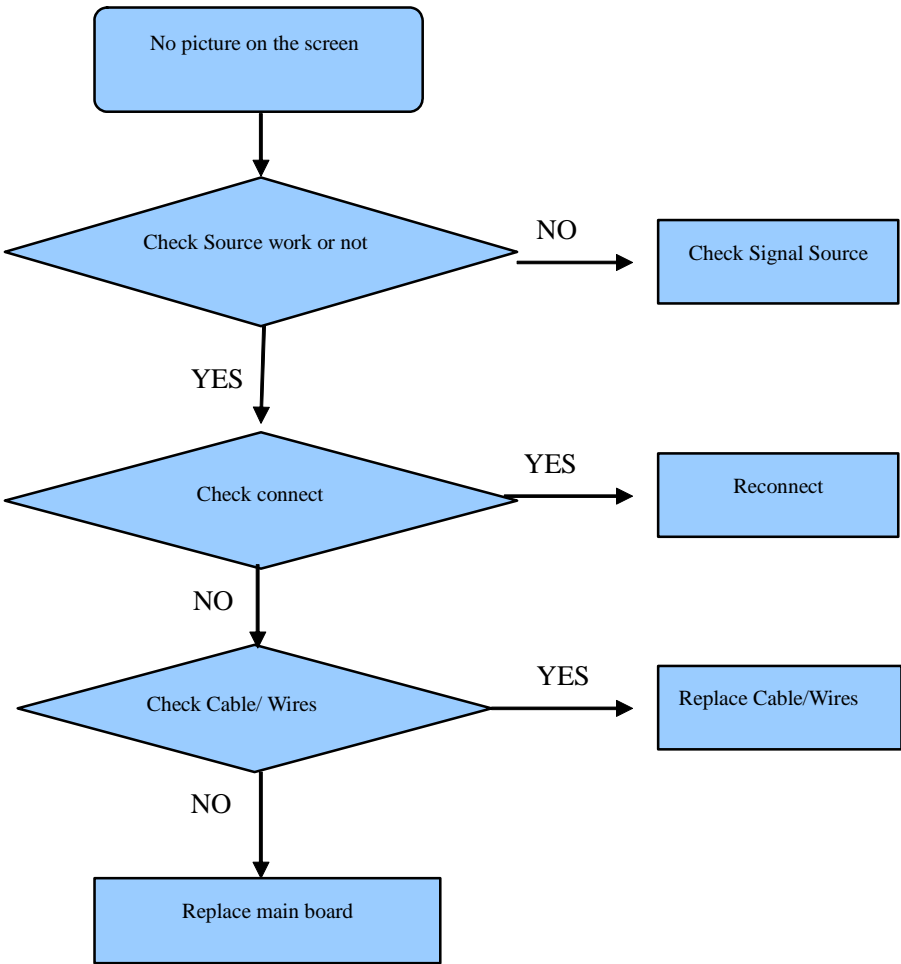
5.5 Troubleshooting for TV/VGA/HDMI input



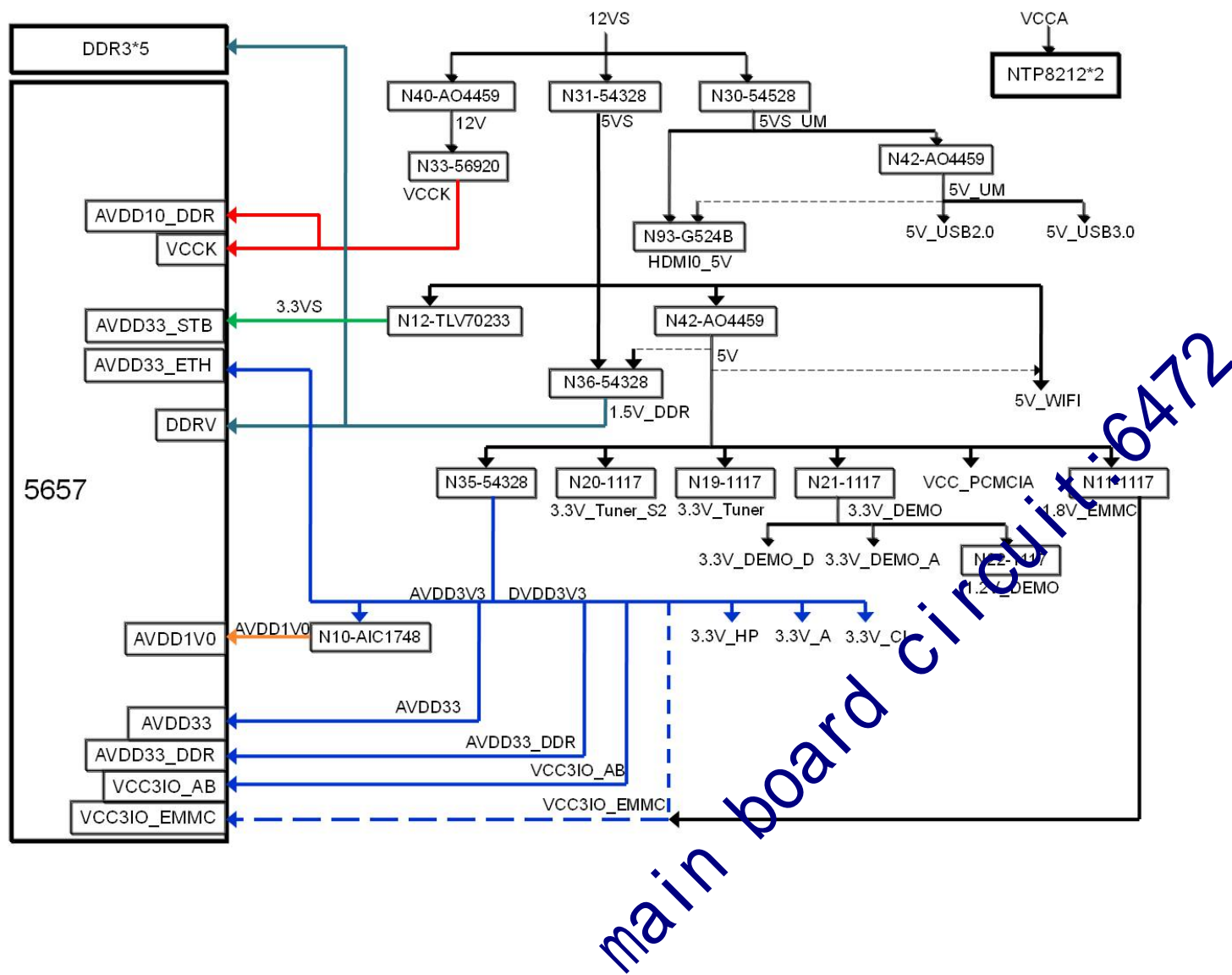
5.6 Troubleshooting for YPbPr input

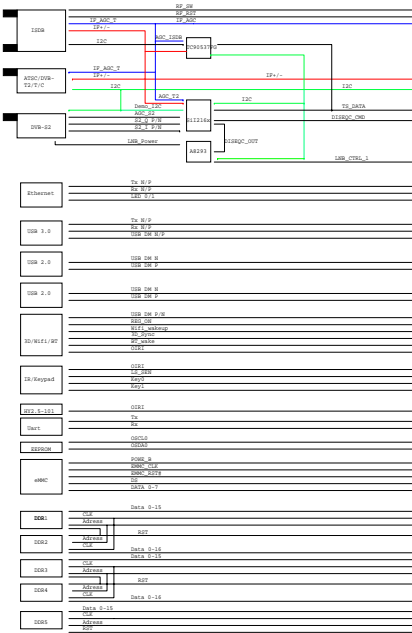
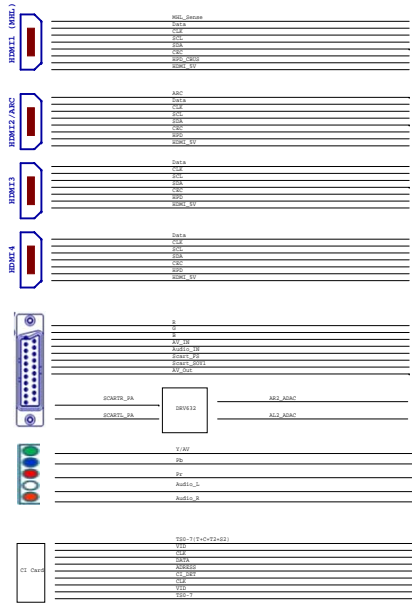


5.7 Troubleshooting for Video input



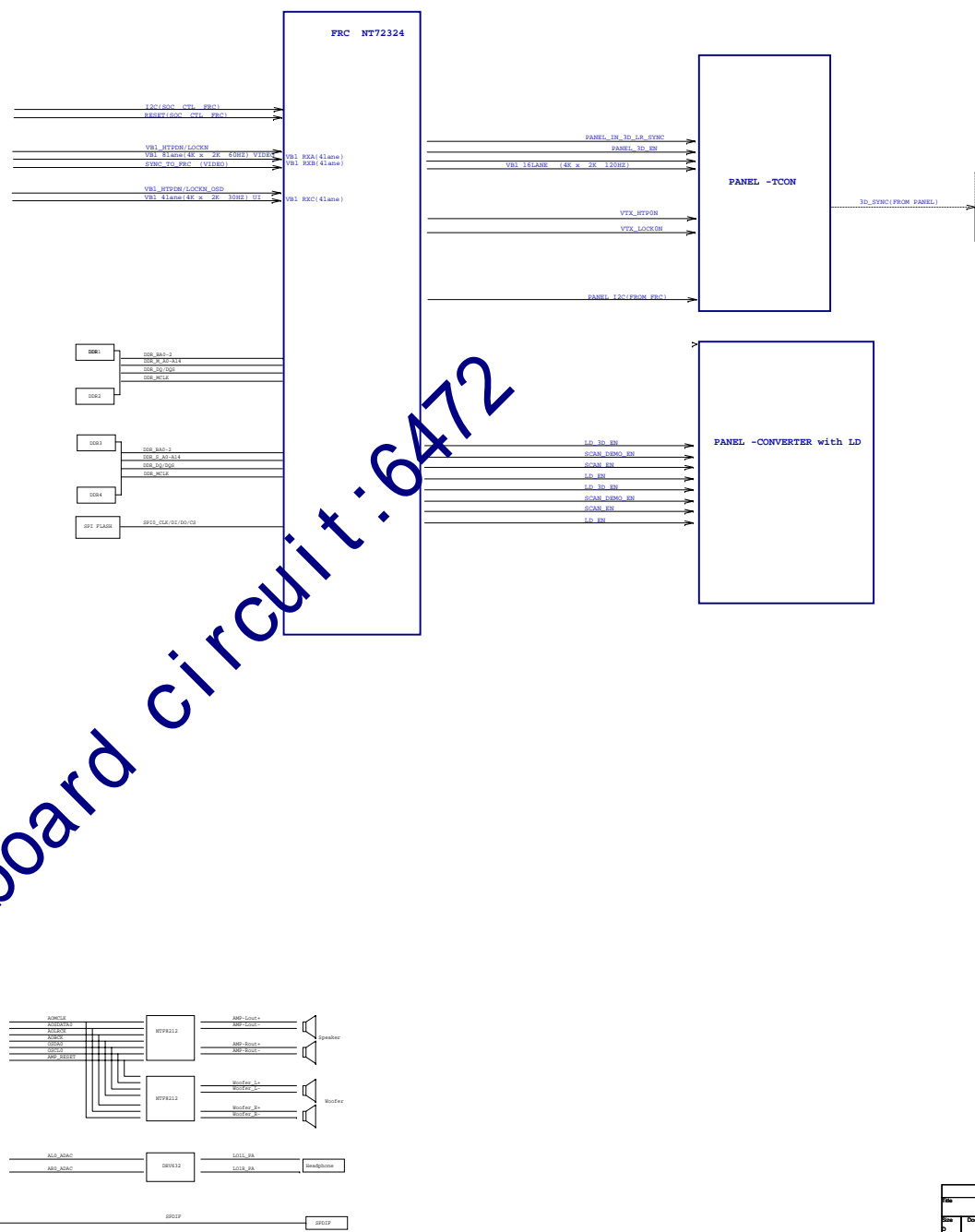
6. Signals Block Diagram & power assign & schematic diagram :





MT5657

main board circuit: 6472



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_MISTR	CI Interface	CI_MISTR (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

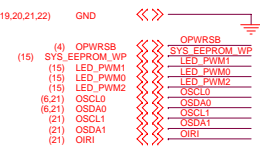
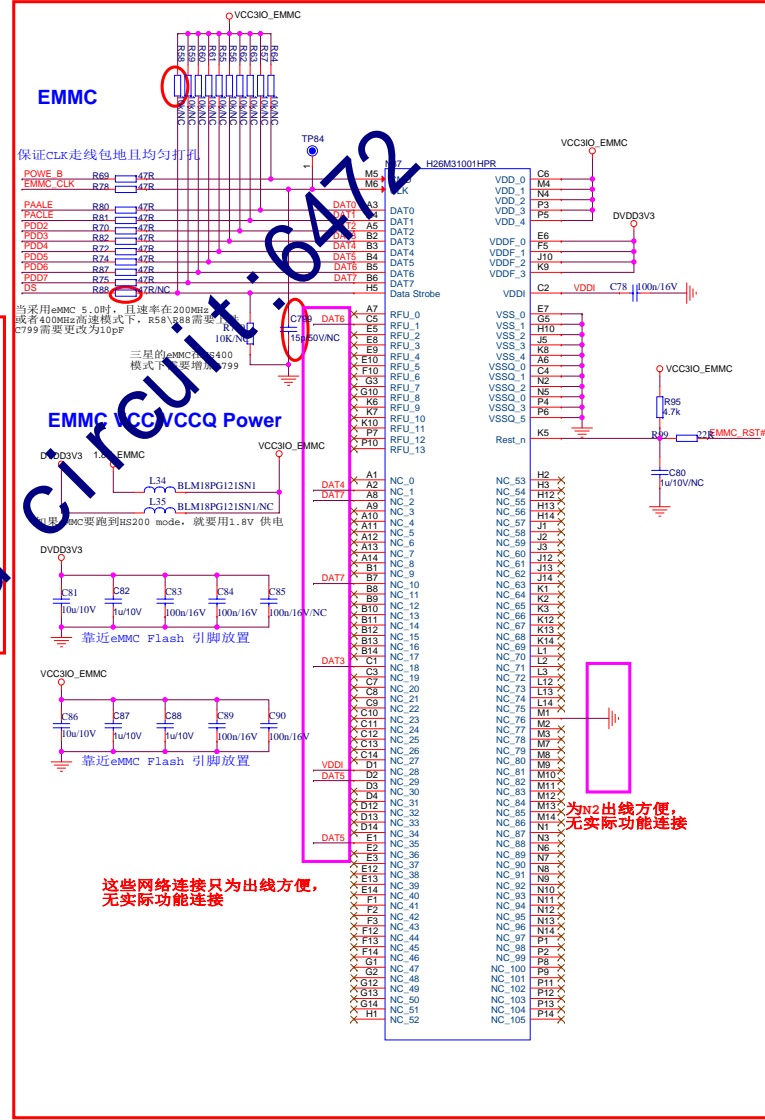
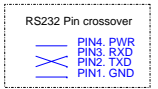
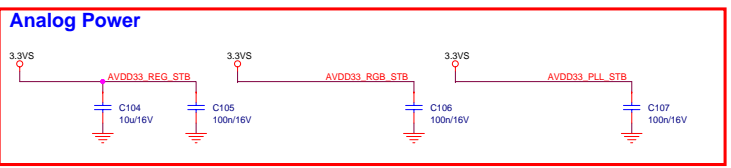
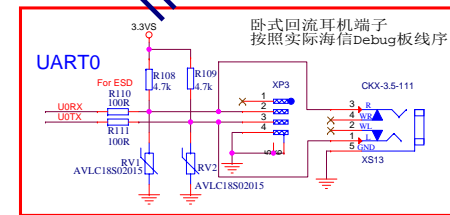
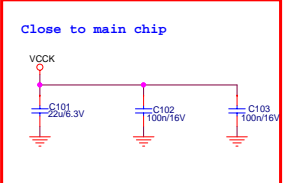
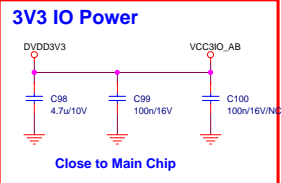
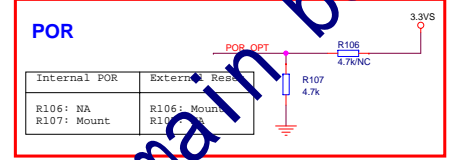
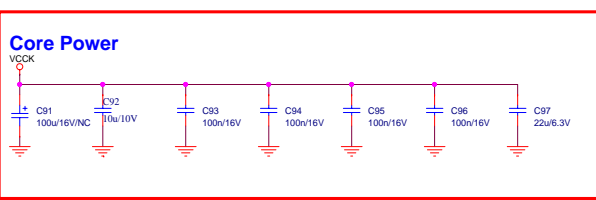
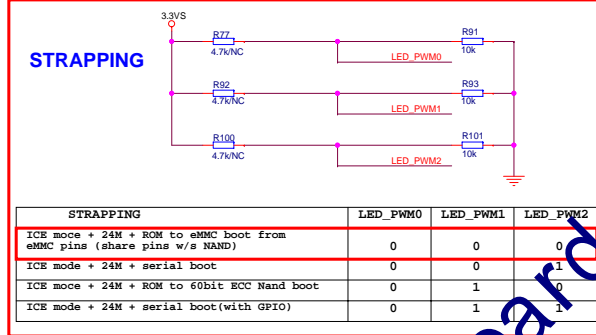
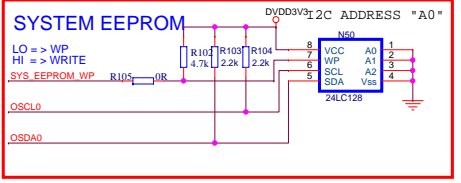
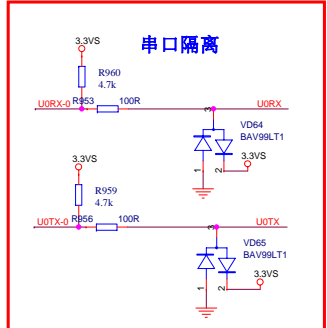
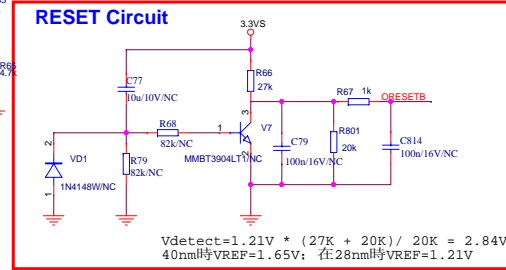
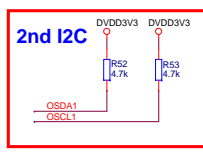
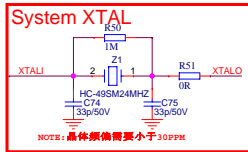
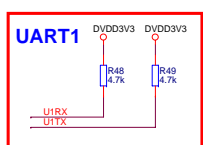
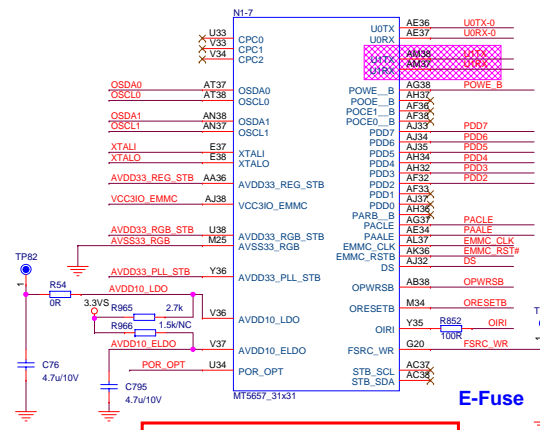
main board circuit 16472

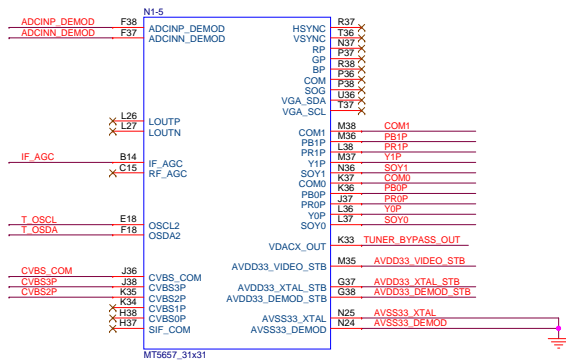
PCBA version ID		PCBA version ID
PIN NAME	Function define	GPIO Function
ADIN0_SRV	Function Select	SCART_FS
ADIN1_SRV	KEY_PAD	KEY_PAD0
ADIN2_SRV	KEY_PAD	KEY_PAD1
ADIN3_SRV	MHL Over Current Protect	USB_MHL_OC
ADIN4_SRV	USB over current detect	USB_OC_P0/P1
ADIN5_SRV	USB over current detect	USB_OC_P2/P3
ADIN6_SRV	Demod	RF_AGC1
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	---	---

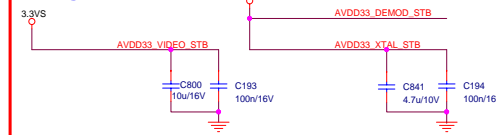
PIN NAME	Function define	GPIO Function
LED_PWM0	Strapping / Standby mode LED	Strap[3] / LED_PWM0
LED_PWM1	Strapping / Power On LED	Strap[2] / LED_PWM1
LED_PWM2	Strapping	Strap[1]
LED_PWM3	---	---

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

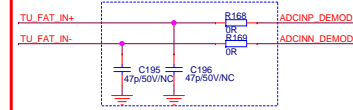




Analog Power 3V3



Close to Main Chip



(4,5,6,8,9,10,11,12,13,14,15,16,17,18,19,20,21,22) GND

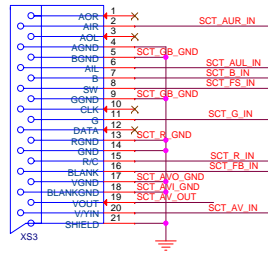


(12) TU_FAT_IN+
(12) TU_FAT_IN-
(15) SCART_FS
(12) T_OSC
(8) AIN_R0
(8) AIN_L0
(8) AIN_R1
(8) AIN_L1

TU_FAT_IN+
TU_FAT_IN-
SCART_FS
T_OSC
AIN_R0
AIN_L0
AIN_R1
AIN_L1

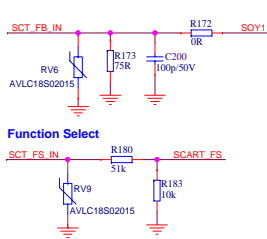
(12) IF_AGC IF_AGC

SCART (Full SCART) ---AV+RGB+AV OUT

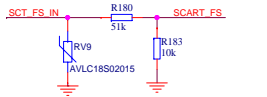


立式回流端子

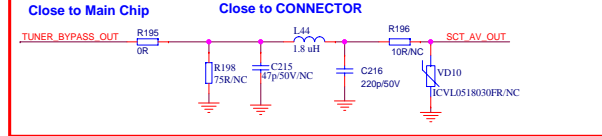
FAST BLANKING/SOY



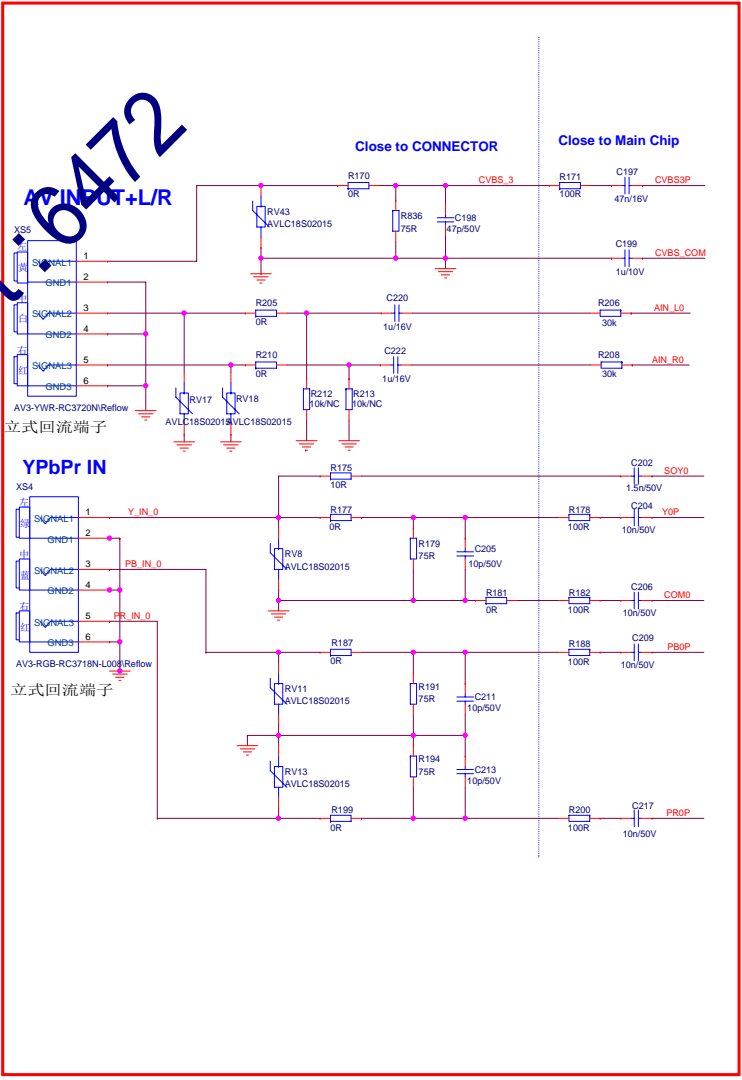
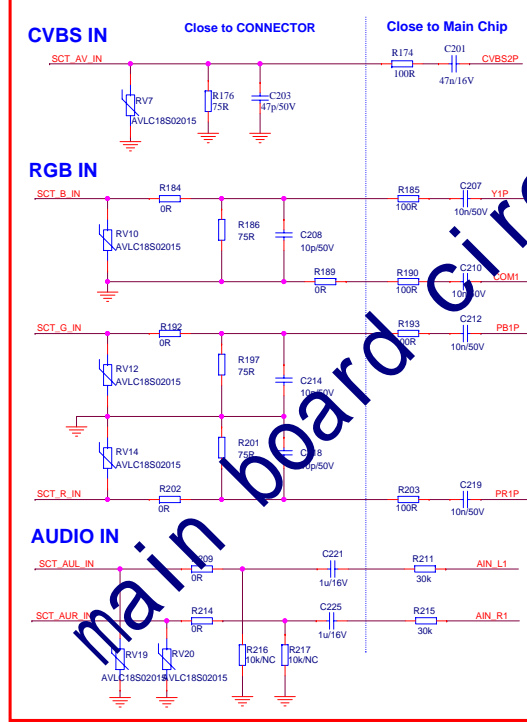
Function Select

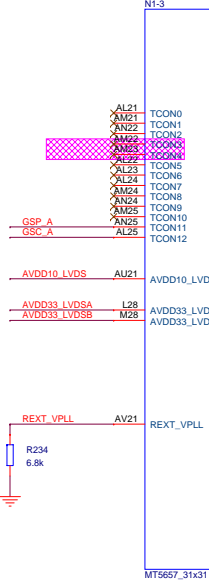


CVBS OUT(调试射频通道预留, 调试时增加R196, 默认不上件)



SCART INPUT



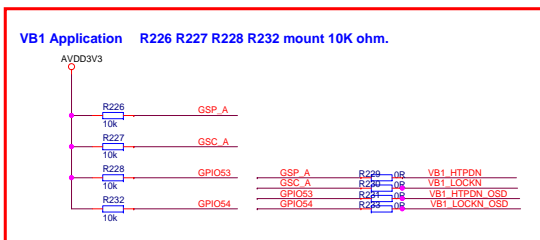


BE0P	AV25
BE0N	AV25
BE1P	AT24
BE1N	AT24
BE2P	AT23
BE2N	AT23
BECKP	AV23
BECKN	AT22
BE3P	AT22
BE3N	AT21
BE4P	AT21
BE4N	AT21
BO0P	AV29
BO0N	AU29
BO1P	AT28
BO1N	AT28
BO2P	AT27
BO2N	AT27
BO3P	AV27
BO3N	AU27
BOCKP	AT26
BOCKN	AT26
BO4P	AT26
BO4N	AT26

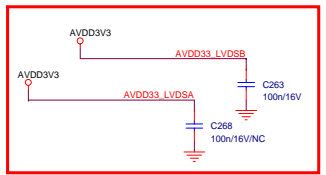
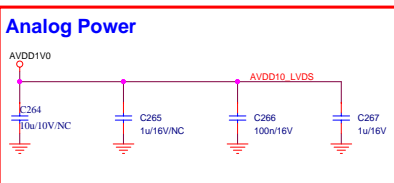
Place CL24-107 Close to main chip

LVDS
C239- C262 mount 0 ohm.

VB1
C239- C262 mount 0.1uF.



(15) GPIO53	GPIO53
(19) VB1_HTPDN_OSD	VB1_HTPDN_OSD
(15) GPIO54	GPIO54
(19) VB1_LOCKN_OSD	VB1_LOCKN_OSD
(19) VB1_HTPDN	VB1_HTPDN
(19) VB1_LOCKN	VB1_LOCKN
(19) LVDSTX_AE0P	LVDSTX_AE0P
(19) LVDSTX_AE0N	LVDSTX_AE0N
(19) LVDSTX_AE1P	LVDSTX_AE1P
(19) LVDSTX_AE1N	LVDSTX_AE1N
(19) LVDSTX_AE2P	LVDSTX_AE2P
(19) LVDSTX_AE2N	LVDSTX_AE2N
(19) LVDSTX_AE3P	LVDSTX_AE3P
(19) LVDSTX_AE3N	LVDSTX_AE3N
(19) LVDSTX_AE4P	LVDSTX_AE4P
(19) LVDSTX_AE4N	LVDSTX_AE4N
(19) LVDSTX_AE0P	LVDSTX_AE0P
(19) LVDSTX_AE0N	LVDSTX_AE0N
(19) LVDSTX_AE1P	LVDSTX_AE1P
(19) LVDSTX_AE1N	LVDSTX_AE1N
(19) LVDSTX_AE2P	LVDSTX_AE2P
(19) LVDSTX_AE2N	LVDSTX_AE2N
(19) LVDSTX_AE3P	LVDSTX_AE3P
(19) LVDSTX_AE3N	LVDSTX_AE3N
(19) LVDSTX_AE4P	LVDSTX_AE4P
(19) LVDSTX_AE4N	LVDSTX_AE4N

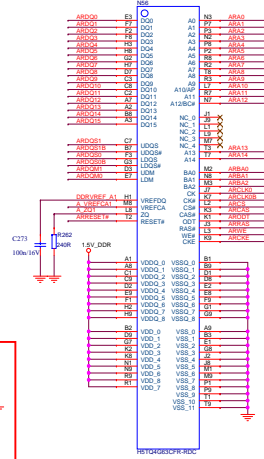


	Port AO						Port AE					
LVDS(Ball name)	AO0	AO1	AO2	AOCK	AO3	AO4	AE0	AE1	AE2	AECK	AE3	AE4
VB1(12Lane)	CH0	CH1	CH2	CH3	CH4	CH5	CH6	CH7	CH8	CH9	CH10	CH11

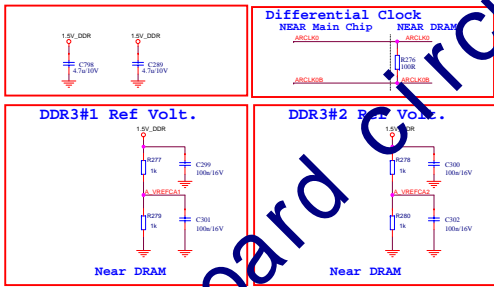
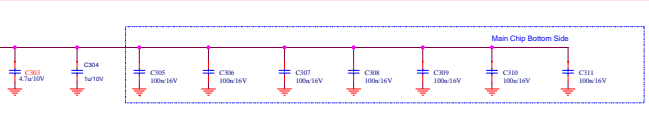
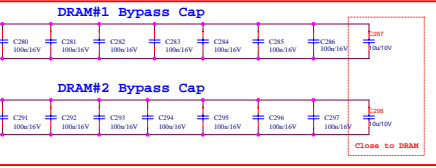
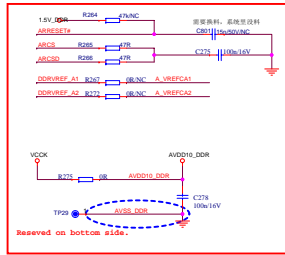
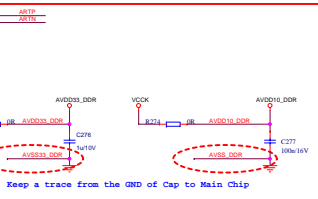
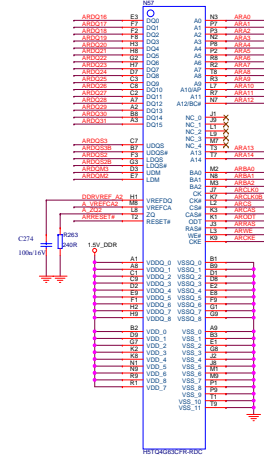
main board circuit:6472



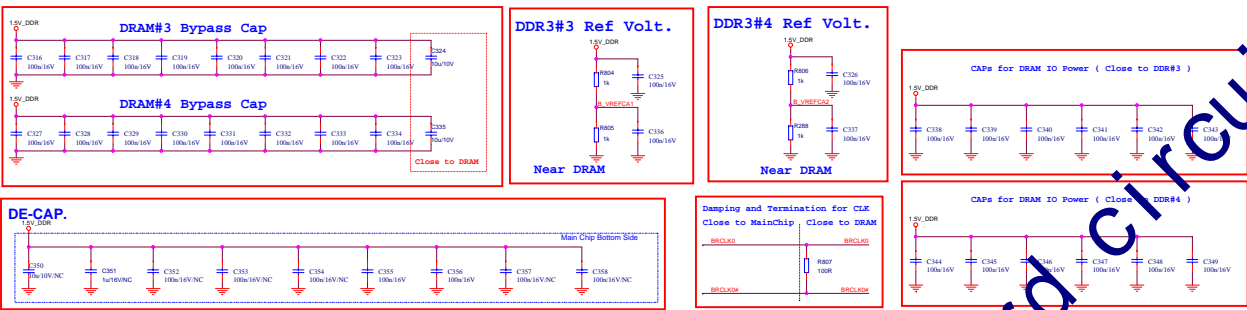
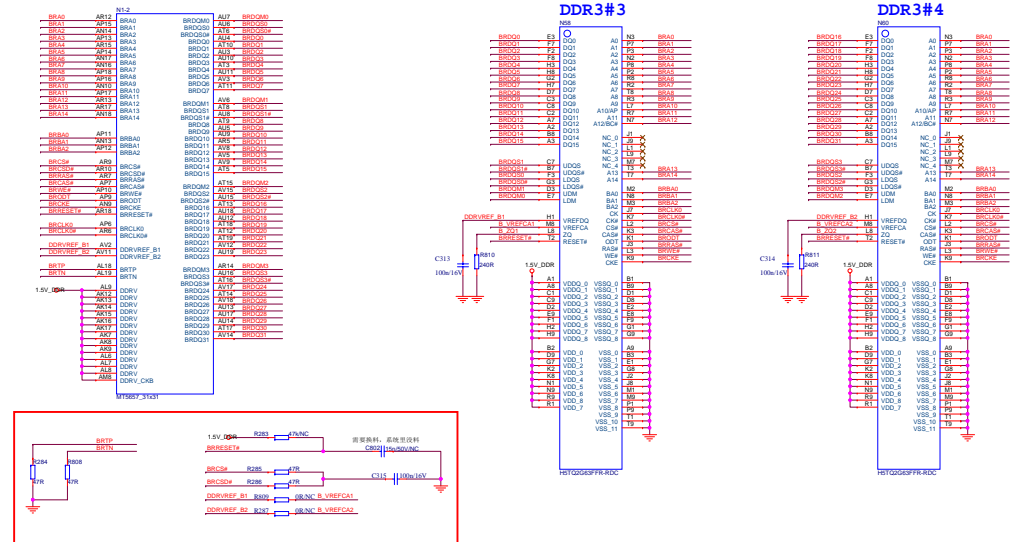
DDR3#1

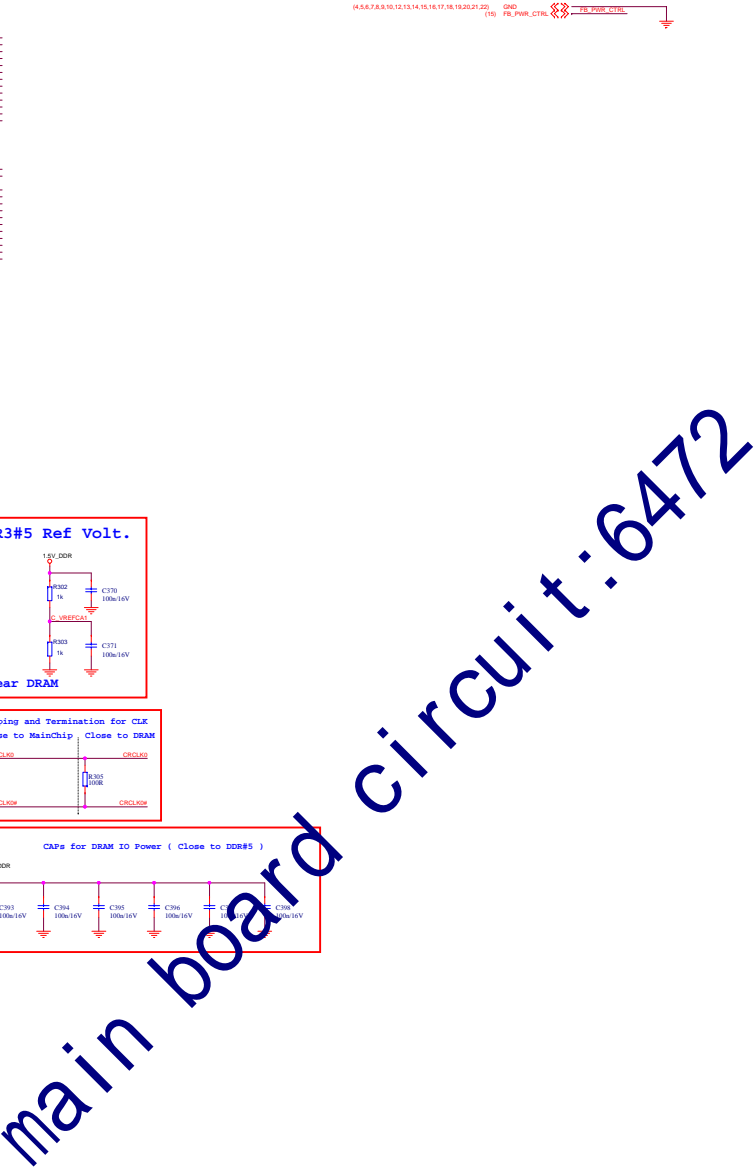


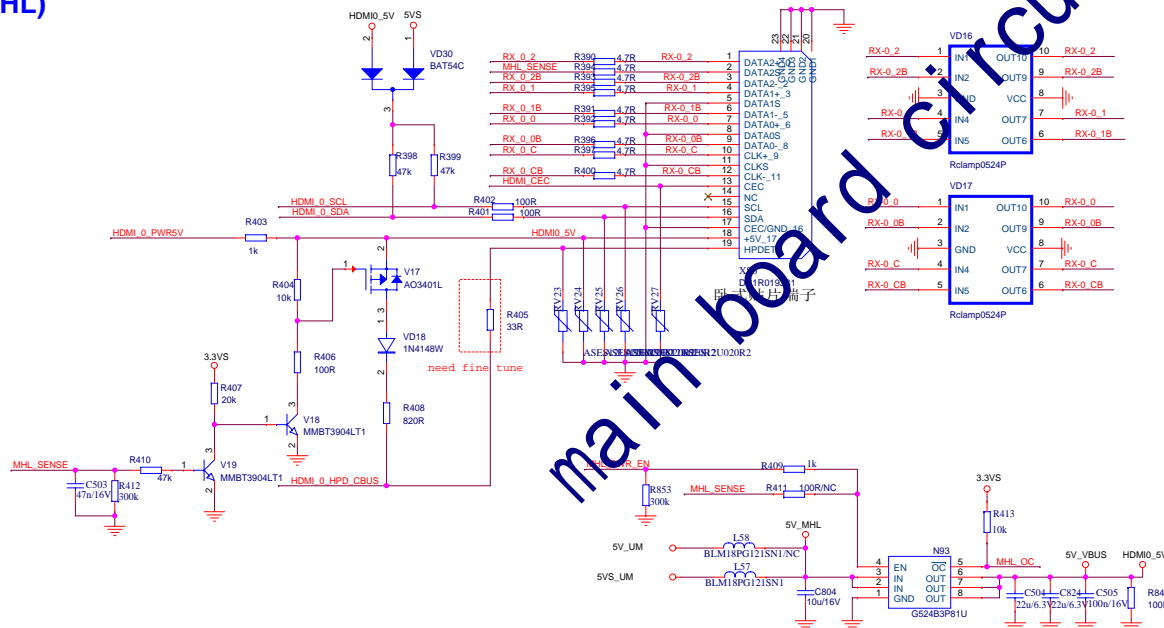
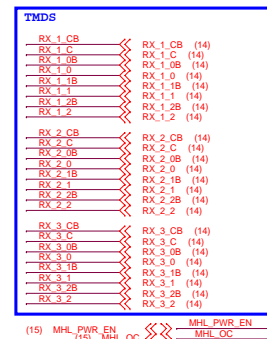
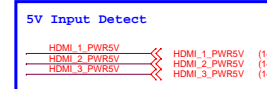
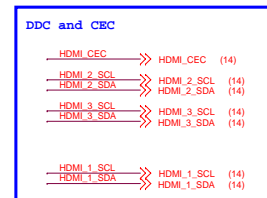
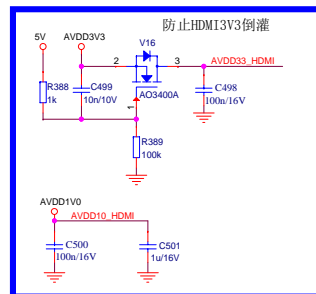
DDR3#2

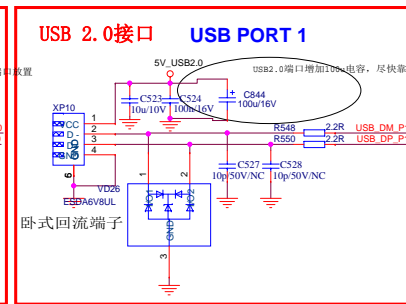
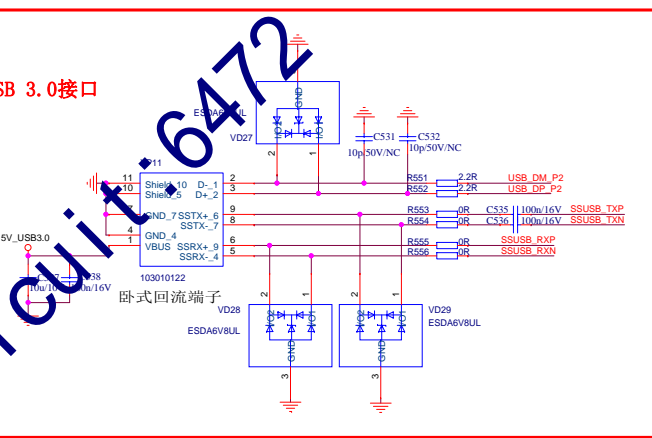
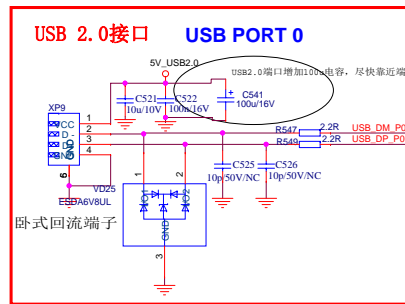
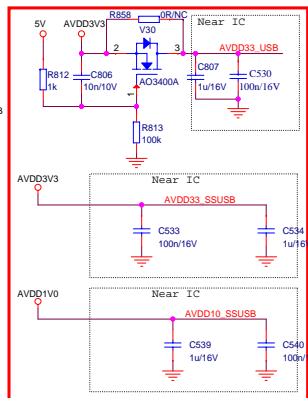
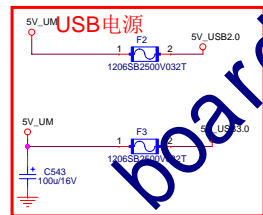
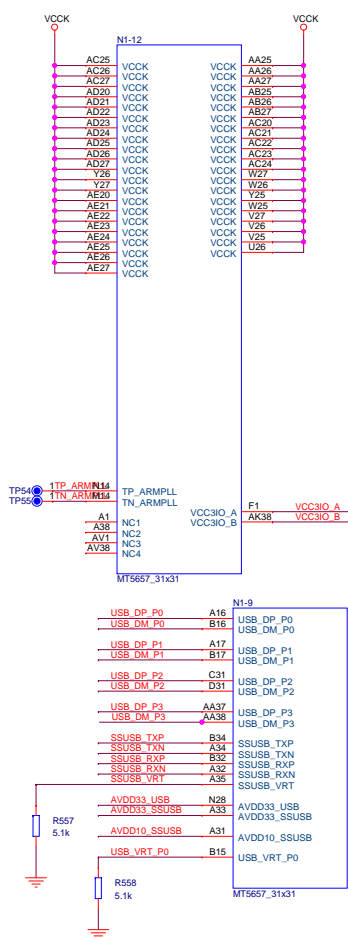
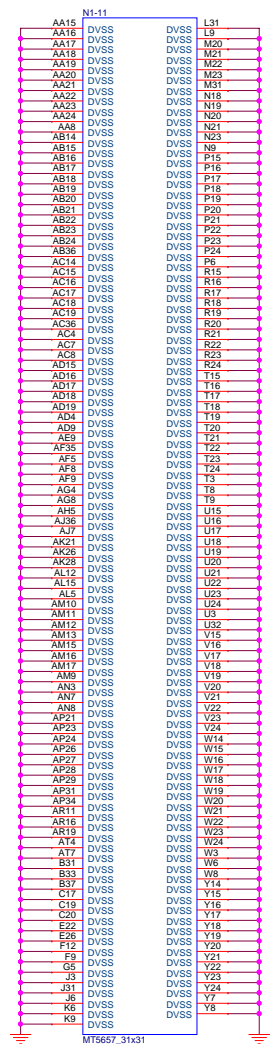


main board Circuit:6472

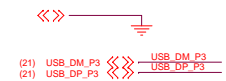




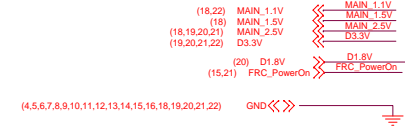
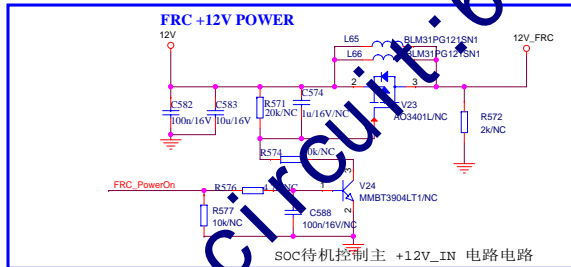
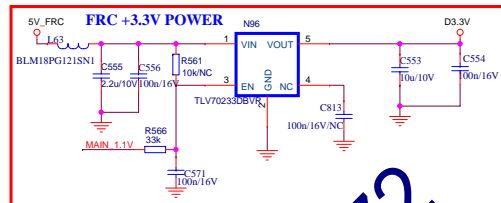
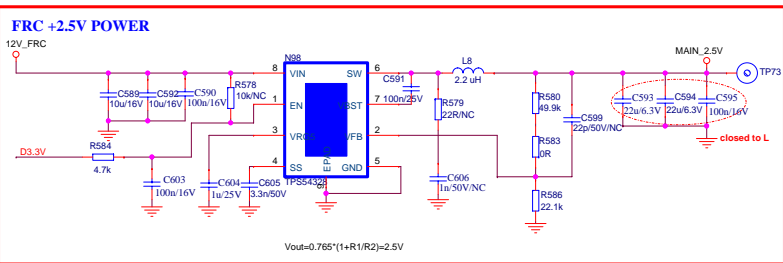
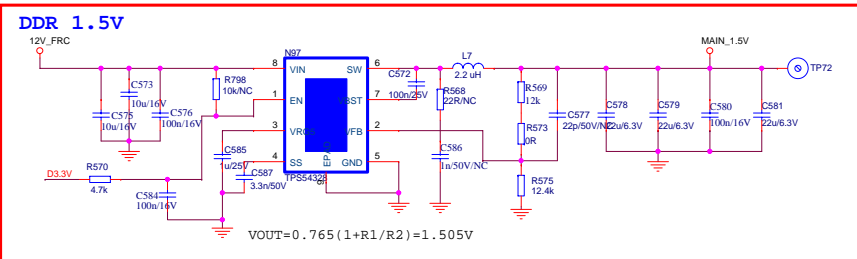
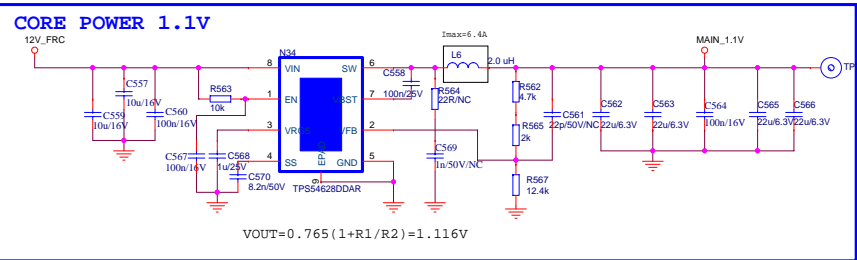
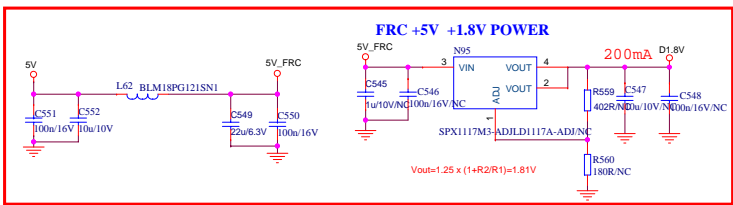




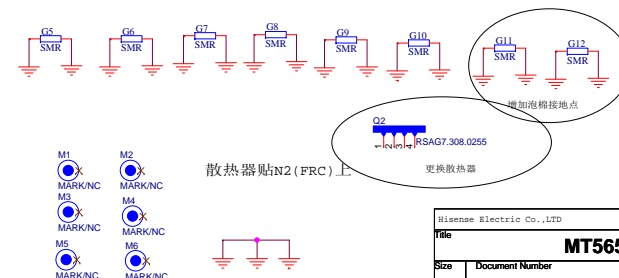
(4,5,6,7,8,9,10,11,12,13,14,15,17,18,19,20,21,22) GND



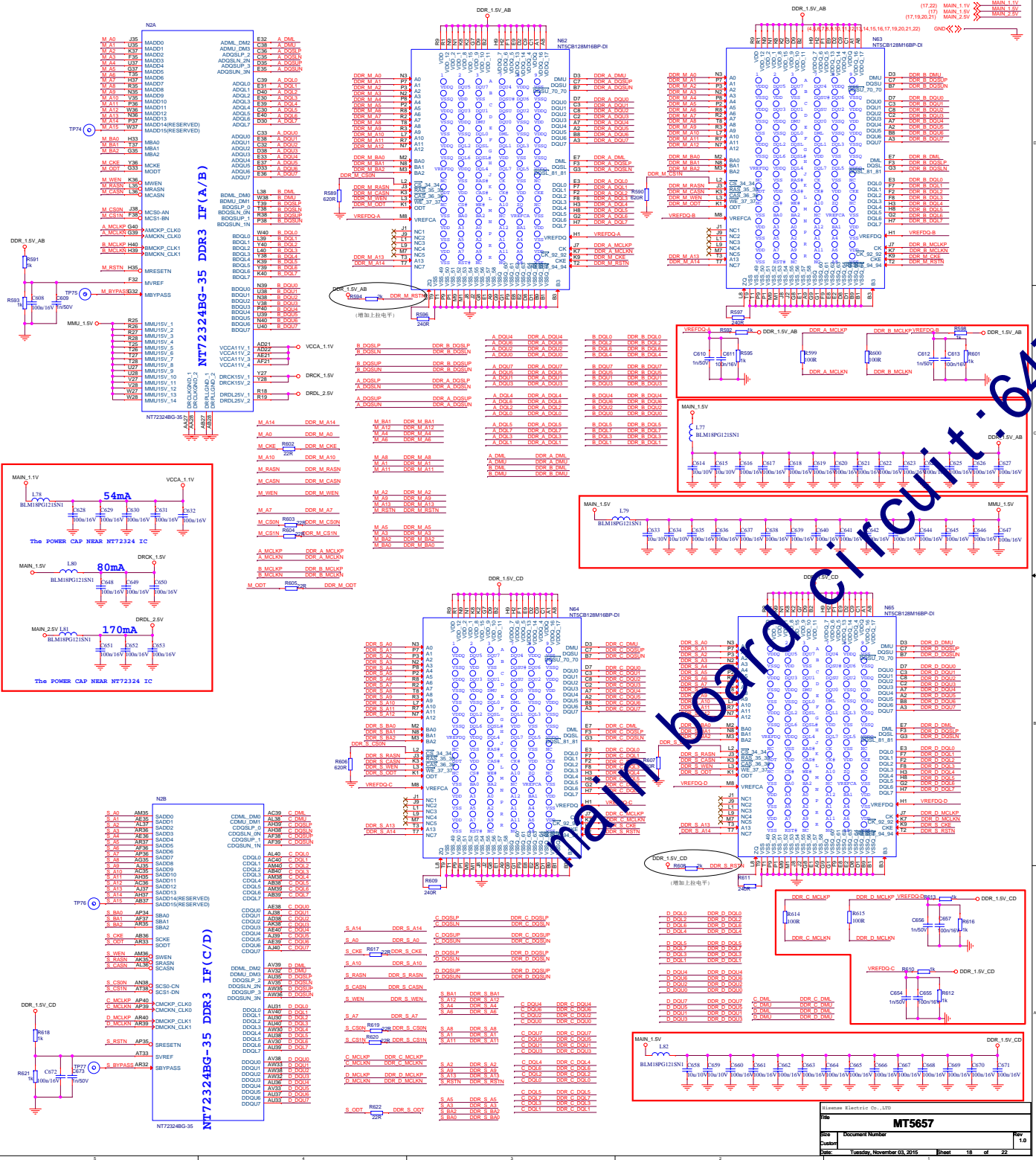
main board circuit 6472



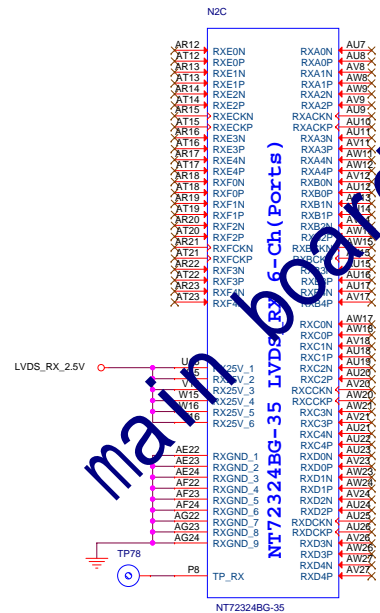
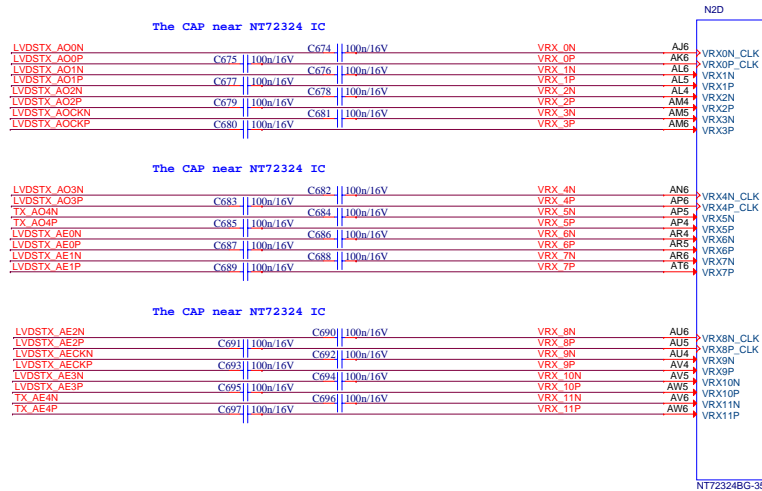
main board circuit: 6472

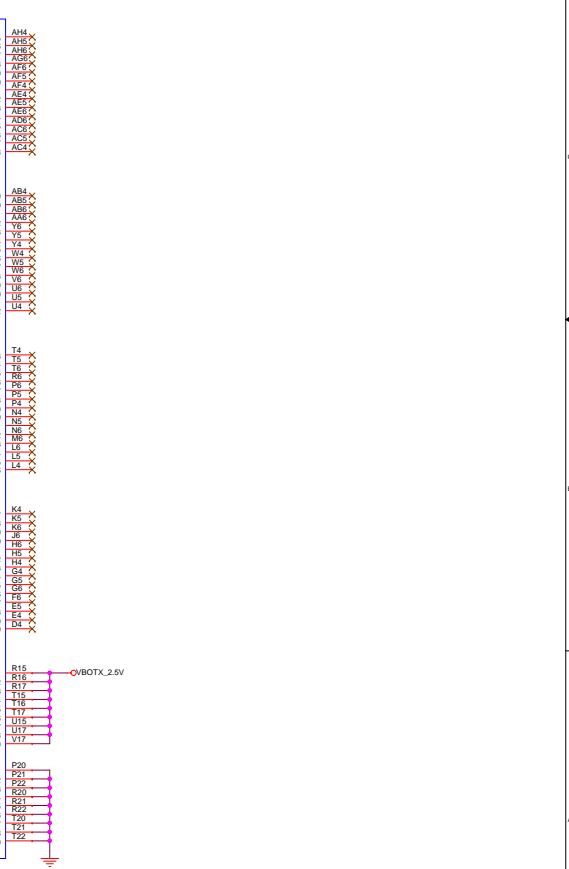
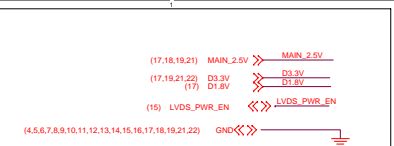


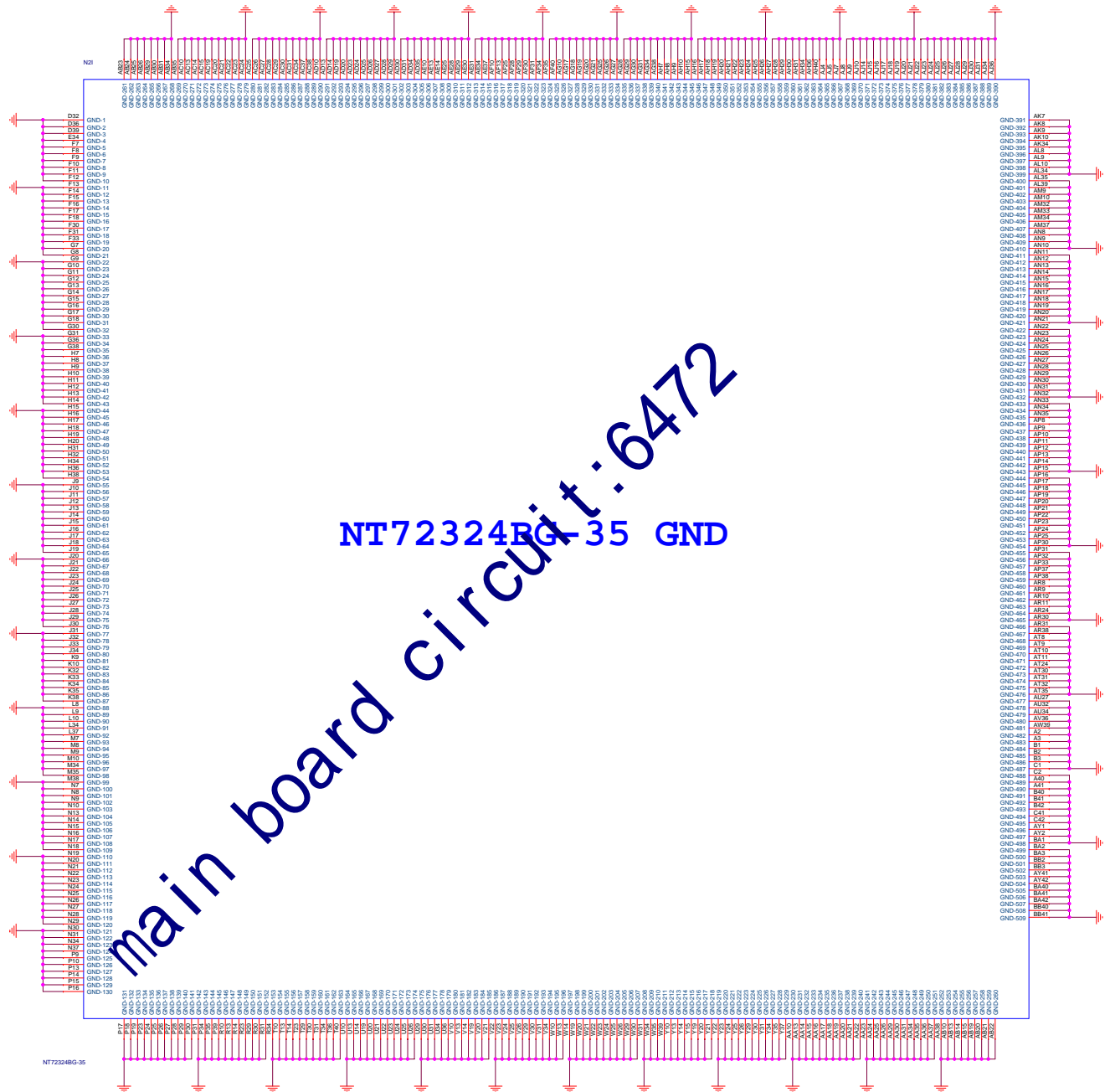
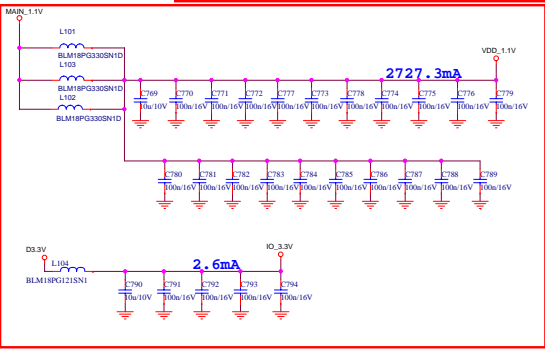
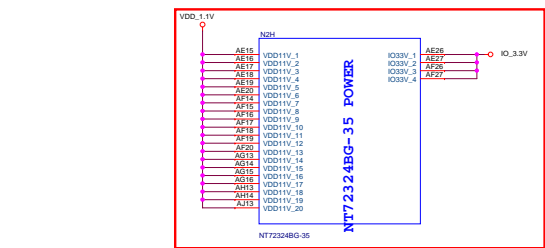
Hisense Electric Co., LTD		
File	MT5657	
Size	Document Number	Rev 1.0
Date	Thursday, November 05, 2015	Sheet 17 of 22

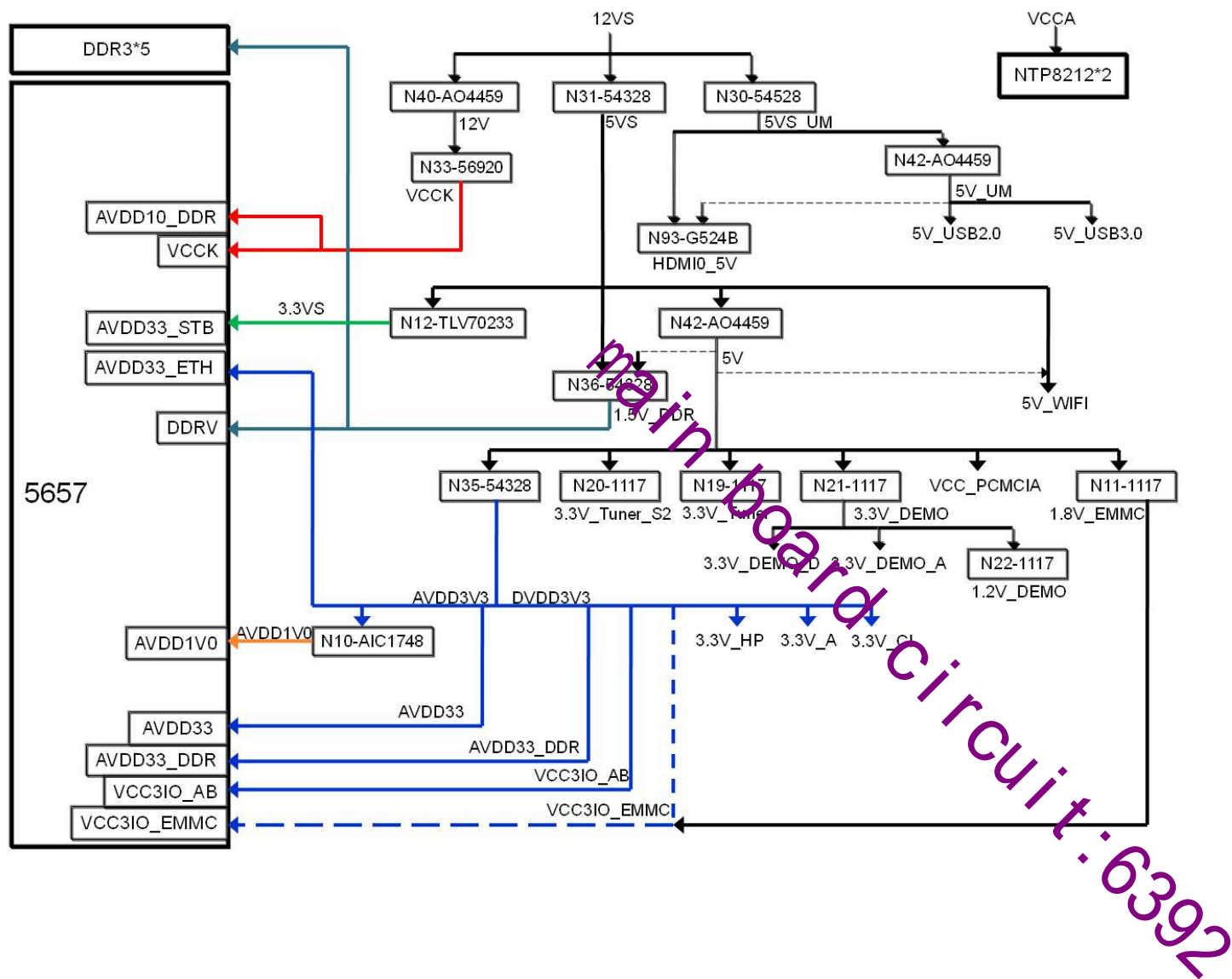


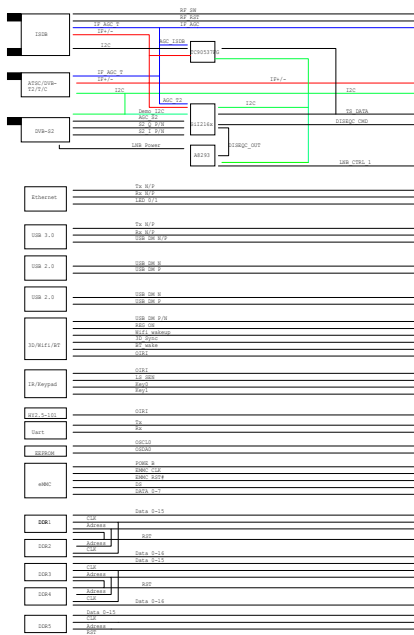
VB1 RX only Lane0, 4 and 8 can generate reference clock.
Please connect at least one of the Lane0/4/8











The diagram illustrates the main board circuit, featuring several integrated circuits and their interconnections. Key components include:

- U100:** A component connected to U101, U102, and U103.
- U101:** A component connected to U100, U102, and U103.
- U102:** A component connected to U100, U101, and U103.
- U103:** A component connected to U100, U101, and U102.
- U104:** A component connected to U105, U106, and U107.
- U105:** A component connected to U104, U106, and U107.
- U106:** A component connected to U104, U105, and U107.
- U107:** A component connected to U104, U105, and U106.
- U108:** A component connected to U109, U110, and U111.
- U109:** A component connected to U108, U110, and U111.
- U110:** A component connected to U108, U109, and U111.
- U111:** A component connected to U108, U109, and U110.
- U112:** A component connected to U113, U114, and U115.
- U113:** A component connected to U112, U114, and U115.
- U114:** A component connected to U112, U113, and U115.
- U115:** A component connected to U112, U113, and U114.

The diagram also shows various other components and their connections, including a large block labeled "main board circuit" and a section labeled "6392".



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_MISTR1	CI Interface	CI_MISTR1 (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

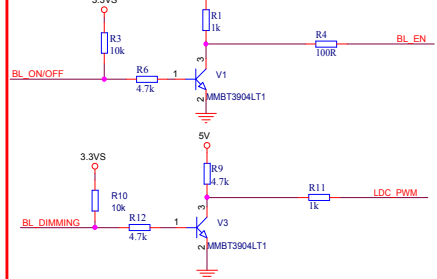
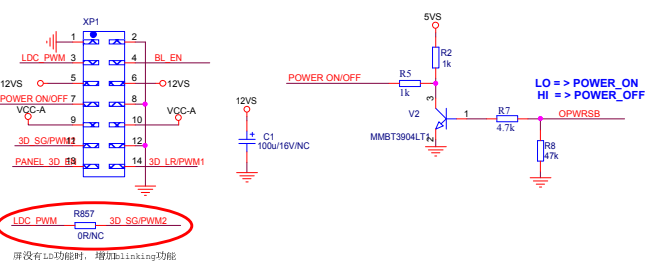
PCBA version ID		PCBA version ID
PIN NAME	Function define	GPIO Function
ADIN0_SRV	Function Select	SCART_FS
ADIN1_SRV	KEY_PAD	KEY_PAD0
ADIN2_SRV	KEY_PAD	KEY_PAD1
ADIN3_SRV	MHL Over Current Protect	USB_MHL_OC
ADIN4_SRV	USB over current detect	USB_OC_P0/P1
ADIN5_SRV	USB over current detect	USB_OC_P2/P3
ADIN6_SRV	Demod	RF_AGC1
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	—	—

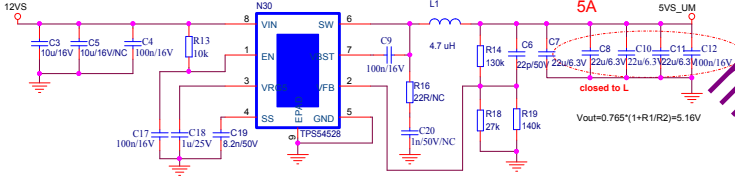
PIN NAME	Function define	GPIO Function
LED_PWM0	Strapping / Standby mode LED	Strap[3] / LED_PWM0
LED_PWM1	Strapping / Power On LED	Strap[2] / LED_PWM1
LED_PWM2	Strapping	Strap[1]
LED_PWM3	—	—

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

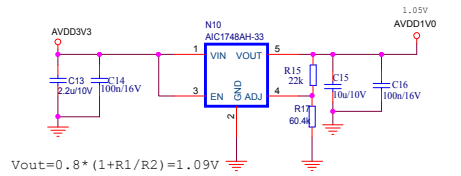
MAIN POWER



12V-->5V

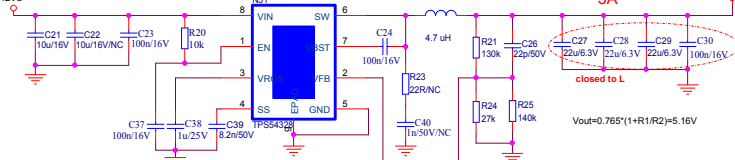


AVDD1V0

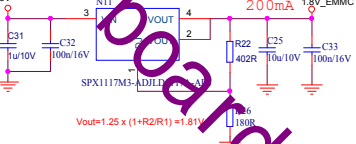


- | | | |
|------|-------------|-------------|
| (15) | BL_DIMMING | BL_DIMMING |
| (15) | BL_ON/OFF | BL_ON/OFF |
| (5) | OPWRSB | OPWRSB |
| (8) | 3D_SG/PWM2 | 3D_SG/PWM2 |
| (8) | PANEL 3D EN | PANEL 3D EN |
| (8) | 3D_LR/PWM1 | 3D_LR/PWM1 |
| (8) | LDC_PWM | LDC_PWM |

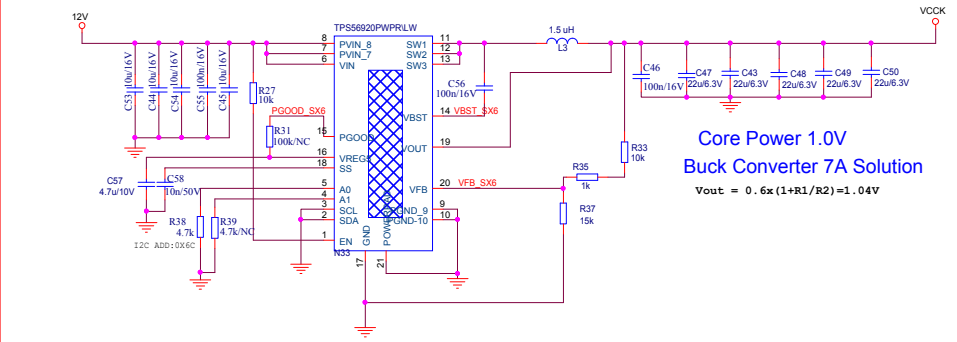
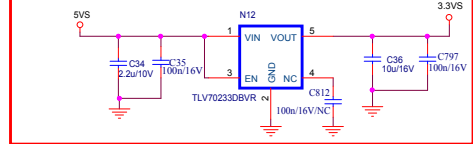
12V-->5V



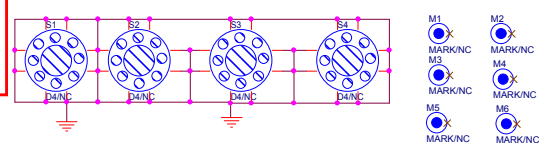
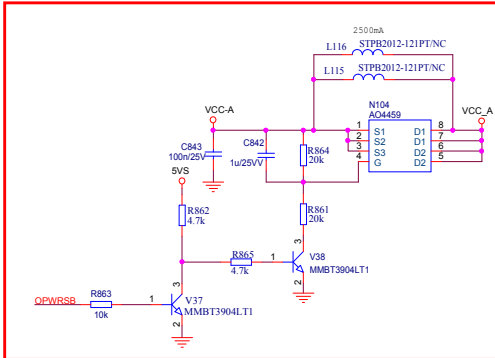
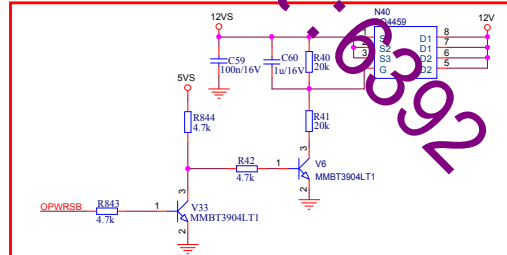
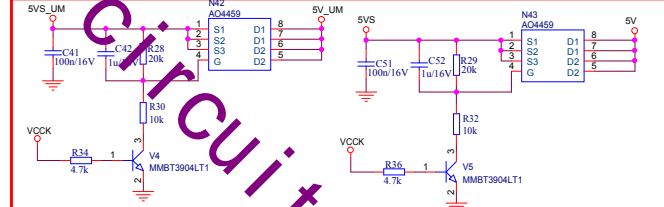
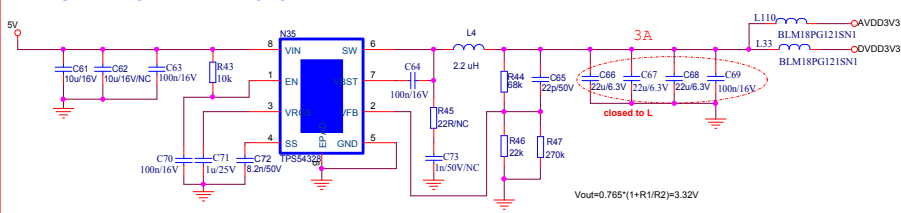
eMMC 1V8

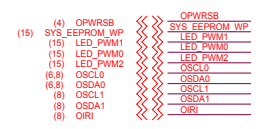


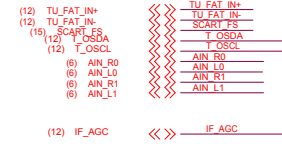
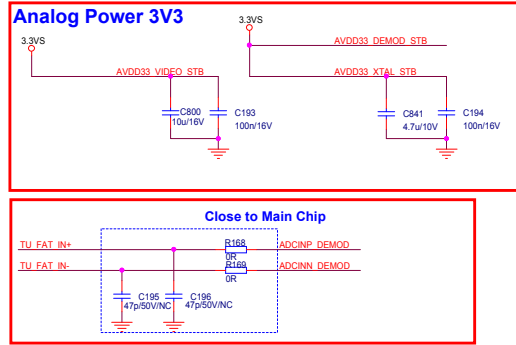
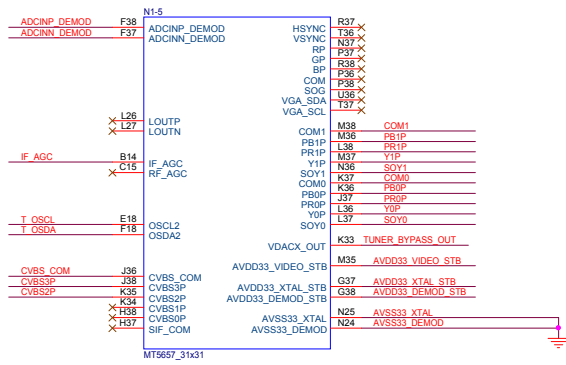
STANDBY POWER 3V3SB



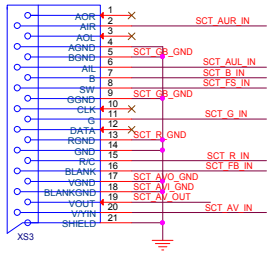
DIGITAL POWER DVDD3V3





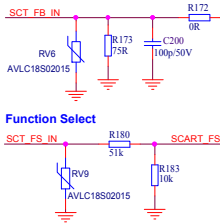


SCART (Full SCART) ---AV+RGB+AV OUT

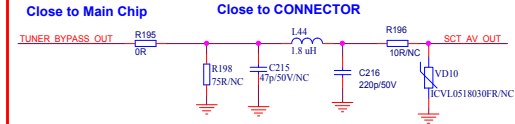


立式回流端子

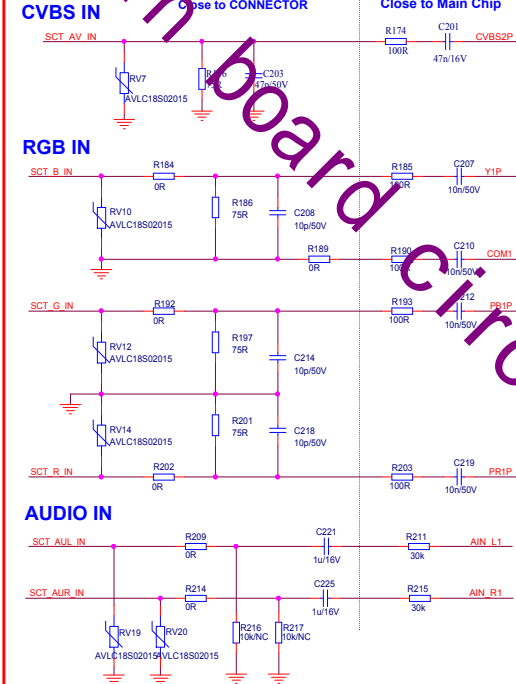
FAST BLANKING/SOY



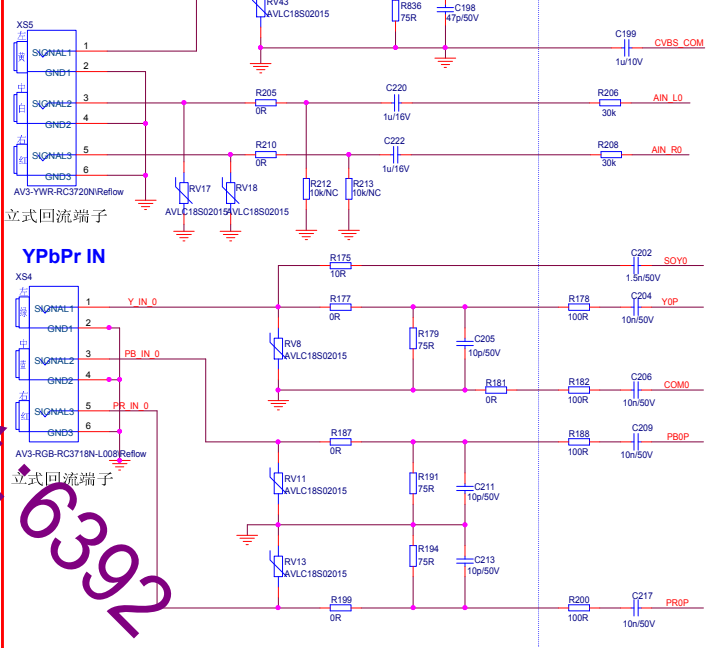
CVBS OUT (调试射频通道预留, 调试时增加R196, 默认不上件)

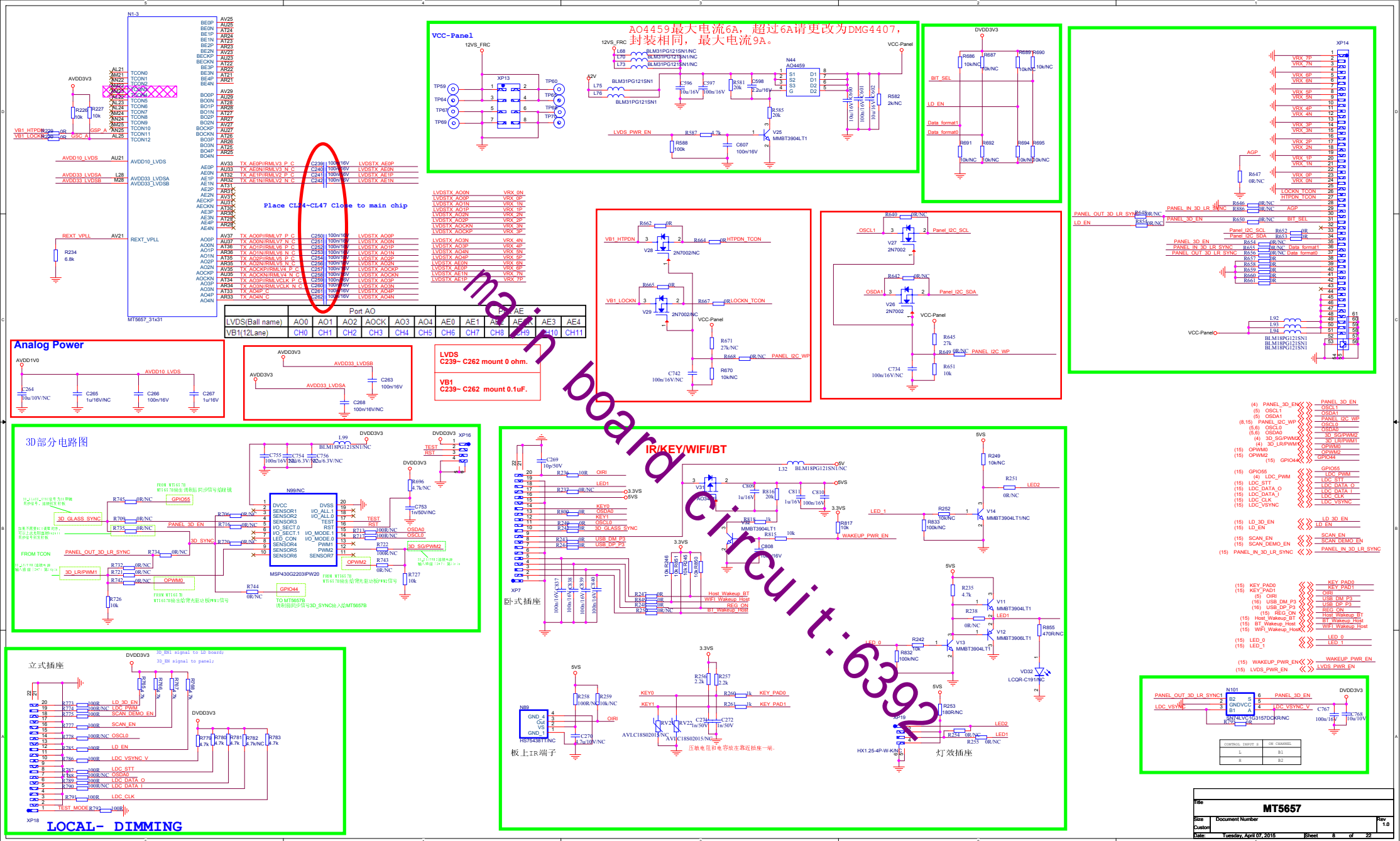


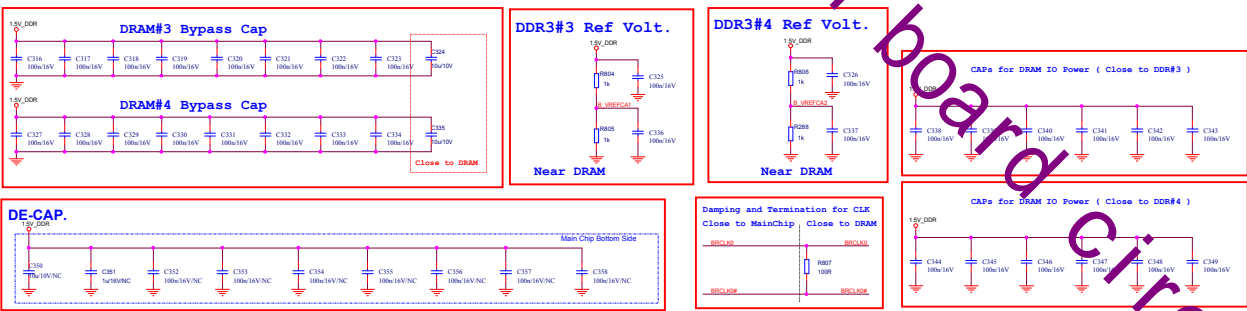
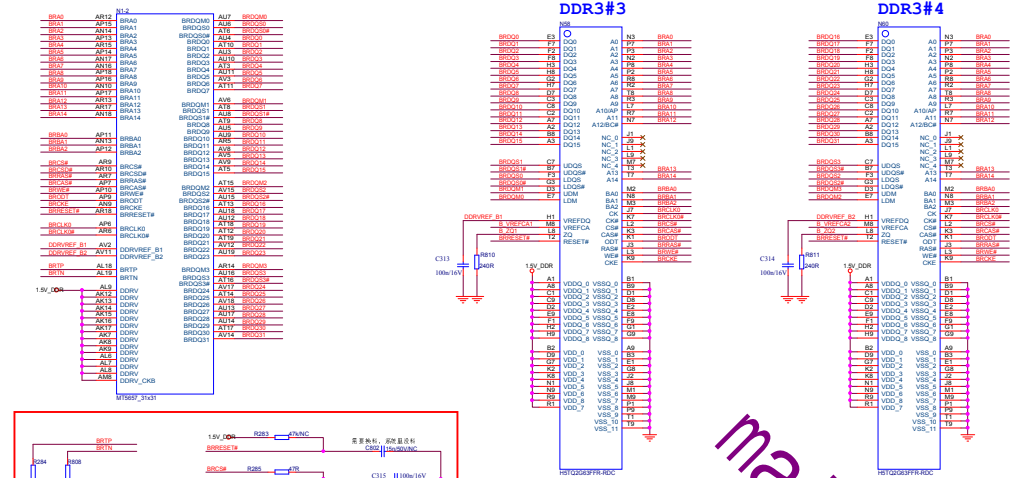
SCART INPUT

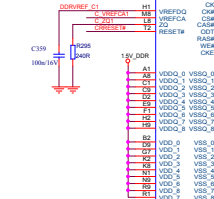
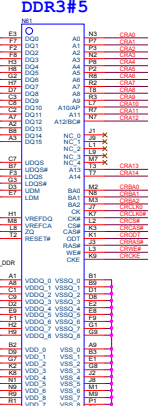
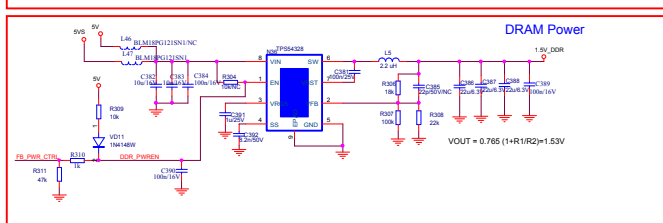
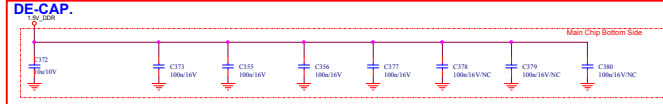
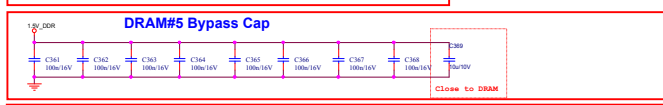
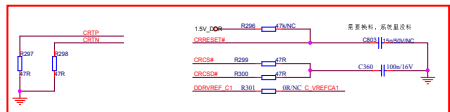
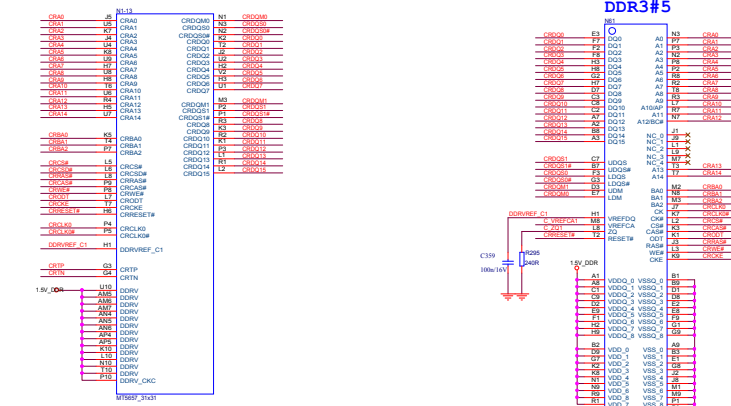


AV INPUT+L/R

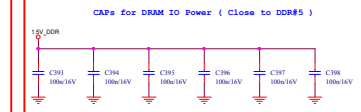
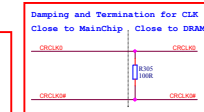
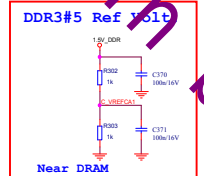


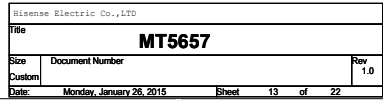
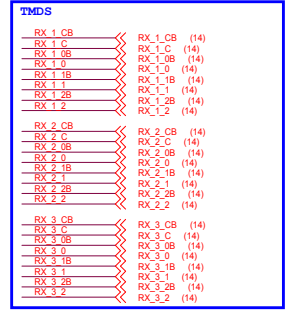
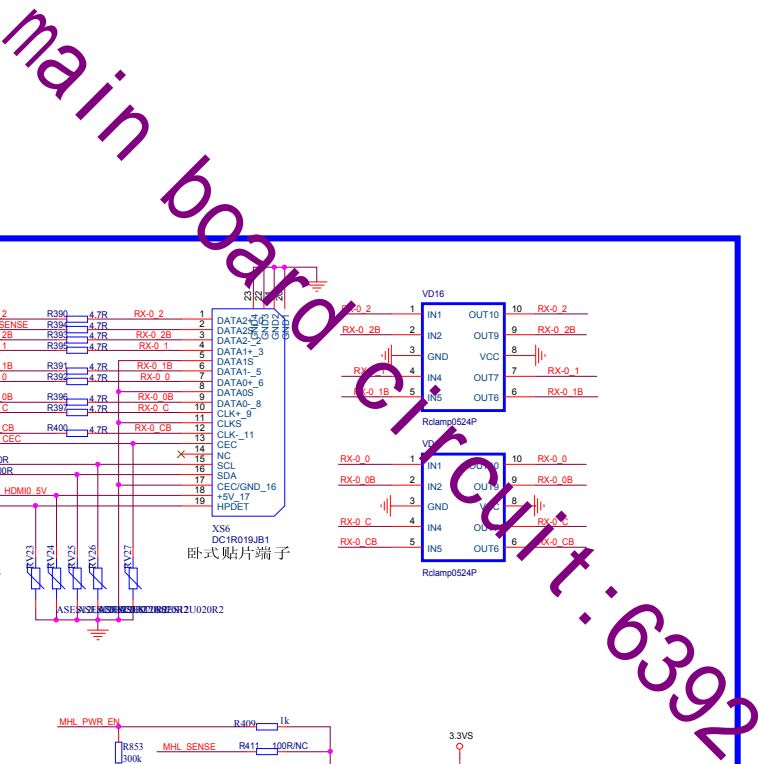


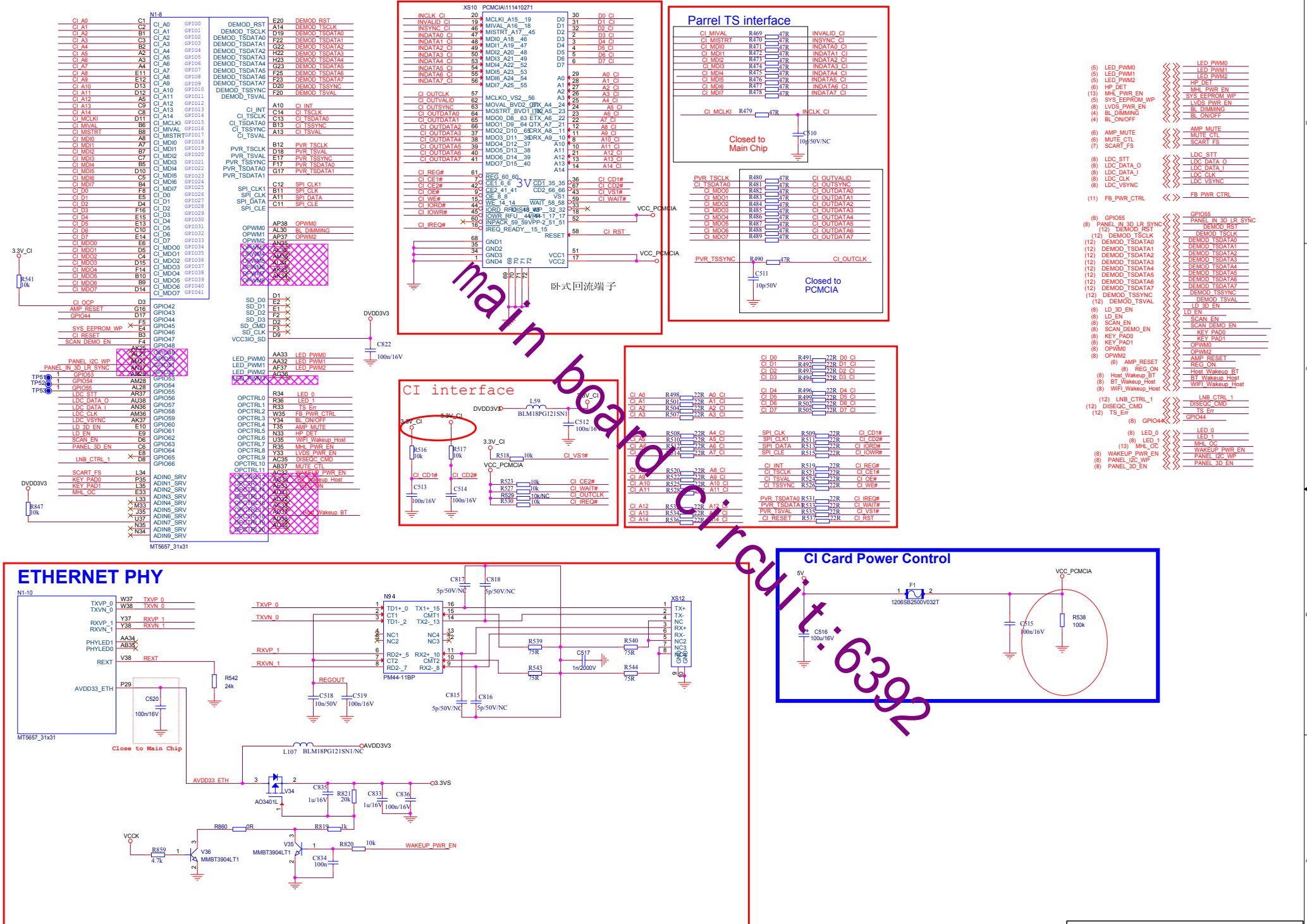


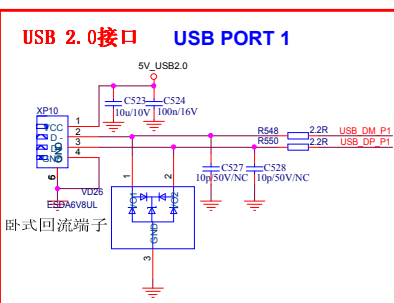
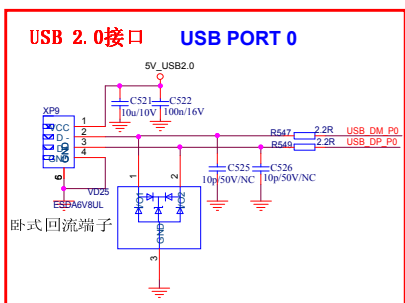
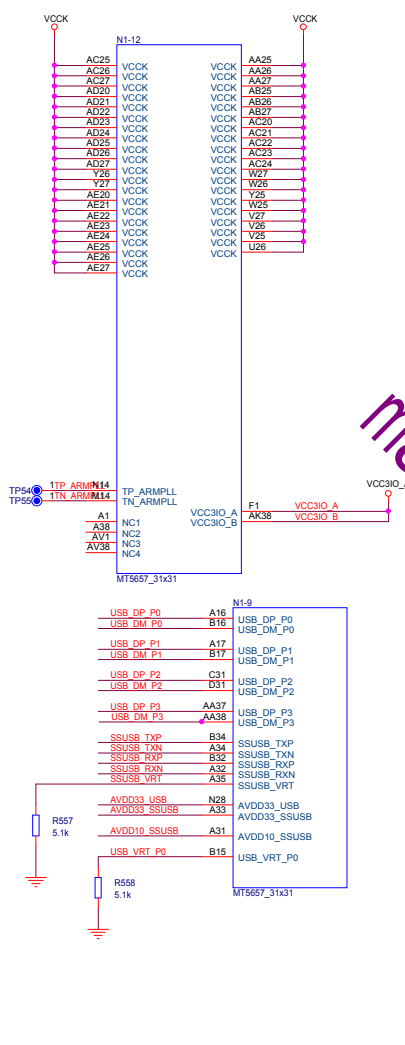
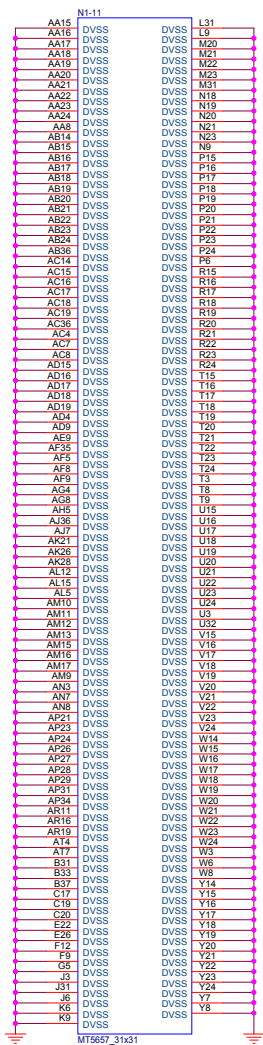


main board circuit: 6392

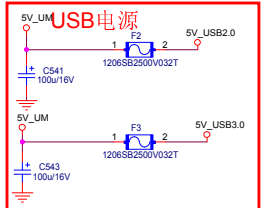
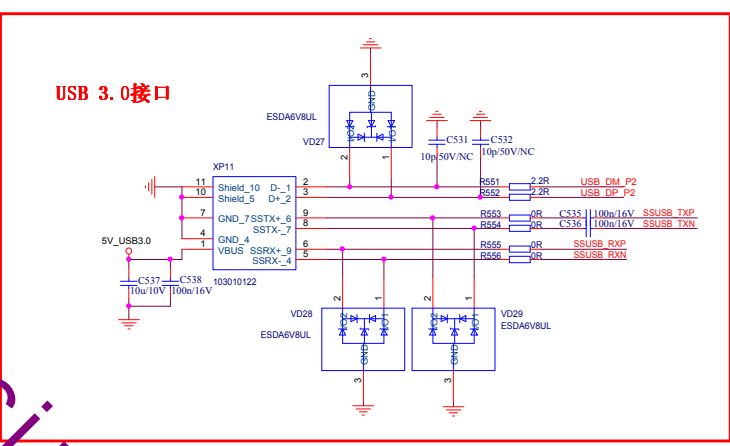
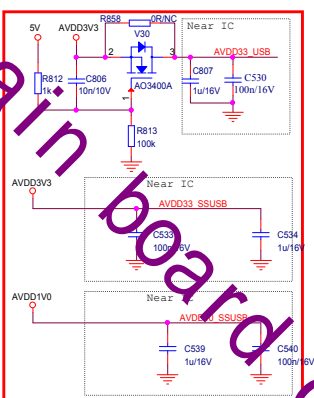




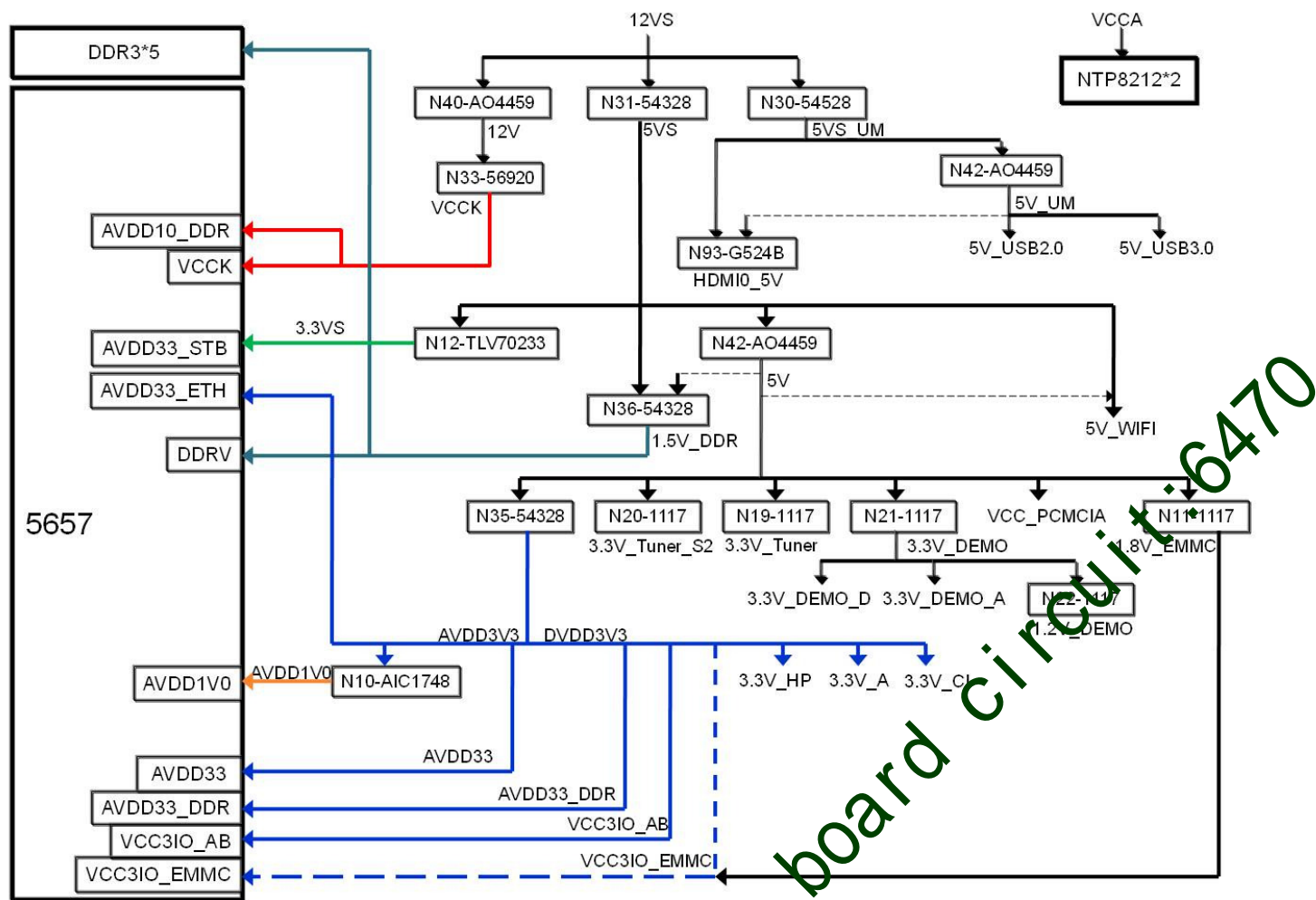




(8) USB_DM_P3 <==> USB_DM_P3
(9) USB_DP_P3 <==> USB_DP_P3



main board circuit: 6392



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_MISTR	CI Interface	CI_MISTR (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

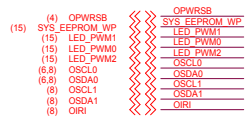
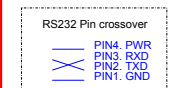
main board circuit 6470

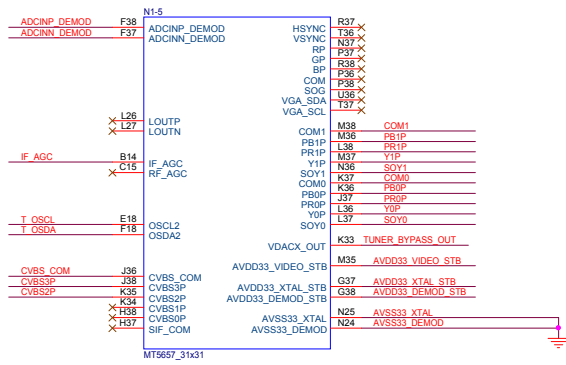
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PIN NAME	Function define	GPIO Function
ADIN0_SRV	Function Select	SCART_FS
ADIN1_SRV	KEY_PAD	KEY_PAD0
ADIN2_SRV	KEY_PAD	KEY_PAD1
ADIN3_SRV	MHL Over Current Protect	USB_MHL_OC
ADIN4_SRV	USB over current detect	USB_OC_P0/P1
ADIN5_SRV	USB over current detect	USB_OC_P2/P3
ADIN6_SRV	Demod	RF_AGC1
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	—	—

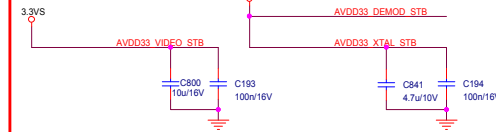
PIN NAME	Function define	GPIO Function
LED_PWM0	Strapping / Standby mode LED	Strap[3] / LED_PWM0
LED_PWM1	Strapping / Power On LED	Strap[2] / LED_PWM1
LED_PWM2	Strapping	Strap[1]
LED_PWM3	—	—

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

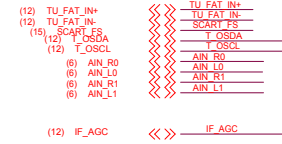
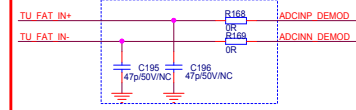




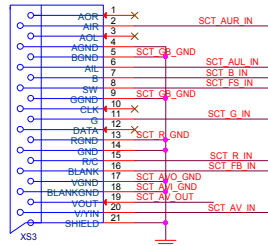
Analog Power 3V3



Close to Main Chip

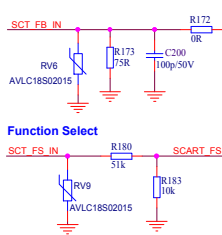


SCART (Full SCART) ---AV+RGB+AV OUT



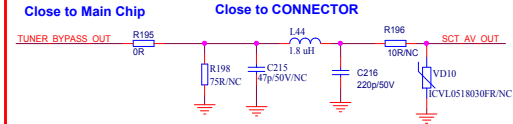
立式回流端子

FAST BLANKING/SOY

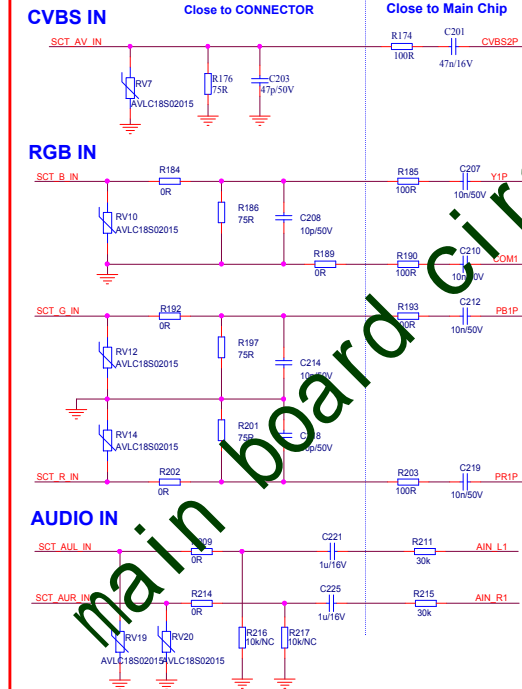


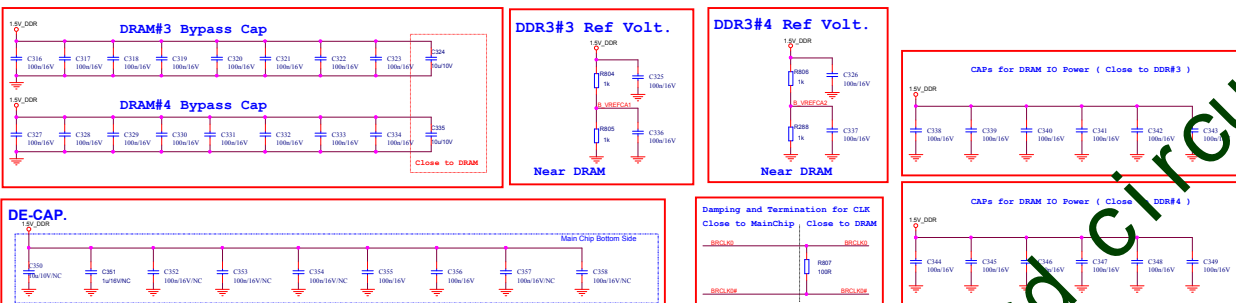
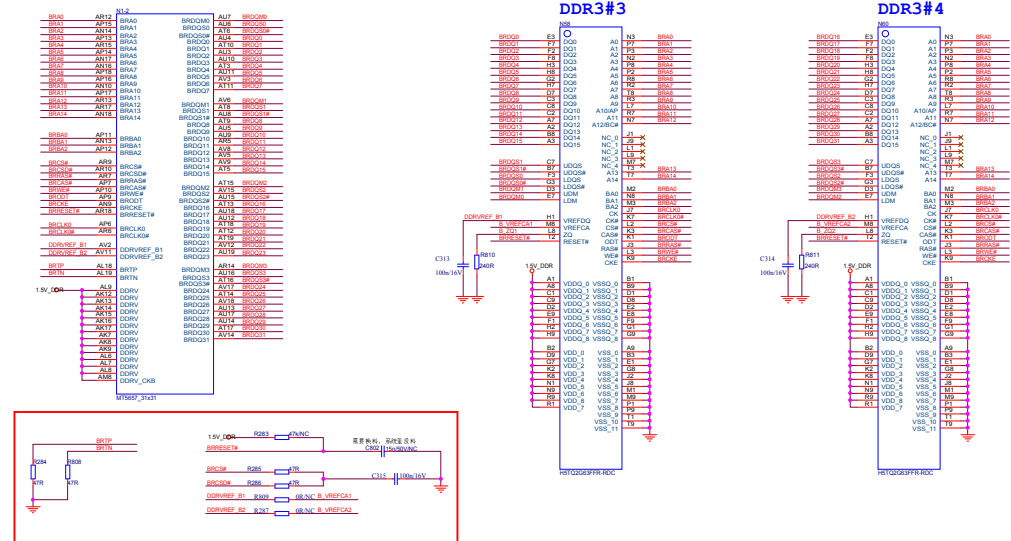
Function Select

CVBS OUT(调试射频通道预留, 调试时增加R196, 默认不上件)

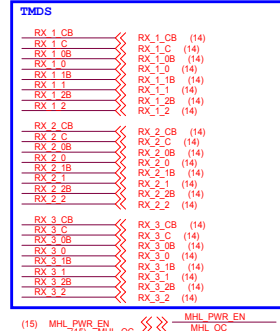
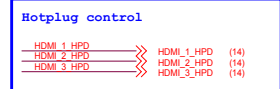
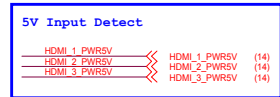
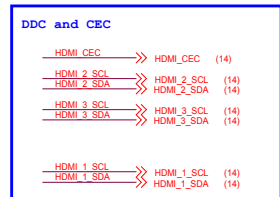
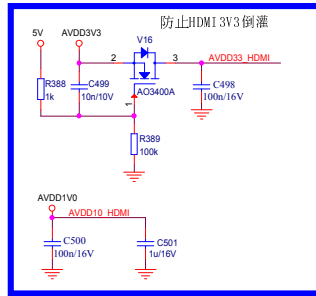
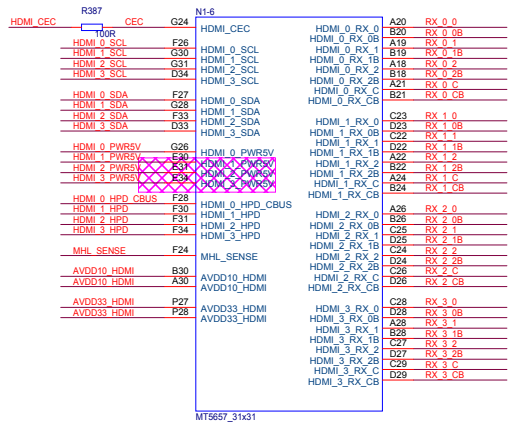


SCART INPUT

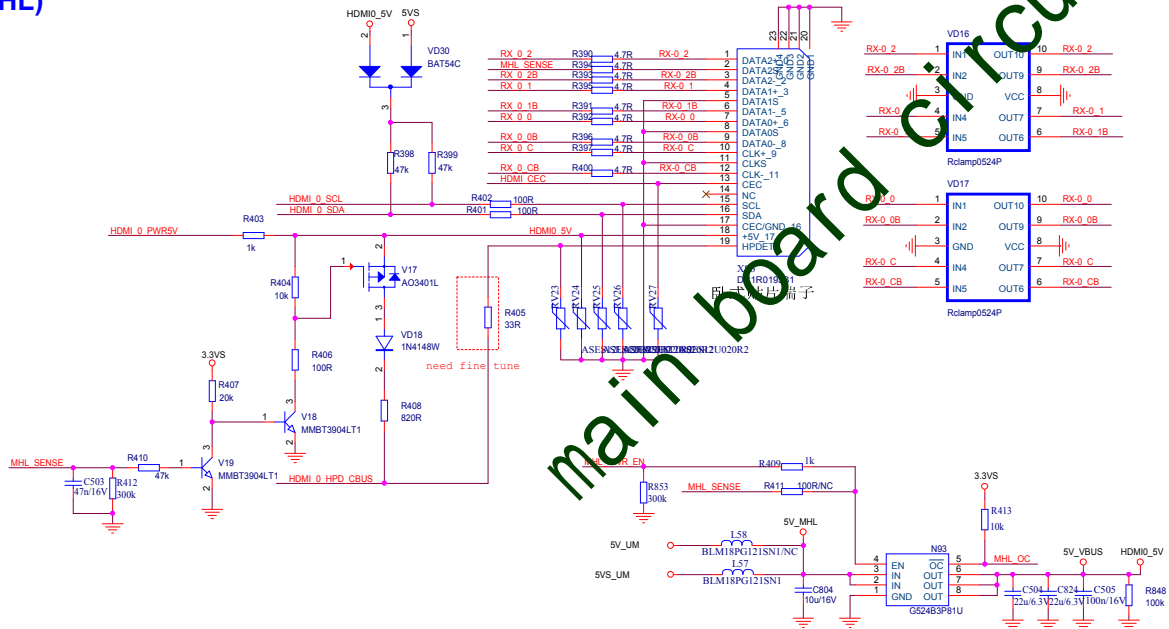




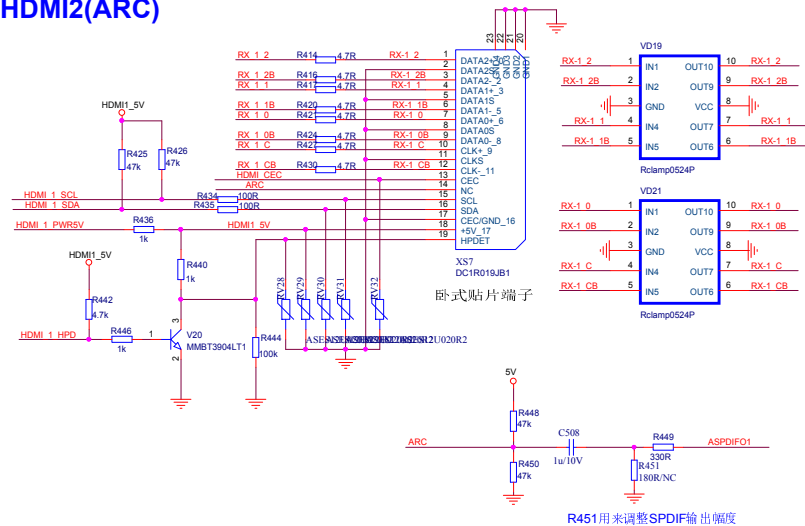
main board circuit: 6470



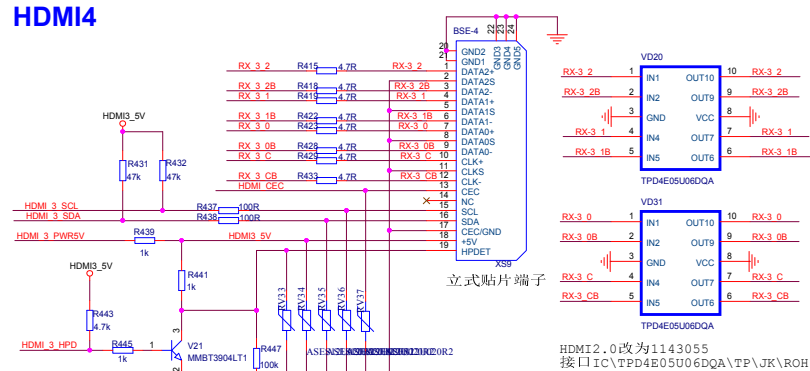
HDMI1(MHL)



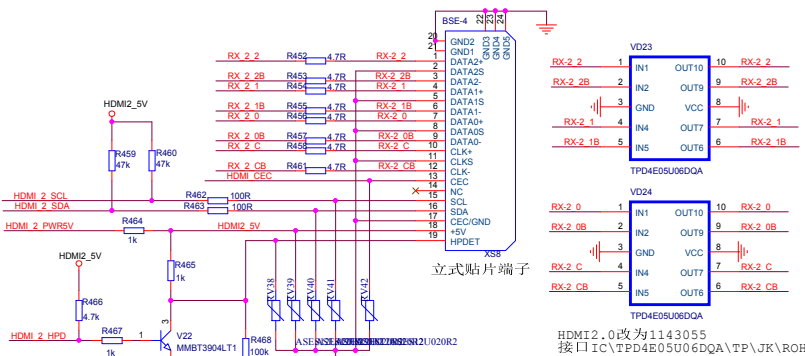
HDMI2(ARC)



HDMI4



HDMI3



TMDs

RX-1 CB	RX-1 CB (13)
RX-1 C	RX-1 C (13)
RX-1 OB	RX-1 OB (13)
RX-1 0	RX-1 0 (13)
RX-1 1B	RX-1 1B (13)
RX-1 1	RX-1 1 (13)
RX-1 2	RX-1 2 (13)
RX-2 CB	RX-2 CB (13)
RX-2 C	RX-2 C (13)
RX-2 OB	RX-2 OB (13)
RX-2 0	RX-2 0 (13)
RX-2 1B	RX-2 1B (13)
RX-2 1	RX-2 1 (13)
RX-2 2B	RX-2 2B (13)
RX-2 2	RX-2 2 (13)
RX-3 CB	RX-3 CB (13)
RX-3 C	RX-3 C (13)
RX-3 OB	RX-3 OB (13)
RX-3 0	RX-3 0 (13)
RX-3 1B	RX-3 1B (13)
RX-3 1	RX-3 1 (13)
RX-3 2B	RX-3 2B (13)
RX-3 2	RX-3 2 (13)

HDMI-1 PWRSV	HDMI-1 PWRSV (13)
HDMI-2 PWRSV	HDMI-2 PWRSV (13)
HDMI-3 PWRSV	HDMI-3 PWRSV (13)

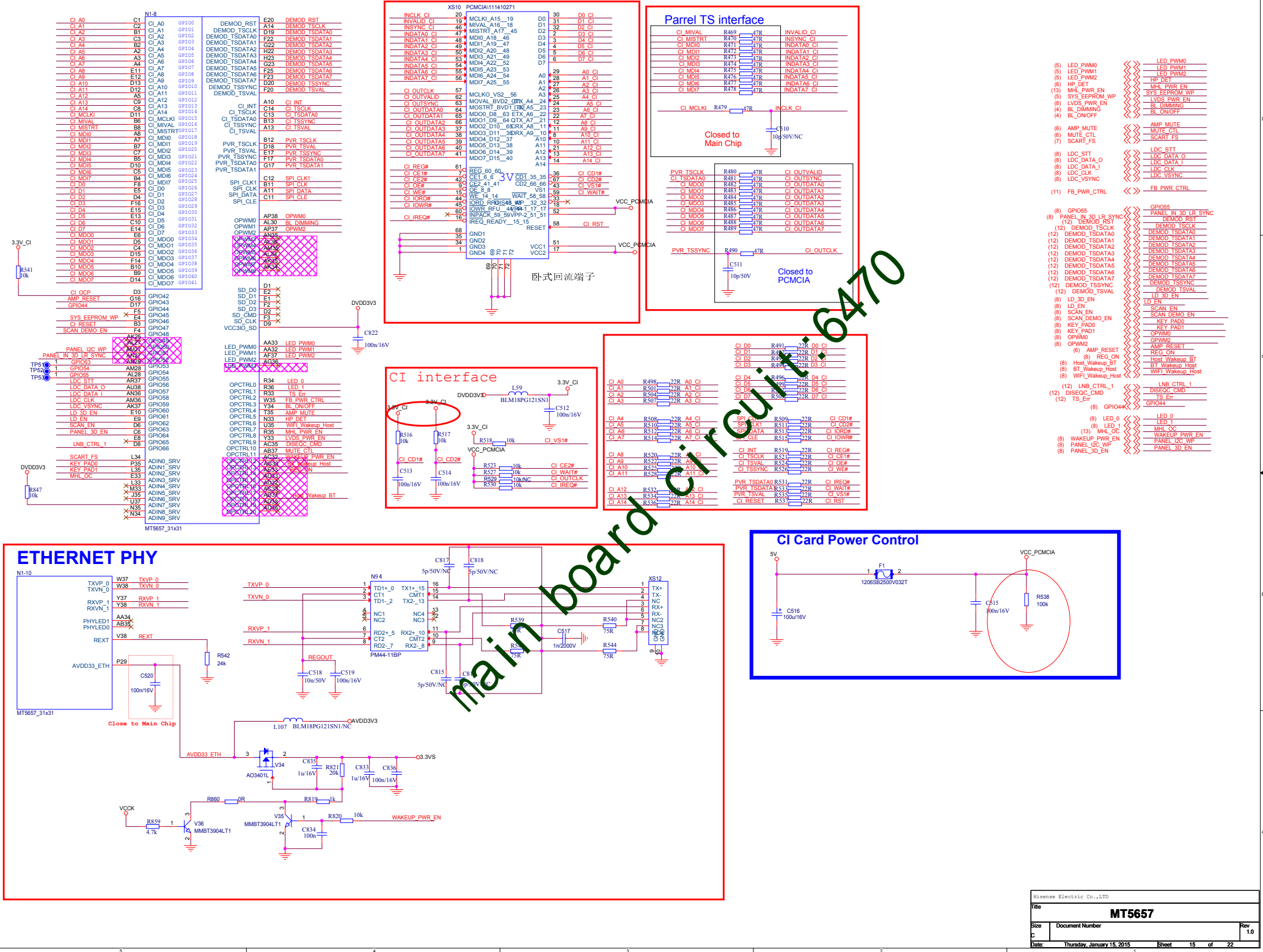
Hotplug control

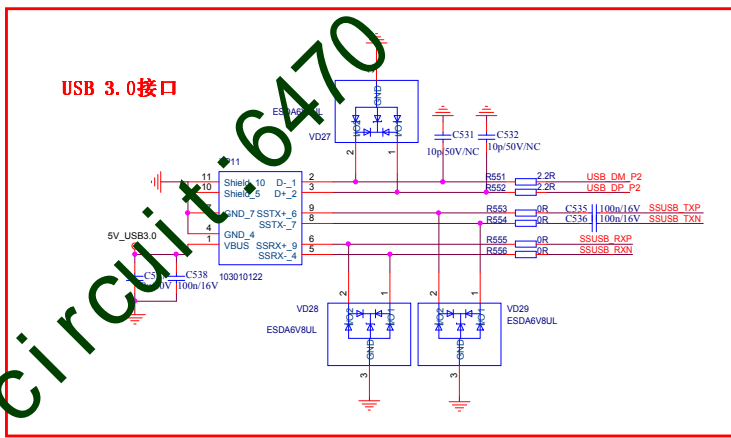
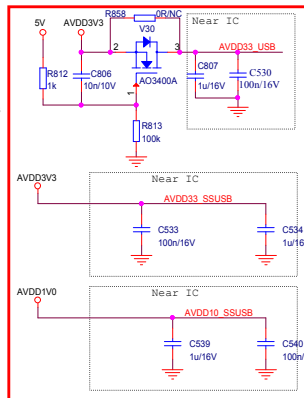
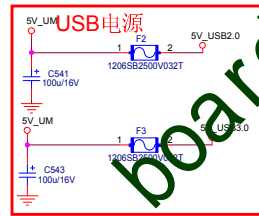
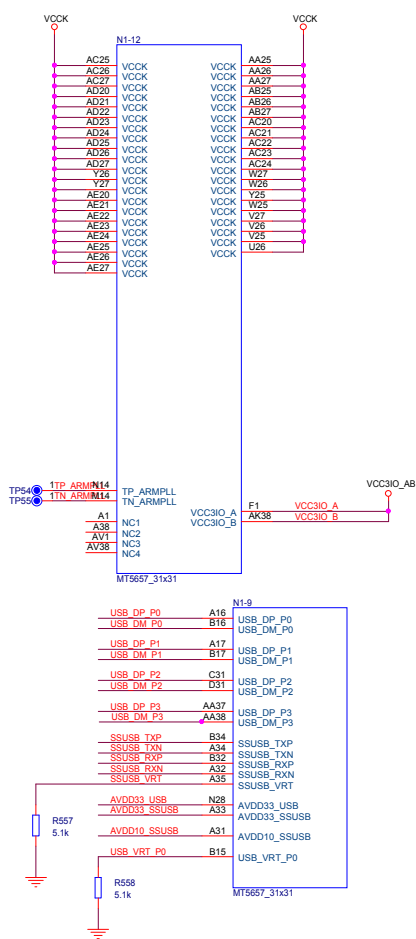
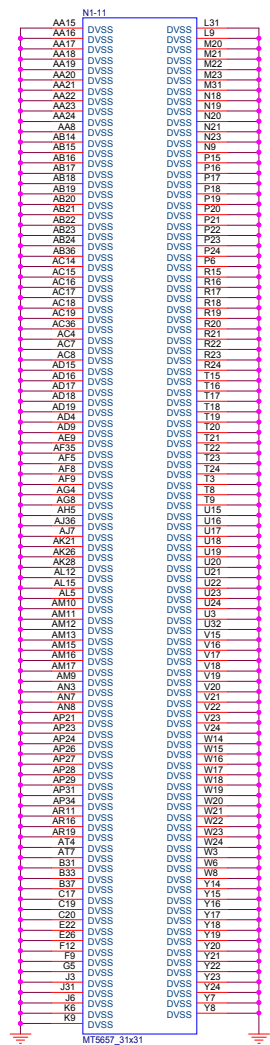
HDMI-1 HPD	HDMI-1 HPD (13)
HDMI-2 HPD	HDMI-2 HPD (13)
HDMI-3 HPD	HDMI-3 HPD (13)

DDC and CEC ARC

HDMI-1 CEC	HDMI-1 CEC (13)
ASPDIF01	ASPDIF01 (6)
HDMI-1 SCL	HDMI-1 SCL (13)
HDMI-1 SDA	HDMI-1 SDA (13)
HDMI-2 SCL	HDMI-2 SCL (13)
HDMI-2 SDA	HDMI-2 SDA (13)
HDMI-3 SCL	HDMI-3 SCL (13)
HDMI-3 SDA	HDMI-3 SDA (13)

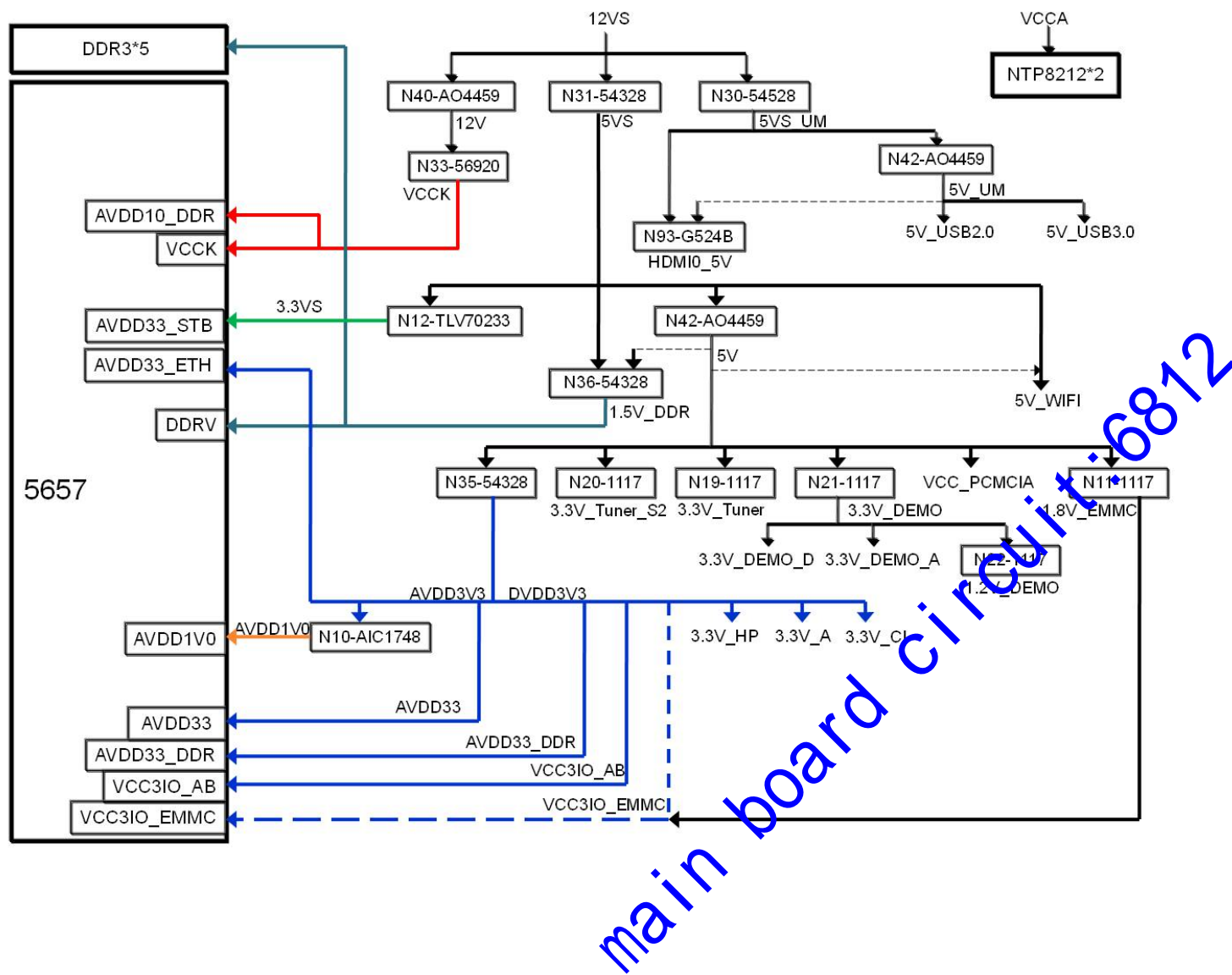
main board circuit: 6470





(8) USB_DM_P3 <-> USB_DM_P3
(9) USB_DP_P3 <-> USB_DP_P3

main board circuit 6470





1. 更换大卡物料，更改为小物料

删除41PIN插座及连接电阻电容

更换散热器

增加FRC散热器接地点

删除重低音功放

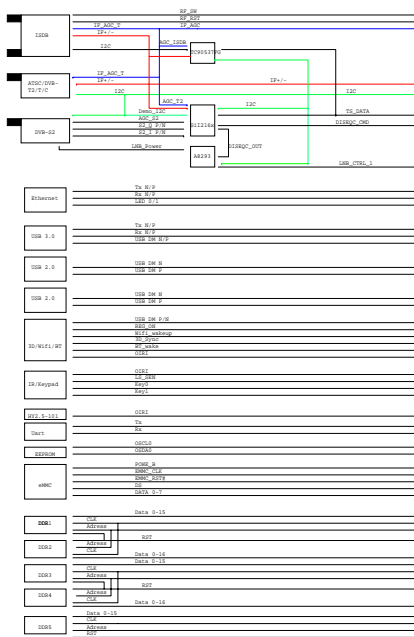
更换卧式符合插座

增加割地连接电阻

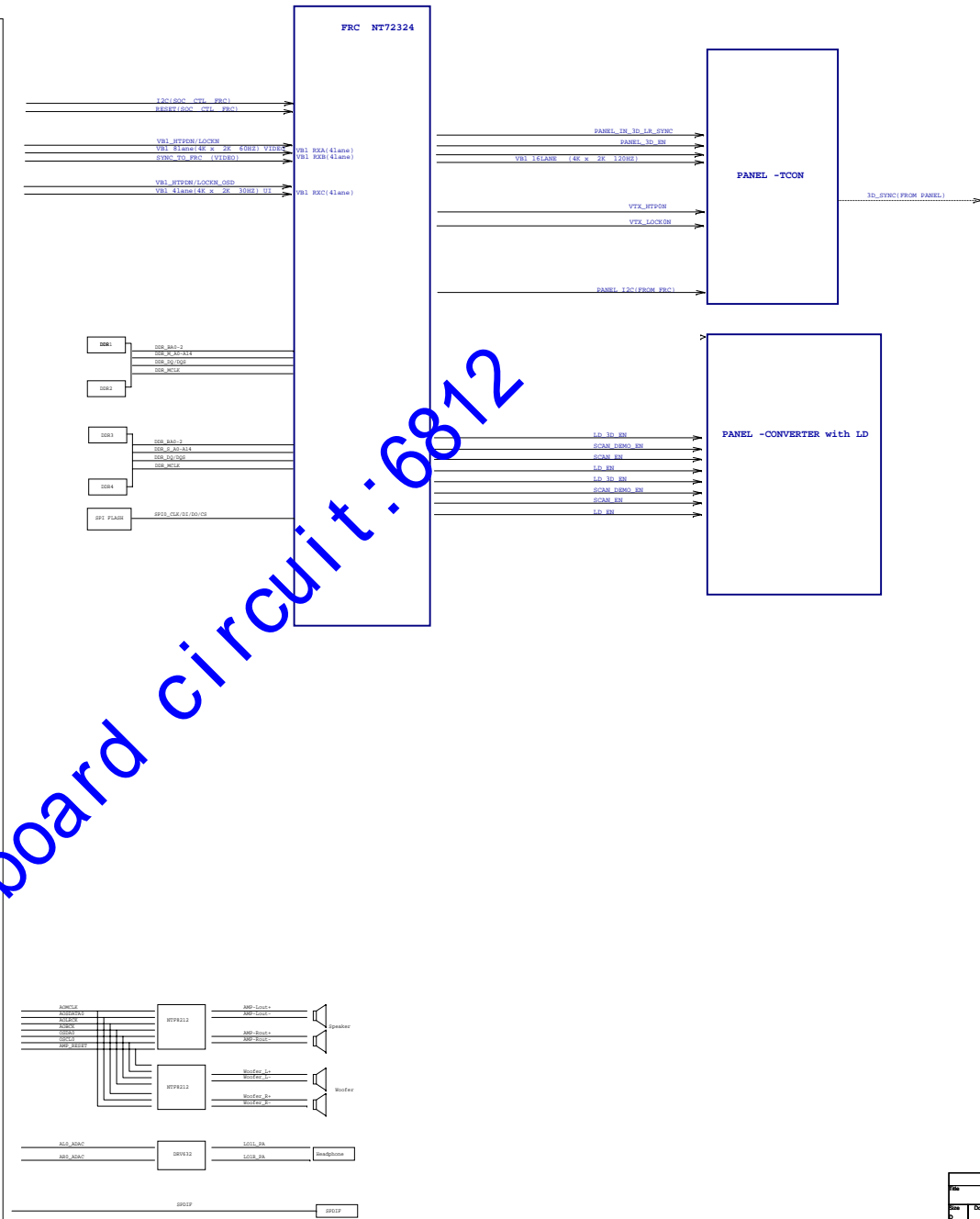
USB2.0端口增加100u电容，尽快靠近端口放置

main board circuit: 6812

Title<Title>		
SizeA	Document Number<Doc>	Rev<RevCode>
Date:	Tuesday, November 03, 2015	Sheet 1 of 1



MT5657



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_MISTR1	CI Interface	CI_MISTR1 (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

main board circuit 6812

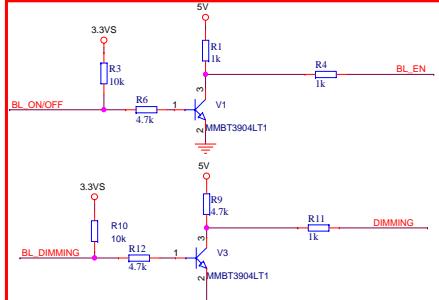
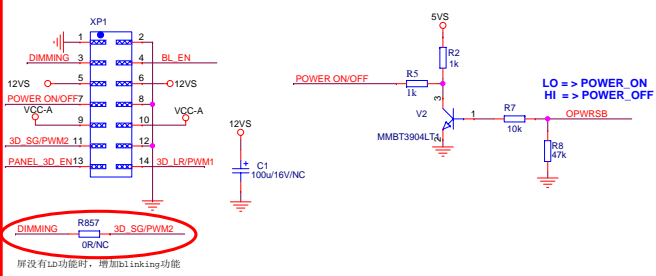
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PIN NAME	Function define	GPIO Function
ADIN0_SRV	Function Select	SCART_FS
ADIN1_SRV	KEY_PAD	KEY_PAD0
ADIN2_SRV	KEY_PAD	KEY_PAD1
ADIN3_SRV	MHL Over Current Protect	USB_MHL_OC
ADIN4_SRV	USB over current detect	USB_OC_P0/P1
ADIN5_SRV	USB over current detect	USB_OC_P2/P3
ADIN6_SRV	Demod	RF_AGCI
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

MAIN POWER



(5,6,7,8,9,10,11,12,13,14,15,16,17,18,19,20,21,22) GND

(15) BL_DIMMING

(15) BL_ON/OFF

(5) OPWRSB

(21) 3D_SG/PWM2

(20,21) PANEL_3D_EN

(21) 3D_LR/PWM1

BL_DIMMING

BL_ON/OFF

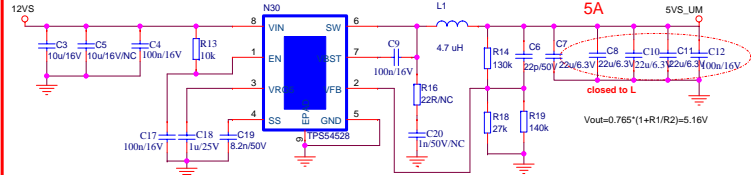
OPWRSB

3D_SG/PWM2

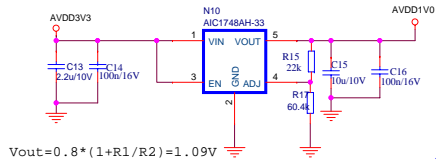
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3D_LR/PWM1

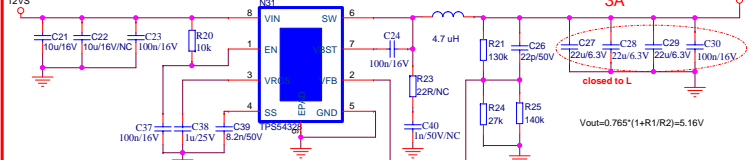
12V-->5V



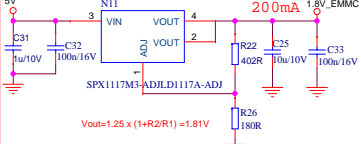
AVDD1V0



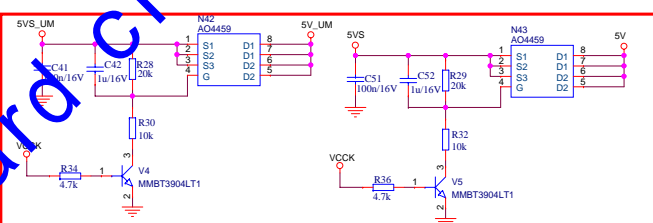
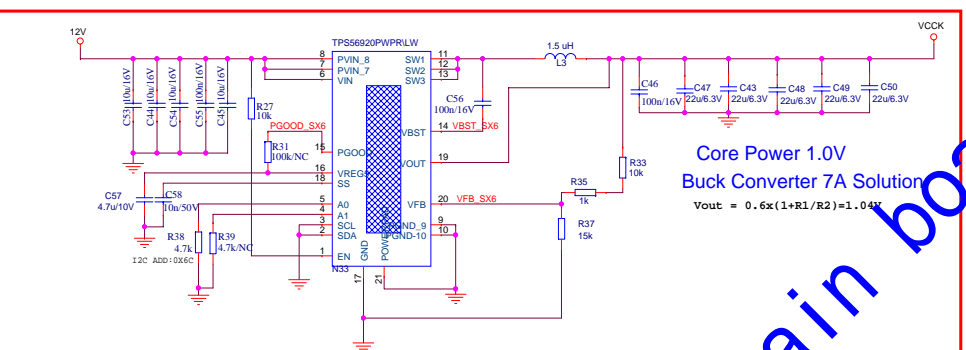
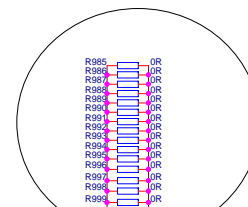
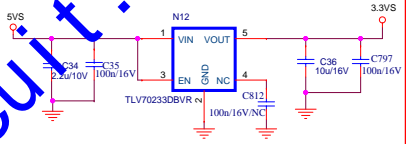
12V-->5V



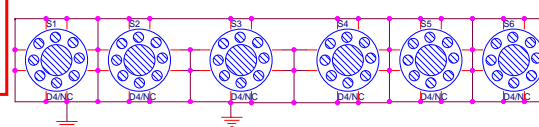
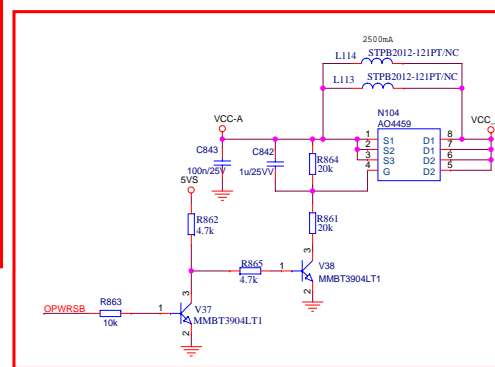
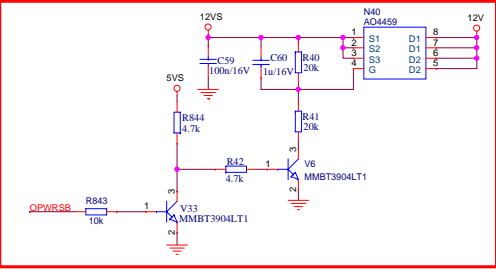
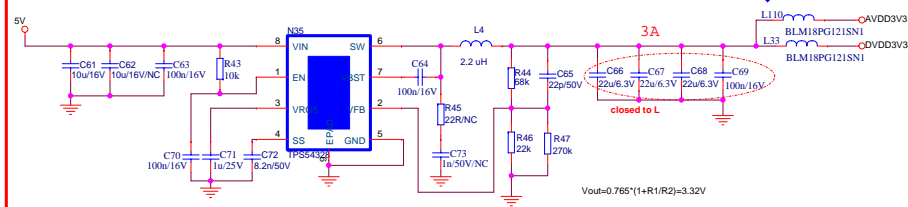
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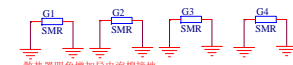
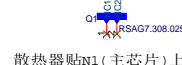
STANDBY POWER 3V3SB



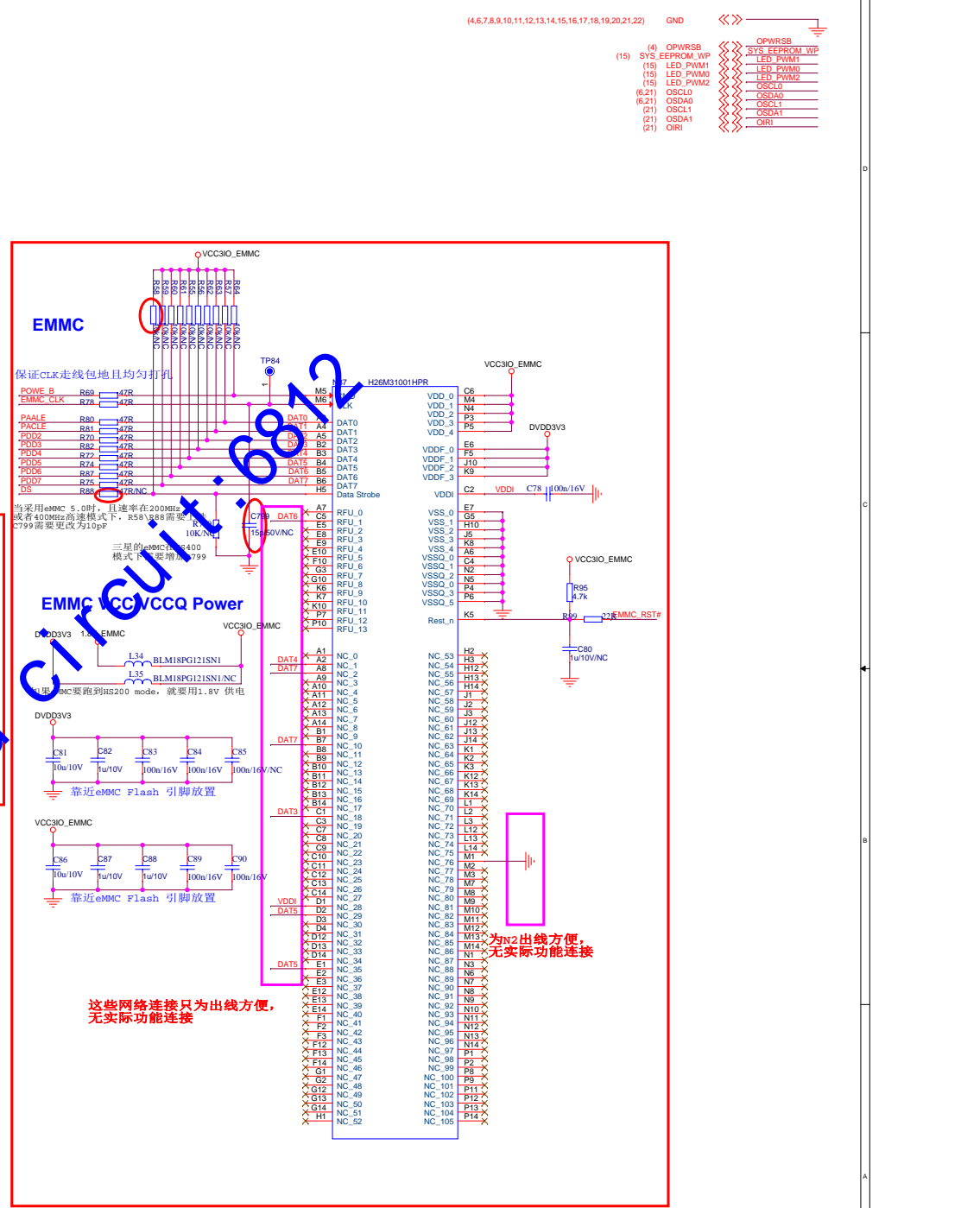
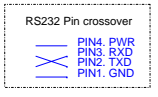
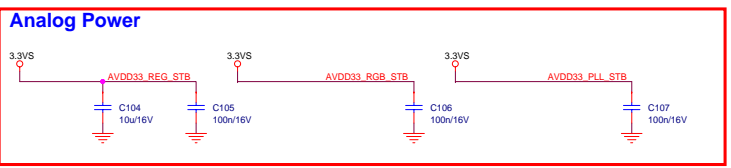
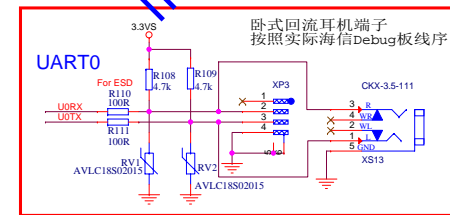
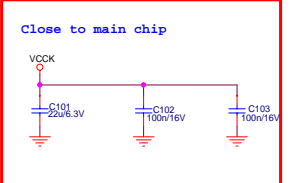
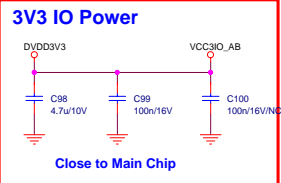
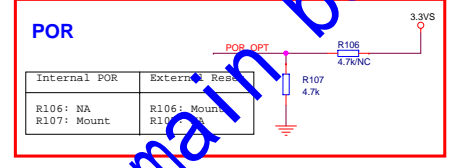
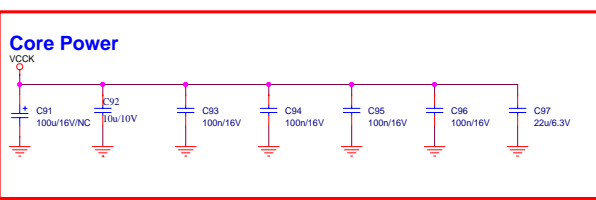
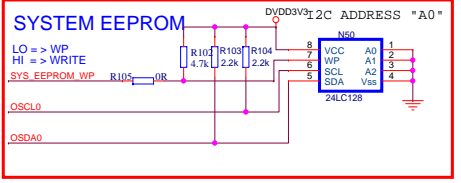
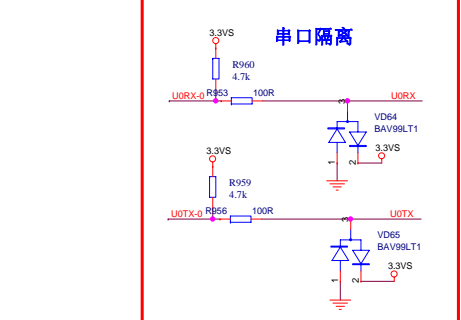
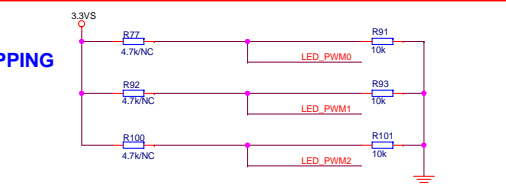
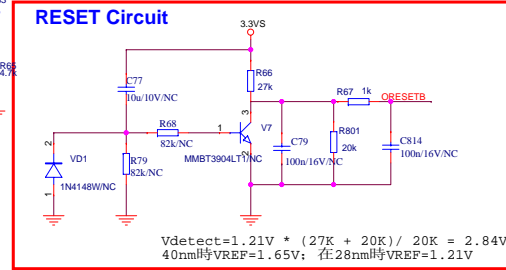
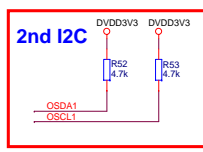
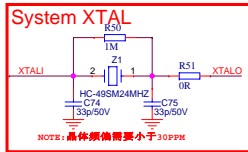
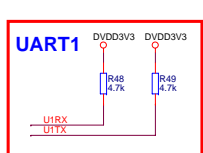
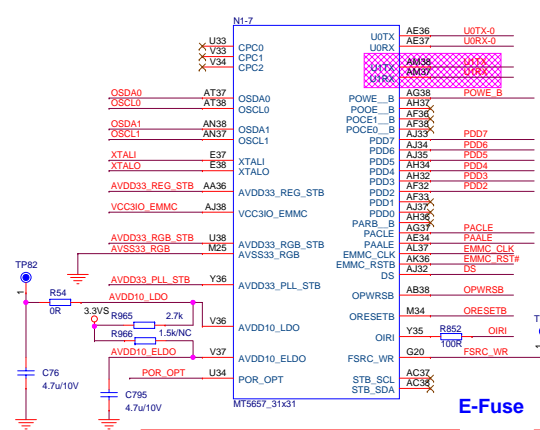
DIGITAL POWER DVDD3V3

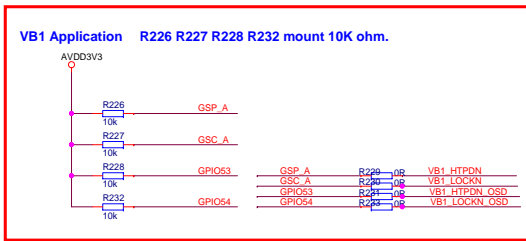
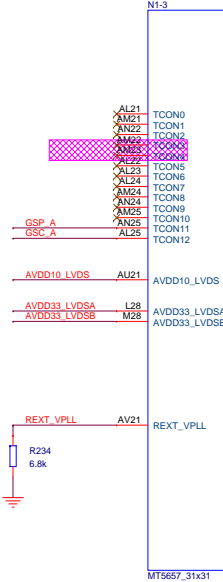


SMcontacts



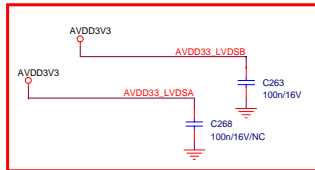
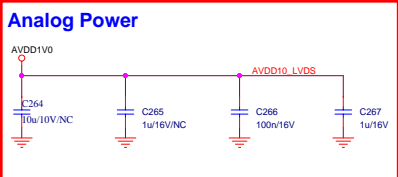
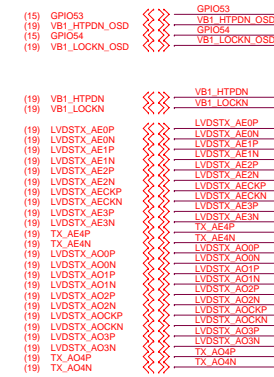
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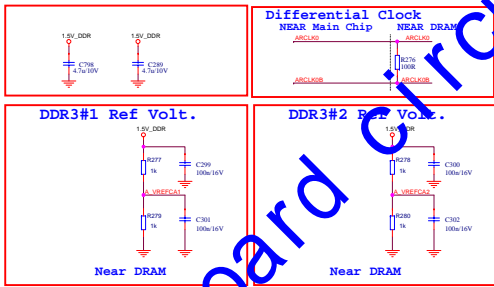
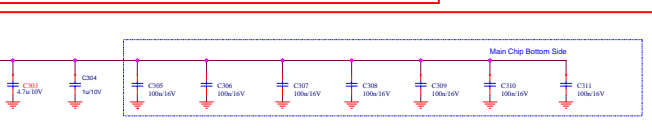


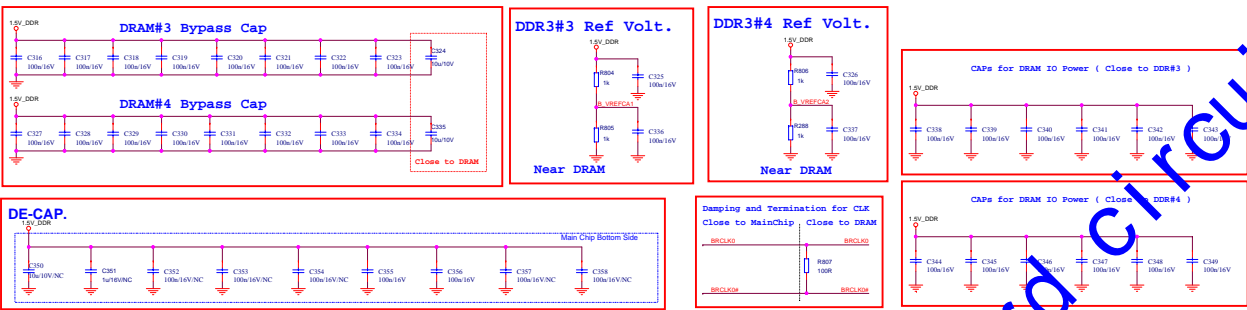
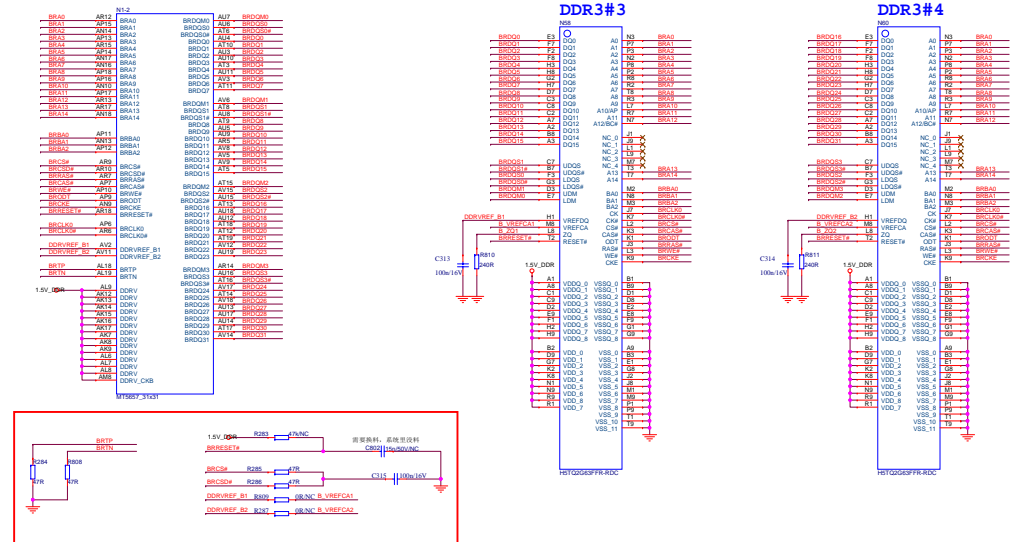
LVDS
C239~ C262 mount 0 ohm.

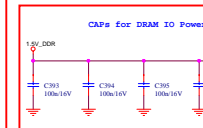
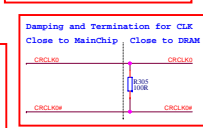
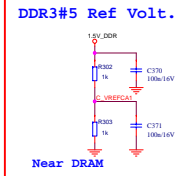
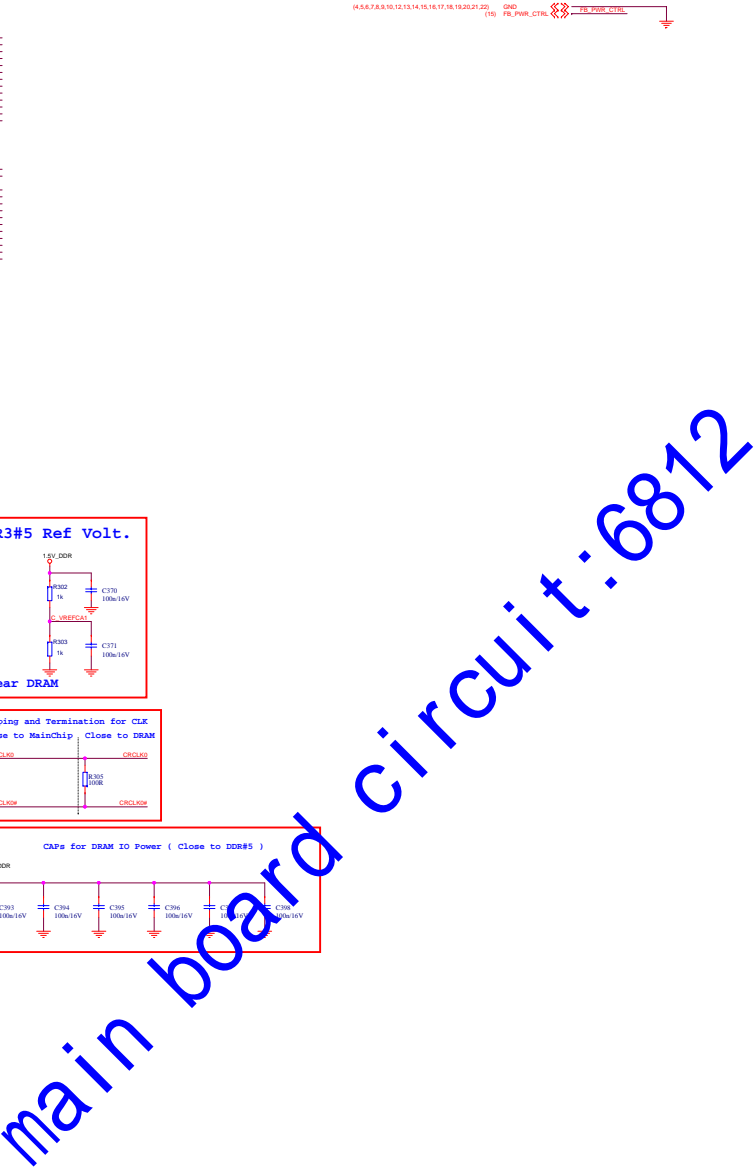
VB1
C239~ C262 mount 0.1uF.

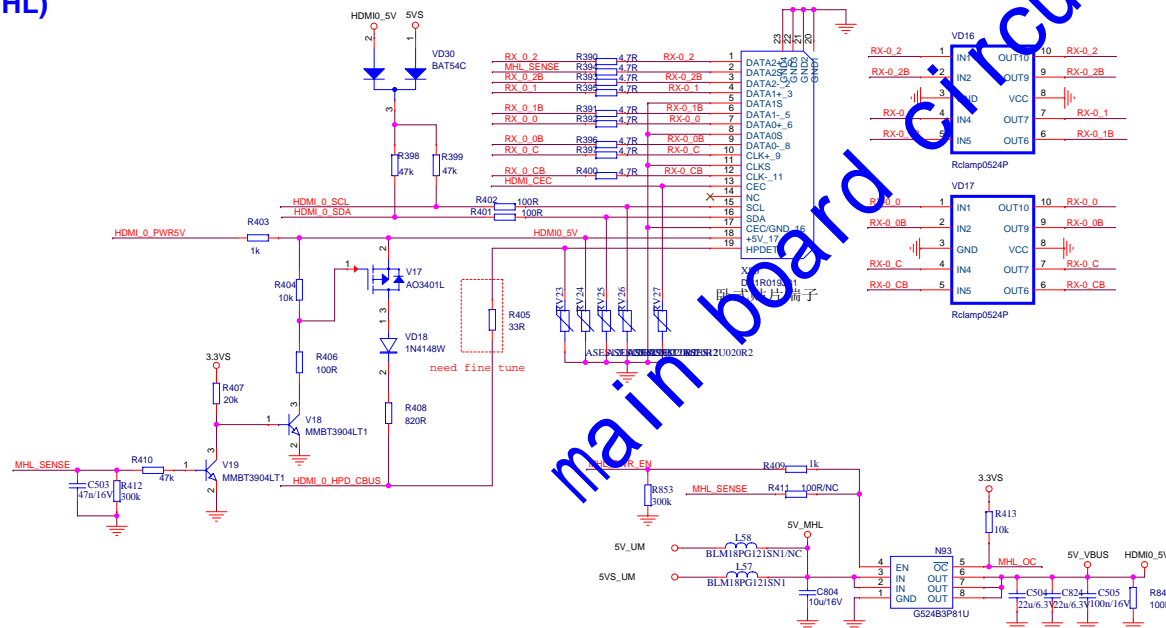
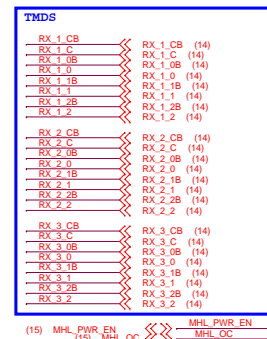
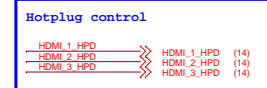
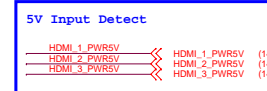
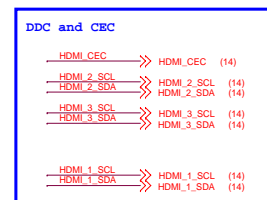
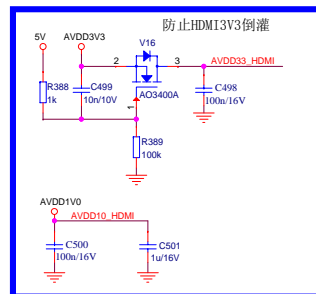


	Port AO						Port AE					
LVDS(Ball name)	AO0	AO1	AO2	AOCK	AO3	AO4	AE0	AE1	AE2	AECK	AE3	AE4
VB1(12Lane)	CH0	CH1	CH2	CH3	CH4	CH5	CH6	CH7	CH8	CH9	CH10	CH11

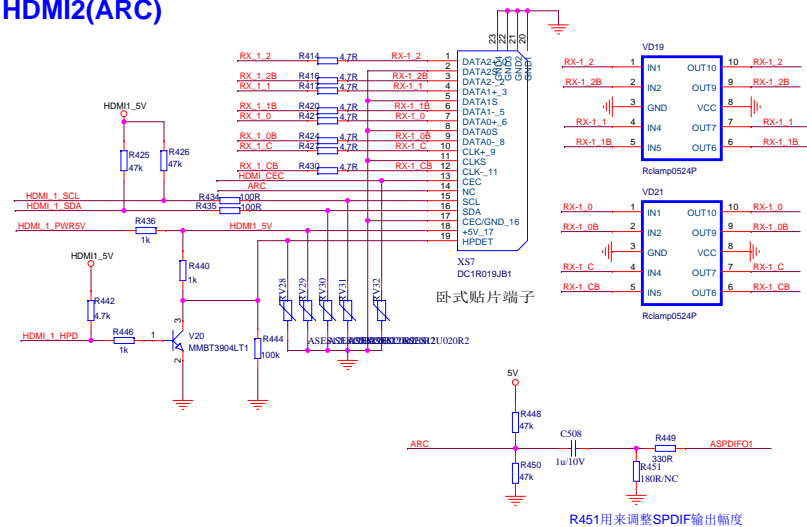




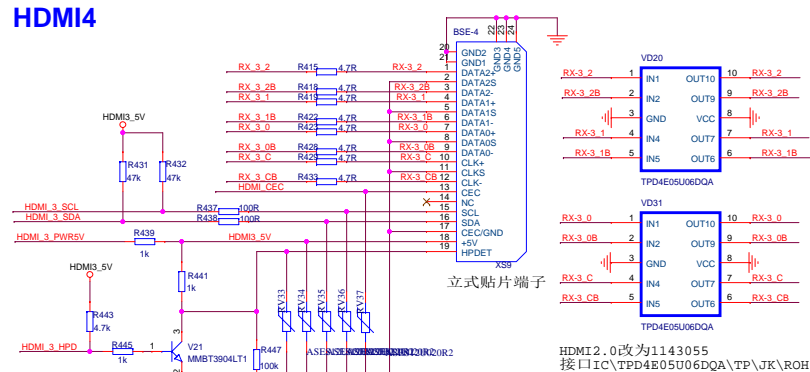




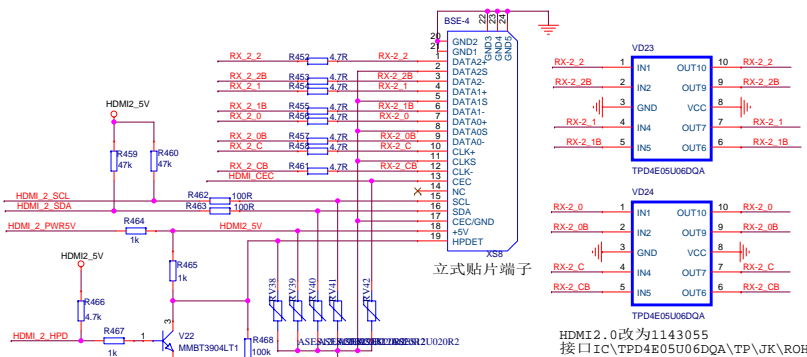
HDMI2(ARC)



HDMI4

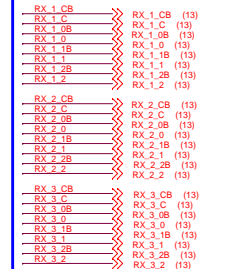


HDMI3



(4,5,6,7,8,9,10,11,12,13,15,16,17,18,19,20,21,22) GND <<> GND

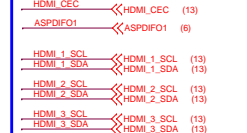
TMS



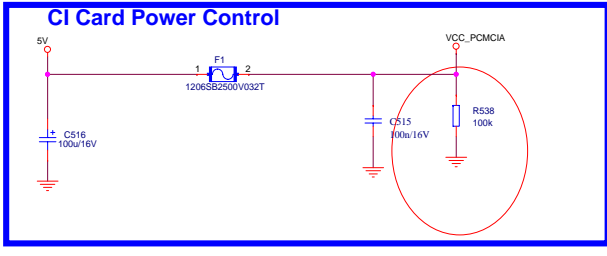
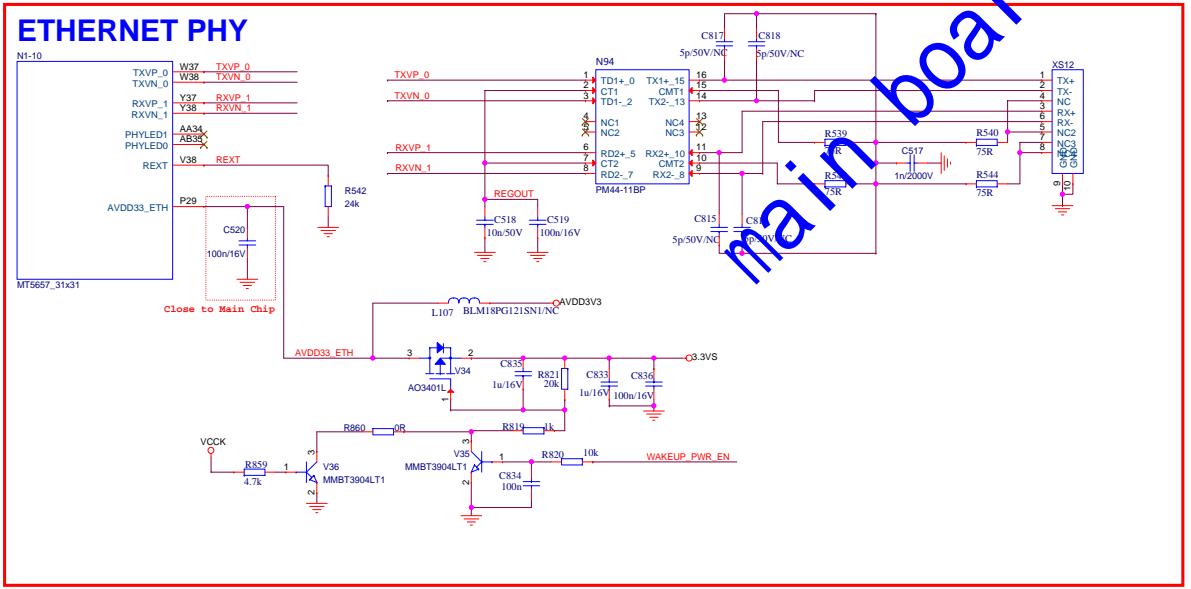
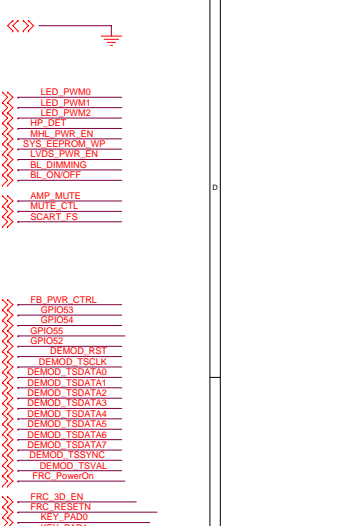
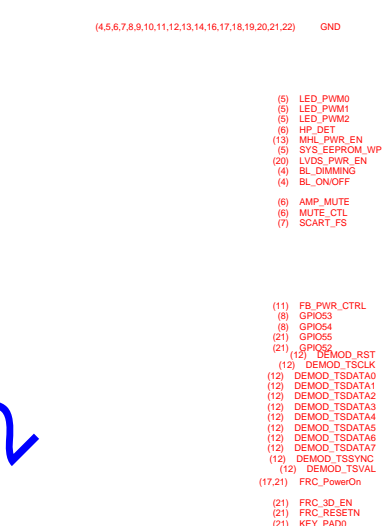
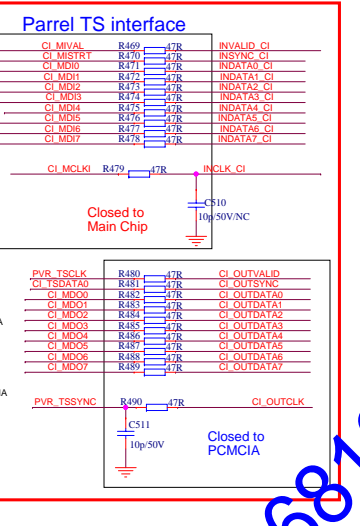
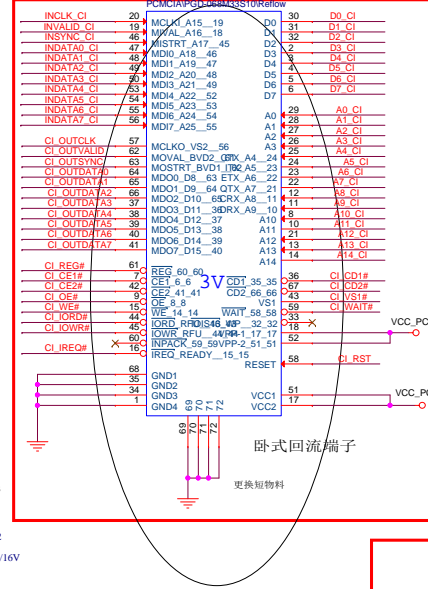
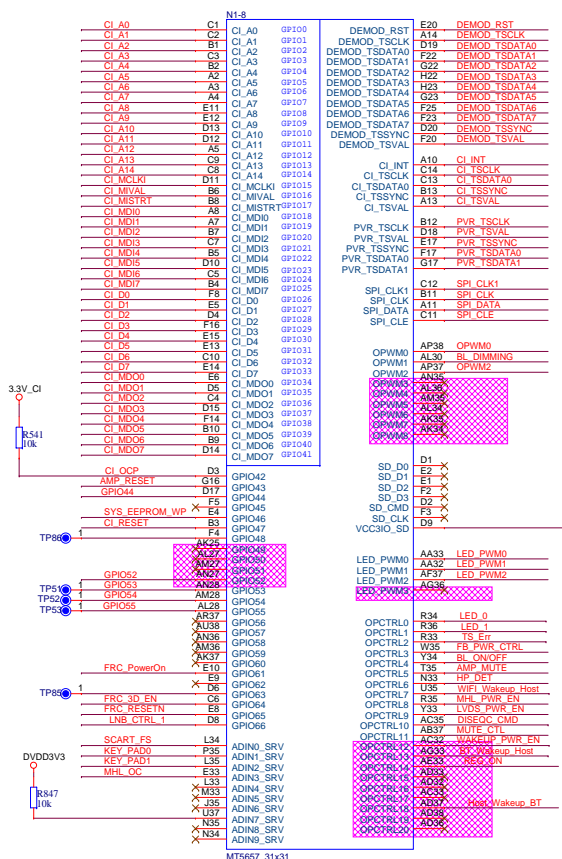
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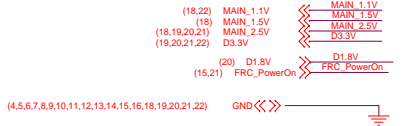
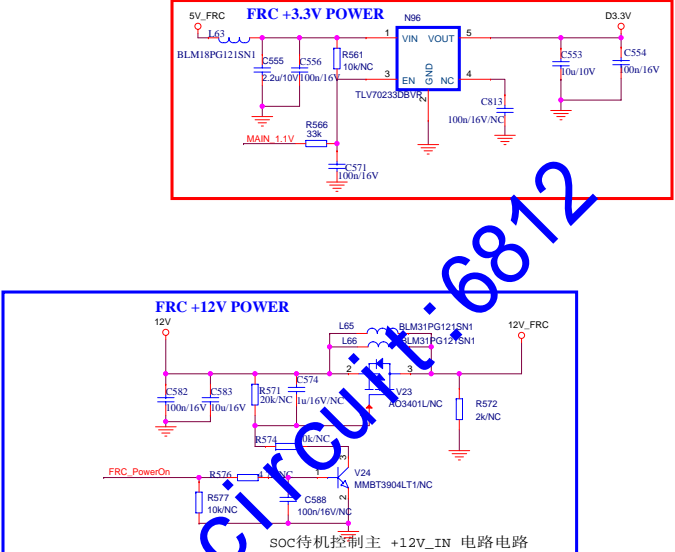
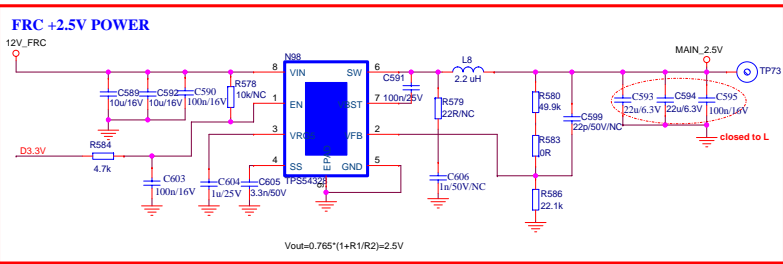
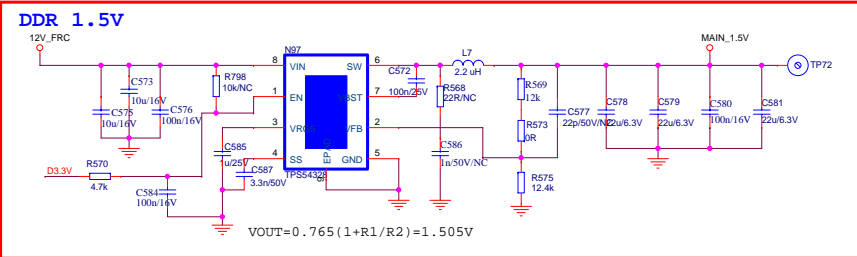
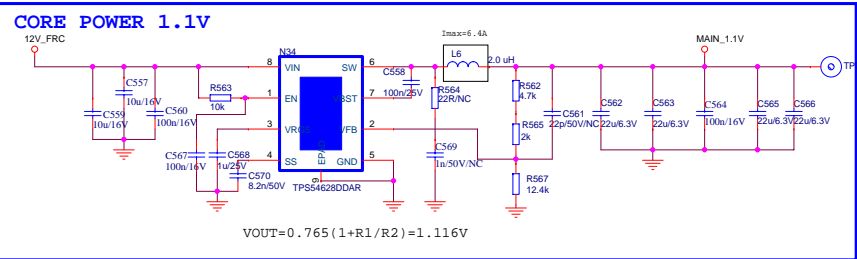
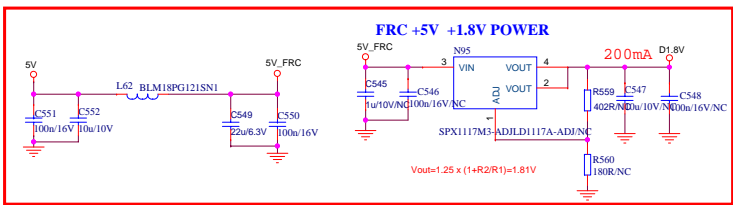


DDC and CEC ARC

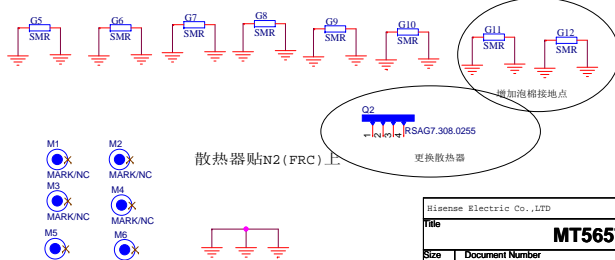


main board circuit: 6812



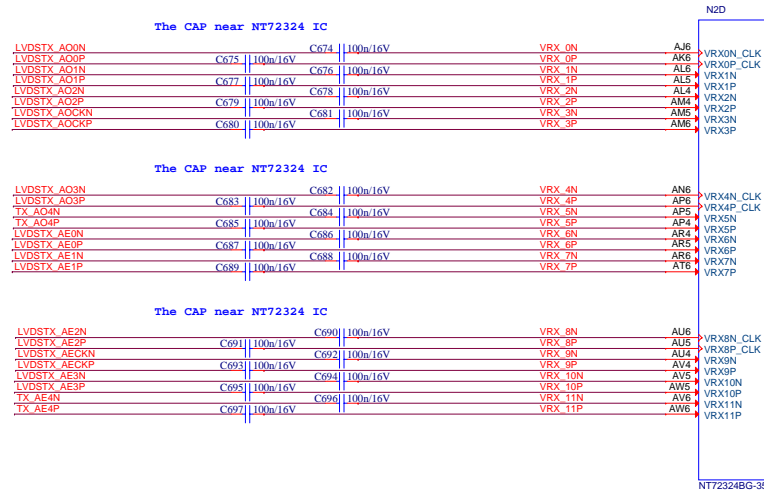


main board circuit: 6812



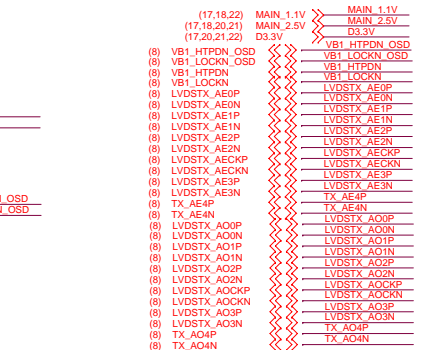
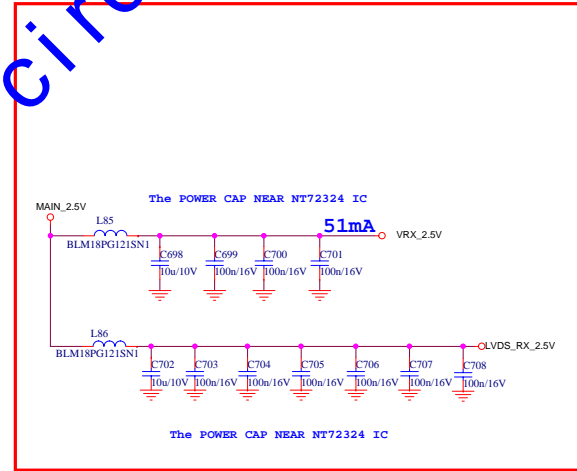
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VB1 RX only Lane0, 4 and 8 can generate reference clock.
Please connect at least one of the Lane0/4/8

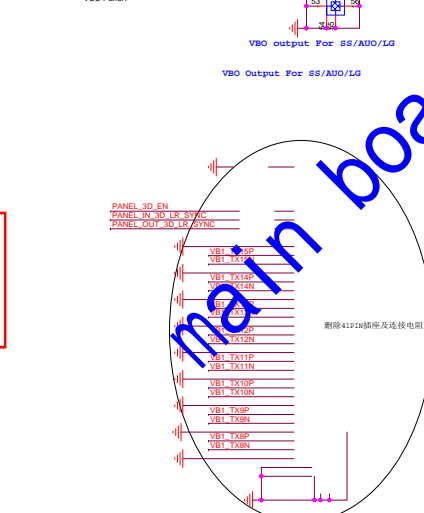
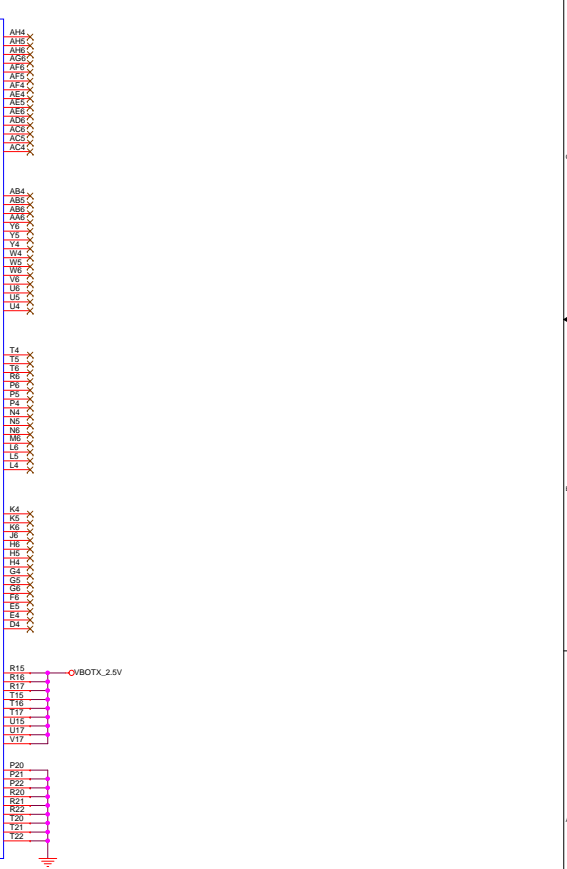
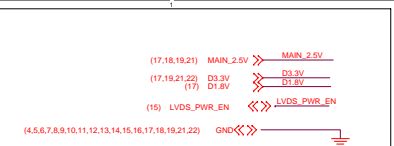


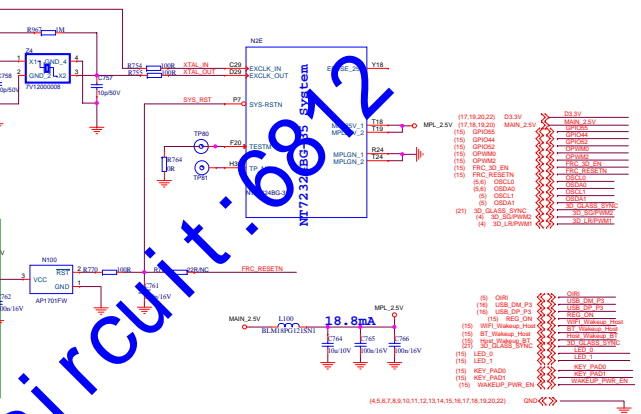
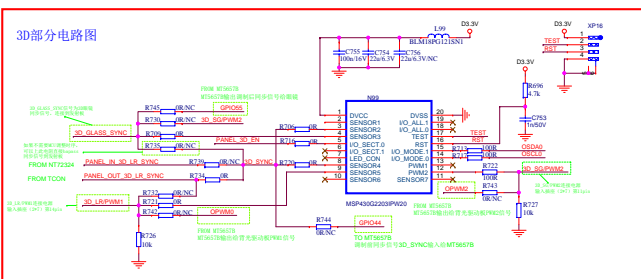
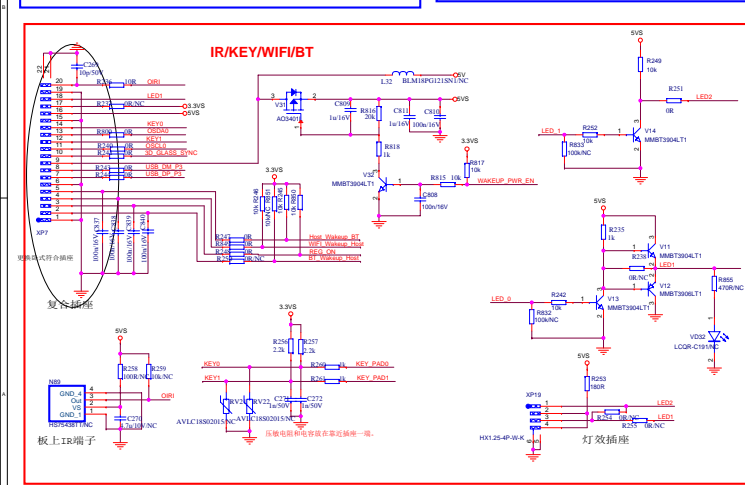
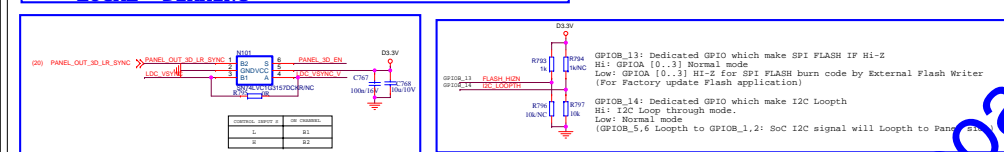
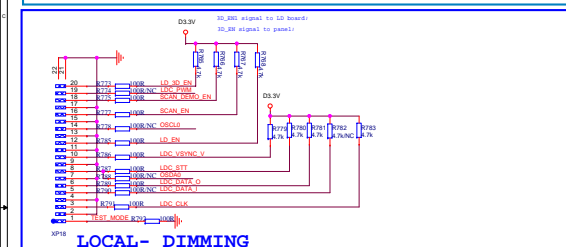
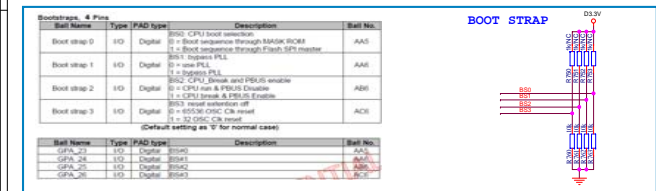
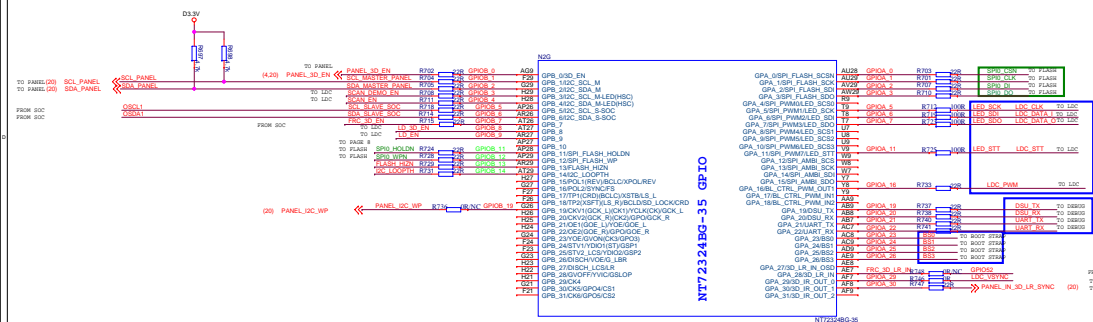
NT72324BG-35 VRX 12 Lanes

NT72324BG-35

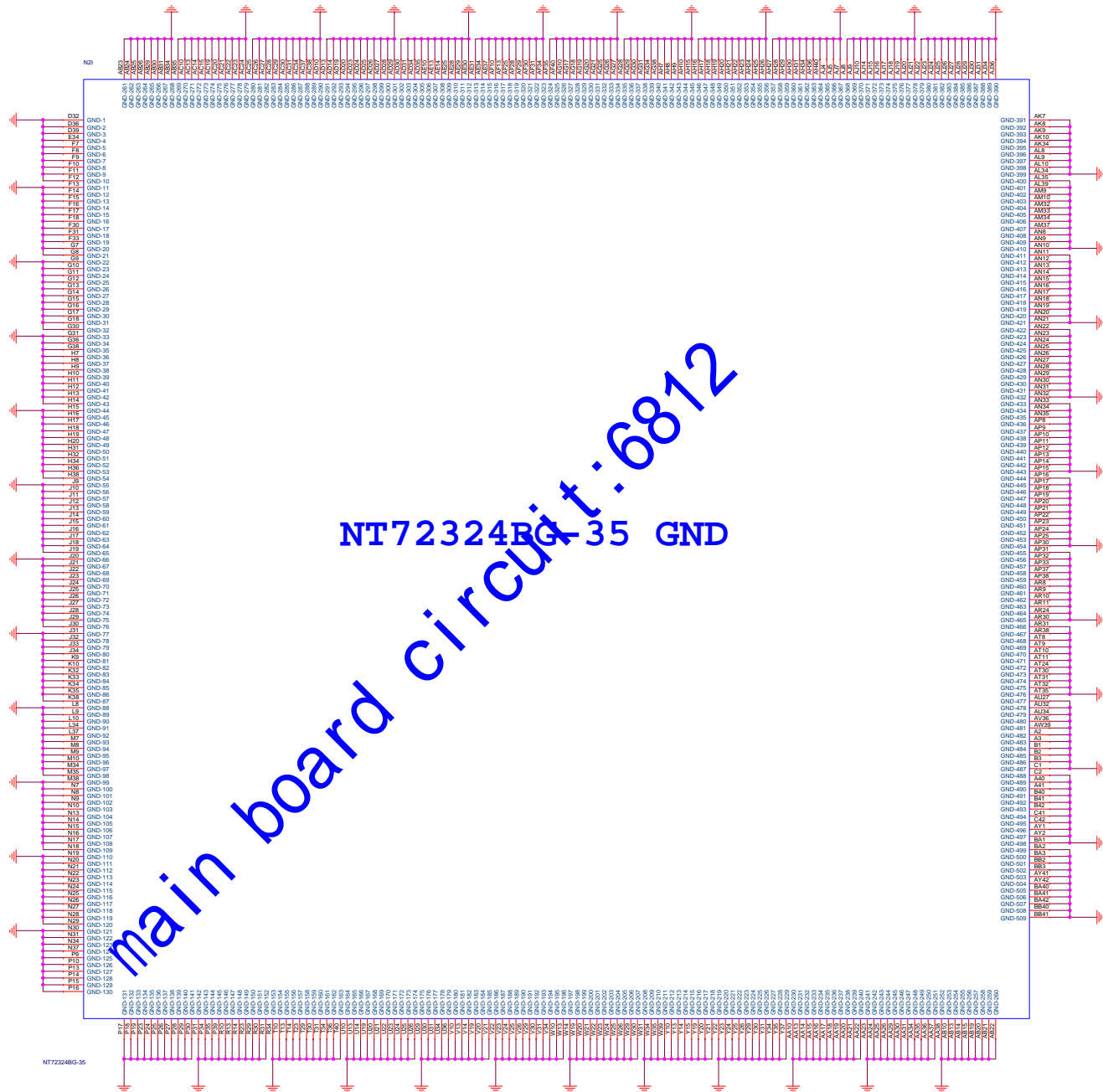
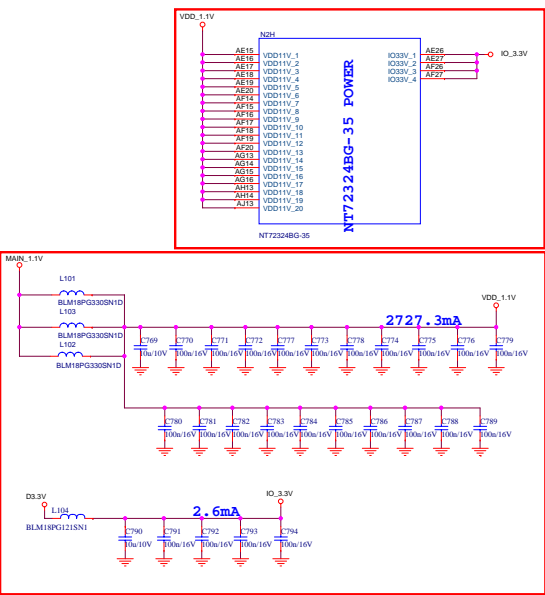


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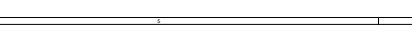
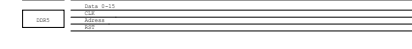
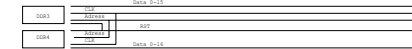
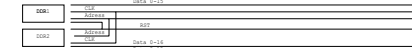
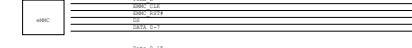
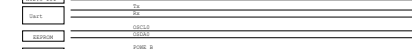
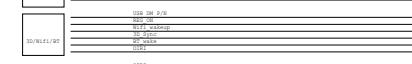
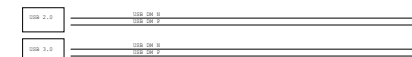
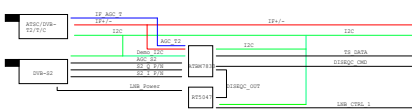
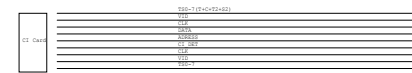
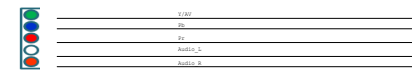
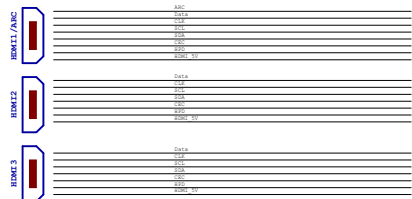




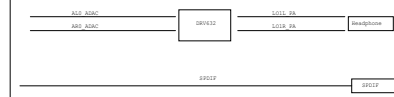
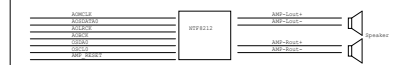
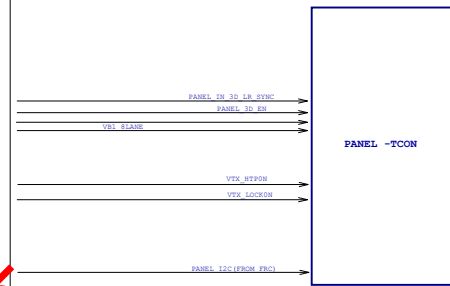
main board circuit: 6812



main board circuit : 6812



MT5657



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_MISTR1	CI Interface	CI_MISTR1 (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

PIN NAME	Function define	GPIO Function
ADIN0_S1RV	Function Select	SCART_FS
ADIN1_S1RV	KEY_PAD	KEY_PAD0
ADIN2_S1RV	KEY_PAD	KEY_PAD1
ADIN3_S1RV	MHL Over Current Protect	USB_MHL_OC
ADIN4_S1RV	USB over current detect	USB_OC_P0/P1
ADIN5_S1RV	USB over current detect	USB_OC_P2/P3
ADIN6_S1RV	Demod	RF_AGC1
ADIN7_S1RV	SD Card Detect	SD_DET
ADIN8_S1RV	—	—
ADIN9_S1RV	—	—

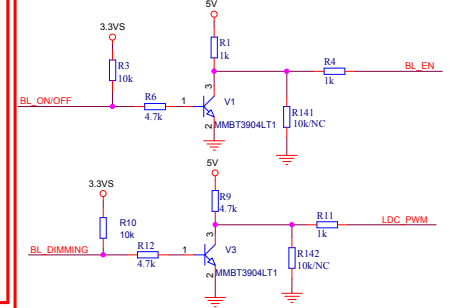
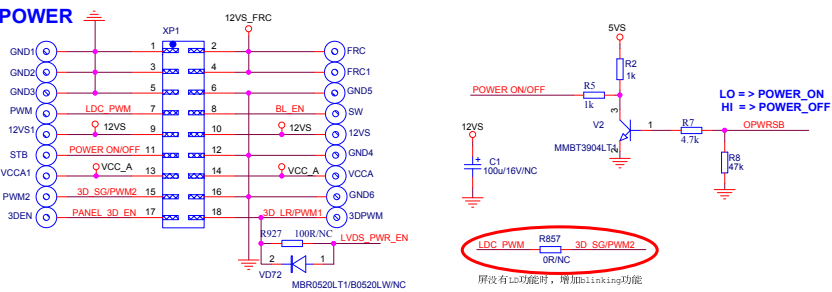
PCBA version ID

PIN NAME	Function define	GPIO Function
OPWM0	—	—
OPWM1	Backlight DIMMING	BL_DIMMING
OPWM2	LNA_AGC switch	LNASW_AGC5W
OPWM3	—	—
OPWM4	—	—
OPWM5	—	—
OPWM6	—	—
OPWM7	—	—
OPWM8	—	—

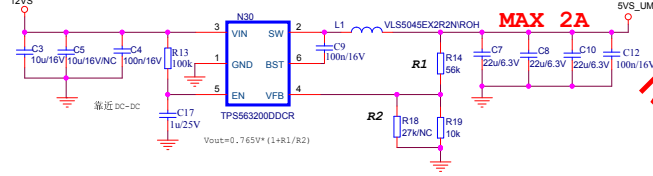
PIN NAME	Function define	GPIO Function
LED_PWM0	Strapping / Standby mode LED	Strap[3] / LED_PWM0
LED_PWM1	Strapping / Power On LED	Strap[2] / LED_PWM1
LED_PWM2	Strapping	Strap[1]
LED_PWM3	—	—

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

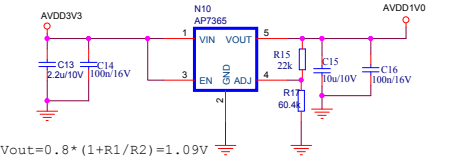
MAIN POWER



12V-->5VS_UM

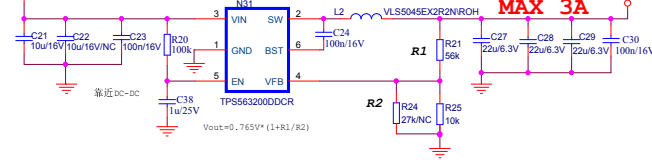


AVDD1V0

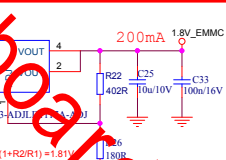


- (15) BL_DIMMING <--> BL_DIMMING
- (15) BL_ON/OFF <--> BL_ON/OFF
- (5) OPWRSB <--> OPWRSB
- (8) 3D_SG/PWM2 <--> 3D_SG/PWM2
- (8) PANEL_3D_EN <--> PANEL_3D_EN
- (8) 3D_LR/PWM1 <--> 3D_LR/PWM1
- (8) LDC_PWM <--> LDC_PWM
- (15) LVDS_PWR_EN <--> LVDS_PWR_EN

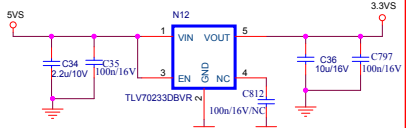
12V-->5VS



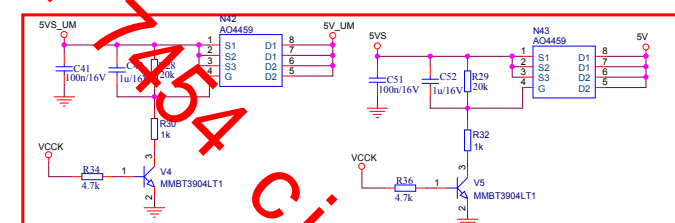
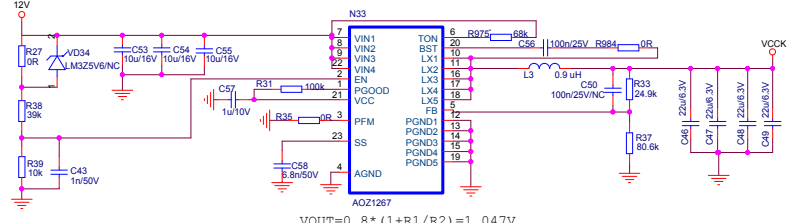
eMMC 1V8



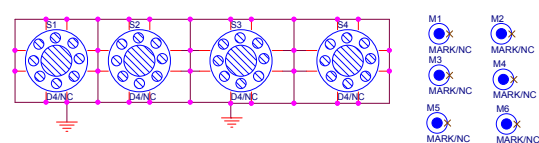
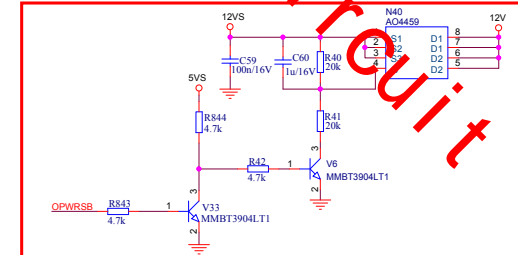
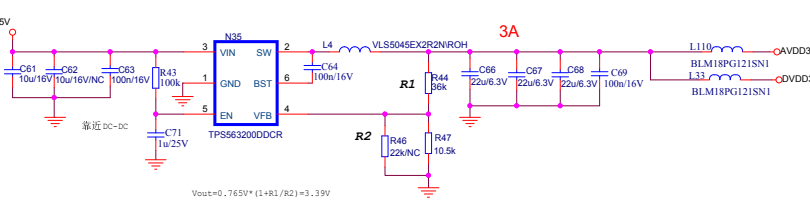
STANDBY POWER 3V3SB



1.0V for Core Power

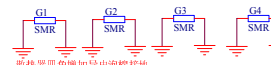


DIGITAL POWER DVDD3V3

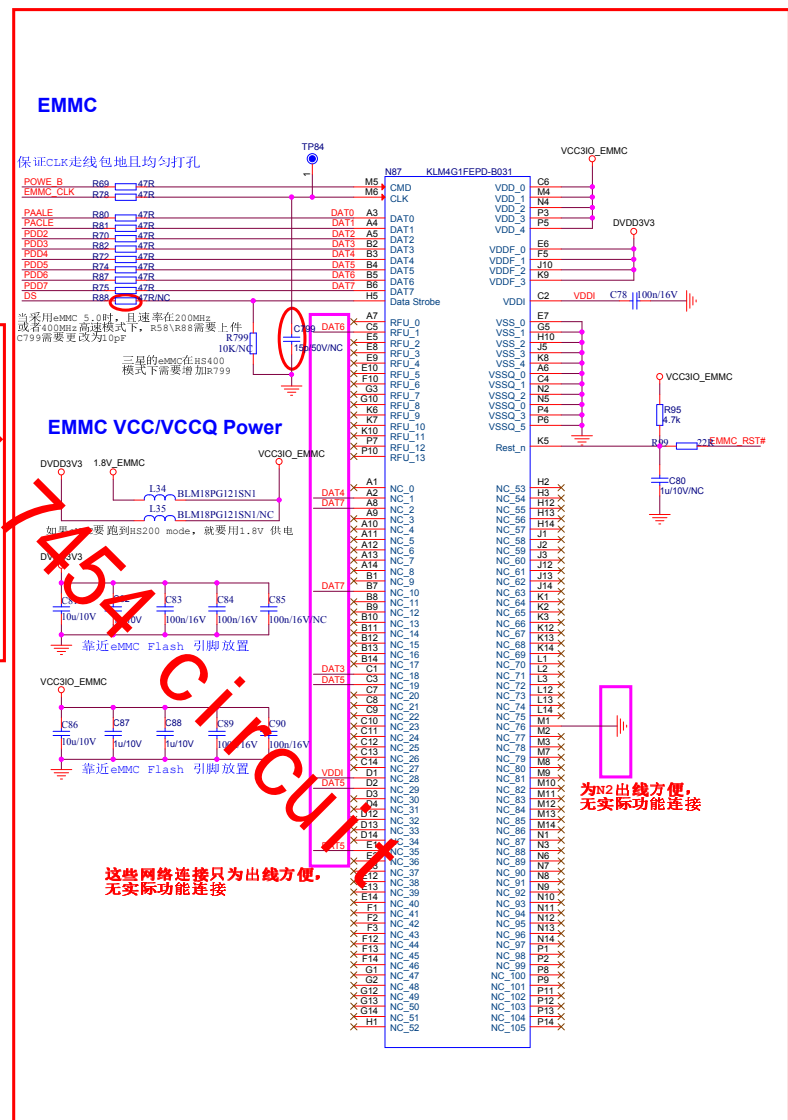
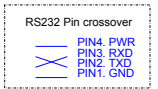
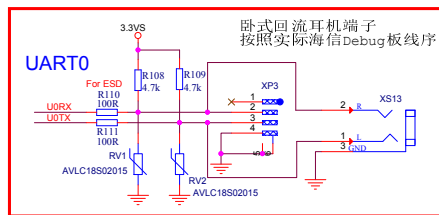
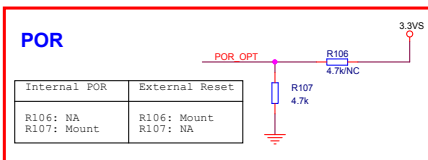
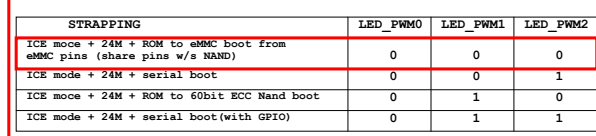
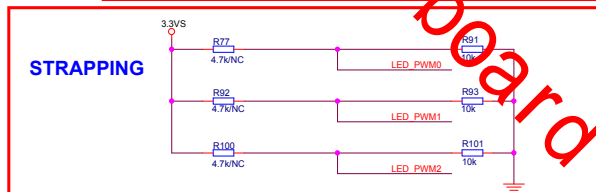
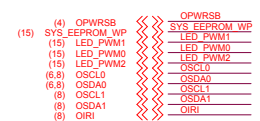


散热器贴N1 (主芯片) 上

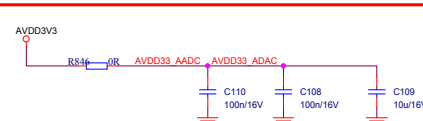
SMcontacts



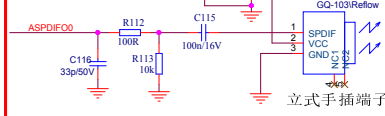
Wisense Electric Co., LTD		
Title		
MT5657		
Size	Document Number	Rev
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Date:	Tuesday, December 06, 2016	Sheet 4 of 22



Analog Power



SPDIF OUT

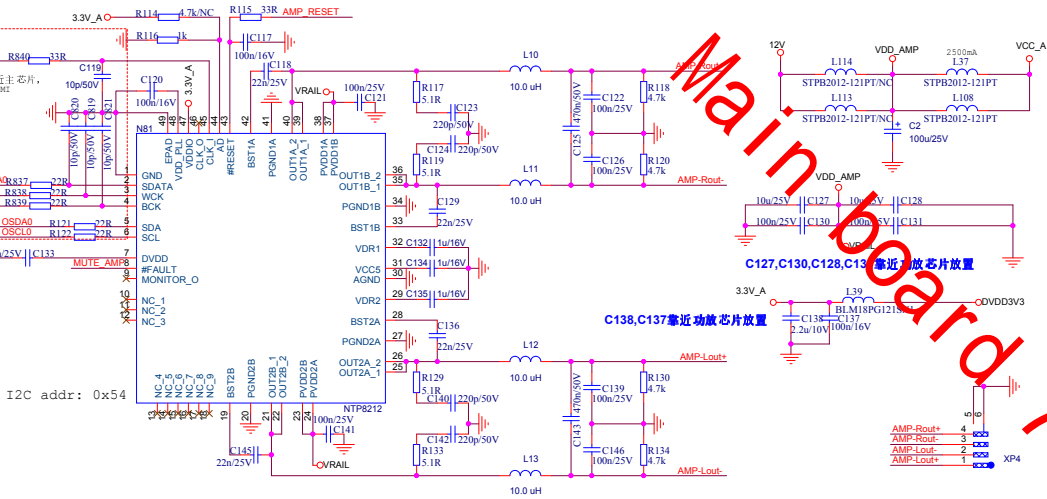


立式手插端子

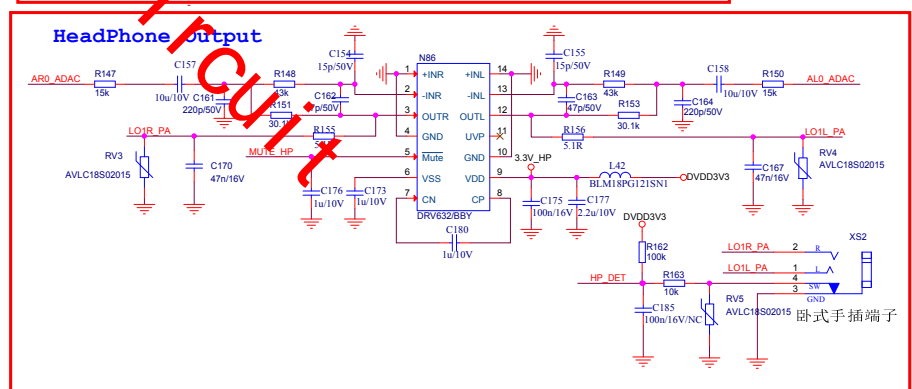
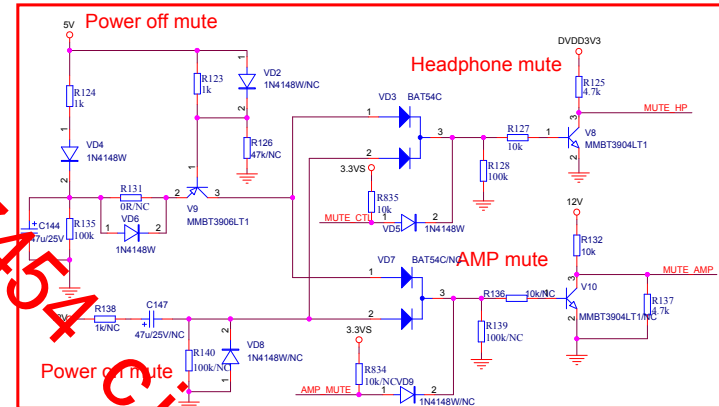
(15) HP_DET <<< HP_DET
(15) MUTE_CTL <<< MUTE_CTL
(15) AMP_MUTE <<< AMP_MUTE
(5,8) OSDL0 <<< OSDL0
(5,8) OSD0A0 <<< OSD0A0
(7) AIN_R0 <<< AIN_R0
(7) AIN_L0 <<< AIN_L0

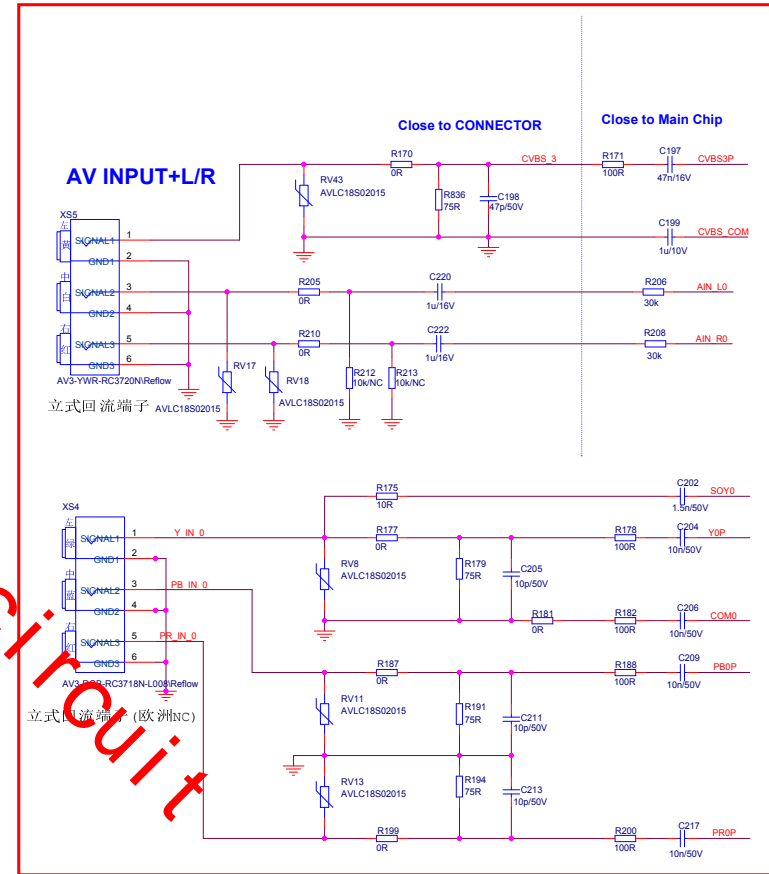
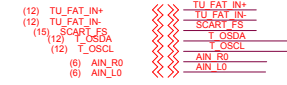
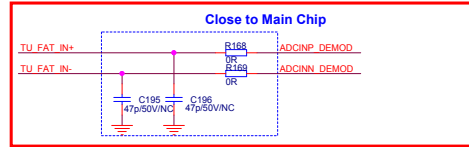
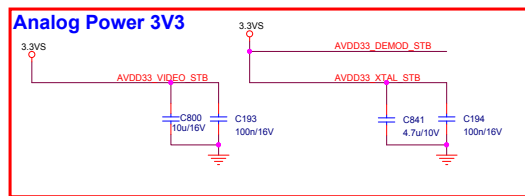
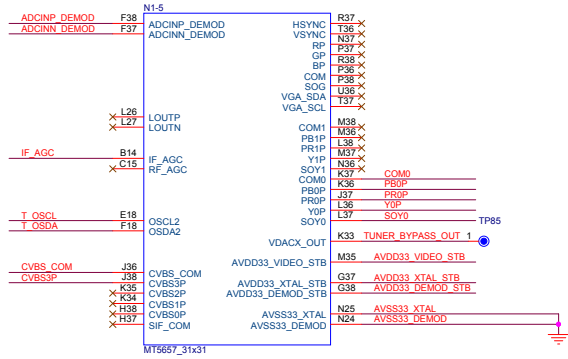
(15) AMP_RESET <<< AMP_RESET
(14) ASPDIF01 <<< ASPDIF01

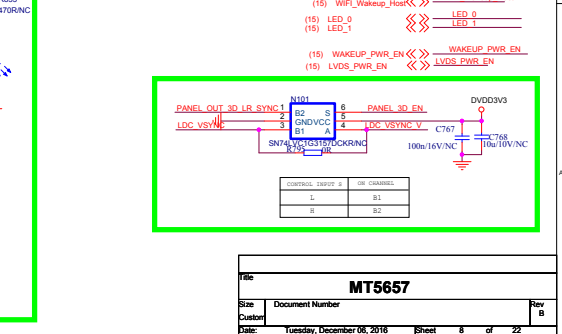
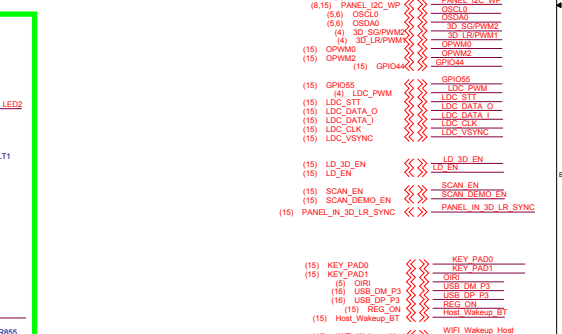
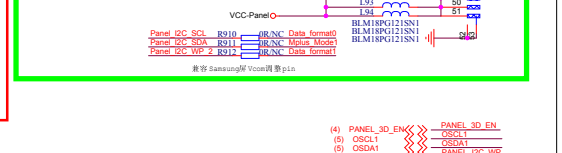
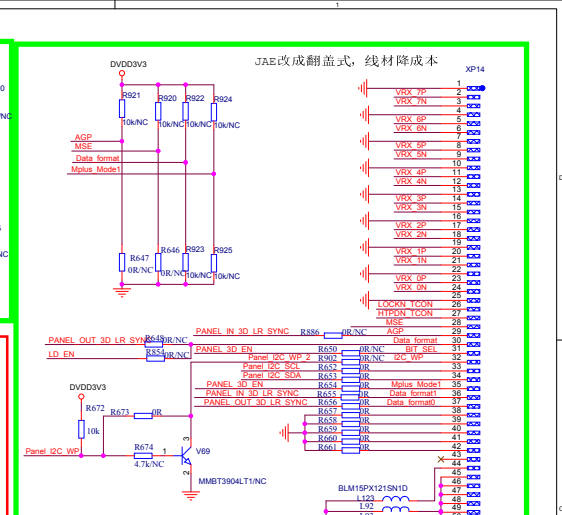
SPEAKER Amplifier

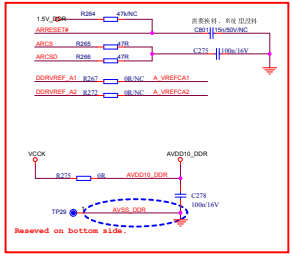


I2C addr: 0x54

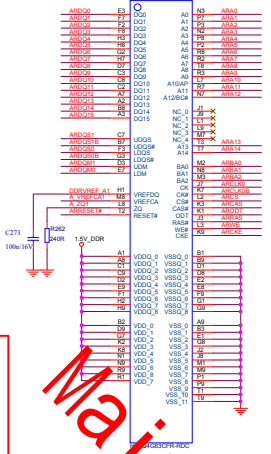
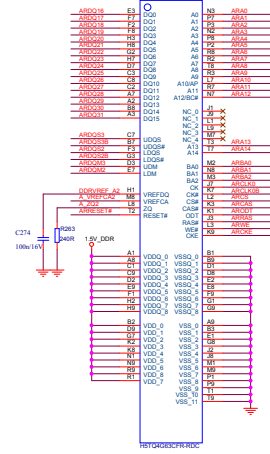








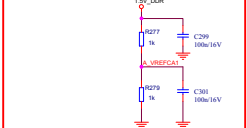
DDR3#1

DDR3#2
N57

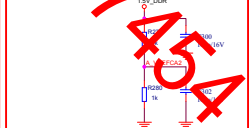
Differential Clock



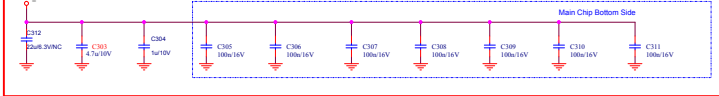
DDR3#1 Ref Volt.

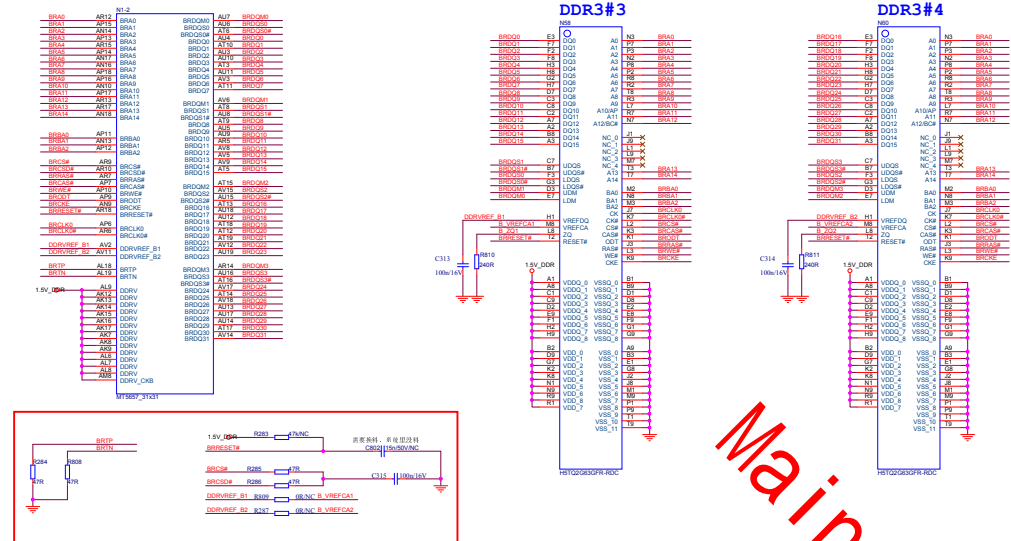


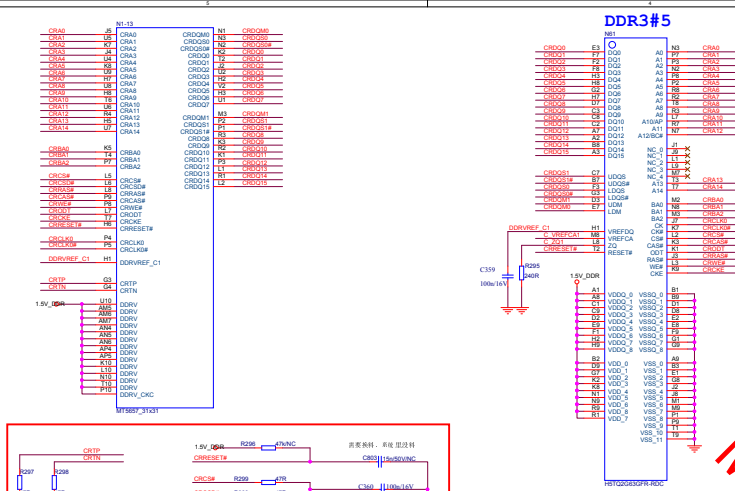
DDR3#2 Ref Volt.

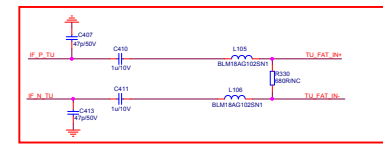
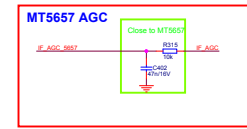
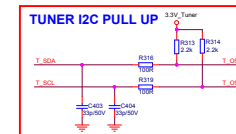
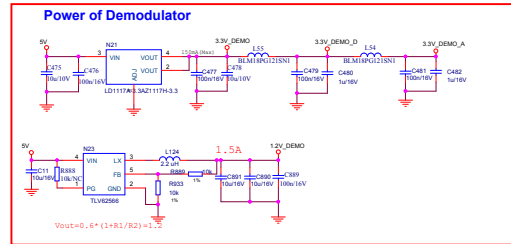
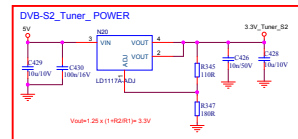
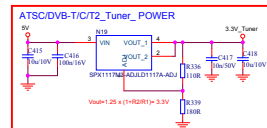


DE-CAP.
19V D00R

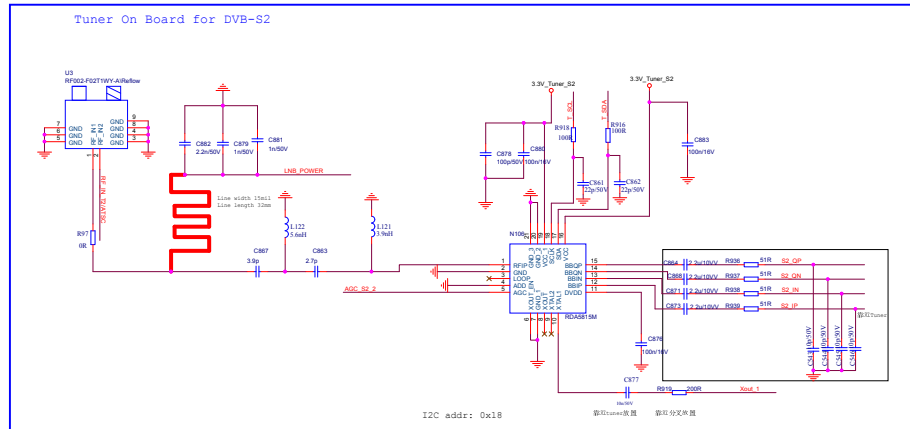
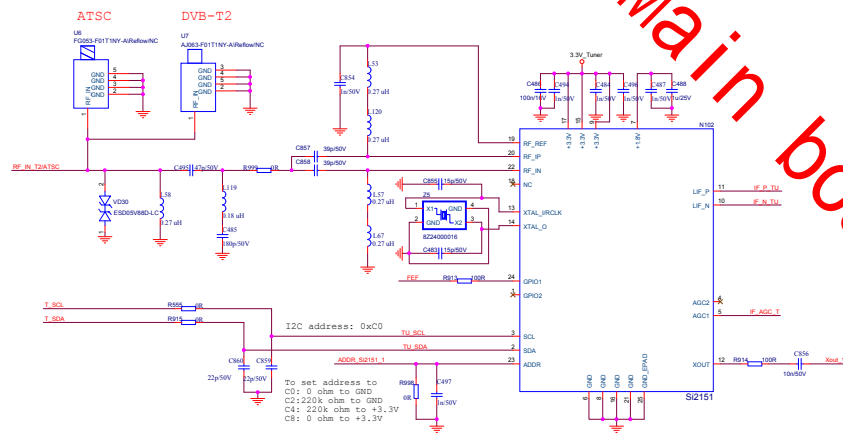




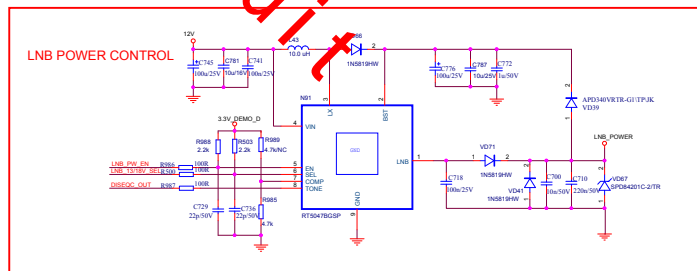
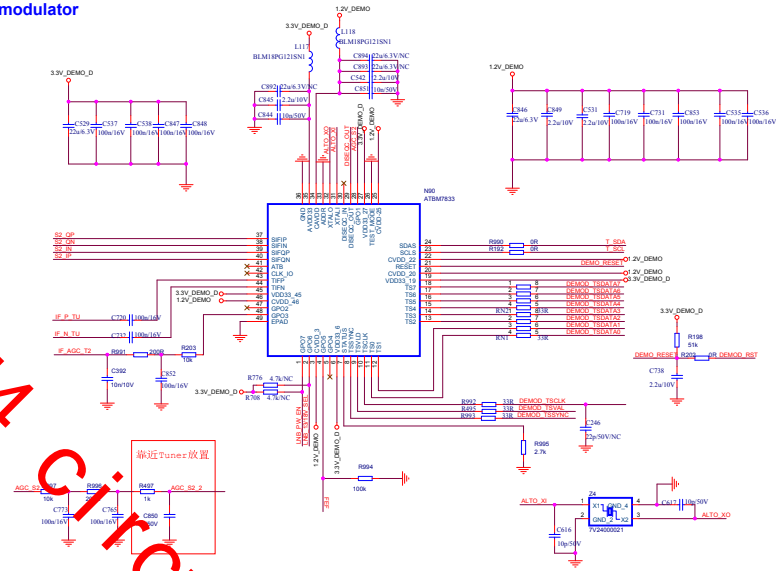


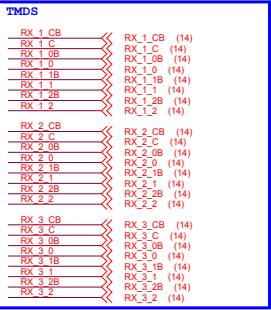
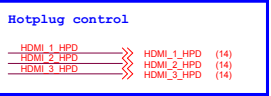
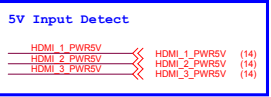
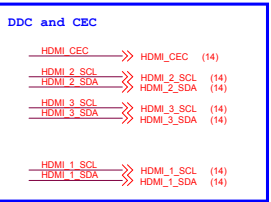
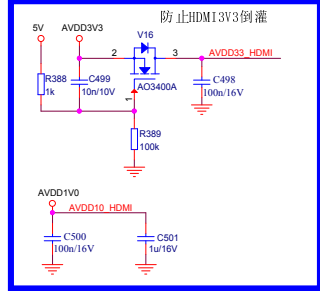
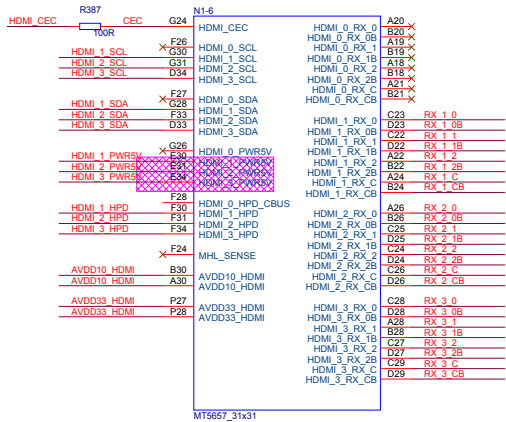


Tuner On Board for ATSC/DVB-T2/T/C



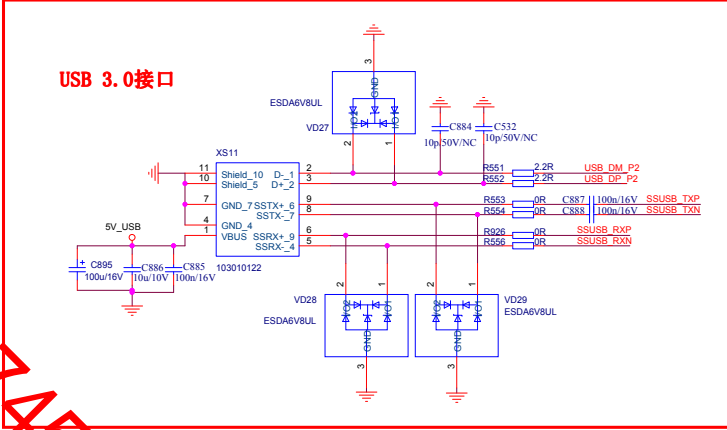
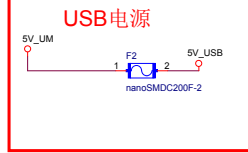
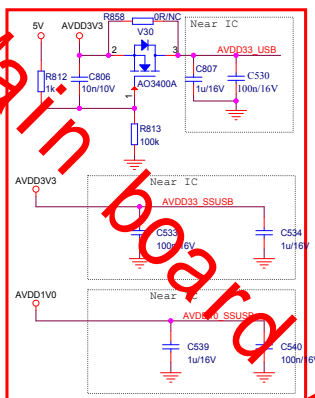
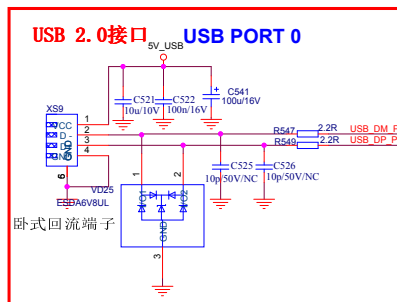
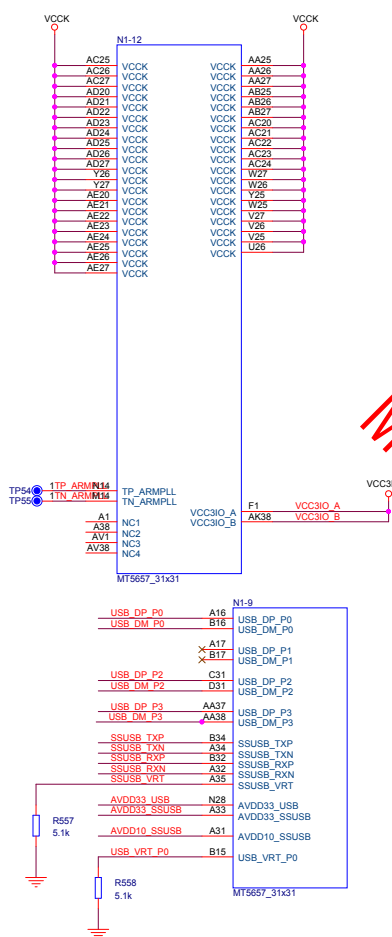
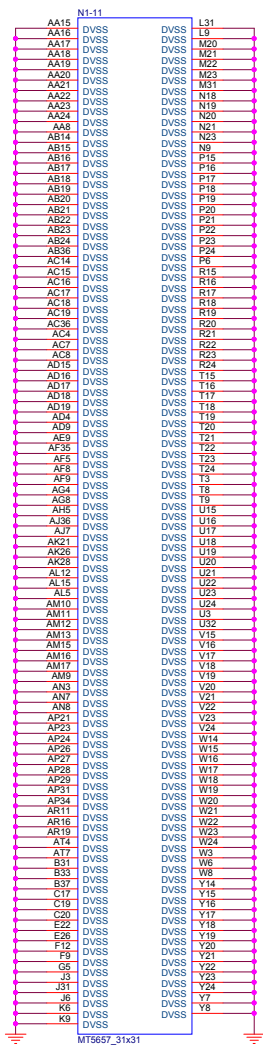
T2/S2 Demodulator





Main board 7454 circuit

HDMI1(MHL)---删除



(8) USB_DM_P3 <-> USB_DM_P3
(9) USB_DP_P3 <-> USB_DP_P3

Main board circuit