LCD Television

Service Manual

Chassis： MSD6586 (Hisense develop)

Version: V 1.01

Hisense Electric Co.，Ltd.

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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

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

1.1 Warning

1.1.1

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

1.1.2.

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

IMPORTANT:

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

1.1.3

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

1.1.4

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

1.1.5

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

-Note:

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

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

1.1.6

(1) Do not supply a voltage higher than that specified to this product. This may damage the product and may cause a fire.

(2) Do not use this product:

> High humidity areas

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

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

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

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

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

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

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

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

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

1.2 Notes

Notes on Safe Handling of the LCD panel and during service

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

• Before starting the work, secure a sufficient working space.

• At all times other than when adjusting and checking the product, be sure to turn OFF the POWER Button and disconnect the power cable from the power source of the TV during servicing.

• To prevent electric shock and breakage of PC board, start the servicing work at least 30 seconds after the main power has been turned off. Especially when installing and removing the power board, start servicing at least 2 minutes after the main power has been turned off.

• While the main power is on, do not touch any parts or circuits other than the ones specified. If any connection other than the one specified is made between the measuring equipment and the high voltage power supply block, it can result in electric shock or may trip the main circuit breaker When installing the LCD module in, and removing it from the packing carton, be sure to have at least two persons perform the work.

• When the surface of the panel comes into contact with the cushioning materials, be sure to confirm that there is no foreign matter on top of the cushioning materials before the surface of the panel comes into contact with the cushioning materials. Failure to observe this precaution may result in, the surface of the panel being scratched by foreign matter.

• Be sure to handle the circuit board by holding the large parts as the heat sink or transformer. Failure to observe this precaution may result in the occurrence of an abnormality in the soldered areas.

• Do not stack the circuit boards. Failure to observe this precaution may result in

problems resulting from scratches on the parts, the deformation of parts, and short-circuits due to residual electric charge.

• Perform a safety check when servicing is completed. Verify that the peripherals of the serviced points have not undergone any deterioration during servicing. Also verify that the screws, parts and cables removed for servicing purposes have all been returned to their proper locations in accordance with the original setup.

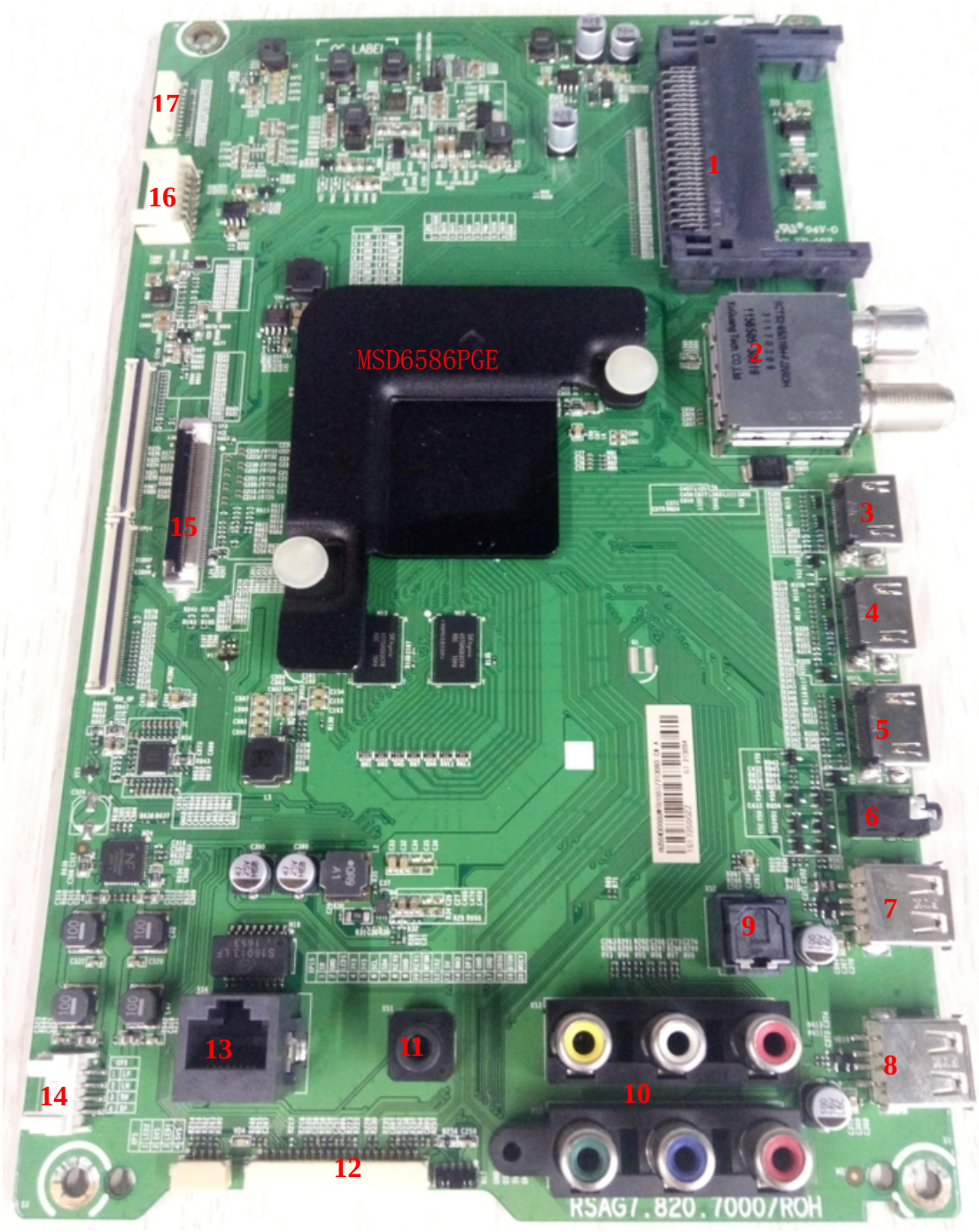
The lightning flash with arrowhead symbol, within an equilateral triangle is intended to alert the user to the presence of uninsulated dangerous voltage within the products enclosure that may be of sufficient magnitude to constitute a risk of electric shock.

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

2. TV boards:

2.1 Main board layout

2.1.1 The top of main board (RSAG7.820.7000/ROH)

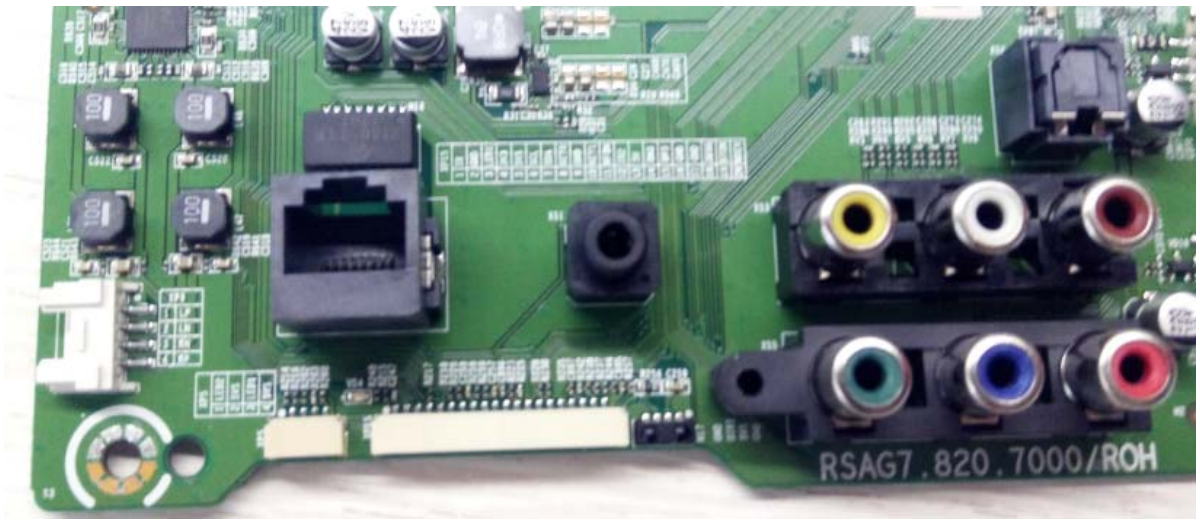


NO.	Position	Description
1	XS10	PCMCIA
2	U8	TUNER (ANT/Cable)
3	XS6	HDMI1(4K@ 60Hz) ARC
4	XS7	HDMI2(4K@ 60Hz)
5	XS15	HDMI3(4K@ 60Hz)
6	XS9	Audio out
7	XS11	USB1
8	XS12	USB2
9	XS2	Digital audio out
10	XS3/XS5	AV in/Component in
11	XS1	Service port
12	XS4	IR/KEY/WIFI/LED
13	XP15	LAN
14	XP9	Speaker
15	XP3	VB1
16	XP1	Main power input
17	XP6	Local dimming

2.1.2 Terminals configure

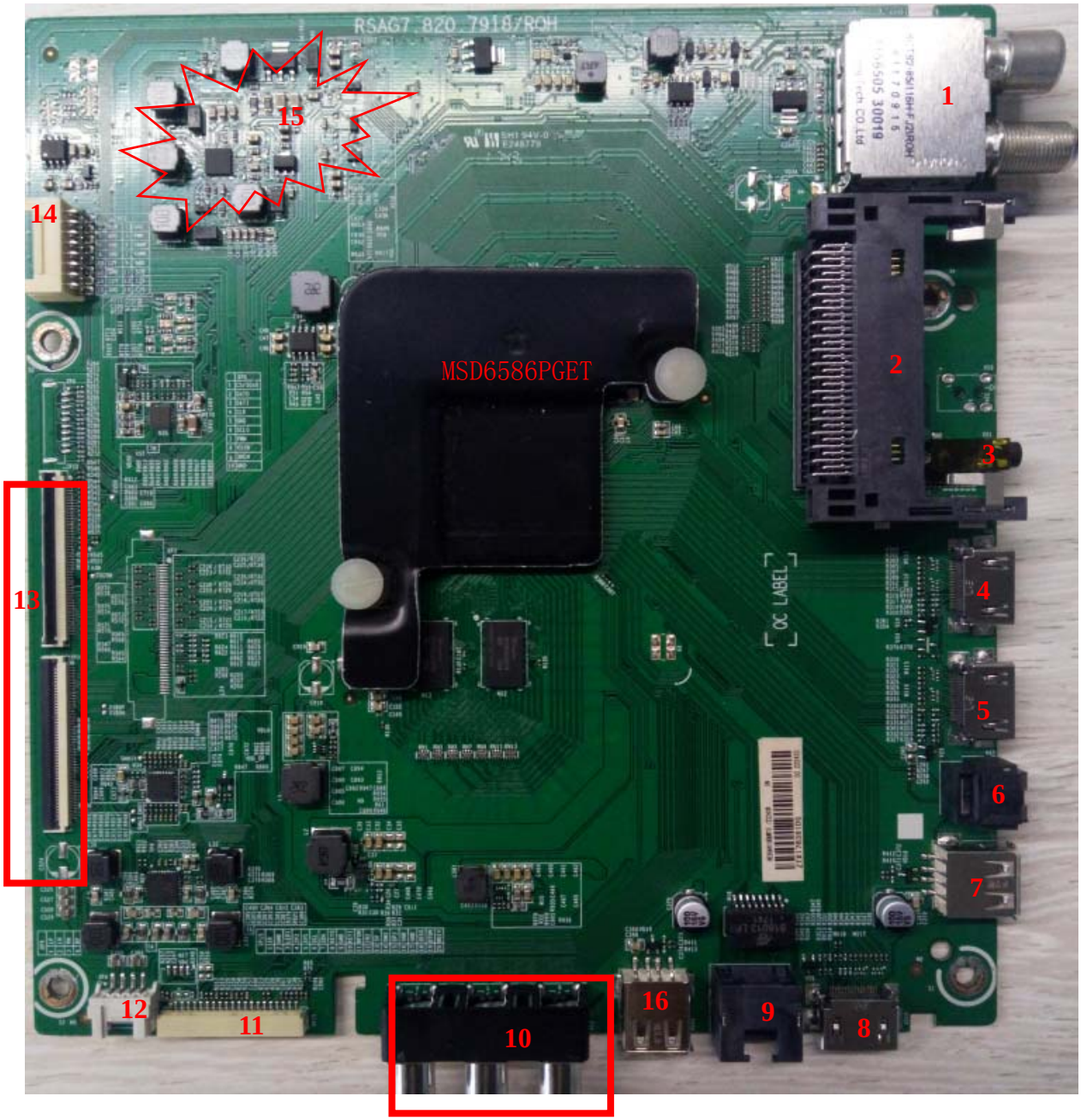
Configure as following

HDMI*3, USB*2 ,



MSD6586PGET

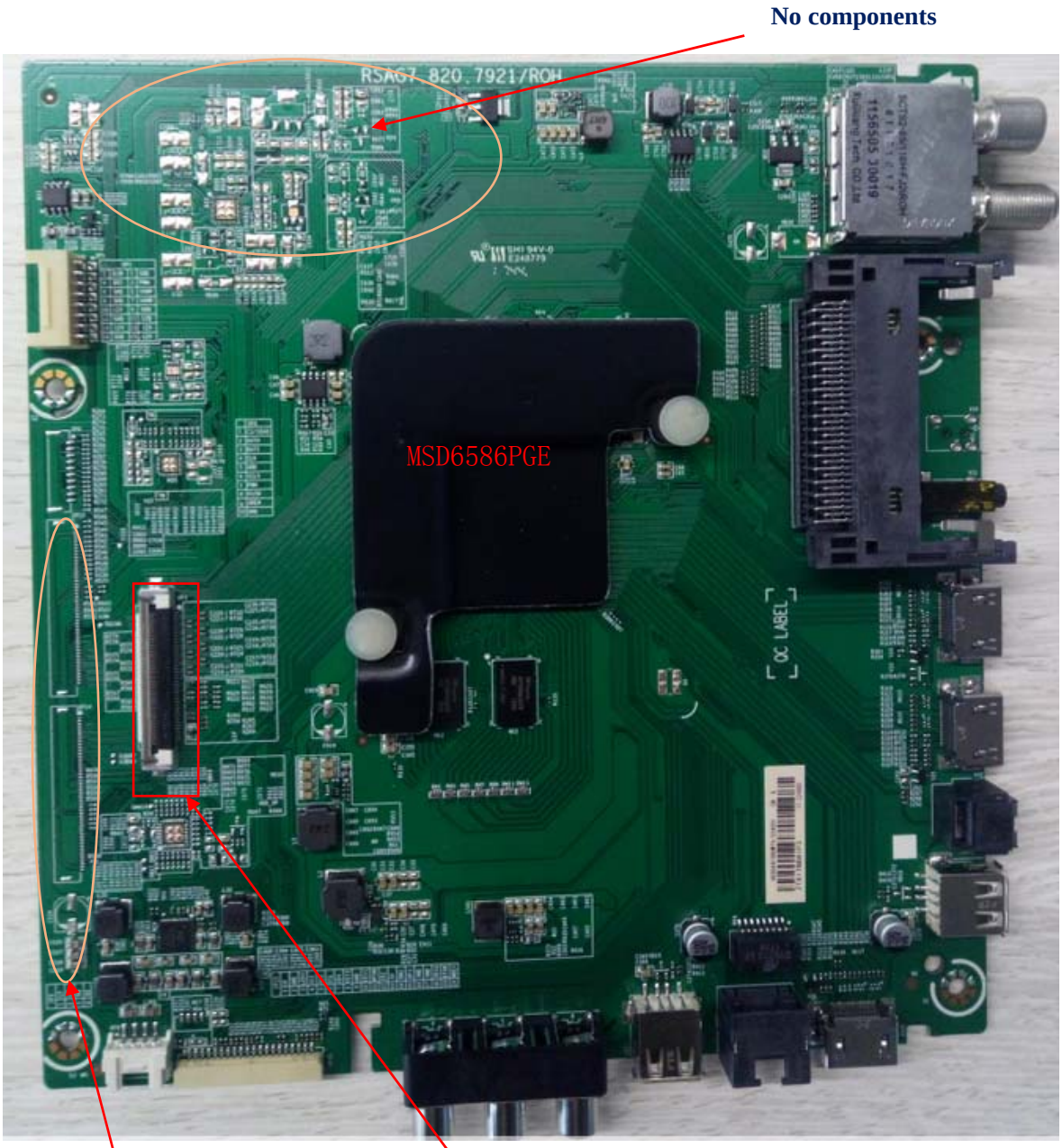
2.1.2 The top of main board (RSAG7.820.7918/ROH)



Board 7918 terminals & socket description

NO.	Position	Description
1	U8	RF terminal
2	XS10	PCMCIA
3	XS1	Service
4	XS6	HDMI1(4K@ 60Hz) ARC
5	XS7	HDMI2(4K@ 60Hz)
6	XS2	SPDIF
7	XS11	USB1
8	XS15	HDMI3(4K@ 60Hz)
9	XS4	LAN
10	XS3	AV input
11	XP15	IR/KEY/WIFI/LED
12	XP9	Speaker
13	XP13	ISP output-L
13	XP14	ISP output-R
14	XP1	Main power connector input
15	Round N33 PMU-IC	TCON part on the board
16	XS12	USB2

The top of main board (RSAG7.820.7921/ROH)

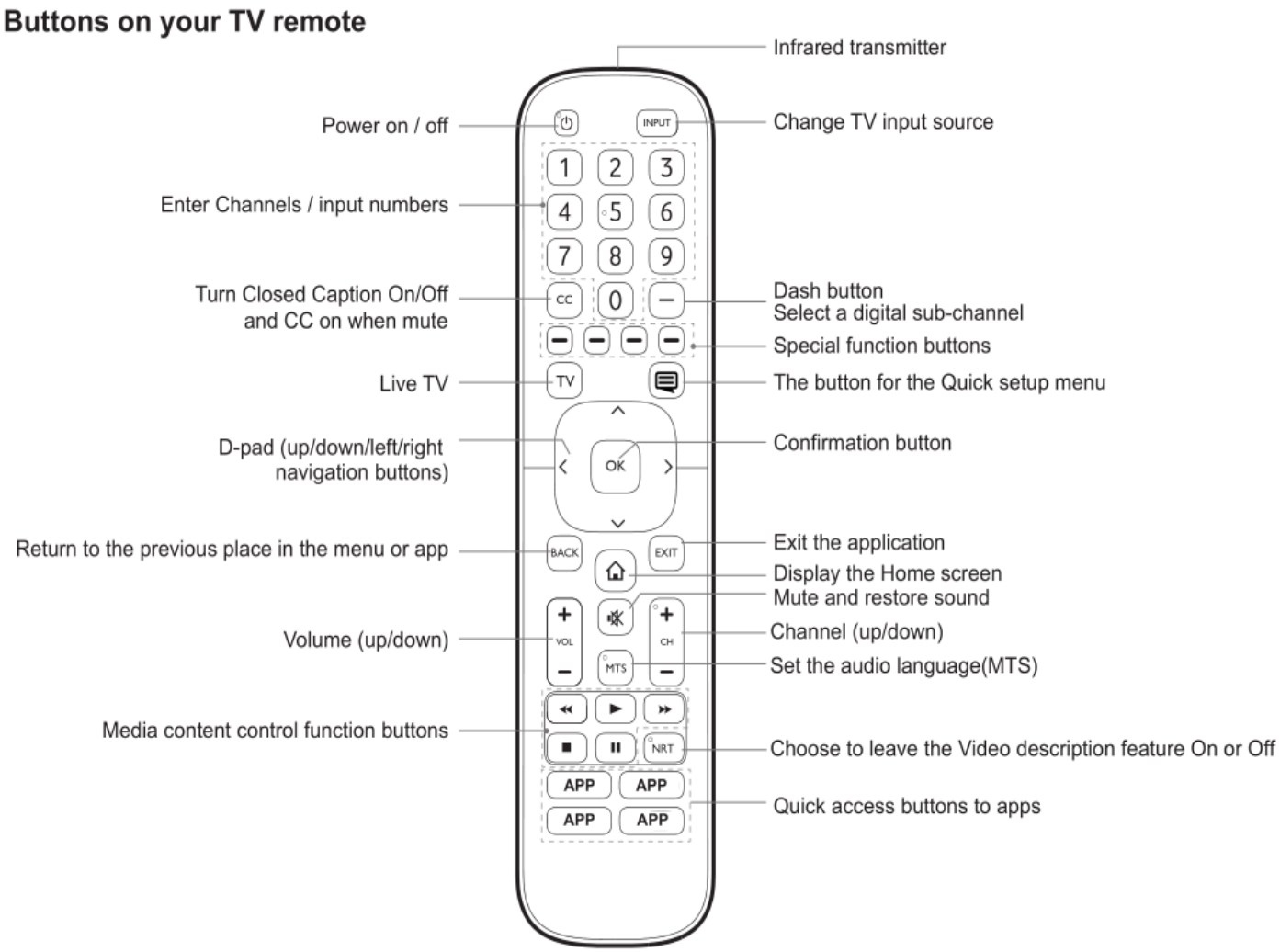


2.2 TV boards part list

Main board	Boards function difference	Main chassis type	For Series
RSAG7.820.7000\ROH	1. Lateral terminal and vertical terminal. 2. TCON part not on the board. 3. Support HEVC 60Hz decoding, support HDMI 2.0/HDCP 2.2. 4. Support 8 lane VBO output, the resolution support up to 4K*2K/60Hz.	MSD6586PGE	● suitable for HE50N3050UWTS.
RSAG7.820.7918\ROH	1. Lateral terminals. 2.TCON part on the board. 3. Support HEVC 60Hz decoding, support HDMI 2.0/HDCP 2.2. 4. The resolution support up to 4K*2K/60Hz. 5 Unit 7918 board use XP13 &XP14 to transfer signal to Panel.	MSD6586PGET	●suitable for HEXXA6100UWTS
RSAG7.820.7921\ROH	1. Lateral terminal and vertical terminal. 2. TCON part not on the board. 3. Support HEVC 60Hz decoding, support HDMI 2.0/HDCP 2.2. 4. Support 8 lane vbyone output, the resolution support up to 4K*2K/60Hz. 5、Unit 7921 board use XP3 to transfer vbyone signal to Panel	MSD6586PGE	● suitable for HE65A6100UWTS

3. Factory/Service OSD Menu and Adjustment

3.1 Remote Control



CAUTION: The included remote control will vary depending on model, country and date of manufacture.

3.2 How to enter the Factory OSD Menu

. With user's RC

1. Power TV on
2. Press button on the RC then call up "Menu" option.
3. Move "﹀" "〉" and "ok "button on RC to select **Settings** ->**Sound**-> **Advanced setting** -> **Balance**
4. On the balance, input figure 1->9->6->9 in sequence on RC.

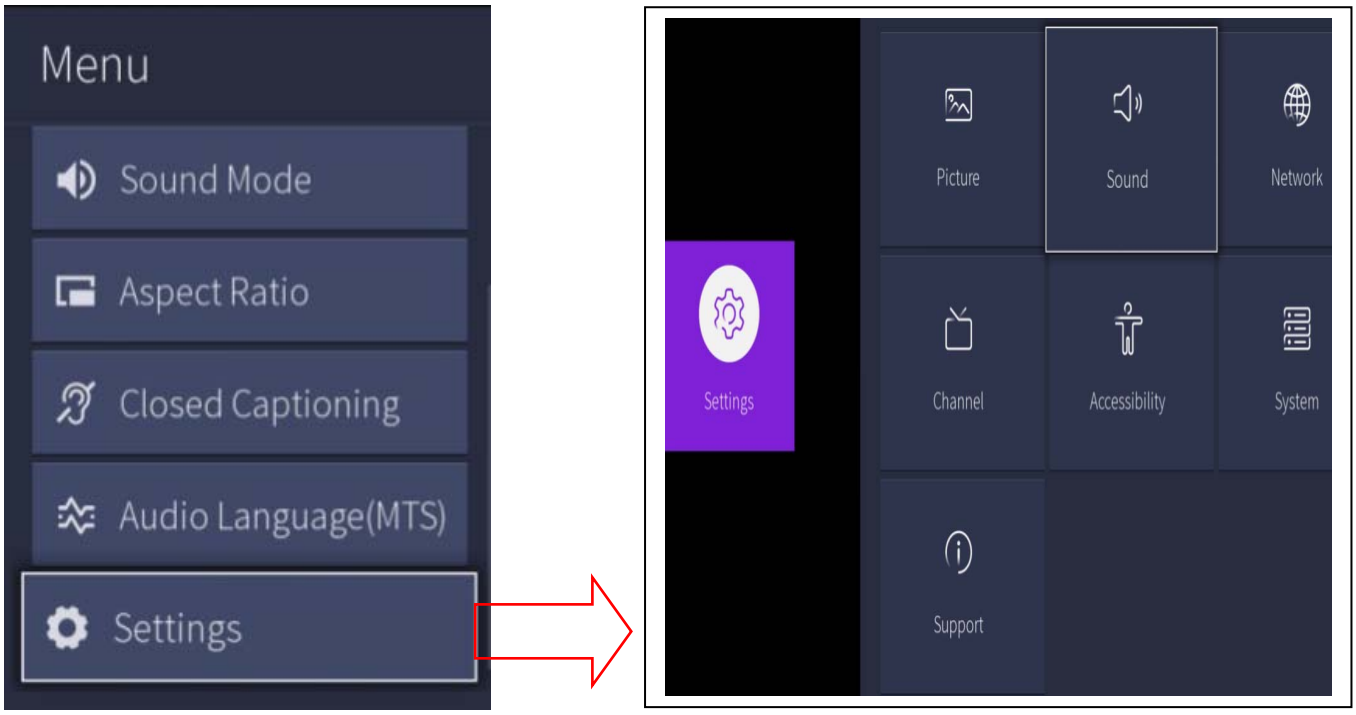
Note: It is important to remember that the hand fingers can't shield the RC emitter diode.

5. Call up a green "**M**" on the left-top of TV, then press button again, the Factory menu appear then.

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

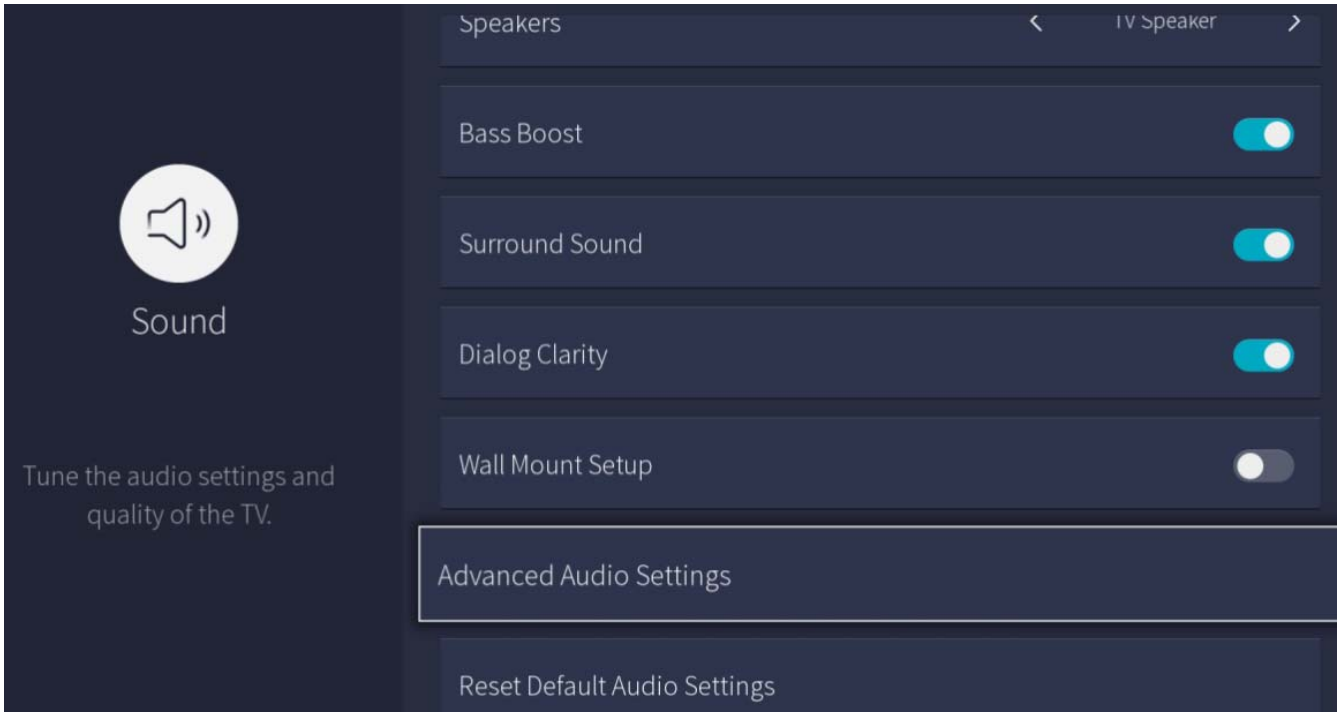
Figures as following:

Select Settings ->Sound

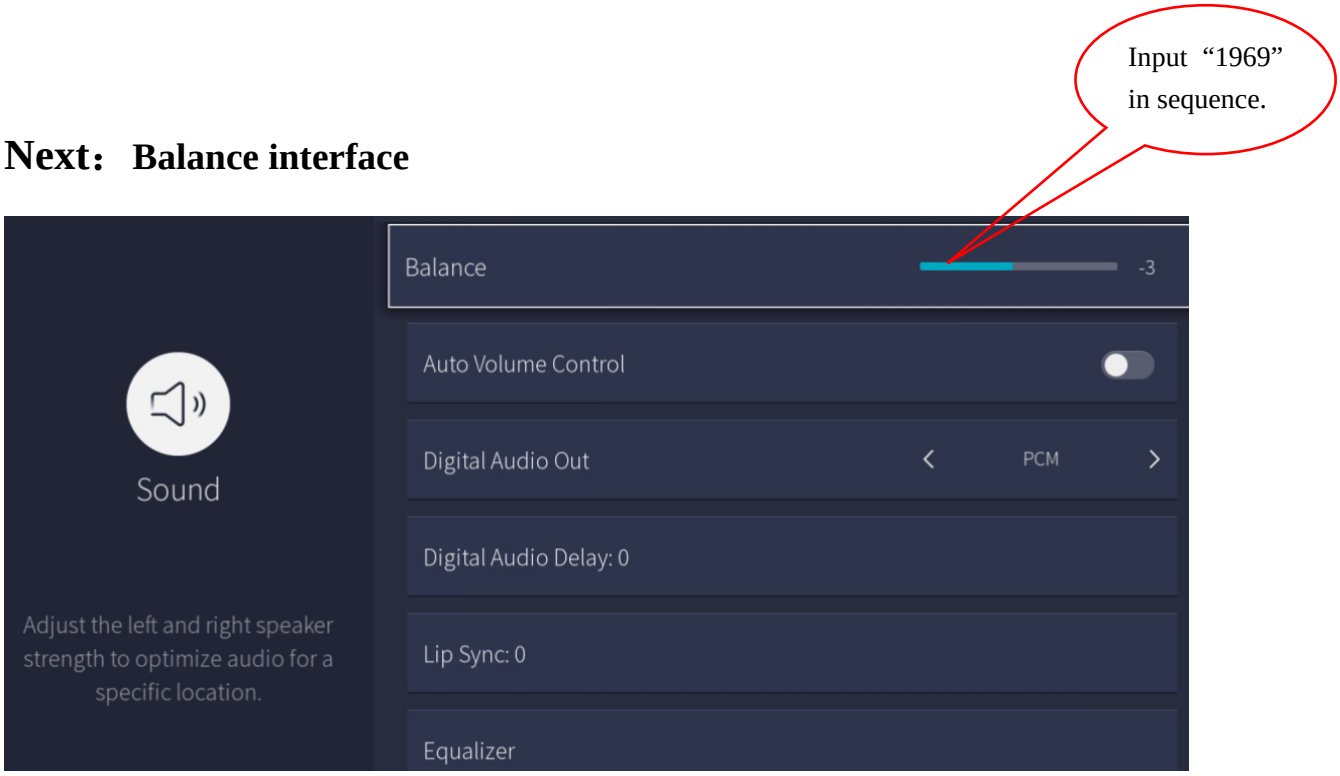


Next

Select Sound-> Advanced setting -> Balance



Next： Balance interface

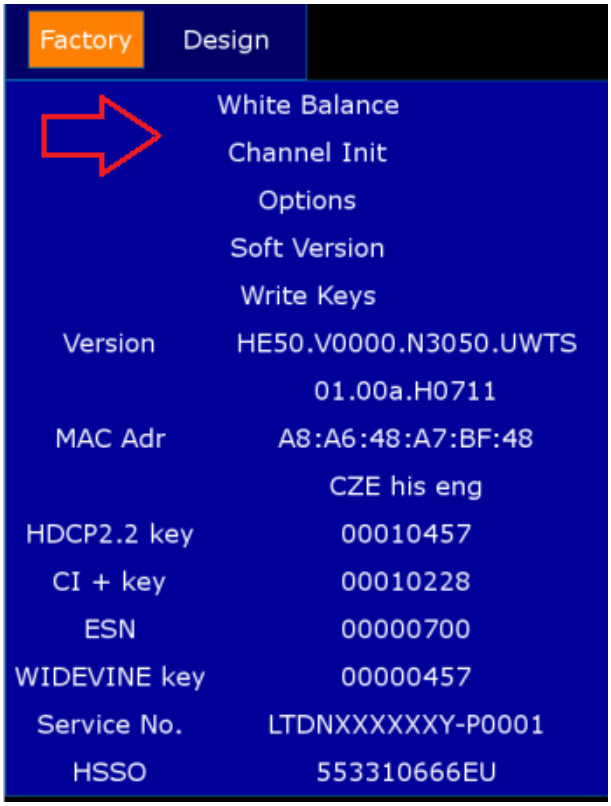


Input finger“1->9->6->9” in sequence with remote control.

3.3 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 diverse market and customer. Take HE50N3050UWTS for example.

Factory menu option:



White Balance:

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

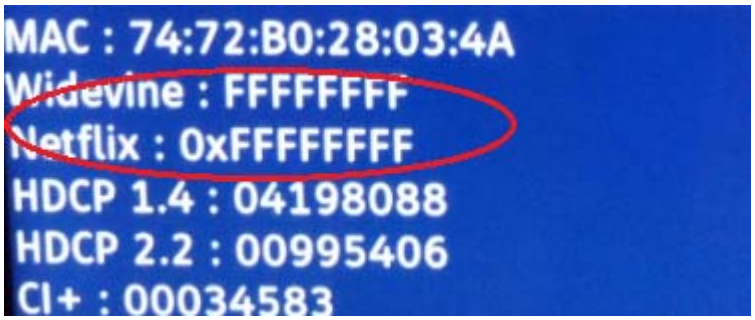
Options:

Soft Version:

Write keys:

Note:

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



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

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

Channel init	huangdao old	
	Qing Dao	TV Produce signal preset, during the factory produce using.
	huangdao new	
	……	

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

Note:

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

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

To clean the EEPROM:

a. Select the item “**Option**”--“**Clear all**” in Factory mode.
b. Press VOL+ button to clear the EEPROM data.
c. Close the OSD menu after 5 seconds.
d. Restart the TV.
e Also the Keys information must been checked, if appear “NG”, then must rewrite key code.

4. Software Upgrading

4.1 USB Upgrade

Main software upgrade directly with USB

The main software can be upgraded with USB disk. It includes two modes: user mode、 factory mode. Take HE50N3050UWTS for example.

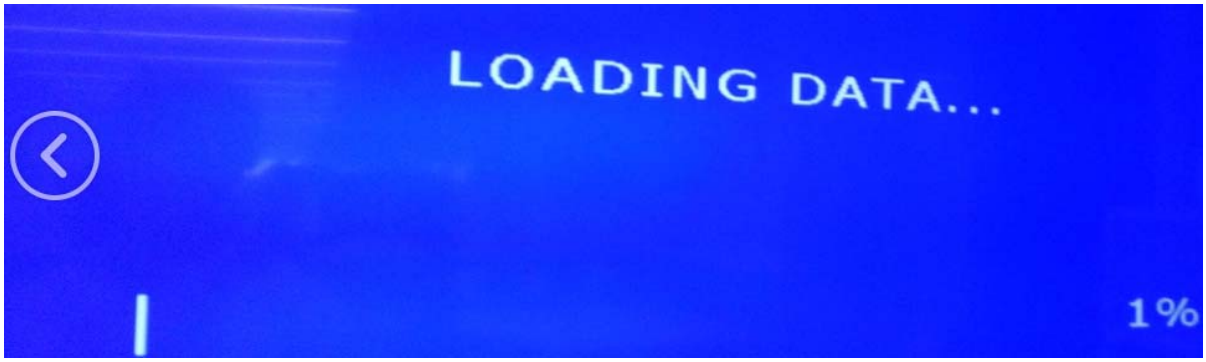
4.1.1 TV in user mode：

a. Decompress HE50N3050UWTS _pkg_YYYYMMDD.tar.gz (YYYYMMDD is the year/month/day when the software is being built, such as HU55N3050UW_pkg_20170711.tar.gz) and copy the usb_HU55N3050UW.bin file to the USB root directory. Please make sure there are no other “*.bin” files in the root directory of USB disk .
b. AC power off the TV, insert the USB disk, keep pressing the “VOL-”button of the remote control and at the same time AC power on the TV. If “Loading data……” is shown on TV, it means TV successfully enters upgrading status..
c. Waiting…… TV is trying to load the software and it will spend about 2 minutes. After that “UPGRADING SOFTWARE, PLEASE DO NOT TURN OFF” will be displayed and upgrade process bar will indicate the progress. It needs about s5 minutes to complete the whole software upgrade.
d. After upgrade, TV can automatically reboot.
e. Enter the Factory OSD Menu to check the main software version, and then choose “option”→“Clear All” to do clean up.

4.1.2 TV in factory mode：

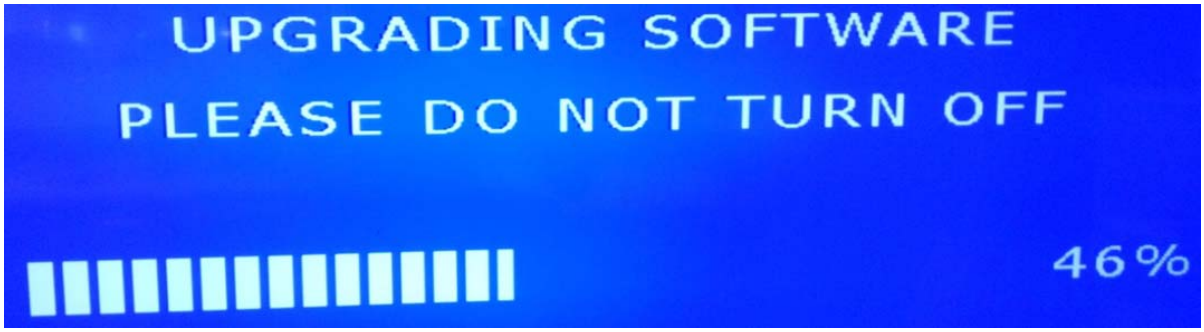
a. If TV is in Factory mode, only have difference from chapter 4.1.1 b. as following. others are same.
b. TV is in factory mode, only AC power off TV and insert the USB disk, next AC power on, TV can identify automatically to update, till call up “Loading data……” interface , update process bar is 1%.

Firgure-1: Loading data



Firgure-1

Firgure-2 : Upgrading software



Firgure-2

Firgure-3 : Software upgrade complete,TV automatically reboot.

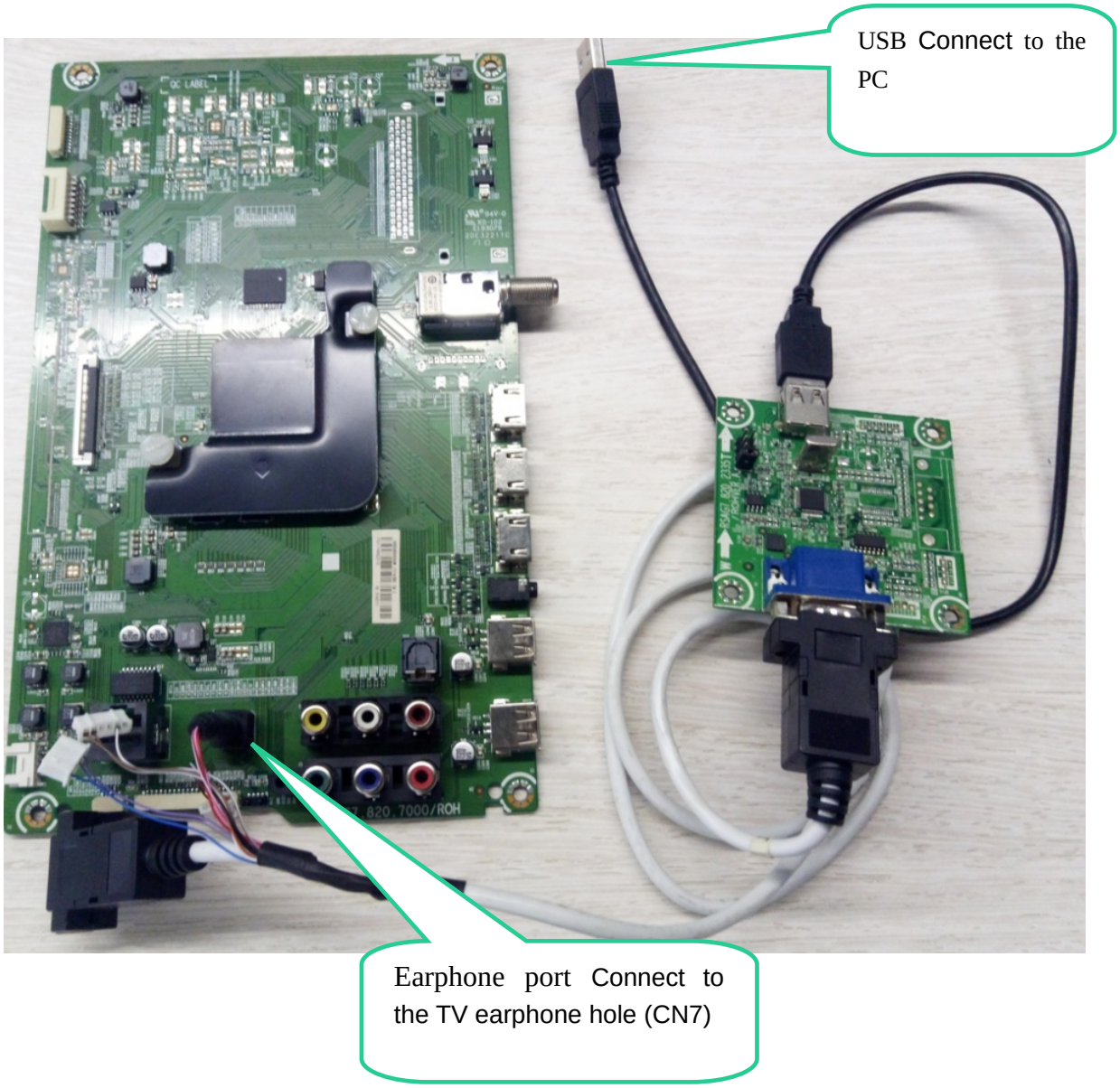
Firgure-3

4.2 Mstar Tool upgrading

If USB upgrades failure, TV crashed and SecureCRT no print message. Repairer must read IC device ID code 、 decipher& burn the Mboot program the EMMC flash first. then USB disk to upgrade the "usb_HU55N3050UW.bin" file.

Hardware connecting

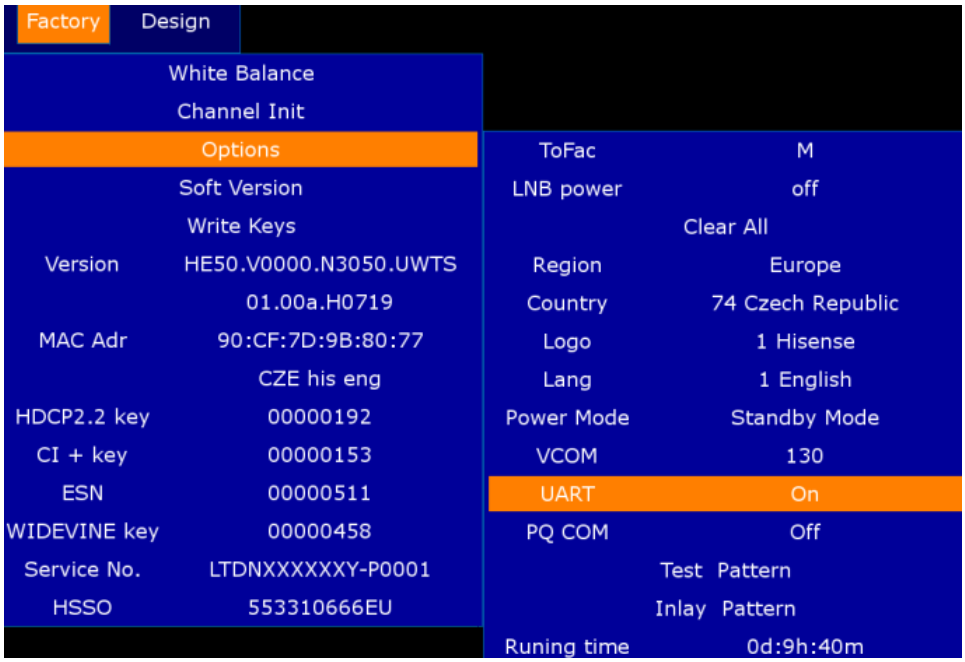
Connect the unit to your pc with Hisense USB-serial port cable. USB port connects to your PC and earphone port to TV's CN7(earphone hole). As following.



4.2.1 Open the UART serial option

UAR serial choose “on “

Menu: Factory-->Options–>UART–>on



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

4.2.2 Mstar USB-serial driver

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

If your PC is Windows XP system:

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

This is a drive software of Mstar

Another:

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

4.2.3 Stop board serial connect with SecureCRT

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

Current steps:

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

How to distribute the three status?

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

Stop board serial with SecureCRT

1) In mboot status:

   << MStar >>#

   Input "du" and "enter" key to ensure, then close the SecureCRT window.

2) In Supernova status:

   Input "00112233"and "enter" key to ensure, then close the SecureCRT window.

3) If no any print information with SecureCRT,then can directly close the SecureCRT window.

4.2.4 Mstar Tool upgrading

Mstar Tool upgrading includes two states: one is TV board has had Mboot software,the other is TV board have no Mboot software.

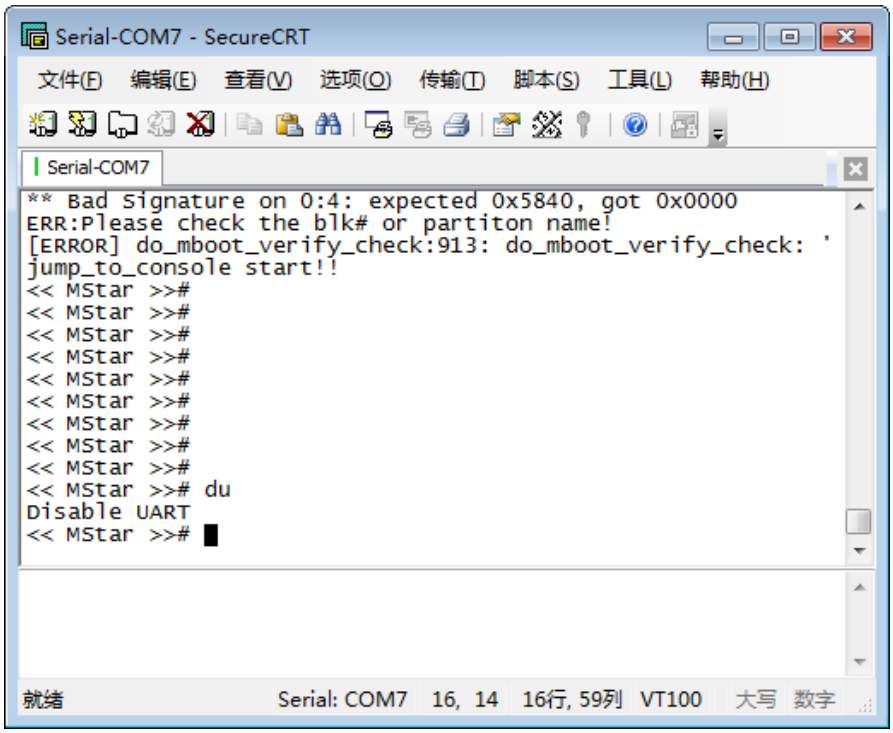
TV board has had Mboot software:

If TV board has had mboot software already, now need update a new one. It is important to stop serial port at first. as following.

Run the SecureCRT ,Pressing the “enter” key and at the same time AC power on the TV, then get into mboot interface to

appear <<MSTAR>># promoting character.

Behind the <<MSTAR>># input “du” then “enter” to ensure.

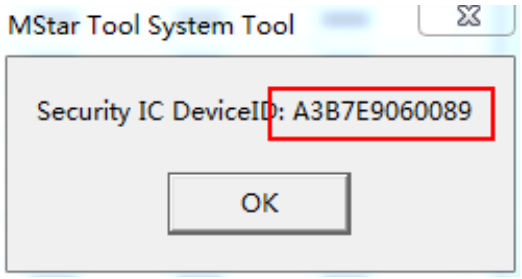


How to get the Device ID password?

● Connect the board with PC via to Hisense debug tool,With MSTVTool4.163 , run MSTV_Tool.exe

● Ensure “ ” button connected correctly, then click "Show DeviceID"button， you will get 12 bit device ID.

For example, A3C2DC130058 (12bit),. Read more again to contrast the IC Device whether has change.



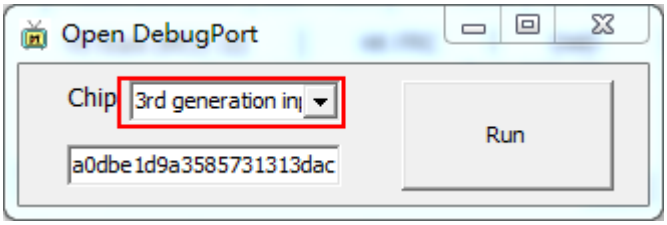
● Send the device ID to the IC developer， MSTAR max-sc lv(吕 思 成)max-sc.lv@mstarsemi.com securitysecurity@mstarsemi.com Waiting for the feedback of ID password.

Deciphering

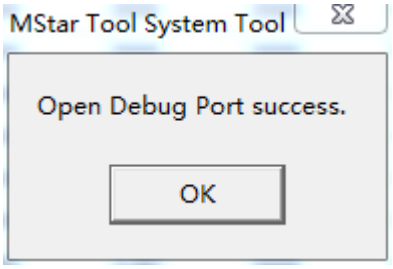
Method 1

● Use MSTV_Tool_4156_258303 tool ,run MSTV_Tool.exe，Click "Show DeviceID"button to inspect the Device ID.

● Click “View”->“Open DebugPort” choose “3rd generation input”，input the ID password from the IC developer then click “Run”



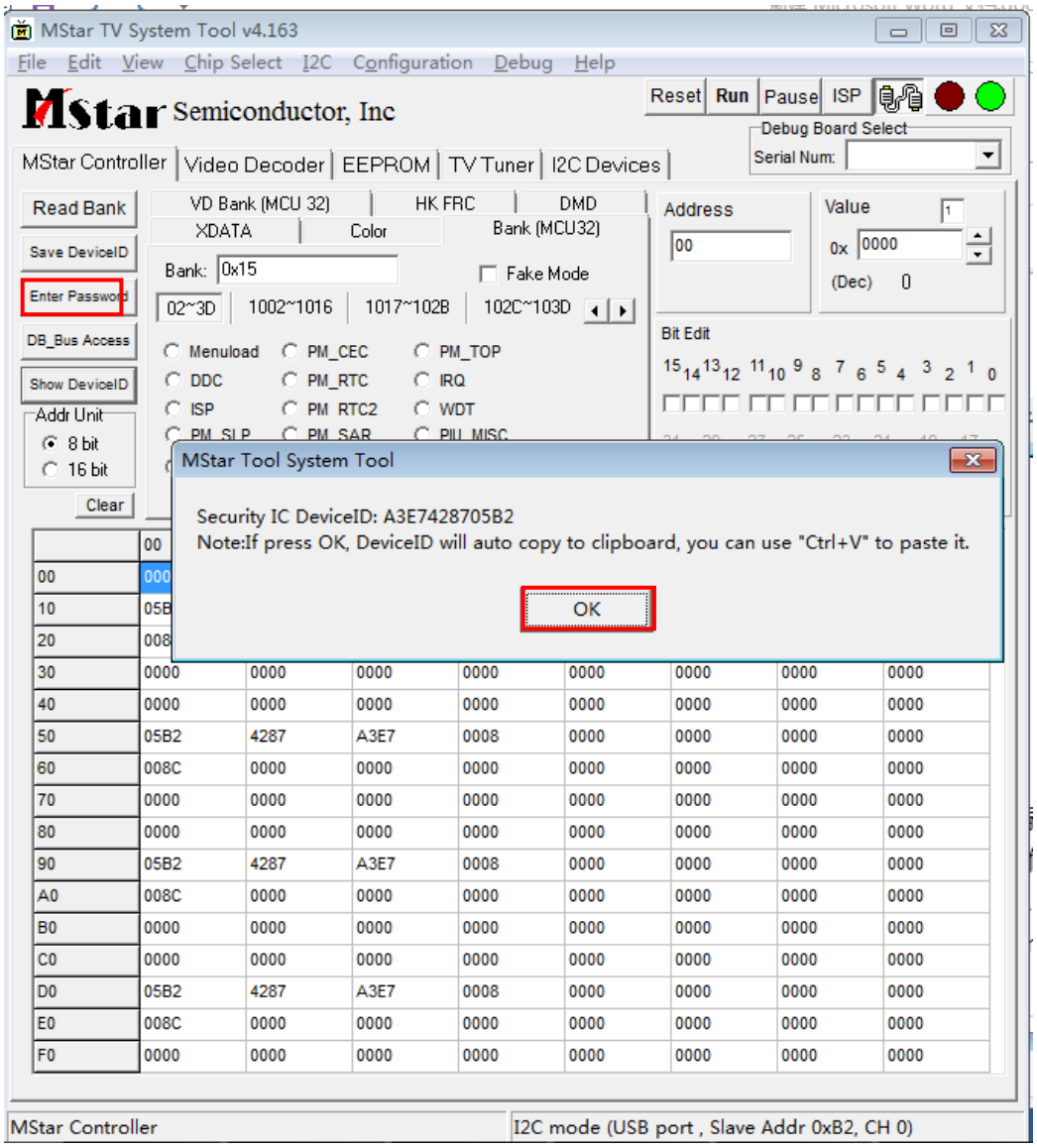
Click” Run”



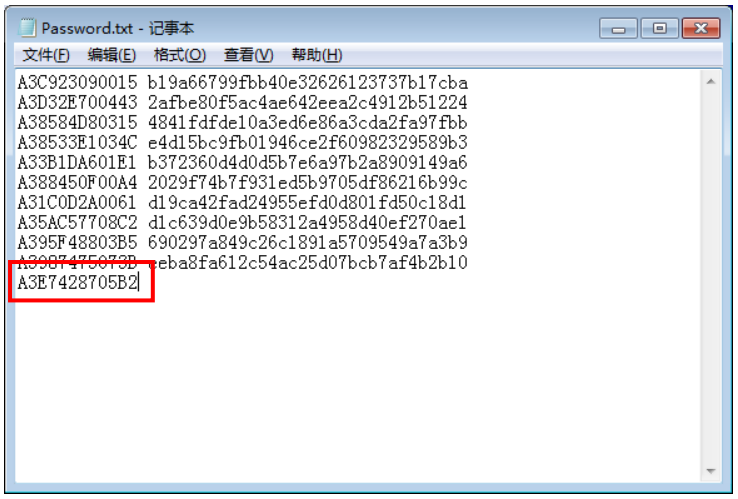
Method 2

Store the Device ID

When click "Show DeviceID"button， you can get 12 bit device ID. Next click “OK” button to copy; Open the “Password.txt” file in the same direction of “MSTV_Tool.exe”to stick the Device ID.



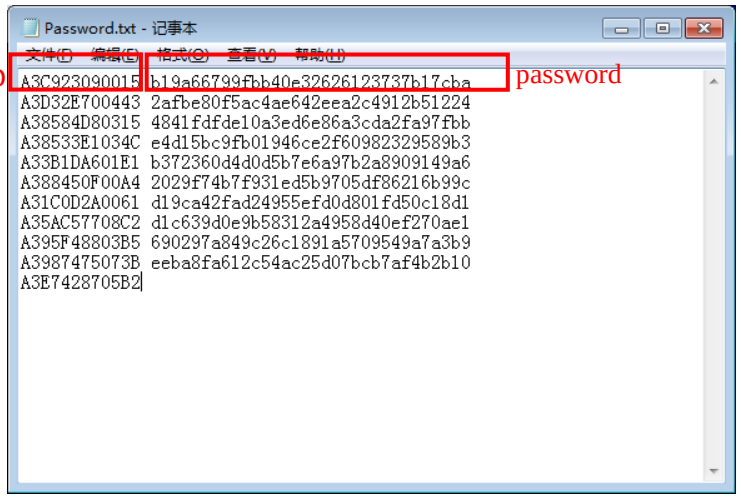
Password .txt file



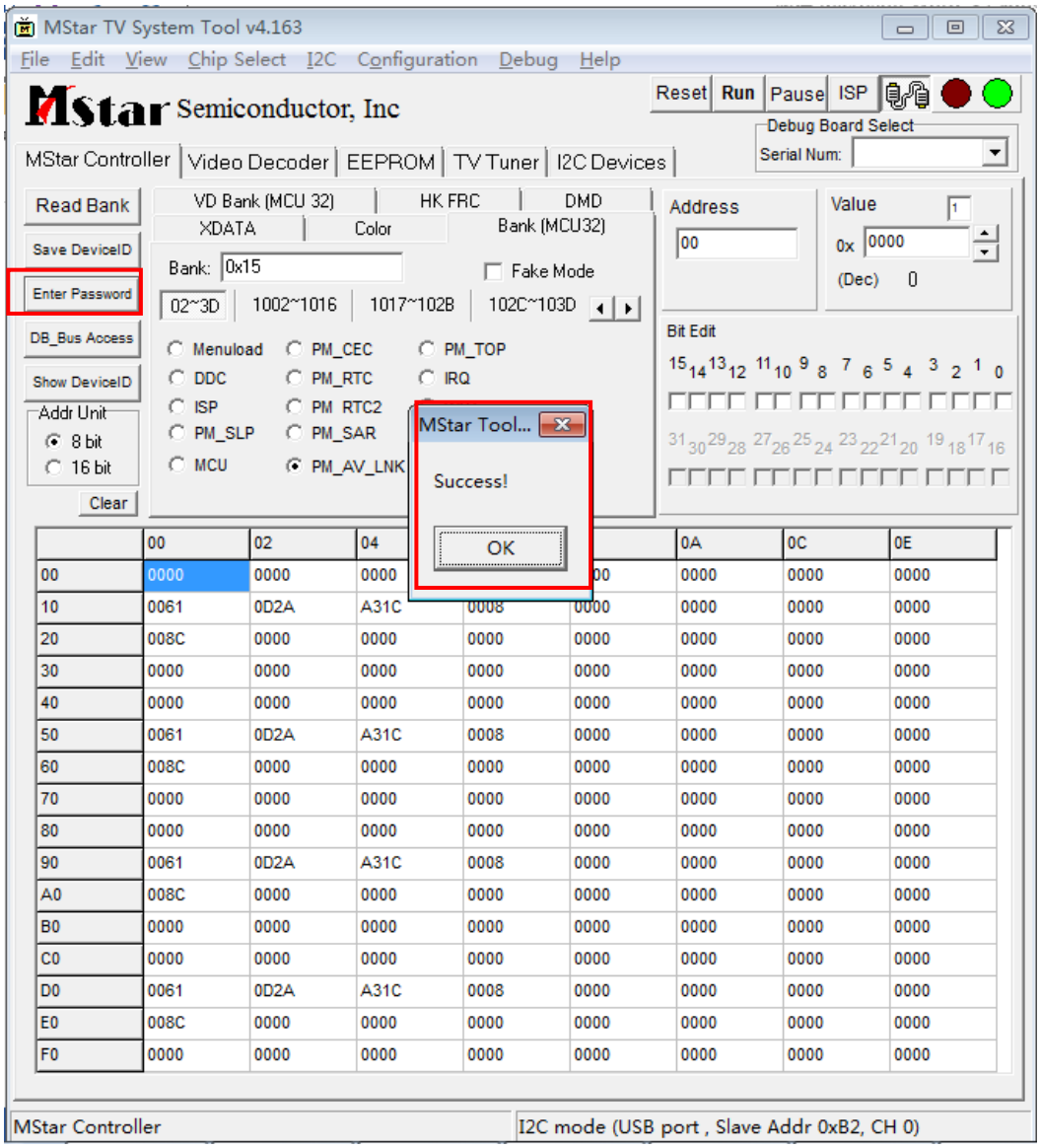
- Send the device ID to the IC developer， MSTAR max-sc lv(吕 思 成)max-sc.lv@mstarsemi.com securitysecurity@mstarsemi.com Waiting for the feedback of ID password.

3、Deciphering

Receive the Device ID password ,copy it into the password.txt ,as following.



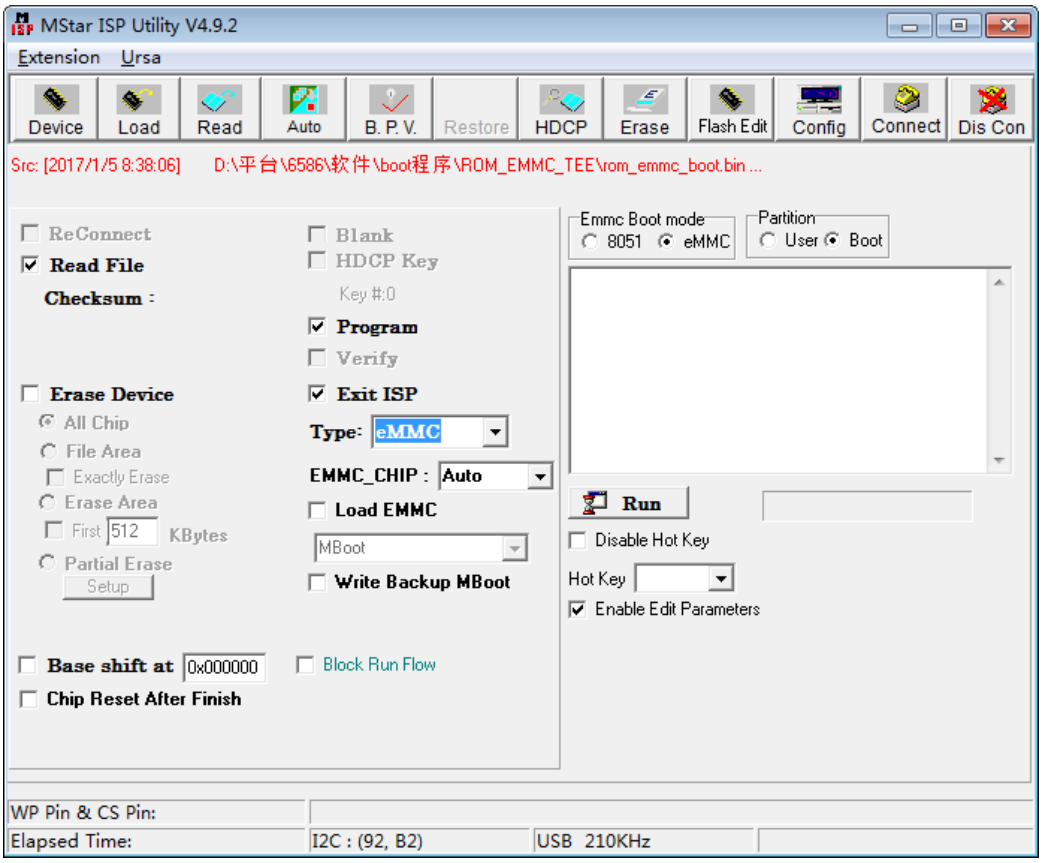
Click “ enter password”button then bounce “success”window, it indicates deciphering succeed.



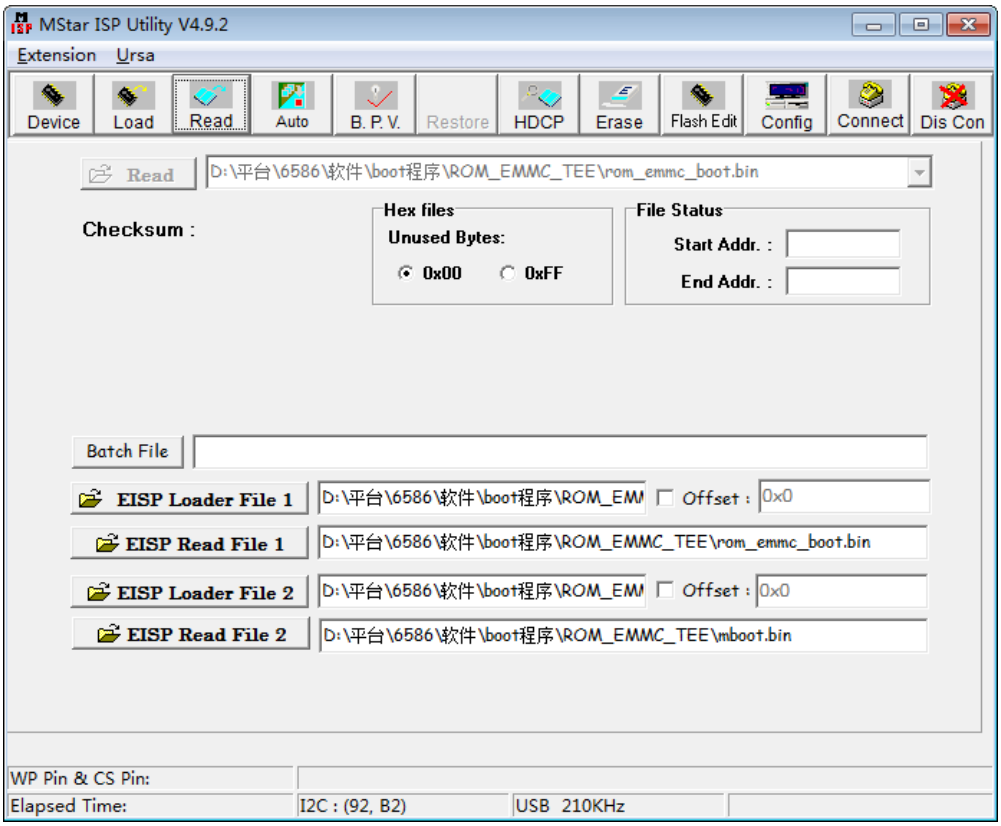
Now Deciphering has finished, Don’t restart the TV .

3) Burn the mboot software with ISP_Tool_4.9.5.

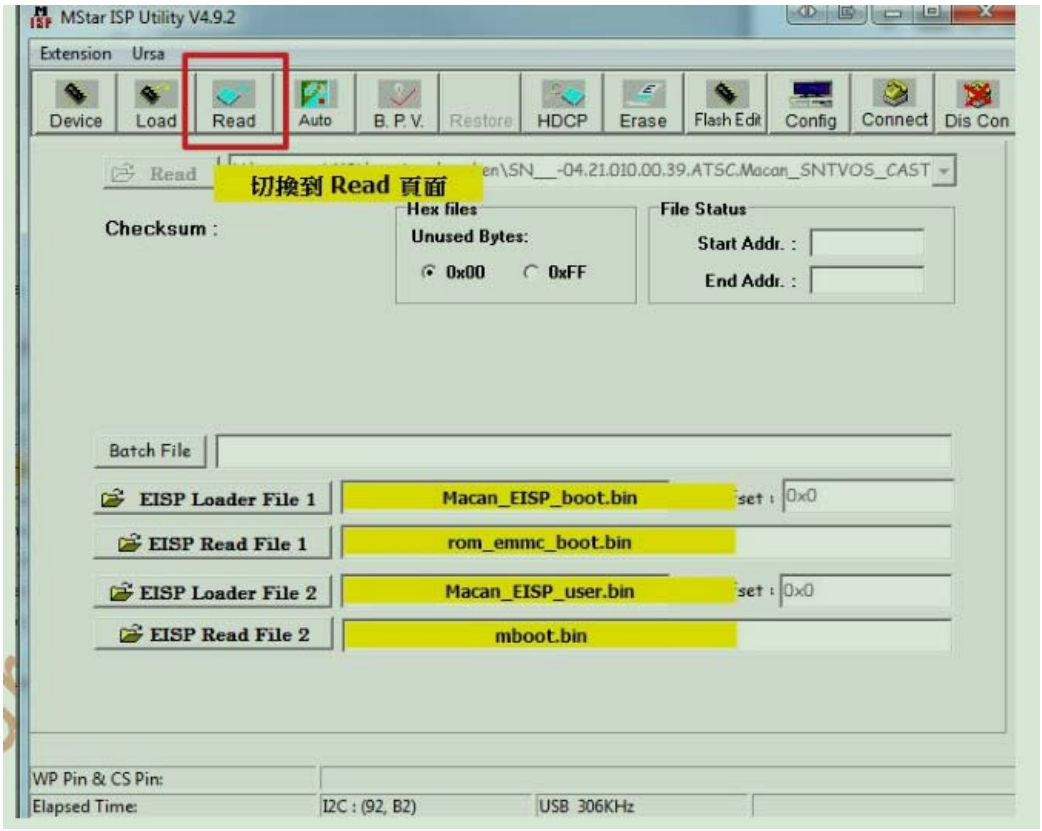
Click “Auto” and Type select “ eMMC”, drawing “✓ ” in front of “program /Exit ISP/Read file”



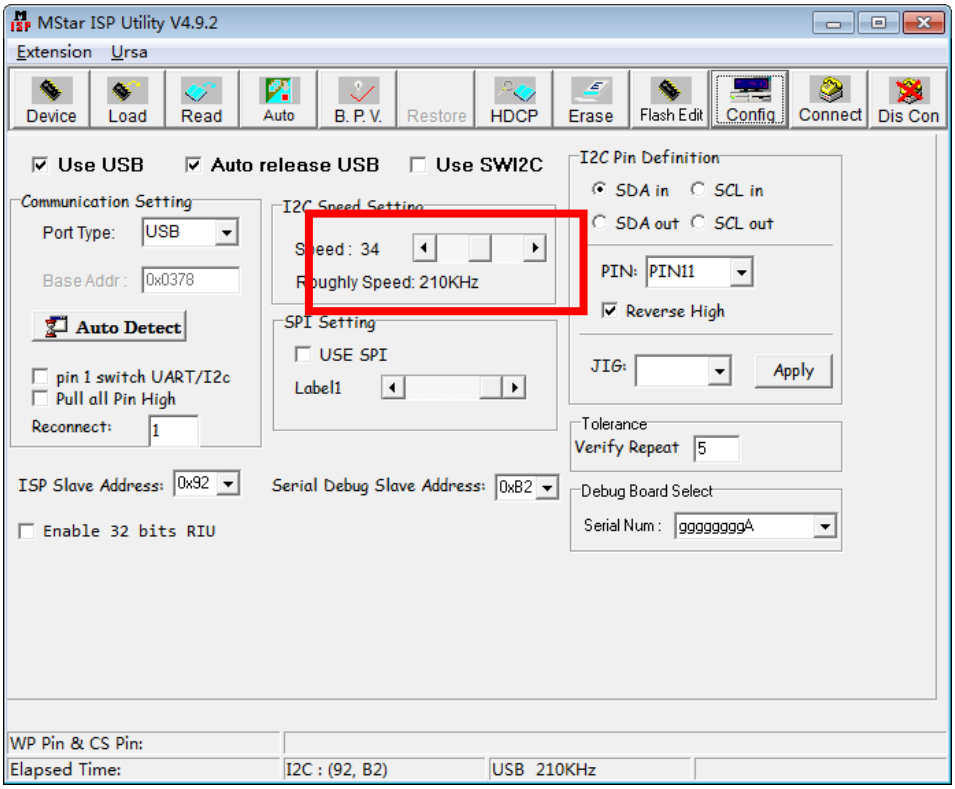
Click“Read”and load following four burning files.



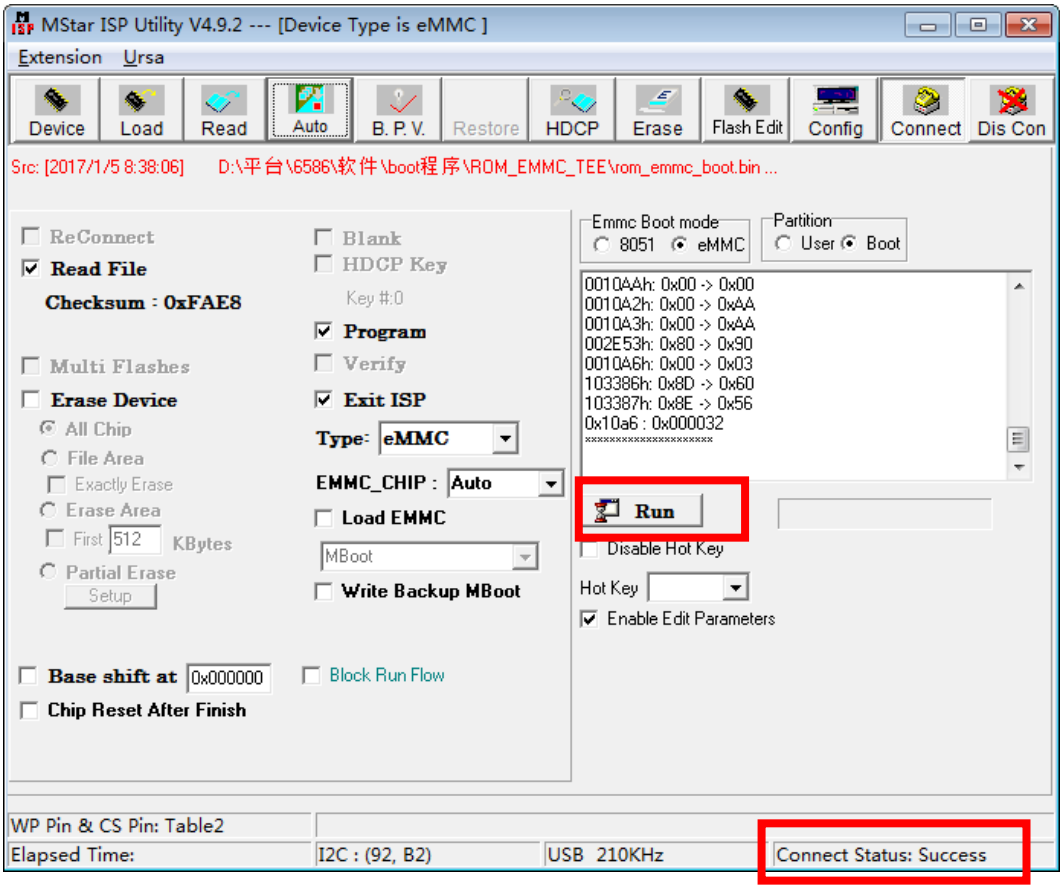
Respectively graphic as following:



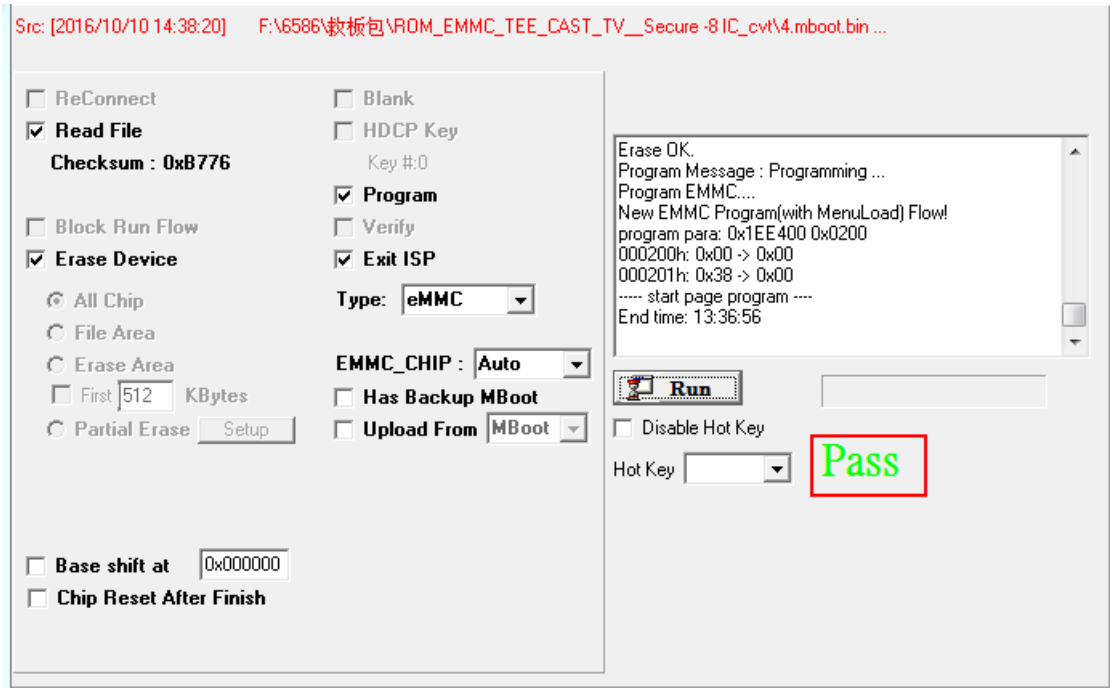
Click “Config” button, “I2C speed setting”choose around 30 ,roughly speed around 200KHz, roughly speed not high otherwise can cause updating abnormality.



Return to “Auto ”, click “Connect” button. about 10 seconds,when connect status appear “success” Then click RUN button to go on.



Waiting for about 6 minutes, a green “PASS” appears on the screen, indicating upgrading successfully.



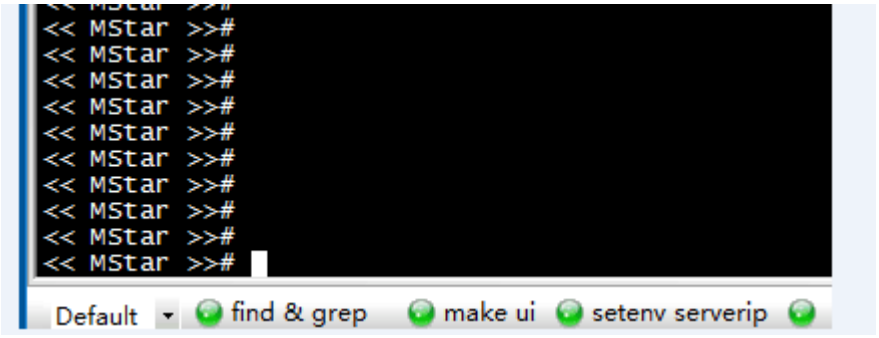
TV board have no mboot software:

Run SecureCRT , AC power on the TV.if nothing appears on screen then can indicates that the TV no Mboot software, next close the SecureCRT window directly.

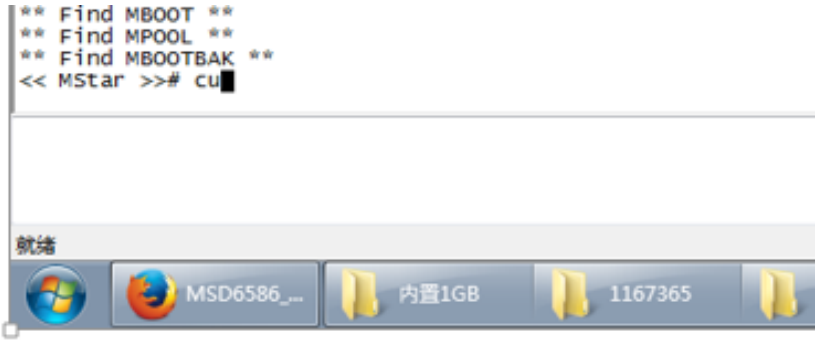
4.2.5 USB upgrading

Copy the main software “usb_HU55N3050UW.bin” to the USB root Disk, ensure there are no other “*.bin” files in the root directory of USB Disk.

Run the SecureCRT ,Pressing the “enter” keypad and at the same time AC power on the TV, then appear mboot interface.



Input lower-case letter “cu” then “enter” to update the main software.



When main software update successfully, the TV can automatically restart.enter the Factory OSD Menu to check the main software version, and then choose “option”→“Clear All” to do clean up.

4.2.6 Next to check the Key information under the current Version whether is OK ,if NG must rewrite key code.

4.2.7 Before upgrade , write down the white balance data of different signal source.

4.2.8 Reset the Options of out of Factory if lost ,such as Region\Country/logo/language …….

4.2.9 Common error

1、 Reading Device ID have different ID codes.

- Check the SecureCRT window whether close.

2、When input key, appear" Input format Error"

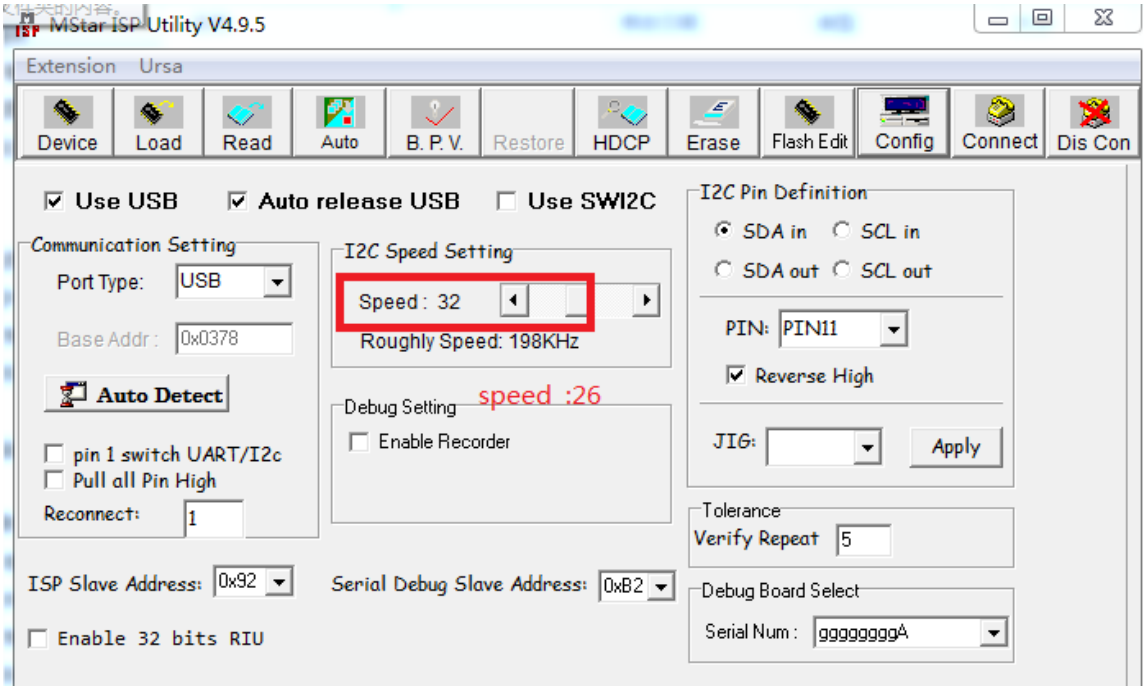
- Check Mstv_tool --open debugport -- "**3rd generation**" whether selected .

3、ISP_Tool connected failure

- Close the SecureCRT, check whether " ✓" in front of "**UseSWI2C"** of **"Config"** .

4、If ISP_Tool connected appear error " Device not selected,yet";

- Reduce the **I2C speed setting** figure lower "Roughly speed" about "200KHz" and have a try.



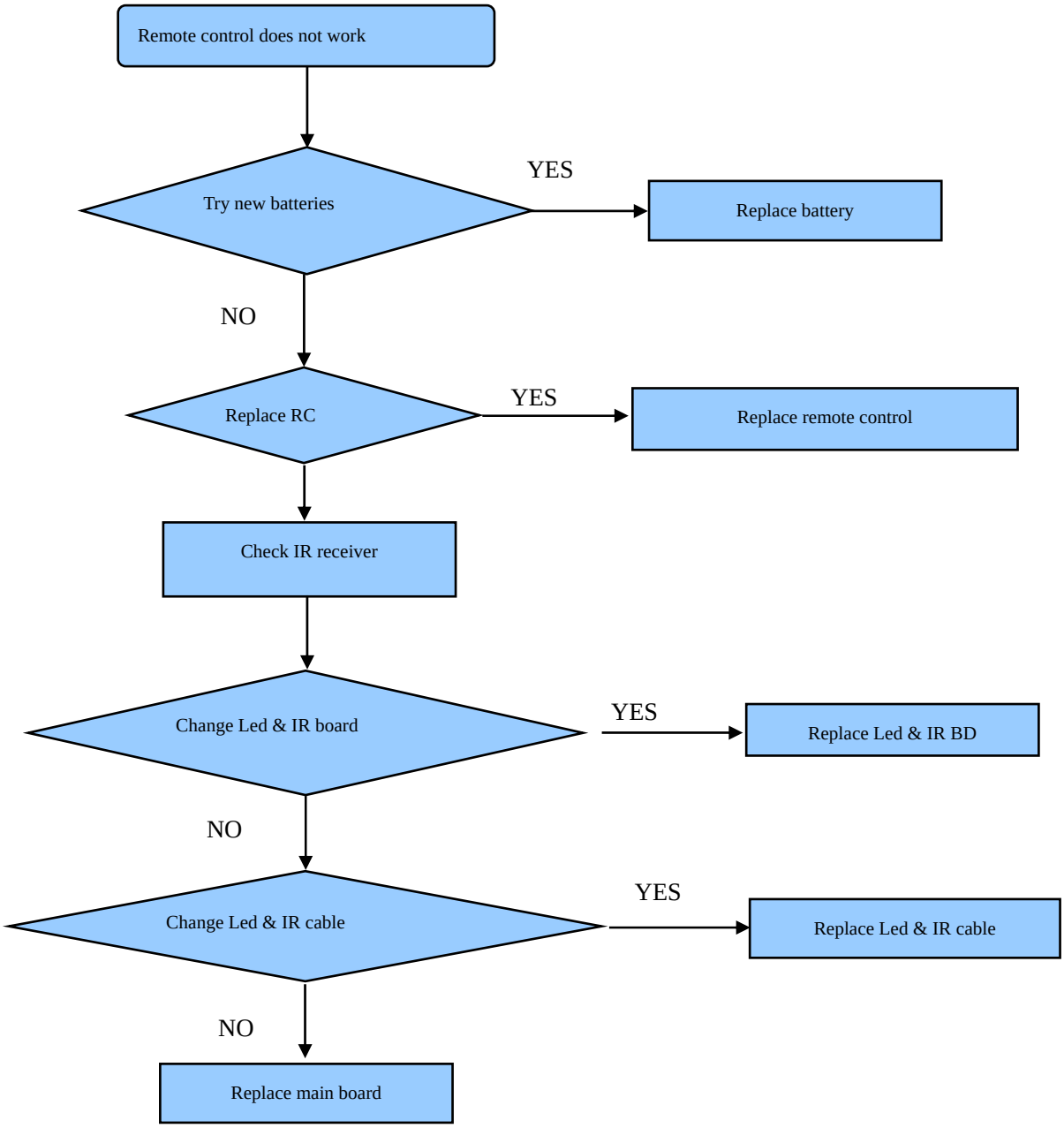
5、After USB upgrade, appear "mtdoops: mtd device (mtddev=name/number) must be supplied，Kernel panic - not syncing: VFS: Unable to mount root fs on unknown-block(179,4)"

Reason: After burn mboot and before USB upgrade, forget to clear the zone schema.

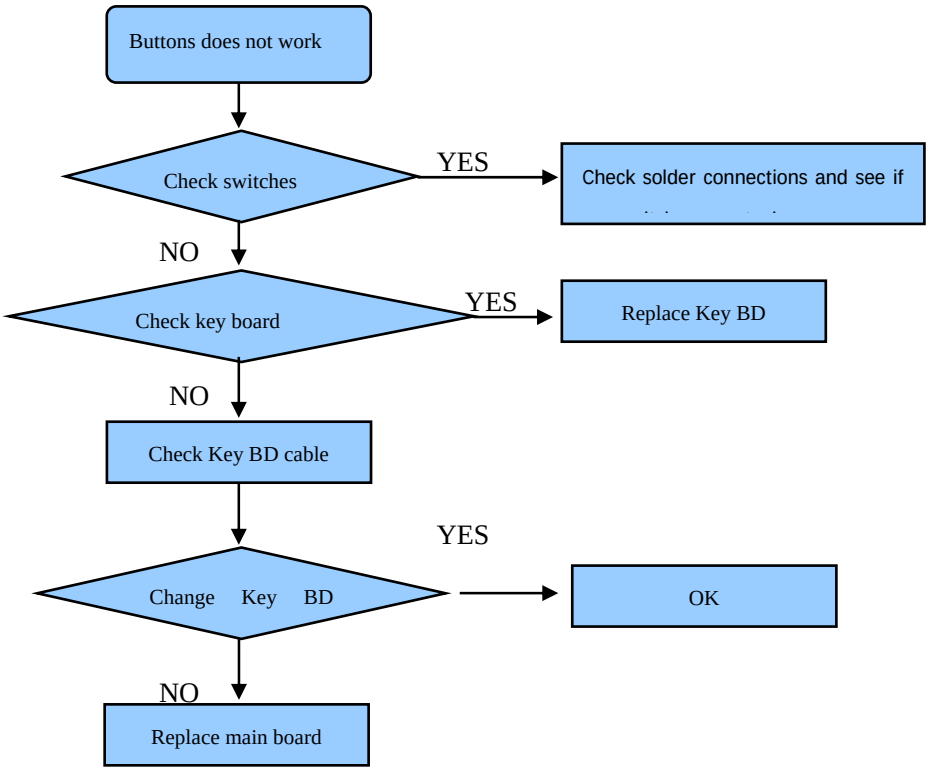
- Don't burn mboot again，ONLY restart TV with "cu" demand to USB upgrading again in mboot .

5. Trouble shooting

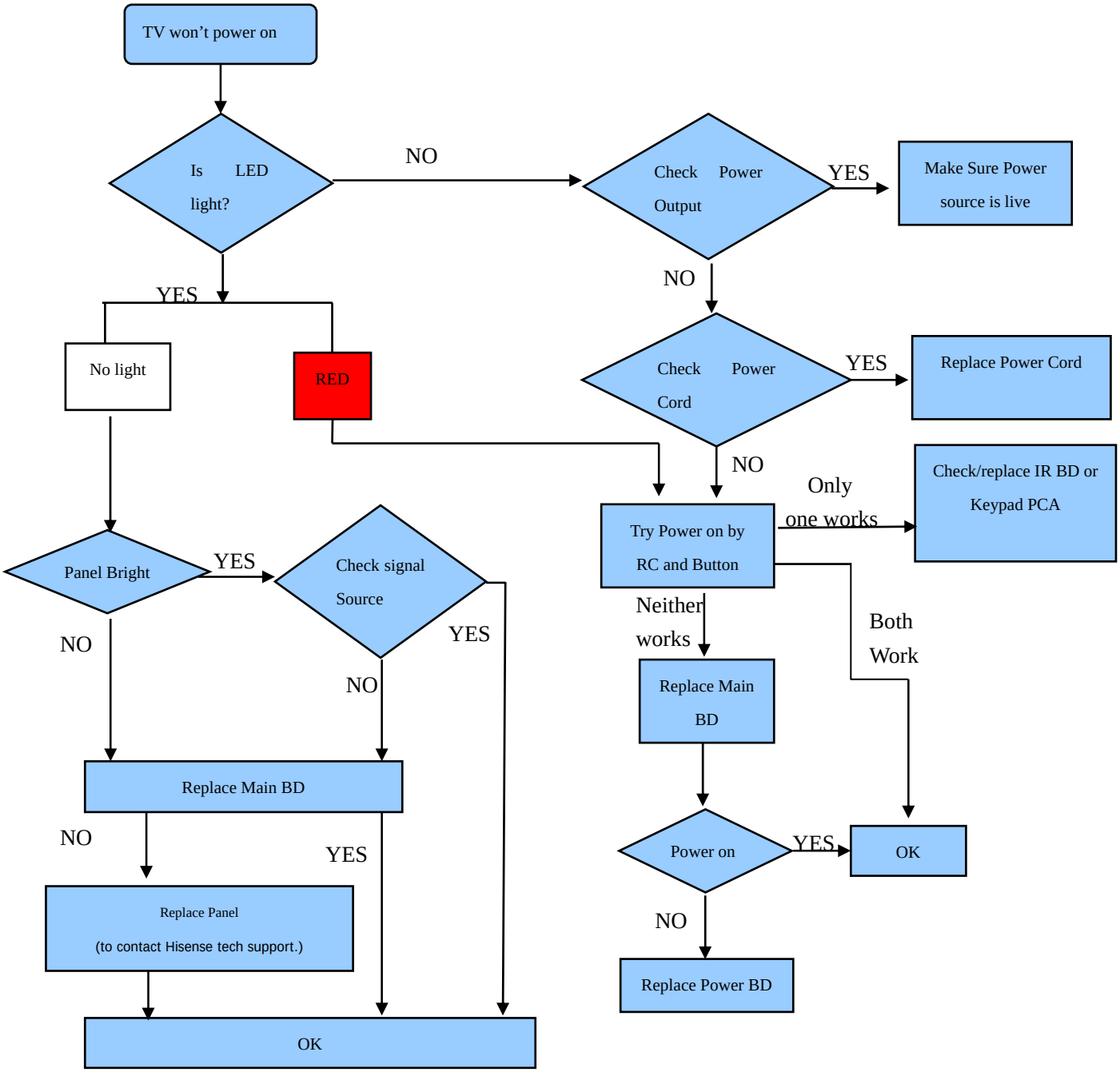
5.1 Troubleshooting for Remote Control



5.2 Troubleshooting for Function Key



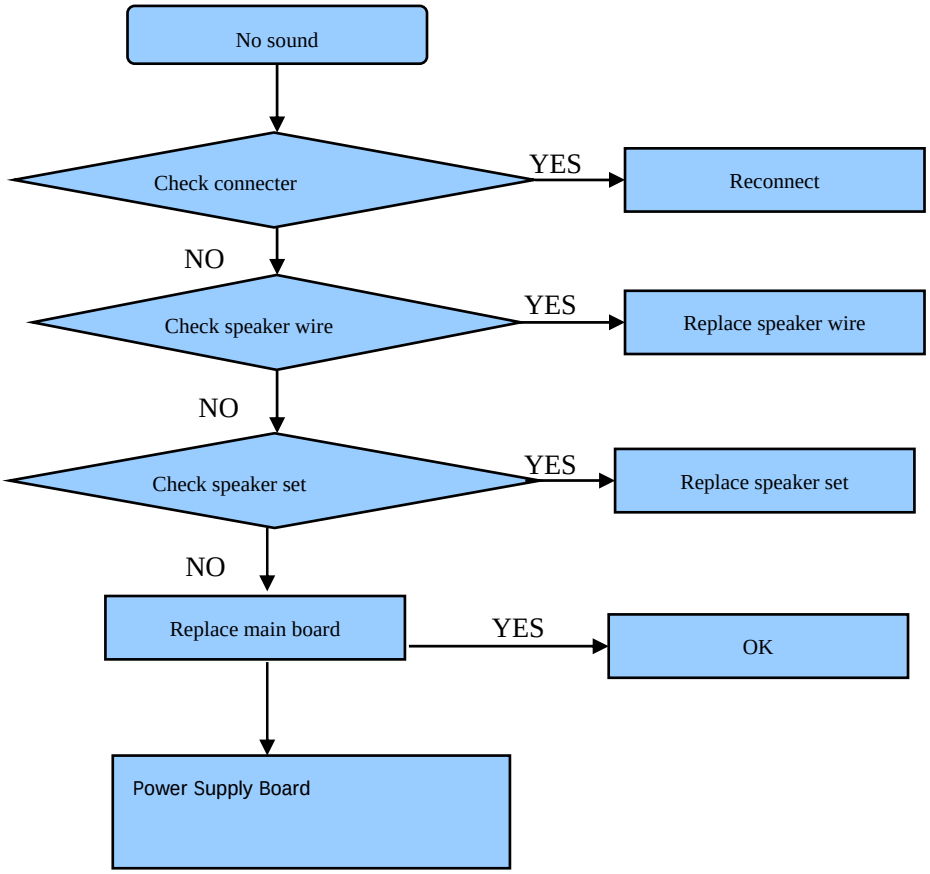
5.3 TV won’t Power On



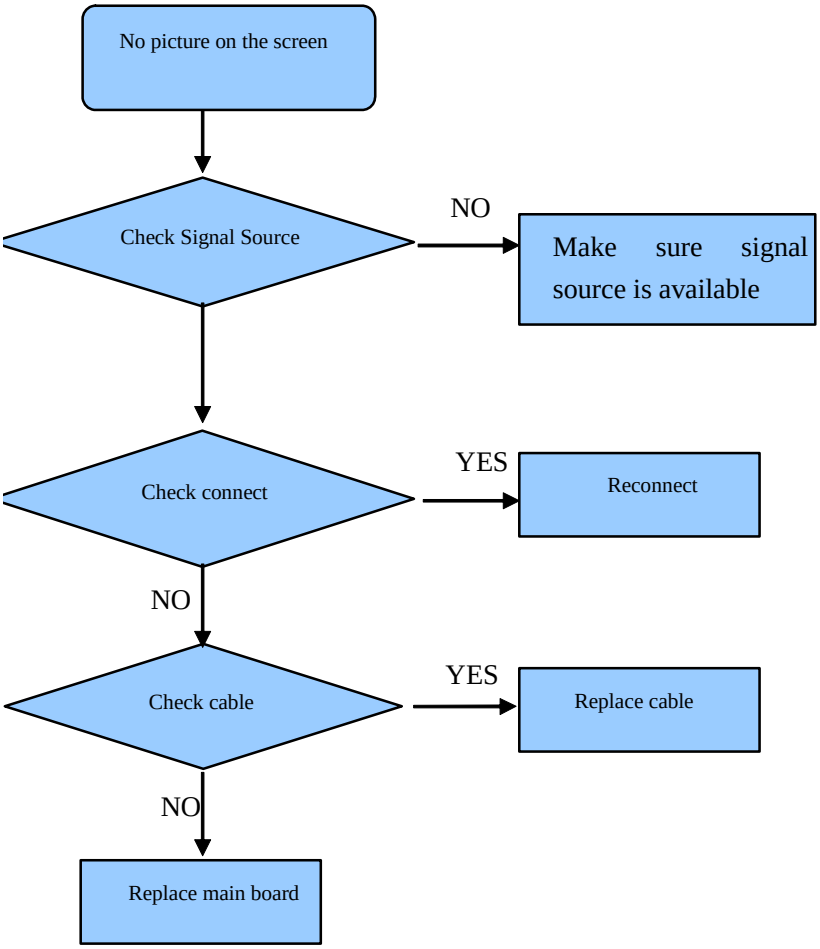
Notice:

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

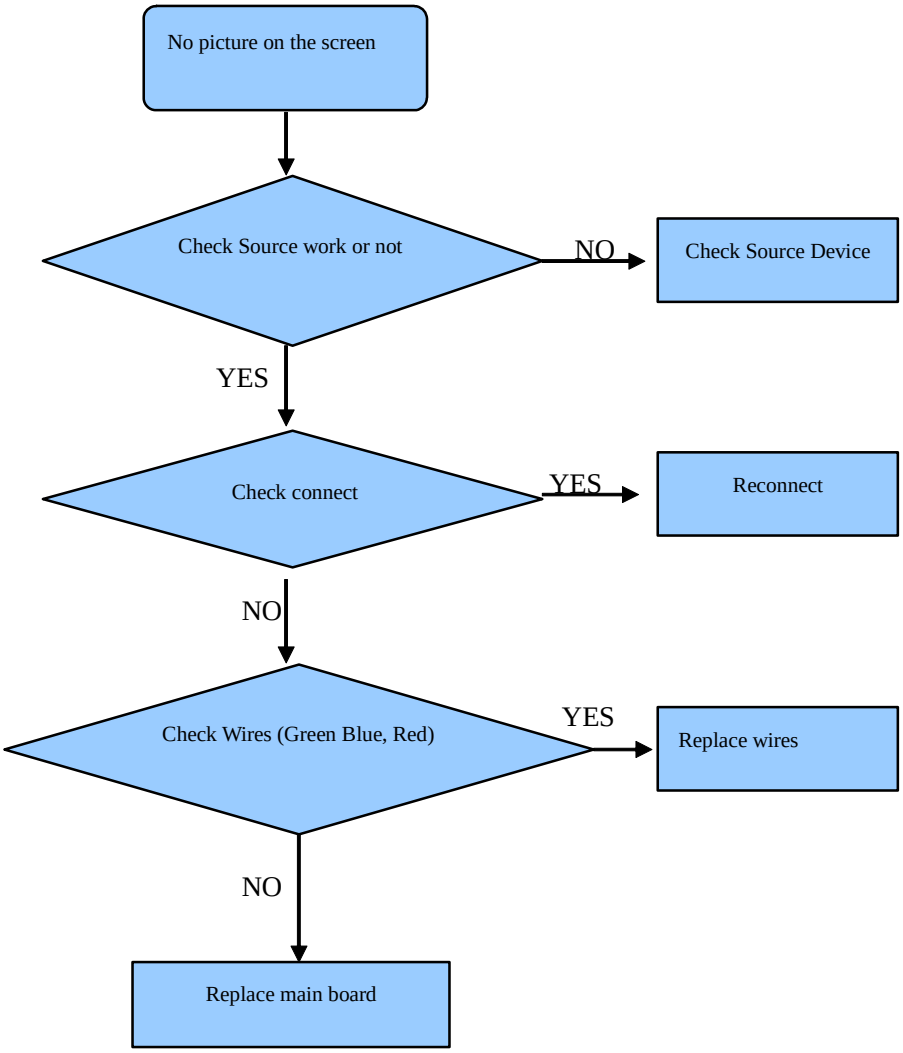
5.4 Troubleshooting for Audio



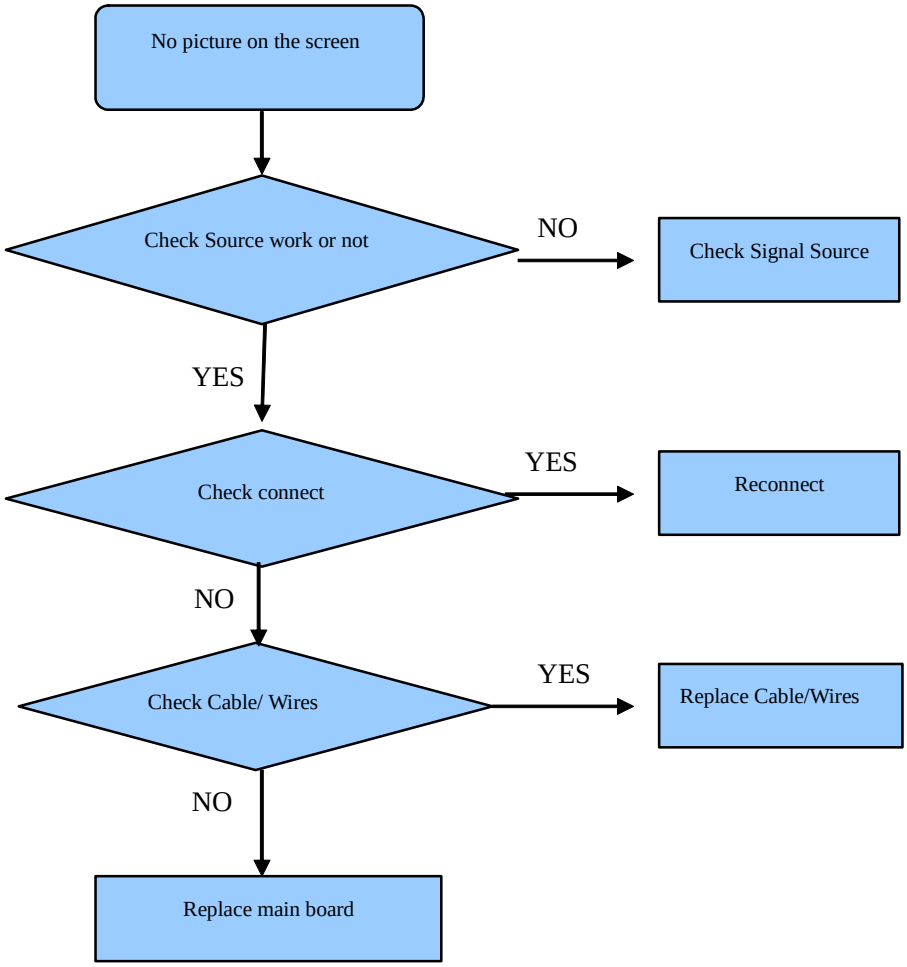
5.5 Troubleshooting for TV/VGA/HDMI input



5.6 Troubleshooting for YPbPr input

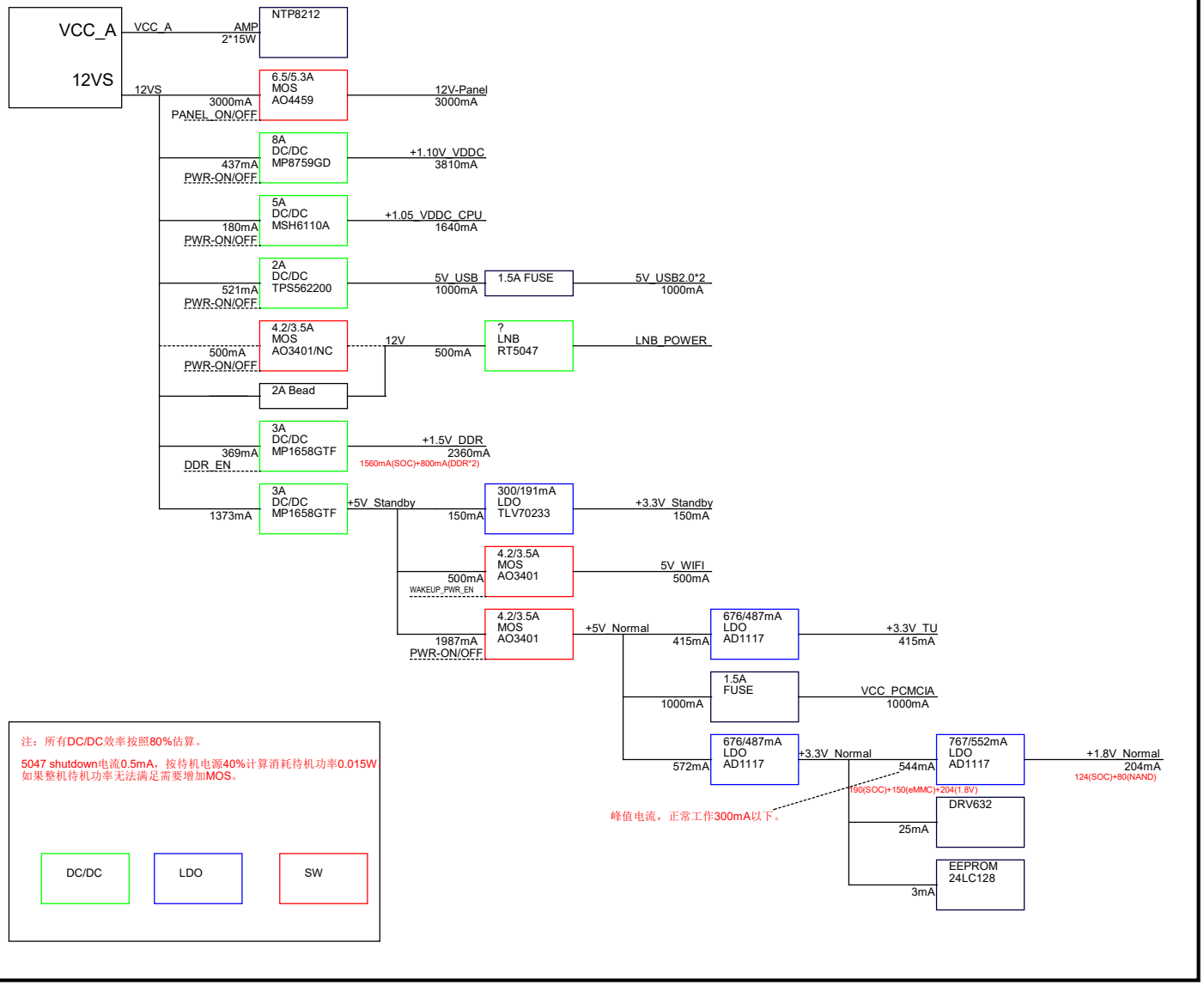


5.7 Troubleshooting for Video input



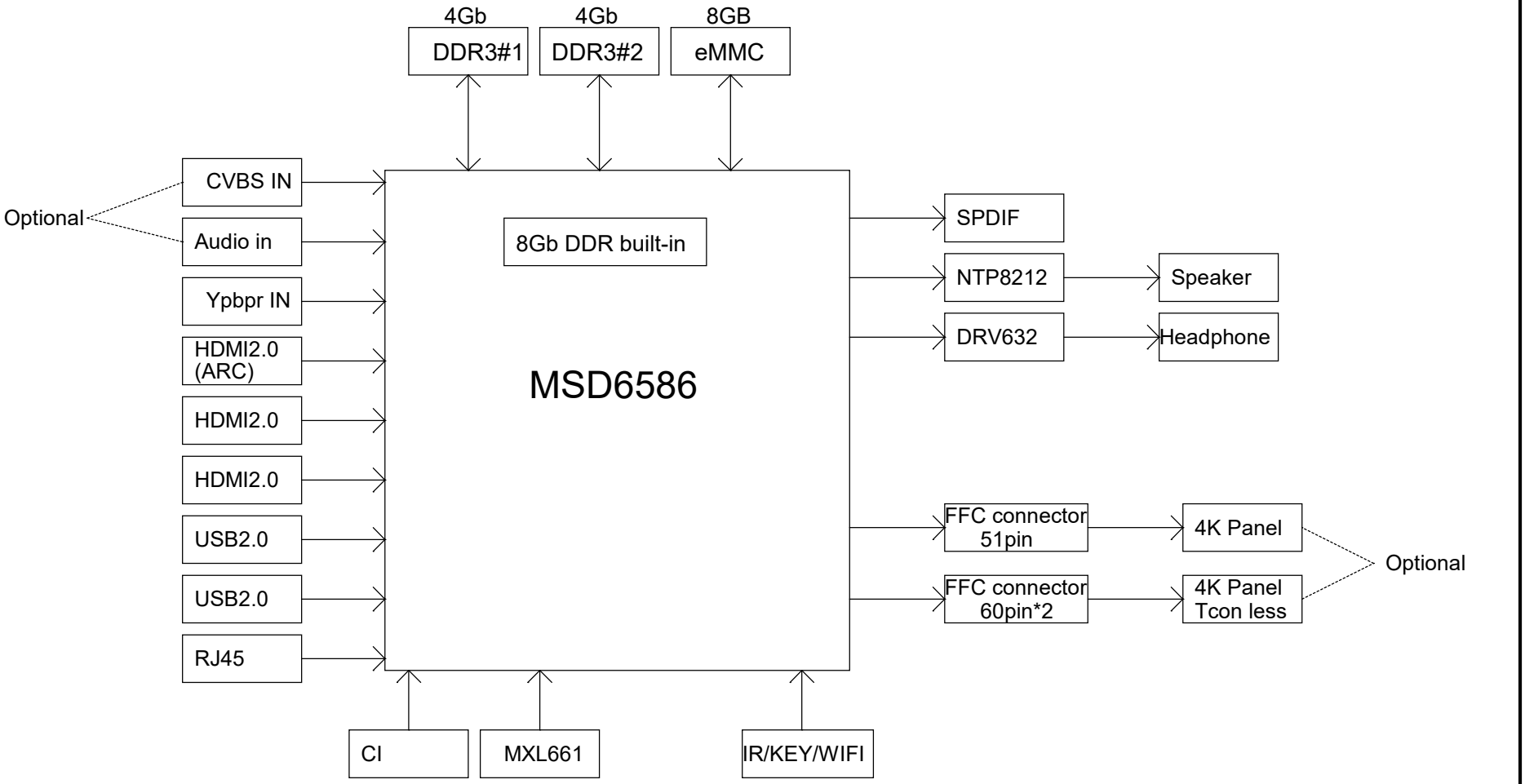
6. Signals Block Diagram & power assign & schematic diagram

Power tree

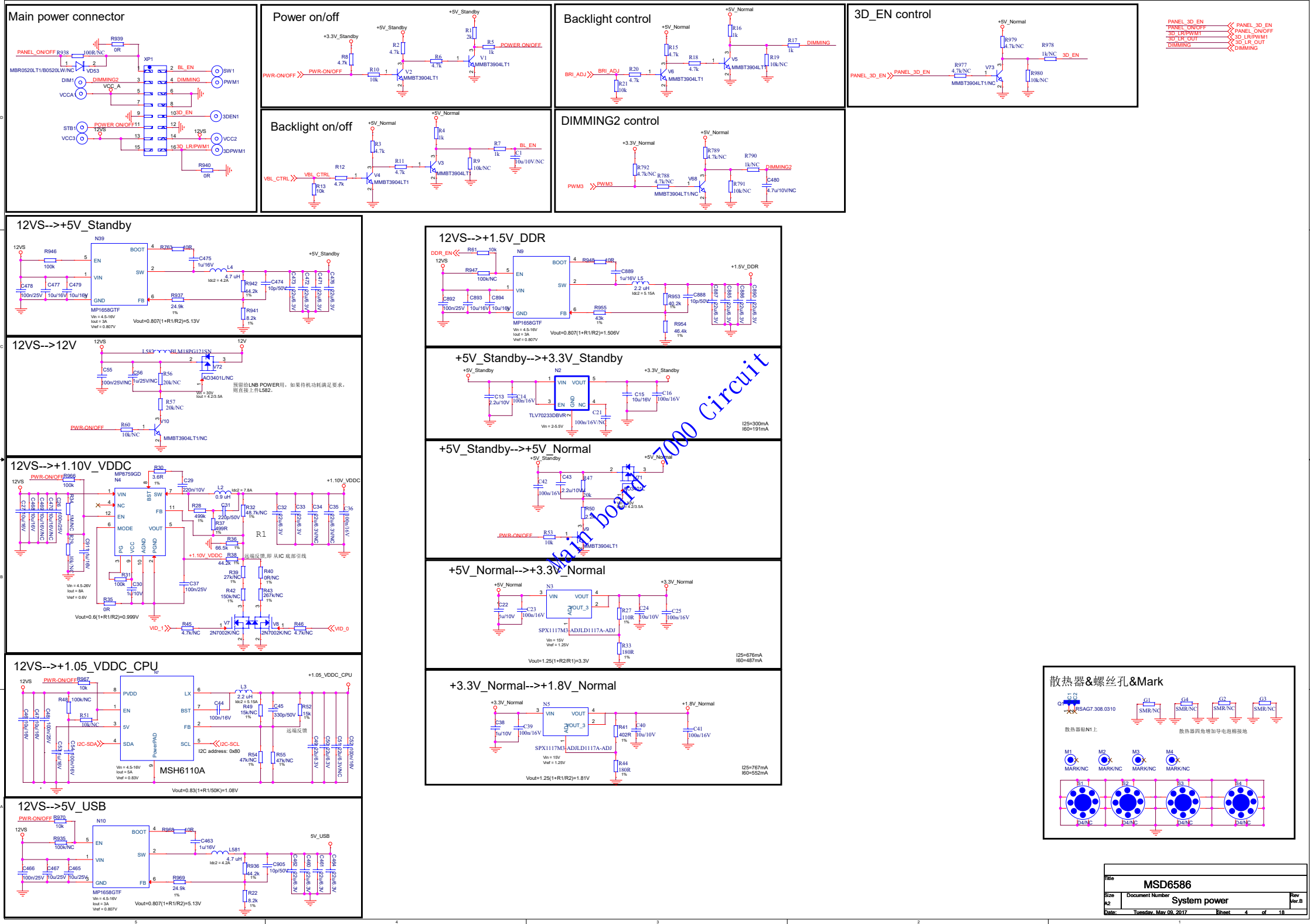


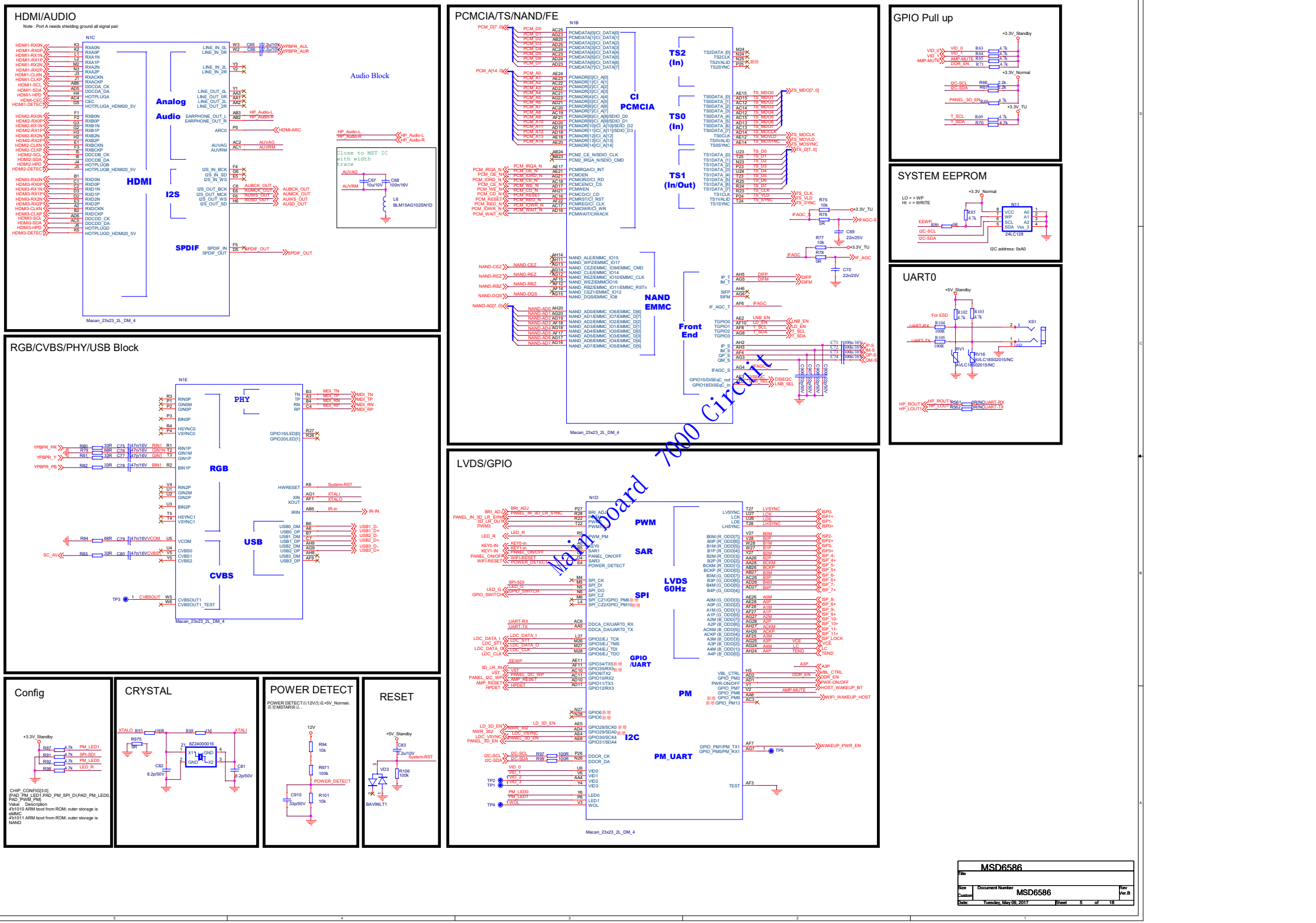
Title	MSD6586	
Size: B	Document Number: Power Tree	Rev: Ver.B
Date: Tuesday, May 09, 2017	Sheet 2 of 18	

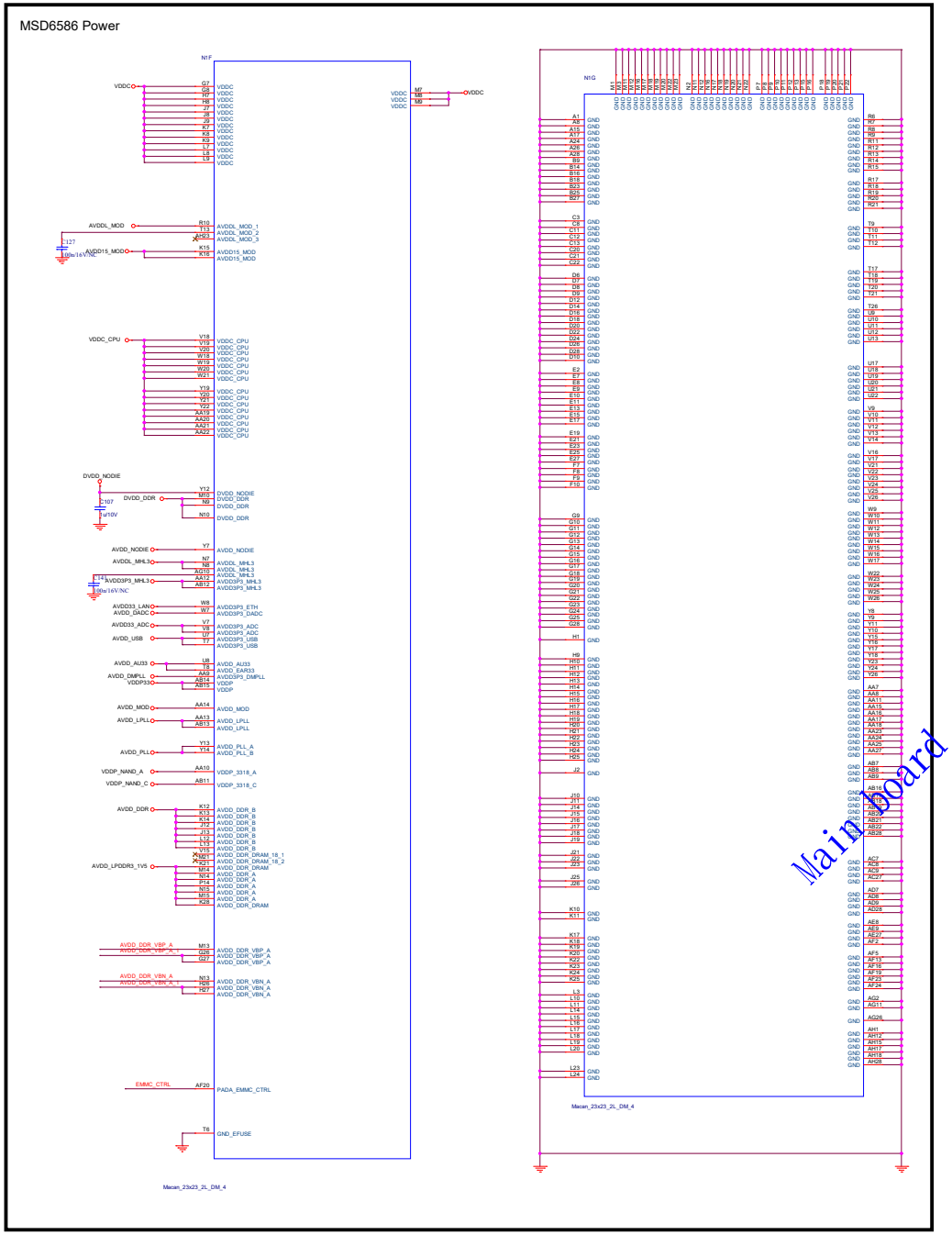
Block diagram

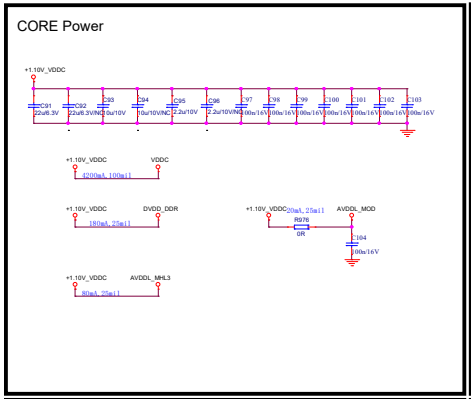


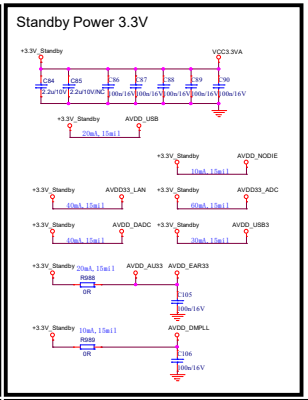
Title	MSD6586	
Size: B	Document Number: Block Diagram	Rev: Ver.B
Date: Tuesday, May 09, 2017	Sheet 3 of 18	

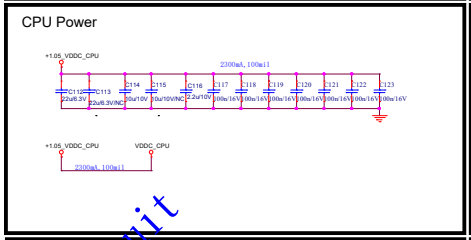

Main power connector
Power on/off
Backlight control
3D_EN control
Backlight on/off
DIMMING2 control
12VS-->+5V_Standby
12VS-->12V
12VS-->+1.10V_VDDC
12VS-->+1.05_VDDC_CPU
12VS-->5V_USB
12VS-->+1.5V_DDR
+5V_Standby-->+3.3V_Standby
+5V_Standby-->+5V_Normal
+5V_Normal-->+3.3V_Normal
+3.3V_Normal-->+1.8V_Normal
散热器&螺丝孔&Mark
Main board 7000 Circuit
MSD6586
System power
Tuesday, May 09, 2017

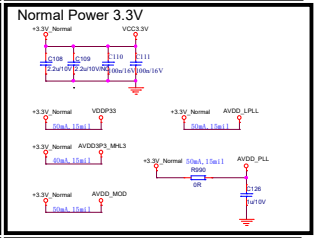

HDMI/AUDIO
Note : Port A needs shielding ground all signal pair
N1C
HDMI1-RX0N
HDMI1-RX0P
HDMI1-RX1N
HDMI1-RX1P
HDMI1-RX2N
HDMI1-RX2P
HDMI1-CLKN
HDMI1-CLKP
HDMI1-SCL
HDMI1-SDA
HDMI1-HPD
HDMI-CEC
HDMI1-DETEC
HOTPLUGA_HDMI20_5V
HDMI2-RX0N
HDMI2-RX0P
HDMI2-RX1N
HDMI2-RX1P
HDMI2-RX2N
HDMI2-RX2P
HDMI2-CLKN
HDMI2-CLKP
HDMI2-SCL
HDMI2-SDA
HDMI2-HPD
HOTPLUGB
HOTPLUGB_HDMI20_5V
HDMI2-DETEC
HDMI3-RX0N
HDMI3-RX0P
HDMI3-RX1N
HDMI3-RX1P
HDMI3-RX2N
HDMI3-RX2P
HDMI3-CLKN
HDMI3-CLKP
HDMI3-SCL
HDMI3-SDA
HDMI3-HPD
HOTPLUGD
HOTPLUGD_HDMI20_5V
HDMI3-DETEC
HDMI
Analog Audio
I2S
SPDIF
LINE_IN_0L
LINE_IN_0R
LINE_IN_2L
LINE_IN_2R
LINE_OUT_0L
LINE_OUT_0R
LINE_OUT_2L
LINE_OUT_2R
EARPHONE_OUT_L
EARPHONE_OUT_R
HP_Audio-L
HP_Audio-R
HDMI-ARC
AUVAG
AUVRM
I2S_IN_BCK
I2S_IN_SD
I2S_IN_WS
I2S_OUT_BCK
I2S_OUT_MCK
I2S_OUT_WS
I2S_OUT_SD
SPDIF_IN
SPDIF_OUT
Audio Block
Close to MST IC with width trace
C67 10u/10V
C68 100n/16V
L6 BLM15AG102SN1D
Macan_23x23_2L_DM_4
PCMCIA/TS/NAND/FE
N1B
PCM_D[7..0]
PCM_A[14..0]
PCM_IRQA_N
PCM_CE_N
PCM_IORD_N
PCM_CE_N
PCM_WE_N
PCM_CD_N
PCM_RESET
PCM_REG_N
PCM_IOWR_N
PCM_WAIT_N
CI PCMCIA
TS2 (In)
TS0 (In)
TS1 (In/Out)
TS_MDO[7..0]
TS_MOCLK
TS_MOVLD
TS_MOSYNC
TS_CLK
TS_VLD
TS_SYNC
IFAGC_S
IFAGC
IF_AGC
NAND-CEZ
NAND-REZ
NAND-RBZ
NAND-DQS
NAND-AD[7..0]
NAND EMMC
Front End
LNB_EN
I_SCL
I_SDA
DISEQC
LNB_SEL
Macan_23x23_2L_DM_4
GPIO Pull up
+3.3V_Standby
+3.3V_Normal
+3.3V_TU
VID_0
VID_1
AMP-MUTE
DDR_EN
I2C-SCL
I2C-SDA
PANEL_3D_EN
T_SCL
T_SDA
SYSTEM EEPROM
LO = > WP
HI = > WRITE
EEWP
24LC128
I2C address: 0xA0
UART0
For ESD
UART-RX
UART-TX
XS1
RV1
RV16 AVLC18S02015/NC
HP_ROUT
HP_LOUT
RS61
RS62
DRINCUART-RX
DRINCUART-TX
RGB/CVBS/PHY/USB Block
N1E
PHY
RGB
USB
CVBS
RIN0P
GIN0M
GIN0P
BIN0P
HSYNC0
VSYNC0
RIN1P
GIN1M
GIN1P
BIN1P
RIN2P
GIN2M
GIN2P
BIN2P
HSYNC1
VSYNC1
VCOM
CVBS0
CVBS1
CVBS2
CVBSOUT1
CVBSOUT1_TEST
MDI_TN
MDI_TP
MDI_RN
MDI_RP
GPIO19/LED[0]
GPIO20/LED[1]
HWRESET
System-RST
XIN
XOUT
XTALI
XTALO
IRIN
IR-IN
USB0_DM
USB0_DP
USB1_DM
USB1_DP
USB2_DM
USB2_DP
USB3_DM
USB3_DP
USB1_D-
USB1_D+
USB2_D-
USB2_D+
USB3_D-
USB3_D+
YPBPR_PR
YPBPR_Y
YPBPR_PB
SC_AV
Macan_23x23_2L_DM_4
LVDS/GPIO
N1D
PWM
SAR
SPI
GPIO /UART
I2C
PM_UART
PM
LVDS 60Hz
BRI_ADJ
PANEL_IN_3D_LR_SYNC
3D_LR_OUT
PWM3
LED_R
KEY0-in
KEY1-in
PANEL_ON/OFF
WIFI-RESET
POWER_DETECT
SPI_CK
SPI_DI
SPI_DO
SPI_CZ
SPI_CZ1/GPIO_PM6 新增
SPI_CZ2/GPIO_PM10 新增
LED_G
GPIO_SWITCH
UART-RX
UART-TX
DDCA_CK/UART0_RX
DDCA_DA/UART0_TX
LDC_DATA_I
LDC_STT
LDC_DATA_Q
LDC_CLK
GPIO2/EJ_TCK
GPIO3/EJ_TMS
GPIO4/EJ_TDI
GPIO5/EJ_TDO
EEWP
3D_LR_IN
VST
PANEL_I2C_WP
AMP_RESET
HPDET
GPIO34/TX5 新增
GPIO35/RX5 新增
GPIO9/TX2
GPIO10/RX2
GPIO11/TX3
GPIO12/RX3
LD_3D_EN
NWR_302
LDC_VSYNC
PANEL_3D_EN
GPIO28/SCK0 新增
GPIO29/SDA0 新增
GPIO30/SCK4 新增
GPIO31/SDA4
I2C-SCL
I2C-SDA
DDCR_CK
DDCR_DA
VID_0
VID_1
VID_2
VID_3
PM_LED0
PM_LED1
TWOL
LED0
LED1
WOL
LVSYNC
LCK
LDE
LHSYNC
B0M (R_ODD[7])
B0P (R_ODD[6])
B1M (R_ODD[5])
B1P (R_ODD[4])
B2M (R_ODD[3])
B2P (R_ODD[2])
BCKM (R_ODD[1])
BCKP (R_ODD[0])
B3M (G_ODD[7])
B3P (G_ODD[6])
B4M (G_ODD[5])
B4P (G_ODD[4])
A0M (G_ODD[3])
A0P (G_ODD[2])
A1M (G_ODD[1])
A1P (G_ODD[0])
A2M (B_ODD[7])
A2P (B_ODD[6])
ACKM (B_ODD[5])
ACKP (B_ODD[4])
A3M (B_ODD[3])
A3P (B_ODD[2])
A4M (B_ODD[1])
A4P (B_ODD[0])
ISP0-
ISP1+
ISP1-
ISP0+
ISP2-
ISP2+
ISP3-
ISP3+
ISP_4-
ISP_4+
ISP_5-
ISP_5+
ISP_6-
ISP_6+
ISP_7-
ISP_7+
ISP_8-
ISP_8+
ISP_9-
ISP_9+
ISP_10-
ISP_10+
ISP_11-
ISP_11+
ISP_LOCK
VCE
LC
TEND
VBL_CTRL
GPIO_PM3
PWR-ON/OFF
GPIO_PM7
GPIO_PM8
新增 GPIO_PM9
新增 GPIO_PM13
HOST_WAKEUP_BT
WIFI_WAKEUP_HOST
GPIO_PM1/PM_TX1
GPIO_PM5/PM_RX1
WAKEUP_PWR_EN
TEST
Macan_23x23_2L_DM_4
Mainboard
7000 Circuit
Config
+3.3V_Standby
PM_LED1
SPI-SDI
PM_LED0
LED_R
CHIP_CONFIG[3:0]
{PAD_PM_LED1,PAD_PM_SPI_DI,PAD_PM_LED0,PAD_PWM_PM}
Value Description
4'b1010 ARM boot from ROM; outer storage is eMMC
4'b1011 ARM boot from ROM; outer storage is NAND
CRYSTAL
XTALO
XTALI
8Z24000016
C82 8.2p/50V
C81 8.2p/50V
POWER DETECT
POWER DETECT由12V生成+5V_Normal.
需要MSTAR确认。
12V
R94 10k
R971 100k
POWER_DETECT
C910 33p/50V
R101 10k
RESET
+5V_Standby
C83 2.2u/10V
System-RST
VD3
R106 100k
BAV99LT1
MSD6586
Title
Size Custom
Document Number MSD6586
Rev Ver.B
Date: Tuesday, May 09, 2017
Sheet 5 of 18

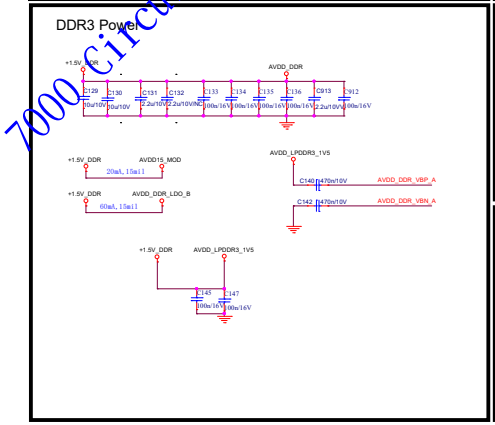


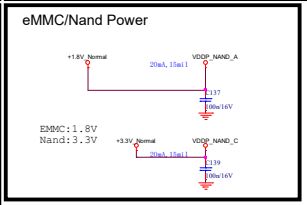


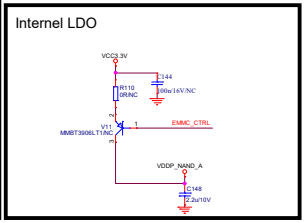












Main board 7000 circuit

Title	MSD6586	
Size: b	Document Number: MSD6586 power	Rev: Ver.B
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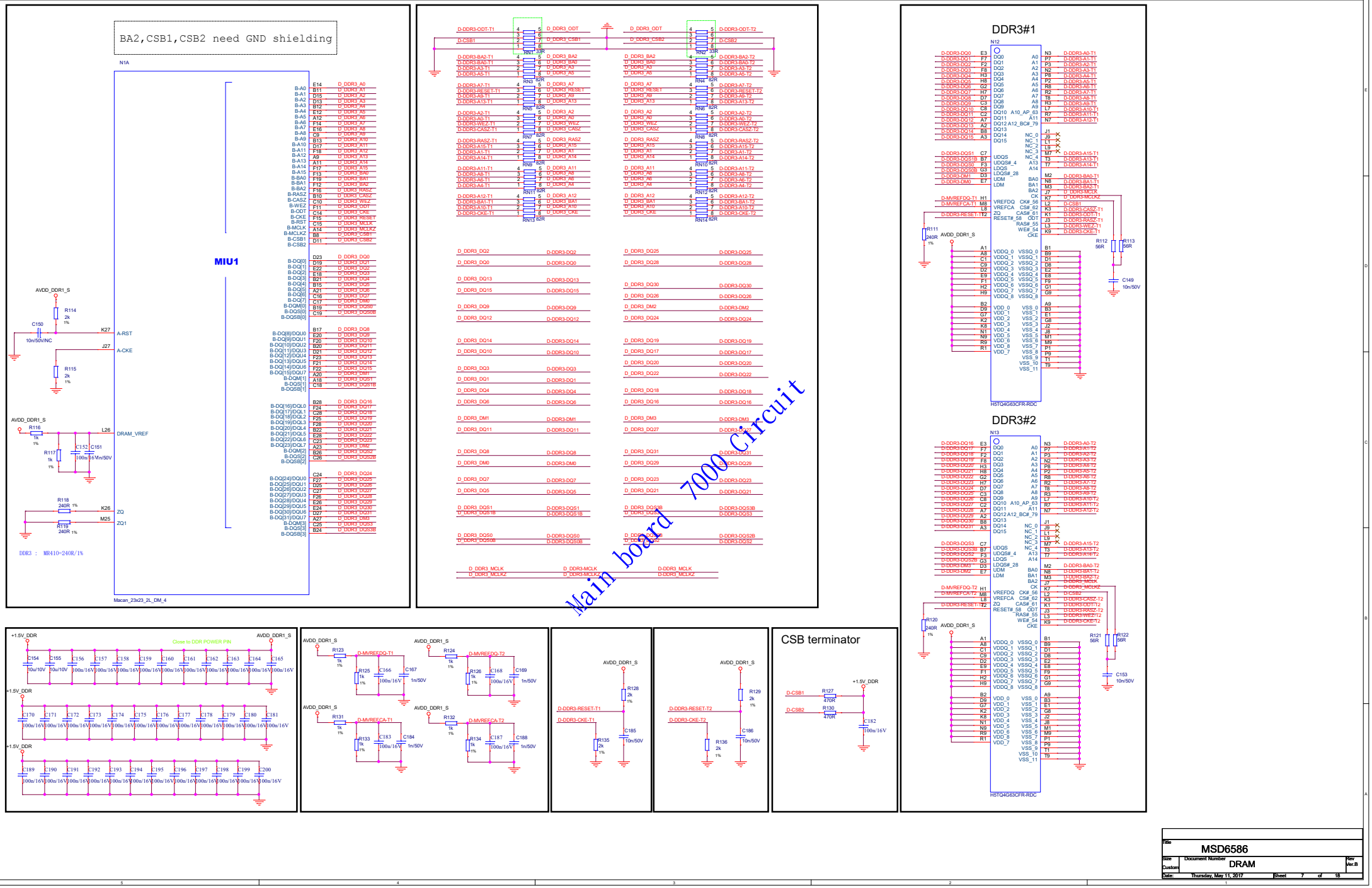
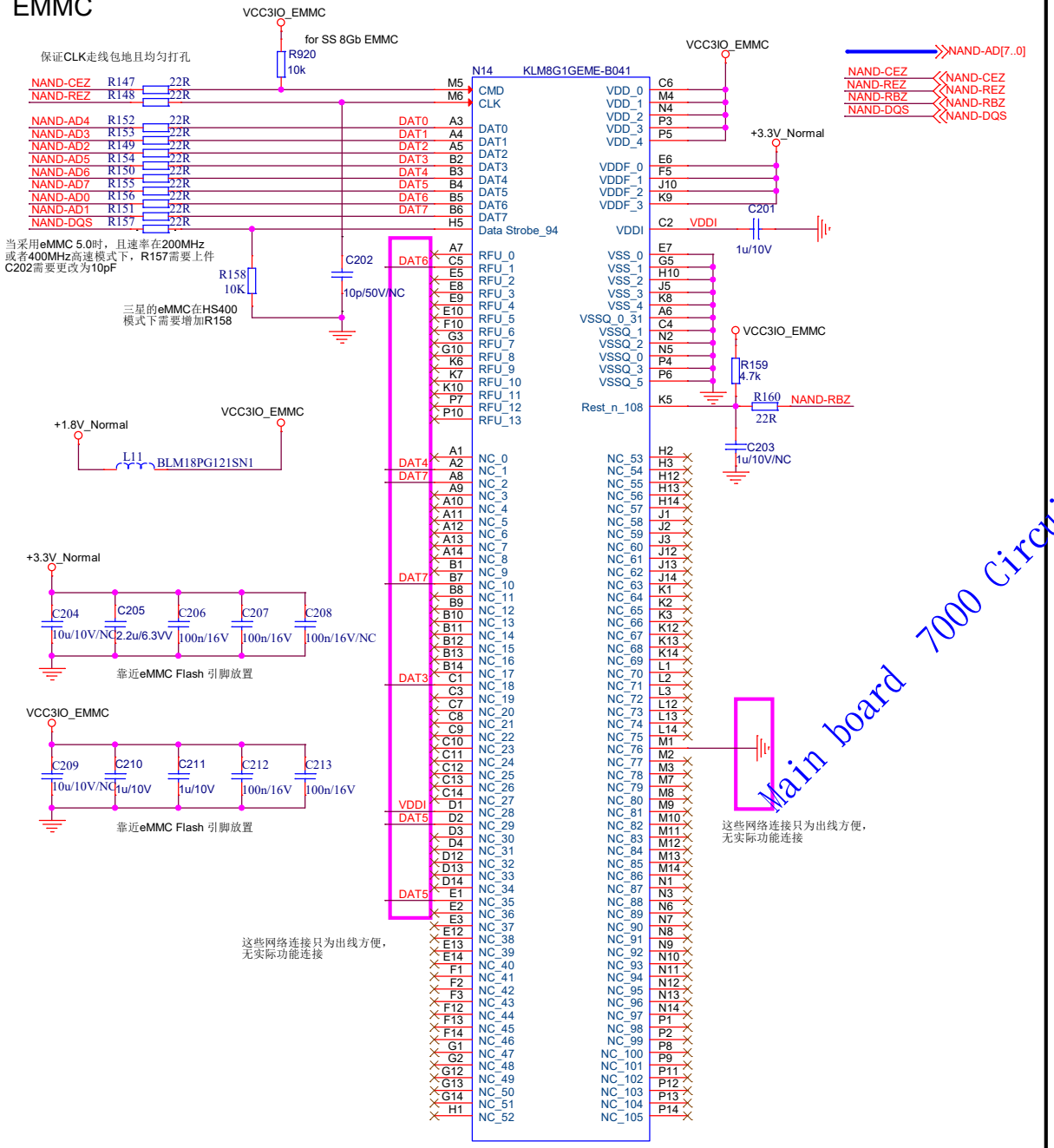


Title	MSD6586		
Size	Document Number	DRAM	Rev Ver.B
Custom			
Date:	Thursday, May 11, 2017	Sheet 7 of 18	

EMMC



Title	MSD6586		
Size B	Document Number EMMC		Rev Ver.B
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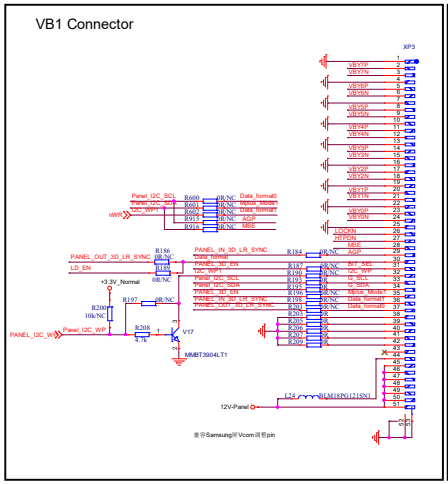

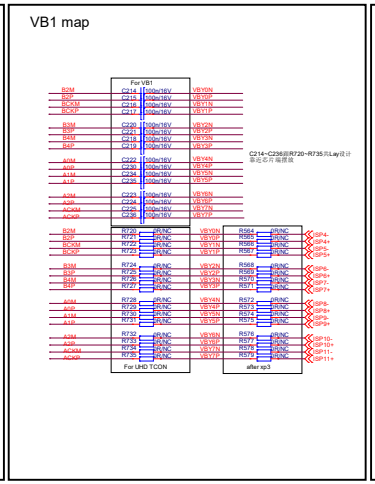

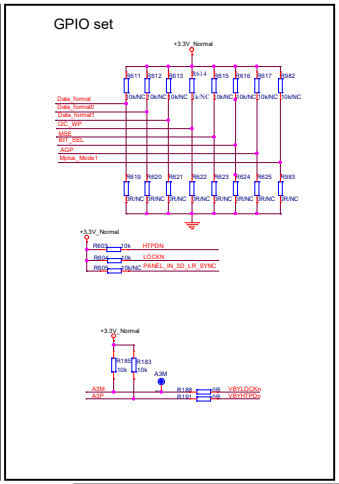

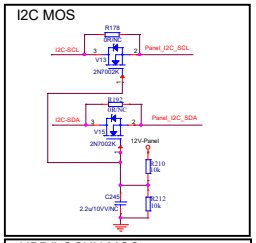

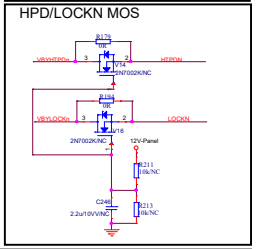

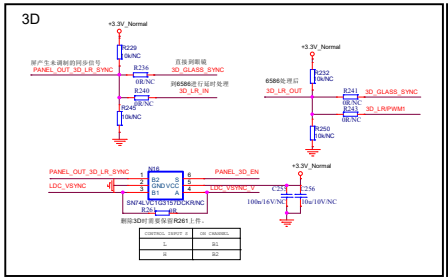

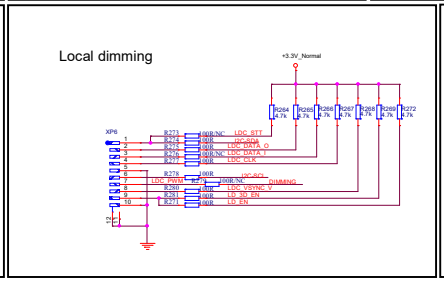

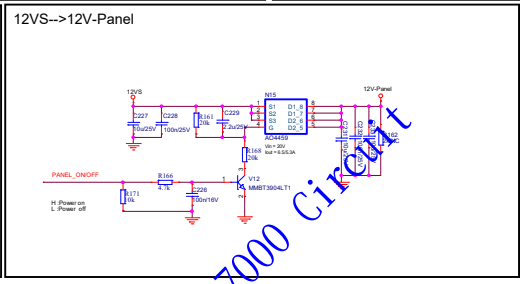

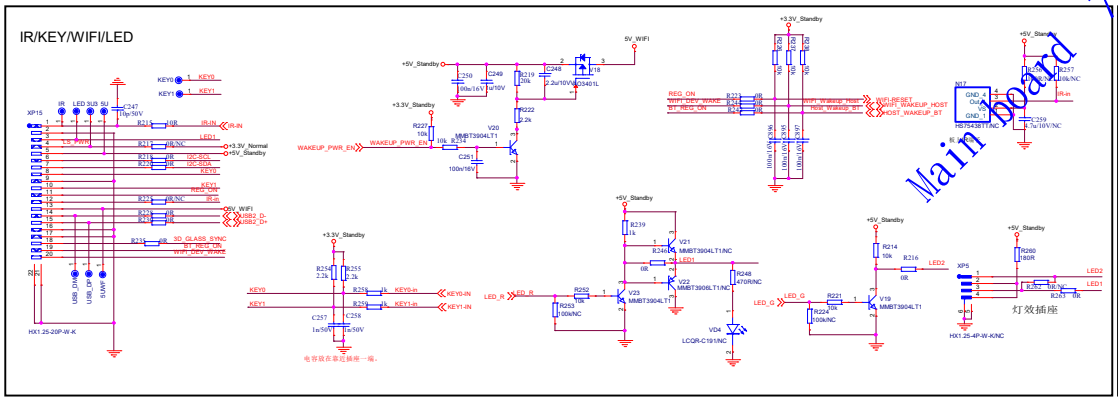

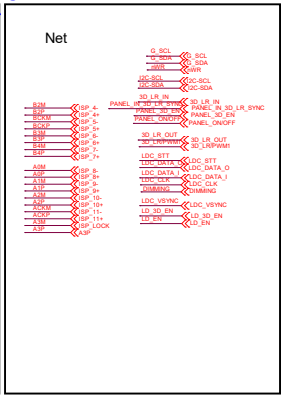

Main Board 7000 Circuit

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Size: D	Document Number: VBY1 & IR & KEY		Rev: Ver.B
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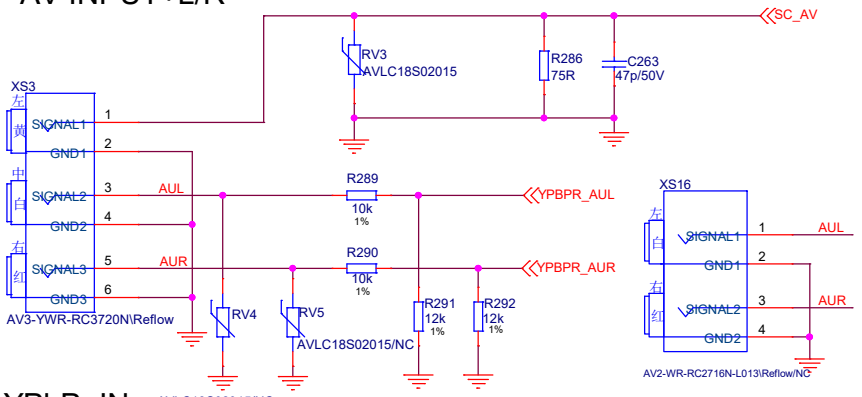
AV INPUT+L/R

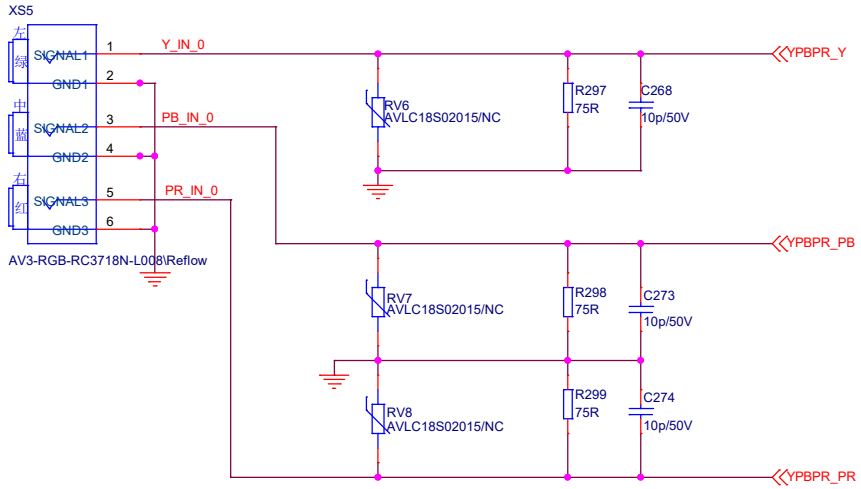
Close to CONNECTOR



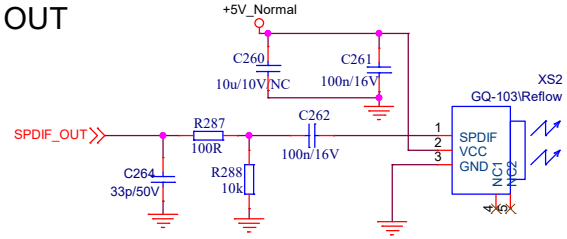
YPbPr IN

AVLC18S02015/NC

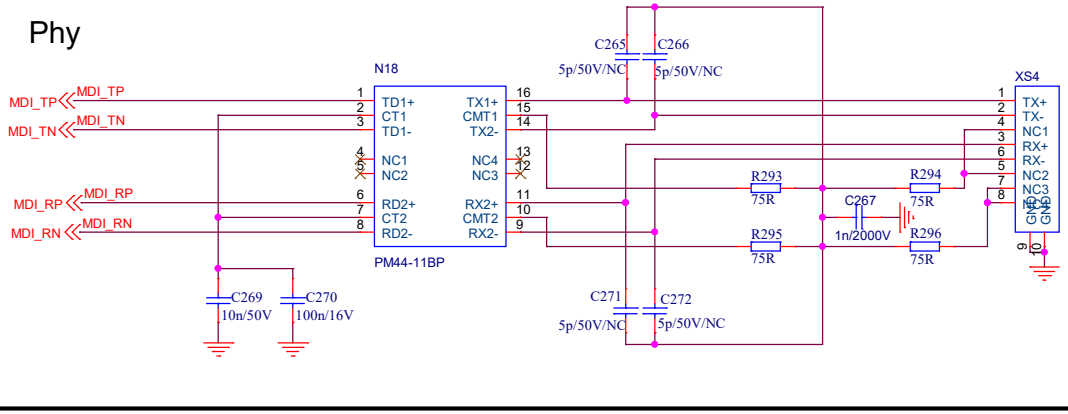
同XS3的白红叠放
兼容欧洲市场不要AV



SPDIF OUT



Phy



Main board 7000 Circuit

Title	MSD6586		
Size B	Document Number Video & Net & Spdif		Rev Ver.B
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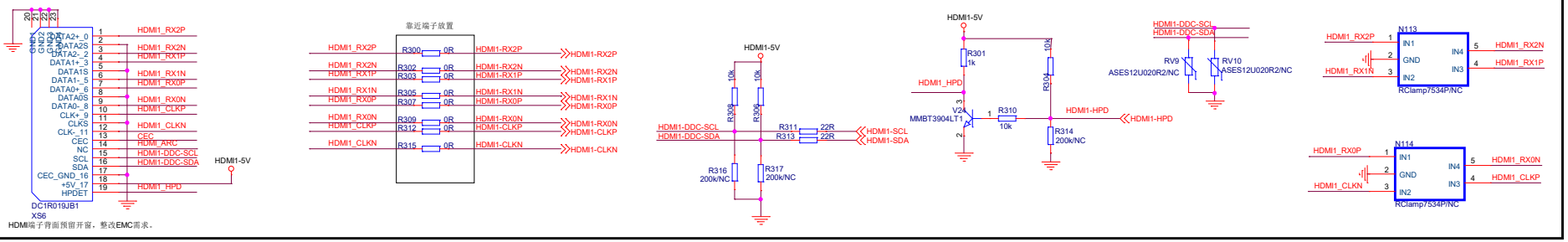
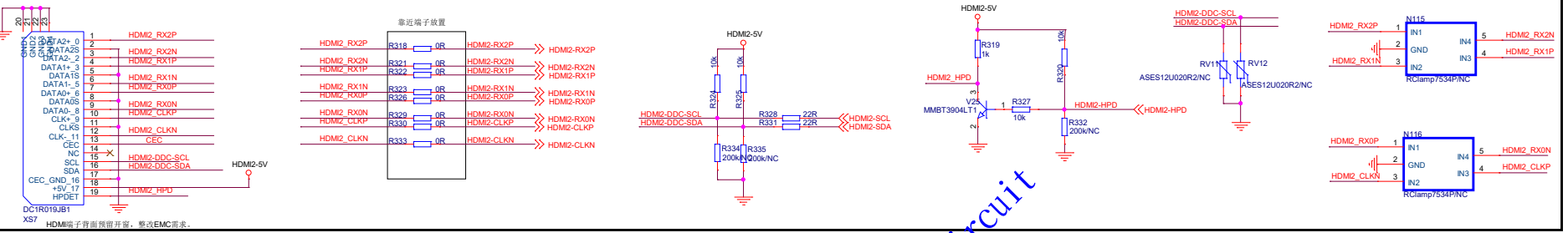
HDMI1(ARC)



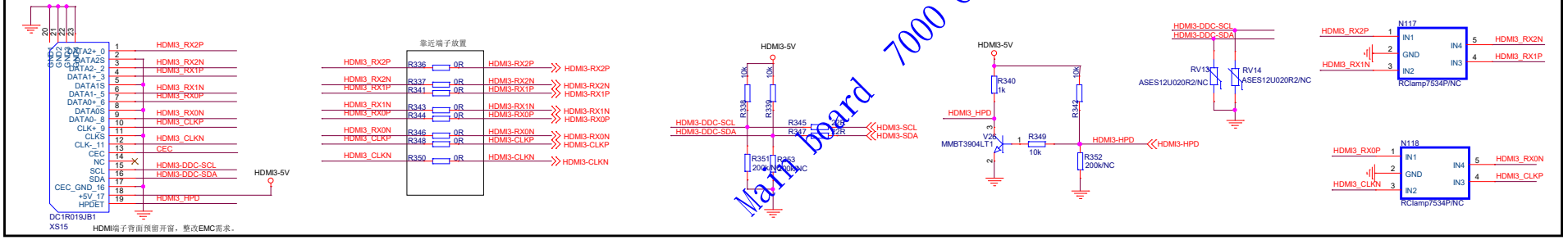
HDMI端子背面预留开窗，整改EMC需求。

HDMI2



HDMI端子背面预留开窗，整改EMC需求。

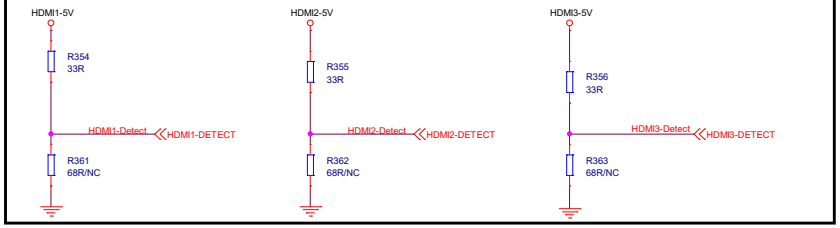
HDMI3



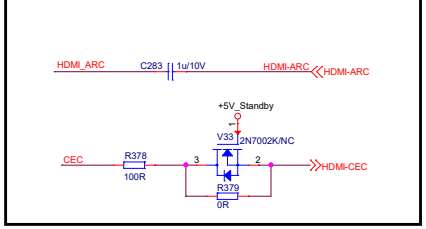
HDMI端子背面预留开窗，整改EMC需求。

Main board 7000 Circuit

HDMI DETECT



CEC & ARC



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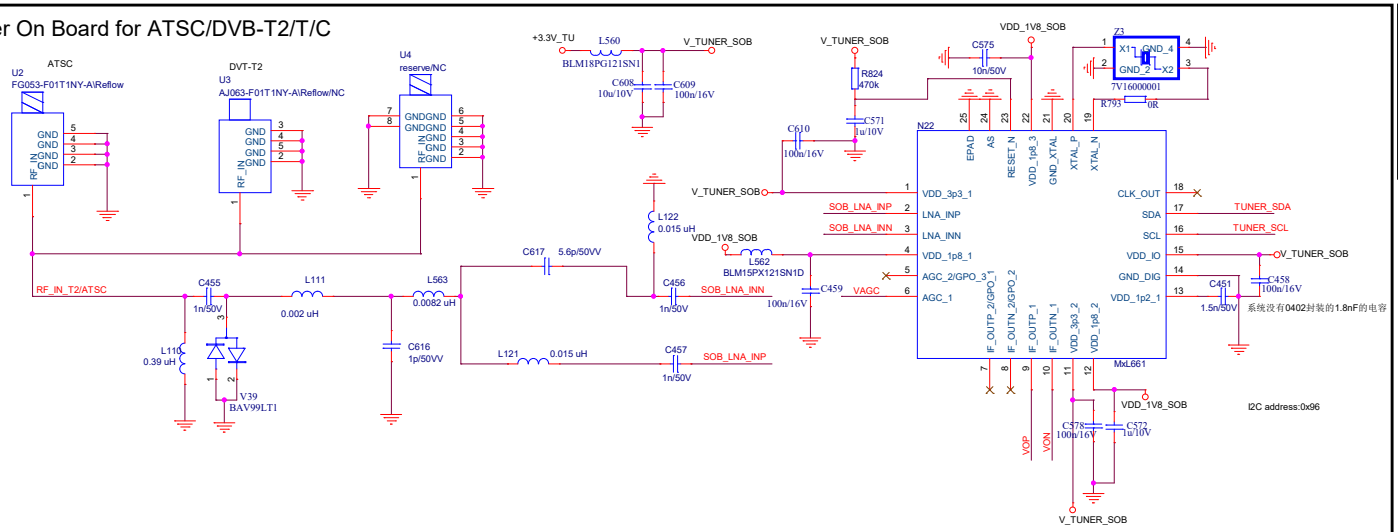
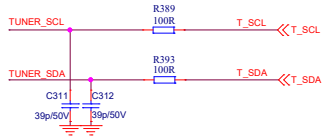
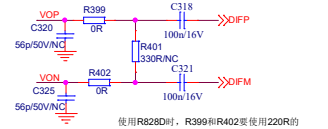
Tuner On Board for ATSC/DVB-T2/T/C



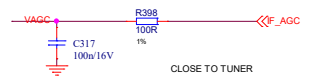
I2C Interface Filter



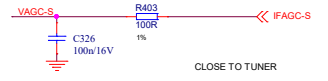
IF Interface Filter



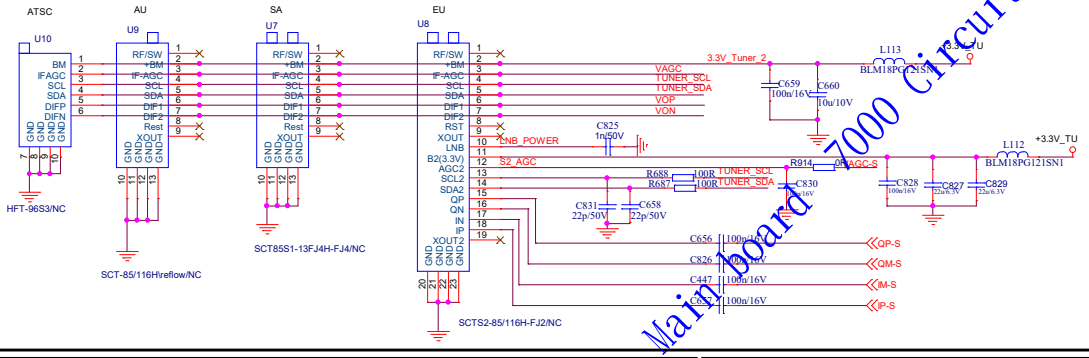
IFAGC Circuit



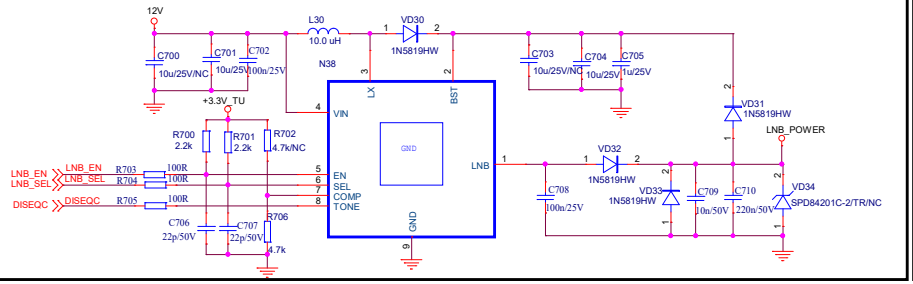
IFAGC-S Circuit



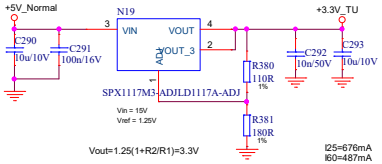
Can tuner for ATSC/DVB-T2/S2/T/S/C/ISDB



LNB POWER



+5V_Normal-->+3.3V_TU



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Size C	Document Number Tuner	Rev Ver.B
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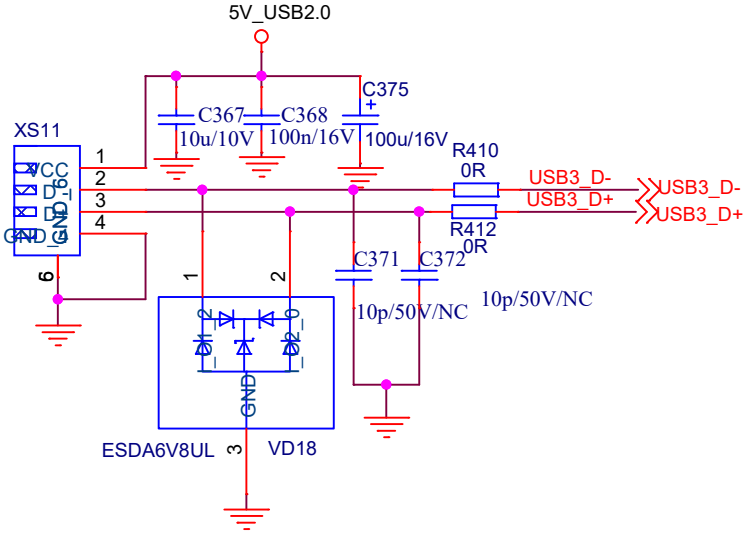
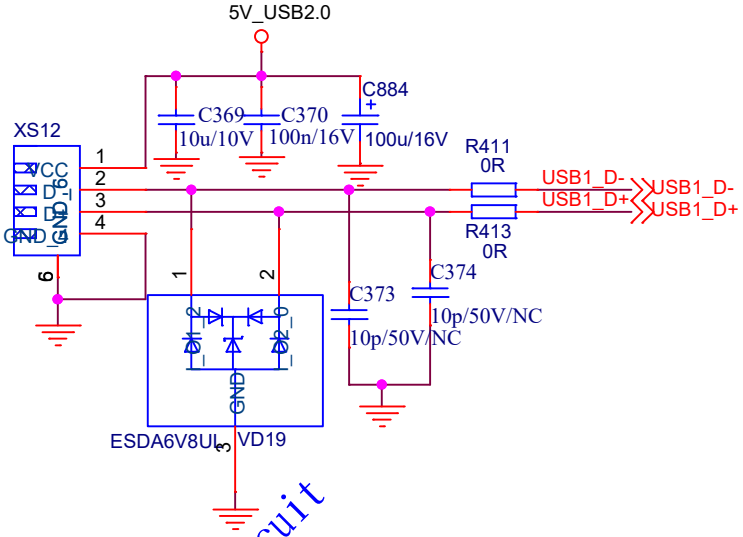
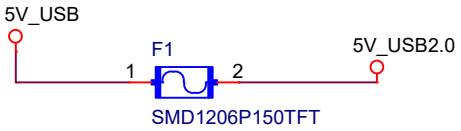
USB PORT 1



USB PORT 2



USB POWER



Main board 7000 Circuit

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Size A	Document Number USB		Rev Ver.B
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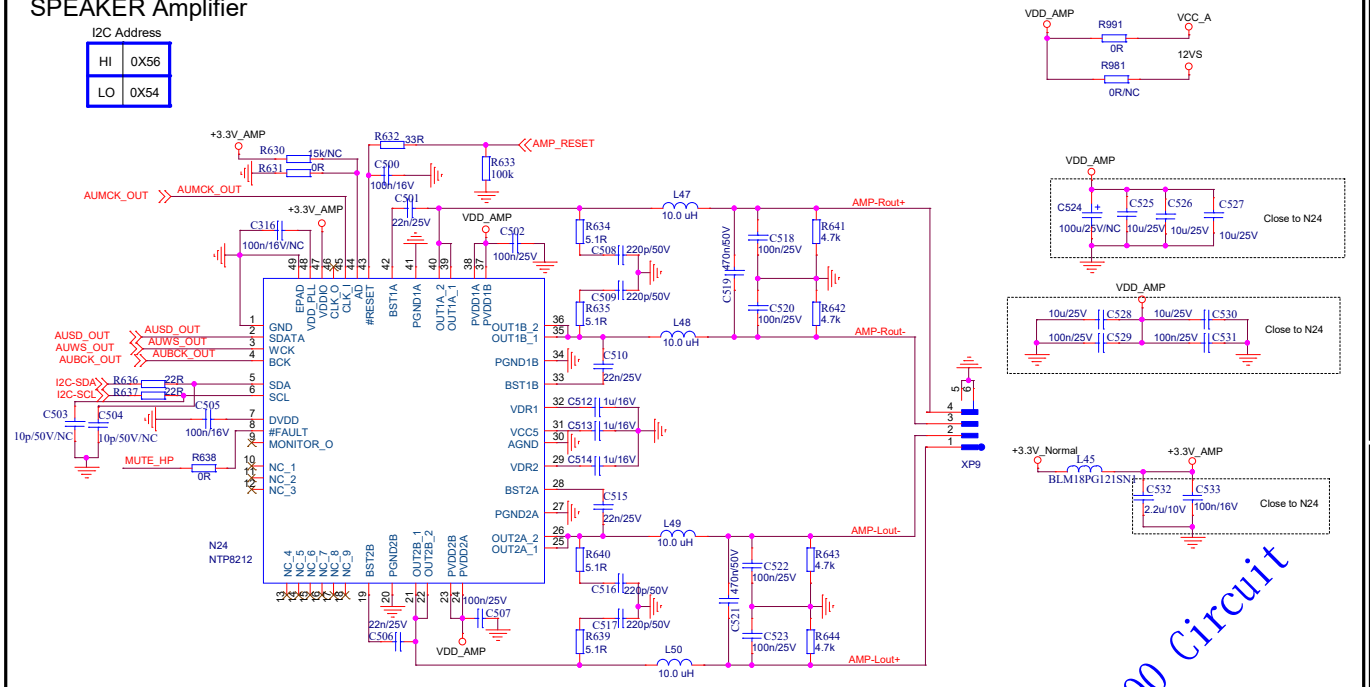
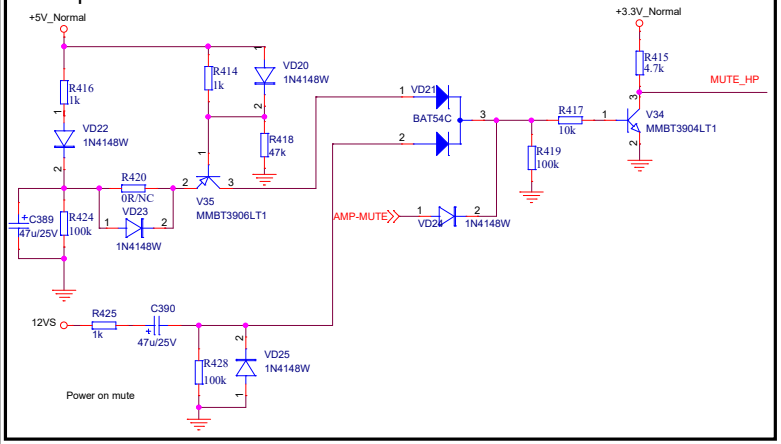
SPEAKER Amplifier

I2C Address

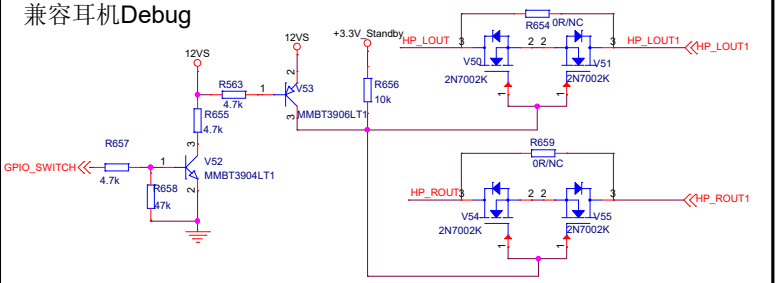
HI	0X56
LO	0X54



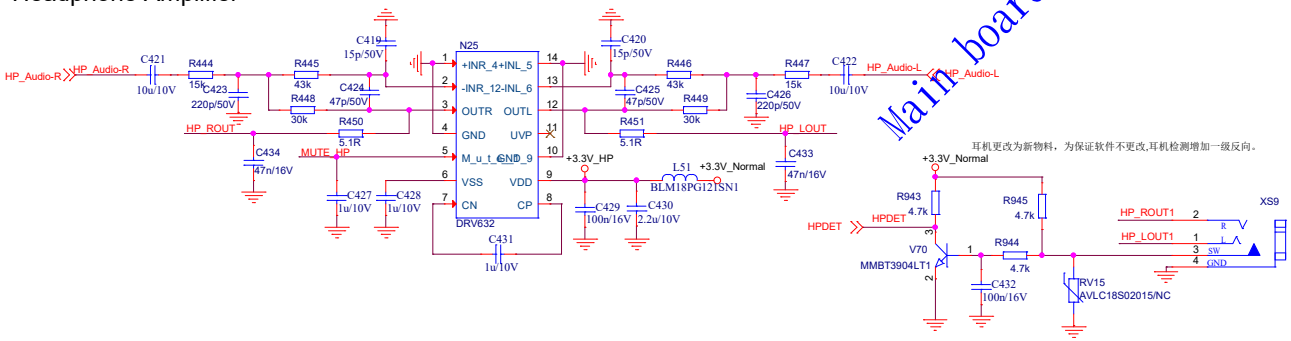
Headphone mute



兼容耳机Debug



Headphone Amplifier



耳机更改为新物料，为保证软件不更改,耳机检测增加一级反向。

Main board

7000 Circuit

Title	MSD6586		
Size: Custom	Document Number: Audio		Rev: Ver.B
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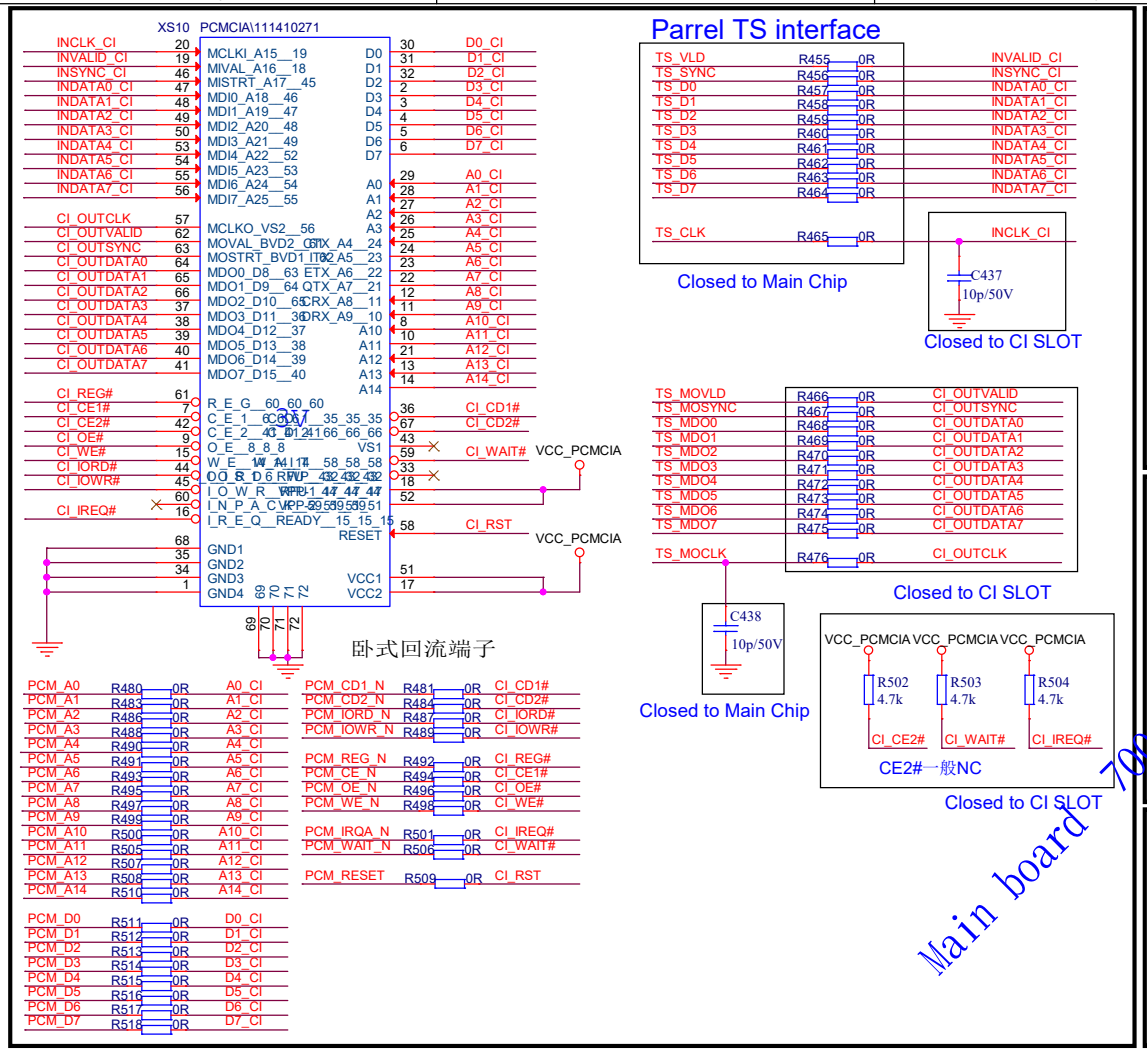
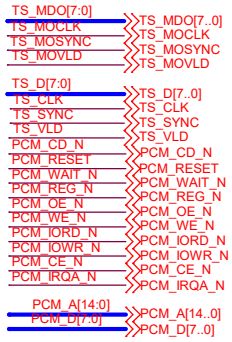
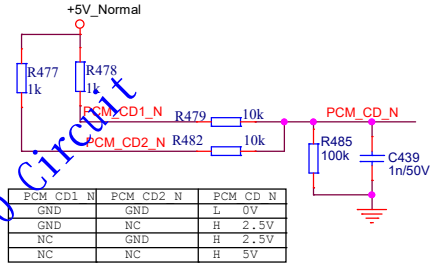


NET

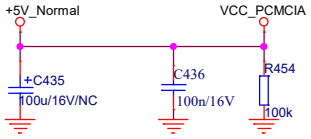


CARD DETECT



PCM_CD1_N	PCM_CD2_N	PCM_CD_N
GND	GND	L 0V
GND	NC	H 2.5V
NC	GND	H 2.5V
NC	NC	H 5V

CI Power



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VGL:-10.6
VGH:30
AVDD:15.1
VSSG:-8
VSSQ:-9.4

PMU IC:P302.11

I2C Address:A0:LOW(0x70),High(0x71)

A0-Device Address Select (7bits):
PMIC (A0 : Low → (0x70h), A0 : High → (0x71h))
VCOM (A0 : Low → (0x74h), A0 : High → (0x76h))

P303.11物料1173307

Temp Compensation

	UD 50"	UD 55"
VGL	-10.6V(1±4%) 0.4A(RMS)	-10.6V(1±4%) 0.4A(RMS)
VGHD	30V(1±3%) 0.4A(RMS)	30V(1±3%) 0.4A(RMS)
AVDD	15.6V(1±1.5%) 2A(RMS)	15.1V(1±1.5%) 2A(RMS)
VCOM	6.8V(1±5%)	6.7V(1±5%)
VSSG	-8.0V(1±4%) 0.1A(RMS)	-8.0V(1±4%) 0.1A(RMS)
VSSQ	-9.4V(1±4%) 0.1A(RMS)	-9.4V(1±4%) 0.1A(RMS)
V1D8	1.8V(1±1.5%) 0.6A(RMS)	1.8V(1±1.5%) 0.6A(RMS)
V12	12V(1±10%)	12V(1±10%)

Main board 7000 circuit

VGL Charge Pump Option

VGH Charge Pump Option

1.5A Max

Title	MSD6586		
Size C	Document Number PMU		Rev Ver.B
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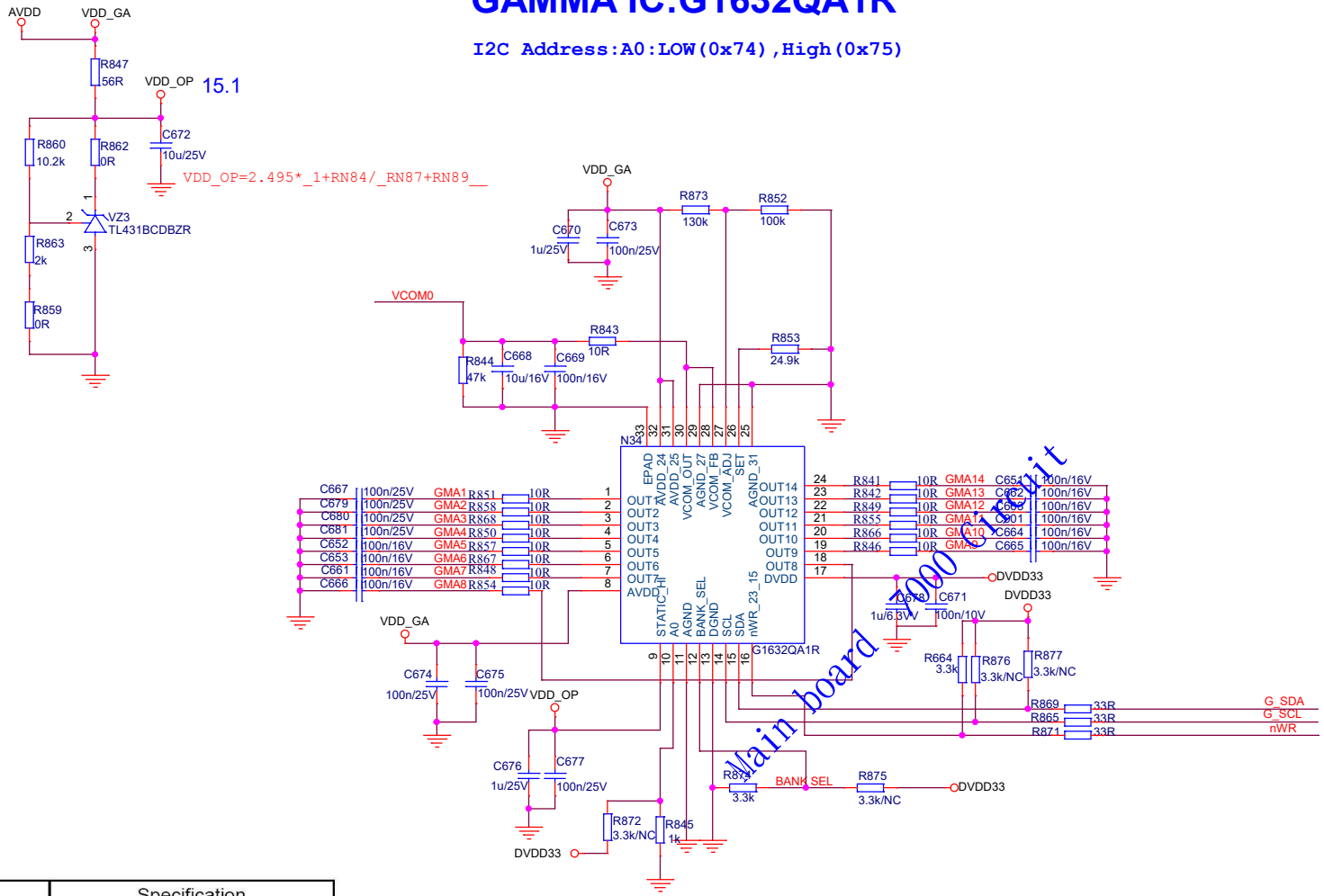
GAMMA IC:G1632QA1R

I2C Address:A0:LOW(0x74),High(0x75)

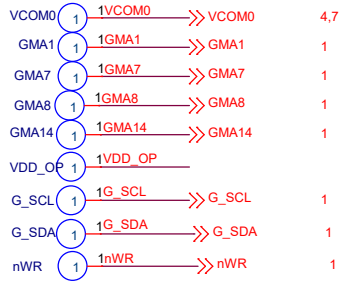


GM1:14.1 GM8:7.16

GM7:8.3 GM14:0.513

VCOM:6.7V AVDD:15.1V

NN7 address: 0X74
NN8 address: 0X75
BANK_SEL:LOW BANKA, HIGH BANKB



Symbol	Specification		
	Typical	Tolerance	Tol. V
VGA1	**14.2**	+/-1.5%	**±0.21**
VGA7	**8.57**	+/-1.6%	**±0.14**
VGA8	**7.4**	+/-1.6%	**±0.12**
VGA14	**1.38**	+/-5.0%	**±0.07**

Note:

VCOM OP output driving ability : +/-100mA

Gamma OP output driving ability : +/-25mA

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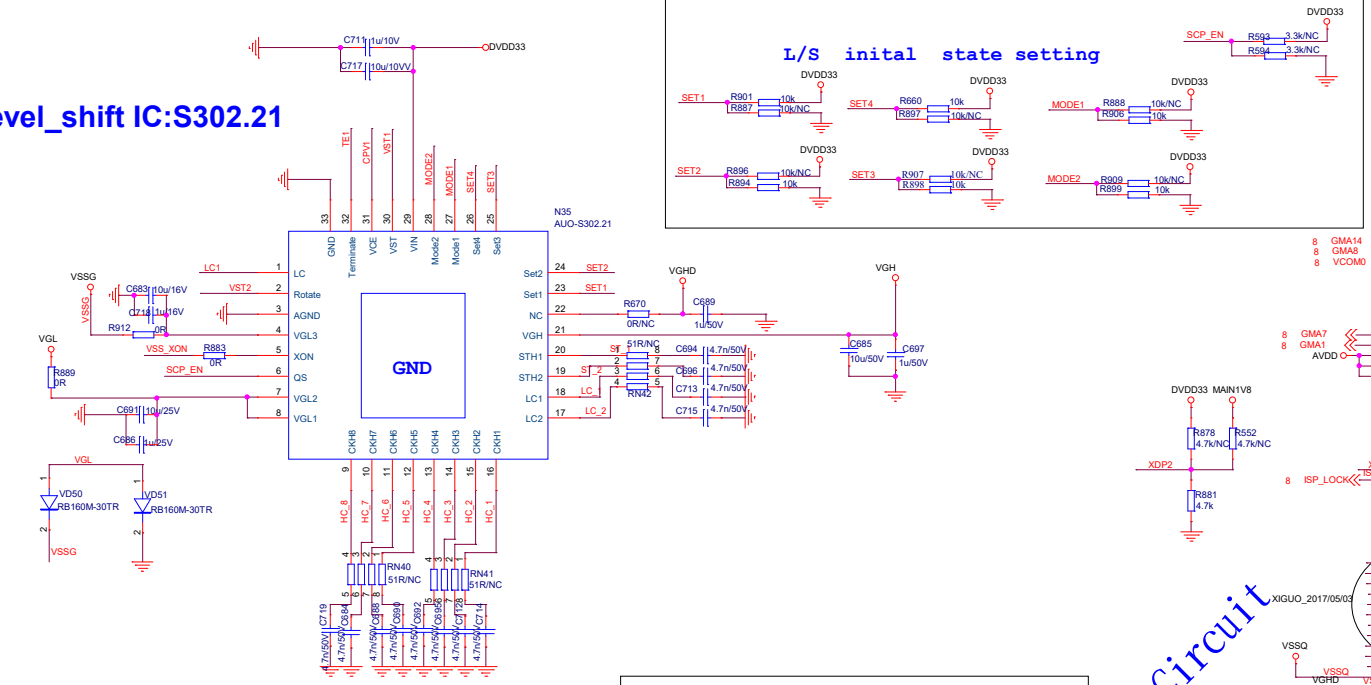
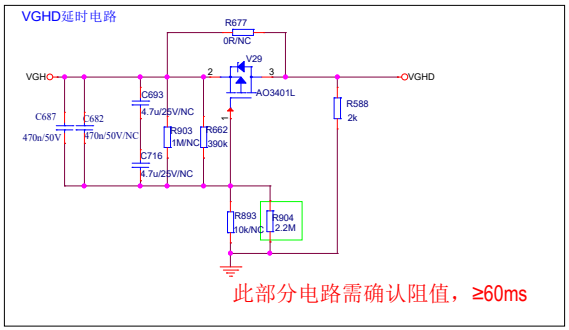
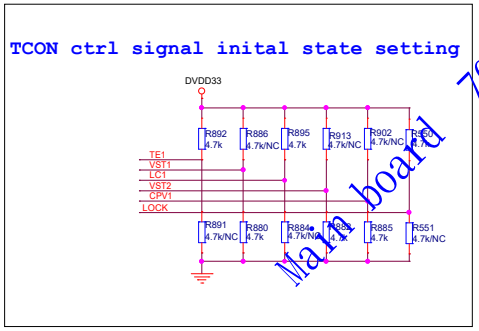
Level_shift IC:S302.21



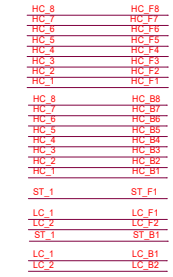


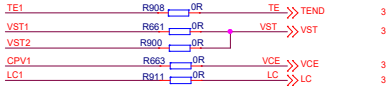


Main board 7000 Circuit

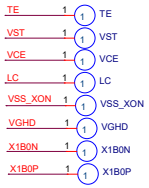
Layout place UP

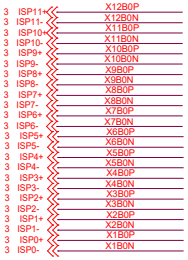
Layout place DOWN





放在正面





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