

TV Productor Service Manual

DATE: 2015-01-12

YOUR COMPANY NAME:

YOUR MODEL NAME:

Production & Function Describtion:

Action: CV512L-B

Function: USB、HDMI、CVBS/AUDIO、 PC AUDIO IN 、
VGA、 ATV、 COAXIAL OUT 、 EARPHONE
OUT

TV System: PAL+SECAM

Approved Signatures:

Approved By Customer Project Leader	Reviewed By Project Leader	Issued By D.C.C.

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1. Basic Specifications

Working Temp: 0~40°C

Storage Temp: -20~60°C

Humidity (Working) : 10~90%

Humidity (Store) : 10~90%

LED Lifespan (50 Lum, Tube current < Rating) : 60000 hour (Il=4.5Ma 25°C)

MTBF:50000 hour (Panel Module NOT included)

Power requirement: Voltage 100~240 V 50 / 60 Hz

(Note: The above specifications are suitable for most of the TV models, and for your reference only.)

2. Maintenance & Safety

2.1 Safety Warning:

(1) The inside key components in the LED must be offered and replaced by qualified and

appointed manufacturer. Otherwise it may generate electricshocks, fires or other important unsafety cases.

(2) Don't try to change the circuits without authorized permission.

(3) Ensure to study the maintenance and service manual thoroughly before doing any of the maintaining actions.

2.2 High Voltage Warning:

Please be highly noted the high voltages in the circuit.

2.3 Electricshocks and Fires Warning:

*Connect the insulate transformer between the AC current to the LED before repairing the panel.

*Take care of the Soldering Pad related to the high voltage circuit. When there occurs

short-circuit case, please replace the overheated components in time.

*All protective equipments must be re-installed according to the original design.

*Check the rosin joints, stack welds and the insulations, ensure there is no objection attached.

2.4 Antistatic Warning:

*The inner circuit boards in the LED TV are sensitive to the statics. Please take care of the

ESD protection when replace the circuit boards.

*The circuit boards must be packed by antistatic bags.

*Please wear antistatic ring and gloves when during repairing works.

2.5 Attention:

LVDS VDD – if the LED is in 5V, it must be switched to the setting of 5V. And

if the LED is in 12V, it must be switched to the setting of 12V. (Switch setting: CN9 -- 5V or 12V)

3. Instruments

3.1 Multimeter:

Max Input Current : over 1A / Max Input Voltage : 500Vdc

Measurement Range : 10Mvr~100Vdc / Accuracy : 0.03%

3.2 Oscilloscope

Frequency Band : over 20M /Input Impedance : over 1M

Input Capacitance : below 30pF / Max Input Voltage : 250V

3.3 PC: XGA (1024X768@60Hz)

3.4 HD Singal Generator: 480P 576P 720P 1080i@50/60HZ

3.5 DVD Player: Audio/Video output, S-VIDEO output, HDMI output.

3.6 VGA cable, S-VIDEObable, RCA cable, YpbPr cable and HDMI cable.

4. Software Upgrade

The chip inside the LED is designed with a FLASH ROM memory program: it can be erased

and reprogrammed, it can be also updated via the USB port. the program is related to the chip fuction ---Different functions of chips need to be planted with different versions of prgrams.

Please upgrade the new software by the USB port the instruction steps below:

-----Please copy the new software to the USB

-----Power ON the TV and press MENU to display the main menu ,then press / to the

OPTION menu. And then select the software in the root of your USB memory , Press ENTER .then press to update and to cancel.

Remarks: When the first upgrading is finished, the action of turning on the tv will be a little slow. So when you turn on the TV at the first time, you need to press the "power" key on the remote control several times until you turn on the tv. Turning on the TV at the first time is very important, you need to operate it carefully to avoid the upgrading is not successful.

REV: V1.0

LCD TV CONTROL BOARD SPECIFICATION

MODEL : CV512L-B-10

AUTHOR :

CHECKED BY :

APPROVED BY :

PUBLISHED DATE: 2014-9-22

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1. CHANGE THE LIST OF UPGRADES

Version	Description	Page	Redaction	Checked	Date
V1.0	First Release	All	Jun Yi		2014-9-22

2. GENERAL DESCRIPTION

This product is a digital and analogue TV board, it can receive the analogue television (PAL/SECAM) and digital television (DVB-T/T2/C/S2) signal. It is suitable for the market in Europe (include UK), Australia etc.

- Supports DVB-T MPEG-4 extended ASP up to 1080p@30fps.
- Supports H.264 MP/HP@L4.1 for SD and HD decoding.
- Supports USB 2.0 multimedia play, supports audio and video play; supports txt and picture browse.
- Analogue and digital HD port input signal largest support 1080P.
- Support analogue & digital 1000 Pages Teletext.
- The largest support various TFT-LCD 1920x1080 resolutions module.
- The HDMI supports 1.4a, the HDCP supports 1.1.
- The HDMI channel can support MHL function or ARC function.
- 3-D video noise reduction.
- Enhanced motion adaptive 3D Y/C separation comb filter for NTSC/PAL system.
- Supports USB update.
- Supports Video SDTV at 480i/576i and 480p/576p.
- Supports Video HDTV at 720P and 1080i and 1080P.
- Supports PC RGB input up to UXGA@60Hz(165MHz).
- Reliable EMC and ESD handle
- Standby<0.2W,economize energy;

3. FEATURES

PANEL	Type	LED
	Resolution	Max. 1920X1080
	Interface	Single/ Double LVDS
	Voltage	3.3V,5V, 12V
ATV	Receiving range	49MHz – 863MHz
	Input Impedance	75Ω
	Video System	PAL ,SECAM
	Sound System	BG, DK, I, L/L' NICAM/A2
DTV	Receiving range	VHF (174MHz – 230MHz)
		UHF (474MHz - 862MHz)
	Input Impedance	75Ω
	Bandwidth	7MHz/8MHz
	Modulation	DVB-T:COFDM 2K/8K QPSK, 16QAM, 64QAM
		DVB-T2: COFDM QPSK, 16QAM ,64QAM , 256QAM
		DVB-C:16QAM, 32QAM, 64QAM, 128QAM, 256QAM
		DVB-S2: QPSK, 8PSK
	Video System	MPEG 2 MP@ML, MPEG-2, MP@HL, H.264
	Sound System	MPEG-1 Layer 1/2, MPEG-2 Layer 2, DD, DD+
PC	Sync	H: 30-75KHz V: 56-75Hz
	Video Level	0.7Vp-p@75ohm
	MODE	Max UXGA@60Hz
AV	Color system	PAL/NTSC/SECAM
	Video Level	1Vp-p@75ohm
	Audio Level	500mV rms
YPbPr	Video Level	Y:1Vp-p@75ohm, PbPr:0.7Vp-p@75ohm
	Audio Level	500mVrms
	Format	480i, 480p, 576i, 576p, 720p, 1080i, 1080p
HDMI	Video	Standard TMDS
	Format	480i, 480p, 576i, 576p, 720p, 1080i, 1080p
SCART	Video	CVBS&RGB input, CVBS output
	Video output/input	RGB: 0.7Vp-p@75ohm
		CVBS: 1Vp-p@75ohm
	Audio output/input	500mVrms
Keyboard	Power/Menu/Source/ Up/ Down/ Left/ Right	
OSD Language	English/French/German/Spanish/Italian	
Audio Amplifier	2 X3W @ 4ohm THD<10%	
Power input	+12V 、 +12V&+5V	

Standby	< 0.2W(Main Board Only)
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4. PRESET MODE FOR USB

USB FORMAT MODE

Media (媒体)	File Exit. (扩展名)	Codec (编码解调器)		Remark
		Video (视频)	Audio (音频)	
MOVIE	.avi	MJPEG	MP3, WMA, AAC,PCM (AC3 Need license)	The Max Resolution And Frame Rate: 1280X720@30fps Max Data Rate: 20 Mbps
		Xvid,MPEG-4,H.264, WMV9/VC-1 (Divx Need license)		
	.mp4/ .mpeg4	MPEG-2,MPEG-4,H. 264,Xvid,MJPEG	MP3, AAC,PCM (AC3 Need license)	The Max Resolution And Frame Rate:1080p@30fps Max Data Rate: 20 Mbps
	.ts/ .trp	MPEG-1,MPEG-2,H. 264,VC-1	MP1/MP2/MP 3,AAC(AC3 Need license)	
	.mpg/ .mpeg	MPEG-1,MPEG-2	MP1/MP2/MP 3,AAC,PCM (AC3 Need license)	
	.mkv	MPEG-2/4,H.264, Xvid,RV30,RV40,VC- 1(Divx Need license)	MP3,AAC, PCM,COOK (AC3 Need license)	
	.mov	MPEG4,H264,MJP EG	MP3,AAC,PC M,AMRNB	The Max Resolution And Frame Rate:1080p@30fps Max Data Rate: 20 Mbps
	.dat	MPEG-1	MP1	
	.vob	MPEG-2	MP1/MP2/MP 3,PCM (AC3 Need license)	

MOVIE	.rm/ .rmvb	RV30,RV40	AAC,COOK	Resolution: 800x600(RV30) 1280x720(Rv40)
PHOTO	.jpg	Progressive DCT		Max Resolution: 1920×1080
	.jpeg	Baseline DCT		Max Resolution: 7680×4320
	.bmp	----		Max Resolution: 1920×1080 Pixel Depth: 8/24/32 bit
	.png	----		Max Resolution: 1920x1080
MUSIC	.mp3	---	MP3	Sample Rate: 32K~48KHz
	.wmv	---	PCM	Bit Rate: 32K~320Kbps Channel: Mono/Stereo
	.mp4/ .aac/ .m4a	---	AAC	Sample Rate: 8K~48KHz Bit Rate: 24K~384Kbps Channel: Mono/Stereo
TEXT	.txt	ANSI/UNICODE GB/UTF8		File Size: Max 10MB

Note:

1) This product includes the following optional patented technologies : Dolby, DIVX, SRS , etc. If you need to use these patented, please provide the patent license to us, so that the product can meet your requirements.

(此产品包括如下可选的专利技术: DOLBY、DIVX、SRS 等, 如您需要开通这些功能, 请提前提供相关专利许可给到我司, 以便产品能满足您的要求。)

2) USB only support PHOTO, MUSIC and MOVIE. The system automatically classified files, only show the supported files.

3) Support hard disk, the maximum storage capacity is 1T.

4) Photo non-support EXIF format.

5) Flash non-support animation.

6) Support for text files.

5. ENVIRONMENTAL CONDITION

Input Electrical Characteristics

Power	Symbol	Range	Max Current	Ripple
Adapter Power Supply				
VCC_+12V	+12V	+12V--+12.5V	2.5A	100mV
Built-In Power Supply(Main Board Only)				
VCC_+5V	+5V	+5.0V--+5.2V	3A	50mV
VCC_+12V	+12V	+12V--+12.5V	1A	100mV
The current of panel, Inverter and extension modules are not included in max current.				

6. SUBSTITUTABLE PRIMARY MATERIALS

General materials

Including SMT capacitors, SMT resistors, diodes, transistors, MOSFET, connectors, common inductance, electrolytic capacitor, PCB etc., and having no obvious changes in appearance or color. Our company has two or three alternative suppliers with these materials, maybe we will alternative use these materials for follow-up mass production due to delivery time, stock or other reasons. We no longer notice your company the alternative materials used. If necessary, you can apply for using related materials (mention as above) in samples stage.

(Note: The alternative materials which have been accepted by our materials confirmation department and PP will enter our system.)

Key materials

Including crystals, LDO, SAW Filter, DC-DC, Amplifier, Audio & Video switch, and having obvious changes in appearance and color of general materials, Our company has two or three alternative suppliers with these materials (See following table for detail), maybe we will alternative use these materials for follow-up mass production due to delivery time, stock or other reasons. We will notice your company the alternative materials used in written form. If necessary, you can apply for using related materials (mention as above) in samples stage.

Name	Main Type	Brand	Backup Type	Brand
LDO	BL1117	BL	SA1117	SA
			BM1117	BM
DCDC	SY8113B	SILERGY	/	/
	SY8120B1	SILERGY	/	/
Audio Amplifier	YD1517P	YD	TDA1517	NXP
			BM1517	BM
Crystal	16MHZ 20PF	RS	16MHZ 20PF	ZG

	+ -10PPM HC-49S		+ -10PPM HC-49S	TKD
Crystal	24.576MHZ 12PF + -10PPM HC-49S	RS	24.576MHZ 12PF + -10PPM HC-49S	TKD
Crystal	27MHZ 20PF + -10PPM HC-49S	TKD	27MHZ 20PF + -10PPM HC-49S	ZG
				RS

Core materials

Including DDR, FLASH, TUNER, and the materials related to change software. Our company has two or three alternative suppliers with these materials (See following table for detail), maybe we will alternative use these materials for follow-up mass production due to delivery time, stock or other reasons. We will notice your company in written form and we must get your company confirm whether accept before using the alternative materials.

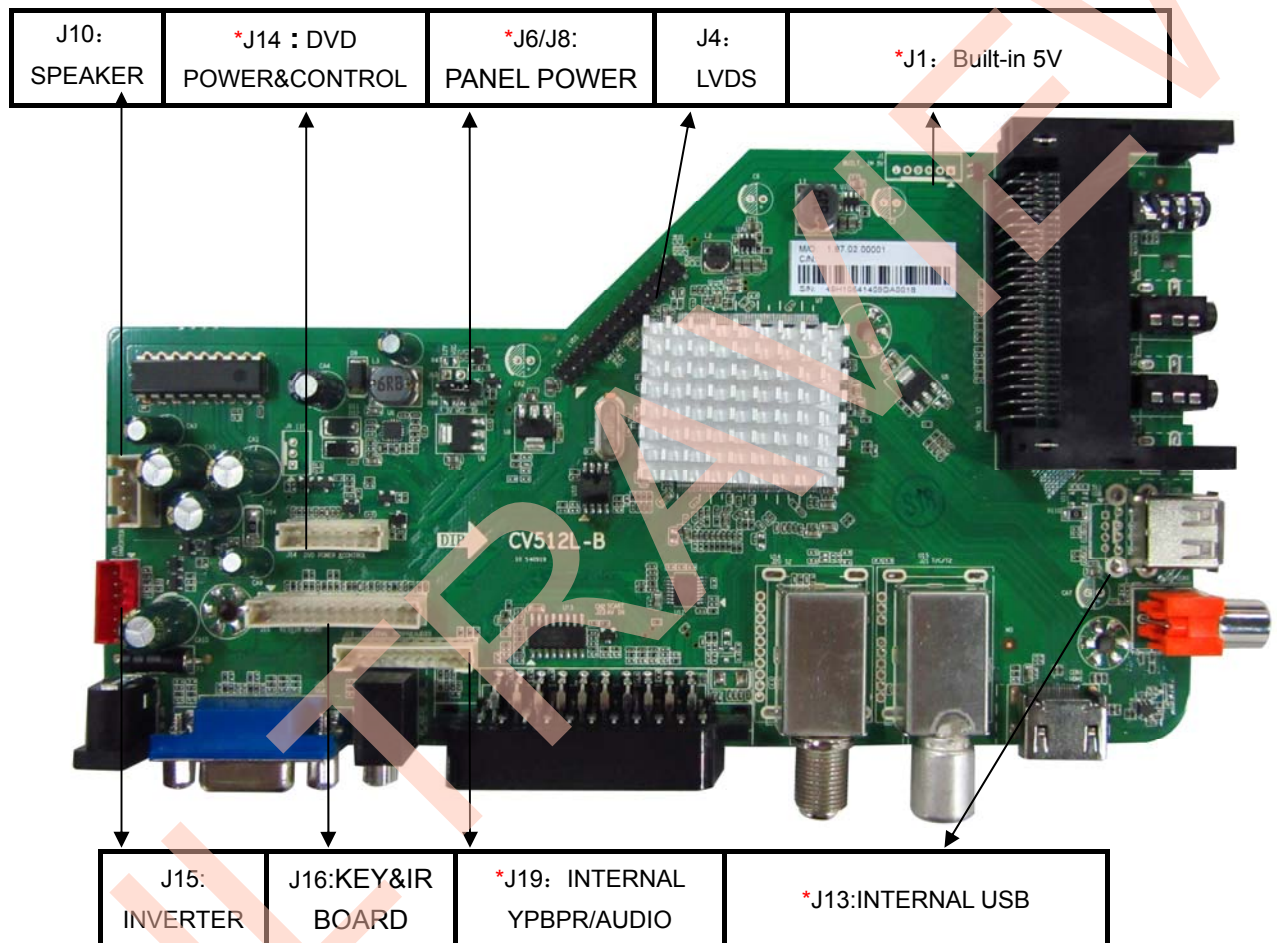
Name	Main Type	Brand	BackupType	Brand
Chipset	S2T512	S2T	--	--
FLASH	W25Q64FVFIG	Winbond	W25Q64BVSSIG	Winbond
			MX25L6405DMI-12G	MXIC
			W25Q64BVFIG	Winbond
S2-TUNER	RDA5815M	RDA	AV2012	BGZ
T2-TUNER	TDA18275	NXP	SIL2158	Siliconlabs
			TDA18274	NXP
			SIL2157	Siliconlabs

7. PICTURE

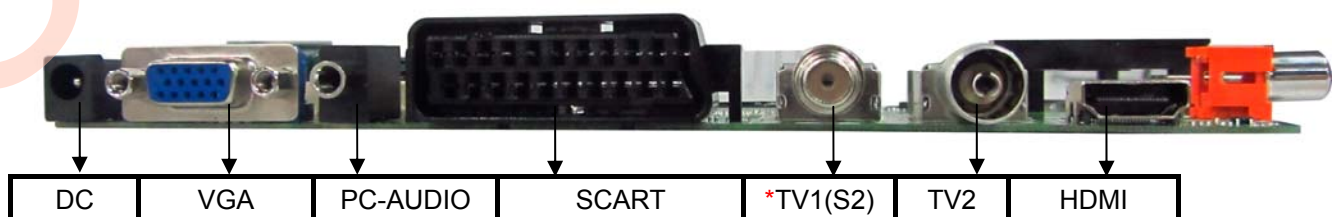
The picture is for a reference only,the actual item is the standard.

The optional connectors and terminals are marked with“*”

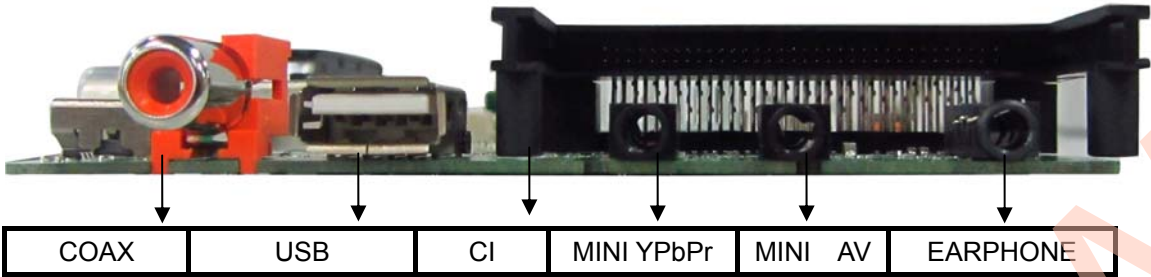
Europe Board Type:



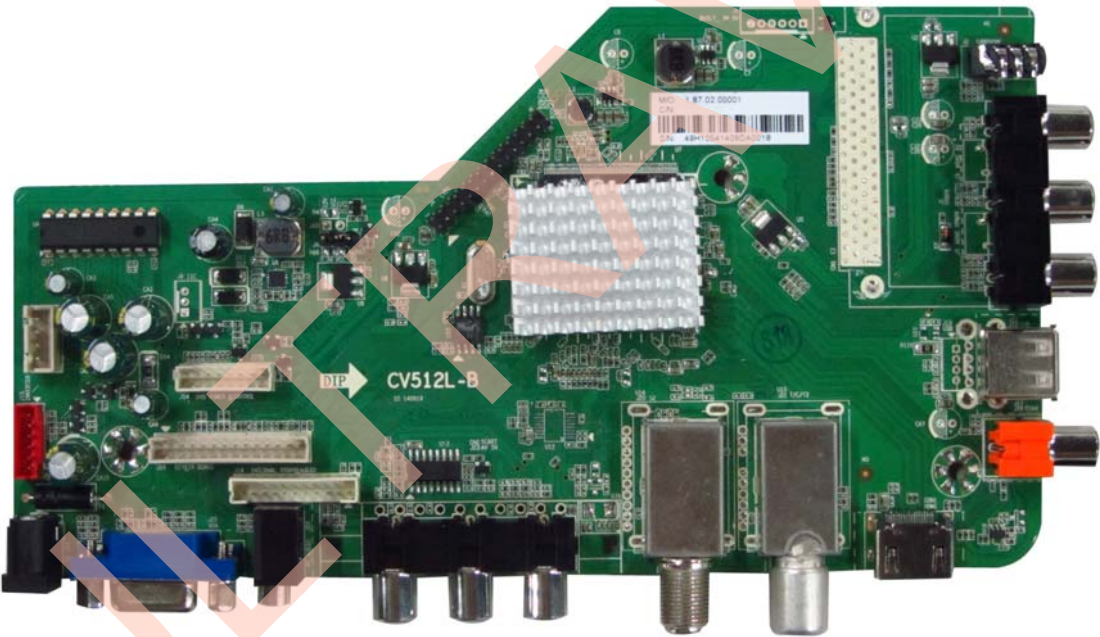
FRONT VIEW



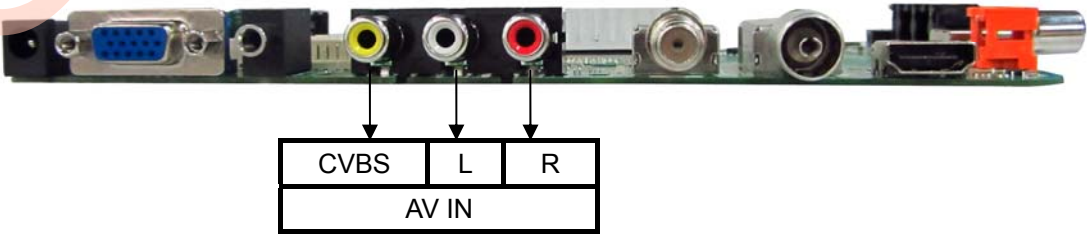
SIDE VIEW



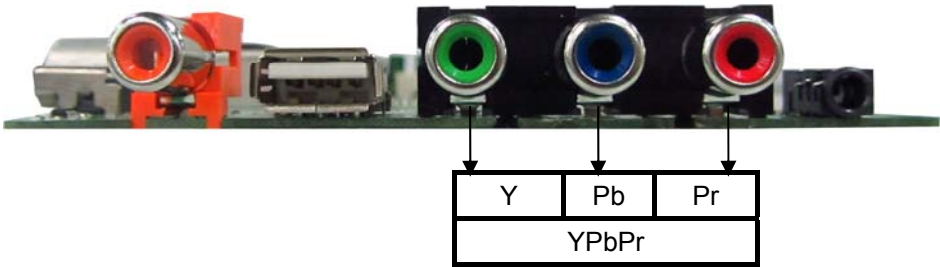
Australia Board Type



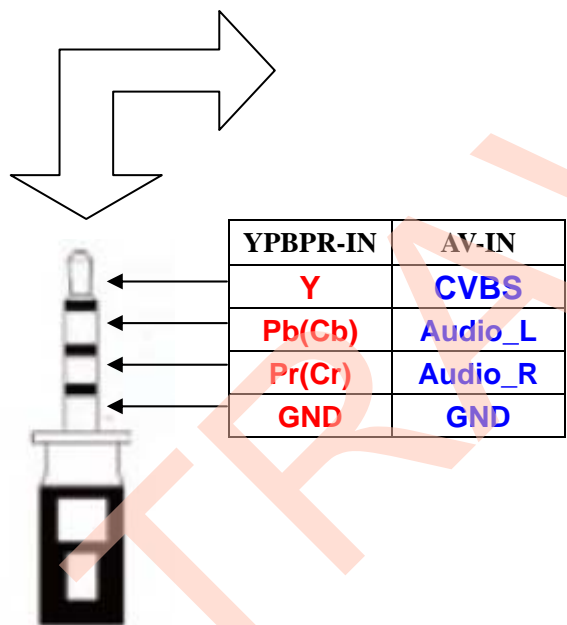
FRONT VIEW



SIDE VIEW



EXTERNAL CONNECTORS



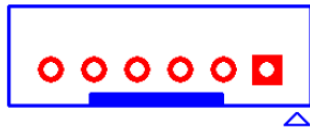
8. INTERFACE DEFINITION

All jack recognize the square pad as first pin.

The optional connectors and terminals are marked with “*” .

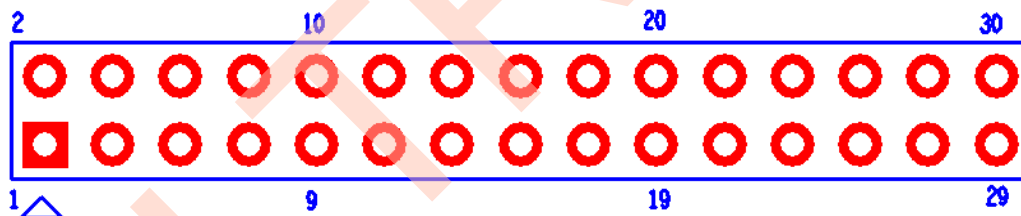
带“*”为可选连接器和端子

*J1 (6pin/2.0/NC)BUILT-IN 5V



NO.	SYMBOL	DESCRIPTION
1	NC	NC
2	5VU	+5V DC Power Supply when Standby
3	GND	Ground
4	GND	Ground
5	5VU	+5V DC Power Supply when Standby
6	5VU	+5V DC Power Supply when Standby

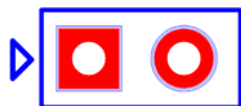
J4 (2X18pin/2.0mm): LVDS Interface



NO.	SYMBOL	DESCRIPTION
1	VCC	Power Supply For Panel
2	VCC	Power Supply For Panel
3	VCC	Power Supply For Panel
4	GND	Ground
5	GND	Ground
6	GND	Ground
7	RX00-	LVDS ODD 0- Signal
8	RX00+	LVDS ODD 0+ Signal
9	RX01-	LVDS ODD 1- Signal
10	RX01+	LVDS ODD 1+ Signal
11	RX02-	LVDS ODD 2- Signal
12	RX02+	LVDS ODD 2+ Signal
13	GND	Ground

14	GND	Ground
15	RXOC-	LVDS ODD Clock- Signal
16	RXOC+	LVDS ODD Clock + Signal
17	RXO3-	LVDS ODD 3- Signal
18	RXO3+	LVDS ODD 3+ Signal
19	RXE0-	LVDS EVEN 0- Signal
20	RXE0+	LVDS EVEN 0+ Signal
21	RXE1-	LVDS EVEN 1- Signal
22	RXE1+	LVDS EVEN 1+ Signal
23	RXE2-	LVDS EVEN 2- Signal
24	RXE2+	LVDS EVEN 2+ Signal
25	GND	Ground
26	GND	Ground
27	RXEC-	LVDS EVEN Clock- Signal
28	RXEC+	LVDS EVEN Clock + Signal
29	RXE3-	LVDS EVEN 3- Signal
30	RXE3+	LVDS EVEN 3+ Signal

*** J6 PANEL POWER SUPPLY (2PIN/2.54)**



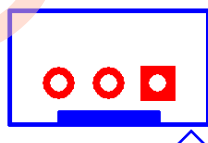
NO.	SYMBOL	DESCRIPTION
1	12V	+12V Panel Power supply
2	VCC	Panel Power supply

J8 PANEL POWER SUPPLY (3PIN/2.54)



NO.	SYMBOL	DESCRIPTION
1	5V	+5V Panel Power supply
2	VCC	Panel Power supply
3	3.3V	+3.3V Panel Power supply

*** J9(3pin/2.0mm) IIC CONNECTOR**



NO.	SYMBOL	DESCRIPTION
1	SDA	IIC DATA

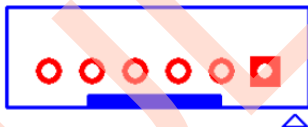
2	SCL	IIC CLOCK
3	GND	Ground

J10 SPEAKER CONNECTOR(4PIN/2.54)

NO.	SYMBOL	DESCRIPTION
1	R	Audio Right channel Output
2	GND	Ground
3	GND	Ground
4	L	Audio Left channel Output

***J14 (8pin/2.0): DVD POWER&CONTROL**

NO.	SYMBOL	DESCRIPTION
1	DVD_STB	DVD Standby Control
2	DVD_AUTO	DVD AUTO
3	DVD_IR	IR Data Transfer to DVD
4	+12V	+12V DC Power Supply for DVD
5	GND	Ground
6	GND	Ground
7	+5V	+5V DC Power Supply for DVD
8	+5V	+5V DC Power Supply for DVD

J15 (6pin/2.0mm): INVERTER interfaces

NO	Definition	Description
1	GND	Ground
2	GND	Ground
3	ADJ	Brightness Adjustment for Panel
4	ON/OFF	Back-Light ON/OFF Control for Panel
5	+12V	Background +12V power
6	+12V	Background +12V power

J16 (14pin/2.0): KEY&IR&LED CONNECTOR

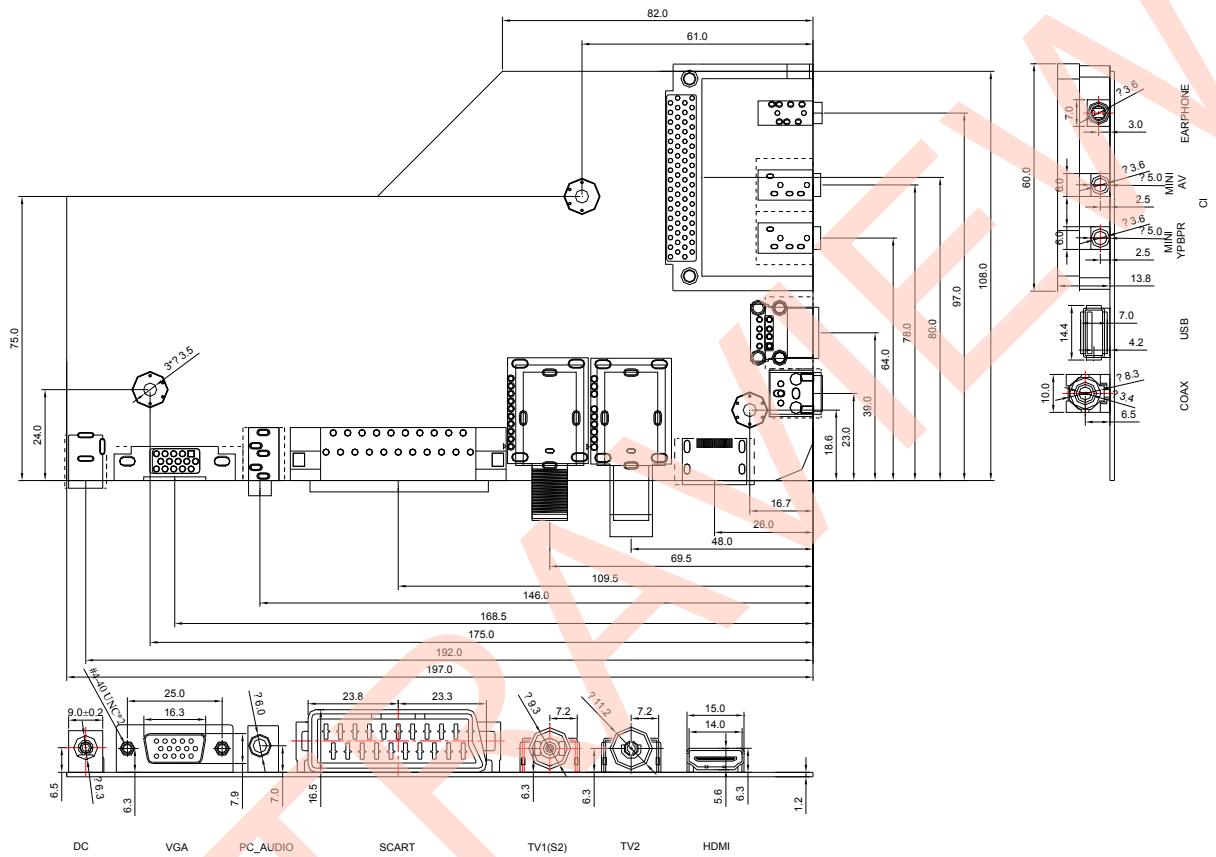
NO.	SYMBOL	DESCRIPTION
1	GND	Ground
2	K7	Key7(Reserved)
3	POWER	POWER KEY
4	VOL+	VOL+ KEY
5	VOL-	VOL- KEY
6	INPUT	INPUT KEY
7	CH+	CH+ KEY
8	CH-	CH- KEY
9	MENU	MENU KEY
10	GND	Ground
11	IR	IR Receiver
12	LED_G	Green Indicator
13	LED_R	Red Indicator
14	+5V	+5V DC Power Supply

***J19 (11pin/2.0): INTERNAL YPBPR&AUDIO CONNECTOR**

NO.	SYMBOL	DESCRIPTION
1	GND	Ground
2	Y	YpbPr-Y Input
3	GND	Ground
4	Pr	YpbPr-Pr Input
5	GND	Ground
6	Pb	YpbPr-Pb Input
7	LIN	Left Channel Input
8	GND	Ground
9	RIN	Right Channel Input
10	GND	Ground
11	NC	NC

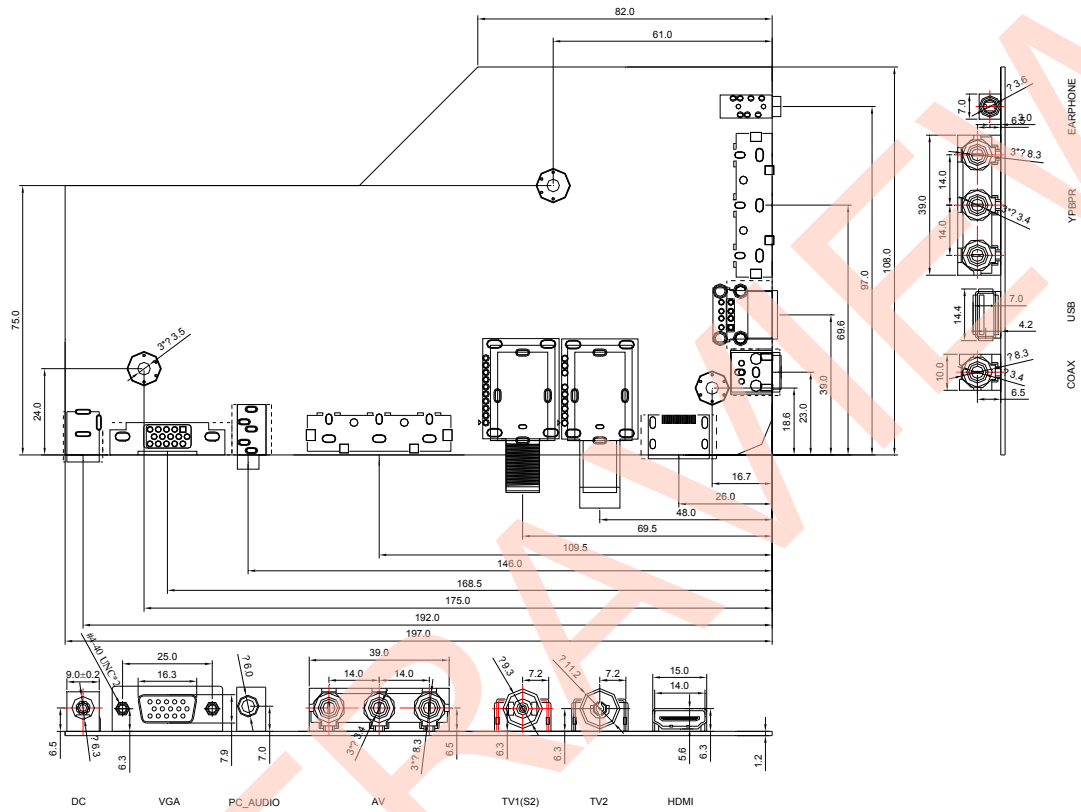
9. CONFIGURATION

Europe Board Type:



The PCB board is thick :1.6mm
 Component the tallest altitude:16.5mm
 Install diameter inside the bore 3.5m

Australia Board Type:



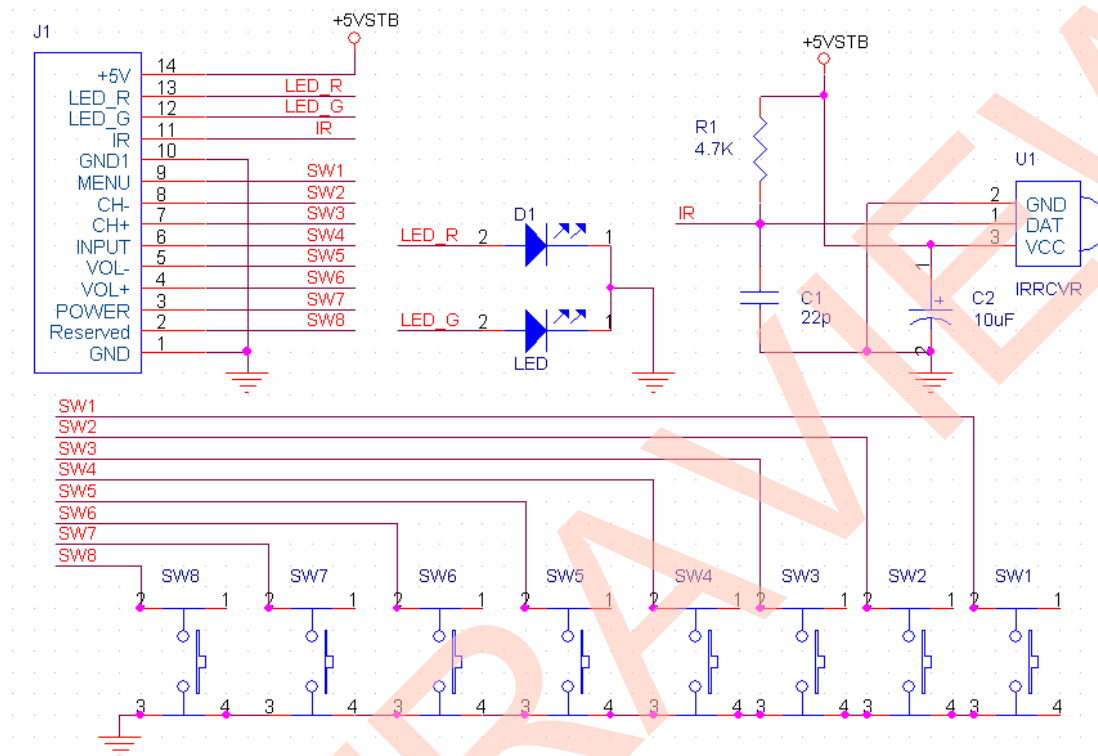
The PCB board is thick :1.6mm
 Component the tallest altitude:16.5mm
 Install diameter inside the bore 3.5mm

10. APPLICATION REQUIREMENT

- Relative humidity $\leq 80\%$
- Store temperature $-10\sim+60\text{ }^{\circ}\text{C}$
- Use temperature $0\sim+40\text{ }^{\circ}\text{C}$
- The procedure of the whole machine assembles and transports need to attend ESD transaction.
- When the whole set assemble, it can down pack or side pack, but don't make the board transform or distort, don't be subjected to heavy pressure.
- The hole of each port does not be opened too small, especially the HDMI port hole, avoid the whole set morphing to cause the extrusion of port when installing.
- The hole of RGB socket is recommended the situation of not using the screw stationary on the RGB socket to fix on the structure board.
- The connected wire which between the other boards and this board can't be leaded too long, or affect performance and image quality.
- The whole set inner wires matching reasonable, each connected wire try to not directly cross the PCB board, especially cross over from the main IC, avoid affect the whole set EMC performance.
- In order to obtain better EMC effect of the whole set, we suggest the LVDS twisted pair wire between the main board and panel must be tied up well and try to use shielding wire. If it's possible, try to put on the magnetic belt ring on the wire which near the board terminal.
- The HDMI and HDCP on the main board are all passed the related certifications, but we just provide testing certification of the inner usage standard. If you need to use legal HDMI and HDCP, please apply related association as formal member by yourself.
- There is ROHS identification on the board and package, the board match ROHS standard.

11. EXCURSUS

Keyboard and remote definition



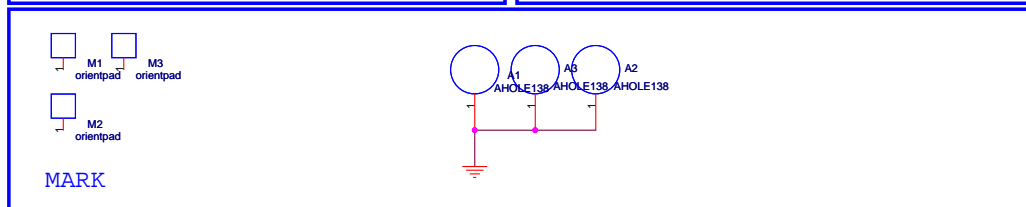
NOTE: POWER KEY Position Can't be changed, Please don't move it !

The diagram shows a 5V regulator circuit using the SY81138B. The input is 12V, and the output is 5V. The circuit includes a 100nF/16V capacitor (C5) at the input, a 100nF/16V capacitor (C4) at the output, and a 100k resistor (R1) in the feedback path. The output voltage is 5V. The circuit is powered by a 12V source and includes a 5V regulator (U1 SY81138B) and a 5V regulator (U2 SY81138B). The output voltage is 5V.

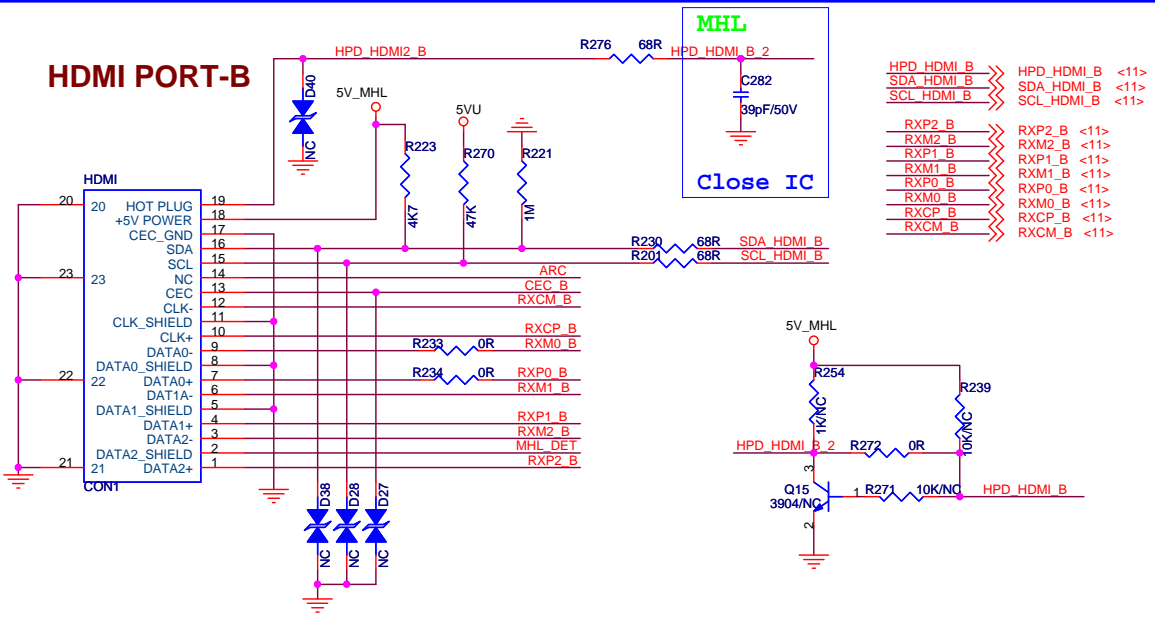
[illegible]

$$V_{out} = V_{ref} \times (1 + (R_F2 / R_F1)) + I_{adj} \times R_2$$

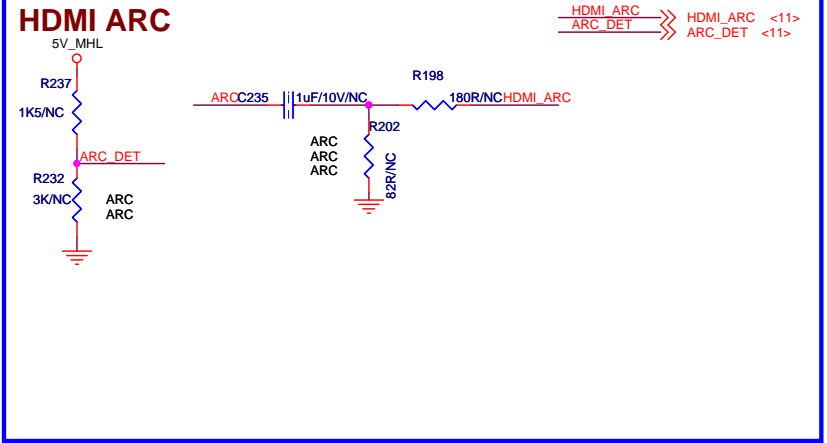
$$V_{ref} = 1.25V$$



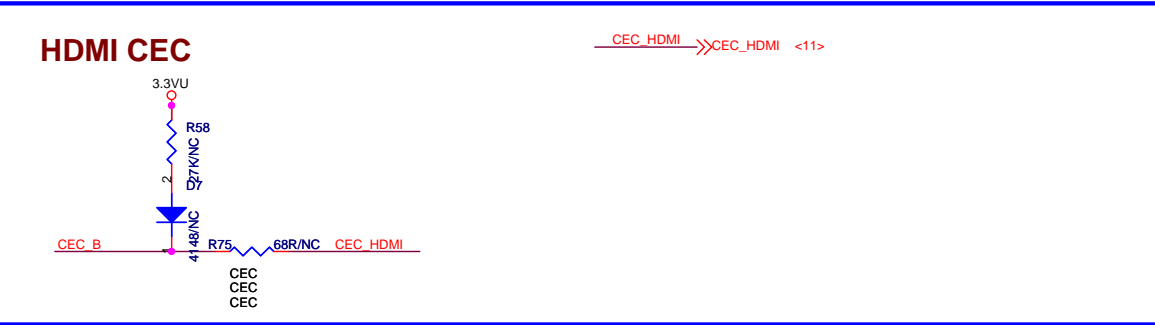
HDMI PORT-B



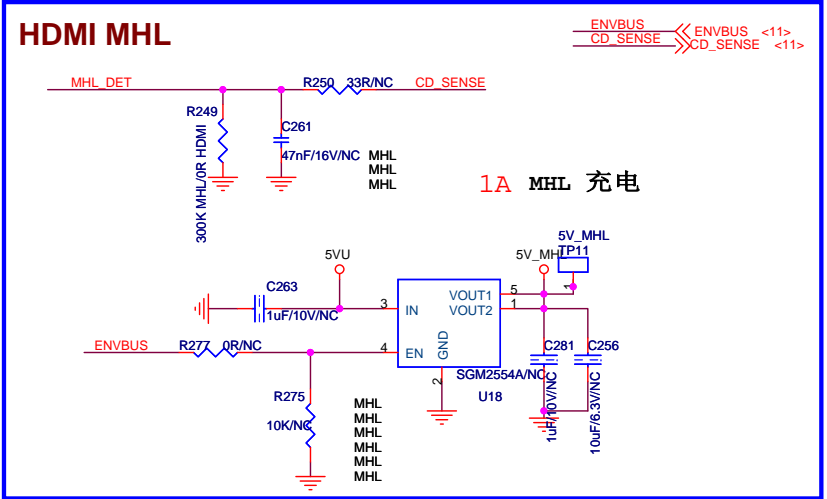
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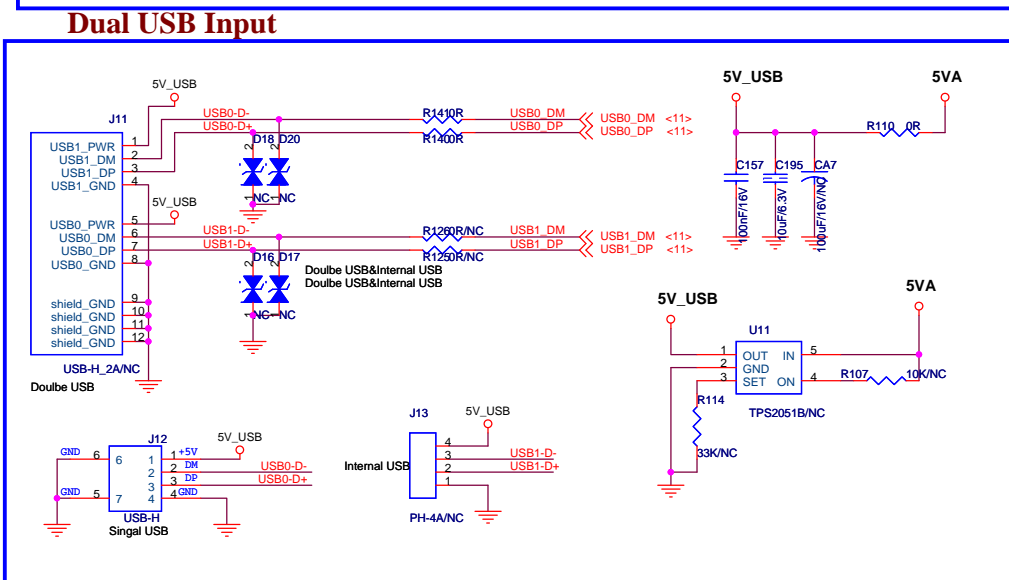
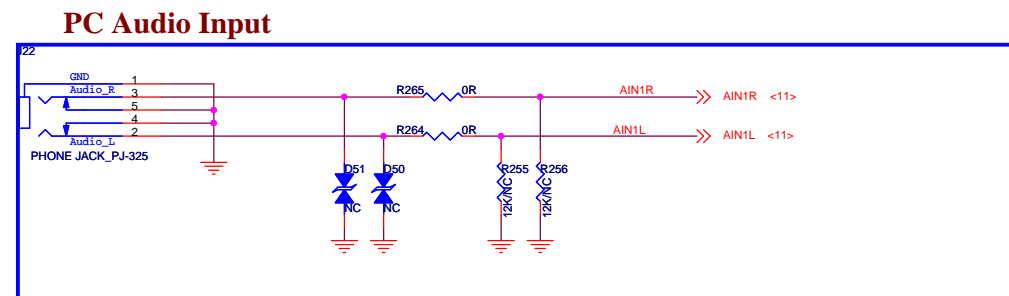
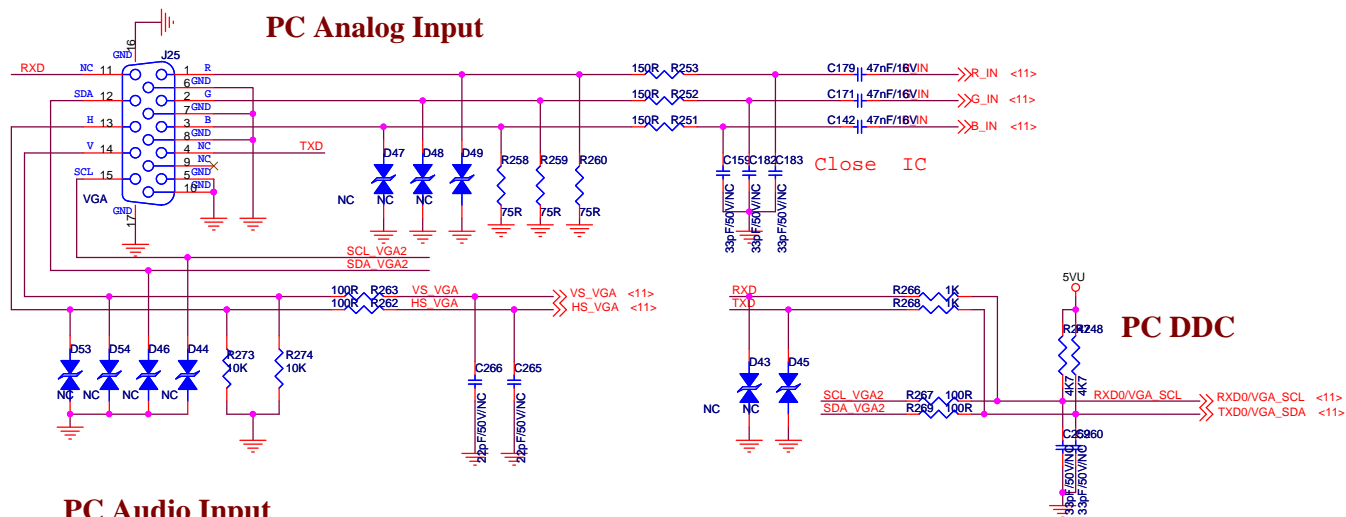


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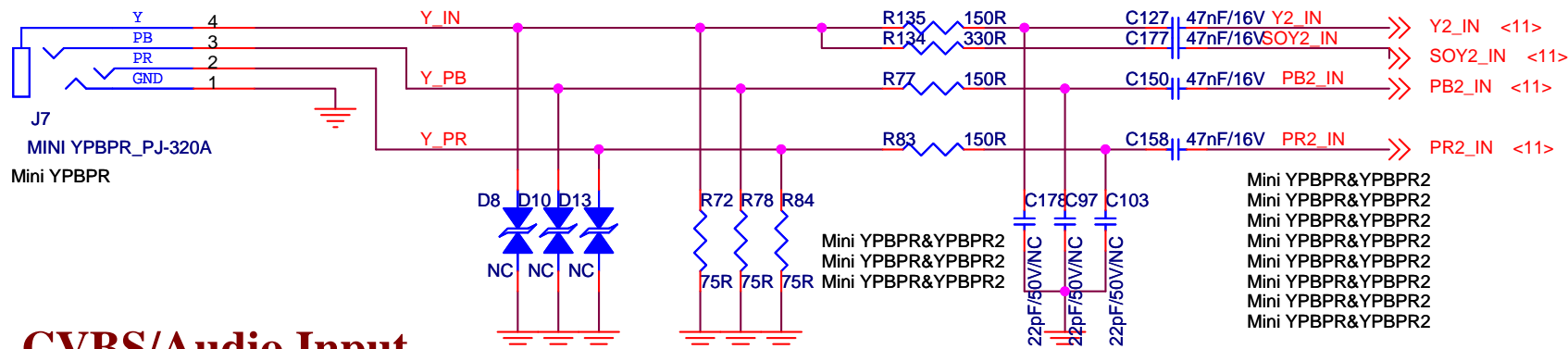


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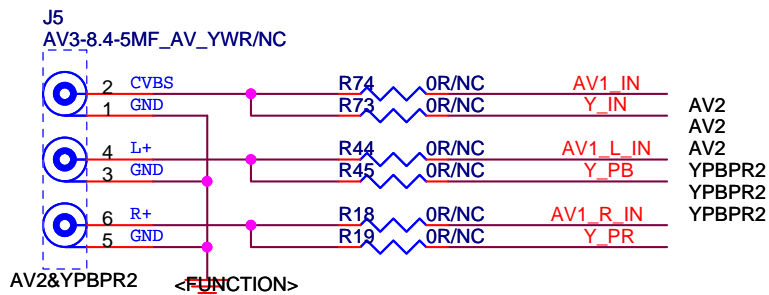




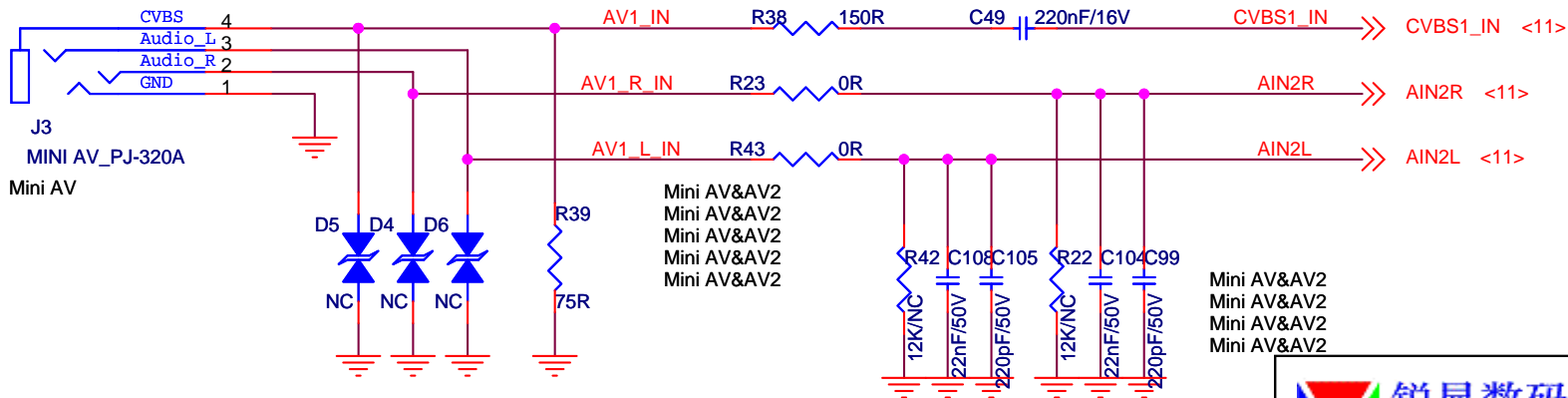
YPbPr Input



CVBS/Audio Input



MINI AV Input



Title

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Size
A

Document Number

YPbPr & AV

Rev
10

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CI

TSO_CLK M1CLK
TSO_VAL R25 22R M1VAL
TSO_SYNC R31 22R M1STRT
CI_A11/TSO_D0 MD10
CI_A10/TSO_D1 MD11
CI_A9/TSO_D2 MD12
CI_A8/TSO_D3 MD13
CI_A7/TSO_D4 MD14
CI_A6/TSO_D5 MD15
CI_A5/TSO_D6 MD16
CI_A4/TSO_D7 MD17

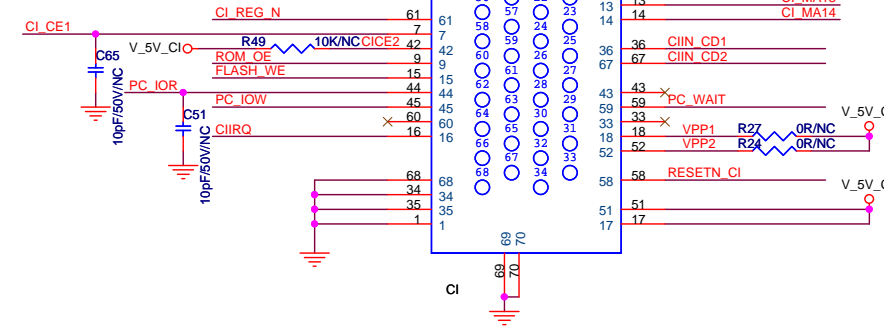
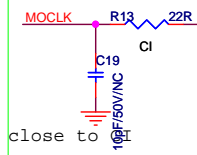
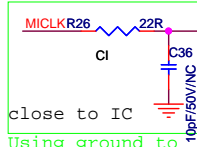
TSI_CLK M0CLK
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TSI_SYNC R2 22R M0STRT
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TSI_D1 MDO1
TSI_D2 MDO2
TSI_D3 MDO3
TSI_D4 MDO4
TSI_D5 MDO5
TSI_D6 MDO6
TSI_D7 MDO7

CI_CE R55 22R CI_CE1
CI_OE R48 22R ROM_OE
CI_WE R36 22R FLASH_WE
CI_IORD R46 22R PC_IOR
CI_IOWR R41 22R PC_IOW

CI_MD0 CI_D0
CI_MD1 CI_D1
CI_MD2 CI_D2
CI_MD3 CI_D3
CI_MD4 CI_D4
CI_MD5 CI_D5
CI_MD6 CI_D6
CI_MD7 CI_D7

CI_MA0 CI_A0
CI_MA1 CI_A1
CI_MA2 CI_A2
CI_MA3 CI_A3
CI_MA4 CI_A4/TSO_D7
CI_MA5 CI_A5/TSO_D6
CI_MA6 CI_A6/TSO_D5
CI_MA7 CI_A7/TSO_D4
CI_MA8 CI_A8/TSO_D3
CI_MA9 CI_A9/TSO_D2
CI_MA10 CI_A10/TSO_D1
CI_MA11 CI_A11/TSO_D0

V_5V_CI
PC_WAIT R7 4K7/NC CI_WAIT
RESETN_CI CI_RST
CIIN_CD1 CIIN_CD2
V_5V_CI
CI_IRQ R32 4K7/NC
CI_IRQ R33 22R CI_IRQ



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CI_A0 CI_A0 <11>
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CI_A2 CI_A2 <11>
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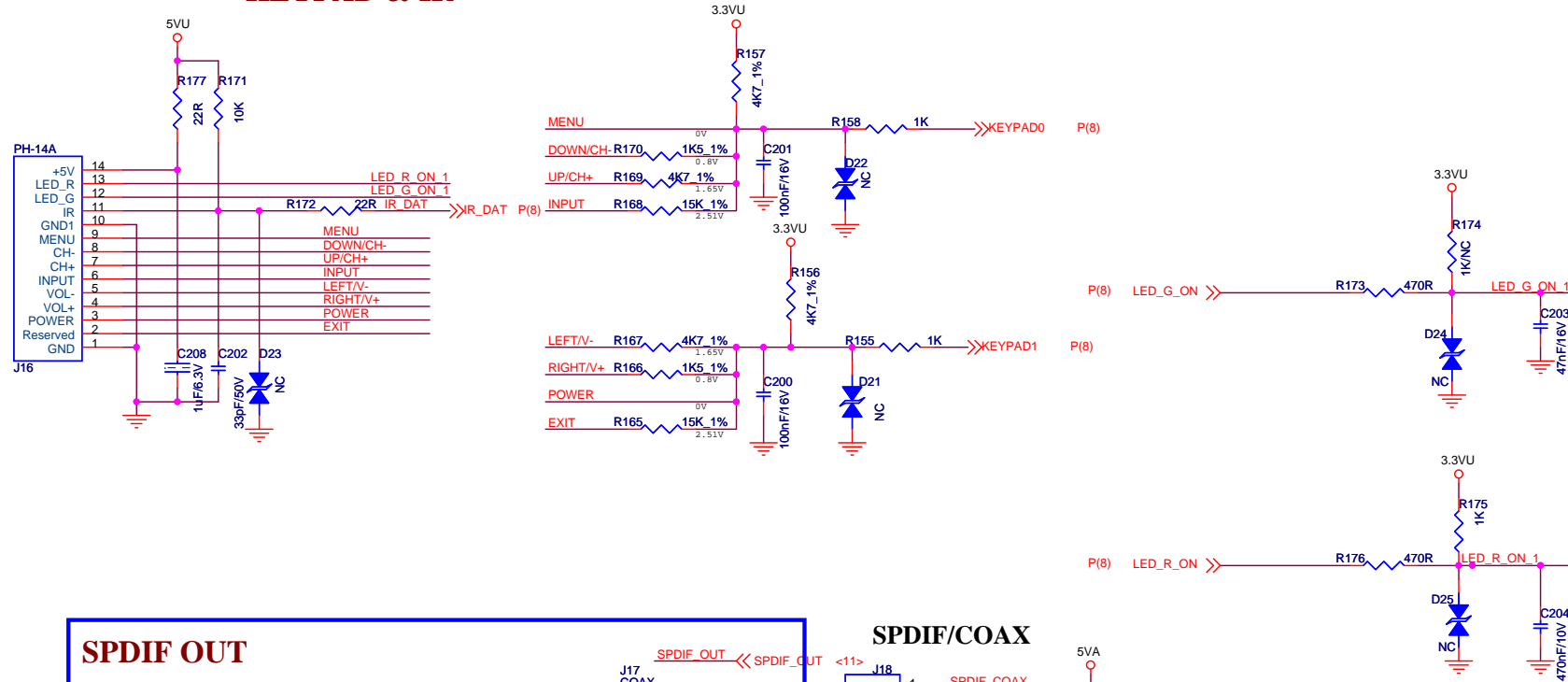
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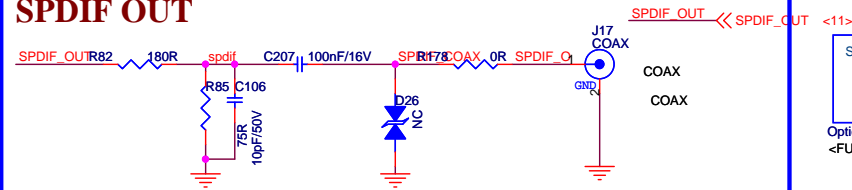
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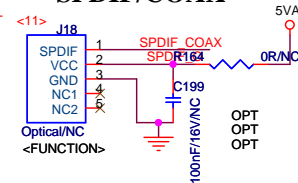
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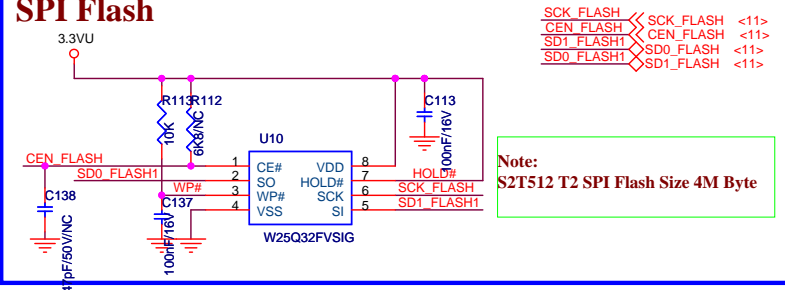
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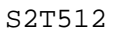
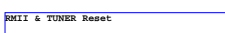


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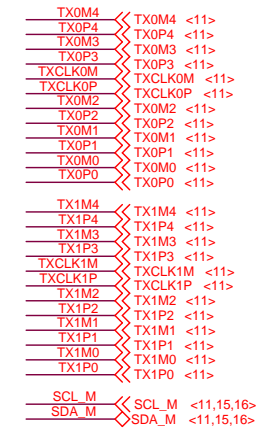
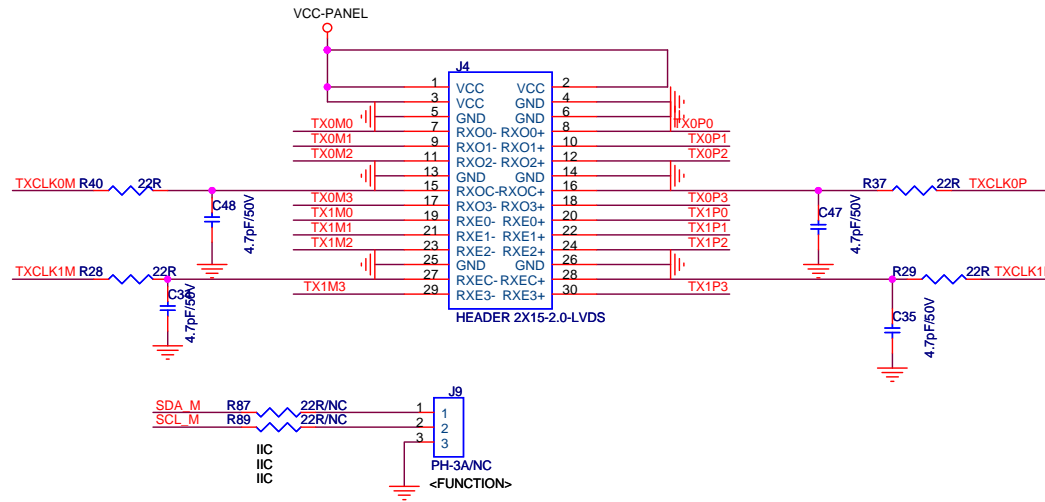


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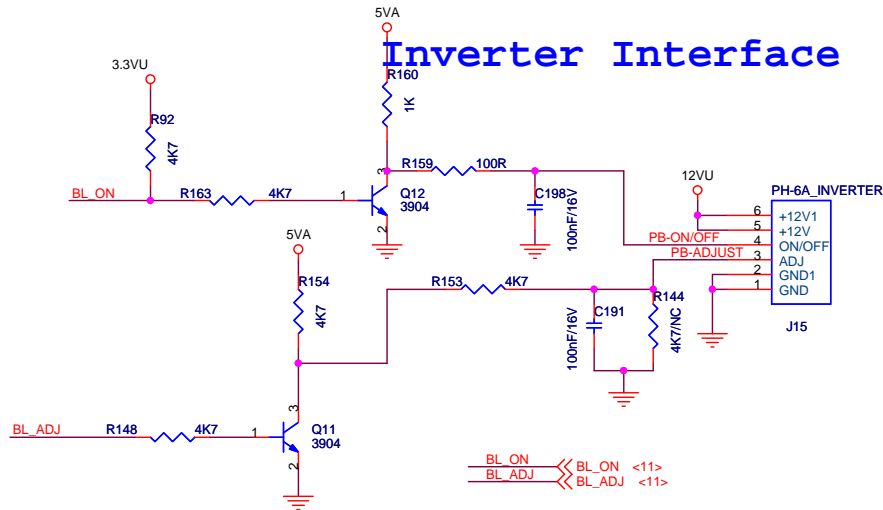




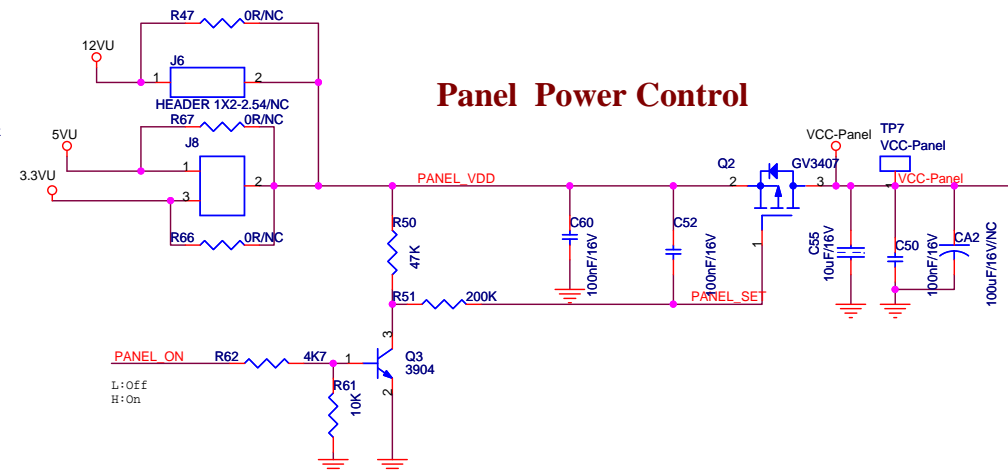
Panel Interface




Inverter Interface

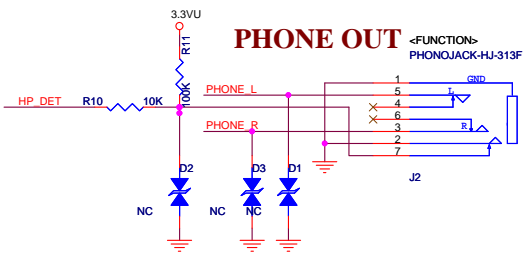
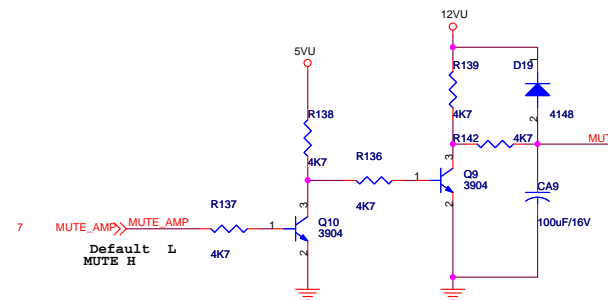
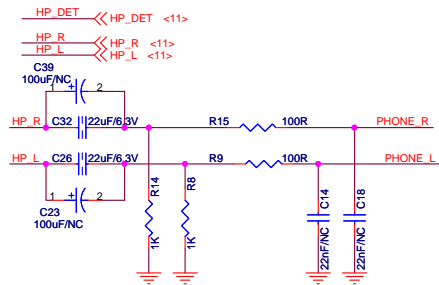
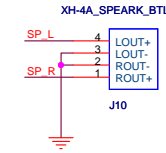
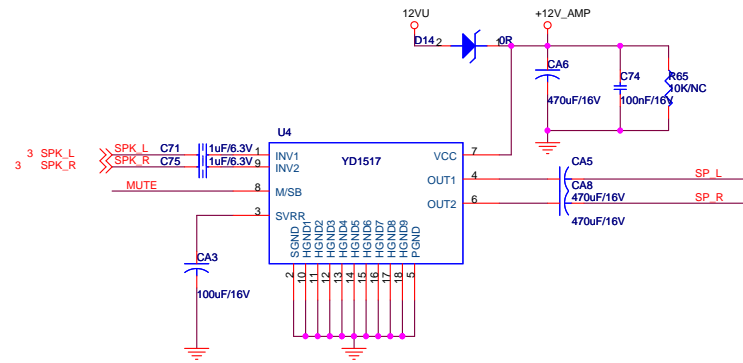


Panel Power Control

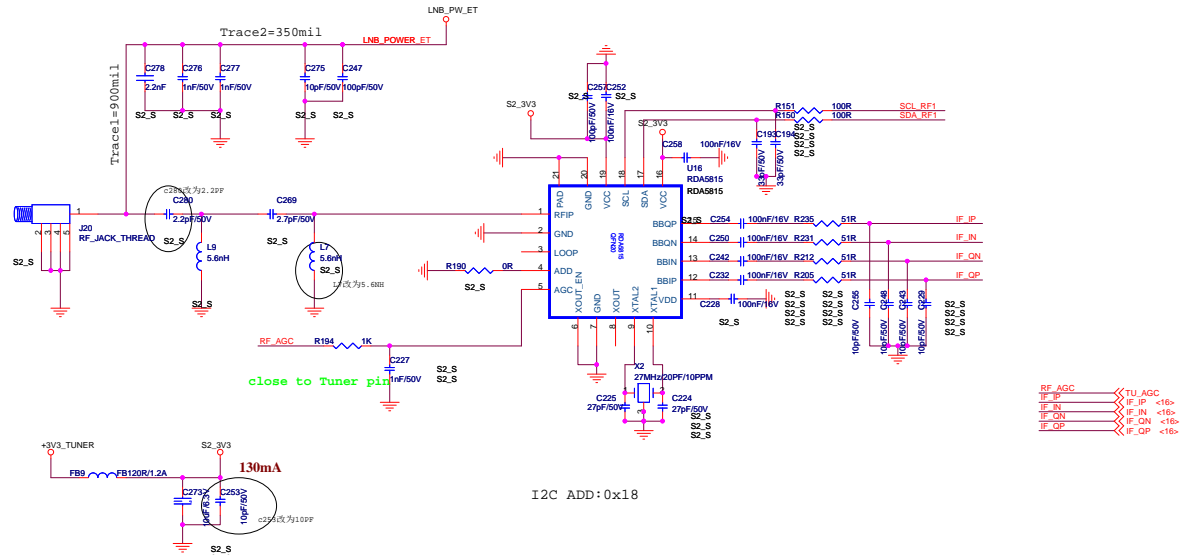


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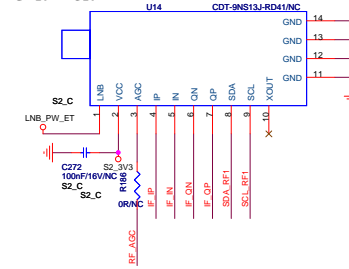
AUDIO AMP



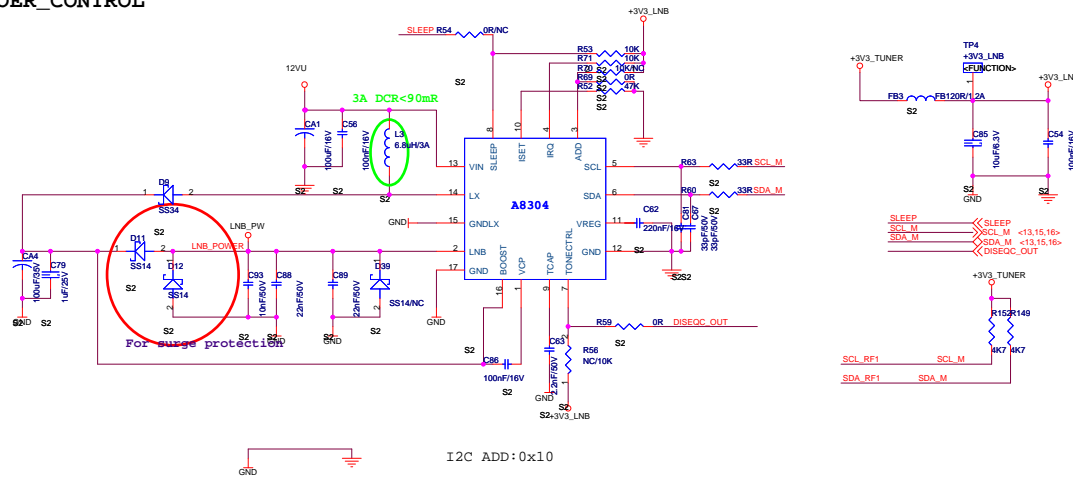
S2 SILICON TUNER



S2 CAN TUNER



LNB_POER_CONTROL

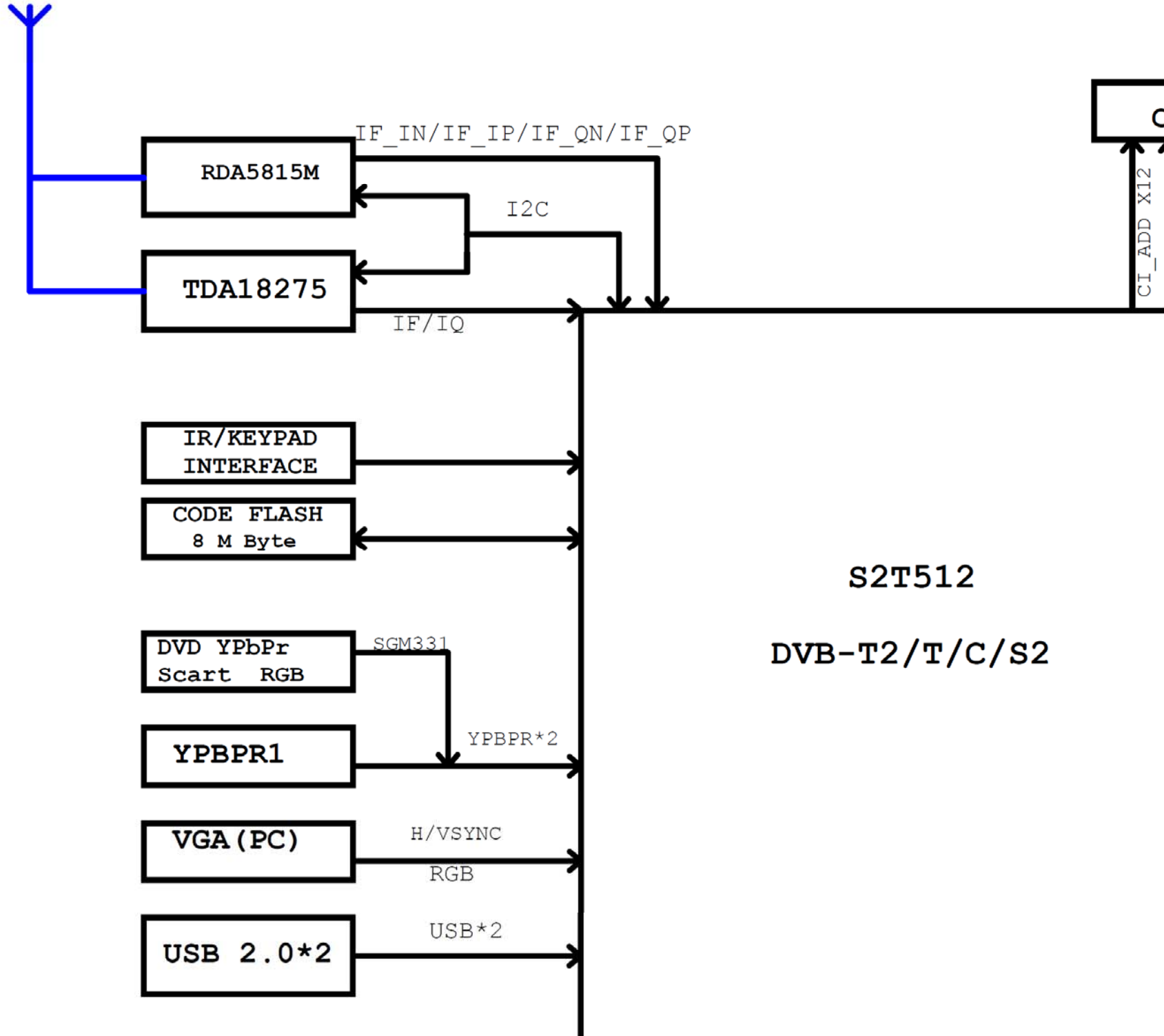


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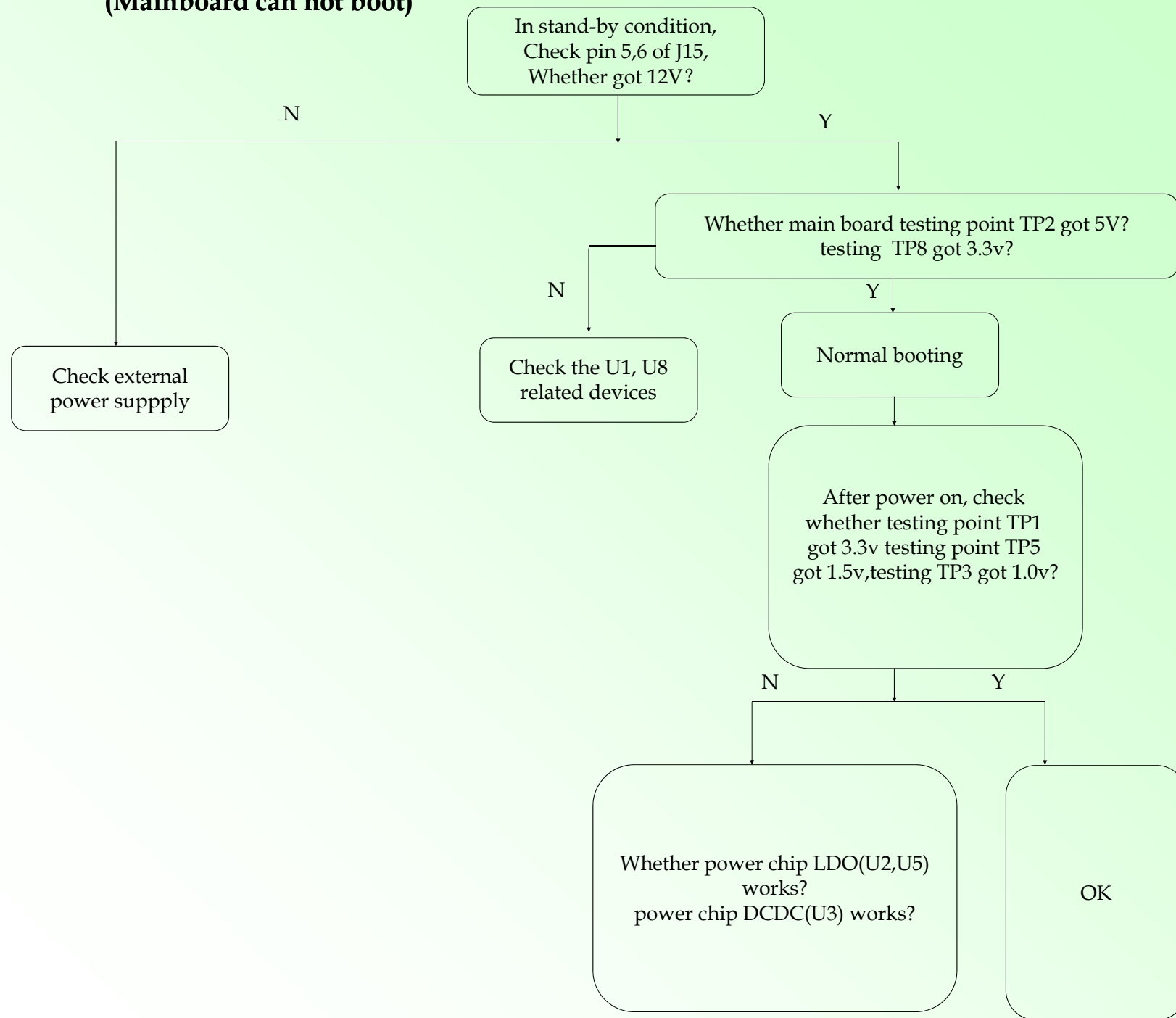
Common problems solution

- Power Unit Problem Solving**
- Display Unit Problem Solving**
- Audio Unit Problem Solving**
- Functional Unit Problem Solving**

ANTENNA

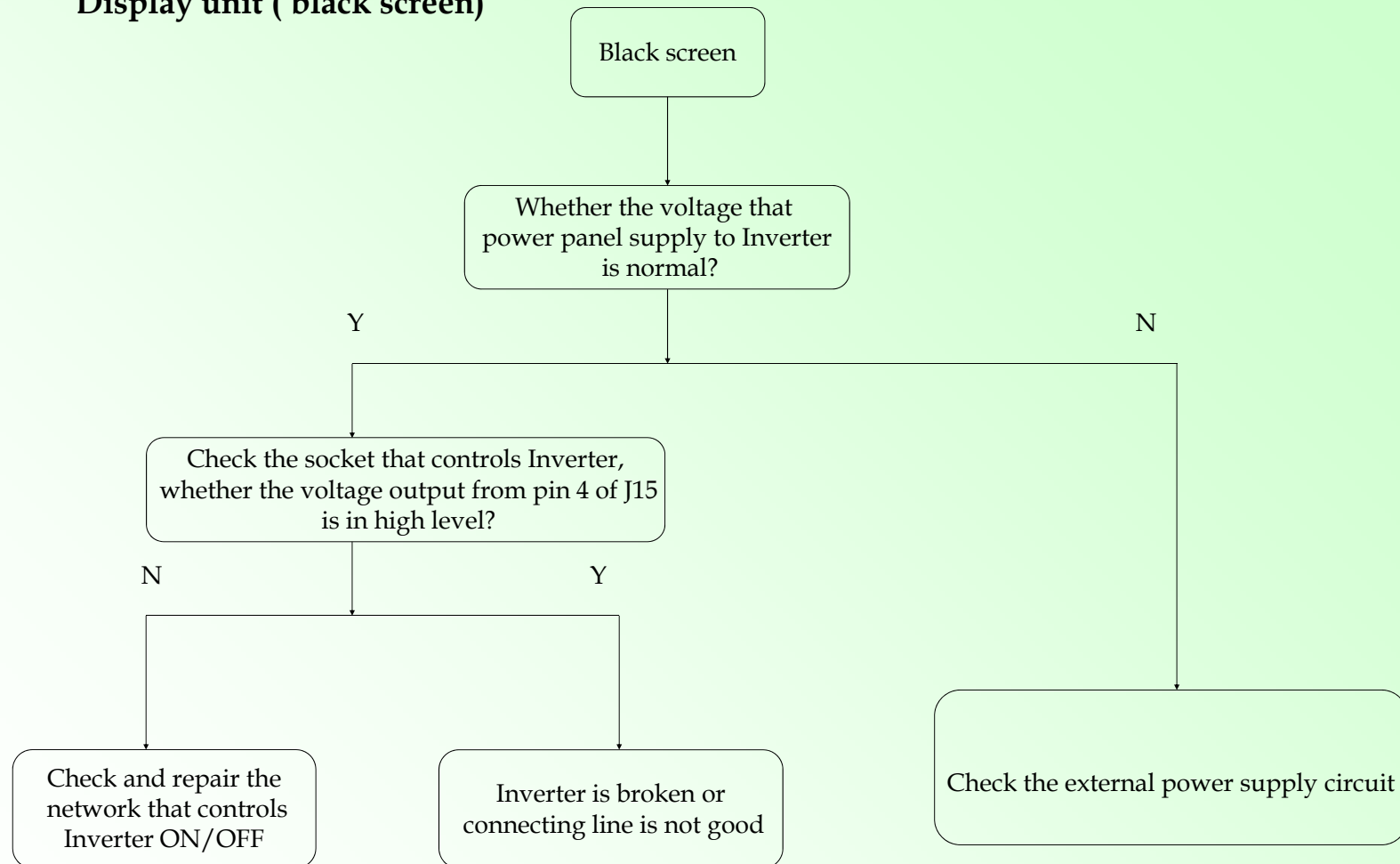


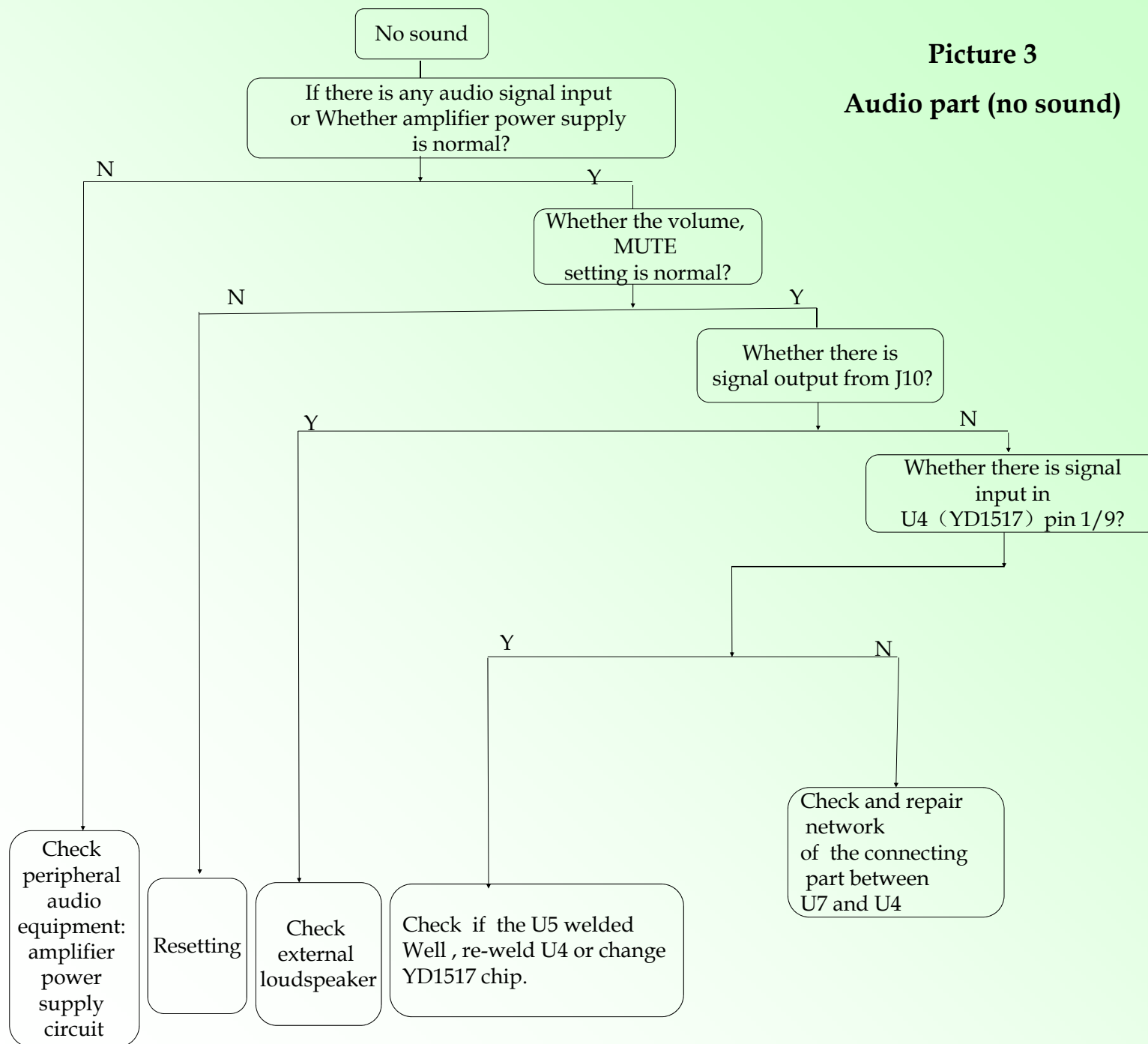
Picture 1: Power Units Problem Solving (Mainboard can not boot)

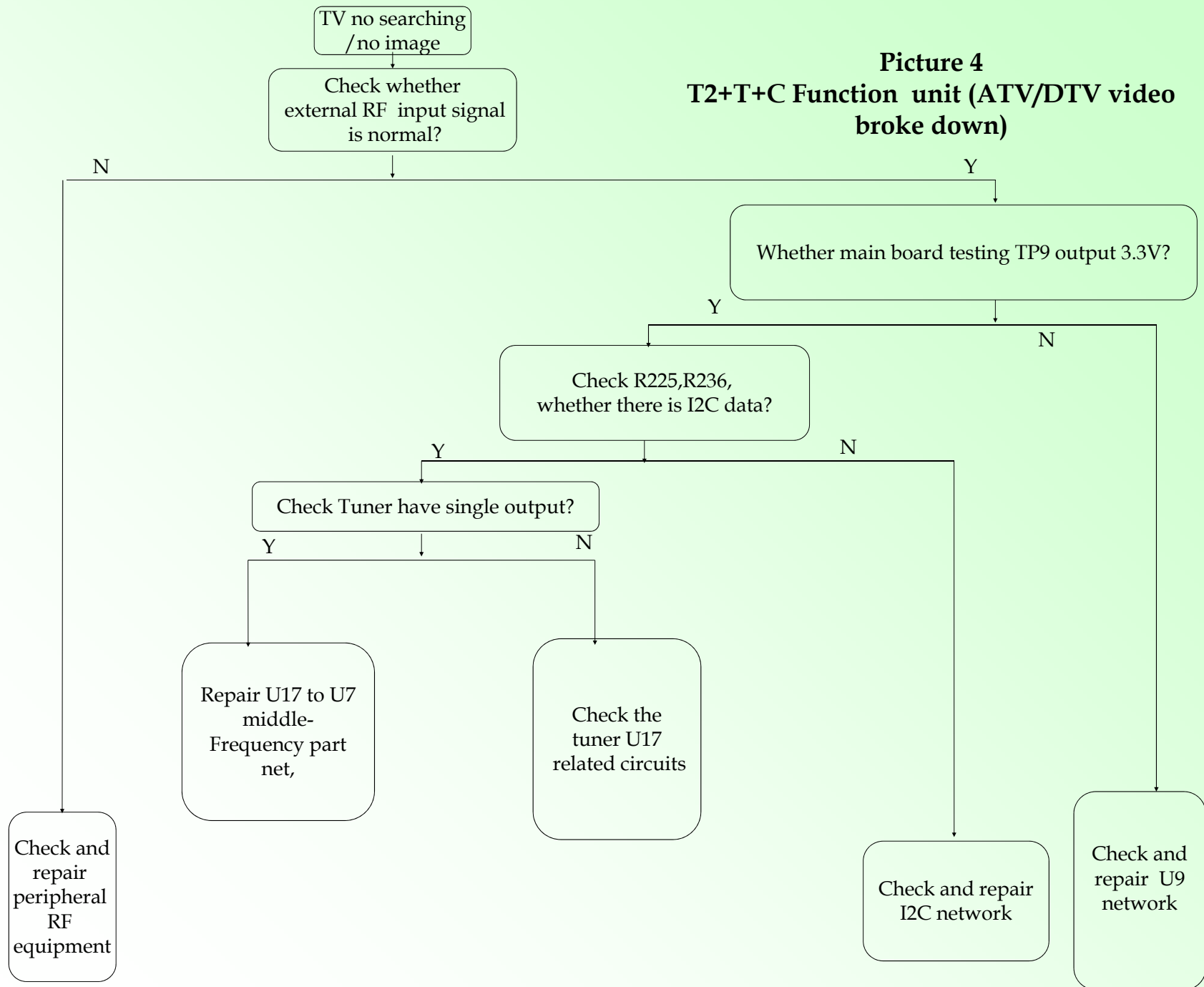


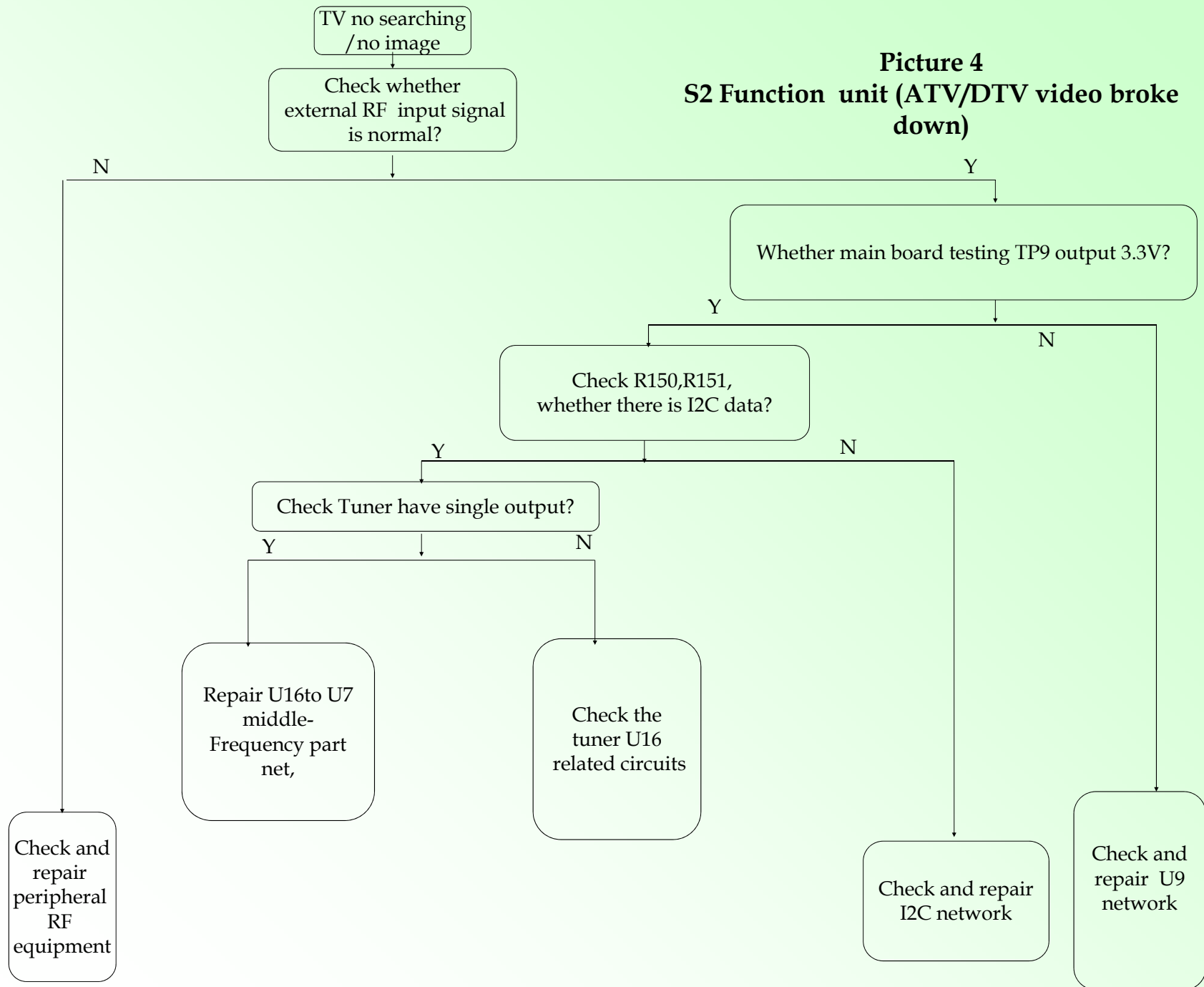
Picture 2

Display unit (black screen)



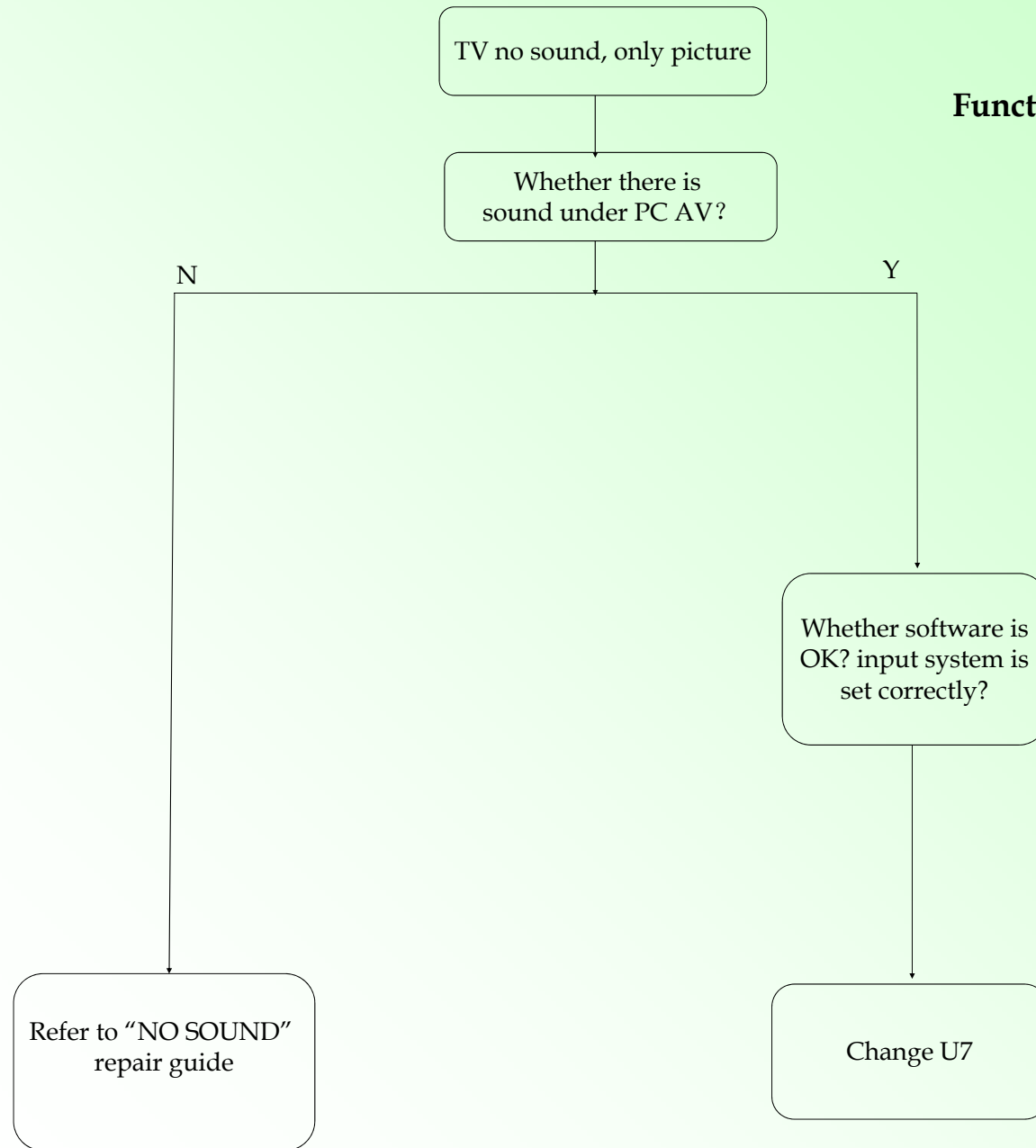






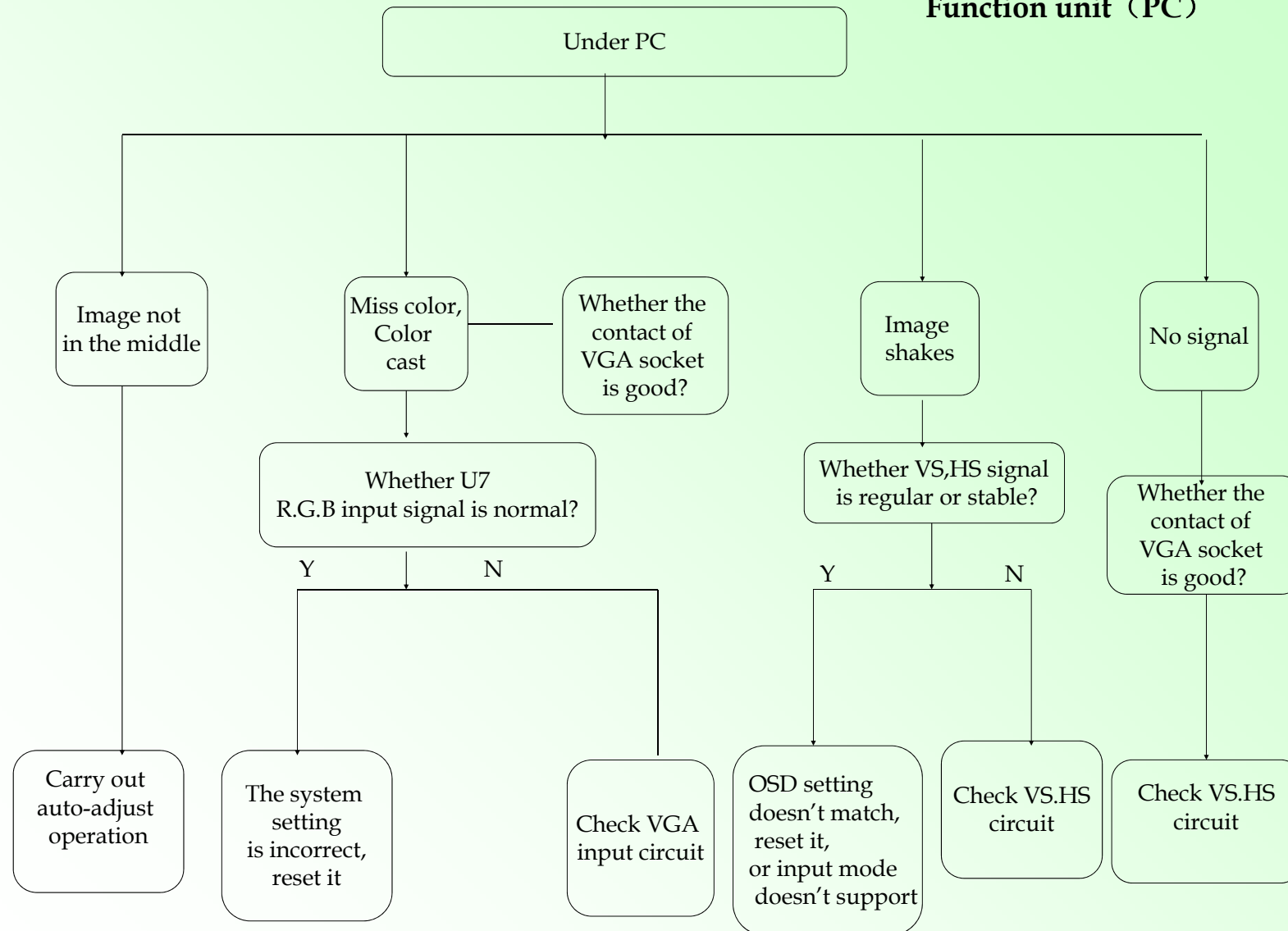
Picture 5

Function unit (ATV/DTV no sound)



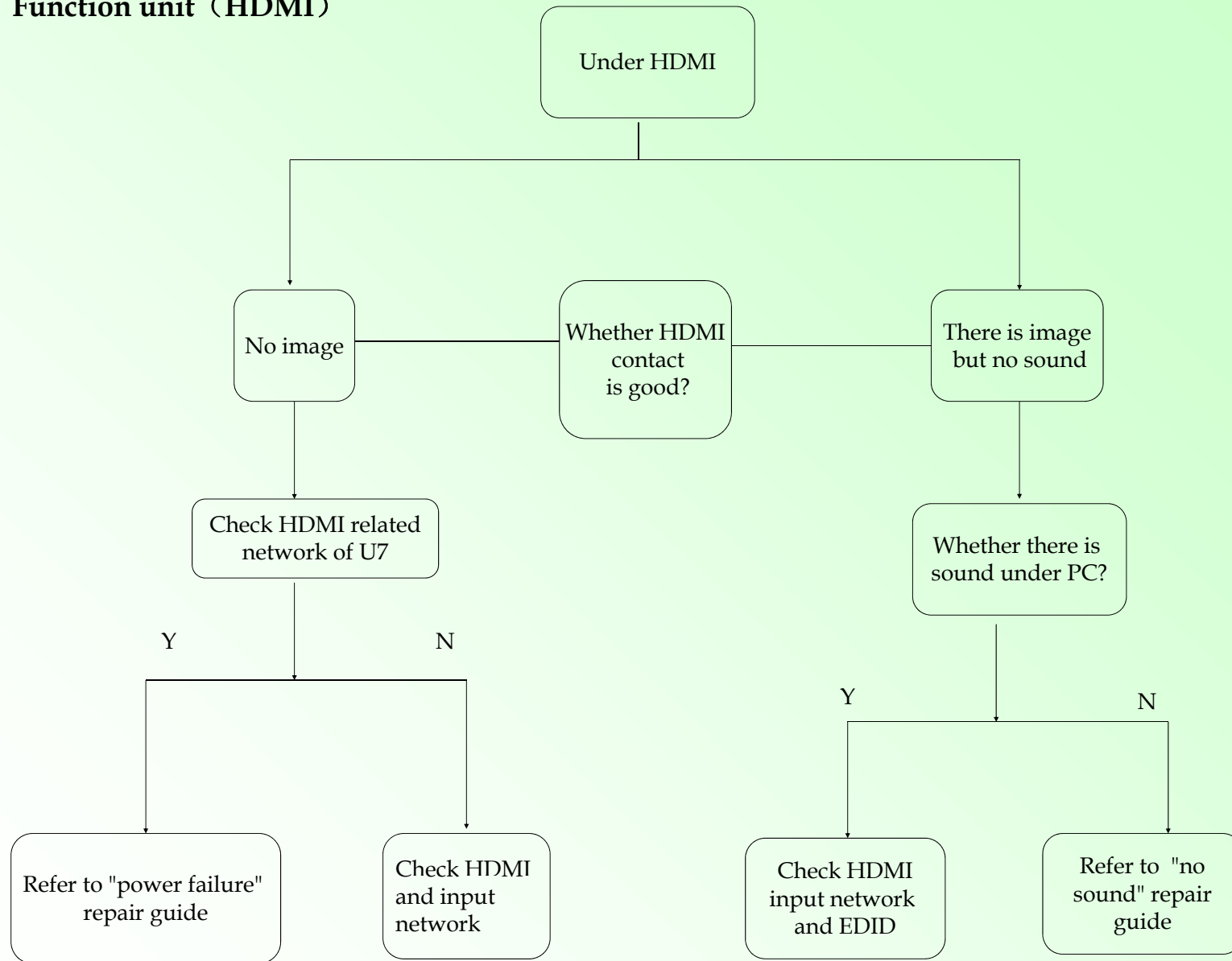
Picture 6

Function unit (PC)



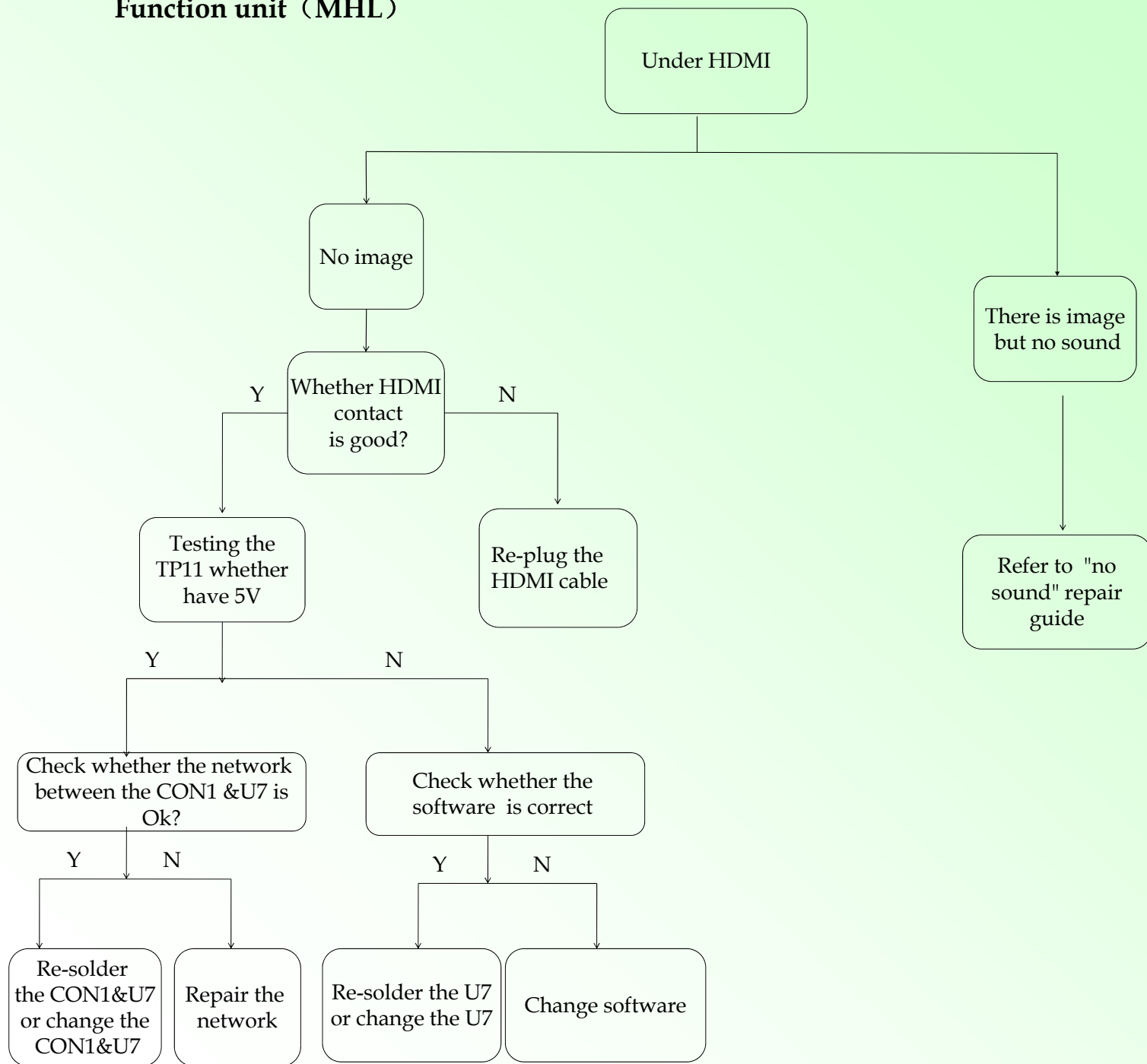
Picture 7

Function unit (HDMI)



Picture 8

Function unit (MHL)





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Guan City, Guang Dong P.R. China
Http://www.ay-power.com

SPECIFICATION

产品规格书

Customer

客 户

Product Name

产 品 名 称

LED 二合一

Model Name

产 品 型 号

AY042D-1SF67

Manufacturer

承 制 方

Customer

客 户

Made 拟制	Checked 审核	Approved 批准
研发部 2013.04.27 刘慧	研发部 2013.04.27 何光银	研发部 2013.04.27 陈家词

Checked 审核	Approved 批准

Document History
(文件修订记录)

No. 序号	Description 描述	Modified By 修改人	Rev 版本	Date 日期	Approved By 批准人
1	Initial released 首次发行				

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3.3 Power supply pin definition (电源连接器脚位定义)

Table.1 Pin-CON1 Connection and Function (插座 CON1 的引脚定义)

NO.	Pin Connection	Function
1	AC-L	AC INPUT LINE
2	NC	NC
3	AC-N	AC INPUT NEUTRAL

Note: CON1 : 90° connection, type: pitch3.96mm(90° 插座 CON1 的间距是 3.96 毫米)

Table 2 Pin-CON2 Connection and Function (插座 CON2 的引脚定义)

NO.	Pin connection	Function
1.2	+12V	+12V OUTPUT
3	ON/OFF	BACK LIGHT ON/OFF CONTROL
4	ADJ	BRIGHTNESS CONTROL
5.6	GND	GROUND

Note: CON2 : 1. 90° connection, type: pitch2.0mm (90° 插座 CON2 的间距是 2.0 毫米)

2. ON/OFF voltage, on is 2.5V, off is 0.8V (开机电压 2.5V, 关机电压 0.8V)

3. ADJ voltage is 0~5V. 0V is minimum output, 5V is maximum output。

(亮度调节电压范围在 0~5V 之间, 且 0V 最暗, 5V 最亮)

Table3 Pin- CN1F Connection and Function (插座 CN1F 的引脚定义)

NO.	Pin connection	Function
2	LED -	LED current sense for string
1	LED +	LED power supply

Note: CN1F : 90° connection, type: pitch2.0mm (90° 插座 CN1F 的间距为 2.0 毫米)

4. Electrical requirements (电气特性)

4.1 Input Electrical Characteristics Overview (输入特性)

Table. 4 Input Electrical Characteristics(输入特性)

Input voltage range 输入电压	90Vac to 264Vac
Normal voltage range 标称输入	100Vac to 240Vac
Frequency range 频率范围	50Hz/60Hz±5%
Max input ac current 满载输入电流	2.0A max at full load and 90Vac condition

4.2 Inrush Current(浪涌电流)

The cold inrush current must not cause the input fuse to open or cause damage to components
冷启动浪涌电流不会造成保险丝开路或者其它元器件损坏。

4.3 Output Voltages and Loads(输出电压与负载)

Table.5 Output Voltage, Current & Regulation. (输出调整率)

Output Voltage 输出电压	Regulation 调整率	Min. current 最小负载(A)	Rate Load 标称负载(A)	Max. current 最大负载(A)
+12V	+11.4~ 12.6V	0.016	1.5	1.5
LED DRIVE	480mA~550mA	25V	28V	30V

Note: 1. ADJ voltage is 5V (ADJ 电压为 5V)

2. The Max current or power should be test at other of dc output at Rated load, and the max current pulse width within 100ms

最大电流或功率的测试是在其它各组负载在标称值时测试，且脉宽小于 100 毫秒。

3. LED DRIVE should be test at CV mode

LED DRIVE 测试条件为 CV 模式。

4.4 DC Output Ripple & Noise(输出纹波与噪音)

Table.6 Ripple and Noise (输出纹波和噪音)

Signal Name	Ripple & Noise (mV)
+12V	≤240

Note:1. Measurements shall be made with an oscilloscope with 20MHz bandwidth.

示波器须设置在 20 兆赫兹带宽

2. Outputs shall be bypassed at the connector with a 0.1uF ceramic capacitor and a 10uF electrolytic capacitor to simulate system loading.

输出须并联 0.1uF 的陶瓷电容和 10uF 的电解电容来模拟负载

4.5 Protection(保护)

4.5.1 DC Output Over current Protection(输出过流保护)

Table.7 DC Output Over current Protection(输出过流保护)

Output Voltage	Over Current(A)	Specification
+12V	3.0A~6.0A	Hiccup or Shutdown

Note: The over current protection should be test at other of dc output at Rated load.

过电流保护应在其它 DC 输出工作在标称负载条件下测试。

4.5.2 DC Output Short Circuit Protection (输出短路保护)

Table.8 DC Output Over Short Protection(输出短路保护)

Output Voltage	Specification
+12V	Hiccup or Shutdown
LED Drive	Hiccup or Shutdown

Note: Each DC output shall have short circuit protection. A short condition on any of DC outputs shall cause no damage to the power supply. The unit shall recover function automatically or by next AC cycle as soon as the short condition is removed. The Short Circuit protection should be test at other of dc output at Rated load.

每路输出都有输出短路保护功能，且短路时不会对电源造成损害。一旦短路条件解除，电源将尽快自动或通过下一次重新开机恢复正常功能。另外输出短路保护应在其它 DC 输出工作在标称负载条件下测试

4.5.3 Fuse protection (保险丝保护)

The Fuse inside the power supply shall open when the AC input current is over the rated current of fuse. This Fuse protection will cause switching power supply to fail.

当 AC 输入电流超过保险丝的额定电流的时候，电源内部的保险丝将熔断，呈开路状态。保险丝保护启动后电源将不能启动

4.5.4 Reset After Shutdown (保护功能复位)

Recycle the ON/OFF signal, the power supply will restart after the fault removed.

故障去除后，关掉 ON/OFF 信号再打开，电源即可恢复

4.6 Efficiency(效率)

75% min. It will be measured at the nominal load and typical line (230VAC)

效率在标称负载和典型输入电压下测量（230V），效率 $\geq 75\%$

4.7 Green mode function(环保模式)

Green mode function: input power should be under 0.5W at 230Vac. (+12V/16mA)

环保模式：在230V交流输入下，输入功率不超过0.5瓦（+12V/16mA）

4.8 Turn on delay time(开机延迟时间)

The turn on delay from application of AC input power to the establishment of rated DC power voltage should not exceed 3 seconds during the range from 100 Vac to 240 Vac with rated load.

开机延迟时间是指，在 100~240V 范围交流输入与满载情况下，从有交流输入到有额定直流电压输出的时间间隔，并且此时间间隔不能超过 3 秒

4.9 Hold-up time(关机保持时间)

The power supply shall maintain voltage regulation within the specified limits in table 5 for at least 10 milliseconds (one cycle drop) after losing of input voltage under the following conditions:

关机时间是指，在如下的条件下关断输入电压，电源输出电压在满足表格 5 所示的规格的情况下持续的时间，且这段时间最少保持 10 毫秒

Input voltage（输入电压）：230Vac

Loading（负载）：rated output load（标称输出负载）

4.10 Mean time between failures (MTBF) (平均无故障时间)

50,000hrs at 25 degrees centigrade when calculated using MIL-HDBK-217F. The vendor can use agreed upon F.I.T. (failure - in - time) number in place of MTBF.

在 25 摄氏度条件下，使用 MIL-HDBK-217F 估计电源的平均无故障时间大约为 50,000 小时。也可以使用商用 F. I. T. 来计算平均无故障时间

4.11 Hi-pot Test(耐压测试)

100% Hi-pot tested, Primary to second: 3KVAC or 4242VDC 3 second

初级到次级，100%耐高压测试，条件是 3000V 交流或 4242V 直流输入，持续时间 3 秒

5. Environmental requirement（工作环境）

5.1 Temperature（环境温度）

Operating	:	0°C to +50°C (non-condensing)
Store	:	-20°C to +70°C

5.2 Humidity（环境湿度）

Operating	:	10% to 90% (non-condensing)
Store	:	5% to 95%

5.3 Altitude（海拔高度）

Operating	:	10,000 ft.(max)
Store	:	20,000ft.(max)

6. International Standards(国际性认证)

6.1 EMC (电磁兼容性)

6.1.1 EMI standards (EMI 标准)

The power supply shall compliance with the following radio disturbance Criterion

该电源应符合下列无线电干扰标准

☐ Sound and television broadcast receivers and associated equipment

声音和电视广播接收机及有关设备

EN55013	:	Sound and television broadcast receivers and associated equipment radio disturbance characteristics limits and methods of measurement
GB13837	:	声音和电视广播接收机及有关设备无线电干扰特性限值和测试方法
FCC CFR 47 Part 15 subpart B:美国联邦通信法规第47卷15章内无意式的辐射器材的相关规定		

6.1.2 EMS standards (EMS 标准)

The power supply shall compliance with the following immunity Criterion

该电源应符合下列抗扰度标准

☐ Sound and television broadcast receivers and associated equipment

声音和电视广播接收机及有关设备

EN55020	:	Sound and television broadcast receivers and associated equipment immunity characteristics limits and methods of measurement	
GB/T 9383	:	声音和电视广播接收机及有关设备抗扰度限值和测试方法	
EN61000-4-2	:	Electrostatic discharge immunity test	CON:±4KV; AIR:±8KV; 10 charge/point for Con; 10 charge/point for Air
GB/T17626.2	:	静电放电抗扰度试验	
EN61000-4-3	:	Radiated, radio-frequency, electromagnetic field immunity test	900 MHz, 3 V/m, duty cycle 1/8, 217 Hz repetition frequency
GB/T17626.3	:	射频电磁场抗扰度试验	
EN61000-4-4	:	Electrical fast transient/burst immunity test	AC port:±1KV
GB/T17626.4	:	电快速脉冲群抗扰度试验	

6.2 Safety (安全)

The power supply shall compliance with the following safety Criterion

电源应符合以下安全标准

☐ Sound and television broadcast receivers and associated equipment

声音和电视广播接收机及有关设备

EN60065	:	Audio, video and similar electronic apparatus – Safety requirements
IEC60065	:	Audio, video and similar electronic apparatus – Safety requirements
GB 8898	:	音频、视频及类似电子设备安全要求
UL60065	:	UL Standard for Safety for Audio, Video and Similar Electronic Apparatus – Safety Requirements

7. Notice（注意事项）

7.1 For safety issue, please keep 4.0mm at least from the metal parts of the system. Or put a high-voltage insulator between the power and the metal parts to avoid the situation of Hi-POT failure or arcing---etc.

出于安全问题的考虑,请在组装时确保板和系统金属材料间保持至少 4mm 以上的距离,或者使用具有足够绝缘等级的绝缘材料加以隔离,以避免产生高压放电

7.2 Don't twist, deform, drop or knock the power supply during assembly

组装时,请确保无扭曲,弯折,掉落及碰撞等现象的发生

7.3 The power supply is usually designed without the case. Please take care about ESD at anytime

因为本产品为无外壳之设计,故在任何时候均应注意静电防护

