

Service Manual



(Product rendering is only for reference, please subject to actual product)

Product Model: 40S5045/78G(40GFS-FISDB)

Main Board: TPD.T950R4.PB751

File Version: V202405.01.X0

Main board scheme: TPD.T950R4.PB751, please subject to actual one

Contents

1. Safety Precautions -----	错误！未定义书签。
2. Product Information -----	错误！未定义书签。
3. Disassembly Guide of Machine -----	错误！未定义书签。
4. Disassembly Guide of Module -----	错误！未定义书签。
5. Exploded Views -----	错误！未定义书签。
6. Interfaces -----	错误！未定义书签。
7. Software Upgrade -----	错误！未定义书签。
8. Circuit -----	错误！未定义书签。
9. IC Data Sheet -----	30
10. Troubleshooting -----	错误！未定义书签。
11. Circuit Diagrams -----	错误！未定义书签。
12. PCBA Silkscreen -----	48

1. Safety Precautions

To ensure the normal use of this product and prevent accidents such as electric shock or fire, please read and understand all requirements and operating procedures before use or repair. Please strictly observe the following requirements (including but not limited to):

- Do not expose this product to rain, moisture and direct sunlight, and it is not allowed to be too wet or attach too much dust, otherwise circuit might be corroded and causes malfunction;
- This product must not be near heat sources, such as heaters or radiation sources; and please put it in a place where is well-ventilated for heat dissipation;
- Please do not use corrosive liquid to wipe this product and prevent any liquid from entering the machine;
- Do not plug in/out wires violently, ensure wires are inserted into corresponding ports correctly, firmly;
- Please unplug power cord if product is not in use for a long time;
- Do not disassemble the product privately. If the product malfunctions and needs to be repaired, such repair can only be conducted by the professional who fully understand product information and relevant repair guidance documents;
- Power off the product before repair or assembly;
- Ensure ESD protection is conducted before repair or assembly to prevent from ESD damage on product;
- Before repair or assembly, please ensure the product is put in a place where is well-ventilated for heat dissipation, so that charged conductors would not touch components and lead to short circuit.

2. Product Information

1.Panel Spec.	
Size	39.5"
Backlight	DLED direct Type
Max.resolution	1920×1080
Contrast ratio(Typ)	5000:1
Response time(Typ)	9.5ms
Aspect ratio	16:9
Viewing angle(CR>10)	Typ(H:178°,V:178°)
Display color	16.7 M
Color gamut(NTSC)	≥NTSC 68%
LCM white central brightness	Min:200cd/m2,Typ:240cd/m2
Local dimming	Not support
Brightness uniformity	≥70% (1/9 point)
2.Hardware Information	
ATV	PAL M/N;NTSC M
DTV	ISDB
CPU architecture	Quad core ARM cortex A35
GPU	ARM Mali-G31 MP2
RAM(DDR)	512MB
ROM(Flash)	512MB
Audio power (output)	6W+6W
WIFI(Type)	1T1R
Tuner type	screw-thread
USB 2.0	1
USB 3.0	-
VGA	-
AV In	-

YPbPr In	-
CI	-
PC audio	-
RJ-45	1
Earphone	1
Audio input	-
Audio output	-
Video output	-
SPDIF output	1(optical)
Bluetooth (version)	-
HDMI	3
Others	-
3.Software Functions	
Channel List	YES
Channel Edit	YES
Picture freezing	NO
MTS/NICAM	MTS
Sleep time setting	YES
Teletext	NO
PVR	NO
EPG	NO
V_CHIP/Parental guidance	Parental Guidance
CC(Closed caption)	YES
AD(Audio description)	NO
TTS(Text to Speech)	YES
CI+	NO
DOLBY	YES
HDMI-ARC	YES
HDMI-CEC	YES

HDMI-MHL	NO
Operating system	Linux
OTA	YES
Hotel mode	NO
4.Structure Information	
Base model name	BCD4-32A Skirt wing fixed plastic base
Dimensions (without base) L×W×H	893×82×509mm
Dimensions (include base) L×W×H	893×223×560mm
Dimensions (carton) L×W×H	975×113×569mm
Net weight (without base)	5.5kg
Net weight (include base)	5.6kg
Gross weight (without base)	6.9kg
Gross weight (include base)	7.0kg
Size (wall mount)	200×200mm
5.Power Management, Safety and Certificates	
Power input	100-240VAc
Fire rating	UL94-HB75
Standby power	≤0.5W
Rated power	60W
Working conditions	Temperature:5℃~40℃,Humidity;20%~80%,Atmosphere:86KPa~106KPa
Storage conditions	Temperature:-20℃~55℃,Humidity:20%~80%,Atmosphere:86kPa~106kPa
6.Accessories	
Base (optional)	1PCS
Remote control	1PCS
Instruction manual	1PCS
Warranty card (optional)	1PCS
Battery (optional)	2PCS

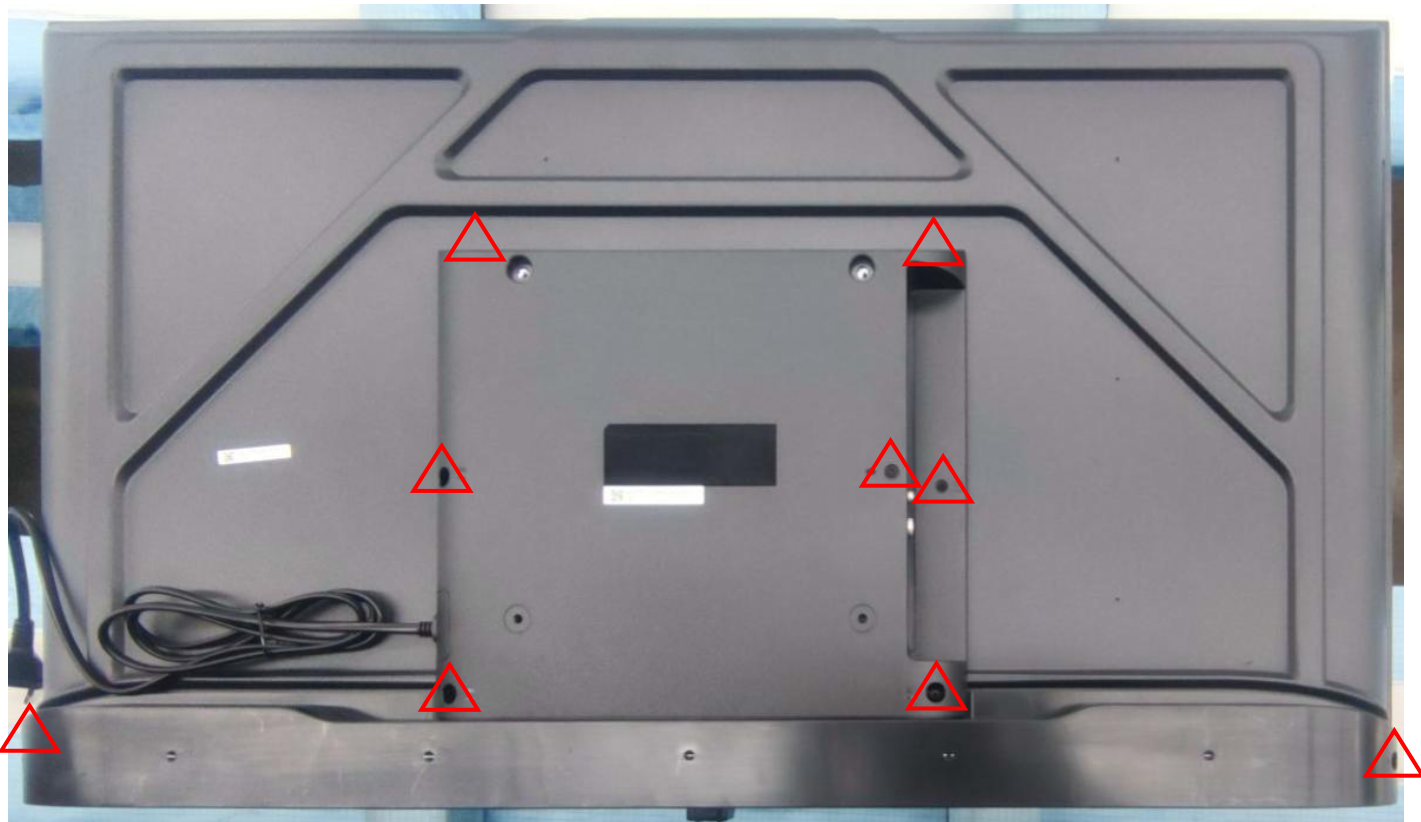
3. Disassembly Guide of Machine

3.1 Remove screws from back cover

1. Use electric screwdriver to remove 9pcs screws from back cover ( in the figure) (torque of electric screwdriver: $4 \pm 1 \text{ kgfcm}$)
2. Put the removed screws in a particular component bin, please do not mix up.
3. After inspecting operations meet requirements, convey the machine to next station.

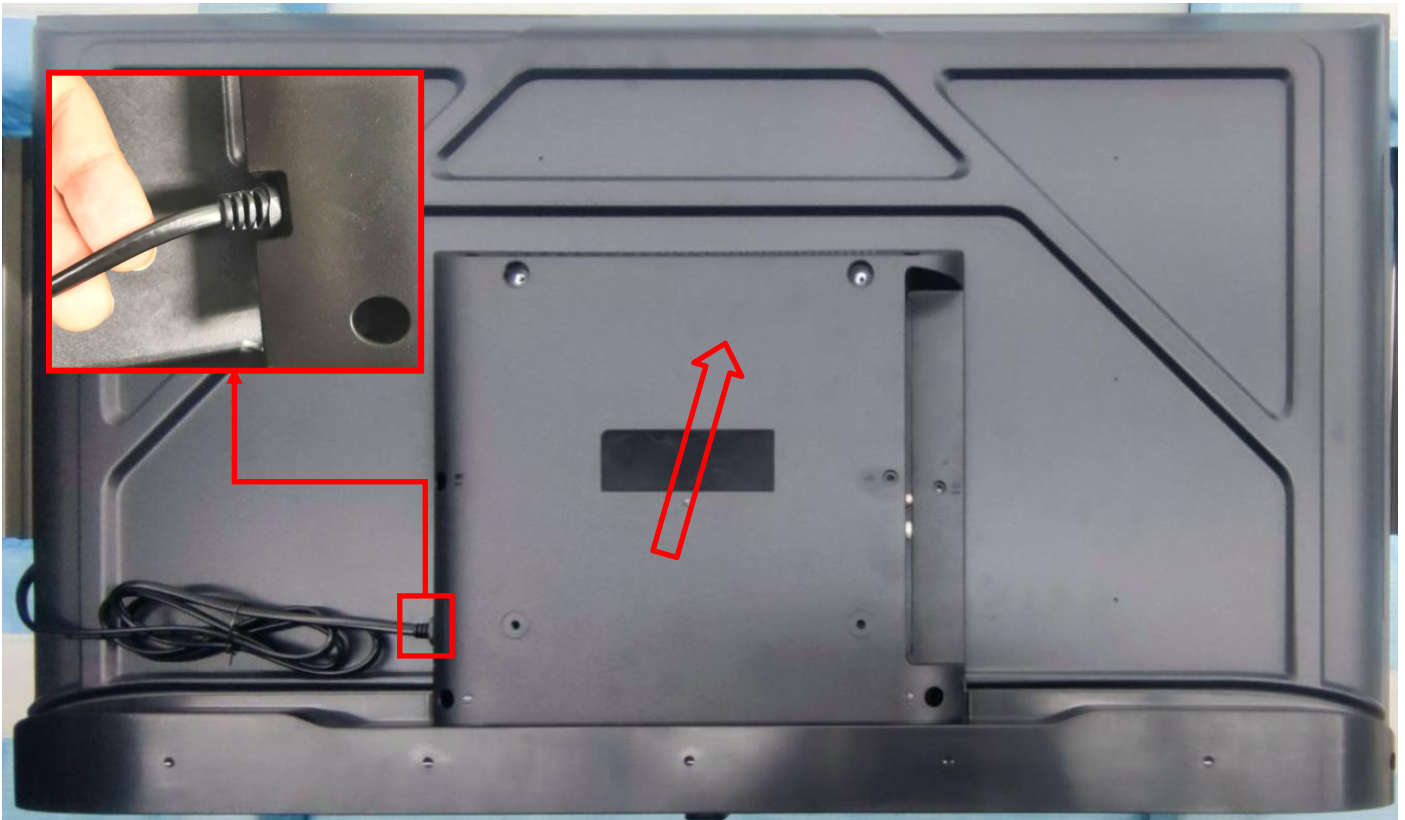
Note:

1. When unscrewing screws, please do not scrape the back cover.



3.2 Remove back cover-U

- 1.Push back cover upward to separate back cover bolt from back plate slot, lift back cover upward, use the left hand to unplug power cable from back cover slot, then remove back cover upward.
- 2.Put back cover U in a packing box.
- 3.After inspecting operations meet requirements, convey the machine to next station.



3.3 Unplug wires

- 1.Remove tapes ( in the figure) from wires, then put them in designated position.
- 2.Unplug power cable, backlight wire, FFC wire, key board wire, WIFI wire and speaker wire from main board, then put them in designated position ( in the figure)
- 4.Classify wires and then put them in designated component bins, arrange them neatly.
- 5.After inspecting operations meet requirements, convey the machine to next station.

Note:

- 1.Please wear ESD wrist strap during operation.
- 2.When removing tape, please tear off one side first, then gently remove it from cable and put it in designated position, do not litter it everywhere.
- 3.The force exerted to remove tape must be proper, prevent from damaging wires during pulling.
- 4.When unplugging wire, please hold the connector lest the wire is pulled.

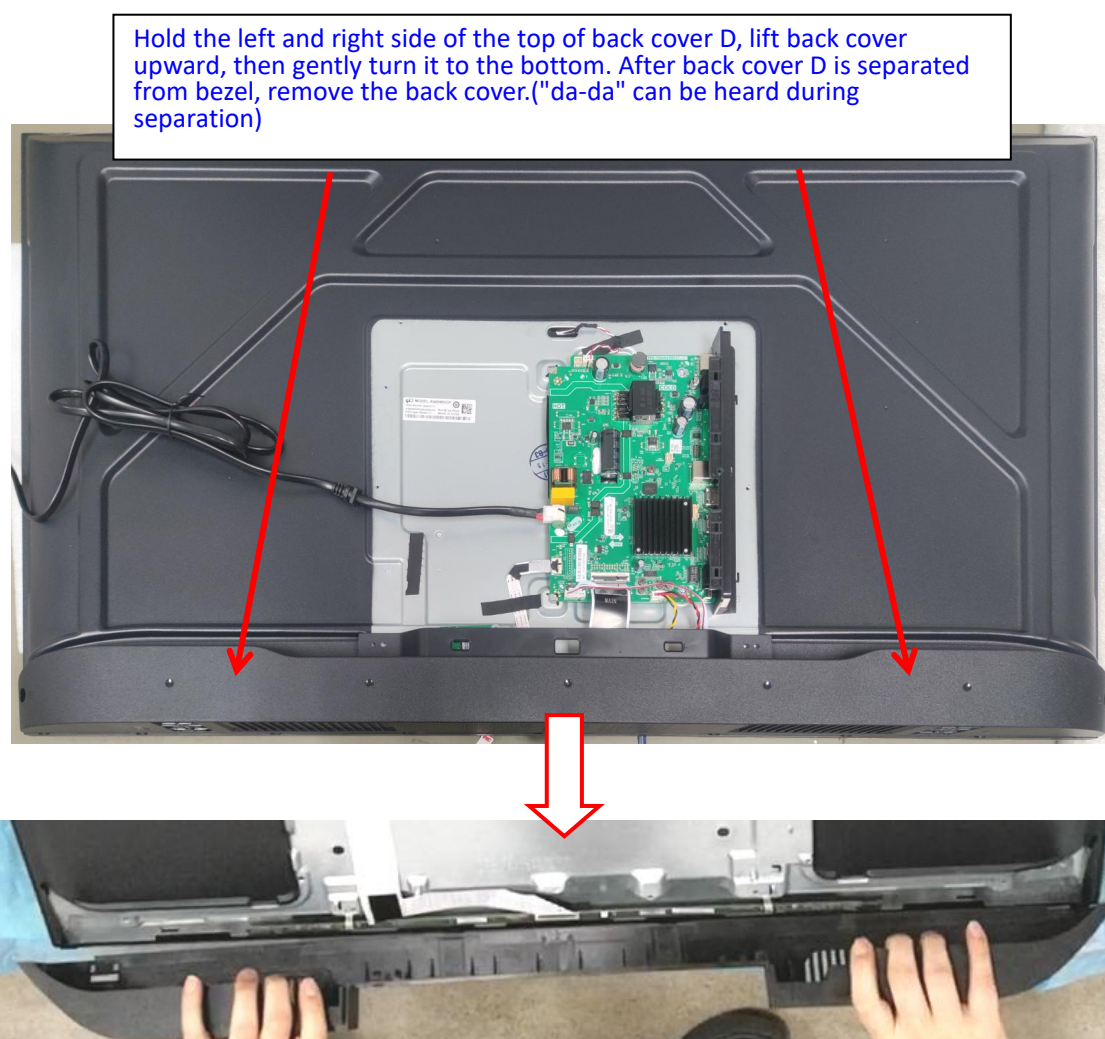


3.4 Remove back cover-D

1. Hold the left and right side of the top of back cover D, lift back cover upward, then gently turn it to the bottom. After back cover D is separated from bezel, remove the back cover.
2. After inspecting operations meet requirements, convey the machine to next station.

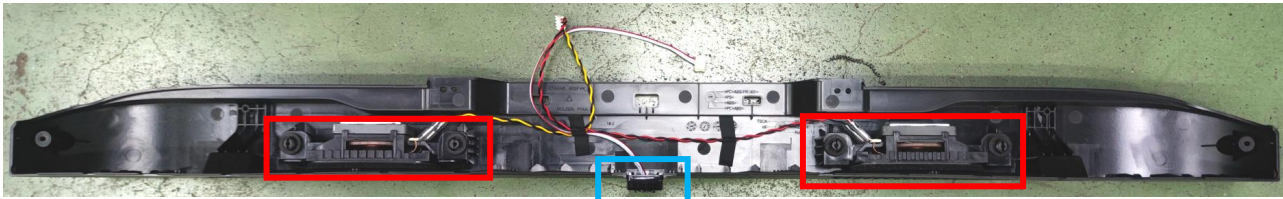
Note:

1. Please wear ESD wrist strap during operation.



3.5 Remove speakers

- 1.Remove speaker-L/R ( in the figure)
- 2.Remove remote control receiving board. ( in the figure)

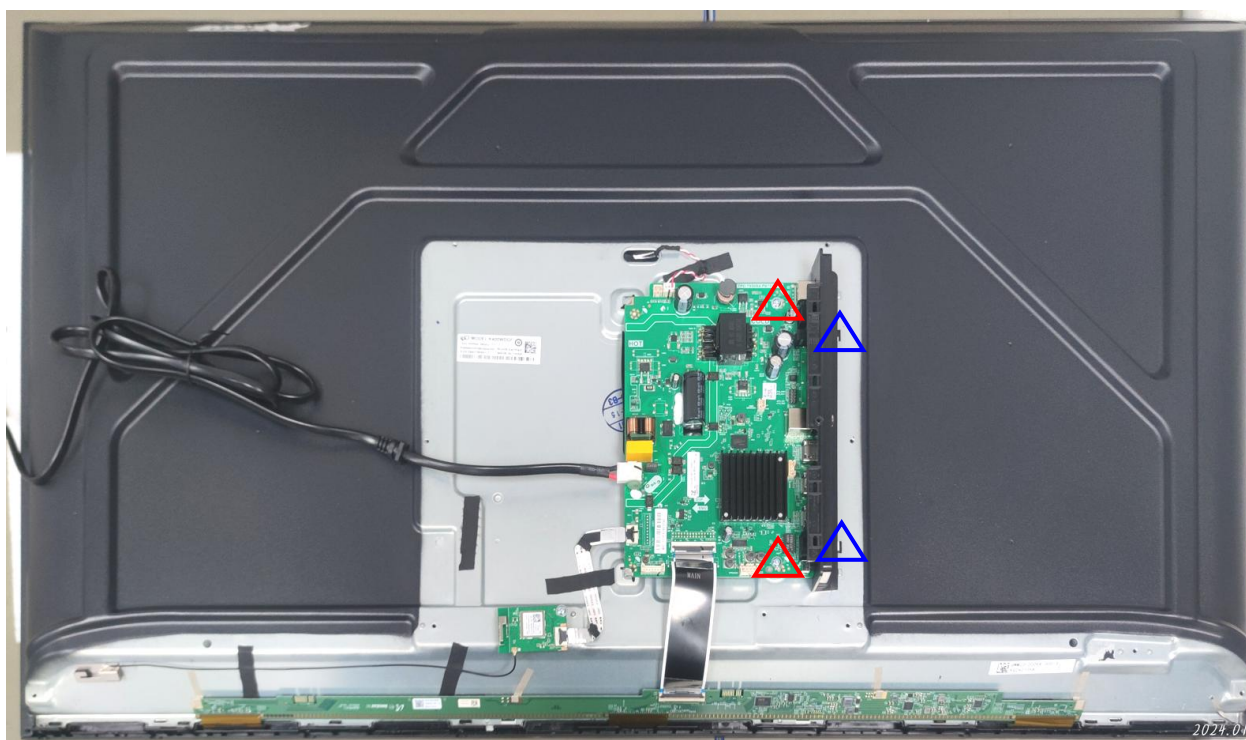


3.6 Remove main board

1. Remove baffle-R from snaps. ( in the figure)
2. Use screwdriver to unscrew the screws from main board, move main board towards right to make it separates from panel slot, then remove the main board. ( in the figure)
3. Put the removed screws in a component bin, do not mix up.
4. Put the removed main board in a component bin.
5. After inspecting operations meet requirements, convey the machine to next station.

Note:

1. Please wear ESD wrist strap during operation.



3.7 Remove WIFI board

- 1.Remove screws from WIFI board, unplug WIFI wire, as shown in the figure. ( )
- 2.Unplug WIFI antenna, then remove WIFI board. ( in the figure)

Note:

- 1.Please wear ESD wrist strap during operation.



4. Disassembly Guide of Module

4.1 Remove conductive fabric

1. Check whether there is any obvious damage to the module, and put the module open cell down on the worktable.

2. Tear the 4PCS conductive fabric that has been pasted on the backboard and S-PCB.

Notes: 1. Wastes produced by this station shall be placed in the assigned position. Refer to Waste Classification and Disposal List.

2. When material is defective, make marks and return it original package, Classification placed.

3. The operator should be familiar with operation content, check with each other to avoid misoperation.



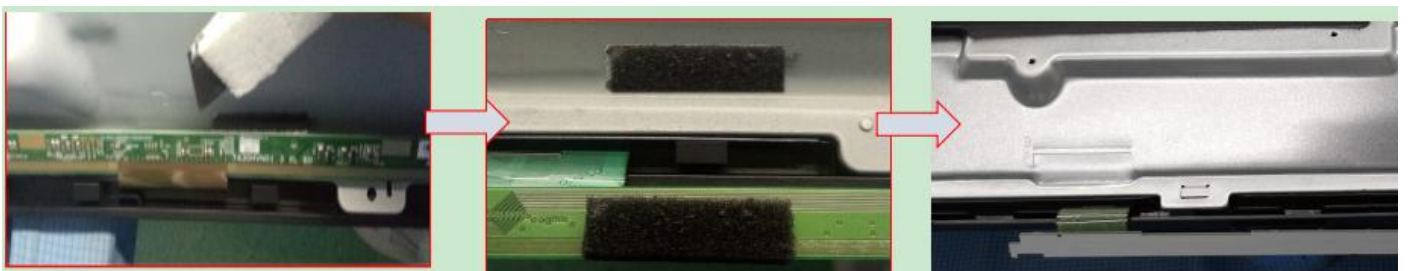
4.2 Cut off sponge mat

- 1 Check whether the disassembly operation of the previous station is completed.
- 2 The 4PCS sponge mats of the fixed S-PCB were cut from the middle with the blade of the art knife.
- 3 Tear off the cut sponge mats and remove the residual glue.

Notes:1. Wastes produced by this station shall be placed in the assigned position. Refer to Waste Classification and Disposal List.

2.When material is defective, make marks and return it original package, Classification placed.

3.The operator should be familiar with operation content, check with each other to avoid misoperation.



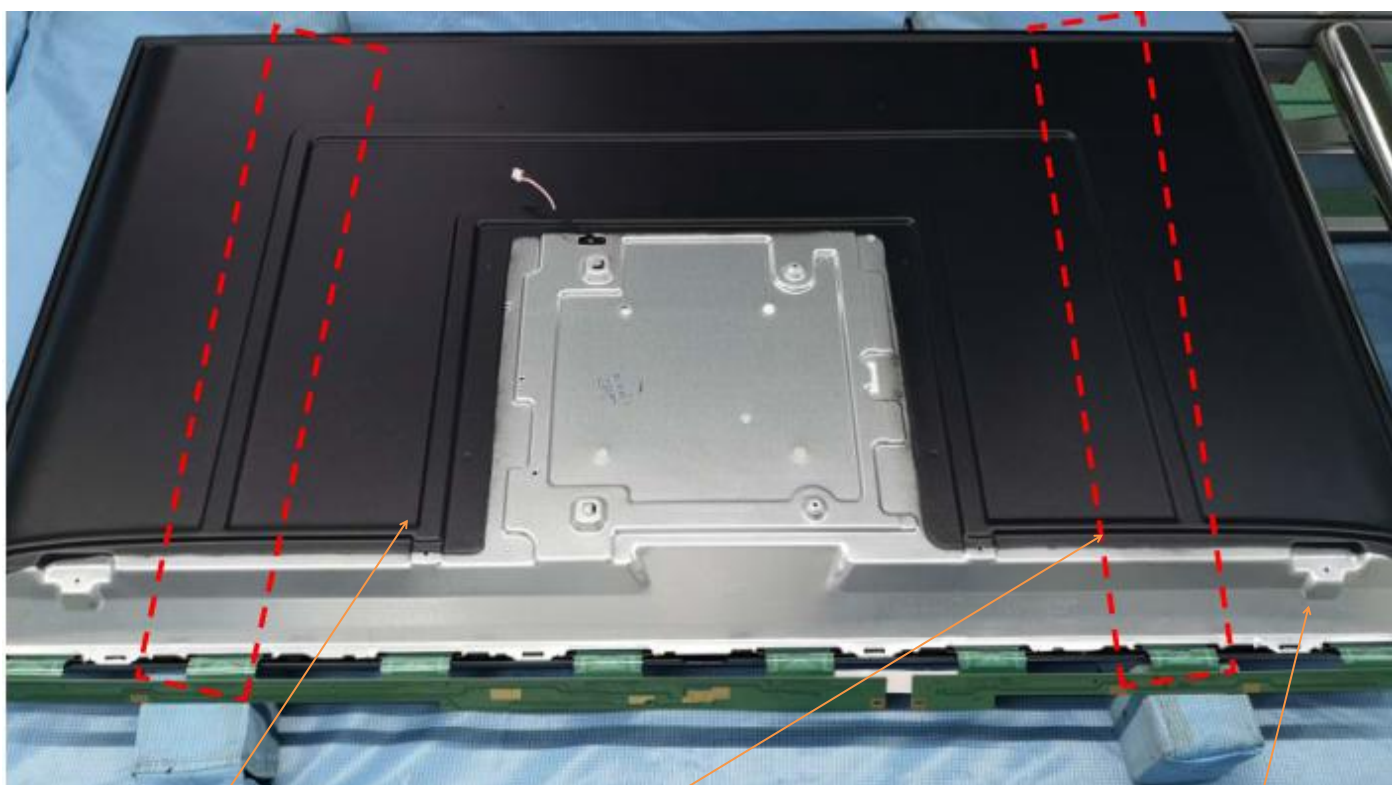
Cut the sponge mat, pay attention to light movement, moderate strength and no damage to the COF

Be careful not to pull the COF to prevent damage.

Remove sponge mat and remove residual glue.

4.3 Flipping the module

1. Check whether the disassembly operation of the previous station is completed.
2. Check that S-PCB has been completely separated from the module backboard.
3. Hold both sides of the module in the middle position to turn the module, then keep the 4 open cell upside



When turning the module, pay attention to keep S-PCB on top, turn over speed not too fast, and movement range should be small.

After the module is turned over, the supporting rod is placed in the area of the back plate, which separates the T-CON board from the table surface and prevents the damage caused by the force.

After turning, put the module flat.

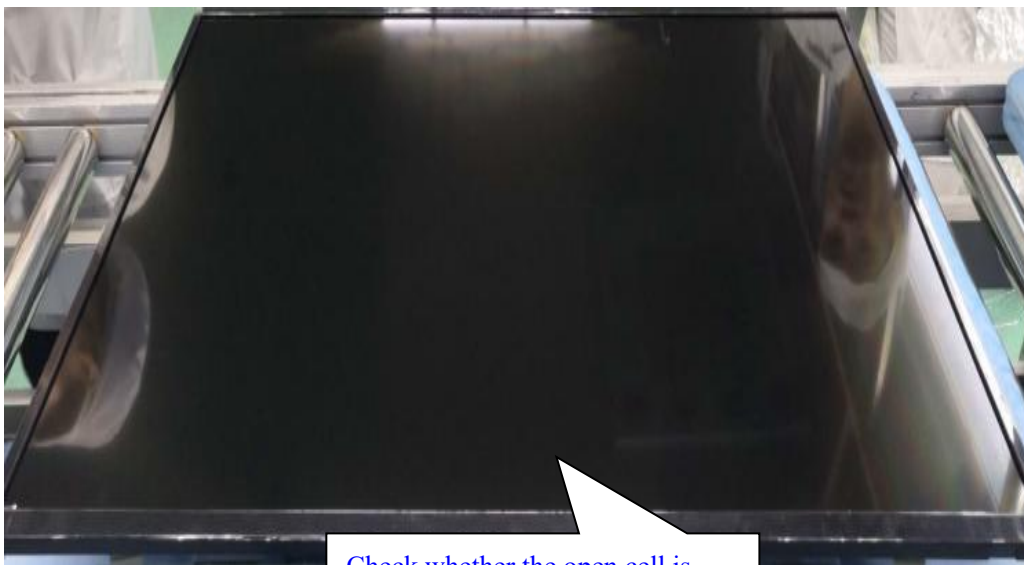
4.4 Remove surface frame

- 1 Check whether the disassembly operation of the previous station is completed.
- 2 Check that all screws have been released.
- 3 Cancel adhesion between S-PCB and backboard.
- 4 Lift and remove the surface frame vertically from the assembly.
- 5 Place the surface frame in the specified position or hang on the revolving utilization car.

Notes:1. Wastes produced by this station shall be placed in the assigned position. Refer to Waste Classification and Disposal List.

2.When material is defective, make marks and return it original package, Classification placed.

3.The operator should be familiar with operation content, check with each other to avoid misoperation.



Check whether the open cell is intact, whether there are obvious scratches, dirty and so on.



Dismantling face frame tool

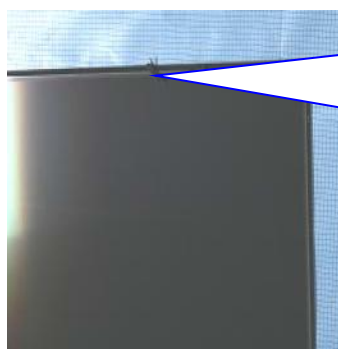
4.5 Take out the glass

1. Check whether the disassembly operation of the previous station is completed.
2. Ensure that the glass is no longer bonded to the frame;
3. Check if S-PCB fixing tool will fix s-PCB in the Horizontal Position; (Figure: )
4. Absorbing the glass and extracting the glass vertically from the module
5. Pay attention to cleaning the residual foam on the back of the glass;
6. Place the cleaned glass in the box and remove the S-PCB holder and Suction Cup.

Notes: 1. Wastes produced by this station shall be placed in the assigned position. Refer to Waste Classification and Disposal List.

2. When material is defective, make marks and return it original package, Classification placed.

3. The operator should be familiar with operation content, check with each other to avoid misoperation.



Clean the remaining foam debris from the back of the glass
Clean the remaining foam debris from the back of the glass

Make sure that the back of the glass is clear of foam debris, and if necessary reattach a protective film to protect it



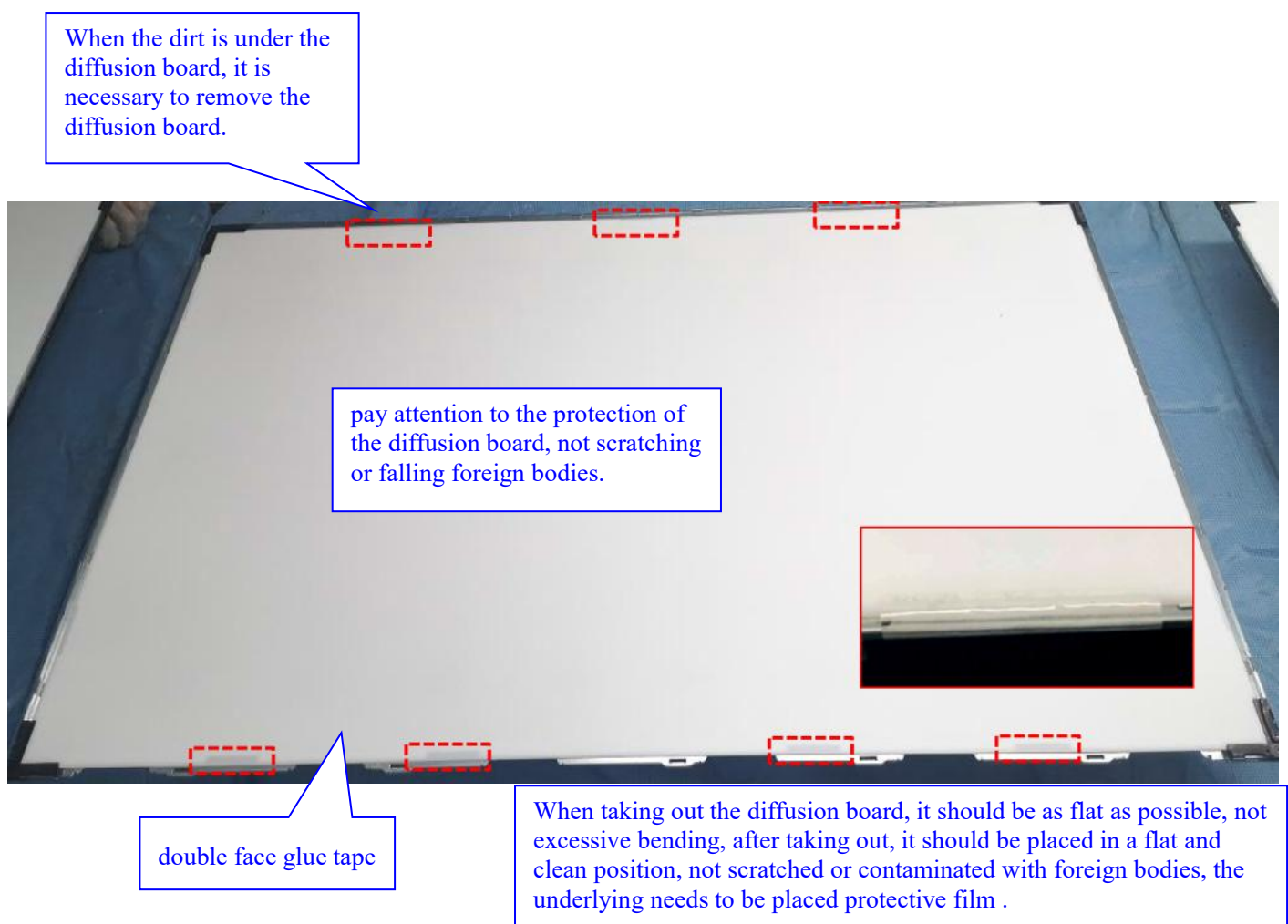
4.6 Cleaning module

1. Check whether the disassembly operation of the previous station is completed.
2. Tear off the tape, remove the diffusion board and check whether there is any residual glue on the diffusion board.
3. Lightly lift the diffusion board and hold the diffusion board on the left and right sides and place it in the specified position.

Notes: 1. Wastes produced by this station shall be placed in the assigned position. Refer to Waste Classification and Disposal List.

2. When material is defective, make marks and return it original package, Classification placed.

3. The operator should be familiar with operation content, check with each other to avoid misoperation.



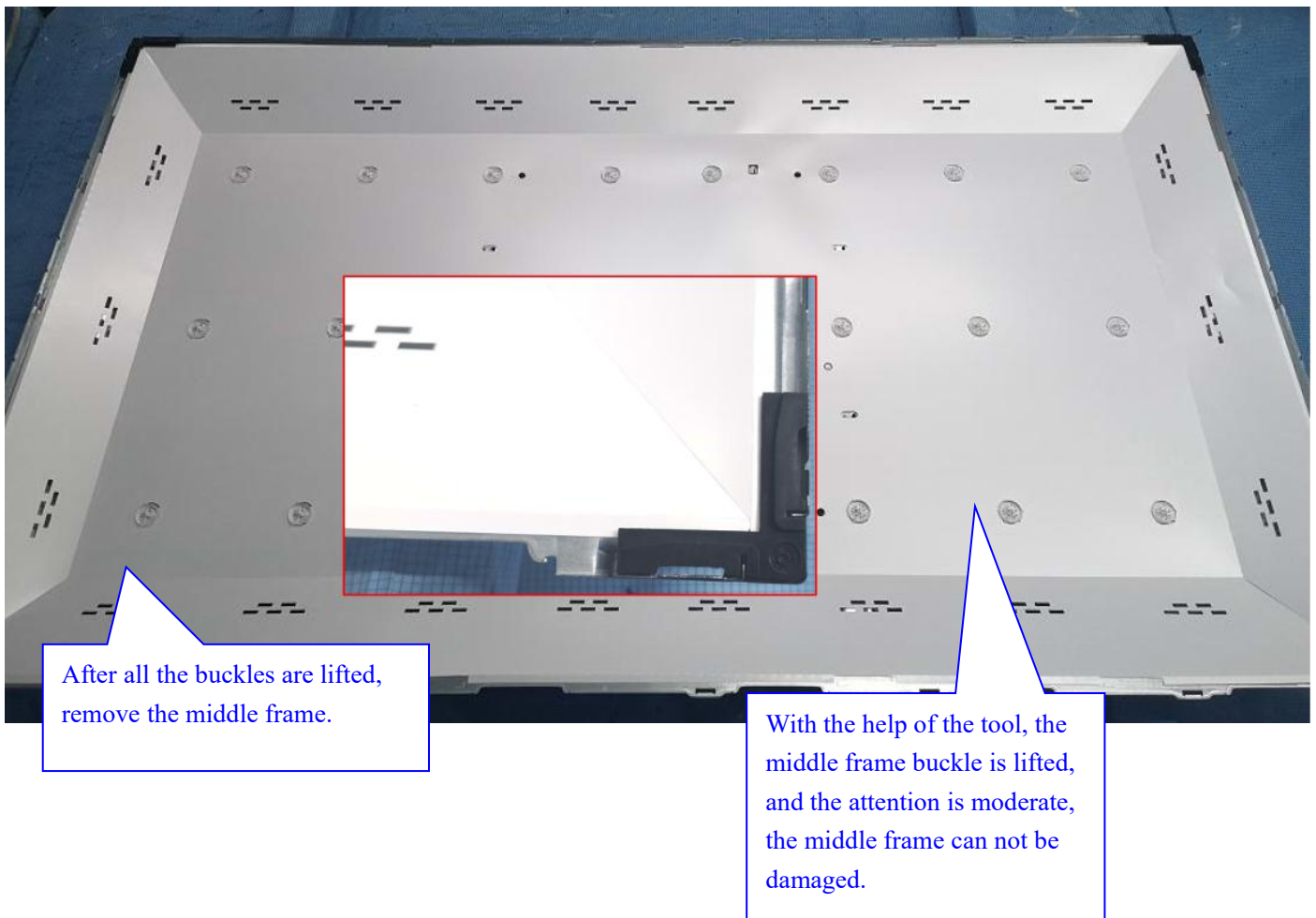
4.7 Remove the diaphragm

- 1 Check whether the disassembly operation of the previous station is completed.
- 2 Use the blade or other tools to pick up the buckle of the middle frame and separate the middle frame from the backboard.

Notes:1. Wastes produced by this station shall be placed in the assigned position. Refer to Waste Classification and Disposal List.

2.When material is defective, make marks and return it original package, Classification placed.

3.The operator should be familiar with operation content, check with each other to avoid misoperation.



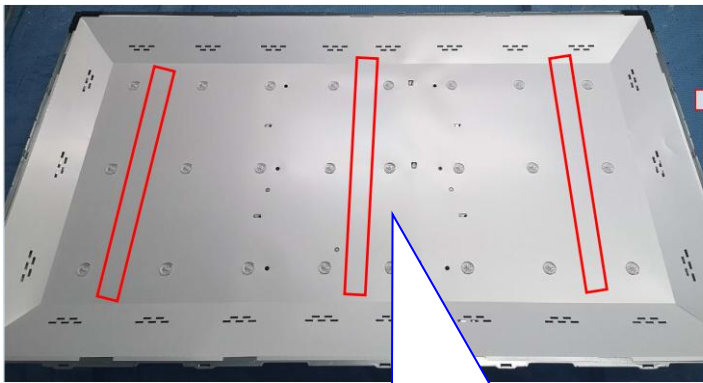
4.8 Remove reflection film

1. Check whether the disassembly operation of the previous station is completed.
2. Hold the reflective film on both sides, gently move, and remove the reflecting film from the lens.
3. The reflective film should be placed in the designated position and protected.

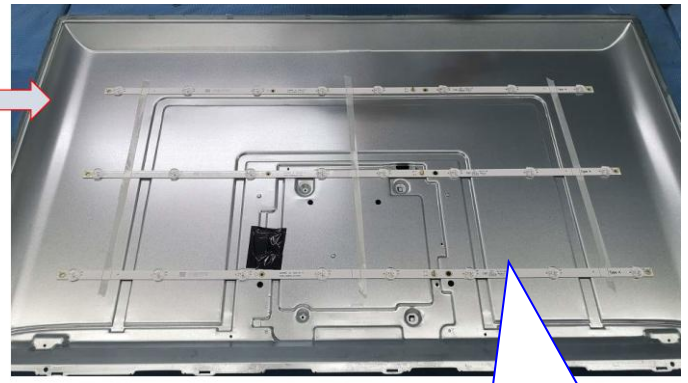
Notes: 1. Wastes produced by this station shall be placed in the assigned position. Refer to Waste Classification and Disposal List.

2. When material is defective, make marks and return it original package, Classification placed.

3. The operator should be familiar with operation content, check with each other to avoid misoperation.



Note that there is backing glue in the reflective film



First, the reflective film is separated from the lens, then the reflection film is removed.

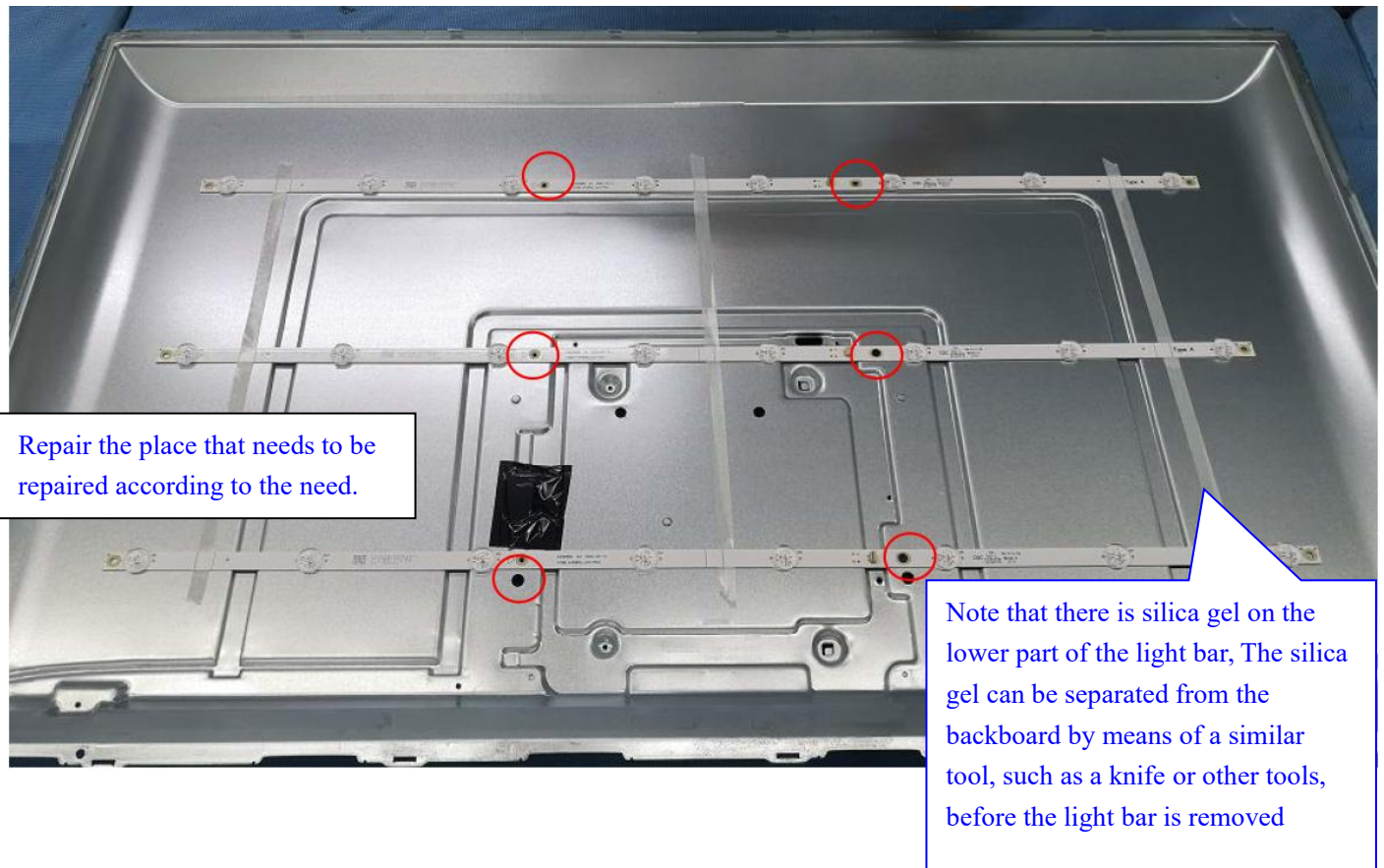
4.9 Repair

1. Repair the place that needs to be repaired according to the need.
2. If you need to change the light bar, please remove the screw and wire first.
3. After repairing, reinstall the module.

Notes:1. Wastes produced by this station shall be placed in the assigned position. Refer to Waste Classification and Disposal List.

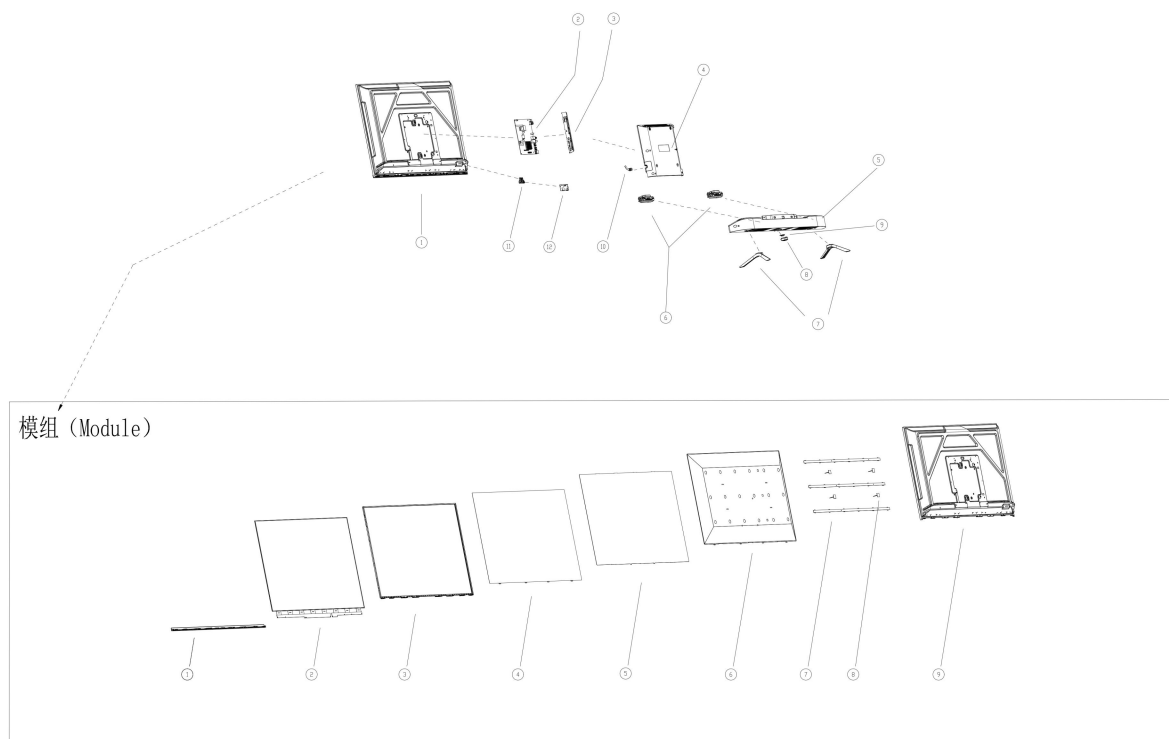
2.When material is defective, make marks and return it original package, Classification placed.

3.The operator should be familiar with operation content, check with each other to avoid misoperation.



5. Exploded Views

5.1 Exploded View of Machine

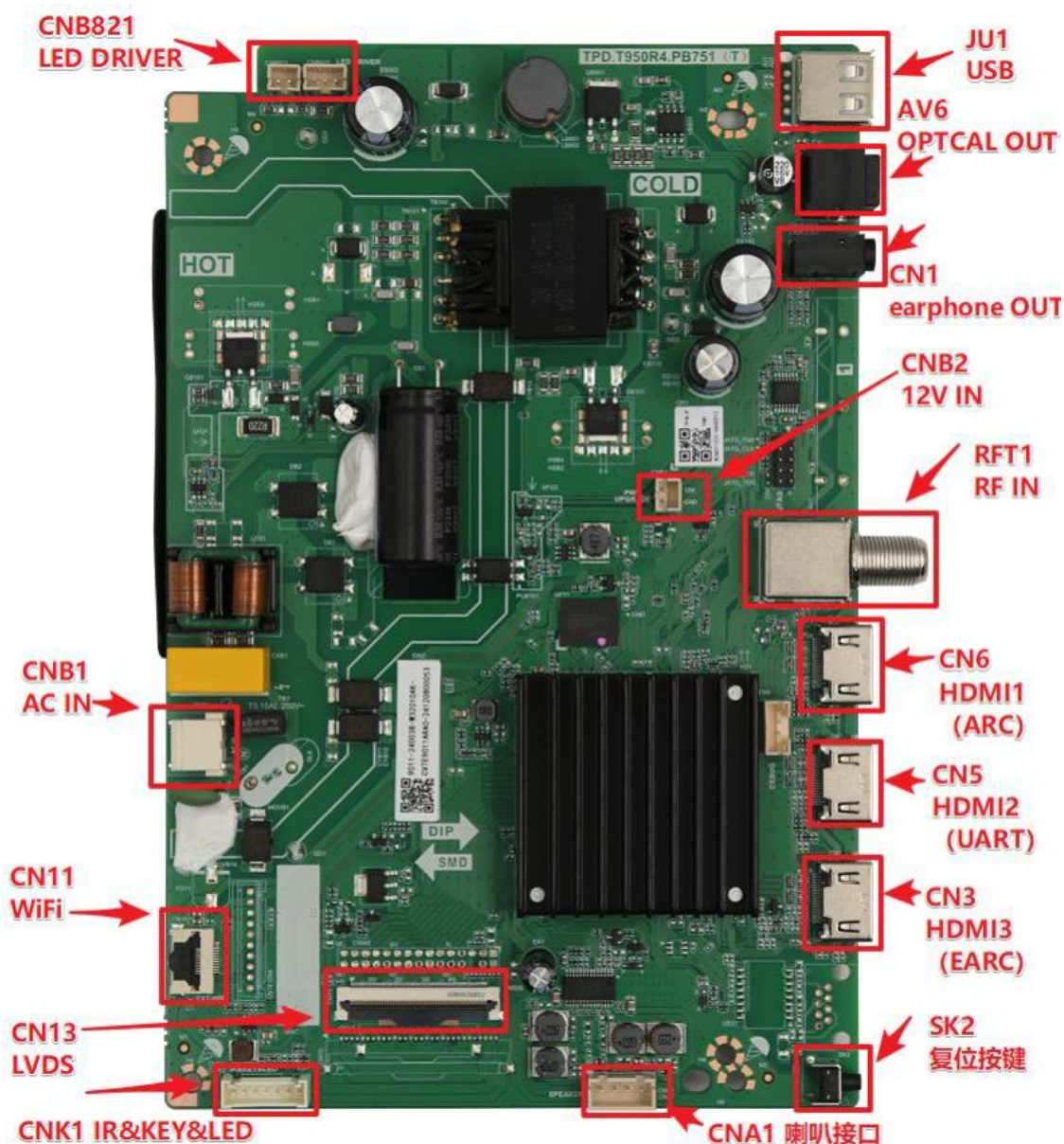


NO.	Name	QTY	NO.	Name	QTY
1	K400WDG1 module	1	1	40GF decoration strip	1
2	Main board	1	2	OC	1
3	Baffle-R	1	3	Plastic middle frame	1
4	Back cover-U	1	4	Brightness enhancement film	1
5	Back cover-D	1	5	Diffusion plate	1
6	Speaker	2	6	Reflective film	1
7	Base	2	7	Light bar	3
8	Remote control receiving window	1	8	Diffusion plate bracket	4
9	Key board component	1	9	40GF module back plate	1

10	Power cable	1		
11	WIFI bracket	1		
12	WIFI	1		

6. Interfaces

6.1 Main board interfaces



8. Circuit

8.1 Introduction

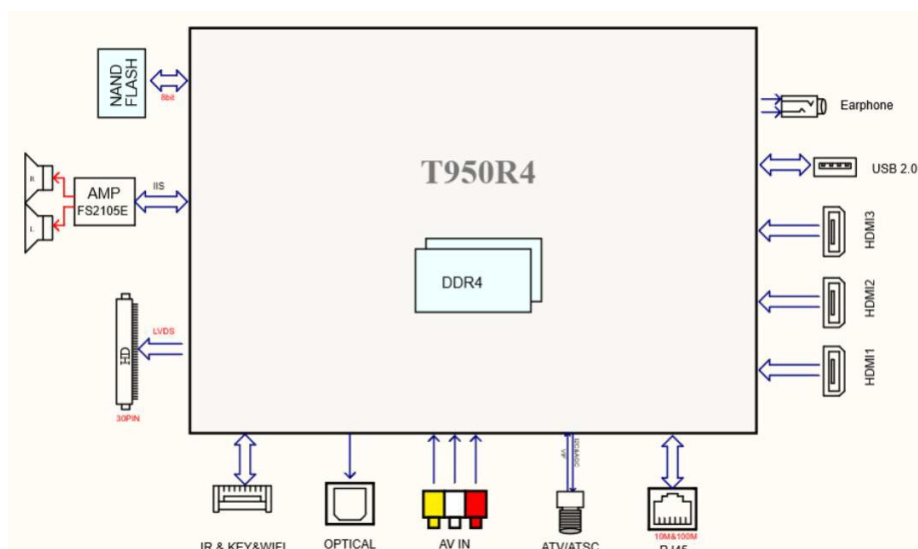
Main board supports dvb-c; dvb-t2,usb0, wifi/multimedia, video output.

8.2 Major components

Key components of the main board:

- S34ML04G300BHI0000 NAND FLASH
- FS2105E amplifier IC
- IU632C headphone amplifier IC
- TMI3252T
- TMI3253T
- LC2202CB5TR
- LC1117CLTR18
- LC1463CB5ATR25
- WL2803E18-5/TR
- R842 tuner IC
- LPW5202FDB5F11 current limiting IC

8.3 Block Diagram



8.4 Power Supply Device

All power is supplied by a service black box. When there is a defect, a new board must be reordered and the defective one must be returned unless the main board has fuse failure.

Always replace defective fuse with the fuse with correct specification! This is valid in a regular market.

Please refer to the Philips Service Portal for main board code.

Important variables of platform:

- New led backlight power architecture
- The "stimulus" signal is now a PWM signal + continuous variable

Control signal:

- PS-ON
- Light "on/off"
- DIM (PWM) (not for PSDL)

In this manual, no detailed information is provided due to design protection.

- +12 output (on-mode)
- +12V_sound(sound AMP power)
- Output to monitor; prevent
- IPB: high voltage liquid crystal panel
- PSL and PSLS (LED driver output)
- PSDL (high-frequency) AC-current

8.5 Diversity

The diversity of power supply units depends largely on the diversity of displays.

Can distinguish displays below:

- CCFL/EEFL backlight: power board is the traditional IPB
- LED backlight:
 - No scanned LED side view: PSL power board
 - No scanned LED side view: PSLS power board
 - Without 2D dimming D-LED: PSL power board
 - with 2D dimming D-LED: PSDL power board

PSL is an integrated LED driver power supply

PSLS integrates the LED driver power supply with scanning function (add micro-controller)

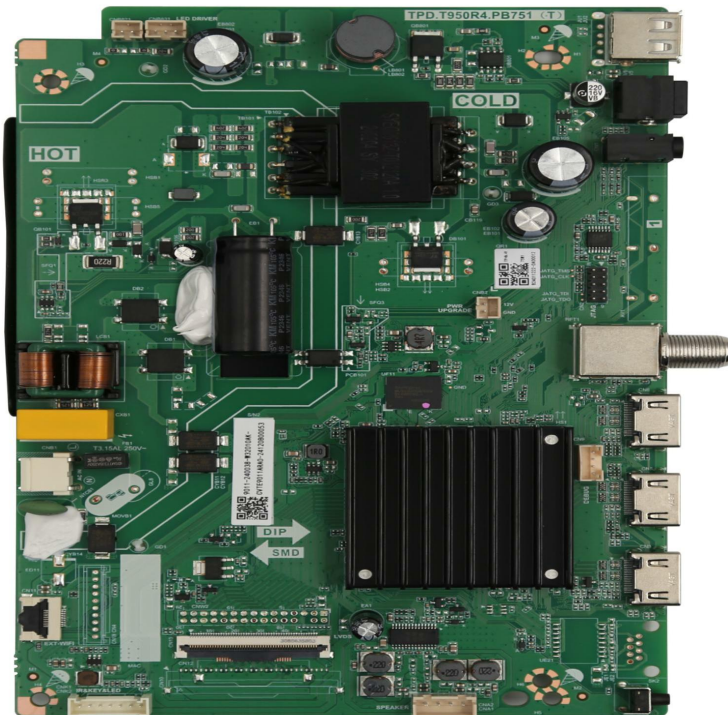
PSDL integrates a power LED backlight 2D dimming which can be viewed directly

8.6 DC/DC converter

The on-board DC/DC converter provides the following voltages (depending on the setting implementation):

- +5V-STB, constant voltage of standby power supply system
- +3V3-STB, supply power to remote control board/key board
- +12V, panel (active mode) power input
- +3V3-EMMC, +V-EMMC-IO, TV turn-on status EMMC voltage
- +1V2-DDR,+2V5-DDR, DDR voltage
- TUNER_3V3, tuner supply voltage
- +5V-M, intermediate input supply voltage of the USB
- +12V-AUDIO1 for the AUDIO AMP
- +3.3_WIFI,wifi voltage
- VDDC_CPU-0.89V,CPU voltage

8.6.1.Power Distribution SSB



8.7 HDMI

Refer to applications below:

Available HDMI connections:

- HDMI 1: HDMI input (support ARC)
- HDMI 2: HDMI input (support UART) • HDMI 3:HDMI input (support CEC) • +5V detection mechanism
- Stable clock detection mechanism
- HPD control
- Synchronous detection
- TMDS output control
- CEC control
- ARC control
- UART control

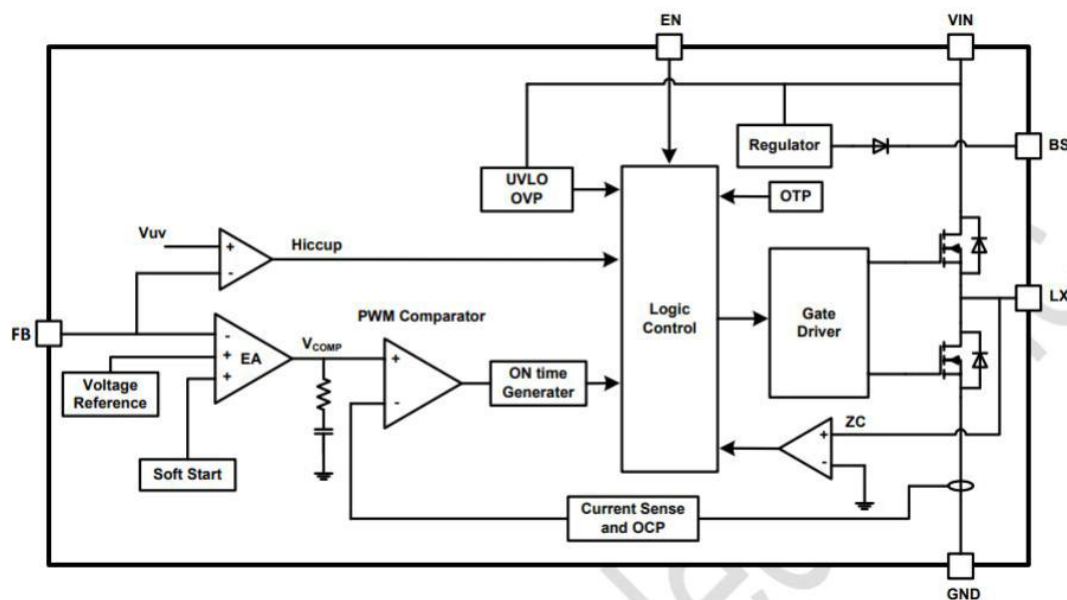
8.8 Video and Sound Processing

The main sound and video processing area (system-on-chip) of the MSD6A658 platform, including the following features:

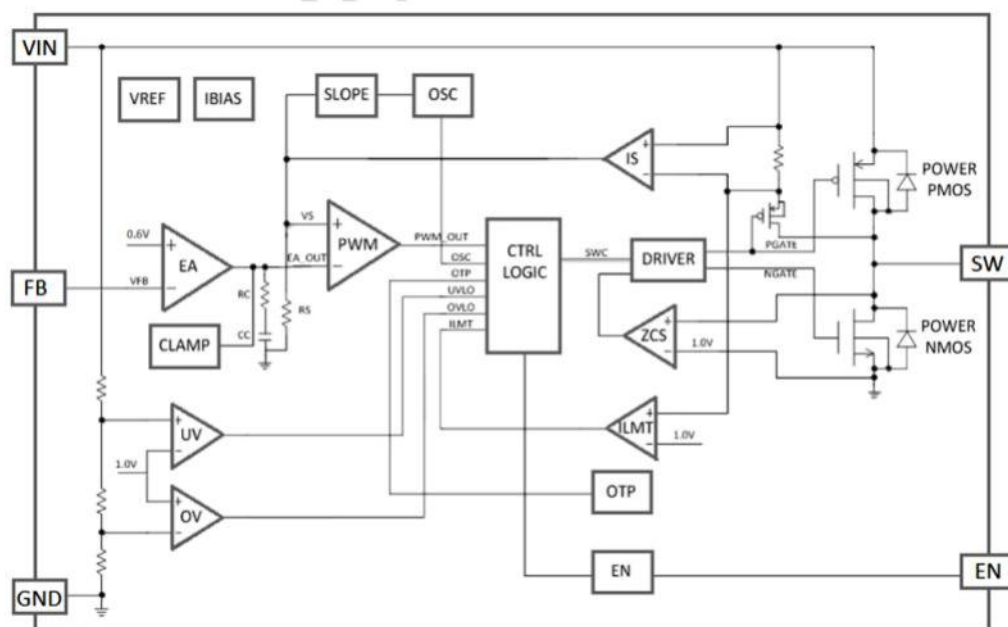
- 1.Global multi-system analog television demodulator
- 2.ATSC/DVB-T/DVB-C/DTMB/ISDB-T demodulator
- 3.UHD@60Hz direct drive
4. Powerful CPU core
- 5.Multi-way multiplexer
- 6 Multimedia video decoder(including VP9)
7. Audio codecs supporting various formats
- 8.H.264 & VP8 encoder
- 9.3D converter
10. MHL3.0 input
- 11.LAN MAC+PHY
12. PWM dimming (LED backlight)
13. Two-way LVDS

9. IC Data Sheet

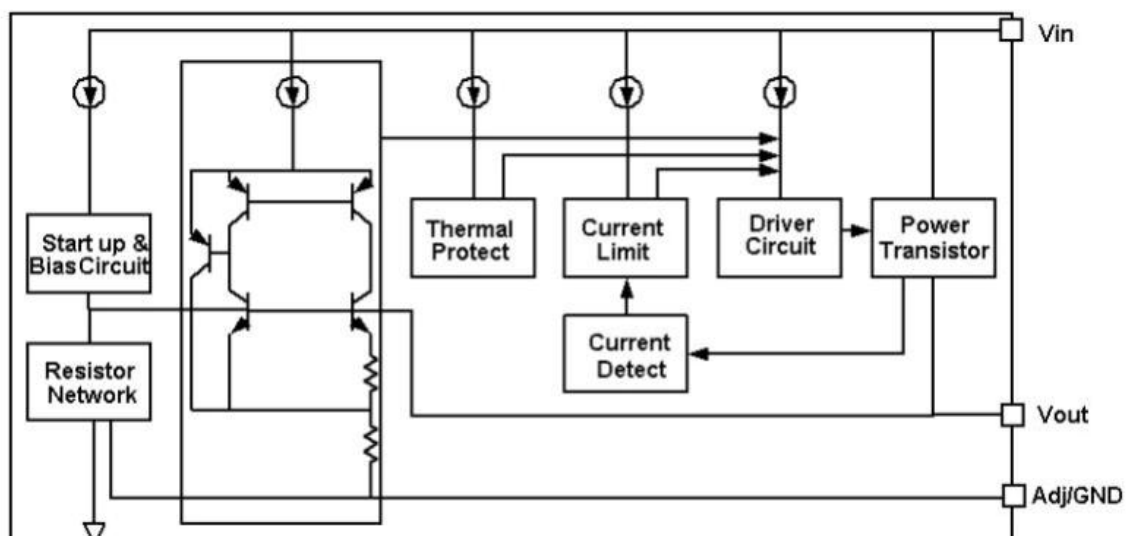
9.1 TMI3252T&TMI3253T



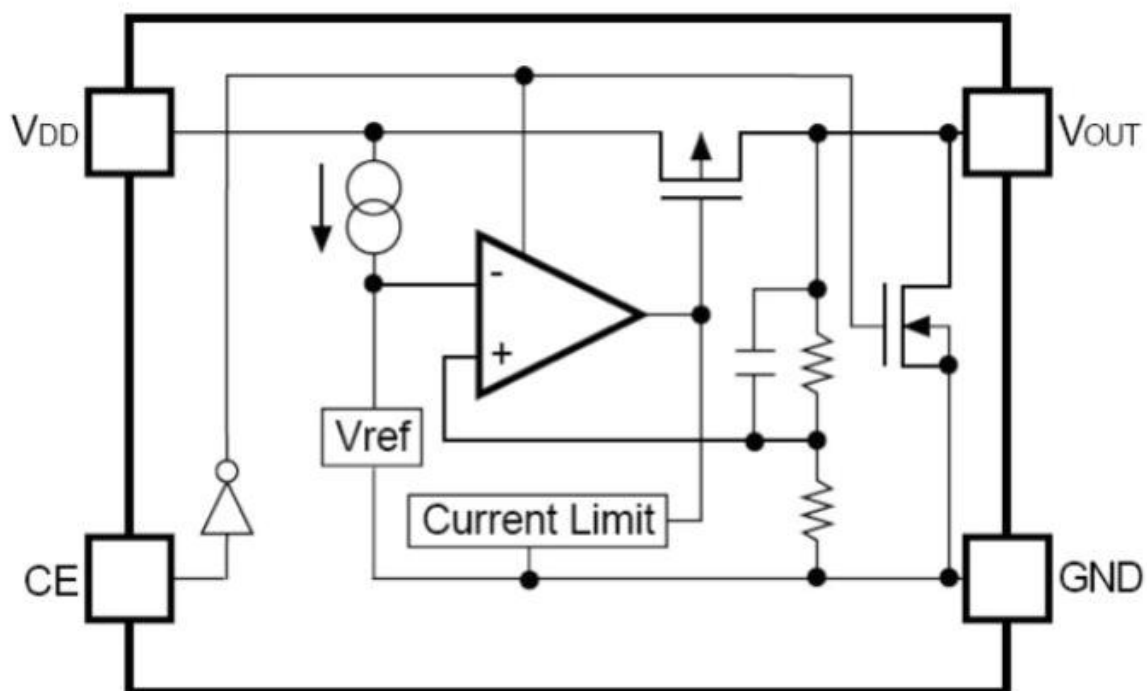
9.2 LC2202CB5TR



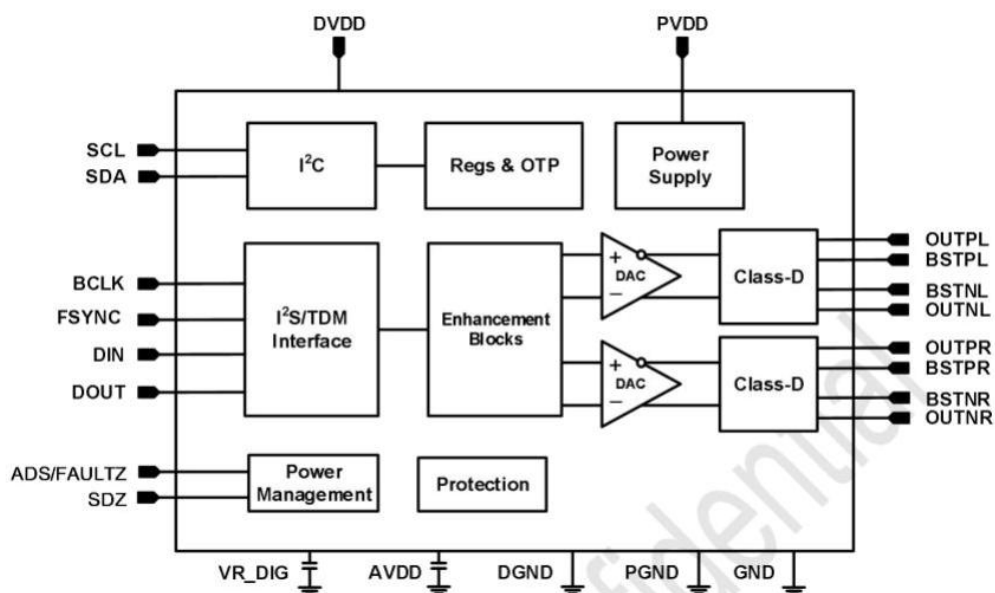
9.3 LC1117CLTR18



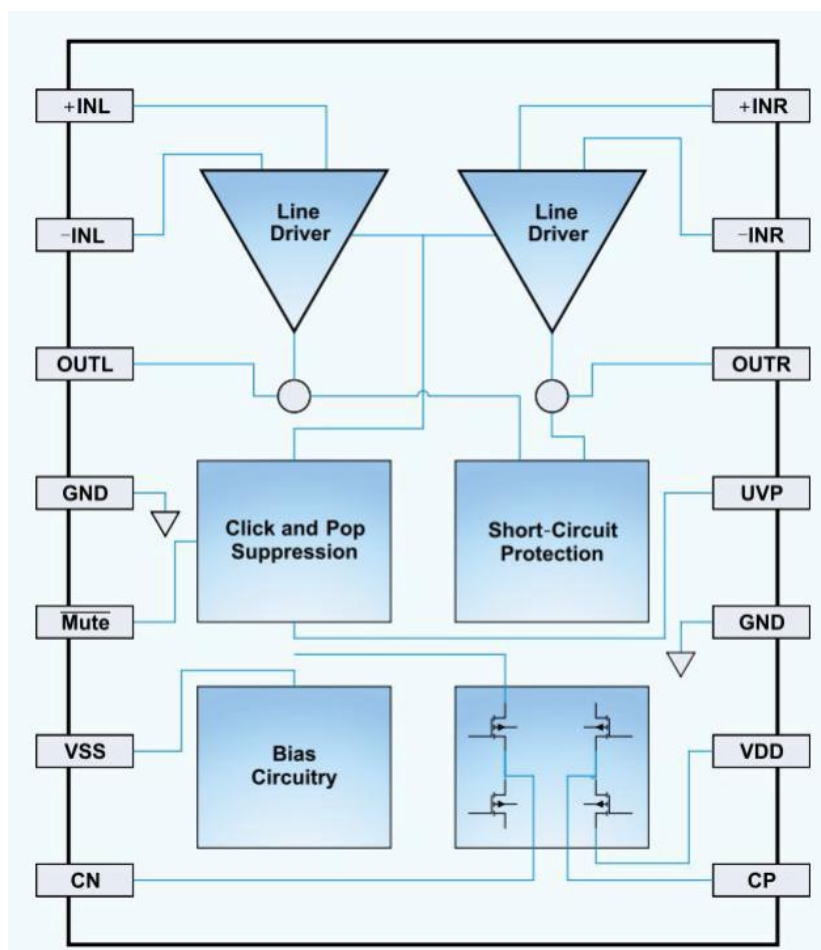
9.4 LC1463CB5ATR25



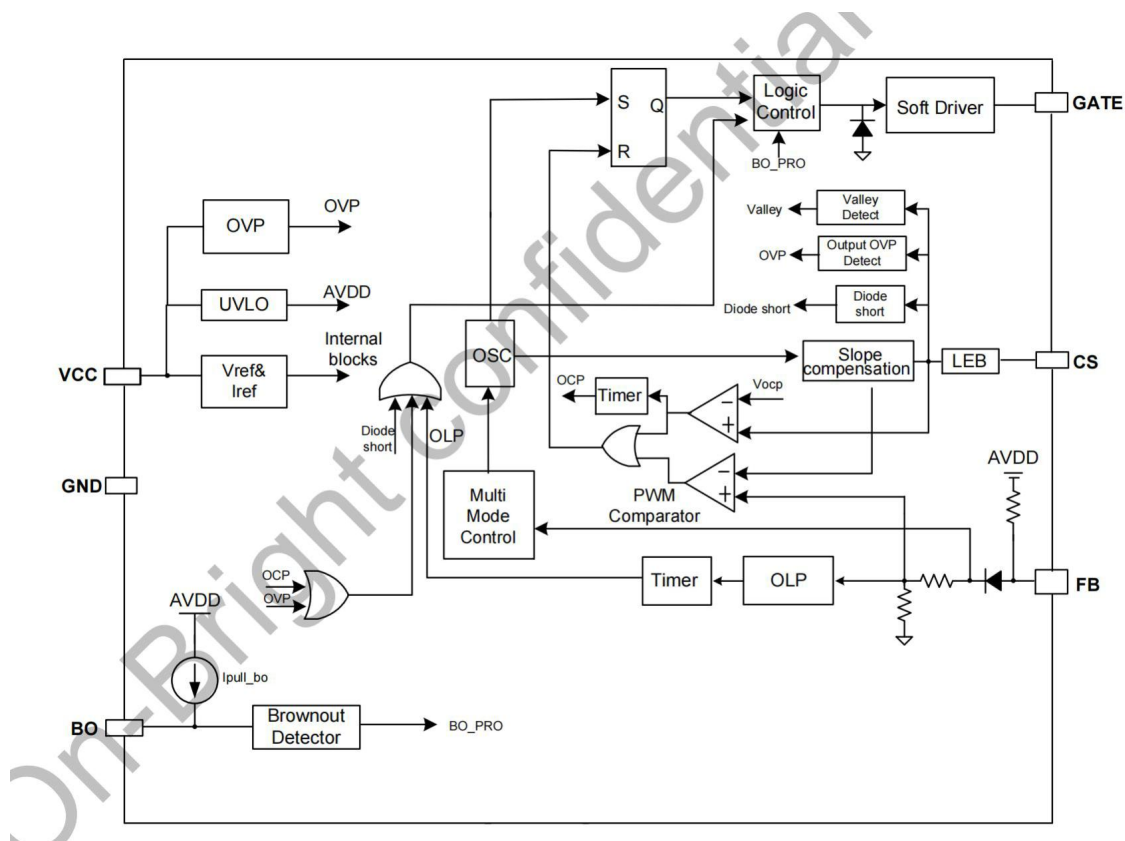
9.5 FS2105E



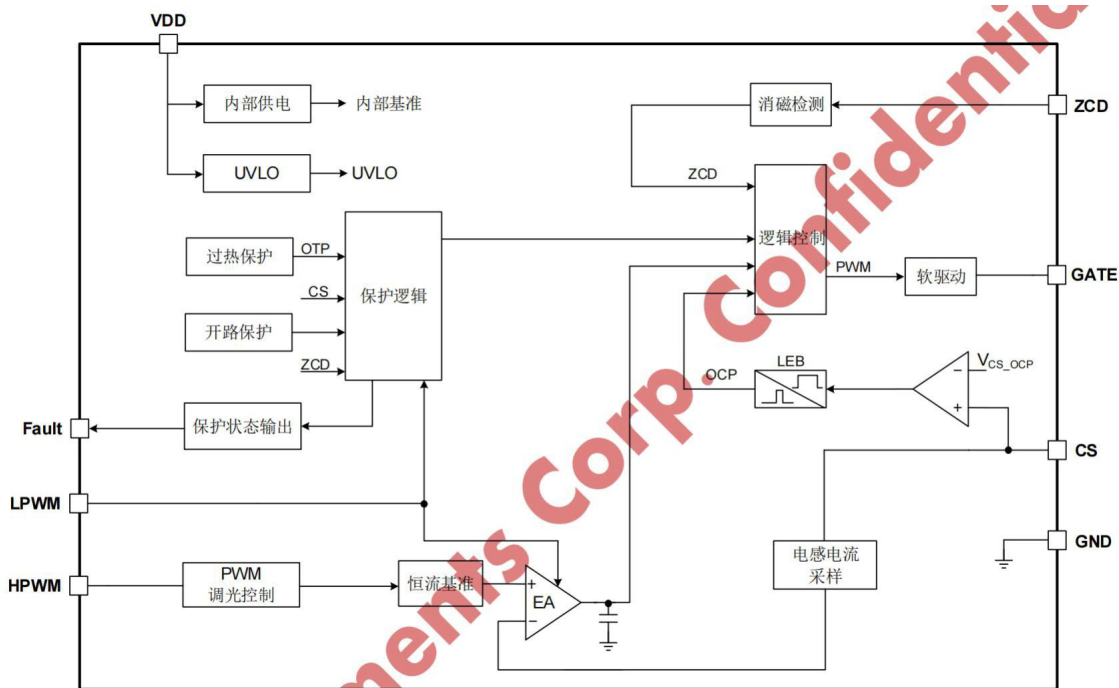
9.6 IU632C



9.7 OB2271QMP

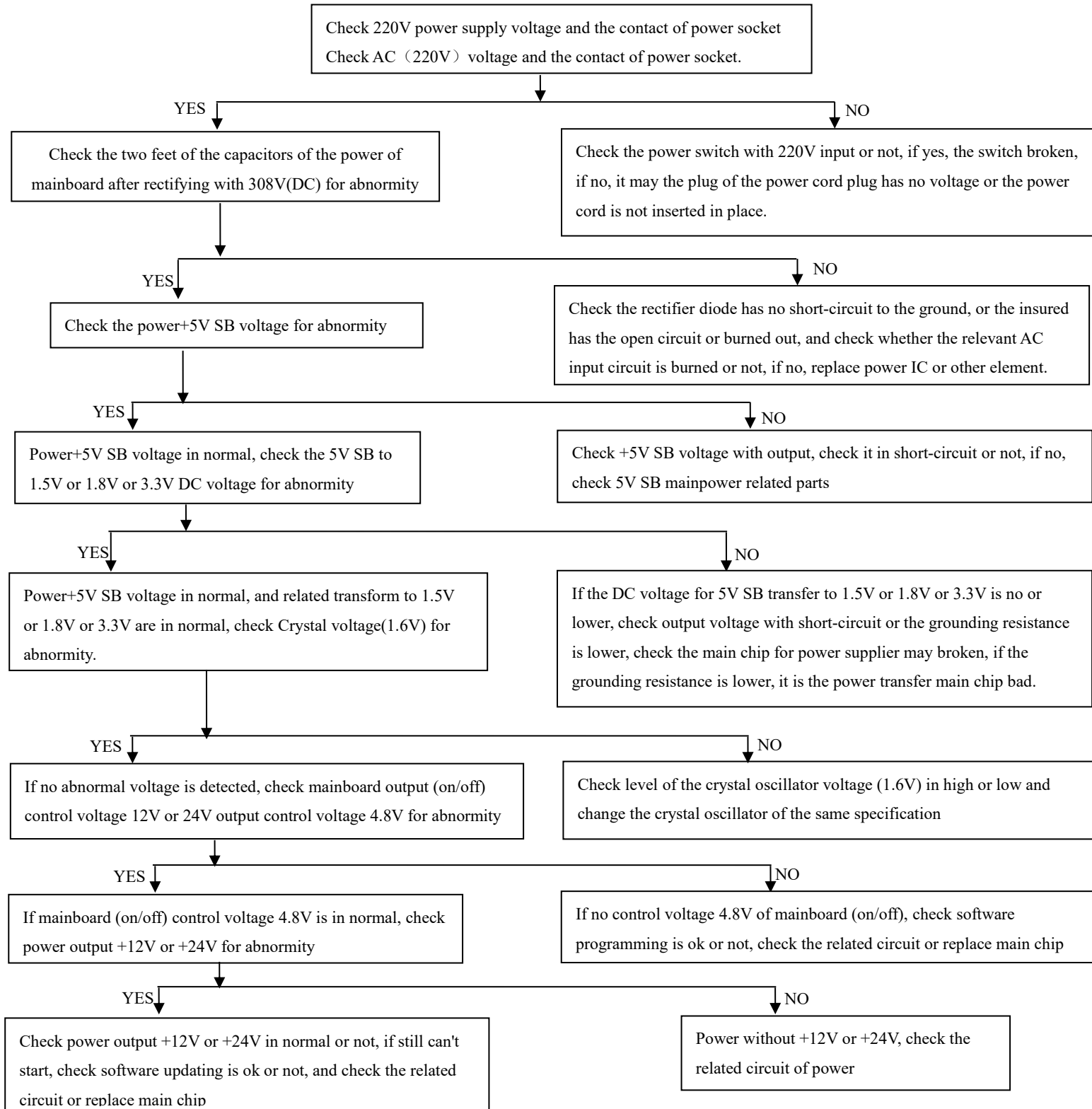


9.8 KP1601SGA

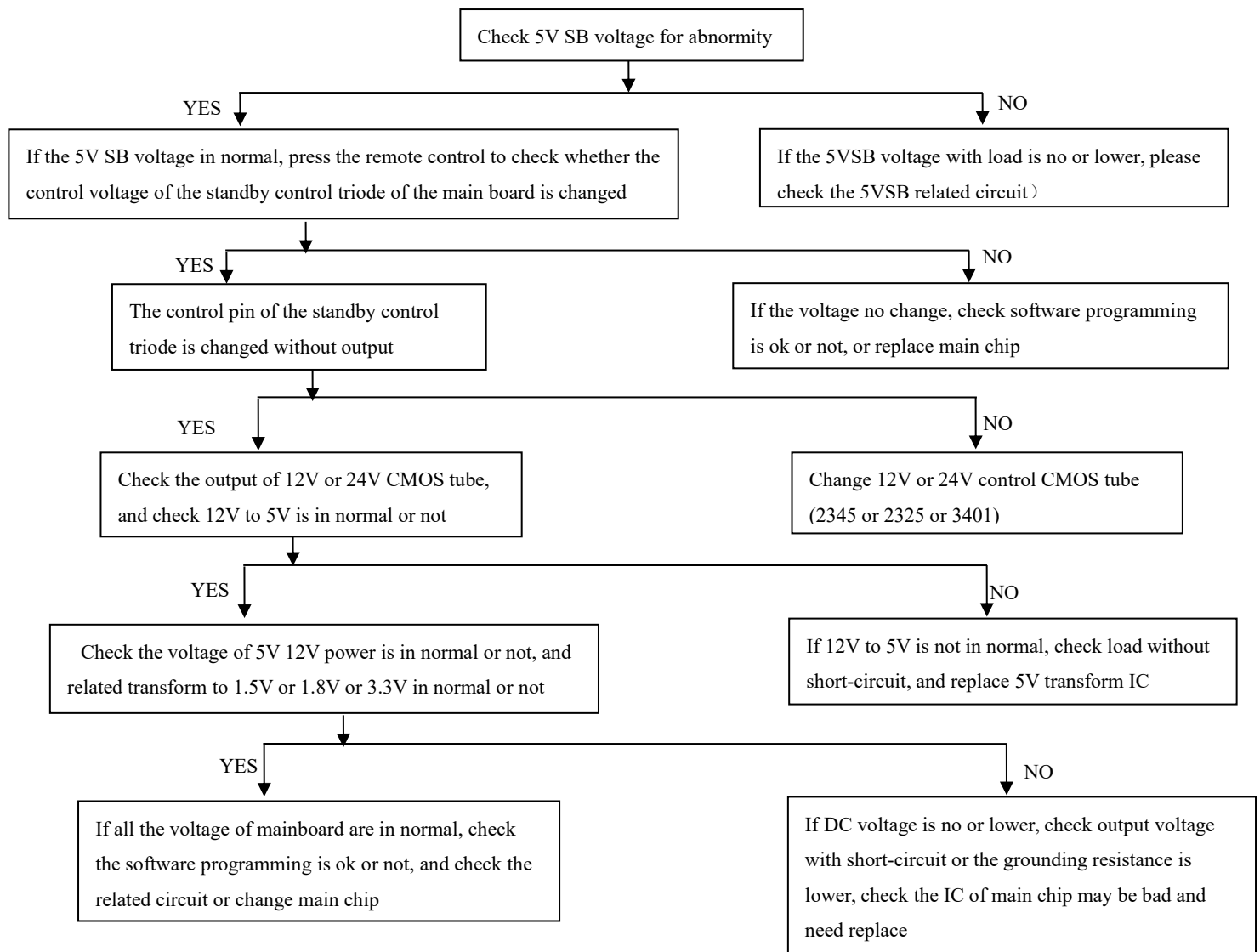


10. Troubleshooting

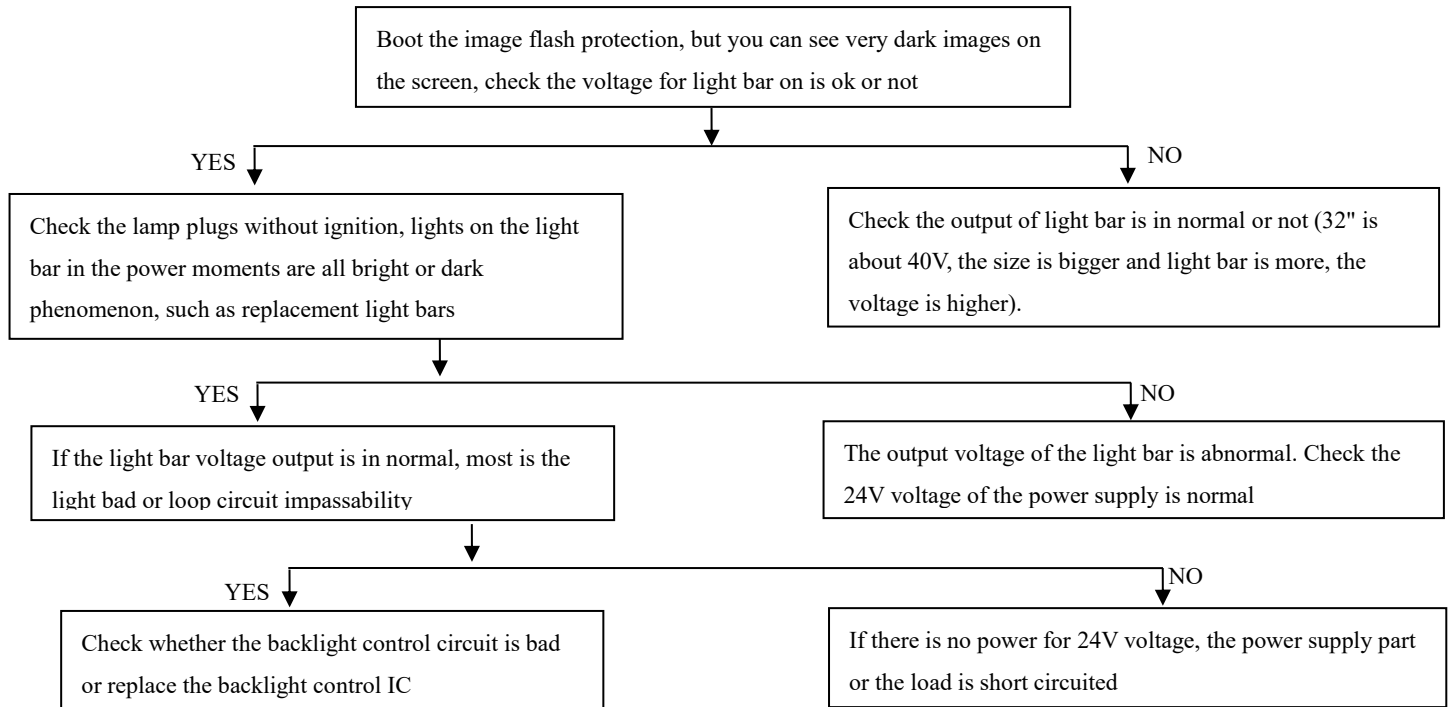
10.1 No power (Connect to power, but all the indicator lights don't work)



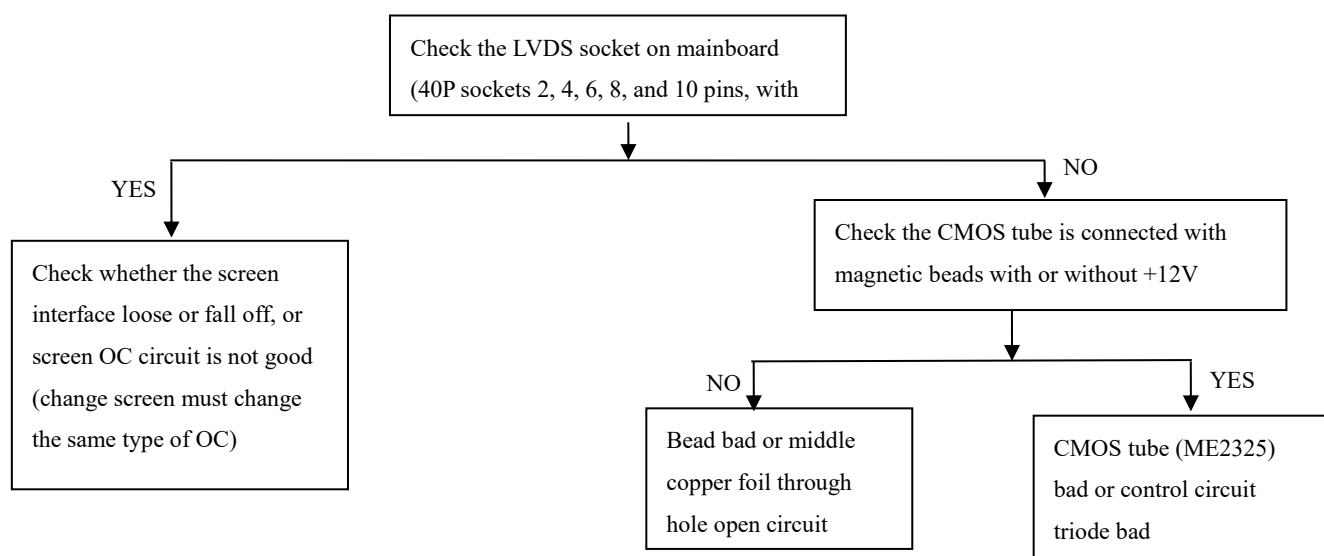
10.2 Red light can't start (Red light, remote control no reflect, no picture display)



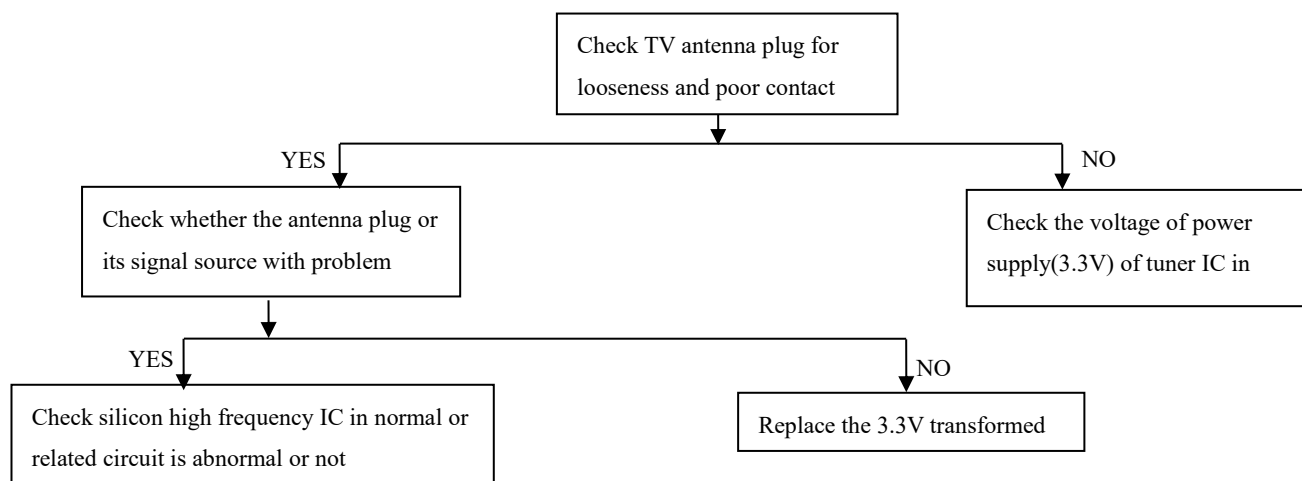
10.3 No light (Boot the image flash protection, but you can see very dark images on the screen)



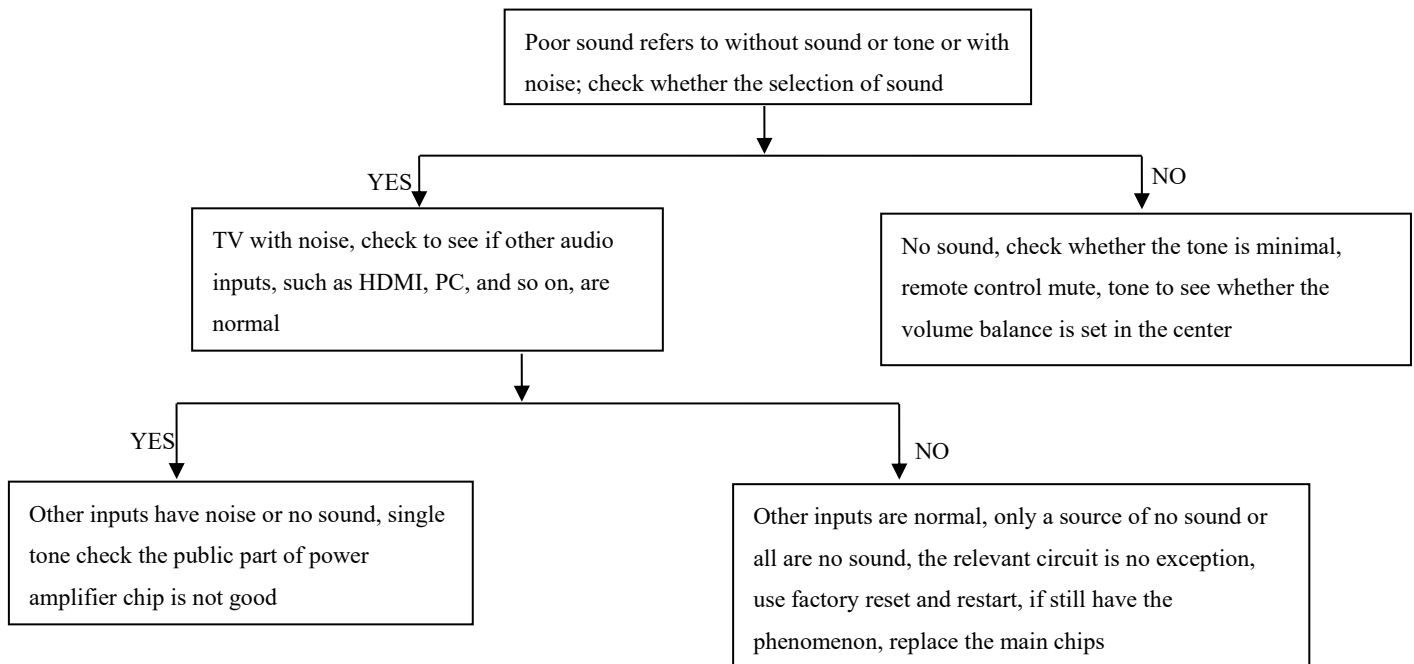
10.4 No picture (the screen light shadow, backlight is bright, but no picture display)



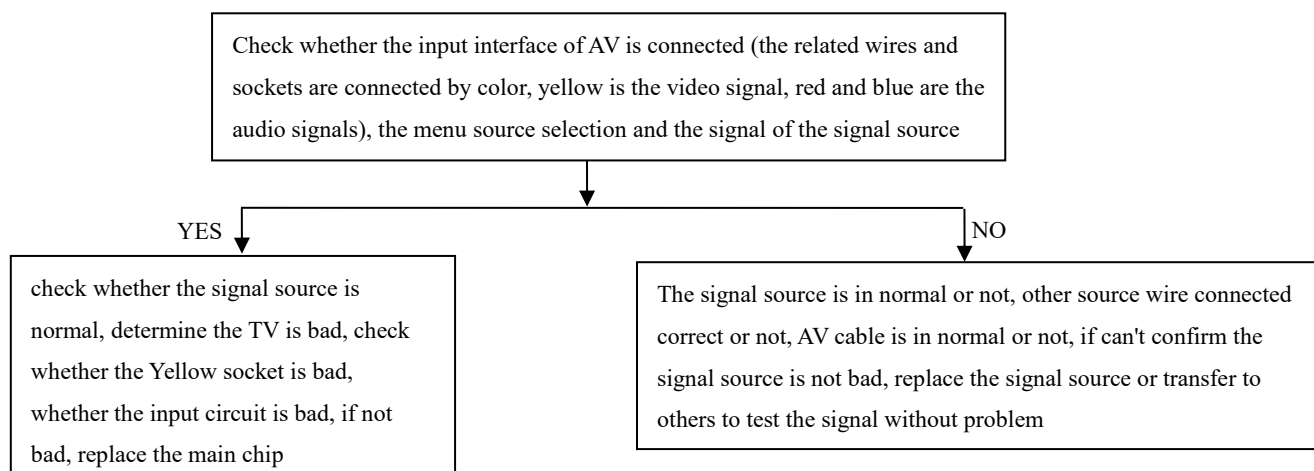
10.5 TV without channel or less channel or interfered



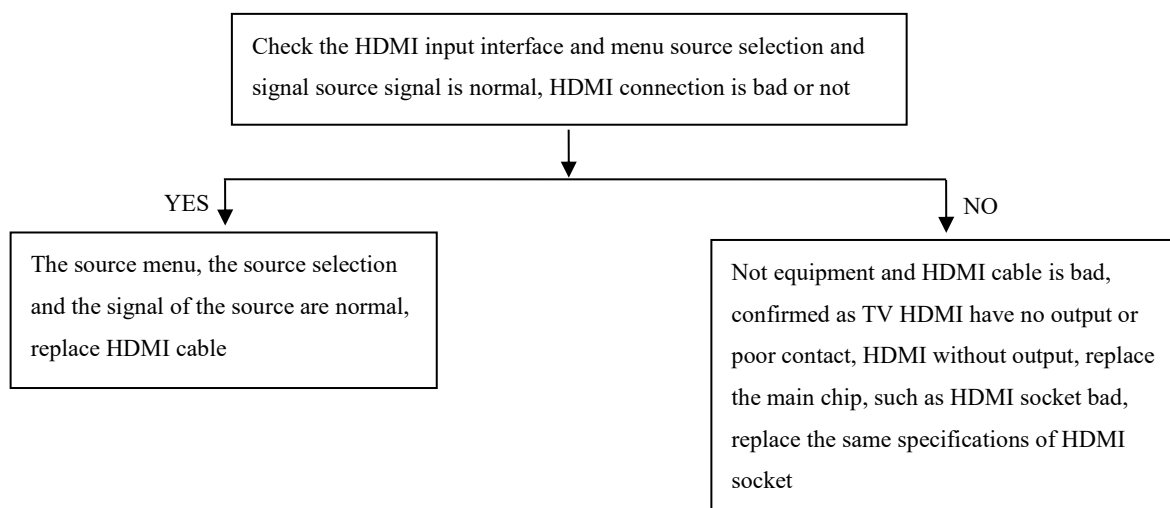
10.6 Poor sound



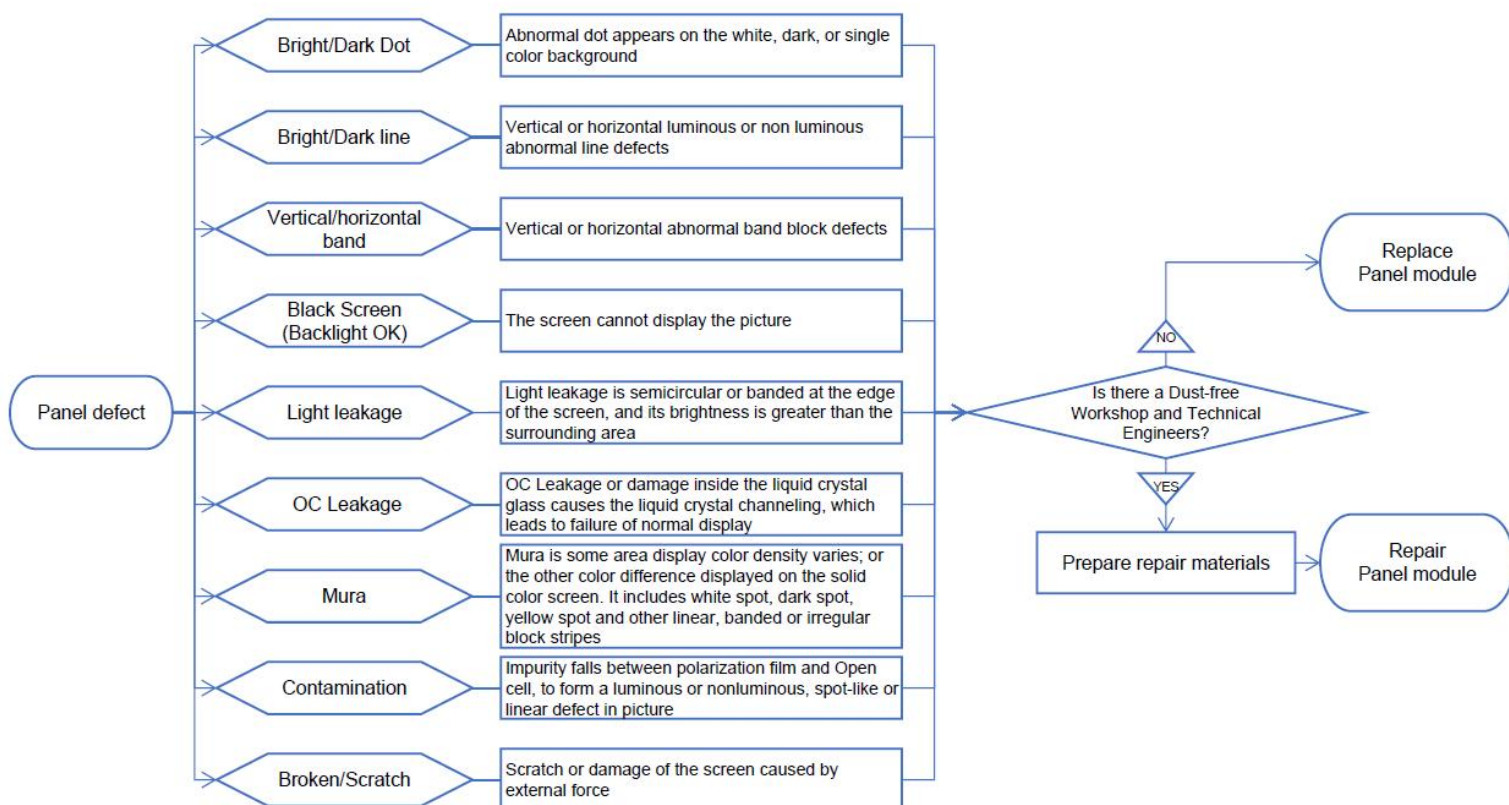
10.7 AV (video) without picture

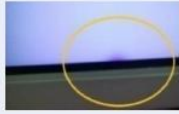


10.8 HDMI without picture



10.9 Panel defect

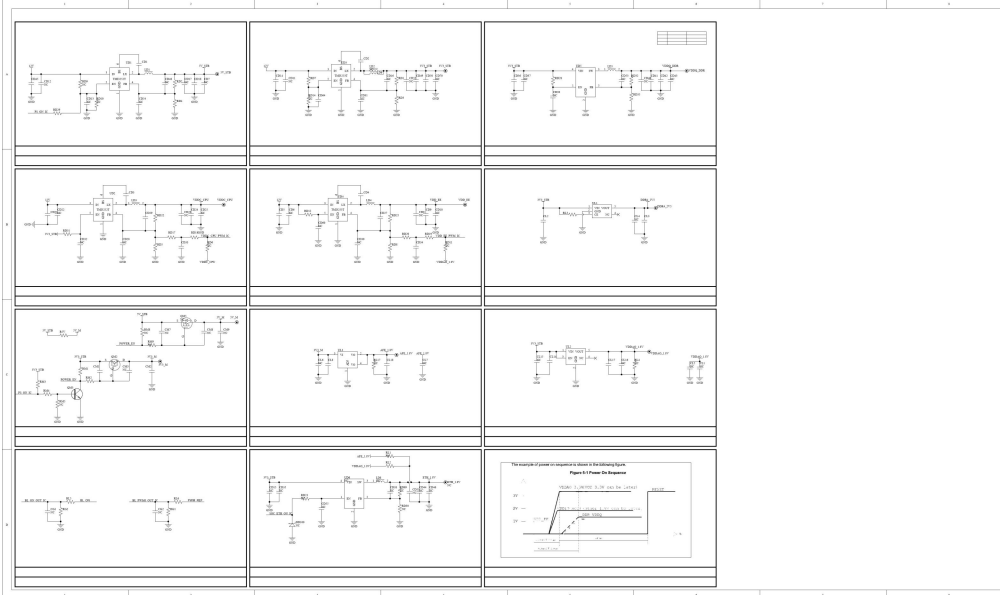


Panel defect	Sample photo	Panel defect	Sample photo
Bright/Dark Dot		OC Leakage	
Bright/Dark line		Mura	
Vertical/horizontal band		Contamination	
Black Screen (Backlight OK)		Broken/Scratch	
Light leakage			

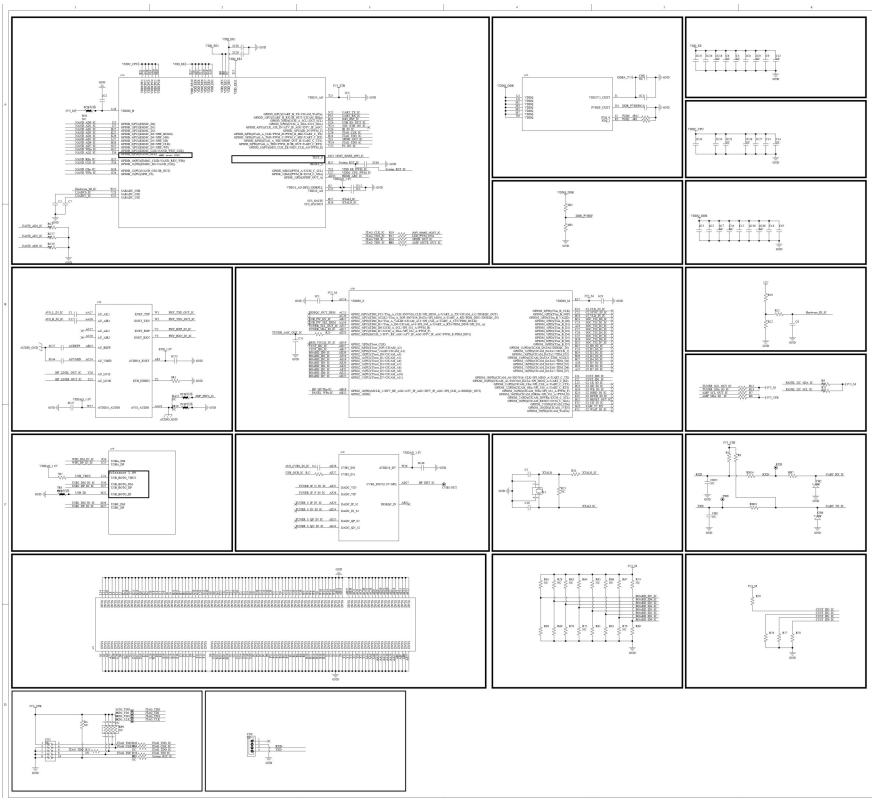
11. Circuit Diagrams

11.1 Circuit Diagram of Main Board

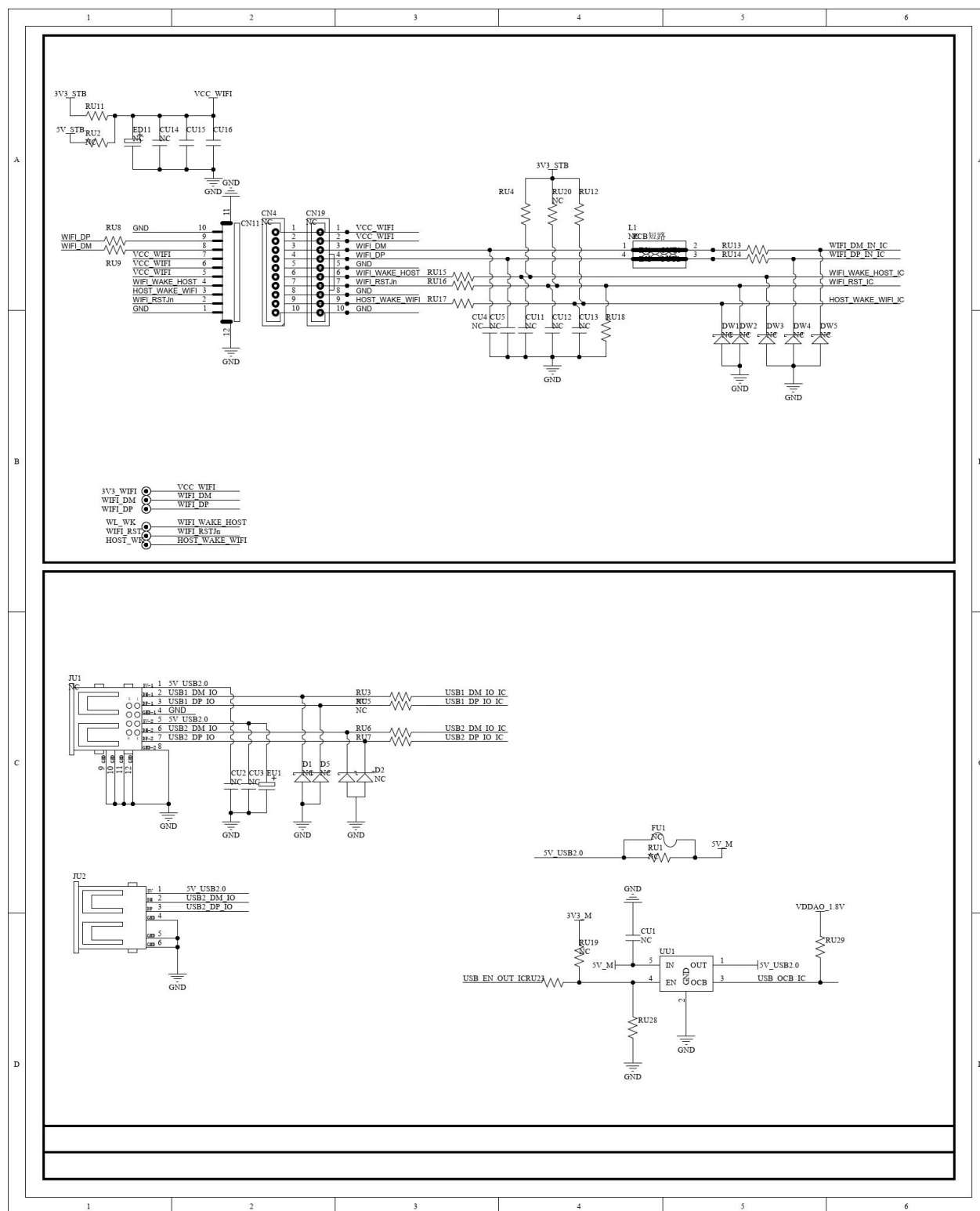
1.



2.

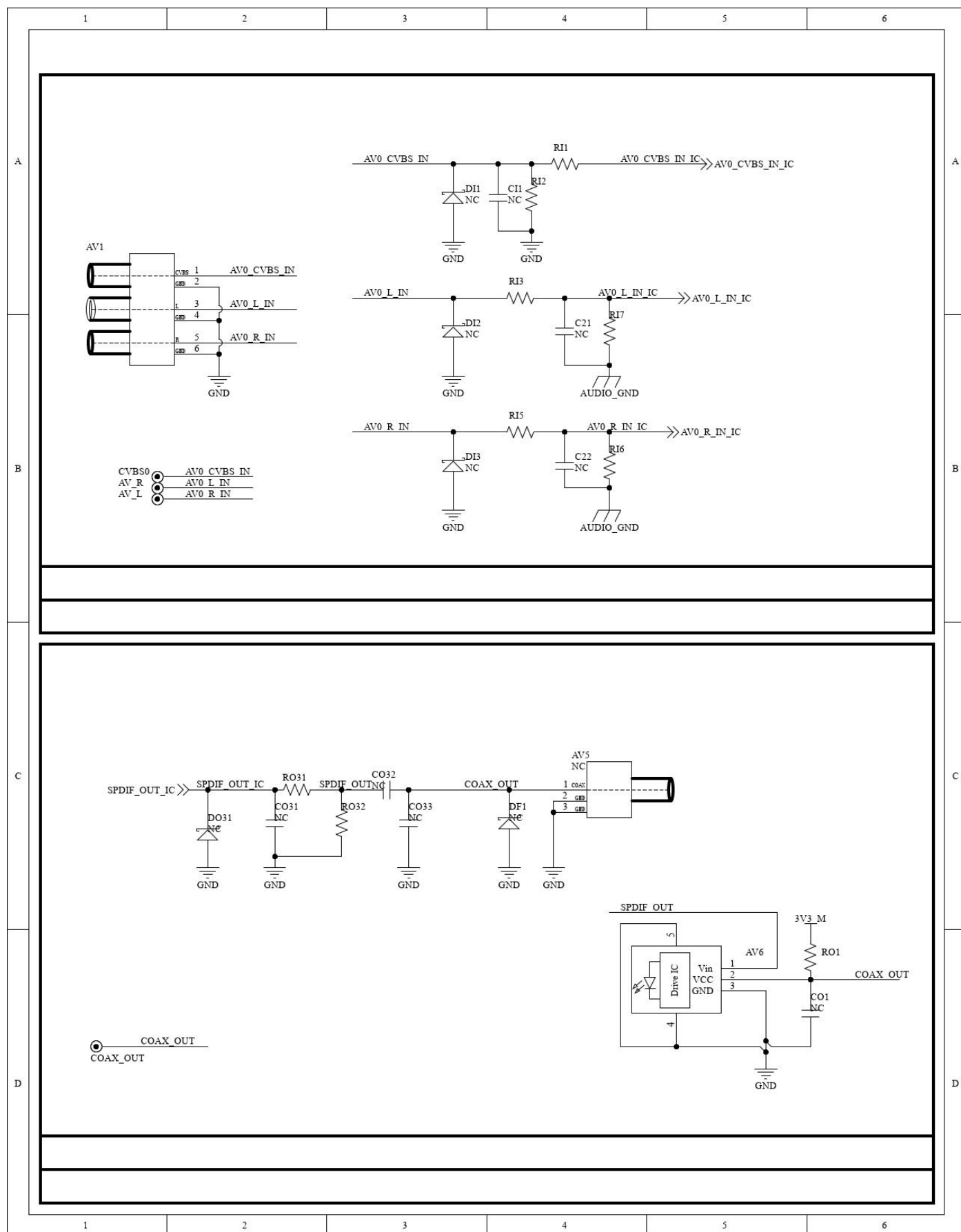


3.

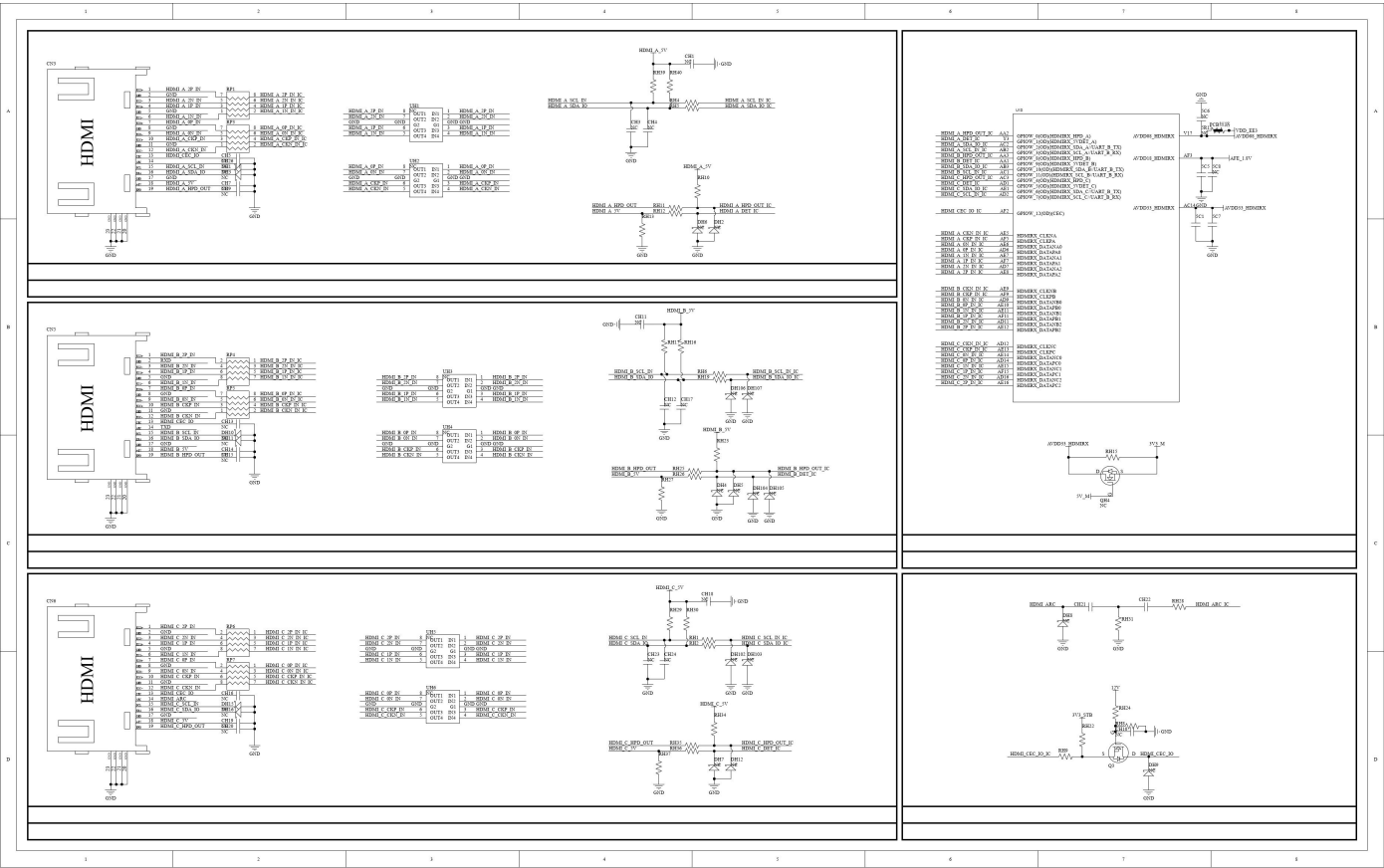


[illegible]

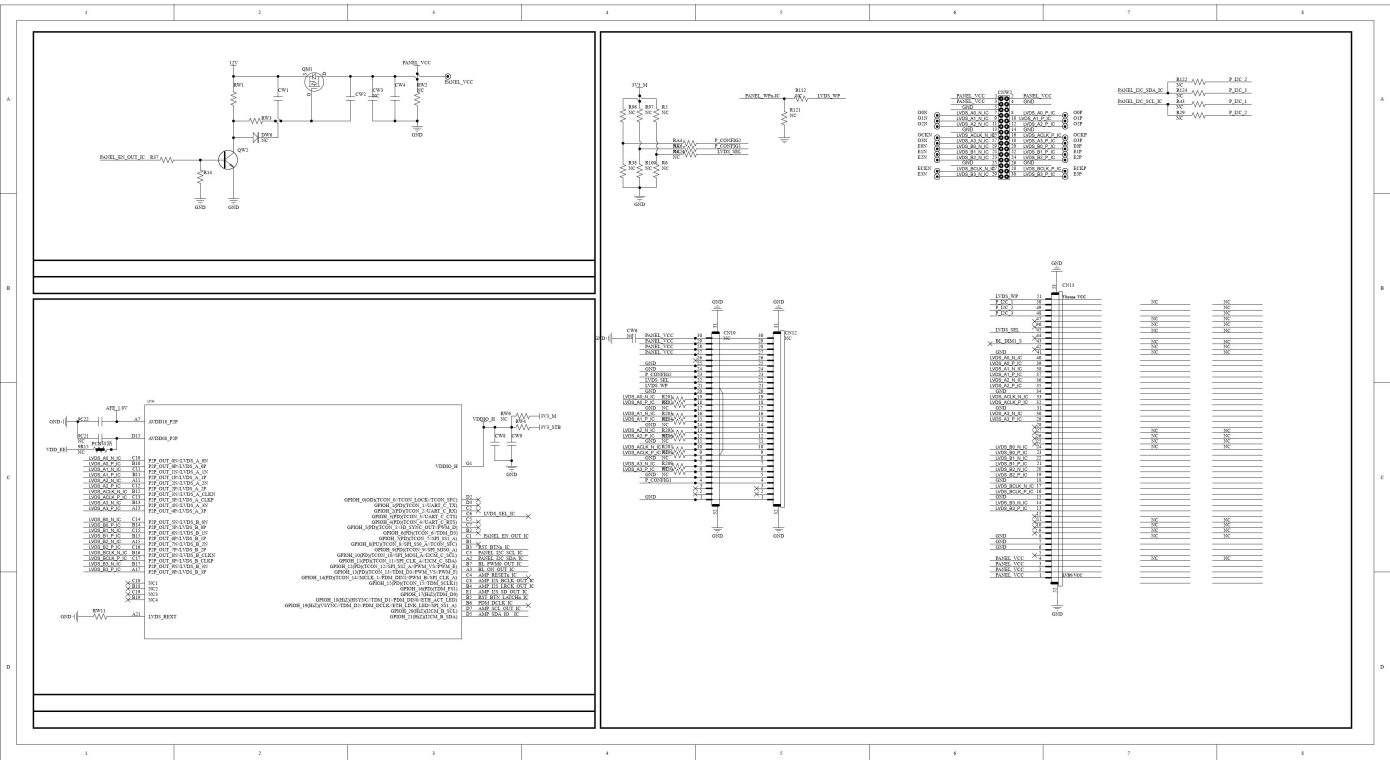
6.



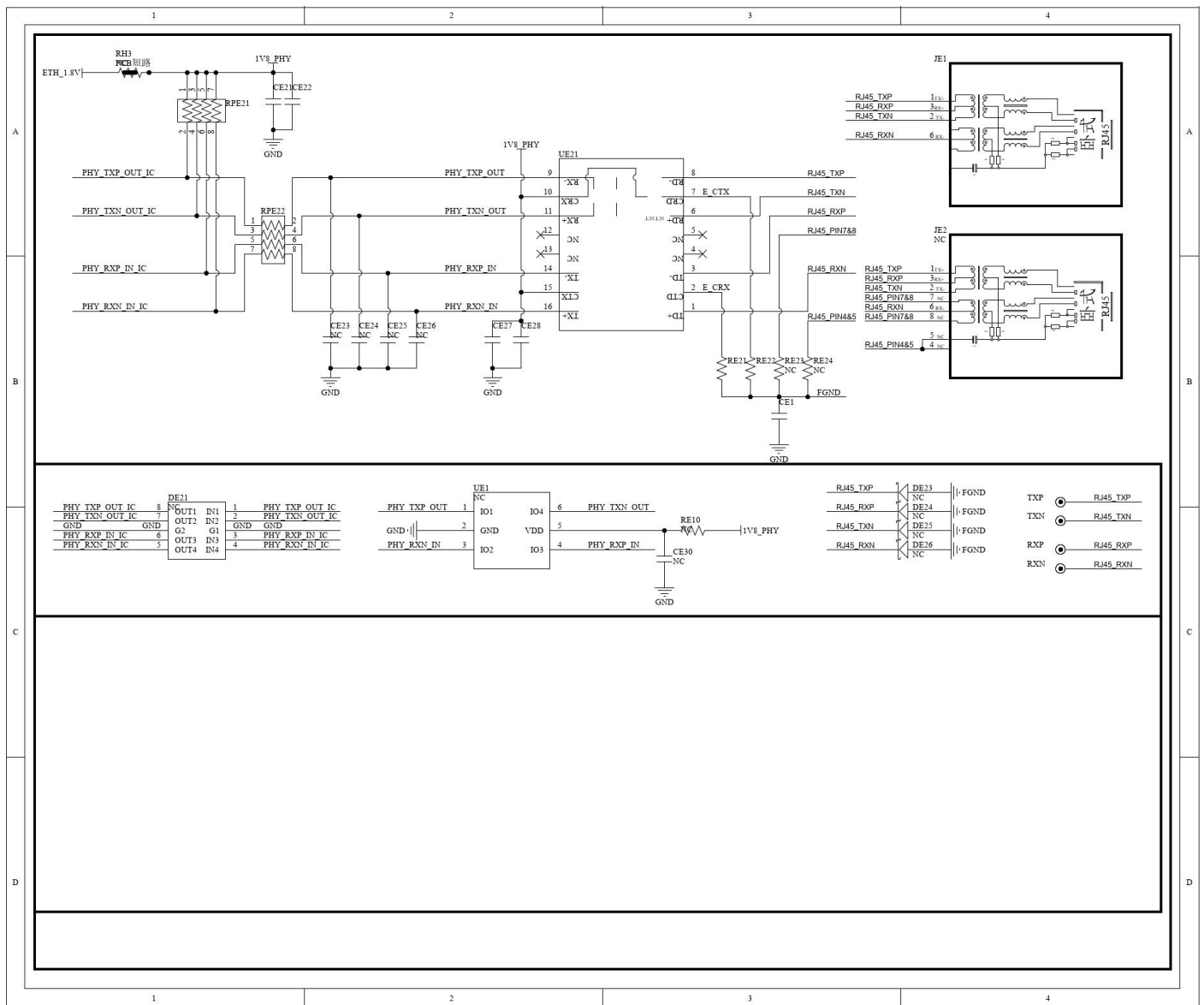
7.



8.



11.



12. PCBA Silkscreen

12.1 Main Board Silkscreen

