

Service  
Service  
Service



# Service Manual

| Chassis name | Platform | Model name   | Model name   |
|--------------|----------|--------------|--------------|
| TPN17.1E LA  | NT72461  | 22PFS4232/12 | 43PFT4112/05 |
|              |          | 22PFT4232/12 | 43PFT4112/12 |
|              |          | 32PFS4132/12 | 24PFS4032/12 |
|              |          | 32PFT4132/05 | 24PFT4032/12 |
|              |          | 32PFT4132/12 | 24PFT4032/60 |
|              |          | 32PFT4132/60 | 24PHS4032/12 |
|              |          | 32PHS4132/12 | 24PHT4032/05 |
|              |          | 32PHT4132/05 | 24PHT4032/12 |
|              |          | 32PHT4132/12 | 24PHT4032/60 |
|              |          | 32PHT4132/60 | 32PHS4032/12 |
|              |          | 43PFS4132/12 | 32PHT4032/12 |
|              |          | 43PFT4132/05 | 32PHT4032/60 |
|              |          | 43PFT4132/12 | 22PFS4022/12 |
|              |          | 43PFT4132/60 | 22PFT4022/05 |
|              |          | 49PFS4132/12 | 22PFT4022/12 |
|              |          | 49PFT4132/12 | 22PFT4022/60 |
|              |          | 32PHS4112/12 | 24PFS4022/12 |
|              |          | 32PHT4112/05 | 24PFT4022/12 |
|              |          | 32PHT4112/12 | 24PFT4022/60 |
|              |          | 39PHS4112/12 | 24PHS4022/12 |
|              |          | 39PHT4112/05 | 24PHT4022/05 |
|              |          | 39PHT4112/12 | 24PHT4022/12 |
|              |          | 43PFS4112/12 |              |

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## Product information

Product information is subject to change without notice. For detailed product information, please visit [www.philips.com/support](http://www.philips.com/support)

### For PHx series TV

#### Video formats

##### Resolution — Refresh rate

- 480i - 60 Hz
- 480p - 60 Hz
- 576i - 50 Hz
- 576p - 50 Hz
- 720p - 50 Hz, 60 Hz
- 1080i - 50 Hz, 60 Hz
- 1080p - 24 Hz, 25 Hz, 30 Hz

#### Computer formats

##### Resolutions (amongst others)

- 640 x 480p - 60 Hz
- 800 x 600p - 60 Hz
- 1024 x 768p - 60 Hz
- 1280 x 768p - 60 Hz
- 1360 x 765p - 60 Hz
- 1360 x 768p - 60 Hz

### For PFx series TV

#### Video formats

##### Resolution — Refresh rate

- 480i - 60 Hz
- 480p - 60 Hz
- 576i - 50 Hz
- 576p - 50 Hz
- 720p - 50 Hz, 60 Hz
- 1080i - 50 Hz, 60 Hz
- 1080p - 24 Hz, 25 Hz, 30 Hz

## Reception

### For PxT series TV

- Aerial input : 75 ohm coaxial (IEC75)
- Tuner bands : Hyperband, S-Channel, UHF, VHF
- DVB : DVB-T2, DVB-C (cable) QAM
- Analogue video playback : SECAM, PAL
- Digital video playback : MPEG2 SD/HD (ISO/IEC 13818-2), MPEG4 SD/HD (ISO/IEC 14496-10)
- Digital audio playback (ISO/IEC 13818-3)

### For PxS series TV

- Aerial input : 75 ohm coaxial (IEC75)
- Tuner bands : Hyperband, S-Channel, UHF, VHF
- DVB : DVB-T2, DVB-C (cable) QAM
- Analogue video playback : SECAM, PAL
- Digital video playback : MPEG2 SD/HD (ISO/IEC 13818-2), MPEG4 SD/HD (ISO/IEC 14496-10)
- Digital audio playback (ISO/IEC 13818-3)
- Satellite aerial input : 75 ohm F-type
- Input frequency range : 950 to 2150MHz
- Input level range : 25 to 65 dBm
- DVB-S/S2 QPSK, symbol rate 2 to 45M symbols, SCPC and MCPC
- LNB : DiSEqC 1.0, 1 to 4 LNBs supported, Polarity selection 14/18V, Band selection 22kHz, Tone burst

## Specifications

14.1

### Power

Product specifications are subject to change without notice. For more specification details of this product, see [www.philips.com/support](http://www.philips.com/support)

#### Power

- Mains power : AC 220-240V +/-10%
- Ambient temperature : 5°C to 35°C
- Power saving features : Eco mode, Picture mute (for radio), Auto switch-off timer, Eco settings menu.

For power consumption information, see chapter: Product Fiche.

The power rating stated on the product typeplate is the power consumption for this product during normal household use (IEC 62087 Ed.2). The maximum power rating, stated between brackets, is used for electrical safety (IEC 60065 Ed. 8.0).

## 2. Connections Overview

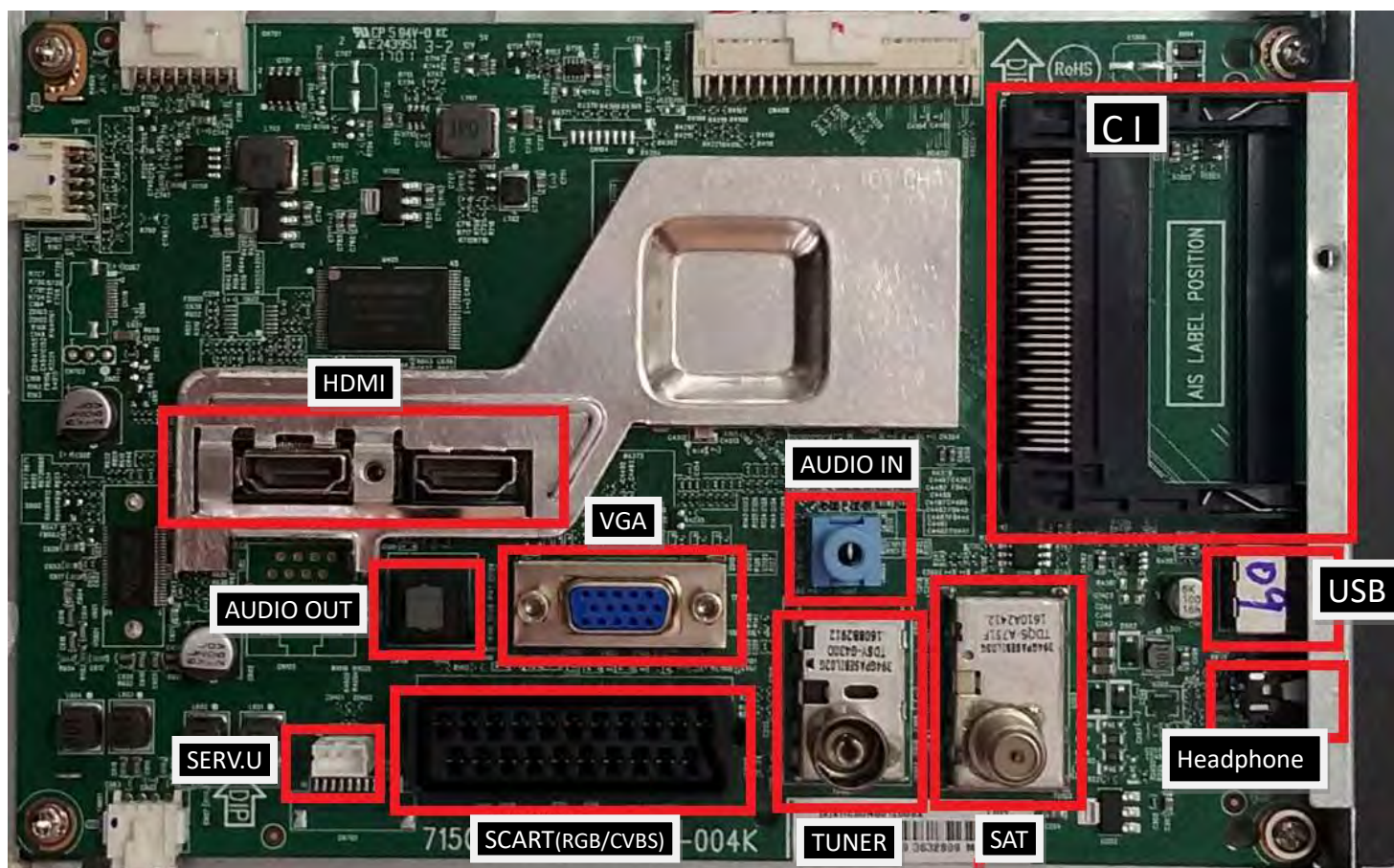


Figure 2-1 (24" 4022 series)

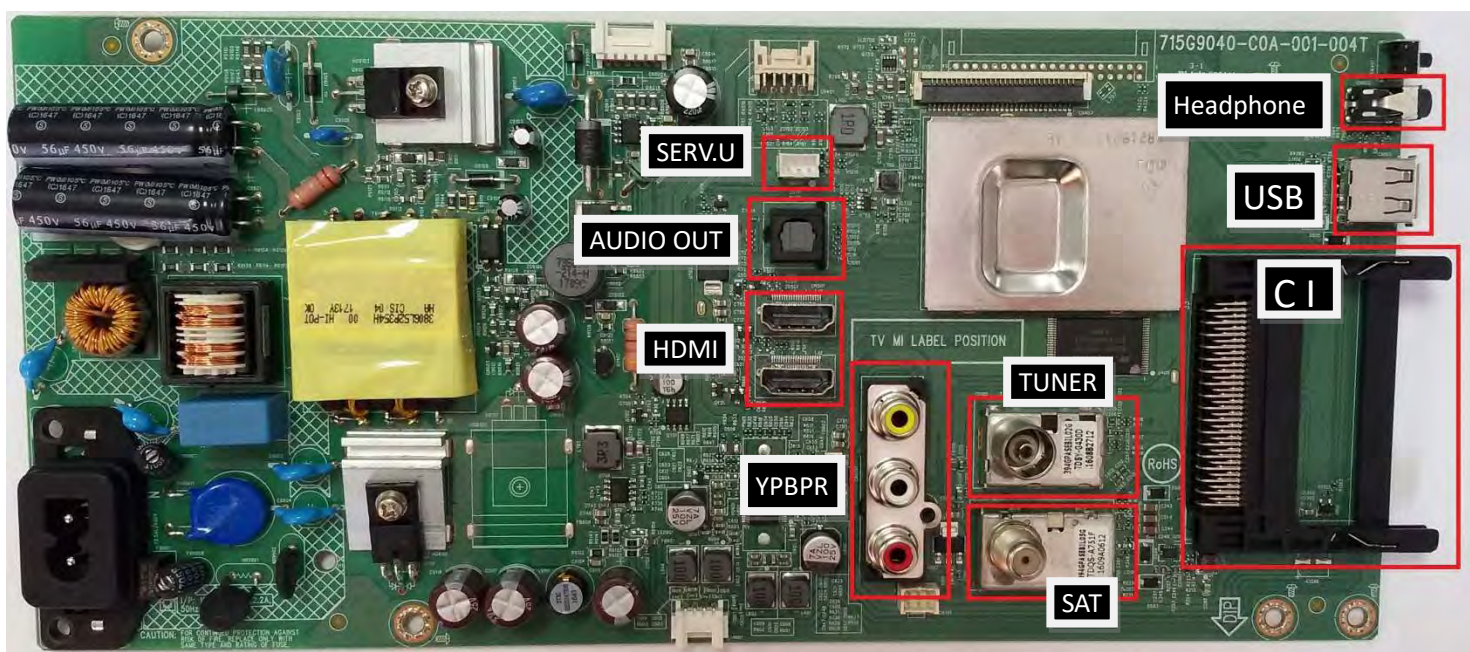


Figure 2-2 (32" 4112 series)

**Remarks:** [Figure 2-1](#) apply to the 24PFS4022/12, but will be similar for other series models except for 4112 series.

[Figure 2-2](#) apply to the 32PHS4112/12, but will be similar for other 4112 series models.

### 3. Mechanical Instructions

**Notes:** Figures below can deviate slightly from the actual situation due to the different set executions.

#### 3.1 Cable Dressing

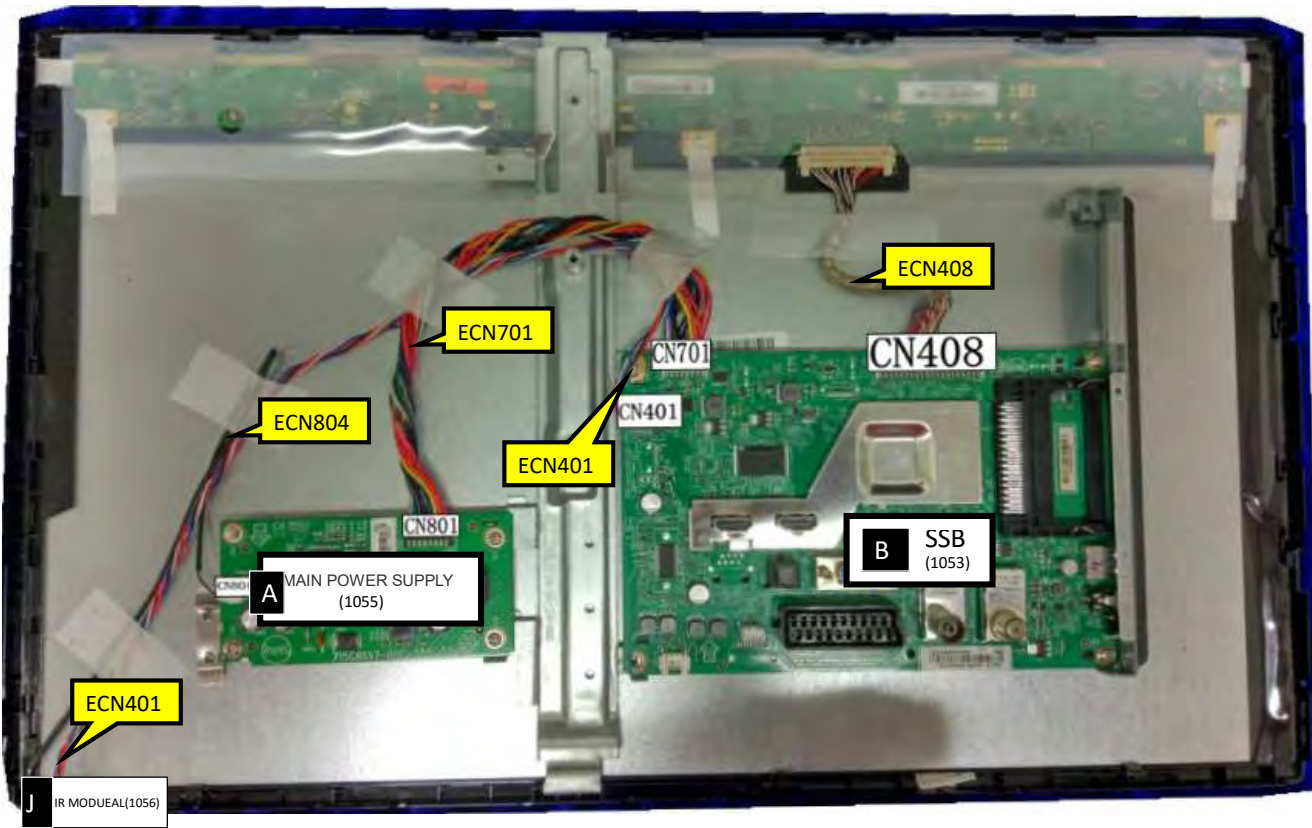


Figure 3-1 Cable dressing (22" 4232 series)

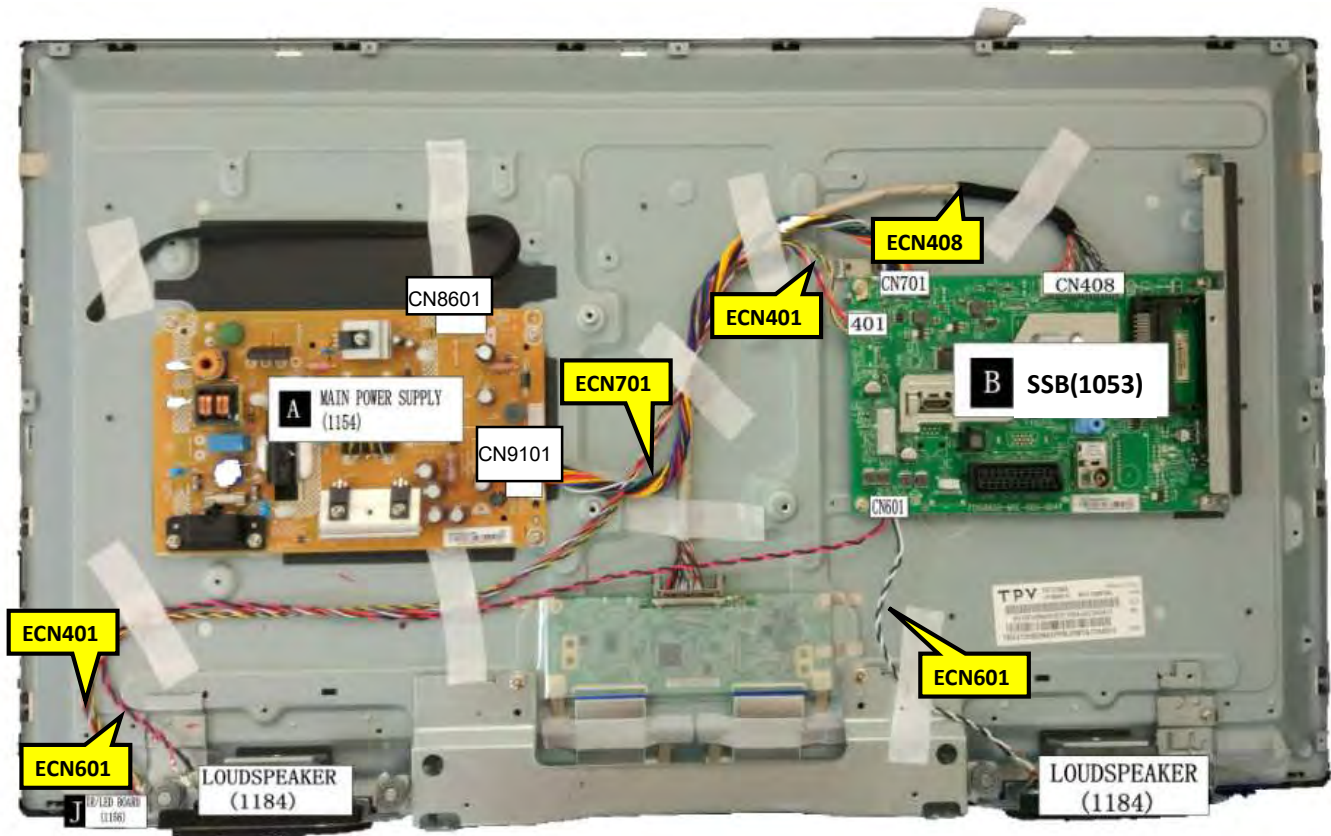


Figure 3-2 Cable dressing (32" 4132 series)

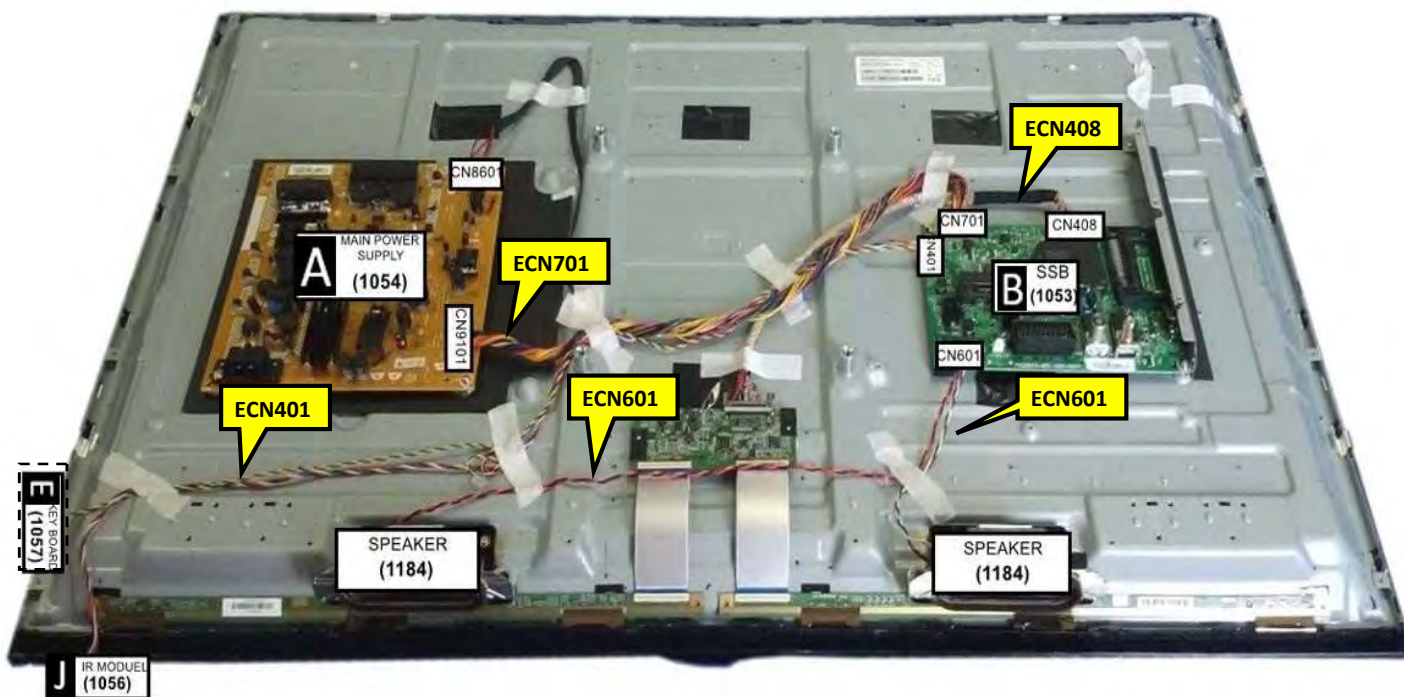


Figure 3-3 Cable dressing (43" 4132 series)

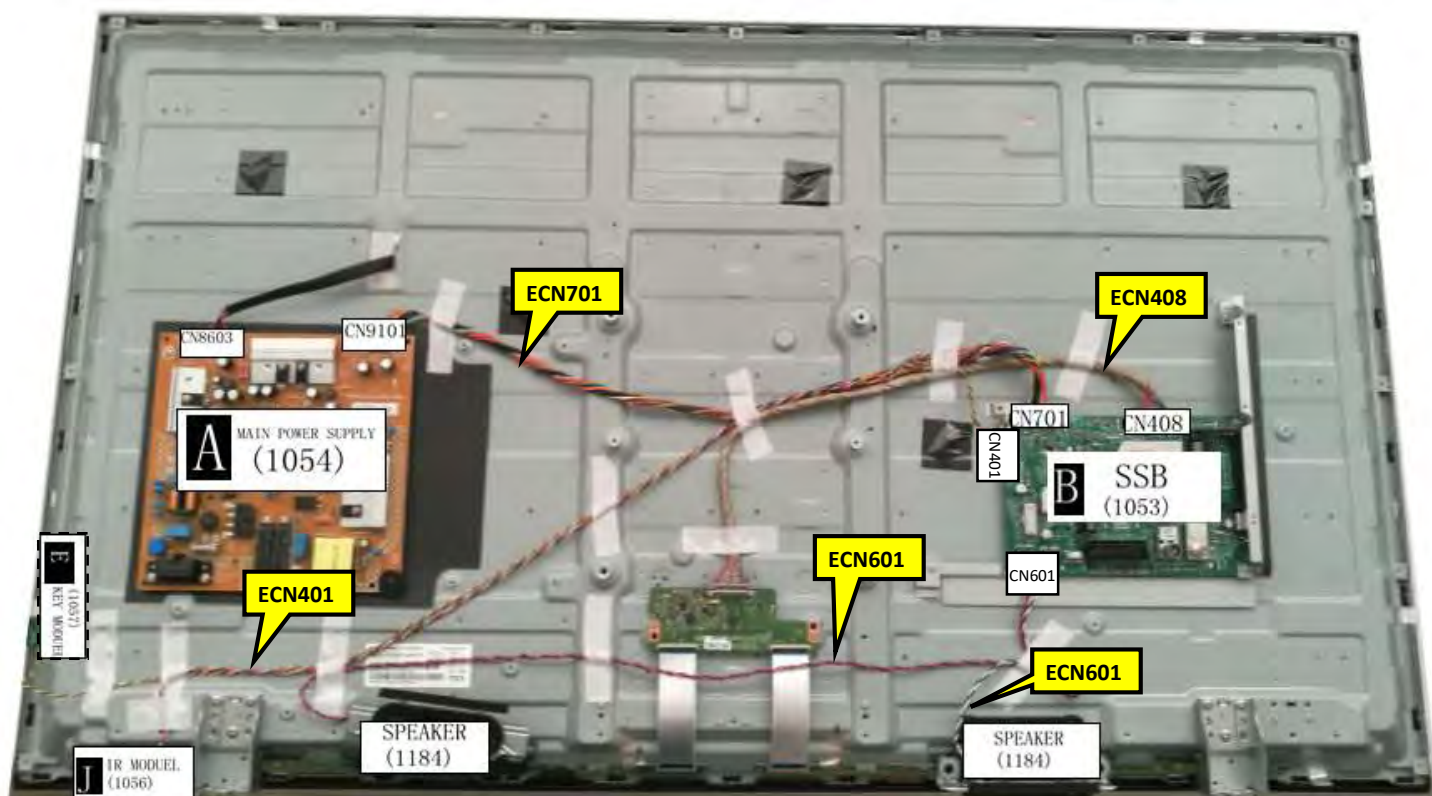


Figure 3-4 Cable dressing (49" 4132 series)



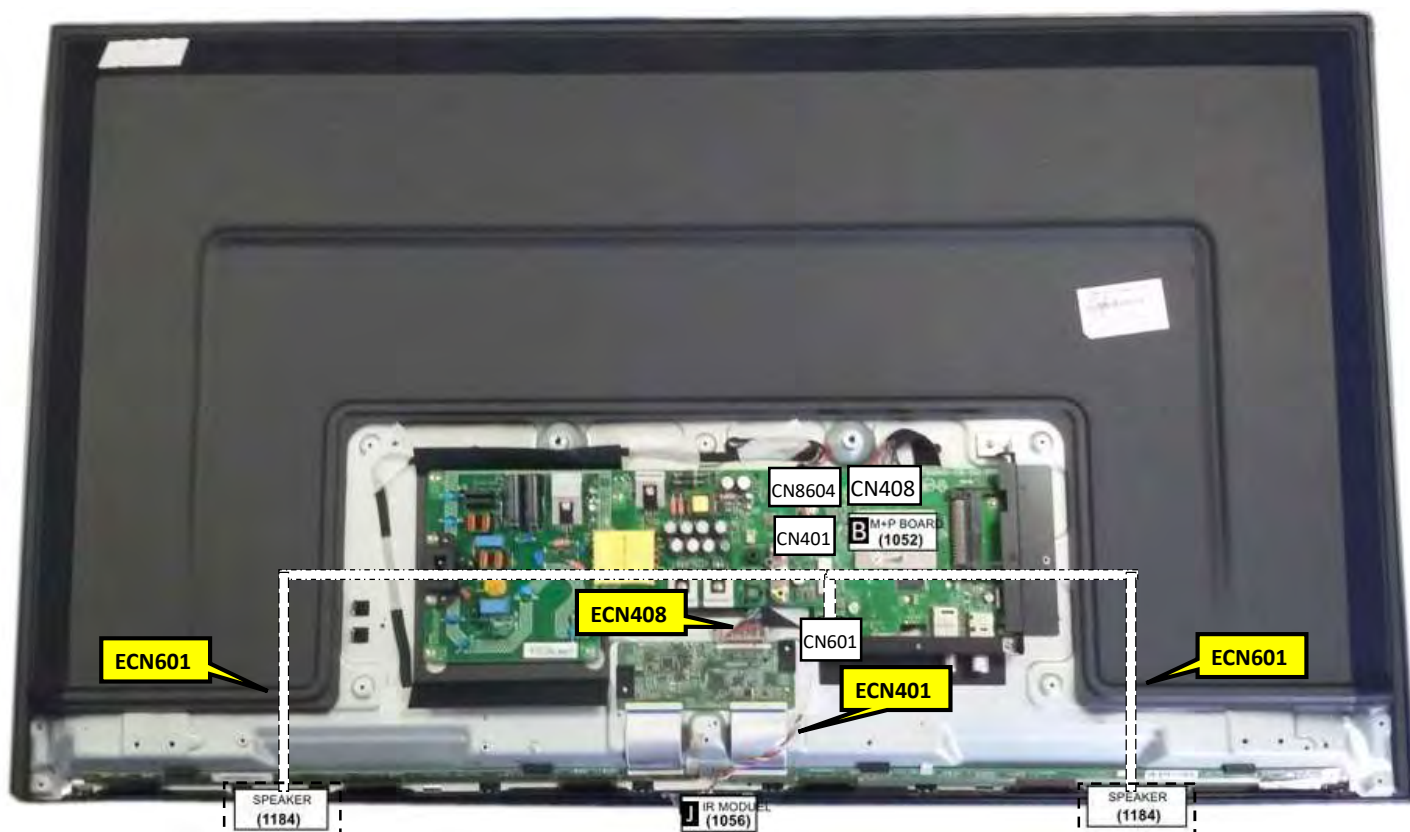


Figure 3-7 Cable dressing (43" 4112 series)

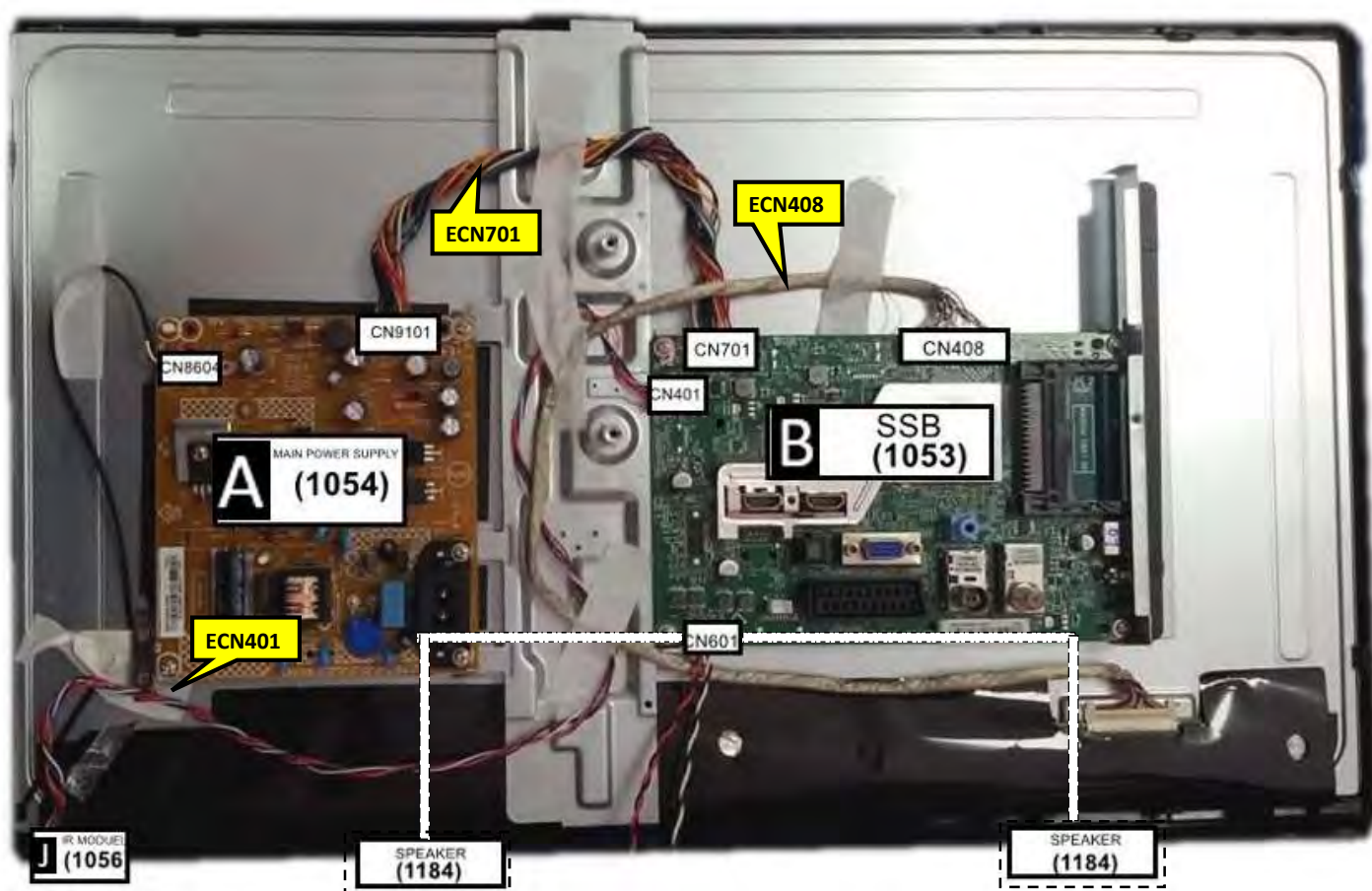


Figure 3-8 Cable dressing (24" 4022 series)

## 3.2 Assembly/Panel Removal

### 3.2.1 Stand removal

**Notes:** Refer to [Figure 3-9](#) and [Figure 3-10](#) for details. But Figures below can deviate slightly from the actual situation due to the different set executions.

1. Remove the fixation screws [1] that secure the stand
2. Take the stand bracket out from the set.



Figure 3-9



Figure 3-10 (For 4022 series)

### 3.2.2 Rear Cover

**Warning:** Disconnect the mains power cord before removing the rear cover.

1. Remove fixation screws [2] and [3] that secure the Back cover assy. Refer to [Figure 3-11](#) for details.
2. Remove fixation screws [2] and [3] that secure the Back cover assy. Refer to [Figure 3-12](#) for details.
3. At the indicated areas [4] the cover is secured by clips. Be very careful with releasing those. Refer to [Figure 3-13](#) for details.
4. Gently lift the rear cover from the TV. Make sure that wires and cables are not damaged while lifting the rear cover from the set.

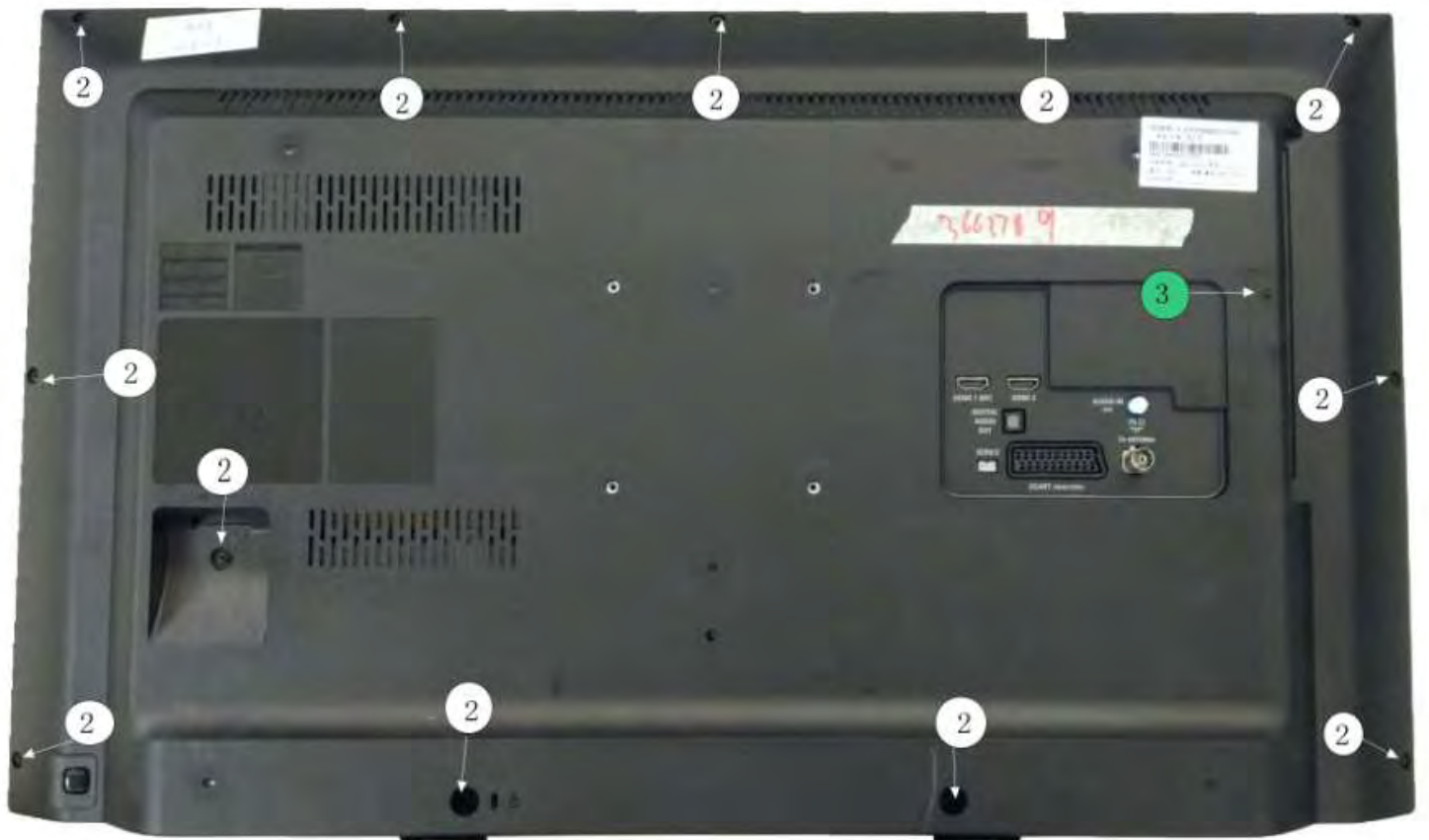


Figure 3-11 (For 4232/4132/4032 series)



Figure 3-12 (For 4112 series)



Figure 3-13 (For 4022 series)

### 3.2.3 Keyboard Control Unit

1. Release the connector from the SSB Board.

**Caution:** Be careful, the Keyboard is catch on the Back cover, please be careful to avoid damage the fragile connectors!

2. Remove all the fixation screws from the keyboard control panel [1] and take it out from the Back cover

When defective, replace the whole unit.

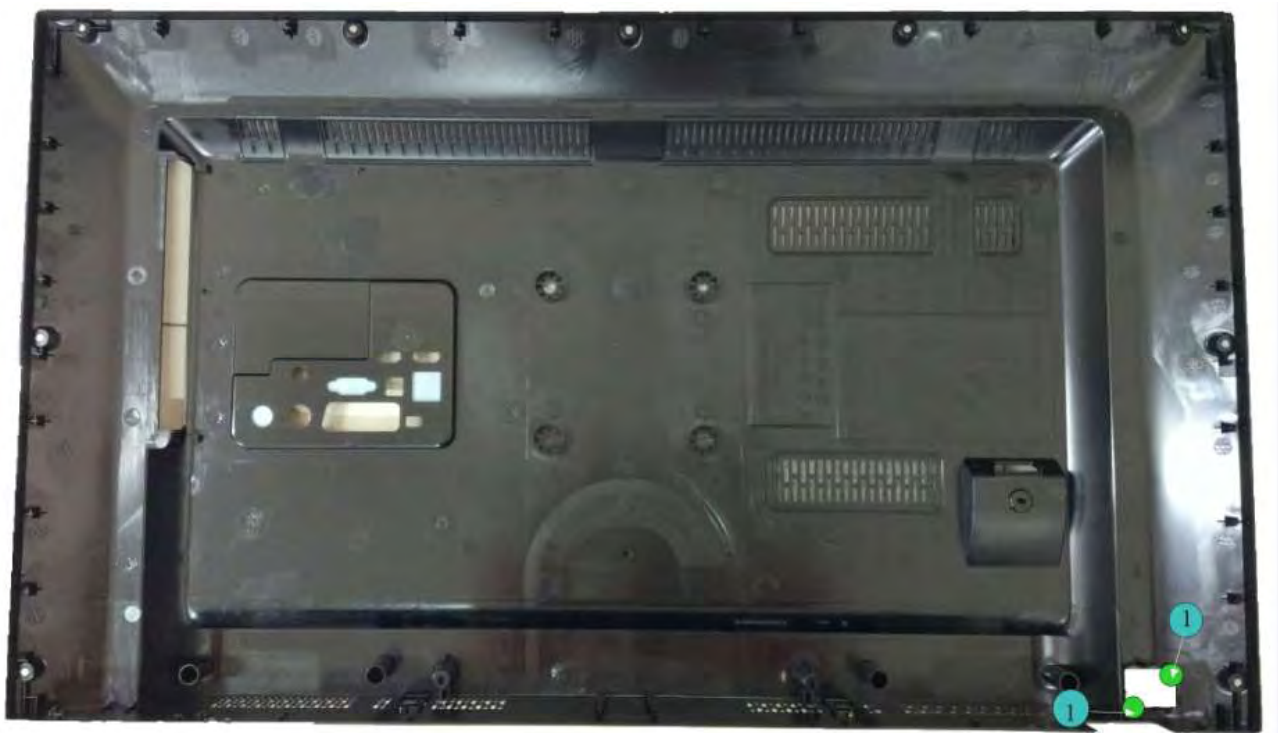


Figure 3-14

### 3.2.4 Small Signal Board (SSB)

**Caution:** it is mandatory to remount all different screws at their original position during re-assembly. Failure to do so may result in damaging the SSB.

1. Release the clips from the connector that connect with the SSB[1].

**Caution:** be careful, as these are very fragile connectors!

2. Unplug all other connectors [2] .
3. Remove all the fixation screws from the SSB [3]. Refer to [Figure 3-15](#) for details.
4. Remove all the fixation screws from the M+P BOARD [4]. Refer to [Figure 3-16](#) for details.
5. The SSB / M+P BOARD can now be shifted from side connector cover, then lifted and taken out of the I/O bracket.

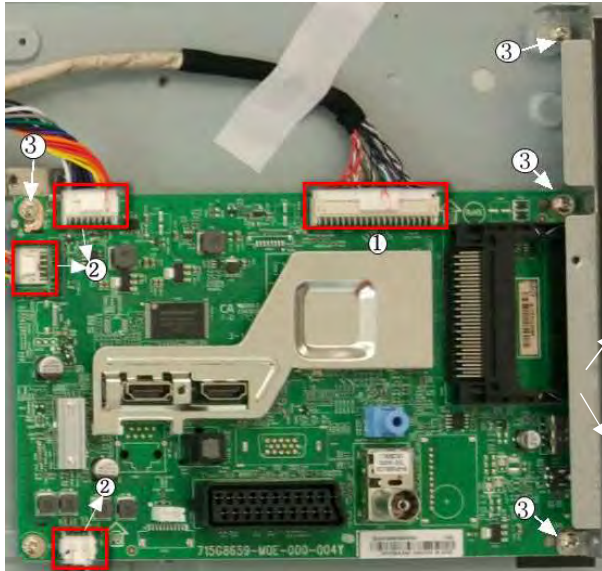


Figure 3-15 SSB

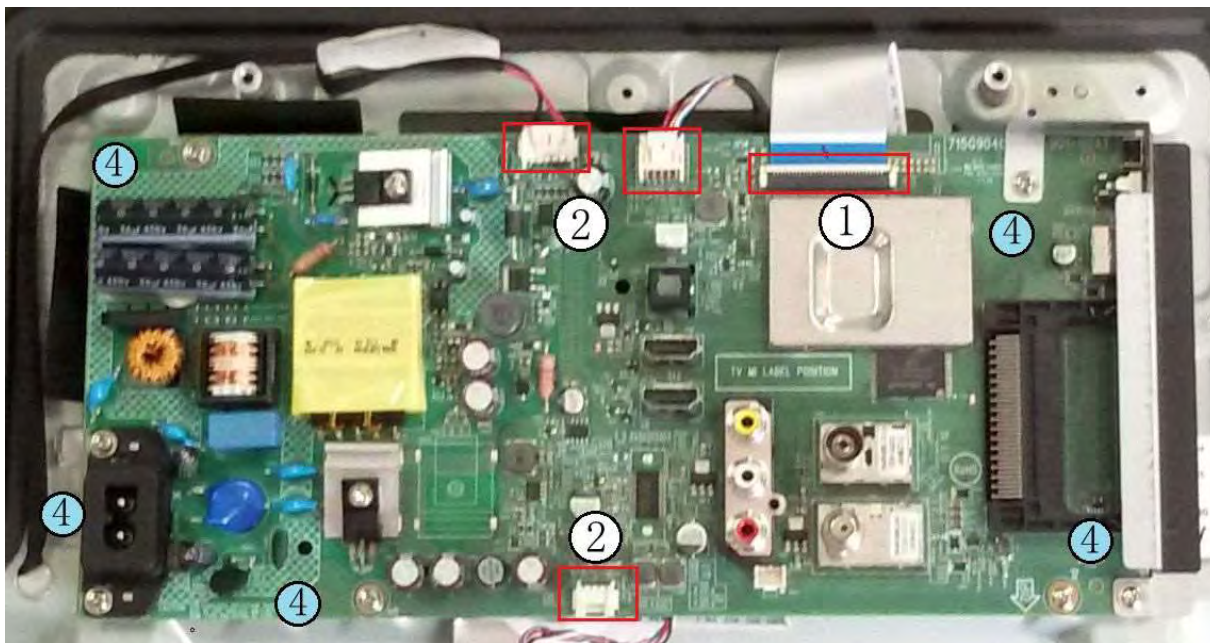


Figure 3-16 M+P BOARD (For 4112 Series)

### 3.2.5 Power Supply Unit (PSU)

**Caution:** it is mandatory to remount all different screws at their original position during re-assembly. Failure to do so may result in damaging the PSU.

1. Gently unplug all connectors from the PSU.
2. Remove all fixation screws from the PSU.
3. The PSU can be taken out of the set now.

### 3.2.6 IR board Control Unit

1. Unplug the connector from the SSB.

**Caution:** be careful, as these are very fragile connectors!

2. Remove all the fixation screws and connector from the IR board control unit.

3. Remove the IR lens, IR board from the DECO\_REAR\_COVER.

When defective, replace the whole unit.



Figure 3-17 (For 32" 4132 series)



Figure 3-18 (For 43" 4132 series)

1. Unplug the connector from the SSB.

**Caution:** Be careful, as these are very fragile connectors!

2. Remove the IR hold, IR board from the DECO\_REAR\_COVER.

When defective, replace the whole unit.

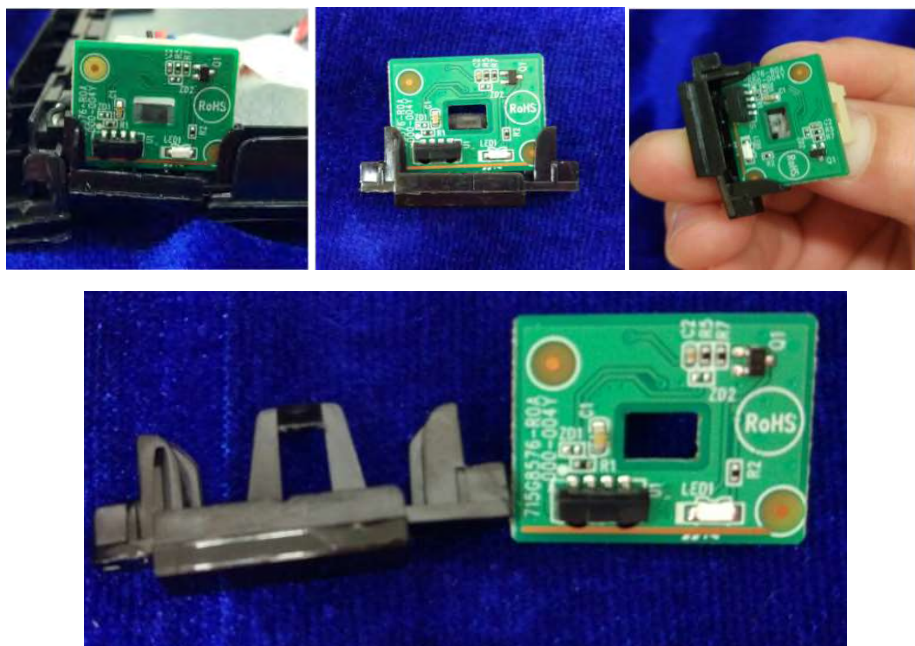


Figure 3-19 (For 22" 4232 series)



Figure 3-20 (For 32" 4112 series)

### 3.2.7 Speakers

Gently release the tapes that secure the speaker cables.

Unplug the speaker connector from the SSB.

Take the speakers out.

When defective, replace the both units.

**Notes:** For 24" 4022 & 32/39/43" 4112 series, the speaker is catch on the Back cover. Please be careful to avoid damage the fragile connectors when assembly! Refer to [Figure 3-21](#) and [Figure 3-22](#) for details.

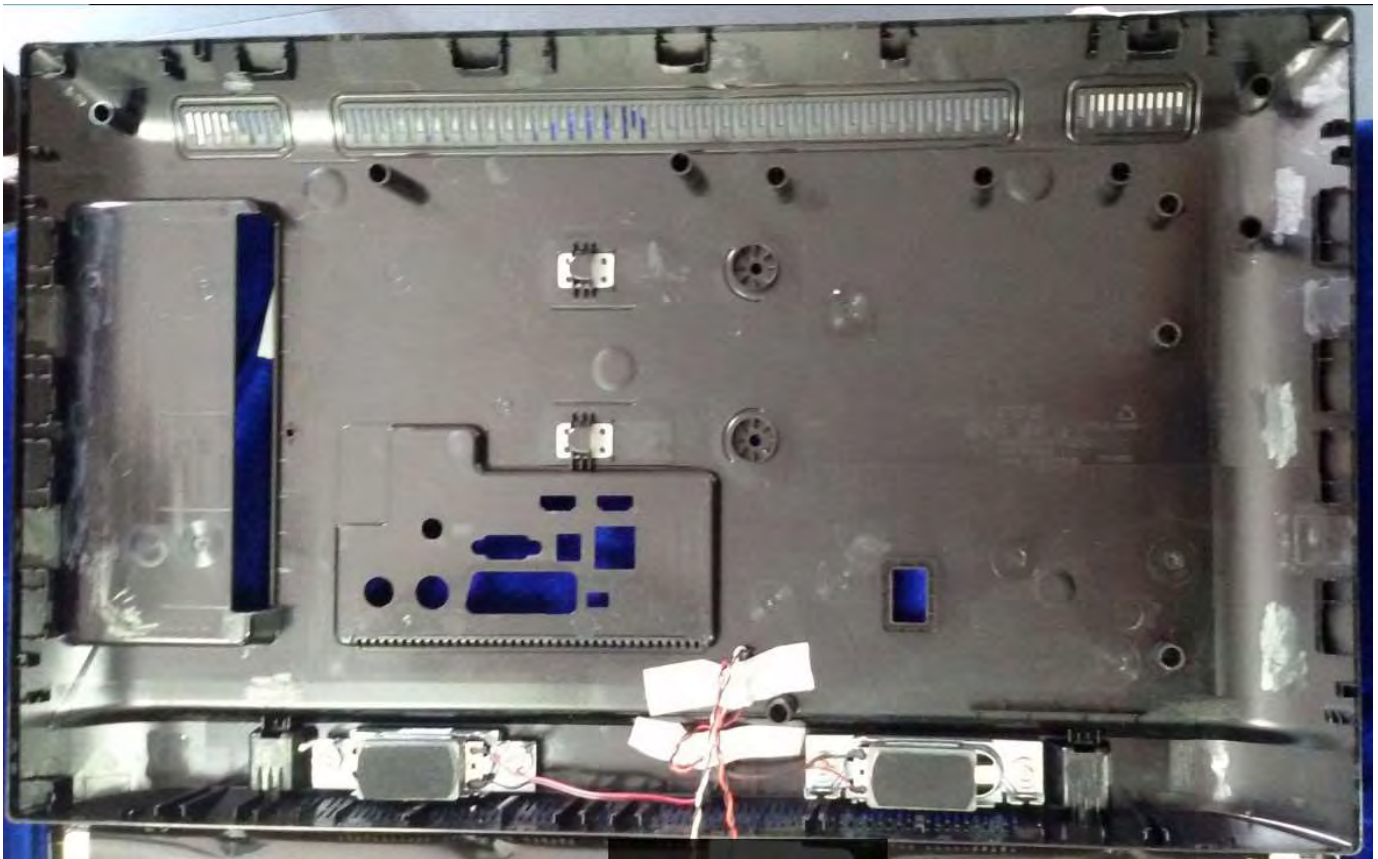


Figure 3-21 (For 24" 4022 series)

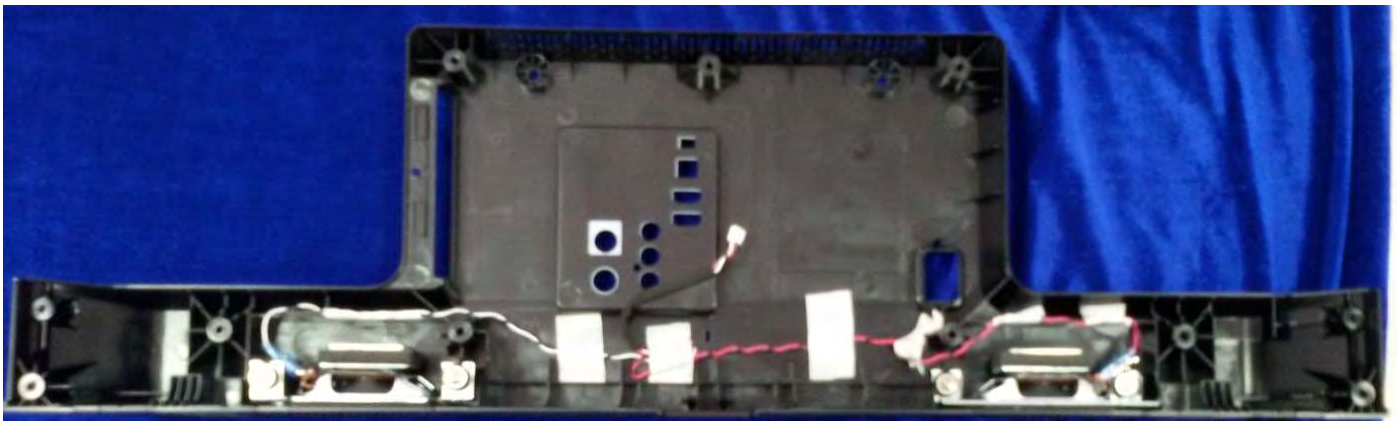


Figure 3-22(For 32" 4112 series)

### 3.2.8 WIFI module

1. Unplug the connector from the SSB..
  2. Remove fixation screw that secure the WIFI module,
- When defective, replace the whole unit.

### 3.2.9 LCD Panel

Remove the SSB as described earlier.

Remove the keyboard control panel as described earlier.

Remove the stand bracket as described earlier.

Remove the IR/LED as described earlier.

Remove the fixations screws that fix the metal clamps to the front bezel. Take out those clamps.

Remove all other metal parts not belonging to the panel.

Lift the LCD Panel from the bezel.

When defective, replace the whole unit.

## 4. Service Modes

### 4.1 Service Modes

The Service Mode feature is split into following parts:

Service Alignment Mode (SAM).

Factory Mode.

Customer Service Mode (CSM). SAM and the Factory mode offer features, which can be used by the Service engineer to repair/align a TV set.

SAM and the Factory mode offer features, which can be used by the Service engineer to repair/align a TV set. Some features are:

Make alignments (e.g. White Tone), reset the error buffer (SAM and Factory Mode).

Display information ("SAM" indication in upper right corner of screen, error buffer, software version, operating hours, options and option codes, sub menus).

The CSM is a Service Mode that can be enabled by the consumer. The CSM displays diagnosis information, which the customer can forward to the dealer or call centre. In CSM mode, "CSM", is displayed in the top right corner of the screen. The information provided in CSM and the purpose of CSM is to:

Increase the home repair hit rate.

Decrease the number of nuisance calls.

Solved customers' problem without home visit.

**Note:** For the new model range, a new remote control (RC) is used with some renamed buttons. This has an impact on the activation of the Service modes. For instance the old "MENU" button is now called "HOME" (or is indicated by a "house" icon).

### 4.2 Service Alignment Mode (SAM)

#### *Purpose*

To modify the NVM.

To display/clear the error code buffer.

To perform alignments.

#### *Specifications*

Operation hours counter (maximum five digits displayed).

Software version, error codes, and option settings display.

Error buffer clearing.

Option settings.

Software alignments (White Tone).

NVM Editor.

Set screen mode to full screen (all content is visible).

#### **How to Activate SAM**

To activate SAM, use one of the following methods:

Press the following key sequence on the remote control transmitter: "**062596**", directly followed by the "**INFO/OK**" button. Do not allow the display to time out between entries while keying the sequence.

Or via ComPair.

After entering SAM, the following items are displayed,

with "SAM" in the upper right corner of the screen to indicate that the television is in Service Alignment Mode.

#### **How to Navigate**

In the SAM menu, select menu items with the UP/DOWN keys on the remote control transmitter. The selected item will be indicated. When not all menu items fit on the screen, use the **UP/DOWN keys** to display the next/previous menu items.

With the "LEFT/RIGHT" keys, it is possible to:

(De) activate the selected menu item.

(De) activate the selected sub menu.

Change the value of the selected menu item.

When you press the MENU button once while in top level SAM, the set will switch to the normal user menu (with the SAM mode still active in the background).

### How to Store SAM Settings

To store the settings changed in SAM mode (except the RGB Align settings), leave the top level SAM menu by using the POWER button on the remote control transmitter or the television set. The mentioned exceptions must be stored separately via the STORE button.

### How to Exit SAM

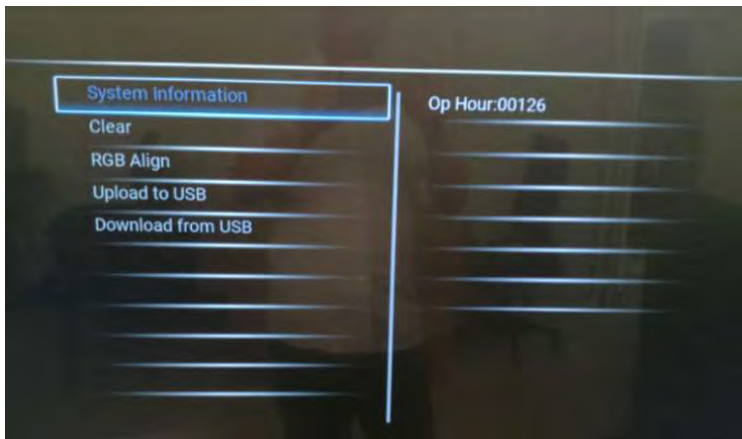
Use one of the following methods:

Switch the set to STANDBY by pressing the mains button on the remote control transmitter or the television set.

Via a standard RC-transmitter, key in "00" sequence.

**Note:** When the TV is switched "off" by a power interrupt while in SAM, the TV will show up in "normal operation mode" as soon as the power is supplied again. The error buffer will not be cleared.

### SAM mode overview



## 4.3 Factory mode:

### **Purpose**

To perform extended alignments.

### **Specifications**

Displaying and or changing Panel ID information.

Displaying and or changing Tuner ID information.

Error buffer clearing.

Various software alignment settings.

Testpattern displaying.

Public Broadcasting Service password Reset.

etc.

### How to Activate the Factory mode

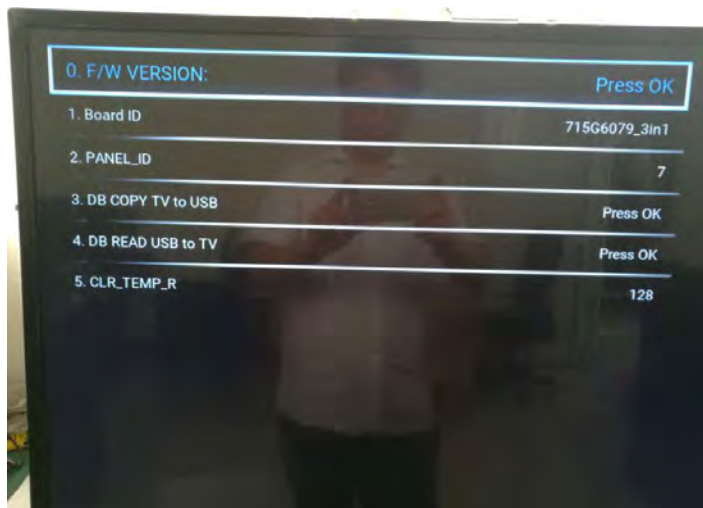
To activate the Factory mode, use the following method:

Press the following key sequence on the remote control transmitter: from the "menu/home" press "1999", directly followed by the "Back/Return" button.

Do not allow the display to time out between entries while keying the sequence.

After entering the Factory mode, we can see many items displayed, use the UP/DOWN keys to display the next/previous menu items

## Factory mode overview



### **How to Exit the Factory mode**

Use one of the following methods:

Select EXIT\_FACTORY from the menu and press the “OK” button.

**Note:** When the TV is switched “off” by a power interrupt, or normal switch to “stand-by” while in the factory mode, the TV will show up in “normal operation mode” as soon as the power is supplied again. The error buffer will not be cleared.

## 4.4 Customer Service Mode (CSM)

### **Purpose**

The Customer Service Mode shows error codes and information on the TV's operation settings. The call centre can instruct the customer (by telephone) to enter CSM in order to identify the status of the set. This helps the call centre to diagnose problems and failures in the TV set before making a service call.

The CSM is a read-only mode; therefore, modifications are not possible in this mode.

### **Specifications**

Ignore “Service unfriendly modes”.

Line number for every

line (to make CSM language independent).

Set the screen mode to full

screen (all contents on screen is visible).

After leaving the Customer Service Mode, the original settings are restored.

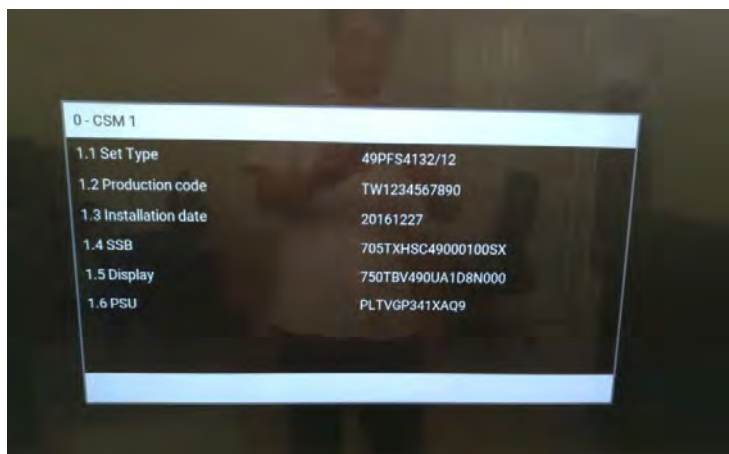
Possibility to use “CH+” or “CH-” for channel surfing, or enter the specific channel number on the RC.

### **How to Activate CSM**

To activate CSM, press the following key sequence on a standard remote control transmitter: “**123654**” (do not allow the display to time out between entries while keying the sequence). After entering the Customer Service Mode, the following items are displayed. Use the **Right/Left** keys to display the next/previous menu items.

**Note:** Activation of the CSM is only possible if there is no (user) menu on the screen!

## CSM Overview



### ***How to Navigate***

By means of the "CURSOR-DOWN/UP" knob (or the scroll wheel) on the RC-transmitter, can be navigated through the menus.

### ***How to Exit CSM***

To exit CSM, use one of the following methods.

Press the MENU/HOME button on the remote control transmitter.

Press the POWER button on the remote control transmitter.

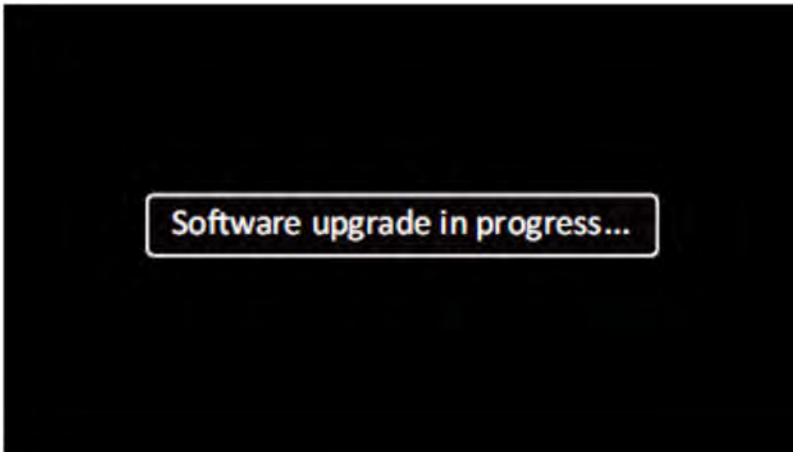
Press the POWER button on the television set.

## 5. Software Upgrading, Error code and Panel Code

### 5.1 Software Upgrading

#### 5.1.1. The following update is for .pkg file.

1. Rename the file to "upgrade\_loader.pkg"
2. Prepare a USB memory.
3. Copy the software to USB flash disk(root directory).
4. Switch off the TV and Insert the USB memory stick that contains the software update files in one of the TV's USB 2.0 ports.  
Note: It contains USB3.0 port, if connect on it, the software may can't be detected.
5. Switch on the TV. The TV will detect the USB memory s tick automatically. Then a window jumps out as below



6. When the TV software is updated, the TV will turn on again automatically. Remove your USB flash drive.
7. We can enter in CSM or Factory mode to check the current software version.

#### 5.1.2. The following update is for .upg file.

##### Step 1: Ready for F/W Upgrade

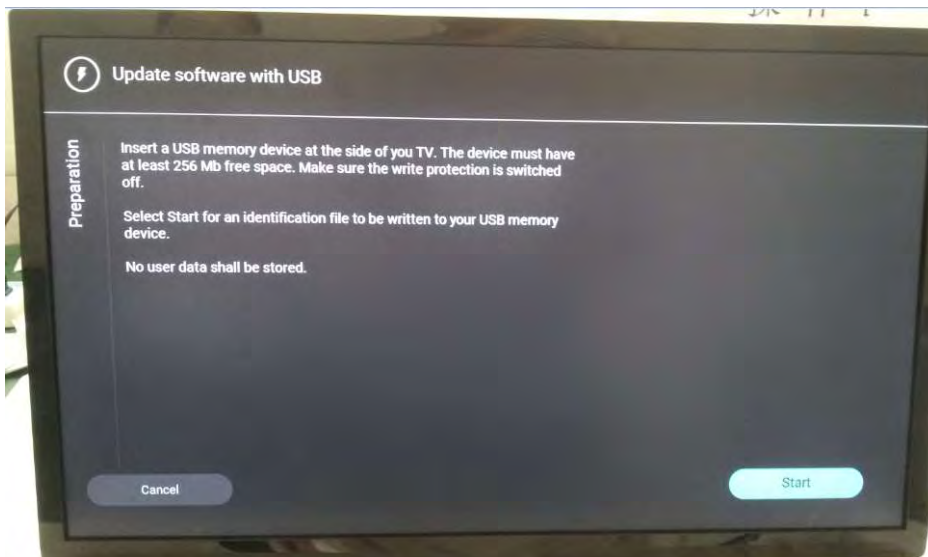
1. Prepare a USB memory.
2. Copy the software to USB flash disk(root directory).

Note the version of this F/W before you change the software file name.

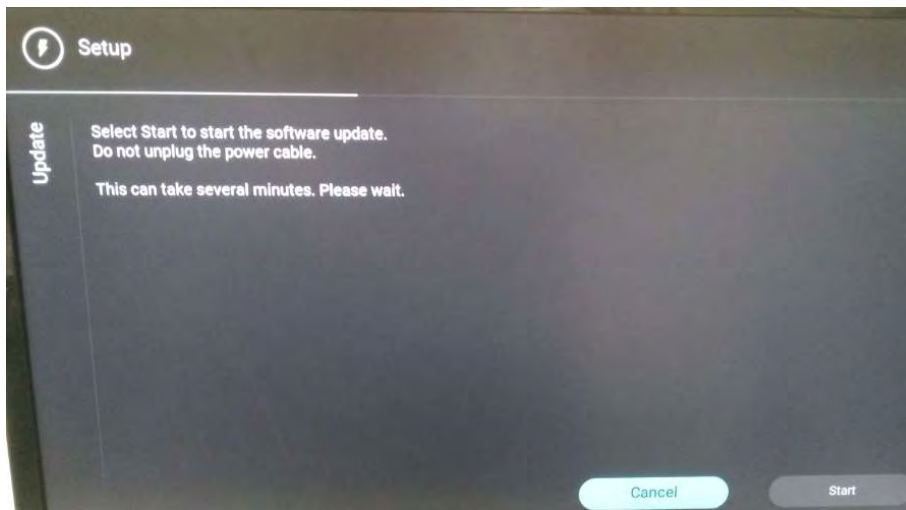


##### Step 2: F/W Upgrade

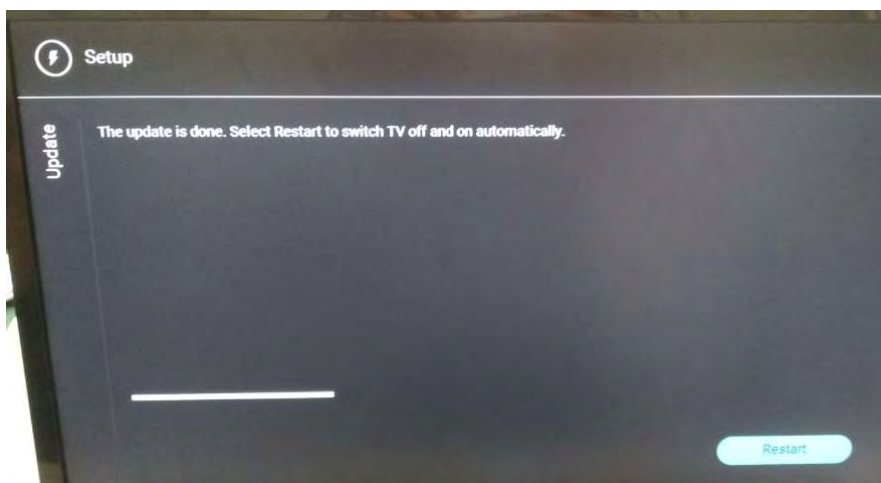
1. Plug the USB memory on the USB port on the side I/O port of TV (Please connect to USB 2.0 port, not recommend USB3.0 port)
2. AC on (Power plug)
3. TV will show message as below image, Press [Start] to detect the software automatically



4. Press [Start] to start software upgrade



5. Upgrade in progress
6. After software upgrade complete, select [Restart] to reboot TV.



### Step 3: Check the SW version

1. After burning software, TV will restart
2. Press "Menu+1999+back", enter Factory mode to check if the software version is correct

Caution: Please make sure that software upgrade is finished before unplug the USB and AC power!

### 5.2.1 Introduction

Error codes are required to indicate failures in the TV set. In principle a unique error code is available for every:

- Activated (SW) protection.
- Failing I2C device.
- General I2C error.

The last five errors, stored in the NVM, are shown in the Service menu's. This is called the error buffer.

The error code buffer contains all errors detected since the last time the buffer was erased. The buffer is written from left to right. When an error occurs that is not yet in the error code buffer, it is displayed at the left side and all other errors shift one position to the right.

An error will be added to the buffer if this error differs from any error in the buffer. The last found error is displayed on the left.

An error with a designated error code never leads to a deadlock situation. It must always be diagnosable (e.g. error buffer via OSD or blinking LED).

In case a failure identified by an error code automatically results in other error codes (cause and effect), only the error code of the MAIN failure is displayed.

### 5.2.2 How to Read the Error Buffer

You can read the error buffer in three ways:

- On screen via the SAM/CSM (if you have a picture).

Example:

- **ERROR: 000 000 000 000 000**: No errors detected
- **ERROR: 013 000 000 000 000**: Error code 13 is the last and only detected error
- **ERROR: 034 013 000 000 000**: Error code 13 was detected first and error code 34 is the last detected (newest) error
- Via the blinking LED procedure (when you have no picture).

### 5.2.3 Error codes overview

In this chassis only "layer 2" error codes are available and point to problems on the SSB. They are triggered by LED blinking when CSM is activated. Only the following layer 2 errors are defined:

| Description                   | LAYER 1 error | LAYER 2 error | Monitored     | Medium              | Error/<br>Prot. | I <sup>2</sup> C address | EB: in error buffer<br>BL: Blinking LED | Device                                                | Defective board |
|-------------------------------|---------------|---------------|---------------|---------------------|-----------------|--------------------------|-----------------------------------------|-------------------------------------------------------|-----------------|
| <b>I<sup>2</sup>C BUSES</b>   |               |               |               |                     |                 |                          |                                         |                                                       |                 |
| I <sup>2</sup> C 0 (SSB bus)  | 2             | 13            | SOC           | I <sup>2</sup> CM0  | E               |                          | BL/EB                                   | SSB                                                   | SSB             |
| I <sup>2</sup> C MCU (BE bus) | 2             | 14            | SOC           | I <sup>2</sup> CMCU | E               |                          | BL/EB                                   | SSB                                                   | SSB             |
| I <sup>2</sup> C 2 (FE bus)   | 2             | 15            | SOC           | I <sup>2</sup> CM2  | E               |                          | BL/EB                                   | SSB                                                   | SSB             |
| I <sup>2</sup> C 1 (SFR bus)  | 2             | 18            | SOC           | I <sup>2</sup> CM1  | E               |                          | BL/EB                                   | SSB                                                   | SSB             |
| SOC doesn't boot (HW cause)   | 2             | 15            | St-by $\mu$ P |                     | P               | D4                       | BL                                      | MT5593                                                | SSB             |
| <b>Supply related:</b>        |               |               |               |                     |                 |                          |                                         |                                                       |                 |
| 12V                           | 3             | 16            | St-by $\mu$ P | I/O                 | P               |                          | BL                                      |                                                       | Supply          |
| Display supply (POK)          | 3             | 17            | SOC           | I/O                 | E               |                          | EB                                      |                                                       | Supply          |
| <b>SSB</b>                    |               |               |               |                     |                 |                          |                                         |                                                       |                 |
| I2C switch                    | 2             | 24            | SOC           | I <sup>2</sup> CMCU | E               | E0                       | EB                                      | PCA9540                                               | SSB             |
| Channel dec                   | 2             | 27            | SOC           | I <sup>2</sup> CM2  | E               | D8-DC                    | EB                                      | Silab Si216x                                          | SSB             |
| Boston (HDMI2.2)              | 2             | 29            | SOC           | I <sup>2</sup> CM0  | E               | 64                       | EB                                      | SIL 9777                                              | SSB             |
| Lnb controler                 | 2             | 31            | SOC           | I <sup>2</sup> CM2  | E               | 10                       | EB                                      | LNBH 25                                               | SSB             |
| Kleernet (Wireless Audio)     | 2             | 32            | SOC           | I <sup>2</sup> CM1  | E               |                          | EB                                      |                                                       | SSB             |
| DTV Tuner                     | 2             | 34            | SOC           | I <sup>2</sup> CM2  | E               | C0                       | EB                                      | Silab Si2157 (H/T models)<br>Sony Helene (K/S models) | SSB             |
| Tuner DVB-S2                  | 2             | 36            | SOC           | I <sup>2</sup> CM2  | E               | C6                       | EB                                      | STV 6111                                              | SSB             |
| Class-D                       | 2             | 37            | SOC           | I <sup>2</sup> CM3  | E               | 36                       | EB                                      | TAS 5731 PHP                                          | SSB             |
| FPGA PQ                       | 2             | 38            | SOC           | I <sup>2</sup> CMCU | E               | 84?                      | EB                                      | Durango                                               | SSB             |
| 2nd Audio amplifier           | 2             | 39            | SOC           | I <sup>2</sup> CM3? | E               | ?                        | EB                                      | ?                                                     | SSB             |
| T° sensor SSB/set             | 2             | 42            | SOC           | I <sup>2</sup> CM1  | E               | 98                       | EB                                      | LM 75                                                 | T°sensor        |
| Light sensor                  | 6             | 43            | SOC           | I <sup>2</sup> CM3  | E               | 72                       | EB                                      | TSL2571                                               | SET             |
| SOC doesn't boot (SW cause)   | 2             | 53            | St-by $\mu$ P |                     | P               | D4                       | BL                                      | MT5593                                                | SSB             |
| NT72324                       | 2             | 61            | SOC           | I <sup>2</sup> CM2  | E               | 34                       | EB                                      | NT72324                                               | SSB             |

|              |   |    |     |                    |   |    |    |                    |     |
|--------------|---|----|-----|--------------------|---|----|----|--------------------|-----|
| NT72323      | 2 | 62 | SOC | I <sup>2</sup> CM2 | E | A4 | EB | NT72323            | SSB |
| Splash error | 2 | 65 | SOC | -                  | E | -  | EB | NT314, MT<br>5593, | SSB |

#### 5.2.4 How to Clear the Error Buffer

The error code buffer is cleared in the following cases:

- By using the CLEAR command in the SAM menu
- By using the CLEAR command in the Factory mode:
- By using the following key sequence on the remote control transmitter: **"062599"** directly followed by the **OK** button.
- If the contents of the error buffer have not changed for 50 hours, the error buffer resets automatically.

**Note:** If you exit SAM by disconnecting the mains from the television set, the error buffer is not reset.

#### Panel Code

Press the following key sequence on a standard RC transmitter: "062598" directly followed by MENU and "xxx", where "xxx" is a 3 digit decimal value of the panel type: see column "Display Code" in below tab. After resetting the Display Code, restart the set immediately.

| CTN_ALT BOM# | Panel Type               | Display Code | CTN_ALT BOM# | Panel Type                     | Display Code |
|--------------|--------------------------|--------------|--------------|--------------------------------|--------------|
| 22PFS4232/12 | TPM215WF1-WU3101.K       | 008          | 49PFT4132/12 | TPT490H2-DUYSHA.G SC1D         | 007          |
| 22PFT4232/12 | TPM215WF1-WU3101.K       | 008          | 32PHS4112/12 | TPT315B5-AN10.S SH02E          | 016          |
| 32PFS4132/12 | TPT315B5-EUJFFE S1R      | 005          | 32PHT4112/05 | TPT315B5-AN10.S SH02E          | 016          |
| 32PFS4132/12 | TPT315B5-FHBN0.K S49P2N  | 019          | 32PHT4112/12 | TPT315B5-AN10.S SH02E          | 016          |
| 32PFT4132/05 | TPT315B5-EUJFFE S1R      | 005          | 39PHS4112/12 | TPT390U2-TA2A0.Q S01A          | 017          |
| 32PFT4132/05 | TPT315B5-FHBN0.K S49P2N  | 019          | 39PHT4112/05 | TPT390U2-TA2A0.Q S01A          | 017          |
| 32PFT4132/12 | TPT315B5-EUJFFE S1R      | 005          | 39PHT4112/12 | TPT390U2-TA2A0.Q S01A          | 017          |
| 32PFT4132/12 | TPT315B5-FHBN0.K S49P2N  | 019          | 43PFS4112/12 | TPT430H3-DUYSHA.G S1CR         | 018          |
| 32PFT4132/60 | TPT315B5-EUJFFE S1R      | 005          | 43PFS4112/12 | TPT430H3-FHBN10.K SA9E         | 027          |
| 32PFT4132/60 | TPT315B5-FHBN0.K S49P2N  | 019          | 43PFT4112/05 | TPT430H3-DUYSHA.G S1CR         | 018          |
| 32PHS4132/12 | TPT315B5-WHBN0.K S8D62R  | 004          | 43PFT4112/05 | TPT430H3-FHBN10.K SA9E         | 027          |
| 32PHS4132/12 | TPT315B5-AN10.S SH02B    | 013          | 43PFT4112/12 | TPT430H3-DUYSHA.G S1CR         | 018          |
| 32PHS4132/12 | TPT315B5-WHBN85.K SD850A | 020          | 43PFT4112/12 | TPT430H3-FHBN10.K SA9E         | 027          |
| 32PHT4132/05 | TPT315B5-WHBN0.K S8D62R  | 004          | 24PFS4032/12 | TPM238WF1-FHBN10.K (Rev.5855)  | 010          |
| 32PHT4132/05 | TPT315B5-AN10.S SH02B    | 013          | 24PFT4032/12 | TPM238WF1-FHBN10.K (Rev.5855)  | 010          |
| 32PHT4132/05 | TPT315B5-WHBN85.K SD850A | 020          | 24PFT4032/60 | TPM238WF1-FHBN10.K (Rev.5855)  | 010          |
| 32PHT4132/05 | TPT315B5-WHBN85.K SDN30A | 021          | 24PHS4032/12 | TPM236WH2-WHBN00.K (Rev.5946)  | 009          |
| 32PHT4132/05 | TPT315B5-WHBN55.K SD941A | 022          | 24PHT4032/05 | TPM236WH2-WHBN00.K (Rev.5946)  | 009          |
| 32PHT4132/05 | TPT315B5-WHBN55.K SD850A | 023          | 24PHT4032/12 | TPM236WH2-WHBN00.K (Rev.5946)  | 009          |
| 32PHT4132/05 | TPT315B5-WHBN55.K SD940A | 024          | 24PHT4032/60 | TPM236WH2-WHBN00.K (Rev.5946)  | 009          |
| 32PHT4132/12 | TPT315B5-WHBN0.K S8D62R  | 004          | 32PHS4032/12 | TPT315B5-WHBN0.K S8D62W        | 012          |
| 32PHT4132/12 | TPT315B5-AN10.S SH02B    | 013          | 32PHS4032/12 | TPT315B5-AN10.S SH02F          | 013          |
| 32PHT4132/12 | TPT315B5-WHBN85.K SD850A | 020          | 32PHT4032/12 | TPT315B5-WHBN0.K S8D62W        | 012          |
| 32PHT4132/12 | TPT315B5-WHBN85.K SDN30A | 021          | 32PHT4032/12 | TPT315B5-AN10.S SH02F          | 013          |
| 32PHT4132/12 | TPT315B5-WHBN55.K SD941A | 022          | 32PHT4032/60 | TPT315B5-WHBN0.K S8D62W        | 012          |
| 32PHT4132/12 | TPT315B5-WHBN55.K SD850A | 023          | 32PHT4032/60 | TPT315B5-AN10.S SH02F          | 013          |
| 32PHT4132/12 | TPT315B5-WHBN55.K SD940A | 024          | 22PFS4022/12 | TPM215WF1-WU3101.K (REV.485BD) | 008          |
| 32PHT4132/60 | TPT315B5-WHBN0.K S8D62R  | 004          | 22PFT4022/05 | TPM215WF1-WU3101.K (REV.485BD) | 008          |
| 32PHT4132/60 | TPT315B5-AN10.S SH02B    | 013          | 22PFT4022/12 | TPM215WF1-WU3101.K (REV.485BD) | 008          |
| 32PHT4132/60 | TPT315B5-WHBN85.K SDN30A | 021          | 22PFT4022/60 | TPM215WF1-WU3101.K (REV.485BD) | 008          |
| 43PFS4132/12 | TPT430H3-DUYSHA.G S1BH   | 006          | 24PFS4022/12 | TPM238WF1-FHBN10.K 5856        | 010          |
| 43PFS4132/12 | TPT430H3-DUYSHA.G S1CB   | 006          | 24PFS4022/12 | TPM238WF1-LF1L0.Q S1A          | 011          |
| 43PFT4132/05 | TPT430H3-DUYSHA.G S1BH   | 006          | 24PFT4022/12 | TPM238WF1-FHBN10.K 5856        | 010          |
| 43PFT4132/05 | TPT430H3-DUYSHA.G S1CB   | 006          | 24PFT4022/12 | TPM238WF1-LF1L0.Q S1A          | 011          |
| 43PFT4132/12 | TPT430H3-DUYSHA.G S1BH   | 006          | 24PFT4022/60 | TPM238WF1-FHBN10.K 5856        | 010          |
| 43PFT4132/12 | TPT430H3-DUYSHA.G S1CB   | 006          | 24PHS4022/12 | TPM236WH2-WHBN00.K 5947        | 009          |
| 43PFT4132/60 | TPT430H3-DUYSHA.G S1BH   | 006          | 24PHT4022/05 | TPM236WH2-WHBN00.K 5947        | 009          |
| 43PFT4132/60 | TPT430H3-DUYSHA.G S1CB   | 006          | 24PHT4022/12 | TPM236WH2-WHBN00.K 5947        | 009          |
| 49PFS4132/12 | TPT490H2-DUYSHA.G SC1D   | 007          |              |                                |              |

## 6. Circuit Descriptions

### 6.1 Introduction

The TPN17.1E LA is a new chassis launched in EU in 2017. The whole range is covered by NT72461 platform. The major deltas versus its predecessor support DVB-S2; ;DVB-T;DVB-T2, with also USB 2.0, Video out

The TPN17.1E LA chassis comes with the following stylings:

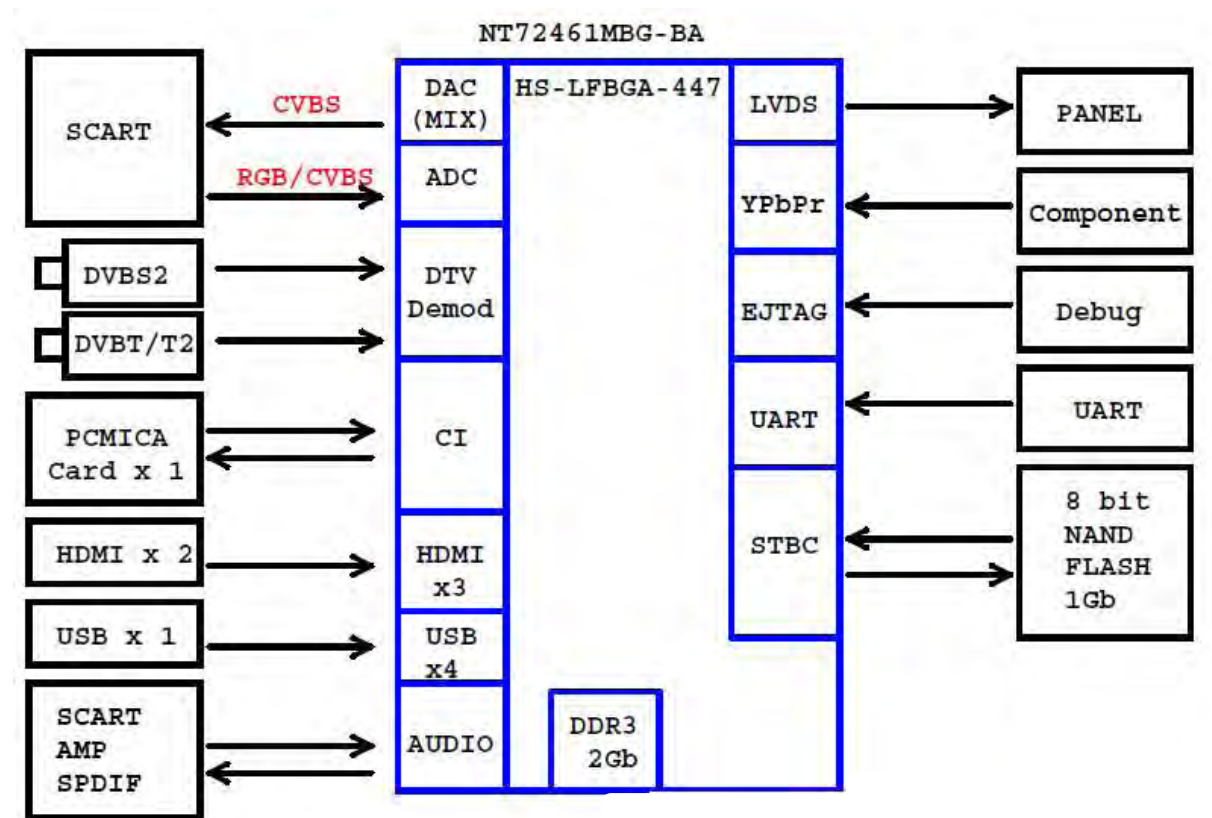
- series xxPHx4132/xx
- series xxPHx4022/xx
- series xxPHx4032/xx
- series xxPHx4112/xx
- series xxPHx4232/xx

#### 6.1.1 Implementation

Key components of this chassis are:

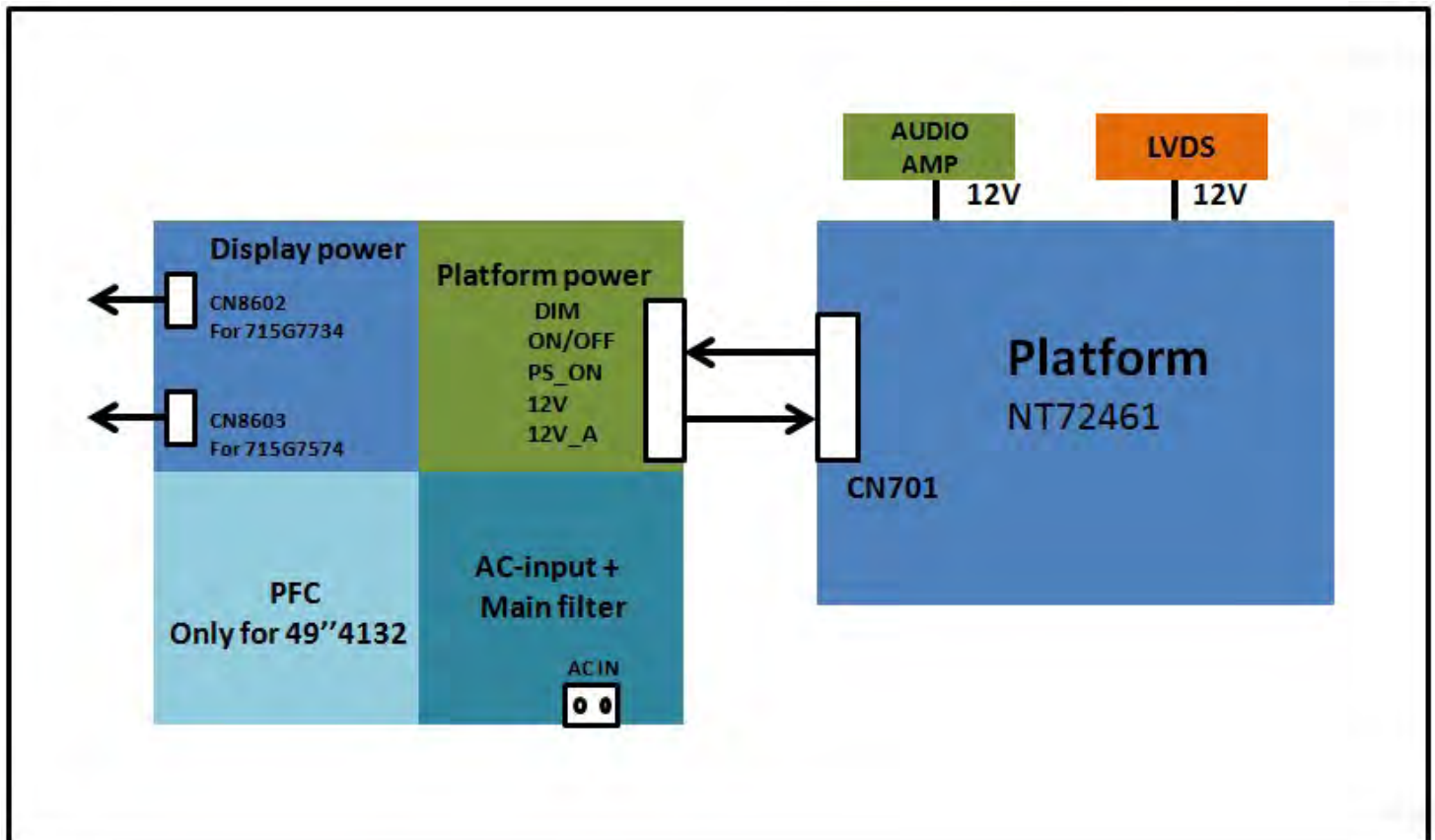
- SCALER NT72461MBG-PA HS-LFBGA-447
- NAND FLASH W29N01GV5IAA 1Gb TSOP-48
- AUDIO TAS5753MDDCAR 20W HTSSOP-48
- TUNER EU SS07CA-6-E
- TUNER EU ST42CS-2-E

#### 6.1.2 Block diagram



## 6.2 Power Supply

Power architecture of this platform.



### 6.2.1 Power Supply Unit

All power supplies are a black box for Service. When defective, a new board must be ordered and the defective one must be returned, unless the main fuse of the board is broken. Always replace a defective fuse with one with the correct specifications! This part is available in the regular market.

Consult the Philips Service web portal for the order codes of the boards.

Important delta's with the platform are:

- New power architecture for LED backlight
- "Boost"-signal is now a PWM-signal + continuous variable

The control signals are:

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

In this manual, no detailed information is available because of design protection issues.

- +8.5V output (standby mode)
- +12 output (on-mode)
- +12V\_audio (audio AMP power)
- Output to the display; in case of
  - IPB: High voltage to the LCD panel
  - PSL and PSLS (LED-driver outputs)
  - PSDL (high frequent) AC-current.

### 6.2.2 Diversity

The diversity in power supply units is mainly determined by the diversity in displays.

The following displays can be distinguished:

- CCFL/EEFL backlight: power panel is conventional IPB
- LED backlight:

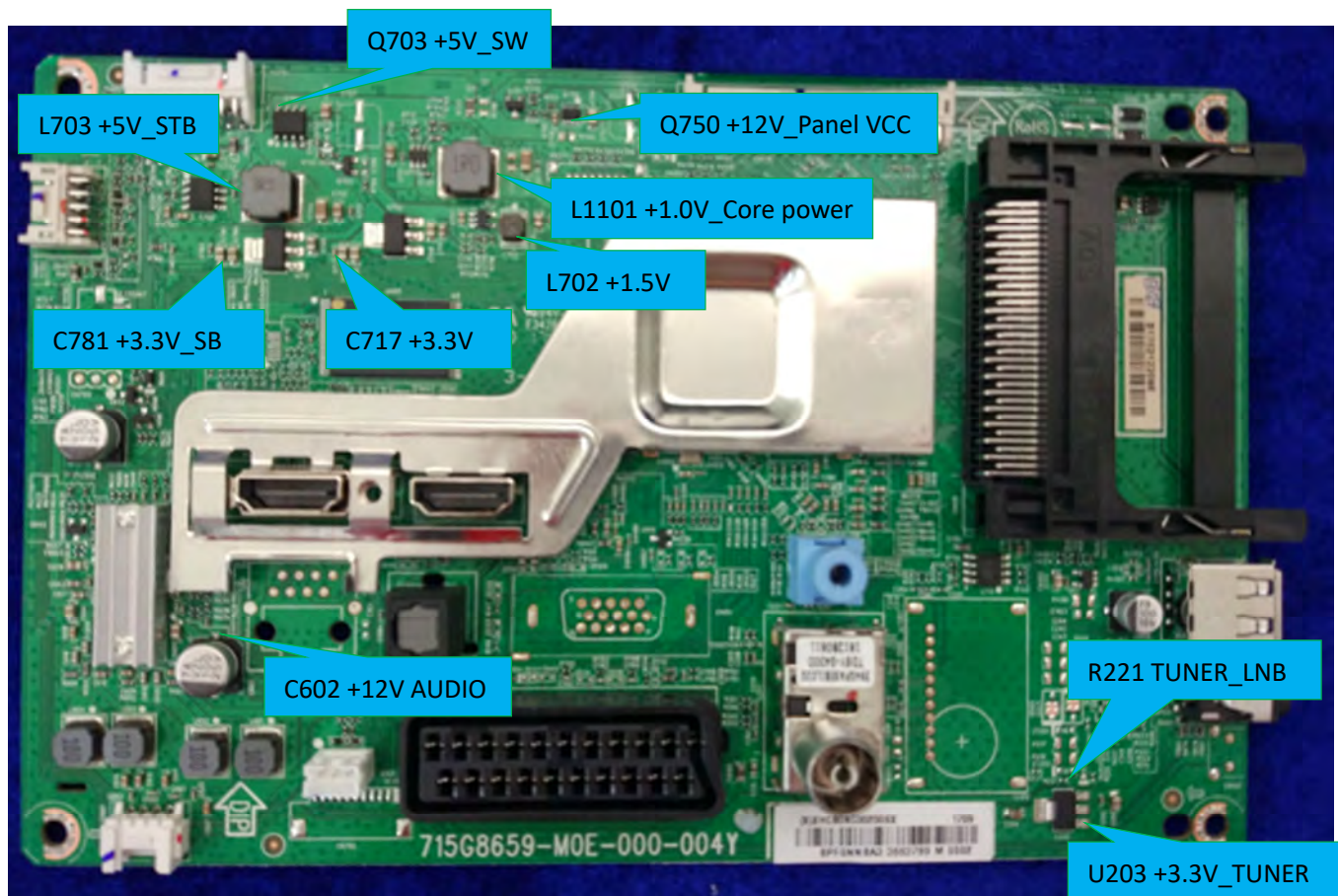
- PSDL** stands for a **P**ower **S**upply for **D**irect-view **L**ED backlight with 2D-dimming.

The on-board DC/DC converters deliver the following voltages(depending on set execution):

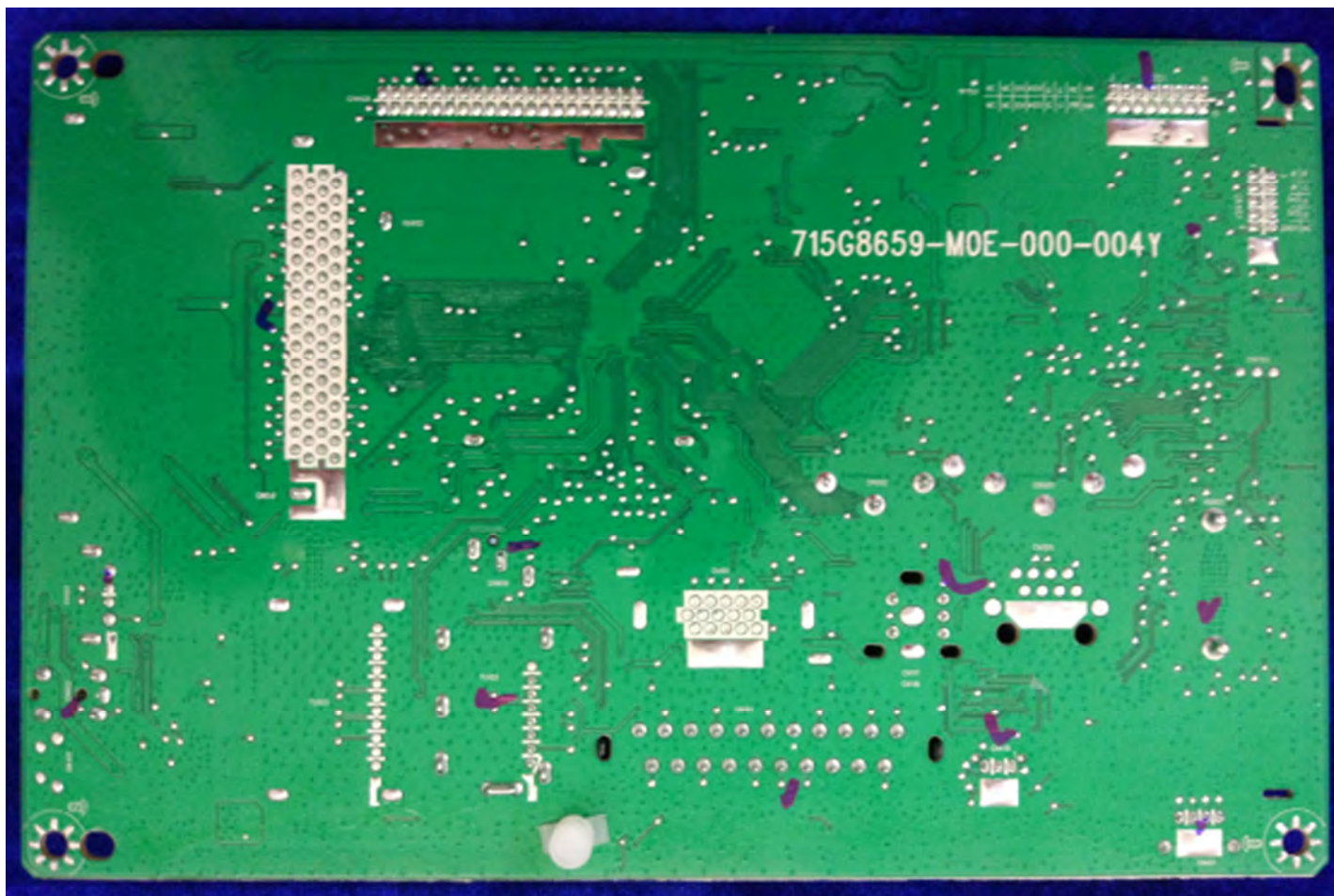
- +3V3-SB, permanent voltage for the Stand-by Power system
- +3V3-STANDBY, voltage for IR/Key board
- +12V, input from the power supply for the panel common(active mode)
- 12V, input from the power supply for LNB supply
- +3V3-EMMC, voltage for EMMC when TV on
- TUNER\_3V3, supply voltage for tuner
- +5V-SW, input intermediate supply voltage for USB Power
- +12V-AUDIO1 for the AUDIO AMP
- +3.3VA T2, voltage for Demodulator IC channel decoder

### 6.3.2 Power layout SSB / M+P BOARD

#### 6.3.2.1 715G8659M BOARD (For 4232 & 4132 & 4032 & 4022 Series)

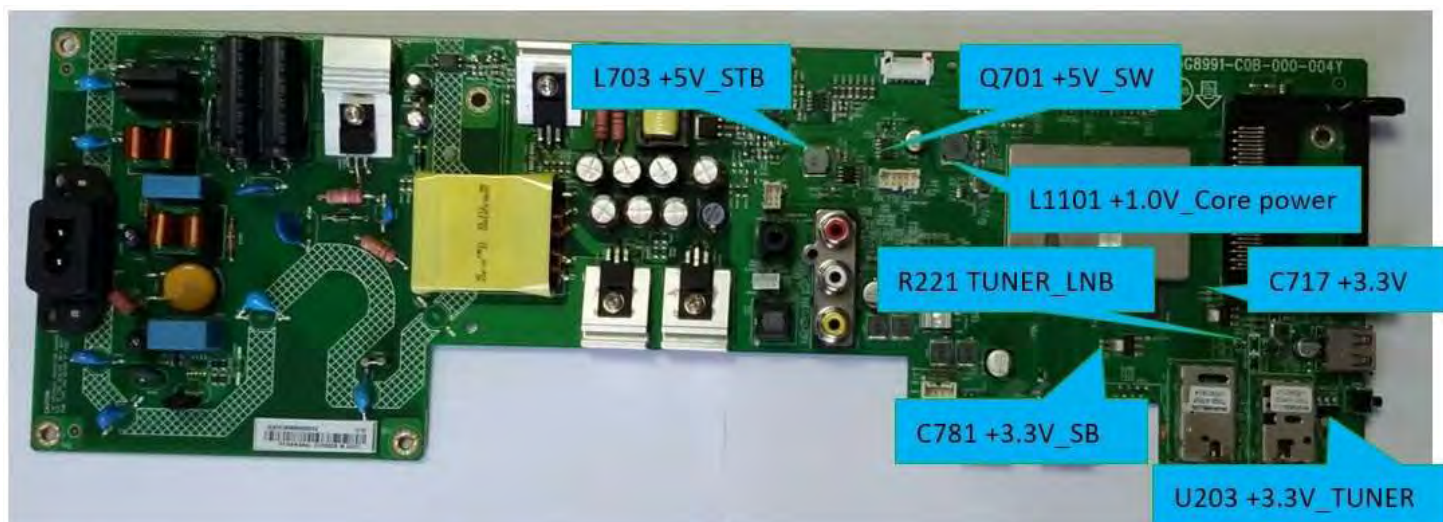


Power SSB Top View

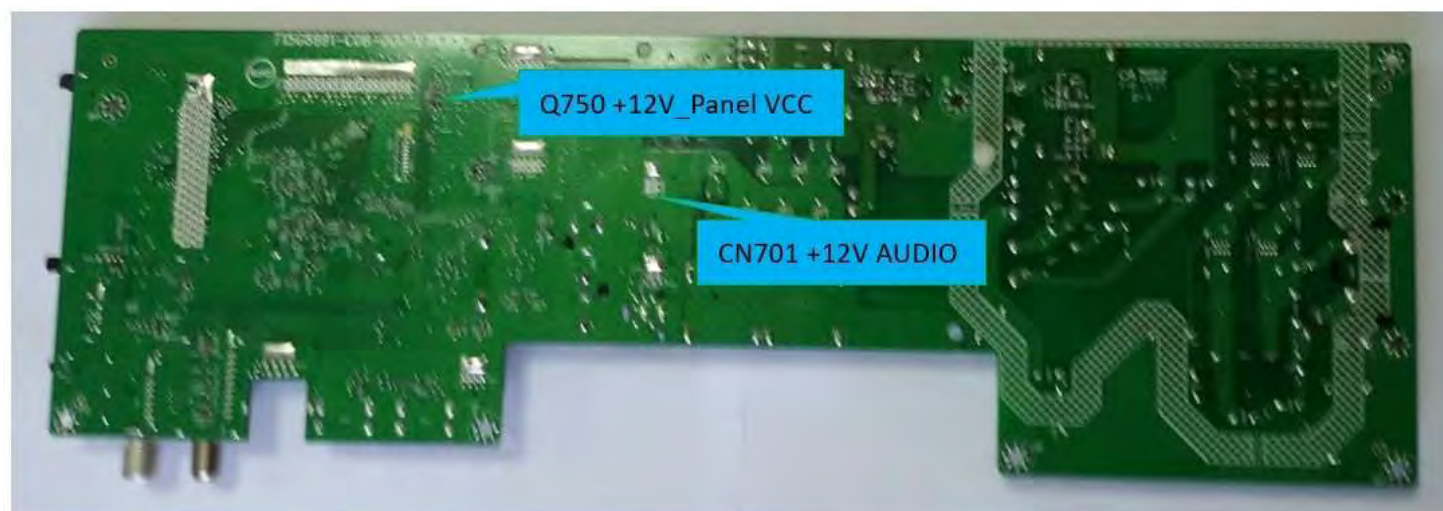


Power SSB Bottom View

### 6.3.2.2 715G8991C BOARD (For 43"4112 Series)

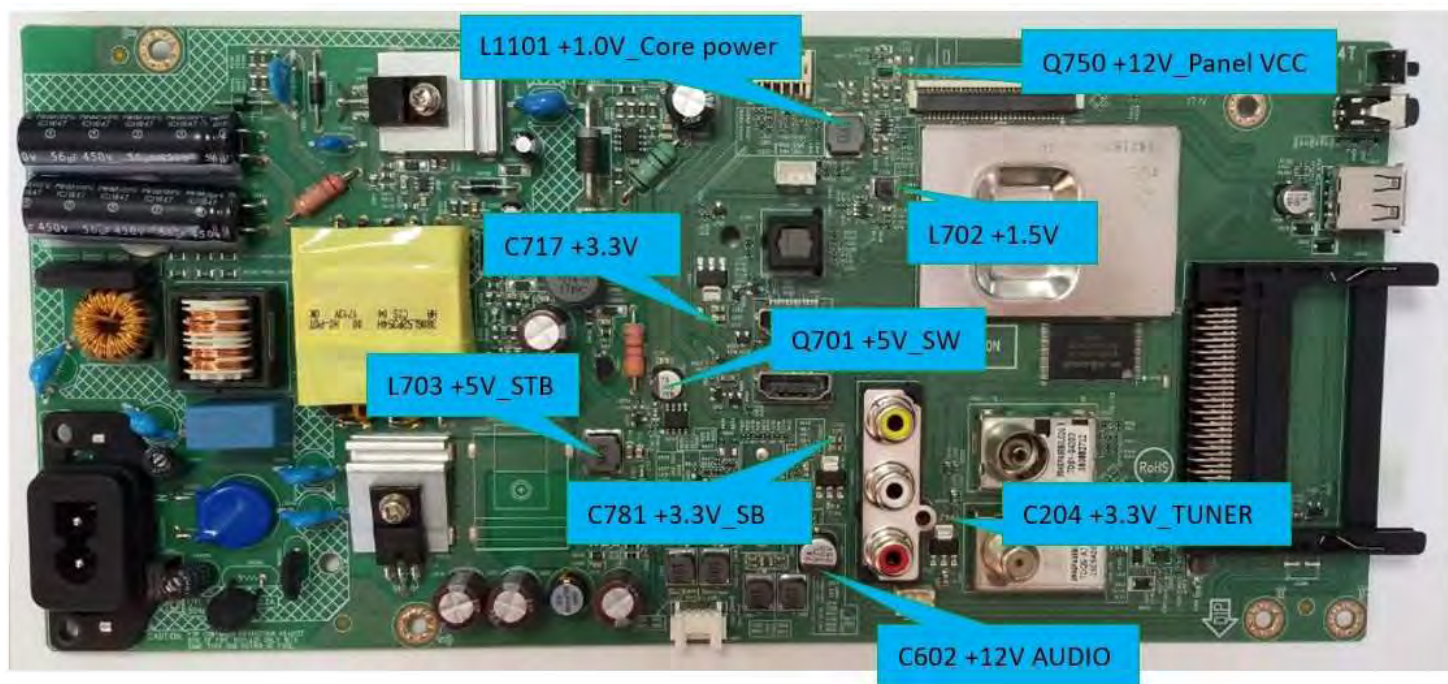


Power M+P BOARD Top View

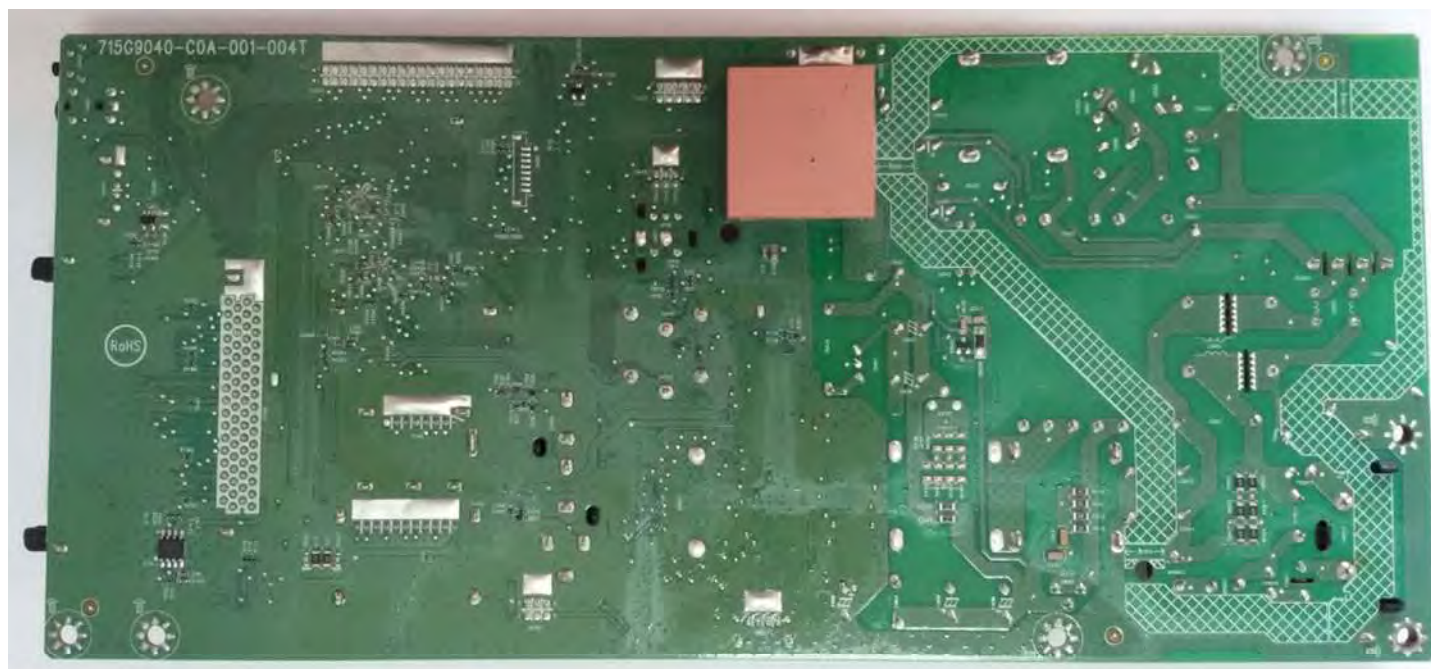


Power M+P BOARD Bottom View

### 6.3.2.3 715G9040C BOARD (For 32"4112 Series)

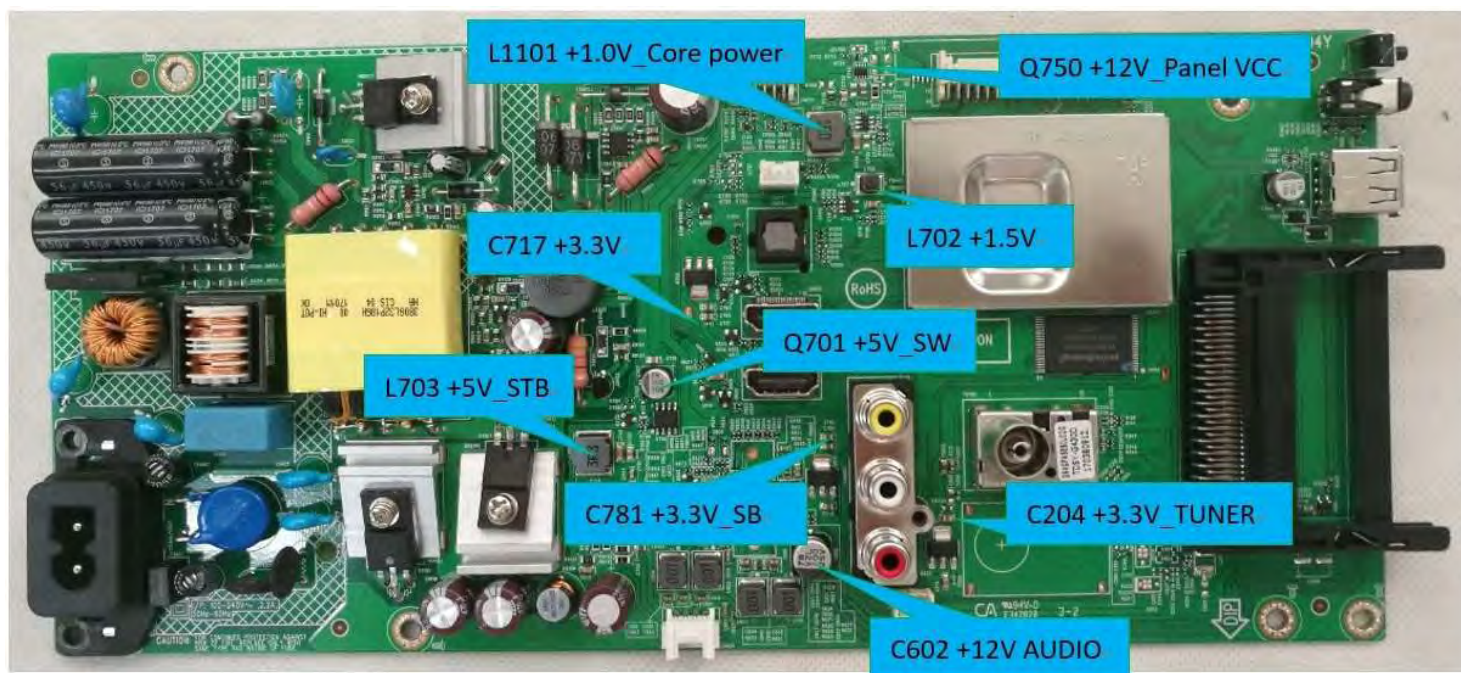


Power M+P BOARD Top View

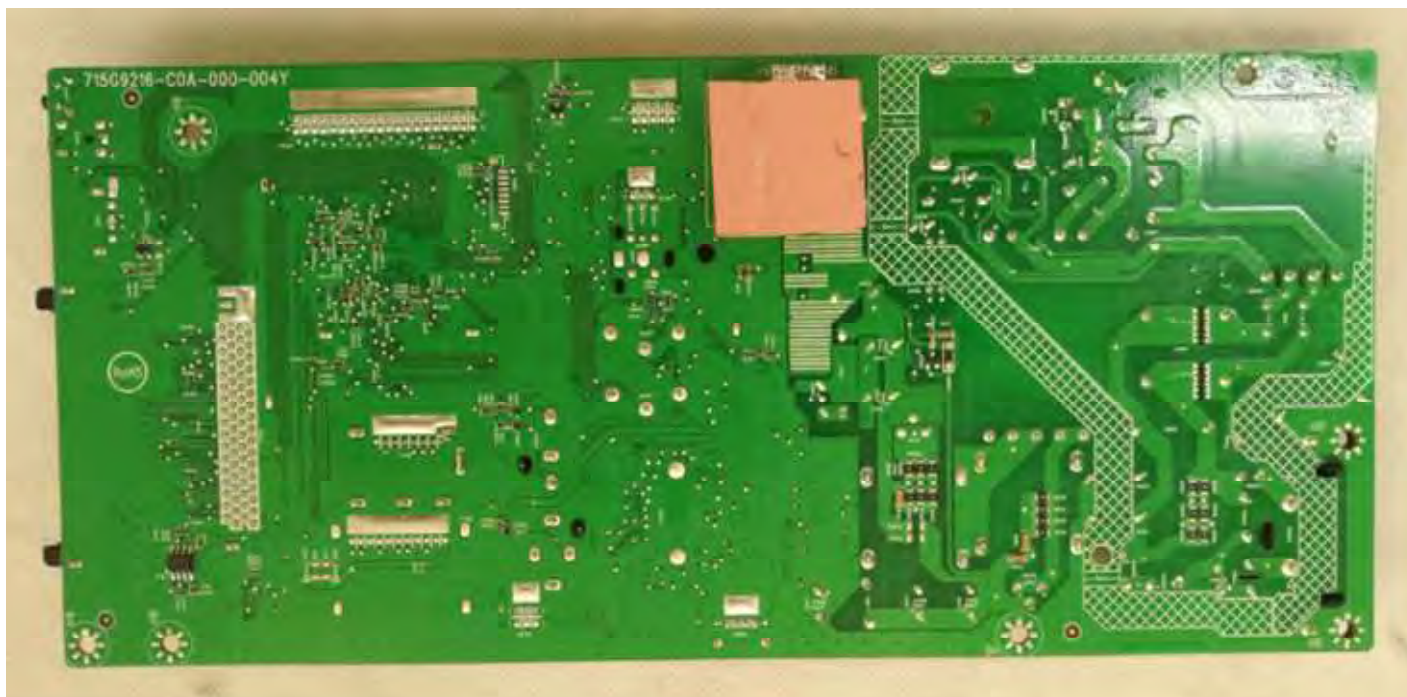


Power M+P BOARD Bottom View

#### 6.3.2.4 715G9216C BOARD (For 39"4112 Series)



Power M+P BOARD Top View



Power M+P BOARD Bottom View

## 6.4 Front-End Analogue and DVB-T, DVB-T2; DVB-S2 reception

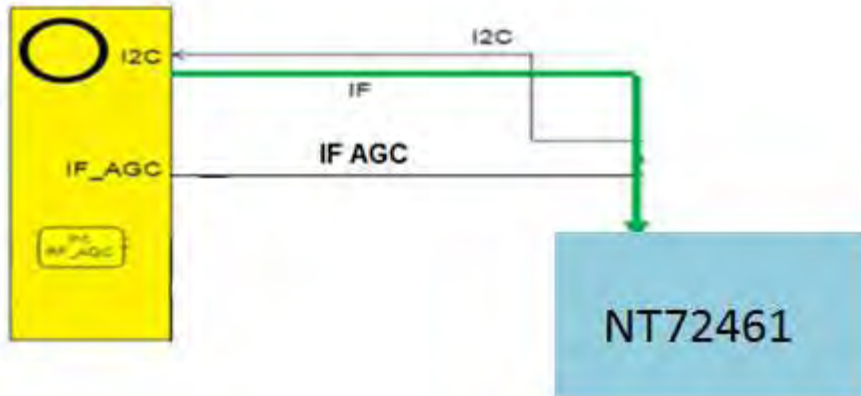
### 6.4.1 DTB-T/T2 part

The Front-End for DVT part consist of the following key components:

- TUNER EU ST42CS-2-E
- SCALER NT72461MBG-PA HS-LFBGA-447

Below find a block diagram of the front-end application for DTV part.

#### ST42CS-2-E

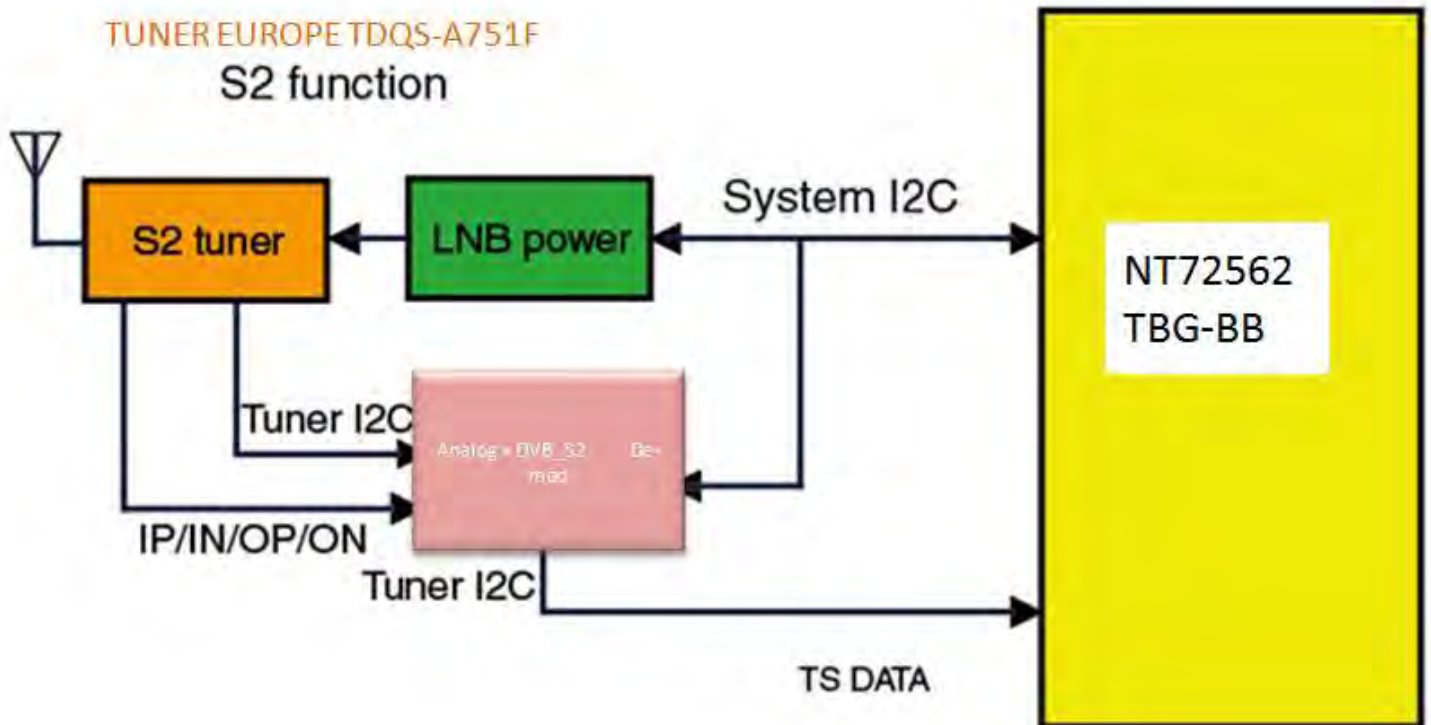


### 6.4.2 DTB-S2 part

The Front-End for DVT part consist of the following key components:

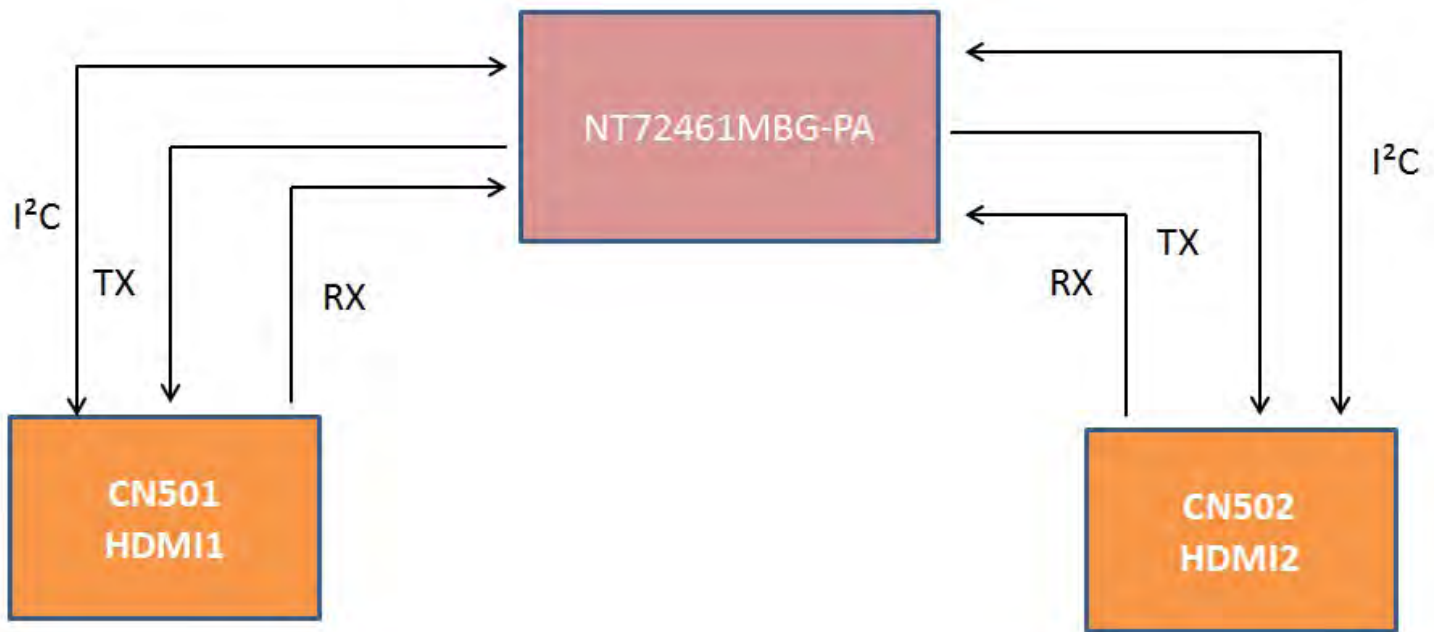
- TUNER EU SS07CA-6-E
- SCALER NT72461MBG-PA HS-LFBGA-447

Below find a block diagram of the front-end application for DTV part.



## 6.5 HDMI

Refer to below for the application.



The following HDMI connector can be used:

- HDMI 1: HDMI input ( TV digital interface support HDMI1.4/HDCP1.3) with digital audio/PC DVI input/ARC
- HDMI 2: HDMI input ( TV digital interface support HDCP) with digital audio/PC DVI input/ARC
- +5V detection mechanism
- Stable clock detection mechanism
- Audio return channel(ARC)
- TMDS output control
- HPD control
- CEC control

## 6.6 Video and Audio Processing – NT72461MBG

The NT72461MBG is the main audio and video processor (or System-on-Chip) for this platform. It has the following features:

- DVB-T /DVB-T2/ DVB-S2 demodulators
- Power CPU core
- A multi-standard video decoder
- A transport de-multiplexer
- Rich format audio codec
- Local dimming (LED backlight)
- TCON
- Panel overdrive control

The NT72461MBG-PA is an integrated digital TV system-on-chip which compliants with variety ATV as NTSC, PAL and SECAM, and DTV standards as ISDB-T, DVB-T/-T2/-C/-S/-S2, ITU-T J.83B, ATSC, integrates DTV and multi-media AV decoder, SIF demodulator, and support A/V post-processing.

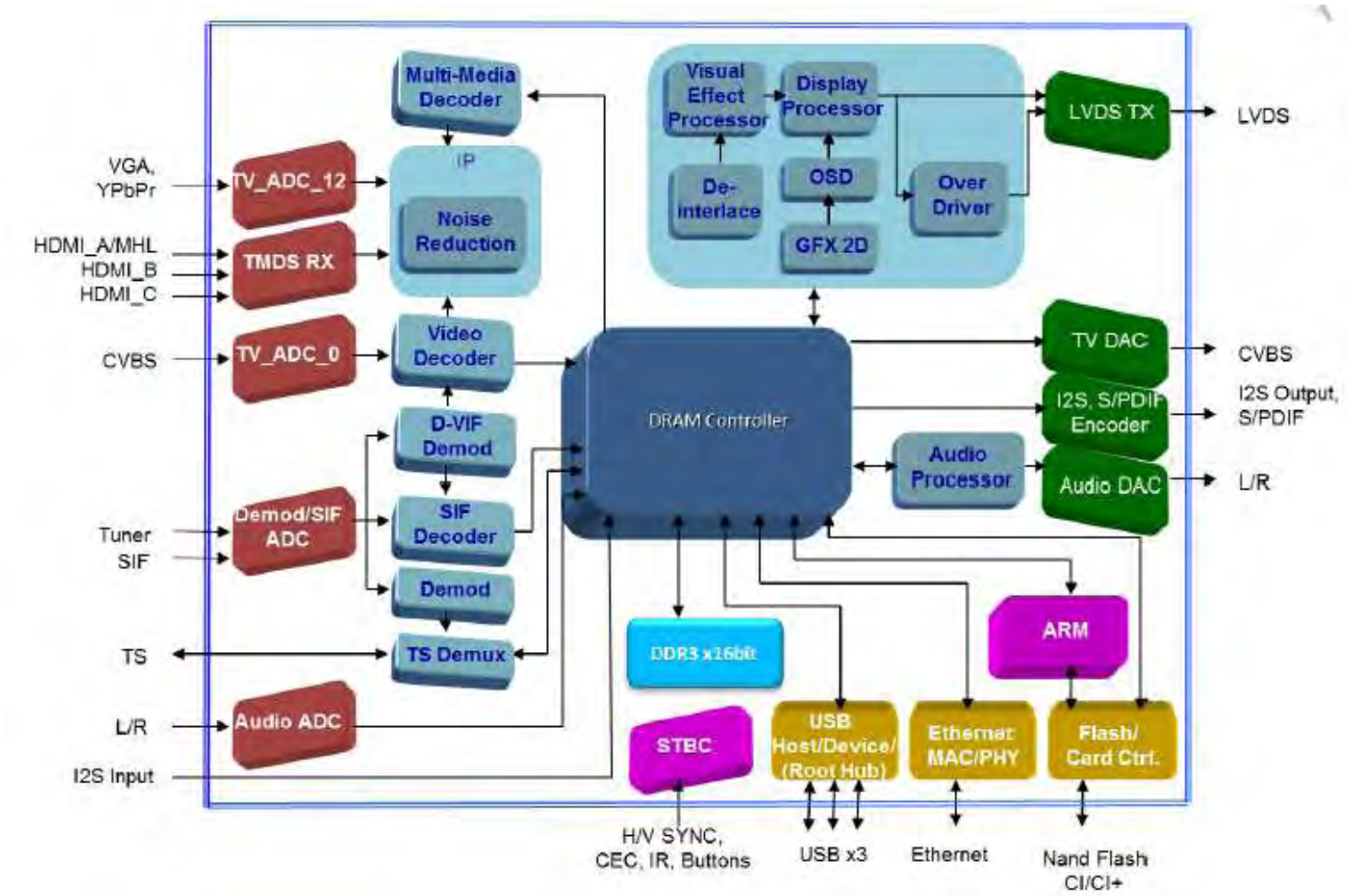
The integrated video ADC and video decoder support PC VGA port, YPbPr or SCART, CVBS and SCART S-Video Input. Regarding the tuner input, the digital VIF performs the universal analog TV demodulation (NTSC, PAL, and SECAM), including IF processing, AGC, video demodulation, and second sound IF generation (SSIF).The video decoder supports universal TV video format. The integrated audio ADC supports stereo audio input corresponding to video input sources. The integrated TV sound decoder supports universal TV sound format.

The advanced picture quality and color engine create more vivid image impression than ever. The HDMI receiver v1.4b, supports deep color, CEC features and 3D formats. The USB high speed host supports updating firmware code, multi-media playback from the external USB flash devices.

The standby controller can operate sololy from the main system, powered by the standby power source from power module, consumes as low current as possible. It meets the requirement of Green appliance.

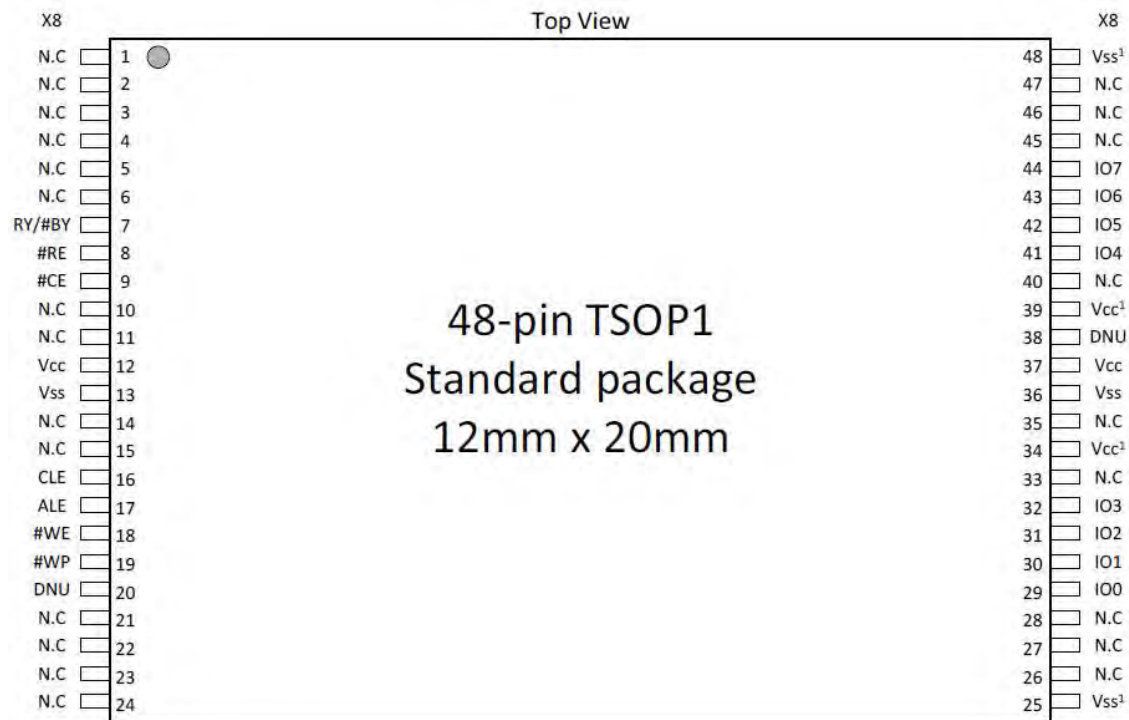
7. IC Data Sheets

7.1NT72461MBG-PA (IC U401)

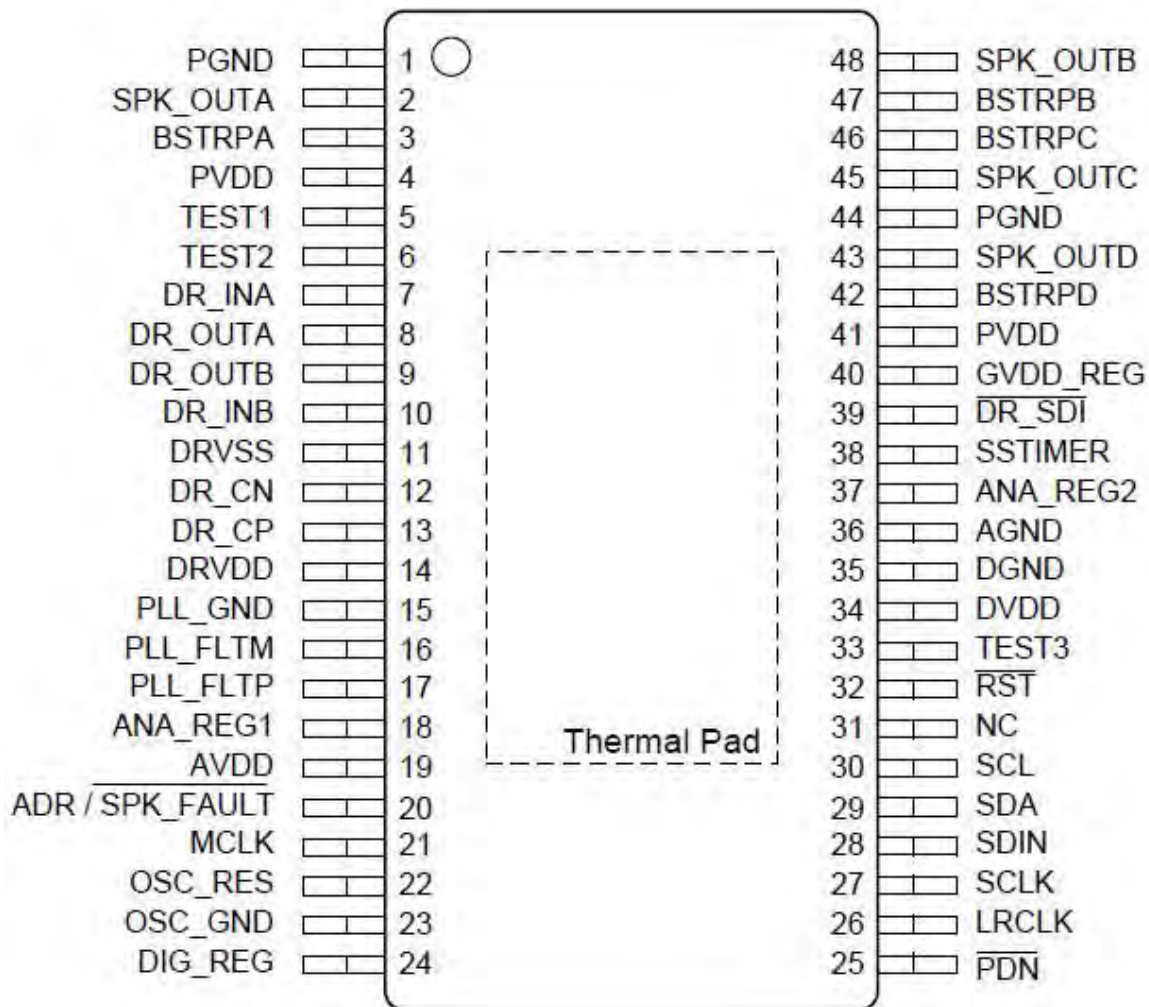
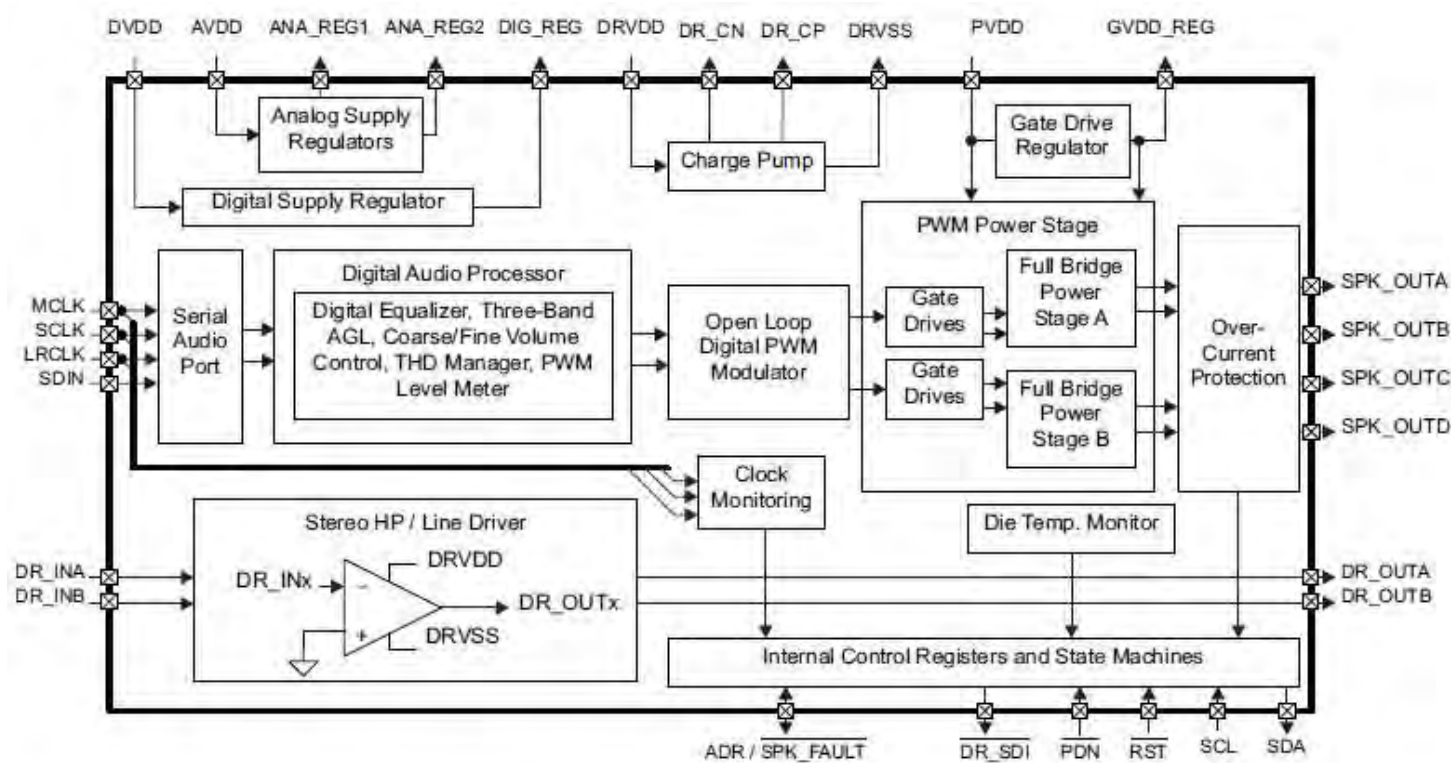


|    | 1   | 2   | 3   | 4   | 5   | 6   | 7   | 8   | 9   | 10  | 11  | 12  | 13  | 14  | 15  | 16  | 17  | 18  | 19  | 20  | 21  | 22  | 23  |    |
|----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|----|
| A  | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | A  |
| B  | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | B  |
| C  | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | C  |
| D  | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | D  |
| E  | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | E  |
| F  | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | F  |
| G  | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | G  |
| H  | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | H  |
| J  | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | J  |
| K  | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | K  |
| L  | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | L  |
| M  | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | M  |
| N  | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | N  |
| P  | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | P  |
| R  | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | R  |
| T  | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | T  |
| U  | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | U  |
| V  | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | V  |
| W  | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | W  |
| Y  | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | Y  |
| AA | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | AA |
| AB | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | AB |
| AC | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | AC |
|    | 1   | 2   | 3   | 4   | 5   | 6   | 7   | 8   | 9   | 10  | 11  | 12  | 13  | 14  | 15  | 16  | 17  | 18  | 19  | 20  | 21  | 22  | 23  |    |

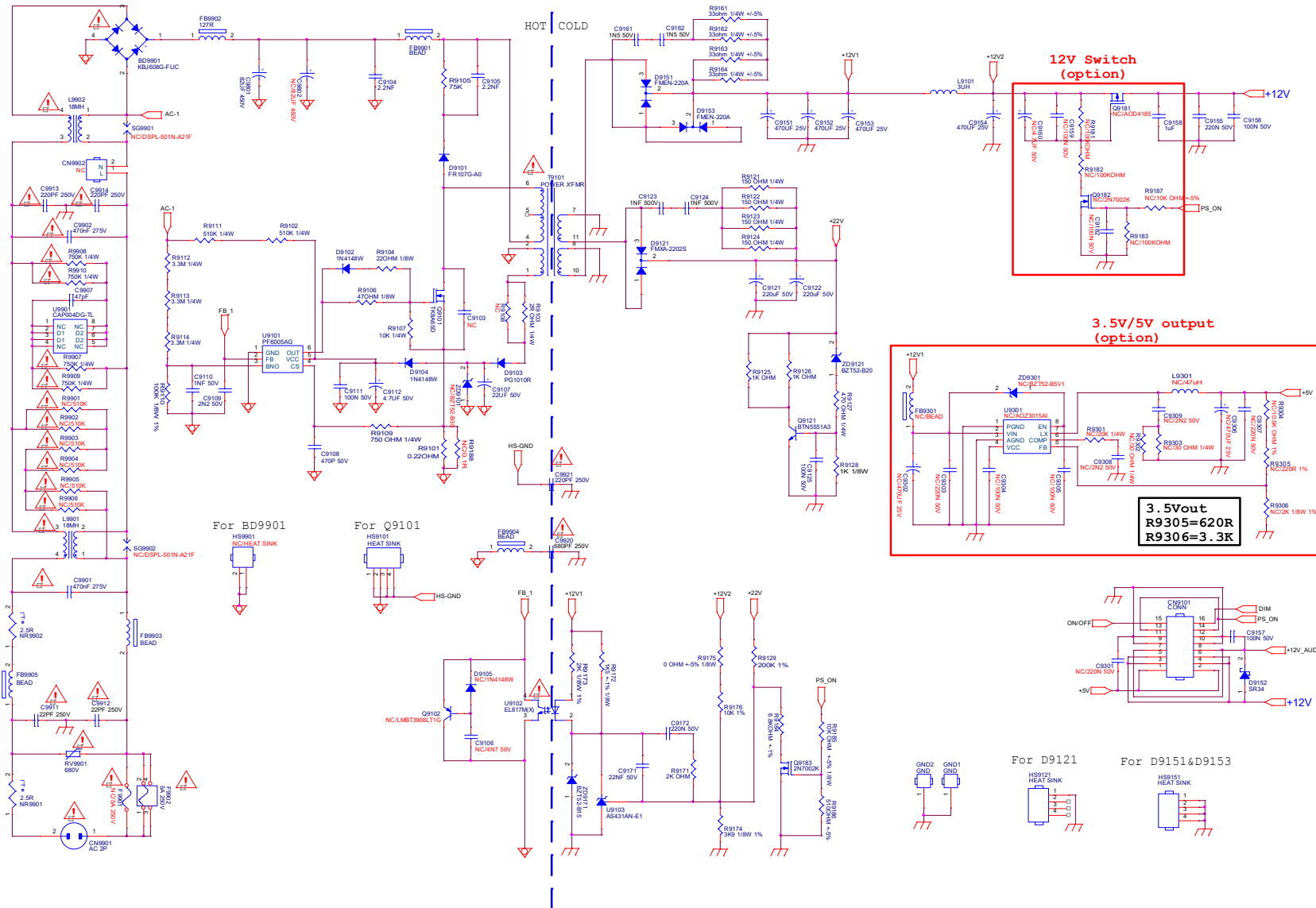
7.2 W29N01GVSIAA (IC U405)



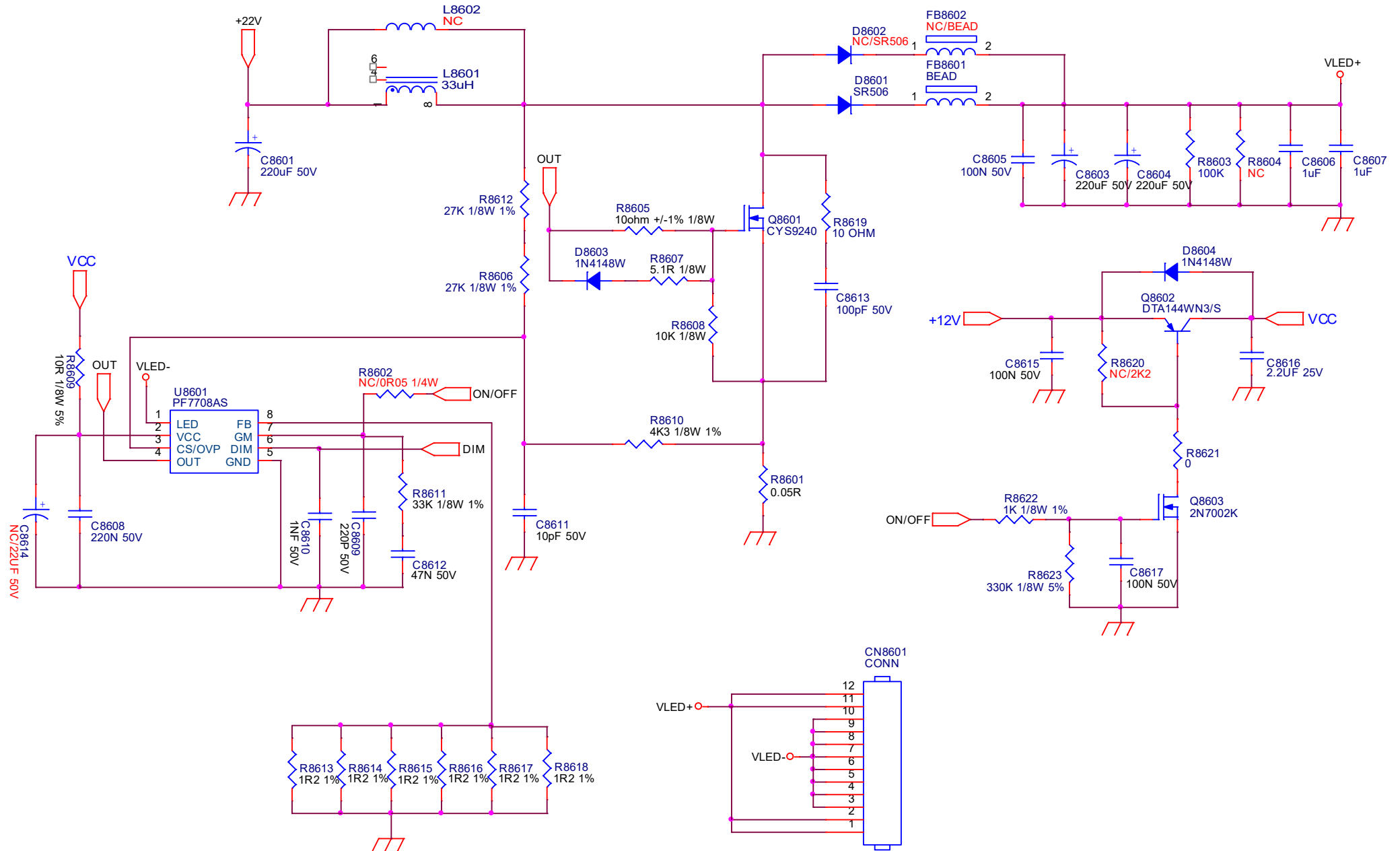
7.3 TAS5753MDDCAR (IC U601)



### 8-1-1 POWER

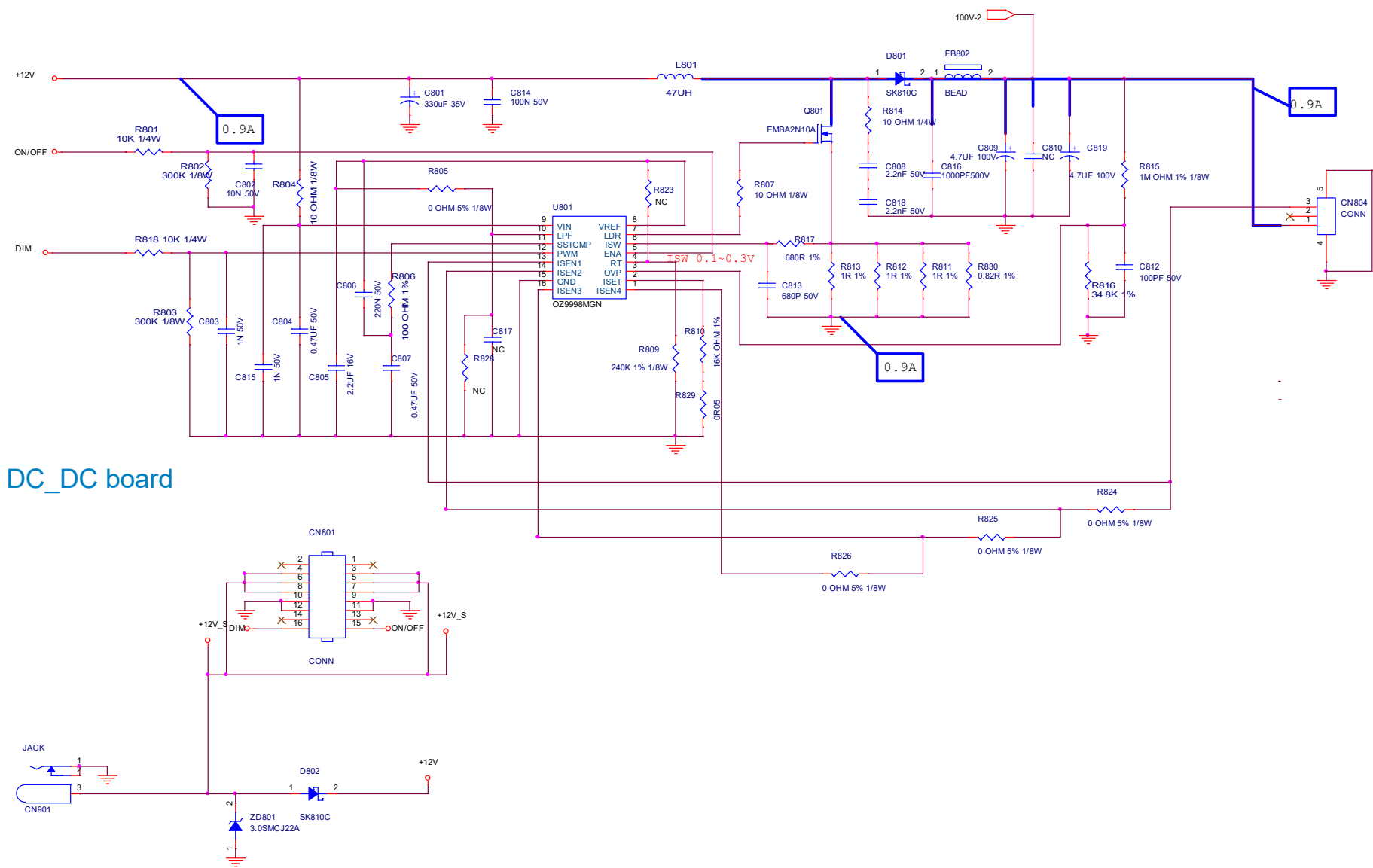


## 8-1-2 LED DRIVER



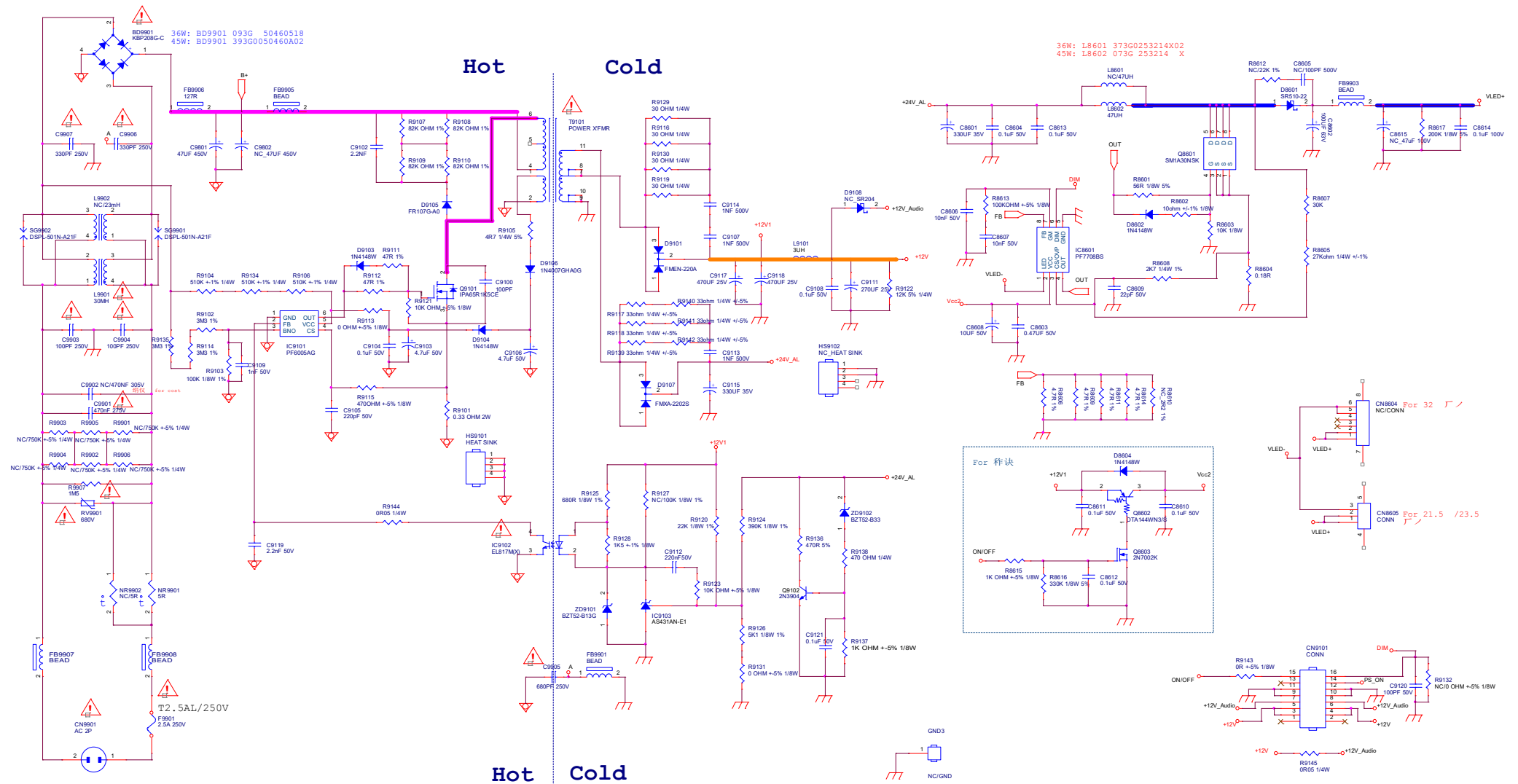
8.2 715G8697 PSU (For 22"4232 Series)

8-2-1 Converter



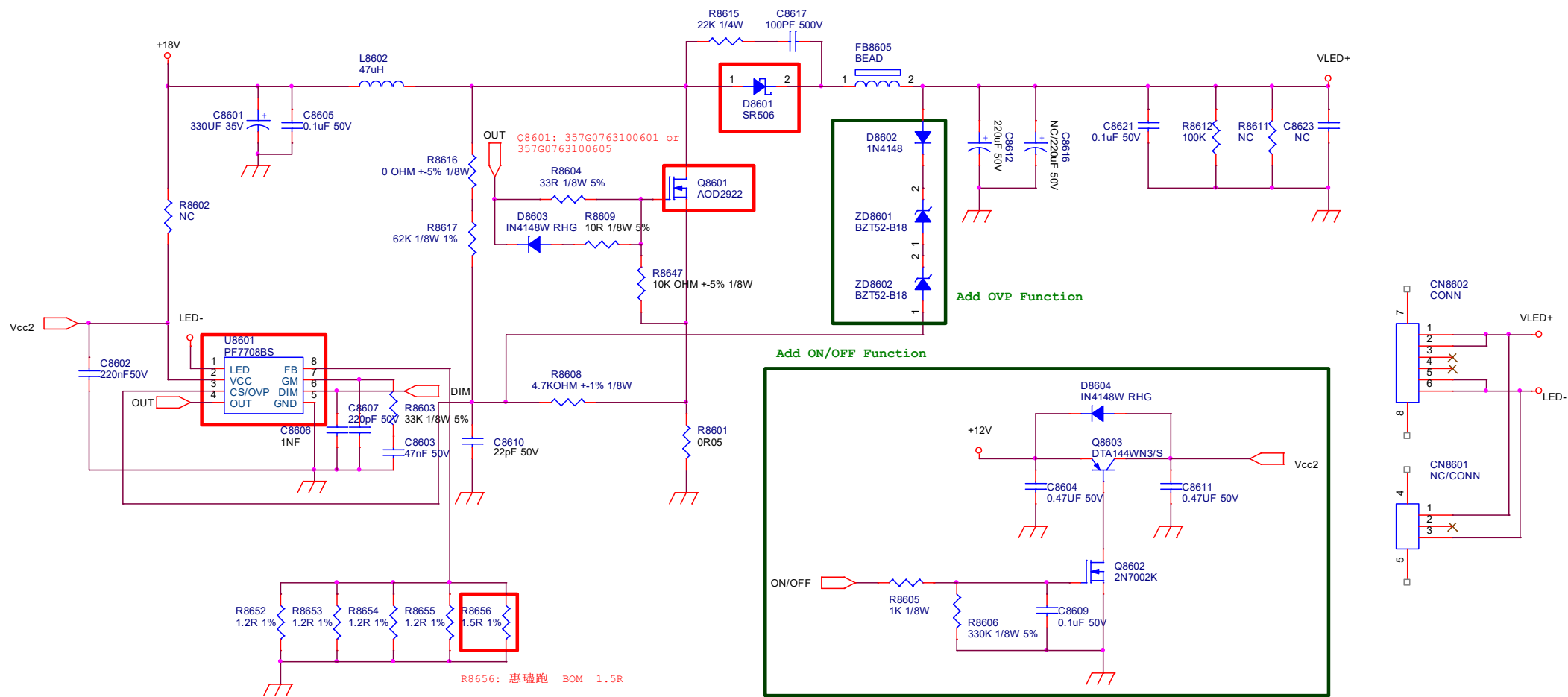
DC\_DC board

### 8-3-1 POWER

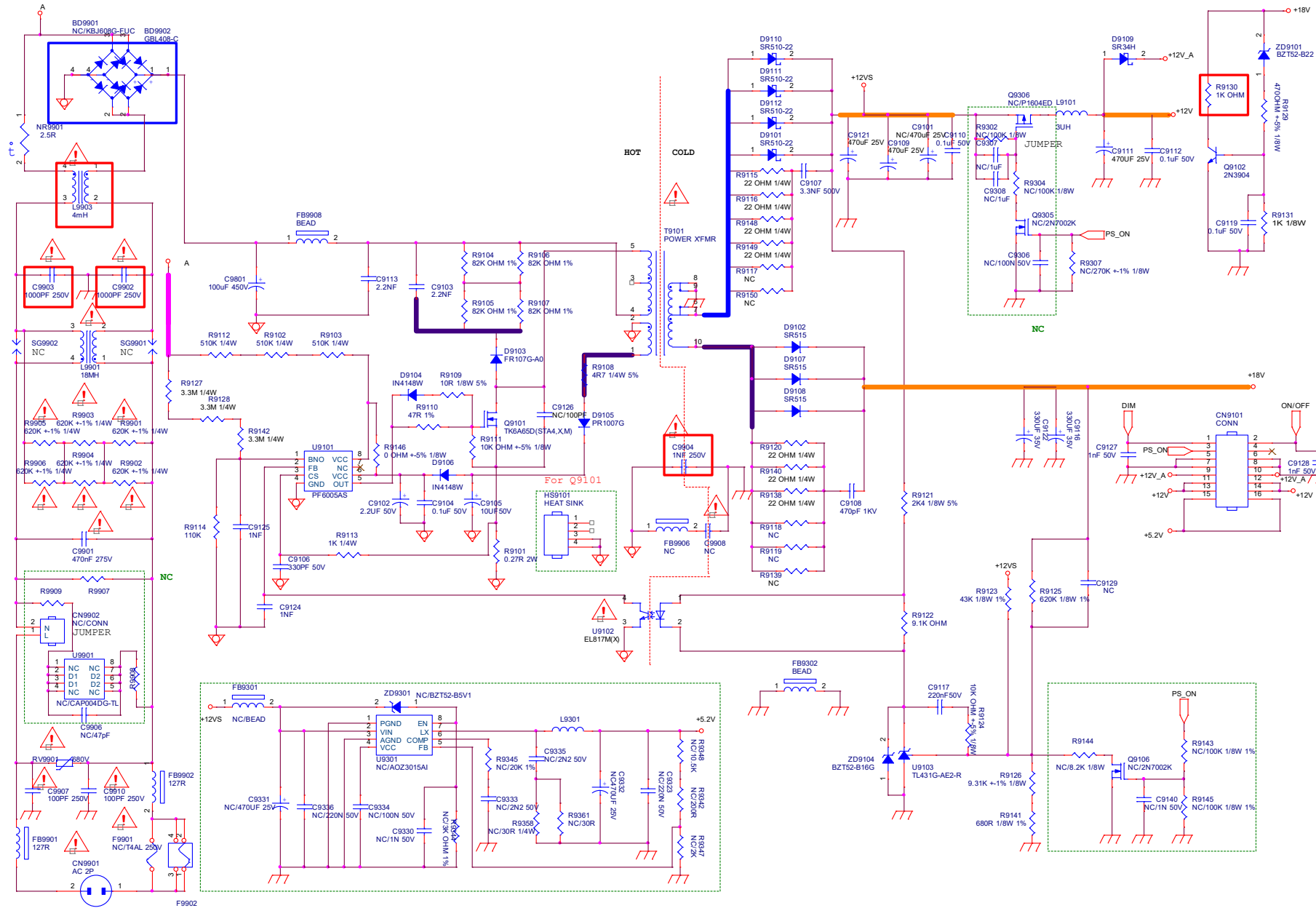


8.4 715G7734 PSU (For 32"4132&4032 Series)

8-4-1 POWER

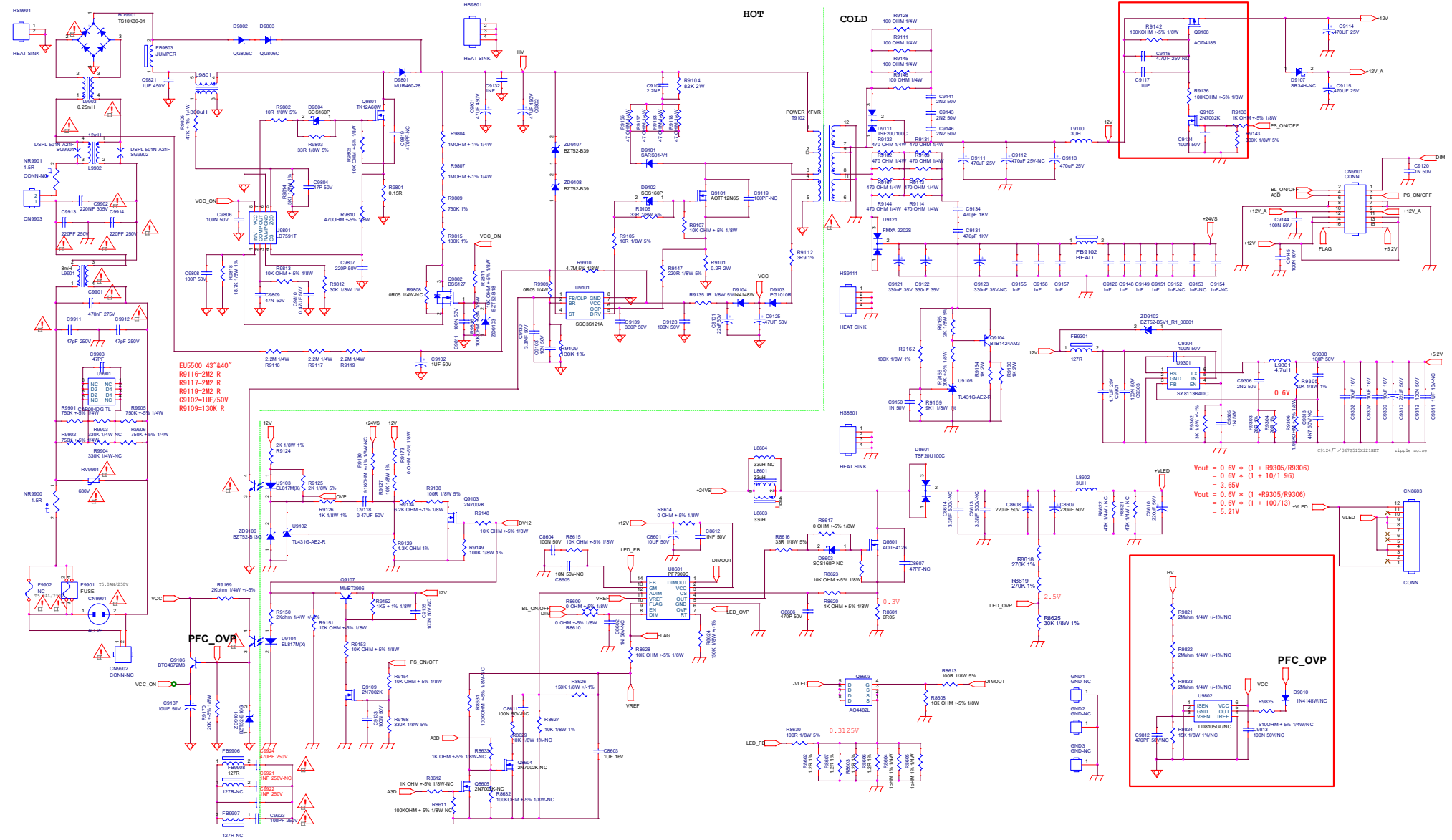


## 8-4-2 LED DRIVER

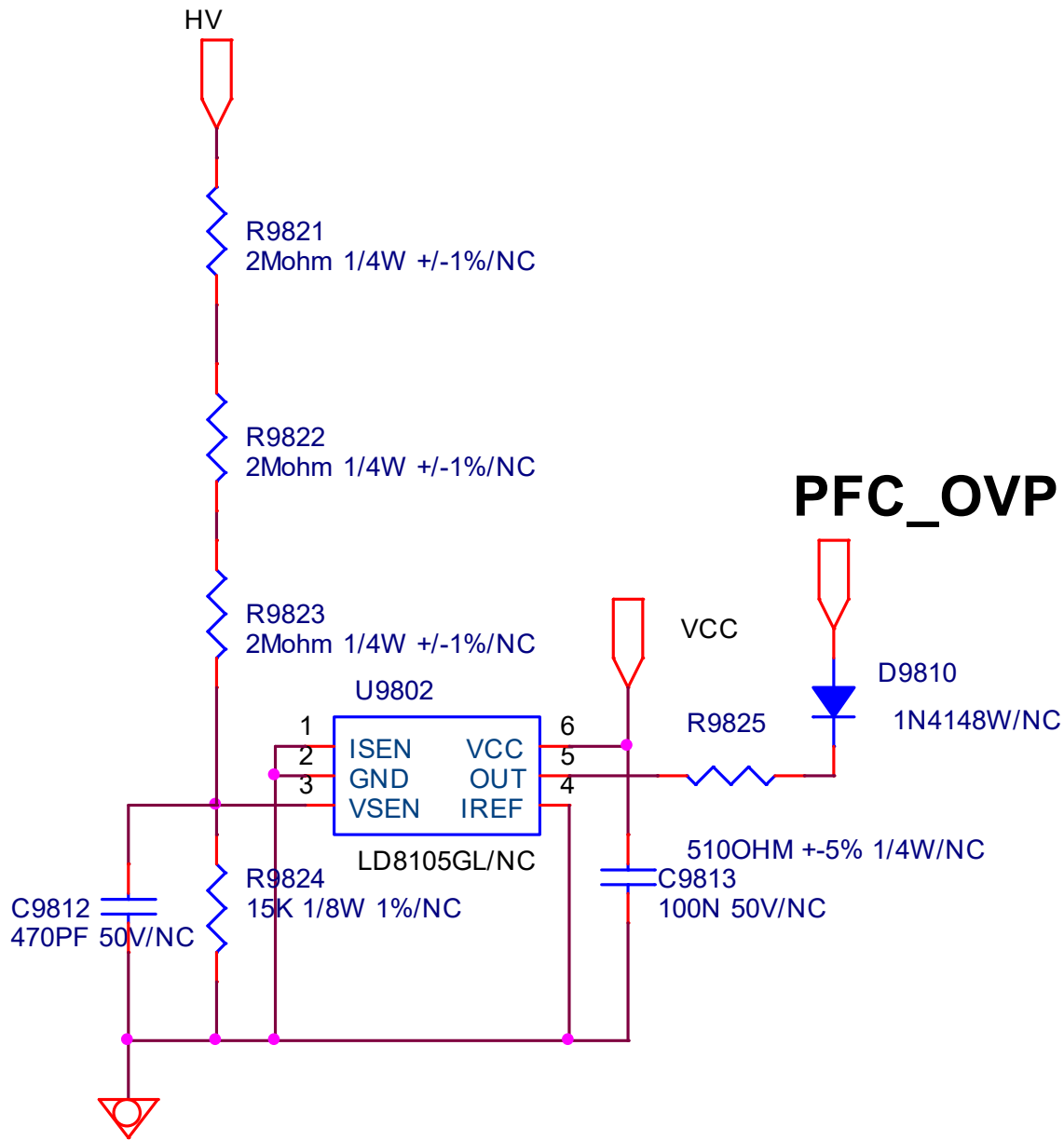


## 8.5 715G7574 PSU (For 49"4132 Series)

### 8.5-1 AC Input



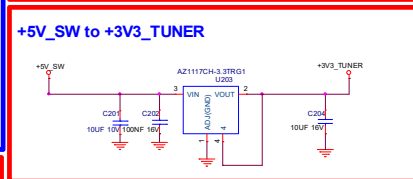
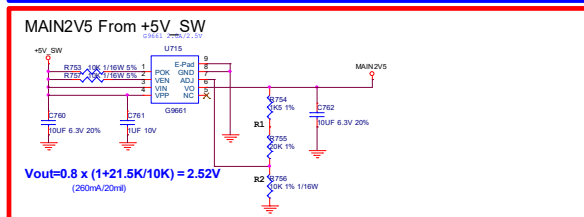
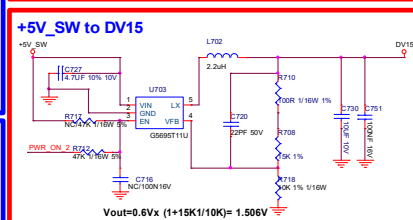
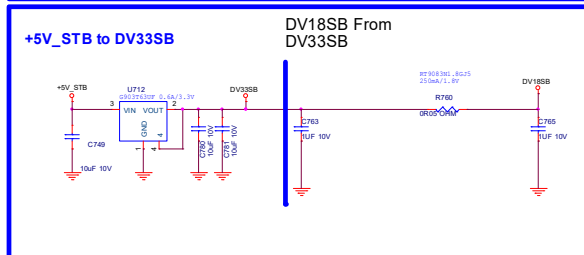
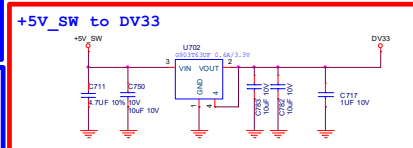
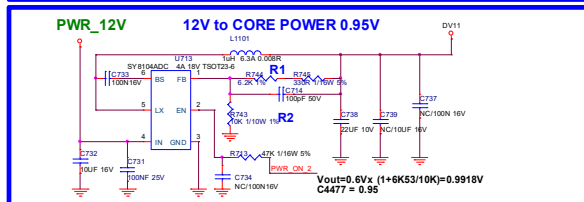
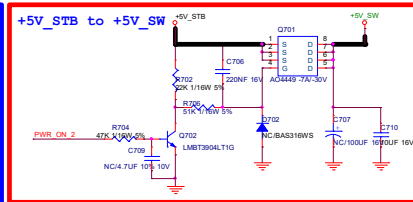
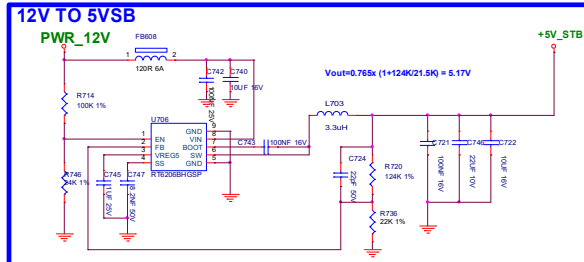
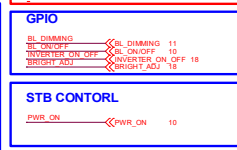
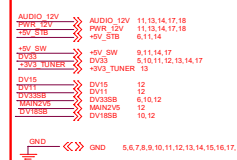
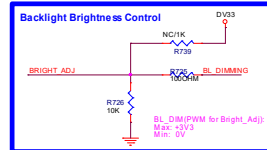
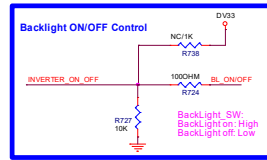
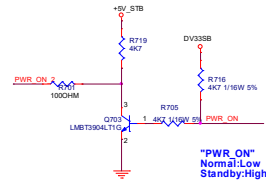
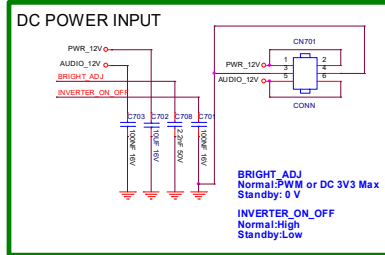
8-5-2 PFC



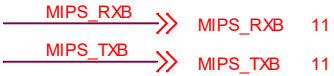
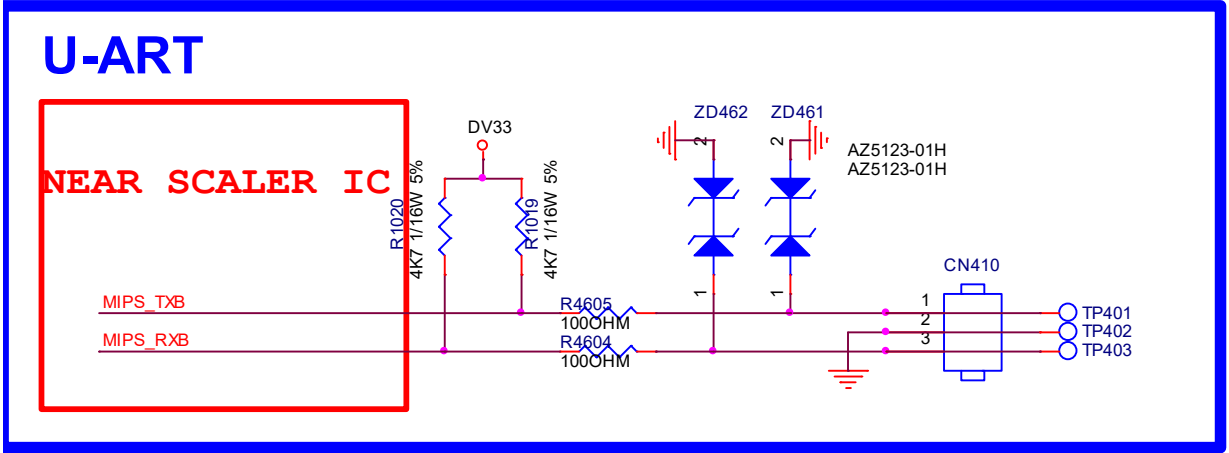
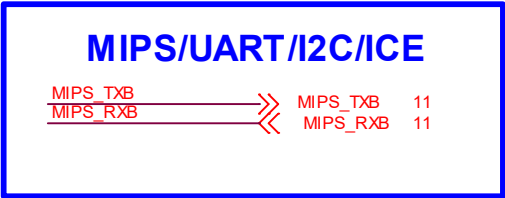
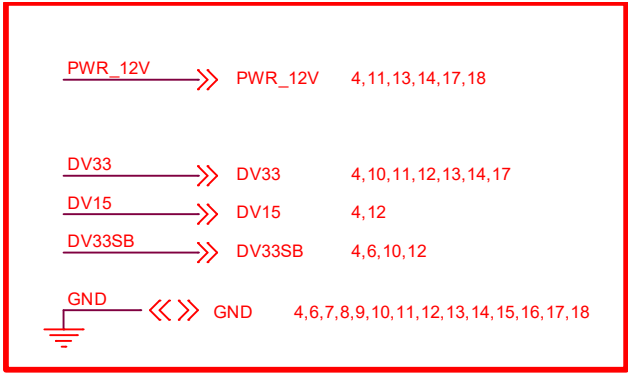
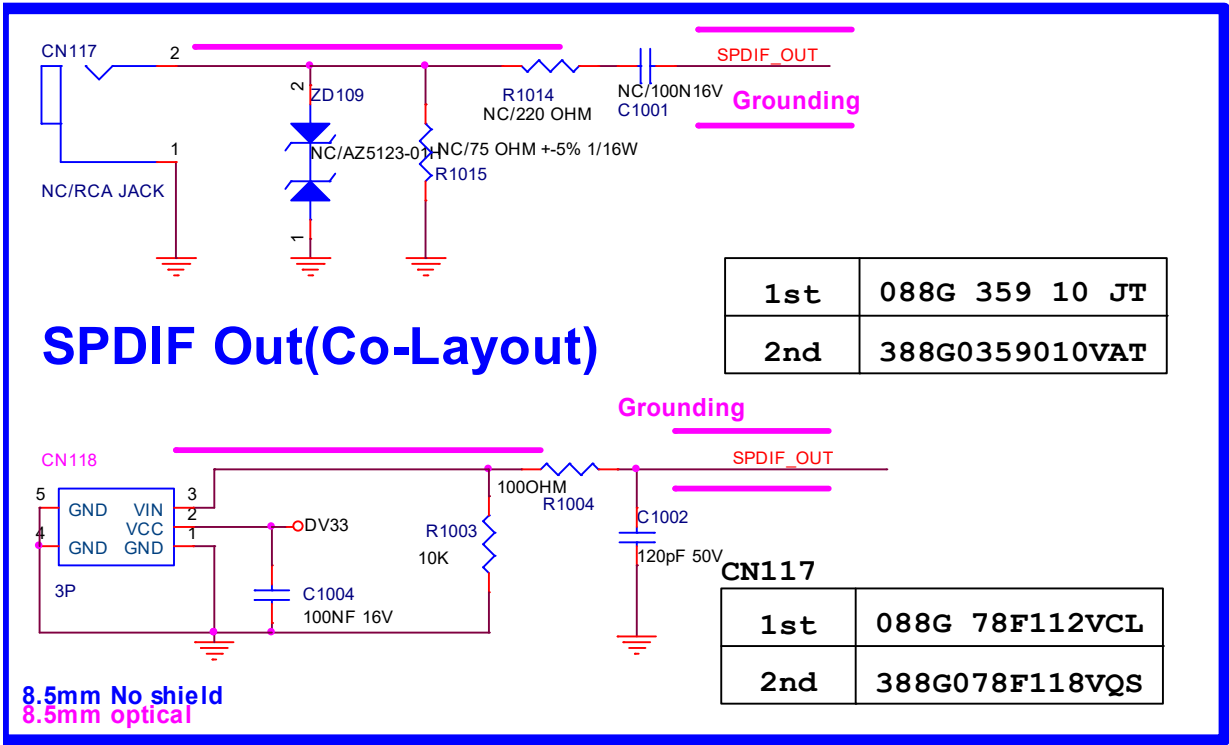
## 8.6 715G9216 MAIN (For 39"4112 Series)

8-6-1 NT72461

2K17 EU NT72461 - 2 Layers 283mm X 125mm

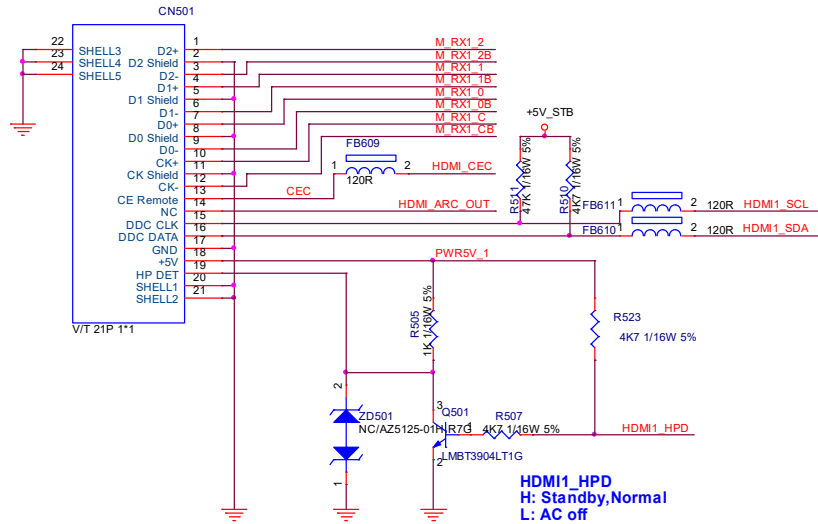


8-6-2 SPDIF/UART INPUT

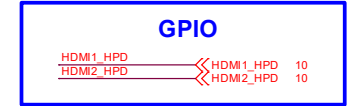
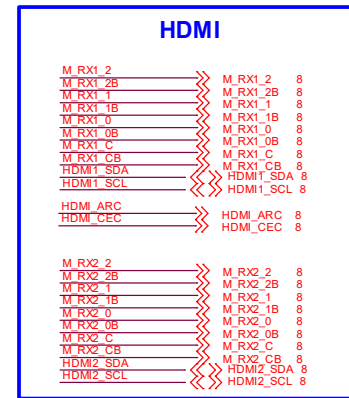
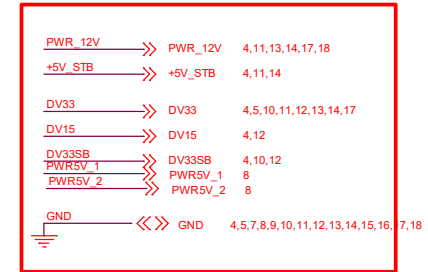
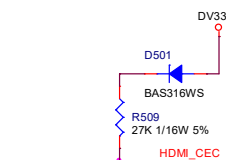
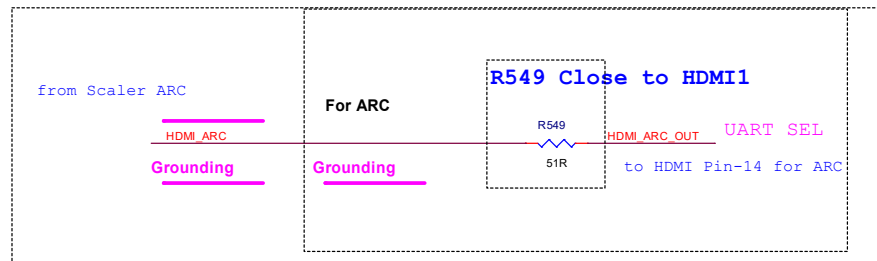
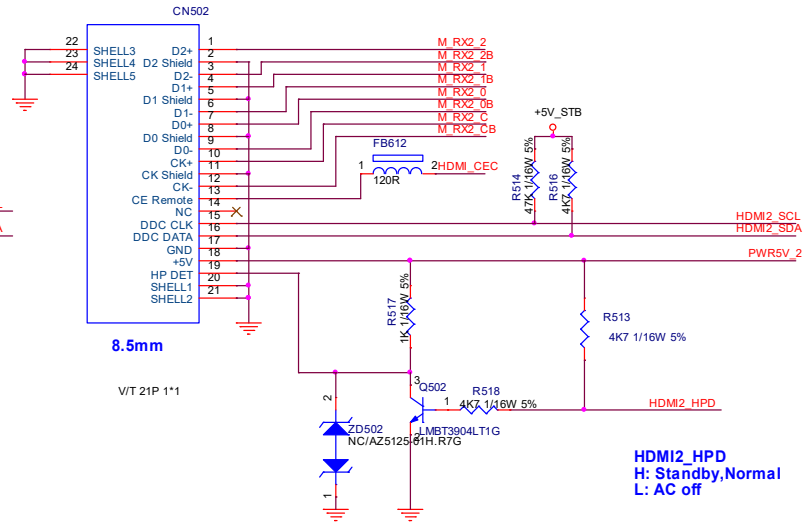


8-6-3 HDMI

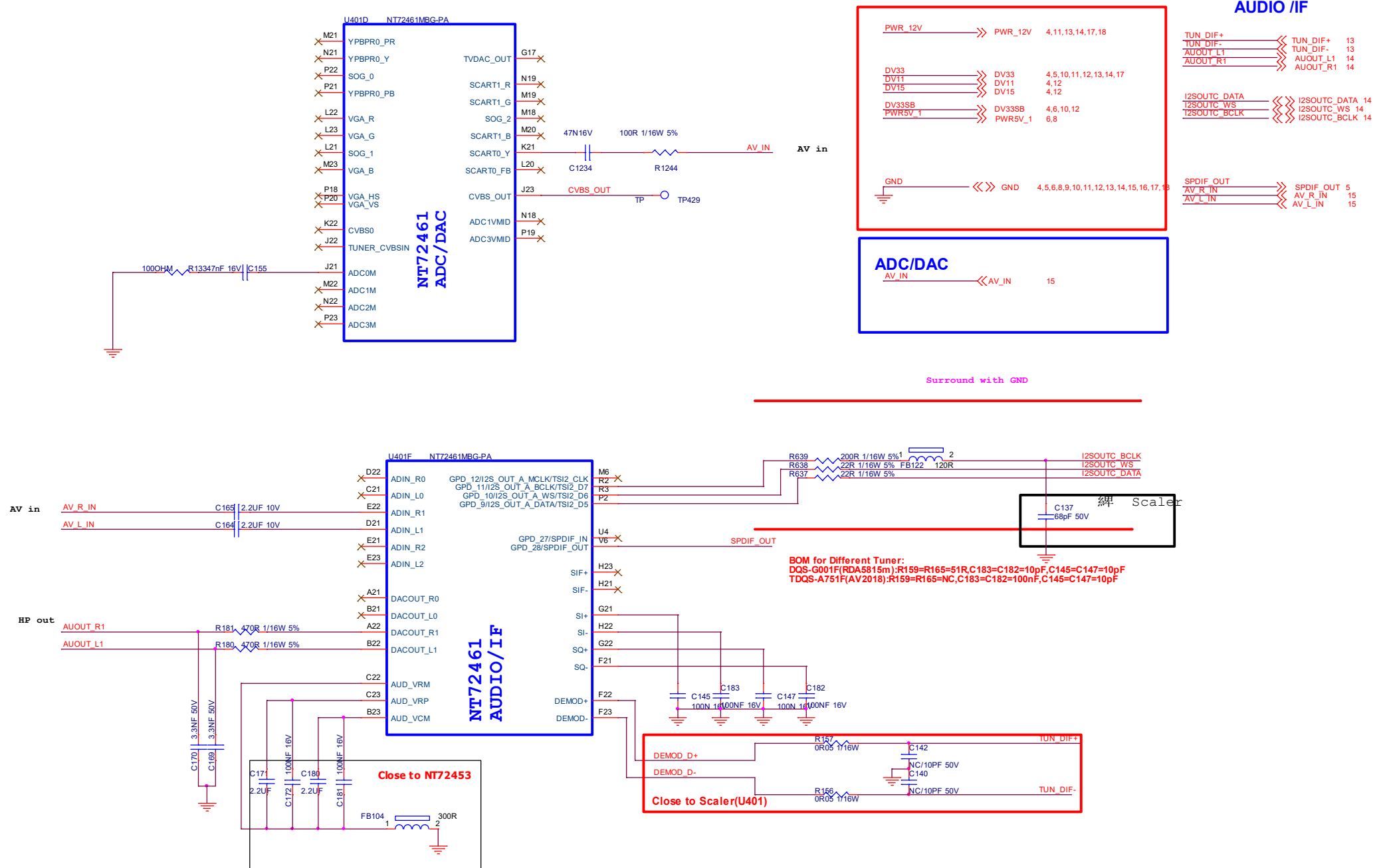
Rear HDMI 1



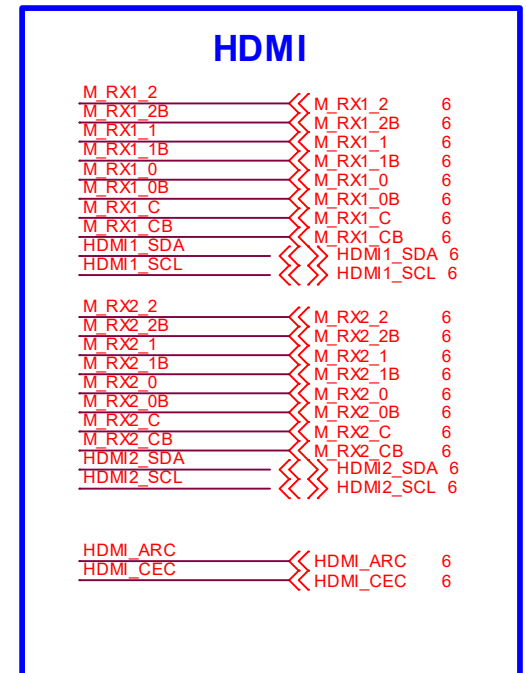
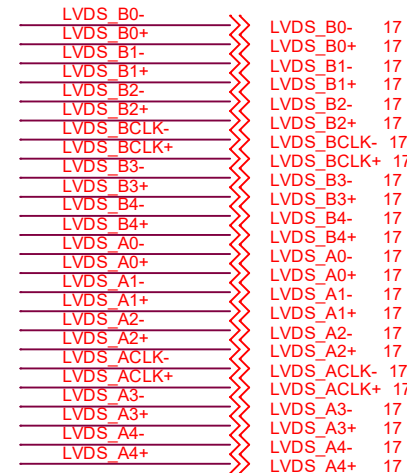
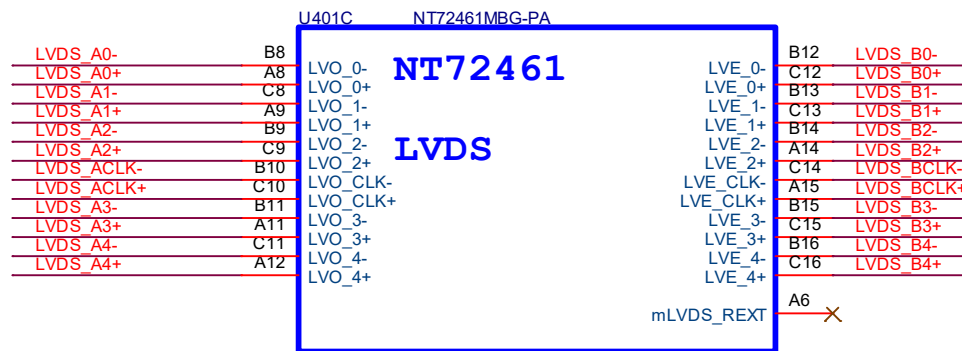
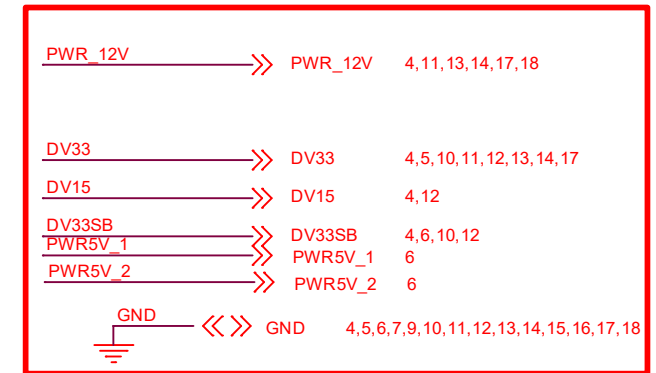
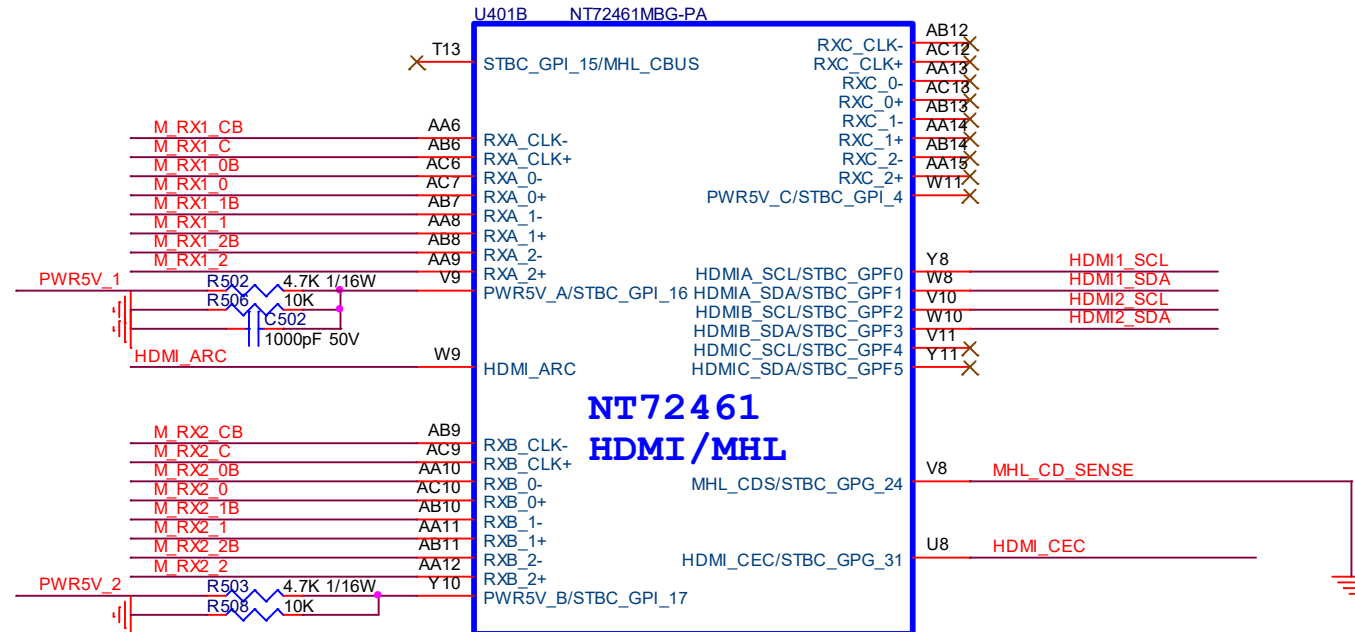
Rear HDMI 2



## 8-6-4 NT72461\_ADC/DAC/AUDIO/SIF



### 8-6-5 NT72461\_HDMI/LVDS OUT



# PCMCIA Slot

**PCMCIA Slot**

Diagram illustrating the pin connections for a PCMCIA Slot, showing various signals and power connections.

**Pin 1:** GND

**Pin 2:** GND

**Pin 3:** CI D3

**Pin 4:** CI D4

**Pin 5:** CI D5

**Pin 6:** CI D6

**Pin 7:** CI D7

**Pin 8:** CI CE1#

**Pin 9:** CI A10

**Pin 10:** CI OE#

**Pin 11:** CI A11

**Pin 12:** CI A9

**Pin 13:** CI A8

**Pin 14:** CI A13

**Pin 15:** CI A14

**Pin 16:** CI WE#

**Pin 17:** CI IREQ#

**Pin 18:** VCC

**Pin 19:** VPP1

**Pin 20:** CI INVALID

**Pin 21:** CI INCLK

**Pin 22:** CI A12

**Pin 23:** CI A7

**Pin 24:** CI A6

**Pin 25:** CI A5

**Pin 26:** CI A4

**Pin 27:** CI A3

**Pin 28:** CI A2

**Pin 29:** CI A1

**Pin 30:** CI A0

**Pin 31:** CI D0

**Pin 32:** CI D1

**Pin 33:** CI D2

**Pin 34:** CI WP#

**Pin 35:** GND

**Pin 36:** GND

**Pin 37:** CD1#

**Pin 38:** CI OUTDATA3

**Pin 39:** CI OUTDATA4

**Pin 40:** CI OUTDATA5

**Pin 41:** CI OUTDATA6

**Pin 42:** CI OUTDATA7

**Pin 43:** CE2#

**Pin 44:** V51#

**Pin 45:** IORD#

**Pin 46:** CI IORD#

**Pin 47:** CI IOWR#

**Pin 48:** CI INSYNC

**Pin 49:** CI INDATA0

**Pin 50:** CI INDATA1

**Pin 51:** CI INDATA2

**Pin 52:** CI INDATA3

**Pin 53:** VCC

**Pin 54:** CI INDATA4

**Pin 55:** CI INDATA5

**Pin 56:** CI INDATA6

**Pin 57:** CI INDATA7

**Pin 58:** CI OUTCLK

**Pin 59:** CI RESET

**Pin 60:** CI WAIT#

**Pin 61:** CI REG#

**Pin 62:** CI OUTVALID

**Pin 63:** CI OUTSYN

**Pin 64:** CI OUTDATA0

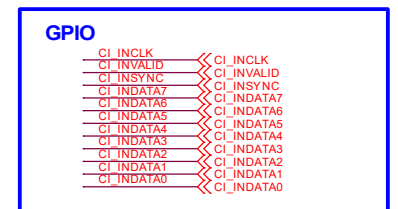
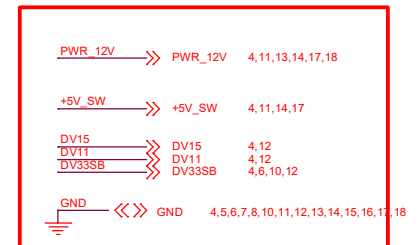
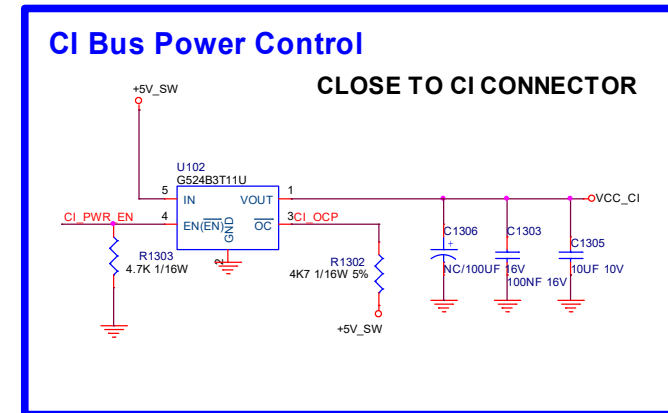
**Pin 65:** CI OUTDATA1

**Pin 66:** CI OUTDATA2

**Pin 67:** CD2#

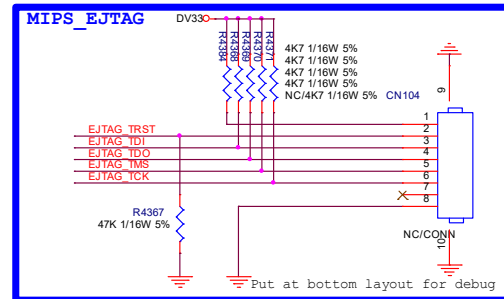
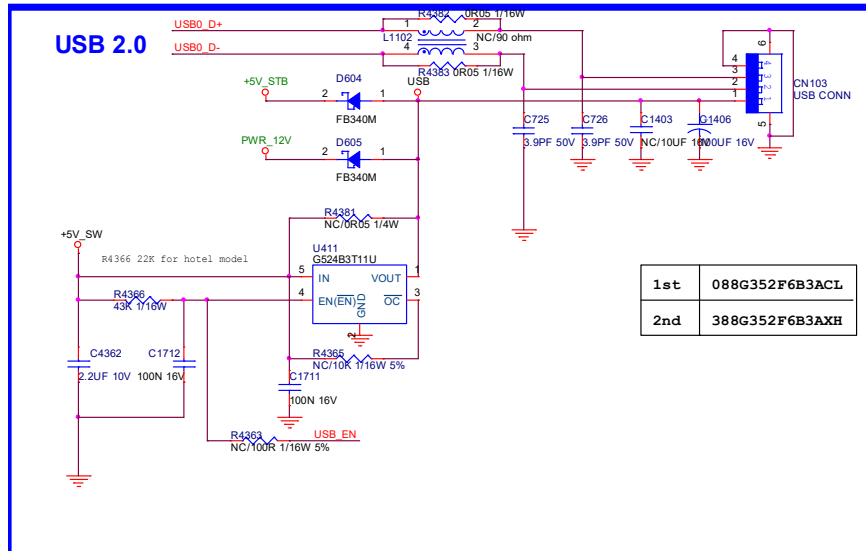
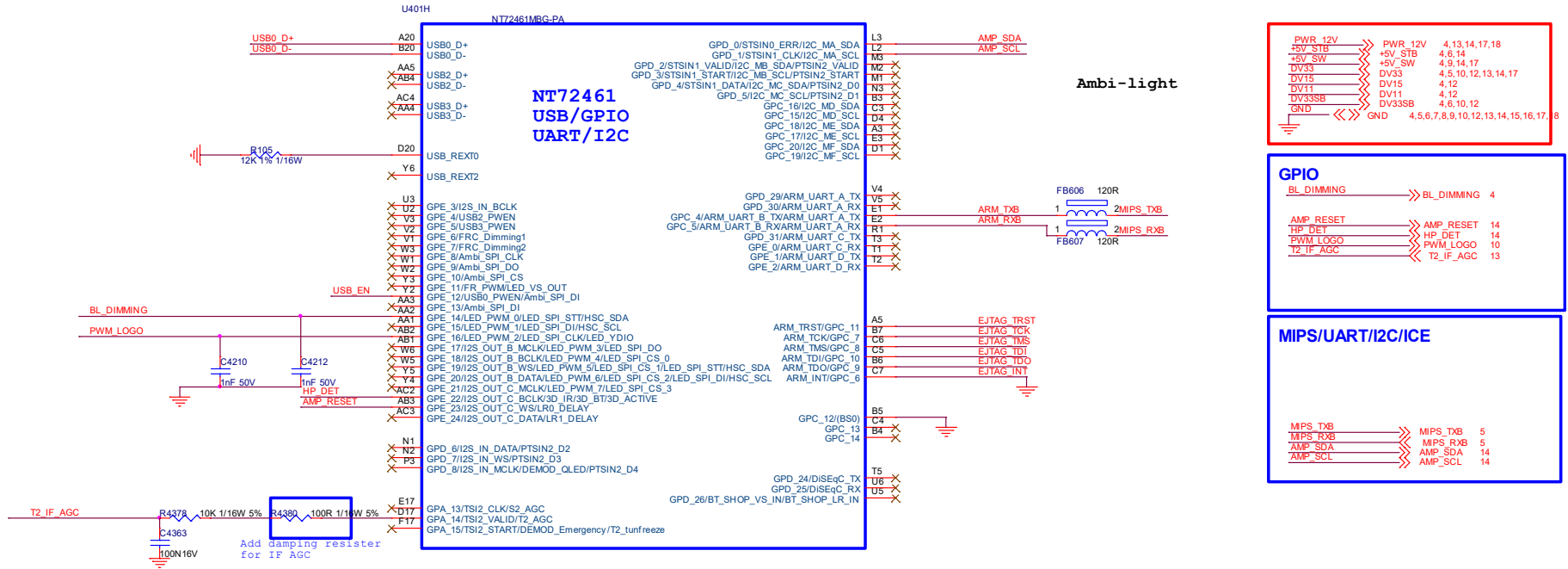
**Pin 68:** GND

**Other Labels:** C1301 10PF 50V, VCC, GND, BVD2# SPKR, BVD1# STSCHG, WP#, GND, 69, 70, 71, 72.

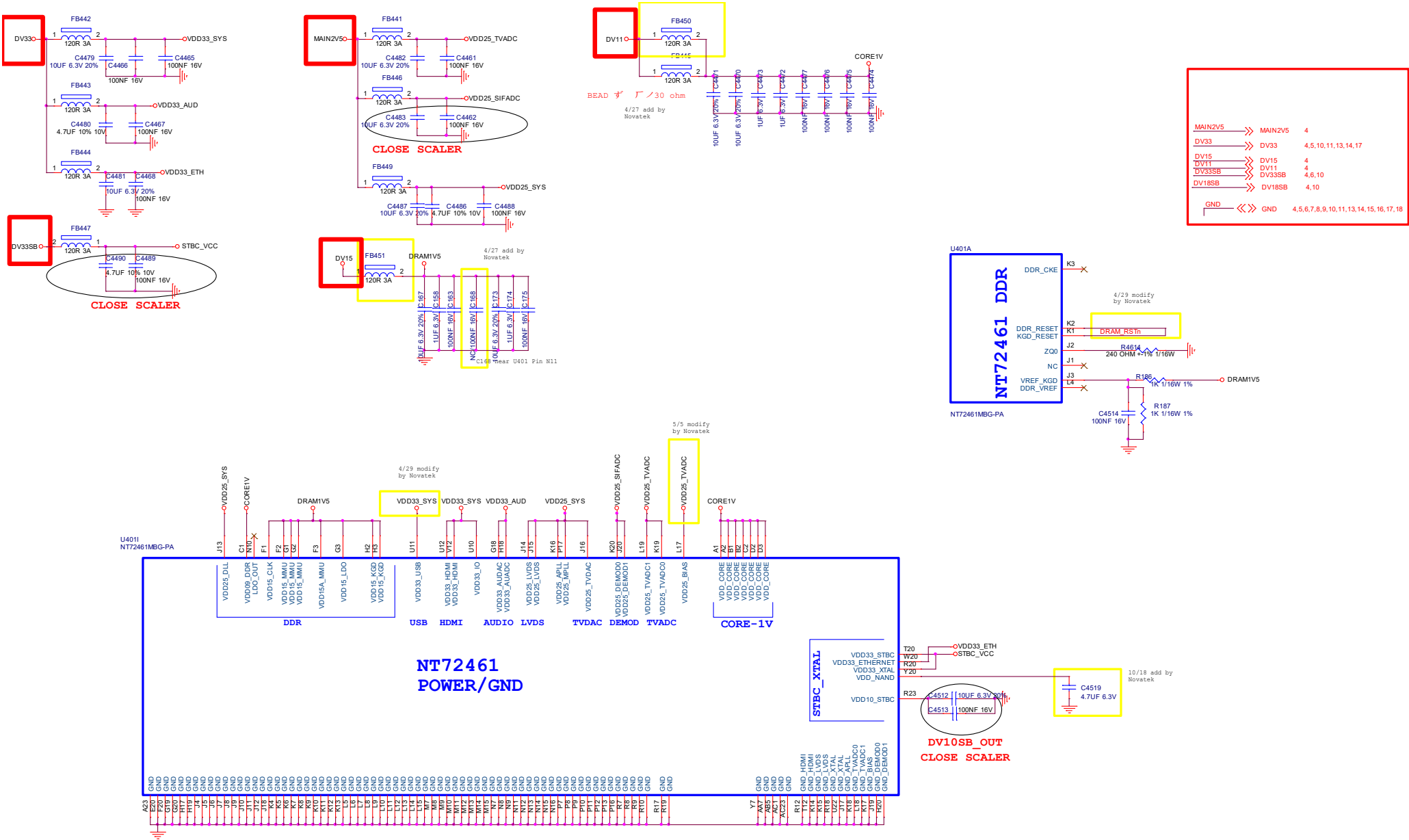


[illegible]

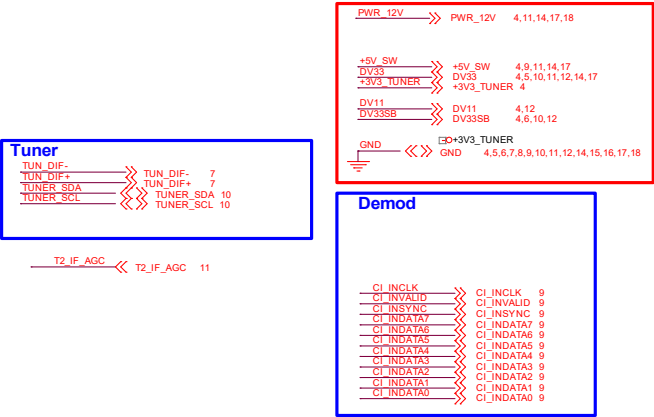
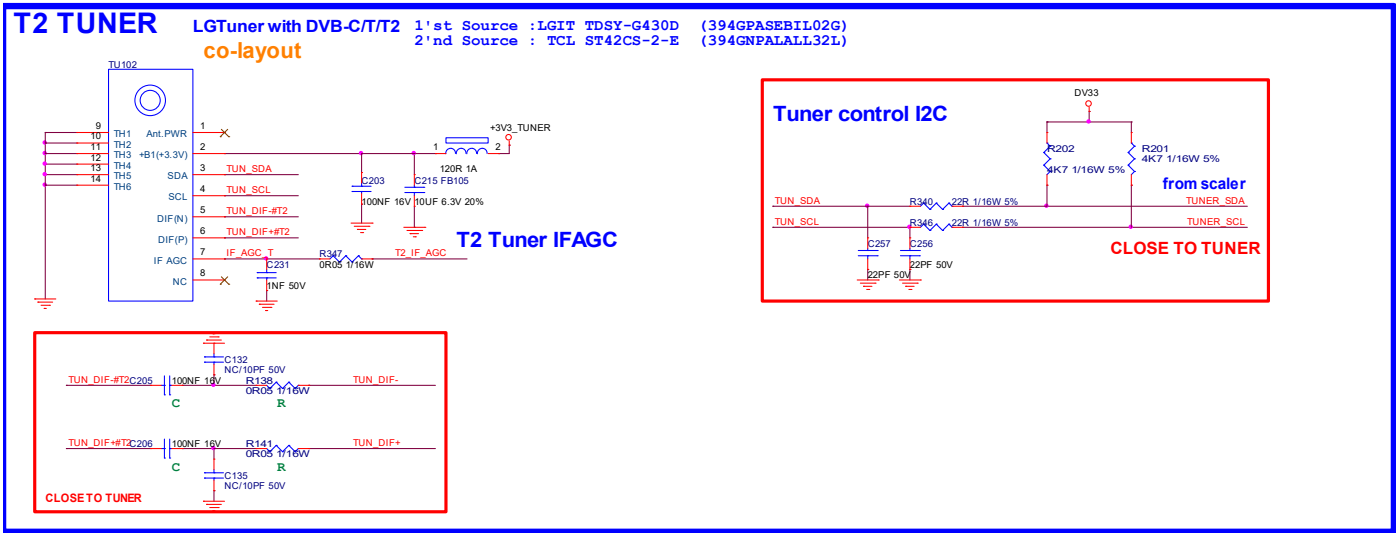
### 8-6-8 NT72461\_USB/GPIO



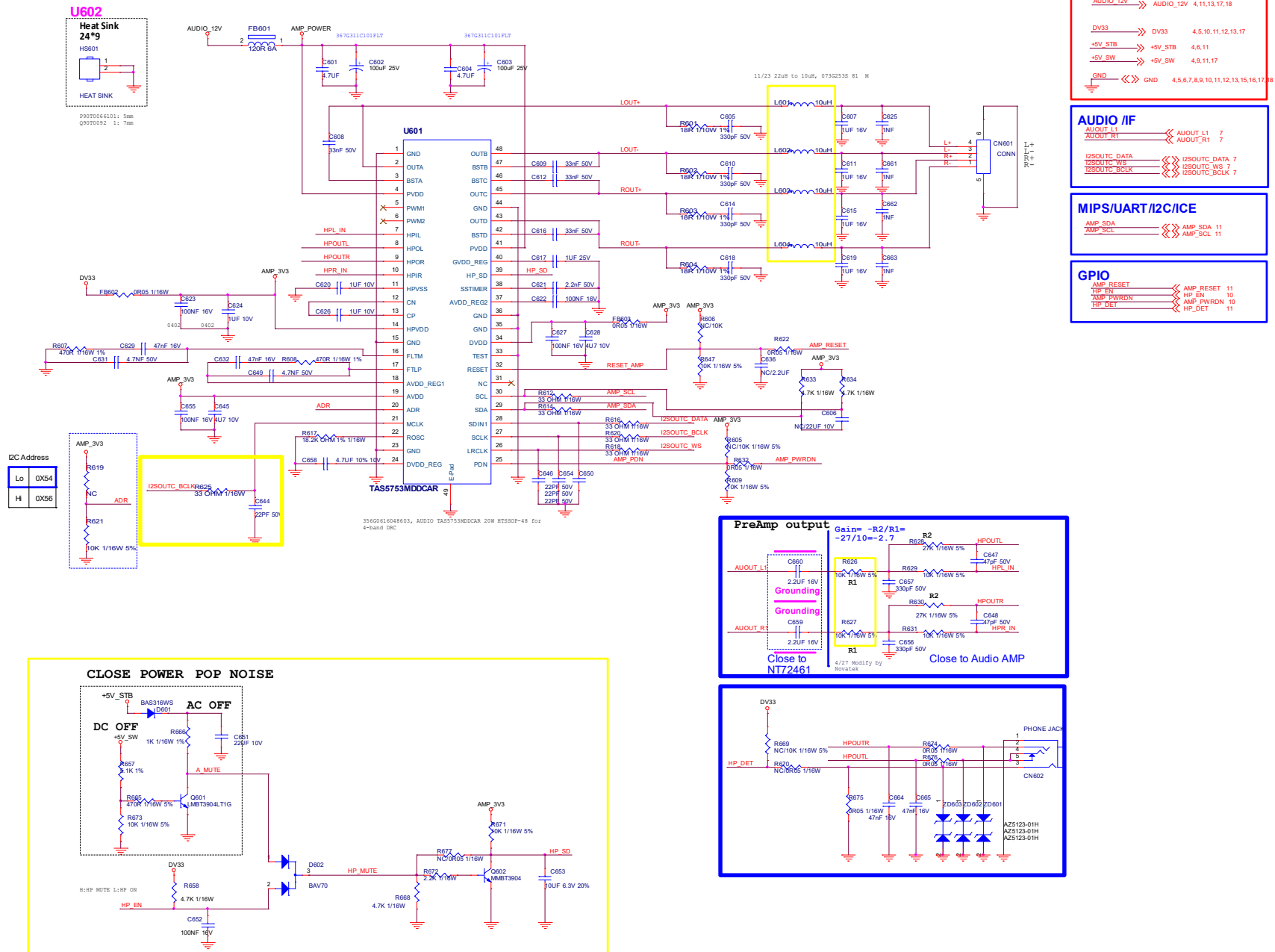
8-6-9 NT72461\_POWER



8-6-10 T2 Tuner



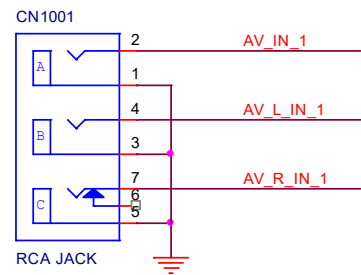
## 8-6-11 SPK AMP/HP OUT



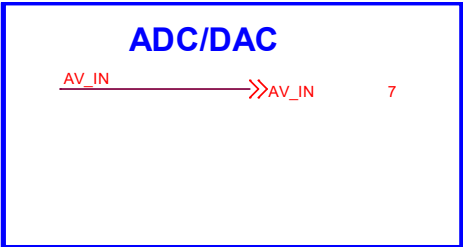
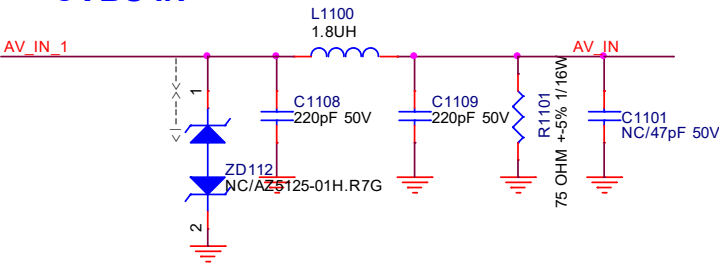
8-6-12 AV

|     |                |
|-----|----------------|
| 1st | 088G 78F137XCL |
| 2nd | 088G 78F137XYG |

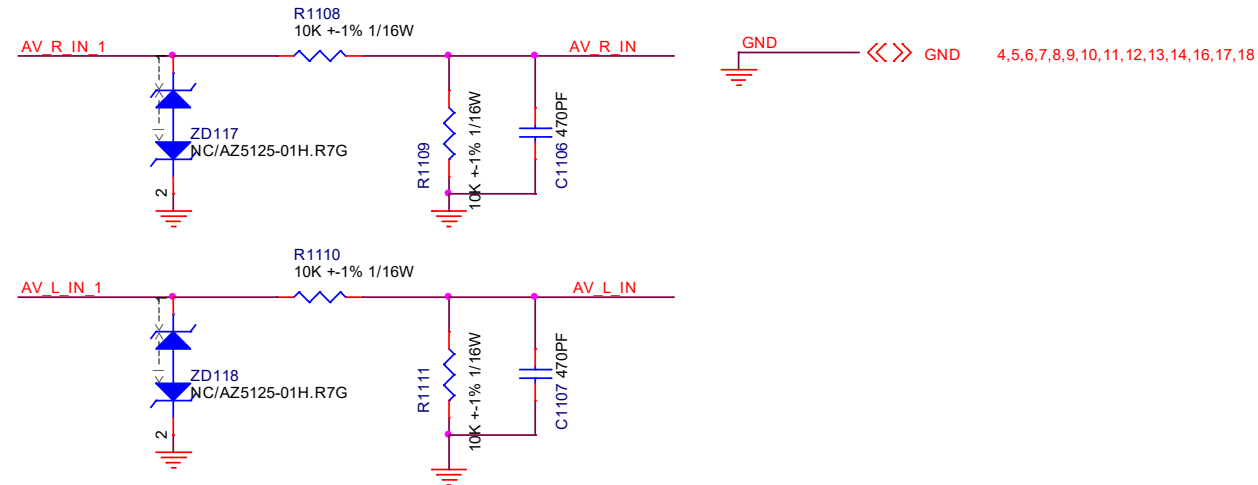
Helf AV(CVBS+L/R IN)



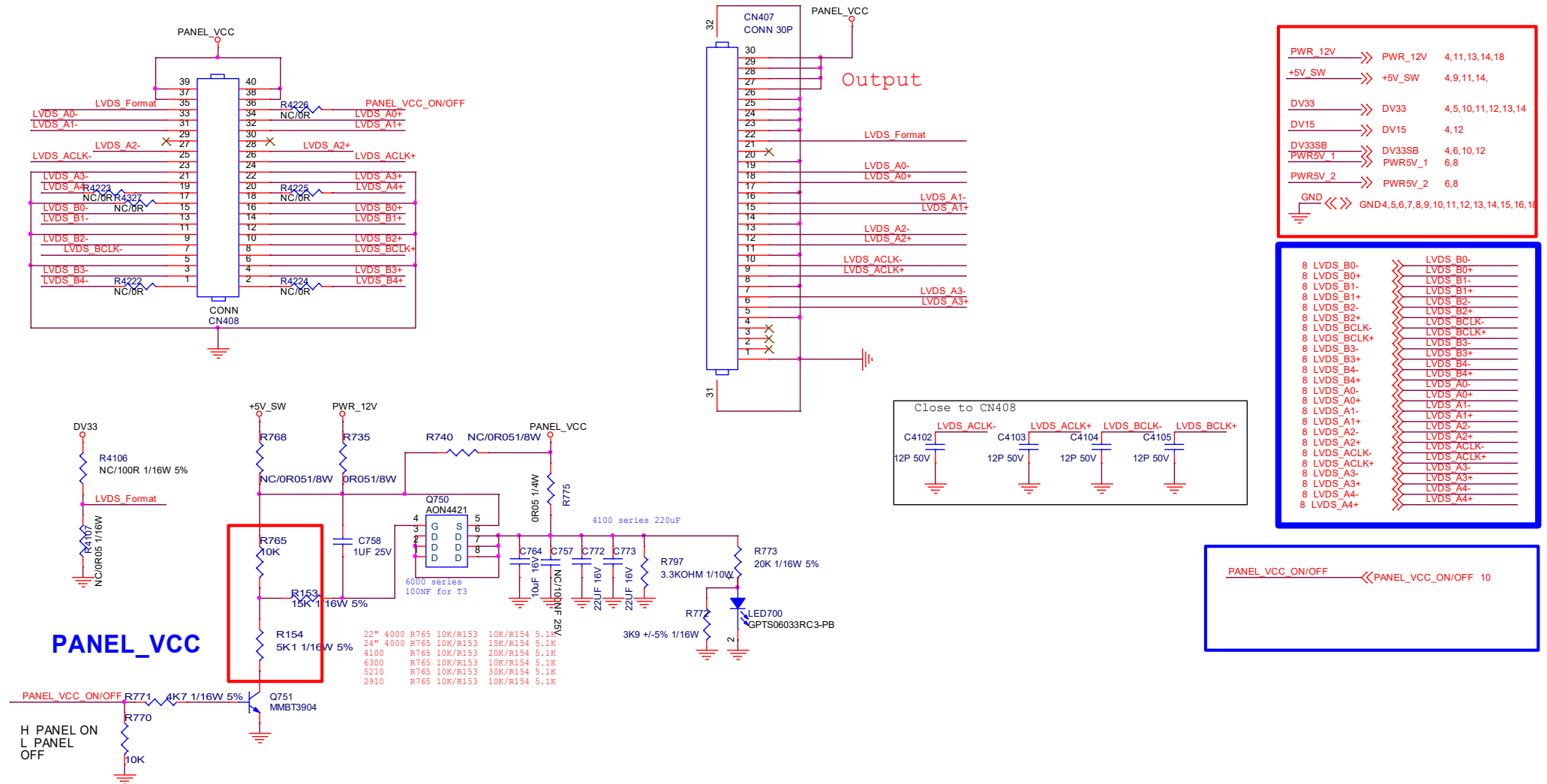
CVBS IN



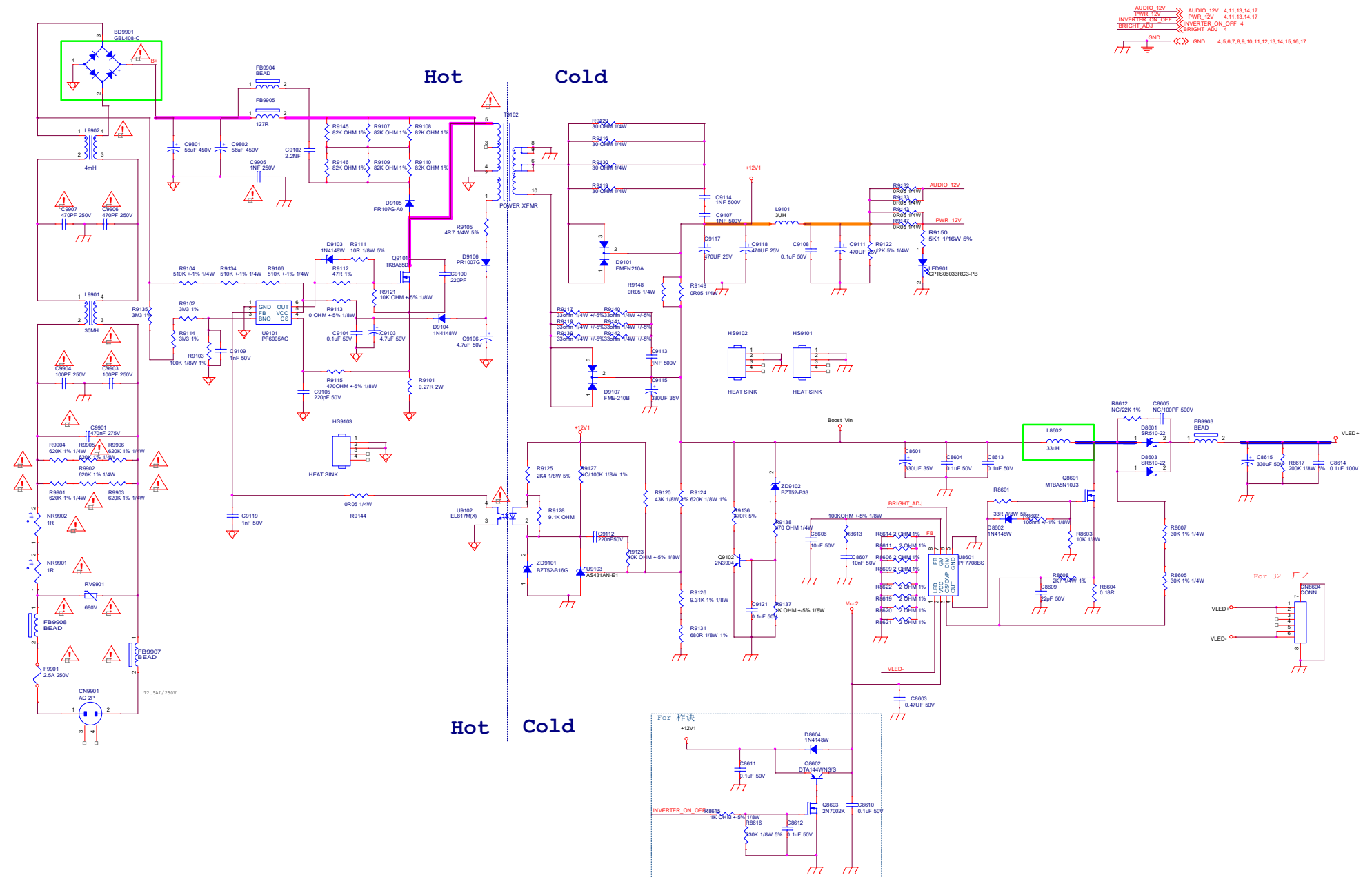
CVBS IN Audio Input



### 8-6-13 LVDS



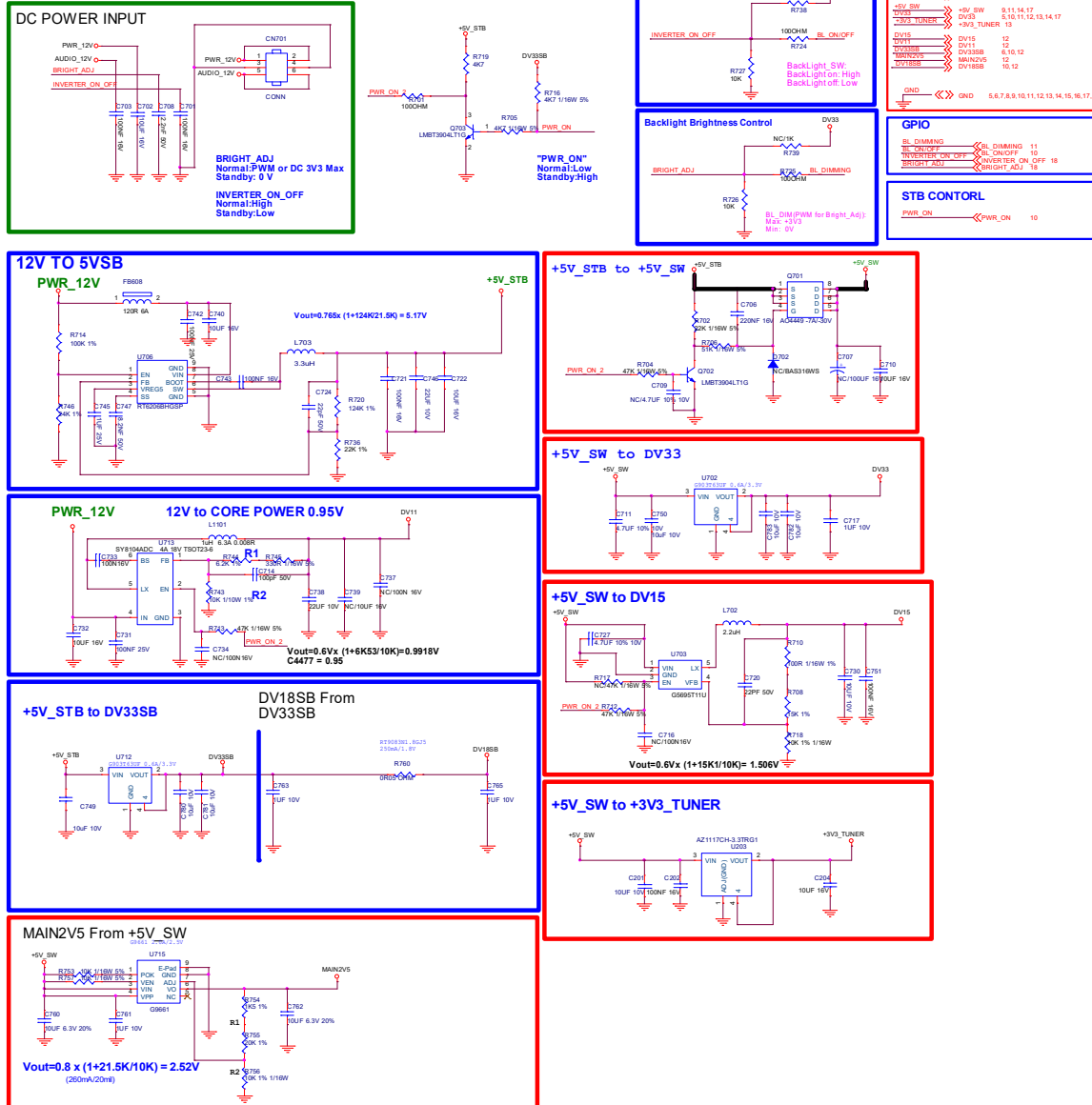
# 8-6-14 Power\_32



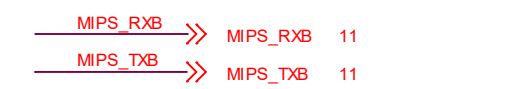
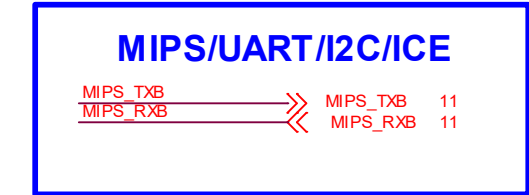
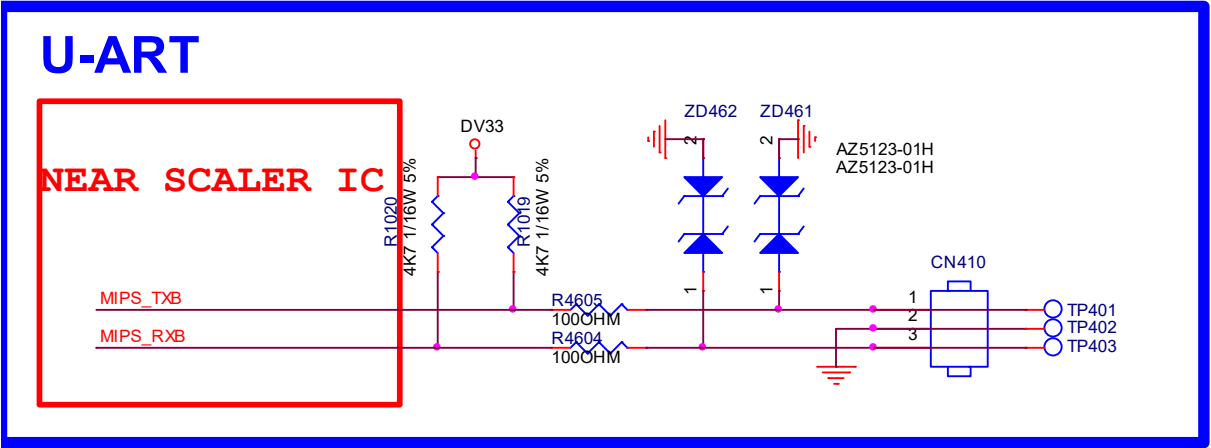
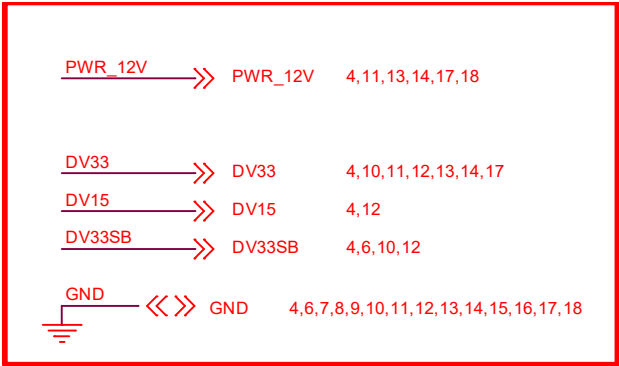
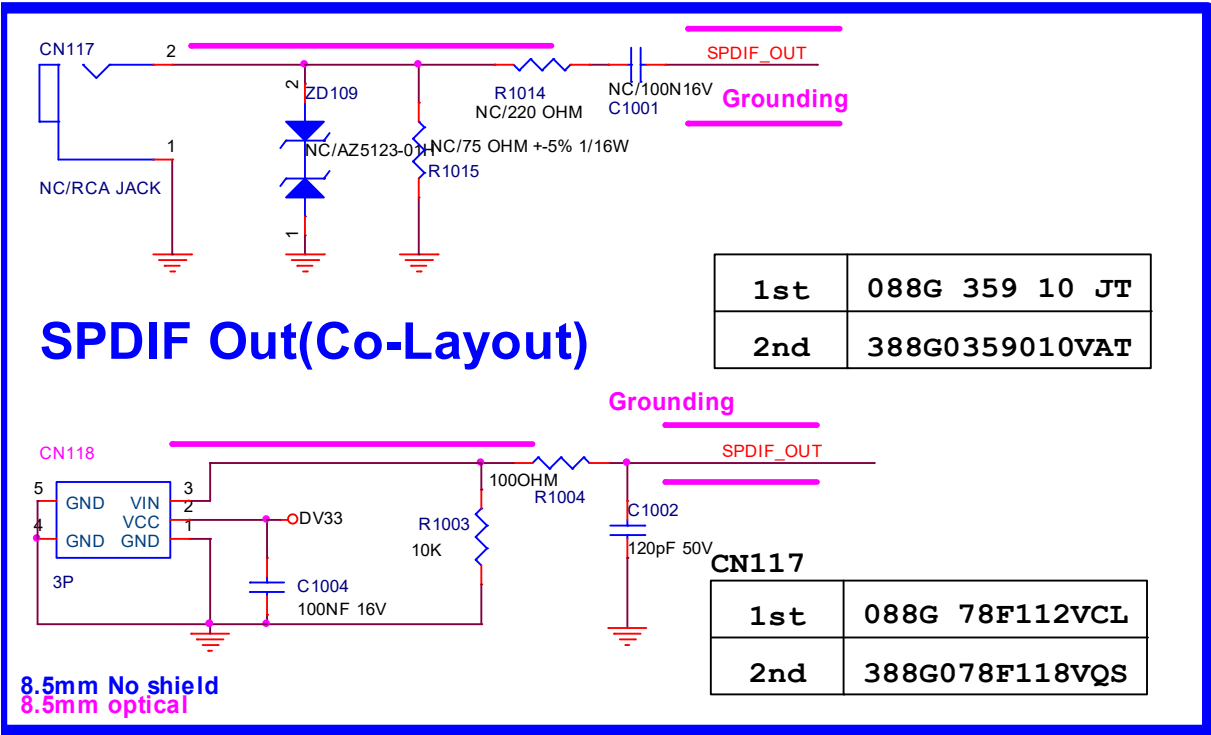
## 8.7 715G9040 MAIN (For 32"4112 Series)

### 8-7-1 NT72461

#### 2K17 EU NT72461 - 2 Layers 283mm X 125mm

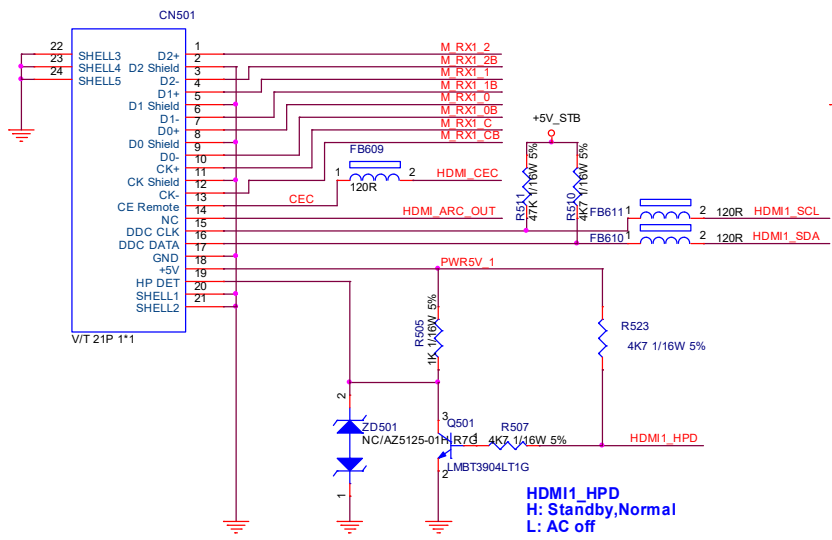


8-7-2 SPDIF/UART INPUT

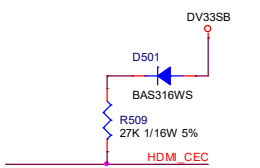
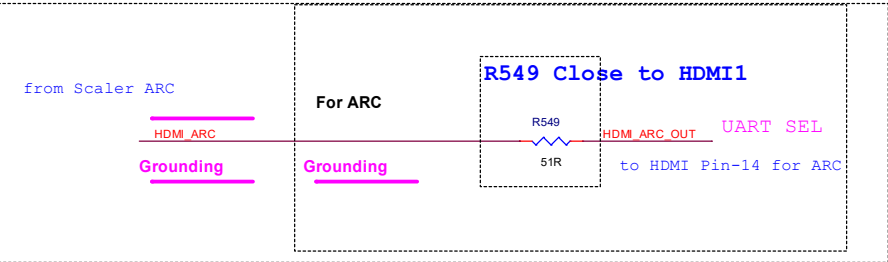
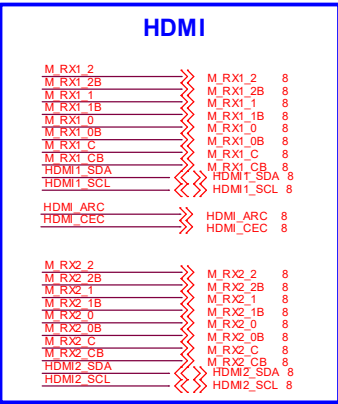
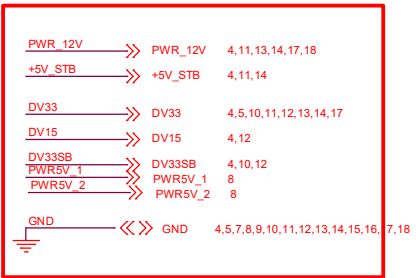
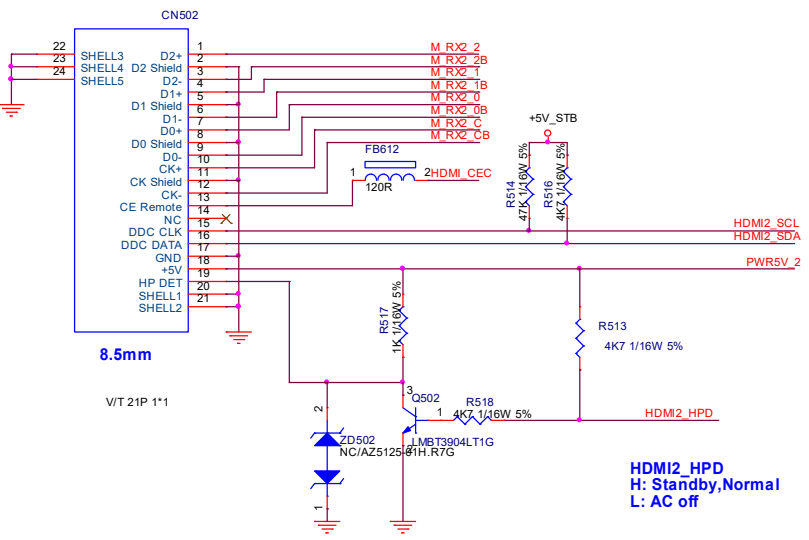


8-7-3 HDMI

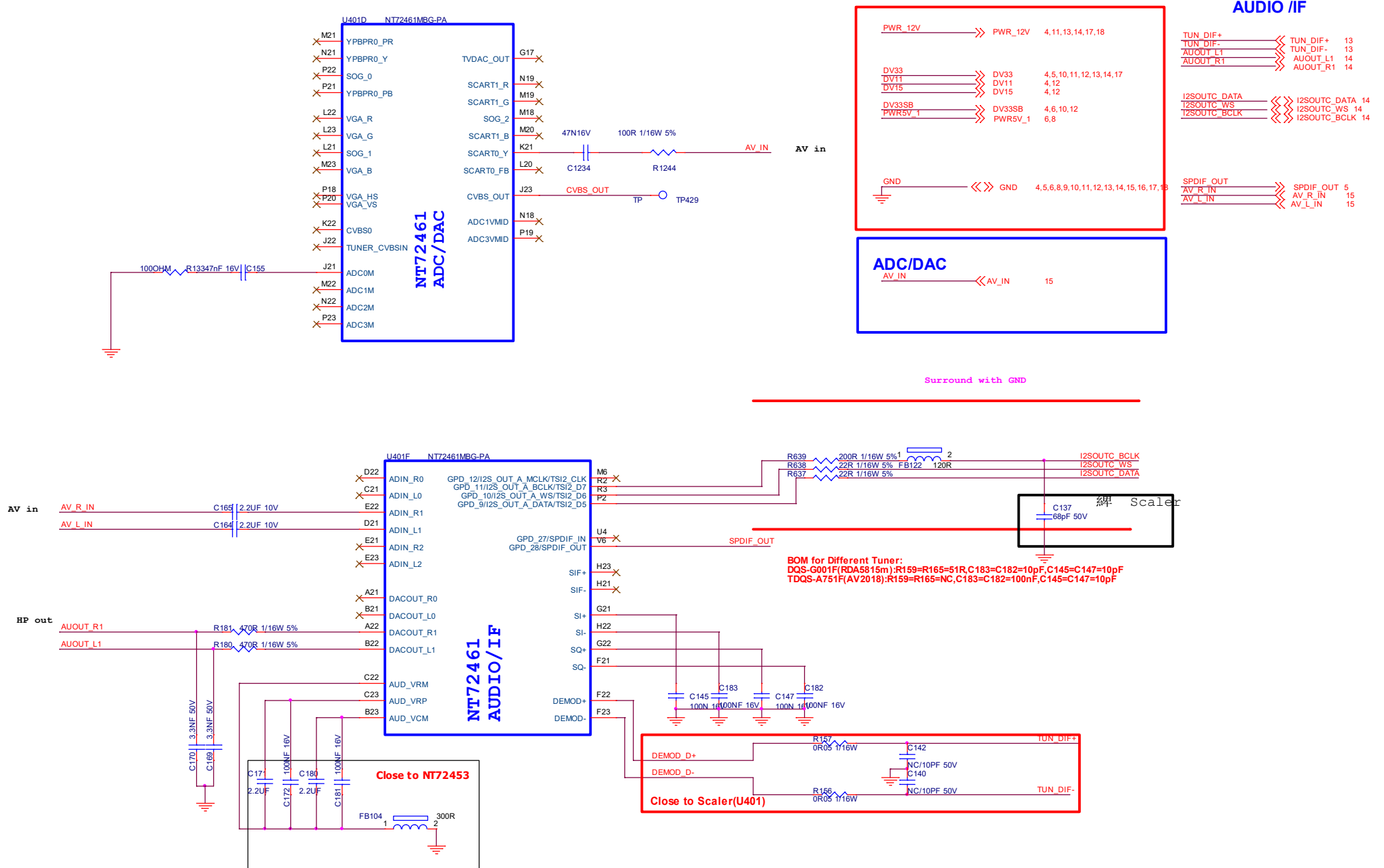
Rear HDMI 1



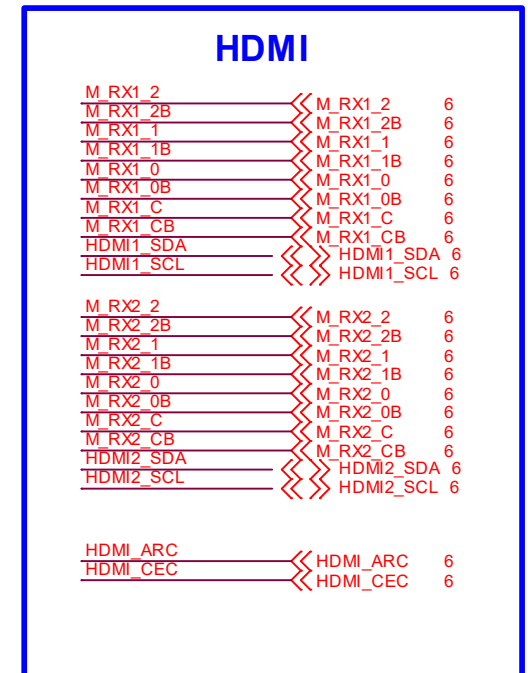
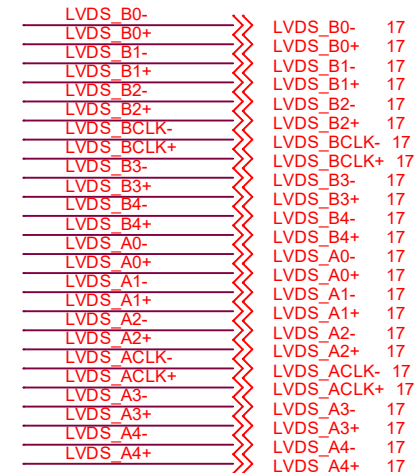
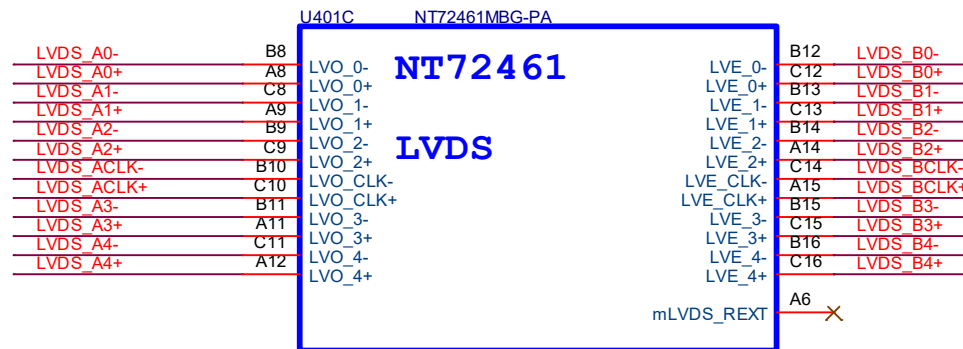
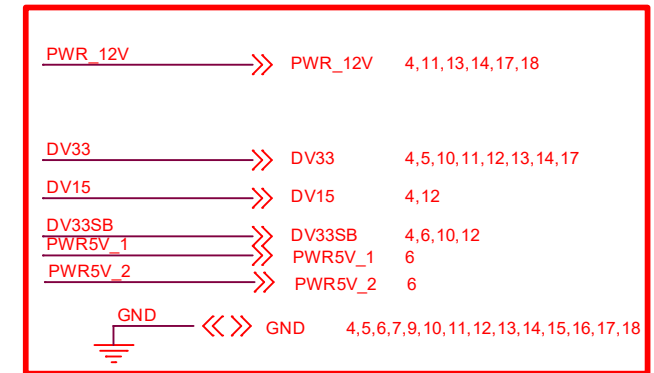
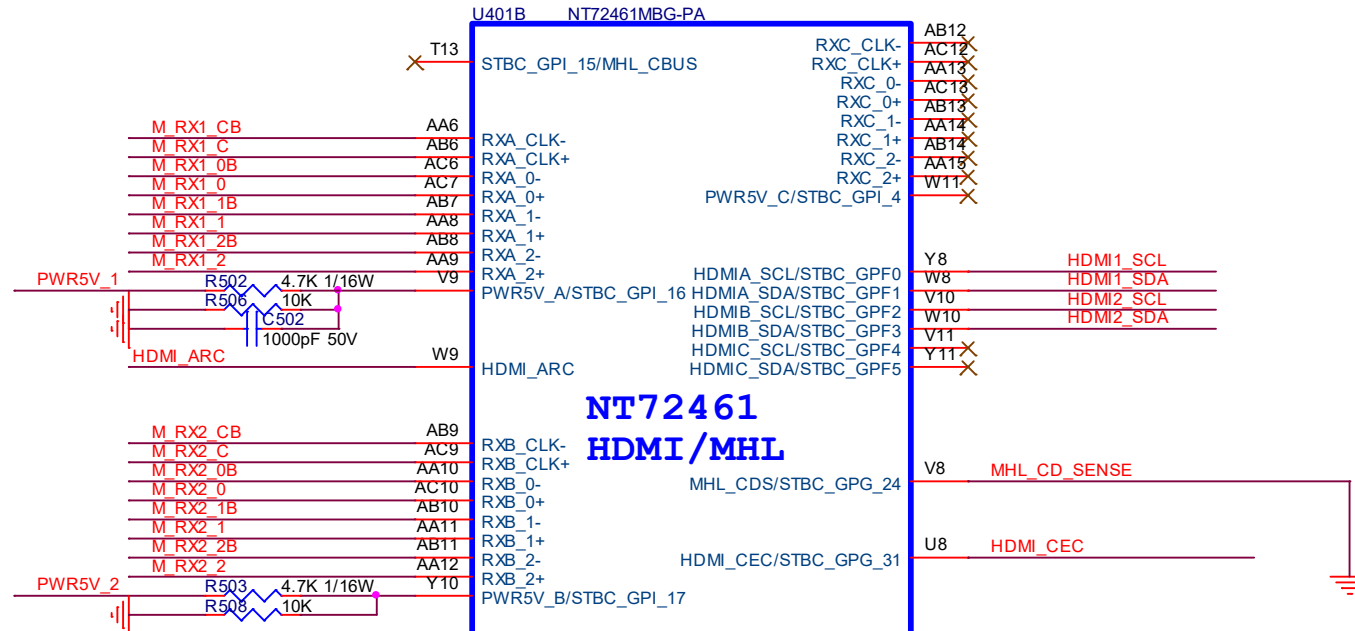
Rear HDMI 2



## 8-7-4 NT72461\_ADC/DAC/AUDIO/SIF

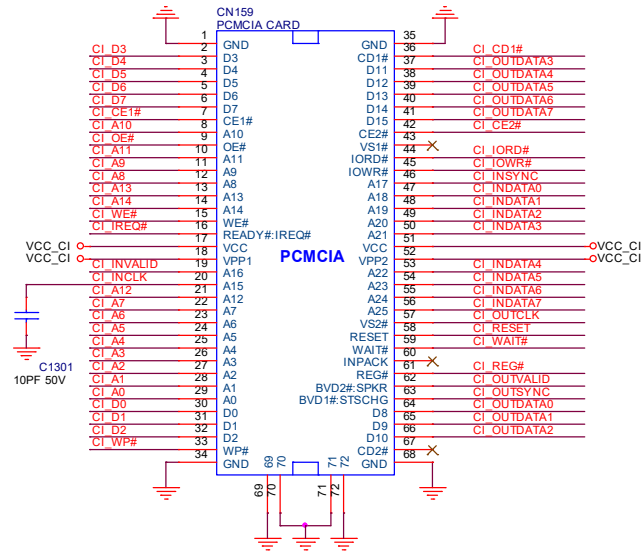


### 8-7-5 NT72461\_HDMI/LVDS OUT



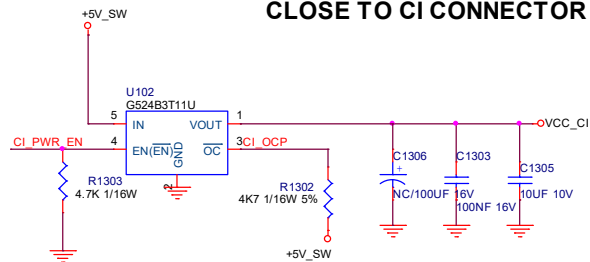
## 8-7-6 NT72461\_CI

### PCMCIA Slot



### CI Bus Power Control

#### CLOSE TO CI CONNECTOR



U401G NT72461MBG-PA

|         |     |                      |
|---------|-----|----------------------|
| CI A 0  | D13 | GPB_2/CI_HA0/CI_ALE0 |
| CI A 1  | H13 | GPB_3/CI_HA1/CI_ALE0 |
| CI A 2  | D12 | GPB_4/CI_HA2         |
| CI A 3  | E12 | GPB_5/CI_HA3         |
| CI A 4  | F12 | GPB_6/CI_HA4         |
| CI A 5  | G12 | GPB_7/CI_HA5         |
| CI A 6  | H12 | GPB_8/CI_HA6         |
| CI A 7  | H11 | GPB_9/CI_HA7         |
| CI A 8  | H10 | GPB_10/CI_HA8        |
| CI A 9  | G9  | GPB_11/CI_HA9        |
| CI A 10 | F9  | GPB_12/CI_HA10       |
| CI A 11 | E9  | GPB_13/CI_HA11       |
| CI A 12 | D9  | GPB_14/CI_HA12       |
| CI A 13 | H9  | GPB_15/CI_HA13       |
| CI A 14 | D8  | GPB_16/CI_HA14       |

|        |    |                |
|--------|----|----------------|
| CI D 0 | E8 | GPB_17/CI_HAD0 |
| CI D 1 | F8 | GPB_18/CI_HAD1 |
| CI D 2 | G8 | GPB_19/CI_HAD2 |
| CI D 3 | H8 | GPB_20/CI_HAD3 |
| CI D 4 | H7 | GPB_21/CI_HAD4 |
| CI D 5 | H6 | GPB_22/CI_HAD5 |
| CI D 6 | G5 | GPB_23/CI_HAD6 |
| CI D 7 | F5 | GPB_24/CI_HAD7 |

|          |     |                 |
|----------|-----|-----------------|
| CI RESET | D16 | GPA_24/CI_RST   |
| CI CD1#  | E16 | GPA_25/CI_CD_0# |
| CI CE1#  | F16 | GPA_26/CI_CE#   |
| CI IREQ# | G16 | GPA_27/CI_IREQ# |
| CI IORD# | H16 | GPA_28/CI_IORD# |
| CI IOWR# | H15 | GPA_29/CI_IOWR# |
| CI OE#   | H14 | GPA_30/CI_OE#   |
| CI WE#   | G13 | GPA_31/CI_WE#   |
| CI REG#  | F13 | GPB_0/CI_REG#   |
| CI WAIT# | E13 | GPB_1/CI_WAIT#  |

NT72461 CI/TS



|             |              |            |             |
|-------------|--------------|------------|-------------|
| CI_OUTDATA2 | CI_OUTDATA_2 | CI A5      | CI A 5      |
| CI D2       | CI D 2       | CI INDATA7 | CI INDATA 7 |
| CI D1       | CI D 1       | CI A7      | CI A 7      |

|             |              |            |             |
|-------------|--------------|------------|-------------|
| CI_OUTDATA1 | CI_OUTDATA_1 | CI INDATA6 | CI INDATA 6 |
| CI D0       | CI D 0       | CI A12     | CI A 12     |
| CI A0       | CI A 0       | CI INDATA5 | CI INDATA 5 |
| CI_OUTDATA0 | CI_OUTDATA_0 | CI INDATA4 | CI INDATA 4 |

|       |        |            |             |
|-------|--------|------------|-------------|
| CI A1 | CI A 1 | CI INDATA3 | CI INDATA 3 |
| CI A2 | CI A 2 | CI INDATA2 | CI INDATA 2 |
| CI A3 | CI A 3 | CI INDATA1 | CI INDATA 1 |
| CI A4 | CI A 4 | CI A14     | CI A 14     |

|            |             |             |              |
|------------|-------------|-------------|--------------|
| CI A13     | CI A 13     | CI D7       | CI D 7       |
| CI INDATA0 | CI INDATA_0 | CI D6       | CI D 6       |
| CI A8      | CI A 8      | CI_OUTDATA5 | CI_OUTDATA_5 |
| CI A9      | CI A 9      | CI D5       | CI D 5       |

|             |              |             |              |
|-------------|--------------|-------------|--------------|
| CI A11      | CI A 11      | CI D4       | CI D 4       |
| CI A10      | CI A 10      | CI_OUTDATA4 | CI_OUTDATA_4 |
| CI_OUTDATA7 | CI_OUTDATA_7 | CI D3       | CI D 3       |
| CI_OUTDATA6 | CI_OUTDATA_6 | CI_OUTDATA3 | CI_OUTDATA_3 |

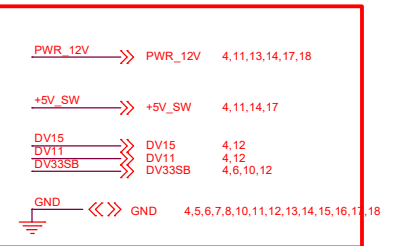
|            |             |            |             |
|------------|-------------|------------|-------------|
| CI A5      | CI A 5      | CI INDATA7 | CI INDATA 7 |
| CI INDATA7 | CI INDATA 7 | CI A7      | CI A 7      |

|            |             |            |             |
|------------|-------------|------------|-------------|
| CI INDATA6 | CI INDATA 6 | CI A12     | CI A 12     |
| CI INDATA5 | CI INDATA 5 | CI INDATA4 | CI INDATA 4 |

|            |             |            |             |
|------------|-------------|------------|-------------|
| CI INDATA3 | CI INDATA 3 | CI INDATA2 | CI INDATA 2 |
| CI INDATA2 | CI INDATA 2 | CI INDATA1 | CI INDATA 1 |
| CI INDATA1 | CI INDATA 1 | CI A14     | CI A 14     |

|             |              |             |              |
|-------------|--------------|-------------|--------------|
| CI D7       | CI D 7       | CI D6       | CI D 6       |
| CI D6       | CI D 6       | CI_OUTDATA5 | CI_OUTDATA_5 |
| CI_OUTDATA5 | CI_OUTDATA_5 | CI D5       | CI D 5       |

|             |              |             |              |
|-------------|--------------|-------------|--------------|
| CI D4       | CI D 4       | CI_OUTDATA4 | CI_OUTDATA_4 |
| CI_OUTDATA4 | CI_OUTDATA_4 | CI D3       | CI D 3       |
| CI_OUTDATA3 | CI_OUTDATA_3 | CI_OUTDATA2 | CI_OUTDATA_2 |
| CI_OUTDATA2 | CI_OUTDATA_2 | CI_INDATA1  | CI_INDATA 1  |
| CI_INDATA1  | CI_INDATA 1  | CI_INDATA0  | CI_INDATA_0  |



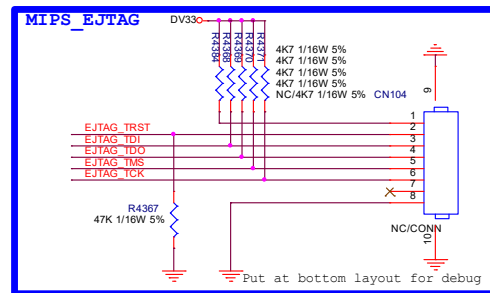
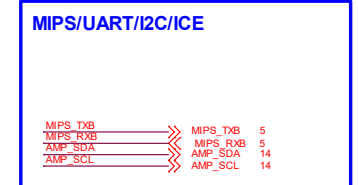
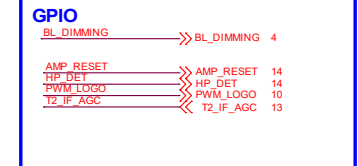
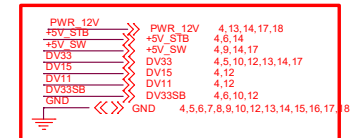
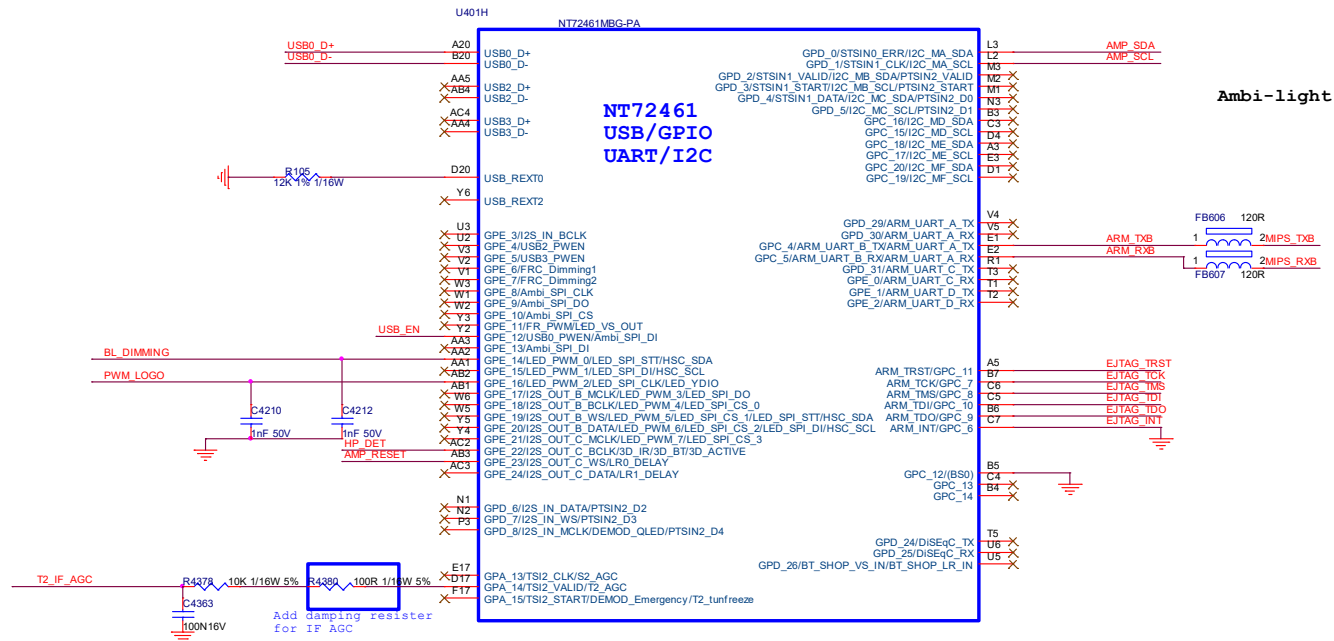
### GPIO

|            |            |            |             |
|------------|------------|------------|-------------|
| CI_INCLK   | CI_INCLK   | CI_INVALID | CI_INVALID  |
| CI_INVALID | CI_INVALID | CI_INSYNC  | CI_INSYNC   |
| CI_INSYNC  | CI_INSYNC  | CI_INDATA7 | CI_INDATA7  |
| CI_INDATA7 | CI_INDATA7 | CI_INDATA6 | CI_INDATA6  |
| CI_INDATA6 | CI_INDATA6 | CI_INDATA5 | CI_INDATA5  |
| CI_INDATA5 | CI_INDATA5 | CI_INDATA4 | CI_INDATA4  |
| CI_INDATA4 | CI_INDATA4 | CI_INDATA3 | CI_INDATA3  |
| CI_INDATA3 | CI_INDATA3 | CI_INDATA2 | CI_INDATA2  |
| CI_INDATA2 | CI_INDATA2 | CI_INDATA1 | CI_INDATA1  |
| CI_INDATA1 | CI_INDATA1 | CI_INDATA0 | CI_INDATA_0 |

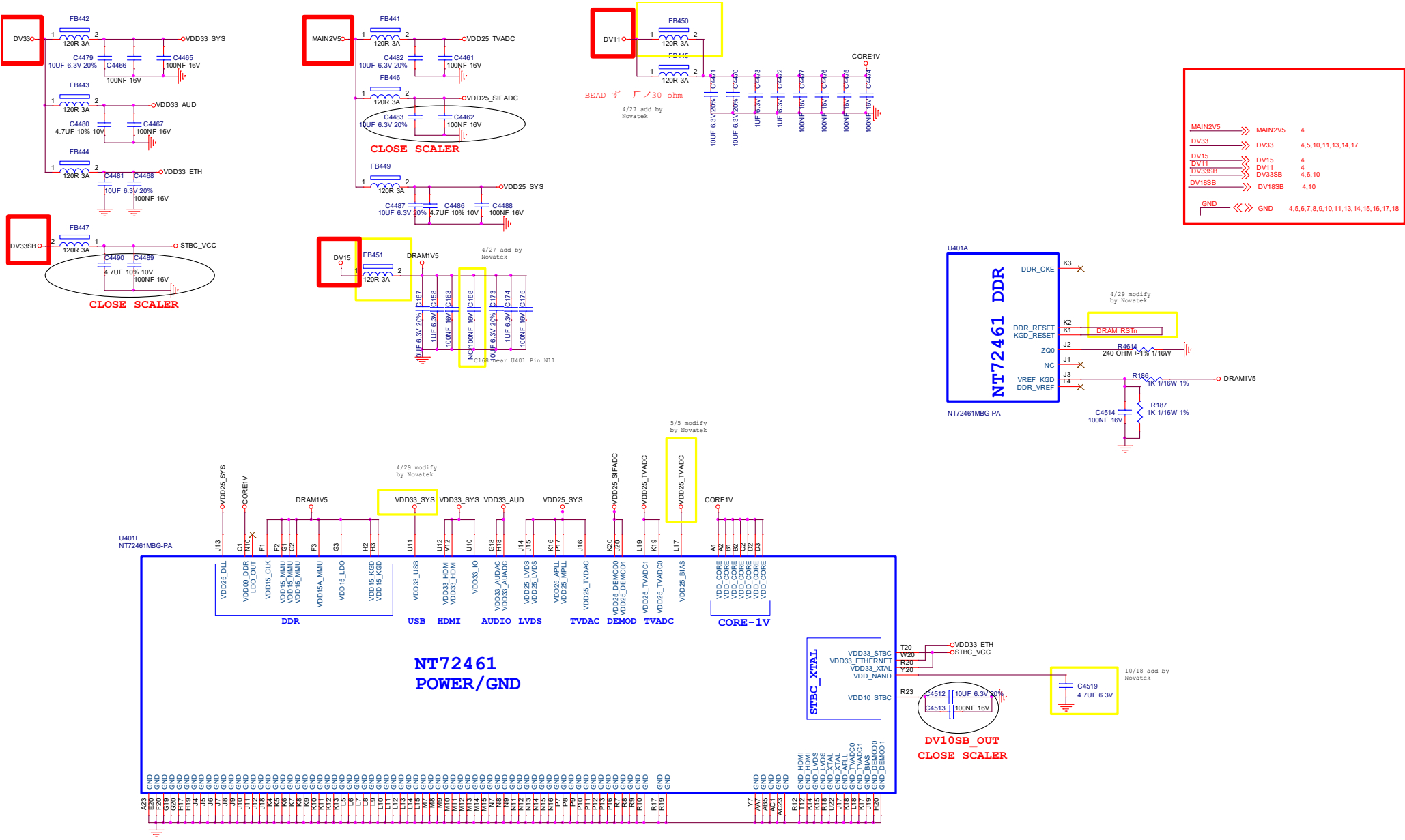
The diagram illustrates the internal architecture of the U401E NT72461MBG-PA module. Key components and their connections include:

- NT72461 STBC:** The central processing unit, connected to various input/output pins and internal components.
- U405 NAND:** A NAND flash memory component, connected to the STBC and other components.
- U401E:** The main microcontroller, connected to the NAND flash and other components.
- IR/KEY BOARD CONN.:** A connector for the IR/KEY board, connected to the STBC and other components.
- Boot strap:** A section for the boot strap, connected to the STBC and other components.

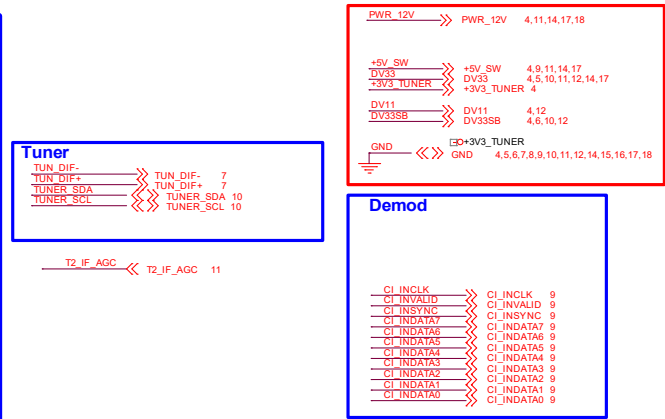
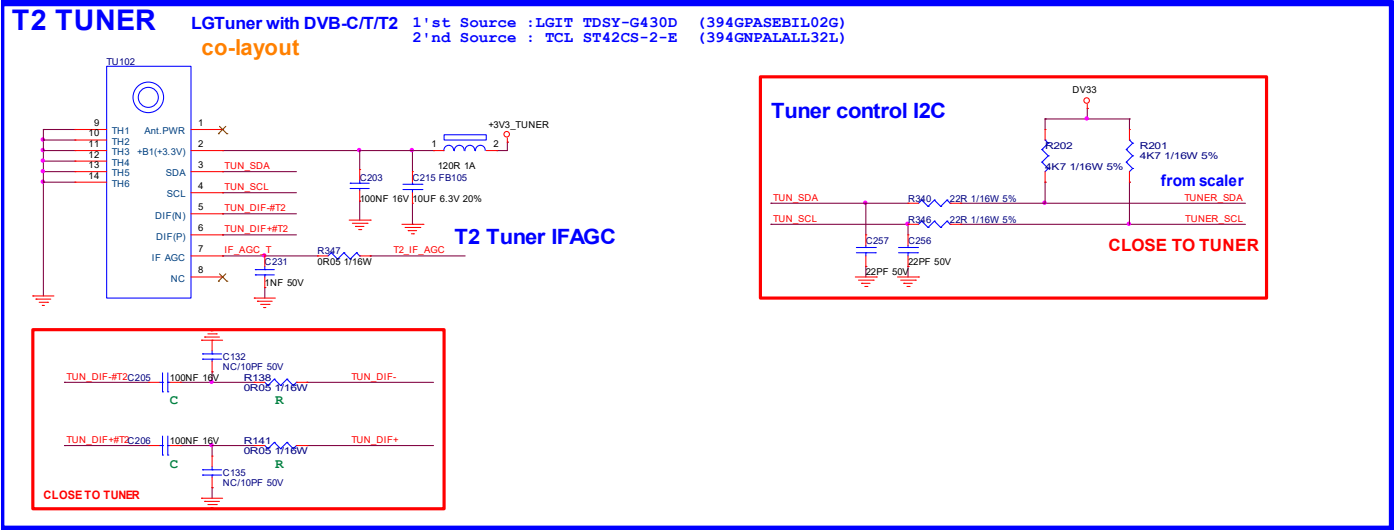
The diagram also includes a section for the **IR / KEY BOARD CONN.** and a section for the **Boot strap**. The components are labeled with their part numbers and values, and the connections are shown with lines and labels.



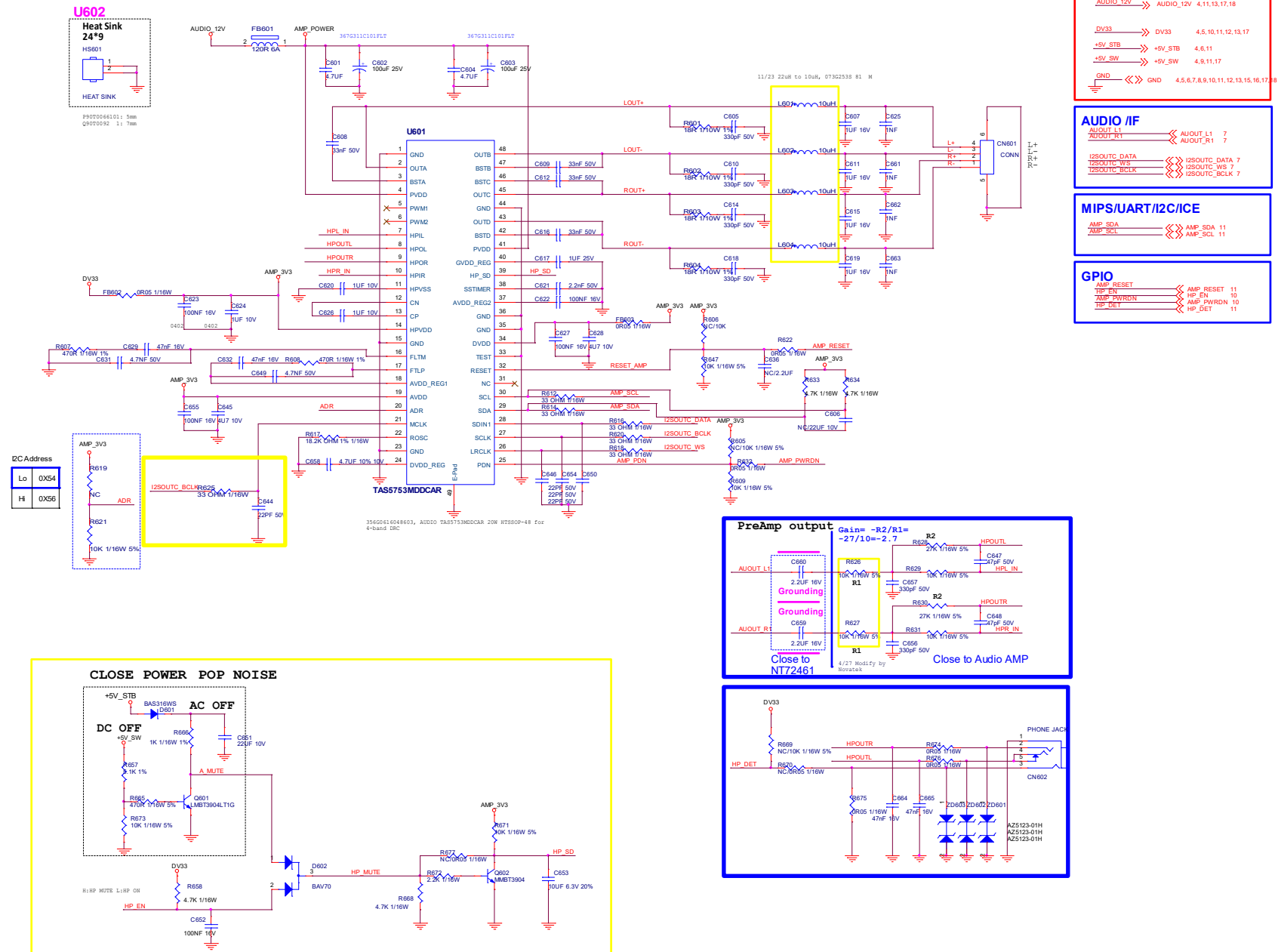
8-7-9 NT72461\_POWER



8-7-10 T2 Tuner

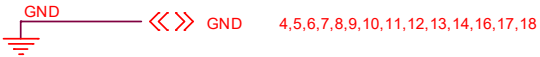
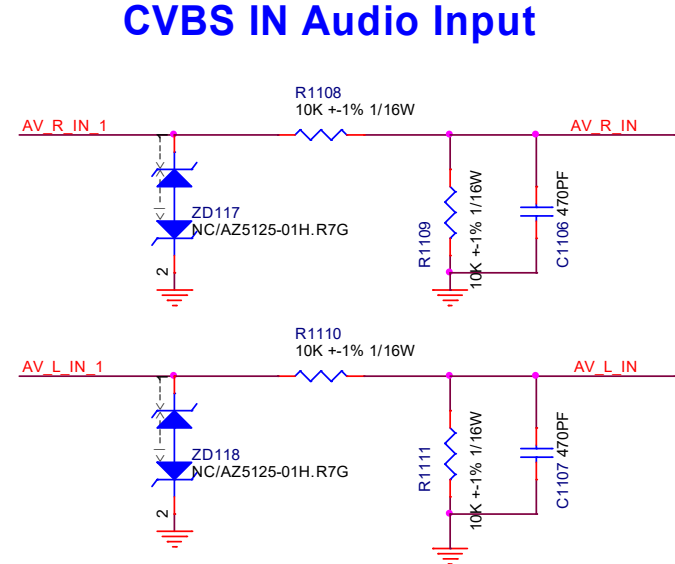
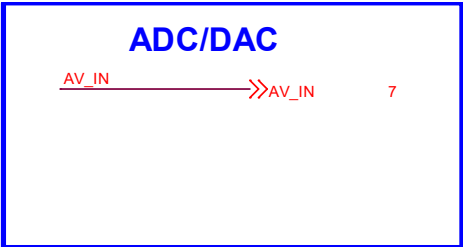
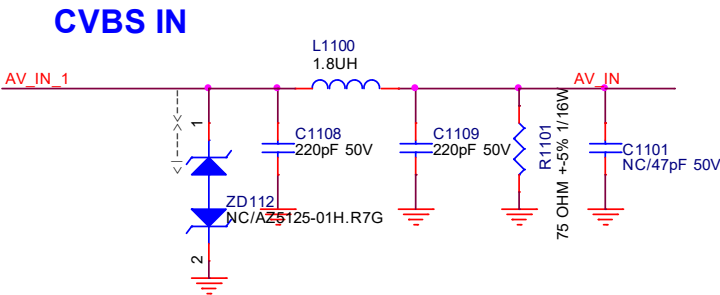
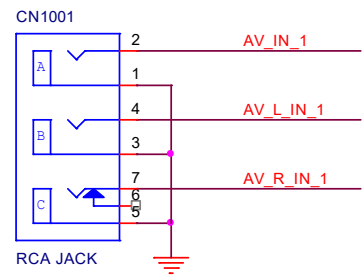


**8-7-11 SPK AMP/HP OUT**

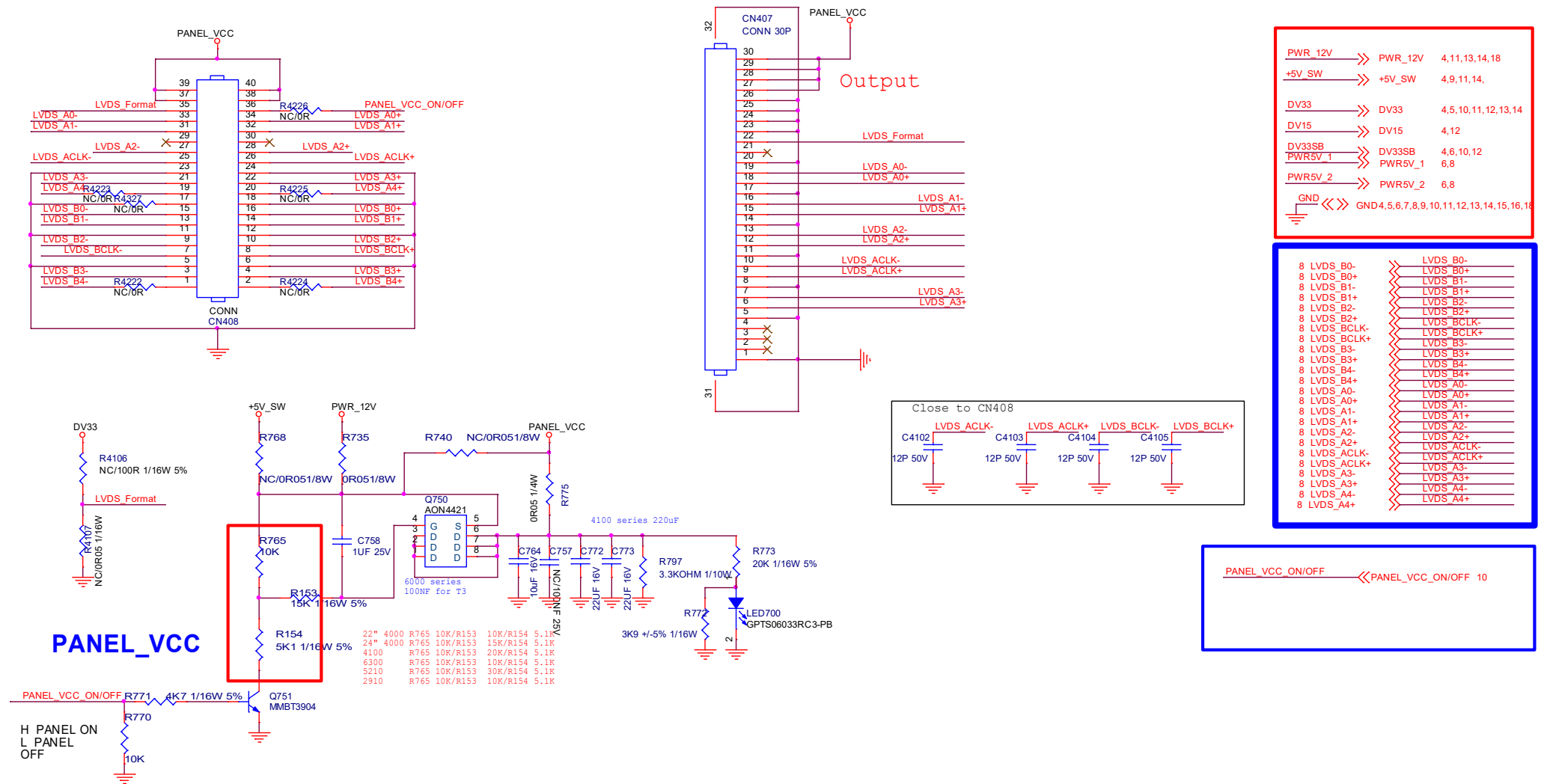


|     |                |
|-----|----------------|
| 1st | 088G 78F137XCL |
| 2nd | 088G 78F137XYG |

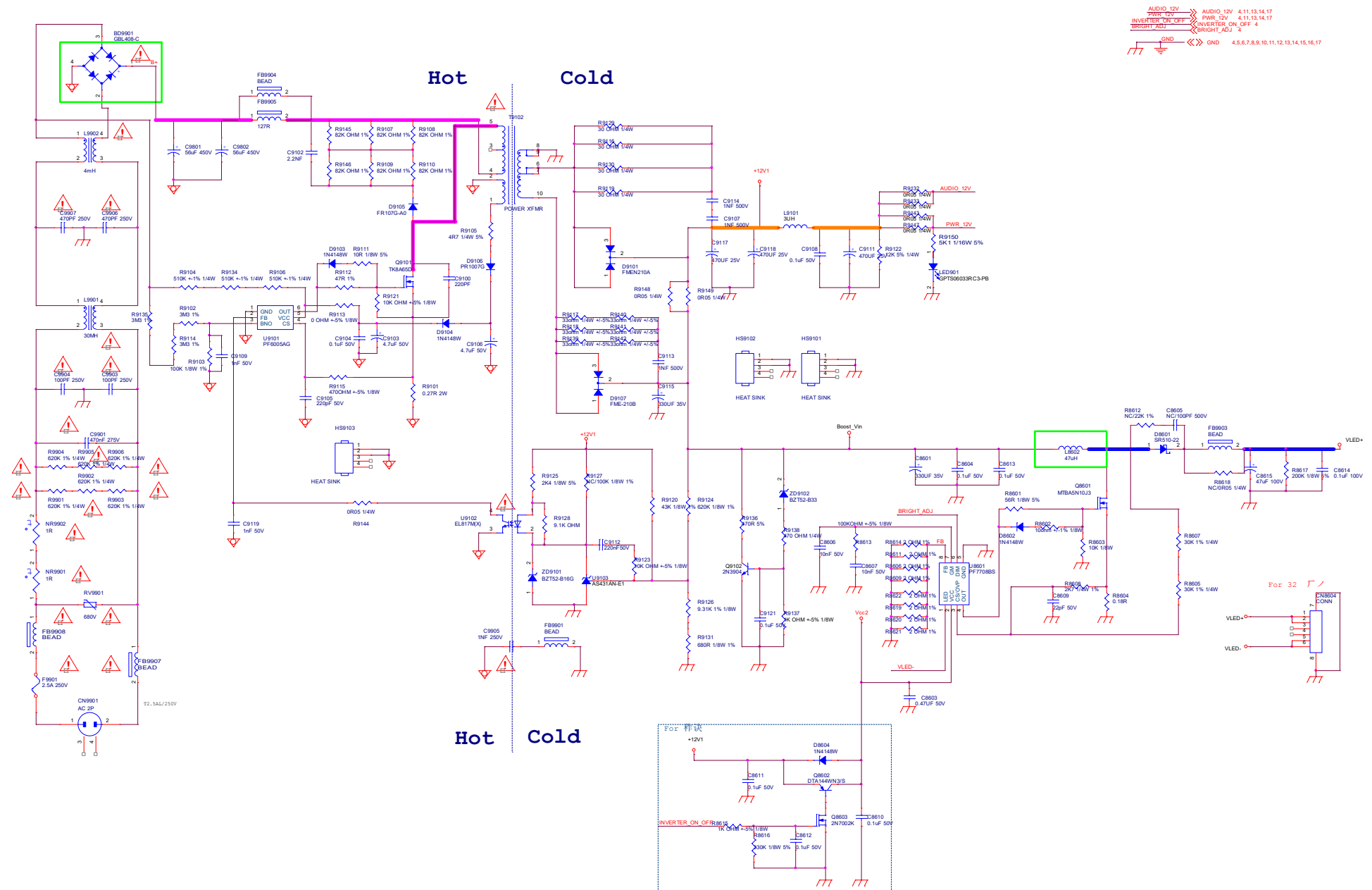
Helf AV(CVBS+L/R IN)



8-7-13 LVDS



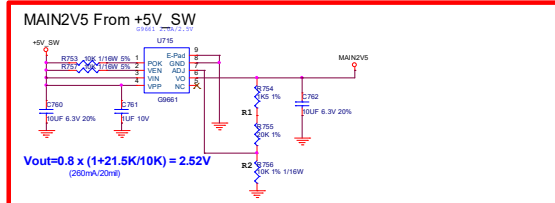
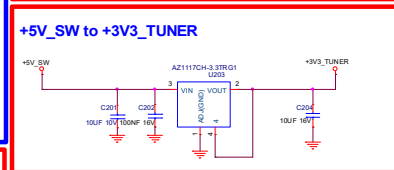
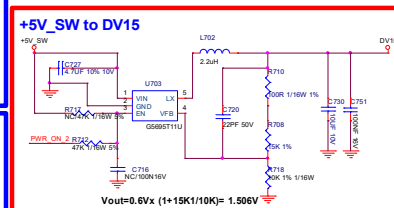
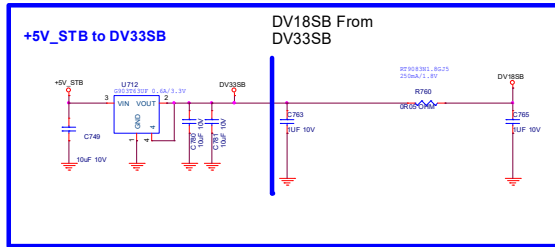
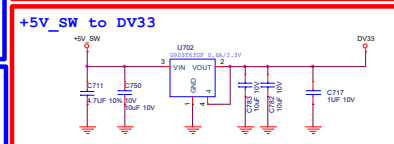
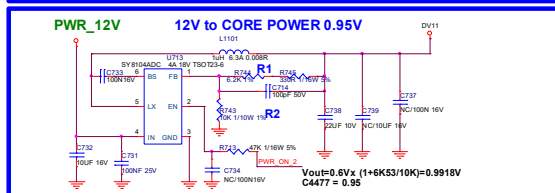
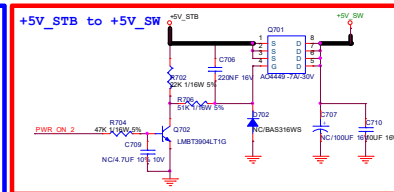
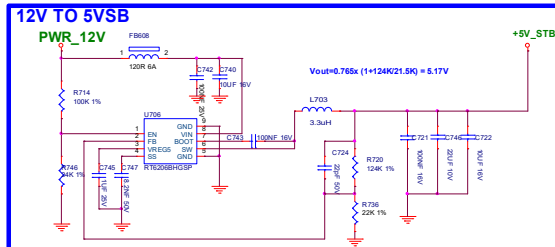
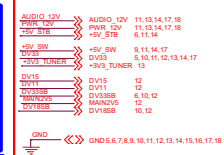
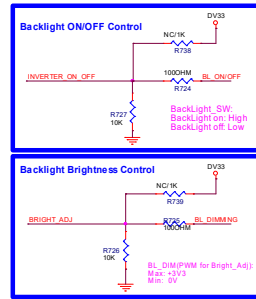
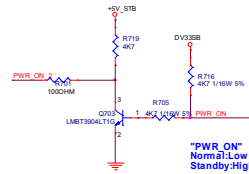
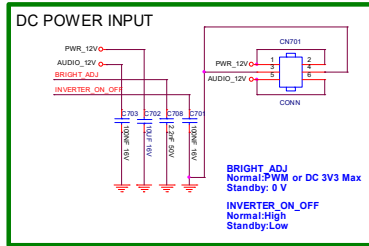
**8-7-14 Power\_32**



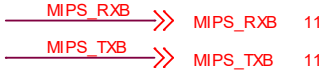
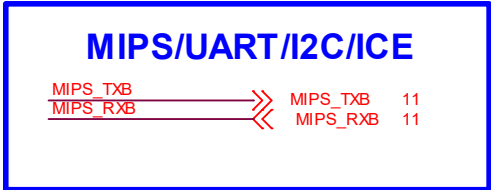
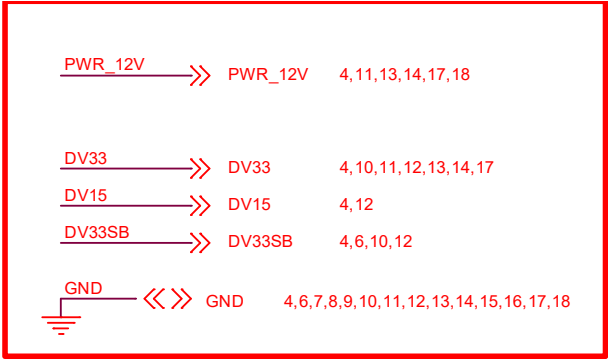
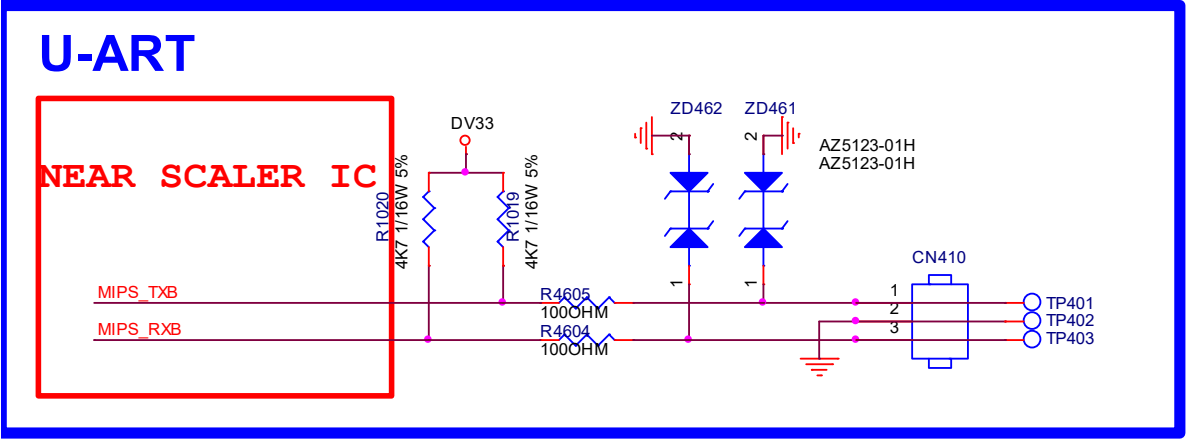
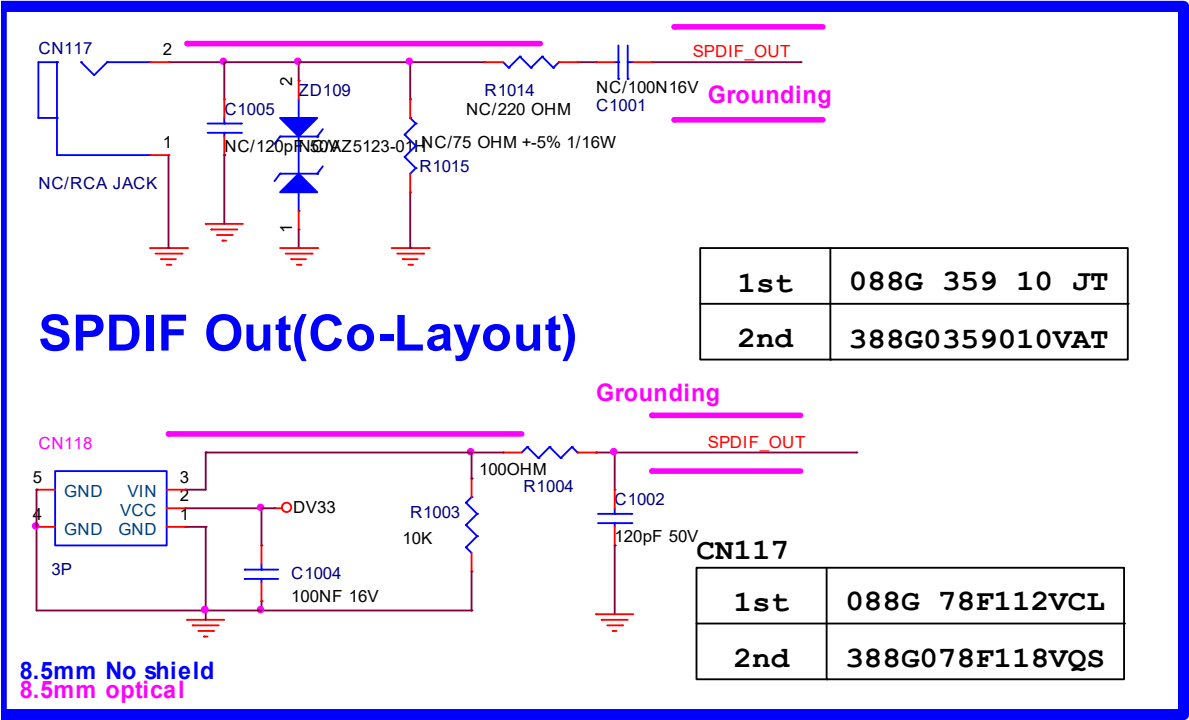
## 8.8 715G8991 MAIN (For 43"4112 Series)

### 8-8-1 NT72461

#### 2K17 EU NT72461 - 2 Layers 400mm X 124mm

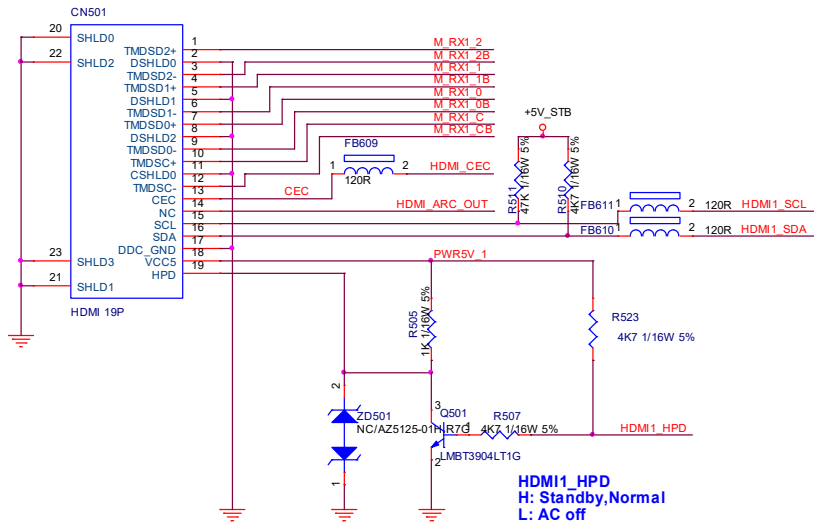


8-8-2 SPDIF/UART INPUT

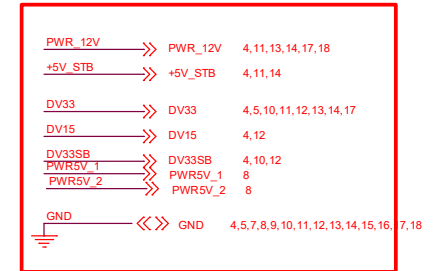
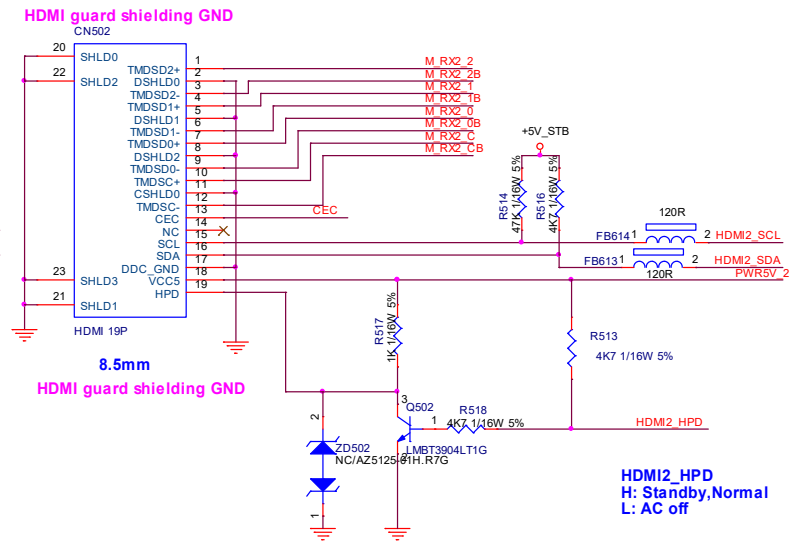


### 8-8-3 HDMI

## HDMI 1 ARC



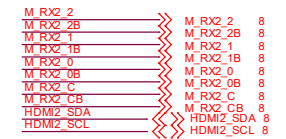
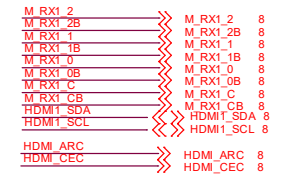
## HDMI 2



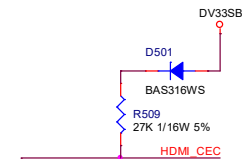
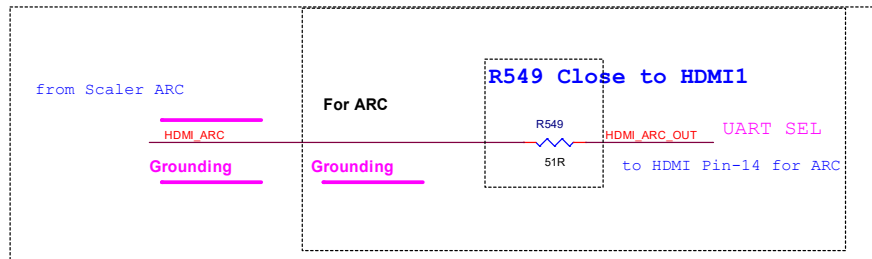
## MIPS/UART/I2C/ICE



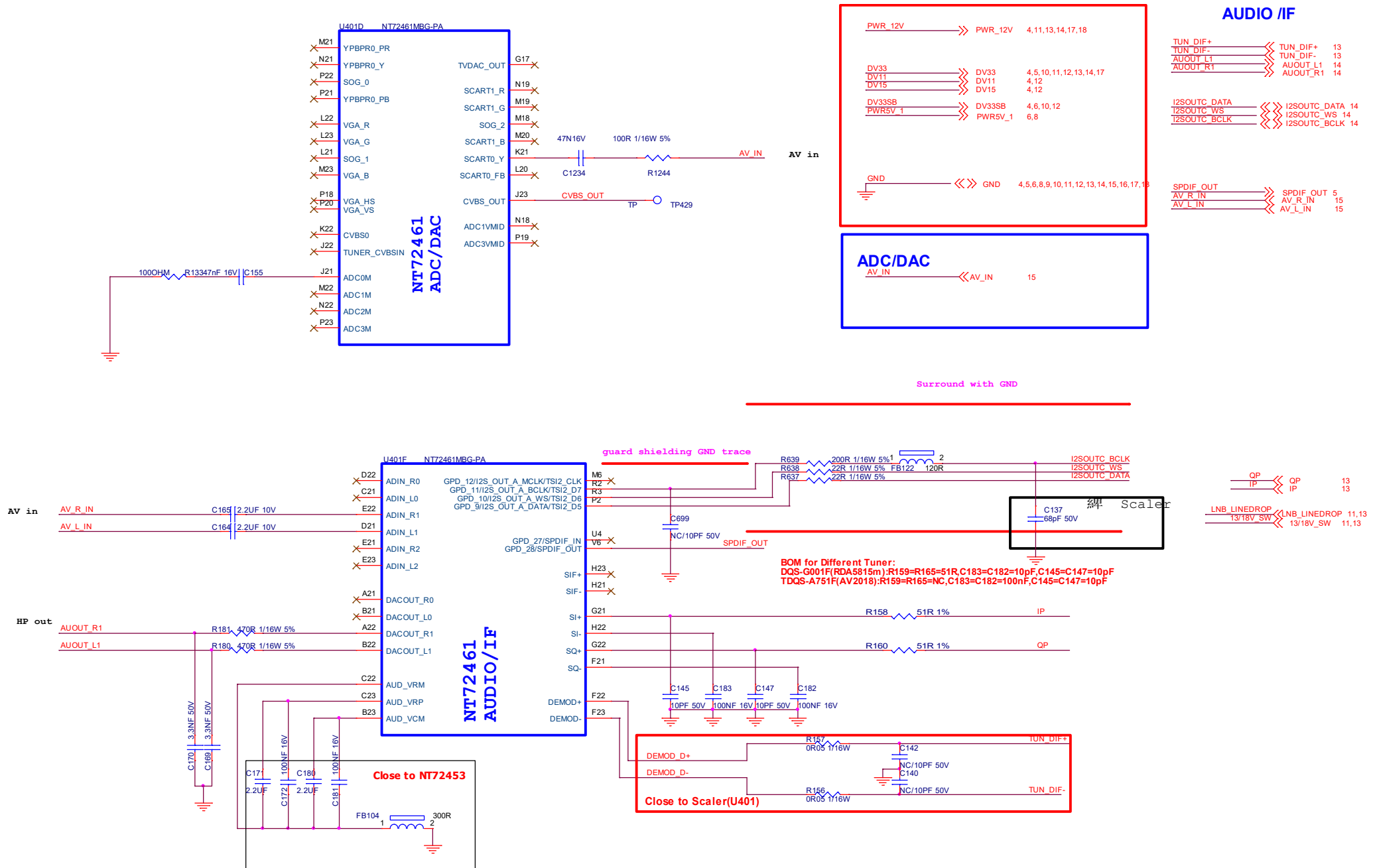
## HDMI



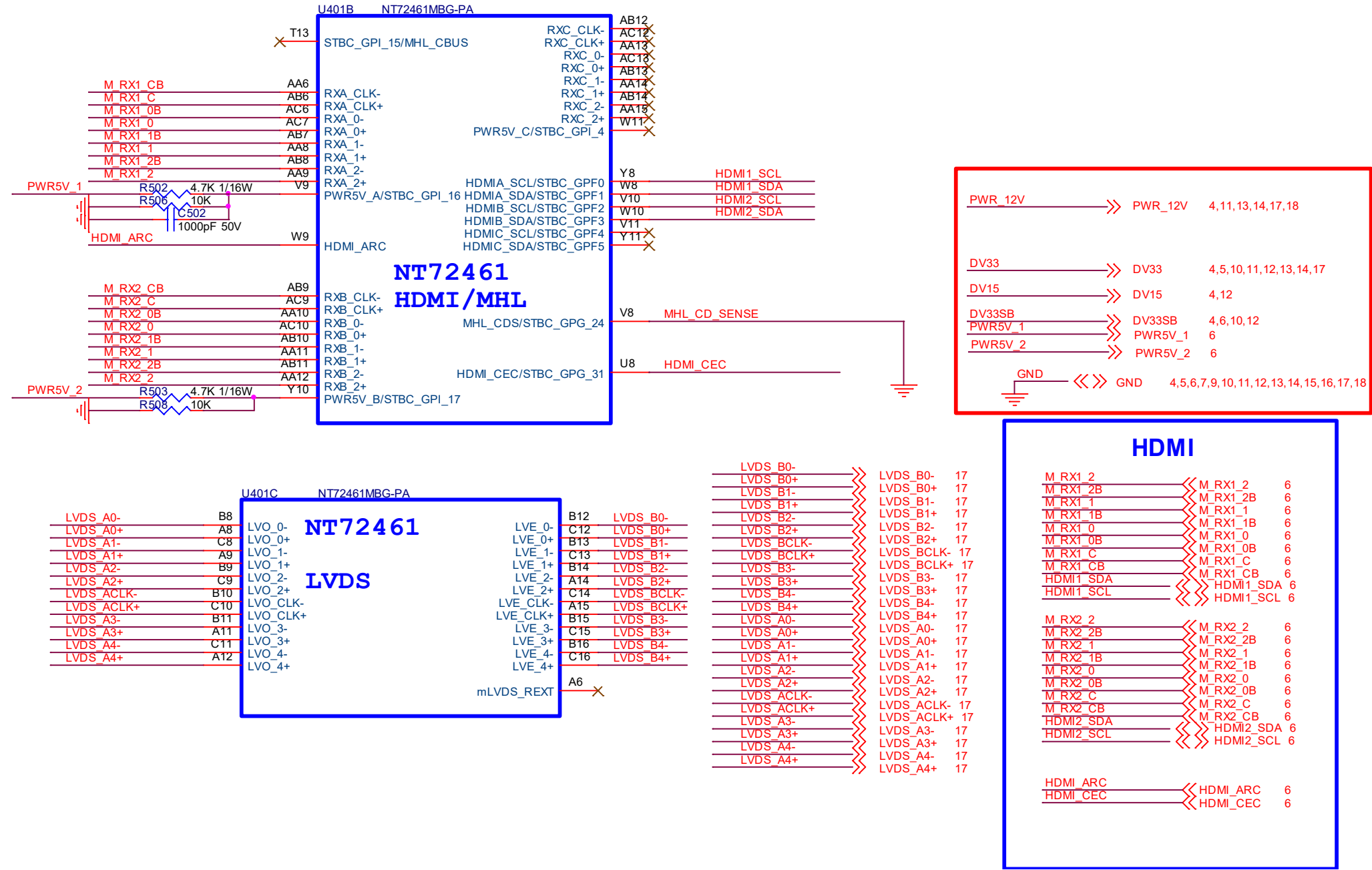
## GPIO



## 8-8-4 NT72461\_ADC/DAC/AUDIO/SIF



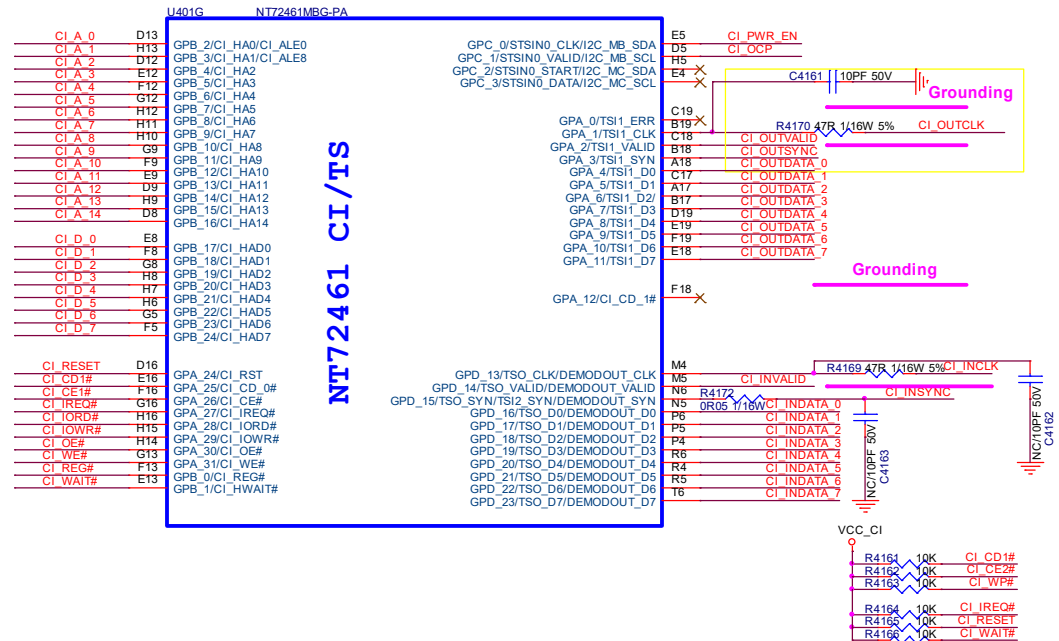
8-8-5 NT72461\_HDMI/LVDS OUT



[illegible]

### CLOSE TO CI CONNECTOR

The diagram shows a 3.3V LDO regulator (U102, GS24B3T11U) with its input capacitor (C1306, 100µF) placed close to the CI connector. The input is connected to +5V\_SW through a 4.7K resistor (R1303). The output is connected to VCC\_CI through a 100nF capacitor (C1303) and a 10µF capacitor (C1305).



|            |             |             |            |
|------------|-------------|-------------|------------|
| CI A13     | CI A 13     | CI D7       | CI D 7     |
| CI INDATA0 | CI INDATA 0 | CI D6       | CI D 6     |
| CI A8      | CI A 8      | CI OUTDATA5 | CI OUTDATA |
| CI A9      | CI A 9      | CI D5       | CI D 5     |

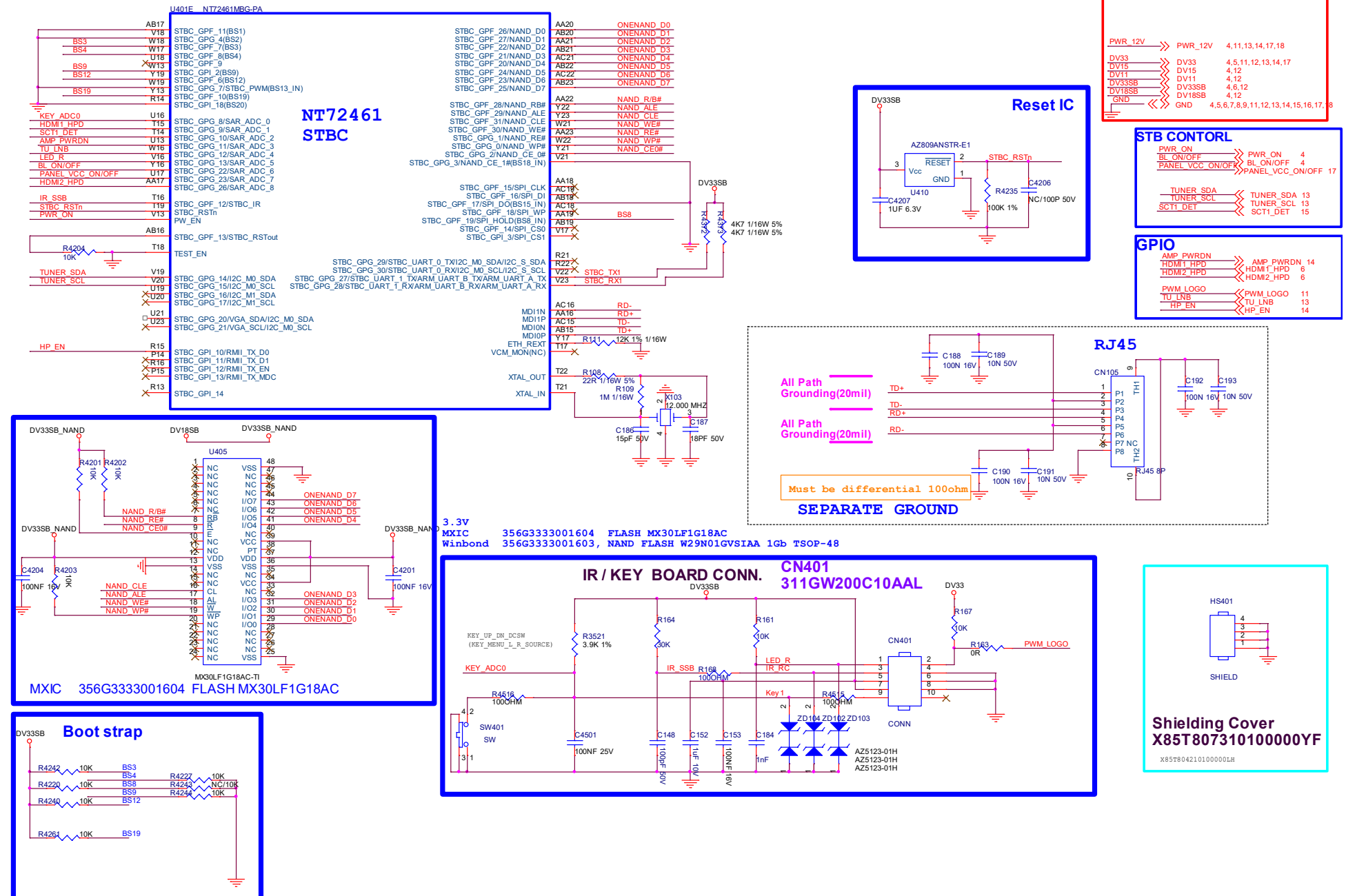
  

|             |              |             |            |
|-------------|--------------|-------------|------------|
| CI A11      | CI A 11      | CI D4       | CI D 4     |
| CI A10      | CI A 10      | CI OUTDATA4 | CI OUTDATA |
| CI OUTDATA7 | CI OUTDATA 7 | CI D3       | CI D 3     |
| CI OUTDATA6 | CI OUTDATA 6 | CI OUTDATA3 | CI OUTDATA |

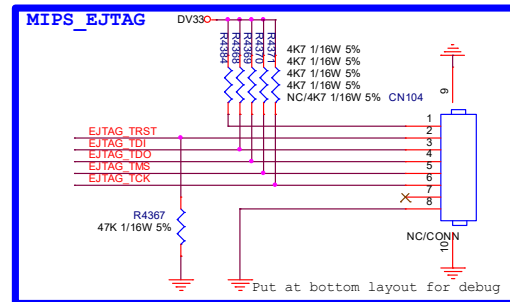
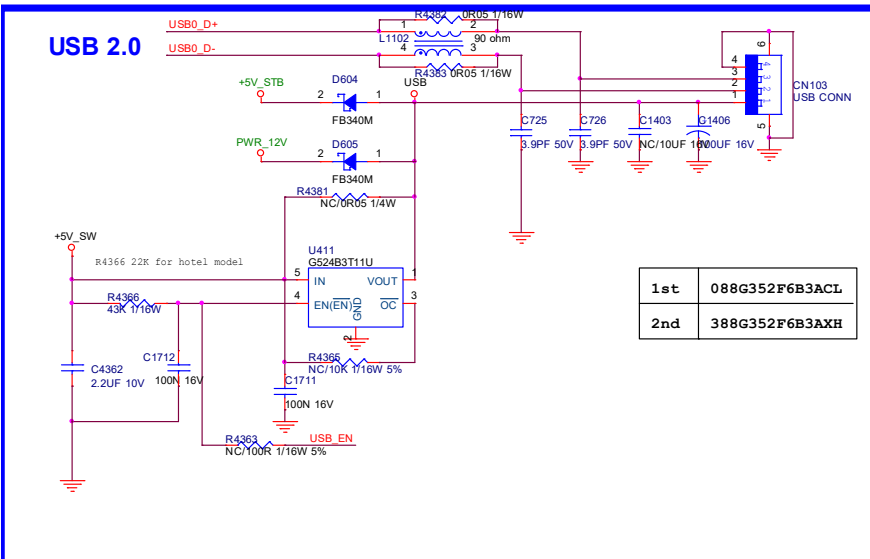
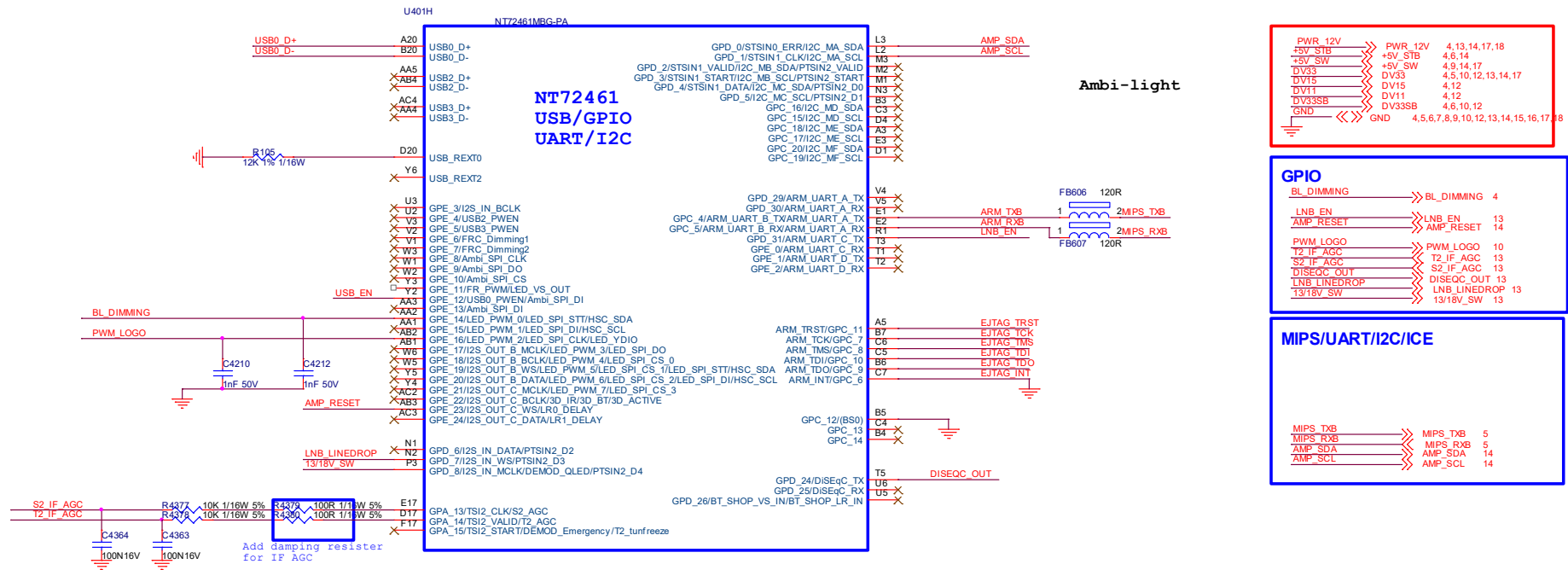
## GPIO

|            |    |            |
|------------|----|------------|
| CI_INCLK   | << | CI_INCLK   |
| CI_INVALID | << | CI_INVALID |
| CI_INSYNC  | << | CI_INSYNC  |
| CI_INDATA7 | << | CI_INDATA7 |
| CI_INDATA6 | << | CI_INDATA6 |
| CI_INDATA5 | << | CI_INDATA5 |
| CI_INDATA4 | << | CI_INDATA4 |
| CI_INDATA3 | << | CI_INDATA3 |
| CI_INDATA2 | << | CI_INDATA2 |
| CI_INDATA1 | << | CI_INDATA1 |
| CI_INDATA0 | << | CI_INDATA0 |

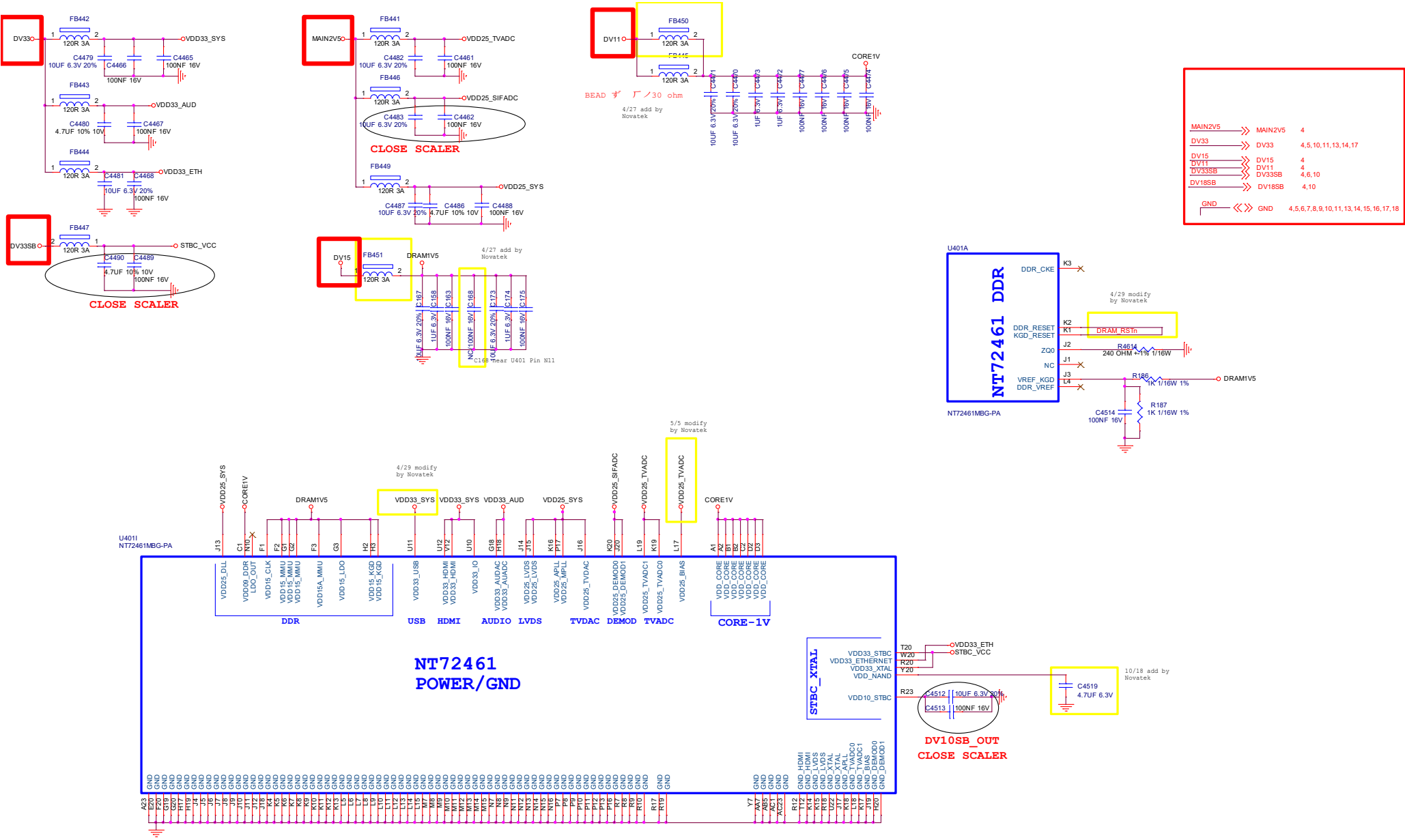
8-8-7 NT72461\_STBC/FLASH/RJ45



8-8-8 NT72461\_USB/GPIO



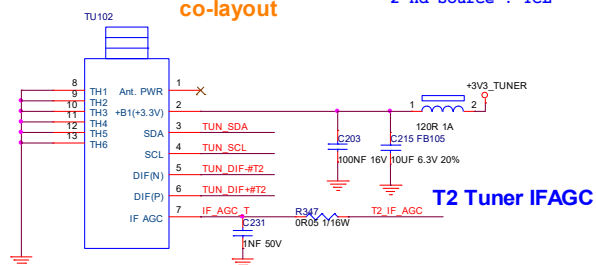
8-8-9 NT72461\_POWER



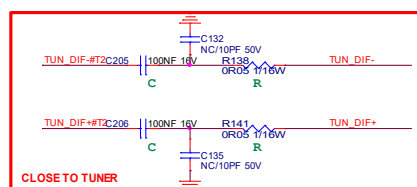
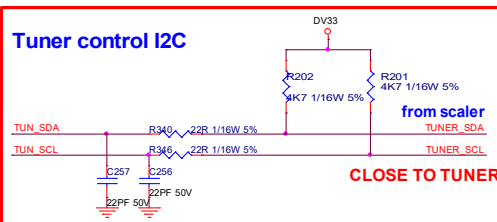
**8-8-10 T2 /S2 Tuner**

## T2 TUNER

LGtuner with DVB-C/T/T2 1'st Source : LGIT TDSY-G480D (394GPASEBIL03G)  
2'nd Source : TCL



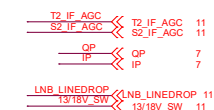
## Tuner control I2C



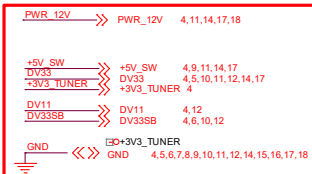
## GPIO



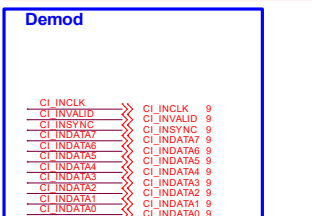
## Tuner



PWR\_12V



## Demod

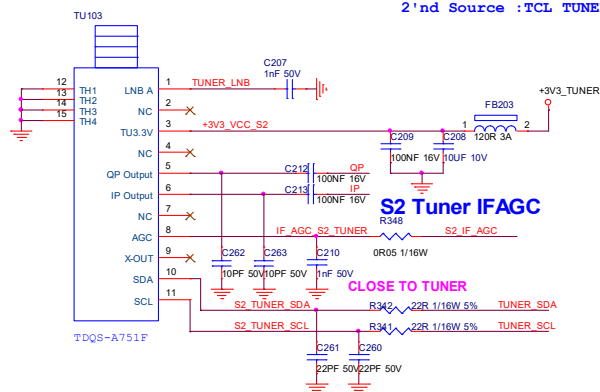


## S2 TUNER

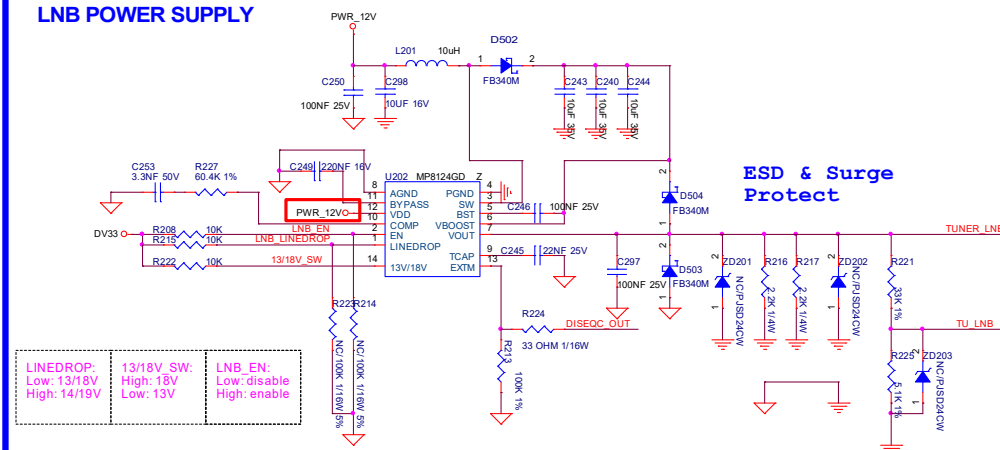
```

LGtuner with DVB-S/S2      1'st Source :LG TDQS-A701F  (394GPASEBIL04G)
                             2'nd Source :TCL TUNER EU  ()

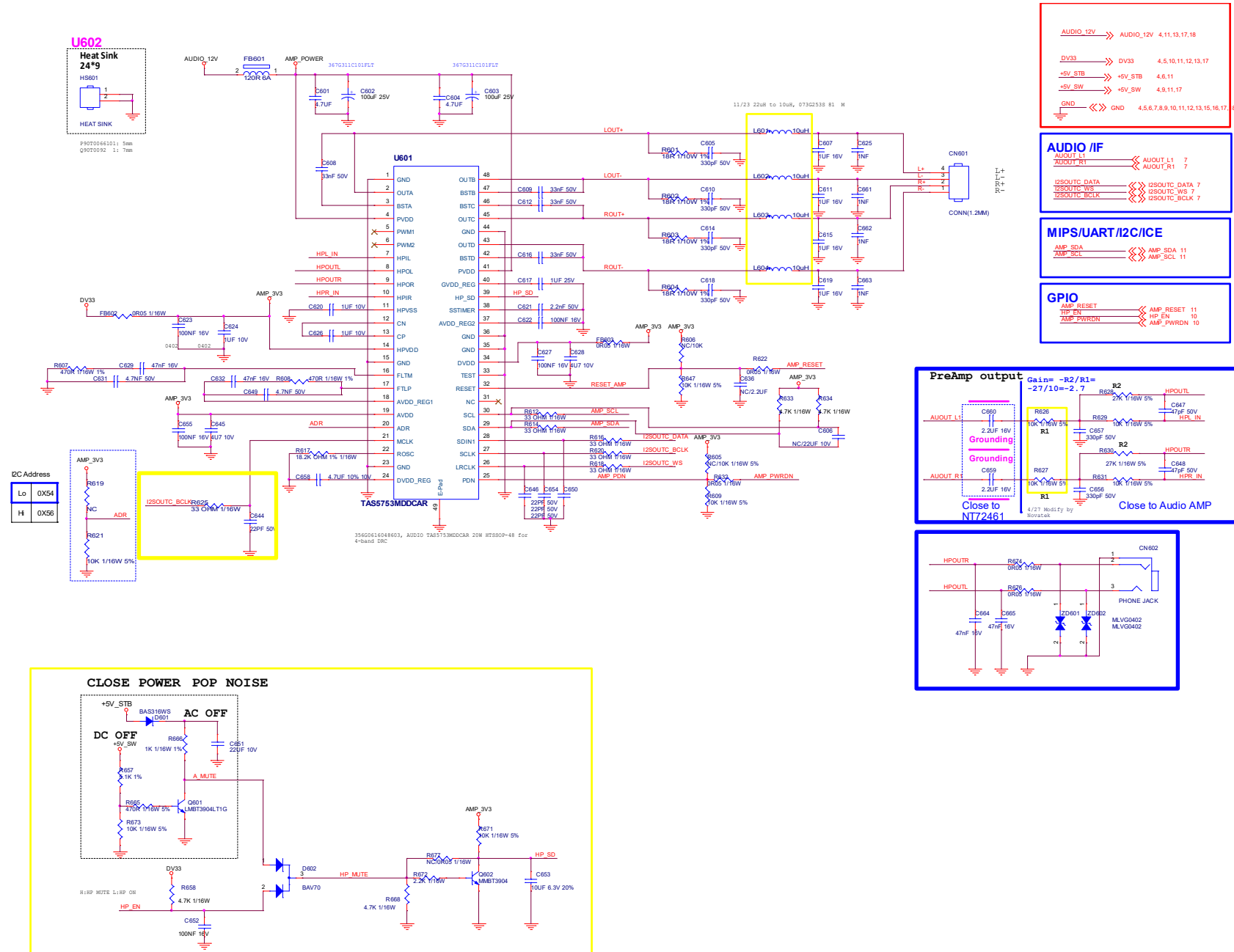
```



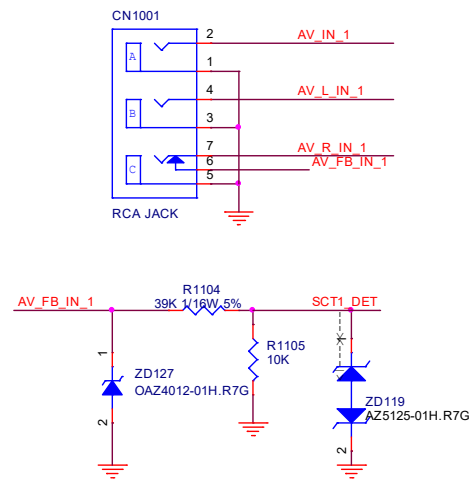
## LNB POWER SUPPLY



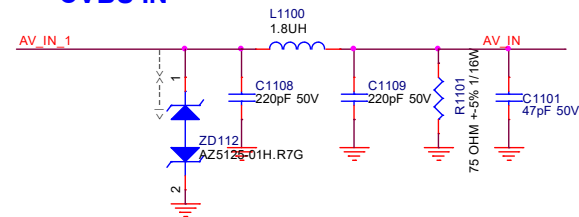
**8-8-11 SPK AMP/HP OUT**



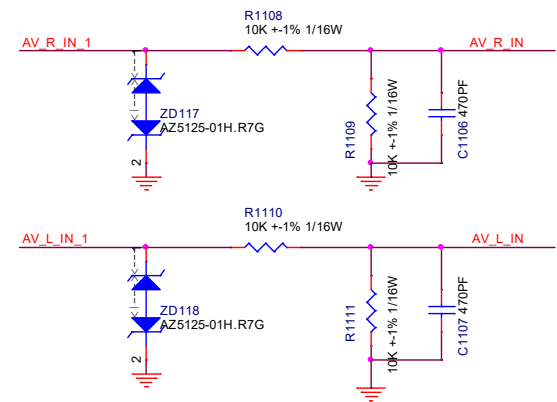
Helf AV(CVBS+L/R IN)



CVBS IN



CVBS IN Audio Input



ADC/DAC

AV\_IN >>> AV\_IN 7

AUDIO /IF

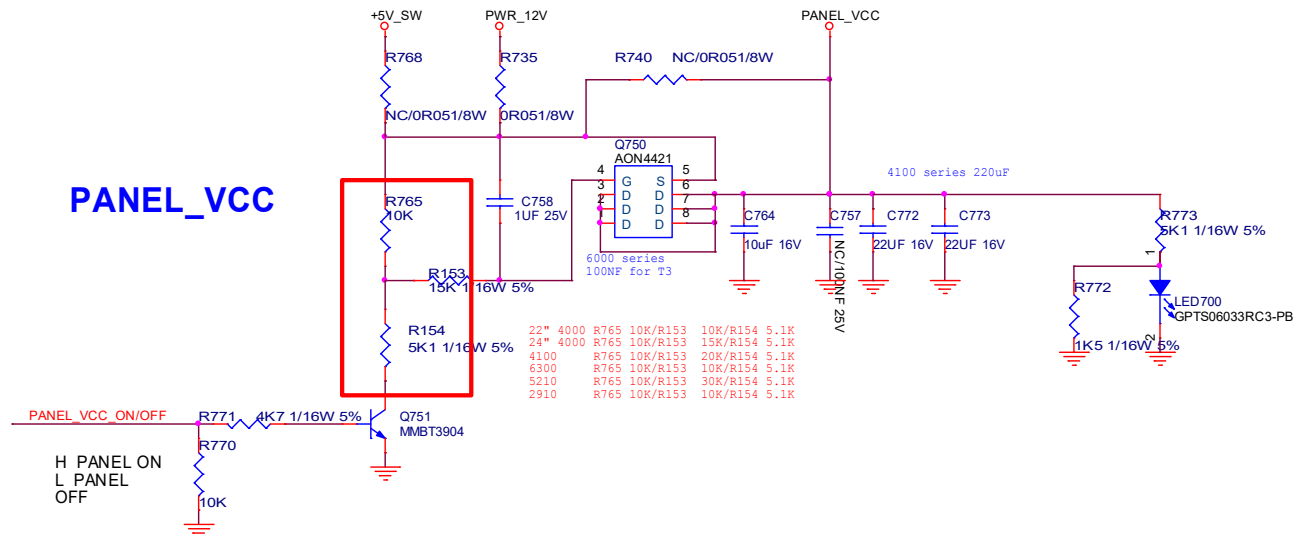
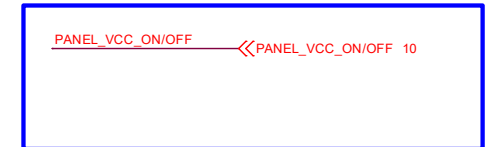
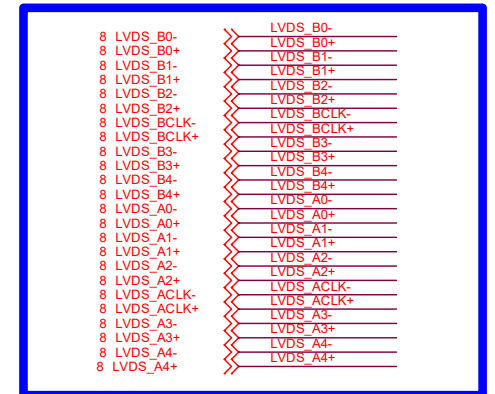
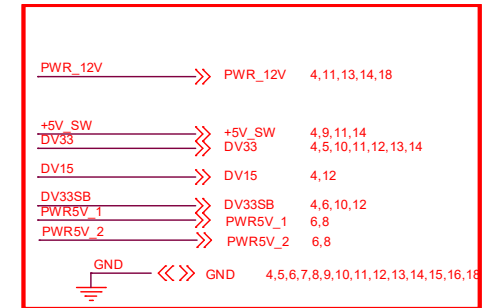
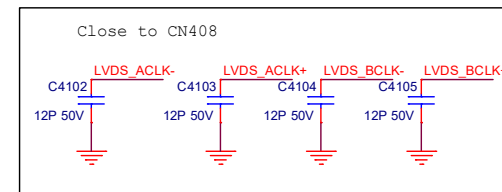
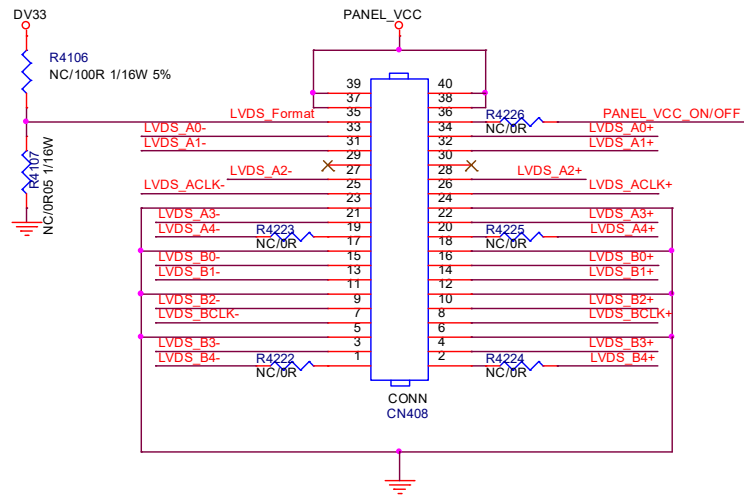
AV\_R\_IN >>> AV\_R\_IN 7  
AV\_L\_IN >>> AV\_L\_IN 7

STB CONTORL

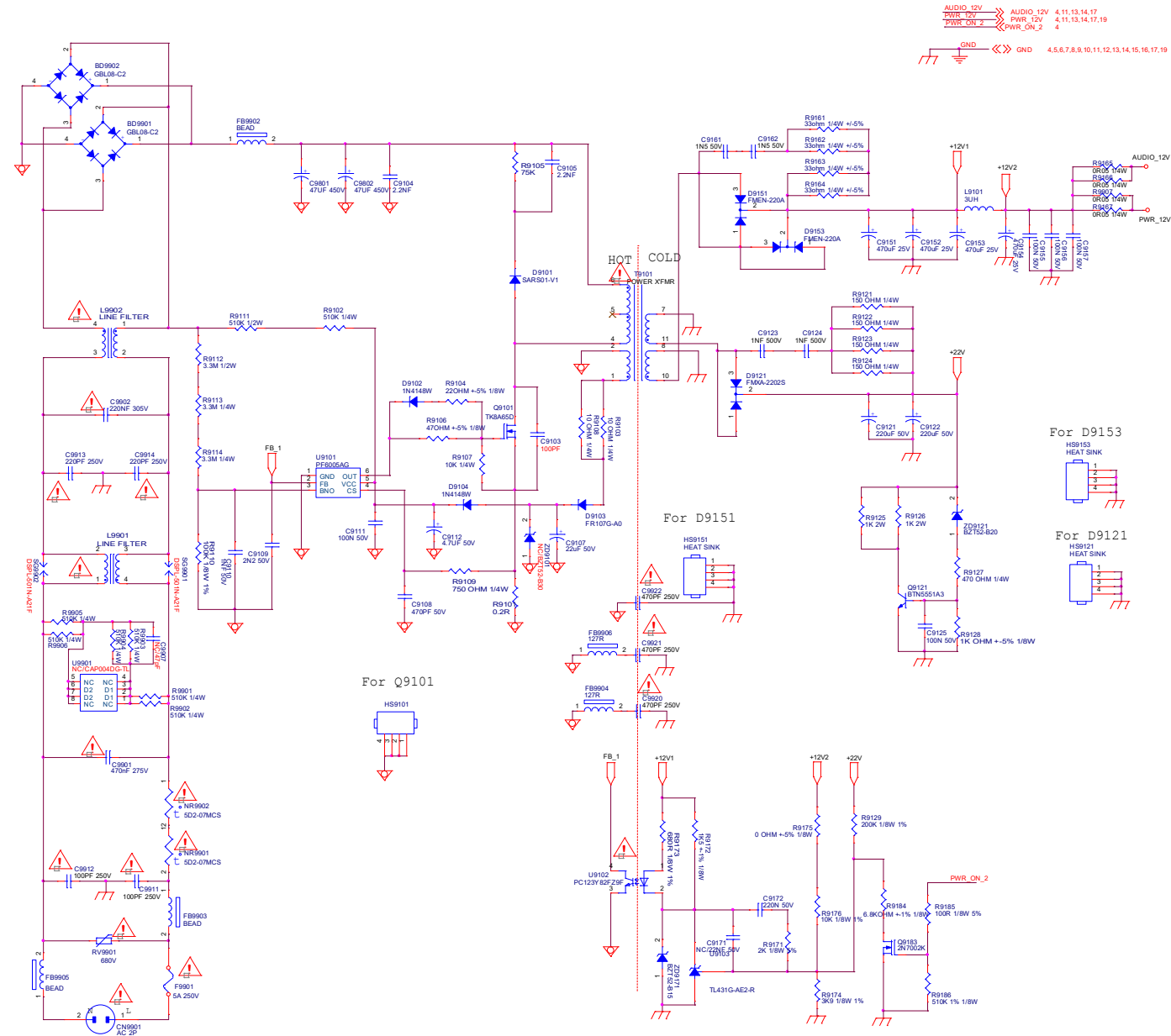
SCT1\_DET >>> SCT1\_DET 10

GND <<< GND 4,5,6,7,8,9,10,11,12,13,14,16,17,18

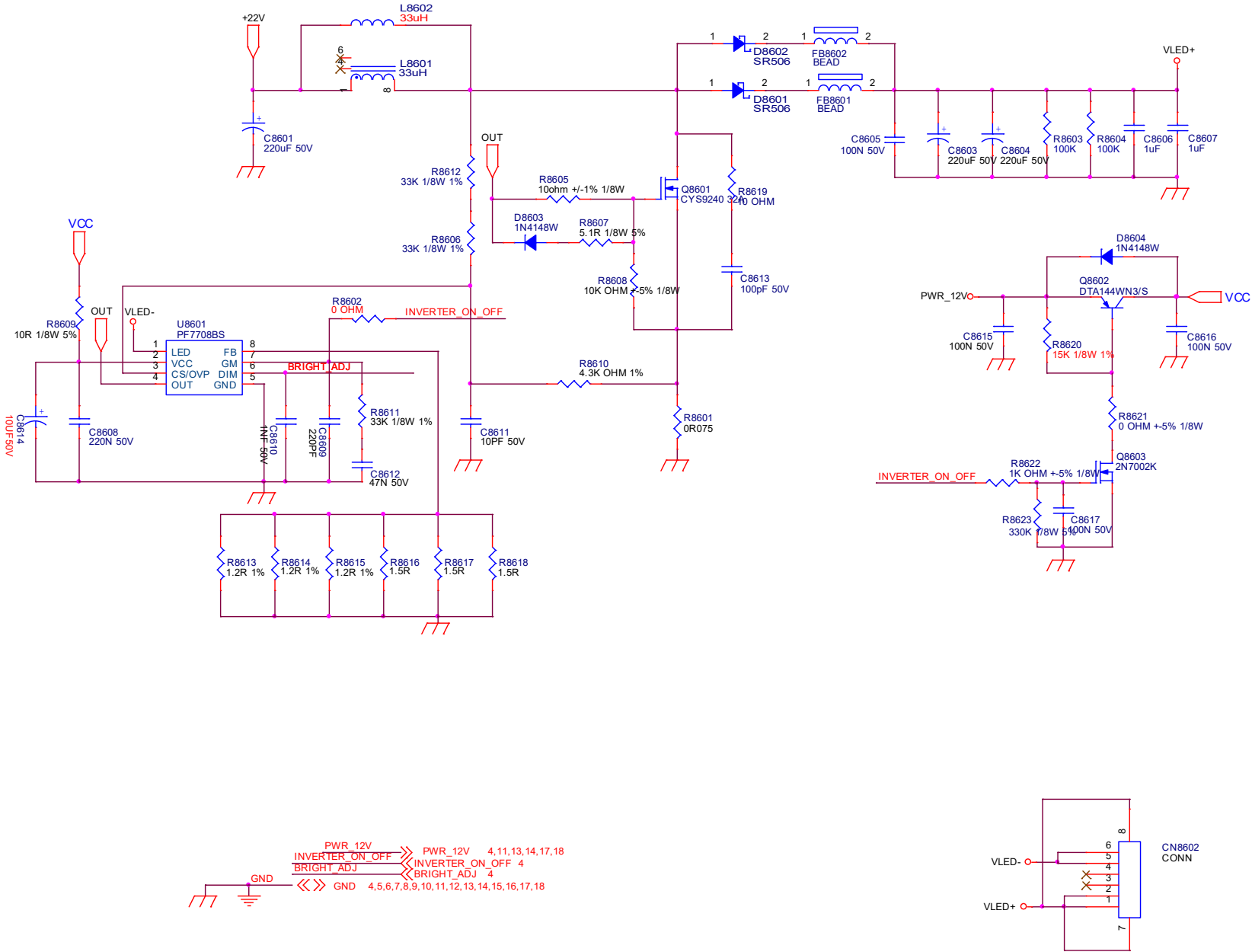
### 8-8-13 LVDS



### 8-8-14 Power



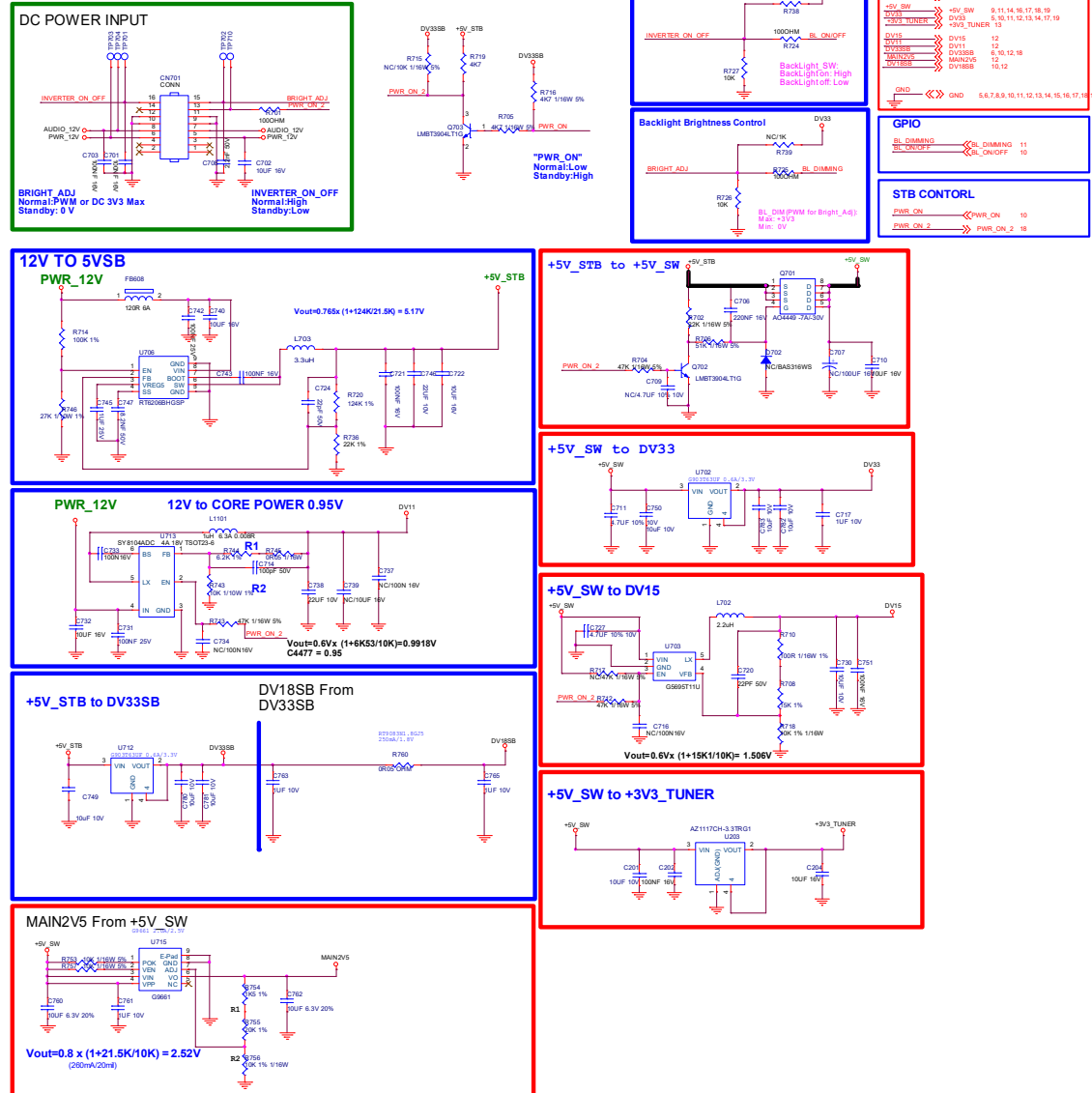
8-8-15 LED Driver



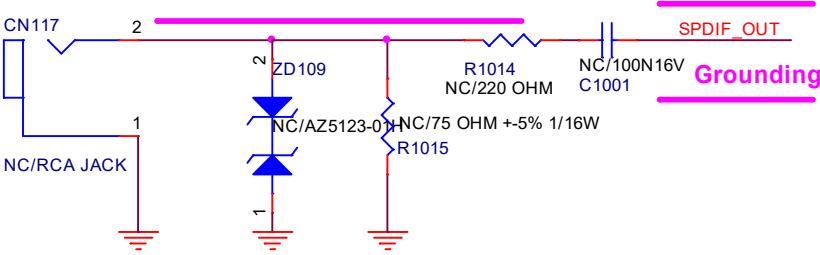
## 8.9 715G8659 MAIN (For 4232 & 4132 & 4032 & 4022 Series)

### 8-9-1 NT72461

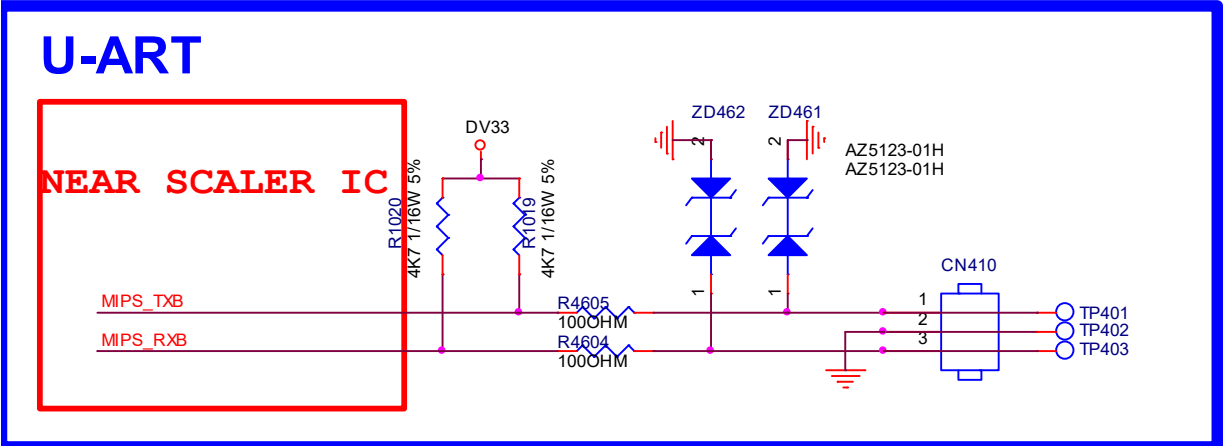
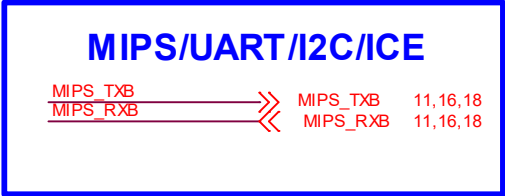
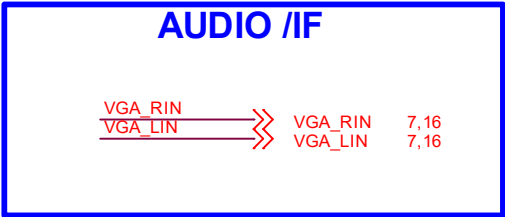
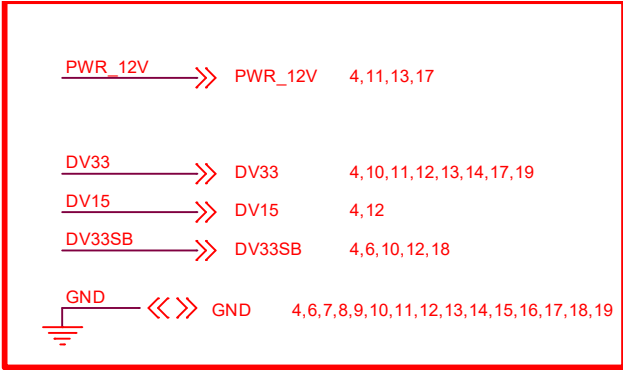
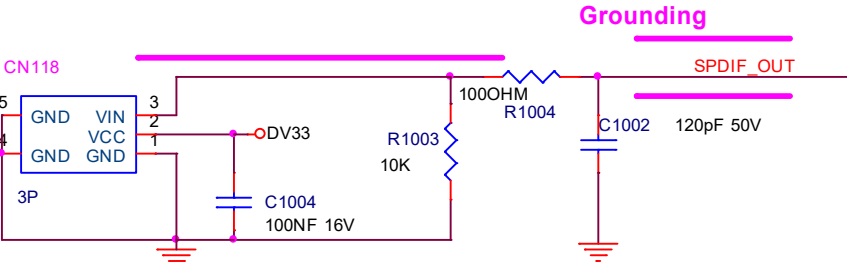
#### 2K14 EU NT72461 - 2 Layers 193mm X 125mm



8-9-2 PDIF/UART INPUT

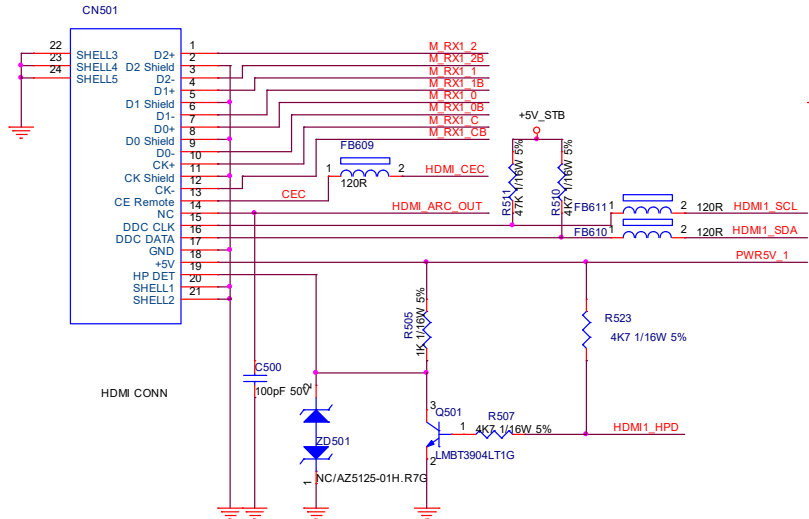


SPDIF Out(Co-Layout)

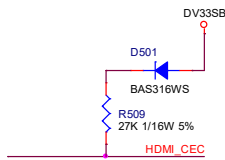
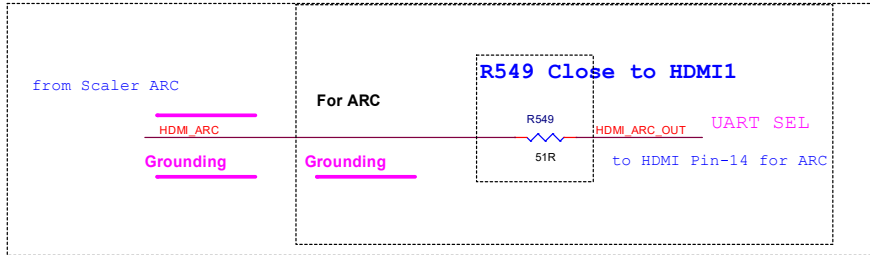
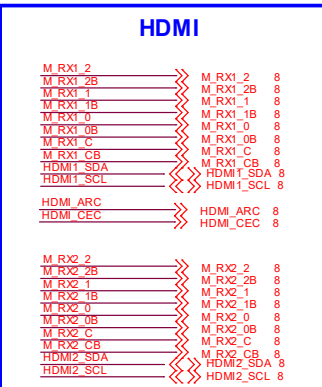
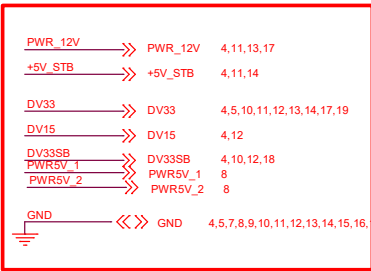
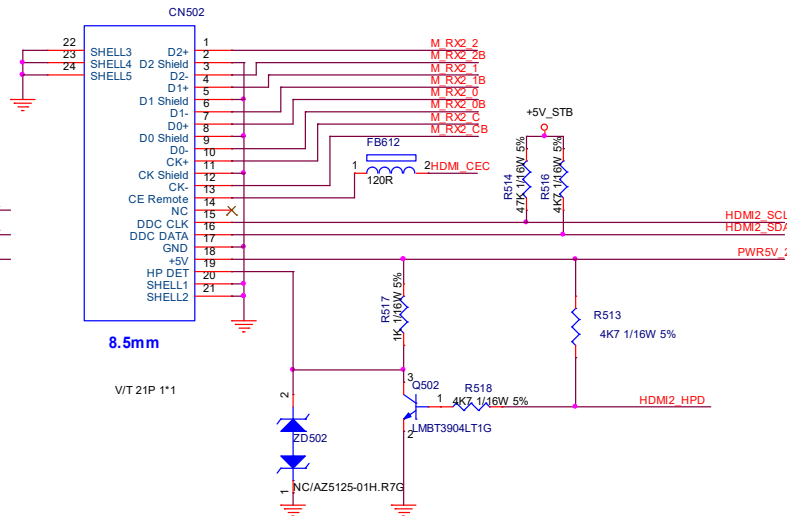


8-9-3 HDMI

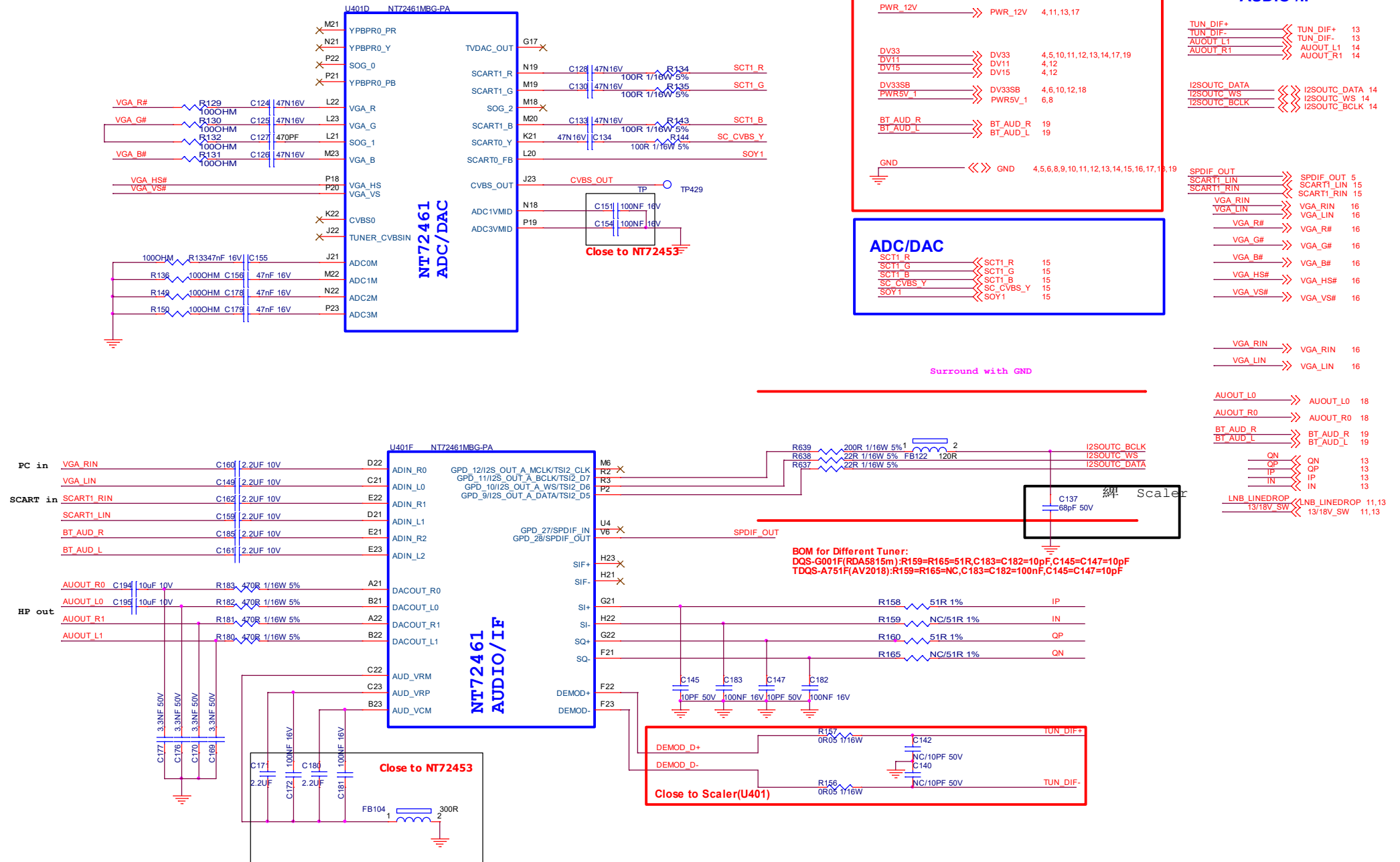
Rear HDMI 1



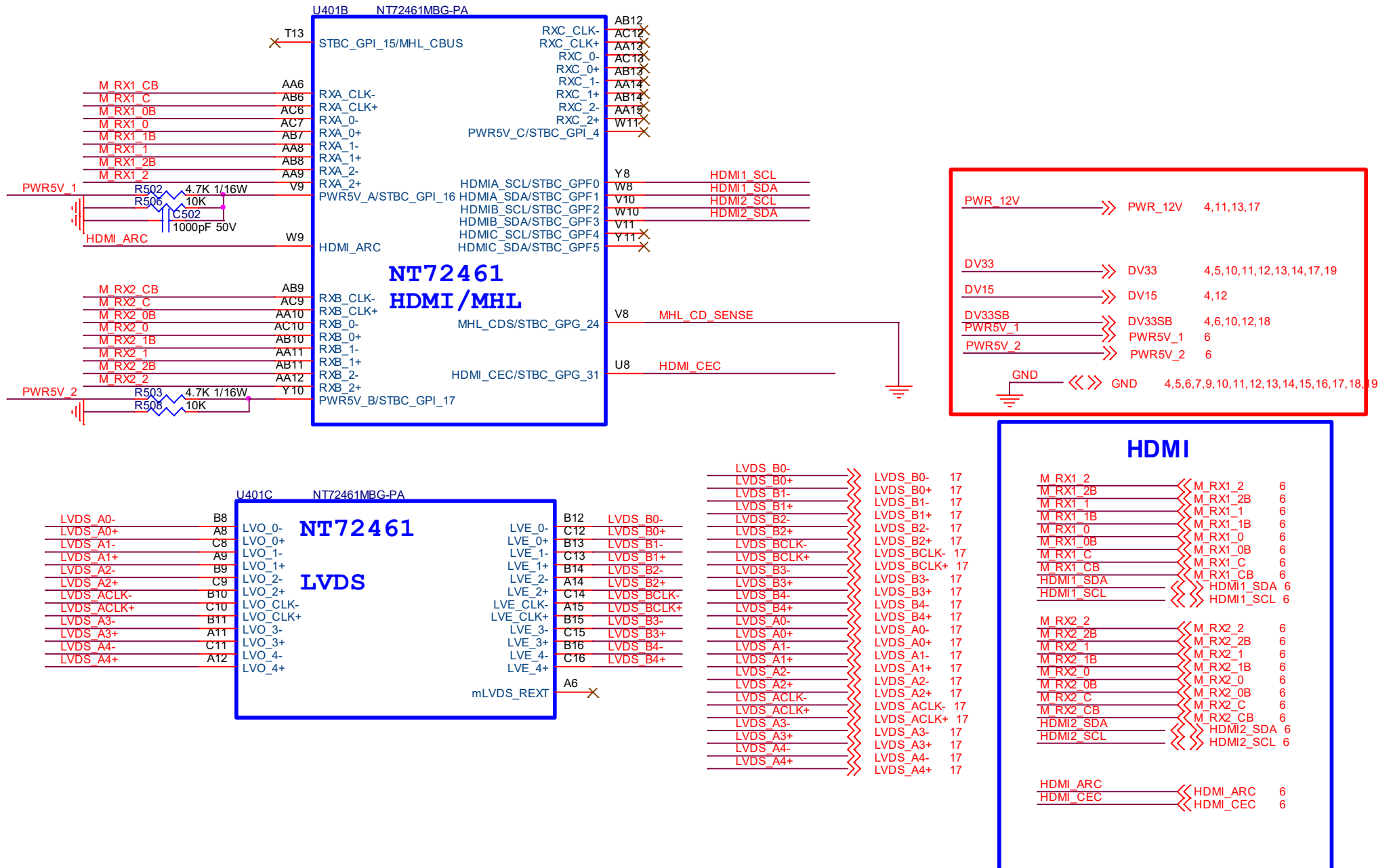
Rear HDMI 2



## 8-9-4 NT72461\_ADC/DAC/AUDIO/SIF

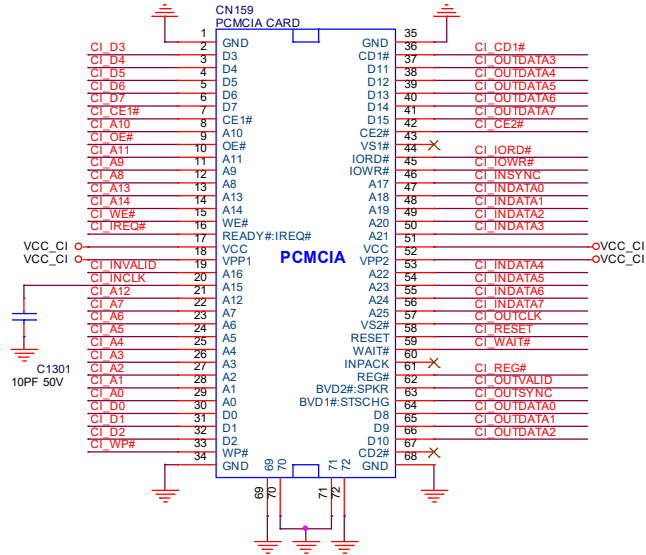


## 8-9-5 NT72461\_HDMI/LVDS OUT



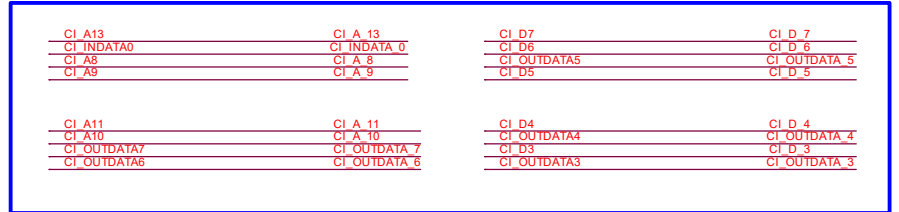
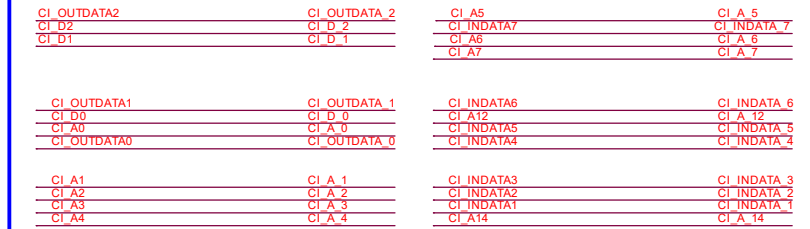
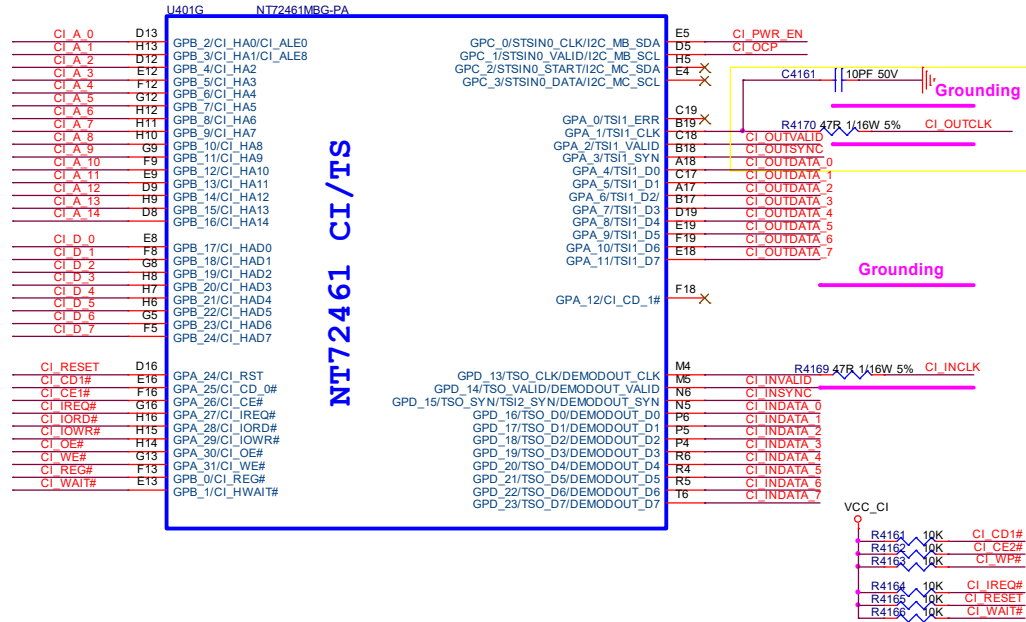
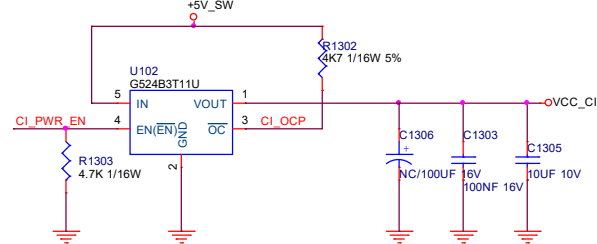
## 8-9-6 NT72461\_CI

### PCMCIA Slot



### CI Bus Power Control

#### CLOSE TO CI CONNECTOR



**NT72461 STBC**

**Left-Top Screw hole**

**Reset IC**

**STB CONTORL**

**GPIO**

**RJ45**

**IR / KEY BOARD CONN.**

**Co-Lay with HS401**

**Boot strap**

**MXIC 356G3333001604 FLASH MX30LF1G18AC**

**W29N01GVSIAA 1Gb TSOP-48**

**HS402**

**SHIELD Cover X85T807310100000YF**

**U401E NT72461MRG-PA**

**U401**

**U717**

**U410**

**U420**

**U430**

**U440**

**U450**

**U460**

**U470**

**U480**

**U490**

**U500**

**U510**

**U520**

**U530**

**U540**

**U550**

**U560**

**U570**

**U580**

**U590**

**U600**

**U610**

**U620**

**U630**

**U640**

**U650**

**U660**

**U670**

**U680**

**U690**

**U700**

**U710**

**U720**

**U730**

**U740**

**U750**

**U760**

**U770**

**U780**

**U790**

**U800**

**U810**

**U820**

**U830**

**U840**

**U850**

**U860**

**U870**

**U880**

**U890**

**U900**

**U910**

**U920**

**U930**

**U940**

**U950**

**U960**

**U970**

**U980**

**U990**

**U1000**

**U1010**

**U1020**

**U1030**

**U1040**

**U1050**

**U1060**

**U1070**

**U1080**

**U1090**

**U1100**

**U1110**

**U1120**

**U1130**

**U1140**

**U1150**

**U1160**

**U1170**

**U1180**

**U1190**

**U1200**

**U1210**

**U1220**

**U1230**

**U1240**

**U1250**

**U1260**

**U1270**

**U1280**

**U1290**

**U1300**

**U1310**

**U1320**

**U1330**

**U1340**

**U1350**

**U1360**

**U1370**

**U1380**

**U1390**

**U1400**

**U1410**

**U1420**

**U1430**

**U1440**

**U1450**

**U1460**

**U1470**

**U1480**

**U1490**

**U1500**

**U1510**

**U1520**

**U1530**

**U1540**

**U1550**

**U1560**

**U1570**

**U1580**

**U1590**

**U1600**

**U1610**

**U1620**

**U1630**

**U1640**

**U1650**

**U1660**

**U1670**

**U1680**

**U1690**

**U1700**

**U1710**

**U1720**

**U1730**

**U1740**

**U1750**

**U1760**

**U1770**

**U1780**

**U1790**

**U1800**

**U1810**

**U1820**

**U1830**

**U1840**

**U1850**

**U1860**

**U1870**

**U1880**

**U1890**

**U1900**

**U1910**

**U1920**

**U1930**

**U1940**

**U1950**

**U1960**

**U1970**

**U1980**

**U1990**

**U2000**

**U2010**

**U2020**

**U2030**

**U2040**

**U2050**

**U2060**

**U2070**

**U2080**

**U2090**

**U2100**

**U2110**

**U2120**

**U2130**

**U2140**

**U2150**

**U2160**

**U2170**

**U2180**

**U2190**

**U2200**

**U2210**

**U2220**

**U2230**

**U2240**

**U2250**

**U2260**

**U2270**

**U2280**

**U2290**

**U2300**

**U2310**

**U2320**

**U2330**

**U2340**

**U2350**

**U2360**

**U2370**

**U2380**

**U2390**

**U2400**

**U2410**

**U2420**

**U2430**

**U2440**

**U2450**

**U2460**

**U2470**

**U2480**

**U2490**

**U2500**

**U2510**

**U2520**

**U2530**

**U2540**

**U2550**

**U2560**

**U2570**

**U2580**

**U2590**

**U2600**

**U2610**

**U2620**

**U2630**

**U2640**

**U2650**

**U2660**

**U2670**

**U2680**

**U2690**

**U2700**

**U2710**

**U2720**

**U2730**

**U2740**

**U2750**

**U2760**

**U2770**

**U2780**

**U2790**

**U2800**

**U2810**

**U2820**

**U2830**

**U2840**

**U2850**

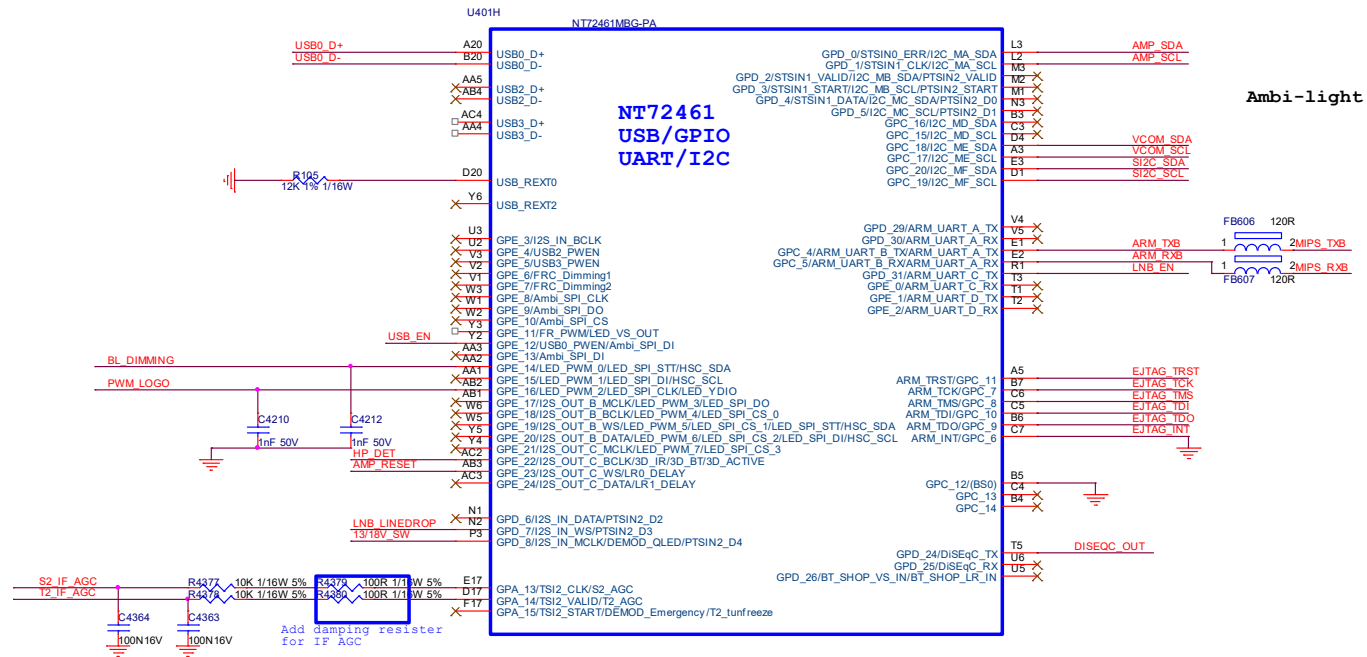
**U2860**

**U2870**

**U2880**

**U2890**

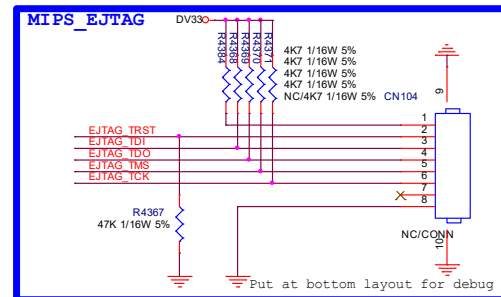
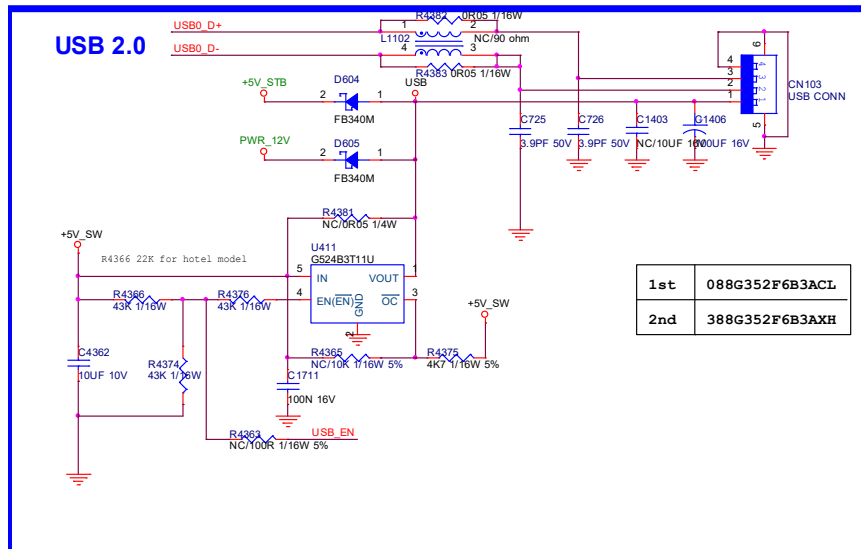
## 8-9-8 NT72461\_USB/GPIO



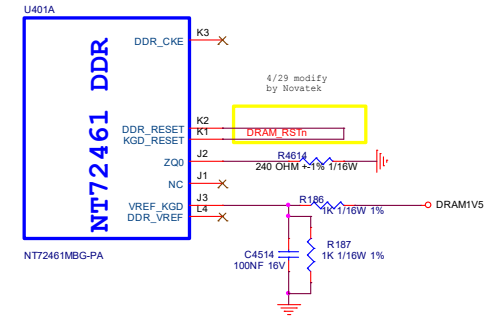
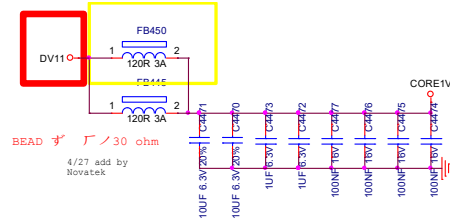
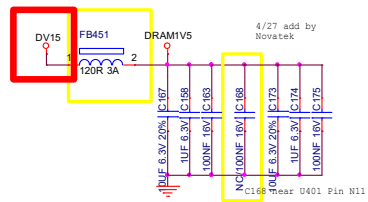
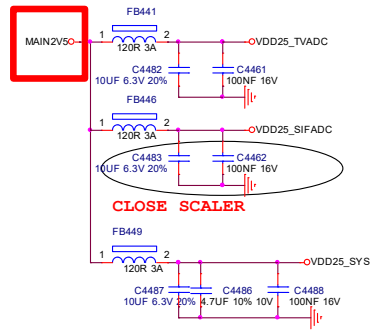
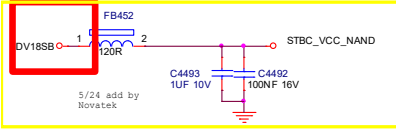
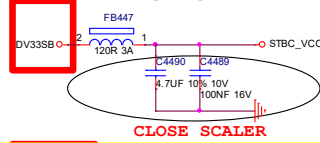
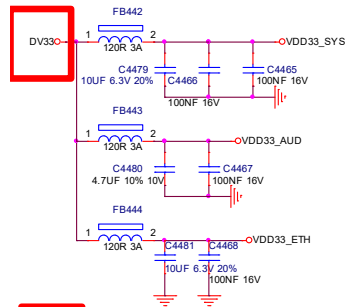
|         |         |                                                      |
|---------|---------|------------------------------------------------------|
| PWR 12V | PWR 12V | 4, 13, 17                                            |
| +5V_STB | +5V_STB | 4, 6, 14                                             |
| +5V_SW  | +5V_SW  | 4, 9, 14, 16, 17, 18, 19                             |
| DV33    | DV33    | 4, 5, 10, 12, 13, 14, 17, 19                         |
| DV15    | DV15    | 4, 12                                                |
| DV11    | DV11    | 4, 12                                                |
| DV33SB  | DV33SB  | 4, 6, 10, 12, 18                                     |
| GND     | GND     | 4, 5, 6, 7, 8, 9, 10, 12, 13, 14, 15, 16, 17, 18, 19 |

| GPIO              |                |    |
|-------------------|----------------|----|
| <u>BL_DIMMING</u> | >>> BL_DIMMING | 4  |
| LNB_EN            | LNB_EN         | 13 |
| AMP_RESET         | AMP_RESET      | 14 |
| HP_DET            | HP_DET         | 14 |
| PWM LOGO          | PWM_LOGO       | 10 |
| T2 IF AGC         | T2_IF_AGC      | 13 |
| S2 IF AGC         | S2_IF_AGC      | 13 |
| DISEQC_OUT        | DISEQC_OUT     | 13 |
| LNB LINEDROP      | LNB_LINEDROP   | 13 |
| 13/18V_SW         | 13/18V_SW      | 13 |

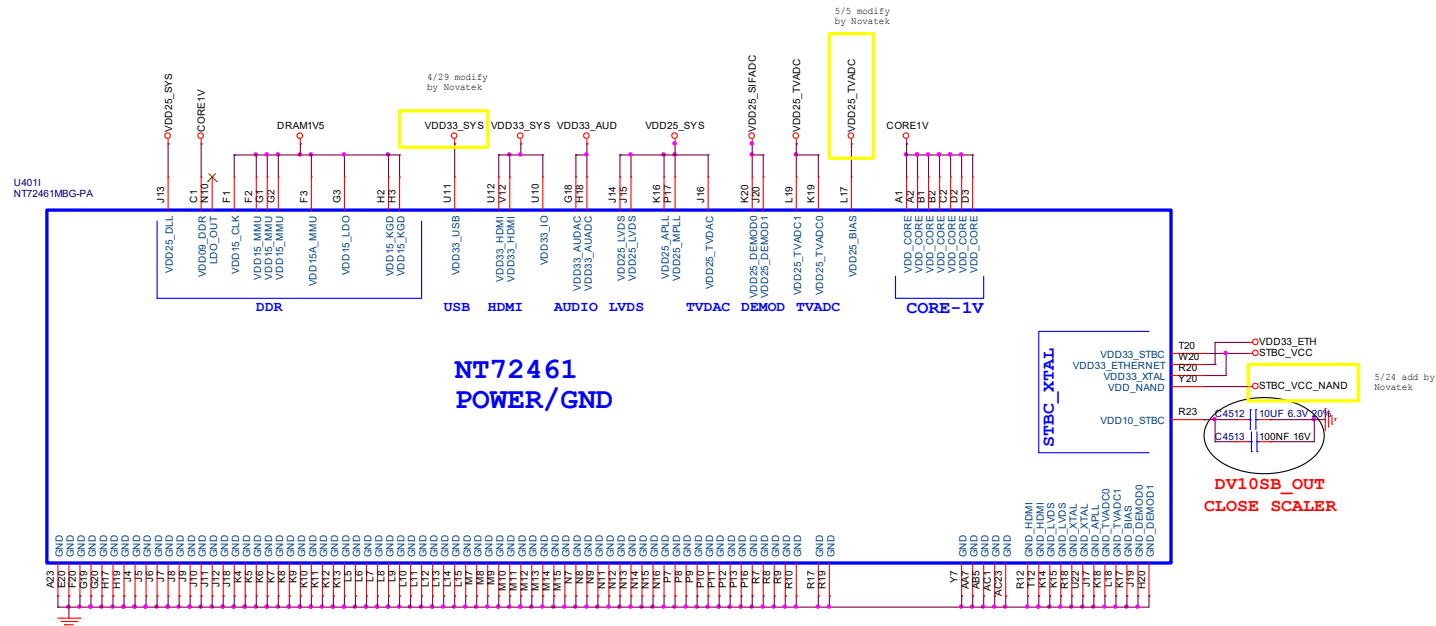
| MIPS UART/I2C/ICE Signal | MCP23017 Pin |
|--------------------------|--------------|
| SI2C_SDA                 | SDA          |
| SI2C_SCL                 | SCL          |
| VCOM_SDA                 | P0           |
| VCOM_SCL                 | P1           |
| MIPS_TXB                 | P2           |
| MIPS_RXB                 | P3           |
| AMP_SDA                  | P4           |
| AMP_SCL                  | P5           |



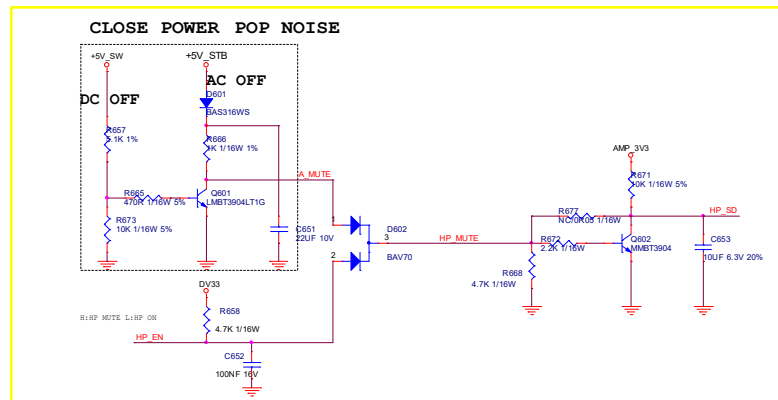
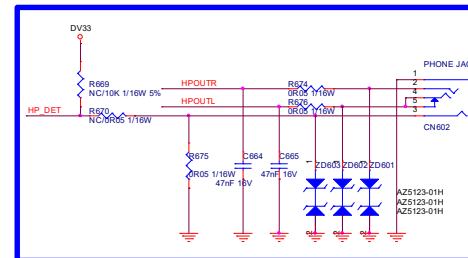
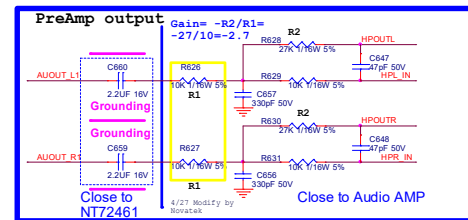
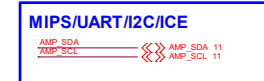
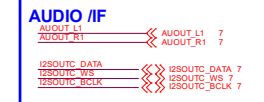
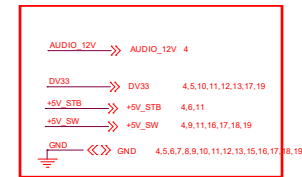
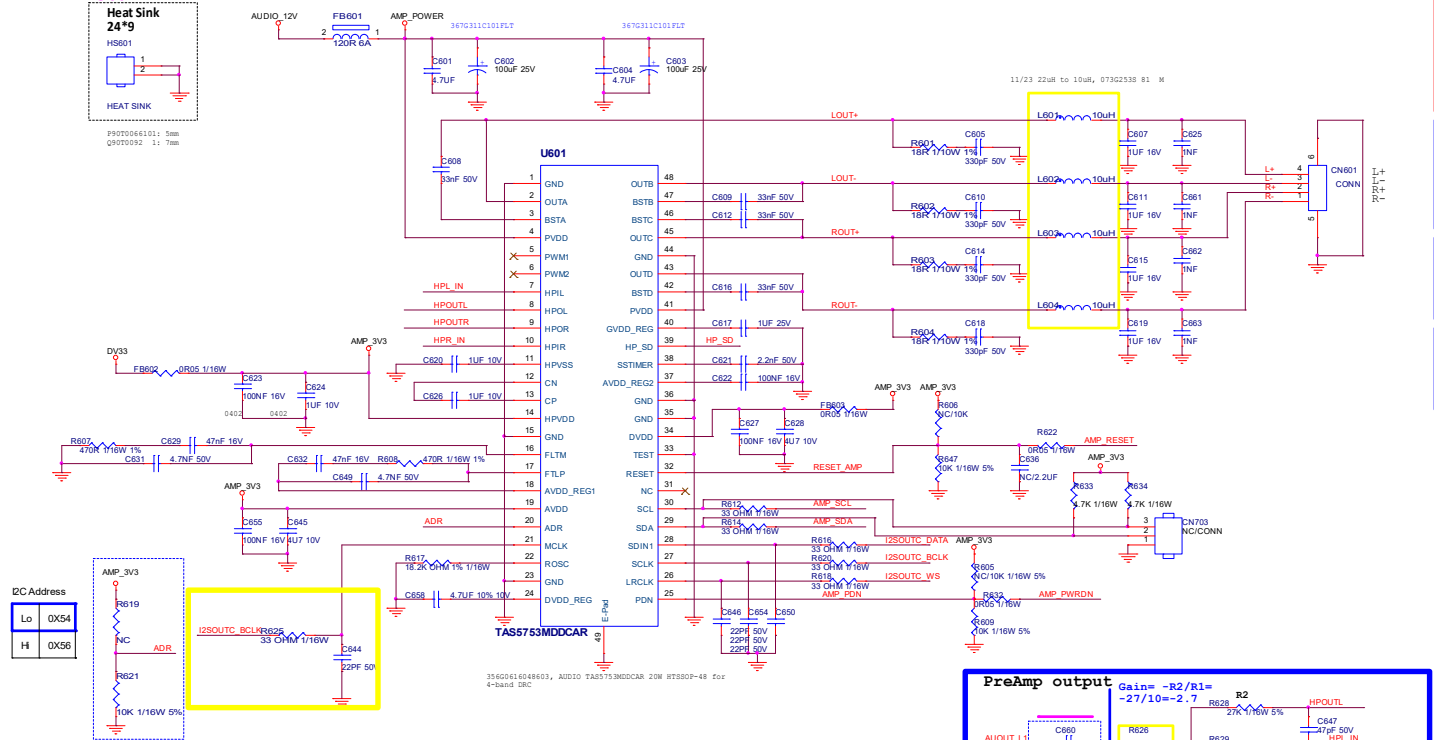
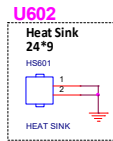
## 8-9-9 NT72461\_USB/GPIO



|         |         |                                        |
|---------|---------|----------------------------------------|
| MAIN2V5 | MAIN2V5 | 4                                      |
| DV33    | DV33    | 4,5,10,11,13,14,17,19                  |
| DV15    | DV15    | 4                                      |
| DV11    | DV11    | 4                                      |
| DV33SB  | DV33SB  | 4,6,10,18                              |
| DV18SB  | DV18SB  | 4,10                                   |
| GND     | GND     | 4,5,6,7,8,9,10,11,13,14,15,16,17,18,19 |

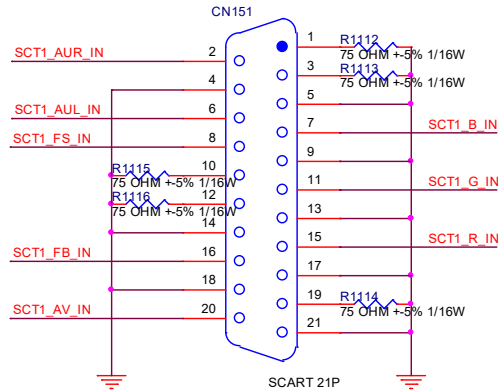


**8-9-10 SPK AMP/HP OUT**



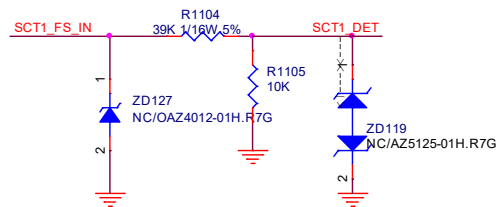
## 8-9-11 Scart

### Half SCART(RGB+CVBS+L/R IN)

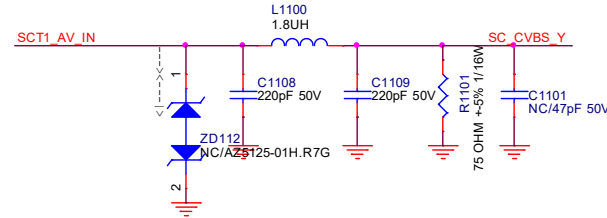


8.5mm No shield

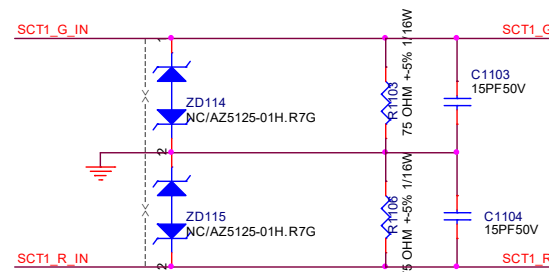
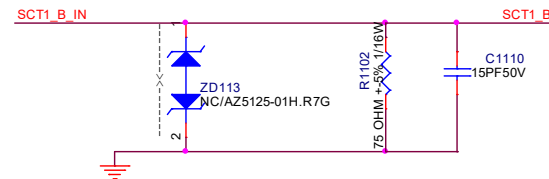
### Function Select



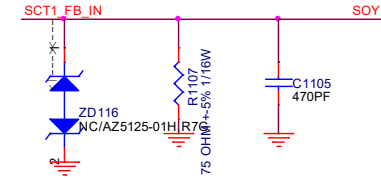
### CVBS IN



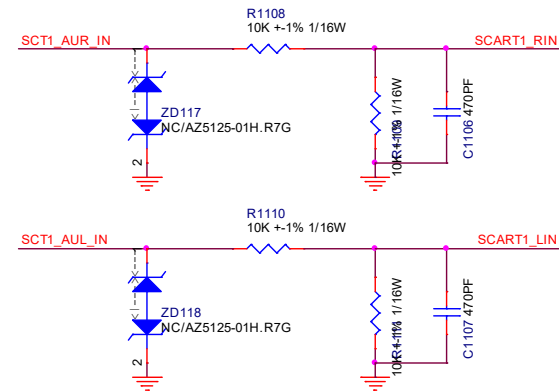
### RGB IN



### FAST BLANKING/SOY



### SCART Audio Input



### ADC/DAC

|           |           |   |
|-----------|-----------|---|
| SC CVBS_Y | SC CVBS_Y | 7 |
| SOY1      | SOY1      | 7 |
| SCT1_B    | SCT1_B    | 7 |
| SCT1_G    | SCT1_G    | 7 |
| SCT1_R    | SCT1_R    | 7 |

### AUDIO /IF

|            |            |   |
|------------|------------|---|
| SCART1_RIN | SCART1_RIN | 7 |
| SCART1_LIN | SCART1_LIN | 7 |

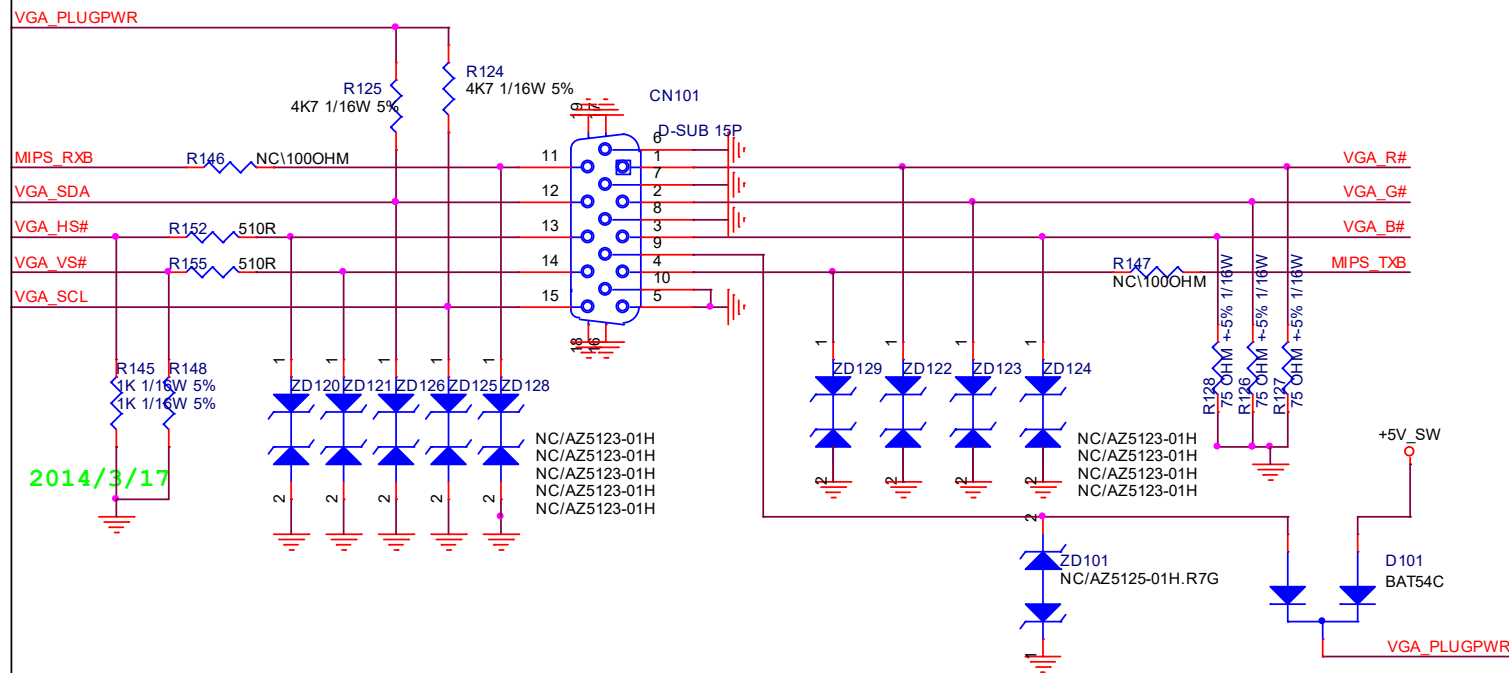
### STB CONTORL

|          |          |    |
|----------|----------|----|
| SCT1_DET | SCT1_DET | 10 |
|----------|----------|----|

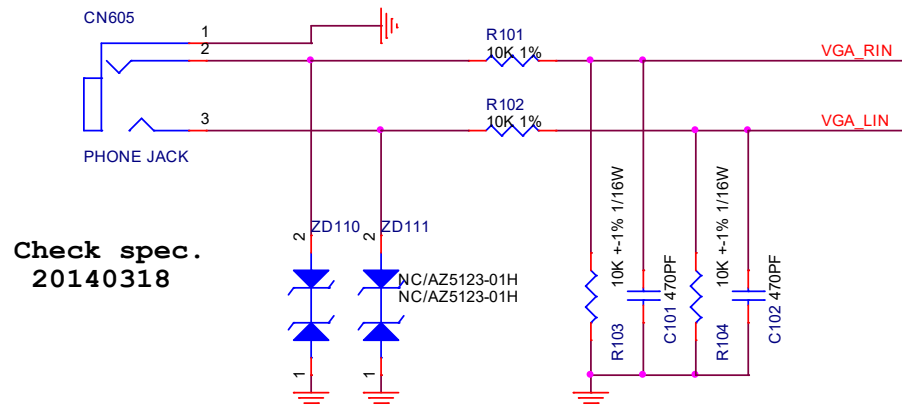
GND <<< GND 4,5,6,7,8,9,10,11,12,13,14,16,17,18,19

## 8-9-12 VGA In

## VGA In



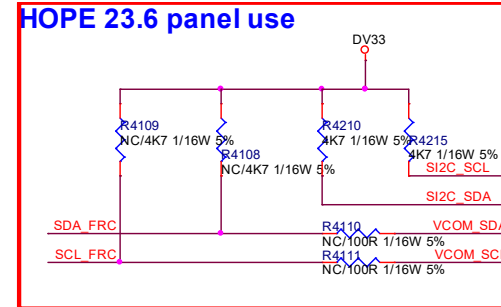
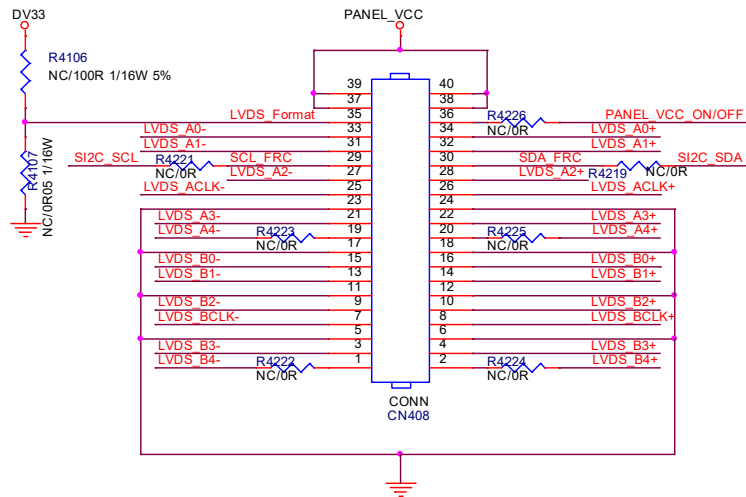
## PC / DVI Audio in



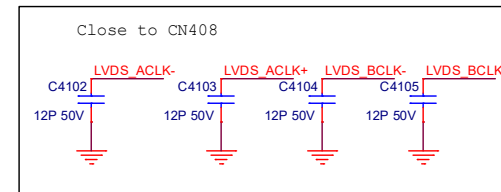
Check spec.  
20140318

|          |                                                                                       |          |                                        |
|----------|---------------------------------------------------------------------------------------|----------|----------------------------------------|
| VGA_R#   | →→                                                                                    | VGA_R#   | 7                                      |
| VGA_G#   | →→                                                                                    | VGA_G#   | 7                                      |
| VGA_B#   | →→                                                                                    | VGA_B#   | 7                                      |
| VGA_HS#  | →→                                                                                    | VGA_HS#  | 7                                      |
| VGA_VS#  | →→                                                                                    | VGA_VS#  | 7                                      |
| VGA_SDA  | →→                                                                                    | VGA_SDA  | 10                                     |
| VGA_SCL  | →→                                                                                    | VGA_SCL  | 10                                     |
| VGA_RIN  | →→                                                                                    | VGA_RIN  | 7                                      |
| VGA_LIN  | →→                                                                                    | VGA_LIN  | 7                                      |
| +5V_SW   | ←←                                                                                    | +5V_SW   | 4,9,11,14,17,18,19                     |
|          | ←← →→                                                                                 | GND      | 4,5,6,7,8,9,10,11,12,13,14,15,17,18,19 |
|          |  |          |                                        |
| MIPS_RXB | →→                                                                                    | MIPS_RXB | 5,11,18                                |
| MIPS_TXB | →→                                                                                    | MIPS_TXB | 5,11,18                                |

### 8-9-13 LVDS

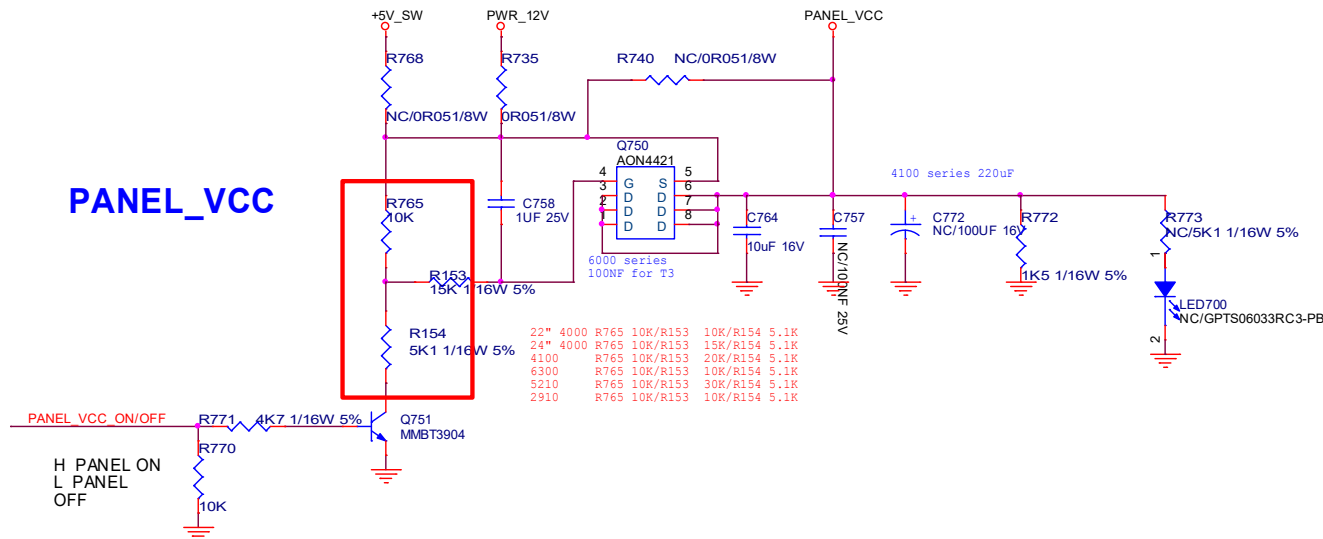


|          |   |          |                                                      |
|----------|---|----------|------------------------------------------------------|
| VCOM_SDA | → | VCOM_SDA | 11                                                   |
| VCOM_SCL | → | VCOM_SCL | 11                                                   |
| PWR_12V  | → | PWR_12V  | 4, 11, 13                                            |
| +5V_SW   | → | +5V_SW   | 4, 9, 11, 14, 16, 18, 19                             |
| DV33     | → | DV33     | 4, 5, 10, 11, 12, 13, 14, 19                         |
| DV15     | → | DV15     | 4, 12                                                |
| DV33SB   | → | DV33SB   | 4, 6, 10, 12, 18                                     |
| PWR5V_1  | → | PWR5V_1  | 6, 8                                                 |
| PWR5V_2  | → | PWR5V_2  | 6, 8                                                 |
| GND      | → | GND      | 4, 5, 6, 7, 8, 9, 10, 11, 12, 13, 14, 15, 16, 18, 19 |

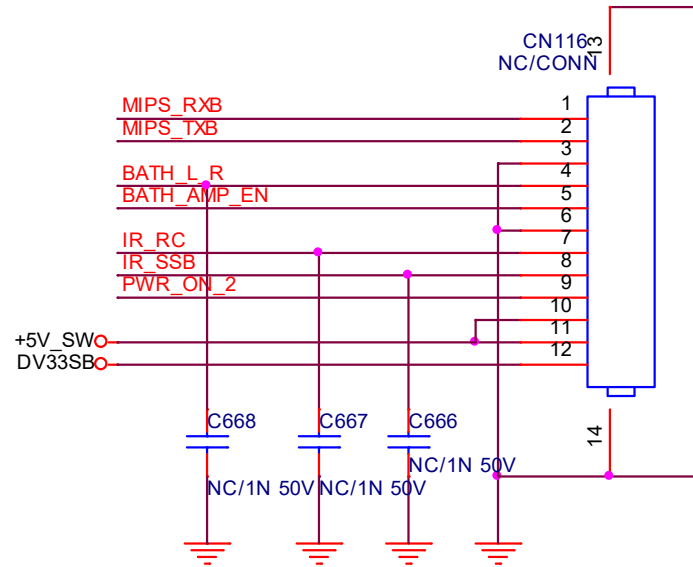


|   |            |            |
|---|------------|------------|
| 8 | LVDS_B0-   | LVDS_B0-   |
| 8 | LVDS_B0+   | LVDS_B0+   |
| 8 | LVDS_B1-   | LVDS_B1-   |
| 8 | LVDS_B1+   | LVDS_B1+   |
| 8 | LVDS_B2-   | LVDS_B2-   |
| 8 | LVDS_B2+   | LVDS_B2+   |
| 8 | LVDS_BCLK- | LVDS_BCLK- |
| 8 | LVDS_BCLK+ | LVDS_BCLK+ |
| 8 | LVDS_B3-   | LVDS_B3-   |
| 8 | LVDS_B3+   | LVDS_B3+   |
| 8 | LVDS_B4-   | LVDS_B4-   |
| 8 | LVDS_B4+   | LVDS_B4+   |
| 8 | LVDS_A0-   | LVDS_A0-   |
| 8 | LVDS_A0+   | LVDS_A0+   |
| 8 | LVDS_A1-   | LVDS_A1-   |
| 8 | LVDS_A1+   | LVDS_A1+   |
| 8 | LVDS_A2-   | LVDS_A2-   |
| 8 | LVDS_A2+   | LVDS_A2+   |
| 8 | LVDS_ACLK- | LVDS_ACLK- |
| 8 | LVDS_ACLK+ | LVDS_ACLK+ |
| 8 | LVDS_A3-   | LVDS_A3-   |
| 8 | LVDS_A3+   | LVDS_A3+   |
| 8 | LVDS_A4-   | LVDS_A4-   |
| 8 | LVDS_A4+   | LVDS_A4+   |

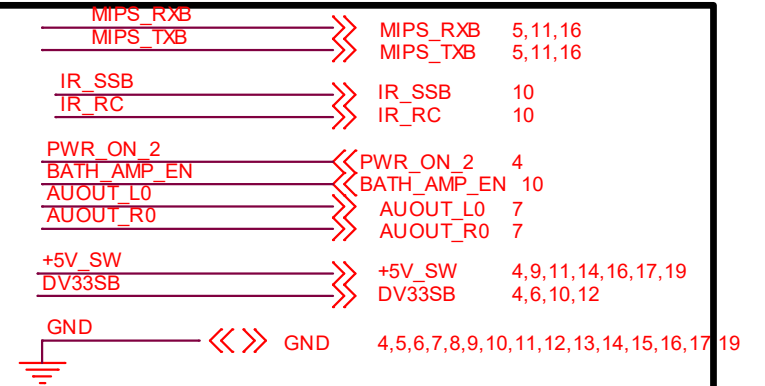
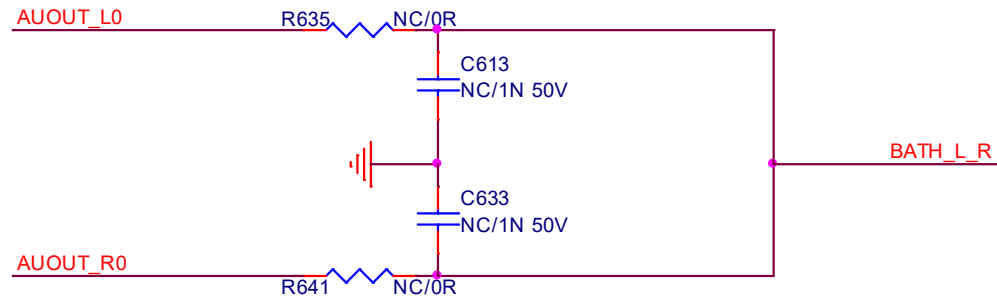
|                  |                   |    |
|------------------|-------------------|----|
| PANEL_VCC_ON/OFF | 《PANEL_VCC_ON/OFF | 10 |
| SI2C_SDA         | 《SI2C_SDA         | 11 |
| SI2C_SCL         | 《SI2C_SCL         | 11 |



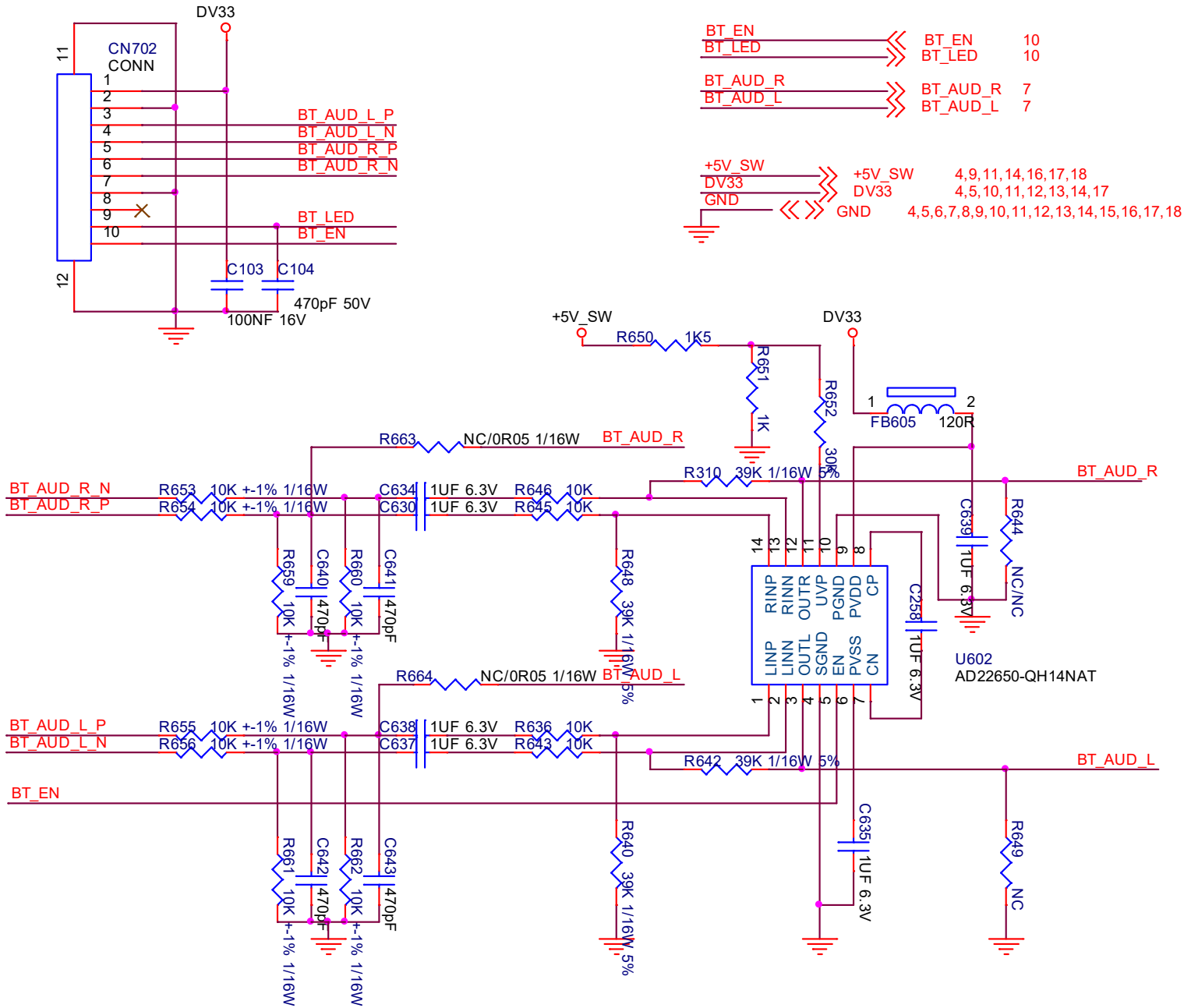
## For BUH daughter board



## Bathroom SPK audio out for BUH

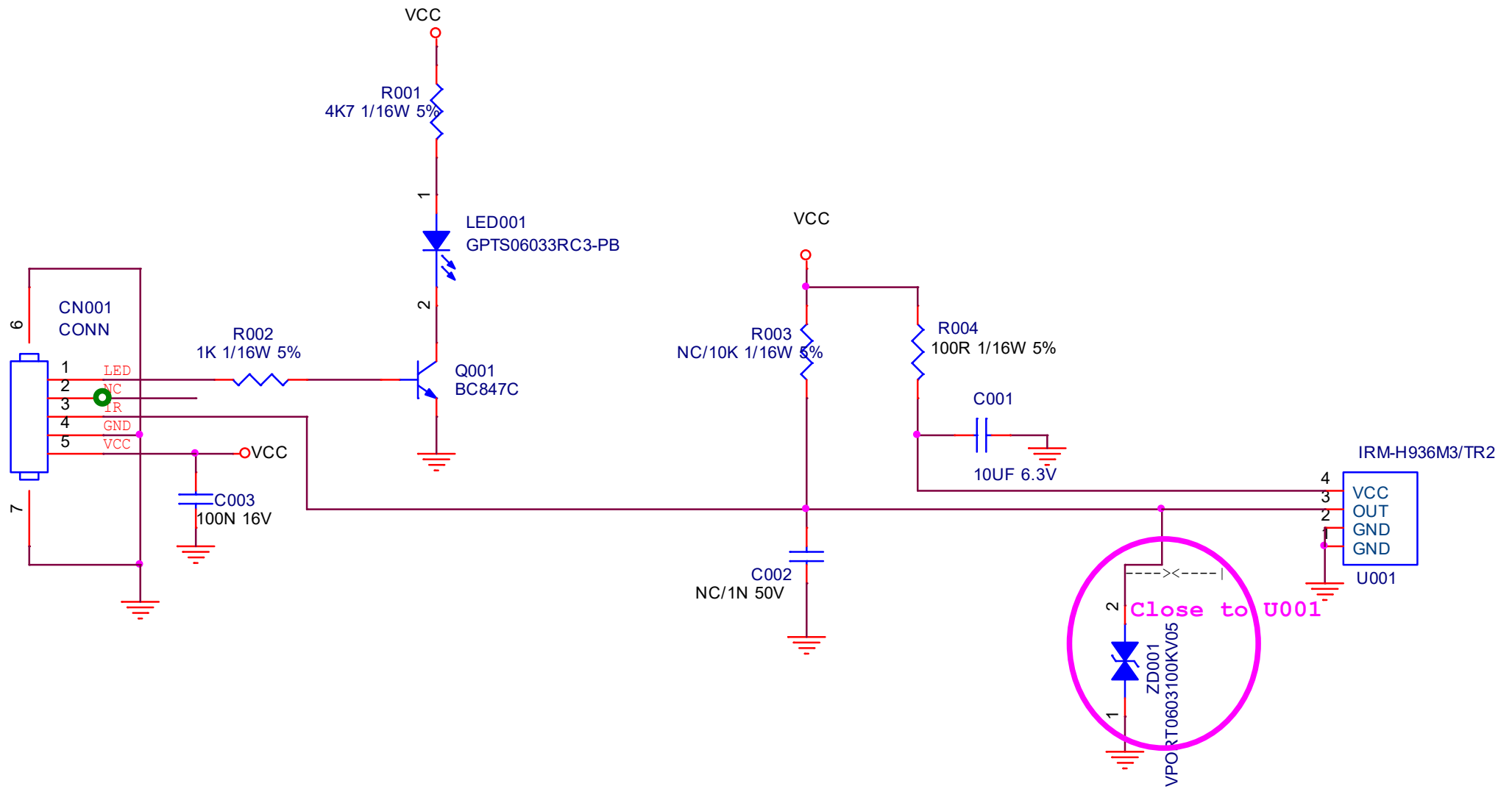


# 8-9-15 BT

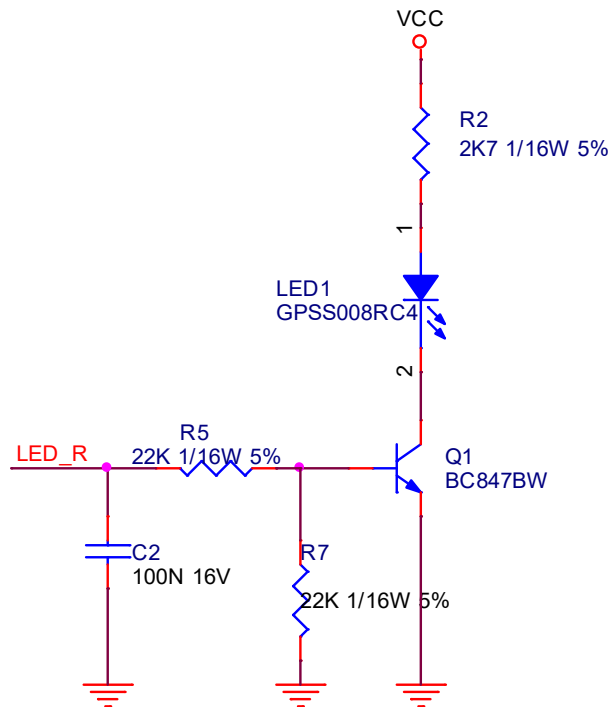
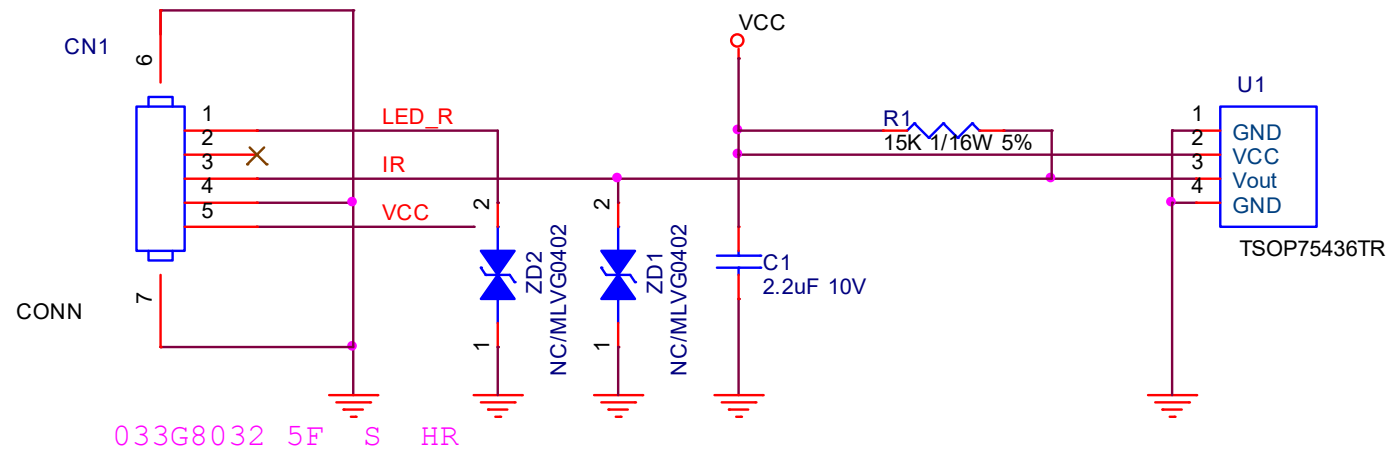


## 8.10 715G8791 IR/LED(For 32/39/43"4112 Series)

### 8-10-1 IR BOARD

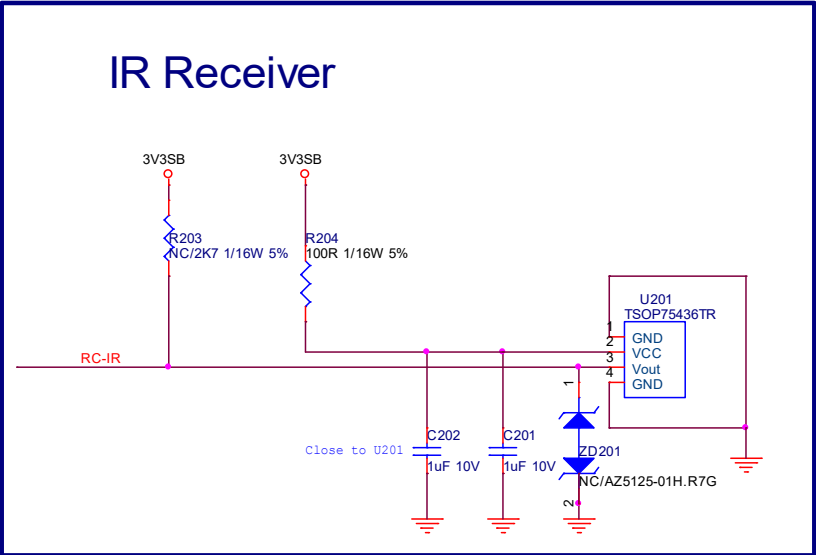
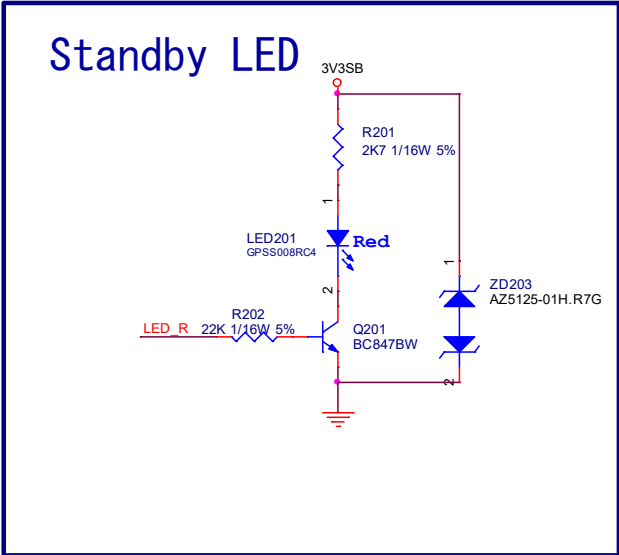
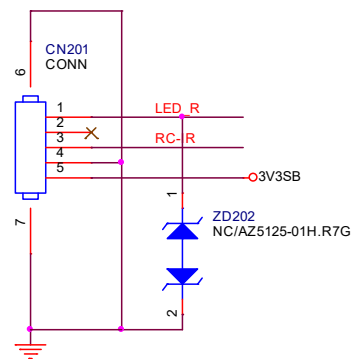


**8-11-1 IR LED**



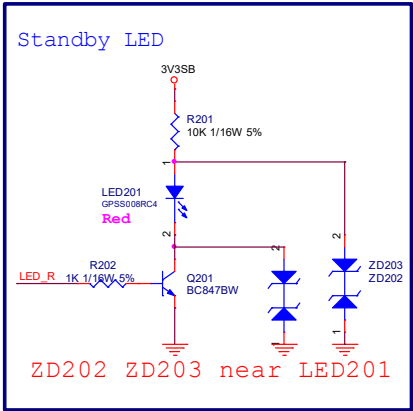
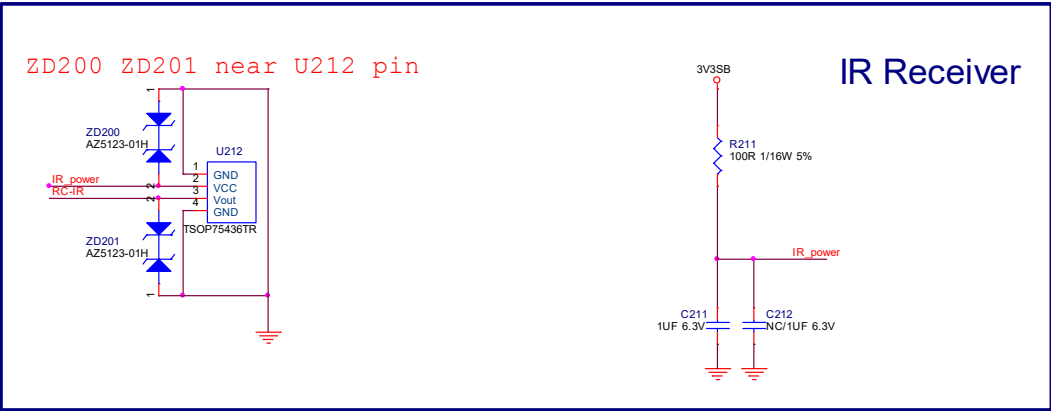
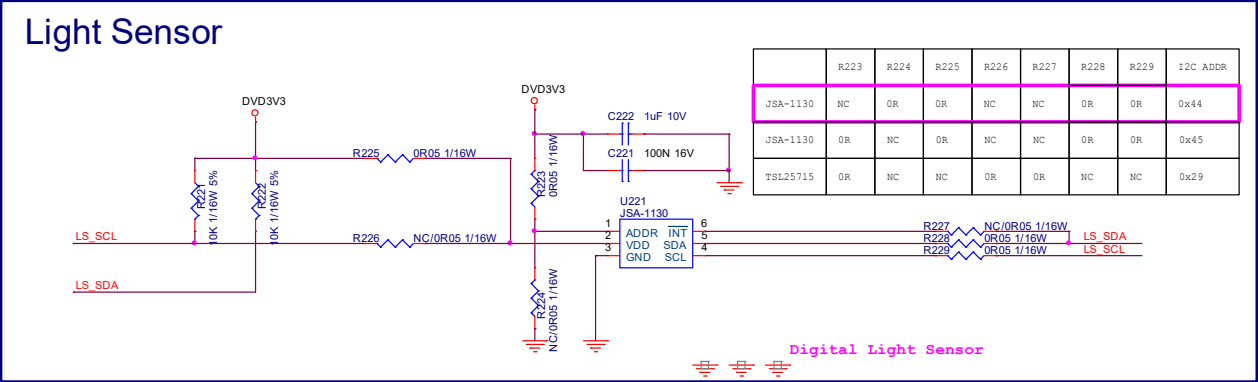
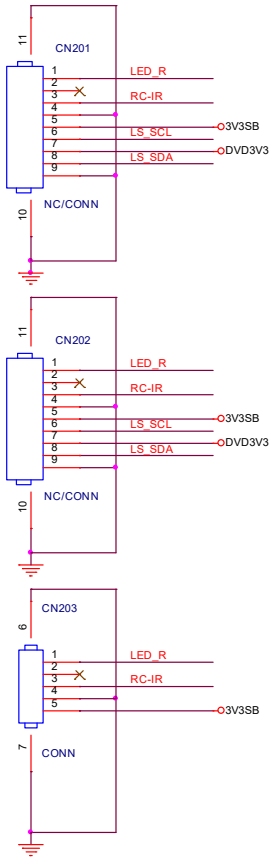
8.12 715G8767 IR/LED(For 32”4132&4032 Series)

8-12-1 IR & LED & Light Sensor



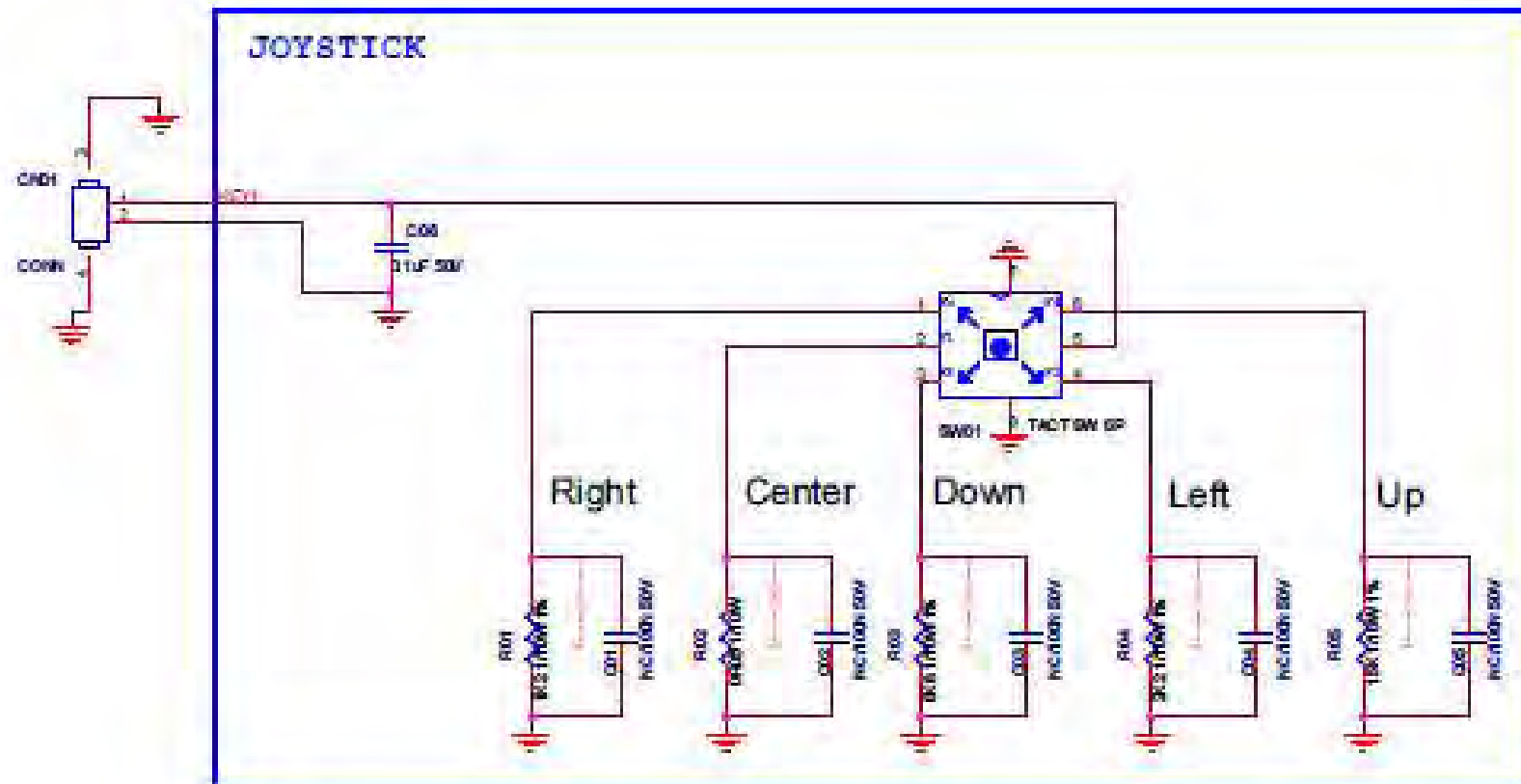
8.13 715G8623 IR/LED(For 49"4132 Series)

8-13-1 IR & LED & Light Sensor



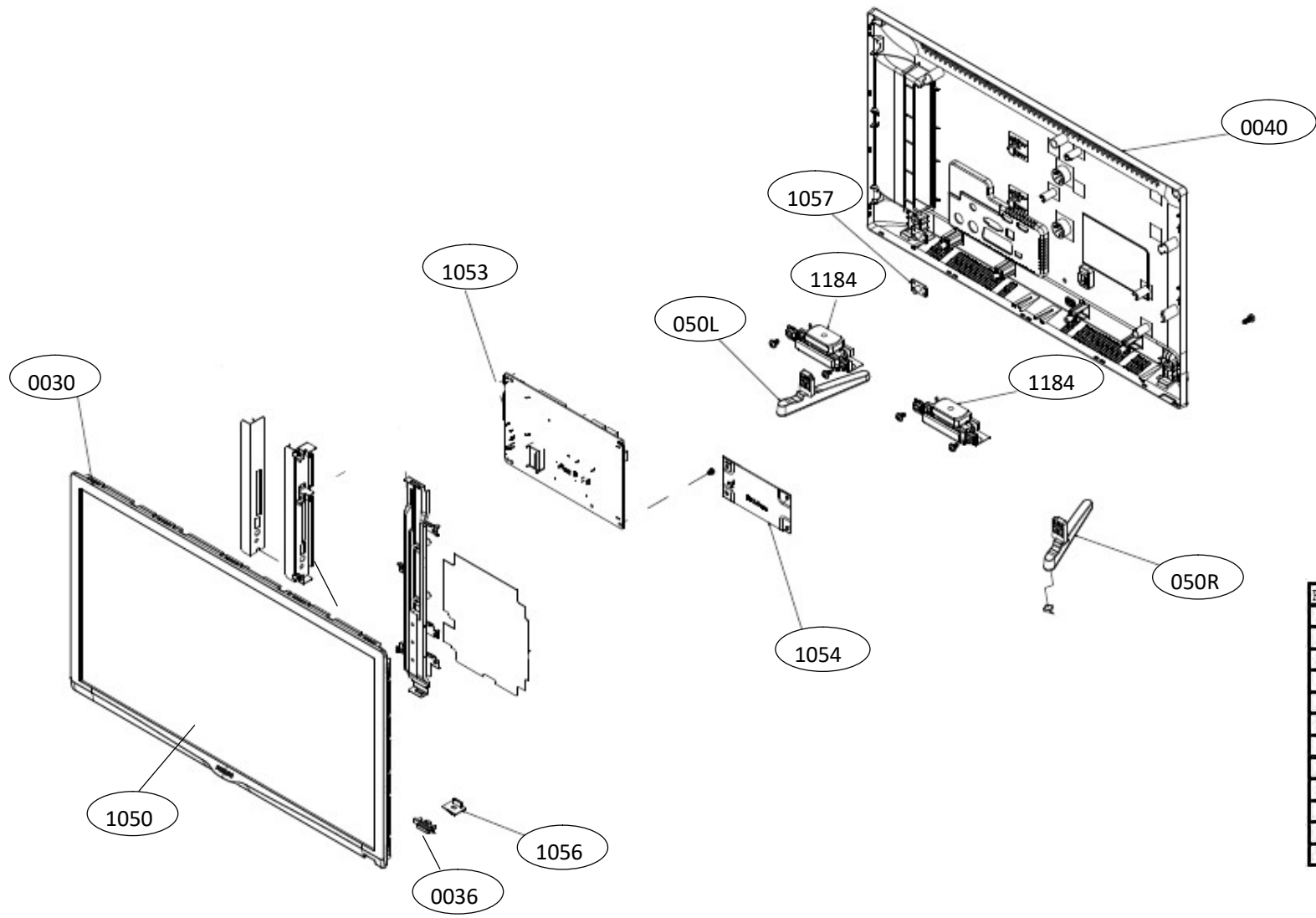
## 8.14 715G7088 KEY(For 32"/49" 4132 Series & 32" 4032 Series)

8-14-1 KEY



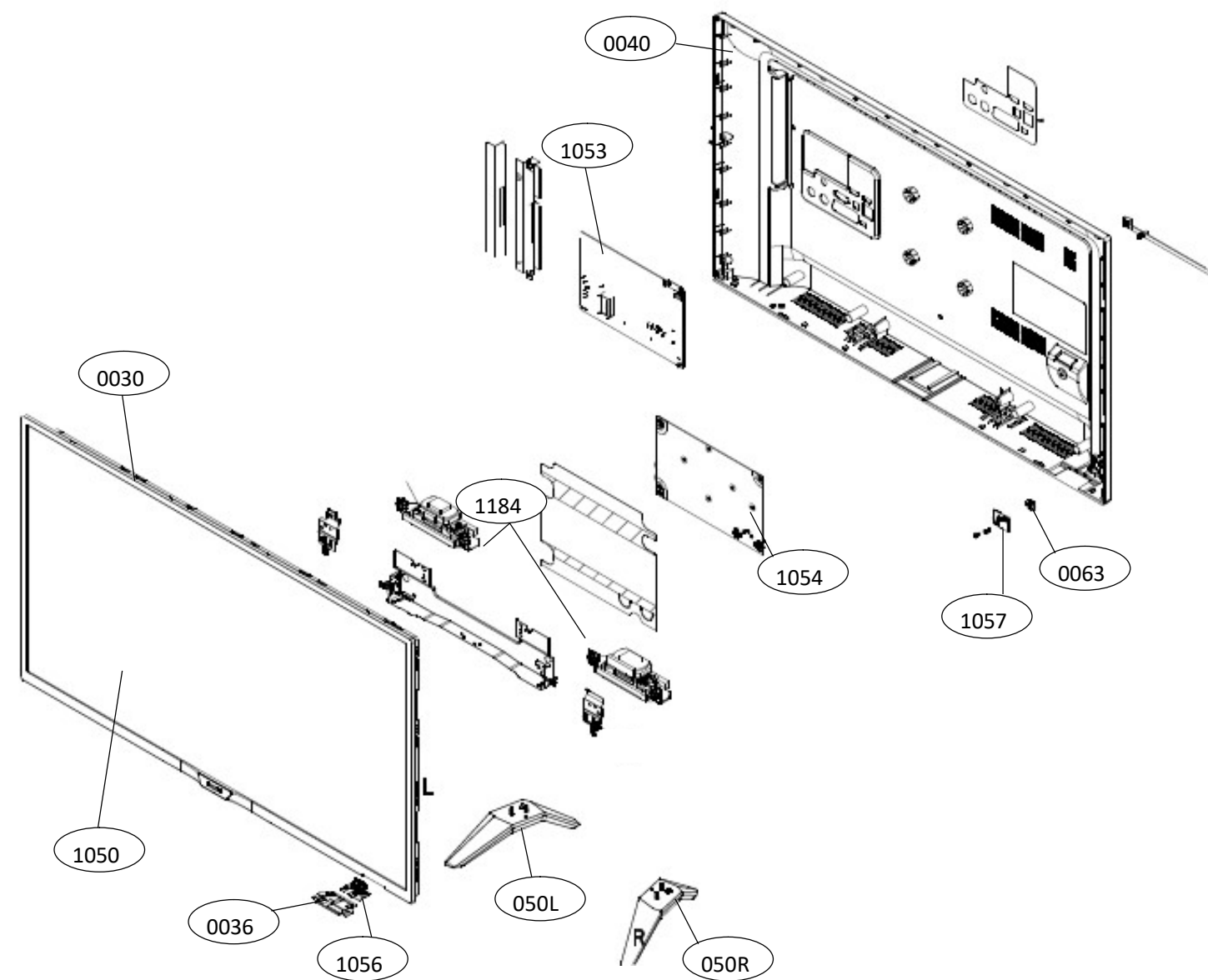
# 9. Styling Sheets

9.1 4232 series 22"



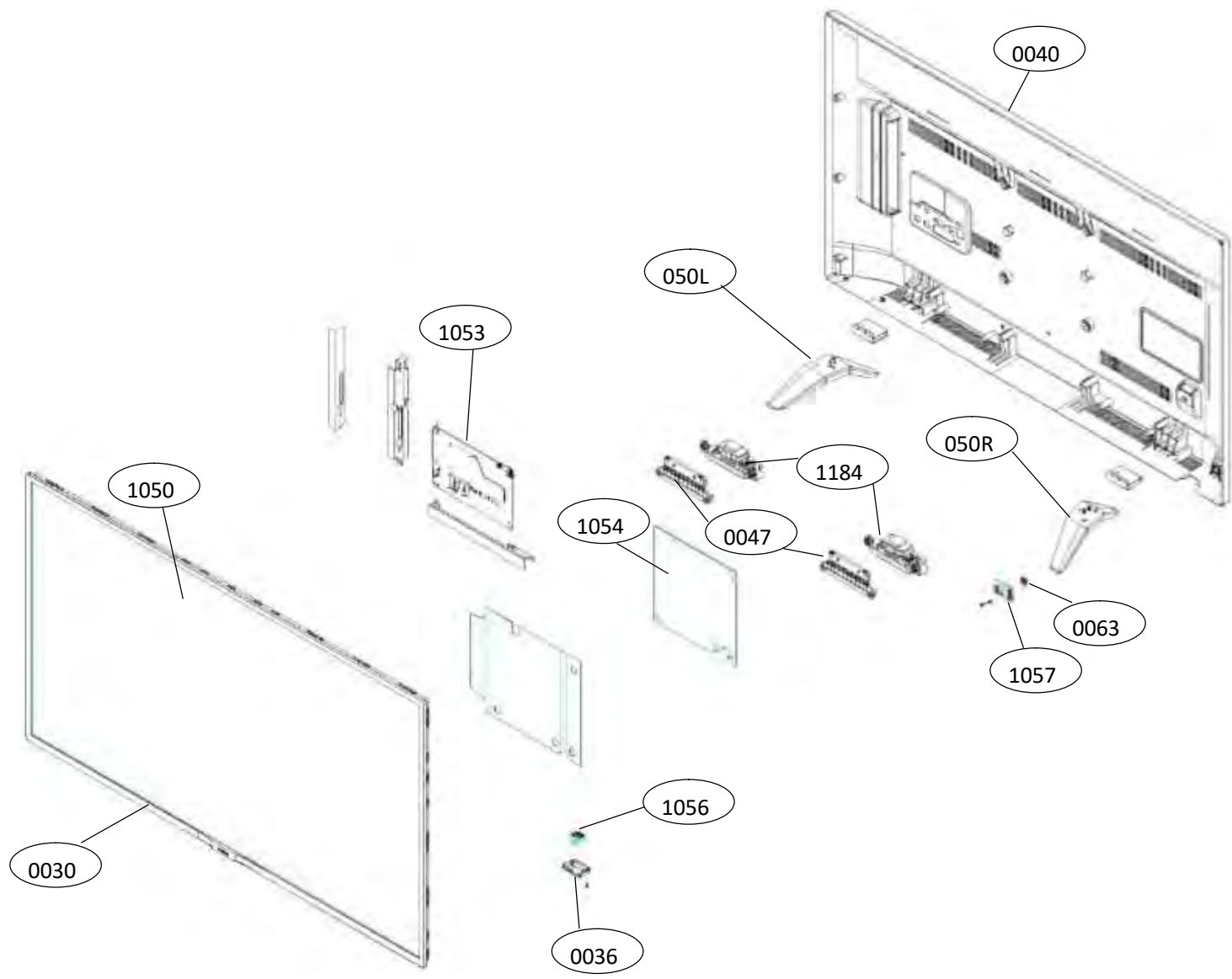
| Pos NO. | Description       | Remark |
|---------|-------------------|--------|
| 0030    | BEZEL             |        |
| 0036    | LENS_IR           |        |
| 0040    | REAR COVER        |        |
| 050L    | EDGE STAND - L    |        |
| 050R    | EDGE STAND - R    |        |
| 1050    | DISPLAY PANEL     |        |
| 1054    | POWER SUPPLY UNIT |        |
| 1055    | DRIVER BOARD      |        |
| 1053    | PANEL SSB         |        |
| 1056    | OPTION BOARD      |        |
| 1176    | REMOTE control    |        |
| 1184    | SPEAKER           |        |

9.2 4132&4032 series 32"



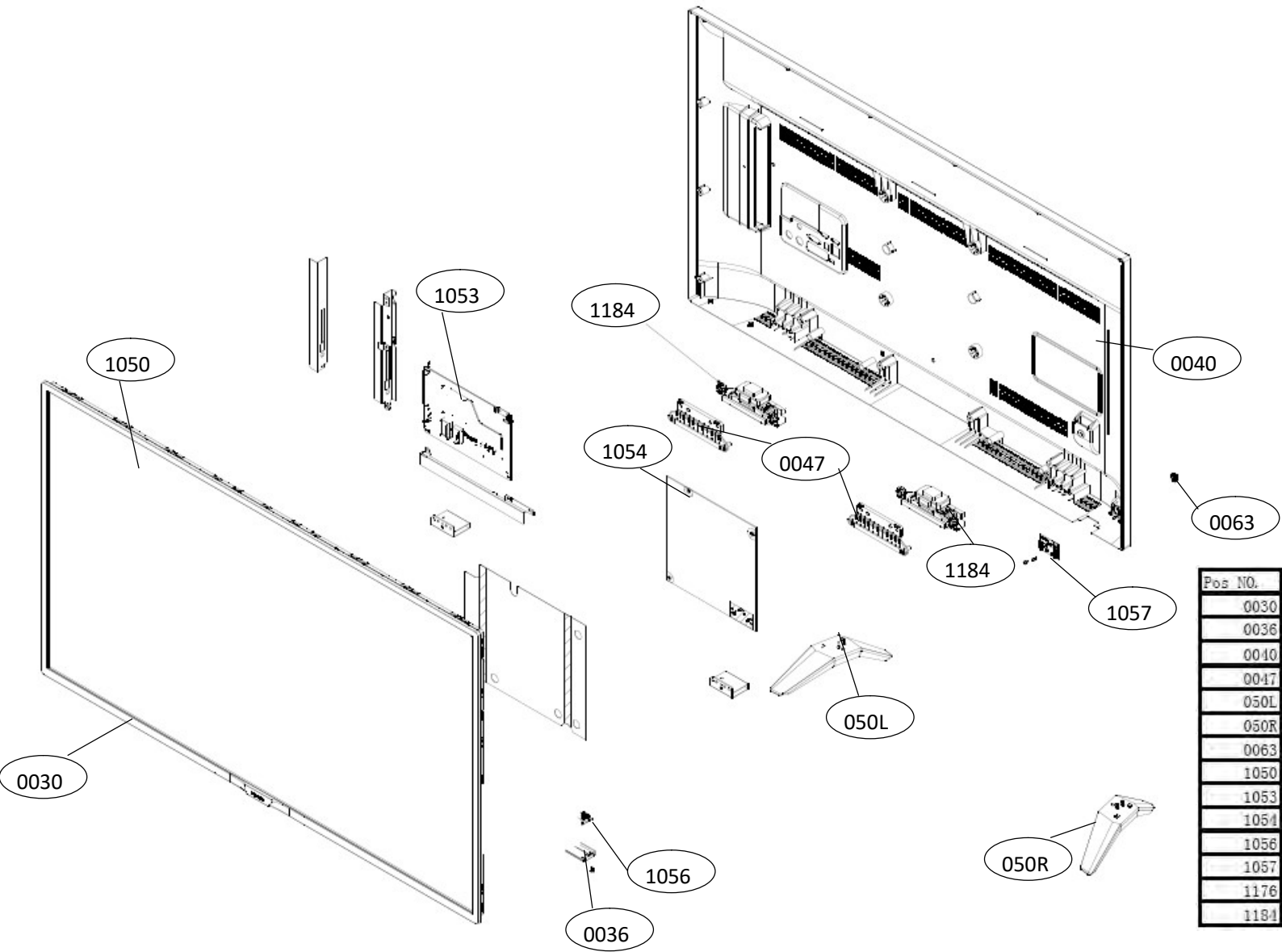
| Pos NO. | Description            | Remark        |
|---------|------------------------|---------------|
| 0030    | BEZEL                  |               |
| 0036    | LENS_IR                |               |
| 0040    | REAR COVER             |               |
| 050L    | EDGE STAND - L         |               |
| 050R    | EDGE STAND - R         |               |
| 0063    | KEY_FUNCTION           |               |
| 1050    | DISPLAY PANEL          |               |
| 1053    | PANEL SSB              |               |
| 1054    | POWER SUPPLY UNIT      |               |
| 1056    | IR/LED PANEL           |               |
| 1057    | KEYBOARD CONTROL PANEL |               |
| 1176    | REMOTE control         | Not displayed |
| 1184    | SPEAKER                |               |

9.3 4132 series 43"



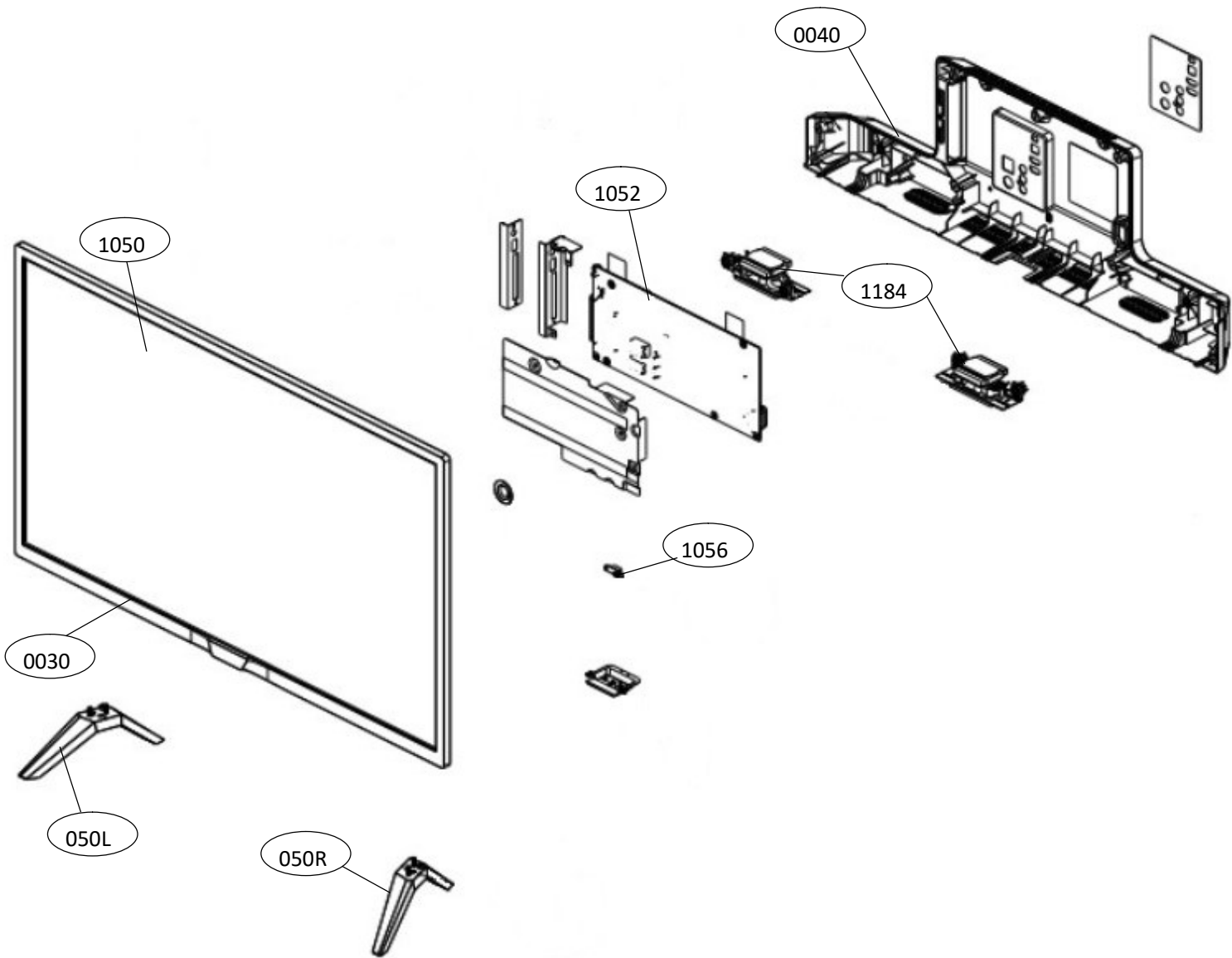
| Pos NO. | Description    | Remark        |
|---------|----------------|---------------|
| 0030    | BEZEL          |               |
| 0036    | LENS_IR        |               |
| 0040    | REAR COVER     |               |
| 0047    | HDD Holder     |               |
| 050L    | EDGE STAND - L |               |
| 050R    | EDGE STAND - R |               |
| 0063    | KEY_FUNCTION   |               |
| 1050    | LCD PANEL      |               |
| 1053    | MAIN BOARD     |               |
| 1054    | POWEWR BOARD   |               |
| 1056    | IR BOARD       |               |
| 1057    | KEY BOARD      |               |
| 1176    | REMOTE CONTROL | Not displayed |
| 1184    | SPEAKER        |               |

9.4 4132 series 49"



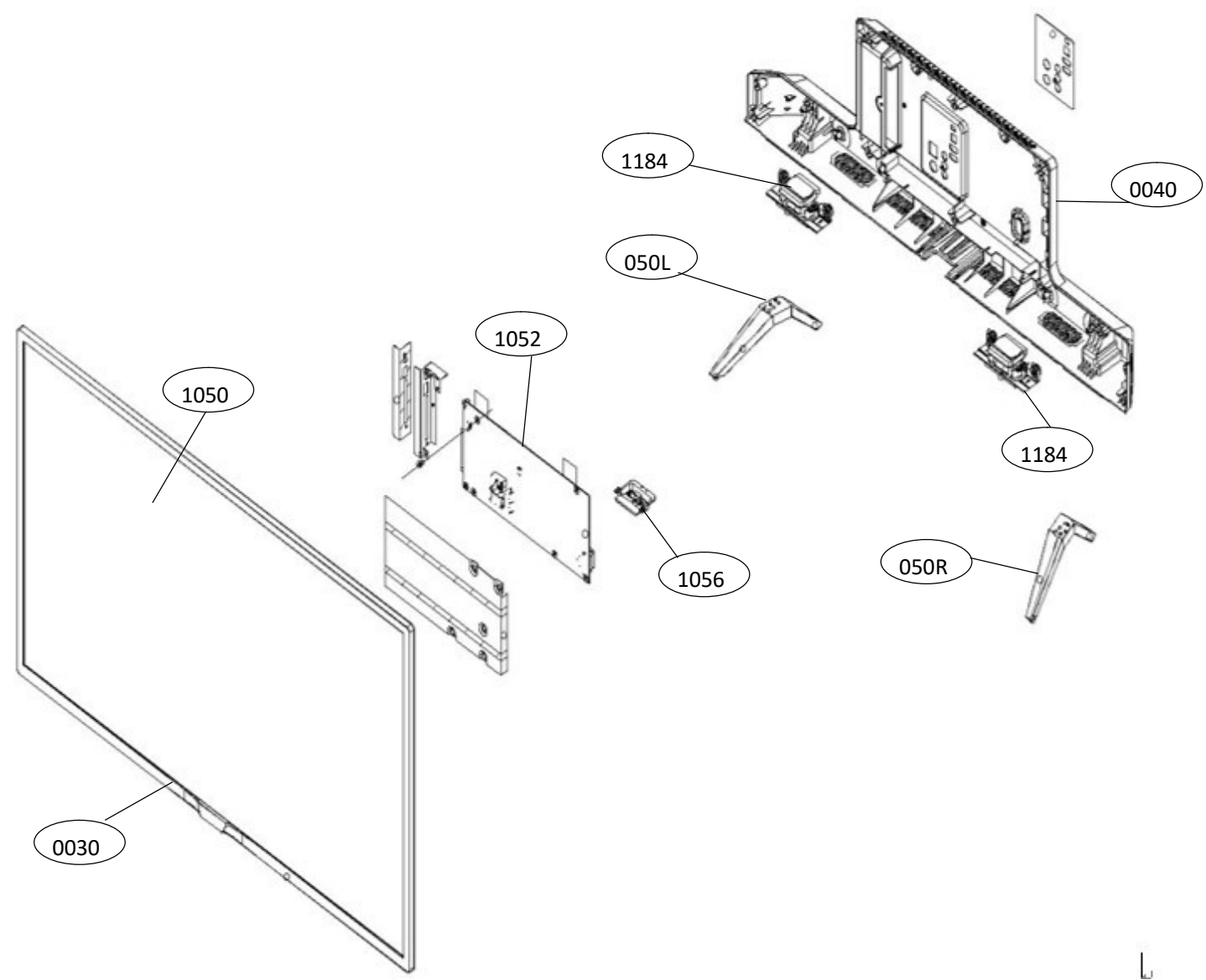
| Pos NO. | Description            | Remark        |
|---------|------------------------|---------------|
| 0030    | BEZEL                  |               |
| 0036    | LENS_IR                |               |
| 0040    | REAR COVER             |               |
| 0047    | HDD Holder             |               |
| 050L    | EDGE STAND - L         |               |
| 050R    | EDGE STAND - R         |               |
| 0063    | KEY FUNCTION           |               |
| 1050    | DISPLAY PANEL          |               |
| 1053    | PANEL SSB              |               |
| 1054    | POWER SUPPLY UNIT      |               |
| 1056    | IR/LED PANEL           |               |
| 1057    | KEYBOARD CONTROL PANEL |               |
| 1176    | REMOTE control         | Not displayed |
| 1184    | SPEAKER                |               |

9.5 4112 series 32"



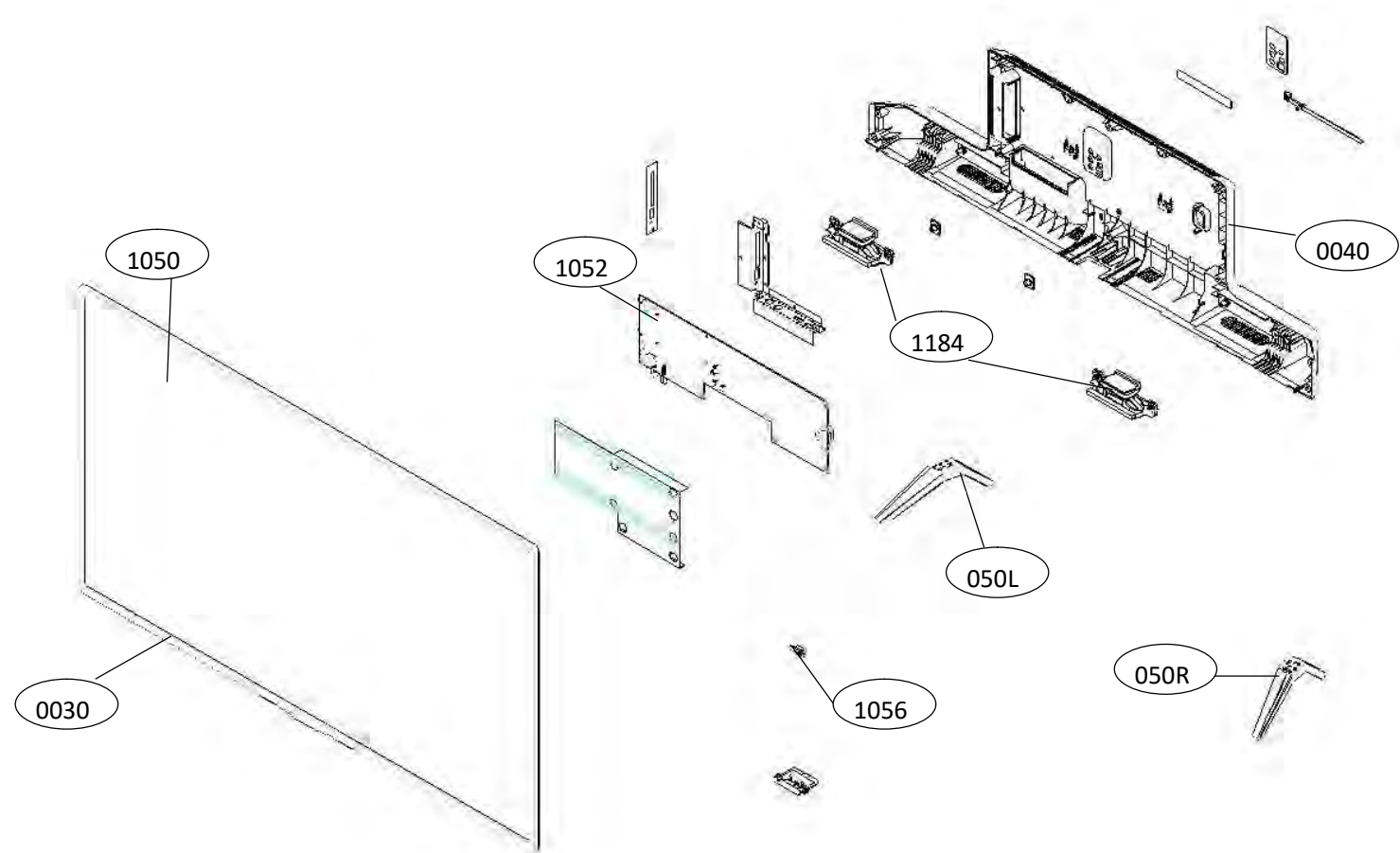
| Pos NO. | Description        | Remark        |
|---------|--------------------|---------------|
| 0030    | Bezel              |               |
| 0040    | REAR COVER         |               |
| 050L    | EDGE STAND - L     |               |
| 050R    | EDGE STAND - R     |               |
| 1050    | LCD PANEL          |               |
| 1052    | MAIN + POWER Board |               |
| 1056    | IR BOARD           |               |
| 1176    | REMOTE CONTROL     | Not displayed |
| 1184    | SPEAKER            |               |

9.6 4112 series 39"



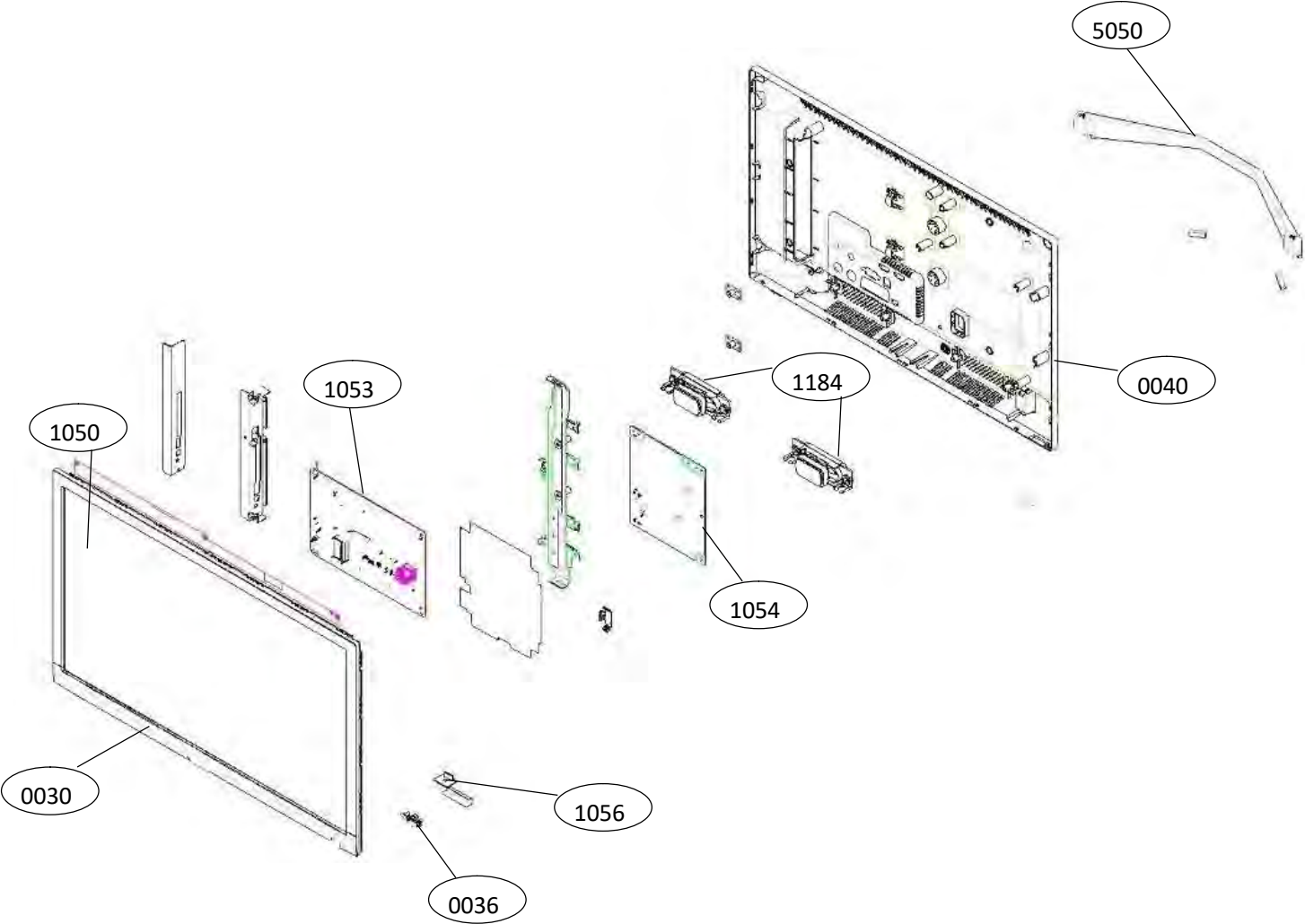
| Pos NO. | Description        | Remark        |
|---------|--------------------|---------------|
| 0030    | Bezel              |               |
| 0040    | REAR COVER         |               |
| 050L    | EDGE STAND – L     |               |
| 050R    | EDGE STAND – R     |               |
| 1050    | LCD PANEL          |               |
| 1052    | MAIN + POWER Board |               |
| 1056    | IR BOARD           |               |
| 1176    | REMOTE CONTROL     | Not displayed |
| 1184    | SPEAKER            |               |

9.7 4112 series 43"



| Pos NO. | Description        | Remark        |
|---------|--------------------|---------------|
| 0030    | Bezel              |               |
| 0040    | REAR COVER         |               |
| 050L    | EDGE STAND - L     |               |
| 050R    | EDGE STAND - R     |               |
| 1050    | LCD PANEL          |               |
| 1052    | MAIN + POWER Board |               |
| 1056    | IR BOARD           |               |
| 1176    | REMOTE CONTROL     | Not displayed |
| 1184    | SPEAKER            |               |

9.8 4032 series 24" & 4022 series 22/24"



| Pos NO. | Description    | Remark        |
|---------|----------------|---------------|
| 0030    | Bezel          |               |
| 0036    | LENS IR        |               |
| 0040    | REAR COVER     |               |
| 1050    | LCD PANEL      |               |
| 1053    | MAIN BOARD     |               |
| 1054    | POWER BOARD    |               |
| 1056    | IR BOARD       |               |
| 1176    | REMOTE CONTROL | Not displayed |
| 1184    | SPEAKER        |               |
| 5050    | CENTRAL STAND  |               |