Home Theater DVD Player HTD5540/12/98/94/93

Service
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Service Manual

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**CLASS 1
LASER PRODUCT**

GB 3141 785 39860

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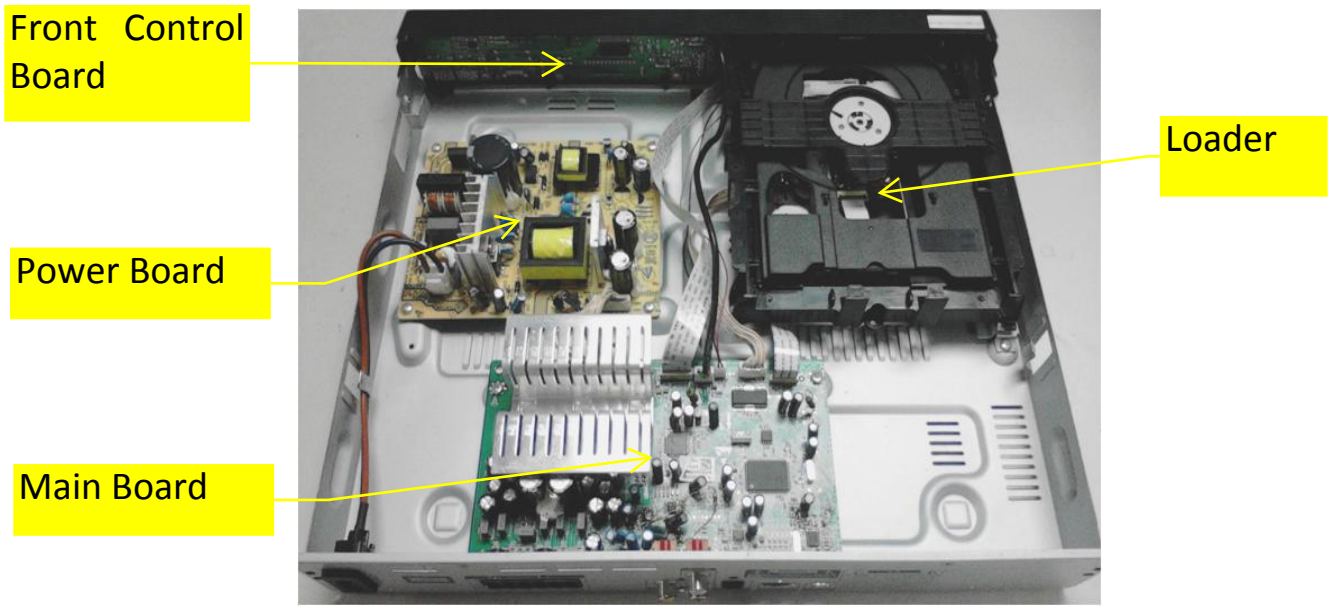
Version 1.0

PHILIPS

PCB Board Locations:



VERSION VARIATIONS

Type / Versions / Board in used / Service Policy	HTD5540			
	/12	/98	/94	/93
MAIN BOARD	M+C	M+C	M+C	M+C
POWER BOARD	M+C	M+C	M+C	M+C
FRONT CONTROL BOARD	M+C	M+C	M+C	M+C
LOADER	M	M	M	M
＊Tips：	C -- Component Lever Repair M -- Module Lever Repair X -- Used			

Product specifications

Note

- Specifications and design are subject to change without notice.

Region codes

The type plate on the back or bottom of the home theater shows which regions it supports.

Country	DVD
Europe, United Kingdom	ALL 2
Asia Pacific, Taiwan, Korea	ALL 3
Latin America	ALL 4
Australia, New Zealand	ALL 4
Russia, India	ALL 5
China	ALL 6

Media formats

- DVD-Video, DVD+R/+RW, DVD-R/-RW, DVD+R/-R DL, CD-R/CD-RW, Audio CD, Video CD/SVCD, Picture files, MP3 media, WMA media, DivX media, USB storage device

File formats

- Audio: .mp3, .wma
- Video: .avi, .divx, .mpg, .mpeg,
- Picture: .jpg, .jpeg

Amplifier

- Total output power: 1000W RMS (30% THD)
- Frequency response: 20 Hz-20 kHz / ±3 dB
- Signal-to-noise ratio: > 65 dB (CCIR) / (A-weighted)
- Input sensitivity:
  - AUX: 2 V
  - AUDIO IN: 1 V

Video

- Signal system: PAL / NTSC/Multi
- HDMI output: 480i/576i, 480p/576p, 720p, 1080i, 1080p

Audio

- S/PDIF Digital audio input:
  - Optical: TOSLINK
- Sampling frequency:
  - MP3: 32 kHz, 44.1 kHz, 48 kHz
  - WMA: 44.1 kHz, 48 kHz
- Constant bit rate:
  - MP3: 32 kbps - 320 kbps
  - WMA: 64 kbps - 192 kbps

Radio

- Tuning range:
  - Europe/Russia/China: FM 87.5-108 MHz (50 kHz)
  - Asia Pacific/Latin America: FM 87.5-108 MHz (50/100 kHz)
- Signal-to-noise ratio: FM 50 dB
- Frequency response: FM 200 Hz-12.5 kHz / ±6 dB

USB

- Compatibility: Hi-Speed USB (2.0)

- Class support: USB Mass Storage Class (MSC)
- File system: FAT16, FAT32, NTFS
- USB port: 5V ⎓, 500mA

Main unit

- Power supply:
  - Europe/China/Russia/India: 220-240V~, 50 Hz
  - Latin America/Asia Pacific: 110-240V~, 50-60 Hz
- Power consumption: 140 W
- Standby power consumption: ≤ 0.5 W
- Dimensions (WxHxD):
  360 x 58 x 325 mm
- Weight: 2.3 kg

Subwoofer

- Output power: 166 W RMS (30% THD)
- Impedance: 4 ohm
- Speaker drivers: 165 mm (6.5") woofer
- Dimensions (WxHxD):
  178 x 300 x 343 mm
- Weight: 3.66 kg
- Cable length: 3.3 m

Speakers

Center speaker:

- Output power: 166 W RMS (30% THD)
- Speaker impedance: 4 ohm
- Speaker drivers: 1 x 78 mm (3") full range
- Dimensions (WxHxD):
  223 x 100 x 80 mm
- Weight: 0.65 kg
- Cable length: 2.25 m

Front/Rear speaker:

- Output power: 4 x 166 W RMS (30% THD)
- Speaker impedance: 4 ohm
- Speaker drivers: 1 x 78 mm (3") full range
- Dimensions (WxHxD):
  - **HTD5510**: 90 x 185 x 82 mm (front/rear)
  - **HTD5540**: 90 x 185 x 82 mm (front); 247 x 1090 x 242 mm (rear)
  - **HTD5570**: 247 x 1090 x 242 mm (front/rear)
- Weight (front):
  - **HTD5510**: 0.53 kg/each
  - **HTD5540**: 0.53 kg/each
  - **HTD5570**: 2.66 kg/each
- Weight (rear):
  - **HTD5510**: 0.56 kg/each
  - **HTD5540/HTD5570**: 2.72 kg/each
- Cable length (front): 3.25 m
- Cable length (rear): 10.25 m

Remote control batteries

- 1 x AAA-R03-1.5 V

Laser

- Type: Semiconductor laser GaAlAs (CD)
- Wave length: 650-662 nm (DVD), 785-795 nm (CD)
- Output power: 6 mW (DVD), 7 mW (VCD/CD)
- Beam divergence: 60 degrees.

Safety instruction, Warning & Notes

Safety instruction

1. General safety

Safety regulations require that during a repair:

. Connect the unit to the mains via an isolation transformer.

. Replace safety components indicated by the symbol ⚠, only by components identical to the original ones. Any other component substitution (other than original type) may increase risk of fire or electrical shock hazard.

Safety regulations require that after a repair, you must return the unit in its original condition. Pay, in particular, attention to the following points:

. Route the wires/cables correctly, and fix them with the mounted cable clamps.

. Check the insulation of the mains lead for external damage.

. Check the electrical DC resistance between the mains plug and the secondary side:

1) Unplug the mains cord, and connect a wire between the two pins of the mains plug.
2) Set the mains switch the "on" position (keep the mains cord unplug).
3) Measure the resistance value between the mains plug and the front panel, controls, and chassis bottom.
4) Repair or correct unit when the resistance measurement is less than 1MΩ.
5) Verify this, before you return the unit to the customer/user (ref. UL-standard no. 1492).
6) Switch the unit "off", and remove the wire between the two pins of the mains plug.

2.Laser safety

This unit employs a laser. Only qualified service personnel may remove the cover, or attempt to service this device (due to possible eye injury).

Laser device unit

Type : Semiconductor laser GaAlAs

Wavelength : 650nm (DVD)

: 780nm (VCD/CD)

Output power : 7mW (DVD)

: 10mW (DVD /CD)

Beam divergence: 60 degree

Note: Use of controls or adjustments or performance of procedure other than those specified herein, may result in hazardous radiation exposure. Avoid direct exposure to beam.

Warning

1.General

. All ICs and many other semiconductors are susceptible to electrostatic discharges (ESD). Careless handing during repair can reduce life drastically. Make sure that, during repair, you are at the same potential as the mass of the set by a wristband with resistance. Keep components and tools at this same potential. Available ESD protection equipment:

1) Complete kit ESD3 (small tablemat, wristband, connection box, extension cable and earth cable) 4822 310 10671.
2) Wristband tester 4822 344 13999.

. Be careful during measurements in the live voltage section. The primary side of the power supply , including the heat sink, carries live mains voltage when you connect the player to the mains (even when the player is “off”!). It is possible to touch copper tracks and/or components in this unshielded primary area, when you service the player. Service personnel must take precautions to prevent touching this area or components in this area. A “lighting stroke” and a stripe-marked printing on the printed wiring board, indicate the primary side of the power supply.

. Never replace modules, or components, while the unit is “on”.

2. Laser

. The use of optical instruments with this product, will increase eye hazard.

. Only qualified service personnel may remove the cover or attempt to service this device, due to possible eye injury.

. Repair handing should take place as much as possible with a disc loaded inside the player.

. Text below is placed inside the unit, on the laser cover shield:

CAUTION: VISIBLE AND INVISIBLE LASER RADIATION WHEN OPEN, AVOID EXPOSURE TO BEAM.

Service Hints

CAUTION

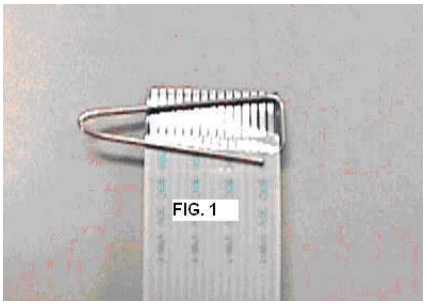
CHARGED CAPACITORS ON THE SERVO BOARD MAY DAMAGE THE DRIVE ELECTRONICS WHEN CONNECTING A NEW DRIVE.THAT'S WHY, BESIDES THE SAFETY MEASURES LIKE

- **SWITCH OFF POWER SUPPLY**
- **ESD PROTECTION**

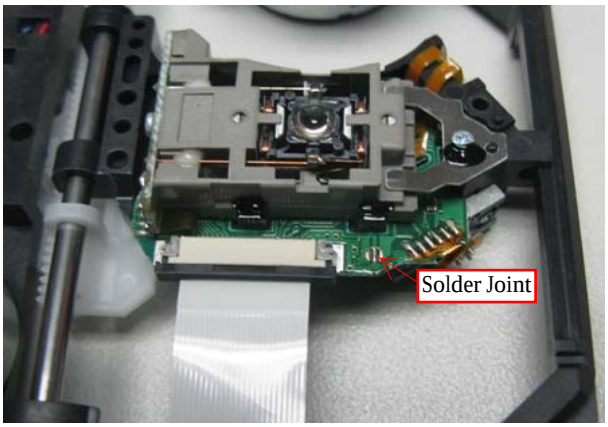
ADDITIONAL ACTIONS MUST BE TAKEN BY THE REPAIR TECHNICIAN.

The following steps have to be done when replacing the defective loader :

1. Dismantling of the loader to access the ESD protection point if necessary.
2. **Solder the ESD protection point*.**
3. Disconnect flexfoil cable from the defective loader.
4. Put a paper clip on the flexfoil to short-circuit the contacts (fig.1)
5. Replace the defective loader with a new loader.
6. Remove paperclip from the flexfoil and connect it to the new loader.
7. Remove solder joint on the ESD protection point.



ATTENTION: The laser diode of this loader is protected against ESD by a solder joint which shortcircuits the laserdiode to ground. For proper functionality of the loader this solder joint must be remove **after** connection loader to the set.



(ESD protection point is accessible from top of loader)

Only applicable for defective loader needed to be sent back to supplier for failure analysis and to support backcharging evidence.
This is also applicable for all partnership workshops.

Notes

Lead-Free requirement for service

INDENTIFICATION:

Regardless of special logo (not always indicated) 

One must treat all sets from 1.1.2005 onwards, according next rules.

Important note: In fact also products a little older can also be treated in this way as long as you avoid mixing solder-alloys (leaded/ lead-free). So best to always use SAC305 and the higher temperatures belong to this.

Due to lead-free technology some rules have to be respected by the workshop during a repair:

- Use only lead-free solder alloy Philips SAC305 with order code 0622 149 00106. If lead-free solder-paste is required, please contact the manufacturer of your solder-equipment. In general use of solder-paste within workshops should be avoided because paste is not easy to store and to handle.
- Use only adequate solder tools applicable for lead-free solder alloy. The solder tool must be able
  - To reach at least a solder-temperature of 400°C,
  - To stabilize the adjusted temperature at the solder-tip
  - To exchange solder-tips for different applications.
- Adjust your solder tool so that a temperature around 360°C – 380°C is reached and stabilized at the solder joint. Heating-time of the solder-joint should not exceed ~ 4 sec. Avoid temperatures above 400°C otherwise wear-out of tips will rise drastically and flux-fluid will be destroyed. To avoid wear-out of tips switch off un-used equipment, or reduce heat.
- Mix of lead-free solder alloy / parts with leaded solder alloy / parts is possible but PHILIPS recommends strongly to avoid mixed
  solder alloy types (leaded and lead-free). If one cannot avoid, clean carefully the
  solder-joint from old solder alloy and re-solder with new solder alloy (SAC305).
- Use only original spare-parts listed in the Service-Manuals. Not listed standard-material (commodities) has to be purchased at external companies.
- Special information for BGA-ICs:
  - always use the 12nc-recognizable soldering temperature profile of the specific BGA (for de-soldering always use highest lead-free temperature profile, in case of doubt)
  - lead free BGA-ICs will be delivered in so-called 'dry-packaging' (sealed pack including a silica gel pack) to protect the IC against moisture. After opening, dependent of MSL-level seen on indicator-label in the bag, the BGA-IC possibly still has to be baked dry. This will be communicated via AYS-website.
  Do not re-use BGAs at all.
- For sets produced before 1.1.2005, containing leaded soldering-tin and components, all needed spare-parts will be available till the end of the service-period. For repair of such sets nothing changes.
- On our website:
  www.atyourservice.ce.Philips.com

You find more information to:

BGA-de-/soldering (+ baking instructions)
Heating-profiles of BGAs and other ICs used in Philips-sets

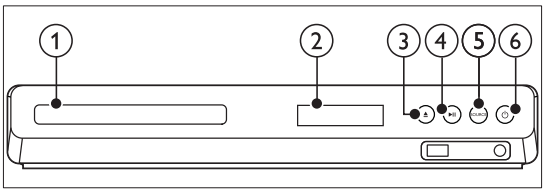
You will find this and more technical information within the "magazine", chapter "workshop news".

For additional questions please contact your local repair-helpdesk.

Your home theater

Congratulations on your purchase, and welcome to Philips! To fully benefit from the support that Philips offers, register your home theater at www.philips.com/welcome.

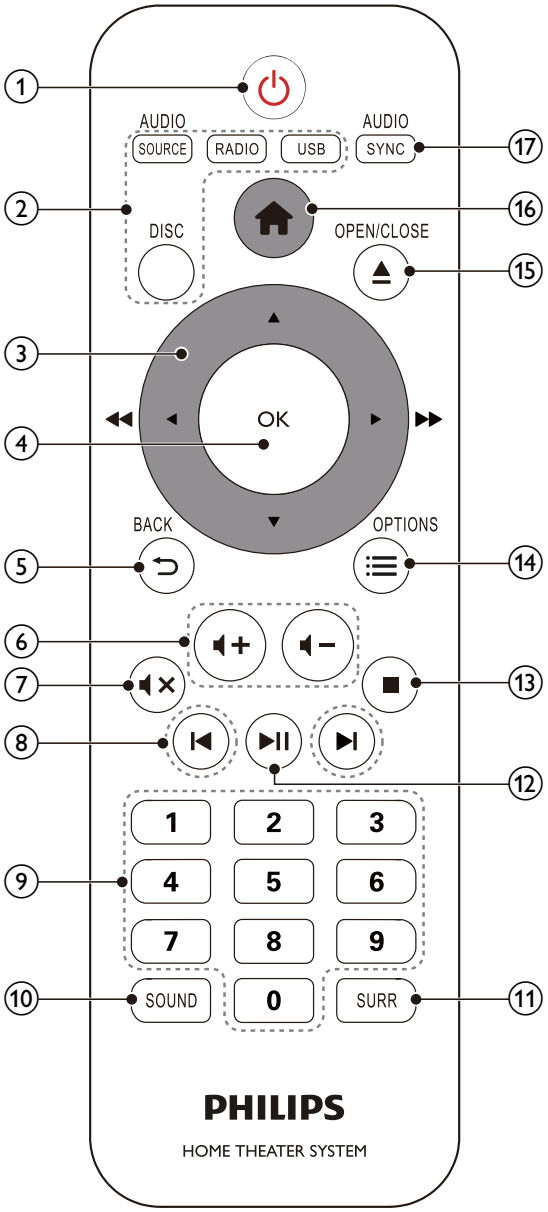
Main unit



1. **Disc compartment**
2. **Display panel**
3. **▲ (Open/Close)**
   Open or close the disc compartment.
4. **▶II (Play/Pause)**
   Start, pause or resume play.
5. **SOURCE**
   Select an audio or video source for the home theater.
6. **⏻ (Standby-On)**
   Switch the home theater on or to standby.

Remote control

This section includes an overview of the remote control.



1. **⏻ (Standby-On)**
   - Switch the home theater on or to standby.
   - When EasyLink is enabled, press and hold for at least three seconds to switch all connected HDMI CEC compliant devices to standby.
2. **Source buttons**
   - **DISC**: Switch to disc source.Access or exit the disc menu when you play a disc.

- **AUDIO SOURCE**: Select an audio input source.
- **RADIO**: Switch to FM radio.
- **USB**: Switch to USB storage device.

③ **Navigation buttons**
- Navigate menus.
- In video mode, press left or right to fast backward or fast forward; press up or down to slow forward or slow backward (for DVD video only).
- In radio mode, press left or right to search a radio station; press up or down to fine tune a radio frequency.

④ **OK**
Confirm an entry or selection.

⑤ **⮌ BACK**
Return to a previous menu screen.

⑥ **+/-**
Increase or decrease volume.

⑦ **(Mute)**
Mute or restore volume.

⑧ **I◄ / ►I (Previous/Next)**
- Skip to the previous or next track, chapter or file.
- In radio mode, select a preset radio station.

⑨ **Numeric buttons**
Select an item to play.

⑩ **SOUND**
Select a sound mode.

⑪ **SURR**
Select surround sound or stereo sound.

⑫ **►II (Play/Pause)**
Start, pause or resume play.

⑬ **■ (Stop)**
Stop play.

⑭ **≡ OPTIONS**
Access more play options while playing a disc or a USB storage device.

⑮ **▲ (Open/Close)**
Open or close the disc compartment.

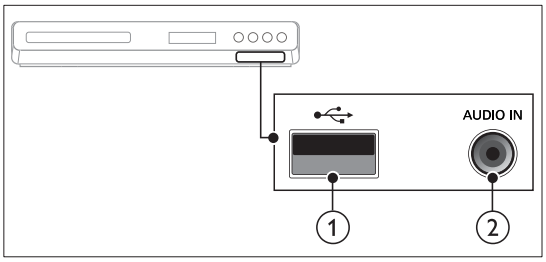
⑯ **(Home)**
Access or exit the home menu.

⑰ **AUDIO SYNC**
- Select an audio language or channel.
- Press and hold to access audio delay setting, then press **Navigation buttons** (left/right) to delay the audio to match the video.

Connectors

This section includes an overview of the connectors available on your home theater.

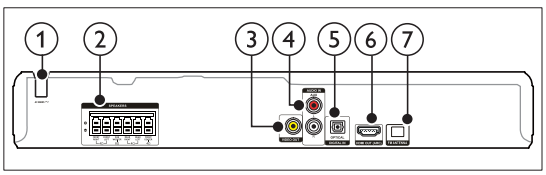
Front



① **(USB)**
Audio, video or picture input from a USB storage device.

② **AUDIO IN**
Audio input from an MP3 player (3.5mm jack).

Back connectors



① **AC MAINS**
Fixed AC power cable.

② SPEAKERS
Connect to the supplied speakers and subwoofer.

③ VIDEO OUT
Connect to the composite video input on the TV.

④ AUDIO IN-AUX
Connect to an analog audio output on the TV or an analog device.

⑤ DIGITAL IN-OPTICAL
Connect to an optical audio output on the TV or a digital device.

⑥ HDMI OUT (ARC)
Connect to the HDMI input on the TV.

⑦ FM ANTENNA
Connect the supplied antenna for radio reception.

Connect and set up

This section helps you connect your home theater to a TV and other devices, and then set it up.
For information about the basic connections of your home theater and accessories, see the quick start guide.

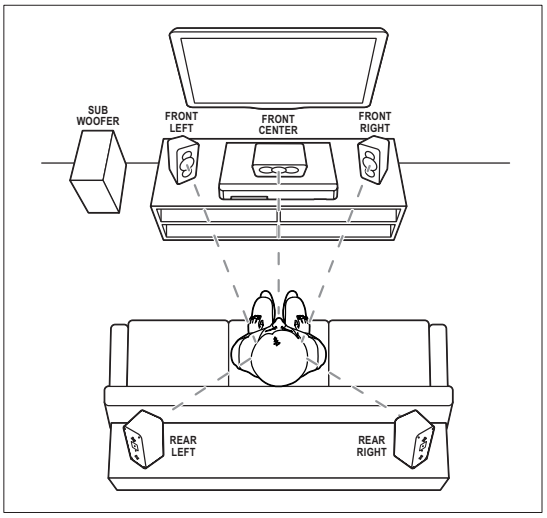
Note

- For identification and supply ratings, see the type plate at the back or bottom of the product.
- Before you make or change any connections, make sure that all devices are disconnected from the power outlet.

Connect speakers

The speaker cables are color-coded for easy connection. To connect a speaker to your home theater, match the color on the speaker cable to the color on the connector.

Speaker position plays a critical role in setting up a surround sound effect. For best effect, position all the speakers towards the seating position and place them close to your ear level (seated).



* The actual speaker shapes may vary from the illustration above.

Note

- Surround sound depends on factors such as room shape and size, type of wall and ceiling, windows and reflective surfaces, and speaker acoustics. Experiment with the speaker positions to find the optimum setting for you.

Follow these general guidelines for speakers placement.

1. Seating position:
   This is the center of your listening area.
2. **FRONT CENTER** (front center) speaker:
   Place the center speaker directly in front of the seating position, either above or below your TV.
3. **FRONT LEFT** (front left) and **FRONT RIGHT** (front right) speakers:
   Place the left and right speakers in the front, and at equal distance from the center speaker. Make sure that the left, right, and the center speakers are at equal distance from your seating position.
4. **REAR LEFT** (rear left) and **REAR RIGHT** (rear right) speakers:
   Place the rear surround speakers to the left and right side of your seating position, either in line with it or slightly behind it.

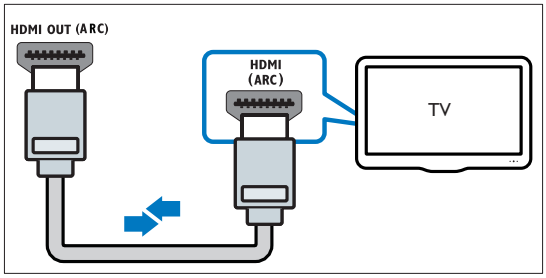
5 **SUBWOOFER** (subwoofer):
Place the subwoofer at least one meter to the left or right of the TV. Leave about 10-centimeter clearance from the wall.

Connect to TV

Connect your home theater to a TV to watch videos. You can listen to the TV audio through your home theater speakers.
Use the best quality connection available on your home theater and TV.

Option 1: Connect to TV through HDMI (ARC)

Best quality video
Your home theater supports HDMI version with Audio Return Channel (ARC). If your TV is HDMI ARC compliant, you can hear the TV audio through your home theater by using a single HDMI cable.



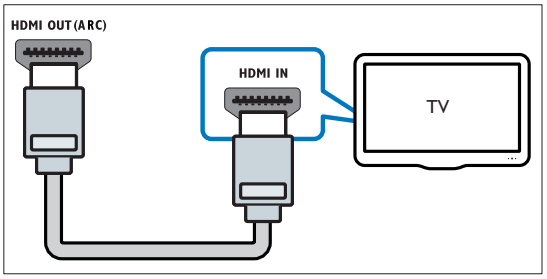
1 Using a High Speed HDMI cable, connect the **HDMI OUT (ARC)** connector on your home theater to the **HDMI ARC** connector on the TV.
   - The **HDMI ARC** connector on the TV might be labeled differently. For details, see the TV user manual.

2 On your TV, turn on HDMI-CEC operations. For details, see the TV user manual.
   - HDMI-CEC is a feature that enables CEC compliant devices that are connected through HDMI to be controlled by a single remote control, such as volume control for both the TV and the home theater. (see 'Set up EasyLink (HDMI-CEC control)' on page 10)

3 If you cannot hear the TV audio through your home theater, set up the audio manually.

Option 2: Connect to TV through standard HDMI

Best quality video
If your TV is not HDMI ARC compliant, connect your home theater to the TV through a standard HDMI connection.



1 Using a High Speed HDMI cable, connect the **HDMI OUT (ARC)** connector on your home theater to the **HDMI** connector on the TV.

2 Connect an audio cable to hear the TV audio through your home theater (see 'Connect audio from TV and other devices' on page 9).

3 On your TV, turn on HDMI-CEC operations. For details, see the TV user manual.
   - HDMI-CEC is a feature that enables CEC compliant devices that are connected through HDMI to be controlled by a single remote control, such as volume control for both the TV and the home theater. (see 'Set up EasyLink (HDMI-CEC control)' on page 10)

4 If you cannot hear the TV audio through your home theater, set up the audio manually.

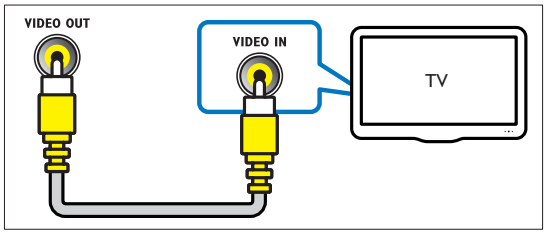
Note

- If your TV has a DVI connector, you can use an HDMI/DVI adapter to connect to TV. However, some of the features may not be available.

Option 3: Connect to the TV through composite video

Basic quality video

If your TV does not have HDMI connectors, use a composite video connection. A composite connection does not support high-definition video.



1 Using a composite video cable, connect the **VIDEO OUT** connector on your home theater to the **VIDEO IN** connector on the TV.
   - The composite video connector might be labeled **AV IN**, **COMPOSITE**, or **BASEBAND**.

2 Connect an audio cable to hear the TV audio through your home theater (see 'Connect audio from TV and other devices' on page 9).

3 When you watch TV programs, press **SOURCE** on your home theater repeatedly to select the correct audio input.

4 When you watch videos, switch your TV to the correct video input. For details, see the TV user manual.

Connect audio from TV and other devices

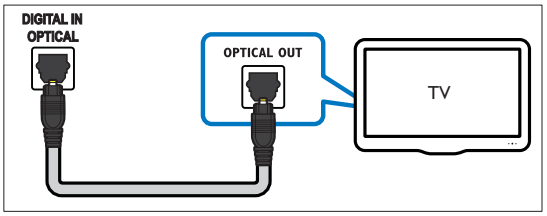
Play audio from TV or other devices through your home theater speakers.
Use the best quality connection available on your TV, home theater, and other devices.

Note

- When your home theater and TV are connected through HDMI ARC, an audio connection is not required (see 'Option 1: Connect to TV through HDMI (ARC)' on page 8).

Option 1: Connect audio through a digital optical cable

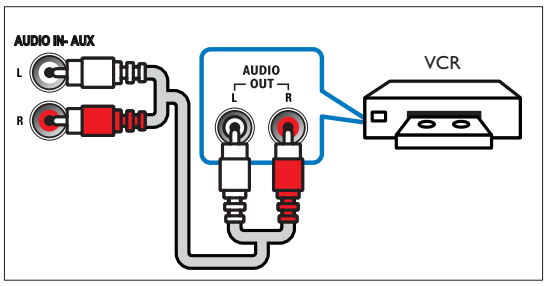
Best quality audio



1 Using an optical cable, connect the **OPTICAL** connector on your home theater to the **OPTICAL OUT** connector on the TV or other device.
   - The digital optical connector might be labeled **SPDIF** or **SPDIF OUT**.

Option 2: Connect audio through analog audio cables

Basic quality audio



1 Using an analog cable, connect the **AUX** connectors on your home theater to the **AUDIO OUT** connectors on the TV or other device.

Set up speakers

Set up the speakers manually to experience customized surround sound.

Before you start

Make the necessary connections described in the quick start guide, and then switch the TV to the correct source for your home theater.

1 Press ⌂ (**Home**).
2 Select **[Setup]**, and then press **OK**.
3 Select **[Audio]** > **[Speaker Setup]**.
4 Press the **Navigation buttons** and **OK** to select and change:
   - **[Speakers Volume]**: Set the volume level of each speaker.
   - **[Speakers Delay]**: Set the delay time for speakers which are placed closer to the seating position in order to obtain equal audio transmission from all the speakers.

Set up EasyLink (HDMI-CEC control)

This home theater supports Philips EasyLink, which uses the HDMI-CEC (Consumer Electronics Control) protocol. EasyLink-compliant devices that are connected through HDMI can be controlled by a single remote control.

Note

- Depending on the manufacturer, HDMI-CEC is known by many names. For information on your device, see the user manual of the device.
- Philips does not guarantee 100% interoperability with all HDMI-CEC devices.

Before you start

- Connect your home theater to the HDMI-CEC compliant device through HDMI connection.
- Make the necessary connections described in the quick start guide, and then switch the TV to the correct source for your home theater.

Enable EasyLink

1 Press ⌂ (**Home**).
2 Select **[Setup]**, and then press **OK**.
3 Select **[Video]**, and then press **OK**.
4 Select **[HDMI Setup]** > **[EasyLink Setup]** > **[EasyLink]** > **[On]**.
5 On your TV and other connected devices, turn on HDMI-CEC control. For details, see the user manual of the TV or other devices.
   - On your TV, set the audio output to 'Amplifier' (instead of TV speakers). For details, see the TV user manual.

EasyLink controls

With EasyLink, you can control your home theater, TV, and other connected HDMI-CEC compliant devices with a single remote control.

- **[One Touch Play]** (One-touch play): If one-touch play is enabled, press ⏻ (**Standby-On**) on the remote control of your home theater to wake up the TV from standby.
- **[One Touch Standby]** (One-touch standby): If one-touch standby is enabled, your home theater can switch to standby with the remote control of the TV or other HDMI-CEC devices.
- **[Sys Audio Control]** (System audio control): If system audio control is enabled, the audio of the connected device is output through your home theater speakers automatically when you play the device.
- **[Audio Mapping]** (Audio input mapping):If system audio control does not work, map the connected device to the correct audio input connector on your home theater.

Note

- To change the EasyLink control settings, press ⌂ (**Home**), select **[Setup]** > **[Video]** > **[HDMI Setup]** > **[EasyLink Setup]** > **[EasyLink]**.

Set up the audio

If you cannot hear the audio output of a connected device through your home theater speakers, do the following:

- Check that you have enabled EasyLink on all the devices (see 'Set up EasyLink (HDMI-CEC control)' on page 10).

1 Press ⌂ (**Home**).
2 Select **[Setup]**, and then press **OK**.
3 Select **[Video]**, and then press **OK**.
4 Select **[HDMI Setup]** > **[EasyLink Setup]** > **[Sys Audio Control]** > **[On]**.
   - To play the audio from the TV speakers, select **[Off]**, and skip the following steps.
5 Select **[HDMI Setup]** > **[EasyLink Setup]** > **[Audio Mapping]**.
6 Follow the onscreen instructions to map the connected device to the audio inputs on your home theater.
   - If you connect your home theater to the TV through an **HDMI ARC** connection, make sure that the TV audio is mapped to the ARC input on your home theater.

Mechanical and Dismantling Instructions

Dismantling Instruction

Detailed information please refer to the model set.

The following guidelines show how to dismantle the player.

Step1: Open the top cover. Remove 2 screws on both sides and 4 screws on back panel,then open the cover. (Figure 1)

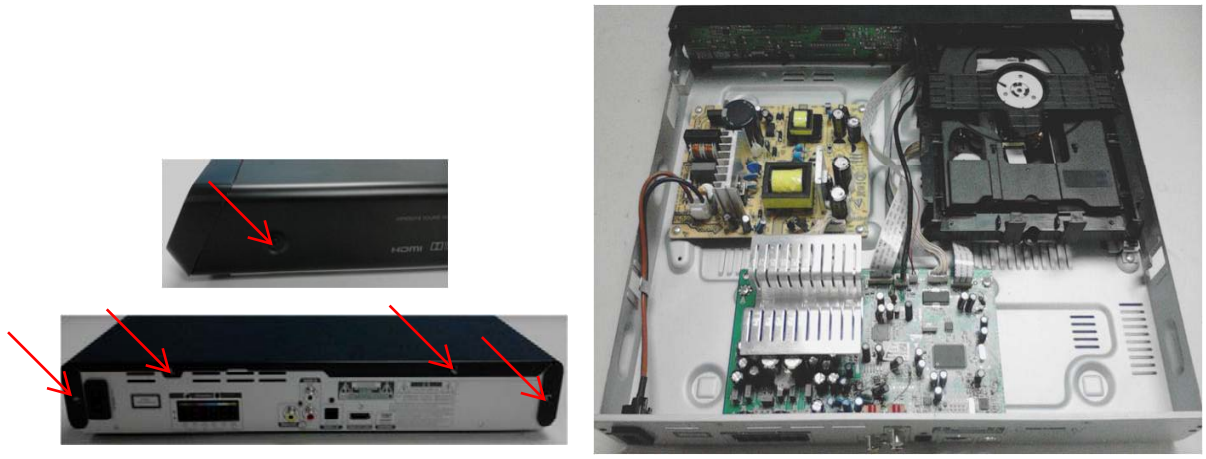


Figure 1

Step2: Dismantle the loader.Open the tray,dismantle the CD door,remove 2 screws beside the loader. disconnect connectors(XP100,XP135,XP136),then pull up the loader.(Figure 2)

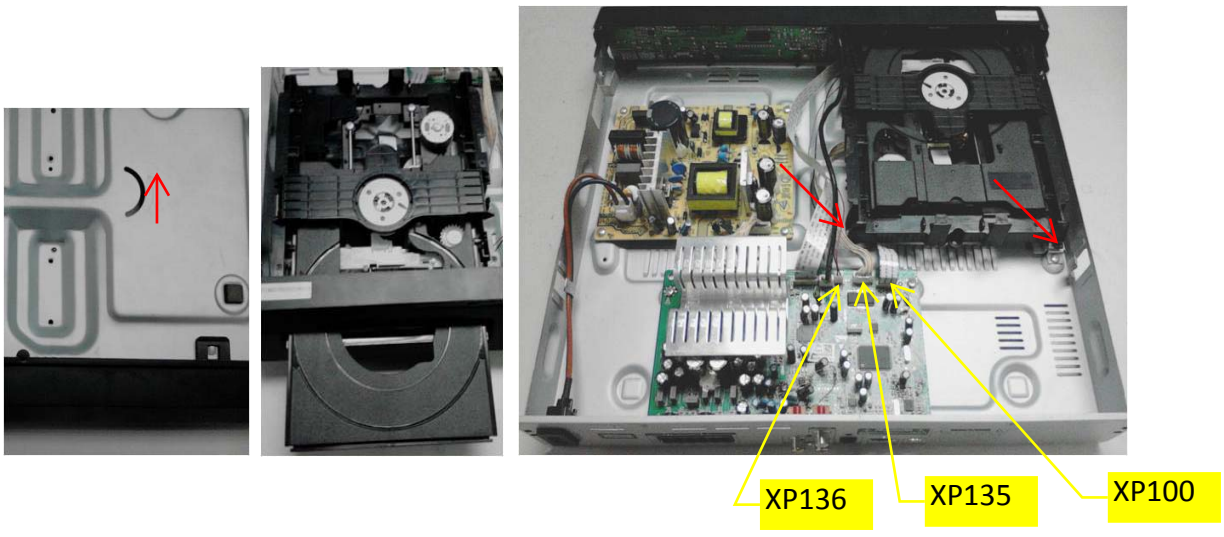


Figure 2

Mechanical and Dismantling Instructions

Dismantling Instruction

Detailed information please refer to the model set.

The following guidelines show how to dismantle the player.

Step3: Dismantle the main board.Disconnect connectors(XP221,XP82,XS751),remove 2 screws on the board and 6 screws on back panel.(Figure 3)

Step4: Dismantle the power board.Remove 4 screws on the board.(Figure 3)

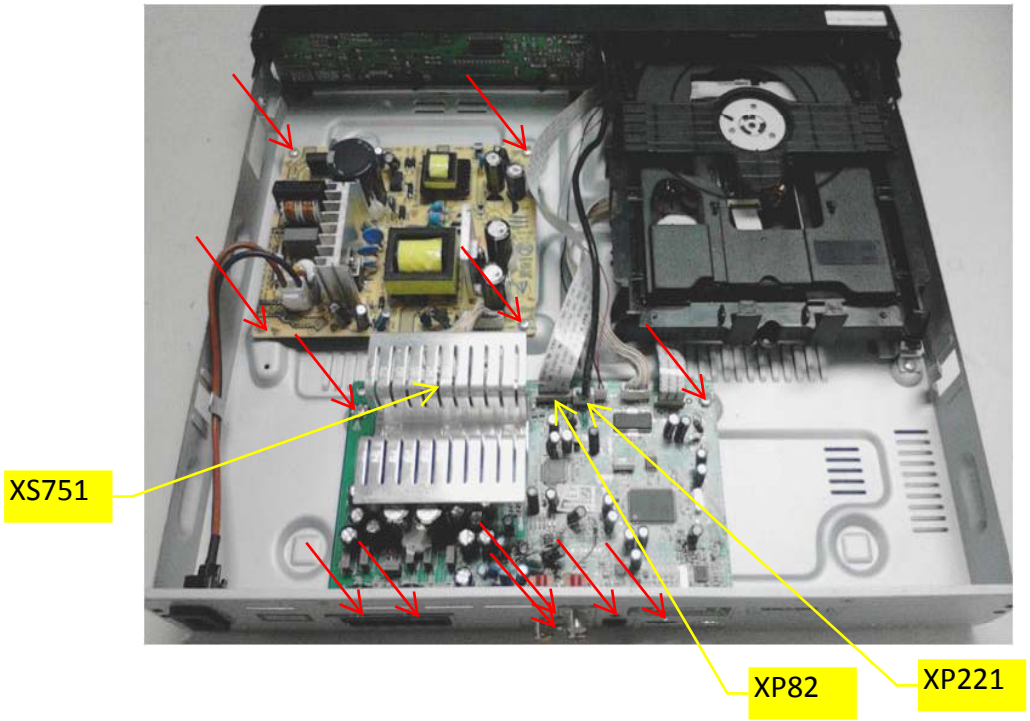


Figure 3

Step5: Dismantle the front panel and the front control board.Loosen the 2 buckles on both sides and 2 buckles under bottom cover,then remove 5 screws on the front control board(Figure 4)

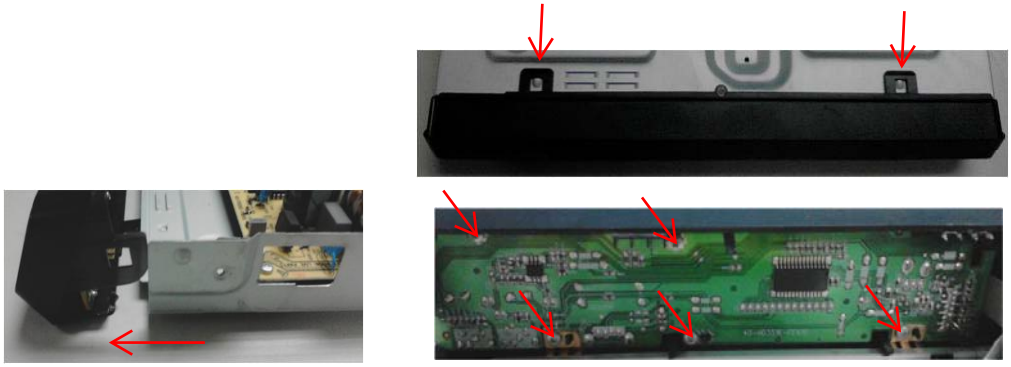


Figure 4

Software Upgrade

1. There are 2 ways to software upgrade:
First:

Upgrade from USB:

Copy the upgrade file HTD5510_X X.BIN to USB then press the USB key on RC or SOURCE key on front panel.
When upgrade file detected, select "Yes" to upgrade, select "Cancel" to cancel.
After upgrading begins, a message “DO NOT POWER OFF” will show, or the product will hang up and upgrading failed.

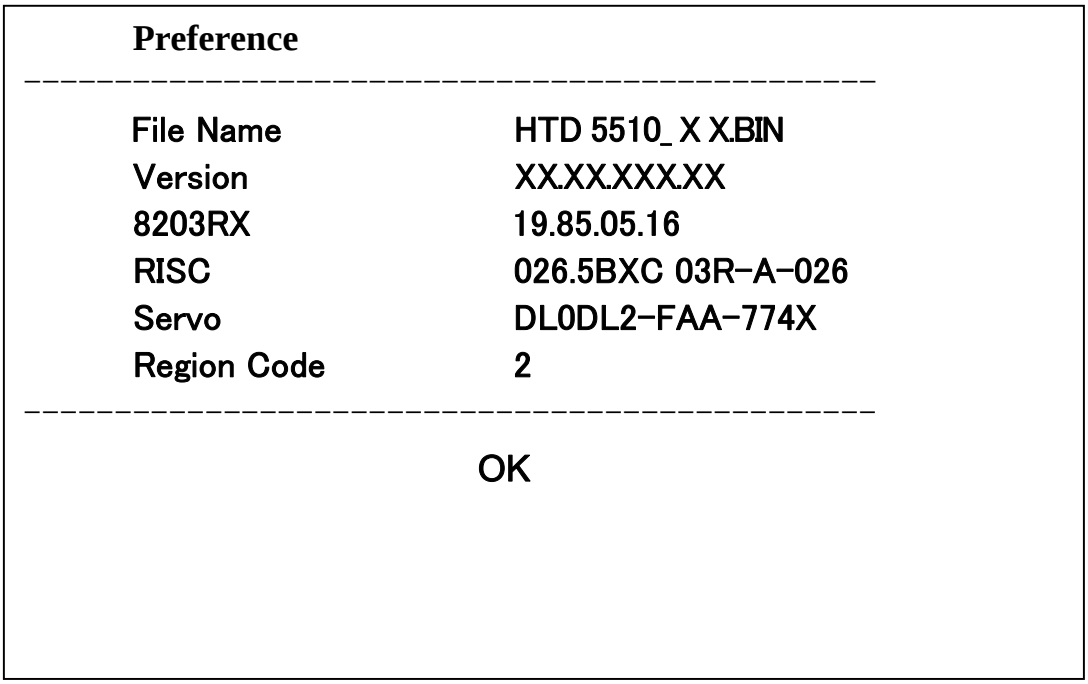
Second:

Upgrade from Disc:

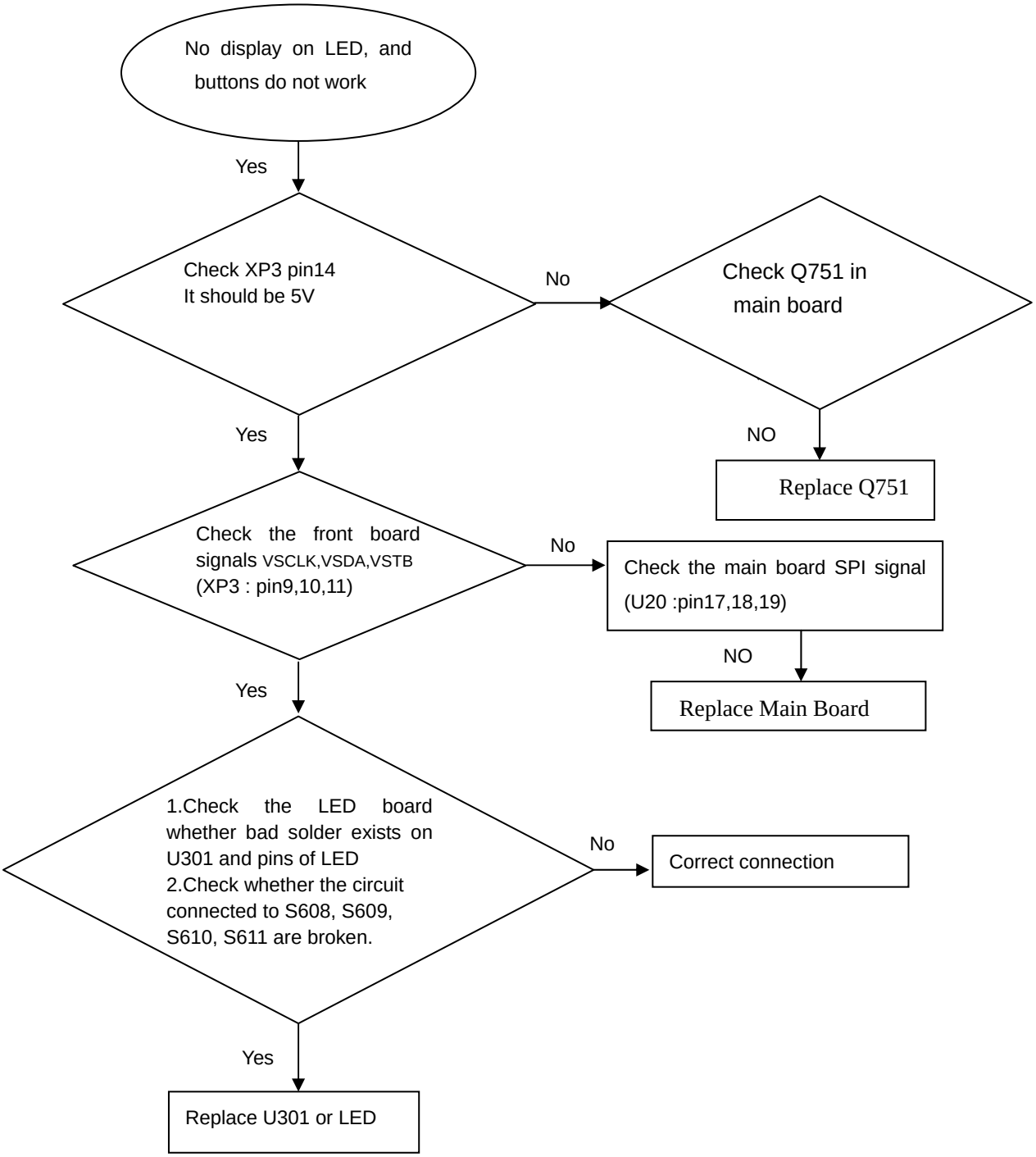
Copy the upgrade file HTD5510_X X.BIN to disc then read the disc.
When upgrade file detected, select "Yes" to upgrade, select “Cancel “to cancel.
After upgrading begins, a message “DO NOT POWER OFF” will show, or the product will hang up and upgrading failed.

2. Check the version information after upgraded.

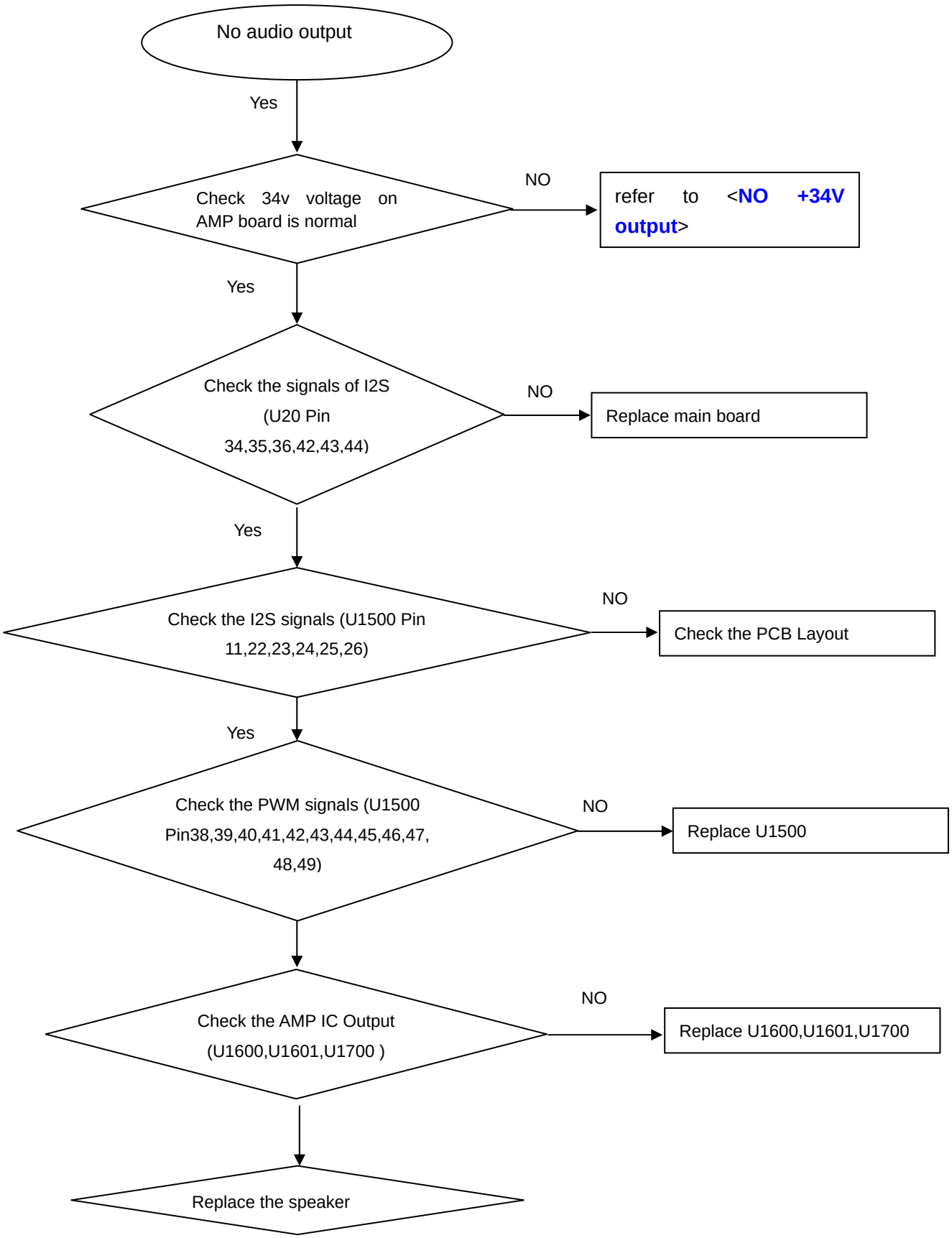
Press the setup key on RC , select Preference Setup, and then Version info , press OK Key you will see a interface below:



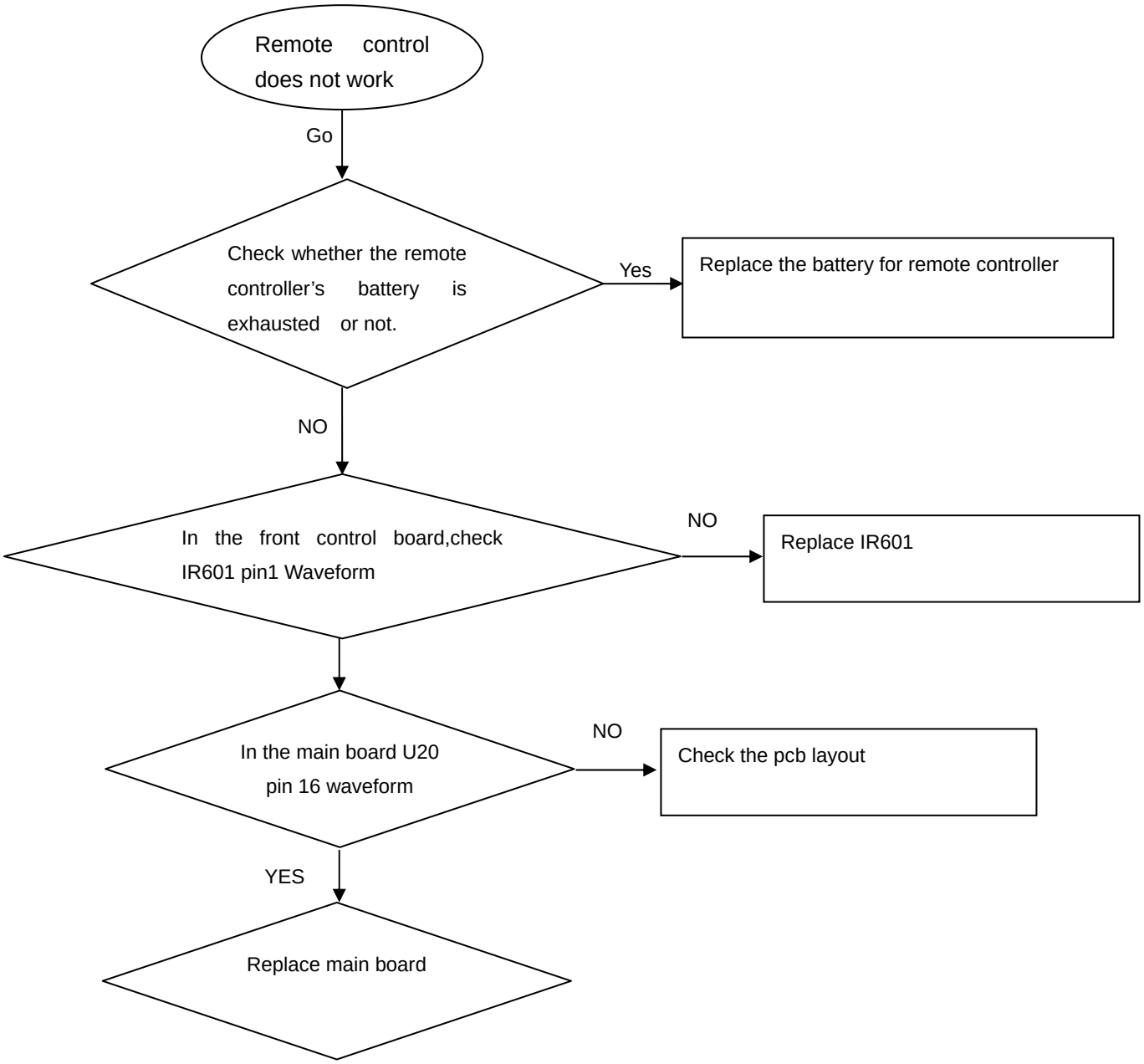
No display on LED, and buttons do not work



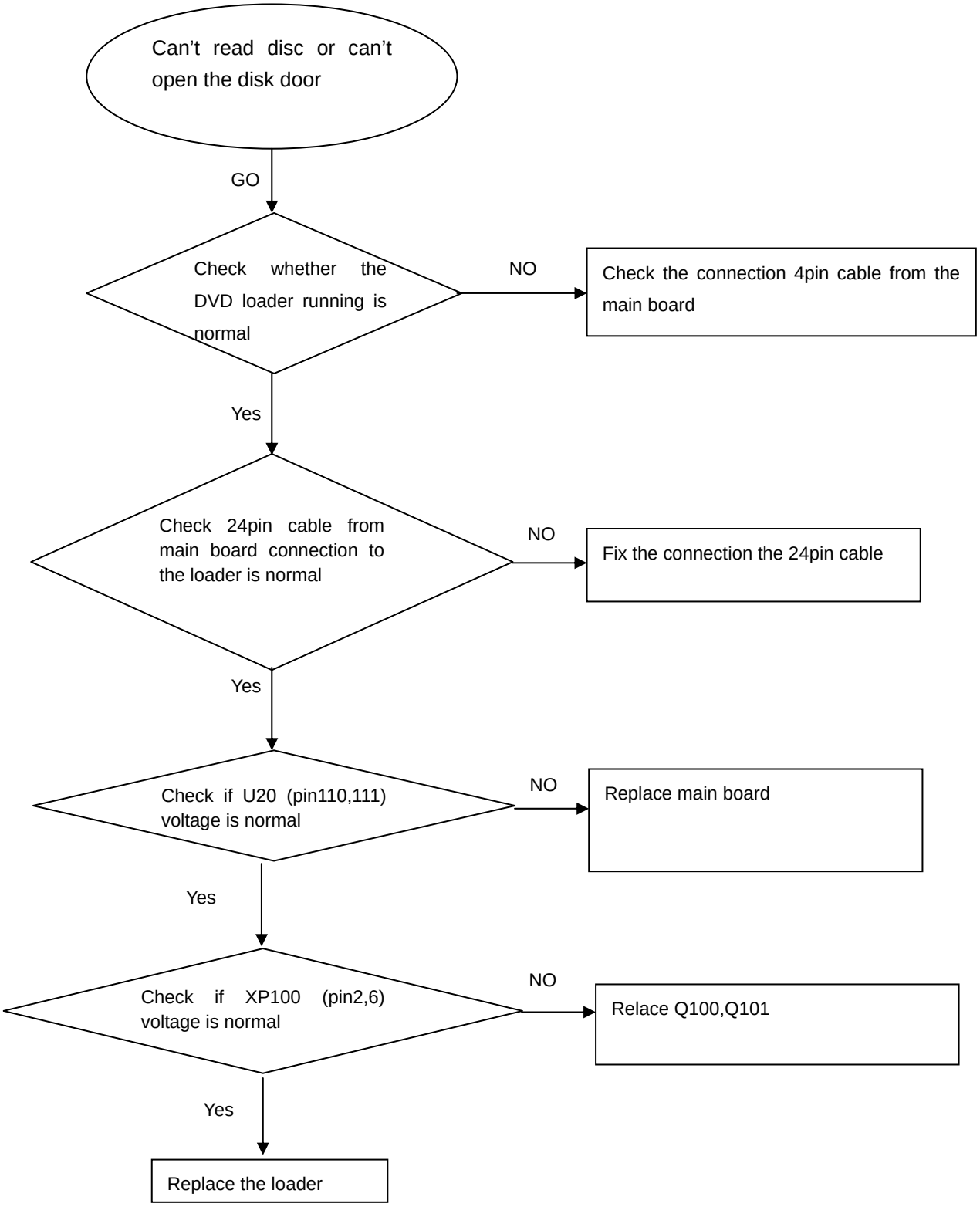
No audio output



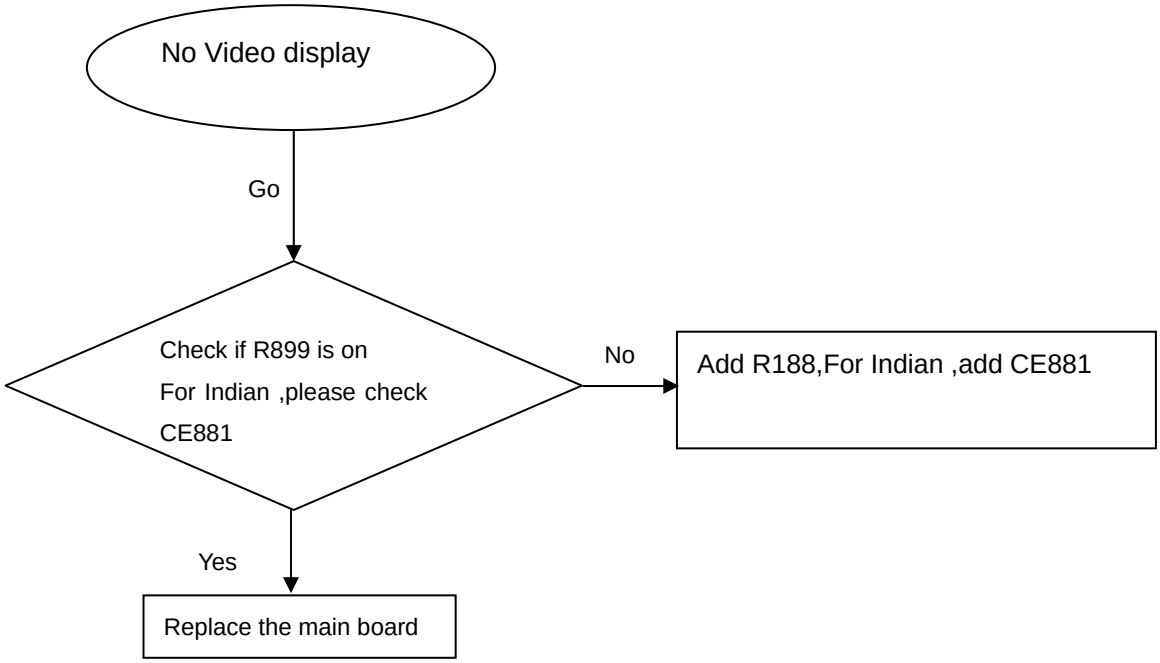
Remote control does not work



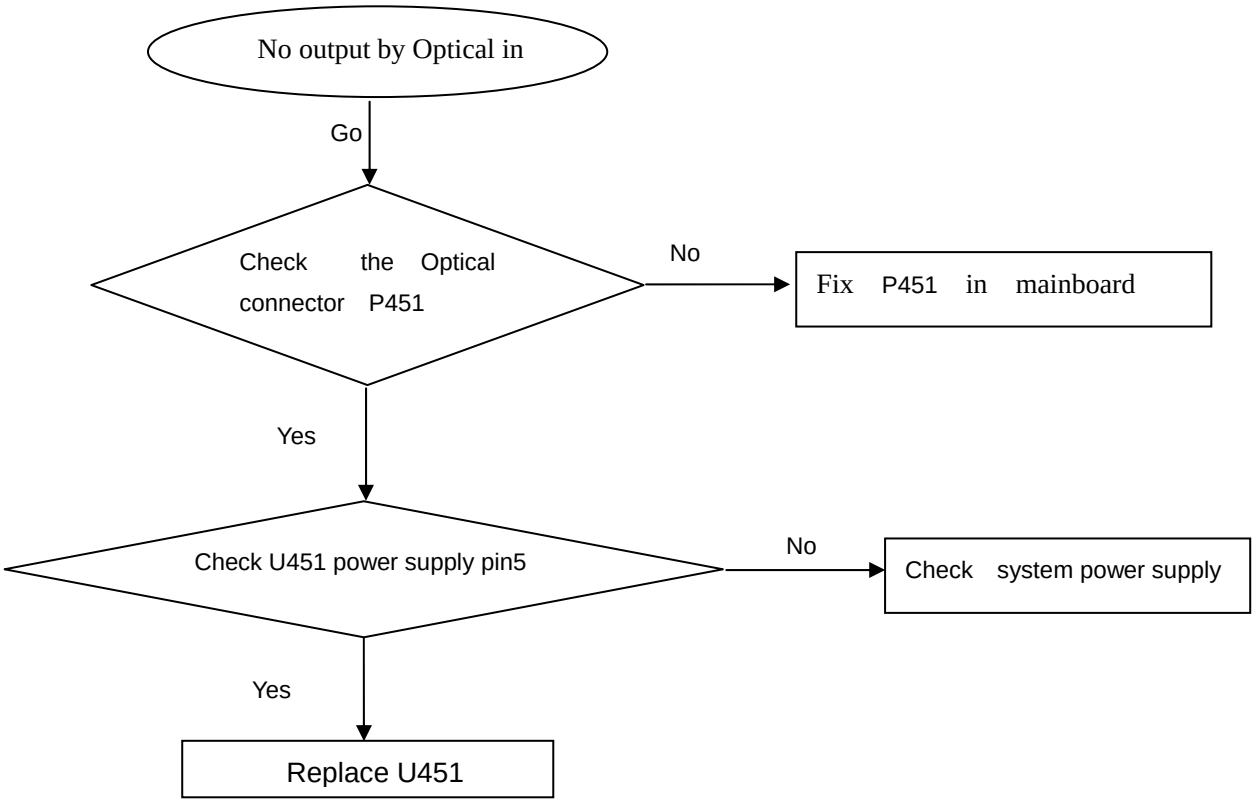
Can’t read disc or can’t open the disk door



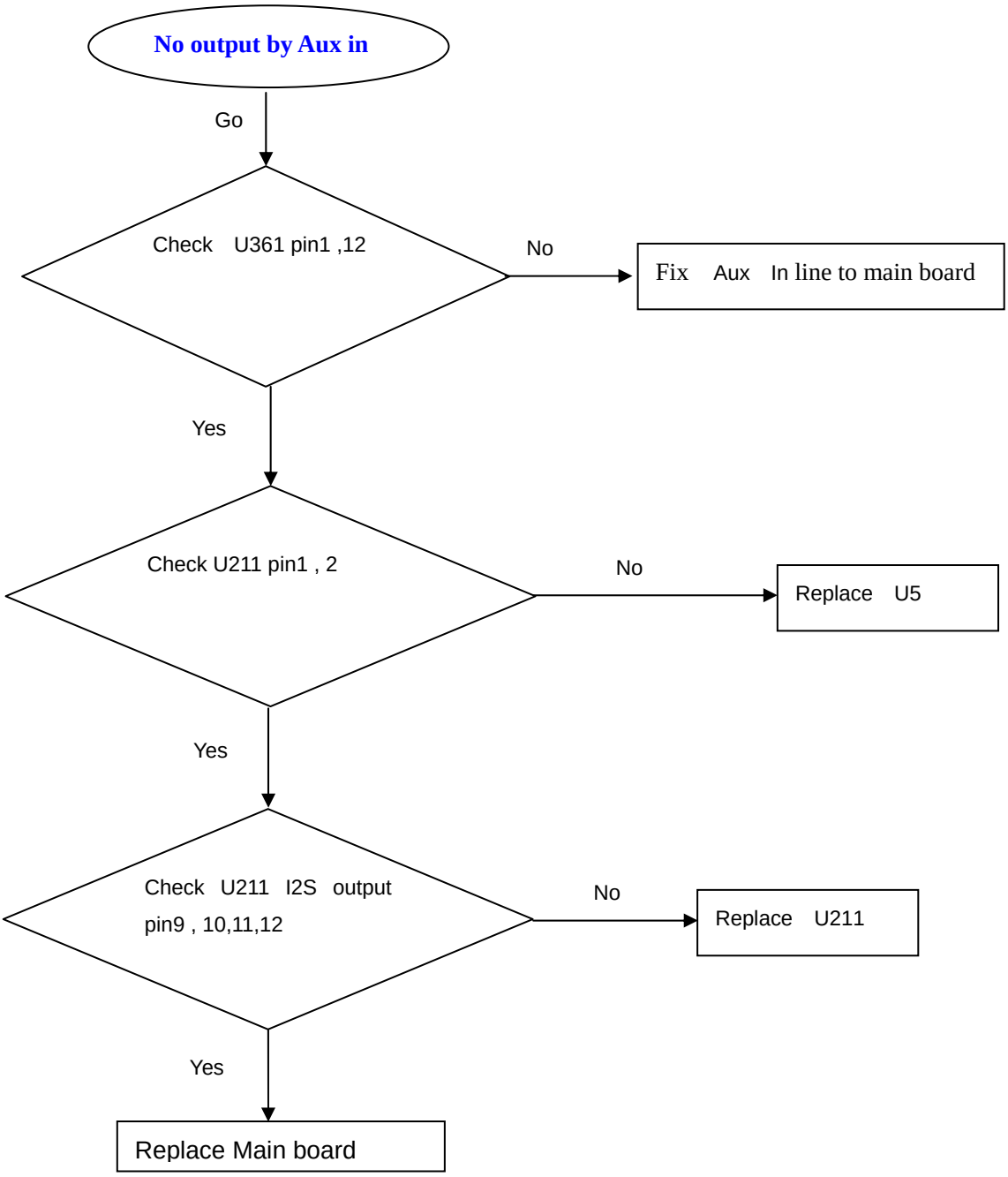
No video display



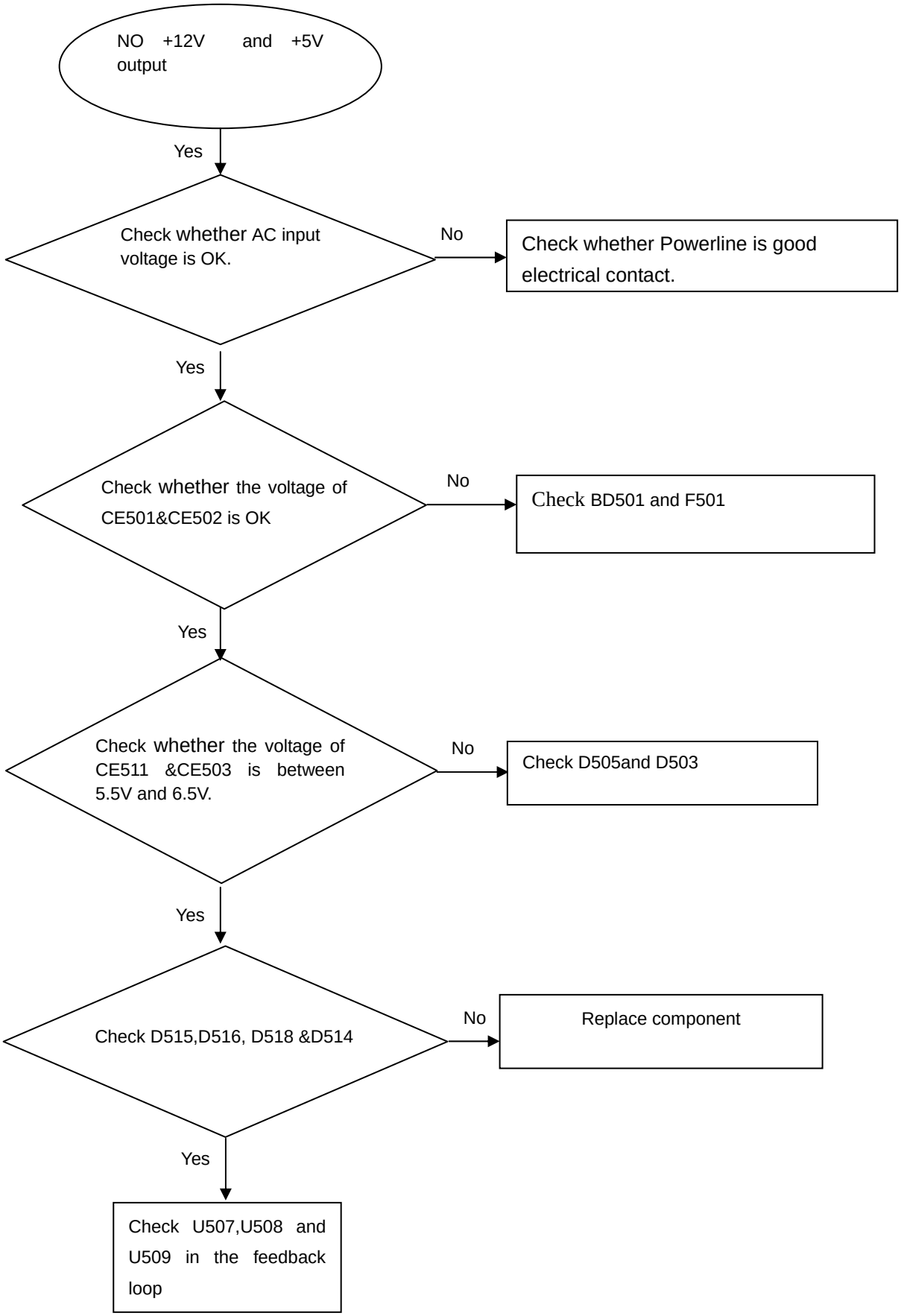
No output by Optical in



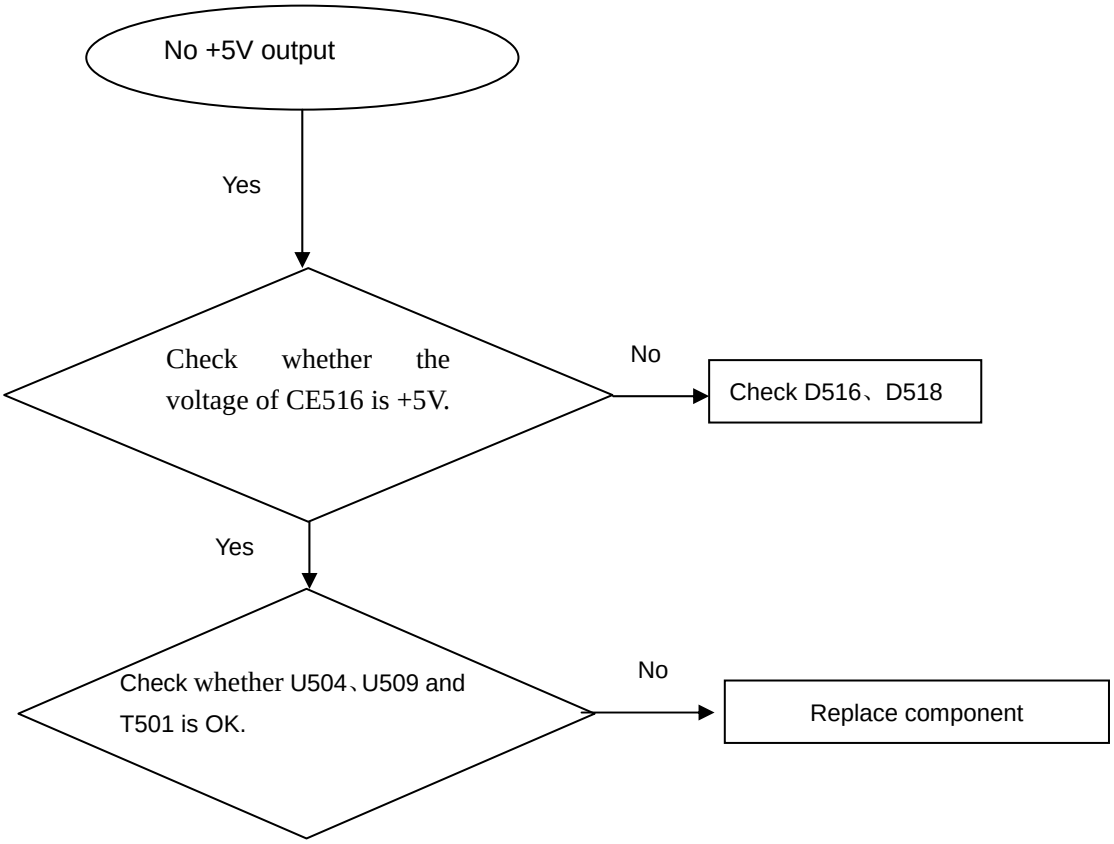
No output by Aux IN



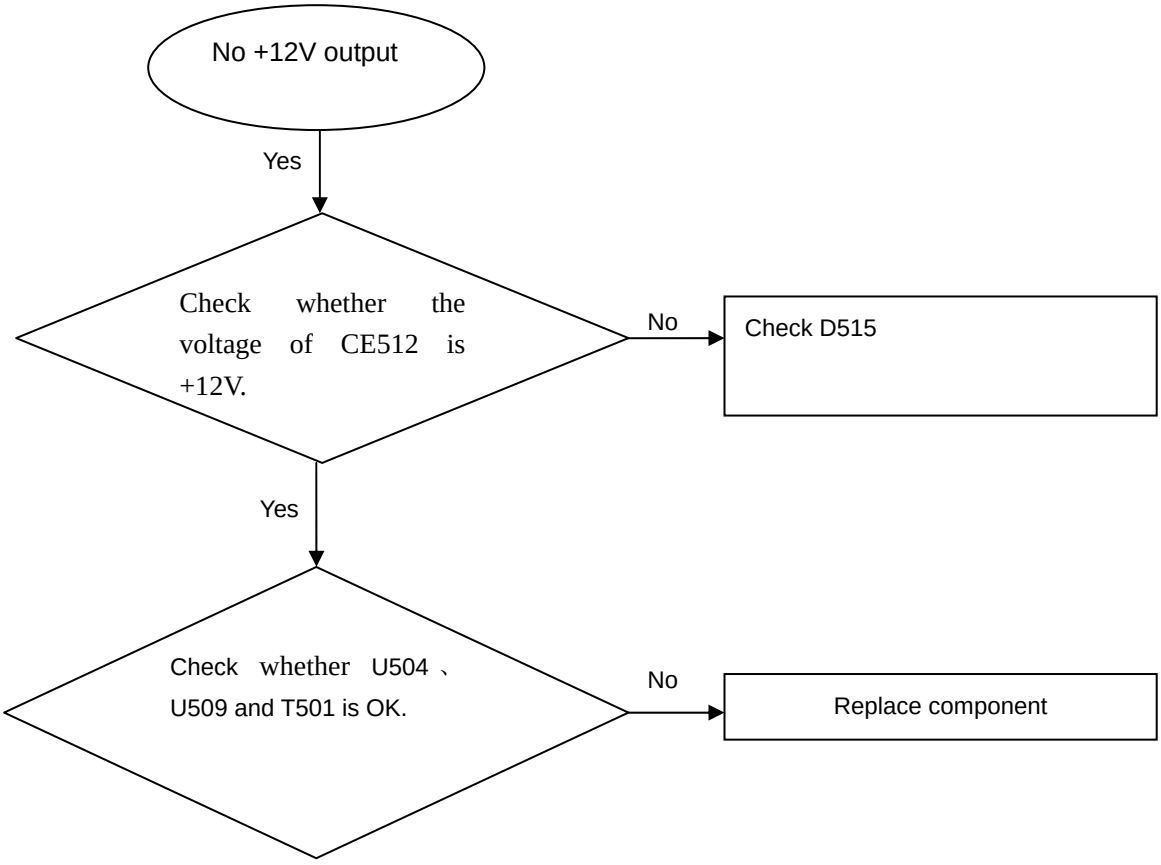
NO +12V 、+5 and +34V output



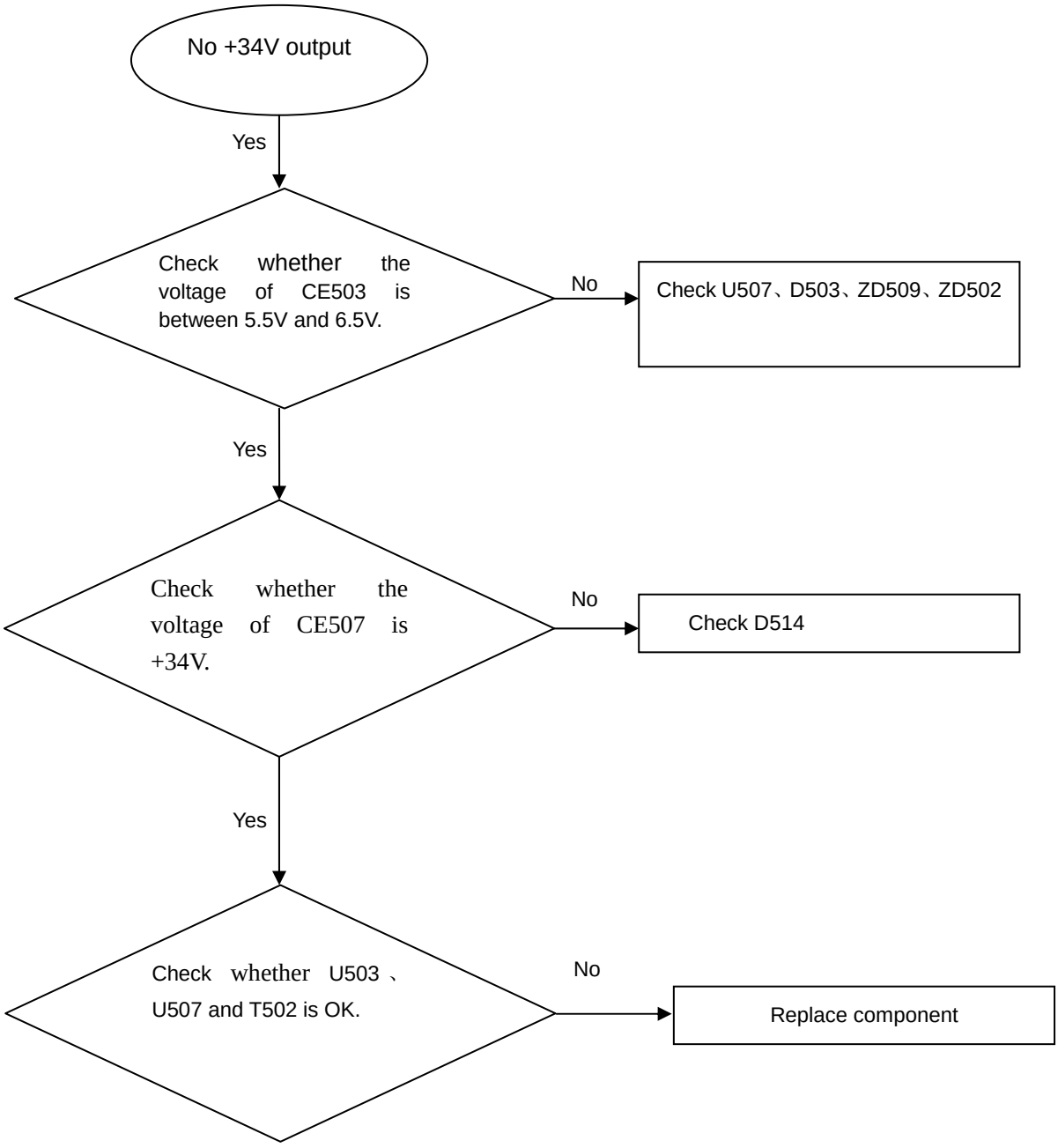
No +5V output


No +5V output
Yes
Check whether the voltage of CE516 is +5V.
No
Check D516、D518
Yes
Check whether U504、U509 and T501 is OK.
No
Replace component

No +12V output

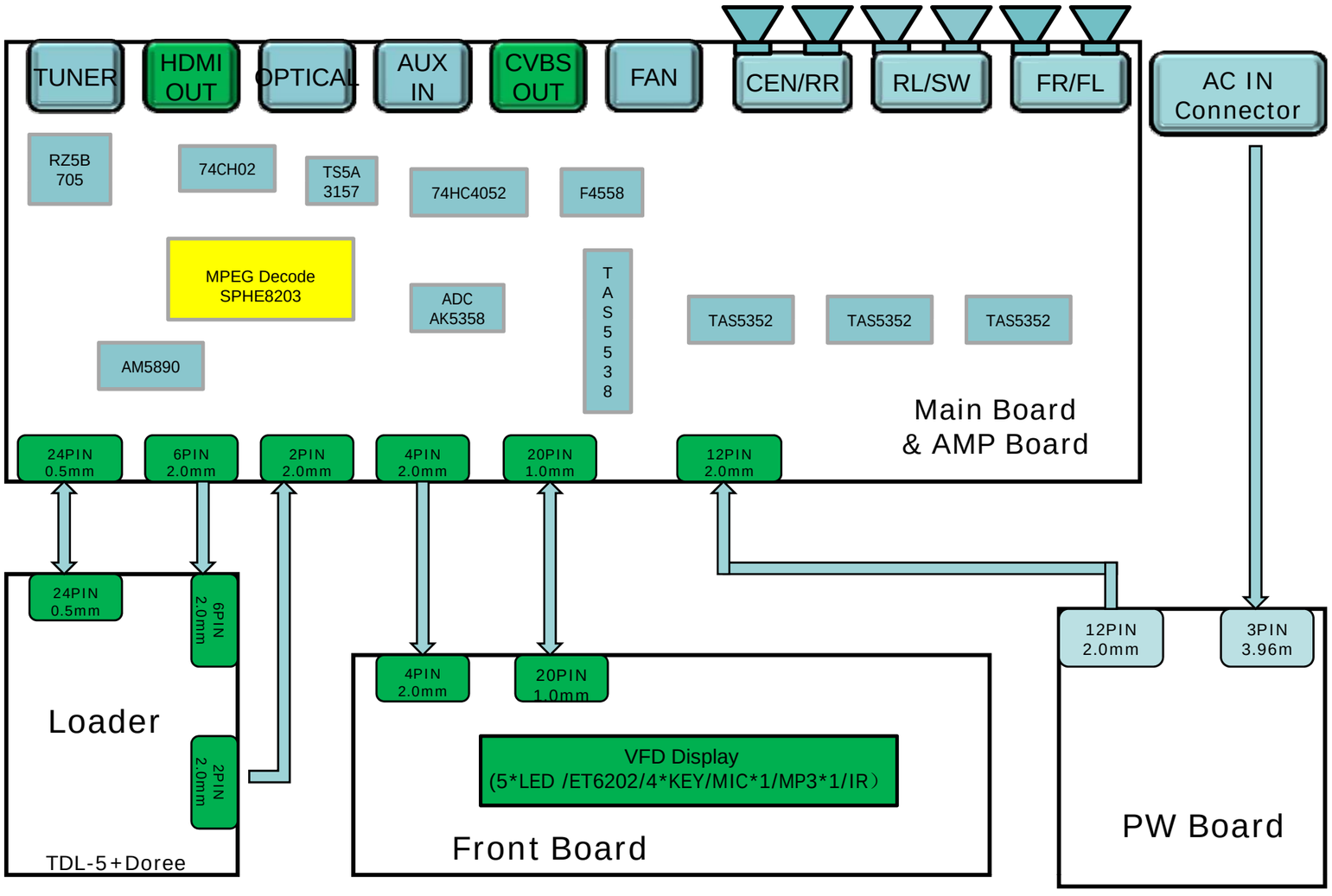


No +34V output



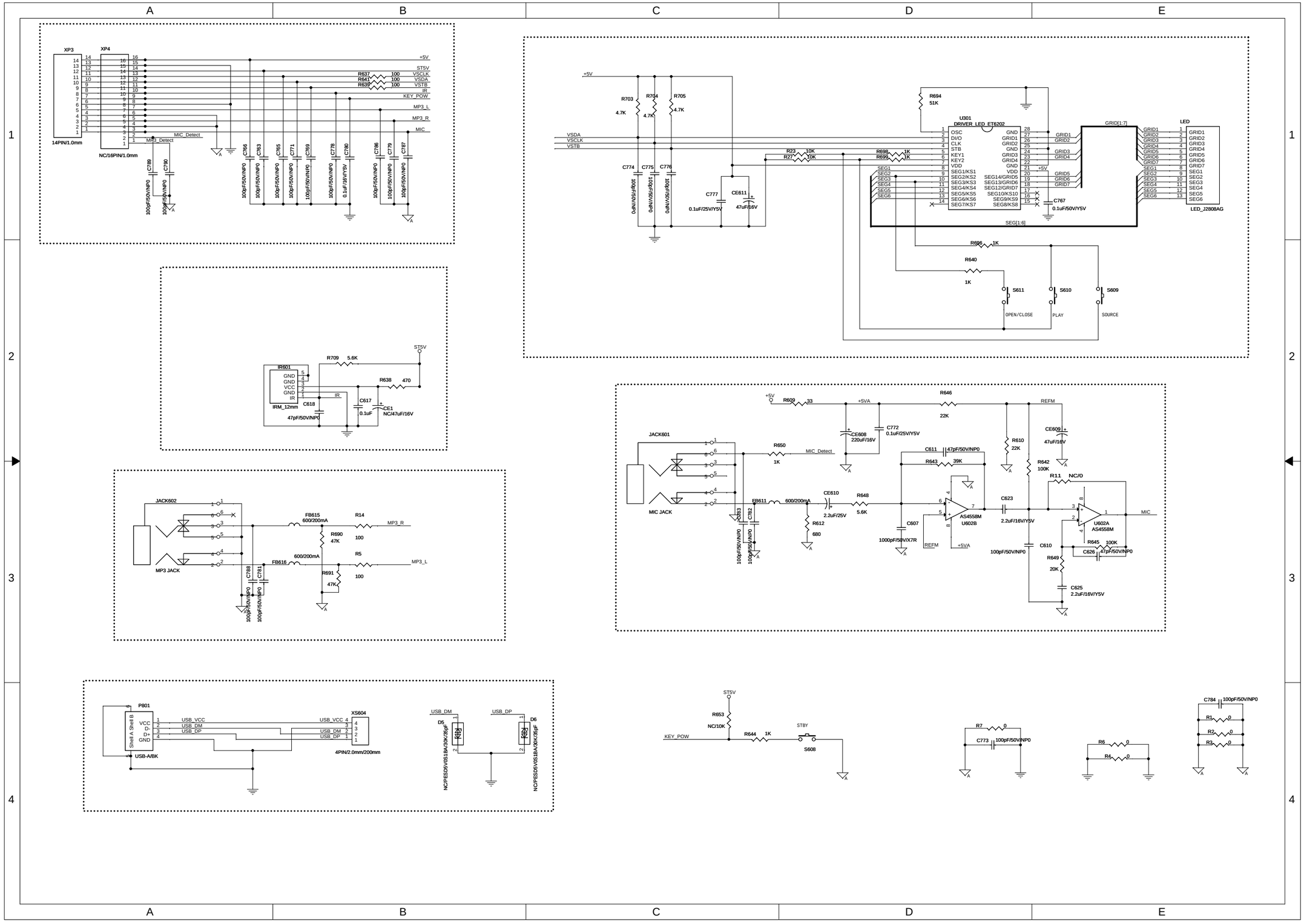
6-1

Block Diagram for HTD5540:



7-1

Front Control Board Circuit Diagram:



7-2

Power Board Circuit Diagram:

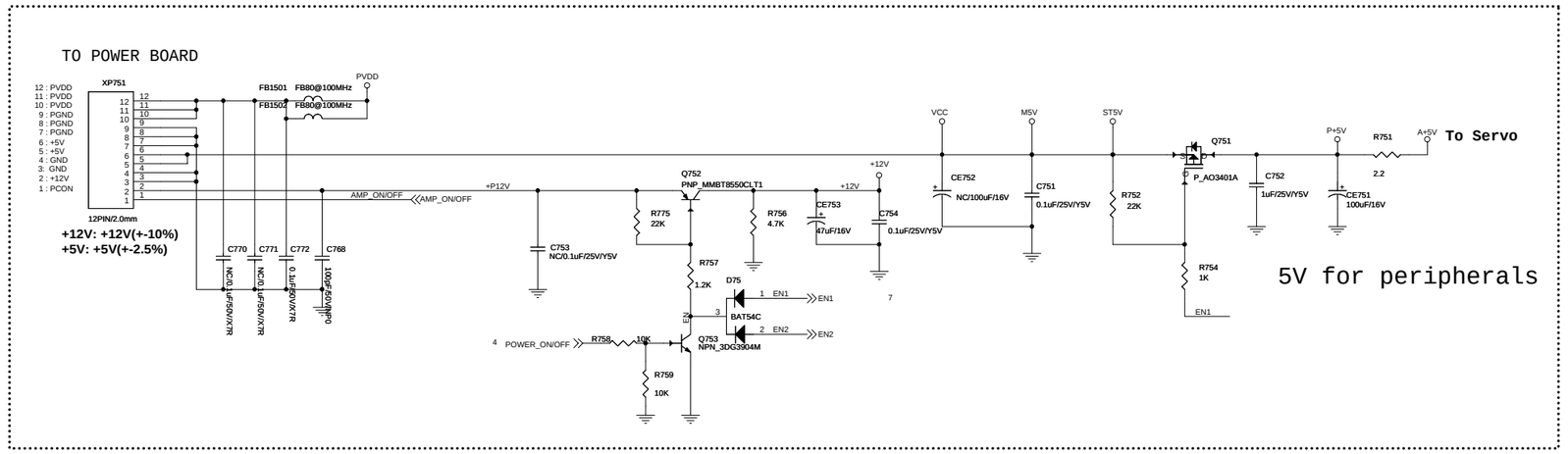
*** CAUTION :**

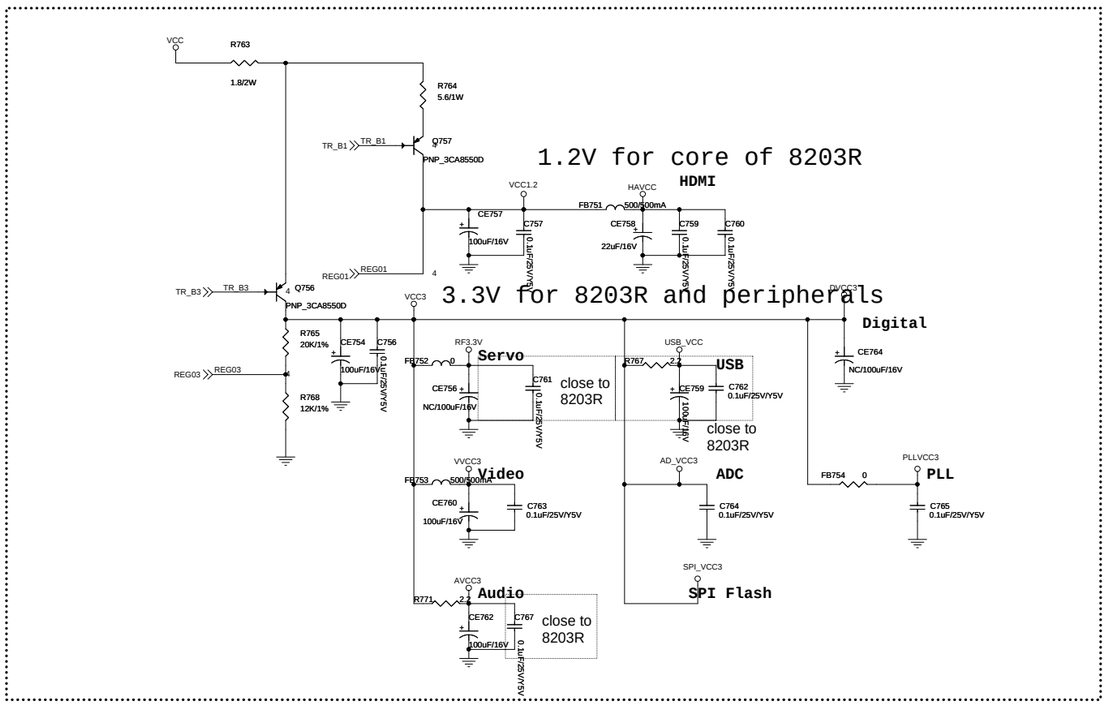
THE PARTS MARKED WITH ⚠ ARE IMPORTANT PARTS ON THE SAFETY.

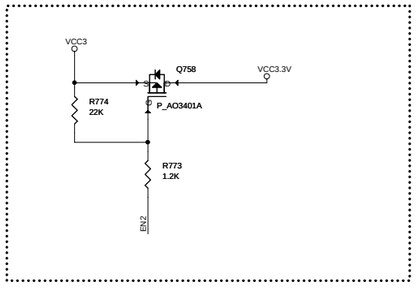
PLEASE USE THE PARTS HAVING THE DESIGNATED PARTS NUMBER WITHOUT FAIL.

7-3

Main Board Circuit Diagram:Power

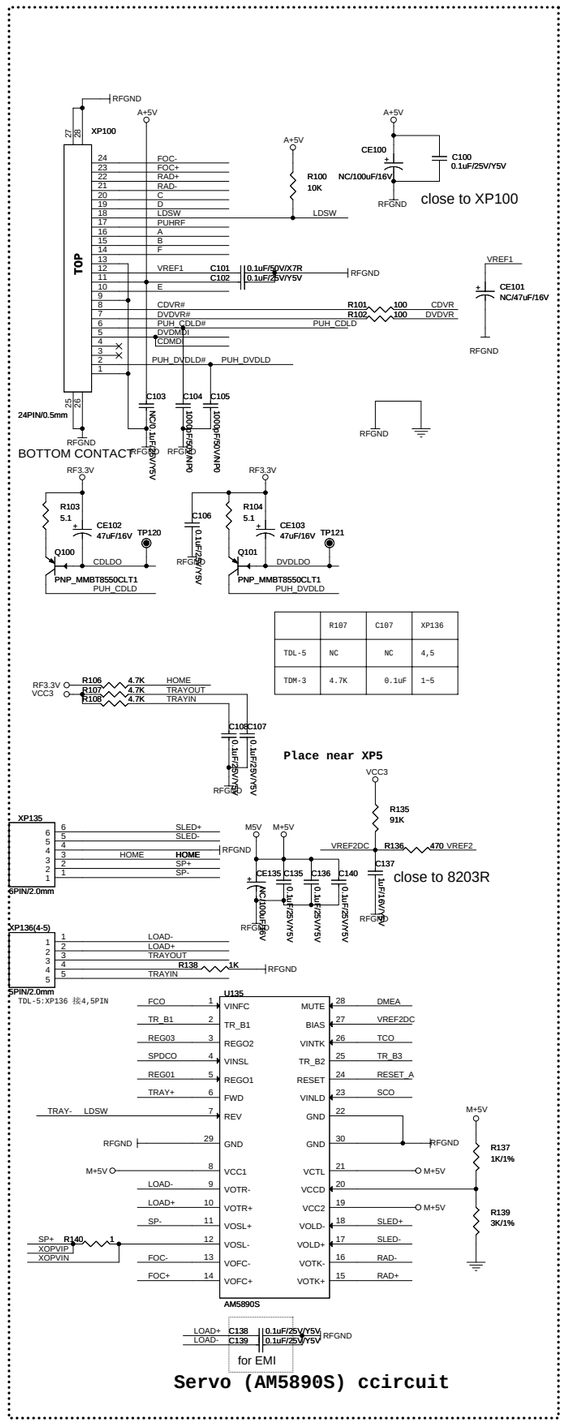




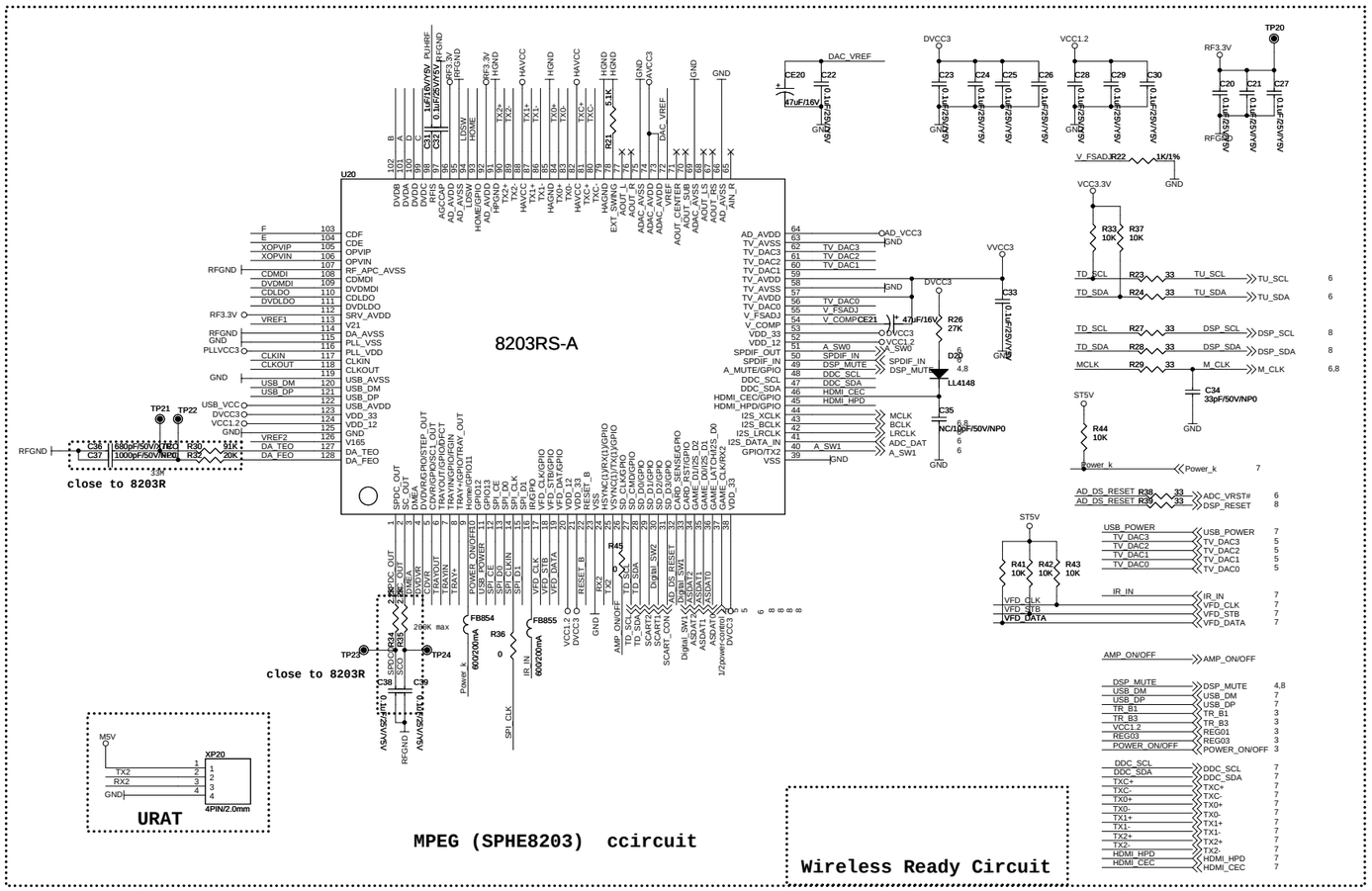


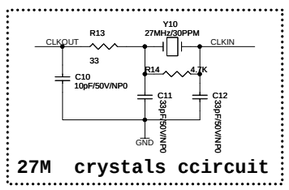
7-4

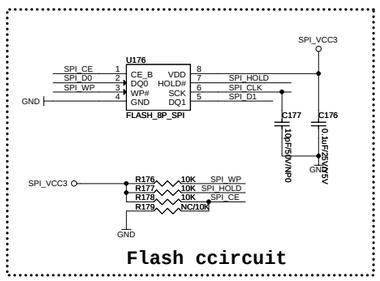
Main Board Circuit Diagram:SPHE8203R

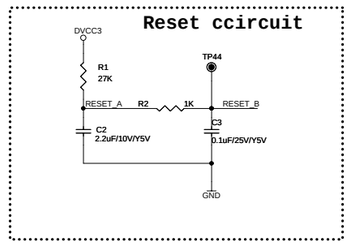


	R107	C107	XP136
TDL-5	NC	NC	4,5
TDM-3	4.7K	0.1uF	1~5



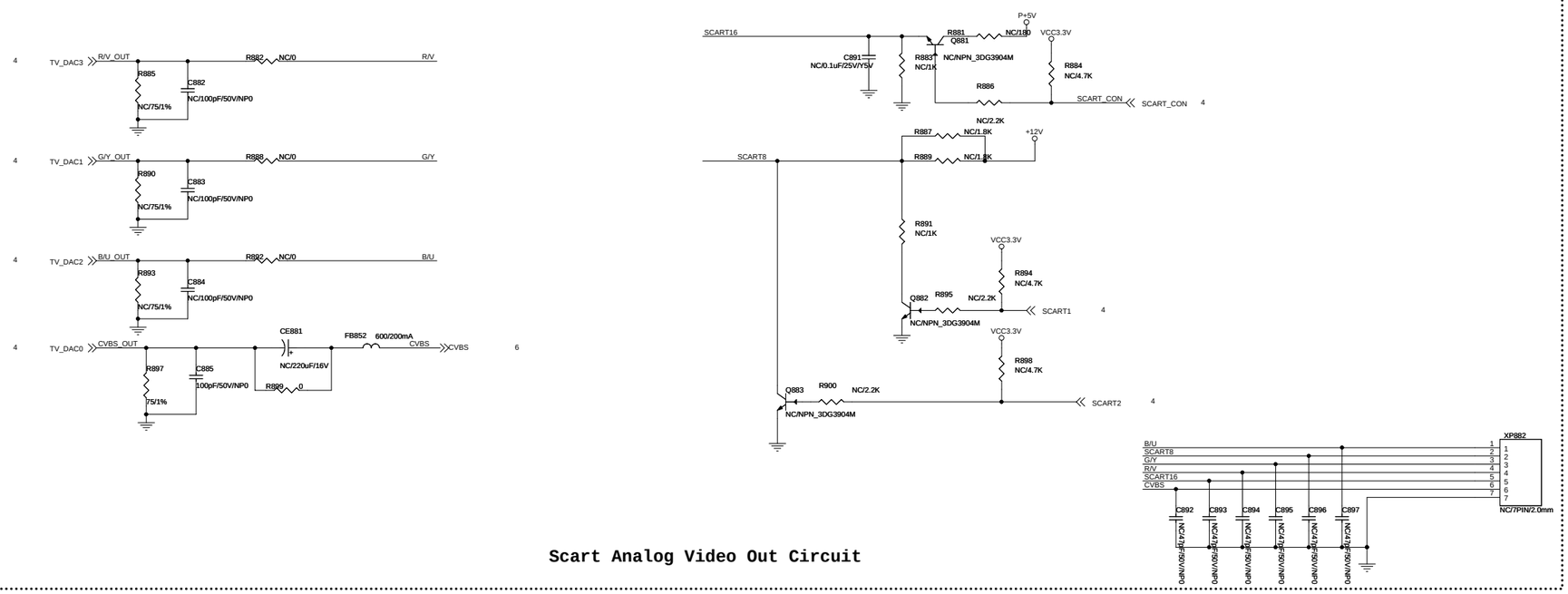






7-5

Main Board Circuit Diagram:Analog Video Output

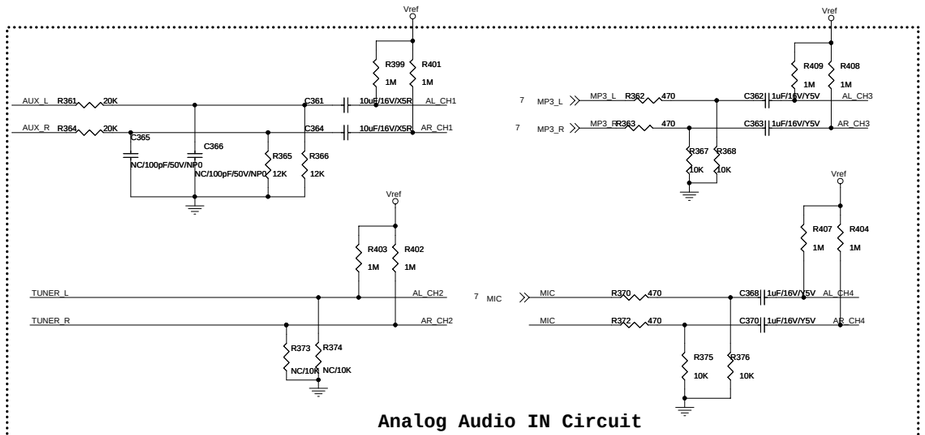


Scart Analog Video Out Circuit

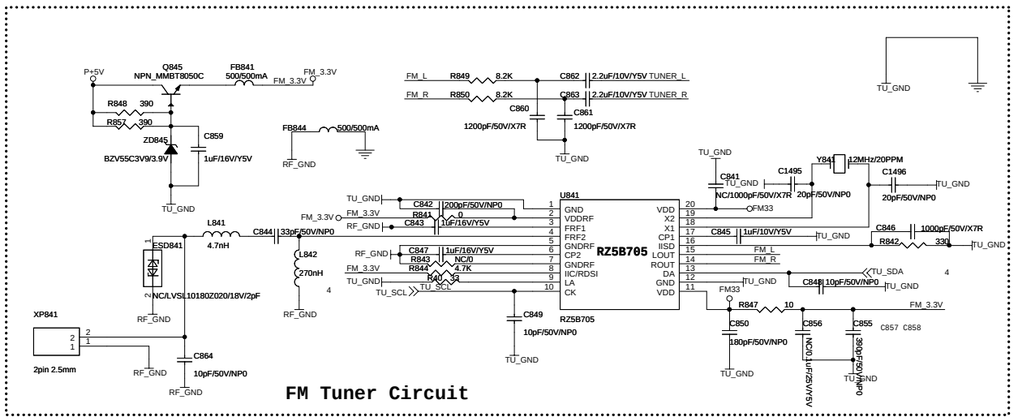
7-6

Main Board Circuit Diagram:Audio Input

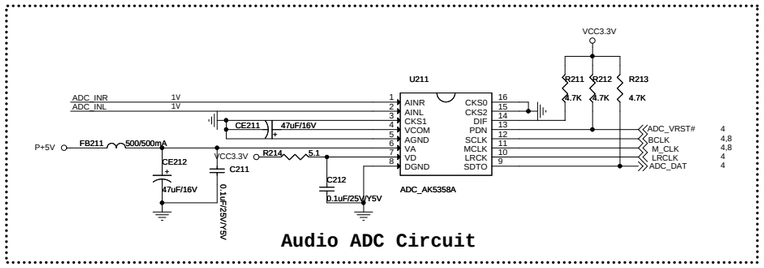
Analog Audio IN Circuit



FM Tuner Circuit

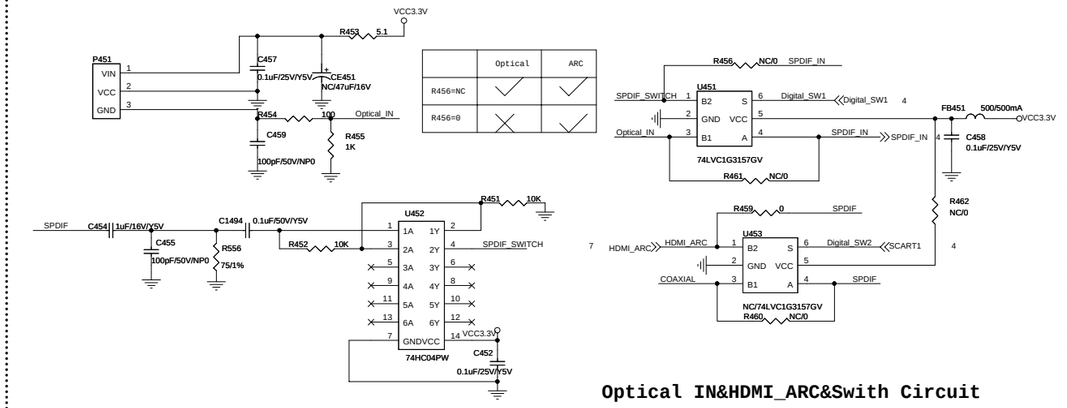


Audio ADC Circuit

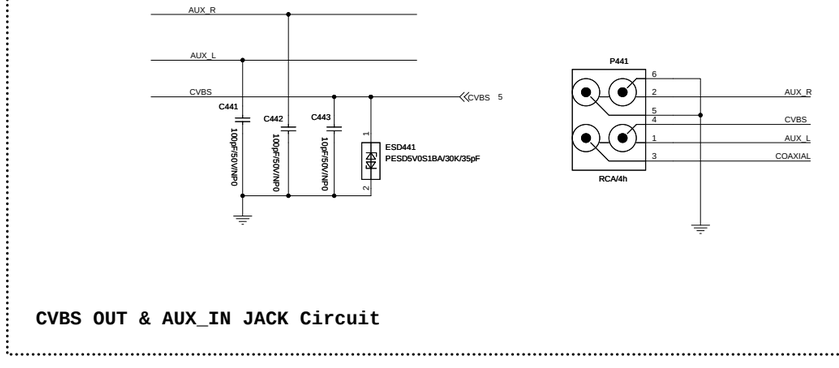


Analog Audio IN Swith Circuit

Optical IN&HDMI_ARC&Swith Circuit



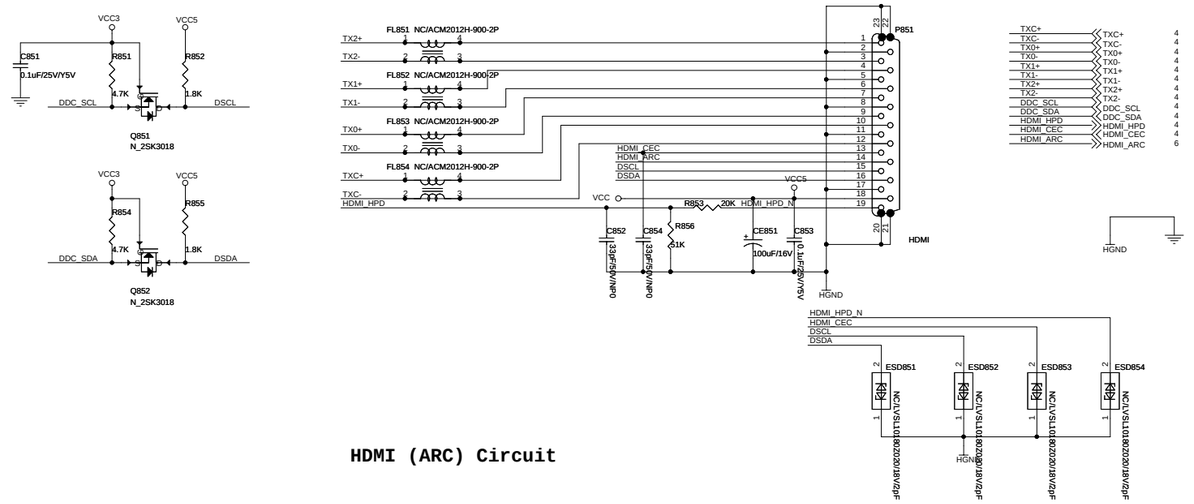
CVBS OUT & AUX_IN JACK Circuit



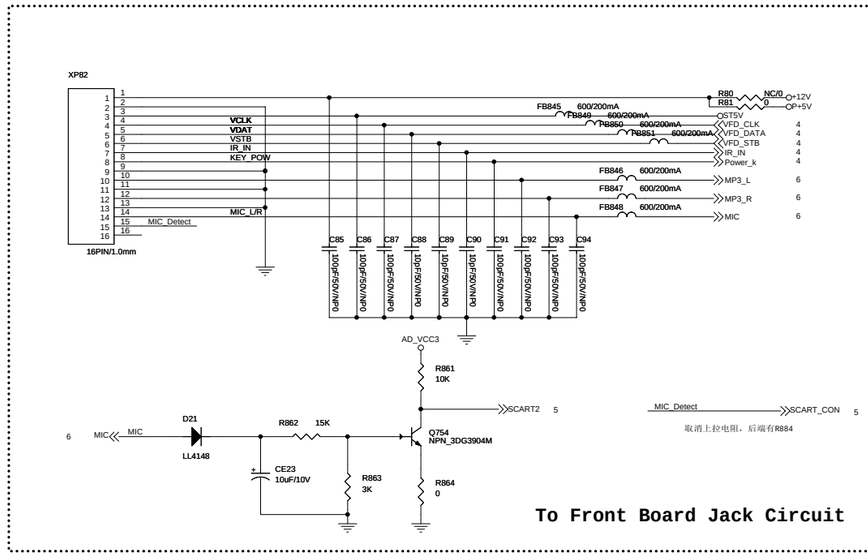
7-7

Main Board Circuit Diagram:HDMI & USB

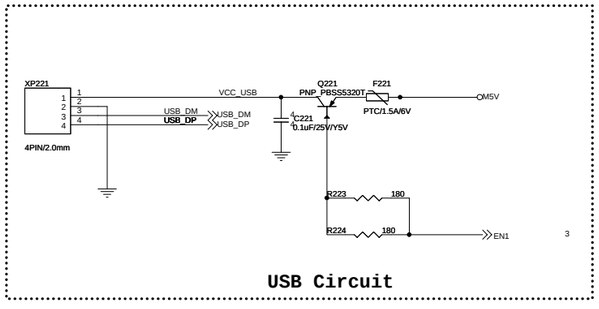
Differential signal trace (TXC+/-, TX1+/-, TX2+/- and TX0+/-):
50ohm single end and 100ohm differential impedance
No via & length than 5cm



HDMI (ARC) Circuit



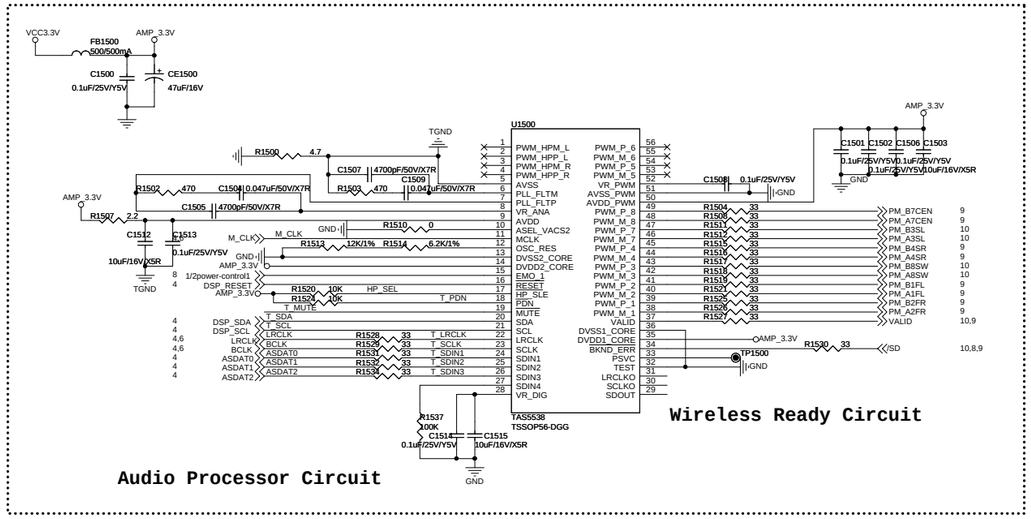
To Front Board Jack Circuit

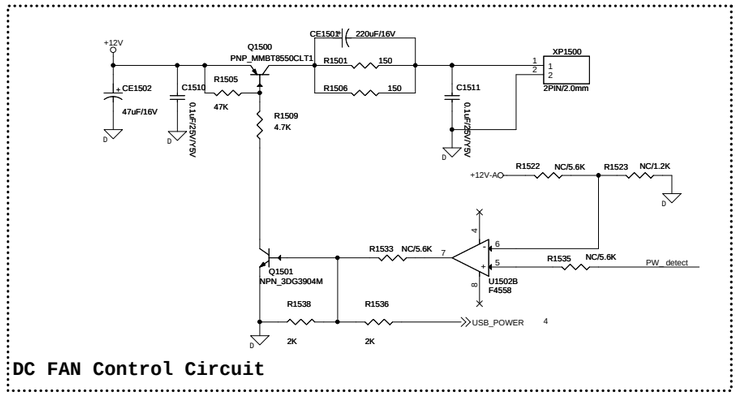


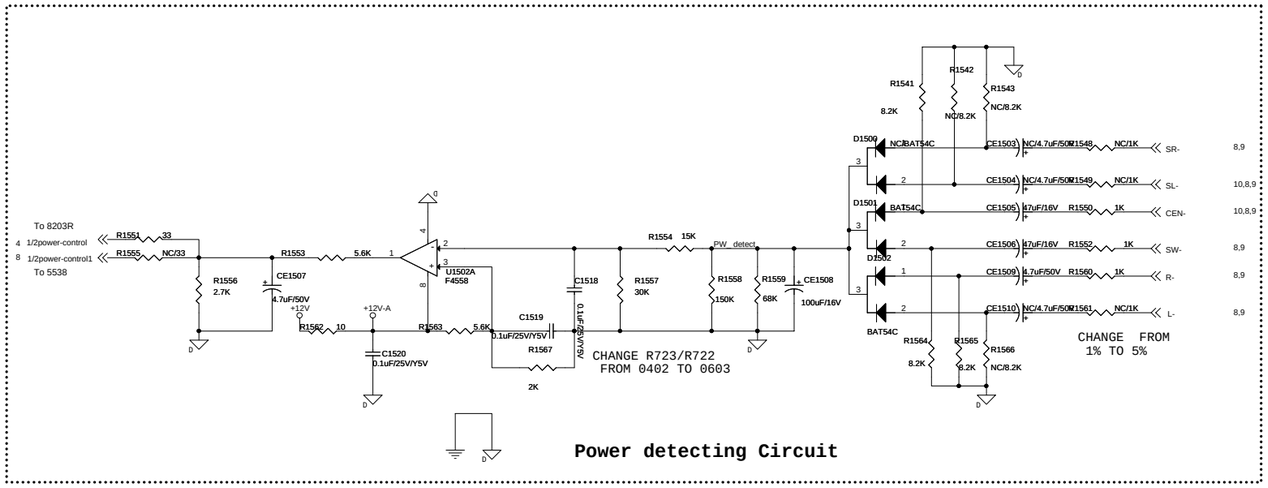
USB Circuit

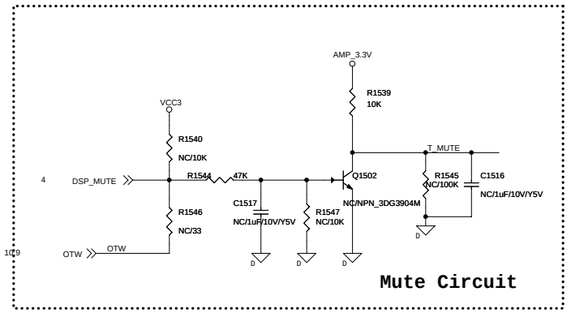
7-8

Main Board Circuit Diagram:TAS5538



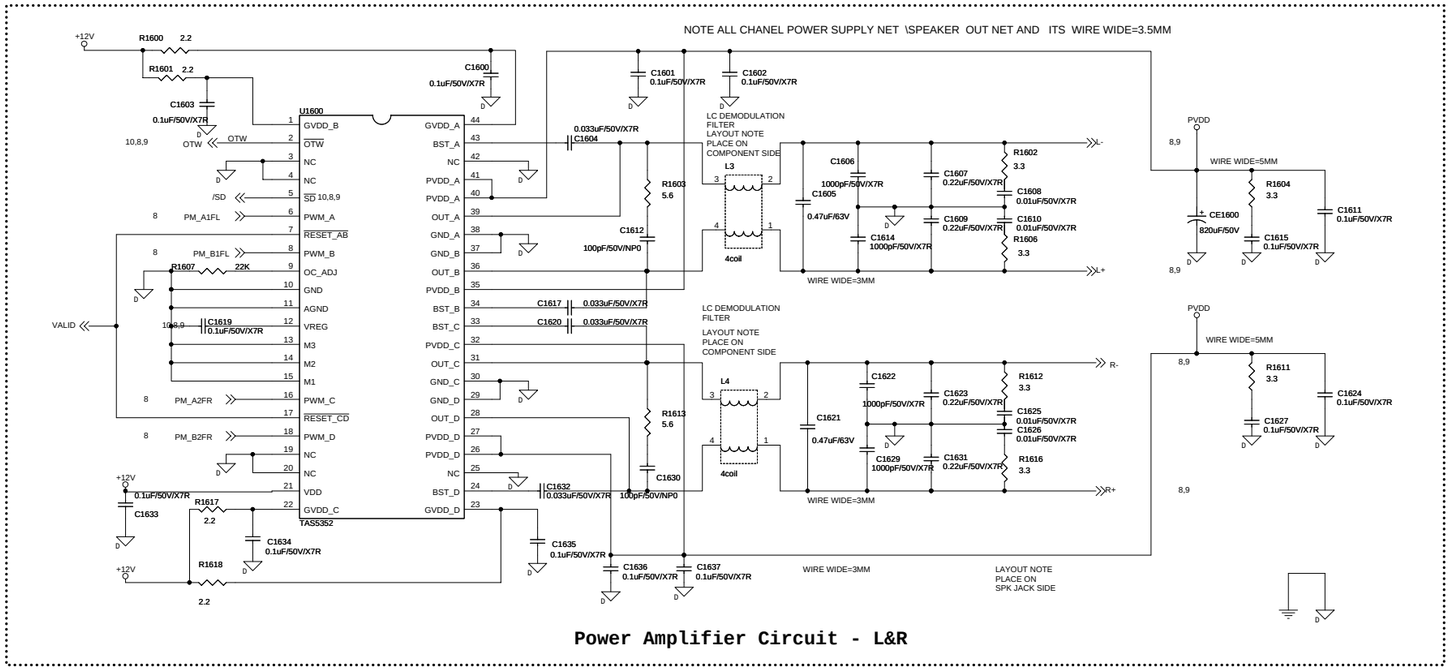




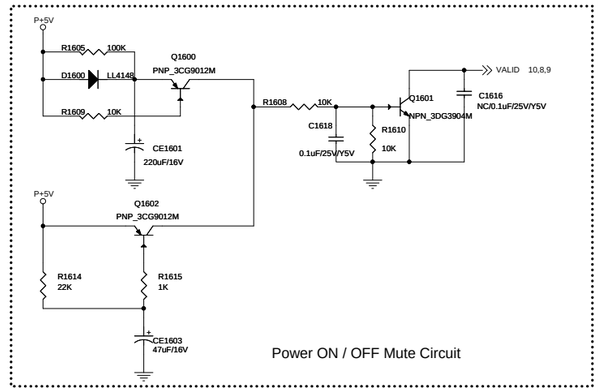


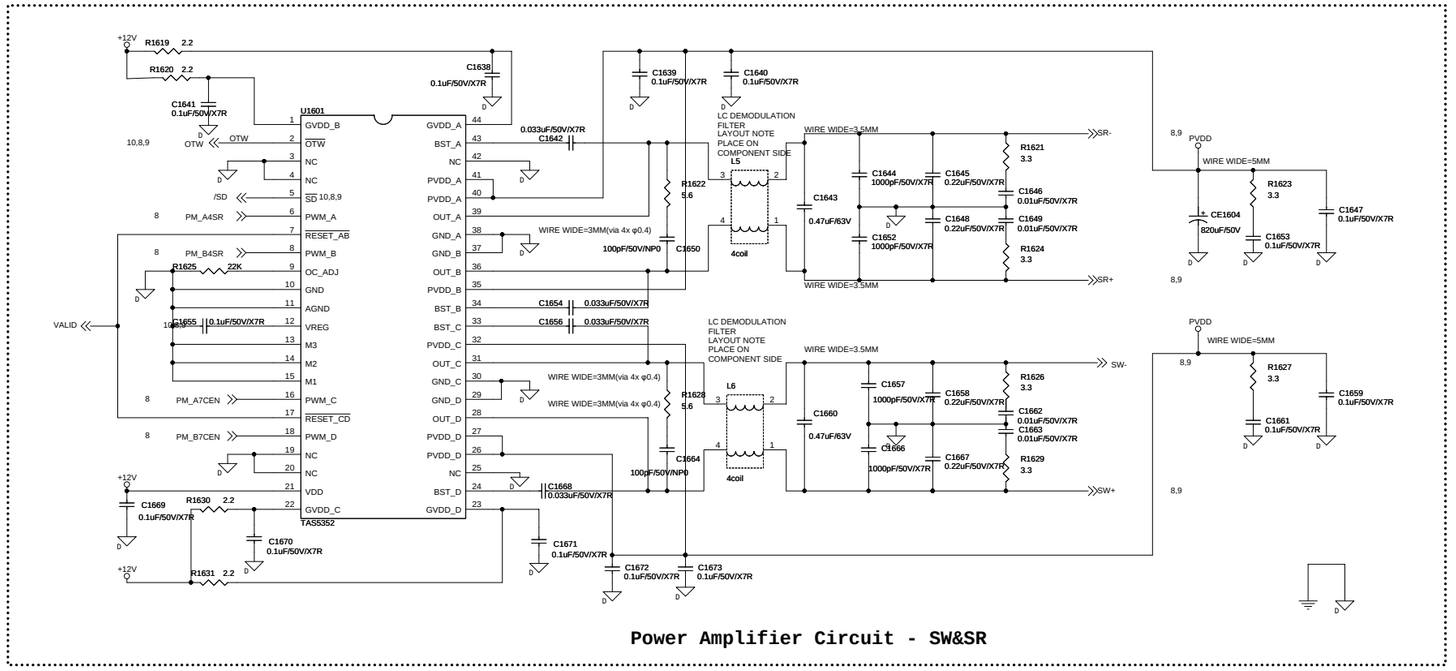
7-9

Main Board Circuit Diagram:AMP TAS5342*2

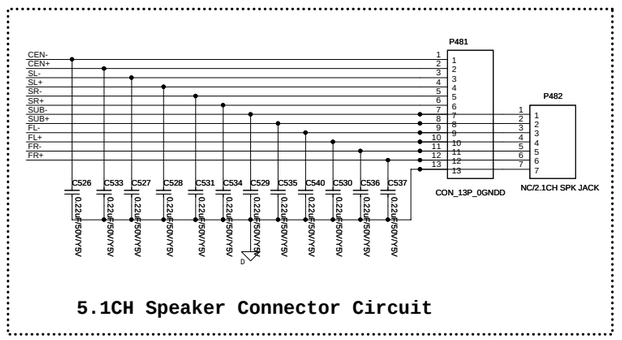


Power Amplifier Circuit - L&R





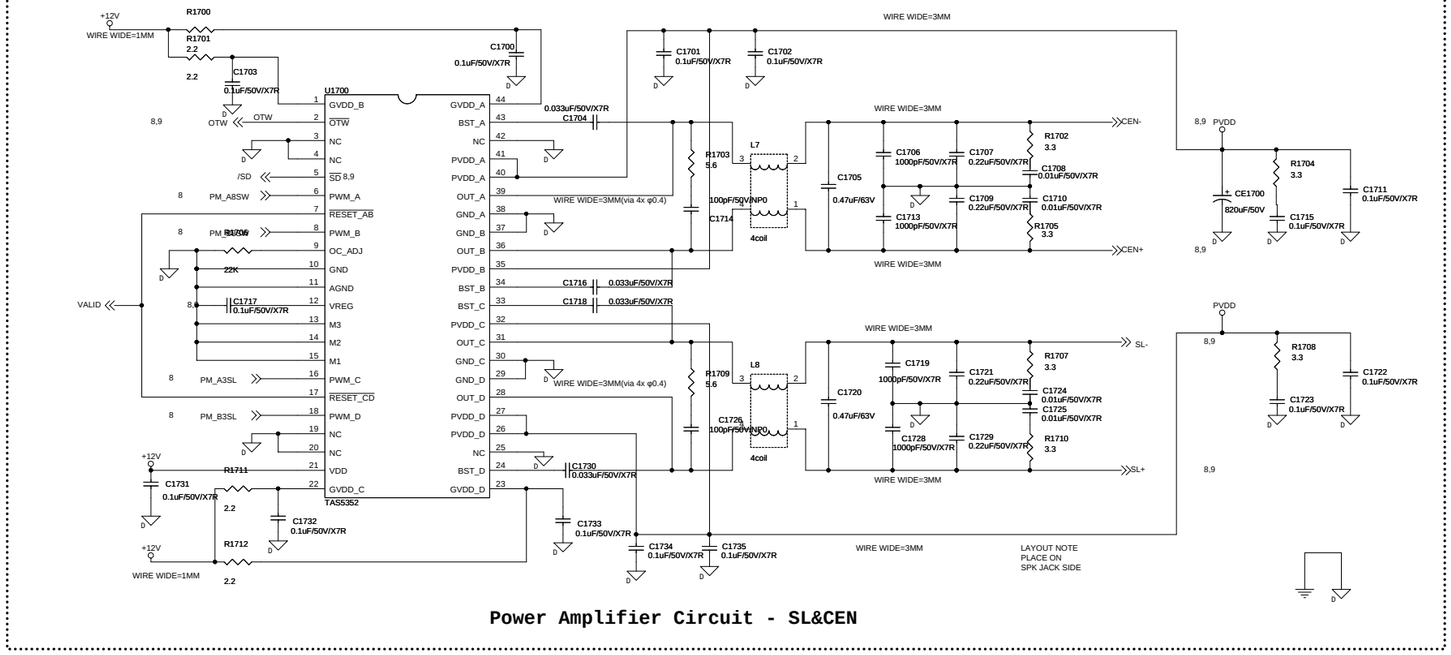
Power Amplifier Circuit - SW&SR



5.1CH Speaker Connector Circuit

7-10

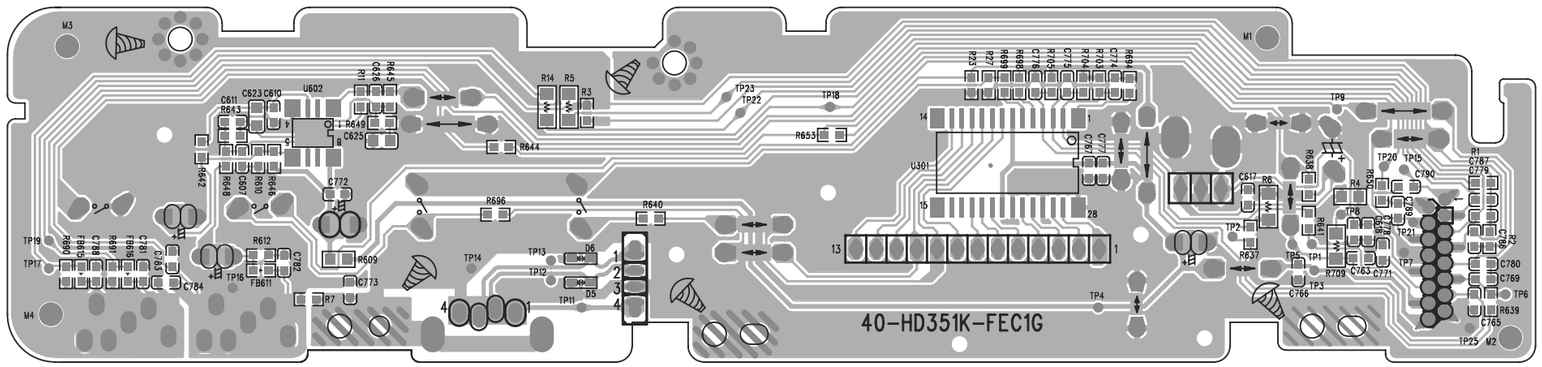
Main Board Circuit Diagram:AMP TAS5352*1



Power Amplifier Circuit - SL&CEN

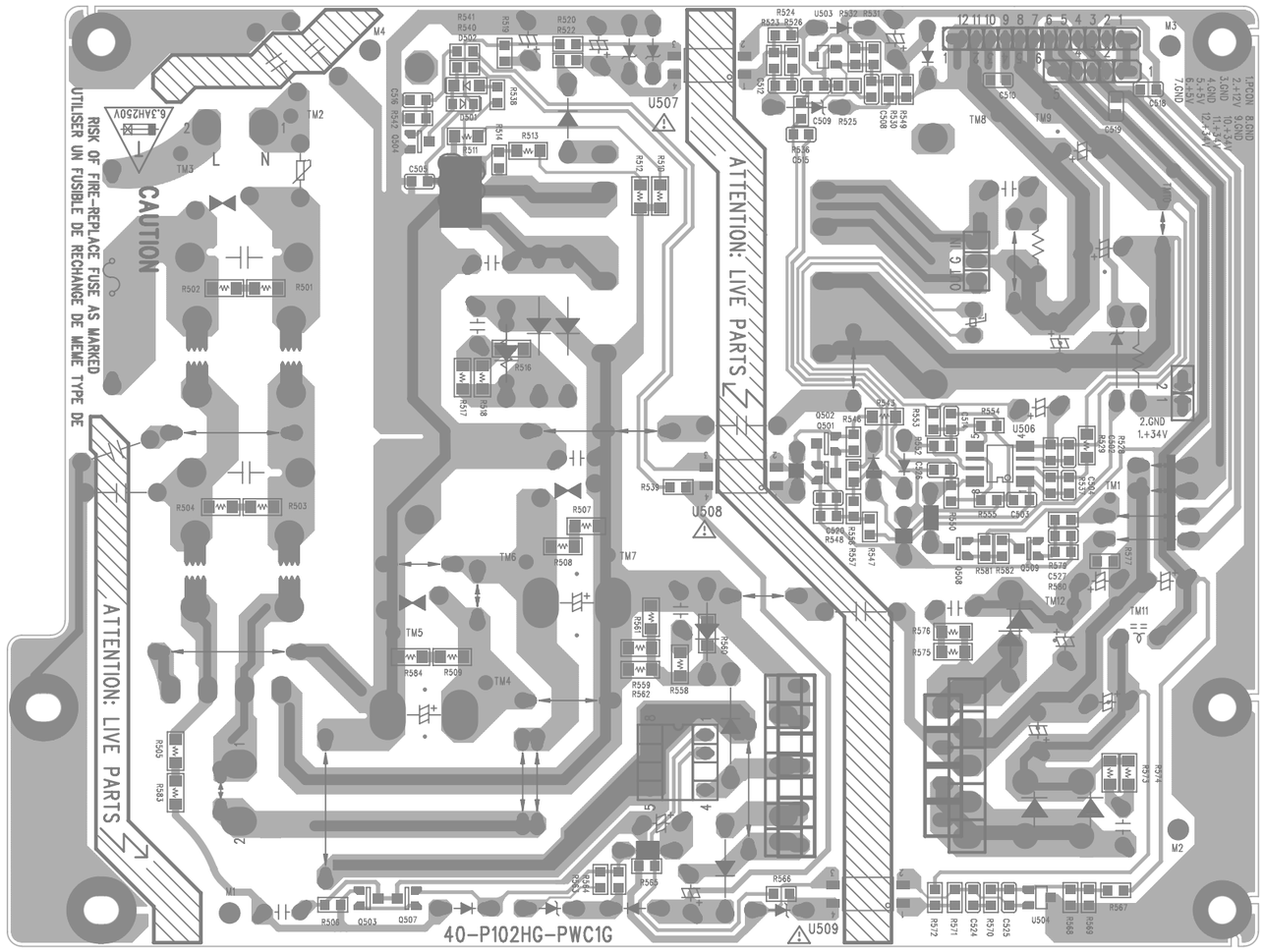
7-11

Front Control Board print-layout:



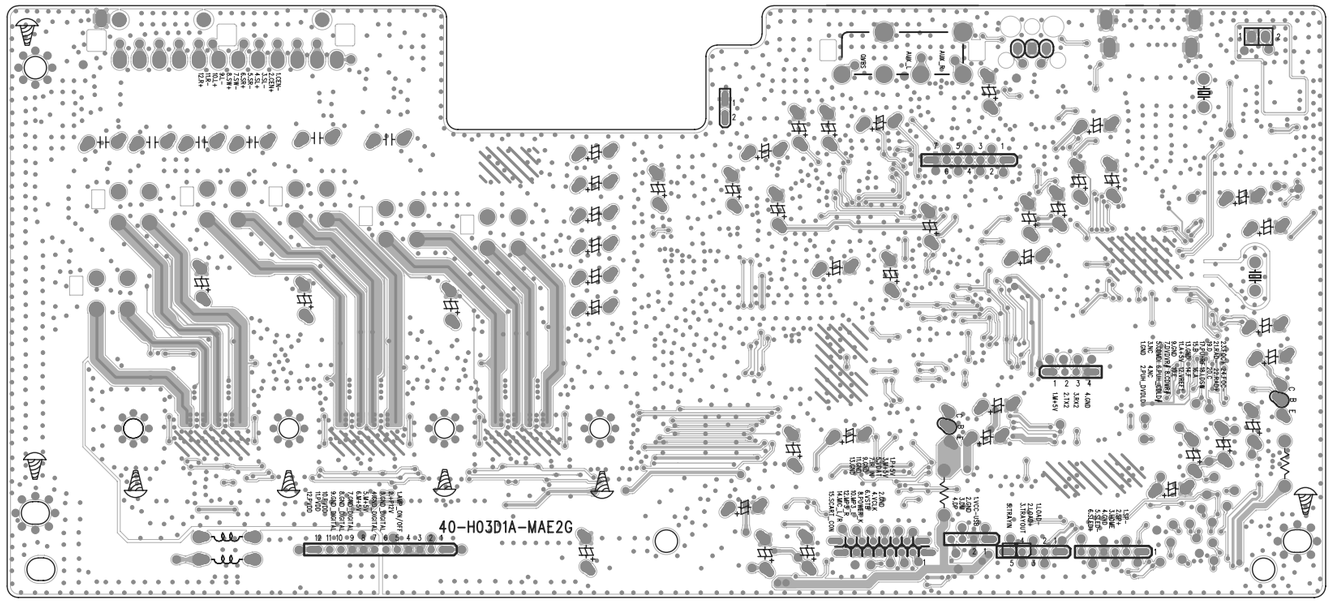
7-12

Power Board print-layout:



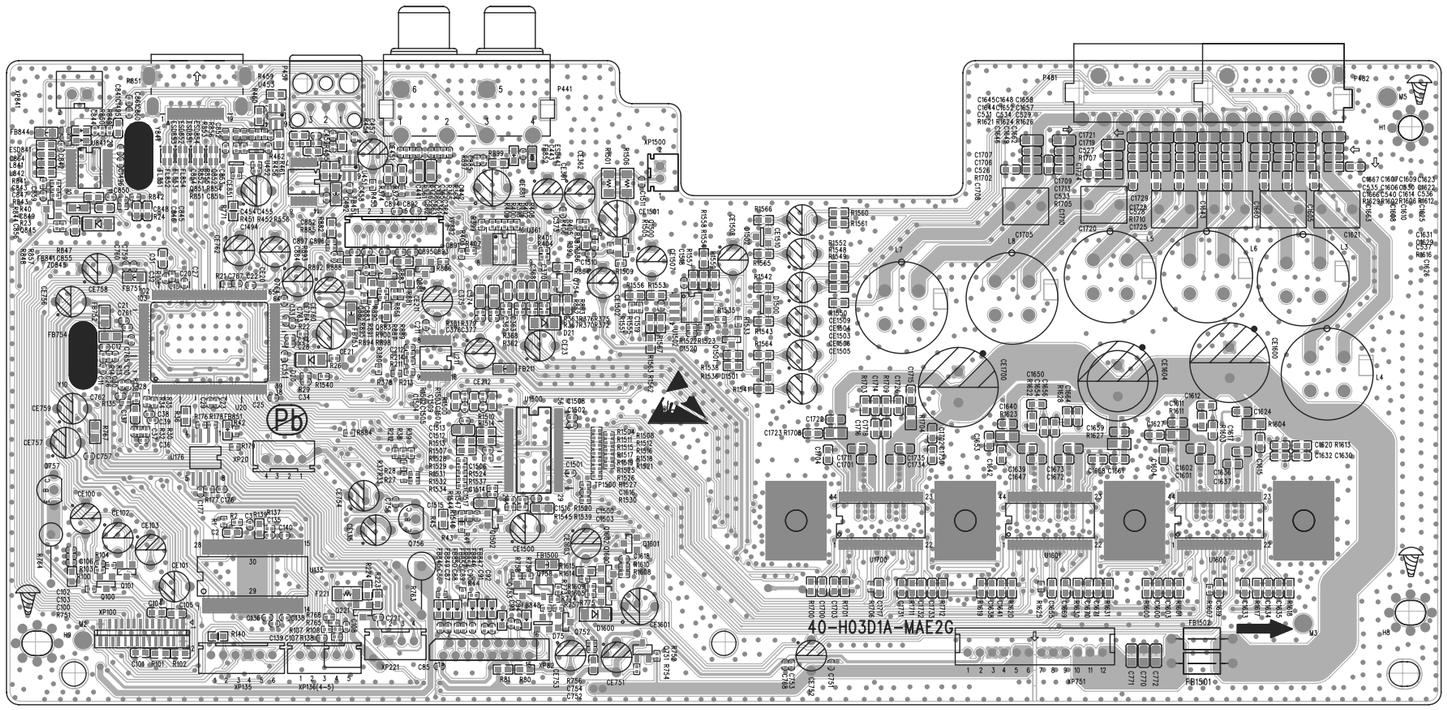
7-13

Main Board print-layout(bottom side):



7-14

Main Board print-layout(top side):



Voltages for per connect pin

XP751 from main board to power board

Pin No.	Pin Assign	Remark
1	AMP_ON/OFF	AMP_ON/OFFsignal
2	+P_12V	12V
3,4,7,8,9	GND	GND
5,6	M_5V	5V
10,11,12	PVDD	34V

XP221 from main board to FB board

PIN NO.	PIN Assign	Remark
1	VCC-USB	5V
2	GND	GND
3	USB_DM	USB D-
4	USB_DP	USB D+

XP82 from main board to FB board

Pin No.	Pin Assign	Remark(Voltage on operation)
1	P+5V	5V
2,9,11,13,	GND	GND
3	M+5V	5V
4	VCLK	SPI signal
5	VDAT	SPI signal
6	VSTB	SPI signal
7	IR_IN	IR signal
8	POWER_K	Power ON/OFF Control signal
10	MP3_L	MP3 input
12	MP3_R	MP3 input
14	MIC	MIC input

XP135 from main board to Loader

Pin No.	Pin Assign	Remark
1	SP-	SP- signal
2	SP+	SP+ signal
3	HOME	HOME signal
4	GND	GND
5	SLED-	SLED- signal
6	SLED+	SLED+ signal

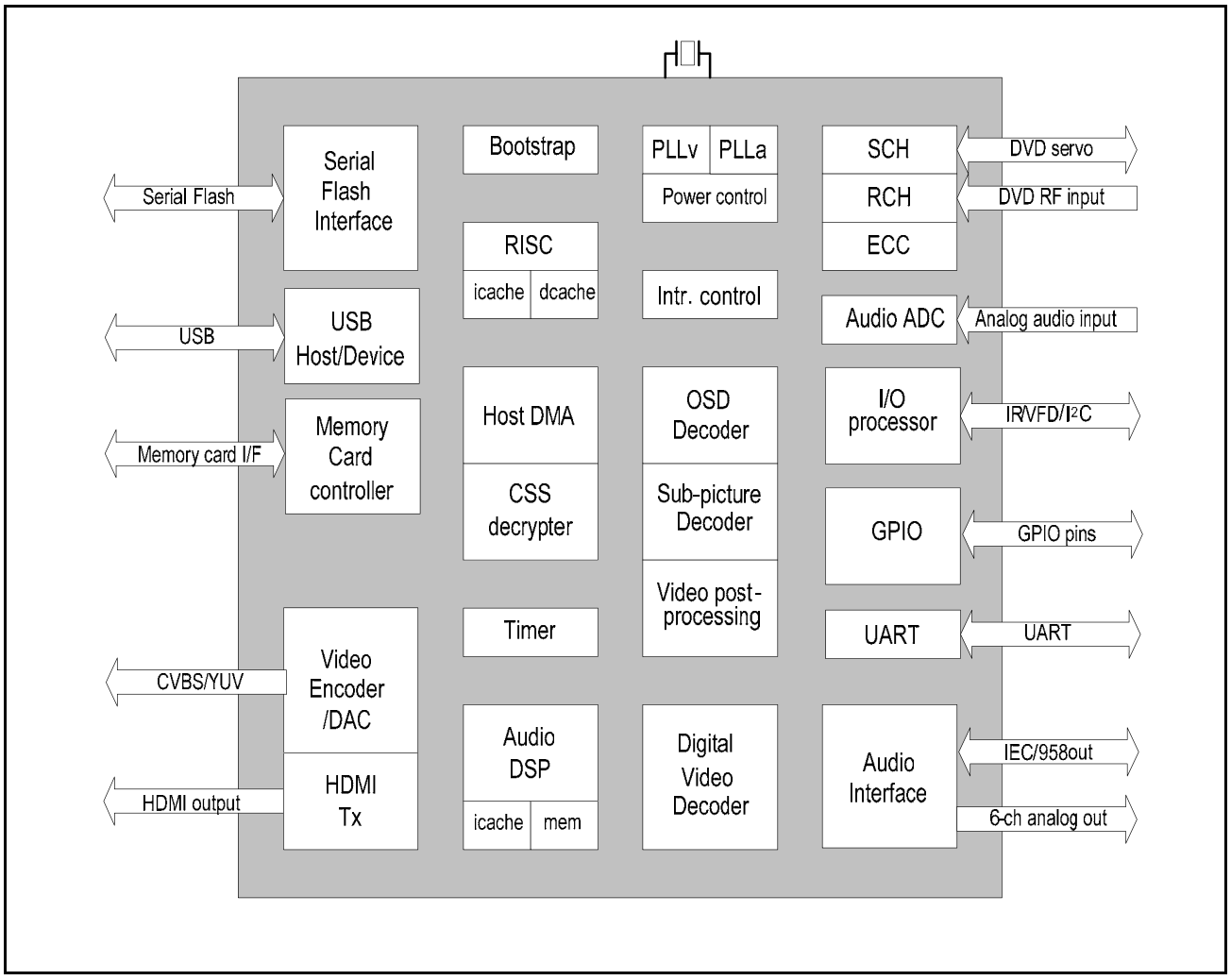
XP136(4-5) from main board to Loader

Pin No.	Pin Assign	Remark
4	GND	GND
5	TRAYIN	TRAYIN signal

XP100 from main board to Loader

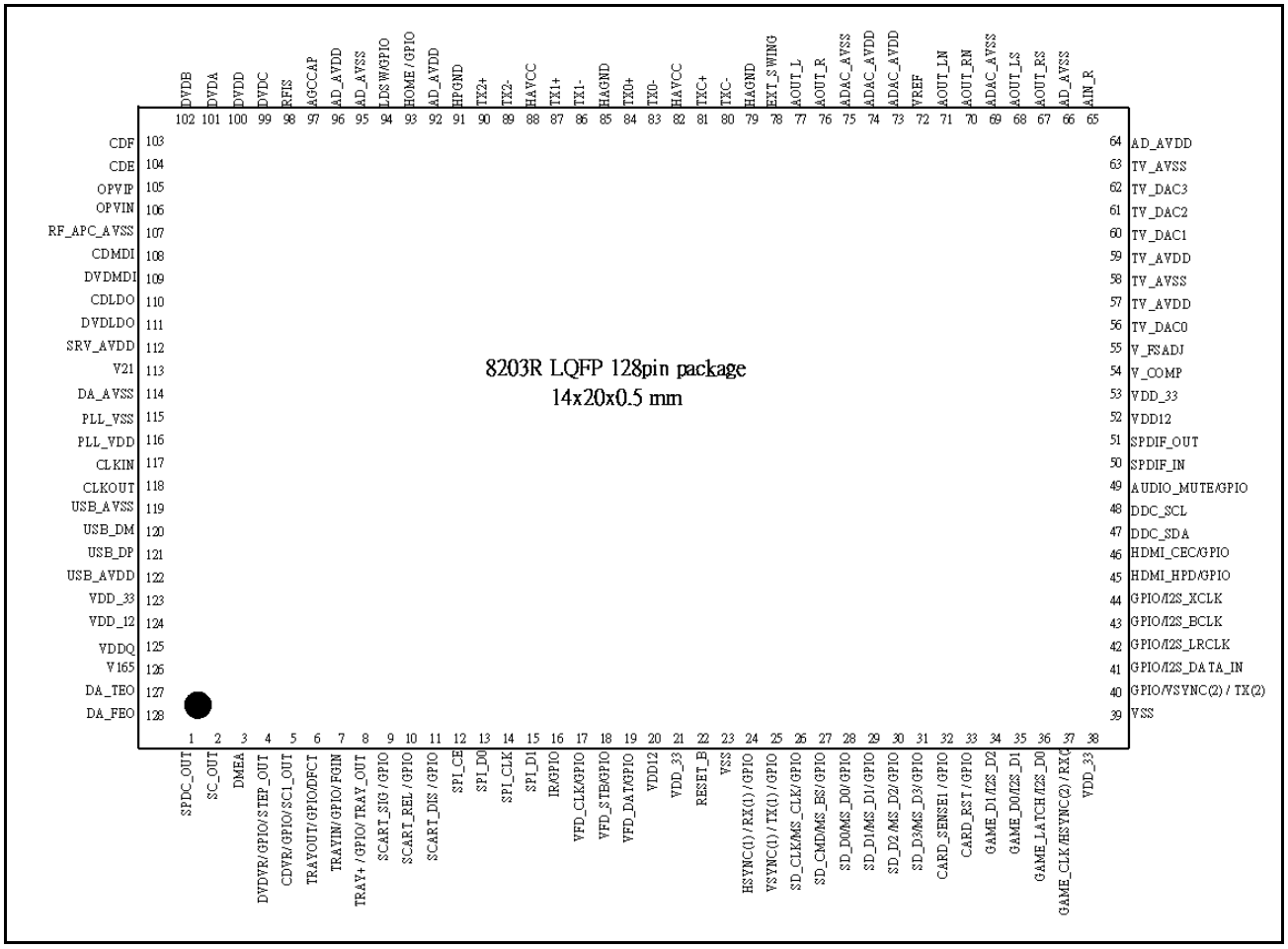
Pin No.	Pin Assign	Remark
1,9,13	GND	GND
2	PUH_DVDLD	PUH_DVDLD signal
3,4	NC	/
5	CDMDI	CDMDI signal
6	PUSH_CDLD	PUSH_CDLD signal
7	DVDVR	DVDVR signal
8	CDVR	CDVR signal
10	E	E signal
11	A+5V	5V
12	VREF1	VREF1 signal
14	F	F signal
15	B	B signal
16	A	A signal
17	PUHRF	PUHRF signal
18	LDSW	LDSW signal
19	D	D signal
20	C	C signal
21	RAD-	RAD- signal
22	RAD+	RAD+ signal
23	FOC+	FOC+ signal
24	FOC-	FOC- signal

MAIN IC BLOCK DIAGRAM SPHE8203R/Rx



SIGNAL DESCRIPTION

Pin Configuration



Pin Description

No.	Pin Name	Pin Type	Description
1	SPDC_OUT	I/O	Servo SPDC OUT
2	SC_OUT	I/O	Servo SC OUT
3	DMEA	I/O	Servo DMEA
4	DVDVR/GPIO/STEP_OUT	I/O	Servo STEP OUT
5	CDVR/GPIO/SC1_OUT	I/O	Servo SC1 OUT
6	TRAY_OUT/GPIO/DFCT	I/O	Servo TRAY OUT
7	TRAYIN/GPIO/FGIN	I/O	Servo TRAYIN or I2C CLK or GPIO[9]
8	TRAY+/GPIO/TRAYOUT	I/O	Servo TRAYOUT or GPIO[10]
9	SCART_SIG / GPIO	I/O	SCART_SIG / GPIO[11]
10	SCART_REL / GPIO	I/O	SCART_REL / GPIO[12]
11	SCART_DIS / GPIO	I/O	SCART_DIS / GPIO[13]
12	SPI_CSB	I/O	SPI chip select or GPIO[14]
13	SPI_D0	I/O	SPI data bit 0 or GPIO[15]
14	SPI_CLK	I/O	SPI clock or GPIO[16]
15	SPI_D1	I/O	SPI data bit 1 or GPIO[17]
16	IR/GPIO18	I/O	IR or GPIO[18]
17	VFD_CLK/GPIO19	I/O	GPIO[19] for VFD CLK
18	VFD_STB/GPIO20	I/O	GPIO[20] for VFD STB
19	VFD_DATA/GPIO21	I/O	GPIO[21] for VFD DATA
20	VDD12	S	Kernel logic power supply pins for chip kernel logic and input pre-driver #0
21	VDD_33	S	I/O power supply pins #0
22	RESET_B	I	System Reset
23	VSS	S	Chip kernel logic and output shared ground pin #0
24	HSYNC(1)/RX(1)/GPIO	I/O	GPIO [22] [IO]
25	VSYNC(1)/TX(1)/GPIO	I/O	GPIO [23] [IO]
26	SD_CLK/MS_CLK/GPIO	I/O	GPIO [24] [IO]
27	SD_CMD/MS_BS/GPIO	I/O	GPIO [25] [IO]
28	SD_D0/MS_D0/GPIO	I/O	GPIO [26] [IO]
29	SD_D1/MS_D1/GPIO	I/O	GPIO [27] [IO]
30	SD_D2/MS_D2/GPIO	I/O	GPIO [28] [IO]
31	SD_D3/MS_D3/GPIO	I/O	GPIO [29] [IO]
32	CARD_SENSE1/GPIO	I/O	GPIO [30] [IO]
33	CARD_RST/GPIO	I/O	GPIO [31] [IO]
34	GAME_D1/I2S_D2	I/O	GPIO [32] [IO]
35	GAME_D0/I2S_D1	I/O	GPIO [33] [IO]
36	GAEM_LATCH/I2S_D0	I/O	GPIO [34] [IO]
37	GAME_CLK/HSYNC(2)/RX(2)	I/O	GPIO [35] [IO]
38	VDD33	S	I/O power supply pins #1
39	VSS	S	Chip kernel logic and output shared ground pin #1
40	GPIO/VSYNC(2)/TX(2)	I/O	GPIO [47] [IO]
41	GPIO/I2S_DATA_IN	I/O	GPIO [48] [IO]
42	GPIO/I2S_LRCLK	I/O	GPIO [49] [IO]
43	GPIO/I2S_BCLK	I/O	GPIO [50] [IO]
44	GPIO/I2S_XCLK	I/O	GPIO [51] [IO]

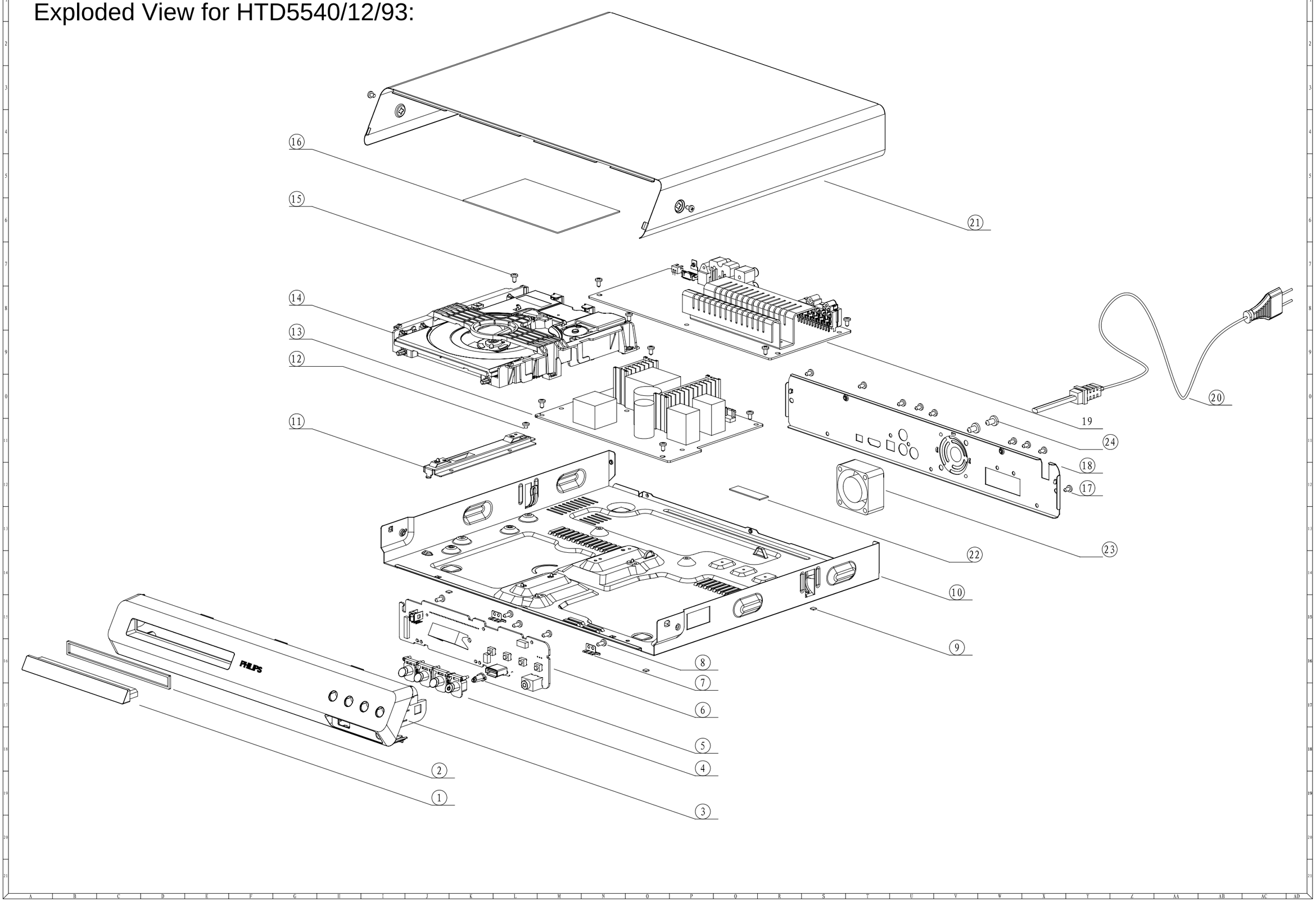
No.	Pin Name	Pin Type	Description
45	HDMI_HPD/GPIO	I/O	GPIO [52] [IO]
46	HDMI_CEC/GPIO	I/O	GPIO [53] [IO]
47	DDC_SDA	I/O	GPIO [54] [IO]
48	DDC_SCL	I/O	GPIO [55] [IO]
49	AUDIO_MUTE/GPIO	I/O	GPIO [56] [IO]
50	SPDIF_IN	I/O	GPIO [57] [IO]
51	SPDIF_OUT	I/O	GPIO [58] [IO]
52	VDD12	S	Kernel logic power supply pins for chip kernel logic and input pre-driver #1
53	VDD_33	S	I/O power supply pins #2
54	V_COMP	A	Video DAC Bias Voltage
55	V_FSADJ	A	Full-Scale adjust control pin (EXT resistor) (1.2 K ohm to ground)
56	TV_DAC0	A	Video DAC channel 0 output
57	TV_AVDD	S	3.3V power for Video DAC channel 0
58	TV_AVSS	S	Ground pin for Video DAC channel 0
59	TV_AVDD	S	3.3V power for Video DAC channel 1~3
60	TV_DAC1	A	Video DAC channel 1 output
61	TV_DAC2	A	Video DAC channel 2 output
62	TV_DAC3	A	Video DAC channel 3 output
63	TV_AVSS	S	Ground pin for Video DAC channel 1~3
64	AD_AVDD	S	3.3V power for Audio ADC
65	AIN	A	ADC analog input
66	AD_AVSS	S	Ground for Audio ADC
67	AOUT_RS	A	DAC RS channel analog output
68	AOUT_LS	A	DAC LS channel analog output
69	ADAC_AVSS	S	Ground pin for Audio DAC
70	AOUT_RN	A	DAC RN channel analog output
71	AOUT_LN	A	DAC LN channel analog output
72	VREF	A	Reference voltage for Audio DAC
73	ADAC_AVDD	S	3.3V power for Audio DAC
74	ADAC_AVDD	S	3.3V power for Audio DAC
75	ADAC_AVSS	S	Ground pin for Audio DAC
76	AOUT_R	A	DAC right channel analog output
77	AOUT_L	A	DAC left channel analog output
78	EXT_SWING	A	HDMI EXT SWING
79	HAPGND0	S	Ground pin for HDMI PHY
80	TXC-	A	HDMI TXC-
81	TXC+	A	HDMI TXC+
82	HAVCC	S	1.25V power for HDMI PHY
83	TX0-	A	HDMI TX0-
84	TX0+	A	HDMI TX0+
85	HAPGND	S	Ground pin for HDMI PHY
86	TX1-	A	HDMI TX1-
87	TX1+	A	HDMI TX1+
88	HAVCC	S	1.25V power for HDMI PHY
89	TX2-	A	HDMI TX2-

No.	Pin Name	Pin Type	Description
90	TX2+	A	HDMI TX2+
91	HAPGND	S	Ground pin for HDMI PHY
92	AD_AVDD	S	3.3V power for ADC
93	HOME/GPIO	I/O	servo test out 0 or GPIO[96] (HOME)
94	LDSW/GPIO	I/O	servo test out 1 or GPIO[97] (LDSW)
95	AD_AVSS	S	ADC ground pin
96	RF_AVDD	S	3.3V power for RF
97	AGCCAP	A	External AGC capacitor connected to ground. (0.1u)
98	RFIS	I	Single-ended RF equalizer input.
99	DVDC	I	DVD RF inputs, from the main beam photo detector.
100	DVDD	I	DVD RF inputs, from the main beam photo detector.
101	DVDA	I	DVD RF inputs, from the main beam photo detector.
102	DVDB	I	DVD RF inputs, from the main beam photo detector.
103	CDF	I	CD tracking error inputs, from the sub-beam photo detector.
104	CDE	I	CD tracking error inputs, from the sub-beam photo detector.
105	OPVIP	I	Op-amp 1 positive input.
106	OPVIN	I	Op-amp 1 negative input.
107	RF_APC_AVSS	S	Ground pin for RF and APC
108	CDMDI	I	CD APC input from monitor photo diode.
109	DVDMDI	I	DVD APC input from monitor photo diode.
110	CDLDO	O	CD APC output.
111	DVDLDO	O	DVD APC output.
112	SRV_AVDD	S	3.3V power for SERVO
113	V21	A	Reference DC bias voltage.
114	DA_AVSS	S	3.3V GND for SERVO
115	PLL_VSS	S	Ground pin for PLLH, PLLTV, PLLA, and Crystal PAD
116	PLL_VDD	S	3.3V power for PLLH, PLLTV, PLLA, and Crystal PAD
117	CILKN	I	Crystal PAD input
118	CLKOUT	O	Crystal PAD output
119	USB_AVSS	S	Ground pin for USB PLL and USB transceiver
120	USB_DM	A	USB bus D-
121	USB_DP	A	USB bus D+
122	USB_AVDD	S	3.3V power for USB PLL and USB transceiver
123	VDD_33	S	I/O power supply pins #3
124	VDD_12	S	Kernel logic power supply pins for chip kernel logic and input pre-driver #2
125	VDDQ	S	2.5V Power for OTP programming
126	V165	I/O	Servo PDM VREF
127	DA_TEO	I/O	Servo PDM DA TEO
128	DA_FEO	I/O	Servo PDM DA FEO

Note: Please refer to SPHE8203R servo datasheet for servo related information.

10-1

Exploded View for HTD5540/12/93:



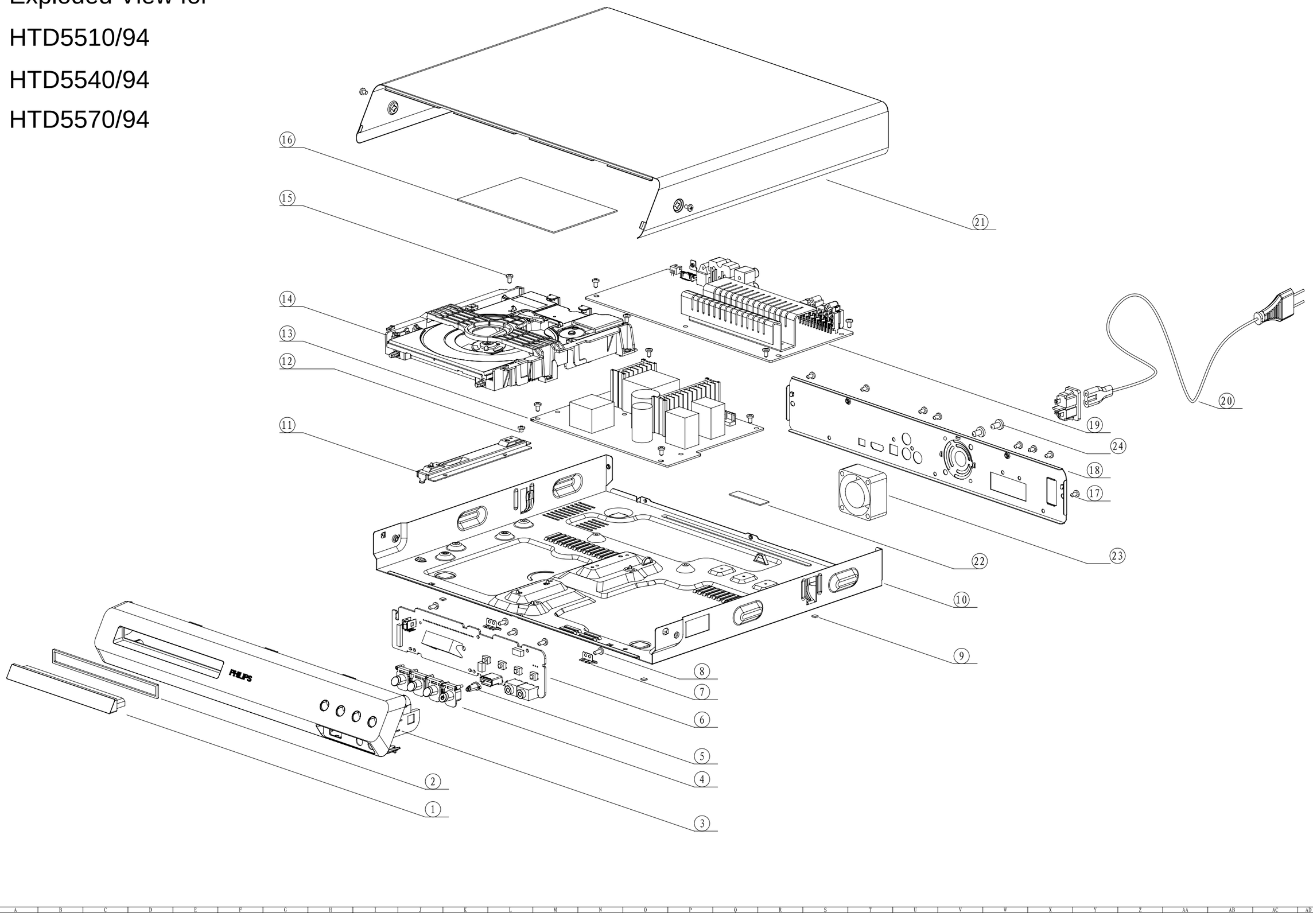
10-2

Exploded View for

HTD5510/94

HTD5540/94

HTD5570/94



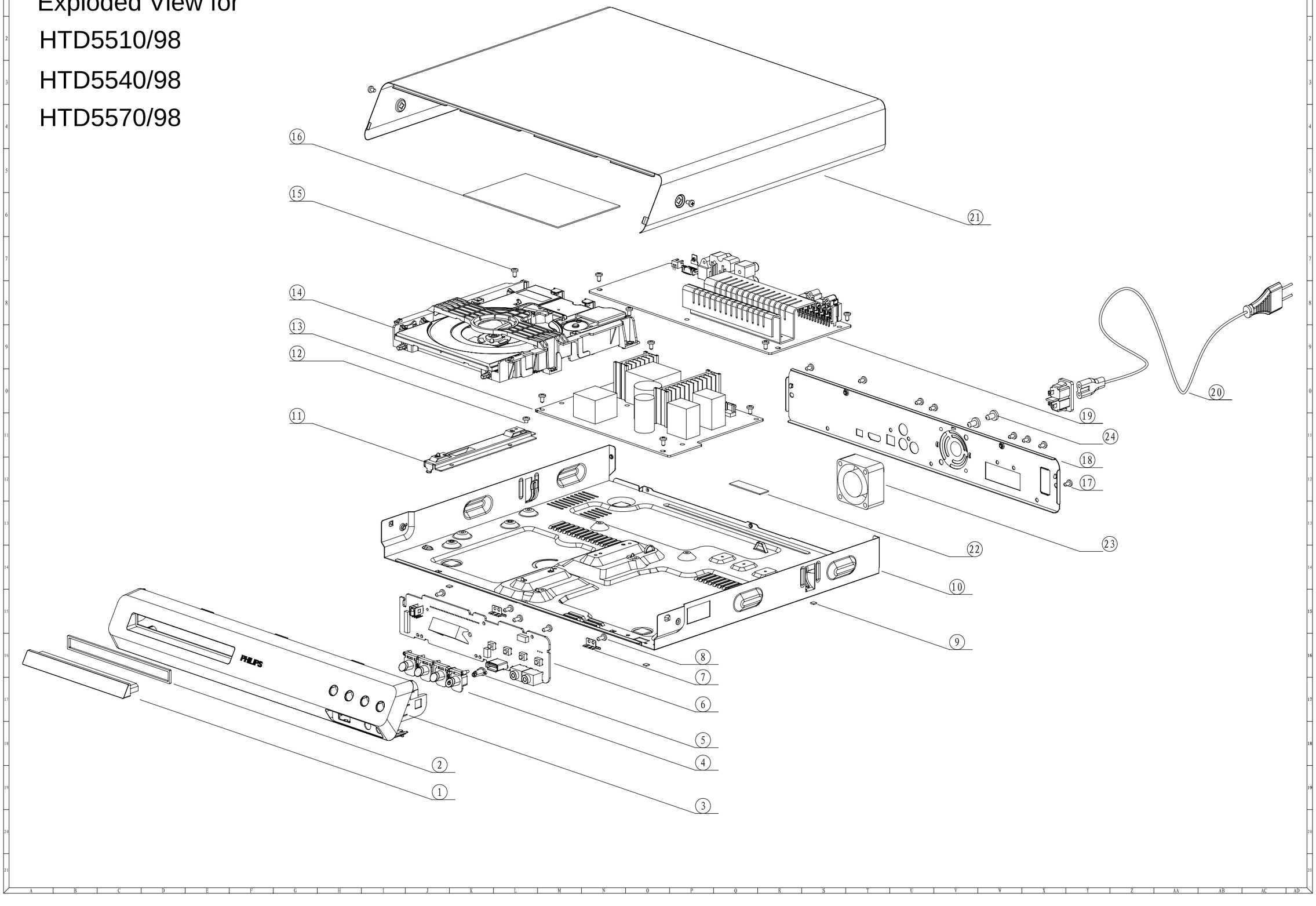
10-3

Exploded View for

HTD5510/98

HTD5540/98

HTD5570/98



Revision List

Version 1.0

* Initial Release for HTD5540/12/98/94/93.