**DVD Player**

DVP352X(K)

Service

Service

Service

DVP3520/55
DVP3522/55
DVP3520K/93


# Service Manual

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**CLASS 1
LASER PRODUCT**

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Version 1.2

PHILIPS

# 1. Technical Specifications, Directions for Use

**Index of this chapter:**



**Notes:**

- Figures can deviate due to the different set executions.
- Specifications are indicative (subject to change).

## 1.1 Technical Specifications

For on-line product support please use the following website:
http://www.p4c.philips.com/cgi-bin/dcbint/cpproduct_selector.pl

Here is product information available, as well as getting started, user manuals, frequently asked questions and software & drivers.

## 1.2 Directions for Use

You can download this information from the following websites:
http://www.philips.com/support
http://www.p4c.philips.com

# 2. Safety Instructions, Warnings, Notes, and Abbreviation List

**Index of this chapter:**



## 2.1 Safety Instructions

Safety regulations require the following **during** a repair:

- Connect the set to the Mains/AC Power via an isolation transformer (> 800 VA).
- 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, the set must be returned in its original condition. Pay in particular attention to the following points:

- Route the wire trees correctly and fix them with the mounted cable clamps.
- Check the insulation of the Mains/AC Power lead for external damage.
- Check the strain relief of the Mains/AC Power cord for proper function.
- Check the electrical DC resistance between the Mains/AC Power plug and the secondary side (only for sets that have a Mains/AC Power isolated power supply):
  1. Unplug the Mains/AC Power cord and connect a wire between the two pins of the Mains/AC Power plug.
  2. Set the Mains/AC Power switch to the “on” position (keep the Mains/AC Power cord unplugged!).
  3. Measure the resistance value between the pins of the Mains/AC Power plug and the metal shielding of the tuner or the aerial connection on the set. The reading should be between 4.5 MΩ and 12 MΩ.
  4. Switch “off” the set, and remove the wire between the two pins of the Mains/AC Power plug.
- Check the cabinet for defects, to prevent touching of any inner parts by the customer.

## 2.2 Warnings

- All ICs and many other semiconductors are susceptible to electrostatic discharges (ESD). Careless handling during repair can reduce life drastically. Make sure that, during repair, you are connected with the same potential as the mass of the set by a wristband with resistance. Keep components and tools also at this same potential.
- Be careful during measurements in the high voltage section.
- Never replace modules or other components while the unit is switched “on”.
- When you align the set, use plastic rather than metal tools. This will prevent any short circuits and the danger of a circuit becoming unstable.

## 2.3 Notes

### 2.3.1 General

- Measure the voltages and waveforms with regard to the chassis (= tuner) ground (⏚), or hot ground (⏚), depending on the tested area of circuitry. The voltages and waveforms shown in the diagrams are indicative. Measure them in the Service Default Mode (see chapter 5) with a colour bar signal and stereo sound (L: 3 kHz, R: 1 kHz unless stated otherwise) and picture carrier at 475.25 MHz for PAL, or 61.25 MHz for NTSC (channel 3).
- Where necessary, measure the waveforms and voltages with (⊓) and without (⊼) aerial signal. Measure the voltages in the power supply section both in normal operation (⏻) and in stand-by (⏻). These values are indicated by means of the appropriate symbols.

### 2.3.2 Schematic Notes

- All resistor values are in ohms, and the value multiplier is often used to indicate the decimal point location (e.g. 2K2 indicates 2.2 kΩ).
- Resistor values with no multiplier may be indicated with either an “E” or an “R” (e.g. 220E or 220R indicates 220 Ω).
- All capacitor values are given in micro-farads ($\mu = \times 10^{-6}$), nano-farads ($n = \times 10^{-9}$), or pico-farads ($p = \times 10^{-12}$).
- Capacitor values may also use the value multiplier as the decimal point indication (e.g. 2p2 indicates 2.2 pF).
- An “asterisk” (*) indicates component usage varies. Refer to the diversity tables for the correct values.
- The correct component values are listed in the Spare Parts List. Therefore, always check this list when there is any doubt.

### 2.3.3 BGA (Ball Grid Array) ICs

***Introduction***

For more information on how to handle BGA devices, visit this URL: *www.atyourservice.ce.philips.com* (needs subscription, not available for all regions). After login, select “Magazine”, then go to “Repair downloads”. Here you will find Information on how to deal with BGA-ICs.

***BGA Temperature Profiles***

For BGA-ICs, you **must** use the correct temperature-profile, which is coupled to the 12NC. For an overview of these profiles, visit the website *www.atyourservice.ce.philips.com* (needs subscription, but is not available for all regions)
You will find this and more technical information within the “Magazine”, chapter “Repair downloads”.
For additional questions please contact your local repair help desk.

### 2.3.4 Lead-free Soldering

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

- Use only lead-free soldering tin Philips SAC305 with order code 0622 149 00106. If lead-free solder paste is required, please contact the manufacturer of your soldering 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 soldering tin. The solder tool must be able:
  - To reach a solder-tip temperature of at least 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 of 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 increase drastically and flux-fluid will be destroyed. To avoid wear-out of tips, switch “off” unused equipment or reduce heat.
- Mix of lead-free soldering tin/parts with leaded soldering tin/parts is possible but PHILIPS recommends strongly **to avoid** mixed regimes. If this cannot be avoided, carefully clear the solder-joint from old tin and re-solder with new tin.

### 2.3.5 Alternative BOM identification

It should be noted that on the European Service website, "Alternative BOM" is referred to as "Design variant".

The **third digit** in the serial number (example: KX**2**B0835000001) indicates the number of the alternative B.O.M. (Bill Of Materials) that has been used for producing the specific AV set. In general, it is possible that the same AV model on the market is produced with e.g. two different types of display, coming from two different suppliers. This will then result in sets which have the same CTN (Commercial Type Number; e.g. MCM394/12) but which have a different B.O.M. number.

Also, it is possible that same model on the market is produced with two production centers, however their partslist is the same. In such case, no alternative B.O.M. will be created.

By looking at the third digit of the serial number, one can identify which B.O.M. is used for the set he is working with. If the third digit of the serial number contains the number "1" (example: KX**1**B033500001), then the set has been manufactured according to B.O.M. number 1. If the third digit is a "2" (example: KX**2**B0335000001), then the set has been produced according to B.O.M. no. 2. This is important for ordering the correct spare parts!
For the third digit, the numbers 1...9 and the characters A...Z can be used, so in total: 9 plus 26= 35 different B.O.M.s can be indicated by the third digit of the serial number.

**Identification:** The bottom line of a type plate gives a 14-digit serial number. Digits 1 and 2 refer to the production centre (e.g. LM is Arts), digit 3 refers to the B.O.M. code, digit 4 refers to the Service version change code, digits 5 and 6 refer to the production year, and digits 7 and 8 refer to production week (in example below it is 2008 week 50). The 6 last digits contain the serial number.

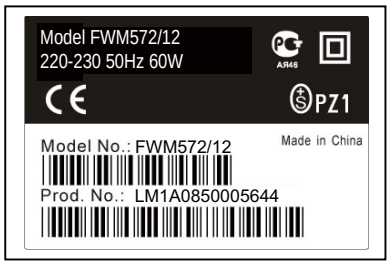



**Figure 2-1 Serial number (example)**

### 2.3.6 Module Level Repair (MLR) or Component Level Repair (CLR)

If a board is defective, consult your repair procedure to decide if the board has to be exchanged or if it should be repaired on component level.
If your repair procedure says the board should be exchanged completely, do not solder on the defective board. Otherwise, it cannot be returned to the O.E.M. supplier for back charging!

### 2.3.7 Practical Service Precautions

- **It makes sense to avoid exposure to electrical shock.** While some sources are expected to have a possible dangerous impact, others of quite high potential are of limited current and are sometimes held in less regard.
- **Always respect voltages**. While some may not be dangerous in themselves, they can cause unexpected reactions that are best avoided. Before reaching into a powered TV set, it is best to test the high voltage insulation. It is easy to do, and is a good service precaution.

## 2.4 Abbreviation List

| | |
|---|---|
| 0/6/12 | SCART switch control signal on A/V board. 0 = loop through (AUX to TV), 6 = play 16 : 9 format, 12 = play 4 : 3 format |
| 2DNR | Spatial (2D) Noise Reduction |
| 3DNR | Temporal (3D) Noise Reduction |
| AARA | Automatic Aspect Ratio Adaptation: algorithm that adapts aspect ratio to remove horizontal black bars; keeps the original aspect ratio |
| ACI | Automatic Channel Installation: algorithm that installs TV channels directly from a cable network by means of a predefined TXT page |
| ADC | Analogue to Digital Converter |
| AFC | Automatic Frequency Control: control signal used to tune to the correct frequency |
| AGC | Automatic Gain Control: algorithm that controls the video input of the feature box |
| AM | Amplitude Modulation |
| ANR | Automatic Noise Reduction: one of the algorithms of Auto TV |
| AP | Asia Pacific |
| AR | Aspect Ratio: 4 by 3 or 16 by 9 |
| ASF | Auto Screen Fit: algorithm that adapts aspect ratio to remove horizontal black bars without discarding video information |
| ATSC | Advanced Television Systems Committee, the digital TV standard in the USA |
| ATV | See Auto TV |
| Auto TV | A hardware and software control system that measures picture content, and adapts image parameters in a dynamic way |
| AV | External Audio Video |
| AVC | Audio Video Controller |
| AVIP | Audio Video Input Processor |
| B/G | Monochrome TV system. Sound carrier distance is 5.5 MHz |
| BLR | Board-Level Repair |
| BTSC | Broadcast Television Standard Committee. Multiplex FM stereo sound system, originating from the USA and used e.g. in LATAM and AP-NTSC countries |
| B-TXT | Blue TeleteXT |
| C | Centre channel (audio) |
| CEC | Consumer Electronics Control bus: remote control bus on HDMI connections |
| CL | Constant Level: audio output to connect with an external amplifier |
| CLR | Component Level Repair |
| COLUMBUS | COlor LUMinance Baseband Universal Sub-system |
| ComPair | Computer aided rePair |
| CP | Connected Planet / Copy Protection |
| CSM | Customer Service Mode |
| CTI | Color Transient Improvement: manipulates steepness of chroma transients |
| CVBS | Composite Video Blanking and Synchronization |
| DAC | Digital to Analogue Converter |
| DBE | Dynamic Bass Enhancement: extra low frequency amplification |
| DDC | See "E-DDC" |

| | |
|---|---|
| D/K | Monochrome TV system. Sound carrier distance is 6.5 MHz |
| DFI | Dynamic Frame Insertion |
| DFU | Directions For Use: owner's manual |
| DMR | Digital Media Reader: card reader |
| DMSD | Digital Multi Standard Decoding |
| DNM | Digital Natural Motion |
| DNR | Digital Noise Reduction: noise reduction feature of the set |
| DRAM | Dynamic RAM |
| DRM | Digital Rights Management |
| DSP | Digital Signal Processing |
| DST | Dealer Service Tool: special remote control designed for service technicians |
| DTCP | Digital Transmission Content Protection; A protocol for protecting digital audio/video content that is traversing a high speed serial bus, such as IEEE-1394 |
| DVB-C | Digital Video Broadcast - Cable |
| DVB-T | Digital Video Broadcast - Terrestrial |
| DVD | Digital Versatile Disc |
| DVI(-d) | Digital Visual Interface (d= digital only) |
| E-DDC | Enhanced Display Data Channel (VESA standard for communication channel and display). Using E-DDC, the video source can read the EDID information form the display. |
| EDID | Extended Display Identification Data (VESA standard) |
| EEPROM | Electrically Erasable and Programmable Read Only Memory |
| EMI | Electro Magnetic Interference |
| EPLD | Erasable Programmable Logic Device |
| EU | Europe |
| EXT | EXTernal (source), entering the set by SCART or by cinches (jacks) |
| FBL | Fast BLanking: DC signal accompanying RGB signals |
| FDS | Full Dual Screen (same as FDW) |
| FDW | Full Dual Window (same as FDS) |
| FLASH | FLASH memory |
| FM | Field Memory or Frequency Modulation |
| FPGA | Field-Programmable Gate Array |
| FTV | Flat TeleVision |
| Gb/s | Giga bits per second |
| G-TXT | Green TeleteXT |
| H | H_sync to the module |
| HD | High Definition |
| HDD | Hard Disk Drive |
| HDCP | High-bandwidth Digital Content Protection: A “key” encoded into the HDMI/DVI signal that prevents video data piracy. If a source is HDCP coded and connected via HDMI/DVI without the proper HDCP decoding, the picture is put into a “snow vision” mode or changed to a low resolution. For normal content distribution the source and the display device must be enabled for HDCP “software key” decoding. |
| HDMI | High Definition Multimedia Interface |
| HP | HeadPhone |
| I | Monochrome TV system. Sound carrier distance is 6.0 MHz |
| $I^2C$ | Inter IC bus |
| $I^2D$ | Inter IC Data bus |
| $I^2S$ | Inter IC Sound bus |
| IF | Intermediate Frequency |
| Interlaced | Scan mode where two fields are used to form one frame. Each field contains half the number of the total amount of lines. The fields are written in “pairs”, causing line flicker. |
| IR | Infra Red |
| IRQ | Interrupt Request |
| ITU-656 | The ITU Radio communication Sector (ITU-R) is a standards body subcommittee of the International Telecommunication Union relating to radio communication. ITU-656 (a.k.a. SDI), is a digitized video format used for broadcast grade video. Uncompressed digital component or digital composite signals can be used. The SDI signal is self-synchronizing, uses 8 bit or 10 bit data words, and has a maximum data rate of 270 Mbit/s, with a minimum bandwidth of 135 MHz. |
| ITV | Institutional TeleVision; TV sets for hotels, hospitals etc. |
| JOP | Jaguar Output Processor |
| LS | Last Status; The settings last chosen by the customer and read and stored in RAM or in the NVM. They are called at start-up of the set to configure it according to the customer's preferences |
| LATAM | Latin America |
| LCD | Liquid Crystal Display |
| LED | Light Emitting Diode |
| L/L' | Monochrome TV system. Sound carrier distance is 6.5 MHz. L' is Band I, L is all bands except for Band I |
| LORE | LOcal REgression approximation noise reduction |
| LPL | LG.Philips LCD (supplier) |
| LS | Loudspeaker |
| LVDS | Low Voltage Differential Signalling |
| Mbps | Mega bits per second |
| M/N | Monochrome TV system. Sound carrier distance is 4.5 MHz |
| MIPS | Microprocessor without Interlocked Pipeline-Stages; A RISC-based microprocessor |
| MOP | Matrix Output Processor |
| MOSFET | Metal Oxide Silicon Field Effect Transistor, switching device |
| MPEG | Motion Pictures Experts Group |
| MPIF | Multi Platform InterFace |
| MUTE | MUTE Line |
| NC | Not Connected |
| NICAM | Near Instantaneous Compounded Audio Multiplexing. This is a digital sound system, mainly used in Europe. |
| NTC | Negative Temperature Coefficient, non-linear resistor |
| NTSC | National Television Standard Committee. Color system mainly used in North America and Japan. Color carrier NTSC M/N= 3.579545 MHz, NTSC 4.43= 4.433619 MHz (this is a VCR norm, it is not transmitted off-air) |
| NVM | Non-Volatile Memory: IC containing TV related data such as alignments |
| O/C | Open Circuit |
| OSD | On Screen Display |
| OTC | On screen display Teletext and Control; also called Artistic (SAA5800) |
| P50 | Project 50: communication protocol between TV and peripherals |
| PAL | Phase Alternating Line. Color system mainly used in West Europe (color carrier= 4.433619 MHz) and South America (color carrier PAL M= |

| | |
|---|---|
| | 3.575612 MHz and PAL N= 3.582056 MHz) |
| PCB | Printed Circuit Board (same as “PWB”) |
| PCM | Pulse Code Modulation |
| PDP | Plasma Display Panel |
| PFC | Power Factor Corrector (or Pre-conditioner) |
| PIP | Picture In Picture |
| PLL | Phase Locked Loop. Used for e.g. FST tuning systems. The customer can give directly the desired frequency |
| POR | Power On Reset, signal to reset the uP |
| Progressive Scan | Scan mode where all scan lines are displayed in one frame at the same time, creating a double vertical resolution. |
| PTC | Positive Temperature Coefficient, non-linear resistor |
| PWB | Printed Wiring Board (same as “PCB”) |
| PWM | Pulse Width Modulation |
| QRC | Quasi Resonant Converter |
| QTNR | Quality Temporal Noise Reduction |
| QVCP | Quality Video Composition Processor |
| RAM | Random Access Memory |
| RGB | Red, Green, and Blue. The primary color signals for TV. By mixing levels of R, G, and B, all colors (Y/C) are reproduced. |
| RC | Remote Control |
| RC5 / RC6 | Signal protocol from the remote control receiver |
| RESET | RESET signal |
| ROM | Read Only Memory |
| R-TXT | Red TeleteXT |
| SAM | Service Alignment Mode |
| S/C | Short Circuit |
| SCART | Syndicat des Constructeurs d'Appareils Radiorécepteurs et Téléviseurs |
| SCL | Serial Clock $I^2C$ |
| SCL-F | CLock Signal on Fast $I^2C$ bus |
| SD | Standard Definition |
| SDA | Serial Data $I^2C$ |
| SDA-F | DAta Signal on Fast $I^2C$ bus |
| SDI | Serial Digital Interface, see “ITU-656” |
| SDRAM | Synchronous DRAM |
| SECAM | SEequence Couleur Avec Mémoire. Color system mainly used in France and East Europe. Color carriers= 4.406250 MHz and 4.250000 MHz |
| SIF | Sound Intermediate Frequency |
| SMPS | Switched Mode Power Supply |
| SoC | System on Chip |
| SOG | Sync On Green |
| SOPS | Self Oscillating Power Supply |
| S/PDIF | Sony Philips Digital InterFace |
| SRAM | Static RAM |
| SRP | Service Reference Protocol |
| SSB | Small Signal Board |
| STBY | STand-BY |
| SVGA | 800x600 (4:3) |
| SVHS | Super Video Home System |
| SW | Software |
| SWAN | Spatial temporal Weighted Averaging Noise reduction |
| SXGA | 1280x1024 |
| TFT | Thin Film Transistor |
| THD | Total Harmonic Distortion |
| TMDS | Transmission Minimized Differential Signalling |
| TXT | TeleteXT |
| TXT-DW | Dual Window with TeleteXT |
| UI | User Interface |
| uP | Microprocessor |
| UXGA | 1600x1200 (4:3) |
| V | V-sync to the module |
| VCR | Video Cassette Recorder |
| VESA | Video Electronics Standards Association |
| VGA | 640x480 (4:3) |
| VL | Variable Level out: processed audio output toward external amplifier |
| VSB | Vestigial Side Band; modulation method |
| WYSIWYR | What You See Is What You Record: record selection that follows main picture and sound |
| WXGA | 1280x768 (15:9) |
| XTAL | Quartz crystal |
| XGA | 1024x768 (4:3) |
| Y | Luminance signal |
| Y/C | Luminance (Y) and Chrominance (C) signal |
| YPbPr | Component video. Luminance and scaled color difference signals (B-Y and R-Y) |
| YUV | Component video |

# Mechanical and Dismantling Instructions

## Dismantling Instruction

Detailed information please refer to the model set.

The following guidelines show how to dismantle the player.
**Step1:** Remove 5 screws around the Top Cover, and then remove the Top Cover (Figure 1).

Figure 1

**Step2**: If it is necessary to dismantle Loader or Front Panel, the Front door should be removed first. (Figure 2)
Note: Make sure to operate gently otherwise the guider would be damaged.

Please kindly note that dismantle the front door assembly carefully to avoid damage tray and the front door.

Figure 2

## Mechanical and Dismantling Instructions

### Dismantling Instruction

Detailed information please refer to the model set.

**Step3**: If the tray can't open in normal way, you can make it through the instruction as below (Figure 3).
Note: Make sure to operate gently otherwise the guider would be damaged.


Figure 3

**Step4**: Dismantling Front Panel, disconnect the connectors (XS301), need release 4 snaps of Front Panel & 2 snaps of bottom cabinet , then gently pull the Panel out from the set. (Figure 4 - Figure 6)

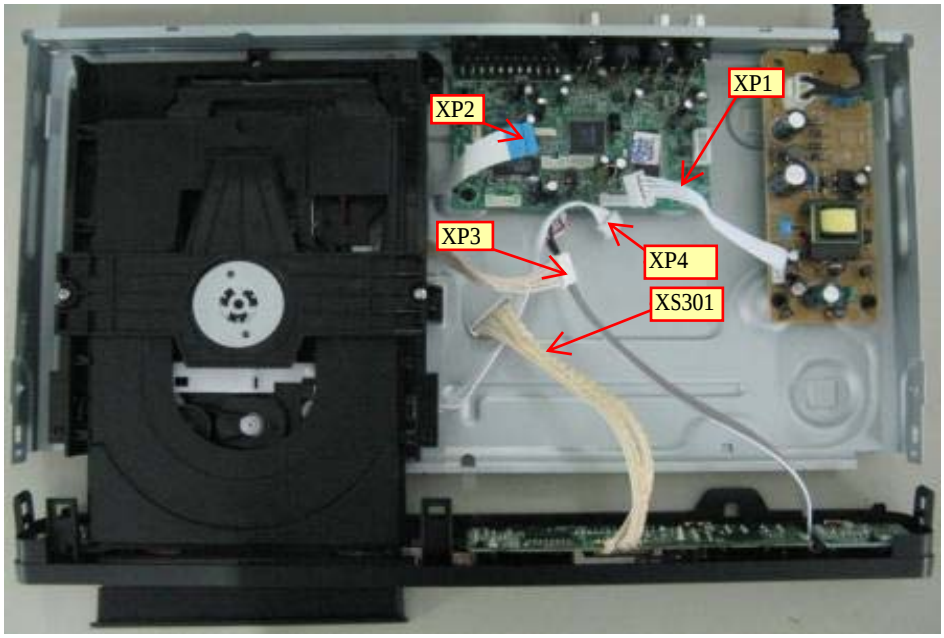



Figure 4

# Mechanical and Dismantling Instructions

## Dismantling Instruction

Detailed information please refer to the model set.

**Step5**: Dismantling Loader, disconnect the 3 connectors (XP2, XP3, XP4) aiming in the below figure, and remove 1 screw that connects the loader and the bottom cabinet. (Figure 5)

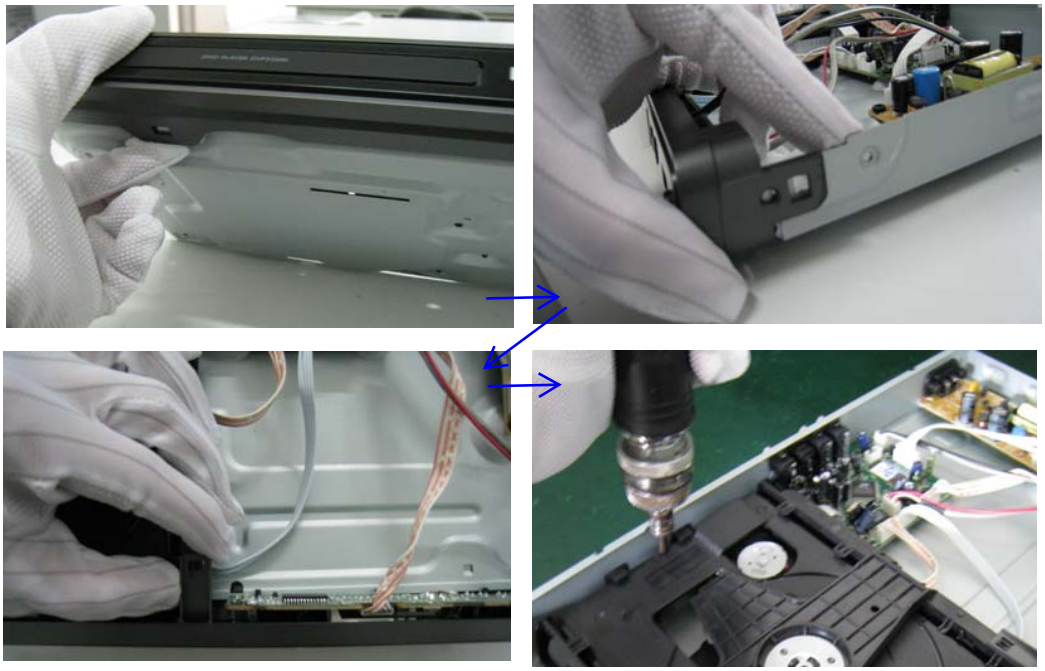


Figure 5

**Step6**: Dismantling Main Board, first disconnect the connector (XP1), and then remove 4 screws. (Figure 6)

**Step7**: Remove the 4 screws on Power Board to dismantle the Power Board. (Figure 6)

Figure 6

# Softeware upgrade and region code change

**Preparation to upgrade software**

1) Power on the set and open the tray, then press "5""5" on remote control to check the SW File Name.
2) Start the CD Burning software and create a new CD project (Data Disc) with the following setting:
   Label: DVP3XXX (No need the label name)
   SW File Name: DVPXXXX_XX.bin
   Note: It is required to keep the SW file name accord.
3) Burn the data onto a blank CDR

**A. Procedure for software upgrade:**

A) Upgrade software via CDR:

1) Power on the set and insert the prepared Upgrade CDR.
2) The set will starts reading disc & response with the following display TV screen:
   Upgrade file detected
   Upgrade ?
   Press PLAY to start
3) Press "PLAY" button to confirm, then screen will display:

| | |
|---|---|
| Upgrade file detected | Upgrade file detected |
| Do not power off | Do not power off |
| File Copying → | Upgrading |

4) The upgraded tray will automatically open when file copying completed, then take out the disc.
5) About 1 minute later, the trace will automatically close when upgrading completed.

B) Upgrade software via USB Flash Drive (only for USB 2.0):

1) Create the correct software file onto the USB flash drive.
2) Power on the set and keep no disc, then insert it to the USB jack of the front panel.
3) When the DVD player switchs to the USB state automatically, pls follow the instructions on the TV screen to confrim the upgrade operation.

**B. Read out the software versions to confirm upgrading**

1) Power on the set and press "Setup" button on the remote control.
2) Press "1""3""7""9" button or press down cursor on remote control to select "Preferences" and press right & down cursor to select "Version Info".

The software version and other informations will be displayed on the TV screen as follows:

| | |
|---|---|
| Version | XX.XX.XX.XX (Main version) |
| Sub-Ver | XX.XX.XX.XX (version of applicaton software) |
| 8032 | XX.XX.XX.XX |
| Servo | XX.XX.XX.XX (software version of Servo) |
| RISC | XX.XX.XX.XX |
| DSP | XX.XX.XX.XX |
| Region Code | X |

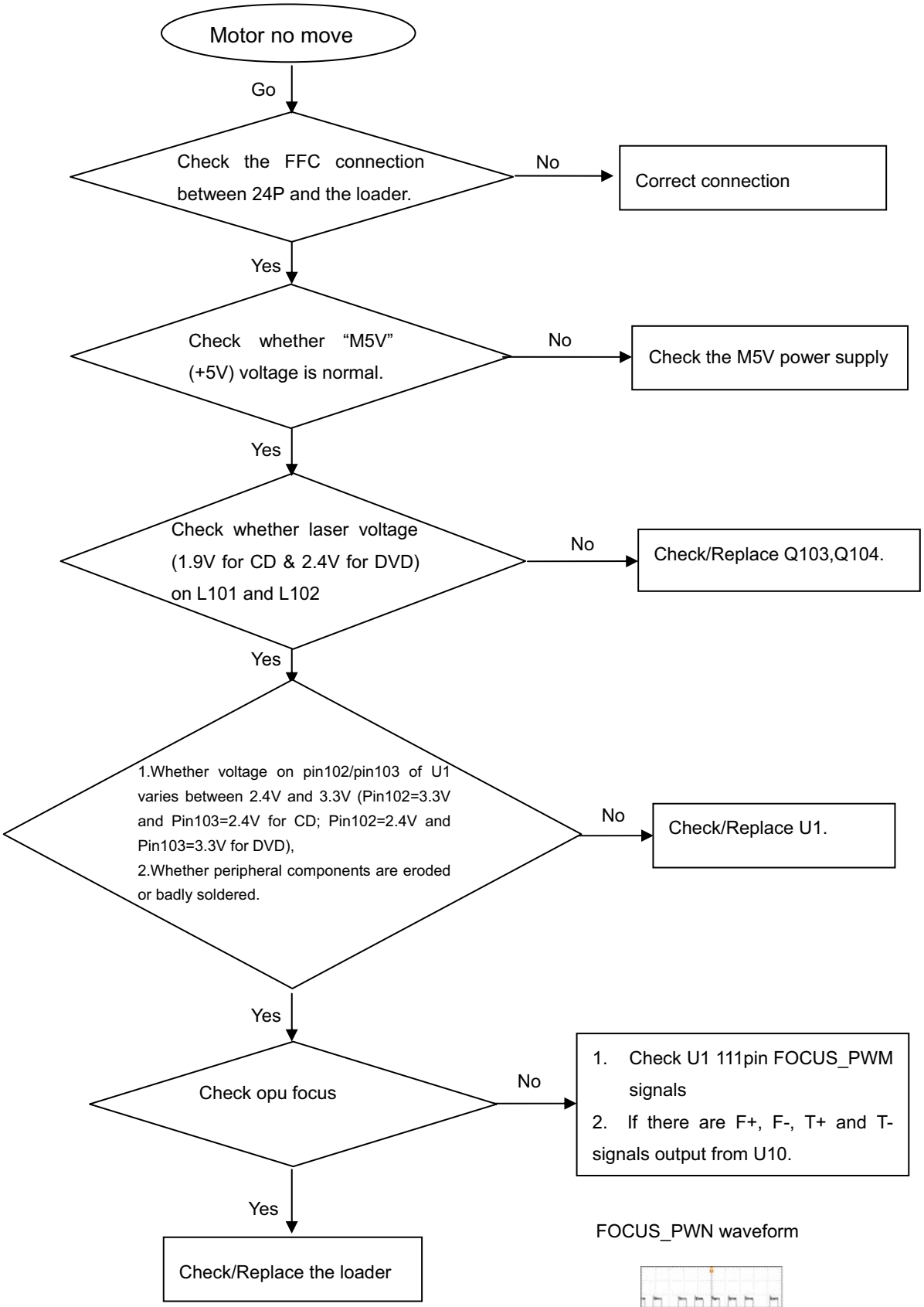
Caution: The set must not be power off during upgrading, Otherwise the Main board will be damaged entirely.

## Region Code Change

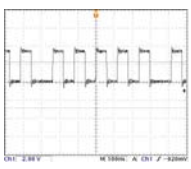
1) Power on the set and open the tray door;
2) Press the "Setup" button on the remote control, then the setup interface will be displayed on the TV screen;
3) Move the down cursor on remote control to select "Preferences" and press "1""3""8""9""3""1" on the remote control;
4) Then move the up or down cursor to select the region code.

Note: Restart after above steps.

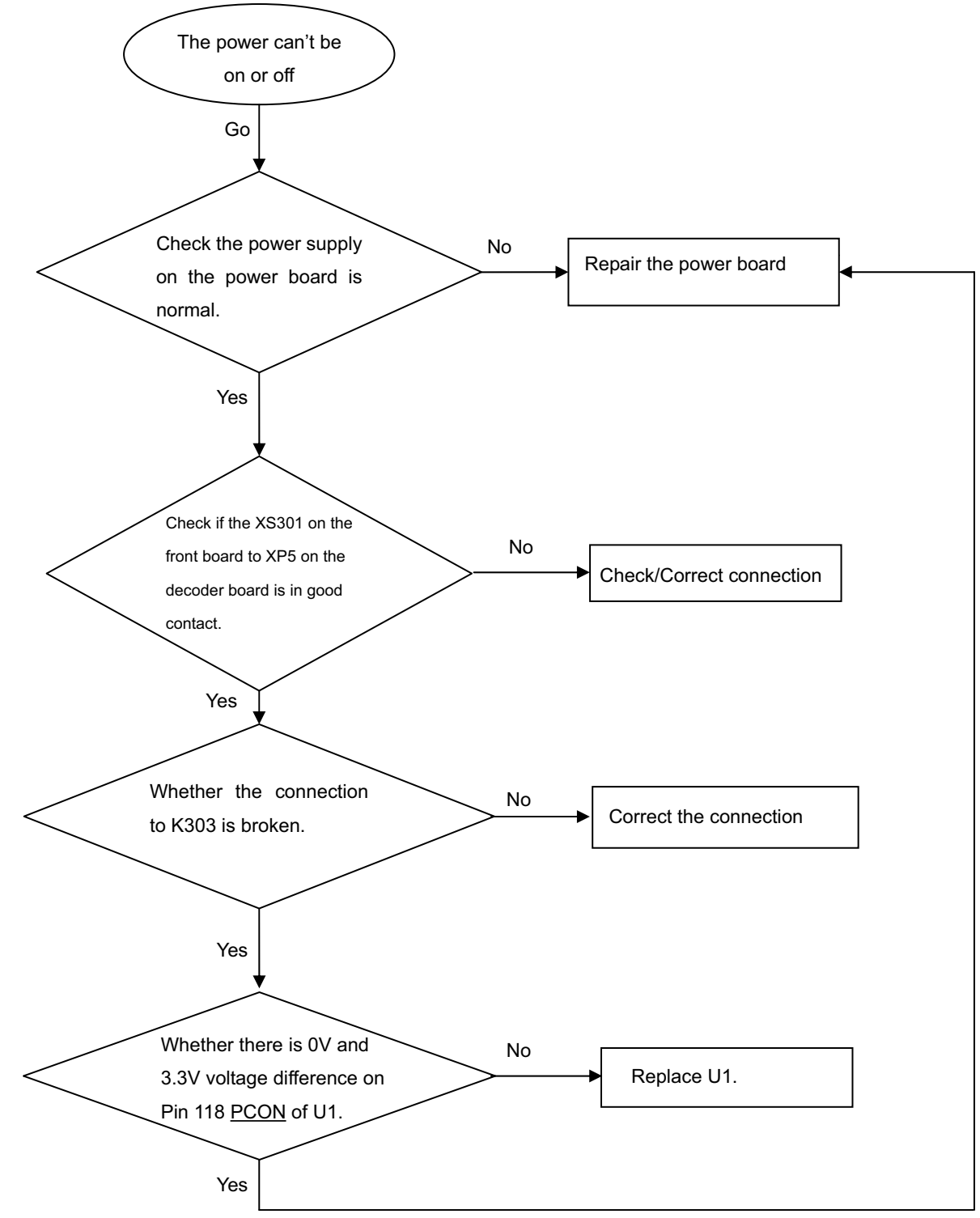
**Spindle motor does not move**



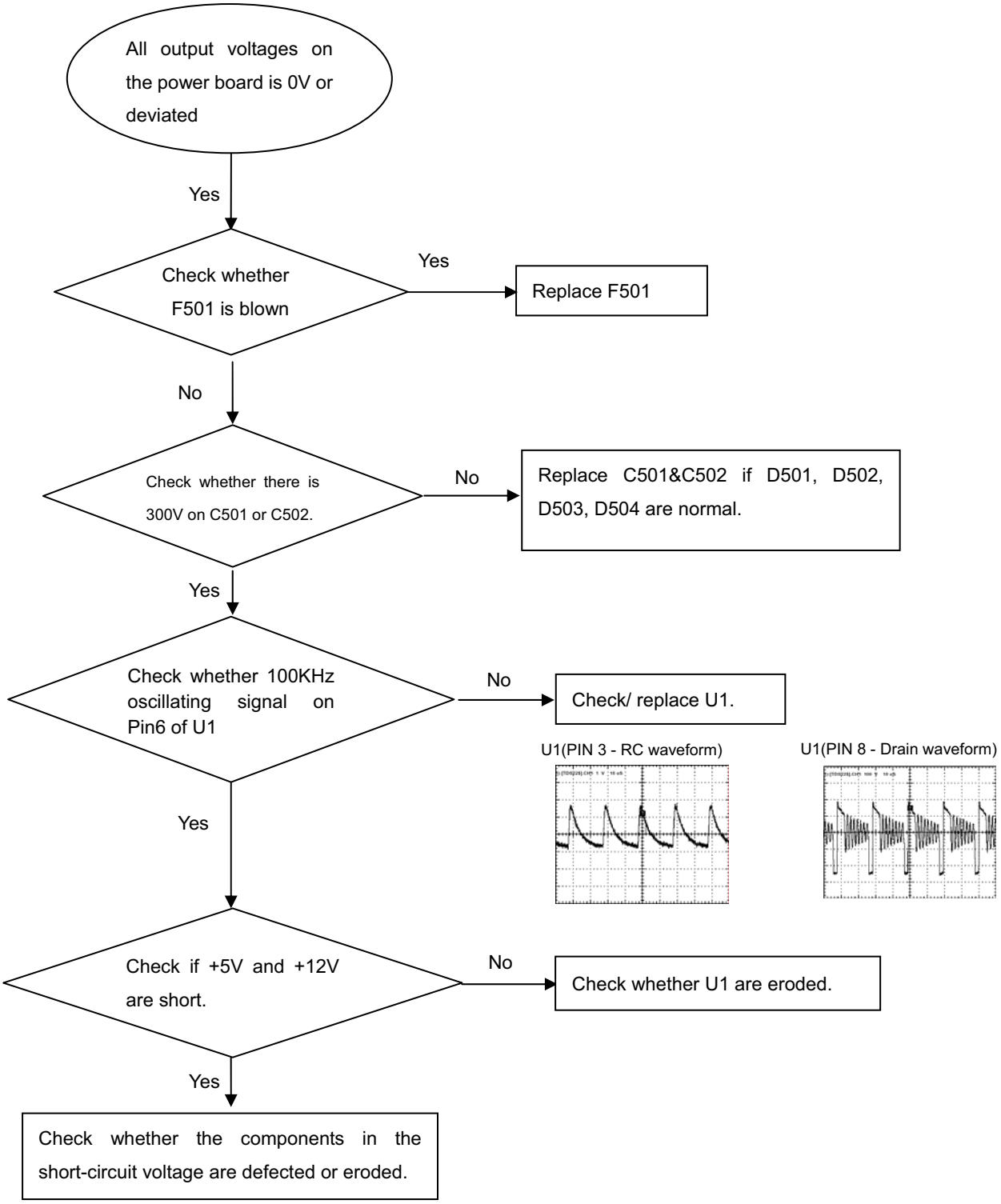

FOCUS_PWN waveform



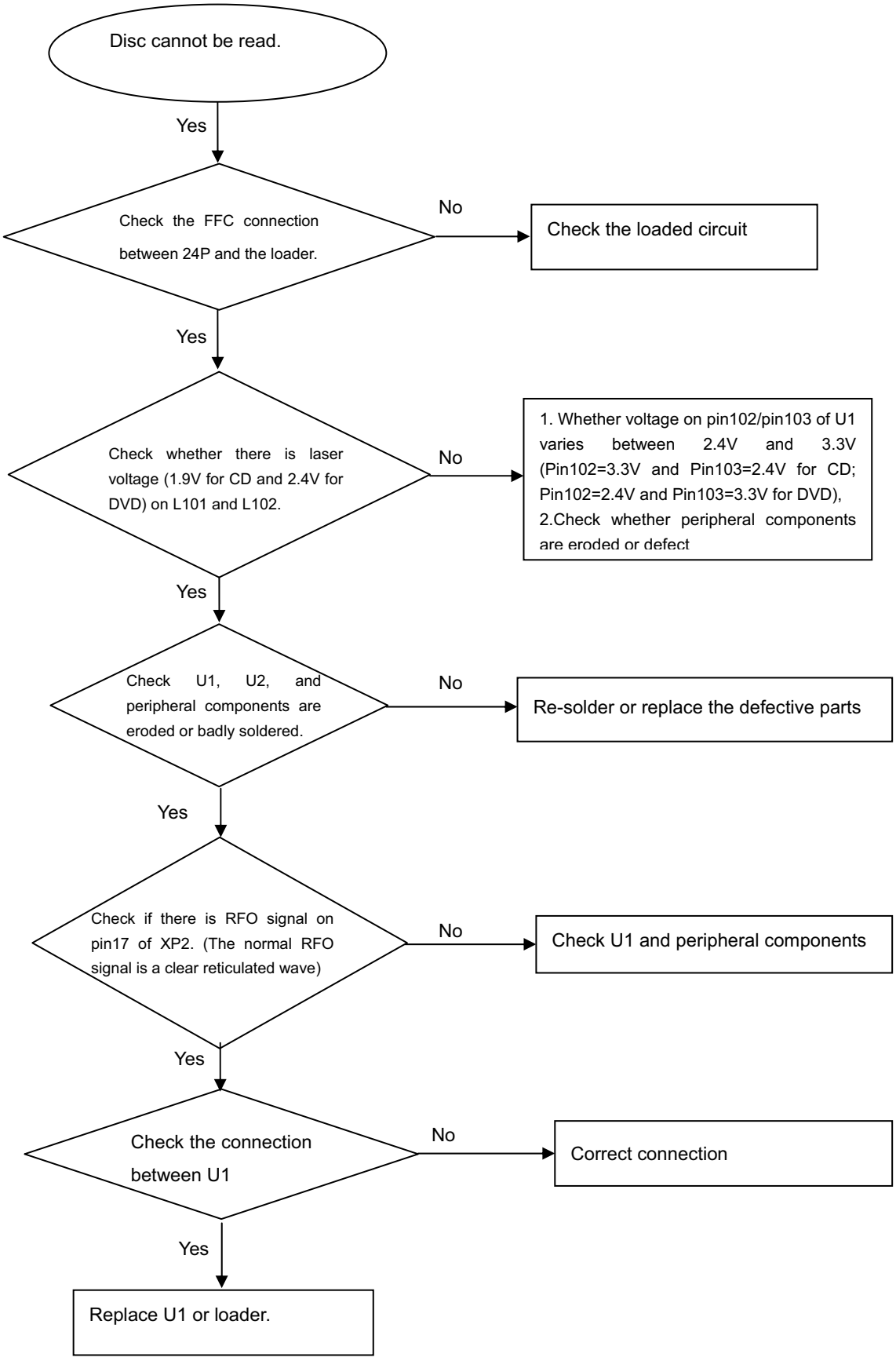
**The power can not be on or off**



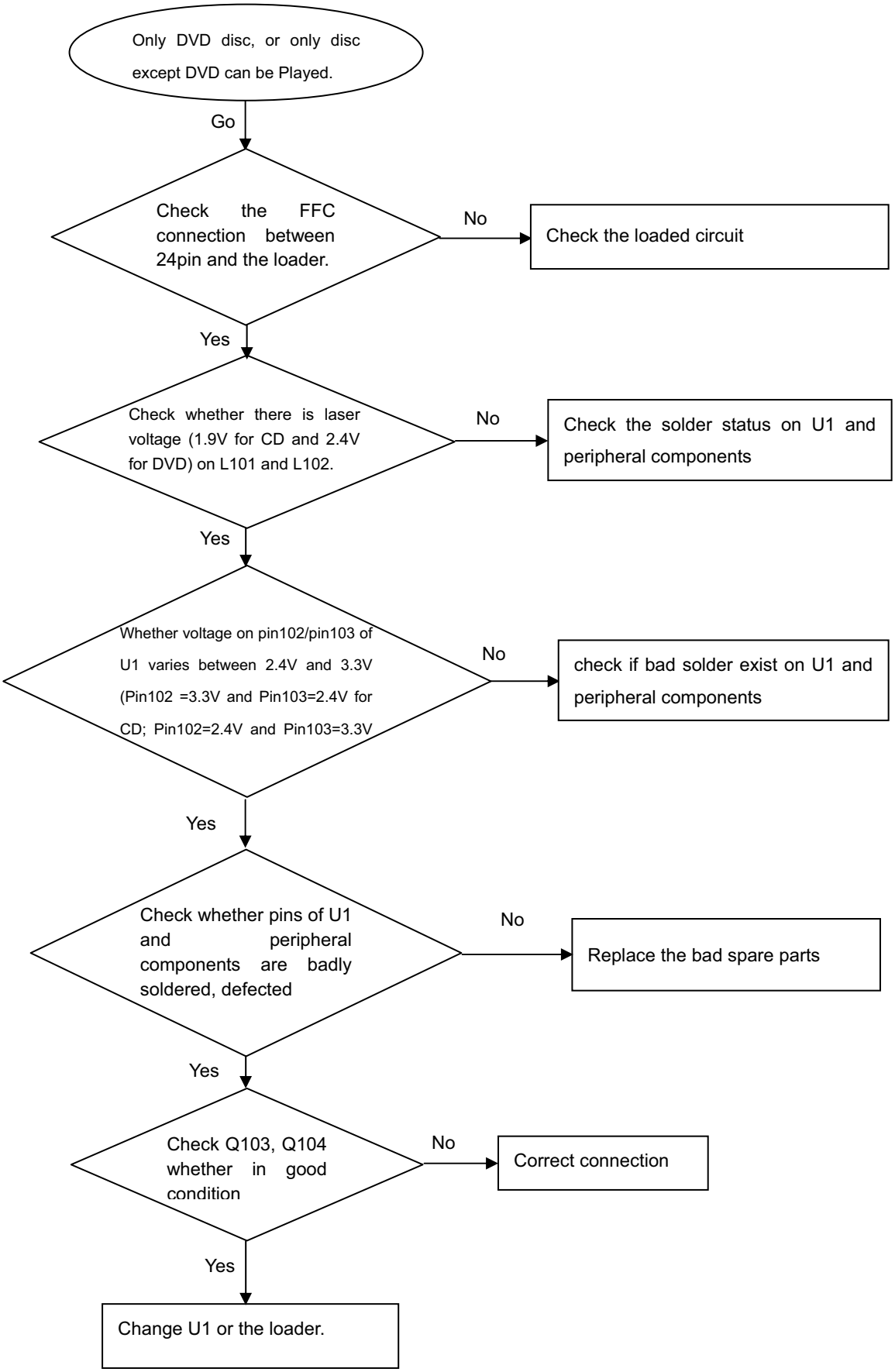
**All output voltages on the power board is 0V or deviated.**



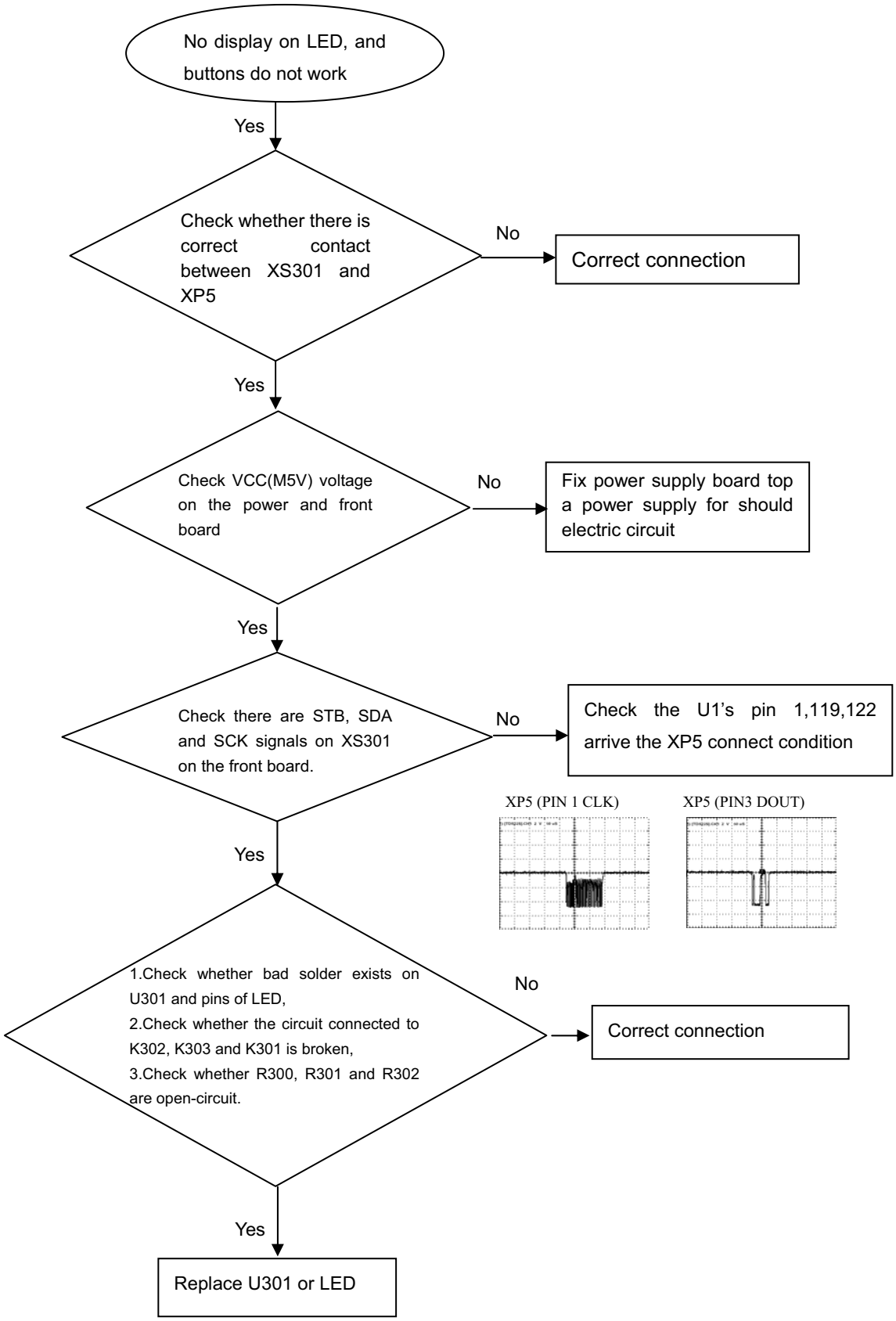
**Disc cannot be read.**



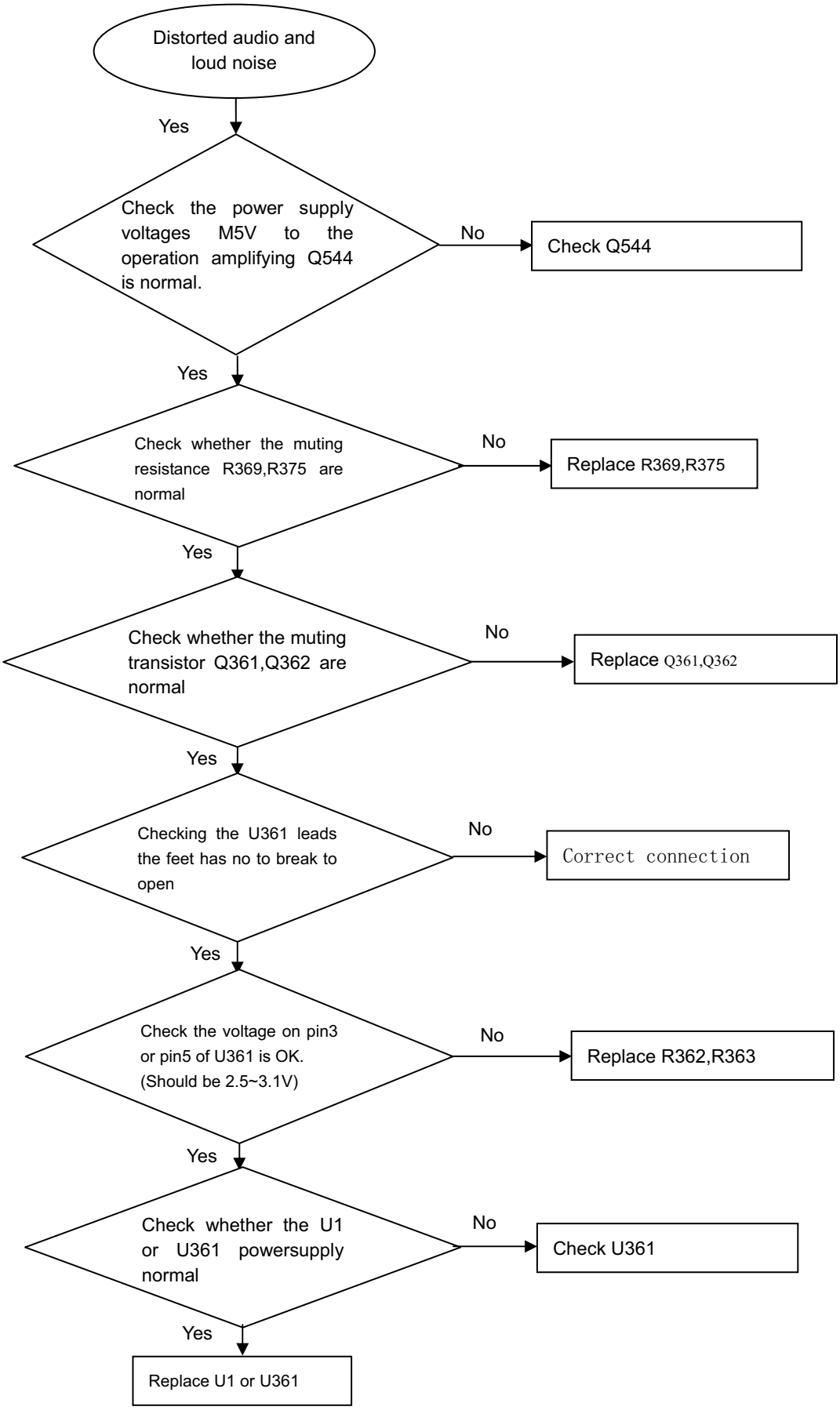
**Only DVD disc or only disc except DVD can be played**



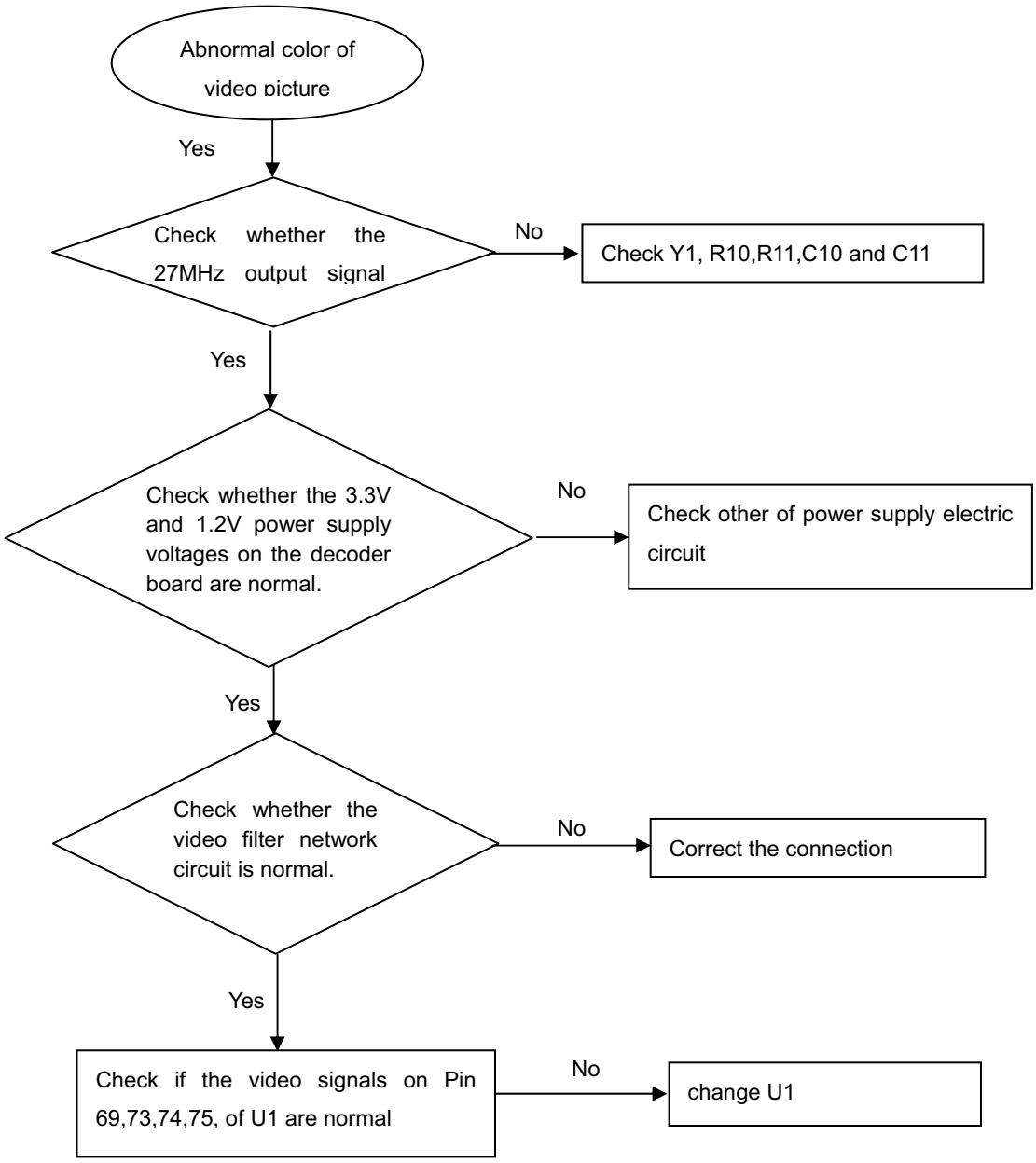
**No display on LED, and buttons do not work**



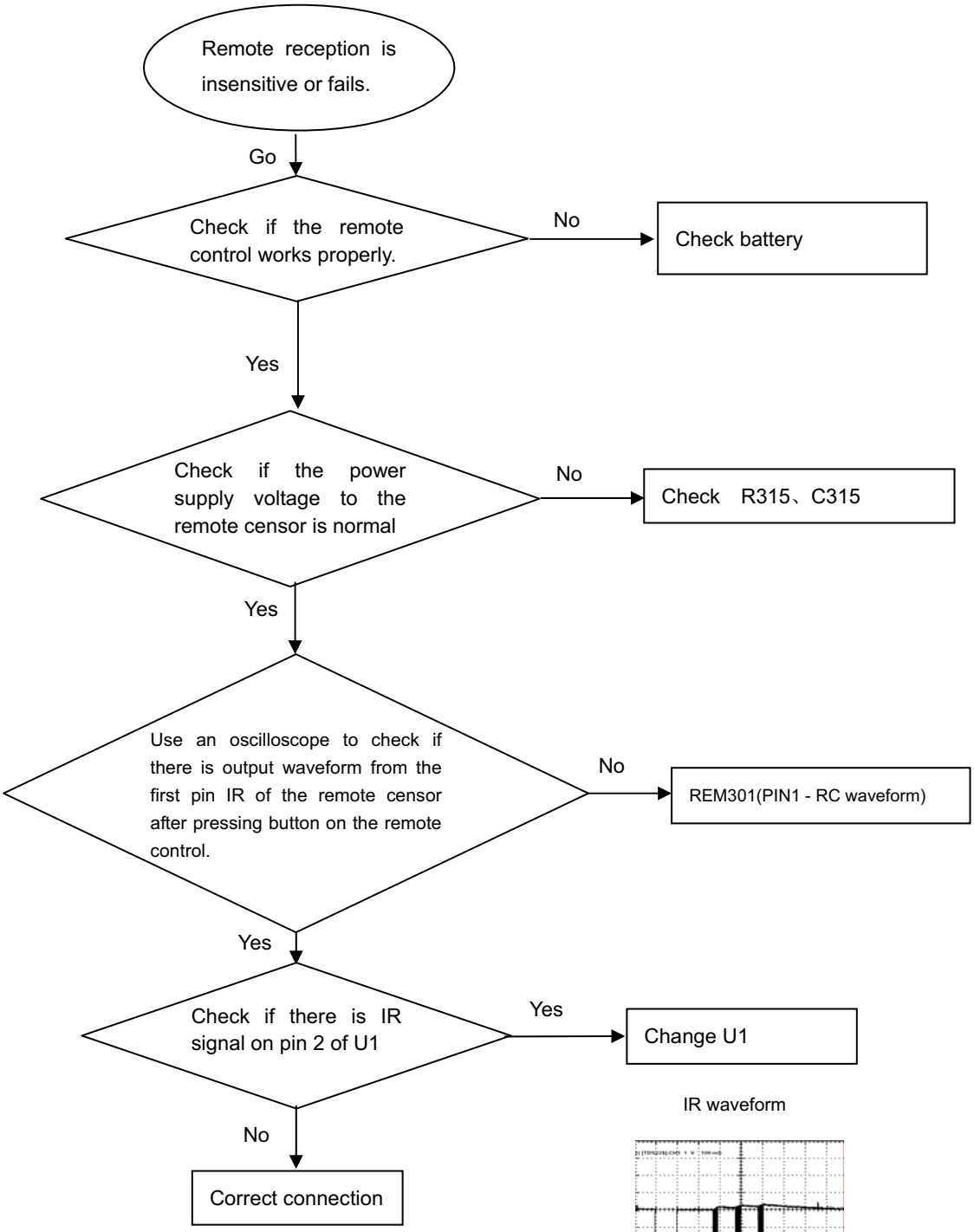
**Distorted audio and loud noise**



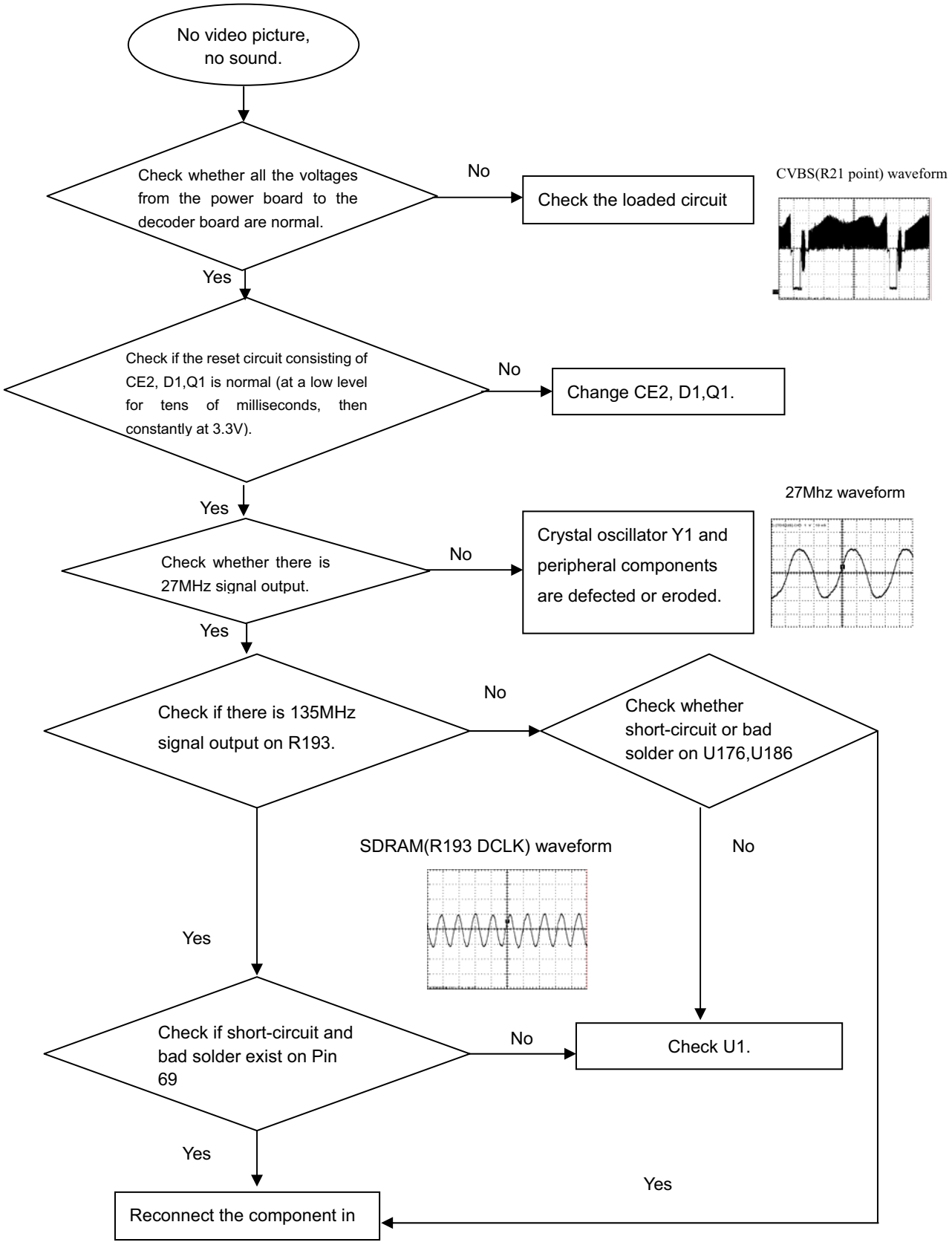
**Abnormal color of video picture**



**Remote reception is insensitive or fails.**

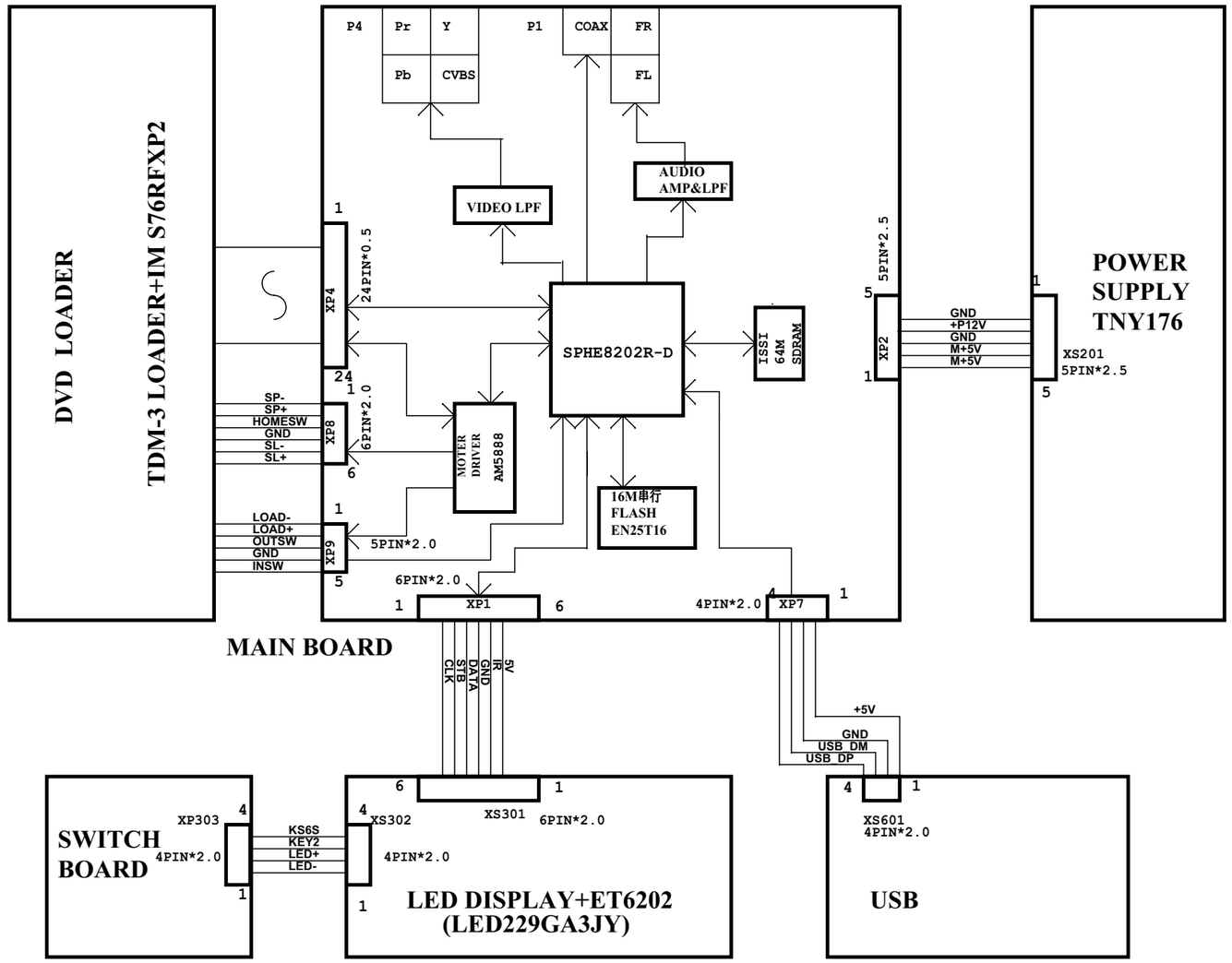


**No video picture, no sound.**



5-1

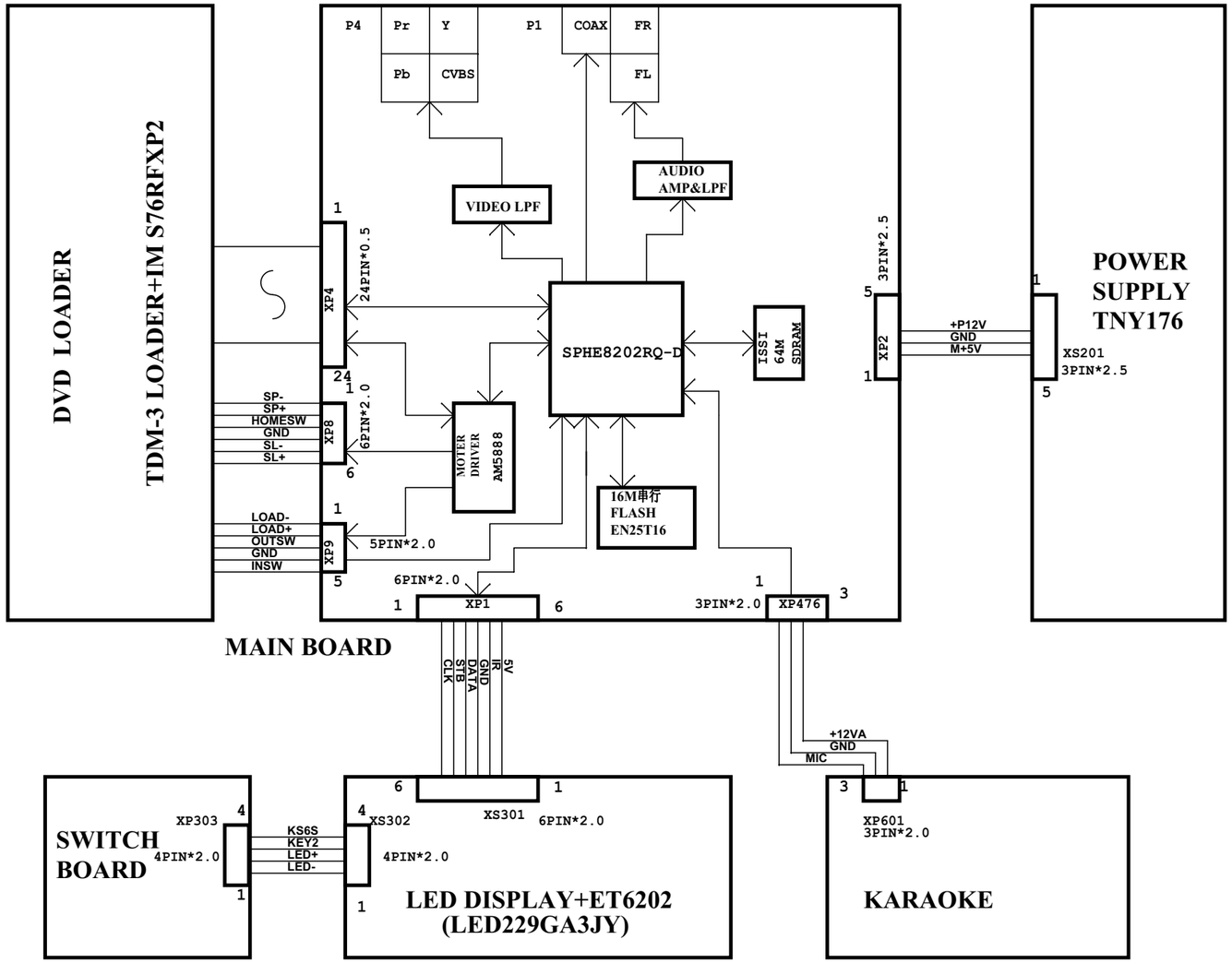
# SPHE8202R-D(2ch) WIRING DIAGRAM




Remark: DVP3520 no USB output.

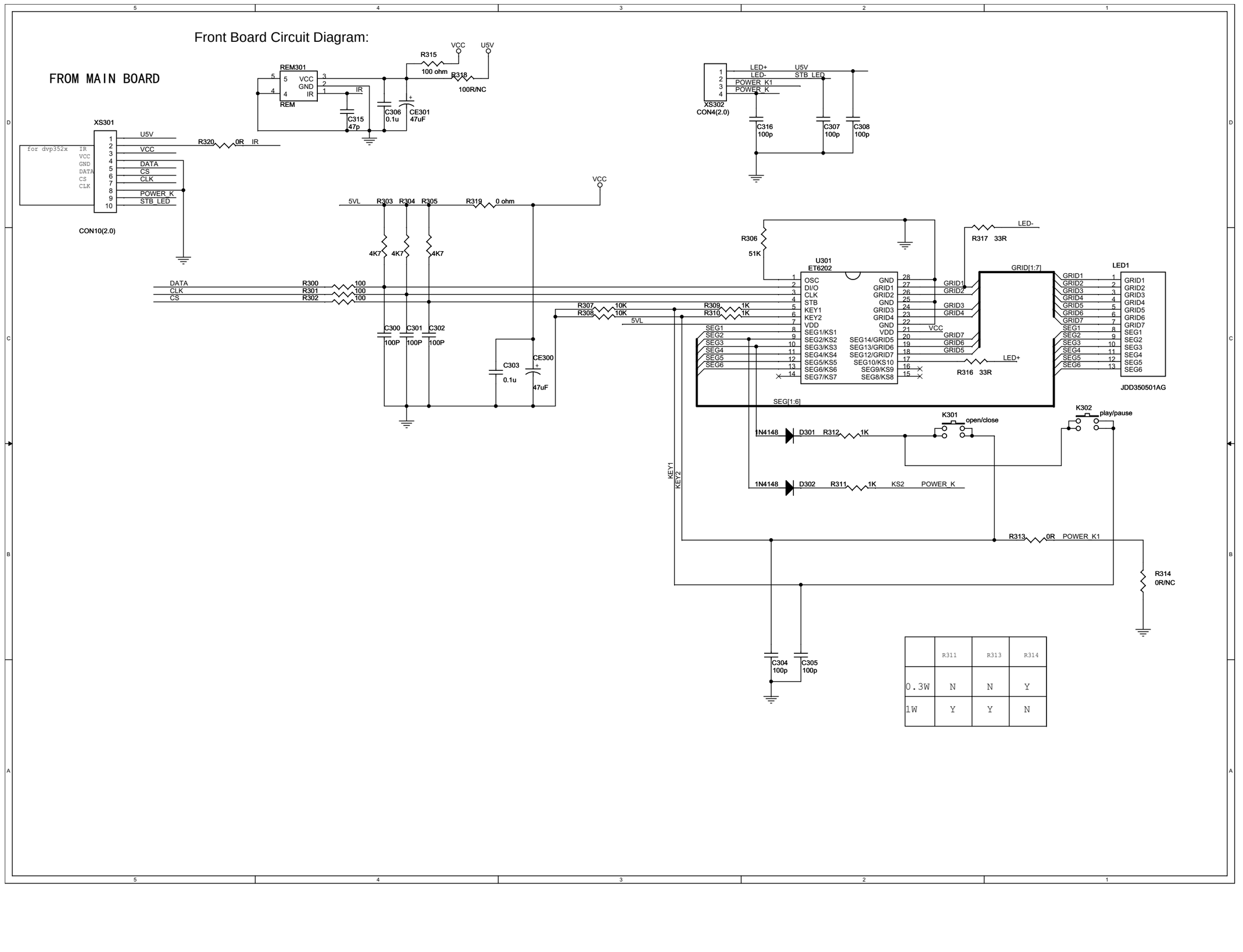
5-1

# DVP3520K SPHE8202RQ-D(2ch) WIRING DIAGRAM



6-1

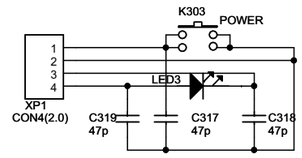
Front Board Circuit Diagram:




| | R311 | R313 | R314 |
|---|---|---|---|
| 0.3W | N | N | Y |
| 1W | Y | Y | N |

6-2

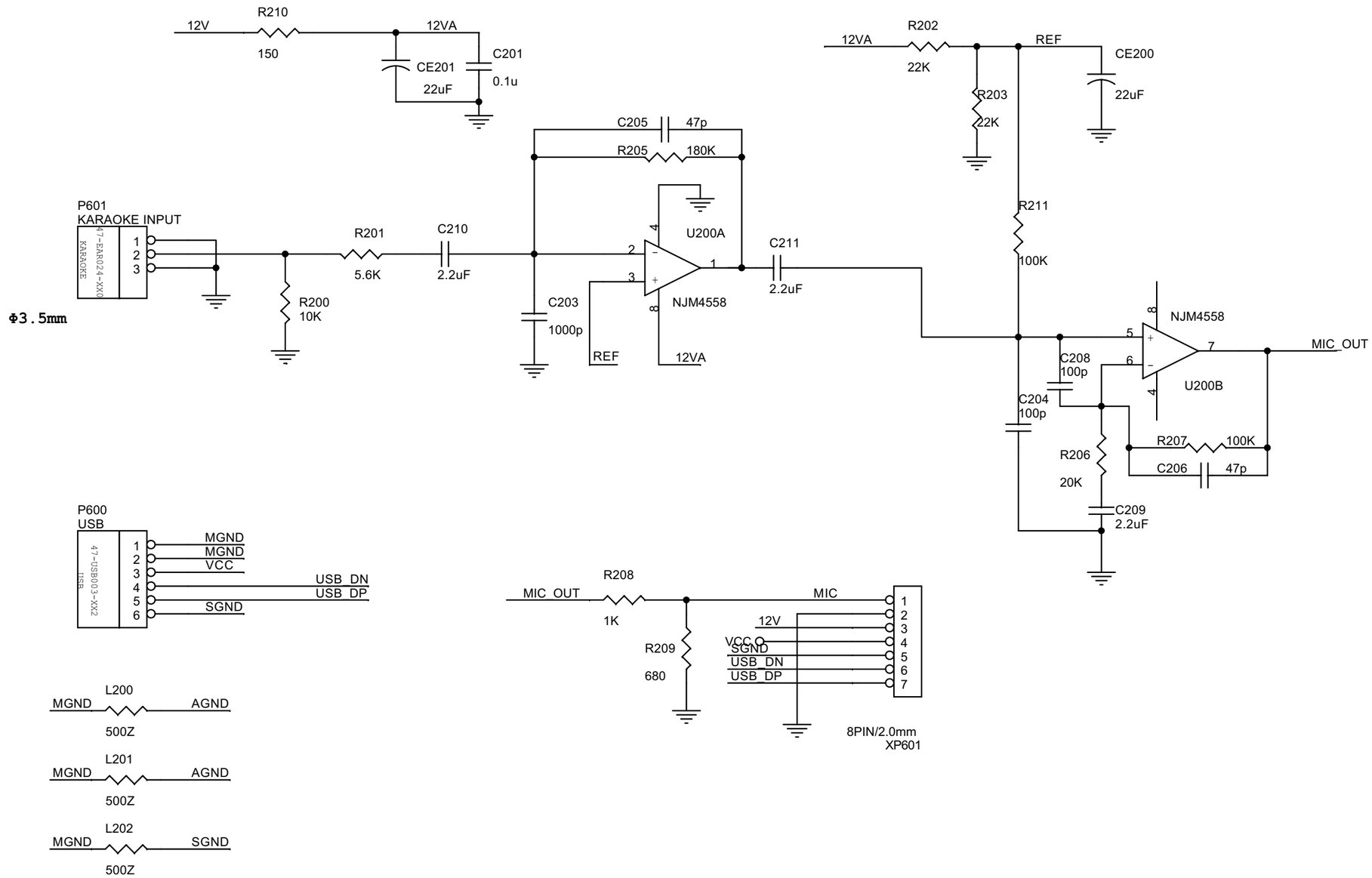
Switch Board Circuit Diagram:




SWITCH BOARD

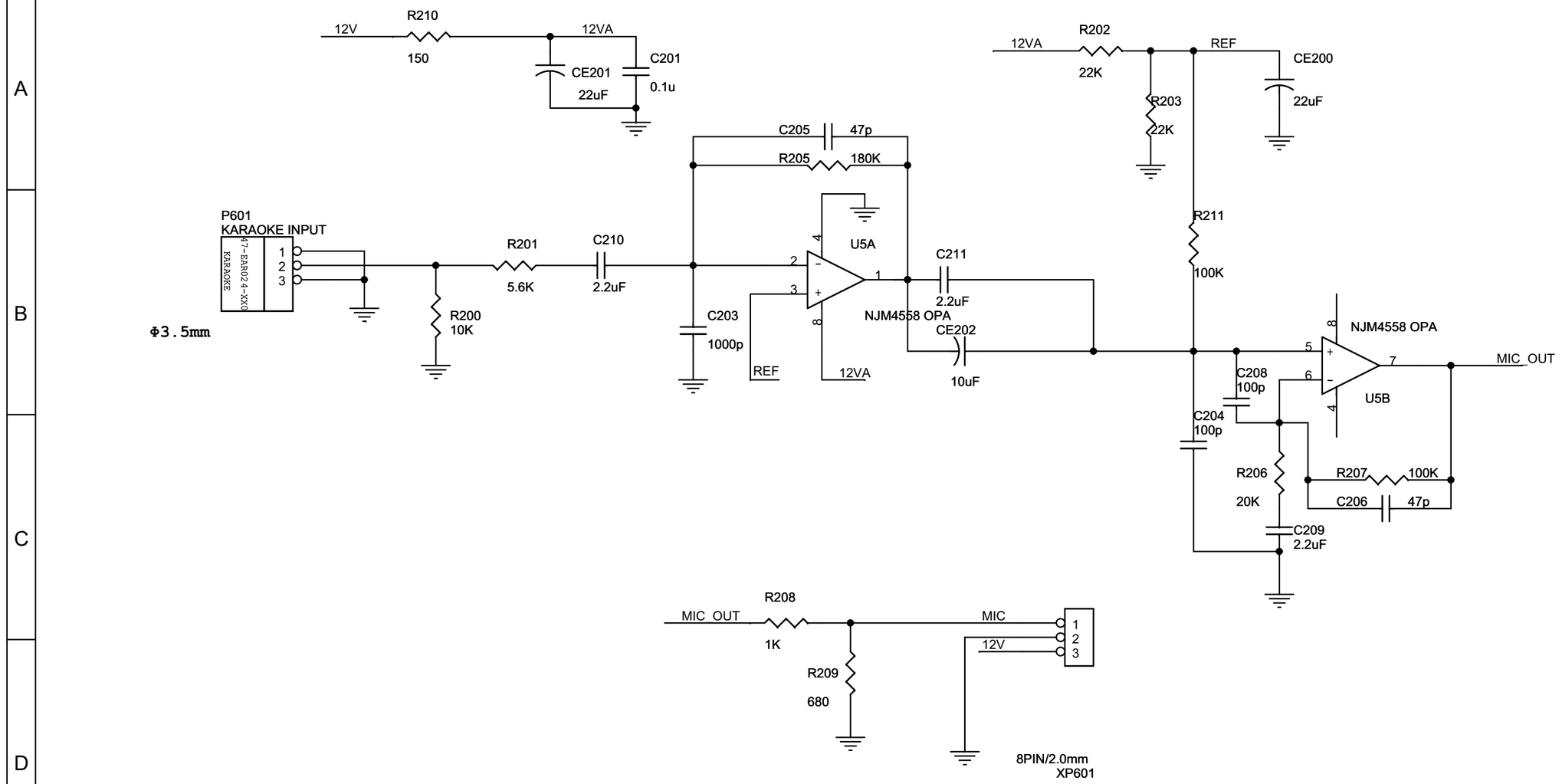
6-3

OK Board & USB Board Electric Diagram (Only for DVP3522 and has not karaoke output)



7-3

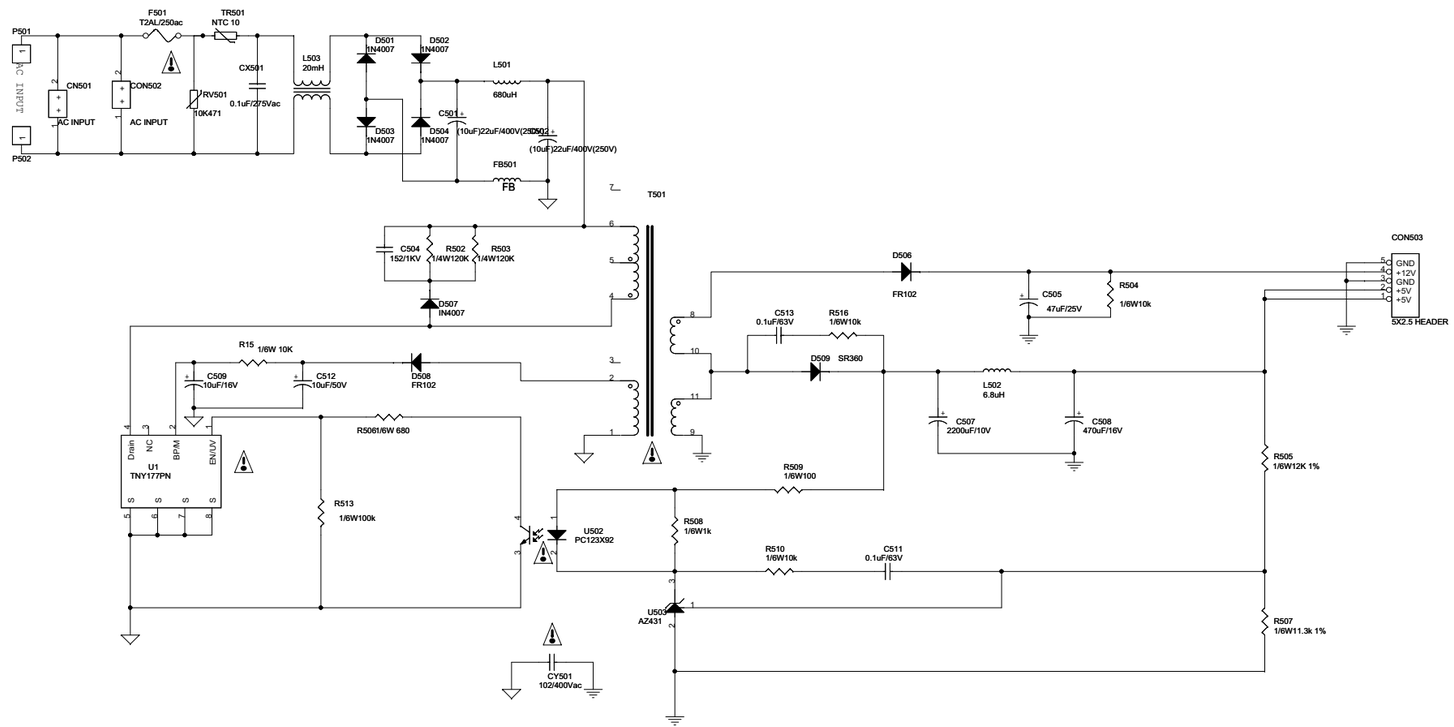
OK Board Circuit Diagram for DVP3520K/93:



6-4

Power Board Circuit Diagram:

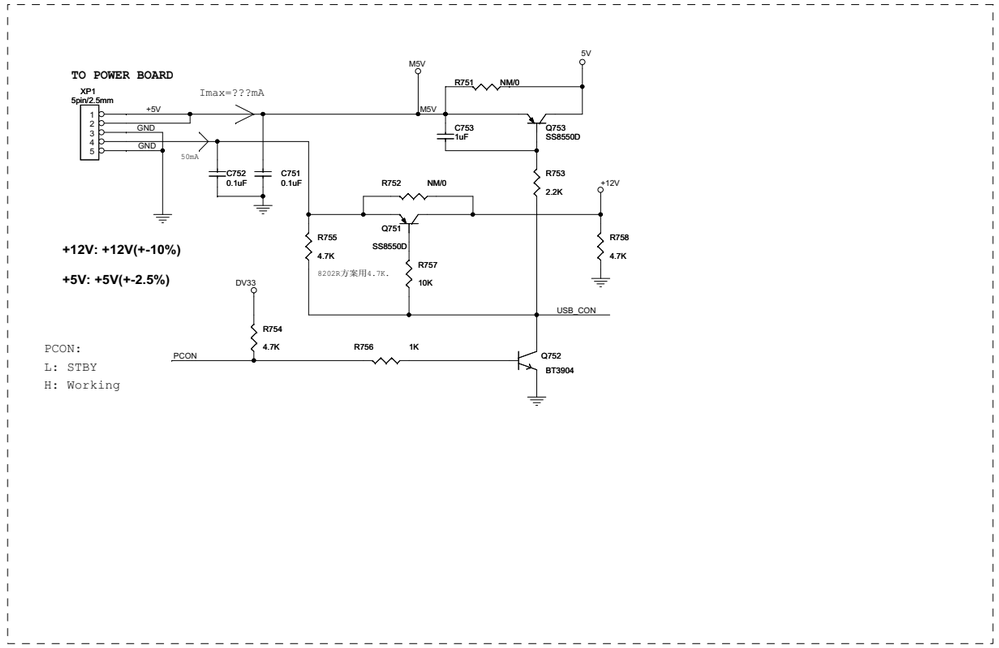
*** CAUTION :**
THE PARTS MARKED WITH ⚠ ARE IMPORTANT PARTS ON THE SAFETY.
PLEASE USE THE PARTS HAVING THE DESIGNATED PARTS NUMBER WITHOUT FAIL.

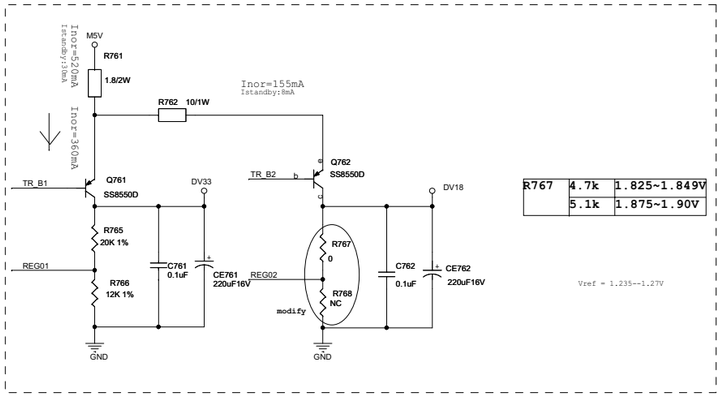


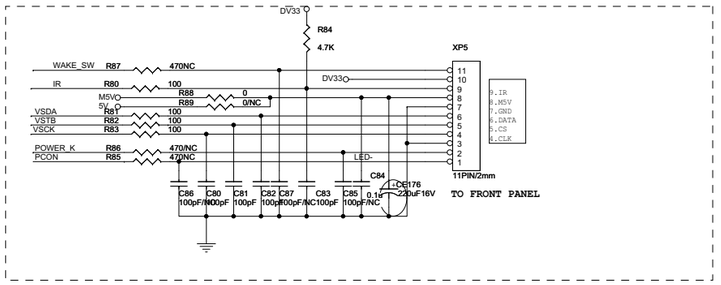

* No use the Class 1 environment management materials of SS-00259
* All of moulding resinous, ink, paint and coating electric wire must be ordered from designated GP supplier of Philips.

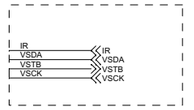
6-5

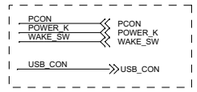
# Main Board Circuit Diagram: POWER & MOTOR DRIVER

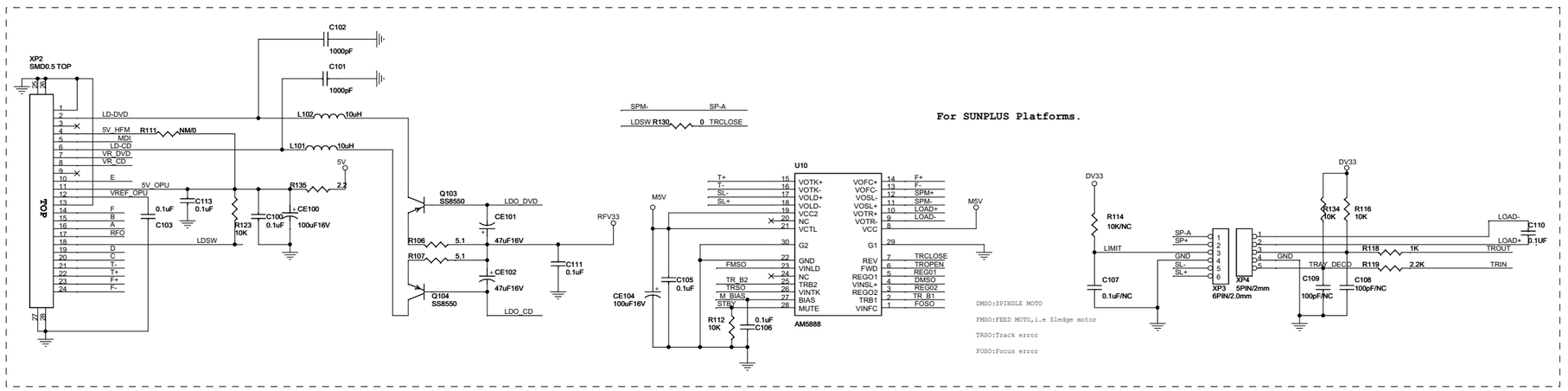


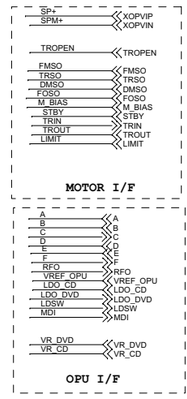



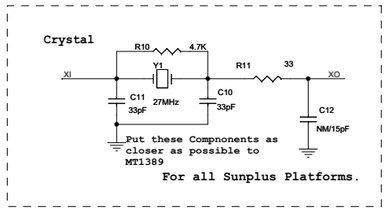



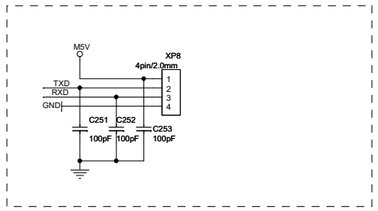



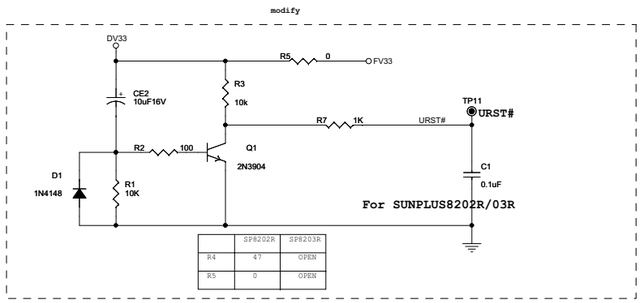



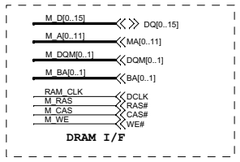
6-6

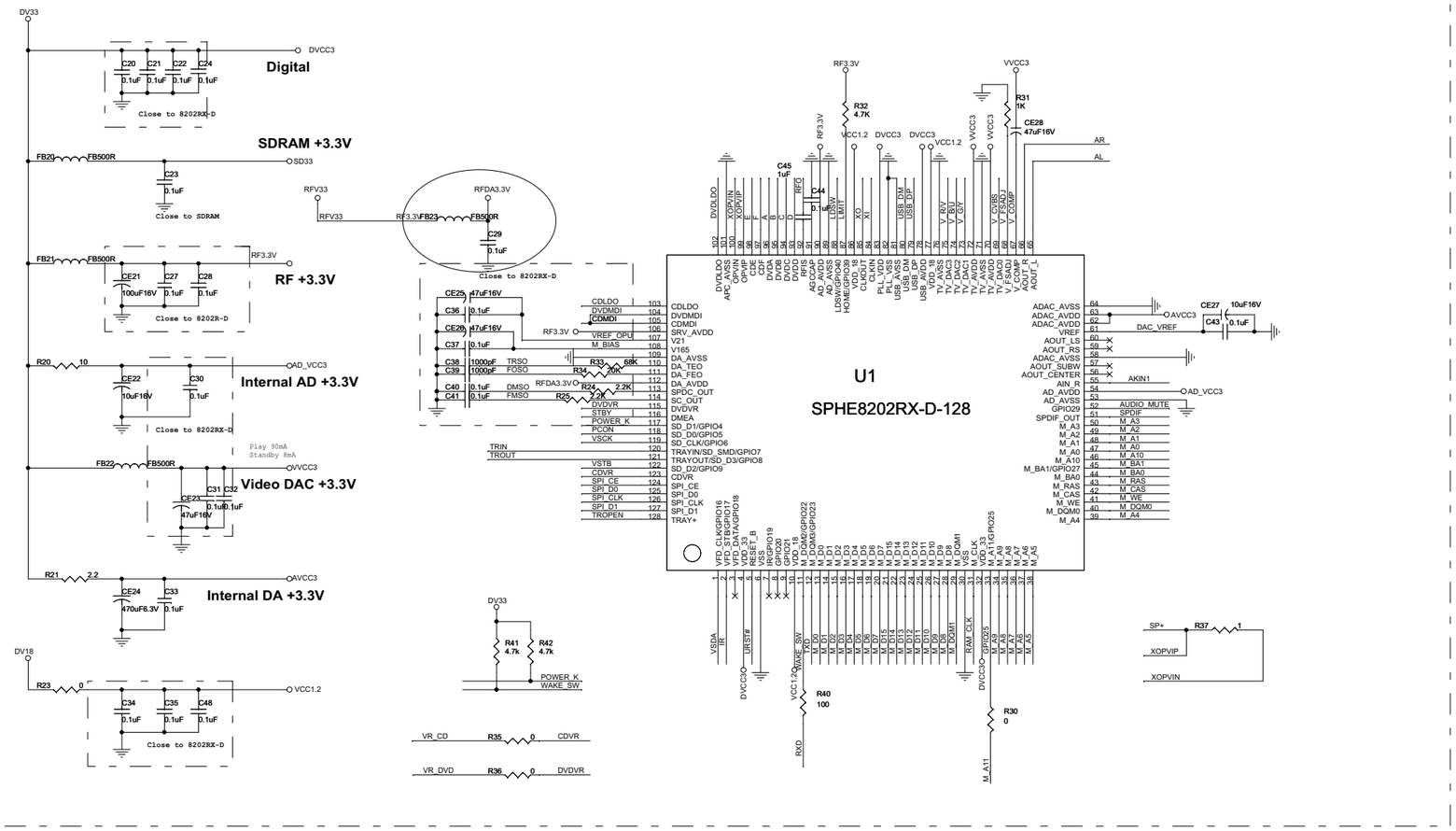
# Main Board Circuit Diagram: SPHD8202R-D

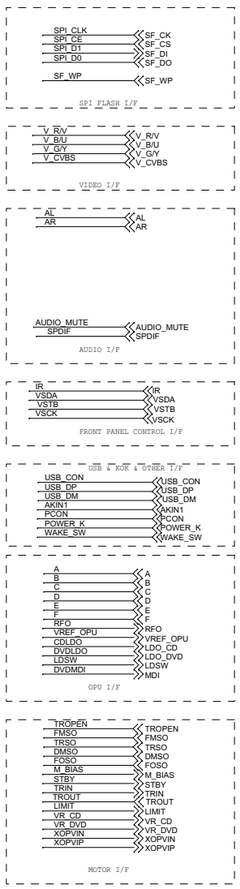


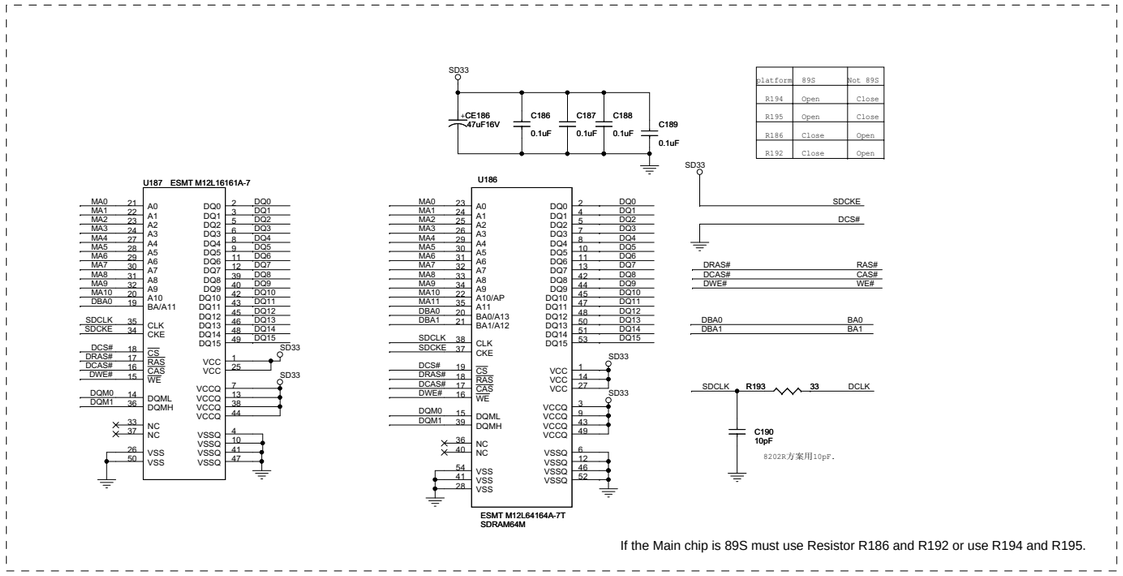



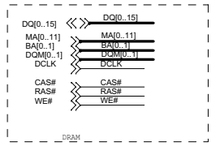



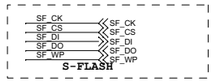
6-7

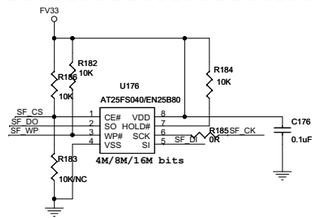
# Main Board Circuit Diagram: SDRAM&FLASH




If the Main chip is 89S must use Resistor R186 and R192 or use R194 and R195.



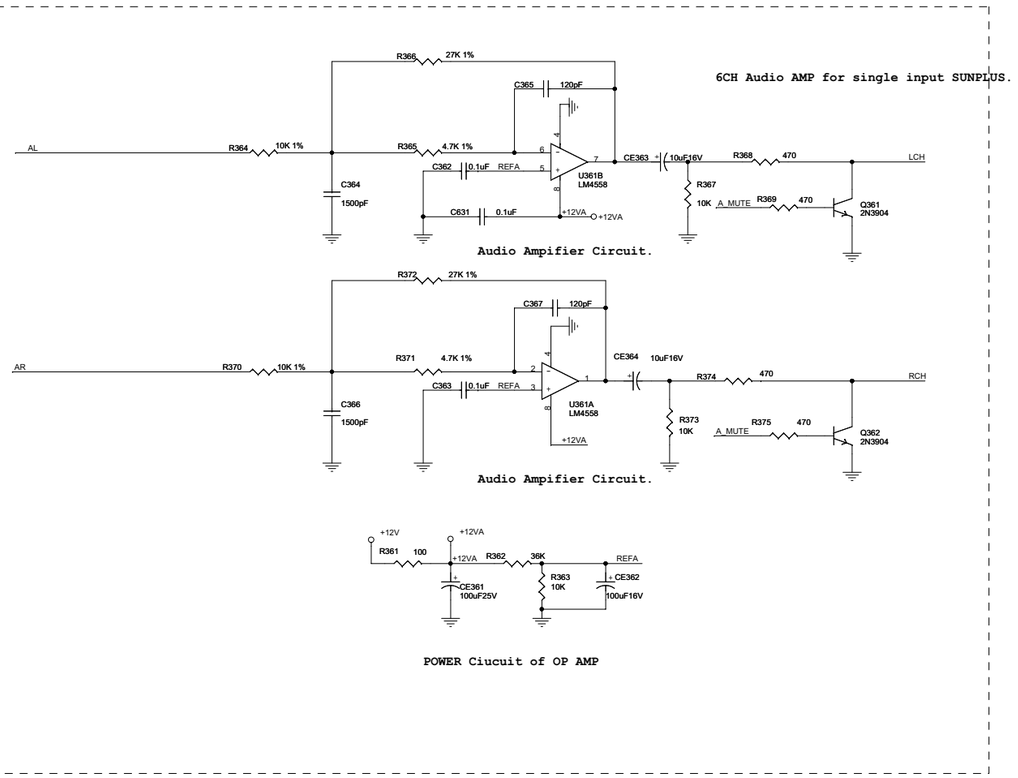



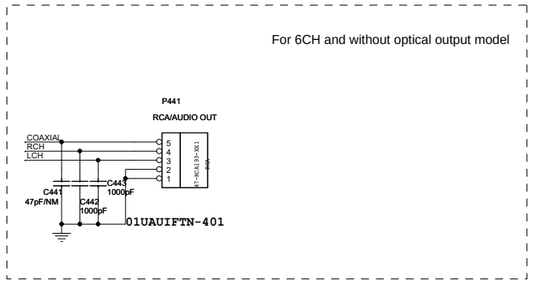



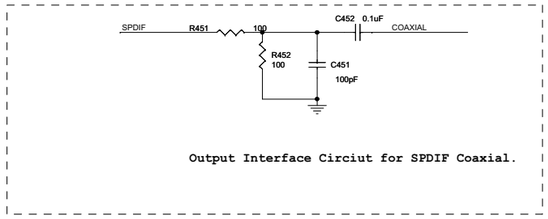

**Note 2:IF use R183,Must take over R181.Default use R183(10K),and R181 Open.**

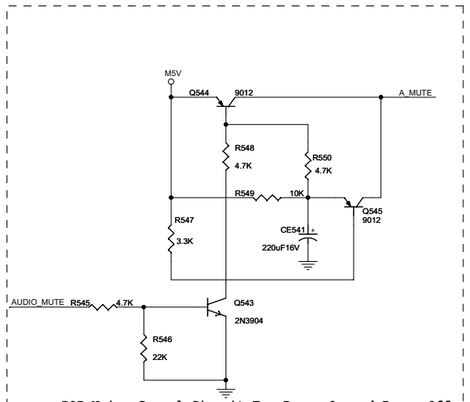
6-8

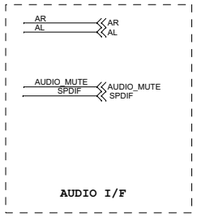
# Main Board Circuit Diagram: AUDIO I/F



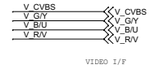



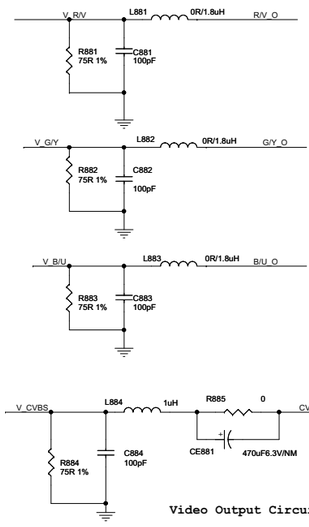



6-9

# Main Board Circuit Diagram: VIDIO I/F

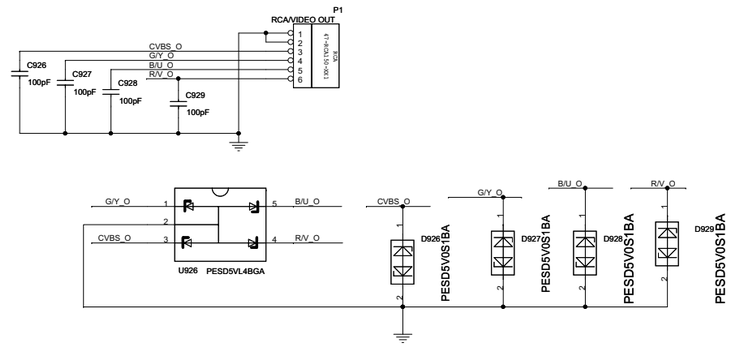



Video Output Circuit.

**Note:Only CE61(470uF/6.3V) use for India stroke.unless other use R230(0 OHM)**

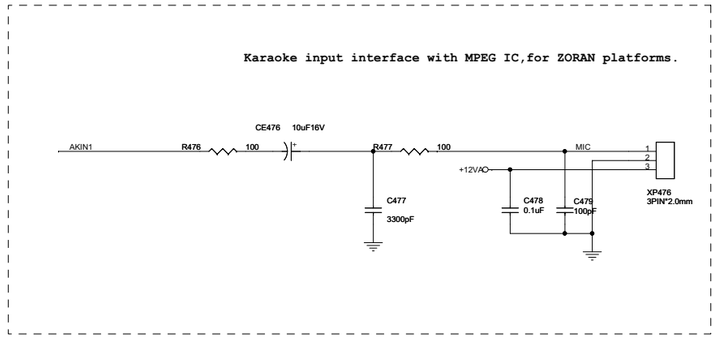
**VIDEO OUTPUT TERMINAL.**

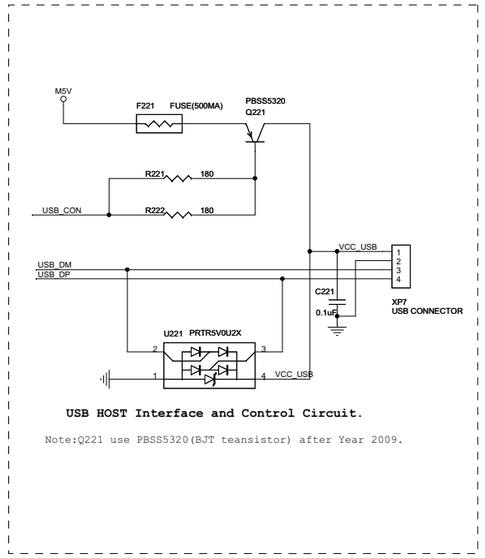


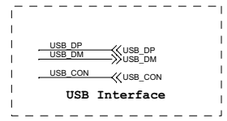

***NOTE1:D926,D927,D928,D929 only for 94/55/77/78(ie.India/Latin America /Argentine/Brazil) stroke,Other Stroke use U926***

6-10

# Main Board Circuit Diagram: OTHER & USB & KOK

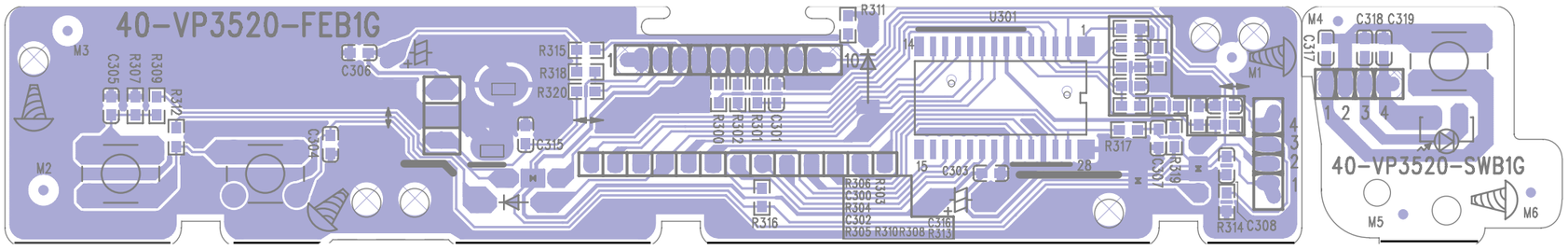


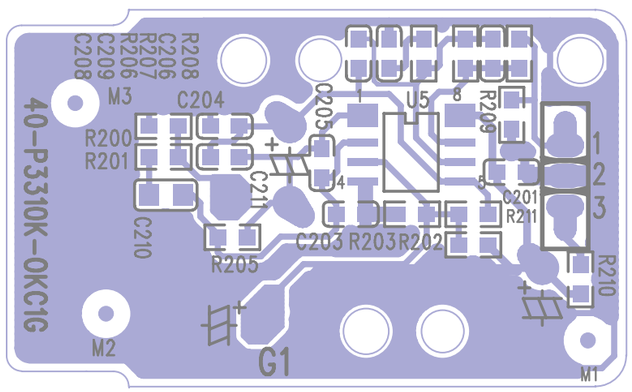




7-11

Front Board and Switch Board Print-layout (Bottom side):

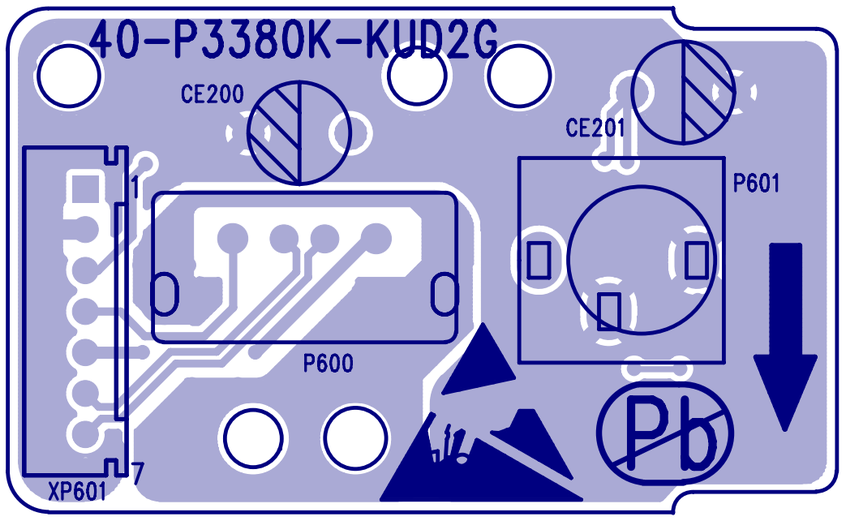



OK Board Print-layout for DVP3520K/93 (Bottom side):

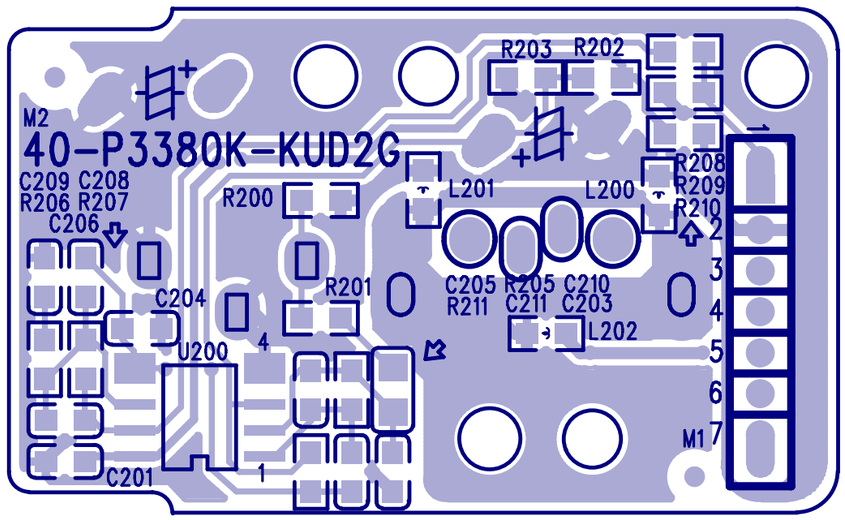


6-12

USB Board Print-layout (Top side)



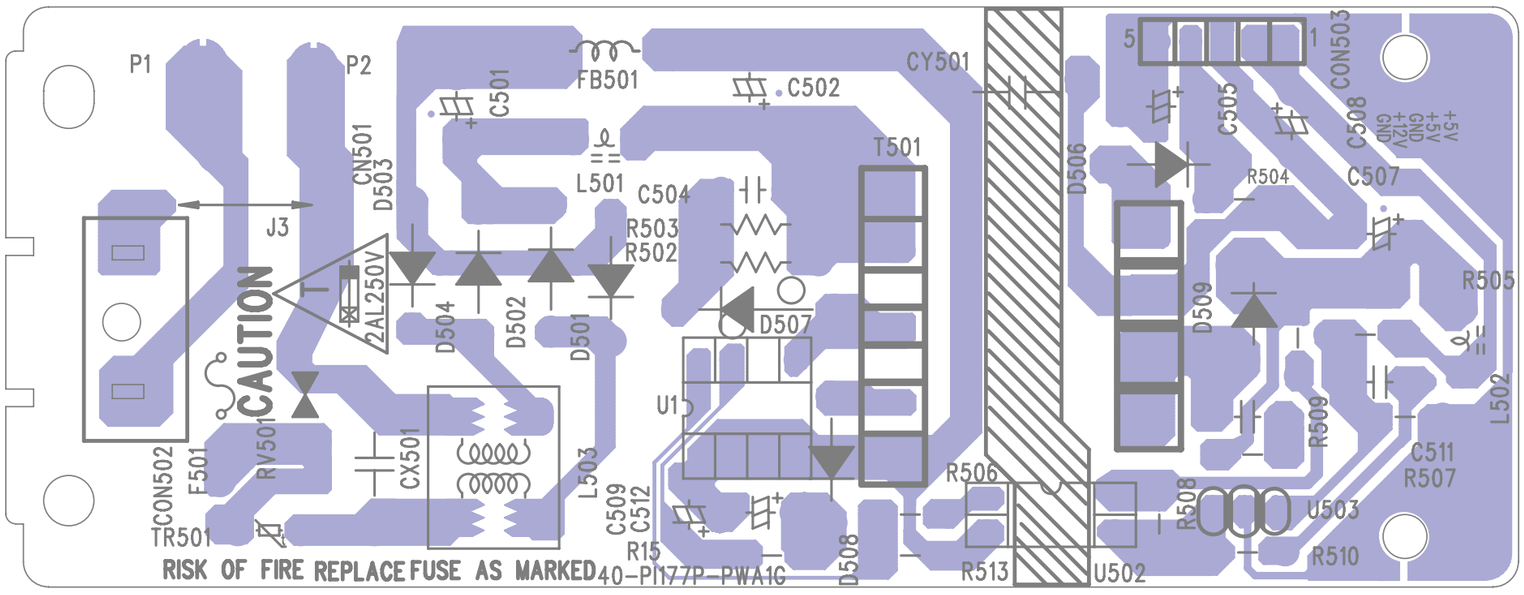

USB Board Print-layout (Bottom side):




Remark: Only for DVP3522 and has not karaoke output.

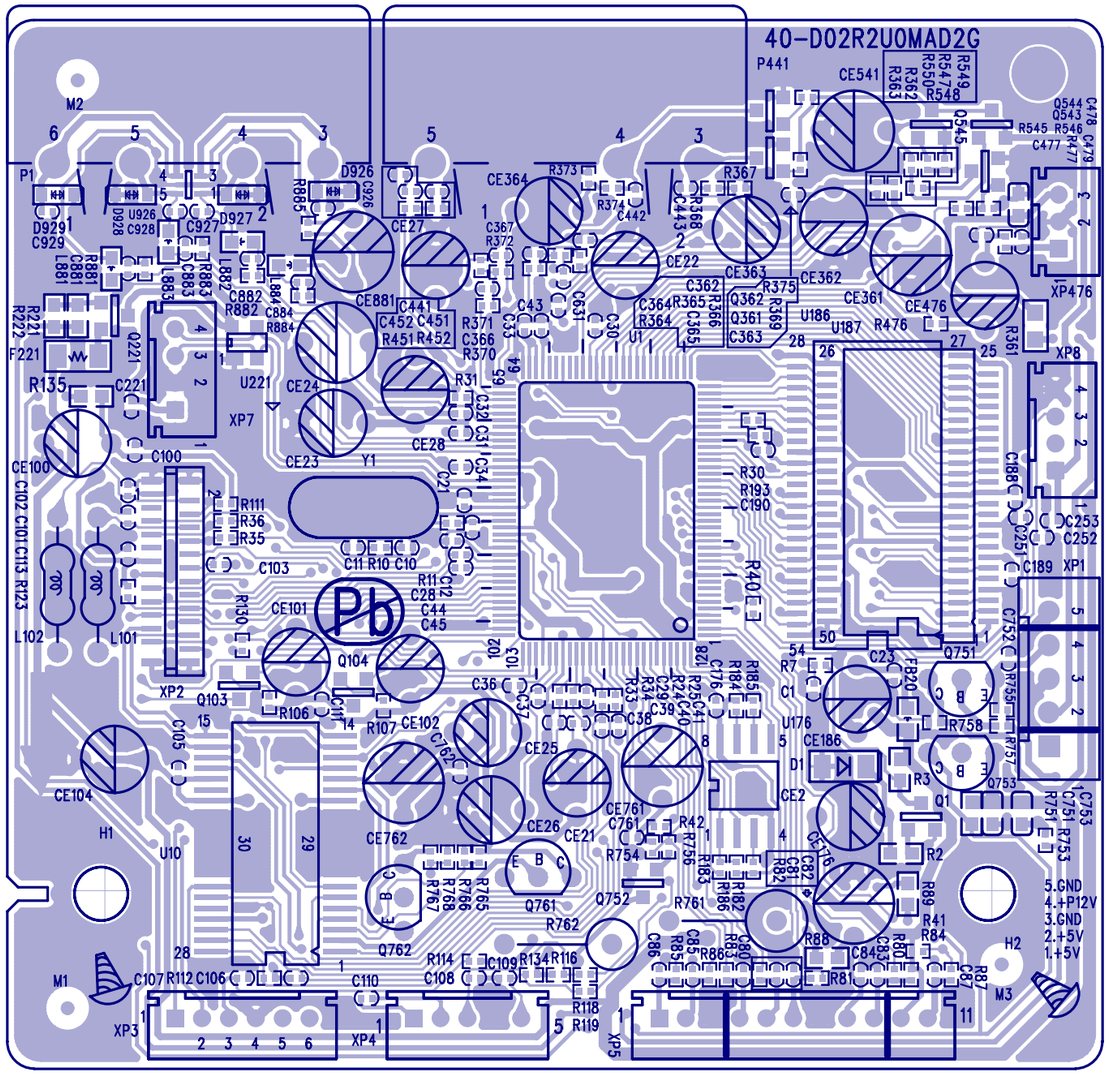
6-13

Power Board Print-layout (Bottom side):



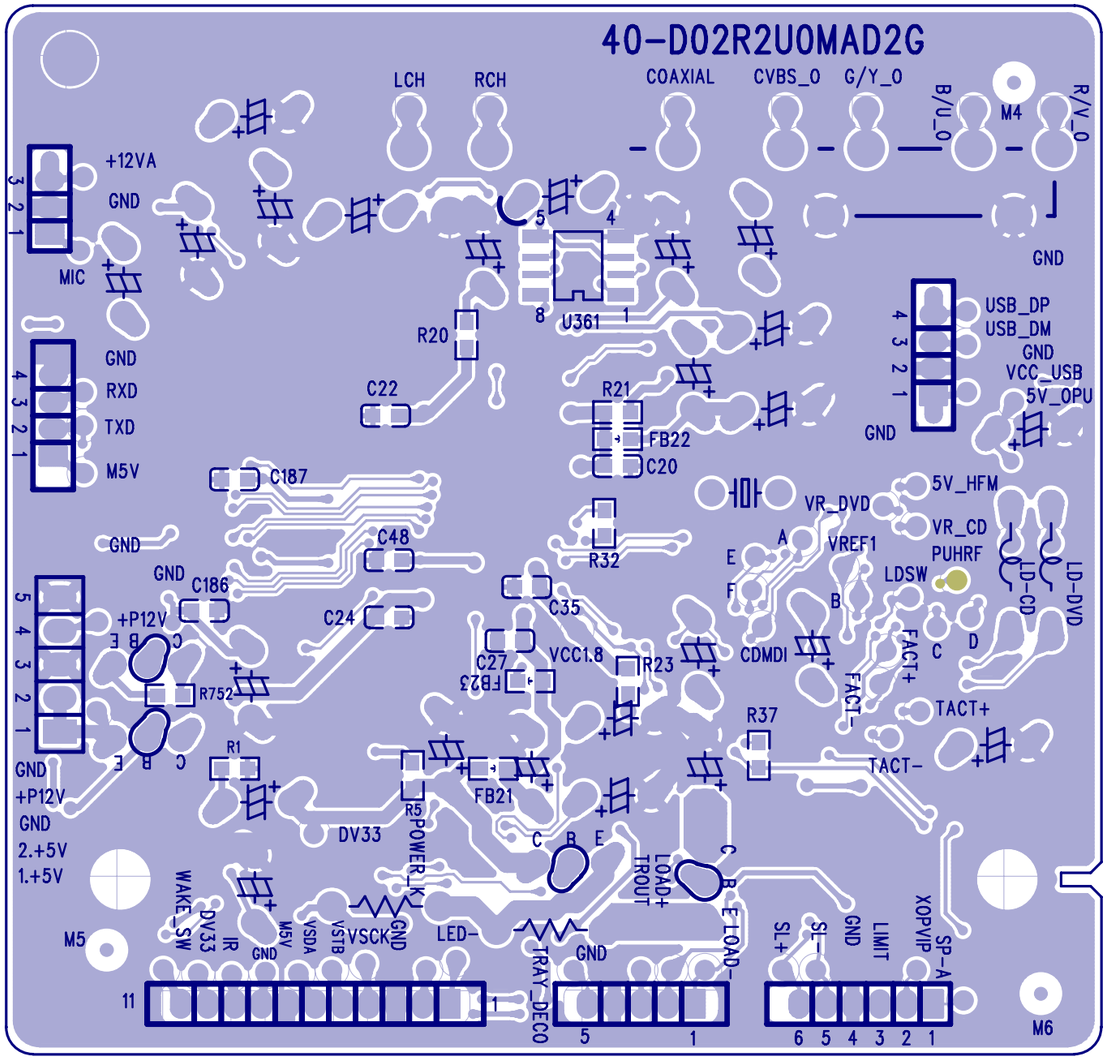
6-14

Main Board Print-layout (Top side):

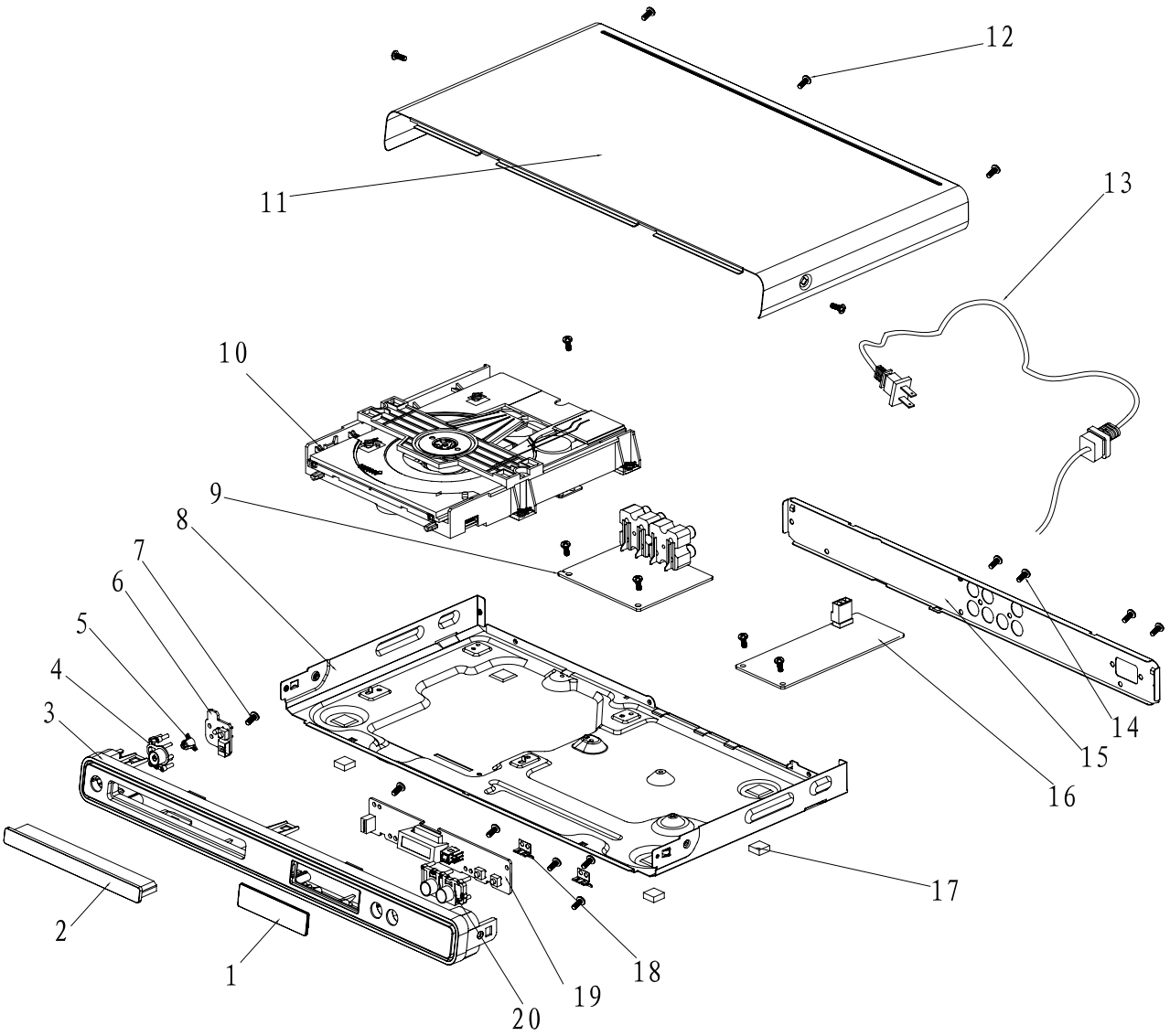


6-15

Main Board Print-layout (Bottom side):

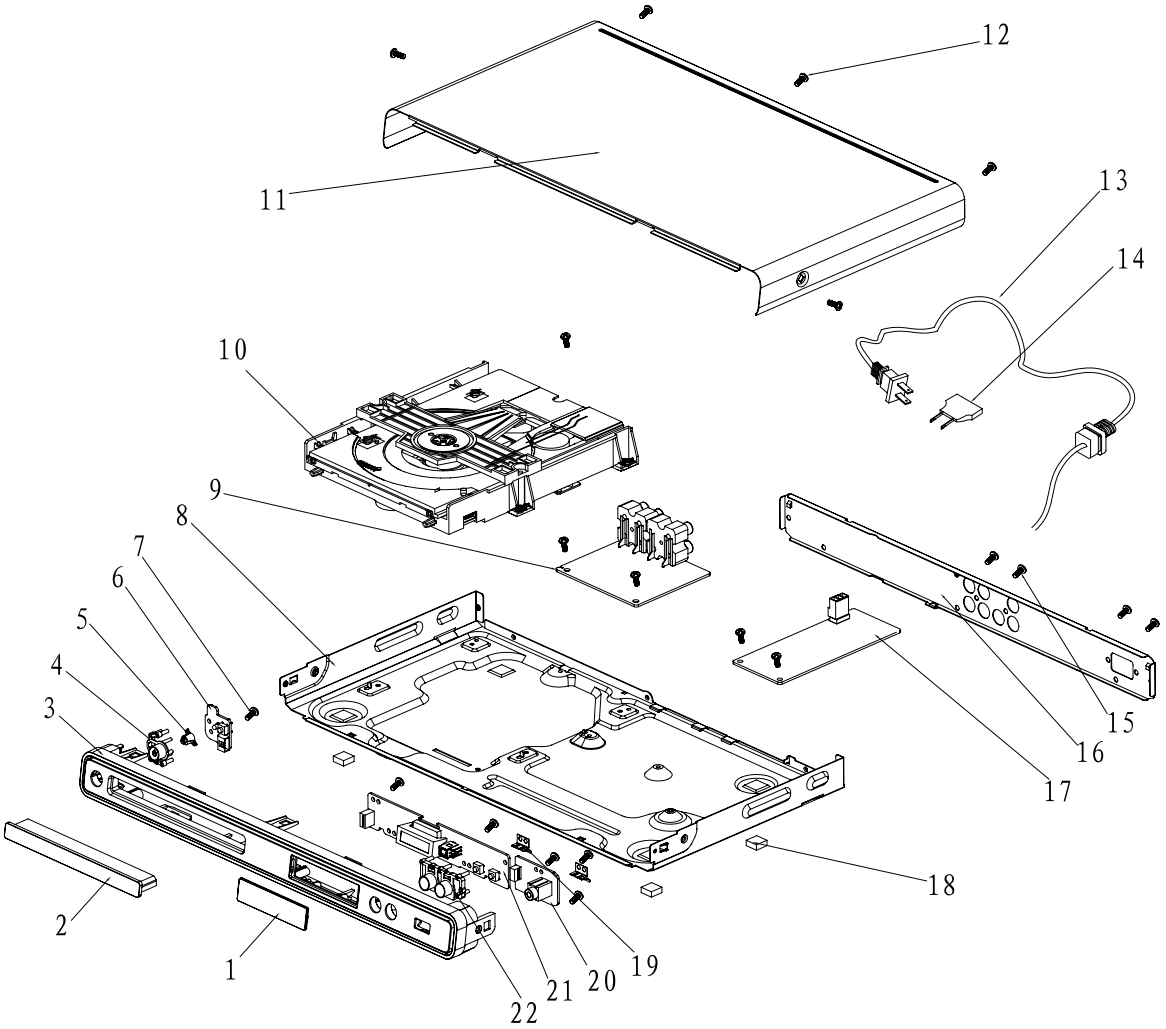


Exploded View for DVP3520/55:



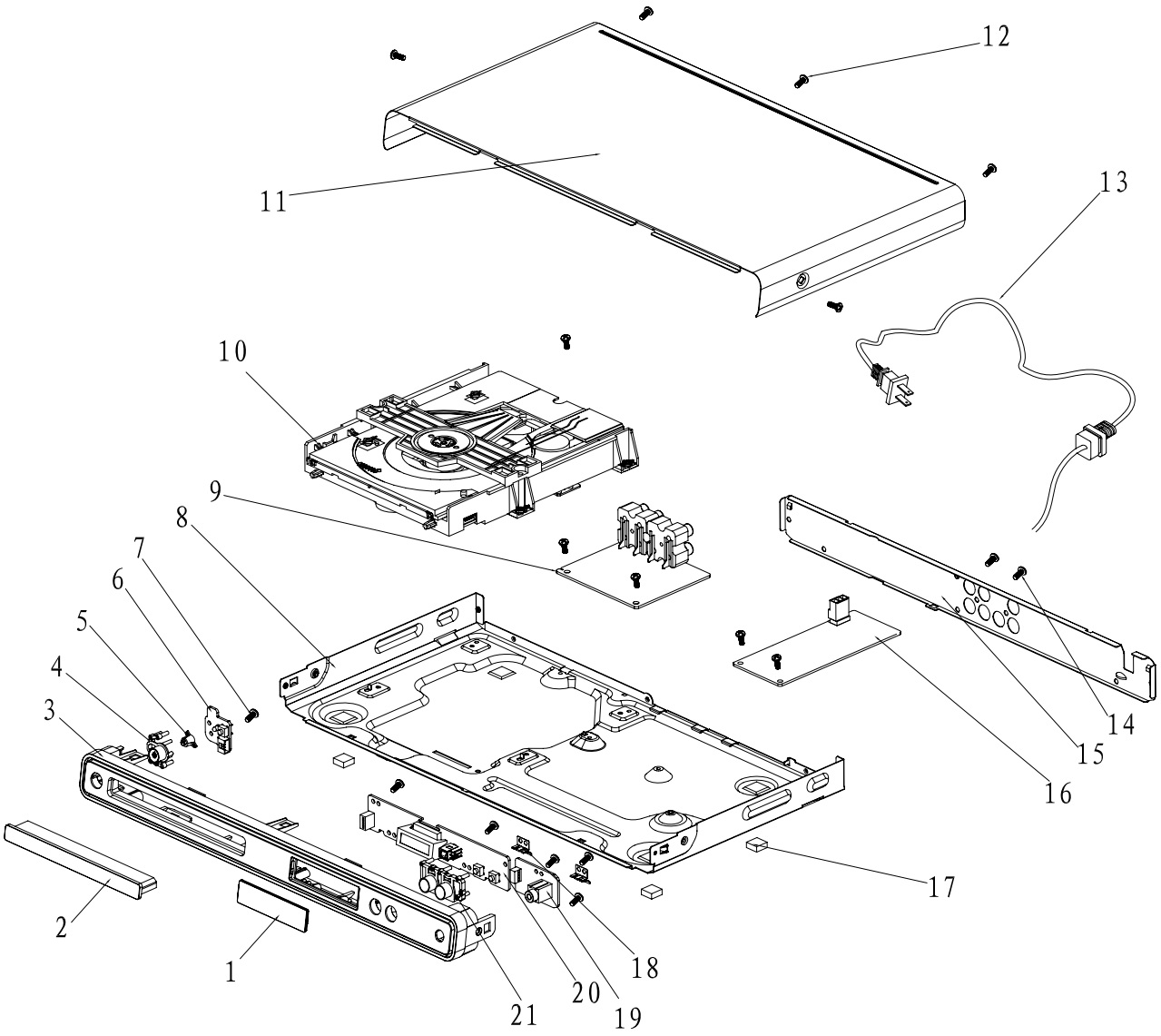

It is a general mechanical exploded view for DVP3520/55, pls refer to the model set for detailed information.
ASSY1 includes components:1.3.4.5.20

Exploded view for DVP3522/55:




It is general mechanical exploded view for DVP3522/55, pls refer to model set for detailed information.
ASSY1 includes components:1.3.4.5.22

Exploded view for DVP3520K/93:




It is general mechanical exploded view for DVP3520K/93, pls refer to model set for detailed information.
ASSY1 includes components:1.3.4.5.21

## DVP3520/55 SERVICE PARTLIST

### ELECTRICAL PARTLIST

| No | 12NC No. | Description | Q'ty |
|---|---|---|---|
| **9** | **996510031325** | **ASSY-MAIN BD** | **1** |
| ⚠ **16** | **996510031326** | **ASSY-PW BD** | **1** |
| **19** | **996510031321** | **ASSY-FB BD (+SW BD)** | **1** |
| **6** | **996510031324** | **ASSY-SW BD (+FB BD)** | **1** |
| **10** | **996510031315** | **LOADER** | **1** |
| OPU | 996510031313 | IM S76RFXP2 OPU | 1 |

### ASSY-MAIN BD COMPONENT PARTLIST

| NO | 12NC NO. | Description | Q'ty |
|---|---|---|---|
| D1 | 996510014439 | SMD. SWITCHING DIODE LL4148 | 1 |
| D926 | 996510020926 | IC PESD5V0S1BA | 1 |
| D927 | 996510020926 | IC PESD5V0S1BA | 1 |
| D928 | 996510020926 | IC PESD5V0S1BA | 1 |
| D929 | 996510020926 | IC PESD5V0S1BA | 1 |
| L101 | 996500014082 | COIL CHOKE 10UH +/-10% | 1 |
| L102 | 996500014082 | COIL CHOKE 10UH +/-10% | 1 |
| Q1 | 996510009669 | SMD.TRANSISTOR MMBT3904LT1 NPN | 1 |
| Q103 | 996510021453 | SMD. TRANSISTOR MMBT8550CLT1 | 1 |
| Q104 | 996510021453 | SMD. TRANSISTOR MMBT8550CLT1 | 1 |
| Q361 | 996510009669 | SMD.TRANSISTOR MMBT3904LT1 NPN | 1 |
| Q362 | 996510009669 | SMD.TRANSISTOR MMBT3904LT1 NPN | 1 |
| Q543 | 996510009669 | SMD.TRANSISTOR MMBT3904LT1 NPN | 1 |
| Q544 | 996510009670 | TRANSISTOR SMT 3CG9012M | 1 |
| Q545 | 996510009670 | TRANSISTOR SMT 3CG9012M | 1 |
| Q751 | 996510031316 | PNP TRANSISTOR 3CA8550C | 1 |
| Q752 | 996510009669 | SMD.TRANSISTOR MMBT3904LT1 NPN | 1 |
| Q761 | 996510031316 | PNP TRANSISTOR 3CA8550C | 1 |
| Q762 | 996510031316 | PNP TRANSISTOR 3CA8550C | 1 |
| U1 | 996510031314 | MPEG IC SPHE8202RQ-D LQFP128 | 1 |
| U10 | 996510009674 | IC AM5888IC | 1 |
| U176 | 996510031293 | 16M FLASH 86MHZ MX25L1605DM2 | 1 |
| U186 | 996510031282 | 4*16M SDRAM EM638165TS -6T | 1 |
| U361 | 996500032494 | IC AS4558M | 1 |
| Y1 | 996510009675 | 27MCL20PF | 1 |

### ASSY-PW BD COMPONENT PARTLIST

| NO | 12NC NO. | Description | Q'ty |
|---|---|---|---|
| D501 | 996510011047 | DIODE IN4007 | 1 |
| D502 | 996510011047 | DIODE IN4007 | 1 |
| D503 | 996510011047 | DIODE IN4007 | 1 |
| D504 | 996510011047 | DIODE IN4007 | 1 |
| D506 | 996500014043 | DIODE FR102 (FAST RECOVERY) | 1 |
| D507 | 996510011047 | DIODE IN4007 | 1 |
| D509 | 996500027866 | DIODE SR360 3A/60V | 1 |
| L501 | 996510009942 | COIL WIDTH | 1 |
| L502 | 996500032509 | COIL SL0811-6R8K2R4 | 1 |
| ⚠ T501 | 996510031322 | TRANSFORMER(BCK-03EE19) | 1 |
| U1 | 996510010953 | IC TNY176PN | 1 |
| U502 | 996500027867 | PHOTOCOUPLER PS2561L1-1-V(WF) | 1 |
| U503 | 996510010419 | REG DE PRECISAO AJUSTAVEL | 1 |
| | | | 1 |

### ASSY-FB BD COMPONENT PARTLIST

| NO | 12NC NO. | Description | Q'ty |
|---|---|---|---|
| LED1 | 996510020917 | J2808AG | 1 |
| REM301 | 996510020925 | HM338-12 RECEIVER MOD H=12MM | 1 |
| U301 | 996510009665 | IC ET6202 SOP-2 | 1 |

### MECHANICAL PARTLIST

| No | 12NC No. | Description | Q'ty |
|---|---|---|---|
| 11 | 996510031317 | TOP CABINET | 1 |
| ⚠ 13 | 996510001175 | POWER CORD | 1 |
| 15 | 996510031323 | BACK PANEL | 1 |
| 17 | 996510006463 | PAD | 4 |
| 2 | 996510031319 | FRONT DOOR | 1 |
| 8 | 996510027099 | BOTTOM PLATE | 1 |
| AVCABLE | 996510001106 | VIDEO CABLE 1500mm | 1 |
| Assy1 | 996510031318 | ASSY-FRONT CABINET | 1 |
| CON503 | 996510021451 | HS 3P TJC-3Y/SCN-3Y L=80MM | 1 |
| ⚠ PSOCKET | 996510020885 | POWER SOCKET transition | 1 |
| RC | 996510020681 | Remote Control | 1 |
| XP1 | 996510029492 | 4PIN CABLE | 1 |
| XP2 | 996510012752 | 24PIN HS | 1 |
| XP3 | 996510021448 | 6PIN HS | 1 |
| XP4 | 996510020919 | 5PIN CBL PH-5Y/JC20-5P L=160MM | 1 |
| XS301 | 996510010479 | 6PIN HS L=120MM | 1 |

### SCREWS LIST:

| No | 12NC No. | Description | Q'ty |
|---|---|---|---|
| 7 | — | S/T SCREW B 2.6 X 8 BF | 6 |
| 12 | — | S/T SCREW B3 X 6 BF | 9 |
| 14 | — | S/T SCREW B 3 X 7 BF | 5 |

## DVP3522/55 SERVICE PARTLIST

### ELECTRICAL PARTLIST

| No | 12NC No. | Description | Q'ty |
|---|---|---|---|
| **9** | **996510031885** | **ASSY-MAIN BOARD** | **1** |
| ⚠ **17** | **996510031883** | **ASSY-POWER BOARD** | **1** |
| **20** | **996510031876** | **ASSY-USB BOARD** | **1** |
| **21** | **996510031321** | **ASSY-FB BD (+SW BD)** | **1** |
| **6** | **996510031324** | **ASSY-SW BD (+FB BD)** | **1** |
| **10** | **996510031315** | **LOADER** | **1** |
| OPU | 996510031313 | IM S76RFXP2 OPU | 1 |

### ASSY-MAIN BD COMPONENT PARTLIST

| NO | 12NC NO. | Description | Q'ty |
|---|---|---|---|
| D1 | 996510014439 | SMD. SWITCHING DIODE LL4148 | 1 |
| D926 | 996510020926 | IC PESD5V0S1BA | 1 |
| D927 | 996510020926 | IC PESD5V0S1BA | 1 |
| D928 | 996510020926 | IC PESD5V0S1BA | 1 |
| D929 | 996510020926 | IC PESD5V0S1BA | 1 |
| L101 | 996500014082 | COIL CHOKE 10UH +/-10% | 1 |
| L102 | 996500014082 | COIL CHOKE 10UH +/-10% | 1 |
| Q1 | 996510009669 | SMD.TRANSISTOR MMBT3904LT1 NPN | 1 |
| Q103 | 996510021453 | SMD. TRANSISTOR MMBT8550CLT1 | 1 |
| Q104 | 996510021453 | SMD. TRANSISTOR MMBT8550CLT1 | 1 |
| Q221 | 996510022279 | PNP TRANSISTOR SOT-23PBSS5320T | 1 |
| Q361 | 996510009669 | SMD.TRANSISTOR MMBT3904LT1 NPN | 1 |
| Q362 | 996510009669 | SMD.TRANSISTOR MMBT3904LT1 NPN | 1 |
| Q543 | 996510009669 | SMD.TRANSISTOR MMBT3904LT1 NPN | 1 |
| Q544 | 996510009670 | TRANSISTOR SMT 3CG9012M | 1 |
| Q545 | 996510009670 | TRANSISTOR SMT 3CG9012M | 1 |
| Q751 | 996510031316 | PNP TRANSISTOR 3CA8550C | 1 |
| Q752 | 996510009669 | SMD.TRANSISTOR MMBT3904LT1 NPN | 1 |
| Q761 | 996510031316 | PNP TRANSISTOR 3CA8550C | 1 |
| Q762 | 996510031316 | PNP TRANSISTOR 3CA8550C | 1 |
| U1 | 996510031881 | MPEG IC SPHE8202R-D | 1 |
| U10 | 996510009674 | IC AM5888IC | 1 |
| U176 | 996510031878 | IC MX25L1605DM2 16M DVP3522/55 | 1 |
| U186 | 996510031282 | 4*16M SDRAM EM638165TS -6T | 1 |
| U221 | 996510013349 | HDMI USB ESD PYOTECTION IC | 1 |
| U361 | 996500032494 | IC AS4558M | 1 |
| Y1 | 996510009675 | 27MCL20PF | 1 |

### ASSY-PW BD COMPONENT PARTLIST

| NO | 12NC NO. | Description | Q'ty |
|---|---|---|---|
| D501 | 996510011047 | DIODE IN4007 | 1 |
| D502 | 996510011047 | DIODE IN4007 | 1 |
| D503 | 996510011047 | DIODE IN4007 | 1 |
| D504 | 996510011047 | DIODE IN4007 | 1 |
| D506 | 996500014043 | DIODE FR102 (FAST RECOVERY) | 1 |
| D507 | 996510011047 | DIODE IN4007 | 1 |
| D509 | 996500027866 | DIODE SR360 3A/60V | 1 |
| L501 | 996510009942 | COIL WIDTH | 1 |
| L502 | 996500032509 | COIL SL0811-6R8K2R4 | 1 |
| ⚠ T501 | 996510031322 | TRANSFORMER(BCK-03EE19) | 1 |
| U1 | 996510010953 | IC TNY176PN | 1 |
| U502 | 996500027867 | PHOTOCOUPLER PS2561L1-1-V(WF) | 1 |
| U503 | 996510010419 | REG DE PRECISAO AJUSTAVEL | 1 |

### ASSY-FB BD COMPONENT PARTLIST

| NO | 12NC NO. | Description | Q'ty |
|---|---|---|---|
| LED1 | 996510020917 | J2808AG | 1 |
| REM301 | 996510020925 | HM338-12 RECEIVER MOD H=12MM | 1 |
| U301 | 996510009665 | IC ET6202 SOP-2 | 1 |

### MECHANICAL PARTLIST

| No | 12NC No. | Description | Q'ty |
|---|---|---|---|
| 11 | 996510031886 | TOP COVER | 1 |
| ⚠ 13 | 996510001175 | POWER CORD | 1 |
| 16 | 996510031882 | BACK PLATE | 1 |
| 18 | 996510006463 | PAD | 4 |
| 2 | 996510031879 | FRONT DOOR | 1 |
| 8 | 996510027099 | BOTTOM PLATE | 1 |
| ASSY1 | 996510031884 | ASSY-FRONT DOOR | 1 |
| AV | 996510001106 | VIDEO CABLE 1500mm | 1 |
| CON503 | 996510010478 | TJC3-5Y/SCN-5P L=80MM | 1 |
| PSOCKET | 996510020885 | POWER SOCKET transition | 1 |
| RC | 996510020682 | Remote Control | 1 |
| XP2 | 996510012752 | 24PIN HS | 1 |
| XP3 | 996510021448 | 6PIN HS | 1 |
| XP4 | 996510020919 | 5PIN CBL PH-5Y/JC20-5P L=160MM | 1 |
| XP601 | 996510031877 | USB CABLE 4PIN/2.0MM 220MM | 1 |
| XS301 | 996510010479 | 6PIN HS L=120MM | 1 |

### SCREWS LIST:

| No | 12NC No. | Description | Q'ty |
|---|---|---|---|
| 7 | — | S/T SCREW B 2.6 X 8 BF | 6 |
| 12 | — | S/T SCREW B3 X 6 BF | 9 |
| 14 | — | S/T SCREW B 3 X 7 BF | 5 |

## DVP3520K/93 SERVICE PARTLIST

### ELECTRICAL PARTLIST

| No | 12NC No. | Description | Q'ty |
|---|---|---|---|
| **9** | **996510034192** | **ASSY-MAIN BOARD** | **1** |
| ⚠ **16** | **996510034193** | **ASSY-POWER BOARD** | **1** |
| **19** | **996510034184** | **ASSY-OK+USB BOARD** | **1** |
| **20** | **996510031321** | **ASSY-FB BD (+SW BD)** | **1** |
| **6** | **996510031324** | **ASSY-SW BD (+FB BD)** | **1** |
| **10** | **996510031315** | **LOADER** | **1** |
| OPU | 996510031313 | IM S76RFXP2 OPU | 1 |

### ASSY-MAIN BD COMPONENT PARTLIST

| NO | 12NC NO. | Description | Q'ty |
|---|---|---|---|
| D1 | 996510014439 | SMD. SWITCHING DIODE LL4148 | 1 |
| L101 | 996500014082 | COIL CHOKE 10UH +/-10% | 1 |
| L102 | 996500014082 | COIL CHOKE 10UH +/-10% | 1 |
| Q1 | 996510009669 | SMD.TRANSISTOR MMBT3904LT1 NPN | 1 |
| Q103 | 996510021453 | SMD. TRANSISTOR MMBT8550CLT1 | 1 |
| Q104 | 996510021453 | SMD. TRANSISTOR MMBT8550CLT1 | 1 |
| Q361 | 996510009669 | SMD.TRANSISTOR MMBT3904LT1 NPN | 1 |
| Q362 | 996510009669 | SMD.TRANSISTOR MMBT3904LT1 NPN | 1 |
| Q543 | 996510009669 | SMD.TRANSISTOR MMBT3904LT1 NPN | 1 |
| Q544 | 996510009670 | TRANSISTOR SMT 3CG9012M | 1 |
| Q545 | 996510009670 | TRANSISTOR SMT 3CG9012M | 1 |
| Q751 | 996510031316 | PNP TRANSISTOR 3CA8550C | 1 |
| Q752 | 996510009669 | SMD.TRANSISTOR MMBT3904LT1 NPN | 1 |
| Q761 | 996510031316 | PNP TRANSISTOR 3CA8550C | 1 |
| Q762 | 996510031316 | PNP TRANSISTOR 3CA8550C | 1 |
| U1 | 996510031314 | MPEG IC SPHE8202RQ-D LQFP128 | 1 |
| U10 | 996510009674 | IC AM5888IC | 1 |
| U176 | 996510034187 | IC 16M SPI FLASH DVP3520K/93 | 1 |
| U186 | 996510021455 | 64M SDRAM -6NS TSP54 | 1 |
| U361 | 996500032494 | IC | 1 |
| U926 | 996510021013 | IC PESD5VL4UG | 1 |
| Y1 | 996510009675 | 27MCL20PF | 1 |

### ASSY-PW BD COMPONENT PARTLIST

| NO | 12NC NO. | Description | Q'ty |
|---|---|---|---|
| D501 | 996510011047 | DIODE IN4007 | 1 |
| D502 | 996510011047 | DIODE IN4007 | 1 |
| D503 | 996510011047 | DIODE IN4007 | 1 |
| D504 | 996510011047 | DIODE IN4007 | 1 |
| D506 | 996500014043 | DIODE FR102 (FAST RECOVERY) | 1 |
| D507 | 996510011047 | DIODE IN4007 | 1 |
| D509 | 996500027866 | DIODE SR360 3A/60V | 1 |
| L501 | 996510009942 | COIL WIDTH | 1 |
| L502 | 996500032509 | COIL SL0811-6R8K2R4 | 1 |
| ⚠ T501 | 996510031322 | TRANSFORMER(BCK-03EE19) | 1 |
| U1 | 996510010953 | IC TNY176PN | 1 |
| U502 | 996500027867 | PHOTOCOUPLER PS2561L1-1-V(WF) | 1 |
| U503 | 996510010419 | REG DE PRECISAO AJUSTAVEL | 1 |

### ASSY-OK+USB BD COMPONENT PARTLIST

| NO | 12NC NO. | Description | Q'ty |
|---|---|---|---|
| U5 | 996500032494 | IC AS4558M | 1 |

### ASSY-FB BD COMPONENT PARTLIST

| NO | 12NC NO. | Description | Q'ty |
|---|---|---|---|
| LED1 | 996510020917 | J2808AG | 1 |
| REM301 | 996510020925 | HM338-12 RECEIVER MOD H=12MM | 1 |
| U301 | 996510009665 | IC ET6202 SOP-2 | 1 |

### MECHANICAL PARTLIST

| No | 12NC No. | Description | Q'ty |
|---|---|---|---|
| 11 | 996510034185 | TOP CABINET | 1 |
| ⚠ 13 | 996510021454 | 3C PLUG POWER CORD | 1 |
| 15 | 996510034191 | BACK PANEL | 1 |
| 17 | 996510006463 | PAD | 4 |
| 2 | 996510034194 | FRONT DOOR | 1 |
| 8 | 996510027099 | BOTTOM PLATE | 1 |
| ADDIFU | 996510034195 | IFU ADDENDUM PAGE | 1 |
| AV | 996510001106 | VIDEO CABLE 1500mm | 1 |
| Assy1 | 996510034186 | ASSY- FRONT DOOR | 1 |
| CON503 | 996510021451 | HS 3P TJC-3Y/SCN-3Y L=80MM | 1 |
| DBOX | 996510034188 | DISPLAY BOX | 1 |
| LBUFFER | 996510031349 | RIGHT PAPER PAD | 1 |
| PBAG | 996510018311 | ACCESSORY BAG | 1 |
| QSG | 996510034189 | QSG | 1 |
| RBUFFER | 996510031356 | LEFT PAPER PAD | 1 |
| RC | 996510021467 | REMOTE CONTROL | 1 |
| SGUAE | 996500033761 | SERVICE GUARANTEE | 1 |
| SLINE | 996500042132 | SERVICE HOT LINE | 1 |
| WCARD | 996510019880 | Worldwideguarantcard | 1 |
| | 996510012752 | HS | 1 |
| XP3 | 996510020921 | 6PIN CBL PH-6Y*2 20080#28 | 1 |
| XP4 | 996510020919 | 5PIN CBL PH-5Y/JC20-5P L=160MM | 1 |
| XP601 | 996510012678 | 3PIN CABLE WITCH SHIELD | 1 |
| XS301 | 996510010479 | 6PIN HS L=120MM | 1 |

### SCREWS LIST:

| No | 12NC No. | Description | Q'ty |
|---|---|---|---|
| 7 | — | S/T SCREW B 2.6 X 8 BF | 6 |
| 12 | — | S/T SCREW B3 X 6 BF | 9 |
| 14 | — | S/T SCREW B 3 X 7 BF | 5 |

# REVISION LIST

Version 1.0

* Initial release for DVP3520/55

Version 1.1

* Adding DVP3522/55

Version 1.2

* Adding DVP3520K/93