



DV927HD(RU)

Service Manual

Model version:SI10.04

Catalog

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Caution :

This Service Manual is applicable to DV917HD(RU)SI09.07.

Chapter One About Maintenance

1.1 Safety precautions

1.1.1 Power supply

When maintenance personnel are repairing DVD players, he should pay special attention to the power board with 220V AC and 330V DC which will cause hurt and damage to persons!

1.1.2 Precautions for antistatic

Movement and friction will both bring static electricity which causes serious damages to integrated IC. Though static charge is little, when a limited quantity of electric charge is added to large-scale integrated IC, as the capacitance is very small in the meantime, now the integrated IC is very much easy to be struck through by static electricity or the performance will decrease. Thus static electricity prevention is of extraordinary importance. The following are several measures to prevent static electricity:

1. Use a piece of electric conduction metal with the length of about 2 metres to insert into the earth, and Fetch the lead wire from the top of the surplus metal and connect to the required static electricity device. The length and depth of the metal embedded under the earth should be determined according to the wettability of the local soil. For humid places, it may be shorter, and longer and deeper for dry places. If possible, it can be distributed and layed in terms of “#” shape.
2. On operating table-board, the antistatic table cushion should be covered and grounded.
3. All devices and equipments should be placed on the antistatic table cushion and grounded.
4. Maintenance personnel should wear antistatic wrist ring which should be grounded.
5. Places around the operating position should also be covered with electric conduction cushion or Painted with antistatic paint.

1.1.3 Precautions for laser head

1. Do not stare at laser head directly, for laser emission will occur when laser head is working, which will Hurt your eyes!
2. Do not use wiping water or alcohol to clean laser head, and you may use cotton swab.

1.1.4 About placement position

1. Never place DVD player in positions with high temperature and humidity.
2. Avoid placing near high magnetic fields, such as loudspeaker or magnet.
3. Positions for placement should be stable and secure.

1.2 Maintenance method

1.2.1 Visualized method

Directly view whether abnormalities of collision, lack of element, joint welding, shedding welding, rosin joint, copper foil turning up, lead wire disconnection and elements burning up among pins of elements appear. Check power supply of the machine and then use hands to touch the casing of part of elements and check whether they are hot to judge the trouble spot. You should pay more attention when using this method to check in high voltage parts.

1.2.2 Electric resistance method

Set the multimeter in resistance position and test whether the numerical value of resistance of each point in the circuit has difference from the normal value to judge the trouble spot. But in the circuit the tested numerical value of resistance is not accurate, and the tested numerical value of integrated IC's pins can only be used for reference, so the elements should be broken down for test.

1.2.3 Voltage method

Voltage method is relatively convenient, quick and accurate. Set the multimeter in voltage position and test power supply voltage of the player and voltage of a certain point to judge the trouble spot according to the tested voltage variation.

1.2.4 Current method

Set the multimeter in current position and test current of the player of a certain point to judge the trouble spot. But when testing in current method, the multimeter should be series connected in the circuit, which makes this method too trivial and troublesome, so it is less frequently used in reality.

1.2.5 Cutting method

Cutting method should be combined with electric resistance method and voltage method to use. This method is mainly used in phenomena of short circuit and current leakage of the circuit. When cutting the input terminal voltage of a certain level, if voltage of the player rises again, it means that the trouble lies in this level.

1.2.6 Element substitution method

When some elements cannot be judged good or bad, substitution method may be adopted directly.

1.2.7 Comparison method

A same good PC board is usually used to test the correct voltage and waveform. Compared these data with those tested through fault PC board, the cause of troubles may be found.

Through the above maintenance method, theoretical knowledge and maintenance experience, all difficulties and troubles will be readily solved.

1.3 Required device for maintenance

- ◆ Digital oscillograph ($\geq 100\text{MHz}$)
- ◆ TV set
- ◆ SMD rework station
- ◆ Multimeter
- ◆ Soldering iron
- ◆ Pointed-nose pincers
- ◆ Cutting nippers
- ◆ Forceps
- ◆ Electric screw driver
- ◆ Terminal connecting cord
- ◆ Headphone
- ◆ Microphone

Chapter Two

Functions and Operation Instructions

2.1 Features

Compatible Disc Types:

#Digital video playback: DVD-Video, Super VCD, VCD compatibility

#MPEG-4 standard support: compatibility with DivX3.11, DivX4, DivX5, DivXPro, XviD compressed video files

#Digital audio playback: DVD-Audio, Super Audio CD, CD-DA and HDCD compatibility

#Fully compatible with compressed audio files such as Mp3, WMA and OGG Vorbis formats

#Playback of DVD, VCD, CD+G karaoke discs

#Digital graphic albums playback: Kodak Picture CD, JPEG compatibility

Audio:

#192 KHz/24 bit Audio Digital/Analog converter

#Coaxial and optical outputs for Dolby Digital/DTS/LPCM digital audio

#Mixed audio output for amplifier or TV connection

#Digital multi-channel decoders, providing Dolby Digital/DTS audio stream playing

#Built-in Dolby Pro Logic II decoder makes available to convert stereo signal into multi-channel

#MIC input for karaoke function

#Headphones output

Video:

#108 MHz/12 bit Video Digital/Analog converter

#HDMI interface provides high-definition image(720p/1080) and digital audio

#Progressive Scan Output(Y Pb Pr) producing flicker-free and stable images

#Composite, component(Y Cb Cr), S-Video and RGB/SCART outputs for various types of connections

#Capable of playing NTSC/PAL discs

#Multiple dubbings, angles, subtitles support

#Sharpness, gamma, brightness, contrast, hue, saturation adjustment

Others:

#Compatible disc types: CD-R/CD-RW, DVD-R/DVD-RW, DVD+R/DVD+RW

#USB interface to connect Mp3 player, flash card or digital camera

#KARAOKE+ system, expanding karaoke function

#Russia, CIS and Baltic States adaptation interface and filenames, ID3-tags and CD-Text support simplifies device operation

#"Memory" function enables to save the last point after stop playback

#"Q-Play" function provides direct playback and allows to skip commercial that is not possible to rewind

#"Virtual Keyboard" function provides more convenient DVD playback control

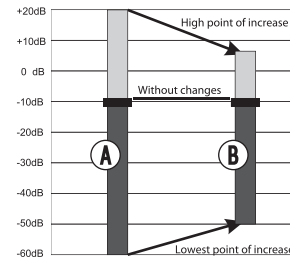
#"Browser" function provides easy access to playback control

#Automatic Screensaver function

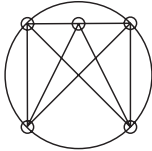
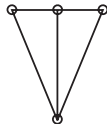
#Parental control function to protect children from watching inappropriate discs

#Super wide range of operating power supplies (~110-250V, 50/60Hz), automatic short circuit protection

Only Dolby Digital system provides for such a method of sound control. It uses the principle of compressing the acoustic signal's dynamic range while recording; therefore, while playing and inverse transformation (volume expansion) takes place. This is called "night" mode. The regulation limits are restricted, however, to avoid distortions of resultant signal. This is called "night" mode. The regulation limits are restricted, however, to avoid distortions of resultant signal.



Principle of compressing the acoustic signal's dynamic range.

	Dolby Digital	Dolby Pro Logic surround
Rear channel	Stereo 20 Hz-20 kHz	Mono channel with limited frequency range(100Hz-7 kHz)
Low-frequency channel(subwoofer)	Available,20-120 Hz	N/a
Sound field distribution	Multivariate 	From left to right, from right to left, from front to rear, from rear to front 
Channels	6 independent channels, each reproducing its own signal at a time	4 segmented channels. Only one channel is decoded at a time.
	Creates an optimum sound field with illusion of an equal distance from listener to each speaker.	The most cost-efficient way to ensure high-quality surround effect.
	Allows adjusting the decompression degree of sound information("night" mode).	Surround sound may be received from any signal source.
Miscellaneous	Possibility of programmable control of the decoder to transfer basses into low-frequency channel in systems equipped with broad-band speakers and a subwoofer.	Compatible with existing and future two-channel(stereo) formats.
	Undoubted progress in sound recording technology, especially important for program directors, film directors, sound engineers and actors.	Big progress in comparison with conventional stereo, the world's most popular surround format.

2.5 MISCELLANEOUS

2.5.1 Useful notes

- #To extend the service life of your DVD player make pauses of not less than 30 seconds between switching off and repeatedly switching on the DVD player.
- #Disconnect the DVD player from the wall outlet after shutdown.
- #Some DVD player's functions may not be applied to some discs.
- #Use supply sources of rated voltage, otherwise the DVD player may not function or be damaged.
- #In case of the DVD player's occasional stops, please switch the power supply off and then on again.

2.5.2 Trouble shooting

Please check probable causes of malfunction before addressing the service center.

Sign of trouble	Cause of trouble	Actions to eliminate the trouble
No sound	1.Poor audio cable connection 2.Disc dirty or damaged. 3.Sound disabled by the MUTE button.	1.Make proper connection. 2.Clean the disc. 3. Press the MUTE button.
No image	1.Poor video cable connection. 2.Incorrect settings of your TV set. 3.The DVD player's is in the progressive scan mode while your TV set does not support this mode.	1.Make proper connection. 2.Correct the settings of your TV set. 3.Place the DVD players in the interlaced scan mode through the DVD-receiver's menu.
Black and white image	1.Incorrect TV color system selected. 2.Color level on the TV set adjusted incorrectly.	1.Set the appropriate color system via the menu: SETUP > Image > TV scan. 2.Readjust the color system of your TV set.
Discs cannot be read	1.Disc not inserted. 2.Disc inserted incorrectly. 3. Condensate on the DVD players's laser head.	1. Insert the disc. 2.Install the disc with the label side facing up. 3. Switch the DVD players on without disc for an hour.
Microphone does not operate	1.Microphone is unplugged. 2. Low level of the microphone's sound volume.	1. Connect the microphone. 2. Adjust the level of the microphone's sound volume.
Remote control does not operate	1.Remote control is incorrectly directed at the DVD players's screen. 2.Distance to the DVD players is in excess of 8 meters. 3. Run out batteries.	1.Use the remote control according to the manual. 2. Decrease the distance to the DVD players. 3. Replace both batteries.
Some functions do not work	1. Disc is recorded incorrectly. 2.Incorrect key sequence. 3.Static voltage on the DVD players's housing.	1.Wait 5-10 seconds and the DVD players will automatically return to normal state. 2. Repeat the operation one more time. 3. Switch the DVD players off for 1-2 minutes and then switch it on again.
Unstable image	1.Incorrect TV set settings.	1.Correct the TV set settings.
Headphones do not operate	1.Headphones are not connected. 2. Low level of sound volume.	1.Connect the headphones. 2. Adjust the level of sound volume.
Not signal or incorrect signal from HDMI socket	1.Poor HDMI cable connection. 2.Display device don't support HDMI output mode. 3. Conditions of protection from copy not observed.	1. Make proper connection. 2. Select another HDMI output mode supported by display device . 3.Satisfy some details about conditions of signal recept to HDMI input in user manual.
Flutter echo during connection by HDMI socket	1.Result of incorrect frequency transformation posteriority frame from 50 Hz to 60 Hz.	1.Examine propriety of settings of DVD player and display device.

2.5.3 Specifications

Supported formats	DVD-Video,Super VCD,VCD,MPEG-4,DVD-Audio,CD-DA, CD+G,HDCD,MP3,WMA,Kodak Picture CD,JPEG	
Data medium	CD-R, CD-RW, DVD-R, DVD+R, DVD-RW, DVD+RW	
Inputs	Microphone input USB port	
Outputs	Audio Outputs	Analog outputs: Stereophonic output, 5.1CH output. (Only for DV915HD),2.1CH output(Only for DV911HD) Digital outputs: Coaxial audio output, Optical output.
	Video Outputs	S-Video output, composite output, component Y CbCr output, progressive scanning Y PbPr output, RGB/SCART output.
Video characteristics	Signal swing of composite video output: Signal swing fo S-Video output: Signal swing of component video output:	1.0Vp-p(75 Ω) 1.0Vp-p(75 Ω) C:0.286Vp-p(75 Ω) 1.0Vp-p(75 Ω) Cb/Cr:0.7Vp-p(75 Ω)
Audio characteristics	Frequency : Signal-to-noise ratio Common distortion harmonic:	20-20000Hz(±1 dB) >100(dB) <0.01%
Voltage range	~110-250V,50/60Hz	
Temperature requirement	5-35℃	
Moisture requirement	15-75%(not condensate)	

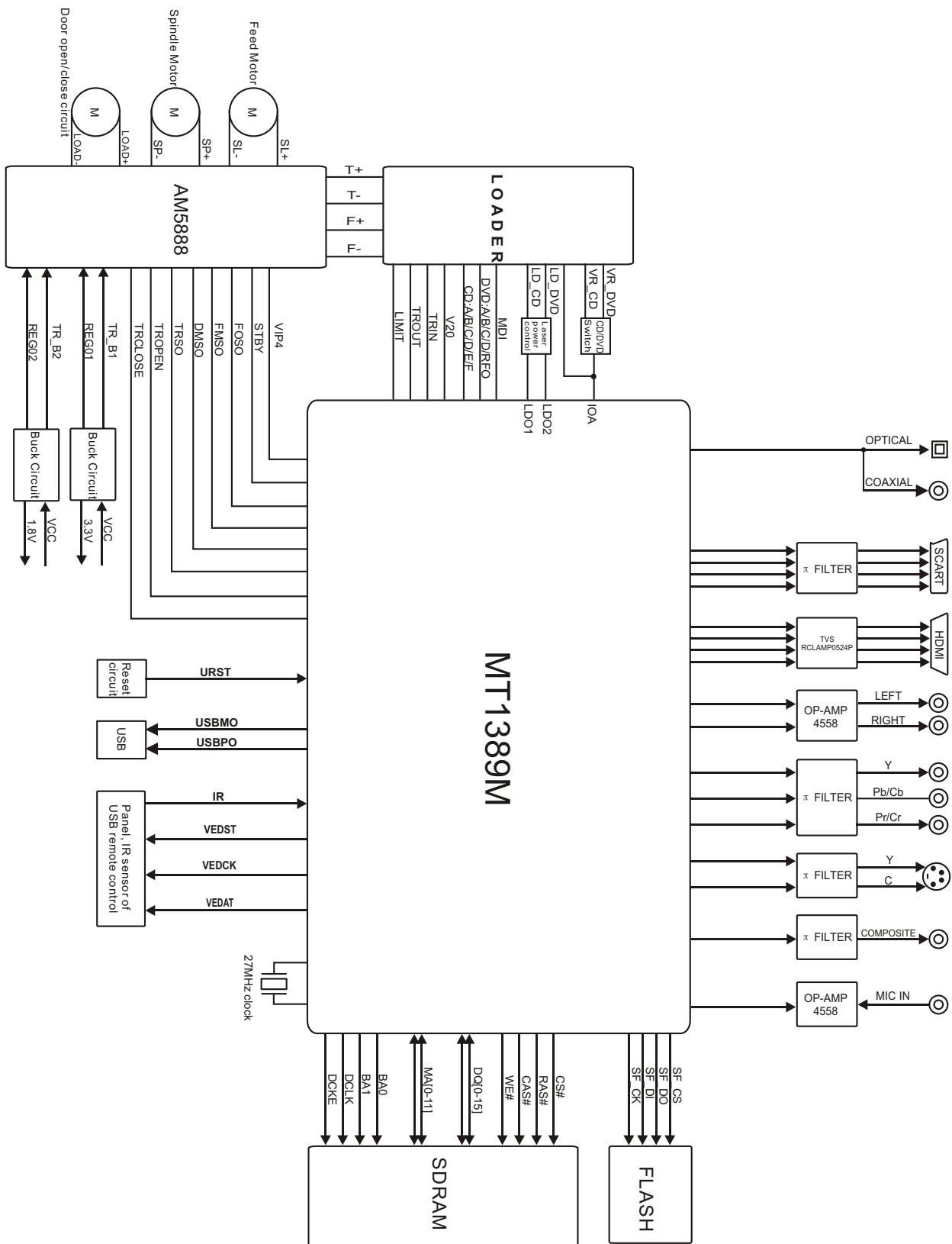
Model	Dimensions(mm)	Weight(kg)
DV917HD	380X 258 X39	1.9

Model	Power consumption(watt)
DV917HD	14

#We improve quality of our production permanently, that's why specification can change without notification.

#Some disks,was recording in different formats on different data mediums, can't playback or can playback incorrect over peculiarity of their record.

3.1.2 Block diagram for player.



Section Two Unit circuit principle

3.2.1 Servo circuit.

Servo circuit of this circuit adopts SONY chip and MTK decoding programme, and it is mainly composed of front-end signal processing, digital servo processing, digital signal processing chip MT1389M and driving circuit chip AM5888. Of which MT1389M is also main composition of decoding circuit. Block diagram of servo circuit is shown in figure 3.2.1.1:

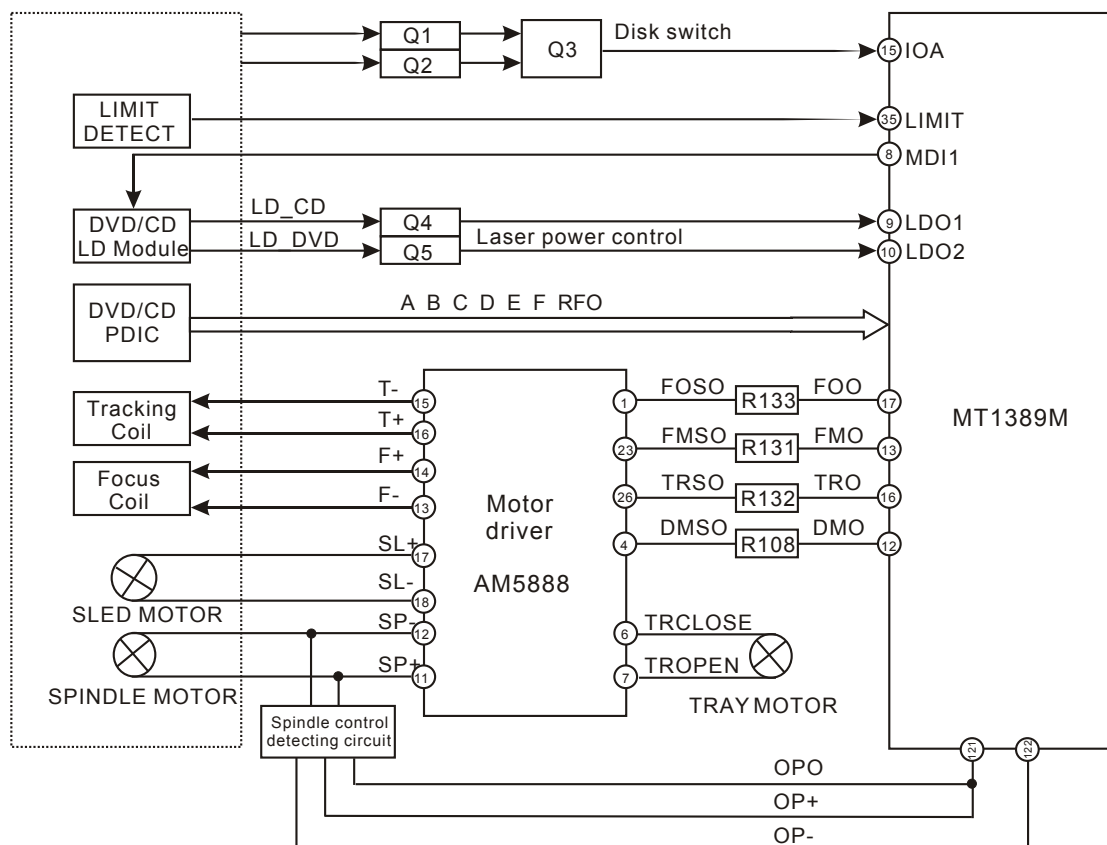


Figure 3.2.1.1 Block diagram of servo circuit

3.2.2 Decoding circuit.

Decoding circuit is mainly composed by MT1389M, SDRAM and FLASH, block diagram of circuit is shown in figure 3.2.2.1:

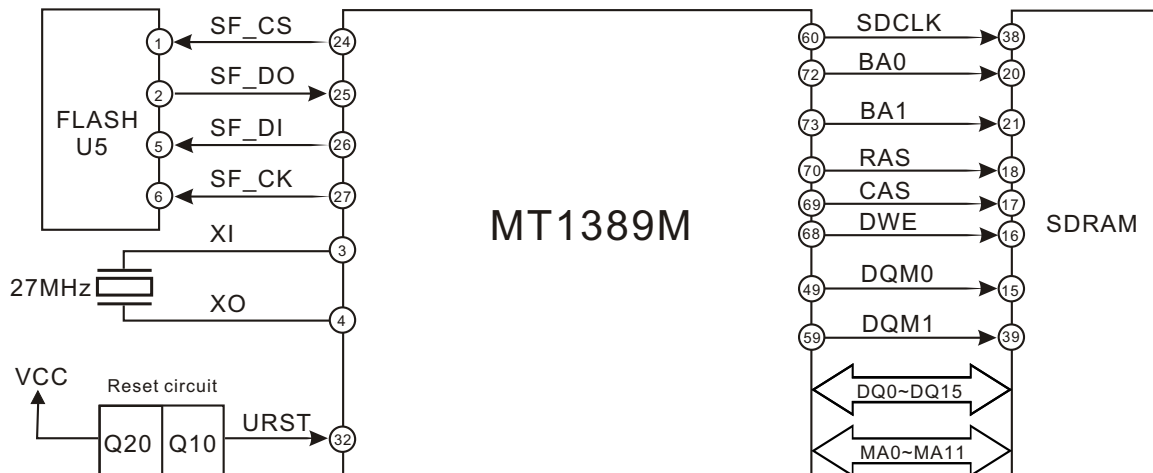


Figure 3.2.2.1 Block diagram of decoding circuit

3.2.3 Audio Circuit.

Block diagram for audio circuit is shown in figure 3.2.3.1.

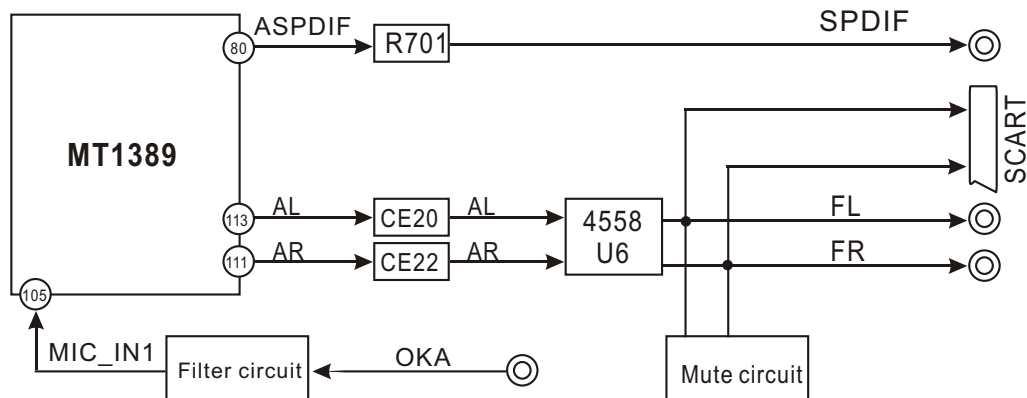


Figure 3.2.3.1 Block diagram of audio circuit

3.2.4 Video circuit .

MT1389M has built-in video D/A conversion circuit. Video output has R/B/G, Y/Pb/Pr, Y/Cb/Cr, CVBS and Y/C modes. However, R/B/G, Y/Pb/Pr, Y/Cb/Cr and Y/C can not output simultaneously, they need software to switch. CVBS is a individual output mode. And four channel video signal outputted by MT1389M outputs to corresponding terminals after video filtering and clamping. Block diagram of video signal is shown in figure 3.2.4.1:

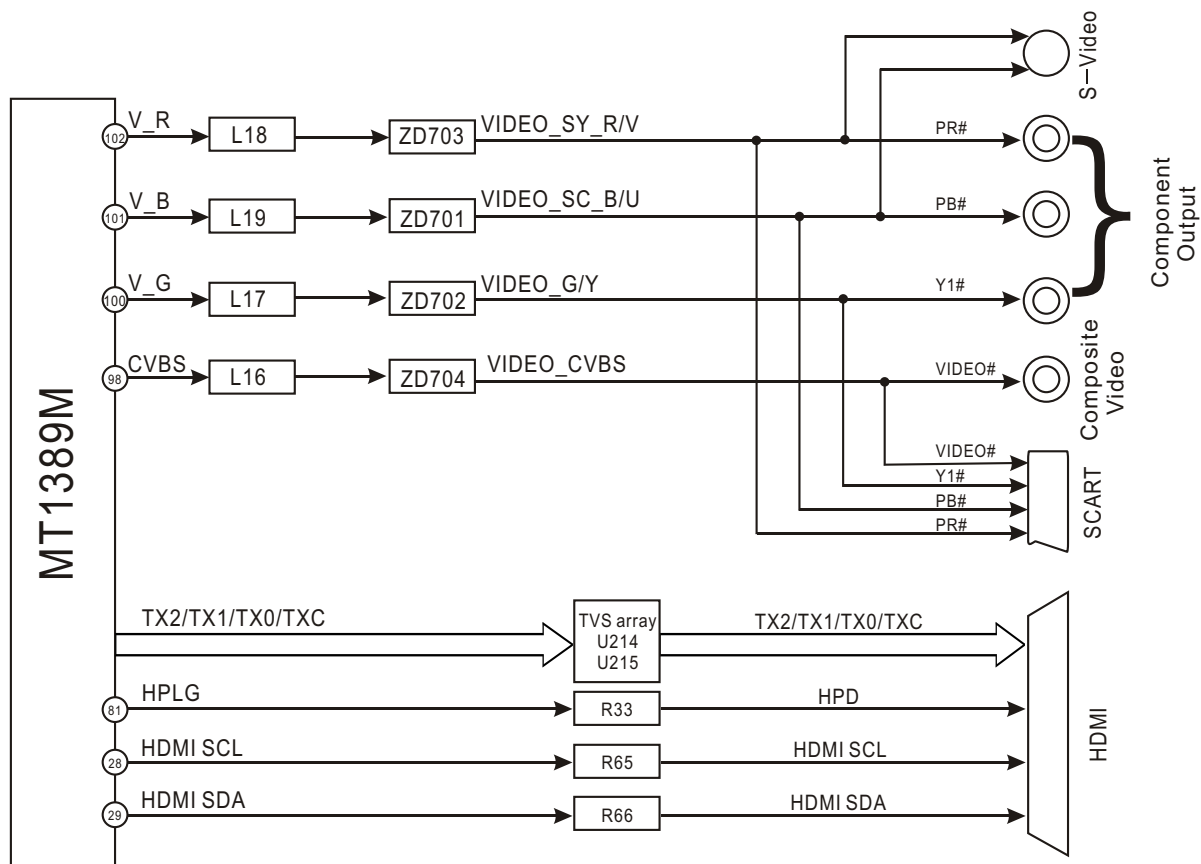


Figure 3.2.4.1 Block diagram of videosignal route

3.2.5 Power Circuit.

Block diagram of power circuit is shown in figure 3.2.5.1:

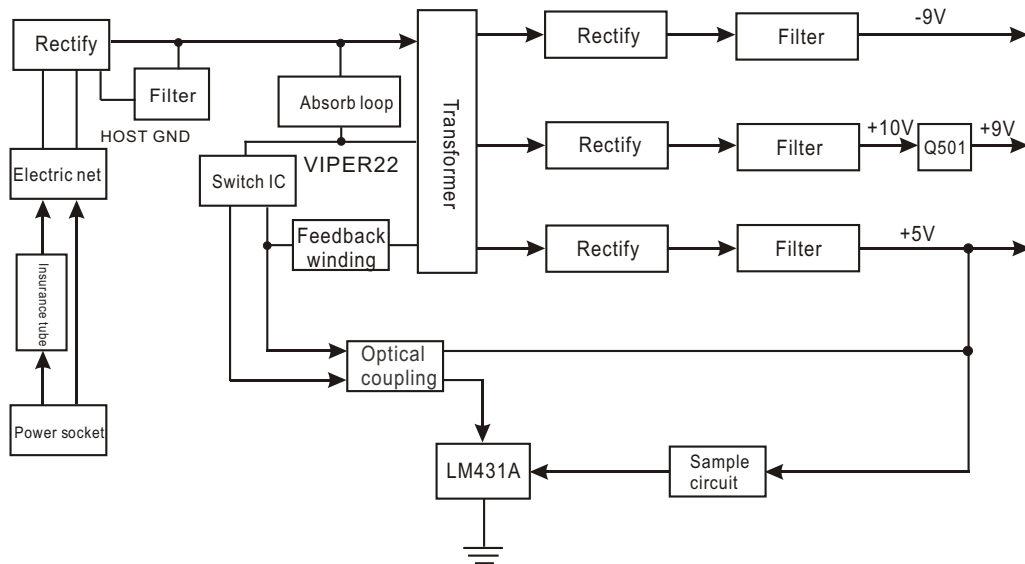
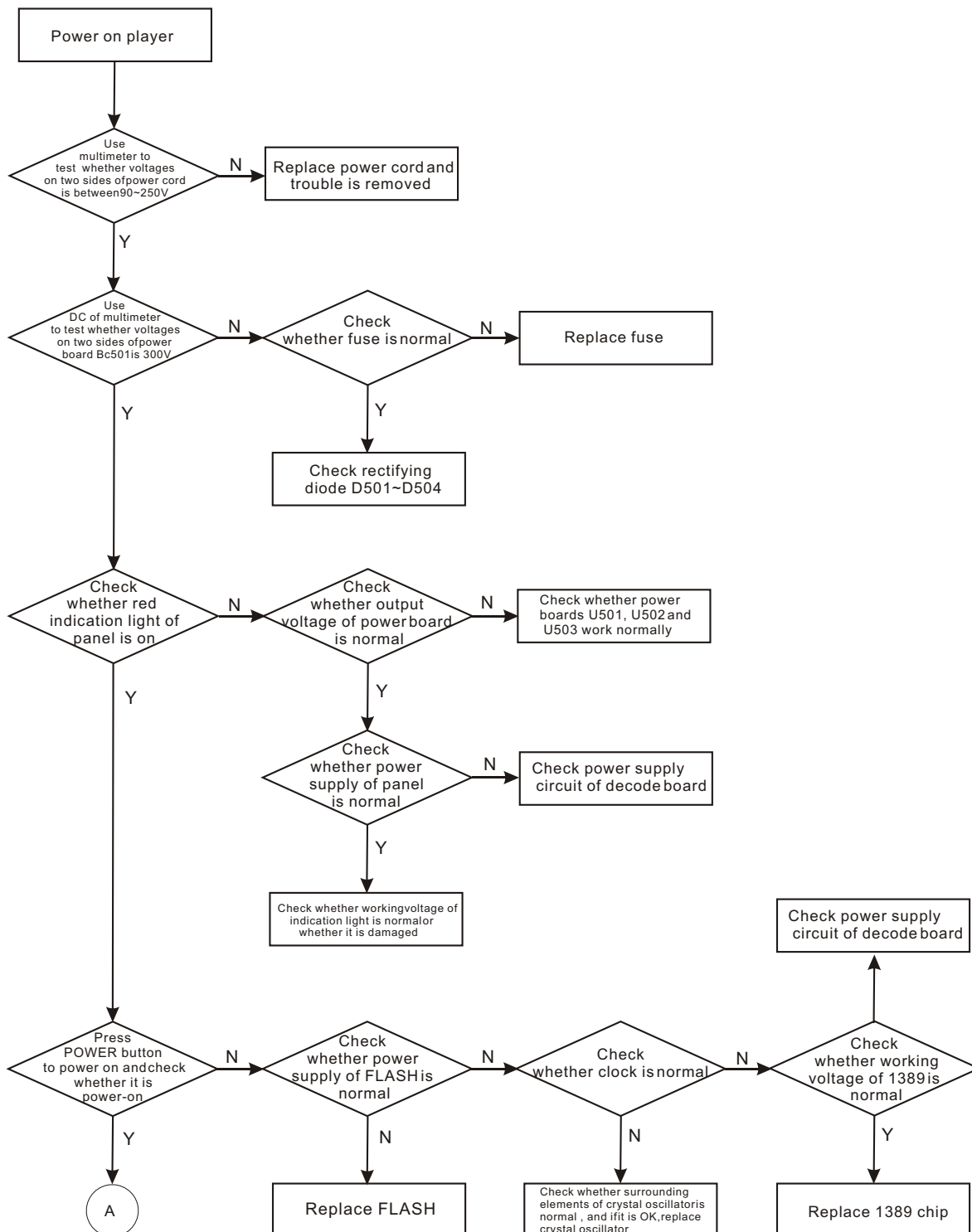
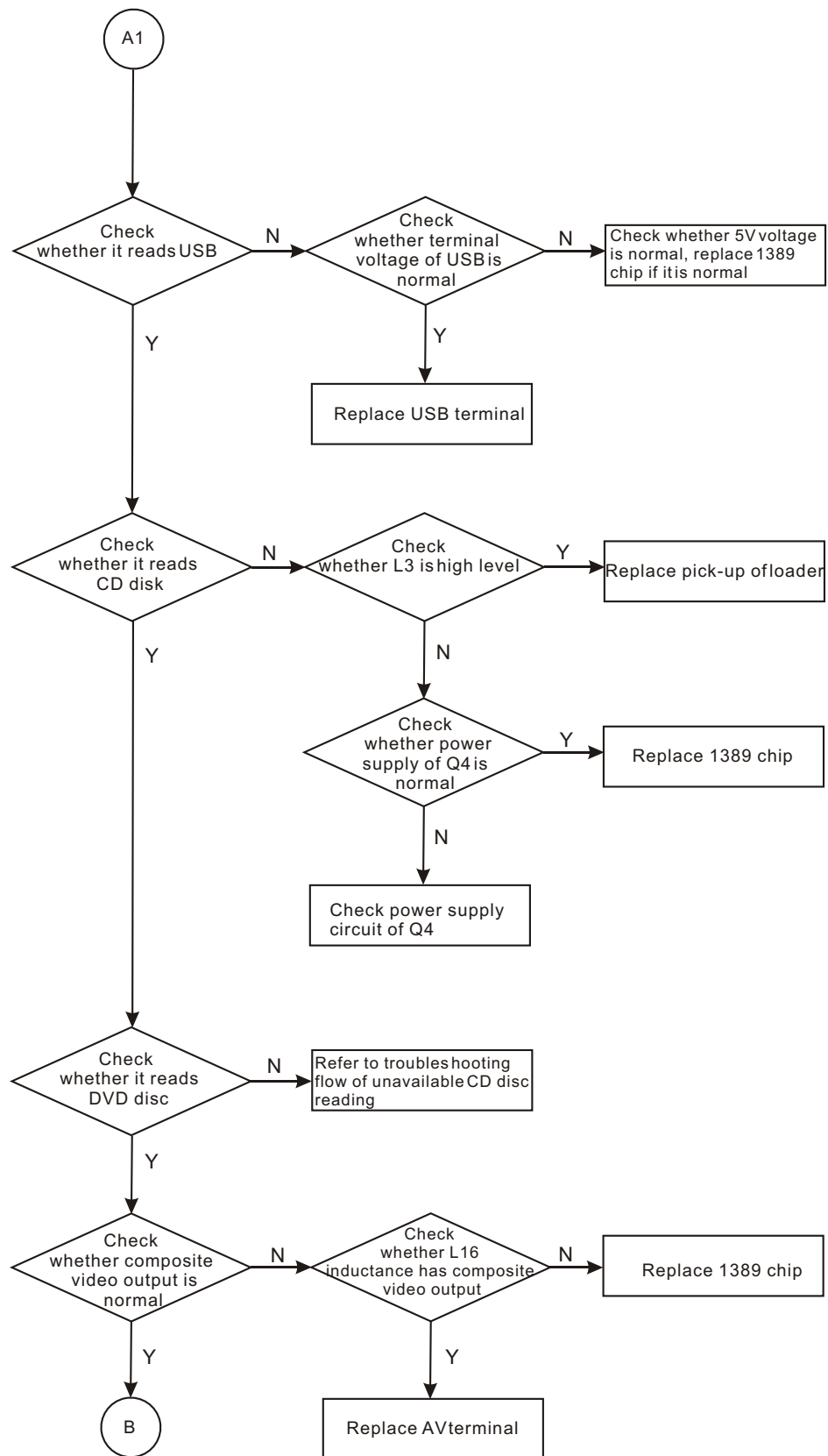
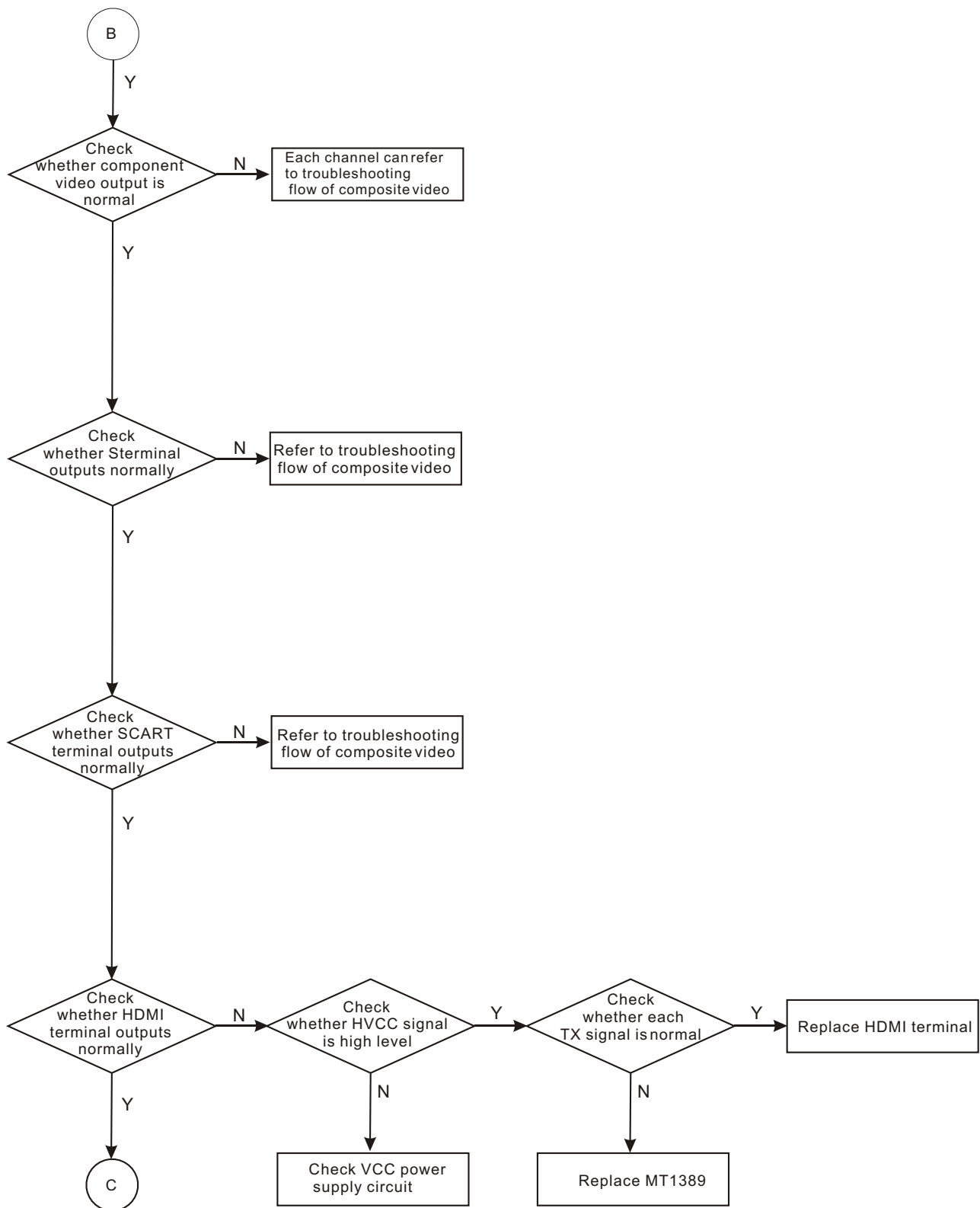


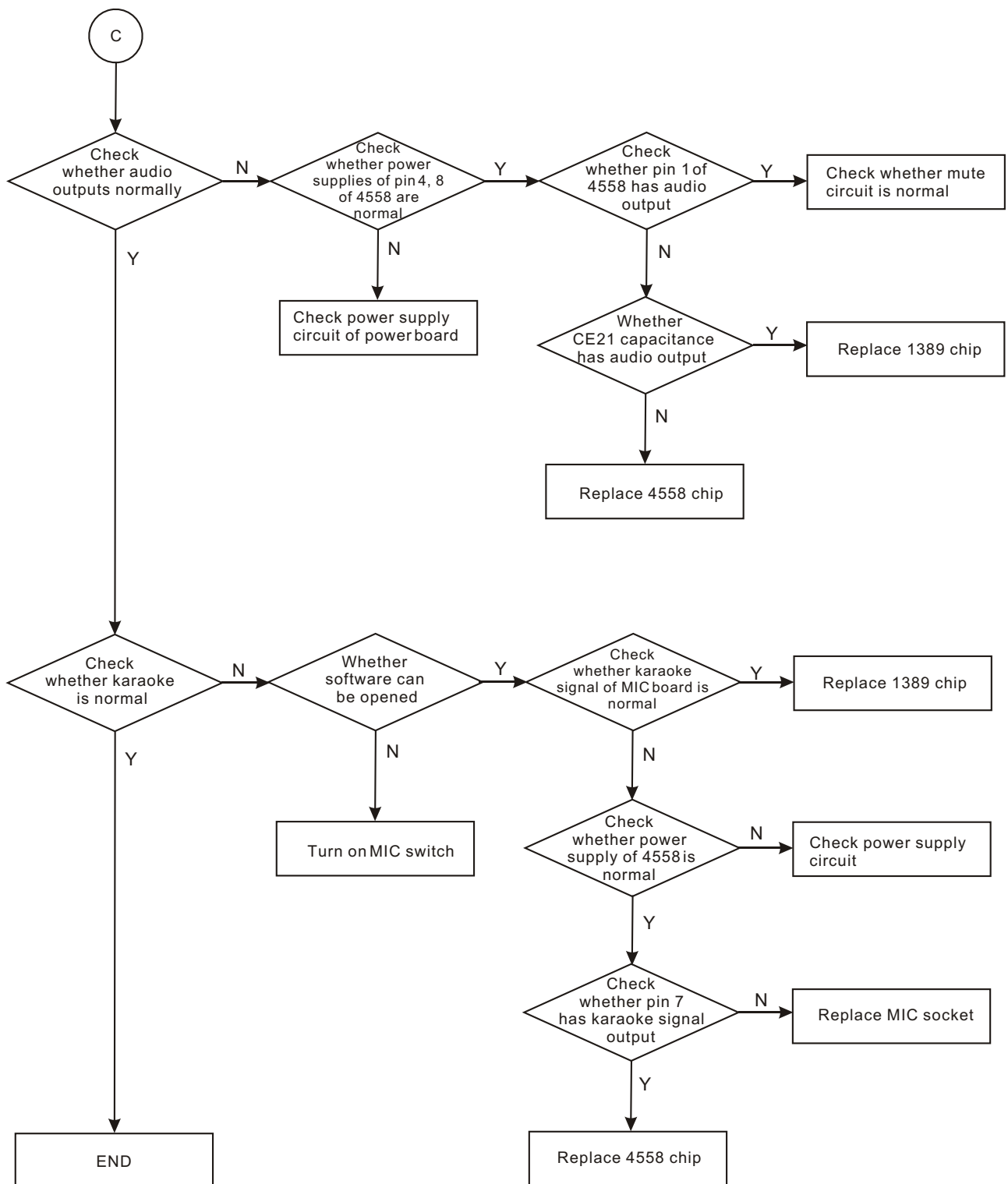
Figure 3.2.5.1 Block diagram of power circuit

Section Three Troubleshooting flow chart





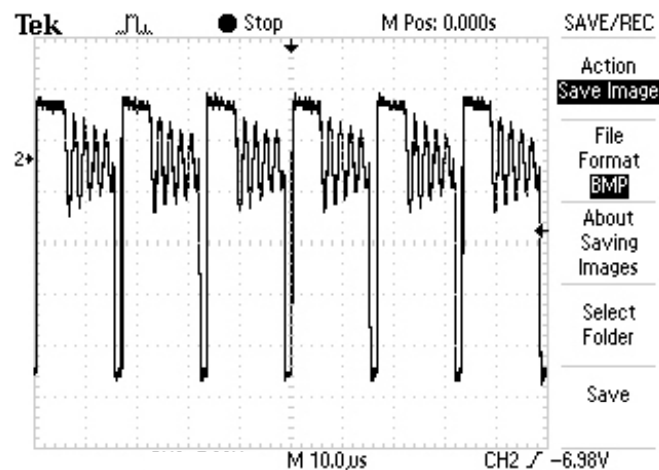




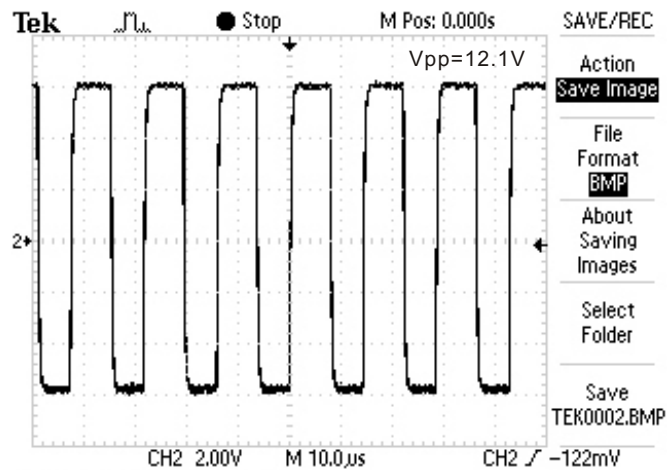
Section Four Waveform Diagram

This section collects signal waveform diagram of audio, video and each unit circuit with the purpose to help servicing personnel to judge where trouble lies in accurately and quickly to improve servicing skills. For the difference of oscillograph's type, model and tuner, a certain difference may exist, so the servicing personnel are expected to pay more attention to check in daily operation.

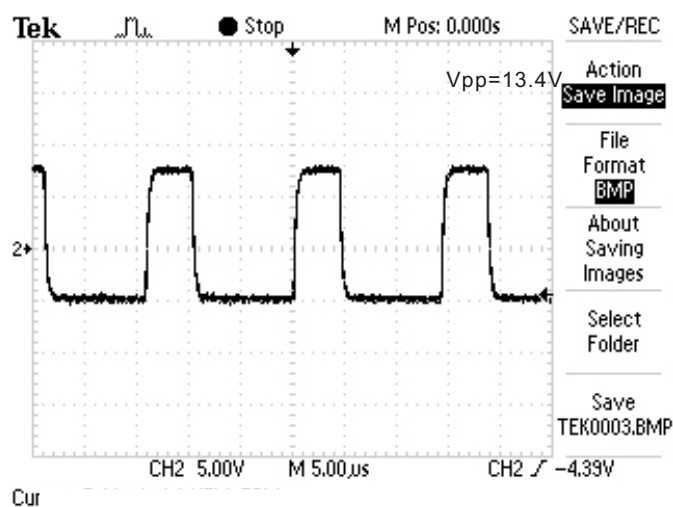
1. Waveform diagram for pulse DC of power board D510 anode.



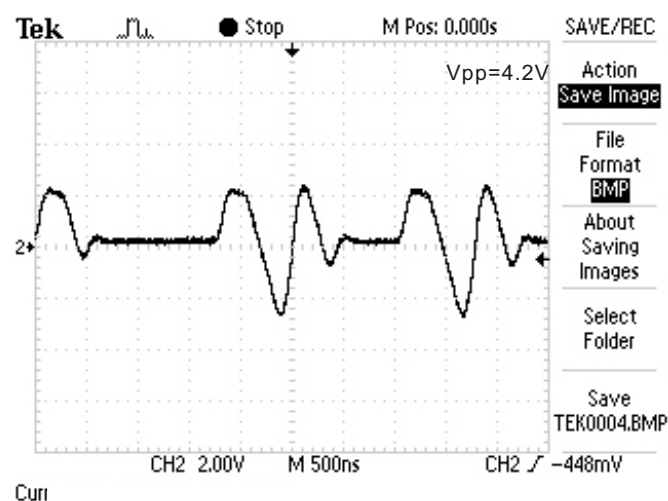
2. DMO waveform diagram (when there is DMSO motion)



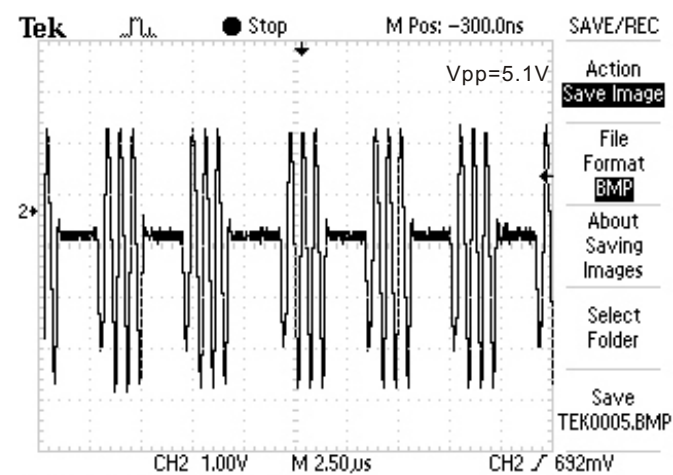
3. FMO waveform diagram (when pick-up has FMSO motion).



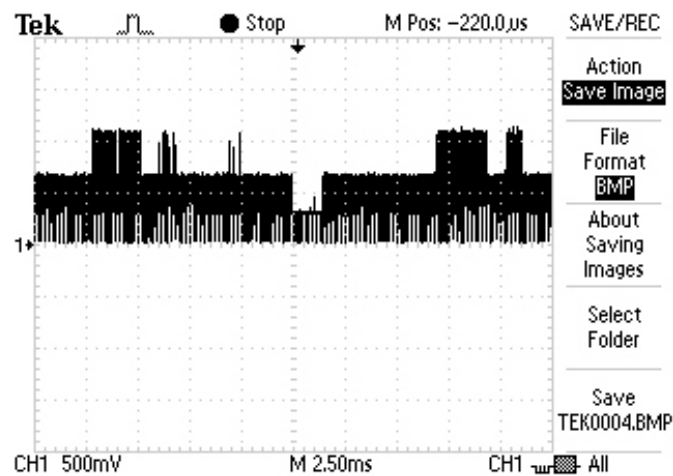
4. TRO waveform diagram (when pick-up has TRSO motion)



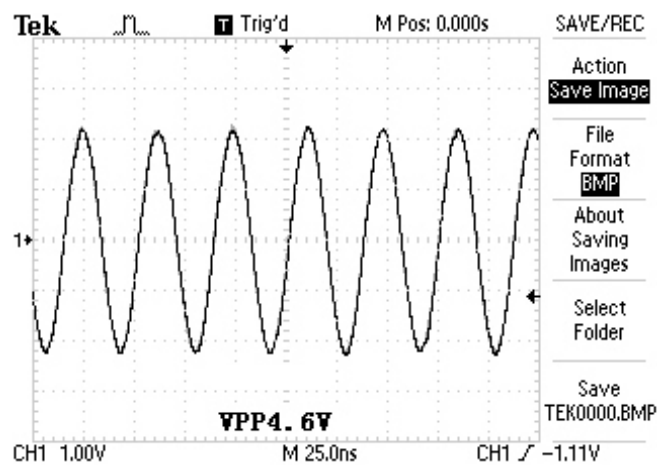
5. FOO waveform diagram (when pick-up has FOSO motion) .



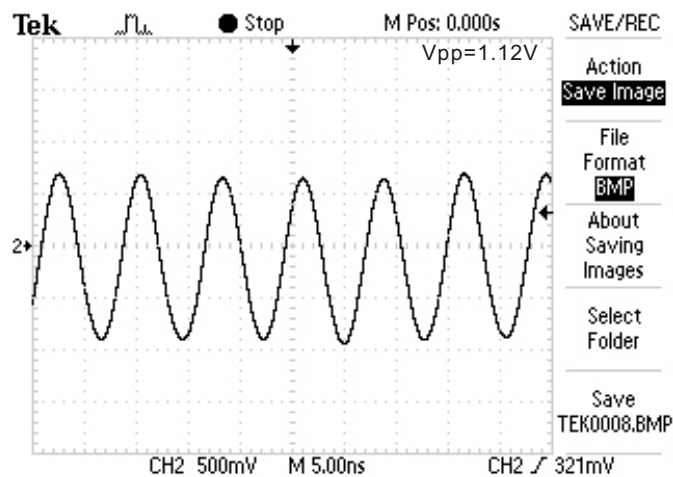
6. Video signal waveform diagram.



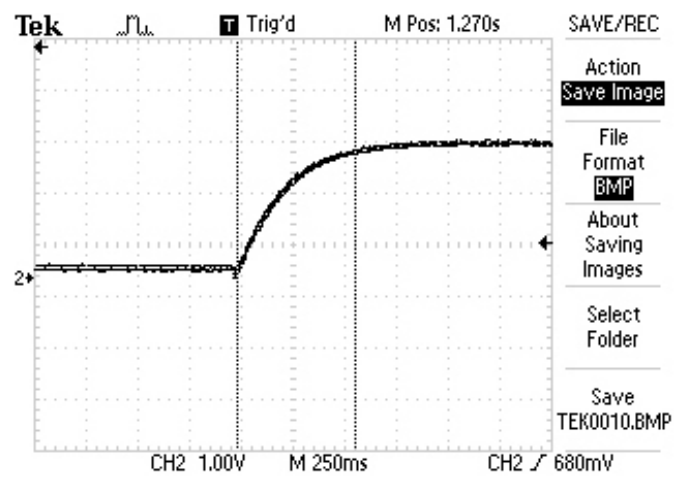
7. 1KHZ audio signal output waveform diagram(it is suggested to use test disc,if not,waveform tested will change at any time,which will affect your judgment).



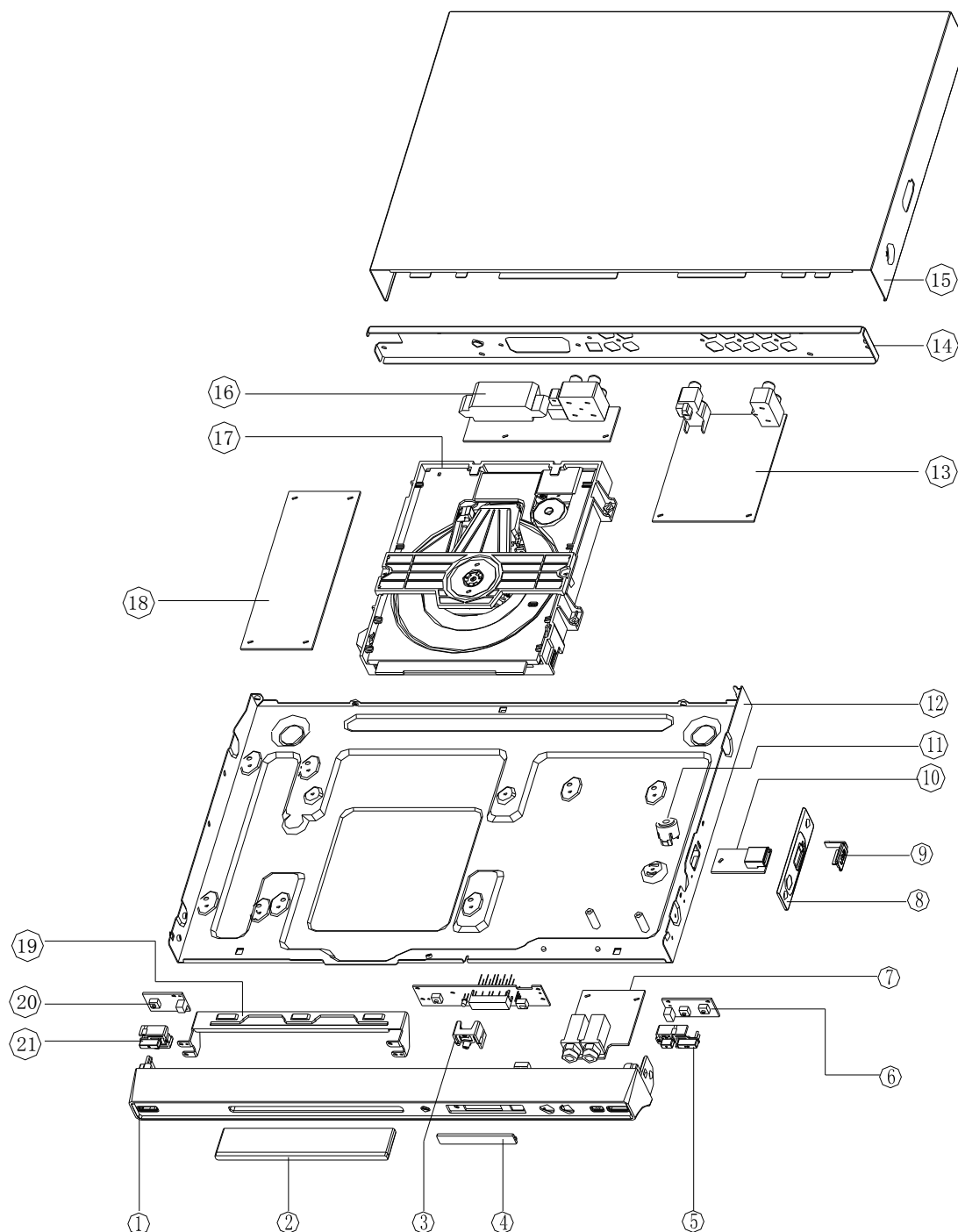
8. Waveform diagram of 27MHz(X1) clock.



9. URST waveform diagram.



Chapter Four Explosion Chart



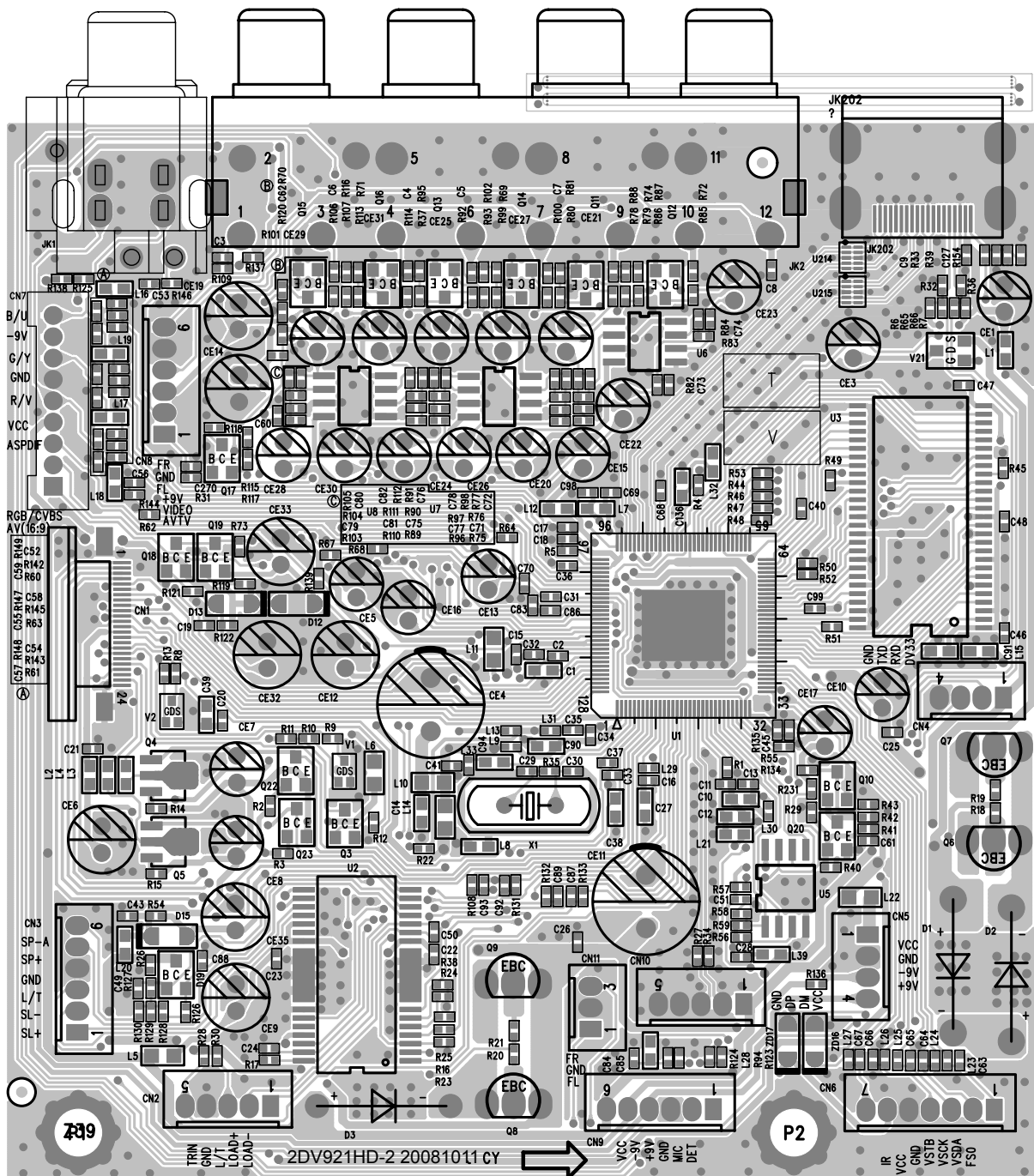
SERIAL NUMBER	MATERIAL CODE	MATERIAL NAME	SPECIFICATIONS	QUANTITY
1	200-917H00-01	PANEL	917HD(RU) BLACK	1
2	206-917H00-01	CD DOOR	917HD(RU) BLACK	1
3	235-917H00-01	OPEN/CLOSE KEY	917HD(RU) BLACK	1
4	254-917H00-01	PANEL MIRROR FILM	917HD(RU)	1
5	234-917H00-01	PLAY/PAUSE&STOP KEY	917HD(RU) BLACK	1
6	190-917H07-00	KEY BOARD	DV917HD-KEY.PCB V2.0	1
7	832-091730-0	MIC BOARD	DV917HD-MIC.PCB V2.0	1
8	273-924H13-02	USB COVER	917HD(RU)	1
9	518-0USB02-0	USB COVER	917HD(RU)	1
10	832-924H03-0	USB BOARD	USB.PCB-V1.0	1
11	283-331108-0	PILLAR	917HD(RU) BLACK	1
12	303-917H03-00	BOTTOM COVER	917HD(RU)	1
13	821-051621-0	DECODER BOARD	917HD(RU)	1
14	301-917H03-00	BACK COVER	917HD(RU)	1
15	302-917H03-00	TOP COVER	917HD(RU)	1
16	832-610S27-1	SCART BOARD	CX9-OUT.PCB V2.0	1
17	820-030401-01	DVD LOADER	ASA-8812-B01-01	1
18	832-091710-0	POWER BOARD	SKY-P0917 V1.0	1
19	315-917H24-0	METAL FRAME OF PANEL	917HD(RU)	1
20	832-917H16-0	POWER KEY BOARD	DV917HD-POWER.PCB V2.0	1
21	230-917H00-01	POWER KEY	917HD(RU) BLACK	1

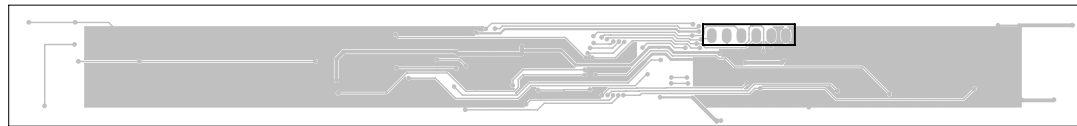
Chapter Cinque

PCB Board&Circuit Diagram

Section One PCB Board

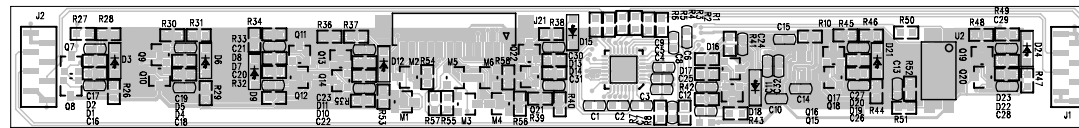
5.1.1 Surface layer of Decode Board(2DV921HD-2) 821-051621-0

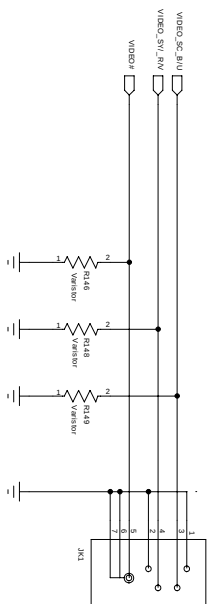
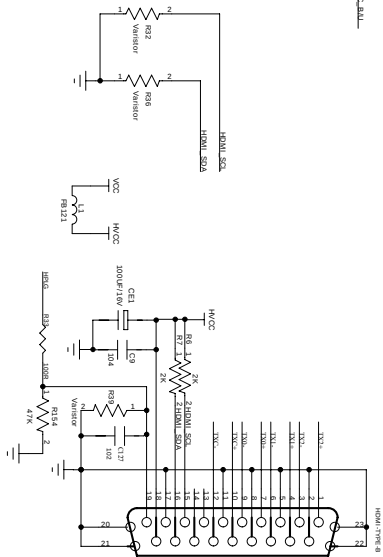
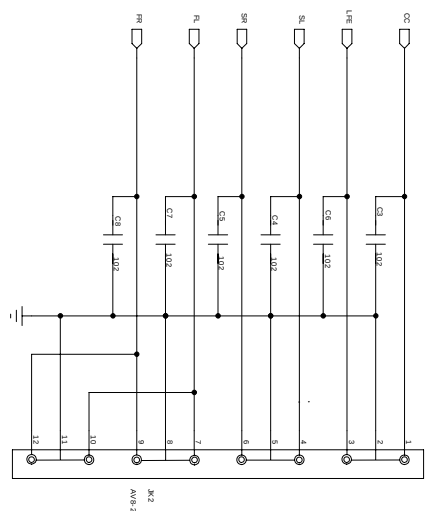
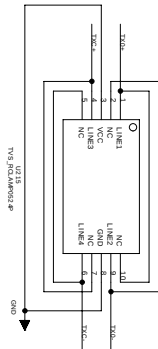
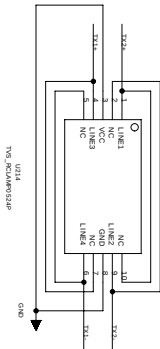
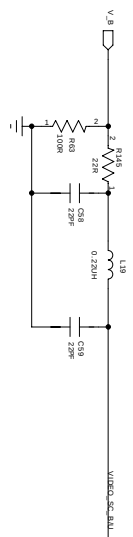
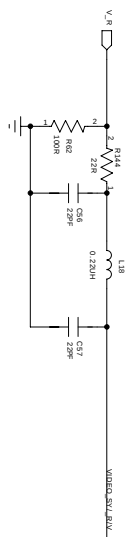
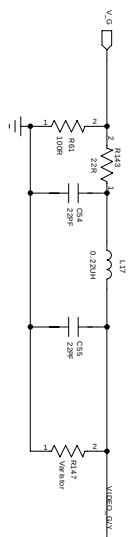
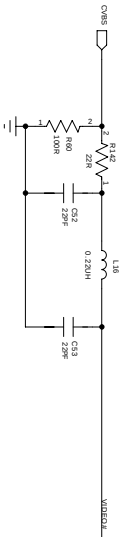
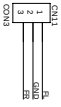
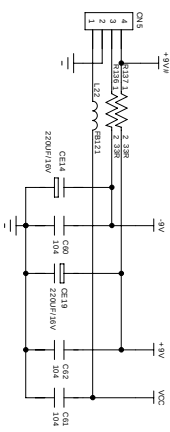
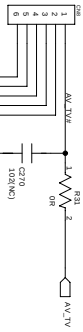
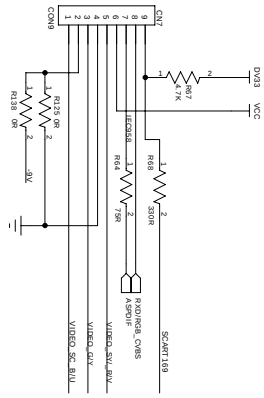
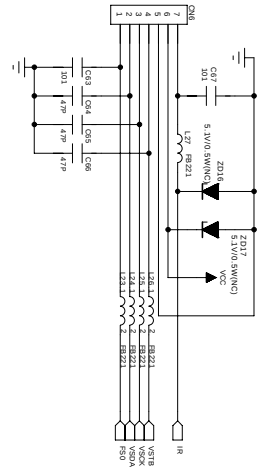


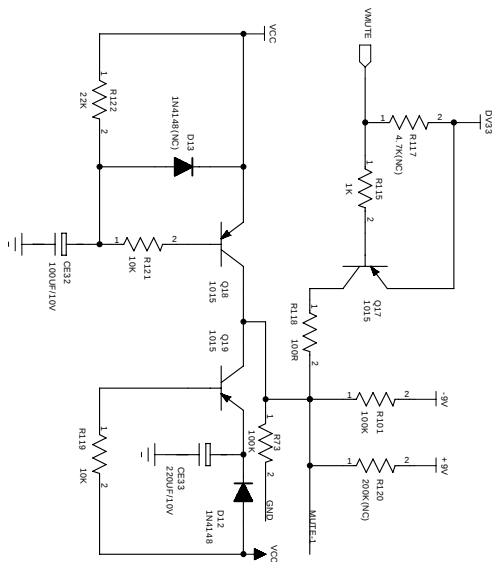
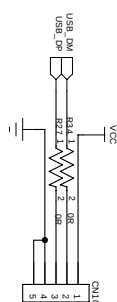
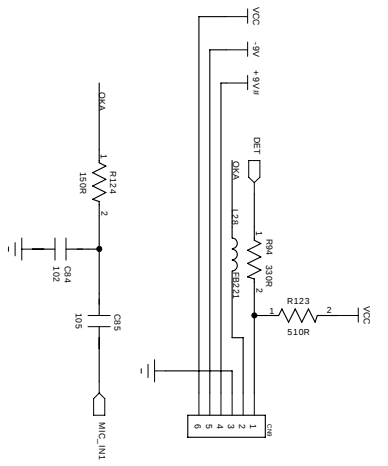




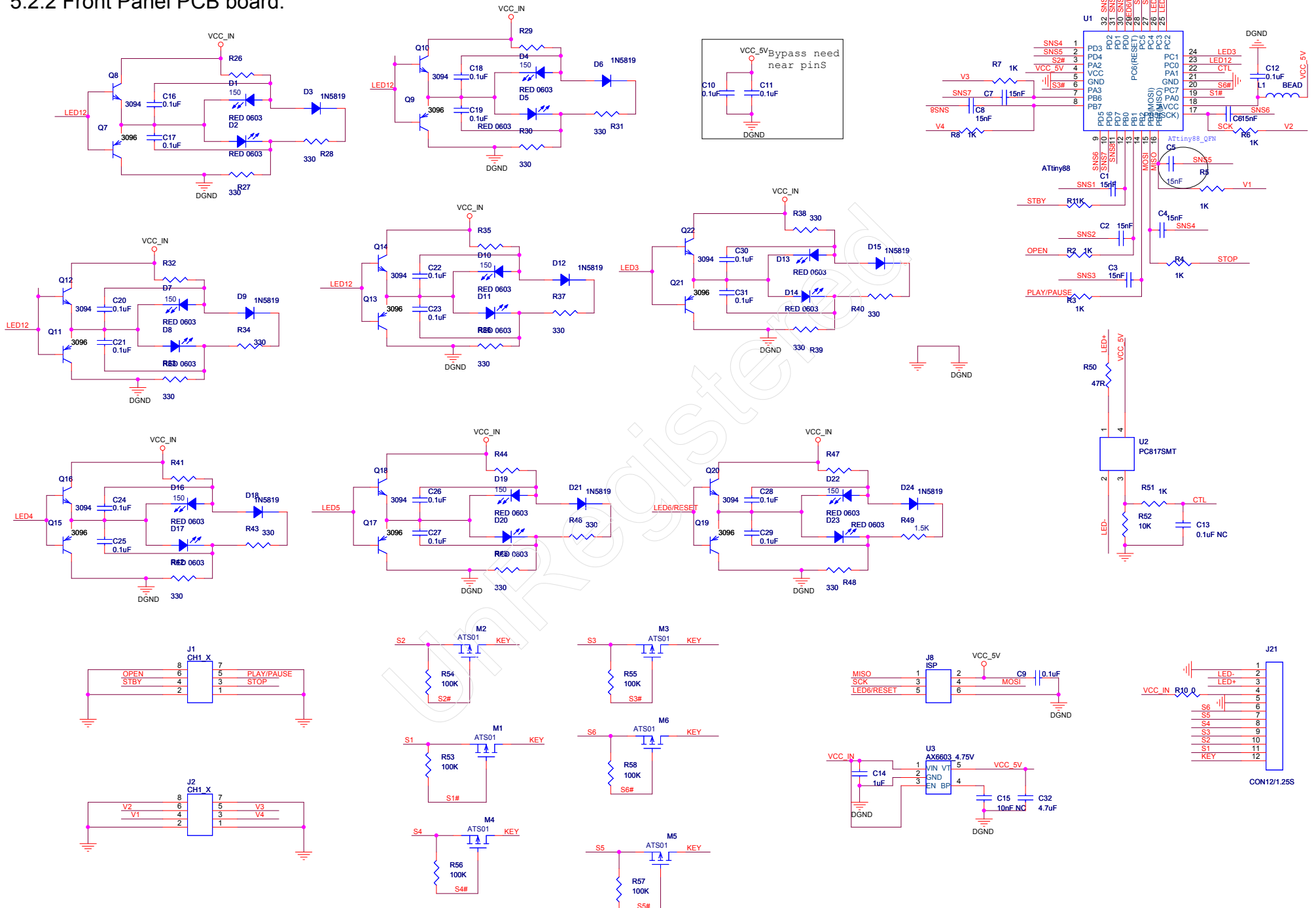




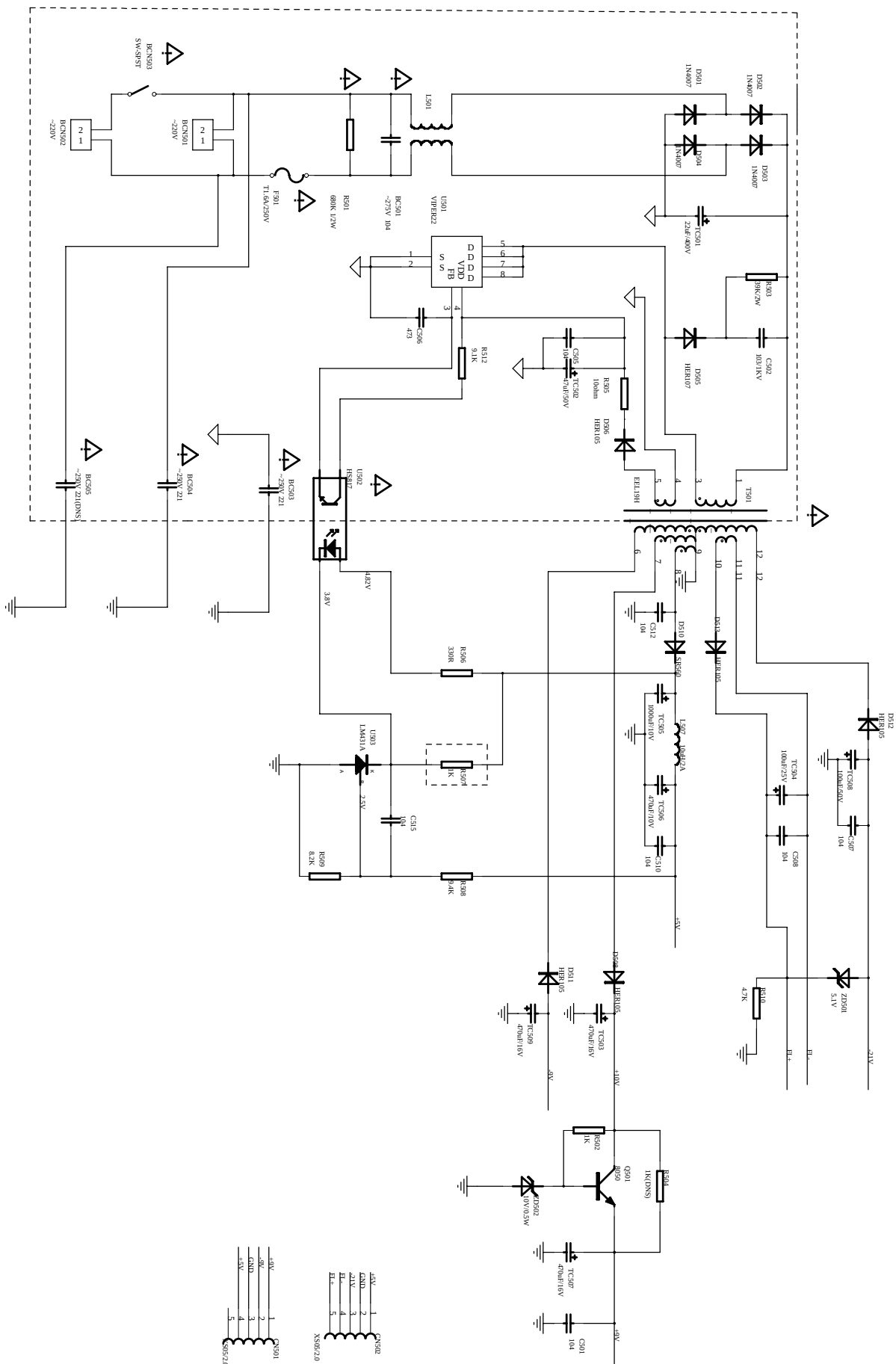




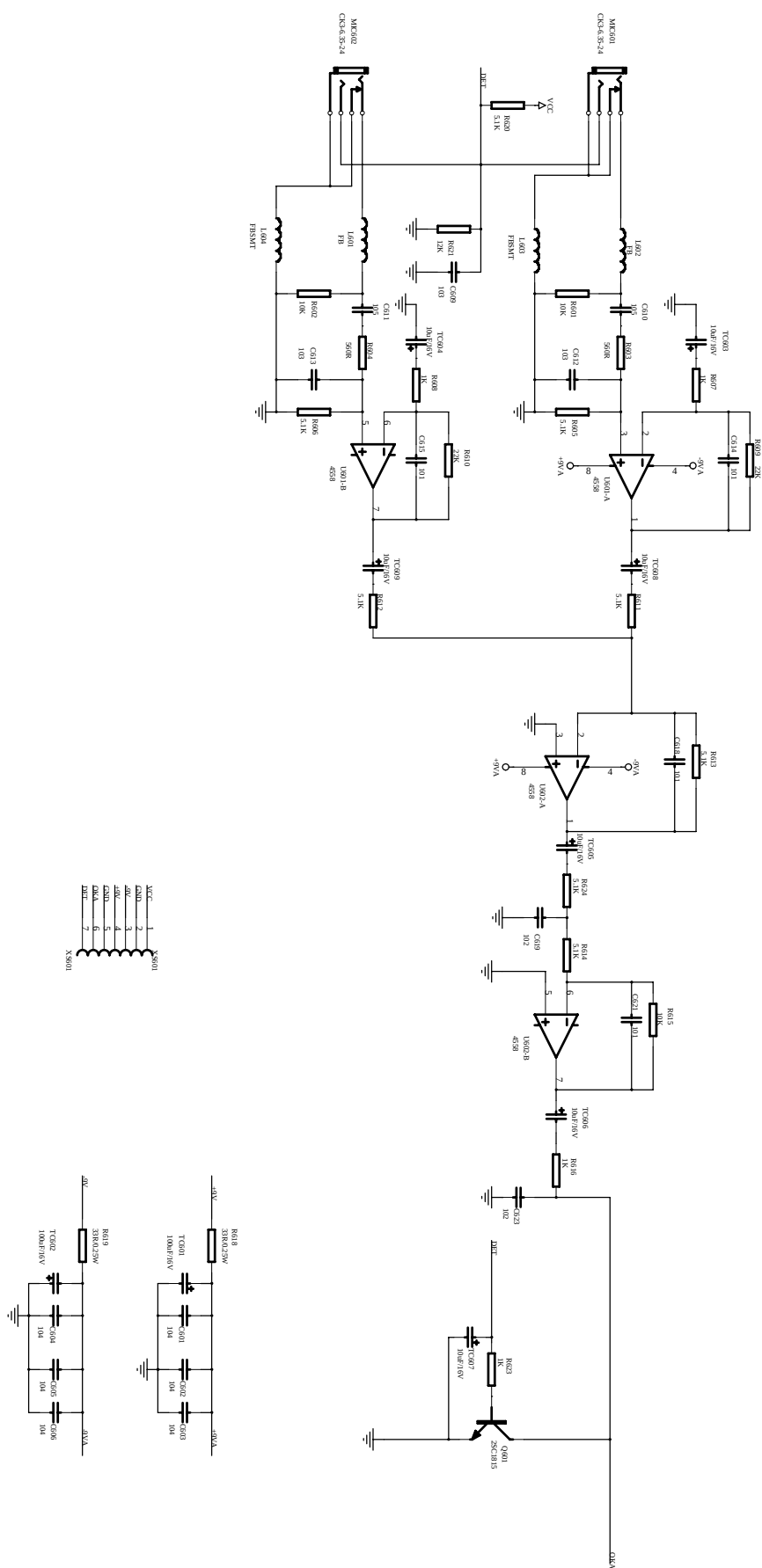
5.2.2 Front Panel PCB board.



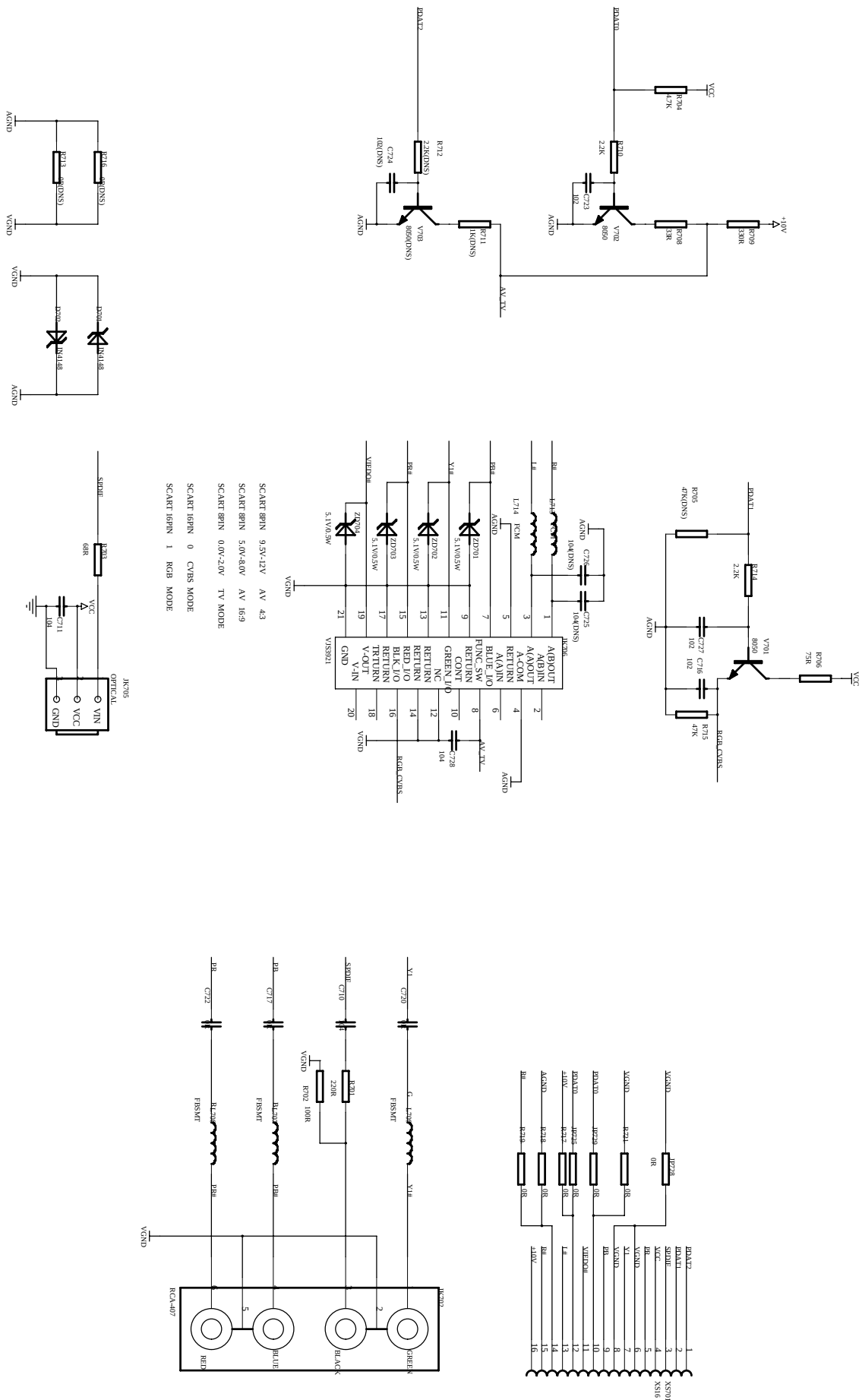
5.2.3 Power Board.



5.2.4 OK Board.



5.2.5 Output Board.



5.2.6 USB Board.

