SAMSUNG

PORTABLE DIGITAL AUDIO PLAYER

Basic Model : YH-J70

* Application : YH-J70SB/SW[20GB]
YH-J70LB/LW[30GB]

SERVICE Manual

PORTABLE DIGITAL AUDIO PLAYER

Model : YH-J70

Features

- Mass Storage Device Support
- MP3, WMA, Audio ASF and Ogg Playback
- USB Host Function Support
- Video Playback Function
- Image & Text Viewer Function
- Direct MP3 Recording
- USB 2.0 High Speed Data Transfer
- SRS WOW Surround Sound
- 1.8-inch Color TFT LCD
- Various Games Support
- Built-in Rechargeable Li-ion Battery
- Playback Speed Control Function
- Upgradable

Notice !!

You can search for the updated part code through ITSELF web site.
URL; http://itself.sec.samsung.co.kr

- Confidential -

YH-J70SB/SW[20GB]
YH-J70LB/LW[30GB]

SAMSUNG ELECTRONICS

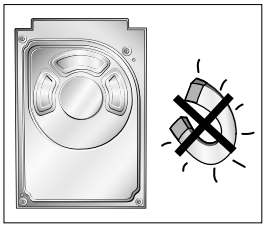
Printed in Korea
Code no. AH68-01654S

INDEX

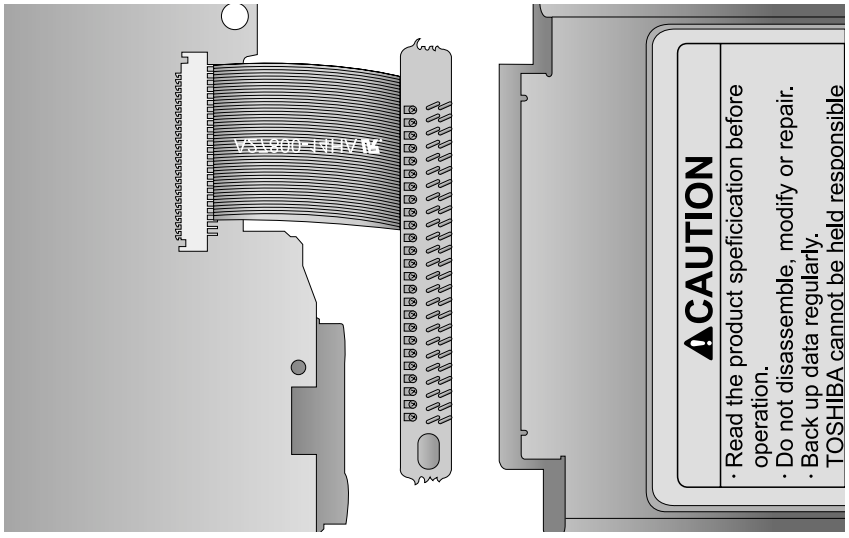
1. Precautions

0. HDD SVC Repair Cautions

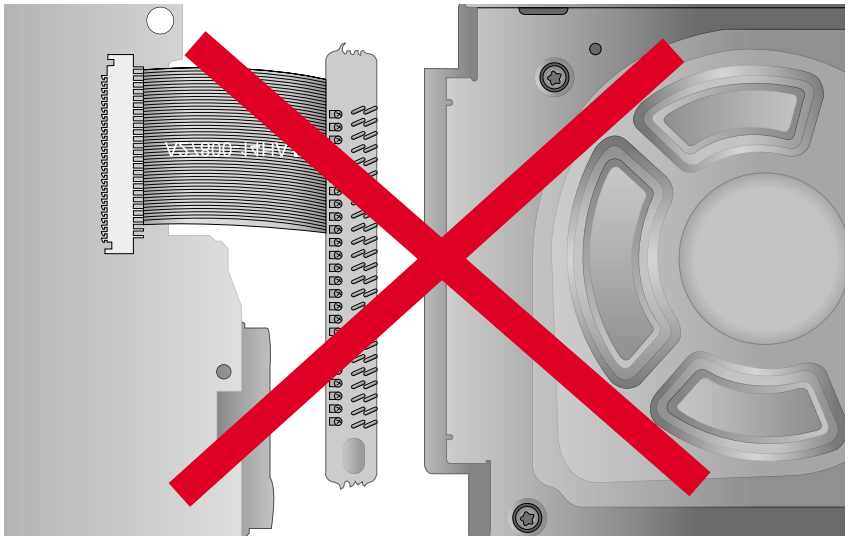
1. At HDD reassembly, connect for direction decided to PCB connector necessarily.
   When connect headlong, hard-disk is damaged.
   refer below " Hard-disk - **PCB connector connection Precation".**
2. HDD is very sensitive in static electricity, therefore refer static electricity prevention countermeasure (PAGE2~4) necessarily.
3. Hard-disk is very frail in shock.
   Do attention in treatment so that there may no be external shock(specially, Droping).
4. connector pin are product that is apt to be awry.
   Take care disassembly or reassembly.
5. Repair being far away because it can receive effect by TV or magnet.
6. Put in safe place lest shock of data recorded to HDD should be passed after separation in substance because data is weak in shock.
7. Since the data on the HDD is weak to mechanical shock, place the HDD in a safe location that is free from mechanical shock once it is removed from the main unit.
8. In order to safe keep the data on the HDD, back up the data before the repair or make sure not to place the HDD near any electrical appliance that generates a strong magnetic field.
   Be backed up before repair to keep data recorded to HDD.



*** Hard-Disk-PCB connection Precaution ***



HDD connection of MAIN PCB TOP side, with picture, must assemble so that the label may come on "**CAUTION**".



1-1 Safety Precautions

Follow these safety, servicing and ESD precautions to prevent damage and protect against potential hazards such as electrical shock and X-rays.

1. Be sure that all of the built-in protective devices are replaced.

2. When reinstalling the chassis and its assemblies, be sure to restore all protective devices, including control knobs and compartment covers.

3. Make sure that there are no cabinet openings through which people--particularly children--might insert fingers and contact dangerous voltages. Such openings include the spacing between the picture tube and the cabinet mask, excessively wide cabinet ventilation slots, and improperly fitted back covers.

4. Design Alteration Warning:
   Never alter or add to the mechanical or electrical design of the unit. Example: Do not add auxiliary audio or video connectors. Such alterations might create a safety hazard. Also, any design changes or additions will void the manufacturer's warranty.

5. Leakage Current Hot Check (Figure 1-1):
   Warning: Do not use an isolation transformer during this test. Use a leakage-current tester or a metering system that complies with American National Standards Institute (ANSI C101.1, *Leakage Current for Appliances*), and Underwriters Laboratories (*UL Publication UL1410, 59.7*).

   With the unit completely reassembled, plug the AC line cord directly into a 120V AC outlet. With the unit's AC switch first in the ON position and then OFF, measure the current between a known earth ground (metal water pipe, etc.) and all exposed metal parts. Examples: Handle brackets, metal cabinets, screwheads and control shafts. The current measured should not exceed 0.5 milliamp. Reverse the power-plug prongs in the AC outlet and repeat.

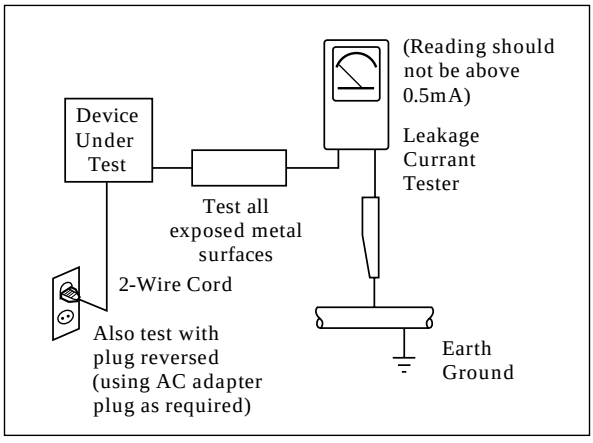


Fig. 1-1 AC Leakage Test

6. Insulation Resistance Cold Check:
   (1) With the unit's AC plug disconnected from the AC source, connect an electrical jumper across the two AC prongs. (2) Set the power switch to ON. (3) Measure the resistance between the shorted AC plug and any exposed metallic parts. Example: Screwheads, antenna, control shafts or handle brackets.

   If any of the exposed metallic parts has a return path to the chassis, the measured resistance should be between 1 and 5.2 megohms. If there is no return path, the measured resistance should be "infinite." If the resistance is outside these limits, a shock hazard might exist. See Figure 1-2

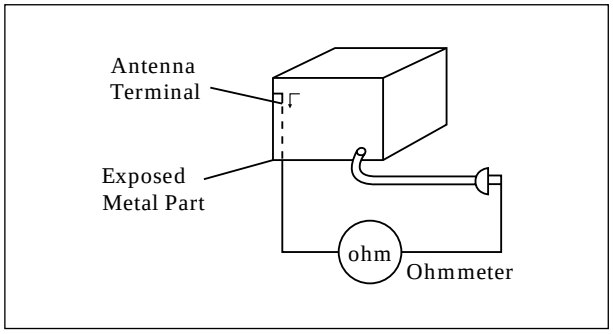


Fig. 1-2 Insulation Resistance Test

1-1 Safety Precautions (Continued)

7. Components, parts and wiring that appear to have overheated or that are otherwise damaged should be replaced with parts that meet the original specifications. Always determine the cause of damage or overheating, and correct any potential hazards

8. Observe the original lead dress, especially near the following areas: Antenna wiring, sharp edges, and especially the AC and high voltage power supplies. Always inspect for pinched, out-of-place, or frayed wiring. Do not change the spacing between components and the printed circuit board. Check the AC power cord for damage. Make sure that no wires or components touch thermally hot parts.

9. Product Safety Notice:
Some electrical and mechanical parts have special safety-related characteristics which might not be obvious from visual inspection. These safety features and the protection they give might be lost if the replacement component differs from the original--even if the replacement is rated for higher voltage, wattage, etc.

10 Components that are critical for safety are indicated in the circuit diagram by shading, ⚠ or ⚠ . Use replacement components that have the same ratings, especially for flame resistance and dielectric strength specifications. A replacement part that does not have the same safety characteristics as the original might create shock, fire or other hazards.

1-2 Servicing Precautions

Warning1: First read the "Safety Precautions" section of this manual. If some unforeseen circumstance creates a conflict between the servicing and safety precautions, always follow the safety precautions.

1. Servicing precautions are printed on the cabinet. Follow them.

2. Always unplug the unit's AC power cord from the AC power source before attempting to: (a) Remove or reinstall any component or assembly, (b) Disconnect an electrical plug or connector, (c) Connect a test component in parallel with an electrolytic capacitor.

3. Some components are raised above the printed circuit board for safety. An insulation tube or tape is sometimes used. The internal wiring may be clamped to prevent contact with thermally hot components. Reinstall all such elements to their original position.

4. After servicing, always check that the screws, components and wiring have been correctly reinstalled. Make sure that the portion around the serviced part has not been damaged.

5. Check the insulation between the blades of the AC plug and accessible conductive parts (examples: metal panels, input terminals and earphone jacks).

6. Insulation Checking Procedure: Disconnect the power cord from the AC source and turn the power switch ON. Connect an insulation resistance meter (500V) to the blades of the AC plug.

   The insulation resistance between each blade of the AC plug and accessible conductive parts (see above) should be greater than 1 megohm.

7. Never defeat any of the B+ voltage interlocks. Do not apply AC power to the unit (or any of its assemblies) unless all solid-state heat sinks are correctly installed.

8. Always connect a test instrument's ground lead to the instrument chassis ground *before* connecting the positive lead; always remove the instrument's ground lead last.

1-3 Precautions for Electrostatically Sensitive Devices (ESDs)

1. Some semiconductor ("solid state") devices are easily damaged by static electricity. Such components are called Electrostatically Sensitive Devices (ESDs). Examples include integrated circuits and some field-effect transistors. The following techniques will reduce the occurrence of component damage caused by static electricity.

2. Immediately before handling any semiconductor components or assemblies, drain the electrostatic charge from your body by touching a known earth ground. Alternatively, wear a discharging wrist-strap device. (Be sure to remove it prior to applying power--this is an electric shock precaution.)

3. After removing an ESD-equipped assembly, place it on a conductive surface such as aluminum foil to prevent accumulation of electrostatic charge.

4. Do not use freon-propelled chemicals. These can generate electrical charges that damage ESDs.

5. Use only a grounded-tip soldering iron when soldering or unsoldering ESDs.

6. Use only an anti-static solder removal device. Many solder removal devices are not rated as "anti-static" (these can accumulate sufficient electrical charge to damage ESDs).

7. Do not remove a replacement ESD from its protective package until you are ready to install it. Most replacement ESDs are packaged with leads that are electrically shorted together by conductive foam, aluminum foil or other conductive materials.

8. Immediately before removing the protective material from the leads of a replacement ESD, touch the protective material to the chassis or circuit assembly into which the device will be installed.

9. Minimize body motions when handing unpackaged replacement ESDs. Motions such as brushing clothes together, or lifting a foot from a carpeted floor can generate enough static electricity to damage an ESD.

1-4 Special Precautions and Warning Labels for Laser Products

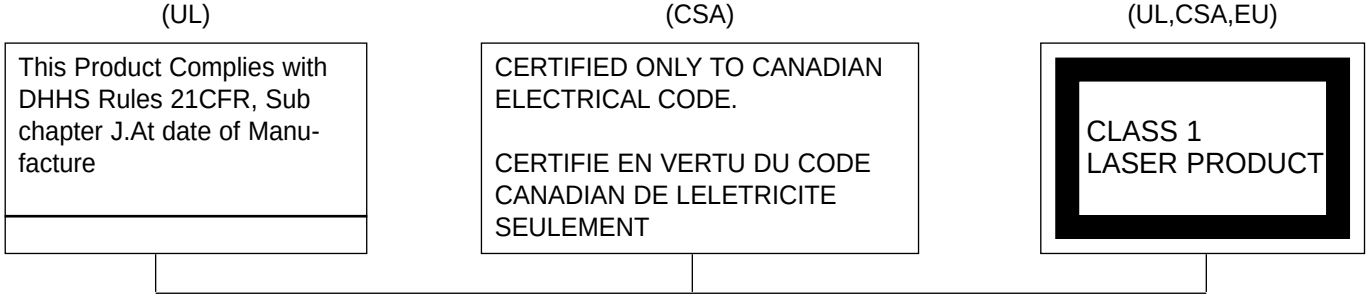


Fig. 1-3 Warning Labels (Location: Enclosure Block)

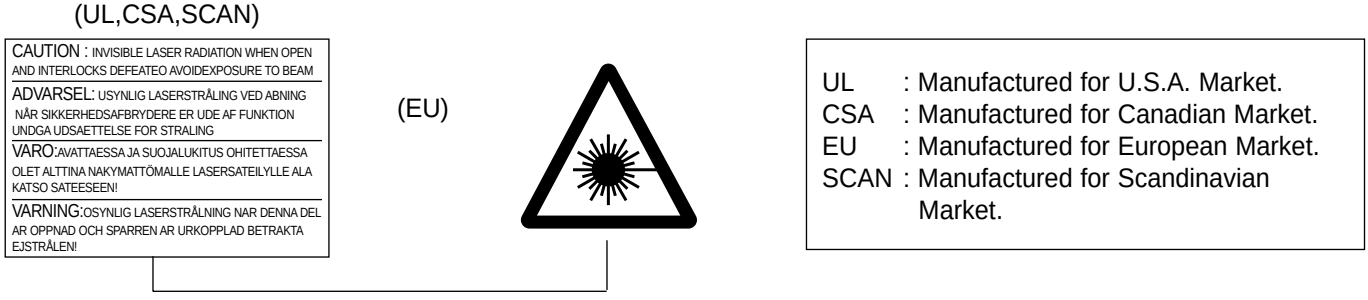


Fig. 1-4 Warning Labels (Location: Disc Clamper, Inner Side of Unit Door or Nearby Unit Chassis)

2. Product Descriptions

1. Product Feature

	PRODUCT FEATURE
Mass Storage Device Support	You can use the built-in hard drive to store your entire music library, plus use it as an external drive for your PC to store other data files.
MP3, WMA, Audio ASF and Ogg Playback	Your player supports playback of MP3, WMA, Audio ASF and Ogg.
USB Host Function Support	Connect external devices such as digital cameras and MP3 player directly to the unit for easy transfer of music, images and other data files without the need for a PC.
Video Playback Function	You can view video files after downloading using the Multimedia Studio.
Image & Text Viewer Function	You can view JPEG files and TXT file texts. Image files edited with Multimedia Studio can be viewed as slide shows.
Direct MP3 Recording	You can convert music from CDs, cassettes, and radio into MP3 files without a PC.
USB 2.0 High Speed Data Transfer SRS WOW Surround Sound	The 3D surround(SRS) feature adds spaciousness to the sound.
1.8-inch Color TFT LCD	You can enjoy high quality image & video files.
Various Games Support	You can enjoy games such as Tetris, Omok and Othello.
Built-in Rechargeable Li-ion Battery	The built-in rechargeable lithium battery provides up to 25 hours of music and 7 hours of video files. (According to company measurement)
Playback Speed Control Function	You can adjust the playback speed of music or voice files.
Upgradable	You can upgrade the built-in programs when available. Please check the home page (www.samsung.com) for upgrades.

Model	YH-J70
Internal Memory Capacity	YH-J70 SB/SW(20GB) / YH-J70 LB/LW(30GB)
Built-in Rechargeable Battery Capacity	950mAh
Voltage	4.2V (Li-ion Rechargeable Battery)
Dimensions/Weight	62 X 99.8 X 16.4mm/135g
Case	Plastic
Signal to Noise Ratio	90dB with 20KHz LPF(based on 1KHz OdB)
Earphone Jack Output Power	20mW(16)/CH
Output Frequency Range	20Hz~20KHz
Operating Temperature Range	-5~ +35¡C (23~95¡F)
FM Frequency	87.50 ~ 108.00MHz
FM Signal to Noise Ratio	45dB
FM T.H.D	1%
M Useable Sensitivity	10dB
File Support	AUDIO : MPEG1/2/2.5 Layer3(8Kbps~320Kbps, 8KHz~48KHz), WMA, Audio ASF (48Kbps~192Kbps, 8KHz~48KHz), Ogg (Q0~Q10) IMAGE : QCIF 160x128
Number of Playable Files	Normal Folder : 1024 Files Recorded Folder : 999 Files

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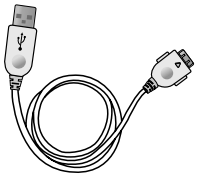
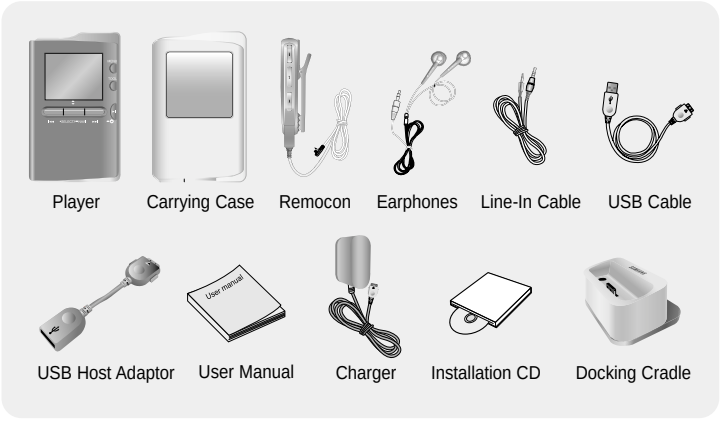
Accessories	Name	Code No.
	Charger	AH44-00100C
	Earphones	AH30-00069D
	Line-In Cable	AH39-00488B
	USB Cable	AH39-00783A
	USB Host Adaptor	AH39-00784A

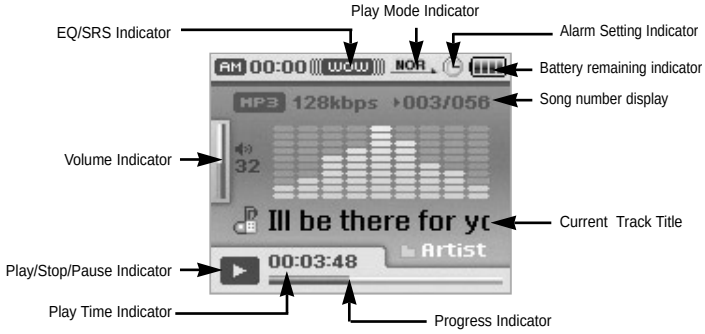
3. Product Functions

1. Basic Functions

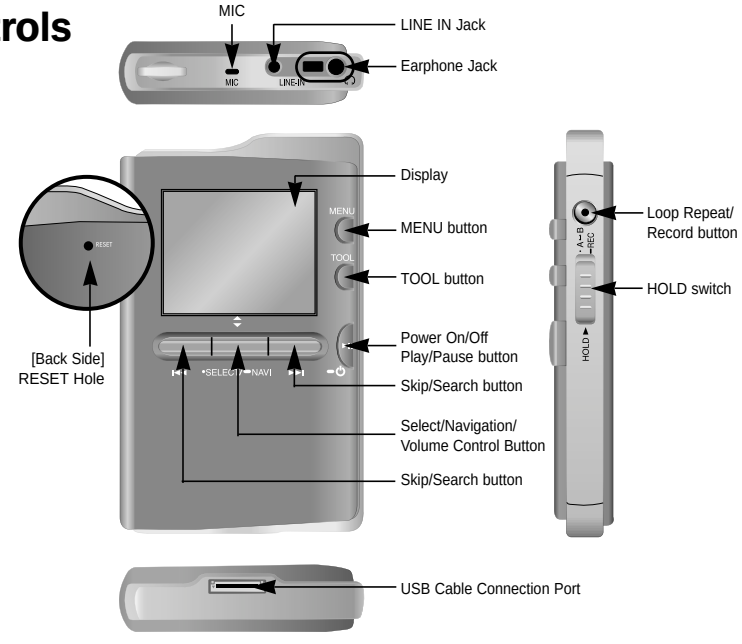


Model	YH-J70 SB/SW	YH-J70 LB/LW
Built-in memory	20GB	30GB

- The capacity of the useable built-in memory is less than indicated as the internal firmware uses a part of the memory as well.
- The appearance of the accessories shown is subject to change for product improvement without prior notice.



Location of Controls



Playing Music

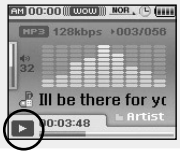
Make sure the player is fully charged and the earphones are connected.

- Power On: Press and hold the ▶II button to turn on the power.
- Power Off: Press and hold the ▶II button to turn off the power.

Playing Music

Press and hold the ▶II button

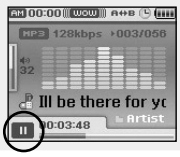
- Playback starts automatically.



Pausing Music

Press the ▶II button to pause playback.

- While in Pause mode, briefly press ▶II again to resume playback.



Adjusting Volume

Adjust volume by moving the SELECT button up and down.

- The volume can be adjusted in increments between 00(MIN) and 60(MAX).

Hold Feature

Use the Hold feature to lock and disable all buttons.

Hold Function of the Main Unit

Activate on the main unit.

- All buttons on the main unit will be disabled, and only the buttons on the remote control can be used for input.
- When you activate the HOLD switch, a " " appears on the display.

Hold Function of the Remote Control

Activate on the remote control.

- All buttons on the remote control will be disabled, and only the buttons on the main unit can be used for input.

Note

- Press and hold the ▶II button on the remote control to turn the power on/off using the remote control in hold mode.

Loop Repeating

Starting Point

While playing a music file, press the A↔B button at the beginning of the loop you want to set.

- A↔ appears in the display.

Ending Point

Press the A↔B button shortly at the point you wish
to end Loop Repeat.

- A↔B appears in the display.
- The loop is played repeatedly.

Press the A↔B button briefly to cancel the loop.

Searching for Music/Voice Files

To Search for Specific Parts During Play

- Press and hold the ⏮, ⏭ button during playback to search for the part you want to listen to.
- Release the button to resume play normally.

To Change Tracks During Play

- Press the ⏭ button briefly during playback to play the next track.
- Press the ⏮ button briefly within 5 seconds after playback starts to move to and play the previous track. Press the ⏮ button briefly after 5 seconds to play the current track from the beginning.

To Change Tracks when Stopped

- Press the ⏮, ⏭ button in stop/pause mode to move to the previous/next track.

Note

- VBR(Variable Bit Rate) file: A file that constantly changes the compression rate according to the type of sounds, such as their pitch, in the file.
- When playing a VBR file, you cannot move to and play the previous track even if you press the ⏮ button within 5 seconds after playback starts.
- Files that were downloaded in MP2 or MP1 and had their file extension changed to MP3 may not play.

Setting Main Functions in Music Mode

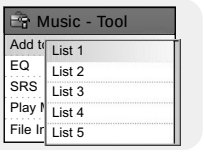
- You can move and select using the SELECT button.
- Press the ⏮ button to move to the previous screen.

Add to Favorites

1 Press the TOOL button in music mode.
- Music Tool screen appears.

2 Press the SELECT button after moving to [Add to Favorites].

3 Press the SELECT button after moving to the list to save.
- The selected file will be added to the list.
- 10 Playlists can be selected.
- Added files can be found at [Navigation] → [Playlist] → [Favorites].

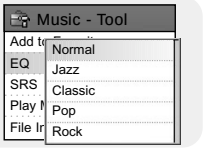


EQ

1 Press the TOOL button in music mode.
- Music Tool screen appears.

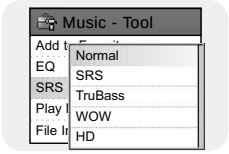
2 Press the SELECT button after moving to [EQ].

3 Press the SELECT button after moving to the desired sound effect mode.
- Normal → Jazz → Classic → Pop → Rock → Bass Boost → Bass Cut → R&B → Club → Dance → House → High Boost → High Cut Loud → Ballad → Strings → Vintage → Vocal Boost → Bluesy → User EQ
- When using User EQ, the desired sound effects can be set from [Settings] →' [Sound Effect] → [User EQ Set].



Setting Main Functions in Music Mode

SRS



1 Press the TOOL button in music mode.
- Music Tool screen appears.

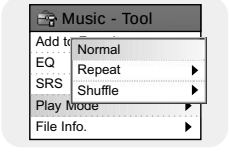
2 Press the SELECT button after moving to [SRS].

3 Press the SELECT button after moving to the desired SRS mode.
- Normal → SRS → TruBass → WOW → HD
- SRS: You will hear 3D Streo sound.
- TruBass: This is bass boost feature that adds fillness to the sound.
- WOW: This feature allows you to enjoy the SRS and Trubass features simultaneously.
- HD: You can enjoy more clear voice and high tones.

Note

- SRS WOW HD is a trademark of SRS Labs, Inc.
  WOW technology is incorporated under license from SRS labs, Inc..
- Please adjust the volume to a suitable level, as the volume may increase in the SRS setting.
- This unit supports sampling frequencies of 32KHz, 44.1KHz or 48KHz.

Play Mode

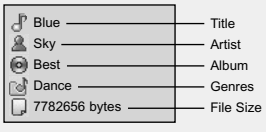


1 Press the TOOL button in music mode.
- Music Tool screen appears.

2 Press the SELECT button after moving to [Play Mode].

3 Press the SELECT button after moving to the desired Play Mode.
- Normal : To play all the files in order one time.
- Repeat: Press the SELECT button at [Repeat].
  - One : To repeat one file.
  - Folder : To repeat the current folder.
  - All : To repeat all files.
- Shuffle : Press the SELECT button at [Shuffle].
  - Folder : To play files in the folder at random.
  - All : To play files at random.

File Info.



1 Press the TOOL button while the music is playing or has stopped.
- Music Tool screen appears.

2 Press the SELECT button after moving to [File Info.].
- Information on file currently playing/paused is displayed.

2. New Functions

MENU Options

Press the MENU button to switch to Menu mode.

Use the SELECT button to select the menu item you want, and then briefly press the SELECT button.

- Now playing : To display the song currently playing.
- FM Radio : To listen to FM radio.
- Navigation : To move to Navigation Mode and browse files and folders.
- Text : To read text files
- Photo/Video : To view saved image files or videos
- USB Host : To transfer files saved in the unit to external devices or transfer files saved in external devices to the unit.
- Games : To play games.
- Settings : To set the functions.

Note

- In Menu mode, press the ⏮ button to move to the previous screen.

Listening to FM Radio

Switching to FM Radio Mode

Press the MENU button.
In the Menu, select FM Radio and then press the SELECT button.

Search for a Frequency

- Manual Search: Press the ⏮, ⏭ buttons to change the frequency up or down.
- Automatic Search: Press and hold the ⏮, ⏭ buttons to automatically search for receiving frequencies.

Setting Main Functions in FM Mode

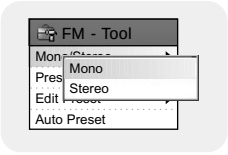
You can move and select using the SELECT button
Press the ⏮ button to move to the previous screen.

Mono / Stereo

1 Press the TOOL button in FM Mode.
- FM Tool Screen appears.

2 Press the SELECT button after moving to [Mono/Stereo].

3 Press the SELECT button after moving to the desired FM reception mode.



Note

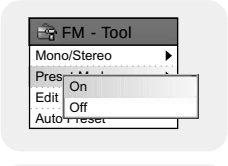
- Mono is automatically selected in areas with weak FM reception.

Preset Mode

1 Press the TOOL button in FM Mode.
- FM Tool Screen appears.

2 Press the SELECT button after moving to [Preset Mode].

3 Press the SELECT button after moving to On/Off.
- On : Preset mode is selected. Select preset frequency using the ⏮, ⏭ button
- Off : FM reception mode is selected.



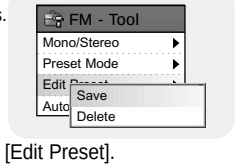
Edit Preset

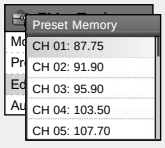
- You can manually preset desired FM frequencies.
- You can store up to 30 frequencies.

1 Press the TOOL button in FM Mode.
- FM Tool Screen appears.

2 Press the SELECT button after moving to [Edit Preset].

3 Press the SELECT button after moving to [Save] or [Delete].
- Save : Select the desired Preset number by using the SELECT button. The current frequency will be saved.
- Delete : Select a saved preset number to be deleted.
  The selected preset number will be deleted.





Auto Preset

1 Press the TOOL button in FM Mode.
- FM Tool Screen appears.

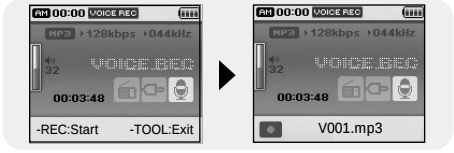
2 Press the SELECT button after moving to [Auto Preset].
- Frequencies are automatically stored up to 30.

Recording Voice

1 Press and hold the REC button.
- Recording screen appears.

2 Press the REC button to start voice recording.

3 Press the REC button again.
- Recording stops and the file is created.
- Files are recorded and renamed V001.mp3, V002.mp3, and so on.
- MP3 files are added to [Navigation] → [File Search] → [RECORDED] → [VOICE REC].
- Press the ▶II button to play the recorded file.



Note

- Even if you set the sampling and bit rates higher, voice recording will default to 44.1KHz.

Recording FM Radio

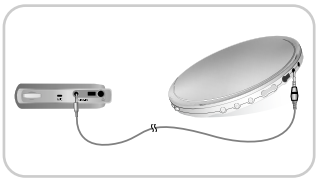
1 Press and hold the REC button while receiving FM.
- Recording screen appears.

2 Press the REC button.
- Current FM broadcasting will be recorded.

3 Press the REC button again.
- Recording stops and the file is created.
- Files are recorded and renamed F001.mp3, F002.mp3, and so on.
- MP3 files are added to [Navigation] → [File Search] → [RECORDED] → [FM REC].
- Press the ▶II button to play the recorded file.

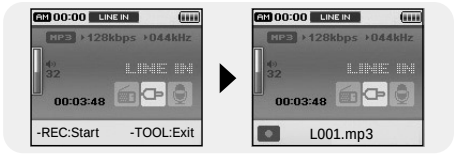
Recording MP3s

1 Connect the Audio Output port on the external audio source (or the Line Out port) to the LINE IN port on the device with the Line cable.
- Press the play button on the external device to play the music to record.



2 Press and hold the REC button.
- Recording screen appears.

3 Press the REC button again.
- Recording stops and the file is created.
- Files are recorded and renamed L001.mp3, L002.mp3, and so on.
- MP3 files are added to [Navigation] → [File Search] → [RECORDED] → [LINE REC].
- Press the ▶II button to play the recorded file.



Note
- Do not disconnect the Line cable during Recording.
- If the battery is not sufficiently charged, the player will not completely record the file.
- Adjust the volume of the external audio source to a suitable level and recode it. If the volume level is too high, the sound quality may be poor.

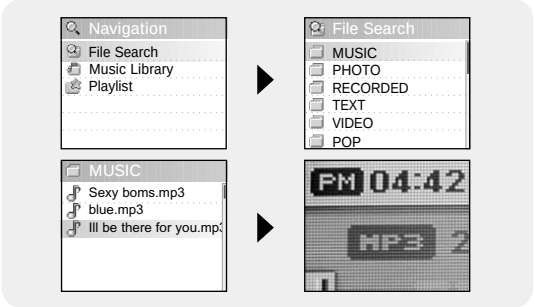
Setting Main Functions in Navigation

- You can move and select using the SELECT button.
- Press the ⏮ button to display the previous screen.

1 Press and hold the SELECT button to move to navigation mode, or press the MENU button to move to Menu and then select Navigation.
- File Search : You can search for a file from MUSIC, PHOTO, TEXT or VIDEO folder.
- Music Library : You can search for a music file by Artist, Album, Genre and Track.
- Playlist : You can search for a file specified as a Favorite in the player or PC Playlist transmitted through yepp Studio.

2 Select the file or folder that you want to play.
- ⏮ : To move to a higher-level folder.
- ⏭ : To move to a lower-level folder.
- ▲,▼ : To move to a file or folder in the same directory.
- SELECT : To move to the next folder down.

3 Press the SELECT button.
- The selected file will be played.

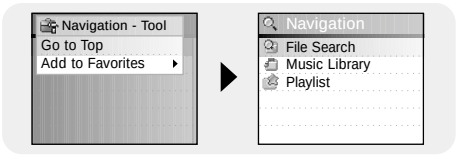


- You can move and select using the SELECT button.
- Press the ⏮ button to display the previous screen.

Go to Top

1 Press the TOOL button in Navigation Mode.
- Navigation Tool screen appears.

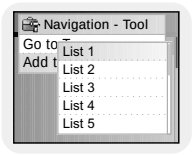
2 Press the SELECT button after moving to [Go to Top].
- Move to the File Navigation screen.



Add to Favorites

1 Press the TOOL button after moving to the music file in Navigation Mode.
- Navigation Tool screen appears.

2 Press the SELECT button after moving to [Add to Favorites].



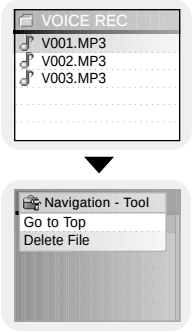
3 Press the SELECT button after moving to the list to save.
- The selected file will be added on the list.
- 10 Playlists can be selected.
- Added files can be found at [Navigation] → [Playlist] → [Favorites].

Delete File

- Recorded files can be deleted in Navigation Mode. Other files can be deleted using Media Studio.

1 Press the TOOL button after moving recorded file to delete in Navigation Mode.
- Navigation Tool screen appears.

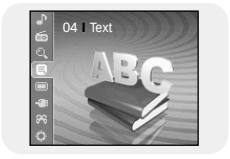
2 Press the SELECT button after moving to [Delete File].
- The selected file will be deleted.



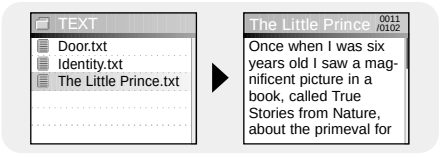
Viewing Text

- Text Viewer allows you to read text files that were created on your PC. Text files must have a .txt extension to be viewed by Text Viewer.
- You can select an text file to view while listening to the music.

1 Press the MENU button to move to menu, and then select Text.
- Navigation screen appears.



2 Move to the text you want to read, and then press the SELECT button.
- The selected text file will be displayed.
  - ▲,▼ : Volume Control.
  - ⏮, ⏭ : Move to Previous/Next Page.
  - Text File Selection: Press and hold the SELECT button to move to navigation during a music is playing. Move to the desired text file, and then press the SELECT button.



3. PC Connection

Connecting the player to your PC

❑ **System Requirements.**

The PC system must meet the following specifications:

- Pentium 200MHz or greater
- Windows XP
- 50MB of available hard disk space
- CD-ROM drive (double speed or greater)
- USB port (2.0) supported
- DirectX 9.0 or above.

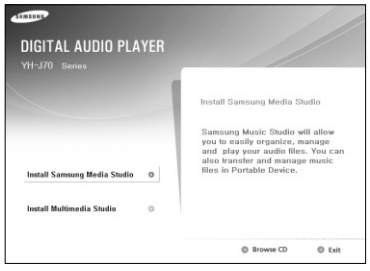
Note
- Log into your PC as an administrator (Main User) and install the supplied software (Media / Multimedia Studio) for Windows XP. Otherwise, the software may not install properly.

N

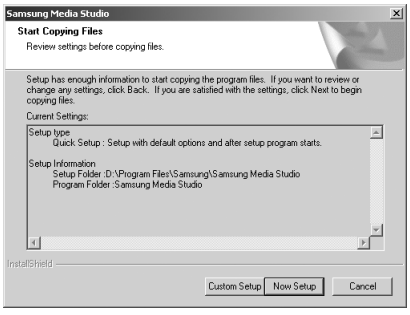
Install Samsung Media Studio prior before connecting the player to PC.

Installing Software

1 Insert the Installation CD into CD-ROM drive.
The picture shown below appears.
Select [Install Samsung Media Studio].



2 Follow the instructions in the window to complete the installation.



Connecting the player to your PC with a USB cable

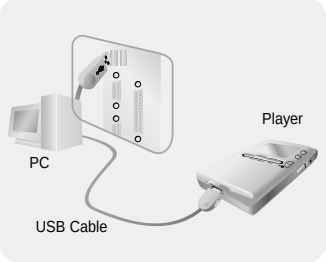
3 Connect the USB cable to the USB port of the computer.

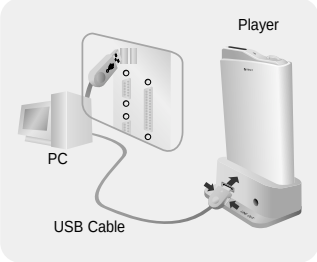
4 Connect the other end of the USB cable to the USB cable connection port located at the bottom of the player.

- If you disconnect the USB cable from your PC while implementing a command or initializing during USB driver installation, your PC may not function correctly.

5 The USB driver is installed with a message saying that it is searching for a new device. You may not see the display screen during installation. Go to the device manager to check that installation has been successfully completed.

6 Upon installation of the USB driver "Samsung YH-J70 USB Device" will appear in the [Device Manager].

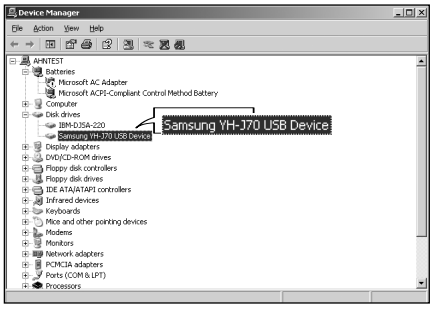




How to check if USB driver is properly installed

Windows XP:

Control Panel → System → Hardware → Device Manager → Disk Drives → Samsung YH-J70 USB Device



7 When USB driver is not installed automatically, refer to next page.

4. Adjustments

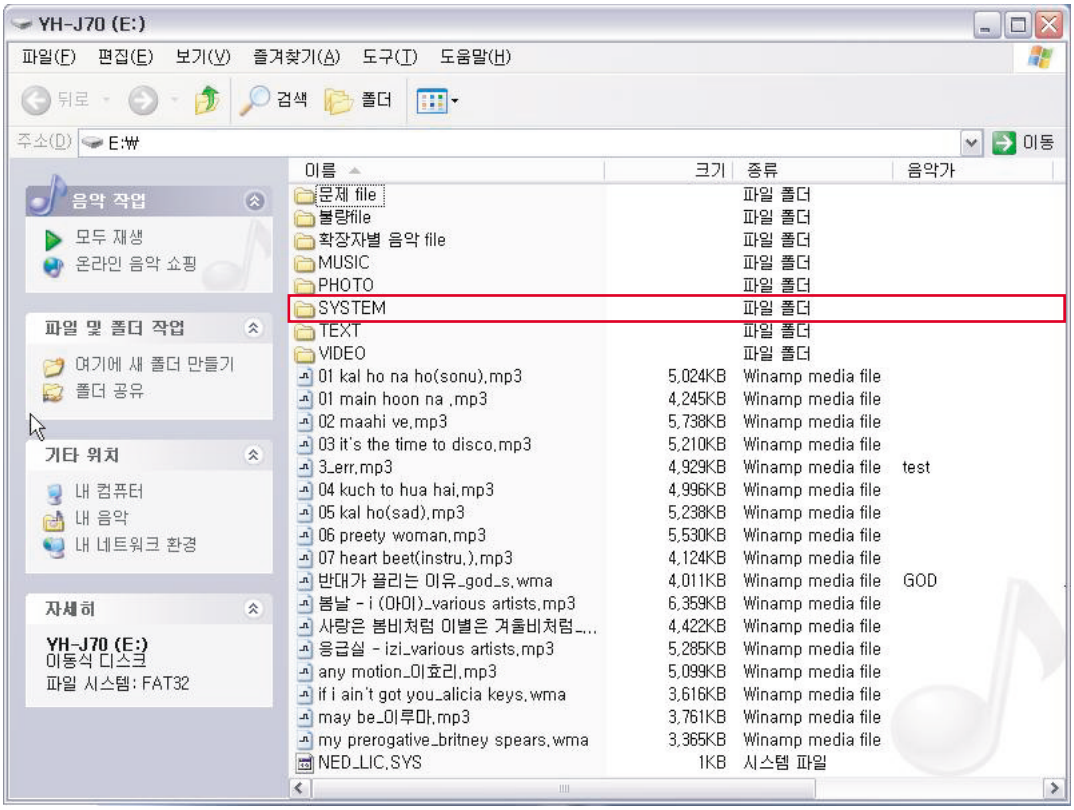
1.How to recover the device

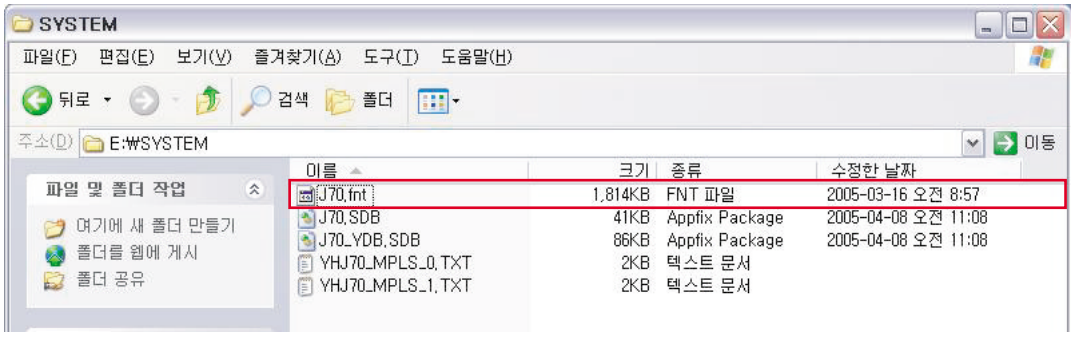
hen file download does not work or screen display is abnormal,
the following recovery procedure is valid for YH-J70, YH-J50, YH-J40 and their derived models.
YH-J70 has self-recovery system that saves system files in Flash memory to prevent corruption.
In addition, firmware is automatically upgraded on line.

1. "System Fail, Need Firmware Upgrade" appears on the LCD screen.

This message appears when the font file in the hard disk drives has been corrupted.

■ Countermeasure
1) Connect the player and the computer with the USB cable and copy "J70.fnt" file to the SYSTEM folder.





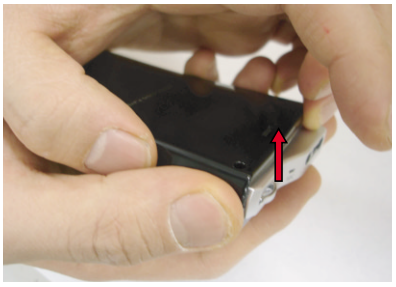
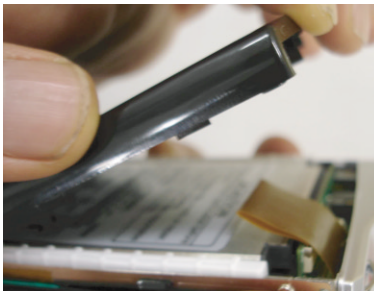
If the same message appears even after you have copied the font file, upgrade the firmware.

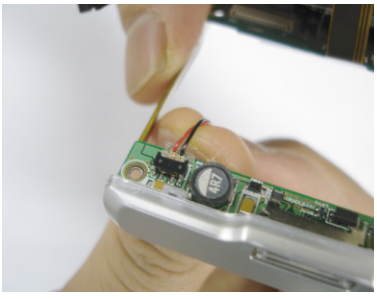
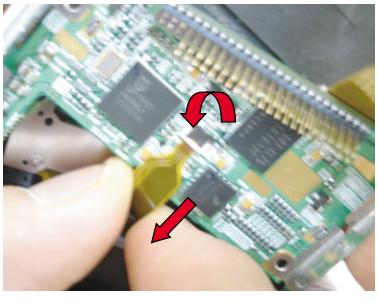
2) Copy the firmware upgrade file, "j70_32.bin" to the root directory of the hard disk drive.

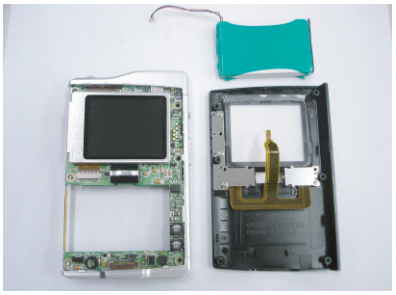
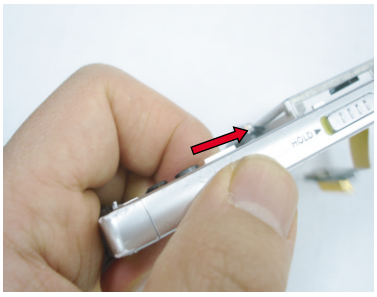
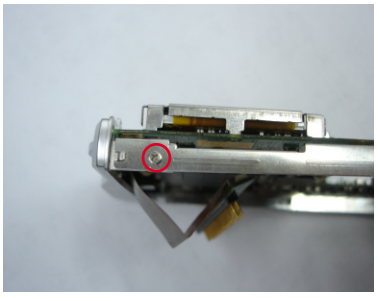
5. How to disassemble

* CAUTIONS

1. The product can be damaged when it is not dissembled in order in SVC MANUAL.
2. PCB IC chip or device is very frail in static electricity, therefore first, know well safety rule necessarily and work.

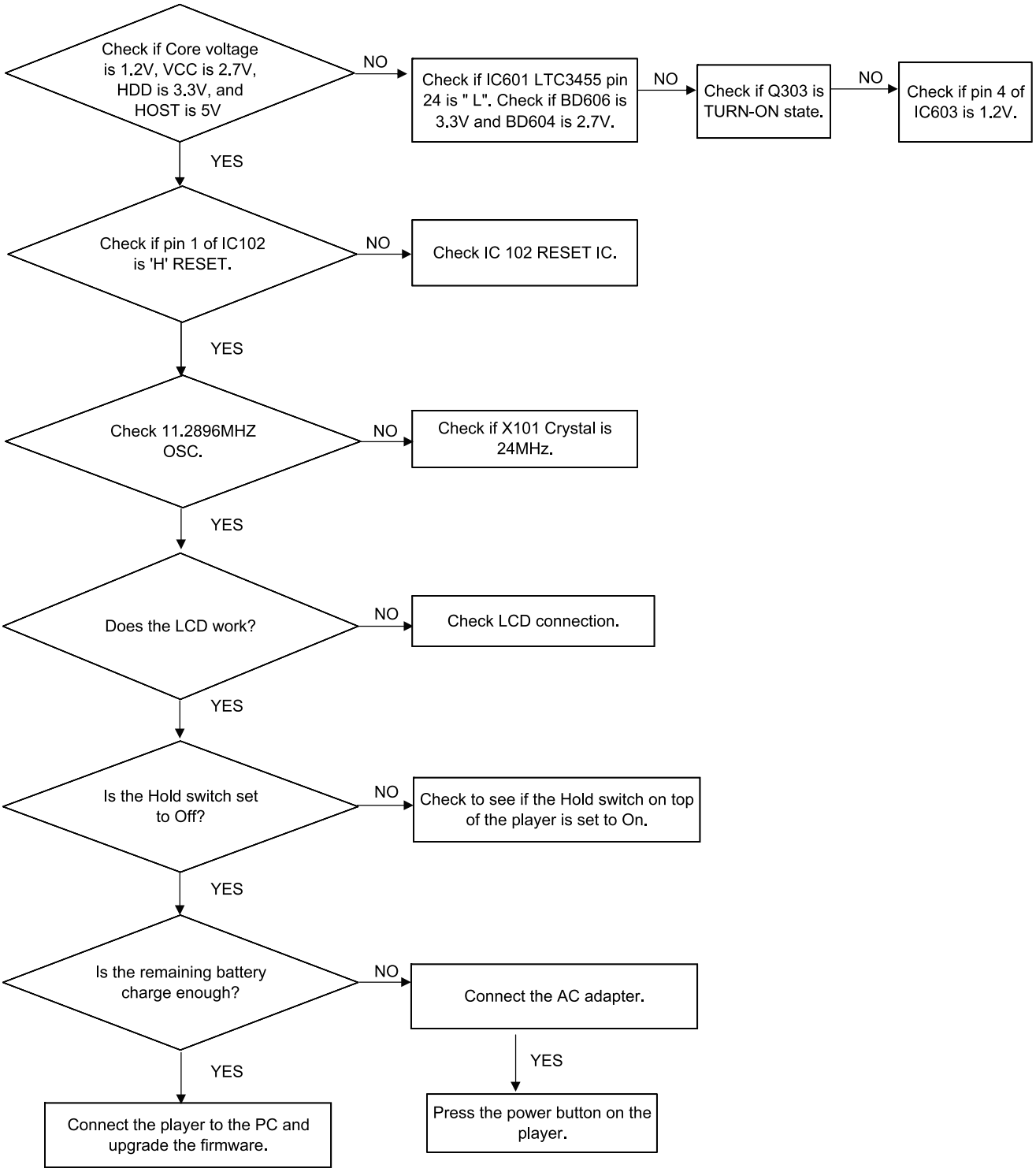
Order(Description)	Picture
1. Remove 2 screws from the rear panel of the player.	
2. Lightly lift and slide the front part of the ASSY BOTTOM so that the hook comes out.	
3. If the hook comes out, it easily opens.	
4. Separate the hard disk.	

Order(Description)	Picture
5. Picture after disassembly	
6. Remove the 4 screws from the Main PCB.	
7. Lightly lift and slide the front part of the ASSY TOP so that the hook comes out.	
8. Pull out and separate the Battery Pack Wire with your hand.	
9. Pull back the Front Key Connector(4P) in the direction of the arrow and separate the Front	

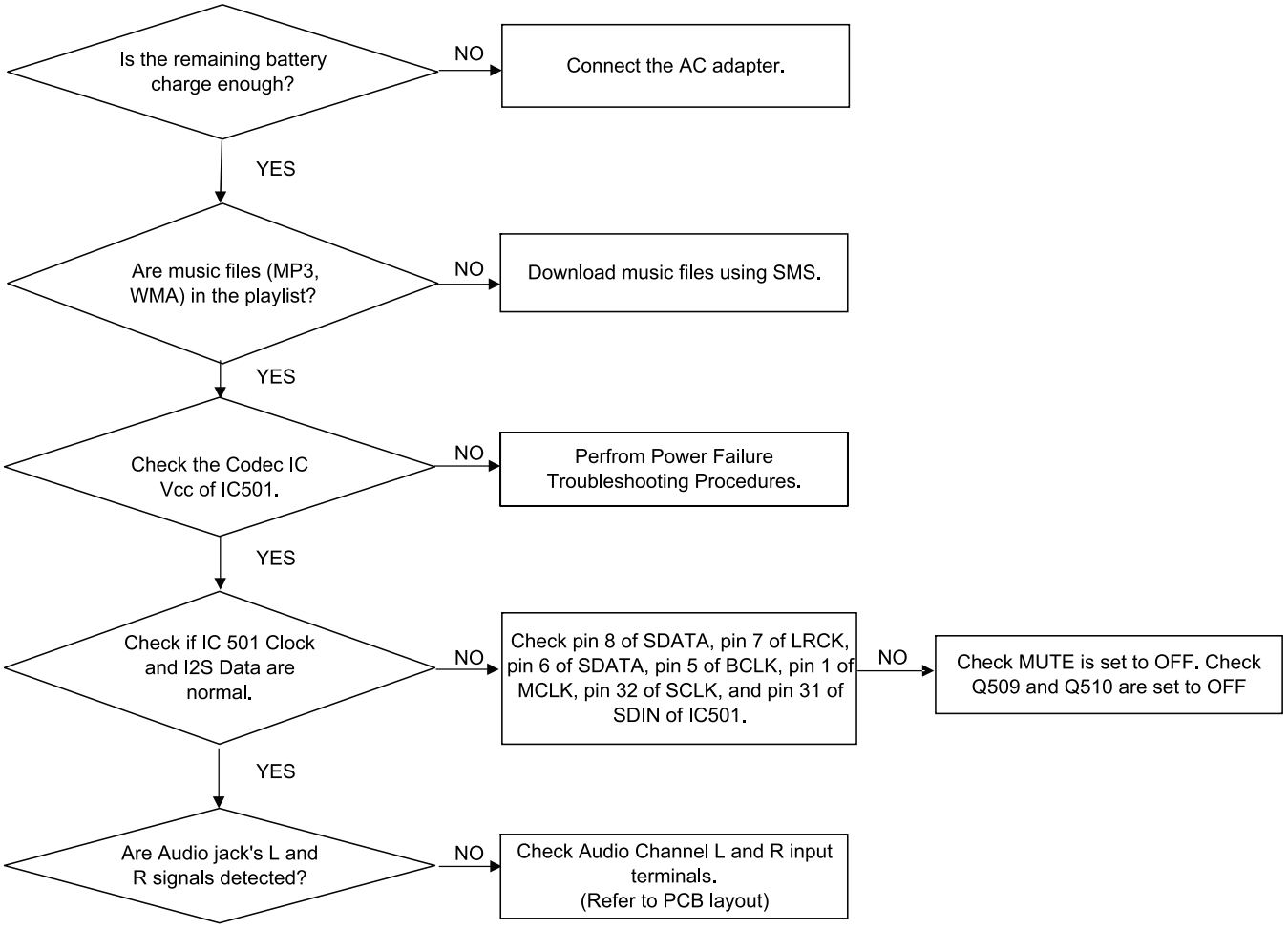
Order(Description)	Picture
10. Picture after disassembly	
11. Slide the Deco Side in the direction of the arrow to sep arate it.	
12. Remove the screws on the side of the Bracket Frame.	
13. Picture after disassembly	

6. Troubleshooting

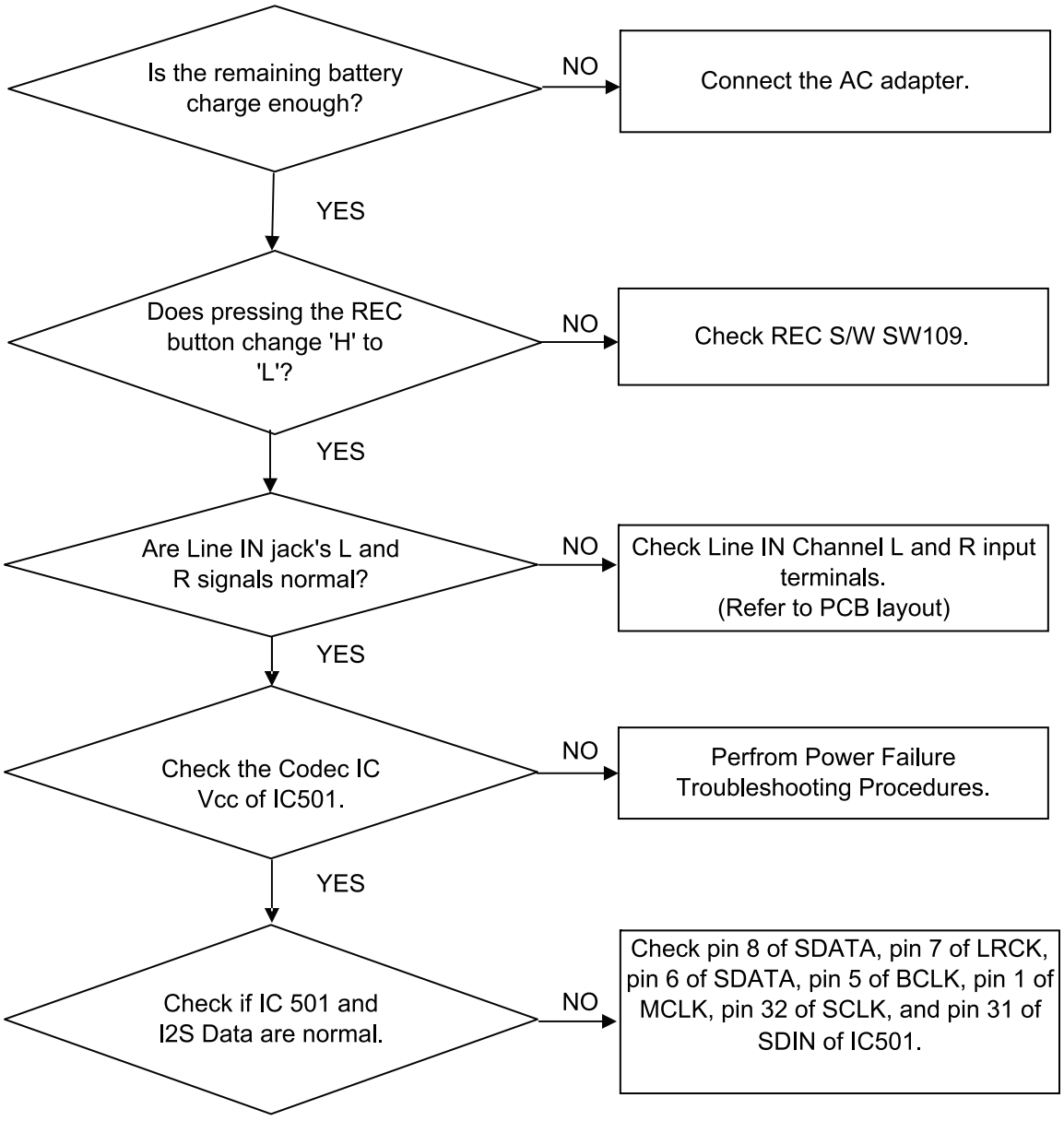
1. It keeps being turned off



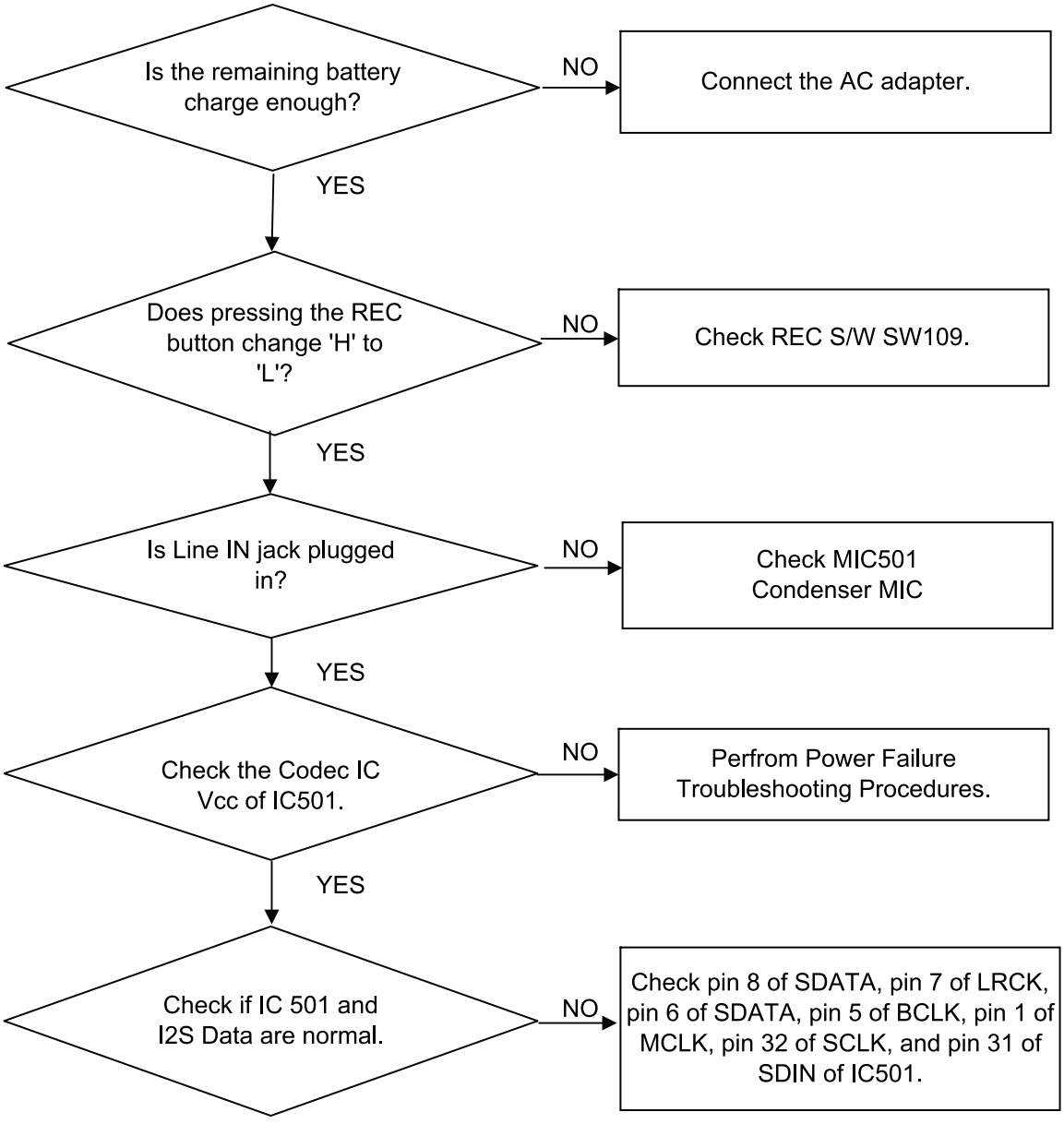
2. No Sound can be heard



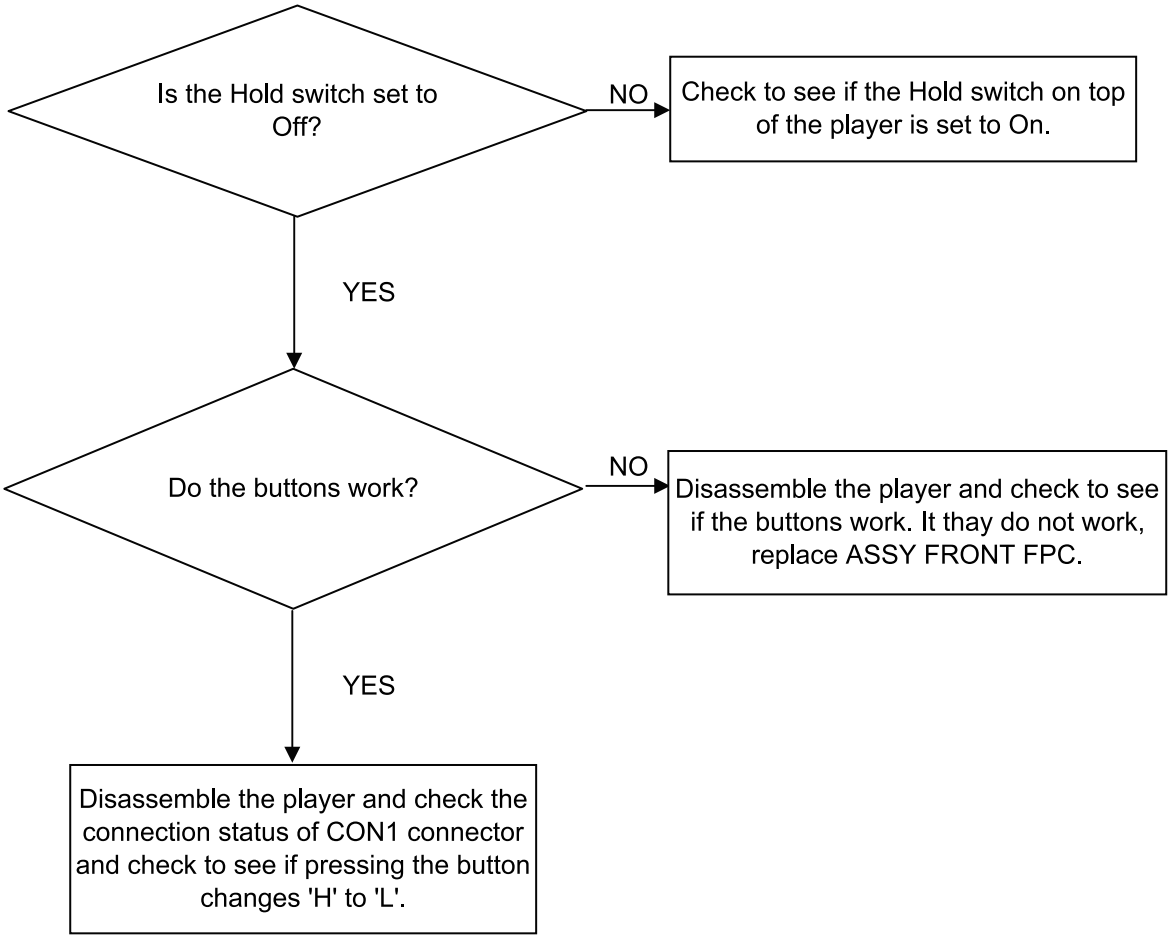
3. Recording Failure (Line IN)



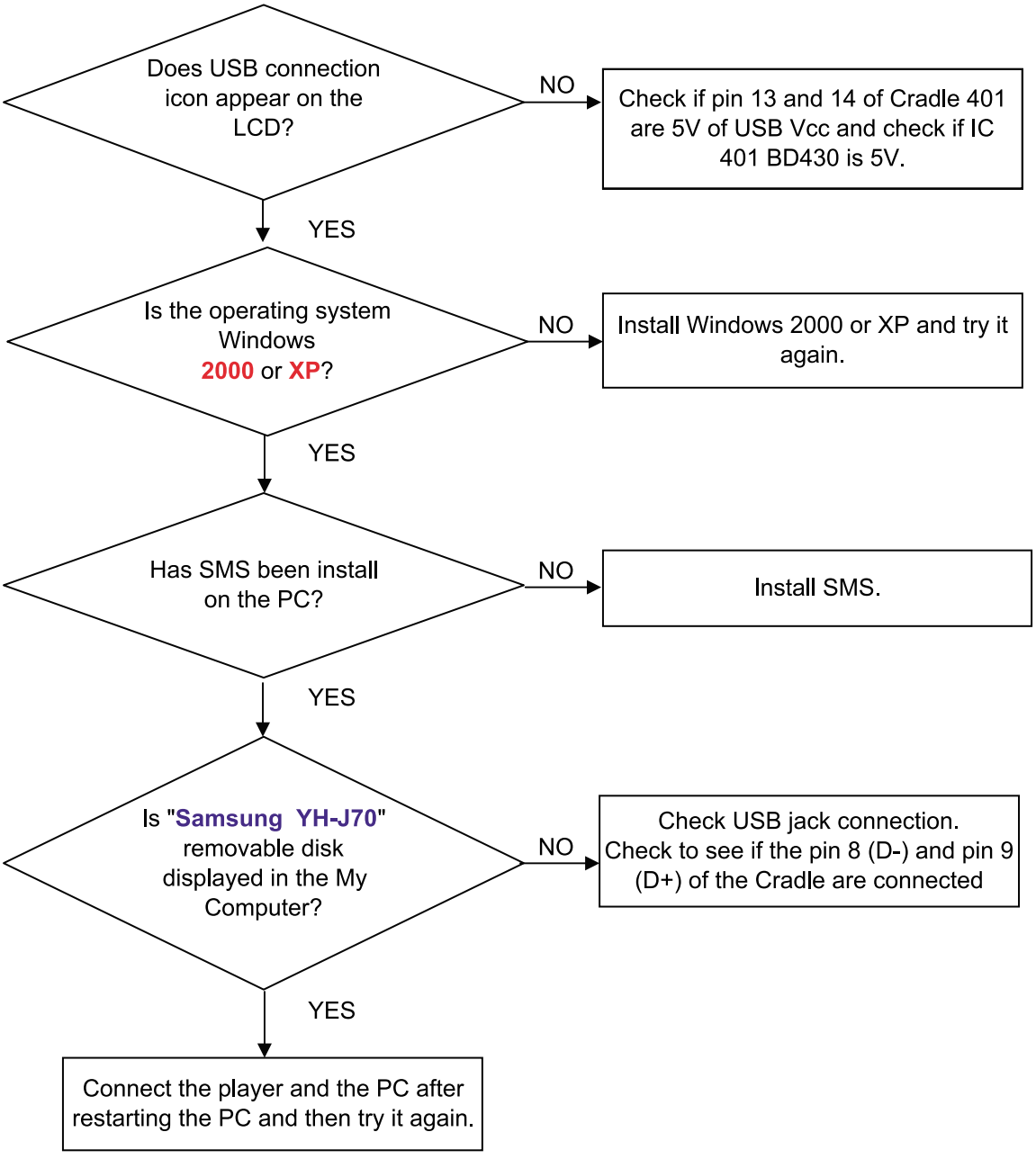
4. Recording Failure (Audio)



5. The buttons does not works



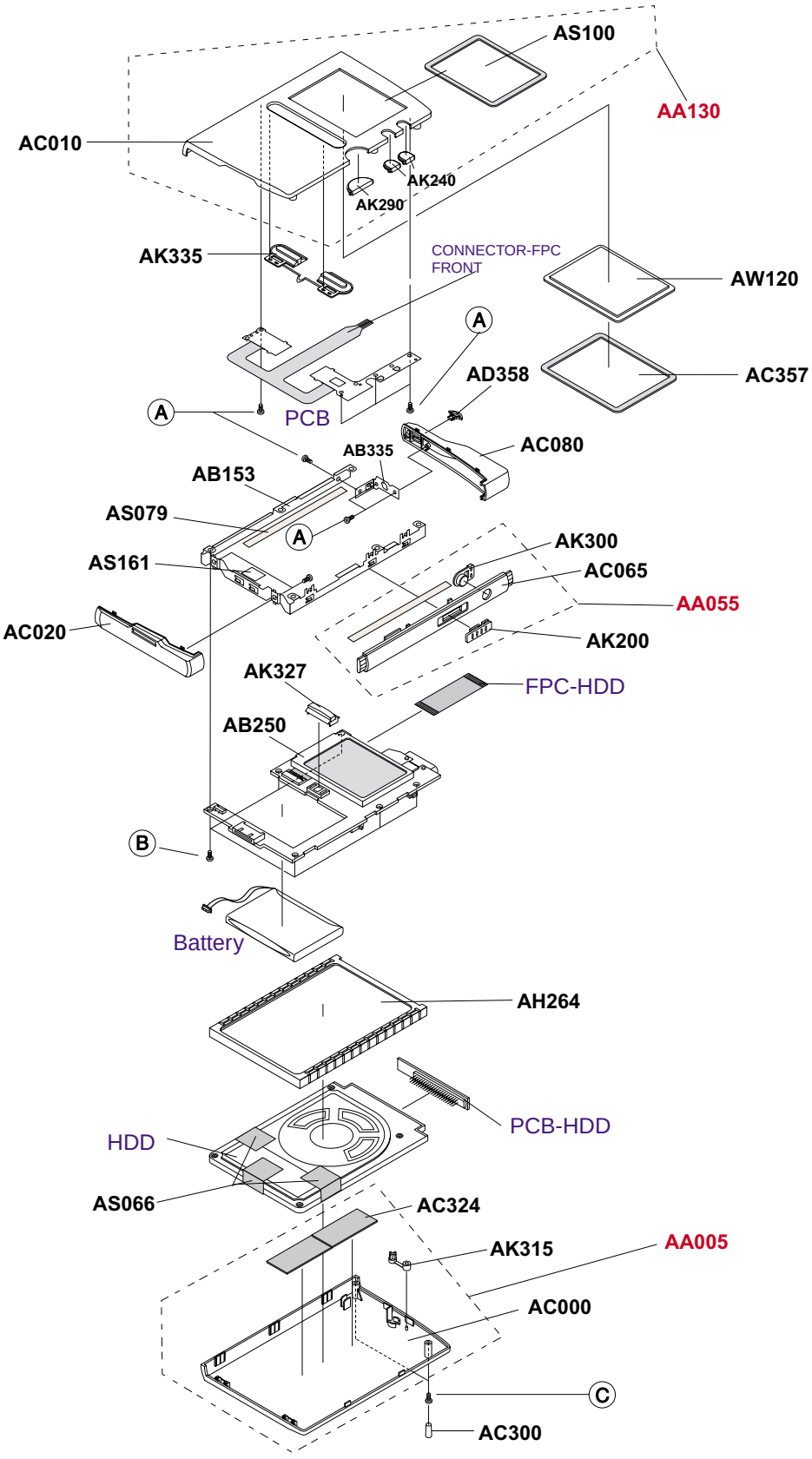
6. When you cannot connect the player to the PC



7.Exploded View & Parts List

1. Total Exploded View

YH-J70 Exploded View



2. Parts List

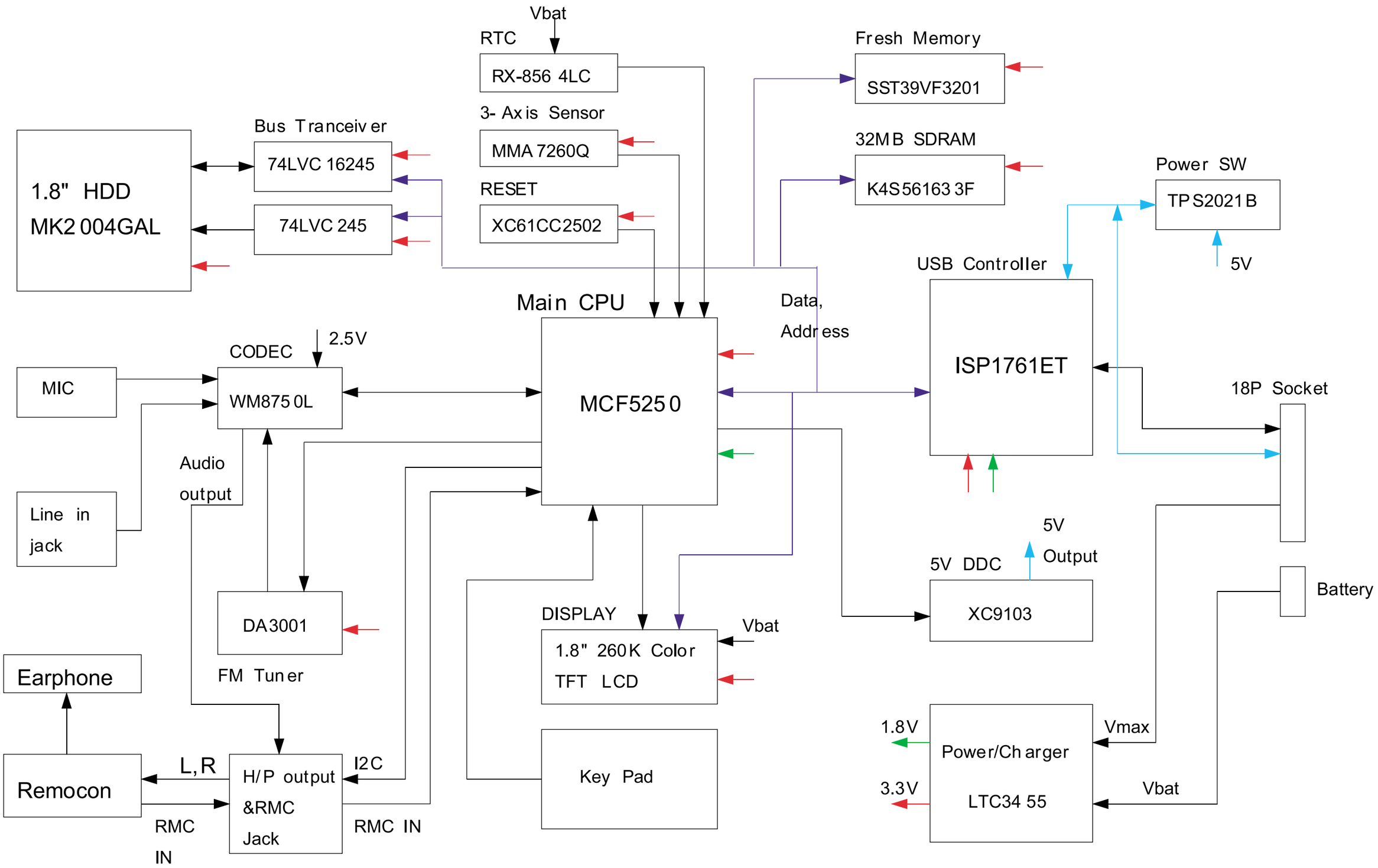
Location No.	Code No.	Descripion	Specification	Qty	REMARK
AA005	AH64-03679G	CABINET-BACK-ASSY	PC,BLACK	1	YH-J70SB/LB
	AH64-03679H	CABINET-BACK-ASSY	PC,WHITE	1	YH-J70SW/LW
AA055	AH64-03681A	CABINET-SIDE-ASSY	PC,SILVER	1	
AA130	AH64-03678C	CABINET-FRONT-ASSY	PC,BLACK	1	YH-J70SB/LB
	AH64-03678D	CABINET-FRONT-ASSY	PC,WHITE	1	YH-J70SW/LW
AB153	AH61-01933A	BRACKET-FRAME	SUS 3/4H	1	
AB250	AH61-01935A	BRACKET-LCD	SPTE t0.3	1	
AB335	AH61-01934A	BRACKET-TOP	SPTE t0.5	1	
AC000	AH64-03432C	CABINET-BACK	PC,BLACK	1	YH-J70SB
	AH64-03432D	CABINET-BACK	PC,WHITE	1	YH-J70SW
	AH64-03432G	CABINET-BACK	PC,BLACK	1	YH-J70LB
	AH64-03432H	CABINET-BACK	PC,WHITE	1	YH-J70LW
AC010	AH64-03433C	CABINET-FRONT(N)	PC,BLACK	1	YH-J70SB/LB
	AH64-03433D	CABINET-FRONT(N)	PC,WHITE	1	YH-J70SW/LW
AC020	AH64-03431A	CABINET-BOTTOM	PC,WHITE	1	
AC065	AH64-03436A	CABINET SIDE	Silver Spray	1	
AC080	AH64-03437A	CABINET-TOP	PC	1	
AC300	AH63-01032A	COVER-SCREW	SILICON 70	2	YH-J70SB/LB
	AH63-01032B	COVER-SCREW	SILICON 70	2	YH-J70SW/LW
AC324	AH63-01007A	SHEET-BACK	PORON t1.0 + 3M t0.05	2	
AC357	AH69-01518A	CUSHION-LCD	PORON t0.5 + 3M t0.05	1	
AD358	AH64-03446A	DECO STRAP	Zn, PLATING	1	
AH264	AH61-01932A	HOLDER-HDD	ELASTOMER (TRIEL 5302)	1	
AK200	AH64-03441A	KNOB-HOLD	ABS	1	
AK240	AH64-03620A	KNOB-MENU	PC	2	YH-J70SB/LB
	AH64-03620B	KNOB-MENU	PC	2	YH-J70SW/LW
AK290	AH64-03619A	KNOB-POWER	PC	1	YH-J70SB/LB
	AH64-03619B	KNOB-POWER	PC	1	YH-J70SW/LW
AK300	AH64-03443A	KNOB-REC	ABS	1	

Location No.	Code No.	Descripion	Specification	Qty	REMARK
AK315	AH64-03445A	KNOB-RESET	PC	1	YH-J70SB/LB
	AH64-03445B	KNOB-RESET	PC	1	YH-J70SW/LW
AK327	AH64-03624A	KNOB-SELECT	ABS / PC	1	YH-J70SB/LB
	AH64-03624B	KNOB-SELECT	ABS / PC	1	YH-J70SW/LW
AK335	AH64-03626A	KNOB-SKIP	ABS / PC	1	YH-J70SB/LB
	AH64-03626B	KNOB-SKIP	ABS / PC	1	YH-J70SW/LW
AS066	AH63-01029A	SHEET-CONDUCTIVE	NI-SHEET	3	SNA
AS074	AH63-01028A	SHEET-EMI	PET(0.03T)	1	SNA
AS079	AH63-01039A	SHEET-FRAME B	NITRO 31CT	1	SNA
AS100	AH63-01026A	SHEET-LCD	3M T0.05	1	SNA
AS161	AH63-01035A	SHEET-USB	NITRO 31CT	1	
AW120	AH64-03617A	WINDOW-LCD(A)	CNC ACRYL (t2.0)	1	
A	6003-001258	SCREW-TAPTITE	M1.4*2	9	
B	6003-001479	SCREW-TAPTITE	M1.7*4	4	
C	6003-001143	SCREW-TAPTITE	M1.7*6	2	

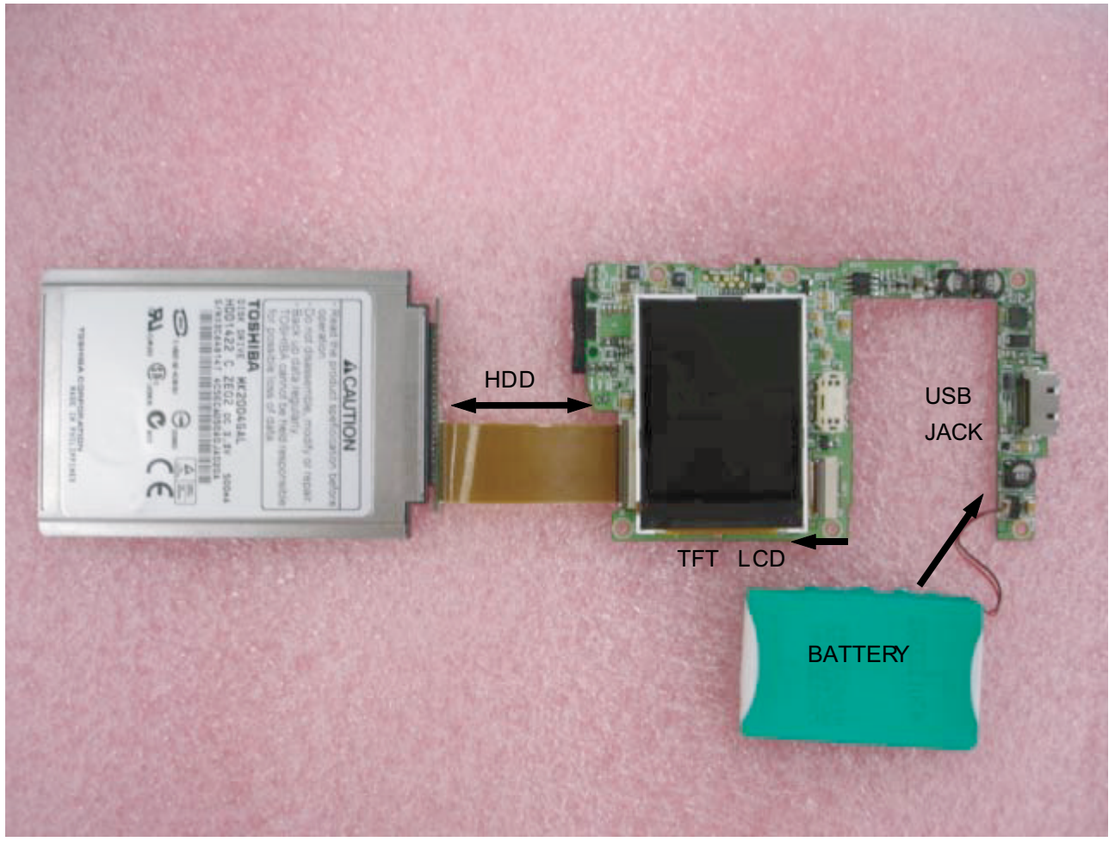
8. Electrical Parts List

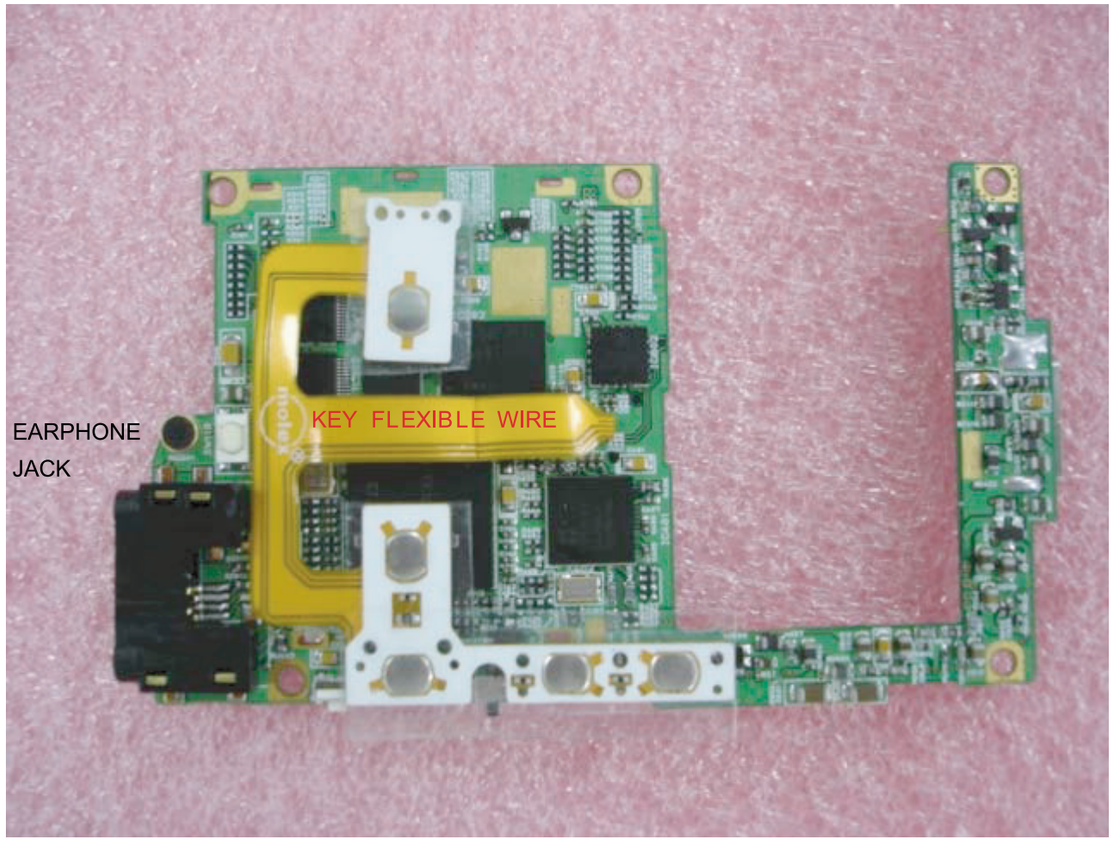
Location no.	Code no.	Description & Specification	Remarks
	** YH-J70SW Series **		
AA005	AH64-03679B	CABINET-BACK-ASSY;YH-J70,PC,-,-,-,-,WHIT	
AA055	AH64-03681A	CABINET-SIDE-ASSY;YH-J70,-,-,-,-,-,SILVE	
AA130	AH64-03678B	CABINET-FRONT-ASSY;YH-J70,PC,-,-,-,-,WHI	
AB153	AH61-01933A	BRACKET-FRAME;YH-J70,SUS,t0.35,-,-,-,-	
AB250	AH61-01935A	BRACKET-LCD;YH-J70,SPTE,t0.3,-,-,-,PLATI	
AB335	AH61-01934A	BRACKET-TOP;YH-J70,SPTE,t0.5,-,-,-,-	
AC020	AH64-03431A	CABINET-BOTTOM;YH-J70,PC,-,-,-,-,WHITE,-	
AC065	AH64-03435A	CABINET-SIDE(N);YH-J70N,PC,-,-,-,-,WHITE	
AC080	AH64-03437A	CABINET-TOP;YH-J70,PC,-,-,-,-,WHITE,-	
AC357	AH69-01518A	CUSHION-LCD;YH0J70,PORON,t0.5,-,-,-,-,BL	
AD358	AH64-03446A	DECORATION-STRAP;YH-J70,Zn,-,-,-,-,-,PLA	
AH264	AH61-01932A	HOLDER-HDD;YH-J70,ELASTOMER,-,-,-,-,-	
AK200	AH64-03441A	KNOB-HOLD;YH-J70,ABS,-,-,-,-,-,-,PLATING	
AK240	AH64-03620B	KNOB-MENU;YH-J70,-,-,-,-,-,WHITE,-,-	
AK290	AH64-03619B	KNOB-POWER;YH-J70,-,-,-,-,-,WHITE,-,-	
AK300	AH64-03443A	KNOB-REC;YH-J70,ABS,-,-,-,-,-,-,PLATING	
AK315	AH64-03445B	KNOB-RESET;YH-J70,PC,-,-,-,-,-,-,######	
AK327	AH64-03624B	KNOB-SELECT;YH-J70,-,-,-,-,-,WHITE,-,-	
AK335	AH64-03626B	KNOB-SKIP;YH-J70,-,-,-,-,-,WHITE,-,-	
AS040	6003-001143	SCREW-TAPTITE;PH,+,-,B,M1.7,L6,NI PLT,SW	
AS040	6003-001258	SCREW-TAPTITE;PH,+,B,M1.4,L2.0,NI PLT,SW	
AS040	6003-001479	SCREW-TAPTITE;BH,+,B,M1.7,L4,ZN	
AS066	AH63-01029A	SHEET-CONDUCTIVE;YH-J70,Ni-Sheet,0.09,-,	
AS074	AH63-01028A	SHEET-EMI;YH-J70,PET,0.02,-,-,####,BACK	
AS079	AH63-01039A	SHEET-FRAME B;YH-J70,NITTO031CT,-,-,-,	
AS082	AH63-01005A	SHEET-HOLD;467MP,-,0.05,-,-,###,BACK SI	
AS095	AH63-00768B	SHEET-PCB;YP-60,3M5480,-,W8,L18,-,-	
AS161	AH63-01035A	SHEET-USB;YH-J70,-,-,-,-,-,-	
AW120	AH64-03617B	WINDOW-LCD;YH-J70,ACRYL,2.0T,-,-,-,-	
BATT6	3710-001436	SOCKET-BOARD TO BOARD;2P,1R,1.27mm,SMD-A	
BD410	3301-001272	BEAD-SMD;120ohm,2x1.25x1mm,-,TR,-,-,-	
BD422	2007-000029	R-CHIP;0ohm,5%,1/8W,TP,2012	
BD430	2007-000070	R-CHIP;0ohm,5%,1/10W,TP,1608	
BD501	3301-001364	BEAD-SMD;1000ohm,1608,150mA,TP,1085ohm/	
BUZZE	3002-001144	BUZZER-MAGNETIC;78dB,3.0V,100mA,4000Hz,R	
C106	2404-001247	C-TA,CHIP;22UF,20%,4V,WT,TP,2012	
C117	2203-000254	C-CER,CHIP;10nF,10%,16V,X7R,1005	
C144	2203-002709	C-CER,CHIP;100nF,+80-20%,16V,Y5V,1005	
C308	2404-001401	C-TA,CHIP;220uF,+-20,4V,SMD,REEL,3216	
C436	2203-006090	C-CER,CHIP;10000nF,10%,6.3V,X5R,2012	
C443	2404-001281	C-TA,CHIP;22UF,20%,6.3V,WT,TP,2012	
C447	2203-005493	C-CER,CHIP;220nF,+80-20%,16V,Y5V,1005	
C452	2203-000627	C-CER,CHIP;0.022NF,5%,50V,C0G,TP,1005	
C502	2203-005900	C-CER,CHIP;1000NF,+80-20%,10V,Y5V,1005	
C503	2404-001407	C-TA,CHIP;TEESVB20E337M8R,330uF,20%,2.5V	
C506	2203-000585	C-CER,CHIP;0.22nF,10%,50V,X7R,1005	
C515	2203-002885	C-CER,CHIP;33nF,+80-20%,50V,Y5V,TP,1005	
C543	2404-001244	C-TA,CHIP;4.7uF,20%,6.3V,-,TP,2012	
C544	2404-001064	C-TA,CHIP;10UF,20%,6.3V,WT,TP,2012	
C604	2203-001640	C-CER,CHIP;0.39nF,10%,50V,X7R,TP,1608	
C605	2203-006391	C-CER,CHIP;1000NF,10%,10V,X7R,-,1608	
C609	2203-000681	C-CER,CHIP;0.027nF,5%,50V,C0G,1608	
C615	2203-000236	C-CER,CHIP;0.1nF,5%,50V,C0G,1608	
C617	2203-002793	C-CER,CHIP;1000nF,+80-20%,25V,Y5V,2012	
C627	2404-001348	C-TA,CHIP;100uF,##20%,6.3V,-,TP,3.2X1.6X	
C632	2203-006818	C-CER,CHIP;47000nF,20%,6.3V,X5R,3216	
CON-H	3708-002076	CONNECTOR-FPC/FFC/PIC;51P,0.3mm,SMD-A,SN	
CON-H	3711-005881	HEADER-BOARD TO CABLE;NOWALL,50P,2R,1.27	
CRADL	3710-002208	CONNECTOR-INTERFACE;18P,1R,0.5mm,ANGLE,N	
D407	1405-001171	VARISTOR;6Vdc,-,1x0.5x0.5mm,TP	
D504	0406-001128	DIODE-TVS;MLVS-0603-E08,50V,-,-	
D601	0404-001010	DIODE-SCHOTTKY;KDR729,30V,200MA,DSM,TP	
D603	0404-001203	DIODE-SCHOTTKY;B240A,40V,2000MA,SMA,TP	
D804	0401-001090	DIODE-SWITCHING;1SS355,80V,100MA,SOD-323	
FMPAC	AH40-00116A	TUNER-FM MODULE;GRP-412S,YH-J50,FM,-,-,-	
FSW1	3403-001150	SWITCH-PUSH;5V,10mA,-,CW-PUSH-CCW,-	
IC101	0904-001993	IC-DSP;SCF5250VM120,16Bit,BGA,196P,15	
IC102	1203-003746	IC-VOL DETECTOR;XC61FC1912MR,SOT-23,3P,	
IC202	1105-001672	IC-DRAM;EM48AM1684,16Mx16Bit,TFBGA,54P	
IC203	1107-001547	IC-FLASH MEMORY;39VF3201,2Mx16Bit,TFBGA,	
IC301	0801-002996	IC-CMOS LOGIC;74LVC16245A,transceiver,TV	
IC302	0801-002997	IC-CMOS LOGIC;74LVC245A,transceiver,TVSO	
IC401	0904-001992	IC-USC;ISP1761ET,32Bit,TFBGA,128P,9.0	
IC403	1205-002517	IC-SWITCH;TPS2020D,SO,8P,-,-,5.5V,725mW,	
IC404	0801-002959	IC-CMOS LOGIC;7SV32,OR GATE,SC-70,5P,2x1	
IC405	0801-002800	IC-CMOS LOGIC;NC7SV08,AND GATE,SC70,5P,4	
IC501	1002-001374	IC-A/D&D/A CONVERTER;WM8750L,24,QFN,32P,	
IC601	1203-003254	IC-DC/DC CONVERTER;LTC3455,QFN,24P,4X4MM	
IC602	1203-003257	IC-DC/DC CONVERTER;XC9103,SOT-25,5P,2.9X	
IC603	1203-003726	IC-DC/DC CONVERTER;XC9216A12CMR,SOT-25,5	
IC801	0909-001041	IC-REAL TIME CLOCK;RX-8564LC,8Bit,VSOJ-1	
IC802	1209-001596	IC-SENSOR;MMA7260QR2,QFN,16P,6x6mm,PLAST	
JACK5	3722-002300	JACK-PHONE;11P,-,AU,-,-	
KR1	2007-001319	R-CHIP;1.2KOHM,5%,1/16W,TP,1005	
KR2	2007-001320	R-CHIP;1.8KOHM,5%,1/16W,TP,1005	
L401	2704-000005	INDUCTOR-SMD-ARRAY;90OHM,50V,370MA,-,0.3	
L506	2703-000275	INDUCTOR-SMD;33UH,10%,2012	
L601	2703-001871	INDUCTOR-SMD;10uH,20%,6060	
L604	2703-001873	INDUCTOR-SMD;4.7uH,20%,6060	
L605	2703-001920	INDUCTOR-SMD;2.2uH,20%,3225	
LCD1	3708-002077	CONNECTOR-FPC/FFC/PIC;33P,0.3mm,SMD-A,SN	
MIC50	3003-001099	MIC-CONDENSOR;2V,130~300uA,-44dB,2.2Kohm	
MKEY_	3708-002035	CONNECTOR-FPC/FFC/PIC;4P,0.5mm,SMD-A,AU,	
Q512	0505-001174	FET-SILICON;SI2302ADS,N,20V,2.4A,65mohm,	
Q515	0504-001084	TR-DIGITAL;-,NPN,200mW,2.2K,SOT-323,TP	
Q601	0504-000156	TR-DIGITAL;KSR2103,PNP,200MW,22K/22K,SOT	
Q602	0505-001845	FET-SILICON;SI2312DS,N,20V,3.77A,0.051oh	
Q605	0504-000211	TR-DIGITAL;DTC143TU,NPN,200mW,4.7K,SC-70	
Q606	0505-001426	FET-SILICON;IRLML6401,P,-12V,-4.3A,0.05o	
Q607	0504-000128	TR-DIGITAL;-,NPN,200MW,22K/22K,SOT-23,TP	
Q802	0501-000730	TR-SMALL SIGNAL;2SA1577,PNP,200MW,SOT-32	
R103	2007-001333	R-CHIP;18KOHM,5%,1/16W,TP,1005	
R120	2007-007107	R-CHIP;100Kohm,1%,1/16W,TP,1005	
R170	2007-002797	R-CHIP;560OHM,5%,1/16W,TP,1005	
R205	2007-000171	R-CHIP;0ohm,5%,1/16W,TP,1005	
R301	2007-001292	R-CHIP;33OHM,5%,1/16W,TP,1005	
R335	2007-000982	R-CHIP;5.6KOHM,5%,1/16W,TP,1005	
R417	2007-001694	R-CHIP;12Kohm,0.5%,1/10W,TP,1608	
R424	2007-000148	R-CHIP;10Kohm,5%,1/16W,TP,1005	
R439	2007-000092	R-CHIP;15Kohm,5%,1/10W,TP,1608	
R445	2007-000170	R-CHIP;1MOHM,5%,1/16W,TP,1005	
R504	2007-000162	R-CHIP;100Kohm,5%,1/16W,TP,1005	
R517	2007-000172	R-CHIP;10ohm,5%,1/16W,TP,1005	
R520	2007-000157	R-CHIP;47Kohm,5%,1/16W,TP,1005	
R522	2007-000775	R-CHIP;33KOHM,5%,1/16W,TP,1005	
R527	2007-000143	R-CHIP;4.7Kohm,5%,1/16W,TP,1005	
R528	2007-000153	R-CHIP;22KOHM,5%,1/16W,TP,1005	
R534	2007-000141	R-CHIP;2.2Kohm,5%,1/16W,TP,1005	
R539	2007-001325	R-CHIP;3.3Kohm,5%,1/16W,TP,1005	
R542	2007-000636	R-CHIP;270KOHM,5%,1/16W,TP,1005	
R543	2007-000139	R-CHIP;220OHM,5%,1/16W,TP,1005	
R604	2007-000104	R-CHIP;150Kohm,5%,1/10W,TP,1608	
R606	2007-000309	R-CHIP;10ohm,5%,1/10W,TP,1608	
R607	2007-007981	R-CHIP;180Kohm,1%,1/16W,TP,1005	
R608	2007-007488	R-CHIP;75KOHM,1%,1/16W,TP,1005	
R610	2007-008453	R-CHIP;1.24KOHM,1%,1/16W,TP,1005	
R612	2007-009079	R-CHIP;255Kohm,1%,1/16W,TP,1005	
R614	2007-000045	R-CHIP;3.32Kohm,1%,1/10W,TP,1608	
R616	2007-002425	R-CHIP;1ohm,5%,1/10W,TP,1608	
R618	2007-000078	R-CHIP;1Kohm,5%,1/10W,TP,1608	
R619	2007-008676	R-CHIP;80.6KOHM,1%,1/16W,TP,1005	
R621	2007-008780	R-CHIP;0.1OHM,1%,1/16W,TP,1005	
R622	2007-000637	R-CHIP;270Kohm,5%,1/10W,TP,1608	
R625	2007-008697	R-CHIP;2.49KOHM,1%,1/16W,TP,1005	
R820	2007-000140	R-CHIP;1Kohm,5%,1/16W,TP,1005	
R823	2007-000758	R-CHIP;330KOHM,5%,1/16W,TP,1005	
R828	2007-000138	R-CHIP;100ohm,5%,1/16W,TP,1005	
SW109	3404-001152	SWITCH-TACT;12V DC,20mA,160gf,4.5x4.0x2.	
SW110	3404-001143	SWITCH-TACT;12VDC,20mA,180gf,3.2x4.9x1.7	
SW801	3408-001110	SWITCH-SLIDE;5V,1mA,1,-,-	
X101	2804-001641	OSCILLATOR-CLOCK;11.2896MHz,50ppm,15pF&1	
X402	2801-004318	CRYSTAL-SMD;12MHz,20ppm,-,12PF,80ohm,TP	
	AH61-02036A	BRACKET-FRAME-ASSY;YH-J70,SUS,t0.3(3/4H)	
	AH63-01025A	SHEET-LCD SIDE;YH-J70,-,-,28,3,-,-	
	AH69-01519A	CUSHION-CON.HDD;YH-J70,PORON,t0.5,5,20,-	
	4302-001186	BATTERY-LI(2ND);3.7V,970mAH,-,190mA,4.2V	
	AH07-00163A	LCD;LCD MODULE,YH-J70,-,40 x 47.6	
	AH30-00084D	PHONE-EAR(EP-360);WHITE,EP-360,16ohm,NOR	
	AH39-00488B	CBF CABLE-STEREO CORD;YD-11034 ,YP-60,3P	
	AH39-00783A	CBF CABLE FORM-USB;49217-1001,YH-J70,2,1	
	AH39-00784A	CBF CABLE FORM-USB;49291-001,YH-J70,-,10	
	AH41-00866A	FPC;YH-J70,0,FPC,4,0.8T,YH-J70	
	AH41-00872A	FPC;YH-J70,FPC,1,0,0.15,15.6X22,-,	
	AH44-00100C	ADAPTOR;PSCV050102C,YH-J70,-,100~240Va	
	AH59-01259A	HDD;20GB,MK2006GAL,63,4,46,160,5MM	
	AH61-02013A	CASE-CARRYING;YH-J70,SILICON,-,-,-,-	
	AH68-00508D	LABEL BAR CODE;-,-,ART PAPER,-,80x95mm,-	
	AH68-00511E	LABEL-PACKING;YP-T7,KOR/CHN,-,-,-,-,-,	
	AH68-00701H	LABEL SERIAL;YP-T7,ALL,-,-,W20,L5.6,-,-	
	AH68-01675B	MANUAL USERS;YH-J70L,SEDA,PORTUGUESE,-,-	
	AH68-01746B	LABEL-WINDOW;YH-J70,XAA,PET,t0.1,-,-,CLE	
	AH68-50119B	LABEL-EAN(B);ART-PAPER,T0.05,L29,W47,WHT	
	AH69-01521A	PACKING-BLISTER;YH-J70LB,-,-,-,62,16.4,9	
	AH80-00119A	INSTALL;YH-J70,-,CD,INSTALL,-,-,-,-	
	AH92-02343A	ASSY PCB-YH-J70 MAIN;YH-J70,MAIN	

9. Block Diagram

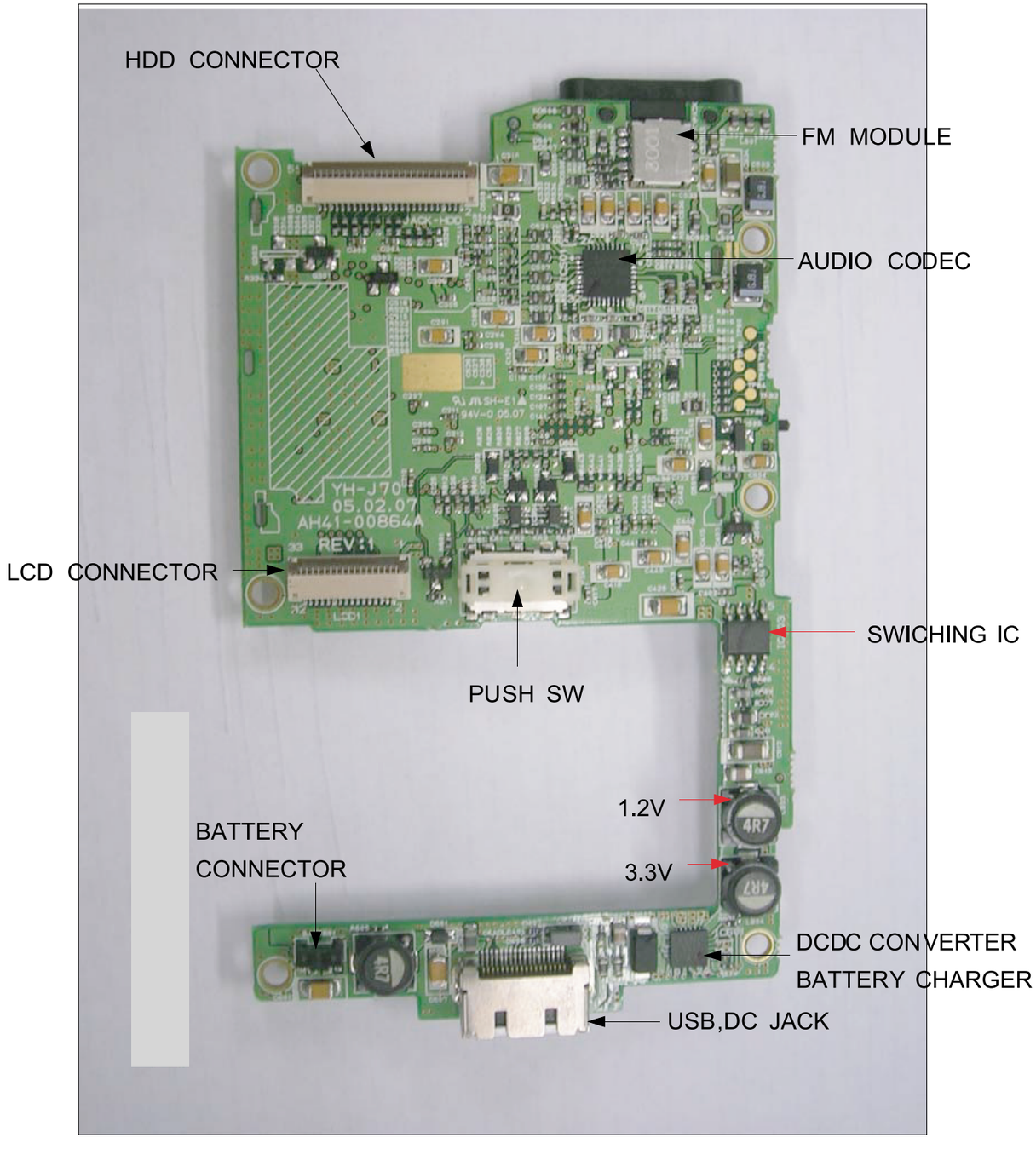


10. Wiring Diagram

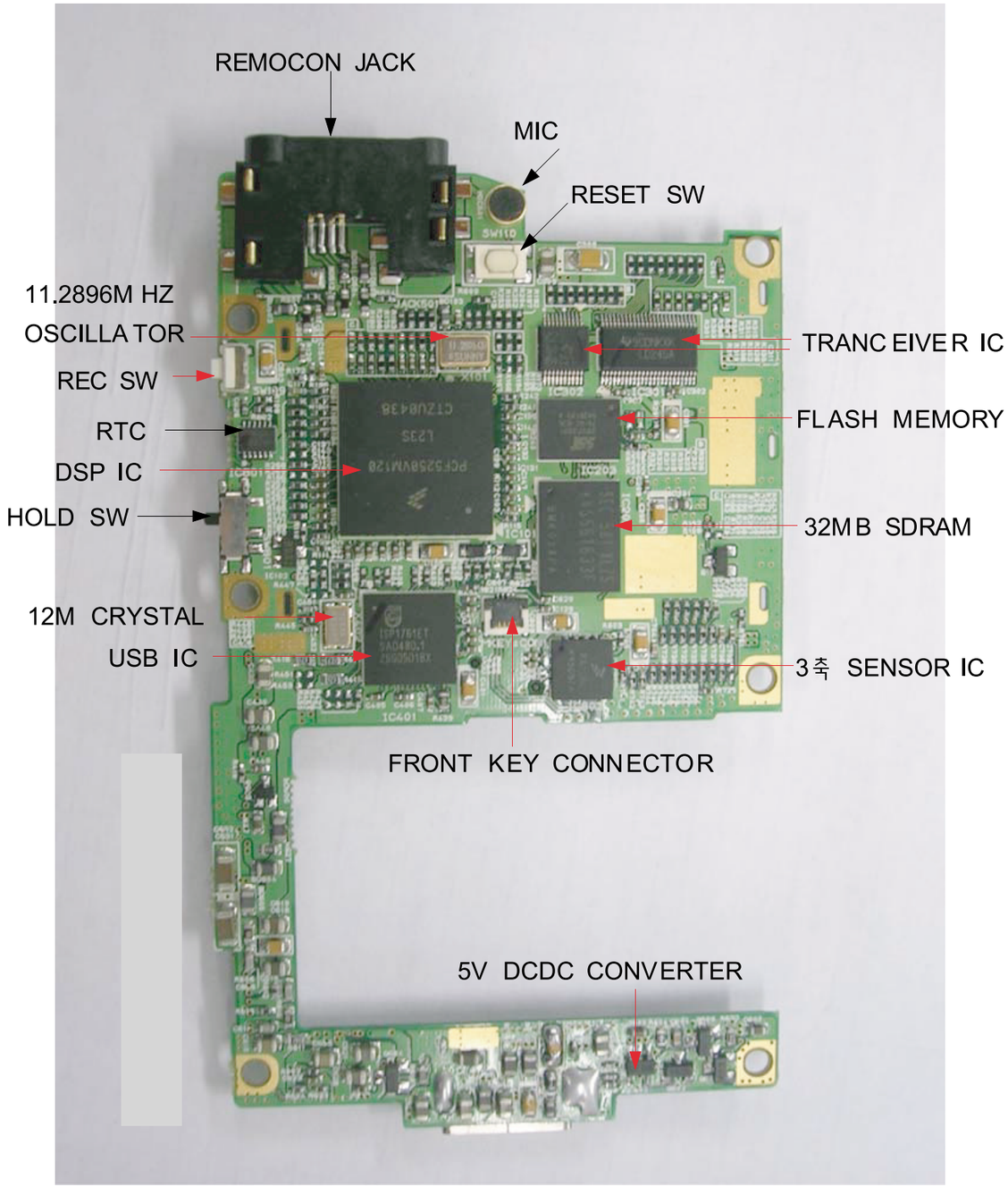




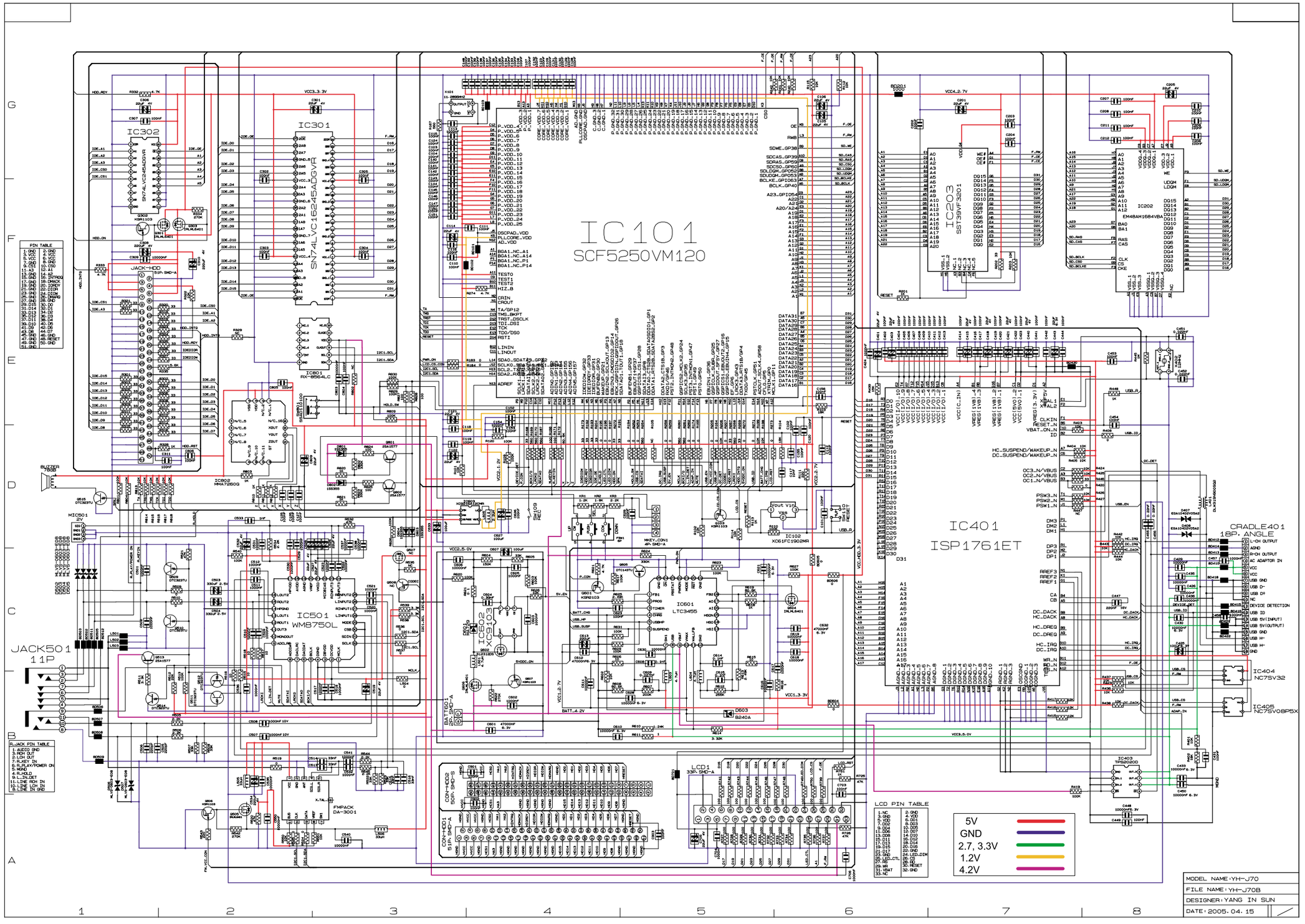
Main Board(TOP)



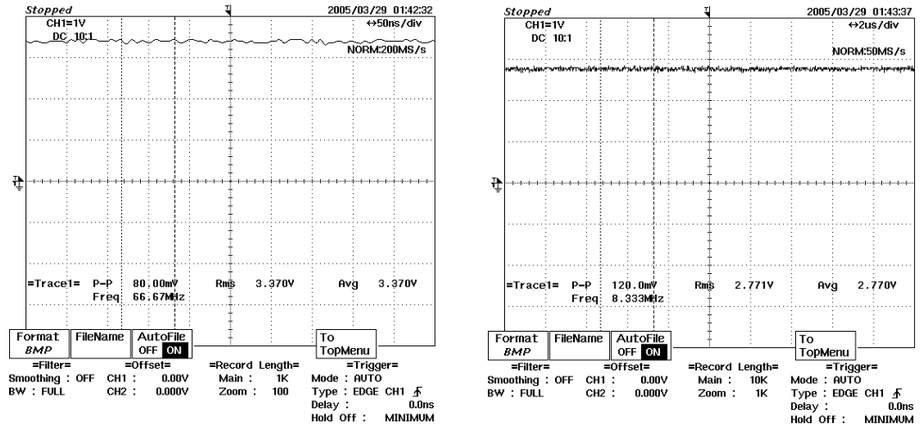
Main Board(BOTTOM)



1. MAIN

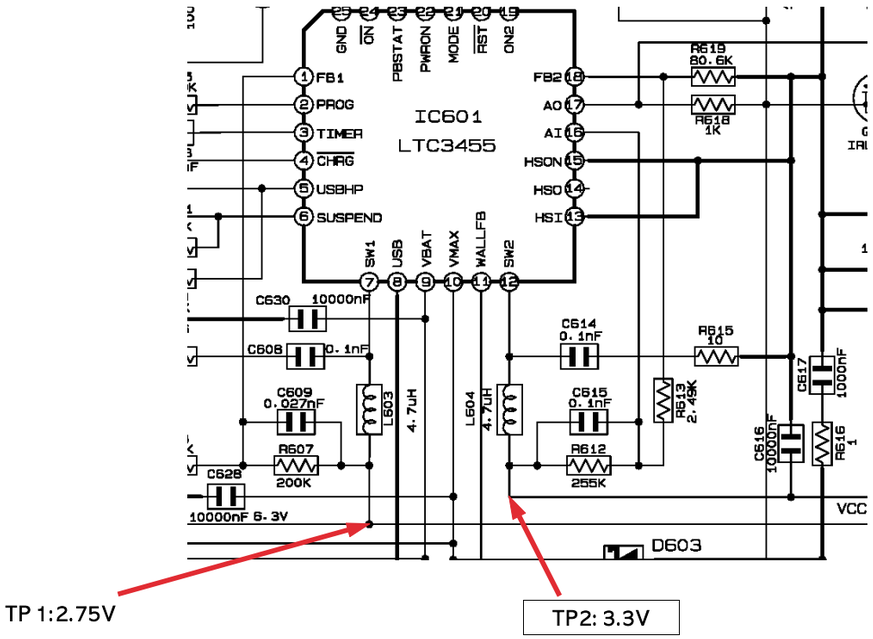

IC101
SCF5250VM120
IC301
IC302
IC501
WM8750L
IC601
LTC3455
IC602
IC603
IC401
ISP1761ET
IC202
IC203
IC102
IC403
TPS2020D
IC404
NC7SV32
IC405
NC7SV08P5X
JACK501
11P
CRADLE401
18P, ANGLE
LCD1
33P, SMD-A
BUZZER
78dB
MODEL NAME:YH-J70
FILE NAME:YH-J70B
DESIGNER:YANG IN SUN
DATE:2005.04.15
5V
GND
2.7, 3.3V
1.2V
4.2V

① VDD Test



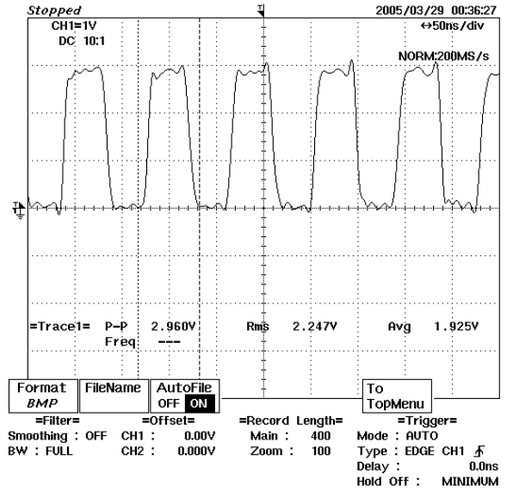
Test point	IC 601(LTC3455)
Result	MAIN Vcc 2.7V // HDD Vcc

〈 PICTURE 1-1 〉



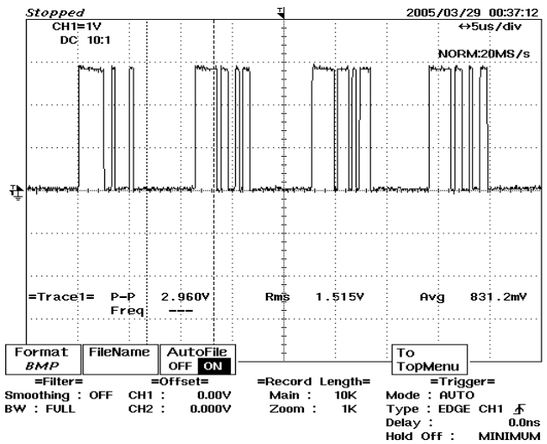
② Codec Test

〈 PICTURE 2 〉



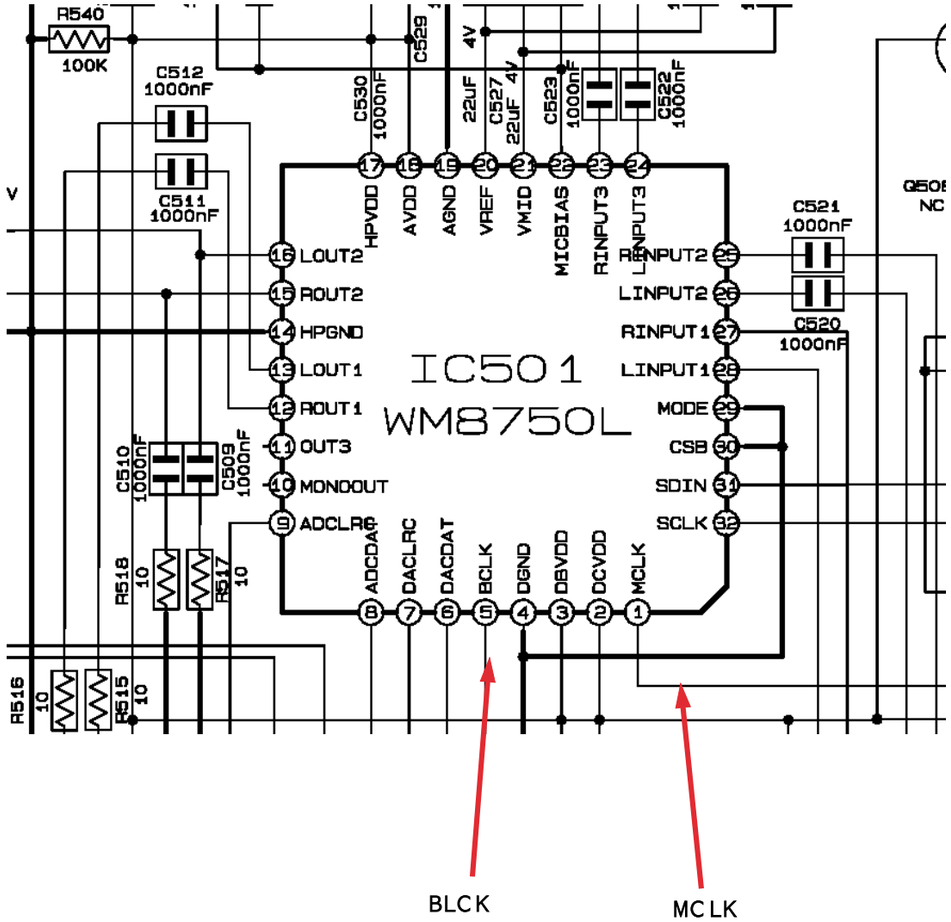
Test point	IC501 1pin
Result	CLOCK(MASTER)

〈 PICTURE 2-1 〉

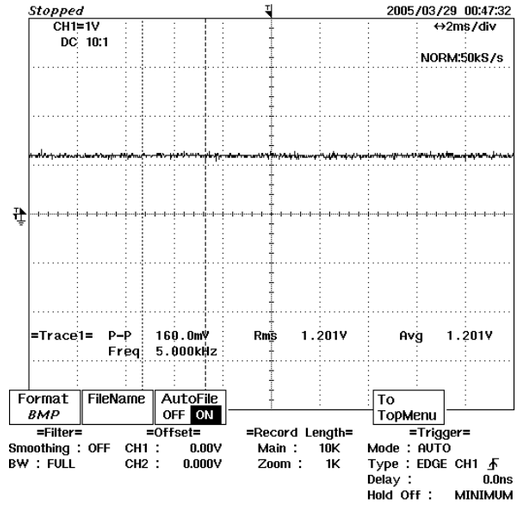


Test point	IC501 5pin
Result	BCLK

〈 PICTURE 2-3 〉

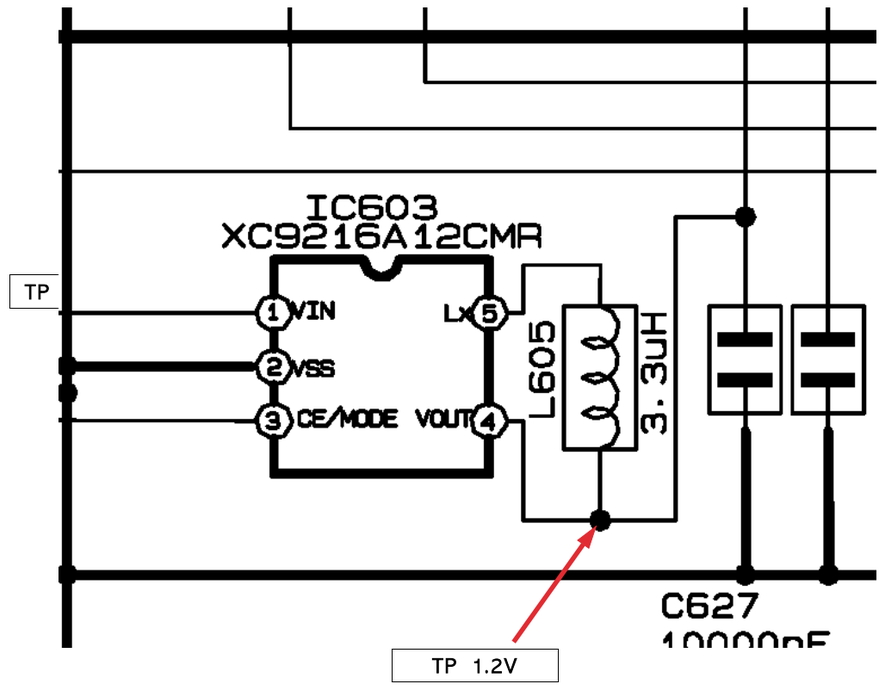


③ CORE DCDC Converter TEST



Test point	IC603 pin No.4
Result	D/D CON 1.2V CHECK

〈 PICTURE 3 〉



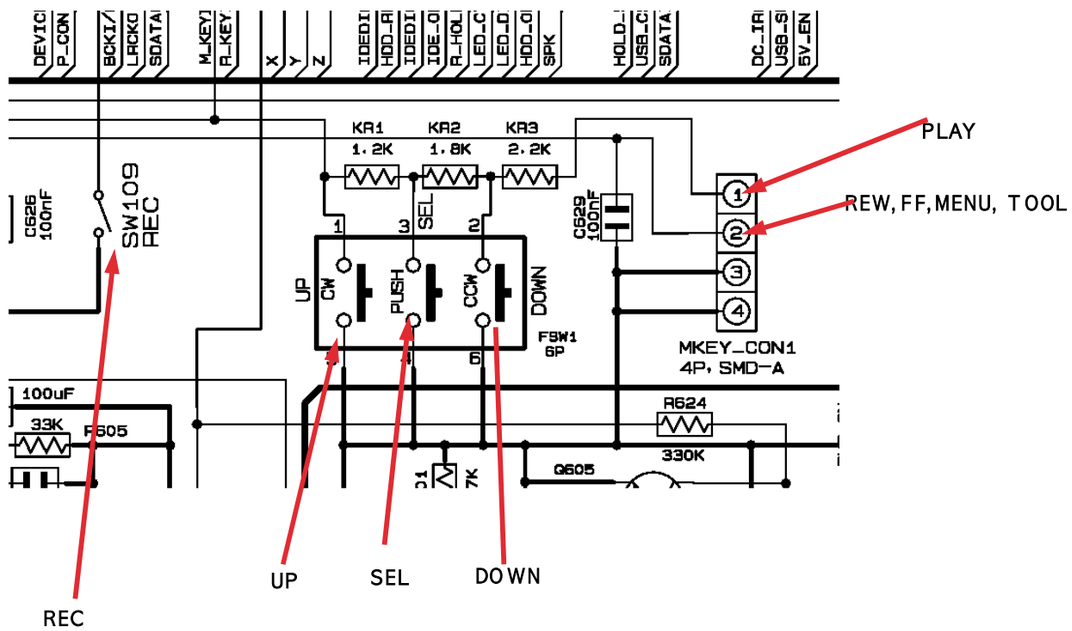
④ SWITCH Test

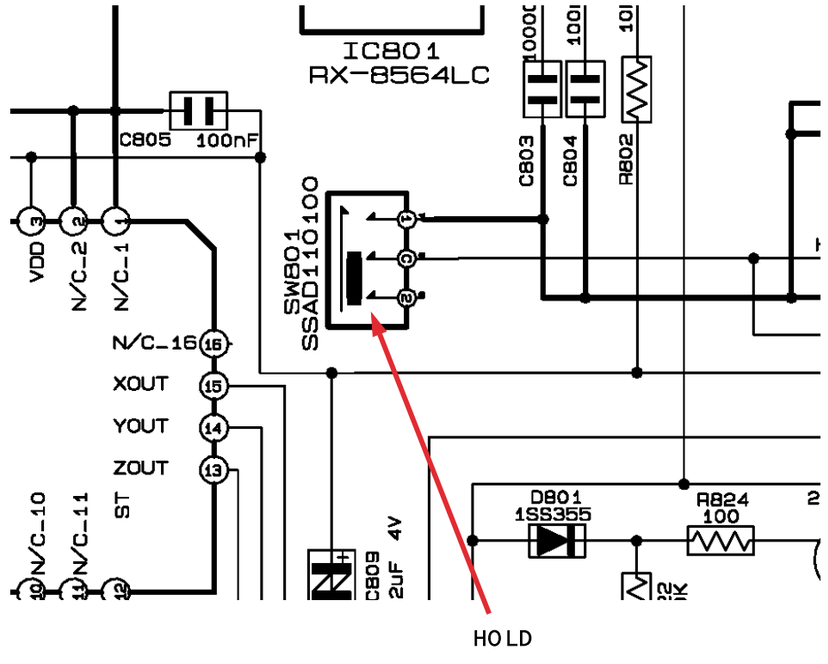
TABLE 1

	SW									
	REW	UP	DOWN	SEL	FF	MENU	TOOL	PLAY	REC	HOLD
TP	CON1	FSW1	FSW1	FSW1	CON1	CON1	CON1	CON1	SW109	SW801
Result	L	L	L	L	L	L	L	H	L	L

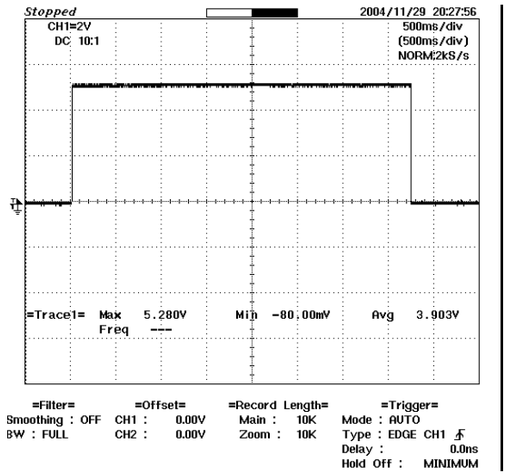
Test point	See Table 1
Result	See Table 1

〈 PICTURE 4 〉



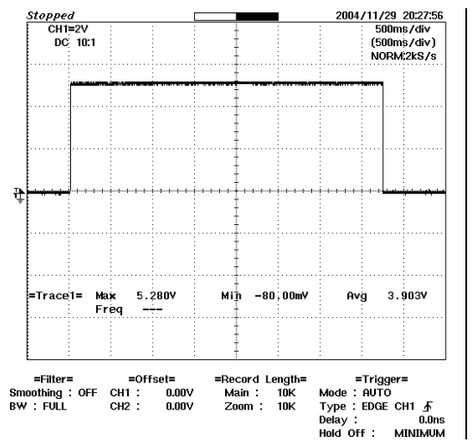


⑤ AC ADAPTOR POWER

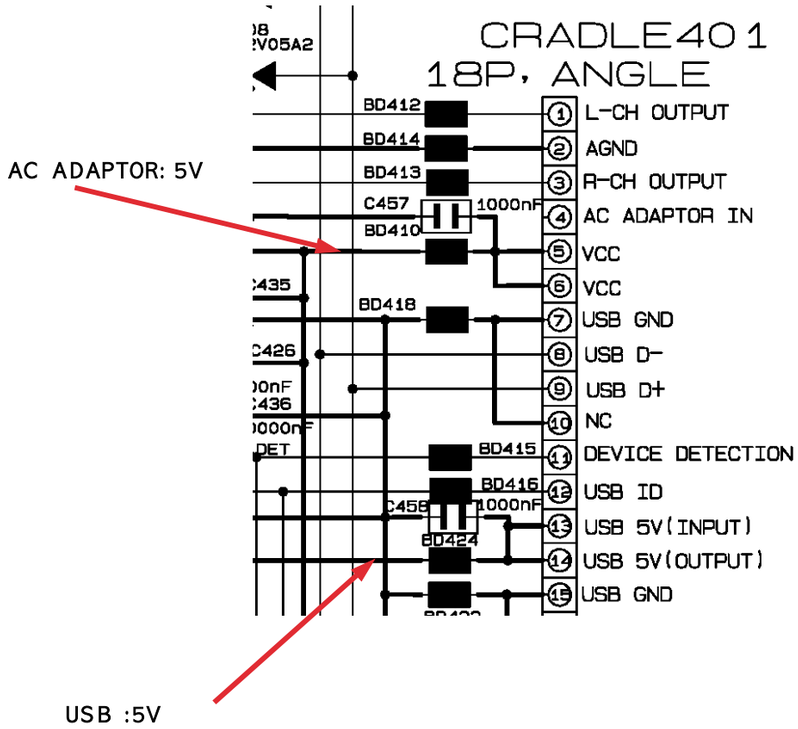


Test point	BD410
Result	DC 5V CHECK
〈 PICTURE 6 〉	

⑥ USB POWER

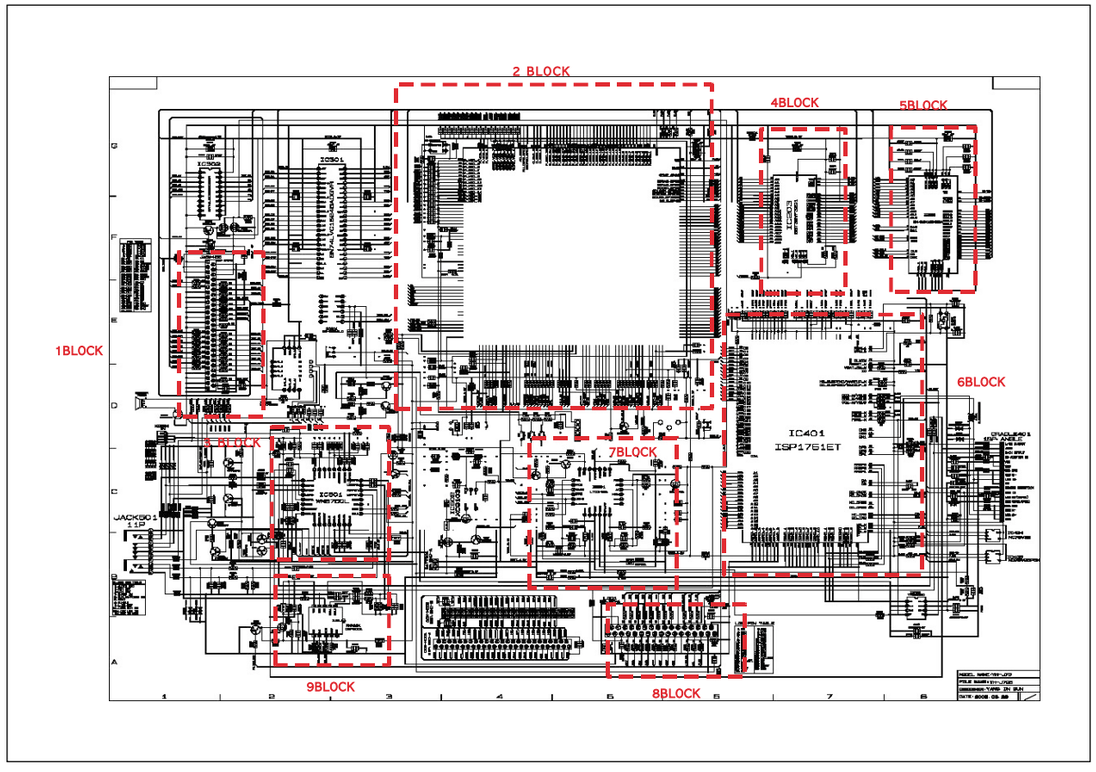


Test point	BD424
Result	USB 5V CHECK
〈 PICTURE 5 〉	



1. Description of the Circuit

1-1. Main Blocks in the Circuit Diagram



1-2.Main Functions by Block

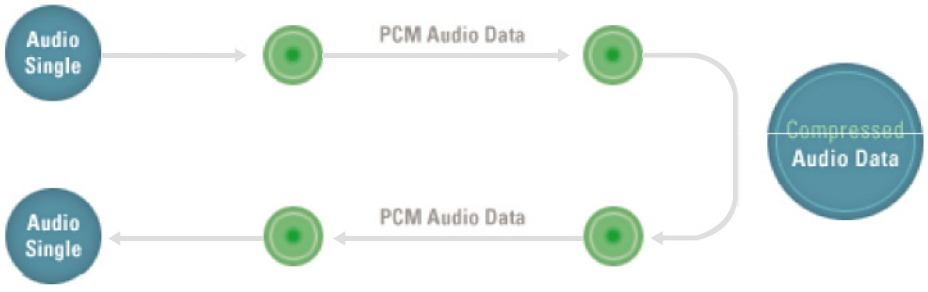
Circuit	Major Functions	Remarks
MAIN	**1. HDD Connection Block.(BLOCK 1)** * Power: +3.3V * 40 Pin Connector **2. MAIN CPU Block(BLOCK 2)** * IC that controls overall operations of the MP3 player as well as encodes and decodes MP3 and WMA data. **3. Codec Block(BLOCK 3)** * Converts the digital signal processed by Micom IC into analog and outputs the signal to the earphones. **4. Flash Memory Block(BLOCK 4)** * Internal built-in memory that saves boot code of the player. **5. SDRAM Block(BLOCK 5)** * Internal built-in memory that saves the program and plays the role of buffer. **6. USB Block(BLOCK 6)** * Supports USB communication between the player and the computer **7. Power Block(BLOCK 7)** * Supplies power for the player operations (Receives power from the battery and changes the voltage to 3.3V and 2.7V) **8. LCD Driver Block** * Controls the LCD operations. **9. Tuner Module Block** * Receives FM radio signal and converts the signal into audio signal.	

14. Basic Information of MP3

1-1. Operating Principle of yepp

Terms and Overview

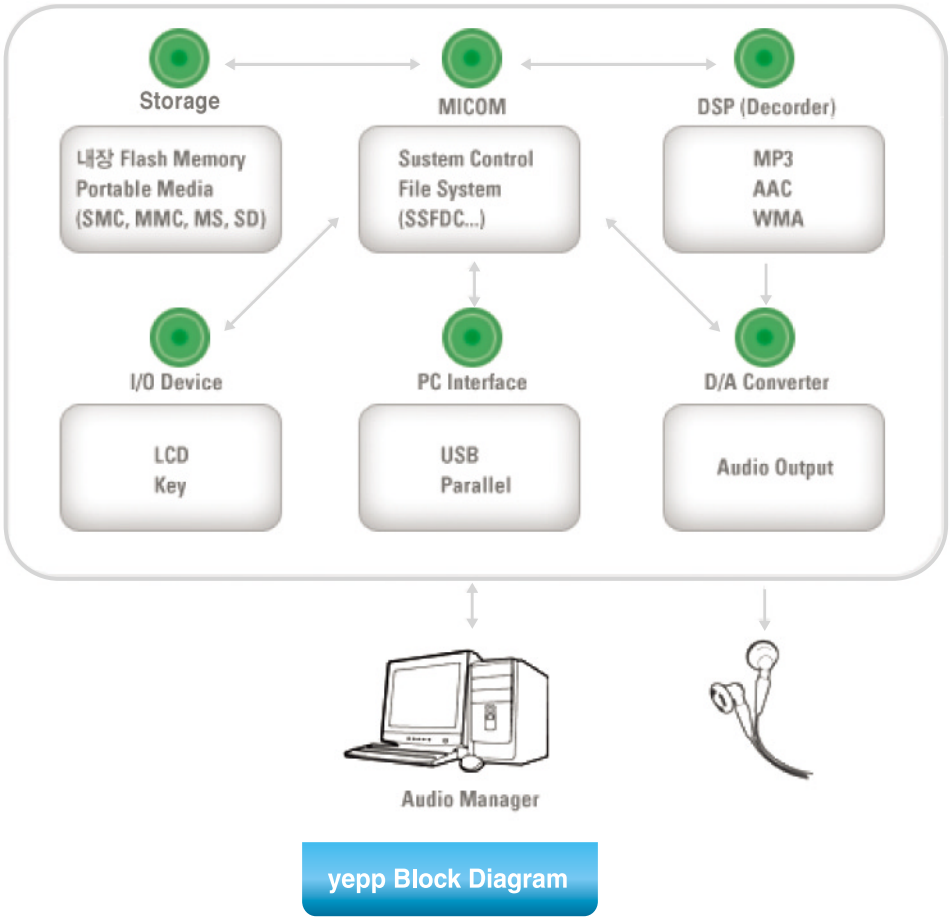
AV Conversion: process of converting Analog Data to Digital Data
SAMPLING RATE : means precision rate of A/D conversion and is indicated in Hz, bit number and channel number(for CD: 44.1 KHz, 16bit, 2channels)
ENCODING : process of compressing and converting digital data obtained through A/D conversion to audio format
Compression rate: indicated in bps(bit per second)
(For MP3: sound quality of CD level with compression rate of 128kbps)
ENCODING FORMAT : MP3 : MPEG Layer3
AAC : MPEG-2 AAC
WMA : Windows Media Audio (Microsoft)
ATRAC(3) : Adaptive TRansform Acoustic Coding (SONY)
EPAC : Enhanced Perceptual Audio Coder (Luscent Technology)
OGG : Ogg Vorbis
DECODING : Process of recovering the digital data encoded to the data before encoding
D/A : Process of converting Digital Data to Analog Data



CD Data Size (44.1KHz, 16Bit, 2Channel sampling으로 1분 용량의 경우)
44100/sec *2bytes(16bit)* 2(channel)* 60sec = 10,584,000 bytes

Process of converting digital data to analog data

Yepp Block Diagram



yepp Block Diagram

Yepp Vocabulary

Yepp (Young Energetic Personal Passinate)

MP3 player that enables you to enjoy audio data like music file in existing CD in high quality by compressing it to 1/12 level without loss of quality using MPEG1 Layer3(audio compression technology of animation and sound compression technique). You can also use it for learning foreign language and Internet broadcasting.

MPEG

MPEG is an abbreviation of Moving Picture Expert Group and means specification defining the compression and de-compression type of animation by MPEG established in 1988.

MP3

MP3 means MPEG1 Layer3 and compression rate can be up to 96:1(phone) to 12:1(CD) depending on sound quality with compression coding technique of audio of MPEG technology.

(file extension: "mp3") That is, up to 150 pieces of songs can be recorded in one copy of CD with MP3 compression.

FLASH Memory

Flash memory is the memory chip where entered information will not be deleted even if the power is turned off while data is entered, and data can be freely entered or deleted.

Smart Media Card

Compact and light semiconductor media card in dimension of 45.1 x 37.1 x 0.76mm and weight of 2.0g. It is used as a storage of portable device and high quality media storage device of digital camera and music MP3 player.
Flash memory is embedded to store the data even if the power is turned off and it is a super-high speed product that can record up to 250 characters per second.(mass production of 8MB, 16MB, 32MB currently at Samsung Electronics)

OTP (Once Time Programmable)

OTP is one type of micro controller(MCU) and is the customer-oriented semi-conductor on which the customers can directly record the program. OTP type MCU is rapidly growing as its life cycle of set product and multi-kind/small quantity production system is introduced.

Since existing type of micro controller uses Mask ROM which cannot be played or recorded again, it requires over 5 months to develop set products, and it is not suitable for products with rapid change of product model.

Firmware

It is a program that controls and manages hardware. Firmware is distinguished from hardware in that it is a program but is distinguished from general applications in that it is closely related to hardware. In general, firmware is saved in ROM.

IP (Information Provider)

Company that provides information that users want through communication system with certain fee.

SecuMAX

As multimedia digital contents distributions become active in networks such as Internet and PC communication, copyright issue has appeared as an important topic. It is a system that can protect the right of copyright holders and enables the user to conveniently use contents. To receive service, member registration is required at digital contents service site adopting SecuMAX.

When completing member registration, customer ID, password and resident registration number will be registered at SecuMAX server and utilized as a basic data for performing user certification role. After registration, download the dedicated player and decryption key to use service.

Music drive developed by Samsung Electronics is embedded with SecuMAX decryption module.

Decryption key will be registered during installation of music drive. Music file downloaded from digital contents music service site with SecuMAX can be played back.

Yepp Explorer

This software controls yepp player in PC. You can move or delete music list or voice saved in yepp card or embedded memory. This software is required to use yepp.

Music Drive

Software audio player for PC embedded with MPEG II AAC Decoder first in Korea. It supports not only playback of MPEG audio format as well as SecuMAX, encryption protection system.

CD Ripper

MP3 compression software that converts CD music in PC to MP3 file.

OGG (Ogg Vorbis)

OGG(Ogg Vorbis) is featured to have "higher compression rate than MP3', 'higher quality than MP3', 'no limit in use, distribution and development due to open source type. The biggest feature of Ogg Vorbis is that it has no limit in use of format itself.

The biggest feature that distinguishes Ogg Vorbis from existing music file is that it supports

VBR(Variable Bit Rate) by default.

Of course, MP3 also supports VBR format, but has effect of reducing capacity due to VBR based on existing MP3. Ogg Vorbis file supports VBR by default and helps you enjoy high quality music without loss due to big width of bit rate.

MP3 is one of file extension like .hwp, .wav, .txt used in computer.

Exactly, it is the abbreviation of MPEG Audio Layer-3.

Origin of MP3

MPEG is Motion Pictures Expert Group and is a standard made by experts in this area under international standard organization like ISO(International Standard Organization) and IEC(International Electric Committee). It is technical standard of compressing and transmitting video and audio signals and recovering them again.

The first specification that MPEG made is MPEG-1 in 1988. It is the technology used to produce video CD. MP3 means the audio compression part among specification of MPEG-1(1995). MPEG-2 is used together with MPEG-1. AAC(Advanced Audio Coding or MP4) receives attention with its excellent digital audio and is derived from MPEG-2. MPEG-4(lastests standard on movie compression for conference communication) is being established.

MP3 is most widely used and called "MPEG Audio Layer-3", which is version up from Layer-1 and Layer-2. In general, it is called MP3 since Layer-1 has compression rate of 1:4, Layer-2 of 1:61:8, Layer-3 of 1:101:12.

Using MP3 technology, up to 100 songs(7 hours) can be contained in one copy of empty CD of 650MB.

Transition of Portable Player

Transition of Portable Player

MP3

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AAC

MP3 is most widely used and called "MPEG Audio Layer-3", which is version up from Layer-1 and Layer-2. In general, it is called MP3 since Layer-1 has compression rate of 1:4, Layer-2 of 1:61:8, Layer-3 of 1:101:12.

WMA (Windows Media Audio)

Multimedia compression type of Microsoft. Only music data is compressed from “WMT”. Streaming and file format also support this data. In a same quality as MP3, it is about 1/2 size and contains Windows Media Rights Manager with copyright protection technology. It can be played back with [Media Player] provided in Windows98.

ATRAC3

Sound compression type of MD and latest specification of [ATRAC (Adaptive TRansform Acoustic Coding)] developed by SONY. Has about 2 compression rate than existing ATRAC.

Real Audio G2

Format type developed by Real Network. High quality can be obtained at low transmission speed of 16Kbps-32Kbps using [RealAUDIO G2 Music Codec] as compression type. Since streaming play in Internet radio is the main purpose, file does not contain copyright protection technology. “Real Player G2” supports MP3 playback and “Real Juke Box” supports encoding from CD to MP3.

Tips

How MP3 can produce same quality as CD?

Ears of human can listen to signal in the range of 20Hz~20KHz. It is called "audible frequency". To convey the audible sound in digital type CD, sampling frequency of 44.1KHz, about 2 times of audible frequency, should be used. It is the task of dividing sound signal to 44,100 pieces per second and making the signal to digital format of 0 and 1. How delicately the sample can be expressed will be determined by number of bit per sample. Audio CD is 16 bit. It means that 1 sample can be expressed in 65,536(16 square of 2) stage.

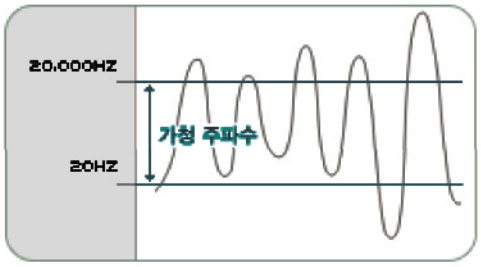


Fig. 1 Sound Wave before Loss Compression

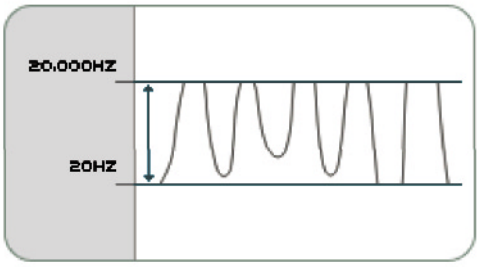
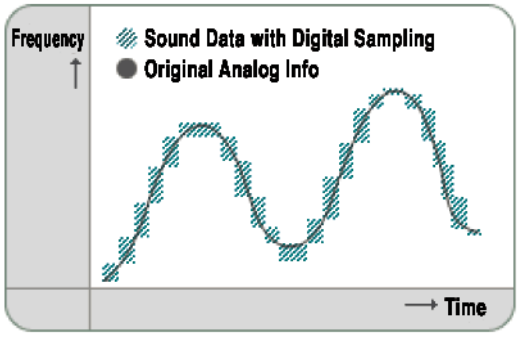


Fig. 2 Sound Wave after Loss Compression

When converting CD music to WAV file, the capacity is about 40MB(for 4 minutes). By converting it to MP3, it reduces to 4MB since "loss compression", the feature of MP3, is used. Loss compression type removes the sound beyond the range of audible frequency(20Hz~20KHz). It uses the features that small sound cannot be heard after very strong sound. <Figure 1> is the sound wave before loss compression. It can be regarded as the sound wave of music CD or cassette tape containing sound people cannot listen. When it is made into MP3, it is as shown in <Fig.2>.

Volume Control



Capacity can be reduced much by adjusting the degree of loss. However, it causes deterioration of sound quality. Music CD contains sound made with 16 bit 44.1KHz of stereo sampling. Stereo is the type of dividing the sound into left and right. CD should change analog

sound to digital.

Digital information is cut between sections and location information is saved in each section. "Sampling rate" is the standard of how many sub-section it will divide 1section. Divided frequency part is called 8 bit and 16 bit. 8 bit sampling means that frequency is divided into 2 stage, that is, sound pitch of 256 stage. 16 bit sampling divides into 65,536 sound pitch. In addition, 44.1KHz means sampling of 44,100 times per second. To reduce the amount of information made at digital, sampling bit number and frequency should be set low, but it will cause deterioration of sound quality. There is no difference in sound quality between MP3 and CD since encoding(converting CD track to MP3) is done with 44.1KHz at 16 bit. Better CD sound quality cannot be obtained by lowering the sampling rate, but the capacity can be reduced.

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MP3 is regarded as MP3.

Let's examine what are the types of storages currently used.

Optical Disc : CD, MD Player / Flash Memory : MP3 Player, Digital audio player

Type of Digital audio player storage.

Audio Format Table

	 SD	 MMC	 Smart Media	 Memory Stick
Source	Matsushita, Toshiba, SanDisk	SanDisk Hitachi	Samsung Toshiba	Sony
Size(mm)	32 x 24 x 2.1	32 x 24 x 1.4	45 x 37 x 0.76	21.5 x 50 x 2.8
Weight(gram)	2.5	1.5	2	4
Pin Count	9 (7of MIMC + 2 I/O)	7	22	10
ESD (Contact/air)	±10K/±15K V	-	±4K/±8K V	-
SDMICompliance	Phase 1 & 2	Phase 1	Phase 1	Phase 1 & 2
Security	Challenge & Response	Unique ID	Unique ID	Encryption Logic
Density	'00 : 32MB, 64MB '01 : 256MB	'00 : 32MB, 64MB	'99 : 32MB, 64MB '01 : 128MB	'00 : 32MB, 64MB '01 : 128MB
Licensing	Required	Open Standard	Open Standard	Required

* SSFDC (Solid State Floppy Disc Card) File System
* Standard file system for support of SMC's compatibility(DOS/FAT adopted)

Small Form - factor Cards Comparison

Item	 CD Player	 MD Player	 MP3 Player	 MP3-CDP
Audio Format	PCM	ATRAC	MP3, AAC, WMA...	MP3, WMA, Audio-CD
Audio Data compression	X	5:1	Various compression rate	Various compression rate
Storage	Optical Disc	Optical Disc	Flash Memory	Flash Memory
Basic function	Audio play	Audio play	Audio play	Audio play
Additional function	X	X	Voice recording, play phonebook FM Radio	Multi codec support Multi-functional LCD Remote controller, FM Radio
PC S/W	X	X	Audio Manager Ripper	Audio Manager Ripper

Various kinds of methods are combined to unify technical

specification to prevent digital music data from illegal reproduction.

Let's examine groups and vocabularies related to copyright.

SDMI (Secure Digital Music Initiative)

Internet music record company consortium to pursue development of digital music file format.
World-class music makers and related groups are formed to protect copyright of music and to prevent illegal reproduction.
-PD : Portable Device
-PM : Portable Media (SMC,MMC,MS,SD Card)
-UID : All PD, PM should have unique ID.
-Binding : All Digital Audio should be bounded to PD or PM.

DRM (Digital Rights Management)

Manage interests of persons related to copyright that occurs due to use of digital contents protected from illegal use of digital contents through various channels.

WaterMarking

Technology of inserting the specific data to claim copyright of multimedia contents so that eyes and ears of human cannot be distinguished.

SecuMAX

Digital Security Total Solution adopting Snake encoding algorithm.
Version1.0 contents in service in Korea (M4you.com, etc.)
SDMI compliant vrsion2.0 development completed

Reproduction Prevention System

Reopening of MP3 music service.
Lots of dispute have occurred in network due to copyright.
However, as online MP3 sales have resolved, the number of legal Internet site has increased.
However, reproduction prevention system is required for legal sales. All Internet sites serving Korean song in MP3 are introducing reproduction prevention system.

Meaning of SecuMAX System Application

Most legal Internet MP3 service sites adopt SecuMAX and YEPP of Samsung and several companies have hardware supporting SecuMAX among MP3 players currently distributed. Then, user needs to receive MP3 applied with SecuMAX to receive legal service. It is required to have program that can play back MP3 applied with SecuMAX technology in MP3 player. For example, since YEPP supports SecuMAX, it can play back, but it means that you cannot play back this at the players of other companies that do not support SecuMAX.

At present, organization has been formed for standardization of reproduction prevention system in foreign countries. Samsung Electronics has also participated in this standard using SecuMAX and completed development of SecuMAX 2.0 with world compatibility.

SecuMAX

SecuMAX is the reproduction prevention system that is made for protection of copyright in rapidly growing distribution of digital contents.

Reopening of MP3 Music Service

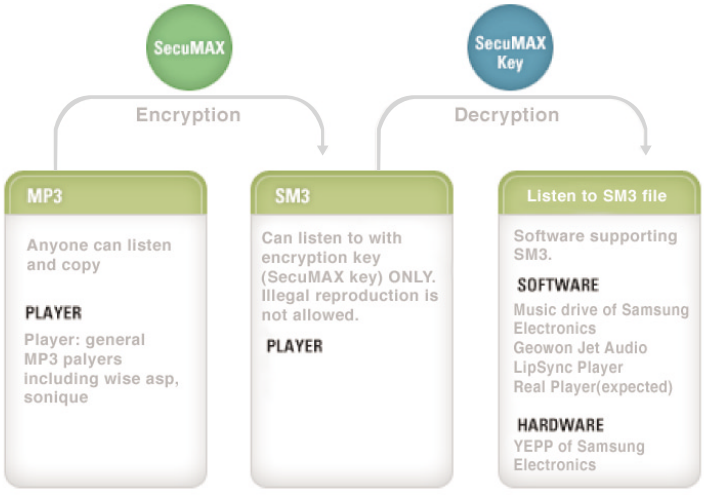
-Digital contents copyright protection and management service.

-Fundamentally prevent the illegal distribution

Only legal users can play back music

Dedicated software required(ex.Samsung Electronics, Music Dreve)

Prevention of usual illegal use such as file transfer, CD-R Copy and hardware reproduction.



-Report for copyright holder

  Basic data for collection of copyright fee and near copyright fee

  Track sales of all publications through Internet, PC communication or 3rd path.

  Provide sales information per IP, song and hour real time.

-Can serve any type of files

-Can applied to Internet and PC communication equally

-Can provide copyright protection service for hardware at the same time.