

Service Manual

AKAI

**27"/ 30" Wide Screen
LCD Multi-Media Display**

LM-H27CJSA

LM-H30CJSA

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1. Safety and Precautions

CAUTION

- * **The service of this LCD TV must be carried out by qualified persons only.**
- * **Do not change any module unless the set is switched off.**

CLEANING : Always disconnect unit from mains supply before attempting to clean it.
Use soft cloth moistened with soapy water, wipe gently. Do not use solvents or abrasive materials.

SOME DO'S AND DON'T'S ON THE SAFE USE OF EQUIPMENT

This equipment has been designed and manufactured to meet European safety standards but like any electrical equipment, care must be taken if you are to obtain the best results and safety is to be assured.

Do read the operating instructions before you attempt to use the equipment.

Do ensure that all electrical connections (Including the mains plug, extension leads and interconnections between pieces of equipment) are properly made in accordance with the manufacturer's instructions. Switch off and withdraw the mains plug when making or changing connections.

Do use only the Power Cord and Power Supply (option) provided.

Do consult your dealer if you are ever in doubt of the installation, operating, or safety of your equipment.

Don't exert pressure on the LCD TV . This could break the panel .

Don't continue to operate the equipment if you are in any doubt about it working normally, or if it is damaged in any way. Switch off, withdraw the mains plug and consult your dealer.

Don't remove any fixed covers as this may expose dangerous voltages.

Don't leave equipment switched on when it is unattended unless it is specifically stated that it is designed for unattended operation or has a standby mode. Switch off using the switch on the equipment and make sure that everyone knows how to do this. Special arrangements may need to be made for infirm or handicapped people.

Don't listen to headphones at high volume, as such use can permanently damage your hearing.

Don't obstruct the ventilation of the equipment, for example, with curtains or soft furnishings. Overheating will cause damage and shorten the life of the equipment.

Don't allow electrical equipment to be exposed to rain or moisture.

Above all

- Never let anyone push anything into holes, slots or any other opening as this could result in a fatal electric shock.
- Never guess or take chances with electrical equipment of any kind.
- It is better to be safe than sorry!

WARNING : TO REDUCE THE RISK OF FIRE OR ELECTRIC SHOCK, DO NOT EXPOSE THIS APPLIANCE TO RAIN OR MOISTURE. DANGEROUS HIGH VOLTAGES ARE PRESENT INSIDE THE ENCLOSURE. DO NOT OPEN THE CABINET. REFER SERVICING TO QUALIFIED PERSONNEL ONLY.

2. Specifications

2.1 Specification for 27”:

ITEMS		SPECIFICATION	
Display	Screen size	27” Wide TFT-LCD Panel (CMO)	
	Aspect Ratio	16 : 9	
	Resolution	1280 x 720 (Wide-XGA)	
	Contrast Ratio	500 : 1 (Typical)	
	Brightness	500 cd/m ² (Typical)	
	Viewing Angle	170° (Hor.) / 170° (Vert.)	
	Response Time : Ton / Toff	15ms / 10ms	
	OSD Language	English, French, German, Spanish, Italian	
TV Function	TV Standard (CCIR)	B/G, D/K, I and L/L’ (Multi-Europe)	
	Color System	PAL / SECAM	
	Sound System	NICAM / A2 (IGR)	
	Teletext	10 Pages (FLOF / TOP)	
Video I/O	Color System	PAL / SECAM / NTSC	
	AV1 (In / Out)	21-pin SCART (RGB / Video) x 1	
	AV2 (In)	Video (Composite)	x 1
		S-Video	x 1
		Component (YPbPr, YCbCr) (DTV system : 625p)	x 1
PC I/P	Signal I/P	Analog : D-Sub 15 pin (detachable cable)	
	PnP compatibility	DDC / 2B	
	I/P Frequency	Analog: F _H : 31kHz to 60kHz F _V : 56Hz to 75Hz	
	Recommended	Analog: 1024x768 (60Hz)	
	DTV ready (via D-sub 15pin)	DTV System : 625p	
Audio I/O	Audio I/O: L/R	Speaker (Built-in) : 10W+10W (rms)	
		Headphone Mini-jack for stereo (3.5 mm)	
		PC audio in	
		Audio In 1 / Out (R/L)	
		Audio In 2 (R/L)	
Other Functions	PIP under PC mode	Yes	
	A.P.S. , Child-Lock	Yes	
	VESA Panel Wall Mounting Holes	100mm x 100mm	
Power	Power Supply	AC 100V~240V, 50/60Hz	
	Power Consumption	< 140W	
Panel Tilt	Forwards/ Backwards /Rotation	-5° / +15° / ±180°	
Weight (net)	14.5 Kg (Without Accessories)		
Accessories	Remote Control , Batteriesx2 , AC cord , D-Sub Signal Cable, Operation Manual .		

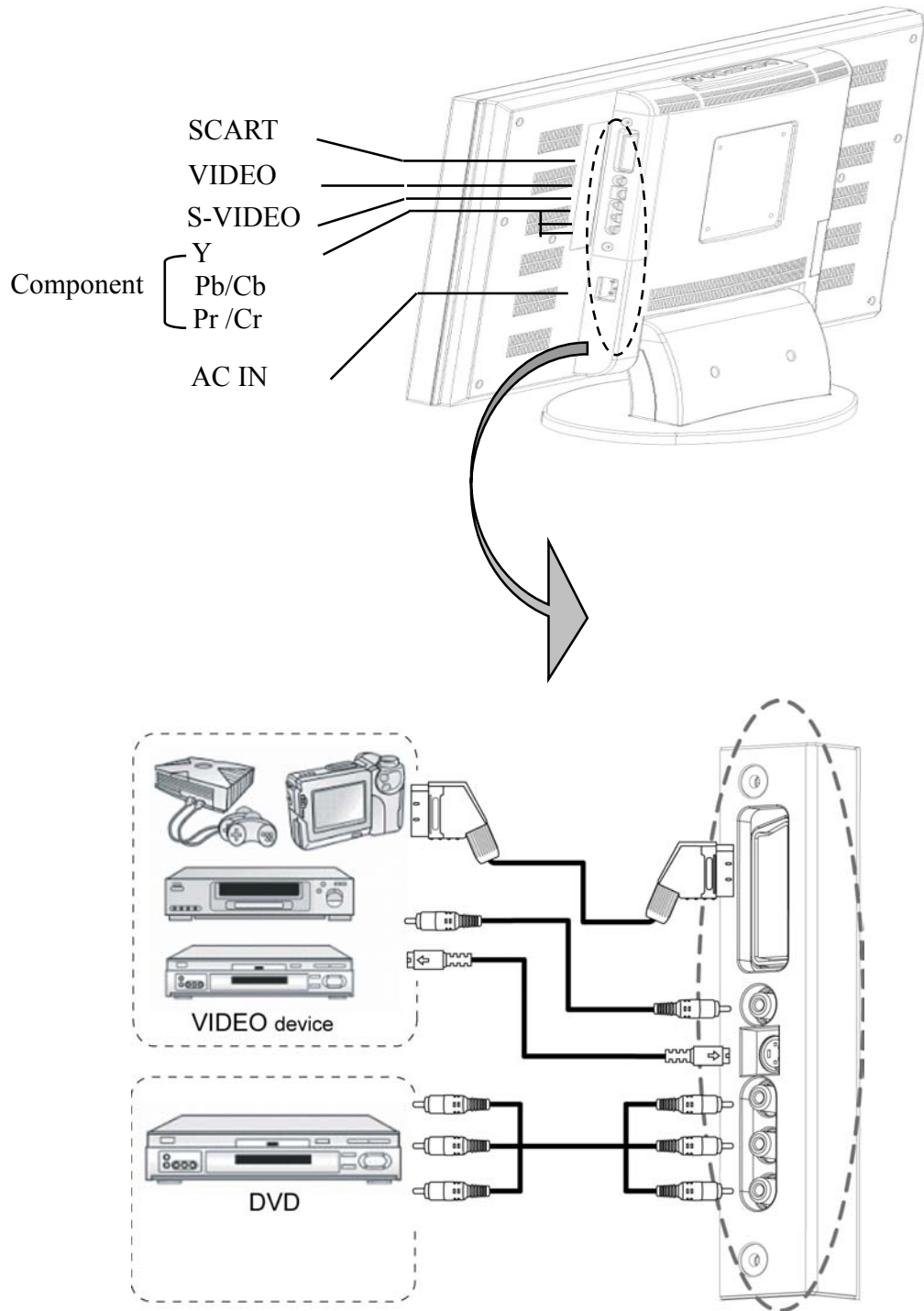
2.2 Specification for 30” :

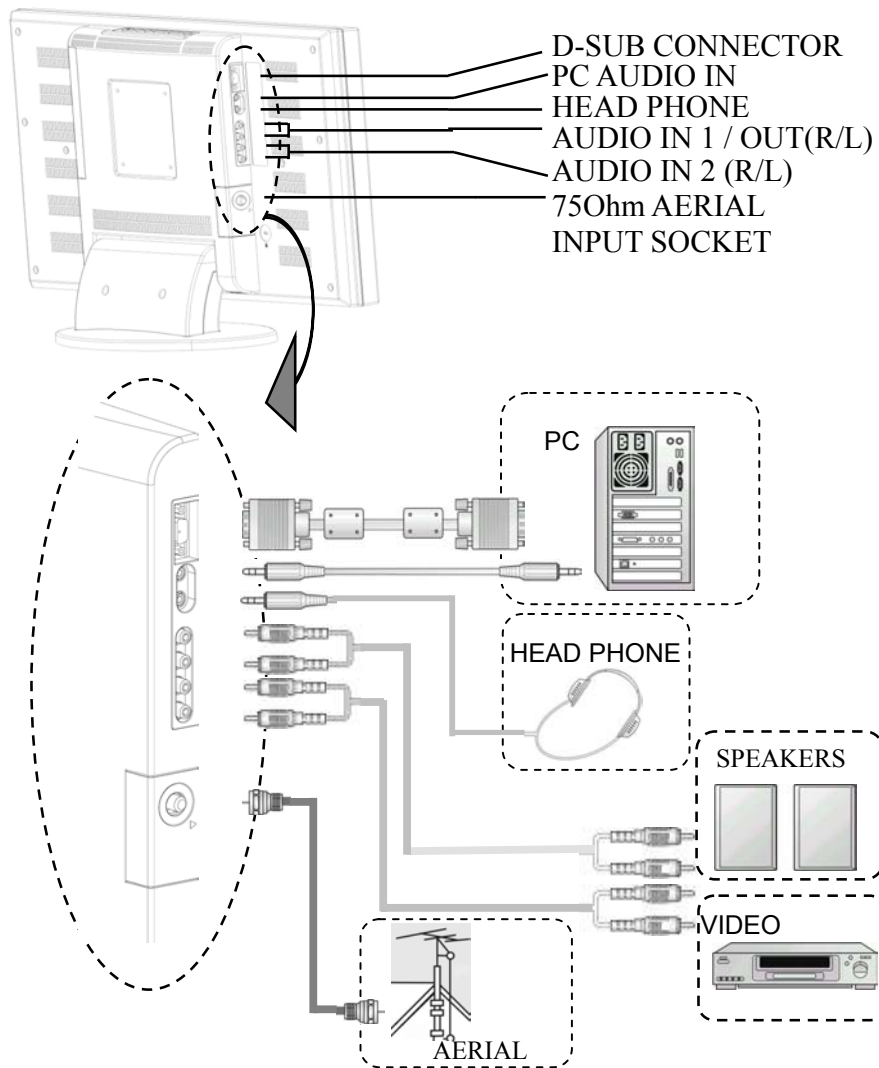
ITEMS		SPECIFICATION
Display	Screen size	30” Wide TFT-LCD Panel (CMO)
	Aspect Ratio	16 : 9
	Resolution	1280 x 768 (Wide-XGA)
	Contrast Ratio	500 : 1 (Typical)
	Brightness	500 cd/m ² (Typical)
	Viewing Angle	170° (Hor.) / 170° (Vert.)
	Response Time : Ton / Toff	15ms / 10ms
	OSD Language	English, French, German, Spanish, Italian
TV Function	TV Standard (CCIR)	B/G, D/K, I and L/L’ (Multi-Europe)
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		PC audio in
		Audio In 1 / Out (R/L)
		Audio In 2 (R/L)
Other Functions	PIP under PC mode	Yes
	A.P.S. , Child-Lock	Yes
	VESA Panel Wall Mounting Holes	100mm x 100mm
Power	Power Supply	AC 100V~240V, 50/60Hz
	Power Consumption	< 150W
Panel Tilt	Forwards/ Backwards /Rotation	-5° / +15° / ±180°
Weight (net)	15.2 Kg (Without Accessories)	
Accessories	Remote Control , Batteriesx2 , AC cord , D-Sub Signal Cable , Operation Manual .	

2.3 PC I/P Preset Timing Table :

Analog Input				
Mode No.	Mode Name Resolution	H.Freq. (kHz) V.Freq. (Hz)	H. Polarity V. Polarity	Pixel CLK (MHZ)
1	VGA 70Hz 640x350	31.469 70.087	+ -	25.175
2	VGA 60Hz 640x480	31.469 59.941	- -	25.175
3	VGA 72Hz 640x480	37.861 72.81	- -	31.5
4	VGA 75Hz 640x480	37.5 75.0	- -	31.5
5	SVGA 56Hz 800x600	35.16 56.25	+ +	36.0
6	SVGA 60Hz 800x600	37.876 60.317	+ +	40.0
7	SVGA 72Hz 800x600	48.077 72.118	+ +	50.0
8	SVGA 75Hz 800x600	46.875 75.0	+ +	49.5
9	XGA 60Hz 1024x768	48.363 60.004	- -	65.0
10	XGA 70Hz 1024x768	56.476 70.069	- -	75.0
11	XGA 75Hz 1024x768	60.023 75.029	+ +	78.75
12	MAC VGA 640x480	35.0 66.667	- -	30.24
13	MAC VGA 832x624	49.725 74.550	- -	57.283
14	US TEXT 720x400	31.469 70.087	- +	28.322
15	WXGA 60Hz 1280x768	47.733 60.042	- -	80

3. Connection & Applications





NOTE:

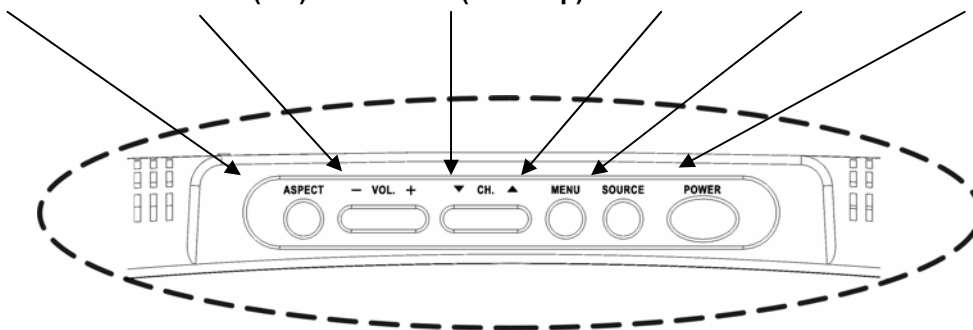
- **Audio out** : The level of audio output cannot be changed using the volume , treble , and bass controls on your TV . These connectors should be used with an external audio amplifier that can be used to control the volume.
- **VCR Recording:** The main display must set to TV mode in order to use SCART to record a program using a VCR .
- **PIP sound** : When using the PIP feature in PC mode , to hear the Sub display sound you must set the sound source to “Sub” .

4. Controls Location

The buttons control your TV's basic features, including the on-screen menu. To use the more advanced features, you must use the remote control.

- POWER:** turn on or turn off the LCD TV.
SOURCE: set up the input source (PC, TV, SCART Video/ SCART RGB , Video, S-Video, Component)
MENU: display the main menu.
CHANNEL (down/up): change channels.
VOLUME (-/+): turn up or turn down the volume.
ASPECT RATIO: set up the ratio of display (Normal, Panscan, Zoom or Full.)

ASPECT RATIO **VOLUME(-/+)** **CHANNEL(down/up)** **MENU** **SOURCE** **POWER**



Speaker

Speaker



Remote sensor window

Aim the remote control towards this region on the TV.

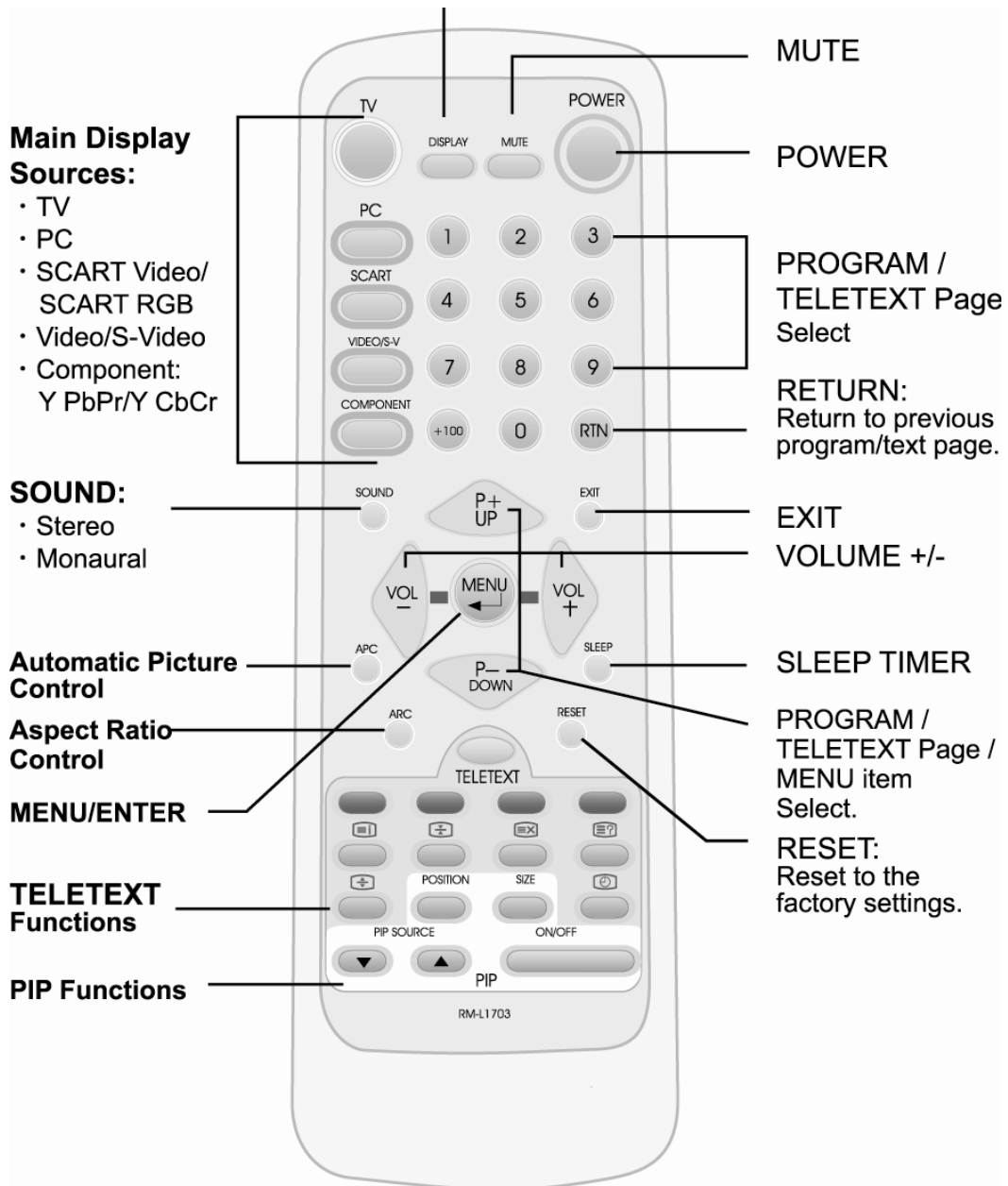
Power indicator

A green indicator lights when the power is on and a red indicator lights when in the standby mode (the indicator will not light when the main power is off).

5. Remote Control

The remote control pad works almost same as ordinary TV remote control that includes the basic function needed while viewing a live video.

DISPLAY : Display the current source or program digits .



Summary of Control Buttons

Selecting the Signal Source

TV	Switch to the TV mode.
PC	Switch to the PC mode.
SCART	Switch to the Video mode or RGB mode from SCART.
VIDEO/S-V	Switch to the Video mode from RCA socket or S-Video mode.
COMPONENT	Switch to the Component mode (YPbPr or YCbCr).
DISPLAY	Display the current source.

Menu Setting

MENU/ENTER	Display the main on-screen menu or enter the next menu.
UP/DOWN	Press to select the item you want to adjust in the OSD menu.
VOL- / VOL+	Press to decrease or increase the value in the OSD control bar.
EXIT	Exit from the menu.




Changing Channels




P- / P+	Press P- or P+ to change Programs in TV mode or Teletext page in TELETXT mode.
0 ~ 9	To select programs directly in TV mode.
DISPLAY	Display the current program digits.
RTN	Press to return to the previous program.

Sound Control

VOL+ / VOL-	Press to turn up or turn down the volume.
MUTE	Press to switch the sound on or off.
SOUND	Press to choose Stereo, Bilingual and Monaural broadcasts.

Teletext Control

TELETXT	Press to show the Teletext Service. Press again to return to TV Viewing.
 INDEX	Press "INDEX" button to show the list of teletext contents.
 HOLD	Press "HOLD" button to stop the automatic page change.
 UPDATE	Press "UPDATE" button to switch to TV while waiting for the next text page.


	REVEAL	Press "REVEAL" button to display concealed information, such as solutions of riddles or a quiz.
	EXPAND	Press "EXPAND" button to enlarge the top half or bottom half of the Teletext page.
	SUB-PAGE/TIME	Press "SUB-PAGE/TIME" button to access to the sub-page you required.
RTN		Press to return to the previous viewed Teletext page.

PIP Control

ON / OFF	Press to watch one of the video sources on Sub-display, whilst in PC mode. Press again to turn off the Sub-display.
PIP Source	Press to select the PIP window input source as : Press ▲ button : TV→ SCART Video→SCART RGB→ Video→ S-Video→ Component Press ▼ button : Component→ S-Video → Video→ SCART RGB →SCART Video→ TV
SIZE	To make the PIP window double, large or small.
POSITION	Press to move the PIP window to: Top Left → Top Right→ Bottom Right → Bottom Left → Repeat.

NOTE : When you set Main-display at 1280x768/1024x768 resolution of PC mode and Sub-display YPbPr, the screen will appear "Not Available". You should reduce the PC resolution to 800 X 600 or 640 X 480. The PIP function will then work.

Other Function

RESET	Reset to the original factory settings, such as the Brightness/Contrast/ Color Temp.
ARC	Set the picture window to Normal(4:3) → Panscan→ Zoom→ Full (16:9)
APC	To select Clear, Dark, or Normal mode for picture control.
SLEEP	Press to select a preset time interval for automatic power off .
 SUB-PAGE/TIME	Press "Sub-Page/Time" to display the digital clock in TV mode.

6. Disassembly Instructions

1. Face down the LCD-TV :

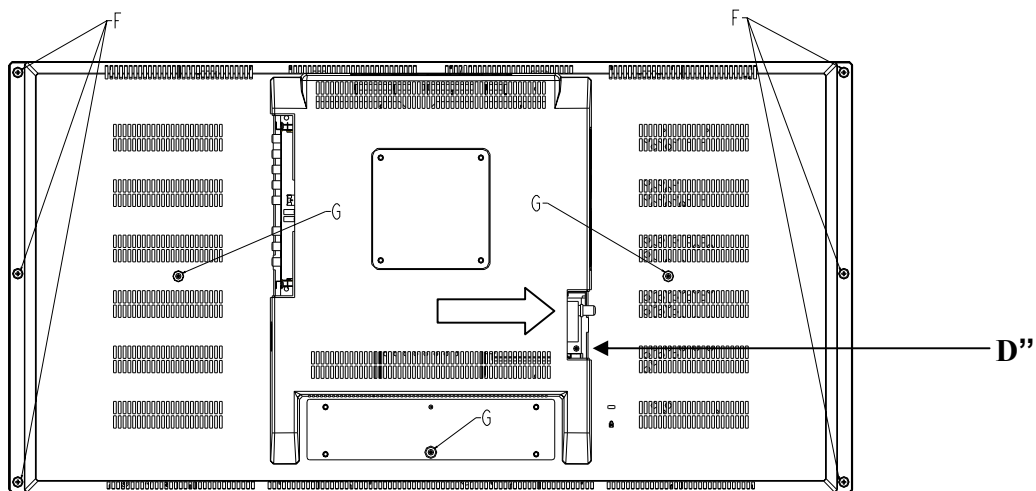
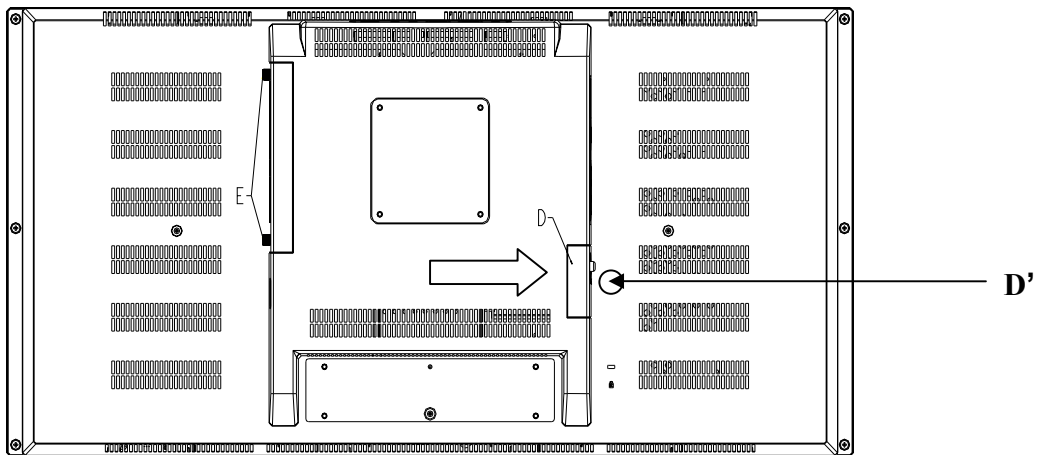
Face down the LCD-TV on a smooth plane with a soft material to protect the panel faceplate .

2. Tuner Board Removal :

Note: If only repair the Tuner Board , need not disassemble the Base and Back Cover.

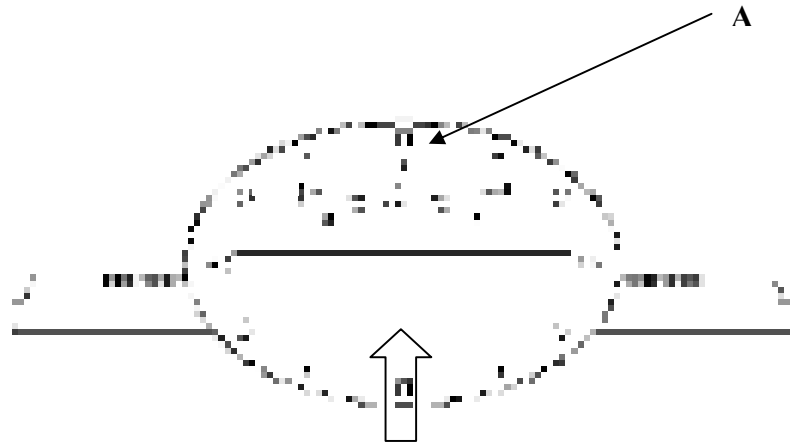
2.1 Remove Tuner Cover by pressing point **D'** and pushing point **D** toward the right direction.
(Indicated as "**D**" and "**D'**")

2.2 Remove 1 screw from the Tuner Board and pull out it along the slot .
(Indicated as "**D**")



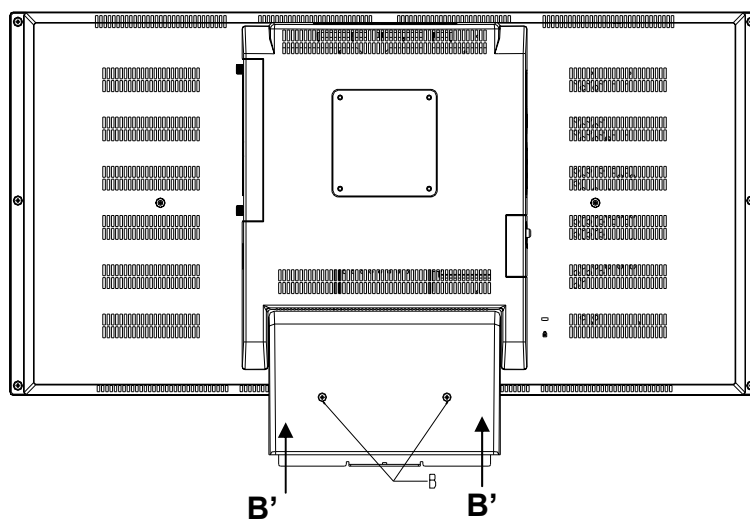
3. Base Removal :

- 3.1 Remove 5 screws from the bottom of the Base. (Indicated as "A")
- 3.2 Push upward and take the Base apart from the Neck. (Indicated as "Arrow")

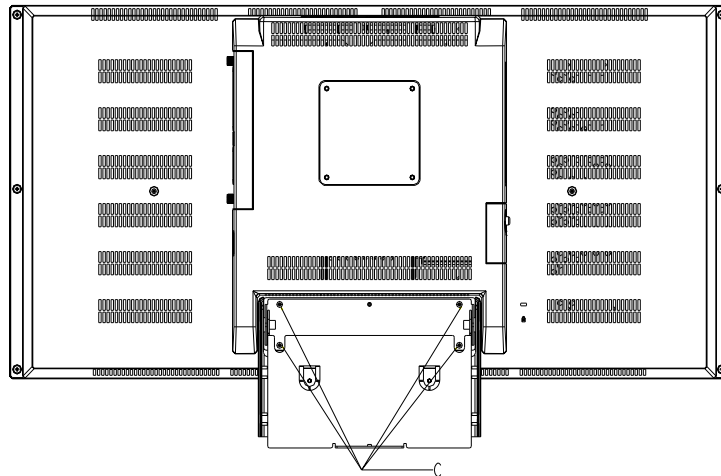


4. Neck Removal :

- 4.1 Remove 2 screws from Neck Cover. (Indicated as "B")
- 4.2 Push 2 hooks on the inside of the Neck Cover by screw driver and take the Neck Cover apart from the Neck. (Indicated as "B'")



4.3 Remove 4 screws from the Neck and then take Neck apart from the Back Cover.
(Indicated as “ C ”)



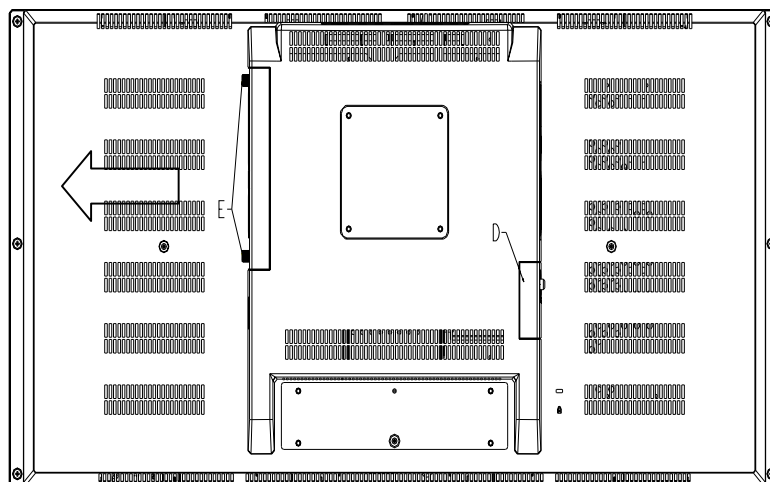
5. AV Cover (I/O Board) Removal :

5.1 Loosen 2 screws.

(Indicated as “ E ”)

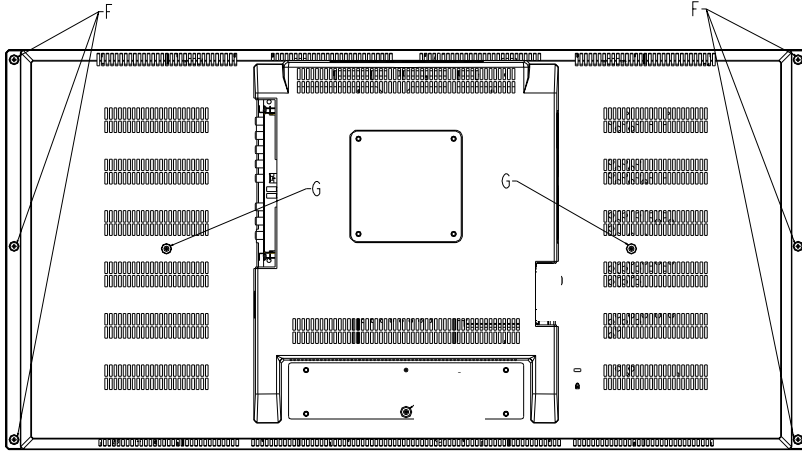
5.2 Pull out the AV Cover (I/O Board) directly.

(Indicated as “ Arrow ”)



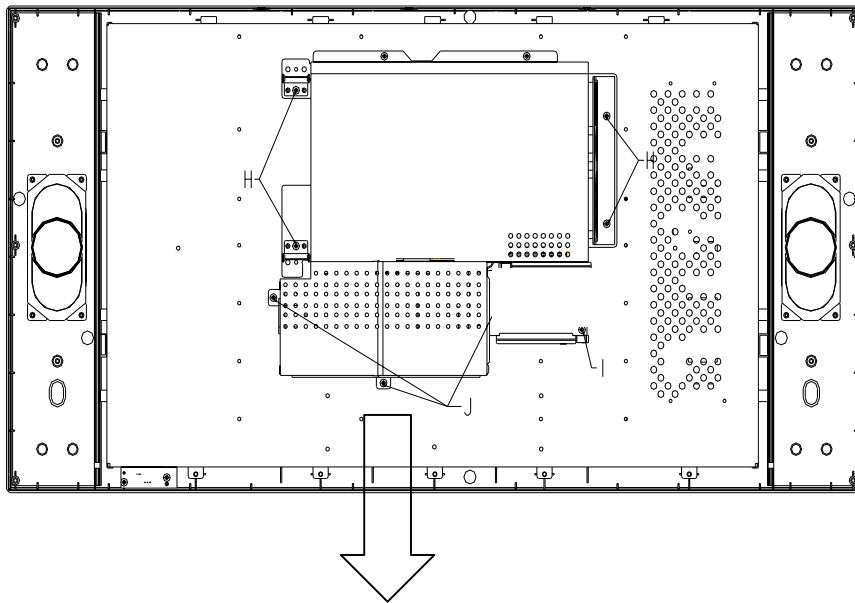
6. Back Cover Removal:

- 6.1 Remove 8 screws from the Back Cover . (Indicated as “ F ” and “ G ”)
- 6.2 Take Back Cover apart from the LCD-TV.



7. Right / Left Side Covers Removal :

- 7.1 Remove 4 screws from 2 Slides of I/O Board & Right Side Cover. (Indicated as “ H ”)
- 7.2 Remove 3 screws from the Power Case Assembly. (Indicated as “ J ”)
- 7.3 Pull out the Power Case Assembly downwards. (Indicated as “ Arrow ”)



8. Main PCB Shield Removal :

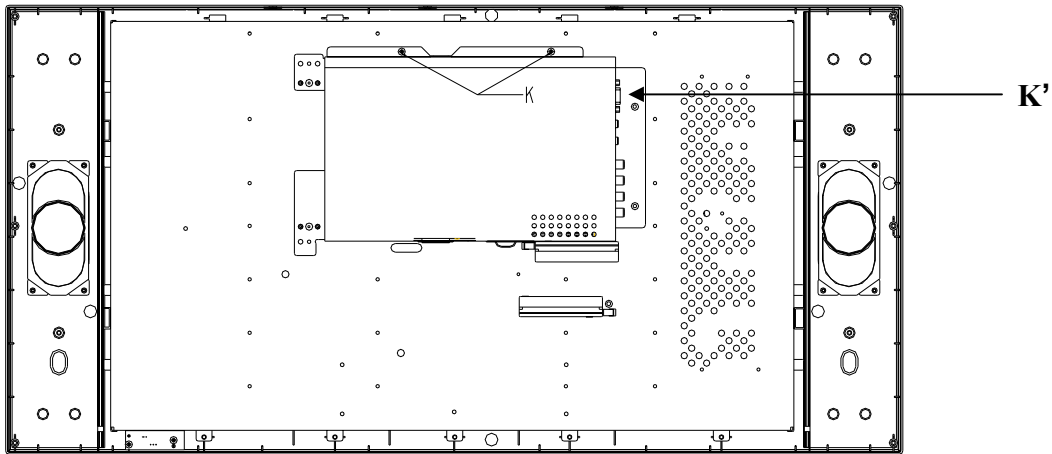
8.1 Remove 2 screws from Main PCB Shield.

(Indicated as “ K ”)

8.2 Remove 2 Hexagonal screws from the D-Sub Connector.

(Indicated as “ K' ”)

8.3 Take Main PCB Shield apart from Panel Bracket .

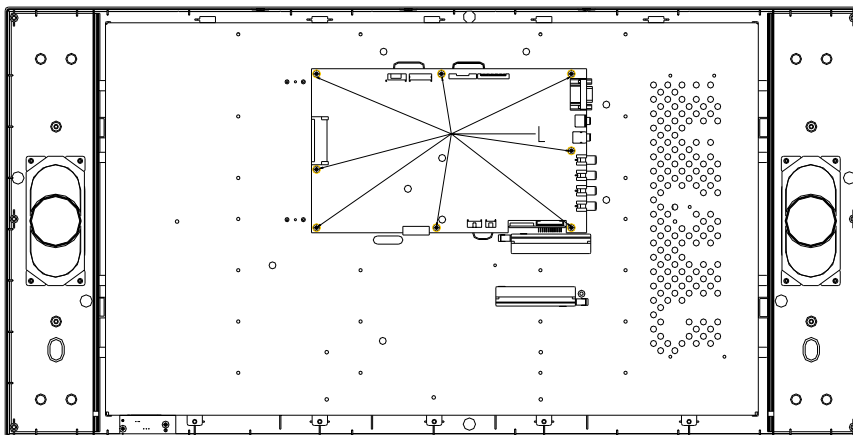


9. Main Bracket Removal :

9.1 Remove 8 screws from the Main PCB .

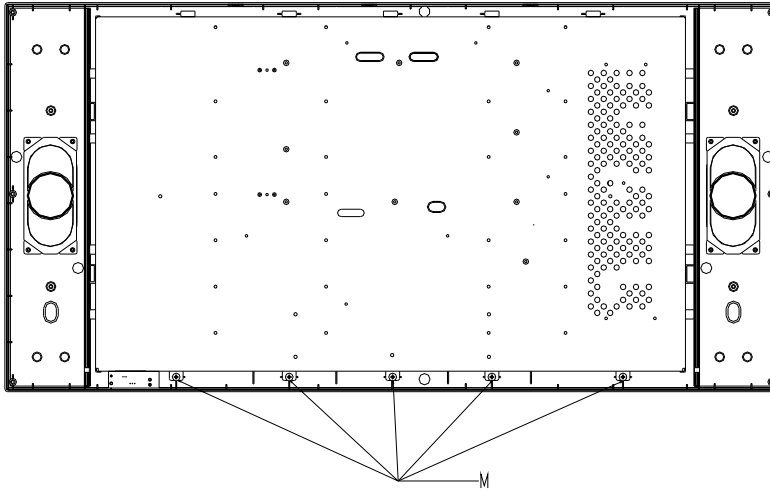
(Indicated “ L “)

9.2 Take Main PCB apart from the Main Bracket .

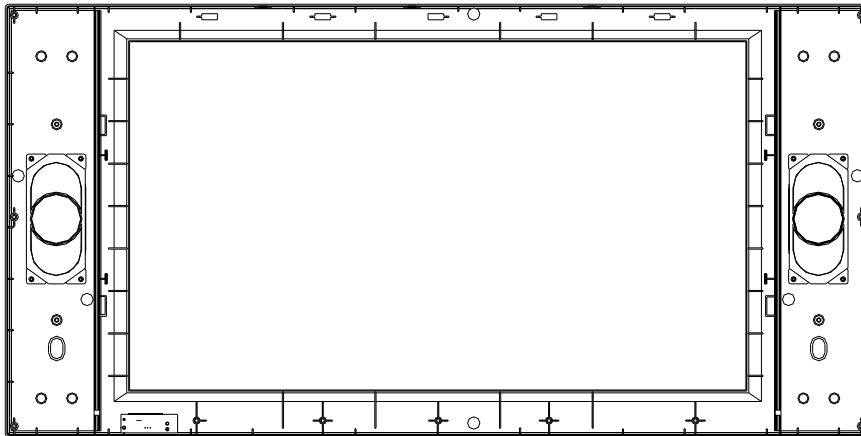


10. Panel Bracket Removal :

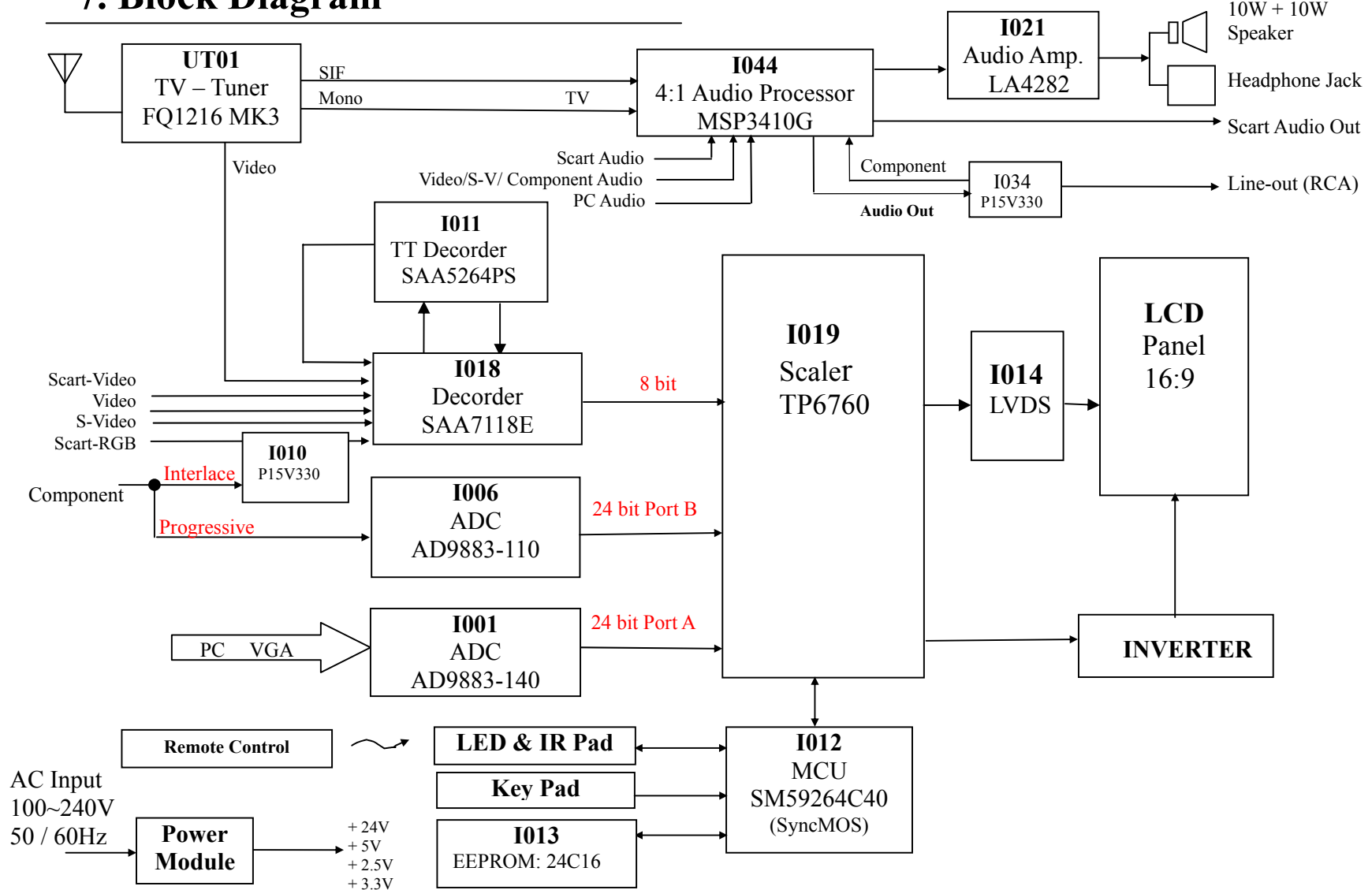
10.1 Remove 5 screws from the Panel Bracket . (Indicated as “ M ”)



10.2 Take Panel Bracket apart from the Front Cover .



7. Block Diagram



8. Troubleshooting

8.1 Symptom Codes : (for Call Center use)

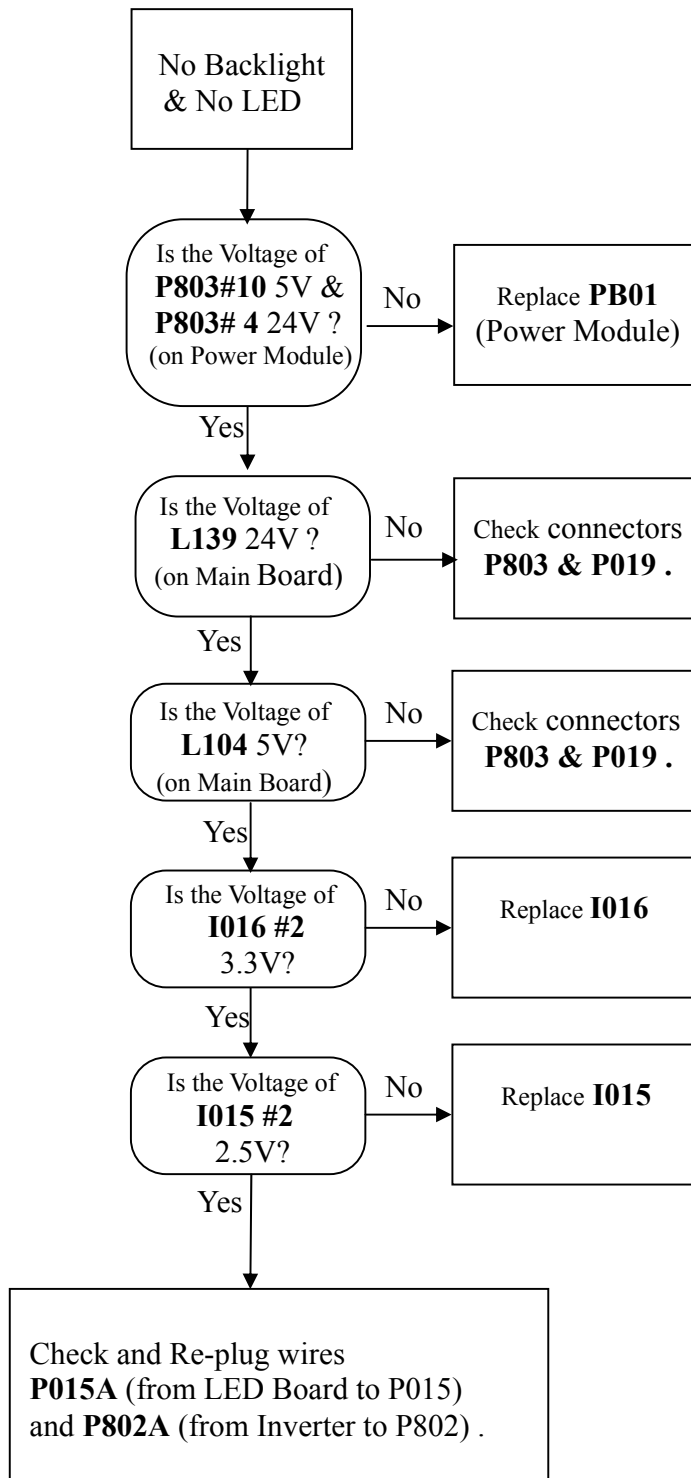
	CODE	SYMPTOM	COUNTERMEASURES
No picture and no Sound	NP1	No Picture and No Sound in TV mode.	<ul style="list-style-type: none"> • Make sure the Power cord and Aerial Cable are properly connected . • Make sure the batteries in remote control are not flat. • Press the POWER button to switch the TV on. • Switch to TV source by pressing “TV” button. • Run “Automatic Search ” by operating the remote control.
	NP2	No Picture and No Sound in video mode.	<ul style="list-style-type: none"> • Check the connection between the optional video equipment and the TV. • Press SCART , Video/S-V or COMPONENT button on the remote control to select the right video equipment.
	NP3	TV is automatically turned off.	<ul style="list-style-type: none"> • Check if the “SLEEP” timer is activated . • Press the POWER button to turn on the TV once again.
Poor Picture	PP1	Double Images / Ghosts	<p>If the TV suffers interference from signals reflecting from mountains or buildings , double-pictures or Ghosts will occur.</p> <ul style="list-style-type: none"> • Adjust the aerial’s location and direction • Replace it with one with better directionality. • Turn off or disconnect the booster if it is in use , as the booster may be inappropriate.
	PP2	Snowy picture and noisy Sound	<p>If snow totally blocks out the picture , there may be a problem with the Aerial or Aerial Cable .</p> <ul style="list-style-type: none"> • Have the TV and aerial been connected properly ? • Has the aerial cable been damaged ? • Is the aerial pointing in the right direction ? • Is the aerial itself faulty ? • Try using a booster , as signal transmission may be low.
	PP3	Distorted picture and noisy sound	<ul style="list-style-type: none"> • Turn off or disconnected the booster if it is in use , as broadcast signals may be too strong.
	PP4	Dotted Lines / Stripes in the picture.	<p>If the TV or aerial suffers interference from other equipment , stripes or noise may appear in the picture.</p> <ul style="list-style-type: none"> • Keep the TV away from noise sources such as personal computer , amplifier , cars, motorcycles or hair-dryers. • If the aerial suffers interference from a radio tower or high-voltage wire , contact the local dealer.

	CODE	SYMPTOM	COUNTERMEASURES
Poor Picture	PP5	Stripe noise .	<ul style="list-style-type: none"> • Check the coaxial cable connected with the TV is not oxidized • Do not use 300 ohm twin lead cables as interference may occur • It is recommended to use a 75 ohm coaxial cable (not supplied) to get premium quality picture. • Keep the aerial cable away from other connecting cables.
	PP6	No color, too light or too dark	<ul style="list-style-type: none"> • Adjust the picture settings — APC, Brightness, Contrast, Saturation , Color Temp. • Press “RESET” button on remote control .
No Sound or Noisy Sound	NS1	Good picture, no sound	<ul style="list-style-type: none"> • Make sure the headphone is not connected. • Check audio connections between Equipment & LCD-TV. • Press MUTE or VOL + to cancel the muting.
	NS2	Noisy noise	<ul style="list-style-type: none"> • Make sure that the aerial connected is 75 ohm coaxial cable (not supplied) , not 300 ohm twin lead cables . • Keep the aerial cable away from other connecting cables. • Press SOUND to select “Mono” which will reduce the noise. • Adjust BASS or TREBLE properly in OSD.
	NS3	No sound in TV mode	<p>If the Country setting for the TV is incorrect , it may prevent the sound from being issued</p> <ul style="list-style-type: none"> • Select the Country where you are located in OSD Menu. • If the country is not listed in OSD , select “Other Country” .
	NS4	Good picture, but noisy sound or no sound in TV mode.	<ul style="list-style-type: none"> • If the sound of “all the channels” is noisy , run A.P.S. again by selecting Automatic Search in OSD. • If the sound of “some channels” is noisy or no sound , select Manual Search and select an appropriate TV system in OSD such as B/G , D/K , I , L/L’ ; then , store it. <p>(If the sound system setting for a TV channel is incorrect , it may prevent the sound from being issued .)</p>
PC	PC1	PC display is Not Full Screen	<ul style="list-style-type: none"> • Select Auto Image Adjust in OSD menu to optimize the image . • If executing Auto Image Adjust still can not achieve full screen display, adjust V.Position and H.Position in PC mode
	PC2	Horizontal Noise or Color pattern is not uniform	<ul style="list-style-type: none"> • Select Auto Image Adjust in OSD menu to optimize the image . • If still no good , adjust H. Phase in OSD menu

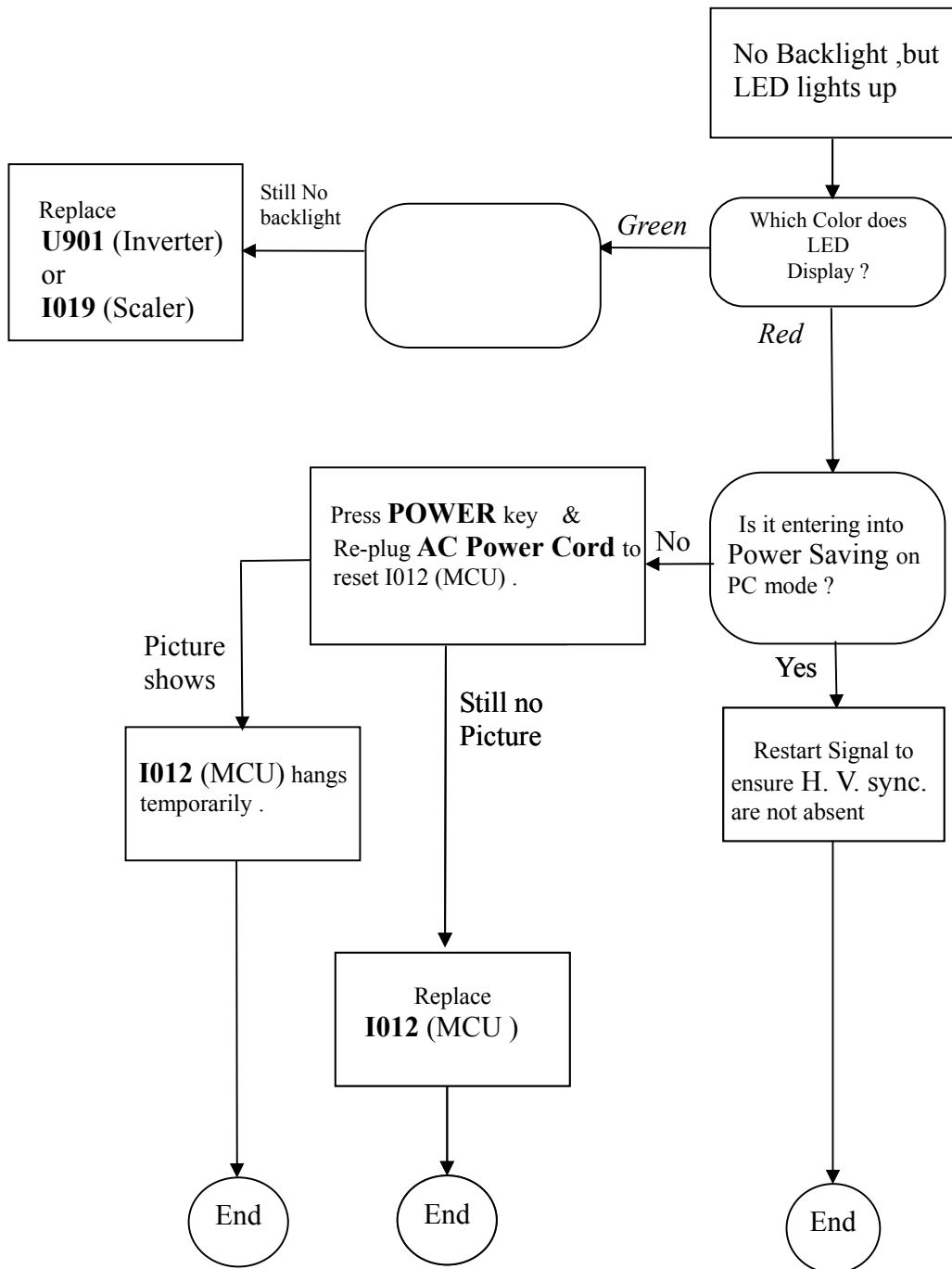
	CODE	SYMPTOM	COUNTERMEASURES
PC	PC3	“Out of Range” message	<ul style="list-style-type: none"> • Maximum PC resolution supported is 1024x768 / 1280 x 768, so the screen will appear “Out of range” at higher resolution. • Reduce the resolution to 1024x 768/ 1280x 768 from PC .
	PC4	No Sound	<ul style="list-style-type: none"> • Make sure PC audio Input is well connected.
	PC5	“Not Available” message on PIP	<ul style="list-style-type: none"> • If Main-Display is PC and Sub-display is Component , resolution of the PC should be reduced to 800 x 600 or lower ;then , the PIP will work well.
	PC6	After “No Signal ” has appeared on PC mode for a while, the view disappears and the “ LED Indicator” turns from Green to”Red” .	<ul style="list-style-type: none"> • Press any key on keyboard or move the mouse to activate the PC , because the PC may go to power saving status. • Check if the D-sub connector (Cable) is disconnected or loose .
Remote Control	RC1	Remote Control does not work	<ul style="list-style-type: none"> • Make sure the batteries in remote control are not flat • Check the polarity of the batteries • Use the remote control in the front of the TV or from less than seven meters away. • make sure the Remote Sensor Window is not under strong lighting.
	RC2	Can not change channels with the remote control	<ul style="list-style-type: none"> • Press TV button to switch to TV mode. • Make sure the TV is not in Teletext mode.
Picture Halt / Abnormal	PH1	Picture suddenly Stops Responding or abnormal.	<ul style="list-style-type: none"> • Press RESET button on remote control . • Unplug and then plug the Power Cord of the TV from the AC outlet (or the Adapter from the TV). • If the picture still no good , execute “Initial EEPROM”. <p>Press POWER key to turn off the TV . Press“CHV ” key on the top of LCD TV (don’t release) ; then, press POWER button on remote control until “Initial EEPROM” appears on the screen .</p> <p>(Note : Remind user that every setting will be return to factory preset mode including Child Lock , PIN No. , Programs ...)</p>

8.2 Flow Chart : (for Repair Center Use)

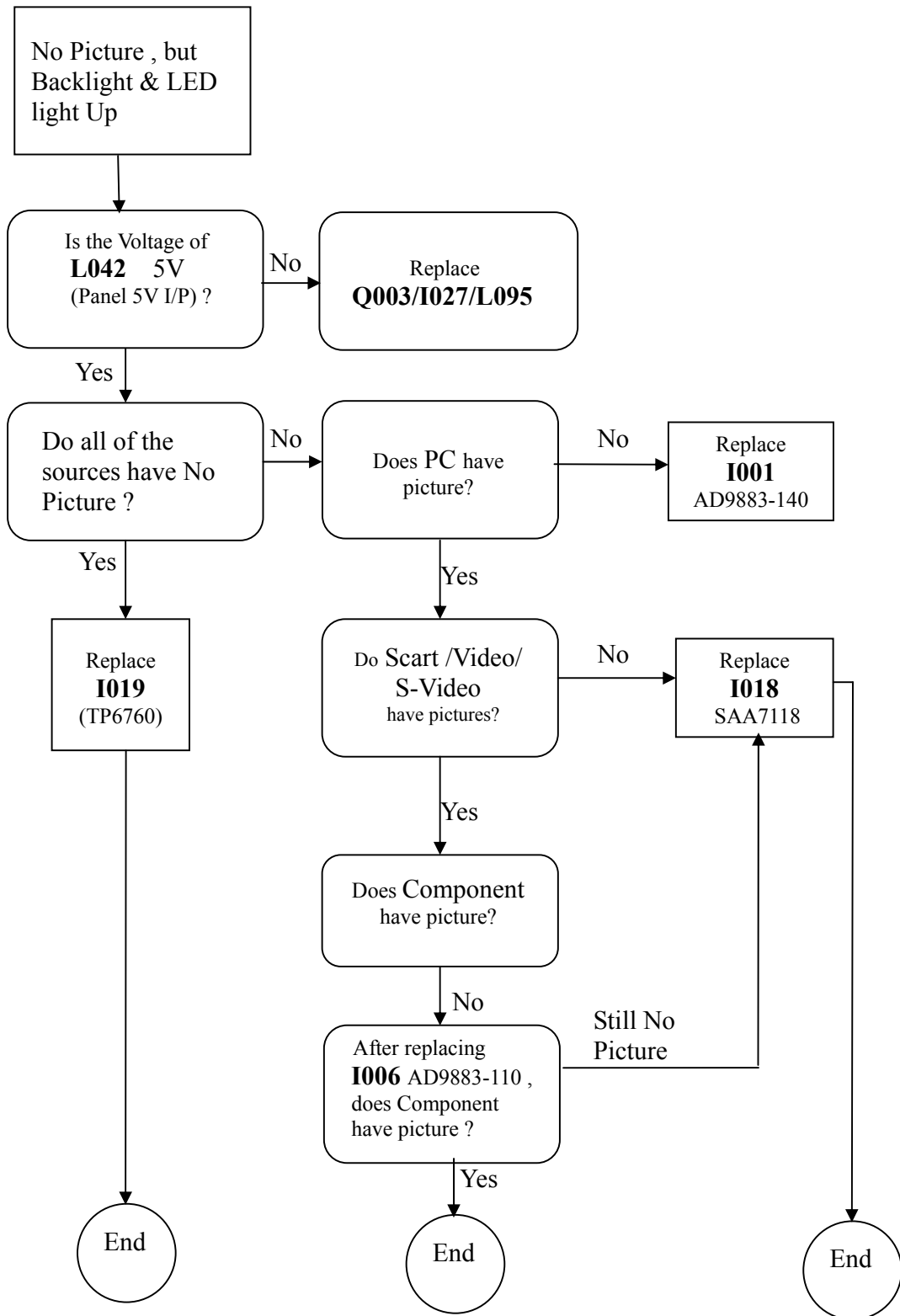
(1) Power Start NG



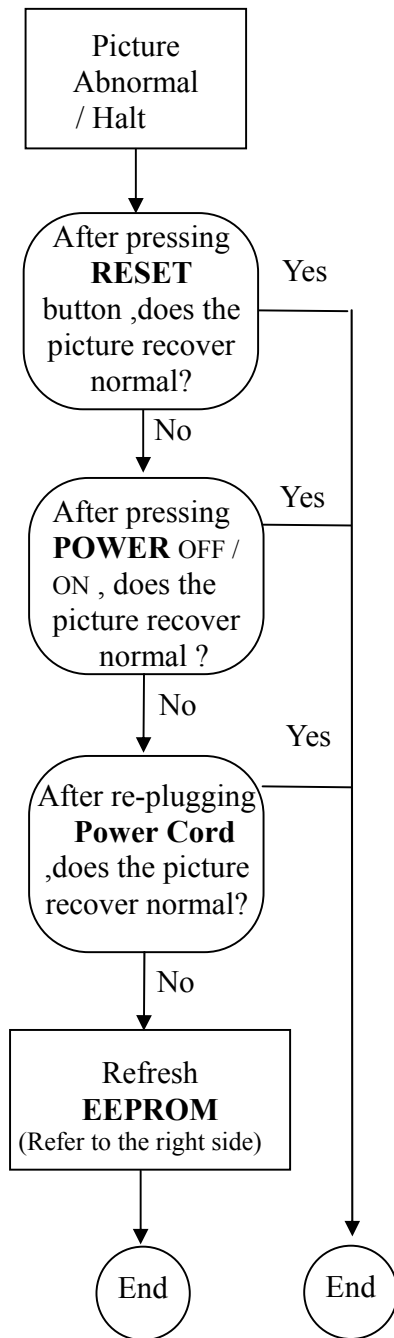
(2) No Backlight , but LED lights up



(3) No picture , but Backlight & LED light up



(4) Picture Abnormal or Halt

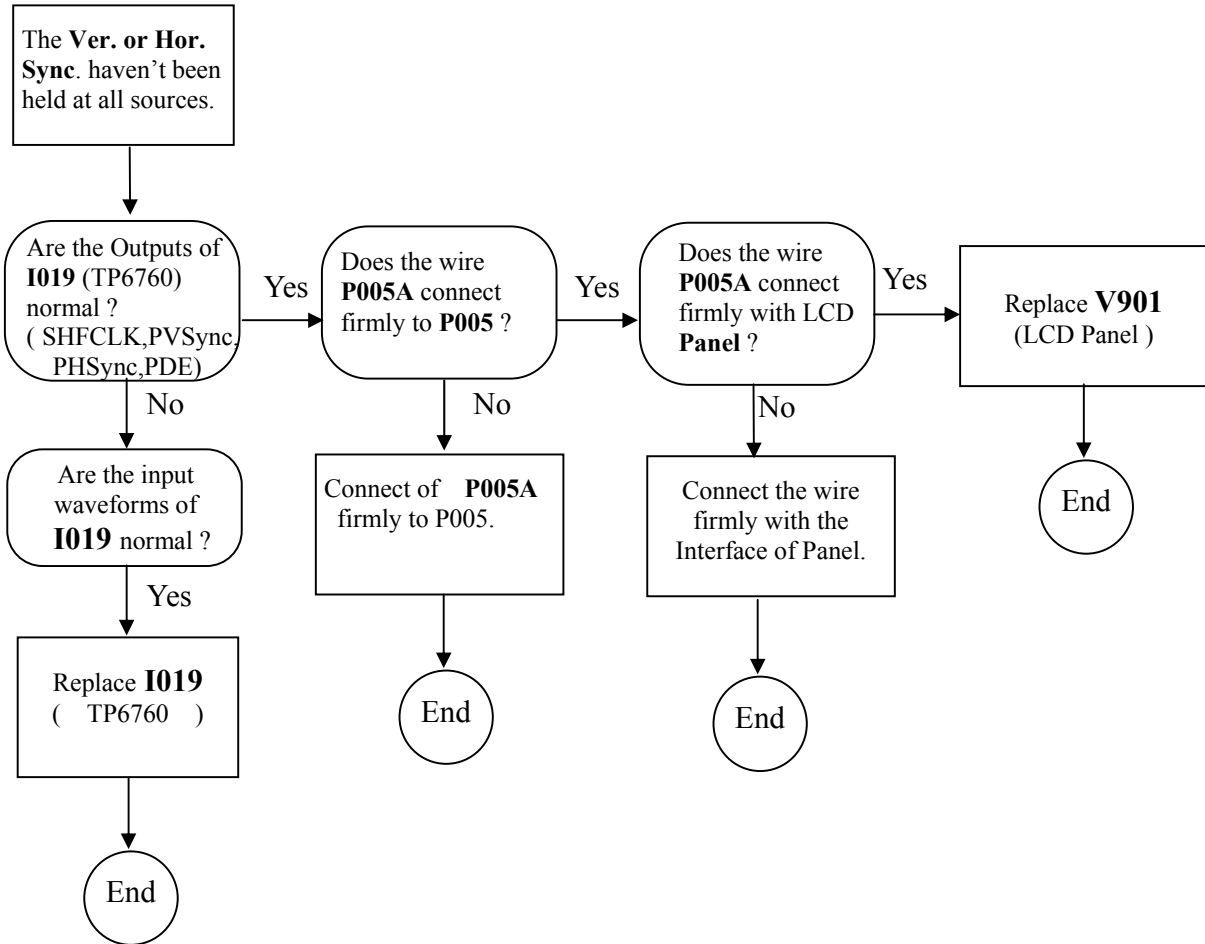


Steps to Refresh EEPROM :

1. Press **POWER** key to turn off the LCD-TV.
2. Press **CH. Down** key on the top of LCD-TV (don't release) and then press **POWER** button on remote control, until "EEPROM Initial" appears.
3. Now, all the buttons which you are pressing could be loosed .

Note : If the PIN of Child-Lock is forgotten , the only way to unlock the channels is to refresh EEPROM and the PIN will also recover initial number "1111". Besides , all the STORE done by user will be refreshed to the situation of First Time Installation.

(5) Frame Defects or Striped Lines at all sources



9. Electronic Circuit Description

9.1 Main Board Circuit

1) Power

Refer to sheet 7 of PWB-0663 circuit diagram.

AC 110V~220V is applied to the LCD-TV through socket **P801** on **PB01** (Power module: PWB-0656) . **PB01** (Power module: PWB-0656) outputs DC+24V to Inverter **U901** via **P802**#1~#5 . DC+24V is also applied to Main Board via **P803**#4 and then fed directly to **I010**#10 (Audio Amp. LA4282).

PB01 (Power module) also provides +5V to Main Board via **P803**#10. It is applied to **I044** (Audio processor MSP3410) through **L031**. +5V is also applied to Panel through **L095** , **I027** (MOSFET: MI9933) ,**L042** and connector **P005** #19.

Beside, +5V is regulated by **I016** (switching regulator : LT1084) to provide +3.3V and also regulated by **I015** (switching regulator : LT1117-adj) to provide +2.5V for all chips.

2) PC Signal

Refer to sheet 1 of PWB-0663 circuit diagram.

The analog R.G.B. video signals are supplied through the **PJ03**(D-sub connector) and these three input signals are approximately 0.7Vpp in amplitude. **R031** 、**R032**and **R033** give resistance of 75Ω respectively for impedance matching. These R.G.B. video signals are AC coupled via 0.047U capacitors **C021** 、**C016** and **C013**, and then fed into the **I001** (AD converter) at #54 、#48 、#49 and #43 respectively. Then , R.G.B. video signals are converted to their digital forms in **I001**. The outputs of digital data including 8 bits red, 8 bits green, 8 bits blue signals are assigned at #70~77 、#2~9and #12~19 of **I001**, and applied to port A of **I019** (Scaler : TP6760) . H.sync & V.sync are applied to **I001** #30 、#31 and the processed signal taken from #66 、#64 are fed into **I019** (TP6760) #18 、#19. CLK signal is taken from **I001** (AD9883-140) #67 and applied to **I019** (TP6760) #156. The LCD-TV is designed to have the DDC/2B functions. DDC communication between the LCD-TV and computer is via **PJ03** (D-sub connector) #12 、#15 and **I004** #5 、#6. The EDID data have written into the **I004** (EEPROM) in the factory during production , so computer will read out the EDID from the **I004** (EEPROM).

3) TV Signal

Refer to sheet 4、8、9 of PWB-0663 circuit diagrams.

The IEC plug on tuner **UT01** receives TV picture and Sound signals from aerial. Tuner **UT01**(Tuner-FQ1216ME/MK3) is a multi-standard TV tuner for CCIR B/G, D/K, I, L/L' system and the front-end has a built-in digitally (I²C) PLL tuning system. (Refer to Chapter 9.2 Tuner Board Circuit)

Tuner **UT01** provides the Composite Video at **QT01** #Emitter and is connected to **I018**(SAA7118)L3 via **P030**#1, and then provides at output #M1 of **I018**(SAA7118). Then, it is connected to Teletext Decoder **I011** (SAA5264) #23 and provides at the R.G.B. output of **I011**#34、#33、#32 after processing. These 3 decoded R.G.B. signal are delivered back to **I018**(SAA7118) # E1、#J3、#G1.

AF and SIF sound from **UT01** (Tuner) are applied to Audio Processor **I044** (MSP3410) #47、#50 through golden finger **PT01** #27、28、#25、26 and **P019** #15,#17 on main Board.

4) AV Signal

(A) Video / S-Video / Component (480i , 525i , 625i):

Refer to sheet 9 of PWB-0663 circuit diagrams.

Video decoder **I018** (SAA7118) is able to decode the colour of PAL, SECAM, and NTSC signals into ITU 601 compatible colour component values. It accepts 4 different video signals, including Composite Video (CVBS) 、 S-Video(Y/C Signal) 、 SCART-R.G.B. and Component Video. There are 4 A/D Converters at the I/O port of **I018** (SAA7118) which includes 16 channel analog inputs.

I018 (SAA7118) 16 channel analog inputs accept Video/S-Video/Component signals from **PI01 / PI08/ PI10 / PI02,PI03,PI04** and provides at the output of 8 bits X-port and then connected to Port V of Scaler **I019** #143~#150.

(B) Component (480p , 525p , 625p) :

Refer to sheet 2 of PWB-0663 circuit diagrams.

Component Signals Y PbPr are applied to **I006** (AD9883-110) # 43,48,49,54 through Green/Blue/Red connectors **PI02/PI03/PI04**. **I006**, AD Converter, converts YPbPr signals to its 24bits digital format and is connected to Port B of Scaler **I019** #8~15、#198~205、#175~182.

5) Panel interface

Refer to sheet 6 of PWB-0663 circuit diagrams.

The signals of panel interface are all applied from Scaler **I019**(TP6760) to LCD Panel through connector **P005** and wire **P005A**. The signals CLK、DE、V.SYNC、H.SYNC from **I019** #90,#92~94 are applied to LVDS IC **I014** #31,#30,#28,#27 and output PCLK-,PCLK+ at #39,#40. Then, signals are applied to Panel via connector **P005** #7, #6 and used for panel display controls. The 24 bits digital R.G.B.data from data outputs of **I019** (Scaler) are transformed to LVDS signals through **I014** and then applied to 8 bits LCD panel.

+5V for LCD panel is controlled by **I019** #96 (FPVCC) via **Q003**(MTB3904) and **I027** (MM9933)

6) MCU

Refer to sheet 5 of PWB-0663 circuit diagrams.

- * Pin 21 (UCLK): The Microcontroller **I012** (Sync.Mos: SM59264C) is operated with the 14.318 MHz Clock which is provided from Scaler **I019** #136 (UCLK) based on crystal **X002**.
- * Pin 10 (Reset) : **C127** and **R096** constitute a Reset circuit. It provides a necessary active high reset signal to **I012**(MCU) # 10 for proper operation of **I012**.
- * Pin 15 (IR) : The signal IR_DA at **I012** #15 is connect with Infrared Receiver. If the IR receives some signal, **I012** will send interrupt signal via **I012** #2、#3 (MSDA、MSCL) to control other chips.
- * Pin 36~43 (Data transfer): The signals AD0~ AD7 transferring between **I012**(MCU)and **I019** (Scaler) are assigned to **I012** #36~#43.
- * Pin 11,13 (Debug) : The signals TXD and RXD used for debugging firmware are assigned to **I012** #13、11.

I013 (24LC16B) provides necessary non-volatile storage for operating variables and parameters. It is controlled by **I012** via MSDA and MSCL signal, which are pull up to +5V voltage by R092 and R093 (10K Ω).

9.2 Tuner Board Circuit

Refer to Tuner Board circuit diagrams of PWB-0564 in Chapter 10.3.

UT01(Tuner-FQ1216ME/MK3) is a multi-standard TV tuner for CCIR B/G, D/K, I, L/L' system and the front-end has a built-in digitally (I^2C) PLL tuning system . The Output of Composite Video from **QT01** #Emitter fed with Tuner **UT01** is applied to SAA7118 through **PT01**#23、24(Golden Finger) , wire **P030A** and socket **P030**#1 on Main Board.

AF and SIF sound from **UT01** (Tuner) are applied to Audio Processor **I044** (MSP3410) #47、#50 through Golden Finger **PT01** #27、28、#25、26 and **P019**#15, #17on Main Board. The specifications of Tuner are as follows :

Intermediate Frequencies

System	L	L'	B/G	D/K	I
Picture Carrier	38.90	33.95	38.90	38.90	38.90
Colour	34.47	38.38	34.47	34.47	34.47
Sound 1	32.40	40.40	33.40	32.40	32.90
Sound 2	-	-	33.16	-	-
NICAM	33.05	39.80	33.05	33.05	32.348

Channel Coverage

BAND	Frequency (MHz)
Low Band	48.25 to 160.00MHz
Mis Band	160.00 to 442.00 MHz
High Band	442.00 to 863.25 MHz

PINNING

SYMBOL	PIN	DESCRIPTION
N.C.	1	(AGC Monitor) Do not connect *
N.C.	2	(Tuning Voltage Monitor) Do not connect
+5V	3	Supply Voltage Vb , tuner section.
SCL	4	I^2C – serial Clock
SDA	5	I^2C – serial Data
AS	6	I^2C – Address Select
-	X	
-	X	
N.C.	9	Not connected
N.C.	10	Not connected
2 nd IF Sound	11	Second IF sound output
CVBS	12	Composite Video Baseband Signal
+5V , IF	13	Supply Voltage , IF section
AF O/P (TV)	14	AF sound output
Ground		Mounting Tags

9.3 Key 、LED&IR Board Circuit

Refer to Key、LED & IR circuit diagram of PWB-0565 in Chapter10.2 and sheet 5 of PWB-0663 circuit diagram(Main Board).

- * Key : The Keyboard is connected with Main Board through socket **P021** and wire **P021A** and to control the **I012** (MCU) .So , if the operation of key is fail , the **I012** (MCU) may fail .
- * IR : The **IR01** (PL-IRM0101-3) is a receiver for infrared remote control systems. The demodulated output signal can directly be decoded by MCU **I012**#15 through **P015**#6 and wire **P015A** .
- * LED :The dual LED **D601** on LED&IR Board is controlled by MCU **I012** #24 、 #25 through **P015** #2 、 #3 and wire **P015A**.

9.4 Inverter Board Circuit

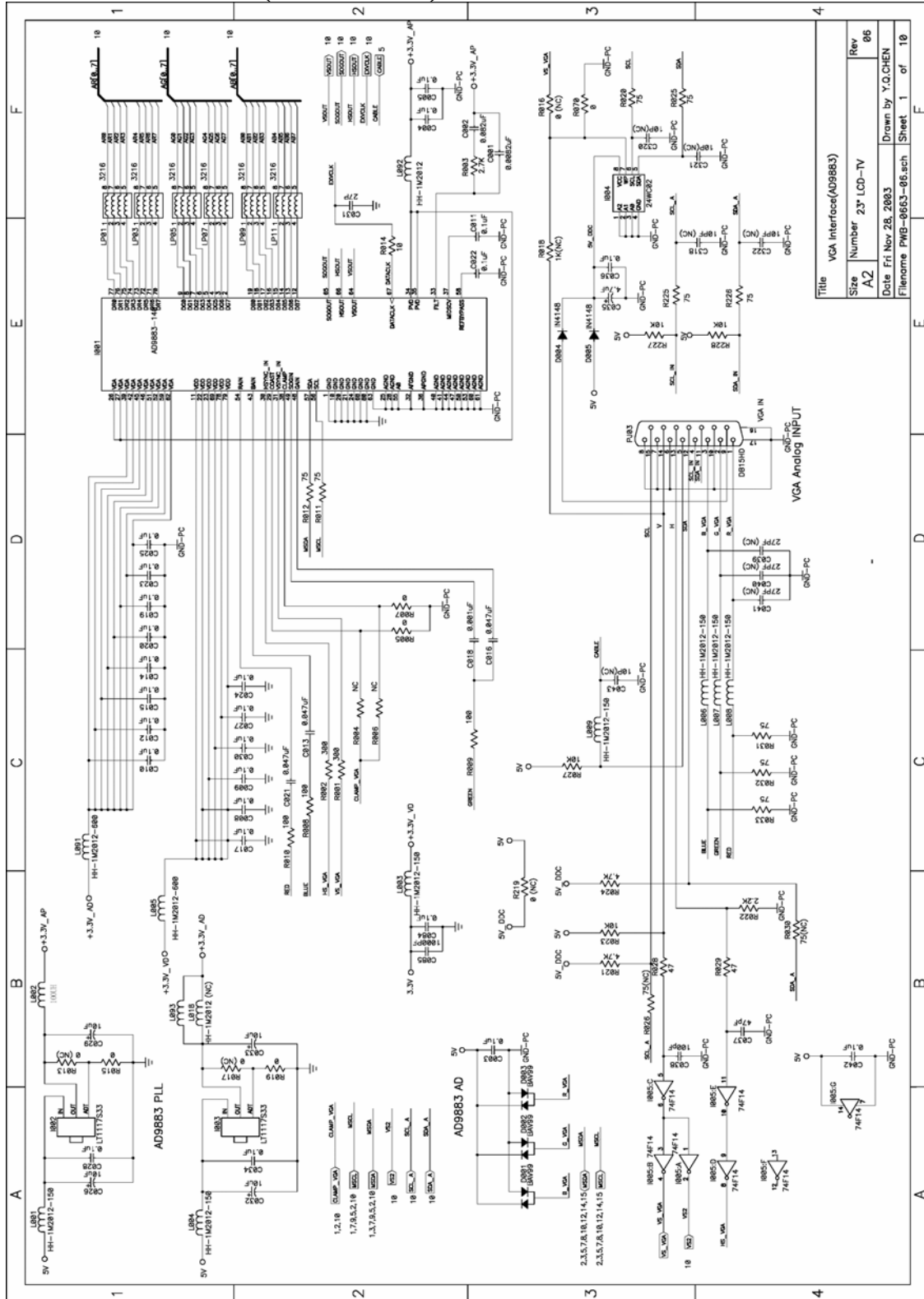
The Inverter Board is fed with +24V through socket **P802** #1~5 on **PB01** (Power Module:PWB-0656)and wire **P802A** .It offers 4.5mA (typical) to each lamp of backlight in LCD panel. (30” panel :16Lamps , 27” panel :14 Lamps)

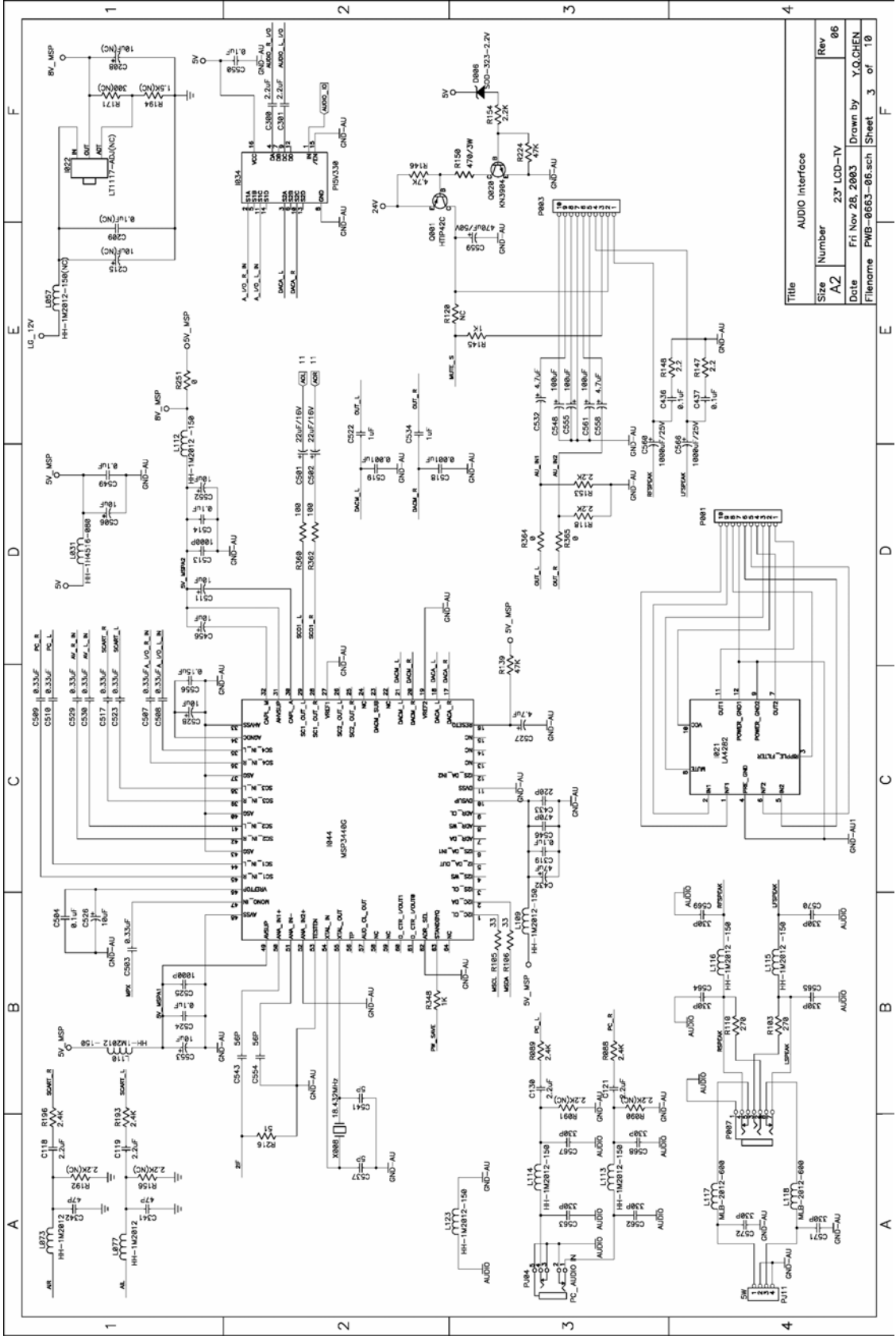
The On / Off of the inverter is controlled by the voltage of **P802** # 11 which is applied from **I019** (Scaler:TP6760) #95 (FPBACK) via **P019**#1 on Main Board. While the voltage of **P802** #11 is ‘**H**’ (2~3.3V) , the lamp of backlight will be turned on. While the voltage of **P802** # 11 is ‘**L**’ (0~ 0.8V) , the lamp of backlight will be turned off.

Adjusting the Brightness in OSD menu is to control the voltage at #62 (DVD0) of **I019** (Scaler:TP6760) and then applies to **P019**#2 on Main Board and **P802** #12 to Inverter . The range of the voltage is from 0V to 2.7V. If the voltage of **P802**#12 is 0V, the screen will get light ; if it’s 2.7V, the screen will get dim. It means that the different voltage will change the lamp current through the inverter to make the screen lighter or dimmer.

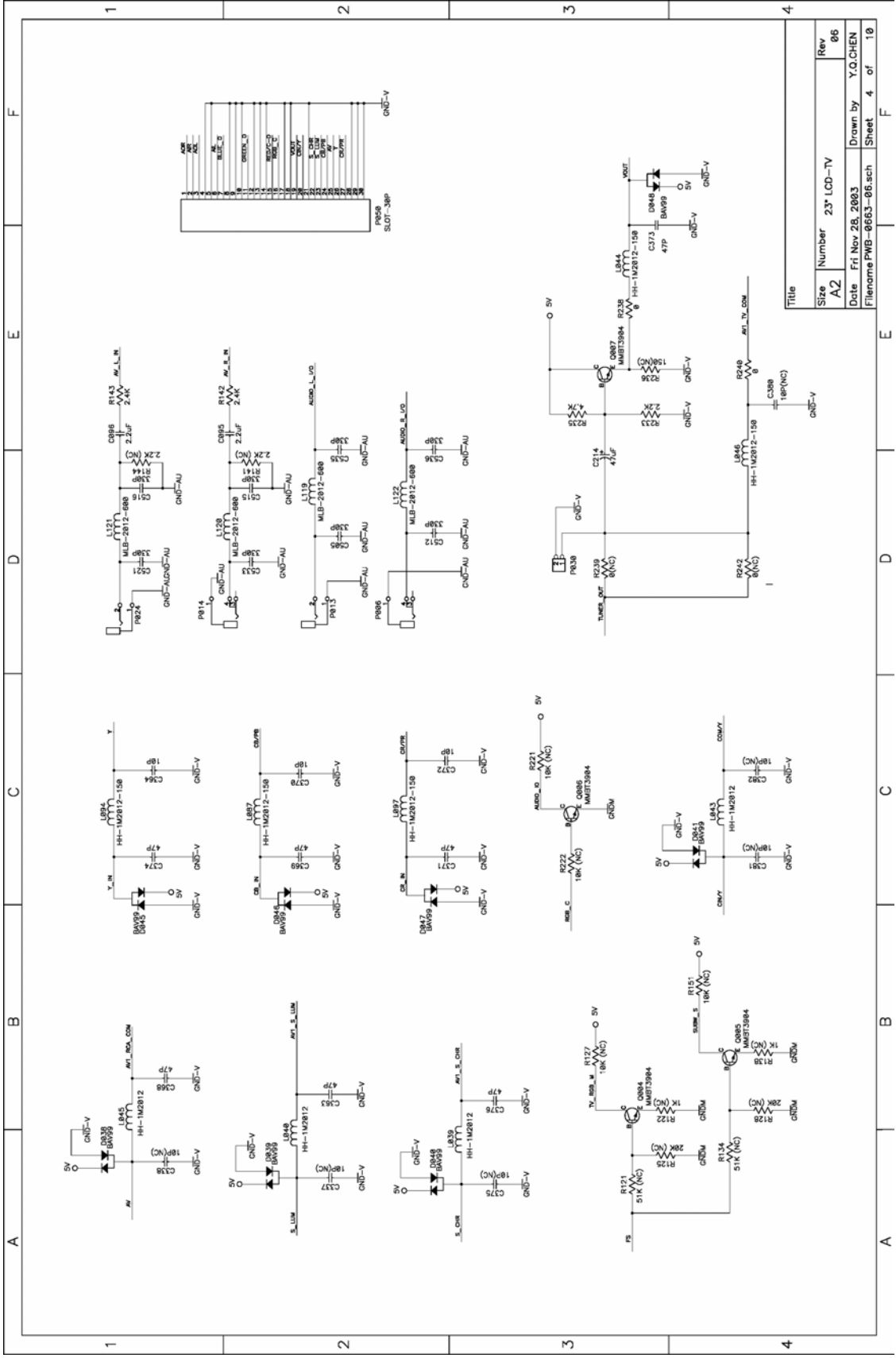
10. Circuit Diagram

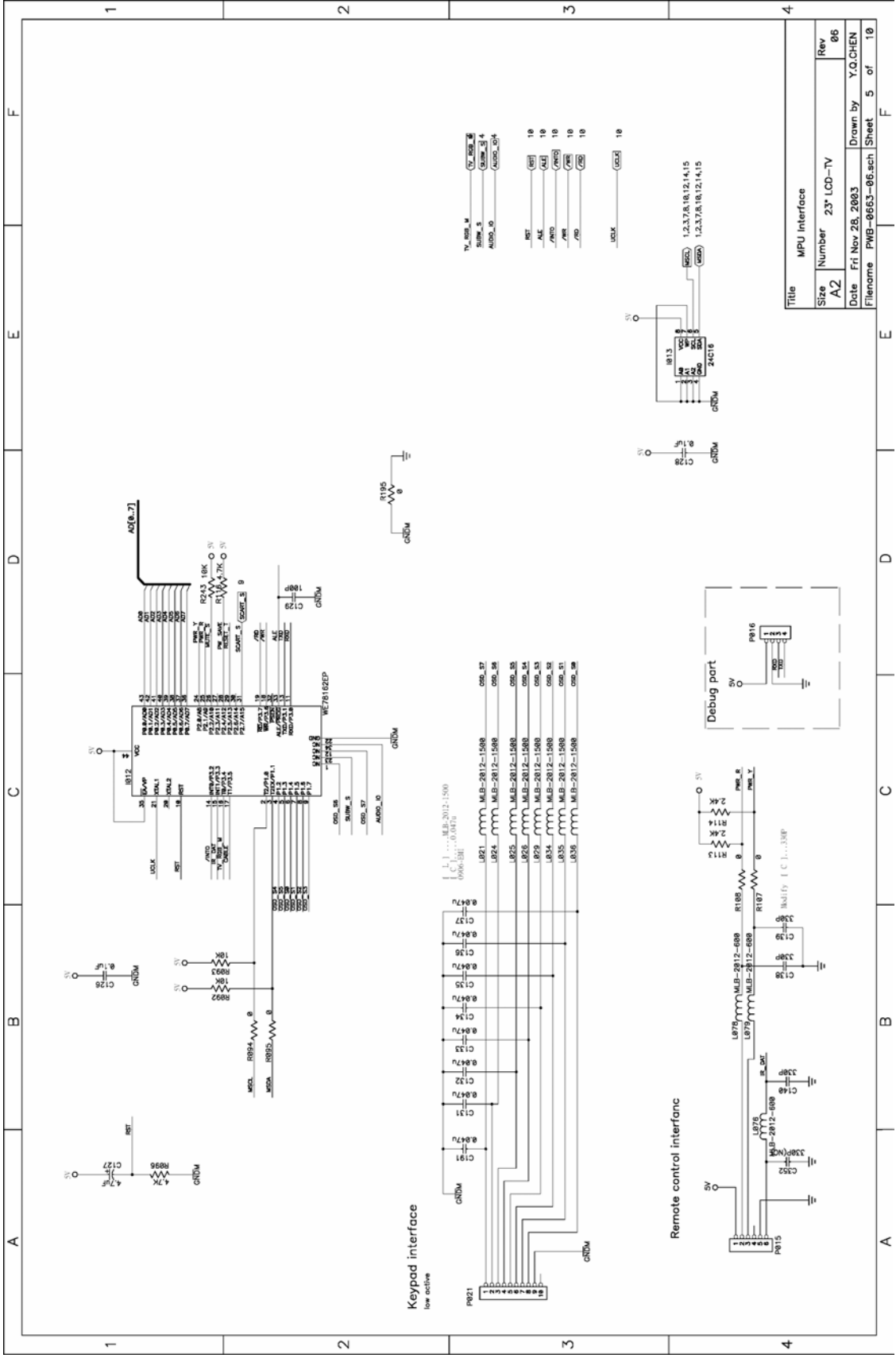
10.1 Main Board (PWB-0663)



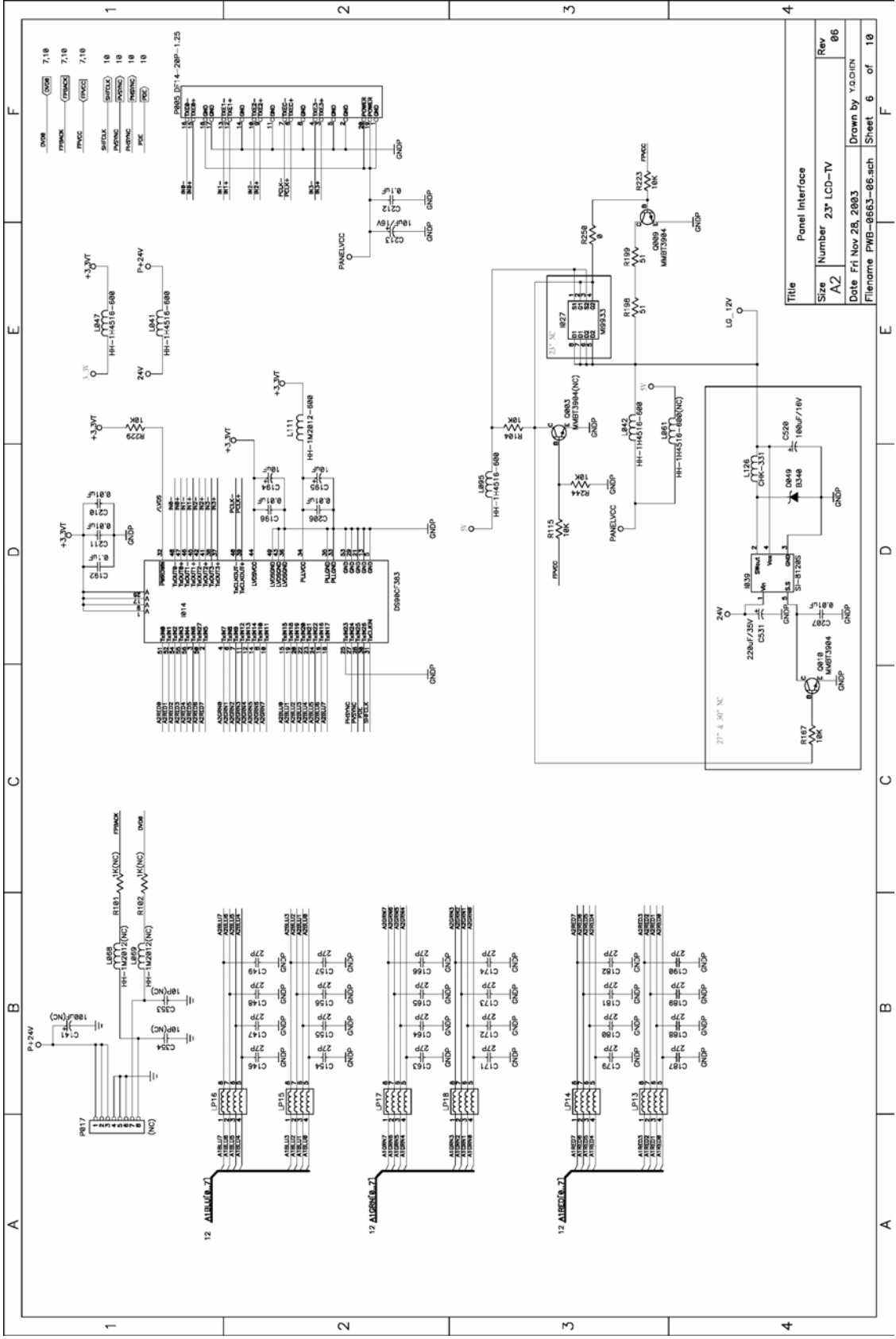


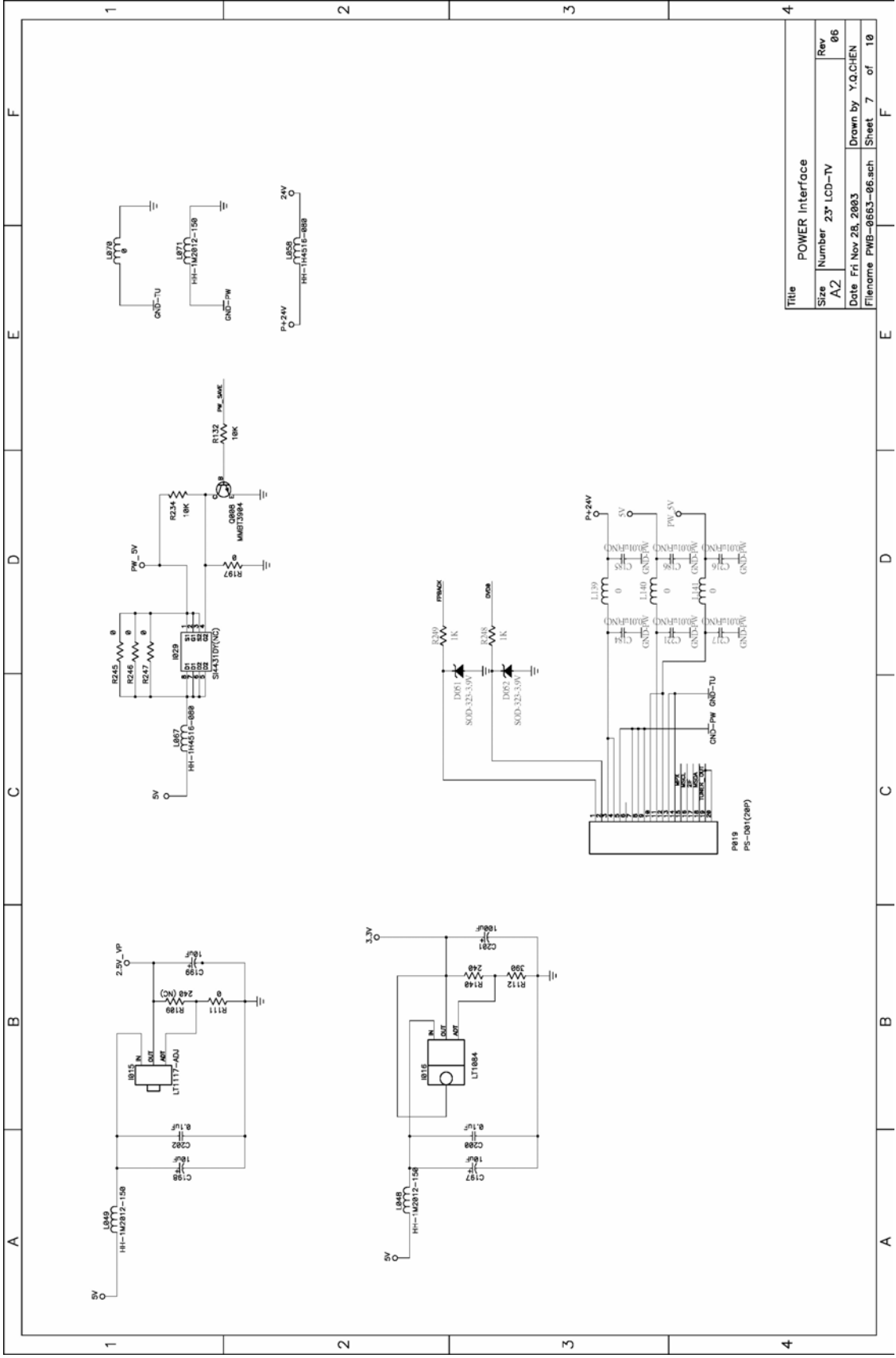
Title			AUDIO Interface		
Size	Number	Rev			
A2	06	06			
Date	Fri Nov 28, 2003		Drawn by	Y.G.CHEN	
Filename	PWB-0663-06.sch		Sheet	3 of 10	



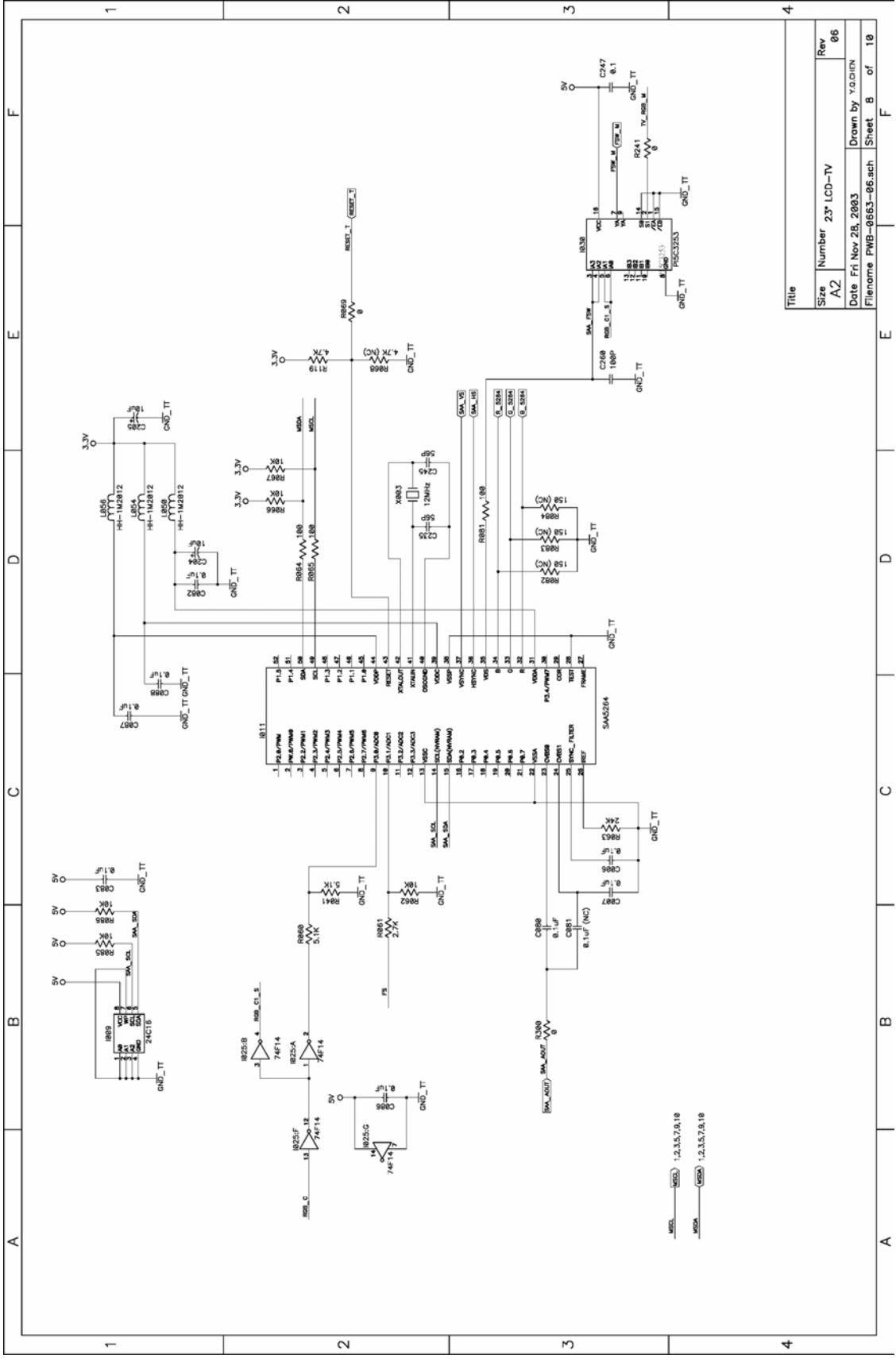


Title		MPU Interface	
Size	A2	Number	23" LCD-TV
Rev	06	Date	Fri Nov 28, 2003
Filename	PWB-0663-06.sch	Sheet	5 of 10
Drawn by	Y.O.CHEN		

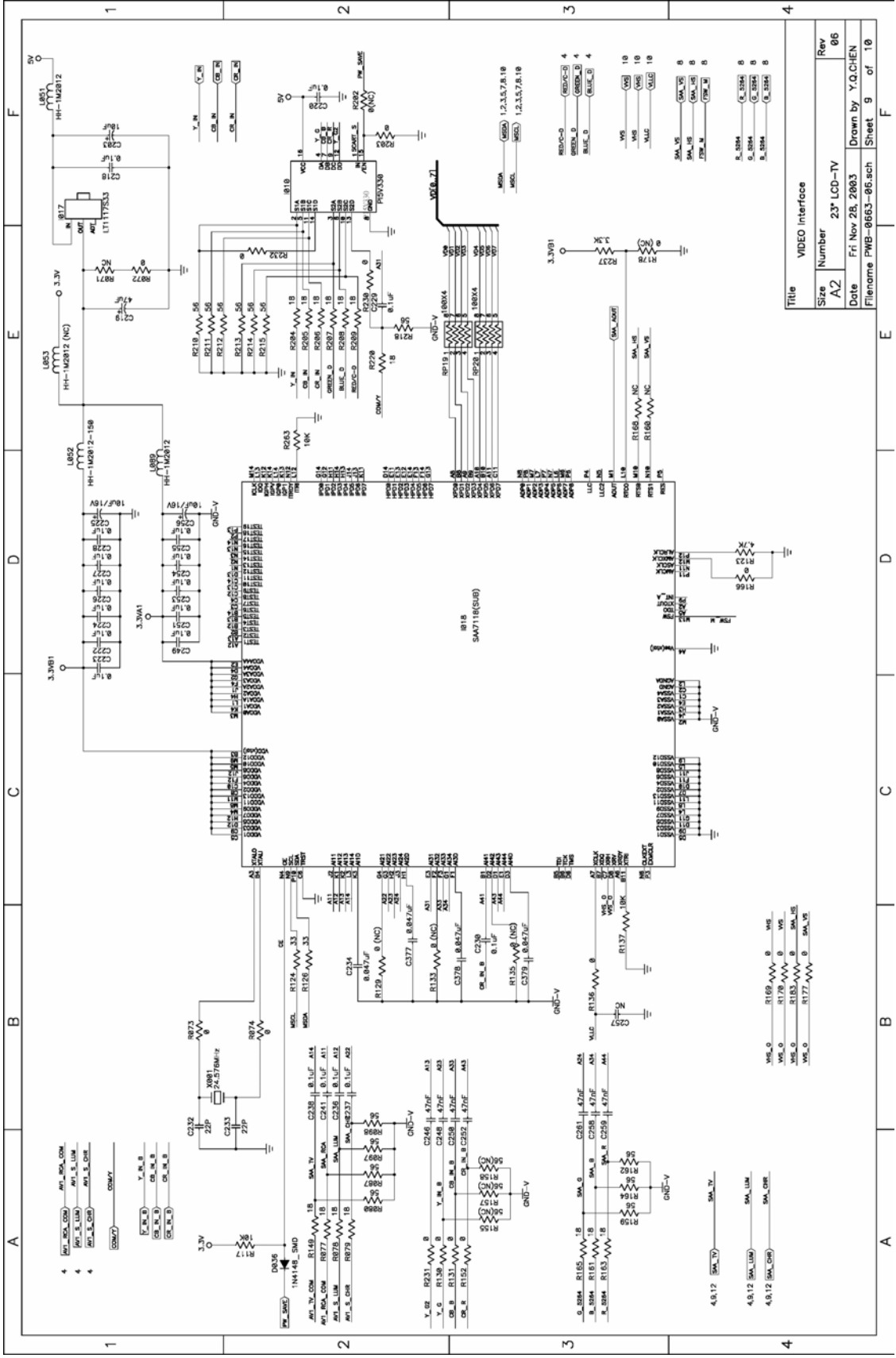




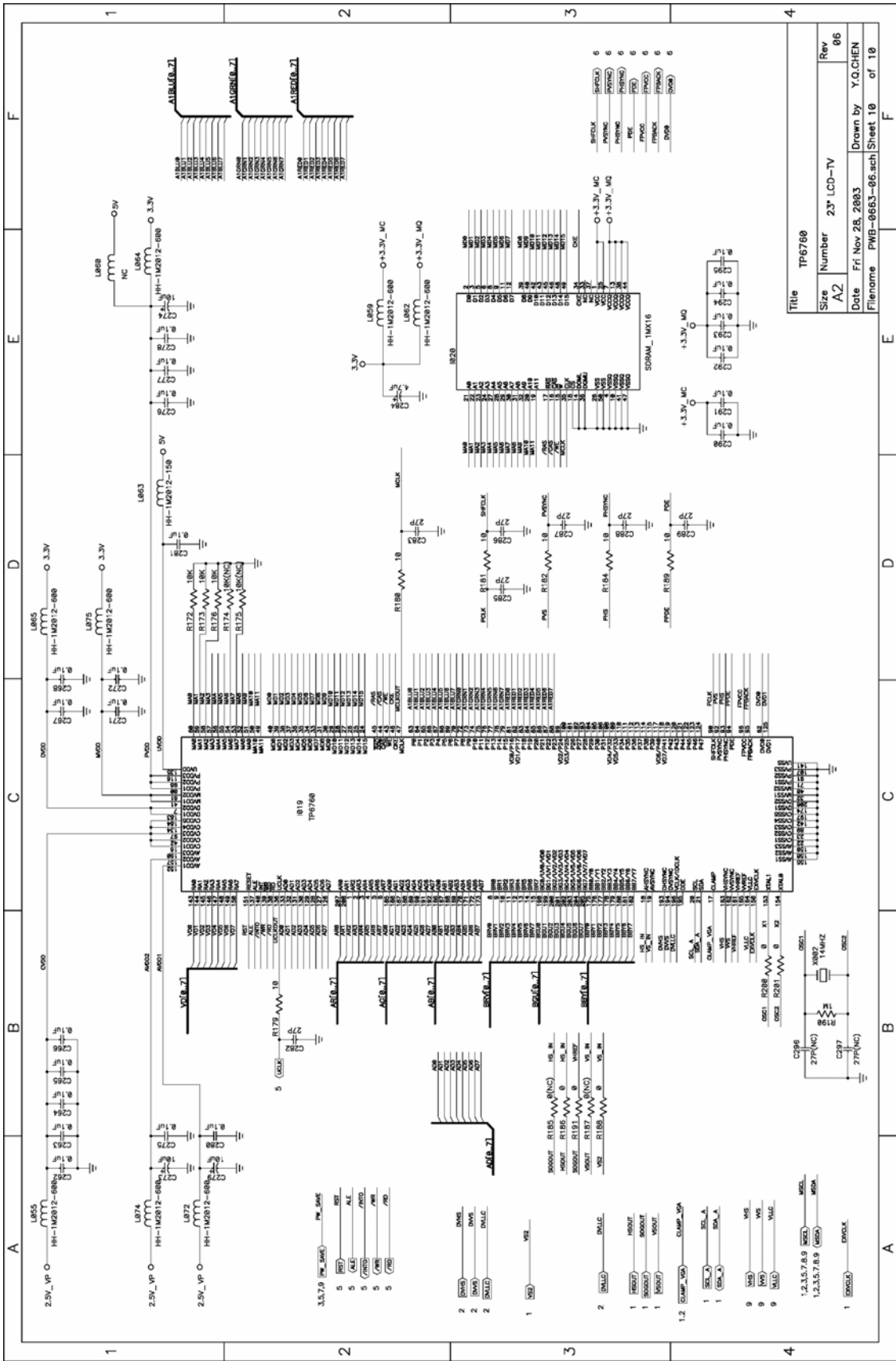
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Size	Number	23 LCD-TV	
A2	06		
Date		Fri Nov 28, 2003	
Filename		PWB--0663--06.sch	
Sheet		7 of 19	



Title	Size	Number	23" LCD-TV	Rev	06
	AZ				
Date	Fri Nov 28, 2003		Drawn by	YAO CHIN	
Filename	PWB-0663-06.sch		Sheet	8 of 18	

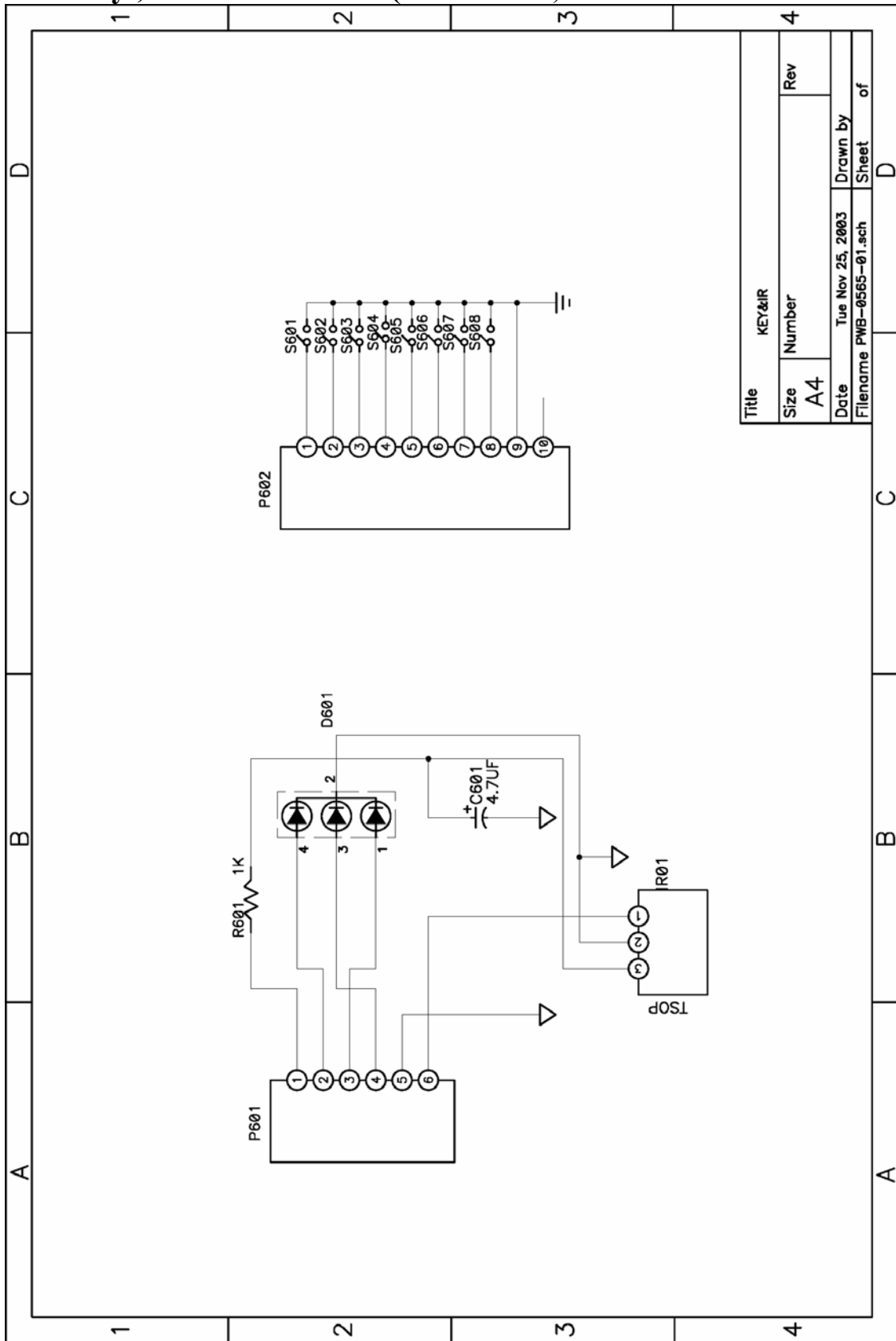


Title		VIDEO interface	
Size	Number	23" LCD-TV	Rev
A2			06
Date	Fri Nov 28, 2003		Drawn by
	Filename PWB-0663-06.sch		Sheet 9 of 10



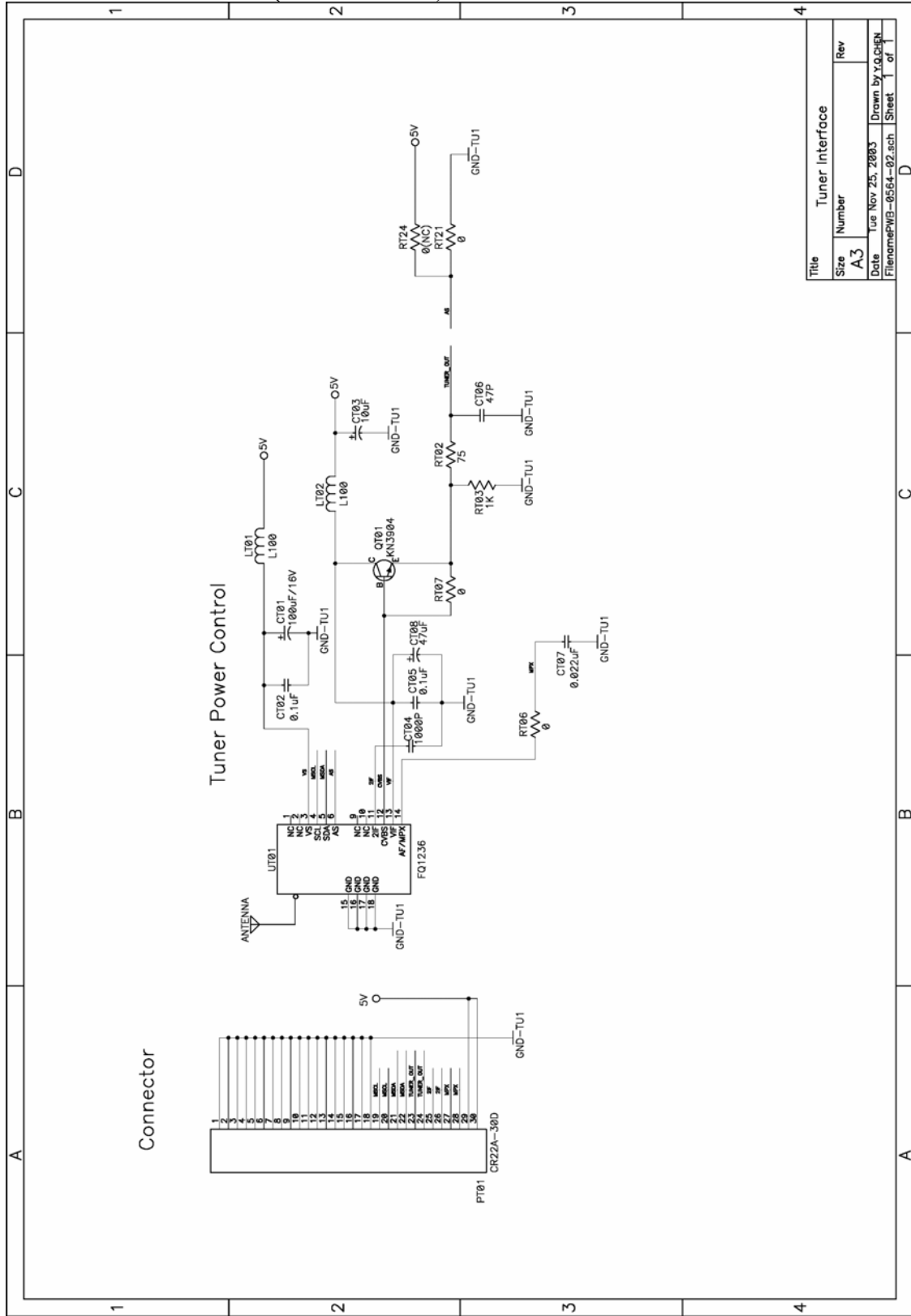
Title TP6760	
Size Number	23" LCD-TV
AZ	06
Date	Fri Nov 28, 2003
Drawn by	Y.O.CHEN
Filename	PWB-0663-06.sch
Sheet	10 of 10

10.2 Key , LED&IR Board (PWB-0565)



Title	KEY&IR		
Size	Number	Rev	
A4			
Date	Tue Nov 25, 2003		Drawn by
Filename	PWB-0565-01.sch		Sheet
			of
			D

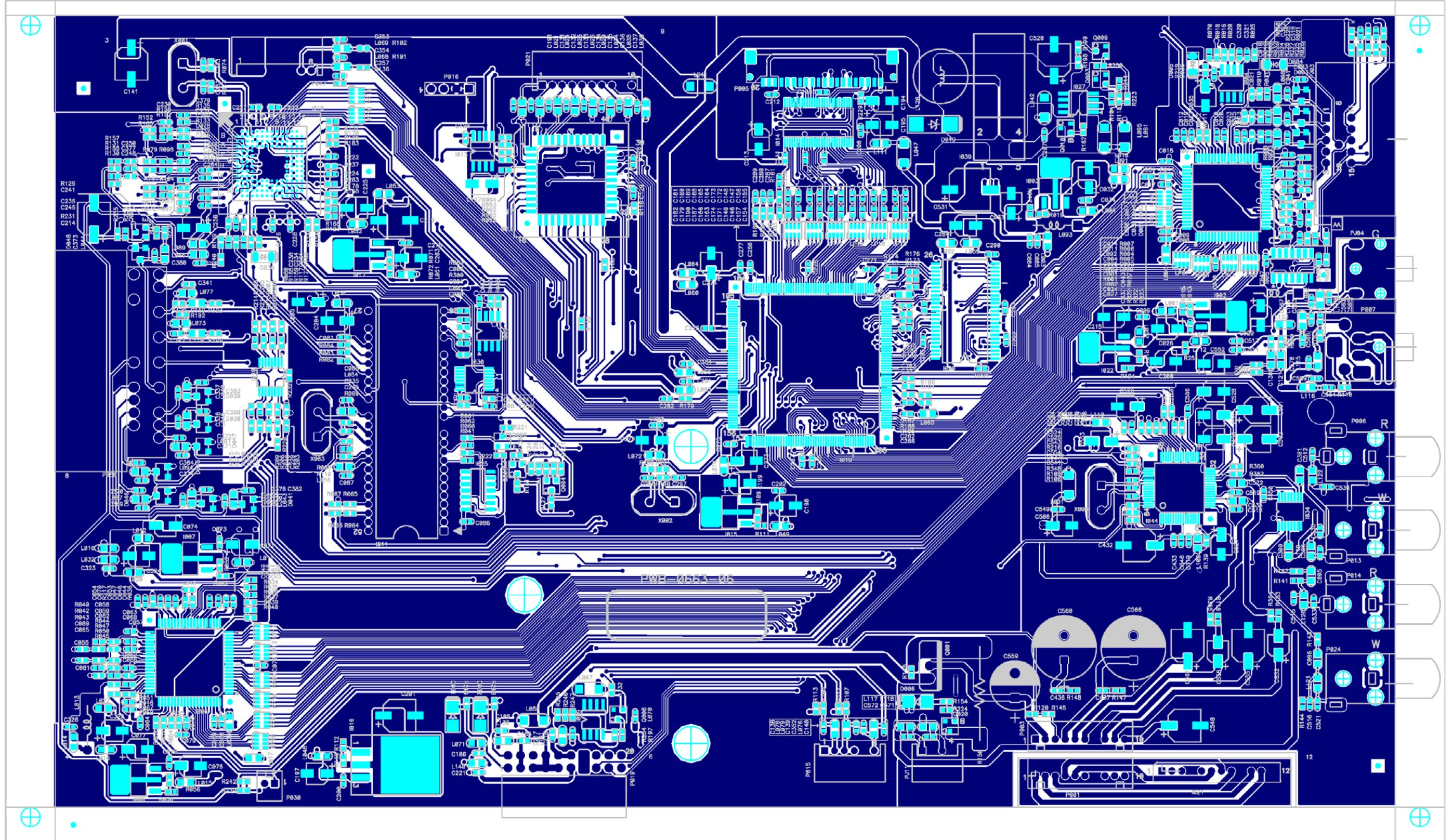
10.3 Tuner Board (PWB-0564)

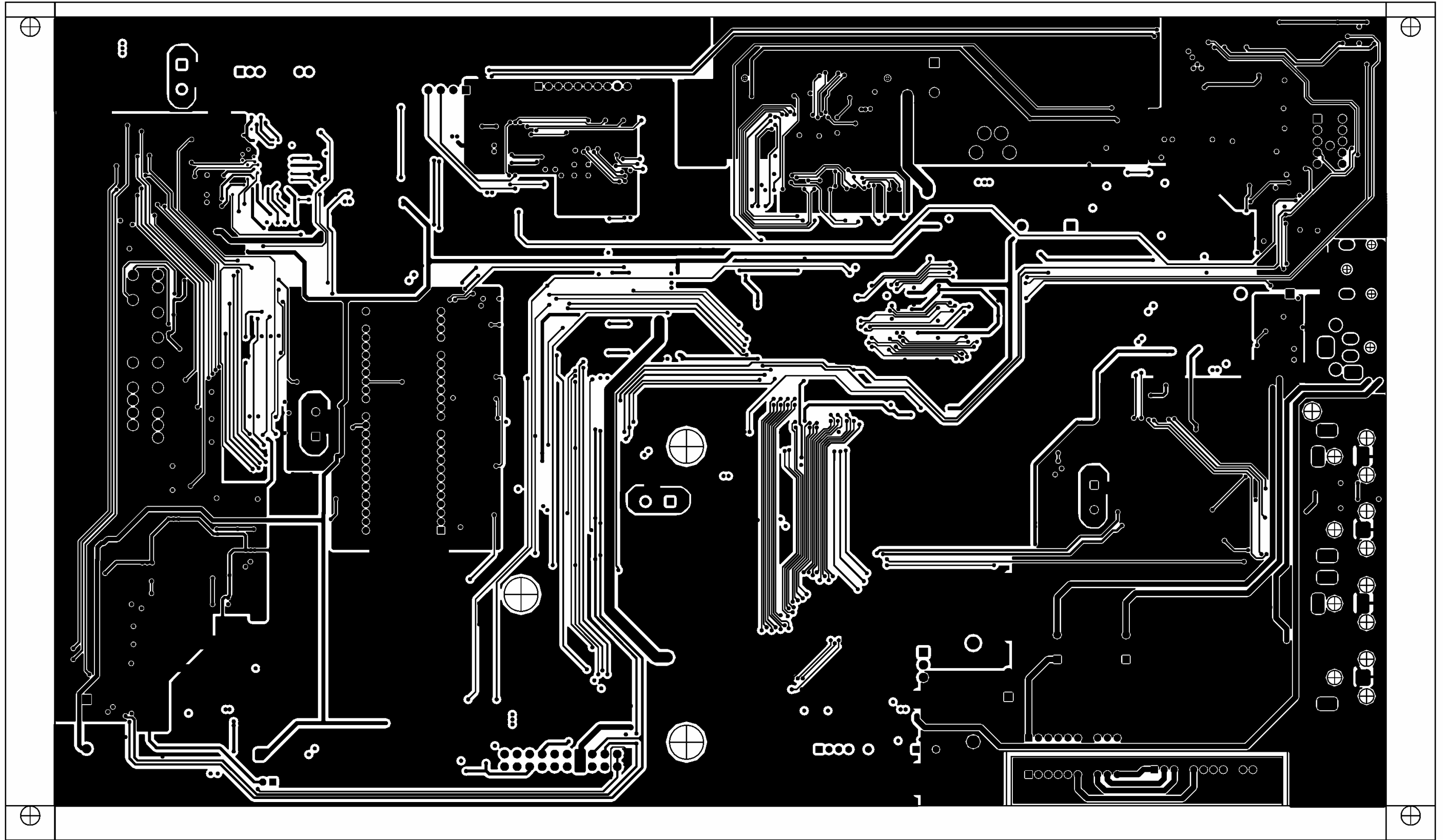


Title		Tuner Interface	
Size	Number	Rev	
A3			
Date	1ue Nov 25, 2003	Drawn by	Y.G.BGN
Filename	PWB-0564-02.sch	Sheet	1 of 1

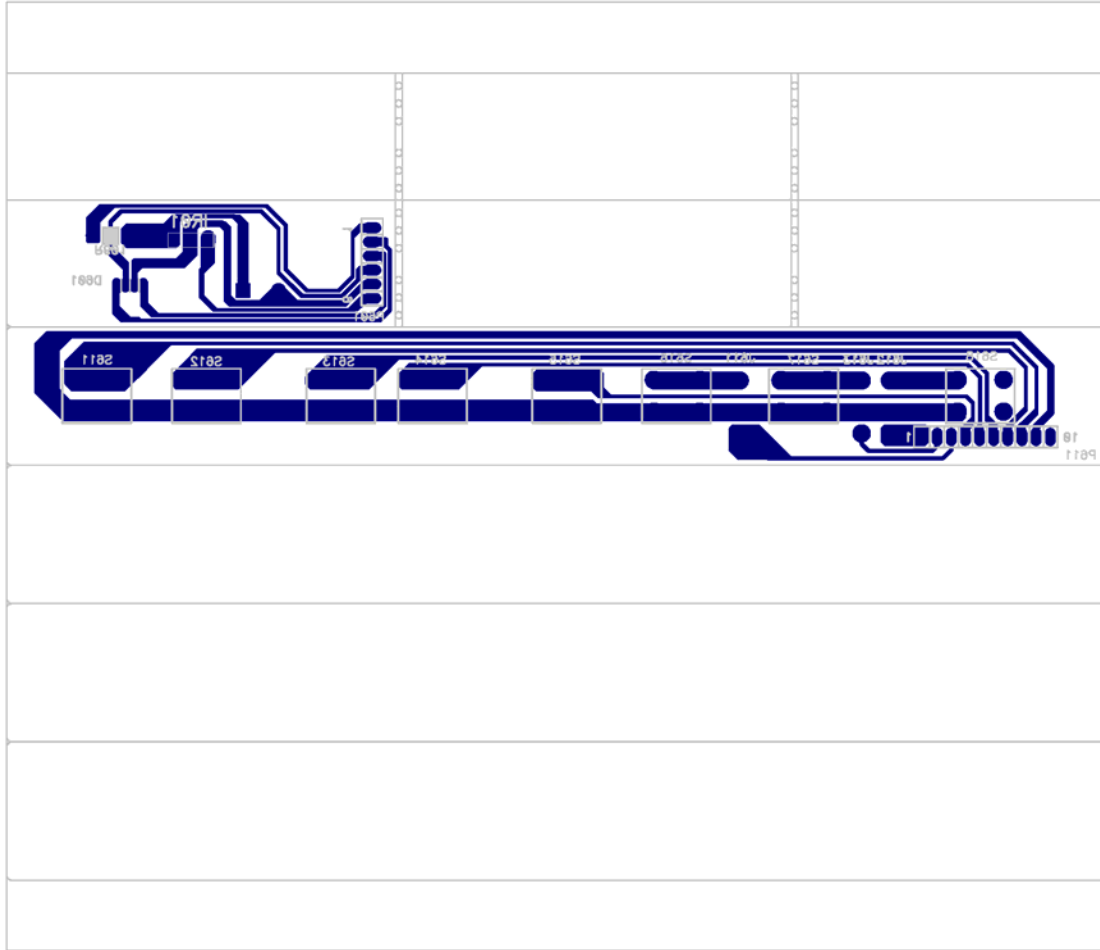
11. PCB Layout

11.1 Main Board PCB (PWB-0663) :

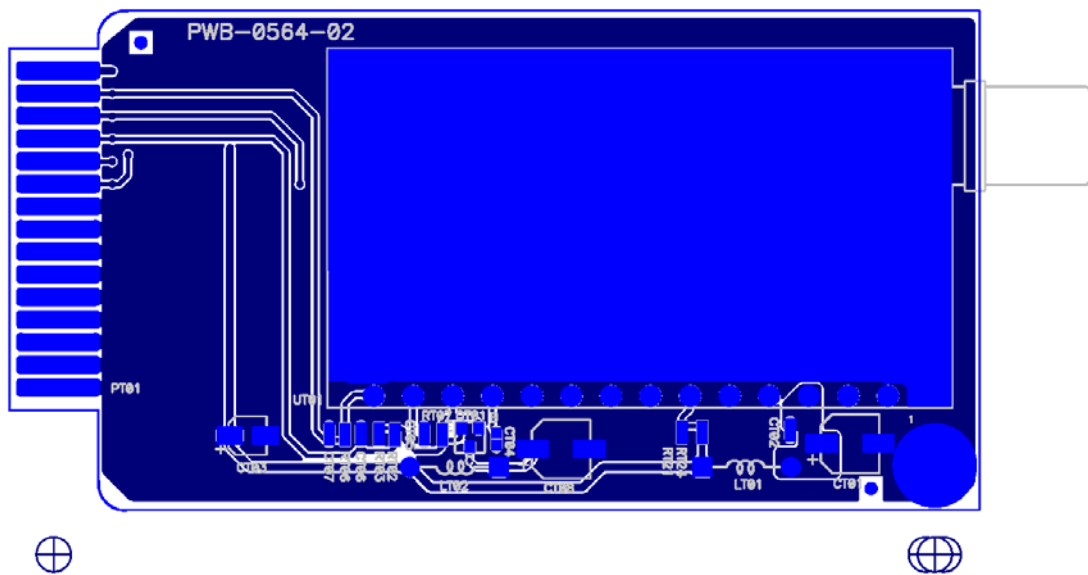




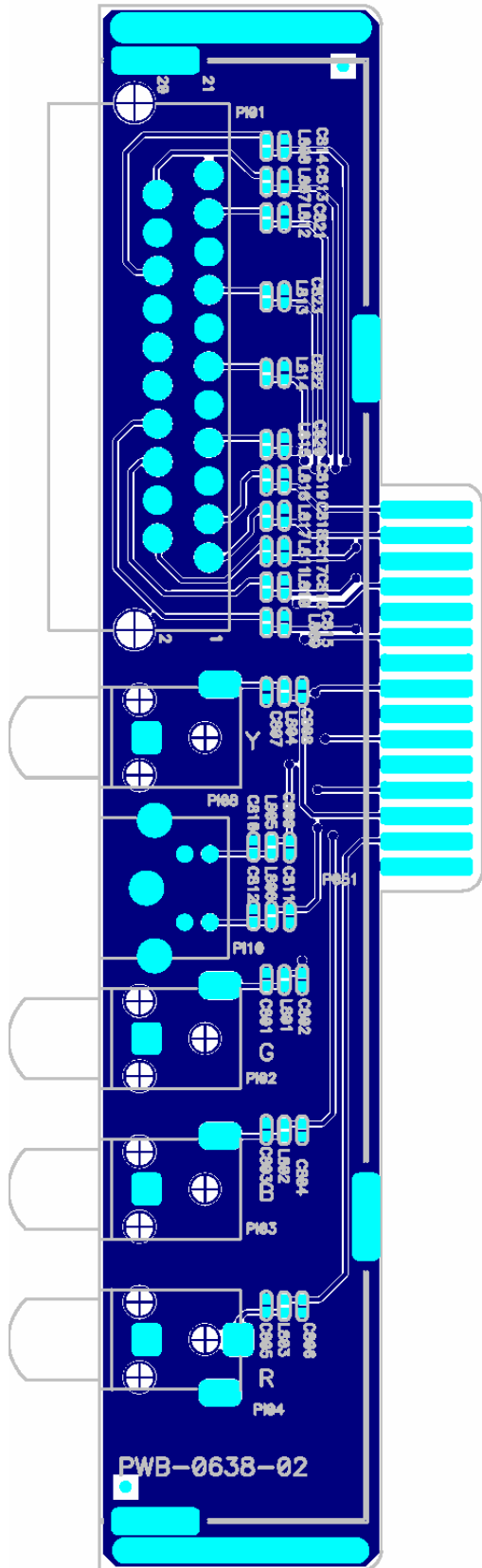
11.2 Key , LED&IR Board PCB (PWB-0565)



11.3 Tuner Board PCB (PWB-0564)



11.4 I/O Board PCB (PWB-0638)



12. Electrical Parts List

12.1 Main Board (PWB-0663)

Main PCB / MCU / Dip Parts					
Item	pc's	Circuit No.	Part Spec.	Part No	AVL
1	1	U0663	PCB : PWB-0663	5053106630	TKE
2	1	I012	MCU : SM59264C	6647021813	Sync.MOS.
3	1	C559	470U/35V	5213547112	CAPXON
4	2	C560,C566	1000U/25V	5214021401	CHINSAN
5	1	I011	SAA5264	6645006603	PHILIPS
6	1	P007	Ear Phone: JY-3551-21	5056302037	Lih-Sheng
7	1	PJ04	PC-AUDIO Jack (B)	5056300104	S.C
8	1	PJ03	D-SUB Connector	5056309125	Cen-Link
9	2	P014,P006	RCA JACK (RED)	5056302039	S.C
10	2	P013,P024	RCA JACK (WHITE)	5056302054	
11	1	P030	CON 2P W	5056415228	JST
12	1	PJ11	CON 4P W	5056415484	Leoco
13	1	P015	CON 6P W	5056415685	Leoco
14	2	P001,P021	CON 10P W	5056416038	JST,JWT
15	1	P003	CON 10P L	5056416023	JST
16	1	P016	Test Pin (4P)	5056415475	JST,JWT
17	1	X001	24.576MHz / 22pF	6699134506	H.ELE
18	1	X002	14.318MHz / 30pF	6699106034	
19	1	X008	18.432MHz / 12pF	6699153730	
20	1	X003	12MHz / 18p	6699114105	
21	2	L002,L093	100uH / Coil Peaking	5064410129	TDK,CHILISIN
22	1	P019	PS-D01(20P)	5056416009	Cen-Link
23	1	P050	SLOT-30P Connector	5056301519	
24	1	R150	3W / 470Ω	5130547103	TZAI YUAN
25	1	I021	LA4282	6644011200	SANYO
26	1	Q001	HTIP42C , PNP	6624003700	HSMC

Main Board SMD Parts					
Item	pc's	Circuit No.	Part Spec.	Part No	Type
1	6	C035,C127,C284,C527,C532,C558	4.7U/16V	5218014791	SMD
2	111	C003,C004,C005,C006,C007,C008,C009,C010,C011,C012,C014,C015,C017,C019,C020,C022,C023,C024,C025,C027,C028,C030,C034,C036,C042,C046,C049,C050,C051,C052,C053,C054,C055,C056,C057,C060,C061,C063,C065,C066,C067,C068,C069,C070,C073,C075,C078,C080,C082,C083,C084,C126,C128,C192,C200,C202,C212,C218,C220,C222,C223,C224,C226,C227,C228,C229,C230,C236,C237,C238,C241,C249,C251,C253,C254,C255,C262,C263,C264,C265,C266,C267,C268,C271,C272,C275,C276,C277,C278,C280,C281,C290,C291,C292,C293,C294,C295,C319,C323,C326,C504,C514,C524,C549,C550,C086,C087,C088,C247,C436,C437	0.1U / 25V	5230005491	0603
3	31	C026,C029,C032,C033,C071,C074,C076,C077,C194,C195,C197,C198,C199,C203,C204,C205,C213,C225,C256,C273,C274,C279,C324,C325,C456,C506,C511,C526,C528,C552,C553.	10U/16V	5218007891	SMD
4	10	C018,C047,C048,C058,C062,C064,C072,C085,C513,C525	1000P/50V	5230610291	0603
5	23	C013,C016,C021,C059,C234,C246,C248,C250,C252,C258,C259,C261,C377,C378,C379,C131,C132,C133,C134,C135,C136,C137,C191	0.047U/50V	5230647391	0603
6	2	C522,C534	1U/16V	5230001191	0805
7	8	C095,C096,C118,C119,C121,C130,C300,C301	2.2U/16V	5230007791	0805
8	9	C503,C507,C508,C509,C510,C517,C523,C529,C530	0.33U/16V	5230004191	0603
9	2	C537,C541	5P / 50V	5240605091	0603
10	1	C433	220P / 50V	5240622191	0603

Item	pc's	Circuit No.	Part Spec.	Part No	Type
11	34	C138,C139,C140,C338,C337, C341,C342,C363,C364,C368, C369,C370,C371,C372,C373, C374,C375,C376,C380,C381, C382,C521,C516,C533,C515, C505,C535,C512,C536,C563, C562,C567,C568,C572,C571, C564,C565,C569,C570	330P	5240633191	0603
12	2	C001,C044	0.0082U/50V	5230682291	0603
13	2	C002,C045	0.082U	5230019091	0603
14	4	C201,C548,C555,C561	100U/16V	5218007991	SMD 6x5
15	33	C031,C079,C146,C147,C148, C149,C154,C155,C156,C157, C163,C164,C165,C166,C171, C172,C173,C174,C179,C180, C181,C182,C187,C188,C189, C190,C282,C283,C285,C286, C287,C288,C289	27P/50V	5240627091	0603
16	3	C038,C129,C260	100P/50V	5240610191	0603
17	4	C196,C206,C210,C211	0.01U/50V	5230610391	0603
18	1	C556	0.15U	5230019191	0603
19	2	C501,C502	22U/16V	5218008891	SMD
20	3	C214,C219,C432	47U/16V	5218008991	SMD
21	2	C232,C233	22p/50V	5240622091	0603
22	4	C235,C245,C543,C554	56P	5240656091	0603
23	1	C546	470P/50V	5240647191	0603
24	2	C518,C519	4700P	5230647291	0603
25	2	C037,C089	47P	5240647091	0603
26	11	D001,D002,D003,D038,D039, D040,D041,D045,D046,D047, D048	BAV99 (DII) MMBD7000LT1 (ON)	6613000555 6613003550	SOT-23
27	3	D004,D005,D036	LS4148 (Rohm) HSK120 (HIT)	6613003059 6613003052	0805
28	1	D006	BZT52C2V4-7 (DII)	6615026753	
29	8	RP07,RP08,RP09,RP10,RP11, RP12,RP19,RP20	RP100x4	5160310900	Array x 4
30	4	L123,L139,L140,L141	0	5132300009	0805
31	8	L021,L024,L025,L026,L029, L034,L035,L036	FBM-10-201209-152	5062133023	

Item	pc's	Circuit No.	Part Spec.	Part No	Type
32	26	L001,L003,L004,L006,L007, L008,L009,L011,L012,L015, L017,L048,L049,L050,L051, L052,L054,L056,L063,L071, L089,L092,L109,L110,L112	MLB-2012-150	5062133008	0805
33	6	L031,L058,L067,L041,L047, L095	HU-1H4516-600J	5062120135	1806
34	38	L005,L020,L022,L030,L039, L040,L043,L044,L045,L046, L055,L059,L062,L064,L065, L072,L073,L074,L075,L076, L077,L078,L079,L087,L091, L094,L097,L111,L113,L114, L115,L116,L117,L118,L119, L120,L121,L122	MLB-201209-00600L-N2	5062133011	0805
35	6	LP13,LP14,LP15,LP16,LP17, LP18	MLB-3216-0030M4-N2	5062128504	Bead Array
36	6	LP01,LP03,LP05,LP07,LP09, LP11	MLB-3216-0240M4-N3	5062128505	Bead Array
37	1	P005	DF14-20P-1.25H (HRS)	5056310015	
38	1	Q009	2SK2731 (ROHM)	6626002752	
39	7	Q004,Q005,Q006,Q007,Q008, Q020,Q003	3904 (ZOWIE) (FAIRCHILD) (DII) (KEC)	6622002257 6621038451 6622002259 6621015356	SOT-23
40	51	R005,R007,R015,R019,R037, R040,R053,R057,R058,R069, L070,R072,R073,R074,R094, R095,R107,R108,R111,R188, R195,R240,R130,R131,R136, R152,R166,R169,R170,R177, R183,R186,R191,R197,R198, R199,R200,R201,R203,R230, R231,R232,R238,R241,R300, R364,R365,R245,R246,R247, R250,R251	0	5134300009	0603
41	4	R145,R248,R249,R348	1K	5134310209	0603
42	4	R105,R106,R124,R126	33	5134333009	0603
43	11	R011,R012,,R020,R025,R031, R032,R033,R045,R046,R225, R226	75	5134375009	0603
44	2	R139,R224	47K	5134347309	0603
45	25	R023,R027,R062,R066,R067, R085,R086,R092,R093,R104, R115,R117,R132,R137,R172, R173,R176,R229,R263,R050, R234,R227,R228,R243,R244,,	10K	5134310309	0603

Item	pc's	Circuit No.	Part Spec.	Part No	Type
45	1	R063	24K	5134324309	0603
46	2	R041,R060	5.1K	5134351209	0603
47	9	R014,R055,R059,R179,R180, R181,R182,R184,R189	10	5134310009	0603
48	4	R022,R118,R153,R154,R233	2.2K	5134322209	0603
49	3	R003,R036,R061	2.7K	5134327209	0603
50	2	R001,R002	300	5134330109	0603
21	1	R140	240	5134324109	0603
52	1	R112	390	5134339109	0603
53	2	R028,R029	47	5134347009	0603
54	8	R088,R089,R113,R114,R142, R143,R193,R196	2.4k	5134324209	0603
55	2	R147,R148	2.2	5134322909	0603
56	2	R103,R110	270	5134327109	0603
57	8	R021,R024,R096,R116,R123, R119,R146,R235	4.7K	5134347209	0603
58	1	R237	3.3K	5134333209	0603
59	11	R008,R009,R010,R042,R043, R044,R064,R065,R081,R360, R362	100	5134310109	0603
60	14	R077,R078,R079,R149,R161, R163,R165,R204,R205,R206, R207,R208,R209,R220	18	5134318009	0603
61	14	R080,R087,R097,R098,R159, R162,R164,R210,R211,R212, R213,R214,R215,R218	56	5134356009	0603
62	1	R216	51	5134351009	0603
63	1	R190	1M	5134310509	0603

Main Board SMD IC					
Item	pc's	Circuit No.	Part Spec.	Part No	AVL
1	2	I005,I025	74F14	6646021451	FAIRCHILD
2	2	I034,I010	P15V33690Q	6644036001	PERICOM
3	5	I002,I003,I007, I008,I017	RC1117ST 33 AP1117E-3.3	6640003858 6640010150	FAIRCHILD ATC
4	1	I015	RC1117ST 25	6640003867 6640010159	FAIRCHILD ATC
5	1	I006	AD9883A-110	6649001852	ADI
6	1	I001	AD9883A-140	6649001853	
7	1	I004	24C02	6647051862	CATALYST
8	1	I044	MSP 3410G	6644077051	MICRONAS
9	2	I009,I013	AT24C16 24LC16B AM24LC16S8	6647026301 6647026355 6647051653	ATMEL MICROCHIP ATC
10	1	I016	LD1084	6640005156	EGTEK
11	1	I018	SAA7118E	6647052050	PHILIPS
12	1	I019	TP6760	6646000351	TOPRO
13	1	I020	HY57V161610	6646013651	HYNIX
14	1	I012A	44P Socket	5056304402	Cen-Link
15	1	I027	SI9933DY	6644075755	VISHAY Silicon
16	1	I014	THC63LVDM83A	6644001354	THINE
17	1	I030	PI5C3253	6645008657	EPCO

12.2 Tuner Board (PWB-0564)

Item	pc's	Circuit No.	Part Spec.	Part No	AVL
1	1	U0564	PWB-0564	5053105640	TKE
2	4	RT02,RT07,RT21, CT07	0	5134300009	YAGEO, RAYAL
3	1	RT03	1K	5134310209	
4	2	CT02,CT05	0.1uF	5230005491	PHYCOMP, TAIYO YUDEN, TDK, WAL SIN
5	1	CT06	47P	5240647091	
6	1	CT01	100uF/16V	5218007991	NIPPON CHEMICON
7	1	CT03	10U/16V	5218007891	
8	1	CT08	47U/16V	5218008991	PANASONIC
9	2	LT01, LT02	Coil Peaking 100uH	5064410129	TDK
10	1	UT01	Tuner FQ1216ME/IH-3	5000100054	PHILIPS

12.3 I/O Board (PWB-0638)

Item	pc's	Circuit No.	Part Spec.	Part No	AVL
1	1	U0638	PWB-0638	5053106380	TKE
2	1	PI01	Euro Scart	5556314100	Jya-Tai
3	1	PI02	RCA JACK(GREEN)	5056302057	S.C
4	1	PI03	RCA JACK(BLUE)	5056302058	S.C
5	1	PI04	RCA JACK(RED)	5056302039	S.C
6	1	PI08	RCA JACK(YELLOW)	5056302055	S.C
7	1	PI10	S-VIDEO	5056302049	S.C
8	23	C801 ~ C823	10p/50V	5240610091	Yuden , Walsin
9	17	L801 ~ L817	Bead Chip MLB-1608	5062132307	Maglaye

12.4 LED & IR Board (PWB-0565)

Item	pc's	Circuit No.	Part Spec.	Part No	AVL
1	1	C601	10U/16V	5214020800	CHINSAN
2	1	D601	Dual LED L-5T8YG	6618018167	PARA LIGHT
3	1	IR01	SENSOR PL-IRM0101	6646036600	
4	1	P601	6PIN CONN.	5056415685	JOWLE
5	1	R601	1K	5142110295	SANYO

12.5 Key Board (PWB-0565)

Item	pc's	Circuit No.	Part Spec.	Part No	AVL
4	1	U0565	KEY/LED BOARD	5053105650	TKE
1	3	J611,J612,J613	WIRE	6119210605	TATUNG
2	1	P602	S10B-PH-K , Base&Pin	5056416038	JST,JWT
3	8	S601,S602,S603, S604,S605,S606, S607,S608	Tact Switch	5054512951	FORWARD

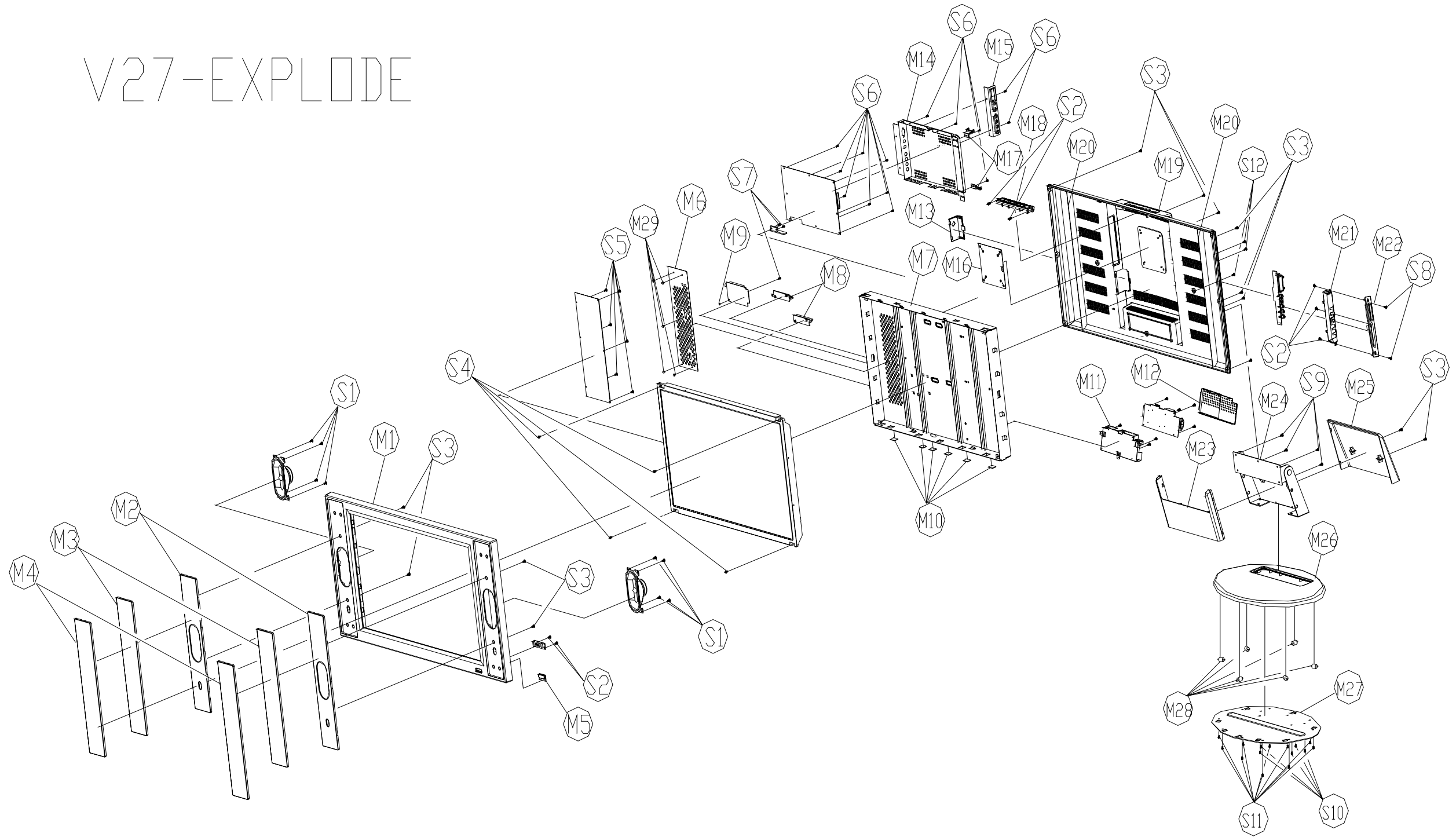
12.6 Power Module / Panel / Inverter /Accessories

Item	pc's	Circuit No.	Part Spec.	Part No	AVL
1	1	PB01	Power Module: PWB-0656 150W, 5V/3A, 24V/6A	5000100077	HJC
2	1	V901	27" Panel : V270W1-L01	5051253641	CMO
			30" Panel : V296W1-L03	5051253642	CMO
3	1	U901	27" Inverter: PLCD17271401 (24V/850mA/58KHz)	5000100074	E-Max
			30" Inverter : PLCD17301 (24V/3.75A/72mA)	5000100069	E-Max
4	1	P021A	WIRE 10P (to Key)	5057410111	Liang-san
5	1	P015A	WIRE 6P (to Sensor)	5057406116	
6	1	PJ11A	WIRE 4P (to Speaker)	5057404365	
7	1	P003A	WIRE10P (to AudioAmp)	5057410025	
8	1	P802A	WIRE 12P/8P (Power-Invert.)	5057412020	
9	1	P005A	WIRE 20P (to Panel)	5057430018	
10	1	P030A	WIRE 2P (TV-Power-Main)	5057402289	
11	1	SP01	Speaker :SPK 4-OHM 10W	5055123700	
12	1	SP02	Speaker :SPK 4-OHM 10W	5055123700	SEA TRADE
13	1	RT01	Remote Control RM-L1703	5000100094	FORWARD
14	1	P101	SIGNAL CABLE 15P D-Sub	5057415248	Liang-san
15	1	P801 (option)	SP-28/IS-14 Black	5056706150	I-Sheng
16	1	Y001	27" USER'S MANUAL I	5030057017	TATUNG
			27" USER'S MANUAL II	5030057030	TATUNG
			30" USER'S MANUAL I	5030057013	TATUNG
			30" USER'S MANUAL II	5030057029	TATUNG

13. Mechanical Disassembly

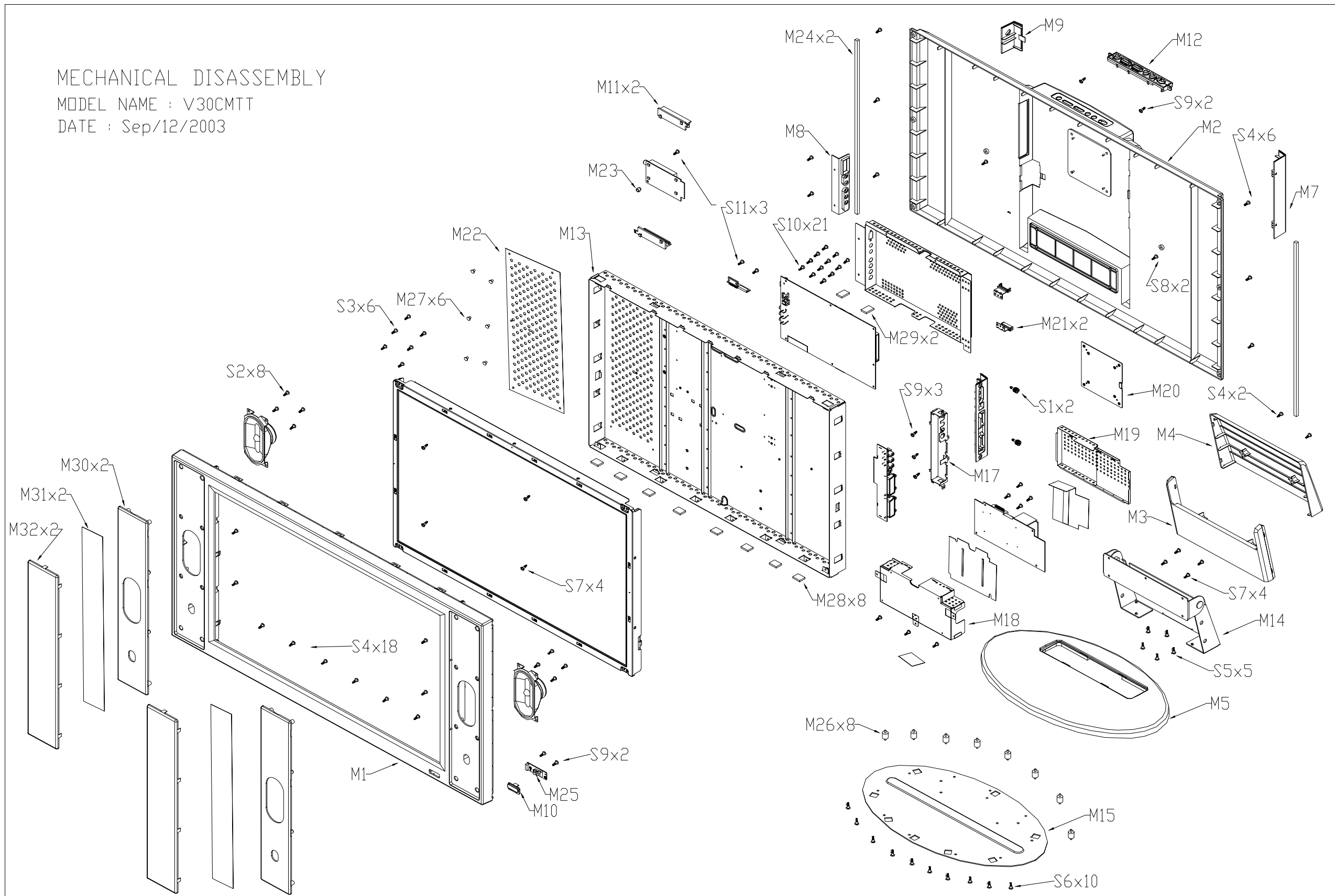
13.1 Exploded Drawing of 27” :

V27-EXPLODE



13.2 Exploded Drawing of 30" :

MECHANICAL DISASSEMBLY
 MODEL NAME : V30CMTT
 DATE : Sep/12/2003



14. Mechanical Parts List

14.1 Parts List of 27” :

CKT NO.	DESCRIPTION	PARTS NO.
M1	FRONT COVER	5642292101
M2	SP-SCREEN	5642317800
M3	NON-WOVEN FABRICS	5642028106
M4	METAL-MESH-SPEAKER	5642514000
M5	IR LENS	5040331300
M6	INSULATION-INVERTER	5646503600
M7	LCD MBRACKET	5642725600
M8	TUNNER PCB CLAMP	5642678700
M9	BRASS SPACER	5642847107
M10	WIRE MOUNTS	5642679000
M11	POWER PCB SHIELD	5646256100
M12	POWER PCB COVER	5646256200
M13	TUNNER COVER	5642318204
M14	CHASSIS PCB SHIELD	5646252900
M15	SIGNAL COVER	5642318104
M16	VISA BRACKET	5648731700
M17	AV PCB BRACKET	5648739400
M18	CONTROL KEY	5642847102
M19	BACK COVER	5642292201
M20	EVA SPONGE	5642026208
M21	AV PCB SHIELD	5646252401
M22	AV COVER	5642420202
M23	NECK FRONT COVER	5641412503
M24	HINGE	5648740501
M25	NECK BACK COVER	5641412603
M26	BASE	5642412703
M27	BASE BRACKET	5640407200
M28	BASE WHEEL	5648602000
M29	RIVET	5640205102
S1	SPEAKER SCREW	5640228400
S2	PZP M3X8	7134161182
S3	PZP M4X12	7134251682
S4	PP M4X10	7001261412
S5	PP M2X5	7001070514
S6	PPW M3X6	7000311032
S7	PPW M3X10	7000311042
S8	AV COVER SCREW	5640228300
S9	PPW M4X12	7000311132
S10	PF M4X8	7004261112
S11	BFB M4X12	7034251652
S12	PP M4X6	7001260612

14.2 Parts List of 30” :

CKT NO.	DESCRIPTION	PARTS NO.
M1	Front Cover	5642291902
M2	Back Cover	5642292002
M3	Neck Front Cover	5641412503
M4	Neck Back Cover	5641412603
M5	Base	5641412703
M6	AV Cover Hole	5642420202
M7	AV Cover	5642318004
M8	Signal Cover	5642318104
M9	Tuner Cover	5642318204
M10	IR Lens	5640331300
M11	Tuner PCB Clamp	5642678700
M12	Control Key	5642847102
M13	LCD Bracket	5642725500
M14	Hinge	5648740500
M15	Base Bracket	5640407200
M16	Chassis PCB Shield	5646252900
M17	AV PCB Shield	5646253100
M18	Power PCB Shield	5646256100
M19	Power PCB Cover	5646256200
M20	Visa Bracket	5648731700
M21	AV PCB Bracket	5648739400
M22	INVTER Insulation	5646504900
M23	Brass Spacer	5640228500
M24	EVA Sponge	5642026207
M25	Sensor Holder	5642678900
M26	Base Wheel	5648602000
M27	Plastic Rivet	5640205102
M28	Wire Mounts	5642679000
M29	Heat Sink	5646405209
M30	SPK Screen Bracket	5642317400
M31	Non-Woven	5642028100
M32	SPK Screen	5642513900

CKT NO.	DESCRIPTION	PARTS NO.
S1	AV Cover Screw	5640228300
S2	Speaker Screw	5640228400
S3	PP M2x5 S-Ni	7001070514
S4	PZP M4X12 S-ZN	7134251682
S5	PF M4X8 S-ZN	7004261112
S6	BFB M4X12 S-ZN	7034251652
S7	PPW M4X12	7000311132
S8	PP M4X6 S-ZN	7001260612
S9	PZP M3X8 S-ZN	7134161180
S10	PPW M3X6 S-ZN	7000311032
S11	PPW M3X10 S-ZN	7000311042