

SERVICE MANUAL

MODEL :LD1912K/LD2212K

SOLUTION:TSUMV26KE(L2M25)

CONTENTS

SAFETY PRECAUTION

SPECIFICATION

BLOCK DIAGRAM

CIRCUIT DIAGRAM

FACTORY MODE&ADJUSTMENT

UPGRADE SOFTWARE

TROUBLE SHOOTING

EXPLODED DIAGRAM

APPENDIX

This manual is the latest at the time of printing, and does not include the modification which may be made after the printing, by the constant improvement of product.

IMPORTANT SAFETY INSTRUCTIONS



This symbol indicates " dangerous voltage " inside the product that presents a risk of electric shock or personal injury.



This symbol indicates important instructions accompanying the product.

Please read this manual carefully before using this product.

- Before connecting the AC power cord ,make sure the voltage designation of the LCD TV corresponds to the local electrical supply .
If you are unsure of your power supply ,ask your local power company .
- Never insert anything metallic into the cabinet openings of the liquid crystal display LCD TV/monitor; otherwise it may create the danger of electric shock.
- To avoid electric shock, Never touch the inside of the LCD TV/monitor .
Only a qualified technician should open the case of the LCD TV/monitor.
- Never use your LCD TV/monitor if the power cord has been damaged .
Do not allow anything to rest on the power cord, and keep the cord away from place where people can trip over it .
- Be sure to hold the plug, not the cord, when disconnecting the power cord from an electric socket.
- Openings in the LCD TV/monitor cabinet are provided for ventilation.
To prevent overheating, these openings should not be blocked or covered. Also, avoid using the LCD TV/monitor on a bed, sofa ,rug, or other soft surface. Doing so may block the ventilation openings in the bottom of the cabinet. If you put the LCD TV/monitor in a bookcase or some other enclosed space, be sure to provide adequate ventilation.
- Do not expose the LCD TV/monitor to extreme temperature conditions or to extreme humidity conditions.
- The apparatus shall not be exposed to dripping or splashing and that no objects filled with liquids.

Technical Specifications

Model				LD1912k/LD2212k	
TV System		PAL BG/DK/ I SECAM BG/DK/L/L'			
Channel Coverage		48.25~863.25 MHz			
Intermediate Frequencies		Picture I.F.	38.90MHz (BG,DK,I)		
		Sound I.F.	33.40 (BG) 32.40MHz(DK,L) 32.90MHz(I)		
Reception		Tuning System		FS With PLL	
		Tuner Band		Standard system with hyper band	
		Auto Channel Scanning		Yes	
		Number Of Preset Channels		100	
Antenna Impedance		75 Ohm Unbalanced			
Power Supply		Power supply: AC 100V-240V, 50/60Hz			
Front Panel		TV KEY	STANDBY,SOURCE, MENU, CH+/CH-, VOL +/-		
		DVD KEY	EJECT, PLAY/PAUSE		
		LED Indicators (Red/Green)		Standby/On	
Terminals	Left	Image In	TV 75ohm Aerial		X 1
			HDMI Connector		X 1
			RCA Video Jack		X 0
			S-Terminal		X 0
			RCA Jack Y, Pb, Pr		X 1
			SCART		X 1
	Left	Audio In	RCA Audio (L/R) Jack - White/Red		X 0
			φ3.5 Stereo Jack		X 1
			MIC Connector		X2
		VGA In	D-sub 15 Pin VGA Connector		X 1
		Audio Out	φ3.5 Earphone Jack		X 1
		DVD		DVD Loader	
Loading Type				Slot-in	
Disc Format				DVD/CD/VCD/CDR/CDRW/DVD-R/DVD+R/ DVD-RW/DVD+RW/SVCD	
Multimedia Format				MP3/WMA/JPEG/MPEG-1/MPEG-2/MPEG-4 DIVX3.XX-DIVX5.XX	

	Card Reader		MS/SD/MMC		X1	
	USB		USB2.0 Host		X 1	
Audio	Output Power (1 KHz 10% THD)				5W	
	NICAM / STEREO				Yes	
	Bass				Yes	
	Treble				Yes	
	Balance				Yes	
OSD Language	Russian , English					
LCD Panel (Only For Reference, Parameters according to panel model)	LD1913SU	Brand			BOE	
		Model			HT185WX1-100	
		Size			18.5”	
		Backlight			CCFLx 2	
		Pixel Pitch			0.3mm (H) x 0.3mm(V)	
		Resolution	Horizontal (dots)		1366	
	Vertical (Lines)		768			
	LD2213SU	Brand			CPT	
		Model			CLAA216WA01	
		Size			21.6”	
		Backlight			CCFLx 4	
		Pixel Pitch			0.1165mm(H)x0.1165mm(V)	
		Resolution	Horizontal (dots)		1366	
	Vertical (Lines)		768			
Support Resolution(For PC)	Horizontal (dots) (Max)				1920	
	Vertical (Lines) (Max)				1080	
Speaker	8Ohm /10W				x2pcs	
Power Consumption	On working				60W Max	
	Standby				≦ 1W	

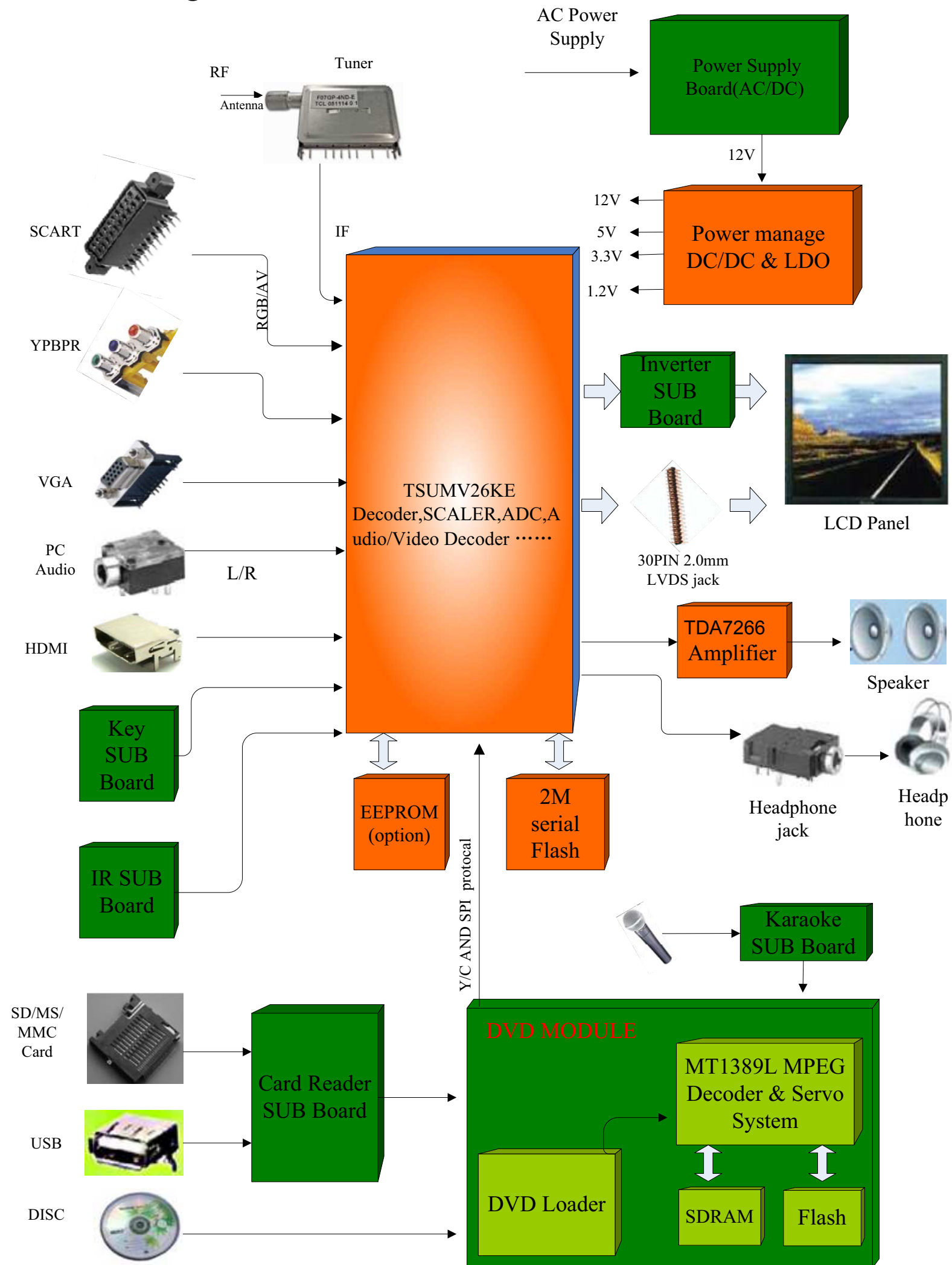
Remote Control



Color	Black
Batteries	1.5V AAA X2
Customer Code	09F6
Remark	

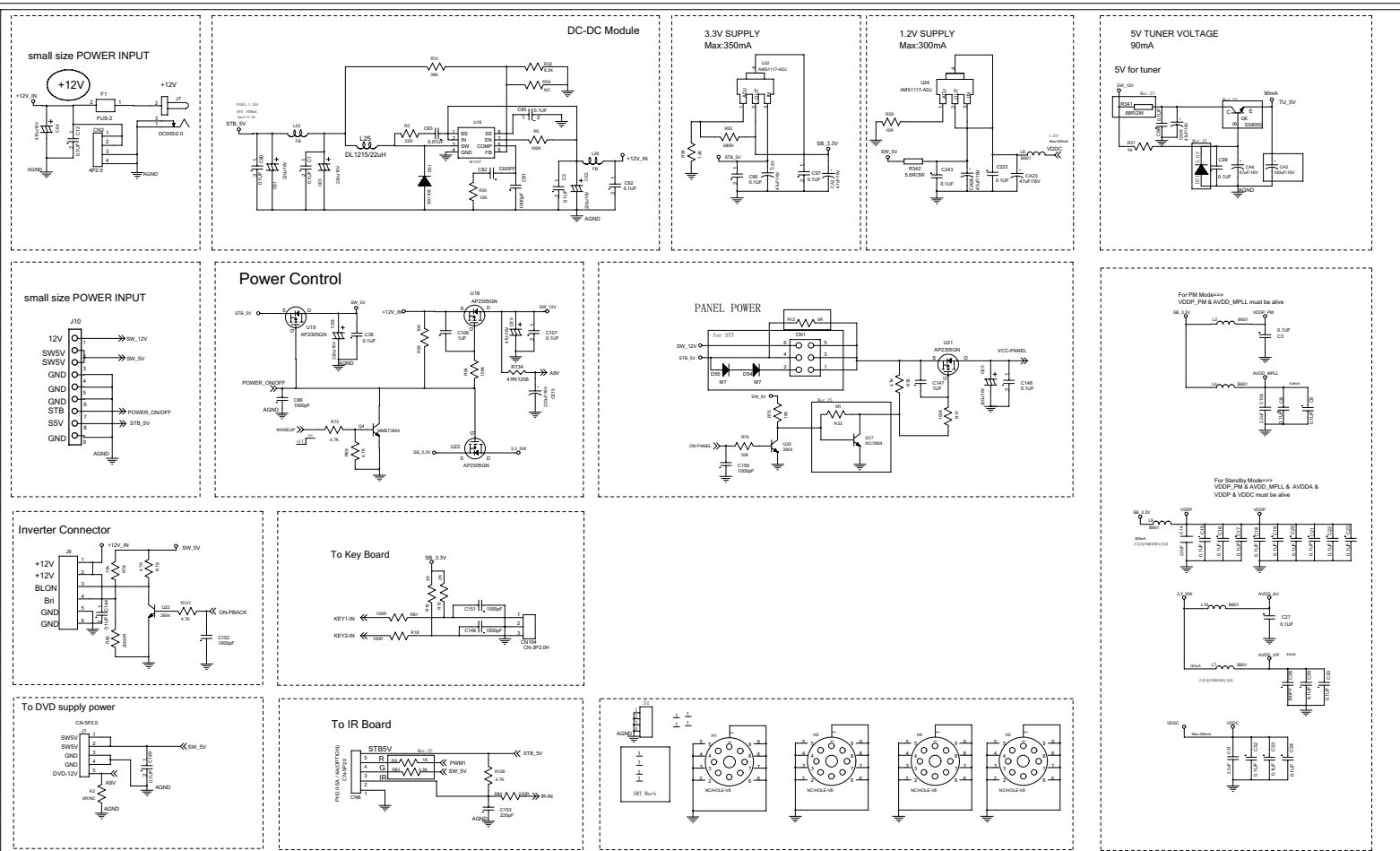
Note: Specifications are subject to change without notice

Block Diagram



CIRCUIT DIAGRAM

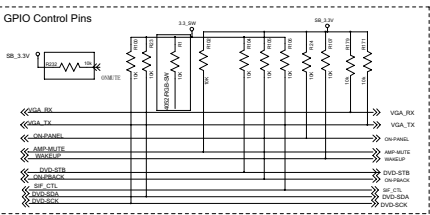
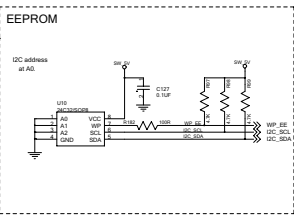
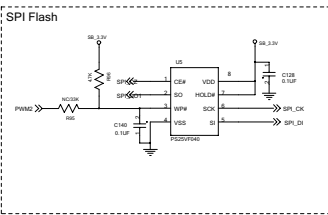
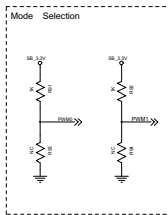
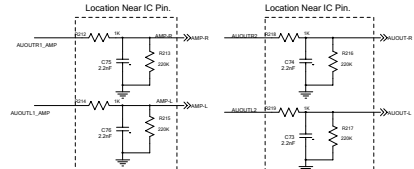
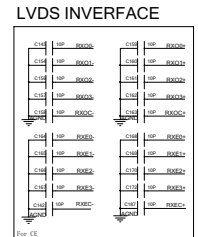
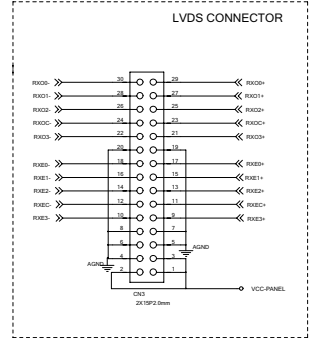
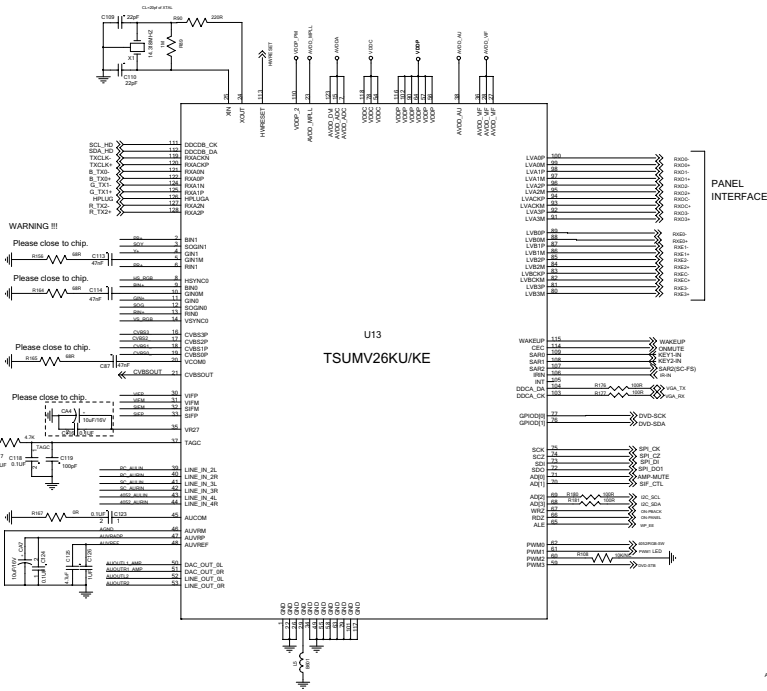
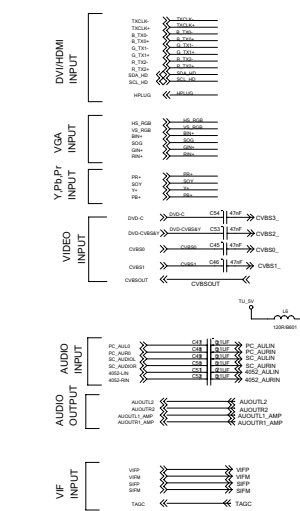
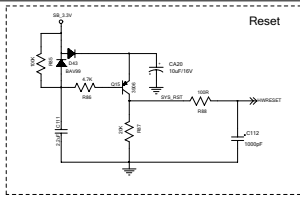
MAIN BOARD SCHEMATICS-1



L2M25(04) 2010.03.24

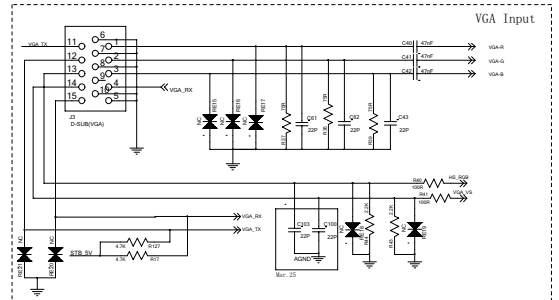
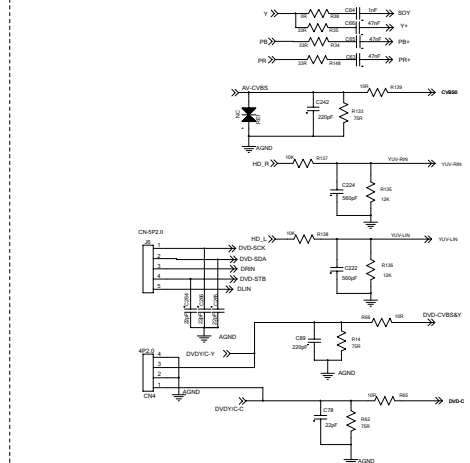
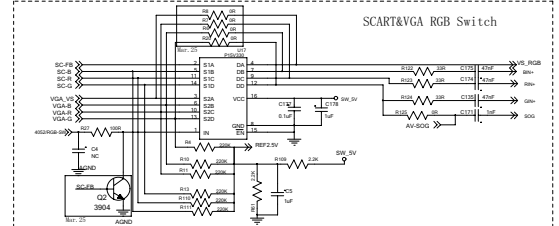
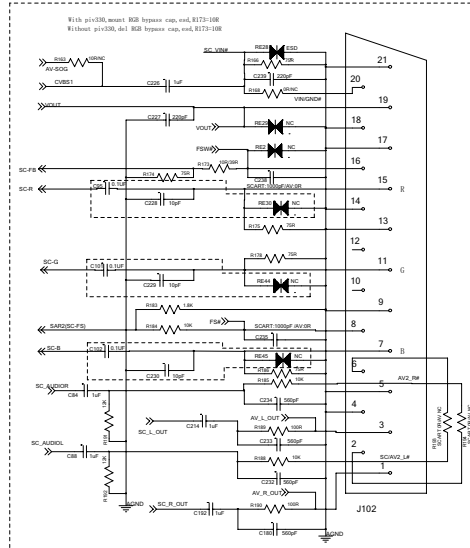
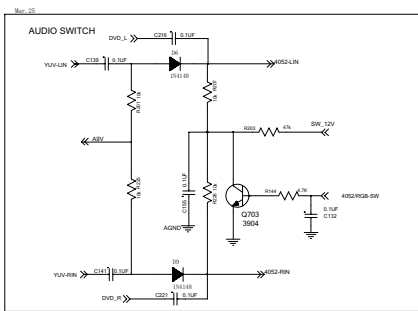
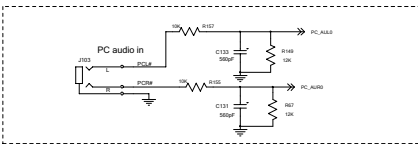
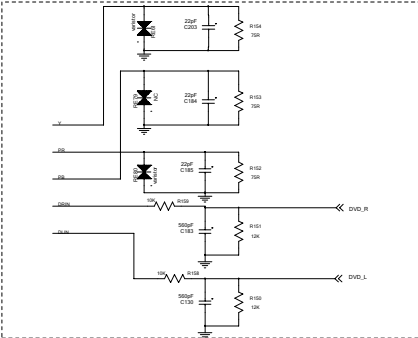
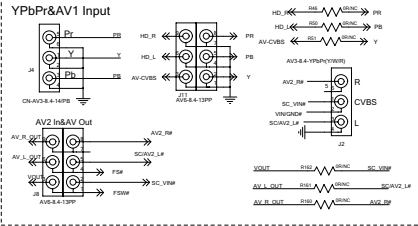
EWIN	
TSUMV26KE_Power	
FILE	TSUMV26KE_Power
DATE	0.2008
DESIGNER	1
CHECKER	1
APPROVER	1
DATE	2.0

MAIN BOARD SCHEMATICS-2



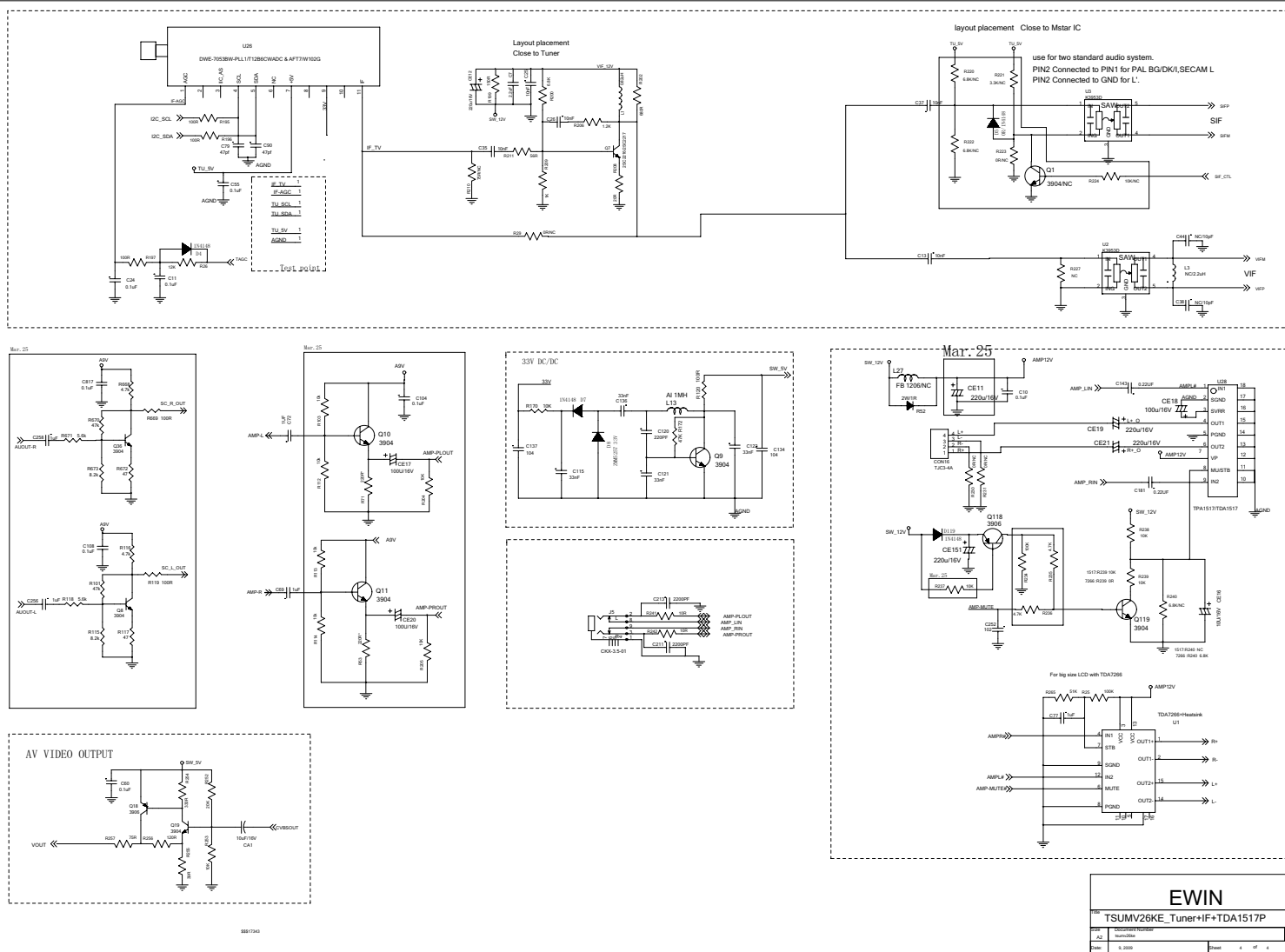
EWIN		
TSMV26KE		
Rev	1.0	1.0
File	TSV26KE001	1.0
Date	August 2008	1.0
Page	2	4

MAIN BOARD SCHEMATICS-3

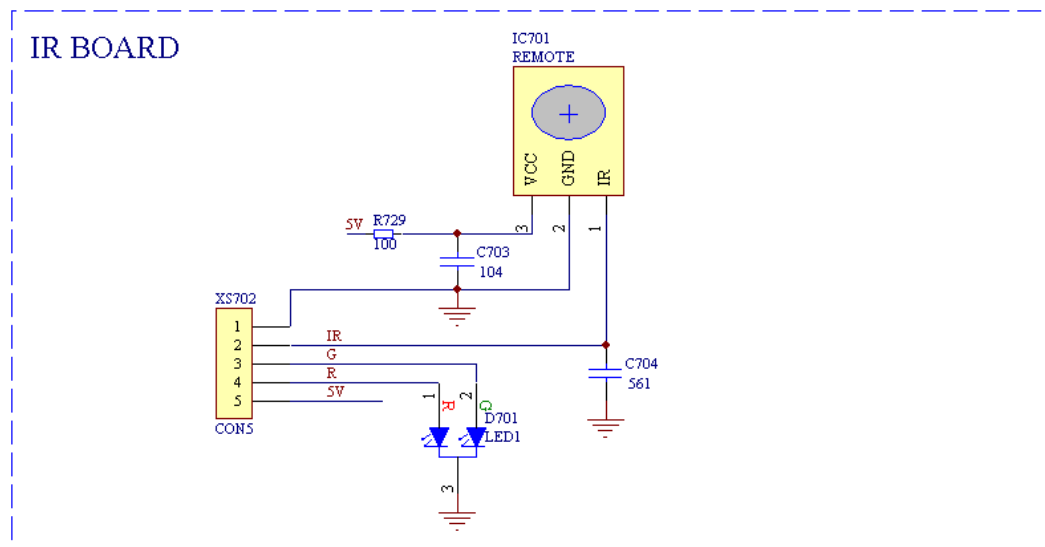


EWIN			
TSUMV26KE_IN & OUT			
REV	1.000	DATE	2008-10-10
FILE	TSUMV26KE_IN & OUT	DESIGNER	W. J. H.
DATE	2008-10-10	DATE	2008-10-10
REV	1.000	DATE	2008-10-10

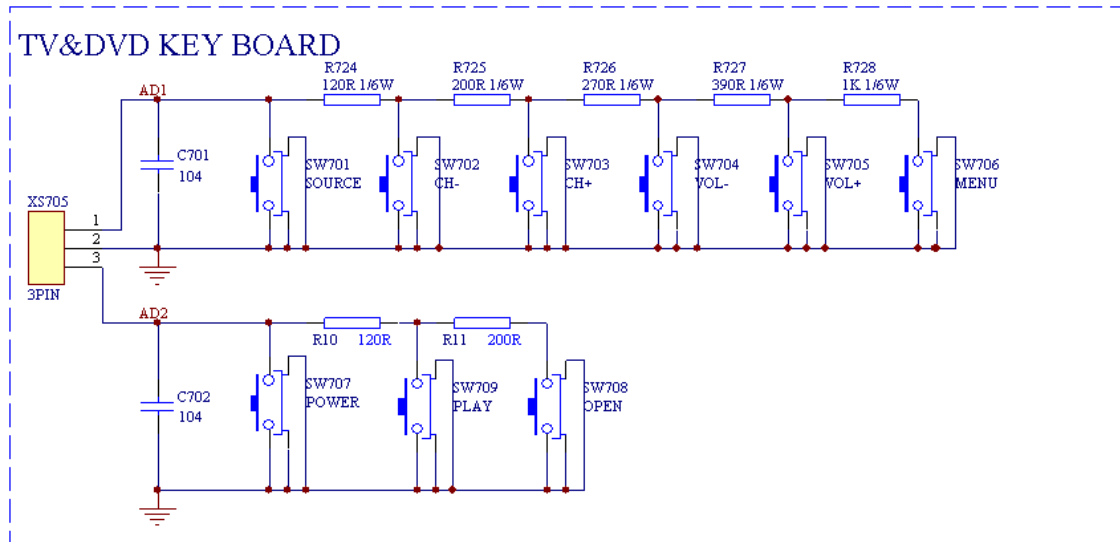
MAIN BOARD SCHEMATICS-4



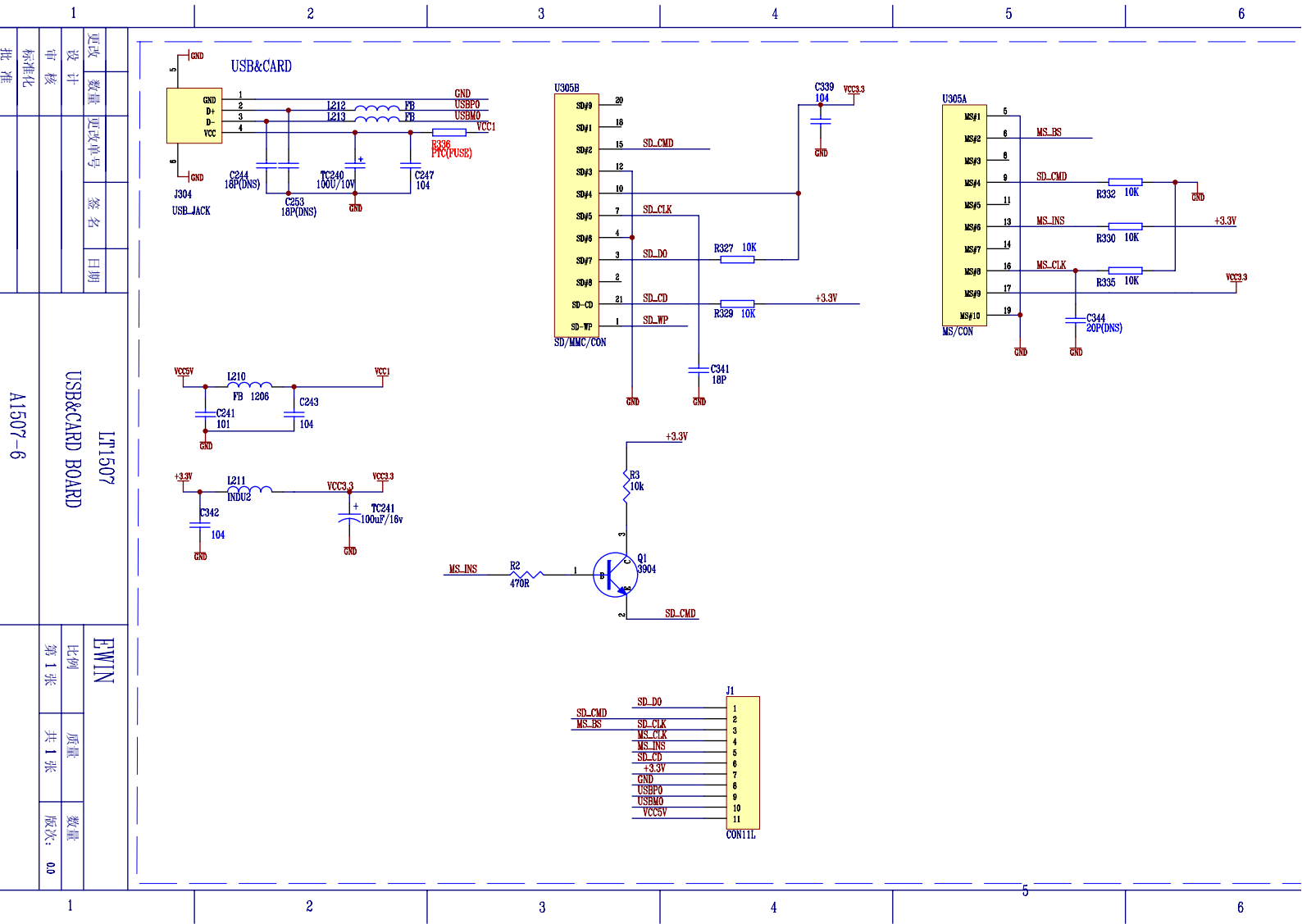
IR BOARD SCHEMATICS



TV&DVD KEY BOARD SCHEMATICS



USB&CARD BOARD SCHEMATICS



INTERFACE DEFINITION AND PIN FUNCTION

★J9: Inverter jack

NO.	Definition	Description
1	12v	Power Supply
2	12v	Power Supply
3	BLO	Black-Light ON/OFF Control
4	Bri	Brightness Adjustment
5	GND	Ground
6	GND	Ground

★CON16: Speaker jack

NO.	Definition	Description
1	R	Right Speaker Output
2	GND	Ground
3	GND	Ground
4	L	Left Speaker Output

★ CN104: Key jack

NO.	Definition	Description
1	K1	Key 1 (ADC Input)
2	GND	Ground
3	K2	Key 2 (ADC Input)

★J6: DVD Y/C Signal Jack

NO.	Definition	Description
1	DVD_C	DVD Signal C
2	GND	Ground
3	DVD_Y	DVD Signal C
4	GND	Ground

★J6: DVD SPI and DVD Audio jack(5P 2.0mm)

NO.	Definition	Description
1	SCK	SPI Communication Protocol SCL
2	SDA	SPI Communication Protocol SDA
3	DRIN	Right Channel of DVD Audio Input
4	STB	SPI Communication Protocol STB
5	DLIN	Left Channel of DVD Audio Input

★J1: DVD Power jack

NO.	Definition	Description
1	5V	DVD 5V Power Supply
2	5V	DVD 5V Power Supply
3	GND	Ground
4	GND	Ground
5	12V/MGND	DVD 12V Power Supply/ motor Ground

★CN6: IR&LED jack

NO.	Definition	Description
1	GND	Ground
2	IR	Remote Receiver
3	LED-G	Green Indicator
4	LED-R	Red Indicator
5	5V	Power Supply

★CN2: Internal power supply jack for small size TV

NO.	Definition	Description
1	12v	Internal 12V Power Supply
2	12v	Internal 12V Power Supply
3	GND	Ground
4	GND	Ground

★J10: Internal power supply jack for big size TV

NO.	Definition	Description
1	SW12v	Switchable 12V Supply
2	SW 5v	Switchable 5V Supply
3	SW 5v	Switchable 5V Supply
4	GND	Ground
5	GND	Ground
6	GND	Ground
7	STB	Standby on/off
8	STB 5V	Standby 5V
9	GND	Ground

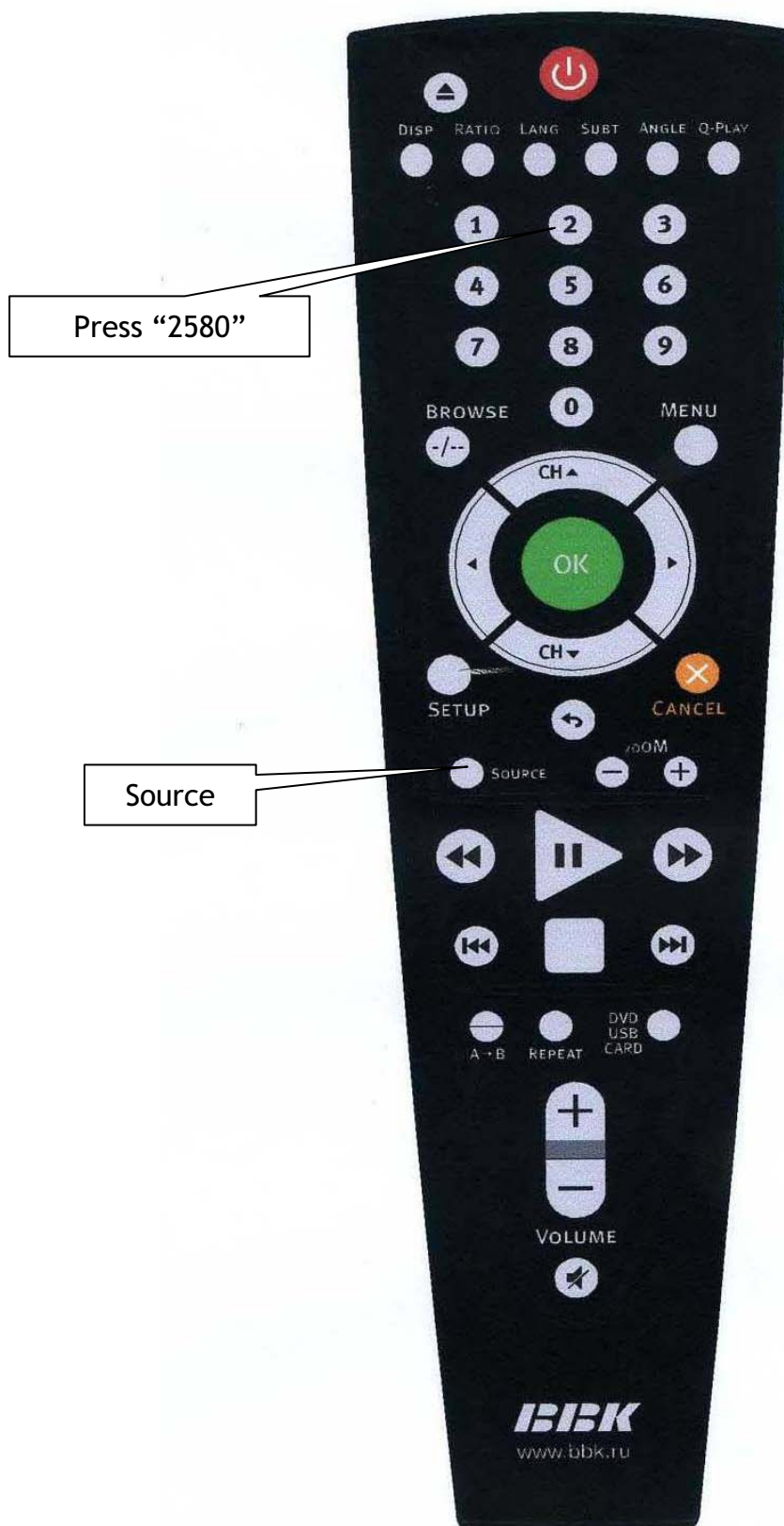
★CN3: LVDS Interface

NO.	Definition	Description
1	LCD-VDD	Power for Panel
2	LCD-VDD	Power for Panel
3	LCD-VDD	Power for Panel
4	NC	NO Connect
5	GND	Ground
6	GND	Ground
7	GND	Ground
8	GND	Ground
9	EDA3+	LVDS EVEN3+ Signal
10	EDA3-	LVDS EVEN3+ Signal
11	ECK+	LVDS EVEN Clock + Signal
12	ECK-	LVDS EVEN Clock - Signal
13	EDA2+	LVDS EVEN2 + Signal
14	EDA2-	LVDS EVEN2 - Signal
15	EDA1+	LVDS EVEN1 + Signal
16	EDA1-	LVDS EVEN1 - Signal
17	EDA0+	LVDS EVEN0 + Signal
18	EDA0-	LVDS EVEN0 - Signal
19	GND	Ground
20	GND	Ground
21	ODA3+	LVDS ODD3 + Signal
22	ODA3-	LVDS ODD3 + Signal
23	OCK+	LVDS ODD Clock + Signal
24	OCK-	LVDS ODD Clock - Signal
25	ODA2+	LVDS ODD2 + Signal
26	ODA2-	LVDS ODD2 - Signal
27	ODA1+	LVDS ODD1 + Signal
28	ODA1-	LVDS ODD1 - Signal
29	ODA0+	LVDS ODD0 + Signal
30	ODA0-	LVDS ODD0 - Signal

FACTORY MODE AND ADJUSTMENT

1) How to enter service mode

Press "Source" button on the remote control, then press "2580", the service menu will be displayed.



2) Service mode description

Color Temp: select a color temperature mode that you want to adjust;

R Gain: red gain for white balance adjusting;

G Gain: green gain for white balance adjusting;

B Gain: blue gain for white balance adjusting;

R Offset: red offset for white balance adjusting;

G Gain: green offset for white balance adjusting;

B Gain: blue offset for white balance adjusting;

Aging: to turn on or off aging mode, optional setting: On /Off;

Auto config: Auto adjust ADC channel difference, only available in VGA mode;

EEprom clear: reset EEPROM data to default value, all users' program and setting will be lost;

Panel: select different panel for factory;

TTX language: select Teletext language, optional setting: West East Russia;

DVD source set: to turn on or off DVD source in the user menu, optional setting: On/Off;

Hotel mode: to turn on or off hotel mode, optional setting: On/Off;

Key mode: to turn on or off local keyboard, optional setting: On/Off;

Power on: to setting the power on source, optional setting: TV Other;

Power mode: to setting the power on mode, optional setting: Force on Memory standby;

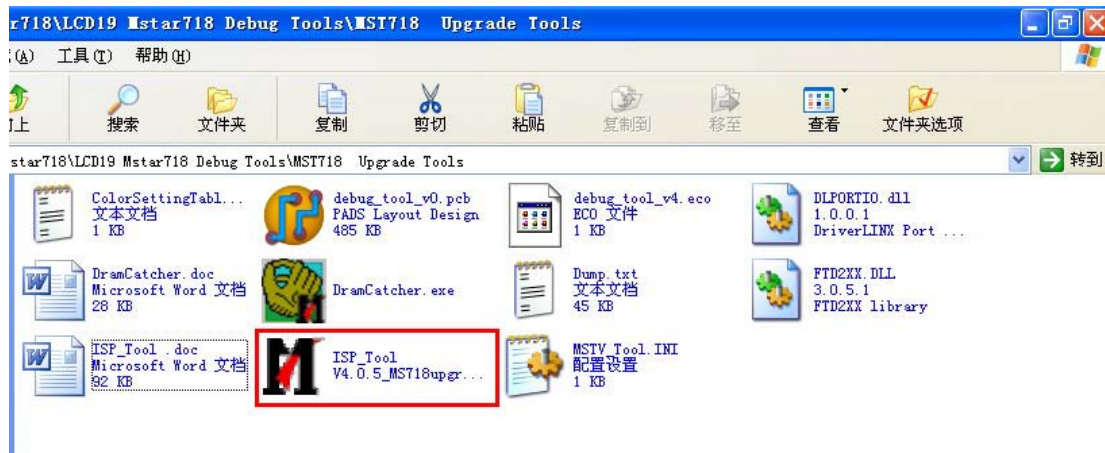
Volume: to setting the max sound volume when hotel mode is active;

AGC: to setting tuner's RF AGC value;

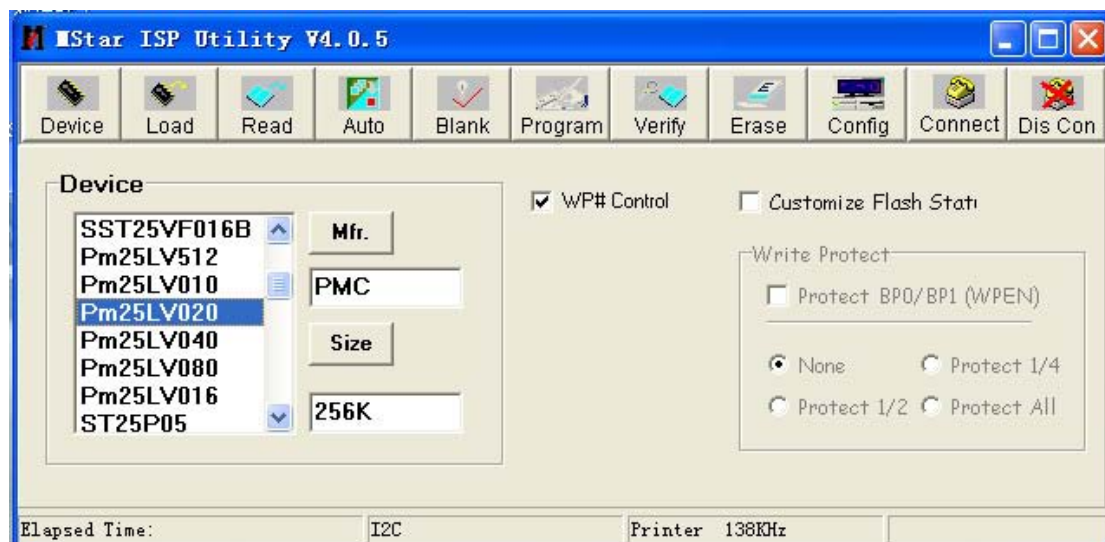
Notes:

1. color temperature adjusting: in different source the white balance can be adjusted separately. the details as below:
 - 1) DVD&YpbPr source use same group color temperature value.
 - 2) TV&Scart source use same group color temperature value.
 - 3) VGA&HDMI source use separated color temperature value.
2. Auto Config: please change source to VGA mode and with grey scale pattern then enter service mode to do this item.

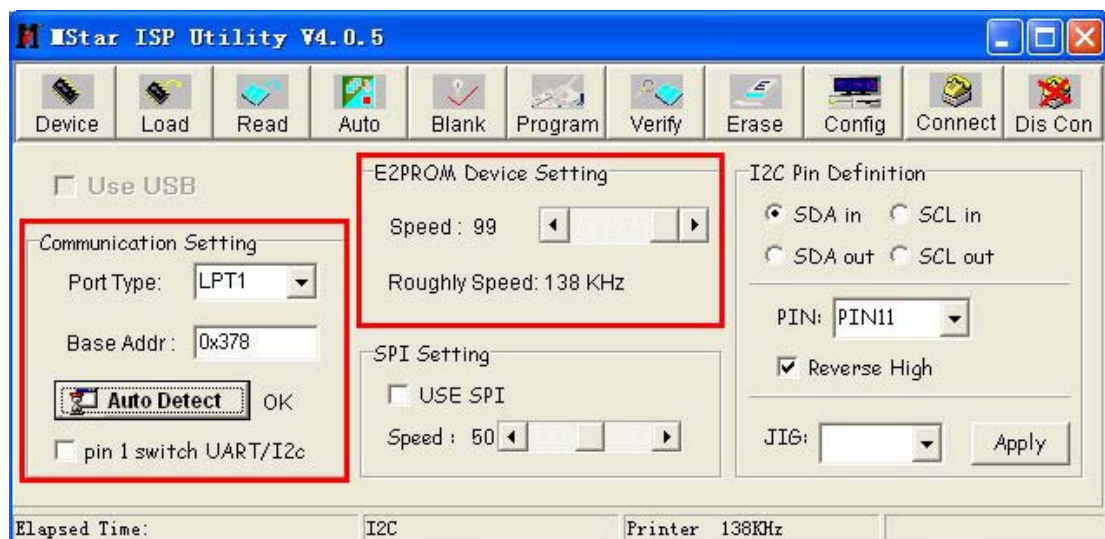
1) Open the update tools--Mstar ISP Utility



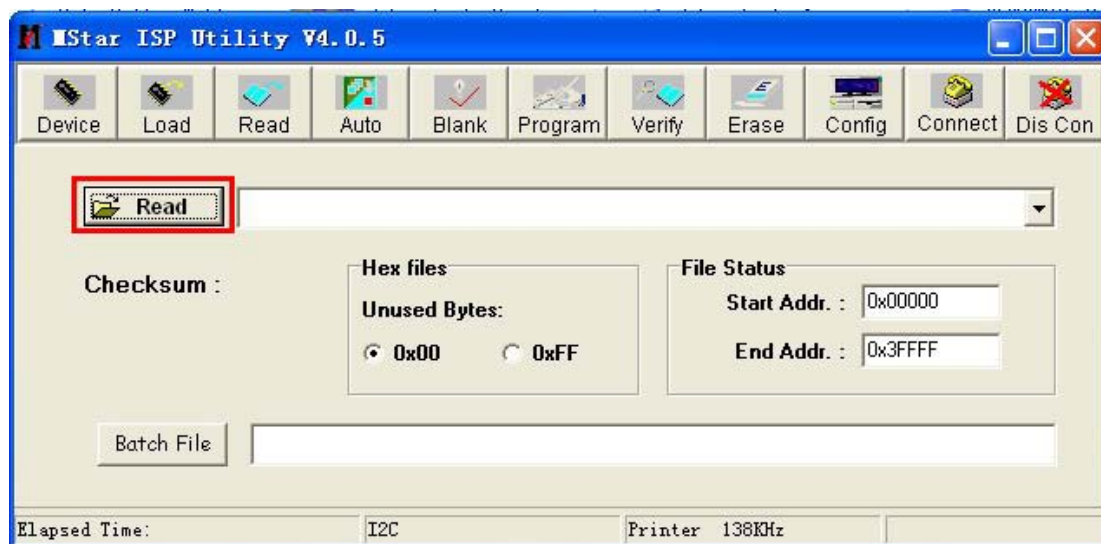
2) Click “Device” button and double click select correctly type(For TSUMV26 chassis select Pm25LV040 normally)



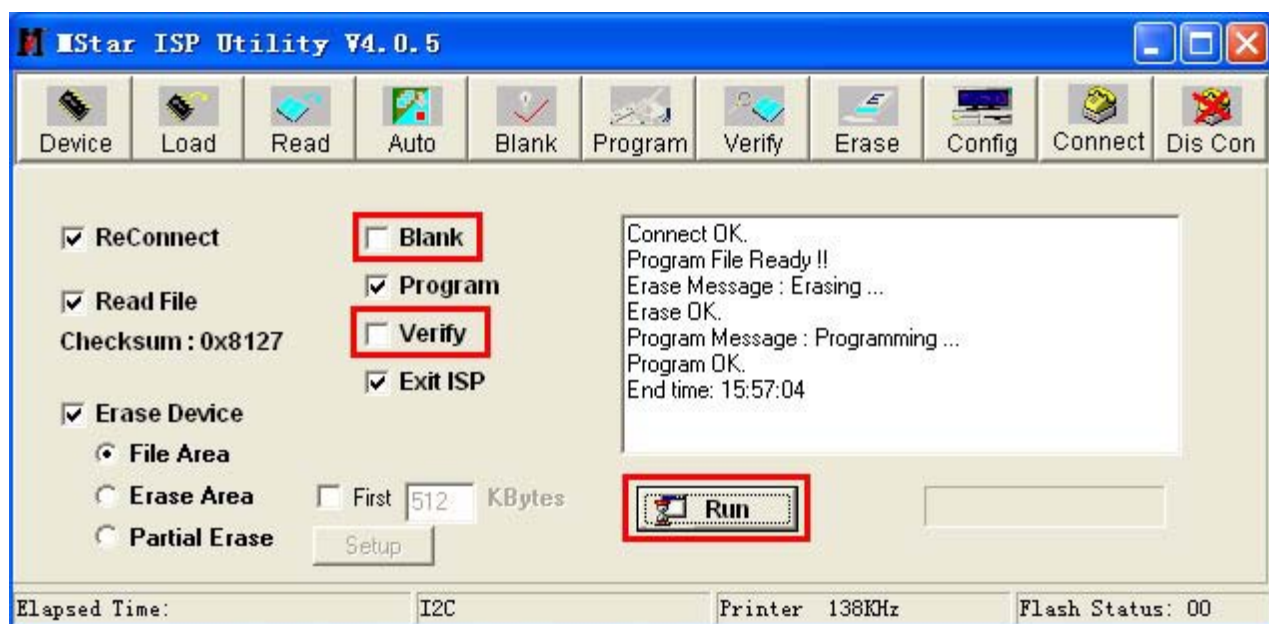
3) Click “Config” button and click “Auto Detect” button confirm that the PC and ISP tool connect properly. Adjust the LPT port speed to 138K, in order to speed up update process.



4) Click “Read” button then select the binary file of firmware.

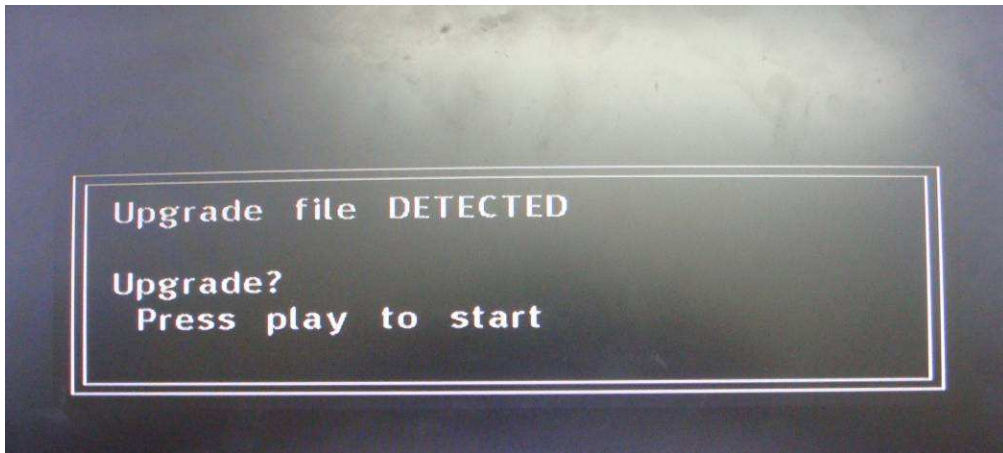


5) Click “Auto” button and remove the marker of “Blank” and “Verify” items. Then click “Run”, after several seconds the update process will be finish.

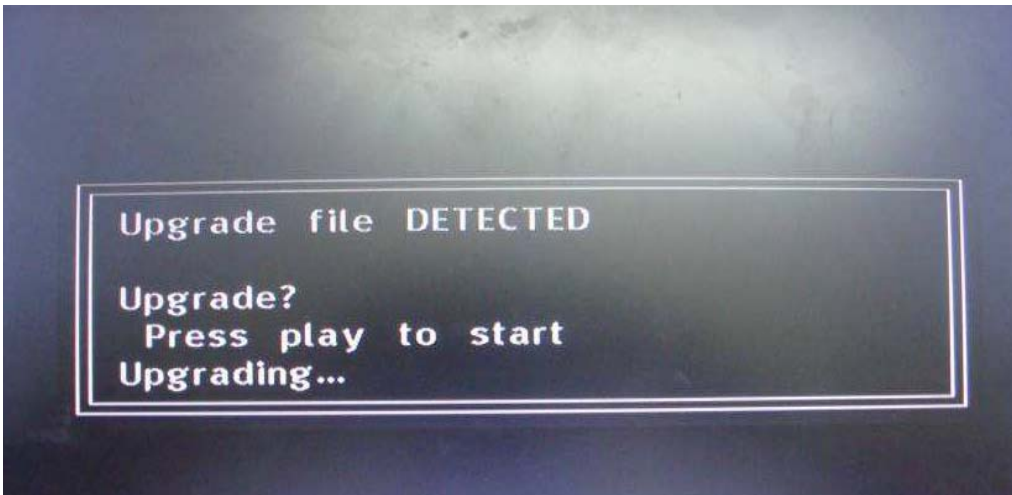


DVD Software upgrade

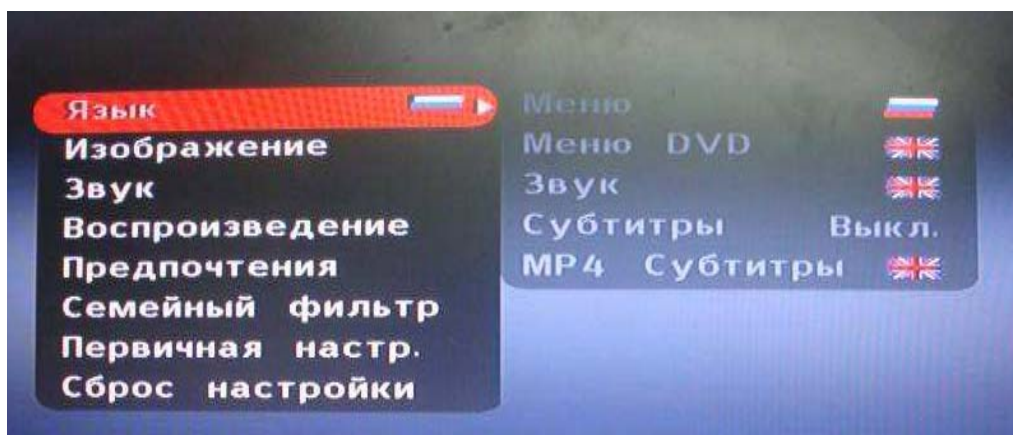
- 1) Please rename the upgrading file to "MTK1389FE.BIN". and download it to a USB device
- 2) Enter DVD source and insert USB device to TV set.
- 3) Press "DVD USB CARD" button, Will show a dialog box as below.



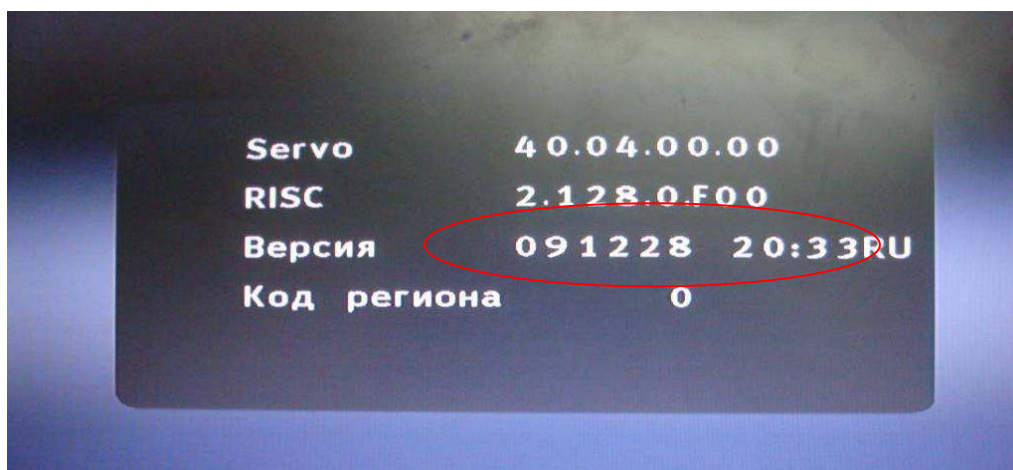
- 4) Press  button on remote control, Will show a dialog box as below,
Please wait a few minutes(about 5 minutes) ,then DVD will restart auto .
During upgrading time, make sure to do not power off and do not pull out USB device.



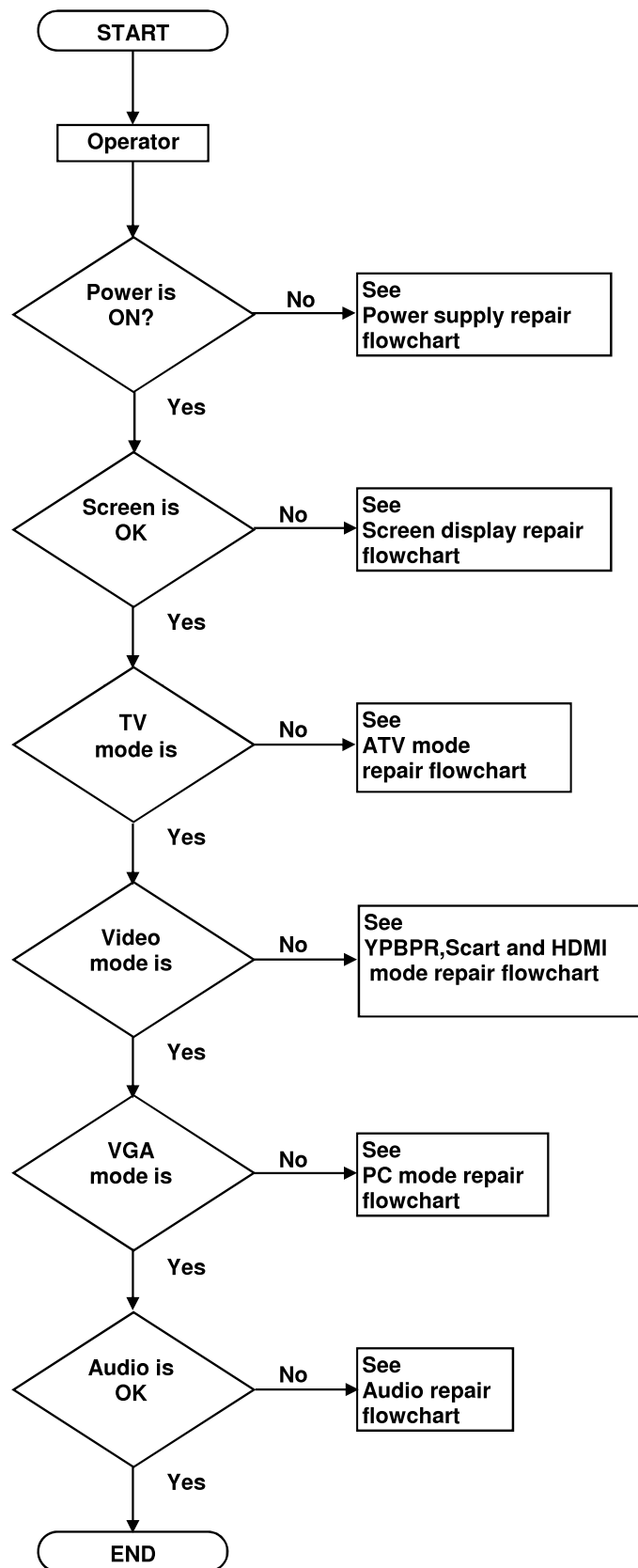
4) After TV restart, Enter DVD setup menu in order to check the version number.



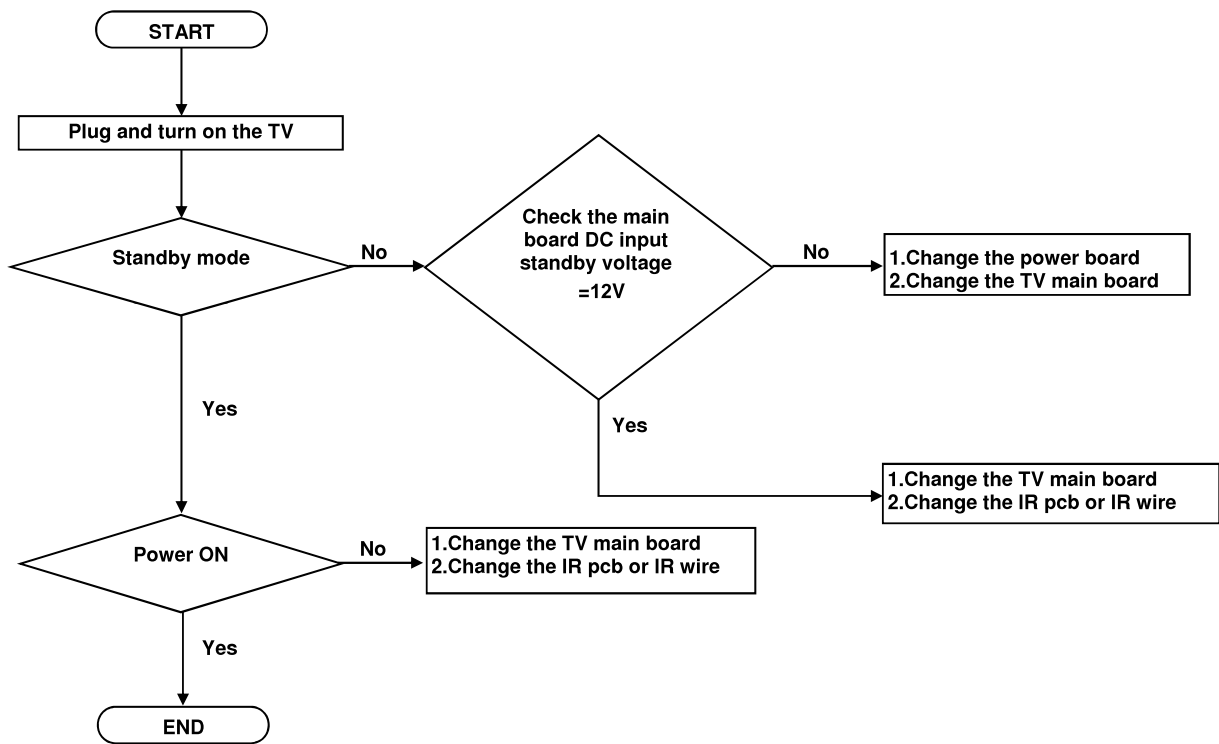
5) Press "9" "2" "1" "0" button serially, You will see DVD factory menu.
A dialog box will be showed as below. Marked with red circle is the version number.



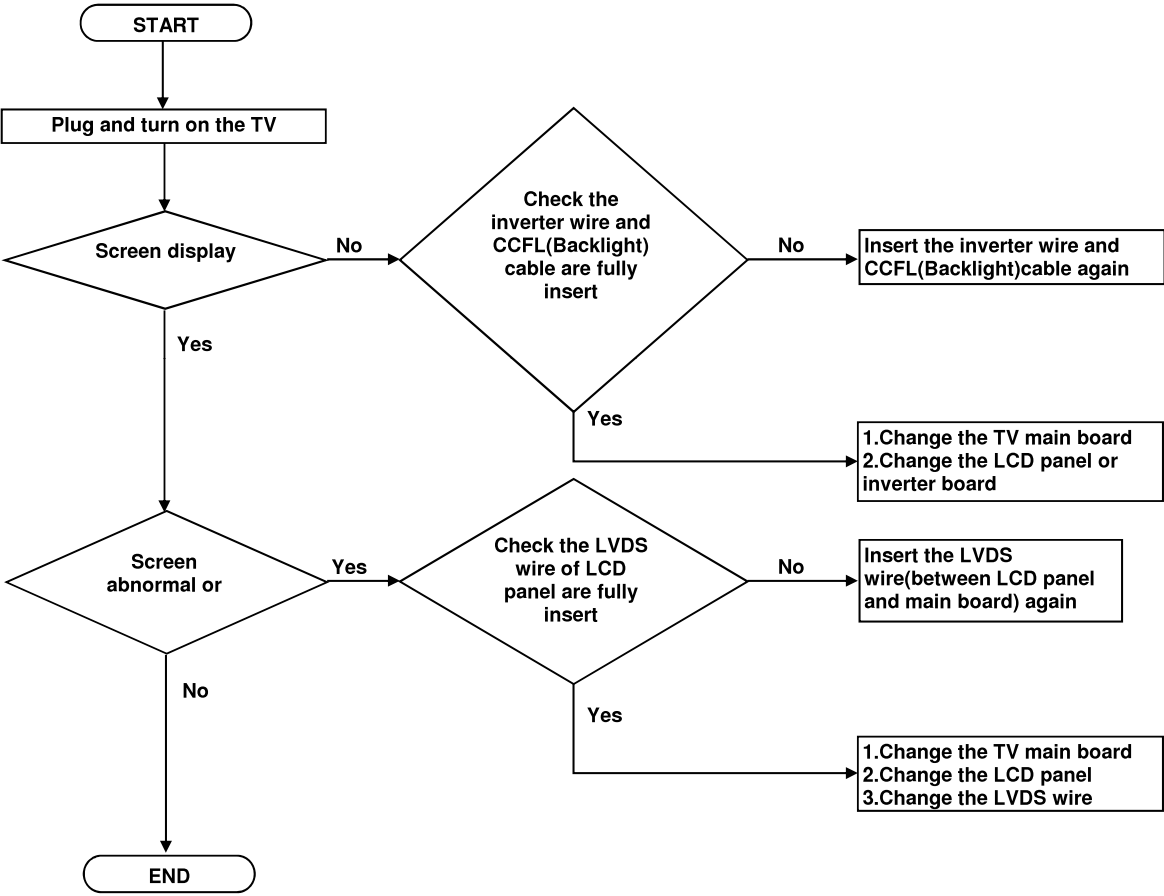
TV Fault finding tree



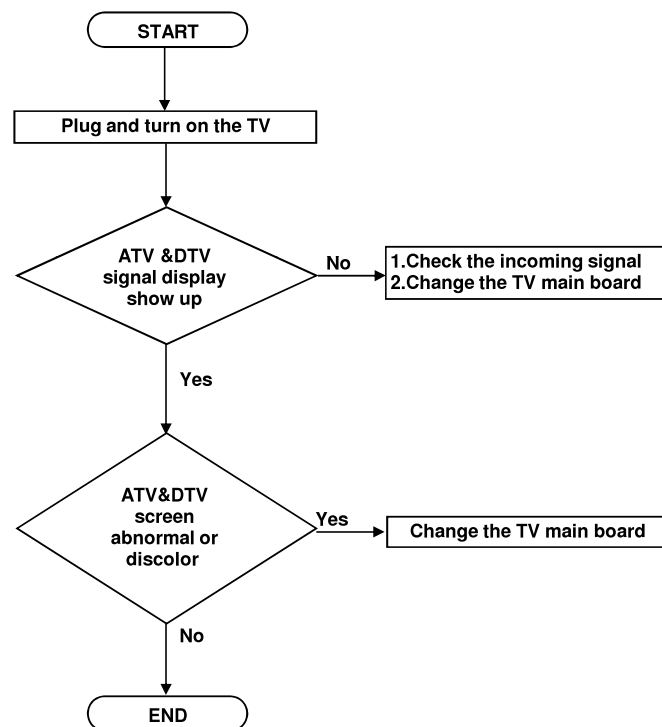
Power supply repair flowchart



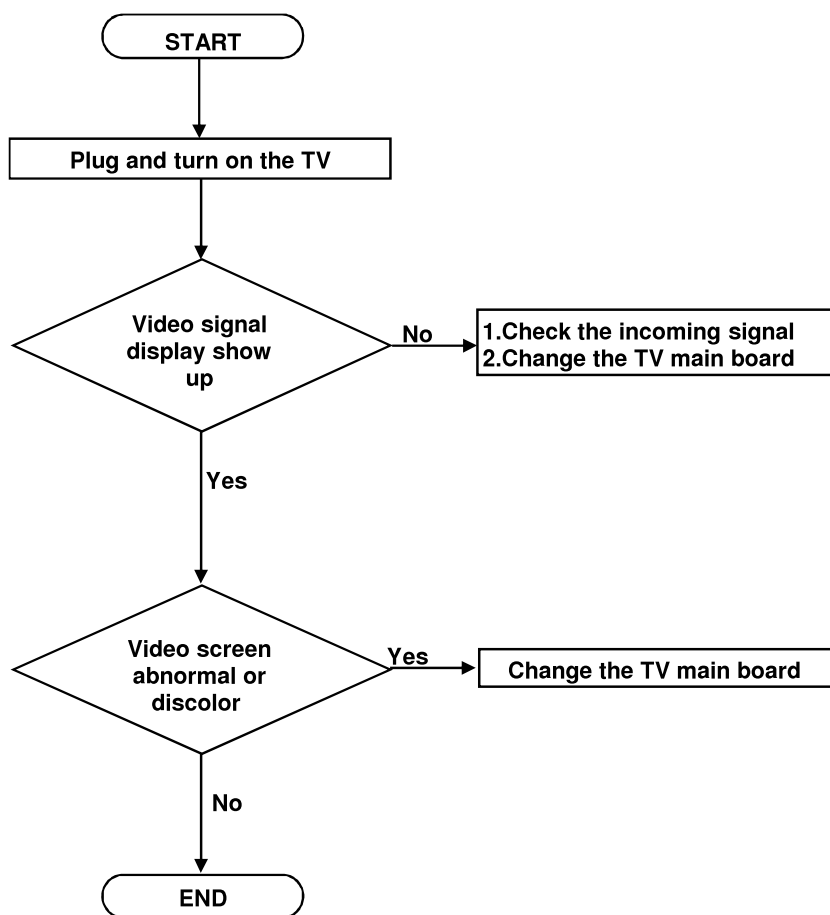
Screen Display repair flowchart



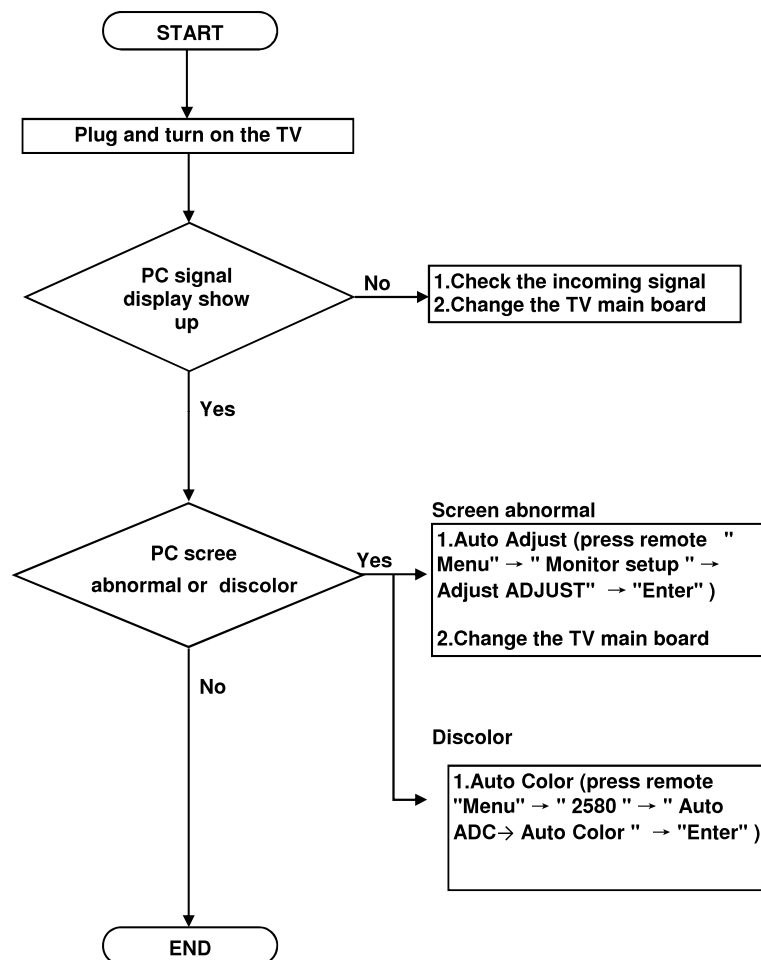
TV mode repair flowchart



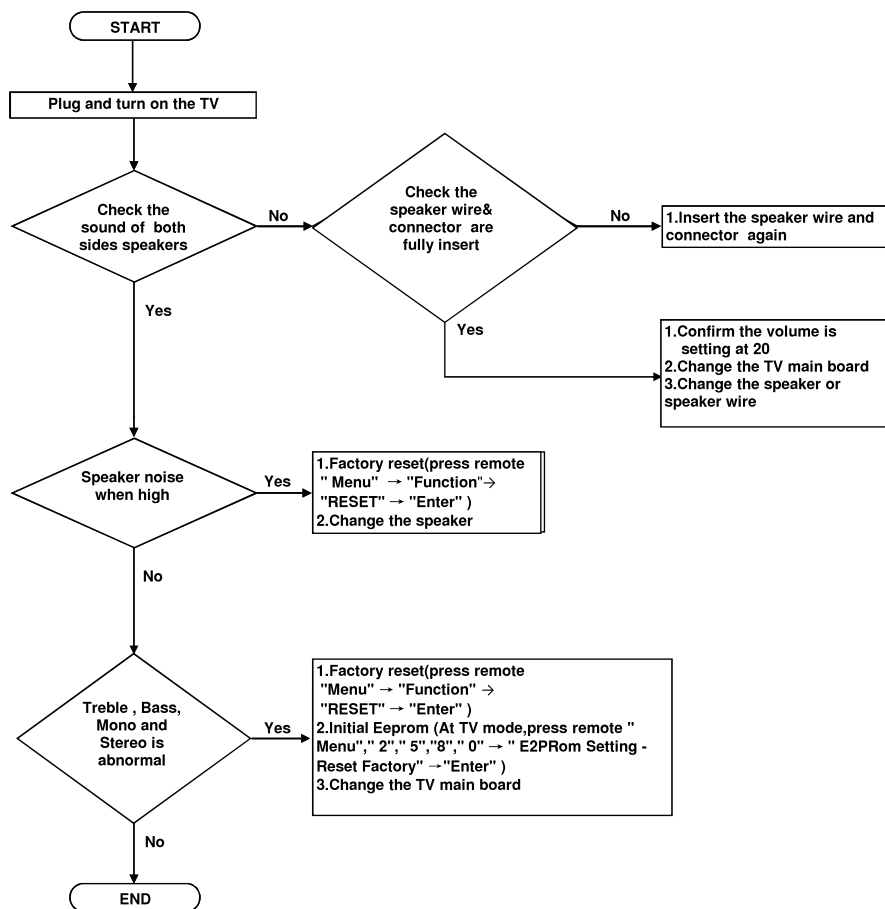
YPBPR ,Scart and HDMI mode repair flowchart



PC mode repair flowchart

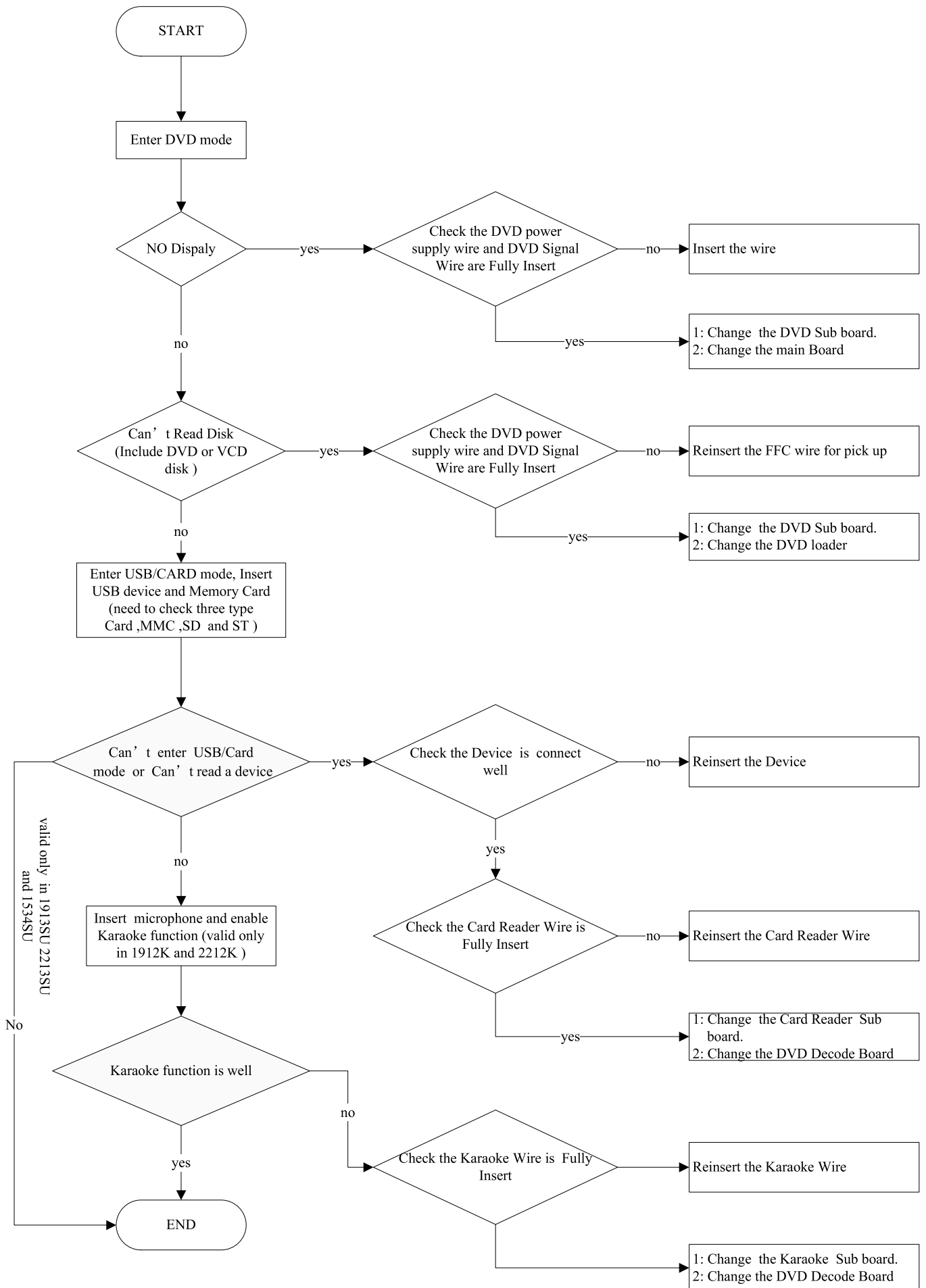


Audio repair flowchart

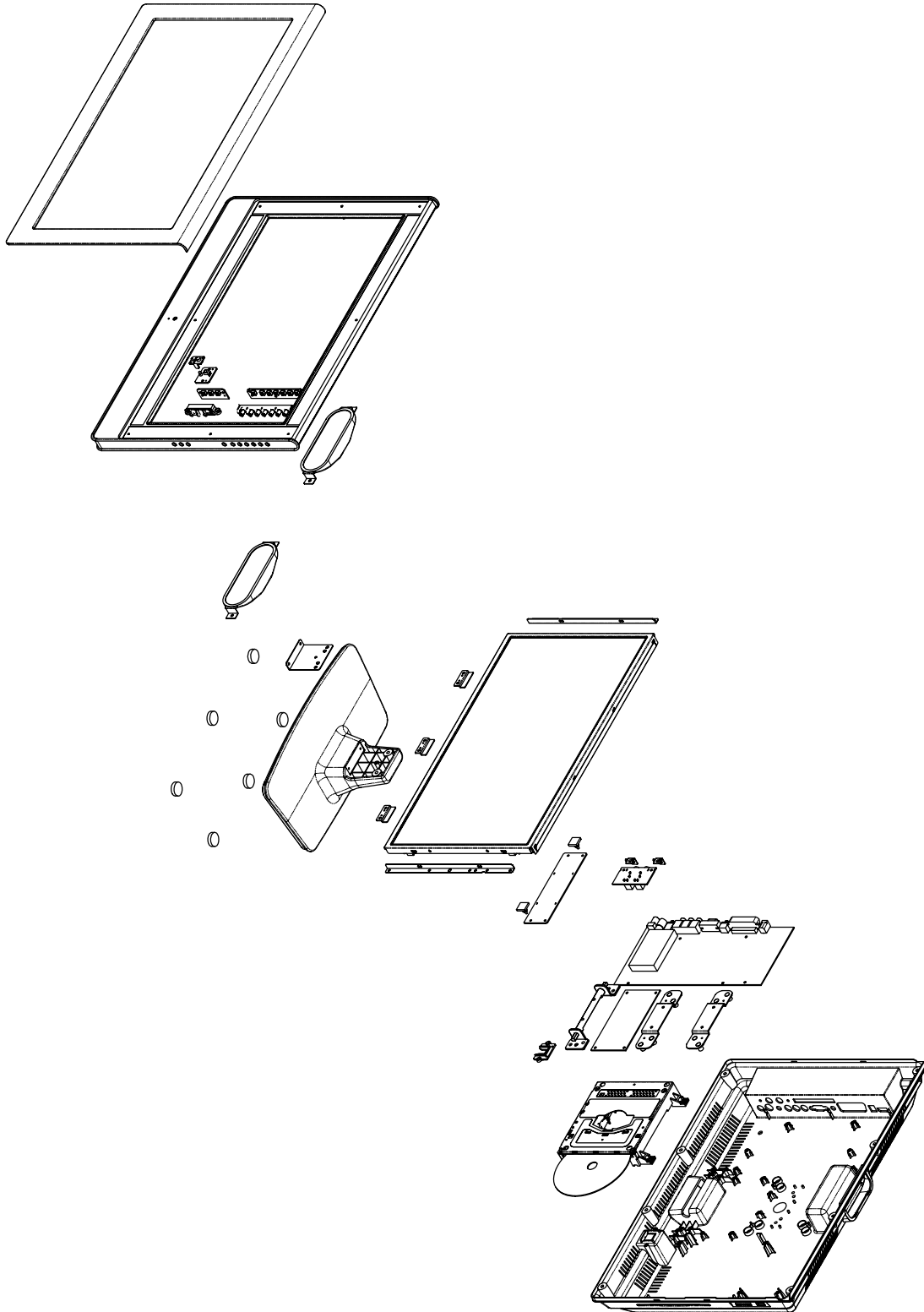


REMARK : After Default Setting , PC mode must " Auto Color"(press remote " Menu" → "2580" → "Auto ADC"→ "Auto Color" → "Enter")

DVD fault Finding and Trouble Shooting

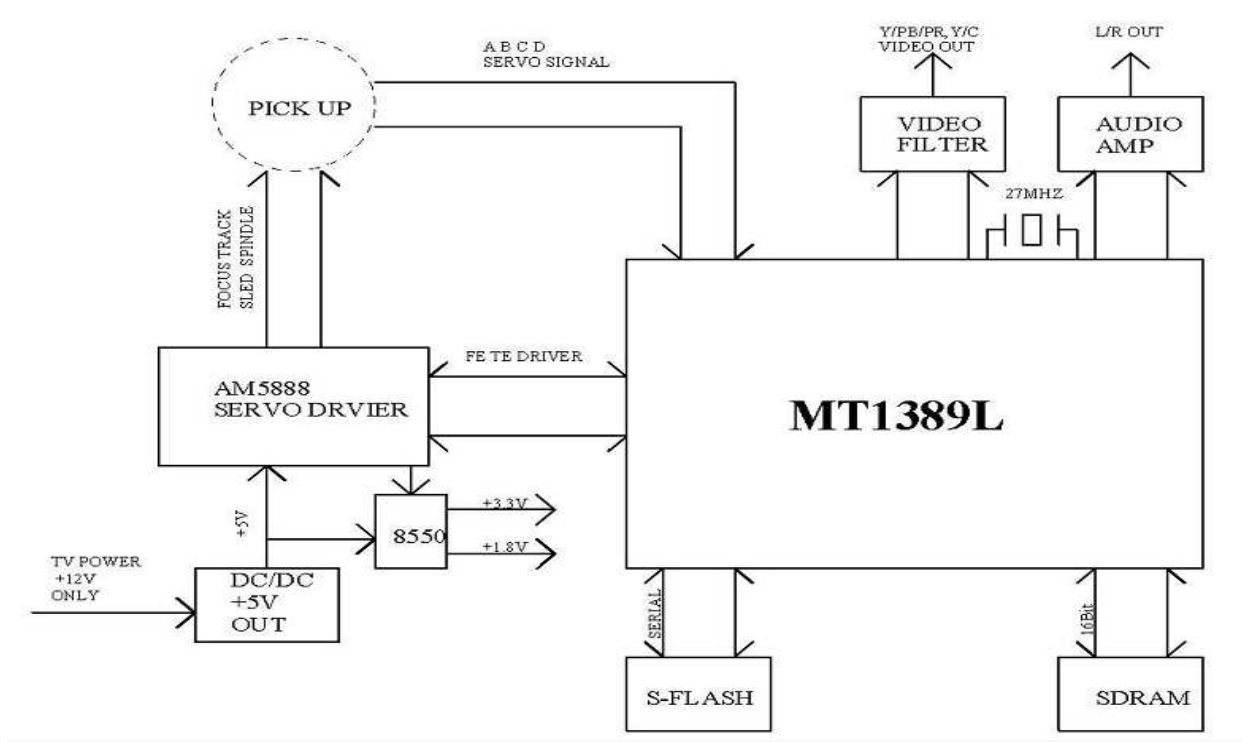


EXPLODED VIEW

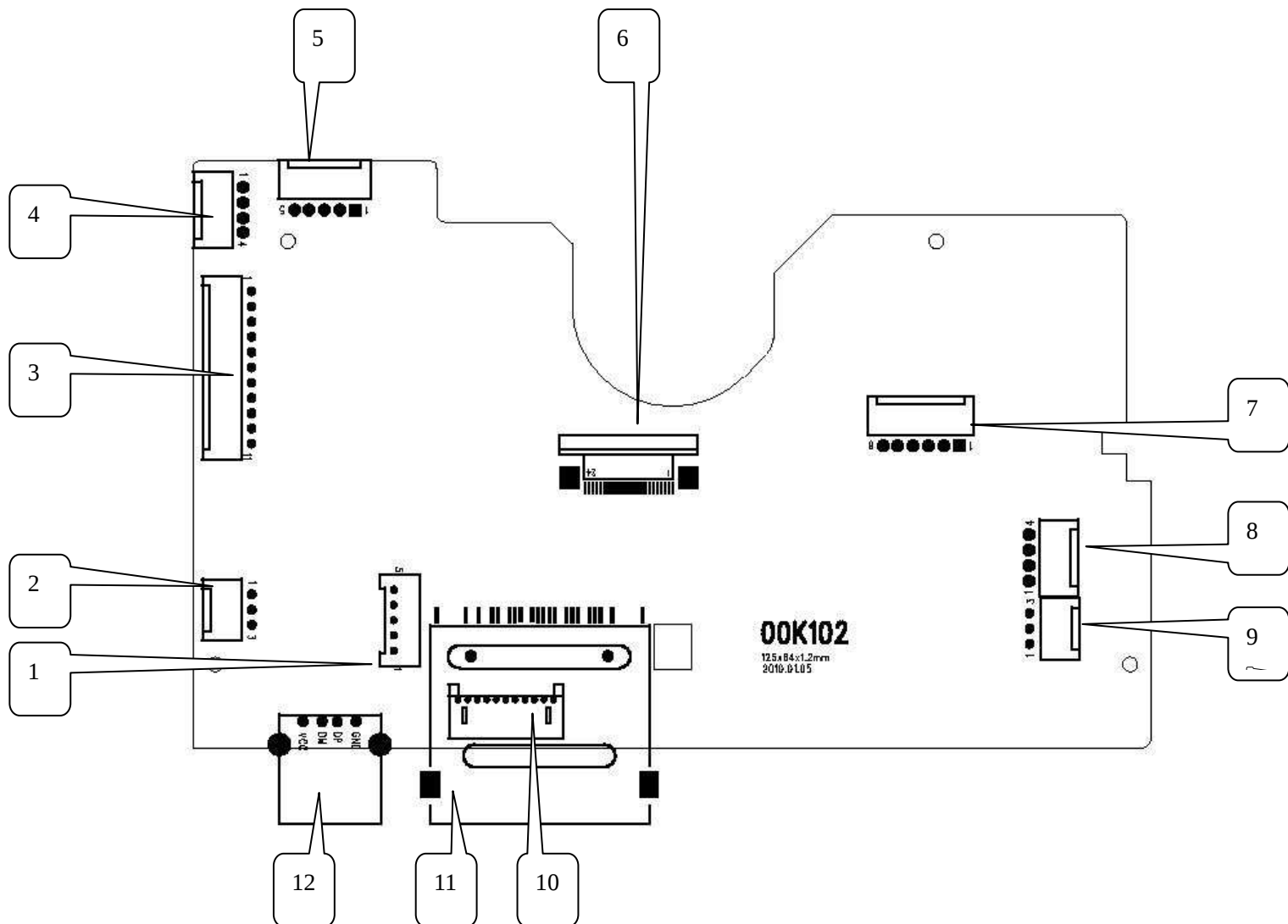


APPENDIX A: DVD Decode Board Specification

Block Diagram



Interface Description (marked with * is optional)



*1(CN10)	Extended USB interface	*8 (CN7)	Karaoke sub board interface
2(CN8)	DVD Detection signal interface	9 (CN9)	DVD KEY interface
3 (CN21)	DVD Video and control signal interface	*10(CN25)	USB,CARD reader extended interface
4 (CN2)	Loading disk control	*11(J1)	3-in-1 card reader interface
5 (CN1)	Power Supply	*12(J2)	USB2.0 interface
6 (CN6)	Pick up interface		
7 (CN5)	Reading Disk control		

Interface define

◆ CN10 (5Pin2.0mm) Extended USB interface

NO	Define	Description
1	GPIO	USB channel control
2	GND	0V Reference
3	USB+	Extended USB+ input
4	USB-	Extended USB- input
5	5V	5V power supply

◆ CN8 (3Pin2.0mm) DVD Detection signal interface

NO	Define	Description
1	TROUT	Ejecting finish signal detection signal
2	DISCEJT	Disk detection signal
3	GND	0V Reference

◆ CN21 (11Pin2.0mm) DVD Video and control signal interface

NO	Define	Description
1	DSCL	Clock of DVD control signal
2	DSDA	Data of DVD control signal
3	DR	Right audio output
4	DSTB	Standby signal
5	DL	Left audio output
6	CVBS	Composite video output
7	GND	0V Reference
8	SPDIF	Coaxial out put
9	DVD_C	DVD-C output
10	GND	0V Reference
11	DVD_Y	DVD-Y output

◆ CN2 (4Pin2.0mm) Loading disk control

NO	Define	Description
1	GND	0V Reference
2	TRIN	Disk loading completed signal
3	SL-	Feed motor input
4	SL+	Feed motor input

◆ CN1 (5Pin2.0mm) Power supply

NO	Define	Description
1	5V	5V Input
2	5V	5V Input
3	GND	0V Reference
4	GND	0V Reference
5	GND	0V Reference

◆ CN5 (6Pin2.0mm) Read disk interface

NO	Define	Description
1	LOAD+	Loading motor + input
2	LOAD-	Loading motor - input
3	GND	0V Reference
4	LIMIT	Pick up detecting signal
5	SP+	Spindle motor input
6	SP-	Spindle motor input

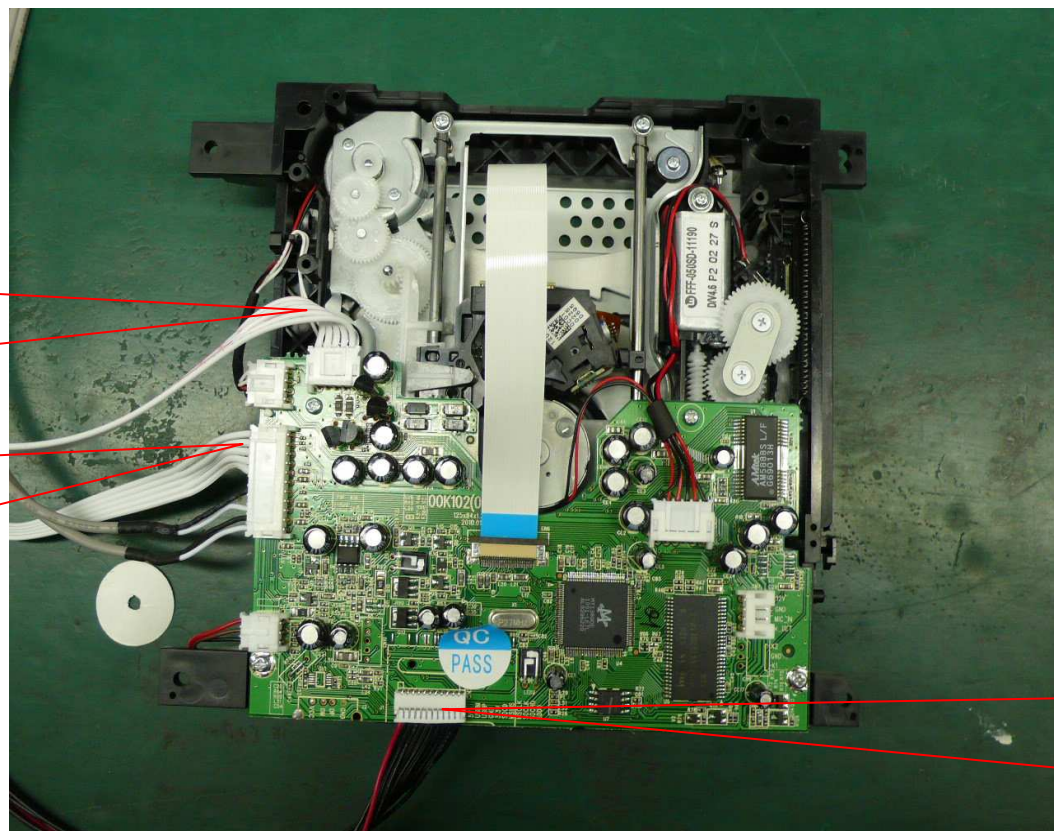
◆ CN7 (4Pin2.0mm) Karaoke Interface

NO	Define	Description
1	MIC_DET	Microphone detecting signal
2	MIC_IN	Microphone audio input
3	GND	0V Reference
4	5V	5V supply for karaoke board

◆ CN9 (3Pin2.0mm) DVD key interface

NO	Define	Description
1	SW1	Key 1
2	GND	0V Reference
3	SW2	key2

Assembly Instruction Picture



DVD power supply,
Connect to
main board

DVD signal
output,
Connect to
main board

USB/Card
Reader signal,
Connect to
USB/ Card
reader sub
board

APPENDIX B: Power Supply Board Specification

Power Supply Overview

Input Electrical Characteristics Overview

Input voltage range	90Vac to 264Vac
Normal voltage range	100Vac to 240Vac
Frequency range	50Hz/60Hz±5%
Max input ac current	2Amax at full load condition
Inrush current (cold start)	50A _{typ} peak, 120Vac; 100A _{typ} peak, 220Vac
Efficiency(full load)	75%min at 90Vac; 82%min at 220Vac
Harmonic current	Meet GB17625.1-1998/IEC61000-3-2 class D
Leakage Current	Less Than 0.75mA, 230Vac input
Standby Power Loss	≤1W, 240Vac input
Input Fuse	T2A/250Vac

Output Electrical Characteristics Overview

Output Voltage ,Current & Regulation.

Output Voltage	Regulation	Min. current	Rated current	Peak current
+12V	+12V±10%	0.02A	5A	7A*

Note:* pulse width within 100ms

DC Output Ripple & Noise.

Output Voltage	Ripple & Noise (Max.)
+12V	120mVp-p@25°C ; 200mVp-p@-10°C

- Note: 1) Measurements shall be made with an oscilloscope with 20MHz bandwidth.
2) Outputs shall be bypassed at the connector with a 0.1uF ceramic capacitor and a 10uF electrolytic capacitor to simulate system loading.

Pin Connection

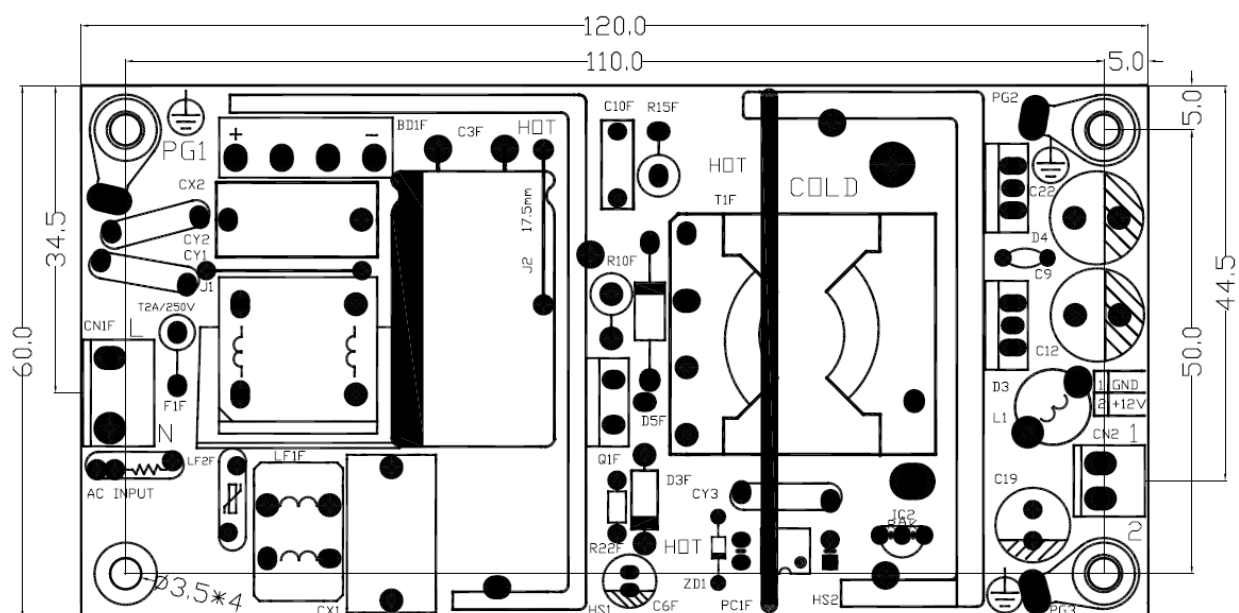
Pin-CN2 Connection And Function TYPE : 2.0MM*8PIN

NO.	Pin Connection	Function
1	GND	
2	+12V	

Pin-C0N1F Connection And Function

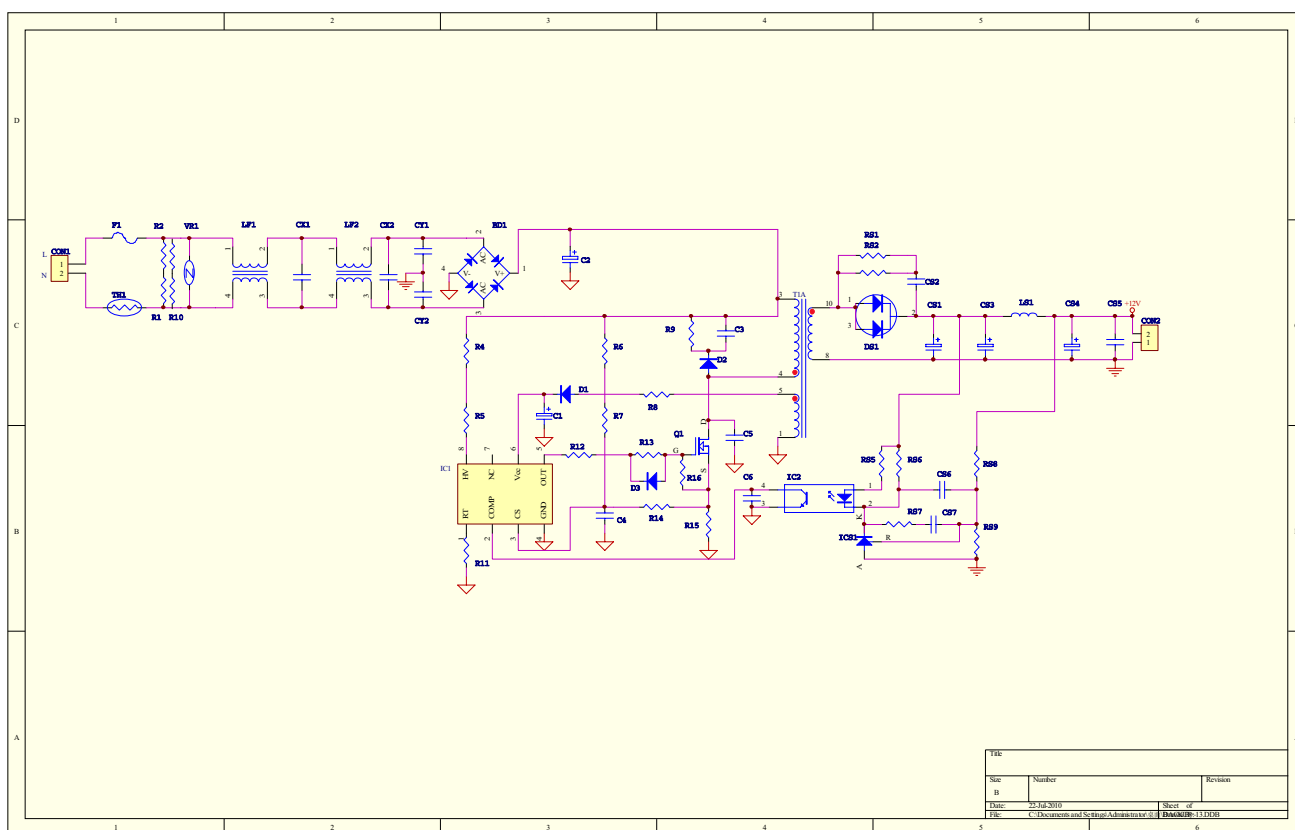
NO.	Pin Connection	Function
1	AC-L	AC INPUT LINE
2	AC-N	AC INPUT NUTURE

Power Supply Mounting



备注:单位(mm)

1. 图中外形误差 ± 0.5 , 其余未注为: ± 0.2
2. 产品元件面限高22.5mm, 板下限高2.5mm, 板厚1.6mm



APPENDIX C: 2 CCFL Lamps Inverter Specification

General Requirements

Input characteristics

PARAMETER	SYMBOL	MIN	TYPICAL	MAX	UNIT	REMARK
INPUT VOLTAGE	Vin	11.4	12.0	12.6	V	
INPUT CURRENT	Iin	-	0.85	0.95	A	Vin=12V,Von/off=5V Vadj=0V,RL= PANEL
INPUT POWER	Pin	-	10.2	11.4	W	Vin=12V,Von/off=5V Vadj=0V,RL= PANEL
INPUT VOLTAGE	Von/off	-	0	0.5	V	Off State
		2.0	5.0	5.5		On State
INPUT VOLTAGE	Vadj	5	-	0	V	
EFFICIENCY	Eff	85	-	-	%	Vin=12V,Von/off=5V Vadj=0V RL= PANEL

Output Characteristics

PARAMETER	SYMBOL	MIN	TYPICAL	MAX	UNIT	REMARK
LAMP CURRENT	IL	7.0	7.5	8.0	mA	Vin=12V,Von/off=5V Vadj=0V, RL= PANEL
LAMP CURRENT	IL	1.0	2.0	2.5	mA	Vin=12V,Von/off=5V Vadj=5V, RL= PANEL
LAMP VOLTAGE	VL	-	600	-	Vrms	Vin=12V,Von/off=5V Vadj=0V RL= PANEL
FREQUENCY	FL	40	50	60	KHz	Vin=12V, Von/off=5V Vadj=0V RL= PANEL, T=25°C
OPEN VOLTAGE	Vs	-	1500		Vrms	Vin=12V,Von/off=5V RL=∞K Ω
OUTPUT OPEN	VL	LATCH				Vin=12V,Von/off=5V Vadj=0V RL=∞K Ω
OUTPUT SHORT	VL	LATCH				Vin=12V,Von/off=5V Vadj=0V, RL=2K Ohm (High Voltage to GND)

Pin Assignments

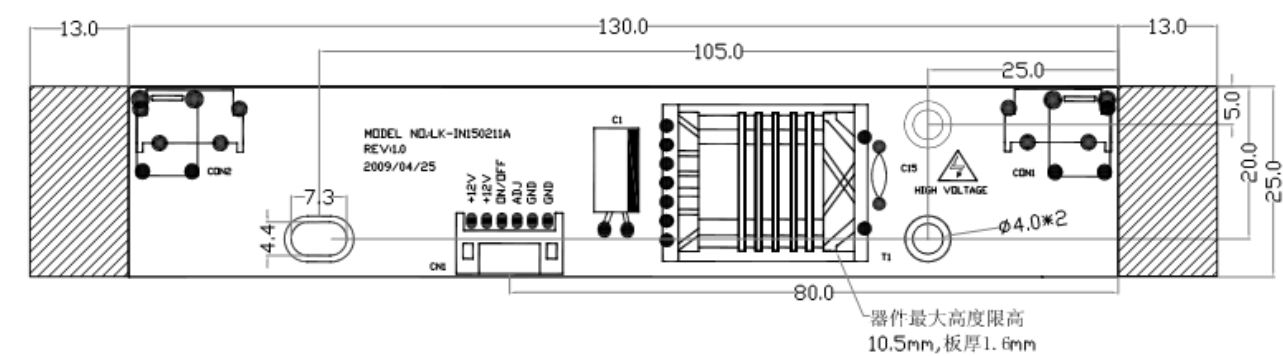
DC Input
Location: CN1
Connector type: JST S5B-PH-K-S or equivalent

Pin No	Symbol	Description
1,2	+12V	
3	ON/OFF	
4	ADJ	
5,6	GND	

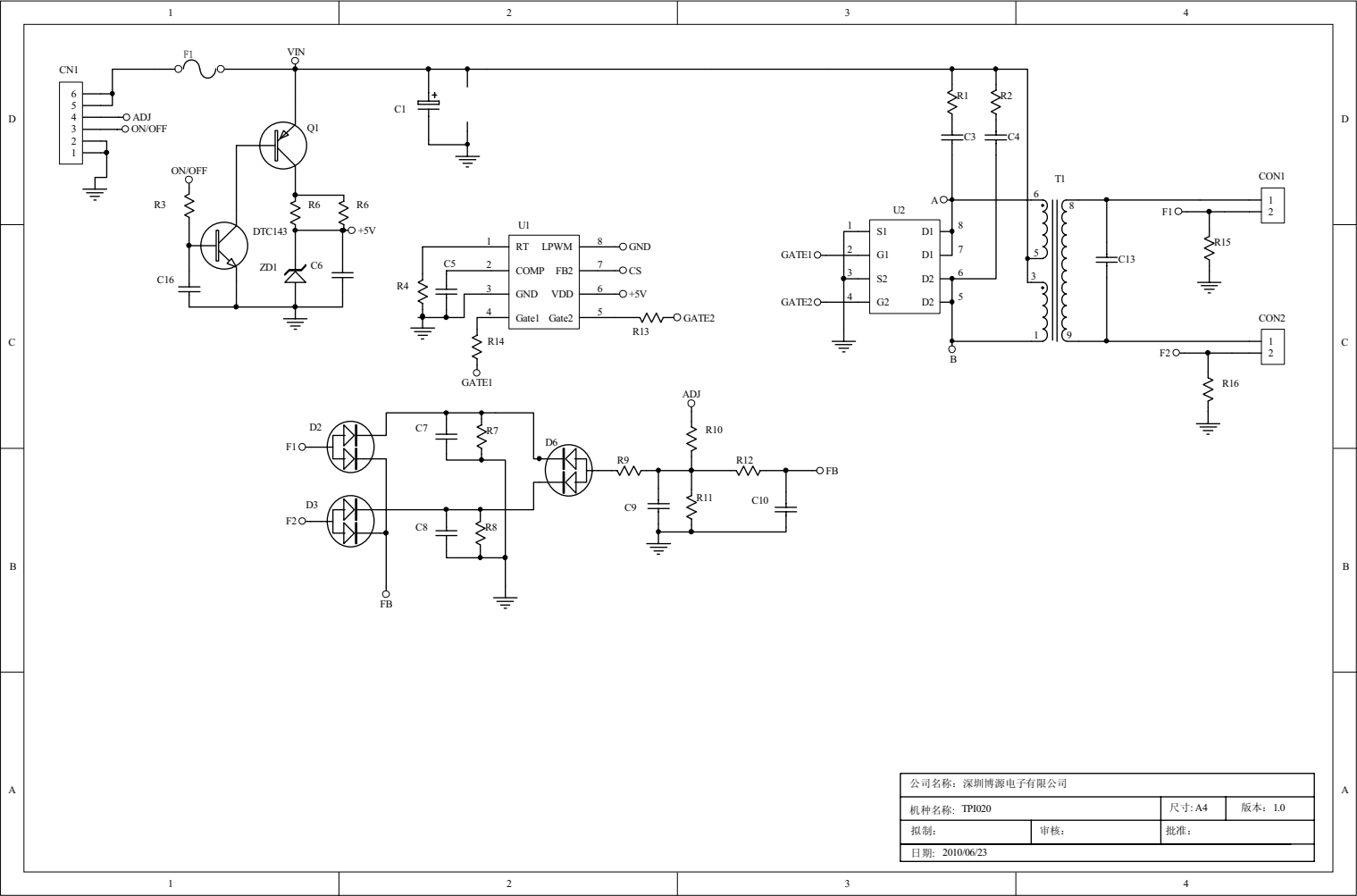
AC Output
Location: CON1;CON2
Connector type: JST SM02B-BHSS-1-TB or equivalent

Pin No	Symbol	Description
1	Vout -H	High Voltage
2	Vout-L	Return

Mechanical Characteristics



备注：单位（mm）
外形尺寸误差为：±0.5，其余误差为：±0.2
图中阴影部分表示多麦拉片



APPENDIX D: 4 CCFL Lamps Inverter Specification

General Requirements

Input characteristics

PARAMETER	SYMBOL	MIN	TYPICAL	MAX	UNIT	REMARK
INPUT VOLTAGE	V _{in}	11.4	12.0	12.6	V	
INPUT CURRENT	I _{in}	-	2.2	2.6	A	V _{in} =12V,V _{on/off} =5V V _{adj} =0V,RL= PANEL
INPUT POWER	P _{in}	-	27.6	30	W	V _{in} =12V,V _{on/off} =5V V _{adj} =0V,RL= PANEL
INPUT VOLTAGE	V _{on/off}	-	0	0.5	V	Off State
		2.0	5.0	5.5		On State
INPUT VOLTAGE	V _{adj}	5	-	0	V	
EFFICIENCY	Eff	85	-	-	%	V _{in} =12V,V _{on/off} =5V V _{adj} =0V RL= PANEL

Output Characteristics

PARAMETER	SYMBOL	MIN	TYPICAL	MAX	UNIT	REMARK
LAMP CURRENT	I _L	6.8	7.5	8.0	mA	V _{in} =12V,V _{on/off} =5V V _{adj} =0V, RL= PANEL
LAMP CURRENT	I _L	3.0	3.5	4.0	mA	V _{in} =12V,V _{on/off} =5V V _{adj} =5V, RL= PANEL
LAMP VOLTAGE	V _L	-	780	-	V _{rms}	V _{in} =12V,V _{on/off} =5V V _{adj} =0V RL= PANEL
FREQUENCY	F _L	40	50	60	KHz	V _{in} =12V, V _{on/off} =5V V _{adj} =0V RL= PANEL, T=25℃
OPEN VOLTAGE	V _s	-	1600		V _{rms}	V _{in} =12V,V _{on/off} =5V RL=∞K Ω
OUTPUT OPEN	V _L	LATCH				V _{in} =12V,V _{on/off} =5V V _{adj} =0V RL=∞K Ω
OUTPUT SHORT	V _L	LATCH				V _{in} =12V,V _{on/off} =5V V _{adj} =0V, RL=2K Ohm (High Voltage to GND)

Pin Assignments

DC Input :

Location: CN1

Connector type: JST S6B-PH-K-S or equivalent

Pin No	Symbol	Description
1, 2	+12V	Supply voltage(+12V)
3	On/off	On/off Control
4	Adj	Brightness
5, 6	Gnd	Ground

AC Output

Location: CON1; CON2; CON3; CON4

Connector type: JST-SM02(3.5)-BHS-1-TB or equivalent

Pin	No	Symbol	Description
	1	Vout -H	High Voltage
	2	Vout-L	Return

Mechanical Characteristics

