Applicable Country & Regions:

Middle East

Product Service Manual – Level 2

Service Manual for BenQ:
LCD-TV/L47-6010
9H.V2W75.KLG

Version: 00a
Date:2010/12/08

Notice:

For RO to input specific "Legal Requirement" in specific NS regarding to responsibility and liability statements.

Please check BenQ's eSupport web site, http://esupport.benq.com, to ensure that you have the most recent version of this manual.

First Edition (July 2010)

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Abbreviations & Acronyms

A	
A/D Converter	**Analog to Digital Converter**
B	
BenQ	**BenQ Corporation**
C	
CEL LABLE	**China Energy Label**
D	
DTV	**Digital Television**
E	
EMI	**Electromagnetic Interference**
F	
G	
H	
HDMI	**High Definition Multimedia Interface**
I	
J	
K	
L	
M	
N	
NTSC	**National Television System Committee**
O	
OSD	**On Screen Display**
P	
PAL	**Phase Alternating Line**
Q	
R	
RS232	**Interface Between Data Terminal Equipment and Data Communications Equipment Employing Serial Binary Data Interchange**
S	
T	
U	
V	

About This Manual

This manual contains information about maintenance and service of BenQ products. Use this manual to perform diagnostics tests, troubleshoot problems, and align the BenQ product.

Important

Only trained service personnel who are familiar with this BenQ Product shall perform service or maintenance to it. Before performing any maintenance or service, the engineer MUST read the "Important Safety Information".

Trademark

The following terms are trademarks of BenQ Corporation:

BenQ

Senseye

Other companies, products, or service names may be the trademarks of their respective companies.

Introduction

This section contains general service information, please read through carefully. It should be stored for easy access place.

Important Service Information

- **RoHS (2002/95/EC) Requirements – Applied to all countries require RoHS.**

The RoHS (Restriction of Hazardous Substance in Electrical and Electronic Equipment Directive) is a legal requirement by EU (European Union) for the global electronics industry which sold in EU and some counties also require this requirement. Any electrical and electronics products launched in the market after June 2006 should meet this RoHS requirements. Products launched in the market before June 2006 are not required to compliant with RoHS parts. If the original parts are not RoHS complaints, the replacement parts can be non ROHS complaints, but if the original parts are RoHS compliant, the replacement parts MUST be RoHS complaints. If the product service or maintenance require replacing any parts, please confirming the RoHS requirement before replace them.

- **Safety Notice**

1. Make sure your working environment is dry and clean, and meets all government safety requirements.
2. Ensure that other persons are safe while you are servicing the product.
3. DO NOT perform any action that may cause a hazard to the customer or make the product unsafe.
4. Use proper safety devices to ensure your personal safety.
5. Always use approved tools and test equipment for servicing.
6. Never assume the product's power is disconnected from the mains power supply. Check that it is disconnected before opening the product's cabinet.
7. Modules containing electrical components are sensitive to electrostatic discharge (ESD). Follow ESD safety procedures while handling these parts.
8. Some products contain more than one battery. Do not disassemble any battery, or expose it to high temperatures such as throwing into fire, or it may explode.
9. Refer to government requirements for battery recycling or disposal.

- **Compliance Statement**

1. Caution: This Optical Storage Product contains a Laser device. Refer to the product specifications and your local Laser Safety Compliance Requirements.

General Descriptions

This Service Manual contains general information. There are 2 levels of service:
Level 1: Cosmetic / Appearance / Alignment Service
Level 2: Circuit Board or Standard Parts Replacement

Related Service Information

Service Web Site

BenQ Global Service Website: http://www.benq.com/support/
eSupport Website: http://esupport.benq.com/v2

Product Overview

This specification describes a 47", 1920x1080 diagonal 3D LCD TV which supports up to 1920*1080 HDTV mode and can display true 1.06Billion colors. This LCD TV is completely free from electromagnetic distortion. So you can install it just about any place. You can simply place it on a table, hang it on the wall. LCD TV reproduces images by adjusting the brightness, color and contrast of each individual pixel on the screen.

It has the following features:

(1). Panel:

- Center luminance 360 nits(L47), (LCM luminance Typical)
- Contrast ratio (Typical) approximates 1400:1 (L47)
- Viewing angle (Typical Horizontal and vertical) 178°/ 178°
- Resolution: 1920x1080

(2). RF

(I) ATV module

- Broadcasting system: PAL B/G, D/K, I; NTSC M; SECAM B/G

(3).HDMI:

- Compliance with HDMI 1.4a, DVI 1.0 and HDCP 1.1
- SD & HD compatible (480i/480p/576i/576p; 720p50/60, 1080i50/60, 1080p24/50/60)

(4). PC

-Support VGA (640x480), SVGA (800x600), XGA (1024x768), WXGA(1360x768),WUXGA(1920x1080,

- DDC (Display Data Channel) function is 2B compliance.

(5) Video, Audio and other features

Video Features	Aspect Ratio Adjustment	16:9 / 4:3 / Movie/Caption / PC Mode
	Picture Modes	Standard / Soft / Personal / Dynamic
	Personal setting	1 Set
	3D De-Interlacing	Yes
	3D Comb Filter	Yes
	PIC/PIP/PBP	No
	Freeze Picture	No
	YUV Domain Engine	Yes
	10 Bit color processing	Yes

	Noise Reduction	Yes
	Black Extension	No
	Auto Contrast Enhancement (ACE)	Yes
	Sharpness Enhancement	Yes
	Motion Optimization	No
	120Hz/MEMC	No
Audio Features	Sound Type(Tuner)	Mono/Dual/Stereo
	L - Mono (RCA audio in)	No
	Auto Volume	Yes
	Surround Effect	No
	Audio Preset Mode	Standard/ News/ Music /Personal
	Equalizer	Yes
	Speaker	8W x 2
	Soft Mute	Yes
	Line out	Yes
	Sub-Picture Sound (PIP)	No
	Subwoofer	No
Functions	Intelligent Light Sensor	No
	Stand Tilt	No
	Stand Swivel	No
	Connector Auto Detection	No
	On/Off Timer	No
	Sleep Timer	Yes
	Clock	No
	Child-Lock	No
	Eco Mode	Yes
	Backlight CONTROL	Yes
	Parental Control (V-chip)	No
	Subtitles Control (CC)	No
	Main switch button (yes/no)	Yes
	OSD Transparency Adjust	Yes
	Text Standard: (Top, FLOF,,,)	No

	Teletext Level: 2.5 / 1.5	No
	Pages for teletext	No
	Teletext character sets ****	No
	Auto Naming/Auto Sorting	No
	Auto update	No
	Format control (Pin8/WSS)	No
	Game Mode	No
	Photo Mode	No
	HDMI CEC	No
	Input Source Naming	No
	Blue Screen	Yes
	Wireless	No
	PC Power Saving mode (like DPMS)	Yes
	Data Manipulation	No
	Hotel Mode	Yes
	PVR	No

(6). Power:

Power	Power Input	AC 100V~240V, 60Hz/50Hz
	De-rating	90%
	Power Consumption	Max<=160W
	Standby Mode	<= 0.5 Watt

(7). User Interface:

- Key pads: Power, Menu, Input, Channel Up(CH+), Channel Down(CH-), Volume+(VOL+), Volume-(VOL-) keys
- IR remote controller

Model	RC (KTC standard RC)
IR Protocol	NEC

- OSD (on screen display) for user control interface
- LED indicator for power on/standby

(8). I/O Connectivity

Input	RF Tuner	ATV: 75Ω F Connector x1
	Composite Video +L/R	x1
	S-Video	N/A
	Component Video +L/R	X1
	HDMI (DVI)	X2(DVI audio shared with PC)
	PC (D-sub + PC audio)	X1
	USB 2.0	X1
Output	AV Out	X1
	Earphone	X0
	SPDIF	X0
Power	IEC/CEE-22 Male	X1
Other	FW upgrade	X1 (through ISP signal or USB)

(9). Accessory

Accessory	User Manual	Yes(EN/ME)
	Quick Start Guide	Yes
	Warranty Card	Yes
	Remote Control(battery included)	Yes
	Power Cord	Yes*1 (Attachable)
	Coaxial Cable	No
	RCA cable	No
	Fixture Gadgets	No
	Feature Label	Yes
	ATV Tuner Box	No
	DTV Tuner Box	No
	IPTV Module	No
	Wall Mount	Optional(VESA standard)

(10). Marketing logo

Marketing logo	HD Ready	No
	HDTV Monitor	No
	HDMI	No
	Sense eye	Yes
	Audio logo (Dolby/SRS/BBE)	No

	Others	

2. Input / Output Signal Specifications

Terminals	RF Tuner	ATV x 1
	HDMI	2
	DVI	2 through HDMI
	DVI-Audio L/R	1：through VGA PC Audio
	Component (Y/Pb/ Pr) + Audio	1
	S-Video(Y/C)	0
	Composite(CVBS) AV (Video+L/R)	1
	AV out	1
	Earphone	0
	D-Sub	1
	PC Audio In	1
	SPDIF	0
	USB	1：support media

2.1 RF input

2.2.1 Antenna Input

ATV: 75Ω F connector x1

2.2.2 Broadcasting Standards

Tuner System	Analog Broadcasting colour System	PAL, NTSC，SECAM
	Analog Broadcasting sound System	B/G,D/K,I,M

2.2 Composite Video Input

(1) Pin definition (RCA Jacks)

(2) Signal level:

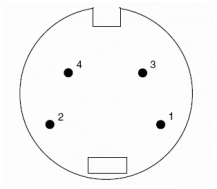
Pin	Signal	Level	Impedance
1	Composite	1.0 Vpp (with sync)	75Ω
2	L audio	2.0 VRMS (max)	> 10 kΩ
3	R audio	2.0 VRMS (max)	> 10 kΩ

(3) Supporting Timings:

Timing	Lines per frame	Horizontal frequency (KHz)	Vertical frequency (Hz)	Sub-carrier Frequency (MHz)	Remark
PAL	625	15.625	50	4.43	
NTSC	525	15.734	60	3.58	

2.3 S-Video Input

(1) Pin definition



4-pin Mini Din Connector

(2) Signal level:

Pin	Signal	Level	Impedance
1	GND		
2	GND		
3	Y (Luma)	1.0 Vpp (with sync)	75Ω
4	C (Chroma)	0.286 Vpp for NTSC, 0.3 Vpp for PAL	75Ω

(3) Supporting Timings:

Same as Composite video.

2.4 Component Video Input

(1) Pin definition (RCA Jacks) and signal level

Pin	Signal	Level	Impedance
1	Y	1.0 Vpp (with sync)	75Ω
2	Pb	0.7 Vpp	75Ω
3	Pr	0.7 Vpp	75Ω
4	L audio	2.0 VRMS (max)	> 10 kΩ
5	R audio	2.0 VRMS (max)	> 10 kΩ

(2) Audio signal:

(a) connector type: RCA Jacks

(b) Level: 2 Vrms max. (0.5Vrms normal)

(c) Impedance: ≧ 10 kΩ

(3) Supporting timing

Timing	Resolution	Horizontal frequency (KHz)	Vertical frequency (Hz)	Dot Clock Frequency (MHz)	Support?
480i	720x480	15.734	60	13.5	Y
576i	720x576	15.625	50	13.5	Y
480p	720x480	31.47	60	27	Y
576p	720x576	31.25	50	27	Y
720p60	1280x720	45.00	60	74.25	Y
720p50	1280x720	37.50	50	74.25	Y
1080i60	1920x1080	33.75	60	74.25	Y
1080i50	1920x1080	28.13	50	74.25	Y
1080p60	1920x1080	67.5	60	148.5	Y
1080p50	1920x1080	56.25	50	148.5	Y

2.5 HDMI / DVI Video Input

- HDMI 1.4a compliance
- DVI 1.0 compliance
- HDCP 1.1 compliance

(1) Pin Definition

Type A (Female) HDMI

Pin	Signal
1	TMDS Data2+
2	TMDS Data2 Shield
3	TMDS Data2–
4	TMDS Data1+
5	TMDS Data1 Shield
6	TMDS Data1–
7	TMDS Data0+
8	TMDS Data0 Shield
9	TMDS Data0–
10	TMDS Clock+
11	TMDS Clock Shield
12	TMDS Clock–
13	CEC
14	Reserved (N.C. on device)
15	SCL
16	SDA
17	DDC/CEC Ground
18	+5 V Power (max 50 mA)
19	Hot Plug Detect

(2) Supporting video timings:

Timing	Resolution	Horizontal frequency (KHz)	Vertical frequency (Hz)	Dot Clock Frequency (MHz)	Remark
480i	720x480	15.734	60	13.5	HDMI only
576i	720x576	15.625	50	13.5	HDMI only
480p	720x480	31.47	60	27	HDMI & DVI
576p	720x576	31.25	50	27	HDMI & DVI
720p60	1280x720	45.00	60	74.25	HDMI & DVI
720p50	1280x720	37.50	50	74.25	HDMI & DVI
1080i60	1920x1080	33.75	60	74.25	HDMI & DVI
1080i50	1920x1080	28.13	50	74.25	HDMI & DVI
1080p60	1920x1080	67.5	60	148.5	HDMI & DVI
1080p50	1920x1080	56.25	50	148.5	HDMI & DVI
1080p24	1920x1080	27	24	74.25	HDMI & DVI

(3) Supporting PC timings:

Timing	Vertical Frequency (Hz)	Horizontal Frequency (kHz)	Pixel Frequency (MHz)	Note	Mode
720x400	70	31.5	28.32	VGA	HDMI & DVI
640x480	60	31.5	25.17	VGA	HDMI & DVI
800x600	60	37.9	40.00	VESA	HDMI & DVI
1024x768	60	48.4	65.00	VESA	HDMI & DVI
1360x768	60	47.7	85.50	VESA	HDMI & DVI
1920x1080	60	67.5	148.5	VESA	HDMI & DVI

Remark: PC timings with 60Hz frame rate must be “frame-rate locked” in video processing.

(4) Supporting 3D video timings:

3D _Structure	description	Hactive	Hblank	Vactive	Vact pace	Vblank	Pixel (Mhz)	H Freq (KHz)	V Freq (Hz)
0000 (Frame Packing)	1080p, 23.98 / 24Hz	1920	830	1080	45	45	148.35 / 148.50	54.00	23.976 / 24.000
	720p, 59.94 / 60Hz	1280	370	720	30	30	148.35 / 148.50	90.00	59.940/ 60.000
	720p, 50Hz	1280	700	720	30	30	148.5	75.00	50.000

1000 (Side by Side Half)	1080i, 59.94/60 Hz	1920	280	540	na	22(Field1) 23(Field2)	74.176/ 74.25	33.75	59.940/ 60.000
	1080i, 50 Hz	1920	720	540	na	22(Field1) 23(Field2)	74.25	28.13	50.000
0110 (Top-and-Bottom)	1080p, 23.98 / 24Hz	1920	830	1080	na	45	74.176/ 74.25	27.00	23.976 / 24.000
	720p, 59.94 / 60Hz	1280	370	720	na	30	74.176/ 74.25	45.00	59.940/ 60.000
	720p, 50Hz	1280	700	720	na	30	74.25	37.50	50.000

(5) Supporting Audio:

(a) HDMI mode:

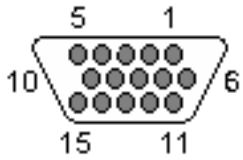
- Support LPCM, two audio channels
- Support audio sampling rate: 32 kHz, 44.1 kHz, 48 kHz
- Support audio bit rate: 16 bits, 20 bits, 24 bits
- Input signal level: 0dB (max)

(b) DVI mode:

Analog audio is supported through PC audio input terminal.

2.6 PC Input

(1) Pin assignment and signal level:



15pin D-sub female

Pin	Signal	Level	Impedance
1	Red Video	0.7Vpp ± 5%	75Ω
2	Green Video	0.7Vpp ± 5%	75Ω
3	Blue Video	0.7Vpp ± 5%	75Ω
4	N/C		
5	N/C		

6	Red GND		
7	Green GND		
8	Blue GND		
9	PC 5V		
10	GND (Vsync, DDC)		
11	N/C		
12	DDC data (SDA)	3.3V and 5V TTL compatible	
13	Horizontal Sync	3.3V and 5V TTL compatible (Logic 0: ≦0.8V, Logic 1: ≧2V)	≧ 2.2kΩ to ground
14	Vertical Sync	3.3V and 5V TTL compatible (Logic 0: ≦0.8V, Logic 1: ≧2V)	≧ 2.2kΩ to ground
15	DDC Clock (SCL)	3.3V and 5V TTL compatible	

(2) PC synchronization:

(a). accept separate sync.

(b). Horizontal sync range: 31kHz ~ 75kHz

(c). Vertical sync range: 56 ~ 63 Hz

(3) PC signal support timing

Timing	Vertical Frequency (Hz)	Horizontal Frequency (kHz)	Pixel Frequency (MHz)	Note	Mode
720x400	70	31.5	28.32	VGA	HDMI & DVI
640x480	60	31.5	25.17	VGA	HDMI & DVI
800x600	60	37.9	40.00	VESA	HDMI & DVI
1024x768	60	48.4	65.00	VESA	HDMI & DVI
1360x768	60	47.7	85.50	VESA	HDMI & DVI
1920x1080	60	67.5	148.5	VESA	HDMI & DVI

Remark: PC timings with 60Hz frame rate must be “frame-rate locked” in video processing.

2.7 PC Audio In

(1) Pin definition (3.5Φ Phone Jack)

(2) Signal level:

- connector type: Mini-Jack (φ3.5mm)
- Level: 2 V_{RMS} (max)
- Impedance: ≧ 10 kΩ

3. Other Functional Specifications

3.1 OSD Table

Item	Layer1	Layer2
TV	Color system	AUTO
		PAL
		NTSC
		SECAM
	Sound system	AUTO/D/K/B/G/I/M
	MTS	MONO
	SKIP	ON/OFF
	AUTO Search	
	Manual Search	
	Fine tune	
	Channel Edit	
PICTURE	Picture Mode	Standard
		Soft
		User
		Bright
	Contrast	0-100
	Brightness	0-100
	Saturation	0-100
	Hue	
	Sharpness	0-100
	Color Temperature	Standard
		Warm
		Cool

	Aspect Ratio	Full（16:9）
		4:3
		Film
		Subtitle
		PC mode
	3D NR	High
		Middle
		Low
		Off
Sound mode	Sound Mode	Standard
		Movie
		Music
		User
	Bass	0-100
	Treble	0-100
	Balance	L0~L50;R0~R50
	Auto volume	On/Off
Setting	OSD Language	Arabic
		English
	OSD Duration	OFF
		15 S
		30 S
		45 S
		60 S
	OSD Transparency	0~100
	BLUE SCREEN	ON/OFF
	Sleep Time	OFF
		15 Min
		30 Min
		45 Min
		60 Min
		90 Min
		120 Min
		240 Min
	OSD Reset	
PC	OSD-H Position	0-100

	OSD-V Position	**0-100**
	Frequency	**0-100**
	Phase	**0-100**
	Auto Adjust	
USB	**Media**	**Picture/Music/Movie/TXT**

∗The below tabulation is just for ME model

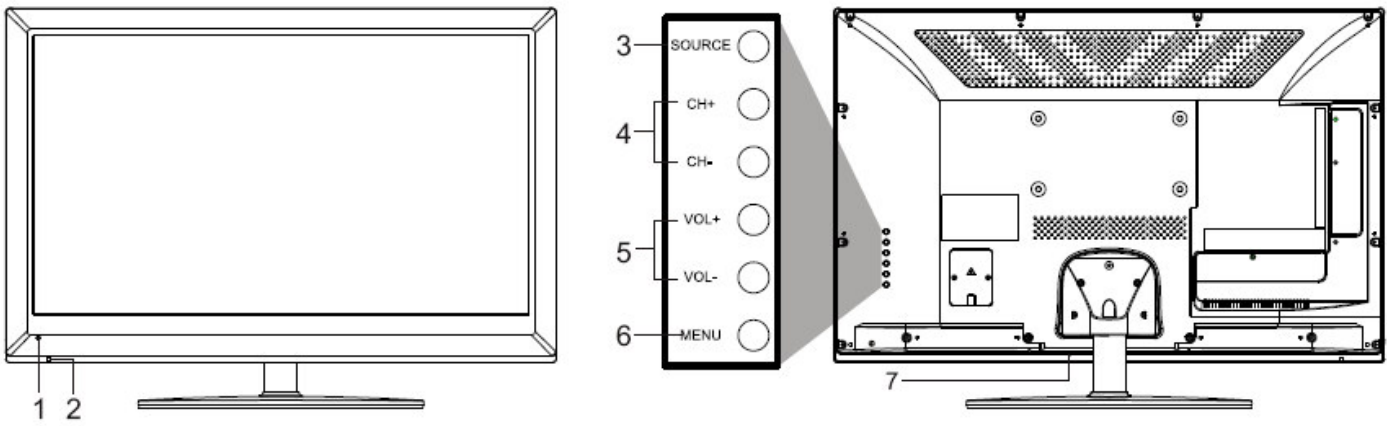
Item	**Layer1**	**Layer2**
TV	**اللـون نظـام**	**آلـي**
		PAL
		NTSC
		SECAM
	الصـوت نظـام	**D/K/B/G/I/M**
	MTS	**أحادي**
	تخطـي	**إيقـاف / تشـغيل**
	آلـي بحـث	
	يـدوي بحـث	
	الصـورة توضـيح	
	القنـاة تحـرير	
الصـورة	**لصـورةا نمـط**	**قياسـي**
		نـاعم
		مسـتخدم
		سـاطع
	تبـاين	**0-100**
	سـطوع	**0-100**
	اللـون تشـبع	**0-100**
	اللـون تـدرج	
	اللـون حدة	**0-100**
	اللـون حرارة	**قياسـي**
		دافـئ
		بـارد
	العـرض مقيـاس	**ممتلـئ**
		4:3
		فيلـم
		فـرعي عنـوان
		الكمبيوتـر نمـط
	الضـجيج خفـض	**مـرتفع**

		متوسط
		منخفض
		إيقاف
الصوت نمط	الصوت نمط	قياسي
		سينمائي
		موسيقي
		مستخدم
	جهير	0-100
	الطبقة عالي	0-100
	توازن	L0~L50;R0~R50
	آلي صوت حجم	إيقاف / تشغيل
إعدادات	العرض لغة	العربية
		English
	العرض مدة	15 ثانية
		30 ثانية
		45 ثانية
		60 ةثاني
	العرض شفافية	0-100
	زرقاء شاشة	إيقاف / تشغيل
	النوم وقت	إيقاف
		15 دقيقة
		30 دقيقة
		45 دقيقة
		60 دقيقة
		90 دقيقة
		120 دقيقة
		240 دقيقة
	تعيين إعادة	
PC	أفقي موضع	0-100
	عمودي موضع	0-100
	التردد	0-100
	المظهر	0-100
	آلي تعديل	
USB	الوسائط	/ موسيقي / الصورة / سينمائي / TXT

3.2 Audio Spec

1. Audio Amplifier	Condition	Spec
Input Impedance		>10KΩ
Input Signal Voltage	Max.	2Vpp(0 dB)
Input Sensitivity	Signal Level.	500mVrms (-12 dB)
Max. output power	I/P=0.5Vrms	O/P=Rated power
Frequency response: Dummy Load	O/P= 1W ,Roll off - 3dB	Fo ~ 20KHz
Frequency response: Speaker Set	O/P=1W, Roll off -15dB Distance 1M	Fo ~ 20KHz
THD	1W O/P	<1%, Fo ~ 20KHz
THD	Rated O/P	<10%, Fo ~ 20KHz
S/N Ratio	Rated O/P	>40dB, Fo ~ 20KHz
Crosstalk	Rated O/P	>40dB, Fo ~ 20KHz

3.3 Key pad control



1) Remote Receiving Sensor.

2) Power Indicator.

3) SOURCE: Press this key to enter the menu of signal source and choose signal source.

4) CH+/CH-: Press these two keys to select the channel, and adjust the options you need under OSD operation.

5) VOL+/VOL-: Press these two keys to add or reduce volume, and adjust the analog value under OSD operation.

6) MENU: Press this key to enter main menu.

7) Power switch .

Note: There are some apparent differences between modes, please according to practicality.

3.4 Display Specifications

3.4.1 LG LED LC470EUN-SDF1

Parameter			Symbol	Value			Unit	Note
				Min	Typ	Max		
Contrast Ratio			CR	1000	1400	-		1
Surface Luminance, white			L_{WH}	290	360	-	cd/m^2	2
				110	135			
Luminance Variation			δ_{WHITE} 5P	-	-	1.3		3
Response Time	Gray-to-Gray		G to G $_{\sigma}$	-	6	9	ms	5
	Uniformity		G to G $_{BW}$	-	8	12		4
Color Coordinates [CIE1931]	RED		Rx	Typ -0.03	0.639	Typ +0.03		
			Ry		0.343			
	GREEN		Gx		0.316			
			Gy		0.595			
	BLUE		Bx		0.152			
			By		0.058			
	WHITE		Wx		0.279			
			Wy		0.292			
Color Temperature					10,000		K	
Color Gamut					68		%	
Viewing Angle	2D (CR>10)	x axis, right(ϕ=0°)	θr	89	-	-	degree	6
		x axis, left (ϕ=180°)	θl	89	-	-		
		y axis, up (ϕ=90°)	θu	89	-	-		
		y axis, down (ϕ=270°)	θd	89	-	-		
	3D (CT≤10%)	up + down	θu (y axis) +θd (y axis)	10			10	7
Gray Scale				-	-	-		8

3.4.2 Color Temperature Specification:

Mode	Color Temperature	(x, y)
Cool	**11047 °K**	**(0.278,0.278)**
Normal	**9300 °K**	**(0.283,0.297)**
Warm	**6500 °K**	**(0.313, 0.329)**

4 Physical Specifications

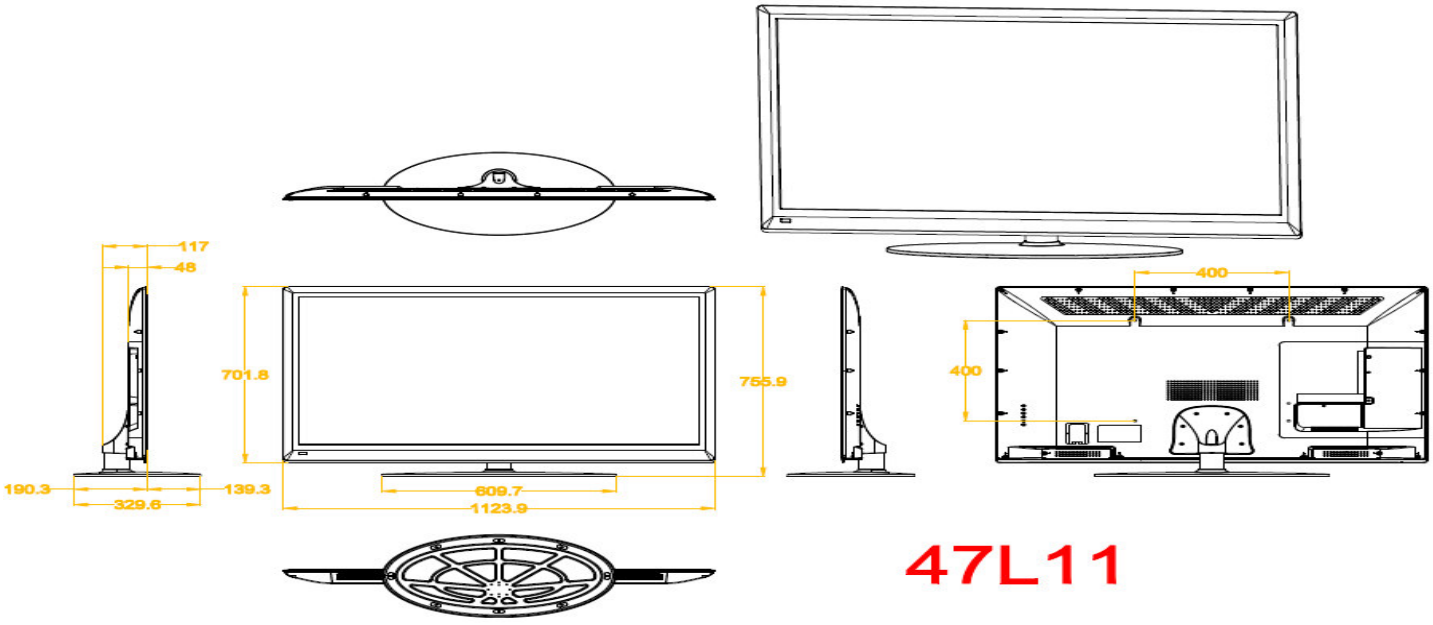
4.1 Physical Dimension & Appearance

4.1.1 Overall Dimensions:

No	Item		Content				Remark
1	Product Dimension 產品尺寸		Width	Length	Height	Unit	
		Before Packing 單機不含包裝	48	1123.9	701.8	mm	SET without Stand
			329.6	1123.9	755.9		SET with Stand
		After Packing	145	1235	815	mm	SET with Stand
2	Product Weight 產品重量	Only SET 整機重	18.5			Kg	SET with Stand
			22.5			Kg	SET without Stand
		With BOX	22.5（无底座）			Kg	SET with Stand
3	Container Loading Quantity 出貨量	Individual or Palletizing	20ft 20ft 櫃	40ft DQ 40ft 櫃	40ft HQ DDDCQ 40ft 高櫃	Packing with Stand	
			Pallet	Pallet	Pallet		
			153（无栈板）	315（无栈板）	359（无栈板）		
4	Stand Assy 腳座尺寸	Type	Detachable				
		Size(W x D x H)	329.6	609.7	270	mm	
		Tilt Degree	+1°/-2°				
		Tilt force	NA				
		Swivel Degree	NA				
		Swivel Force	NA				

4.1.2 Outer Appearance:

See Fig. 1 Physical Dimension Top, Front and Side View



4.3 Marking & Labels

4.3.1 Reference Label (Rear panel)

(1) Reference numbers

(2) Manufacture data

(3) Agency Approvals

(4) Power Ratings

4.3.2 Controls & Connectors

AC power cord input: abbreviated labels

User's Controls: standard print

4.4 Packaging

4.4.1 Carton Dimension

1235*145*815

4.4.2 Shipping Weight

Net Weight: 18.5 ± 0.5Kg
Gross Weight: 20.5 ± 0.5Kg

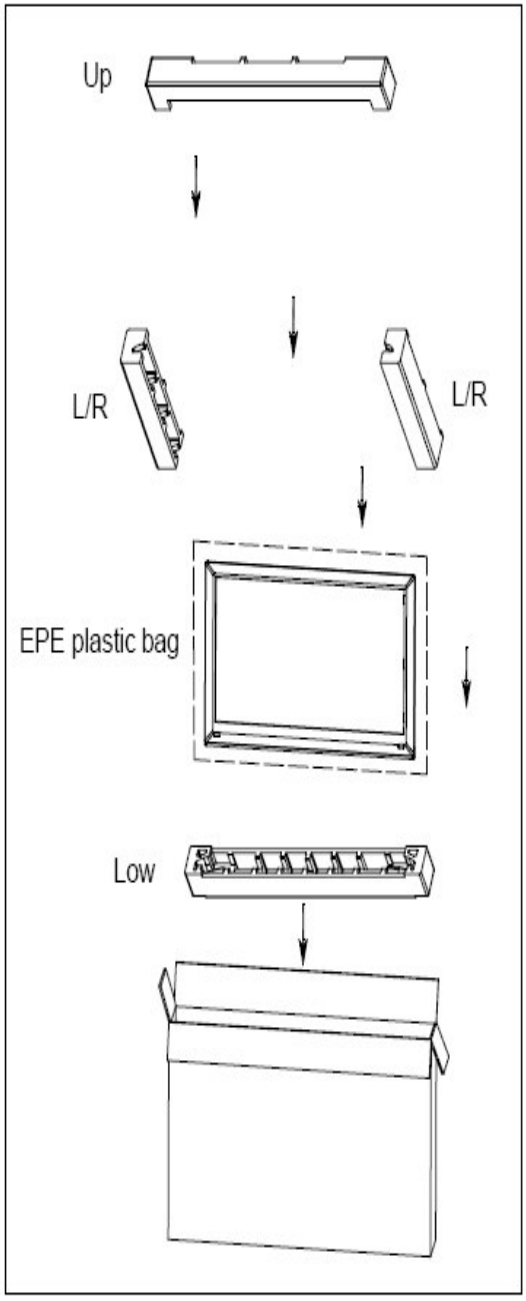
4.4.3 Shipping Container

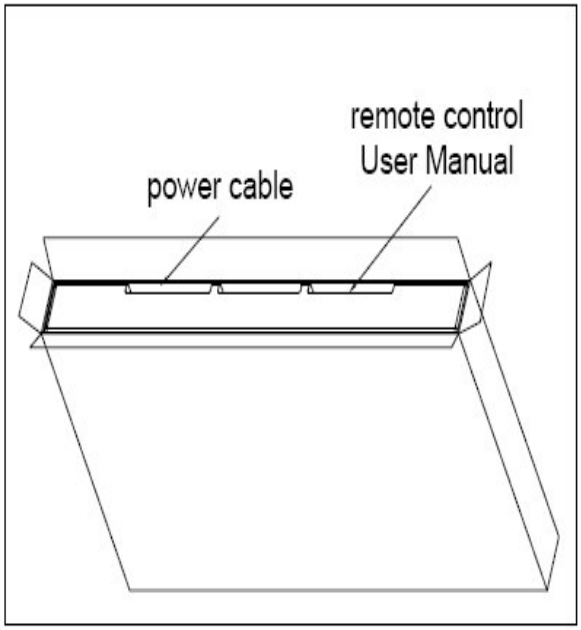
	20GP	**40GP**
Carton Dimension L×WxH(mm)	1235*145*815	
Base Carton Dimension(mm)	670*380*175	
Pallet Dimension (mm)	1470×1140×120	

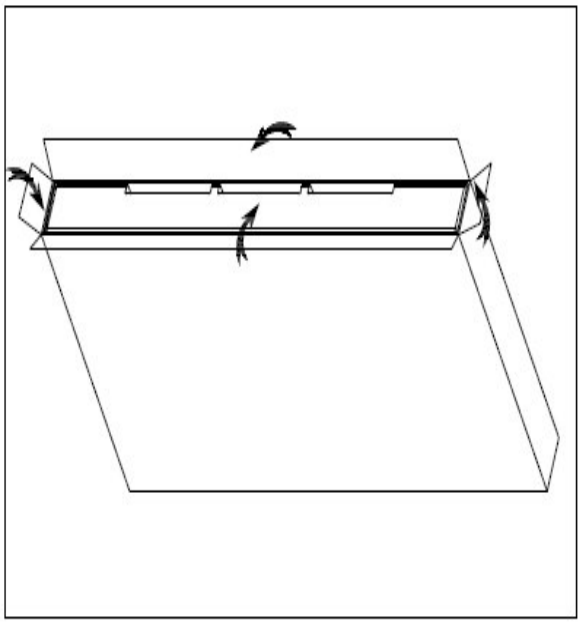
Packing

47L11

Packing Diagram

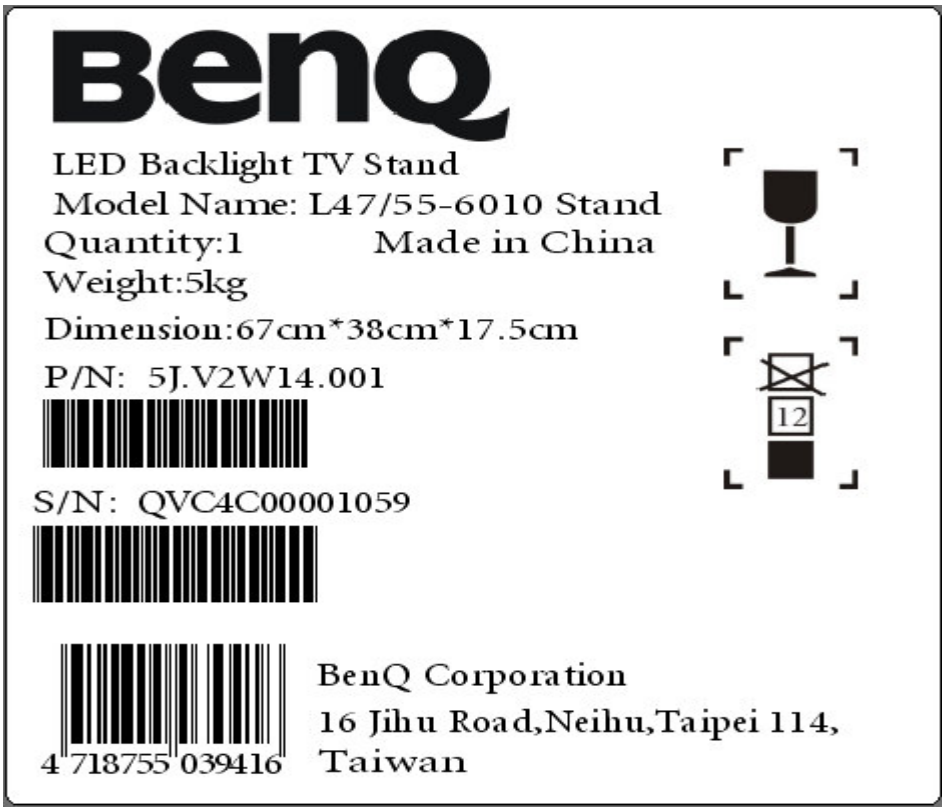




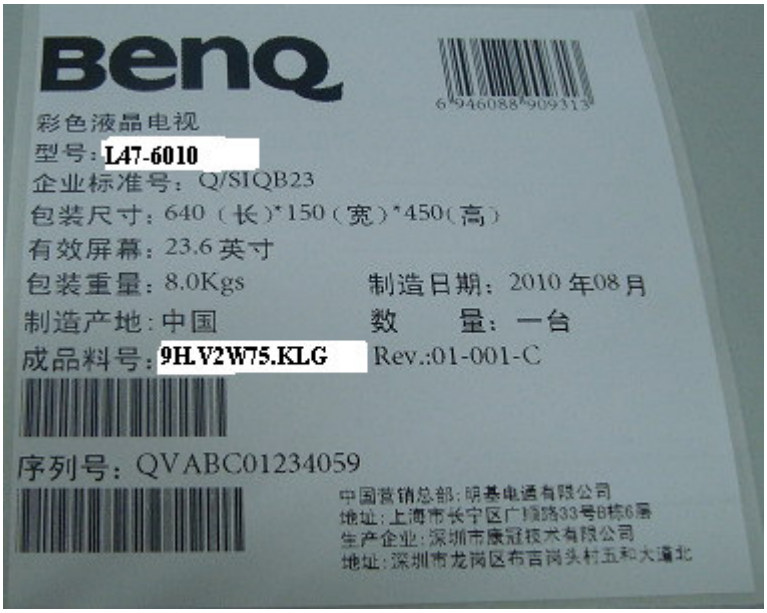


1. Spec. Label (109.4*64.4mm)

Stand Label



2. Carton Label (1100*100mm):

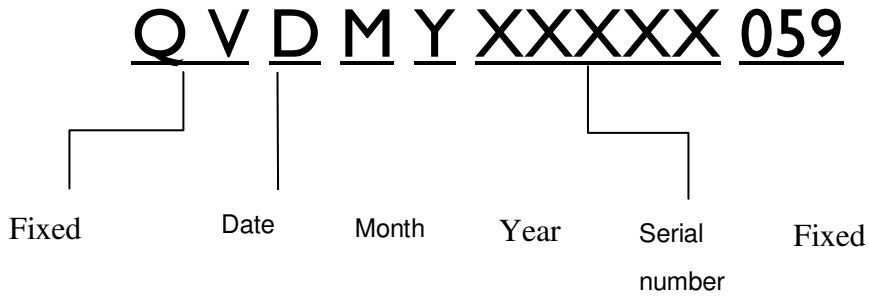


3. Serial Number Label (Pasted on Accessory bag):

4. Serial Number Label (5*28mm*1pc, Pasted on warranty card):

Print font: Times New Roman 9

5. Serial Number coding rule:



(1)First two of the "QV" and after three of the "059" for fixed content;

(2)D = date code, if the first product, please print 1，If it is produced at 16, print G，details are as follows：1~9, A=10, B=11, C=12, D=13, E=14, F=15, G=16, H=17, J=18, K=19, L=20, M=21,N=22, P=23, R=24, S=25, T=26, V=27, W=28, X=29, Y=30, Z=31(No using: 0, I, O, Q, U);

(3)M = month code, if the production is produced in August, print 8，December production print C，details are as follows：1 = January, 2 = February 3 = March 4 = April 5 = May 6 = June 7 = July 8 = August 9 = September, A = October, B = November, C = December;

(4) Y = Year Code, 2010 production print A, 2011 年 print B, Y = A ~ Z from 2010，A=10, B=11, C=12, D=13, E=14, F=15;

(5)XXXXX = serial number, using 00001 to 99999, a total of five yards control by the factory, replies a day to00001.

Customer Acceptance

L47-6010 LCD TV Customer Acceptance Criteria

1.0 SCOPE

This document establishes the general workmanship standards and functional Acceptance criteria for TV model L47-6010.

2.0 PURPOSE

The purpose of this publication is to define a procedure for inspection of the LCD TV by means of a customer acceptance test, the method of evaluation of defects and rules for specifying acceptance levels.

3.0 APPLICATION

The "Customer Acceptance Criteria" is applicable to the inspection of the LCD TV, completely packed and ready for dispatch to customers. Unless otherwise specified, the customer acceptance inspection should be conducted at manufacturer's site.

4.0 DEFINITION

The "Customer Acceptance Criteria" is the document defining the process of examining, testing or otherwise comparing the product with a given set of specified technical, esthetic and workmanship requirements leading to an evaluation of the "degree of fitness for use", including possible personal injury or property damage for the user of the product.

5.0 CLASSIFICATION OF DEFECTS

The defects are grouped into the following classes:

5.1 Critical defect

A critical defect is a defect that judgment and experience indicate is likely to result in hazardous or unsafe conditions for individuals using, maintaining or depending upon the product.

5.2 Major defect

A major defect is a defect, other than critical that is likely to result in failure, or to reduce materially the usability of the product for its intended purpose.

5.3 Minor defect

A minor defect is a defect that is not likely to reduce materially the usability of the product for its intended purpose, or is a departure from established standards having little bearing on the effective use of operation of the product.

Note: If BenQ defect undefined failure, and it judged that is reduce the merchandise ability, BenQ CM Inform this defect. After that parties make communication and decide how to solve.

6.0 CLASSIFICATION OF DEFECTIVES

A defective is a product, which contains one or more defects. The defective will be classified into following classes:

6.1 Major defective

A major defective contains one or more defects and may also contain minor defects but contains no critical defect.

6.2 Minor defective

A minor defective contains one or more minor defects but contains no critical and major defects.

7.0 EXPRESSION OF DEFECTIVES

$$\text{Percent of defects} = \frac{\text{Number of defects}}{\text{Number of products inspected}} \times 100\%$$

8.0 INSPECTION STANDARD

Unless otherwise specified, the inspection standard will be defined by MIL- STD-105E (ISO-2859), SINGLE SAMPLING PLAN. Level Ⅱ is in use all the time, inspection levels are normal, reduce and tighten.

8.1 Acceptance Quality Level

8.1.1 When a critical defect is found, this must be reported immediately upon detection, the lot or batch shall be rejected and further shipments shall be held up pending instructions from the responsible person in relevant organization.

8.1.2

Major Defective: 0.65 AQL

Minor Defective: 1.5 AQL

9.0 GENERAL RULES

The inspection must be carried out by trained inspectors having good knowledge of the meaning of "fitness for use". The inspection must be based upon the documents concerning the completely assembled and packed product when more defects appear with the same cause only the most serious defect must be taken into account. Defects found in accessories packed with the product as connecting cables, plugs, adapters and the like, and being inspected as a part of the complete product, must be included in the evaluation.

The evaluation must be within the limits of the product specification and, for not specified characteristics, be related to the design model, limit samples or judgment of a jury of experts. Faults must be demonstrable.

10.0 TEST CONDITIONS

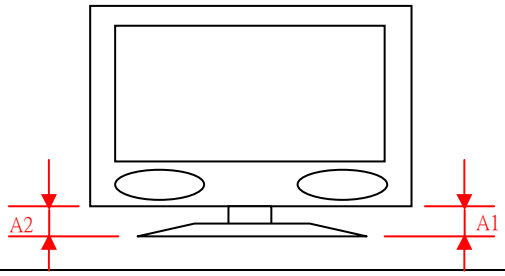
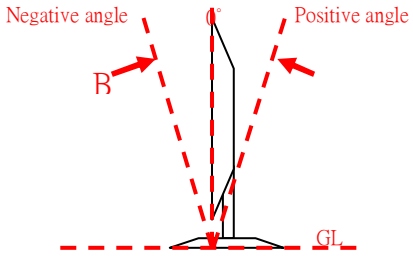
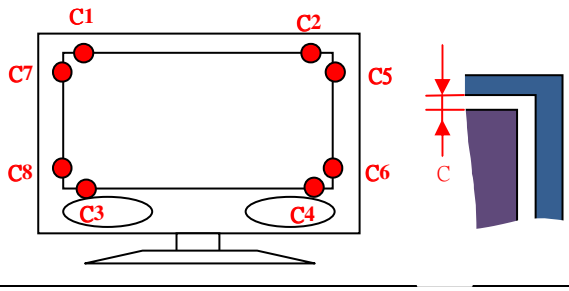
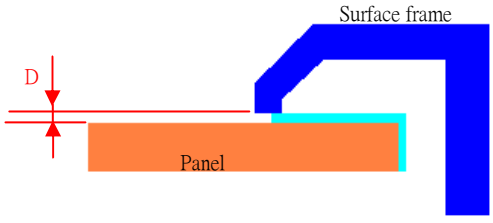
Unless otherwise prescribed, the test conditions are as follows:

. Nominal mains voltage
. Environmental illumination variable from 450 to 600 Lux (300-500 Lux in panel spec).
. Temperature: 0-40℃
. Warm up time: 30 minutes minimum.
. Visual inspection shall be down with the distance from eyes to the sample 45 cm.
. Display mode: Primary mode VESA 60Hz

11.0 TEST EQUIPMENTS

11.1 BenQ PCs with BenQ display adapter or other specific display adapter, which is greedupon by both parties
11.2 Test program by AUO
11.3 Power saving test tool
11.4 Minolta color analyzer (CA-210)
11.5 Pattern Generator: Chroma
11.6 Fluke or TV signal
11.7 DVD player
11.8 Speaker

Level 1 Cosmetic / Appearance / Alignment Service

No.	Item	Description	SPEC(Unit ： mm)
1	Standard specification and the method of inspection	Standard specification and the method of inspection of appearance(including components)： 1. If the following items have definition, execute as following standard. 2. If the following items have no definition, execute as the attachment in the right column. 3. If have boundary samples, items should be subject to boundary samples.	LCD_TV_appearance_spec_20080205.pdf
2	The altitude difference between left /right side of front		A1 – A2 ≦ 5
3	The front and back tilt of machine when placing		No Tilt function：-0.5≦ B ≦ 1.5 Comply with engineering specifications if it has tilt function
4	The black edge between display area and surface frame		***Do not cover display area (C > 0.2)*** |left to right|≤2.0mm，|top to bottom |≤2.0mm; Same side | top to bottom |≤1.2mm
5	The gap between surface frame of display area and glass surface of panel		*** It is not allow to scratch the panel *** 0 < D ≤1.8 Dmax-Dmin ≤0.8

PART II. OPERATIONAL INSPECTION CRITERIA

1. Specification:

Item		Parameter
		47″
Max Resolution		1920×1080
Best Resolution		1920×1080@60Hz
Pixel Pitch		0.54mm×0.54mm
Active Area		1039.68mm×584.82mm
Viewing Angle	2D mode	left+right: 178°
		top+bottom: 178°
	3D mode	top+bottom: 10°
Max Brightness	2D mode	360cd/㎡
	3D mode	135cd/㎡
3D display mode		Horizontal Polarization
Max Contrast		1400:1
Response Time(G to G)		6ms
Colors		16.7M colors (8Bit)
Power Consumption (Operating)		≤160W
Power Consumption (Suspend)		≤0.5W
Operating voltage		100V-240VAC 60/50Hz
Audio Power Consumption		8W+8W
Remote Area		≥8m ±30°
Working Environment		Temperature: 5℃~40℃ Humidity: 10%~85% Atmospheric Pressure: 86KPa~104KPa
Storage Environment		Temperature: -20℃~55℃ Humidity: 5%~95% Atmospheric Pressure: 86kPa~104kPa
Dimensions(W*H*D)		47L11 without base: 1124×702×48mm with base: 1124×756×48mm
		47L11 Packed: 1235×815×145mm (without base)
Weight		N.W.: 18.5Kg (without base) G.W.: 22.5Kg (without base)

PART III INSPECTION CRITERIA

1. PACKING
2. ACCESSORIES
3. APPEARANCE
4. AC POWER AND SIGNAL CABLE
5. INTERIOR OF THE PRODUCT

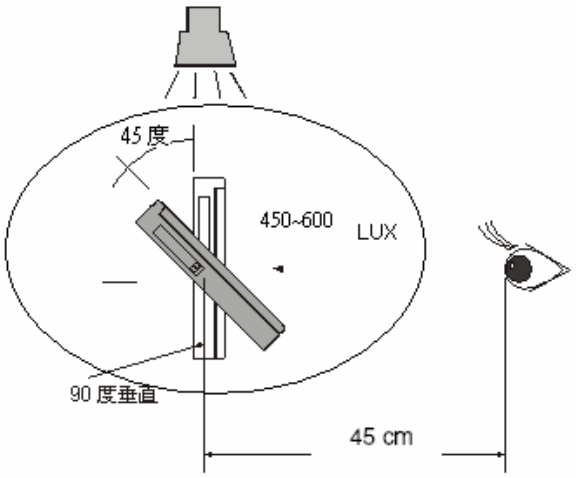
1.0 Inspection distance for different zone: and timing to inspect

Zone A: Front view of the bezel.

Zone B: a) Top view and right view of the bezel. b) Front view of base stand.

Zone C: Other areas can be defined as zone C.

等級區分 Classification	A 區 Area A	B 區 Area B	C 區 Area C
光源位置 Illuminant location	被觀察物正上方.		
目視距離 Watching distance	A cm Refer to B404 spec	A cm Refer to B404 spec	A cm Refer to B404 spec



Please check appearance check spec

1.1 Inspection interval (time)

檢視時間與樣品大小及檢視區域有關

Inspection interval is a function of surface area.

Parts Size	"A" surface	"B" surface	"C" surface
Scan speed	10 sec	10 sec	10 sec

1.2 Appearance Inspection Criteria

No	Description	Class
1	**Packing**	
1.1	Wrong packing material	Major
1.2	Carton damaged (over 6cm dia). Wet, badly taped or stapled, product will not arrive in good condition at customer	Major
1.3	Carton damaged (3cm to 6cm dia), badly taped or stapled, product will arrive in good condition at customer	Minor
1.4	Wrong marking of trade mark	Major
1.5	Wrong marking of model number	Major
1.6	Wrong serial # marking on carton	Major
1.7	Product wrongly placed in box (upside down)	Major
1.8	Broken polyfoam or PU foam	Major
1.9	Broken packing bag	Minor
1.10	Wrong size or poor printing for artwork/character	Major
1.11	Bar-code wrong, missing, or damaged	Major
1.12	Label on box missing or damaged	Major
1.13	Strange object in the box	Major
1.14	Unit not corresponding to model stated on external label	Major
1.15	Superficial breaking 5 ~ 10 cm dia	Minor
2	**Accessories**	
2.1	Missing accessory parts	Major
2.2	Wrong Accessory parts	Major
3	**Appearance of product**	
3.1	Incorrect color of bezel/ rear cover	Major
3.2	Incorrect color of base	Major

3.3	Wrong logo or name plate	Major
3.4	Poor print of logo or name plate	Major
3.5	Label on product Wrong or missing	Major
3.6	Scratched or dirty but legible spec. Label	Minor
3.7	GAP over Spec	Major
3.8	Spot, scratch, grid holes and Burr over spec	Major
3.9	Cabinet warped, sagged or bulging ＞0.5% of surface length	Major
3.10	Cabinet warped, sagged or bulging noticeable but ＜0.5% of surface length	Minor
3.11	Sharp stud or edge, which can cause damage not safe	Critical
No	**Description**	**Class**
3.12	Finishing of piece parts will not arrived in good condition at the customer	Major
3.13	The step between the plastic>1.0 mm	Major
3.14	Gap between other plastic parts is over spec (refer to PS1)	Major
3.15	Wiring or fixing cord comes out of cabinet or jammed	Major
3.16	Auxiliary material used during production not removed	Major
3.17	Cabinet parts come loose during normal handling, not safe	Critical
3.18	Cabinet parts come loose during normal handling, but safe	Major
3.19	Tilt/swivel too flexible/not working	Major
3.20	Tilt/swivel stiff	Minor
3.21	Dirty front bezel and housing can't remove	Major
3.22	Dirty front bezel and housing removable easily	Minor
3.20	Sticker or loose user control switch which will not function correctly	Major
3.21	Missing knob or switch, not safe	Critical
3.23	Missing knob or switch, but safe	Major
3.24	Poor functional user controls in mechanical	Major
3.25	Unreadable printing of user controls label	Major
3.26	Rubber foot missing	Major
3.27	LED wrong material or missing	Major
3.28	Wrong S/N between spec. Label and monitor display	Major
4	**AC power and signal cable**	
4.1	AC power or connector not correct or damaged, not safe	Critical
4.2	AC power or connector not correct or damaged, but safe	Major
4.3	Signal cable contact pin dirty	Major
4.4	Signal cable plug dirty or surface damaged, but safe	Minor
4.5	Cable crack	Major
4.6	Cable scratch (wire not exposed), or dirty	Minor
4.7	AC-DC adapter no function	Major

4.8	Signal cable contact pin dirty	Major
5	**Interior of the product**	
5.1	Use Non-QVL (Qualify vendor list) component	Major
5.2	Wrong parts, broken component, but safe	Major
5.3	Foreign material	
	Conductive (Has potential to short circuit)	Critical
	Non-conductive (Moveable)	Major
5.4	Missing hardware, component or screw, stripped screw	Major
5.5	Loose hardware/screw or insufficient torque	Major
5.6	Poor wire routing, which is no concerned on EMI	Minor
5.7	Cold soldering/loose connections (Electrical)	Major
5.8	Wires and mechanical structure do not meet UL/CSA or TUV	Critical
5.9	Wrong parts, broken component, not safe	Critical
5.10	Component burn	Critical

1.3 OPERATIONAL INSPECTION CRITERIA

No	Description	Class
1	**Warm up time**	
1.1	After switching on the product the appearance of the picture takes more than 3 sec.	Major
1.2	After appearance of the picture, picture quality is not acceptable after more than 5 sec	Major
1.3	No display	Major
2	**Display Quality** (include input: Video, TV, S-video, Y, Pr/Cr, Pb/Cb, DVI and PC)	
2.1	H size --- out of specification.	Major
2.2	V size --- out of specification.	Major
2.3	Light output --- out of specification. < 400 cd/m^2	Major
2.4	Offset --- Out of specification. >0.5mm	Major
2.5	Tilt --- Out of specification >0.5mm	Major
2.6	Brightness & Uniformity --- out of specification.	Major
2.7	Color coordinates --- out of specification.	Major
2.8	Color Check --- Out of specification	Major
2.9	Gray stage check --- Missing stage	Major
2.10	Video noise --- If video noise presented	Major
2.11	DDC data error / incorrect	Major
2.12	Mode detection error	Major

2.13	Centering incorrect	Major
2.14	Contrast ratio --- out of specification	Major
2.15	OSD Malfunction	Major
2.16	Zoom ON/OFF Function Failure.	Major
2.17	Aspect function failure	Major
3	**Audio Quality**	
3.1	Audio malfunction	Major
3.2	Speaker no function	Major
3.3	Speaker Left / Right channel reverse	Major
3.4	Volume mute malfunction	Major
3.5	Audio out malfunction	Major
4	**Remote control malfunction**	Major
	Project distance:6M; Project angle: ±30 horizontal degree angle and ±30 degree vertical angle	Major

Remote control testing distance

Test condition **測試項目**	**Specification**	
	Min	Typ
0°	2m	8m
± 30°	2m	6m

Software/Firmware Upgrade Process

1.Software upgrade tools and materials

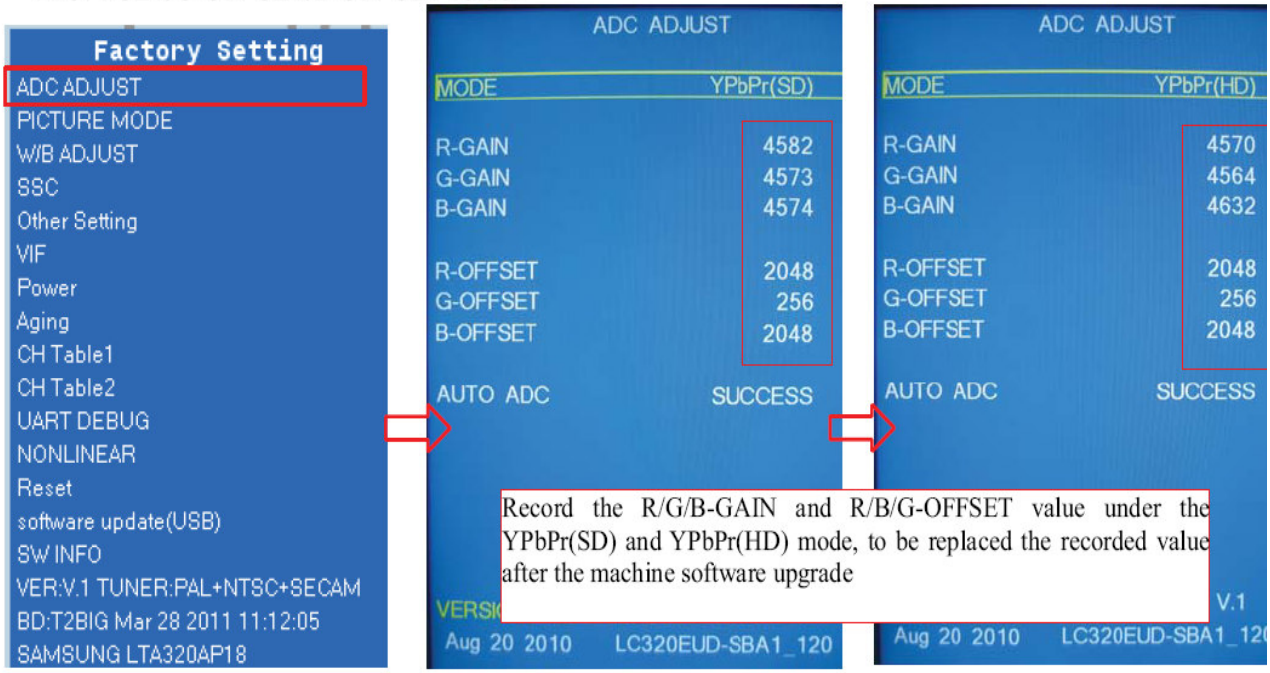
- Personal computer （WINDOWS XP system, USB2.0）
- AC100~240V power supply and power cord
- ISP burning board and connecting line
- USB flash disk（2.0 version，Capacity not more than 2G）

2.Preparatory work before the upgrade

Recorded all the ADC and the white balance data of all the message source in factory menu before upgrade(FLASH initialization may occur after the upgrade, flush color calibration data, then restore the data you have been recorded):

2.1In the condition of YPbPb message source, press the MENU button after appear the main menu, then followed by 8202 number keys to enter the factory menu, select ADC ADJUST item, press the OK key to enter the next level menu, move the cursor to the MODE item, press the left / right Moving button and move the cursor selection in YPbPr (SD)item, record the R-GAIN/G-GAIN/B-GAIN value and R-OFFSET/G-OFFSET/B-OFFSET value.

2.2 In the ADC ADJUST item, press OK key to enter the next level menu, move the cursor to the MODE item, press the left / right cursor keys to select YPbPr (HD) item, record R-GAIN/G-GAIN/B-GAIN value and R-OFFSET/G-OFFSET/B-OFFSET value.



2.3 Operations and procedure of software upgrading:

2.3.1. Changed the file name to "MERGE.bin", then stored software in the FAT32 format blank U disk.

2.3.2. Insert USB flash disk into the USB upgrade port, upgrade the software according to the following the operating instructions:

Method 1：

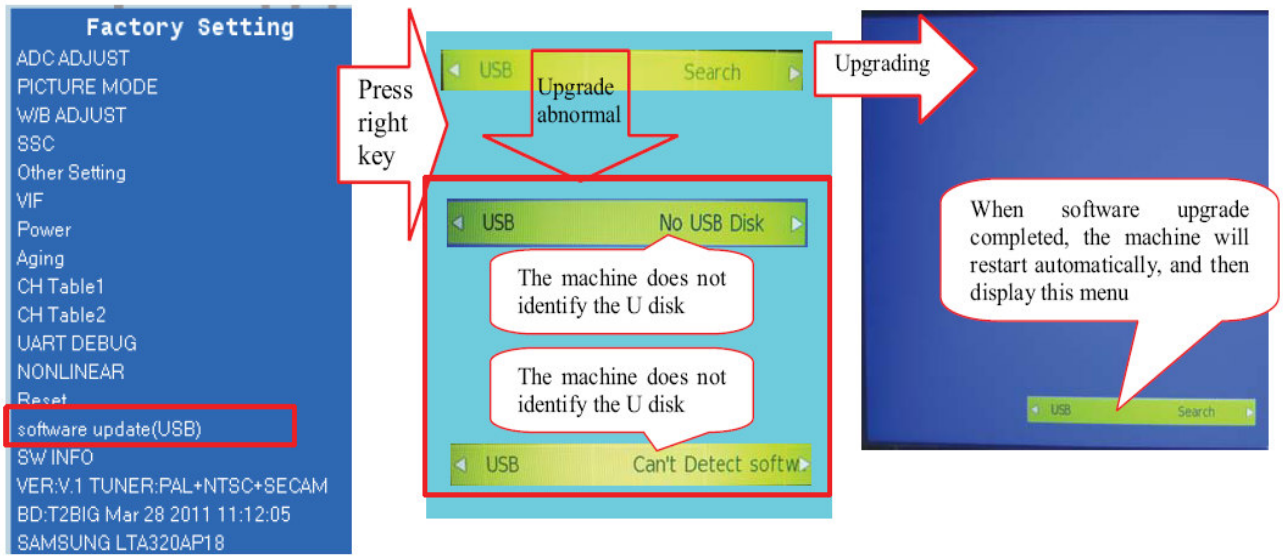
①. Start the machine and wait the normal picture display, press the MENU button on the remote control, will be popping up the main menu, press the 8202 number keys and enter the Factory Setting menu.

②. Press up/down keys to move the cursor to "USB" function menu, then press the right key to enter the next level menu "USB-Search", press the left/right keys to implement USB search command:

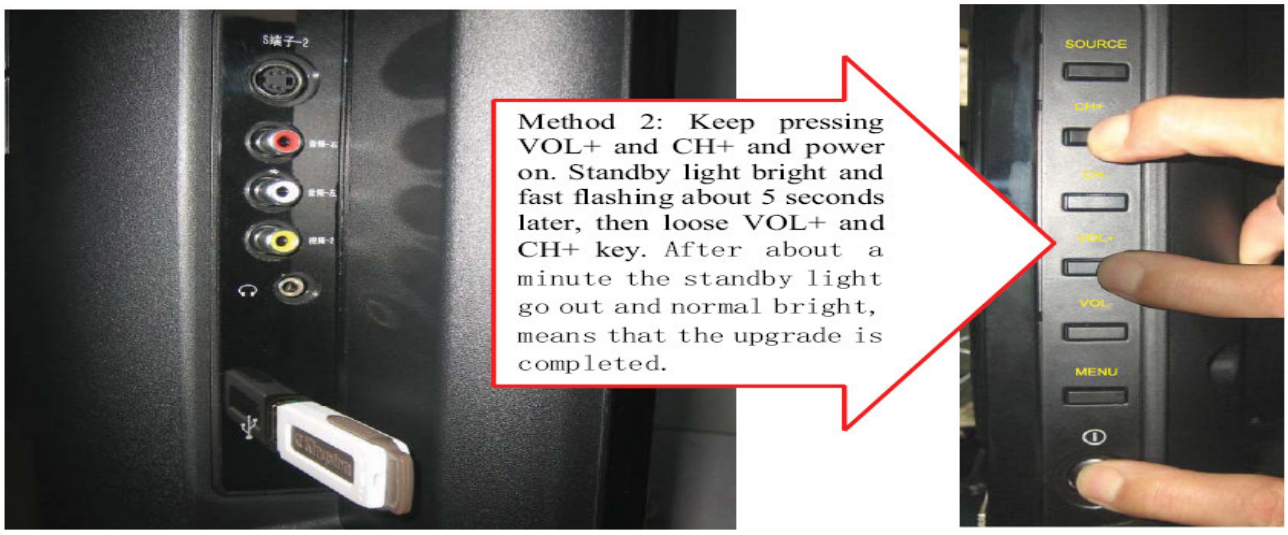
a. After the machine blue screen prompt "Can't Detect software file", means that the machine have been find USB device, but did not find the needing upgrade software, please check the software name is correct or format the U disk again and then copy software.

b. After the machine blue screen prompt "No USB Disk", means that the machine does not find USB device, check if the USB device has been inserted into, or change another U disk and try again.

③. The machine blue screen and displays " USB-Search " after about 10 seconds, the machine black screen and restart automatically, means that the machine complete the upgrade process, turn off the machine first, then pull out the U disk.



Method 2：Keep pressing VOL+ and CH+ keys on the machine panel, power on the machine, the standby light flashes quickly after about 5 seconds, standby light extinguish and turn into lighting after about a minute, means that the upgrade is completed.



2.5. Notice:

①. When the machine Upgrading (U disk light flash), do not remove U disk or switch off the power, otherwise it will destroy the software and lead can not upgrade.

②. The machine must be power off when inserted or pulled out U disk, to avoid U disk or damage the machine.

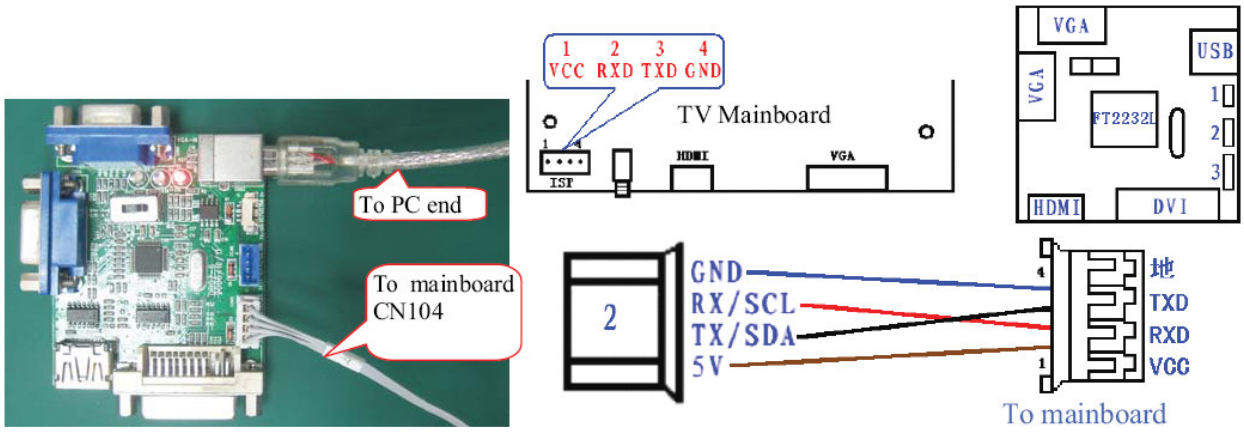
③.Because of compatibility of machine and U disk, some machines won't have the standby light flashing phenomenon during upgrading. This phenomenon suggest replacing U disk(The capacity of U disk not more than 2G) or use "method 1" to upgrade.

④If the display screen which upgrading use can not display menu normally, you can not use "method " to upgrade. You can also use Mstar ISP Tools to upgrade according to "Mstar TV mainboard program burning".

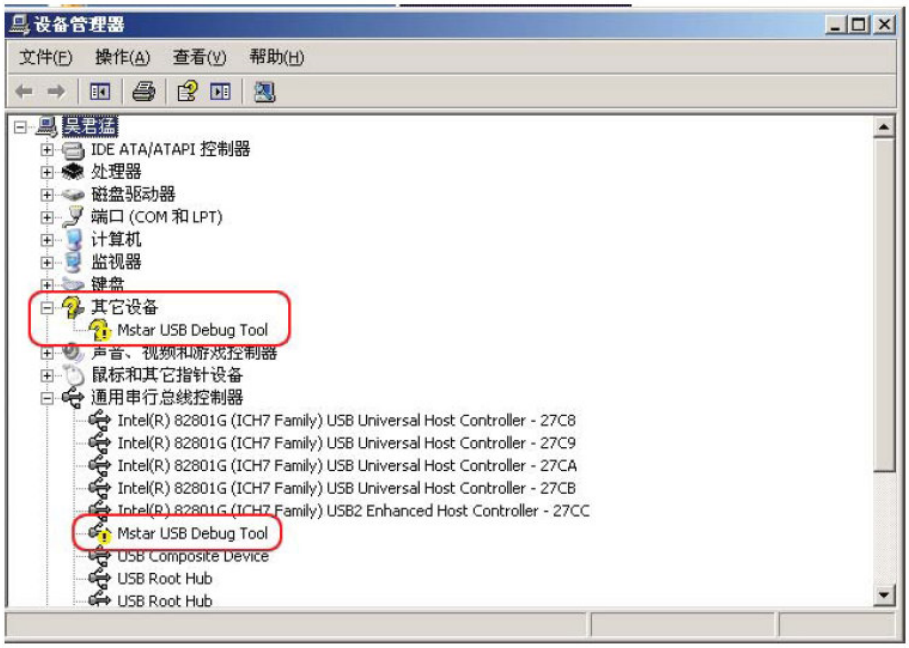
ISP Upgrade board driver installation

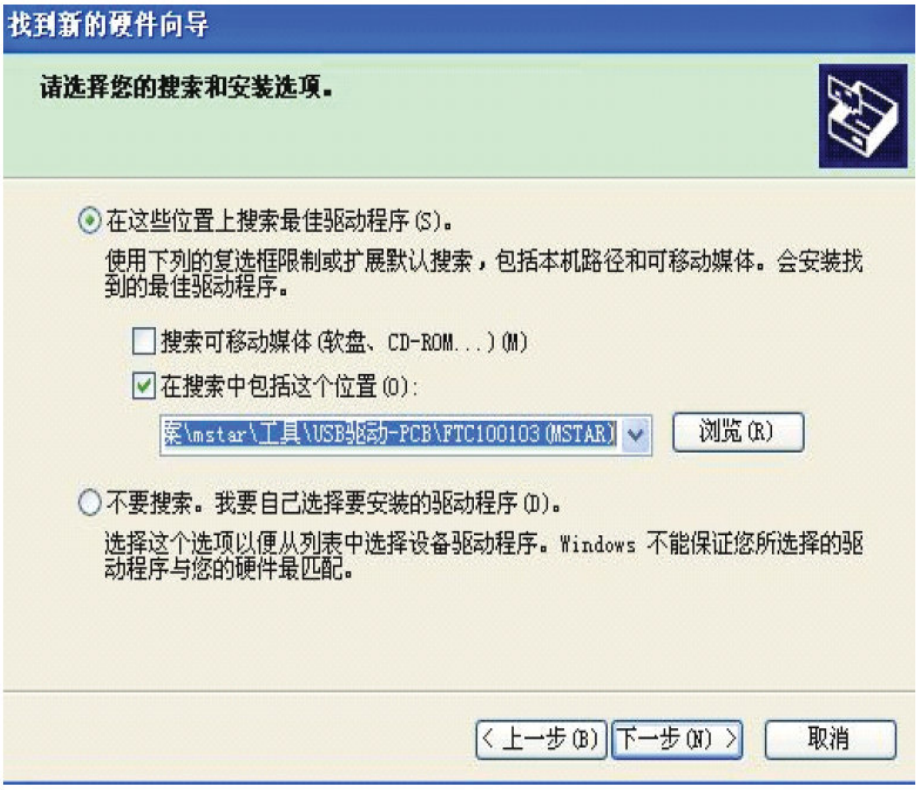
B、ISP upgrade board driver installation

(1). Connect the Upgrade board to computer with USB cable, then burning board light red, explain ISP board has been connected to the computer

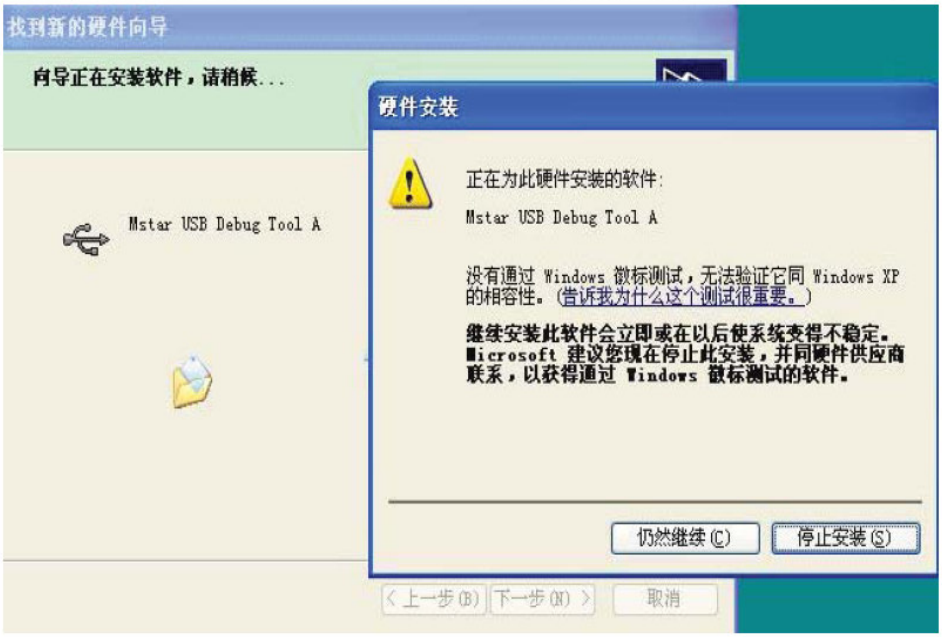


(2) Insert the Mstar USB Tool into the USB port of your PC. The PC can recognize the new device. You can choose to install it in the list, or choose to install at a specified directory and specify the path to the drive file. See the figure below:



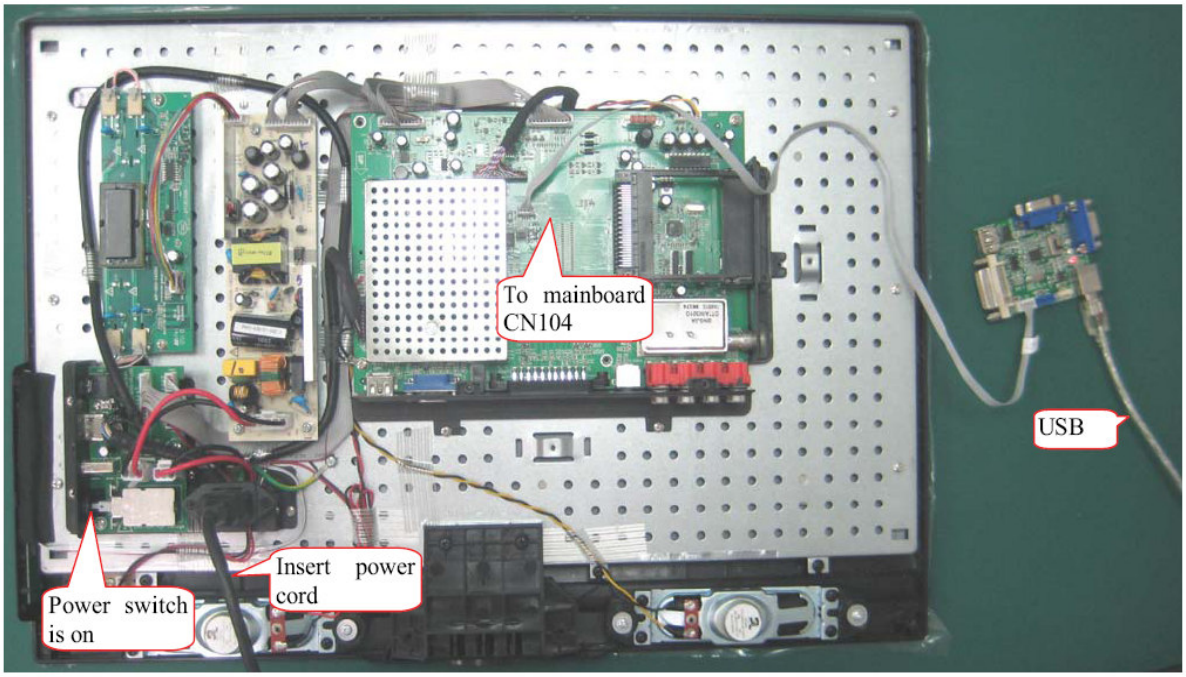


(3) When the PC finds the drive file, it will give the prompts as in the figure below during the installation process. Please click “Continue" to go ahead. The system will go through three drive installation processes, including Mstar USB Debug Tool A, Mstar USB Debug Tool B, and Mstar USB SerialPort. They will be installed one by one.

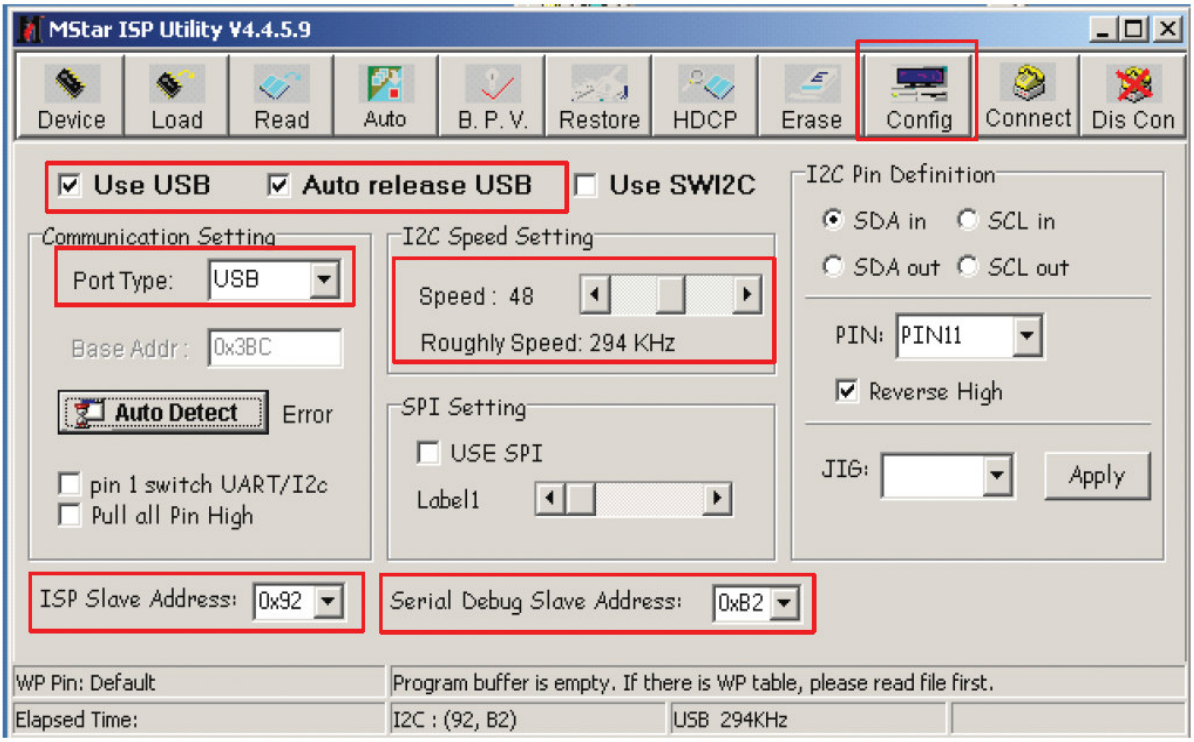


C. Program burning

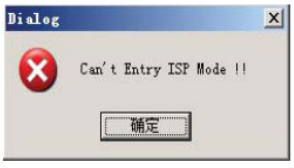
1. When the drives are installed, connect the Mstar USB Tool board to TV in such a way as specified below. Then, connect the TV power cord and run the software ISP_Tool.4.4.5.9.exe to burn the program into the TV drive board.



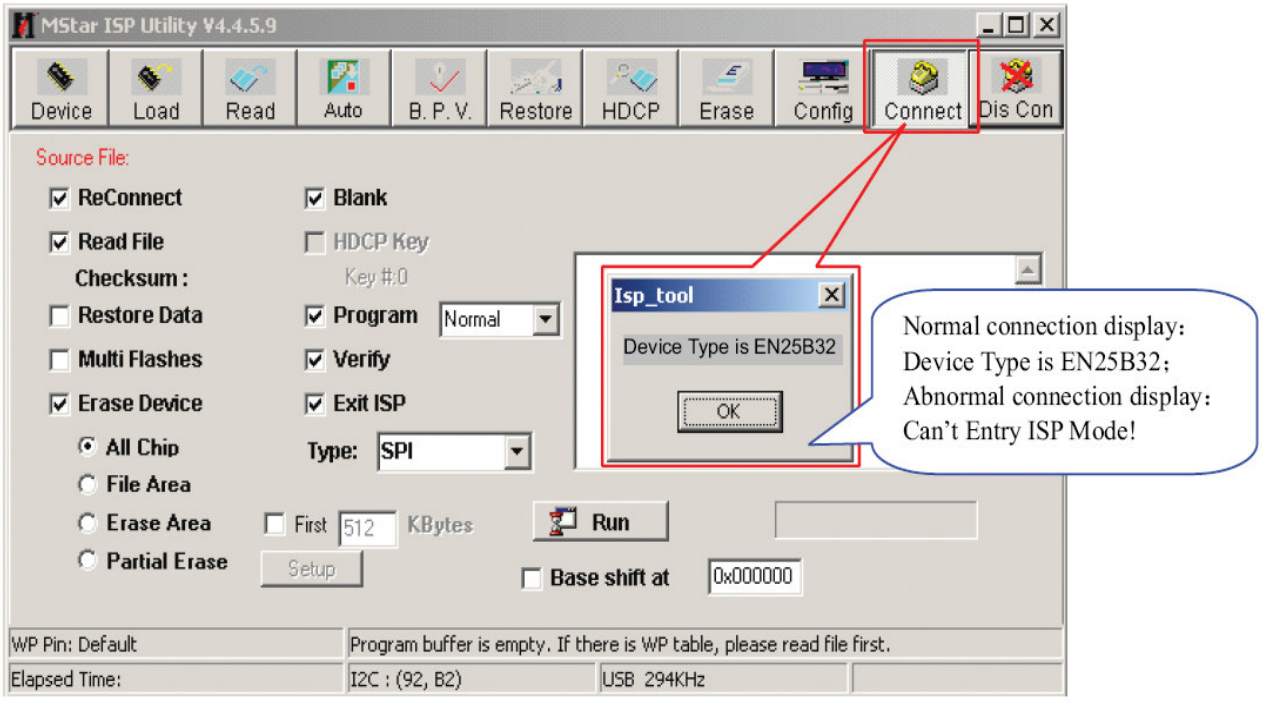
2. In the config menu bar to select Use USB and Auto release USB, Communication Setting items corresponding to the Port Type menu select USB。 Set the burning speed of 48 in I2C Speed Setting item, ISP Slave Address item menu select OX92, Serial Debug Slave Address menu select 0XB2。



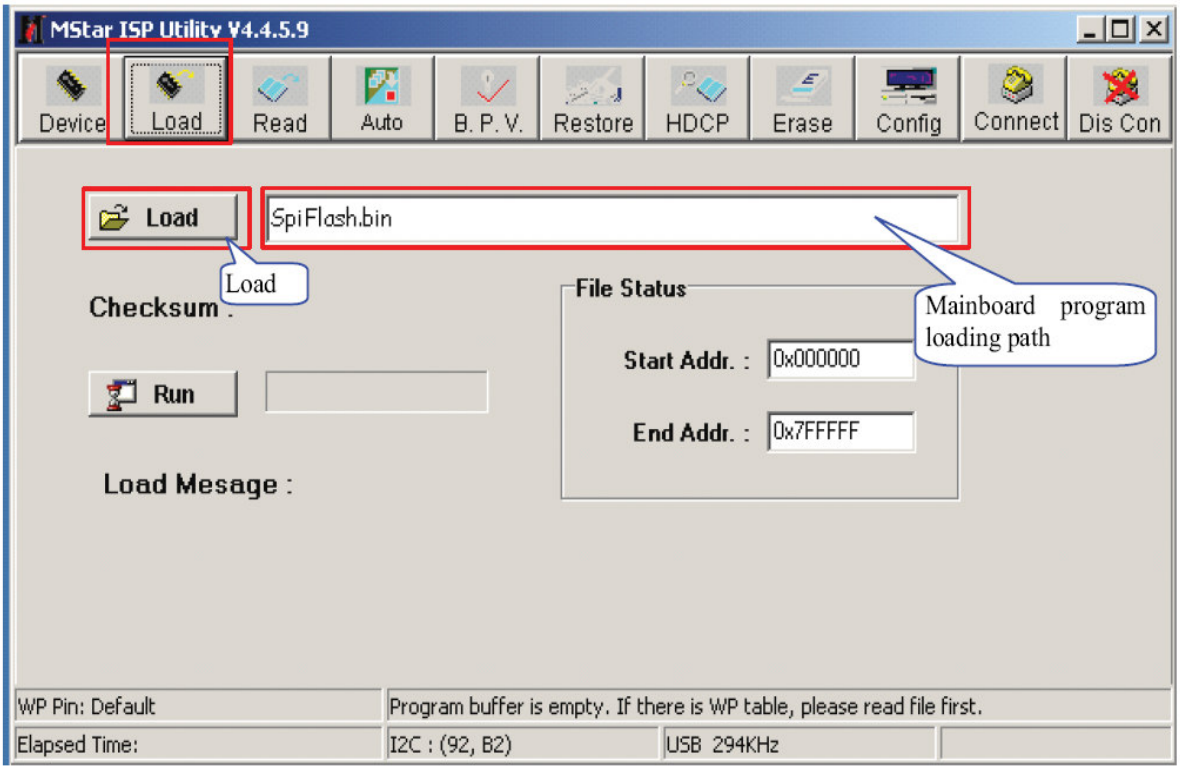
3. Power on the machine and click Connect button in the main menu to test the current hardware connection. If it prompts



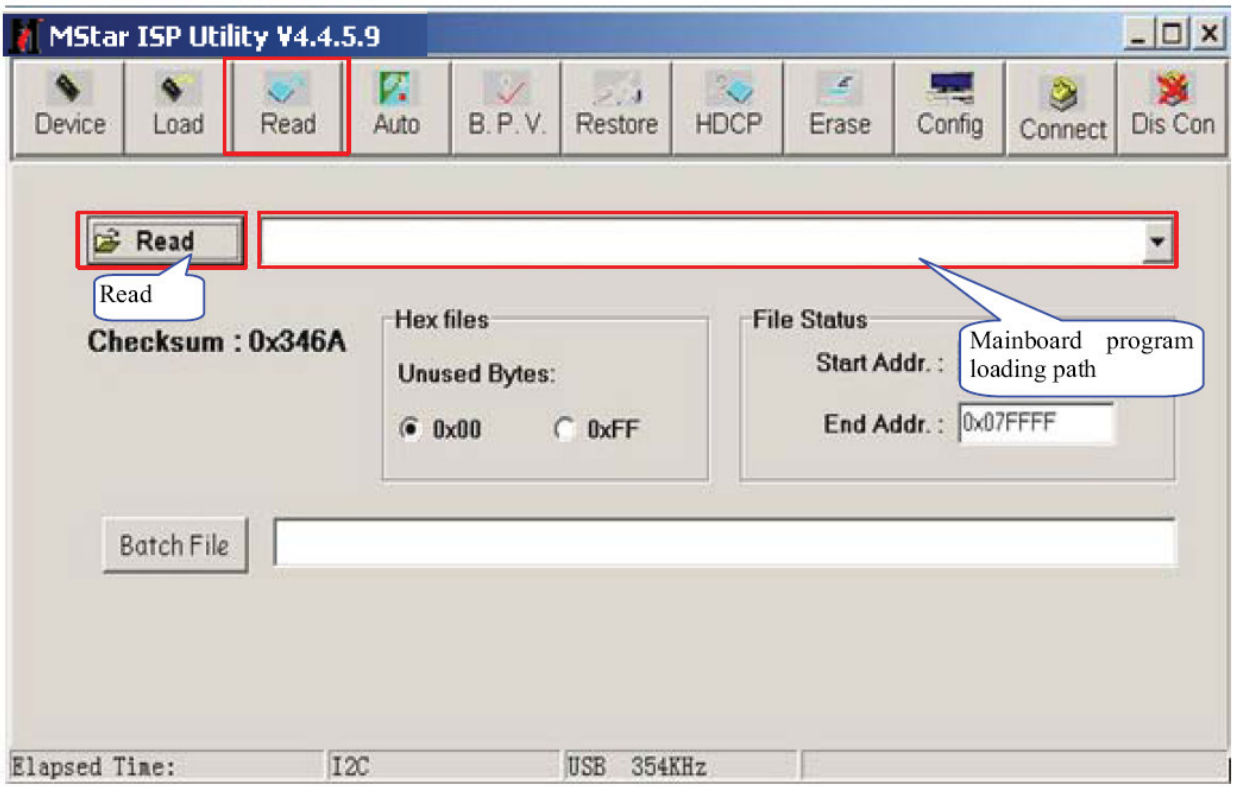
"Can't Entry ISP Mode!", that means there is poor connection or the TV is not connected to the power, please have a check. (Try to slow down the speed. It this doesn't work, close the software and unplug & plug the Mstar USB Tool board once again.)



4. Press **Load** button in the main menu， in the popping menu click Load button to load TV mainboard program. bin file。

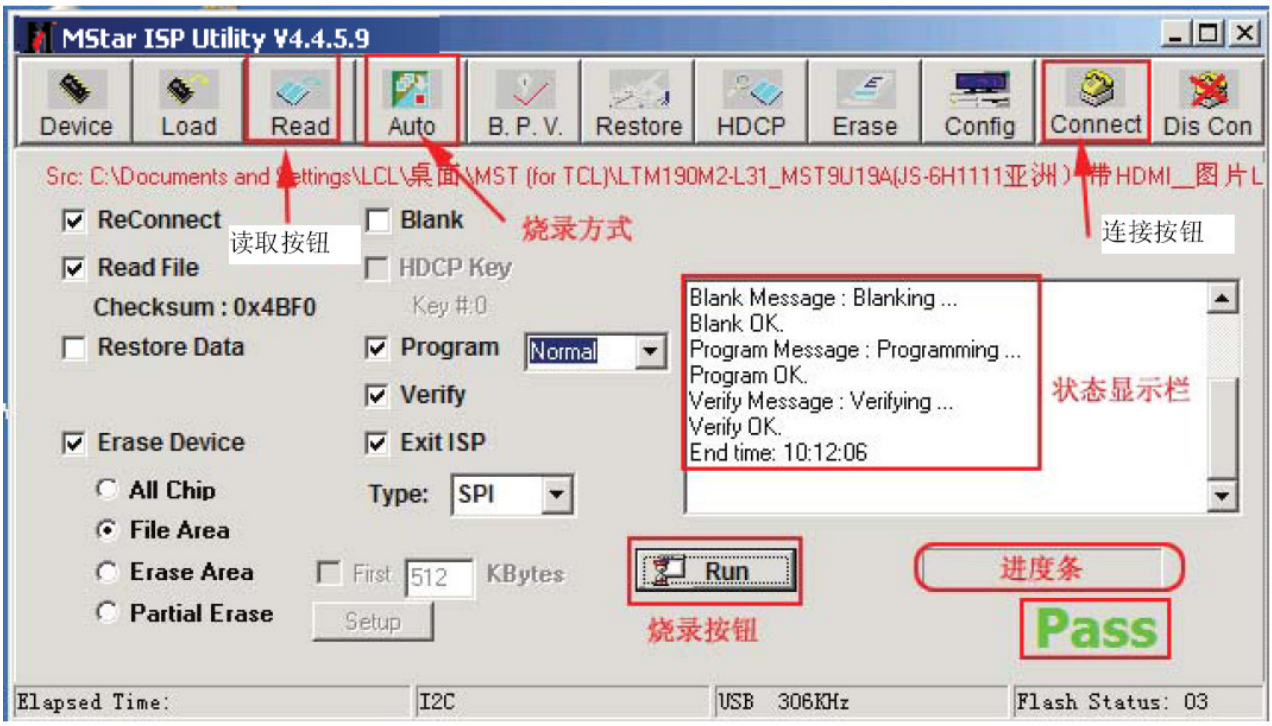


5. Press **Read** button in the main menu， in the popping menu click Read button to read and load TV mainboard program. bin file.



6.Set other function setting and loading item as following figure, Please click **Run** to burn the software： In 

blank space (prompt area for burning) you will see a lot of information related to burning. About six minutes later, the word "Pass" will appear and burning prompt bar no word rolling any more, that means the software has been burnt successfully.



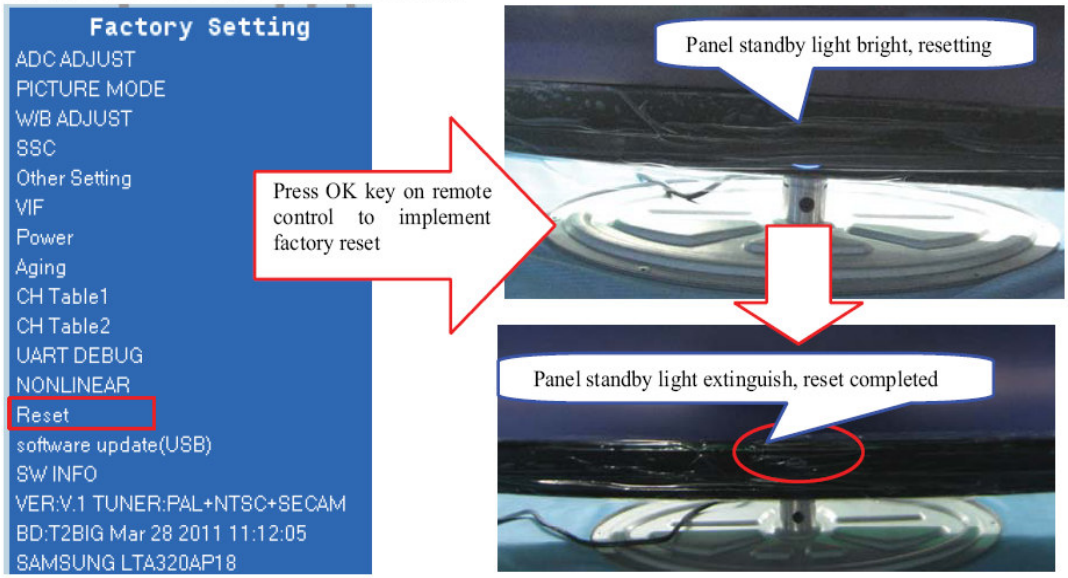
7. Never plug or unplug the connection lines in the burning process. Please turn the power switch to "Off" when installing

ISP board. Pull out the power cord from the machine and then pull out the burning adapter from the machine, when burning completed, change the TV and click **Run** button to burn next machine.

Adjustment / Alignment Procedure

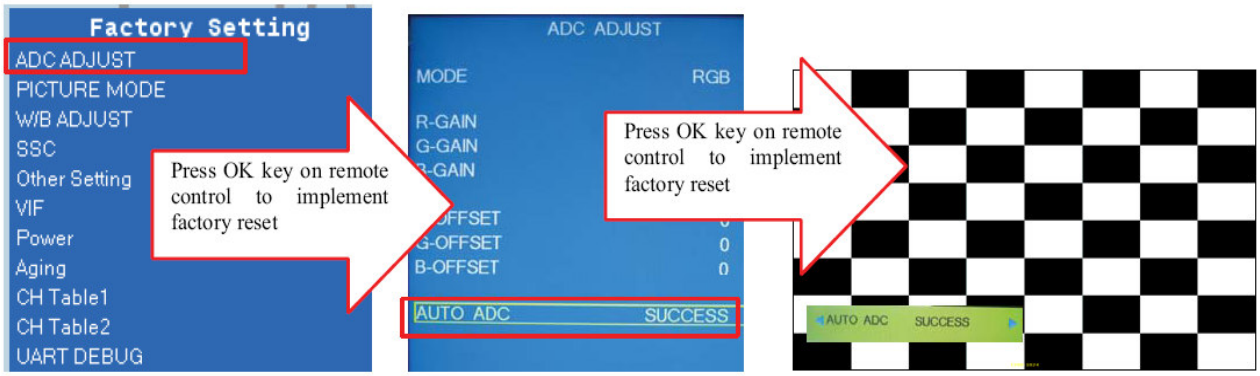
5. When upgrade complete, install the machine back cover, then must be adjusted before leave factory:

(1). Power to the machine, press MENU button on the remote control then press 8202 number keys and then will popping the factory menu automatically, press the remote control up/down cursor keys to move to the " Reset" option press OK key to implement. After about 5 seconds latter the machine implement clear command automatically. After about 5 seconds latter the screen will be black and it flashes blue lantern panel display, it said that the order implement successfully.

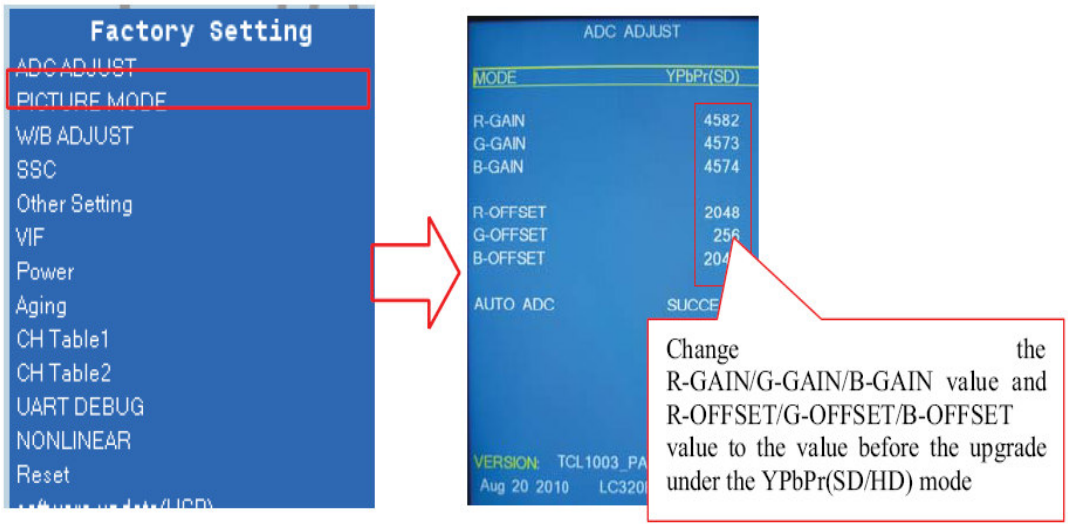


(2). Insert signal cable to the machine, switch to the PC message source.

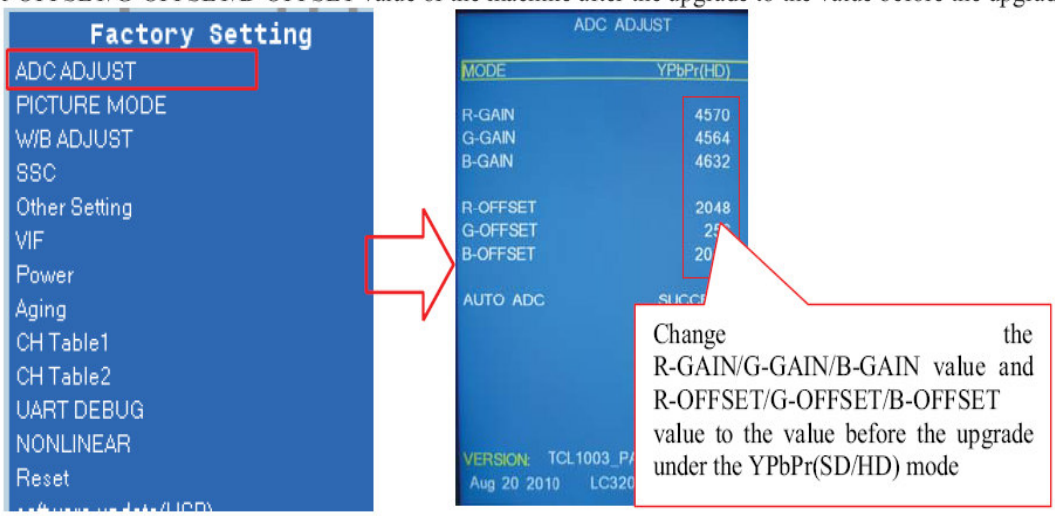
(3). Run the KTC-LCD test software, switch to the mosaic picture and best resolution. Press MENU key to popup the main menu, and then press 8202 number keys to enter the factory menu, press the shift douwn key to ADC ADJUST option to press OK key to enter the next level menu. In the MODE option press left/right cursor keys to select RGB, and then press shift douwn key to move the cursor to the Auto ADC option, press OK key to enter the next level menu, press the left/right button to implement ADC action (The screen will flash and Auto ADC function menu prompt SUCCESS means that debug success, prompt FAIL said that debug failed, try again), press the MENU button to exit factory menu when debugging completed.



(4). Under the YPbPb message source, press the MENU button after popping the main menu, then press 8202 number keys to enter the factory menu, select ADC ADJUST item, press the OK key to enter the next level menu, move the cursor to the MODE item, press the left/right Moving key mover cursor to select YPbPr(SD)item, change the R-GAIN/G-GAIN/B-GAIN value and R-OFFSET/G-OFFSET/B-OFFSET value of the machine after the upgrade to the value before the upgrade.



(5). In the ADC ADJUST item, press OK key to enter the next level menu, move the cursor to the MODE item, press the left/right keys tomove cursor select the YPbPr(HD)item, change the R-GAIN/G-GAIN/B-GAIN value and R-OFFSET/G-OFFSET/B-OFFSET value of the machine after the upgrade to the value before the upgrade.



(6). Complete the ADC ADJUST debugging, press MENU key succession to exit the factory built-in menu to save the adjusted data, and then restore the original packaging.

Adjustment of Factory Mode

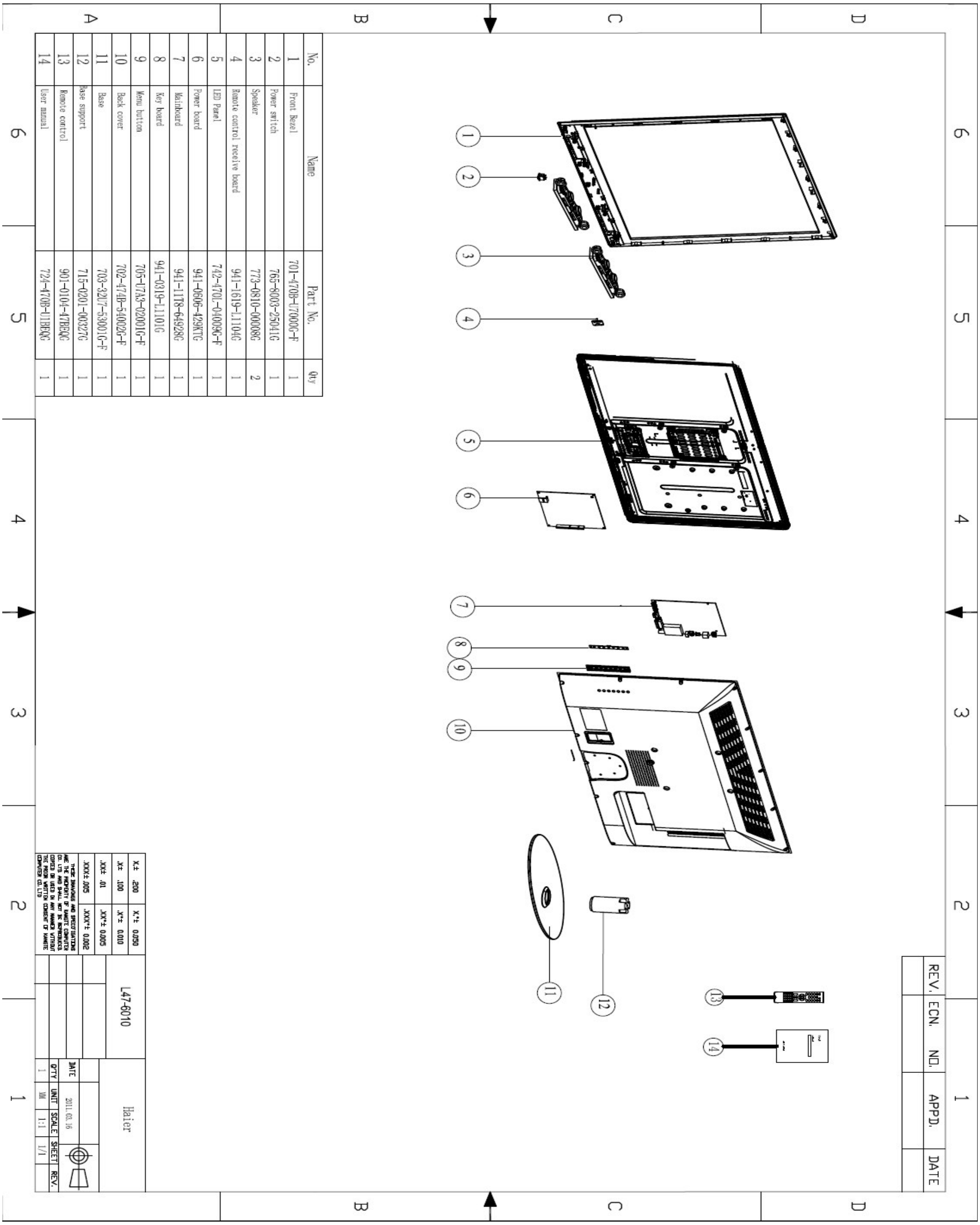
Press Menu to enter into the menu interface, and then press 8202 to enter into Factory menu.

Primary Menu	Secondary Menu	Value, Notes
ADC ADJUST		ADC ADJUST
	MODE	VGA(RGB),YPbPr(SD,HD)selection
	R-GAIN	Front-end gain adjustment
	G-GAIN	
	B-GAIN	
	R-OFFSET	Clamp level adjustment
	G-OFFSET	
	B-OFFSET	
	AUTO ADC	Automatic ADC adjustment
PICTURE MODE		Picture mode
	MODE	Signal source selection
	PICTURE MODE	Modes: dynamic, standard, soft.
	BRIGHTNESS	Brightness
	CONTRAST	Contrast
	COLOR	Color saturation
	SHARPNESS	Definition
	TINT	Hue
W/B ADJUST		Color temperature adjustment
	MODE	Signal source
	TEMPERATURE	Cool,Standard,Warm
	R-GAIN	White level adjustment
	G-GAIN	
	B-GAIN	
	R-OFFSET	Black level adjustment
	G-OFFSET	
	B-OFFSET	
SSC ADJUST		Spread spectrum adjustment
	MIU Enable	MIU spread spectrum Enable
	MIU Span	spread spectrum span
	MIU Step	spread spectrum step
	LVDS Enable	LVDS spread spectrum Enable
	LVDS Span	LVDS spread spectrum span
	LVDS Step	LVDS spread spectrum step
Other Setting		Other Setting
	2HOUR OFF	Turn off TV after two hours
	NICAM CTRL	NICAM enable or not
	WHITE PATTERN	Panel dislay pattern(OFF、White、Red、Green、Blue、Black)

VD&VIF-NoStrand1 VD&VIF-NoStrand2 VD&VIF-NoStrand3	Power Mode	Power-up mode (power-on upon powering up, power-off upon powering up, restore to the previous status upon powering up) Burning ON/OFF. We can also enter "Burning ON" mode in the way as follow: Press Menu to enter into the menu interface, and then press 1470.
	Aging	
	Backlight	Backlight adjustment
		VD&VIF parameter adjustment
	。。。	。。。
Factory Reset	Reset All	
Software Update（USB）	Software update	
UART DEBUG	UART DEBUG	Debug mode selection There are four items ,OFF,HK,AEON and VDEC. We usually choose HK to enable serial port debugging.
NONLINEAR	MODE	All kinds of adjustment curves Signal source selection
	Brightness Curve	OSD-0、OSD-25、OSD-50、OSD-75、OSD-100
	Contrast Curve	OSD-0、OSD-25、OSD-50、OSD-75、OSD-100
	Saturation Curve	OSD-0、OSD-25、OSD-50、OSD-75、OSD-100
	Hue Curve	OSD-0、OSD-25、OSD-50、OSD-75、OSD-100
	Sharpness Curve	OSD-0、OSD-25、OSD-50、OSD-75、OSD-100
	Volume Curve	OSD-0、OSD-25、OSD-50、OSD-75、OSD-100
CH Table1	set factory TV channels	
CH Table2	set factory TV channels	

Level 2 Circuit Board and Standard Parts Replacement

Exploded View



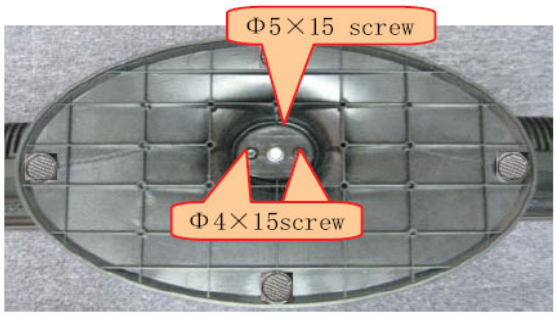
No.	Name	Part No.	Qty
1	Front Bezel	701-470B-U7000G-F	1
2	Power switch	765-8003-25041G	1
3	Speaker	773-0810-00008G	2
4	Remote control receive board	941-1619-L1104G	1
5	LED Panel	742-470L-04009G-F	1
6	Power board	941-0606-429KTG	1
7	Mainboard	941-11T8-64928G	1
8	Key board	941-0319-L1101G	1
9	Menu button	705-U7A3-02001G-F	1
10	Back cover	702-474B-54002G-F	1
11	Base	703-32U7-53001G-F	1
12	Base support	715-0201-00327G	1
13	Remote control	901-0104-47BEQG	1
14	User manual	724-470B-U1BEQG	1

Disassembly / Assembly

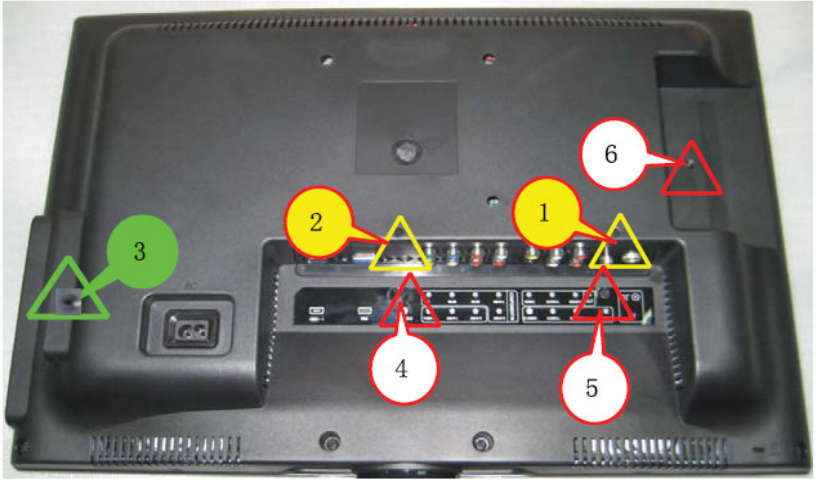
3.1. Remove the protective package from machine and clean the table.

3.2. Put bubble bag on the table, then put the machine on bubble bag with it display face downwards, to avoid cover scratch..

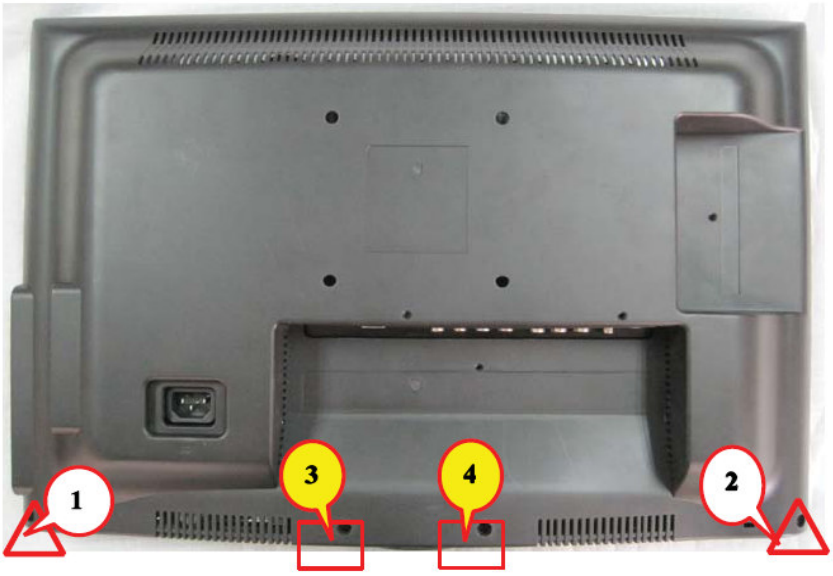
3.3. Take one Φ5×15mm P-head white-zinc-plated tapping screws with flat washers and two Φ4×15mm B-head pointed-tail nickel-plated tapping screws which fasten on the base, move the base assembly from the machine.



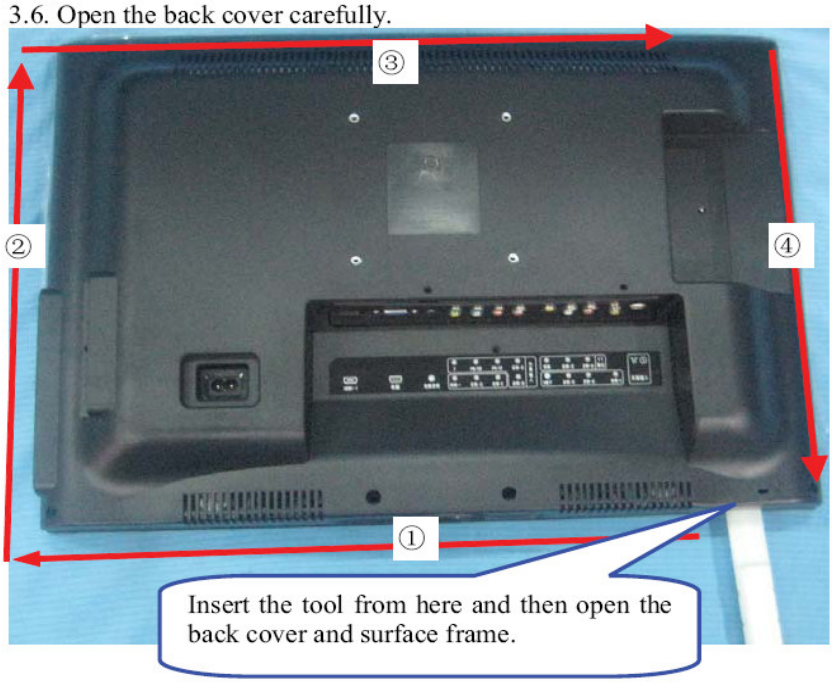
3.4. Take the Φ3×14 sink-head pointed-tail black-zinc-plated tapping screws(1-2# screws) 、 Φ3×10 sink-head pointed-tail black-zinc-plated tapping screws(1# screw) and Φ3×10 sink-head machine screws (4，5，6# screws)which fasten on the back cover.



3.5. Take two Φ4×15mm round-head pointed-tail tapping screws (NO.1-2 screws) and two Φ4×20mm round-head pointed-tail tapping screws (NO.3-4 screws)



3.6. Open the back cover carefully.



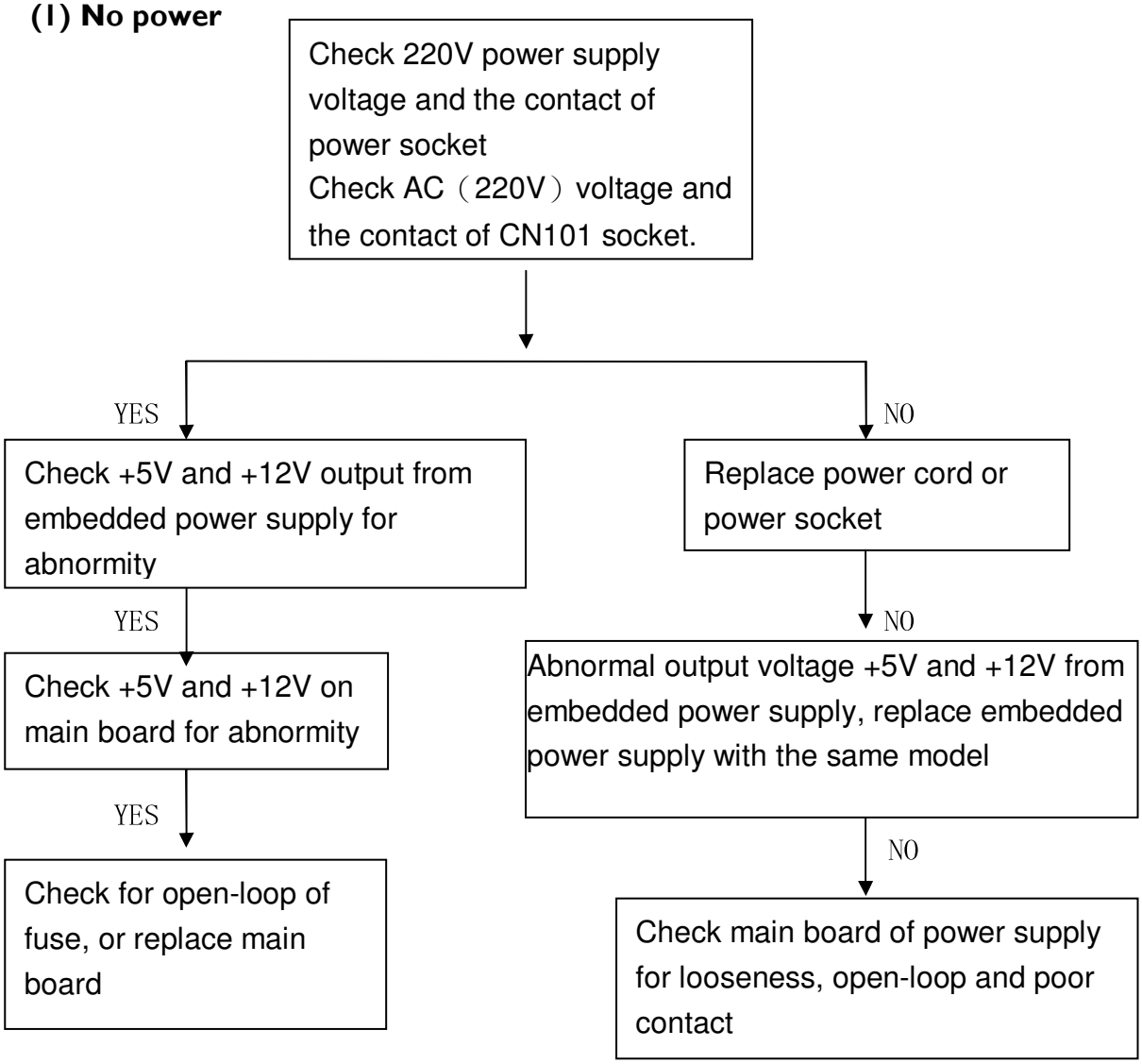
Notice:

a). Need special tools to open. Do not force pull the back cover from surface frame, to avoid break out the button of surface frame, causing the back cover and the surface frame with big crevice.。

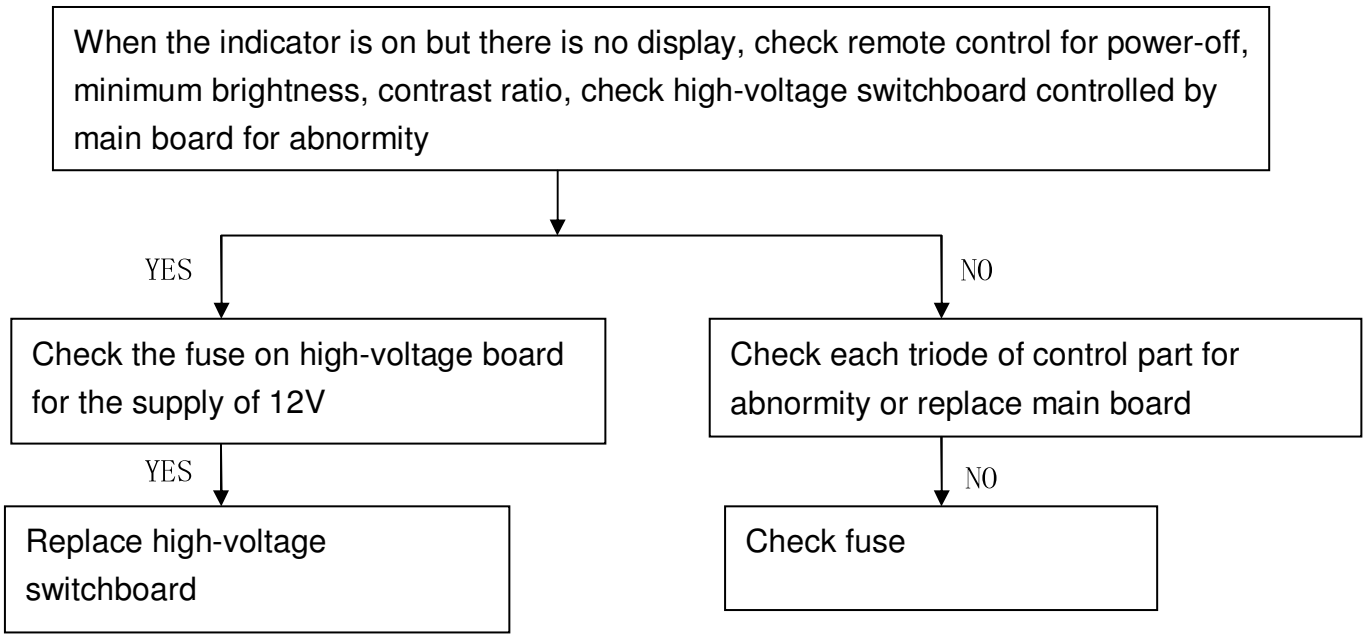
b). Inserted in the back cover open tool as left illustrated marking position, and then paddling by Figure 9 ① / ② / ③ / ④, so that let the back cover separate to the surface frame.

Troubleshooting Procedure

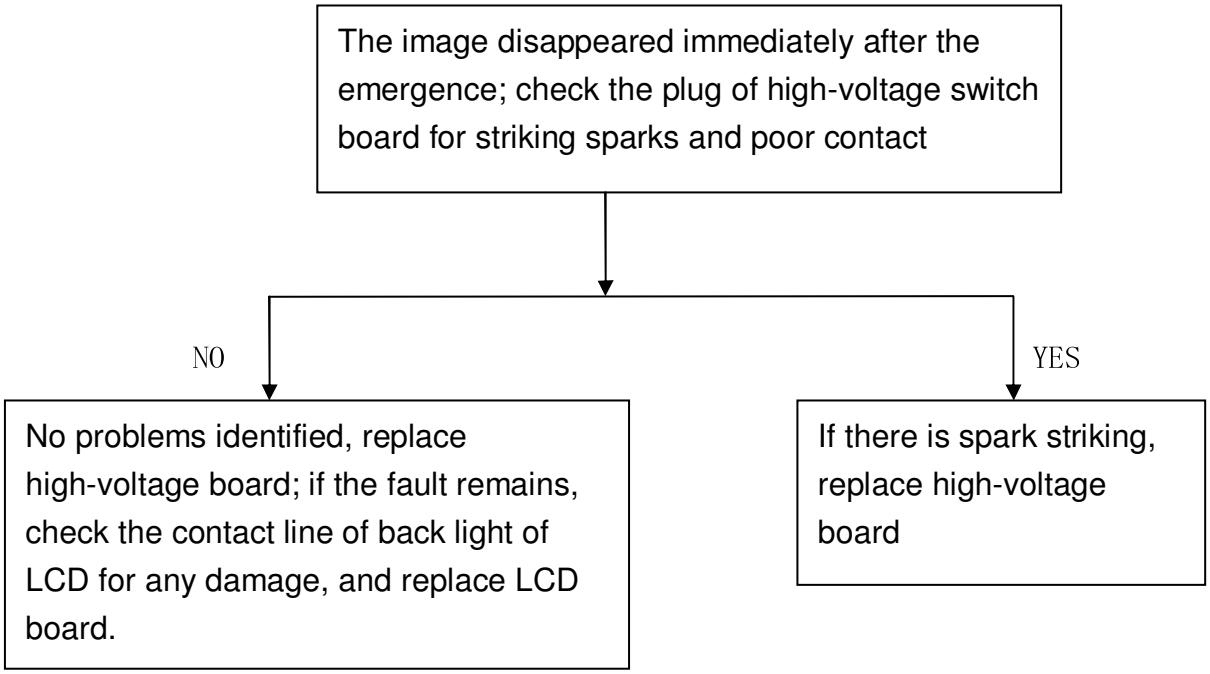
(1) No power



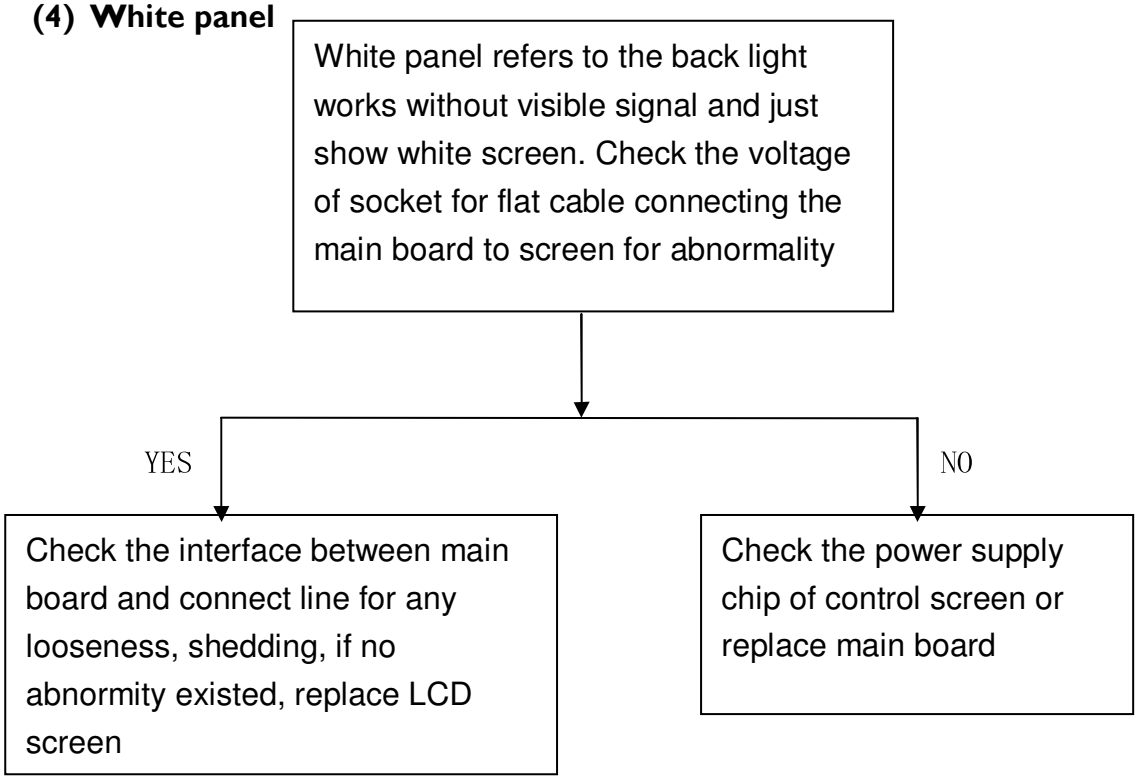
(2) Without light



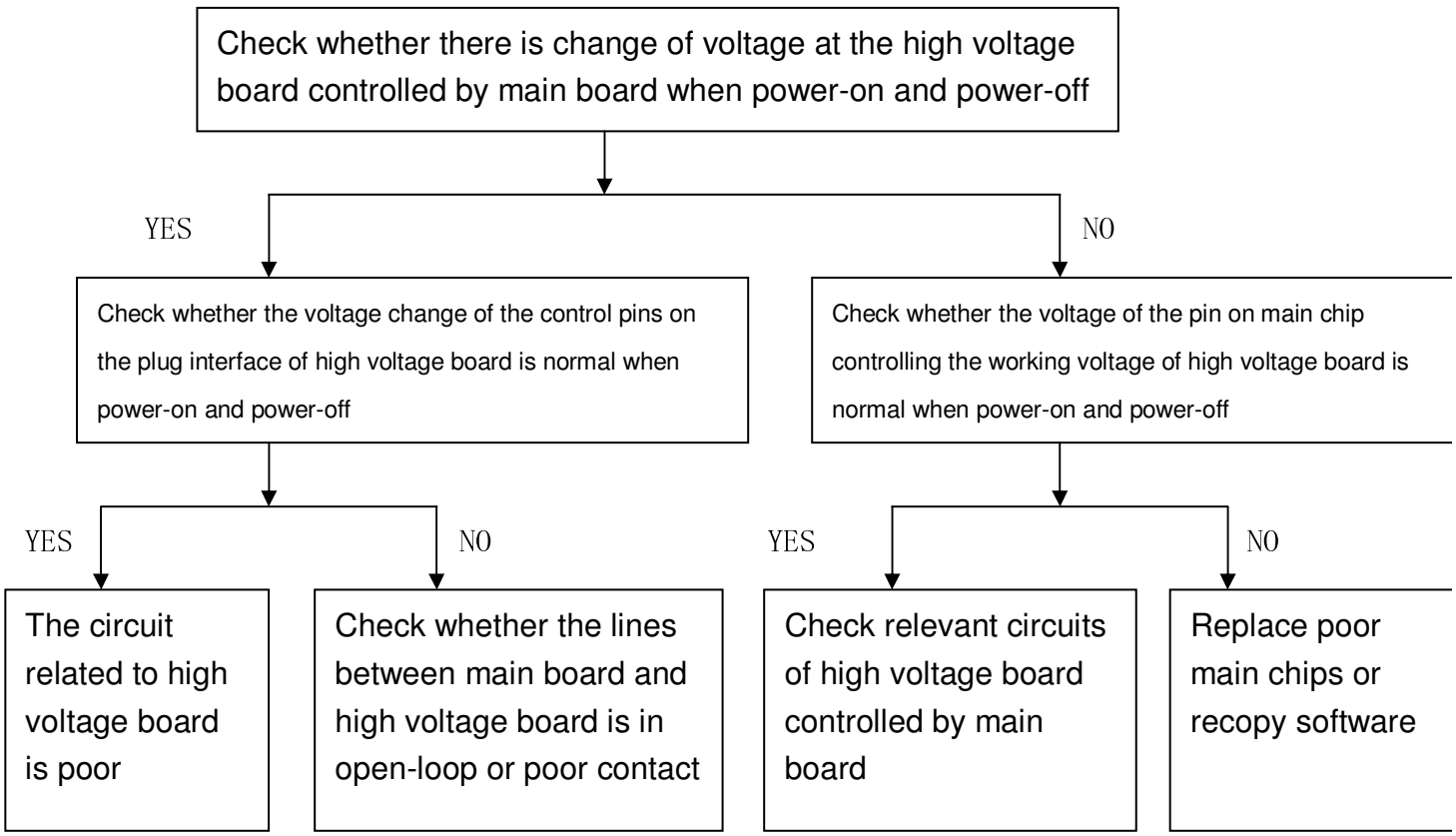
(3) Protection or without light (refers to the disappearance of image several seconds after the emergence of image)



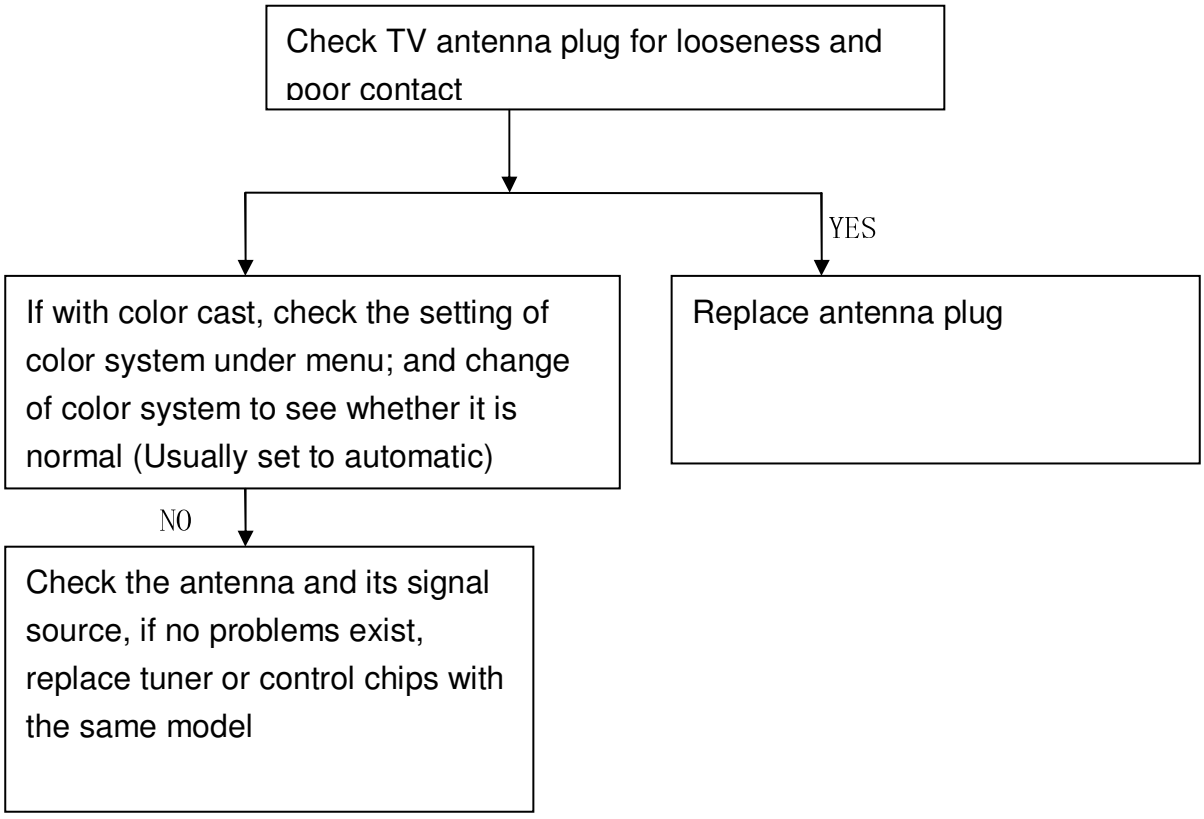
(4) White panel



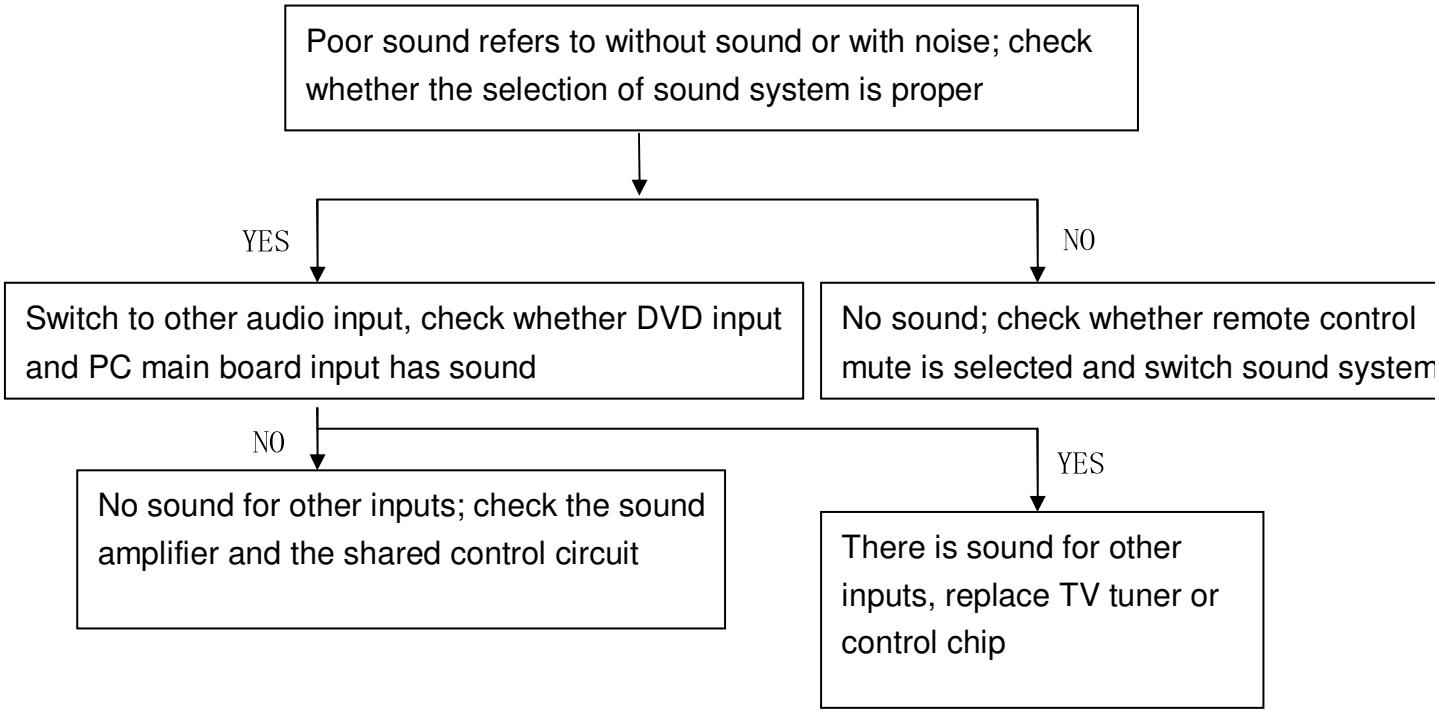
(5) White screen after power-off (work normally when power on, but when power-off or no signal input, the screen shows a white screen)



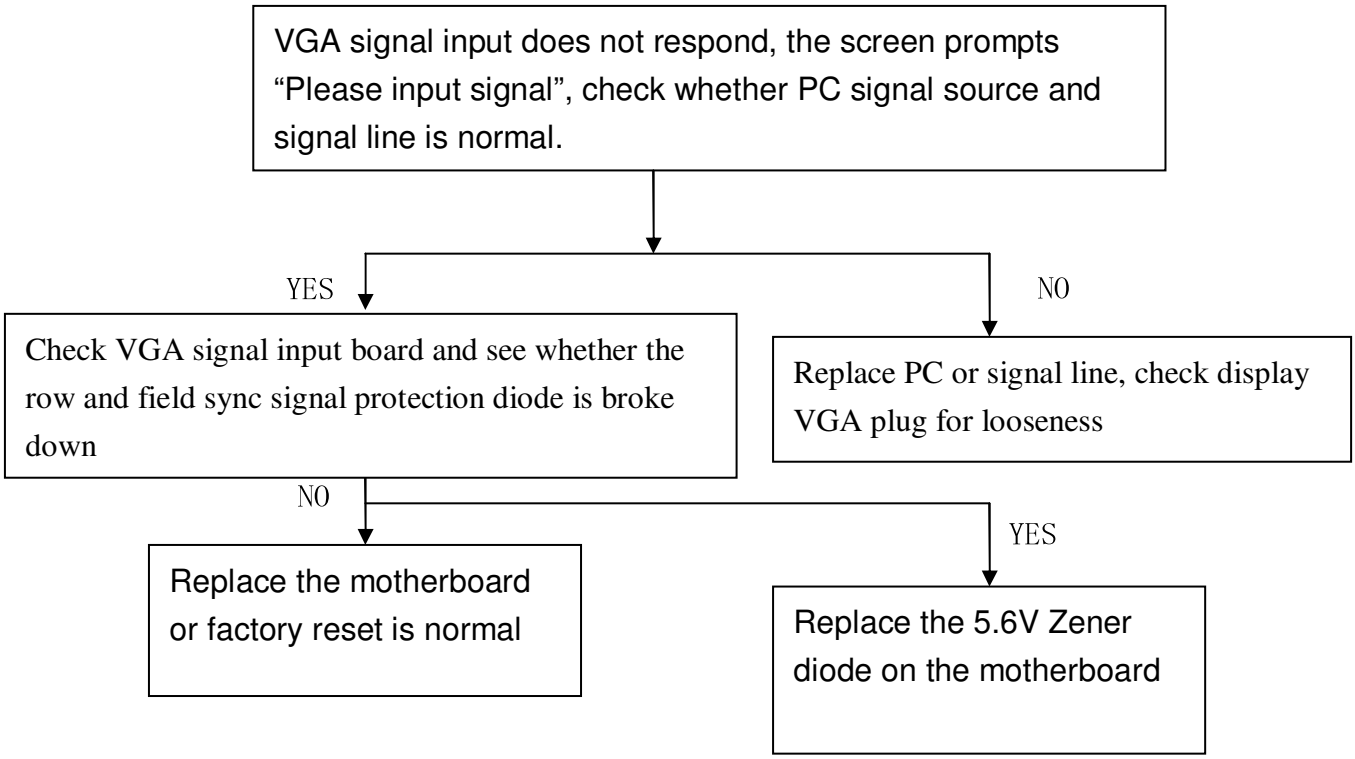
(6) TV without channel or with color cast



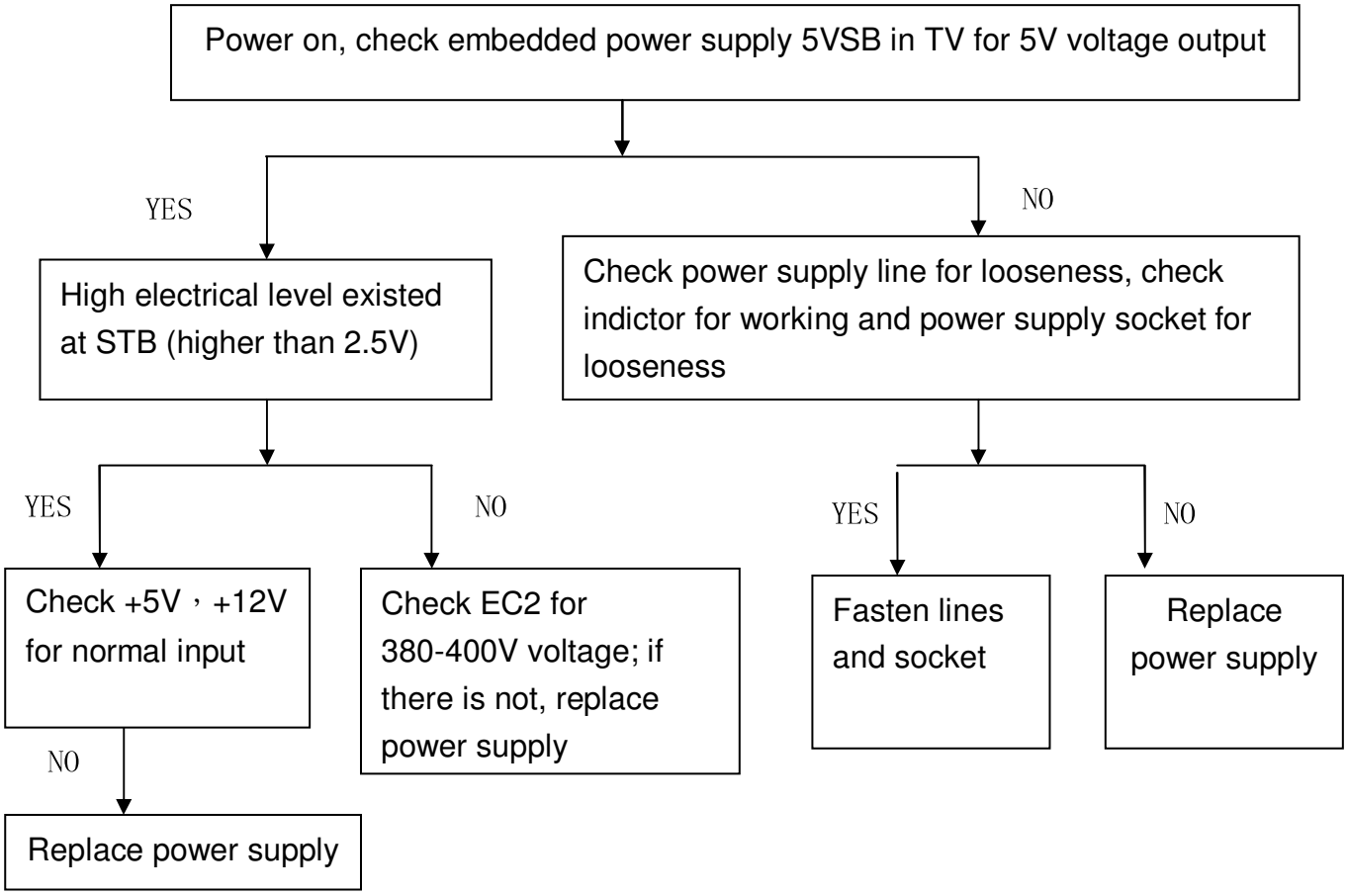
(7) Poor sound



(8) No VGA input signal



(9) Poor embedded power supply of TV



(10) Common fault of LCD screen

10.1 Bright line or bright belt (BL): constant longitudinal or transverse illuminating line or belt due to non-conformed connection between IC and glass

10.2 Dark line (DL): constant longitudinal or transverse illuminating line due to non-conformed connection between IC and glass.

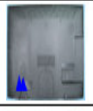
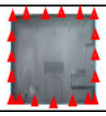
10.3 White panel (WP): only light tube illuminates owing to non-conformed drive plate of the LCD, without any display signal in the display area, and the whole screen is white.

10.4 Screen breaking: (overflow of LCD): with damage or invisible damage of the liquid crystal glass, irregular black defect occurs from liquid crystal body to glass and polarizer, which cannot be seen at any image. The overflow portion cannot form image and does not display.

10.5 Pressing Scrape (PS): after local display area at the front of LCD is heavily pressed, glass of the pressed portion is not damaged, the liquid crystal body cannot display normally, with spot or block black defect.

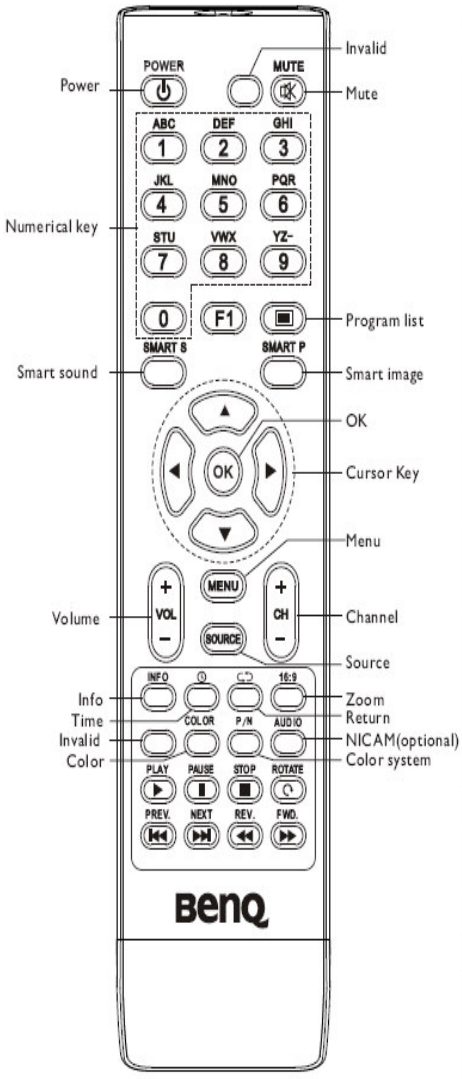
10.6 Screen mess: irregular color display arising from damage of driving plate in LCD.

Appendix 1 – SCREW LIST / TORQUE

	The Screws Used in 47L11					
Section	Part number	Amount	Name	Location	Diagram	Torque Force
Prepocces sing Assembly	751-3008-11101G	1	Φ3×8 round-head pointed-tail nickel-plated tapping screw	Remote control receive board+surface frame	 	3±0.5kgfcm
	751-3008-11101G	2	Φ3×8 round-head pointed-tail nickel-plated tapping screws	Key board+back cover	 	3±0.5kgfcm
Unit Assembly	751-4010-12401G	4	Φ4×10mm round-head flat-tail black-zinc-plated tapping screws	Lower panel-pressing plate+surface frame	 	4±0.5kgfcm
	751-4010-12401G	3	Φ4×10mm round-head flat-tail black-zinc-plated tapping screws	Lower panel-pressing plate+surface frame	 	4±0.5kgfcm
	751-3006-44101G	4	Φ3×6mm B-head nickel-plated machine screws	Power bracket+panel	 	4±0.5kgfcm
	751-3006-44101G	2	Φ3×6mm B-head nickel-plated machine screws	Adapter plate bracket+panel	 	4±0.5kgfcm
	751-3006-44101G	1	Φ3×6mm B-head nickel-plated machine screws	Mainboard bracket+panel	 	4±0.5kgfcm
	751-3006-44101G	4	Φ3×6mm B-head nickel-plated machine screws	Power board+power board bracket	 	4±0.5kgfcm
	751-3006-44101G	3	Φ3×6mm B-head nickel-plated machine screws	Mainboard+mainboard bracket, adapter plate bracket	 	4±0.5kgfcm
	751-3006-64402G	1	Φ3×6 countersunk-head black-zinc-plated machine screws	Side I/O baffle palte+panel	 	4±0.5kgfcm
	751-3006-44101G	6	Φ3×6mm B-head nickel-plated machine screws	Panel back plate+panel	 	5±1kgfcm
	751-4005-C4501G	1	Φ4×5mm round-head machine screws with jugged washers	Ground wire of three-core power cord+panel	 	5±1kgfcm
	751-3010-61401G	2	Φ3×10mm countersunk-head pointed-tail black-zinc-plated tapping screws	Back cover+side I/O baffle plate,mainboard bracket,panel	 	3±0.5kgfcm
	751-3006-64402G	3	Φ3×6 countersunk-head black-zinc-plated machine screws	Back cover+bracket	 	3±0.5kgfcm
	751-4010-12401G	19	Φ4×10mm round-head flat-tail black-zinc-plated tapping screws	Back cover+surface frame	 	4±0.5kgfcm

Appendix 2 – Code List: IR

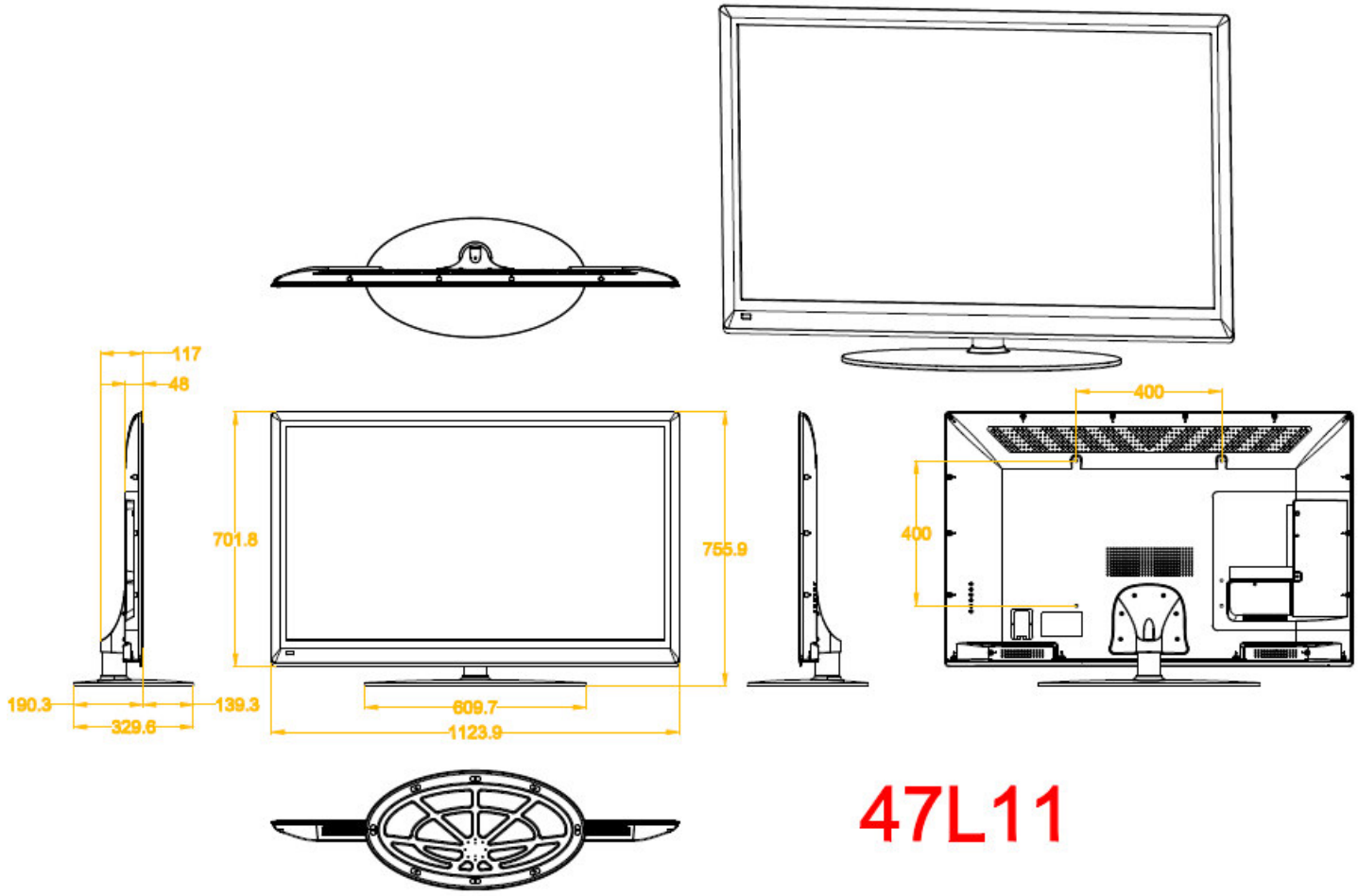
Remote Control



Remote Control Key Instruction

Key	Function
POWER	Turn on or standby
MUTE	Eliminate sound
Numerical key	Number input button
FI	Freeze picture
Program list	Look through program list
SMART S	Intelligent sound mode selection
SMART P	Intelligent image mode selection
Cursor key	Up or Down cursor button: function select; Left or right cursor button: analog add or reduce
VOL+/VOL-	Sound volume add or reduce button
MENU	Press this button to display menu
SOURCE	Press this button to display signal source selection menu
CH+/CH-	Select channel Number
INFO	System information display switch
Time (⏲)	Timer setting button, press this key can set time of turning down
Return (↩)	Press this button to return to last watching channel
16:9	Switch aspect ratio
Color	Color temperature mode selection button
P/N	Color system mode selection button
AUDIO(optional)	Select NICAM mode
OK	Confirm operation
PLAY (▶)	For USB operation
PAUSE (⏸)	
STOP (■)	
ROTATE (↻)	
PREV. (⏮)	
NEXT (⏭)	
REV. (◀◀)	
FWD.(▶▶)	

Appendix 3 – Wall Mount Dimension



Packing List

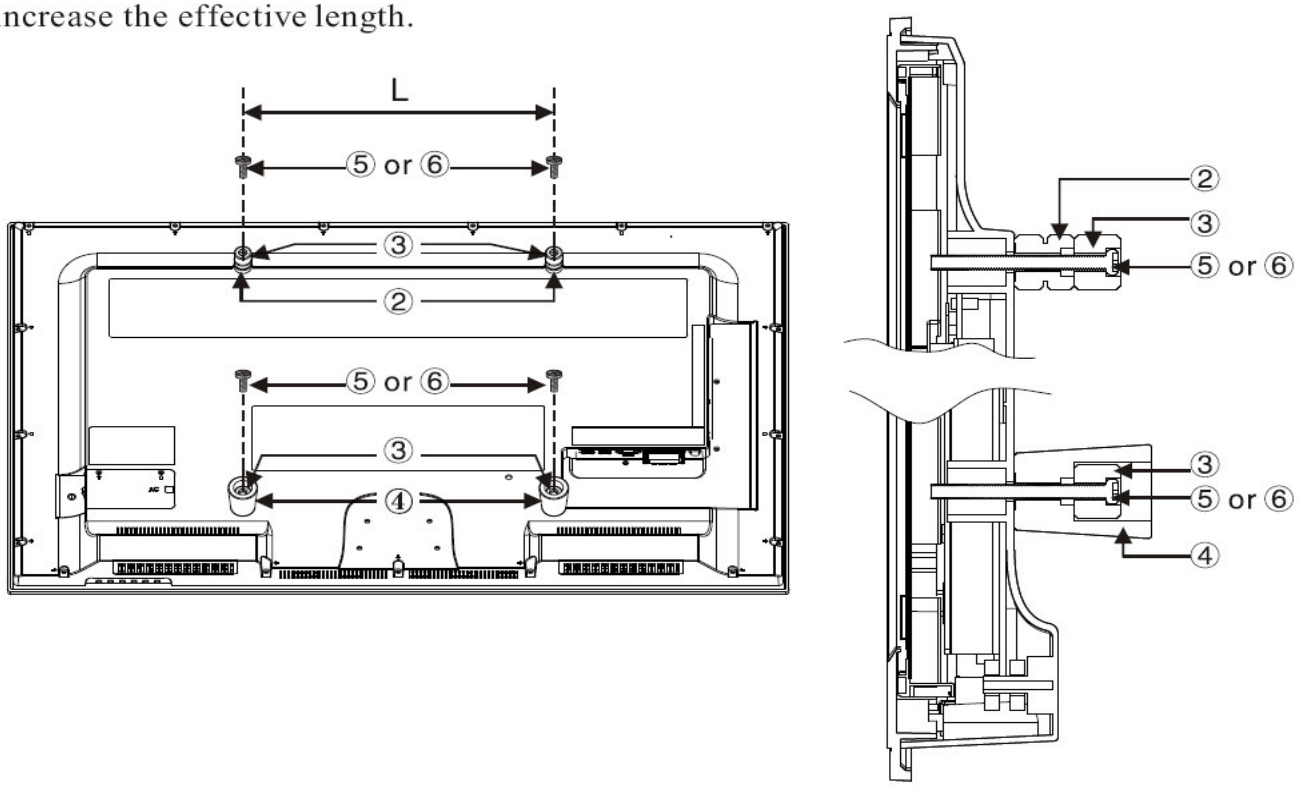
No.	Name	Unit	Count
①	Metals wall-mounting stand	PCS	2
②	Wall - iron work (Φ6.5mm)	PCS	2
③	Wall-mounting stand plastic gasket	PCS	4
④	Plastic wall-mounting stand	PCS	2
⑤	M4*43mm P-head nickel-plated machine screws with spring washer	PCS	4
⑥	M6*43mm P-head nickel-plated machine screws with spring washer	PCS	4
⑦	M6*50mm HWA gray pouches screws	PCS	4
⑧	Installation Manual	Basis	1

Notice: The Number No. of the picture is the same as the packing list.

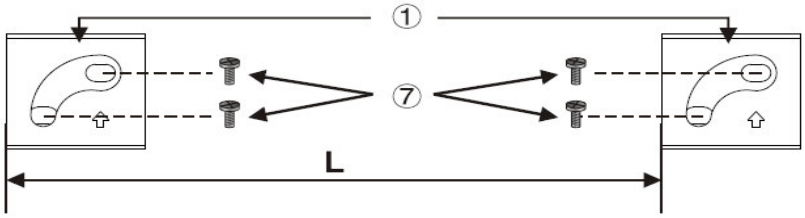
Installation

1. Remove the LCD TV support assembly for base. According to the specification of wall-hanging bolt-holes on the back of LCD TV, use four appropriate specifications screws to fix Wall-mounting stand plastic gasket+Wall-iron work and Wall-mounting stand plastic gasket+plastic wall-mounting stand into the hole on the back of LCD TV, and measure the distance "L" of left-right wall-hanging hole at the same time.

Notice: If the length of screw not long enough, cancel the Wall-mounting stand plastic gasket to increase the effective length.



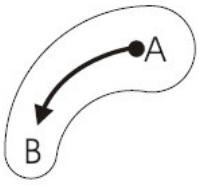
2. Choose a proper place to install, and fix the metals wall-mounting stand tightly in the selected wall with four (M6*50) screws. In necessity to drill to make sure the wall and screws has enough connect strength. To make sure the distance "L" of two wall-hanging bracket whether the same of measuring LCD TV left-right wall-hanging hole distance "L" in step 1.

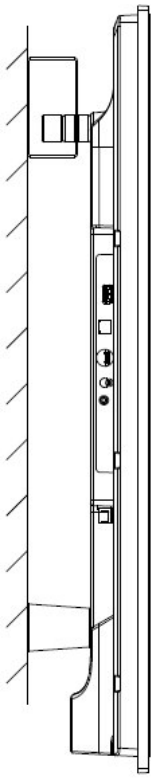


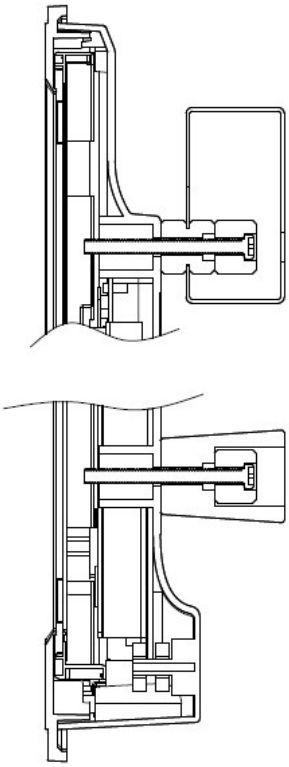
Notice:

- ◆ Use the gradienter to adjust two wall-hanging bracket while installing, and keep the place of level. If come into being horizontal and vertical deviation, will result in TV screen tilting after wall-hanging, serious cases can cause the internal structure of machine stress, wall screws may come off, so positioning should pay special attention when mounting dimensions.
- ◆ Direction of the arrow on the metal wall-mounting stand must be up.

3. To hang these two Wall-iron work assembled on TV back during step 1 into position "A" of the metal wall-mounting stand assembled during step 2, and let it fall through the oval trench of the metal wall-mounting stand to position "B". Then try pulling the TV to check if it is fasten. Loose your grip if OK.



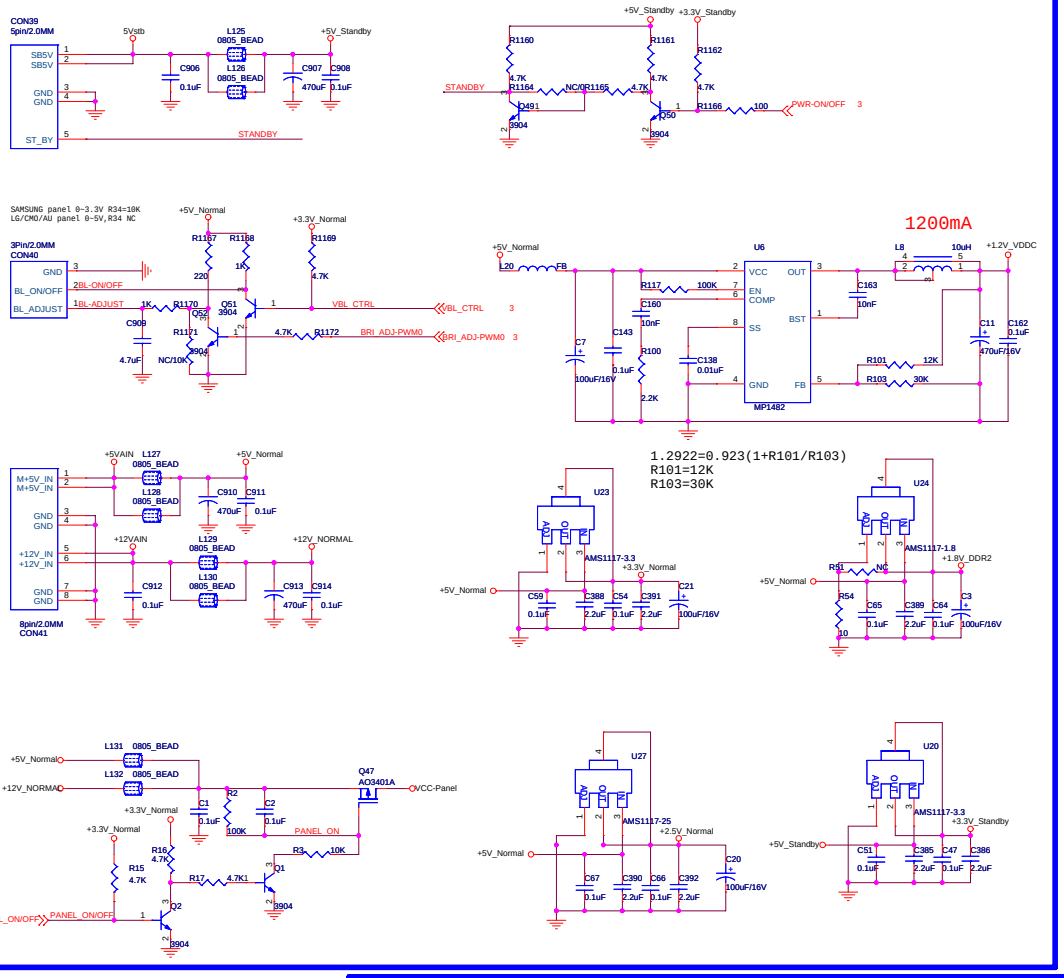


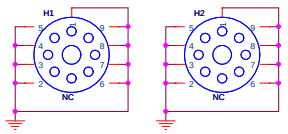


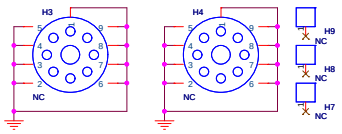
Notice:

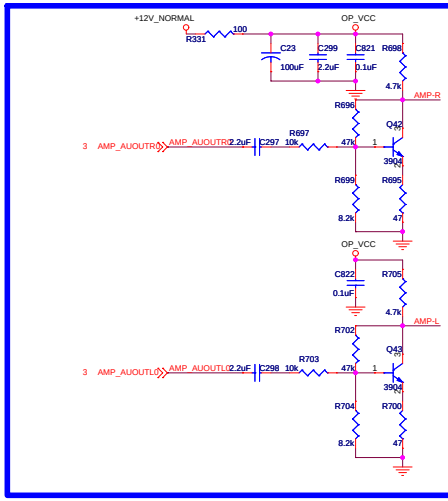
- The pylons bearing the weight of LCD TV should not exceed 40Kg.
- In order to properly guide the installation of the pylons, please read the installation instructions carefully when you install.
- Please call the authorized installation company to install the pylons.
- If any ambiguity when reading or use this specification, please contact the company.

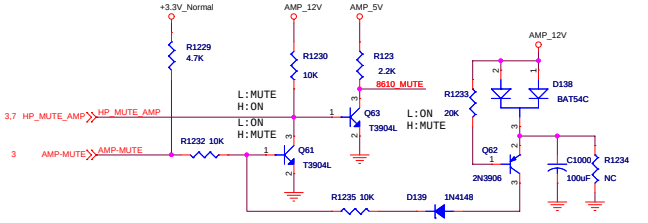
POWER & INVERTER CONTRAL



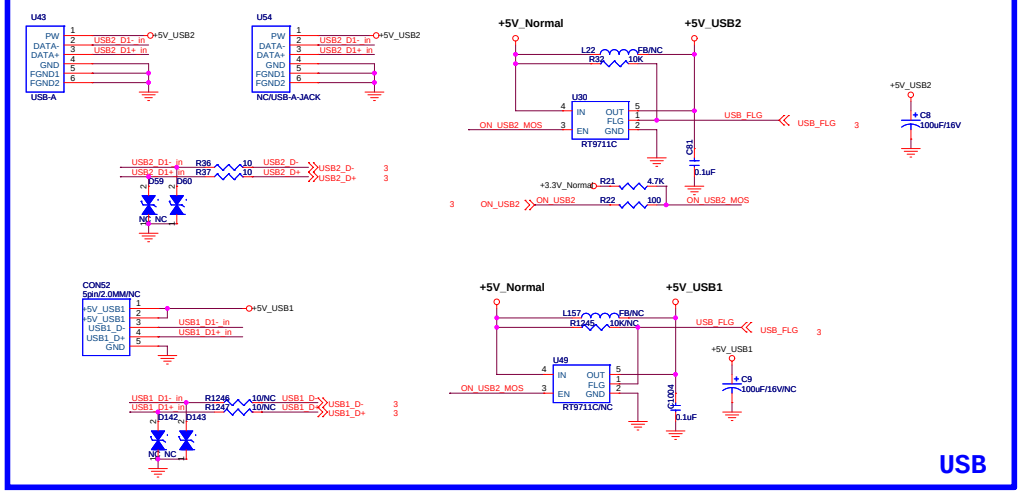




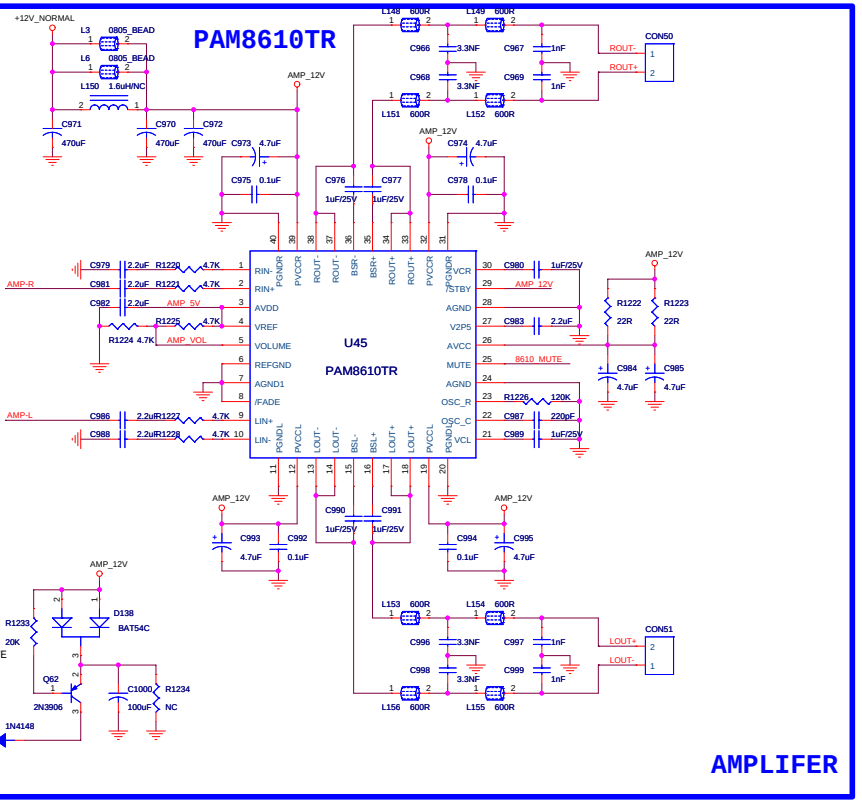




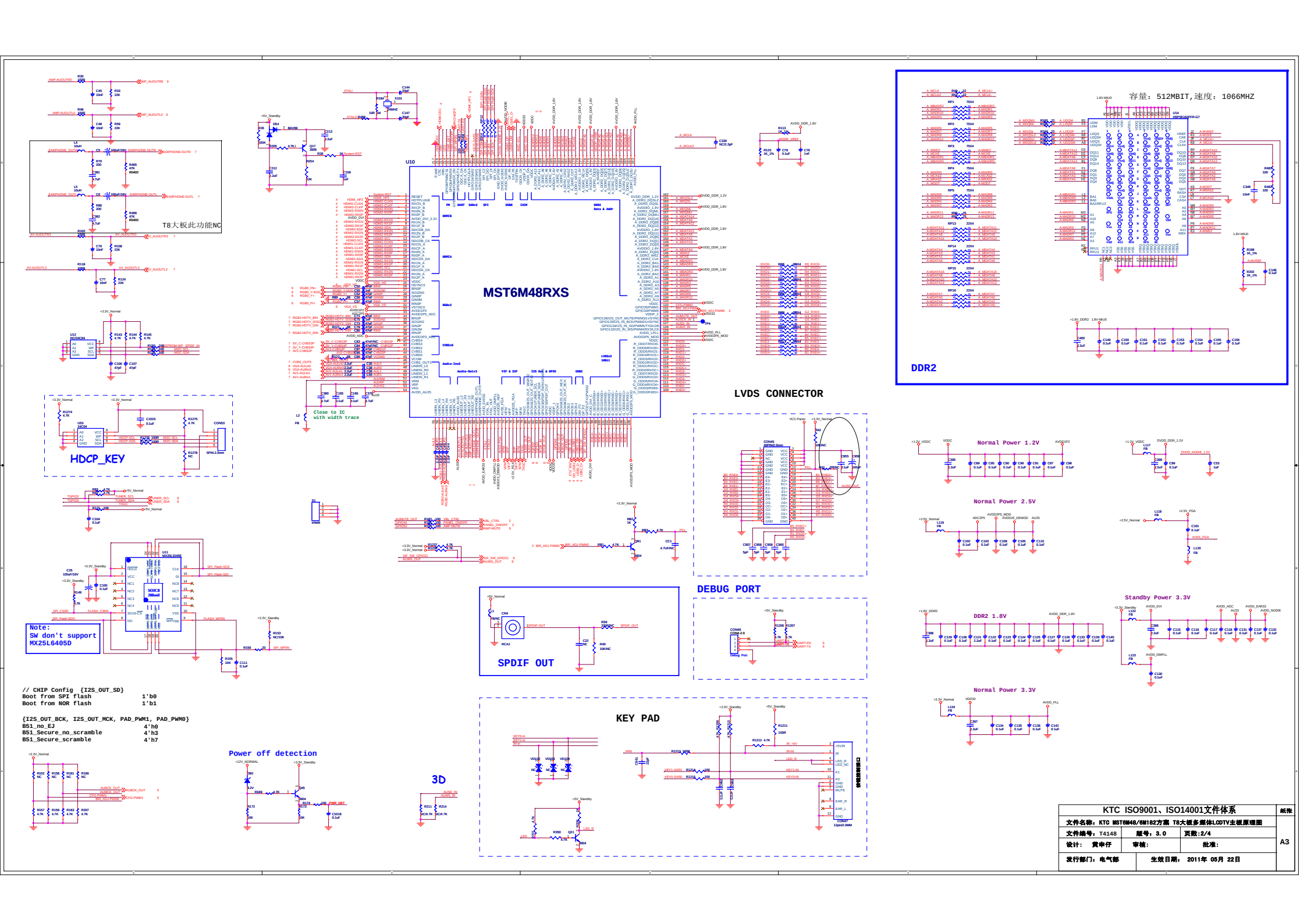
USB



AMPLIFER



KTC ISO9001、ISO14001文件体系			纸张
文件名称：KTC MST6M48/6M182方案 T8大板多媒体LCDTV主板原理图			A3
文件编号：T4148	版号：3.0	页数：1/4	
设计： 黄申仔	审核：	批准：	
发行部门：电气部	生效日期： 2011年 05月 22日		



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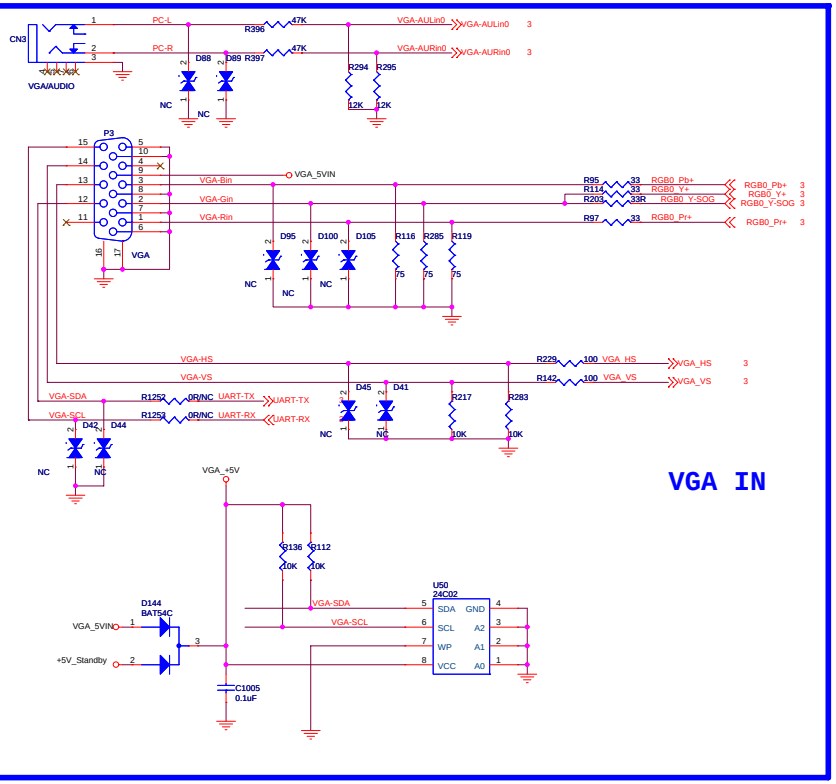
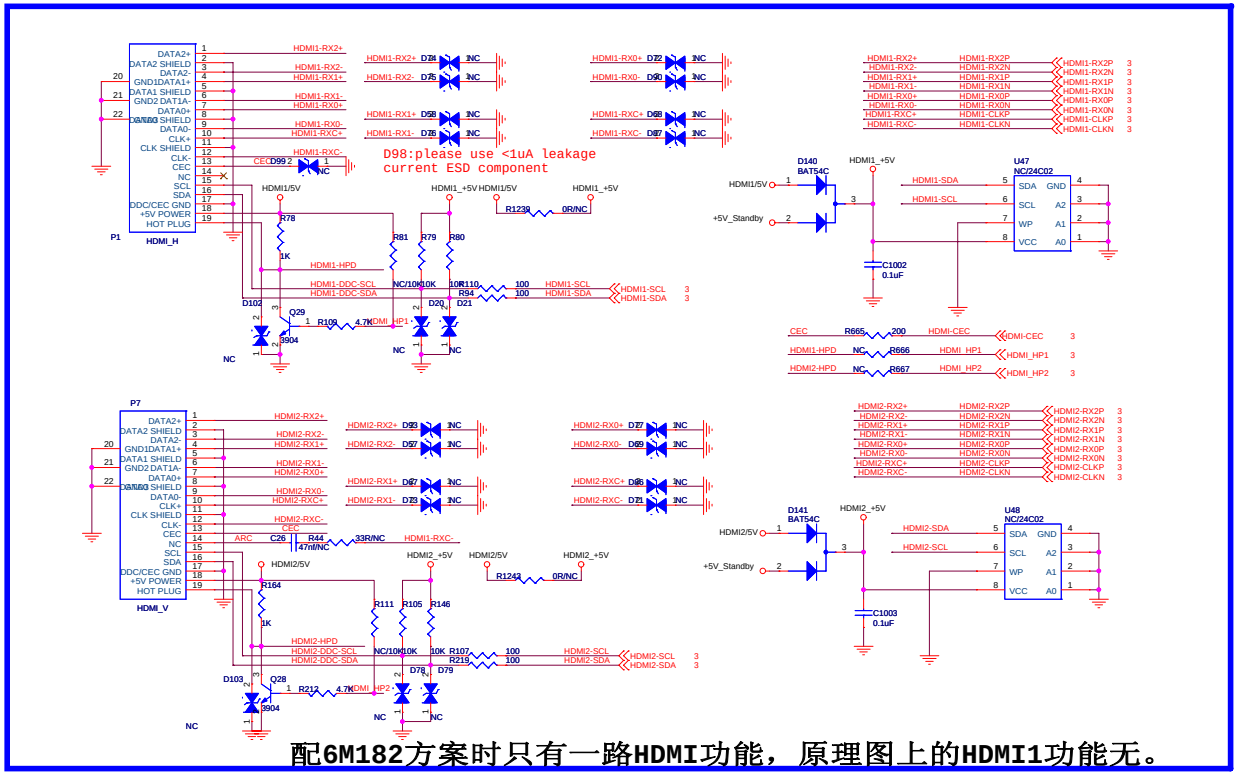
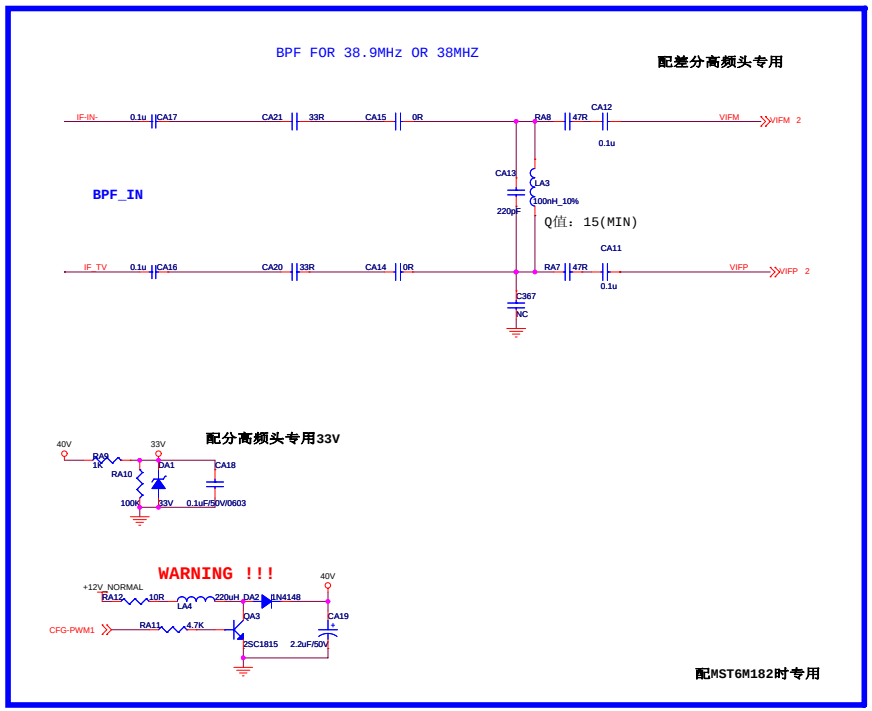
发行部门：电气部	生效日期： 2011年 05月 22日		

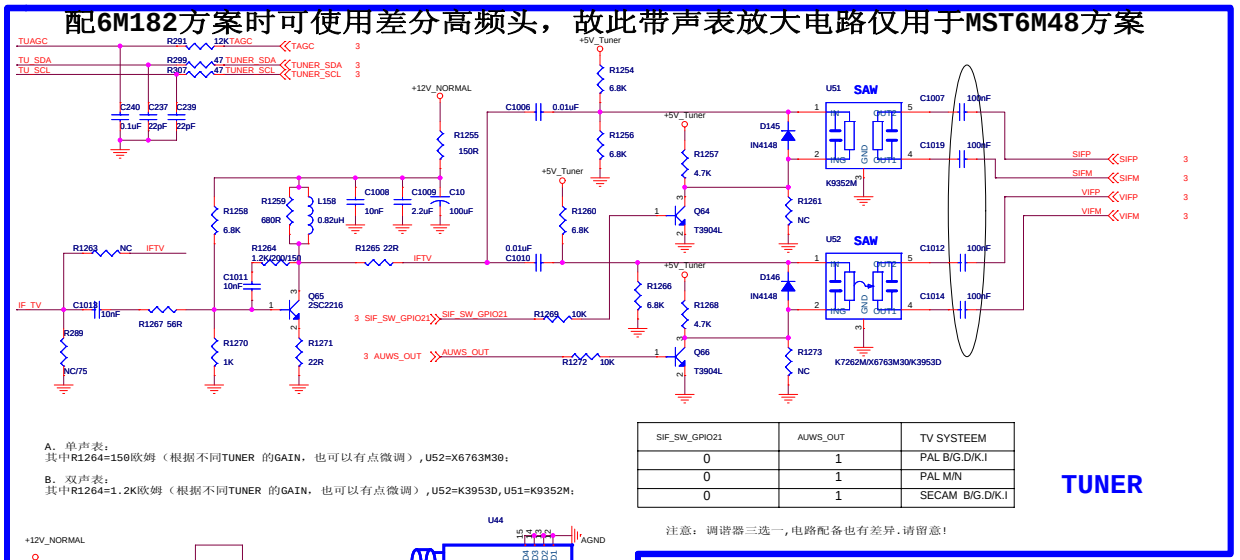




配6M182方案时只有一路HDMI功能，原理图上的HDMI1功能无。



配6M182方案时可使用差分高频头，故此带声表放大电路仅用于MST6M48方案

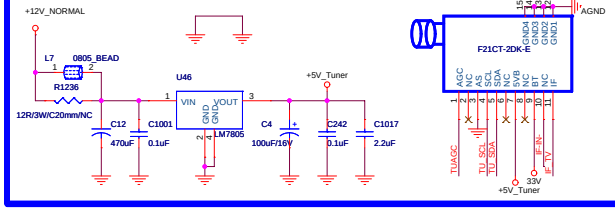


SIF_SW_GPIO21	AUWS_OUT	TV SYSTEEM
0	1	PAL B/G.D/K.I
0	1	PAL M/N
0	1	SECAM B/G.D/K.I

A、单声表：
其中R1264=150欧姆（根据不同TUNER 的GAIN，也可以有点微调），U52=X6763M30；

B、双声表：
其中R1264=1.2K欧姆（根据不同TUNER 的GAIN，也可以有点微调），U52=K3953D,U51=K9352M；

注意：调谐器三选一，电路配备也有差异，请留意！



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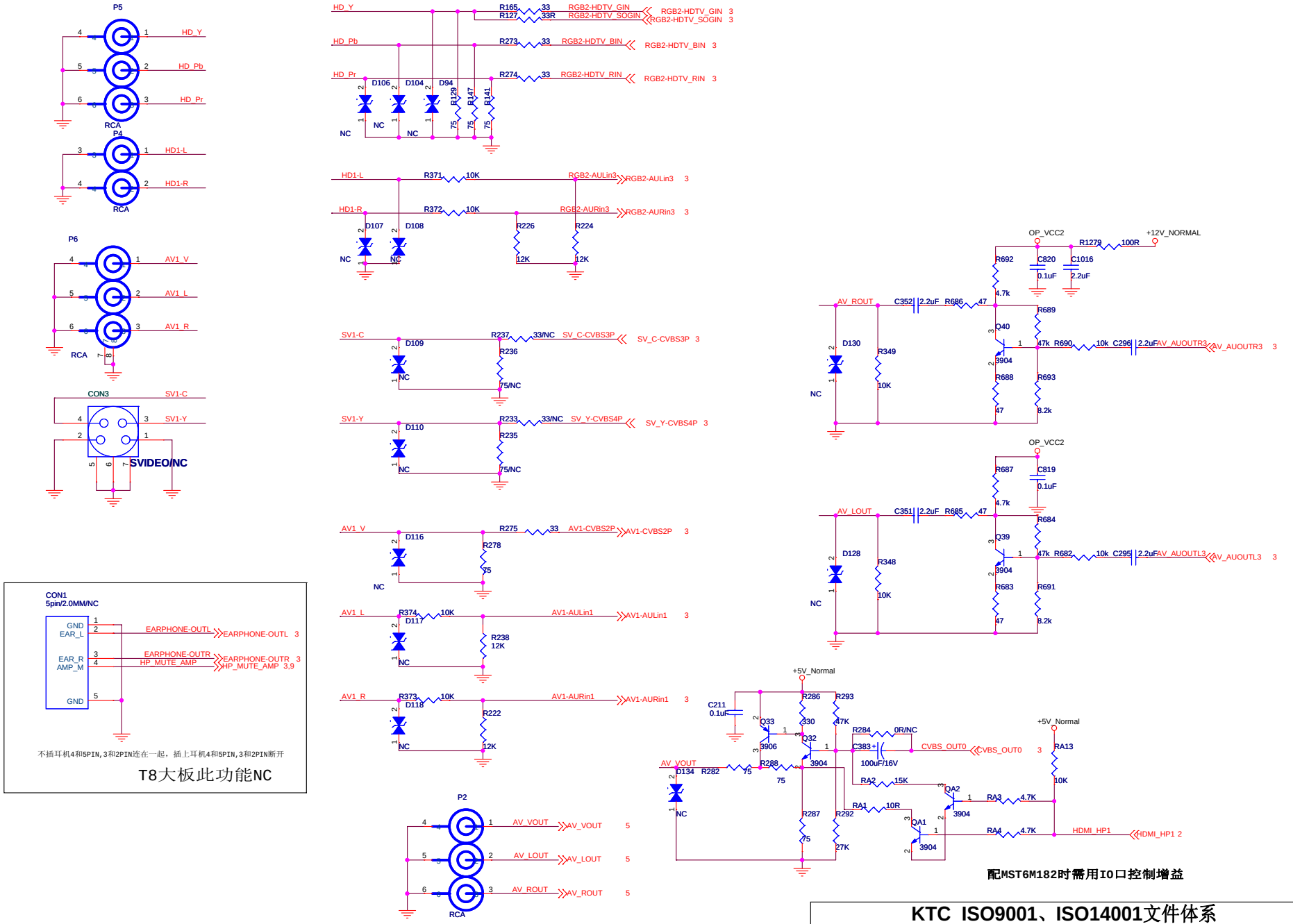
发行部门：电气部	生效日期：2011年 05月 22日		



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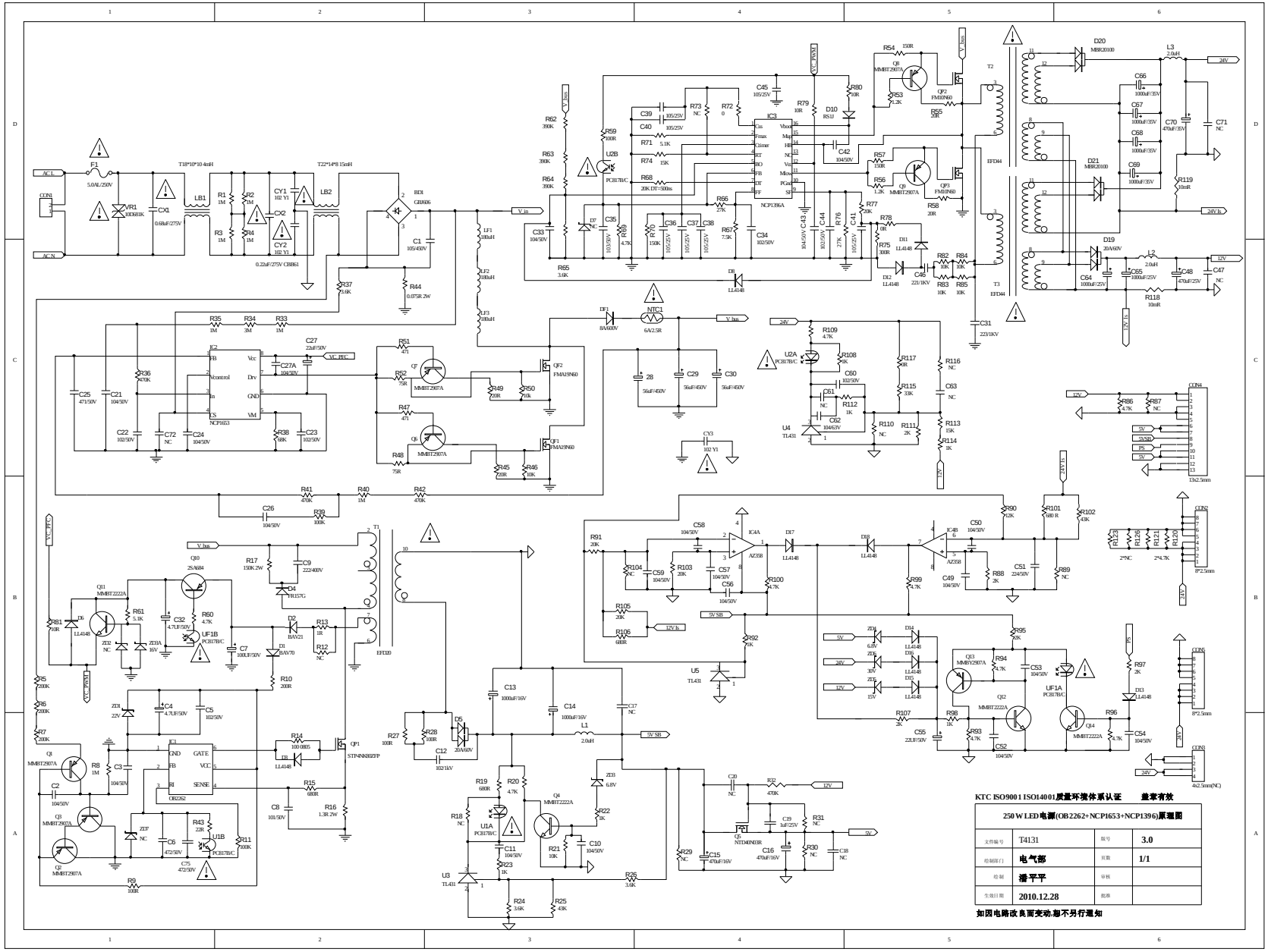

KTC ISO9001 ISO14001质量环境体系认证　　盖章有效

250 W LED电源(OB2262+NCP1653+NCP1396)原理图			
文件编号	T4131	版号	3.0
绘制部门	电气部	页数	1/1
绘 制	潘平平	审核	
生效日期	2010.12.28	批准	

如因电路改良而变动,恕不另行通知