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e-mail:<http://www.LGservice.com/techsup.html>

# LCD TV

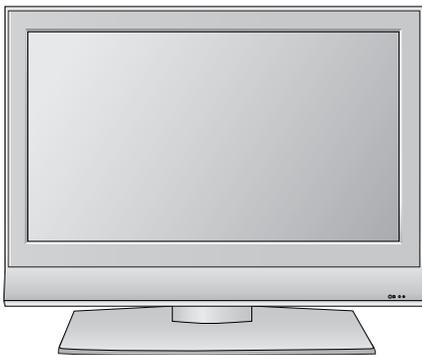
# SERVICE MANUAL

**CHASSIS : LP78A**

**MODEL : 42LC51 42LC51-ZA**

## **CAUTION**

BEFORE SERVICING THE CHASSIS,  
READ THE SAFETY PRECAUTIONS IN THIS MANUAL.



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# SAFETY PRECAUTIONS

## IMPORTANT SAFETY NOTICE

Many electrical and mechanical parts in this chassis have special safety-related characteristics. These parts are identified by  $\triangle$  in the Schematic Diagram and Replacement Parts List.

It is essential that these special safety parts should be replaced with the same components as recommended in this manual to prevent Shock, Fire, or other Hazards.

Do not modify the original design without permission of manufacturer.

### General Guidance

An **isolation Transformer should always be used** during the servicing of a receiver whose chassis is not isolated from the AC power line. Use a transformer of adequate power rating as this protects the technician from accidents resulting in personal injury from electrical shocks.

It will also protect the receiver and its components from being damaged by accidental shorts of the circuitry that may be inadvertently introduced during the service operation.

If any fuse (or Fusible Resistor) in this TV receiver is blown, replace it with the specified.

When replacing a high wattage resistor (Oxide Metal Film Resistor, over 1W), keep the resistor 10mm away from PCB.

Keep wires away from high voltage or high temperature parts.

### Before returning the receiver to the customer,

always perform an **AC leakage current check** on the exposed metallic parts of the cabinet, such as antennas, terminals, etc., to be sure the set is safe to operate without damage of electrical shock.

### Leakage Current Cold Check(Antenna Cold Check)

With the instrument AC plug removed from AC source, connect an electrical jumper across the two AC plug prongs. Place the AC switch in the on position, connect one lead of ohm-meter to the AC plug prongs tied together and touch other ohm-meter lead in turn to each exposed metallic parts such as antenna terminals, phone jacks, etc.

If the exposed metallic part has a return path to the chassis, the measured resistance should be between  $1M\Omega$  and  $5.2M\Omega$ .

When the exposed metal has no return path to the chassis the reading must be infinite.

An other abnormality exists that must be corrected before the receiver is returned to the customer.

### Leakage Current Hot Check (See below Figure)

Plug the AC cord directly into the AC outlet.

### Do not use a line Isolation Transformer during this check.

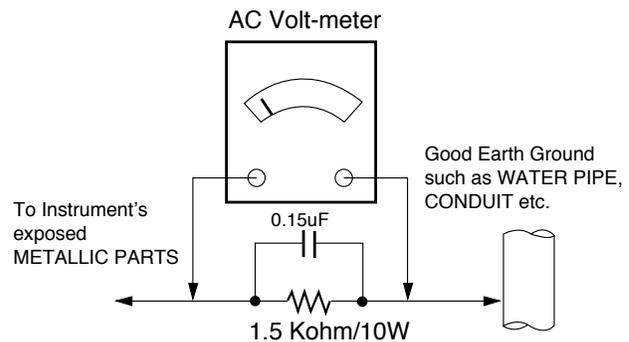
Connect 1.5K/10watt resistor in parallel with a 0.15uF capacitor between a known good earth ground (Water Pipe, Conduit, etc.) and the exposed metallic parts.

Measure the AC voltage across the resistor using AC voltmeter with 1000 ohms/volt or more sensitivity.

Reverse plug the AC cord into the AC outlet and repeat AC voltage measurements for each exposed metallic part. Any voltage measured must not exceed 0.75 volt RMS which corresponds to 0.5mA.

In case any measurement is out of the limits specified, there is possibility of shock hazard and the set must be checked and repaired before it is returned to the customer.

### Leakage Current Hot Check circuit



# SERVICING PRECAUTIONS

**CAUTION:** Before servicing receivers covered by this service manual and its supplements and addenda, read and follow the *SAFETY PRECAUTIONS* on page 3 of this publication.

**NOTE:** If unforeseen circumstances create conflict between the following servicing precautions and any of the safety precautions on page 3 of this publication, always follow the safety precautions. Remember: Safety First.

## General Servicing Precautions

1. Always unplug the receiver AC power cord from the AC power source before;
  - a. Removing or reinstalling any component, circuit board module or any other receiver assembly.
  - b. Disconnecting or reconnecting any receiver electrical plug or other electrical connection.
  - c. Connecting a test substitute in parallel with an electrolytic capacitor in the receiver.  
**CAUTION:** A wrong part substitution or incorrect polarity installation of electrolytic capacitors may result in an explosion hazard.

2. Test high voltage only by measuring it with an appropriate high voltage meter or other voltage measuring device (DVM, FETVOM, etc) equipped with a suitable high voltage probe. Do not test high voltage by "drawing an arc".

3. Do not spray chemicals on or near this receiver or any of its assemblies.

4. Unless specified otherwise in this service manual, clean electrical contacts only by applying the following mixture to the contacts with a pipe cleaner, cotton-tipped stick or comparable non-abrasive applicator; 10% (by volume) Acetone and 90% (by volume) isopropyl alcohol (90%-99% strength)

**CAUTION:** This is a flammable mixture.

Unless specified otherwise in this service manual, lubrication of contacts is not required.

5. Do not defeat any plug/socket B+ voltage interlocks with which receivers covered by this service manual might be equipped.
6. Do not apply AC power to this instrument and/or any of its electrical assemblies unless all solid-state device heat sinks are correctly installed.
7. Always connect the test receiver ground lead to the receiver chassis ground before connecting the test receiver positive lead.

Always remove the test receiver ground lead last.

8. Use with this receiver only the test fixtures specified in this service manual.

**CAUTION:** Do not connect the test fixture ground strap to any heat sink in this receiver.

## Electrostatically Sensitive (ES) Devices

Some semiconductor (solid-state) devices can be damaged easily by static electricity. Such components commonly are called *Electrostatically Sensitive (ES) Devices*. Examples of typical ES devices are integrated circuits and some field-effect transistors and semiconductor "chip" components. The following techniques should be used to help reduce the incidence of component damage caused by static by static electricity.

1. Immediately before handling any semiconductor component or semiconductor-equipped assembly, drain off any electrostatic charge on your body by touching a known earth ground. Alternatively, obtain and wear a commercially available discharging wrist strap device, which should be removed to prevent potential shock reasons prior to applying power to the

unit under test.

2. After removing an electrical assembly equipped with ES devices, place the assembly on a conductive surface such as aluminum foil, to prevent electrostatic charge buildup or exposure of the assembly.
3. Use only a grounded-tip soldering iron to solder or unsolder ES devices.
4. Use only an anti-static type solder removal device. Some solder removal devices not classified as "anti-static" can generate electrical charges sufficient to damage ES devices.
5. Do not use freon-propelled chemicals. These can generate electrical charges sufficient to damage ES devices.
6. Do not remove a replacement ES device from its protective package until immediately before you are ready to install it. (Most replacement ES devices are packaged with leads electrically shorted together by conductive foam, aluminum foil or comparable conductive material).
7. Immediately before removing the protective material from the leads of a replacement ES device, touch the protective material to the chassis or circuit assembly into which the device will be installed.  
**CAUTION:** Be sure no power is applied to the chassis or circuit, and observe all other safety precautions.
8. Minimize bodily motions when handling unpackaged replacement ES devices. (Otherwise harmless motion such as the brushing together of your clothes fabric or the lifting of your foot from a carpeted floor can generate static electricity sufficient to damage an ES device.)

## General Soldering Guidelines

1. Use a grounded-tip, low-wattage soldering iron and appropriate tip size and shape that will maintain tip temperature within the range or 500°F to 600°F.
2. Use an appropriate gauge of RMA resin-core solder composed of 60 parts tin/40 parts lead.
3. Keep the soldering iron tip clean and well tinned.
4. Thoroughly clean the surfaces to be soldered. Use a mall wire-bristle (0.5 inch, or 1.25cm) brush with a metal handle. Do not use freon-propelled spray-on cleaners.
5. Use the following unsoldering technique
  - a. Allow the soldering iron tip to reach normal temperature. (500°F to 600°F)
  - b. Heat the component lead until the solder melts.
  - c. Quickly draw the melted solder with an anti-static, suction-type solder removal device or with solder braid.  
**CAUTION:** Work quickly to avoid overheating the circuit board printed foil.
6. Use the following soldering technique.
  - a. Allow the soldering iron tip to reach a normal temperature (500°F to 600°F)
  - b. First, hold the soldering iron tip and solder the strand against the component lead until the solder melts.
  - c. Quickly move the soldering iron tip to the junction of the component lead and the printed circuit foil, and hold it there only until the solder flows onto and around both the component lead and the foil.  
**CAUTION:** Work quickly to avoid overheating the circuit board printed foil.
  - d. Closely inspect the solder area and remove any excess or splashed solder with a small wire-bristle brush.

### IC Remove/Replacement

Some chassis circuit boards have slotted holes (oblong) through which the IC leads are inserted and then bent flat against the circuit foil. When holes are the slotted type, the following technique should be used to remove and replace the IC. When working with boards using the familiar round hole, use the standard technique as outlined in paragraphs 5 and 6 above.

#### Removal

1. Desolder and straighten each IC lead in one operation by gently prying up on the lead with the soldering iron tip as the solder melts.
2. Draw away the melted solder with an anti-static suction-type solder removal device (or with solder braid) before removing the IC.

#### Replacement

1. Carefully insert the replacement IC in the circuit board.
2. Carefully bend each IC lead against the circuit foil pad and solder it.
3. Clean the soldered areas with a small wire-bristle brush.  
(It is not necessary to reapply acrylic coating to the areas).

### "Small-Signal" Discrete Transistor

#### Removal/Replacement

1. Remove the defective transistor by clipping its leads as close as possible to the component body.
2. Bend into a "U" shape the end of each of three leads remaining on the circuit board.
3. Bend into a "U" shape the replacement transistor leads.
4. Connect the replacement transistor leads to the corresponding leads extending from the circuit board and crimp the "U" with long nose pliers to insure metal to metal contact then solder each connection.

### Power Output, Transistor Device

#### Removal/Replacement

1. Heat and remove all solder from around the transistor leads.
2. Remove the heat sink mounting screw (if so equipped).
3. Carefully remove the transistor from the heat sink of the circuit board.
4. Insert new transistor in the circuit board.
5. Solder each transistor lead, and clip off excess lead.
6. Replace heat sink.

### Diode Removal/Replacement

1. Remove defective diode by clipping its leads as close as possible to diode body.
2. Bend the two remaining leads perpendicular y to the circuit board.
3. Observing diode polarity, wrap each lead of the new diode around the corresponding lead on the circuit board.
4. Securely crimp each connection and solder it.
5. Inspect (on the circuit board copper side) the solder joints of the two "original" leads. If they are not shiny, reheat them and if necessary, apply additional solder.

### Fuse and Conventional Resistor

#### Removal/Replacement

1. Clip each fuse or resistor lead at top of the circuit board hollow stake.
2. Securely crimp the leads of replacement component around notch at stake top.
3. Solder the connections.

**CAUTION:** Maintain original spacing between the replaced component and adjacent components and the circuit board to prevent excessive component temperatures.

### Circuit Board Foil Repair

Excessive heat applied to the copper foil of any printed circuit board will weaken the adhesive that bonds the foil to the circuit board causing the foil to separate from or "lift-off" the board. The following guidelines and procedures should be followed whenever this condition is encountered.

#### At IC Connections

To repair a defective copper pattern at IC connections use the following procedure to install a jumper wire on the copper pattern side of the circuit board. (Use this technique only on IC connections).

1. Carefully remove the damaged copper pattern with a sharp knife. (Remove only as much copper as absolutely necessary).
2. Carefully scratch away the solder resist and acrylic coating (if used) from the end of the remaining copper pattern.
3. Bend a small "U" in one end of a small gauge jumper wire and carefully crimp it around the IC pin. Solder the IC connection.
4. Route the jumper wire along the path of the out-away copper pattern and let it overlap the previously scraped end of the good copper pattern. Solder the overlapped area and clip off any excess jumper wire.

#### At Other Connections

Use the following technique to repair the defective copper pattern at connections other than IC Pins. This technique involves the installation of a jumper wire on the component side of the circuit board.

1. Remove the defective copper pattern with a sharp knife. Remove at least 1/4 inch of copper, to ensure that a hazardous condition will not exist if the jumper wire opens.
2. Trace along the copper pattern from both sides of the pattern break and locate the nearest component that is directly connected to the affected copper pattern.
3. Connect insulated 20-gauge jumper wire from the lead of the nearest component on one side of the pattern break to the lead of the nearest component on the other side. Carefully crimp and solder the connections.  
**CAUTION:** Be sure the insulated jumper wire is dressed so the it does not touch components or sharp edges.

# SPECIFICATION

NOTE : Specifications and others are subject to change without notice for improvement.

## 1. Application range

This specification is applied to LP78A chassis.

## 2. Requirement for Test

Testing for standard of each part must be followed in below condition.

- (1) Temperature :  $25 \pm 5^{\circ}\text{C}$  ( $77 \pm 9^{\circ}\text{F}$ ), CST :  $40 \pm 5^{\circ}\text{C}$
- (2) Humidity :  $65\% \pm 10\%$
- (3) Power : Standard input voltage (100-240V~, 50/60Hz)  
\*Standard Voltage of each products is marked by models

(4) Specification and performance of each parts are followed each drawing and specification by part number in accordance with BOM.

(5) The receiver must be operated for about 20 minutes prior to the adjustment.

## 3. Test method

3.1 Performance : LGE TV test method followed

3.2 Demanded other specification

Safety : CE, IEC Specification

EMC : CE, IEC

## 4. General Specification(LCD Module)

Item	Specification		Measurement	Result	Remark		
Display Screen Device	26/27/32/37/42" wide Color Display Module				LCD		
Aspect Ratio	16:9						
LCD Module	26/27/32/37/42" TFT WXGA LCD				MAKER : AUO/CMO/LPL/CPT		
Operating Environment	Temp. : 0 ~ 40 deg, Humidity : 0 ~ 85%				LGE SPEC		
Storage Environment	Temp. : -20 ~ 60 deg, Humidity : 0 ~ 85 %						
Input Voltage	100-240V~, 50/60Hz						
Power Consumption	Power on (Green) ≤ TBD (42") ≤ max (26", 27", 32", 37")				Volume: 1/8 volume of sound distortion point		
	St-By (Red) : 1.0 W						
LCD Module	AUO	Outline Dimension	26"	626.0 x 373.0 x 47.5	mm	(H) x (V) x (D) [with inverter]	
			32"	760.0 x 450.0 x 45	mm		
			37"	877.0 x 514.6 x 54.7	mm		
		Pixel Pitch	26"	0.4215	mm		
			32"	0.51075			
			37"	0.6 x 0.6			(H) x (W)
	Back Light	26",32"	8 U-lamp				
		37"	10 U-lamp				
	CMO	Outline Dimension	27"	637.55 x 379.8 x 40.7	mm	(H) x (V) x (D) [with inverter]	
			32"	760 x 450 x 47.53			
		Pixel Pitch	27"	0.1455 x 0.4365	mm	(H) x (V)	
			32"	0.1730 x 0.5190			
		Back Light	27"	14 CCFL			
			32"	16 CCFL			
	LPL	Outline Dimension	26"	626 x 373 x 44.1	mm	(H) x (V) x (D) [with inverter] (H) x (V)	
			32"	760.0 x 450.0 x 48.0			
			37"	877.0 x 516.8 x 55.5			
			42"	1006 x 610 x 56			
		Pixel Pitch	26"	0.1405 x 0.4215	mm		
			32"	0.17025 x 0.51075			
			37"	0.200 x 0.600			
			42"	0.227 x 0.681			
		Back Light	26"	18 EEFL (17 EEFL)		(LC260WX2-SLB3)	
			32"	18 EEFL			
37"			20 EEFL				
42"			20 CCFL				
Display Colors		16.7M (16,777,216)			(LPL 26")		
Coating		3H, AG					

## 5. Model Specification(EU)

Item	Specification		Remark
Market	EU		
Broadcasting system	PAL BG/DK, PAL I/II, SECAM L/L'		
Available Channel	BAND	PAL	
	VHF/UHF	C1_C69	
	CATV	S1_S47	
Receiving system	Upper Heterodyne		
SCART Input(2EA)	PAL, SECAM, NTSC		Full Scart 1EA, Harf 1EA
Video Input (1EA)	PAL, SECAM, NTSC		Side AV
S-Video Input (1EA)	PAL, SECAM, NTSC		Side AV S-Video Priority
Component Input (1EA)	Y/Cb/Cr, Y/ Pb/Pr		
RGB Input (1EA)	RGB-PC		
HDMI Input (2EA)	HDMI-DTV		
Audio Input (4EA)	PC Audio, AV (3A), Component (1EA)		L/R Input(PC 1EA,SCART 2EA, SIDE AV 1EA, Component 1EA)
Variable Audio out(1EA)			

## 6. Component Video Input (Y, Pb, Pr)

Resolution	H-freq(kHz)	V-freq(kHz)	Pixel clock(MHz)	Proposed
720*480	15.73	59.94	13.500	SDTV, DVD 480I(525I)
720*480	15.75	60.00	13.514	SDTV, DVD 480I(525I)
720*576	15.625	50.00	13.500	SDTV, DVD 576I(625I) 50Hz
720*480	31.47	59.94	27.000	SDTV 480P
720*480	31.50	60.00	27.027	SDTV 480P
720*576	31.25	50.00	27.000	SDTV 576P 50Hz
1280*720	44.96	59.94	74.176	HDTV 720P
1280*720	45.00	60.00	74.250	HDTV 720P
1280*720	37.50	50.00	74.25	HDTV 720P 50Hz
1920*1080	33.72	59.94	74.176	HDTV 1080I
1920*1080	33.75	60.00	74.250	HDTV 1080I
1920*1080	28.125	50.00	74.250	HDTV 1080I 50Hz

## 7. RGB Input (Analog PC)

Resolution	H-freq(kHz)	V-freq(kHz)	Pixel clock(MHz)	Proposed	Remark
640*350	31.468	70.80	25.17	EGA	
720*400	31.469	70.80	28.321	DOS	
640*480	31.469	59.94	25.17	VESA(VGA)	
800*600	37.879	60.31	40.00	VESA(SVGA)	
1024*768	48.363	60.00	65.00	VESA(XGA)	
1280*768	47.776	59.87	79.50	WXGA	XGA only
1360*768	47.720	59.799	84.75	WXGA	XGA only
1366*768	47.720	59.799	84.75	WXGA	XGA only

## 8. HDMI input (DTV)

Resolution	H-freq(kHz)	V-freq(kHz)	Pixel clock(MHz)	Proposed
720*480	15.75	60.00	13.514	SDTV, DVD 480I(525I)
720*480	15.73	59.94	13.500	SDTV, DVD 480I(525I)
720*576	15.625	50.00	13.500	SDTV, DVD 576I(625I) 50Hz
720*480	31.47	59.94	27.000	SDTV 480P
720*480	31.50	60.00	27.027	SDTV 480P
720*576	31.25	50.00	27.000	SDTV 576P 50Hz
1280*720	44.96	59.94	74.176	HDTV 720P
1280*720	45.00	60.00	74.250	HDTV 720P
1280*720	37.50	50.00	74.25	HDTV 720P 50Hz
1920*1080	33.72	59.94	74.176	HDTV 1080I
1920*1080	33.75	60.00	74.250	HDTV 1080I
1920*1080	28.125	50.00	74.250	HDTV 1080I 50Hz
1920*1080	67.432	59.94	148.350	HDTV 1080P
1920*1080	67.5	60	148.5	HDTV 1080P
1920*1080	56.250	50	148.5	HDTV 1080P 50Hz

# ADJUSTMENT INSTRUCTION

## 1. Application Range

This spec sheet is applied all of the 26/32/37/42" LCD TV(LP78A) by manufacturing LG TV Plant all over the world.

## 2. Specification

- 1) Because this is not a hot chassis, it is not necessary to use an isolation transformer. However, the use of isolation transformer will help protect test instrument.
- 2) Adjustment must be done in the correct order.
- 3) The adjustment must be performed in the circumstance of  $25 \pm 5^\circ\text{C}$  of temperature and  $65 \pm 10\%$  of relative humidity if there is no specific designation.
- 4) The input voltage of the receiver must keep 100~220V, 50/60Hz.
- 5) Before adjustment, execute Heat-Run for 30 minutes at RF no signal.

## 3. Adjustment items

### 3.1. PCB assembly adjustment items

- 1) Download the VCTP main software (IC500,VCT\_Pro)
- 2) Channel memory (IC501,EEPROM)
- 3) Color carrier Adjustment

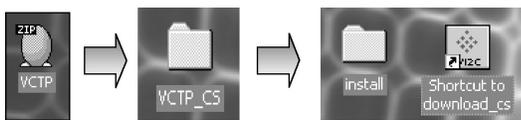
### 3.2. SET assembly adjustment items

- 1) DDC Data input.
- 2) Adjustment of White Balance.
- 3) Factoring Option Data input.

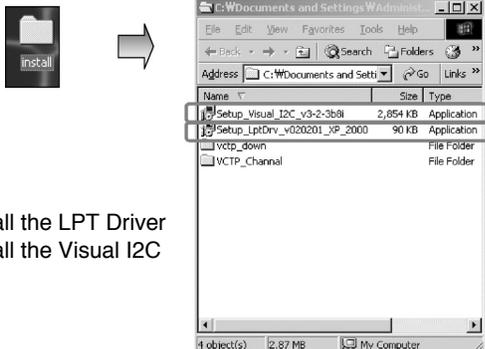
## 4. PCB assembly adjustment method (Using VCTP Download program)

### 4.1. Download program installation

- (1) Extract a Zip file



- (2) Visual I2C & LPT Driver Installation



Install the LPT Driver  
Install the Visual I2C

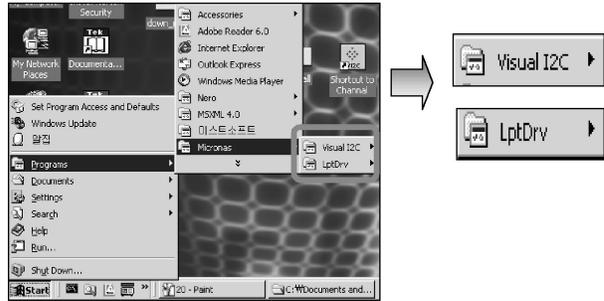
LPT Port Driver (LptDrv) Setups : Program Files > Micronas > Visual I2C > Port\_Driver

\*Use for Windows 95/98 : Setup\_LptDrv\_v0104\_9x.exe

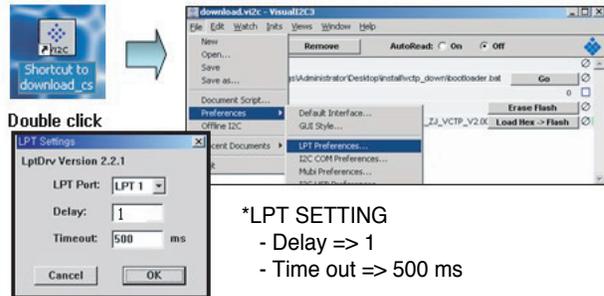
\*Use for Windows 2000/XP : Setup\_LptDrv\_v0202\_XP\_2000.exe

\*Use for Windows NT : Setup\_LptDrv\_v0104\_NT.exe

- (3) Verification (Start > Programs > Micronas > Visual I2C or LptDrv)



- (4) LPT delay setting(File > Preference > LPT preferences)



\*LPT SETTING

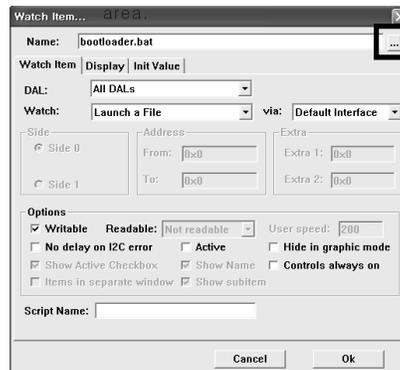
- Delay => 1

- Time out => 500 ms

- (5) Exchange the bootloader.bat file.

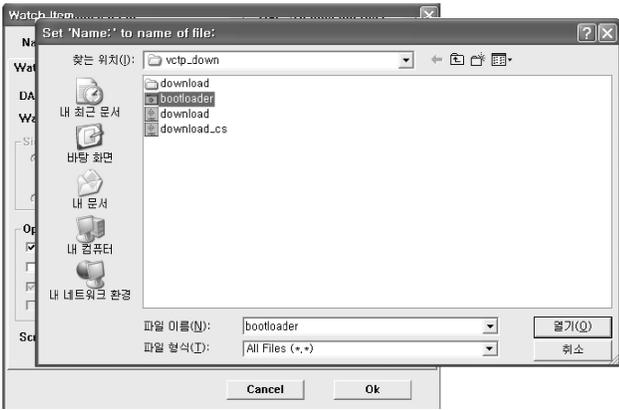


- ▶ Double click the Red

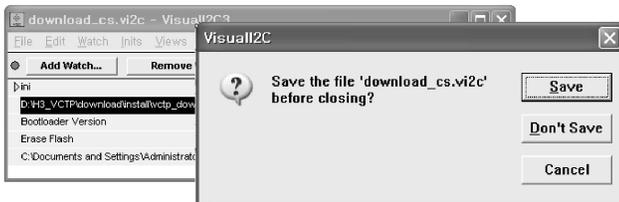


- ▶ Double click the Red

area.



=> Select the "Bootloader.bat" file (install > VCTP\_download > Bootloader)  
=> Push "OK"



=> Finish the program, after saving the file "download\_cs.vi2c" (if you click [X], the message appears automatically)

## 4.2. S/W program download

### (1) Download method 1 (PCB Ass'y)



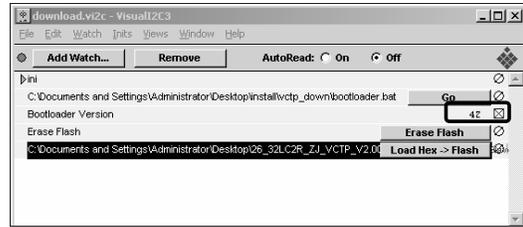
- 1) Connect the download jig to D-sub jack
- 2) Execute 'Download.vi2c' program in PC, then a main window will be opened



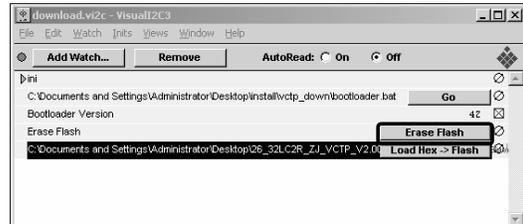
Double click



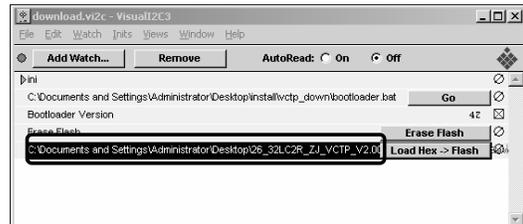
- 3) Double click the blue box and confirm "Bootloader Version" as 42.



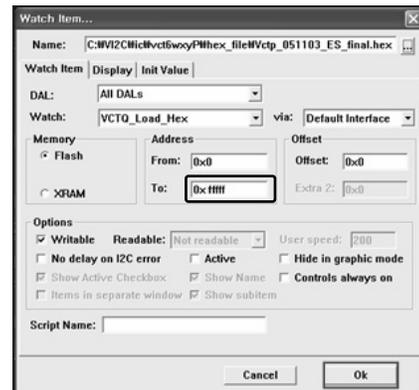
- 4) Click the "Erase Flash" button



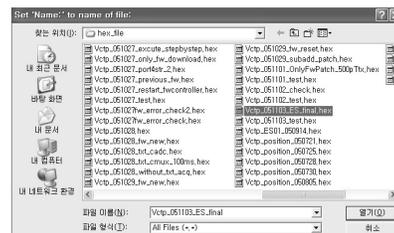
- 5) Double click the download file low, then "edit" window will be opened



- 6) Click the choice button in the "edit window", then "file choice window" will be opened.



- 7) Choose the Hex file in folder and execute downloading with click "open" button.

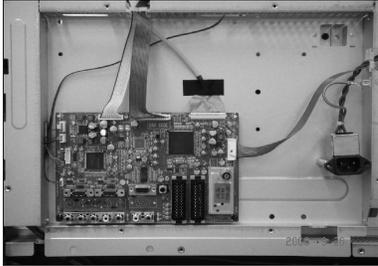


- 8) Click OK button at the "edit window".
- 9) Under Downloading process

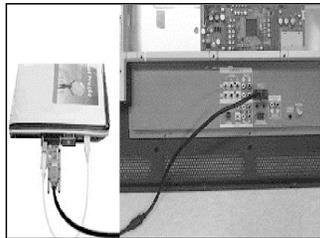
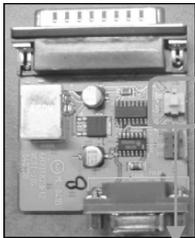


- 10) If download is failed, for example "No acknowledge from slave". Execute download again from(1).

(2) Download method 2 (AV Plate Ass'y)

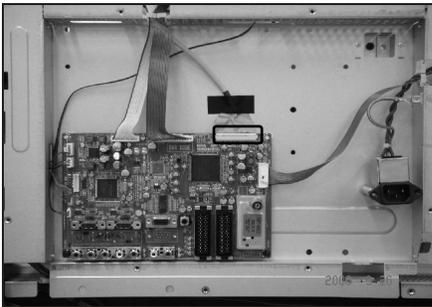


- 1) Push S/W 'ON' (connect SCL to GND using switch at Jig) and connect the download jig to D-sub jack.

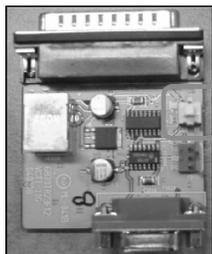


Push S/W

- 2) Supply the power (Stand-by 5V) and wait for 3 seconds.



- 3) Push the S/W off (Disconnect SCL to GND using switch at jig).

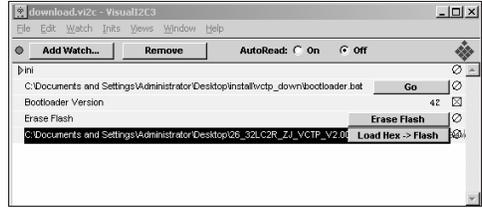


Push S/W

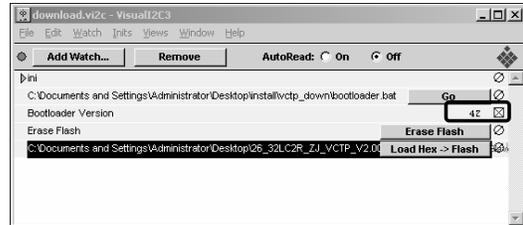
- 4) Execute 'Download.vi2c' program in PC, then a main widow will be opened.



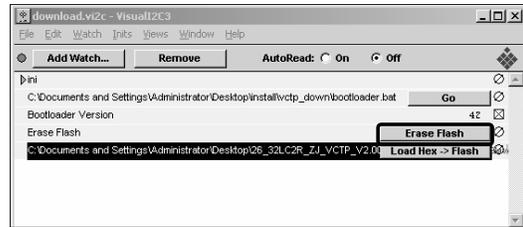
Double click



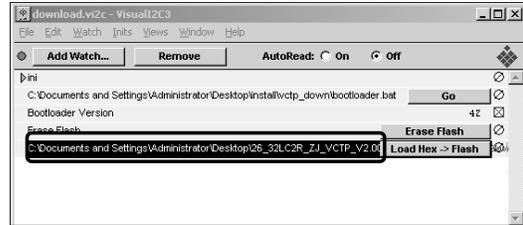
- 5) Double click the blue box and confirm "Bootloader Version" as 42.



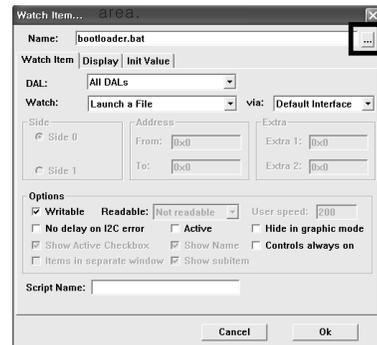
- 6) Click the "Erase Flash" button.



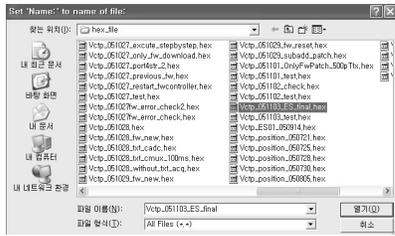
- 7) Double click the download file low then, "edit" window will be opened.



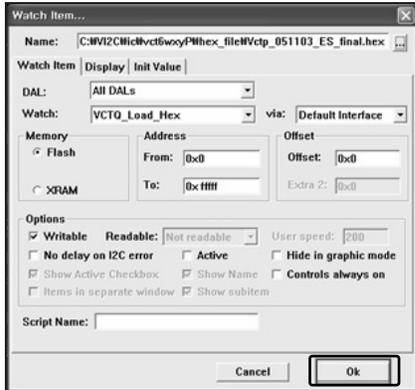
- 8) Chck the choice button I n the "edit window", then "file choice window' will be opened.



9) Choose the Hex file in folder and execute downloading with click "open button".



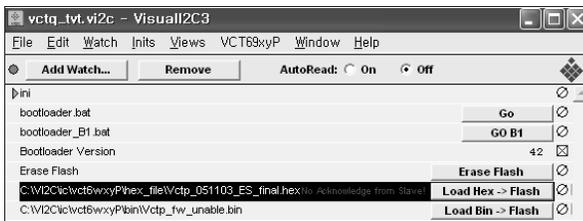
10) Click OK button at the "edit window"



11) Under Downloading progress.

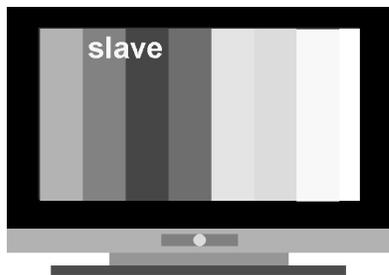


12) If download is failed, for example "No acknowledge from slave", execute download again from (1).

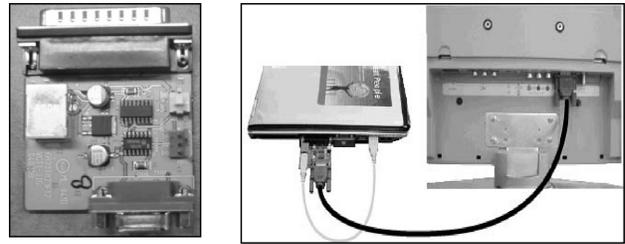


(3) Download method 3 (SET)

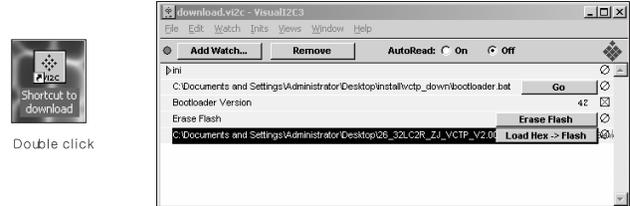
1) Push the "Tilt" button in an Adjust Remocon Then the LCD TV will change a "slave mode".



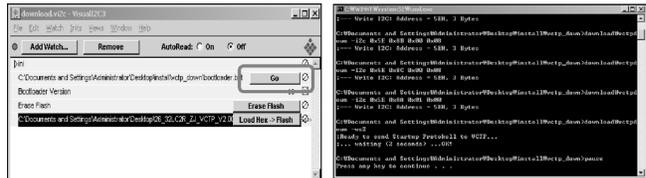
2) Connect Zig to TV using a D-sub cable.



3) Execute 'Download\_CS.vi2c' program in PC, then a main widow will be opened.



4) Click "GO" button.



If you don't push the "go", the Hex file would not be downloaded although the download proceeds normally at first glance.

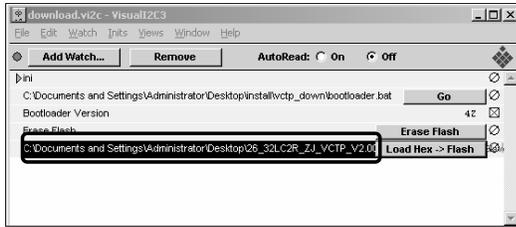
5) Double click the blue box and confirm "Bootloader Version" as 42.



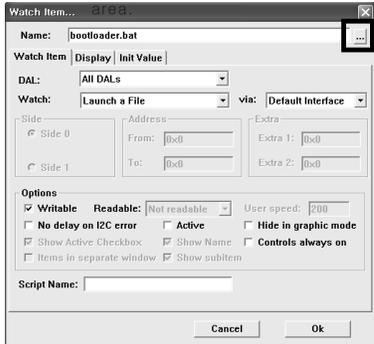
6) Click the "Erase Flash" button



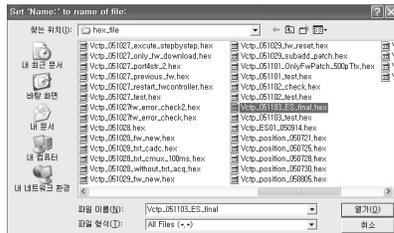
7) Double click the download file low then, "edit" window will be opened.



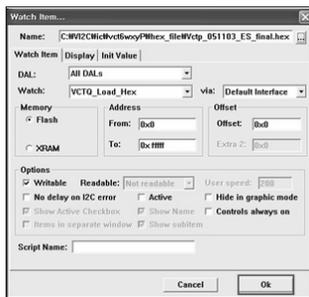
8) Click the choice button I in the "edit window", then "file choice window" will be opened



9) Choose the Hex file in folder and execute downloading with click "open button"



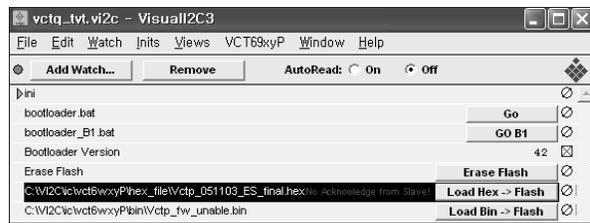
10) Click OK button at the "edit window"



11) Downloading



12) If download is failed, for example "No acknowledge from slave", execute download again from (1).

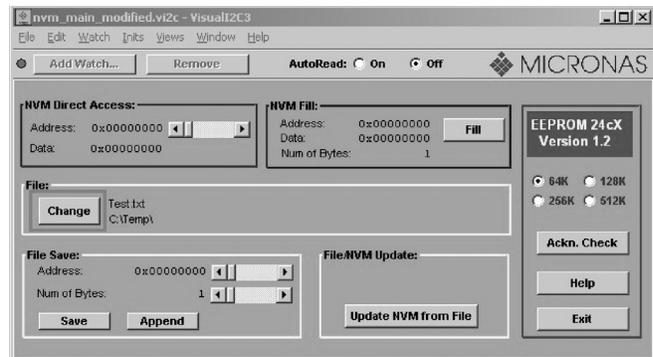


### 4.3. Channel memory download

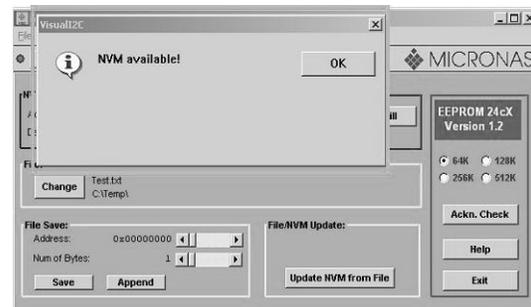
- (1) Connect the download jig to D-sub jack.
- (2) Execute 'Channel.vi2c' program in PC, then a main window will be opened.



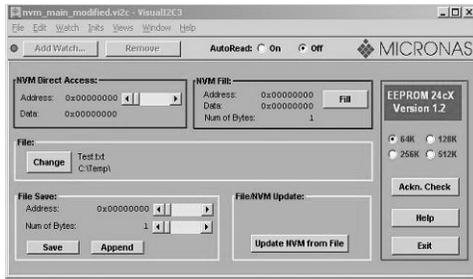
- (3) Push the button change and select the Channel memory data.



- (4) Check the communication is OK or not.  
=> Push the Read area (Ackn. Check) and check Cyan area is OK message.



(5) Push the Update NVM from File



#### 4.4. Tool Option Area Option Change

Before PCB check, have to change the Tool option and Area option

Option values are below

(If on changed the option, the input menu can differ the model spec.)

The input methods are same as other chassises(Use adj Key on the Adjust Remocon)

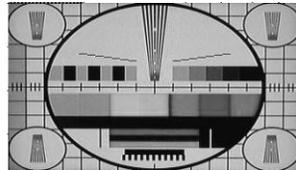
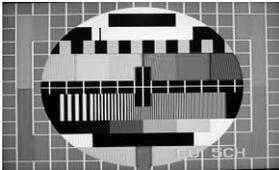
Tool Option		
<b>Inch</b>	<b>ZA</b>	<b>TA</b>
26	02240	04288
32	02256	04304
37	02264	04312
42	02272	04320
Area Option	Depend on PR	

#### 4.5. Color carrier Adjustment (Inspection process)

(1) Tuning the RF signal

ZA, TA : PAL Philips Pattern(with color Bar)

MA : NTSC Digital Pattern(with color Bar)

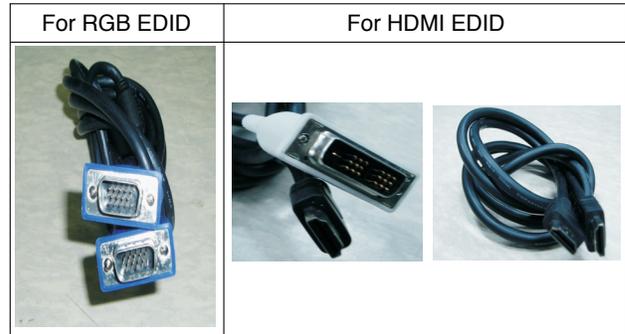


(2) push the "adj" key in the adjustment remocon.

### 5. EDID(The Extended Display Identification Data) /DDC(Display Data Channel) download

\* Caution

- Use the proper signal cable for EDID Download.
- Never connect HDMI & D-SUB Cable at the same time.
- Use the proper cables below for EDID Writing.



\* EDID Data

Item	Condition	Data
Manufacturer ID	GSM	1E6D
Version	Digital : 1	01
Revision	Digital :3	03

<EDID DATA Analog Set : 128bytes>

Addr	00	01	02	03	04	05	06	07	08	09	0A	0B	0C	0D	0E	0F
0000	00	FF	FF	FF	FF	FF	FF	00	1E	6D	(a)			(b)		
0010		(c)	01	03	08	46	27	78	0A	D9	B0	A3	57	49	9C	25
0020	11	49	4B	A1	08	00	31	40	01	01	01	01	45	40	01	01
0030	61	40	01	01	01	01	1B	21	50	A0	51	00	1E	30	48	88
0040	35	00	BC	88	21	00	00	1C	4E	1F	00	80	51	00	1E	30
0050	40	80	37	0	BC	88	21	00	00	18	00	00	00	FD	00	3A
0060	3F	1F	32	09	00	0A	20	20	20	20	20	20		(d)		
0070																(e)

< EDID DATA HDMI Set : 256bytes>

Addr	00	01	02	03	04	05	06	07	08	09	0A	0B	0C	0D	0E	0F
0000	00	FF	FF	FF	FF	FF	FF	00	1E	6D	(a)			(b)		
0010		(c)	01	3	80	5C	34	96	0A	F3	30	A7	54	42	AA	26
0020	0F	48	4C	00	00	00	01	01	01	01	01	01	01	01	01	01
0030	01	01	01	01	01	01	8C	0A	D0	8A	20	E0	2D	10	10	3E
0040	96	00	C4	8E	21	00	00	18						(d)		
0050																(e)
0060	41	19	32	8	00	0A	20	20	20	20	20	20	00	00	00	00
0070	00	00	00	00	00	00	00	00	00	00	00	00	00	00	01	(e)
0080	02	03	1E	72	23	09	07	02	4B	10	1F	07	16	81	03	05
0090	14	13	12	04	83	01	00	00	65	03	0C	00	10	00	01	1D
00A0	80	18	71	1C	16	20	58	2C	25	00	C4	8E	21	00	00	9E
00B0	01	1D	80	D0	72	1C	16	20	10	2C	25	80	C4	8E	21	00
00C0	00	9E	01	1D	00	BC	52	D0	1E	20	B8	28	55	40	C4	8E
00D0	21	00	00	1E	8C	0A	D0	90	20	40	31	20	0C	40	55	00
00E0	C4	8E	21	00	00	18	01	1D	00	72	51	D0	1E	20	6E	28
00F0	55	00	C4	8E	21	00	00	1E	00	00	00	00	00	00	00	(e)

=> Detail EDID Options are below(a, b, c, d, e)

**a. Product ID**

Model Name	Product ID		
	DEC	HEX	EDID table
32LC4R	30113(A)	75A1	A175
	30114(D)	75A2	A275
32LC7R	30115 (A)	75A3	A375
	30116 (D)	75A4	A475
42LC4R	40075 (A)	9C8B	8B9C
	40076 (D)	9C8C	8C9C
42LC7R	40077(A)	9C8D	8D9C
	40078(D)	9C8E	8E9C
26LC7R	22083(A)	5643	4356
	22084(D)	5644	4456
37LC4R	30119(A)	75A7	A775
	30200(D)	75A8	A875
37LC7R	30115(A)	75A3	A375
	30116(D)	75A4	A475

- b. Serial No : Controlled on production line
- c. Month, Year : Controlled on production line  
ex) Montly: '03' => '03'  
Year: '2005' => '0F'
- d. Model Name(Hex):

Model Name	Model Name(HEX)																
32LC4R-ZA	00	00	00	FC	00	33	32	4C	43	34	52	2D	5A	41	0A	20	20
42LC4R-ZA	00	00	00	FC	00	34	32	4C	43	34	52	2D	5A	41	0A	20	20
37LC4R-TA	00	00	00	FC	00	33	37	4C	43	34	52	2D	54	41	0A	20	20
26LC7R-ZA	00	00	00	FC	00	32	36	4C	43	37	52	2D	5A	41	0A	20	20
32LC7R-ZA	00	00	00	FC	00	33	32	4C	43	37	52	2D	5A	41	0A	20	20

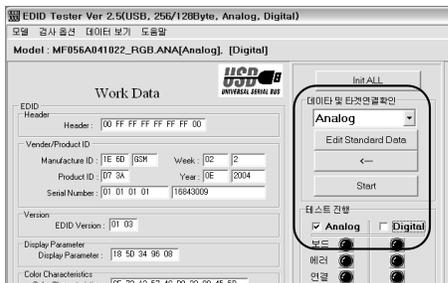
e. Checksum (7EH) : Changeable by total EDID data

**5.1. Sequence of Adjustment**

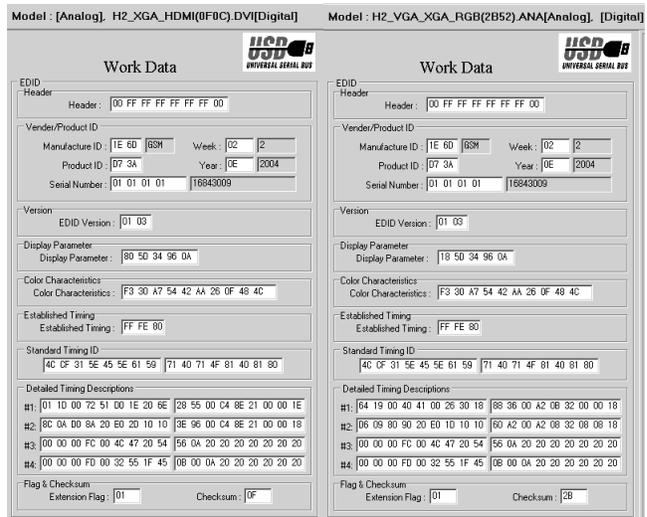
- (1) DDC data of Analog-RGB
- 1) Init the data



- 2) Load the EDID data. (Open file)  
[Analog - RGB : LP78A\_RGB.ANA]  
[Digital - HDMI : LP78A\_HDMI.DVI]
- 3)Set the S/W as below



- 4) Push the "Write Data & Verify" button. And confirm "Yes".
- 5) If the writing is finished, you will see the "OK" message.



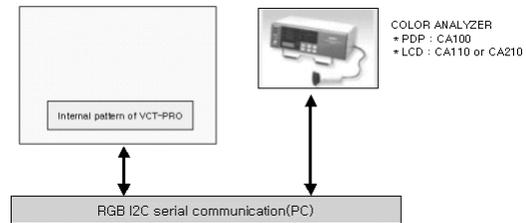
<EDID DATA>

**6. Adjustment of White Balance**

**6.1 Required Equipment**

- (1) Remote control for adjustment
- (2) Color Analyzer (CA-110 or CA-210 or same product)
- (3) Auto W/B adjustment instrument(only for Auto adjustment)

**6.2 Connecting diagram of equipment for measuring (For Automatic Adjustment)**



- (1) Enter the DDC adjust mode

- Enter the DDC adjust mode at the same time heat-run mode when pushing the power on by power only key
- Enter the adjust mode and change the input mode to AV (ZA : AV3, TA, MA : AV2)when pushing the Front av key
- Maintain the DDC adjust mode with same condition of Heat-run -> Maintain after AC off/on in status of Heat-run pattern display

- (2) Release the DDC adjust mode

- Release the adjust mode after AC off/on or std-by off/on in status of finishing the Hear-run mode
- Release the Adjust mode when receiving the aging off command(F3 00 00) from adjustment equipment
- Need to transmit the aging off command to TV set after finishing the adjustment.)

(3) DDC adjustment support command set

Adjustment	CMD(HEX)	ADR	
Aging On/Off	F3	00	FF : ON / OO : OFF
Input select	F4	00	0x10 : TV
			0x20 : AV1(SCART1)
			0x21 : AV2(SCART2)
			0x23 : AV3(Side AV)
			0x40 : Component1
			0x50 : RGB DTV
			0x60 : RGB PC
			0x90 : HDMI1 DTV
R GAIN	16	00	GAIN adjustment
G GAIN	18	00	
B GAI	1A	00	

### 6.3. Adjustment of White Balance

(For Manual adjustment)

- Operate the zero-calibration of the CA-110 or CA-210, then stick sensor to LCD module when you adjust.
- For manual adjustment, it is also possible by the following sequence

1) Select RF no signal by pressing "POWER ON" key on remote control for adjustment then operate heat run more than 15 minutes.

(If not executed this step, the condition for W/B will be differ. The W/B condition is Picture Mode : Standard (MA : Optimum), Color Temp : Normal. )

2) Changing to the av mode by pushing the input or front av key.

3) Display the internal pattern of the VCT-Pro IC by pushing the IN-START.

4) Stick sensor to center of the screen and select each items (Red/Green/Blue Gain and Offset) using ▲/▼ (CH+/-) key on R/C.

5) Adjust R Gain / B Gain using ◀/▶ (VOL+/-) key on R/C.

6) Adjust it until color coordination becomes as below.

(Initially, R/G/B gain and R/G/B offset values are fixed as below)

Red Gain : 80 , Green Gain : 80 , Blue Gain : 80

Red Offset : 80 , Green Offset : 80 , Blue Offset : 80

\* Target Value [Picture Mode : Standard (ZA, TA), Optimum(MA), Color Temp: Normal]

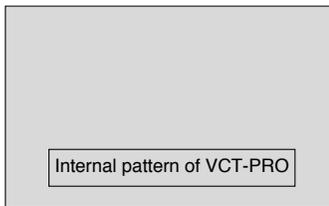
-Normal (9300K) x ; 0.283±0.003 y ; 0.298±0.003

-Luminance(Y) AV : upper 150 cd/m<sup>2</sup> (Typ : 350 cd/m<sup>2</sup>)

=> Reference Value(Automatically fixed)

- Cool(11000K): x:0.274±0.003, y: 0.286±0.003

- Warm(7200K) : x:0.303±0.003, y: 0.319±0.003



<Pattern for Adjustment of White Balance>

7) When adjustment is completed, Exit adjustment mode using EXIT key on R/C

## 6.4 Input the Shipping Option Data

- 1) Push the ADJ key in a Adjust Remote control.
- 2) Input the Option Number that was specified in the BOM, into the Shipping area.
- 3) The work is finished, Push ■ Key.

## 7. Default Value in Adjustment mode (Default values maybe modified the module condition)

### 7.1. White Balance

White Balance		
RED	Gain	80
Green	Gain	80
Blue	Gain	80
Red	Offset	80
Green	Offset	80
Blue	Offset	80

<Default Value on OSD>

## 8. Internal press test

Item	Value	Unit	Remark
Dielectric Voltage (AC <-> FG)	1.5	kV	At 100mA for 1sec (Line)
			At 100mA for 1min (OQC)
Dielectric Voltage (Without FG)	3	kV	At 100mA for 1sec (Line)
			At 100mA for 1min (OQC)

## 9. Sound spec.

Item	Min	Typ	Max	Unit	Remark
Audio Practical Max Output, L(Mono)/R	6	7	9	W	LCD

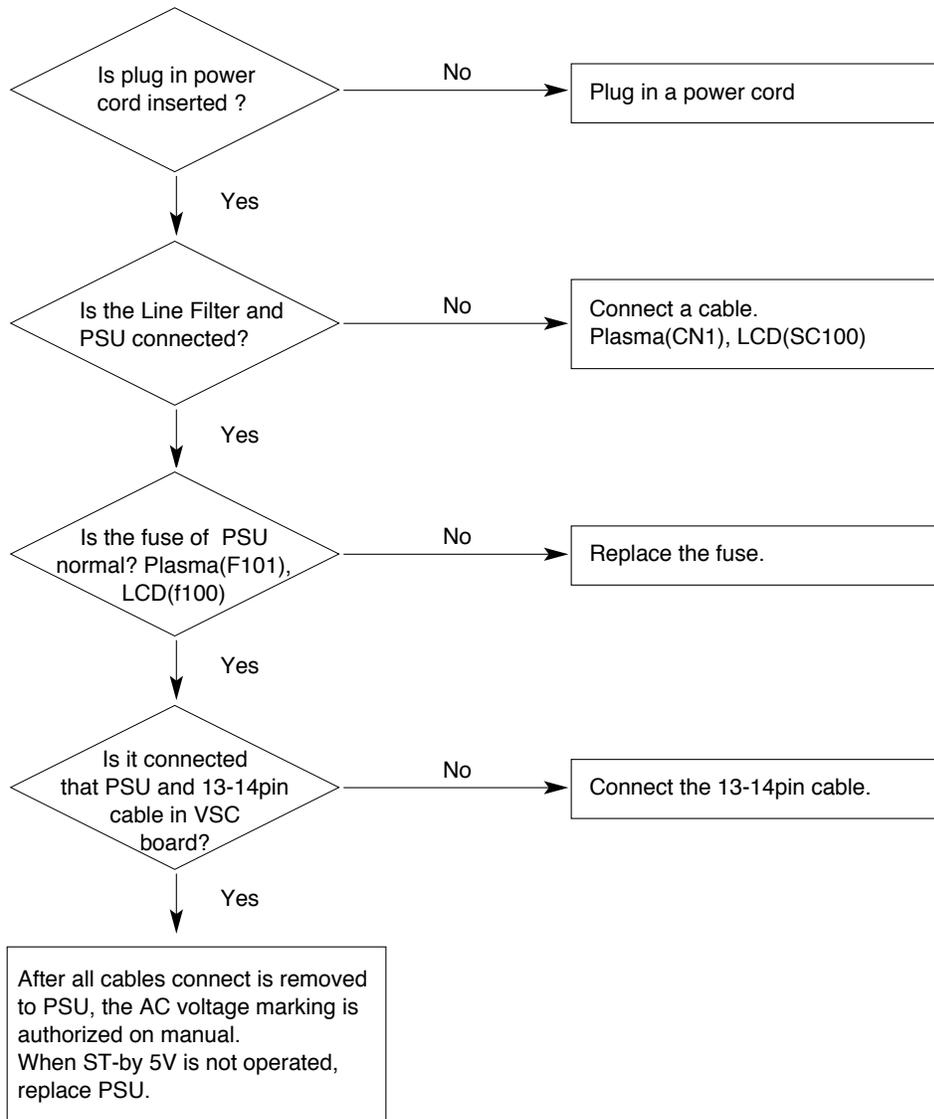
# TROUBLESHOOTING

## 1. No power

### (1) Symptom

- 1) It is not discharged minutely from the module.
- 2) Light does not come into the front LED.

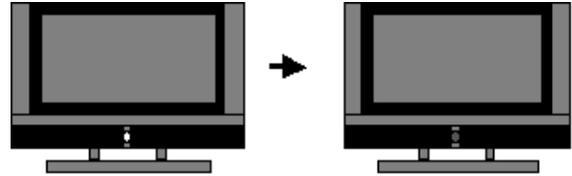
### (2) Check process



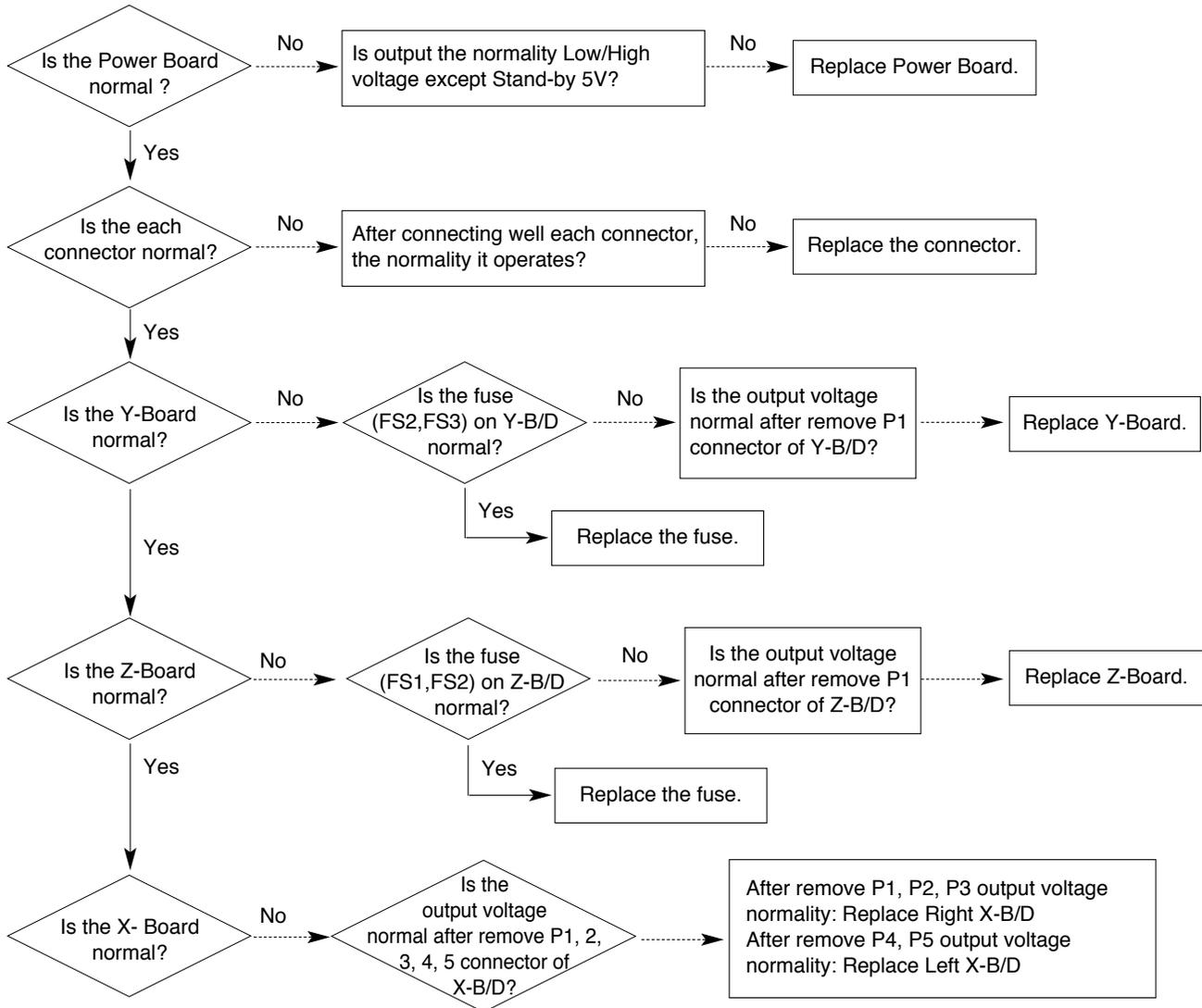
## 2. Protect mode

### (1) Symptom

- 1) After once shining, it does not discharge minutely from module.
- 2) The relay falls.(The sound is audible "Click".)
- 3) It is converted with the color where the front LED is red from green.



### (2) Check following



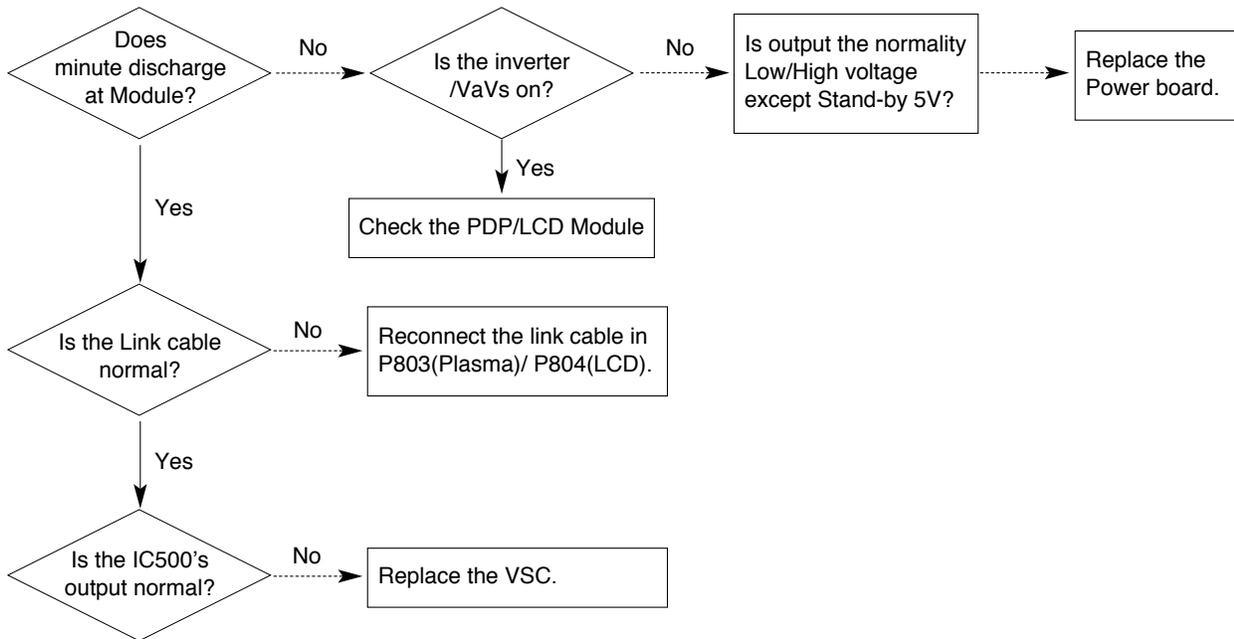
### 3. No Raster

#### (1) Symptom

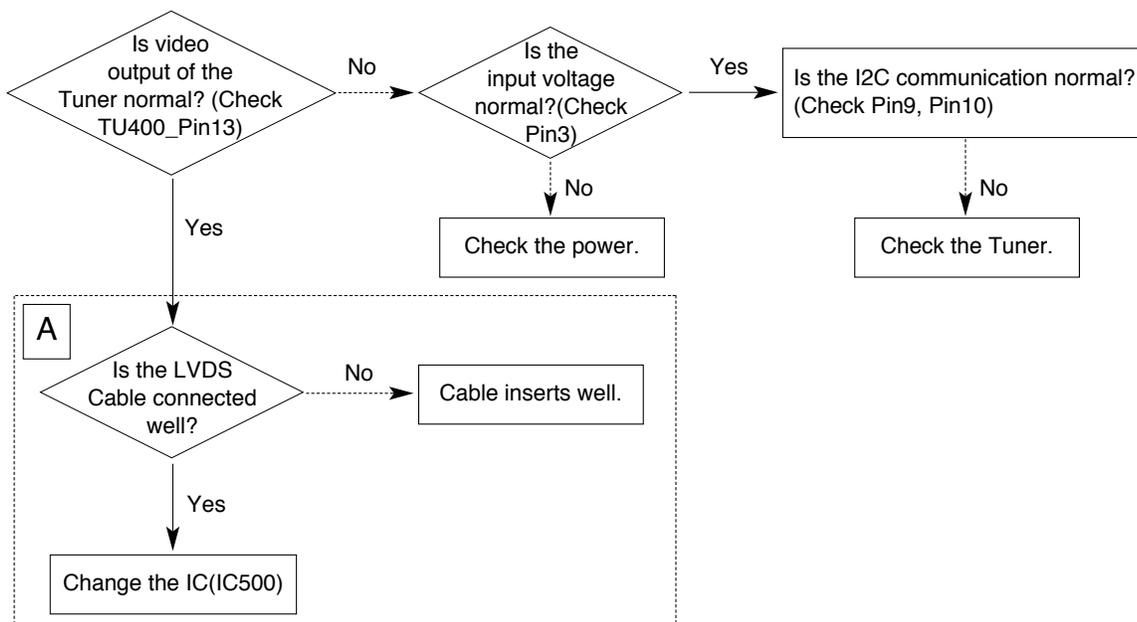
- 1) No OSD and image occur at screen.
- 2) It maintains the condition where the front LED is green.



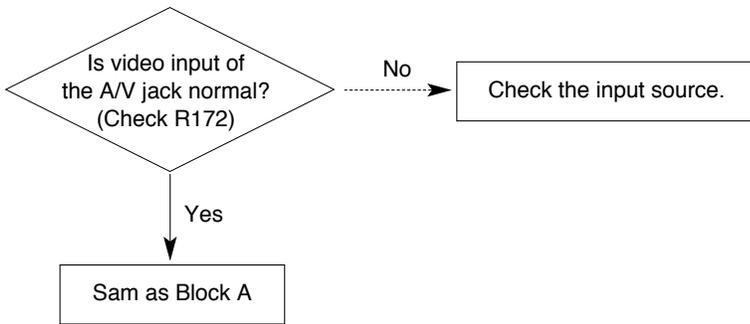
#### (2) Check following



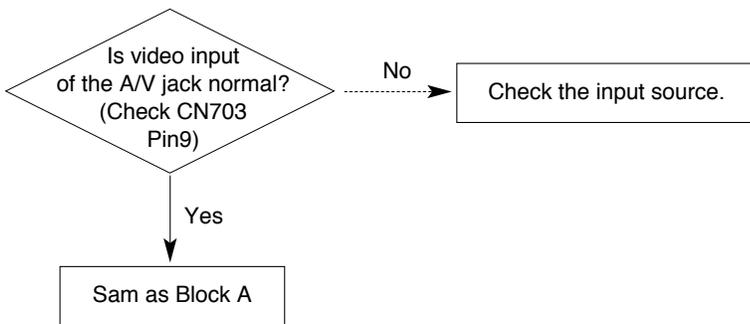
### 4. In case of becomes unusual display from RF mode.



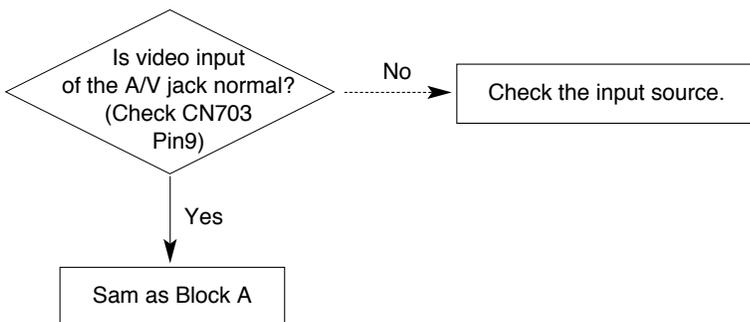
### 5. In case of becomes unusual display from rear AV mode.



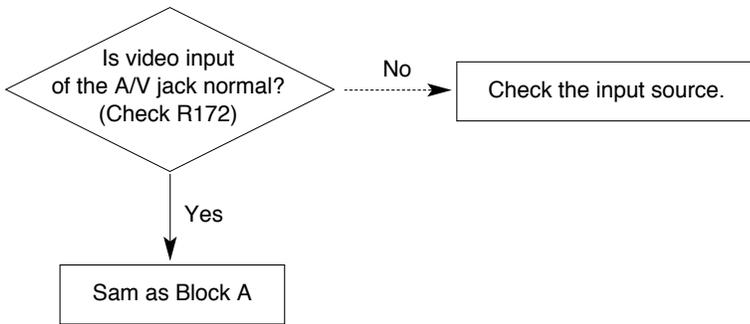
### 6. In case of becomes unusual display from Side AV mode.



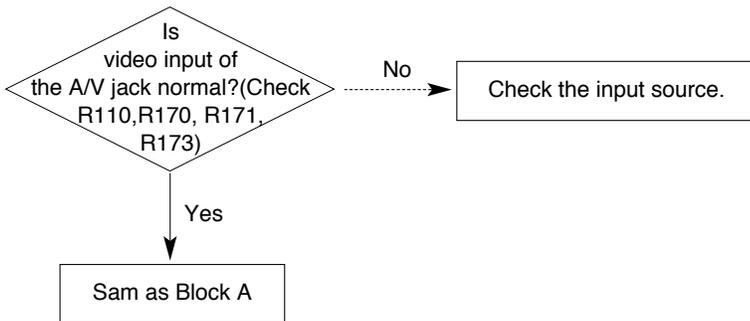
### 7. In case of becomes unusual display from Side S-Video mode.



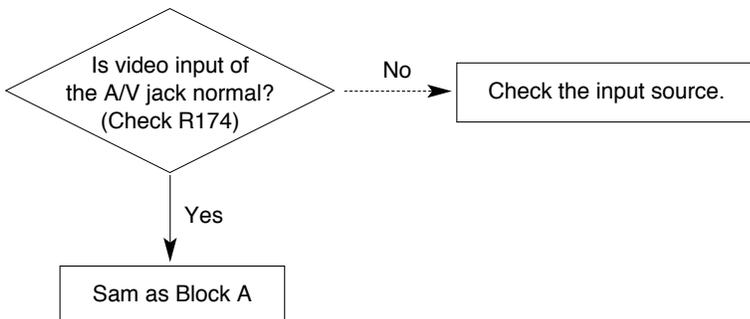
### 8. In case of becomes unusual display from SCART 1 mode.



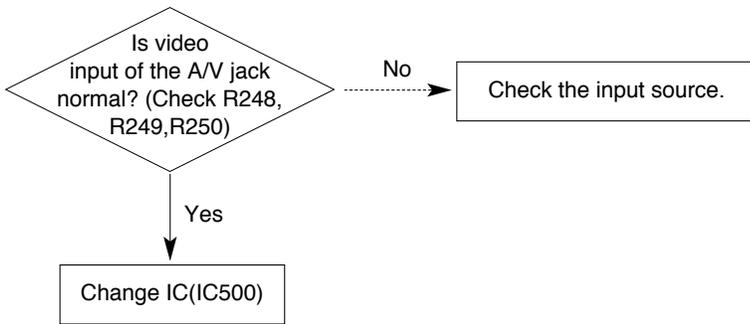
### 9. In case of becomes unusual display from SCART 1\_RGB mode.



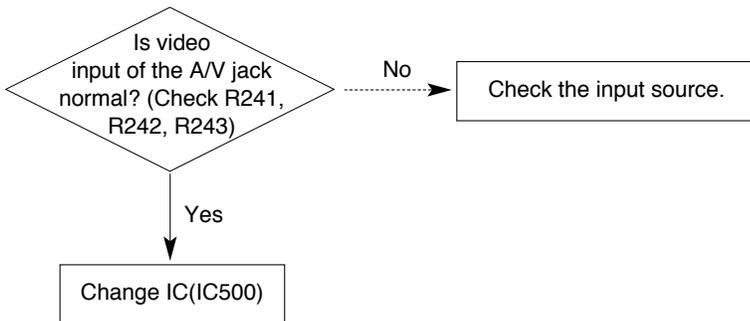
### 10. In case of becomes unusual display from SCART 2 mode.



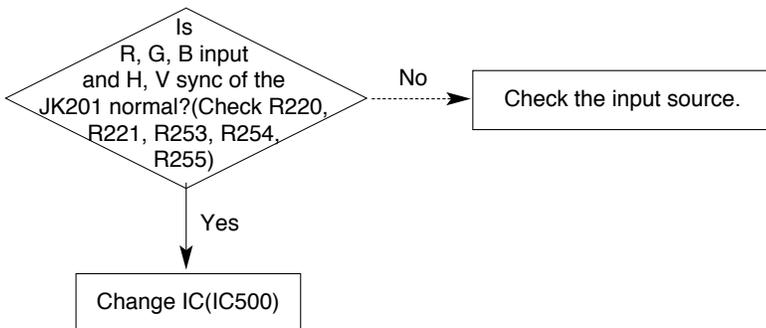
### 11. In case of becomes unusual display from component 1 mode.



### 12. In case of becomes unusual display from component 2 mode.



### 13. In case of becomes unusual display from RGB mode.

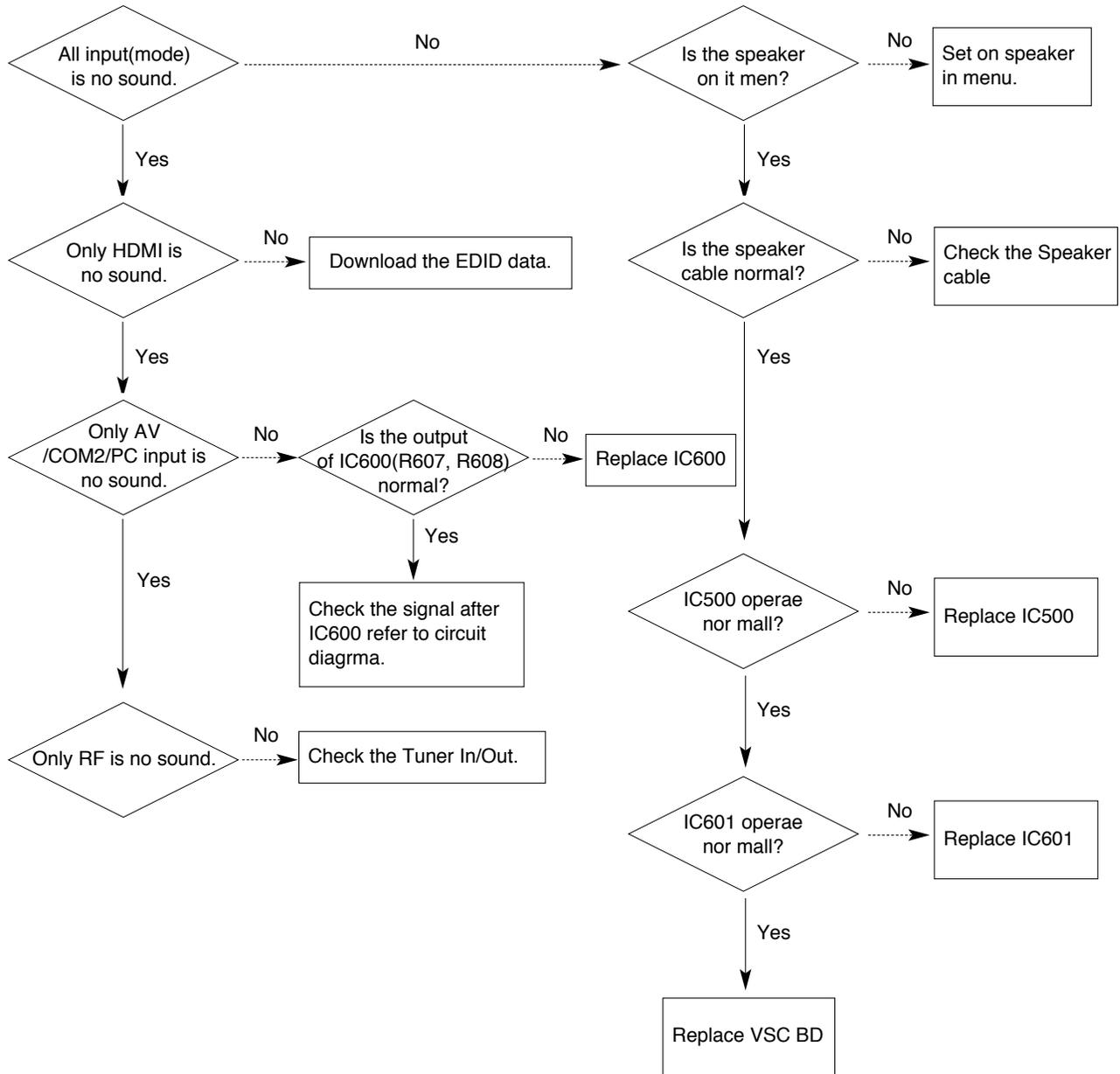


# 14. No Sound

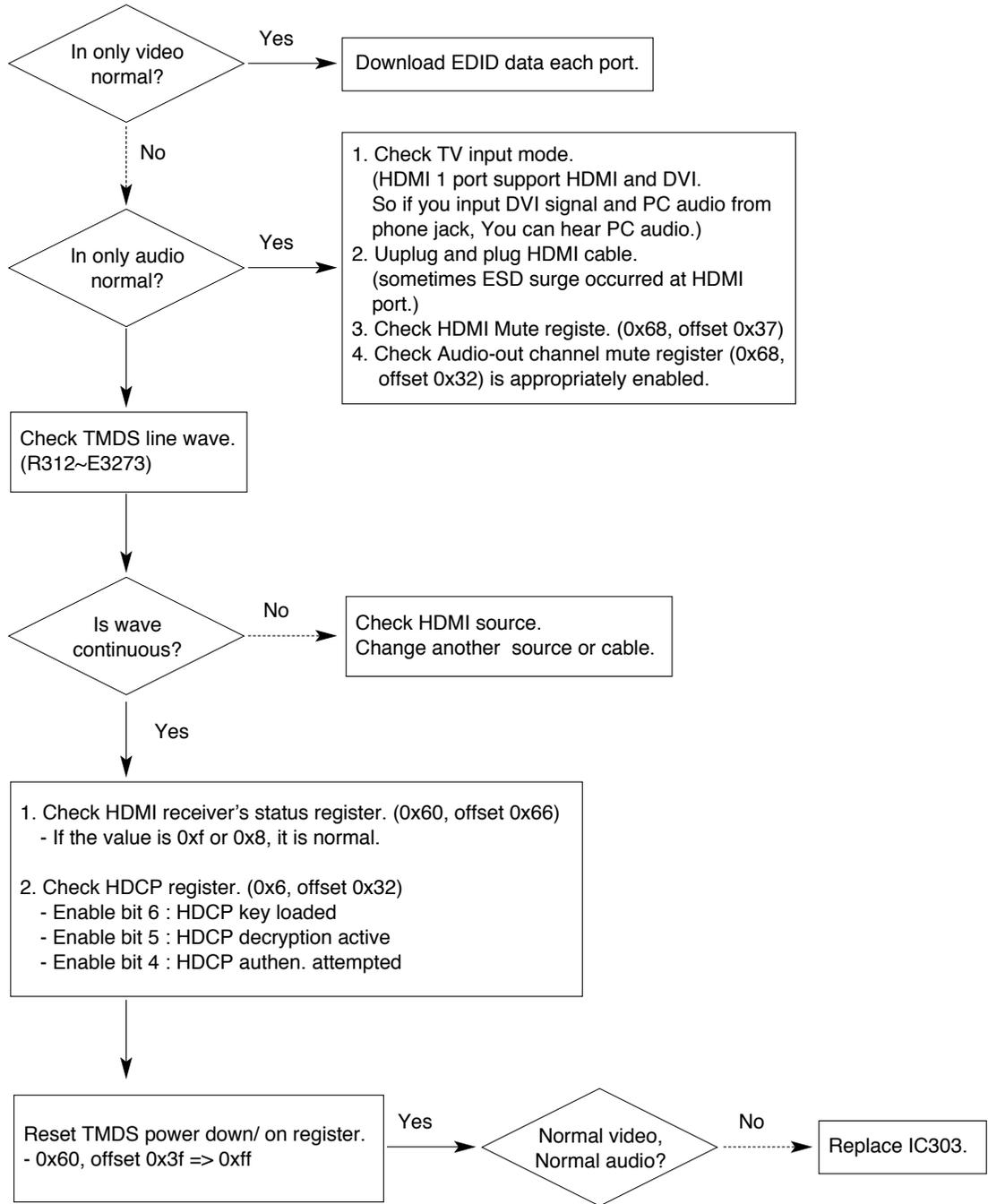
## (1) Symptom

- 1) LED is green.
- 2) Screen display but sound is not output.

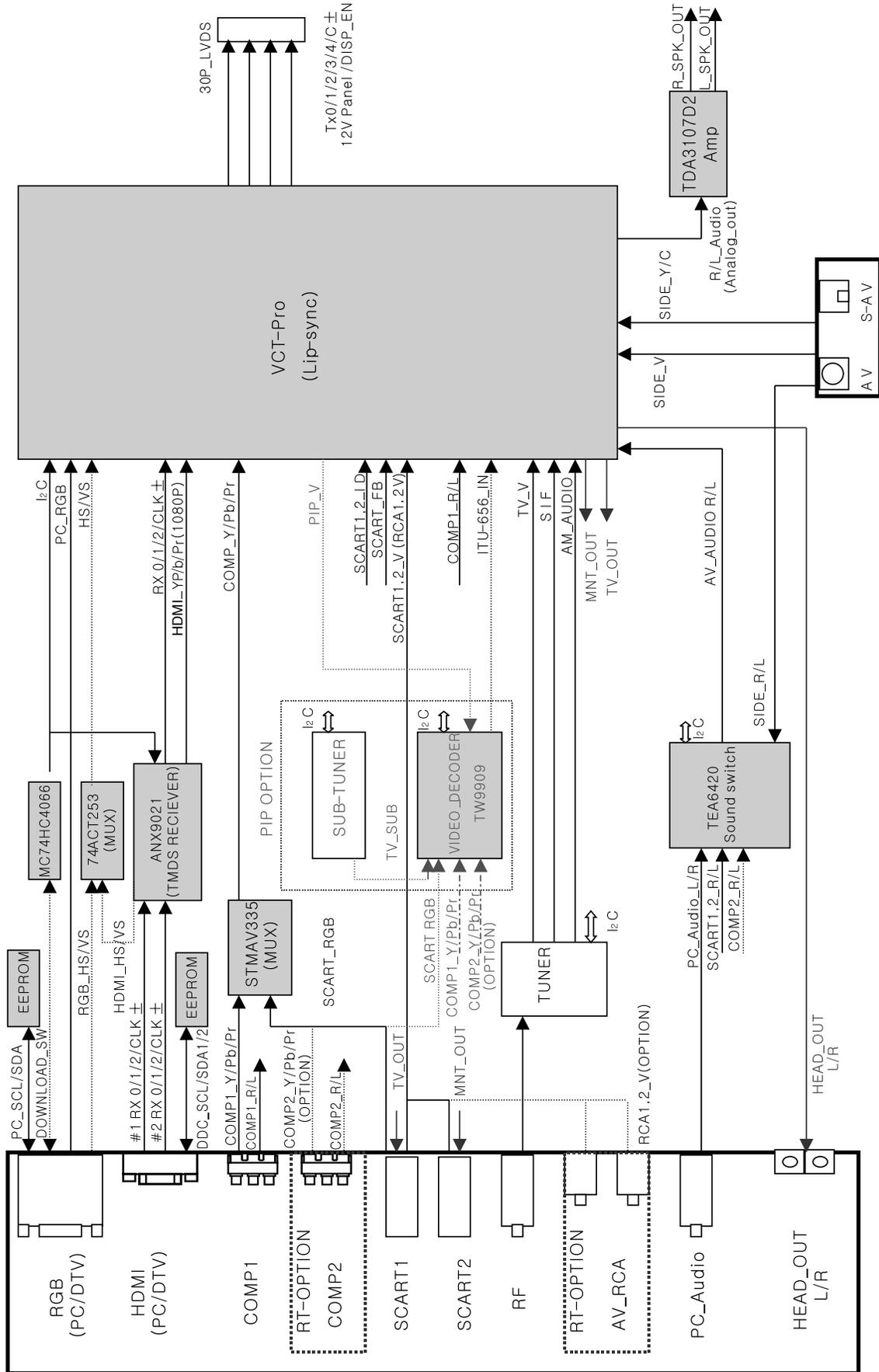
## (2) Check following



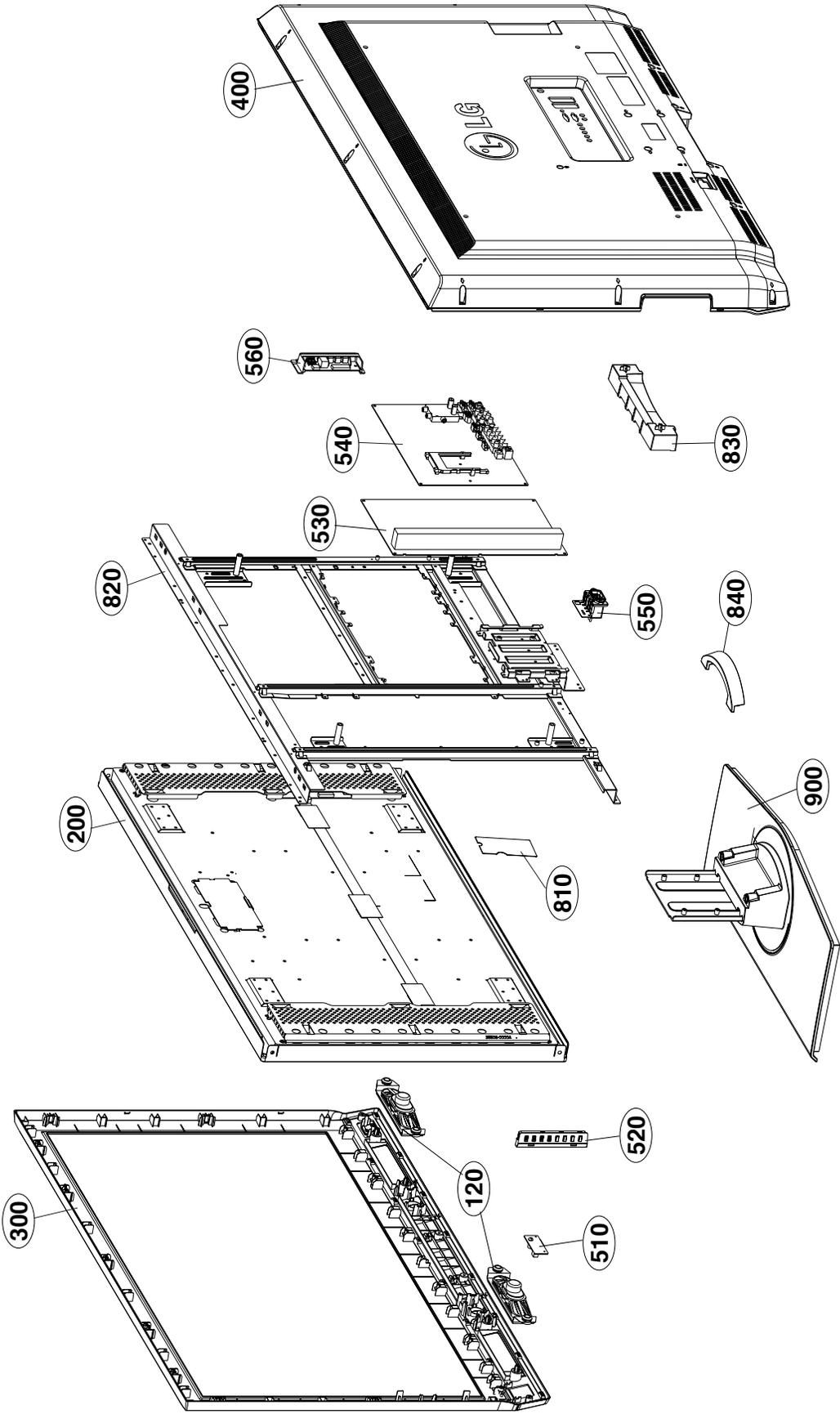
# 15. HDMI mode



# BLOCK DIAGRAM



**EXPLODED VIEW**



## EXPLODED VIEW PARTS LIST

No.	PART NO.	DESCRIPTION
	120	EAB33775101 Speaker,Full Range, EN1562C-6712 ND 10W 8OHM 82DB 100HZ 193.5 X 42 X 39.9 LUG KOREA TOPTONE
⚠	200	EAJ36547901 LCD,Module-TFT, LC420WX6-SLA2 WXGA 42INCH 1366X768 500CD COLOR 72% 16/9 1000:1(DCR 5000:1) 5ms(GTG),Zero RT Pol. 10000K LG PHILIPS LCD
⚠	300	ABJ32403510 Cabinet Assembly, 42LC7R-ZA H4 42" CABINET ASSY "02" C/SKD
⚠	400	ACQ32247913 Cover Assembly, 42LC7R-ZA LP78A 42" BACK COVER ASSY_42" H4_NON_DVR_TORNADO
	510	EBR35670601 PCB Assembly,Sub, SUB T.T LP78A H4 26/42LC7R PRE-AMP TOTAL .
	520	EBR36204701 PCB Assembly,Sub, SUB T.T LP78A H4 26LCD Model . CONTROL
⚠	530	EAY34797001 Power Supply Assembly, Tornado 42inch 42INCH Tornado 42inch LCD LGIT LCD Tornado 42inch (Power+Inverter), PSU LG INNOTEK.,LTD.
	540	EBR35843704 PCB Assembly, MAIN T.T LP78A 42LC4R-ZA . Total For CKD . From China To WR
	550	EBT36115601 Chassis Assembly, POWER(SMPS) LP78A 37/42" LCD AC-Inlet Assembly
	560	EBR36575401 PCB Assembly, SUB T.T LP78A H4 EU SIDE AV
	810	AGU32559808 Plate Assembly, ASSY AL PLATE ASSY(APPLIED TORNADO MODULE, C/SKD)
	820	AGU32675113 Plate Assembly, ASSY 42LC7R/55/56-ZA H4_NON_DVR_TORNADO MODULE BAR ASSY FOR LGEWR LOCAL
	830	MAZ34241801 Bracket, MOLD HIPS 405AF STAND 42LC5/7-HIPS 405AF GUIDE
	840	MCK32929601 Cover, MOLD ABS HF-380 42LC4 ABS, HF-380 CABLE MANAGEMENT
⚠	900	AAN32937104 Base Assembly, STAND 42LC7D-UB LA73E STAND ASSY_NO PRINT_CSKD(HIGH GLOSSY)

# REPLACEMENT PARTS LIST

DATE: 2007. 03. 24.

LOC. NO.	PART NO.	DESCRIPTION / SPECIFICATION	LOC. NO.	PART NO.	DESCRIPTION / SPECIFICATION
<b>ACCESSORY</b>					
A1	MFL37396705	"Manual,Owners" PRINTING USER LP78A BRA	C815	0CE107WF6DC	"Capacitor,AL,Chip" MVK6.3TP16VC100M 100uF
A2	MKJ32022825	Remote Controller COMPLEX PA71A 50PC5R-ZA	C816	0CE107WF6DC	"Capacitor,AL,Chip" MVK6.3TP16VC100M 100uF
A3	6410TEW010A	Power Cord "CEE,LP-34A&H05VV-FX3C,L"	C820	0CE107WF6DC	"Capacitor,AL,Chip" MVK6.3TP16VC100M 100uF
A4	341-746B	Holder MOLD ABS CABLE Holder	C820	0CE227SF6DC	"Capacitor,AL,Chip" MVG6.3TP16VC220M 220uF
<b>CAPACITORS</b>					
C101	0CE476VF6DC	"Capacitor,AL,Chip" VGV476M016S0ANE010 47uF	C821	0CE477WF6DC	"Capacitor,AL,Chip" MVK10TP16VC470M 470uF 2
C102	0CE227SF6DC	"Capacitor,AL,Chip" MVG6.3TP16VC220M 220uF	C824	0CE476SF6DC	"Capacitor,AL,Chip" VMV476M016S0ANC010 47uF
C102	0CE476VF6DC	"Capacitor,AL,Chip" VGV476M016S0ANE010 47uF	C825	0CE107SF6DC	"Capacitor,AL,Chip" VMV107M016S0ANE010 100u
C103	0CE106SF6DC	"Capacitor,AL,Chip" VMV106M016S0ANB010 10uF	C825	0CE107WF6DC	"Capacitor,AL,Chip" MVK6.3TP16VC100M 100uF
C103	0CE476VF6DC	"Capacitor,AL,Chip" VGV476M016S0ANE010 47uF	C828	0CE107WF6DC	"Capacitor,AL,Chip" MVK6.3TP16VC100M 100uF
C104	0CE106SF6DC	"Capacitor,AL,Chip" VMV106M016S0ANB010 10uF	C828	0CE227WF6DC	"Capacitor,AL,Chip" MVK8.0TP16VC220M 220uF
C116	0CE227SF6DC	"Capacitor,AL,Chip" MVG6.3TP16VC220M 220uF	C830	0CE107WF6DC	"Capacitor,AL,Chip" MVK6.3TP16VC100M 100uF
C117	0CE106SF6DC	"Capacitor,AL,Chip" VMV106M016S0ANB010 10uF	C832	0CE107SF6DC	"Capacitor,AL,Chip" VMV107M016S0ANE010 100u
C120	0CE106SF6DC	"Capacitor,AL,Chip" VMV106M016S0ANB010 10uF	C640	0CE477BJ618	"Capacitor,AL,Radial" ESM477M035T1G5H20G 470u
C206	0CE106SF6DC	"Capacitor,AL,Chip" VMV106M016S0ANB010 10uF	C641	0CE477BJ618	"Capacitor,AL,Radial" ESM477M035T1G5H20G 470u
C206	0CE106WFKDC	"Capacitor,AL,Chip" MVK4.0TP16VC10M 10uF 20	C100	0CC102CK41A	"Capacitor,Ceramic,Chip" C1608C0G1H102JT 1nF 5%
C311	0CE106SH6DC	"Capacitor,AL,Chip" VMV106M025S0ANB010 10uF	C100	0CH5101K416	"Capacitor,Ceramic,Chip" C2012C0G1H101JT 100pF 5
C316	0CE106SH6DC	"Capacitor,AL,Chip" VMV106M025S0ANB010 10uF	C100	0CH5101K416	"Capacitor,Ceramic,Chip" C2012C0G1H101JT 100pF 5
C316	0CE106WFKDC	"Capacitor,AL,Chip" MVK4.0TP16VC10M 10uF 20	C101	0CC102CK41A	"Capacitor,Ceramic,Chip" C1608C0G1H102JT 1nF 5%
C318	0CE106SH6DC	"Capacitor,AL,Chip" VMV106M025S0ANB010 10uF	C101	0CH5101K416	"Capacitor,Ceramic,Chip" C2012C0G1H101JT 100pF 5
C403	0CE107SF6DC	"Capacitor,AL,Chip" VMV107M016S0ANE010 100u	C104	0CH5471K416	"Capacitor,Ceramic,Chip" C2012C0G1H471JT 470pF 5
C408	0CE227SF6DC	"Capacitor,AL,Chip" MVG6.3TP16VC220M 220uF	C105	0CC102CK41A	"Capacitor,Ceramic,Chip" C1608C0G1H102JT 1nF 5%
C516	0CE106SF6DC	"Capacitor,AL,Chip" VMV106M016S0ANB010 10uF	C106	0CC102CK41A	"Capacitor,Ceramic,Chip" C1608C0G1H102JT 1nF 5%
C516	0CE106WFKDC	"Capacitor,AL,Chip" MVK4.0TP16VC10M 10uF 20	C110	0CK682CK51A	"Capacitor,Ceramic,Chip" C1608Y5P1H682KT 6.8nF 1
C527	0CE335WK6D8	"Capacitor,AL,Chip" MVK4.0TP50VC3.3M 3.3uF	C111	0CK682CK51A	"Capacitor,Ceramic,Chip" C1608Y5P1H682KT 6.8nF 1
C533	0CE106WH6DC	"Capacitor,AL,Chip" MVK5.0TP25VC10M 10uF 20	C112	0CK682CK51A	"Capacitor,Ceramic,Chip" C1608Y5P1H682KT 6.8nF 1
C539	0CE226WF6DC	"Capacitor,AL,Chip" MVK5.0TP16VC22M 22uF 20	C113	0CK682CK51A	"Capacitor,Ceramic,Chip" C1608Y5P1H682KT 6.8nF 1
C540	0CE226WF6DC	"Capacitor,AL,Chip" MVK5.0TP16VC22M 22uF 20	C114	0CC102CK41A	"Capacitor,Ceramic,Chip" C1608C0G1H102JT 1nF 5%
C541	0CE226WF6DC	"Capacitor,AL,Chip" MVK5.0TP16VC22M 22uF 20	C115	0CC102CK41A	"Capacitor,Ceramic,Chip" C1608C0G1H102JT 1nF 5%
C542	0CE226WF6DC	"Capacitor,AL,Chip" MVK5.0TP16VC22M 22uF 20	C118	0CC102CK41A	"Capacitor,Ceramic,Chip" C1608C0G1H102JT 1nF 5%
C543	0CE226WF6DC	"Capacitor,AL,Chip" MVK5.0TP16VC22M 22uF 20	C119	0CC102CK41A	"Capacitor,Ceramic,Chip" C1608C0G1H102JT 1nF 5%
C544	0CE226WF6DC	"Capacitor,AL,Chip" MVK5.0TP16VC22M 22uF 20	C200	0CC102CK41A	"Capacitor,Ceramic,Chip" C1608C0G1H102JT 1nF 5%
C545	0CE226WF6DC	"Capacitor,AL,Chip" MVK5.0TP16VC22M 22uF 20	C201	0CC102CK41A	"Capacitor,Ceramic,Chip" C1608C0G1H102JT 1nF 5%
C574	0CE475WJ6DC	"Capacitor,AL,Chip" MVK4.0TP35VC4.7M 4.7uF	C204	0CK103CK56A	"Capacitor,Ceramic,Chip" 0603B103K500CT 10nF 10%
C601	0CE107WF6DC	"Capacitor,AL,Chip" MVK6.3TP16VC100M 100uF	C205	0CK103CK56A	"Capacitor,Ceramic,Chip" 0603B103K500CT 10nF 10%
C609	0CE226WF6DC	"Capacitor,AL,Chip" MVK5.0TP16VC22M 22uF 20	C213	0CC102CK41A	"Capacitor,Ceramic,Chip" C1608C0G1H102JT 1nF 5%
C610	0CE475WJ6DC	"Capacitor,AL,Chip" MVK4.0TP35VC4.7M 4.7uF	C214	0CC102CK41A	"Capacitor,Ceramic,Chip" C1608C0G1H102JT 1nF 5%
C611	0CE475WJ6DC	"Capacitor,AL,Chip" MVK4.0TP35VC4.7M 4.7uF	C215	0CK105CF94A	"Capacitor,Ceramic,Chip" 0603F105J160CT 1uF -20T
C628	0CE106WH6DC	"Capacitor,AL,Chip" MVK5.0TP25VC10M 10uF 20	C216	0CK105CF94A	"Capacitor,Ceramic,Chip" 0603F105J160CT 1uF -20T
C628	JCE8106J691	"Capacitor,AL,Chip" MVK5.0TP35VC10M 10uF 20	C217	0CK105CF94A	"Capacitor,Ceramic,Chip" 0603F105J160CT 1uF -20T
C647	0CE107WJ6DC	"Capacitor,AL,Chip" MVK10TP35VC100M 100uF 2	C218	0CK105CF94A	"Capacitor,Ceramic,Chip" 0603F105J160CT 1uF -20T
C701	0CE107WH6DC	"Capacitor,AL,Chip" MVK8.0TP25VC100M 100uF	C219	0CK105CF94A	"Capacitor,Ceramic,Chip" 0603F105J160CT 1uF -20T
C708	0CE226SF6DC	"Capacitor,AL,Chip" VMV226M016S0ANB010 22uF	C220	0CK105CF94A	"Capacitor,Ceramic,Chip" 0603F105J160CT 1uF -20T
C801	0CE227WF6DC	"Capacitor,AL,Chip" MVK8.0TP16VC220M 220uF	C221	0CK104CF56A	"Capacitor,Ceramic,Chip" 0603B104K160CT 100nF 10
C807	0CE107WH6DC	"Capacitor,AL,Chip" MVK8.0TP25VC100M 100uF	C225	EAE32755801	"Capacitor,Ceramic,Chip" CL31A106K5HNNNE 10uF 10
C808	0CE107WF6DC	"Capacitor,AL,Chip" MVK6.3TP16VC100M 100uF	C226	EAE32755801	"Capacitor,Ceramic,Chip" CL31A106K5HNNNE 10uF 10
C813	0CE107WF6DC	"Capacitor,AL,Chip" MVK6.3TP16VC100M 100uF	C227	EAE32755801	"Capacitor,Ceramic,Chip" CL31A106K5HNNNE 10uF 10
			C302	0CK103CK56A	"Capacitor,Ceramic,Chip" 0603B103K500CT 10nF 10%
			C303	0CK103CK56A	"Capacitor,Ceramic,Chip" 0603B103K500CT 10nF 10%
			C307	0CK103CK56A	"Capacitor,Ceramic,Chip" 0603B103K500CT 10nF 10%
			C308	0CC180CK41A	"Capacitor,Ceramic,Chip" C1608C0G1H180JT 18pF 5%





LOC. NO.	PART NO.	DESCRIPTION / SPECIFICATION
IC303	0IPRP00735A	"IC,I/O Support Chip" ANX9021 3.3V 60u 17MHZ
IC802	0IPMG78341A	"IC,LDO Voltage Regulator" "AZ1085S-3.3TR/E1,LF 12V"
IC803	0IPMG78341A	"IC,LDO Voltage Regulator" "AZ1085S-3.3TR/E1,LF 12V"
IC805	EAN34140401	"IC,LDO Voltage Regulator" AZ1085S-1.8TRE1 1.238V
IC809	0IPMG00049A	"IC,LDO Voltage Regulator" AZ1117H-1.8TR/E1[H13A]
IC500	EAN35336801	"IC,Video Processors" VCT7993P- FA-A1-H-000 1
IC502	0IFA752700A	"IC,Voltage Detector" KA75270Z 2.55TO2.85V 0
IC800	EAN32662801	"IC,Voltage Regulator" KA7809ERTM 35V to 40V 9

**COILS & FILTERS & INDUCTORS**

F1	EAM35501401	"Filter,AC Line" IF3-N06CEWL1 5.3mH 250V
AL308	6210TCE002B	"Filter,Bead" HB-4M3216-121JT 120OHM
AL309	6210TCE002B	"Filter,Bead" HB-4M3216-121JT 120OHM
AL310	6210TCE002B	"Filter,Bead" HB-4M3216-121JT 120OHM
AL311	6210TCE002B	"Filter,Bead" HB-4M3216-121JT 120OHM
AL312	6210TCE002B	"Filter,Bead" HB-4M3216-121JT 120OHM
AL313	6210TCE002B	"Filter,Bead" HB-4M3216-121JT 120OHM
L100	6210TCE001A	"Filter,Bead" HB-1S2012-080JT 80HM 2X
L101	6210TCE001A	"Filter,Bead" HB-1S2012-080JT 80HM 2X
L102	6210TCE001A	"Filter,Bead" HB-1S2012-080JT 80HM 2X
L103	6210TCE001A	"Filter,Bead" HB-1S2012-080JT 80HM 2X
L104	6210TCE001A	"Filter,Bead" HB-1S2012-080JT 80HM 2X
L105	6210TCE001A	"Filter,Bead" HB-1S2012-080JT 80HM 2X
L106	6210TCE001A	"Filter,Bead" HB-1S2012-080JT 80HM 2X
L107	6210TCE001A	"Filter,Bead" HB-1S2012-080JT 80HM 2X
L108	6210TCE001A	"Filter,Bead" HB-1S2012-080JT 80HM 2X
L109	6210TCE001A	"Filter,Bead" HB-1S2012-080JT 80HM 2X
L200	6210TCE001A	"Filter,Bead" HB-1S2012-080JT 80HM 2X
L201	6210TCE001A	"Filter,Bead" HB-1S2012-080JT 80HM 2X
L204	6210TCE001A	"Filter,Bead" HB-1S2012-080JT 80HM 2X
L205	6210TCE001A	"Filter,Bead" HB-1S2012-080JT 80HM 2X
L314	6210TCE001G	"Filter,Bead" HH-1M3216-501JT 500OHM
L315	6210TCE001G	"Filter,Bead" HH-1M3216-501JT 500OHM
L400	6210TCE001G	"Filter,Bead" HH-1M3216-501JT 500OHM
L501	6210TCE001G	"Filter,Bead" HH-1M3216-501JT 500OHM
L503	6210TCE001G	"Filter,Bead" HH-1M3216-501JT 500OHM
L508	6210TCE001B	"Filter,Bead" HH-1H3216-500JT 500HM 3
L509	6210TCE001B	"Filter,Bead" HH-1H3216-500JT 500HM 3
L510	6210TCE001B	"Filter,Bead" HH-1H3216-500JT 500HM 3
L511	6210TCE001G	"Filter,Bead" HH-1M3216-501JT 500OHM
L512	6210TCE001G	"Filter,Bead" HH-1M3216-501JT 500OHM
L602	6210TCE001G	"Filter,Bead" HH-1M3216-501JT 500OHM
L603	6210TCE001G	"Filter,Bead" HH-1M3216-501JT 500OHM
L608	6210TCE001G	"Filter,Bead" HH-1M3216-501JT 500OHM
L609	6210TCE001G	"Filter,Bead" HH-1M3216-501JT 500OHM
L610	6210TCE001P	"Filter,Bead" HB-1S2012-121JT(H:1mm)
L612	6210TCE001P	"Filter,Bead" HB-1S2012-121JT(H:1mm)
L615	6210TCE001P	"Filter,Bead" HB-1S2012-121JT(H:1mm)
L617	6210TCE001P	"Filter,Bead" HB-1S2012-121JT(H:1mm)
L618	6210TCE001G	"Filter,Bead" HH-1M3216-501JT 500OHM
L701	6210TCE001G	"Filter,Bead" HH-1M3216-501JT 500OHM
L703	6210TCE001G	"Filter,Bead" HH-1M3216-501JT 500OHM
L704	6200J00005N	"Filter,Bead" HH-1M2012-121JT(H:1mm)
L705	6200J00005N	"Filter,Bead" HH-1M2012-121JT(H:1mm)

LOC. NO.	PART NO.	DESCRIPTION / SPECIFICATION
L706	6200J00005N	"Filter,Bead" HH-1M2012-121JT(H:1mm)
L707	6210TCE001A	"Filter,Bead" HB-1S2012-080JT 80HM 2X
L708	6210TCE001A	"Filter,Bead" HB-1S2012-080JT 80HM 2X
L709	6210TCE001A	"Filter,Bead" HB-1S2012-080JT 80HM 2X
L800	6210TCE001G	"Filter,Bead" HH-1M3216-501JT 500OHM
L801	6210TCE001G	"Filter,Bead" HH-1M3216-501JT 500OHM
L802	6210TCE001B	"Filter,Bead" HH-1H3216-500JT 500HM 3
L803	6210TCE001G	"Filter,Bead" HH-1M3216-501JT 500OHM
L806	6210TCE001G	"Filter,Bead" HH-1M3216-501JT 500OHM
L806	6210TCE001G	"Filter,Bead" HH-1M3216-501JT 500OHM
L807	6210TCE001G	"Filter,Bead" HH-1M3216-501JT 500OHM
L808	6210TCE001G	"Filter,Bead" HH-1M3216-501JT 500OHM
F1	6210VH0001A	"Filter,Ferrite Core" 6210VH0001A 50OHM 25MM
L707	EAM33010401	"Filter,LCR" MEM2012P25R0 EMI 25MHZ
L708	EAM33010401	"Filter,LCR" MEM2012P25R0 EMI 25MHZ
L709	EAM33010401	"Filter,LCR" MEM2012P25R0 EMI 25MHZ
L711	EAM33010402	"Filter,LCR" MEM2012P101R EMI 100MHZ
L712	EAM33010402	"Filter,LCR" MEM2012P101R EMI 100MHZ
L713	EAM33010401	"Filter,LCR" MEM2012P25R0 EMI 25MHZ
L714	EAM33010402	"Filter,LCR" MEM2012P101R EMI 100MHZ
L100	0LC1032101A	"Inductor,Multilayer,Chip" FI-C3216-103KJT 10UH 10
L600	0LCML00020C	"Inductor,Multilayer,Chip" MLI-201212-100K 10UH 10
L601	0LCML00020C	"Inductor,Multilayer,Chip" MLI-201212-100K 10UH 10
L605	EAP32842807	"Inductor,Wire Wound,Chip" NR8040T330M 33UH 20%
L606	EAP32842807	"Inductor,Wire Wound,Chip" NR8040T330M 33UH 20%
L613	EAP32842807	"Inductor,Wire Wound,Chip" NR8040T330M 33UH 20%
L614	EAP32842807	"Inductor,Wire Wound,Chip" NR8040T330M 33UH 20%
L810	0LCTO00019A	"Inductor,Wire Wound,Chip" D75C-646CY-220M=P3 22

**TRANSISTORS & FETs**

IC301	0TFTH80001A	FET SSM6N15FU N-CHANNEL MOS
IC305	0TFTH80001A	FET SSM6N15FU N-CHANNEL MOS
IC306	0TFTH80001A	FET SSM6N15FU N-CHANNEL MOS
IC400	0TFTH80001A	FET SSM6N15FU N-CHANNEL MOS
Q700	EBK32753101	FET SI4925BDY P-CHANNEL MOS
Q100	0TRIY80001A	"TR,Bipolar" 2SC3052 NPN 6V 50V 50V
Q101	0TRIY80001A	"TR,Bipolar" 2SC3052 NPN 6V 50V 50V
Q103	0TRIY80001A	"TR,Bipolar" 2SC3052 NPN 6V 50V 50V
Q104	0TRIY80001A	"TR,Bipolar" 2SC3052 NPN 6V 50V 50V
Q105	0TRIY80001A	"TR,Bipolar" 2SC3052 NPN 6V 50V 50V
Q106	0TRIY80001A	"TR,Bipolar" 2SC3052 NPN 6V 50V 50V
Q107	0TRIY80001A	"TR,Bipolar" 2SC3052 NPN 6V 50V 50V
Q108	0TRIY80001A	"TR,Bipolar" 2SC3052 NPN 6V 50V 50V
Q109	0TRIY80001A	"TR,Bipolar" 2SC3052 NPN 6V 50V 50V
Q110	0TRIY80001A	"TR,Bipolar" 2SC3052 NPN 6V 50V 50V
Q200	0TRIY80001A	"TR,Bipolar" 2SC3052 NPN 6V 50V 50V
Q204	0TRIY80001A	"TR,Bipolar" 2SC3052 NPN 6V 50V 50V
Q205	0TRIY80001A	"TR,Bipolar" 2SC3052 NPN 6V 50V 50V
Q206	0TRIY80001A	"TR,Bipolar" 2SC3052 NPN 6V 50V 50V
Q400	0TRIY80001A	"TR,Bipolar" 2SC3052 NPN 6V 50V 50V
Q401	0TRIH80002A	"TR,Bipolar" 2SA1530A-T112-1R PNP -6
Q403	0TRIY80001A	"TR,Bipolar" 2SC3052 NPN 6V 50V 50V
Q404	0TRIH80002A	"TR,Bipolar" 2SA1530A-T112-1R PNP -6
Q411	0TRIH80002A	"TR,Bipolar" 2SA1530A-T112-1R PNP -6

LOC. NO.	PART NO.	DESCRIPTION / SPECIFICATION	LOC. NO.	PART NO.	DESCRIPTION / SPECIFICATION
Q500	0TR102009AM	"TR,Bipolar" KRA102S PNP -30V 0V -50	R107	0RH1101D622	"Resistor,Chip" MCR10EZHZ112 1.1KOHM 5%
Q501	0TRIH80002A	"TR,Bipolar" 2SA1530A-T112-1R PNP -6	R107	0RH3301D622	"Resistor,Chip" MCR10EZHZJ332 3.3KOHM 5%
Q502	0TRIH80002A	"TR,Bipolar" 2SA1530A-T112-1R PNP -6	R107	0RJ0752D677	"Resistor,Chip" MCR03EZPJ750 750OHM 5% 1
Q503	0TRIIY80001A	"TR,Bipolar" 2SC3052 NPN 6V 50V 50V	R108	0RH0000D622	"Resistor,Chip" MCR10EZHZJ000 0OHM 5% 1/
Q504	0TRIH80002A	"TR,Bipolar" 2SA1530A-T112-1R PNP -6	R108	0RH0332D622	"Resistor,Chip" MCR10EZHZJ330 330OHM 5% 1
Q600	0TRIIY80001A	"TR,Bipolar" 2SC3052 NPN 6V 50V 50V	R108	0RH9101D622	"Resistor,Chip" MCR10EZHZJ912 9.1KOHM 5%
Q601	0TRIIY80001A	"TR,Bipolar" 2SC3052 NPN 6V 50V 50V	R108	0RJ2203D677	"Resistor,Chip" MCR03EZPJ224 220KOHM 5%
Q602	0TRIIY80001A	"TR,Bipolar" 2SC3052 NPN 6V 50V 50V	R109	0RH0752D622	"Resistor,Chip" MCR10EZHZJ750 750OHM 5% 1
Q603	0TRIIY80001A	"TR,Bipolar" 2SC3052 NPN 6V 50V 50V	R109	0RJ2203D677	"Resistor,Chip" MCR03EZPJ224 220KOHM 5%
Q701	0TRIIY80001A	"TR,Bipolar" 2SC3052 NPN 6V 50V 50V	R110	0RH0000D622	"Resistor,Chip" MCR10EZHZJ000 0OHM 5% 1/
Q800	0TRIIY80001A	"TR,Bipolar" 2SC3052 NPN 6V 50V 50V	R110	0RJ2000D677	"Resistor,Chip" MCR03EZPJ201 200OHM 5%
Q801	0TRIIY80001A	"TR,Bipolar" 2SC3052 NPN 6V 50V 50V	R111	0RJ1001D677	"Resistor,Chip" MCR03EZPJ102 1KOHM 5% 1
Q803	0TRIIY80001A	"TR,Bipolar" 2SC3052 NPN 6V 50V 50V	R112	0RJ1001D677	"Resistor,Chip" MCR03EZPJ102 1KOHM 5% 1
Q804	0TRIIY80001A	"TR,Bipolar" 2SC3052 NPN 6V 50V 50V	R114	0RH0000D622	"Resistor,Chip" MCR10EZHZJ000 0OHM 5% 1/
<b>RESISTORS</b>			R115	0RH0000D622	"Resistor,Chip" MCR10EZHZJ000 0OHM 5% 1/
L402	0RJ0000G676	"Resistor,Chip" MCR18EZHZJ000_ 0OHM 5% 1	R116	0RH0000D622	"Resistor,Chip" MCR10EZHZJ000 0OHM 5% 1/
L710	0RH0000D622	"Resistor,Chip" MCR10EZHZJ000 0OHM 5% 1/	R117	0RH0000D622	"Resistor,Chip" MCR10EZHZJ000 0OHM 5% 1/
R1	0RH0000D622	"Resistor,Chip" MCR10EZHZJ000 0OHM 5% 1/	R119	0RJ1001D677	"Resistor,Chip" MCR03EZPJ102 1KOHM 5% 1
R1	0RH0000D622	"Resistor,Chip" MCR10EZHZJ000 0OHM 5% 1/	R120	0RJ1001D677	"Resistor,Chip" MCR03EZPJ102 1KOHM 5% 1
R100	0RH0000D622	"Resistor,Chip" MCR10EZHZJ000 0OHM 5% 1/	R121	0RJ1001D677	"Resistor,Chip" MCR03EZPJ102 1KOHM 5% 1
R100	0RH0332D622	"Resistor,Chip" MCR10EZHZJ330 330OHM 5% 1	R122	0RJ1001D677	"Resistor,Chip" MCR03EZPJ102 1KOHM 5% 1
R100	0RJ0752D677	"Resistor,Chip" MCR03EZPJ750 750OHM 5% 1	R132	0RJ4701D677	"Resistor,Chip" MCR03EZPJ472 4.7KOHM 5%
R101	0RH0000D622	"Resistor,Chip" MCR10EZHZJ000 0OHM 5% 1/	R133	0RJ4701D677	"Resistor,Chip" MCR03EZPJ472 4.7KOHM 5%
R101	0RH0000D622	"Resistor,Chip" MCR10EZHZJ000 0OHM 5% 1/	R140	0RJ4701D677	"Resistor,Chip" MCR03EZPJ472 4.7KOHM 5%
R101	0RH0752D622	"Resistor,Chip" MCR10EZHZJ750 750OHM 5% 1	R141	0RJ4701D677	"Resistor,Chip" MCR03EZPJ472 4.7KOHM 5%
R101	0RH9101D622	"Resistor,Chip" MCR10EZHZJ912 9.1KOHM 5%	R153	0RJ0000D677	"Resistor,Chip" MCR03EZPJ000 0OHM 5% 1/
R101	0RJ9101D677	"Resistor,Chip" MCR03EZPJ912 9.1KOHM 5%	R154	0RJ0752D677	"Resistor,Chip" MCR03EZPJ750 750OHM 5% 1
R102	0RH1002D622	"Resistor,Chip" MCR10EZHZJ103 10KOHM 5%	R155	0RJ0000D677	"Resistor,Chip" MCR03EZPJ000 0OHM 5% 1/
R102	0RH1101D622	"Resistor,Chip" MCR10EZHZJ112 1.1KOHM 5%	R156	0RJ0000D677	"Resistor,Chip" MCR03EZPJ000 0OHM 5% 1/
R102	0RH3301D622	"Resistor,Chip" MCR10EZHZJ332 3.3KOHM 5%	R157	0RJ9101D677	"Resistor,Chip" MCR03EZPJ912 9.1KOHM 5%
R102	0RH4700D622	"Resistor,Chip" MCR10EZHZJ471 470OHM 5%	R158	0RJ0752D677	"Resistor,Chip" MCR03EZPJ750 750OHM 5% 1
R102	0RJ0752D677	"Resistor,Chip" MCR03EZPJ750 750OHM 5% 1	R159	0RJ2203D677	"Resistor,Chip" MCR03EZPJ224 220KOHM 5%
R103	0RH0000D622	"Resistor,Chip" MCR10EZHZJ000 0OHM 5% 1/	R160	0RJ2203D677	"Resistor,Chip" MCR03EZPJ224 220KOHM 5%
R103	0RH1101D622	"Resistor,Chip" MCR10EZHZJ112 1.1KOHM 5%	R161	0RJ3601D677	"Resistor,Chip" MCR03EZPJ362 3.6KOHM 5%
R103	0RH2203D622	"Resistor,Chip" MCR10EZHZJ224 220KOHM 5%	R162	0RJ1001D677	"Resistor,Chip" MCR03EZPJ102 1KOHM 5% 1
R103	0RH3301D622	"Resistor,Chip" MCR10EZHZJ332 3.3KOHM 5%	R163	0RJ1001D677	"Resistor,Chip" MCR03EZPJ102 1KOHM 5% 1
R103	0RJ0752D677	"Resistor,Chip" MCR03EZPJ750 750OHM 5% 1	R164	0RJ1001D677	"Resistor,Chip" MCR03EZPJ102 1KOHM 5% 1
R104	0RH0000D622	"Resistor,Chip" MCR10EZHZJ000 0OHM 5% 1/	R165	0RJ1001D677	"Resistor,Chip" MCR03EZPJ102 1KOHM 5% 1
R104	0RH1002D622	"Resistor,Chip" MCR10EZHZJ103 10KOHM 5%	R166	0RJ2001D677	"Resistor,Chip" MCR03EZPJ202 2KOHM 5% 1
R104	0RH4700D622	"Resistor,Chip" MCR10EZHZJ471 470OHM 5%	R167	0RJ2001D677	"Resistor,Chip" MCR03EZPJ202 2KOHM 5% 1
R104	0RH9101D622	"Resistor,Chip" MCR10EZHZJ912 9.1KOHM 5%	R168	0RJ2001D677	"Resistor,Chip" MCR03EZPJ202 2KOHM 5% 1
R104	0RJ0752D677	"Resistor,Chip" MCR03EZPJ750 750OHM 5% 1	R169	0RJ2001D677	"Resistor,Chip" MCR03EZPJ202 2KOHM 5% 1
R105	0RH0000D622	"Resistor,Chip" MCR10EZHZJ000 0OHM 5% 1/	R170	0RJ0332D677	"Resistor,Chip" MCR03EZPJ330 330OHM 5% 1
R105	0RH0000D622	"Resistor,Chip" MCR10EZHZJ000 0OHM 5% 1/	R171	0RJ0332D677	"Resistor,Chip" MCR03EZPJ330 330OHM 5% 1
R105	0RH2203D622	"Resistor,Chip" MCR10EZHZJ224 220KOHM 5%	R172	0RJ0332D677	"Resistor,Chip" MCR03EZPJ330 330OHM 5% 1
R105	0RH9101D622	"Resistor,Chip" MCR10EZHZJ912 9.1KOHM 5%	R173	0RJ0332D677	"Resistor,Chip" MCR03EZPJ330 330OHM 5% 1
R105	0RJ0752D677	"Resistor,Chip" MCR03EZPJ750 750OHM 5% 1	R174	0RJ0332D677	"Resistor,Chip" MCR03EZPJ330 330OHM 5% 1
R106	0RH0000D622	"Resistor,Chip" MCR10EZHZJ000 0OHM 5% 1/	R2	0RH0000D622	"Resistor,Chip" MCR10EZHZJ000 0OHM 5% 1/
R106	0RH0332D622	"Resistor,Chip" MCR10EZHZJ330 330OHM 5% 1	R2	0RH0000D622	"Resistor,Chip" MCR10EZHZJ000 0OHM 5% 1/
R106	0RH1101D622	"Resistor,Chip" MCR10EZHZJ112 1.1KOHM 5%	R200	0RJ1002D677	"Resistor,Chip" MCR03EZPJ103 10KOHM 5%
R106	0RH3301D622	"Resistor,Chip" MCR10EZHZJ332 3.3KOHM 5%	R201	0RJ1002D677	"Resistor,Chip" MCR03EZPJ103 10KOHM 5%
R106	0RJ3601D677	"Resistor,Chip" MCR03EZPJ362 3.6KOHM 5%	R202	0RJ1000D677	"Resistor,Chip" MCR03EZPJ101 100OHM 5%
R107	0RH0752D622	"Resistor,Chip" MCR10EZHZJ750 750OHM 5% 1	R203	0RJ1000D677	"Resistor,Chip" MCR03EZPJ101 100OHM 5%
			R204	0RJ2203D677	"Resistor,Chip" MCR03EZPJ224 220KOHM 5%
			R205	0RJ2203D677	"Resistor,Chip" MCR03EZPJ224 220KOHM 5%



LOC. NO.	PART NO.	DESCRIPTION / SPECIFICATION	LOC. NO.	PART NO.	DESCRIPTION / SPECIFICATION
R401	0RJ3300D677	"Resistor,Chip" MCR03EZPJ331 330OHM 5%	R544	0RJ1001D677	"Resistor,Chip" MCR03EZPJ102 1KOHM 5% 1
R402	0RJ3300D677	"Resistor,Chip" MCR03EZPJ331 330OHM 5%	R545	0RJ1001D677	"Resistor,Chip" MCR03EZPJ102 1KOHM 5% 1
R404	0RJ7501D677	"Resistor,Chip" MCR03EZPJ752 7.5KOHM 5%	R546	0RJ4701D677	"Resistor,Chip" MCR03EZPJ472 4.7KOHM 5%
R405	0RJ4701D677	"Resistor,Chip" MCR03EZPJ472 4.7KOHM 5%	R547	0RJ4701D677	"Resistor,Chip" MCR03EZPJ472 4.7KOHM 5%
R407	0RJ1001D677	"Resistor,Chip" MCR03EZPJ102 1KOHM 5% 1	R548	0RJ1000D677	"Resistor,Chip" MCR03EZPJ101 100OHM 5%
R408	0RJ4700D677	"Resistor,Chip" MCR03EZPJ471 470OHM 5%	R549	0RJ1000D677	"Resistor,Chip" MCR03EZPJ101 100OHM 5%
R410	0RJ1001D677	"Resistor,Chip" MCR03EZPJ102 1KOHM 5% 1	R550	0RJ1000D677	"Resistor,Chip" MCR03EZPJ101 100OHM 5%
R411	0RJ1002D677	"Resistor,Chip" MCR03EZPJ103 10KOHM 5%	R551	0RJ1000D677	"Resistor,Chip" MCR03EZPJ101 100OHM 5%
R412	0RJ0822D677	"Resistor,Chip" MCR03EZPJ820 820OHM 5% 1	R552	0RJ0000D677	"Resistor,Chip" MCR03EZPJ000 0OHM 5% 1/
R413	0RJ2200D677	"Resistor,Chip" MCR03EZPJ221 220OHM 5%	R554	0RJ1000D677	"Resistor,Chip" MCR03EZPJ101 100OHM 5%
R421	0RJ0000D677	"Resistor,Chip" MCR03EZPJ000 0OHM 5% 1/	R554	0RJ1001D677	"Resistor,Chip" MCR03EZPJ102 1KOHM 5% 1
R422	0RJ2200D677	"Resistor,Chip" MCR03EZPJ221 220OHM 5%	R555	0RJ4702D677	"Resistor,Chip" MCR03EZPJ473 47KOHM 5%
R423	0RJ1500D677	"Resistor,Chip" MCR03EZPJ151 150OHM 5%	R556	0RJ1000D677	"Resistor,Chip" MCR03EZPJ101 100OHM 5%
R423	0RJ2000D677	"Resistor,Chip" MCR03EZPJ201 200OHM 5%	R557	0RJ1000D677	"Resistor,Chip" MCR03EZPJ101 100OHM 5%
R423	0RJ4700D677	"Resistor,Chip" MCR03EZPJ471 470OHM 5%	R558	0RJ8201D677	"Resistor,Chip" MCR03EZPJ822 8.2KOHM 5%
R424	0RJ0000D677	"Resistor,Chip" MCR03EZPJ000 0OHM 5% 1/	R559	0RJ1001D677	"Resistor,Chip" MCR03EZPJ102 1KOHM 5% 1
R5	0RH0000D622	"Resistor,Chip" MCR10EZHJ000 0OHM 5% 1/	R560	0RJ1001D677	"Resistor,Chip" MCR03EZPJ102 1KOHM 5% 1
R503	0RJ1000D677	"Resistor,Chip" MCR03EZPJ101 100OHM 5%	R561	0RJ1000D677	"Resistor,Chip" MCR03EZPJ101 100OHM 5%
R503	0RJ2000D477	"Resistor,Chip" MCR03EZPF201 200OHM 1%	R563	0RJ3001D677	"Resistor,Chip" MCR03EZPJ302 3KOHM 5% 1
R504	0RJ1500D677	"Resistor,Chip" MCR03EZPJ151 150OHM 5%	R564	0RJ3001D677	"Resistor,Chip" MCR03EZPJ302 3KOHM 5% 1
R505	0RJ4700D677	"Resistor,Chip" MCR03EZPJ471 470OHM 5%	R567	0RJ1001D677	"Resistor,Chip" MCR03EZPJ102 1KOHM 5% 1
R506	0RJ1500D677	"Resistor,Chip" MCR03EZPJ151 150OHM 5%	R570	0RJ0000D677	"Resistor,Chip" MCR03EZPJ000 0OHM 5% 1/
R508	0RJ1000D677	"Resistor,Chip" MCR03EZPJ101 100OHM 5%	R573	0RJ2702D677	"Resistor,Chip" MCR03EZPJ273 27KOHM 5%
R509	0RJ2000D477	"Resistor,Chip" MCR03EZPF201 200OHM 1%	R574	0RJ1002D677	"Resistor,Chip" MCR03EZPJ103 10KOHM 5%
R510	0RJ1001D677	"Resistor,Chip" MCR03EZPJ102 1KOHM 5% 1	R6	0RH0000D622	"Resistor,Chip" MCR10EZHJ000 0OHM 5% 1/
R511	0RJ1000D677	"Resistor,Chip" MCR03EZPJ101 100OHM 5%	R600	0RJ1001D677	"Resistor,Chip" MCR03EZPJ102 1KOHM 5% 1
R512	0RJ1802D677	"Resistor,Chip" MCR03EZPJ183 18KOHM 5%	R601	0RJ1001D677	"Resistor,Chip" MCR03EZPJ102 1KOHM 5% 1
R513	0RJ4701D677	"Resistor,Chip" MCR03EZPJ472 4.7KOHM 5%	R602	0RJ1000D477	"Resistor,Chip" MCR03EZPF101 100OHM 1%
R514	0RJ4701D677	"Resistor,Chip" MCR03EZPJ472 4.7KOHM 5%	R603	0RJ1000D477	"Resistor,Chip" MCR03EZPF101 100OHM 1%
R515	0RJ1000D677	"Resistor,Chip" MCR03EZPJ101 100OHM 5%	R605	0RJ1000D477	"Resistor,Chip" MCR03EZPF101 100OHM 1%
R516	0RJ1000D677	"Resistor,Chip" MCR03EZPJ101 100OHM 5%	R606	0RJ1000D477	"Resistor,Chip" MCR03EZPF101 100OHM 1%
R517	0RJ1000D677	"Resistor,Chip" MCR03EZPJ101 100OHM 5%	R607	0RJ1000D477	"Resistor,Chip" MCR03EZPF101 100OHM 1%
R518	0RJ1000D677	"Resistor,Chip" MCR03EZPJ101 100OHM 5%	R608	0RJ1000D477	"Resistor,Chip" MCR03EZPF101 100OHM 1%
R519	0RJ1000D677	"Resistor,Chip" MCR03EZPJ101 100OHM 5%	R609	0RJ4701D677	"Resistor,Chip" MCR03EZPJ472 4.7KOHM 5%
R520	0RJ1000D677	"Resistor,Chip" MCR03EZPJ101 100OHM 5%	R610	0RJ4701D677	"Resistor,Chip" MCR03EZPJ472 4.7KOHM 5%
R521	0RJ1000D677	"Resistor,Chip" MCR03EZPJ101 100OHM 5%	R611	0RJ2001D677	"Resistor,Chip" MCR03EZPJ202 2KOHM 5% 1
R522	0RJ6201D677	"Resistor,Chip" MCR03EZPJ622 6.2KOHM 5%	R612	0RJ2001D677	"Resistor,Chip" MCR03EZPJ202 2KOHM 5% 1
R523	0RJ0000D677	"Resistor,Chip" MCR03EZPJ000 0OHM 5% 1/	R613	0RJ4703D677	"Resistor,Chip" MCR03EZPJ474 470KOHM 5%
R524	0RJ0000D677	"Resistor,Chip" MCR03EZPJ000 0OHM 5% 1/	R614	0RJ4703D677	"Resistor,Chip" MCR03EZPJ474 470KOHM 5%
R527	0RJ1000D677	"Resistor,Chip" MCR03EZPJ101 100OHM 5%	R615	0RJ1002D677	"Resistor,Chip" MCR03EZPJ103 10KOHM 5%
R528	0RJ1001D677	"Resistor,Chip" MCR03EZPJ102 1KOHM 5% 1	R616	0RJ1000D477	"Resistor,Chip" MCR03EZPF101 100OHM 1%
R529	0RJ1001D677	"Resistor,Chip" MCR03EZPJ102 1KOHM 5% 1	R617	0RJ1000D477	"Resistor,Chip" MCR03EZPF101 100OHM 1%
R530	0RJ1000D677	"Resistor,Chip" MCR03EZPJ101 100OHM 5%	R618	0RJ1000D477	"Resistor,Chip" MCR03EZPF101 100OHM 1%
R531	0RJ1000D677	"Resistor,Chip" MCR03EZPJ101 100OHM 5%	R619	0RJ1000D477	"Resistor,Chip" MCR03EZPF101 100OHM 1%
R532	0RJ1001D677	"Resistor,Chip" MCR03EZPJ102 1KOHM 5% 1	R621	0RJ1000D477	"Resistor,Chip" MCR03EZPF101 100OHM 1%
R533	0RJ1001D677	"Resistor,Chip" MCR03EZPJ102 1KOHM 5% 1	R622	0RJ1000D477	"Resistor,Chip" MCR03EZPF101 100OHM 1%
R534	0RJ1000D677	"Resistor,Chip" MCR03EZPJ101 100OHM 5%	R623	0RJ2001D677	"Resistor,Chip" MCR03EZPJ202 2KOHM 5% 1
R535	0RJ0222D677	"Resistor,Chip" MCR03EZPJ220 22OHM 5% 1	R624	0RJ2001D677	"Resistor,Chip" MCR03EZPJ202 2KOHM 5% 1
R536	0RJ0222D677	"Resistor,Chip" MCR03EZPJ220 22OHM 5% 1	R625	0RJ2001D677	"Resistor,Chip" MCR03EZPJ202 2KOHM 5% 1
R537	0RJ1001D677	"Resistor,Chip" MCR03EZPJ102 1KOHM 5% 1	R626	0RJ2001D677	"Resistor,Chip" MCR03EZPJ202 2KOHM 5% 1
R538	0RJ1001D677	"Resistor,Chip" MCR03EZPJ102 1KOHM 5% 1	R627	0RJ3001D677	"Resistor,Chip" MCR03EZPJ302 3KOHM 5% 1
R540	0RJ1001D677	"Resistor,Chip" MCR03EZPJ102 1KOHM 5% 1	R628	0RJ3001D677	"Resistor,Chip" MCR03EZPJ302 3KOHM 5% 1
R541	0RJ1001D677	"Resistor,Chip" MCR03EZPJ102 1KOHM 5% 1	R629	0RJ1000D677	"Resistor,Chip" MCR03EZPJ101 100OHM 5%
R542	0RJ1001D677	"Resistor,Chip" MCR03EZPJ102 1KOHM 5% 1	R631	0RJ1002D677	"Resistor,Chip" MCR03EZPJ103 10KOHM 5%
R543	0RJ1001D677	"Resistor,Chip" MCR03EZPJ102 1KOHM 5% 1	R633	0RJ1002D677	"Resistor,Chip" MCR03EZPJ103 10KOHM 5%

LOC. NO.	PART NO.	DESCRIPTION / SPECIFICATION
R634	0RJ1003D677	"Resistor,Chip" MCR03EZPJ104 100KOHM 5%
R635	0RH0000D622	"Resistor,Chip" MCR10EZHJ000 0OHM 5% 1/
R636	0RH0000D622	"Resistor,Chip" MCR10EZHJ000 0OHM 5% 1/
R7	0RH0000D622	"Resistor,Chip" MCR10EZHJ000 0OHM 5% 1/
R705	0RJ0000D677	"Resistor,Chip" MCR03EZPJ000 0OHM 5% 1/
R706	0RJ0000D677	"Resistor,Chip" MCR03EZPJ000 0OHM 5% 1/
R718	0RJ4701D677	"Resistor,Chip" MCR03EZPJ472 4.7KOHM 5%
R719	0RJ1001D677	"Resistor,Chip" MCR03EZPJ102 1KOHM 5% 1
R720	0RJ1002D677	"Resistor,Chip" MCR03EZPJ103 10KOHM 5%
R720	0RJ1002D677	"Resistor,Chip" MCR03EZPJ103 10KOHM 5%
R722	0RJ2002D677	"Resistor,Chip" MCR03EZPJ203. 20KOHM 5%
R723	0RJ2002D677	"Resistor,Chip" MCR03EZPJ203. 20KOHM 5%
R725	0RJ1000D677	"Resistor,Chip" MCR03EZPJ101 100OHM 5%
R726	0RJ1000D677	"Resistor,Chip" MCR03EZPJ101 100OHM 5%
R8	0RH0000D622	"Resistor,Chip" MCR10EZHJ000 0OHM 5% 1/
R806	0RJ1001D677	"Resistor,Chip" MCR03EZPJ102 1KOHM 5% 1
R807	0RJ0000D677	"Resistor,Chip" MCR03EZPJ000 0OHM 5% 1/
R808	0RJ2000D677	"Resistor,Chip" MCR03EZPJ201 200OHM 5%
R809	0RJ0000D677	"Resistor,Chip" MCR03EZPJ000 0OHM 5% 1/
R811	0RJ2001D677	"Resistor,Chip" MCR03EZPJ202 2KOHM 5% 1
R812	0RJ1002D677	"Resistor,Chip" MCR03EZPJ103 10KOHM 5%
R814	0RJ1002D677	"Resistor,Chip" MCR03EZPJ103 10KOHM 5%
R815	0RJ1002D677	"Resistor,Chip" MCR03EZPJ103 10KOHM 5%
R817	0RJ1002D677	"Resistor,Chip" MCR03EZPJ103 10KOHM 5%
R818	0RJ1002D677	"Resistor,Chip" MCR03EZPJ103 10KOHM 5%
R821	0RJ1002D677	"Resistor,Chip" MCR03EZPJ103 10KOHM 5%
R823	0RJ1002D677	"Resistor,Chip" MCR03EZPJ103 10KOHM 5%
R825	0RJ0752D677	"Resistor,Chip" MCR03EZPJ750 75OHM 5% 1
R826	0RJ0752D677	"Resistor,Chip" MCR03EZPJ750 75OHM 5% 1
R827	0RJ1002D677	"Resistor,Chip" MCR03EZPJ103 10KOHM 5%
R828	0RJ1201D677	"Resistor,Chip" MCR03EZPJ122 1.2KOHM 5%
R831	0RJ0000D677	"Resistor,Chip" MCR03EZPJ000 0OHM 5% 1/
R832	0RJ0000D677	"Resistor,Chip" MCR03EZPJ000 0OHM 5% 1/
R833	0RJ6802D677	"Resistor,Chip" MCR03EZPJ683 68KOHM 5%
R834	0RJ2202D677	"Resistor,Chip" MCR03EZPJ223 22KOHM 5%
R835	0RJ7501D677	"Resistor,Chip" MCR03EZPJ752 7.5KOHM 5%

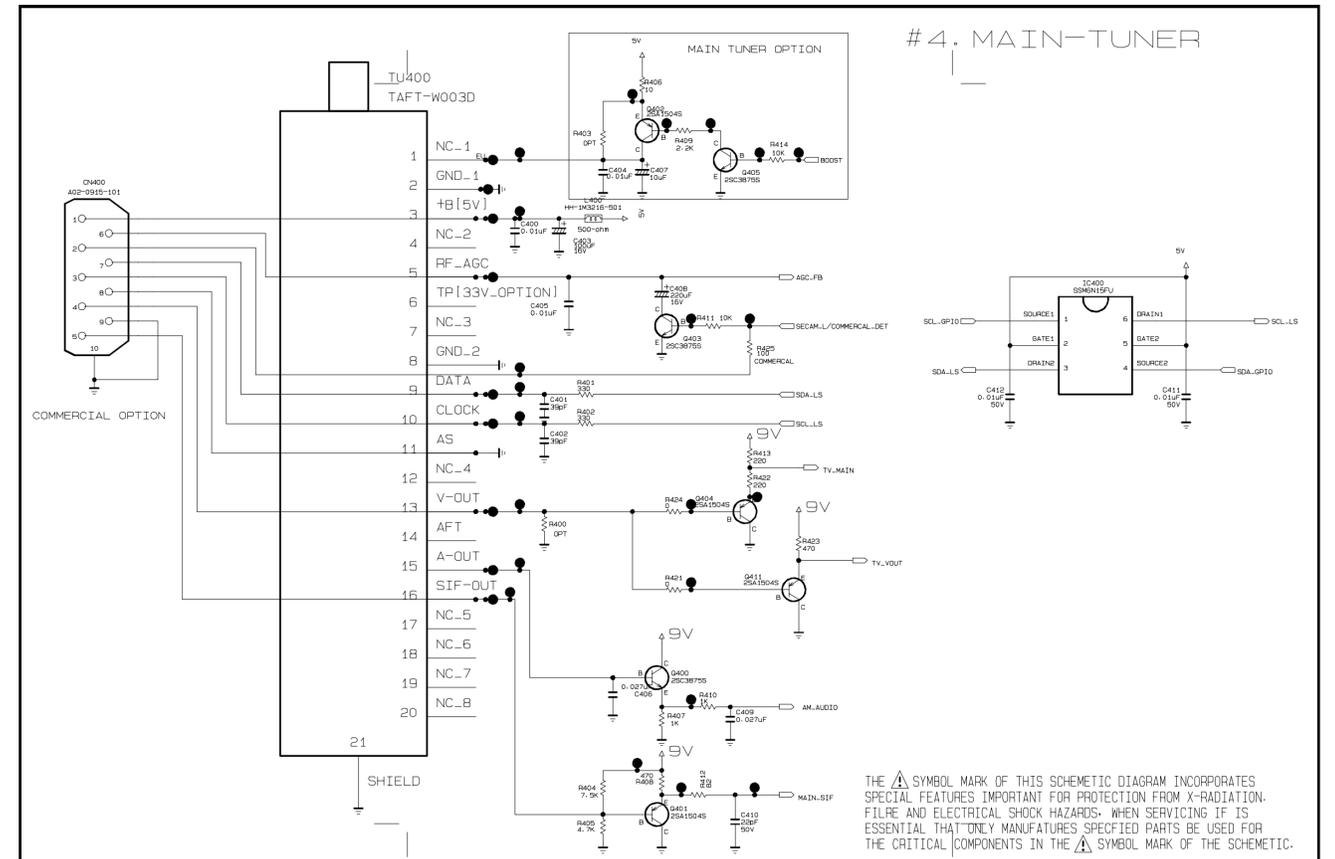
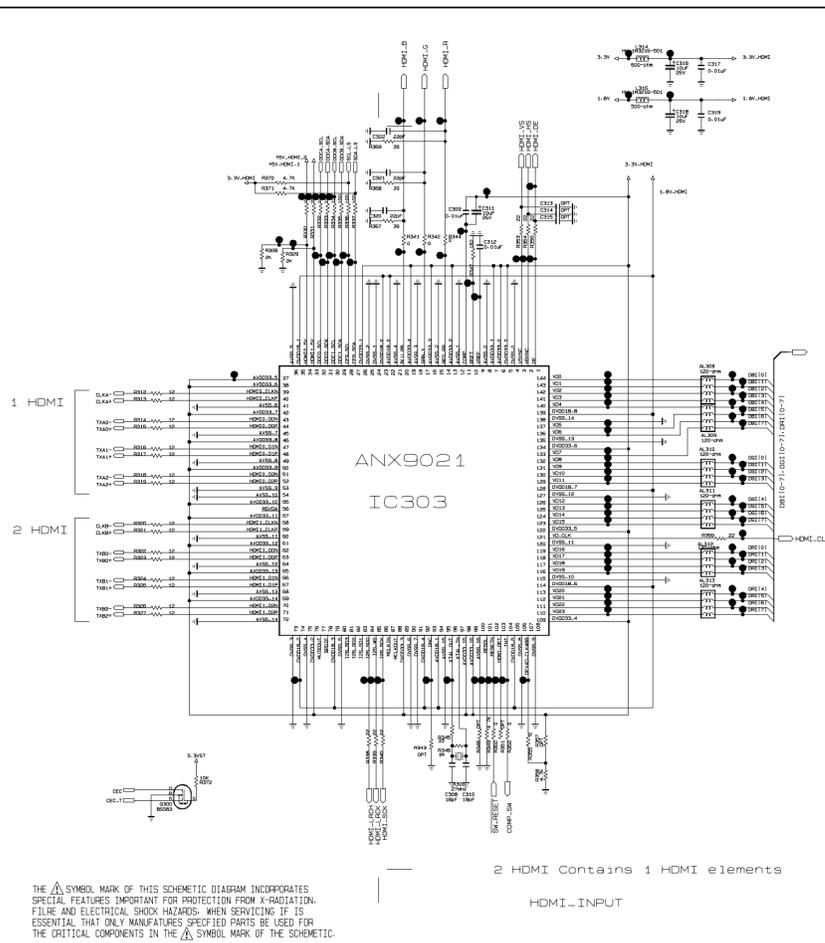
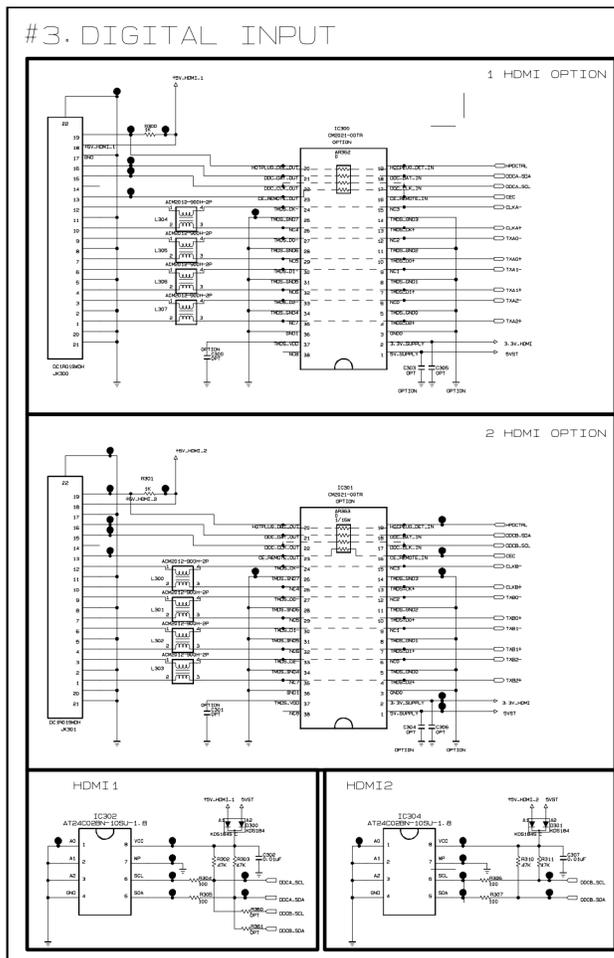
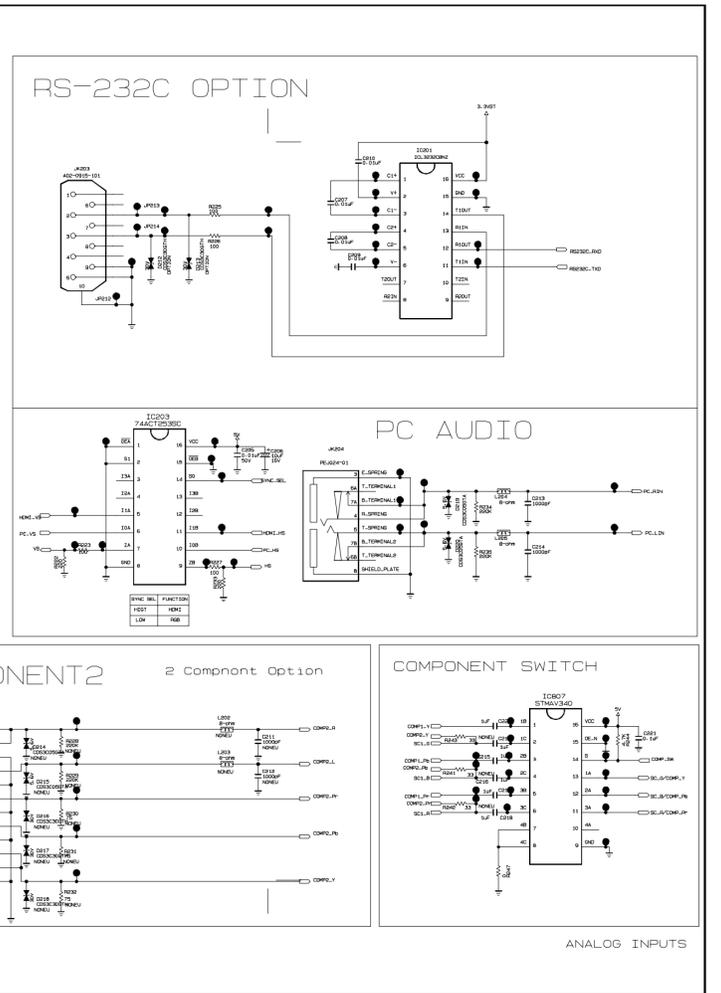
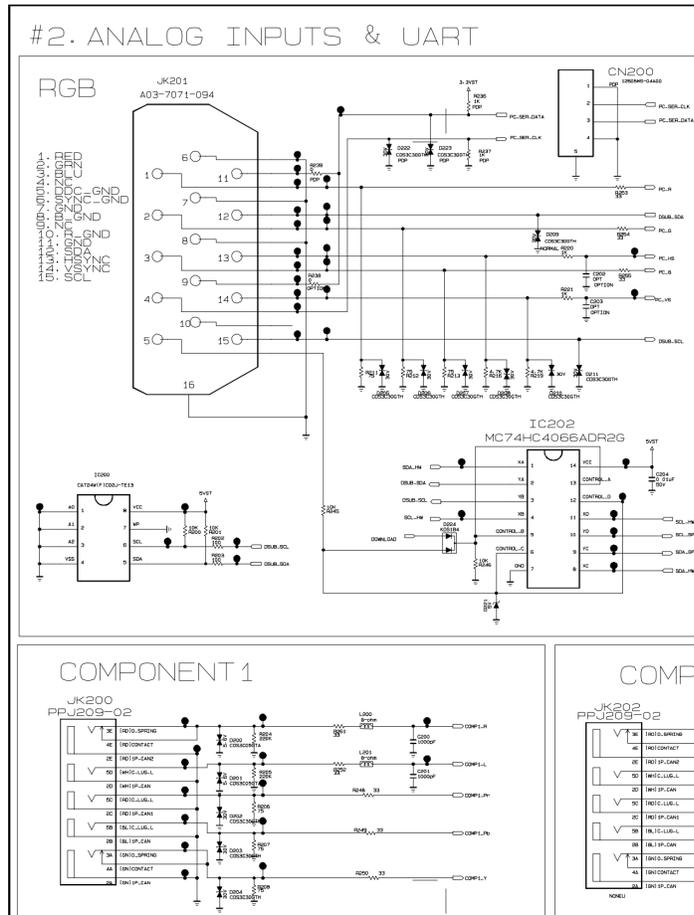
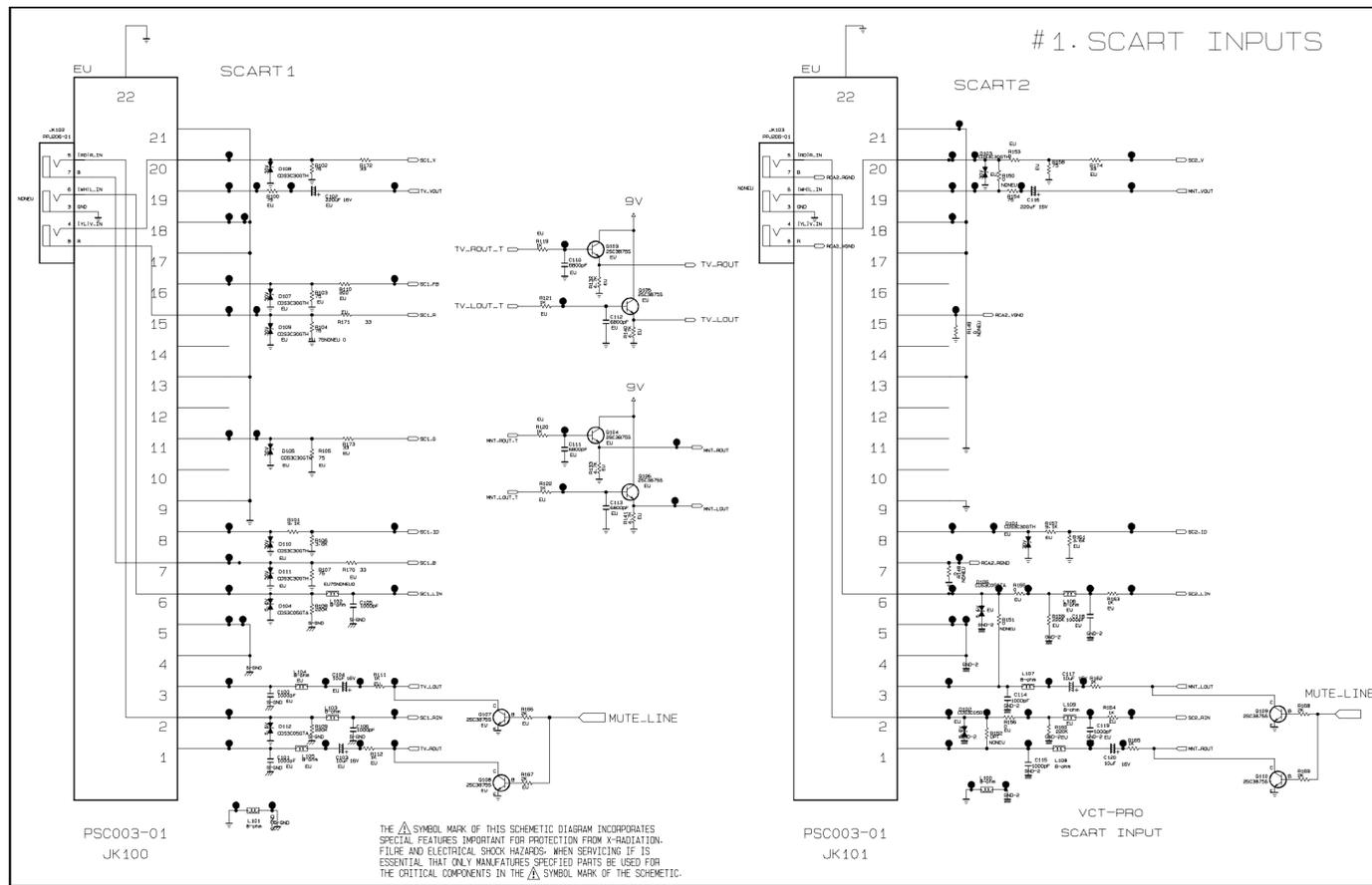
**OTHERs**

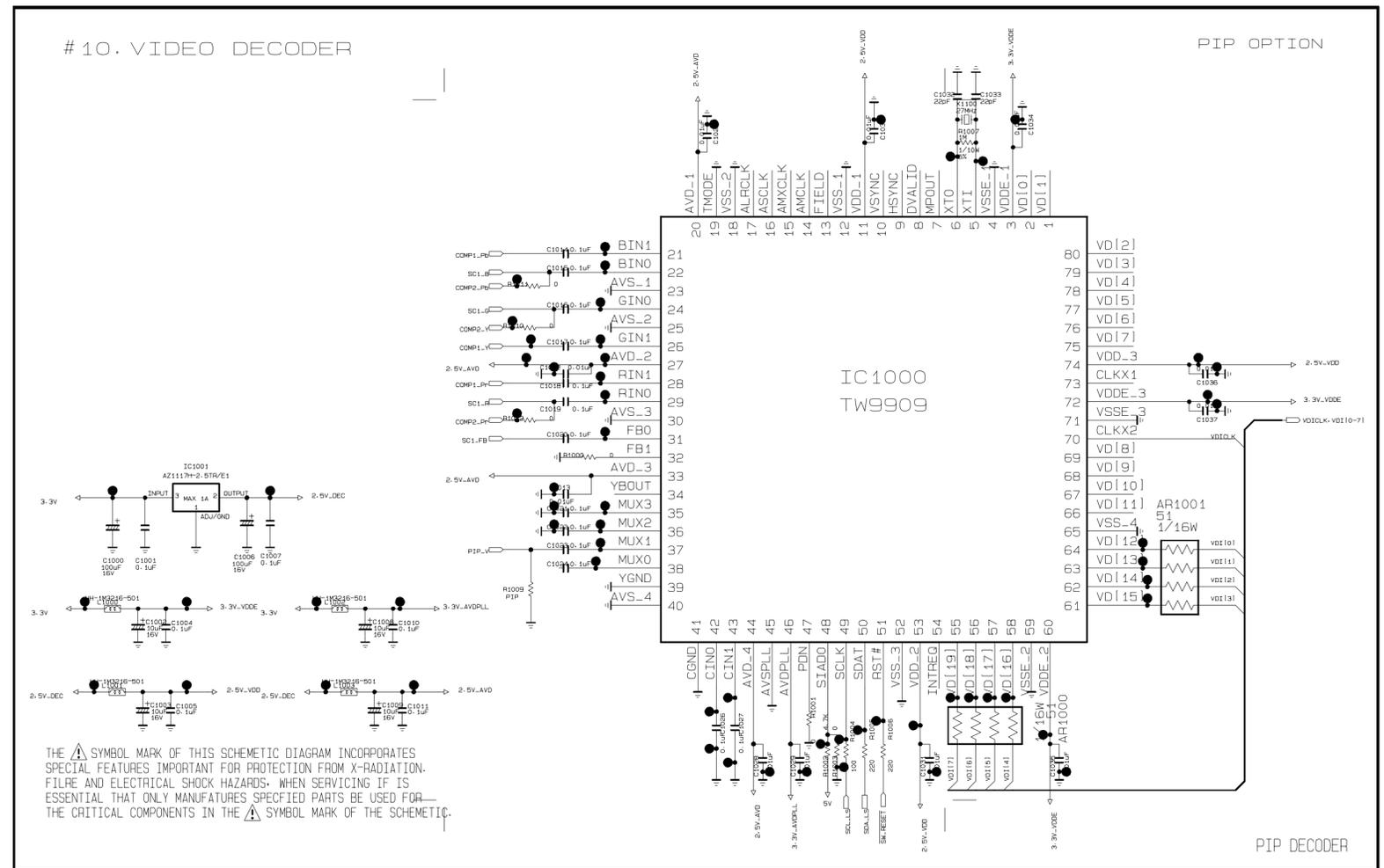
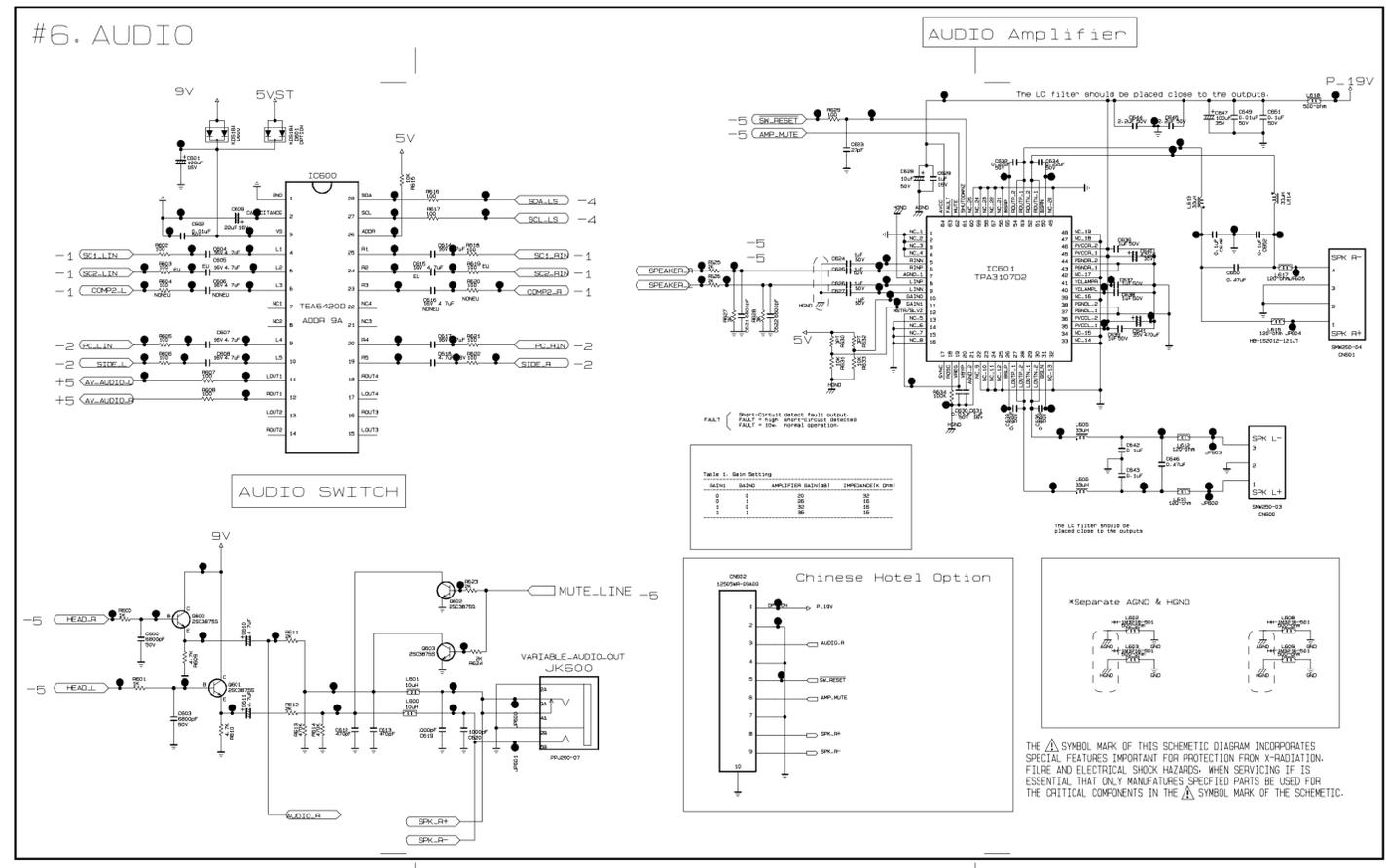
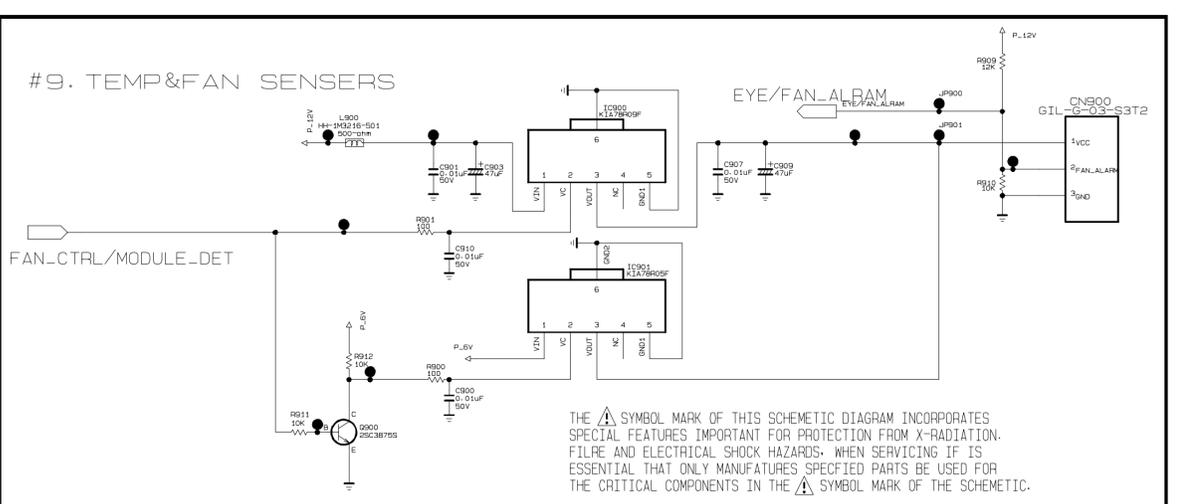
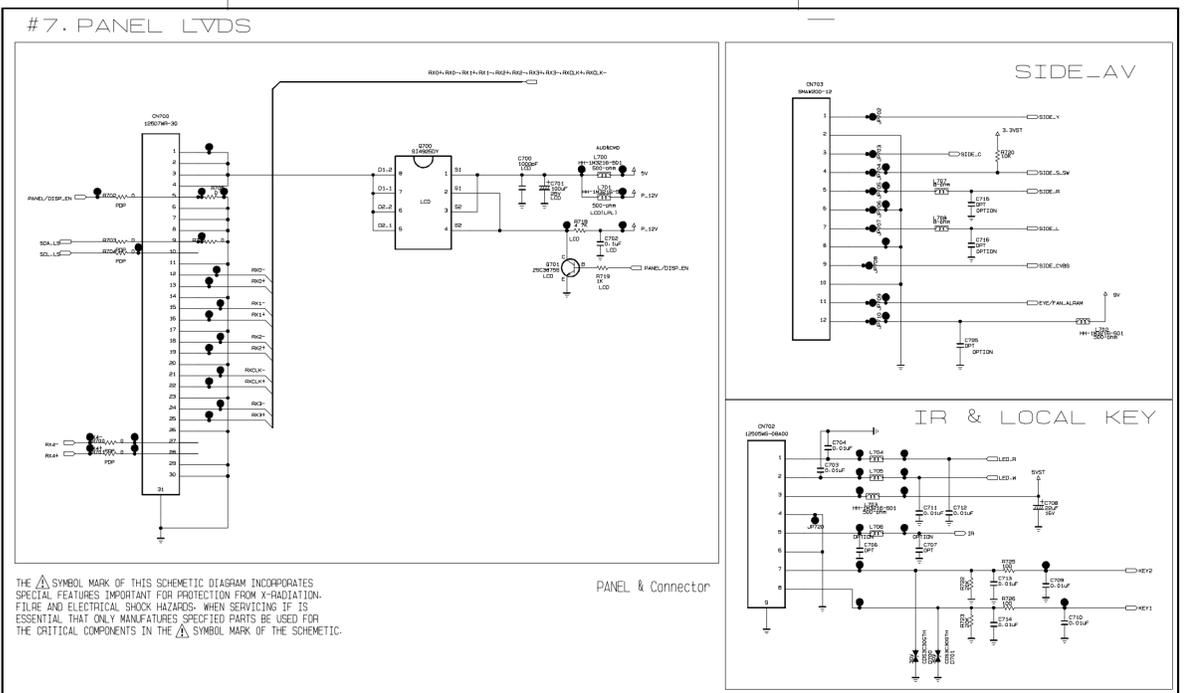
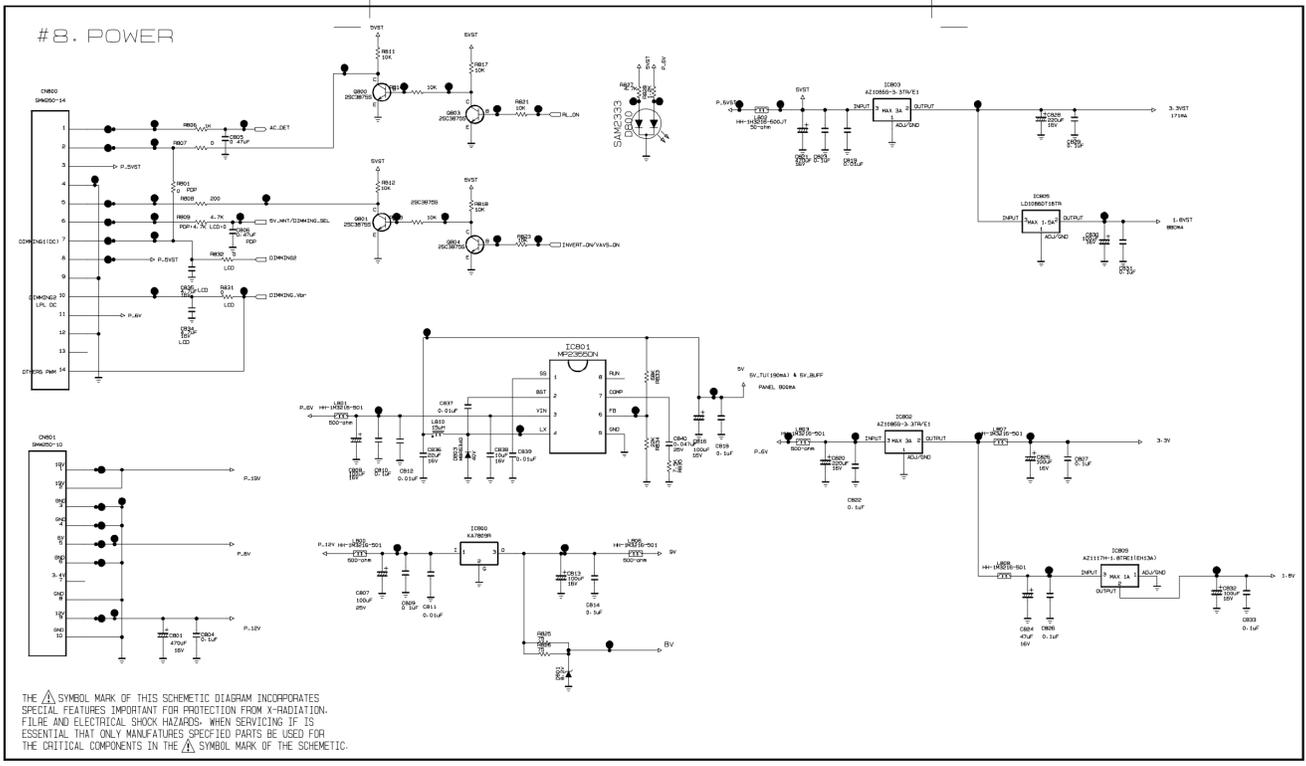
X300	6202TST001H	Crystal SX-1 27MHZ 30PPM 27MHZ
X500	6202VDT002P	Crystal HC-49/SM 20.25000MHZ 20
J100	6612J10033A	"Jack,Complex" PMJ016-13 13P DIN/RCA 1
JK300	6612B00015C	"Jack,DIN" DC1R019WDH. SOCKET 21P
JK301	6612B00015C	"Jack,DIN" DC1R019WDH. SOCKET 21P
JK204	6612F00099A	"Jack,Phone" PEJ024-01 1P 4P STRAIGH
JK200	6612J10031A	"Jack,RCA" PPJ209-02 14.0MM 1RX5C
JK600	6612J10043A	"Jack,RCA" PPJ200-07 15MM 1RX4C AN
JK100	6612M00010A	"Jack,Scart" PSC003-01 21P 21P/1C 3.
JK101	6612M00010A	"Jack,Scart" PSC003-01 21P 21P/1C 3.
D800	0DL233309AC	"LED,Chip" SAM2333 RED/Y-GREEN 2.7
D100	0DLBE0138AA	"LED,DIP" BL-BUBGE301 ROUND 3MM S
SW1	SAA30632022	"S/W,Firmware" V3.12 AD3F WORLD WIDE F
SW101	140-313B	"Switch,Tact" KPT-1115AM 1C1P 12VDC 0
SW102	140-313B	"Switch,Tact" KPT-1115AM 1C1P 12VDC 0
SW103	140-313B	"Switch,Tact" KPT-1115AM 1C1P 12VDC 0

LOC. NO.	PART NO.	DESCRIPTION / SPECIFICATION
SW104	140-313B	"Switch,Tact" KPT-1115AM 1C1P 12VDC 0
SW105	140-313B	"Switch,Tact" KPT-1115AM 1C1P 12VDC 0
SW106	140-313B	"Switch,Tact" KPT-1115AM 1C1P 12VDC 0
SW107	140-313B	"Switch,Tact" KPT-1115AM 1C1P 12VDC 0
SW108	140-313B	"Switch,Tact" KPT-1115AM 1C1P 12VDC 0
T1	EBL35311207	"Tuner,Tuner/Modulator" TAFT-W005D PAL-B/G+I+D/

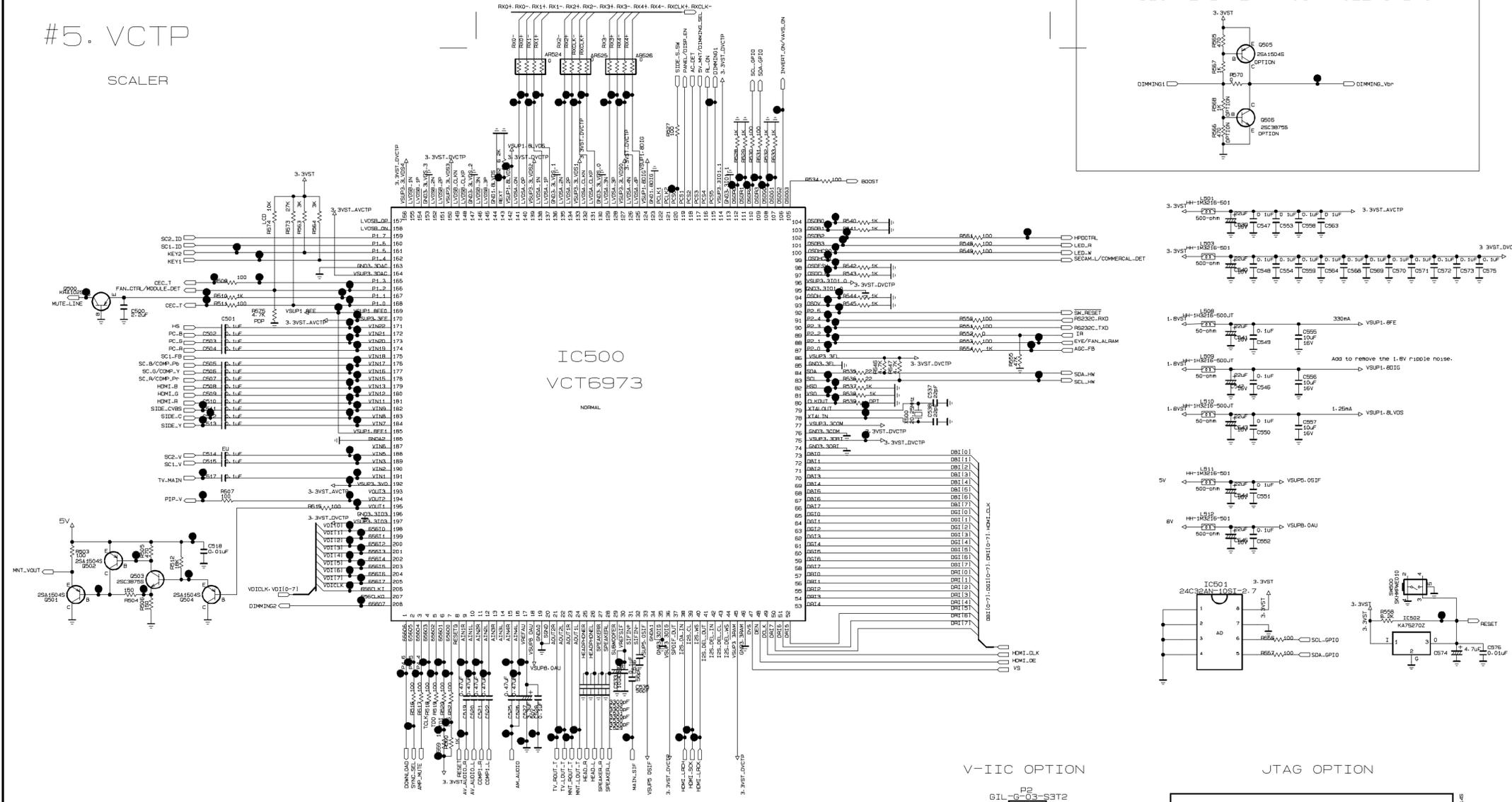
**CONNECTOR**

JK201	6630TGA004K	"Connector,DSUB" KCN-DS-1-0089 D-SUB 15P
CN501	366-932B	"Connector,Wafer" GIL-G-03P-S3T2-E(TYPOE)
CN600	6602T25008B	"Connector,Wafer" SMW250-03P 3P 2.50MM 1R
CN601	6602T25008C	"Connector,Wafer" SMW250-04P 4P 2.50MM 1R
CN700	6630VF00530	"Connector,Wafer" 12507WR-30A00 30P 1.25M
CN702	6602T12004G	"Connector,Wafer" 12505WS-08A00 8P 1.25MM
CN703	6602T20009L	"Connector,Wafer" SMAW200-12P 12P 2.00MM
CN800	6602T25008N	"Connector,Wafer" SMW250-14P 14P 2.50MM 1
CN801	6602T25008J	"Connector,Wafer" SMW250-10P 10P 2.50MM 1
P100	6602T12005G	"Connector,Wafer" 12505WR-08A00 8P 1.25MM
P100	6602T20009C	"Connector,Wafer" SMAW200-04P 4P 2.00MM 1
P101	6602T20009C	"Connector,Wafer" SMAW200-04P 4P 2.00MM 1
P101	6602T20009L	"Connector,Wafer" SMAW200-12P 12P 2.00MM
C1	6631900012E	"Harness,Single" SMH250 SMH250 300mM 2.5
C2	6631900013N	"Harness,Single" 6631900013N SMH200 SMH2
C3	6631900018P	"Harness,Single" 3P(LEFT) SPK CONNECTOR
C4	6631900048B	"Harness,Single" EAD00393302 SMH200 SMH2
C5	6631T25026C	"Harness,Single" 6631T25026C SMH250 3509
C6	EAD35683003	"Harness,Single" LVDS LPL STD_300MM FI-X
C7	EAD35788001	"Harness,Single" 8P 1.25 750MM 12505HS 1
C8	EAD35908101	"Harness,Single" 35001HS-02L 65002HS-03-
C9	EAD35908401	"Harness,Single" 35001HS-02L 65002HS-03-
C10	EAD35983001	"Harness,Single" 12507HS-04L SMH200 500M
C11	EAD36105801	"Harness,Single" SMH250-13 SMH250-14 400

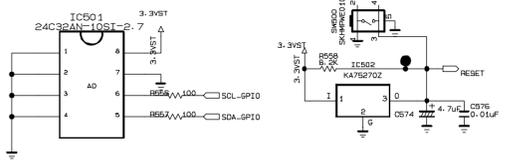
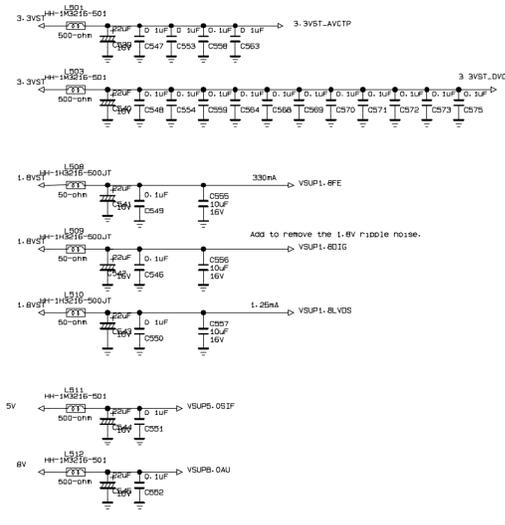
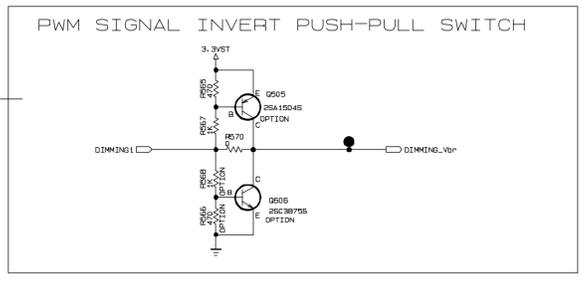




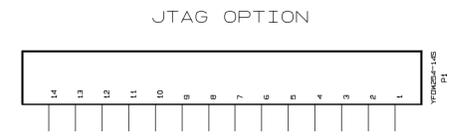
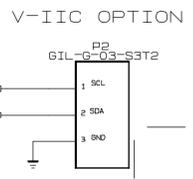
# #5. VCTP SCALER



IC500  
VCT6973



THE  $\Delta$  SYMBOL MARK OF THIS SCHEMATIC DIAGRAM INCORPORATES SPECIAL FEATURES IMPORTANT FOR PROTECTION FROM X-RADIATION. FILRE AND ELECTRICAL SHOCK HAZARDS. WHEN SERVICING IF IS ESSENTIAL THAT ONLY MANUFACTURES SPECIFIED PARTS BE USED FOR THE CRITICAL COMPONENTS IN THE  $\Delta$  SYMBOL MARK OF THE SCHEMATIC.





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