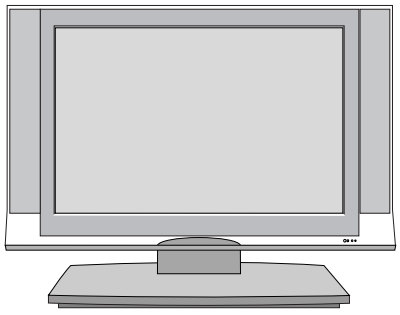
website:http://biz.LGservice.com
e-mail:http://www.LGEservice.com/techsup.html

LCD TV
SERVICE MANUAL

CHASSIS : CL-81

MODEL : 20LS1R-ZG

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



CONTENTS

SAFETY PRECAUTIONS

IMPORTANT SAFETY NOTICE

Many electrical and mechanical parts in this chassis have special safety-related characteristics. These parts are identified by ⚠ 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 it's 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.

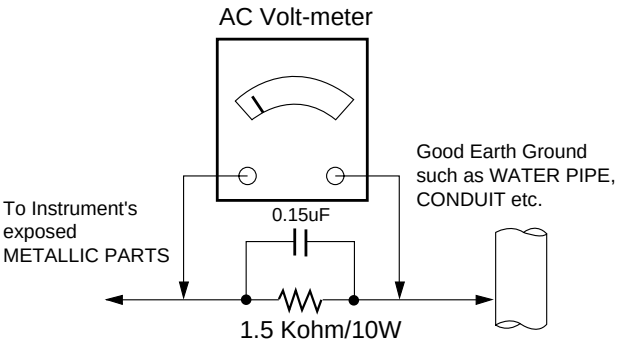
Before returning the receiver to the customer,

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 1MΩ and 5.2MΩ.
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 is 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 in 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 circuitboard 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. General Specification

NO	Item		Content		Remark
1	User Model Name		20LS1R-ZG : PAL/SECAM (EU)		
2	Feature		20.1" LCD TV		
3	Chassis Name		CL-81		
4	General Scope	External SW &Adj.	PR(E /D), VOL(F /G), OK, MENU, INPUT, POWER		8Keys
		Function	* Reference table		
5	Power Cord		Length : 1.87±0.04 M Shape : Wall-out, Color : BLACK		NATION
6	Power Adapter		No		
7	LCD Module Feature # 1 LPL LC201V02-SDA1		Maker	LPL	P/N : EAJ30338001
			Type	TFT Color LCD Module	
			Active Display Area	640 (H) x 480 (V)	
			Pixel Pitch [mm]	0.6375mm x 0.2125mm x RGB	
			Electrical Interface	TTL	
			Color Depth	8bit, 16.7M colors	
			Size [mm]	432(W) x 331.5(H) x 25.0(D)	
			Surface Treatment	Hard coating(3H) & anti-glare treatment of the front polarizer	
			Operating Mode	Normally Black, IPS	
			Back light Unit	6 CCFL (6 lamps)	
			R/T Typ.	25ms	
	LCD Module Feature # 2 CPT CLAA201VA07		Maker	CPT	P/N : 6304FCP008A
			Type	TFT Color LCD Module	
			Active Display Area	640 (H) x 480 (V)	
			Pixel Pitch [mm]	0.6375mm x 0.2125mm x RGB	
			Electrical Interface	LVDS	
			Color Depth	6BIT WITH FRC, 16.2M colors	
			Size [mm]	448(W) x 337(H) x 23.0(D)	
			Surface Treatment	Anti Glare, Hard Coating(3H)	
			Operating Mode	Normally White, TN	
			Back light Unit	6 CCFL(6 lamps)	
			R/T Typ.	12ms	
	LCD Module Feature # 3 Hydis HT201V01-101		Maker	Hydis	P/N : 6304FBH010B
			Type	TFT Color LCD Module	
			Active Display Area	640 (H) x480 (V)	
			Pixel Pitch [mm]	0.6375mm x 0.2125mm x RGB	
			Electrical Interface	LVDS	
			Color Depth	8bit, 16.7M colors	
			Size [mm]	448.6(W) x 339.6(H) x 25.0(D)	
			Surface Treatment	Anti Glare, Hard Coating	
			Operating Mode	Normally White	
			Back light Unit	6 CCFL(6 lamps)	
			R/T Typ.	8ms	

2. Mechanical specification

No.	Item		Content				Remark
1	ProductDimension		Width (W)	Length (D)	Height (H)		
		Before Packing	573.2	189.7	435.5		With Stand
		After Packing	635.0	177.0	470.0		
2	ProductWeight	Only SET	6.9 kg(LPL), 6.8kg(HYDIS), 7.6kg(CPT)				
		With BOX	8.7 kg(LPL), 8.6kg(HYDIS), 9.4kg(CPT)				
3	Container	Individual orPalletizing	20ft		40ft		
	Loading		Indi.	Wooden	Indi.	Wooden	
	Quantity		546	480	1,118	1,008	
4	Stand Assy	Type	Base detachable				
		Size (W x D x H)	399.9(W) x 189.7(D) x 67.4(H)				
		Tilt Degree	-3(-0/+3) ~ +10(±2) Degree				
		Tilt force	Target 1.5Kgf (0.8Kgf ~ 2.0Kgf)				
		Swivel Degree	—NON				
		Swivel Force	—NON				
5	Appearance	General	Refer to Standard of LG(55)G1-1020				

3. Engineering Specification

No.	ITEM	Specification			Remark
1	ENERGE	SYNC(V/H)	VIDEO	POWER CONSUMPTION	LED COLOR
	Normal	On/On	Active	≤ 60W	Green
	Stand By	Off/Off	Off	≤ 2W(110V) ≤ 2W(220V)	Red
	Cut-off Switch off-		-	1W	OFF
2	D-SUB Pin configuration	1 : RED 3 : Blue 5 : S.T (GND) 7 : Green GND 9 : N.C 11: ID0(GND) 13: H-Sync 15: SCL		2 : Green 4 : ID2 (GND) 6 : RED GND 8 : Blue GND 10: D-GND 12:SDA 14: V-Sync Shell: GND	For Service Only
3	Control Function	1) Contrast/Brightness/ Colour/Sharpness/(Tint) 2) Power On/Off, Input select, Menu, OK, Volume(F / G), PR(E /D)			
4	Component Jack	1 : Y 2 : Pb 3 : Pr			TG ONLY

4. Optical Characteristic

No	Item	Specification					Remark
1	Viewing Angle <CR≥10>	Horizontal		LPL	178		
				CPT	170		
				Hydis	150		
		Vertical		LPL	178		
				CPT	170		
				Hydis	130		
2	Luminance	Luminance			Mix	Typ	1.TV, AV : PSM : Dynamic CSM : Normal 2.PC Contrast : 100 Brightness : 50
				LPL	280	350	
				CPT	280	350	
				Hydis	280	350	
3	Contrast Ratio	CR			Mix	Typ	All white/All black
				LPL	500	800	
				CPT	450	500	
				Hydis	500	700	
4	CIE Color Coordinates			Min	Typ	Max	In AV input
		White	Wx	0.283	0.313	0.343	PSM : Dynamic
		(Warm)	Wy	0.299	0.329	0.359	White
		White	Wx	0.253	0.283	0.313	(100IRE)
		(Normal)	Wy	0.268	0.298	0.328	
		White	Wx	0.244	0.274	0.304	
		(Cool)	Wy	0.256	0.286	0.316	

5. Outgoing Condition

No	Item			Condition	Remark
1	Power			Off	
2	Volume Level			30	
3	Main Picture Input			TV	
4	Main Last Channel			Pr 01	
5	Mute			Off	
6	STATION	Auto Programme			
		Manual Programme			
		Programme Edit			
		Favourite Programme None			
7	PICTURE	PSM		Dynamic	
		CSM		Normal	Cool (PAL Multi)
		Dynamic	Contrast	100	
			Brightness	50	
			Colour	70	
			Sharpness	50	
			Tint	0	NTSC OPTION
8	SOUND	SSM		Flat	
		AVL		Off	
		Balance		0	
9	TIME	Clock		-- : --	
		Off time		-- : -- Off	
		On time		-- : -- Pr.1 Vol. 30 Off	
		Auto sleep		Off	
10	SPECIAL	Language		English(Area Management)	
		Input		TV	
		Child lock		Off	
		Power indicator		On	

ADJUSTMENT INSTRUCTION

1. Application

This document is applied to 20.1" LCD TV(or Monitor TV) which is manufactured in Monitor (or TV) Factory or is produced on the basis of this data

2. Designation

2.1 The adjustment is according to the order which is designated and which must be followed, according to the plan which can be changed only on agreeing.
2.2. Power Adjustment: Free Voltage
2.3. Magnetic Field Condition: Nil
2.4. Input signal Unit: Product Specification Standard
2.5. Reserve after operation: Above 30 Minutes
2.6. Adjustment equipments: Pattern Generator (MSPG-925L or Equivalent), DDC Adjustment Jig equipment, SVC remote controller

3. Main PCB check process

*** Caution ***
If DDC CMD don't work, please check below.
IIC_SW is "0" or "1".
- IIC_SW "0" : DDC Communications. (DDC2AB) in Factory Side
-IIC_SW "1" : EDID Write/Read (DDC2B) and Factory default(Shipping Condition).

How to change IIC_SW
1.Power-on state
2. Push "IN-START" key in SVC remote controller
3. Enter "Etc." menu, II_SW Change 0 or 1 by "VOL+" key

3.1 APC

After Manual-Insult, executing APC

3.2 ISP UOC file

3.2.1 Required Equipment
- JIG for ISP
- PC that is installed with "WISP" program.
- Control + Power LED PCB Ass'y

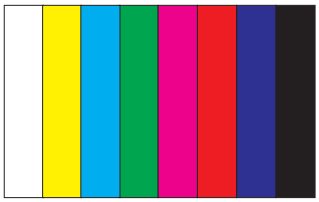
3.2.2 ISP Sequence
1) Connect main pcb ass'y with JIG for ISP
2) Execute "WISP" Program
3) Compare UOC version in BOM with version of hex file.
4) Push "Browse…" button in WISP program and select hex file
5) Push "Auto Execute" button
6) Occur an Error, try again and again. 4)~5)
7) After finishing ISP, Must AC off / ON
8) Amber LED is blink during write default value in EEPROM (24C32)
9) ALL ISP process is finished when Amber LED is off and Blue LED is ON
10) After ISP, automatically input source change "AV2" and II_SW set to °∞0°±)

3.3 ADC Process

"IIC_ SW" must set "0" for Auto Adjust (After ISP, automatically set "0")

3.3.1 DCXO setting in Video

- Signal equipment displays
  Output Voltage : 700 mVp-p
  Impress Resolution : CVBS NTSC-J 60Hz .
  Pattern : 8 Color-Bar pattern (Refer below picture).
  (Model:207, Pattern: 33 at MSPG925)
  (DCXO setting is done automatically by DDC communication)



[DEXO adjustment pattern]

3.3.2 AV2 input ADC
3.3.2.1 Auto Gain/Offset Adjustment

- Signal equipment displays
  Output Voltage : 700 mVp-p
  Impress Resolution : CVBS 576i.
  Pattern : gray pattern that left & right is black and center is white signal (Refer below picture).
  (Model:202, Pattern: 29 at MSPG925L)
- Adjust by commanding AUTO_COLOR_ADJUST (0xF1) 0x00 0x00 instruction.

3.3.2.2 Confirmation

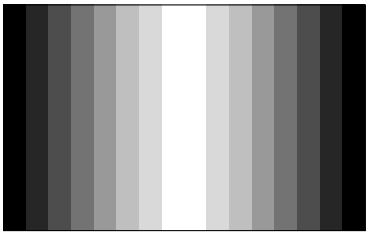
- Convert to PC in Input-source
- Signal equipment displays
  Output Voltage : 700 mVp-p
  Impress Resolution SXGA (1280 x 1024 @ 60Hz)
  Pattern : gray pattern that left & right is black and center is white signal (Refer below picture).
  (Model : 45, Pattern : 28 at MSPG925L)
- Adjust by commanding AUTO_COLOR_ADJUST (0xF1) 0x00 0x00 instruction.

3.3.3 RGB-PC input ADC
3.3.3.1 Auto Gain/Offset Adjustment

- SConvert to PC in Input-source
- Signal equipment displays
  Output Voltage : 700 mVp-p
  Impress Resolution SXGA (1280 x 1024 @ 60Hz)
  Pattern : gray pattern that left & right is black and center is white signal (Refer below picture).
  (Model : 45, Pattern : 28 at MSPG925L)
- Adjust by commanding AUTO_COLOR_ADJUST(0xF1) 0x00 0x00 instruction.

3.3.3.2 Confirmation

- We confirm whether "0x00" address of EEPROM "0xA0" is "0xAA" or not.
- If "0x00" address of EEPROM "0xA0" isn't "0xAA", we adjust once more
- We can confirm the ADC values from "0x06~0x0B" addresses in a page "0xA0"



[Adjustment pattern(PC and CVBS)]

3.3.4 Preparation for Function check

- Input source change TV and II_SW change to "1" by commanding F3 x 00 instruction.

3.4 Function Check

3.4.1 DDC2B test

"IIC_ SW" must set "1" (After ADC, automatically set "1")

- Execute DDC2B Scan Test

3.4.2 Check display and sound

"IIC_ SW" must set "1"

- Check Input and Signal items
  1. TV
  2. AV1 (SCART)
  3. AV2 (CVBS/ S-Video)
  4. RGB-DTV
  5. RGB-PC
  6. PC Audio In and H/P Out

4. Total Assembly line process

*** Caution ***

If DDC CMD don't work, please check below.

1. Enter SVC menu by SVC Remote controller
2. Enter "ETC" menu

Check please, IIC_SW is "0" or "1"

- IIC_SW "0" DDC Communications.(DDC2AB)
- IIC_SW "1": EDID Write/Read(DDC2B) and Factory default.

* We can change IIC_SW by pushing "VOL+" key in SVC remote controller

4.1 Adjustment Preparation

"IIC_ SW" must set "0" By pushing "POWER ON" and "TILT" key.

- Above 30 minutes H/run in RF no signal
- 15 Pin D-Sub Jack is connected to the signal of Pattern Generator.

4.2 Confirmation of Luminance

4.2.1 RGB-PC input (15", 17", 19" apply)

- Set Statement
  Input : RGB PC
  Contrast : 100 (Max) / Brightness : 50
- Signal equipment displays
  Output Voltage : 700 mVp-p
  Output Mode : Full White pattern and XGA@60 Hz
  (Model : 37 Pattern : 04 MSPG-925)

4.2.2 AV2 input

- Set Statement
  Input : AV2 (CVBS) / PSM : Dynamic
- Signal equipment displays
  Output Voltage : 700 mVp-p
  Output Mode:576i(Model : 202 Pattern : 04 MSPG-925)

4.3 Confirmation of Color Coordinate

- Input : Full white pattern RGB-PC(Model : 37 Pattern : 04 MSPG-925)
  AV2-CVBS(Model : 202 Pattern : 04 MSPG-925)
- PSM : Dynamic
- Confirm whether x±0.03, y±0.03 or not (Color Temp.9300K)

After Confirming color coordinate and luminance, "IIC_ SW" set "1" automatically.

4.4. Outgoing condition Configuration

- Outgoing Option setting in Service OSD.
- Press IN-START Key by using the SVC Remote Controller
- Press 8 digit code by SVC Remote controller refer 3854TAA001A or 3854TAA002A in BOM
- After option configuration is complete, Exit SVC MENU OSD

4.5 Other quality

- Confirm that each items satisfy under standard condition that was written product spec.

Confirm Video and Sound at each source

1) AV
   Select input AV1 and whether picture is displayed or not
   - SCART output displayed or not
   Select input AV2 (CVBS) and whether picture is displayed or not
   Select input AV2 (S-video) and whether picture is displayed or not
2) TV
- Select input TV and check below item
  (1) In Gumi Factory
  C05 (E05) - TELETEXT Function Check
  ; (Applicable to the model that has Teletext code set-up item in Product spec)
  C07 (E07) - Nicam DUAL Check
  C52 (E52) - Nicam Stereo Check

Preset CH information

3) RGB-DTV/PC
   Select input RGB DTV and whether picture is displayed or not

4.6 DPM operation confirmation

Check if Power LED Color and Power Consumption operate as standard.

- Measurement Condition : 230V@ 50Hz (Analog)
- Confirm DPM operation at the state of screen without Video Signal.

4.7 DDC EDID Write

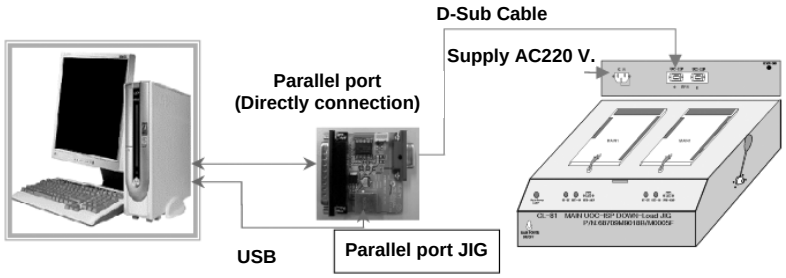
- Connect D-sub Signal Cable to D-Sub Connector
- Write EDID DATA to EEPROM (24C02) by using DDC2B protocol.
- Check whether written EDID data is correct or not. (refer to Product spec).

4.8 Outgoing condition Configuration

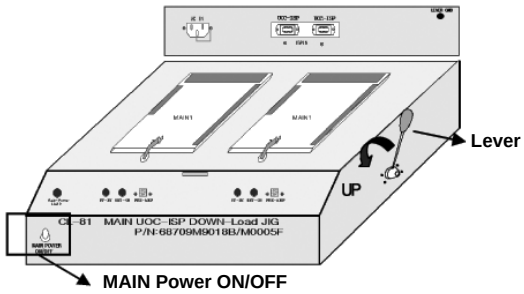
- After all function test., press IN-STOP Key by SVC Remote controller. And Make Ship Condition.
- Amber LED is blink. And then automatically turn off. . (Must not AC OFF during blink)

ISP Manual

1. Connect between ┌PC for ISP and Parallel port Jig though parallel port and USB cable.
   └Parallel port Jig and Down-Load JIG though D-sub port.



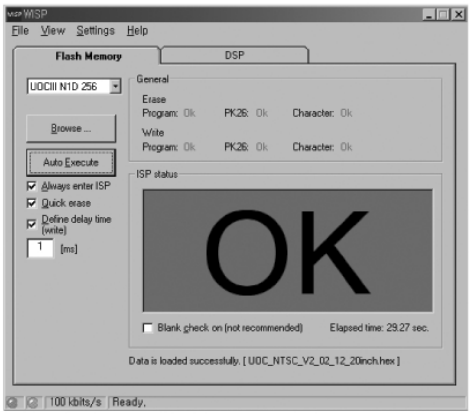
2. After set on Main board on pull the Lever at right, turn on ISP Down-Load JIG.(Push the MAIN POWER ON/OFF.)



- **LOC ISP Mode.**
  Push IN-START => IN-STOP => TILT at Service remocon in order then SET-ON LED(Green) will be blinking.
  *If ST-BY(Red) blinks, please push TILT key once.

- **LOC Download.**

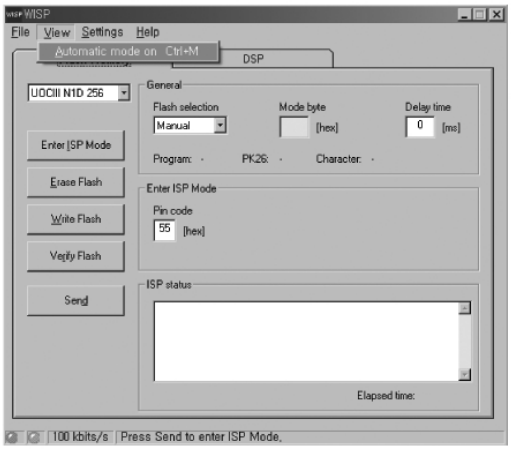
1. After LED checking, execute "WISP" program.
2. Compare LOC version in BOM with version of hexfile.
3. Push "Browse…" in WISP program and select hex file.(1)



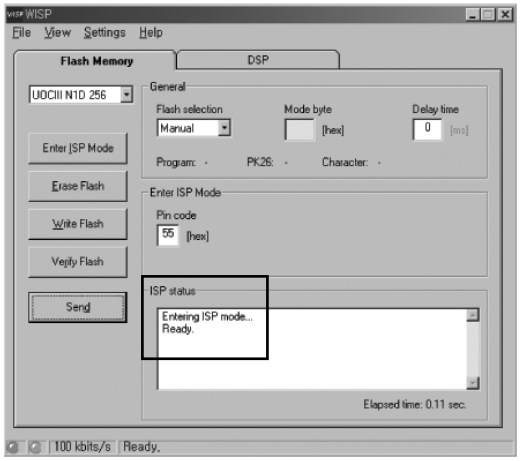
4. Push "Auto Execute" after loading file.(2)
5. After Writing Flash memory, check OK message. (3)
6. After finishing ISP, turn OFF Main Power AC switch and then turn ON the switch.
7. Red LED is blinking during writing default value in EEPROM(24C32) after turn on the switch.
8. ALL LOC ISP process is finished when Red LED is off and Green LED is ON.
9. After ISP, automatically input source change "AV2" and II_SW set to "0")

If you can't use service remocon or enter ISP mode, please follow the method.
(The method uses manual WISP program)

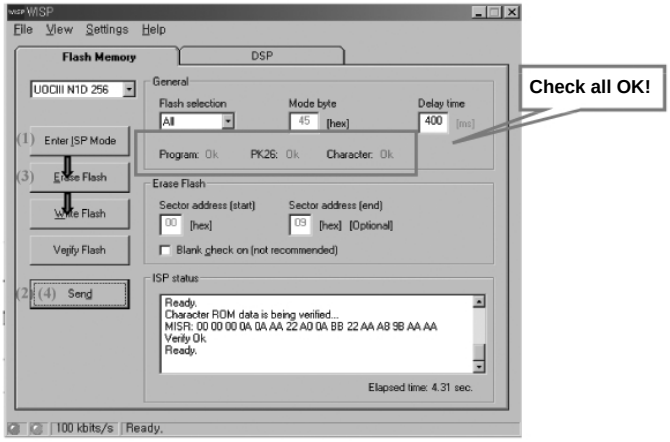
1. Change from WISP Automatic mode on to manual mode and then push Enter ISP Mode.



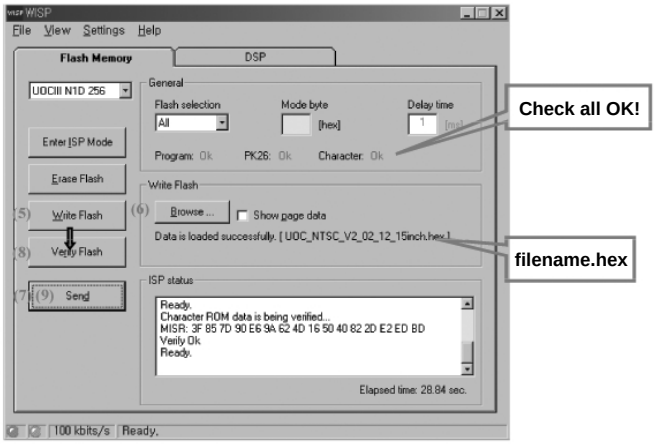
2. As soon as turn on AC power, push Send quickly and again. Check the following message in ISP status.
*If ISP status is not ready, try again from AC power on.



3. After Entering ISP mode, Push Erase Flash and Send. (Take turns (1)~(4)).
*If Erase Flash is not OK, try again Erase Flash.

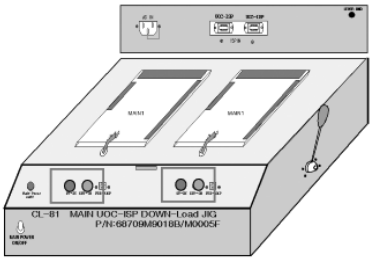


4. After Erase Flash, Push Write Flash. Then select hex file after push Browse. Check file loading.
Push Send and wait for writing flash. (Take turns (5)~(7))



5. Push Verify Flash and Send.(Take turns (8)~(9).) Finally, Turn off and on Main AC Power and wait for ending LED blinking.

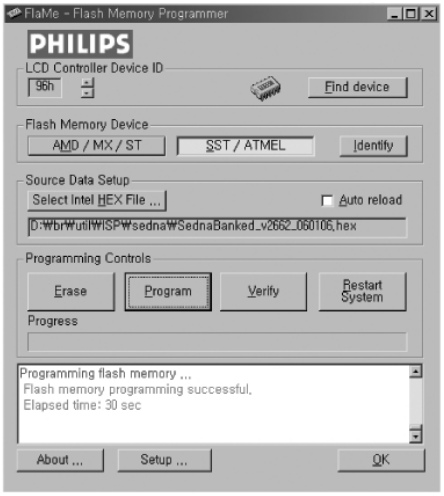
- **SEDNA ISP Mode.**
  Push IN-START => IN-STOP => TILT => TILT at Service remocon in order then ST-BY(Red) will be blinking.
  *If SET-ON LED(Green) blinks, please push TILT key once.



- **SEDNA Download**

1. After LED checking, execute "ISP_Tool" program.
2. Push Identity and check connection message.

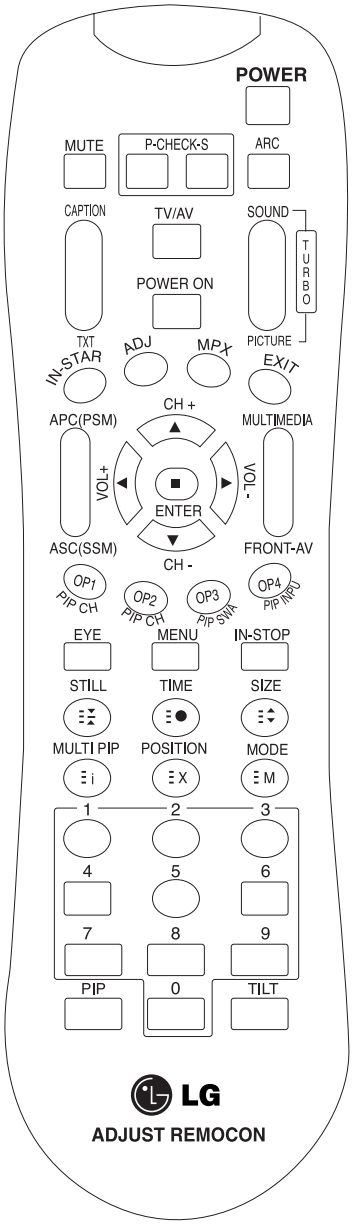
3. Push "Select Intel HEX File" and select hex file.(1)



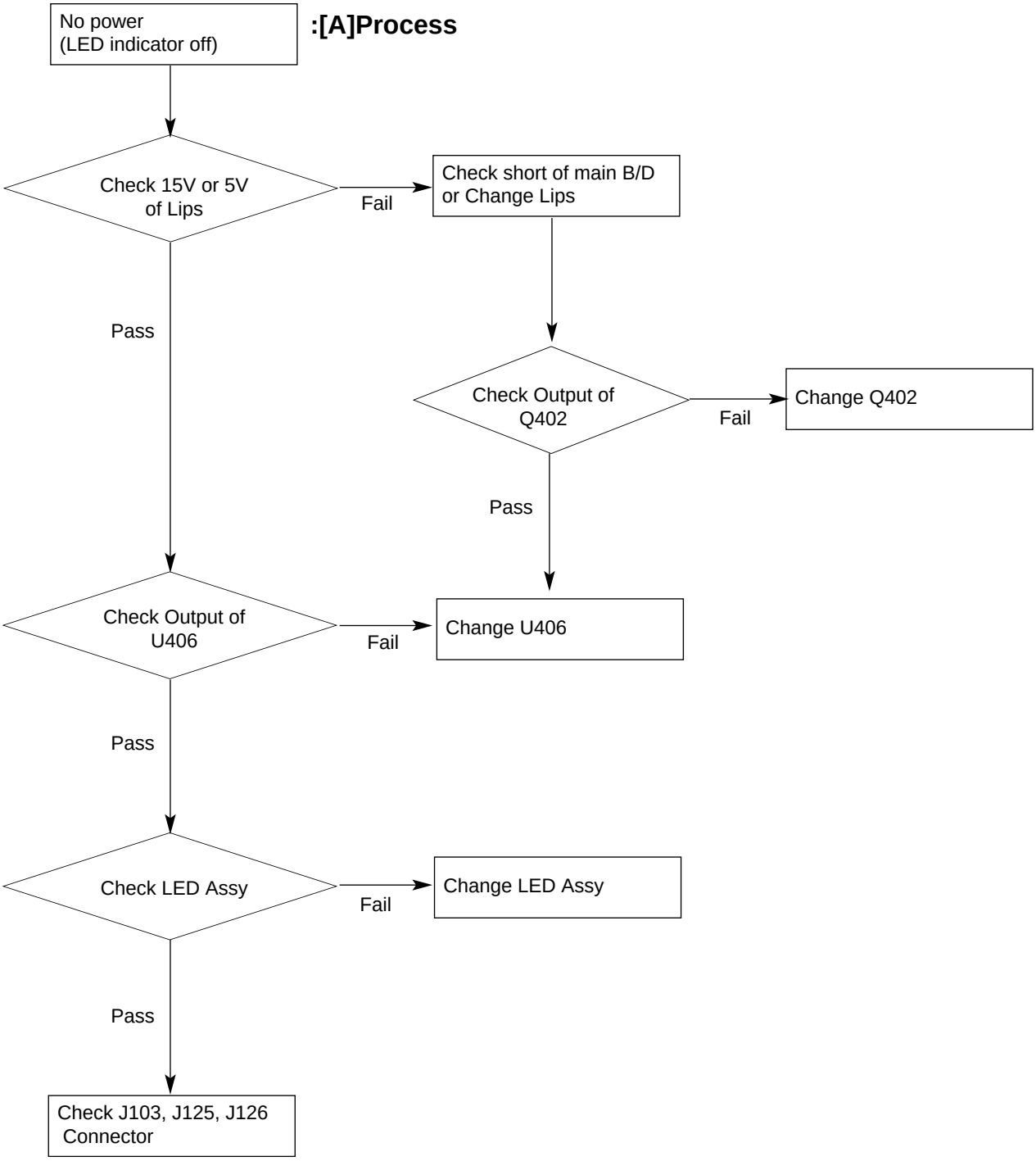
4. Push "Erase" => "Program" => "Verify" => "Restart System" after loading file.
   (Take turns (2)~(5)).
5. Check whether each stage (2)~(5) is successful in message box.
6. After finishing ISP, turn OFF Main Power AC switch and then turn ON the switch.

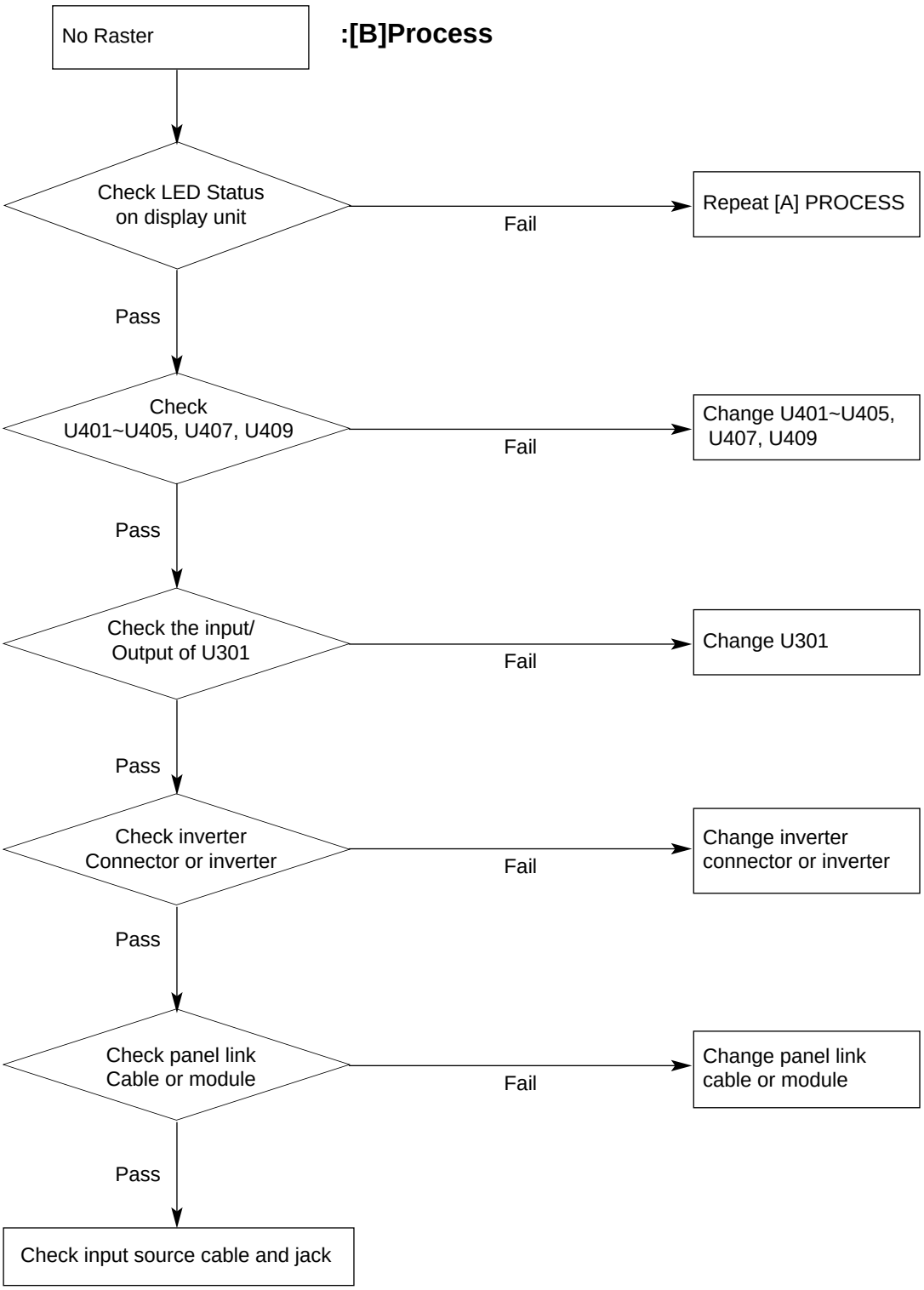
SVC REMOCON

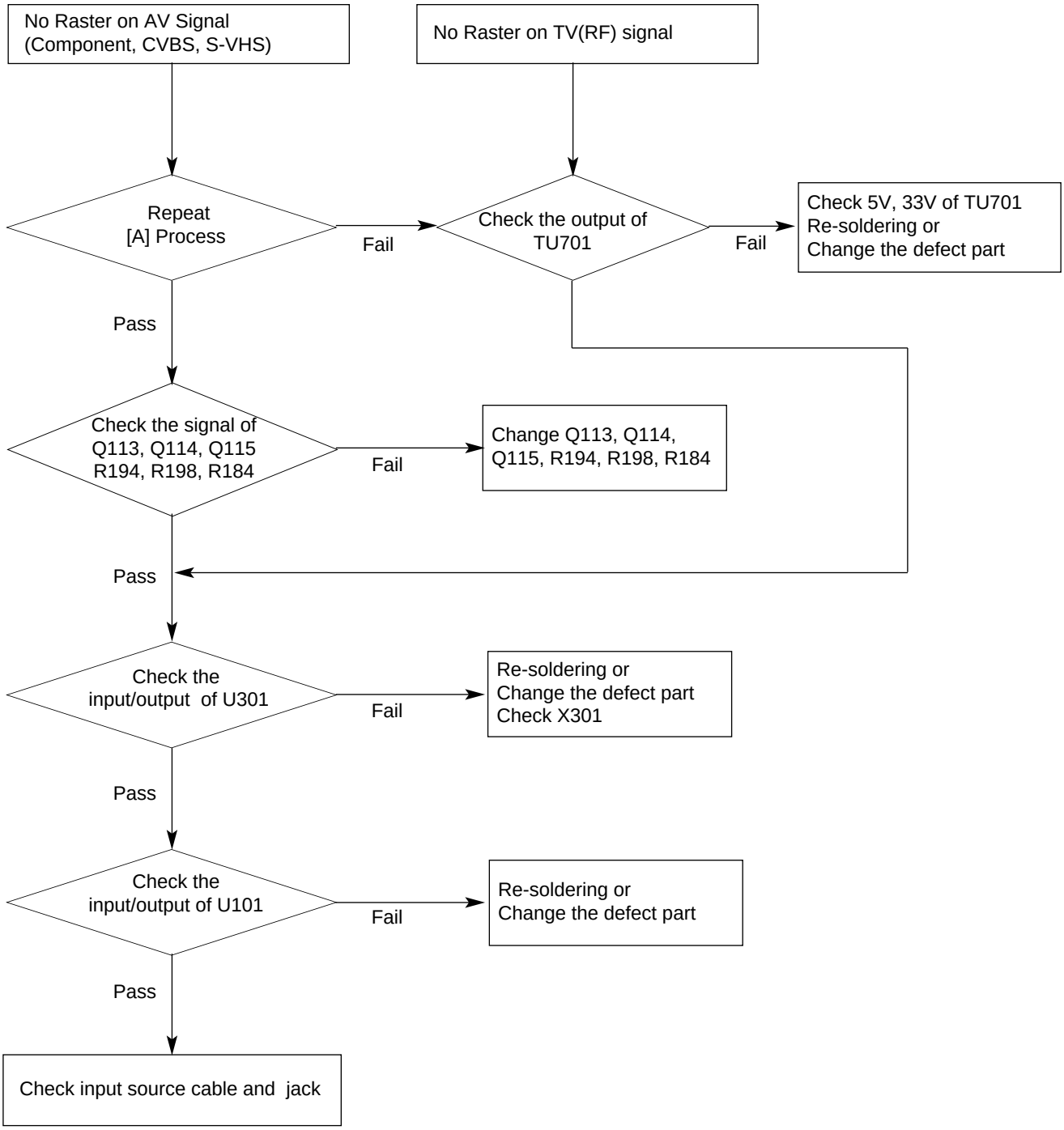
NO.	KEY	FUNTION	REMARK
1	POWER	To turn the TV on or off	
2	MUTE	To activate the mute function.	
3	P-CHECK	To check TV screen image easily.	Shortcut keys
4	S-CHECK	To check TV screen sound easily	Shortcut keys
5	ARC(23inch)	To select size of the main screen (Auto, 4:3, 16:9, 14:3, Zoom, Cinema Zoom)	Shortcut keys
6	CAPTION	Switch to closed caption broadcasting	
7	TXT	To toggle on/off the teletext mode	
8	TV/AV	External input	
9	IN-START	To enter adjustment mode when manufacturing the TV sets. In-Start→Vol±→Auto ADC→Vol±→W/B adjustment→ Exit two times(Adjustment completed)	Use the AV key to enter the screen W/B adjustment mode.
10	MPX	To select the multiple sound mode (Mono, Stereo or MPEG, DOLBY, Digital)	
11	EXIT	To release the adjustment mode	
12	APC(PSM)	To easily adjust the screen according to surrounding brightness	
13	ASC(SSM)	To easily adjust sound according to the program type	
14	MULTIMEDIA	External input	Shortcut keys
15	CH ±	To move channel up/down or to select a functiondisplayed on the screen.	
16	VOL ±	To adjust the volume or accurately control a specific function.	
17	ENTER	To set a specific function or complete setting.	
18	CH-(OP1)	To use as a **red key** in the teletext mode	
19	CH+(OP2)	To use as a **green key** in the teletext mode	
20	SWAP(OP3)	To use as a **yellow key** in the teletext mode	
21	INPUT(OP4)	To use as a **blue key** in the teletext mode	
22	MENU	To select the functions such as video, voice, function or channel.	
23	IN-STOP	To set the delivery condition status after manufacturing the TV set.	
24	HOLD Used as a hold key in the teletext mode (Page updating is stopped.)		
25	TIME	Displays the teletext time in the normal mode Enables to select the sub code in the teletext mode	
26	SIZE	Used as the size key in the teletext mode	
27	INDEX	Used as the index key in the teletext mode (Top index will be displayed if it is the top text.)	
28	UPDATE	Used as the update key in the teletext mode (Text will be displayed if the current page is updated.)	
29	MODE	Used as Mode in the teletext mode	
30	TILT To set IIC SW "0" or "1" in the adjustment mode		
31	0~9	To manually select the channel.	

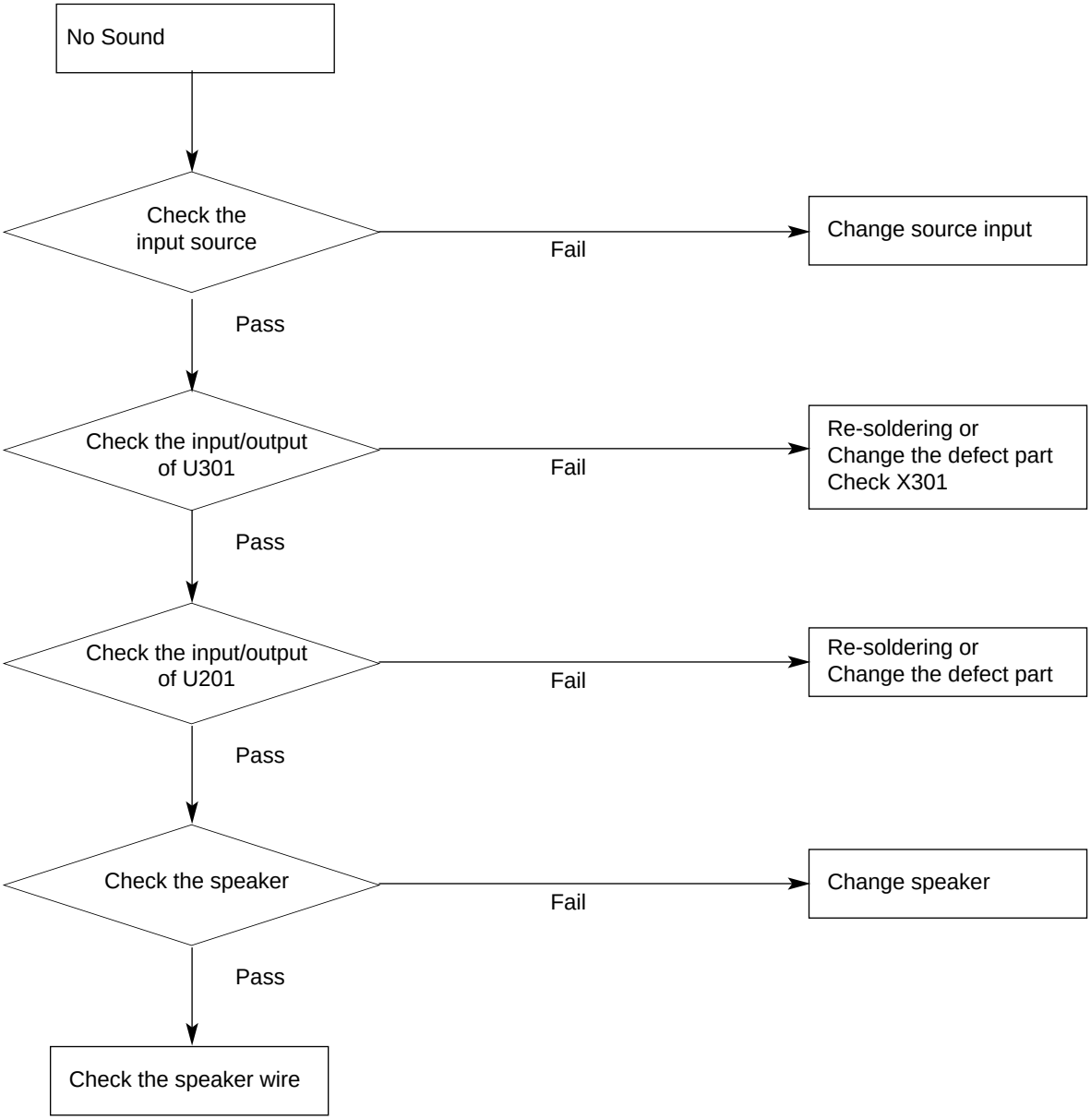


TROUBLESHOOTING

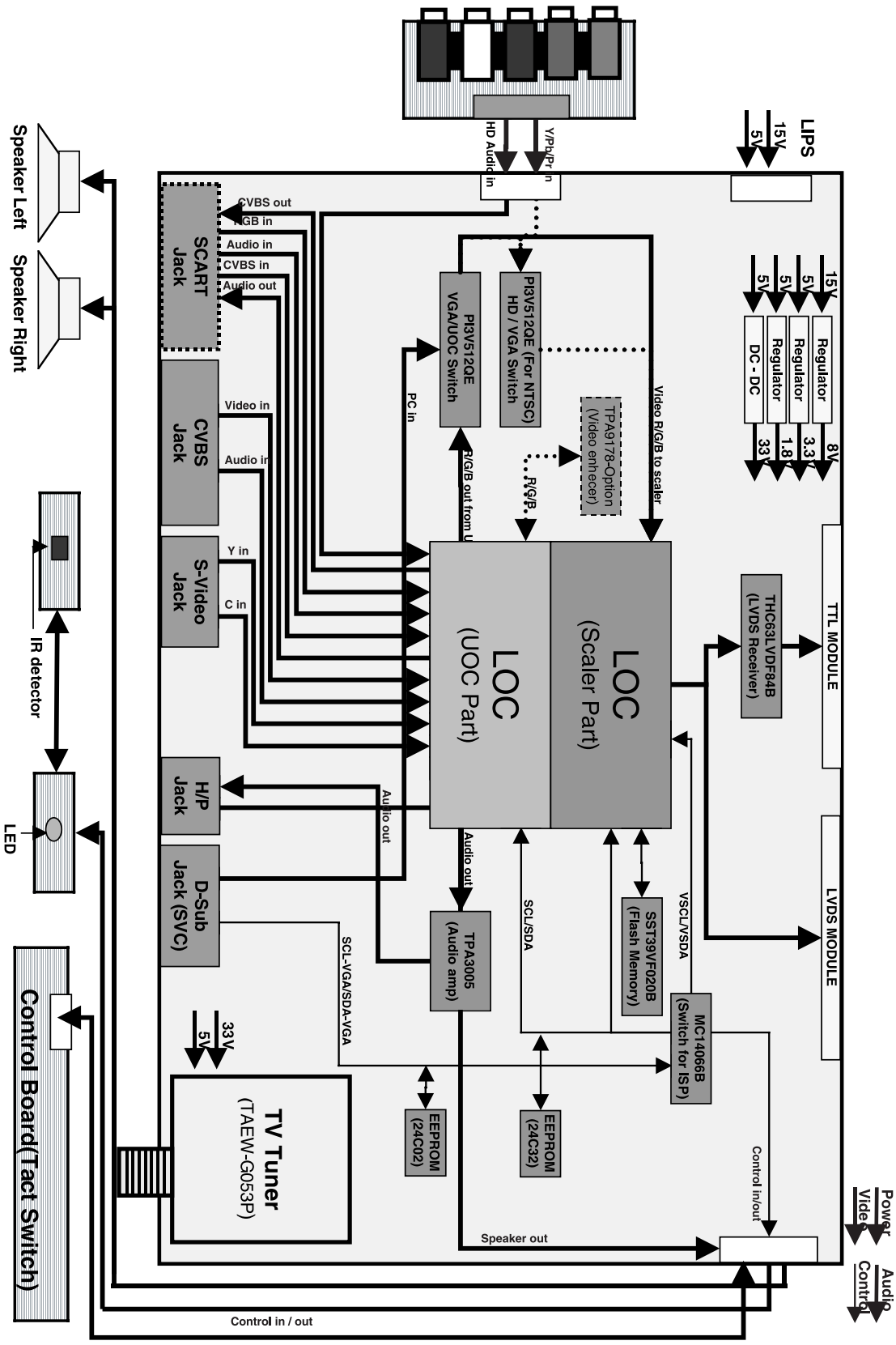



No Raster
:[B]Process
Check LED Status
on display unit
Fail
Repeat [A] PROCESS
Pass
Check
U401~U405, U407, U409
Fail
Change U401~U405,
U407, U409
Pass
Check the input/
Output of U301
Fail
Change U301
Pass
Check inverter
Connector or inverter
Fail
Change inverter
connector or inverter
Pass
Check panel link
Cable or module
Fail
Change panel link
cable or module
Pass
Check input source cable and jack


No Raster on AV Signal
(Component, CVBS, S-VHS)
No Raster on TV(RF) signal
Repeat
[A] Process
Fail
Check the output of
TU701
Fail
Check 5V, 33V of TU701
Re-soldering or
Change the defect part
Pass
Check the signal of
Q113, Q114, Q115
R194, R198, R184
Fail
Change Q113, Q114,
Q115, R194, R198, R184
Pass
Check the
input/output of U301
Fail
Re-soldering or
Change the defect part
Check X301
Pass
Check the
input/output of U101
Fail
Re-soldering or
Change the defect part
Pass
Check input source cable and jack


No Sound
Check the input source
Fail
Change source input
Pass
Check the input/output of U301
Fail
Re-soldering or Change the defect part Check X301
Pass
Check the input/output of U201
Fail
Re-soldering or Change the defect part
Pass
Check the speaker
Fail
Change speaker
Pass
Check the speaker wire

BLOCK DIAGRAM



BLOCK DIAGRAM DESCRIPTION

Power Supply Block (LIPS)
This Block Generates DC Voltage (5V,15V) to Main Control system from AC Power (100-240 V, 50/60 Hz, 1.0A)
Also it has the inverter function that converts input voltage to AC Rms value for the LCD lamp.

DC/DC Converter block
DC/DC Converter convert the input 5V,15V to proper 3.3V, 5V, 8V, 12V for Main control system.
For shooting heat trouble, we use the DC/DC converting IC

Audio Amplifier
This block is composed of TPA3005D2 and peripheral device.
The function of the audio amplifier is that to amplify audio L / R signal transmitted from audio decoder. The audio signal is amplified according to pre-defined DC volume control curve.

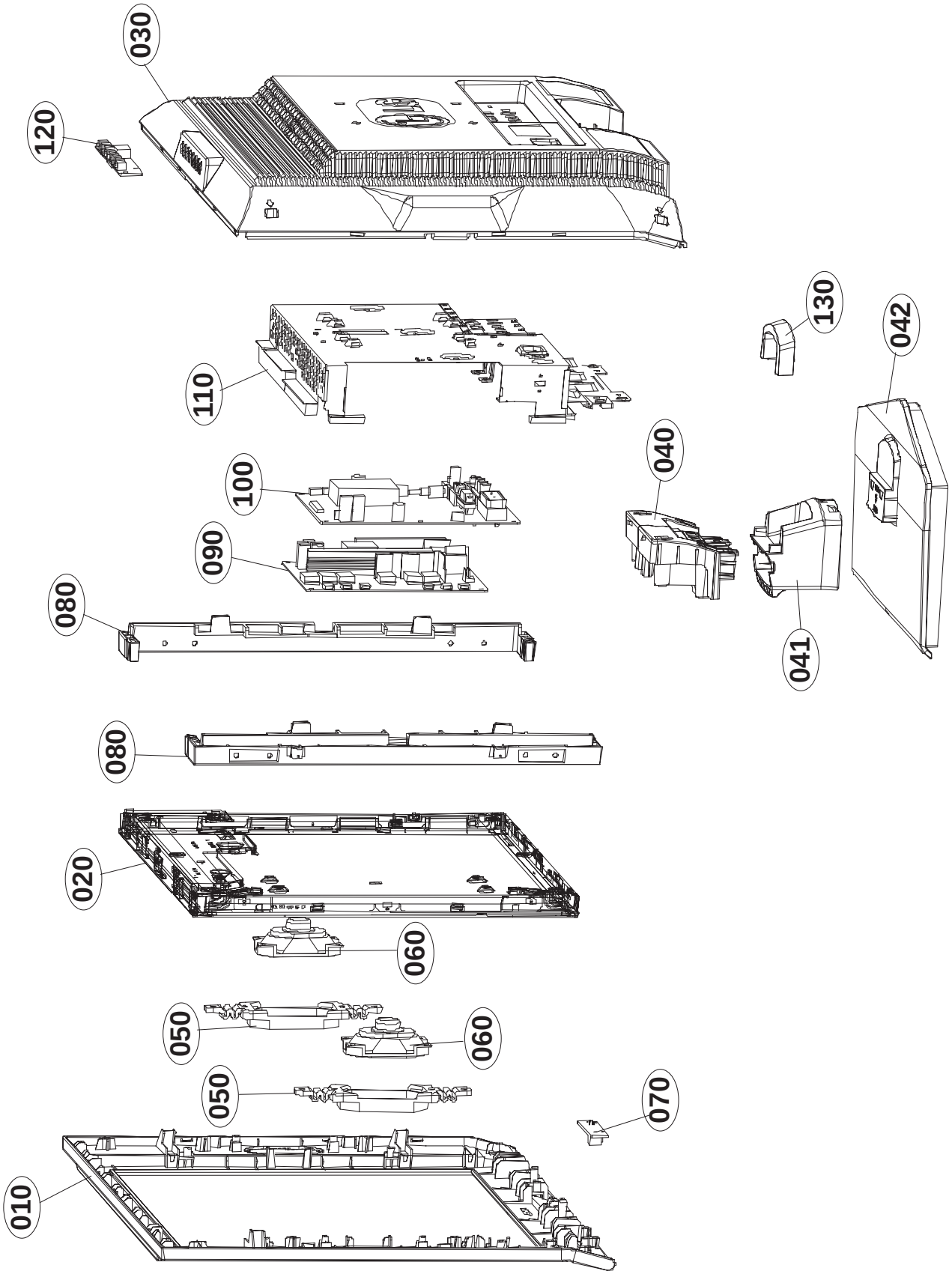
Audio / Video / IF Decoder / Scaler
This block is composed of LOC1 and peripheral devices.
1) Video Decoder
This Block Selects input Video signals (like CVBS, Y/C, SCART RGB) and output RGB signal.
On decoding, We can control signal like Contrast, Brightness, Sharpness, Color, tint signals including Adaptive Comb Filter
2) Audio Decoder
This block analyzes audio input signal through A/V Jack and PC audio and Tuner IF.
The analyzed signals transmitted to audio amplifier
On decoding, We can control signal like Bass, treble.
3) IF Decoder
This block can change IF signal to audio and video signal that transmitted to Video/audio decoder.
4) Scaler
This IC includes A/D Converter and LVDS Transmitter
This IC is directly Inputted Analog Signal and transmits it to LCD Module
5) Micom
This block controls each IC through IIC communication line.

LVDS Rx (DTC34LF86L)
It is composed of DTC34LF86L/THC63LVDF84B.
The LVDS Rx converts the LVDS data streams back into 24bits of CMOS/TTL data with
Falling edge or rising edge clock for convenient with variety of LCD panel controllers.

Switch IC (PI3V512QE)
It is composed of PI3V512QE.
This IC selects between D-sub RGB signal and LOC1 RGB signal, and it transmits the selected signal to video signal processor.

TUNER
Micom controls this through IIC Line.
TUNER makes IF and transmits IF signal to LOC1.

EXPLODED VIEW



EXPLODED VIEW PARTS LIST

*** Note:** Safety mark ⚠

No.	PART NO.		DESCRIPTION
010	⚠	ABJ30635005	Cabinet Assembly, 20LS1R CL-81 20" 51SF CABINET ASSY,BK, LPL/CPT ,MA_LOCAL
020	⚠	EAJ30338001	LCD,Module-TFT, LC201V02-SDA1 VGA 20.1INCH 640X480 450CD COLOR 72% 4/3 800 P7 Module(0RT-Pol., NEC D-IC TTL/Mini LVDS) LG PHILIPS LCD
030	⚠	ACQ30637706	Cover Assembly, 20LS1R CL-81 20" BACK_51SF_BK_LPL, PAL_SECAM, MA_LOCAL
040	⚠	AAN31023103	Base Assembly, STAND 20LS1R CL81 20LS1R STAND BODY ASSY' , MA_LOCAL
041	⚠	MCK30214201	Cover, MOLD HIPS 51SF 15LS1R HIPS 51SF 15LS1R COVER STAND BODY
042	⚠	AAN30637905	Base Assembly, STAND 20LS1R CL81 BASE _NON_METAL_MA_LOCAL
050		MCQ30553401	Damper, MOLD SANTOPRENE SUPPORT RUBBER LS1R SPEAKER RUBBER
060		EAB31483101	Speaker,Fullrange, EN1527C-6603-3 ND 5W 16OHM 80DB 170HZ 71.5 X 42 X 29.5 LUG
070		EBR31651301	PCB Assembly, SUB T.T CL81 LS1R(B) all LED IR
080		MAZ30569601	Bracket, MOLD HIPS 51SF FIXER 20LS1R CL81 HIPS 51SF MODULE FIX BRACKET
090	⚠	6871TPT319A	PCB Assembly,Power, POWER T.T ETC 6-LAMP TV/MNT/MFT BRAND -
100	⚠	EBU31674601	Main Total Assembly, 20LS1R BRAND CL-81
110		ADV30635206	Frame Assembly, 15_20LS1 CL-81 20" 20" JAPAN_LPL
120		EBR31651201	PCB Assembly, SUB T.T CL81 LS1R(B) all control
130		MCK30233401	Cover, MOLD HIPS 51SF LS1R HIPS 51SF LS1R-holder cable management

REPLACEMENT PARTS LIST

For Capacitor & Resistors, the charactors at 2nd and 3rd digit in the P/No. means as follows;	CC, CX, CK, CN, CH : Ceramic CQ : Polyestor CE : Electrolytic CF : Fixed Film	RD : Carbon Film RS : Metal Oxide Film RN : Metal Film RH : CHIP, Metal Glazed(Chip) RR : Drawing

DATE: 2006. 08. 03.

*S	*AL	LOC. NO.	PART NO.	DESCRIPTION / SPECIFICATION
MAIN BOARD				
CAPACITOR				
		C101	0CE107WF6DC	MVK6.3TP16VC100M 100uF 20%
		C109	0CE107WF6DC	MVK6.3TP16VC100M 100uF 20%
		C141	0CE107WF6DC	MVK6.3TP16VC100M 100uF 20%
		C175	0CE107WF6DC	MVK6.3TP16VC100M 100uF 20%
		C194	0CH8106F691	MVK4.0TP16VC10M 10uF 20% 16
		C195	0CH8106F691	MVK4.0TP16VC10M 10uF 20% 16
		C196	0CH8106F691	MVK4.0TP16VC10M 10uF 20% 16
		C201	0CH8476H691	MVK8.0TP25VC47M 47uF 20% 25
		C220	0CE337SC6D8	MVG6.3TP6.3VC330M 330uF 20%
		C3004	0CH8106F691	MVK4.0TP16VC10M 10uF 20% 16
		C3046	0CE475WJ6DC	MVK4.0TP35VC4.7M 4.7uF 20%
		C3071	0CE107WF6DC	MVK6.3TP16VC100M 100uF 20%
		C3094	0CE107WF6DC	MVK6.3TP16VC100M 100uF 20%
		C311	0CE107WF6DC	MVK6.3TP16VC100M 100uF 20%
		C318	0CE105WK6DC	MVK4.0TP50VC1M 1uF 20% 50V
		C321	0CE107WF6DC	MVK6.3TP16VC100M 100uF 20%
		C323	0CH8106F691	MVK4.0TP16VC10M 10uF 20% 16
		C359	0CE107WF6DC	MVK6.3TP16VC100M 100uF 20%
		C371	0CE107WF6DC	MVK6.3TP16VC100M 100uF 20%
		C384	0CH8106F691	MVK4.0TP16VC10M 10uF 20% 16
		C385	0CH8106F691	MVK4.0TP16VC10M 10uF 20% 16
		C404	0CE107WF6DC	MVK6.3TP16VC100M 100uF 20%
		C408	0CE107WF6DC	MVK6.3TP16VC100M 100uF 20%
		C410	0CE226WF6DC	MVK5.0TP16VC22M 22uF 20% 16
		C414	0CE107WF6DC	MVK6.3TP16VC100M 100uF 20%
		C420	0CE107WF6DC	MVK6.3TP16VC100M 100uF 20%
		C423	0CE107WF6DC	MVK6.3TP16VC100M 100uF 20%
		C750	0CE107WF6DC	MVK6.3TP16VC100M 100uF 20%
		C751	0CE226WF6DC	MVK5.0TP16VC22M 22uF 20% 16
		C134	0CE228ED618	KMG5.0TP10VB2200M 2200uF 20
		C146	0CE108EH618	KMG5.0TP25VB1000M 1000uF 20
		C226	0CE477EH618	KMG5.0TP25VB470M 470uF 20%
		C227	0CE477EH618	KMG5.0TP25VB470M 470uF 20%
		C405	0CE477ED610	KMG10VB470M 470uF 20% 10V 2
		C748	0CE226EK610	KMG50VB22M 22uF 20% 50V 79M
		C132	0CH3104K566	0805B104K500CT 100nF 10% 50
		C144	0CK105DH56A	C2012X7R105KFT 1uF 10% 25V
		C150	0CH6101K416	C2012C0G1H101JT 100pF 5% 50
		C170	0CH3104K566	0805B104K500CT 100nF 10% 50
		C171	0CH5102K416	0805N102J500LT 1nF 5% 50V C
		C172	0CH5102K416	0805N102J500LT 1nF 5% 50V C
		C174	0CH3104K566	0805B104K500CT 100nF 10% 50
		C176	0CH3104K566	0805B104K500CT 100nF 10% 50
		C177	0CH3104K566	0805B104K500CT 100nF 10% 50
		C178	0CH3104K566	0805B104K500CT 100nF 10% 50
		C180	0CK475DD57A	C2012X5R1A475KT 4.7uF 10% 1
		C181	0CK475DD57A	C2012X5R1A475KT 4.7uF 10% 1
		C187	0CH3104K566	0805B104K500CT 100nF 10% 50
		C188	0CH3104K566	0805B104K500CT 100nF 10% 50
		C190	0CH3104K566	0805B104K500CT 100nF 10% 50
		C191	0CH6331K416	C2012C0G1H331JT 330pF 5% 50
		C192	0CH3104K566	0805B104K500CT 100nF 10% 50

DATE: 2006. 08. 03.

*S	*AL	LOC. NO.	PART NO.	DESCRIPTION / SPECIFICATION
		C197	0CH3104K566	0805B104K500CT 100nF 10% 50
		C205	0CH3474H946	C2012Y5V1E474ZT 470nF -20TO
		C209	0CH3474H946	C2012Y5V1E474ZT 470nF -20TO
		C211	0CH3104K566	0805B104K500CT 100nF 10% 50
		C212	0CH3104K566	0805B104K500CT 100nF 10% 50
		C213	0CH3474H946	C2012Y5V1E474ZT 470nF -20TO
		C215	0CH3474H946	C2012Y5V1E474ZT 470nF -20TO
		C216	0CH3104K566	0805B104K500CT 100nF 10% 50
		C217	0CH3104K566	0805B104K500CT 100nF 10% 50
		C228	0CH3224K946	C2012Y5V1H224ZT 220nF -20TO
		C236	0CH5102K416	0805N102J500LT 1nF 5% 50V C
		C237	0CH5102K416	0805N102J500LT 1nF 5% 50V C
		C238	0CH5102K416	0805N102J500LT 1nF 5% 50V C
		C239	0CH5102K416	0805N102J500LT 1nF 5% 50V C
		C240	0CH3224K946	C2012Y5V1H224ZT 220nF -20TO
		C3001	0CH3104K566	0805B104K500CT 100nF 10% 50
		C3002	0CH3104K566	0805B104K500CT 100nF 10% 50
		C301	0CH3224K946	C2012Y5V1H224ZT 220nF -20TO
		C3011	0CH3103K516	C2012Y5P1H103KT 10nF 10% 50
		C3012	0CH6470K416	C2012C0G1H470JT 47pF 5% 50V
		C3013	0CH3104K566	0805B104K500CT 100nF 10% 50
		C3014	0CH6470K416	C2012C0G1H470JT 47pF 5% 50V
		C3022	0CH3474H946	C2012Y5V1E474ZT 470nF -20TO
		C3024	0CH6470K416	C2012C0G1H470JT 47pF 5% 50V
		C3026	0CH3474H946	C2012Y5V1E474ZT 470nF -20TO
		C3028	0CH6470K416	C2012C0G1H470JT 47pF 5% 50V
		C3033	0CH6470K416	C2012C0G1H470JT 47pF 5% 50V
		C3043	0CH6470K416	C2012C0G1H470JT 47pF 5% 50V
		C3045	0CH6470K416	C2012C0G1H470JT 47pF 5% 50V
		C3047	0CH3474H946	C2012Y5V1E474ZT 470nF -20TO
		C3048	0CH6470K416	C2012C0G1H470JT 47pF 5% 50V
		C305	0CH6151K416	C2012C0G1H151JT 150pF 5% 50
		C3051	0CH3104K566	0805B104K500CT 100nF 10% 50
		C3060	0CH2392K516	0805B392K500CT 3.9nF 10% 50
		C3061	0CH3104K566	0805B104K500CT 100nF 10% 50
		C3062	0CH6470K416	C2012C0G1H470JT 47pF 5% 50V
		C3064	0CH3474H946	C2012Y5V1E474ZT 470nF -20TO
		C307	0CH3224K946	C2012Y5V1H224ZT 220nF -20TO
		C3082	0CK225DK94A	CL21F225ZBFNNNE 2.2uF -20TO
		C3083	0CK225DK94A	CL21F225ZBFNNNE 2.2uF -20TO
		C3084	0CH3104K566	0805B104K500CT 100nF 10% 50
		C3092	0CH3224K946	C2012Y5V1H224ZT 220nF -20TO
		C3093	0CH3104K566	0805B104K500CT 100nF 10% 50
		C3102	0CK475DD57A	C2012X5R1A475KT 4.7uF 10% 1
		C313	0CH3104K566	0805B104K500CT 100nF 10% 50
		C316	0CH3224K946	C2012Y5V1H224ZT 220nF -20TO
		C317	0CH2472K516	0805B472K500CT 4.7nF 10% 50
		C319	0CH3224K946	C2012Y5V1H224ZT 220nF -20TO
		C322	0CH3224K946	C2012Y5V1H224ZT 220nF -20TO
		C327	0CH3224K946	C2012Y5V1H224ZT 220nF -20TO
		C329	0CH2334F566	0805B334K160CT 330nF 10% 16
		C330	0CH3224K946	C2012Y5V1H224ZT 220nF -20TO
		C331	0CH3103K516	C2012Y5P1H103KT 10nF 10% 50
		C332	0CH3104K566	0805B104K500CT 100nF 10% 50

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*S	*AL	LOC. NO.	PART NO.	DESCRIPTION / SPECIFICATION
		C334	0CH3104K566	0805B104K500CT 100nF 10% 50
		C335	0CH3104K566	0805B104K500CT 100nF 10% 50
		C336	0CH3104K566	0805B104K500CT 100nF 10% 50
		C337	0CH3104K566	0805B104K500CT 100nF 10% 50
		C338	0CH3104K566	0805B104K500CT 100nF 10% 50
		C339	0CH3104K566	0805B104K500CT 100nF 10% 50
		C340	0CH3104K566	0805B104K500CT 100nF 10% 50
		C341	0CH3104K566	0805B104K500CT 100nF 10% 50
		C342	0CH3104K566	0805B104K500CT 100nF 10% 50
		C343	0CH3104K566	0805B104K500CT 100nF 10% 50
		C347	0CH3104K566	0805B104K500CT 100nF 10% 50
		C348	0CH3104K566	0805B104K500CT 100nF 10% 50
		C350	0CH3104K566	0805B104K500CT 100nF 10% 50
		C358	0CH3104K566	0805B104K500CT 100nF 10% 50
		C360	0CH3104K566	0805B104K500CT 100nF 10% 50
		C361	0CH3104K566	0805B104K500CT 100nF 10% 50
		C362	0CH3104K566	0805B104K500CT 100nF 10% 50
		C363	0CH3104K566	0805B104K500CT 100nF 10% 50
		C364	0CH3104K566	0805B104K500CT 100nF 10% 50
		C365	0CH3104K566	0805B104K500CT 100nF 10% 50
		C366	0CH3104K566	0805B104K500CT 100nF 10% 50
		C367	0CH3224K946	C2012Y5V1H224ZT 220nF -20TO
		C373	0CH3104K566	0805B104K500CT 100nF 10% 50
		C374	0CH3104K566	0805B104K500CT 100nF 10% 50
		C375	0CH3104K566	0805B104K500CT 100nF 10% 50
		C379	0CH5102K416	0805N102J500LT 1nF 5% 50V C
		C386	0CH3104K566	0805B104K500CT 100nF 10% 50
		C388	0CH3104K566	0805B104K500CT 100nF 10% 50
		C389	0CH3104K566	0805B104K500CT 100nF 10% 50
		C390	0CH3104K566	0805B104K500CT 100nF 10% 50
		C391	0CH3104K566	0805B104K500CT 100nF 10% 50
		C394	0CH3224K946	C2012Y5V1H224ZT 220nF -20TO
		C395	0CH3224K946	C2012Y5V1H224ZT 220nF -20TO
		C396	0CH3104K566	0805B104K500CT 100nF 10% 50
		C403	0CH3104K566	0805B104K500CT 100nF 10% 50
		C409	0CH3104K566	0805B104K500CT 100nF 10% 50
		C411	0CK475DD57A	C2012X5R1A475KT 4.7uF 10% 1
		C413	0CH3103K516	C2012Y5P1H103KT 10nF 10% 50
		C415	0CK105DH56A	C2012X7R105KFT 1uF 10% 25V
		C416	0CH3104K566	0805B104K500CT 100nF 10% 50
		C421	0CH3104K566	0805B104K500CT 100nF 10% 50
		C422	0CH3104K566	0805B104K500CT 100nF 10% 50
		C425	0CK105DH56A	C2012X7R105KFT 1uF 10% 25V
		C704	0CH3104K566	0805B104K500CT 100nF 10% 50
		C705	0CH3104K566	0805B104K500CT 100nF 10% 50
		C708	0CH3104K566	0805B104K500CT 100nF 10% 50
		C715	0CH3104K566	0805B104K500CT 100nF 10% 50
		C716	0CH3104K566	0805B104K500CT 100nF 10% 50
		C717	0CH3104K566	0805B104K500CT 100nF 10% 50
		C718	0CH3104K566	0805B104K500CT 100nF 10% 50
		C719	0CH3104K566	0805B104K500CT 100nF 10% 50
		C720	0CH3104K566	0805B104K500CT 100nF 10% 50
		C740	0CH3103K516	C2012Y5P1H103KT 10nF 10% 50
		C744	0CH3104K566	0805B104K500CT 100nF 10% 50
		C117	0CK105DH56A	C2012X7R105KFT 1uF 10% 25V
		C118	0CK105DH56A	C2012X7R105KFT 1uF 10% 25V
		C145	0CK103CK51A	0603B103K500CT 10nF 10% 50V
		C155	0CC470CK41A	C1608C0G1H470JT 47pF 5% 50V
		C157	0CC470CK41A	C1608C0G1H470JT 47pF 5% 50V
		C189	0CC271CK41A	C1608C0G1H271JT 270pF 5% 50
		C198	0CC271CK41A	C1608C0G1H271JT 270pF 5% 50
		C199	0CC271CK41A	C1608C0G1H271JT 270pF 5% 50

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		C202	0CK104CK56A	0603B104K500CT 100nF 10% 50
		C203	0CK104CK56A	0603B104K500CT 100nF 10% 50
		C204	0CC221CK41A	C1608C0G1H221JT 220pF 5% 50
		C206	0CK224CF56A	0603B224K160CT 220nF 10% 16
		C207	0CK105CF94A	0603F105Z160CT 1uF -20TO+80
		C208	0CK105CF94A	0603F105Z160CT 1uF -20TO+80
		C210	0CK224CF56A	0603B224K160CT 220nF 10% 16
		C214	0CK224CF56A	0603B224K160CT 220nF 10% 16
		C218	0CK224CF56A	0603B224K160CT 220nF 10% 16
		C221	0CK474CH94A	0603F474Z250CT 470nF -20TO+
		C222	0CK474CH94A	0603F474Z250CT 470nF -20TO+
		C223	0CK105CF94A	0603F105Z160CT 1uF -20TO+80
		C224	0CK474CH94A	0603F474Z250CT 470nF -20TO+
		C225	0CK474CH94A	0603F474Z250CT 470nF -20TO+
		C232	0CC470CK41A	C1608C0G1H470JT 47pF 5% 50V
		C233	0CC470CK41A	C1608C0G1H470JT 47pF 5% 50V
		C3015	0CK474CH94A	0603F474Z250CT 470nF -20TO+
		C3017	0CK474CH94A	0603F474Z250CT 470nF -20TO+
		C3019	0CK104CK56A	0603B104K500CT 100nF 10% 50
		C302	0CK104CK56A	0603B104K500CT 100nF 10% 50
		C303	0CK104CK56A	0603B104K500CT 100nF 10% 50
		C3030	0CC470CK41A	C1608C0G1H470JT 47pF 5% 50V
		C3031	0CK474CH94A	0603F474Z250CT 470nF -20TO+
		C3032	0CK474CH94A	0603F474Z250CT 470nF -20TO+
		C3035	0CK225DK94A	CL21F225ZBFNNNE 2.2uF -20TO
		C3036	0CK333CK56A	C1608X7R1H333KT 33nF 10% 50
		C3037	0CC220CK41A	C1608C0G1H220JT 22pF 5% 50V
		C304	0CK224CF56A	0603B224K160CT 220nF 10% 16
		C3040	0CK225DK94A	CL21F225ZBFNNNE 2.2uF -20TO
		C3042	0CK104CK56A	0603B104K500CT 100nF 10% 50
		C3044	0CK333CK56A	C1608X7R1H333KT 33nF 10% 50
		C3049	0CC220CK41A	C1608C0G1H220JT 22pF 5% 50V
		C3050	0CK333CK56A	C1608X7R1H333KT 33nF 10% 50
		C3066	0CK104CK56A	0603B104K500CT 100nF 10% 50
		C3067	0CK223CK56A	UMK107JB223KA-T 22nF 10% 50
		C3068	0CK333CK56A	C1608X7R1H333KT 33nF 10% 50
		C3069	0CK333CK56A	C1608X7R1H333KT 33nF 10% 50
		C3070	0CK333CK56A	C1608X7R1H333KT 33nF 10% 50
		C3073	0CC220CK41A	C1608C0G1H220JT 22pF 5% 50V
		C308	0CC150CK41A	C1608C0G1H150JT 15pF 5% 50V
		C3080	0CC470CK41A	C1608C0G1H470JT 47pF 5% 50V
		C3081	0CC470CK41A	C1608C0G1H470JT 47pF 5% 50V
		C3085	0CK225DK94A	CL21F225ZBFNNNE 2.2uF -20TO
		C3086	0CK225DK94A	CL21F225ZBFNNNE 2.2uF -20TO
		C309	0CC150CK41A	C1608C0G1H150JT 15pF 5% 50V
		C3090	0CK104CK56A	0603B104K500CT 100nF 10% 50
		C3091	0CK474CH94A	0603F474Z250CT 470nF -20TO+
		C3100	0CC101CK41A	C1608C0G1H101JT 100pF 5% 50
		C3101	0CC270CK41A	C1608C0G1H270JT 27pF 5% 50V
		C312	0CK104CK56A	0603B104K500CT 100nF 10% 50
		C320	0CK104CK56A	0603B104K500CT 100nF 10% 50
		C345	0CK224CF56A	0603B224K160CT 220nF 10% 16
		C352	0CK224CF56A	0603B224K160CT 220nF 10% 16
		C354	0CK104CK56A	0603B104K500CT 100nF 10% 50
		C355	0CK104CK56A	0603B104K500CT 100nF 10% 50
		C356	0CK104CK56A	0603B104K500CT 100nF 10% 50
		C357	0CK104CK56A	0603B104K500CT 100nF 10% 50
		C369	0CK224CF56A	0603B224K160CT 220nF 10% 16
		C372	0CK104CK56A	0603B104K500CT 100nF 10% 50
		C376	0CC470CK41A	C1608C0G1H470JT 47pF 5% 50V
		C377	0CC470CK41A	C1608C0G1H470JT 47pF 5% 50V
		C378	0CC470CK41A	C1608C0G1H470JT 47pF 5% 50V

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*S	*AL	LOC. NO.	PART NO.	DESCRIPTION / SPECIFICATION
		C380	0CK104CK56A	0603B104K500CT 100nF 10% 50
		C381	0CK104CK56A	0603B104K500CT 100nF 10% 50
		C382	0CK104CK56A	0603B104K500CT 100nF 10% 50
		C387	0CK104CK56A	0603B104K500CT 100nF 10% 50
		C392	0CK104CK56A	0603B104K500CT 100nF 10% 50
		C393	0CC100CK41A	C1608C0G1H100JT 10pF 5% 50V
		C412	0CC102CK41A	C1608C0G1H102JT 1nF 5% 50V
		C706	0CK103CK51A	0603B103K500CT 10nF 10% 50V
		C707	0CK103CK51A	0603B103K500CT 10nF 10% 50V
		C709	0CK103CK51A	0603B103K500CT 10nF 10% 50V
		C710	0CK103CK51A	0603B103K500CT 10nF 10% 50V
		C731	0CC330CK41A	C1608C0G1H330JT 33pF 5% 50V
		C732	0CC330CK41A	C1608C0G1H330JT 33pF 5% 50V
		C733	0CC330CK41A	C1608C0G1H330JT 33pF 5% 50V
		C735	0CC220CK41A	C1608C0G1H220JT 22pF 5% 50V
		DIODEs		
		D106	0DD184009AA	KDS184 KDS184 TP KEC - 85V
		D110	0DSON00138A	MMBD301LT1G 600MV 30V - - 1
		D703	0DSON00138A	MMBD301LT1G 600MV 30V - - 1
		D701	0DS226009AA	KDS226 1.2V 85V 300MA 2A 4N
		D702	0DSKE00248A	KDS114 850MV 35V 100MA - -
		ZD102	0DZ560009DA	UDZS5.6B 5.6V 5.49TO5.73V 6
		ZD103	0DZ560009DA	UDZS5.6B 5.6V 5.49TO5.73V 6
		ZD118	0DZ560009DA	UDZS5.6B 5.6V 5.49TO5.73V 6
		ZD119	0DZ560009DA	UDZS5.6B 5.6V 5.49TO5.73V 6
		ZD120	0DZ560009DA	UDZS5.6B 5.6V 5.49TO5.73V 6
		ZD121	0DZ560009DA	UDZS5.6B 5.6V 5.49TO5.73V 6
		ZD122	0DZ560009DA	UDZS5.6B 5.6V 5.49TO5.73V 6
		ZD123	0DZ560009DA	UDZS5.6B 5.6V 5.49TO5.73V 6
		ZD124	0DZ560009DA	UDZS5.6B 5.6V 5.49TO5.73V 6
		ZD125	0DZ560009DA	UDZS5.6B 5.6V 5.49TO5.73V 6
		ZD126	0DZ560009DA	UDZS5.6B 5.6V 5.49TO5.73V 6
		ZD127	0DZ560009DA	UDZS5.6B 5.6V 5.49TO5.73V 6
		ZD128	0DZ560009DA	UDZS5.6B 5.6V 5.49TO5.73V 6
		ZD129	0DZ560009DA	UDZS5.6B 5.6V 5.49TO5.73V 6
		ZD130	0DZ560009DA	UDZS5.6B 5.6V 5.49TO5.73V 6
		ZD131	0DZ560009DA	UDZS5.6B 5.6V 5.49TO5.73V 6
		ZD136	0DZ560009DA	UDZS5.6B 5.6V 5.49TO5.73V 6
		ZD137	0DZ560009DA	UDZS5.6B 5.6V 5.49TO5.73V 6
		ZD138	0DZ560009DA	UDZS5.6B 5.6V 5.49TO5.73V 6
		ZD145	0DZ560009DA	UDZS5.6B 5.6V 5.49TO5.73V 6
		ZD150	0DZ560009DA	UDZS5.6B 5.6V 5.49TO5.73V 6
		ZD151	0DZ560009DA	UDZS5.6B 5.6V 5.49TO5.73V 6
		ZD155	0DZ560009DA	UDZS5.6B 5.6V 5.49TO5.73V 6
		ZD703	0DZRM00448A	UDZS33B 33V 32.15TO33.79V 2
		ZD704	0DZRM00448A	UDZS33B 33V 32.15TO33.79V 2
		ZD101	0DZ560009DA	UDZS5.6B 5.6V 5.49TO5.73V 6
		ZD108	0DZ560009DA	UDZS5.6B 5.6V 5.49TO5.73V 6
		ZD110	0DZ560009DA	UDZS5.6B 5.6V 5.49TO5.73V 6
		ZD116	0DZ560009DA	UDZS5.6B 5.6V 5.49TO5.73V 6
		ZD117	0DZ560009DA	UDZS5.6B 5.6V 5.49TO5.73V 6
		ZD201	0DZ120009CF	UDZ 12B 12V 11.74TO12.24V 3
		IC		
		U112	0ISTL00031A	MC74HC4066ADR2G MC74HC4066A
		U101	0IPRP00639A	PI3V512QE 3TO3.6V - - 500MW
		U302	0IMMRSG036D	M24C32-WMN6P 32KBIT 4096X8B
		U402	0IRH033200A	BA033FP-E2 4.3TO25V 3.3V 1W
		U404	0IRH033200A	BA033FP-E2 4.3TO25V 3.3V 1W

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*S	*AL	LOC. NO.	PART NO.	DESCRIPTION / SPECIFICATION
		U403	0IPMGSG018D	LD1086DT18TR-LF 30V 1.8V -
		U201	0IPRP00007A	TPA3005D2PHPRG4 8.5TO18V -
		U703	0IPRP00667A	DTC34LF86L 3.0VTO3.6V 1.4W
		U301	0IPRP00641B	"TDA15521E 4.7VTO5.3V,3.0VTO"
		U401	0IKE780800J	KIA7808API 10.5TO23V 8V 2W
		U409	0ISS780500H	KA78M05RTM 7TO20V 5V - DPAK
		U704	0ISS780500H	KA78M05RTM 7TO20V 5V - DPAK
		U408	0IMCRKE010A	KIA7812AF 14.5TO27V 12V 1.3
		U303	0IMMR00142A	SST39VF020-70-4C-NHE 2MBIT
		COIL & FILTER & INDUCTOR		
		L201	61409B0002A	DBF-1030A 30uH - 2.5A 10.8X
		L202	61409B0002A	DBF-1030A 30uH - 2.5A 10.8X
		L203	61409B0002A	DBF-1030A 30uH - 2.5A 10.8X
		L204	61409B0002A	DBF-1030A 30uH - 2.5A 10.8X
		L712	150-985B	CB221 24mH - - 11X16MM LEAD
		L101	6200J00005E	HH-1M2012-601JT 600OHM 2X1.
		L104	6210TCE001H	HB-1T2012-301JT 300OHM 2X1.
		L105	6210TCE001H	HB-1T2012-301JT 300OHM 2X1.
		L106	6210TCE001H	HB-1T2012-301JT 300OHM 2X1.
		L107	6210TCE001H	HB-1T2012-301JT 300OHM 2X1.
		L108	6210TCE001H	HB-1T2012-301JT 300OHM 2X1.
		L109	6210TCE001H	HB-1T2012-301JT 300OHM 2X1.
		L110	6210TCE001H	HB-1T2012-301JT 300OHM 2X1.
		L115	6200J00005E	HH-1M2012-601JT 600OHM 2X1.
		L205	6210TCE0014	HB-1M2012-221JT 220OHM 2X1.
		L206	6210TCE0014	HB-1M2012-221JT 220OHM 2X1.
		L207	6210TCE0014	HB-1M2012-221JT 220OHM 2X1.
		L208	6210TCE0014	HB-1M2012-221JT 220OHM 2X1.
		L301	6200J00005E	HH-1M2012-601JT 600OHM 2X1.
		L304	6200J00005E	HH-1M2012-601JT 600OHM 2X1.
		L306	6200J00005E	HH-1M2012-601JT 600OHM 2X1.
		L310	6200J00005E	HH-1M2012-601JT 600OHM 2X1.
		L312	6200J00005E	HH-1M2012-601JT 600OHM 2X1.
		L313	6200J00005E	HH-1M2012-601JT 600OHM 2X1.
		L314	6200J00005E	HH-1M2012-601JT 600OHM 2X1.
		L317	6200J00005E	HH-1M2012-601JT 600OHM 2X1.
		L318	6200J00005E	HH-1M2012-601JT 600OHM 2X1.
		L321	6200J00005E	HH-1M2012-601JT 600OHM 2X1.
		L323	6200J00005E	HH-1M2012-601JT 600OHM 2X1.
		L325	6200J00005E	HH-1M2012-601JT 600OHM 2X1.
		L327	6200J00005E	HH-1M2012-601JT 600OHM 2X1.
		L328	6200J00005E	HH-1M2012-601JT 600OHM 2X1.
		L329	6200J00005E	HH-1M2012-601JT 600OHM 2X1.
		L334	6200J00005E	HH-1M2012-601JT 600OHM 2X1.
		L335	6200J00005E	HH-1M2012-601JT 600OHM 2X1.
		L111	6210TCE001H	HB-1T2012-301JT 300OHM 2X1.
		L112	6210TCE001H	HB-1T2012-301JT 300OHM 2X1.
		L302	6200J00005E	HH-1M2012-601JT 600OHM 2X1.
		L305	6200J00005E	HH-1M2012-601JT 600OHM 2X1.
		L307	6200J00005E	HH-1M2012-601JT 600OHM 2X1.
		L308	6200J00005E	HH-1M2012-601JT 600OHM 2X1.
		L324	6200J00005E	HH-1M2012-601JT 600OHM 2X1.
		L330	6200J00005E	HH-1M2012-601JT 600OHM 2X1.
		L333	6200J00005E	HH-1M2012-601JT 600OHM 2X1.
		U701	6200QL3003A	K3965D 33.9MHZ 38.9MHZ 13.7
		U702	6200QL3003B	K9656D 33.9MHZ 38.9MHZ 13.7
		L116	0LCML00020C	MLI-201212-100K 10UH 10% -
		L117	0LCML00020C	MLI-201212-100K 10UH 10% -
		L704	0LC0562001A	FI-A2012-561KJT 560NH 10% -
		L731	0LC1020101A	FI-B2012-102KJT 1UH 10% - 1

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*S	*AL	LOC. NO.	PART NO.	DESCRIPTION / SPECIFICATION
		TRANSISTOR		
		Q203	0TFRH80001A	RK7002T116 N-CHANNEL MOSFET
		U405	0TFVI80036A	SI3861DV N-CHANNEL MOSFET 2
		U406	0TF492509AA	SI4925DY P-CHANNEL -30V +-2
		Q301	0TR127009AA	KTA1270-Y(KTA562TM) PNP -5V
		Q302	0TR127009AA	KTA1270-Y(KTA562TM) PNP -5V
		Q103	0TR390409AE	KST3904 NPN 6V 60V 40V 200M
		Q109	0TR390609FA	KST3906-MTF PNP -5V -40V -4
		Q701	0TR390409AE	KST3904 NPN 6V 60V 40V 200M
		Q715	0TR387500AA	2SC3875S(ALY) NPN 5V 60V 50
		Q107	0TR162309CA	KSC1623-Y(MTF) NPN 5V 60V 5
		Q108	0TR150400BA	2SA1504S(ASY) PNP -5V -50V
		Q110	0TR162309CA	KSC1623-Y(MTF) NPN 5V 60V 5
		Q111	0TR162309CA	KSC1623-Y(MTF) NPN 5V 60V 5
		Q112	0TR162309CA	KSC1623-Y(MTF) NPN 5V 60V 5
		Q201	0TR390409AE	KST3904 NPN 6V 60V 40V 200M
		Q304	0TR390409AE	KST3904 NPN 6V 60V 40V 200M
		Q305	0TR390409AE	KST3904 NPN 6V 60V 40V 200M
		Q402	0TR390409AE	KST3904 NPN 6V 60V 40V 200M
		Q702	0TR388109AA	KTC3881 NPN 4V 30V 25V 50MA
		Q704	0TR162309CA	KSC1623-Y(MTF) NPN 5V 60V 5
		RESISTORs		
		RA701	0RJ0222C687	RCA86TRJ22R0 22OHM 5% 1/16W
		RA702	0RJ0222C687	RCA86TRJ22R0 22OHM 5% 1/16W
		RA703	0RJ0222C687	RCA86TRJ22R0 22OHM 5% 1/16W
		RA704	0RJ0222C687	RCA86TRJ22R0 22OHM 5% 1/16W
		RA705	0RJ0222C687	RCA86TRJ22R0 22OHM 5% 1/16W
		RA706	0RJ0222C687	RCA86TRJ22R0 22OHM 5% 1/16W
		R1001	0RH4701D622	MCR10EZHJ472 4.7KOHM 5% 1/8
		R1002	0RH1002D622	MCR10EZHJ103 10KOHM 5% 1/8W
		R1005	0RH4701D622	MCR10EZHJ472 4.7KOHM 5% 1/8
		R1006	0RH1002D622	MCR10EZHJ103 10KOHM 5% 1/8W
		R1009	0RH4701D622	MCR10EZHJ472 4.7KOHM 5% 1/8
		R1010	0RH1002D622	MCR10EZHJ103 10KOHM 5% 1/8W
		R1013	0RH4701D622	MCR10EZHJ472 4.7KOHM 5% 1/8
		R1014	0RH4701D622	MCR10EZHJ472 4.7KOHM 5% 1/8
		R1017	0RH4701D622	MCR10EZHJ472 4.7KOHM 5% 1/8
		R1018	0RH1001D622	MCR10EZHJ102 1KOHM 5% 1/8W
		R1020	0RH5102D622	MCR10EZHJ513 51KOHM 5% 1/8W
		R1021	0RH1000D622	MCR10EZHJ101 100OHM 5% 1/8W
		R1022	0RH1802D622	MCR10EZHJ183 18KOHM 5% 1/8W
		R1026	0RH3300D622	MCR10EZHJ331 330OHM 5% 1/8W
		R1027	0RH3300D622	MCR10EZHJ331 330OHM 5% 1/8W
		R1028	0RH3300D622	MCR10EZHJ331 330OHM 5% 1/8W
		R1029	0RH3300D622	MCR10EZHJ331 330OHM 5% 1/8W
		R1031	0RH1500D622	MCR10EZHJ151 150OHM 5% 1/8W
		R1032	0RH0752D622	MCR10EZHJ750 75OHM 5% 1/8W
		R1033	0RH0752D622	MCR10EZHJ750 75OHM 5% 1/8W
		R1034	0RH0752D622	MCR10EZHJ750 75OHM 5% 1/8W
		R1039	0RH1001D622	MCR10EZHJ102 1KOHM 5% 1/8W
		R1040	0RH1001D622	MCR10EZHJ102 1KOHM 5% 1/8W
		R107	0RH0000D622	MCR10EZHJ000 0OHM 5% 1/8W 2
		R111	0RH1200D622	MCR10EZHJ121 120OHM 5% 1/8W
		R115	0RH0222D622	MCR10EZHJ220 22OHM 5% 1/8W
		R116	0RH4701D622	MCR10EZHJ472 4.7KOHM 5% 1/8
		R117	0RH1002D622	MCR10EZHJ103 10KOHM 5% 1/8W
		R121	0RH1002D622	MCR10EZHJ103 10KOHM 5% 1/8W
		R122	0RH1501D622	MCR10EZHJ152 1.5KOHM 5% 1/8
		R126	0RH1502D622	MCR10EZHJ153 15KOHM 5% 1/8W

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		R129	0RH1002D622	MCR10EZHJ103 10KOHM 5% 1/8W
		R149	0RH4701D622	MCR10EZHJ472 4.7KOHM 5% 1/8
		R151	0RH1001D622	MCR10EZHJ102 1KOHM 5% 1/8W
		R177	0RH0000D622	MCR10EZHJ000 0OHM 5% 1/8W 2
		R178	0RH0000D622	MCR10EZHJ000 0OHM 5% 1/8W 2
		R180	0RH1500D622	MCR10EZHJ151 150OHM 5% 1/8W
		R182	0RH1200D622	MCR10EZHJ121 120OHM 5% 1/8W
		R183	0RH1002D622	MCR10EZHJ103 10KOHM 5% 1/8W
		R184	0RH0752D622	MCR10EZHJ750 75OHM 5% 1/8W
		R191	0RH0752D622	MCR10EZHJ750 75OHM 5% 1/8W
		R194	0RH0222D622	MCR10EZHJ220 22OHM 5% 1/8W
		R195	0RH0222D622	MCR10EZHJ220 22OHM 5% 1/8W
		R196	0RH0222D622	MCR10EZHJ220 22OHM 5% 1/8W
		R197	0RH0752D622	MCR10EZHJ750 75OHM 5% 1/8W
		R198	0RH0472D622	MCR10EZHJ470 47OHM 5% 1/8W
		R199	0RH0752D622	MCR10EZHJ750 75OHM 5% 1/8W
		R206	0RH0000D622	MCR10EZHJ000 0OHM 5% 1/8W 2
		R207	0RH0000D622	MCR10EZHJ000 0OHM 5% 1/8W 2
		R217	0RH1502D622	MCR10EZHJ153 15KOHM 5% 1/8W
		R218	0RH4702D622	MCR10EZHJ473 47KOHM 5% 1/8W
		R221	0RH0000D622	MCR10EZHJ000 0OHM 5% 1/8W 2
		R222	0RH0000D622	MCR10EZHJ000 0OHM 5% 1/8W 2
		R223	0RH0000D622	MCR10EZHJ000 0OHM 5% 1/8W 2
		R224	0RH0000D622	MCR10EZHJ000 0OHM 5% 1/8W 2
		R225	0RH0000D622	MCR10EZHJ000 0OHM 5% 1/8W 2
		R226	0RH0000D622	MCR10EZHJ000 0OHM 5% 1/8W 2
		R227	0RH0000D622	MCR10EZHJ000 0OHM 5% 1/8W 2
		R248	0RH4701D622	MCR10EZHJ472 4.7KOHM 5% 1/8
		R251	0RH0000D622	MCR10EZHJ000 0OHM 5% 1/8W 2
		R252	0RH1002D622	MCR10EZHJ103 10KOHM 5% 1/8W
		R3001	0RH1002D622	MCR10EZHJ103 10KOHM 5% 1/8W
		R3002	0RH1002D622	MCR10EZHJ103 10KOHM 5% 1/8W
		R3003	0RH1000D622	MCR10EZHJ101 100OHM 5% 1/8W
		R3006	0RH0331D622	MCR10EZHJ3R3 3.3OHM 5% 1/8W
		R3007	0RH0331D622	MCR10EZHJ3R3 3.3OHM 5% 1/8W
		R3008	0RH0331D622	MCR10EZHJ3R3 3.3OHM 5% 1/8W
		R3009	0RH0331D622	MCR10EZHJ3R3 3.3OHM 5% 1/8W
		R3017	0RH1502D622	MCR10EZHJ153 15KOHM 5% 1/8W
		R3018	0RH1502D622	MCR10EZHJ153 15KOHM 5% 1/8W
		R304	0RH1000D622	MCR10EZHJ101 100OHM 5% 1/8W
		R305	0RH1000D622	MCR10EZHJ101 100OHM 5% 1/8W
		R306	0RH1001D622	MCR10EZHJ102 1KOHM 5% 1/8W
		R307	0RH1000D622	MCR10EZHJ101 100OHM 5% 1/8W
		R308	0RH1502D622	MCR10EZHJ153 15KOHM 5% 1/8W
		R309	0RH0000D622	MCR10EZHJ000 0OHM 5% 1/8W 2
		R310	0RH0000D622	MCR10EZHJ000 0OHM 5% 1/8W 2
		R315	0RH1000D622	MCR10EZHJ101 100OHM 5% 1/8W
		R321	0RH0102D622	MCR10EZHJ100 10OHM 5% 1/8W
		R322	0RH0102D622	MCR10EZHJ100 10OHM 5% 1/8W
		R323	0RH0000D622	MCR10EZHJ000 0OHM 5% 1/8W 2
		R325	0RH4702D622	MCR10EZHJ473 47KOHM 5% 1/8W
		R327	0RH0102D622	MCR10EZHJ100 10OHM 5% 1/8W
		R328	0RH1000D622	MCR10EZHJ101 100OHM 5% 1/8W
		R329	0RH2203D622	MCR10EZHJ224 220KOHM 5% 1/8
		R330	0RH1000D622	MCR10EZHJ101 100OHM 5% 1/8W
		R333	0RH4701D622	MCR10EZHJ472 4.7KOHM 5% 1/8
		R334	0RH1004D422	MCR10EZHF105 1MOHM 1% 1/8W
		R335	0RH3902D422	MCR10EZHF393 39KOHM 1% 1/8W
		R337	0RH1000D622	MCR10EZHJ101 100OHM 5% 1/8W
		R338	0RH1000D622	MCR10EZHJ101 100OHM 5% 1/8W
		R339	0RH1000D622	MCR10EZHJ101 100OHM 5% 1/8W
		R341	0RH1003D622	MCR10EZHJ104 100KOHM 5% 1/8

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		R347	0RH8202D622	MCR10EZHJ823 82KOHM 5% 1/8W
		R348	0RH1201D622	MCR10EZHJ122 1.2KOHM 5% 1/8
		R349	0RH0102D622	MCR10EZHJ100 10OHM 5% 1/8W
		R350	0RH1002D622	MCR10EZHJ103 10KOHM 5% 1/8W
		R352	0RH1000D622	MCR10EZHJ101 100OHM 5% 1/8W
		R367	0RH1002D622	MCR10EZHJ103 10KOHM 5% 1/8W
		R369	0RH1002D622	MCR10EZHJ103 10KOHM 5% 1/8W
		R381	0RH1000D622	MCR10EZHJ101 100OHM 5% 1/8W
		R382	0RH1002D622	MCR10EZHJ103 10KOHM 5% 1/8W
		R383	0RH1502D622	MCR10EZHJ153 15KOHM 5% 1/8W
		R385	0RH1002D622	MCR10EZHJ103 10KOHM 5% 1/8W
		R386	0RH1502D622	MCR10EZHJ153 15KOHM 5% 1/8W
		R388	0RH1002D622	MCR10EZHJ103 10KOHM 5% 1/8W
		R391	0RH0331D622	MCR10EZHJ3R3 3.3OHM 5% 1/8W
		R392	0RH1002D622	MCR10EZHJ103 10KOHM 5% 1/8W
		R394	0RH0331D622	MCR10EZHJ3R3 3.3OHM 5% 1/8W
		R395	0RH1002D622	MCR10EZHJ103 10KOHM 5% 1/8W
		R396	0RH2201D622	MCR10EZHJ222 2.2KOHM 5% 1/8
		R397	0RH2201D622	MCR10EZHJ222 2.2KOHM 5% 1/8
		R401	0RH4701D622	MCR10EZHJ472 4.7KOHM 5% 1/8
		R409	0RH1002D622	MCR10EZHJ103 10KOHM 5% 1/8W
		R413	0RH1002D622	MCR10EZHJ103 10KOHM 5% 1/8W
		R414	0RH4702D622	MCR10EZHJ473 47KOHM 5% 1/8W
		R425	0RH0000D622	MCR10EZHJ000 0OHM 5% 1/8W 2
		R426	0RH0000D622	MCR10EZHJ000 0OHM 5% 1/8W 2
		R434	0RH0000D622	MCR10EZHJ000 0OHM 5% 1/8W 2
		R702	0RH4700D622	MCR10EZHJ471 470OHM 5% 1/8W
		R705	0RH1000D622	MCR10EZHJ101 100OHM 5% 1/8W
		R706	0RH1000D622	MCR10EZHJ101 100OHM 5% 1/8W
		R711	0RH0000D622	MCR10EZHJ000 0OHM 5% 1/8W 2
		R715	0RH0000D622	MCR10EZHJ000 0OHM 5% 1/8W 2
		R728	0RH1501D622	MCR10EZHJ152 1.5KOHM 5% 1/8
		R730	0RH4701D622	MCR10EZHJ472 4.7KOHM 5% 1/8
		R732	0RH4701D622	MCR10EZHJ472 4.7KOHM 5% 1/8
		R740	0RH4702D622	MCR10EZHJ473 47KOHM 5% 1/8W
		R741	0RH4700D622	MCR10EZHJ471 470OHM 5% 1/8W
		R742	0RH1002D622	MCR10EZHJ103 10KOHM 5% 1/8W
		R750	0RH4702D622	MCR10EZHJ473 47KOHM 5% 1/8W
		R751	0RH3902D422	MCR10EZHF393 39KOHM 1% 1/8W
		R753	0RH1002D622	MCR10EZHJ103 10KOHM 5% 1/8W
		R760	0RH1000D622	MCR10EZHJ101 100OHM 5% 1/8W
		R761	0RH1000D622	MCR10EZHJ101 100OHM 5% 1/8W
		R762	0RH4701D622	MCR10EZHJ472 4.7KOHM 5% 1/8
		R772	0RH8200D622	MCR10EZHJ821 820OHM 5% 1/8W
		R775	0RH1000D622	MCR10EZHJ101 100OHM 5% 1/8W
		R1003	0RJ1300D477	MCR03EZPF1300 130OHM 1% 1/1
		R1004	0RJ0752D477	MCR03EZPF750 75OHM 1% 1/10W
		R1007	0RJ1300D477	MCR03EZPF1300 130OHM 1% 1/1
		R1008	0RJ0752D477	MCR03EZPF750 75OHM 1% 1/10W
		R1011	0RJ1300D477	MCR03EZPF1300 130OHM 1% 1/1
		R1012	0RJ0752D477	MCR03EZPF750 75OHM 1% 1/10W
		R1023	0RH0000D622	MCR10EZHJ000 0OHM 5% 1/8W 2
		R1030	0RJ0752D677	MCR03EZPJ750 75OHM 5% 1/10W
		R1076	0RJ1000D677	MCR03EZPJ101 100OHM 5% 1/10
		R1077	0RJ0222D677	MCR03EZPJ220 22OHM 5% 1/10W
		R112	0RJ0000D677	MCR03EZPJ000 0OHM 5% 1/10W
		R128	0RJ4700D677	MCR03EZPJ471 470OHM 5% 1/10
		R132	0RJ0000D677	MCR03EZPJ000 0OHM 5% 1/10W
		R133	0RJ0000D677	MCR03EZPJ000 0OHM 5% 1/10W
		R150	0RJ2001D677	MCR03EZPJ202 2KOHM 5% 1/10W
		R152	0RJ1001D677	MCR03EZPJ102 1KOHM 5% 1/10W
		R153	0RJ0000D677	MCR03EZPJ000 0OHM 5% 1/10W

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		R157	0RJ0000D677	MCR03EZPJ000 0OHM 5% 1/10W
		R159	0RJ4701D677	MCR03EZPJ472 4.7KOHM 5% 1/1
		R161	0RJ0000D677	MCR03EZPJ000 0OHM 5% 1/10W
		R162	0RJ0000D677	MCR03EZPJ000 0OHM 5% 1/10W
		R163	0RJ0000D677	MCR03EZPJ000 0OHM 5% 1/10W
		R175	0RJ0682D677	MCR03EZPJ680 68OHM 5% 1/10W
		R202	0RJ1003D677	MCR03EZPJ104 100KOHM 5% 1/1
		R203	0RJ1202D677	MCR03EZPJ123 12KOHM 5% 1/10
		R204	0RJ1002D677	MCR03EZPJ103 10KOHM 5% 1/10
		R208	0RJ1203D677	MCR03EZPJ124 120KOHM 5% 1/1
		R215	0RJ1802D677	MCR03EZPJ183 18KOHM 5% 1/10
		R234	0RJ0000D677	MCR03EZPJ000 0OHM 5% 1/10W
		R250	0RJ4701D677	MCR03EZPJ472 4.7KOHM 5% 1/1
		R253	0RJ1001D677	MCR03EZPJ102 1KOHM 5% 1/10W
		R254	0RJ1001D677	MCR03EZPJ102 1KOHM 5% 1/10W
		R301	0RJ1000D677	MCR03EZPJ101 100OHM 5% 1/10
		R3010	0RJ1000D677	MCR03EZPJ101 100OHM 5% 1/10
		R3015	0RJ1502D677	MCR03EZPJ153 15KOHM 5% 1/10
		R3016	0RJ1502D677	MCR03EZPJ153 15KOHM 5% 1/10
		R302	0RJ1000D677	MCR03EZPJ101 100OHM 5% 1/10
		R3020	0RJ0222D677	MCR03EZPJ220 22OHM 5% 1/10W
		R3021	0RJ0222D677	MCR03EZPJ220 22OHM 5% 1/10W
		R303	0RJ1000D677	MCR03EZPJ101 100OHM 5% 1/10
		R312	0RJ0000D677	MCR03EZPJ000 0OHM 5% 1/10W
		R313	0RJ1000D677	MCR03EZPJ101 100OHM 5% 1/10
		R316	0RJ1001D677	MCR03EZPJ102 1KOHM 5% 1/10W
		R317	0RJ1000D677	MCR03EZPJ101 100OHM 5% 1/10
		R318	0RJ1000D677	MCR03EZPJ101 100OHM 5% 1/10
		R319	0RJ2002D677	MCR03EZPJ203. 20KOHM 5% 1/1
		R320	0RJ0332D677	MCR03EZPJ330 33OHM 5% 1/10W
		R326	0RJ1000D677	MCR03EZPJ101 100OHM 5% 1/10
		R332	0RJ0222D677	MCR03EZPJ220 22OHM 5% 1/10W
		R336	0RJ1000D677	MCR03EZPJ101 100OHM 5% 1/10
		R342	0RJ1000D677	MCR03EZPJ101 100OHM 5% 1/10
		R343	0RJ1000D677	MCR03EZPJ101 100OHM 5% 1/10
		R344	0RJ1000D677	MCR03EZPJ101 100OHM 5% 1/10
		R351	0RJ1000D677	MCR03EZPJ101 100OHM 5% 1/10
		R355	0RJ1000D677	MCR03EZPJ101 100OHM 5% 1/10
		R356	0RJ1000D677	MCR03EZPJ101 100OHM 5% 1/10
		R370	0RJ1002D677	MCR03EZPJ103 10KOHM 5% 1/10
		R371	0RJ4701D677	MCR03EZPJ472 4.7KOHM 5% 1/1
		R372	0RJ1002D677	MCR03EZPJ103 10KOHM 5% 1/10
		R375	0RJ0472D677	MCR03EZPJ470 47OHM 5% 1/10W
		R376	0RJ3900D677	MCR03EZPJ391 390OHM 5% 1/10
		R377	0RJ0472D677	MCR03EZPJ470 47OHM 5% 1/10W
		R378	0RJ1202D677	MCR03EZPJ123 12KOHM 5% 1/10
		R379	0RJ4701D677	MCR03EZPJ472 4.7KOHM 5% 1/1
		R380	0RJ0332D677	MCR03EZPJ330 33OHM 5% 1/10W
		R384	0RJ0472D677	MCR03EZPJ470 47OHM 5% 1/10W
		R387	0RJ0332D677	MCR03EZPJ330 33OHM 5% 1/10W
		R399	0RJ0332D677	MCR03EZPJ330 33OHM 5% 1/10W
		R410	0RJ2202D677	MCR03EZPJ223 22KOHM 5% 1/10
		R411	0RJ5600D677	MCR03EZPJ561 560OHM 5% 1/10
		R533	0RJ4701D677	MCR03EZPJ472 4.7KOHM 5% 1/1
		R534	0RJ4701D677	MCR03EZPJ472 4.7KOHM 5% 1/1
		R714	0RJ1002D677	MCR03EZPJ103 10KOHM 5% 1/10
		R720	0RJ1201D677	MCR03EZPJ122 1.2KOHM 5% 1/1
		R729	0RJ4702D677	MCR03EZPJ473 47KOHM 5% 1/10
		R731	0RJ9101D677	MCR03EZPJ912 9.1KOHM 5% 1/1
		R735	0RJ0222D677	MCR03EZPJ220 22OHM 5% 1/10W
		R736	0RJ0222D677	MCR03EZPJ220 22OHM 5% 1/10W
		R737	0RJ0222D677	MCR03EZPJ220 22OHM 5% 1/10W

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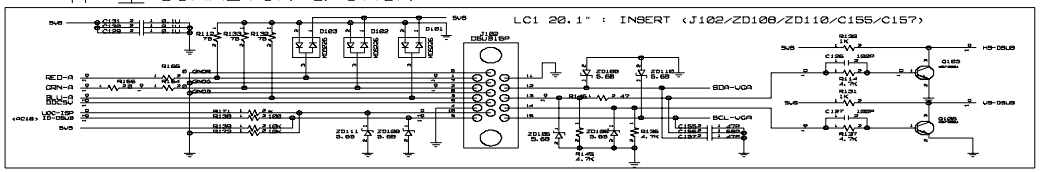
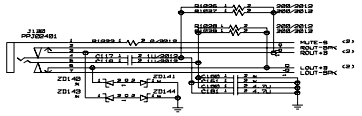
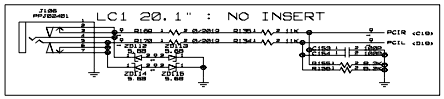
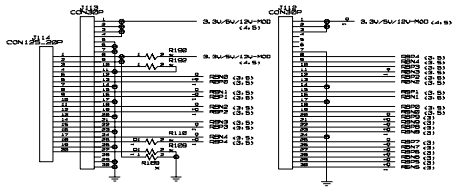
*S	*AL	LOC. NO.	PART NO.	DESCRIPTION / SPECIFICATION
		R739	0RJ1000D677	MCR03EZPJ101 100OHM 5% 1/10
		R743	0RJ1000D677	MCR03EZPJ101 100OHM 5% 1/10
		R744	0RJ1000D677	MCR03EZPJ101 100OHM 5% 1/10
		R745	0RJ1000D677	MCR03EZPJ101 100OHM 5% 1/10
		R746	0RJ1000D677	MCR03EZPJ101 100OHM 5% 1/10
		R747	0RJ1000D677	MCR03EZPJ101 100OHM 5% 1/10
		R770	0RJ0562D677	MCR03EZPJ560 56OHM 5% 1/10W
		R771	0RJ1501D677	MCR03EZPJ152 1.5KOHM 5% 1/1
		R773	0RJ3000D677	MCR03EZPJ301 300OHM 5% 1/10
		R774	0RJ0682D677	MCR03EZPJ680 68OHM 5% 1/10W
		R776	0RX0202K665	RSD02F4J20R0 20OHM 5% 2W 12
		OTHERs		
		X301	6202TST003G	HC-49/SM5H 24.576MHZ 30PPM
		TU701	EBL31435801	TAEA-G051P MULTI 48.25MHZTO
		LED&IR BOARD		
		LED500	0DL200000CA	SAM5670(DL-2LRG) ROUND 4.8M
		PA5000	6712SCA232A	TSOP34838SO1 2.7TO5.5V 1.5M
		C5000	0CH5101K416	C2012C0G1H101JT 100pF 5% 50
		C5001	0CH5101K416	C2012C0G1H101JT 100pF 5% 50
		C5002	0CH5470K416	0805N470J500LT 47pF 5% 50V
		C5003	0CH3104K566	0805B104K500CT 100nF 10% 50
		Q5001	0TR387500AA	2SC3875S(ALY) NPN 5V 60V 50
		Q5002	0TR387500AA	2SC3875S(ALY) NPN 5V 60V 50
		R5001	0RH1501D622	MCR10EZHJ152 1.5KOHM 5% 1/8
		R5002	0RH1001D622	MCR10EZHJ102 1KOHM 5% 1/8W
		R5003	0RH1001D622	MCR10EZHJ102 1KOHM 5% 1/8W
		R5004	0RH1001D622	MCR10EZHJ102 1KOHM 5% 1/8W
		R5005	0RH1001D622	MCR10EZHJ102 1KOHM 5% 1/8W
		ZD5000	0DZ510009EE	UDZS5.1B 5.1V 4.98TO5.2V 80
		CONTROL BOARD		
		C6000	0CN1040K949	CH UP050 F104Z-B-B Z 100nF
		C6001	0CN1040K949	CH UP050 F104Z-B-B Z 100nF
		R6000	0RN8200F409	RN-96T1F820R 820OHM 1% 1/6W
		R6001	0RN8200F409	RN-96T1F820R 820OHM 1% 1/6W
		R6002	0RN1501F409	RN-96T1F1K50 1.5KOHM 1% 1/6
		R6003	0RN1501F409	RN-96T1F1K50 1.5KOHM 1% 1/6
		R6004	0RN2201F409	RN-96T1F2K20 2.2KOHM 1% 1/6
		R6005	0RN2201F409	RN-96T1F2K20 2.2KOHM 1% 1/6
		SW6000	140-058B	EVQPB205K 1C1P 15VDC 0.02A
		SW6001	140-058B	EVQPB205K 1C1P 15VDC 0.02A
		SW6002	140-058B	EVQPB205K 1C1P 15VDC 0.02A
		SW6003	140-058B	EVQPB205K 1C1P 15VDC 0.02A
		SW6004	140-058B	EVQPB205K 1C1P 15VDC 0.02A
		SW6005	140-058B	EVQPB205K 1C1P 15VDC 0.02A
		SW6006	140-058B	EVQPB205K 1C1P 15VDC 0.02A
		SW6007	140-058B	EVQPB205K 1C1P 15VDC 0.02A
		ZD6000	0DZ560009CF	MTZJ5.6B 5.6V 5.45TO5.73V 4
		ZD6001	0DZ560009CF	MTZJ5.6B 5.6V 5.45TO5.73V 4

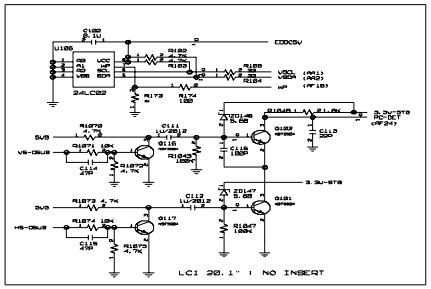
#1 BLUE BIRD PAL/SECAM CONNETOR & JACK

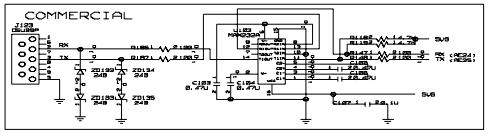




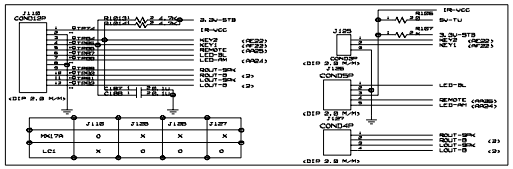


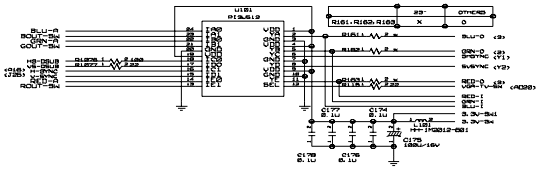


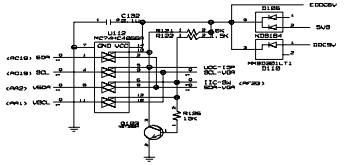


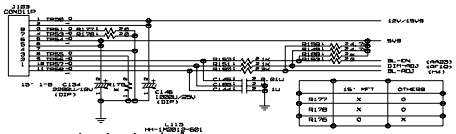


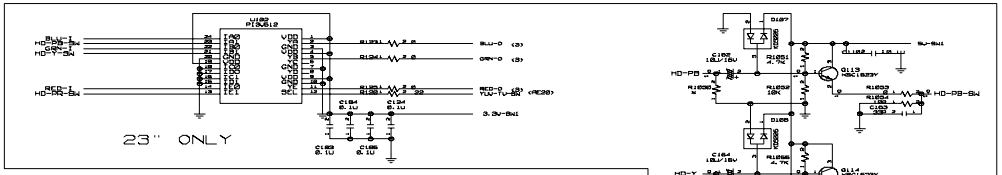
	J114	J113	J114	J112
	LPL 15" MFM (3.3V) LPL 15" TV (5V)	LPL 23" TV (12V)	AUO 17"WTV (5V) AUO 15"TV (3.3V)	LPL 17"/19" SXGA MFM (5V)
R188	X	O	X	X
R190(2012)	O	X	O	X
R192	O	X	O	X
R189	O	X	X	X
R110	O	O	O	X

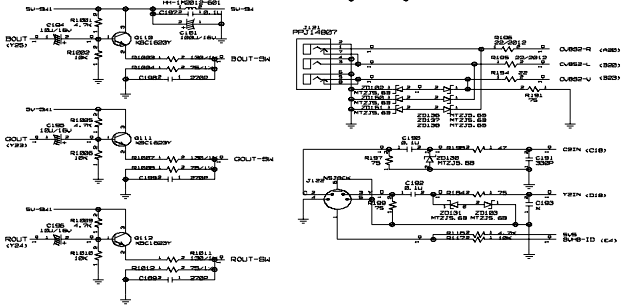


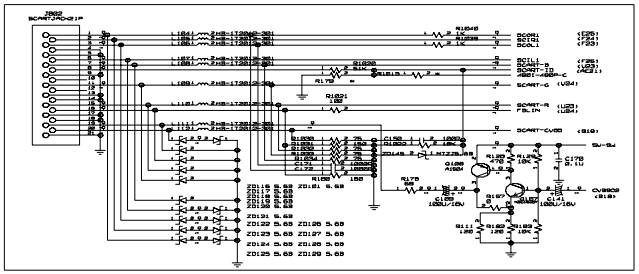


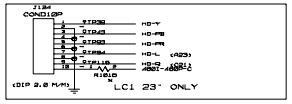


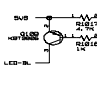








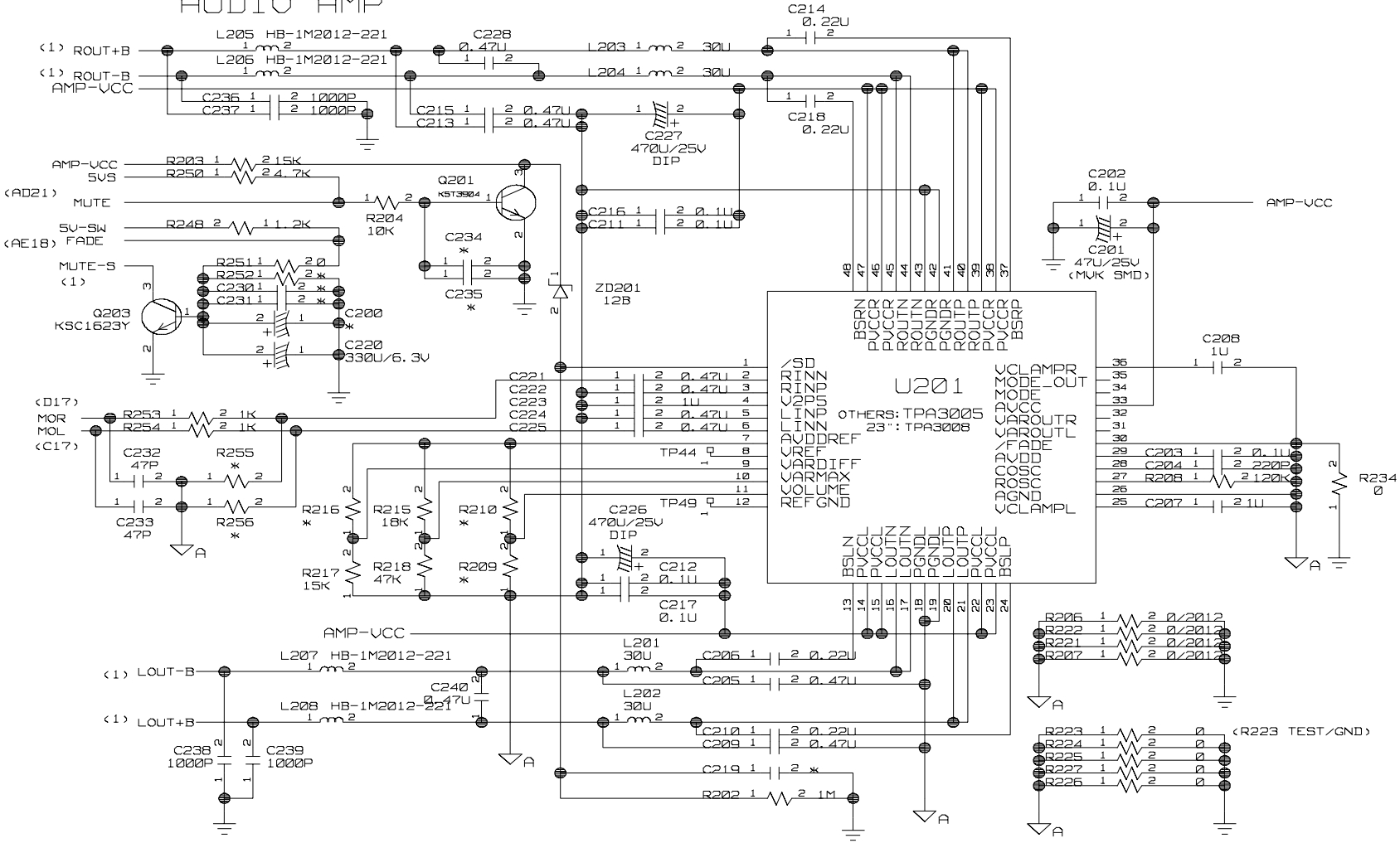




BLUE BIRD

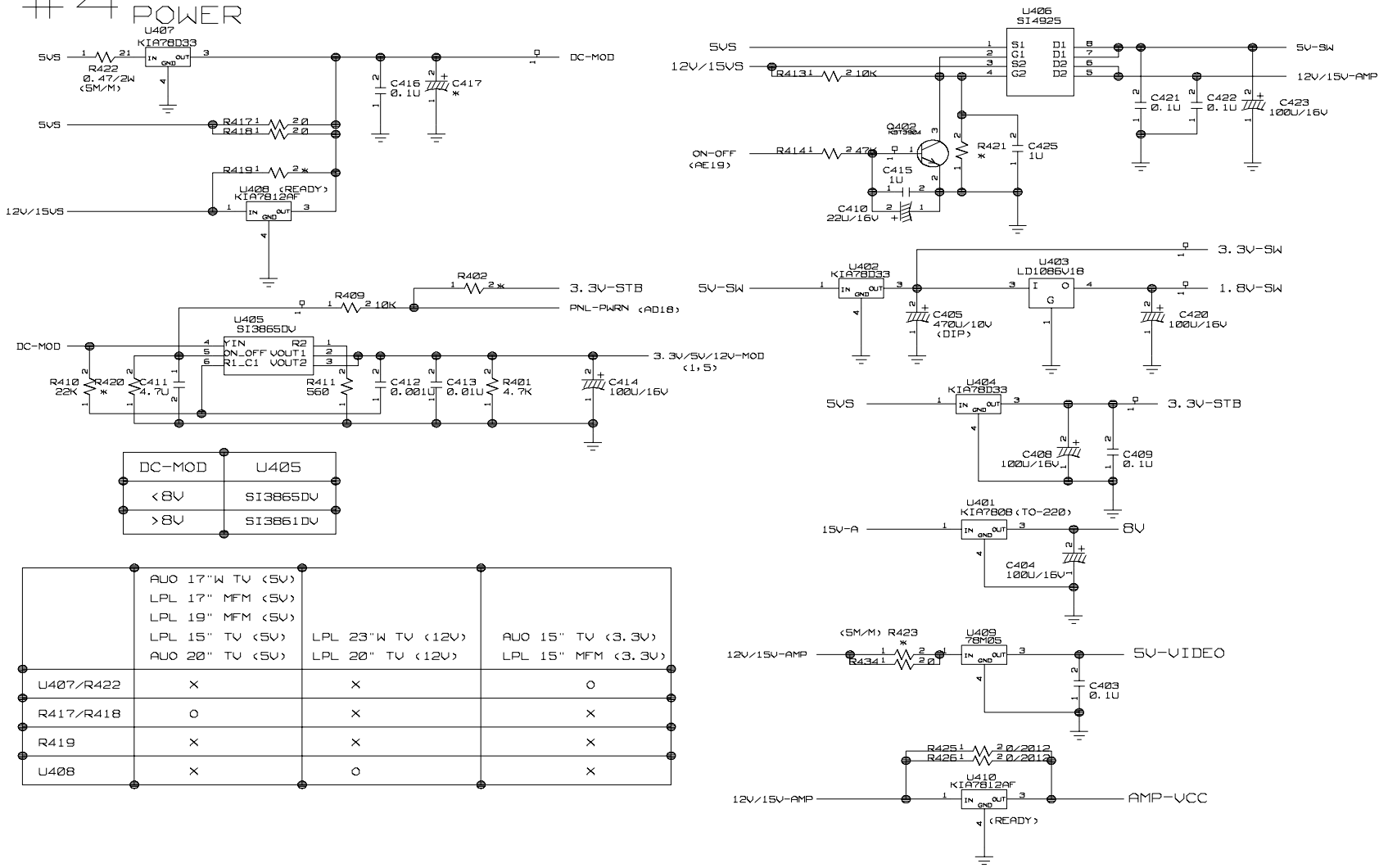
#2 PAL/SECAM

AUDIO AMP



#3 BLUE BIRD
PAL/SECAM
SCALER/MEMORY
LOCI

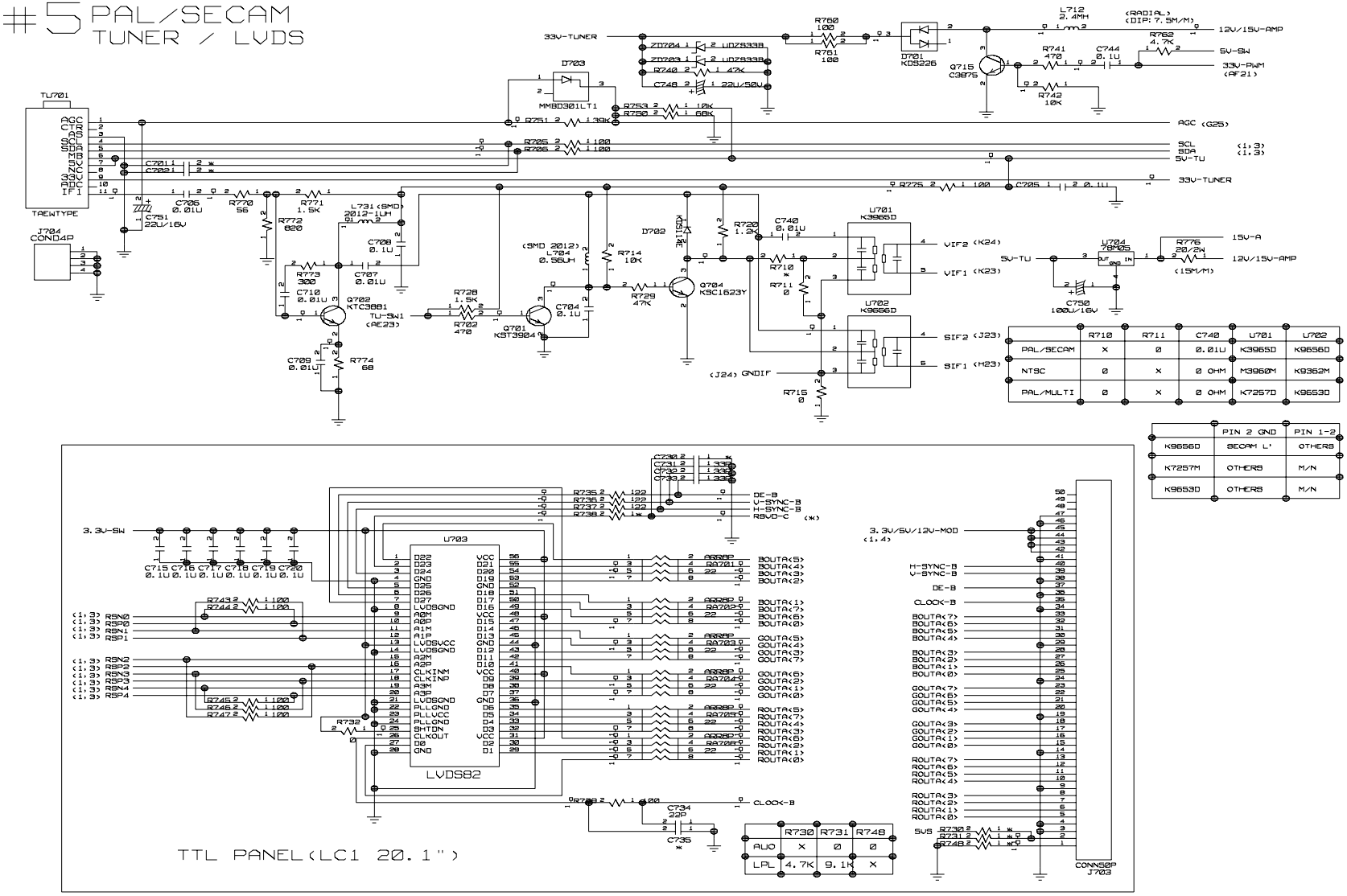
BLUE BIRD
#4 PAL/SECAM
POWER



DC-MOD	U405
<8V	SI3865DV
>8V	SI3861DV

	AUO 17"W TV (5V) LPL 17" MFM (5V) LPL 19" MFM (5V) LPL 15" TV (5V) AUO 20" TV (5V)	LPL 23"W TV (12V) LPL 20" TV (12V)	AUO 15" TV (3.3V) LPL 15" MFM (3.3V)
U407/R422	X	X	O
R417/R418	O	X	X
R419	X	X	X
U408	X	O	X

#5 BLUE BIRD PAL/SECAM TUNER / LVDS



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