



# LCD PROJECTION TELEVISION

Chassis : PLT51A  
Model: SP403JHAX

# **SERVICE** *Manual*

## LCD PROJECTION TELEVISION



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## 1. Precautions

Follow these safety, servicing and ESD precautions to prevent damage and protect against potential hazards such as electrical shock and X-rays.

### 1-1 Safety Precautions

1. Be sure that all of the built-in protective devices are replaced. Restore any missing protective shields.
2. When reinstalling the chassis and its assemblies, be sure to restore all protective devices, including: nonmetallic control knobs and compartment covers.
3. Make sure that there are no cabinet openings through which people—particularly children—might insert fingers and contact dangerous voltages. Such openings include the spacing between the picture tube and the cabinet mask, excessively wide cabinet ventilation slots, and improperly fitted back covers.

If the measured resistance is less than 1.0 megohm or greater than 5.2 megohms, an abnormality exists that must be corrected before the unit is returned to the customer.

4. Leakage Current Hot Check (Figure 1-1):  
Warning: Do not use an isolation transformer during this test. Use a leakage-current tester or a metering system that complies with American National Standards Institute (ANIS C101.1, Leakage Current for Appliances), and Underwriters Laboratories (UL Publication UL1410, 59.7).
5. With the unit completely reassembled, plug the AC line cord directly into the power outlet. With the unit's AC switch first in the ON position and then OFF, measure the current between a known earth ground (metal water pipe, conduit, etc.) and all exposed metal parts, including: antennas, handle brackets, metal cabinets, screwheads and control shafts. The current measured should not exceed 0.5 milliamp. Reverse the power-plug prongs in the AC outlet and repeat the test.

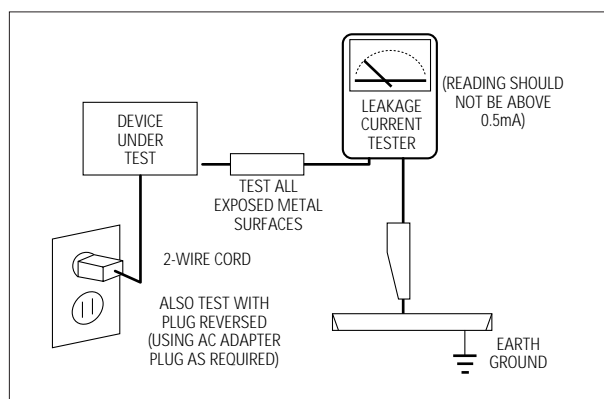




Fig. 1-1 AC Leakage Test

6. Antenna Cold Check:  
With the unit's AC plug disconnected from the AC source, connect an electrical jumper across the two AC prongs. Connect one lead of the ohmmeter to an AC prong. Connect the other lead to the coaxial connector.
7. X-ray Limits:  
The picture tube is especially designed to prohibit X-ray emissions. To ensure continued X-ray protection, replace the picture tube only with one that is the same type as the original. Carefully reinstall the picture tube shields and mounting hardware; these also provide X-ray protection.
8. High Voltage Limits:  
High voltage must be measured each time servicing is done on the B+, horizontal deflection or high voltage circuits. Correct operation of the X-ray protection circuits must be reconfirmed whenever they are serviced.  
(X-ray protection circuits also may be called "horizontal disable" or "hold-down".)

Heed the high voltage limits. These include the X-ray Protection Specifications Label, and the Product Safety and X-ray Warning Note on the service data schematic.

## 1-1 Safety Precautions (Continued)

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9. High voltage is maintained within specified limits by close-tolerance, safety-related components and adjustments. If the high voltage exceeds the specified limits, check each of the special components.
10. Design Alteration Warning:  
Never alter or add to the mechanical or electrical design of this unit. Example: Do not add auxiliary audio or video connectors. Such alterations might create a safety hazard. Also, any design changes or additions will void the manufacturer's warranty.
11. Hot Chassis Warning:  
Some TV receiver chassis are electrically connected directly to one conductor of the AC power cord. If an isolation transformer is not used, these units may be safely serviced only if the AC power plug is inserted so that the chassis is connected to the ground side of the AC source.  
  
To confirm that the AC power plug is inserted correctly, do the following: Using an AC voltmeter, measure the voltage between the chassis and a known earth ground. If the reading is greater than 1.0V, remove the AC power plug, reverse its polarity and reinsert. Re-measure the voltage between the chassis and ground.
12. Some TV chassis are designed to operate with 85 volts AC between chassis and ground, regardless of the AC plug polarity. These units can be safely serviced only if an isolation transformer inserted between the receiver and the power source.
13. Some TV chassis have a secondary ground system in addition to the main chassis ground. This secondary ground system is not isolated from the AC power line. The two ground systems are electrically separated by insulating material that must not be defeated or altered.
14. Components, parts and wiring that appear to have overheated or that are otherwise damaged should be replaced with parts that meet the original specifications. Always determine the cause of damage or overheating, and correct any potential hazards.
15. Observe the original lead dress, especially near the following areas: Antenna wiring, sharp edges, and especially the AC and high voltage power supplies. Always inspect for pinched, out-of-place, or frayed wiring. Do not change the spacing between components and the printed circuit board. Check the AC power cord for damage. Make sure that leads and components do not touch thermally hot parts.
16. Picture Tube Implosion Warning:  
The picture tube in this receiver employs "integral implosion" protection. To ensure continued implosion protection, make sure that the replacement picture tube is the same as the original.
17. Do not remove, install or handle the picture tube without first putting on shatterproof goggles equipped with side shields. Never handle the picture tube by its neck. Some "in-line" picture tubes are equipped with a permanently attached deflection yoke; do not try to remove such "permanently attached" yokes from the picture tube.
18. Product Safety Notice:  
Some electrical and mechanical parts have special safety-related characteristics which might not be obvious from visual inspection. These safety features and the protection they give might be lost if the replacement component differs from the original—even if the replacement is rated for higher voltage, wattage, etc.  
  
Components that are critical for safety are indicated in the circuit diagram by shading, () or ().  
Use replacement components that have the same ratings, especially for flame resistance and dielectric strength specifications. A replacement part that does not have the same safety characteristics as the original might create shock, fire or other hazards.

## 1-2 Servicing Precautions

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Warning1: First read the "Safety Precautions" section of this manual. If some unforeseen circumstance creates a conflict between the servicing and safety precautions, always follow the safety precautions.

Warning2: An electrolytic capacitor installed with the wrong polarity might explode.

1. Servicing precautions are printed on the cabinet. Follow them.
2. Always unplug the unit's AC power cord from the AC power source before attempting to: (a) Remove or reinstall any component or assembly, (b) Disconnect an electrical plug or connector, (c) Connect a test component in parallel with an electrolytic capacitor.
3. Some components are raised above the printed circuit board for safety. An insulation tube or tape is sometimes used. The internal wiring is sometimes clamped to prevent contact with thermally hot components. Reinstall all such elements to their original position.
4. After servicing, always check that the screws, components and wiring have been correctly reinstalled. Make sure that the portion around the serviced part has not been damaged.
5. Check the insulation between the blades of the AC plug and accessible conductive parts (examples: metal panels, input terminals and earphone jacks).
6. **Insulation Checking Procedure:** Disconnect the power cord from the AC source and turn the power switch ON. Connect an insulation resistance meter (500V) to the blades of the AC plug.  
  
The insulation resistance between each blade of the AC plug and accessible conductive parts (see above) should be greater than 1 megohm.
7. Never defeat any of the B+ voltage interlocks. Do not apply AC power to the unit (or any of its assemblies) unless all solid-state heat sinks are correctly installed.
8. Always connect a test instrument's ground lead to the instrument chassis ground before connecting the positive lead; always remove the instrument's ground lead last.
9. When some parts inside the optical engine (except lamp) are damaged, replace the whole optical engine.

## 1-3 Precautions for Electrostatically Sensitive Devices (ESDs)

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1. Some semiconductor (“solid state”) devices are easily damaged by static electricity. Such components are called Electrostatically Sensitive Devices (ESDs); examples include integrated circuits and some field-effect transistors. The following techniques will reduce the occurrence of component damage caused by static electricity.
2. Immediately before handling any semiconductor components or assemblies, drain the electrostatic charge from your body by touching a known earth ground. Alternatively, wear a discharging wrist-strap device. (Be sure to remove it prior to applying power—this is an electric shock precaution.)
3. After removing an ESD-equipped assembly, place it on a conductive surface such as aluminum foil to prevent accumulation of electrostatic charge.
4. Do not use freon-propelled chemicals. These can generate electrical charges that damage ESDs.
5. Use only a grounded-tip soldering iron when soldering or unsoldering ESDs.
6. Use only an anti-static solder removal device. Many solder removal devices are not rated as “anti-static”; these can accumulate sufficient electrical charge to damage ESDs.
7. Do not remove a replacement ESD from its protective package until you are ready to install it. Most replacement ESDs are packaged with leads that are electrically shorted together by conductive foam, aluminum foil or other conductive materials.
8. Immediately before removing the protective material from the leads of a replacement ESD, touch the protective material to the chassis or circuit assembly into which the device will be installed.
9. Minimize body motions when handling unpackaged replacement ESDs. Motions such as brushing clothes together, or lifting a foot from a carpeted floor can generate enough static electricity to damage an ESD.

## 2. Reference Information

### 2-1 Tables of Abbreviations and Acronyms

Table 2-1 Abbreviations

A	Ampere	MV	Megavolt
Ah	Ampere-hour	MW	Megawatt
Å	Angstrom	MΩ	Megohm
dB	Decibel	m	Meter
dBm	Decibel Referenced to One Milliwatt	μA	Microampere
°C	Degree Celsius	μF	Microfarad
°F	Degree Fahrenheit	μH	Microhenry
°K	degree Kelvin	μm	Micrometer
F	Farad	μs	Microsecond
G	Gauss	μW	Microwatt
GHz	Gigahertz	mA	Milliampere
g	Gram	mg	Milligram
H	Henry	mH	Millihenry
Hz	Hertz	ml	Milliliter
h	Hour	mm	Millimeter
ips	Inches Per Second	ms	Millisecond
kWh	Kilowatt-hour	mV	Millivolt
kg	Kilogram	nF	Nanofarad
kHz	Kilohertz	Ω	Ohm
kΩ	Kilohm	pF	Picofarad
km	Kilometer	lb	Pound
km/h	Kilometer Per Hour	rpm	Revolutions Per Minute
kV	Kilovolt	rps	Revolutions Per Second
kVA	Kilovolt-ampere	s	Second (Time)
kW	Kilowatt	V	Volt
l	Liter	VA	Volt-ampere
MHz	Megahertz	W	Watt
		Wh	Watt-hour

Table 2-1 Abbreviations

ABL	Automatic Brightness Limiter	I/O	Input/output
AC	Alternating Current	L	Left
ACC	Automatic Chroma Control	L	Low
AF	Audio Frequency	LED	Light Emitting Diode
AFC	Automatic Frequency Control	LF	Low Frequency
AFT	Automatic Fine Tuning	MOSFET	Metal-Oxide-Semiconductor-Field-Effect-Tr
AGC	Automatic Gain Control	MTS	Multi-channel Television Sound
AM	Amplitude Modulation	NAB	National Association of Broadcasters
ANSI	American National Standards Institute	NEC	National Electric Code
APC	Automatic Phase Control	NTSC	National Television Systems Committee
APC	Automatic Picture Control	OSD	On Screen Display
A/V	Audio-Video	PCB	Printed Circuit Board
AVC	Automatic Volume Control	PLL	Phase-Locked Loop
BAL	Balance	PWM	Pulse Width Modulation
BPF	Bandpass Filter	QIF	Quadrature Intermediate Frequency
B-Y	Blue-Y	R	Right
CATV	Community Antenna Television (Cable TV)	RC	Resistor & Capacitor
CB	Citizens Band	RF	Radio Frequency
CCD	Charge Coupled Device	R-Y	Red-Y
CCTV	Closed Circuit Television	SAP	Second Audio Program
Ch	Channel	SAW	Surface Acoustic Wave(Filter)
CRT	Cathode Ray Tube	SIF	Sound Intermediate Frequency
CW	Continuous Wave	SMPS	Switching Mode Power Supply
DC	Direct Current	S/N	Signal/Noise
DVM	Digital Volt Meter	SW	Switch
EIA	Electronics Industries Association	TP	Test Point
ESD	Electrostatic Discharge	TTL	Transistor Transistor Logic
ESD	Electrostatically Sensitive Device	TV	Television
FBP	Feedback Pulse	UHF	Ultra High Frequency
FBT	Flyback Transformer	UL	Underwriters Laboratories
FF	Flip-Flop	UV	Ultraviolet
FM	Frequency Modulation	VCD	Variable-Capacitance Diode
FS	Fail Safe	VCO	Voltage Controlled Oscillator
GND	Ground	VCXO	Voltage Controlled Crystal Oscillator
G-Y	Green-Y	VHF	Very High Frequency
H	High	VIF	Video Intermediate Frequency
HF	High-Frequency	VR	Variable Resistor
HI-FI	High Fidelity	VTR	Video Tape Recorder
IC	Inductance-Capacitance	VTVM	Vacuum Tube Voltmeter
IC	Integrated Circuit	TR	Transistor
IF	Intermediate Frequency		

## 2-2 IC Line Up

Table 2 - 2 IC Line - Up			
BLOCK	SPECIFICATION	MAKER	FUNCTION
MAIN	TDA9810T	PHILLIPS	VIF (QSS-IF&AM)
	TDA7265	SGS-THOMSON	STEREO AMP (25W)
	PCF8574P	PHILIPS	FAN, LEVER S/W, THERMO S/W DETECT
	SAA1300	PHILIPS	LED CONTROL, LAMP ON/OFF
AV-TERMINAL	TDA6920X	SIEMENS	7*5 VIDEO S/W
	TEA5114A	SGS-THOMSON	VIDEO S/W
	TL062CDT	T.I	OP AMP
SOUND	MSP3410D	ITT	SOUND PROCESSOR
	DPL3519A	ITT	DOLBY PRO LOGIC
	TL062CDT	T.I	OP AMP
	74HC4052	PHILIPS	ANALOG-MULTIPLEXER
	SDA30C264	SIEMENS	8-BIT MICRO CONTROLLER
MICOM	ST24W16	SGS-THOMSON	EEPROM (2K*8)
	TMS27C040	T.I	PROGRAMMABLE ROM
	SDA5273P	SIEMENS	MEGATEXT
	KM44C1004D	SEC	DRAM (1M*4BIT)
	HD74HC123P	HITACHI	MULTIVIBRATOR
LCD-CONTROL	74HC04D	PHILIPS	CMOS-LOGIC
	TDA4780	PHILIPS	RGB CONTROL
	TDA8444	PHILIPS	DAC
	CXA1853Q	SONY	RGB DRIVER
	CXA2504N	SONY	SAMPLE/HOLD DRIVER
	CXD2443Q	SONY	TIMING GENERATOR
	CIP3215A	ITT	COMPONENT INTERFACE PROCESSOR
FEATURE-BOX	VPC3210A	ITT	VIDEO PROCESSOR
	TL7705AC	T.I	POWER-ON RESET GENERATOR
	SDA9280	SIEMENS	DISPLAY PROCESSOR
	SDA9272	SIEMENS	VIDEO INTERPOLATION PROCESSOR
	SDA9253	SIEMENS	DRAM
	74F125	PHILIPS	BUFFER
	74F541	PHILIPS	BUFFER



### 3. Specifications

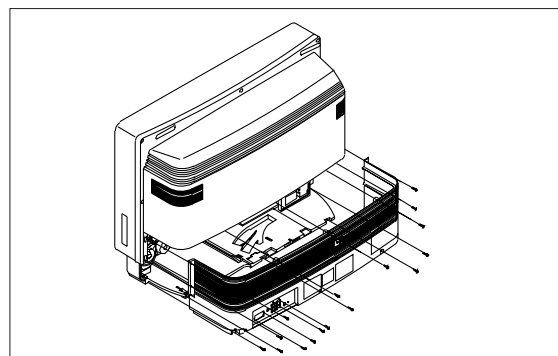
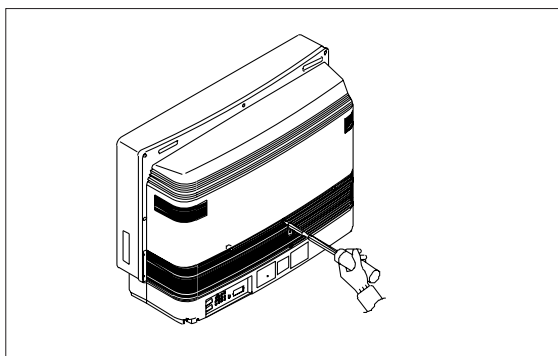
MODEL		SP-403JHA
MAIN CHARACTERISTICS	Progressive	0
	Dolby Prologic	0 (3D Sound)
	AV- LINK	0
SYSTEM	TUNING	Frequency Synthesizer
	COLOR	PAL, SECAM, NTSC (only AV mode)
	SOUND	NICAM, A2 STEREO, AM
ANTENNA INPUT		75 $\Omega$ , Coaxial Cable
POWER	CONSUMPTION	168 W
	REQUIREMENTS	Main Voltage : 230V Input Range : 220 ~240V
	FREQUENCY	50Hz
LCD	SIZE	1.43" , 16:9
	TYPE	p-Si : Active matrix TFT
NUMBER OF CHANNELS		100
TUNING RANGE		VHF : 2 ~ 12, UHF : 21 ~ 69, Cable : S1 ~ S41
SOUND OUTPUT		Right : 13W Left : 13W
SOCKETS	EXT4	-1 RCA Input / 1 S-Video input -Headphone Audio Output
	BACK (3 SCARTS)	-EXT1 : full RGB Scart / AV-LINK -EXT2 : Scart (Output Selectable) -EXT3 : Decoder (Output Selectable) -Dolby Prologic Signal Output (RCA Jack)

Specifications are subject to change.

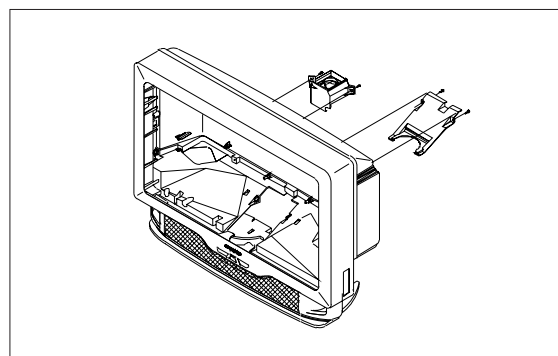
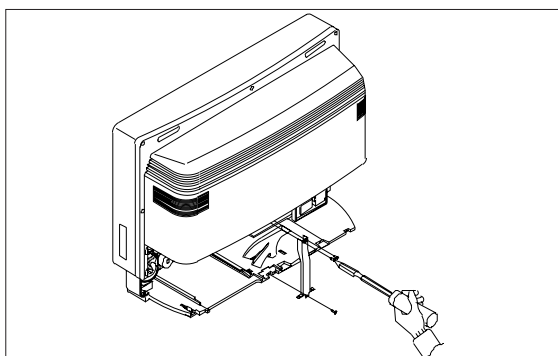
## 4. Disassembly and Reassembly

### 4-1 Back Cover Removal

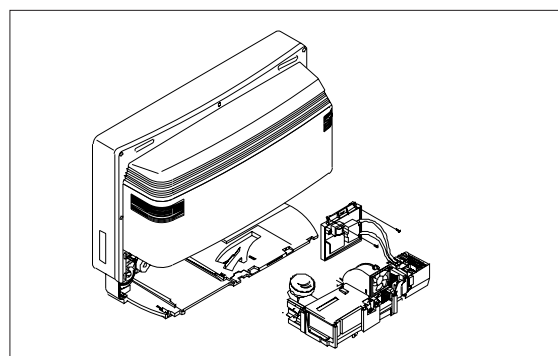
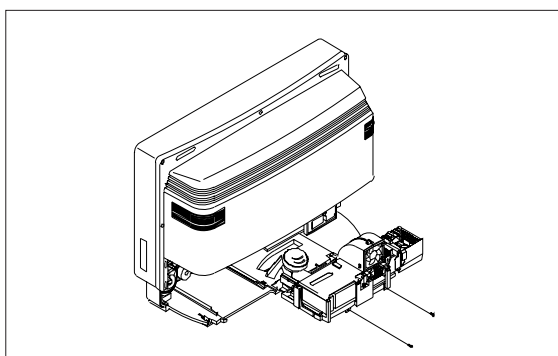
1. After removing the 16 screws, pull the bottom part of the cabinet back wards.



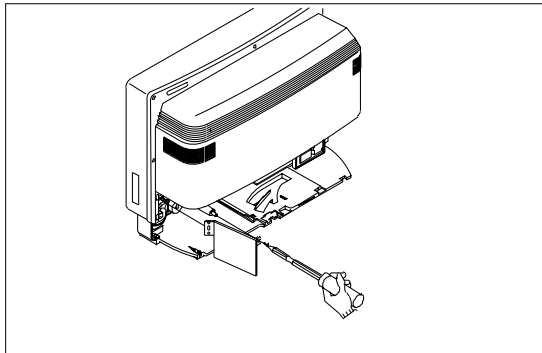
2. Loosen the 4 screws and remove the supporter.



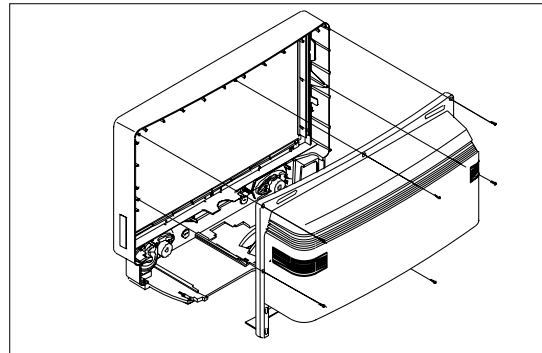
4. Loosen the 2 screws. Remove the optical meter.



6. After loosening the 2 screws, remove the chassis holder and power mounting.

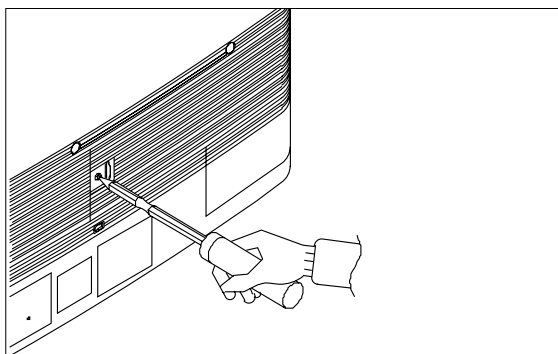


7. After removing the 6 screws, pull the top cabinet backwards.

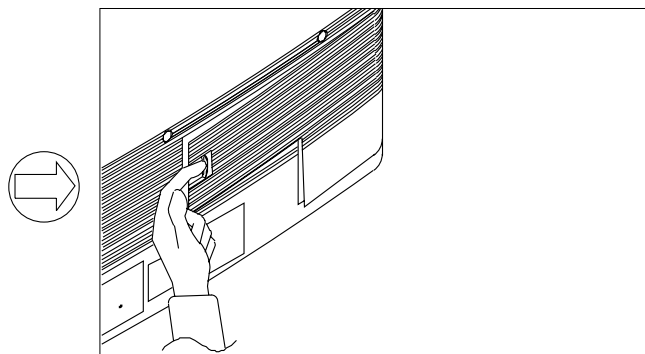


## 4-2 Lamp Replacement

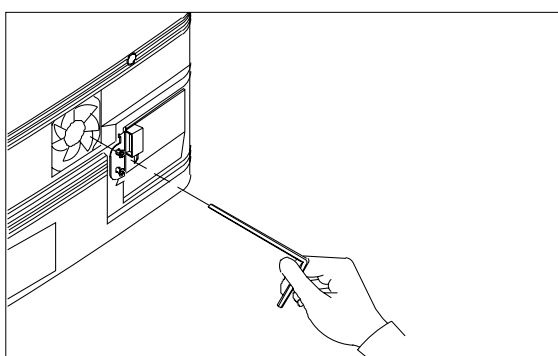
1. Loosen the screw.



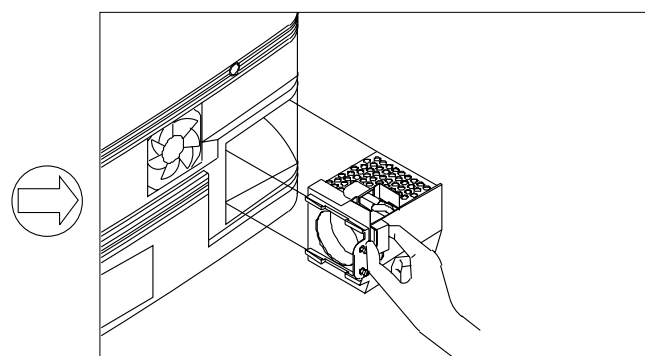
2. Remove the cover.



3. Using a hexagonal wrench, loosen the two screws that secure the lamp.



4. Pull out the lamp.



### 5. PROCEDURE

After completing the lamp replacement, enter the Service Mode

Press the remote control Keys in the following sequence:

“Display → P.STD → Mute → Power”

00 Lamp Total time (05999)  
01 Lamp Life (05999)

(1) Select 01 (lamp life) with using the channel (▼) key, then press the volume (+) key (See the figure below).

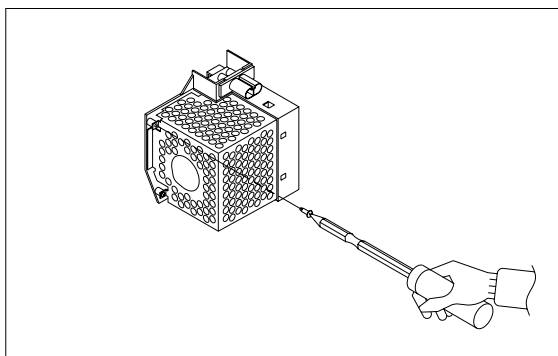
(2) Press the Cancel key to reset the lamp life (“00000”).

(3) Press the Power key to reset the factory value.

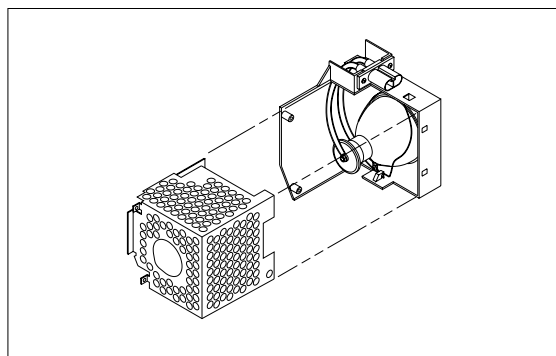
(4) Press the DISPLAY key to verify that the lamp use time is 0.

### 4-2-1 Lamp (Bulb only) Replacement

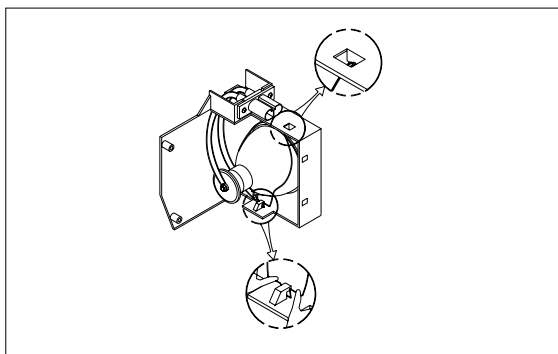
1. Loosen the two screws.



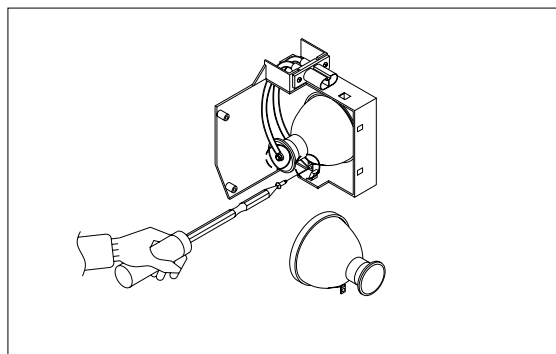
2. Remove the lamp-bracket from the lamp assembly.



3. After loosening the two brackets, remove the lamp-holder and wires.



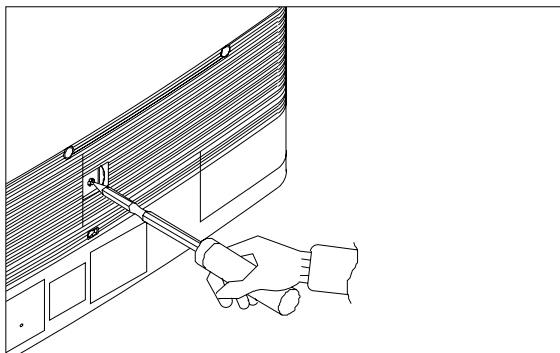
4. After loosening one screw and one nut, remove the bulb.



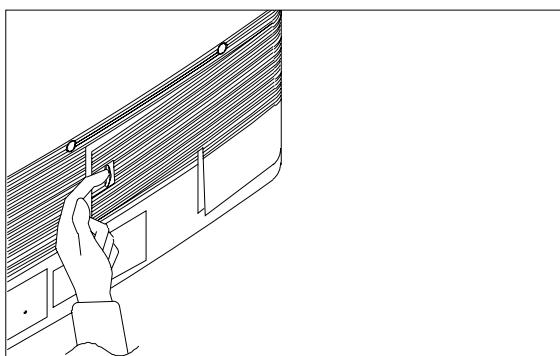
## 4-3 Air Filter Check

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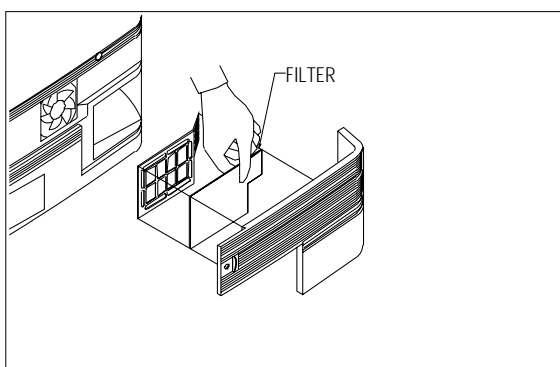
1. Loosen the screw.



2. Remove the cover.

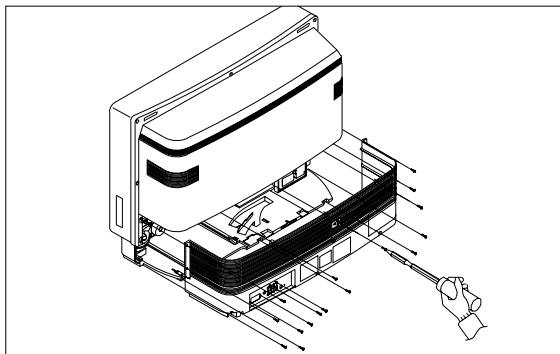


3. After removing the holder and filter from the cover, clean the filter.

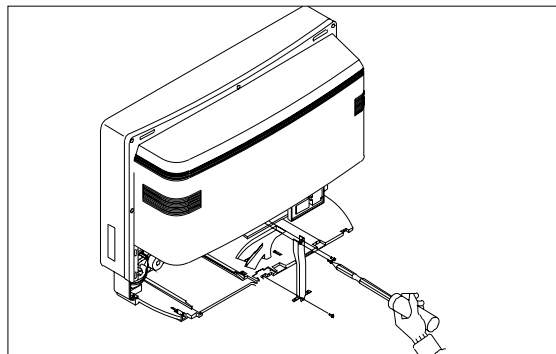


## 4-4 Liquid Crystal Panel Replacement

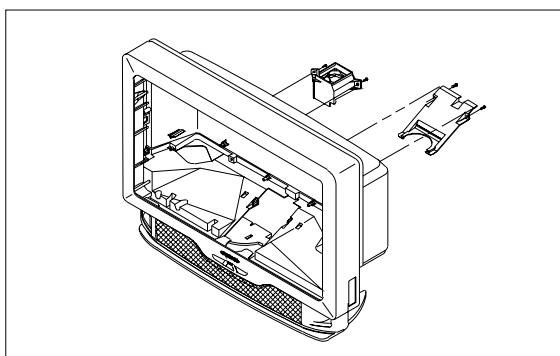
1. After removing the 16 screws, pull the cabinet backwards.



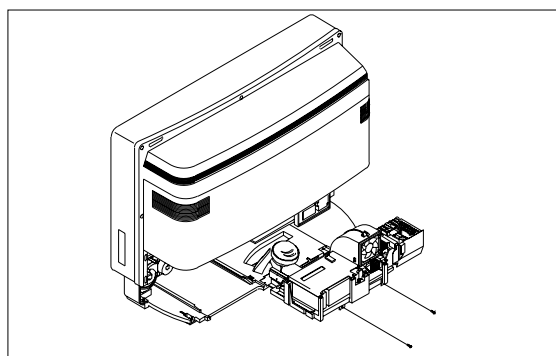
2. Loosen the 3 screws. Remove the supporter.



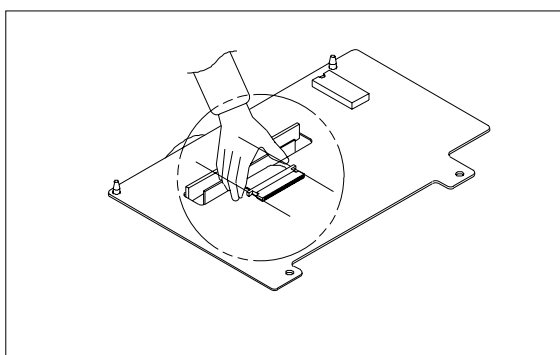
3. After loosening the 4 screws, remove the lens cover and fan duct.



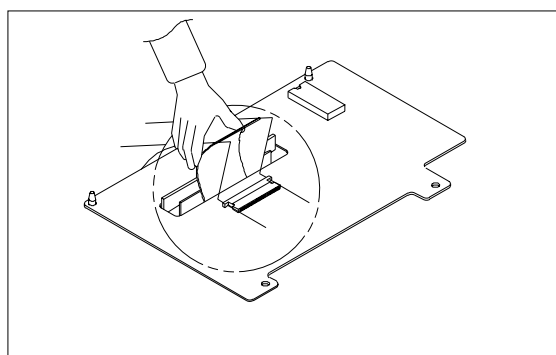
4. Loosen the 2 screws. Remove the optical meter.



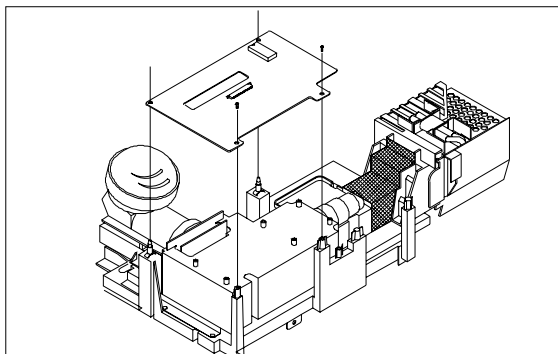
5. Remove the GUIDE from the FPC-Connector.



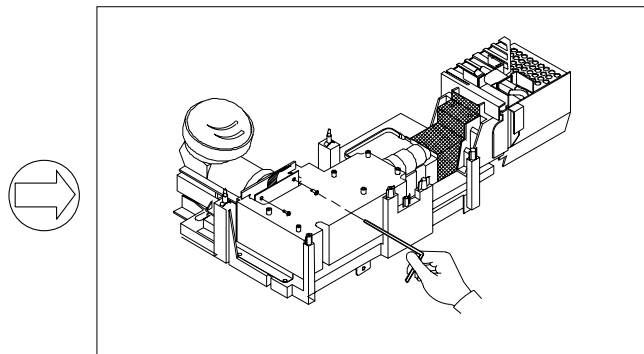
6. Remove FPC cable from the FPC-Connector.



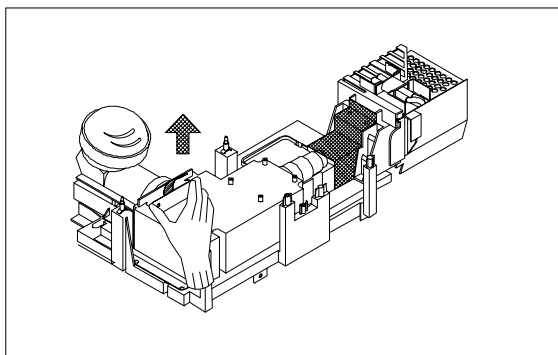
7. Loosen the 2 screws, 2 PCB spacers and remove the PCB-LCD.



8. Using a hexagonal wrench, loosen the two screws.



9. Lift the LCD in the direction of arrow.

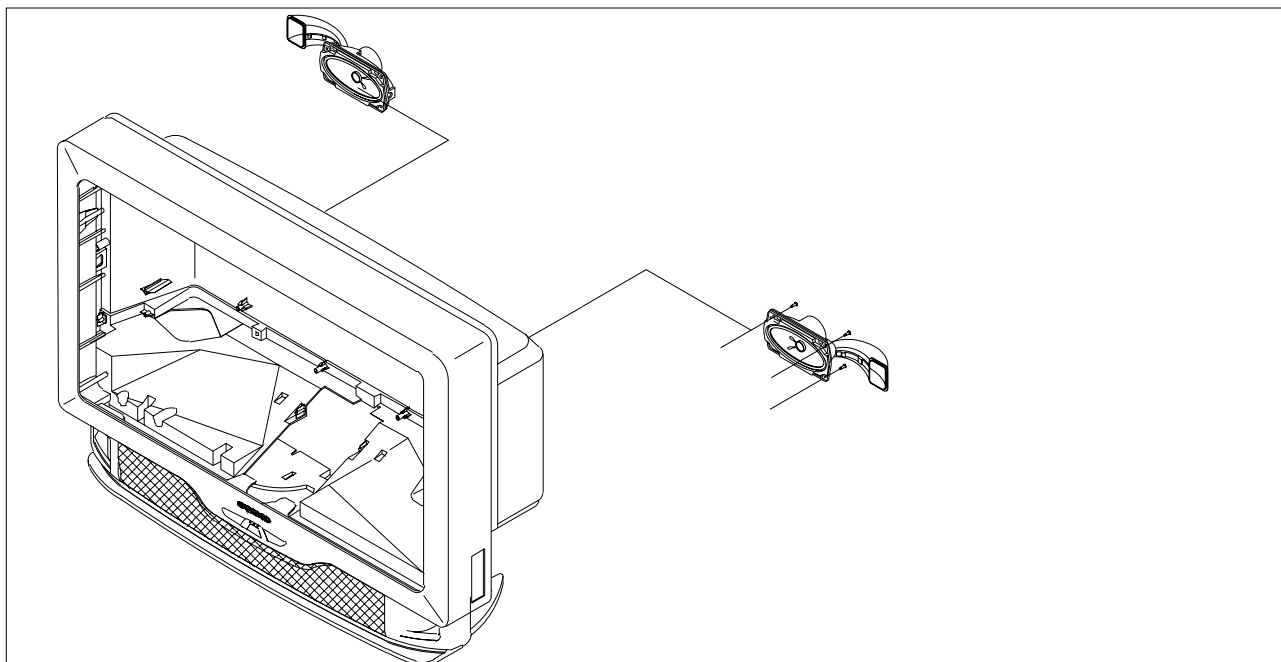




## 4-5 Speaker Removal

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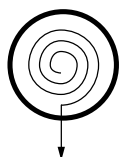
1. Loosen the 4 screws and remove the speaker holders.



## 5. Alignment and Adjustments

### 5-1 Lens and Mirror Cleaning

1. Mix the alcohol and ethyl in appropriate proportions.
2. Use a clean cotton cloth or a cleaning paper.
3. Clean the top of the lens by turning it as shown. The pattern starts at the center and proceeds outward, as shown below:



4. Use minimal pressure when rubbing the mirror. Otherwise, the surface will be damaged.

### 5-2 Focus Adjustment for projection Lens

1. Loosen the 4 screws that secure the optical assembly.
2. After setting the optical assembly on the front cabinet, secure the unit temporarily using the two screws.
3. After applying the liquid crystal panel signal, input a lion head pattern from a pattern generator.
4. Move the focus adjustment screws right and left until the liquid crystal picture element is clearly displayed on the screen.
5. Reposition the optical assembly, and fasten all 4 screws.
6. Check the focus adjustment.
7. Repeat adjustments 1~5, if necessary.

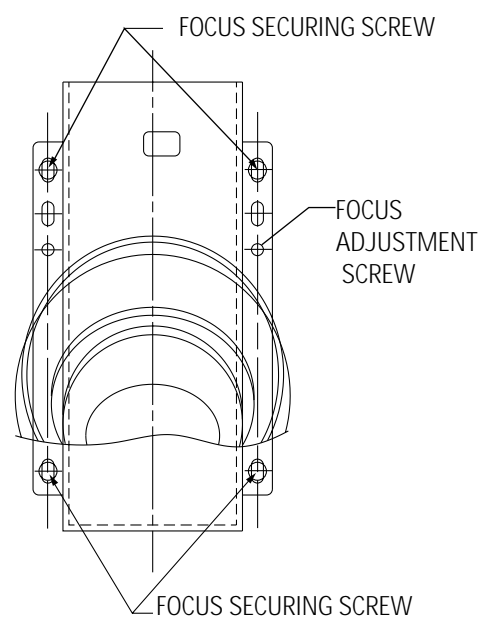


Fig. 5-1

### 5-3 Liquid Crystal Screen Center Adjustment

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After replacing with the new liquid crystal panel, make sure that the liquid crystal screen center is aligned with the screen center. If they are not aligned, make the following adjustments:

1. Using a hexagonal wrench, loosen the two screws that secure the liquid crystal panel.

Note: Loosen the screws just until the panel can move easily.

2. Using two fingers, lift the liquid crystal upward. (The screen moves downward.)
3. When moving the liquid crystal panel towards the left, the screen moves right (and vice versa).
5. Repeat adjustments 2~4 until the screen center is aligned vertically and horizontally.
6. Using a hexagonal wrench, refasten the two screws.

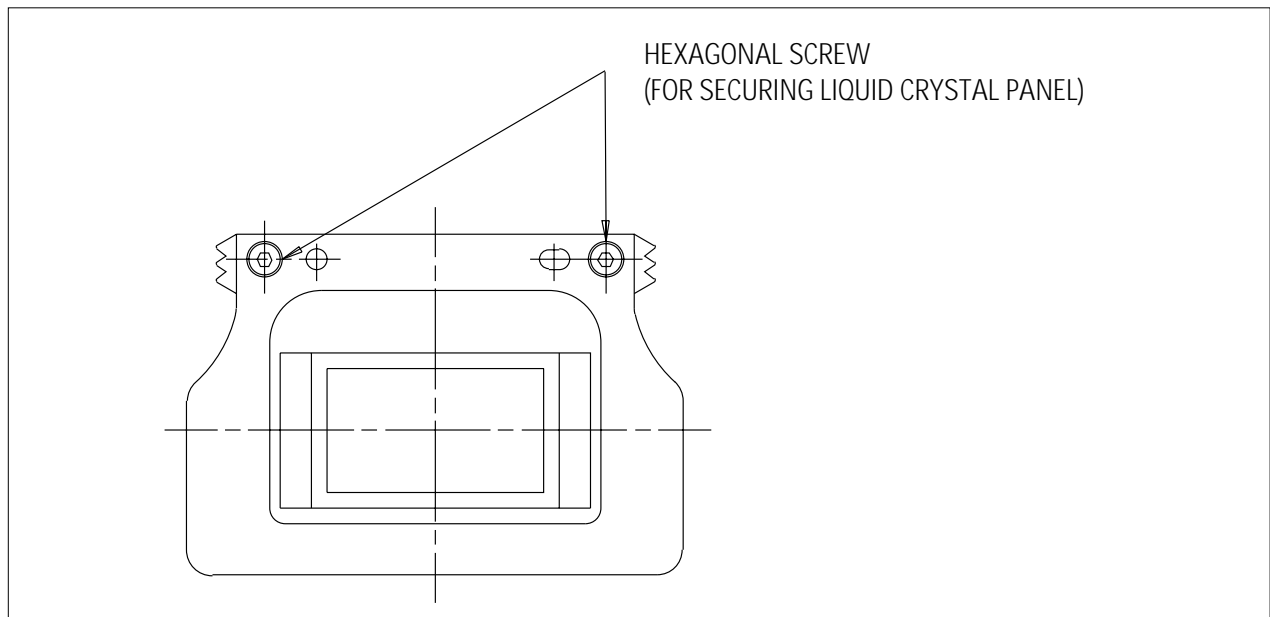
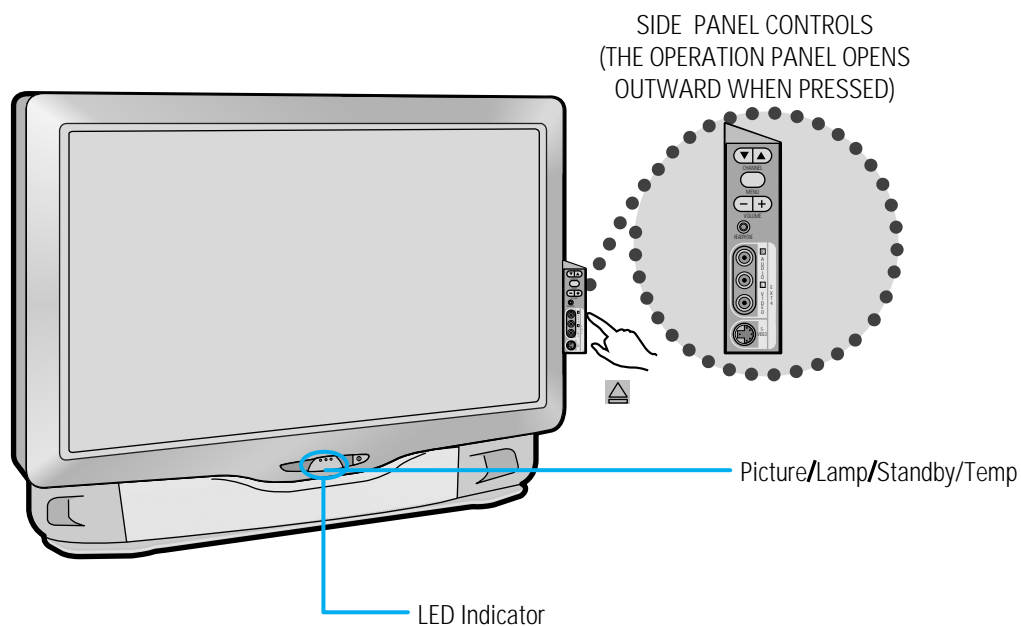
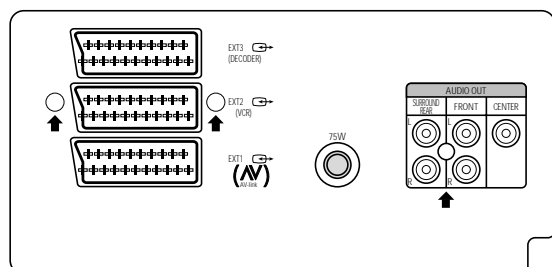


Fig. 5-2

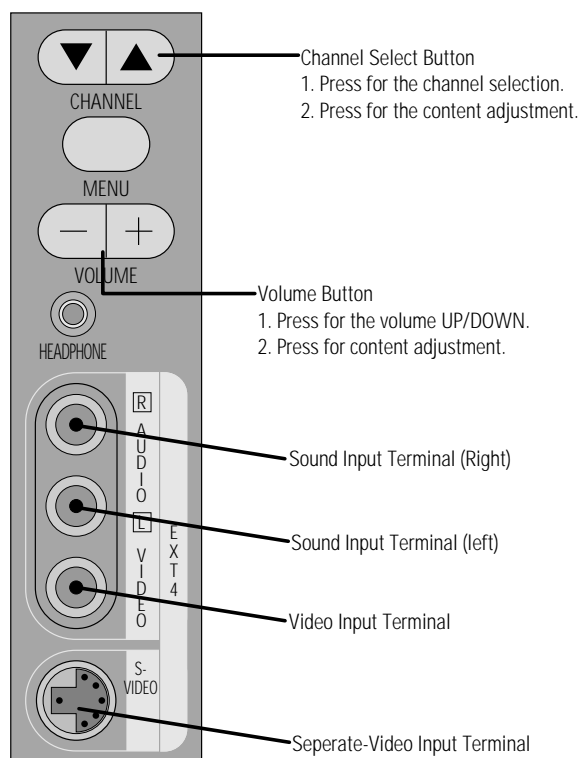
## 5-4 Side Panel Controls



### 4-4-1 Rear Panel Jacks



### 5-4-2 Side Operation Panel



## 5-5 Service Mode Adjustments



### 5-5-1 MATRIX IC (TDA4780) Adjustment

No.	Item	Range	Initial value	Description
00	RED DRIVE	63	52	Adjustment for the R gain
01	GREEN DRIVE	63	48	Adjustment for the G gain
02	BLUE DRIVE	63	53	Adjustment for the B gain
03	RED CUTOFF	63	32	Adjustment for the R cutoff
04	GREEN CUTOFF	63	32	Adjustment for the G cutoff
05	BLUE CUTOFF	63	32	Adjustment for the B cutoff
06	SUB BRIGHTNESS	20	14	Adjustment for the brightness
07	SUB CONTRAST	20	20	Adjustment for the contrast
08	SUB COLOR	20	00	Adjusts the color difference signal level of YUVIN 1
09	PEAK DRIVE LIMIT	63	43	Adjustment for the peak drive limit
10	P.YC DELAY	15	13	Adjustment for the P.YC delay
11	SUB TINT	17	09	Adjusts the center of tint (0 →R 9 →CENTER 17 →G )
12	$\gamma$ CORRECTION	63	63	Adjustment for the $\gamma$ correction

## 5-5-2 LCD Interface IC (CXA1853\_A) Adjustment

No.	Item	Range	Initial value	Description
00	Gamma gain 1	63	41	Adjusts the gain of black side on the gamma curve (R,G,B)
01	R gamma gain 1	63	39	Adjusts the gain of black side on the gamma curve for R
02	B gamma gain 1	63	48	Adjusts the gain of black side on the gamma curve for B
03	Gamma gain 2	63	16	Adjusts the gain of white side on the gamma curve (R,G,B)
04	R gamma gain 2	63	36	Adjusts the gain of white side on the gamma curve for R
05	B gamma gain 2	63	36	Adjusts the gain of white side on the gamma curve for R
06	Gamma ctrl 2	63	34	Adjusts the change point of the white side on the gamma curve (R,G,B). The smaller the value, the more it moves towards white.
07	Main bright	63	42	Adjust the DC level of R,G,B signal before doing the gamma adjustment. It determines the change point of the gamma curve. The greater the value, the darker it gets.
08	R main bright	63	36	Adjusts the DC level of R before doing the gamma adjustment. It determines the change point of the gamma curve. The greater the value, the darker it gets.
09	B main bright	63	36	Adjusts the DC level of B before doing the gamma adjustment. It determines the change point of the gamma curve. The greater the value, the darker it gets.
10	White limit	63	41	Adjusts the limiter voltage of white peak of R,G,B video signal (applied to LCD). The greater the value, the lower the limiter voltage becomes.

**5-5-3 LCD Interface IC (CXA1853\_B) Adjustment**

No.	Item	Range	Initial value	Description
00	Gamma ctrl 1 off	63	36	Adjusts the change point of the black side on the gamma curve (R,G,B). The greater the value, the more it moves towards black
01	Black Stretch On	36	33	Adjusts the change point of the back side on the (R,G,B) gamma curve. Moves the change point to the white side. The value is always less than the one of the gamma ctrl 1 off.
02	R gamma ctrl 1	63	40	Adjusts the change point of the back side on the gamma curve for R. The greater the value, the more it moves towards black.
03	B gamma ctrl 1	63	32	Adjusts the change point of the black side on the gamma curve for B. The greater the value, the more it moves towards black.
04	Sub bright	20	10	Adjusts the brightness of R, G, B after doing the gamma adjustment. No change of the gamma curve. The greater the value, the darker it gets.
05	R sub bright	63	35	Adjusts the brightness of R after doing the gamma adjustment. No change on the gamma curve. The greater the value, the darker it gets.
06	B sub bright	63	42	Adjusts the brightness of B after doing the gamma adjustment. No change on the gamma curve. The greater the value, the darker it gets.
07	Common ctrl	63	30	Adjusts the common voltage (applied to LCD)
08	Signal center	63	15	Adjusts the DC level of composite video signals (applied to LCD). Set the signal center to 7V.
09	Sub contrast	63	47	Adjusts the gain of R, G, B (applied to LCD).
10	R sub contrast	63	42	Adjusts the gain of R (applied to LCD).
11	B sub contrast	63	34	Adjusts the gain of B (applied to LCD).

**5-5-4 LCD CONTROLLER (CXD2443Q) Adjustment**

No.	Item	Range	Initial value	Description
00	LCD h pos	255	70	Determines the start location of horizontal indication by picture element.
01	LCD v pos	15	3	Determines the start location of vertical indication (within 1H)
02	SH position	15	6	Determines the phase of the sample/hold pulse.

### 5-5-5 Lamp's Total Hours

No.	Item	Range	Initial value	Description
00	lamp total time	05999		Records total elapsed time (from the time where power is first applied). Reset not possible
01	lamp time	05999		Records total elapsed time (from the point where power is first applied). Reset (using the cancel key). The lamp time is displayed by using the Display key. Reset must be done during the set shipment. Reset must be done after lamp replacement.

### 5-5-6 Option

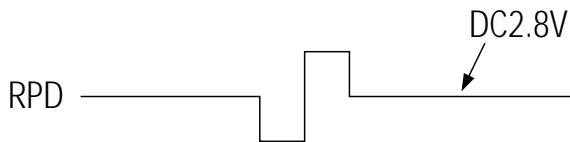
No.	Item	Range	Initial value	Description
00	Epg	on/off	off	Electronic program guide
01	Av_link	on/off	on	Av_link
02	Palplus	on/off	off	-
03	27Mhz external	on/off	on	27Mhz external
04	16 : 9 wide	on/off	on	16 : 9 wide
05	Dolby prologic	on/off	on	Dolby prologic
06	3d sound	on/off	off	3d sound
07	S-audio mute	on/off	on	Scart audio mute
08	Blue screen	on/off	on	Blue screen
09	UHF only	on/off	off	UHF only
10	Vga	on/off	off	Vga input
11	Atm one run	on/off	on	Atm one run ("OFF" for France)
12	Size key	on/off	off	Size key
13	Vip option	on/off	on	Vip option



## 5-6 Circuit Adjustments

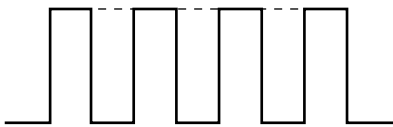
### 5-6-1 LCD Control Board PLL Adjustment

1. Input a color bar signal.
2. Connect CNL06,RPD to an oscilloscope, and check the waveforms.  
(1 V/div, 20 u sec/div)



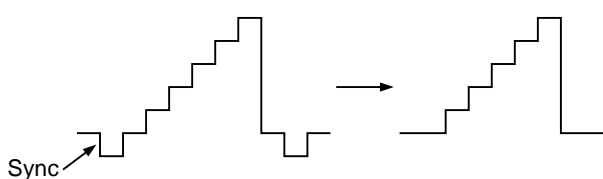
### 5-6-2 Matrix IC (TDA4780) Sub Tint Adjustment

1. Input a color bar signal.
2. Connect CNL07 (B output) to an oscilloscope, and check the waveform.  
(0.5 V/div, 20 u sec/div)



### 5-6-3 Matrix R Output Signal Amplitude Adjustment (Red Drive)

1. Input a 10-step signal (Color OFF).
2. Connect CNL07 (R output) to an oscilloscope, and check the waveform.  
(0.5 V/div, 10 u sec/div)
3. Adjust the red drive so that the signal amplitude becomes 0.7Vp-p.
4. Adjust the Sub-brightness of TDA4780 so that the waveform (without sync) is seen as shown in the figure below.



### 5-6-4 Matrix G Output Signal Amplitude Adjustment (Green Drive)

1. Input a 10-step signal (Color OFF).
2. Connect CNL07 (G output) to an oscilloscope, and check the waveform.  
(0.5 V/div, 10 u sec/div)
3. Adjust the green drive so that the signal amplitude becomes 0.7Vp-p.

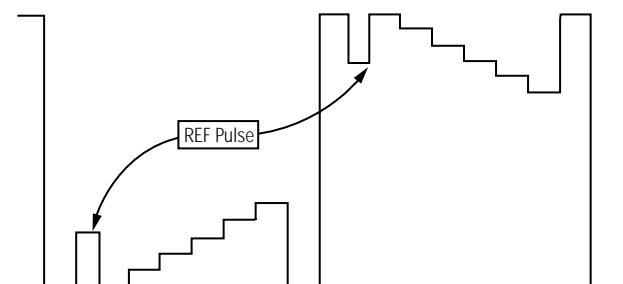
### 5-6-5 Matrix B Output Signal Amplitude Adjustment (Blue Drive)

1. Input a 10-step signal (Color OFF).
2. Connect CNL07 (B output) to an oscilloscope, and check the waveform.  
(0.5 V/div, 10 u sec/div)
3. Adjust the blue drive so that the signal amplitude becomes 0.7Vp-p.

### 5-6-6 Main Brightness Adjustment

1. Input a 10-step signal (Color OFF).
2. Connect LCD CNL08(R1) input to an oscilloscope, and check the waveform.  
(2 V/div, 10 u sec/div)
3. Adjust the main brightness so that the Ref pulse is positioned on the center of signal.

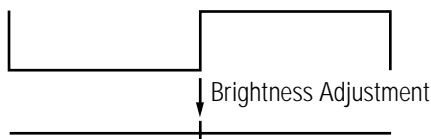
Note : The change point (on gamma curve) is determined by Ref.



### 5-6-7 R Main Brightness & B Main Brightness Adjustments

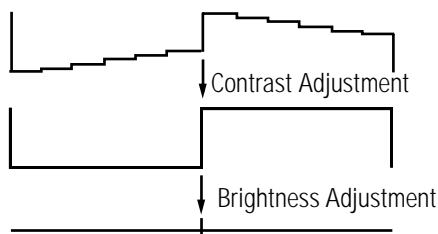
1. Input a 5-step signal (Color OFF).
2. Connect CH1 to LCD G1 input and CH2 to LCD R,B input. (1 V/div, 10 u sec/div)
3. Reverse the CH2 signal, and add CH1 and CH2 in ADD mode.
4. Adjust R,B main brightness for the waveform shown below.

Note: The R,B main brightness adjustment should be done with Gamma Adjustment OFF (gamma ctrl1 = 63, gamma ctrl2 = 17).



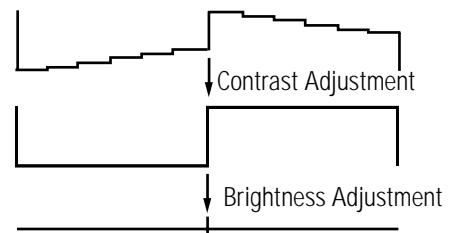
### 5-6-8 R Sub-brightness & R Contrast Adjustments

1. Input a 5-step signal (Color OFF).
2. Connect CH1 to LCD G1 input and CH2 to LCD R1 input. (1 V/div, 10 u sec/div)
3. Reverse the CH2 signal, and add CH1 and CH2 in ADD mode.
4. Adjust R sub-contrast and R sub-brightness waveforms, as shown below:



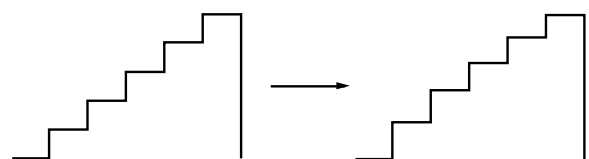
### 5-6-9 B Sub-brightness & B Contrast Adjustments

1. Input a 5-step signal (Color OFF).
2. Connect CH1 to LCD G1 input and CH2 to LCD B1 input. (1 V/div, 10 u sec/div)
3. Reverse the CH2 signal, and add CH1 and CH2 in ADD mode.
4. Adjust B sub-contrast and B sub-brightness waveforms, as shown below:



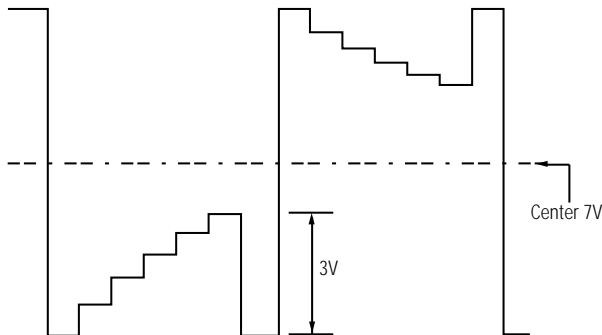
### 5-6-10 Gamma Adjustment

1. Input a 5-step signal (Color OFF).
2. Connect LCD G1 input to an oscilloscope. (2 V/div, 10 u sec/div)
3. Adjust the gamma gain1, gain2 and the gamma ctrl1, ctrl2 for the waveform shown below.



### 5-6-11 Sub-Contrast Adjustment

1. Input a 5-step signal (Color OFF).
2. Connect LCD G1 input to an oscilloscope.  
(2 V/div, 10 u sec/div)
3. Adjust the sub-contrast so that the signal level is 3V, as shown below:



### 5-6-12 Signal Center Adjustment

1. Input a 5-step signal (Color OFF).
2. Connect LCD G1 input to an oscilloscope, and check the waveform.  
(2 V/div, 10 u sec/div)
3. Set the signal center to 7V.

### 5-6-13 Common Voltage Adjustment

1. Connect LCD COMMON input to an oscilloscope, and check the waveform.  
(1 V/div, 10 u sec/div)
2. Set the common control to 6.8V.

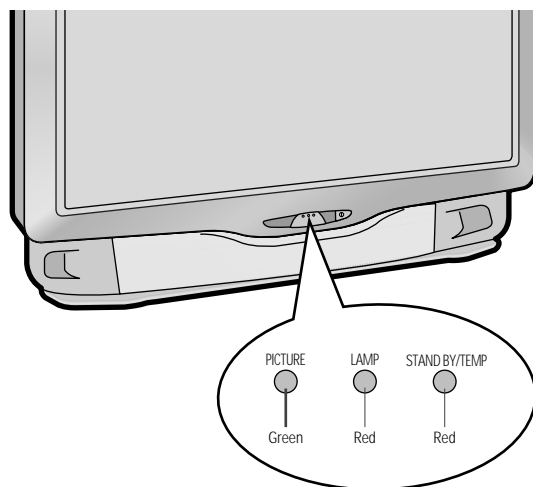
### 5-6-14 White Balance Adjustment

1. Input a lion head pattern from a pattern generator.
2. Adjust the sub-brightness so that the white cannot be saturated.
3. Adjust R,B contrast for the high light of white balance.
4. Adjust R,B sub-brightness when the middle tone is not black and white, but colored. Repeat adjustments 3 ~ 4 for optimum.
5. Adjust gamma ctrl1 for adjusting the brightness of the black side.
6. Adjust R,B gamma ctrl1 while checking the tone of the black side so that any color is not seen.
7. Repeat adjustments 2 ~ 6, if necessary.

### 5-6-15 Center Convergence Adjustment

1. Input a lion head pattern from a pattern generator.
2. Adjust the LCD Horizontal/Vertical POS.

## 5-7 LED Display Check



○ : OFF    ● : ON    ◐ : Blinking

No	Status	Picture	Lamp	Stand By Temp
1	Master Power ON (in the Stand-by Mode)	○	○	●
2	Normal operation	●	●	○
3	Lamp is warming up. The normal picture comes on after 25 seconds.	◐ ○	● or ◐	○
4	Air vent cover in the rear of the TV is not properly installed.	○	◐	◐
5	Inside temperature of the TV is over normal. Clean the air vent cover in the rear of the TV. Turn the TV back on after 1 hour. (see below "Temperature")	○	○	◐
6	The lamp needs to be replaced.	◐	◐	◐

### ◆ Temperature

When the inside temperature of the TV becomes too high, the TV set is automatically turned off. You will observe the following.

1. "TEMP" LED is blinking for about 5 ~ 6 seconds.
2. The picture is turned to blue screen and "TEMPERATURE" character blinks for about 5 ~ 6 seconds.
3. The power is turned off and "TEMP" LED is blinking for about 20 seconds.  
(This is not a TV set failure and normal operation)

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## 6. Troubleshooting

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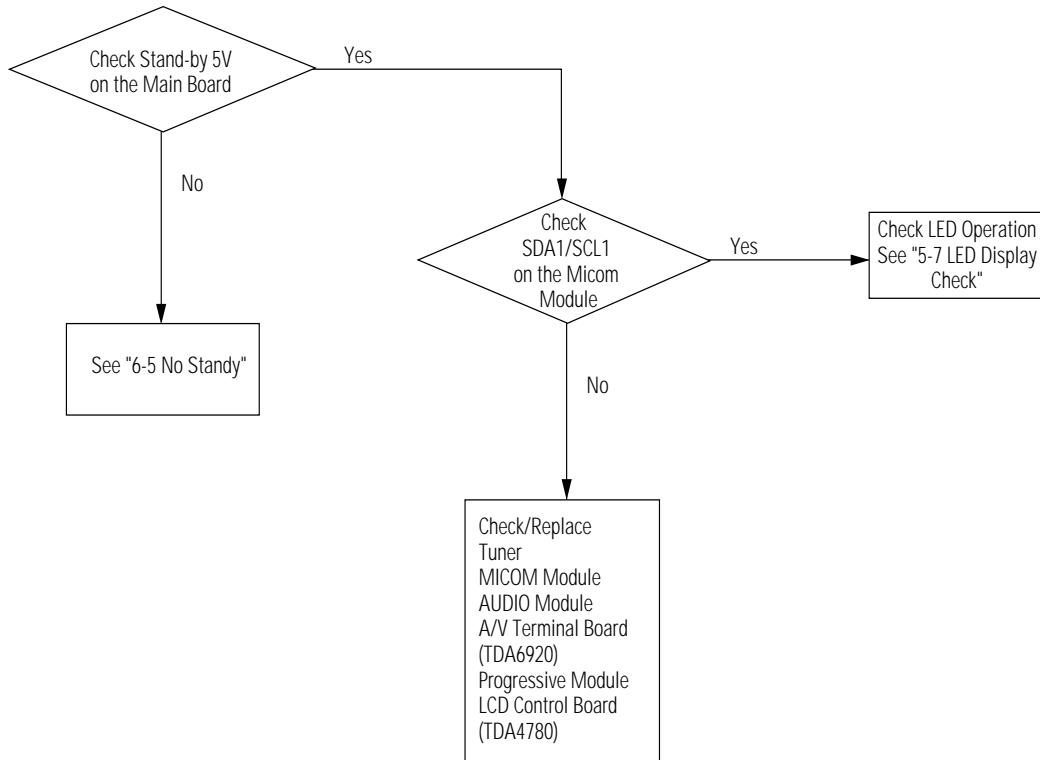
### 6-1 Service Mode

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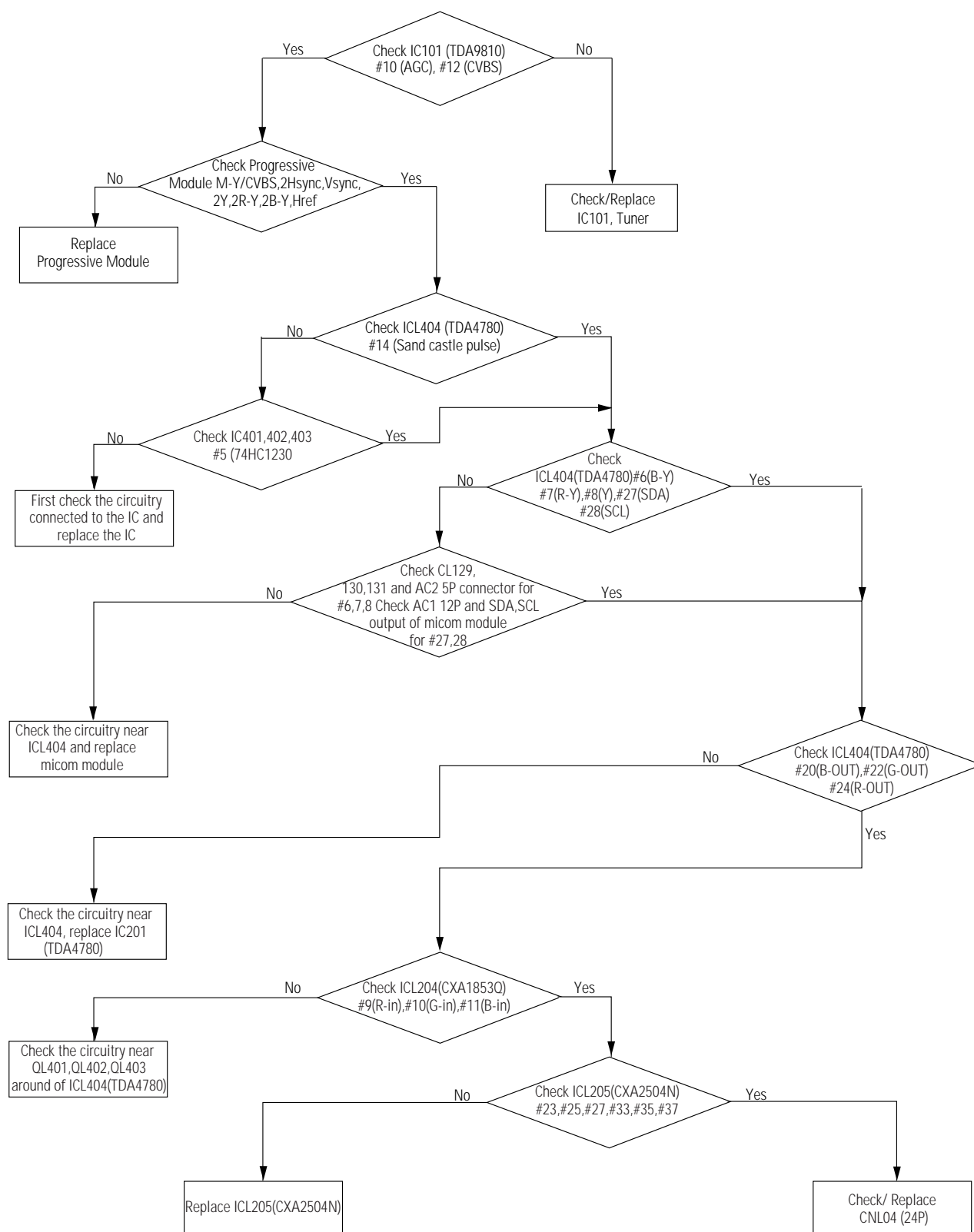
1. To enter the Service Mode, press the remote-control keys in the following sequence:  
Display → Picture Standard → Mute → Power
2. Use the Channel UP/DOWN keys to move within the Service Mode.
3. Use the Vol (+) key and Vol ( - ) key to change data.
  - (1) Press the Vol (+) key to increase data.
  - (2) Press the Vol (-) key to decrease data.
4. Use the Power key to exit and store data in memory.

## 6-2 No Power

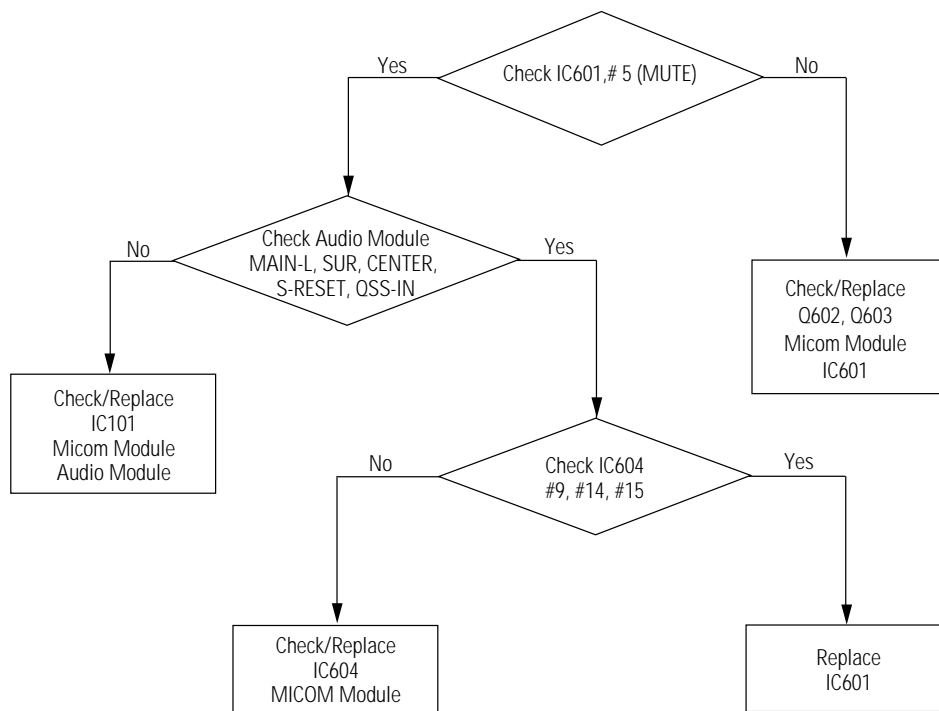
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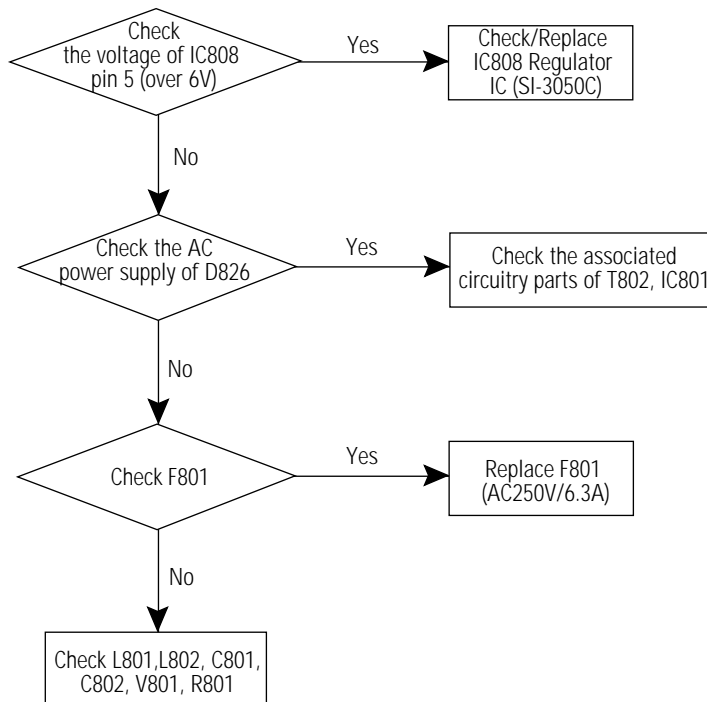
### 6-3 No Picture



## 6-4 No Sound

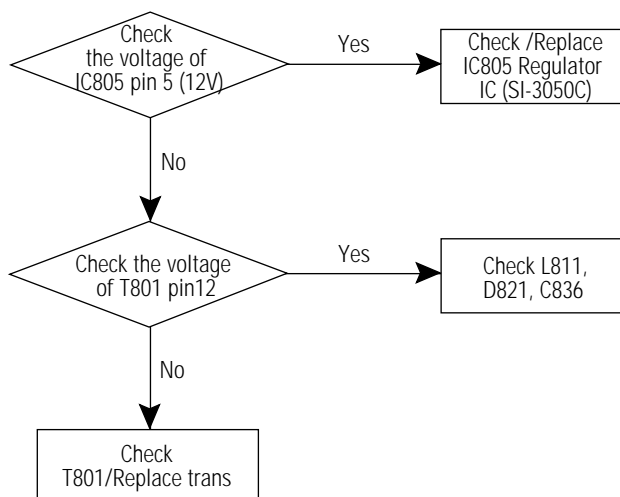


## 6-5 No Standby (+5V)

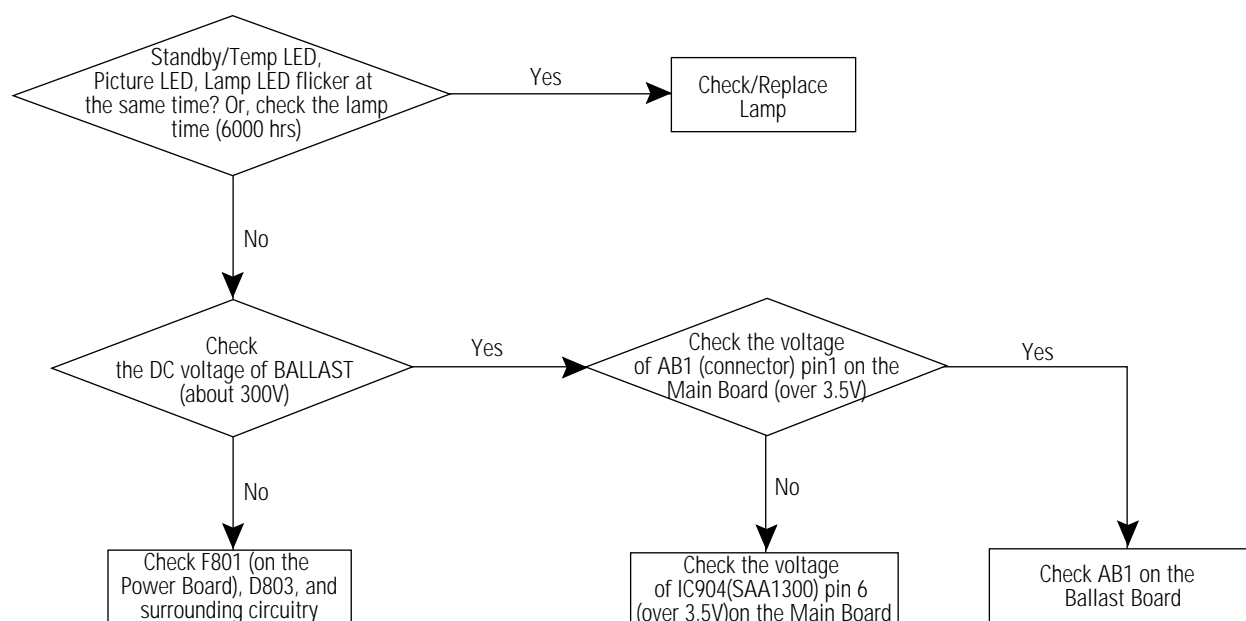




## 6-6 No FAN Voltage (+8V)

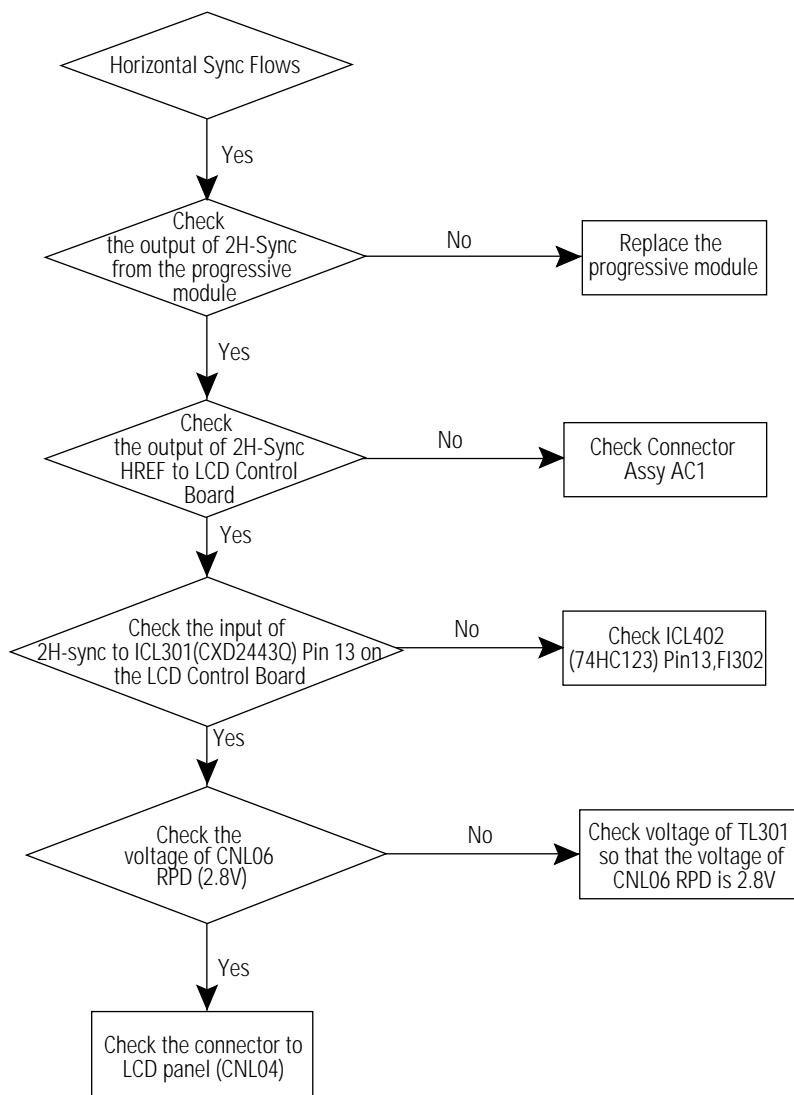


## 6-7 Lamp Does Not Work



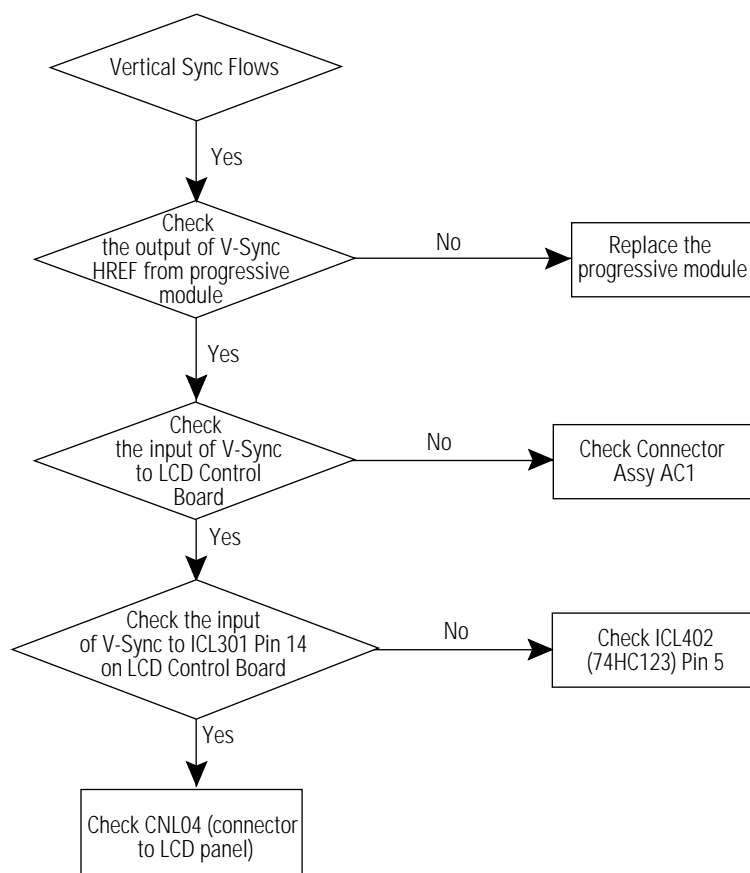
## 6-8 Horizontal Sync Flows

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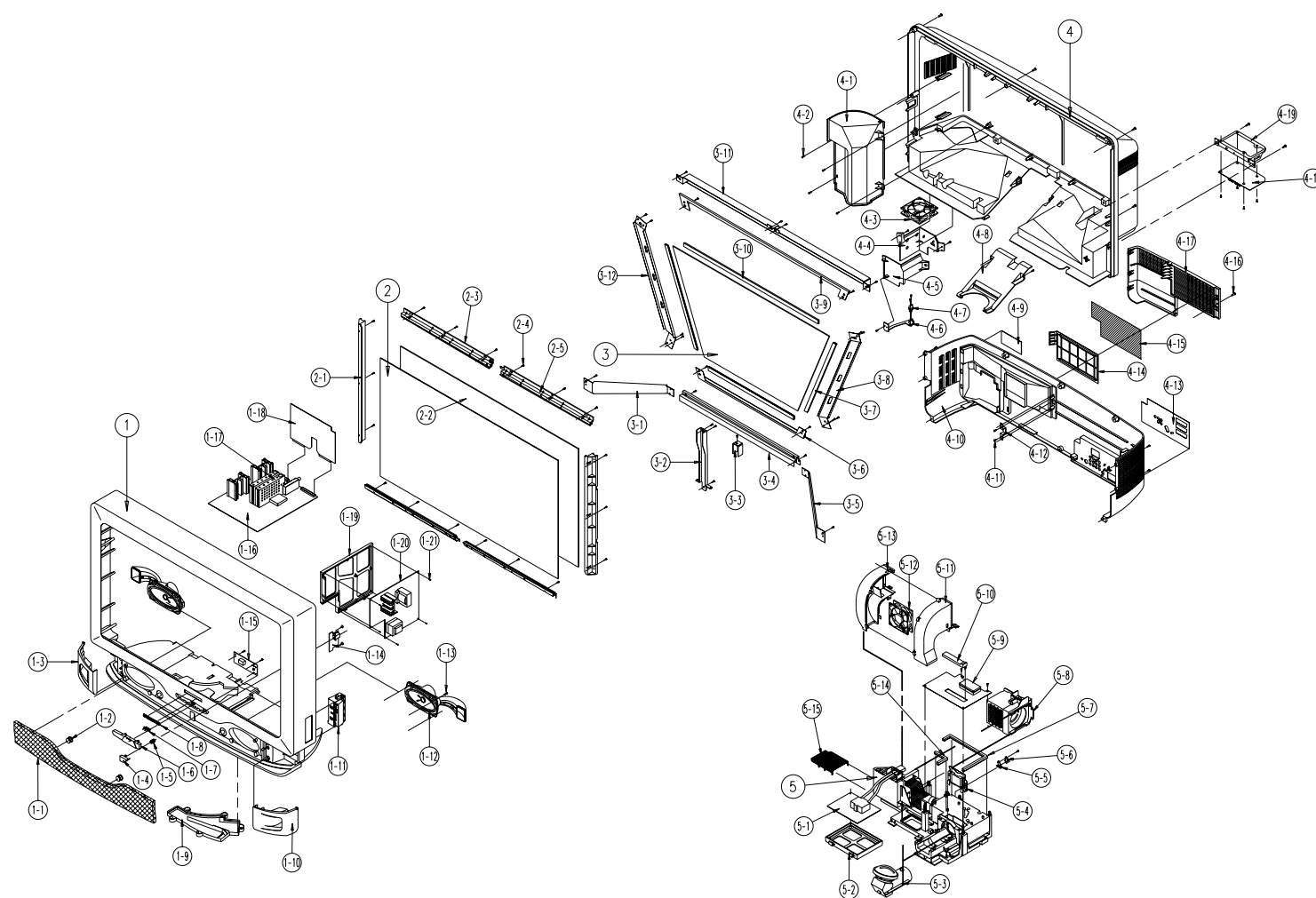
## 6-9 Vertical Sync Flows

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## 7. Exploded View & Parts List

### 7-1 SP403JHAX



No	Code No	Description	Specification	Q'ty	Remark
1-17	AA95-90031M	ASSY-PCB,MICOM	-,SPT-403J,PLT51A,PAL,-,-	1	
1-18	AA95-90031J	ASSY-AV,TERMINAL	-,SP403JHA,PLT51A,-,-,EU	1	
1-19	AA61-20217A	HOLDER-CHASS/POWER	ABS VO GRAY	1	
1-20	AA95-10010X	ASSY-PCB,POWER	SP-403JHA,PLT51A,40,-,EC,-	1	
1-21	AA60-10008A	SCREW-TAPPING	TH,+,M3,L10,ZPC(YEL),SWRCH185	1	
2	AA67-70049A	SUN-SCREEN	-,SVP-403J,P=0.72,PMMA,-,T=3.0	1	
2-1	AA61-20215B	HOLDER-SCREEN,S	-,S40LW,HIPS,HB,BLK,-	2	
2-2	AA67-70051A	SCREEN-TINT	-,SVP-403J,P=0.72,PMMA,-,T=3.0	1	
2-3	AA61-20214B	HOLDER-SCREEN,T	-,SVP403J,HIPS,HB,BLK,-	2	
2-4	6002-000522	SCREW-TAPPING	TH,+,2,M4,L15,ZPC(BLK),SWRCH18	18	
2-5	AA61-20215A	HOLDER-SCREEN,T	-,SVP403J,HIPS,HB,BLK,-	2	
3	AA67-20024A	MIRROR-FRONT	40,GLASS,3,-,SURFACE,779x460x	1	
3-1	AA61-10341A	BRACKET-MIRROR,SUP	-,SVP-403J,SECC-1,T1.6,BLK,RIG	1	
3-2	AA61-10371A	BRACKET-BACK,SUP(A)	-,SVP-403J,SECC-1,T1.2,BLK,-,-	1	
3-3	AA61-10344A	BRACKET-BACK,BOT	-,SVP-403J,SECC-1,T1.2,BLK,-,-	1	
3-4	AA61-10337A	BRACKET-BACK,TOP	-,SVP-403J,SECC-1,T1.2,BLK,-,-	1	
3-5	AA61-10340A	BRACKET-MIRROR,SUP	-,SVP-403J,SECC-1,T1.6,BLK,LEF	1	
3-6	AA61-10338A	BRACKET-MIRROR,BOT	-,SVP-403J,SECC-1,T1.2,BLK,-,-	1	
3-7	AA63-60052G	SPACER-MIRROR	PVC,HB,BLK,390,SVP403J,-	3	
3-8	AA61-10342A	BRACKET-MIRROR,SIDE	-,SVP-403J,SECC-1,T1.6,BLK,LEF	1	
3-9	AA61-10339A	BRACKET-MIRROR,TOP	-,SVP-403J,SECC-1,T1.2,BLK,-,-	1	
3-10	AA63-60052F	SPACER-MIRRORPVC	-,BLK,HB 720,SVP-403J,-	1	
3-11	AA61-10323A	BRACKET-FRONT,T	-,SVP-403J,SECC-1,T1.2,BLK,-,-	1	
3-12	AA61-10343A	BRACKET-MIRROR,SIDE	-,SVP-403J,SECC-1,T1.6,BLK,RIG	1	
4	AA64-30854B	CABINET-B/TOP	HIPS V2 GRAY	1	
4-1	AA63-30130A	COVER-DUCT	-,SVP403J,-,HIPS,VO,BLK,-,-	1	
4-2	6002-000522	SCREW-TAPPING	TH,+,2,M4,L15,ZPC(BLK),SWRCH18	4	
4-3	AA91-20069A	ASSY-DUCT,IN	-,VO,FAN,SVP403J	1	
4-4	AA63-30180A	COVER-DUCT,OUT,R	-,SVP-403J,-,HIPS,VO,BLK,-,-	1	
4-5	AA63-30181A	COVER-DUCT,OUT,L	-,SVP-403J,-,HIPS,VO,BLK,-,-	1	
4-6	AA61-11006A	BRACKET-LAMP	-,SVP-403J,SECC-1,T1.0,-,-,-	1	
4-7	4712-000121	THERMOSTAT	125V/250V,15A/7.5A,95+5C,85+	1	
4-8	AA63-30176A	COVER-LENS,A	-,SVP-403J,-,HIPS,VO,BLK,-,-	1	
4-9	AA64-60411B	INLAY-LAMP	SPT-403J,-,PS,T0.5,BLK,-,-	1	
4-10	AA64-31012B	CABINET-BACK,BO	T,-,SPM-403J,-,HIPS,V2,GRAY,-,-	1	
4-11	6002-000522	SCREW-TAPPING	TH,+,2,M4,L15,ZPC(BLK),SWRCH18	2	
4-12	AA61-10379A	BRACKET-COVER	-,SVP403J,SECC,T1.0,-,-,-	1	
4-13	AA64-60442A	INLAY-TERMINAL,PAL	SPM-403J,-,PS,T0.5,BLK,-,-	1	
4-14	AA61-20253A	HOLDER-SPONGE,A	-,SVP-403J,ABS,HB,BLK,-	1	
4-15	AA63-60112B	SPACER-SPONGE,DUCT	PU FORM,T5,BLK,-,SVP403J,-	1	
4-16	AA60-10050K	SCREW-MACHINE	FH,M4,L15.5,ZPC(BLK),SWRC	1	
4-17	AA63-30183B	COVER-FAN,A	-,SPM-403J,-,HIPS,V2,GRAY,-,-	1	
4-18	AA95-90033C	ASSY-PCB,PFC	-,SP-403JHA,PLT51A,EC,-,-	1	
4-19	AA61-11005	BRACKET-PFC	SP403J	1	
5	AA91-20057A	ASSY-LENS,MECHA	-,-,DS001AKB-61B,SVP-403J	1	
5-1	AA61-20252A	BALLAST-PCB	-,ABS,VO,GRY,-,SVP-403J	1	
5-2	AA07-10002A	HOLDER-CHASSIS	SP403J	1	
5-3	AA95-90033B	ASSY-PCB,LCD CONTROL	-,SP-403JHA,PLT51A,EC,-,-	1	
5-4	AA61-10185A	BRACKET-SENSOR	-,L3300,SECC,T1.0,-,-,-	1	
5-5	3409-000178	SWITCH-LEVER	12V,100mA,SPDT,-,27deg	1	
5-6	AA63-60123A	SPACE-SPONGE,LCD	SPONGE,VO,BLK	1	
5-7	AA63-60123A	SPACE-SPONGE,LCD	SPONGE,VO,BLK	1	
5-8	AA95-90033B	ASSY-PCB,LCD CONTROL	-,SP-403JHA,PLT51A,EC,-,-	1	
5-10	AA63-30223A	COVER-LCD	ABS VO BLK	1	
5-11	AA63-30178A	COVER-DUCT,IN,R	-,SVP-403J,-,HIPS,VO,BLK,-,-	1	
5-12	AA91-20069A	ASSY-DUCT,IN	-,VO,FAN,SVP403J	1	
5-13	AA63-30179A	COVER-DUCT,IN,L	-,SVP-403J,-,HIPS,VO,BLK,-,-	1	
5-14	AA63-60123B	SPACE-SPONGE,LCD	SPONGE,VO,BLK	1	
5-15	AA63-50351A	GRILLE-LAMP	SECC-1 T0.5	1	
1	AA91-10308L	ASSY-CABINET,FRONT	-,SPM403JHARX/NWT,PLT51A UKRAINE	1	
	AA64-30853E	CABINET-FRONT	-,-,DG-703P,HIPS,HB,BLK,-,-	1	
1-1	AA63-30128A	COVER-GRILLE	-,SVP-403J,-,HIPS,HB,BLK,-,-	1	
1-2	AA61-20061A	HOLDER-GRILLE	-,S5288,NEOPRENE,HB,BLK,-	2	
1-3	AA63-30127F	COVER-HORN,L	-,SP403JHAR,-,ABS,HB,BLK,-	1	
1-4	AA64-10775A	KNOB-POWER,MASTER	-,SP403JHA,-,PC,-,VIOLET	1	
1-5	AA61-60004N	SPRING-ES	-,SUS304,0.6,OD8.1,H10,N5,-,-,	1	
1-6	AA61-20301A	HOLDER-INDICATOR	-,SPM-403J,PC,VO,VIOLET,-	1	
1-7	AA64-40381A	INDICATOR-LED	-,SVP403J,-,ACRYL,HB,CLEAR,-	1	
1-8	AA64-70105A	BADGE-BRAND	AL,SS FLAT,SILVER,L70,-,-,-	1	
1-9	AA63-30177A	COVER-DUCT,BOT	-,SVP40LW,-,HIPS,HB,BLK,-,-	1	
1-10	AA63-30126B	COVER-HORN,R	-,SP403JHA,DG703P,HIPS,HB,BLK,	1	
1-11	AA91-20056C	ASSY-DOOR	-,ABS HB,DG-703P,SPM403J	1	
1-12	AA91-60225A	ASSY-HOLDER,SPK	-,PP,HB,BLK,8R20W,168BR20K	1	
1-13	6002-000522	SCREW-TAPPING	TH,+,2,M4,L15,ZPC(BLK),SWRCH18	8	
1-14	AA95-90032Z	ASSY-PCB,MASTER	-,SP-403JHA,PLT51A,EC,-,-	1	
1-15	AA95-90032Y	ASSY-PCB,REMOCON	-,SP-403JHA,PLT51A,EC,-,-	1	
1-16	AA94-00724A	ASSY-PCB,MAIN(OPT)	SP403JHARX/NWT,PLT51A,UKRANINE-	1	

## 8. Electric Parts List

### 8-1 SP403JHAX Parts List

Loc. No.	Code No.	Description ; Specification	Remark	Loc. No.	Code No.	Description ; Specification	Remark
		<b>ASSY-PCB,MAIN(OPT)</b>					
		BUYER : SRSC		C608	2301-000530	C-FILM,PEF:100nF,5%,100V,TP,11.5x12.5x6.5	
*	AA94-00274A	ASSY-PCB,MAIN(OPT);SP403JHARX/NWT, PLT51A,UKRAI BUYER : AMFO		C609	2401-000603	C-AL:1uF,20%,50V,GP,TP,5x11,5	
*	AA94-10148Y	SSY-PCB,MAIN(OPT);SP403JHAX/AMF,PLT51A,NETHERAN BUYER : ANA		C610	2401-000318	C-AL:100uF,20%,25V,LZ,TP,8x11.5,5	
*	AA94-10149H	ASSY-PCB,MAIN(OPT);SP403JHAX/ANA,PLT51A,RUMA BUYER : ATR		C611	2401-000603	C-AL:1uF,20%,50V,GP,TP,5x11,5	
*	AA94-10149F	ASSY-PCB,MAIN(OPT);SP403JHAX/ATR,PLT51A,SWISS,- BUYER : BOB		C621	2301-000383	C-FILM,PEF:10nF,5%,50V,TP,6x7x3.2mm,5mm	
*	AA94-10149J	ASSY-PCB,MAIN(OPT);SP403JHAX/BOB,PLT51A,BULGARIA, BUYER : NSI		C622	2301-000383	C-FILM,PEF:10nF,5%,50V,TP,6x7x3.2mm,5mm	
*	AA94-10148W	ASSY-PCB,MAIN(OPT);SP403JHAX/NSI,PLT51A,DEN BUYER : ELS		C623	2301-000530	C-FILM,PEF:100nF,5%,100V,TP,11.5x12.5x6.5	
*	AA94-10149A	ASSY-PCB,MAIN(OPT);SP403JHAX/ELS,PLT51A,AUSTRIA,- BUYER : EUP		C624	2401-000603	C-AL:1uF,20%,50V,GP,TP,5x11,5	
*	AA94-10149E	ASSY-PCB,MAIN(OPT);SP403JHAX/EUP,PLT51A,CROATIA,- BUYER : INT		C629	2401-000962	C-AL:22uF,20%,50V,GP,TP,5x11,5	
*	AA94-10149G	ASSY-PCB,MAIN(OPT);SP403JHAX/INT,PLT51A,SLOVENIA, BUYER : XEC		C633	2401-000480	C-AL:10uF,20%,50V,GP,TP,5x11,5	
*	AA94-10148U	ASSY-PCB,MAIN(OPT);SP403JHAX/XEC,PLT51A,SPAIN,- BUYER : XEF		C634	2305-000665	C-FILM,MPEF:100nF,5%,63V,TP,7.5x4.0x5.0mm,	
*	AA94-10143R	ASSY-PCB,MAIN(OPT);SP-403JHAX/XEF,PLT51A,FRANCE,- BUYER : XEH		C635	2401-000480	C-AL:10uF,20%,50V,GP,TP,5x11,5	
*	AA94-10149D	ASSY-PCB,MAIN(OPT);SP403JHAX/XEH,PLT51A,HUNGARY,- BUYER : XEO		C636	2401-000302	C-AL:100uF,20%,25V,GP,TP,6.3x11,5	
*	AA94-10149C	ASSY-PCB,MAIN(OPT);SP403JHAX/XEO,PLT51A,POLAND,- BUYER : XEU		C637	2401-000302	C-AL:100uF,20%,25V,GP,TP,6.3x11,5	
*	AA94-10148S	ASSY-PCB,MAIN(OPT);SP403JHAX/XEU,PLT51A,U.K.- BUYER : SEI		C638	2401-000302	C-AL:100uF,20%,25V,GP,TP,6.3x11,5	
*	AA94-10148T	ASSY-PCB,MAIN(OPT);SP403JHAX/XET,PLT51A,ITALY,-		C639	2401-000302	C-AL:100uF,20%,25V,GP,TP,6.3x11,5	
AB1	3711-002642	CONNECTOR-HEADER:BOX,3P,1R,2.5mm,STRAIGHT,SN		C831	2401-002286	C-AL:470uF,20%,16V,WT,TP,10x12.5,5	
AF1	3711-002642	CONNECTOR-HEADER:BOX,3P,1R,2.5mm,STRAIGHT,SN		C832	2305-000665	C-FILM,MPEF:100nF,5%,63V,TP,7.5x4.0x5.0mm,	
AF3	3711-002642	CONNECTOR-HEADER:BOX,3P,1R,2.5mm,STRAIGHT,SN		C833	2401-003034	C-AL:220uF,20%,16V,WT,TP,8x11.5,5	
AF4	3711-002642	CONNECTOR-HEADER:BOX,3P,1R,2.5mm,STRAIGHT,SN		C835	2305-000665	C-FILM,MPEF:100nF,5%,63V,TP,7.5x4.0x5.0mm,	
AT1	3711-002642	CONNECTOR-HEADER:BOX,3P,1R,2.5mm,STRAIGHT,SN		C836	2401-002286	C-AL:470uF,20%,16V,WT,TP,10x12.5,5	
C101	2305-000665	C-FILM,MPEF:100nF,5%,63V,TP,7.5x4.0x5.0mm,		C837	2401-002286	C-AL:470uF,20%,16V,WT,TP,10x12.5,5	
C103	2305-000665	C-FILM,MPEF:100nF,5%,63V,TP,7.5x4.0x5.0mm,		C838	2305-000665	C-FILM,MPEF:100nF,5%,63V,TP,7.5x4.0x5.0mm,	
C104	2401-000660	C-AL:2.2uF,20%,50V,GP,TP,5x11,5		C839	2401-003034	C-AL:220uF,20%,16V,WT,TP,8x11.5,5	
C105	2305-000665	C-FILM,MPEF:100nF,5%,63V,TP,7.5x4.0x5.0mm,		C840	2401-003034	C-AL:220uF,20%,16V,WT,TP,8x11.5,5	
C107	2305-000289	C-FILM,MPEF:220nF,5%,63V,TP,-5mm		C841	2305-000665	C-FILM,MPEF:100nF,5%,63V,TP,7.5x4.0x5.0mm,	
C108	2401-000667	C-AL:2.2uF,20%,50V,WT,TP,5x11,5		C842	2401-000302	C-AL:100uF,20%,25V,GP,TP,6.3x11,5	
C109	2401-002300	C-AL:47uF,20%,50V,GP,TP,6.3x11,5		C843	2305-000665	C-FILM,MPEF:100nF,5%,63V,TP,7.5x4.0x5.0mm,	
C111	2201-000292	C-CERAMIC,DISC:1nF,10%,50V,Y5P,TP,5x3,5		C851	2305-000665	C-FILM,MPEF:100nF,5%,63V,TP,7.5x4.0x5.0mm,	
C112	2401-000947	C-AL:22uF,20%,35V,GP,TP,5x11,5		C852	2305-000665	C-FILM,MPEF:100nF,5%,63V,TP,7.5x4.0x5.0mm,	
C113	2201-000180	C-CERAMIC,DISC:10nF,10%,50V,Y5V,TP,6.5*3,5		C863	2401-001397	C-AL:470uF,20%,25V,GP,TP,10x16,5	
C114	2201-000292	C-CERAMIC,DISC:1nF,10%,50V,Y5P,TP,5x3,5		C864	2305-000665	C-FILM,MPEF:100nF,5%,63V,TP,7.5x4.0x5.0mm,	
C115	2201-000180	C-CERAMIC,DISC:10nF,10%,50V,Y5V,TP,6.5*3,5		C866	2401-002273	C-AL:220uF,20%,25V,HR,TP,10x20mm,5m	
C116	2401-001176	C-AL:33uF,20%,25V,GP,TP,5x11,5		C870	2305-000665	C-FILM,MPEF:100nF,5%,63V,TP,7.5x4.0x5.0mm,	
C117	2201-000982	C-CERAMIC,DISC:10nF,+80-20%,50V,Y5V,TP,6.5x3,		C901	2305-000665	C-FILM,MPEF:100nF,5%,63V,TP,7.5x4.0x5.0mm,	
C119	2401-000302	C-AL:100uF,20%,25V,GP,TP,6.3x11,5		C902	2401-000914	C-AL:22uF,20%,16V,GP,TP,5x11,5	
C120	2401-000302	C-AL:100uF,20%,25V,GP,TP,6.3x11,5		C903	2301-000383	C-FILM,PEF:10nF,5%,50V,TP,6x7x3.2mm,5mm	
C121	2401-002300	C-AL:47uF,20%,50V,GP,TP,6.3x11,5		C904	2401-002235	C-AL:10uF,20%,16V,GP,TP,5x11mm,5mm	
C267	2201-000146	C-CERAMIC,DISC:100pF,5%,50V,SL,TP,5x3,5		C905	2301-000452	C-FILM,PEF:47nF,5%,50V,TP,8x11x4.5mm,5mm	
C270	2201-000375	C-CERAMIC,DISC:220pF,5%,50V,RH,TP,9.5x3,0,5		CN704A	3710-001208	CONNECTOR-SOCKET:32P,2R,2.54mm,STRAIGHT,AUF	
C290	2201-000376	C-CERAMIC,DISC:220pF,5%,50V,SL,TP,4x4,5		CN705A	3710-001208	CONNECTOR-SOCKET:32P,2R,2.54mm,STRAIGHT,AUF	
C296	2201-000558	C-CERAMIC,DISC:470pF,10%,50V,Y5P,TP,5x3,5		CNM01	3711-002645	CONNECTOR-HEADER:BOX,6P,1R,2.5mm,STRAIGHT,SN	
C603	2401-000192	C-AL:1000uF,20%,50V,GP,TP,16x25,7.5		CNM02	3711-003641	CONNECTOR-HEADER:BOX,12P,1R,2.5mm,STRAIGHT,SN	
C604	2301-000530	C-FILM,PEF:100nF,5%,100V,TP,11.5x12.5x6.5		CNM08	3711-001054	CONNECTOR-HEADER:BOX,6P,1R,2.5mm,STRAIGHT,SN	
C605	2401-000192	C-AL:1000uF,20%,50V,GP,TP,16x25,7.5		CNM09	3711-003641	CONNECTOR-HEADER:BOX,12P,1R,2.5mm,STRAIGHT,SN	
C606	2301-000530	C-FILM,PEF:100nF,5%,100V,TP,11.5x12.5x6.5		CNM09A	AA39-20032C	LEAD-CONNECTOR,ASSY:-,67096-012,S,12P,400,1007#26	
C607	2401-000192	C-AL:1000uF,20%,50V,GP,TP,16x25,7.5		CNM10	3711-002645	CONNECTOR-HEADER:BOX,6P,1R,2.5mm,STRAIGHT,SN	
				CNM10A	AA39-20038D	LEAD-CONNECTOR,ASSY:-,67096-006,S,6P,300,1185#26	
				CNM11	3711-002641	CONNECTOR-HEADER:BOX,10P,1R,2.54mm,STRAIGHT,Sn	
				CNM11A	AA39-20025E	LEAD-CONNECTOR,ASSY:-,67096-010,S,10P,400,1007#26	
				CNM12	3711-000900	CONNECTOR-HEADER:BOX,3P,1R,2.5mm,STRAIGHT,SN	
				CNM13	3711-002643	CONNECTOR-HEADER:BOX,4P,1R,2.5mm,STRAIGHT,SN	
				CNM14	3711-003359	CONNECTOR-HEADER:BOX,10P,1R,2.5mm,STRAIGHT,SN	
				CNM15	3711-000392	CONNECTOR-HEADER:3WALL,10P,1R,2.5mm,STRAIGHT,-	
				D101	0401-000005	DIODE-SWITCHING:1N4148,75V,300mA,DO-35,TP	
				D103	0401-001024	DIODE-SWITCHING:BAW75,25V,300mA,DO-35,TP	
				D104	0401-001024	DIODE-SWITCHING:BAW75,25V,300mA,DO-35,TP	
				D601	0401-000005	DIODE-SWITCHING:1N4148,75V,300mA,DO-35,TP	
				D602	0401-000005	DIODE-SWITCHING:1N4148,75V,300mA,DO-35,TP	
				D603	0401-000005	DIODE-SWITCHING:1N4148,75V,300mA,DO-35,TP	
				D901	0401-000005	DIODE-SWITCHING:1N4148,75V,300mA,DO-35,TP	
				D902	0401-000005	DIODE-SWITCHING:1N4148,75V,300mA,DO-35,TP	
				DZ102	1203-000451	IC-VOLTAGE REGULATOR:33,TO-92-3P,-PLASTIC,31/35V,2	
				DZ201	0403-000297	DIODE-ZENER:MTZ6.2B,6.2V,5.96-6.27V,500mW,	
				DZ202	0403-000297	DIODE-ZENER:MTZ6.2B,6.2V,5.96-6.27V,500mW,	























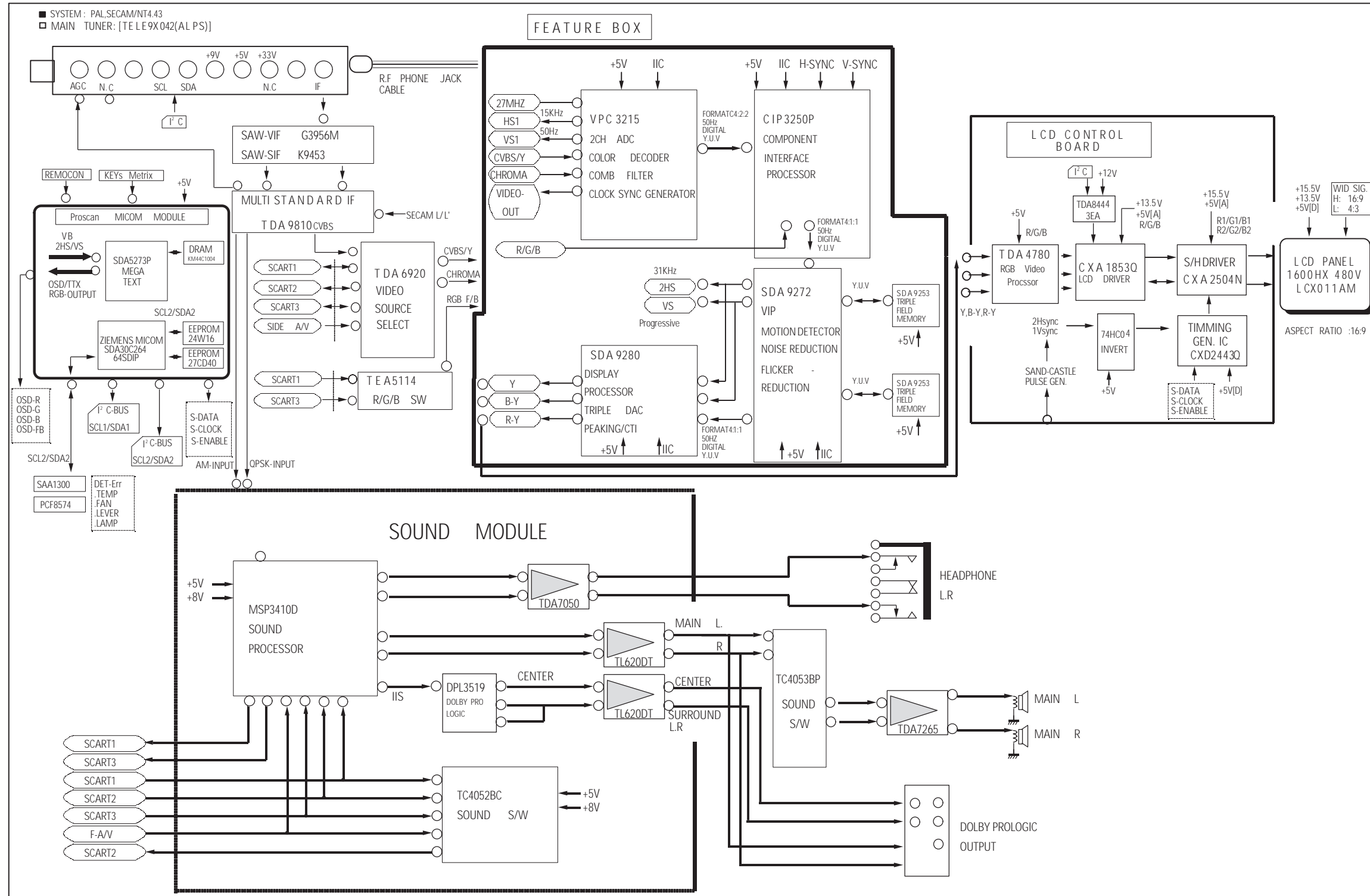
Electric Parts List

Loc. No.	Code No.	Description ; Specification	Remark	Loc. No.	Code No.	Description ; Specification	Remark
AS1A	AA39-20505A	LEAD CONNECTOR-ASSY;- ,YSH025-04,REC,4P,900.700,100					
<b>ASSY-ACCESSORY</b>							
	AA39-40001B	CABLE-RCA;- ,RCA,1500mm,0.12/10,RED/WHT/Y					
		BUYER : SEG/ANA/BOB/ELS/EUP/INT/XEH/XEO/XEU					
I/B	AA68-11328A	MANUAL-USERS;PLT51A,ENG/GER,TM49,B5,W/P 100					
		BUYER : UKRAINE					
I/B	AA68-00020A	MANUAL-USERS;PLT51A,N-RUSSIA,-B5,W/P(100)-					
		BUYER : ATR/AMFO					
I/B	AA68-11329A	MANUAL-USERS;PLT51A,FRA/DUT,TM49,B5,W/P					
I/B	AA68-11361A	MANUAL-USERS;PLT51A,GER/ITA,TM49,B5,W/P					
		BUYER : NSI					
I/B	AA68-11330A	MANUAL-USERS;PLT51A,FINL/NORW,TM54,B5,W/P					
I/B	AA68-11335A	MANUAL-USERS;PLT51A,SWE/DAN,TM49,B5,W/P					
		BUYER : XEC					
I/B	AA68-11331A	MANUAL-USERS;PLT51A,SPA/POR,TM49,B5,W/P					
		BUYER : XEF					
I/B	AA68-11329A	MANUAL-USERS;PLT51A,FRA/DUT,TM49,B5,W/P					
		BUYER : SEI					
I/B	AA68-11329A	MANUAL-USERS;PLT51A,FRA/DUT,TM49,B5,W/P					
S/D	AA68-20055A	MANUAL-S/D;PLT51A,ENG,- ,W/P,100(G)-ITAL					
S/N	AA68-20056A	MANUAL-SERVICE;PLT51A,W/P,100(G),B5,U K/IT A/S					



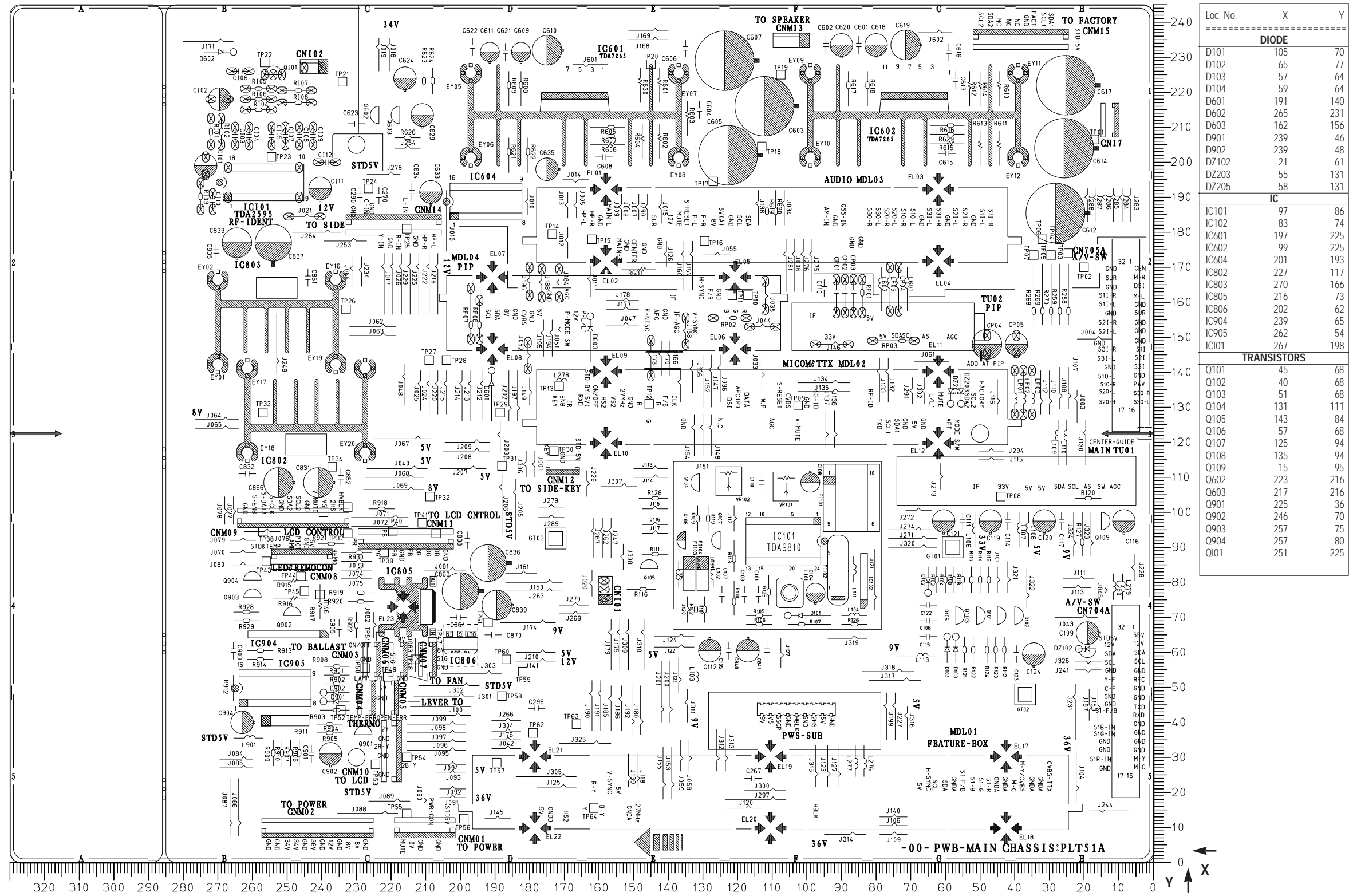
# 9. Block Diagram

## 9-1 PLT51A (SP-403JHA)



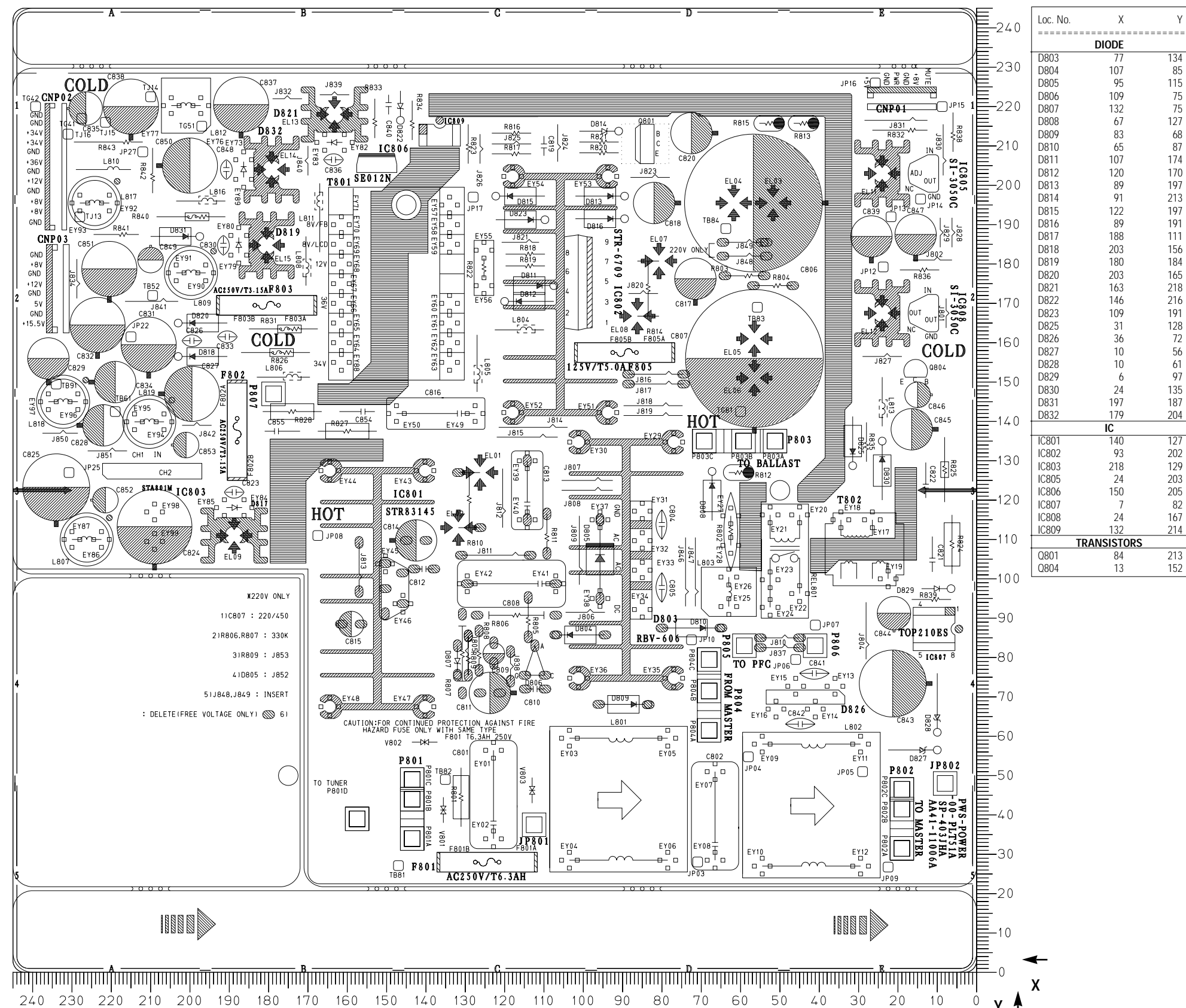
# 10. PCB Layout Diagram

## 10-1 PCB-MAIN

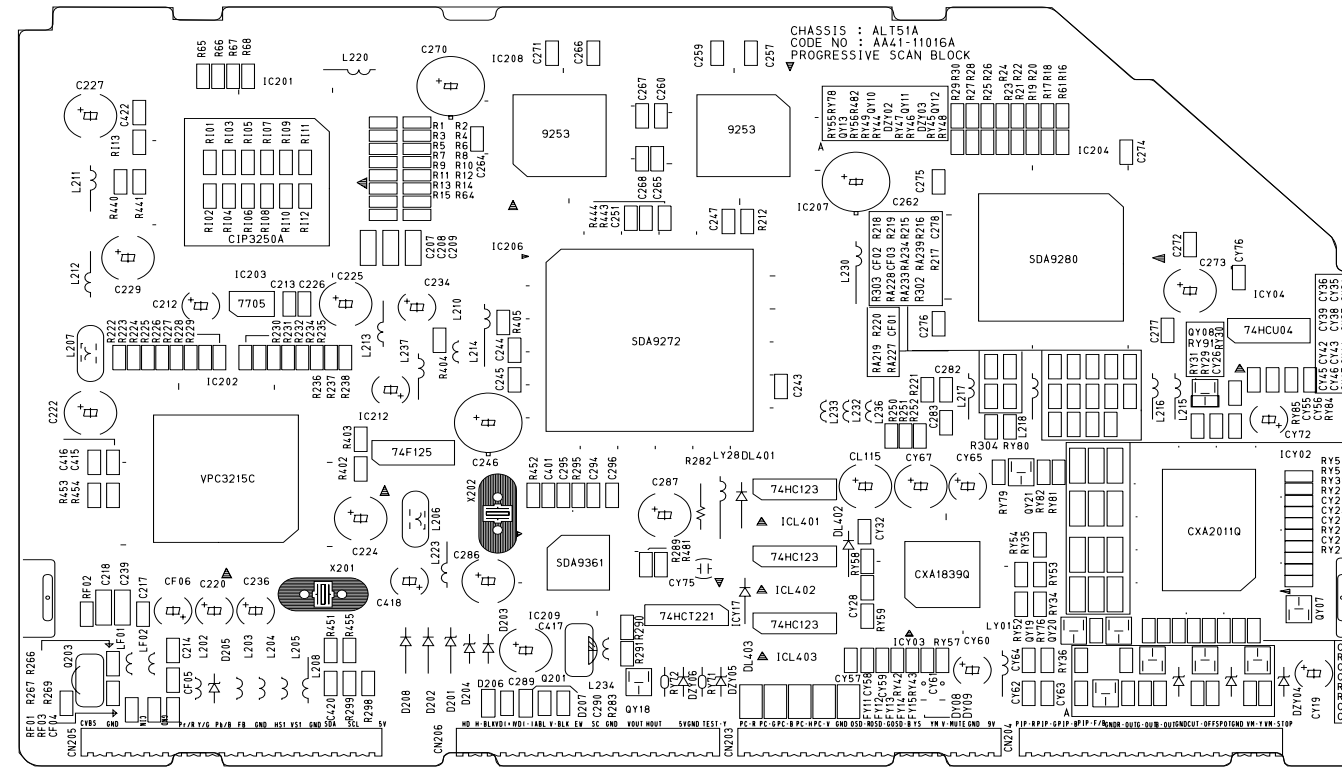


Loc. No.	X	Y
DIODE		
D101	105	70
D102	65	77
D103	57	64
D104	59	64
D601	191	140
D602	265	231
D603	162	156
D901	239	46
D902	239	48
DZ102	21	61
DZ203	55	131
DZ205	58	131
IC		
IC101	97	86
IC102	83	74
IC601	197	225
IC602	99	225
IC604	201	193
IC802	227	117
IC803	270	166
IC805	216	73
IC806	202	62
IC904	239	65
IC905	262	54
IC101	267	198
TRANSISTORS		
Q101	45	68
Q102	40	68
Q103	51	68
Q104	131	111
Q105	143	84
Q106	57	68
Q107	125	94
Q108	135	94
Q109	15	95
Q602	223	216
Q603	217	216
Q901	225	36
Q902	246	70
Q903	257	75
Q904	257	80
Q101	251	225

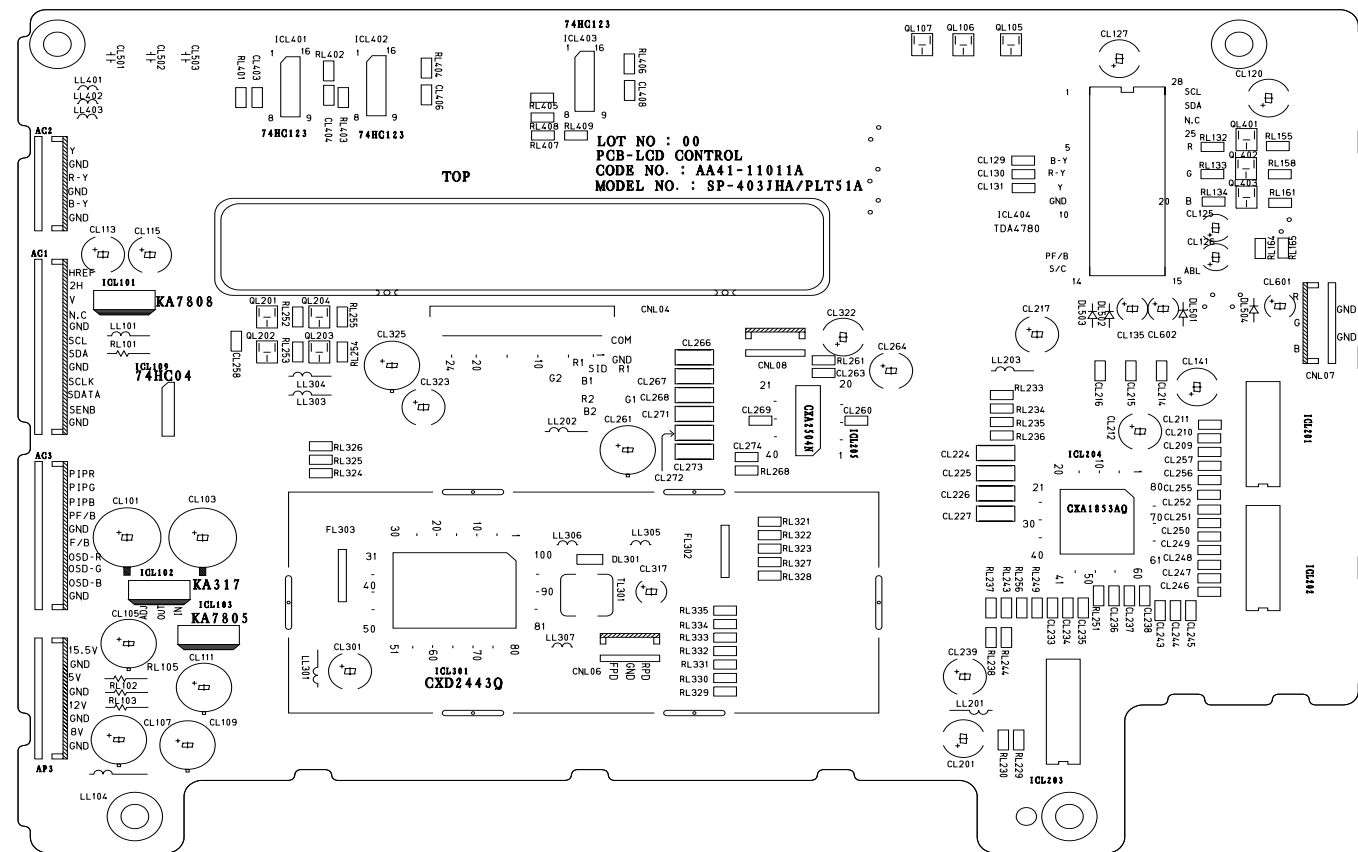
### 10-2 PCB-POWER



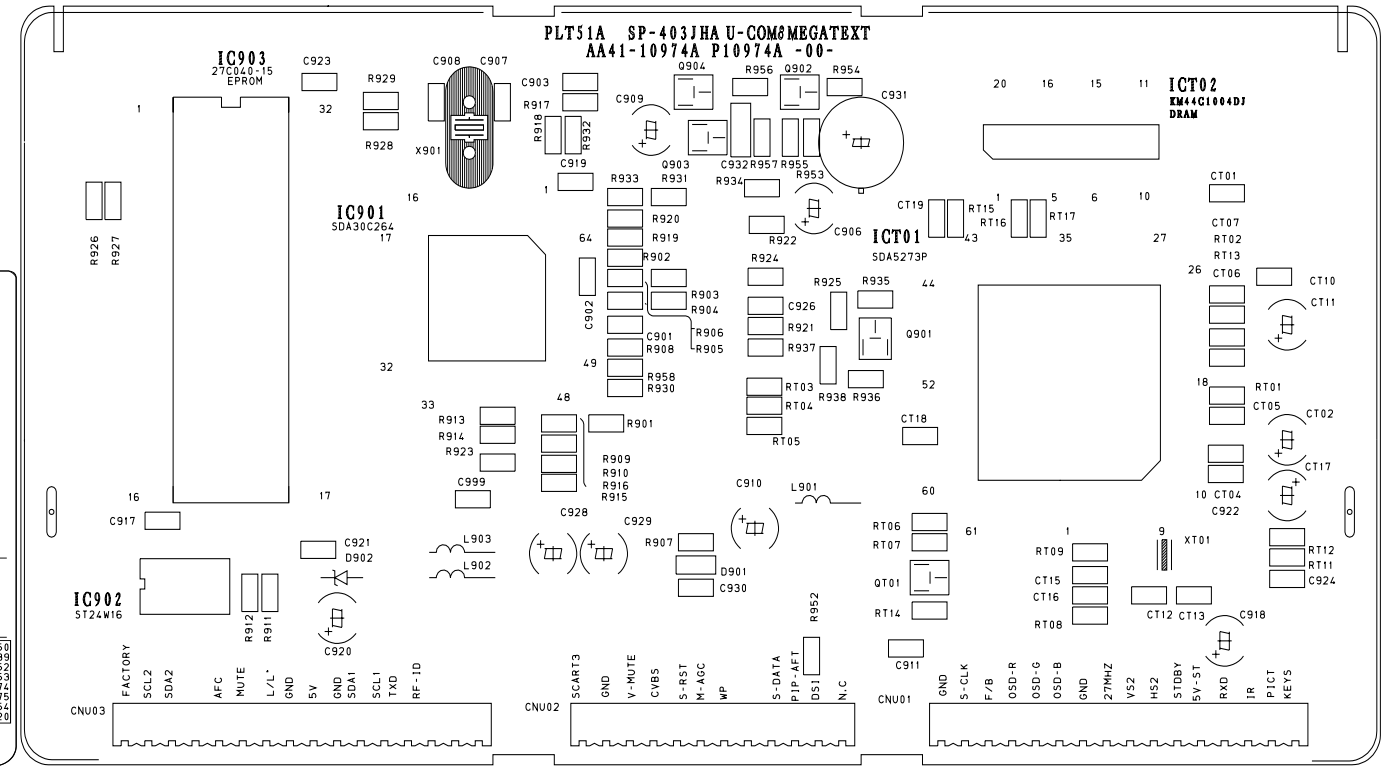
### 10-3 PCB-PROGRESSIVE



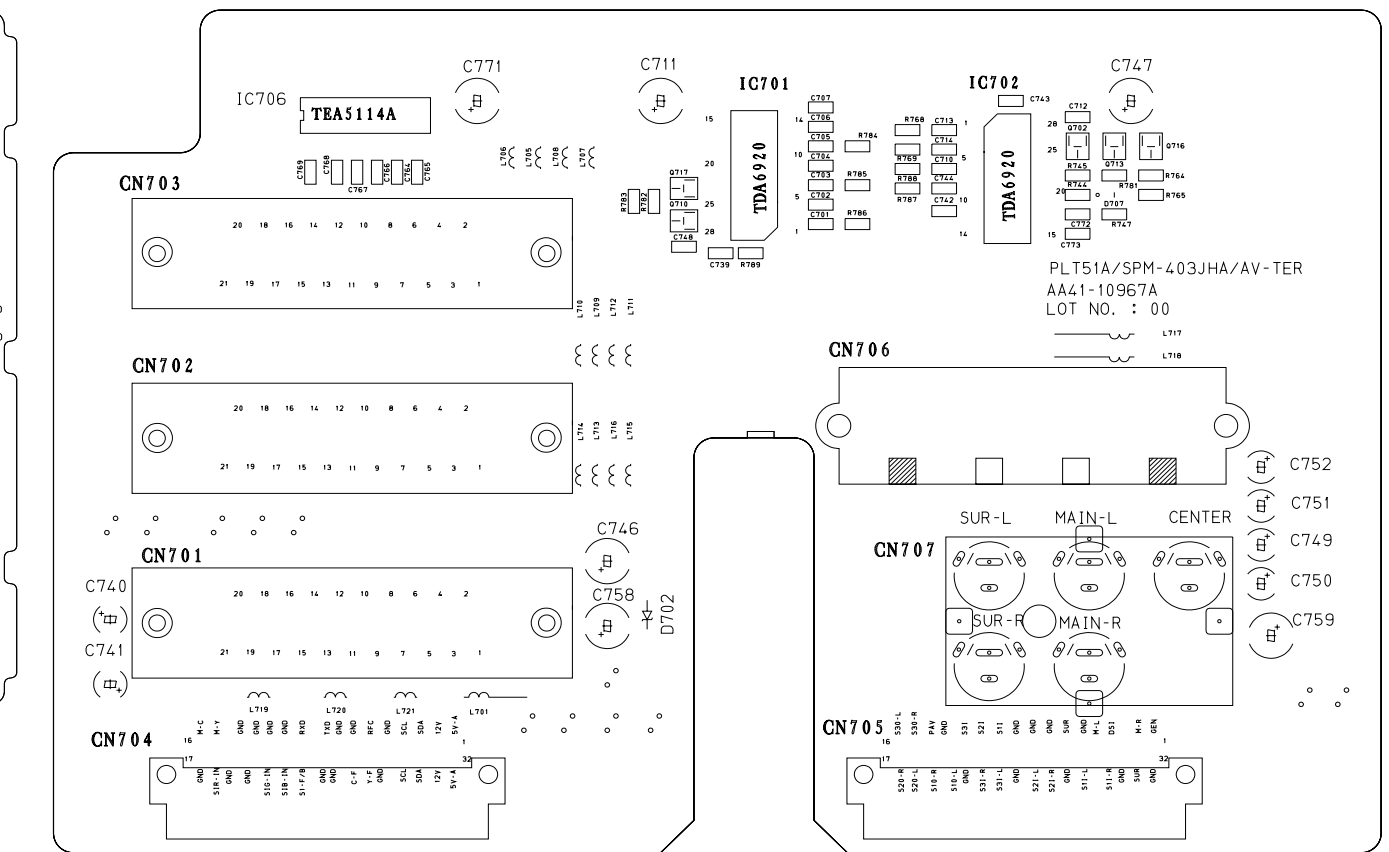
### 10-5 PCB-LCD CONTROL



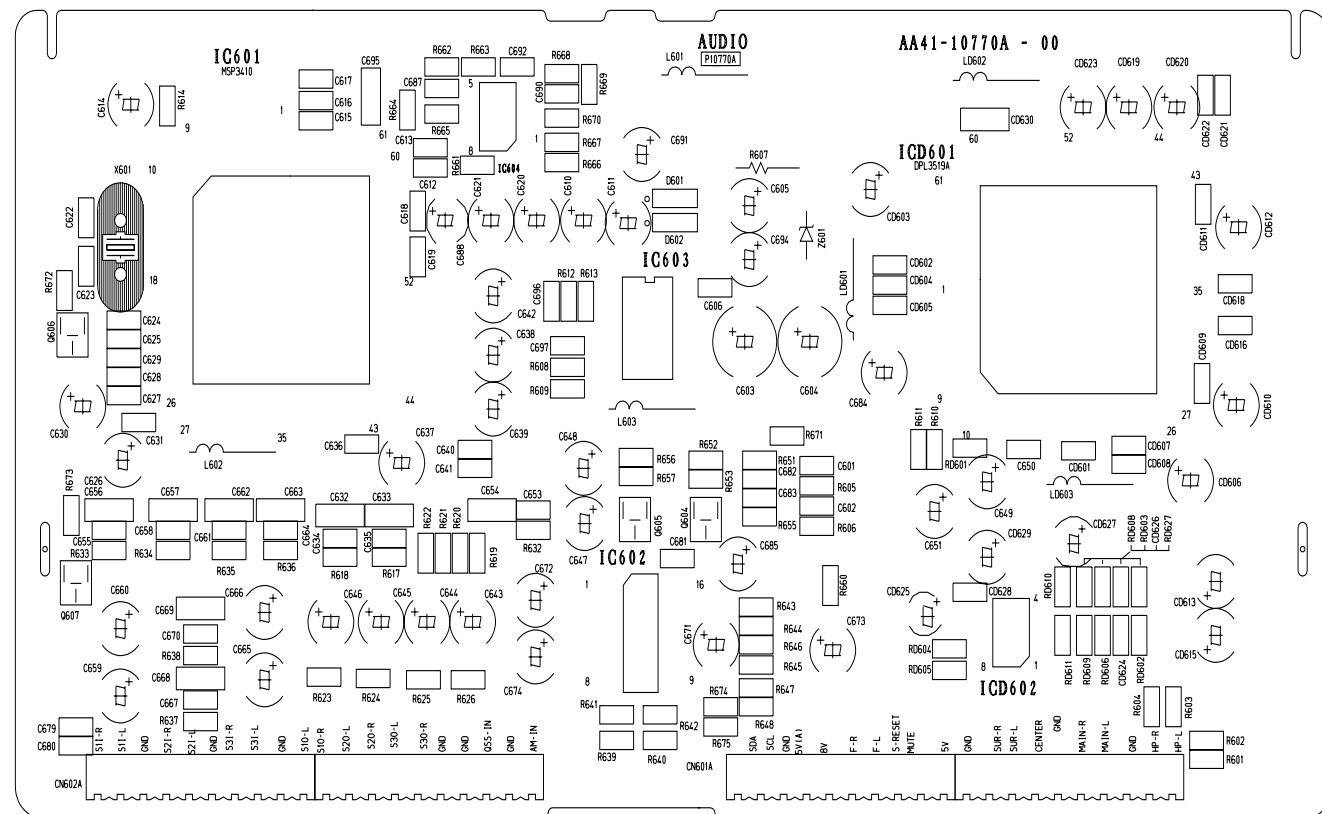
### 10-4 PCB u-COM



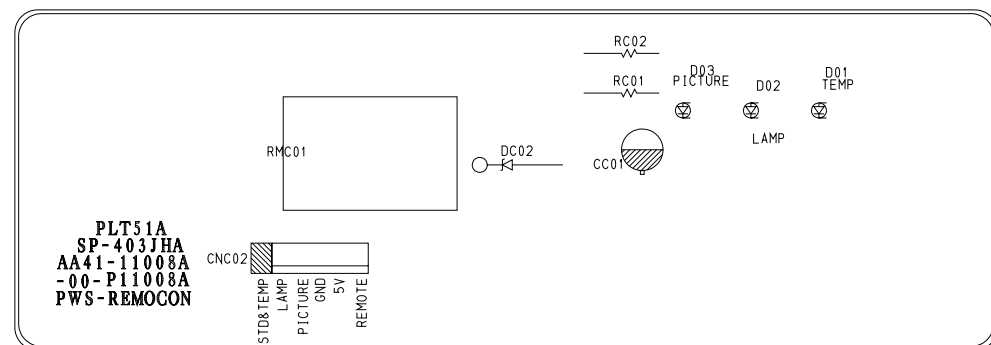
### 10-6 PCB-A/V TERMINAL



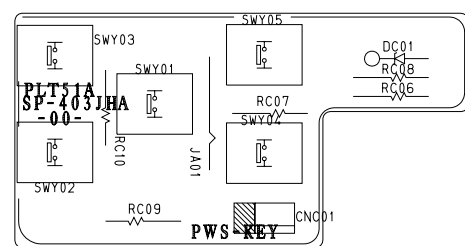
### 10-7 PCB-AUDIO



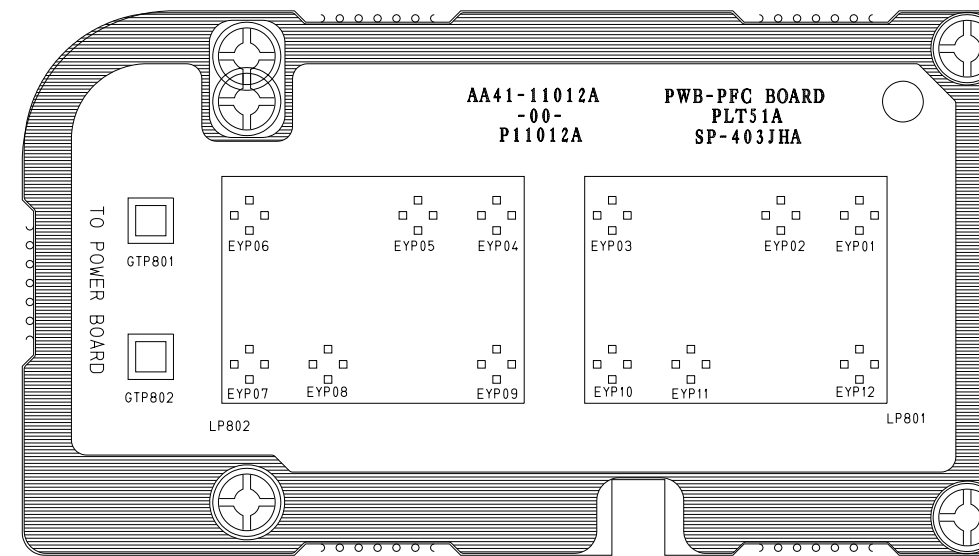
### 10-9 PCB-REMOCON



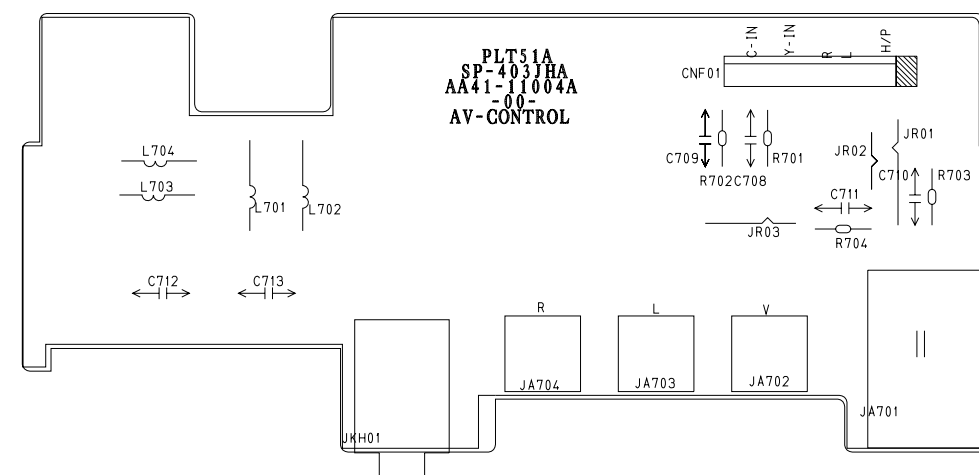
### 10-11 PCB-SIDE KEY



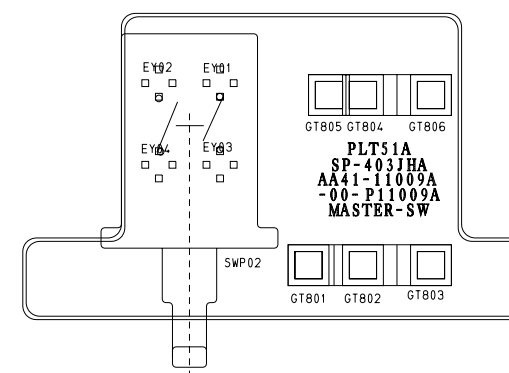
### 10-8 PCB-PFC



### 10-10 PCB-A/V CONTROL

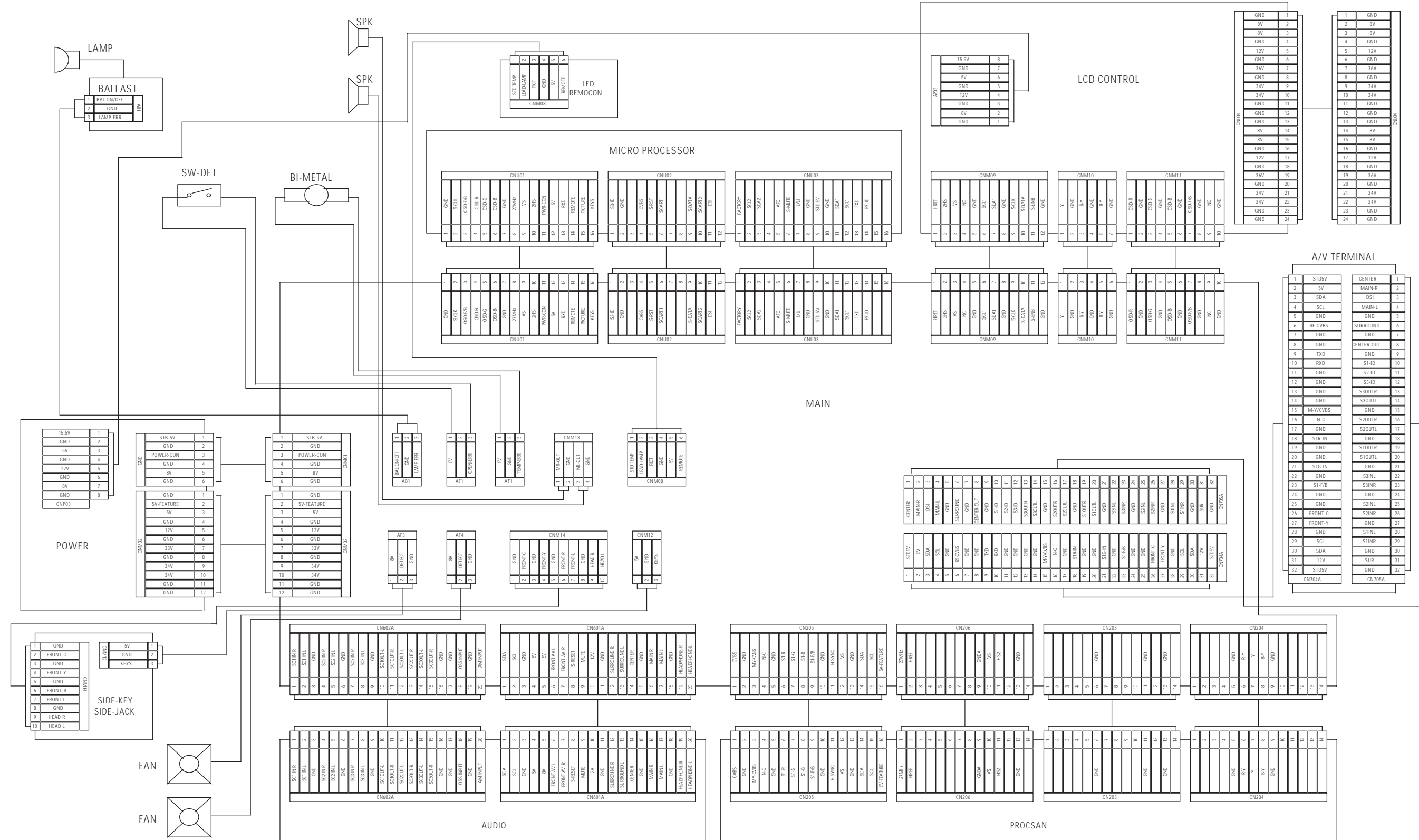


### 10-12 PCB-MASTER S/W



# 11. Wiring Diagram

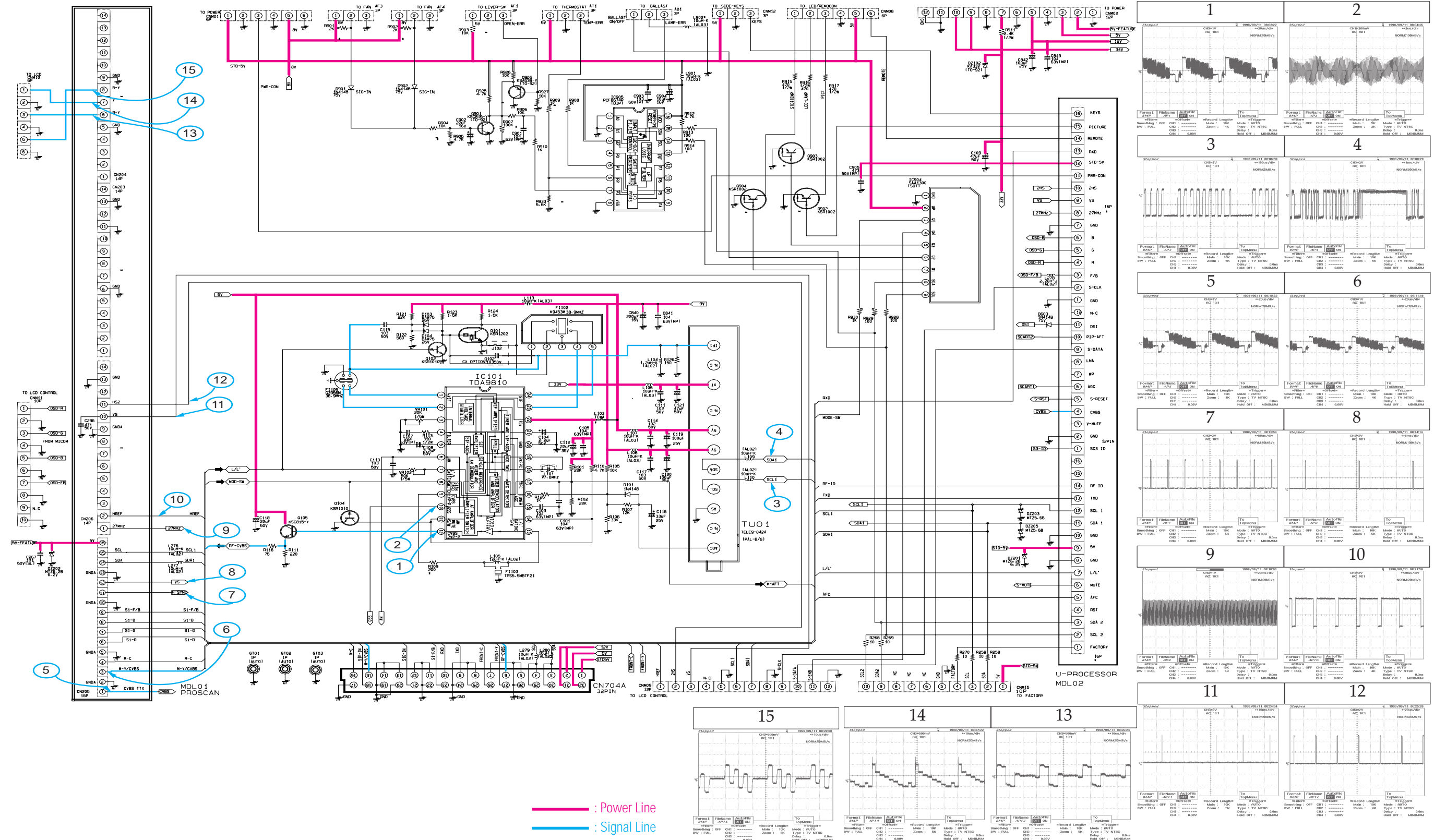
## 11-1 PLT51A (SP-403JHA) Wiring Diagram



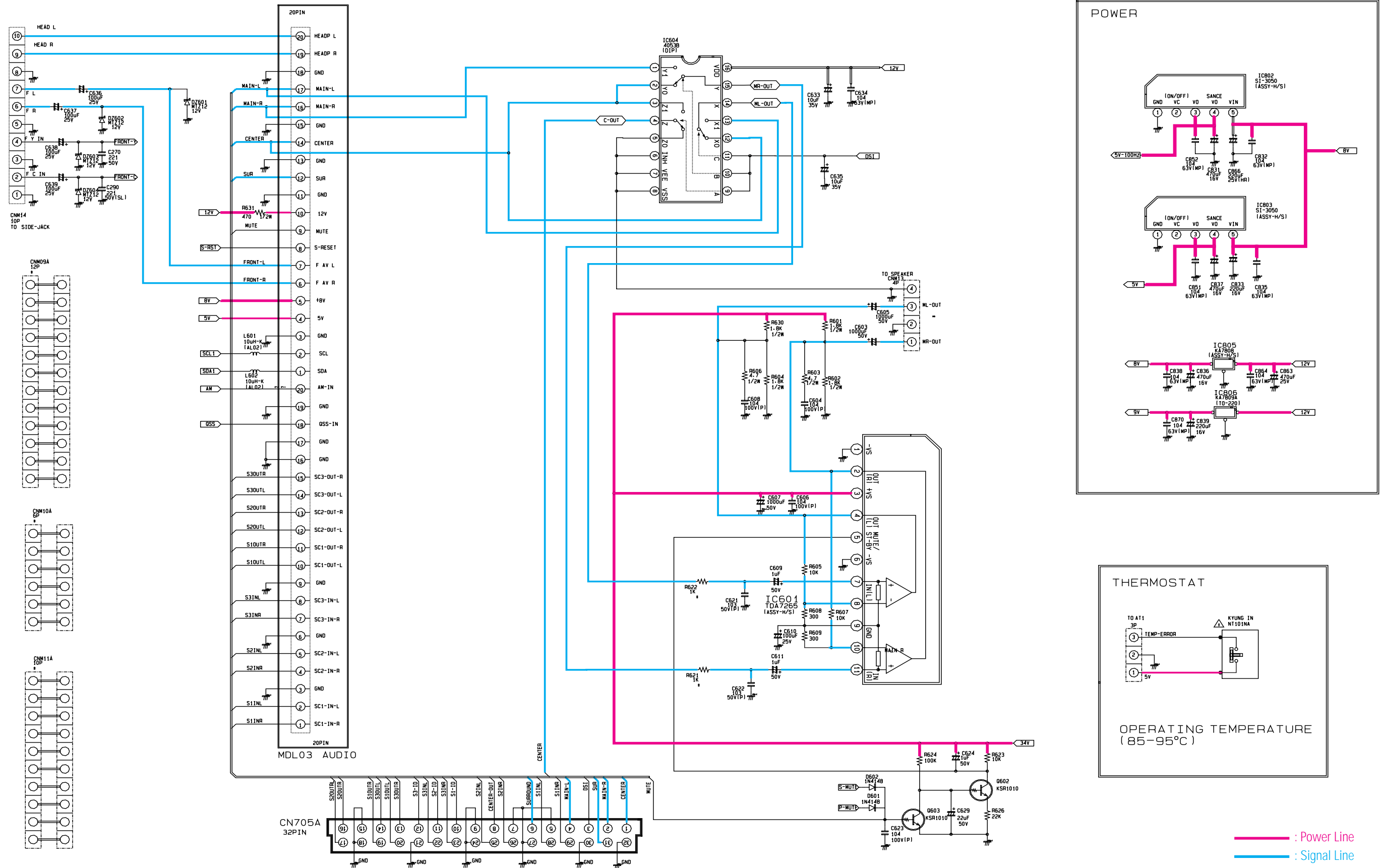


# 12. Schematic Diagrams

## 12-1 MAIN (1)

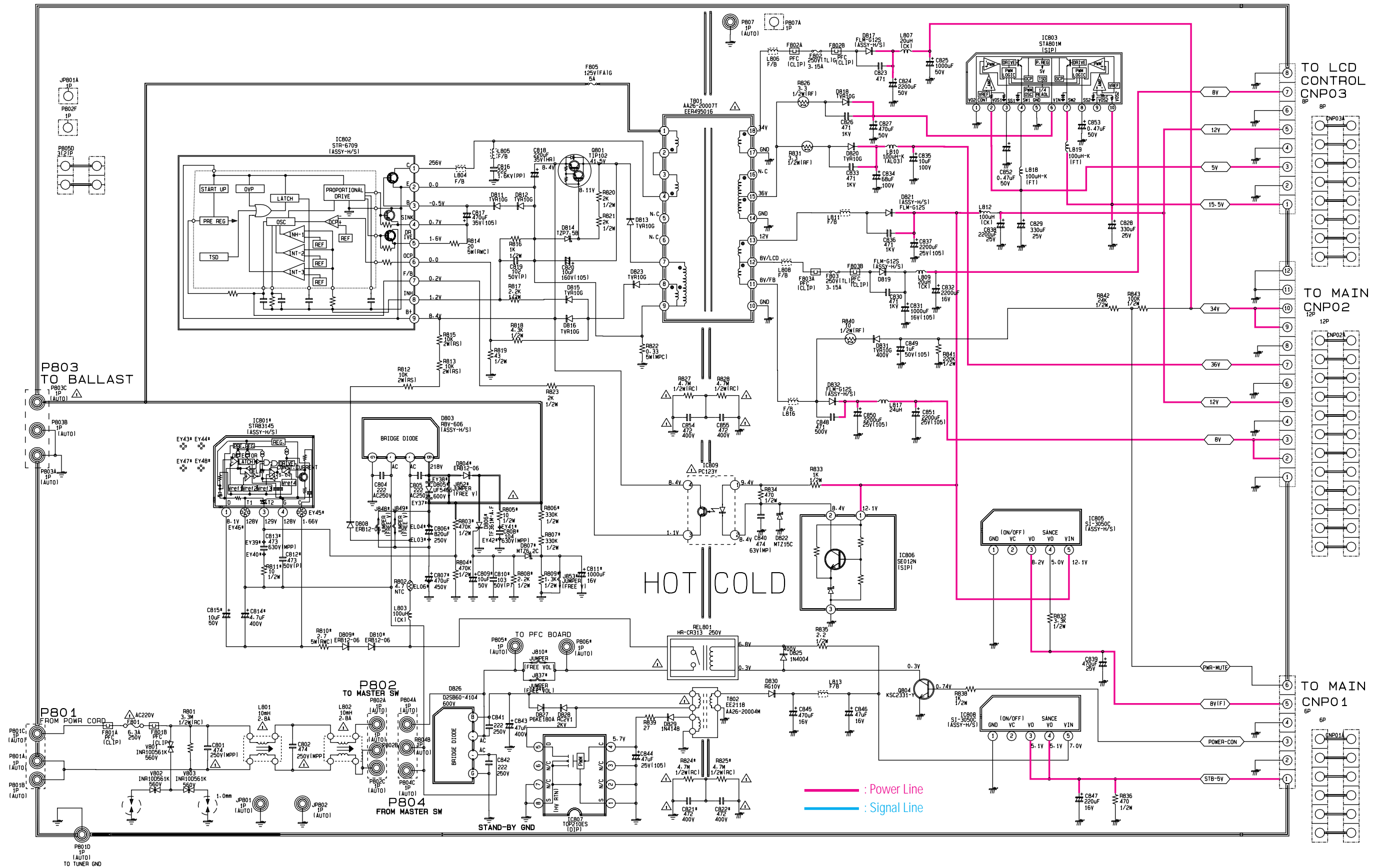


# 12-2 MAIN (2)

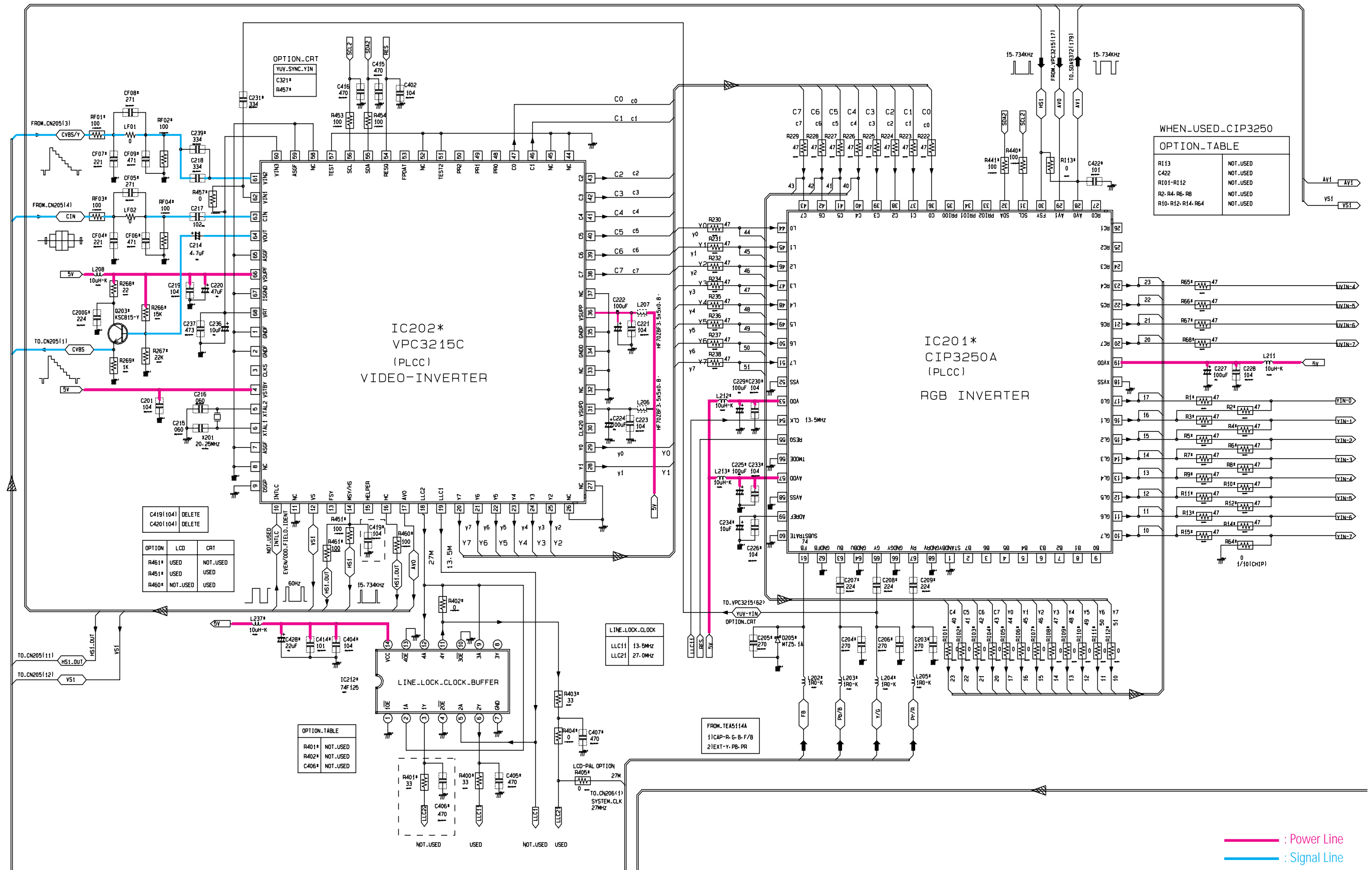




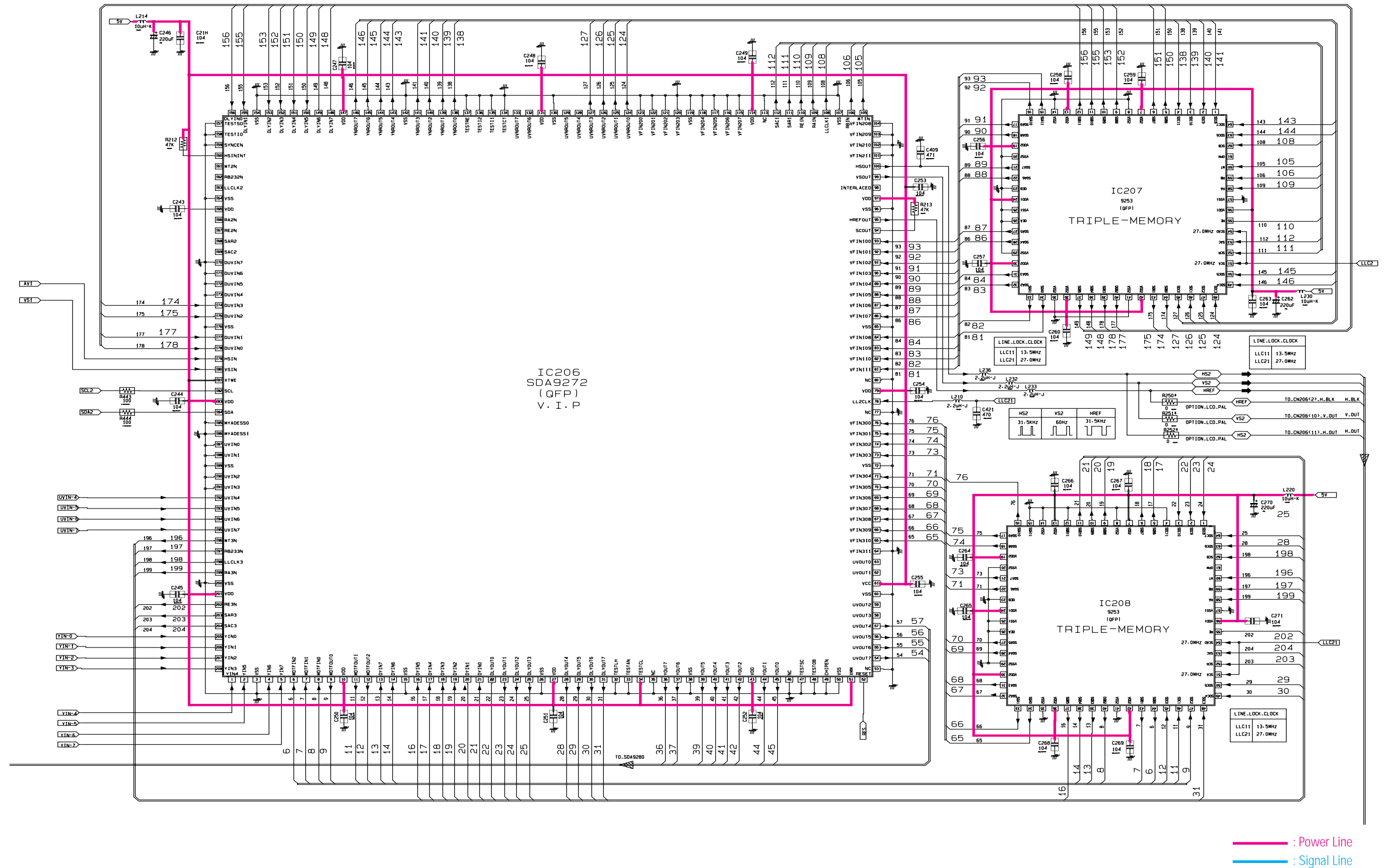
# 12-3 MAIN (POWER)



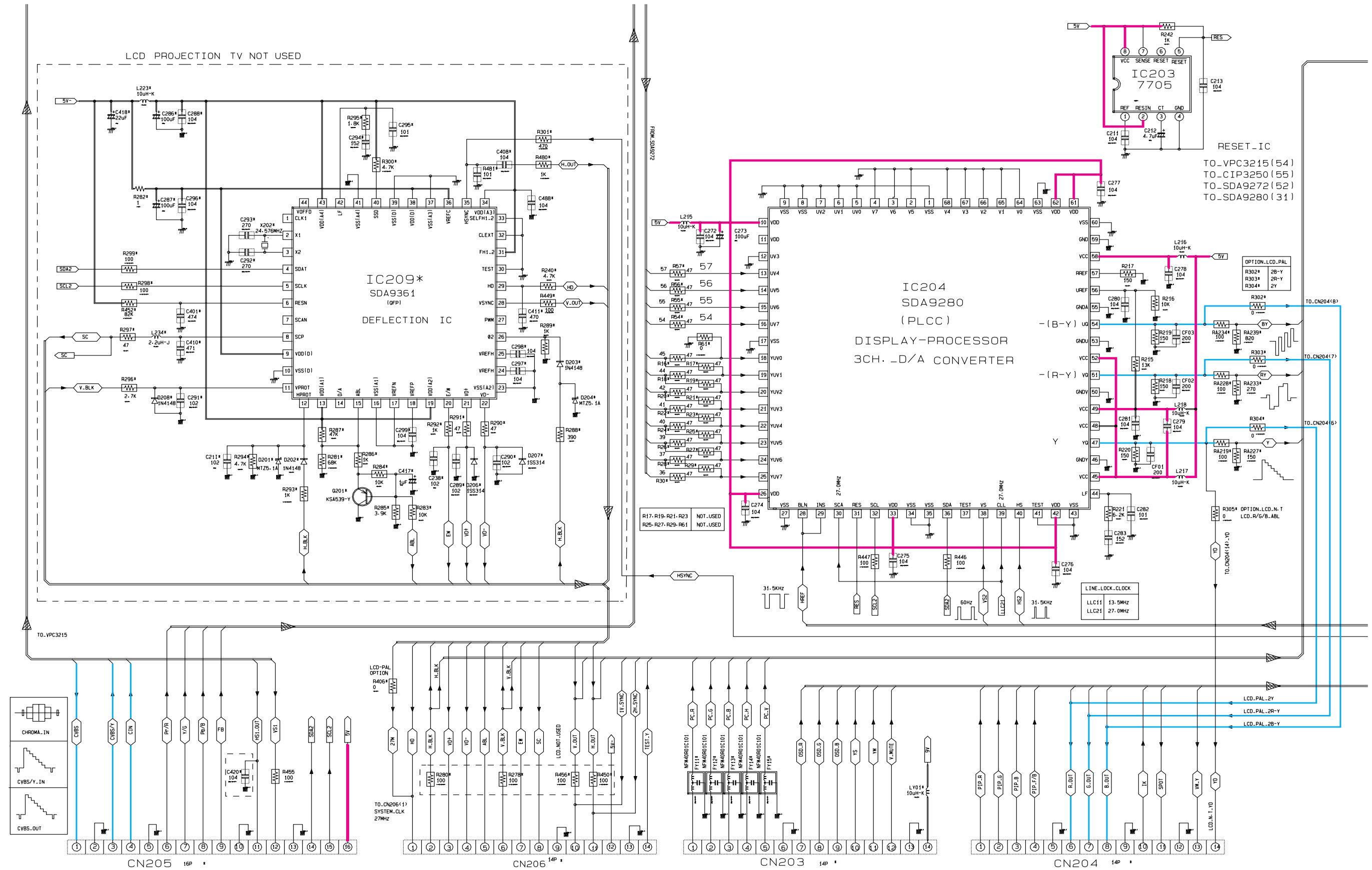
# 12-4 PROSCAN (1)



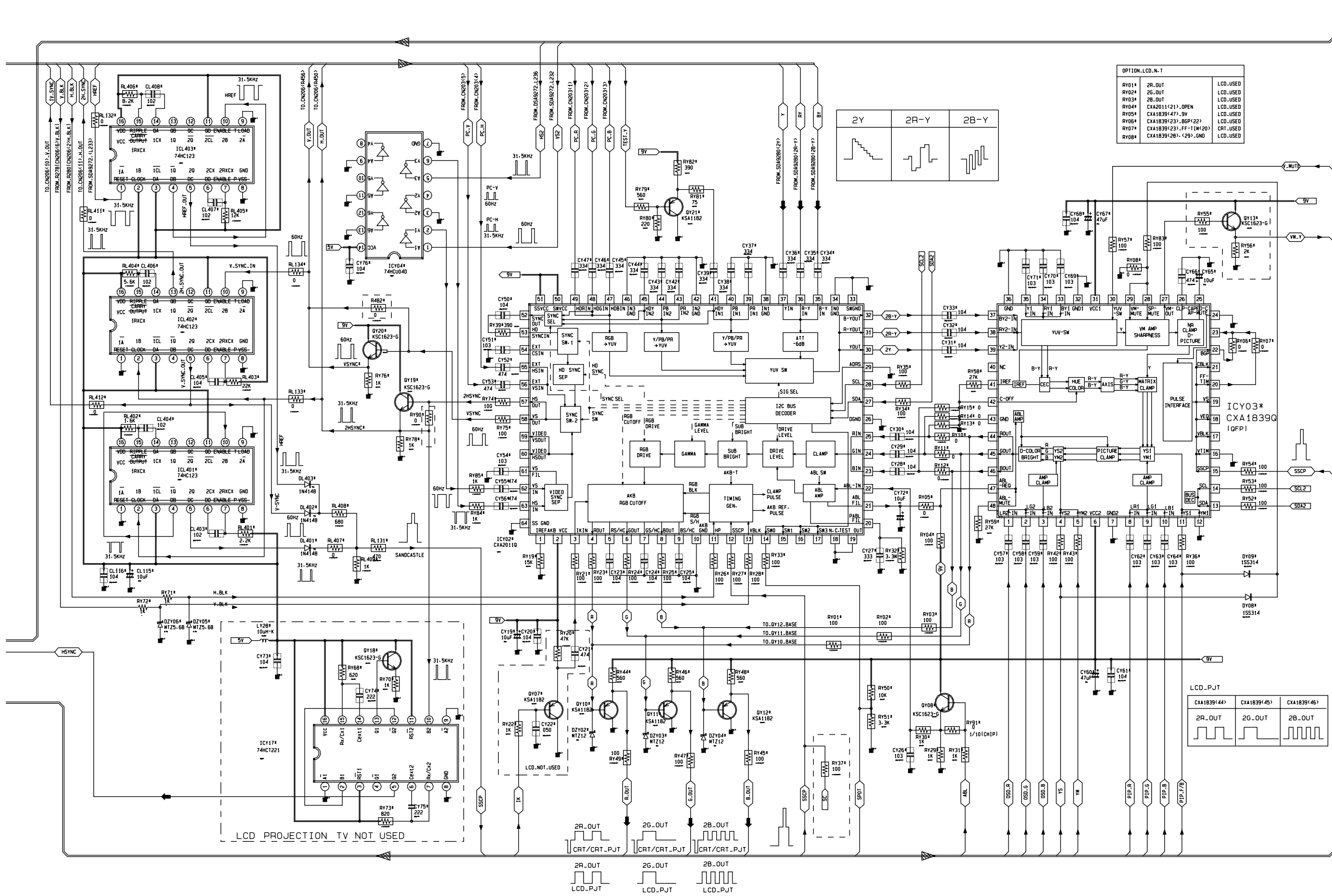
12-5 PROSCAN (2)



# 12-6 PROSCAN (3)

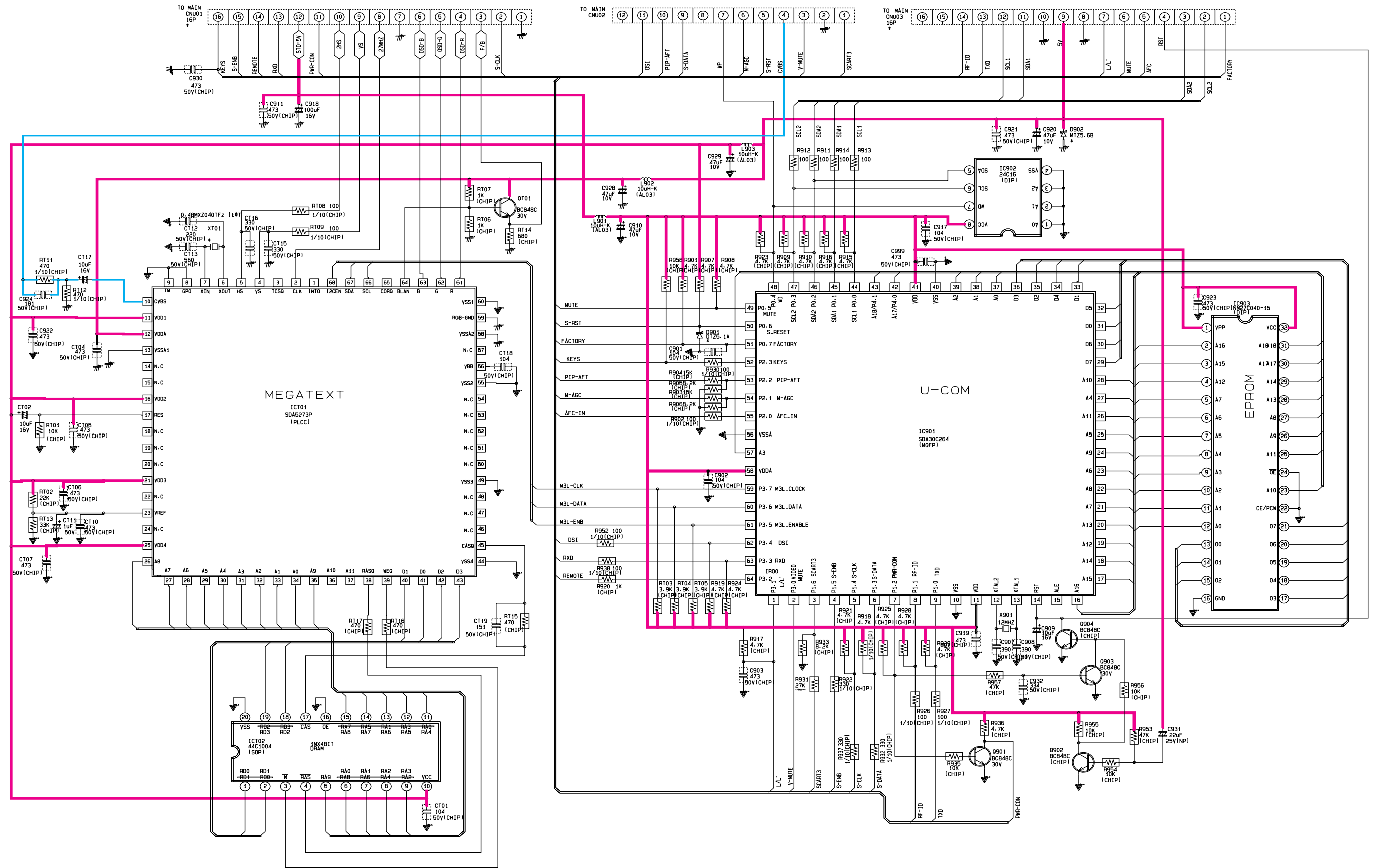


12-7 PROSCAN (4)

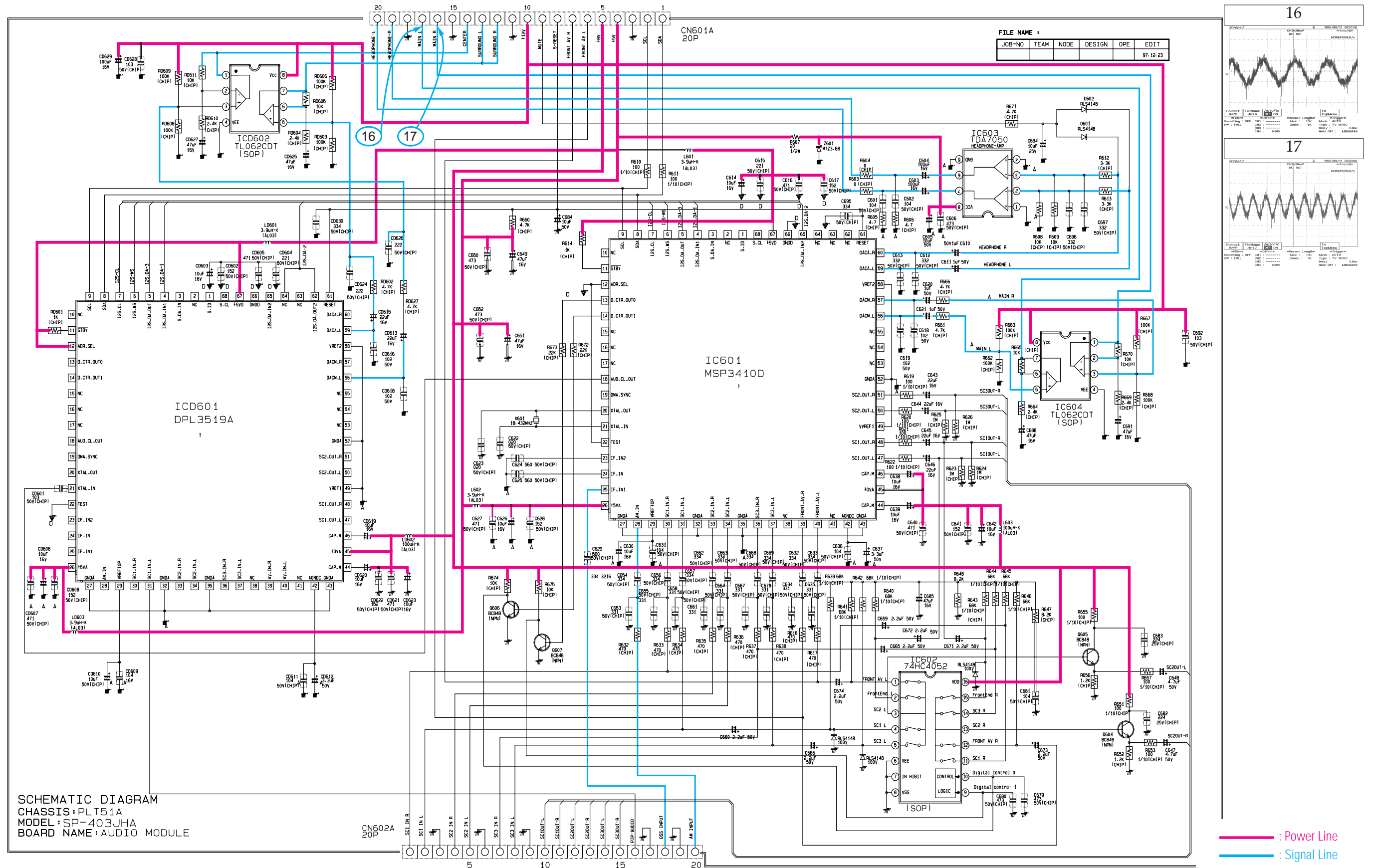




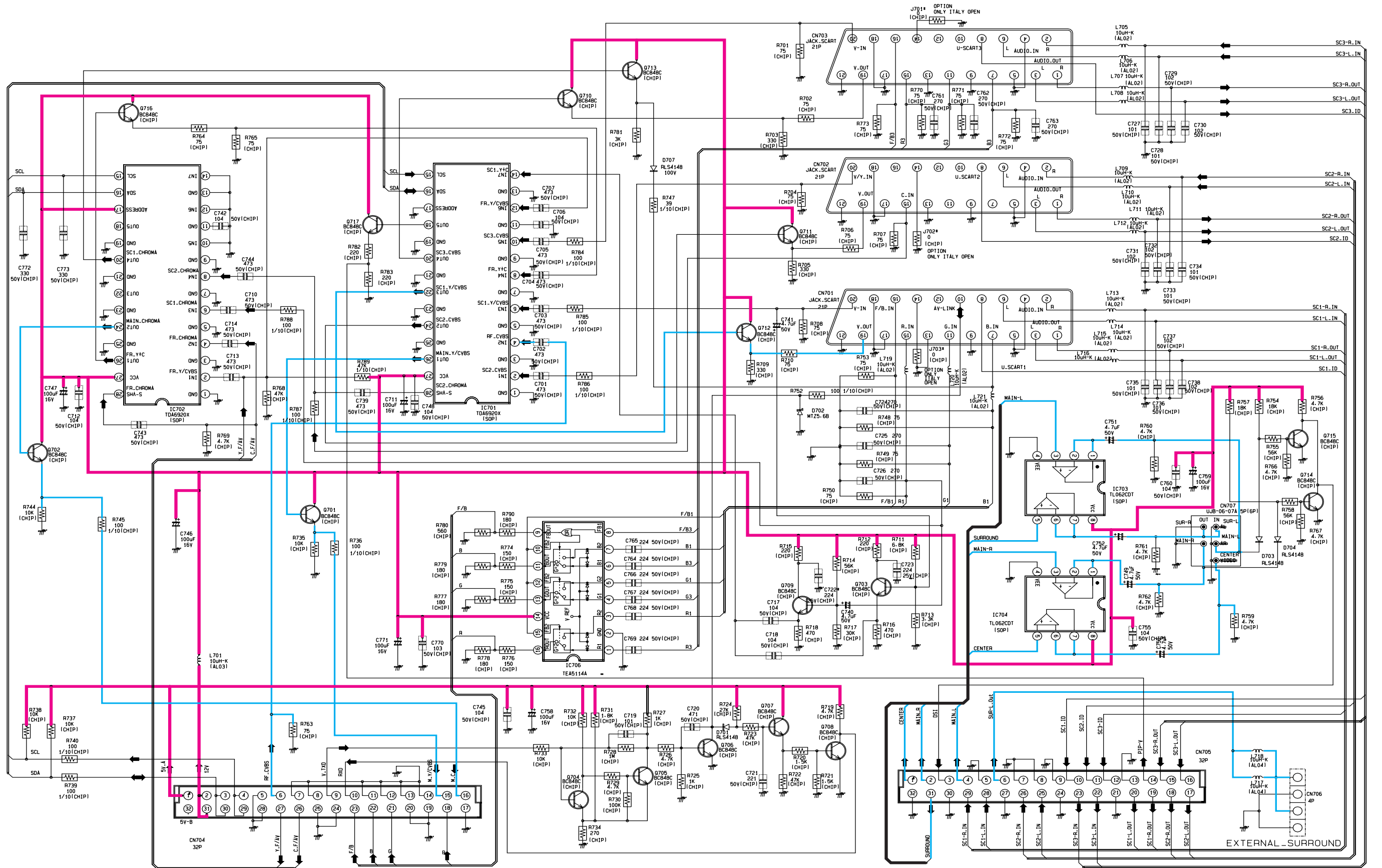
# 12-8 MAIN (u-COM)



# 12-9 MAIN (AUDIO)

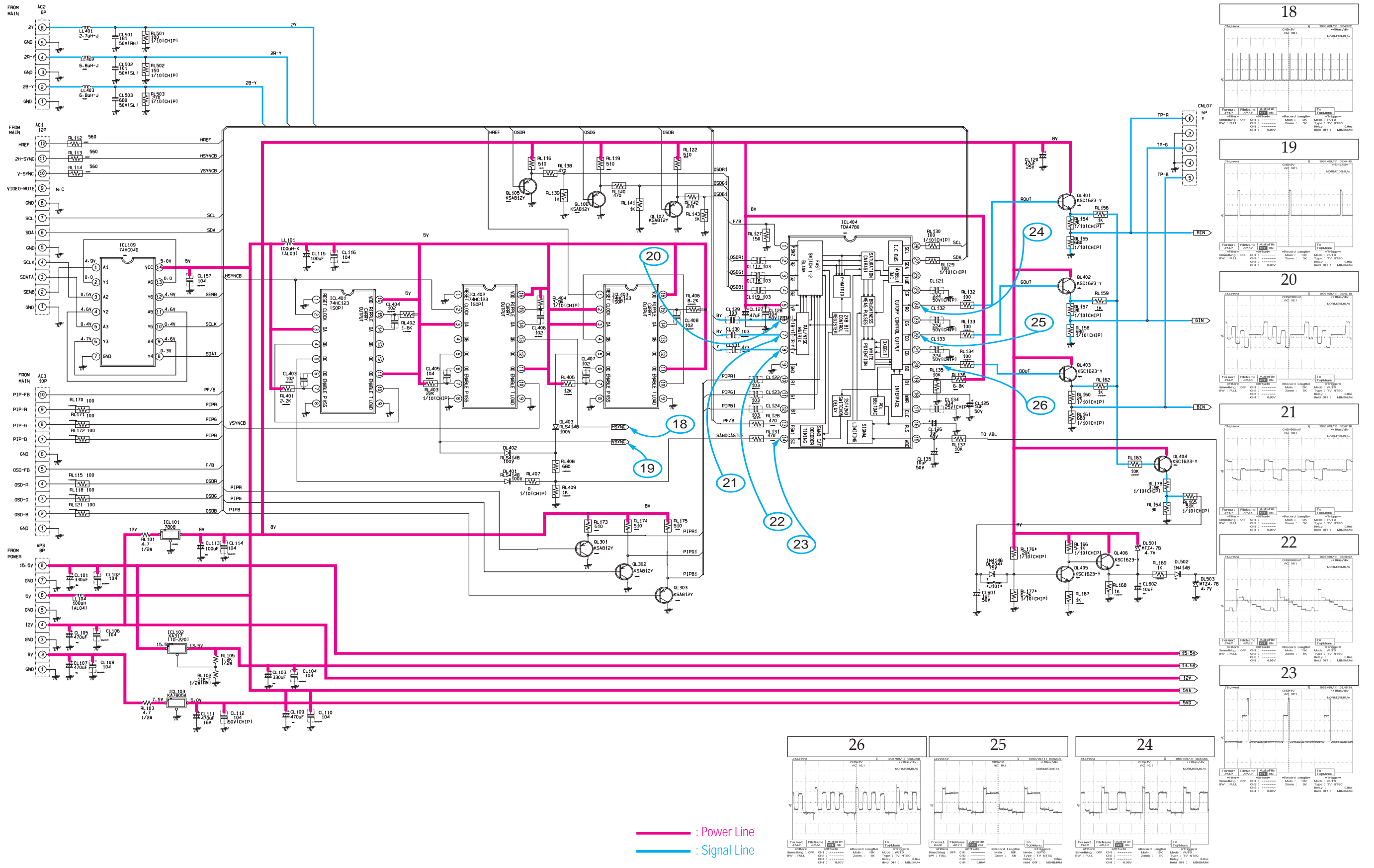


# 12-10 MAIN (A/V TERMINAL)

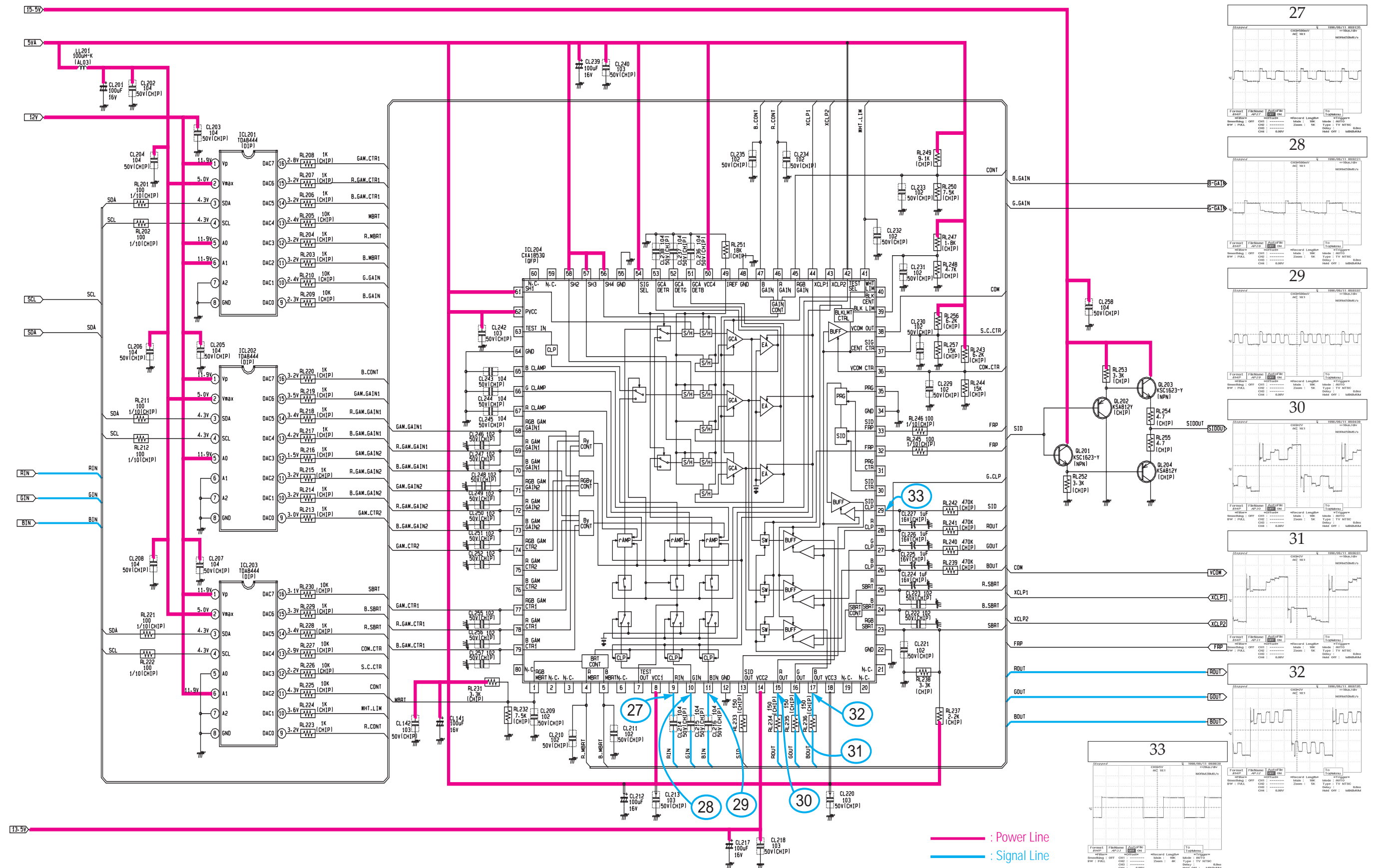




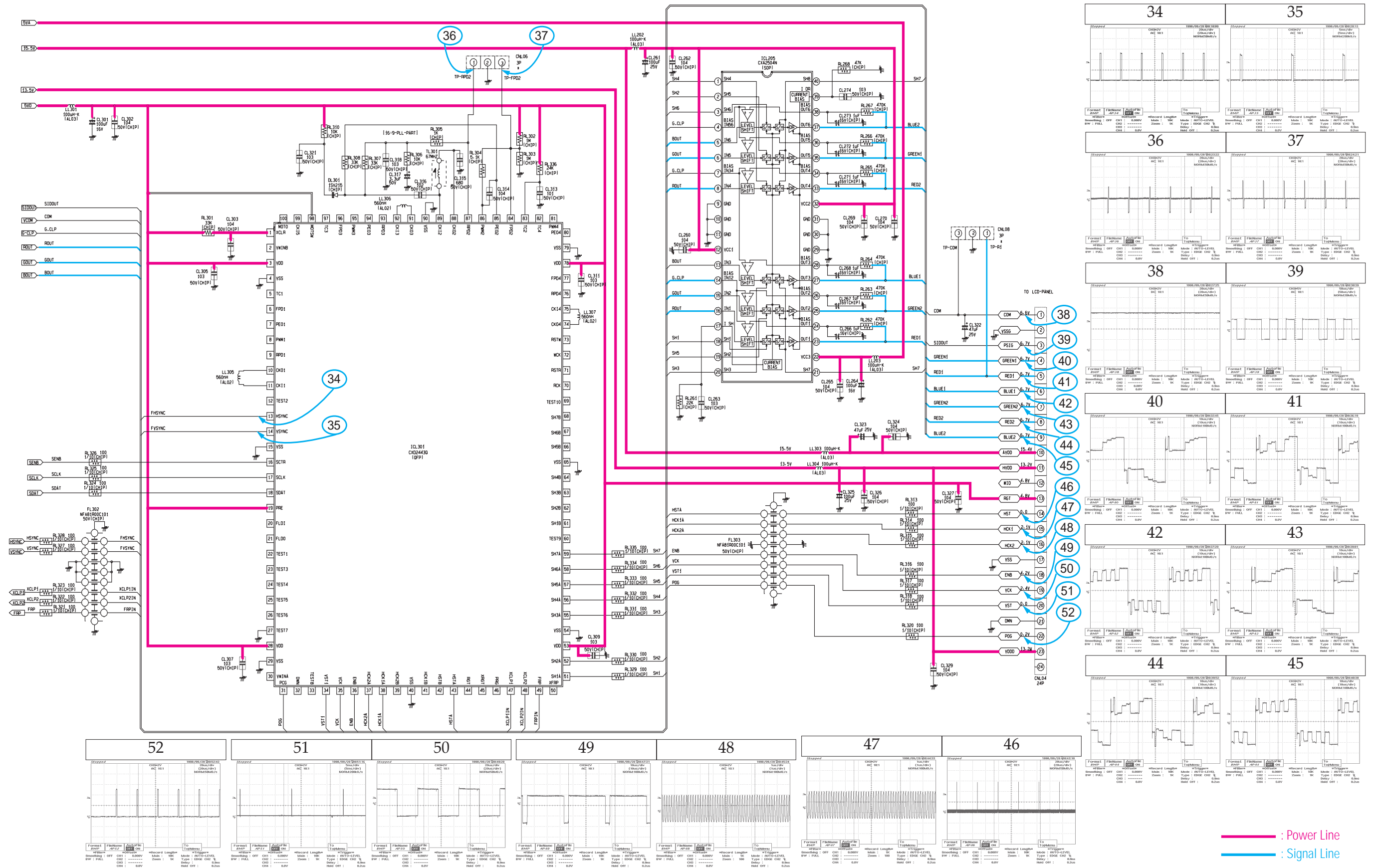
### 12-11 CONTROL LCD (1)



# 12-12 CONTROL LCD (2)



# 12-13 CONTROL LCD (3)



### 12-14 MAIN SUB (MASTER/REMOCON/PRE-AMP)

