SAMSUNG

TFT-LCD TV/MONITOR

Chassis	Model
VR22EO	LW22N23N

SERVICE Manual

TFT-LCD TV/MONITOR

CONTENTS

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1 Precautions

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

1-1 Safety Precautions

1-1-1 Warnings

1. For continued safety, do not attempt to modify the circuit board.
2. Disconnect the AC power and DC Power Jack before servicing.

1-1-2 Servicing the LCD Monitor

1. When servicing the LCD Monitor Disconnect the AC line cord from the AC outlet.
2. It is essential that service technicians have an accurate voltage meter available at all times. Check the calibration of this meter periodically.

1-1-3 Fire and Shock Hazard

Before returning the monitor to the user, perform the following safety checks:

1. Inspect each lead dress to make certain that the leads are not pinched or that hardware is not lodged between the chassis and other metal parts in the monitor.
2. Inspect all protective devices such as nonmetallic control knobs, insulating materials, cabinet backs, adjustment and compartment covers or shields, isolation resistor-capacitor networks, mechanical insulators, etc.
3. 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 (*ANSI C101.1, Leakage Current for Appliances*), and Underwriters Laboratories (*UL Publication UL1410, 59.7*).

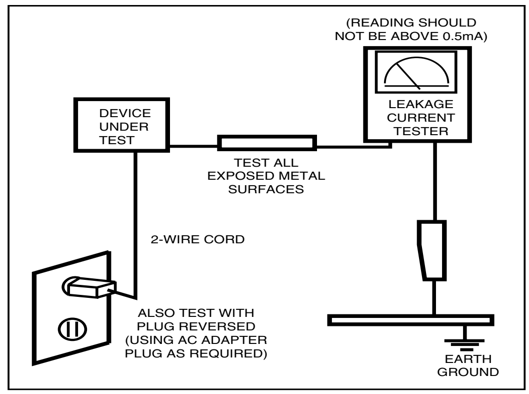


Figure 1-1. Leakage Current Test Circuit

4. With the unit completely reassembled, plug the AC line cord directly into a 120V AC 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: 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.

1-1-4 Product Safety Notices

Some electrical and mechanical parts have special safety-related characteristics which are often not evident from visual inspection. The protection they give may not be obtained by replacing them with components rated for higher voltage, wattage, etc. Parts that have special safety characteristics are identified by ⚠ on schematics and parts lists. A substitute replacement that does not have the same safety characteristics as the recommended replacement part might create shock, fire and/or other hazards. Product safety is under review continuously and new instructions are issued whenever appropriate.

1-2 Servicing Precautions

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

Caution: Before servicing units covered by this service manual, read and follow the Safety Precautions section of this manual.

Note: If unforeseen circumstances create conflict between the following servicing precautions and any of the safety precautions, always follow the safety precautions.

1-2-1 General Servicing Precautions

1. Always unplug the unit's AC power cord from the AC power source and disconnect the DC Power Jack before attempting to:
   (a) remove or reinstall any component or assembly, (b) disconnect PCB plugs or connectors, (c) connect a test component in parallel with an electrolytic capacitor.
2. 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.
3. After servicing, always check that the screws, components and wiring have been correctly reinstalled. Make sure that the area around the serviced part has not been damaged.
4. Check the insulation between the blades of the AC plug and accessible conductive parts (examples: metal panels, input terminals and earphone jacks).
5. Insulation Checking Procedure: Disconnect the power cord from the AC source and turn the power switch ON. Connect an insulation resistance meter (500 V) 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.
6. 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.

1-3 Electrostatically Sensitive Devices (ESD) Precautions

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

1. 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. To avoid a shock hazard, be sure to remove the wrist strap before applying power to the monitor.
2. After removing an ESD-equipped assembly, place it on a conductive surface such as aluminum foil to prevent accumulation of an electrostatic charge.
3. Do not use freon-propelled chemicals. These can generate electrical charges sufficient to damage ESDs.
4. Use only a grounded-tip soldering iron to solder or desolder ESDs.
5. Use only an anti-static solder removal device. Some solder removal devices not classified as "anti-static" can generate electrical charges sufficient to damage ESDs.
6. 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.
7. 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.

   Caution: Be sure no power is applied to the chassis or circuit and observe all other safety precautions.
8. Minimize body motions when handling unpackaged replacement ESDs. Motions such as brushing clothes together, or lifting your foot from a carpeted floor can generate enough static electricity to damage an ESD.

2 Product Specifications

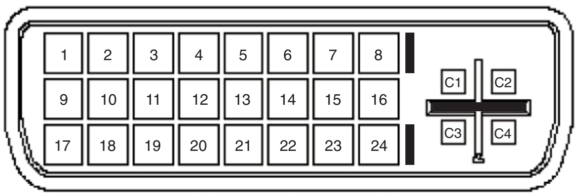
2-1 Specifications

Item	Description	
LCD Panel	TFT-LCD Panel, RGB vertical stripe, normaly Black, 22-Inch viewable, 0.381 mm pixel pitch	
Scanning Frequency	Horizontal : 30 kHz ~ 68 kHz (Automatic) Vertical : 56 Hz ~ 85 Hz (Automatic)	
Display Colors	16.7 Million colors	
Maximum Resolution	Horizontal : 1280 Pixels Vertical : 720 Pixel	
Input Video Signal	Positive at 75 Ω	
Input Sync Signal	Type : Seperate H/V Level : TTL level	
Maximum Pixel Clock rate	70 MHz	
Active Display Horizontal/Vertical	487.68 mm/ 274.32 mm	
AC power voltage & Frequency	AC 100 ~ 264 Volts, 50~60 Hz ± 3 Hz	
Power Consumption	80 W	
Dimensions (W x H x D) Set Package	23.6 x 17.3 x 8.2 Inches (599 X 439 X 209.4 mm) / 23.6 x 16.5 x 4.4 Inches (599 X 418 X 112.7 mm) State of stand disassembled 28.1 x 23.0 x 8.1 Inches (713.0 X 583.0 X 205.0 mm)	
Weight Set / Package	8.98 kg (19.8 lbs) After installation of Stand / 11.0 kg (24.3 lbs)	
Environmental Considerations	Operating Temperature : 50 °F ~ 104 °F (10 °C ~ 40 °C) Operating Humidity : 10 % ~ 80 % Storage Temperature : -4 °F ~ 113 °F (-20 °C ~ 45 °C) Storage Humidity : 5 % ~ 95 %	
TV System	Tunning	Frequency Synthesize
	System	PAL/SECAM-B/G/I/D/K/L/L : NTSC (AV)
	Sound	STEREO
Antena Input	75Ω	
Sound Characteristic	– MAX Internal speaker Out : Right => 5W Left => 5W	
	– BASS Control Range : -8 dB ~ + 8dB – TREBLE Control Range : -8 dB ~ +8 dB – Headphone Out : 5 mW max (400 m Vrms) – Output Frequency : 20 Hz ~15.2 Hz	

2-2 Pin Assignments

2-2-1 DVI-I (Analog & Digital)

Ref) DVI-D : Digital only
D-SUB : Analog only



DVI-I Receptacle Connector Front View

Pin No.	Signal Assignment	Pin No.	Signal Assignment	Pin No.	Signal Assignment
1	RX2-	11	GND	21	NC
2	RX2+	12	NC	22	GND
3	GND	13	NC	23	RXC+
4	NC	14	DDC Input Power(+5V)	24	RXC-
5	NC	15	IDENT_PC	C1	Analog Red
6	DDC Clock (SCL)	16	5V	C2	Analog Green
7	DDC Data (SDA)	17	RX0-	C3	Analog Blue
8	Analog Vertical Sync.	18	RX0+	C4	Analog Horizontal Sync.
9	RX1-	19	GND		
10	RX1+	20	NC		

2-2-2 SCART

Pin	Separate	Pin	Separate	Pin	Separate
1	SC1 RED OUT	15	SC1 RED	29	SC2 SWITCHING
2	SC1 RED IN	16	GND	30	GND
3	SC1 LEFT OUT	17	SC1 FAST BLANKING	31	N/C
4	GND	18	GND	32	N/C
5	GND	19	SC1 CVBS OUT	33	N/C
6	SC1 LEFT IN	20	SC1 CVBS IN	34	GND
7	SC1 BLUE	21	GND	35	GND
8	SC1 SWITCHING	22	SC2 RED OUT	36	N/C
9	GND	23	SC2 RED IN	37	N/C
10	N/C	24	SC2 LEFT OUT	38	GND
11	SC1 GREEN	25	GND	39	GND
12	N/C	26	GND	40	SC2 CVBS OUT
13	GND	27	SC2 LEFT IN	41	SC2 CVBS IN
14	GND	28	N/C	42	GND

2-2-3 S-Video

Pin	Separate
1	GND
2	Y
3	C
4	GND
5	GND

2-2-4 A/V

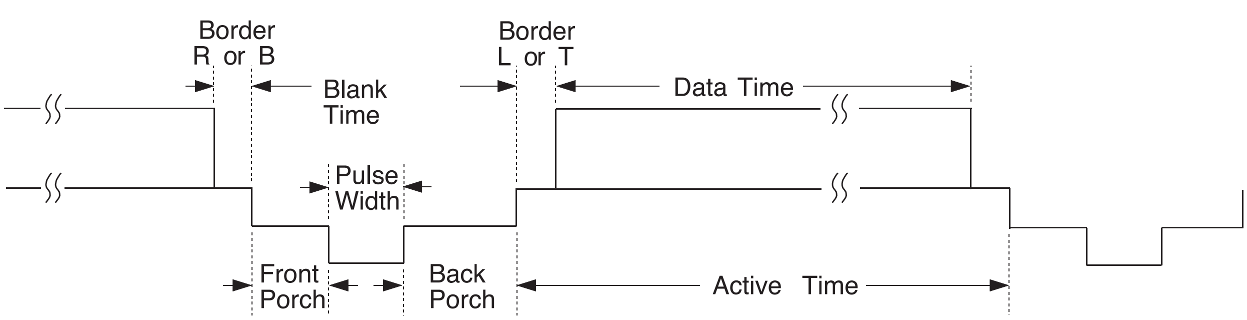
RCA Yellow	CVBS
RCA White	Audio L
	GND
RCA Red	Audio R
	GND

2-3 Timing Chart

This section of the service manual describes the timing that the computer industry recognizes as standard for computer-generated video signals.

2-3-1 LCD Panel Mode1 mode

Timing No.	
Originator	VESA DTV
Mode Name	1280/60Hz
Resolution (HxV)	1280x720
HORIZONTAL	
Frequency	45 kHz
Total time	22.200 µs
Active time	17.239 µs
Blank time	4.984 µs
Border(L / R)	0.000 µs
Data time	17.239 µs
Front porch	0.943 µs
Sync. width	0.539 µs
Back porch	3.502 µs
Sync. polarity	Negative
VERTICAL	
Frequency	60 Hz
Total time	16.000 ms
Active time	16.000 ms
Blank time	1.222 ms
Border(T / B)	0.000 ms
Data time	16.000 ms
Front porch	0.667 ms
Sync. width	0.111 ms
Back porch	0.444 ms
Sync. polarity	Positive
Dot Clock	74.25 MHz
Sync. Type	Separate
Scan Type*	N/I



2-3-1 Supported Modes (1)

Timing No. Originator Mode Name Resolution (HxV)	2 IBM VGA2 720x400	3 IBM VGA3 640x480	11 VESA 640/72Hz 640x480	17 VESA 640/75Hz 640x480	32 MAC 640/67Hz 640x480	42 VESA 640/85Hz 640x480
HORIZONTAL						
Frequency	31.469kHz	31.469kHz	37.861kHz	37.500kHz	35.000kHz	43.269kHz
Total time	31.777µs	31.778µs	26.413µs	26.667µs	28.571µs	23.111µs
Active time	26.058µs	26.058µs	20.825µs	20.317µs	21.164µs	17.778µs
Blank time	5.720µs	5.720µs	5.588µs	6.350µs	7.407µs	5.333µs
Border(L / R)	0.318µs	0.318µs	0.254µs	0.000µs	0.000µs	0.000µs
Data time	25.422µs	25.422µs	20.317µs	20.317µs	21.164µs	17.778µs
Front porch	0.318µs	0.318µs	0.508µs	0.508µs	2.116µs	1.556µs
Sync. width	3.813µs	3.813µs	1.270µs	2.032µs	2.116µs	1.556µs
Back porch	1.589µs	1.589µs	3.810µs	3.810µs	3.175µs	2.222µs
Sync. polarity	Negative	Negative	Negative	Negative	Negative	Negative
VERTICAL						
Frequency	70.087Hz	59.940Hz	72.809Hz	75.000Hz	66.667Hz	85.008Hz
Total time	14.268ms	16.683ms	13.735ms	13.333ms	15.000ms	11.764ms
Active time	13.155ms	15.761ms	13.100ms	12.800ms	13.714ms	11.093ms
Blank time	1.113ms	0.922ms	0.635ms	0.533ms	1.286ms	0.671ms
Border(T/B)	0.222ms	0.254ms	0.211ms	0.000ms	0.000ms	0.000ms
Data time	12.711ms	15.253ms	12.678ms	12.800ms	13.714ms	11.093ms
Front porch	0.191ms	0.064ms	0.026ms	0.027ms	0.086ms	0.023ms
Sync. width	0.064ms	0.064ms	0.079ms	0.080ms	0.086ms	0.069ms
Back porch	0.858ms	0.794ms	0.528ms	0.427ms	1.114ms	0.578ms
Sync polarity	Positive	Negative	Negative	Negative	Negative	Negative
Dot Clock	28.322MHz	25.175MHz	31.500MHz	31.500MHz	30.240MHz	36.000MHz
Sync. Type Scan Type*	Separate N/I	Separate N/I	Separate N/I	Separate N/I	Separate N/I	Separate N/I

2-3-1 Supported Modes (2)

Timing No.	12	13	14	18	43	33
Originator	VESA	VESA	VESA	VESA	VESA	MAC
Mode Name	800/56Hz	800/60Hz	800/72Hz	800/75Hz	800/85Hz	832/75Hz
Resolution (HxV)	800x600	800x600	800x600	800x600	800x600	832x624
HORIZONTAL						
Frequency	35.156kHz	37.879kHz	48.077kHz	46.875kHz	53.674kHz	49.726kHz
Total time	28.444µs	26.400µs	20.800µs	21.333 µs	18.631 µs	20.110 µs
Active time	22.222µs	20.000µs	16.000µs	16.162 µs	14.222 µs	14.524 µs
Blank time	6.222 µs	6.400 µs	4.800 µs	5.171 µs	4.409 µs	5.586 µs
Border(L / R)	0.000 µs	0.000 µs	0.000 µs	0.000 µs	0.000 µs	0.000 µs
Data time	22.222µs	20.000µs	16.000µs	16.162 µs	14.222 µs	14.524 µs
Front porch	0.667 µs	1.000 µs	1.120 µs	0.323 µs	0.569 µs	0.559 µs
Sync. width	2.000 µs	3.200 µs	2.400 µs	1.616 µs	1.138 µs	1.117 µs
Back porch	3.556 µs	2.200 µs	1.280 µs	3.232 µs	2.702 µs	3.910 µs
Sync. polarity	Positive or Negative	Positive	Positive	Positive	Positive	Negative
VERTICAL						
Frequency	56.250Hz	60.317Hz	72.188Hz	75.000Hz	85.061Hz	74.551Hz
Total time	17.778ms	16.579ms	13.853ms	13.333ms	11.756ms	13.414ms
Active time	17.067ms	15.840ms	12.480ms	12.800ms	11.179ms	12.549ms
Blank time	0.711ms	0.739ms	1.373ms	0.533ms	0.577ms	0.865ms
Border(T / B)	0.000ms	0.000ms	0.000ms	0.000ms	0.000ms	0.000ms
Data time	17.067ms	15.840ms	12.480ms	12.800ms	11.179ms	12.549ms
Front porch	0.028ms	0.026ms	0.770ms	0.021ms	0.019ms	0.020ms
Sync. width	0.057ms	0.106ms	0.125ms	0.064ms	0.056ms	0.060ms
Back porch	0.626ms	0.607ms	0.478ms	0.448ms	0.503ms	0.784ms
Sync polarity	Positive or Negative	Positive	Positive	Positive	Positive	Negative
Dot Clock	36.000MHz	40.000MHz	50.000MHz	49.500MHz	56.250MHz	57.284MHz
Sync. Type	Separate	Separate	Separate	Separate	Separate	Separate Compsite Sync.- on-G
Scan Type*	N/I	N/I	N/I	N/I	N/I	N/I

2-3-1 Supported Modes (3)

Timing No.	15	16	19	44
Origniator	VESA	VESA	VESA	VESA
Mode Name	1024/60Hz	1024/70Hz	1024/75Hz	1024/85Hz
Resolution (HxV)	1024x768	1024x768	1024x768	1024x768
HORIZONTAL				
Frequency	48.363kHz	56.476kHz	60.023kHz	68.677kHz
Total time	20.677µs	17.707µs	16.660µs	14.561µs
Activetime	15.754µs	13.653µs	13.003µs	10.836µs
Blank time	4.923µs	4.053 µs	3.777 µs	3.725µs
Border(L / R)	0.000µs	0.000µs	0.000µs	0.000µs
Data time	15.754µs	13.653µs	13.003µs	10.836µs
Front porch	0.369µs	0.320µs	0.323µs	0.508µs
Sync. width	2.092µs	1.813µs	1.219µs	1.016µs
Back porch	2.462µs	1.920µs	2.235µs	2.201µs
Sync. polarity	Negative	Negative	Positive	Positive
VERTICAL				
Frequency	60.004Hz	70.069Hz	75.029Hz	84.997Hz
Total time	16.666ms	14.272ms	13.328ms	11.765ms
Active time	15.880ms	13.599ms	12.795ms	11.183ms
Blank time	0.786ms	0.672ms	0.533ms	0.582ms
Border(T/B)	0.000ms	0.000ms	0.000ms	0.000ms
Data time	15.880ms	13.599ms	12.795ms	11.183ms
Front porch	0.062ms	0.053ms	0.017ms	0.015ms
Sync. width	0.124ms	0.106ms	0.050ms	0.044ms
Back porch	0.600ms	0.513ms	0.466ms	0.524ms
Sync polarity	Negative	Negative	Positive	Positive
Dot Clock	65.000MHz	75.000MHz	78.750MHz	94.500MHz
Sync. Type	Separate	Separate	Separate	Separate
Scan Type*	N/I	N/I	N/I	N/I

Memo

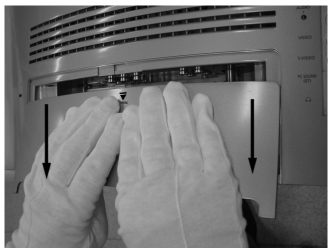
3 Disassembly and Reassembly

This section of the service manual describes the disassembly and reassembly procedures for the LW22N23N monitor.

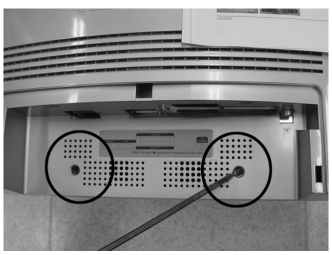
WARNING: This monitor contains electrostatically sensitive devices. Use caution when handling these components.

3-1 Disassembly

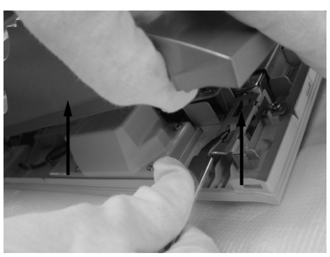
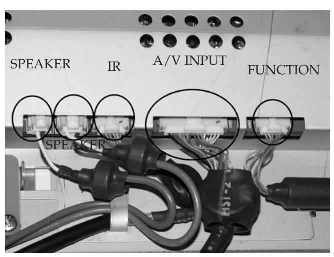
Cautions: 1. Disconnect the monitor from the power source before disassembly.
2. R/Cover opening jig : BH81-00001A

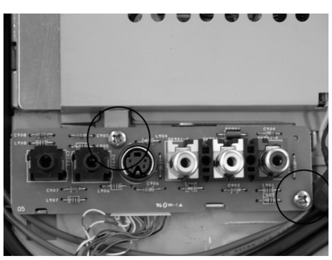
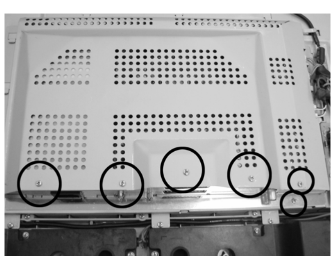
1. Loacte the monitor on the cushioned table with face down. Remove the stand from LCD-TV and pull the stand cover.



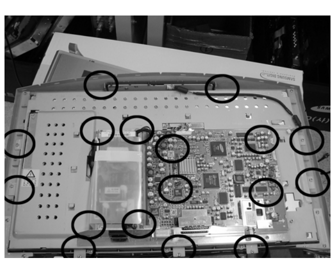

2. Remove 2 screws from the rear cover and remove rear cover by using opening driver.

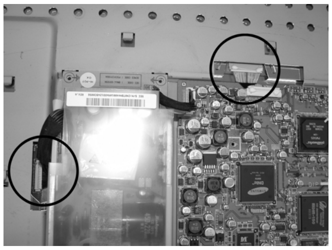
3. Lift up the rear cover and disconnect function cable, A/V Input cable, IR cable and speaker cable from the shield. (See illustrations)

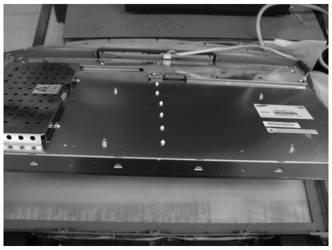
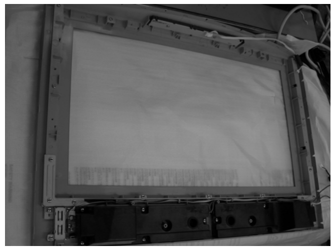
4. Remove 2 screws (A/V Input Board) from the shield. Please add a circle around the 6 screws that connects the silver shield of the Main-PCB to the Panel shield.(see illustrations)

5. Lift up main shield and remove 17 screws from the set (Main Board and Panel Shield). (see illustrations)




6. Disconnect cable and lift up the main board and panel shield. (see illustrations)

7. Lift up the panel.

3-2 Replacement Order of Lamp Assemblies

LCD panal may not be serviced. (Lamps are generally located at top and bottom of panel, which may be replaced.However,for the Victoria LTA170WP_L01 panel, the lamp is firmly soldered inside of the back panel. Therefore,servicing the lamp may cause a defective panel.Also,servicing lamp requires front glass removal, which may cause scratch and/or foreign materials on the glass.)

3-3 Reassembly

Reassembly procedures are in the reverse order of dissasembly procedures.

4 Alignments and Adjustments

4-1 General Alignment Instuction

1. Usually, a color TV-VCR needs only slight touch-up adjustment upon installation. Check the basic characteristics such as height, horizontal and vertical sync.
2. Use the specified test equipment or its equivalent.
3. Correct impedance matching is essential.
4. Avoid overload. Excessive signal from a sweep generator might overload the front-end of the TV. When inserting signal markers, do not allow the marker generator to distort test result.
5. Connect the TV only to an AC power source with voltage and frequency as specified on the backcover nameplate.
6. Do not attempt to connect or disconnect any wire while the TV is turned on. Make sure that the power cord is disconnected before replacing any parts.
7. To protect aganist shock hazard, use an isolation transform.

4-2 Factory Mode Adjustments

4-2-1 Entering Factory Mode

1. To enter "Service Mode" Press the remote -control keys in this sequence :
   - If you do not have Factory remote - control

Power OFF → INFO → MENU → MUTE → Power ON

   - If you have Factory remote - control

PICTURE ON → DISPLAY → FACTORY

   - The buttons are active in the service mode.
     1. Remote - Control Key : Power, Arrow Up, Arrow Down, Arrow Left Arrow Right, Menu, Enter, Number Key(0~9)
     2. Function - Control Key : Power, CH +, CH -, VOL +, VOL -, Menu, TV/VIDEO(Enter)

4-2-2 Factory Mode Tree

1. PC Calibration	10. Checksum	0000
2. Option Table 2C34 0050	11. Adjust	
3. Color Control	12. Reset	
4. PW565		
5. VPC3230-MAIN		
6. ADC		
7. DNIe		
8. MDIN-150		
9. Test Pattern		

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1. PC Calibration	10. Checksum	0000
2. Option Table 2C34 0050	11. Adjust	
3. Color Control	12. Reset	
4. PW565		
5. VPC3230-MAIN		
6. ADC		
7. DNIe		
8. MDIN-150		
9. Test Pattern		

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2. Option Table 2C34 0050

Flesh Tone	Off	Area	CW
LNA	Off	DebugExpress	Off
Language	English	High Deviation	Off
Melody Volume	10	TXT Group	Osd Language
TTX List	Flop	DNIe Demo	On
TTX TOP	Off	TTX Page	200page
Auto FM	On	Bus Stop	Off
Help	On	DDC Write	Off
		SSON	On

PanelLifeTime : 3Day 15h 18m

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1. PC Callbration	10. Check sum 0000
2. Option Table 2C34 0050	11. Adjust
3. Color Control	12. Reset
4. PW565	
5. VPC3230-MAIN	
6. ADC	
7. DNIe	
8. MDIN-150	
9. Test Pattern	

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3. Color Control

Pw565 White Balance

Dnie White Balance

3. Color Control

Pw565 White Balance

Sub-Brightness	128	Sub-Contrast	128
Red Offset	128	Red Gain	128
Green Offset	128	Green Gain	128
Blue Offset	128	Blue Gain	128
Brightness	45	TTX-Bright	100

3. Color Control

Dnie White Balance

Sub-Brightness	117	Sub-Contrast	100
Red Offset	128	Red Gain	130
Green Offset	128	Green Gain	128
Blue Offset	124	Blue Gain	124

1. PC Callbration	10. Check sum 0000
2. Option Table 2C34 0050	11. Adjust
3. Color Control	12. Reset
4. PW565	
5. VPC3230-MAIN	
6. ADC	
7. DNIe	
8. MDIN-150	
9. Test Pattern	

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4. PW565

Red Gain	140	Pixel Shift	Video Port	YB_1	120
Green Gain	140	Pixel Number	4	YB_2	200
Blue Gain	140	Time	4	Xth_0	110
Red Offset	140	Virtual Framelo	2	Xth_1	190
Green Offset	140	Alpha	255	DECS Demo	Off
Blue Offset	140	Beta	255		
APL	Off	Degree	30		

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1. PC Callbration	10. Check sum 0000
2. Option Table 2C34 0050	11. Adjust
3. Color Control	12. Reset
4. PW565	
5. VPC3230-MAIN	
6. ADC	
7. DNIe	
8. MDIN-150	
9. Test Pattern	

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5. VPC3230-MAIN

CT	30	CIPCT	29	KILVL	07
BR	90	PFS	02	PKCOR	01
ACC_SAT	80	PK	02	FB_GAIN	22
TINT	00	VPK	00	HV_SLVL	0B
SATCb	24	LPF2	00		
SATCr	2B	CBW2	00		
CIPTNT	1F	CBW	03		
CIPBR	C5	IFC	00		

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1. PC Callbration		10. Check sum	0000
2. Option Table	2C34 0050	11. Adjust	
3. Color Control		12. Reset	
4. PW565			
5. VPC3230-MAIN			
6. ADC			
7. DNIe			
8. MDIN-150			
9. Test Pattern			
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6. ADC

Red Gain	8C	Pr Gain	A0
Green Gain	8C	Y Gain	A0
Blue Gain	8C	Pb Gain	A0
Red Offset	46	Pr Offset	43
Green Offset	46	Y Offset	45
Blue Offset	46	Pb Offset	42
Current	04	TTX Phase	96
VCO	02	TTX Contrast	00

1. PC Callbration		10. Check sum	0000
2. Option Table	2C34 0050	11. Adjust	
3. Color Control		12. Reset	
4. PW565			
5. VPC3230-MAIN			
6. ADC			
7. DNIe			
8. MDIN-150			
9. Test Pattern			
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7. DNIe TV

NR_ScaleMaxY	32	NR_TH_HRF	7	CTI_Gain	7
NR_ScaleMinY	16	NR_TH_EDGE	6	CTI_V	9
NR_ScaleMaxC	32	NR_SEL	3	CTI_U	9
NR_ScaleMinC	16	CE_CutOff	16	CUT_DIFF_DIV_V	150
Scale Noise_Y	72	CE_Upper	254	CUT_DIFF_DIV_U	150
Scale Noise_C	100	CE_Gain	48	DEP_TH_Cor	63
Limit_Y	126	CE_HPF_Gain	128	DEP_NR_DET_Gain	8
Limit_C	132	DCE_Gain	128	DEP_R_INT	64
T_VIC22PEU_0908		02/05/2004 16:04:38		Next	

7. DNIe TV

Prev.		Black_Slope_Fix	0	White_Slope_Fix	256
BWS_B_Gain	375	B_Ratio	12000	B_Pgain_Ratio_Rise	224
BWS_W_Gain	375	W_Ratio	12000	B_Pgain_Ratio_Rise	128
WTE_Gain	300	Black_Tilt	66	W_Pgain_Ratio_Rise	224
CTE_Gain	32	White_Tilt	191	W_Pgain_Ratio_Rise	128
BS_On	1	Black_Gain_Max	358	Next	
WS_On	1	White_Gain_Max	358		
White_Slope_Fix	0	Black_Slope_Gain	256		
T_VIC22PEU_0908		02/05/2004 16:04:38			

1. PC Callbration		10. Check sum	0000
2. Option Table	2C34 0050	11. Adjust	
3. Color Control		12. Reset	
4. PW565			
5. VPC3230-MAIN			
6. ADC			
7. DNIe			
8. MDIN-150			
9. Test Pattern			

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8. MDIN-150

Front Noise Reduction Filter
Horizontal Peaking Filter
Edge Enhancement Filter
Input Test Pattern
Output Test Pattern
Deinterlace Control

8. MDIN-150

Front Noise Reduction Filter

Noise_Reduction_Flt0	255	Noise_Reduction_Flt_On	0
Noise_Reduction_Flt1	0	Noise_Reduction_Flt_Difference	0
Noise_Reduction_Flt2	0	Median_Flt_On	0
Noise_Reduction_Flt3	0	Median_Flt_Difference	0
Noise_Reduction_Flt4	0	Noise_Reduction_Flt_Diff_Sel	0
Noise_Reduction_Flt5	0		
Noise_Reduction_Flt6	0		
Noise_Reduction_Flt7	0		

8. MDIN-150

Horizontal Peaking Filter

H_Peaking_Flt0	256	H_Peaking_Flt_Enable	1
H_Peaking_Flt1	0	H_Peaking_Flt_Gain	20
H_Peaking_Flt2	896	H_Peaking_No_Sum	0
H_Peaking_Flt3	0	H_Peaking_Inverse	0
H_Peaking_Flt4	0		
H_Peaking_Flt5	0		
H_Peaking_Flt6	0		
H_Peaking_Flt7	0		

8. MDIN-150

Edge Enhancement Filter

Edge_Cor_Offse	8
Edge_Enh_Level	2
Edge_Enh_2D_Flt_Enable	1

8. MDIN-150

Input Test Pattern

In_Test_RGB	0
In_Test_Ptrn	0
In_Test_Format	0

8. MDIN-150

Output Test Pattern

Out_Test_Ptrn	0
Out_Dark_Scrn_Main	0

8. MDIN-150

Deinterlace Control

Deint_Mode	1	Deint_Edge_En	2	Deint_Film_Min	0
Deint_C_Delay_Sel	0	Deint_Edge_Thres	255	Film_Mode_Thres	5
Median_Tap	0	Film_Invaild_Lines	8	Bad_Edit_En	1
Expander_Tap	1	Film32_Mo_Thres	160	Caption_Mode	3
Deint_Thres	24	Film_Mode	5	D_Caption_V_Posi	160
Fast_Mode	1	D_Film_Slide_Cnt	0	Deint_Disp_Color	5
N_Median_Tap	1	D_Film_Slide_Cor	40	Deint_Disp_Mode	0
D_Fast_Mode_Thres	4	Deint_Film_Plus	1		
N_Deint_Thres	24	Deint_Film_Minus	3		
Very_Fast_En	1	Deint_Film_Max	3		

1. PC Callbration
2. Option Table
3. Color Control
4. PW565
5. VPC3230-MAIN
6. ADC
7. DNIe
8. MDIN-150
9. **Test Pattern**
10. Check sum 0000
11. Adjust
12. Reset

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→

9. Test Pattern

1. Luma Ramp (16 Step)
2. Luma Ramp (128 Step)
3. White 16
4. White 240
5. Color Bar
6. RGB Ramp (32 Step)

1. PC Callbration
2. Option Table
3. Color Control
4. PW565
5. VPC3230-MAIN
6. ADC
7. DNIe
8. MDIN-150
9. Test Pattern
10. **Check sum 0000**
11. Adjust
12. Reset

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1. PC Callbration
2. Option Table
3. Color Control
4. PW565
5. VPC3230-MAIN
6. ADC
7. DNIe
8. MDIN-150
9. Test Pattern
10. Check sum 0000
11. **Adjust**
12. Reset

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11. Adjust

TTX-Brightness	20	Movie	70 47 50 50	LD av pal	9
TTX-Contrast	20	LD rf pal-b/g	9	LD av secam	8
TTX-Sharpness	65	LD rf pal-d/k	6	LD av ntsc 3.57	9
CarrierMute	42	LD rf pal-i	10	LD av ntsc 4.43	9
Pilot High	14	LD rf secam-b/g	8	LD av pal 60	9
Pilot Low	7	LD rf secam-b/g	10	ValidLockCnt	2
Dynamic	100 45 75 65	LD rf secam-l/i	9	RF_db-1	
Standard	85 45 60 60	LD rf ntsc4.43	9	RF_db-2	

1. PC Callbration
2. Option Table
3. Color Control
4. PW565
5. VPC3230-MAIN
6. ADC
7. DNIe
8. MDIN-150
9. Test Pattern
10. Check sum 0000
11. Adjust
12. **Reset**

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* Unless otherwise specifid, do not adjust data in Factory Mode.

* Data may be changed for display improvement.

4-3 White Balance Adjustment

1. In factory mode (1, 3, 6), you can adjust the white balance.
2. As the adjustment and data values differ depending on input sources, different adjustments are requried for RF, PC/DVI modes.
3. Optimum condition data for each mode are saved as default values. (Refer to Table 2, 3)
4. As the RF mode is applied with the same vlaues as for VIDEO and S-VIDEO, adjustment can be made in any of RF, VIDEO and S-VIDEO modes.

Table 4-1. White Balance Setting Conditions

Mode	High Light			Low Light		
	"x"	"y"	Y	"x"	"y"	Y
RF	285	295	35fL	289	287	1.6fL
DVI(A)	285	295	23fL	285	295	0.7fL
DVI(D)	285	295	23fL	285	295	0.7fL

Table 4-2. Color Control Default Vlaue

Mode	RF	DTV	PC	Mode	RF	DTV	PC
Sub-Brightness	127	131	149	Sub-Contrast	95	65	42
Red Offset	130	133	128	Red Gain	128	128	128
Green Offset	128	128	128	Green Gain	128	128	128
Blue Offset	130	131	128	Blue Gain	131	128	128
Brightness	45	45	50	Contrast	100	100	80

Table 4-3. Color Control Default Vlaue

Mode	PC	Mode	DTV
Red Gain	8C	Pr Gain	A0
Green Gain	8C	Y Gain	A0
Blue Gain	8C	Pb Gain	A0
Red Offset	46	Pr Offset	40
Green Offset	46	Y Offset	40
Blue Offset	46	Pb Offset	40
Current	05		
VCO	02		

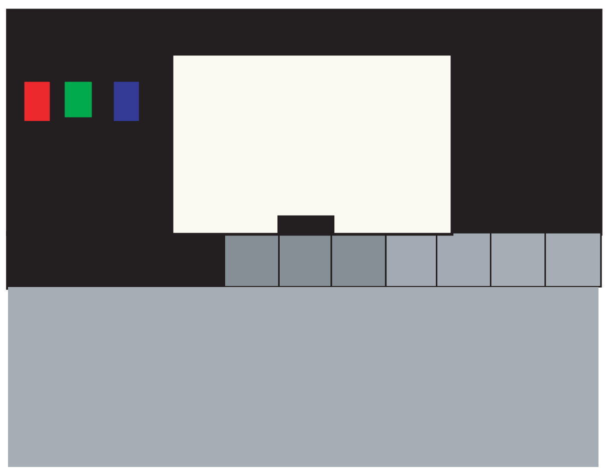
4-3-1 Conditions for Measurement

1. On the basis of toshiba ABL pattern : High Light level (57 IRE)
   - INPUT SIGNAL GENERATOR : MSPG-925LTH
     * Mode NO 1 : 750X480@60 Hz
       NO 6 : 1280X720@60 Hz
       NO 21 : 1024X768@60 Hz
     * Pattern NO 36 : 16 Color Pattern
       NO 16 : Toshiba ABL Pattern
2. Optical measuring device : CA210 (FL)
   Please use the MSPG-925 LTH generator for model LTP227W.

4-3-2 Method of Adjustment

1. Adjust the basic level of DTV and PC input signals.
   a) Set the input to the mode in which the adjustment will be made (PC).
   * Input signal - PC Mode : Model #21 (1024*768 Mode), Pattern #16 (Picture 4-1)
   b) Enter factory Calibration, confirm the ADC data (PC Mode Only).
   * ADC default value : Table 4-3.

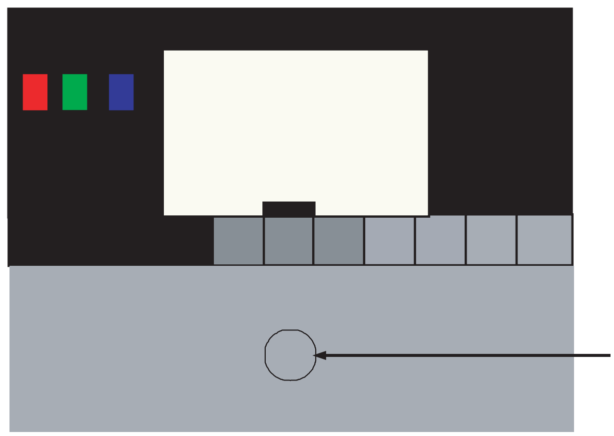
Picture 4-1 Toshiba ABL Pattern



2. Adjust the white balance of RF, DTV and PC Modes.
   a) Set the input to the mode in which the adjustment will be made (RF → DTV → PC).
   * Input signal - VIDEO Mode : Model #1 (750*480 Mode), Pattern #16
     - PC Mode : Model #21 (1024*768 Mode), Pattern #16
   b) Enter factory color control, confirm the data.

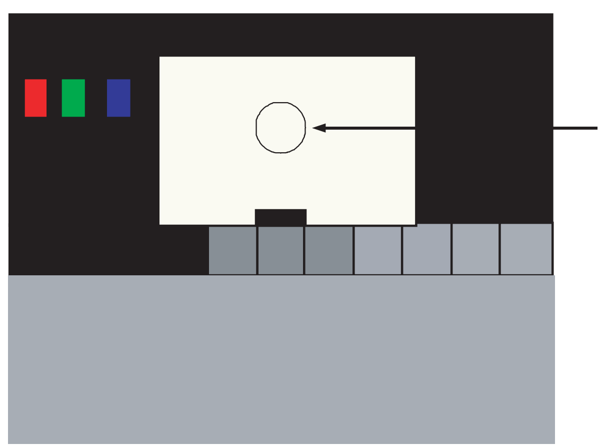
c) Adjust the low light. (Refer to table 1, 2 in adjustment position by mode)
- Adjust sub - Brightness to set the 'Y' value.
- Adjust red offset ('x') and blue offset ('y') to the color coordinates.
* Do not adjust green offset data.

Picture 4-2 Toshiba ABL Pattern



d) Adjust the high light. (Refer to table 1, 2 in adjustment position by mode)
- Adjust red gain ('x') and blue gain ('y') to the color coordinates.
* Do not adjust the green gain and sub-contrast (Y) data.

Picture 4-3 Toshiba ABL Pattern



4-3-3 Option Table

Option	Default	Option 1	Option 2	Option 3	Remark
DebugExpress	Off	Off (FIX)	Off (FIX)	Off (FIX)	* When a Jig control use to On
LNA	Off (FIX)	Off (FIX)	Off (FIX)	Off (FIX)	-
Vchip	On	On	On	On	-
VchipArea	USA	USA+Canada	USA	USA+Canada	-
Melody Volume	10	10	0 ~ 19	0 ~ 19	0 ~ 19
DnieDemo	On	On	On	On	-
I2c Bus Stop	Off	Off	Off	Off	-
Video Mute	3 X 100	3 X 100	3 X 100	3 X 100	[msec]
DECS Demo	On	On	On	On	-
YB_1	100	100	100	100	1 ~ 255
YB_2	200	200	200	200	1 ~ 255
Xth_0	90	90	90	90	1 ~ 254
Xth_1	190	190	190	190	10 ~ 254
Sub_Woofer	Off	Off	Off	Off	Don't Adjust
Corner Freq.	15	15	15	15	Don't Adjust
Data	0A94	0A9C	0094~1394	009C~139C	00XX ~ 13XX

* The default settings are most recommended for Option Data. Each data may be adjusted.

4-3-4 PW565

* Below figures are for contrast adjustment of PW565 (IC565). Do not change the data.

Mode	Data
Red Gain	128
Green Gain	128
Blue Gain	128
Red Offset	128
Green Offset	128
Blue Offset	128

4-3-5 VPC 3230-MAIN

* Data may be adjusted.

MODE	Data	MODE	Data
CT	20	PK	03
BR	8E	VPK	00
ACC_SAT	80	LPF2	00
TINT	32	CBW2	00
SATCb	1F	CBW	03
SATCr	3F	IFC	03
CIPTNT	20	KILVL	07
CIPBR	B5	PKCOR	01
CIPCT	20	FB_GAIN	22
PFS	02	HV_SLVL	0E

4-3-6 ADC

*Adjust the R(Pr), G(Y), B(Pb) gain and offset to the basic level of DTV and PC Input signals.

Mode	PC	Mode	DTV
Red Gain	8C →Adjust	Pr Gain	A0 →Adjust
Green Gain	8C →Adjust	Y Gain	A0 →Adjust
Blue Gain	8C →Adjust	Pb Gain	A0 →Adjust
Red Offset	46 →Adjust	Pr Offset	40 →Adjust
Green Offset	46 →Adjust	Y Offset	40 →Adjust
Blue Offset	46 →Adjust	Pb Offset	40 →Adjust
Current	05		
VCO	02		

4-3-7 DNIe

* Control the specify item that a output signals of scalar (PW565).
* This data can be changed without notice.

Mode	Data	Mode	Data	Mode	Data
NR_ScaleMaxY	32	NR_SEL	3	DEP_NR_DET_Gain	8
NR_ScaleMinY	16	CE_CutOff	0	DEP_R_INT	16
NR_ScaleMaxC	32	CE_Upper	220	BWS_B_Gain	375
NR_ScaleMinC	16	CE_Gain	255	BWS_W_Gain	375
NR_TH_HRF	7	CE_HPF_Gain	128	WTE_Gain	1023
NR_TH_EDGE	5	DCE_Gain	32	CTE_Gain	50
Limit _Y	129	CTI_Gain	7		
Limit _C	144	DEP_TH_Cor	15		

4-3-8 MDIN-150

* Control the specify item that a output signals (RF, CVBS, S-VHS Modes) of MDIN-150 (IC405).
* This data can be changed without notice.

4-3-9 Test Pattern

* Use below test patters to demonstrate the image display of PW565 (IC565).

1) Luma Ramp (16 step)
2) Luma Ramp (128 Step)
3) White 16
4) White 240
5) Color Bar
6) RGB Ramp (32 Step)

4-3-10 Check sum

* XXXX : Displays the current check sum size of the MICOM.
  (Varies depending on program update)

4-3-11 Reset

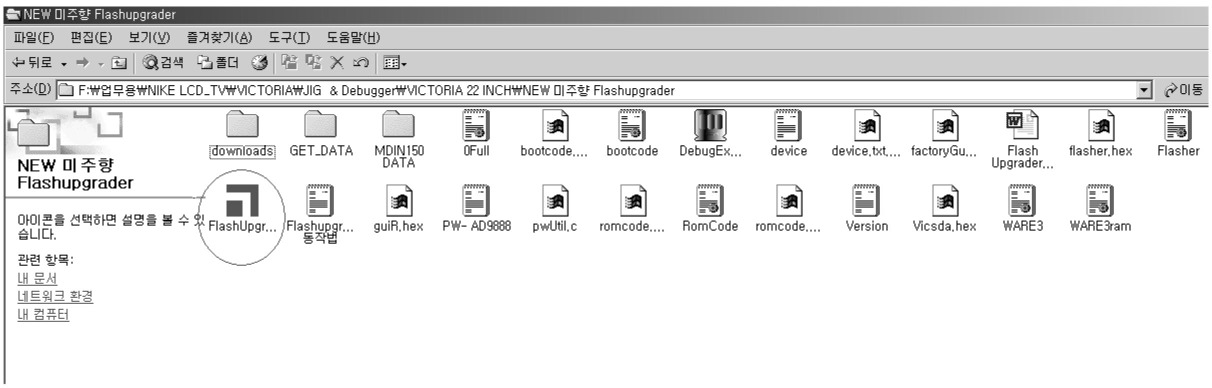
* Initializes the data in the MICOM. (Set to default value)
  Use 'Reset' to restore adjustmints made in Factory Mode to the original settings.

4-3-12 T_VIC22NUS_0166 11/27/2003 20:10:51

* Displays the MICOM program version

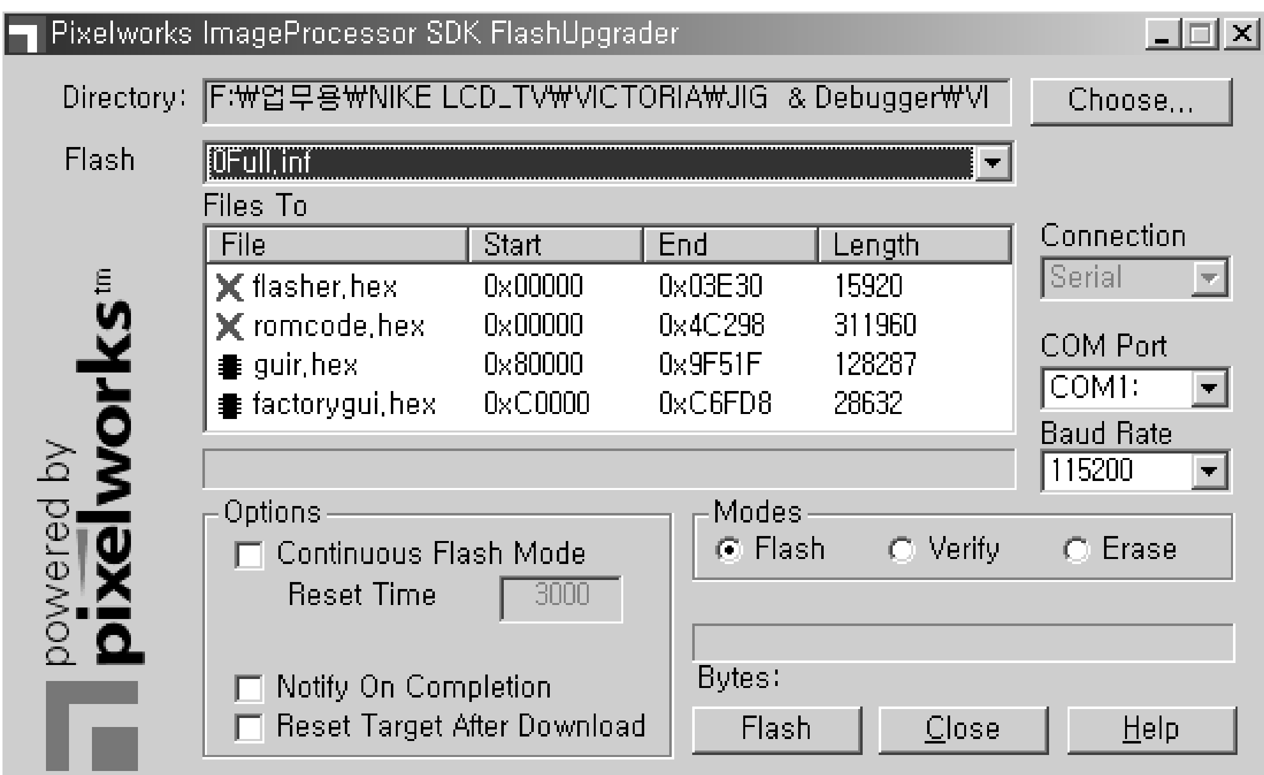
4-4 How to use SW(FlashupgradNT) for LTP227W Set program update

1. Store program practice file in new folder.
2. Connect Set and Jig Cable to execute Program Update.
(Refer to the Picture 4-4 attachment)
3. After completing the JIG Cable connection, store Update practice program (hex file 3EA) in new folder. (guiR, romcode, factoryGui).
4. Click FlashupgradNT.exe icon 2 times and execute it.
(Upgrader OSD screen is marked)



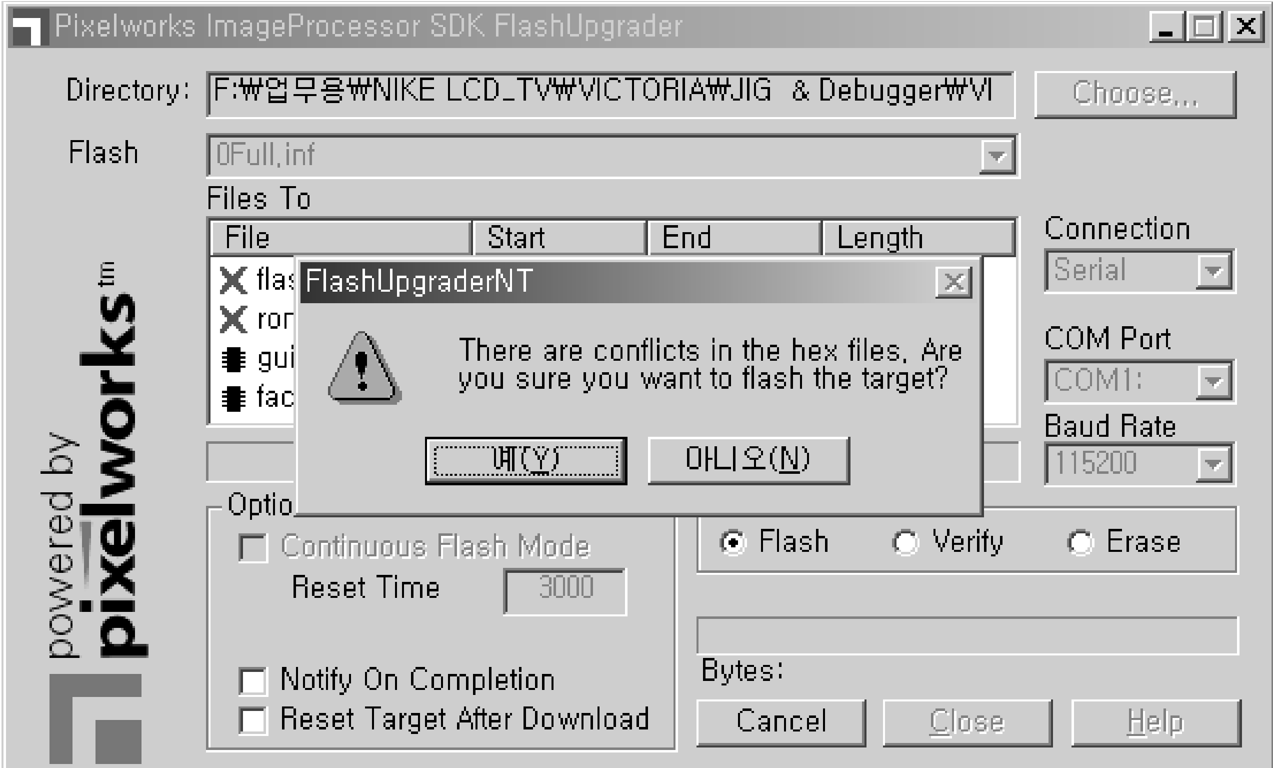
Picture 4-4

5. Select OFull.inf in Flash.
(flaher, romcode, guir, factorygui items look in Files To)



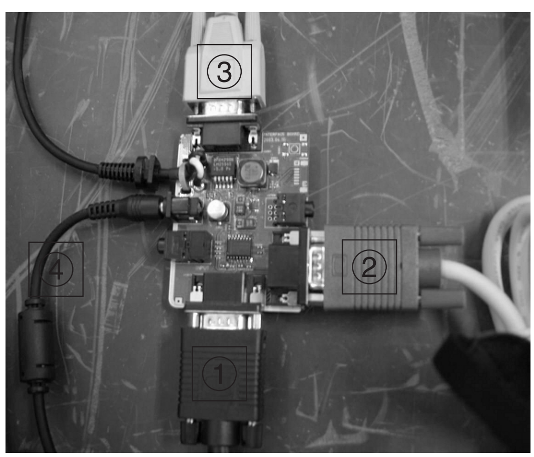
Picture 4-5

6. Click the “Flash” that is under right of OSD screen.
(if warning message comes out, Click the “Yes”(Y).)



Picture 4-6

7. After acting No.6, extract Set’s Power Cable and connect it again.
8. During acting No.7, program Update sledding is marked sequentially on OSD screen.
9. After Program Update completion, act NO.7 again.
10. Program Update is completed.

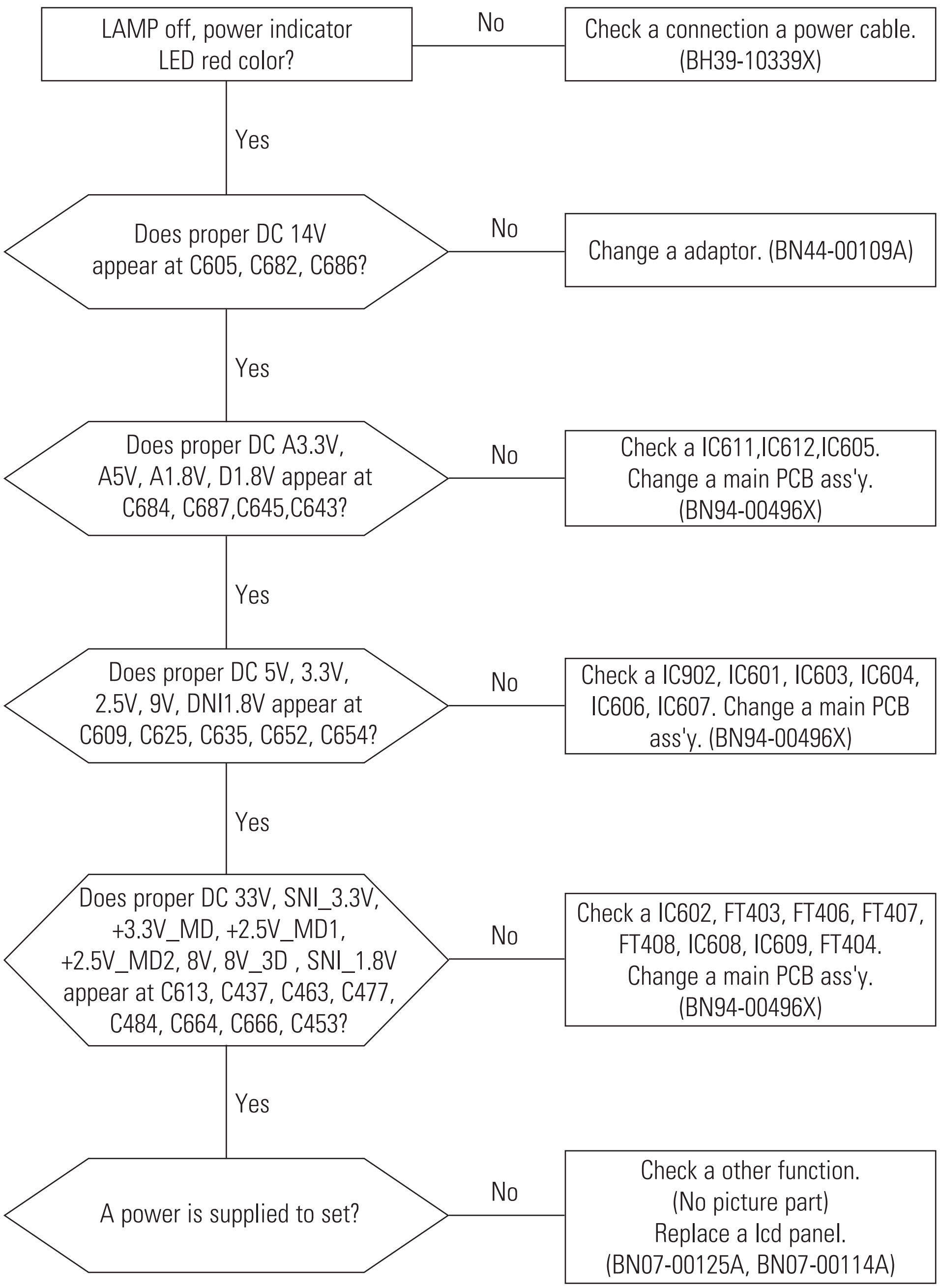


Picture 4-7

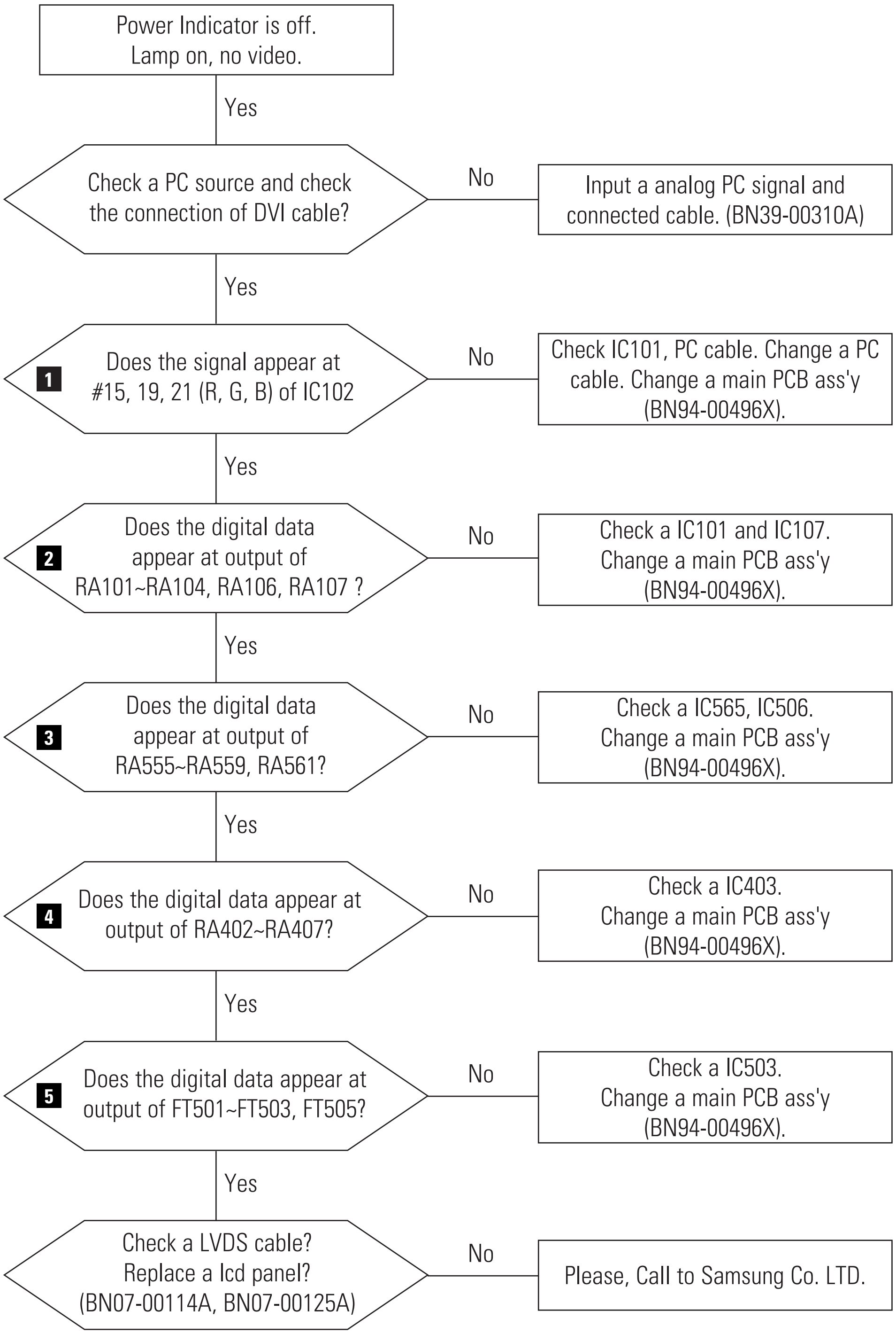
<Attachment Picture 4-7 : JIG Cable Connection Explain>
1. Connect with PC Pattern Generator’s output.
(Connect only when you want to see PC screen.)
2. Connect with JIG Output (15 pins) and PC Input (PC/DVI 24 pins) terminal.
3. Connect with COM Port1 of PC (9 Pins).
4. Connect 14V 4.5A Adaptor Cable.

5 Troubleshooting

5-1 No Power

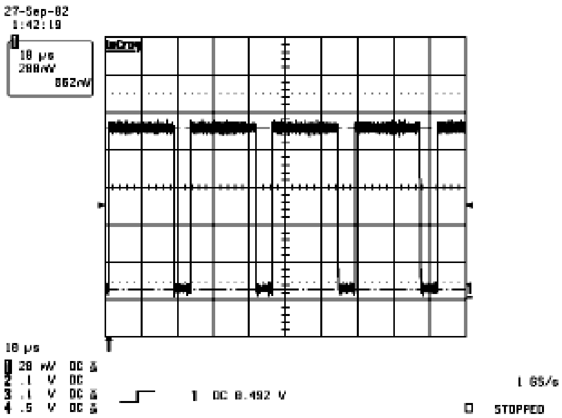


5-2 No Video (Analog PC Signal)

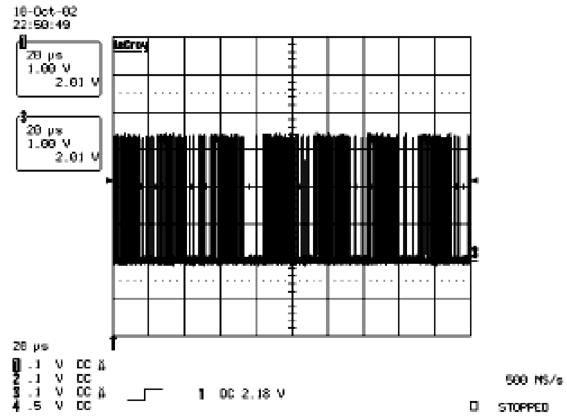


WAVEFORMS

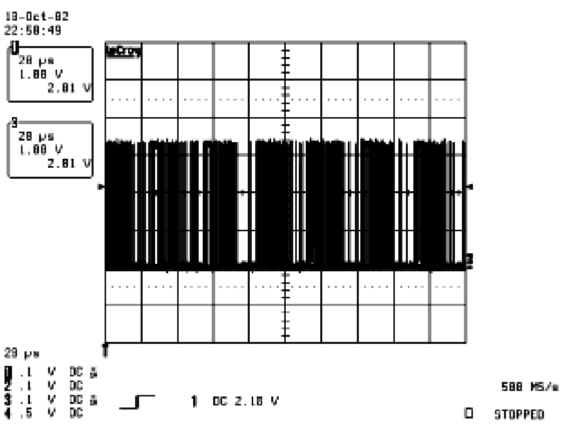
1 R,G,B Output Signal (#15,19,21) Of IC102



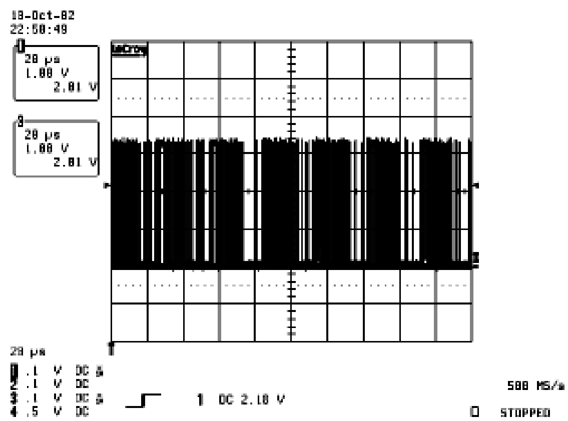
2 R,G,B Output Signal Of IC101



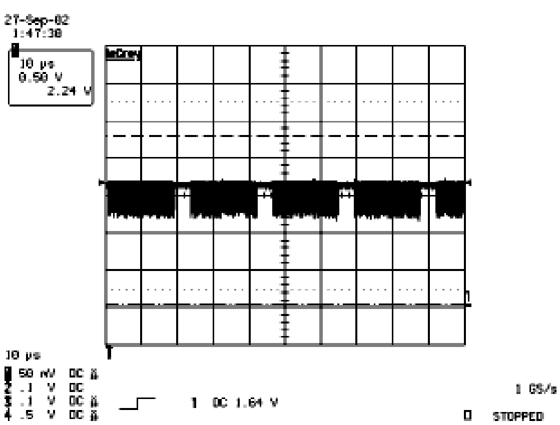
3 Output Digital Signal of IC565



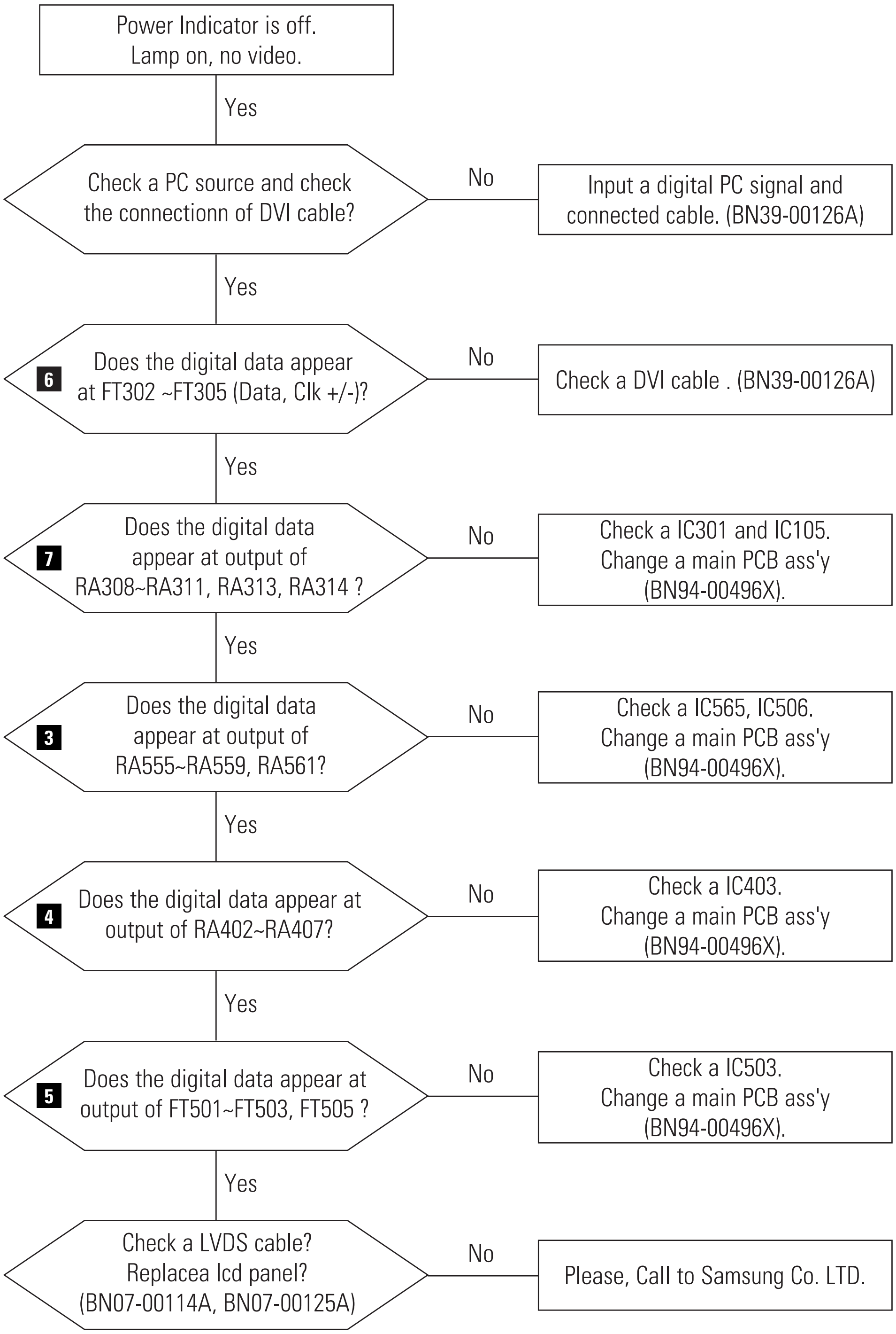
4 Output Digital Signal of IC403



5 Digital Output Data of IC503

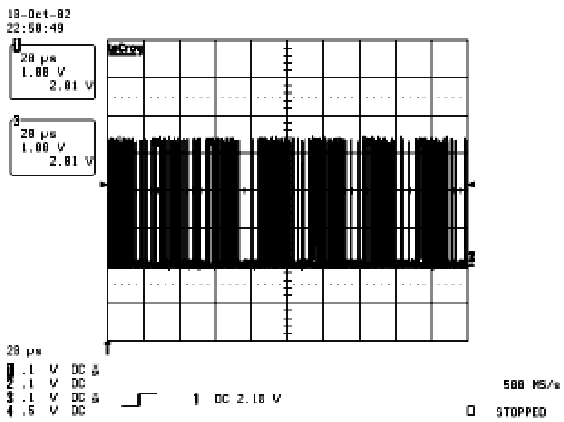


5-3 No Video (Digital PC Signal)

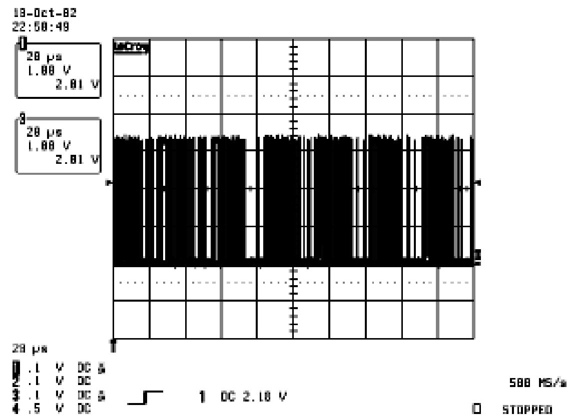


WAVEFORMS

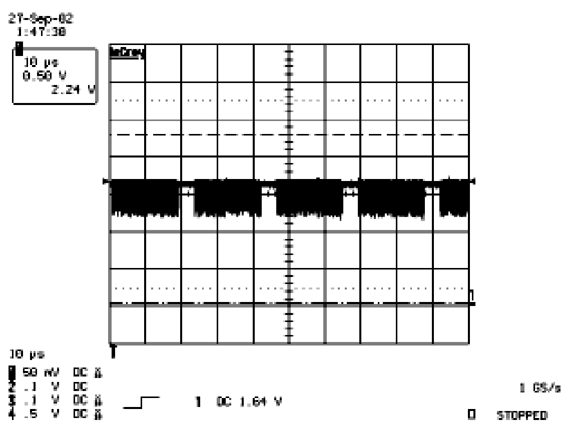
3 Output Digital Signal of IC565



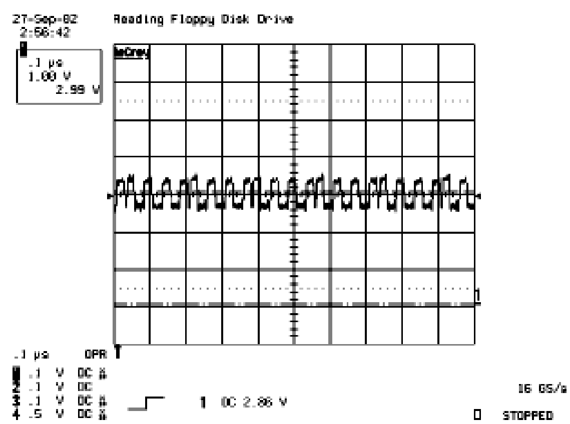
4 Output Digital Signal of IC403



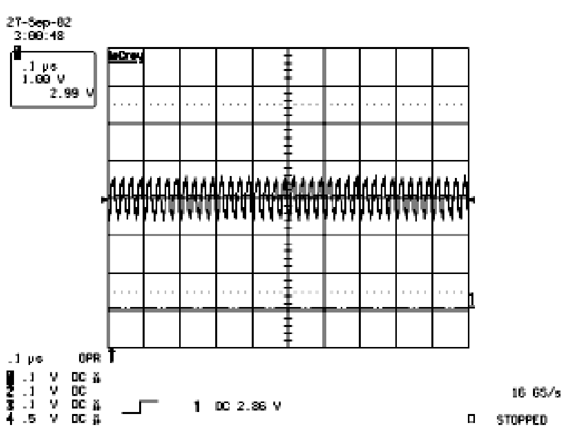
5 Digital Output Data of IC503



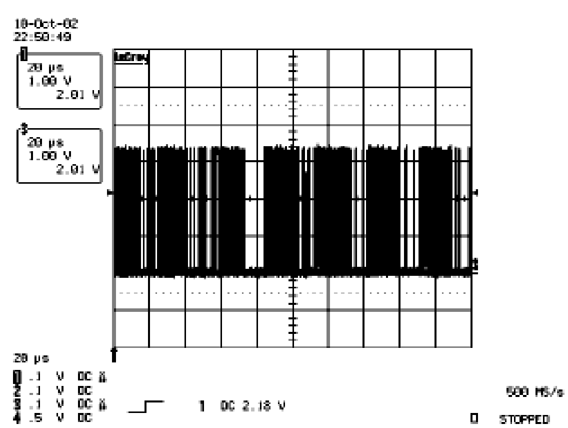
6 Signal of DVI_RX 0~2 (Data)



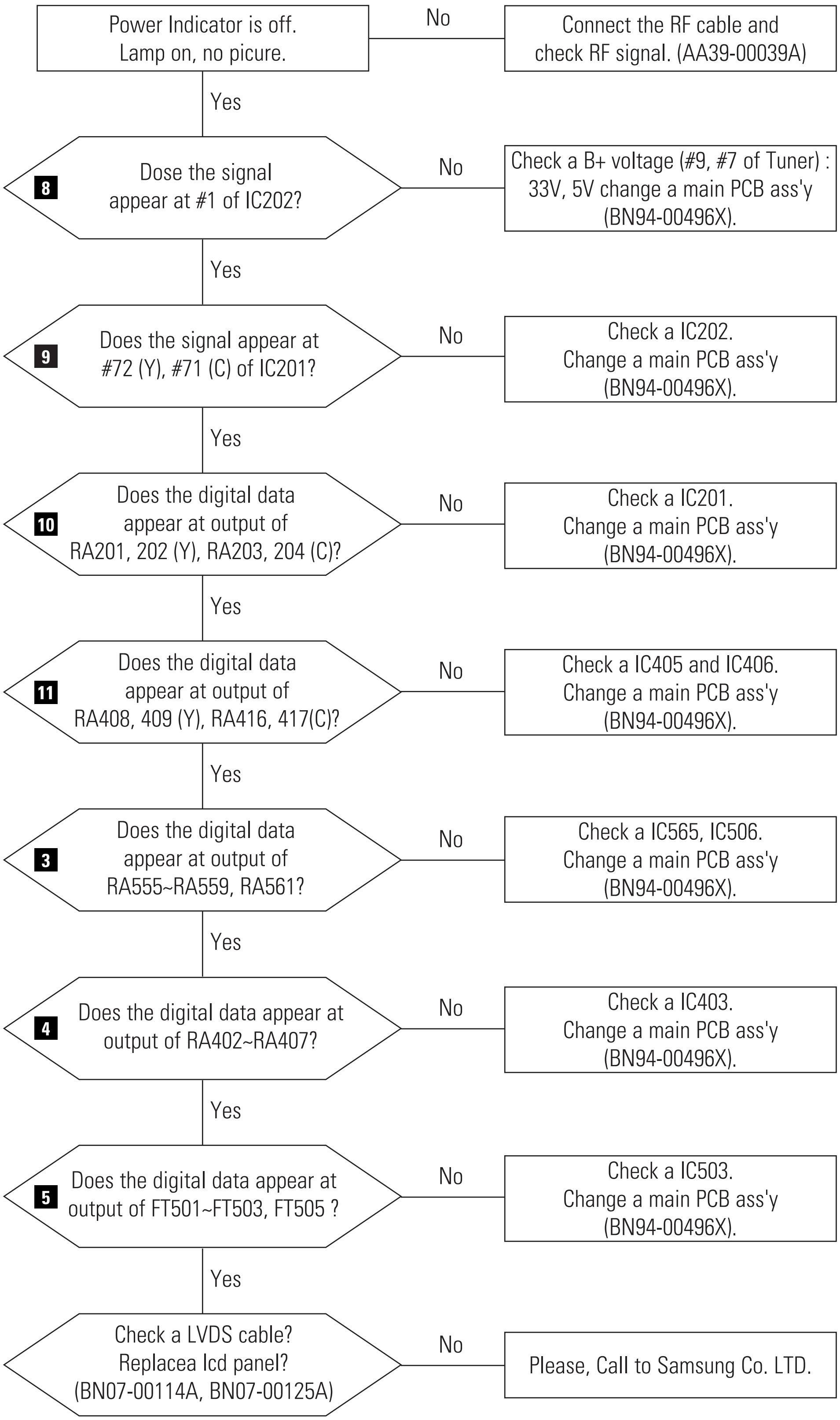
6-1 Signal of DVI_RXC (CLK)



7 Digital Output Signal Of IC301

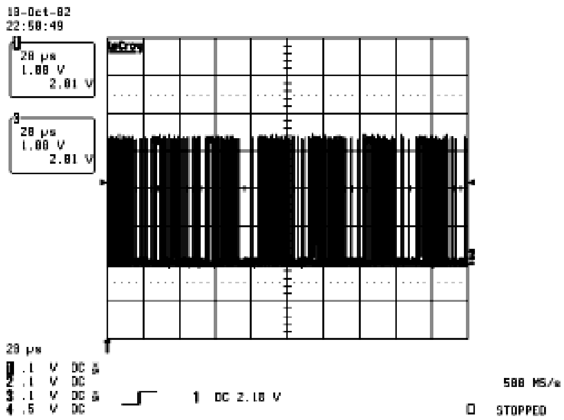


5-4 No Picture (Tuner_CVBS)

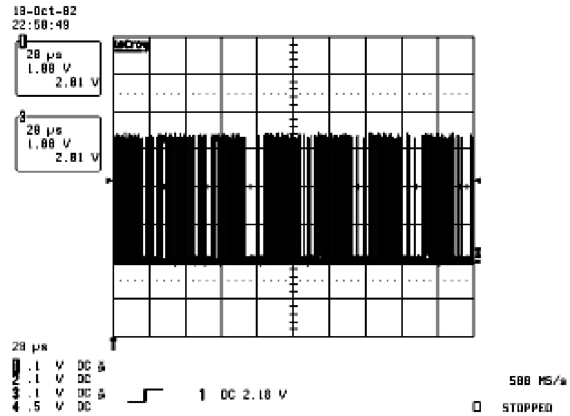


WAVEFORMS

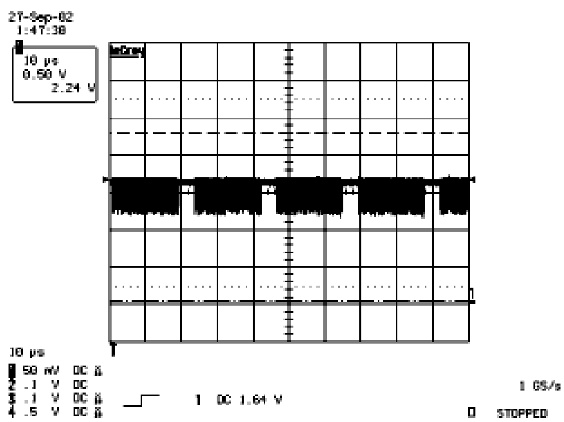
3 Output Digital Signal of IC565



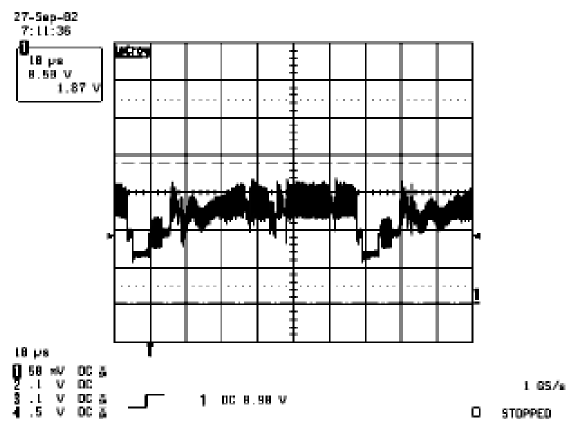
4 Output Digital Signal of IC403



5 Digital Output Data of IC503

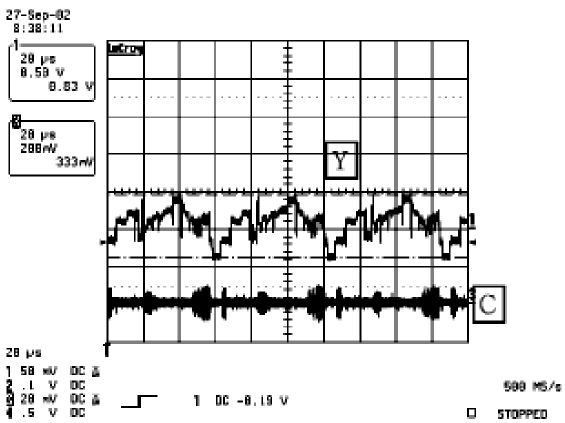


8 Tuner_CVBS Output Signal

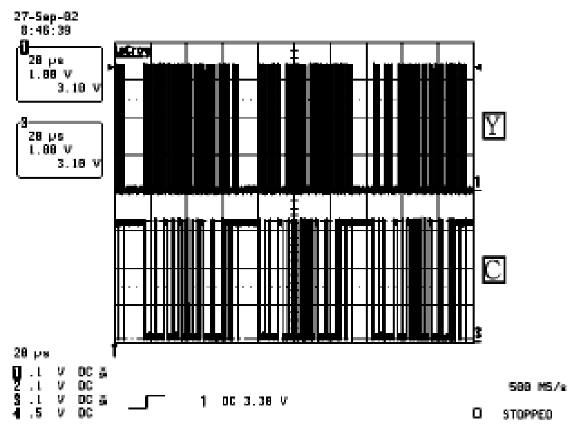


WAVEFORMS

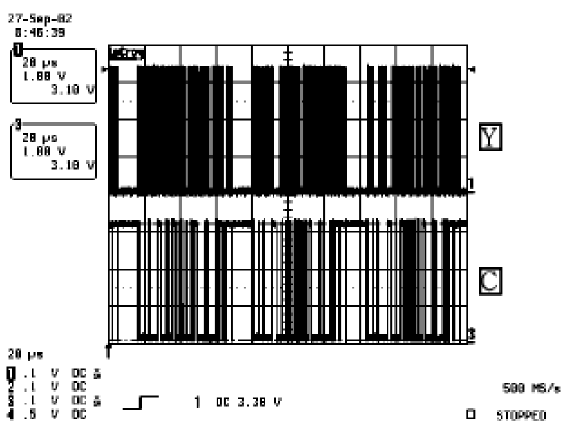
9 Analog Signal (Y,C) to IC201



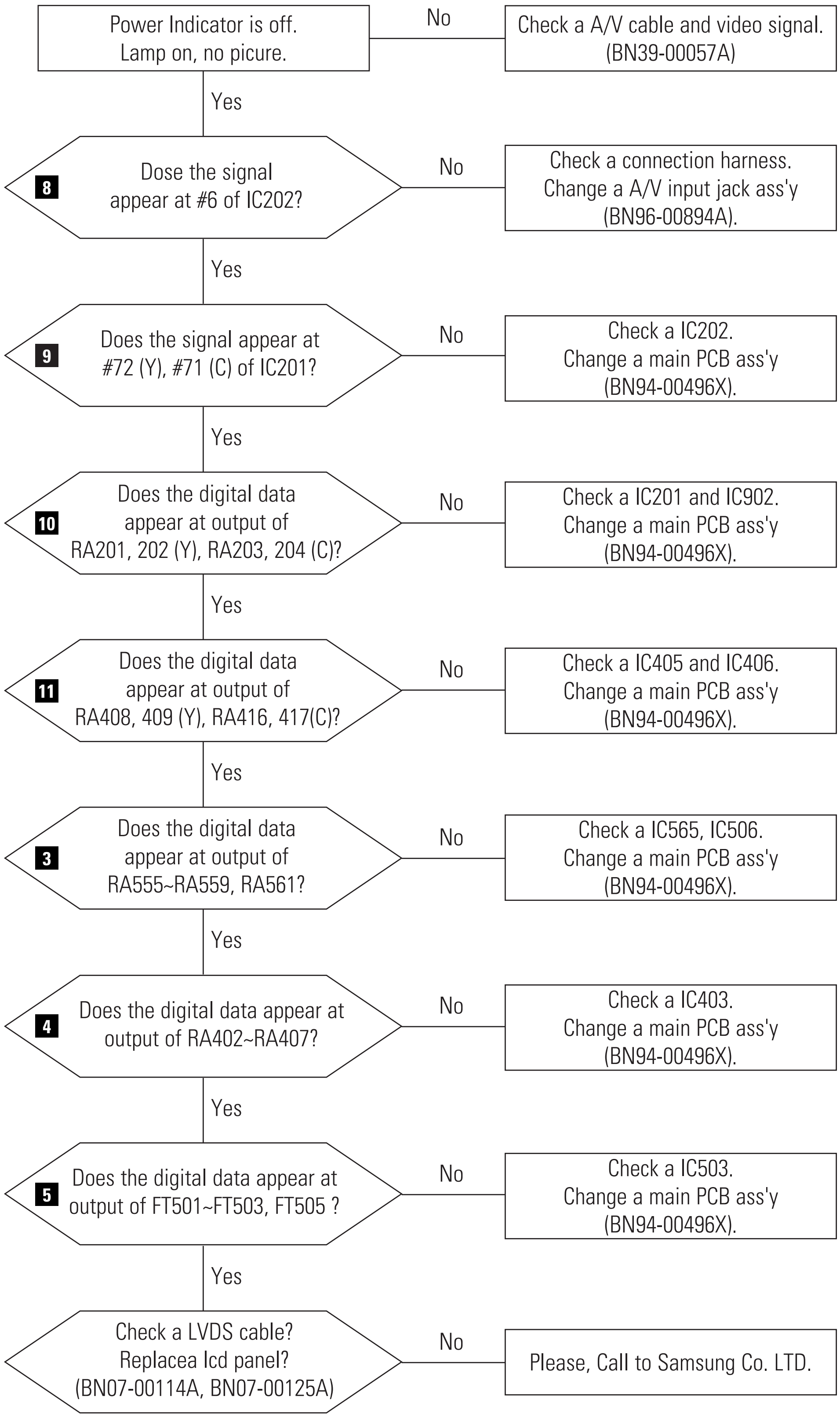
10 3230 Y,C_OUT (0:7) Data



11 Digital Output Y,C_OUT (0:7) Data Of IC405

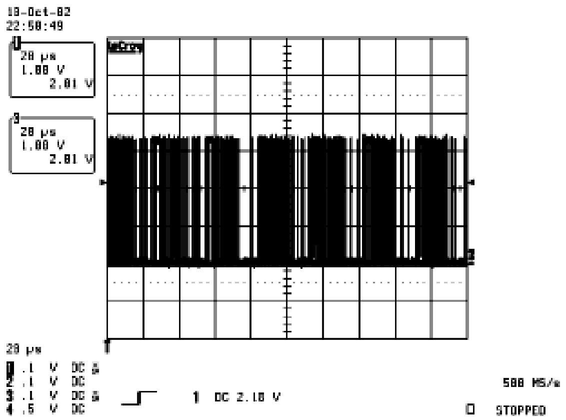


5-5 No Picture (Video_CVBS)

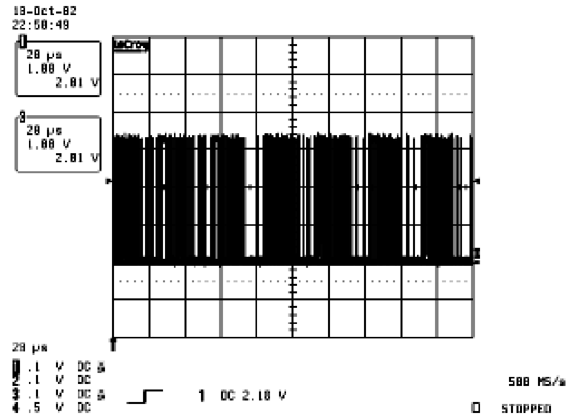


WAVEFORMS

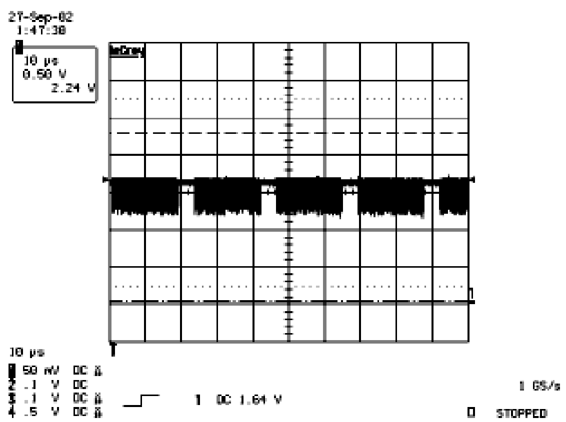
3 Output Digital Signal of IC565



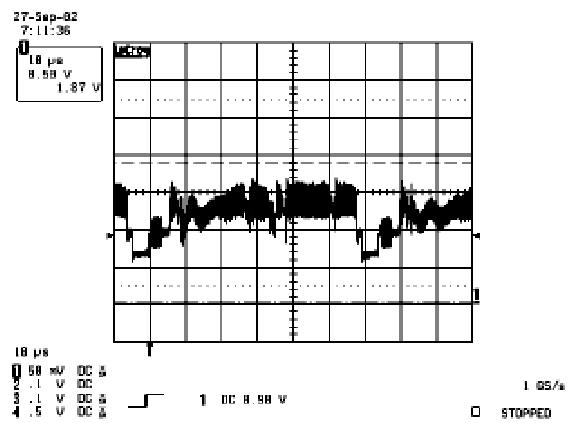
4 Output Digital Signal of IC403



5 Digital Output Data of IC503

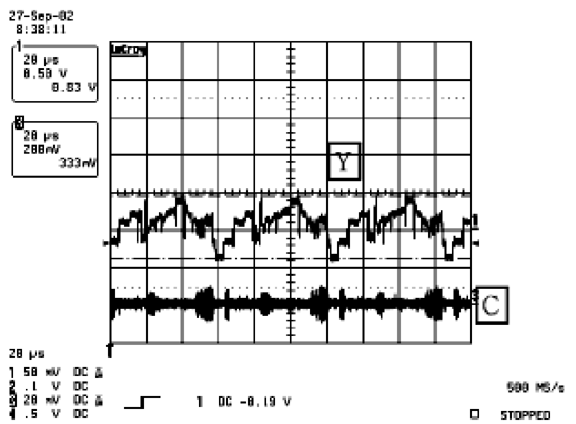


8 Tuner_CVBS Output Signal

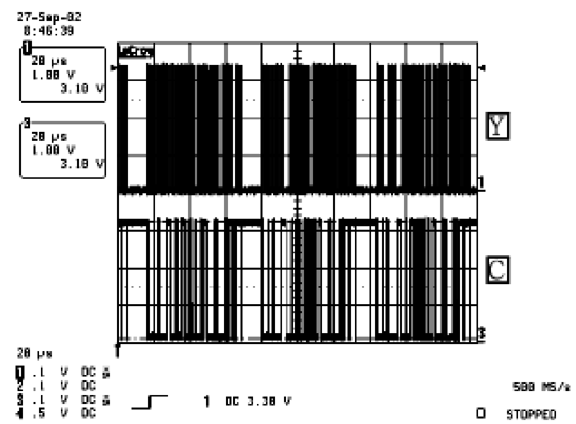


WAVEFORMS

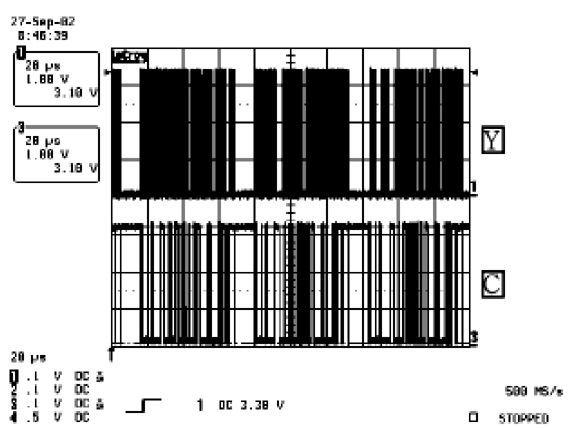
9 Analog Signal (Y,C) to IC201



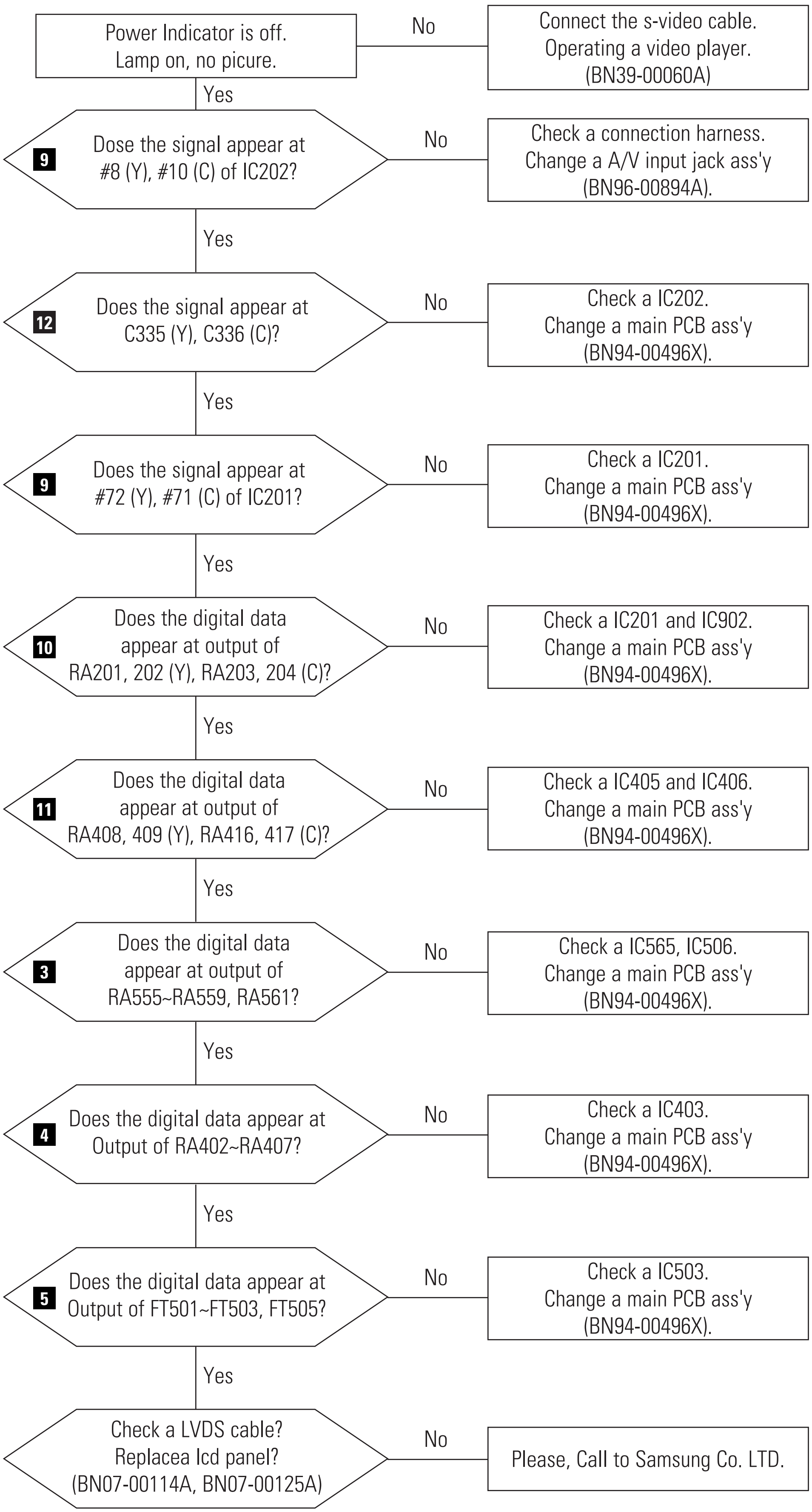
10 3230 Y,C_OUT (0:7) Data



11 Digital Output Y,C_OUT (0:7) Data Of IC405

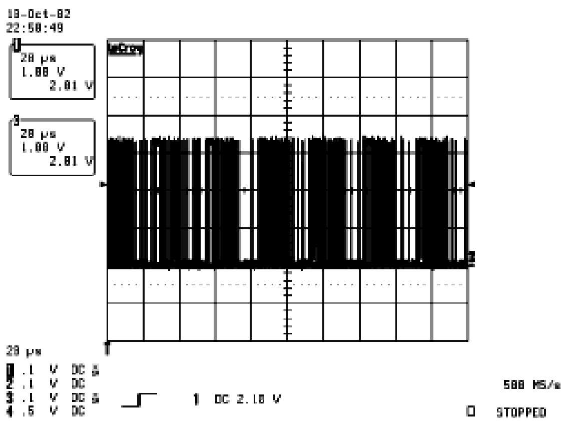


5-6 No Picture (S-VIDEO_Y,C)

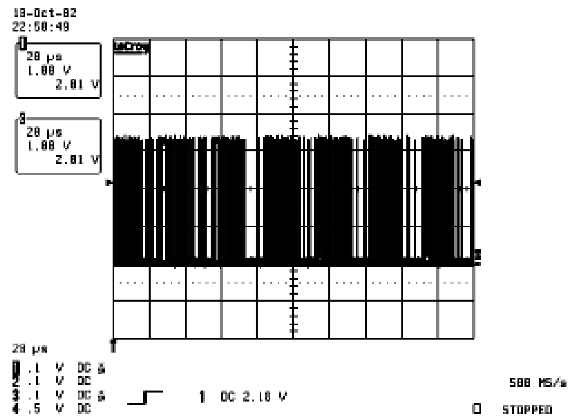


WAVEFORMS

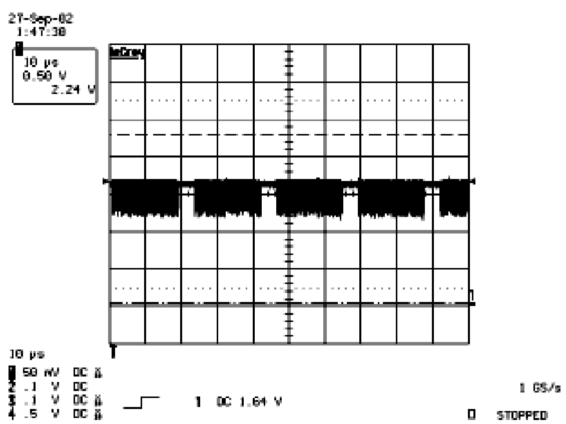
3 Output Digital Signal of IC565



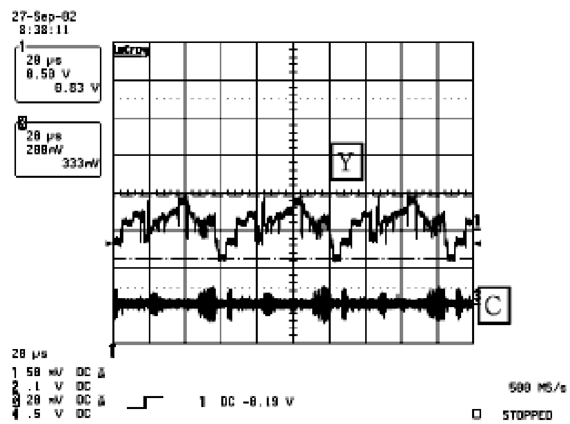
4 Output Digital Signal of IC403



5 Digital Output Data of IC503

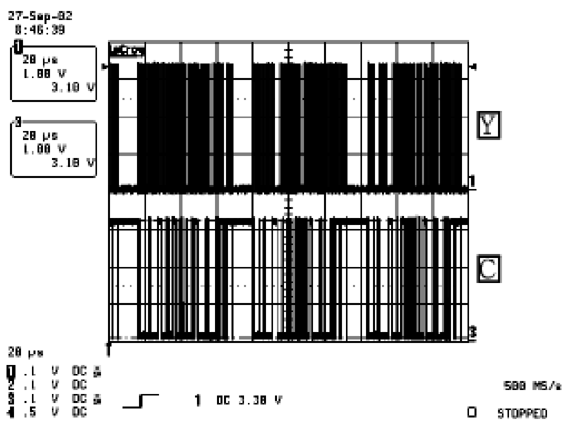


9 Analog Signal (Y,C) to IC201

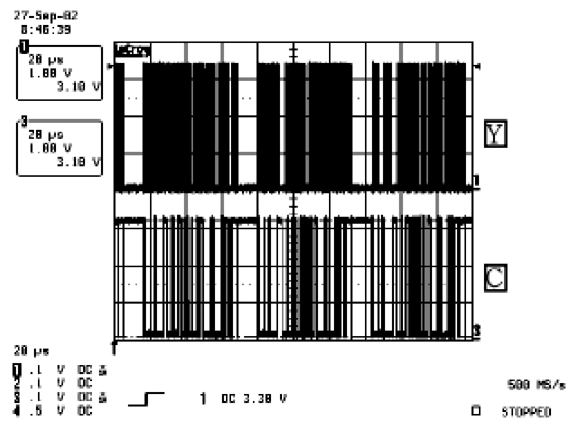


WAVEFORMS

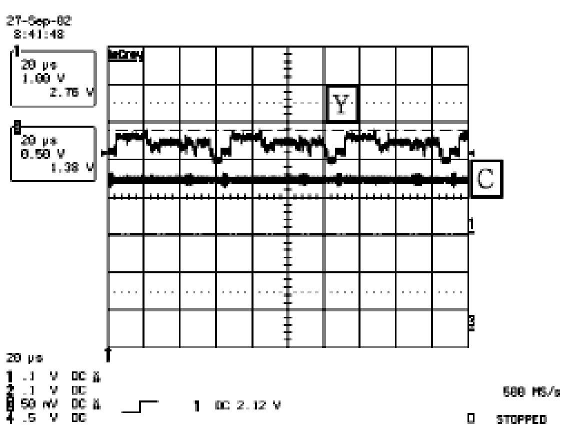
10 3230 Y,C_OUT (0:7) Data



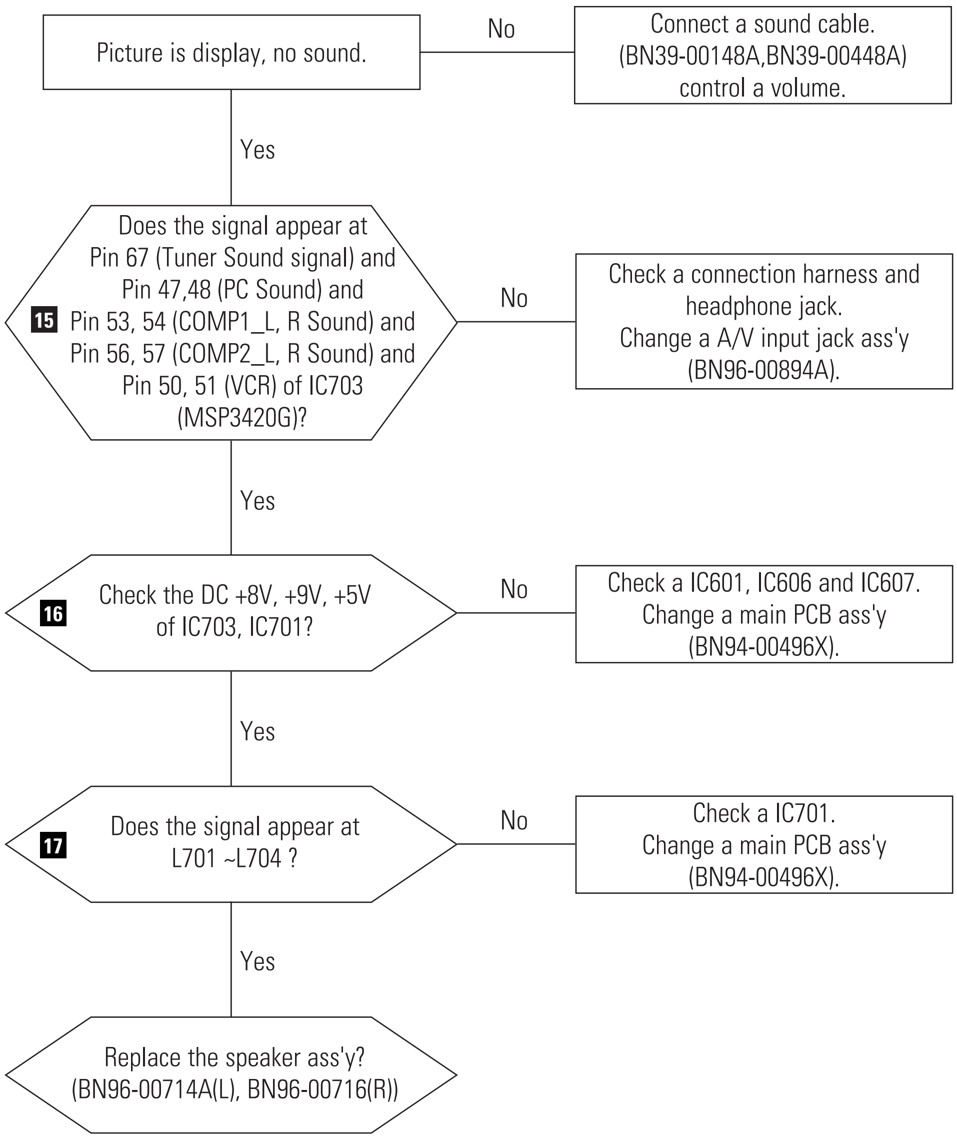
11 Digital Output Y,C_OUT (0:7) Data Of IC405



12 SVHS_Y,C Input Signal to IC202

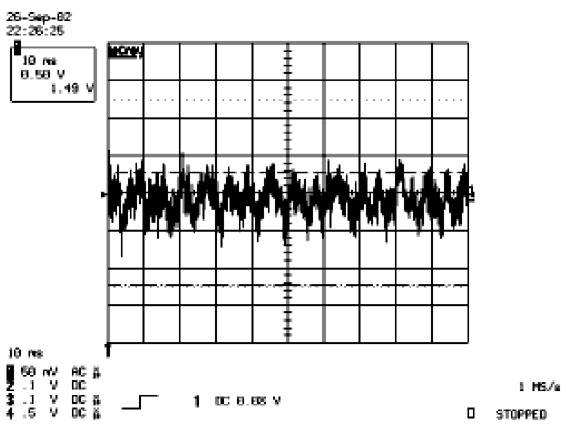


5-7 No Sound

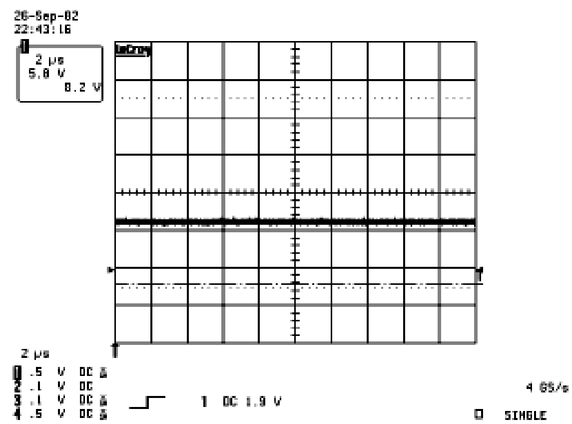

Picture is display, no sound.
No
Connect a sound cable.
(BN39-00148A,BN39-00448A)
control a volume.
Yes
15
Does the signal appear at
Pin 67 (Tuner Sound signal) and
Pin 47,48 (PC Sound) and
Pin 53, 54 (COMP1_L, R Sound) and
Pin 56, 57 (COMP2_L, R Sound) and
Pin 50, 51 (VCR) of IC703
(MSP3420G)?
No
Check a connection harness and
headphone jack.
Change a A/V input jack ass'y
(BN96-00894A).
Yes
16
Check the DC +8V, +9V, +5V
of IC703, IC701?
No
Check a IC601, IC606 and IC607.
Change a main PCB ass'y
(BN94-00496X).
Yes
17
Does the signal appear at
L701 ~L704 ?
No
Check a IC701.
Change a main PCB ass'y
(BN94-00496X).
Yes
Replace the speaker ass'y?
(BN96-00714A(L), BN96-00716(R))

WAVEFORMS

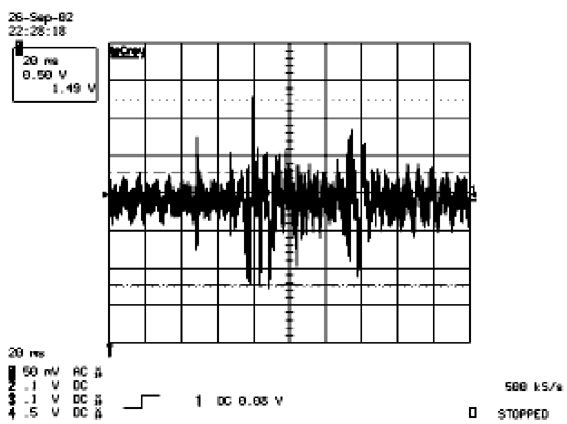
15 The Signal are Inputed to IC703



16 DC +8V

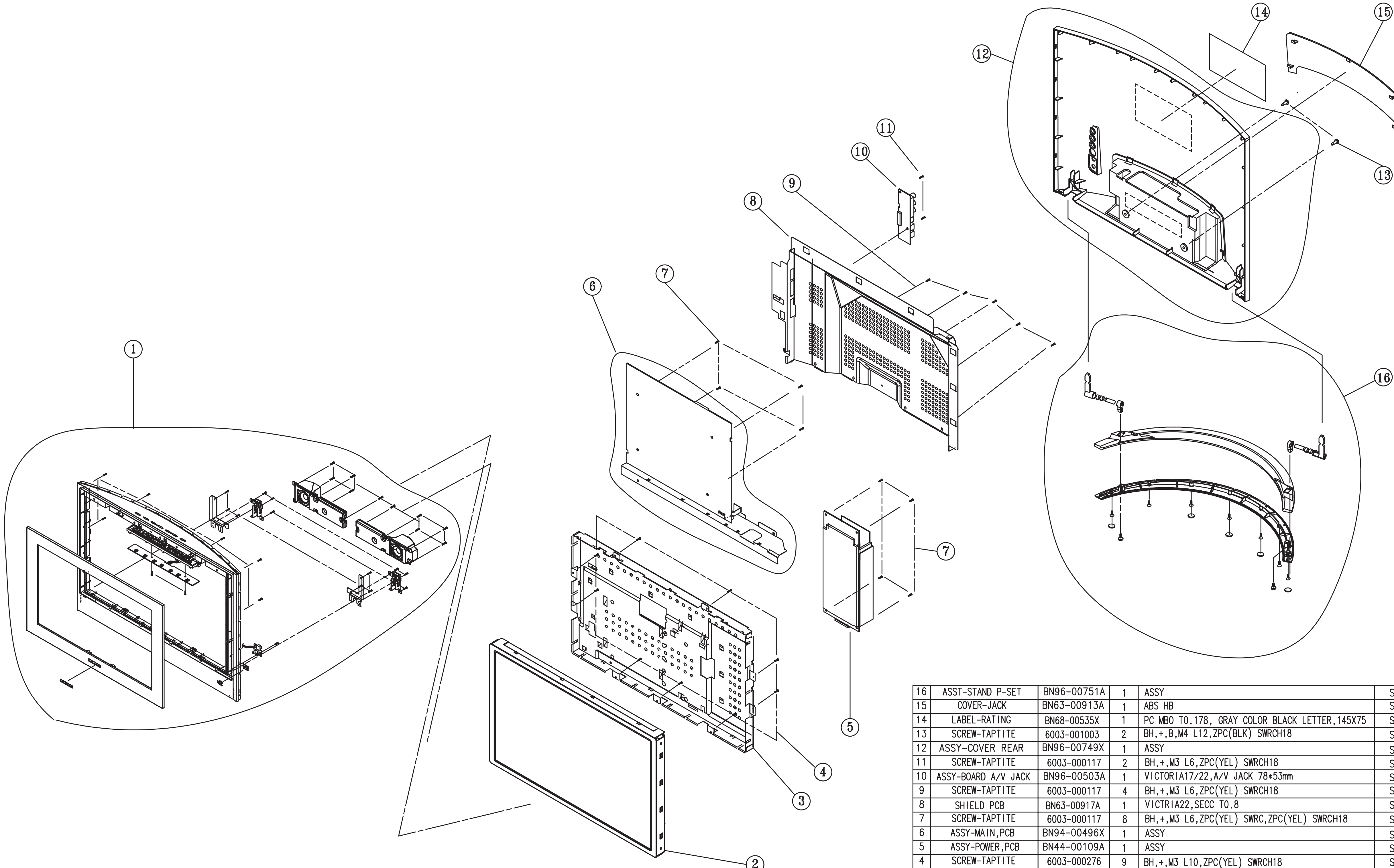


17 Output WaveForm



6 Exploded View and Parts List

❇ You can search for updated part codes through ITSELF web site.
URL : http://itself.sec.samsung.co.kr/



NO	PART NAME	CODE NO.	Q'TY	SPECIFICATION	REMARK
16	ASST-STAND P-SET	BN96-00751A	1	ASSY	S N A
15	COVER-JACK	BN63-00913A	1	ABS HB	S N A
14	LABEL-RATING	BN68-00535X	1	PC MBO T0.178, GRAY COLOR BLACK LETTER,145X75	S N A
13	SCREW-TAPTITE	6003-001003	2	BH,+,B,M4 L12,ZPC(BLK) SWRCH18	S N A
12	ASSY-COVER REAR	BN96-00749X	1	ASSY	S N A
11	SCREW-TAPTITE	6003-000117	2	BH,+,M3 L6,ZPC(YEL) SWRCH18	S N A
10	ASSY-BOARD A/V JACK	BN96-00503A	1	VICTORIA17/22,A/V JACK 78*53mm	S N A
9	SCREW-TAPTITE	6003-000117	4	BH,+,M3 L6,ZPC(YEL) SWRCH18	S N A
8	SHIELD PCB	BN63-00917A	1	VICTRIA22,SECC T0.8	S N A
7	SCREW-TAPTITE	6003-000117	8	BH,+,M3 L6,ZPC(YEL) SWRC,ZPC(YEL) SWRCH18	S N A
6	ASSY-MAIN,PCB	BN94-00496X	1	ASSY	S N A
5	ASSY-POWER,PCB	BN44-00109A	1	ASSY	S N A
4	SCREW-TAPTITE	6003-000276	9	BH,+,M3 L10,ZPC(YEL) SWRCH18	S N A
3	ASSY SHIELD PANEL	BN96-00865A	1	SECC T1.0	S N A
2	PANEL-SEC/TORISAN	BN07-00114A/125A	1	22INCH	S N A
-	SPEAKER ASSY	BN96-00714A(L)/716A(R)	1	8 OHM, 5W	S N A
1	ASSY-COVER FRONT	BN96-00750X	1	ASSY	S N A

Memo

7 Parts List

❇ You can search for updated part codes through ITSELF web site.
URL : http://itself.sec.samsung.co.kr/

7-1 Part Lists

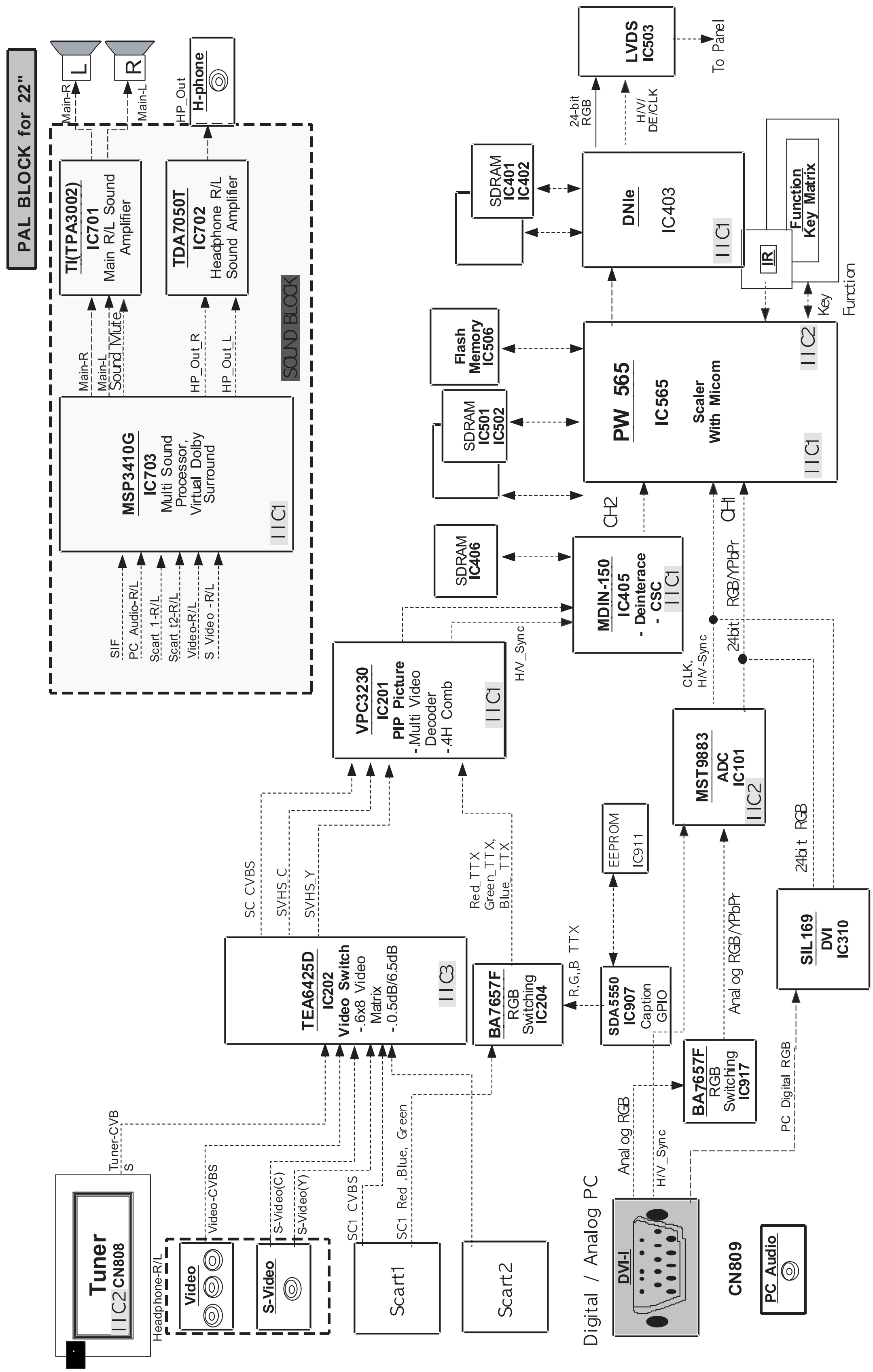
Description	Code No.
ASSY PCB MAIN	BN94 - 00496X
ASSY COVER FRONT	BN90 - 00620A
ASSY COVER REAR	BN90 - 00540A
LCD-PANEL	BN07 - 00125A
ASSY CHASSIS	BN91 - 00722C
ASSY SHIELD	BN91 - 00763A
ASSY BOARD P-AV/JACK	BN96 - 00894A
ASSY BOX	BN92 - 00888A
ASSY LABEL	BN92 - 00889A
REMOCON	BN59 - 00394B
ASSY ACCESSORY	BN92 - 00702H

<OPTION PART LIST>	
IF Cable	: AA39-00039A
A/V Cable	: BN39-00057A
S-Video Cable	: BN39-00060A
COMPONENT Cable	: BN39-00279A
SOUND Cable(R, L)	: BN39-00148A
PC DVI(D) Cable	: BN39-00126A
PC DVI(A) Cable	: BN39-00310A
DVI AUDIO Cable	: BN81-00120A
STEREO Cable	: BN39-00448A

Memo

8 Block Diagram

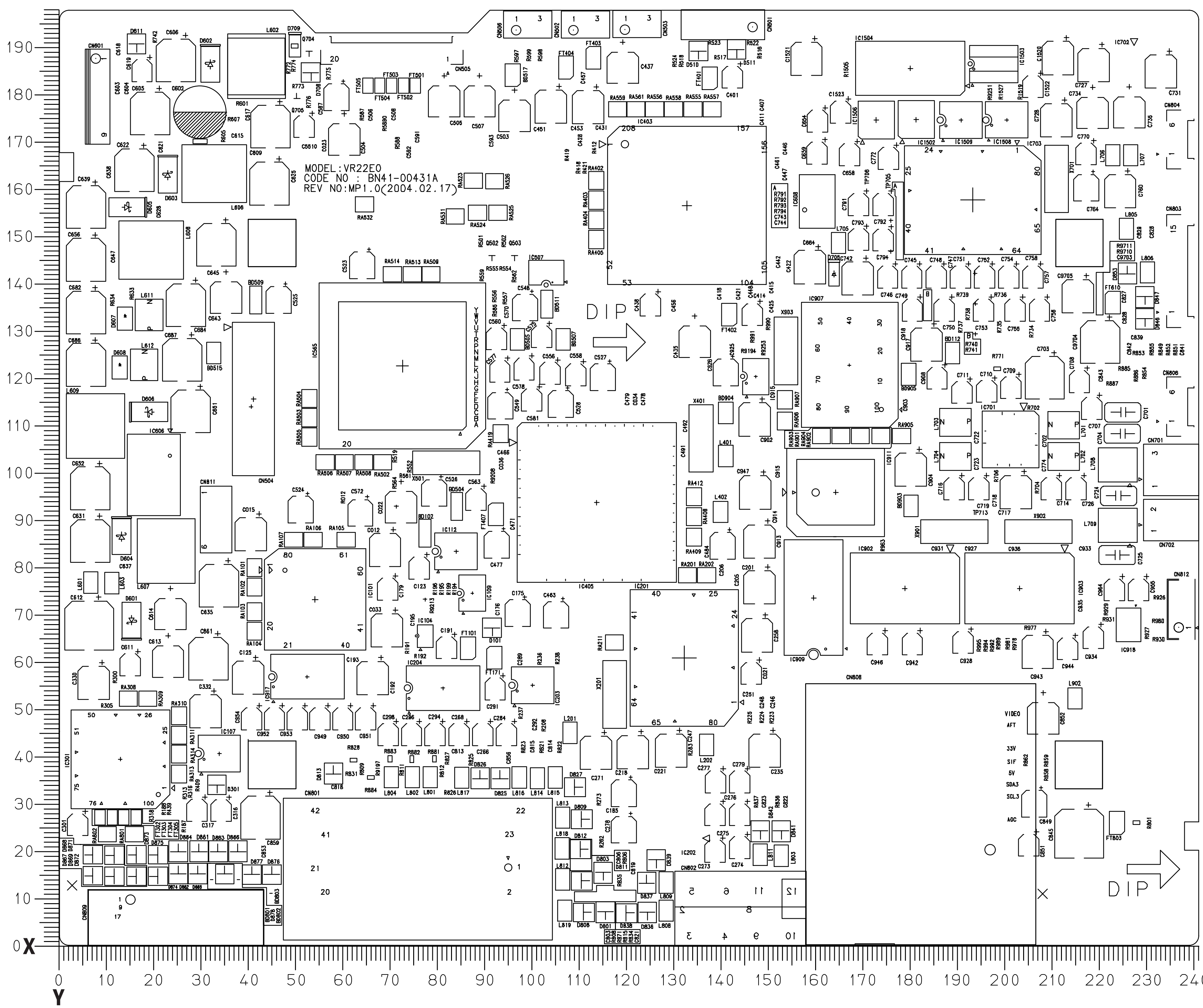
❇ This Document can not be used without Samsung's authorization.



Memo

10 PCB Layout

10-1 Main PCB Layout



Loc. No.	Description	X	Y
DIODE			
D101	DIODE-ARRAY	91.2	66.9
D102	DIODE-SWITCHING	54.9	52.5
D103	DIODE-SWITCHING	59.5	52.5
D104	DIODE-SWITCHING	64.5	52.6
D300	DIODE-ZENER	25.1	31.7
D301	DIODE-SWITCHING	33.2	33.8
D501	DIODE-ZENER	76.9	86.1
D502	DIODE-SWITCHING	62.9	90.3
D504	DIODE-ZENER	29.3	124.7
D510	DIODE-SWITCHING	134.7	188.4
D511	DIODE-SWITCHING	142.7	188.7
D601	DIODE-RECTIFIER	15.2	68.5
D602	DIODE-RECTIFIER	31.8	185.7
D603	DIODE-RECTIFIER	22.8	162.3
D604	DIODE-RECTIFIER	13.1	86.1
D605	DIODE-RECTIFIER	14.2	155.5
D606	DIODE-RECTIFIER	19.0	112.4
D607	DIODE-SCHOTTKY	13.8	131.9
D608	DIODE-SCHOTTKY	12.7	121.6
D611	DIODE-ARRAY	16.3	189.9
D701	DIODE-ZENER	217.7	188.7
D702	DIODE-SWITCHING	217.8	184.1
D703	DIODE-ZENER	215.7	177.0
D704	DIODE-ZENER	222.8	177.2
D705	DIODE-ZENER	163.2	141.4
D706	DIODE-ZENER	215.4	166.2
D707	DIODE-ZENER	218.0	160.5
D708	DIODE-ARRAY	53.0	183.9
D709	DIODE-ZENER	49.6	189.5
D801	DIODE-ZENER	115.1	7.1
D802	DIODE-ZENER	109.6	26.8
D803	DIODE-ZENER	114.6	15.4
D804	DIODE-ZENER	109.6	17.2
D805	DIODE-ZENER	47.8	20.1
D806	DIODE-ZENER	47.8	15.3
D808	DIODE-ZENER	110.4	7.0
D809	DIODE-ZENER	110.0	26.6
D811	DIODE-ZENER	110.0	13.6

Loc. No.	Description	X	Y
D812	DIODE-ZENER	109.7	20.3
D813	DIODE-ZENER	57.7	36.1
D814	DIODE-ZENER	57.7	36.3
D815	DIODE-ZENER	235.1	179.3
D816	DIODE-ZENER	236.1	157.6
D817	DIODE-ZENER	230.6	174.5
D821	DIODE-ZENER	101.1	40.1
D822	DIODE-ZENER	108.8	33.6
D823	DIODE-ZENER	92.9	37.6
D824	DIODE-ZENER	88.6	37.6
D825	DIODE-ZENER	92.9	35.1
D826	DIODE-ZENER	88.6	35.1
D827	DIODE-ZENER	108.6	33.4
D828	DIODE-ZENER	100.7	34.9
D836	DIODE-ZENER	123.9	7.0
D837	DIODE-ZENER	123.7	13.1
D838	DIODE-ZENER	119.4	6.8
D839	DIODE-ZENER	125.8	18.0
D841	DIODE-ZENER	152.1	24.1
D842	DIODE-ZENER	147.7	24.1
D843	DIODE-ZENER	152.1	24.1
D844	DIODE-ZENER	147.7	24.1
D845	DIODE-ZENER	229.0	131.9
D846	DIODE-ZENER	228.7	132.1
D847	DIODE-ZENER	228.7	136.7
D848	DIODE-ZENER	228.9	136.6
D849	DIODE-SWITCHING	231.2	148.4
D851	DIODE-ZENER	229.3	141.6
D852	DIODE-ZENER	224.8	150.9
D853	DIODE-ZENER	225.0	141.5
D854	DIODE-ZENER	224.8	145.3
D855	DIODE-ZENER	220.3	136.5
D856	DIODE-ZENER	220.3	131.6
D857	DIODE-ZENER	220.4	126.7
D858	DIODE-ZENER	230.6	163.4
D859	DIODE-ZENER	230.2	179.2
D861	DIODE-ZENER	29.4	19.7
D862	DIODE-ZENER	25.0	15.0
D863	DIODE-ZENER	33.4	19.7

Loc. No.	Description	X	Y
D864	DIODE-ZENER	25.0	19.7
D865	DIODE-ZENER	29.1	15.0
D866	DIODE-ZENER	37.6	19.7
D867	DIODE-SWITCHING	7.0	14.6
D868	DIODE-SWITCHING	7.0	19.0
D869	DIODE-SWITCHING	11.5	14.5
D871	DIODE-SWITCHING	11.5	18.9
D872	DIODE-SWITCHING	16.2	14.5
D873	DIODE-SWITCHING	16.2	19.0
D874	DIODE-SWITCHING	20.7	14.5
D875	DIODE-SWITCHING	20.7	19.0
D876	DIODE-SWITCHING	44.7	14.9
D877	DIODE-SWITCHING	40.5	14.9
D878	DIODE-SWITCHING	34.8	15.0
D881	DIODE-ZENER	79.1	36.6
D882	DIODE-ZENER	42.3	25.6
D883	DIODE-ZENER	69.8	36.6
D884	DIODE-ZENER	34.3	60.2
D901	DIODE-SWITCHING	200.7	62.6
D906	DIODE-ZENER	171.1	129.7
D907	DIODE-ZENER	171.1	126.1
IC			
IC101	IC-A/D CONVERTER	53.9	72.9
IC104	IC-POSI.FIXED REG.	77.0	65.2
IC107	IC-CMOS LOGIC	33.7	40.4
IC108	IC-EEPROM	97.1	70.2
IC109	IC-EEPROM	87.0	74.2
IC111	IC-ANALOG SWITCH	77.1	72.9
IC112	IC-ANALOG SWITCH	83.6	83.0
IC201	IC-VIDEO PROCESS	131.7	60.5
IC202	IC-VIDEO SWITCH	128.8	28.3
IC203	IC-ANALOG SWITCH	99.7	54.8
IC204	IC-VIDEO SWITCH	80.8	54.2
IC301	IC-RECEIVER	12.9	39.2
IC302	IC-VOL. DETECTOR	32.1	33.7
IC401	IC-DRAM	147.6	168.4
IC402	IC-DRAM	147.9	144.6
IC403	IC-DISPLAY DRIVER	132.2	155.9

Loc. No.	Description	X	Y
IC405	IC-VIDEO PROCESS	113.2	93.3
IC406	IC-DRAM	97.1	97.0
IC501	IC-DRAM	89.4	155.8
IC502	IC-DRAM	65.1	155.8
IC503	IC-TRANSMITTER	69.7	173.6
IC504	IC-VOL. DETECTOR	56.3	92.2
IC505	IC-CMOS LOGIC	71.0	92.5
IC506	IC-FLASH MEMORY	40.4	113.5
IC507	IC-EEPROM	102.6	141.7
IC508	FET-SILICON	51.0	177.2
IC509	IC-VOL. DETECTOR	61.3	97.8
IC510	IC-MODULATOR	79.8	99.1
IC565	IC-LCD CONTROLLER	72.3	122.0
IC601	IC-SWITCH VOL. REG.	32.1	186.8
IC602	IC-SWITCH REG.	14.5	68.1
IC603	IC-SWITCH VOL. REG.	22.2	162.4
IC604	IC-DC/DC CONVERTER	12.8	86.3
IC605	IC-SWITCH VOL. REG.	12.3	153.0
IC606	IC-DC/DC CONVERTER	19.9	98.6
IC607	FET-SILICON	162.7	172.7
IC608	IC-POSI.FIXED REG.	159.7	157.2
IC611	IC-DC/DC CONVERTER	13.2	133.2
IC612	IC-DC/DC CONVERTER	10.5	121.8
IC613	IC-OP AMP	175.2	152.7
IC614	IC-OP AMP	175.2	146.2
IC616	IC-OP AMP	192.9	141.6
IC617	IC-OP AMP	193.0	135.2
IC618	IC-OP AMP	193.0	128.8
IC701	IC-AUDIO AMP	200.4	106.6
IC702	IC-AUDIO AMP	224.5	185.0
IC703	IC-SOUND PROCESSOR	192.5	157.0
IC902	IC MICOM	178.2	75.2
IC903	IC MICOM	202.3	75.2
IC904	IC-VOL. DETECTOR	208.7	64.5
IC907	IC-DECODER	166.4	122.3
IC909	IC-SRAM	158.9	73.2
IC911	IC-EPROM	163.6	95.5
IC915	IC-EEPROM	146.7	119.9
IC917	IC-VIDEO SWITCH	52.2	56.6

Loc. No.	Description	X	Y
IC918	IC-VOL. DETECTOR	225.3	67.4
IC1501	IC-TTL	168.5	184.3
IC1502	IC-CMOS LOGIC	180.5	174.0
IC1503	IC-TTL	196.9	185.7
IC1504	IC-SRAM	179.3	184.8
IC1505	IC-TTL	180.0	184.1
IC1506	IC-CMOS LOGIC	172.1	173.9
IC1507	IC-TTL	196.8	183.3
IC1508	IC-TTL	199.6	174.0
IC1509	IC-TTL	190.0	173.9
TRANSISTOR			
Q101	TR-SMALL SIGNAL	78.6	65.7
Q102	TR-SMALL SIGNAL	85.1	81.7
Q103	TR-SMALL SIGNAL	89.1	71.8
Q177	TR-SMALL SIGNAL	116.1	23.4
Q178	TR-SMALL SIGNAL	115.5	31.2
Q324	FET-SILICON	25.3	26.3
Q325	FET-SILICON	21.0	26.3
Q502	FET-SILICON	91.1	145.3
Q503	FET-SILICON	96.0	145.3
Q504	FET-SILICON	70.5	81.2
Q505	FET-SILICON	64.6	81.3
Q506	TR-SMALL SIGNAL	46.0	170.9
Q601	TR-SMALL SIGNAL	21.0	98.4
Q602	TR-SMALL SIGNAL	166.3	161.6
Q603	TR-SMALL SIGNAL	162.1	161.5
Q701	TR-SMALL SIGNAL	231.9	187.1
Q702	TR-SMALL SIGNAL	206.8	96.8
Q703	TR-SMALL SIGNAL	193.9	96.0
Q704	TR-SMALL SIGNAL	52.6	188.4
Q705	TR-SMALL SIGNAL	50.0	178.4
Q801	TR-SMALL SIGNAL	232.9	123.7
Q802	TR-SMALL SIGNAL	228.9	123.7
Q803	TR-SMALL SIGNAL	226.9	119.8
Q901	TR-SMALL SIGNAL	180.6	121.5
Q903	TR-SMALL SIGNAL	166.0	125.5

9 Wiring Diagram

MAIN BOARD

CN505

Pin	Signal
1	ADJ_GAMMA
2	GND
3	TXOUT0-
4	TXOUT0+
5	GND
6	TXOUT1-
7	TXOUT1+
8	GND
9	TXOUT2-
10	TXOUT2+
11	GND
12	TXCLKOUT-
13	TXCLKOUT+
14	GND
15	TXCLKOUT3-
16	TXCLKOUT3+
17	GND
18	GND
19	5V
20	5V

CN601

Pin	Signal
1	ADJ_BRIGHT
2	SW_INVERTER
3	GND
4	GND
5	GND
6	NC
7	14V
8	14V
9	14V

CN804

Signal	Pin
KEY1	1
POWER_KEY	2
CH+_OUT	3
CH-_OUT	4
SOURCE_OUT	5
GND	6

CN803

Signal	Pin
GND	1
IDENT_HP	2
GND	3
HP_L	4
HP_R	5
GND	6
PC_AUDIO_L	7
PC_AUDIO_R	8
GND	9
S_VHS_C	10
S_VHS_Y	11
VIDEO_CVBS	12
GND	13
VIDEO_L	14
VIDEO_R	15

CN806

Signal	Pin
LED_GRN	1
LED_RED	2
NC	3
A3.3V	4
IR	5
GND	6

CN701

Signal	Pin
SPKOUT R+	1
NC	2
SPKOUT R-	3

CN702

Signal	Pin
SPKOUT L+	1
SPKOUT L-	2

CN808

Pin	Signal
1	TUNER

CN809

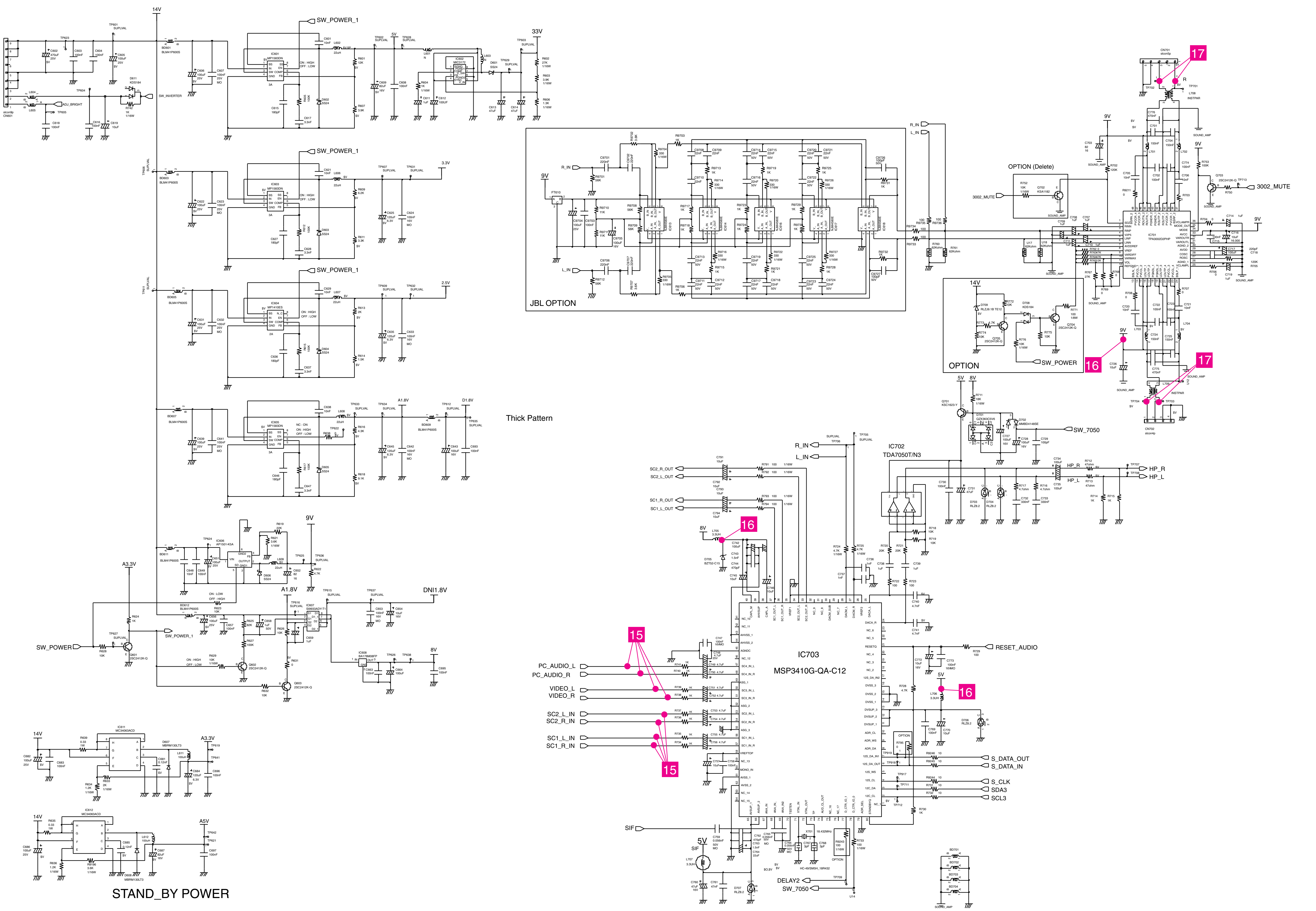
Pin	Signal	Pin	Signal
1	RX2-	16	5V
2	RX2+	17	Rx0-
3	GND	18	Rx0+
4	NC	19	GND
5	NC	20	NC
6	PC_DDC_SCL	21	NC
7	PC_DDC_SDA	22	GND
8	VSYNC_PC	23	RxC+
9	Rx1-	24	RxC-
10	Rx1+	25	PC_BLUE
11	GND	26	GND
12	NC	27	HSYNC_PC
13	NC	28	PC_GREEN
14	PC_5V	29	GND
15	IDENT_PC	30	PC_RED

CN801

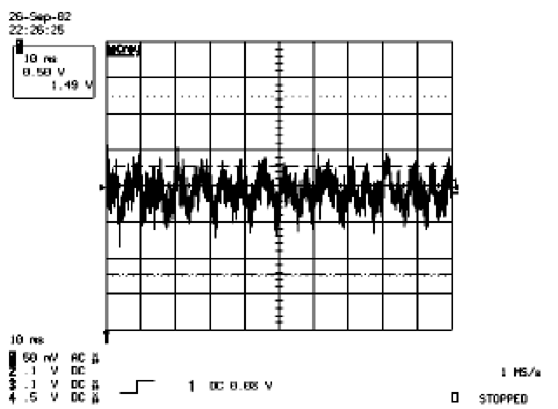
Pin	Signal	Pin	Signal
1	SC1 RED OUT	22	SC2 RED OUT
2	SC1 RED IN	23	SC2 RED IN
3	SC1 LEFT OUT	24	SC2 LEFT OUT
4	GND	25	GND
5	GND	26	GND
6	SC1 LEFT IN	27	SC2 LEFT IN
7	SC1 BLUE	28	N/C
8	SC1 SWIT CHING	29	SC2 SWIT CHING
9	GND	30	GND
10	N/C	31	N/C
11	SC1 GREEN	32	N/C
12	N/C	33	N/C
13	GND	34	GND
14	GND	35	GND
15	SC1 RED	36	N/C
16	GND	37	N/C
17	SC1 FAST BLANKING	38	GND
18	GND	39	GND
19	SC1 CVBS OUT	40	SC2 CVBS OUT
20	SC1 CVBS IN	41	SC2 CVBS IN
21	GND	42	GND

Memo

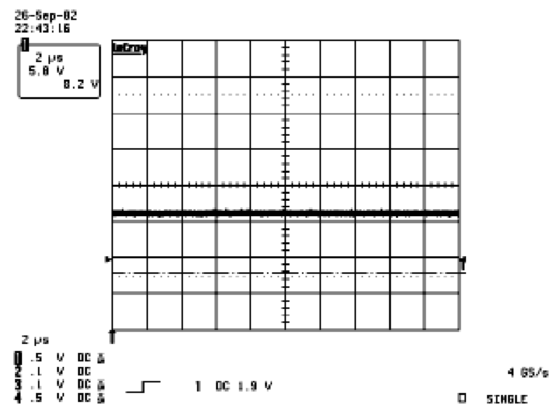
11-5 SOUND PROCESSOR, SOUND AMP, POWER Schematic Diagram



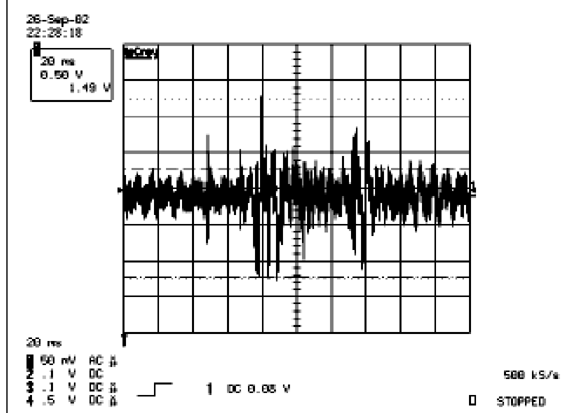
15 The Signal are Inputed to IC703



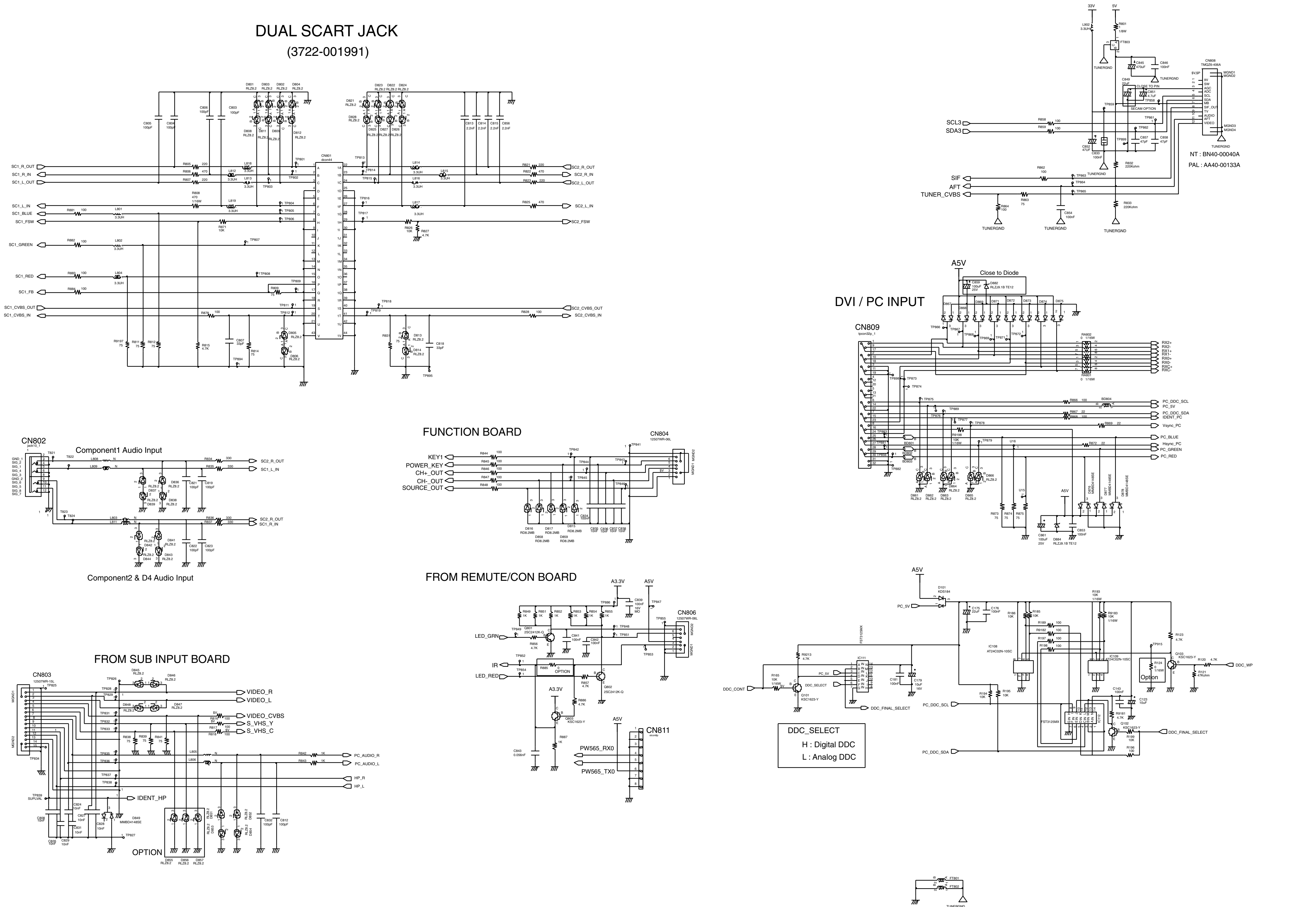
16 DC +8V



17 Output WaveForm



11-6 INPUT CONECTOR Schematic Diagram



Memo

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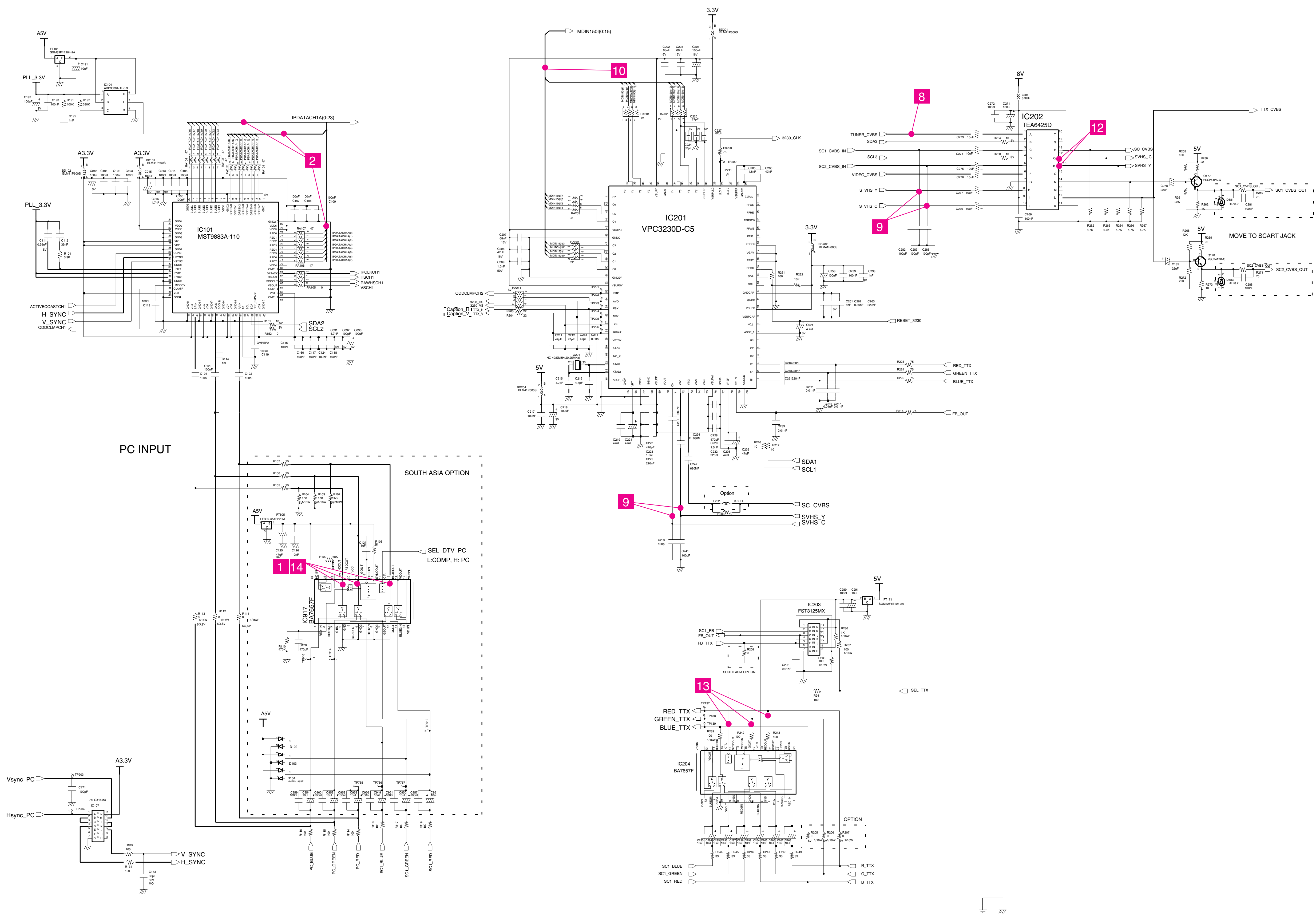
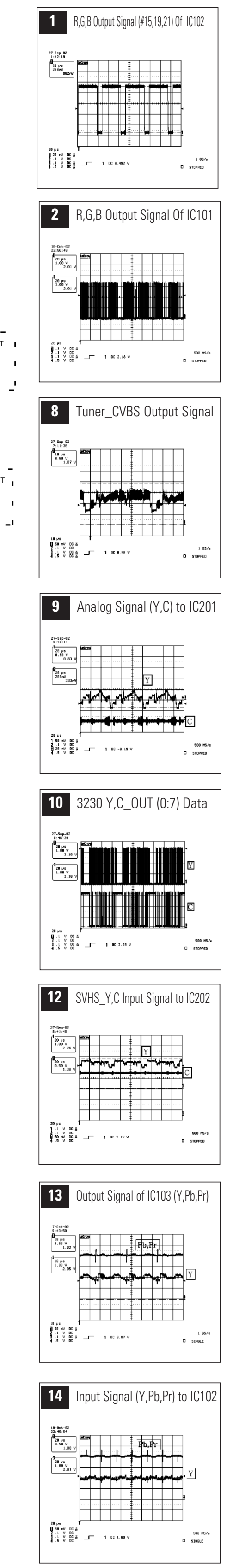
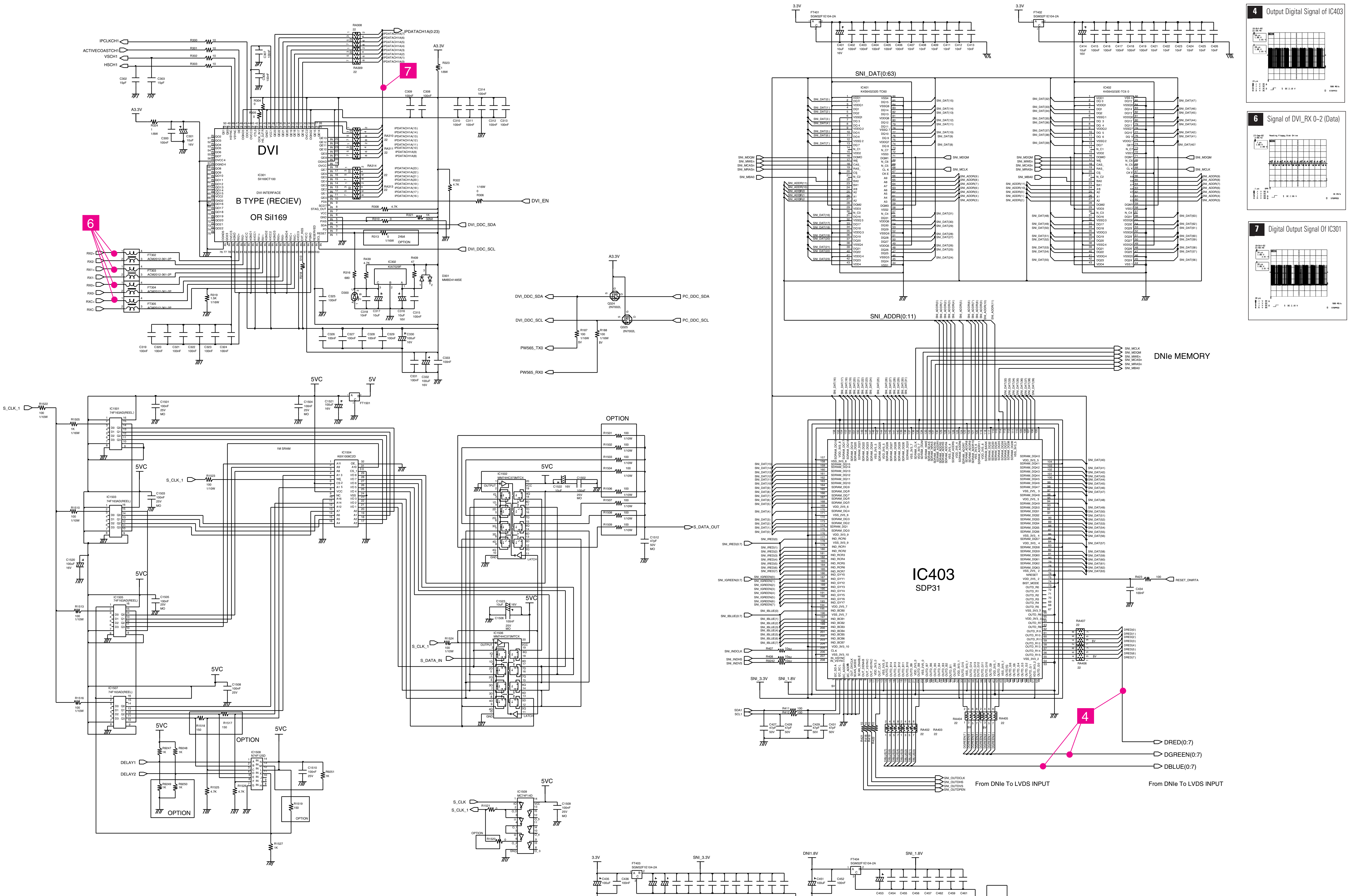
11-1 VIDEO DECORDER ADC, SWITCH Schematic Diagram

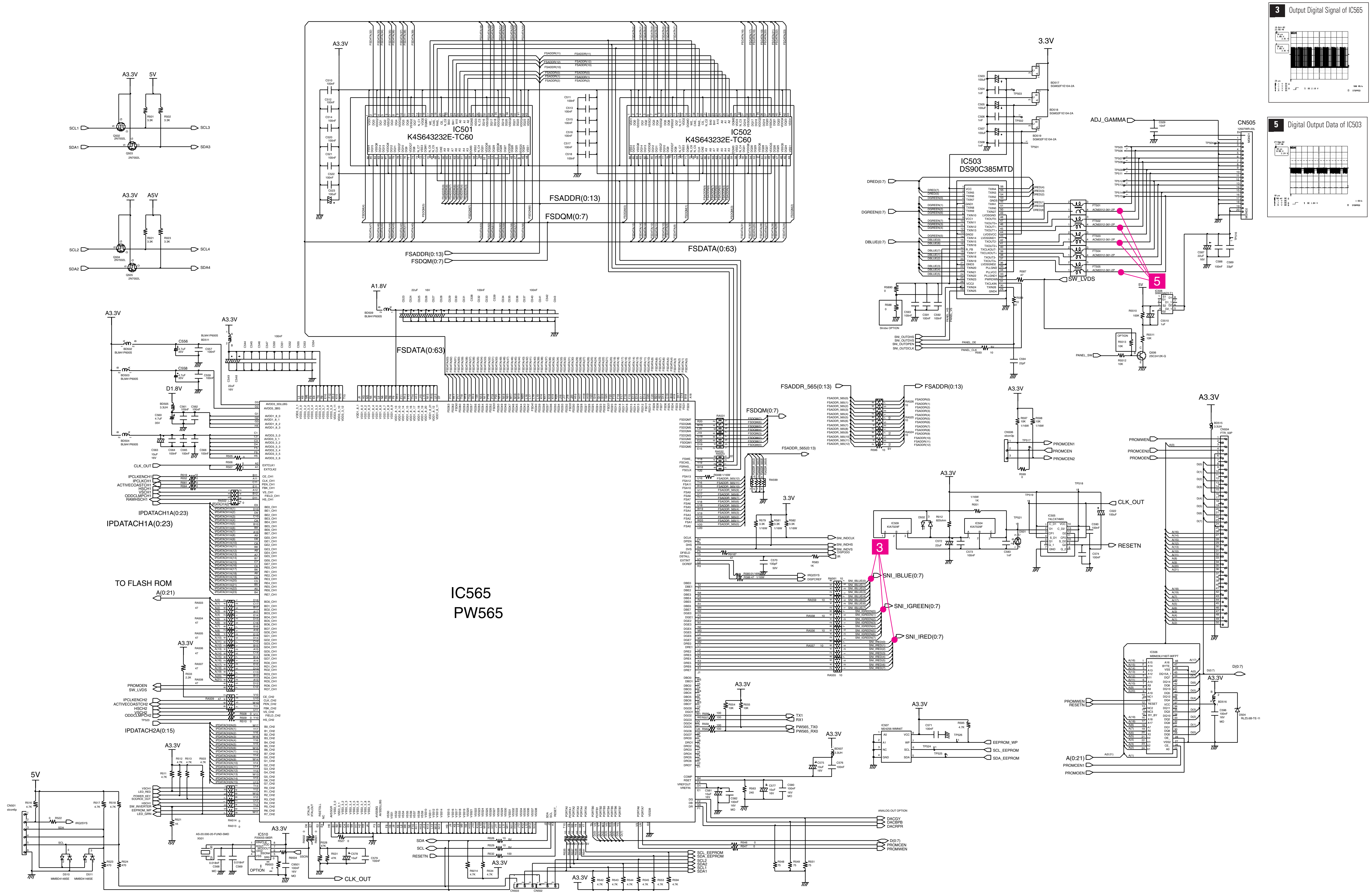




11-2 DVE, DNI 3D Comb Schematic Diagram



11-3 PW565_Scaler LVDS, Video_Memory, Flash_Memory Schematic Diagram



11-4 CAPTION, TTX DEINTERLACER, SUB_MICOM Schematic Diagram