

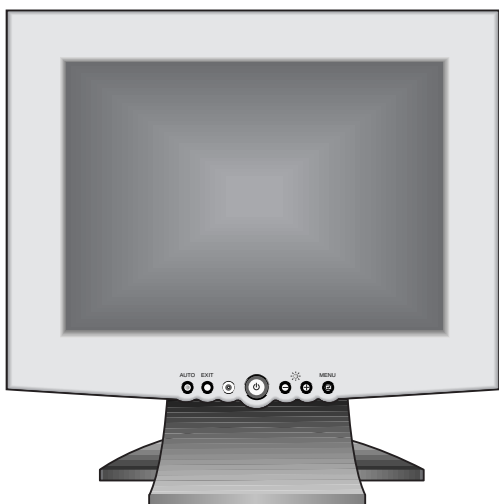


COLOR MONITOR

**SyncMaster 470STFT
(RN14AS)**

SERVICE Manual

COLOR MONITOR



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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.
3. When the chassis is operating, semiconductor heatsinks are potential shock hazards.

1-1-2 Servicing the LCD Monitor

1. When servicing the LCD Monitor, remove the static charge by connecting a 10k ohm resistor in series with an insulated wire (such as a test probe) between the chassis and the anode lead. (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*).

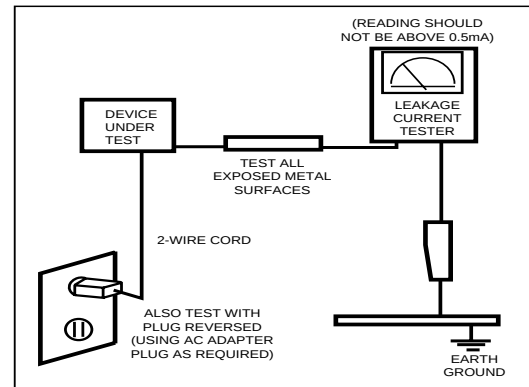


Figure 1-1. Leakage Current Test Circuit

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 devices 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, normally white, 14-Inch viewable, 0.27825 (H) x 0.27825 (V) pixel pitch
Scanning Frequency	Horizontal : 30 kHz to 61 kHz (Automatic) Vertical : 50 Hz to 75 Hz (Automatic)
Display Colors	262,144 colors
Maximum Resolution	Horizontal : 1024 Pixels Vertical : 768 Pixels
Input Video Signal	Analog, 0.714 Vp-p $\pm$ 5% positive at 75 Ω , internally terminated
Input Sync Signal	Type: Separate H/V sync, Composite H/V, Sync-on-Green, automatic synchronization without external switch of sync type Level: TTL level
Maximum Pixel Clock rate	80 MHz
Active Display Horizontal/Vertical	284.9 mm / 213.7 mm
AC power voltage & Frequency	AC 90 to 264 Volts, 60/ 50 Hz to 12V/3A
Power Consumption	35W (max.)
Dimensions / Unit Weight / incl. Carton Unit (W x H x D) with:	Simple base 375.4 x 361.7 x 168 mm / 5.15kg / 8.35kg MultiMedia base 375.4 x 403.2 x 174 mm / 5.9kg / 9.1kg Pivot-MM base 375.4 x 403.2 x 174 mm / 5.9kg / 9.1kg Angle-Pivot base 375.4 x 428.6 x 173.9 mm / 6.55kg / 9.75kg Wire-frame base 375.4 x 336.2 x 92.7 mm / 4.35kg / 7.55kg Carton (W x H x D) 415 x 282 x 510 mm
Environmental Considerations	Operating Temperature : 50°F to 104°F (10°C to 40°C) Humidity : 10 % to 80 % Storage Temperature : -13°F to 113°F (-25°C to 45°C) Humidity : 5 % to 95 %
Audio Characteristics	- Audio Characteristics - Built-in Microphone: High-sensitivity condenser microphone (mono) - Audio input: Left/Right Stereo phone jack, 0.5 Vrms - Sound output: 1.0 W (left) + 1.0 W (right)/THD 1% at 8ohm - Frequency response: 80 Hz~20 kHz (at -3dB) - Headphone: Max 50mW output (3.5-pi jack) - Speaker: Internal semi Dome (16ohm x 2)
- SyncMaster 470STFT comply with SWEDAC (MPR II) recommendations for reduced electromagnetic fields. - Designs and specifications are subject to change without prior notice.	

2-2 Pin Assignments

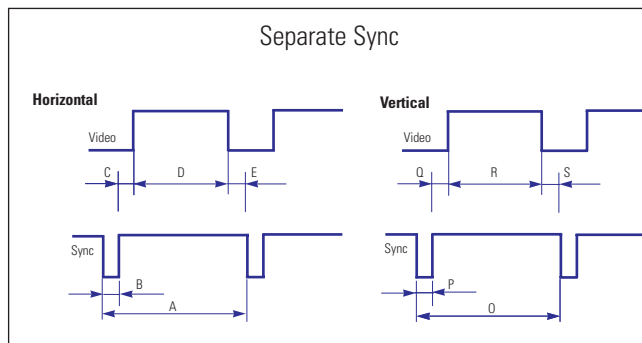
Pin No.	Sync Type	15-Pin Signal Cable Connector		
		Separate	Composite	Sync-on-green
1		Red	Red	Red
2		Green	Green	Green + H/V Sync
3		Blue	Blue	Blue
4		GND	GND	GND
5		GND (DDC Return)	GND (DDC Return)	GND (DDC Return)
6		GND-R	GND-R	GND-R
7		GND-G	GND-G	GND-G
8		GND-B	GND-B	GND-B
9		No Connection	No Connection	Not Used
10		GND-Sync/Self Test	GND-Sync/Self Test	GND-Sync/Self Test
11		GND	GND	GND
12		DDC Data	DDC Data	DDC Data
13		H-Sync	H/V-Sync	Not Used
14		V-Sync	Not Used	Not Used
15		DDC Clock	DDC Clock	DDC Clock

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.

Table 2-1. Timing Chart

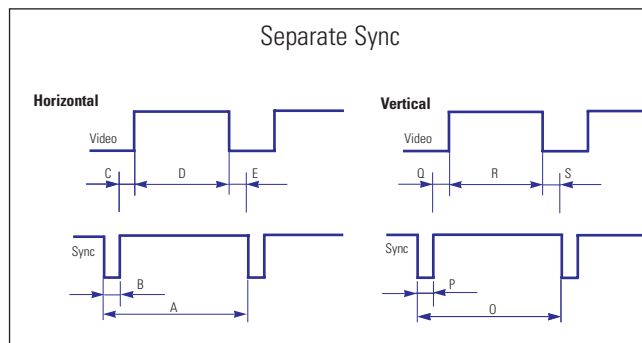
Mode Timing	IBM			VESA			
	VGA1/70 Hz 640 x 350	VGA2/70 Hz 720 x 400	VGA3/60 Hz 640 x 480	640/72 Hz 640 x 480	640/75 Hz 640 x 480	800/56 Hz 800 x 600	800/60 Hz 800 x 600
fH (kHz)	31.469	31.469	31.469	37.861	37.500	35.156	37.879
A μ sec	31.778	31.777	31.778	26.413	26.667	28.444	26.400
B μ sec	3.813	3.813	3.813	1.270	2.032	2.000	3.200
C μ sec	1.589	1.589	1.589	3.810	3.810	3.556	2.200
D μ sec	26.058	26.058	26.058	20.825	20.317	22.222	20.000
E μ sec	0.318	0.318	0.318	0.508	0.508	0.667	1.000
fV (Hz)	70.086	70.087	59.940	72.809	75.000	56.250	60.317
O msec	14.268	14.268	16.683	13.735	13.333	17.778	16.579
P msec	0.064	0.064	0.064	0.079	0.080	0.057	0.106
Q msec	1.716	0.858	0.794	0.528	0.427	0.626	0.607
R msec	11.504	13.155	15.761	13.100	12.800	17.067	15.840
S msec	0.985	0.191	0.064	0.026	0.027	0.028	0.026
Clock Frequency (MHz)	25.175	28.322	25.175	31.500	31.500	36.000	40.000
Polarity H.Sync	Positive	Negative	Negative	Negative	Negative	Positive	Positive
V.Sync	Negative	Positive	Negative	Negative	Negative	Negative	Positive
Remark	Separate	Separate	Separate	Separate	Separate	Separate	Separate



A : Line time total	B : Horizontal sync width	O : Frame time total	P : Vertical sync width
C : Back porch	D : Active time	Q : Back porch	R : Active time
E : Front porch		S : Front porch	

Table 2-1. Timing Chart Continued

Mode Timing	VESA					MAC.	
	800/72 Hz 800 x 600	800/75 Hz 800 x 600	1024/60 Hz 1024 x 768	1024/70 Hz 1024 x 768	1024/75 Hz 1024 x 768	640/67 Hz 640 x 480	832/75 Hz 832 x 624
fH (kHz)	48.077	46.875	48.363	56.476	60.023	35.000	49.726
A μ sec	20.800	21.333	20.677	17.707	16.660	28.571	20.110
B μ sec	2.400	1.616	2.092	1.813	1.219	2.116	1.117
C μ sec	1.280	3.232	2.462	1.920	2.235	3.175	3.910
D μ sec	16.000	16.162	15.754	13.653	13.003	21.164	14.524
E μ sec	1.120	0.323	0.369	0.320	0.203	2.116	0.559
fV (Hz)	72.188	75.000	60.004	70.069	75.029	66.667	74.551
O msec	13.853	13.333	16.666	14.272	13.328	15.000	13.414
P msec	0.125	0.064	0.124	0.106	0.050	0.086	0.060
Q msec	0.478	0.448	0.600	0.513	0.466	1.114	0.784
R msec	12.480	12.800	15.880	13.599	12.795	13.714	12.549
S msec	0.770	0.021	0.062	0.053	0.017	0.086	0.020
Clock Frequency (MHz)	50.000	49.500	65.000	75.000	78.750	30.240	57.284
Polarity H.Sync	Positive	Positive	Negative	Negative	Positive	Negative	Negative
V.Sync	Positive	Positive	Negative	Negative	Positive	Negative	Negative
Remark	Separate	Separate	Separate	Separate	Separate	Separate	Separate



A : Line time total

B : Horizontal sync width

O : Frame time total

P : Vertical sync width

C : Back porch

D : Active time

Q : Back porch

R : Active time

E : Front porch

S : Front porch

3 Disassembly and Reassembly

This section of the service manual describes the disassembly and reassembly procedures for the SyncMaster 470STFT 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. Follow these directions carefully; never use metal instruments to pry apart the cabinet.

3-1-1 Removing the Stand

1. Remove 4 screws in the hinge area.
2. Pry it off the back of the monitor.
3. Disconnect Power Cord and Signal Cable.

3-1-2 Main Body Disassembly

1. Remove the 4 screws on the four corner of the Rear Cover.
2. Remove Rear Cover from the Front Cover.
3. Remove 11 screws on the Shield and remove the shield.
4. Disconnect Inverter wire, Function PCB wire and Interface wire.
Remove 4 screws on the Main PCB and remove 2 screws on the D sub shield.
5. Remove the Main PCB Assembly.
6. Remove 6 screws on the Rear Panel Bracket.
7. Remove the Bracket Assembly from the Front Cover.
8. Remove 3 screws on the Function PCB from locking area of Function knob and remove Function PCB.
9. Remove 4 screws on the Shield of Panel.
10. Remove the Shield.
11. Remove Rear Bracket from Panel.
12. Remove 2 screws between Panel Rear and Inverter PCB.
13. Remove the Interface wire on the Rear Side of Panel.

3-1-3 Multi-media Stand Disassembly (option)

1. Stand the stand assembly with the base close to you.
2. Remove the 4 screws on the back cover of the stand and remove it.
3. Stand the stand assembly upside down.

4. Remove the 4 screws.
5. Disconnect CN805, CN806, CN807, CN808, CN809, CN812 and F1.
6. Remove the Back Cover of the Stand Front assembly.
7. Remove 4 screws on the external adaptor and remove the adaptor.
8. Remove 2 screws between hinge and Stand Body.
9. Remove the hinge
10. Remove 2 screws on Audio main PCB and remove it
11. Remove 2 screws on the Audio Function PCB and remove it.

3-1-4 Multi-media Stand Disassembly (Multi-media pivot stand Disassembly) Pivot Stand Disassembly

1. Remove the cap pivot from the stand assembly.
2. Remove the 4 screws on the hinge assembly.
3. Remove the 4 screws on the Stand Rear
4. Remove the Stand Rear from the Stand assembly.
5. Remove the Stand Front from the Stand assembly.
6. Remove the Neck Rear from the Stand assembly.
7. Remove the 4 Rubbers on the four corner of the Stand Bottom and the 4 screws on the four corner of the Stand Bottom.
8. Remove the 5 stopper hings from the Bracket Bottom.
9. Remove the Stand Base from the Stand Assembly.

3-1-5 Standard Stand Disassembly

1. Remove 5 screws from the Stand Rear

2. Remove 4 screws from the Stand Bottom.
3. Remove Stand Front from the Stand assembly.
4. Remove 2 screws from the Stand assembly.
5. Remove the Stand Rear from the Stand assembly.
6. Remove 5 screws on the Vesa Brkt from the Stand assembly.
7. Remove cover hinge from the Stand assembly.
8. Remove Stand Base from the Stand assembly.

3-1-5 Wire frame stand Disassembly

1. Carefully pull the cover hinge.
2. Remove the cover vesa from the Stand assembly.
3. Remove 4 screws on the assembly Bracket assembly.

3-2 Replacement Order of Lamp Assemblies

1. Disconnect lamp leadconnectors from the inverter. (2EA)
- * Replacement of lamp assemblies should be done at the power off state and recommended clean bench condition.

2. Remove 2 screws which are used to hold the lamp assemblies on.
3. Replace 2 lamp assemblies.
4. Assemble new lamp assemblies according to the counter order.

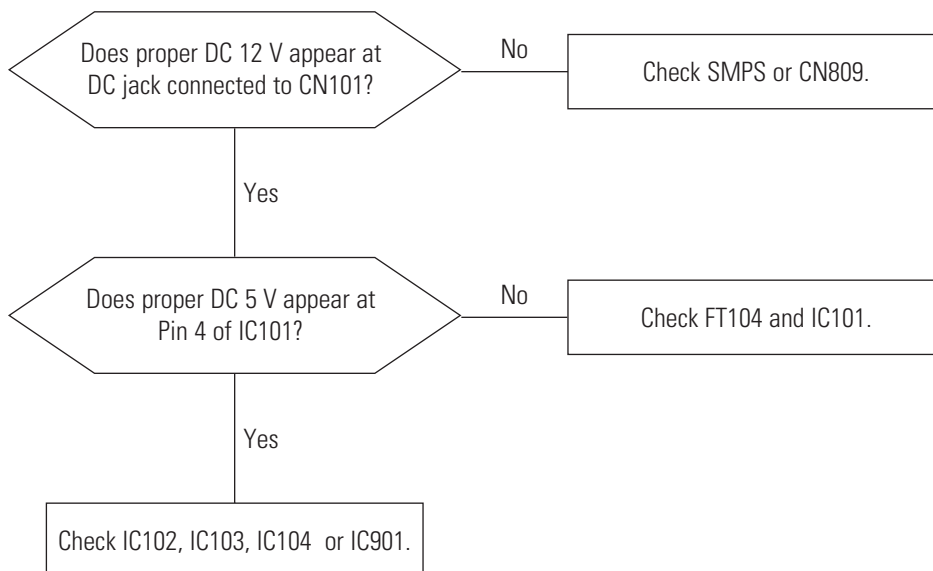
3-3 Reassembly

Reassembly procedures are in the reverse order of Disassembly procedures.

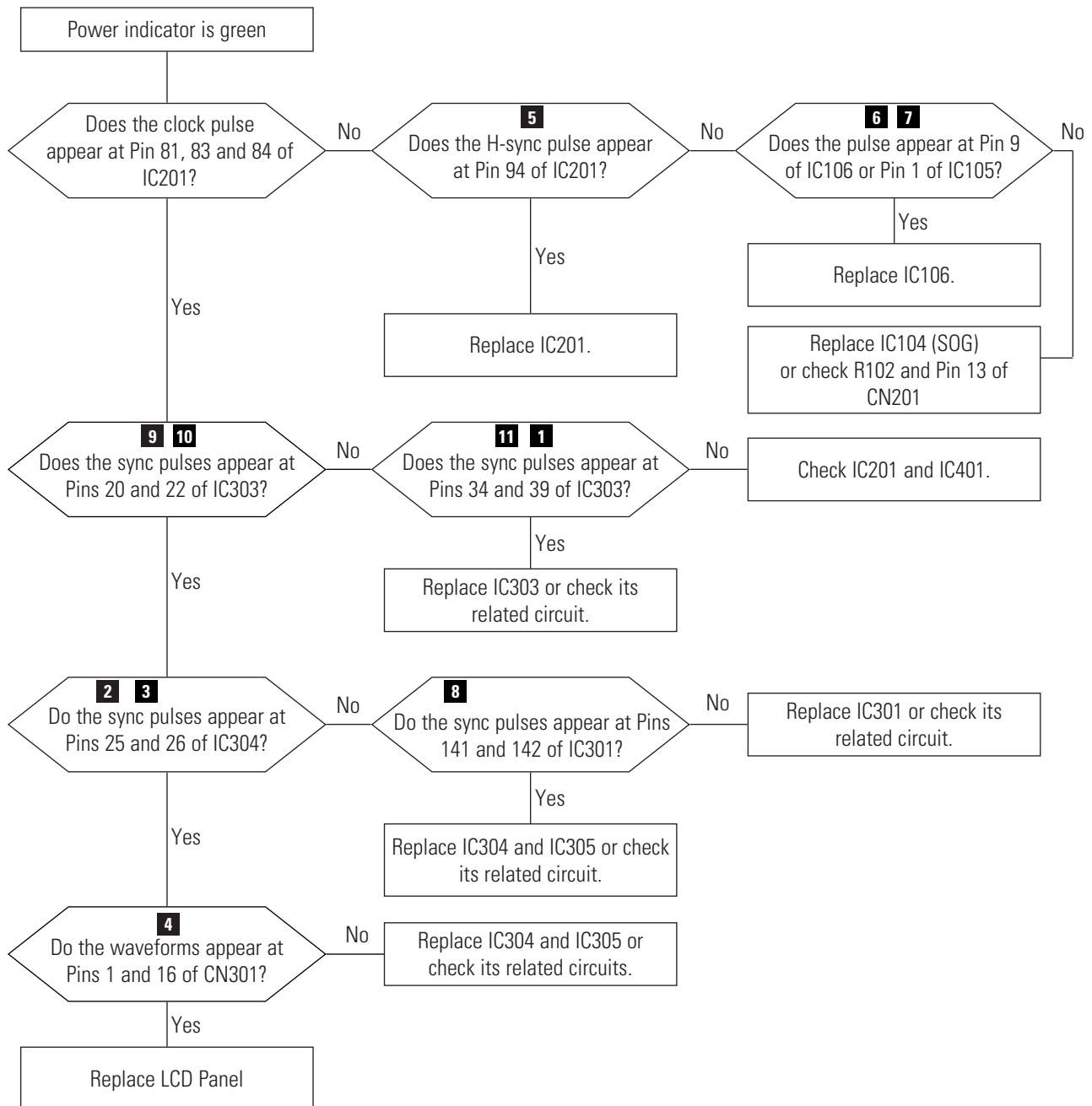
4 Troubleshooting

- Notes:**
- Before troubleshooting, setup the PC's display as below.
 - Resolution: 1024 x 768
 - H-frequency: 48 kHz
 - V-frequency: 60 Hz
 - If no picture appears, make sure the power cord is correctly connected.
 - Check the following circuits.
 - No raster appears: Audio PCB, SMPS PCB, Main PCB
 - 12V develop but no screen: Main PCB
 - 12V does not develop: Audio PCB, SMPS PCB
 - If you push and hold the "EXIT" button for more than 5 seconds, the monitor automatically turns back to the factory preset.

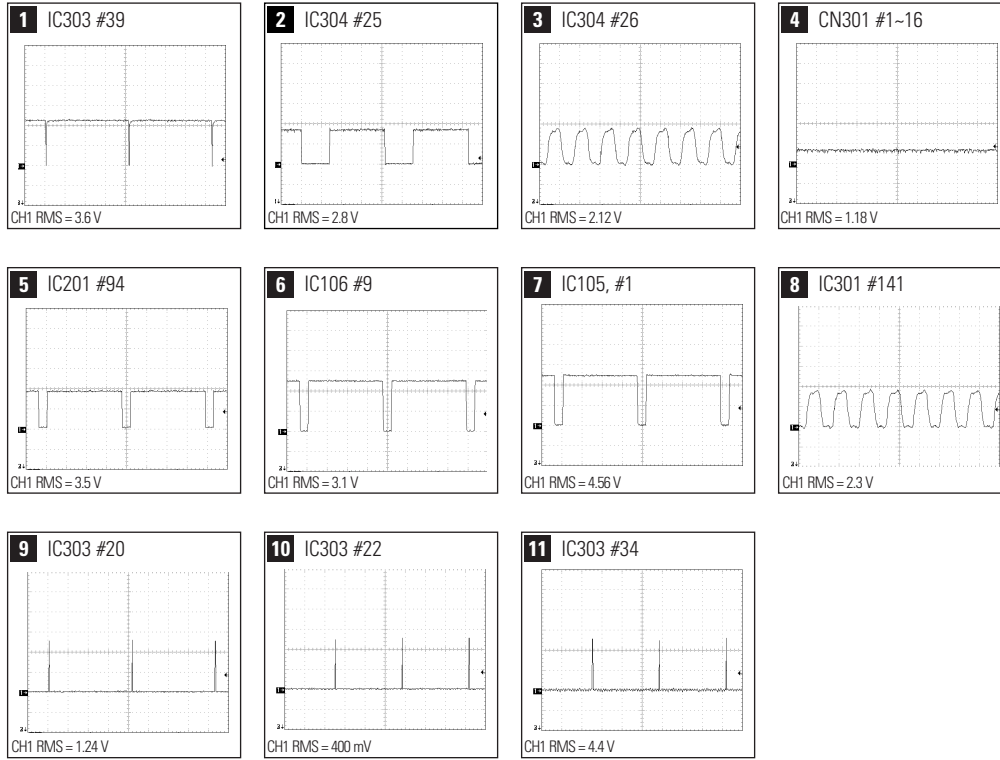
4-1 No Power



4-2 No Video

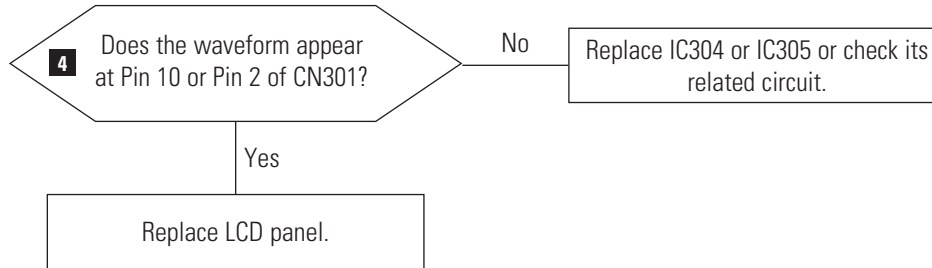


WAVEFORMS

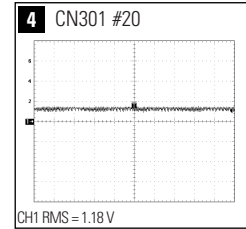


4-3 No Video of Alternate Vertical Line

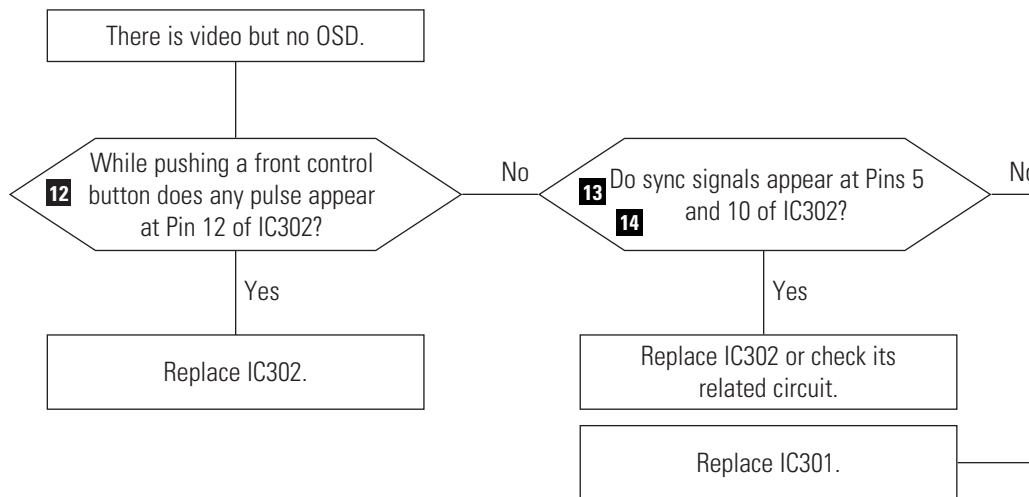
One or more even or odd vertical lines do not display.



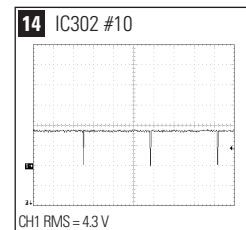
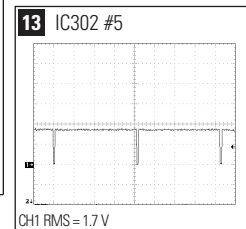
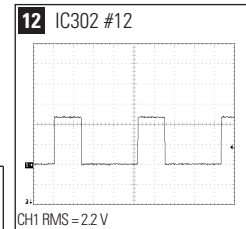
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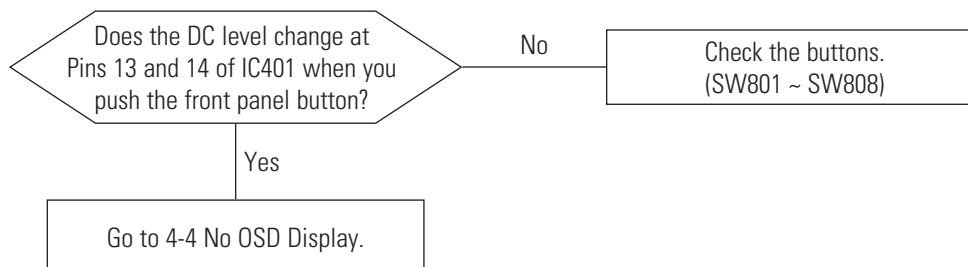
4-4 No OSD



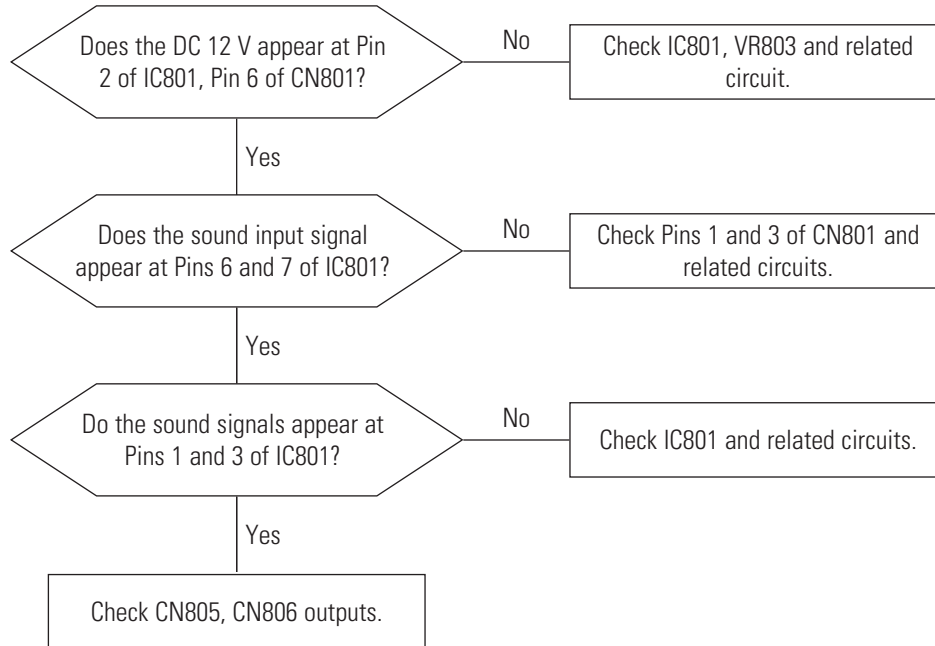
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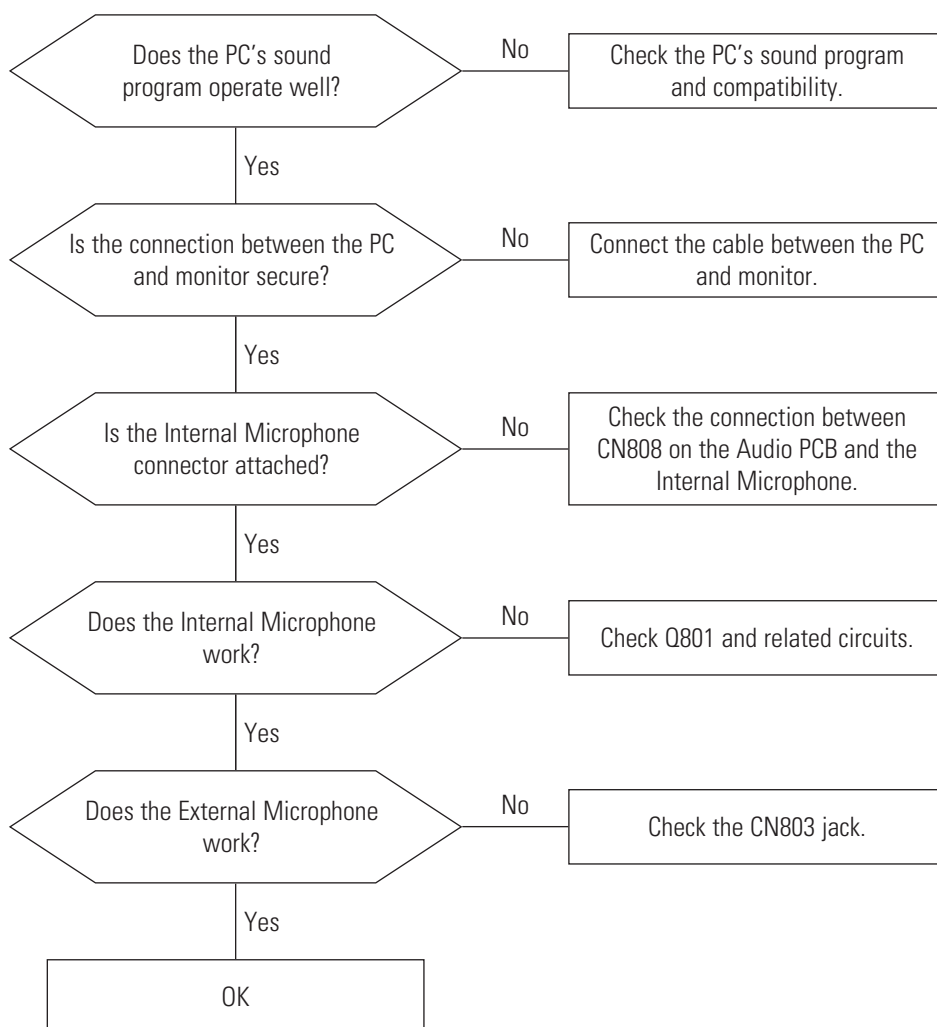
4-5 User Controls Don't Work



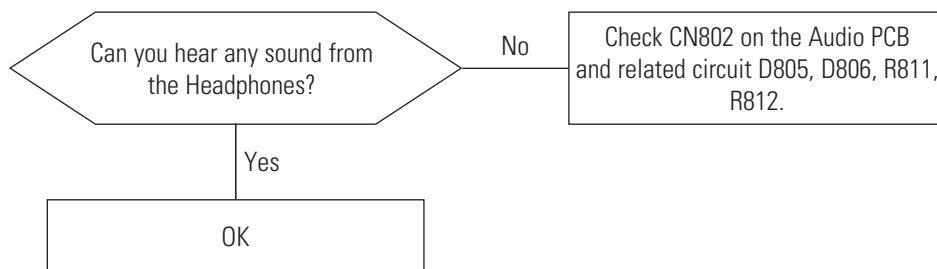
4-6 No Sound



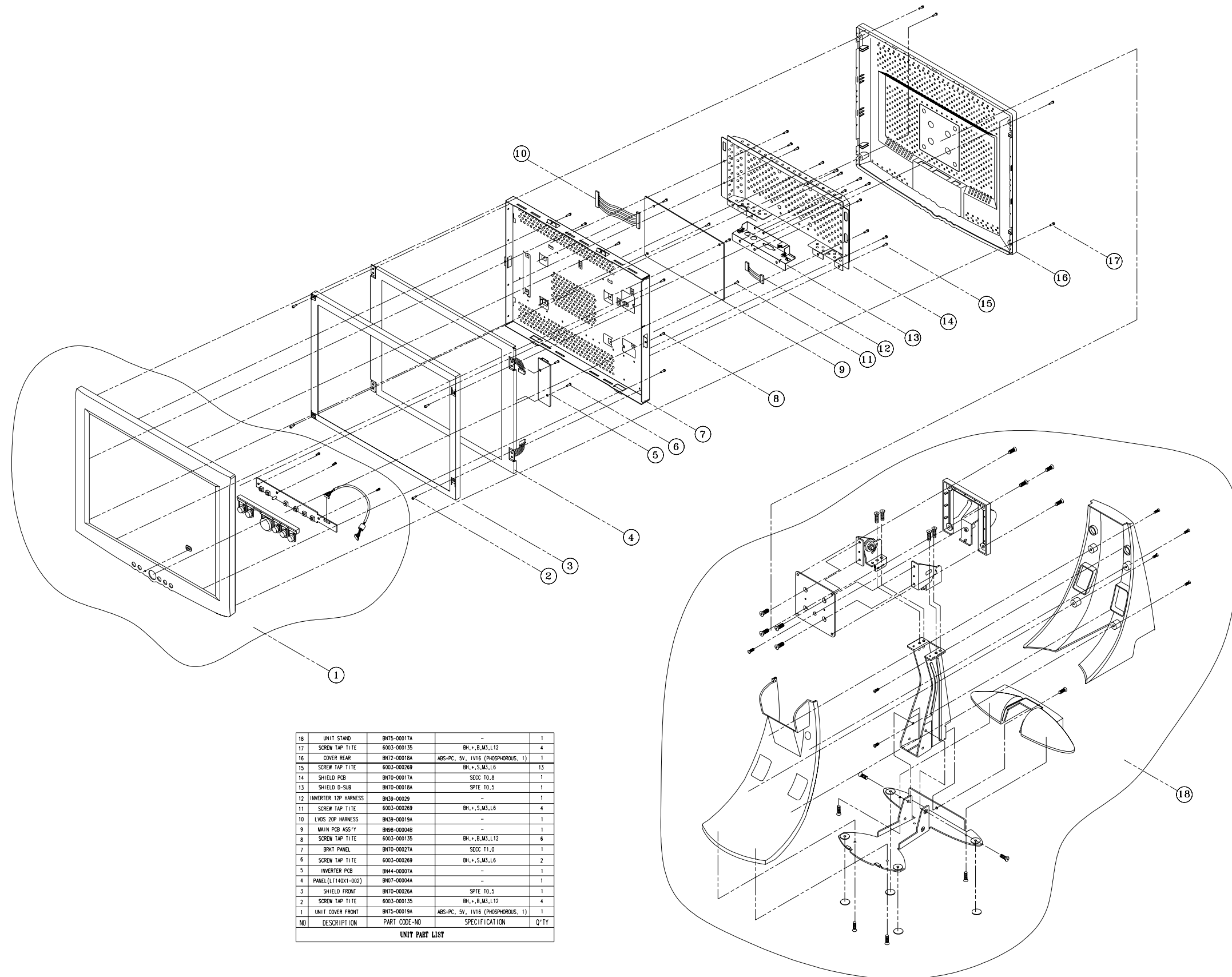
4-7 Microphones Don't Work



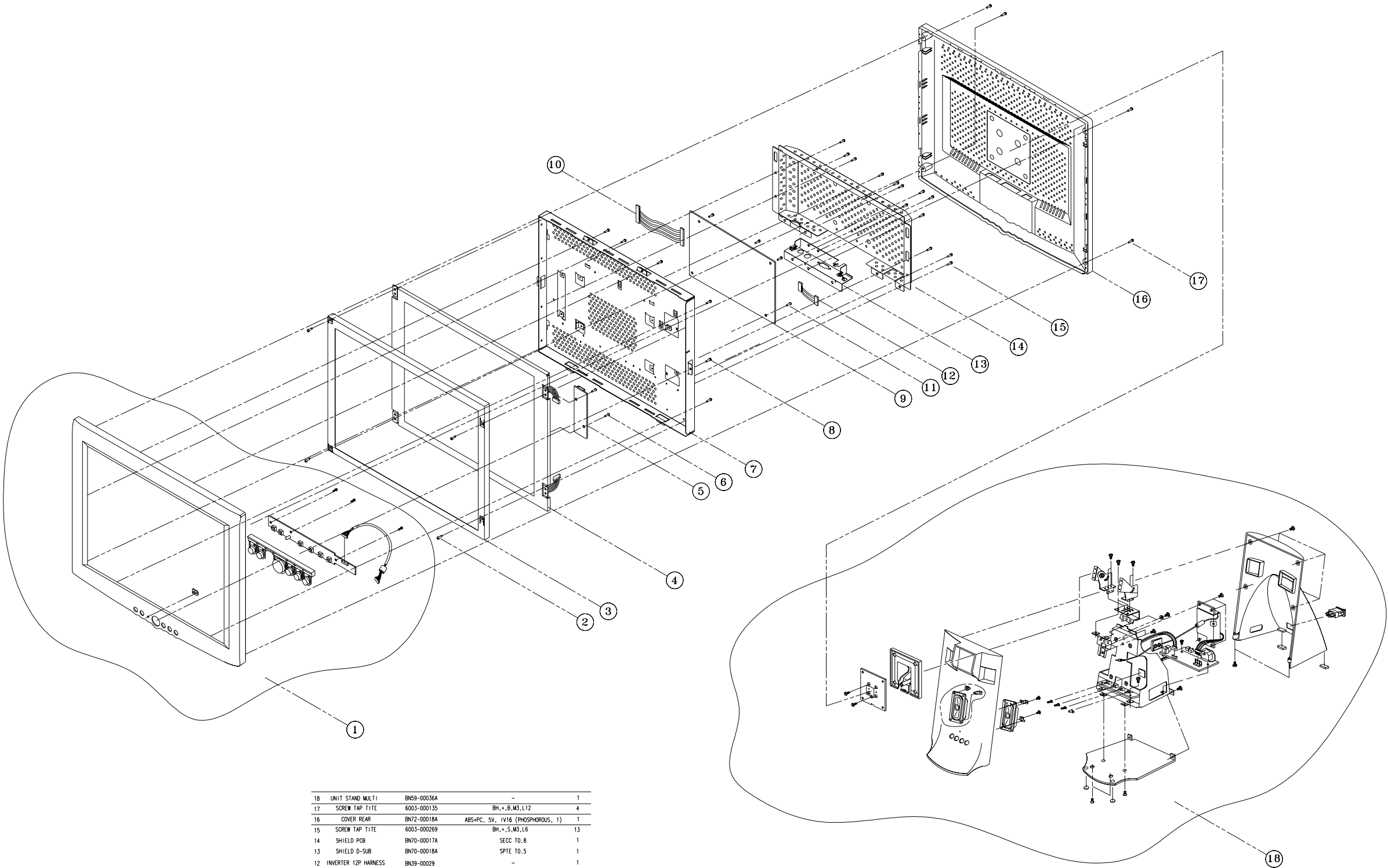
4-8 Headphones Don't Work



5-1 Simple base



5-2 MultiMedia base



18	UNIT STAND MULTI	BN59-00036A	-	1
17	SCREW TAP TITE	6003-000135	BH,+,B,M3,L12	4
16	COVER REAR	BN72-00018A	ABS+PC, 5V, 1V16 (PHOSPHOROUS, 1)	1
15	SCREW TAP TITE	6003-000269	BH,+,S,M3,L6	13
14	SHIELD PCB	BN70-00017A	SECC T0.8	1
13	SHIELD D-SUB	BN70-00018A	SPTT T0.5	1
12	INVERTER 12P HARNESS	BN39-00029	-	1
11	SCREW TAP TITE	6003-000269	BH,+,S,M3,L6	4
10	LVDS 20P HARNESS	BN39-00019A	-	1
9	MAIN PCB ASS'Y	BN98-00004B	-	1
8	SCREW TAP TITE	6003-000135	BH,+,B,M3,L12	6
7	BRKT PANEL	BN70-00027A	SECC T1.0	1
6	SCREW TAP TITE	6003-000269	BH,+,S,M3,L6	2
5	INVERTER PCB	BN44-00007A	-	1
4	SHIELD FRONT	BN70-00026A	SPTT T0.5	1
3	SCREW TAP TITE	6003-000135	BH,+,B,M3,L12	4

Loc. No.	Code No.	Description	Remarks
C137	2203-000260	ccap, C-CERAMIC,CHIP, 10nF,10%,50V,X7R,2012,TP	
C138	2203-000204	ccap, C-CERAMIC,CHIP, 100nF,10%,25V,X7R,TP,2012	
C139	2203-000260	ccap, C-CERAMIC,CHIP, 10nF,10%,50V,X7R,2012,TP	
C140	2203-000204	ccap, C-CERAMIC,CHIP, 100nF,10%,25V,X7R,TP,2012	
C141	2203-000260	ccap, C-CERAMIC,CHIP, 10nF,10%,50V,X7R,2012,TP	
C142	2203-000204	ccap, C-CERAMIC,CHIP, 100nF,10%,25V,X7R,TP,2012	
C143	2203-000455	ccap, C-CERAMIC,CHIP, 1nF,5%,50V,NPO,2012,TP	
C144	2203-001391	ccap, C-CERAMIC,CHIP, 150nF,10%,25V,X7R,TP,2012	
C145	2203-000260	ccap, C-CERAMIC,CHIP, 10nF,10%,50V,X7R,2012,TP	
C146	2203-000260	ccap, C-CERAMIC,CHIP, 10nF,10%,50V,X7R,2012,TP	
C147	2203-000609	ccap, C-CERAMIC,CHIP, 22nF,10%,50V,X7R,2012,TP	
C148	2203-000260	ccap, C-CERAMIC,CHIP, 10nF,10%,50V,X7R,2012,TP	
C149	2203-000260	ccap, C-CERAMIC,CHIP, 10nF,10%,50V,X7R,2012,TP	
C150	2203-000260	ccap, C-CERAMIC,CHIP, 10nF,10%,50V,X7R,2012,TP	
C151	2203-000609	ccap, C-CERAMIC,CHIP, 22nF,10%,50V,X7R,2012,TP	
C152	2203-000260	ccap, C-CERAMIC,CHIP, 10nF,10%,50V,X7R,2012,TP	
C153	2203-000260	ccap, C-CERAMIC,CHIP, 10nF,10%,50V,X7R,2012,TP	
C154	2203-000260	ccap, C-CERAMIC,CHIP, 10nF,10%,50V,X7R,2012,TP	
C155	2203-000609	ccap, C-CERAMIC,CHIP, 22nF,10%,50V,X7R,2012,TP	
C156	2203-000260	ccap, C-CERAMIC,CHIP, 10nF,10%,50V,X7R,2012,TP	
C157	2203-000151	ccap, C-CERAMIC,CHIP, 1.5nF,5%,50V,NPO,TP,2012	
C158	2203-000260	ccap, C-CERAMIC,CHIP, 10nF,10%,50V,X7R,2012,TP	
C159	2203-000260	ccap, C-CERAMIC,CHIP, 10nF,10%,50V,X7R,2012,TP	
C160	2203-000204	ccap, C-CERAMIC,CHIP, 100nF,10%,25V,X7R,TP,2012	
C161	2203-000204	ccap, C-CERAMIC,CHIP, 100nF,10%,25V,X7R,TP,2012	
C162	2402-000108	ecap, C-AL,SMD, 10uF,20%,16V,WT,TP,4.3x4.3x5.4	
C163	2203-000204	ccap, C-CERAMIC,CHIP, 100nF,10%,25V,X7R,TP,2012	
C164	2402-000108	ecap, C-AL,SMD, 10uF,20%,16V,WT,TP,4.3x4.3x5.4	
C201	2203-000260	ccap, C-CERAMIC,CHIP, 10nF,10%,50V,X7R,2012,TP	
C202	2203-000260	ccap, C-CERAMIC,CHIP, 10nF,10%,50V,X7R,2012,TP	
C203	2203-000204	ccap, C-CERAMIC,CHIP, 100nF,10%,25V,X7R,TP,2012	
C204	2203-000260	ccap, C-CERAMIC,CHIP, 10nF,10%,50V,X7R,2012,TP	
C205	2203-000204	ccap, C-CERAMIC,CHIP, 100nF,10%,25V,X7R,TP,2012	
C206	2203-000818	ccap, C-CERAMIC,CHIP, 33pF,5%,50V,NPO,2012,TP	
C207	2203-000260	ccap, C-CERAMIC,CHIP, 10nF,10%,50V,X7R,2012,TP	
C208	2203-000204	ccap, C-CERAMIC,CHIP, 100nF,10%,25V,X7R,TP,2012	
C209	2203-000260	ccap, C-CERAMIC,CHIP, 10nF,10%,50V,X7R,2012,TP	
C210	2203-000204	ccap, C-CERAMIC,CHIP, 100nF,10%,25V,X7R,TP,2012	
C211	2203-000260	ccap, C-CERAMIC,CHIP, 10nF,10%,50V,X7R,2012,TP	
C212	2203-000204	ccap, C-CERAMIC,CHIP, 100nF,10%,25V,X7R,TP,2012	
C213	2203-000260	ccap, C-CERAMIC,CHIP, 10nF,10%,50V,X7R,2012,TP	
C214	2203-000204	ccap, C-CERAMIC,CHIP, 100nF,10%,25V,X7R,TP,2012	
C301	2203-000204	ccap, C-CERAMIC,CHIP, 100nF,10%,25V,X7R,TP,2012	
C302	2203-000204	ccap, C-CERAMIC,CHIP, 100nF,10%,25V,X7R,TP,2012	
C303	2203-000204	ccap, C-CERAMIC,CHIP, 100nF,10%,25V,X7R,TP,2012	
C304	2203-000204	ccap, C-CERAMIC,CHIP, 100nF,10%,25V,X7R,TP,2012	
C305	2203-000204	ccap, C-CERAMIC,CHIP, 100nF,10%,25V,X7R,TP,2012	

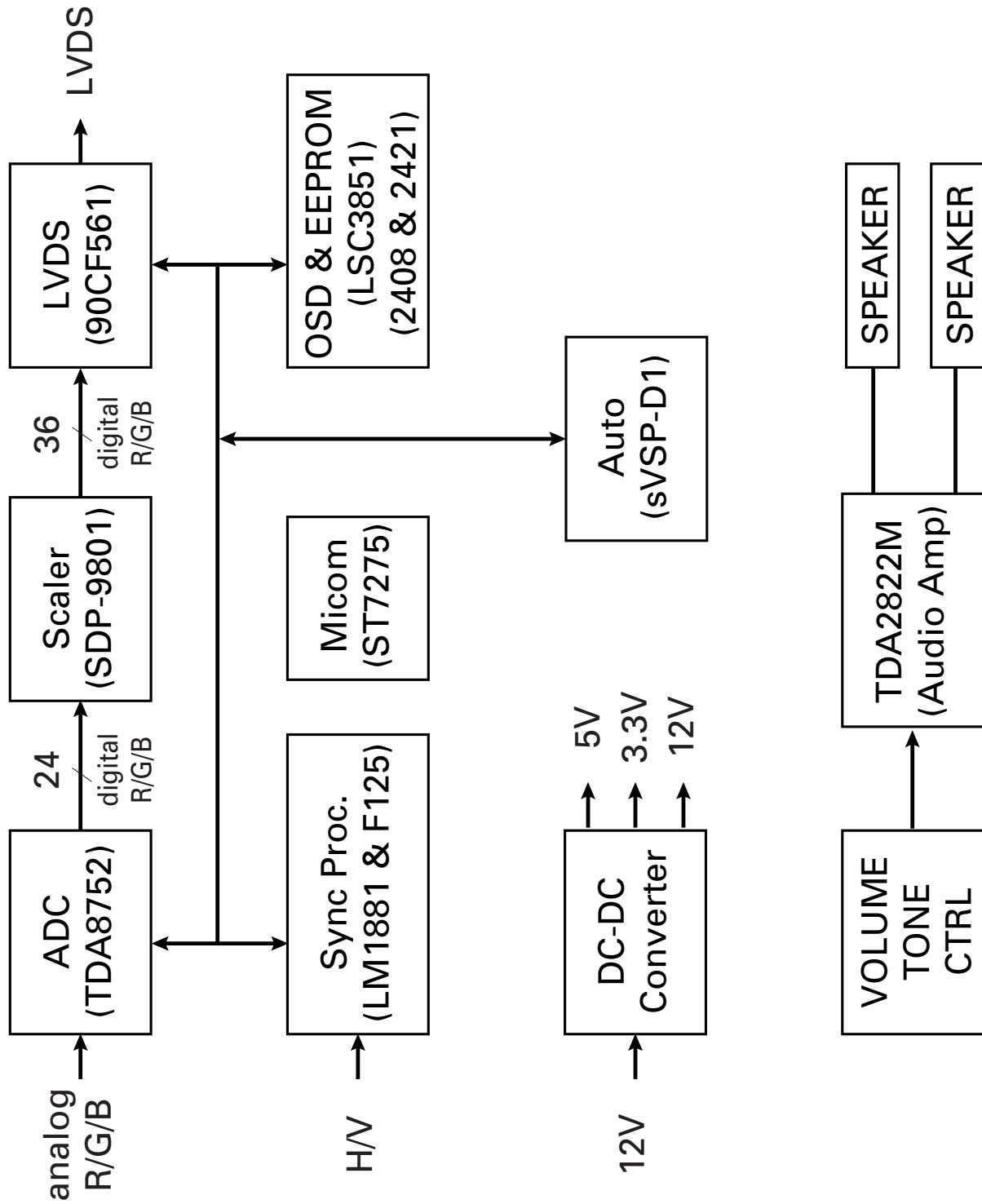
Loc. No.	Code No.	Description	Remarks
C306	2203-000204	ccap, C-CERAMIC,CHIP, 100nF,10%,25V,X7R,TP,2012	
C307	2203-000204	ccap, C-CERAMIC,CHIP, 100nF,10%,25V,X7R,TP,2012	
C308	2203-000204	ccap, C-CERAMIC,CHIP, 100nF,10%,25V,X7R,TP,2012	
C309	2203-000204	ccap, C-CERAMIC,CHIP, 100nF,10%,25V,X7R,TP,2012	
C310	2203-000204	ccap, C-CERAMIC,CHIP, 100nF,10%,25V,X7R,TP,2012	
C311	2203-000204	ccap, C-CERAMIC,CHIP, 100nF,10%,25V,X7R,TP,2012	
C312	2203-000204	ccap, C-CERAMIC,CHIP, 100nF,10%,25V,X7R,TP,2012	
C313	2203-000204	ccap, C-CERAMIC,CHIP, 100nF,10%,25V,X7R,TP,2012	
C314	2203-000204	ccap, C-CERAMIC,CHIP, 100nF,10%,25V,X7R,TP,2012	
C315	2203-000204	ccap, C-CERAMIC,CHIP, 100nF,10%,25V,X7R,TP,2012	
C316	2203-000204	ccap, C-CERAMIC,CHIP, 100nF,10%,25V,X7R,TP,2012	
C317	2203-000204	ccap, C-CERAMIC,CHIP, 100nF,10%,25V,X7R,TP,2012	
C318	2203-000204	ccap, C-CERAMIC,CHIP, 100nF,10%,25V,X7R,TP,2012	
C319	2203-000204	ccap, C-CERAMIC,CHIP, 100nF,10%,25V,X7R,TP,2012	
C320	2203-000204	ccap, C-CERAMIC,CHIP, 100nF,10%,25V,X7R,TP,2012	
C321	2203-000204	ccap, C-CERAMIC,CHIP, 100nF,10%,25V,X7R,TP,2012	
C322	2203-000204	ccap, C-CERAMIC,CHIP, 100nF,10%,25V,X7R,TP,2012	
C323	2203-000204	ccap, C-CERAMIC,CHIP, 100nF,10%,25V,X7R,TP,2012	
C324	2203-000204	ccap, C-CERAMIC,CHIP, 100nF,10%,25V,X7R,TP,2012	
C325	2203-000204	ccap, C-CERAMIC,CHIP, 100nF,10%,25V,X7R,TP,2012	
C326	2203-000204	ccap, C-CERAMIC,CHIP, 100nF,10%,25V,X7R,TP,2012	
C327	2203-000683	ccap, C-CERAMIC,CHIP, 27pF,5%,50V,NPO,2012,TP	
C328	2402-000108	ecap, C-AL,SMD, 10uF,20%,16V,WT,TP,4.3x4.3x5.4	
C329	2203-000260	ccap, C-CERAMIC,CHIP, 10nF,10%,50V,X7R,2012,TP	
C330	2402-000108	ecap, C-AL,SMD, 10uF,20%,16V,WT,TP,4.3x4.3x5.4	
C331	2203-000260	ccap, C-CERAMIC,CHIP, 10nF,10%,50V,X7R,2012,TP	
C332	2203-000818	ccap, C-CERAMIC,CHIP, 33pF,5%,50V,NPO,2012,TP	
C333	2203-000818	ccap, C-CERAMIC,CHIP, 33pF,5%,50V,NPO,2012,TP	
C334	2203-000260	ccap, C-CERAMIC,CHIP, 10nF,10%,50V,X7R,2012,TP	
C335	2402-000108	ecap, C-AL,SMD, 10uF,20%,16V,WT,TP,4.3x4.3x5.4	
C336	2203-000260	ccap, C-CERAMIC,CHIP, 10nF,10%,50V,X7R,2012,TP	
C337	2402-000108	ecap, C-AL,SMD, 10uF,20%,16V,WT,TP,4.3x4.3x5.4	
C338	2203-000260	ccap, C-CERAMIC,CHIP, 10nF,10%,50V,X7R,2012,TP	
C339	2402-000108	ecap, C-AL,SMD, 10uF,20%,16V,WT,TP,4.3x4.3x5.4	
C340	2203-000260	ccap, C-CERAMIC,CHIP, 10nF,10%,50V,X7R,2012,TP	
C341	2402-000108	ecap, C-AL,SMD, 10uF,20%,16V,WT,TP,4.3x4.3x5.4	
C342	2203-000260	ccap, C-CERAMIC,CHIP, 10nF,10%,50V,X7R,2012,TP	
C343	2402-000108	ecap, C-AL,SMD, 10uF,20%,16V,WT,TP,4.3x4.3x5.4	
C344	2203-000260	ccap, C-CERAMIC,CHIP, 10nF,10%,50V,X7R,2012,TP	
C345	2402-000108	ecap, C-AL,SMD, 10uF,20%,16V,WT,TP,4.3x4.3x5.4	
C346	2203-000260	ccap, C-CERAMIC,CHIP, 10nF,10%,50V,X7R,2012,TP	
C381	2203-000260	ccap, C-CERAMIC,CHIP, 10nF,10%,50V,X7R,2012,TP	
C382	2203-000260	ccap, C-CERAMIC,CHIP, 10nF,10%,50V,X7R,2012,TP	
C383	2203-000260	ccap, C-CERAMIC,CHIP, 10nF,10%,50V,X7R,2012,TP	
C401	2402-000108	ecap, C-AL,SMD, 10uF,20%,16V,WT,TP,4.3x4.3x5.4	
C402	2203-000260	ccap, C-CERAMIC,CHIP, 10nF,10%,50V,X7R,2012,TP	
C403	2203-000455	ccap, C-CERAMIC,CHIP, 1nF,5%,50V,NPO,2012,TP	

Loc. No.	Code No.	Description	Remarks
C404	2203-000555	ccap, C-CERAMIC,CHIP, 20pF,5%,50V,NPO,2012,TP	
C405	2203-000555	ccap, C-CERAMIC,CHIP, 20pF,5%,50V,NPO,2012,TP	
C406	2203-000204	ccap, C-CERAMIC,CHIP, 100nF,10%,25V,X7R,TP,2012	
C407	2402-000108	ecap, C-AL,SMD, 10uF,20%,16V,WT,TP,4.3x4.3x5.4	
C408	2402-000108	ecap, C-AL,SMD, 10uF,20%,16V,WT,TP,4.3x4.3x5.4	
C409	2203-000260	ccap, C-CERAMIC,CHIP, 10nF,10%,50V,X7R,2012,TP	
C410	2402-000108	ecap, C-AL,SMD, 10uF,20%,16V,WT,TP,4.3x4.3x5.4	
C411	2203-000260	ccap, C-CERAMIC,CHIP, 10nF,10%,50V,X7R,2012,TP	
C412	2402-000108	ecap, C-AL,SMD, 10uF,20%,16V,WT,TP,4.3x4.3x5.4	
C413	2203-000260	ccap, C-CERAMIC,CHIP, 10nF,10%,50V,X7R,2012,TP	
C414	2203-000239	ccap, C-CERAMIC,CHIP, 100pF,5%,50V,NPO,TP,2012	
C415	2203-000204	ccap, C-CERAMIC,CHIP, 100nF,10%,25V,X7R,TP,2012	
C416	2402-000108	ecap, C-AL,SMD, 10uF,20%,16V,WT,TP,4.3x4.3x5.4	
C417	2203-000260	ccap, C-CERAMIC,CHIP, 10nF,10%,50V,X7R,2012,TP	
C418	2203-000260	ccap, C-CERAMIC,CHIP, 10nF,10%,50V,X7R,2012,TP	
C419	2203-000260	ccap, C-CERAMIC,CHIP, 10nF,10%,50V,X7R,2012,TP	
C420	2402-000108	ecap, C-AL,SMD, 10uF,20%,16V,WT,TP,4.3x4.3x5.4	
C902	2402-000170	ecap, C-AL,SMD, 1uF,20%,50V,GP,4x5.4,1mm,TP	
CFT301	2901-001115	filter3p_3, FILTER-EMI SMD, 50VDC,500mADC,20pF,3.1x1.6x2	
CL101	BN27-20001C	coil, COIL-SMD, 105UH,20%,SMD,TAPING	
CN101	3722-000117	dcjhp_7, JACK-DC POWER, 3P,3.5mm,AG,BLK,NO	
CN201	3701-001129	tpcon19p, CONNECTOR-DSUB, 15P,3R,FEMALE,ANGLE,AUF	
CN301	3711-003161	slcon22p_1, CONNECTOR-HEADER, BOX,20P,1R,1.25mm,ANGLE,SN	
CN401	3711-002049	slcon8p, CONNECTOR-HEADER, BOX,6P,1R,1.25mm,SMD-A,SN	
CN402	3711-000556	slcon14p_1, CONNECTOR-HEADER, BOX,12P,1R,1.25mm,SMD-A,SN	
D101	0401-001056	diode_acc, DIODE-SWITCHING, MMBD4148SE,75V,600mA,SOT-23,TP	
D102	0401-001056	diode_acc, DIODE-SWITCHING, MMBD4148SE,75V,600mA,SOT-23,TP	
D103	0401-001056	diode_acc, DIODE-SWITCHING, MMBD4148SE,75V,600mA,SOT-23,TP	
D104	0402-000553	diode_sch, DIODE-RECTIFIER, SS24,40V,2.0A,DO-214AA	
D201	0401-001056	diode_acc, DIODE-SWITCHING, MMBD4148SE,75V,600mA,SOT-23,TP	
D401	0401-001056	diode_acc, DIODE-SWITCHING, MMBD4148SE,75V,600mA,SOT-23,TP	
D402	0401-001056	diode_acc, DIODE-SWITCHING, MMBD4148SE,75V,600mA,SOT-23,TP	
FT101	2901-001114	filter3p_1, FILTER-EMI SMD, 25VDC,2.0ADC,100nF,3.2x1.6x1	
FT102	2901-001114	filter3p_1, FILTER-EMI SMD, 25VDC,2.0ADC,100nF,3.2x1.6x1	
FT103	2901-001114	filter3p_1, FILTER-EMI SMD, 25VDC,2.0ADC,100nF,3.2x1.6x1	
FT104	3301-001145	filter_smd, CORE-FERRITE BEAD, AB,4.5x1.6x1.6mm	
FT201	2901-001114	filter3p_1, FILTER-EMI SMD, 25VDC,2.0ADC,100nF,3.2x1.6x1	
FT202	2901-001114	filter3p_1, FILTER-EMI SMD, 25VDC,2.0ADC,100nF,3.2x1.6x1	
FT203	2901-001114	filter3p_1, FILTER-EMI SMD, 25VDC,2.0ADC,100nF,3.2x1.6x1	
FT204	2901-001114	filter3p_1, FILTER-EMI SMD, 25VDC,2.0ADC,100nF,3.2x1.6x1	
FT301	2901-001114	filter3p_1, FILTER-EMI SMD, 25VDC,2.0ADC,100nF,3.2x1.6x1	
FT302	2901-001114	filter3p_1, FILTER-EMI SMD, 25VDC,2.0ADC,100nF,3.2x1.6x1	
FT303	2901-001114	filter3p_1, FILTER-EMI SMD, 25VDC,2.0ADC,100nF,3.2x1.6x1	
FT304	2901-001114	filter3p_1, FILTER-EMI SMD, 25VDC,2.0ADC,100nF,3.2x1.6x1	
FT305	2901-001114	filter3p_1, FILTER-EMI SMD, 25VDC,2.0ADC,100nF,3.2x1.6x1	
FT306	2901-001114	filter3p_1, FILTER-EMI SMD, 25VDC,2.0ADC,100nF,3.2x1.6x1	
FT307	2901-001114	filter3p_1, FILTER-EMI SMD, 25VDC,2.0ADC,100nF,3.2x1.6x1	

Loc. No.	Code No.	Description	Remarks
IC101	1203-001448	lm2596, IC-POS.FIXED REG., 2596,T0-263,5P,PLASTIC,4.750	
IC102	0505-001170	si9933, FET-SILICON, SI9933ADY-T1,P,-20V,3.4A,0.075	
IC103	1203-001293	icreg3p, IC-POS.FIXED REG., 033,T0-252,3P,6.5MIL,PLASTIC,3	
IC104	1203-001488	icreg3p, IC-POS.FIXED REG., 7805,T0-252,3P,PLASTIC,4.8/5	
IC105	1204-000292	ic_8p_1, IC-VIDEO SYSTEM, IC-VIDEO,LM1881M,SOP,8P,150MIL	
IC106	0803-000122	ic_14p, IC-TTL, 74F125,BUFFER,SOP,14P,150MIL,Q	
IC107	1203-001538	icreg3p, IC-POS.ADJUST REG., 431,SOT-89,3P,PLASTIC,2.47/3	
IC201	1002-001099	tda8752, IC-A/D CONVERTER, TDA8752,8BIT,QFP,100P,+0.5	
IC202	0803-000275	ic_14p, IC-TTL, 74F32,OR GATE,SOP,14P,150MIL,Q	
IC301	BN13-00004A	sdp_9801, IC-MEMORY, SDP_9801, 256P, 0.4mm	
IC302	BN09-10001C	ic_16p, IC-OSD PROCESSOR, LSA820/LSB810,LSC3851DW,16P,EN	
IC303	BN13-00002A	svsp_d1, IC-ASIC, XB(LCD),FG60A018HM_L18,QFP,48P	
IC304	1003-001023	ic_48p, IC-VFD, DS90CF561,DIP,48P,600MIL,SINGL	
IC305	1003-001023	ic_48p, IC-VFD, DS90CF561,DIP,48P,600MIL,SINGL	
IC401	0903-001063	st72e75, IC-MICROCONTROLLER, 72E75,8BIT,DIP,42P,600MIL,24MH	
IC401_SOCKET	3704-001071	SOCKET-IC;42P,DIP,SN,1.778mm	
IC402	1203-001109	icreg3p, IC-VOL. DETECTOR, 7045,SOT-89,3P,PLASTIC,4.3/4	
IC403	1103-001087	24lc21, IC-EEPROM, 24LC21A,128X8BIT,DIP,8P,150MIL	
IC404	1103-001023	24C08,1028*8BIT,SOP,8P,150MIL	
IC901	0505-001170	si9933, FET-SILICON, SI9933ADY-T1,P,-20V,3.4A,0.075	
L101	2703-001070	induct2p, INDUCTOR-SMD, 100uH,10%,4.5x3.2x3.2mm	
L103	2703-001070	induct2p, INDUCTOR-SMD, 100uH,10%,4.5x3.2x3.2mm	
Q101	0501-002080	npn_bec, TR-SMALL SIGNAL, 2SC2412K,NPN,200mW,SOT-23,TP,1	
Q102	0501-002080	npn_bec, TR-SMALL SIGNAL, 2SC2412K,NPN,200mW,SOT-23,TP,1	
Q103	0501-002080	npn_bec, TR-SMALL SIGNAL, 2SC2412K,NPN,200mW,SOT-23,TP,1	
Q104	0501-002080	npn_bec, TR-SMALL SIGNAL, 2SC2412K,NPN,200mW,SOT-23,TP,1	
Q401	0501-002080	npn_bec, TR-SMALL SIGNAL, 2SC2412K,NPN,200mW,SOT-23,TP,1	
Q402	0501-002080	npn_bec, TR-SMALL SIGNAL, 2SC2412K,NPN,200mW,SOT-23,TP,1	
Q901	0501-002080	npn_bec, TR-SMALL SIGNAL, 2SC2412K,NPN,200mW,SOT-23,TP,1	
Q903	0501-002080	npn_bec, TR-SMALL SIGNAL, 2SC2412K,NPN,200mW,SOT-23,TP,1	
R101	2007-000872	res, R-CHIP, 4.7Kohm,5%,1/10W,DA,TP,2012	
R102	2007-000282	res, R-CHIP, 100Kohm,5%,1/10W,DA,TP,2012	
R103	2007-000282	res, R-CHIP, 100Kohm,5%,1/10W,DA,TP,2012	
R104	2007-000300	res, R-CHIP, 10Kohm,5%,1/10W,DA,TP,2012	
R105	2007-000282	res, R-CHIP, 100Kohm,5%,1/10W,DA,TP,2012	
R106	2007-000872	res, R-CHIP, 4.7Kohm,5%,1/10W,DA,TP,2012	
R107	2007-000290	res, R-CHIP, 100ohm,5%,1/10W,DA,TP,2012	
R108	2007-000290	res, R-CHIP, 100ohm,5%,1/10W,DA,TP,2012	
R109	2007-000290	res, R-CHIP, 100ohm,5%,1/10W,DA,TP,2012	
R110	2007-000468	res, R-CHIP, 1Kohm,5%,1/10W,DA,TP,2012	
R111	2007-000300	res, R-CHIP, 10Kohm,5%,1/10W,DA,TP,2012	
R112	2007-000872	res, R-CHIP, 4.7Kohm,5%,1/10W,DA,TP,2012	
R113	2007-000023	res, R-CHIP, 120ohm,5%,1/10W,DA,TP,2012	
R114	2007-001113	res, R-CHIP, 680Kohm,5%,1/10W,DA,TP,2012	
R115	2007-001166	res, R-CHIP, 75ohm,5%,1/10W,DA,TP,2012	
R116	2007-001166	res, R-CHIP, 75ohm,5%,1/10W,DA,TP,2012	
R117	2007-001166	res, R-CHIP, 75ohm,5%,1/10W,DA,TP,2012	

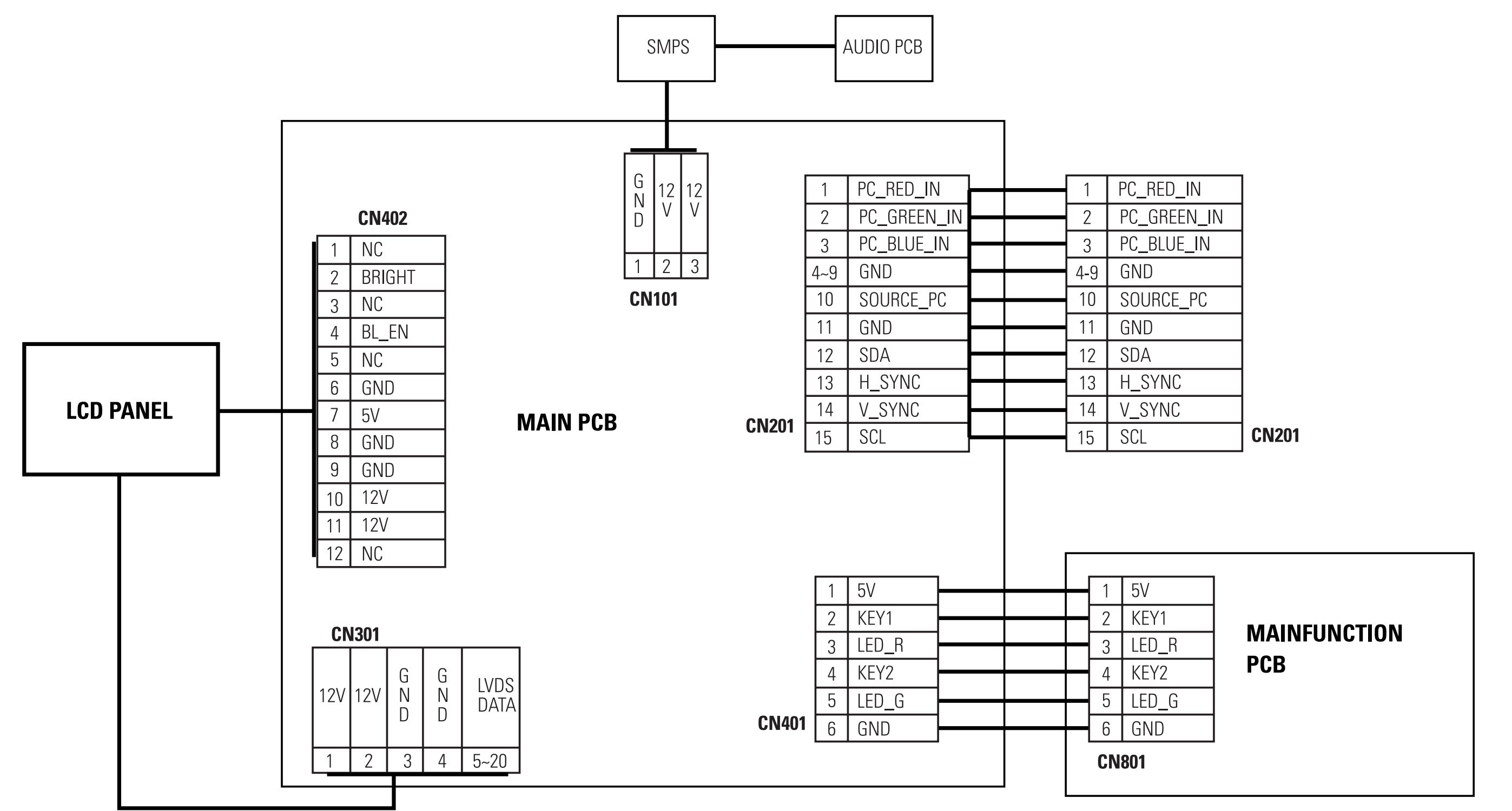
R118	2007-000493	res, R-CHIP, 2.2Kohm,5%,1/10W,DA,TP,2012
R119	2007-000300	res, R-CHIP, 10Kohm,5%,1/10W,DA,TP,2012
R120	2007-000290	res, R-CHIP, 100ohm,5%,1/10W,DA,TP,2012
R121	2007-001166	res, R-CHIP, 75ohm,5%,1/10W,DA,TP,2012
R201	2007-000290	res, R-CHIP, 100ohm,5%,1/10W,DA,TP,2012
R202	2007-000872	res, R-CHIP, 4.7Kohm,5%,1/10W,DA,TP,2012
R203	2007-000468	res, R-CHIP, 1Kohm,5%,1/10W,DA,TP,2012
R204	2007-000468	res, R-CHIP, 1Kohm,5%,1/10W,DA,TP,2012
R205	2007-000593	res, R-CHIP, 22ohm,5%,1/10W,DA,TP,2012
R206	2007-000593	res, R-CHIP, 22ohm,5%,1/10W,DA,TP,2012
R207	2007-000593	res, R-CHIP, 22ohm,5%,1/10W,DA,TP,2012
R209	2007-000781	res, R-CHIP, 33ohm,5%,1/10W,DA,TP,2012
R211	2007-000781	res, R-CHIP, 33ohm,5%,1/10W,DA,TP,2012
R213	2007-000781	res, R-CHIP, 33ohm,5%,1/10W,DA,TP,2012
R301	2007-000781	res, R-CHIP, 33ohm,5%,1/10W,DA,TP,2012
R302	2007-000290	res, R-CHIP, 100ohm,5%,1/10W,DA,TP,2012
R303	2007-000290	res, R-CHIP, 100ohm,5%,1/10W,DA,TP,2012
R304	2007-000468	res, R-CHIP, 1Kohm,5%,1/10W,DA,TP,2012
R400	2007-000290	res, R-CHIP, 100ohm,5%,1/10W,DA,TP,2012
R401	2007-000290	res, R-CHIP, 100ohm,5%,1/10W,DA,TP,2012
R402	2007-000290	res, R-CHIP, 100ohm,5%,1/10W,DA,TP,2012
R403	2007-000290	res, R-CHIP, 100ohm,5%,1/10W,DA,TP,2012
R404	2007-000290	res, R-CHIP, 100ohm,5%,1/10W,DA,TP,2012
R405	2007-000290	res, R-CHIP, 100ohm,5%,1/10W,DA,TP,2012
R406	2007-000290	res, R-CHIP, 100ohm,5%,1/10W,DA,TP,2012
R407	2007-000290	res, R-CHIP, 100ohm,5%,1/10W,DA,TP,2012
R408	2007-000290	res, R-CHIP, 100ohm,5%,1/10W,DA,TP,2012
R409	2007-000290	res, R-CHIP, 100ohm,5%,1/10W,DA,TP,2012
R410	2007-000290	res, R-CHIP, 100ohm,5%,1/10W,DA,TP,2012
R411	2007-000468	res, R-CHIP, 1Kohm,5%,1/10W,DA,TP,2012
R412	2007-000290	res, R-CHIP, 100ohm,5%,1/10W,DA,TP,2012
R413	2007-000290	res, R-CHIP, 100ohm,5%,1/10W,DA,TP,2012
R414	2007-000290	res, R-CHIP, 100ohm,5%,1/10W,DA,TP,2012
R415	2007-000290	res, R-CHIP, 100ohm,5%,1/10W,DA,TP,2012
R417	2007-000290	res, R-CHIP, 100ohm,5%,1/10W,DA,TP,2012
R418	2007-000290	res, R-CHIP, 100ohm,5%,1/10W,DA,TP,2012
R419	2007-000290	res, R-CHIP, 100ohm,5%,1/10W,DA,TP,2012
R420	2007-000290	res, R-CHIP, 100ohm,5%,1/10W,DA,TP,2012
R421	2007-000290	res, R-CHIP, 100ohm,5%,1/10W,DA,TP,2012
R422	2007-000290	res, R-CHIP, 100ohm,5%,1/10W,DA,TP,2012
R423	2007-000290	res, R-CHIP, 100ohm,5%,1/10W,DA,TP,2012
R424	2007-000290	res, R-CHIP, 100ohm,5%,1/10W,DA,TP,2012
R425	2007-000290	res, R-CHIP, 100ohm,5%,1/10W,DA,TP,2012
R426	2007-000290	res, R-CHIP, 100ohm,5%,1/10W,DA,TP,2012
R427	2007-000290	res, R-CHIP, 100ohm,5%,1/10W,DA,TP,2012
R428	2007-000290	res, R-CHIP, 100ohm,5%,1/10W,DA,TP,2012
R430	2007-000941	res, R-CHIP, 47Kohm,5%,1/10W,DA,TP,2012

7 Block Diagram



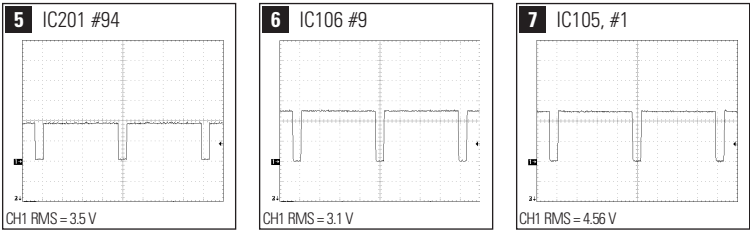
Memo

8 Wiring Diagram

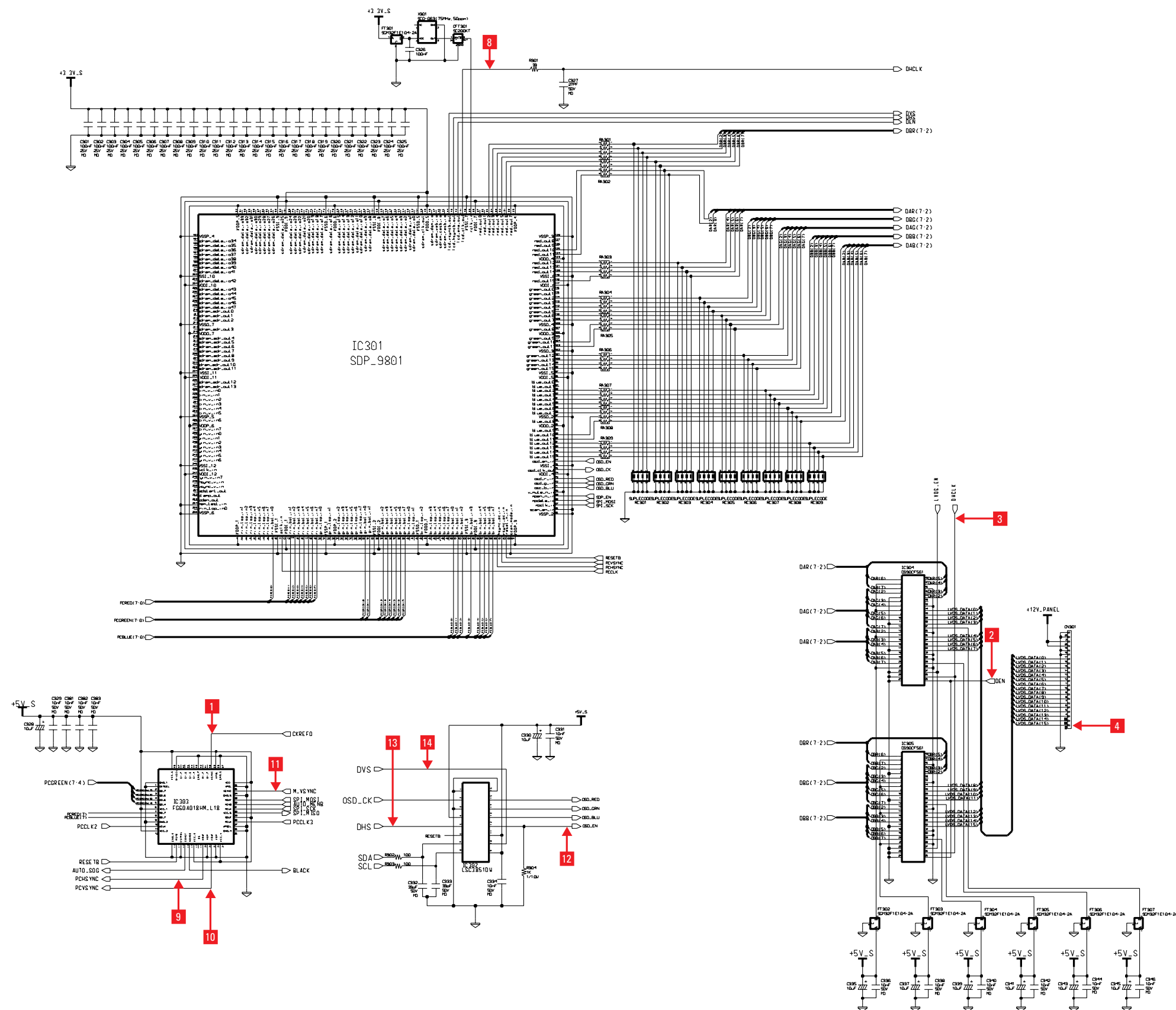


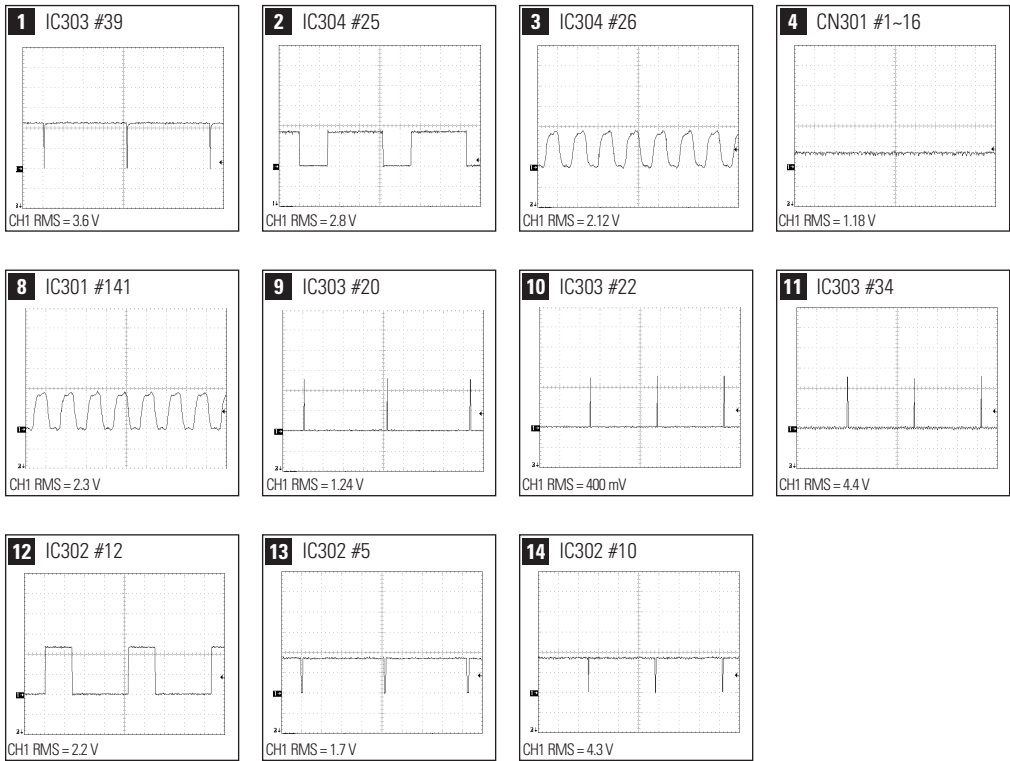
9-1 DAC & IO Part Schematic Diagram





9-2 ZOOM & FRC Part Schematic Diagram





9-3 Micom Part Schematic Diagram

1	0~5	22	Pulse
2	0, 5	23	GND
3	5	24	Pulse
4	5	25	5
5	4.62	26	5
6	0	27	0
7	5	28	0
8	5	29	5
9	GND	30	5
10	5	31	0
11	5	32	Clock
12	NC	33	Clock
13	5	34	5
14	5	35	NC
15	Pulse	36	3.8
16	Pulse	37	5
17	5	38	0
18	NC	39	5
19	NC	40	5
20	Pulse	41	GND
21	Pulse	42	NC

Table 9-8. IC403

# pin	MODES
	1024 x 768 / 75 Hz
1	NC
2	NC
3	NC
4	GND
5	4.43
6	4.46
7	4.87
8	5.03

Unit: Vrms

Table 9-9. IC404

# pin	MODES
	1024 x 768 / 75 Hz
1	GND
2	GND
3	GND
4	GND
5	5.03
6	5.03
7	GND
8	5.03

Unit: Vrms



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