

Service  
Service  
**Service**



# Service Manual



## CONTENTS

Technical specification .....1-2  
 Service measurement setup.....1-3  
 Service aids .....1-4  
 Instructions on CD playability .....2-1..2-2  
 Disassembly diagram.....3-1  
 Block diagram .....4-1  
 Wiring diagram .....4-2  
 CD board  
 Circuit diagram .....5-1  
 Layout diagram.....5-2..5-3  
 Display board  
 Circuit diagram .....6-1  
 Layout diagram.....6-2..6-3

AMP board  
 Circuit diagram .....7-1  
 Layout diagram.....7-2..7-3  
 Exploded view diagram .....8-1  
 Mechanical parts list .....8-2  
 Electrical parts list.....9-1..9-2

© Copyright 2009 Philips Consumer Electronics B.V. Eindhoven, The Netherlands  
 All rights reserved. No part of this publication may be reproduced, stored in a retrieval  
 system or transmitted, in any form or by any means, electronic, mechanical, photocopying,  
 or otherwise without the prior permission of Philips.

Published by LX 0909 Service Audio Subject to modification

3141 785 33511

Version 1.1



# PHILIPS

## TECHNICAL SPECIFICATION

### Amplifier

Rated Output Power	2X20W RMS
Frequency Response	63 - 16000 Hz, $\pm 3$ dB
Signal to Noise Ratio	>62dB

### Disc

Laser Type	Semiconductor
Disc Diameter	12cm/8cm
Support Disc	CD-DA, CD-R, CD-RW, MP3-CD, WMA-CD
Audio DAC	24Bits / 44.1kHz
Total Harmonic Distortion	<1%
Frequency Response	63Hz - 16kHz
S/N Ratio	>65dBA

### Supported MP3 disc formats

- ISO9660, Joliet
- Maximum title number: 511 (depending on file name length)
- Maximum album number: 511
- Directory nesting up to a maximum of 8 levels

### Tuner

#### FM

Tuning Range	87.5 - 108 MHz
Tuning grid	50 KHz
Sensitivity	
- Mono, 26dB S/N Ratio	<22 dBu
- Stereo, 46dB S/N Ratio	<45 dBu
Search Selectivity	<28 dBu
Total Harmonic Distortion	<3%
Signal to Noise Ratio	>45 dB

#### AM

Tuning Range	530 - 1700 kHz
--------------	----------------

### Speakers

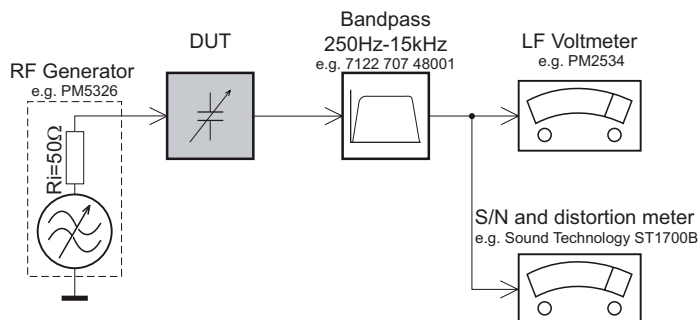
Speaker Impedance	8ohm
-------------------	------

### General information

AC power	110 - 127V/220 - 240V, 50/60Hz
Dimensions	
- Main Unit (W x H x D)	220 x 290 x 271 mm
- Speaker Box (W x H x D)	189 x 290 x 175 mm
Weight	
- With Packing	7.9 kg
- Main Unit	3.8 kg
- Speaker Box	2 x 1.7 kg

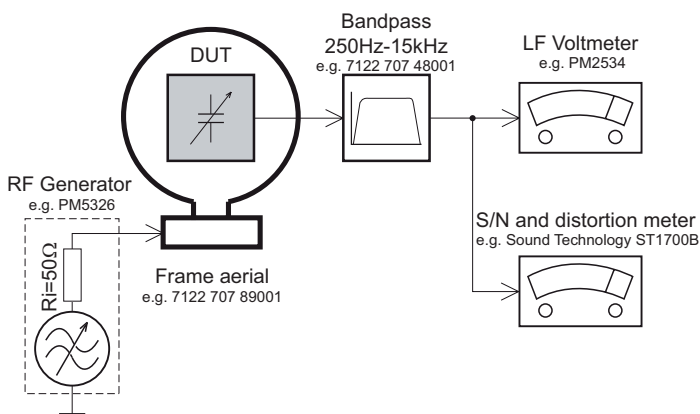
# MEASUREMENT SETUP

## Tuner FM



Use a bandpass filter to eliminate hum (50Hz, 100Hz) and disturbance from the pilotone (19kHz, 38kHz).

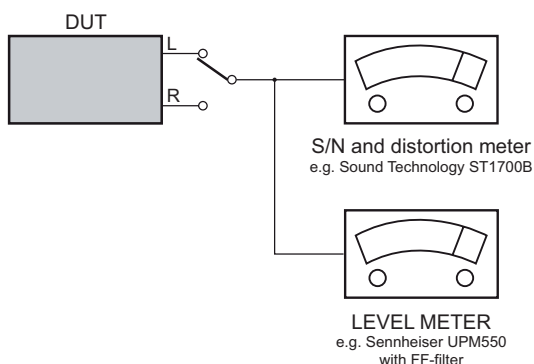
## Tuner AM (MW,LW)



To avoid atmospheric interference all AM-measurements have to be carried out in a Faraday's cage. Use a bandpass filter (or at least a high pass filter with 250Hz) to eliminate hum (50Hz, 100Hz).

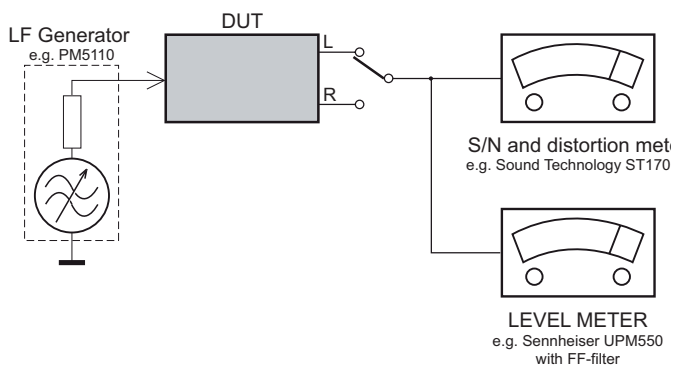
## CD

Use Audio Signal Disc SBC429 4822 397 30184  
(replaces test disc 3)



## Recorder

Use Universal Test Cassette Cr02 SBC419 4822 397 30069  
or Universal Test Cassette Fe SBC420 4822 397 30071



## SERVICE AIDS

### **GB** WARNING

All ICs and many other semi-conductors are susceptible to electrostatic discharges (ESD). Careless handling during repair can reduce life drastically.

When repairing, make sure that you are connected with the same potential as the mass of the set via a wrist wrap with resistance. Keep components and tools also at this potential.

### ESD



### **GB**

Safety regulations require that the set be restored to its original condition and that parts which are identical with those specified, be used

Safety components are marked by the symbol  $\Delta$ .

**CLASS 1  
LASER PRODUCT**

## INFORMATION ABOUT LEAD-FREE SOLDERING

Philips CE is producing lead-free sets from 1.1.2005 onwards.

### IDENTIFICATION:

Regardless of special logo (not always indicated) one must treat all sets from 1 Jan 2005 onwards, according next rules:



- On our website [www.atyourservice.ce.Philips.com](http://www.atyourservice.ce.Philips.com) you find more information to:
  - \* BGA-de-/soldering (+ baking instructions)
  - \* Heating-profiles of BGAs and other ICs used in Philips-sets
  - \* Lead free

You will find this and more technical information within the "magazine", chapter "workshop news".

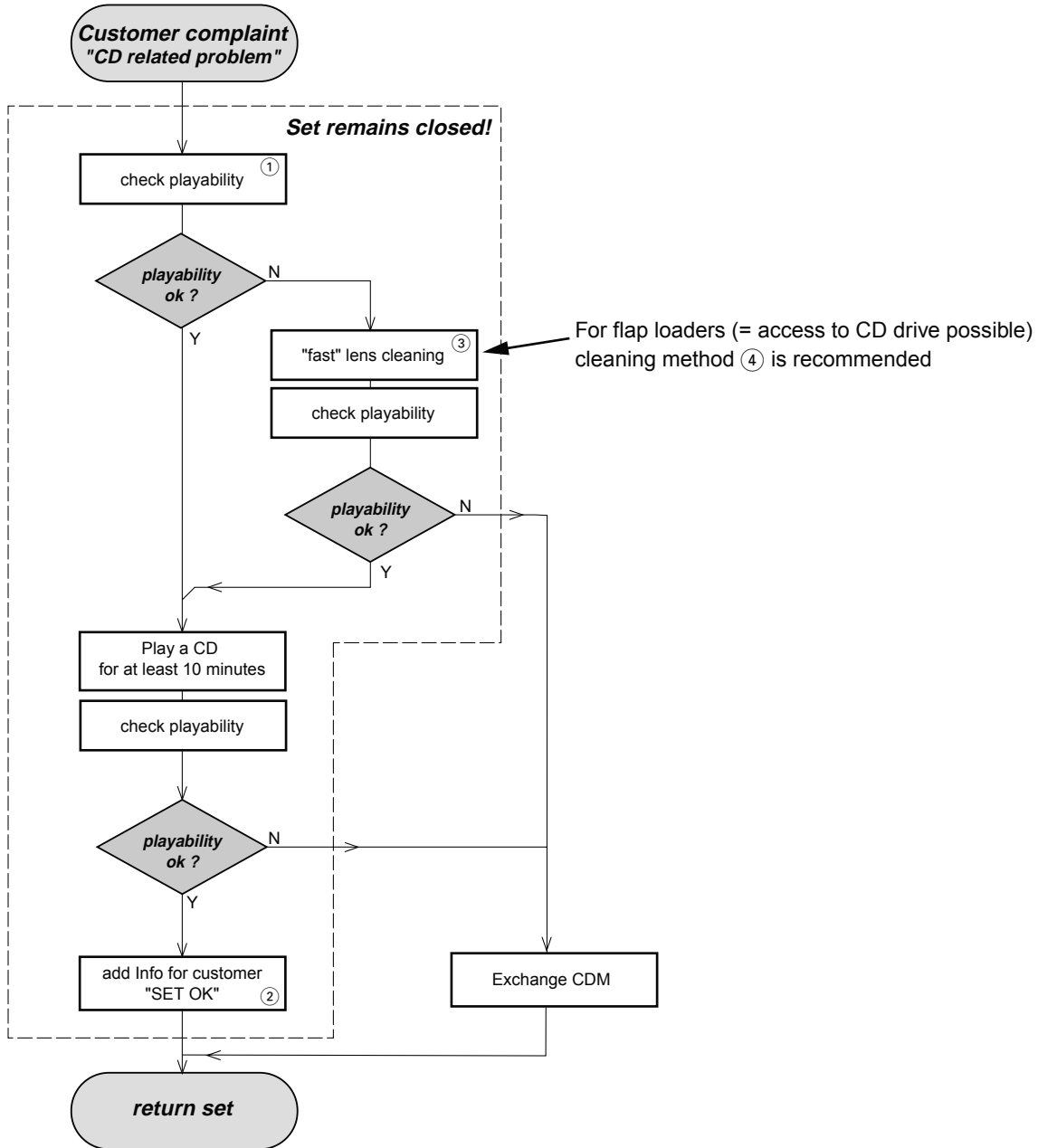
For additional questions please contact your local repair-helpdesk.

## SERVICE INSTRUCTION

Safety regulations require that after a repair, the set must be returned in its original condition. Pay in particular attention to the following points:

- Route the wire trees correctly and fix them with the mounted cable clamps.
- Check the insulation of the AC Power lead for external damage.
- Check the strain relief of the AC Power cord for proper function.
- Check the electrical DC resistance between the AC Power Plug and the secondary side (only for sets which have a AC Power isolated power supply):
  1. Unplug the AC Power cord and connect a wire between the two pins of the AC Power plug.
  2. Set the AC Power switch to the "on" position (keep the AC Power cord unplugged!).
  3. Measure the resistance value between the pins of the AC Power plug and the metal shielding of the tuner or the aerial connection on the set. The reading should be larger than 4.5 Mohm (For U.S. it should be between 4.2 Mohm and 12 Mohm).
  4. Switch "off" the set, and remove the wire between the two pins of the AC Power plug.
- Check the cabinet for defects, to avoid touching of any inner parts by the customer.

# INSTRUCTIONS ON CD PLAYABILITY



① - ④ For description - see following pages

## INSTRUCTIONS ON CD PLAYABILITY

①

### PLAYABILITY CHECK

For sets which are compatible with **CD-RW** discs  
 use CD-RW Printed Audio Disc .....7104 099 96611  
 TR 3 (Fingerprint)  
 TR 8 (600µ Black dot) **maximum at 01:00**

- playback of these two tracks without audible disturbance  
 playing time for: Fingerprint  $\geq 10$ seconds  
 Black dot from 00:50 to 01:10
- jump forward/backward (search) within a reasonable time

For all other sets  
 use CD-DA SBC 444A .....4822 397 30245  
 TR 14 (600µ Black dot) **maximum at 01:15**  
 TR 19 (Fingerprint)  
 TR 10 (1000µ wedge)

- playback of all these tracks without audible disturbance  
 playing time for: 1000µ wedge  $\geq 10$ seconds  
 Fingerprint  $\geq 10$ seconds  
 Black dot from 01:05 to 01:25
- jump forward/backward (search) within a reasonable time

②

### CUSTOMER INFORMATION

It is proposed to add an addendum sheet to the set which informs the customer that the set has been checked carefully - but no fault was found.

The problem was obviously caused by a scratched, dirty or copy-protected CD. In case problems remain, the customer is requested to contact the workshop directly.

The lens cleaning (method ③) should be mentioned in the addendum sheet.

The final wording in national language as well as the printing is under responsibility of the Regional Service Organizations.

④

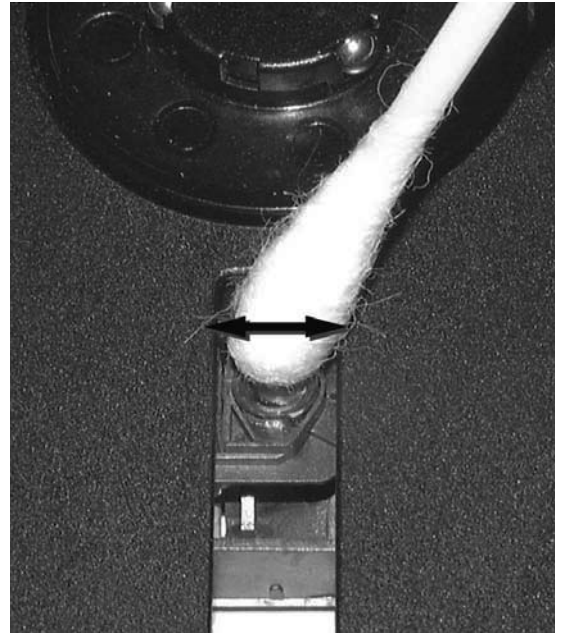
### LIQUID LENS CLEANING

**Before touching the lens it is advised to clean the surface of the lens by blowing clean air over it. This to avoid that little particles make scratches on the lens.**

Because the material of the lens is synthetic and coated with a special anti-reflectivity layer, cleaning must be done with a non-aggressive cleaning fluid. It is advised to use "Cleaning Solvent"

The actuator is a very precise mechanical component and may not be damaged in order to guarantee its full function. Clean the lens gently (don't press too hard) with a soft and clean cotton bud moistened with the special lens cleaner.

The direction of cleaning must be in the way as indicated in the picture below.

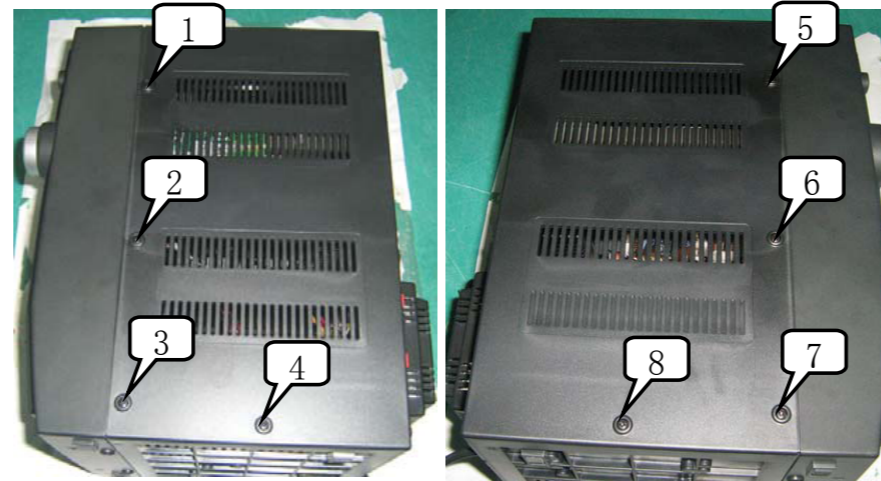


**DISASSEMBLY DIAGRAM VIEW**

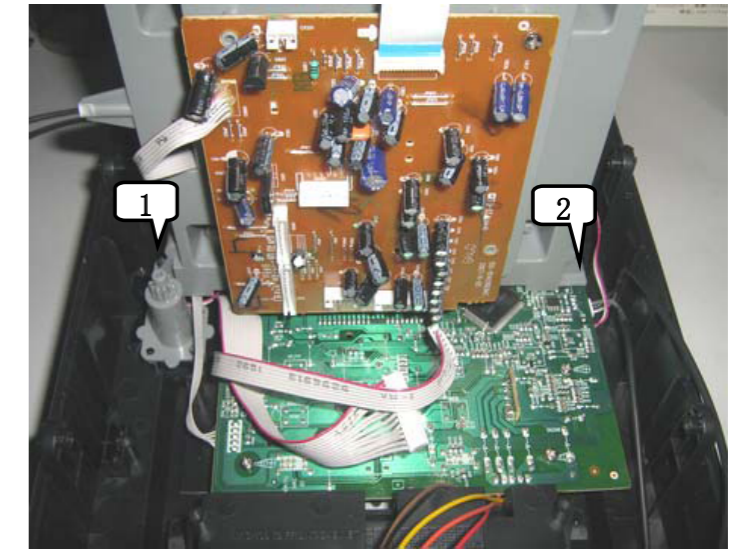
- 1) a.Plug in the 220V AC power cord , set the menu to "CD" function, and press "STANDBY-ON" button , Press "OPEN/CLOSE"to open CD door.
- b.Pull out CD door
- c.Press "OPEN/CLOSE" button to close the CD tray, power off the mainset and unplug the AC power cord.



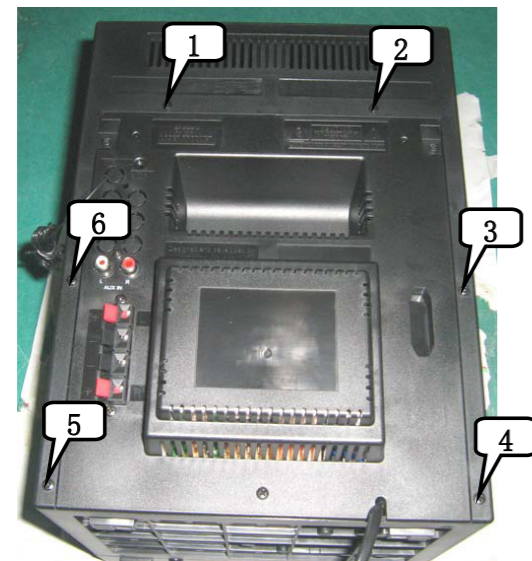
- 2) Loosen 8 screws PT3×12 in both sides.



- 5) Loosen 2 screws PWT3 to remove CD tray.



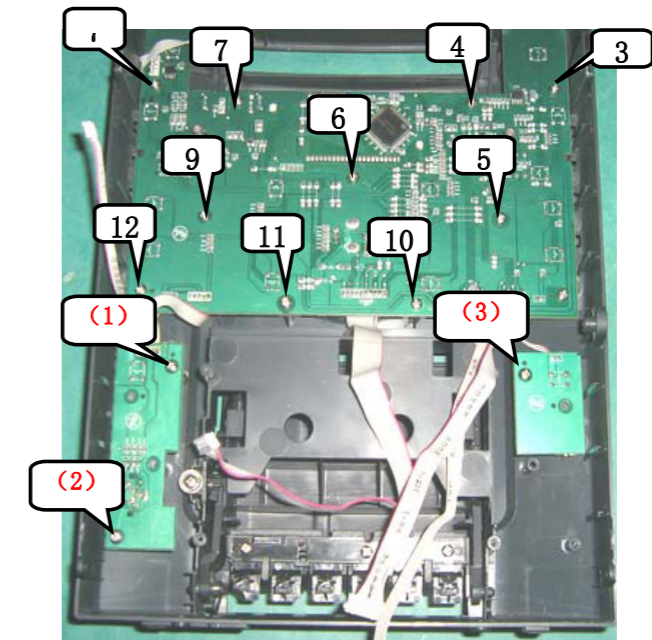
- 3) Loosen 6 screws PT3×12 in rear cabinet .



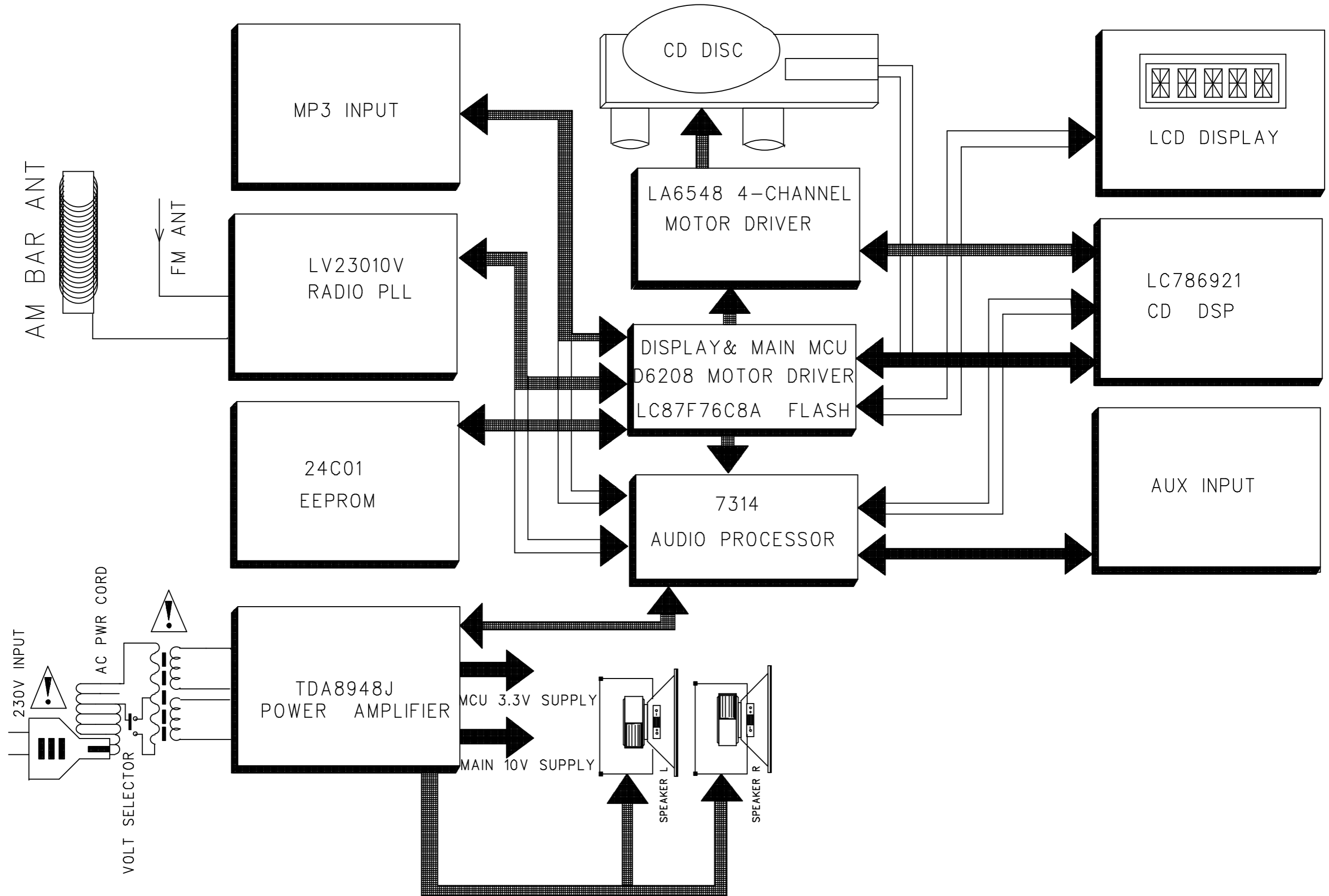
- 4) Remove top cabinet.



- 6) Loosen 12 screws T3×8 and 3 screws PT3x8 to remove Main board.

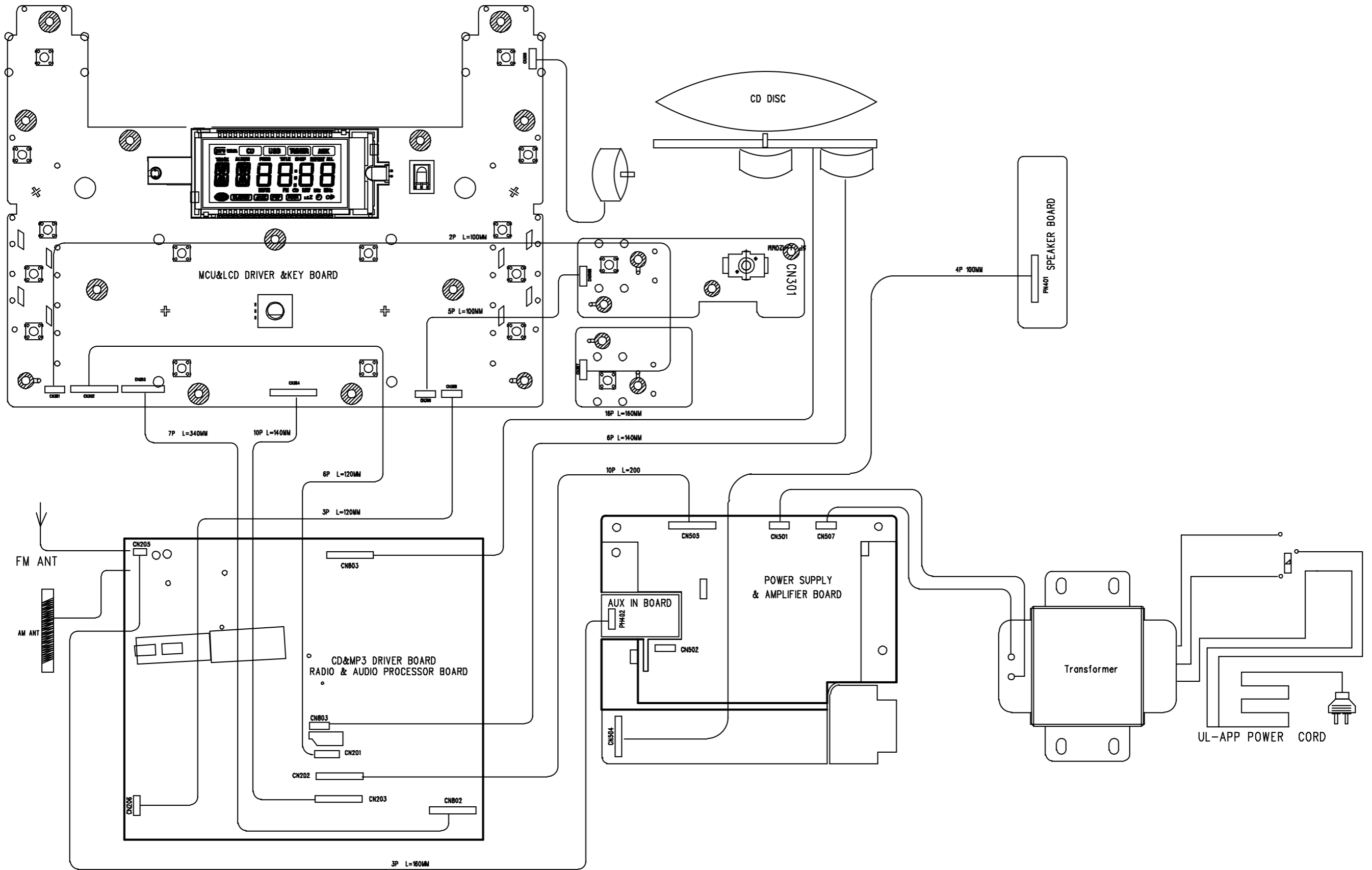


SET BLOCK DIAGRAM

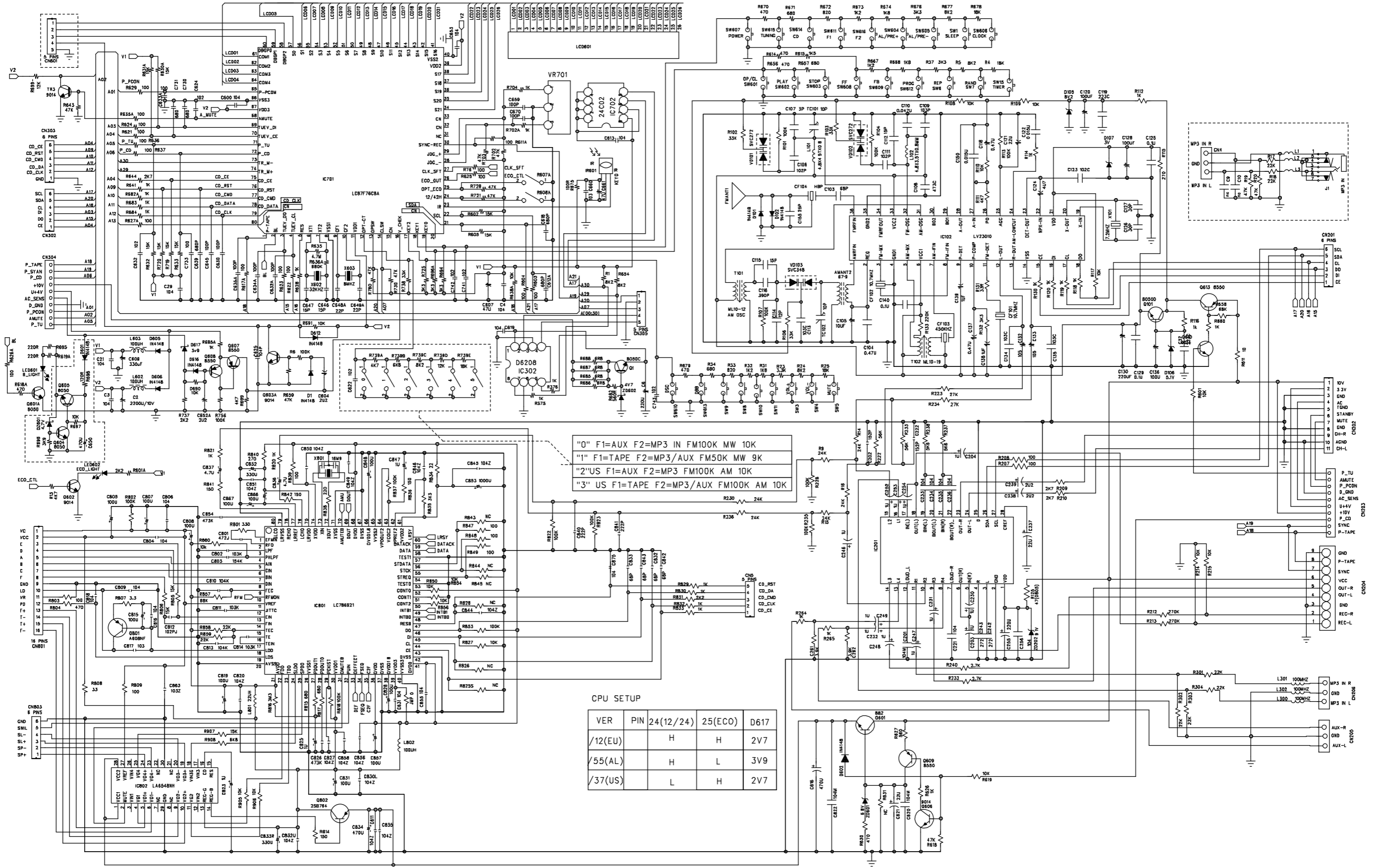




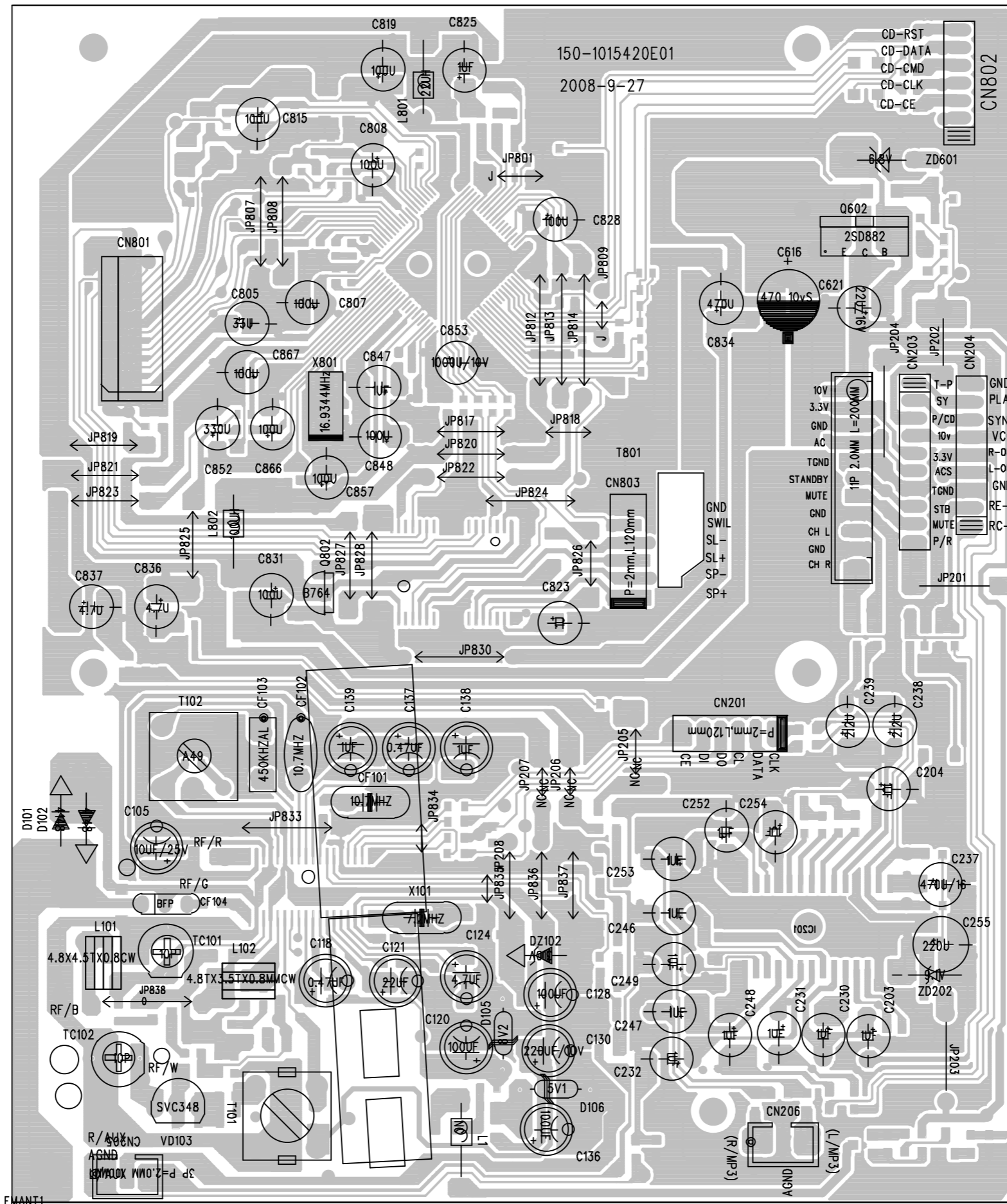
# SET WIRING DIAGRAM



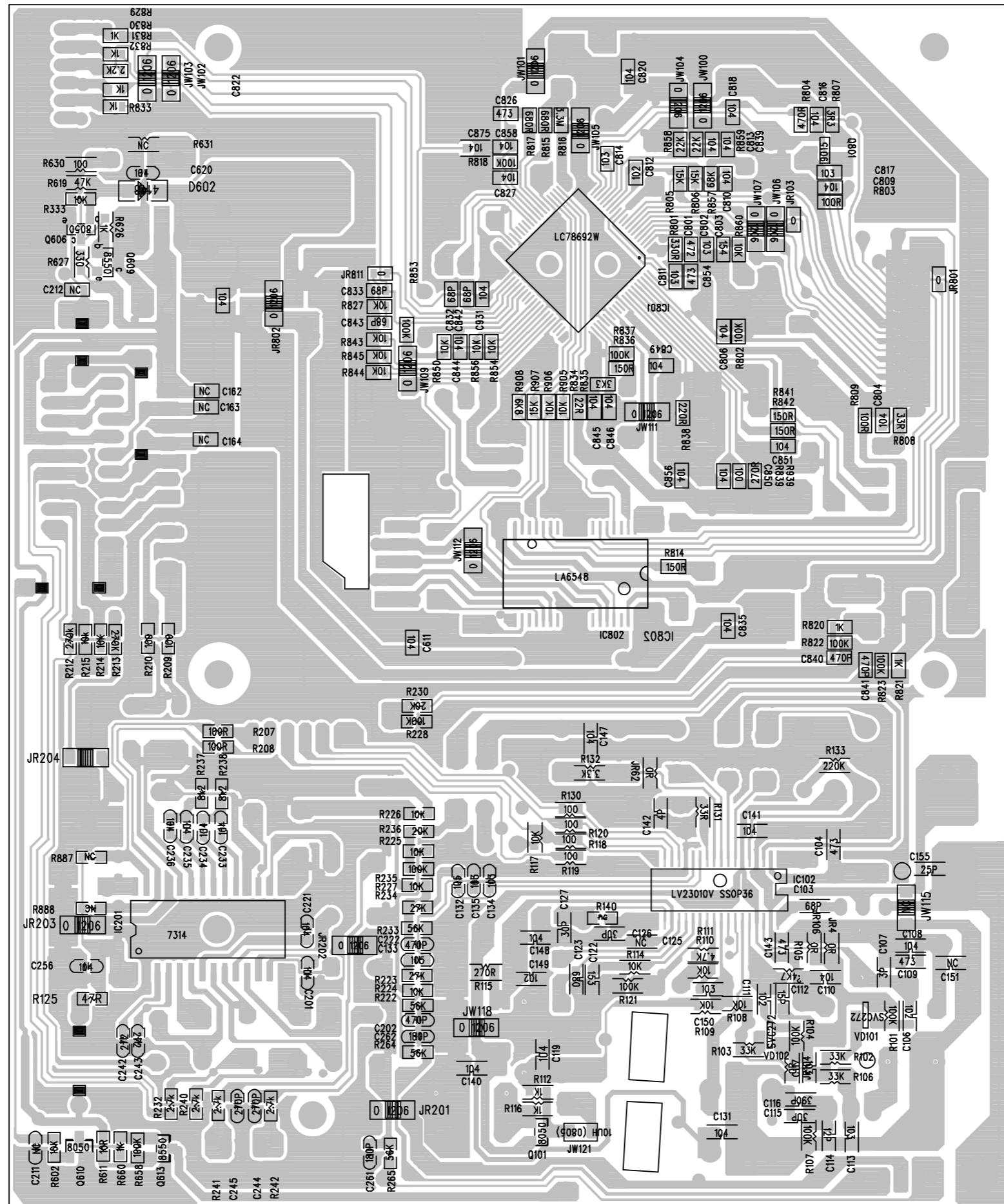
# CIRCUIT DIAGRAM - CD BOARD



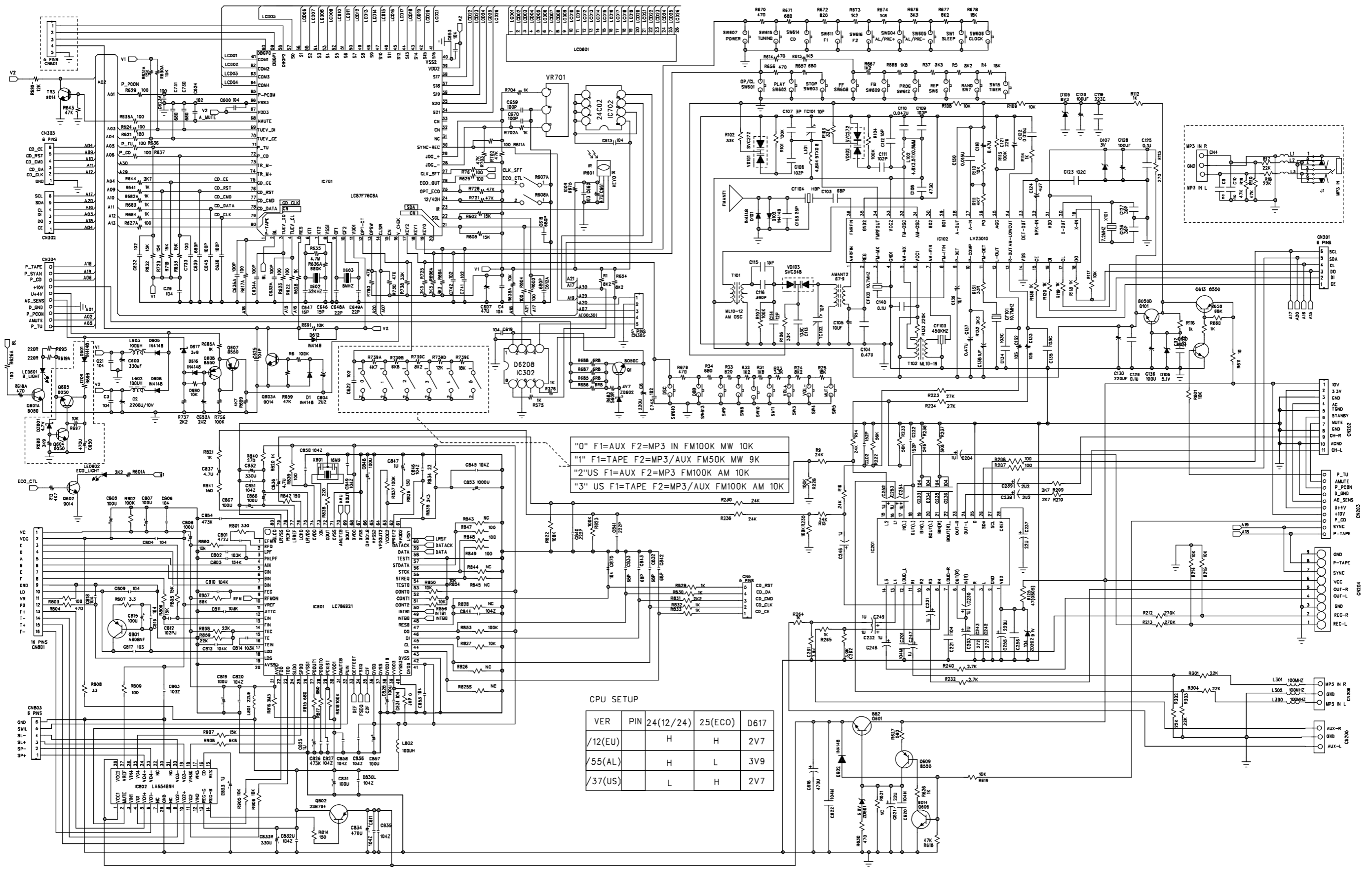
LAYOUT DIAGRAM - CD BOARD  
COMPONENT SIDE VIEW



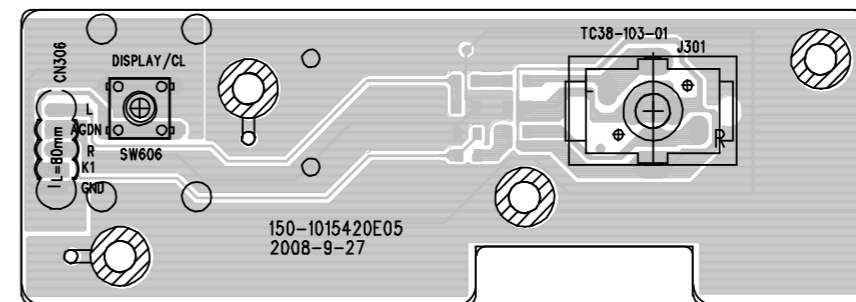
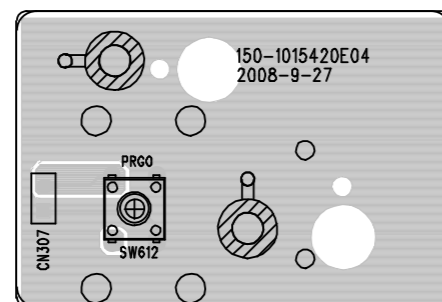
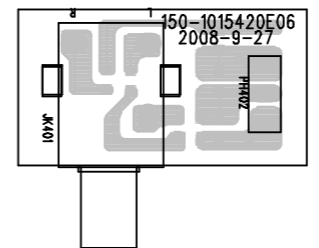
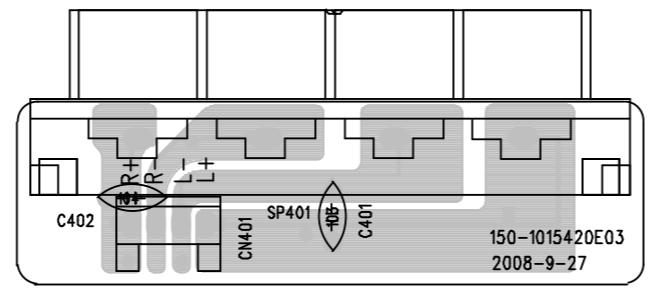
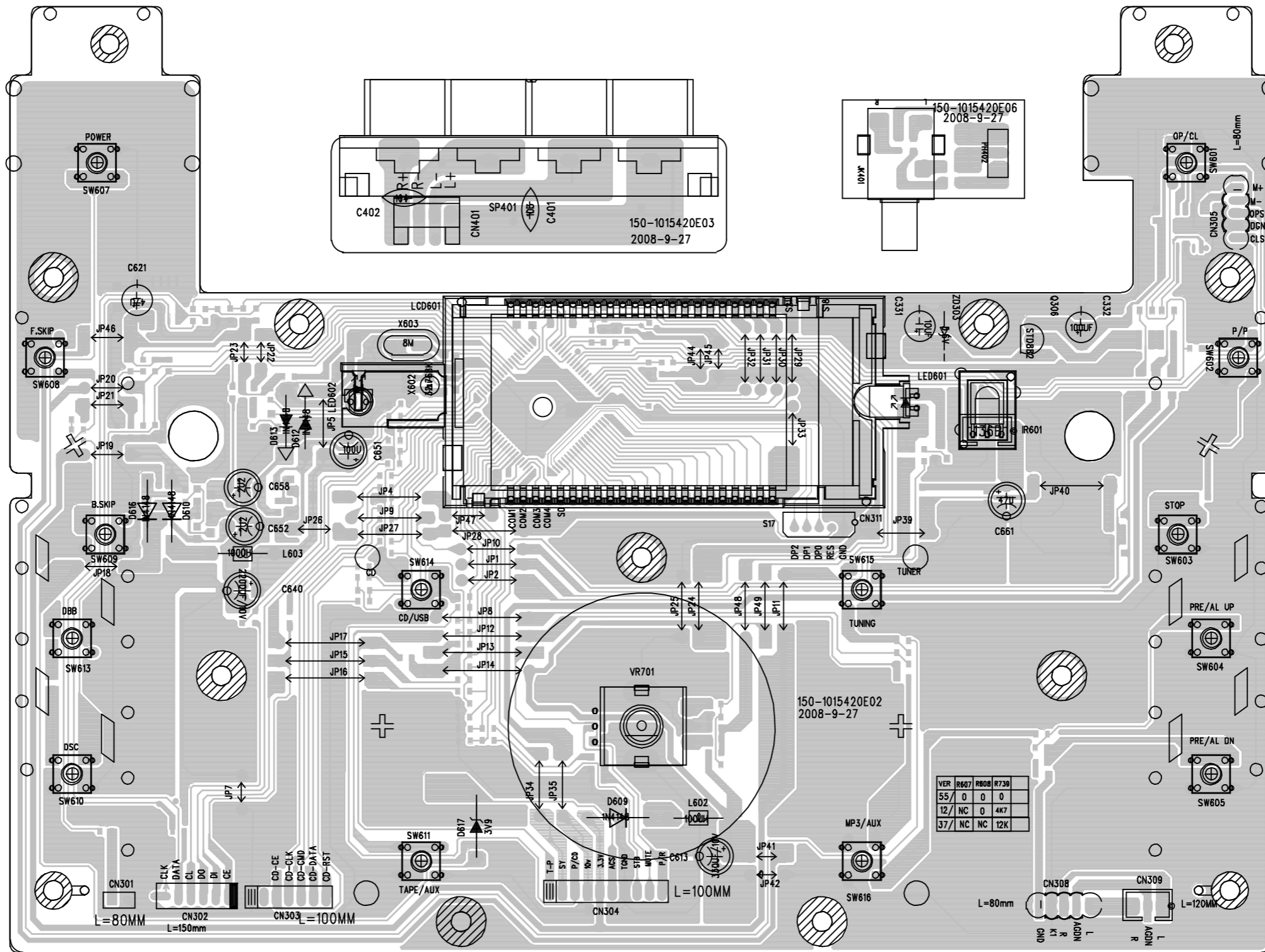
# LAYOUT DIAGRAM - CD BOARD COPPER SIDE VIEW



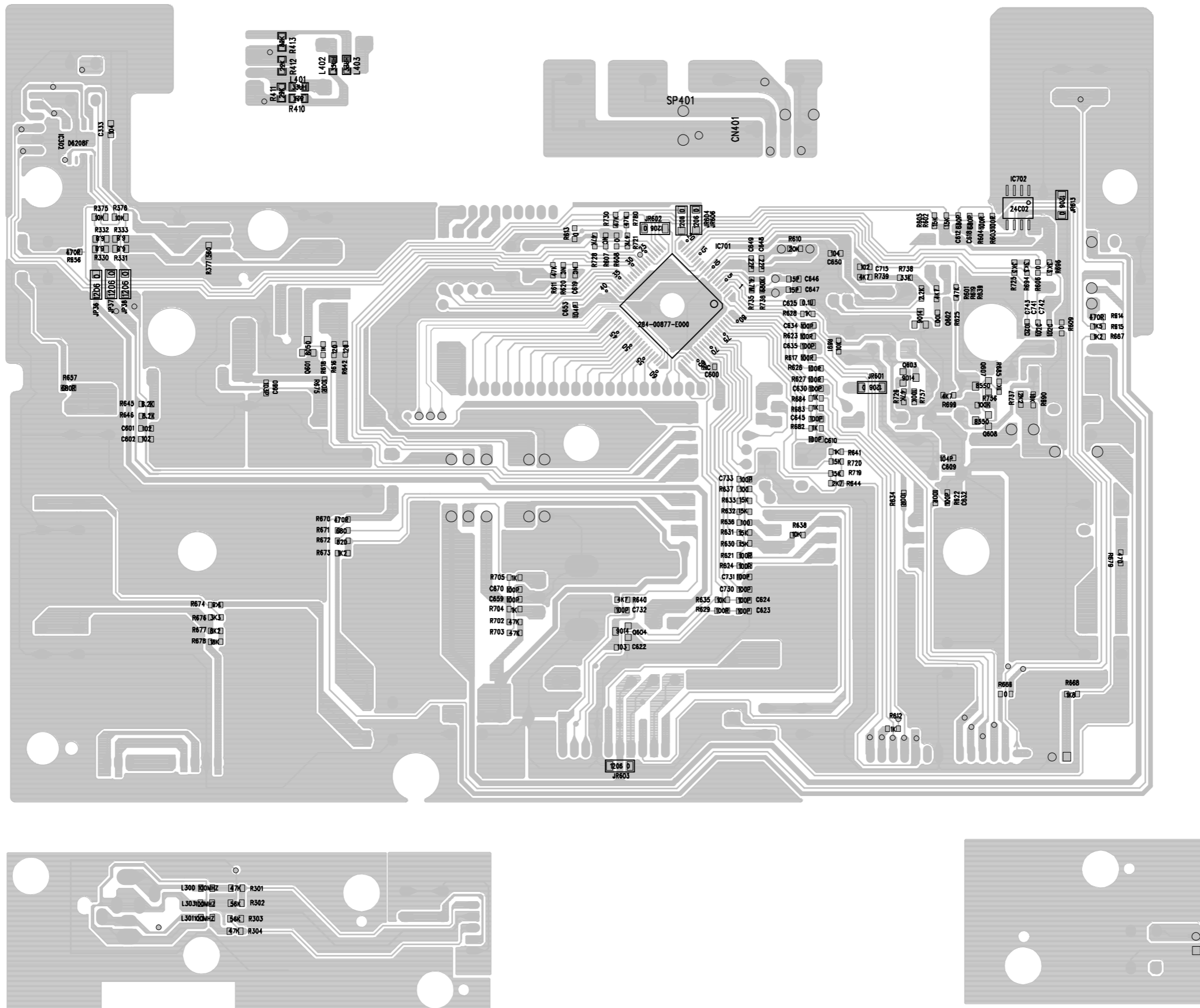
# CIRCUIT DIAGRAM - DISPLAY BOARD



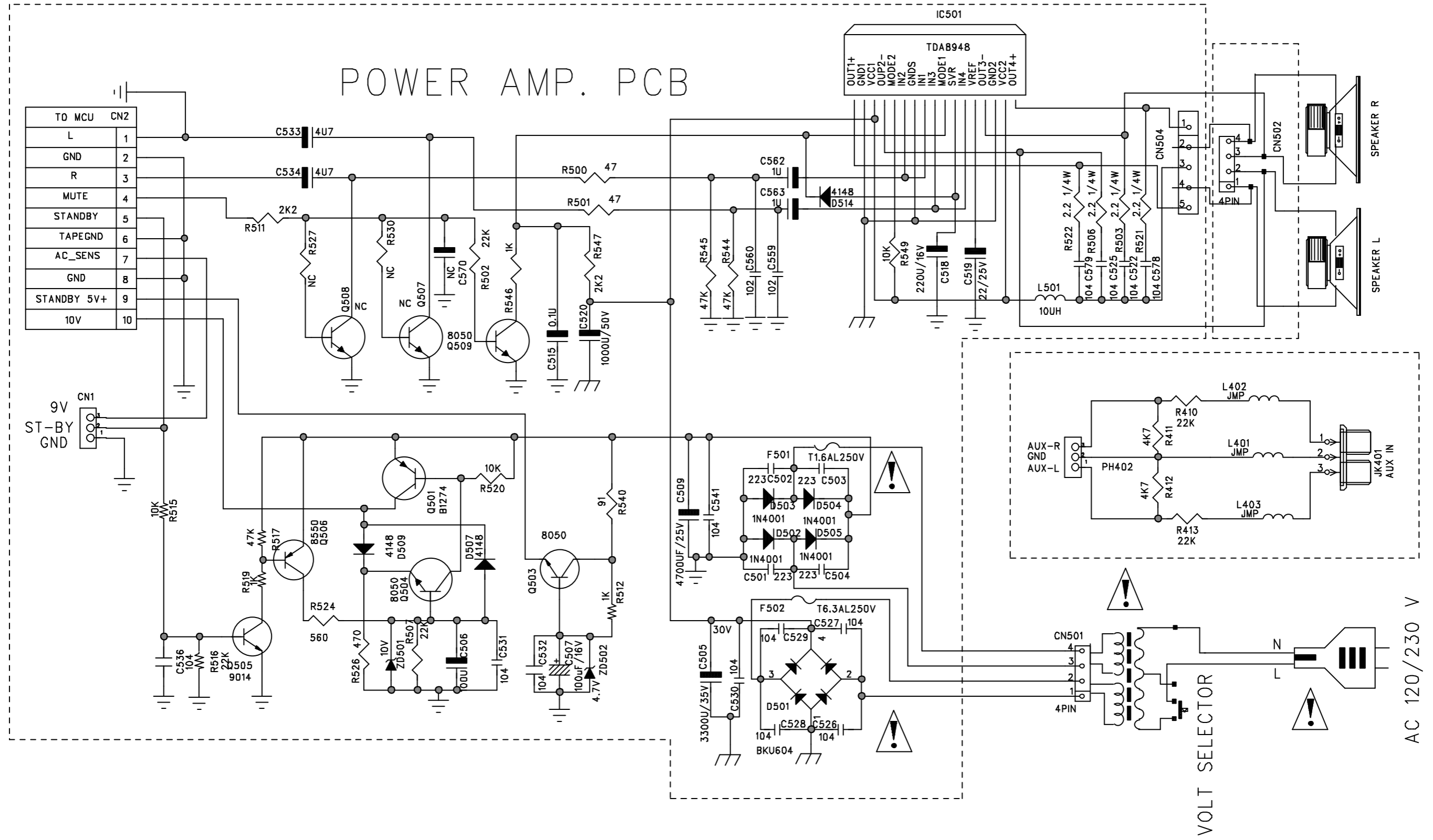
# LAYOUT DIAGRAM - DISPLAY BOARD COMPONENT SIDE VIEW



# LAYOUT DIAGRAM - DISPLAY BOARD COPPER SIDE VIEW

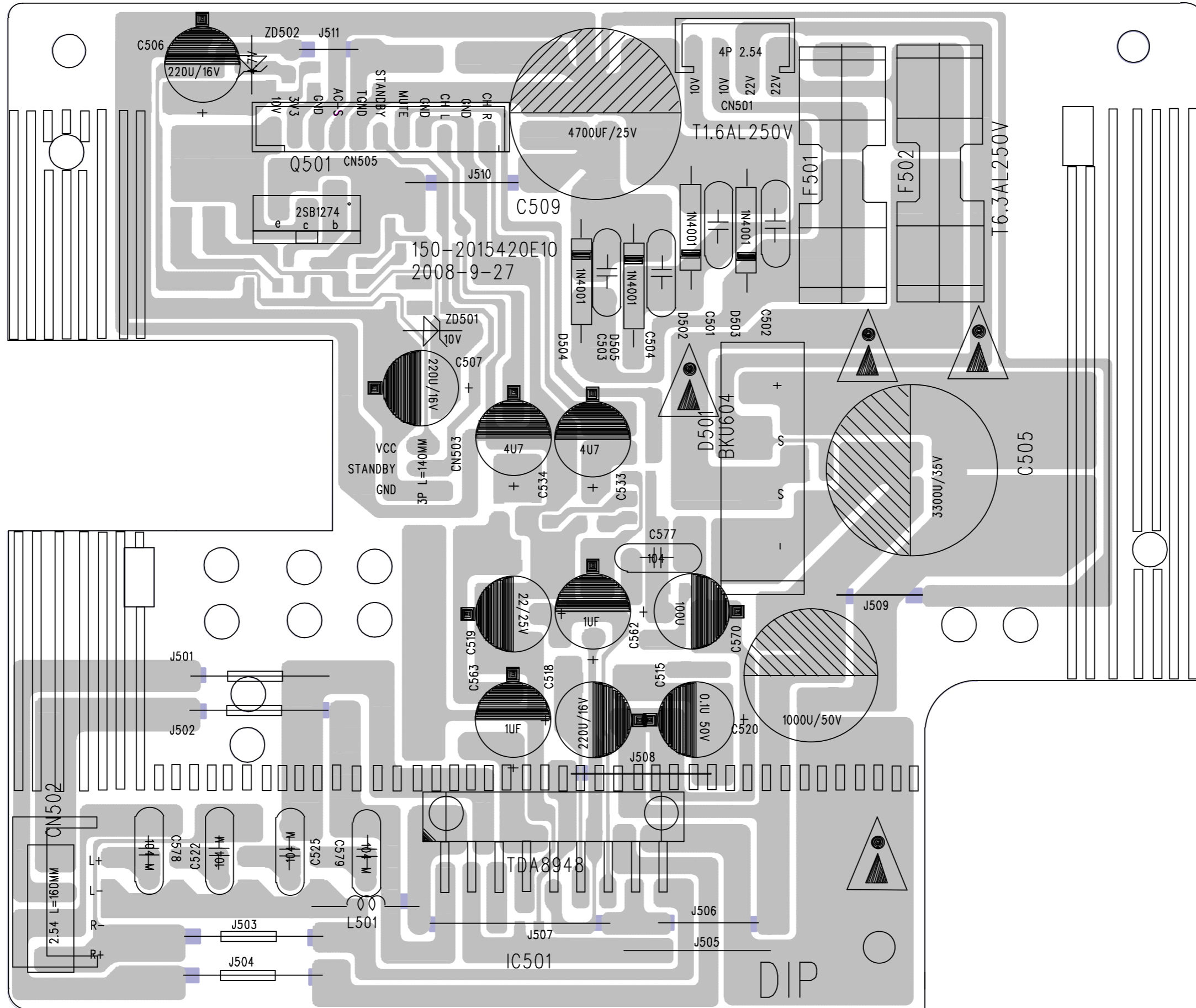


# CIRCUIT DIAGRAM - AMP BOARD

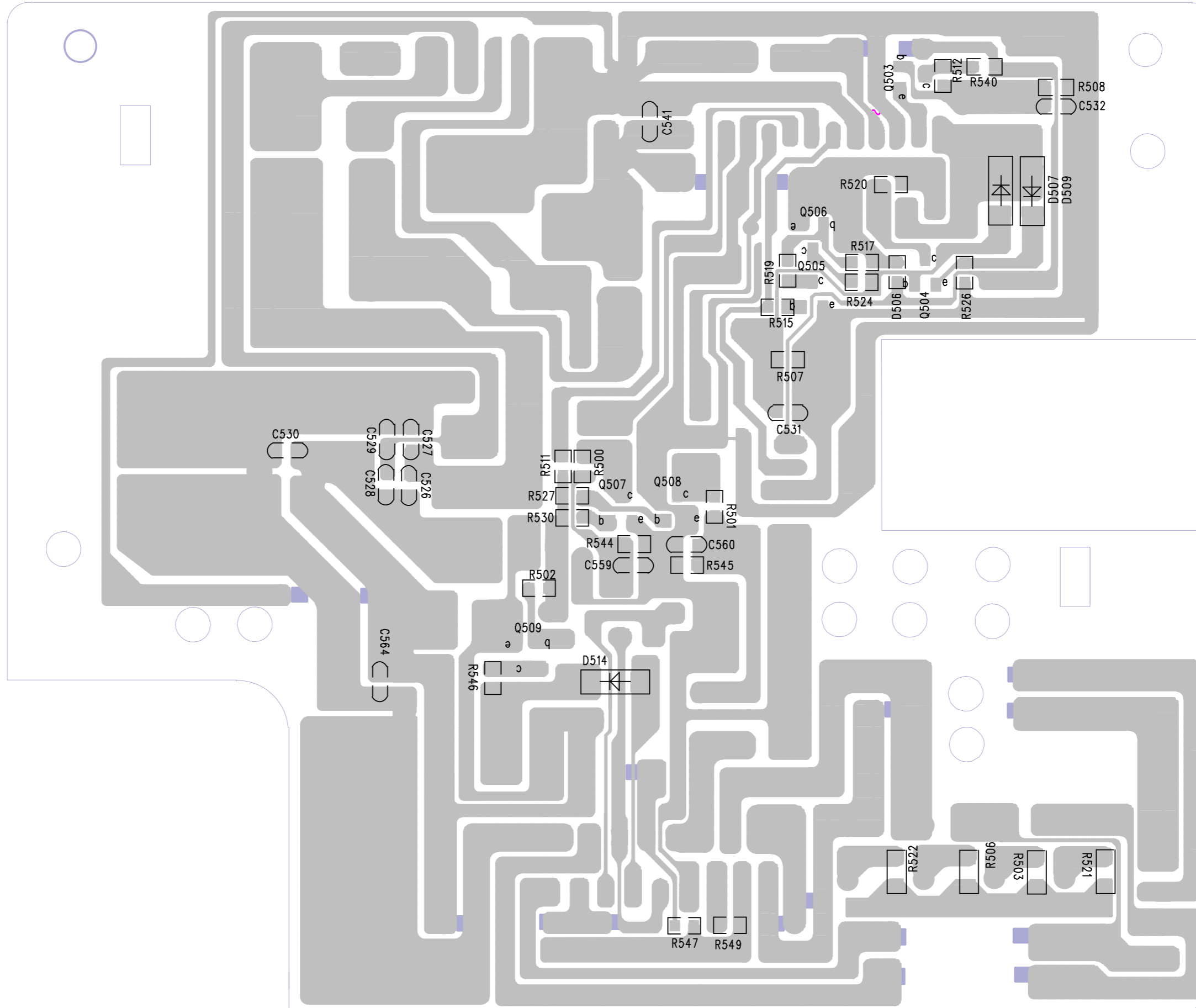




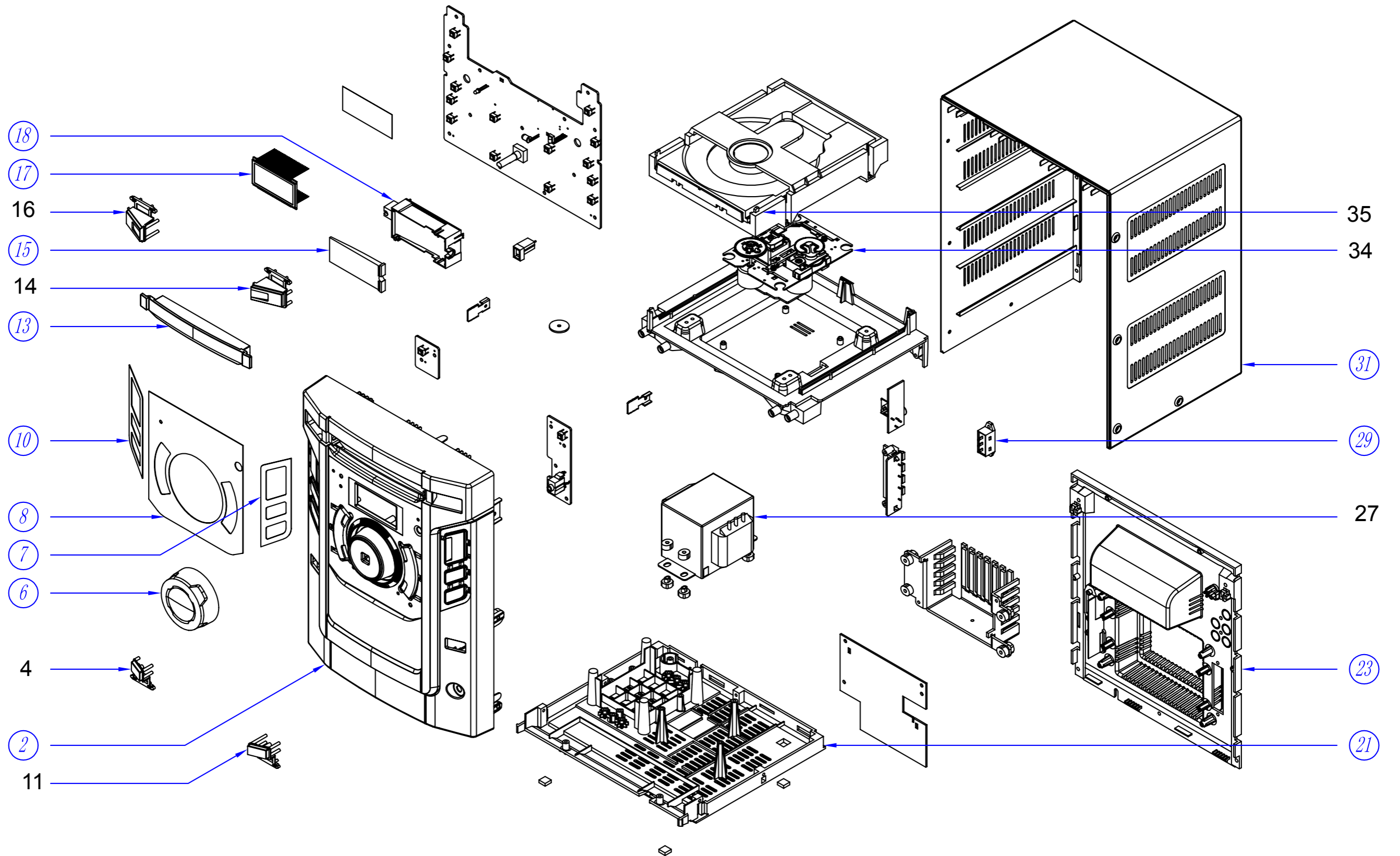
LAYOUT DIAGRAM - AMP BOARD  
COMPONENT SIDE VIEW






LAYOUT DIAGRAM - AMP BOARD  
COPPER SIDE VIEW



EXPLODED VIEW DIAGRAM



**MECHANICAL PARTSLIST**

11	996510021219	CLOCK BUTTON
14	996510021207	OPEN/CLOSE BUTTON
16	996510021196	POWER BUTTON
27	 996510021442	TRANS UL EML662324MT
27A	 996510021438	TRANS UL 0-9464T-1
34	996500038819	CD MECHANISM SANYO DA11VF
35	996500038820	CD LOADER WXD-8210 (COMPLETED)
36A	996510006434	16P(FLEX FT C)CONNECTL150P1A
4	996510021198	PROG. BUTTON
AC1	 996510010129	AC CORD BAXI L=1650mm (10A) EP
AC2	994000004736	SLIDE SWITCH (SSV-12-8700S)
FM1	996510003947	FM ANT L1500

**ACCESSORIES**

AUX1	996510020741	AUX WIRE 400mmW/3.5 STEREO BLK
B1	996510021443	SPEAKER BOX(L)
B2	996510021199	SPEAKER BOX (R)
RC	996510021209	REMOTE HANDSET
A	 996510007662	UL-APP 110V 3A PLUG CONVERTOR

**Note:** Only these parts mentioned in the list are normal service parts.

**ELECTRICAL PARTSLIST****CD BOARD ASSEMBLY**

IC102	996510015912	IC LV23010V SSOP36
IC201	996510013420	IC 7314 (SOP 28P)(ANGUS)(EP)
IC801	996510002298	IC LC78692W (CD DSP) SQFP80
IC802	996500038842	IC LA6548NH (4 CH DRIVER)
Q101	994000004004	CHIP TR NPN 8050C
Q602	996510010554	TR NPN KTD882 (TO-126) (EP)
Q605	996510017876	TR NPN 8050D (TP)
Q606	994000004004	CHIP TR NPN 8050C
Q609	994000004005	CHIP TR PNP 8550D
Q610	994000004004	CHIP TR NPN 8050C
Q613	994000004005	CHIP TR PNP 8550D
Q801	994000003973	CHIP TR MMBT9015C
Q802	996500038840	TR PNP 2SB764E-SSH-AE(TP)
X101	996510018248	CRYSTAL 7.2MHz (HC49U)

**PROG BOARD ASSEMBLY**

CN307	996510021434	CABLE2P(S FT)#28UL2651L58P1.27
SW612	996510021215	TACT SW: 6x6mmH3.5

**MP3 LINK BOARD ASSEMBLY**

J301	994000003989	ST PHONES JACK 3.5MM 7P
SW606	996510021215	TACT SW: 6x6mmH3.5

**SPEAKER PLYWOOD BOARD ASSEMBLY**

CN401	996510021435	CXH WAFER 4P P=2.5mm(C&K)
SP401	994000004779	SPEAKER TERMINAL 4P MSP-124V



**AUX BOARD ASSEMBLY**

JK401	996510006430	AUX RCA JACK (RCA-207)(RED/WHT)
-------	--------------	---------------------------------

**ELECTRICAL PARTSLIST****DISPLAY BOARD ASSEMBLY**

IC302	994000004737	IC D6208 (MOTOR DRIVER) SOT8
IC701	996510034245	IC LC8776 80B-5AN3 QFP80
IC702	996510013449	IC FT24C02 (EEPROM) (SOP8)(EP)
IR601	996510002274	SENSOR AT136BV3 (36KHz) (3.3V)
LCD601	996510021218	FWM153LCD DISPL:SDH-A1224-TN-4
LED601	996510002275	LED WHITE D5mm (DL5NWCH)
Q306	996510002285	TR NPN STD882 (TO-92)(TP)
Q601	994000004004	CHIP TR NPN 8050C
Q603	994000003972	CHIP TR MMBT9014C
Q604	994000003972	CHIP TR MMBT9014C
Q605	994000004004	CHIP TR NPN 8050C
Q606	994000004004	CHIP TR NPN 8050C
Q607	994000004005	CHIP TR PNP 8550D
Q608	994000004005	CHIP TR PNP 8550D
SW601	996510021215	TACT SW: 6x6mmH3.5
SW602	996510021215	TACT SW: 6x6mmH3.5
SW603	996510021215	TACT SW: 6x6mmH3.5
SW604	996510021215	TACT SW: 6x6mmH3.5
SW605	996510021215	TACT SW: 6x6mmH3.5
SW607	996510021215	TACT SW: 6x6mmH3.5
SW608	996510021215	TACT SW: 6x6mmH3.5
SW609	996510021215	TACT SW: 6x6mmH3.5
SW610	996510021215	TACT SW: 6x6mmH3.5
SW611	996510021215	TACT SW: 6x6mmH3.5
SW613	996510021215	TACT SW: 6x6mmH3.5
SW614	996510021215	TACT SW: 6x6mmH3.5
SW615	996510021215	TACT SW: 6x6mmH3.5
SW616	996510021215	TACT SW: 6x6mmH3.5
VR701	996510018244	ENCODER:EC121102X2B-HA1-137
X602	996500038822	CRYSTAL JF32.768kHz JU2x6
X603	996500038823	CRYSTAL 8MHz(HC-49US)

**AMP BOARD ASSEMBLY**

IC501	996510009066	IC TDA8948J (DBS17P)(PHILIPS)
Q501	996510021217	TR PNP 2SB1274 (TO-220F) (EP)
Q501	996510021433	7871 HEAT SINK
Q503	994000004004	CHIP TR NPN 8050C
Q504	994000004004	CHIP TR NPN 8050C
Q505	994000003972	CHIP TR MMBT9014C
Q506	994000004005	CHIP TR PNP 8550D
Q509	994000004004	CHIP TR NPN 8050C
F501	 994000004782	FUSE 50T D5X20 1.6A 250V(S.B.)
F502	 996510002287	FUSE T6.3A 250V 5x20

**Note:** Only these parts mentioned in the list are normal service parts.