

Service
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Service Manual



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Published by LX 0815 Service Audio Subject to modification

3141 785 32640

Version 1.0



PHILIPS

TECHNICAL SPECIFICATION

AMPLIFIER

Output power 2 x 2W RMS
 Signal-to-noise ratio ≥ 60 dBA (IEC)
 Frequency response 125 – 16000 Hz
 Impedance loudspeakers 8Ω

CD PLAYER

Frequency range 125 – 16000 Hz
 Signal-to-noise ratio 65 dBA

TUNER

FM wave range 87.5 – 108 MHz
 Sensitivity
 – FM 26 dB sensitivity 20 μV
 Total harmonic distortion ≤ 5%

SPEAKERS

Bass reflex system
 Dimensions (w x h x d) .. 134 x 230 x 152 (mm)

GENERAL INFORMATION

AC Power 220 – 230V / 50 Hz
 Dimensions (w x h x d) .. 148 x 233 x 216 (mm)
 Weight (with/without speakers)
 approx. 3.65 / 1.53 kg
 Power consumption
 Active 15 W
 Standby < 4 W

Specifications and external appearance are subject to change without notice.

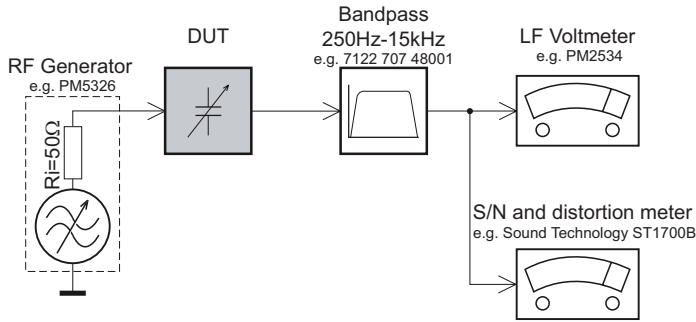
VERSION VARIATION

Type /Versions:		MCB146									
Board in used:	Service policy	/05	/12		/55	/58	/61			/93	/98
DISPLAY BOARD	C										
MAIN BOARD	C										
Type /Versions:		MCB146									
Features	Feature difference	/05	/12		/55	/58	/61			/93	/98
RDS & DAB		√									
VOLTAGE SELECTOR											
ECO STANDBY - DARK		√									

* TIPS : C -- Component Lever Repair.
 M -- Module Lever Repair
 √ -- Used

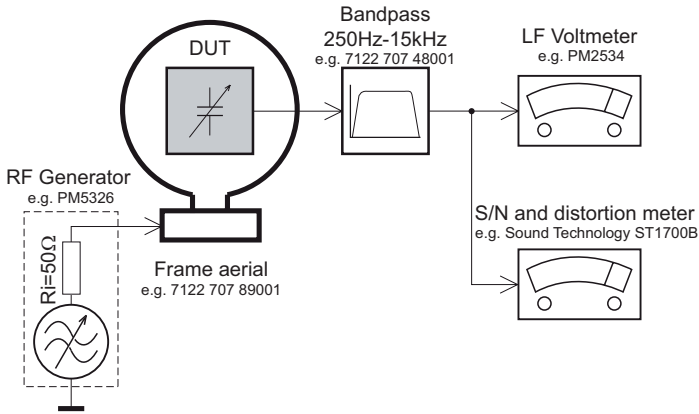
MEASUREMENT SETUP

Tuner FM



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

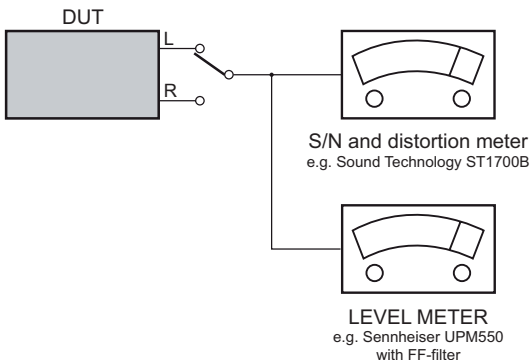
Tuner AM (MW,LW)



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).

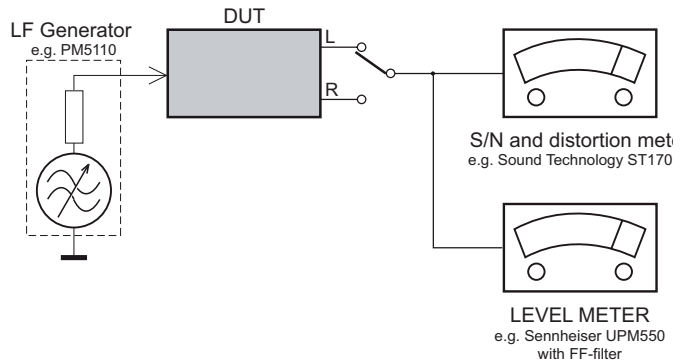
CD

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 .

**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 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".

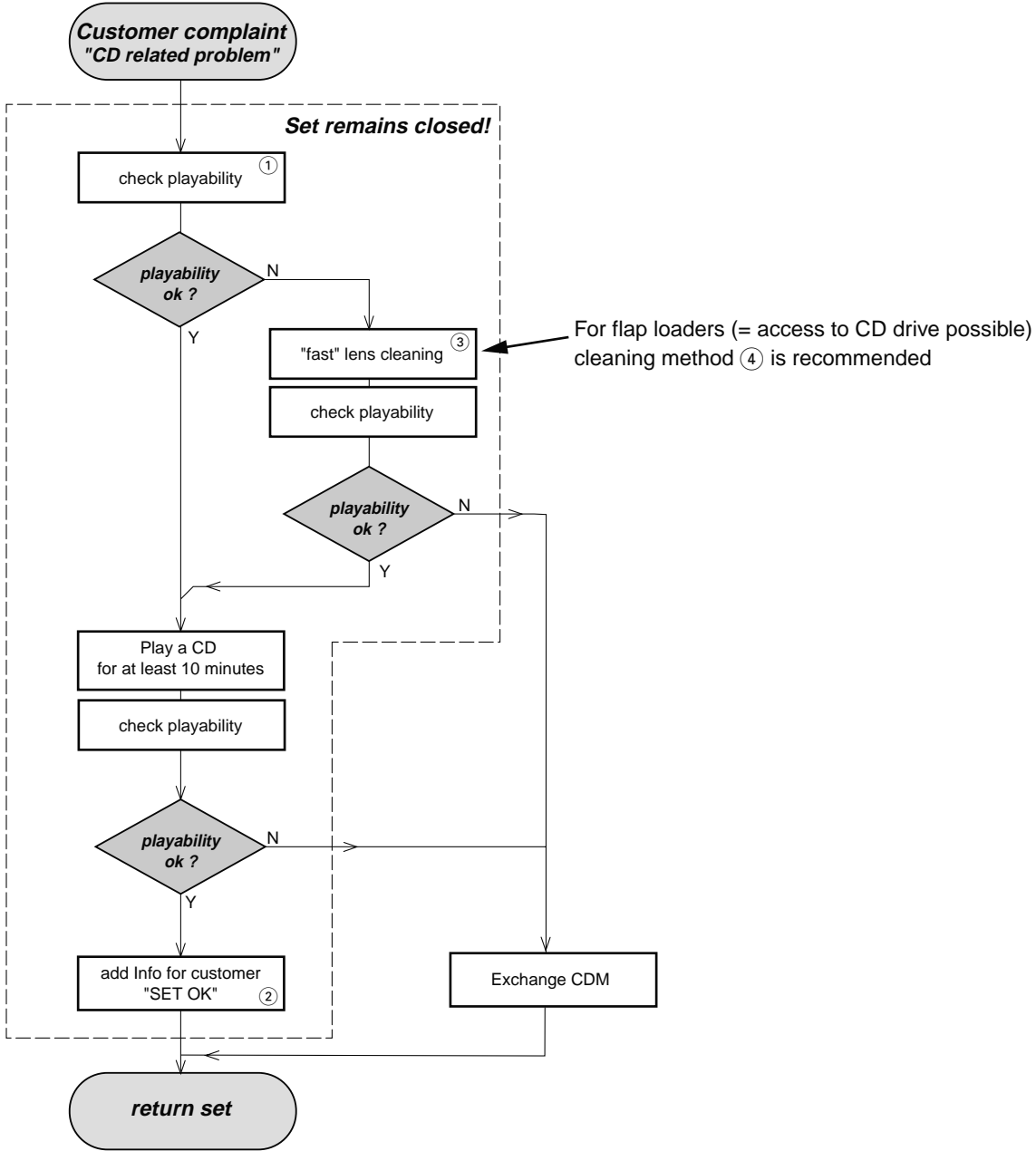
For additional questions please contact your local repair-helpdesk.

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 Disc7104 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 ≥ 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 444A4822 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 ≥ 10 seconds
 Fingerprint ≥ 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

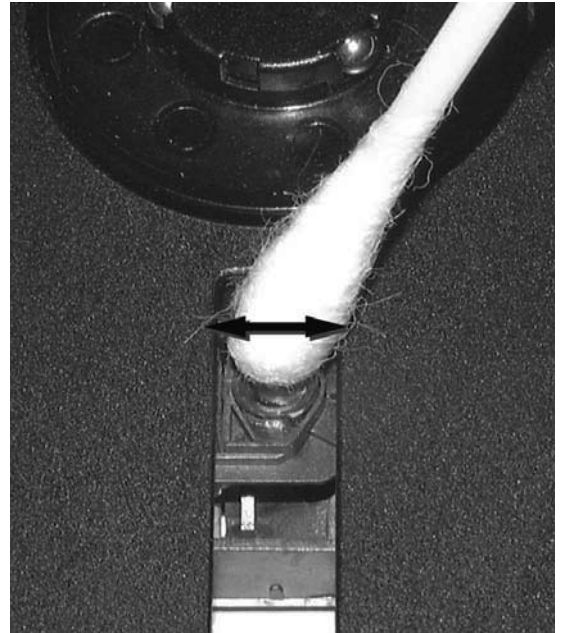
LIQUID LENS CLEANING

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.

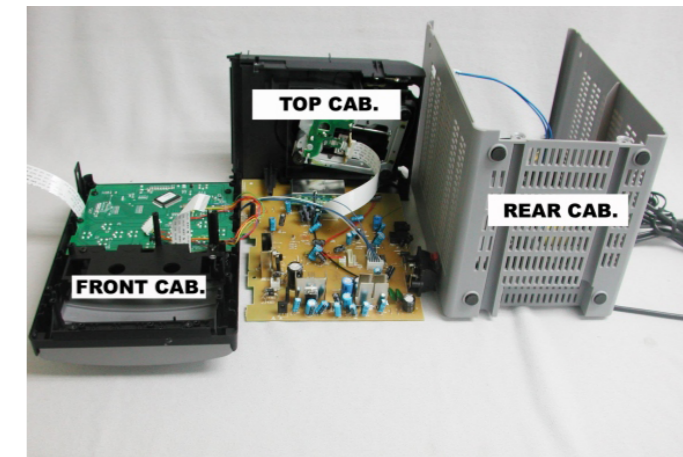
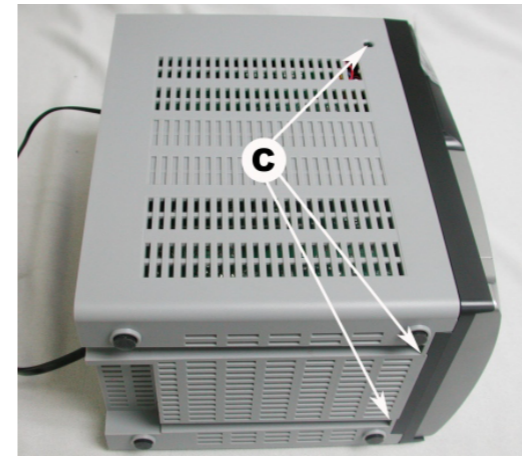
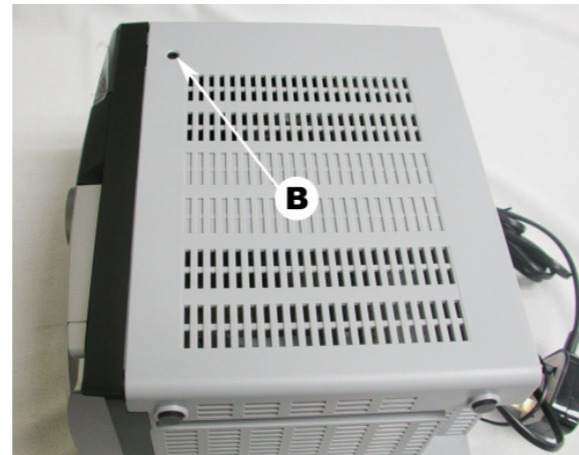
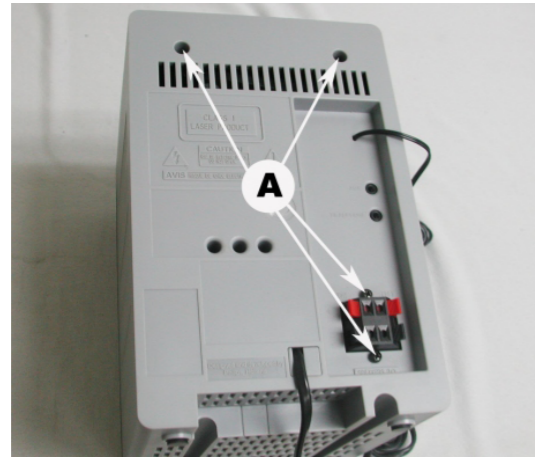
The direction of cleaning must be in the way as indicated in the picture below.



DISASSEMBLY DIAGRAM VIEW

Dismantling of the Rear Cabinet

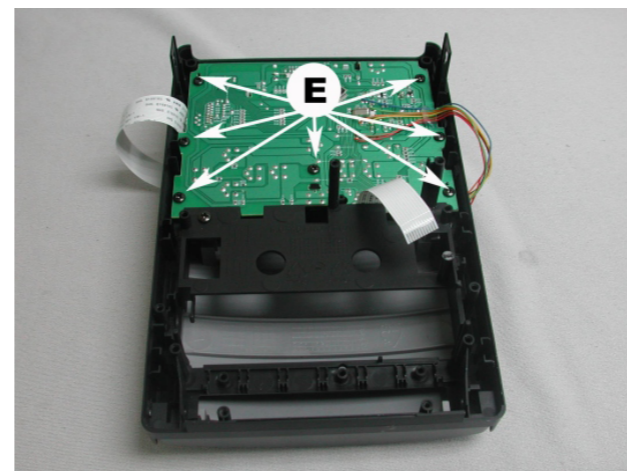
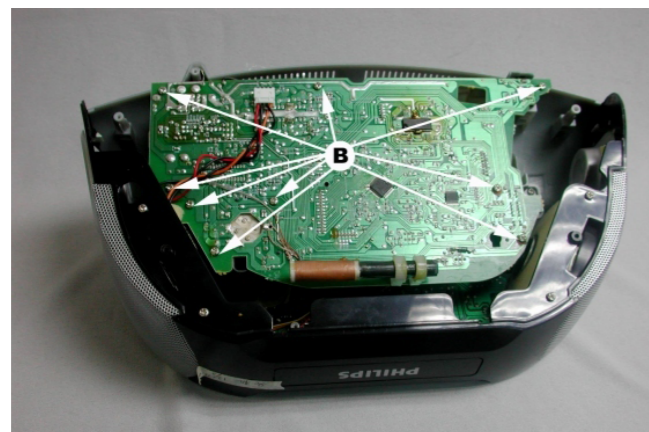
1) Remove 8 screws A&B&C as indicated to loosen the Rear Cabinet.



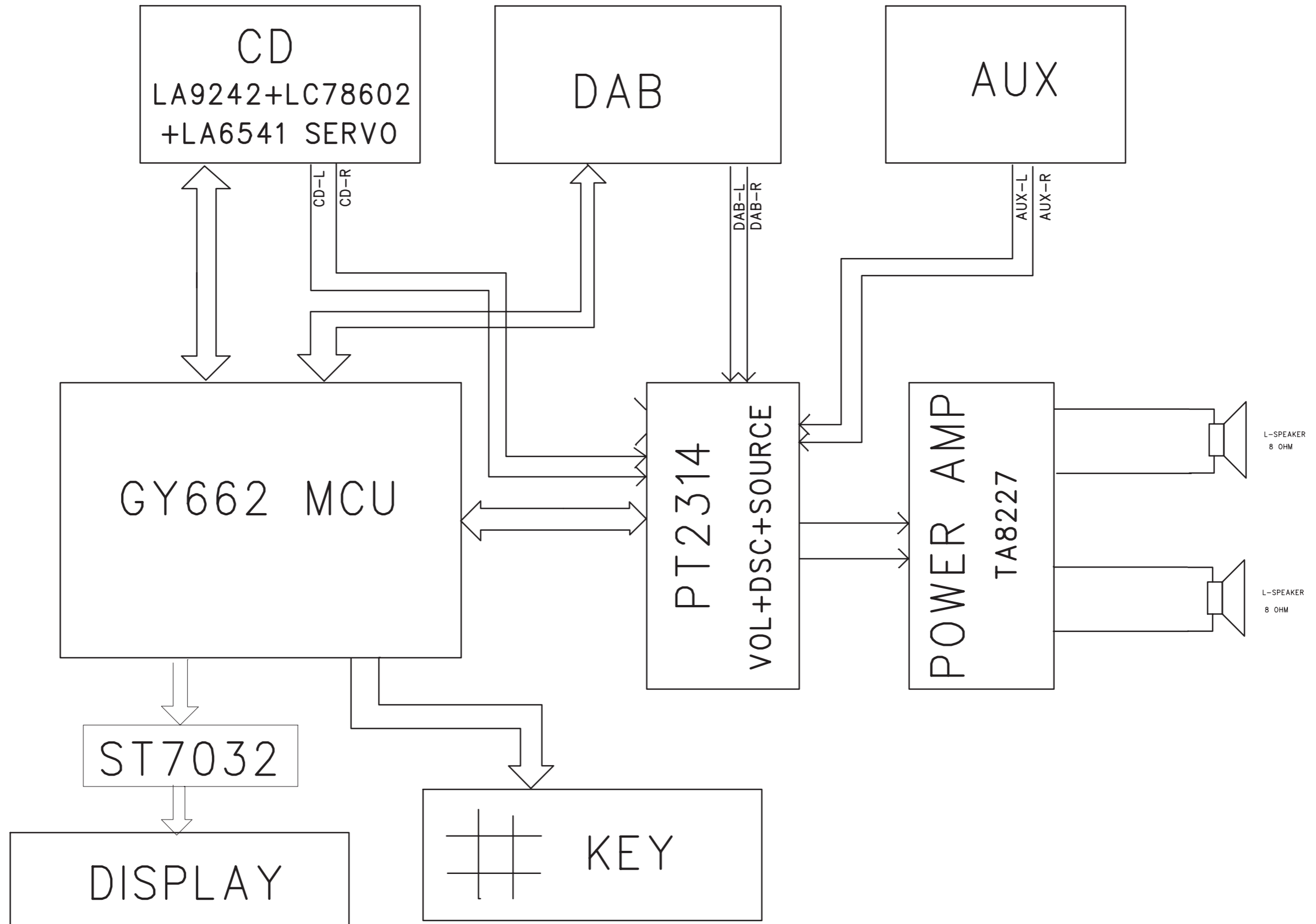
Dismantling of the PCB Board

2) Remove 2 screws D as indicated to loosen the Main Board.

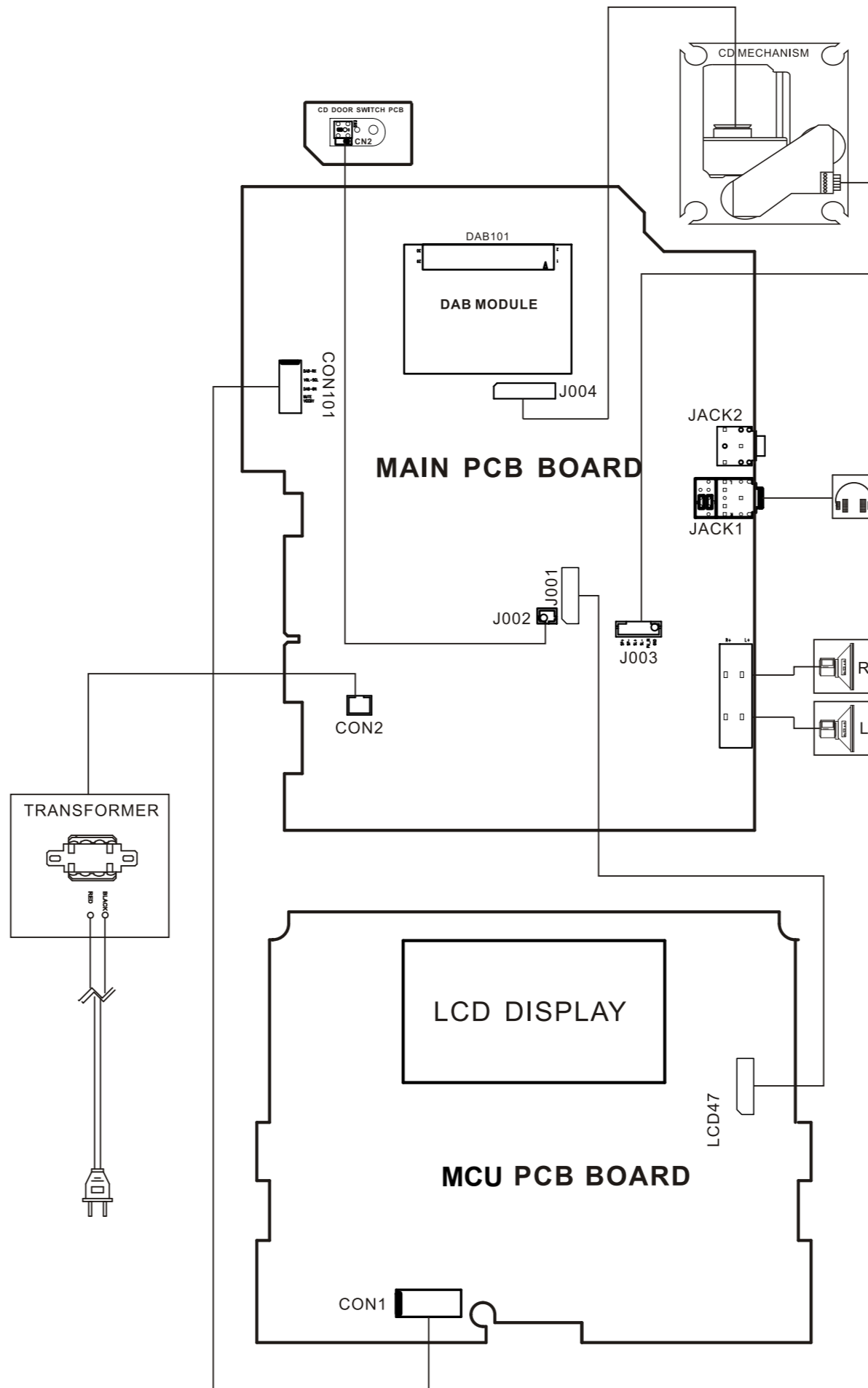
2) Remove 7 screws E as indicated to loosen the Display Board.



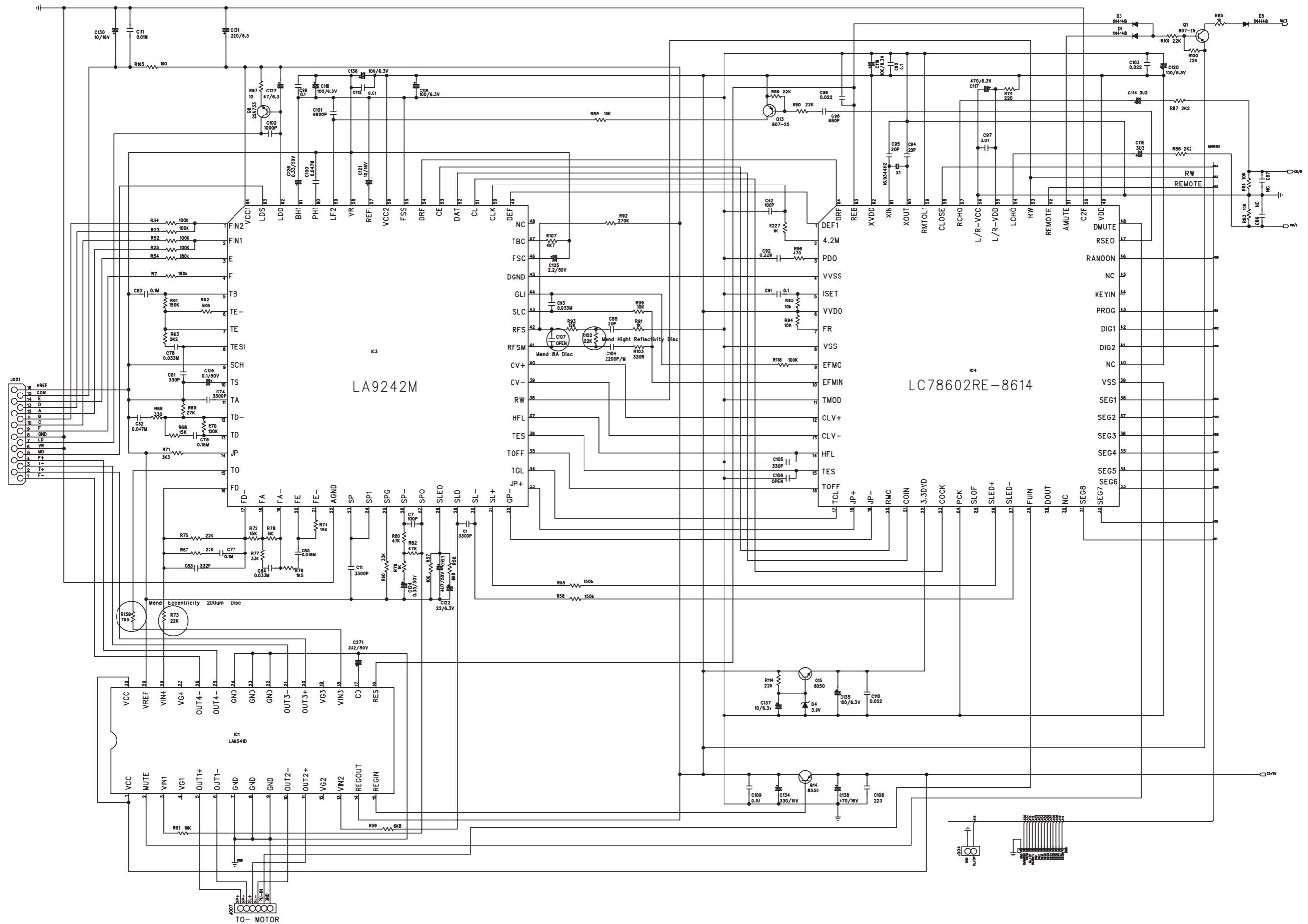
SET BLOCK DIAGRAM



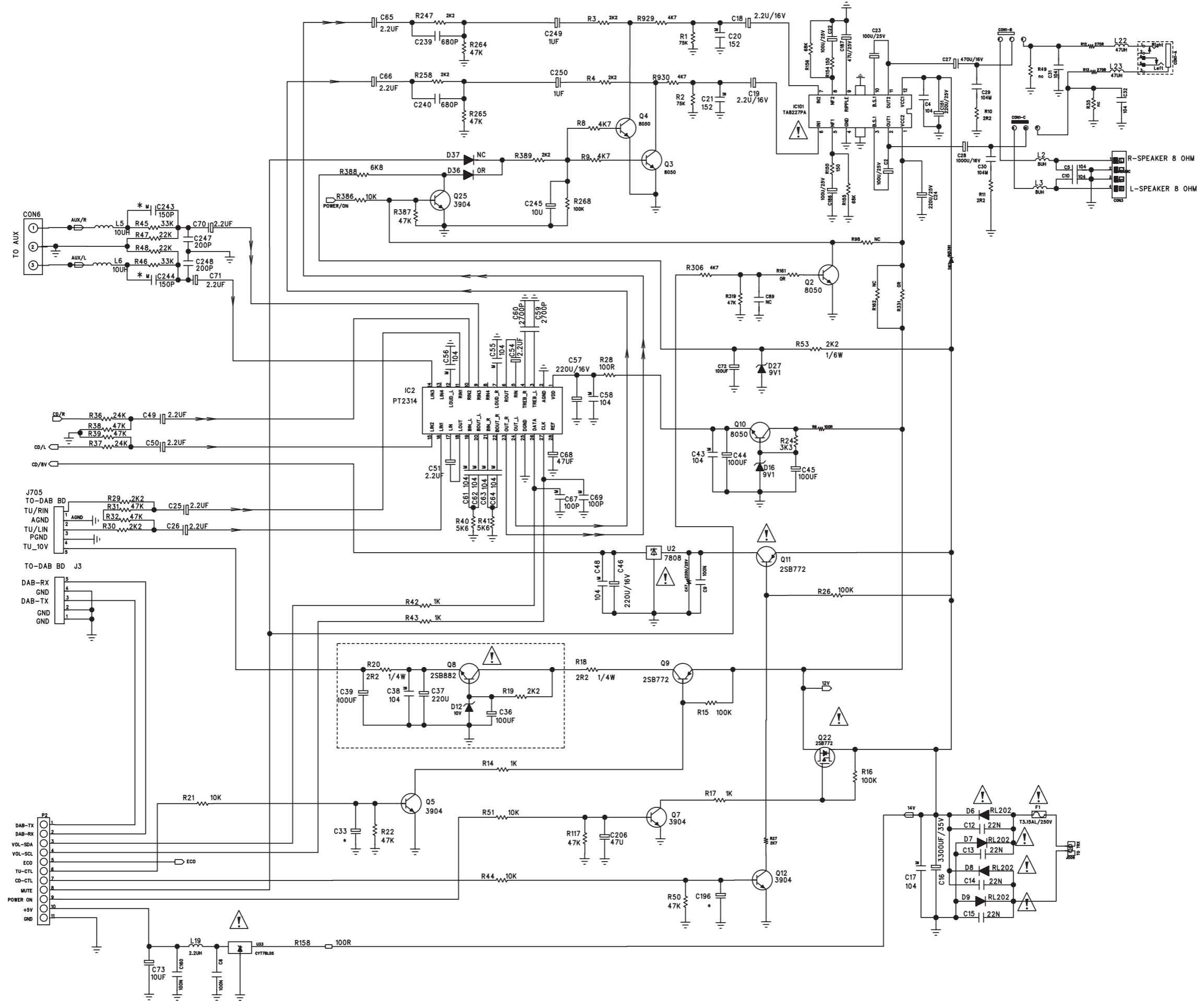
SET WIRING DIAGRAM



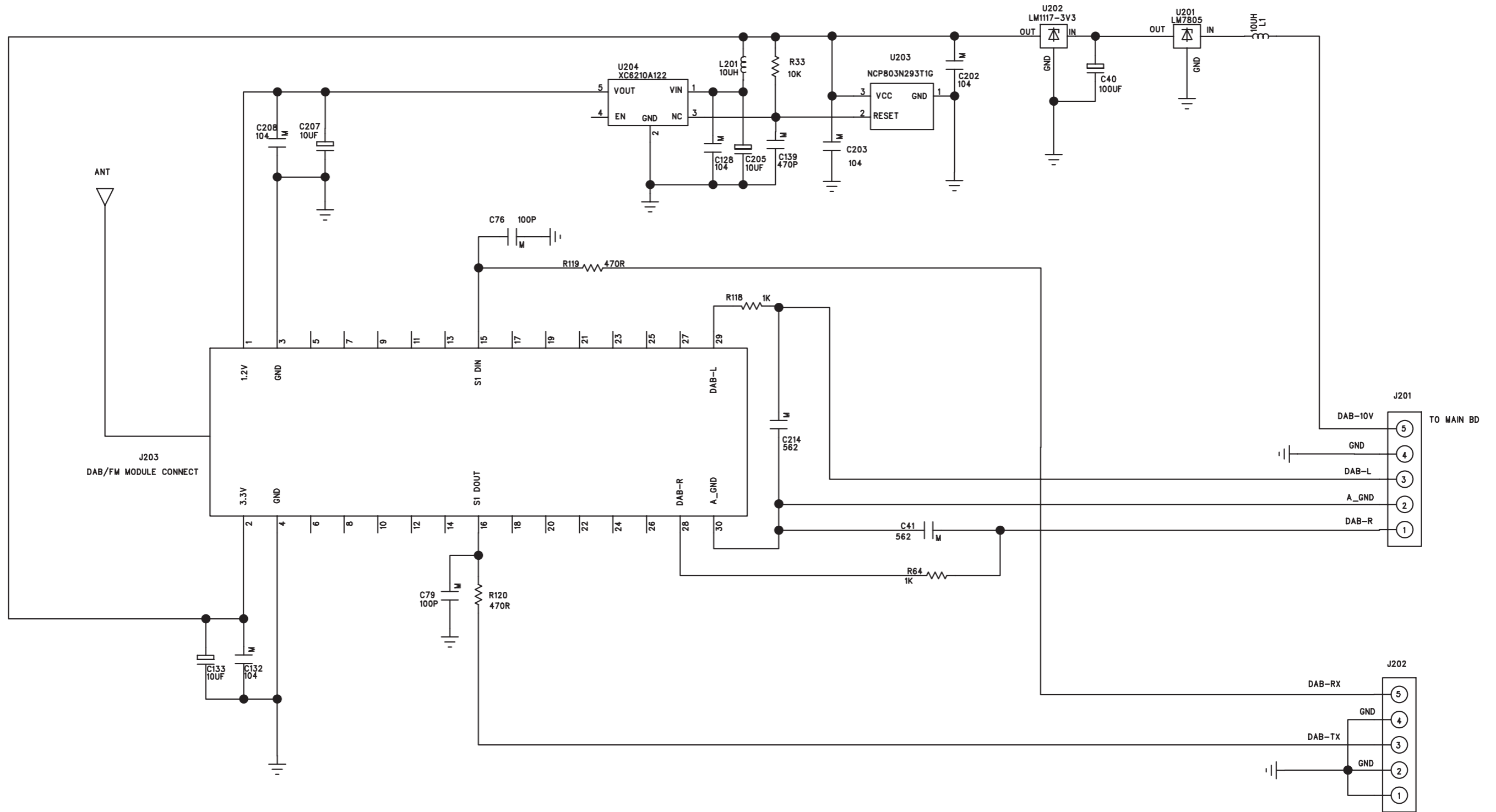
CIRCUIT DIAGRAM - MAIN BOARD CD PART



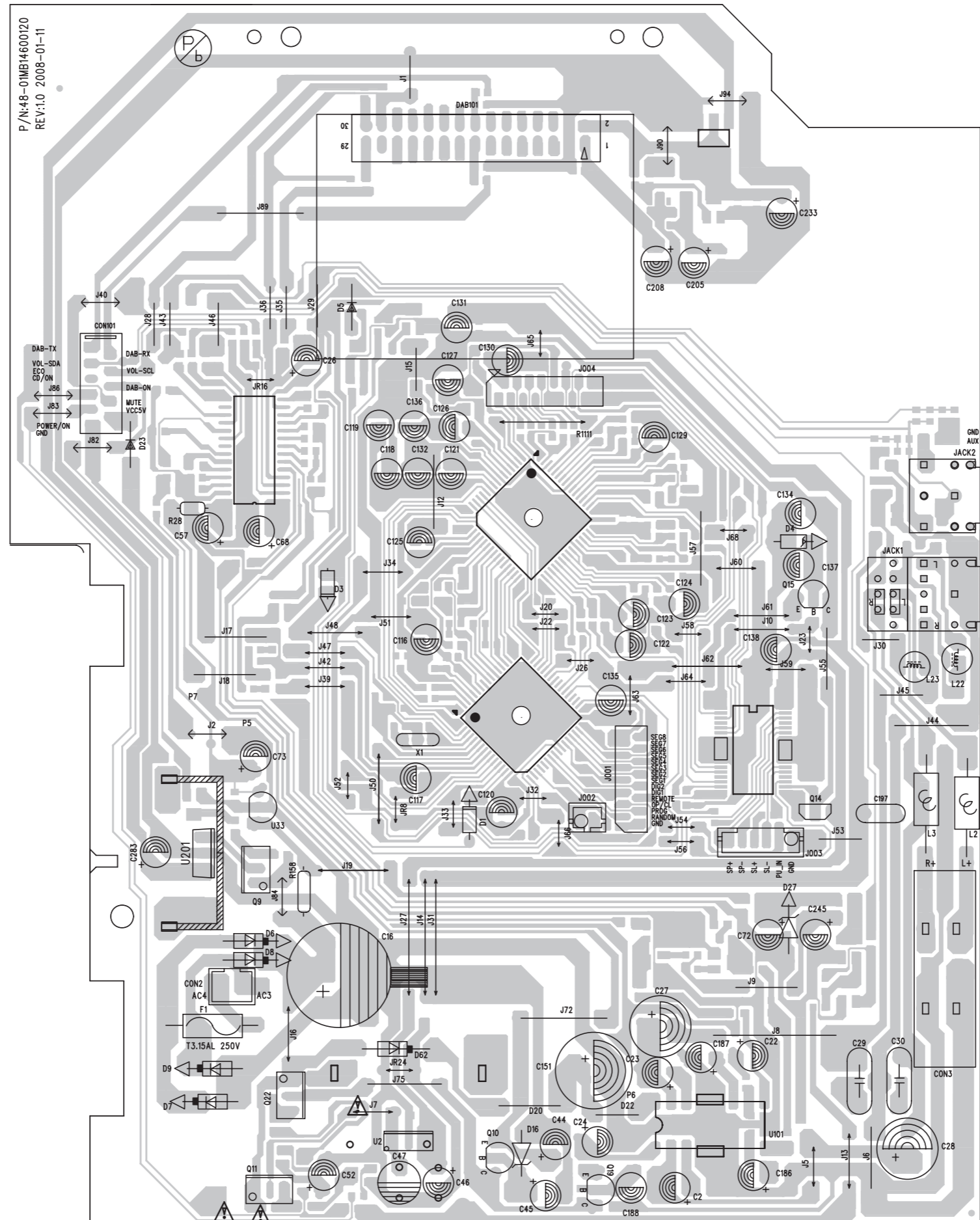
CIRCUIT DIAGRAM - MAIN BOARD AMP & POWER SUPPLY PART



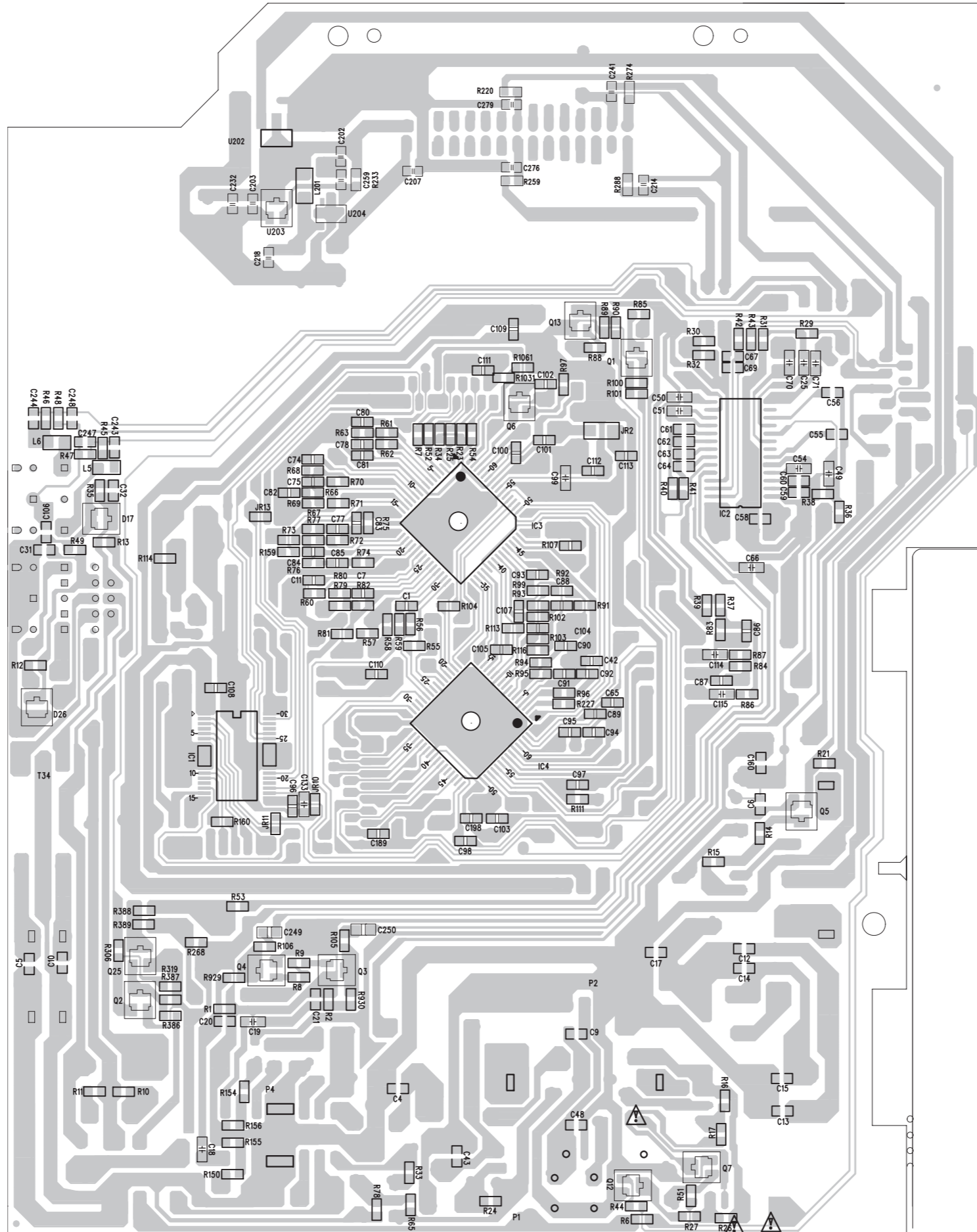
CIRCUIT DIAGRAM - MAIN BOARD TUNER PART



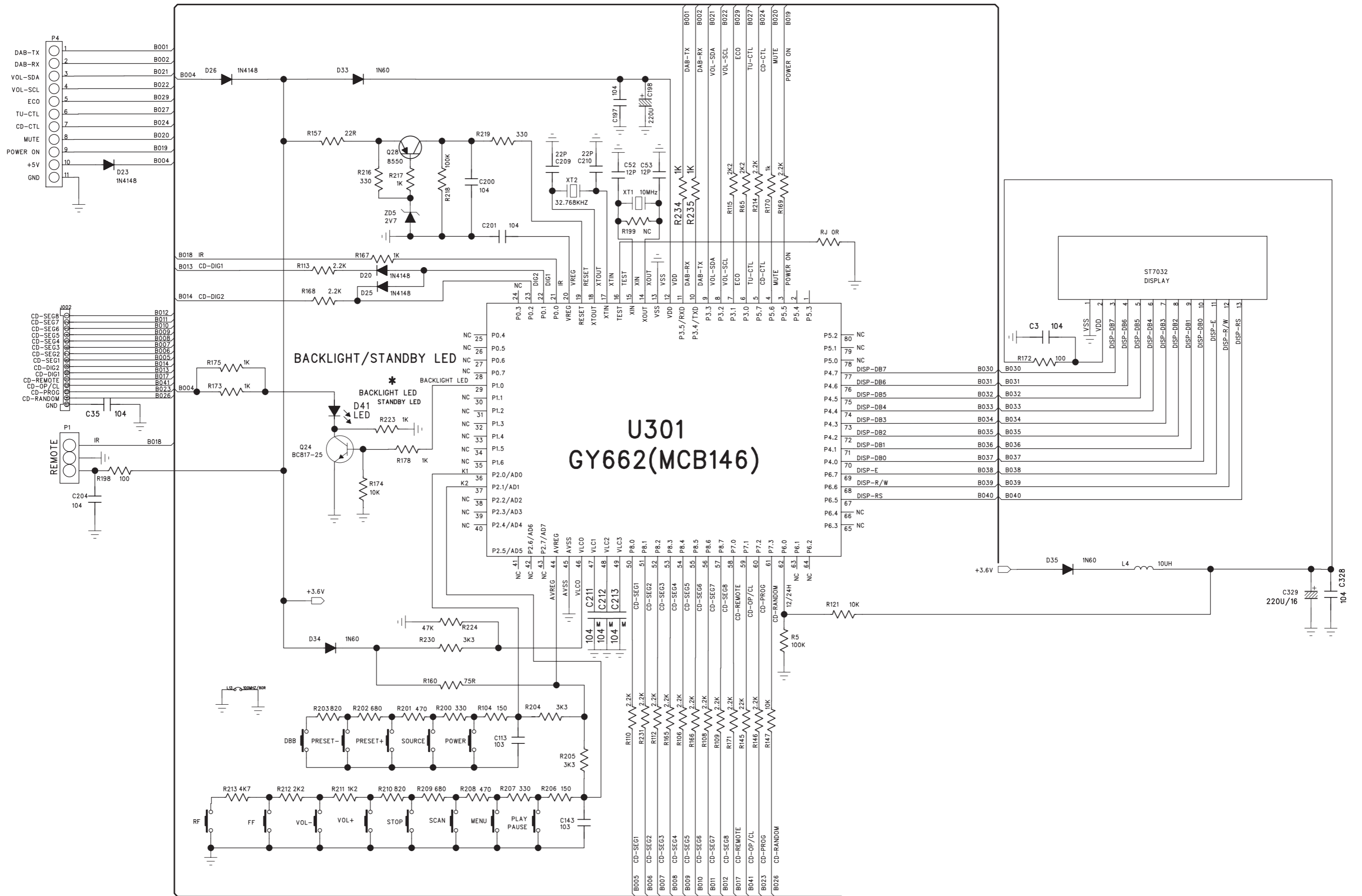
LAYOUT DIAGARM - MAIN BOARD COMPONENT SIDE VIEW



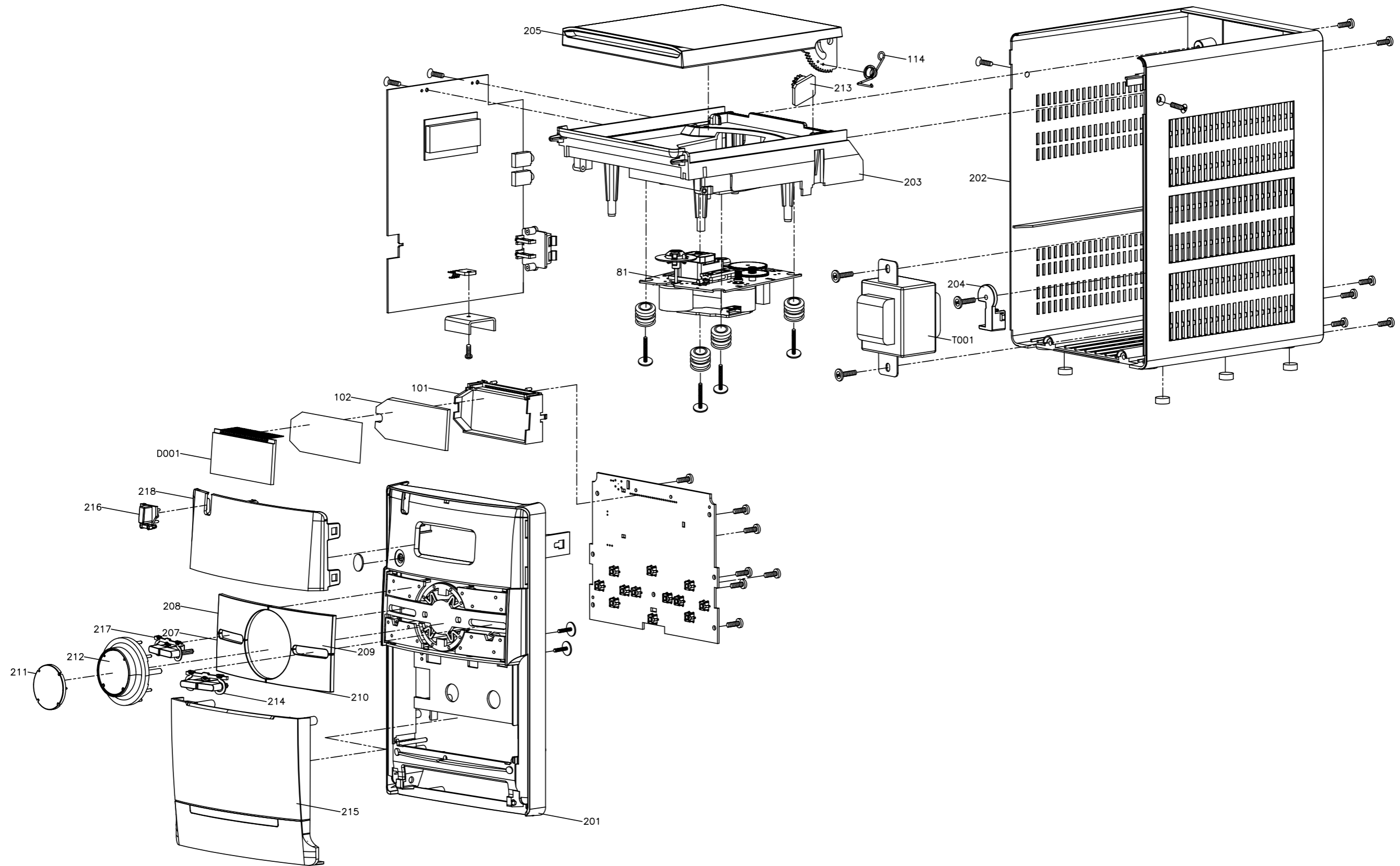
LAYOUT DIAGARM - MAIN BOARD COPPER SIDE VIEW



CIRCUIT DIAGRAM - MCU BOARD



EXPLODED VIEW DIAGRAM



MECHANICAL PARTSLIST


81	994000005398	CD MECHANISM DA11B3VF
101	996510013796	LCD BRACKET
102	996510008372	LCD LIGHT GUIDE
114	994000003674	CD DOOR SPRING
201	996510008373	FRONT CABINET
202	996510013802	REAR CABINET
203	996510006656	CD TRAY
204	996510013803	AC CORD BRACKET
205	996510008374	CD DOOR
206	996500039787	LASER COVER (FOR SANYO CD)
207	996510013804	DBB BUTTON COVER
208	996510013807	SOURCE BUTTON COVER
209	996510013808	PLAY BUTTON COVER
210	996510013810	STOP BUTTON COVER
211	996510013805	VOL COSMETI COVER
212	996510013806	VOL BUTTON COVER
213	994000001295	DAMPER GEAR ASS'Y
214	996510013809	PROGRAM/REPEAT BUTTON
215	996510008376	CASS DOOR BOGUS
216	996510006662	POWER BUTTON
217	996510013811	PRESET BUTTON
218	996510013812	DISPLAY LENS
D001	996510013795	LCD DISPLAY
J001	994000004487	16P FFC 1MM L=170MM
J002	996510013800	11P FFC.1.25mm L=100mm
J005	996510013801	FM ANT BALANCE CABLE 1x2+1m
J008	996510006841	15P FFC 1mm L260mm
J011	⚠ 996510000859	AC CORD BS APP 2M (to UK)
CORD	⚠ 996510000909	AC CORD VDE APP 2M (to Switzerland)
T001	⚠ 996510006839	TRANSFORMER EI48 230V

ACCESSORIES

J012	996510000910	FM ANT SMF-01T-1.3 L=1.1M
M002	996510013799	DAB MODULE VERICE
SPK	996510013798	SPK BOX ASSY (inclu.L&R)
6	996510013797	REMOTE CONTROL

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

ELECTRICAL PARTSLIST**MAIN BOARD ASSEMBLY**

D2	996510000323	SMD DIODE BAS316
D6	994000003938	RECTIFIER DIODE RL-202
D7	994000003938	RECTIFIER DIODE RL-202
D8	994000003938	RECTIFIER DIODE RL-202
D9	994000003938	RECTIFIER DIODE RL-202
IC1	996510006827	IC (SANYO) LA6541NHL-TE-L-E
IC2	996500039806	IC ET2314 (SOP28)
IC3	996510006828	IC (SANYO) LA9242M-MPB-E
IC4	996510006829	IC (SANYO) LC78602RE-8616
Q1	996510000315	SMD TRANSISTORS BC807-25
Q10	996510010910	TRANSISTOR ST8050C
Q11	994000004145	TRANSISTORS B772Y (160-320)
Q12	996510010292	SMD TRANSISTORS MMBT3904
Q13	996510000315	SMD TRANSISTORS BC807-25
Q14	996510003996	TRANSISTORS KTA1273
Q15	996510010910	TRANSISTOR ST8050C
Q19	996510010910	TRANSISTOR ST8050C
Q2	996510008369	TRANSISTORS MMBT8050D (SOT23)
Q21	996510010292	SMD TRANSISTORS MMBT3904
Q22	994000004145	TRANSISTORS B772Y (160-320)
Q25	996510010292	SMD TRANSISTORS MMBT3904
Q3	996510008369	TRANSISTORS MMBT8050D (SOT23)
Q4	996510008369	TRANSISTORS MMBT8050D (SOT23)
Q5	996510010292	SMD TRANSISTORS MMBT3904
Q5	996510010910	TRANSISTOR ST8050C
Q6	996510000315	SMD TRANSISTORS BC807-25
Q7	996510010292	SMD TRANSISTORS MMBT3904
Q9	994000004145	TRANSISTORS B772Y (160-320)
U101	994000003636	IC D8227 DIP
U2	994000000253	IC (SAMSUNG) KA7808
U201	994000000253	IC (SAMSUNG) KA7808
U202	994000002839	IC LM1117S-3.3
U203	996510013793	IC NCP803SN293T1G
U204	996510013794	IC XC6210A122 1.2V
U33	994000001357	IC LM78L05-AC
X1	994000004551	CRYSTAL 16.9344MHZ +-20PPM
S001	994000003093	CD DOOR SWITCH 1P1T DTS-03
J44	996500042462	FXDIND BEAD 100MHZ 80R
CON3	996510005450	SPK JACK PT-22V11A
F1	 994000000586	GLASS FUSE W/LEAD 3.15A/250V
JACK1	994000004369	PHONE JACK TC38-063-05-0
JACK2	996510000889	PHONE JACK TC38-060-01 RING
L2	996500042462	FXDIND BEAD 100MHZ 80R
L22	996510000885	CHOKE COIL 47UH W/PLASTIC TUBE
L23	996510000885	CHOKE COIL 47UH W/PLASTIC TUBE
L3	996500042462	FXDIND BEAD 100MHZ 80R

ELECTRICAL PARTSLIST**MCU BOARD ASSEMBLY**

D41	996500042438	LED LAMP 2x5x7mm (WHITE)
RE1	994000004367	OPTIC SENSER FM-6038TM2-5AN
SW1	996500042444	TACT SWITCH 6x6mm 4.3mm
SW10	996500042444	TACT SWITCH 6x6mm 4.3mm
SW11	996500042444	TACT SWITCH 6x6mm 4.3mm
SW12	996500042444	TACT SWITCH 6x6mm 4.3mm
SW13	996500042444	TACT SWITCH 6x6mm 4.3mm
SW2	996500042444	TACT SWITCH 6x6mm 4.3mm
SW3	996500042444	TACT SWITCH 6x6mm 4.3mm
SW4	996500042444	TACT SWITCH 6x6mm 4.3mm
SW5	996500042444	TACT SWITCH 6x6mm 4.3mm
SW6	996500042444	TACT SWITCH 6x6mm 4.3mm
SW7	996500042444	TACT SWITCH 6x6mm 4.3mm
SW8	996500042444	TACT SWITCH 6x6mm 4.3mm
SW9	996500042444	TACT SWITCH 6x6mm 4.3mm
XT1	996500039820	CRYSTAL 10MHZ 49/US
XT2	996500042441	X'TAL 32.768KHZ -20PPM

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