

# Service Service Service



# Service Manual



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**CLASS 1  
LASER PRODUCT**



## TECHNICAL SPECIFICATION

Amplifier	
Rated Output Power	2X5W RMS
Frequency Response	60 - 16kHz, $\pm 3$ dB
Signal to Noise Ratio	>65dB
Aux Input	0.5 V RMS 20kohm

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	60Hz -16kHz (44.1kHz)
S/N Ratio	>65dBA

General information	
AC power	220 - 230V, 50Hz
Operation Power Consumption	20W
Standby Power Consumption	<4W
Eco Standby Power Consumption	<2W
USB Direct	Version 2.0/1.1
Dimensions	
- Main Unit (W x H x D)	147 x 231 x 209 mm
- Speaker Box (W x H x D)	134 x 233 x 153 mm
Weight	
- With Packing	4.75 kg
- Main Unit	1.95 kg
- Speaker Box	2 x 1.2 kg

Tuner	
Tuning Range	FM: 87.5 - 108MHz; MW: 531 - 1602kHz
Tuning grid	50KHz (FM); 9KHz (MW)

FM	
Sensitivity	
- Mono, 26dB S/N Ratio	<22 dBf
- Stereo, 46dB S/N Ratio	<43 dBf
Search Selectivity	>28dBf
Total Harmonic Distortion	<3%
Signal to Noise Ratio	>55dB

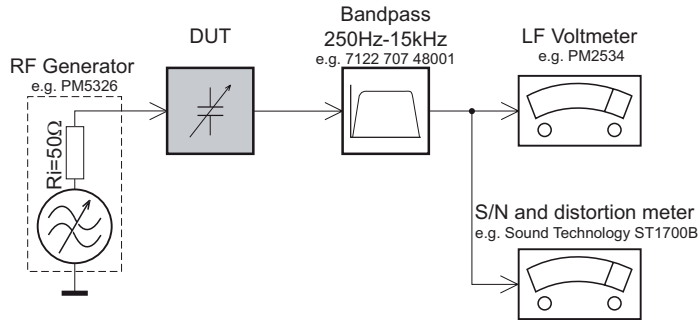
Speakers	
Speaker Impedance	4ohm
Speaker Driver	3.5"woofer+0.8" tweeter
Sensitivity	>82dB/m/W

## VERSION VARIATION

[illegible]

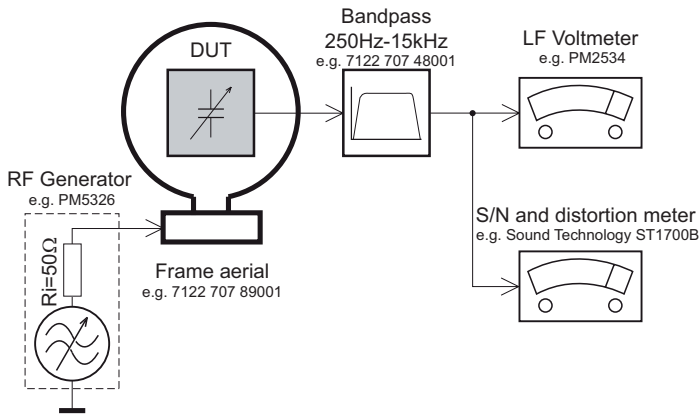
## MEASUREMENT SETUP

### Tuner FM



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

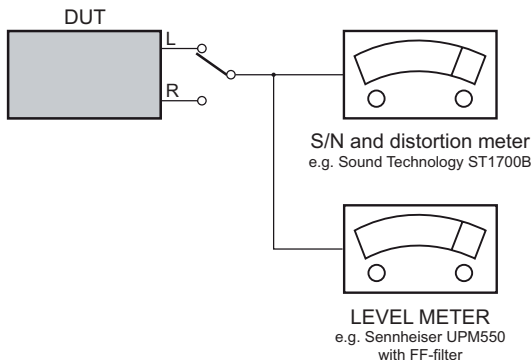
### Tuner AM (MW,LW)



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).

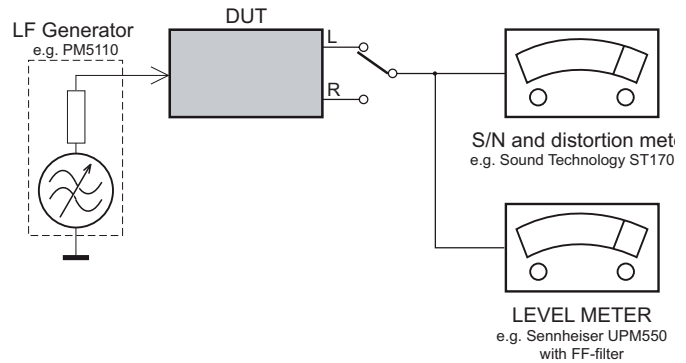
### CD

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](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".

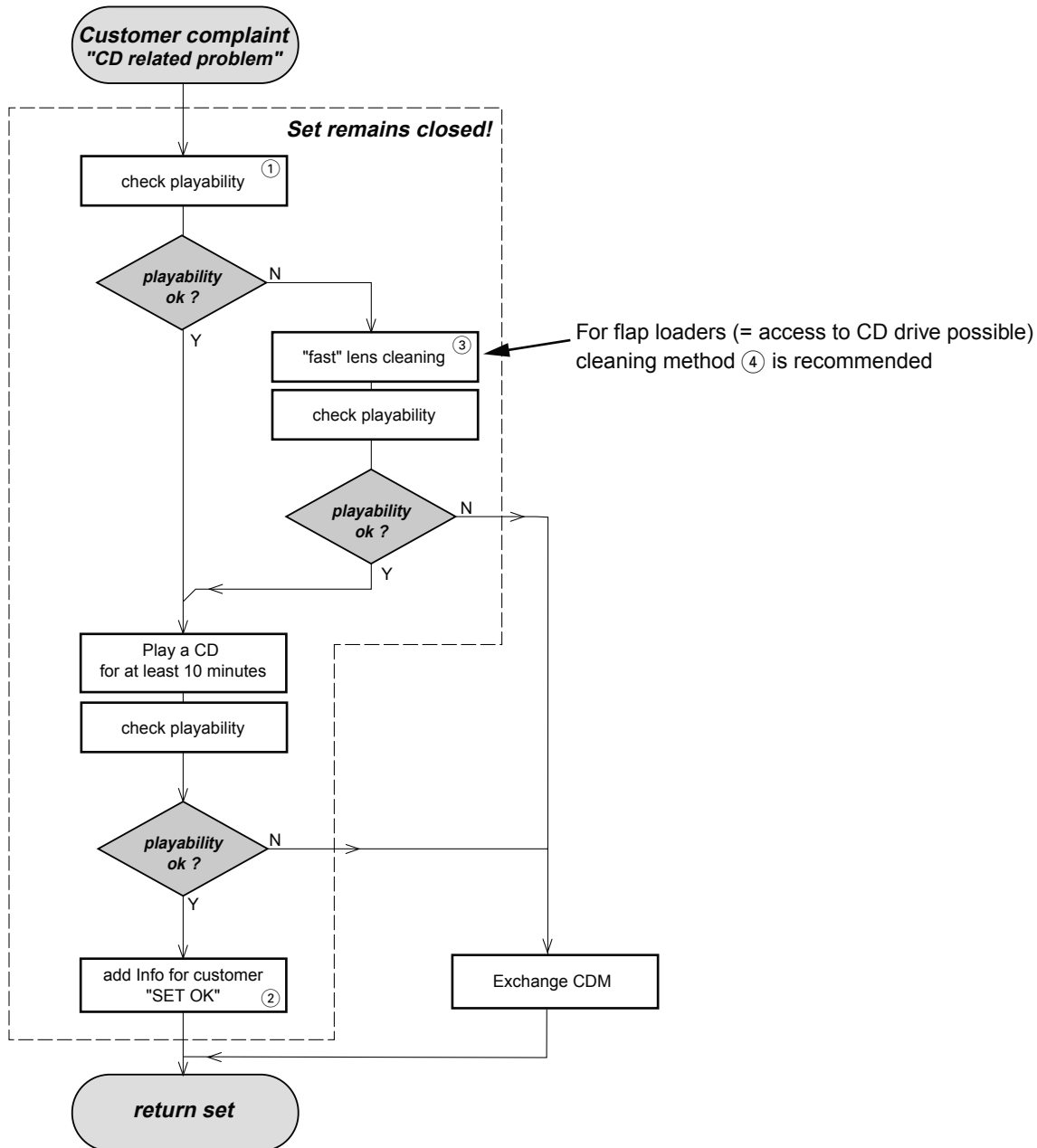
For additional questions please contact your local repair-helpdesk.

## 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

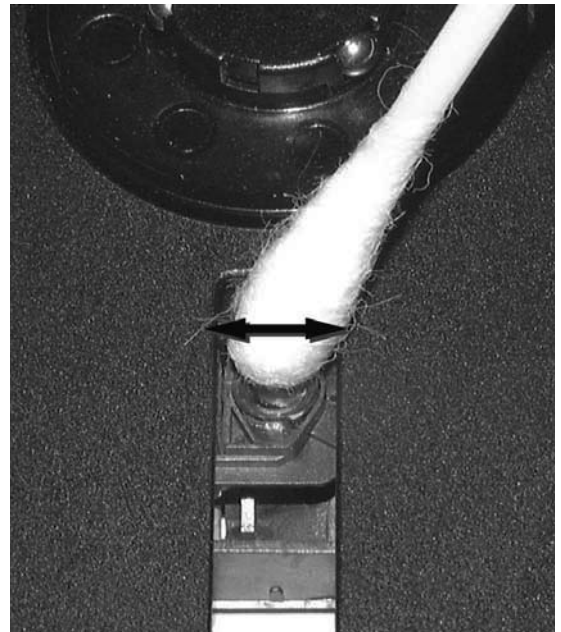
### LIQUID LENS CLEANING

**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

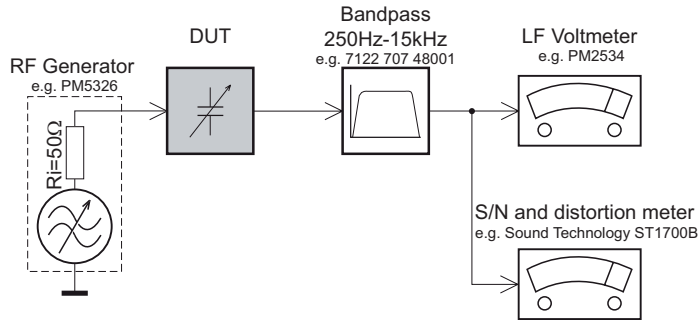
The actuator is a very precise mechanical component and may not be damaged in order to guarantee its full function. Clean the lens gently (don't press too hard) with a soft and clean cotton bud moistened with the special lens cleaner.

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



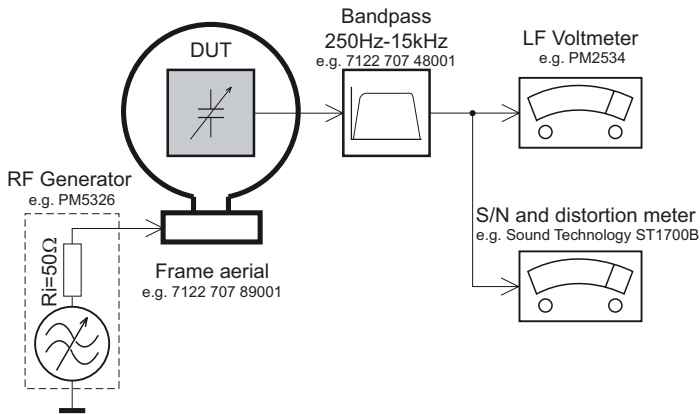
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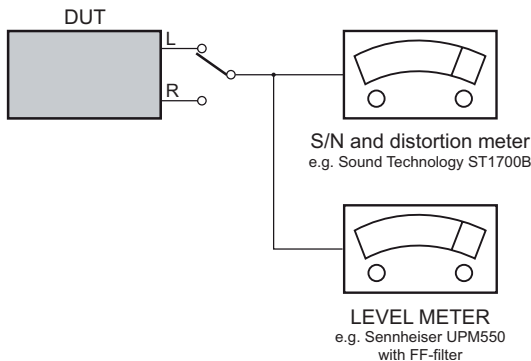
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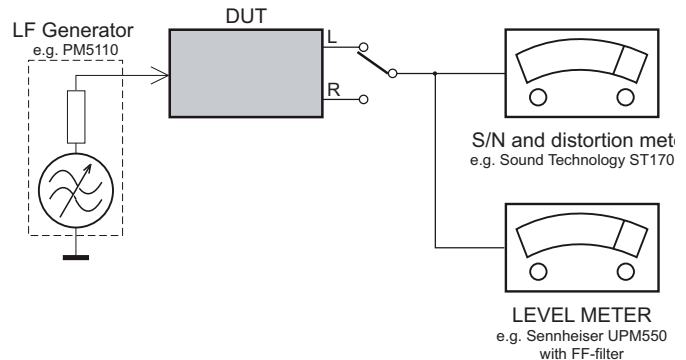
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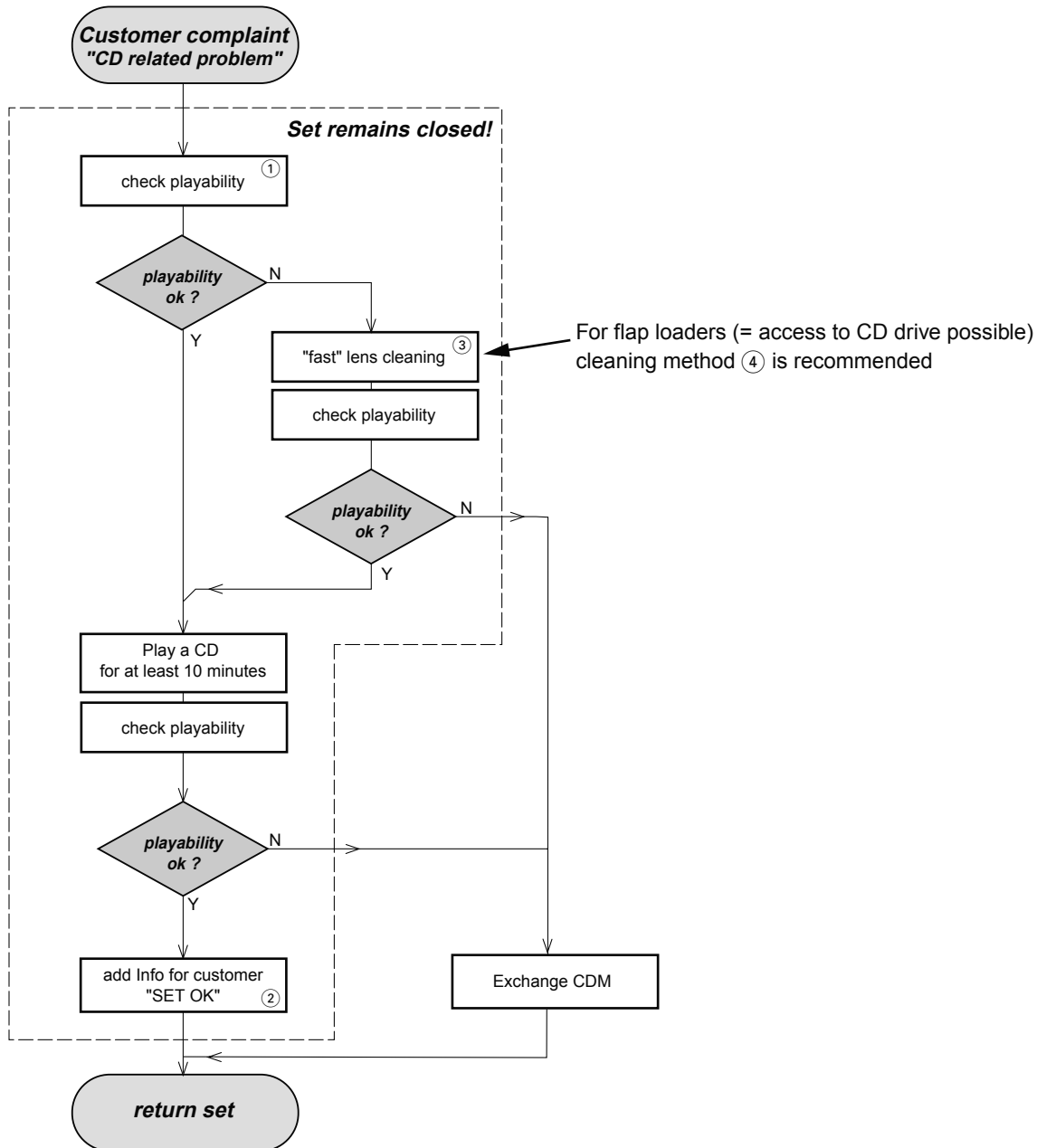
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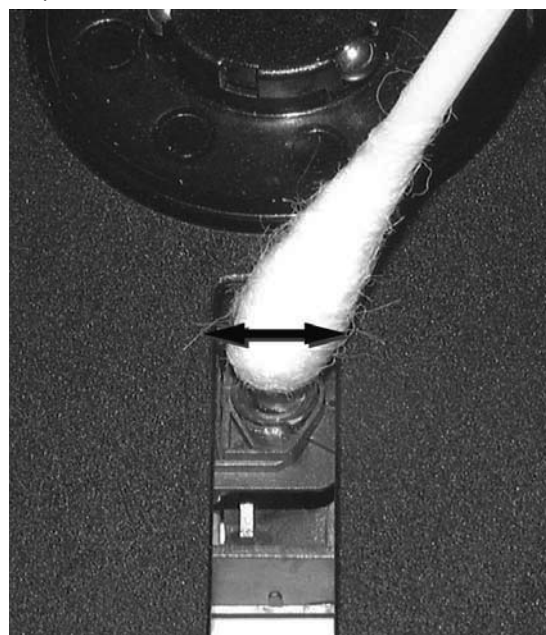
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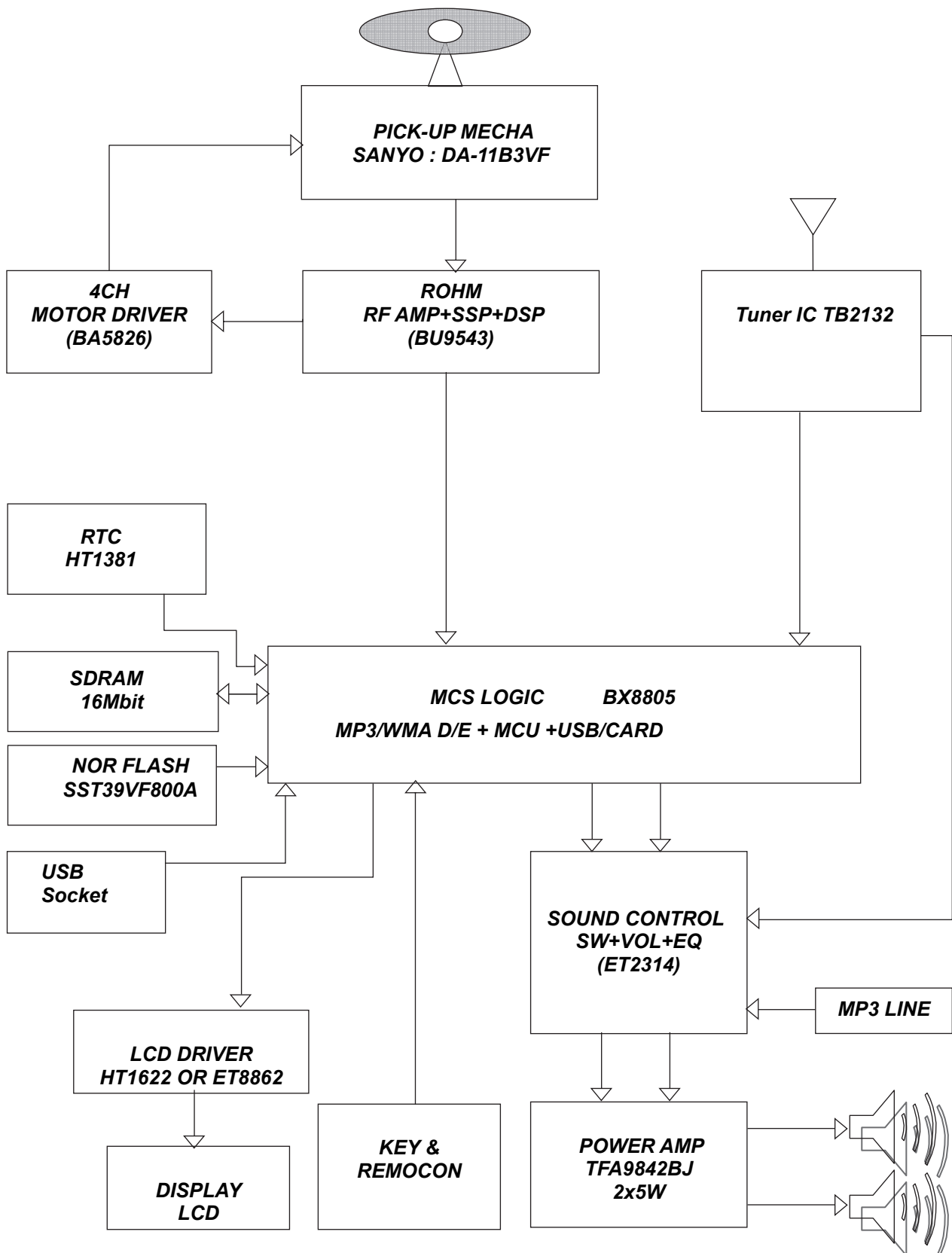
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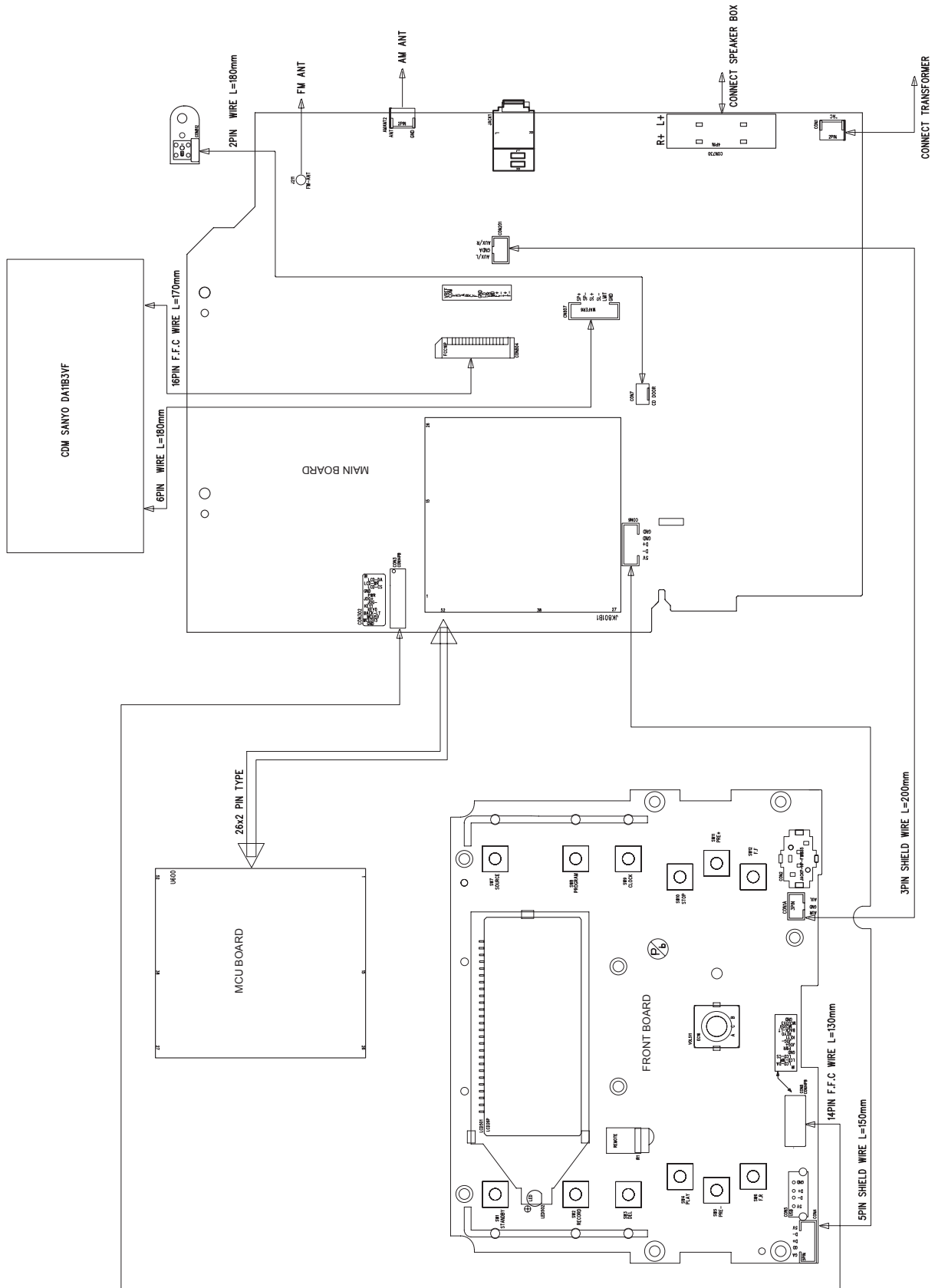
The direction of cleaning must be in the way as indicated in the picture below.



## BLOCK DIAGRAM



# WIRING DIAGRAM

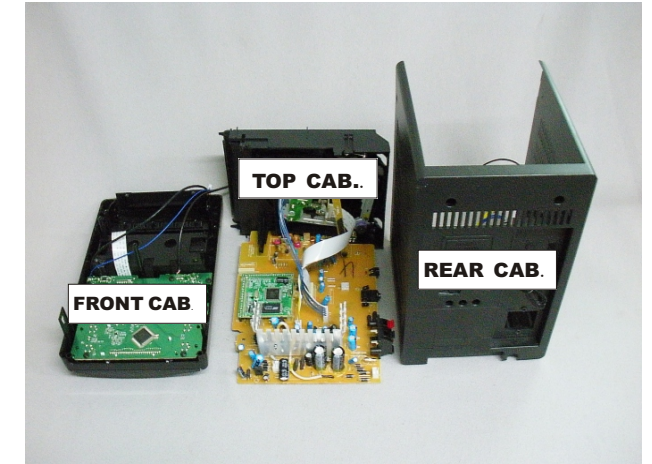
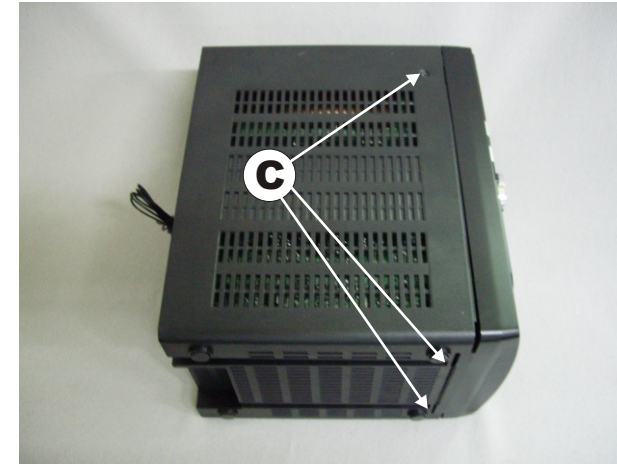
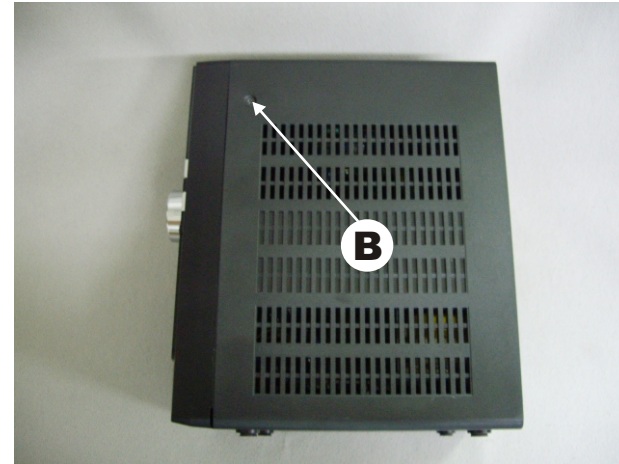


## DISASSEMBLY DIAGRAM

### Dismantling of the Rear Cabinet

---

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

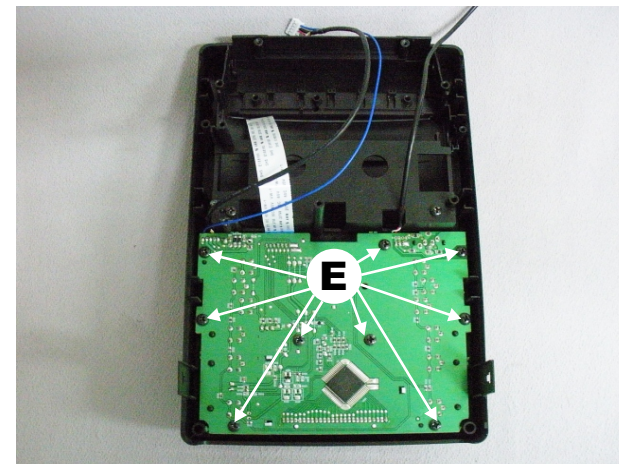
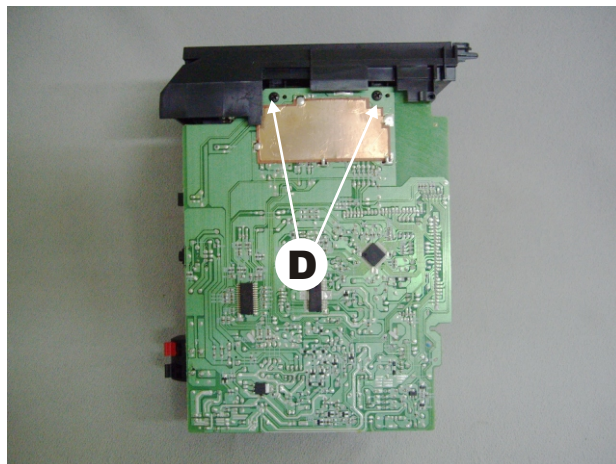


### Dismantling of the PCB Board

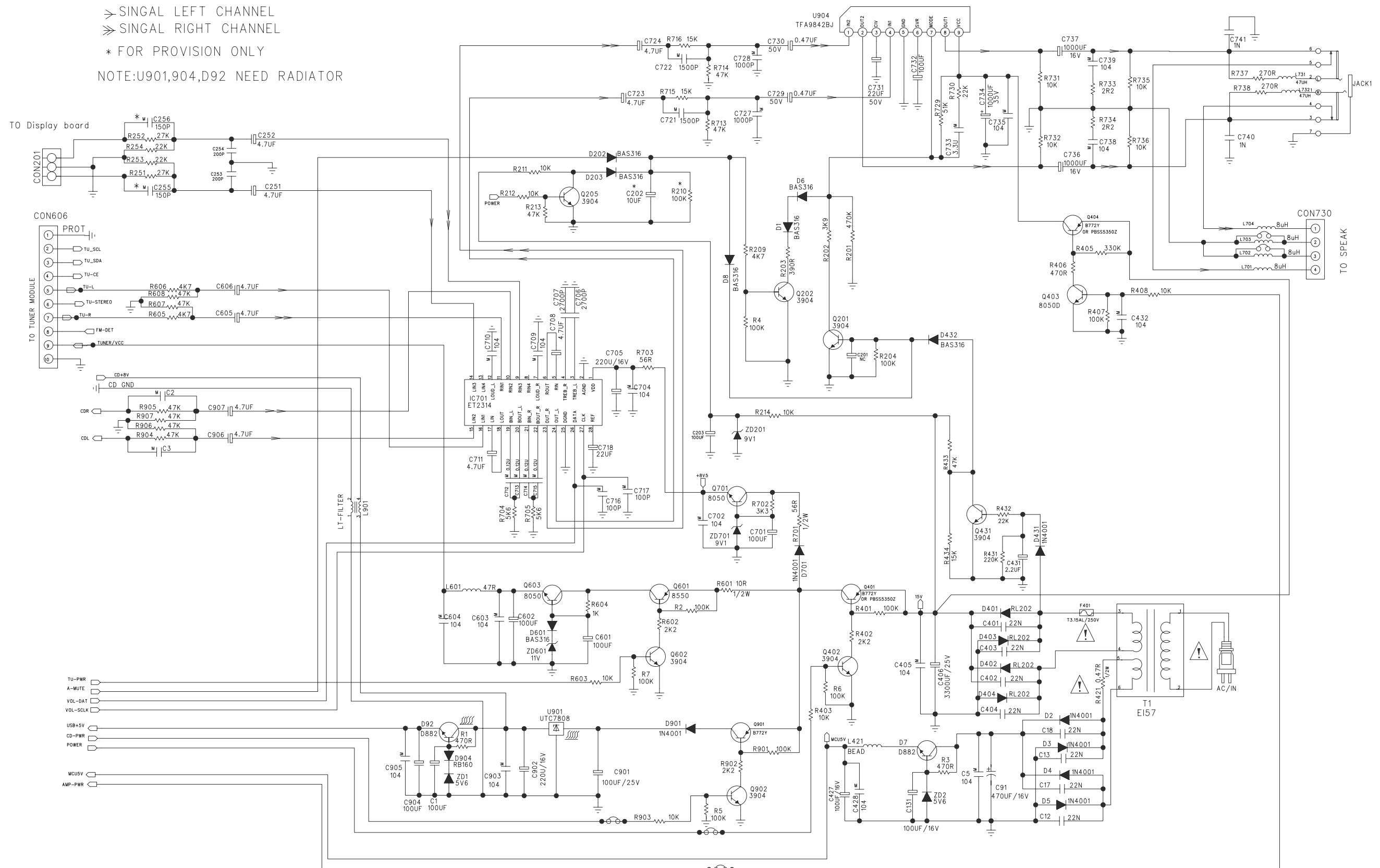
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1) Remove 2 screws D as indicated to loosen the Main Board.

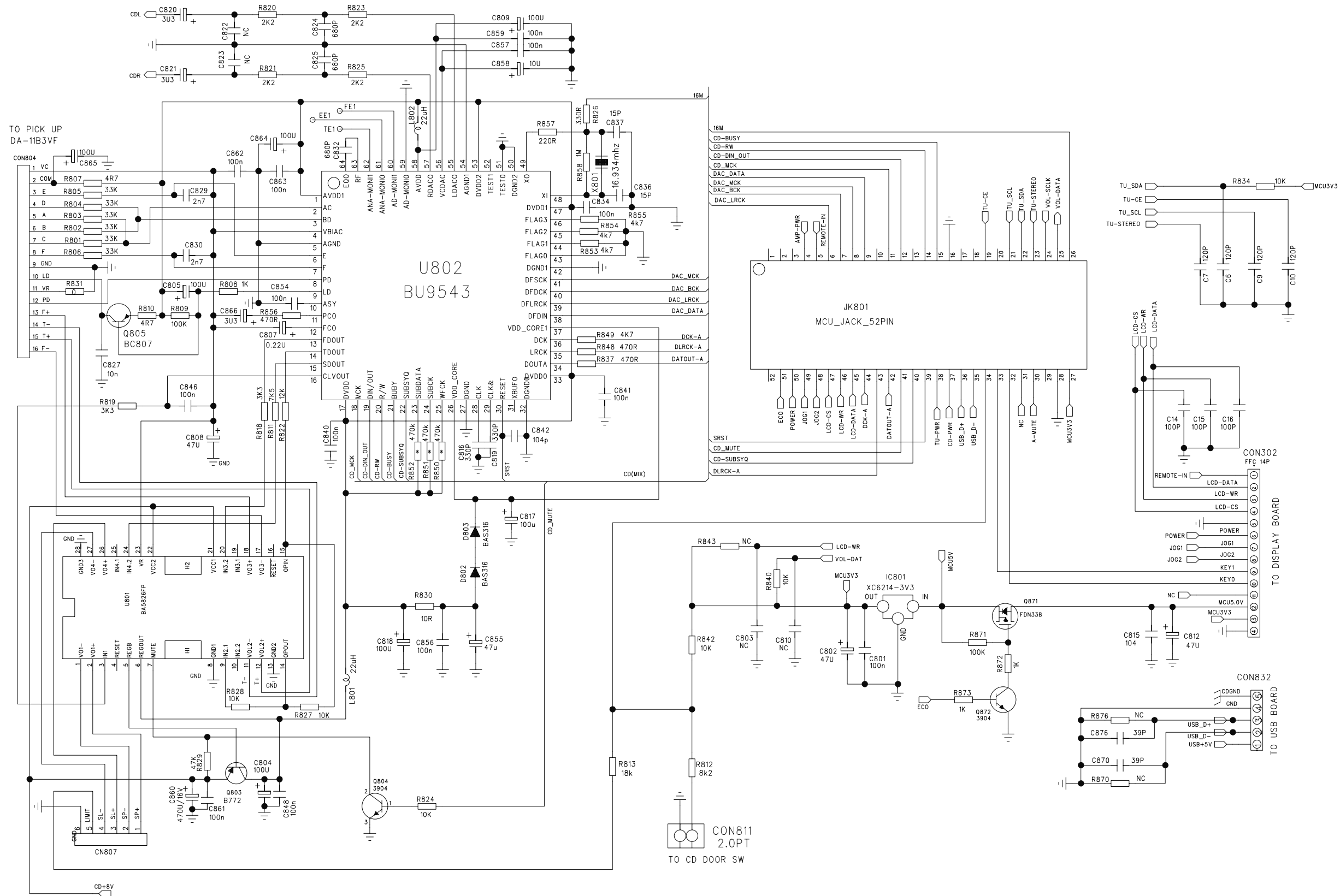
2) Remove 9 screws E as indicated to loosen the Display Board.



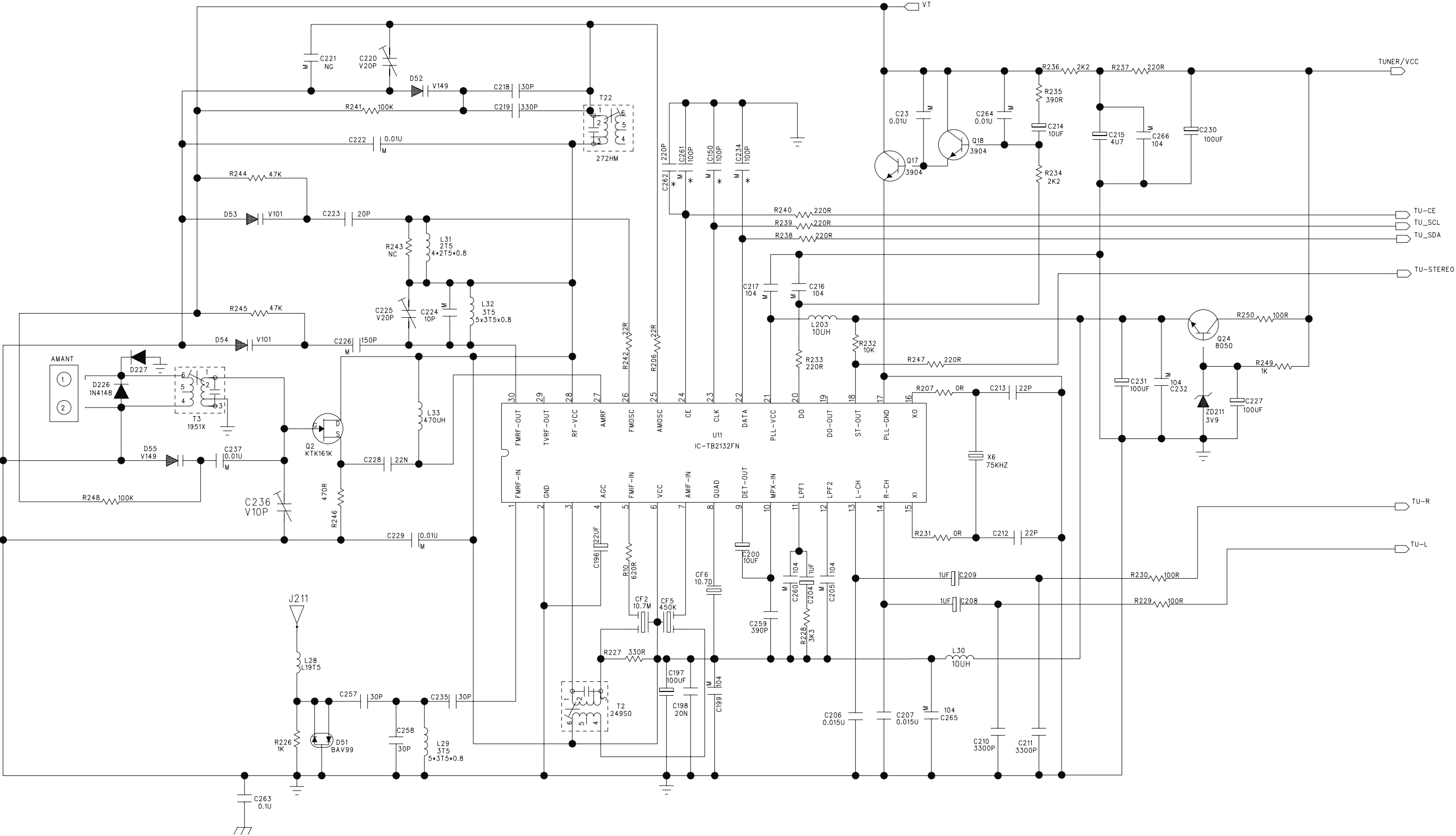
➤ SINGAL LEFT CHANNEL  
 ➤➤ SINGAL RIGHT CHANNEL  
 \* FOR PROVISION ONLY  
 NOTE:U901,904,D92 NEED RADIATOR

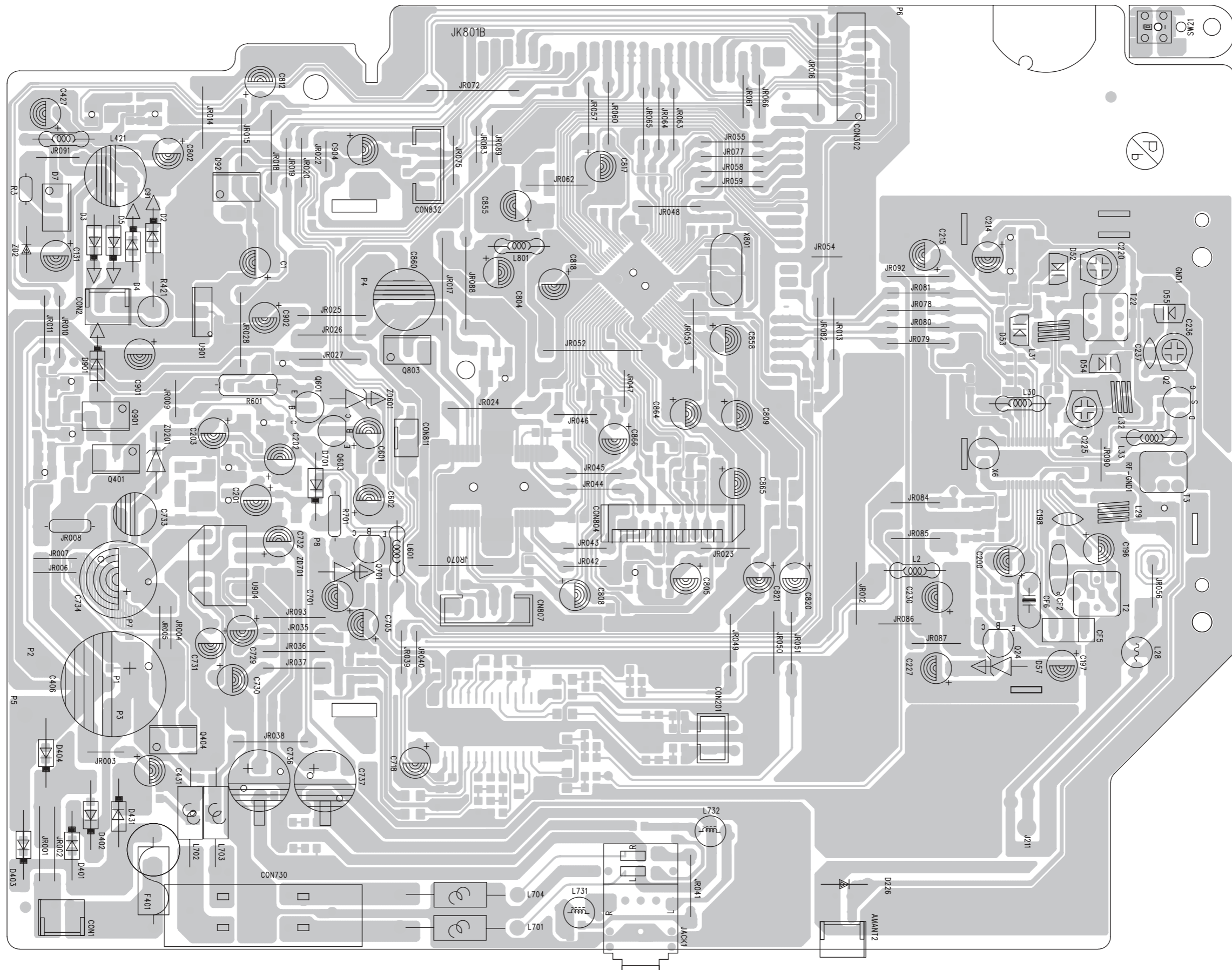


CIRCUIT DIAGRAM - MAIN BOARD  
CD PART

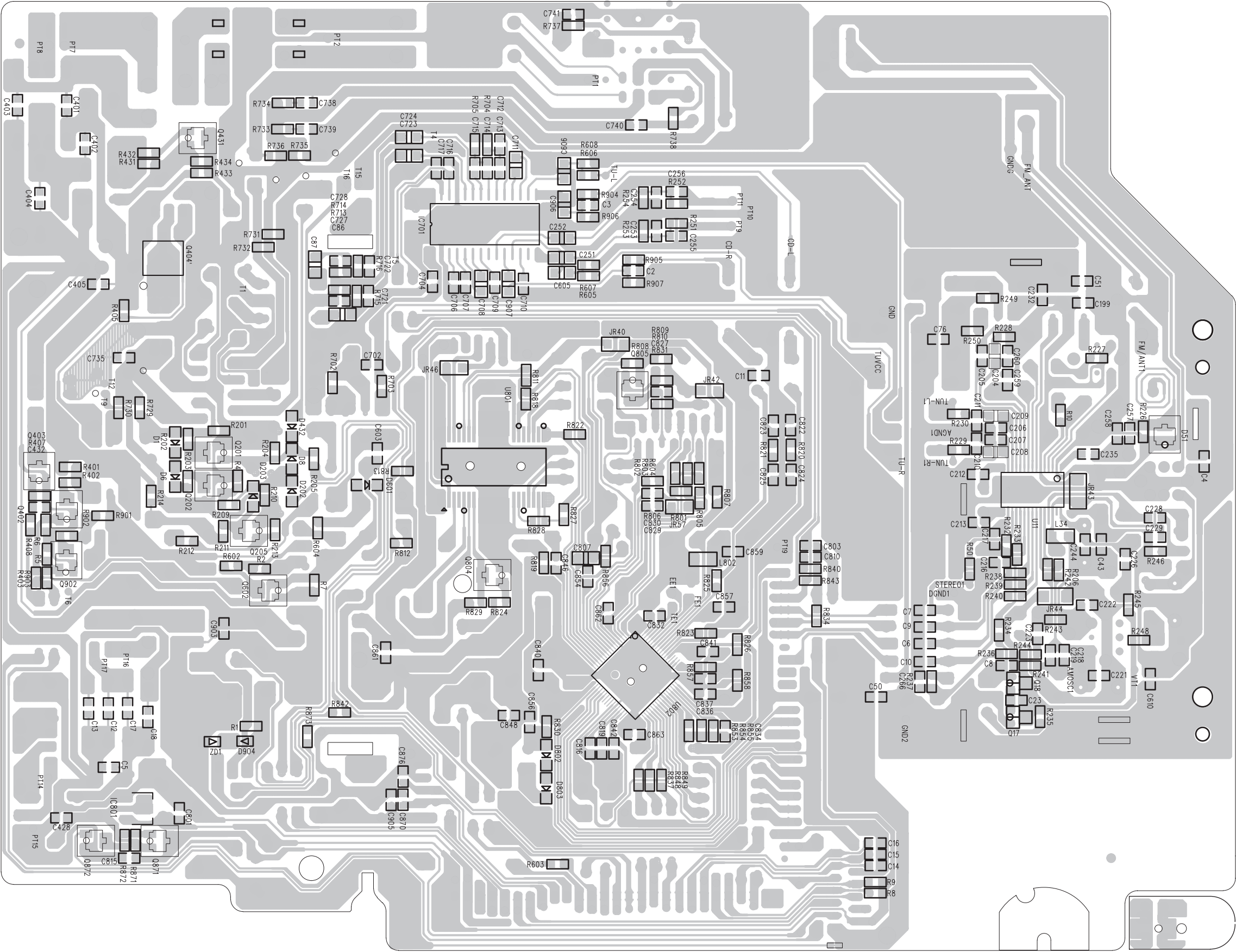


CIRCUIT DIAGRAM - MAIN BOARD  
TUNER PART

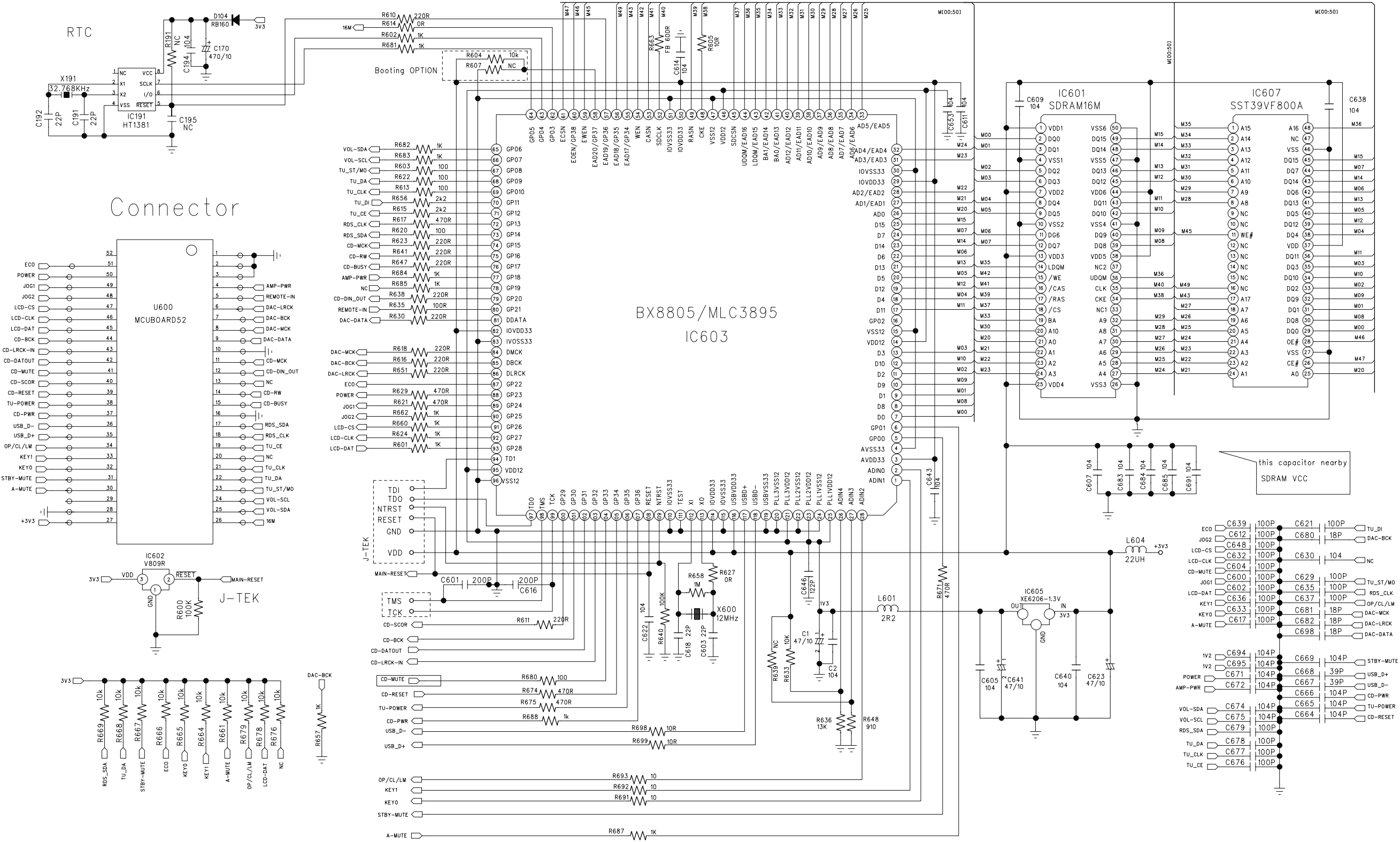




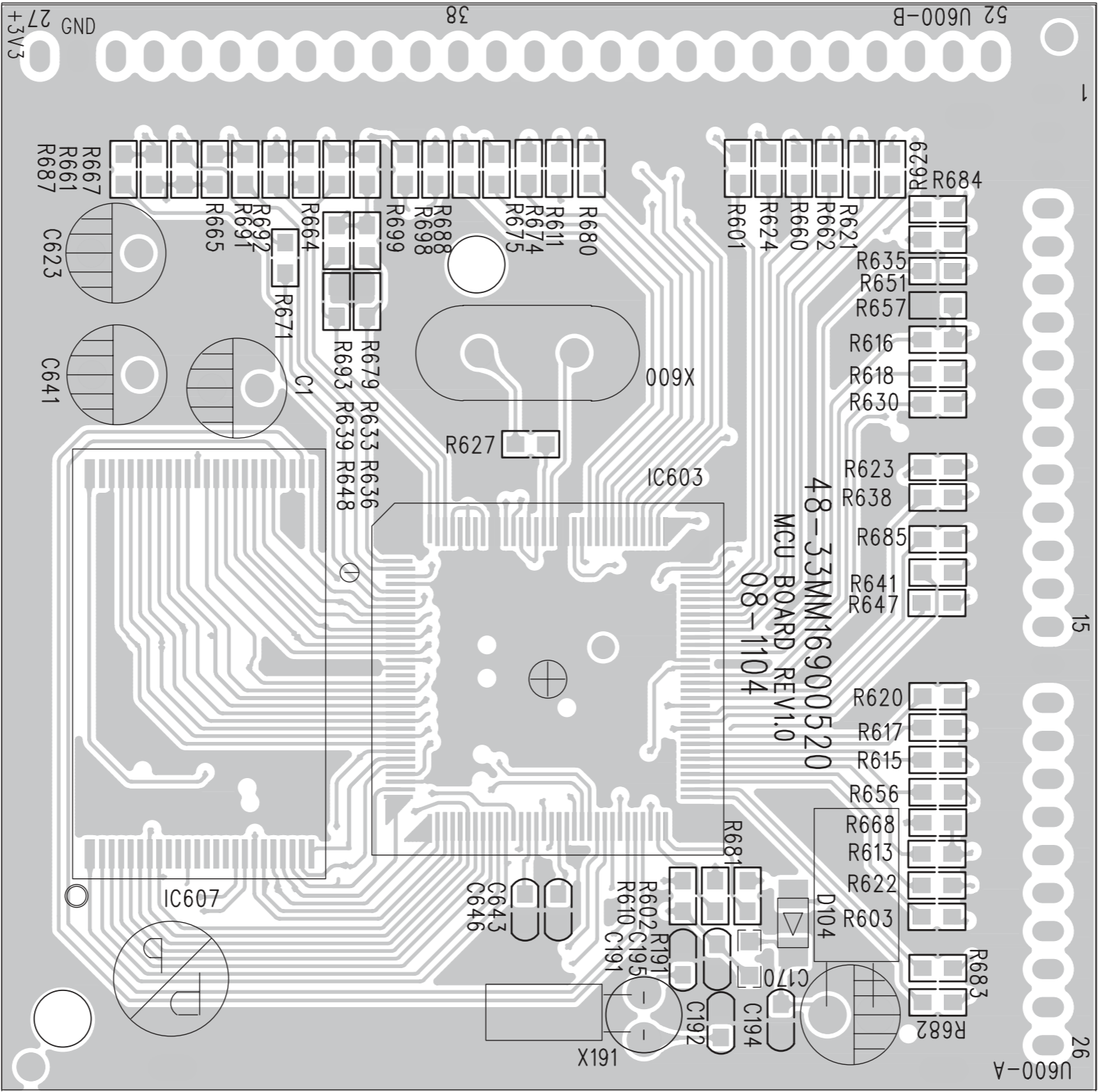
LAYOUT DIAGRAM - MAIN BOARD  
BOTTOM SIDE



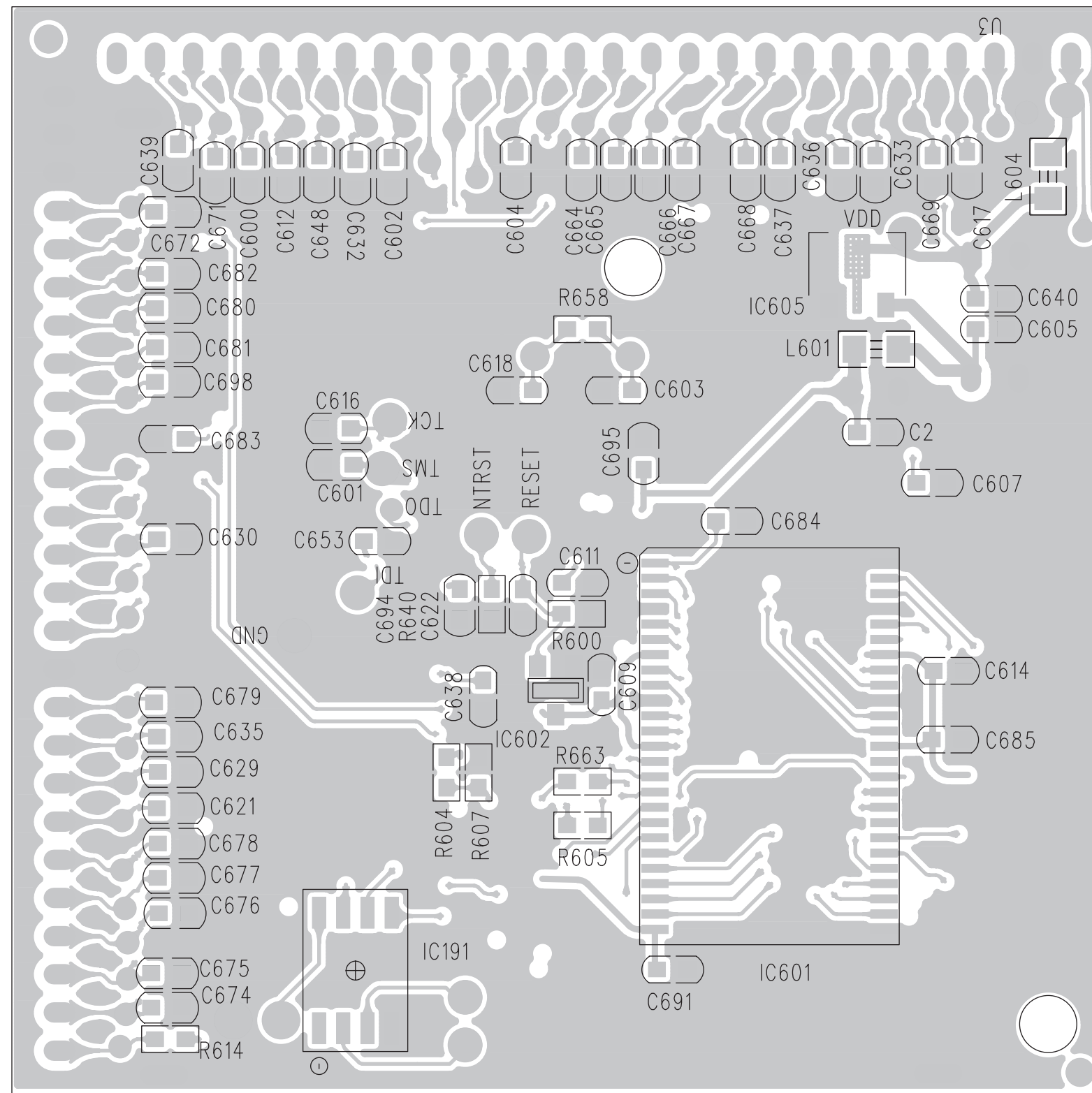
CIRCUIT DIAGRAM - MCU BOARD



LAYOUT DIAGRAM - MCU BOARD  
TOP SIDE

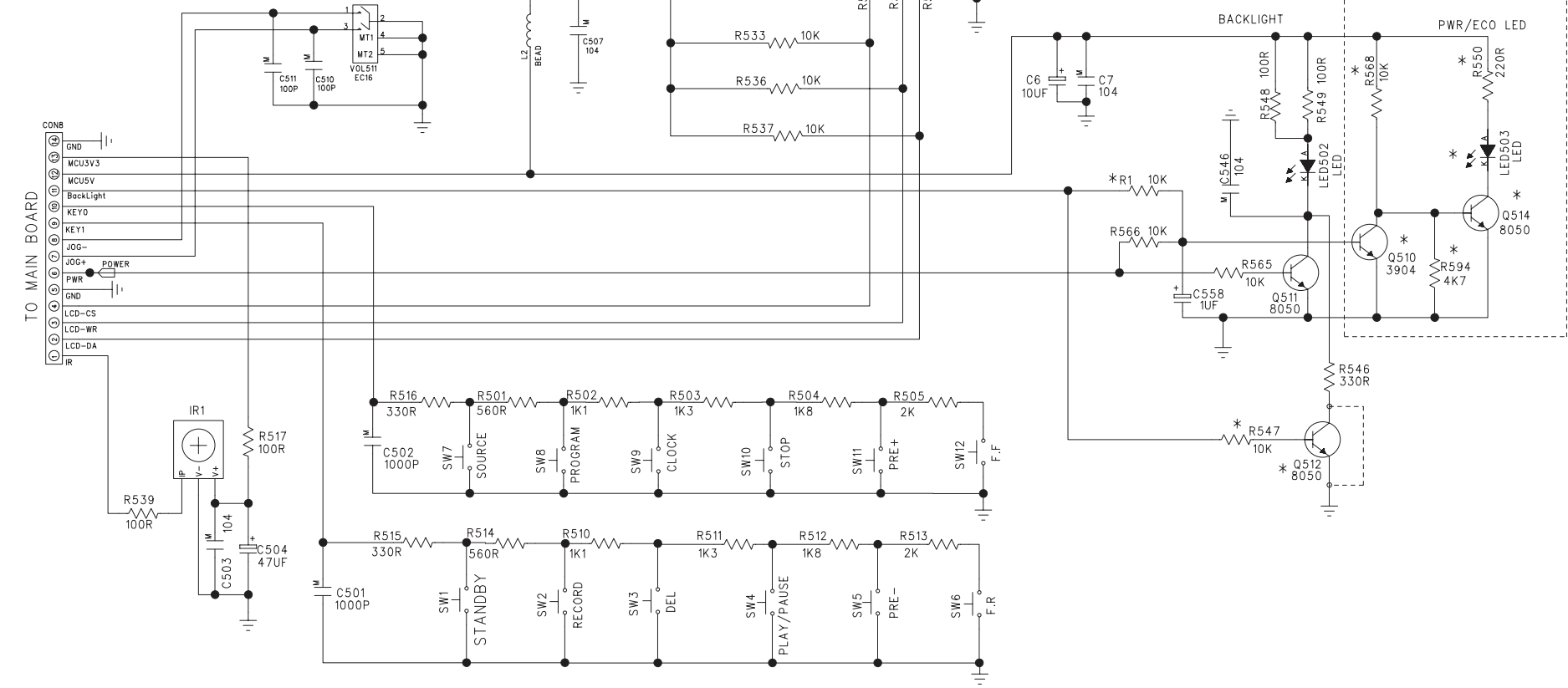
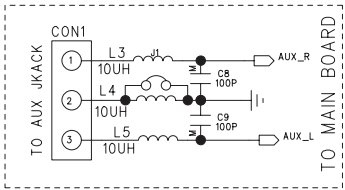
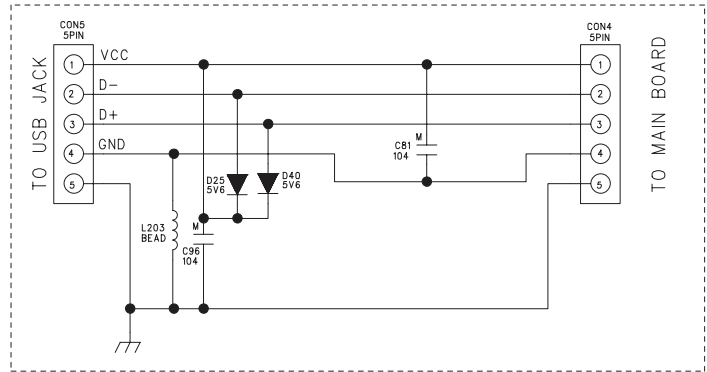


## LAYOUT DIAGRAM - MCU BOARD BOTTOM SIDE

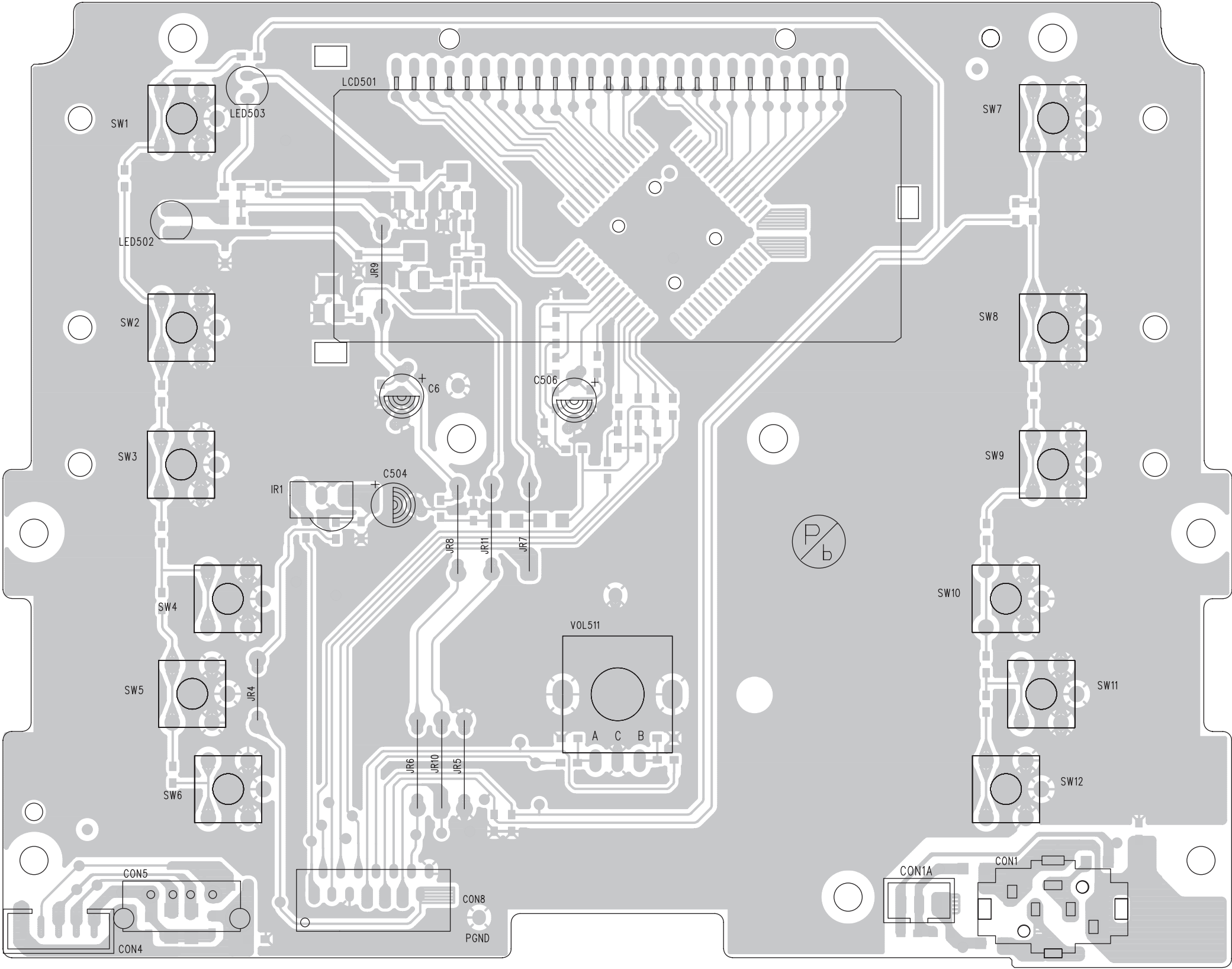


CIRCUIT DIAGRAM - DISPLAY BOARD

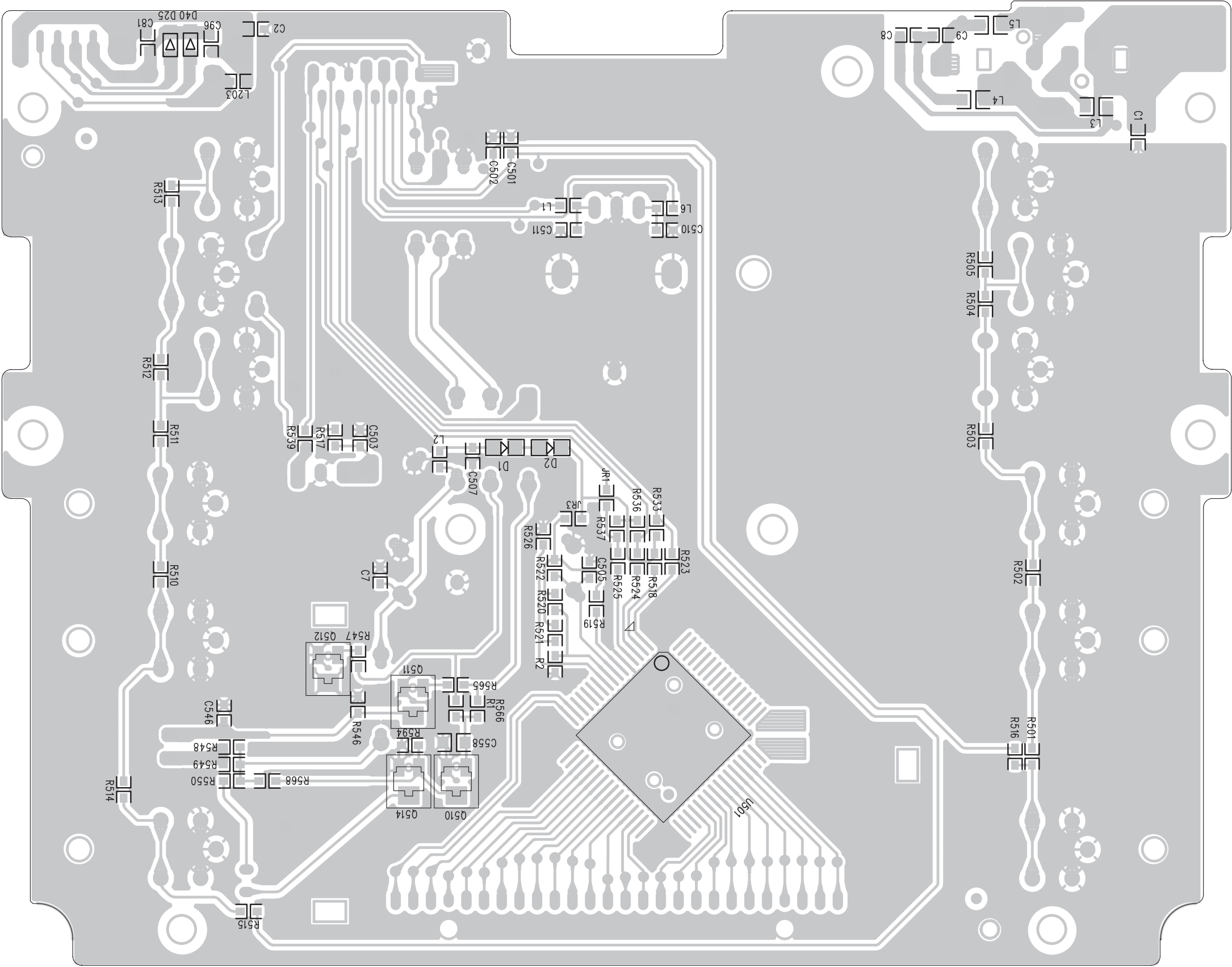
\* FOR PROVISION ONLY



LAYOUT DIAGRAM - DISPLAY BOARD  
TOP SIDE

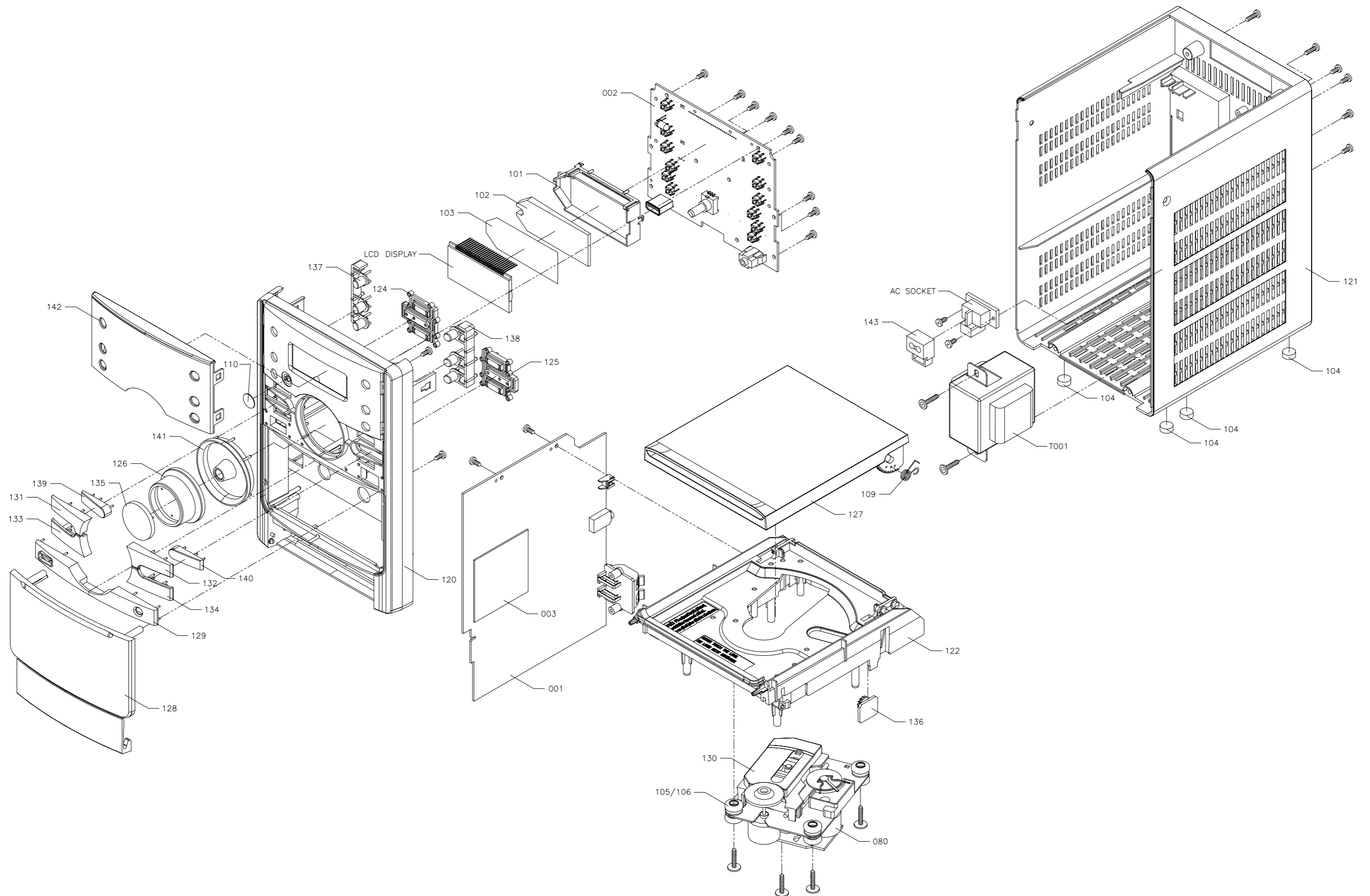


LAYOUT DIAGRAM - DISPLAY BOARD  
BOTTOM SIDE







# SET EXPLODED VIEW DIAGRAM

9-1



9-1

**MECHANICAL PARTSLIST (for -/12/96)**

0080	994000005398	CD MECHANISM DA11B3VF
0104	996510008651	RUB FOOT DIA10mm T=4mm (GREY) (only for -/12)
0109	994000003674	CD DOOR SPRING (only for -/96)
0120	996510020788	FRONT CABINET
0121	996510020785	REAR CABINET (only for -/12)
0121	996510024806	REAR CABINET (only for -/96)
0122	996510020792	CD TRAY
0123	996510020762	AC CORD BRACKET
0124	996510018975	LEFT KEY BRACKET
0125	996510018976	RIGHT KEY BRACKET
0126	996510020789	VOL ROTARY KNOB
0127	996510020784	CD DOOR
0128	996510020776	CAMOUFLAGE DOOR
0129	996510020769	USB DECORATE PLATE
0130	996500039787	LASER COVER (FOR SANYO CD)
0131	996510020777	PLAY KEY
0132	996510020782	STOP KEY
0133	996510020763	REVIEW KEY
0134	996510020768	NEXT KEY
0135	996510020781	VOL ROTRAY COVER
0136	994000001295	DAMPER GEAR ASS'Y
0137	996510020765	STANDBY KAY
0138	996510020766	SOURCE KEY
0139	996510020764	PRESET -
0140	996510020773	PRESET +
0141	996510020791	ROTARY DECORATE RING
0142	996510020767	DISPLAY LENS
1111	994000003673	AC SOCKET TC08-115-02
1112	994000001192	AM LOOP ANTENNA LAN-031
1113	 994000003633	AC CORD SET VDE APP 6FT (only for -/12)
ACL	 994000003869	AC CORD SET CNS APP 2M (only for -/96)
J001	996510020787	14P FFC.1mm L=130mm
J002	994000004487	16P FFC 1MM L=170MM
J005	996510018969	FM ANT L=1.5M
T001	 996510029556	TRANSFORMER VDE 230V (only for -/12)
T001	 996510024803	TRANSFORMER VDE EI57 127/240V (only for -/96)

**ACCESSORIES**

J006	996510002103	CONN. CORD 3.5 ST/PLUGx2 500mm
RC	996510020786	REMOTE CONTROL
SK	996510040164	SINGLE SPEAKER BOX L/R

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

**ELECTRICAL PARTSLIST (only for -/12)****MAIN BOARD ASSEMBLY**

CON703	996510005450	SPK JACK PT-22V11A
F401	994000000586	GLASS FUSE W/LEAD 3.15A/250V
IC701	996500039806	IC ET2314 (SOP28)
IC801	996510012556	IC XC6214P332
JACK1	994000004369	PHONE JACK TC38-063-05-0
Q17	996510010292	SMD TRANSISTORS MMBT3904
Q2	996510005251	MOSFET TRANSISTORS 2SK161-Y
Q404	996510000878	TRANSISTORS SPD09P06PL
Q871	996510000319	SMD TRANSISTORS FDN338P
SW21	994000003093	CD DOOR SWITCH 1P1T DTS-03
U11	996510000881	IC TB2132FNG
U801	996510009310	IC BA5826FP
U802	996510009311	IC BU9543KV (SMD)
U901	996510018852	IC UTC7808
U904	996510000882	IC TFA9842BJ
D7	996510029558	IC HT7550-1 5V

**FRONT BOARD ASSEMBLY**

CON1	994000001244	V/PHONE JACK 3.5MM
CON5	996510001316	USB SOCKET 4P
D1	996510020774	SMD DIODE BAS316
D25	996510020779	SMD DIODE MM1Z5V6ST
IR1	994000004367	OPTIC SENSER FM-6038TM2-5AN
LCD501	996510019017	LCD DISPLAY
LED502	996500042438	LED LAMP 2x5x7mm (WHITE)
SW1	996500042444	TACT SWITCH 6x6mm 4.3mm
U501	996510020783	IC ET8862Q
VOL511	996510000998	ROTARY ENCODER

**MCU BOARD ASSEMBLY**

0103	996510017007	LCD DIFFUSER
IC191	996510015481	IC HT1381
IC601	996510020772	IC SI636165TS
IC602	996510022969	IC HWD809R 2.63V
IC603	996510020775	MCU IC BX8805
IC605	996510020761	IC XC6206P122PR 1.2V
IC607	996510020771	IC SST39VF800A

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

**ELECTRICAL PARTSLIST (only for -/96)****MAIN BOARD ASSEMBLY**

C220	994000004351	TRIMMER 20PF 6MM (RED)
C225	994000004351	TRIMMER 20PF 6MM (RED)
C236	994000000254	TRIMMER 10PF 6MM (WH)
C406	996510024798	E.CAP 3300UF 25V +-20% 85C
C734	996510024798	E.CAP 3300UF 25V +-20% 85C
CF2	994000003642	CER. FILTER LT10.7MA5-A RED
CF5	994000002857	CERAMIC FILTER SFU450B
CF6	996510000343	DISCRIMINATOR JT10.7MG77
CON703	996510005450	SPK JACK PT-22V11A
D7	996510020216	TRANSISTORS D882F
D92	996510020216	TRANSISTORS D882F
F401	994000000586	GLASS FUSE W/LEAD 3.15A/250V
IC701	996500039806	IC ET2314 (SOP28)
IC801	996510012556	IC XC6214P332
JACK1	994000004369	PHONE JACK TC38-063-05-0
JK801A	996510024799	PCB CONNECTOR 2mm 24P
JK801B	996510023925	PCB CONNECTOR 2mm 26P
L29	996510000888	FM COIL 5x3.5T
L31	996510016842	FM COIL 4x2.5T (0.8mm)
L32	996510000888	FM COIL 5x3.5T
L421	996500042462	FXDIND BEAD 100MHz 80R
Q2	996510005251	MOSFET TRANSISTORS 2SK161-Y
Q401	994000004145	TRANSISTORS B772Y (160-320)
Q803	994000004145	TRANSISTORS B772Y (160-320)
Q805	996510000315	SMD TRANSISTORS BC807-25
Q871	996510000319	SMD TRANSISTORS FDN338P
Q901	994000004145	TRANSISTORS B772Y (160-320)
SW21	994000003093	CD DOOR SWITCH 1P1T DTS-03
T2	994000004356	I.F.T 7MM 7AC-249S0 (YELLOW)
T22	994000004357	I.F.T 7MM 7AL-272HM (RED)
T3	996510000886	AM ANT BLACK 7mm 7M4A1951X
U11	996510000881	IC TB2132FNG
U801	996510009310	IC BA5826FP
U802	996510009311	IC BU9543KV (SMD)
U901	996510018852	IC UTC7808
U904	996510000882	IC TFA9842BJ
X6	996510018961	CRYSTAL 75KHZ 12.5PF
X801	994000004551	CRYSTAL 16.9344MHZ +-20PPM

**FRONT BOARD ASSEMBLY**

CON1	994000001244	V/PHONE JACK 3.5MM
CON5	996510001316	USB SOCKET 4P
D1	996510020774	SMD DIODE BAS316
D25	996510020779	SMD DIODE MM1Z5V6ST
IR1	994000004367	OPTIC SENSER FM-6038TM2-5AN
LCD501	996510019017	LCD DISPLAY
LED502	996500042438	LED LAMP 2x5x7mm (WHITE)
SW1	996500042444	TACT SWITCH 6x6mm 4.3mm
U501	996510020783	IC ET8862Q
VOL511	996510000998	ROTARY ENCODER

**ELECTRICAL PARTSLIST (only for -/96)****MCU BOARD ASSEMBLY**

IC191	996510015481	IC HT1381
IC601	996510020772	IC SI636165TS
IC602	996510022969	IC HWD809R 2.63V
IC603	996510020775	MCU IC BX8805
IC605	996510020761	IC XC6206P122PR 1.2V
IC607	996510020771	IC SST39VF800A
X191	996510024804	CRYSTAL 32.768KHZ 3x8mm
X600	996510008326	CRYSTAL 12 MHzHC-49/US H=3.5mm

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