

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..3-2		
Block diagram.....	4-1		
Wiring diagram	4-2		
Main board			
Circuit diagram	5-1..5-2		
Layout diagram.....	5-3..5-4		
AMP board			
Circuit diagram	6-1		
Layout diagram.....	6-2..6-3		
Front board			
Circuit diagram	7-1		
Layout diagram.....	7-2..7-3		
		MCU board	
		Circuit diagram	8-1
		Layout diagram.....	8-2..8-3
		CD Board	
		Circuit diagram.....	9-1
		Layout diagram.....	9-2..9-3
		Exploded view diagram	10-1
		Mechanical parts list.....	10-2
		Electrical parts list.....	11-1..11-2

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3141 785 32800

Version 1.0



PHILIPS

TECHNICAL SPECIFICATION

AMPLIFIER

RMS output power	
1KHz (Low channel-both channels driven)	100 W per channel
10KHz (High channel-both channels driven)	100 W per channel
Total output power	580 W
Signal-to-noise ratio	67 dB A (IEC)
Frequency response	60 – 16000 Hz
Input sensitivity	
AUX	1500mV/2000mV
Output	
Speakers	3 Ω
(1) (3 Ω , 1 kHz, 10%THD)	

CD/MP3-CD PLAYER

Number of programmable tracks	40
Frequency response	60 – 16000 Hz -3dB
Signal-to-noise ratio	75 dB A
Channel separation	50 dB (1 kHz)
Total harmonic distortion	< 1.5%
MPEG 1 Layer 3 (MP3-CD)	MPEG AUDIO
MP3-CD bit rate	32-256 kbps
	(128 kbps advised)
Sampling frequencies	32, 44.1, 48 kHz

TUNER

FM wave range	87.5 – 108 MHz
AM wave range (9 kHz)	531 – 1602 kHz
AM wave range (10 kHz)	530 – 1700 kHz
Tuning grid	9/10 kHz
Number of presets	40
Antenna	
FM	75 Ω wire
AM	Loop antenna

USB PLAYER

USB	12Mb/s,V1.1
 support MP3 and WMA files
Number of albums/folders	maximum 99
Number of tracks/titles	maximum 999

SPEAKERS

System	2-way; double port bass reflex
Impedance	3 Ω
Woofer	2 x 5.25"
Tweeter	2 x 1.75"
Dimensions (w x h x d) ..	225 x 430 x 275 (mm)
Weight	4.928 kg each

SUBWOOFER

Impedance	6 Ω
Subwoofer driver	8"
Subwoofer output power	180 W
Dimensions (w x h x d)	274 x 430 x 342.3 (mm)
Weight	6.747 kg

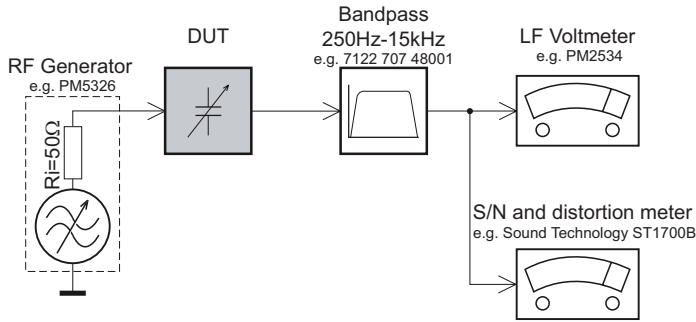
GENERAL

Material/finish	Polystyrene/Metal
AC Power	110 – 127 / 220 – 240 V;
 50/60 Hz, Switchable
Power Consumption	
Active	130 W
Standby	\leq 20 W
Dimensions (w x h x d) ..	265 x 345 x 382 (mm)
Weight (without speakers)	8.505 kg

Specifications and external appearance are subject to change without notice.

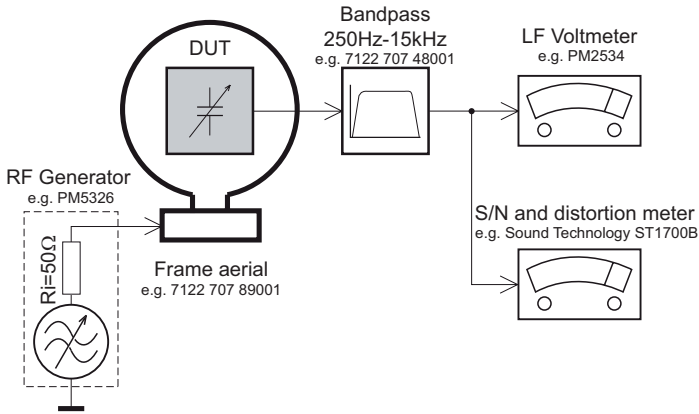
MEASUREMENT SETUP

Tuner FM



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

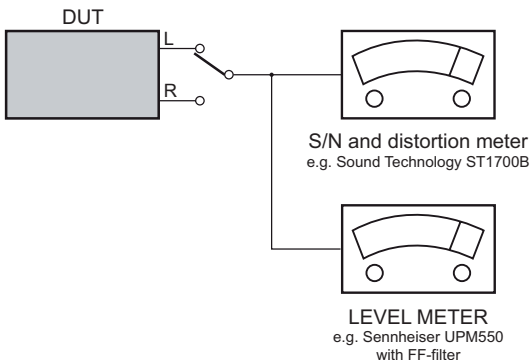
Tuner AM (MW,LW)



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).

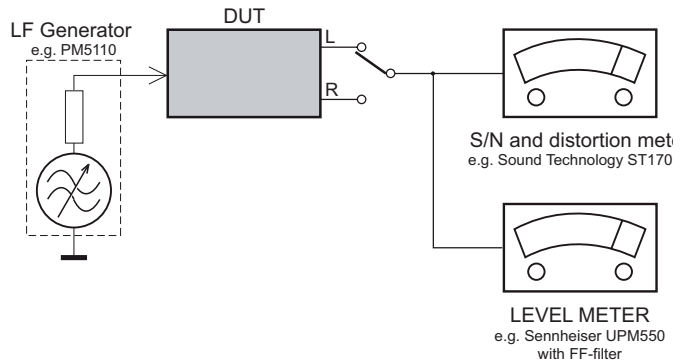
CD

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 Δ .

**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".

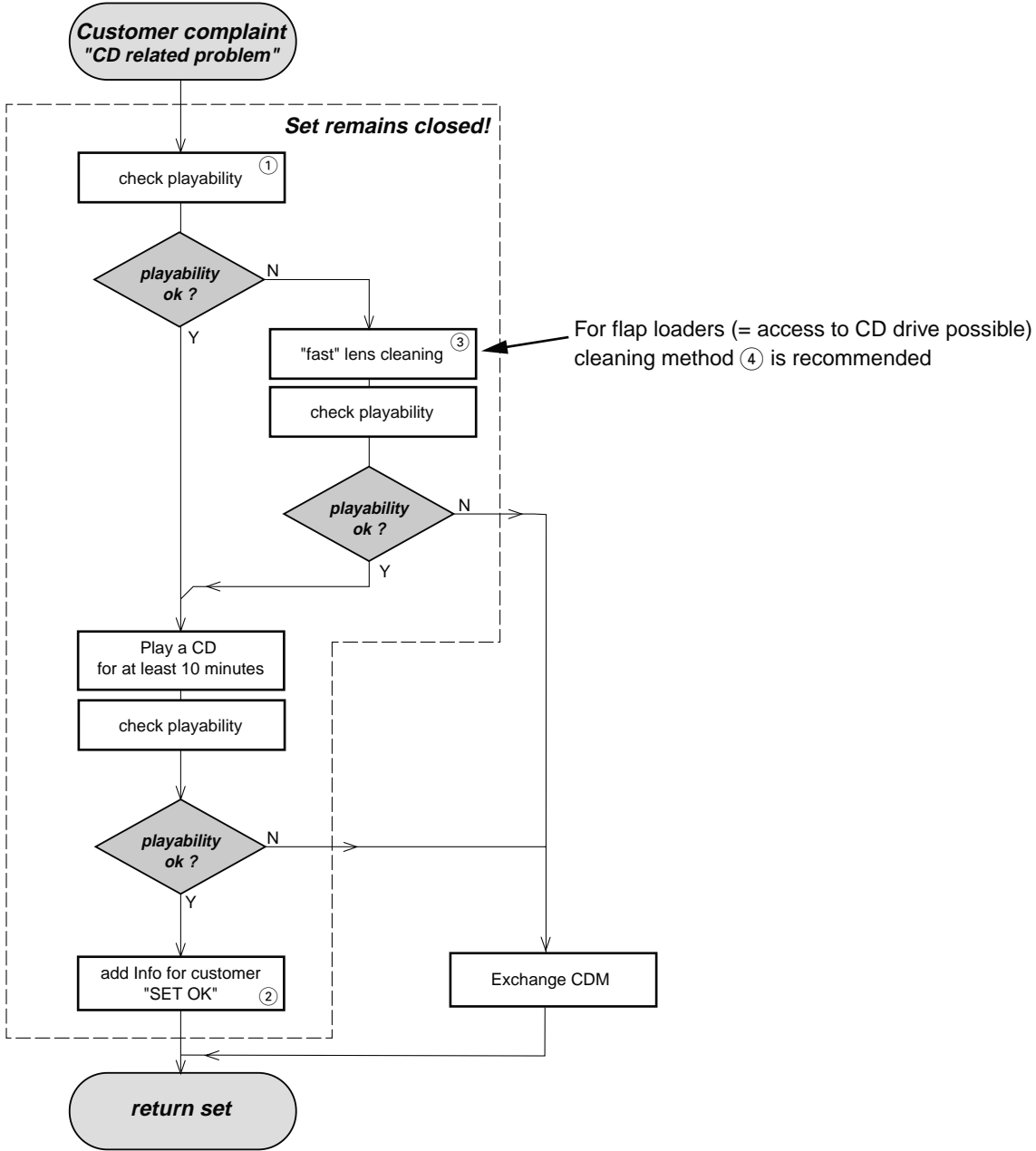
For additional questions please contact your local repair-helpdesk.

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



For flap loaders (= access to CD drive possible) cleaning method ④ is recommended

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

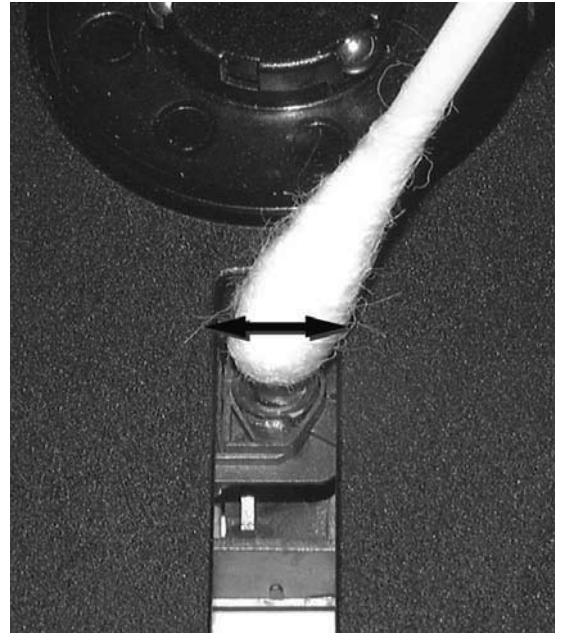
LIQUID LENS CLEANING

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.

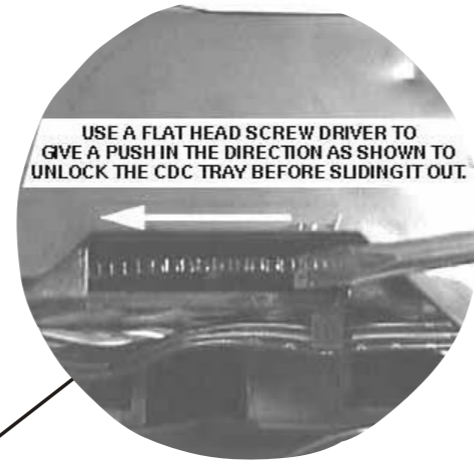
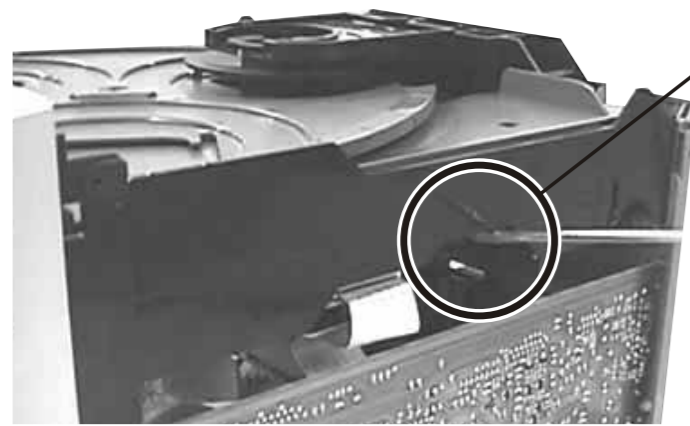
The direction of cleaning must be in the way as indicated in the picture below.



DISASSEMBLY DIAGRAM VIEW PART 1

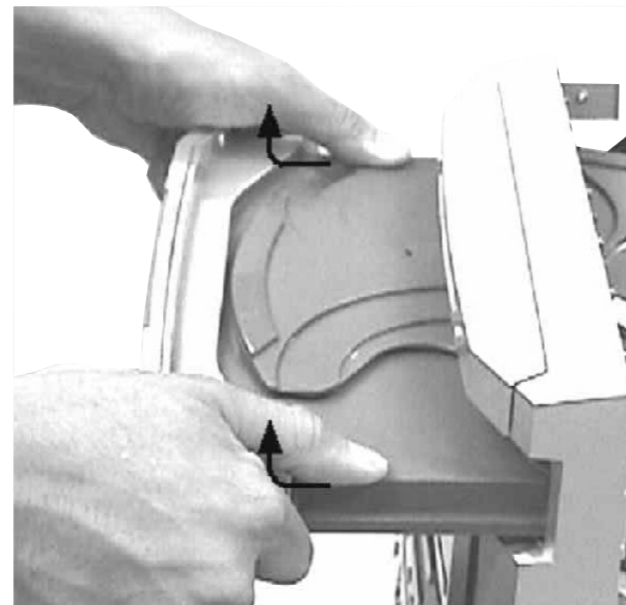
Dismantling of the CDC Module and Front Panel

- 1) Loosen 17 screws to remove the Cover Top of the set.
- 2) Slide out the CDC Tray as shown in the diagram below with the help of a flat head screw driver.



Sliding Out The CDC Tray

- 3) Remove the Cover Tray CDC as indicated.

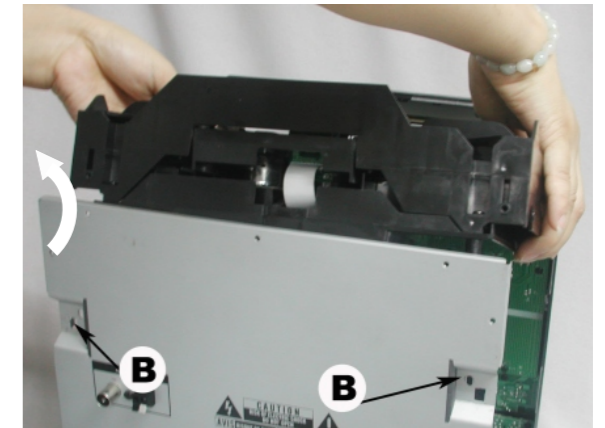


Remove Cover Tray CDC

- 4) Loosen 2 screws A and 2 screws B to remove the CDC Module as indicated.
- 5) Remove 2 screws at the bottom to separate the Front Panel Assembly from the Plate Bottom.



Front View CDC

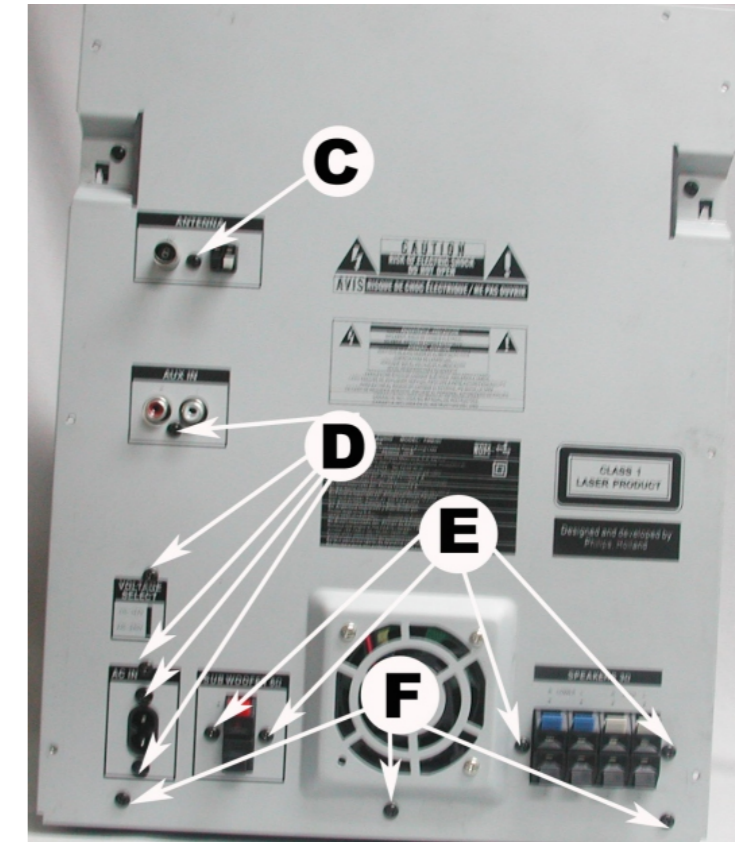
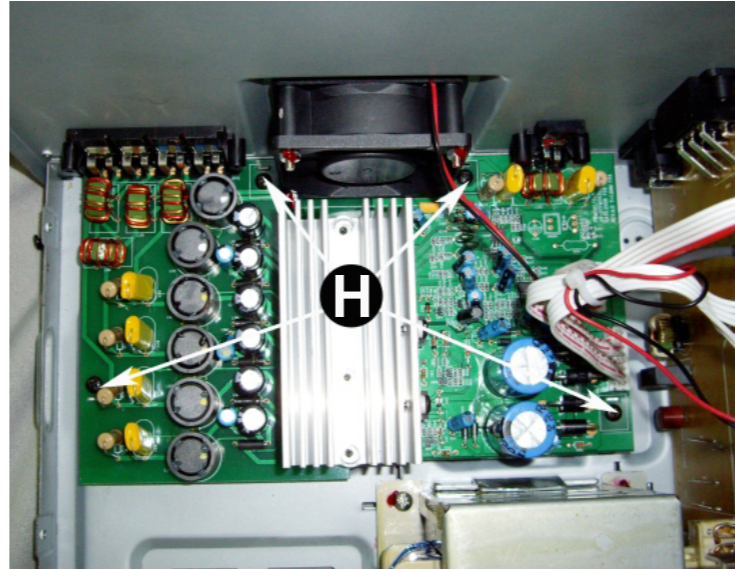
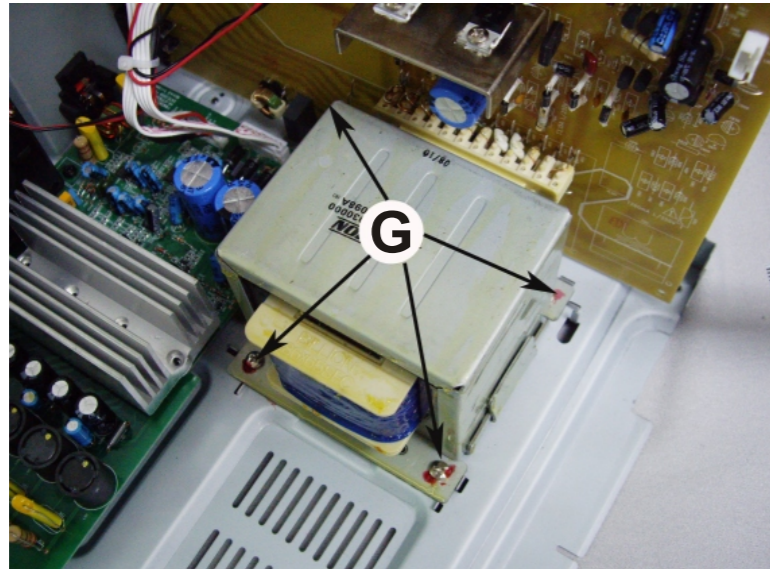


Remove CDC Module

DISASSEMBLY DIAGRAM VIEW PART 2

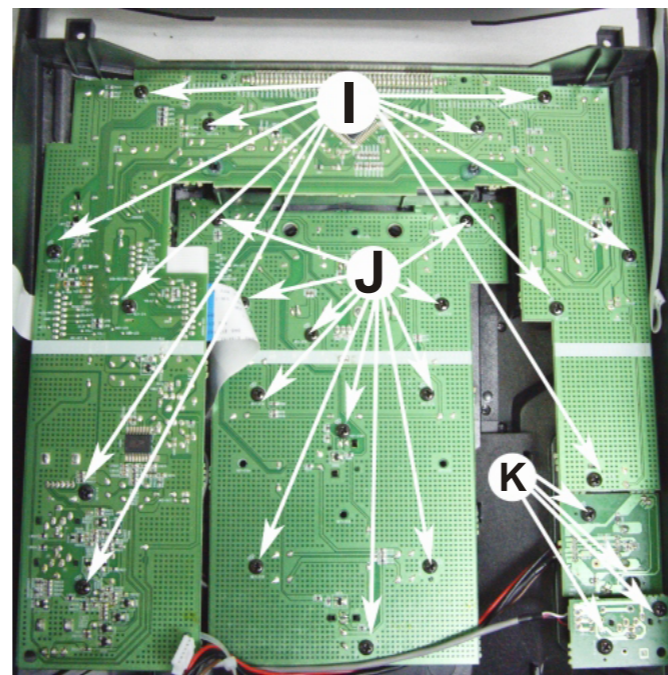
Dismantling of Rear Portion

- 1) Remove 1 screw C as indicated to loosen the Tuner Module
- 2) Remove 9 screws D&G as indicated to loosen the Main Board.
- 3) Remove 8 screws E&H as indicated to loosen the AMP Board.
- 4) Remove 3 screws F as indicated to loosen the Bottom Cabinet.

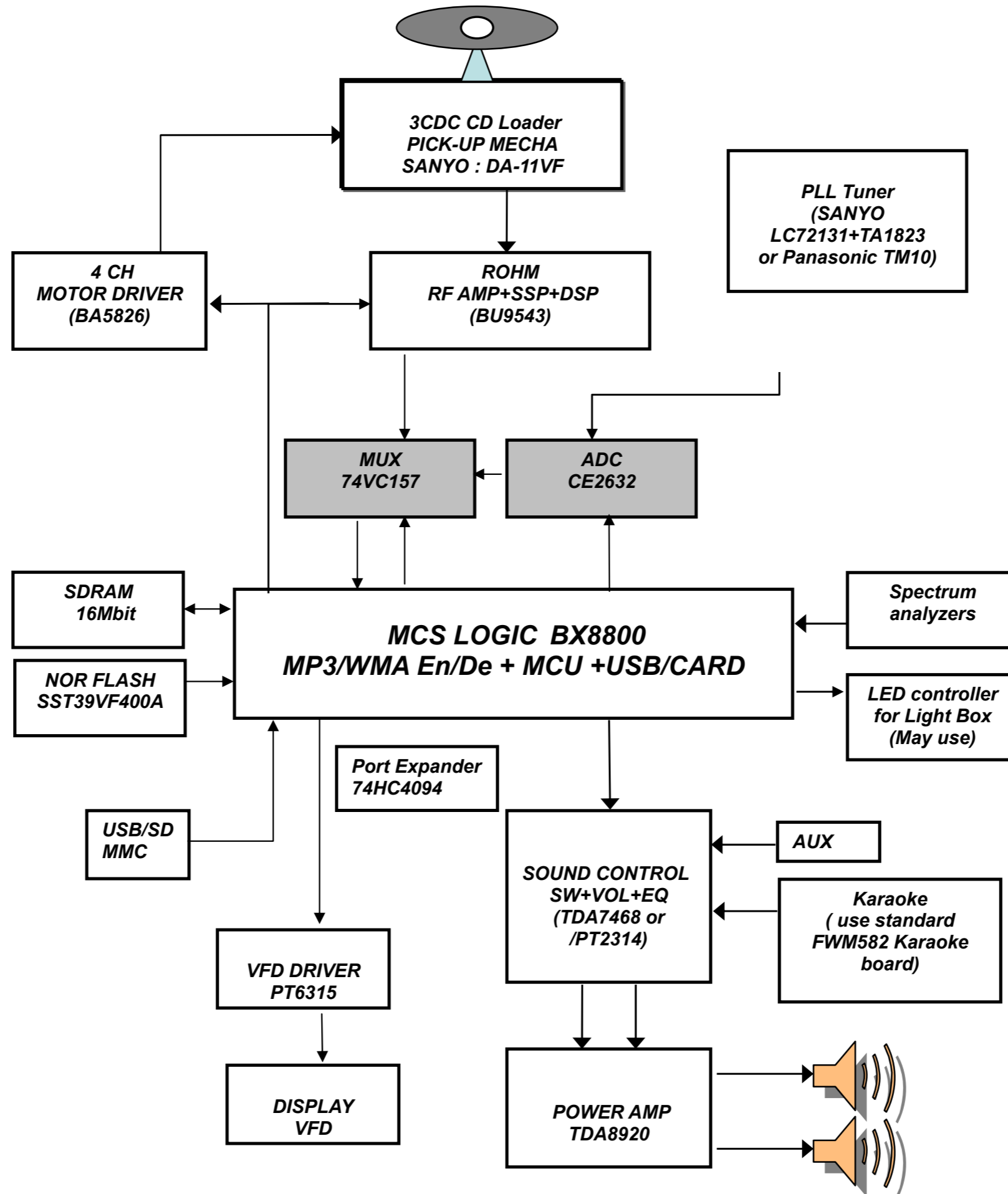


Dismantling of the PCB Board

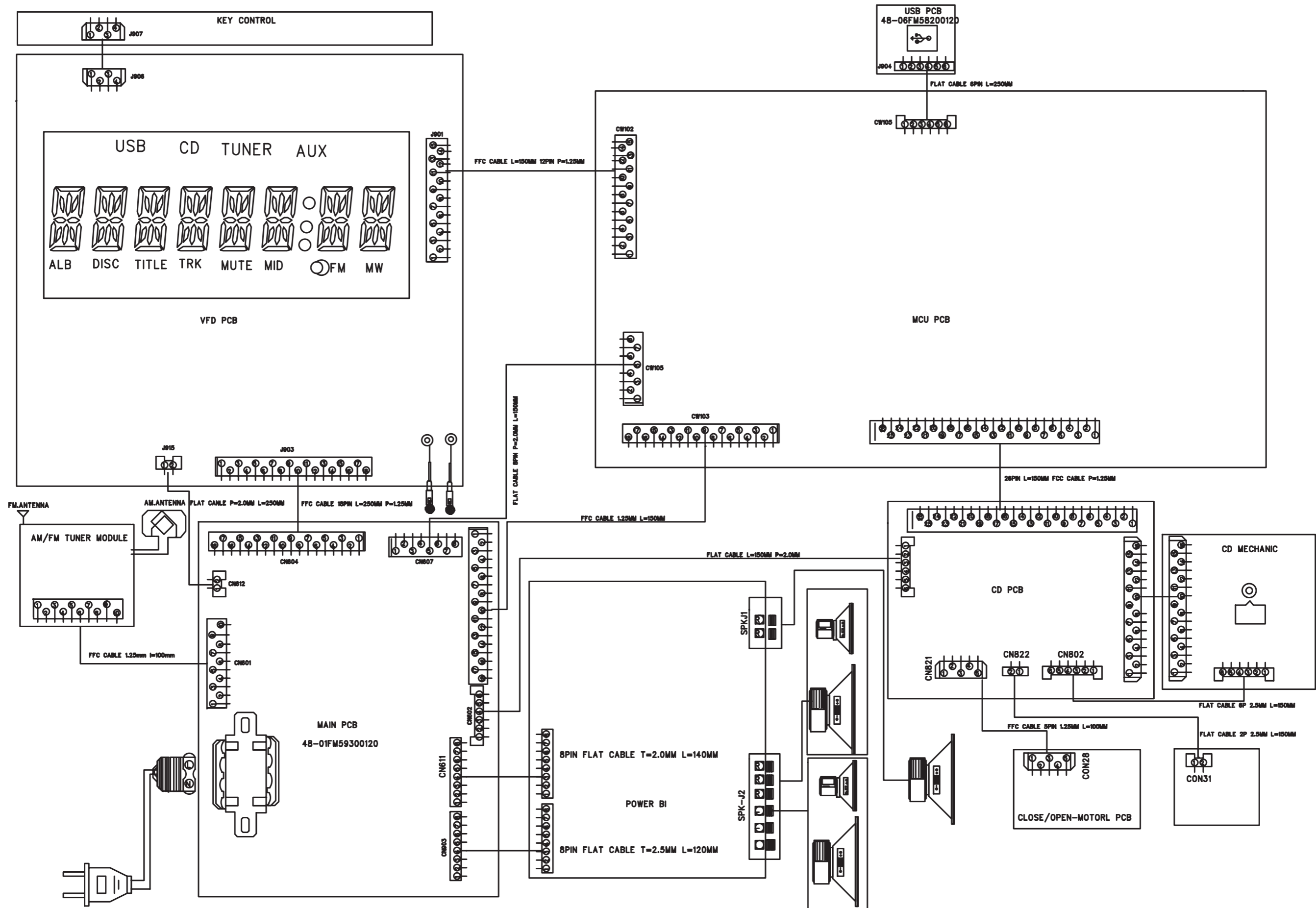
- 1) Remove 11 screws I as indicated to loosen the KEY1 Board.
- 2) Remove 11 screws J as indicated to loosen the KEY2 Board.
- 3) Remove 4 screws K as indicated to loosen the USB&LINE IN Board.



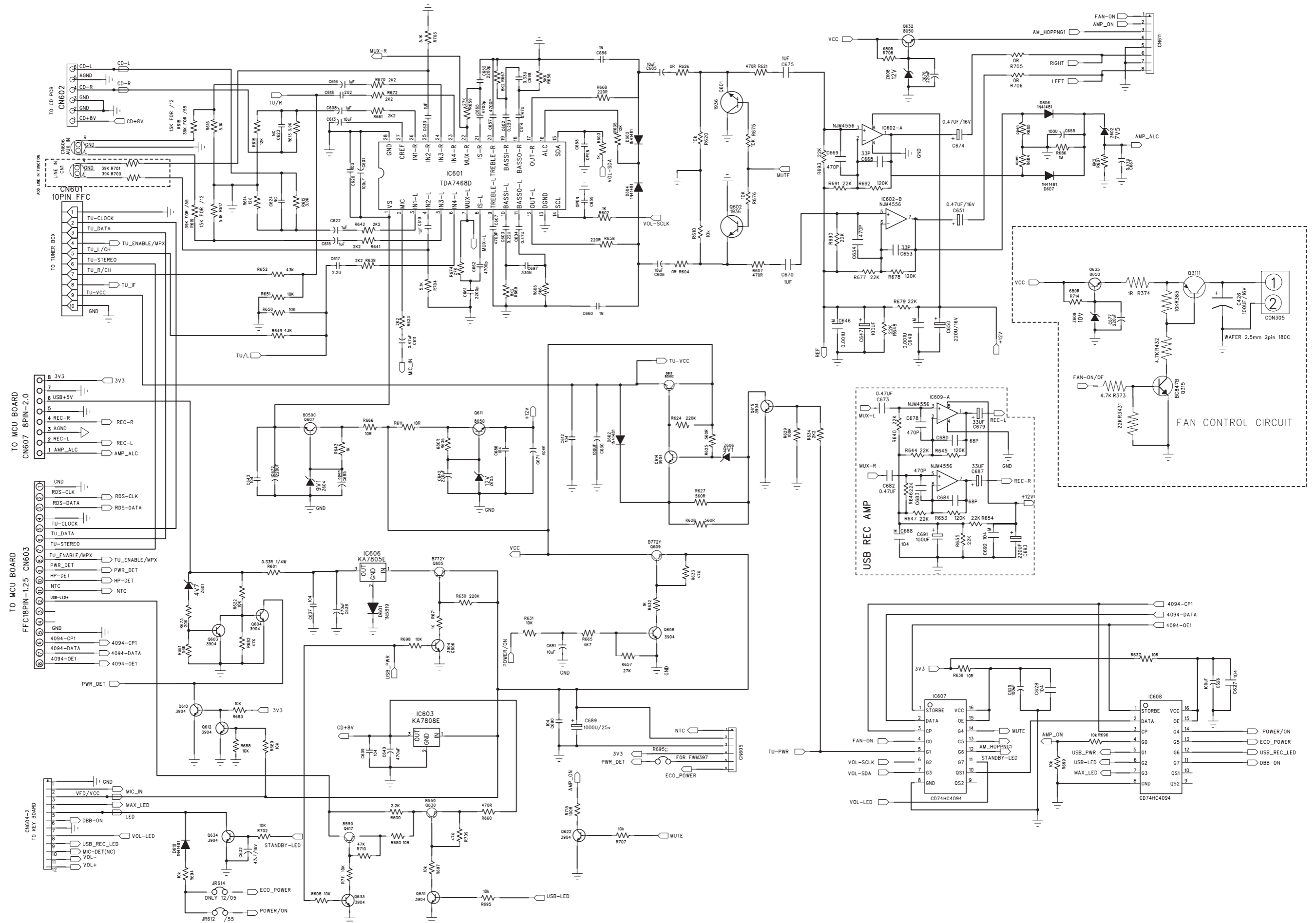
SET BLOCK DIAGRAM



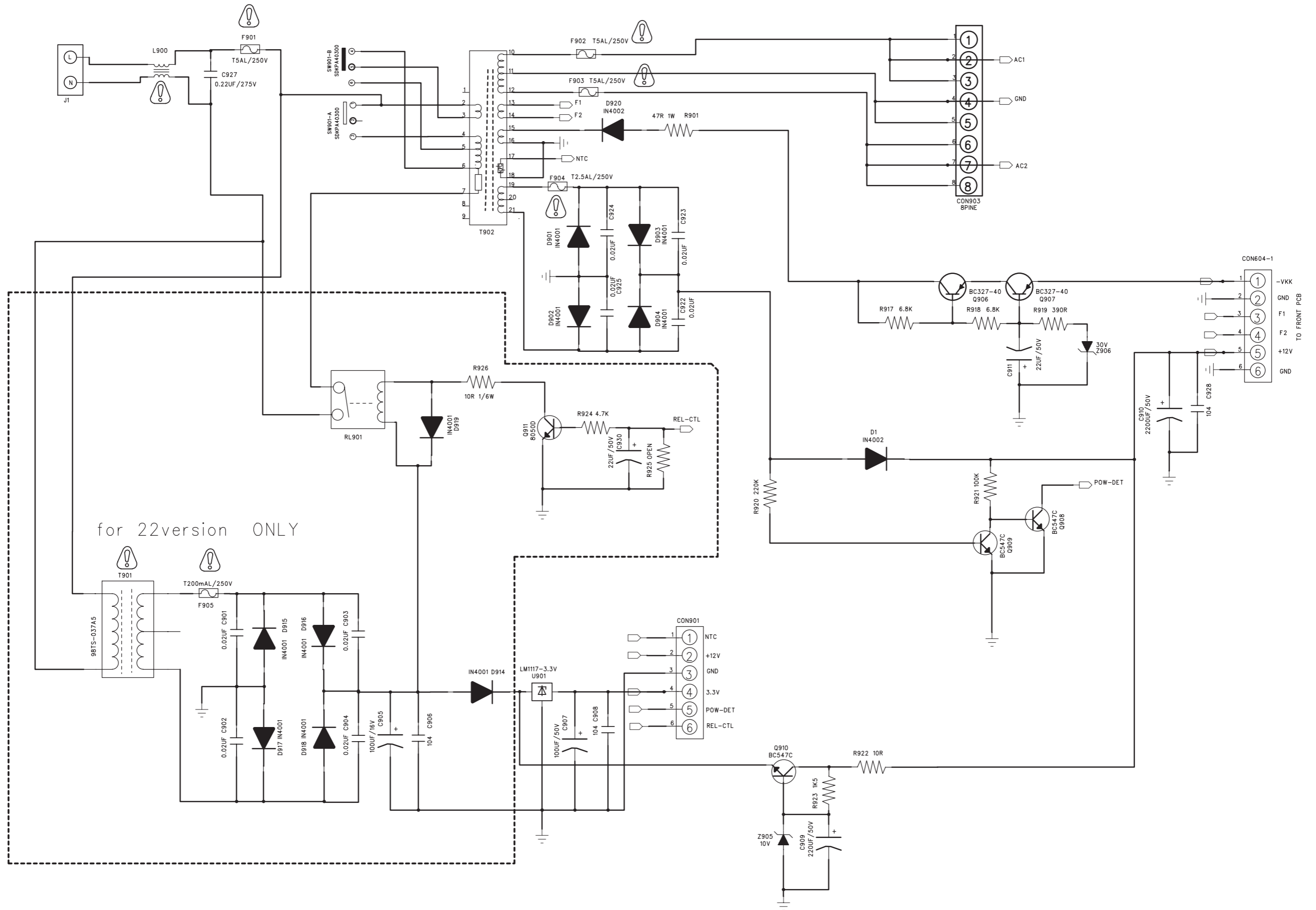
SET WIRING DIAGRAM



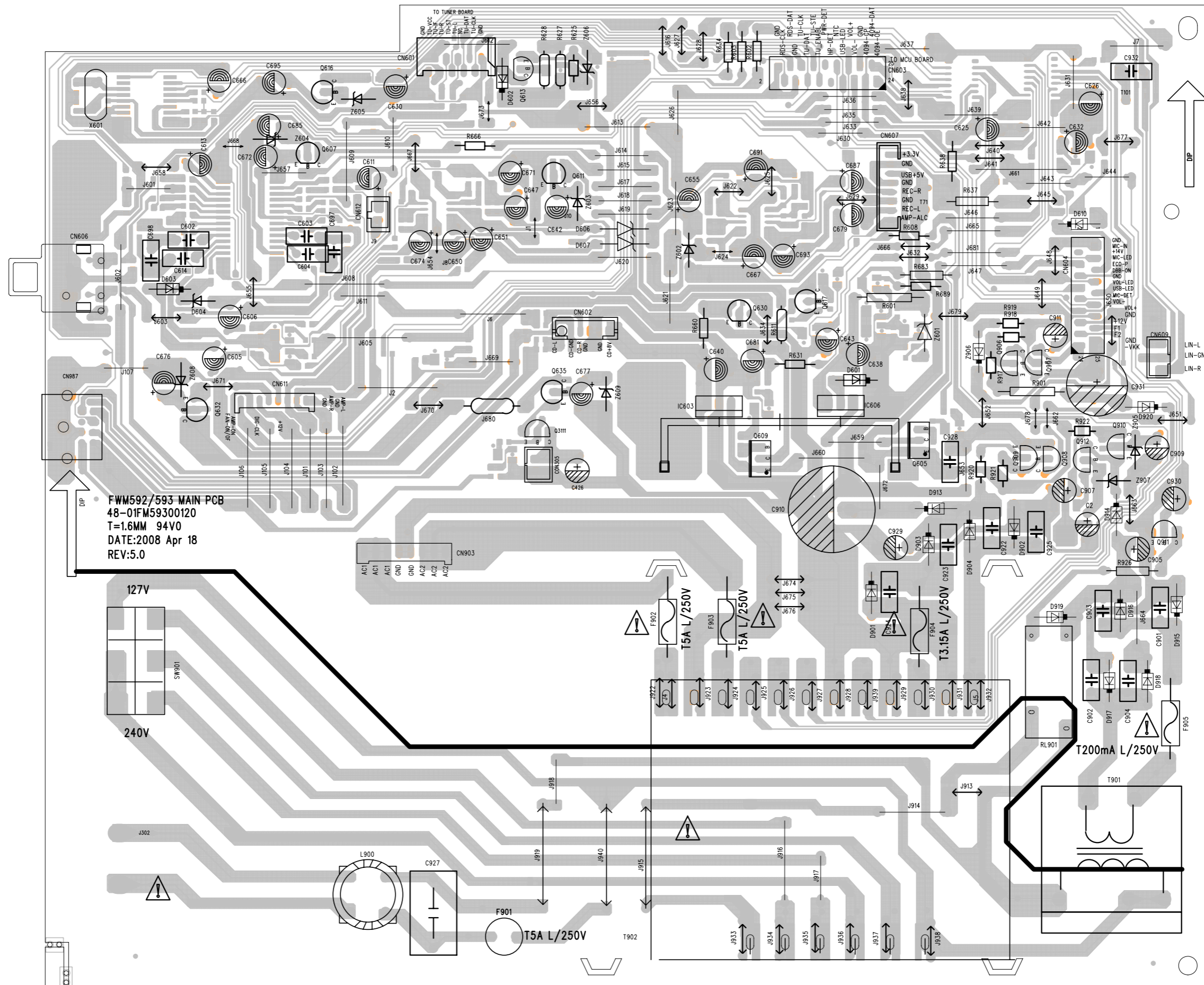
CIRCUIT DIAGRAM - MAIN BOARD PART 1



CIRCUIT DIAGRAM - MAIN BOARD PART 2



LAYOUT DIAGARM - MAIN BOARD
COMPONENT SIDE VIEW



FWM592/593 MAIN PCB
48-01FM59300120
T=1.6MM 94V0
DATE:2008 Apr 18
REV:5.0

127V
SW901
240V

AC1 AC1 AC1 GND GND AC2 AC2 AC2

F901
T5A L/250V

F902
T5A L/250V

F903
T5A L/250V

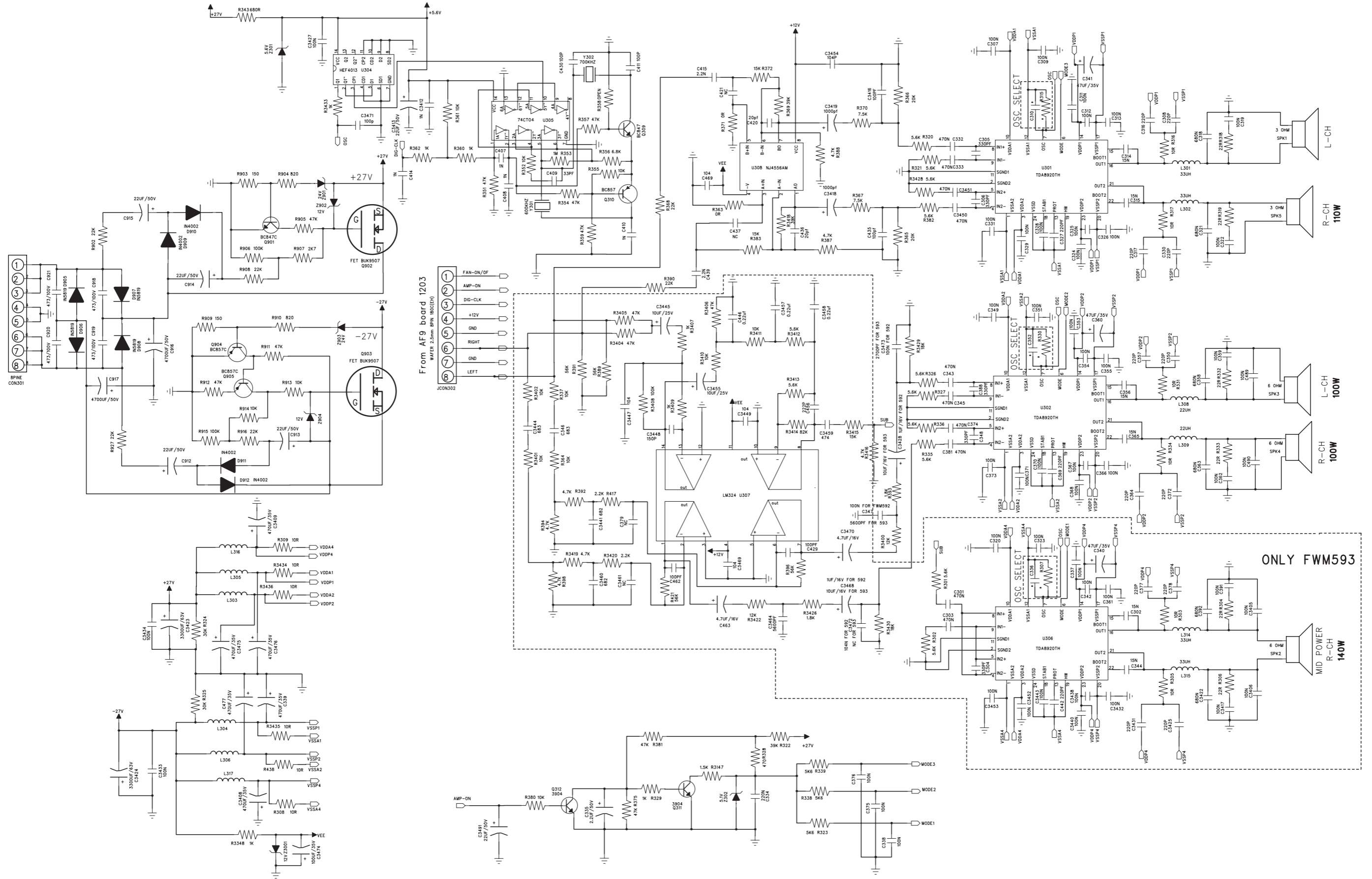
F904
T3.15A L/250V

F905
T200mA L/250V

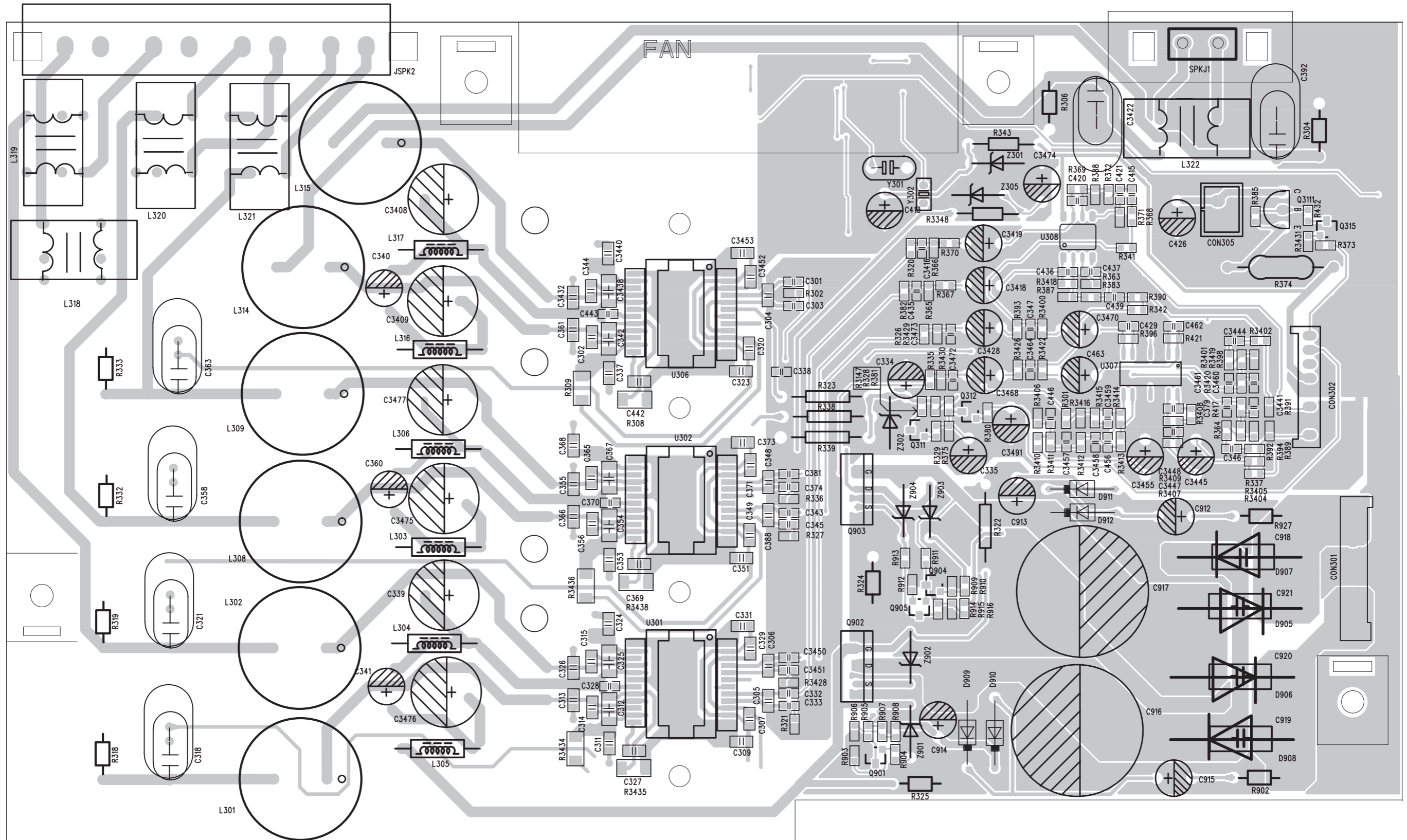
T901

DIP

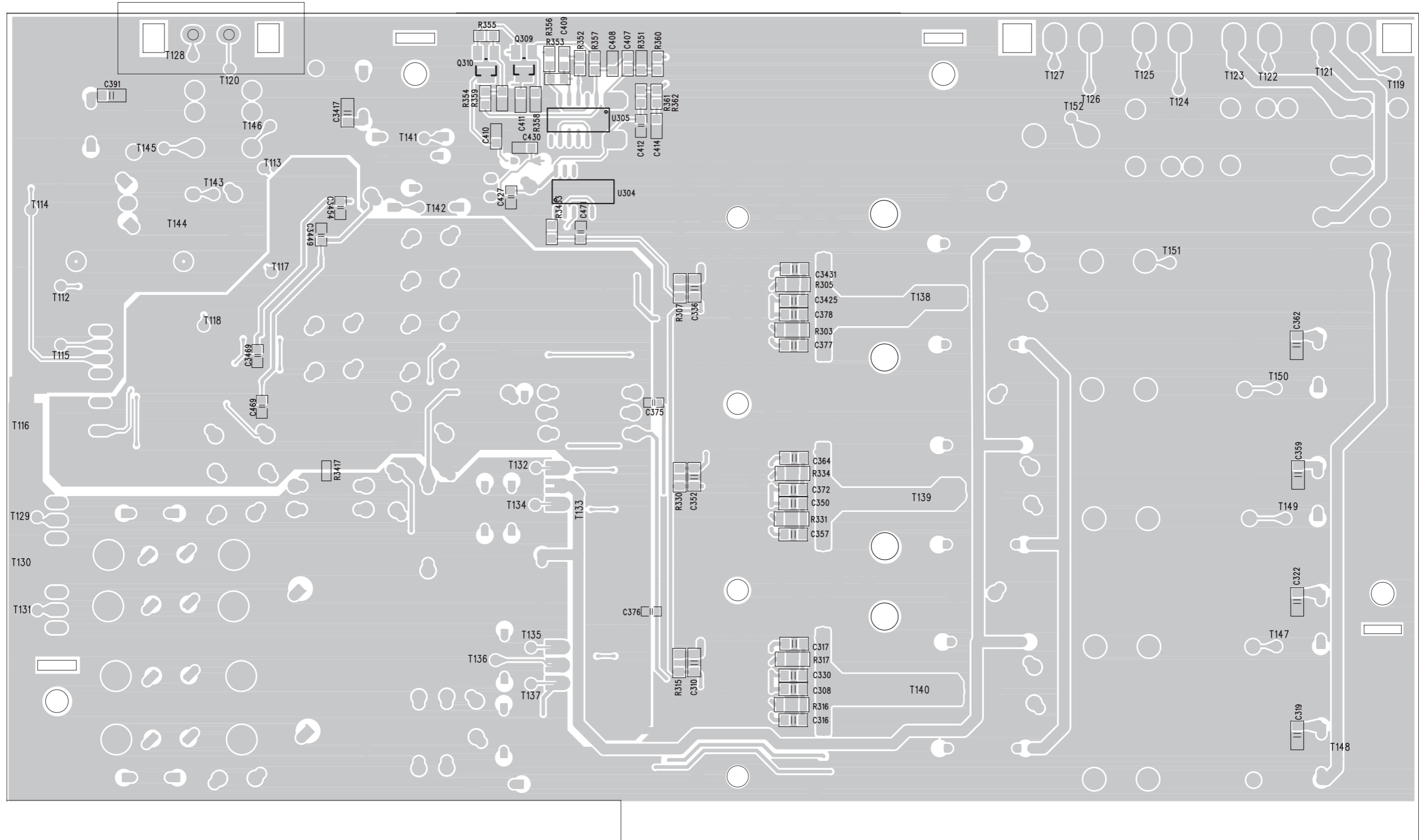
CIRCUIT DIAGRAM - AMP BOARD



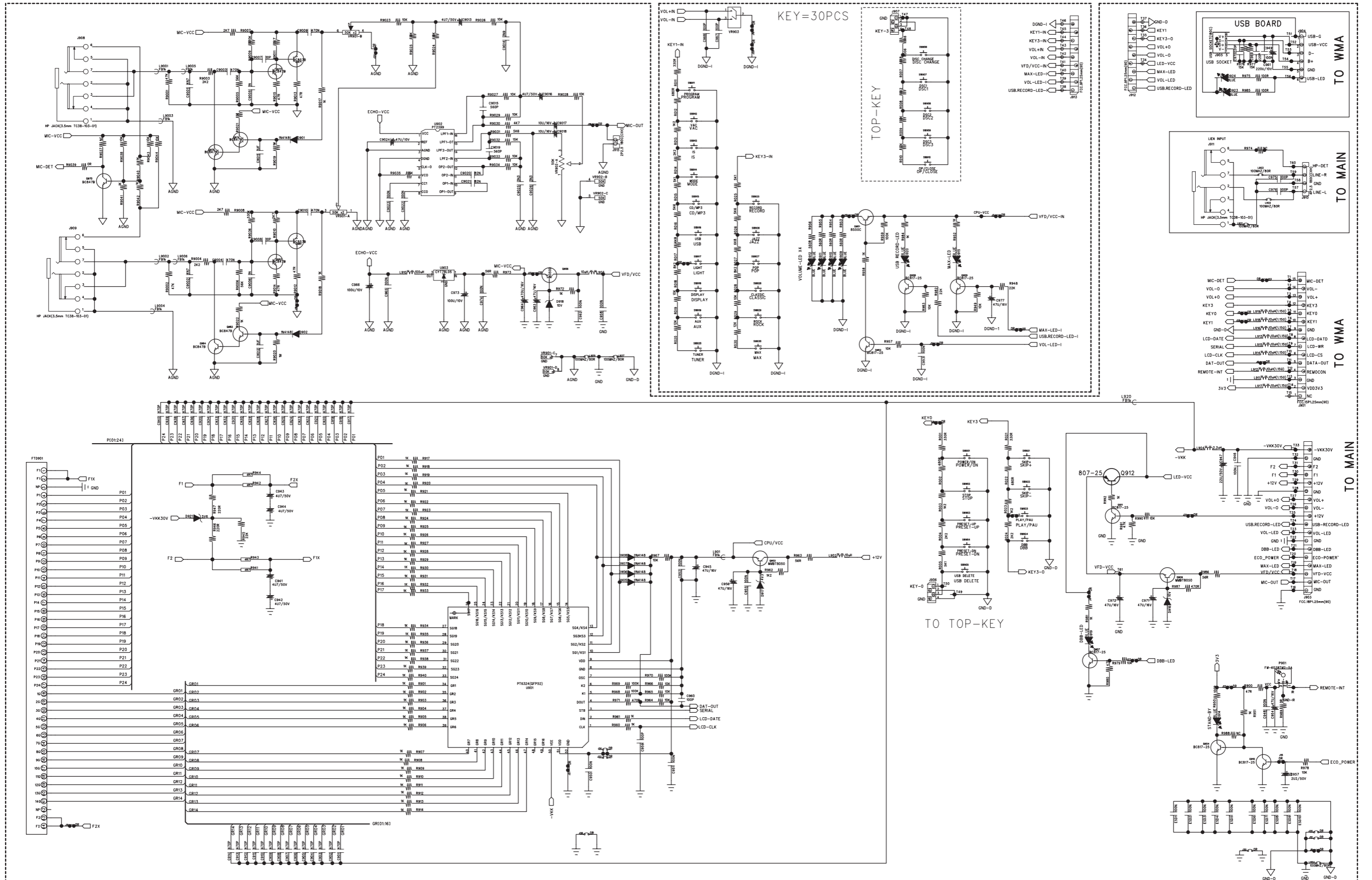
LAYOUT DIAGRAM - AMP BOARD COMPONENT SIDE VIEW



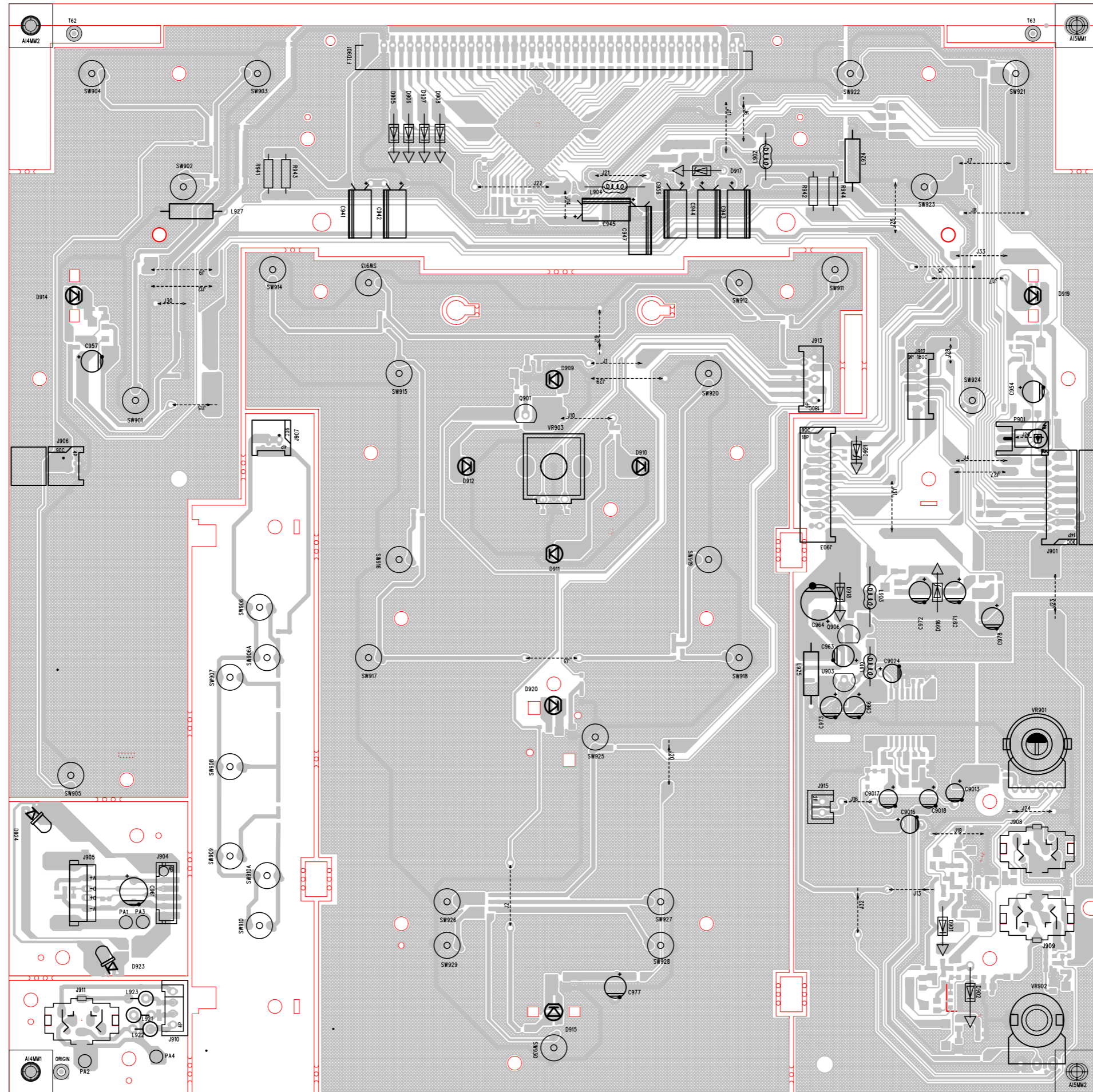
LAYOUT DIAGARM - AMP BOARD
COPPER SIDE VIEW



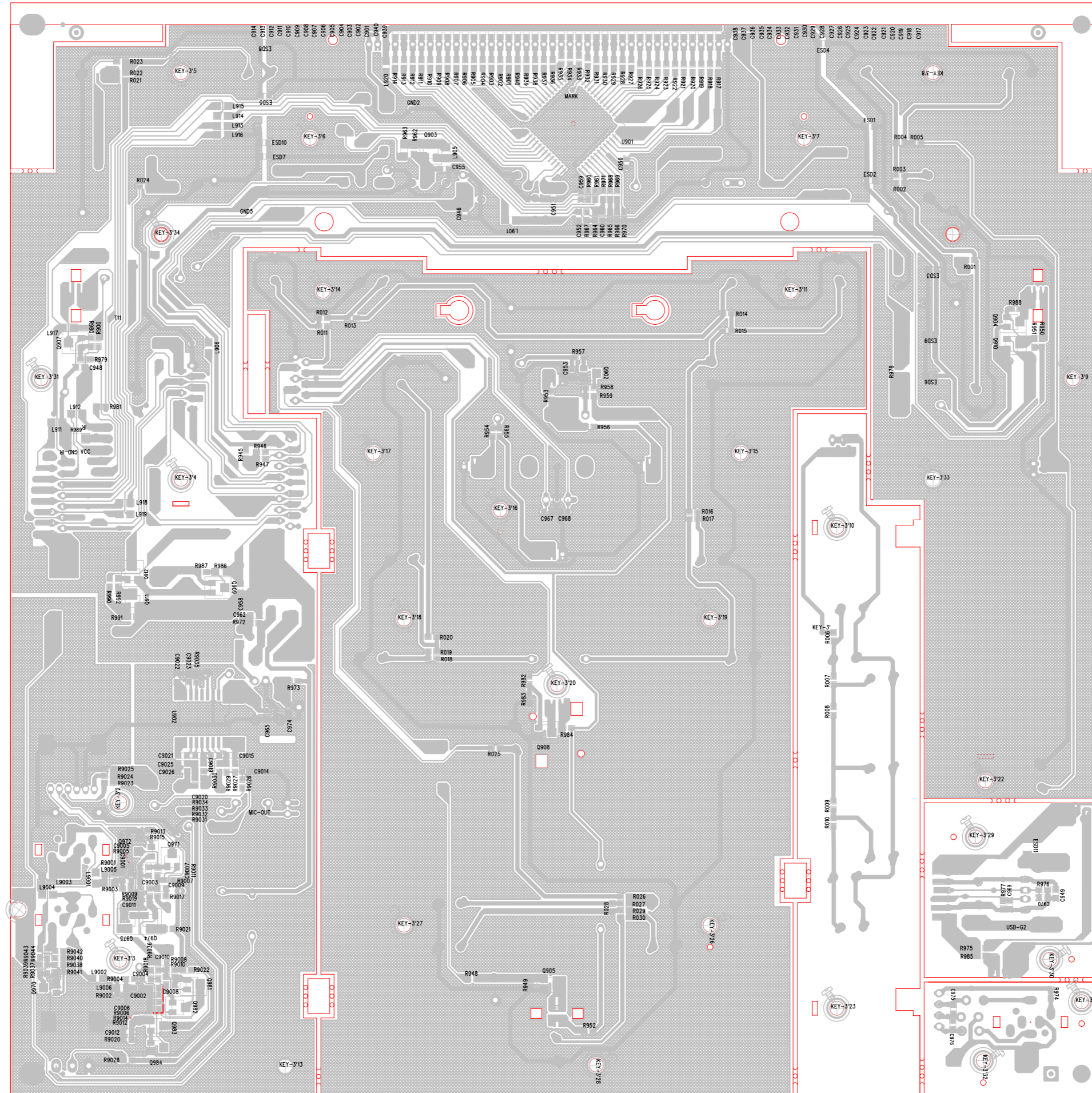
CIRCUIT DIAGRAM - FRONT BOARD



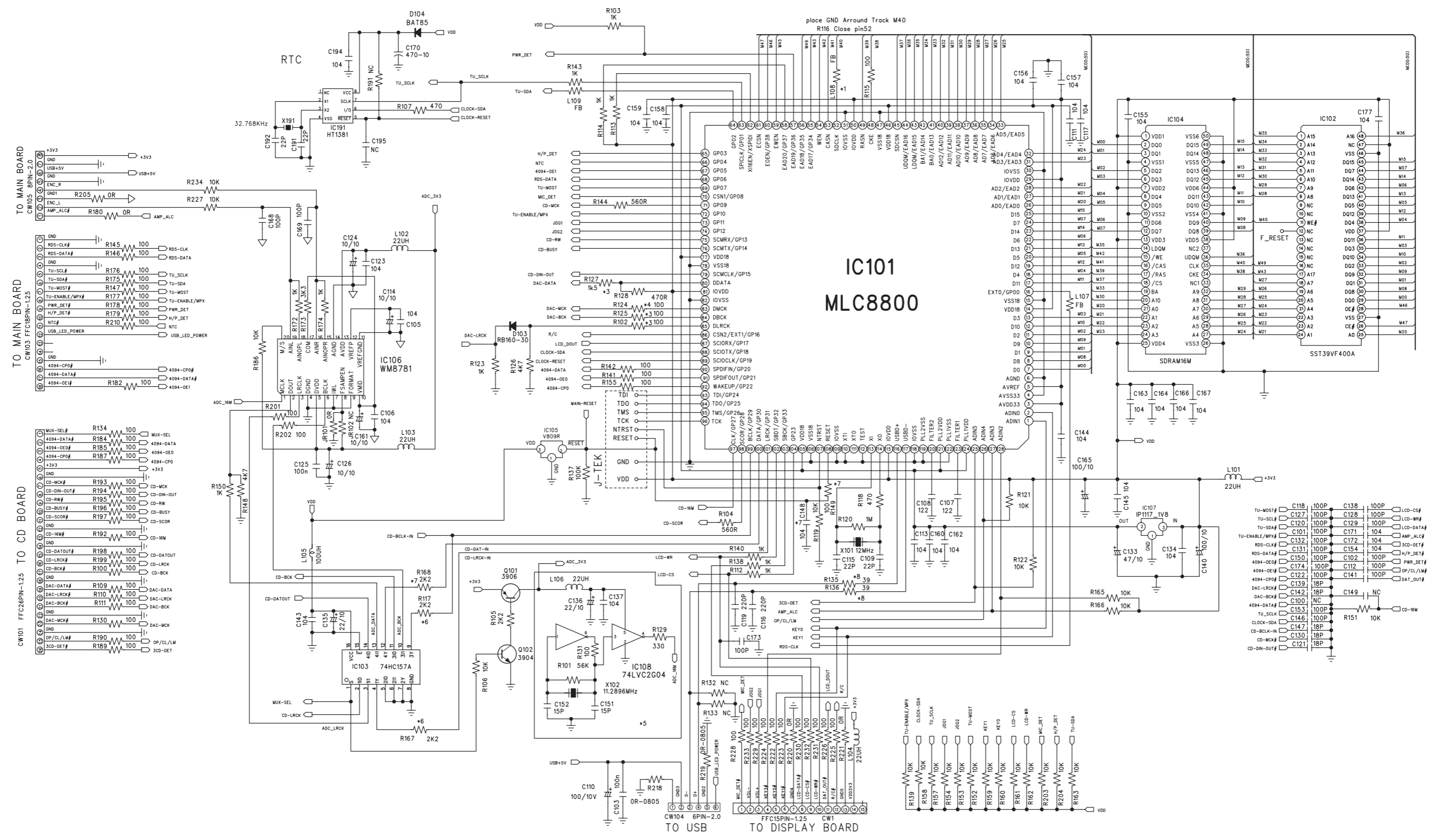
LAYOUT DIAGARM - FRONT BOARD COMPONENT SIDE VIEW



LAYOUT DIAGRAM - FRONT BOARD
COPPER SIDE VIEW



CIRCUIT DIAGRAM - MCU BOARD



TO MAIN BOARD
CW105 8PIN-20

+	+3V3		+3V3
+	USB+5V		USB+5V
+	ENC_R		
+	ENC_L		
+	AMP_ALC#	OR	AMP_ALC

TO MAIN BOARD
CW103 6PIN-125

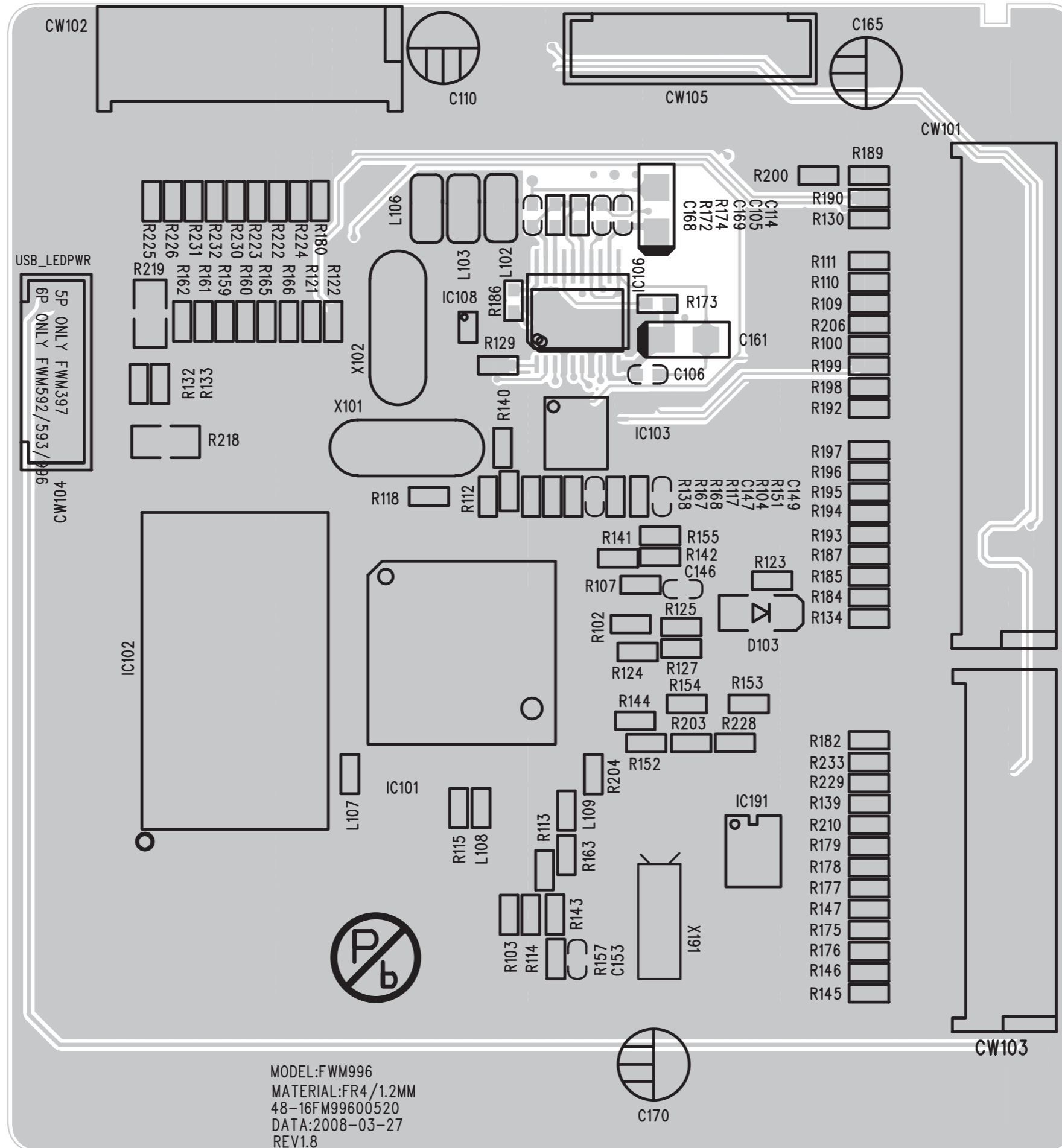
+	RDS-CLK#	R145	100	RDS-CLK
+	RDS-DATA#	R146	100	RDS-DATA
+	TU-SCLK#	R176	100	TU_SCLK
+	TU-SDA#	R175	100	TU_SDA
+	TU-MOST#	R147	100	TU-MOST
+	TU-ENABLE/MPX#	R177	100	TU-ENABLE/MPX
+	PWR_DET#	R178	100	PWR_DET
+	H/P_DET#	R179	100	H/P_DET
+	NTC#	R210	100	NTC
+	USB_LED_POWER			USB_LED_POWER

TO CD BOARD
CW101 6PIN-125

+	MUX-SEL#	R134	100	MUX-SEL
+	4094-DATA#	R184	100	4094-DATA
+	4094-OE#	R185	100	4094-OE
+	4094-CPO#	R187	100	4094-CPO
+	+3V3			+3V3
+	CD-MCK#	R193	100	CD-MCK
+	CD-DN-OUT#	R194	100	CD-DN-OUT
+	CD-RW#	R195	100	CD-RW
+	CD-BUSY#	R196	100	CD-BUSY
+	CD-SCOR#	R197	100	CD-SCOR
+	CD-1M#	R192	100	CD-1M
+	CD-DATOUT#	R198	100	CD-DATOUT
+	CD-LRCK#	R199	100	CD-LRCK
+	CD-BCK#	R100	100	CD-BCK
+	DAC-DATA#	R109	100	DAC-DATA
+	DAC-LRCK#	R110	100	DAC-LRCK
+	DAC-BCK#	R111	100	DAC-BCK
+	DAC-MCK#	R130	100	DAC-MCK
+	OP/CL/LM#	R190	100	OP/CL/LM
+	3CD-BEF#	R189	100	3CD-DET

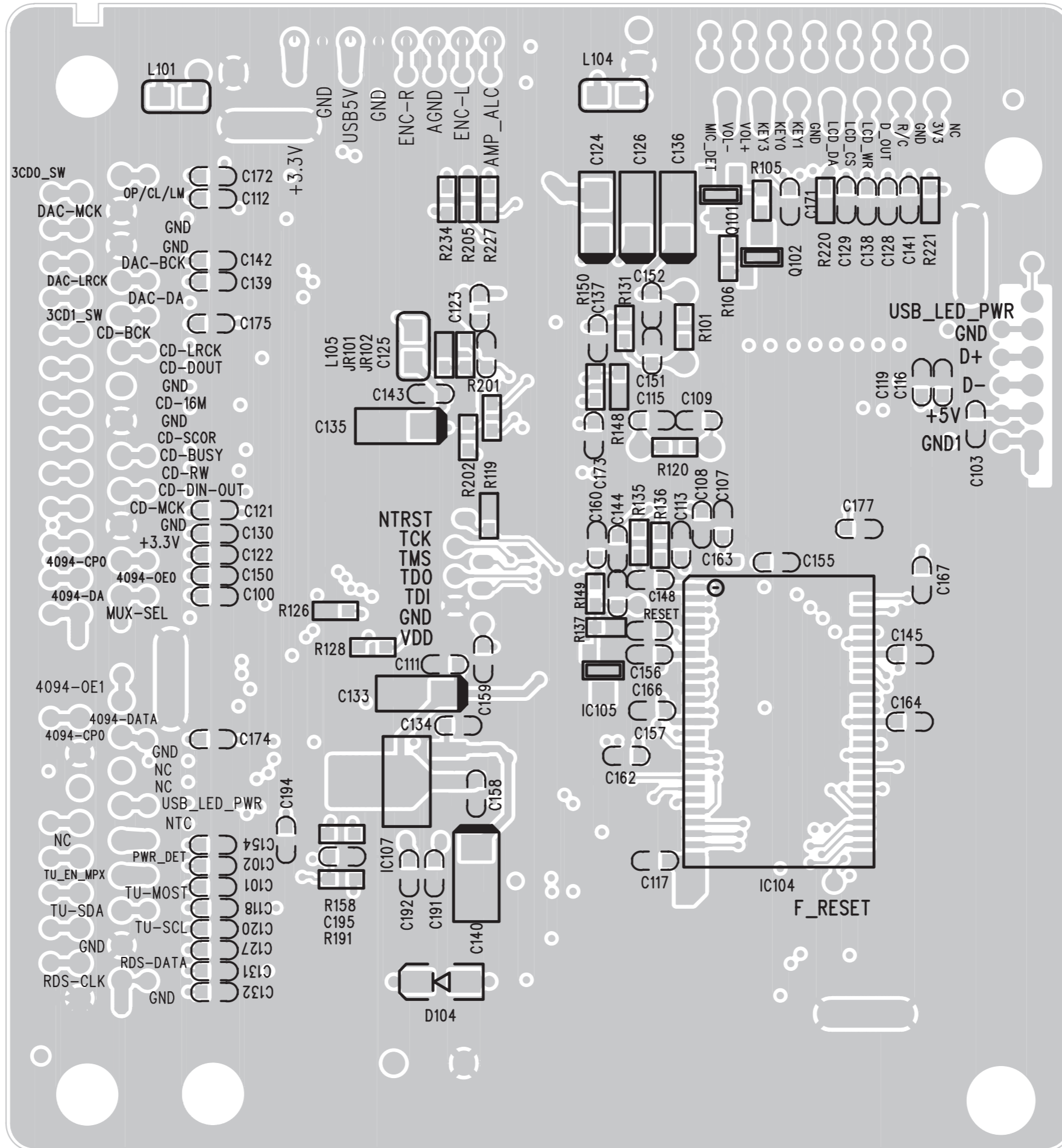
+	TU-MOST#	C118	100P	C138	100P	CD-CS#
+	TU-SCLK	C127	100P	C128	100P	CD-WR#
+	TU-SDA#	C120	100P	C129	100P	CD-DATA#
+	TU-ENABLE/MPX#	C101	100P	C171	104	AMP_ALC#
+	RDS-CLK#	C132	100P	C172	104	3CD-BEF#
+	4094-DATA#	C131	100P	C154	104	H/P_DET#
+	4094-OE#	C150	100P	C102	100P	PWR_DET#
+	4094-CPO#	C174	100P	C112	100P	OP/CL/LM#
+	4094-RW#	C122	100P	C141	100P	DAT_OUT#
+	DAC-BCK#	C139	18P	C149	18P	NC
+	4094-DATA#	C100	100P	C142	18P	CD-1M#
+	TU-SCLK	C153	100P	R151	10K	CD-1M#
+	CLOCK-SDA	C146	100P			
+	CD-BCK-IN	C147	18P			
+	CD-MCK	C130	18P			
+	CD-DN-OUT#	C121	18P			

LAYOUT DIAGARM - MCU BOARD
COMPONENT SIDE VIEW

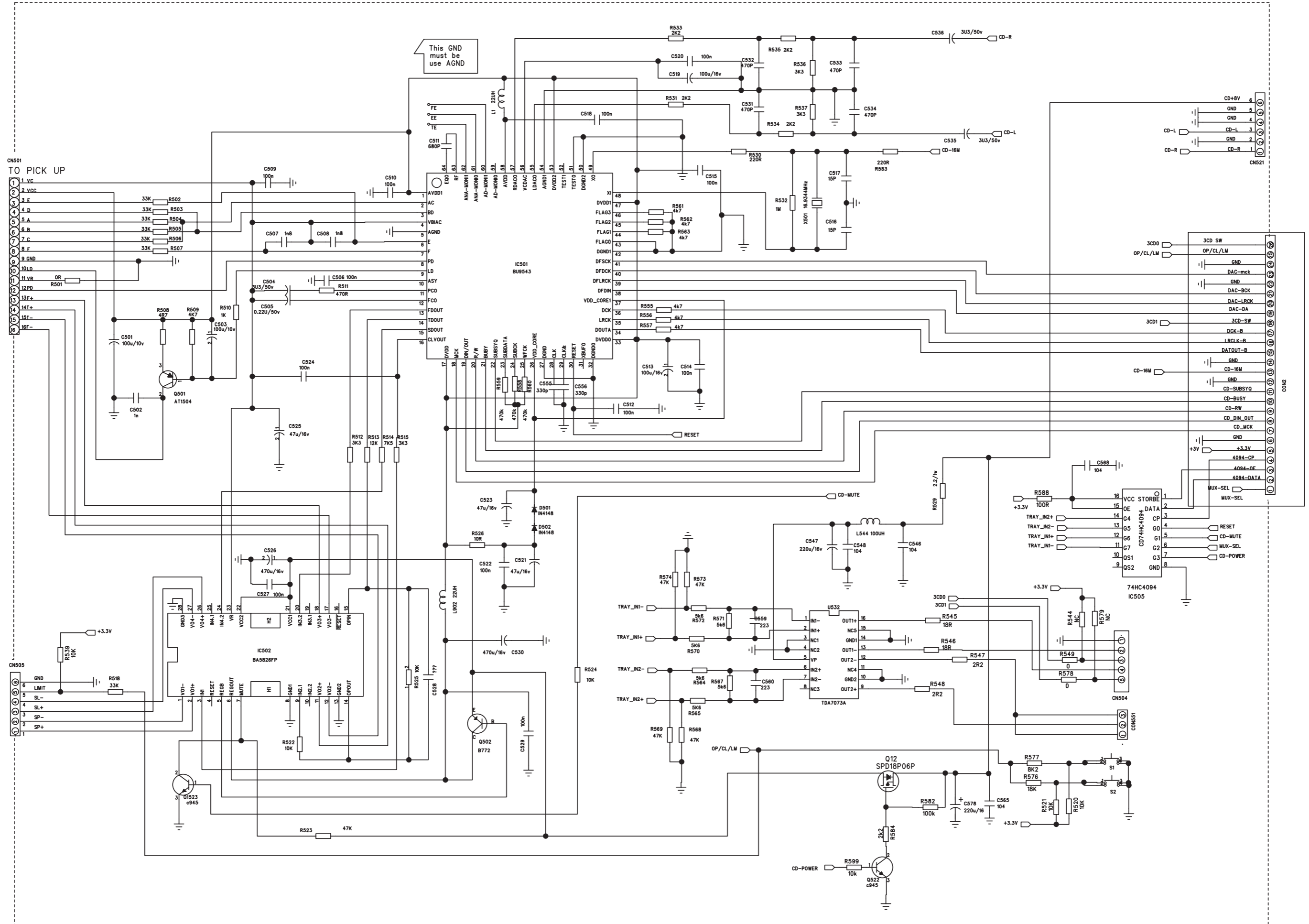


MODEL:FWM996
 MATERIAL:FR4/1.2MM
 48-16FM99600520
 DATA:2008-03-27
 REV1.8

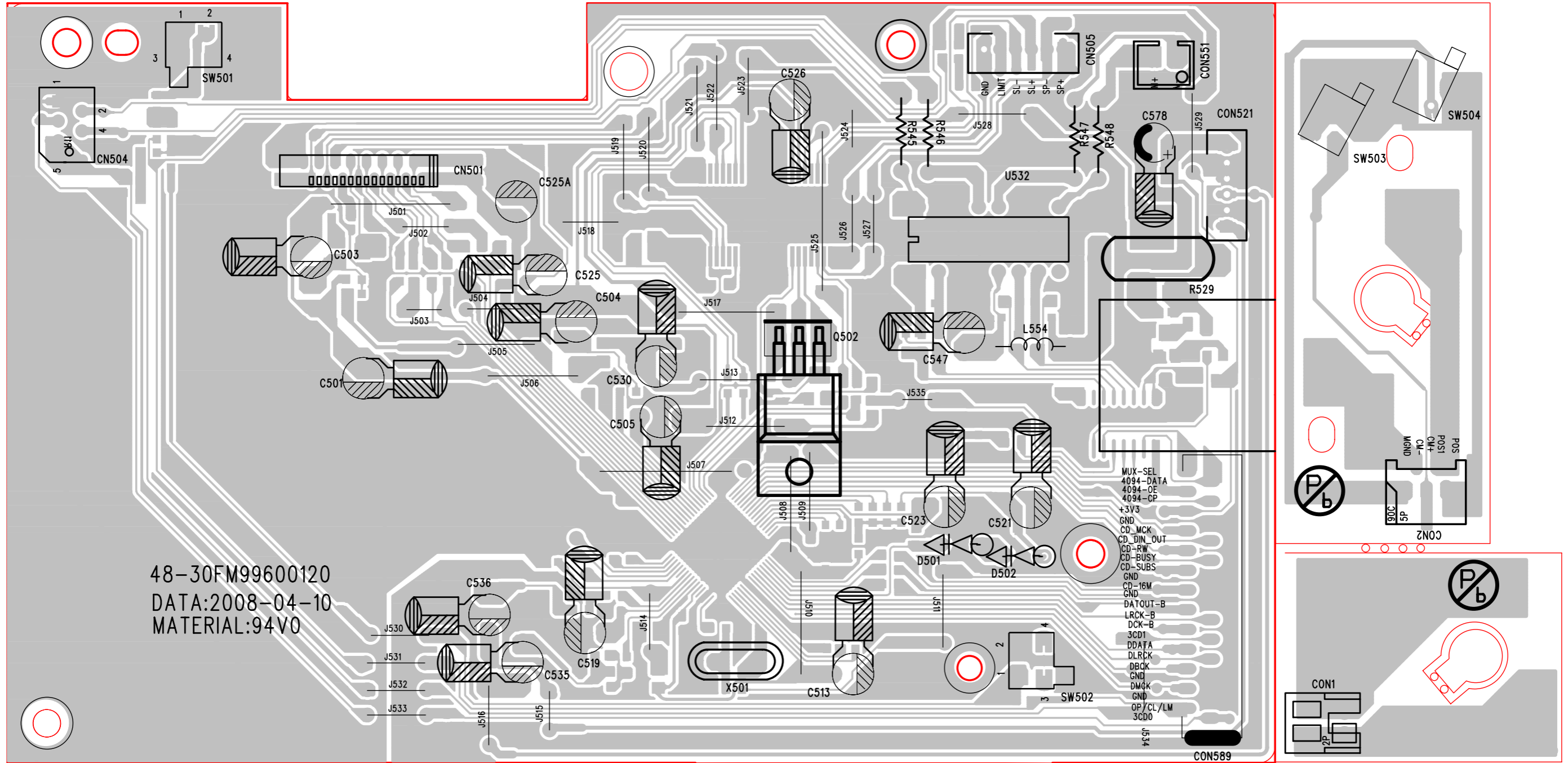
LAYOUT DIAGARM - MCU BOARD
COPPER SIDE VIEW



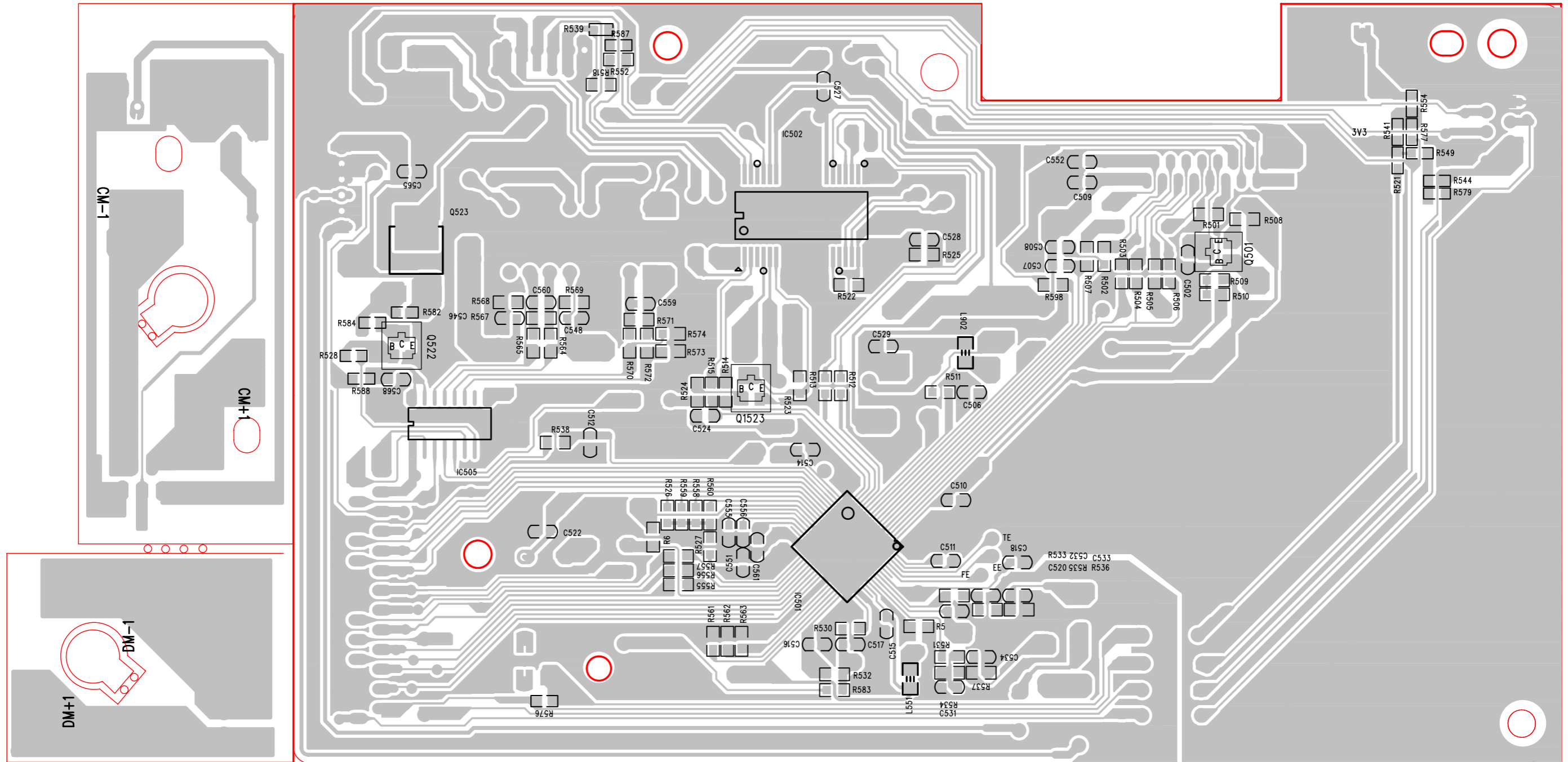
CIRCUIT DIAGRAM - CD BOARD



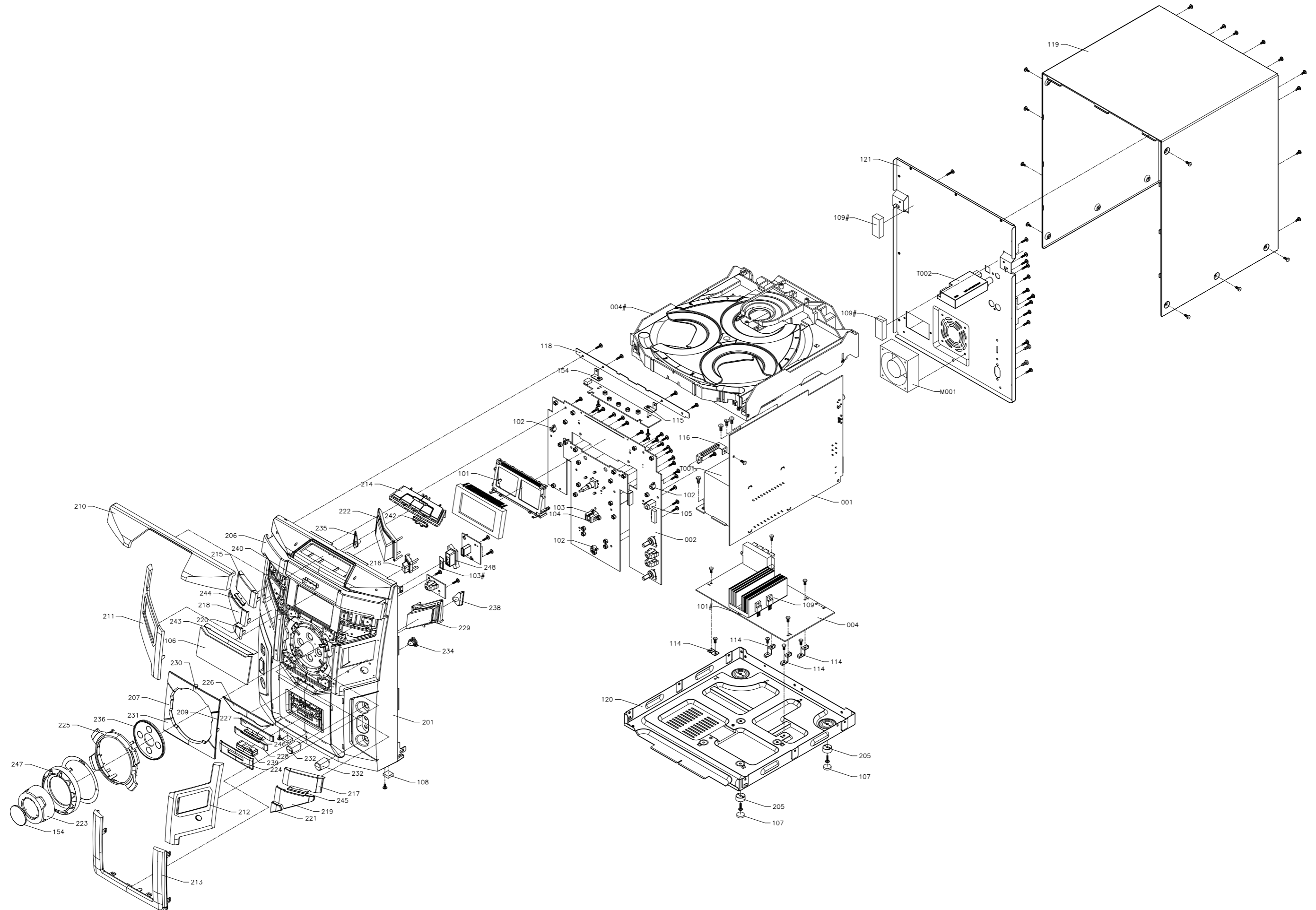
LAYOUT DIAGRAM - CD BOARD COMPONENT SIDE VIEW



LAYOUT DIAGRAM - CD BOARD
COPPER SIDE VIEW



EXPLODED VIEW DIAGRAM



MECHANICAL PARTSLIST

101	996510016093	FTD HOLDER
102	996510016094	LED HOLDER
103	996510016095	LED BRACKET
104	996510016096	LED LIGHT GUIDE
154	996510016113	VOL KNOB COVER
201	996510016104	FRONT CABINET
205	996510016105	FOOT HOLDER
206	996510016106	3CDC DOOR
207	996510016107	LEFT PANEL AROUND VOL
209	996510016108	RIGHT PANEL AROUND VOL
210	996510016109	TOP COVER
211	996510016110	LEFT COVER
212	996510016111	RIGHT COVER
213	996510016112	BOTTOM COVER
214	996510016114	TOP CD BUTTON
215	996510016115	ALBUM BUTTON
216	996510015507	USB DELETE BUTTON
217	996510016116	TITLE BUTTON
218	996510016117	STOP BUTTON
219	996510016118	PLAY BUTTON
220	996510016119	MODE BUTTON
221	996510016120	PROGRAM BUTTON
222	996510016121	POWER BUTTON
223	996510016122	VOL KNOB
224	996510016123	MAX SOUND BUTTON
225	996510016124	CLUSTER BUTTON
226	996510016125	USB RECORD BUTTON
227	996510016126	JAZZ-POP BUTTON
228	996510016127	ROCK-CLASSIS BUTTON
229	996510016128	DDB BUTTON
230	996510016129	DISC AND TUNER BUTTON
231	996510016130	USB AND AUX BUTTON
232	996510015510	MIC KNOB
234	996510016131	IR LENS
235	996510016132	POWER LIGHT GUIDE
236	996510016133	VOL LIGHT GUIDE
238	996510016134	DBB LIGHT GUIDE
239	996510016135	MAX BUTTON LIGHT GUIDE
240	996510016136	BADGE PHILIPS
242	996510016137	MIDDLE STRAP SOUND BUTTON
243	996510016138	DISPLAY TOP BAR
244	996510016139	MIDDLE STRAP L
245	996510016140	MIDDLE STRAP R
246	996510016141	MIDDLE STRAP TOP BUTTON
247	996510016142	VOL RING
248	996510016143	USB RING
4	996510015483	3CD MECHA PART DA11VF(inclu.CDM & MCU board & CD bosrd & CDM bracket)
J013	994000004462	4P FFC 1.25MM L=270MM(AA)
J014	996510016102	9P FFC.1.25mm L=80mm
J015	994000002431	FFC CABLE 10P L=120MM

MECHANICAL PARTSLIST





J016	996510016103	14P FFC.1.25mm L=180mm
J017	996510015486	18P FFC.1.25mm L=150mm
J018	996500040407	18P FFC 1.25mm L=130mm
T001	996510016098	TRANS EI86xS65 127/240V
T002	△ 996510016100	TUNER MODULE MT004MS0-6I
J011	996510012091	FERRITE CORE 22.5x15x6.5mm

ACCESSORIES

FM	996510009429	FM ANT (GREY) 1.5M CE/75
J010	996510016101	AM LOOP ANTENNA
6	996510003974	REMOTE CONTROL
7	△ 996500037714	AC CORD SET VDE/BRAZIL APP 1.8
SPK	996510016099	SPK BOX PART (SINGLE) -/55/BK
J012	996510002103	CONN. CORD 3.5 ST/PLUGx2 500mm

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

ELECTRICAL PARTSLIST**MAIN BOARD ASSEMBLY**

CN606	994000001221	V/RCA JACK 2P
F901	 996510002426	CERAMIC FUSE 3.9x10.5mmW
F902	 996510002426	CERAMIC FUSE 3.9x10.5mmW
F903	 996510002426	CERAMIC FUSE 3.9x10.5mmW
F904	 994000002459	FUSE PTU 2.5A 250V
IC601	996510005250	IC TDA7468D
IC602	994000001201	IC NJM4556AM
IC603	994000000253	IC (SAMSUNG) KA7808
IC606	994000004549	IC KA7805E
IC607	994000001247	IC HEF4094BT
IC608	994000001247	IC HEF4094BT
IC609	994000001201	IC NJM4556AM
J001	996510014304	AC SOCKET UL APP
SW901	994000001323	SWITCH
U901	996510016090	IC AP1117E33L-13

AMP BOARD ASSEMBLY

JSPK1	996510016371	SPK JACK
JSPK2	996510016097	SPK JACK 8P PT-24V11A
U301	996510003980	IC TDA8920(SOT566-3) 2X100W
U302	996510003980	IC TDA8920(SOT566-3) 2X100W
U304	996500042457	IC HEF4013BT
U305	996500042456	IC 74HCT04D SOP14
U306	996510003980	IC TDA8920(SOT566-3) 2X100W
U307	996500039808	IC SM LM324D
U308	994000001201	IC NJM4556AM
Y301	996500042460	CERAMIC RESONATOR 600KHz
Y302	996500042461	CERAMIC RESONATOR 700KHz

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

ELECTRICAL PARTSLIST**FRONT BOARD ASSEMBLY**

D909	996510000438	LED LAMP
D910	996510000438	LED LAMP
D911	996510000438	LED LAMP
D912	996510000438	LED LAMP
D914	996510000438	LED LAMP
D915	996510000438	LED LAMP
D919	996510000438	LED LAMP
D920	996500042443	LED LAMP 2x5x7mm(S.BLUE)
D923	996510000438	LED LAMP
D924	996510000438	LED LAMP
FTD901	996510016092	VFD DISPLAY
J905	996510000344	USB SOCKET
J908	994000001244	V/PHONE JACK 3.5MM
J909	994000001244	V/PHONE JACK 3.5MM
J911	994000001244	V/PHONE JACK 3.5MM
P901	994000000325	OPTIC SENSER (OPTO..)
SW901	994000001243	TACT SWITCH
SW902	994000001243	TACT SWITCH
SW903	994000001243	TACT SWITCH
SW904	994000001243	TACT SWITCH
SW905	994000001243	TACT SWITCH
SW906	994000001243	TACT SWITCH
SW907	994000001243	TACT SWITCH
SW908	994000001243	TACT SWITCH
SW909	994000001243	TACT SWITCH
SW910	994000001243	TACT SWITCH
SW911	994000001243	TACT SWITCH
SW912	994000001243	TACT SWITCH
SW913	994000001243	TACT SWITCH
SW914	994000001243	TACT SWITCH
SW915	994000001243	TACT SWITCH
SW916	994000001243	TACT SWITCH
SW917	994000001243	TACT SWITCH
SW918	994000001243	TACT SWITCH
SW919	994000001243	TACT SWITCH
SW920	994000001243	TACT SWITCH
SW921	994000001243	TACT SWITCH
SW922	994000001243	TACT SWITCH
SW923	994000001243	TACT SWITCH
SW924	994000001243	TACT SWITCH
SW925	994000001243	TACT SWITCH
SW926	994000001243	TACT SWITCH
SW927	994000001243	TACT SWITCH
SW928	994000001243	TACT SWITCH
SW929	994000001243	TACT SWITCH
SW930	994000001243	TACT SWITCH
U901	996510016091	IC PT6324
U902	996510003985	IC ECHO PROCESSOR PT2399S
U903	996510003984	IC CYT78L05 (TO-92)
VR901	996510006586	ROTARY VOLUME F-122KGP B50K L
VR902	996510003986	ROTARY VOLUME
VR903	994000001241	ROTARY ENCODER