

Service
Service
Service



Service Manual



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Published by LX 0923 Service Audio Subject to modification

3141 785 33302

Version 1.2



PHILIPS

TECHNICAL SPECIFICATIONS

Amplifier

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

Disc

Laser Type	Semiconductor
Disc Diameter	12cm/8cm
Video Decoding	MPEG-2/MPEG-1
Video DAC	10 Bits
Signal System	PAL/NTSC
Video Format	4:3/16:9
Video S/N	56 dB (minimum)
Composite Video Output	1.0 Vp-p, 75 ohm
S-Video output	Y- 1.0 Vp-p, 75 ohm C- 0.286 Vp-p, 75 ohm
Audio DAC	24Bits / 96 kHz
Total Harmonic Distortion	<1%
Frequency Response	4 Hz - 20 kHz (44.1kHz) 4 Hz - 22 kHz (48 kHz) 4 Hz - 44 kHz (96 kHz)
Digital Output	SPDIF (Sony Philips digital interface) coaxial
Total harmonic distortion	< 0.1% (1 kHz)
Channel separation	40 dB minimum (1 kHz)
S/N Ratio	>65dBA

Tuner

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

FM

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

Tape deck

Frequency response	- Normal tape (type I) 125 - 8000 Hz (8 dB)
Signal-to-noise ratio	- Normal tape (type I) 40 dBA
Wow and ? utter	<0.4% JIS

Speakers

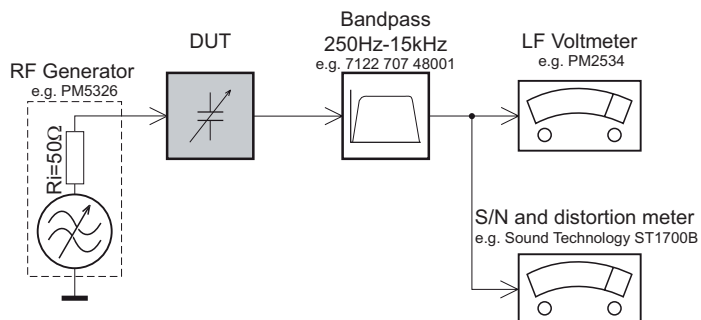
Speaker Impedance	4ohm
Speaker Driver	3.5"woofer
Sensitivity	>82dB/m/W

VERSION VARIATION

Type /Versions: Board in used:	MCD170									
	Service policy									
	/05	/12		/55	/58	/61			/93	/98
FRONT BOARD		C			C					C
MAIN BOARD		C			C					C
DVD BOARD		M			M					M
TAPE BOARD		M			M					M
Type /Versions: Features	MCD170									
	Feature difference									
	/05	/12		/55	/58	/61			/93	/98
RDS										
VOLTAGE SELECTOR										√
ECO STANDBY - DARK		√			√					
* TIPS : C -- Component Lever Repair. M -- Module Lever Repair √ -- Used										

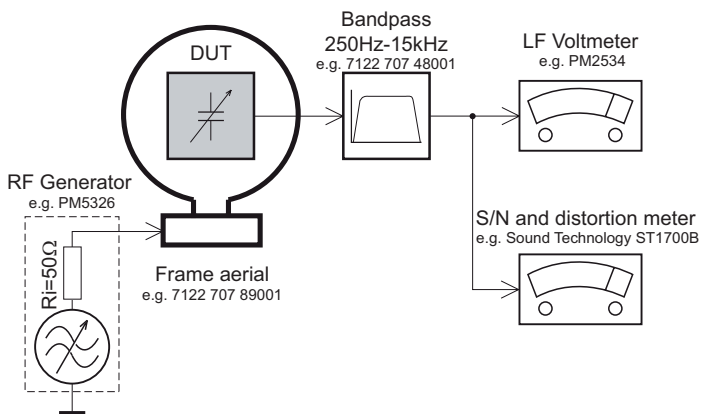
MEASUREMENT SETUP

Tuner FM



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

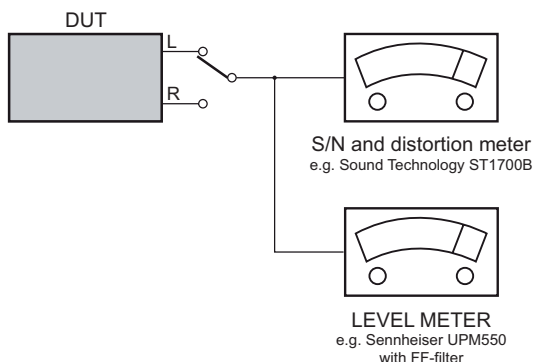
Tuner AM (MW,LW)



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).

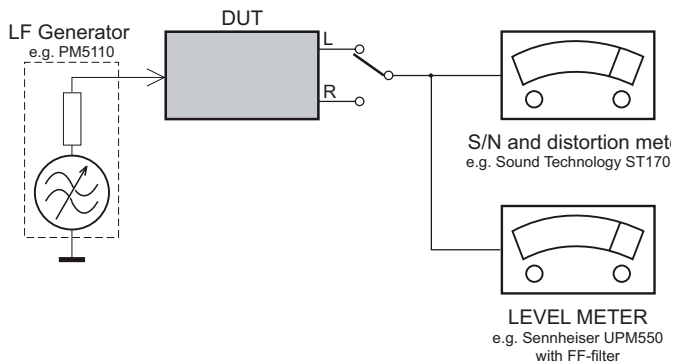
CD

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 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".

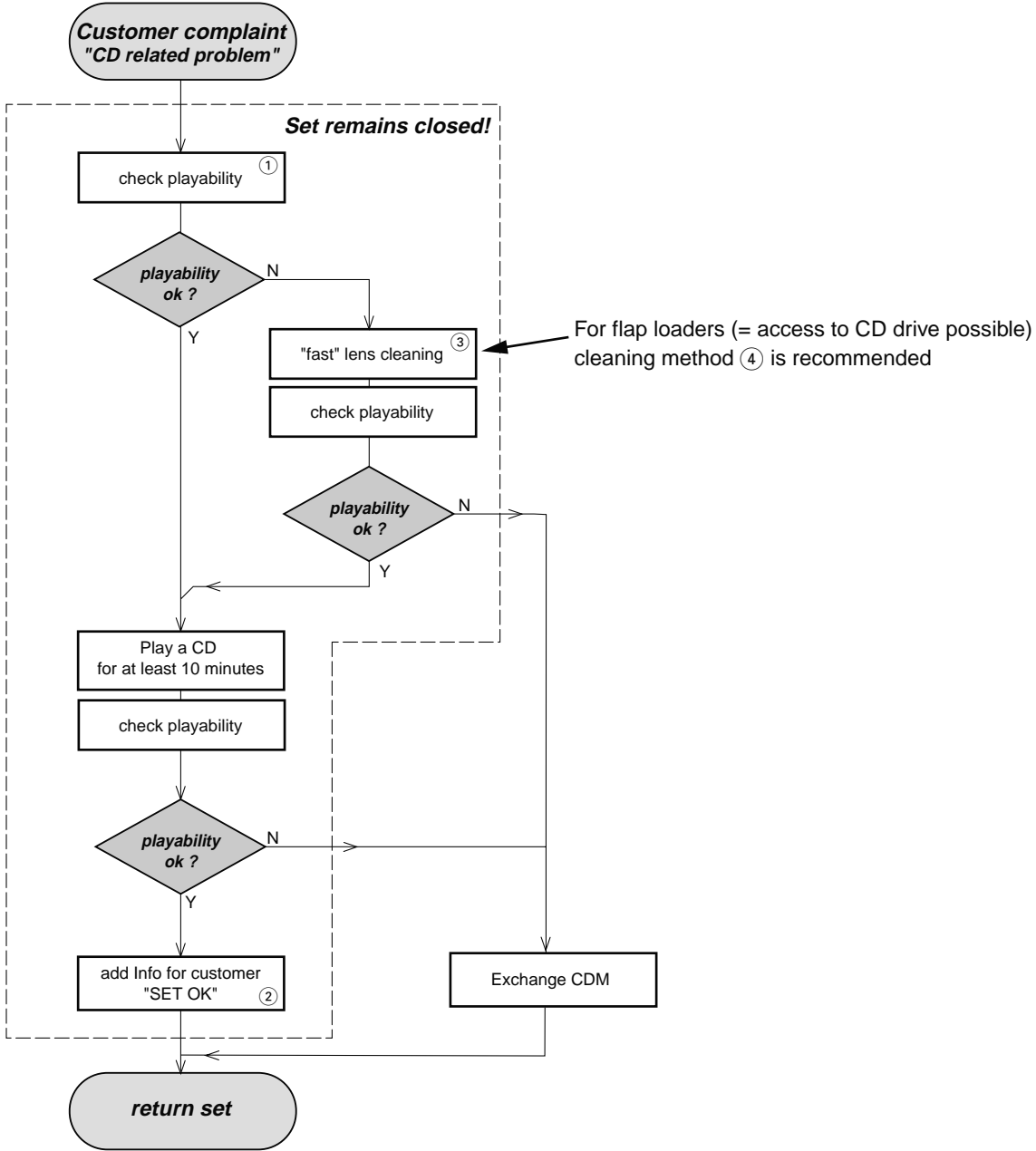
For additional questions please contact your local repair-helpdesk.

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



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

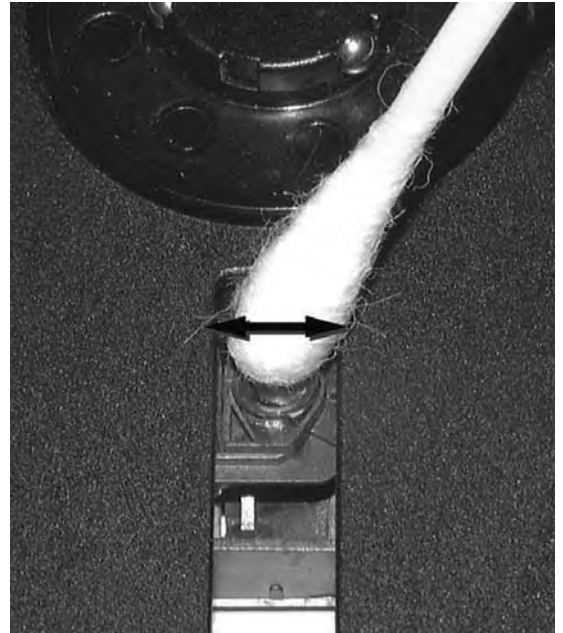
LIQUID LENS CLEANING

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.

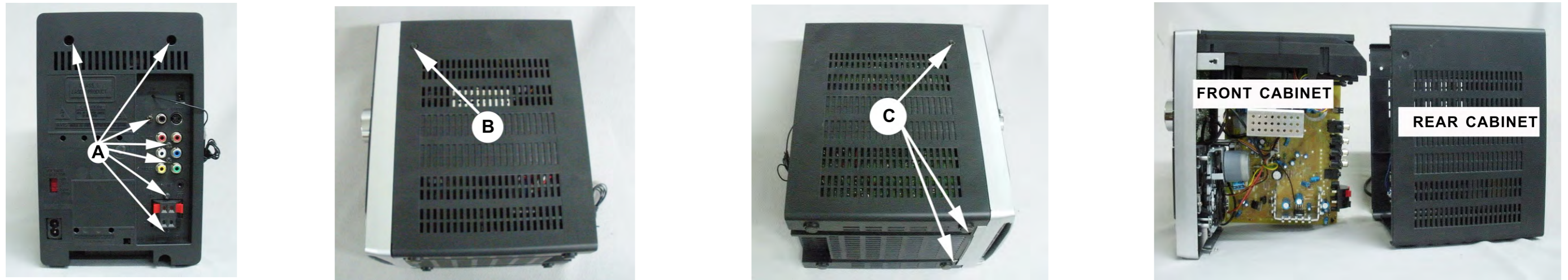
The direction of cleaning must be in the way as indicated in the picture below.



DISASSEMBLY DIAGRAM VIEW

Dismantling of the Rear Cabinet

1) Remove 11 screws A&B&C as indicated to loosen the Rear Cabinet.

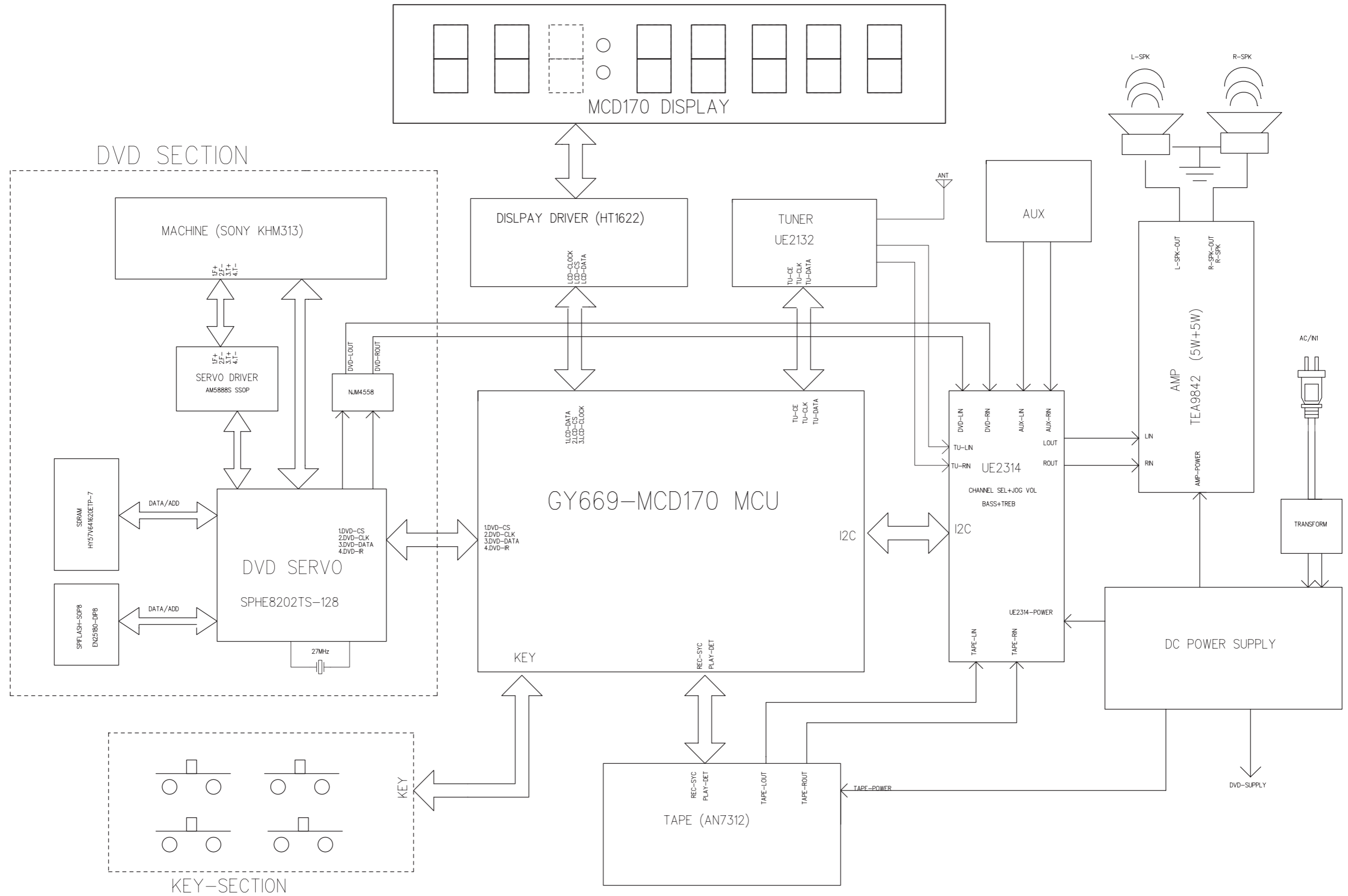


Dismantling of the PCB Board

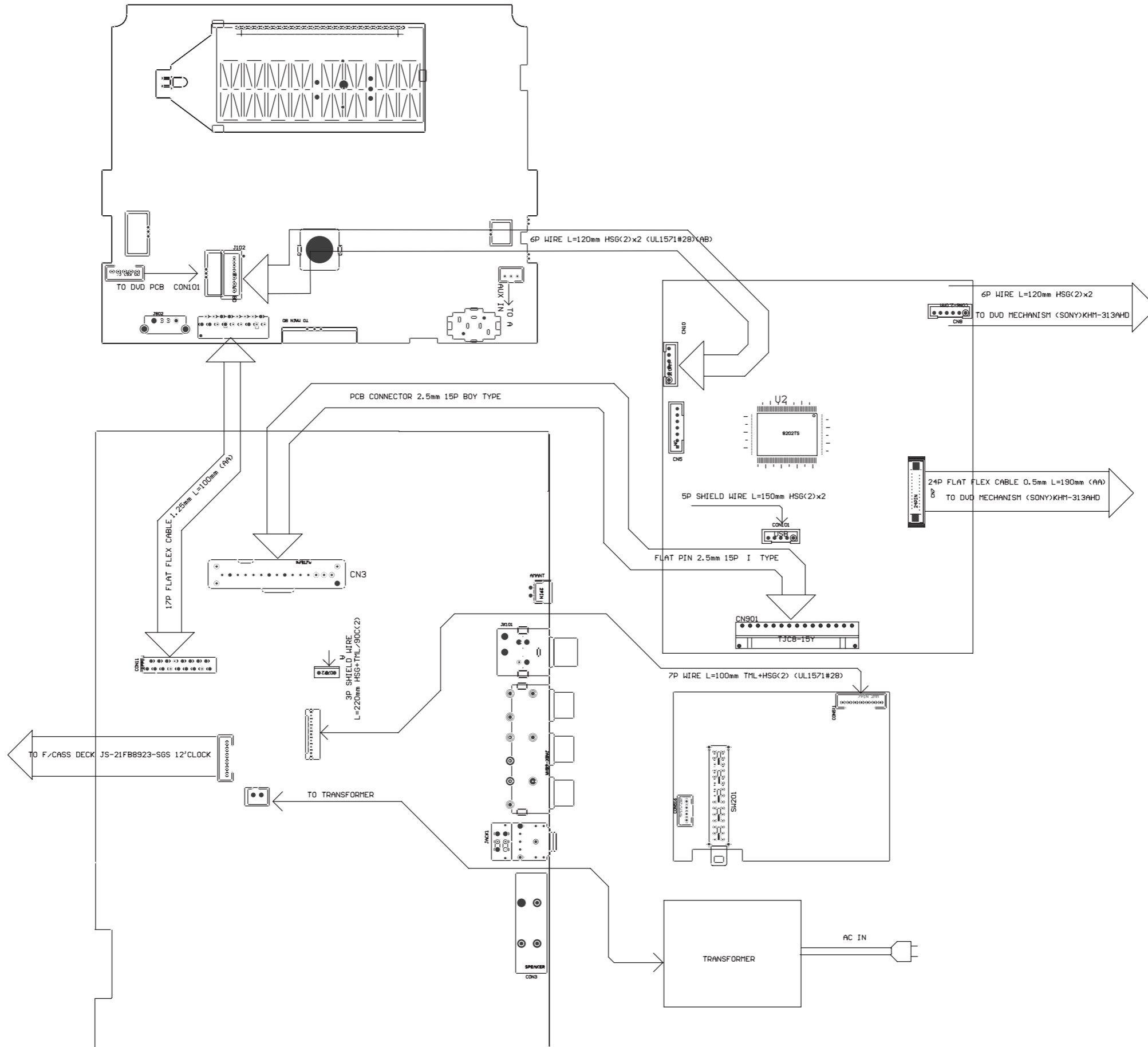
- 1) Remove 6 screws D&E as indicated to loosen the Main and DVD Board.
- 2) Remove 9 screws F as indicated to loosen the Display Board.
- 3) Remove 3 screws G as indicated to loosen the Cass Deck Board.
- 4) Remove 4 screws I as indicated to loosen the Cass Deck.



SET BLOCK DIAGRAM

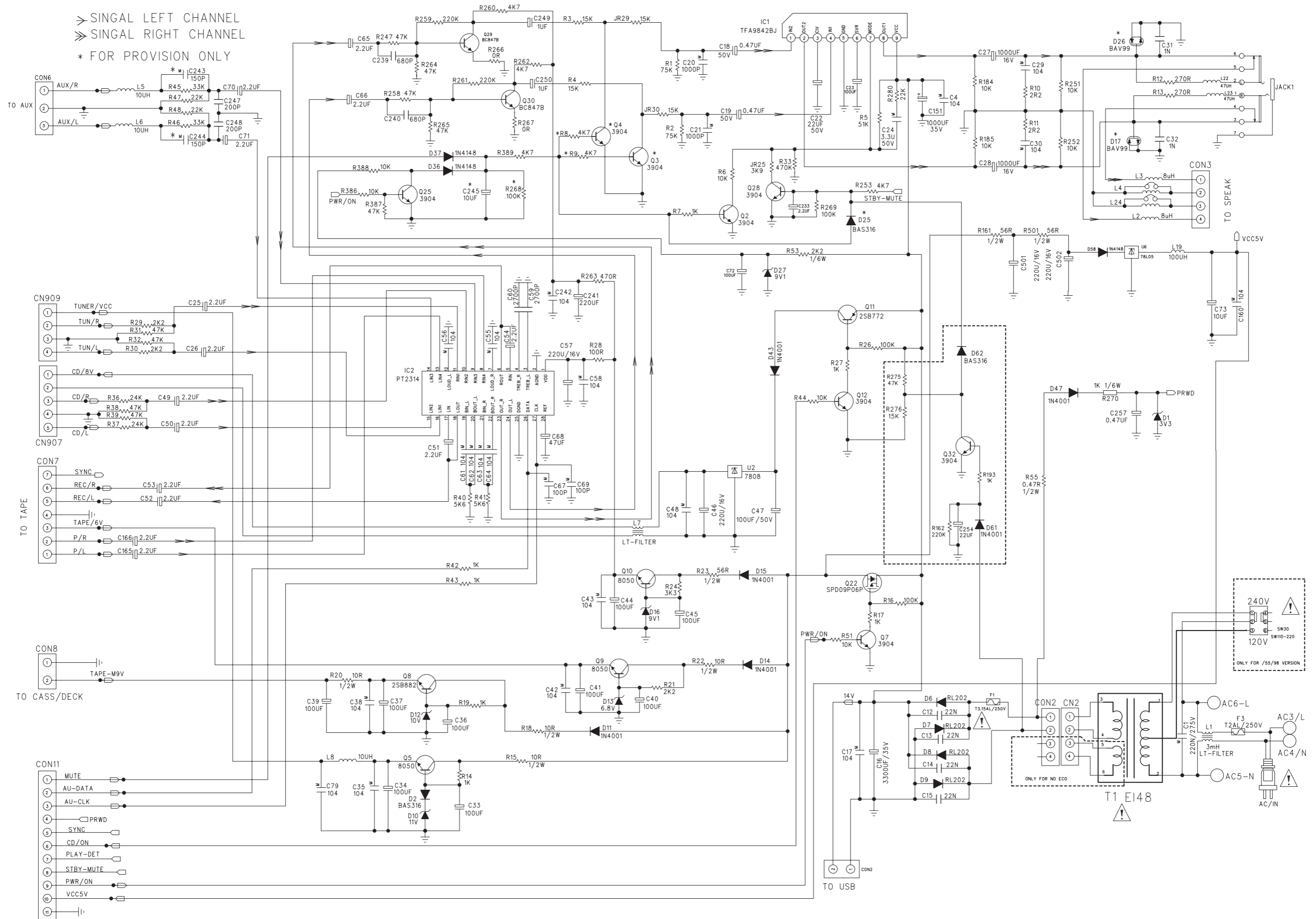


SET WIRING DIAGRAM

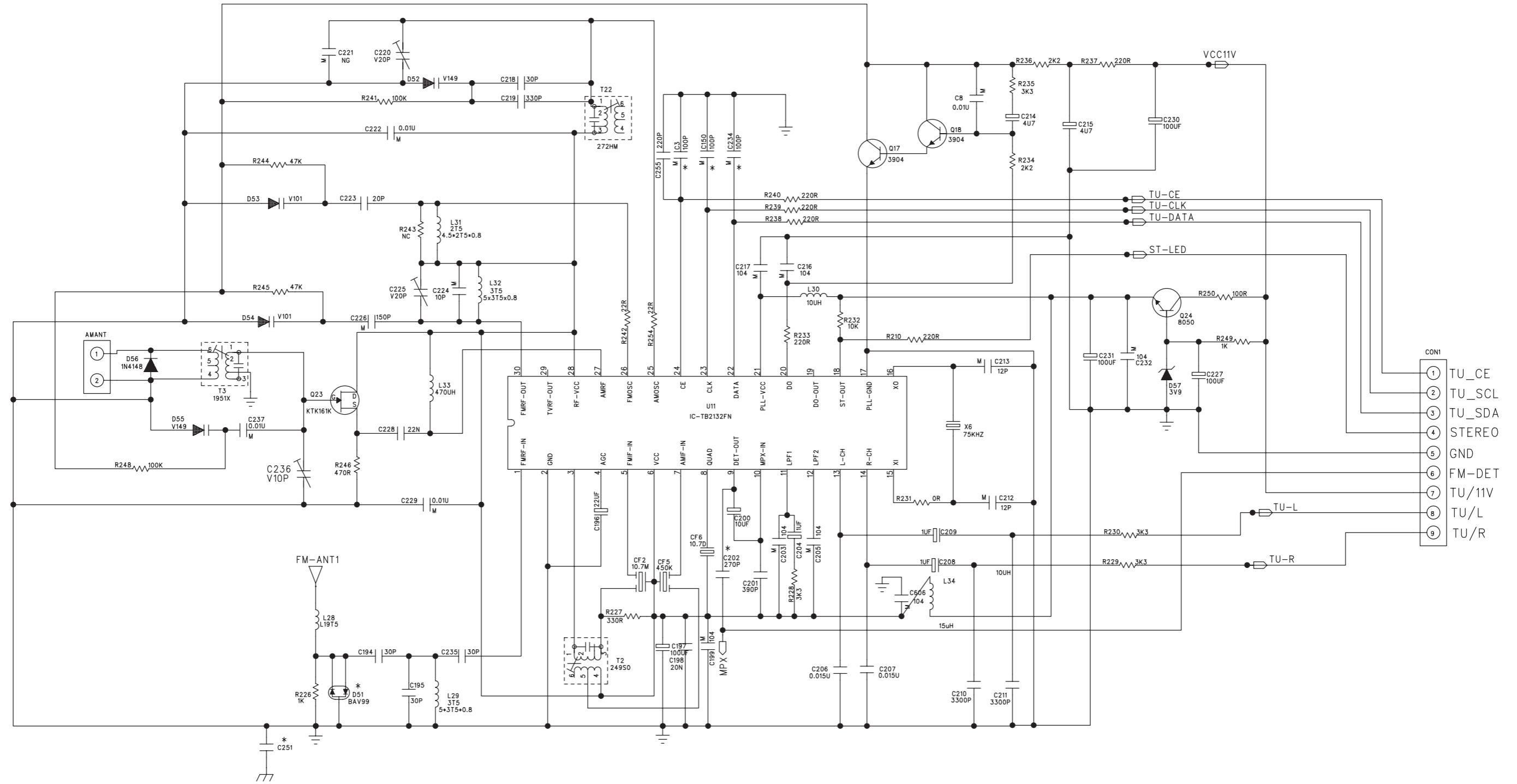


CIRCUIT DIAGRAM - MAIN BOARD AMP PART

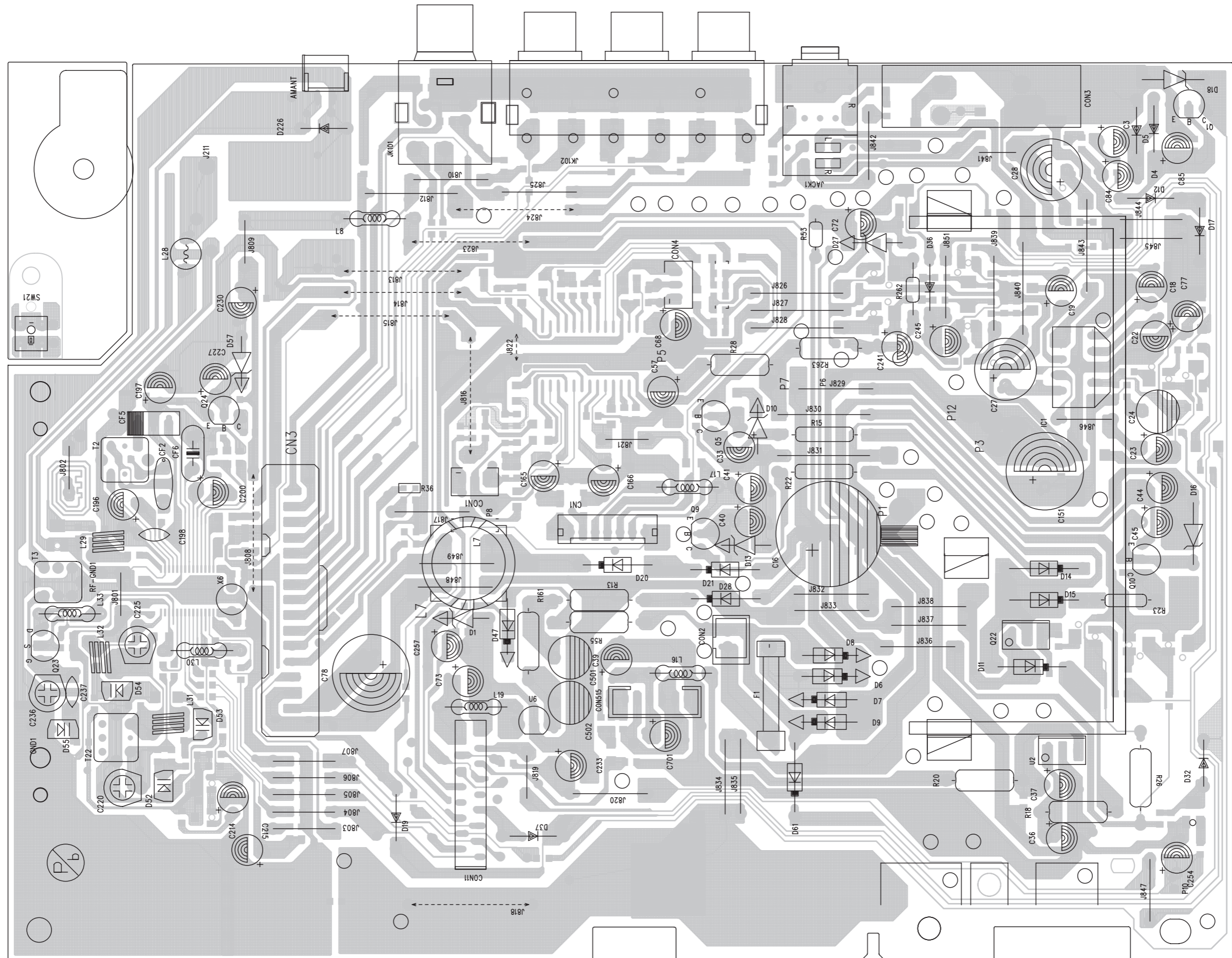
➤ SINGAL LEFT CHANNEL
➤ SINGAL RIGHT CHANNEL
* FOR PROVISION ONLY



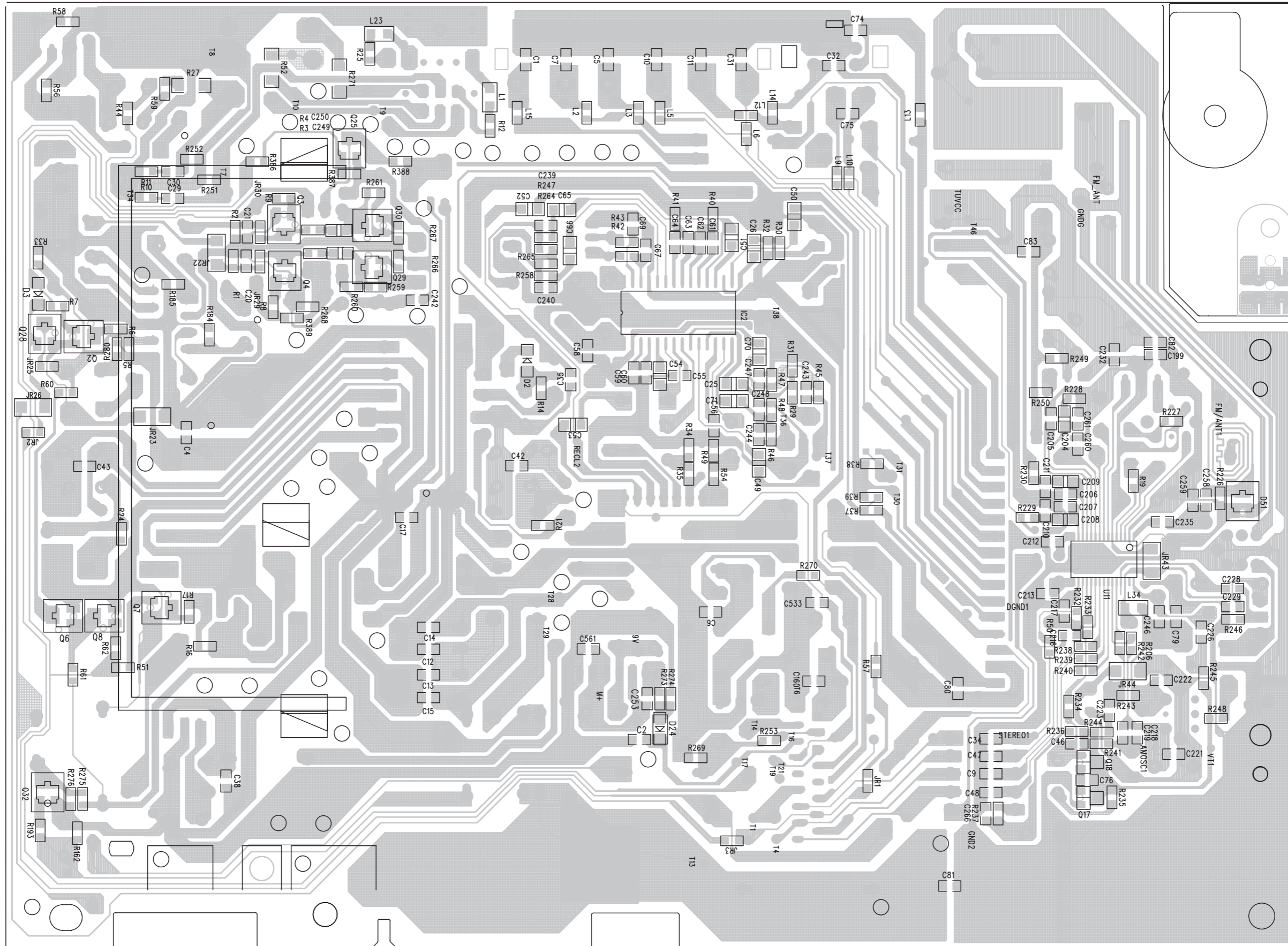
CIRCUIT DIAGRAM - MAIN BOARD TUNER PART



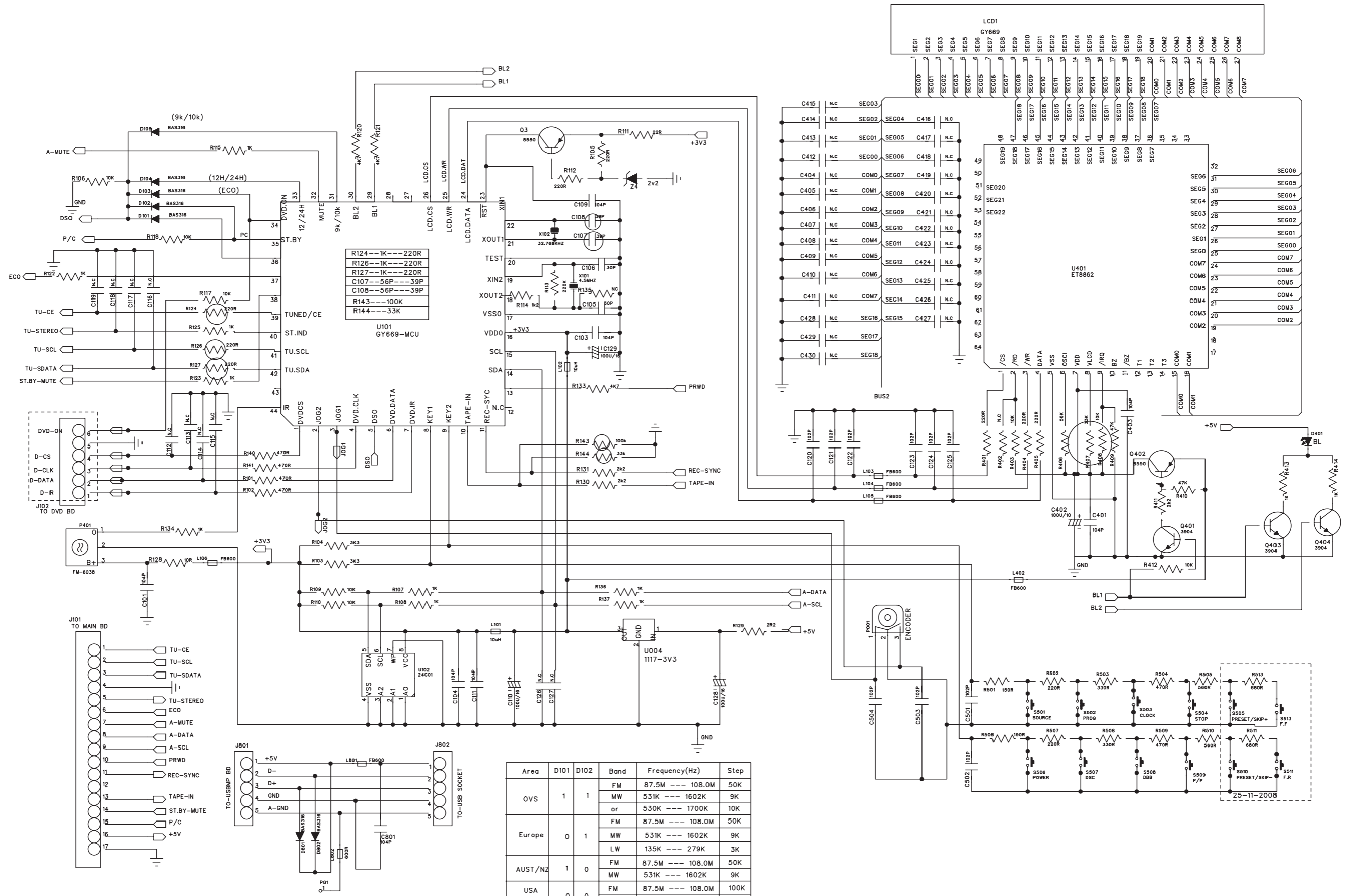
LAYOUT DIAGARM - MAIN BOARD COMPONENT SIDE VIEW



LAYOUT DIAGARM - MAIN BOARD
COPPER SIDE VIEW

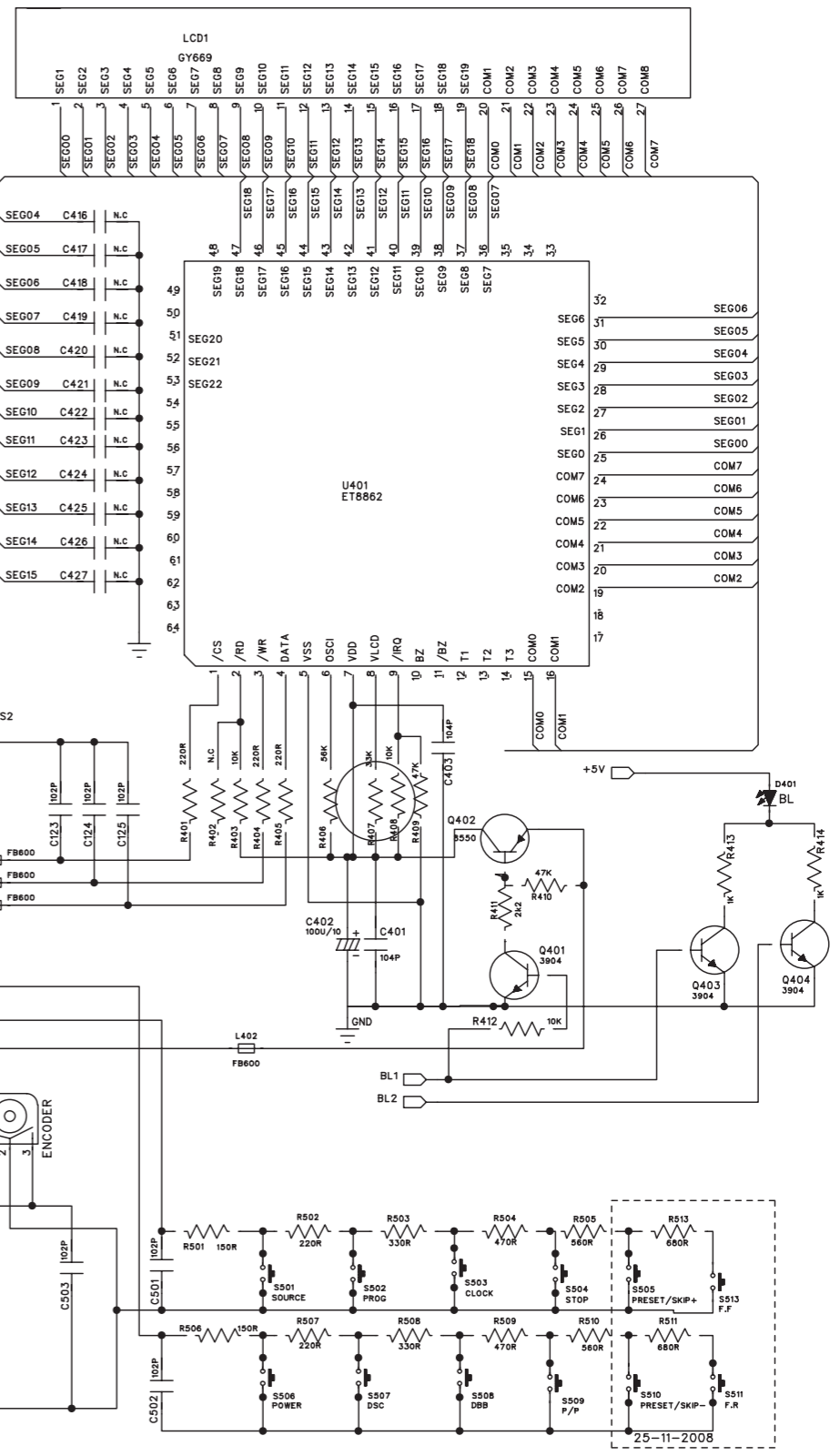


CIRCUIT DIAGRAM - FRONT BOARD



Area	D101	D102	Band	Frequency(Hz)	Step
OVS	1	1	FM	87.5M --- 108.0M	50K
			MW	531K --- 1602K	9K
			or	530K --- 1700K	10K
Europe	0	1	FM	87.5M --- 108.0M	50K
			MW	531K --- 1602K	9K
			LW	135K --- 279K	3K
AUST/NZ	1	0	FM	87.5M --- 108.0M	50K
			MW	531K --- 1602K	9K
			AM	530K --- 1700K	10K
USA Canada	0	0	FM	87.5M --- 108.0M	100K
			MW	531K --- 1602K	9K
			AM	530K --- 1700K	10K

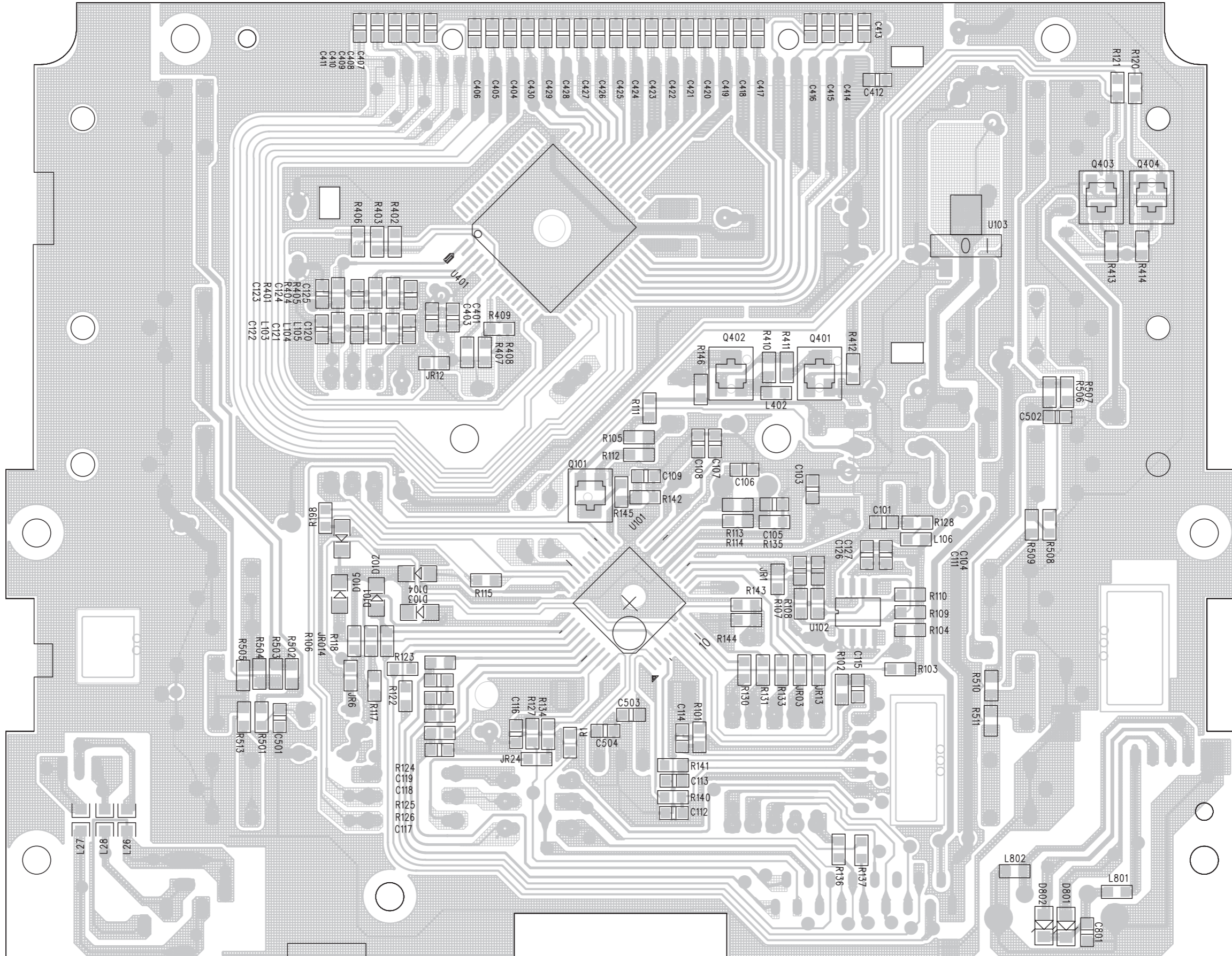
ECO	12/24H	9k	10k
YSE	NO	12H	24H
0	1	0	1
		1	0



Area	D101	D102	Band	Frequency(Hz)	Step
OVS	1	1	FM	87.5M --- 108.0M	50K
			MW	531K --- 1602K	9K
			or	530K --- 1700K	10K
Europe	0	1	FM	87.5M --- 108.0M	50K
			MW	531K --- 1602K	9K
			LW	135K --- 279K	3K
AUST/NZ	1	0	FM	87.5M --- 108.0M	50K
			MW	531K --- 1602K	9K
			AM	530K --- 1700K	10K
USA Canada	0	0	FM	87.5M --- 108.0M	100K
			MW	531K --- 1602K	9K
			AM	530K --- 1700K	10K

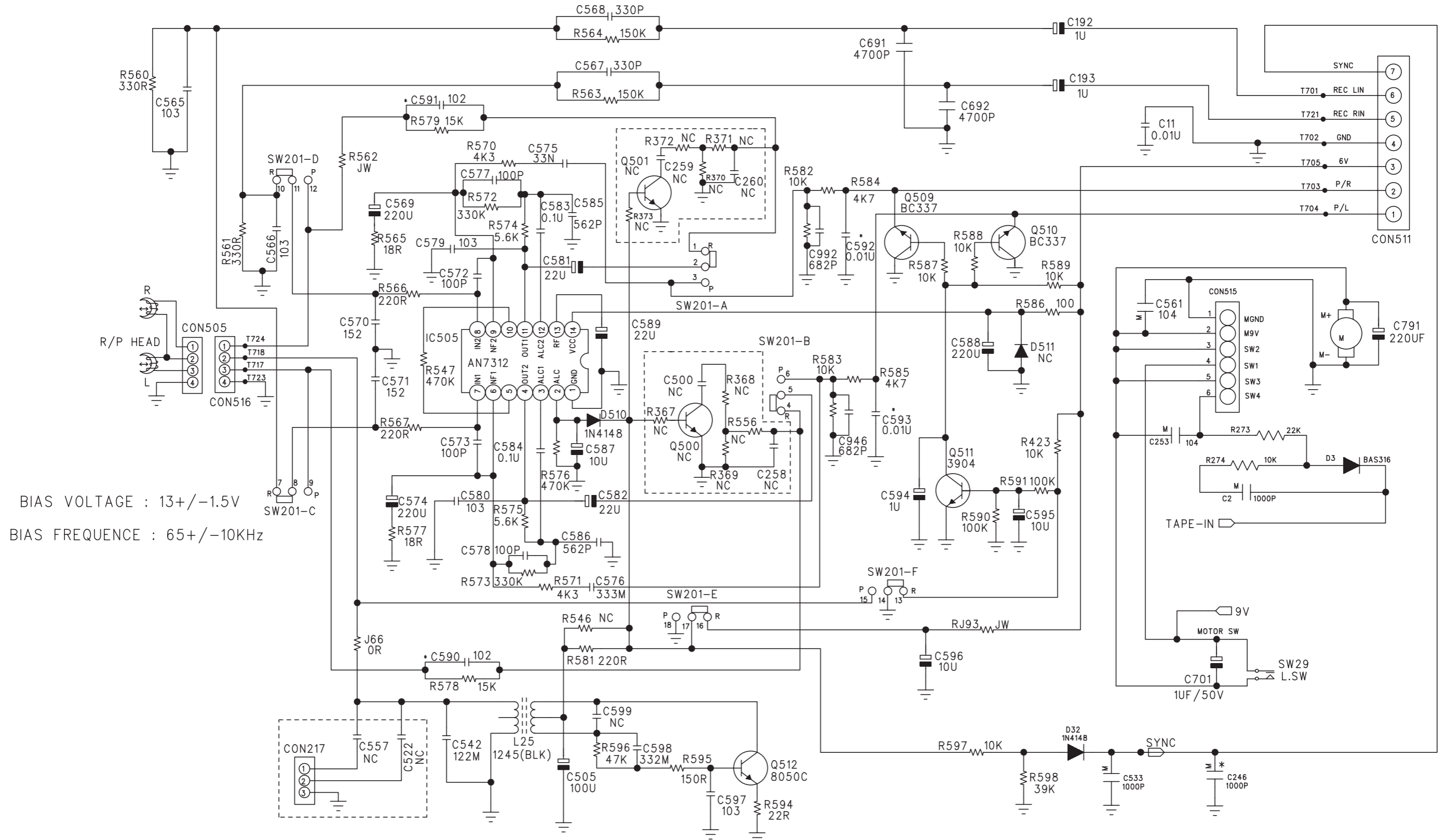
ECO	12/24H	9k	10k
YSE	NO	12H	24H
0	1	0	1
		1	0

LAYOUT DIAGARM - FRONT BOARD
COPPER SIDE VIEW

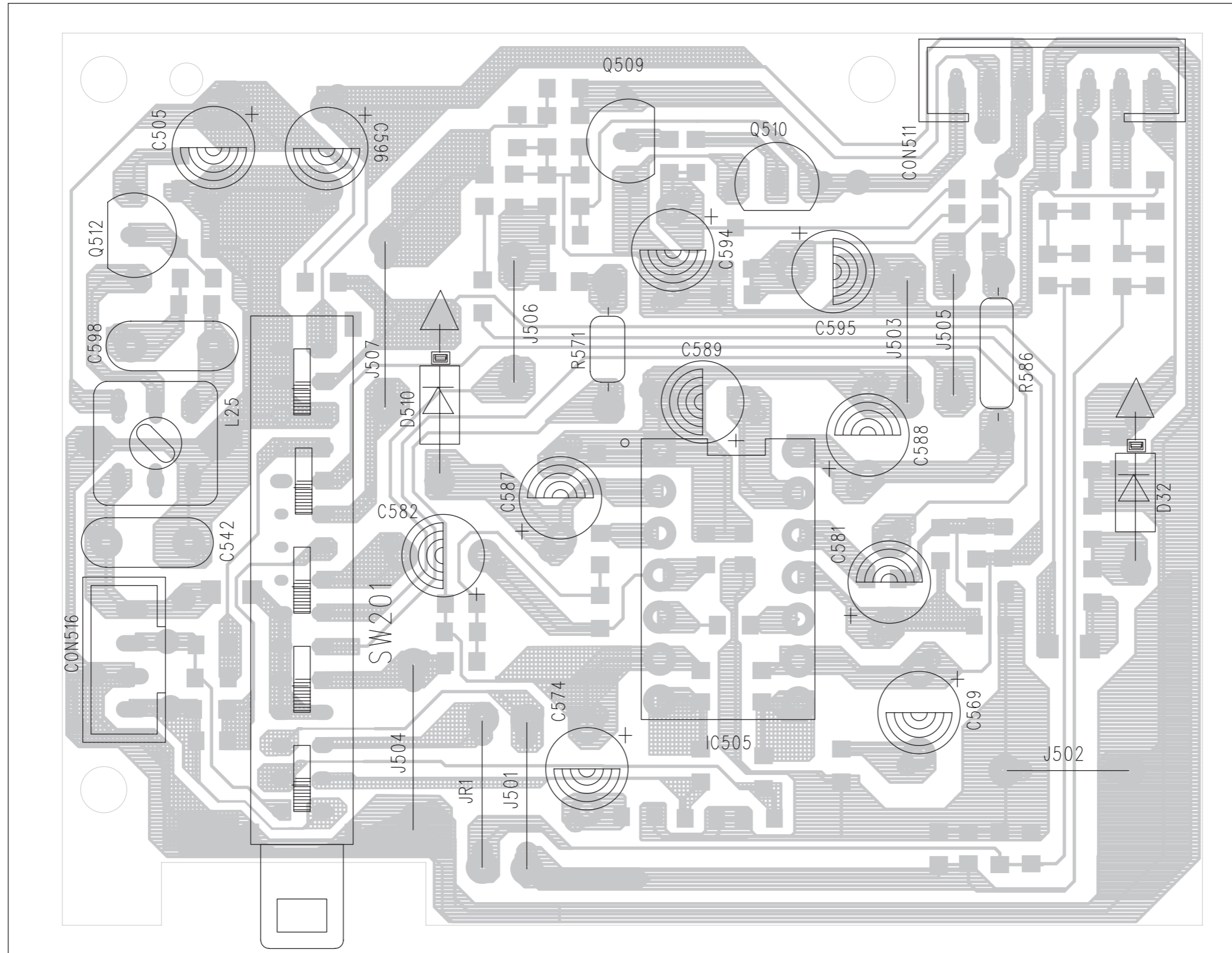


CIRCUIT DIAGRAM - TAPE BOARD

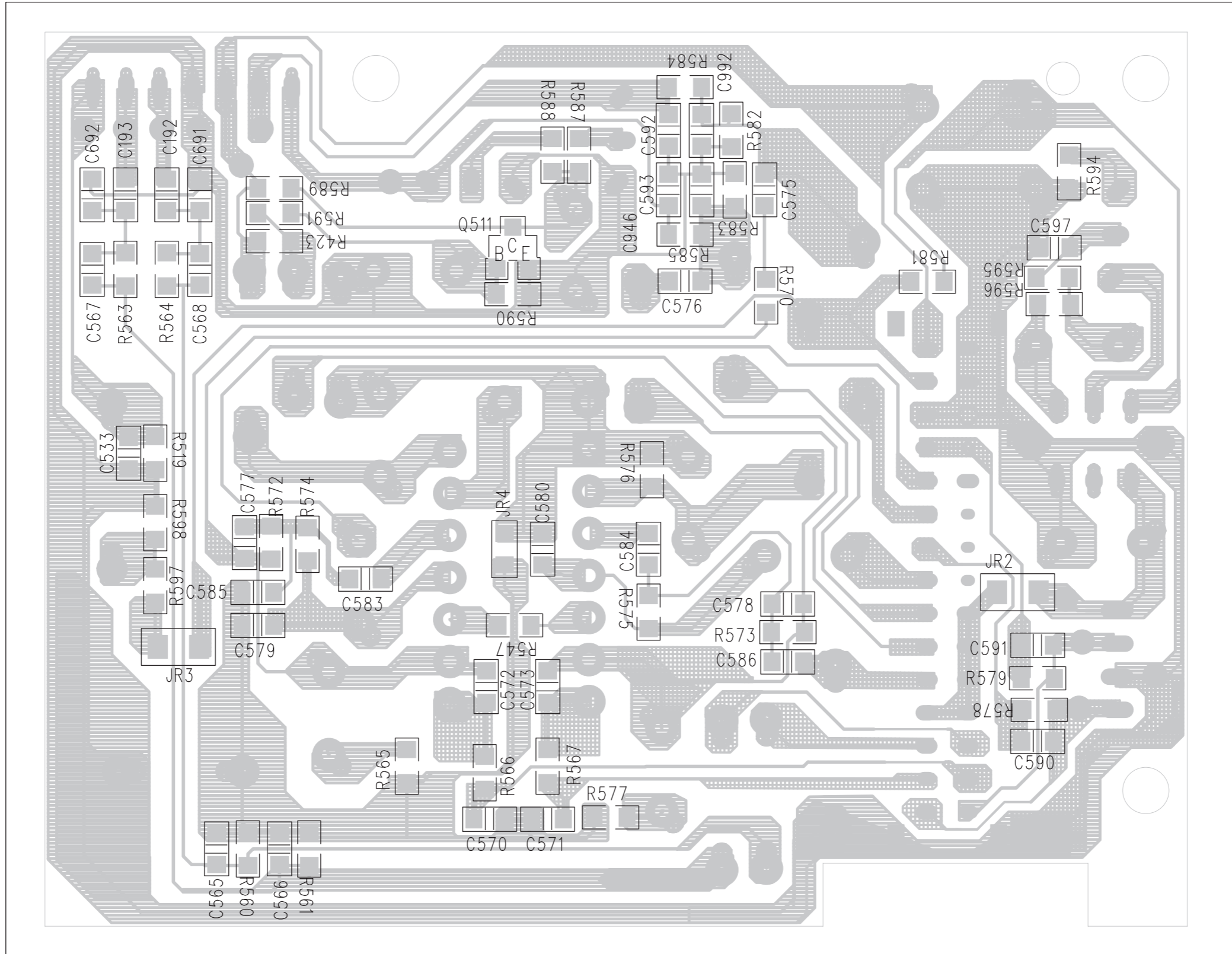
TAPE is not repaired, diagram for reference only.



LAYOUT DIAGARM - TAPE BOARD
COMPONENT SIDE VIEW

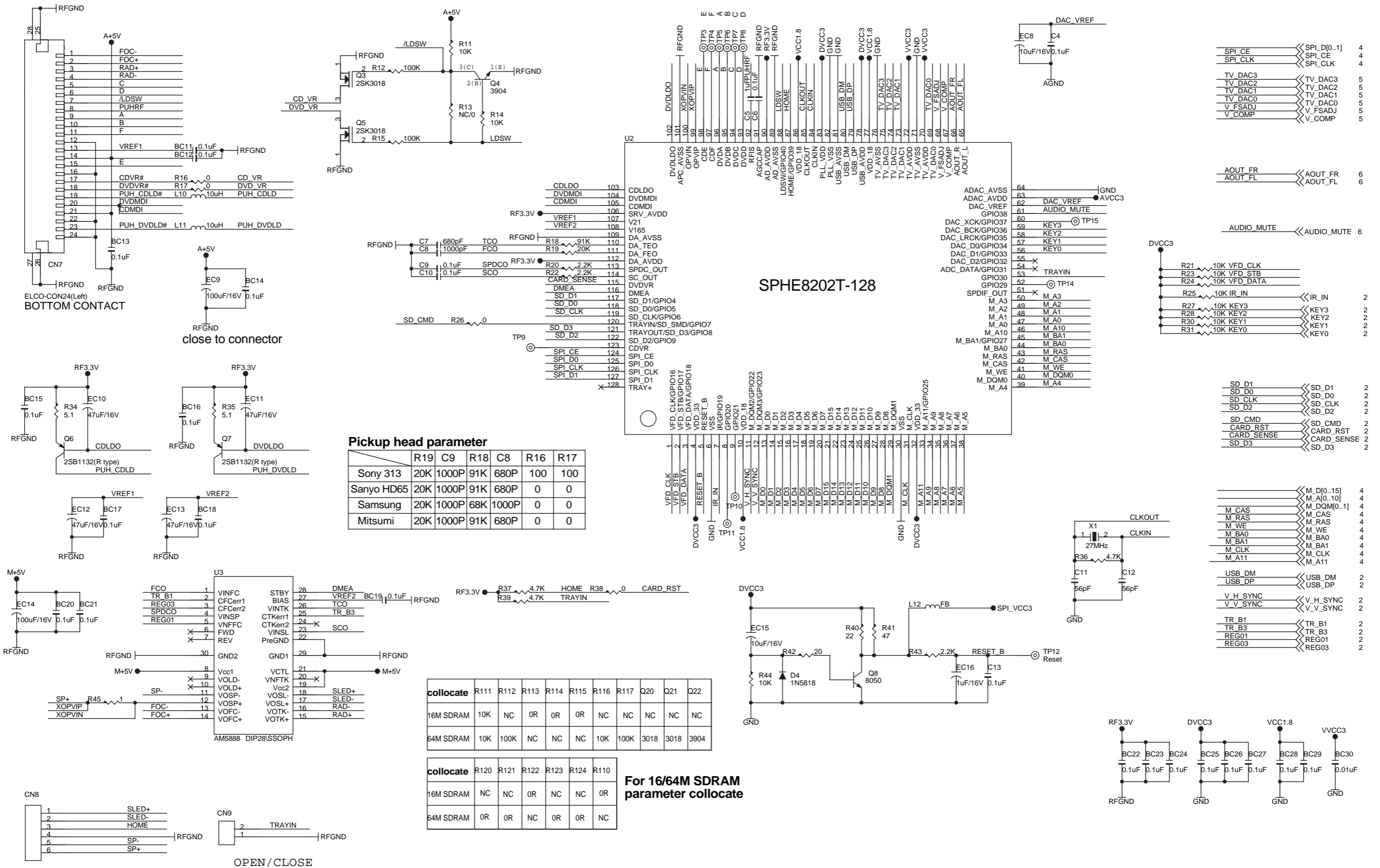


LAYOUT DIAGARM - TAPE BOARD
COPPER SIDE VIEW



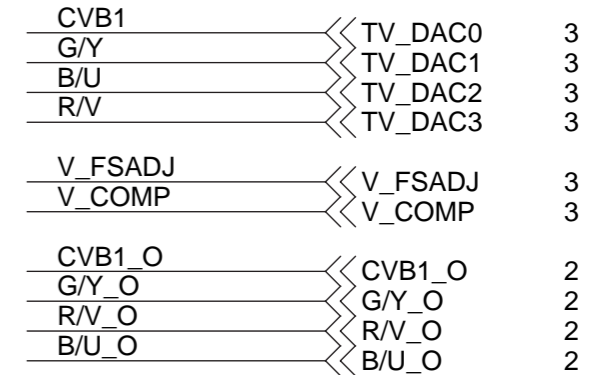
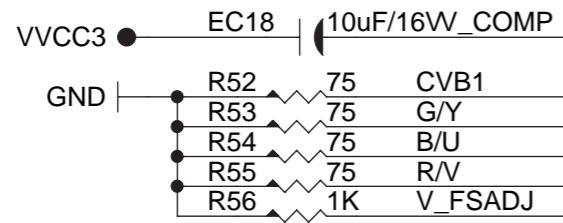
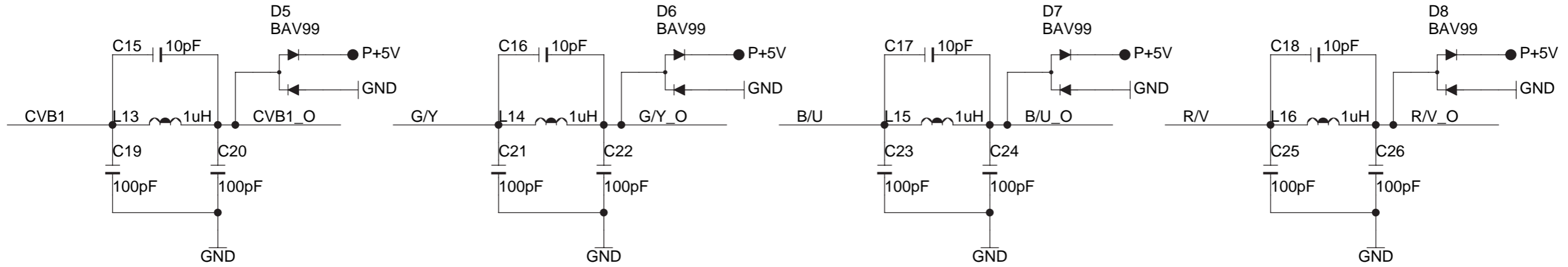
CIRCUIT DIAGRAM - DVD BOARD

MPEG is not repaired, diagram for reference only.



CIRCUIT DIAGRAM - DVD BOARD

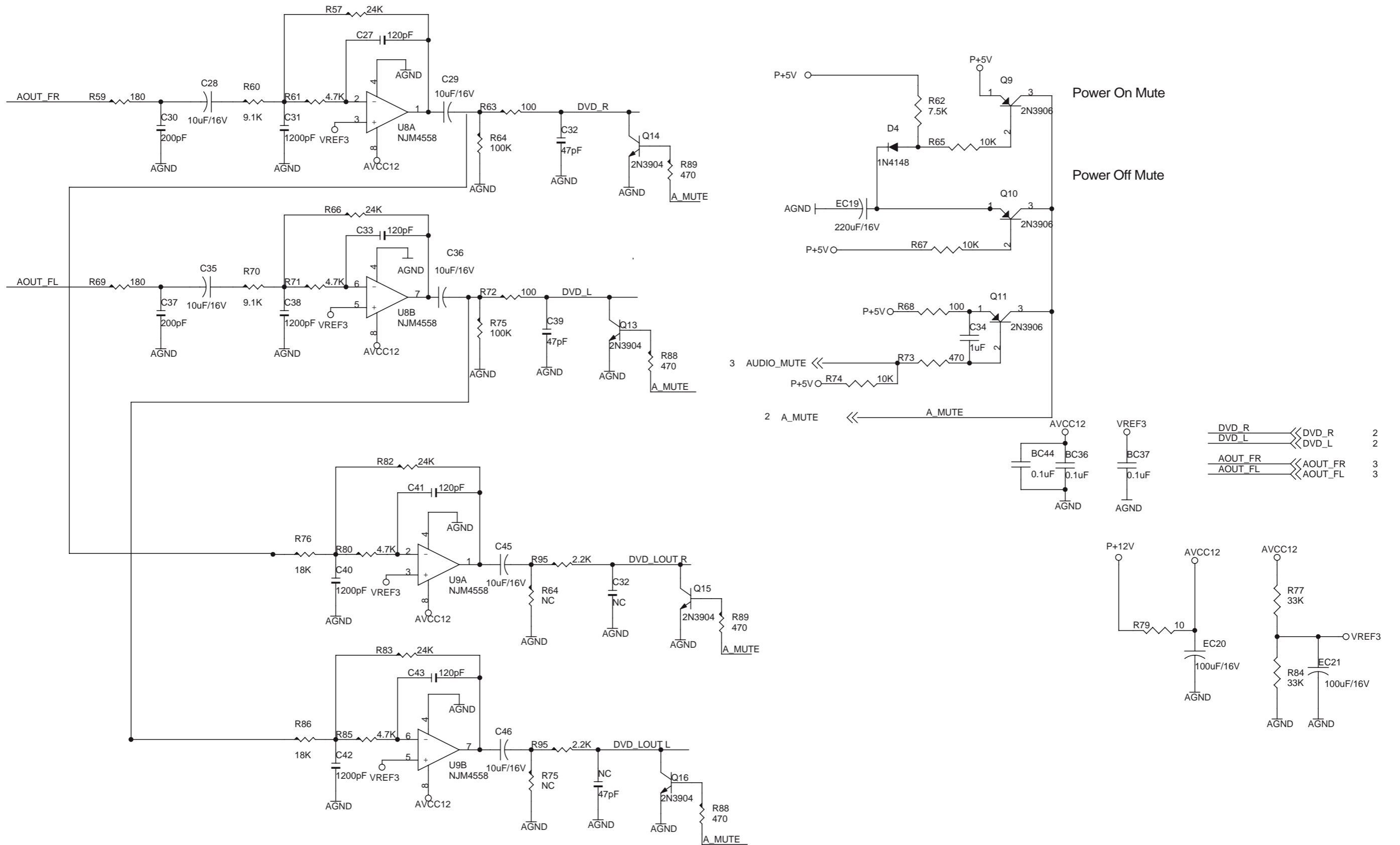
MPEG is not repaired, diagram for reference only.



TV0	TV1	TV2	TV3
CVB	Y	Cb	Cr
CVB	Y(S-Video)	CVB	C(S-Video)
CVB	G	B	R

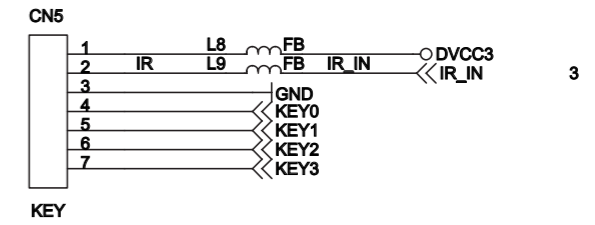
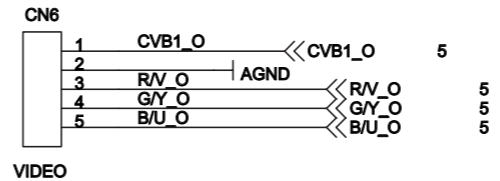
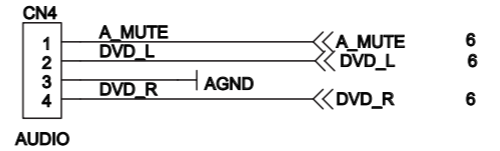
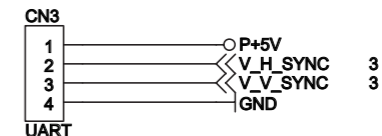
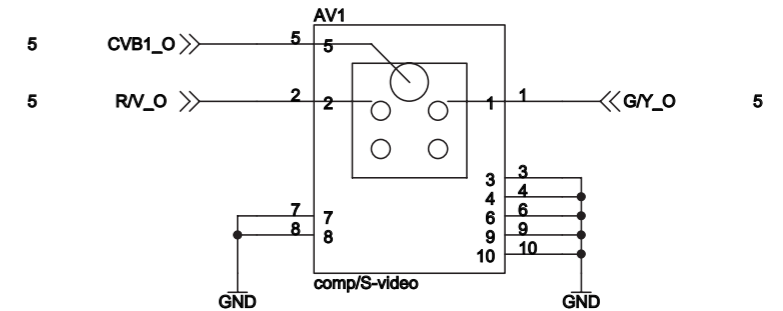
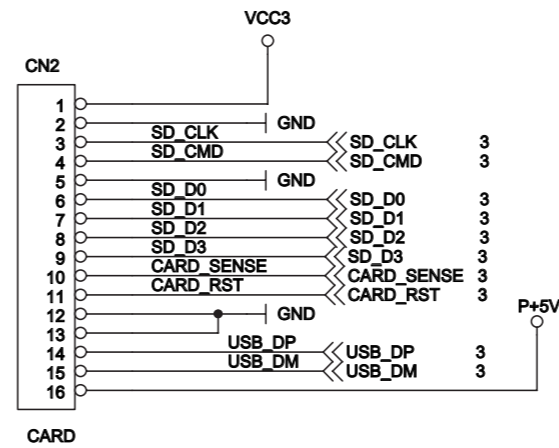
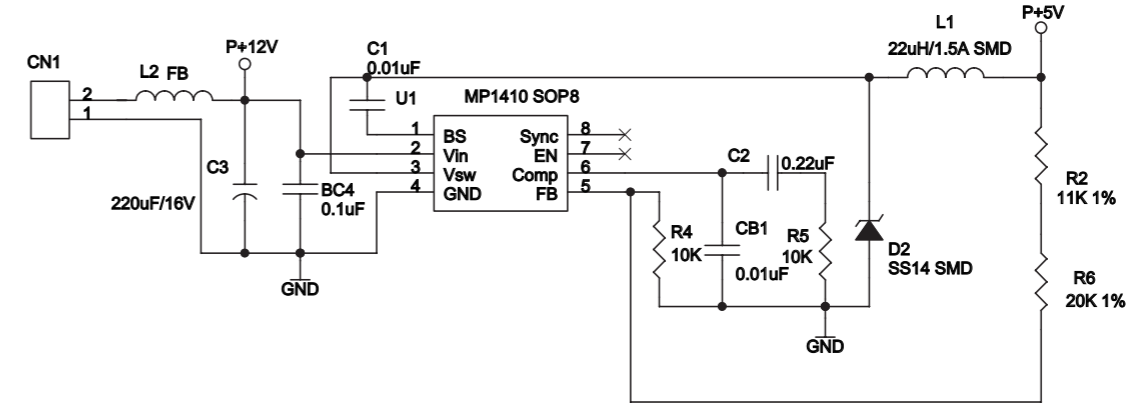
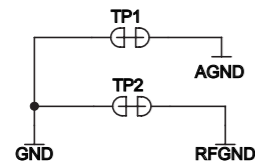
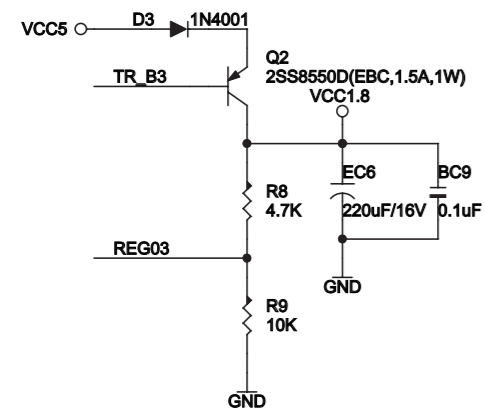
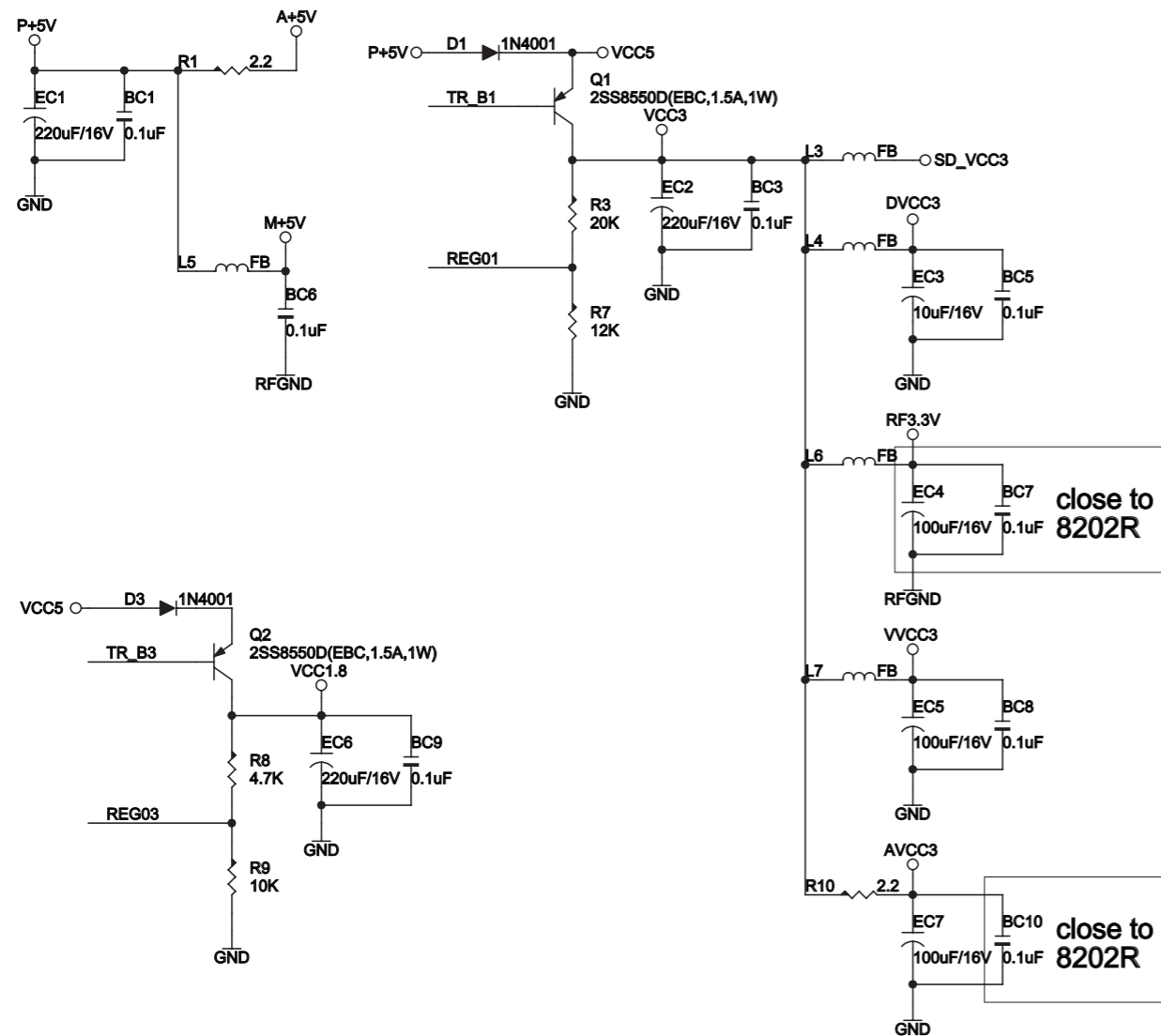
CIRCUIT DIAGRAM - DVD BOARD

MPEG is not repaired, diagram for reference only.



CIRCUIT DIAGRAM - DVD BOARD

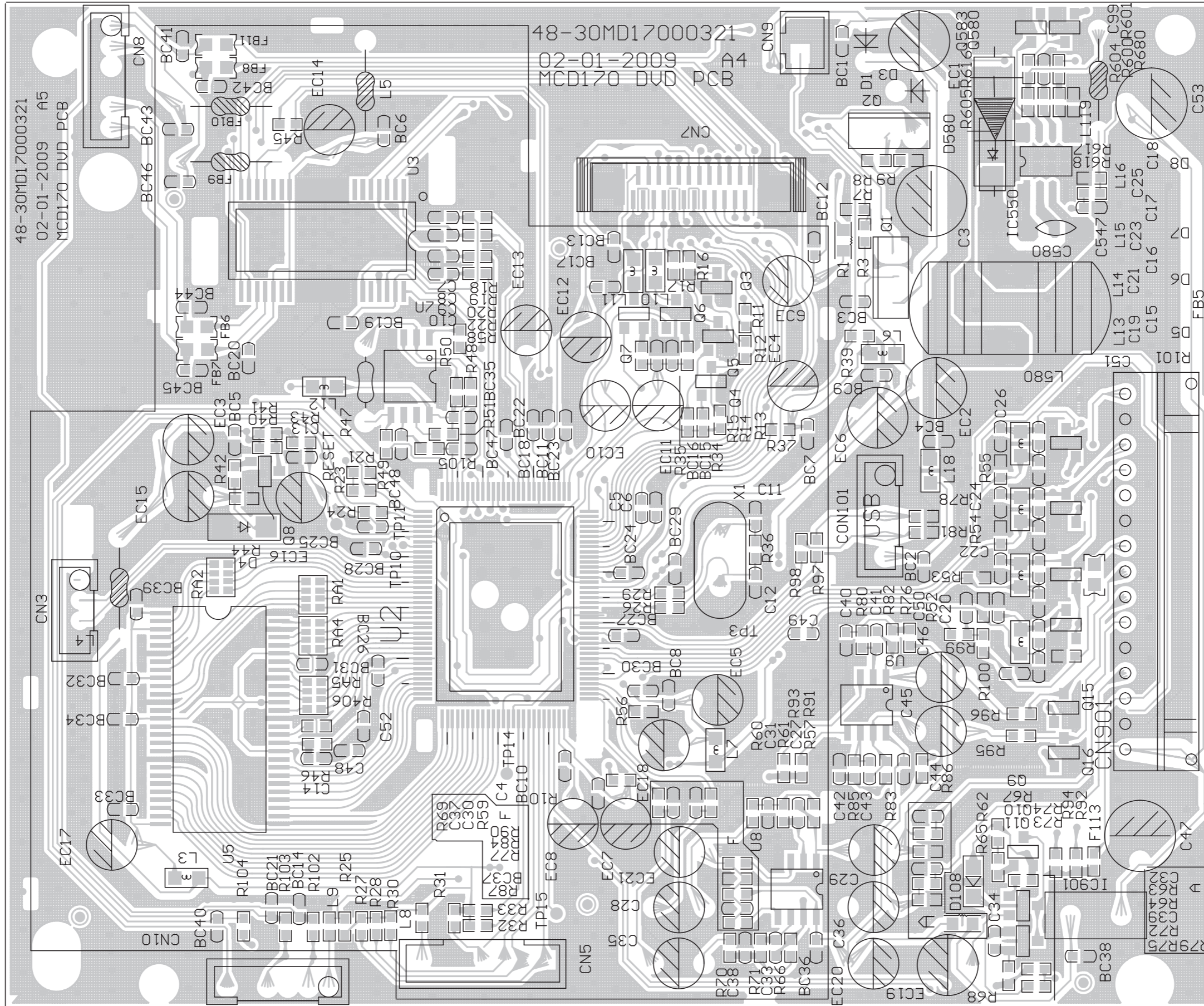
MPEG is not repaired, diagram for reference only.



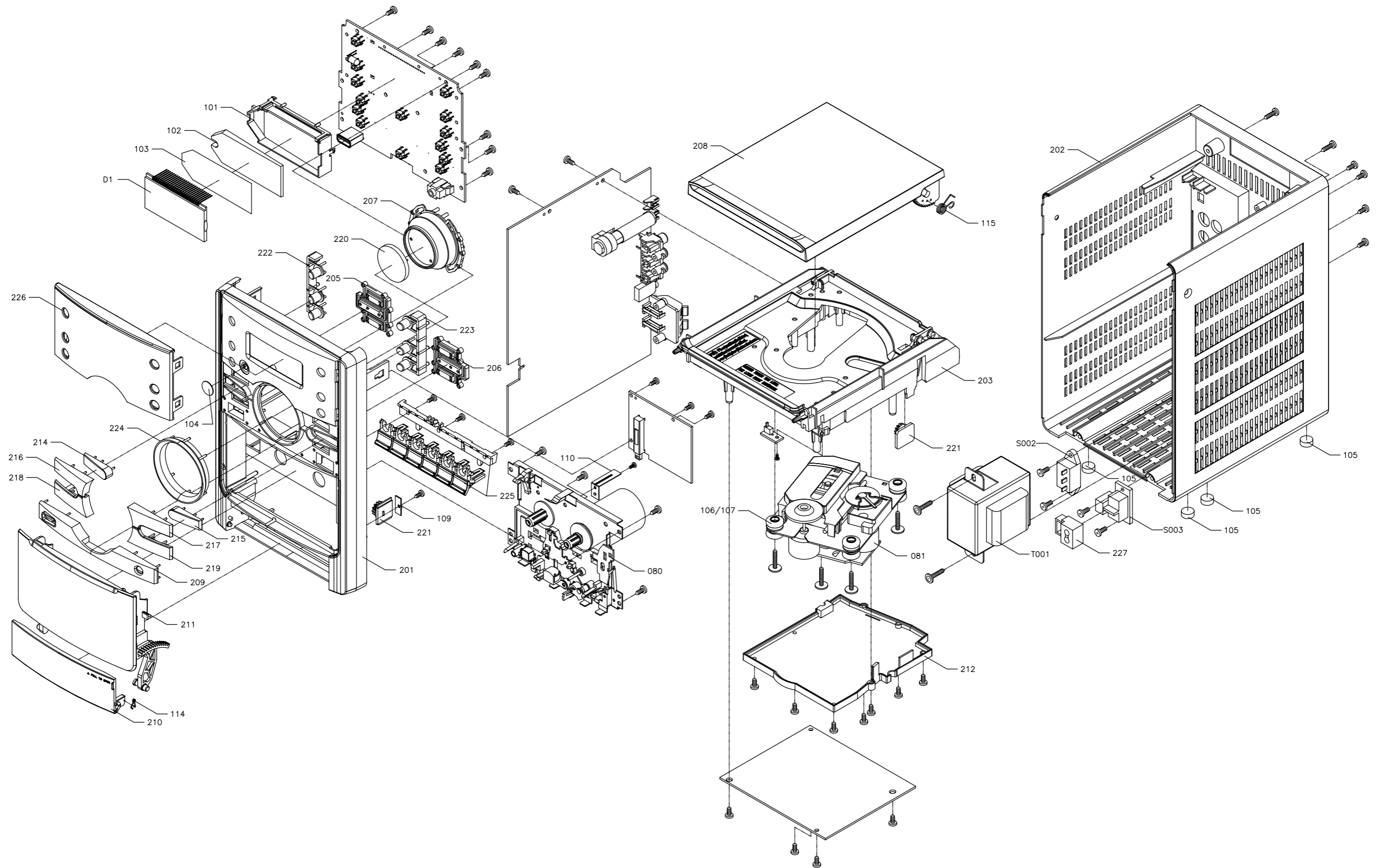
Power Bead > 2A, RAC@100 MHz
= 70 ohm, RDC(max)= 0.4 ohm

LAYOUT DIAGRAM - DVD BOARD

MPEG is not repaired, diagram for reference only.



EXPLODED VIEW DIAGRAM



MECHANICAL PARTSLIST(only for -/12/98)

D1	996510020843	LCD DISPLAY
0003	996510020835	DVD BOARD ASSY must be used with 996520035676 MAIN BOARD ASSY (only for -/98) (Production with serial number LM000919002165 and onwards)
0003	996510032247	DVD BOARD ASSY must be used with 996520035676 MAIN BOARD ASSY (only for -/12) (Production with serial number LM010943003805 and onwards)
105	996510008651	RUB FOOT DIA10mm T=4mm (GREY)
201	996510020813	FRONT CABINET
202	996510020839	REAR CABINET
203	996510020834	CD TRAY
205	996510018975	LEFT KEY BRACKET
206	996510018976	RIGHT KEY BRACKET
207	996510020819	VOL ROTRAY KNOB
208	996510020823	CD DOOR
209	996510020818	USB DECORATE PLATE
210	996510020829	CASSETTE KEY DOOR
211	996510020816	CASSETTE DOOR
212	996510020836	DUST COVER
213	996500039787	LASER COVER (FOR SANYO CD)
214	996510020833	PRESET - KEY
215	996510020832	PRESET + KEY
216	996510020824	PLAY KEY
217	996510020815	STOP KEY
218	996510020837	REVIEW KEY
219	996510020828	NEXT KEY
220	996510020825	VOL ROTRAY COVER
221	994000001295	DAMPER GEAR ASS'Y
222	996510020812	STAND BY KEY
223	996510020842	SOURCE KEY
224	996510020791	ROTARY DECORATE RING
225	996510020214	CASS KEY WITH HOLDER
J001	996500042448	CLOSE END WIRE CONNECTOR
J002	△ 994000001478	AC PLUG ADAPTOR (-/98)
J003	996510020821	24P FFC.0.5mm L=190mm
J004	996510020838	14P FFC.1mm L=110mm
J005	996510000914	17P FLAT FLEX CABLE 1.25mm
J006	△ 994000003633	AC CORD SET VDE APP 6FT (-/98)
J006	△ 996510000909	AC CORD VDE APP 2M (-/12)
J007	996510018969	FM ANT L=1.5M
S002	994000004376	SWITCH SL14-22AH-5AN
T001	△ 996510020827	TRANSFORMER VDE (-/98)
T001	△ 996510029626	TRANSFORMER 230V (-/12)
0081	996510012090	DVD MECHANISM (SONY)
0004	996520032155	PCBA-CASS DEC
0080	996510006840	CASS DECK JS-21FB8923-SGS

ACCESSORIES

0005	996510028867	REMOTE CONTROL
0006	994000001192	AM LOOP ANTENNA LAN-031
S001	996510020814	SINGLE SPEAKER BOX (L/R)
J008	996510020831	RCA PLUG CORD 3P L=1.5M
J009	996510002103	CONN. CORD 3.5 ST/PLUGx2 500mm

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

MECHANICAL PARTSLIST(only for -/58)

D1	996510020843	LCD DISPLAY
005	996520032155	PCBA-CASS DECK
010	996510026059	AC CORD BRACKET
011	996510026078	DISPLAY LENS
080	996510006840	CASS DECK JS-21FB8923-SGS
081	996510012090	DVD MECHANISM (SONY)
113	996510000917	CASS SPRING
114	996510026076	CASSETTE KEY DOOR SPRING
115	994000003674	CD DOOR SPRING
201	996510026075	FRONT CABINET
202	996510026073	REAR CABINET
203	996510026066	CD TRAY
205	996510018975	LEFT KEY BRACKET
206	996510018976	RIGHT KEY BRACKET
207	996510020819	VOL ROTRAY KNOB
208	996510026068	CD DOOR
209	996510026074	USB DECORATE PLATE
210	996510026065	CASSETTE KEY DOOR
211	996510026077	CASSETTE DOOR
212	996510020836	DUST COVER
214	996510026048	PRESET - KEY
215	996510026052	PRESET + KEY
216	996510026055	PLAY KEY
217	996510026056	STOP KEY
218	996510026061	REVIEW KEY
219	996510026049	NEXT KEY
220	996510020825	VOL ROTRAY COVER
221	994000001295	DAMPER GEAR ASS'Y
222	996510026069	STANDBY KAY
223	996510026064	SOURCE KEY
224	996510020791	ROTARY DECORATE RING
225	996510026071	CASS KEY WITH HOLDER
J003	996510020821	24P FFC.0.5mm L=190mm
J005	996510026051	17P FFC. 1.25mm L=120mm
J006	 996510000909	AC CORD VDE APP 2M
J007	996510018969	FM ANT L=1.5M
T001	 996510021289	TRANSFORMER 230V
0004	996510020835	DVD BOARD ASSY
0002N	996510041644	PCBA-MAIN (LM021046010541 onwards) (only for -/58)

ACCESSORIES

J008	996510020831	RCA PLUG CORD 3P L=1.5M
J009	996510002089	CONN. CORD 3.5 ST/PLUGx2 500mm
RC	996510020817	REMOTE CONTROL
S001	996510020814	SINGLE SPEAKER BOX
0002	994000001192	AM LOOP ANTENNA LAN-031

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

ELECTRICAL PARTSLIST(for all versions)**MAIN BOARD ASSEMBLY**

CON3	996510005450	SPK JACK PT-22V11A
F1	△ 994000000586	GLASS FUSE W/LEAD 3.15A/250V
IC1	996510000882	IC TFA9842BJ
IC2	996510014303	IC UE2314
JACK1	994000004369	PHONE JACK TC38-063-05-0
JK101	996510012085	S.V/RCA JACK
JK102	996510020826	RCA JACK 6P
Q2	996510010292	SMD TRANSISTORS MMBT3904
Q23	996510005251	MOSFET TRANSISTORS 2SK161-Y
Q5	996510018960	TRANSISTOR ST8050C
SW1	994000002354	CD DOOR SWITCH DLS-02-W-1
U11	996510000881	IC TB2132FNG
U2	996510018852	IC UTC7808
U6	996510003984	IC CYT78L05 (TO-92)

FRONT BOARD ASSEMBLY

D401	996500042438	LED LAMP 2x5x7mm (WHITE)
J025	994000001244	V/PHONE JACK 3.5MM
J802	996510001316	USB SOCKET 4P
P001	996510000998	ROTARY ENCODER
P401	994000004367	OPTIC SENSER FM-6038TM2-5AN
Q101	996510008369	TRANSISTORS MMBT8050D (SOT23)
Q402	996510009308	TRANSISTORS MMBT8550D
S501	996500042444	TACT SWITCH 6x6mm 4.3mm
U101	996510020841	IC GY669 LQFP44
U102	996510020822	IC AT24C02BN
U103	996510012079	LDO IC UTC1117B33 (-/12/98)
U103	994000002839	IC LM1117S-3.3 (-/58)
U401	996510020783	IC ET8862Q

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