Digital A/V Surround Receiver

HTR5205/98

Service
Service
Service

Service Manual

DOLBY DIGITAL PRO LOGIC II

dts Digital Surround

TABLE OF CONTENTS

	Page
Location of PC Boards	1-2
Versions Variation & Package	1-2
Specifications	1-3
Measurement Setup	1-4
Service Aids	1-5
ESD & Safety Instruction	1-6
Pb(Lead) Free Solder	1-7
Setting Procedure & Repair Instructions	2
Disassembly Instructions & Service positions	3
Block & Wiring Diagram	4
Control & Vol & Phone Board	5
Main Board	6
Power Board	7
Exploded View	8

CLASS 1
LASER PRODUCT

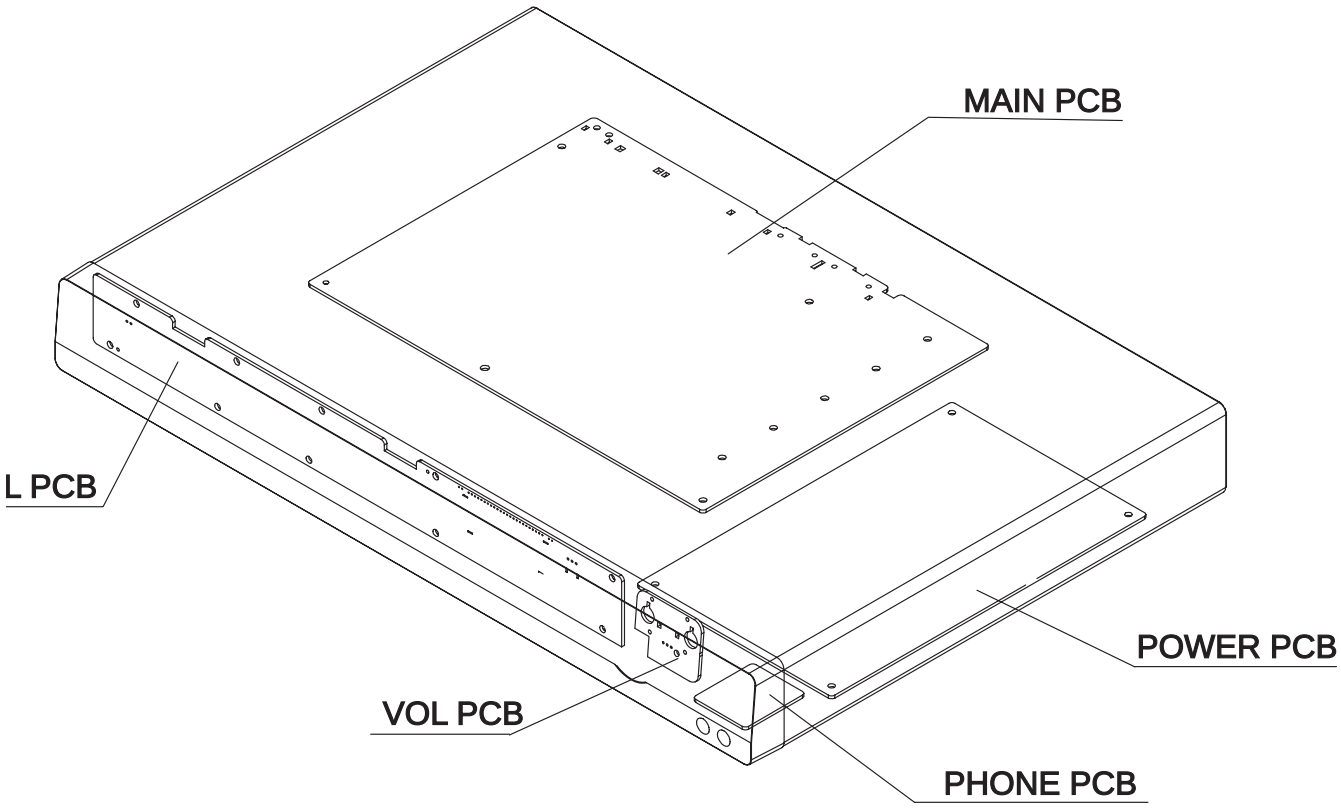
Published by HY-ET0619 Service Audio Printed in The Netherlands Subject to modification

GB 3139 785 32670

Version 1.0

PHILIPS

LOCATION OF PCB BOARDS



VERSION VARIATION:

Type/Version / Feature & Board in used	HTR5205 /98
Main PCB (Power Output 600W)	X
Power Voltage (120/230V)	X
Power cord(detachable)	X

Specifications

AMPLIFIER

Total MAX Output Power
Home Theater Mode: 600W
Front: .....75 W x 2
...../ Channel
Centre: ..... 150 W / Channel
Surround: .....75 W x / Channel
Subwoofer: ..... 150 W / Channel
Frequency Response: ..... 150 Hz –18 kHz / ±3 dB
Signal–to–Noise Ratio: .....> 60 dB (A–weighted)
Input Sensitivity:
– TV In: .....500 mV
– AUX In: .....500 mV

Radio

Tuning Range: ..... FM 87.5 –108 MHz (50 kHz)
..... AM/MW 531 –1602 kHz
.....(9 kHz)
26 dB Quieting
Sensitivity: .....FM 22 dBf,
..... AM/MW 5000 µV/m
Signal–to–Noise Ratio : .....FM 55 dB,
..... AM/MW 40 dB
Harmonic Distortion: .....FM Mono 3%
..... FM Stereo AM/MW 5%
Frequency Response: ..... FM 180 Hz – 9 kHz / ±6 dB
Stereo Threshold: .....FM 23.5dB

MAIN UNIT

Power Supply Rating: ..... 110 – 127 V/ 220 – 240 V
.....; 50 Hz
Power Consumption: .....100 W
Standby Power Consumption: ..... < 1 W
Dimensions: .....435 x 56 x 325 mm
.....(w x h x d)
Weight: 3.2kg

FRONT AND REAR SPEAKERS

System Full range satellite
Impedance:..... 4 Ω
Speaker drivers: ..... 3” full–range speaker,
Frequency response: .....150 Hz – 20 kHz
Dimensions: .....95.6 x 198.3 x 75 mm
.....(w x h x d)
Weight: .....0.675 kg /each

Centre speaker

System Full range satellite
Impedance:..... 8 Ω
Speaker drivers: ..... x 2.5” woofer,
..... 1 x 2” tweeter
Frequency response:..... 150Hz – 20 kHz
Dimensions: .....435 x 93.5 x 67 mm
.....(w x h x d)
Weight: ..... 1.45 kg

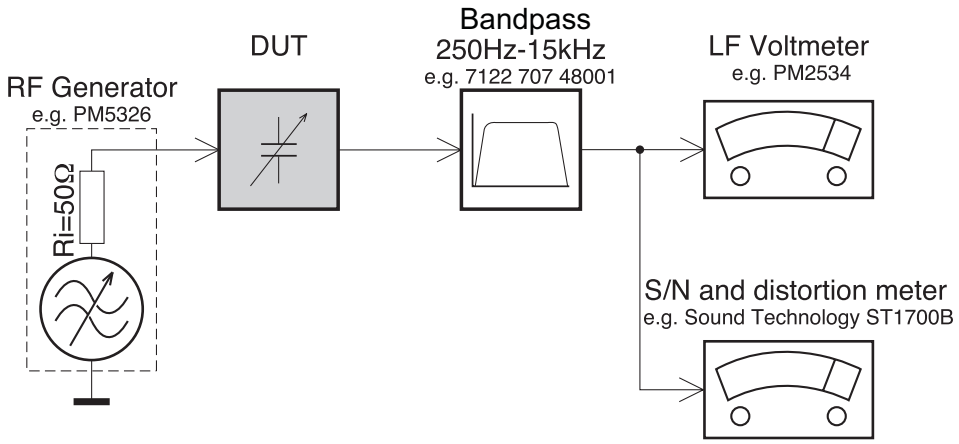
PASSIVE SUBWOOFER

Frequency response: ..... 40 Hz – 150 Hz
Impedance: .....8 Ω
Subwoofer driver: ..... 8” sub–woofer,
Dimensions: ..... 159.5 x 355.5 x 370 mm (w x h x d)
Weight: 4.712kg

Specifications subject to change without prior notice.

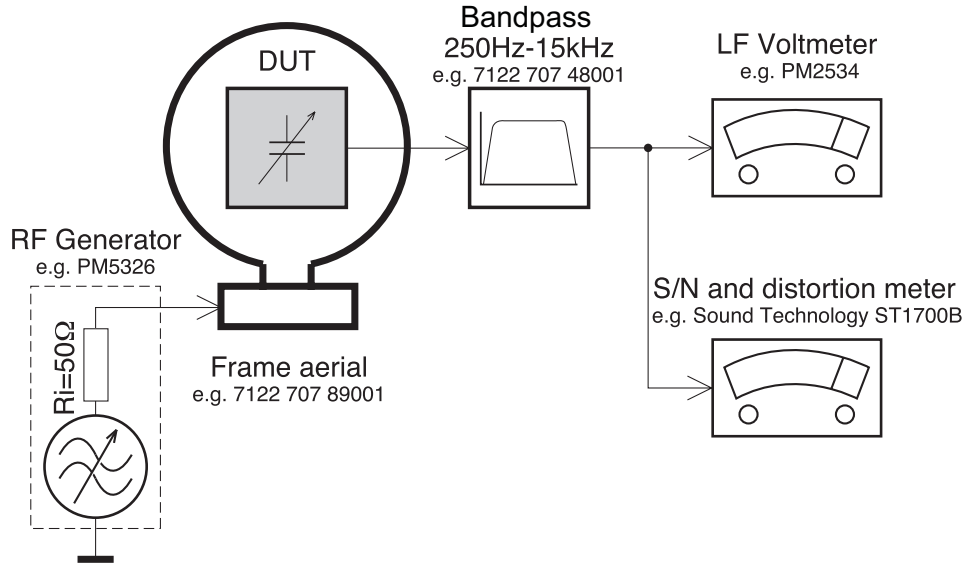
Measurement Setup

Tuner FM



Use a bandpass filter to eliminate hum (50Hz, 100Hz) and disturbance from the pilottone (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).

SERVICE AIDS

Service Tools:

Universal Torx driver holder 4822 395 91019
Torx bit T10 150mm 4822 395 50456
Torx driver set T6-T20 .....4822 395 50145
Torx driver T10 extended 4822 395 50423

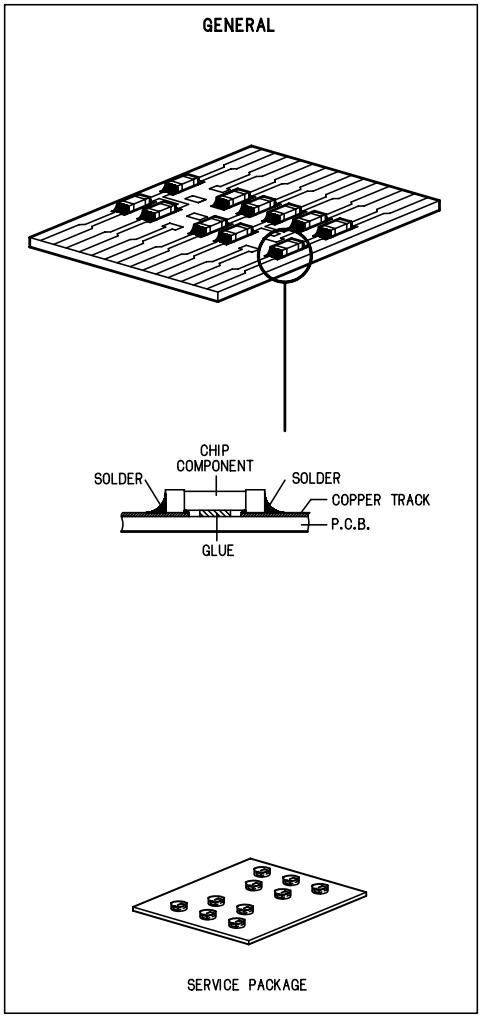
Compact Disc:

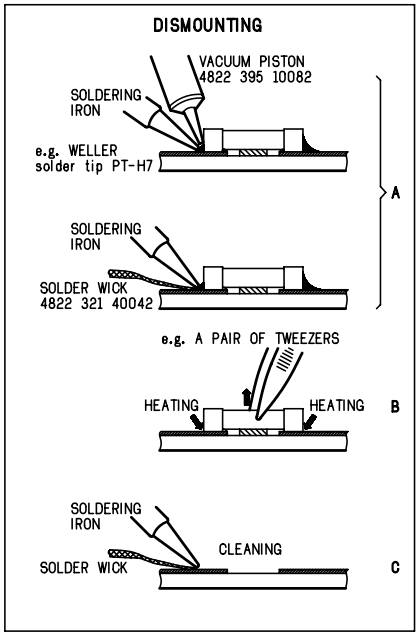
SBC426/426A Test disc 5 + 5A 4822 397 30096
SBC442 Audio Burn-in test disc 1kHz 4822 397 30155
SBC429 Audio Signals disc 4822 397 30184
Dolby Pro-logic Test Disc 4822 395 10216

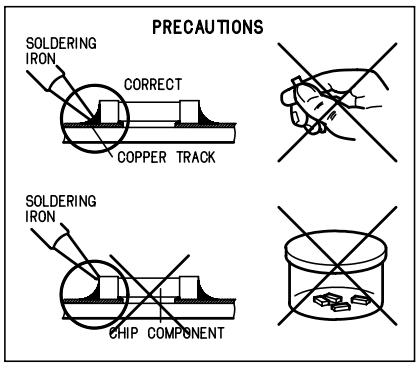
ESD Equipment:

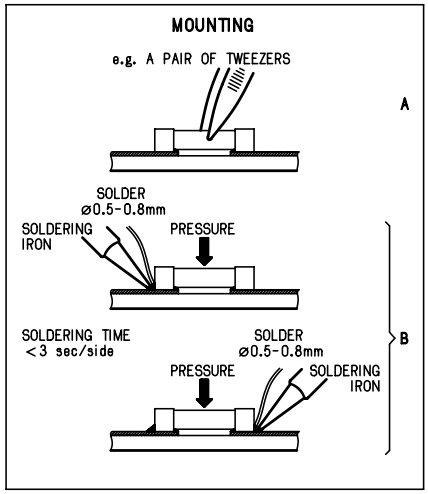
Anti-static table mat - large 1200x650x1.25mm ...4822 466 10953
anti-static table mat - small 600x650x1.25mm 4822 466 10958
Anti-static wristband 4822 395 10223
Connectorbox (1MΩ) 4822 395 11307
Extension cable
(to connect wristband to conn.box) 4822 320 11305
Connecting cable
(to connect table mat to conn.box) 4822 320 11306
Earth cable (to Connect product to mat or box) --4822 320 11308
Complete kit ESD3
(combining all above products) 4822 320 10671
Wristband tester 4822 344 13999

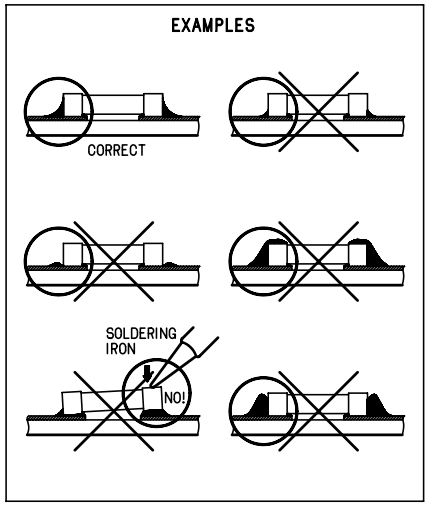
HANDLING CHIP COMPONENTS











ESD

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.

F **ATTENTION**

Tous les IC et beaucoup d'autres semi-conducteurs sont sensibles aux décharges statiques (ESD).
Leur longévité pourrait être considérablement écourtée par le fait qu'aucune précaution n'est prise à leur manipulation.
Lors de réparations, s'assurer de bien être relié au même potentiel que la masse de l'appareil et enfiler le bracelet serti d'une résistance de sécurité.
Veiller à ce que les composants ainsi que les outils que l'on utilise soient également à ce potentiel.

D **WARNUNG**

Alle ICs und viele andere Halbleiter sind empfindlich gegenüber elektrostatischen Entladungen (ESD).
Unsorgfältige Behandlung im Reparaturfall kan die Lebensdauer drastisch reduzieren.
Veranlassen Sie, dass Sie im Reparaturfall über ein Pulsarmband mit Widerstand verbunden sind mit dem gleichen Potential wie die Masse des Gerätes.
Bauteile und Hilfsmittel auch auf dieses gleiche Potential halten.

NL **WAARSCHUWING**

Alle IC's en vele andere halfgeleiders zijn gevoelig voor electrostatische ontladingen (ESD).
Onzorgvuldig behandelen tijdens reparatie kan de levensduur drastisch doen verminderen.
Zorg ervoor dat u tijdens reparatie via een polsband met weerstand verbonden bent met hetzelfde potentiaal als de massa van het apparaat.
Houd componenten en hulpmiddelen ook op ditzelfde potentiaal.

I **AVVERTIMENTO**

Tutti IC e parecchi semi-conduttori sono sensibili alle scariche statiche (ESD).
La loro longevità potrebbe essere fortemente ridatta in caso di non osservazione della più grande cauzione alla loro manipolazione.
Durante le riparazioni occorre quindi essere collegato allo stesso potenziale che quello della massa dell'apparecchio tramite un braccialetto a resistenza.
Assicurarsi che i componenti e anche gli utensili con quali si lavora siano anche a questo potenziale.

GB **ESD PROTECTION EQUIPMENT**

Complete Kit ESD3 (small tablemat, wristband, connection box, estention cable and earth cable 4822 310 10671
Wristband tester 4822 344 13999

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 ⚠ .

NL

Veiligheidsbepalingen vereisen, dat het apparaat bij reparatie in zijn oorspronkelijke toestand wordt teruggebracht en dat onderdelen, identiek aan de gespecificeerde, worden toegepast.

De Veiligheidsonderdelen zijn aangeduid met het symbol ⚠ .

F

Les normes de sécurité exigent que l'appareil soit remis à l'état d'origine et que soient utiliséés les piéces de rechange identiques à celles spécifiées.

Less composants de sécurité sont marqués ⚠ .

D

Bei jeder Reparatur sind die geltenden Sicherheitsvorschriften zu beachten. Der Original zustand des Geräts darf nicht verändert werden; für Reparaturen sind Original-Ersatzteile zu verwenden.

Sicherheitsbauteile sind durch das Symbol ⚠ markiert.

I

Le norme di sicurezza esigono che l'apparecchio venga rimesso nelle condizioni originali e che siano utilizzati i pezzi di ricambio identici a quelli specificati.

Componenty di sicurezza sono marcati con ⚠ .

GB

After servicing and before returning set to customer perform a leakage current measurement test from all exposed metal parts to earth ground to assure no shock hazard exist, The leakage current must not exceed 0.5mA.

GB **Warning !**

Invisible laser radiation when open.
Avoid direct exposure to beam.

S **Varning !**

Osynlig laserstrålning när apparaten är öppnad och spärren är urkopplad. Betrakta ej strålen.

SF **Varoitus !**

Avatussa laitteessa ja suojalukituksen ohitettaessa olet alttiina näkymättömälle laserisäteilylle. Älä katso säteeseen!

DK **Advarse !**

Usynlig laserstråling ved åbning når sikkerhedsafbrydere er ude af funktion. Undgå udsaettelse for stråling.

F

"Pour votre sécurité, ces documents doivent être utilisés par des spécialistes agréés, seuls habilités à réparer votre appareil en panne".

Pb(Lead) Free Solder

When soldering , be sure to use the pb free solder.

INDENTIFICATION:
Regardless of special logo (not always indicated) 

one must treat all sets from **1 Jan 2005** onwards, according next rules:

Important note: In fact also products of year 2004 must be treated in this way as long as you avoid mixing solder-alloys (leaded/ lead-free). So best to always use SAC305 and the higher temperatures belong to this.

Due to lead-free technology some rules have to be respected by the workshop during a repair:

- Use only lead-free solder alloy Philips SAC305 with order code 0622 149 00106. If lead-free solder-paste is required, please contact the manufacturer of your solder-equipment. In general use of solder-paste within workshops should be avoided because paste is not easy to store and to handle.
- Use only adequate solder tools applicable for lead-free solder alloy. The solder tool must be able
  - To reach at least a solder-temperature of 400°C,
  - To stabilize the adjusted temperature at the solder-tip
  - To exchange solder-tips for different applications.
- Adjust your solder tool so that a temperature around 360°C – 380°C is reached and stabilized at the solder joint. Heating-time of the solder-joint should not exceed ~ 4 sec. Avoid temperatures above 400°C otherwise wear-out of tips will rise drastically and flux-fluid will be destroyed. To avoid wear-out of tips switch off un-used equipment, or reduce heat.
- Mix of lead-free solder alloy / parts with leaded solder alloy / parts is possible but PHILIPS recommends strongly to avoid mixed solder alloy types (leaded and lead-free).
  If one cannot avoid or does not know whether product is lead-free, clean carefully the solder-joint from old solder alloy and re-solder with new solder alloy (SAC305).
- Use only original spare-parts listed in the Service-Manuals. Not listed standard-material (commodities) has to be purchased at external companies.
- Special information for BGA-ICs:

– Always use the 12nc-recognizable soldering temperature profile of the specific BGA (for de-soldering always use the lead-free temperature profile, in case of doubt)

– Lead free BGA-ICs will be delivered in so-called 'dry-packaging' (sealed pack including a silica gel pack) to protect the IC against moisture. After opening, dependent of MSL-level seen on indicator-label in the bag, the BGA-IC possibly still has to be baked dry. (MSL=Moisture Sensitivity Level). This will be communicated via AYS-website.
Do not re-use BGAs at all.

- For sets produced before 1.1.2005 (except products of 2004), containing leaded solder-alloy and components, all needed spare-parts will be available till the end of the service-period. For repair of such sets nothing changes.
- 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

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

  For additional questions please contact your local repair-helpdesk.

2 - 1

System , Region Code , etc. Setting Produre

1)System Reset

a) switch source to DISC 6CH

b) press and hold ⏭ buttom on front panel

c) VFD will display reset, then sysytem power down and return to original default setting

2)Version & Region Code Change

a) switch source to DISC 6CH

b) press”9” “1“ “0“ on R/C

c) press volume + / - key on R/C to choose desired one

5 regions:

EU 12 / UK 05 / APAC 98 / US 98

d) press OK key to comfirm

3)Check on the Sofeware Version

a) switch source to DISC 6CH

b) press “1“ “5“ “9“ buttom on R/C

c) VFD will display the version

6)Upgrading new sofeware

a) copy file HTR5200.ROM to root directory of USB disc

b) switch source to 6CH

c) insert USB disc to HTR520X USB socket

d) VFD will display UPGRADE

NOTE: during software upgrade ,you must not press any key and power down.

After software upgrading completed ,move USB will display on VFD ,now ,you must power down.

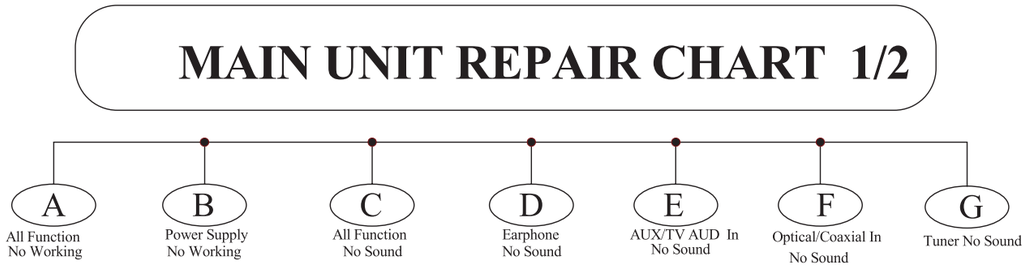
CAUTION !

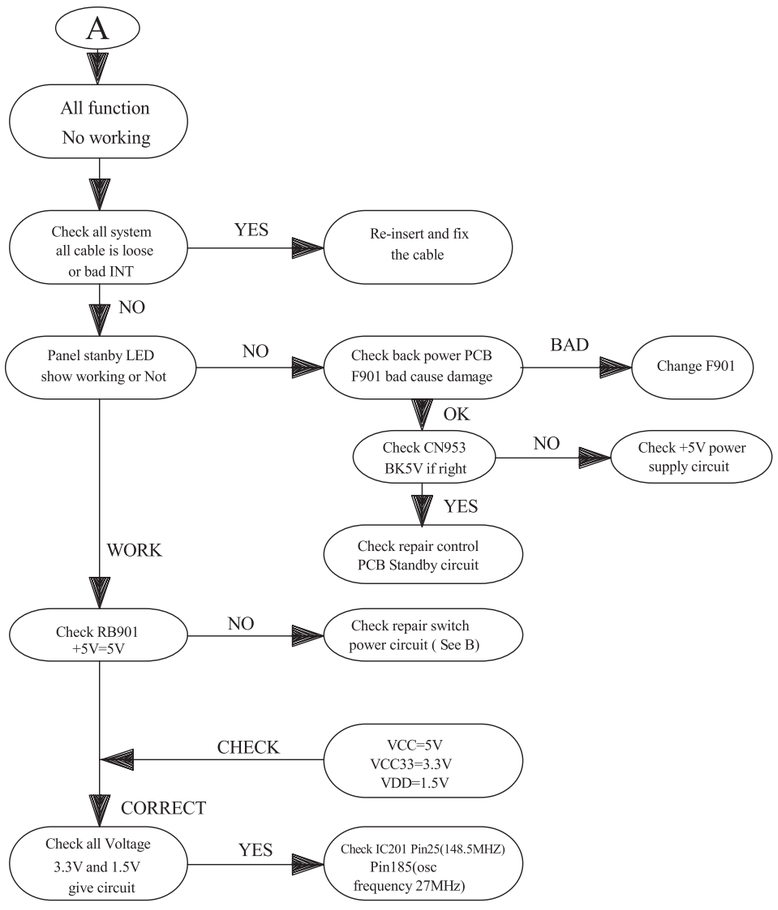
This information is confidencial and may not be distributed. Only a qualified service person should reprogram the Region Code.

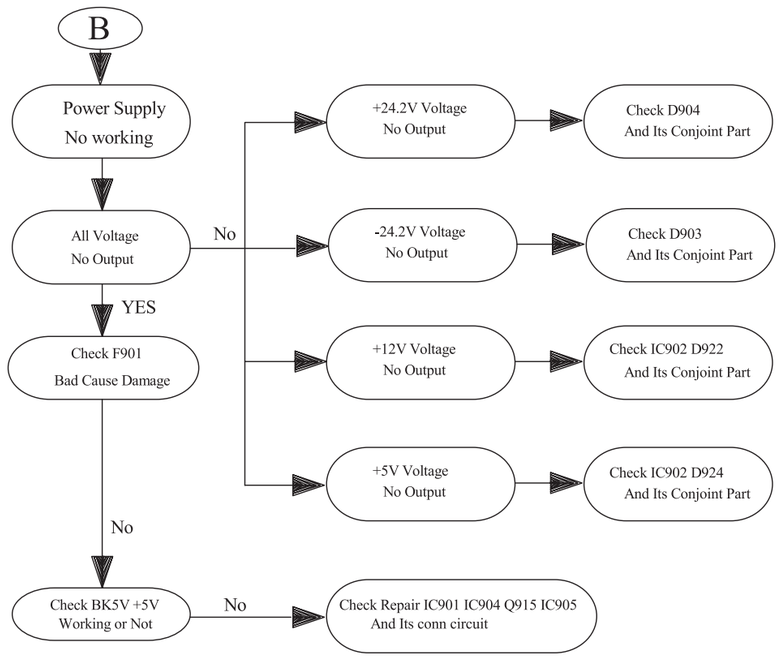
REPAIR INSTRUCTION

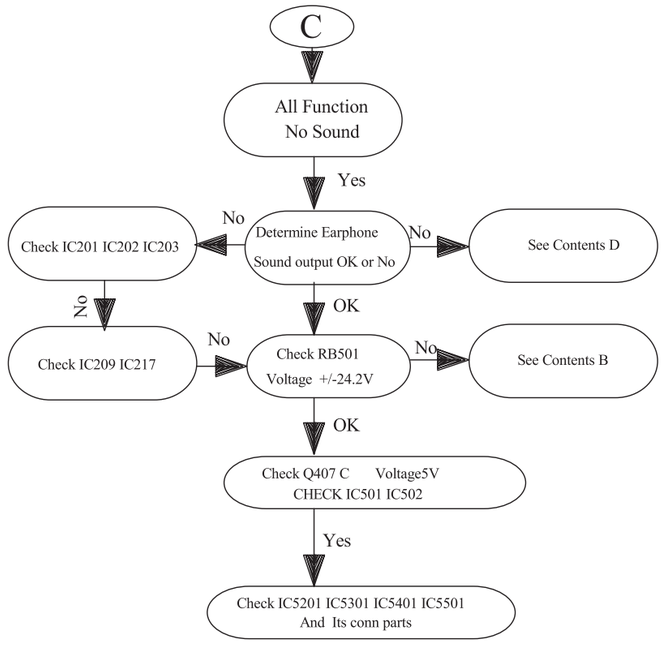
2 - 2

MAIN UNIT REPAIR CHART 1/2



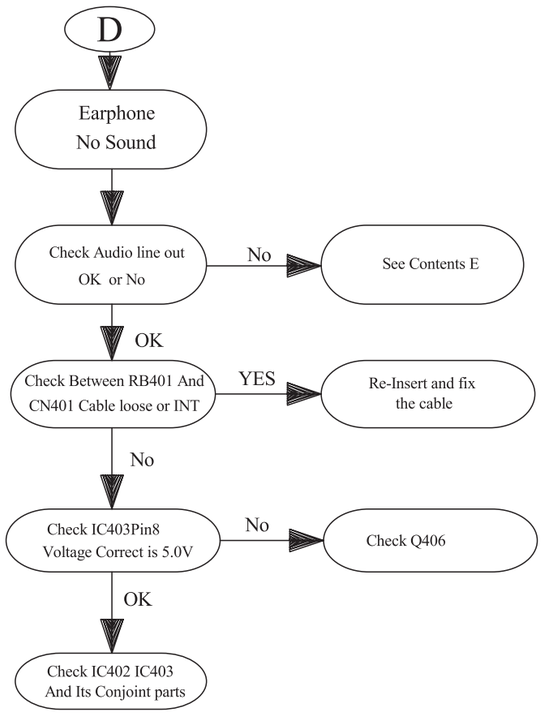


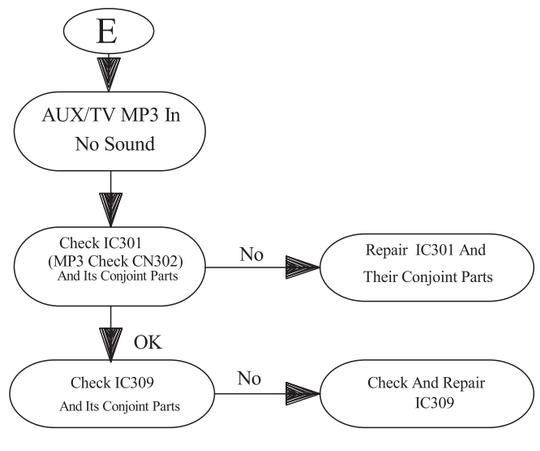


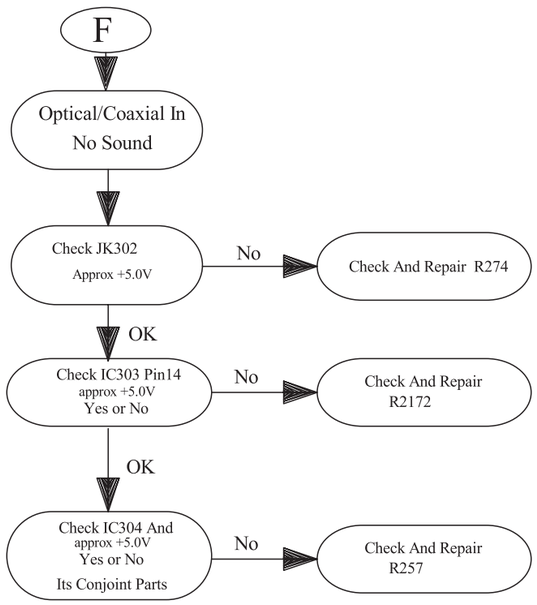


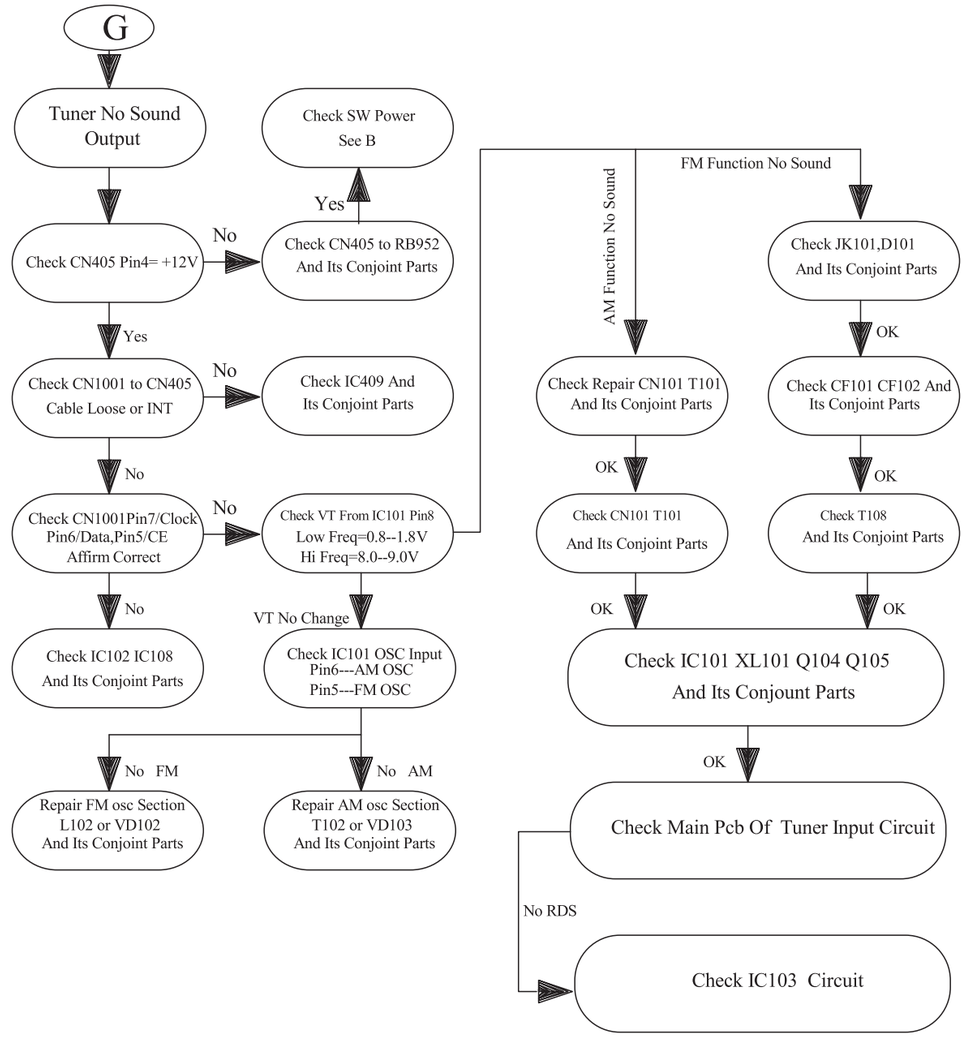
2 - 3

MAIN UNIT REPAIR CHART 2/2









DISASSEMBLY INSTRUCTIONS

Dismantling of the top cover Assembly

1) Loosen 5 screws to take out the Top Cover
   - 3 screws ”A” on the back as show in figure 1
   - 1 screws ”B” each on the left & right side as show in figure 2

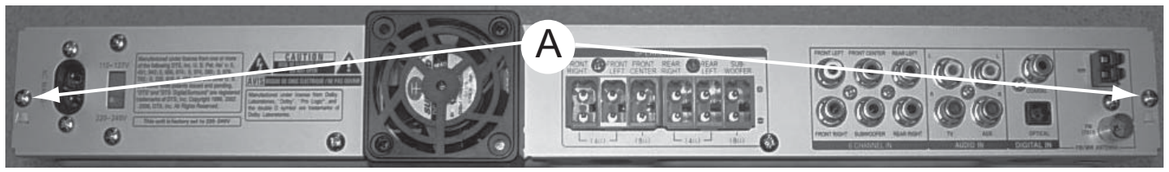


Figure 1

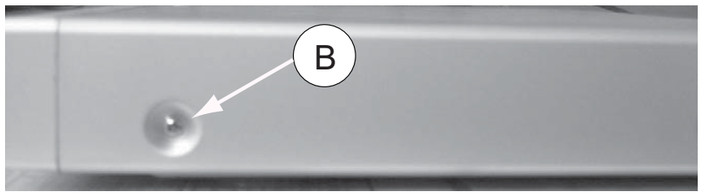


Figure 2

Dismantling of the front panel Assembly

1) Loosen 6 screws to take out the front panel.
   -1 screw ”C” on the inside as show in figure 3
   -1 screw “D“each on the left & right side as show in figure 4
   -3 screws ”E” on the bottom as show in figure 5

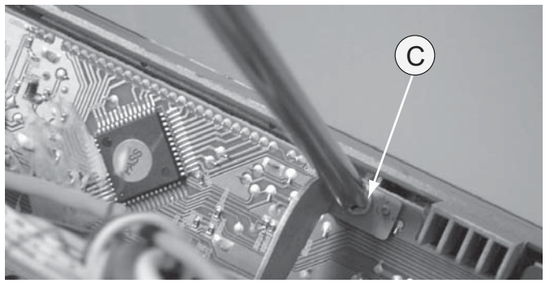


Figure 3

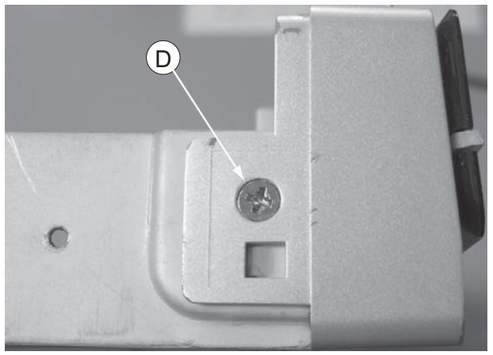


Figure 4

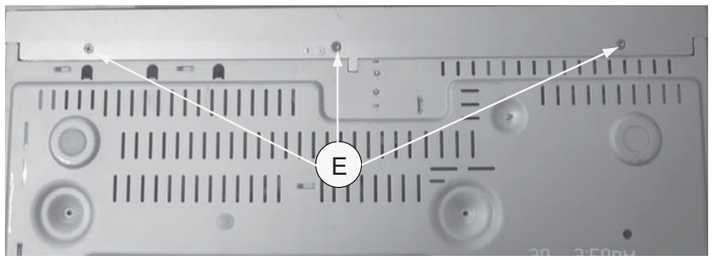


Figure 5

Dismantling of the Main PCB

1) Loosen 4 screw “ F “ on the top of main board as shown in figure 6.
2) Loosen 6 screw “ G ” at the back panel as shown in figure 7.

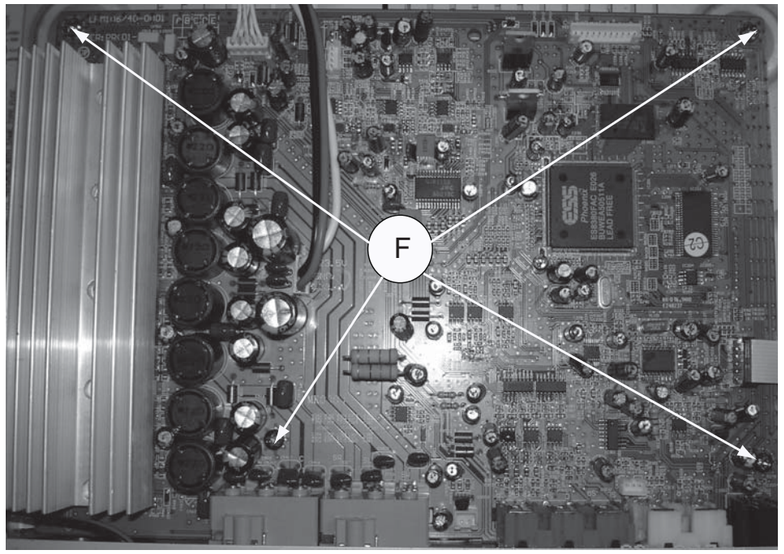


Figure 6

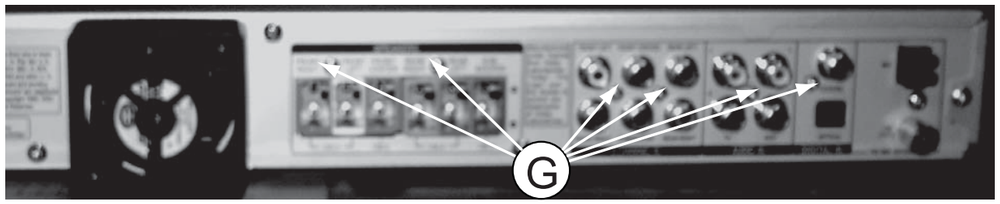


Figure 7

Dismantling of the Control Board

1) Loosen 13 screws “H” at the back pancle as shown in figure 8

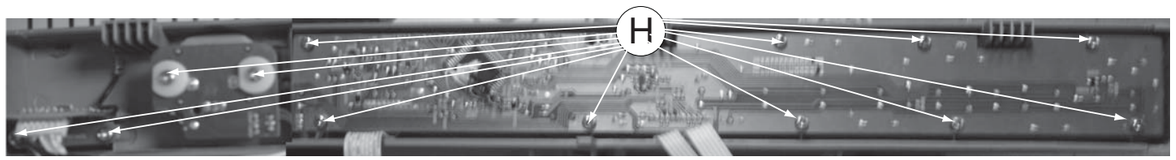


Figure 8

Dismantling of the Power Board

1) Loosen 5 screws “D” at the top of the Power Board as shown in figure 9

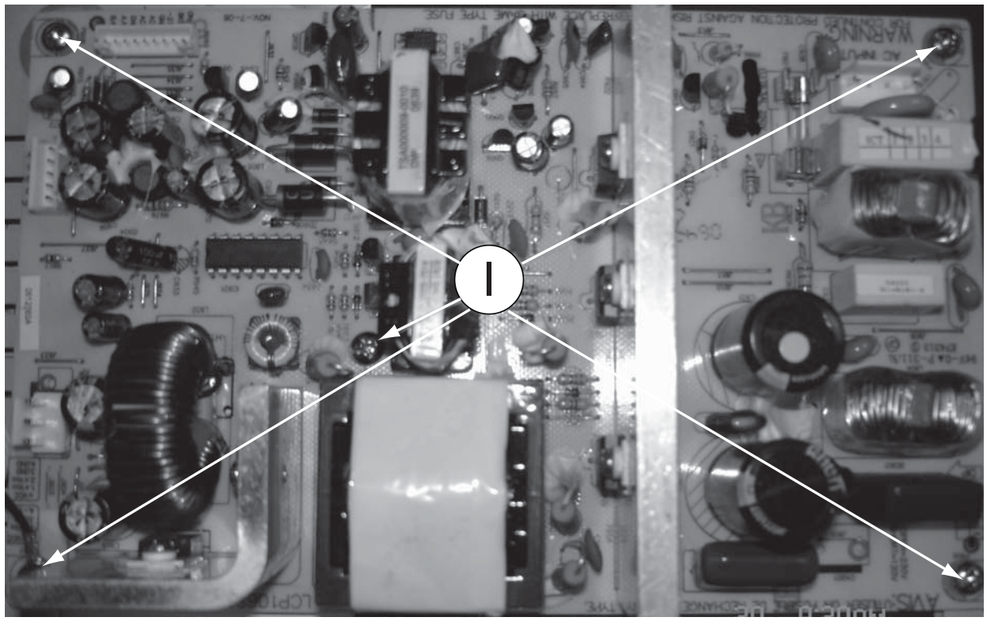
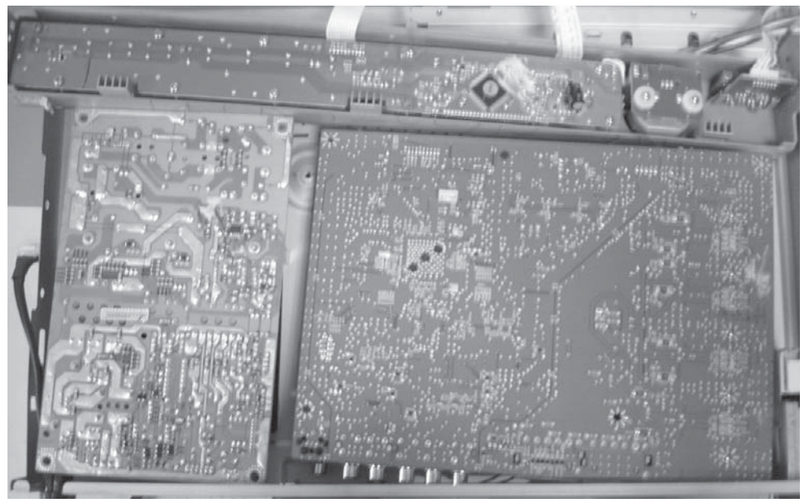
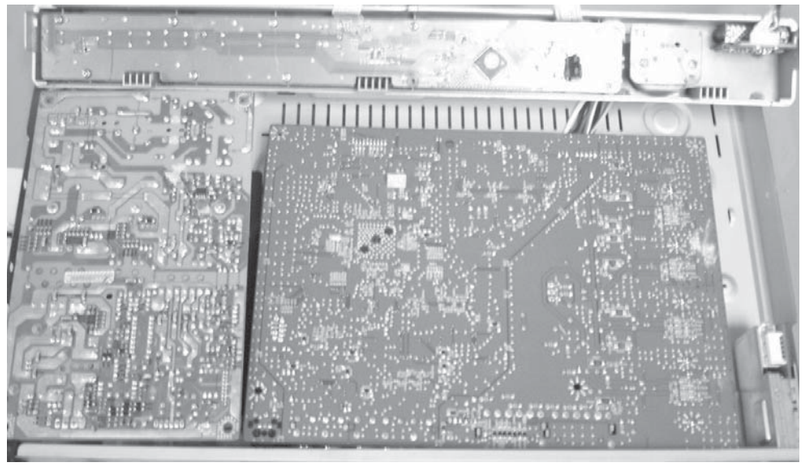


Figure 9

Service Position



Service A

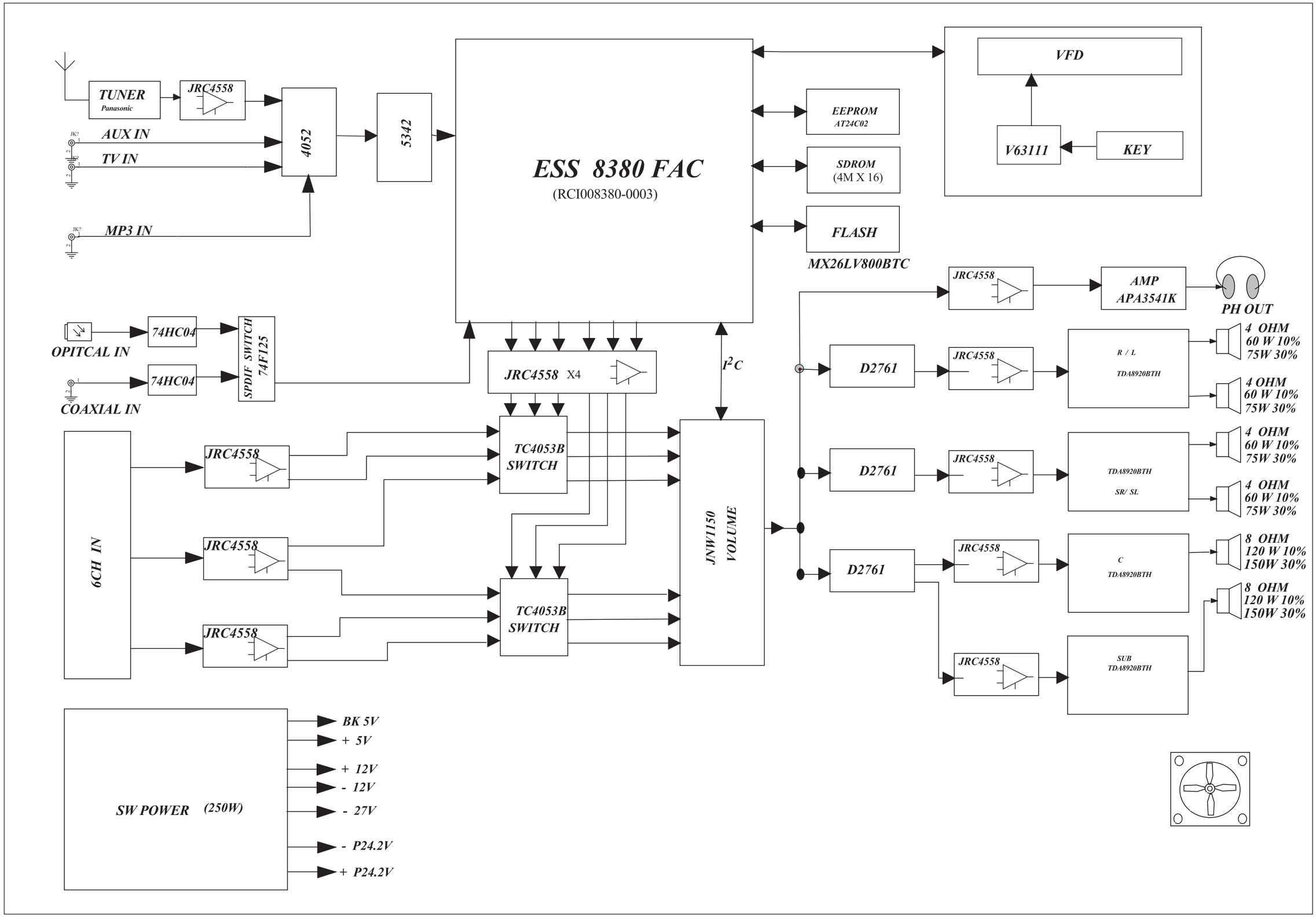


Service B

Note:In some service positions the components or copper patterns of one board may risk touching its neighbouring pc boards or metallic parts. To prevent such short-circuit use a piece of hard paper or other insulating material between them.

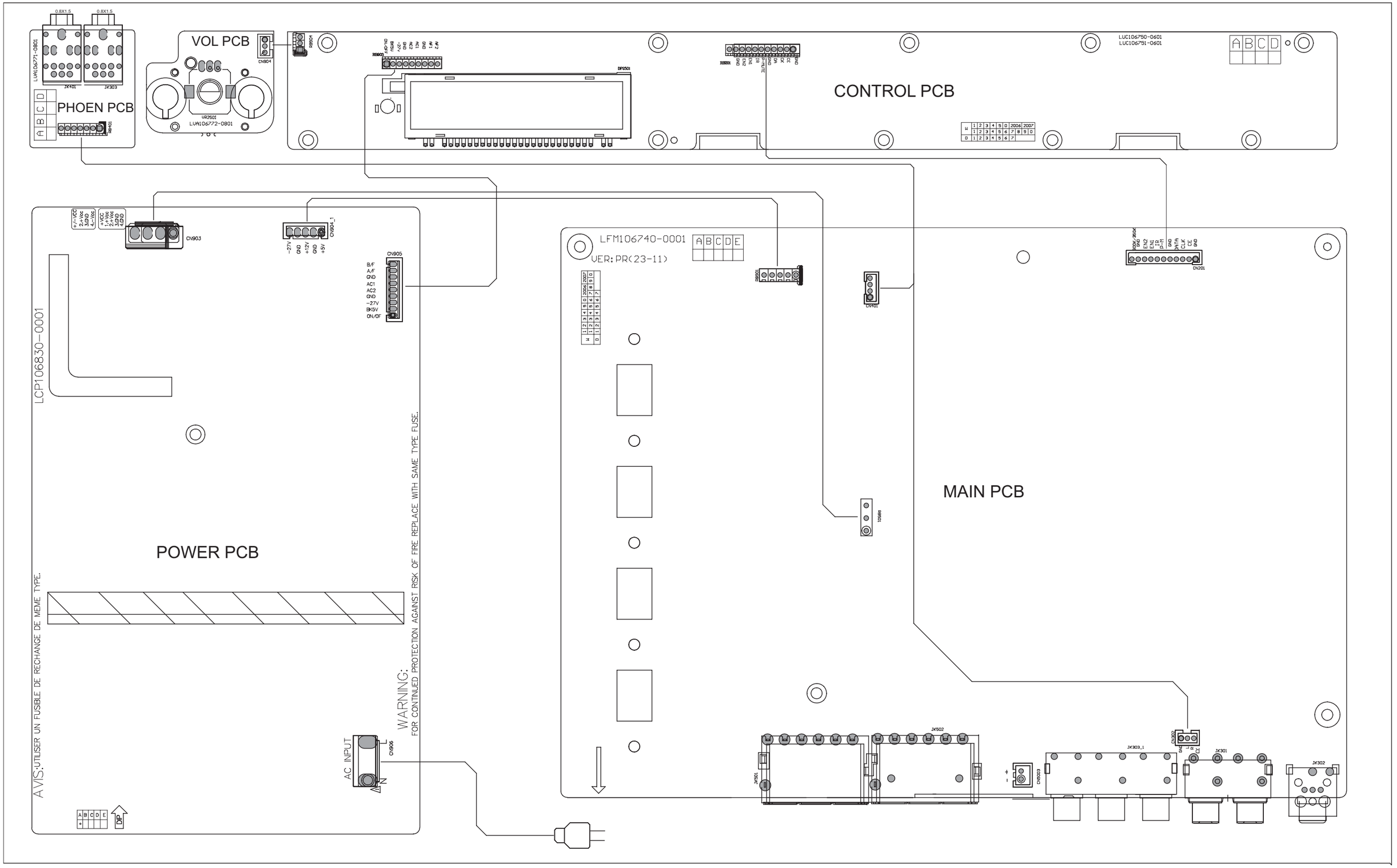
4 - 1

BLOCK DIAGRAM



4 - 2

WIRING DIAGRAM

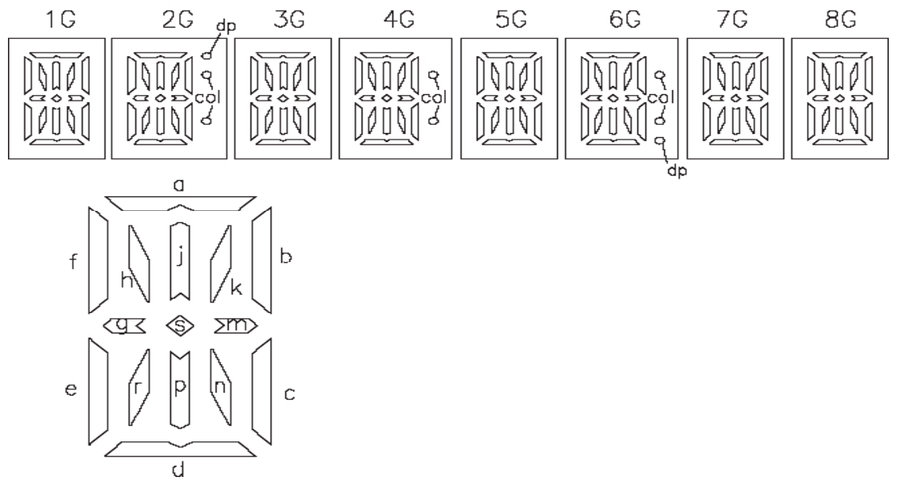


CONTROL BOARD

TABLE OF CONTENTS

FTD Display Pin Assignment 5-1
Voltage 5-2
Circuit Diagram(control pcb) 5-3
PCB Layout Top & Bottom View(control pcb) 5-4
Circuit Diagram(phone & vol pcb) 5-5
PCB Layout Top & Bottom View(phone & vol pcb) 5-5

FTD DISPLAY PIN ASSIGNMENT



	1G	2G	3G	4G	5G	6G	7G	8G
P1	a	a	a	a	a	a	a	a
P2	j , p	j , p	j , p	j , p	j , p	j , p	j , p	j , p
P3	h	h	h	h	h	h	h	h
P4	k	k	k	k	k	k	k	k
P5	b	b	b	b	b	b	b	b
P6	f	f	f	f	f	f	f	f
P7	m	m	m	m	m	m	m	m
P8	g	g	g	g	g	g	g	g
P9	c	c	c	c	c	c	c	c
P10	e	e	e	e	e	e	e	e
P11	r	r	r	r	r	r	r	r
P12	n	n	n	n	n	n	n	n
P13	d	d	d	d	d	d	d	d
P14	—	dp	—	col	—	col	—	—
P15	s	s	s	s	s	s	s	s
P16	—	col	—	—	—	dp	—	—

PIN CONNECTION

PIN NO.	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
CONNECTION	F	F	NP	P1	P2	P3	P4	P5	P6	P7	P8	P9	P10	P11	P12
PIN NO.	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30
CONNECTION	P13	P14	P15	P16	1G	2G	3G	4G	5G	6G	7G	8G	NP	F	F

Note: F: Filament P: Anode G: Grid NP: No pin

5 - 2

VOLTAGE

Q2051			
Pin NO	b	c	e
Voltage	3.9	3.6	0

Q2052			
Pin NO	b	c	e
Voltage	3.9	4.2	3.6

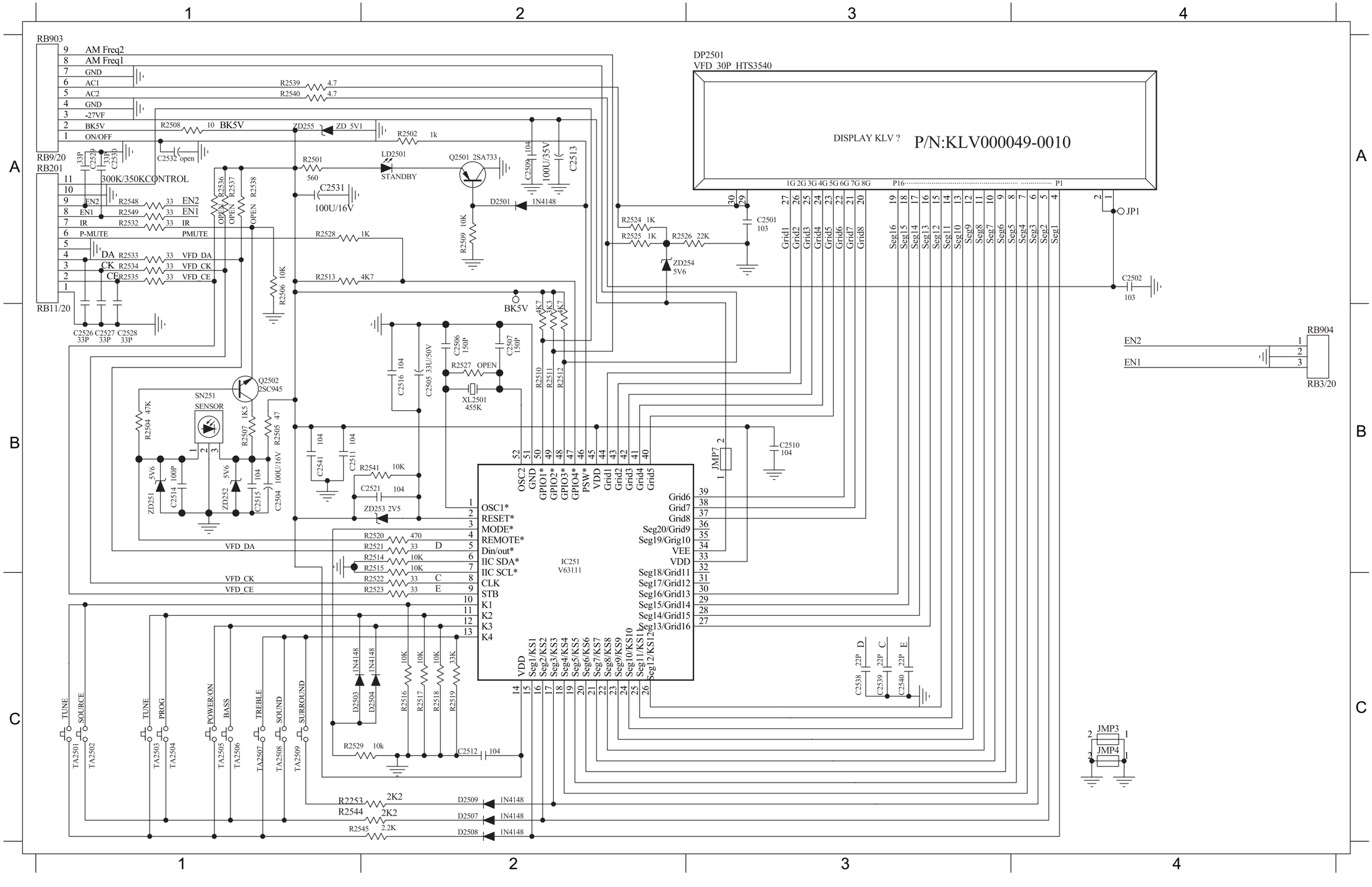
IC251 (V63111)																			
Pin NO	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20
Voltage	0	4.3	0	4.3	3.3	0	0	5	5	0	0	0	4.5	-13.9	-23	-27.1	-37.1	-23	-16.4	20
Pin NO	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40
Voltage	20	-18.5	-18.5	-27.1	-24	-27.1	-14.1	-25.1	0	-23.1	-25	-25	4.5	-27	0	-25.3	-25	0	-25.3	-25.3
Pin NO	41	42	43	44	45	46	47	48	49	50	51	52								
Voltage	-25	-25	-25	-25	-25	4.5	0	0	0	0	0	2.2								

5 - 3

CIRCUIT DIAGRAM (control pcb)

C2501	A3	C2509	A2	C2515	B1	C2529	A1	C2541	B1	D2509	C2	LD2501	A2	R2504	B1	R2510	B2	R2516	C2	R2522	C2	R2529	C1
C2502	A4	C2510	B3	C2516	B2	C2530	A1	D2501	A2	DP2501	A3	Q2501	A2	R2505	B1	R2511	B2	R2517	C2	R2523	C2	R2532	A1
C2504	B1	C2511	B1	C2521	B2	C2531	A1	D2503	C1	IC251	B2	Q2502	B1	R2506	A1	R2512	B2	R2518	C2	R2524	A2	R2533	A1
C2505	B2	C2512	C2	C2526	B1	C2538	C3	D2504	C2	JMP3	C4	R2253	C1	R2507	B1	R2513	A1	R2519	C2	R2525	A2	R2534	A1
C2506	B2	C2513	A2	C2527	B1	C2539	C3	D2507	C2	JMP4	C4	R2501	A1	R2508	A1	R2514	B2	R2520	B2	R2526	A2	R2535	A1
C2507	B2	C2514	B1	C2528	B1	C2540	C3	D2508	C2	JMP7	B3	R2502	A2	R2509	A2	R2515	B2	R2521	B2	R2528	A1	R2539	A1

R2540	A1	RB201	A1	TA2503	C1	TA2509	C1	ZD255	A1														
R2541	B2	RB903	A1	TA2504	C1	XL2501	B2																
R2544	C1	RB904	B4	TA2505	C1	ZD251	B1																
R2545	A1	SN251	B1	TA2506	C1	ZD252	B1																
R2548	A1	TA2501	C1	TA2507	C1	ZD253	B2																
R2549	A1	TA2502	C1	TA2508	C1	ZD254	A2																

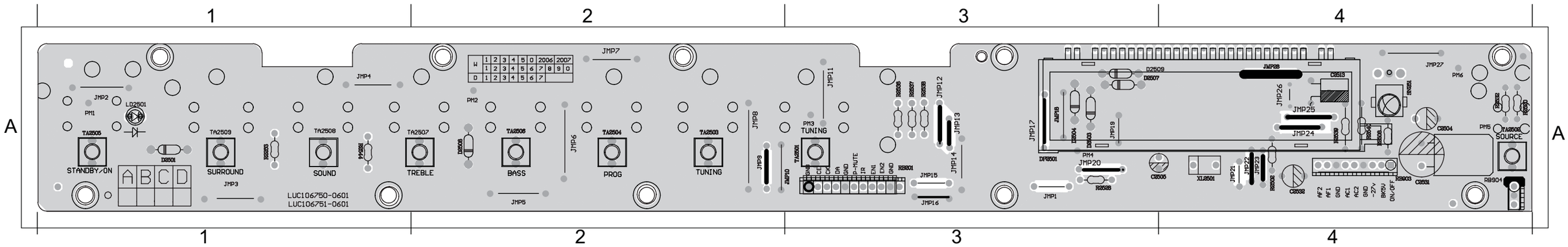


5 - 4

PCB LAYOUT - TOP VIEW (control pcb)

D2501	A1	LD2501	A1	TA2506	A1	JMP10	A2	JMP8	A2	TA2507	A2	D2507	A3	JMP11	A3	JMP15	A3	JMP19	A3	TA2501	A3
JMP2	A1	R2253	A1	TA2508	A1	JMP5	A2	JMP9	A2	C2505	A3	D2509	A3	JMP12	A3	JMP16	A3	JMP20	A3	C2504	A4
JMP3	A1	R2544	A1	TA2509	A1	JMP6	A2	TA2503	A2	D2503	A3	DP2501	A3	JMP13	A3	JMP17	A3	R2528	A3	C2513	A4
JMP4	A1	TA2505	A1	D2508	A2	JMP7	A2	TA2504	A2	D2504	A3	JMP1	A3	JMP14	A3	JMP18	A3	RB201	A3	C2531	A4

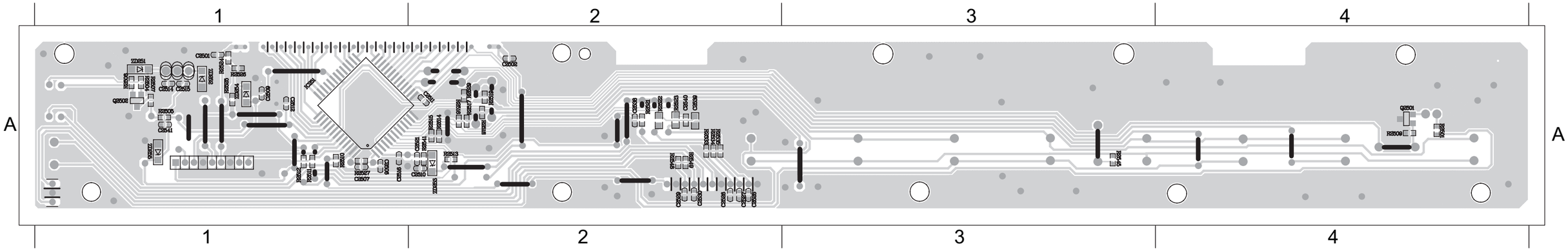
JMP21	A4	JMP25	A4	R2502	A4	R2539	A4	SN251	A4												
JMP22	A4	JMP26	A4	R2508	A4	R2540	A4	TA2502	A4												
JMP23	A4	JMP27	A4	R2520	A4	RB903	A4	XL2501	A4												
JMP24	A4	JMP28	A4	R2532	A4	RB904	A4														



PCB LAYOUT - BOTTOM VIEW (control pcb)

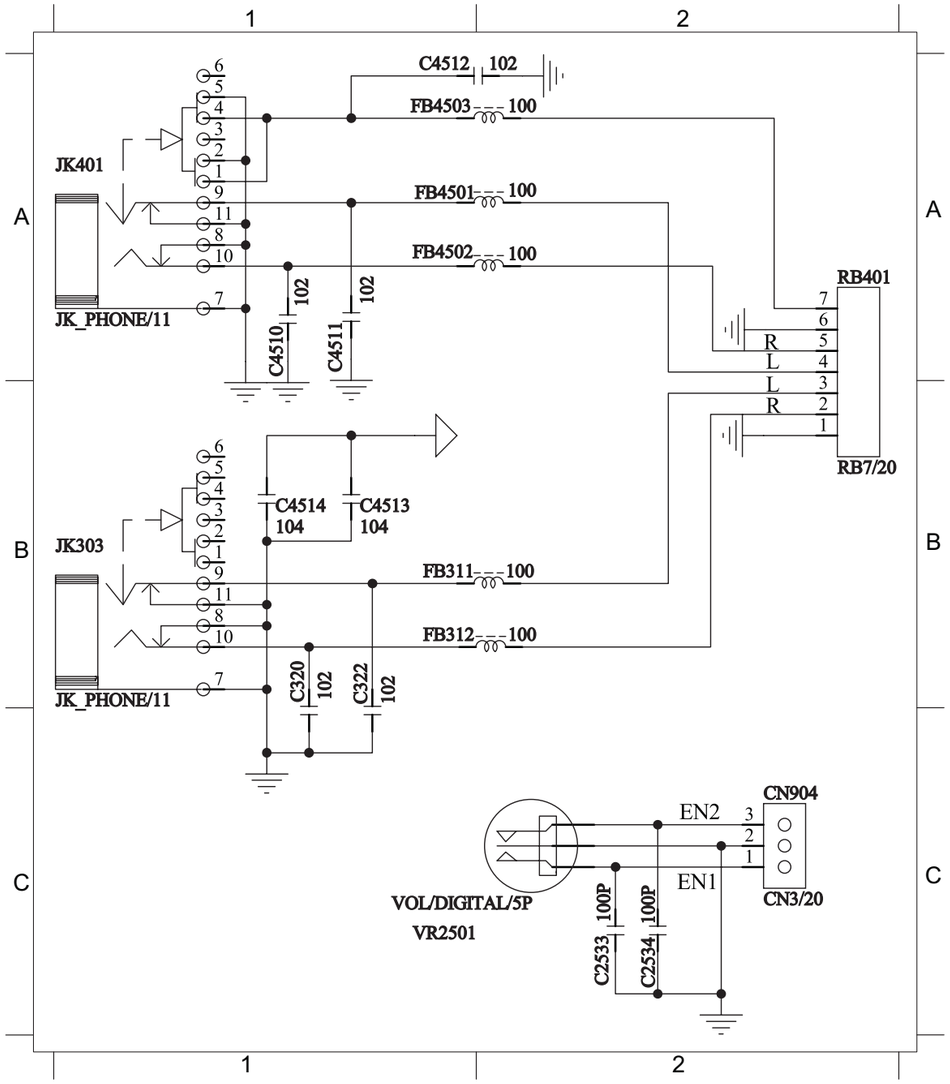
C2501	A1	C2512	A1	C2541	A1	R2505	A1	R2511	A1	R2526	A1	ZD255	A1	C2521	A2	C2529	A2	C2540	A2	R2516	A2
C2506	A1	C2514	A1	IC251	A1	R2506	A1	R2512	A1	ZD251	A1	C2502	A2	C2526	A2	C2530	A2	R2513	A2	R2517	A2
C2507	A1	C2515	A1	Q2502	A1	R2507	A1	R2524	A1	ZD252	A1	C2510	A2	C2527	A2	C2538	A2	R2514	A2	R2518	A2
C2509	A1	C2516	A1	R2504	A1	R2510	A1	R2525	A1	ZD254	A1	C2511	A2	C2528	A2	C2539	A2	R2515	A2	R2519	A2

R2521	A2	R2533	A2	R2548	A2	Q2501	A4														
R2522	A2	R2534	A2	R2549	A2	R2501	A4														
R2523	A2	R2535	A2	ZD253	A2	R2509	A4														
R2529	A2	R2541	A2	R2545	A3																



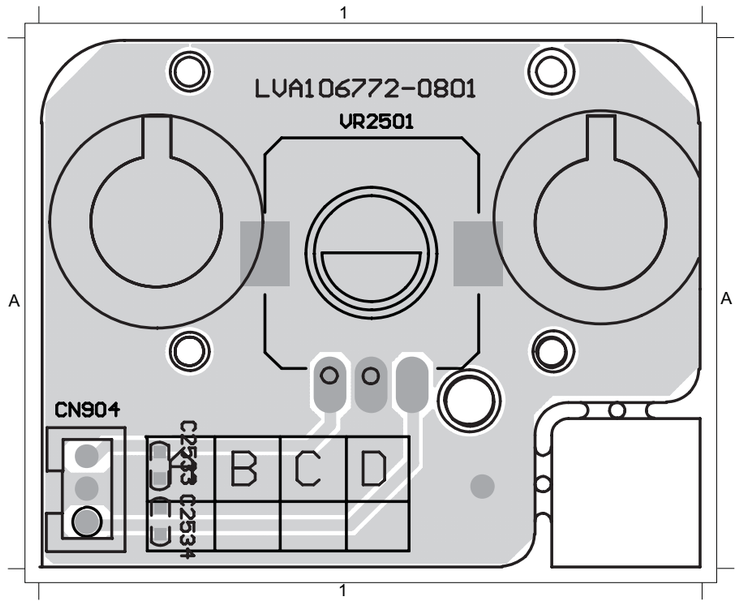
CIRCUIT DIAGRAM (phone & vol pcb)

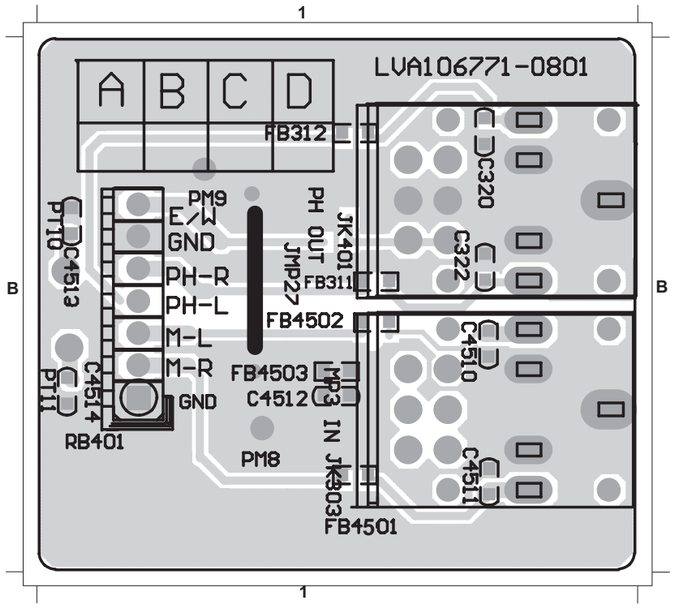
C2533	C2	C322	B1	C4512	A1	CN904	C2	FB4501	A1	JK303	B1	VR2501	C2		
C2534	C2	C4510	A1	C4513	B1	FB311	B1	FB4502	A1	JK401	A1				
C320	B1	C4511	A1	C4514	B1	FB312	B1	FB4503	A1	RB401	A2				



PCB LAYOUT - TOP VIEW (phone&vol pcb)

C2533	A1	C322	B1	C4512	B1	CN904	A1	FB4501	B1	JK303	B1	PM9	B1		
C2534	A1	C4510	B1	C4513	B1	FB311	B1	FB4502	B1	JK401	B1	RB401	B1		
C320	B1	C4511	B1	C4514	B1	FB312	B1	FB4503	B1	JMP27	B1	VR2501	A1		



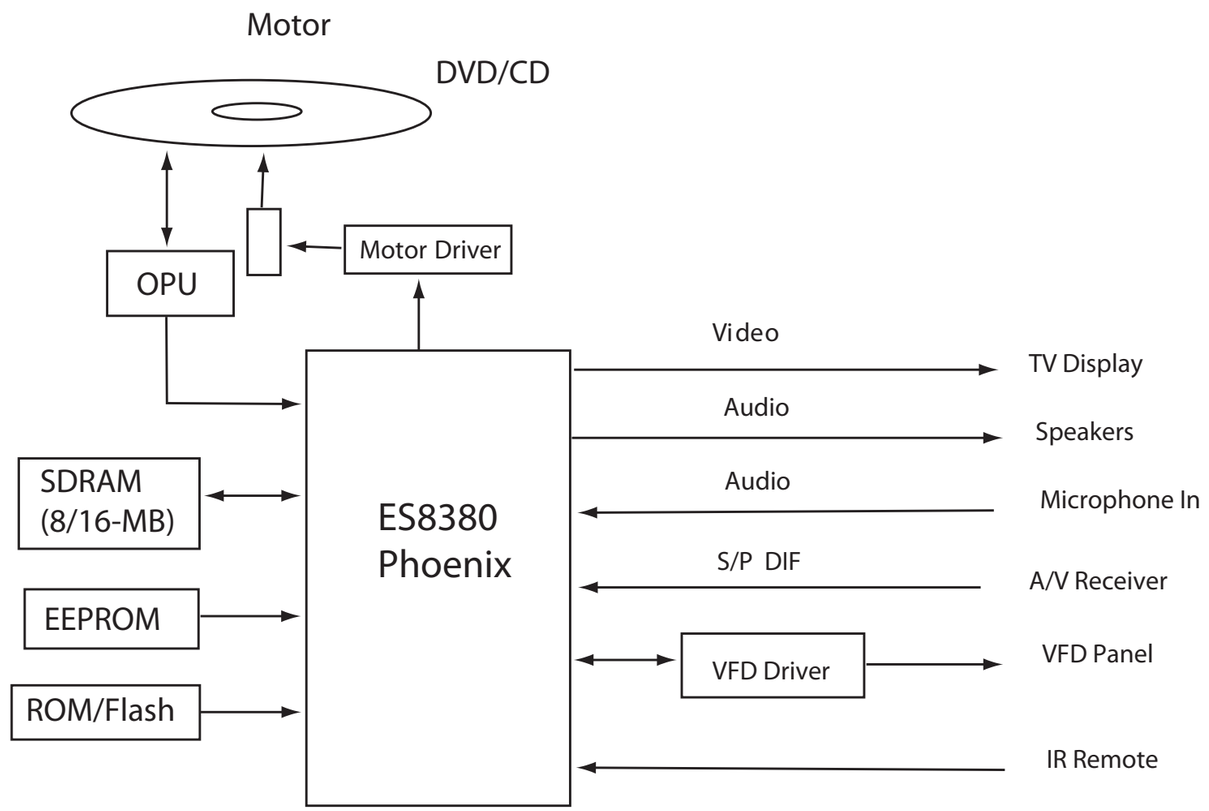


MAIN BOARD

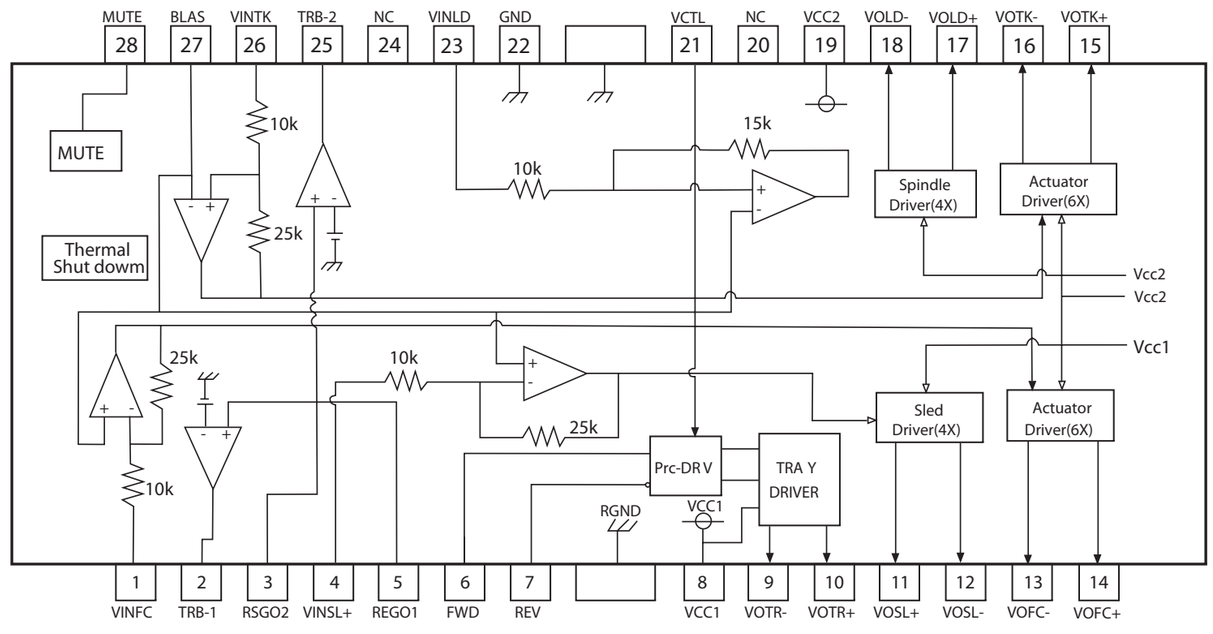
TABLE OF CONTENTS

Internal IC Diagram 6-1
Circuit Diagram(AMP Board) 6-2
Circuit Diagram(mian pcb) 6-3
PCB Layout Top View 6-4
PCB Layout Bottom View 6-5
Voltage 6-6

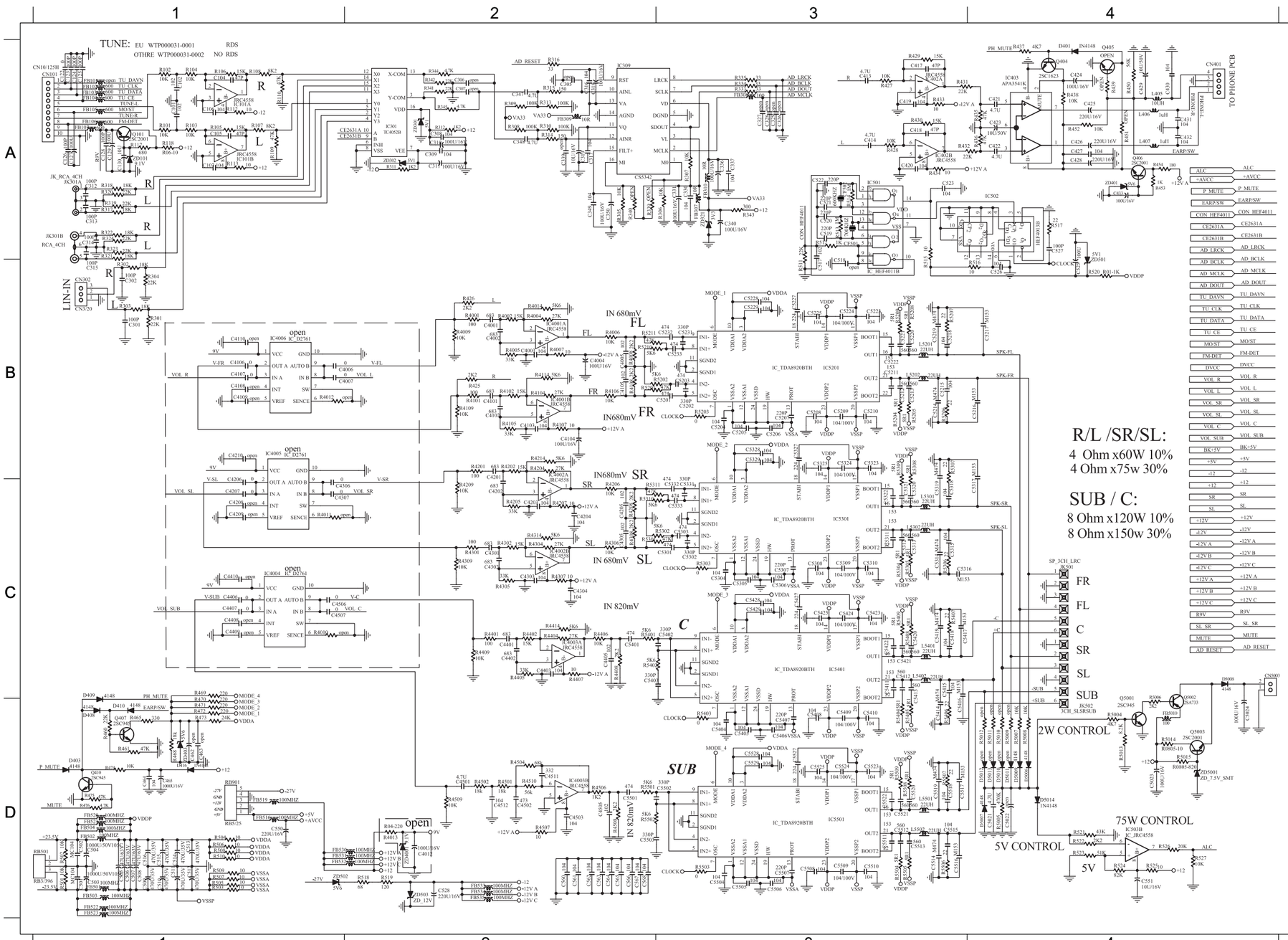
INTERNAL IC DIAGRAM - ES8380FAC



INTERNAL IC DIAGRAM - V5888S HOSP



Circuit Diagram(AMP pcb)



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C107	A1
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C350	A2
C4001	B2
C4002	B2
C4003	B2
C4004	B2
C4005	B2
C4006	B1
C4007	B1
C4012	D2
C4101	B2
C4102	B2
C4103	B2
C4104	B2
C4105	B2
C4106	B1
C4107	B1
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C4204	C2
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C567	D2
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CF501	A3
CF502	A3
CN101	A1
CN302	B1
CN401	A4
CN5003	C4
D403	D1
D408	D1
D409	D1
D410	D1
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FB107	A1
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JK301	A1
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L5201	B3
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Q404	A4
Q406	A4
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R4208	C2
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R425	B2
R426	B2
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R4307	C2
R4308	C2
R4309	C2
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R4406	C2
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R475	D1
R476	D1
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R5006	D4
R5007	D4
R5008	D4
R501	D1
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R515	A3
R516	B4
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R5207	B3
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R5309	B3
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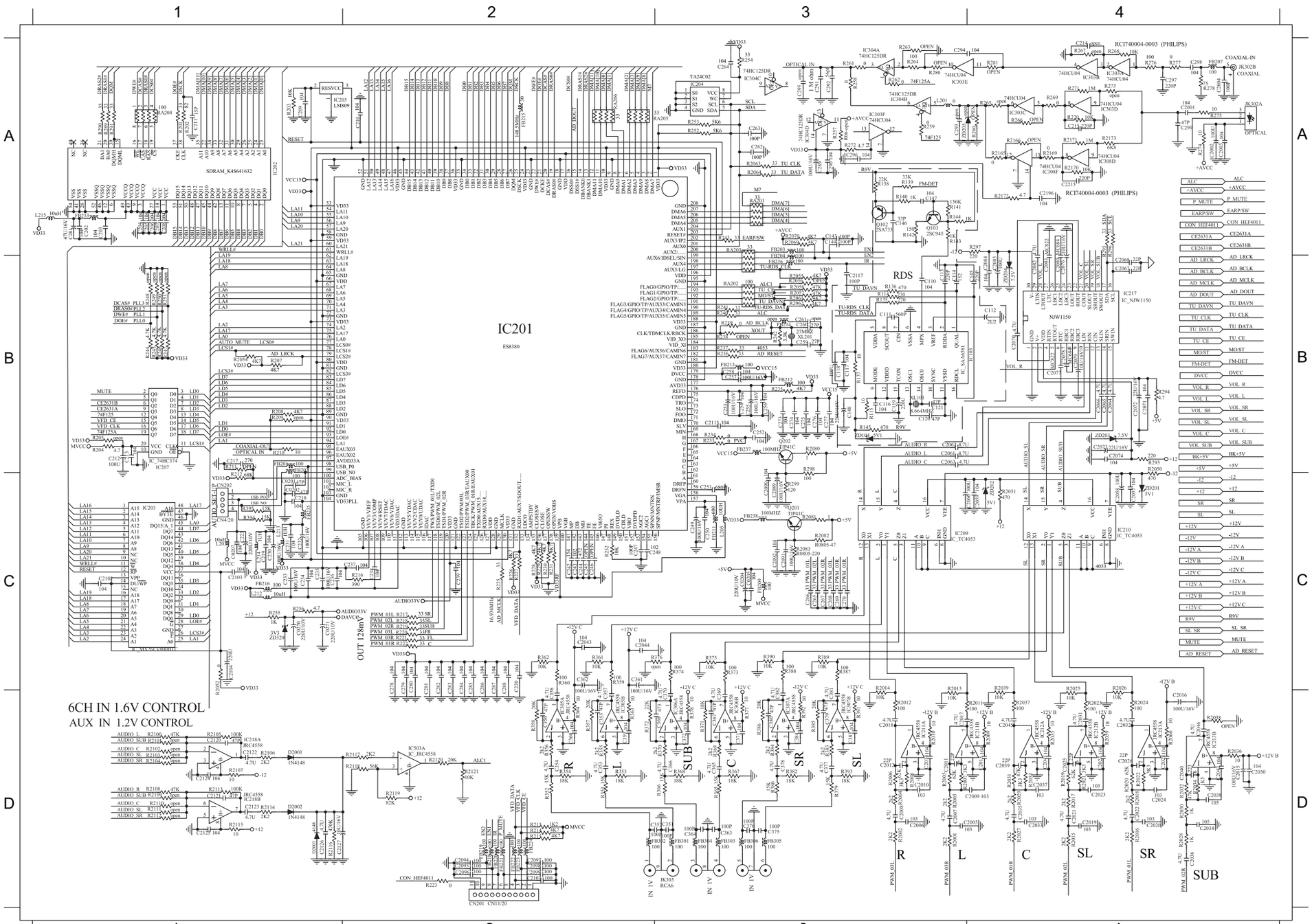
R5404	D3
R5405	D3
R5406	D3
R5407	C3
R5408	C3
R5409	C3
R5501	D2
R5502	D2
R5503	D3
R5504	D3
R5505	D3
R5506	D3
R5507	D3
R5508	D3
R5509	D3
RB501	D1
RB901	D1
ZD101	A1
ZD301	A2
ZD302	A2
ZD321	A3
ZD4001	D2
ZD401	A4
ZD403	D1
ZD5001	D4
ZD501	A4
ZD502	D1
ZD503	D2

Circuit Diagram(main pcb)



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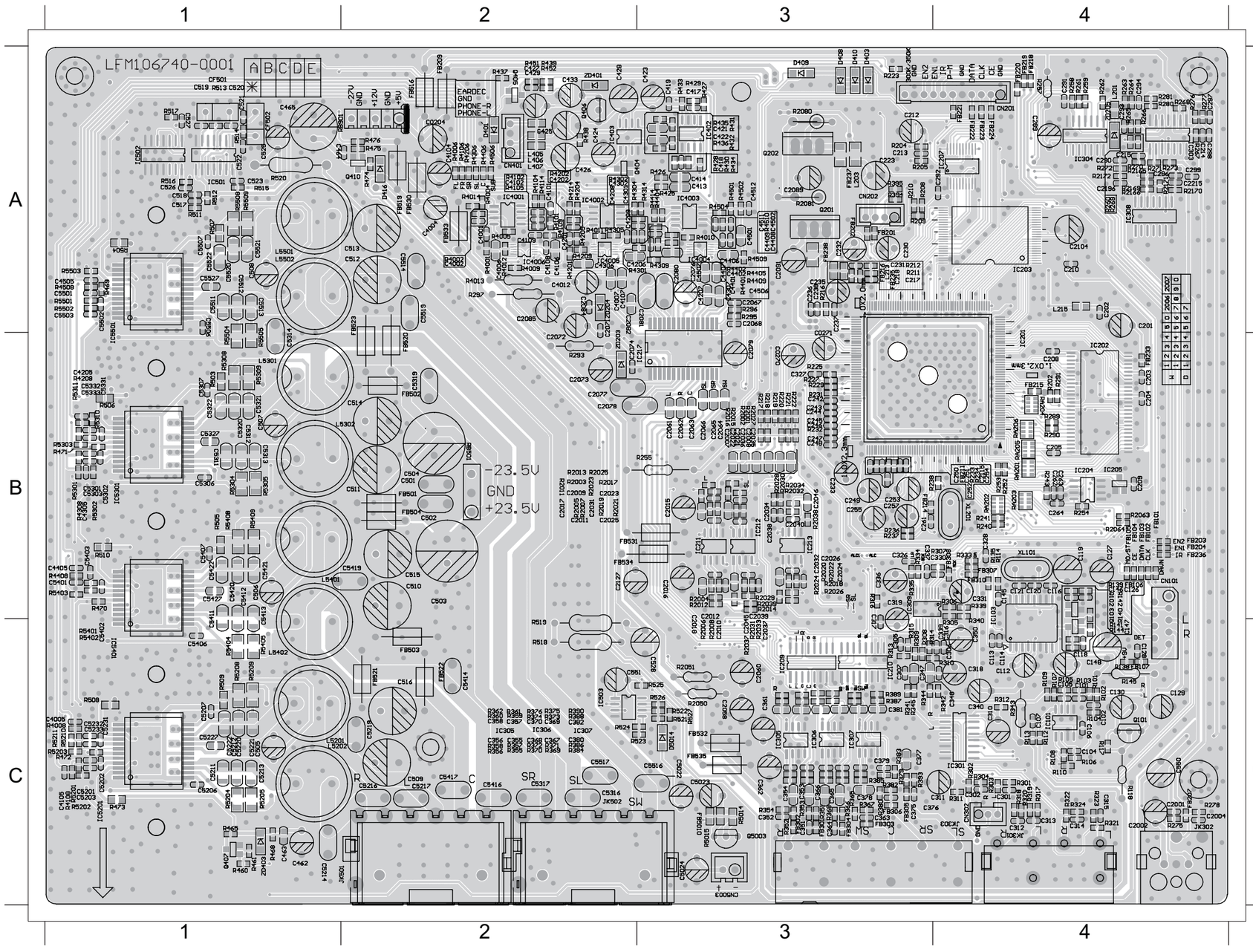
C0204	D4	C2080	B4	C280	C2	FB304	D3	R2058	B3	R270	A4
C0205	D4	C2081	B4	C281	C2	FB305	D3	R2059	D4	R271	A4
C0207	C1	C2082	B4	C282	C2	FB306	D3	R2060	D4	R272	A2
C0270	C1	C2084	B4	C283	C2	IC201	B2	R2061	B3	R273	A4
C0271	C1	C2085	B4	C284	C2	IC202	A1	R2062	B3	R274	A4
C143	A2	C2089	C3	C285	C2	IC203	C1	R2063	A2	R275	A4
C144	A2	C209	A1	C286	C2	IC204	A2	R2064	A2	R276	A4
C2001	A4	C2090	C3	C287	C2	IC205	A1	R2069	A2	R277	A4
C2002	A4	C2091	C3	C288	C2	IC207	B1	R207	B1	R278	A4
C2003	A4	C2092	C3	C289	A2	IC209	C3	R2070	A2	R280	A3
C2004	A4	C2094	D2	C290	A2	IC210	C4	R208	B1	R281	A4
C2005	D3	C2095	D2	C291	A2	IC211	D3	R2080	B3	R289	A1
C2006	D3	C2096	D2	C292	A2	IC212	D4	R2081	C3	R290	A1
C2007	D3	C2097	D2	C293	A3	IC213	D4	R2082	C3	R291	A1
C2008	D3	C2098	D2	C296	A3	IC217	B4	R2083	C3	R293	B4
C2009	D4	C2099	D2	C297	A4	IC218	D1	R210	B1	R294	B4
C201	A1	C210	A2	C298	A4	IC303	A3	R2100	D1	R295	A4
C2010	D3	C2101	D2	C299	A4	IC304	A2	R2101	D1	R296	A4
C2011	D3	C2102	C1	C351	D3	IC305	D2	R2105	D1	R297	A4
C2012	D3	C2103	C1	C352	D3	IC306	D3	R2106	D1	R298	B3
C2013	D4	C2104	C1	C353	D2	IC307	D3	R2107	D1	R299	C3
C2014	D3	C2115	B3	C354	D2	IC503	D2	R2108	D1	R351	D2
C2015	D4	C2117	B3	C355	D2	JK302	A4	R2109	D1	R352	D2
C2016	D4	C212	B1	C356	D2	JK303	D3	R2113	D1	R353	D2
C2017	D3	C2120	D1	C357	D2	L201	A3	R2114	D1	R354	D2
C2018	D3	C2121	D1	C358	D2	L203	C1	R2115	D1	R355	D2
C2019	D4	C2122	D1	C359	D2	L205	C3	R2116	D1	R356	D2
C202	A1	C2123	D1	C360	D2	L212	C1	R2117	D2	R357	D2
C2020	D4	C2124	D1	C361	C2	L213	C1	R2118	D2	R358	D2
C2021	D4	C2125	D1	C362	C2	L214	C1	R2119	D2	R359	C2
C2022	D4	C2126	D1	C363	D3	L215	A1	R212	C1	R360	C2
C2023	D4	C213	B1	C364	D3	Q201	C3	R2120	D2	R361	C2
C2024	D4	C214	A4	C365	D3	Q202	B3	R2121	D2	R362	C2
C2025	D4	C217	B1	C366	D3	R2001	D3	R213	D2	R363	D2
C2026	D4	C218	C1	C367	D3	R2002	D3	R214	D2	R364	D2
C2027	D4	C219	C1	C368	D3	R2003	D3	R215	D2	R365	D3
C2028	D4	C220	C2	C369	D3	R2004	D3	R216	C2	R366	D3
C203	A1	C223	C1	C370	D3	R2005	D3	R217	C2	R367	D3
C2030	D4	C230	C1	C371	D3	R2006	D3	R218	C2	R368	D3
C2031	D4	C231	C1	C372	D3	R2007	D3	R219	C2	R369	D3
C2032	D4	C232	C1	C375	D3	R2008	D3	R220	C2	R370	D3
C2033	D4	C233	C1	C376	D3	R2009	D4	R221	C2	R371	D3
C2034	D4	C234	C1	C377	D3	R201	A1	R222	C2	R373	C3
C2035	D4	C235	C1	C378	D3	R2010	D3	R223	D2	R374	C3
C2036	D4	C236	C1	C379	D3	R2011	D4	R225	C2	R375	C3
C2037	D4	C237	C2	C380	D3	R2012	D3	R226	C2	R377	D3
C2038	D4	C238	C2	C381	D3	R2013	D3	R227	C2	R378	D3
C2039	D4	C239	C2	C382	D3	R2014	D3	R228	C2	R379	D3
C204	A1	C242	C2	C383	D3	R2015	D4	R229	C2	R380	D3
C2040	D4	C243	C2	C384	D3	R2016	D4	R230	C2	R382	D3
C2041	D4	C244	C2	CN201	D2	R2017	D4	R231	C2	R383	D3
C2042	D4	C247	C2	CN202	C1	R2018	D4	R232	C2	R384	D3
C2043	C2	C248	C2	D2001	D1	R2019	D4	R233	B3	R385	D3
C2044	C2	C249	C3	D2002	D1	R202	A1	R234	B3	R386	D3
C2045	D4	C250	C3	D2003	D1	R2020	D4	R235	B3	R387	C3
C2046	D4	C251	C3	FB201	B1	R2021	D4	R236	B3	R388	C3
C205	A1	C252	B3	FB202	A2	R2022	D4	R237	B3	R389	C3
C2057	C4	C253	B3	FB203	A2	R2023	D4	R239	B3	R390	C3
C2058	C4	C254	B3	FB204	A2	R2024	D4	R240	B3	R391	D3
C2059	C4	C255	B3	FB207	A4	R2025	D4	R241	B3	R392	D3
C206	A1	C256	B3	FB209	C3	R2026	D4	R242	B3	R393	D3
C2060	C4	C257	B3	FB211	C3	R2027	D4	R243	A2	R394	C1
C2061	C3	C258	B3	FB212	B3	R2028	D4	R244	B1	R395	C1
C2062	C3	C259	B3	FB213	B3	R2029	D4	R245	B1	RA201	A2
C2063	C3	C260	B3	FB215	A2	R203	A1	R246	B1	RA202	B3
C2064	B4	C262	A2	FB216	C1	R2030	D4	R247	B1	RA203	A2
C2065	B4	C263	A2	FB218	D2	R2031	D4	R252	A2	RA204	A1
C2066	B4	C264	A2	FB219	D2	R2032	D4	R253	A2	RA205	A2
C2067	B4	C265	C3	FB220	D2	R2033	D4	R254	A2	RA206	A2
C2068	B4	C266	C3	FB221	D2	R2034	D4	R255	C1	XL201	B3
C207	A1	C267	C3	FB222	D2	R2035	D4	R256	C1	ZD104	B3
C2070	B4	C268	C3	FB223	D2	R2036	D4	R257	A2	ZD201	C4
C2071	B4	C269	C3	FB224	D2	R2037	D4	R258	A2	ZD202	C4
C2072	B4	C270	C3	FB233	A1	R2039	D4	R259	A3	ZD203	B4
C2073	B4	C273	B3	FB235	C1	R204	B1	R261	A3	ZD205	A4
C2074	B4	C274	B3	FB236	B3	R2050	B4	R262	A2	ZD320	C1
C2076	B4	C275	B3	FB237	B3	R2051	C4	R264	A2		
C2077	B4	C276	B3	FB238	C3	R2052	C1	R265	A4		
C2078	B4	C277	B3	FB301	D3	R2054	B1	R267	A4		

6 - 4

PCB Layout Top View



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C102	C4	C237	A3	C4107	A2	C523	A1	FB207	C4	L405	A2	R225	B3	R371	C2	R472	C1		
C104	C4	C238	A3	C4108	A2	C5231	C1	FB209	A2	L406	A2	R227	B3	R373	C2	R473	C1		
C105	C4	C242	B3	C4109	A2	C5232	C1	FB211	B4	L407	A2	R229	B3	R374	C2	R474	A2		
C106	C4	C243	B3	C413	A3	C5233	C1	FB215	B4	L5201	C1	R231	B3	R375	C2	R475	A2		
C107	C4	C244	B3	C414	A3	C525	A1	FB216	A3	L5202	C1	R232	B3	R379	C3	R476	A2		
C126	B4	C247	B3	C417	A3	C526	A1	FB218	A4	L5301	B1	R233	B4	R380	C3	R5014	C3		
C127	B4	C248	B3	C418	A3	C527	A1	FB219	A4	L5302	B2	R234	B4	R382	C3	R5015	C3		
C128	C4	C249	B3	C419	A3	C528	C3	FB220	A4	L5401	B1	R236	B3	R383	C3	R503	B1		
C129	C4	C250	B4	C4201	A2	C5301	B1	FB221	A4	L5402	C1	R237	B3	R384	C2	R504	A1		
C130	C4	C251	B4	C4202	A2	C5302	B1	FB222	A4	L5501	A1	R240	B4	R385	C3	R505	B1		
C2001	C4	C252	B4	C4205	B1	C5303	B1	FB223	A4	L5502	A1	R241	B4	R386	CC2	R506	B1		
C2002	C4	C253	B3	C4206	A2	C5306	B1	FB224	A4	Q101	C4	R243	B4	R387	C3	R507	A1		
C2004	C4	C254	B4	C4207	A3	C5307	B1	FB233	B4	Q201	A3	R252	B4	R388	C2	R508	C1		
C2007	B3	C255	B3	C4208	A2	C5311	B1	FB235	A3	Q202	A3	R253	B4	R389	C2	R509	C1		
C2008	B3	C257	B3	C4209	A2	C5312	B1	FB236	B4	Q404	A2	R254	B4	R390	C3	R510	B1		
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C2011	B2	C289	A4	C423	A3	C5317	C2	FB302	C3	Q5003	C3	R259	A4	R4001	A2	R515	A1		
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C2015	B3	C291	A4	C425	A2	C5320	B1	FB304	C3	R102	C4	R262	A4	R4004	A2	R517	A1		
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C2018	B3	C296	A4	C428	A2	C5327	B1	FB307	B4	R105	C4	R267	A4	R4008	C1	R520	A1		
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C2031	B2	C311	C4	C4402	A3	C5411	B1	FB519	A2	R118	C4	R277	A4	R4104	A2	R5210	C1		
C2032	B3	C312	C4	C4403	A3	C5412	B1	FB520	B2	R2001	B3	R278	C4	R4105	A2	R5211	C1		
C2034	B3	C313	C4	C4405	B1	C5413	B1	FB521	C2	R2002	B3	R280	A4	R4106	A2	R522	C3		
C2035	B3	C314	C4	C4407	A3	C5414	C2	FB522	C2	R2003	B2	R281	A4	R4108	C1	R523	C2		
C2036	B3	C315	C4	C4408	A3	C5416	C2	FB523	A2	R2004	B3	R289	B4	R4109	A2	R524	C2		
C2037	B3	C316	C4	C4409	A3	C5417	C2	FB530	A2	R2005	B2	R290	B4	R4114	A2	R525	C3		
C2038	B3	C317	C3	C4501	A3	C5419	B2	FB531	B2	R2006	B3	R291	B4	R4201	A2	R526	C3		
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C2071	A3	C357	C2	C507	B1	C5517	C2	IC217	B3	R2024	B3	R315	C3	R4305	A2	R5409	C1		
C2072	A2	C358	C2	C508	A1	C5519	A2	IC301	C4	R2025	B2	R316	B3	R4306	A2	R5501	A1		
C2073	B2	C361	C3	C509	C2	C5520	A1	IC303	A4	R2026	B3	R317	C4	R4308	B1	R5502	A1		
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C208	B4	C367	C2	C515	B2	CN101	B4	IC4001	A2	R2032	B3	R335	B3	R436	A3	RA201	B4		
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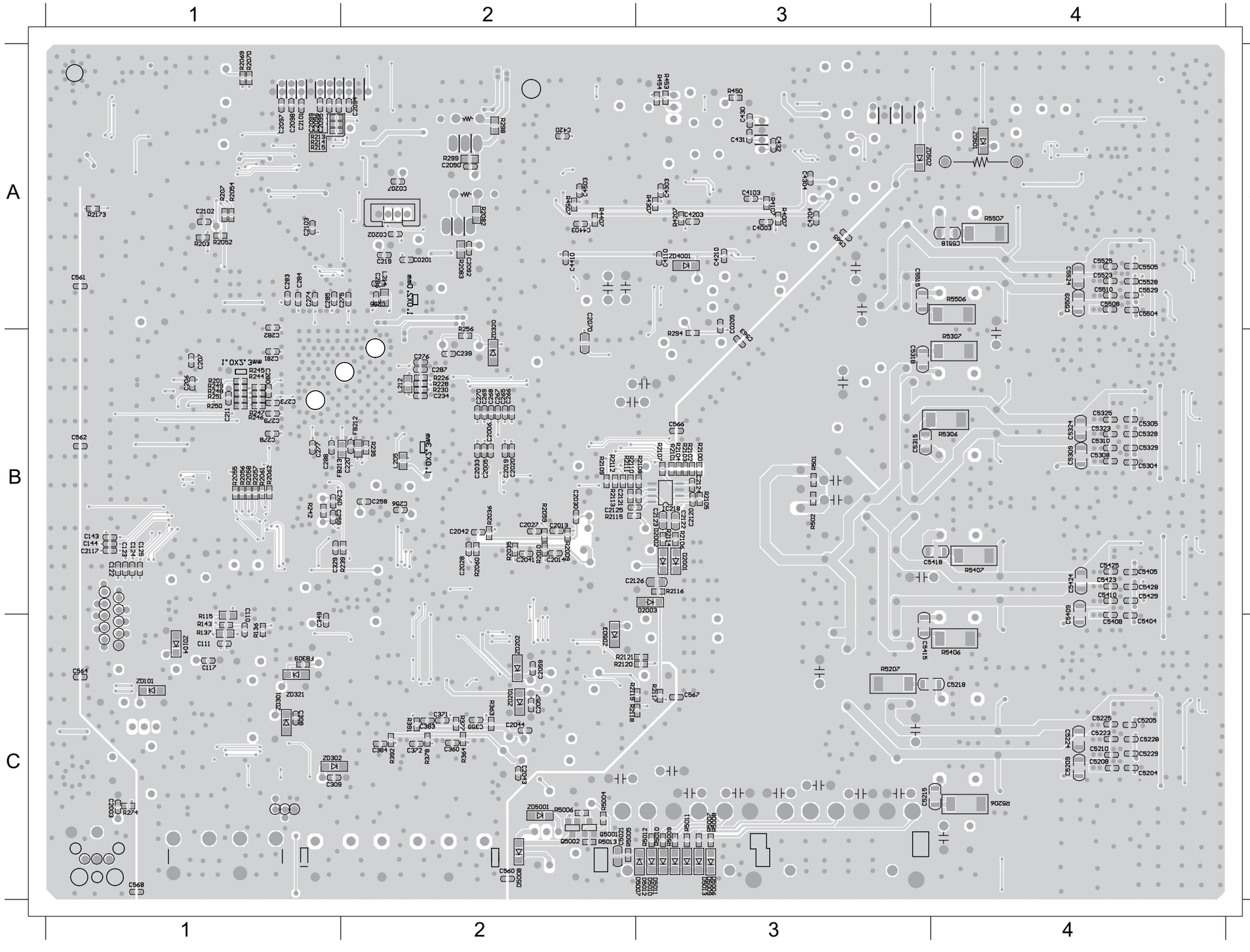
C2104	A4	C381	C3	C5207	C1	D410	A3	IC503	C2	R208	A3	R355	C2	R4414	A3	ZD205	A4		
C2115	B4	C382	C2	C521	A1	D416	A2	IC5201	C1	R2080	A3	R356	C2	R4501	A3	ZD401	A2		
C212	A3	C4001	A2	C5211	C1	D5014	C3	IC5301	B1	R2081	A3	R357	C2	R4502	A3	ZD403	C1		
C213	A3	C4002	A2	C5212	C1	FB101	B4	IC5401	C1	R2082	A3	R358	C2	R4504	A3				
C214	A4	C4004	A2	C5213	C1	FB102	B4	IC5501	A1	R210	A3	R359	C2	R4506	A2				
C217	A3	C4005	C1	C5214	C1	FB103	B4	JK301	C4	R212	A3	R360	C2	R4508	A1				
C218	A3	C4006	A2	C5216	C2	FB104	B4	JK302	C4	R216	A3	R361	C2	R4510	A3				
C223	A3	C4007	A2	C5217	C2	FB105	B4	JK303	C4	R217	B3	R362	C2	R452	A2				
C230	A3	C4012	A2	C5219	C2	FB106	B4	JK501	C1	R218	B3	R365	C3	R461	C1				
C231	A3	C4101	A2	C522	A1	FB107	C4	JK502	C2	R219	B3	R366	C3	R465	C1				
C232	A3	C4102	A2	C5220	C1	FB201	A3	L201	A4	R220	B3	R367	C3	R468	C1				
C233	B3	C4104	A2	C5221	C1	FB202	A3	L203	A3	R221	B3	R368	C3	R469	A1				

6 - 5

PCB Layout Bottom View



C0201	A2	C288	B1	C567	C3	R4307	A3
C0202	A2	C308	C1	C568	C1	R4407	A2
C0205	A3	C309	C1	D2001	B3	R450	A3
C0207	A2	C349	C1	D2002	B3	R4507	A2
C0270	B2	C359	C2	D2003	B3	R453	A3
C0271	A2	C360	C2	D5006	C3	R454	A3
C122	B1	C371	C2	D5007	C3	R5004	C2
C123	B1	C372	C2	D5008	C2	R5005	C2
C124	B1	C383	C2	D5013	C3	R5006	C2
C125	B1	C384	C2	FB212	B2	R5007	C3
C143	B1	C4003	A3	FB213	B2	R5008	C3
C144	B1	C4103	A3	FB309	C1	R501	B3
C2003	C1	C4110	A3	IC218	B3	R502	B3
C2005	B2	C420	A2	L205	B2	R5206	C3
C2006	B2	C4203	A3	L212	B2	R5207	C3
C2013	B2	C4204	A3	L214	A2	R5306	B4
C2014	B2	C430	A3	Q5001	C2	R5307	B4
C2019	B2	C4303	A3	Q5002	C2	R5406	C4
C2020	B2	C4304	A3	R2009	B2	R5407	B4
C2027	B2	C431	A3	R201	B1	R5506	A4
C2028	B2	C432	A3	R2010	B2	R5507	A4
C2030	B2	C4406	A2	R203	A1	ZD101	C1
C2033	B2	C4410	A2	R2035	B2	ZD104	C1
C2041	B2	C4503	A2	R2036	B2	ZD201	C2
C2042	B2	C5021	C2	R2052	A1	ZD202	C2
C2043	C2	C516	A1	R2054	A1	ZD301	C1
C2044	C2	C5205	C3	R2055	B1	ZD302	C1
C2057	C2	C5208	C3	R2057	B1	ZD320	B2
C2059	C2	C5209	C3	R2058	B1	ZD321	C1
C206	B1	C5210	C3	R2059	B2	ZD4001	A3
C207	B1	C5215	C3	R2060	B2	ZD5001	C2
C2070	B2	C5218	C3	R2061	B1	ZD501	A4
C2090	A2	C5223	C3	R2062	B1	ZD502	A3
C2092	A2	C5224	C3	R2069	A1	ZD503	C2
C2094	A2	C5225	C3	R207	A1		
C2095	A1	C5228	C4	R2070	A1		
C2096	A1	C5229	C4	R2083	A2		
C2097	A1	C5304	B4	R2100	B3		
C2098	A1	C5305	B4	R2101	B3		
C2099	A1	C5308	B4	R2105	B3		
C2101	A1	C5309	B4	R2106	B3		
C2102	A1	C5310	B4	R2107	B3		
C2103	A1	C5315	B3	R2108	B3		
C2117	B1	C5318	B3	R2109	B2		
C2120	B3	C5323	B4	R2113	B2		
C2121	B3	C5324	B4	R2114	B3		
C2122	B3	C5325	B4	R2115	B2		
C2123	B3	C5328	B4	R2116	B3		
C2124	B3	C5329	B4	R2117	C3		
C2125	B2	C5404	C4	R2118	C2		
C2126	B3	C5405	B4	R2119	C2		
C219	A2	C5408	C4	R2120	C2		
C220	B2	C5409	B4	R2121	C2		
C234	B2	C5410	B4	R213	B1		
C239	B2	C5415	C3	R214	B1		
C256	B2	C5418	B3	R215	B1		
C258	B2	C5423	B4	R226	B2		
C259	B1	C5424	B4	R228	B2		
C260	B1	C5425	B4	R230	B2		
C265	B2	C5428	B4	R235	B2		
C266	B2	C5429	B4	R239	B2		
C267	B2	C5504	A4	R242	B1		
C268	B2	C5505	A4	R244	B1		
C269	B2	C5508	A4	R245	B1		
C270	B2	C5509	A4	R246	B1		
C273	B1	C5510	A4	R247	B1		
C274	A1	C5515	A3	R256	B2		
C275	A1	C5518	A4	R274	C1		
C276	B2	C5523	A4	R294	B3		
C277	B1	C5524	A4	R298	A2		
C278	B1	C5525	A4	R299	A2		
C279	B1	C5528	A4	R363	C2		
C280	B1	C5529	A4	R364	C2		
C281	B1	C560	C2	R377	C2		
C282	A1	C561	A1	R378	C2		
C283	A1	C562	B1	R391	C2		
C284	A1	C563	B3	R392	C2		
C285	A1	C564	C1	R4007	A3		
C286	A2	C565	A3	R4107	A3		
C287	B2	C566	B3	R4207	A3		

6 - 6

Voltage

IC101(4558 SOP8)																				
Pin NO	1	2	3	4	5	6	7	8												
Voltage	0.02	0.03	0.01	-10.5	0.04	0.05	0.07	12.5												

IC103(SAA6581T)																				
Pin NO	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16				
Voltage	2.03	2.61	2.02	2.01	4.6	0	2.06	2.05	4.5	0	0	4.5	1.6	2.2	4.5	2.2				

IC201(ES8380FAC)																				
Pin NO	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20
Voltage	3.2	1.6	1.1	0	1.7	0.3	0.4	0	0	3.2	0.1	0.1	0	0.1	0	0	2.7	0	3	3.1
Pin NO	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40
Voltage	3.2	3	0	3.2	3.3	0	1	1.1	0	0.9	1	1.3	1	0.9	0	3.2	1	1	1	0.8
Pin NO	41	42	43	44	45	46	47	48	49	50	51	52	53	54	55	56	57	58	59	60
Voltage	0.8	1	1.1	1.3	0	3.2	0	2.1	1.3	1.8	2.5	0	3.2	1	1.6	1.8	0	0	3.2	3.2
Pin NO	61	62	63	64	65	66	67	68	69	70	71	72	73	74	75	76	77	78	79	80
Voltage	3.2	0	0	1.1	0	1.4	1.9	1.5	1.7	1.7	1.5	0	3.2	1.6	0	1.6	3.2	3.2	1.6	1.4
Pin NO	81	82	83	84	85	86	87	88	89	90	91	92	93	94	95	96	97	98	99	100
Voltage	0	0	1.2	0	1.8	0	0	1.1	0	3.2	0	1	0	1.7	1.6	0	0	0	1.6	0.5
Pin NO	101	102	103	104	105	106	107	108	109	110	111	112	113	114	115	116	117	118	119	120
Voltage	0.8	0.8	0	3.2	0	0	3.2	1.3	0	0	3.2	0	0.8	0.8	0.8	0.8	1.6	1.7	1.7	3.4
Pin NO	121	122	123	124	125	126	127	128	129	130	131	132	133	134	135	136	137	138	139	140
Voltage	0	0	1.6	1.7	3.2	3.8	1.4	0	1.5	3.2	0	0	0	3.2	1.4	0	0	0	3.2	0
Pin NO	141	142	143	144	145	146	147	148	149	150	151	152	153	154	155	156	157	158	159	160
Voltage	0	1.4	0	1.6	0	1.5	2.7	1.1	3.2	2.1	1.9	0.2	1.2	1.2	1	3.1	0	1.5	1.5	1.5
Pin NO	161	162	163	164	165	166	167	168	169	170	171	172	173	174	175	176	177	178	179	180
Voltage	2	2	2	2	2	2	1.9	1.9	1.5	3.2	1.1	1.6	1.5	1.6	0	2.3	3.2	0	1.4	3.2
Pin NO	181	182	183	184	185	186	187	188	189	190	191	192	193	194	195	196	197	198	199	200
Voltage	0	3.6	3.6	1.8	1.7	1.6	0	3.2	0	3.2	0	3.2	0	0	0	1.4	4	3.7	3.9	3.6
Pin NO	201	202	203	204	205	206	207	208												
Voltage	3.9	3.2	3.2	3.9	1.6	1.7	1.4	0												

IC202(EW484M1644VTA-6F)																				
Pin NO	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20
Voltage	3.4	0.8	3.4	1.03	1.22	0	0.9	0.9	3.4	0.9	1	0	1.08	3.4	0	3.4	3.47	3.46	3.4	0
Pin NO	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40
Voltage	0	0	0	0	0	3.4	3.4	0	3.4	3.4	3.4	3.4	0	0	0	0	3.4	1.85	0	0
Pin NO	41	42	43	44	45	46	47	48	49	50	51	52	53	54						
Voltage	0	0.09	3.4	0.12	0	0	0.1	0.1	3.4	0.09	0	0	0.09	0						

IC203(KH29LV800CBTC-70G0)																				
Pin NO	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20
Voltage	0.5	0.05	0.1	0.02	0.04	0.01	0.08	0.01	0	0	0.1	0.08	3.3	3.3	0.5	0.06	0.01	0.01	0.02	0.03
Pin NO	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40
Voltage	0.08	0.09	0.08	0	0	0	0	0	0.1	0.5	0.4	0.08	0.01	0.07	0.09	0.02	3.3	0.08	0.09	0.5
Pin NO	41	42	43	44	45	46	47	48												
Voltage	0.04	0.07	0.08	0.09	0.07	0.01	0.08	0.09												

IC204(TU24C04CS2BF)																				
Pin NO	1	2	3	4	5	6	7	8												
Voltage	0	0	0	0	3.3	3.3	0	3.3												

IC205(STL8110GCL300)																				
Pin NO	1	2	3																	
Voltage	3.3	0	3.3																	

IC207(SN74HC374PW)																				
Pin NO	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20
Voltage	0	0	0.5	1.16	0	0	1.09	1.2	0	0	3.4	5	1.07	0	5.12	5.1	1.3	1.2	5	5.1

IC209(CD4053BM96)																				
Pin NO	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16				
Voltage	0	0	0	0	0	0	-5.2	0	0	0	0	0	0	0	0	5.07				

IC211(CO4558A)																				
Pin NO	1	2	3	4	5	6	7	8												
Voltage	0.04	0.02	0.03	-10.5	0.01	0.08	0.09	12.3												

IC212(4558 SOP8)																				
Pin NO	1	2	3	4	5	6	7	8												
Voltage	0	0.04	0	-10.5	0	0.09	0.08	12.3												

IC213 (CO4558A)																				
Pin NO	1	2	3	4	5	6	7	8												
Voltage	0.07	0.01	0.03	-10.5	0.04	0.05	0	12.5												

IC217(NJW1150M)																				
Pin NO	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20
Voltage	0	7.8	5	0	0	0	0	0	0.1	0	0	0	0.5	0.07	0.04	3.3	3.3	0.1	0.2	0.03
Pin NO	21	22	23	24	25	26	27	28	29	30										
Voltage	0	0	0.1	0.8	0	0.2	0	0	0.9	-7.8										

IC218(4558 SOP8)																				
Pin NO	1	2	3	4	5	6	7	8												
Voltage	0.01	0.02	0.03	-10.5	0.04	0.05	0.08	12.4												

IC301(4052L-S16-R)																				
Pin NO	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16				
Voltage	0	0	0	0	0	0	-5	0	0	0	0	0	0	0	0	5.04				

IC303(SN74HCU04DR)																				
Pin NO	1	2	3	4	5	6	7	8	9	10	11	12	13	14						
Voltage	0	0	2.1	2.2	2.08	0	0	0	0	2.09	2.2	0.1	0	0						

IC5201(TDA8920BTH)																				
Pin NO	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20
Voltage	-23.8	0	23.6	0	0	5	2.4	0	0	23.7	0	-23.5	-16	24	11.3	0	-24	-11.9	-23.7	-23.8
Pin NO	21	22	23	24																
Voltage	0	11.2	24	-23.8																

IC5301(TDA8920BTH)																				
Pin NO	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20
Voltage	-23.8	0	23.6	0	0	5	2.4	0	0	23.7	0	-23.5	-16	24	11.3	0	-24	-11.9	-23.7	-23.8
Pin NO	21	22	23	24																
Voltage	0	11.2	24	-23.8																

IC5401(TDA8920BTH)																				
Pin NO	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20
Voltage	-23.8	0	23.6	0	0	5	2.4	0	0	23.7	0	-23.5	-16	24	11.3	0	-24	-11.9	-23.7	-23.8
Pin NO	21	22	23	24																
Voltage	0	11.2	24	-23.8																

IC5501(TDA8920BTH)																				
Pin NO	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20
Voltage	-23.8	0	23.6	0	0	5	2.4	0	0	23.7	0	-23.5	-16	24	11.3	0	-24	-11.9	-23.7	-23.8
Pin NO	21	22	23	24																
Voltage	0	11.2	24	-23.8																

Q101			
Pin NO	b	c	e
Voltage	8.4	12.2	9.1

Q102			
Pin NO	b	c	e
Voltage	1.3	0.7	3.3

Q103			
Pin NO	b	c	e
Voltage	0	4.1	3.3

Q201			
Pin NO	b	c	e
Voltage	3.43	5.13	4.1

Q202			
Pin NO	b	c	e
Voltage	1.5	5.1	2.16

Q404			
Pin NO	b	c	e
Voltage	5.1	0	0

Q406			
Pin NO	b	c	e
Voltage	0.5	0	0.7

Q407			
Pin NO	b	c	e
Voltage	0	0	0

Q410			
Pin NO	b	c	e
Voltage	0	0.6	0

Q5001			
Pin NO	b	c	e
Voltage	6	0	6

Q5002			
Pin NO	b	c	e
Voltage	6	6.6	12.5

Q5003			
Pin NO	b	c	e
Voltage	12.1	12.2	12.4

POWER BOARD

TABLE OF CONTENTS

Voltage 7-1
Circuit Diagram 7-2
PCB Layout Top View 7-3
PCB Layout Bottom View 7-4

7 - 1

VOLTAGE

IC901(AP3843GMTR-E1)																				
Pin NO	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16				
Voltage	4.9	4.9	2.6	0	1.7	3.4	0	12.1	2.1	2	12.1	12.1	4.9	4.8	2.4	0				

IC902(AP3843GMTR-E1)																				
Pin NO	1	2	3	4	5	6	7	8												
Voltage	3.18	0	0.5	2.17	0	1.4	10.9	5.15												

IC903																				
Pin NO	1	2	3	4																
Voltage	4.9	4.9	0	0																

IC904																				
Pin NO	1	2	3	4																
Voltage	4.9	4.9	0	0																

IC905(AZ431AZ-A)																				
Pin NO	1	2	3																	
Voltage	4	0	4.03																	

IC906(TL431 TO-92)																				
Pin NO	1	2	3																	
Voltage																				

Q901			
Pin NO	b	c	e
Voltage	145	295	145

Q902			
Pin NO	b	c	e
Voltage	2.6	0	0.8

Q903			
Pin NO	b	c	e
Voltage	1.85	0	1.79

Q904			
Pin NO	b	c	e
Voltage	0	3.4	0

Q905			
Pin NO	b	c	e
Voltage	0.5	0	0

Q906			
Pin NO	b	c	e
Voltage	42.1	0	0

Q907			
Pin NO	b	c	e
Voltage	0	0	0

Q908			
Pin NO	b	c	e
Voltage	0	4	0

Q909			
Pin NO	b	c	e
Voltage	145	0	0

Q910			
Pin NO	b	c	e
Voltage	1.7	0	1.7

Q911			
Pin NO	b	c	e
Voltage	1.7	0	1.7

Q912			
Pin NO	b	c	e
Voltage	298	0	0

Q913			
Pin NO	b	c	e
Voltage	2.4	0	70.6

Q914			
Pin NO	b	c	e
Voltage	0	0	0

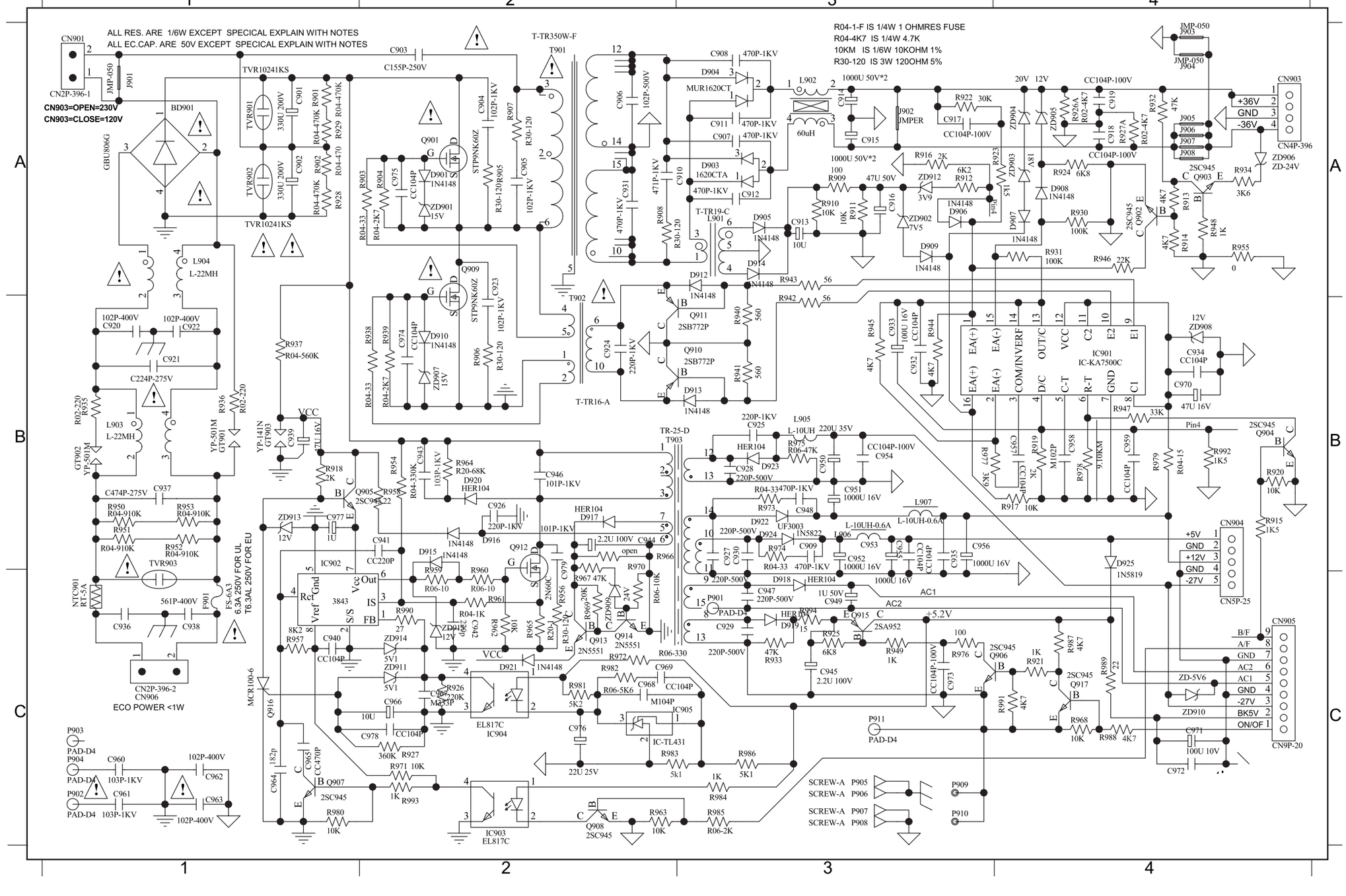
Q915			
Pin NO	b	c	e
Voltage	42.1	4.9	42.1

Q916			
Pin NO	b	c	e
Voltage	0	0	0

7 - 2

CIRCUIT DIAGRAM

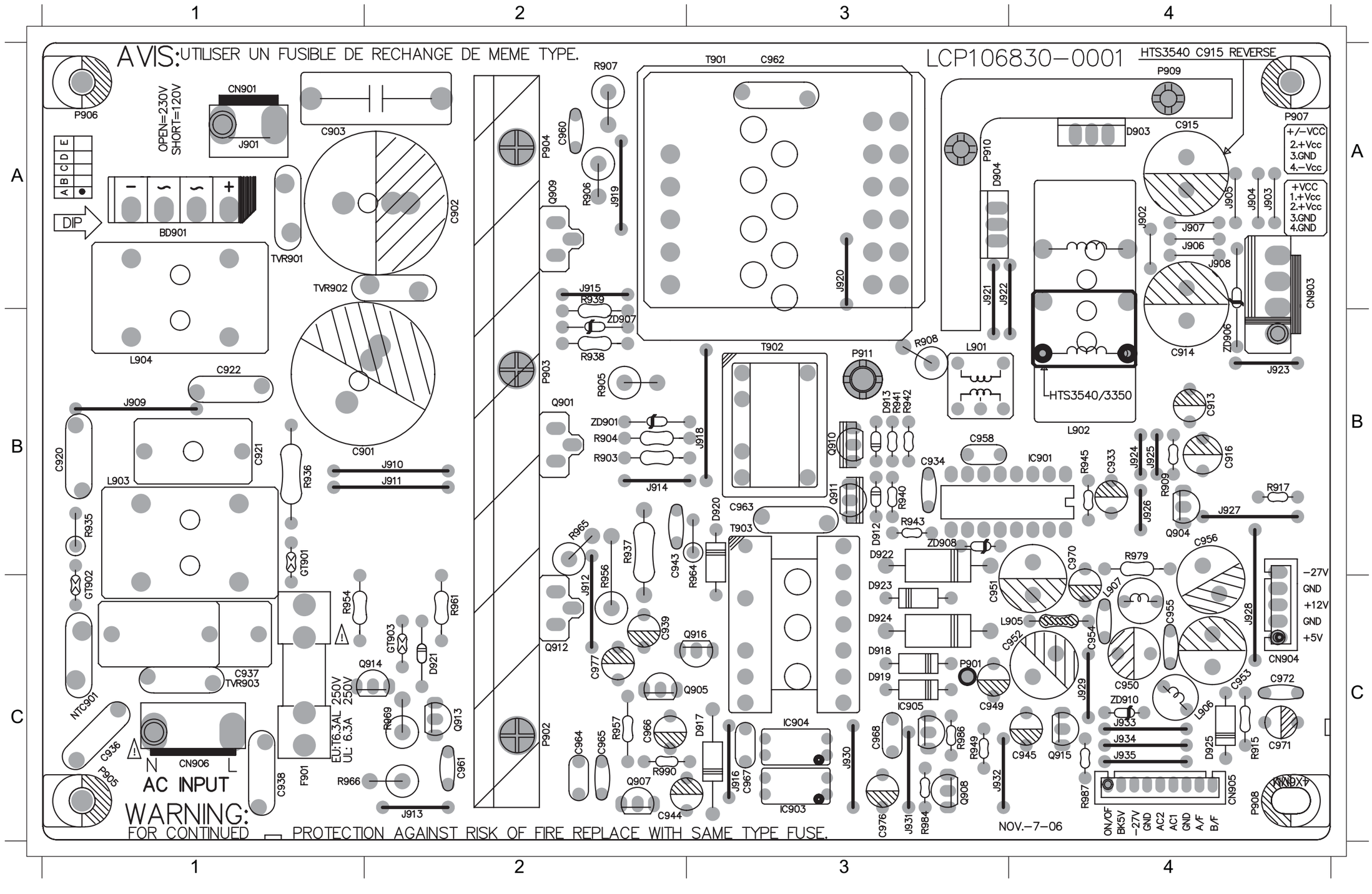
BD901	A1	C913	A3	C925	B3	C938	C1	C951	B3	C963	C1	C977	B1	D908	A4	D921	C2	IC905	C2	Q904	B4	Q916	C1	R911	A3	R923	A4	R934	A4	R946	A4	R959	C2	R971	C2	R983	C2	T902	A2	ZD908	B4
C901	A1	C914	A3	C926	B2	C939	B1	C952	B3	C964	C1	C978	C2	D909	A3	D922	B3	L901	A3	Q905	B2	Q917	C4	R912	A3	R924	A4	R935	B1	R947	B4	R960	C2	R972	C2	R984	C3	T903	B2	ZD909	C2
C902	A1	C915	A3	C927	B3	C940	C1	C953	B3	C965	C1	CN901	A1	D910	B2	D923	B3	L902	A3	Q906	C4	R901	A1	R913	A4	R925	C3	R936	B1	R948	A4	R961	C2	R973	B3	R985	C3	TVR901	A1	ZD910	C4
C903	A2	C916	A3	C928	B3	C941	B2	C954	B3	C966	C2	CN903	A4	D912	A3	D924	B3	L903	B1	Q907	C1	R902	A1	R914	A4	R926A	A4	R937	B1	R949	C3	R962	C2	R974	B3	R986	C3	TVR902	A1	ZD911	C2
C904	A2	C917	A3	C929	C3	C942	C2	C955	B3	C967	C2	CN904	B4	D913	B3	D925	B4	L904	A1	Q908	C2	R903	A2	R915	B4	R927	C2	R938	B2	R950	B1	R963	C2	R975	B3	R987	C4	TVR903	B1	ZD912	A3
C906	A2	C918	A4	C930	B3	C943	B2	C956	B3	C968	C2	CN905	C4	D914	A3	F901	C1	L905	B3	Q909	A2	R904	A2	R916	A3	R927A	A4	R939	B2	R951	B1	R964	B2	R976	C3	R988	C4	ZD901	A2	ZD913	B1
C907	A3	C919	A4	C931	A2	C944	B2	C957	B4	C969	C2	CN906	C1	D915	B2	GT901	B1	L906	B3	Q910	B3	R905	A2	R917	B4	R928	A1	R940	B3	R952	B1	R965	C2	R977	B4	R989	C4	ZD902	A3	ZD914	C2
C908	A3	C920	B1	C932	B3	C945	C3	C958	B4	C970	B4	D901	A2	D916	B2	GT902	B1	L907	B3	Q911	B3	R906	B2	R918	B1	R929	A1	R941	B3	R953	B1	R966	B2	R978	B4	R990	C2	ZD903	A4		
C909	B3	C921	B1	C933	B3	C946	B2	C959	B4	C971	C4	D903	A3	D917	B2	IC901	B4	NTC901	C1	Q912	B2	R907	A2	R919	B4	R930	A4	R942	B3	R954	B2	R967	B2	R979	B4	R991	C4	ZD904	A4		
C910	A2	C922	B1	C934	B4	C948	B3	C960	C1	C972	C4	D904	A3	D918	C3	IC902	C1	Q901	A2	Q913	C2	R908	A2	R920	B4	R931	A4	R943	A3	R955	A4	R968	C4	R980	C1	R993	C2	ZD905	A4		
C911	A3	C923	A2	C935	B3	C949	C3	C961	C1	C973	C3	D905	A3	D919	C3	IC903	C2	Q902	A4	Q914	C2	R909	A3	R921	C4	R932	A4	R944	B3	R957	C1	R969	C2	R981	C2	R994	C3	ZD906	A4		
C912	A3	C924	B2	C937	B1	C950	B3	C962	C1	C976	C2	D907	A4	D920	B2	IC904	C2	Q903	A4	Q915	C3	R910	A3	R922	A3	R933	C3	R945	B3	R958	B2	R970	B2	R982	C2	T901	A2	ZD907	B2		



7 - 3

PCB LAYOUT - TOP VIEW

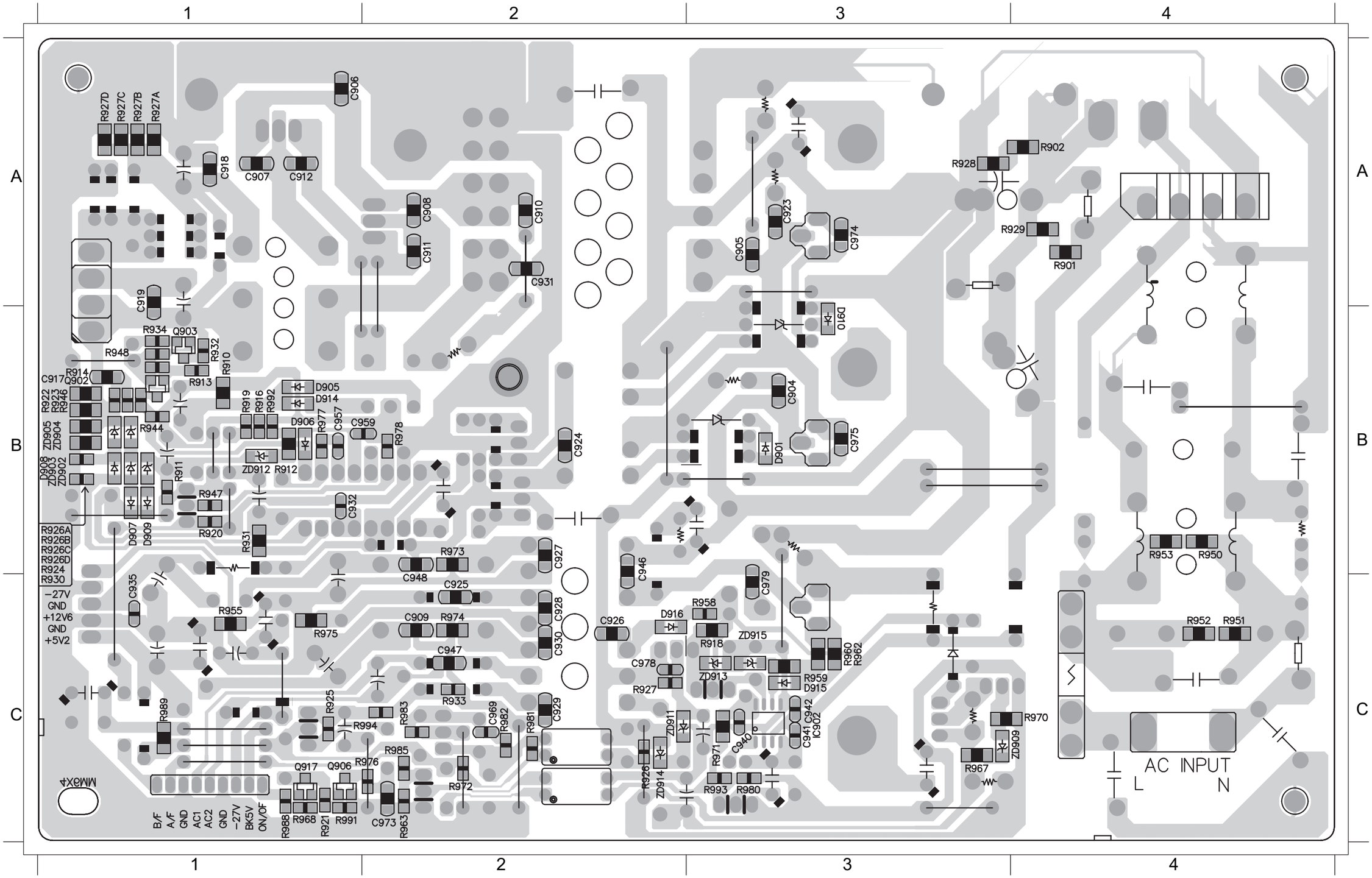
BD901	A1	C920	B1	C943	B2	C954	C4	C964	C2	C976	C3	D904	A3	D922	B3	IC903	C3	J910	B2	J920	A3	J928	C4	L901	B3	Q901	B2	Q912	C2	R906	A2	R937	B2	R949	C3	R979	B4	TVR901	A1
C901	B1	C921	B1	C944	C2	C955	C4	C965	C2	C977	C2	D912	B3	D923	C3	IC904	C3	J911	B2	J921	A3	J929	C4	L902	B4	Q904	B4	Q913	C2	R907	A2	R938	B2	R954	C1	R984	C3	TVR902	A2
C902	A2	C922	B1	C945	C4	C956	B4	C966	C2	CN901	A1	D913	B3	D924	C3	IC905	C3	J912	C2	J922	A4	J930	C3	L903	B1	Q905	C3	Q914	C2	R908	B3	R939	A2	R957	C2	R986	C3	TVR903	C1
C903	A1	C933	B4	C949	C3	C958	B3	C967	C3	CN903	A4	D917	C3	D925	C4	J905	A4	J913	C2	J923	B4	J931	C3	L904	B1	Q907	C2	Q915	C4	R909	B4	R940	B3	R961	C2	R987	C4	ZD901	B2
C913	B4	C934	B3	C950	C4	C960	A2	C968	C3	CN904	C4	D918	C3	F901	C1	J906	A4	J914	B2	J924	B4	J932	C4	L905	C4	Q908	C3	Q916	C3	R915	C4	R941	B3	R964	B3	R990	C2	ZD906	A4
C914	B4	C937	C1	C951	C4	C961	C2	C970	B4	CN905	C4	D919	C3	GT901	B1	J907	A4	J915	A2	J925	B4	J933	C4	L906	C4	Q909	A2	R903	B2	R917	B4	R942	B3	R965	B2	T901	A3	ZD907	B3
C915	A4	C938	C1	C952	C4	C962	A3	C971	C4	CN906	C1	D920	B3	GT902	C1	J908	A4	J916	C3	J926	B4	J934	C4	L907	C4	Q910	B3	R904	B2	R935	B1	R943	B3	R966	C2	T902	B3	ZD908	B3
C916	B4	C939	C2	C953	C4	C963	B3	C972	C4	D903	A4	D921	C2	IC901	B4	J909	B1	J918	B3	J927	B4	J935	C4	NTC901	C1	Q911	B3	R905	B2	R936	B1	R945	B4	R969	C2	T903	B3	ZD910	C4



7 - 4

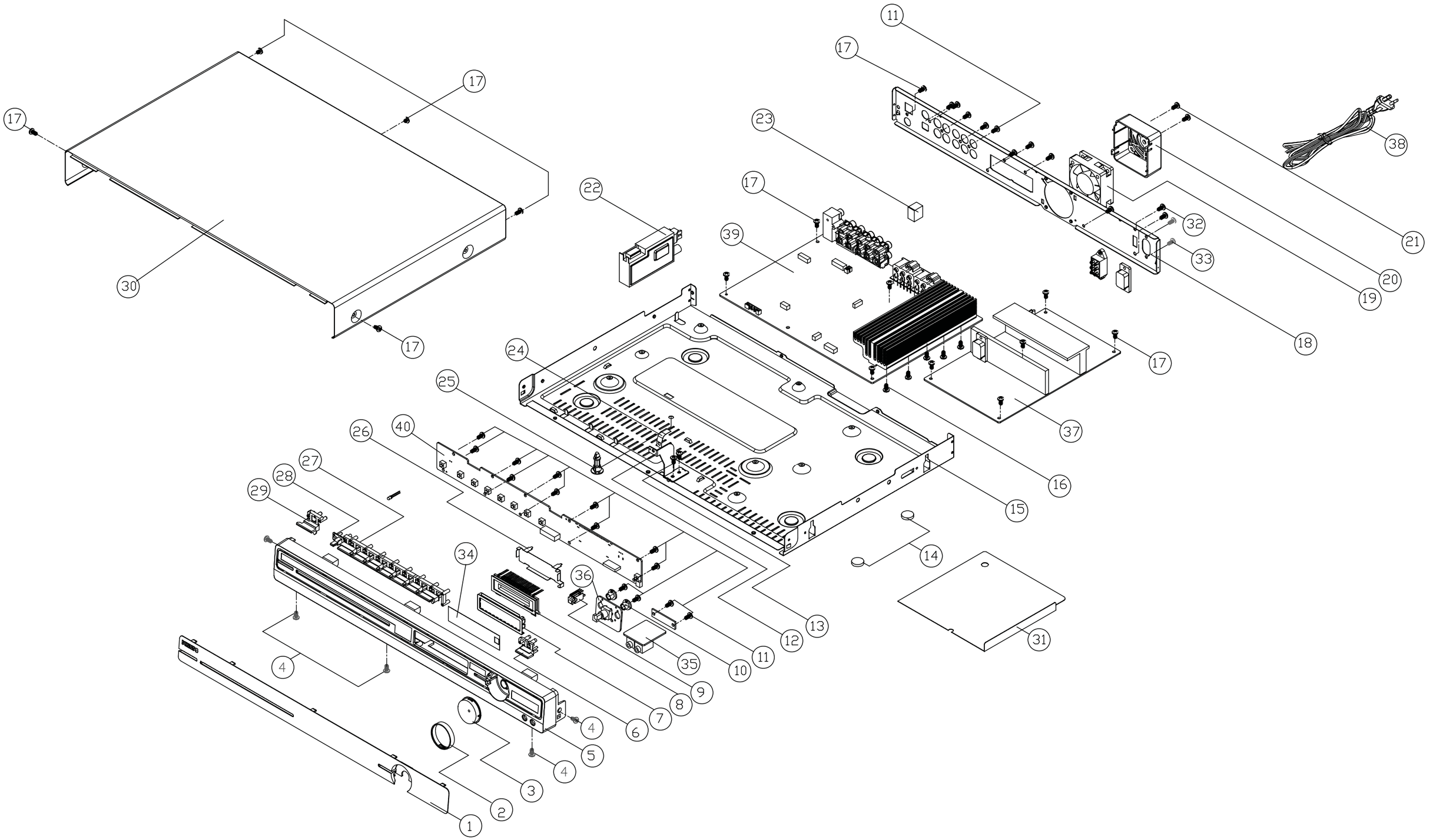
PCB LAYOUT - BOTTOM VIEW

C906	A1	R927D	A1	R902	A4	D908	B1	R913	B1	R926A	B1	R944	B1	ZD912	B1	D901	B3	R925	C1	C909	C2	C978	C2	R981	C2	C942	C3	R967	C3	R952	C4
C907	A1	C908	A2	R929	A4	D909	B1	R914	B1	R926B	B1	R946	B1	C924	B2	D910	B3	R955	C1	C925	C2	D916	C2	R982	C2	D915	C3	R970	C3		
C912	A1	C910	A2	C917	B1	D914	B1	R916	B1	R926C	B1	R947	B1	C927	B2	R950	B4	R968	C1	C926	C2	R927	C2	R983	C2	IC902	C3	R971	C3		
C918	A1	C911	A2	C932	B1	Q902	B1	R919	B1	R926D	B1	R948	B1	C946	B2	R953	B4	R975	C1	C928	C2	R933	C2	R985	C2	R918	C3	R980	C3		
C919	A1	C931	A2	C957	B1	Q903	B1	R920	B1	R930	B1	ZD902	B1	C948	B2	C935	C1	R988	C1	C929	C2	R963	C2	ZD911	C2	R958	C3	R993	C3		
R927A	A1	C923	A3	C959	B1	R910	B1	R922	B1	R931	B1	ZD903	B1	R973	B2	Q906	C1	R989	C1	C930	C2	R972	C2	ZD914	C2	R959	C3	ZD909	C3		
R927B	A1	R928	A3	D905	B1	R911	B1	R923	B1	R932	B1	ZD904	B1	R978	B2	Q917	C1	R991	C1	C969	C2	R976	C2	C940	C3	R960	C3	ZD913	C3		
R927C	A1	R901	A4	D907	B1	R912	B1	R924	B1	R934	B1	ZD905	B1	C904	B3	R921	C1	R994	C1	C973	C2	R974	C2	C941	C3	R962	C3	R951	C4		



Mechanical Exploded View

9 - 1



9 - 2

Loc.	Part No.	Description
1	996510003624	DISPLAY LENS
2	996510001609	VOL RING
3	996510001610	VOL KNOB
5	996510001611	FRONT CAB
6	996510001612	SOURCE BUTTON
10	--	SCREW HOLDER
14	996500036124	RUBBER FOOT
19	996500042571	FAN
20	--	FAN COVER
22	996510001690	TUNER PACK
27	996510001616	FUNCTION BUTTON
28	996510001617	STANDBY LENS
29	996510001618	STANDBY BUTTON
31	996510001619	POWER PVC
34	996510001613	VFD FILTE
35	996510001604	PHONE PCB
36	996510001606	VOL PCB
37	996510003622	POWER PCB
38	996510003623	POWER CORD
39	996510003621	MAIN PCB
40	996510001602	CONTROL PCB
RC	996510001620	REMOTE CONTROL
FM	996500023583	FM ANTENNA
AM	996510001621	LOOP ANT
Stereo	996510001598	STEREO CABLE
Coaxial	996510003625	RCA CAE
Audio	996500023267	RCA CABLE
CN101	996510001623	FFC CABLE 10P 60MM

Speaker

SPKC	996510003626	SPEAKER BOX -CENTER
RFC	996510001599	RUBBER FOOT -CENTER
SPKFL	996510003627	SPEAKER BOX -FRONT LEFT
SPKFR	996510003628	SPEAKER BOX - FRONT RIGHT
SPKRL	996510003629	SPEAKER BOX- REAR LEFT
SPKRR	996510003630	SPEAKER BOX- REAR RIGHT
RFF	996510001600	RUBBER FOOT-FRONT
RFR	996510001601	RUBBER FOOT-REAR
SUBW	996510003631	SUBWOOFER
RFS	996500028375	RUBBER FOOT -SUB