DVD Home Theater System HTS2200/93

Service
Service
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Service Manual

DOLBY DIGITAL DIVX DIVX ULTRA USB DIRECT

TABLE OF CONTENTS

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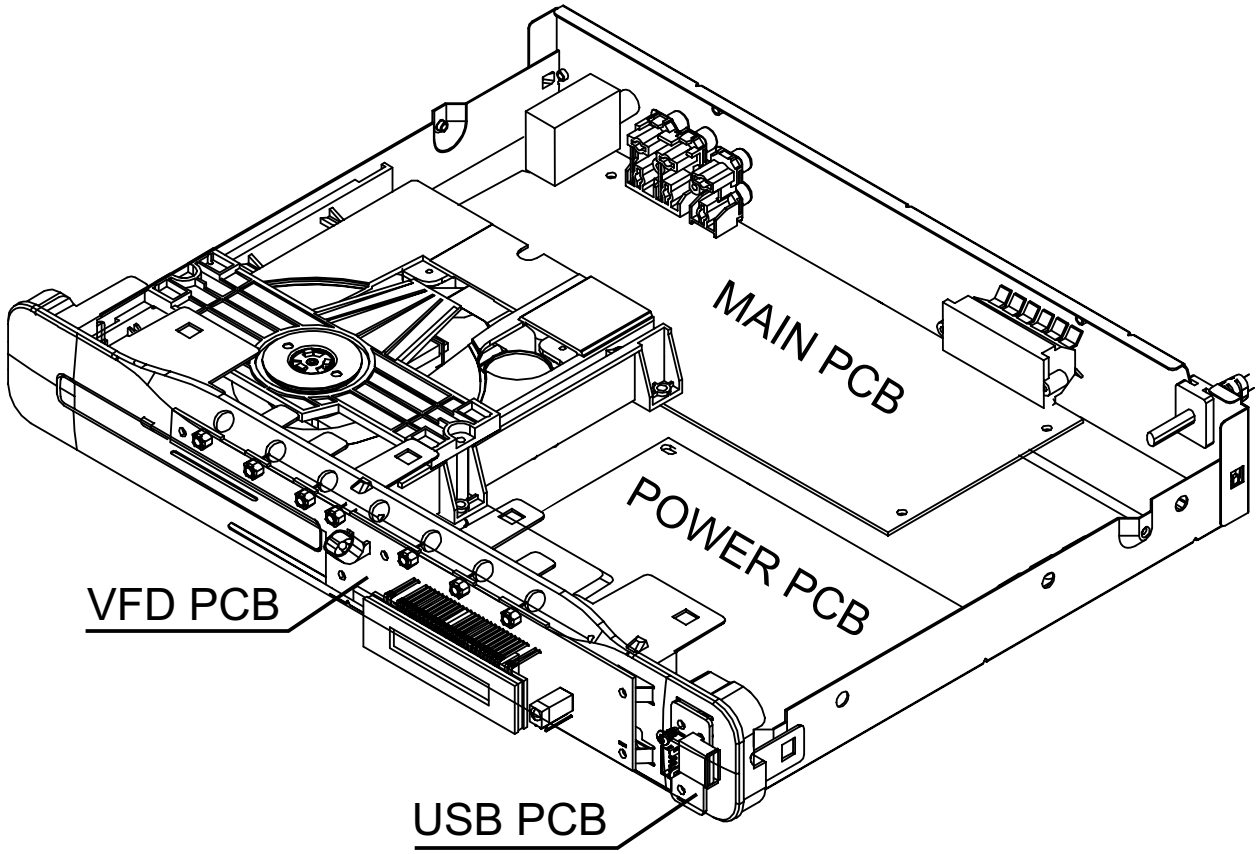
GB 3139 785 35530

Version 1.0

PHILIPS

LOCATION OF PCB BOARDS



VERSION VARIATION:

Type/Versions / Features	HTS2200 /93
Output Power - 150W	X
Output Power - 120W	X
Voltage (110-240V)	X
AUX	X

REPAIR SCENARIO MATRIX:

Type/Versions / Board in used	HTS2200 /93
Main Board	C
Power Board	C
VFD+USB Board	C

*C = Component Level Repair

SPECIFICATIONS

Playback media

DVD-Video, DVD+R/+RW, DVD-R/-RW, CD-R/CD-RW, Audio CD, Video CD/SVCD, Picture CD, MP3-CD, WMA-CD, DivX-CD, USB storage device

File Format

Audio ..... .mp3, .wma
Video ..... .divx, .divx ultra, .mpeg, .mpg
Picture ..... .jpeg, .jpg

Amplifier

Total output power.....
.....150 W RMS (30% THD), 120W RMS(10% THD)
Frequency response..... 20 Hz-20 kHz /±3dB
Signal-to-noise ratio..... > 65 dB (CCIR) /(A-weighted)
Input sensitivity.....
AUX ..... 800 mV

Video

Signal system ..... PAL / NTSC

Audio

Sampling frequency.....
MP3 ..... 32 kHz, 44.1 kHz, 48 kHz
WMA..... 44.1 kHz, 48 kHz
Constant bit rate .....
MP3 ..... 112 kbps - 320 kbps
WMA..... 48 kbps - 192 kbps

Radio

Tuning range ..... FM 87.5-108 MHz (50 kHz)
Signal-to-noise ratio.....FM 50 dB
Frequency response.....FM 180 Hz-10 kHz/ ±6dB

USB

Compatibility ..... USB
Class support..... UMS (USB Mass Storage Class)
File system FAT16, FAT32
Maximum memory support ..... < 160GB

Main Unit

Power supply ..... 110-240V, ~50-60 Hz;
Power consumption ..... 50 W
Standby power consumption .....≤ 0.9 W
Dimensions (WxHxD) ..... 360 x 58 x 303(mm)
Weight .....2.3 kg

Speakers

System..... full range satellite
Speaker impedance..... 3 ohm
Speaker drivers ..... 76 mm (3") full range
Frequency response.....150 Hz-20 kHz
Dimensions (WxHxD) ..... 254 x 1001 x 254(mm)
Weight .....3.38 kg/each
Cable length ..... 4 m

Subwoofer

Impedance..... 12 ohm
Speaker drivers ..... 165 mm (6.5") woofer
Frequency response.....40 Hz-150 kHz
Dimensions (WxHxD) ..... 123 x 309 x 369 (mm)
Weight .....3.81 kg
Cable length ..... 4 m

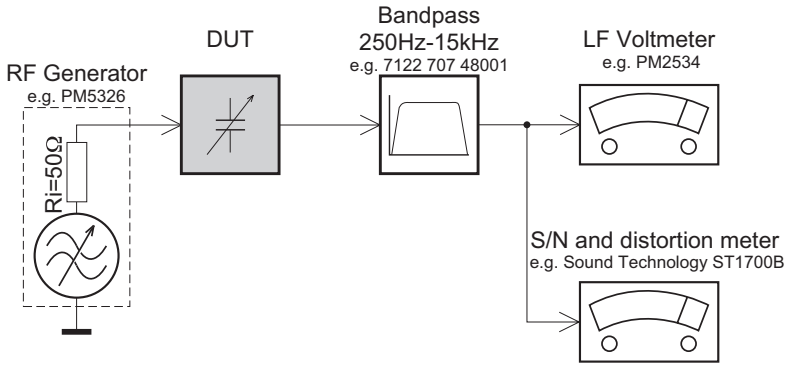
Laser specification

Type.....Semiconductor laser GaAlAs (CD)
Wave length..... 645 - 665 nm (DVD), 770 - 800 nm (CD)
Output power.....6 mW (DVD), 7 mW (VCD/CD)
Beam divergence..... 60 degrees.

Specifications subject to change without prior notice.

MEASUREMENT SETUP

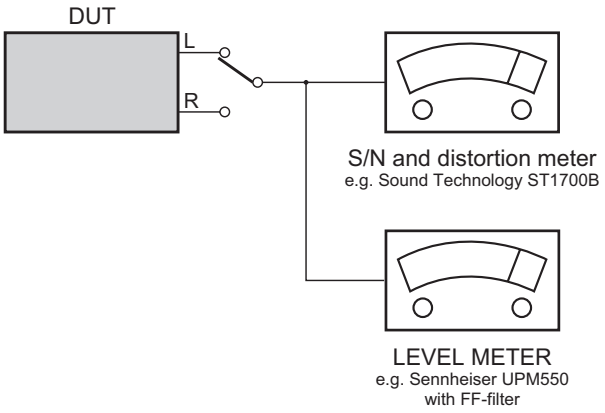
Tuner FM



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

CD

Use Audio Signal Disc SBC429 4822 397 30184
(replaces test disc 3)



SERVICE AIDS

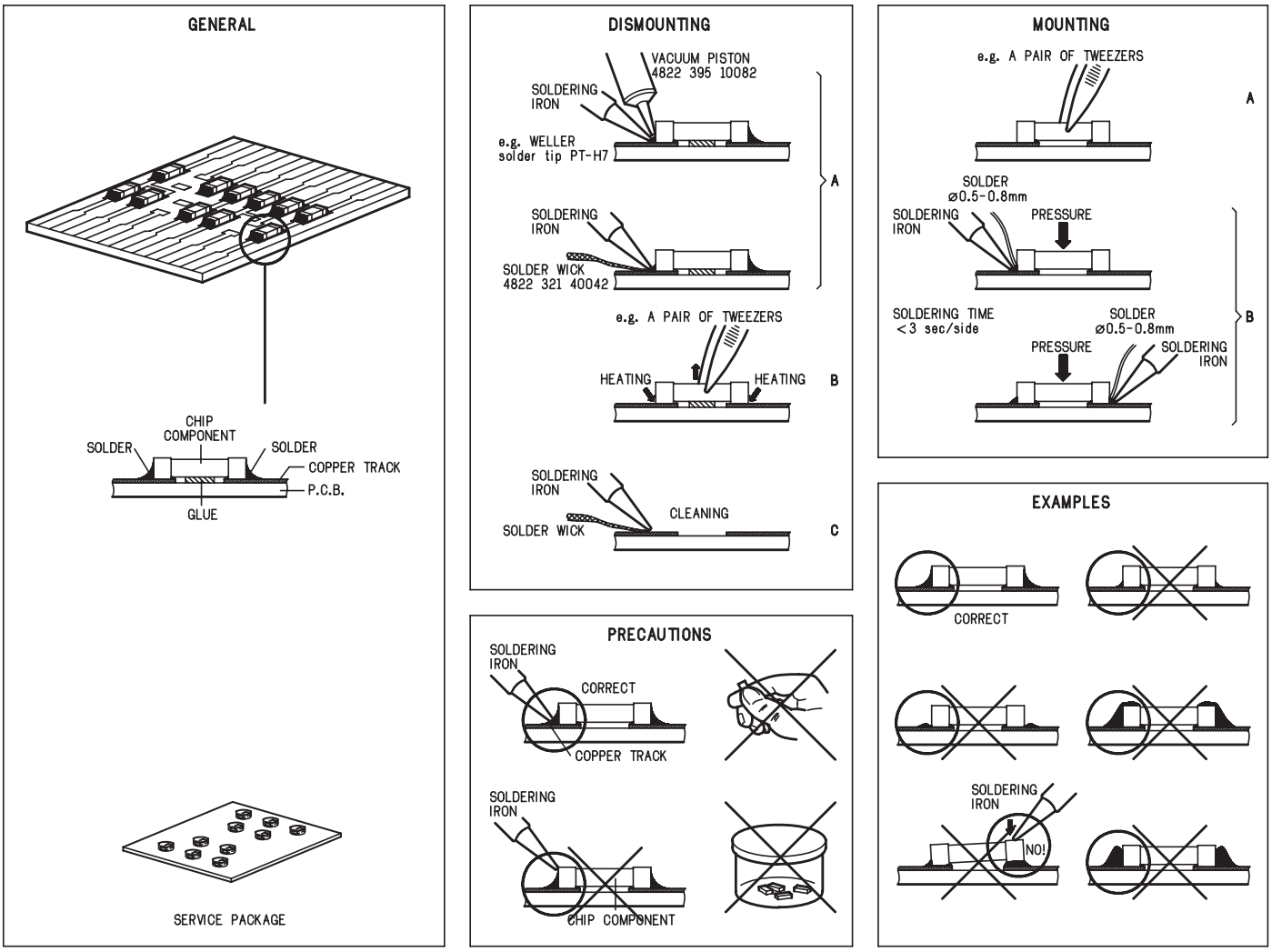
Service Tools:

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

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.

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.

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.

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 unused 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.

System , Region Code , etc. Setting Produre

1) Restore factory setting

a) Press <SETUP> button on R/C.
b) Select <preference setup> ,then press < OK >.
c) Select <default>,then press <OK> to confirm.

2) Version control change

a) Open the Door,then,press “1” “5” “9” on RC.
b) Press <OK> button on RC.
c) TV will show message as follow:

Current model: 2200-93
Version:00.07.02_0 Release:2010.06.10
Region:0 Servo:62.10.00.07
8032: 0F.01.00.09 Risc:01.00.00.04
MCU: 07.00 BootLoader: Er

if current model doesnot match your set,
use down arrow key on the remote to change
OK

d) If current model doesnot match your set, use down arrow key on the remote to change.

3) Password change

a) Press <SETUP> button on R/C.
b) Select <preference setup> ,then press <OK>.
c) Select <password> <change>,then press <OK> to confirm
“0000” is default password supplied.

4) Trade model

a) Press <Open/Close>button on R/C.
b) Press “2” “5” “9” on R/C,VFD will display “TRA ON “ or “TRA OFF“.

5) Check on software version

a) Press <SETUP> button on R/C.
b) Select <preference setup> ,then press <OK>.
c) Select <version info>,then press <OK>.
d) TV will show message as follow:

Current model: 2200-93
Version:00.07.02_0 Release:2010.06.10
Region:0 Servo:62.10.00.07
8032: 0F.01.00.09 Risc:01.00.00.04
MCU: 07.00 BootLoader: Er

OK

Press SETUP to exit menu

6) Upgrading new software

a) Check for the latest software version on
www.philips.com/support.
Search for your model and click on ‘software&drivers’.
b) Copy the latest upgrading software onto a CD-R or USB storage device.
c) Insert the CD-R program disc or connect the USB storage device to the home theater.
d) Press <USB> button on R/C.
e) TV will show message as follow:

Upgrade file detected

Upgrade?
Press PLAY to start

f) Press <PLAY> “▶II” button on R/C.
g) TV will show message as follow:

Upgrade file detected

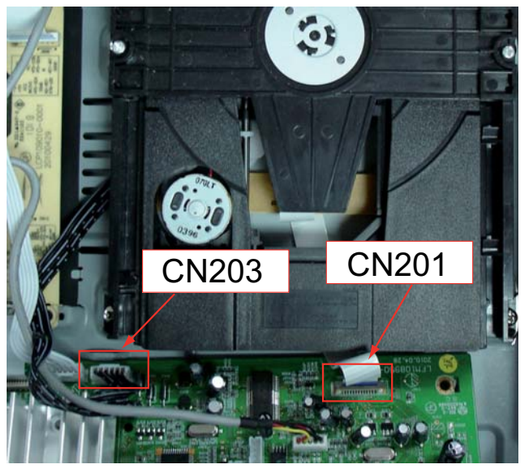
Upgrade?
Press PLAY to start
Upgrading

h) When the updated is complete ,the home theater automatically switch to standby.

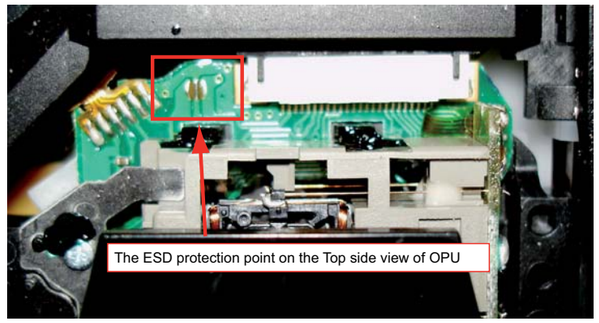
Note: when upgrade in progress, please do not unplug or switch off the device.

7) How to replace the defective DVD Loader

a) Remove the defective DVD Loader (see chapter 3).
b) Accordingly connect DVD Loader and “CN201”, “CN203” on the top of main board as shown below:



c) Remove solder joint on the ESD protection point.



The Top side view of OPU

Note: The ESD protection point on the Top side view of OPU must be soldered if
- the DVD Loader is OK and needs to be disconnected from connector “CN201” and “CN203” of the main board.
- the defective DVD Loader is needed to be send back to supplier for failure analysis and to support back charging evidence.

8) DVD Region Code Change

a) In open mode, press “9” “9” “9” “9” on R/C,then input desired number to change region code:

1 USA
2 EU
3 APAC
4 Australia ,NZ, Latam
5 Russia ,India
6 China

CAUTION!

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

2 - 2

REPAIR INSTRUCTION

MAIN UNIT REPAIR CHART

- A — All Function No Working
- B — All Function No Sound
- C — Aux In No Sound
- D — Tuner Function No Sound
- E — DISC Function No Sound
- F — USB NO FUNCTION
- G — Power Supply No working

A — All Function No Working

- Check all system all cable is loose or bad INT
  - YES → RE-insert and fix the cable
  - NO → Panel standby LED whether light
    - NO → Check power board BK3V3 out
    - YES → Check MAIN PCB IC305 and their conjoint part.

B — All Function No Sound

- Check MAIN PCB CN302 whether at PIN29 +30.4V,CN302 PIN19 +12V.
  - NO → Check SW power and conjoint part
  - YES → Check MAIN PCB C425 Pin1 VCC whether at +3.3V
    - NO → Check MAIN PCB Q402 and their conjoint part whether OK
    - YES → Check MAIN PCB IC401 IC403 and their conjoint part whether OK

C — Aux In No Sound

- Check MAIN PCB IC302 Pin 3/13 Whether output OK
  - NO → Check MAIN PCB IC302 Pin6/7 Whether at +-5V and their conjoint part whether OK.
  - YES → Check MAIN PCB IC303 Pin 5/ 13 whether at 5v/3.3v .
    - NO → Check MAIN PCB R333/R340 Whether OK.
    - YES → Check MAIN PCB IC303 and their conjoint art whether OK

D — Tuner Function No Sound

- Check MAIN PCB TU301Pin7/8 output whether OK.
  - NO → Check MAIN PCB TU301 PIN5whether is5V and their conjoint part whether OK
  - YES → Check MAIN PCB IC302 Pin1/12 whether out OK.
    - NO → Check MAIN PCB IC301Pin8/4 Whether at +/-12V and their conjoint part whether OK.
    - YES → Check MAIN PCB IC302and their conjiont part whether OK.

E — DISC Function No Sound

- Check MAIN PCB IC202 Pin111-122 and their conjoint part whether OK.
- YES → Check MAIN PCB IC304 and their conjoint part whether OK.
- YES → Check MAIN PCB IC401 Pin124-32 and their conjoint part whether OK.

F — USB NO FUNCTION

- Check USB cable and CN204 Whether OK
  - NO → RE-insert CN204 and fix the cable
  - YES → Check Main PCB F201 whether 5V.

G — Power Supply No working

- All Voltage No Output
  - NO →
    - AC1 AC2 Voltage No Output → Check D905 Q901 IC901 ZD903 And Its Conjoint Part
    - +32.5V Voltage No Output → Check D908 Q901 IC901 And Its Conjoint Part
    - -27V Voltage No Output → Check D906 Q901 IC901 And Its Conjoint Part
    - +12V Voltage No Output → Check D904 Q901 IC901 And Its Conjoint Part
    - +5.1V Voltage No Output → Check D902 Q901 IC901 And Its Conjoint Part
    - BK3.3V Voltage No Output → Check D910 IC904 Q901 IC901 And Its Conjoint Part
  - YES → Check F901 Bad Causc Damage
    - NO → Check BK3.3V Working or Not
      - NO → Check Requir IC901 IC904 And Its conn circuit

DISASSEMBLY INSTRUCTIONS

Dismantling of theTop & Front Panel Assemble

1) Open the DVD Tray by using the Open/Close Button while the Set is ON and disconnect the mains supply after removing the Tray Cover.
   Note: If this is not possible, the DVD Tray has to be open manually.
   Take a mini screw driver about 2mm diameter and make a marking 24mm from the tip as shown in figure 2 . Place the set on its side, insert the mini screw driver till the marking and slide it towards the left as shown in figure 1 until the Tray moves out of the Front Panel.
2) Return the set to its upright position and remove the Tray Cover as shown in Figure 3 and close the tray manually by pushing it back in.

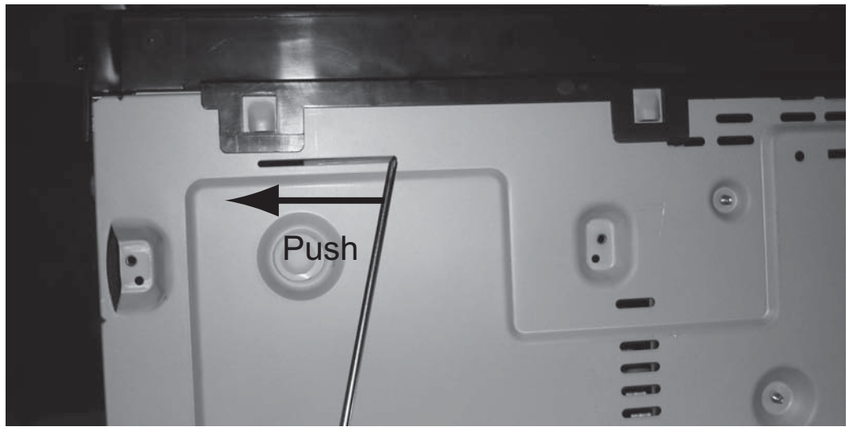


Figure 1

Figure 2

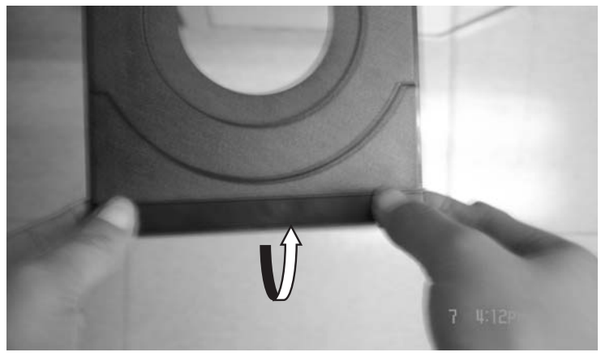


Figure 3

3 - 1

3) Loosen 6 screws and remove the Top Cover by lifting the rear portion upwards before sliding it out towards the rear.
   - 4 screws “A” at the back panel as shown in figure 4.
   - 1 screw “B” each on the left & right side as shown in figure 5.

Figure 4

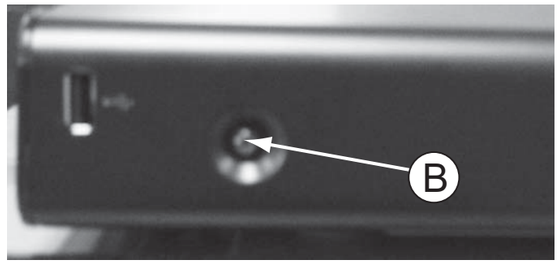


Figure 5

Dismantling of the DVD Loader Module

1) Loosen 4 screws “ C “ at the DVD Loader Module as shown in figure 6.

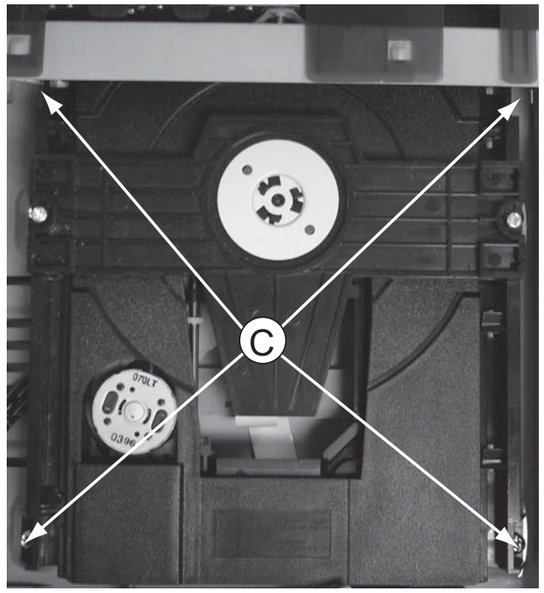


Figure 6

Dismantling of the VFD+USB Board

1) Loosen 7 screws “D” on the top of VFD+USB Board as shown in figure 7.

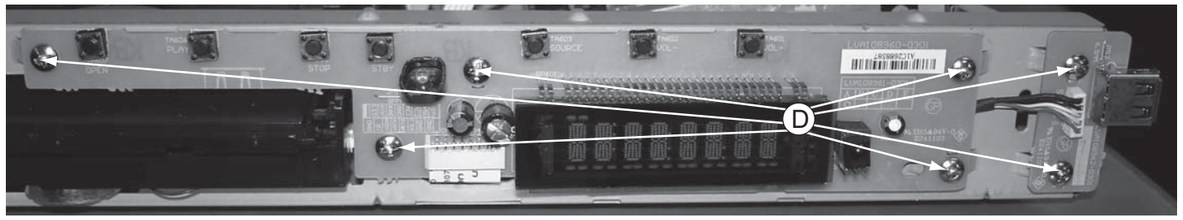


Figure 7

Dismantling of the MAIN Board

1) Loosen 4 screws “ E ” on the top of MAIN Board as shown in figure 8.
2) Loosen 5 screws “ F ” at the back panel as shown in figure 9.

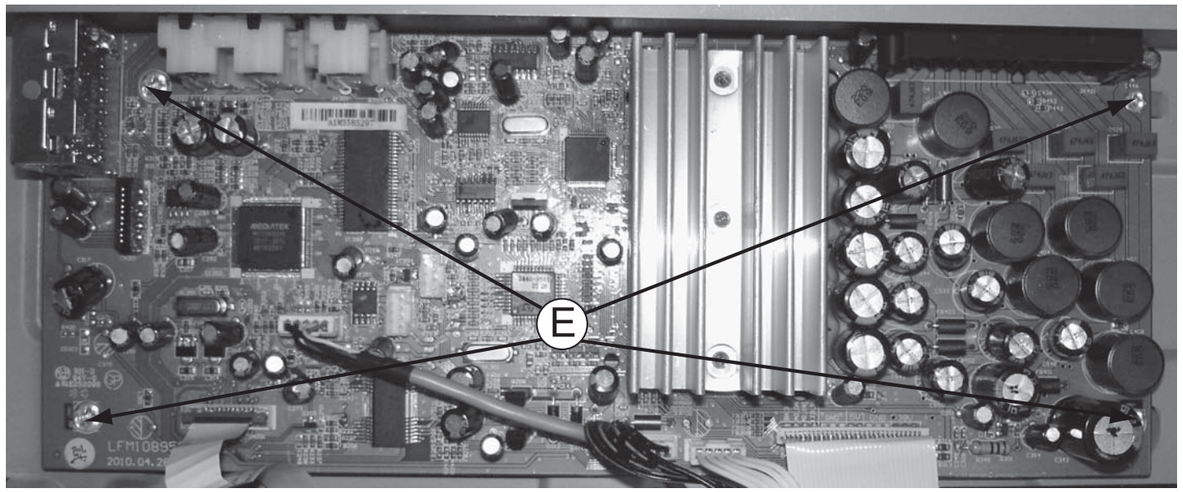


Figure 8

Figure 9

3 - 2

Dismantling of the POWER Board

1) Loosen 5 screws “G ” on the top of Power Board as shown in figure 10.

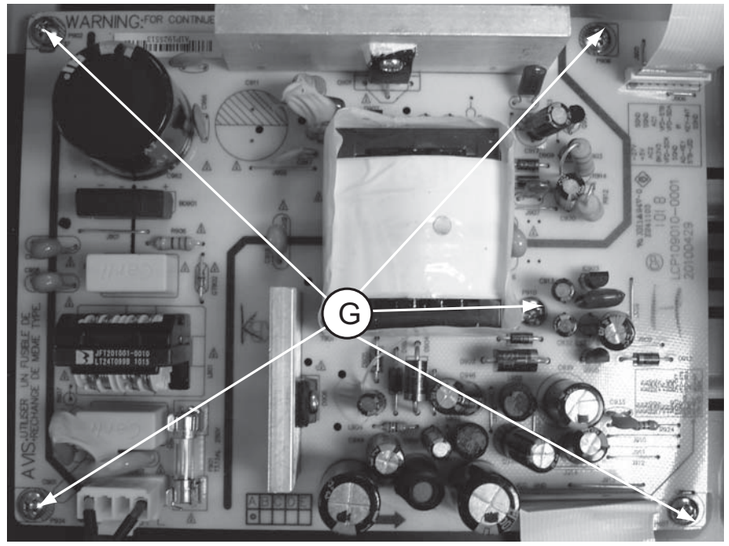
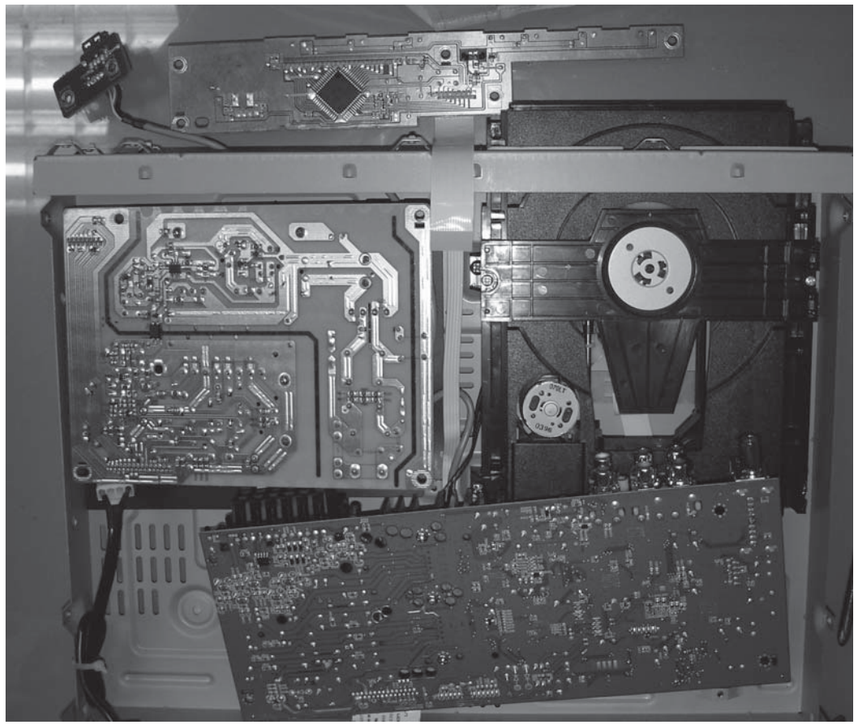


Figure 10

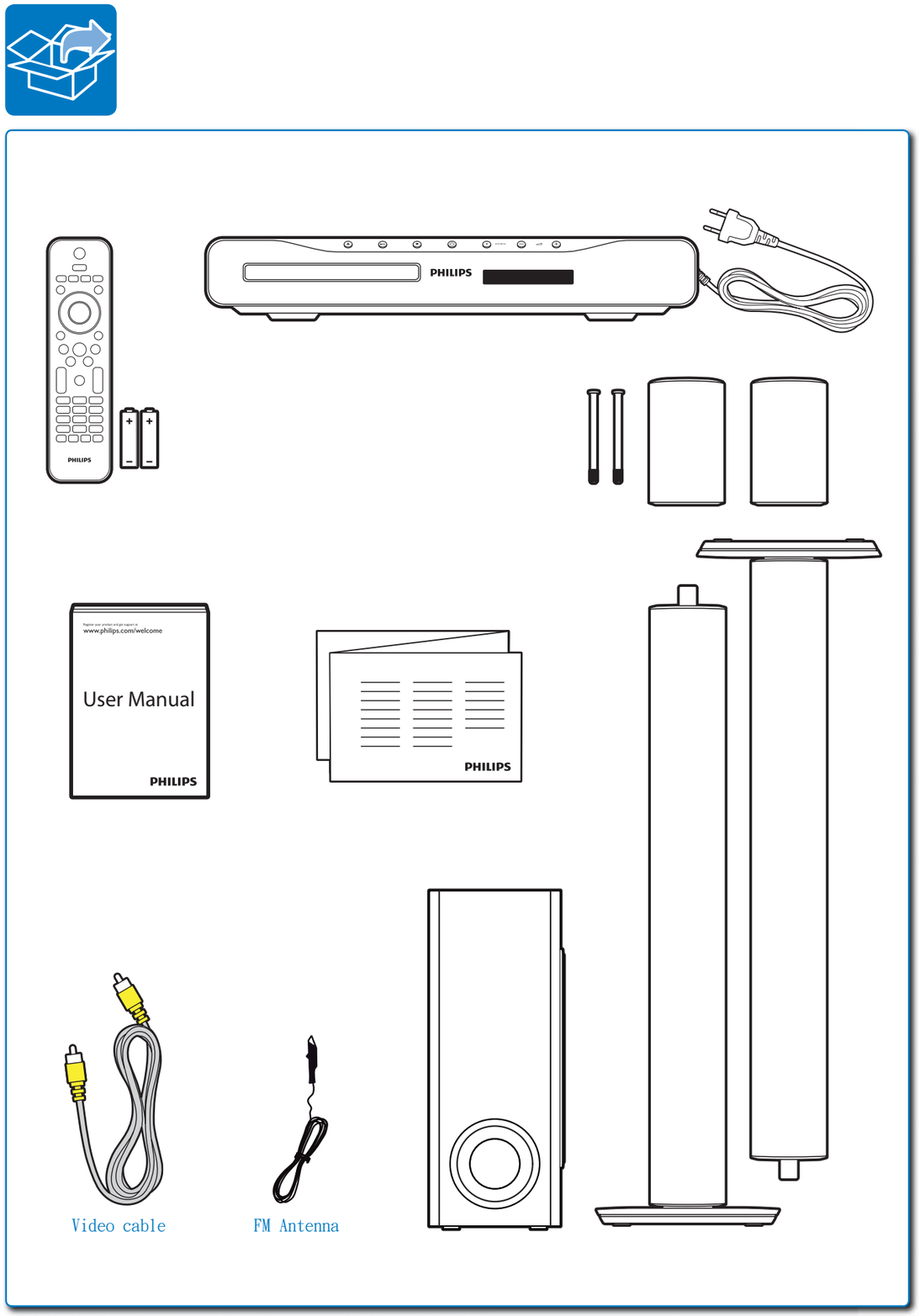
SERVICE POSITIONS



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.

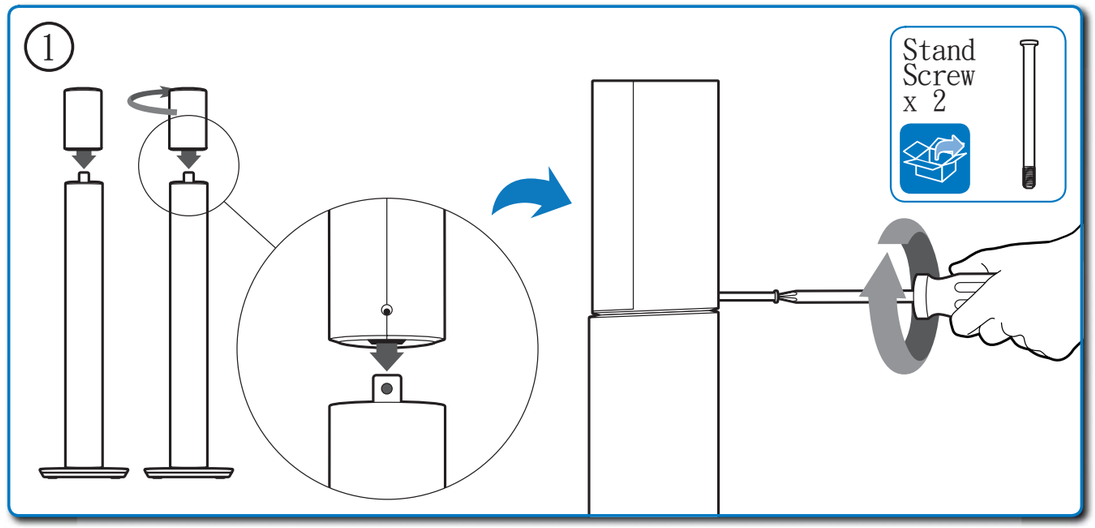
CIRCUIT DIAGRAM

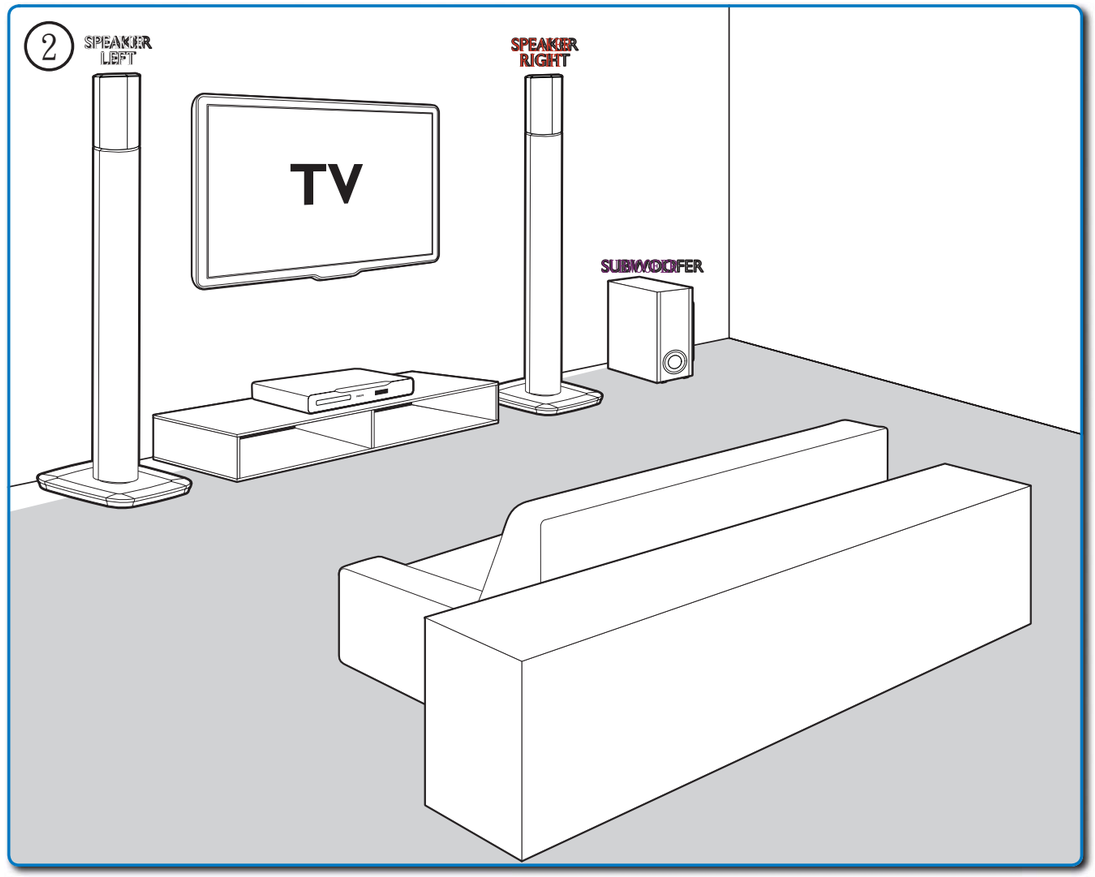
The following excerpt of the QSG/DFU serves as an introduction to the set.
The complete Direction for Use can be download in the different languages from the internet site of Philips Consumer care Center: www.support.philips.com



4 - 1

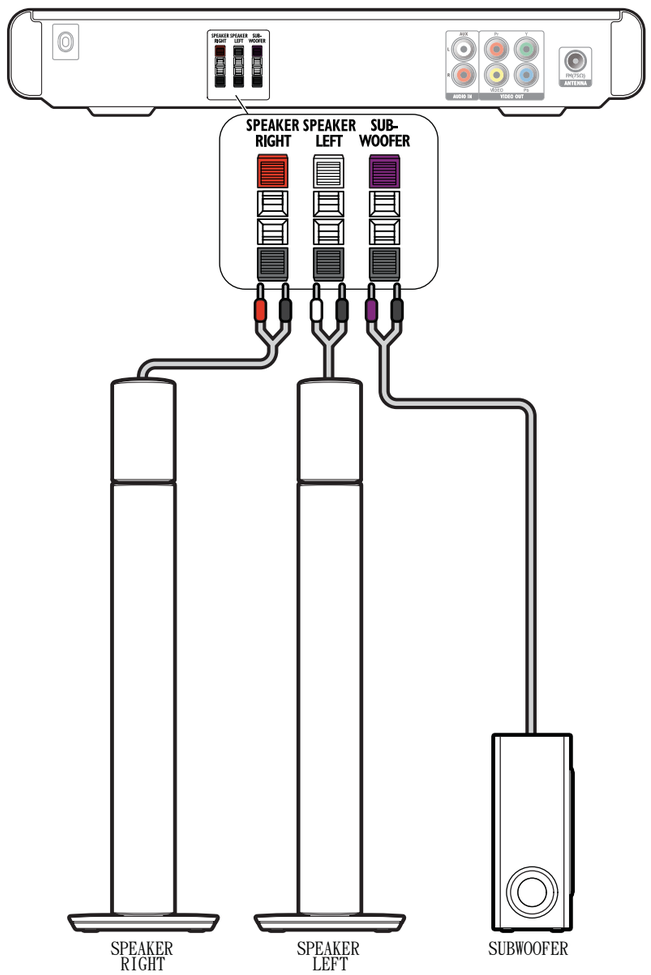
1



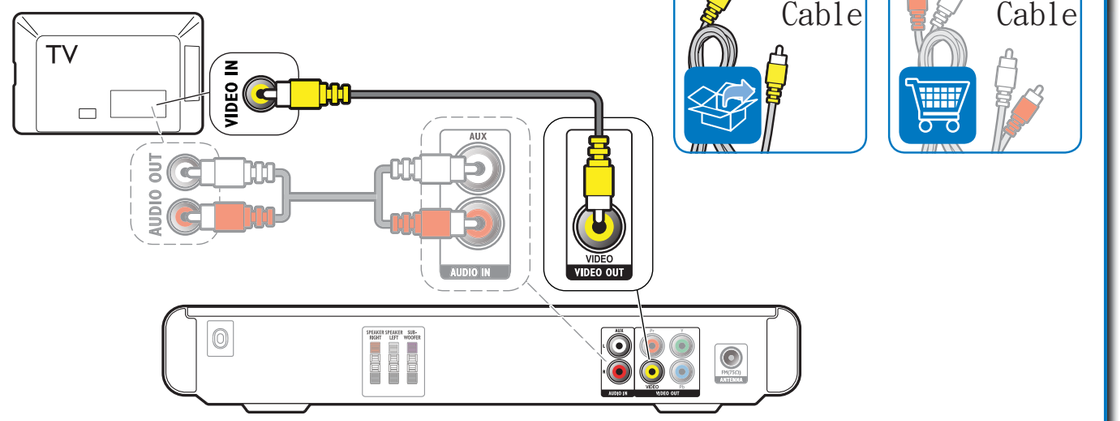


4 - 2

3


SPEAKER RIGHT
SPEAKER LEFT
SUB-WOOFER
SPEAKER RIGHT
SPEAKER LEFT
SUBWOOFER

5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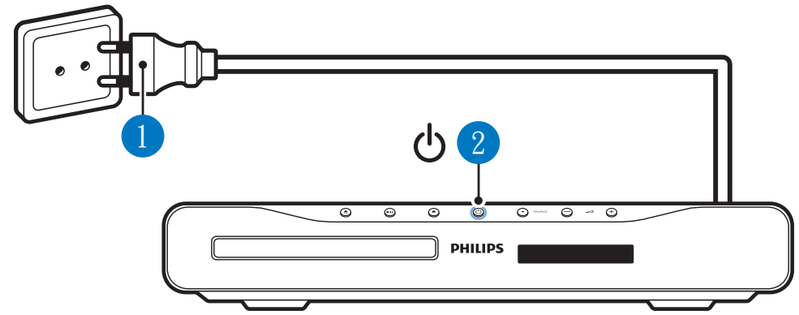
VIDEO IN
AUDIO OUT
AUX
AUDIO IN
VIDEO
VIDEO OUT
Video Cable
Audio Cable

6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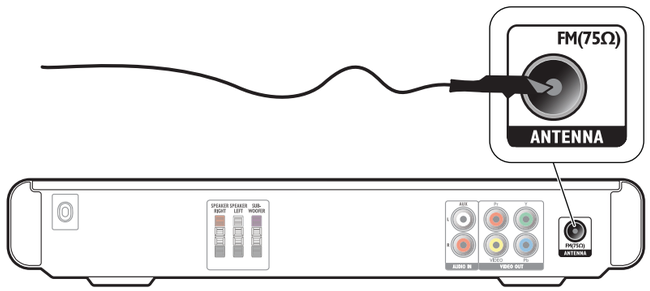
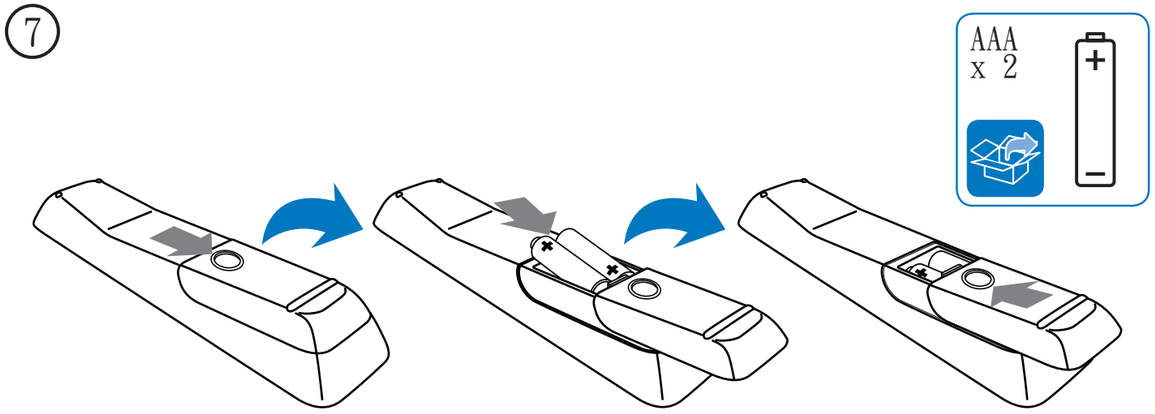
PHILIPS

4

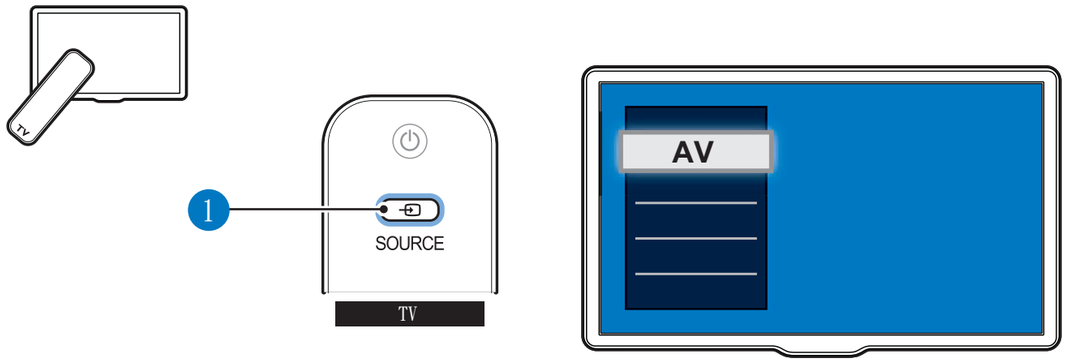

FM(75Ω)
ANTENNA


FM
Antenna

7


AAA
x 2

2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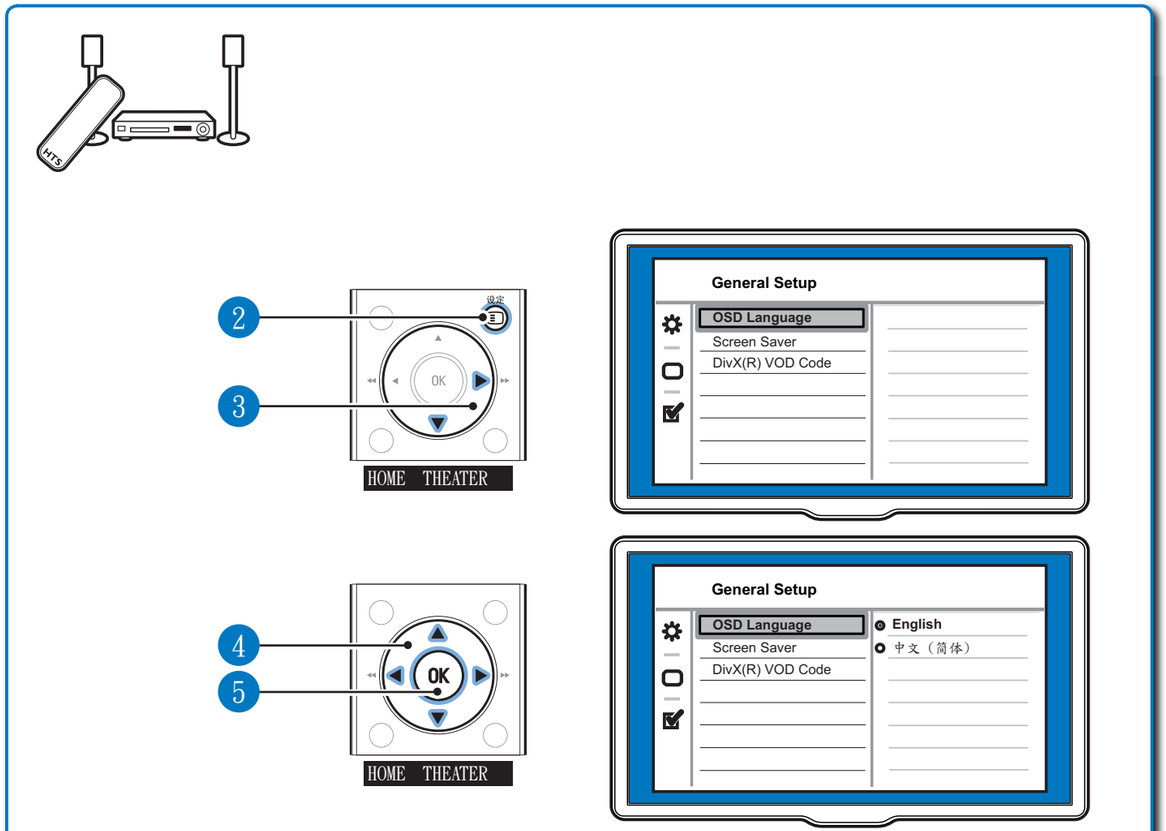
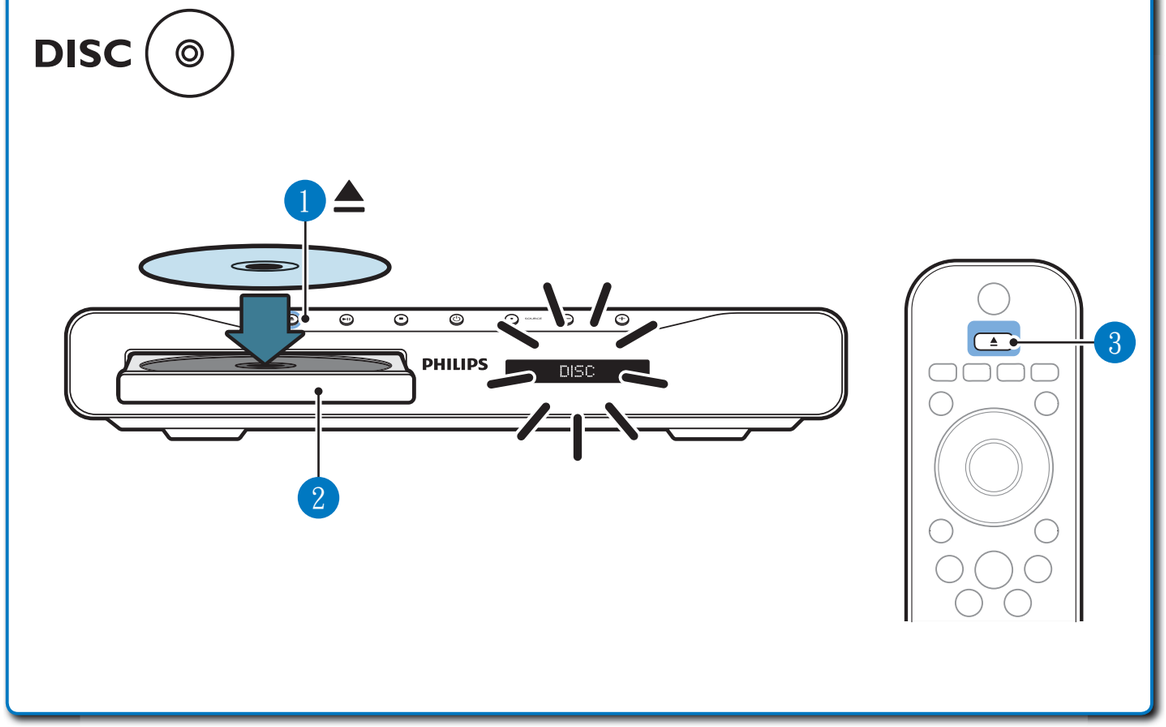
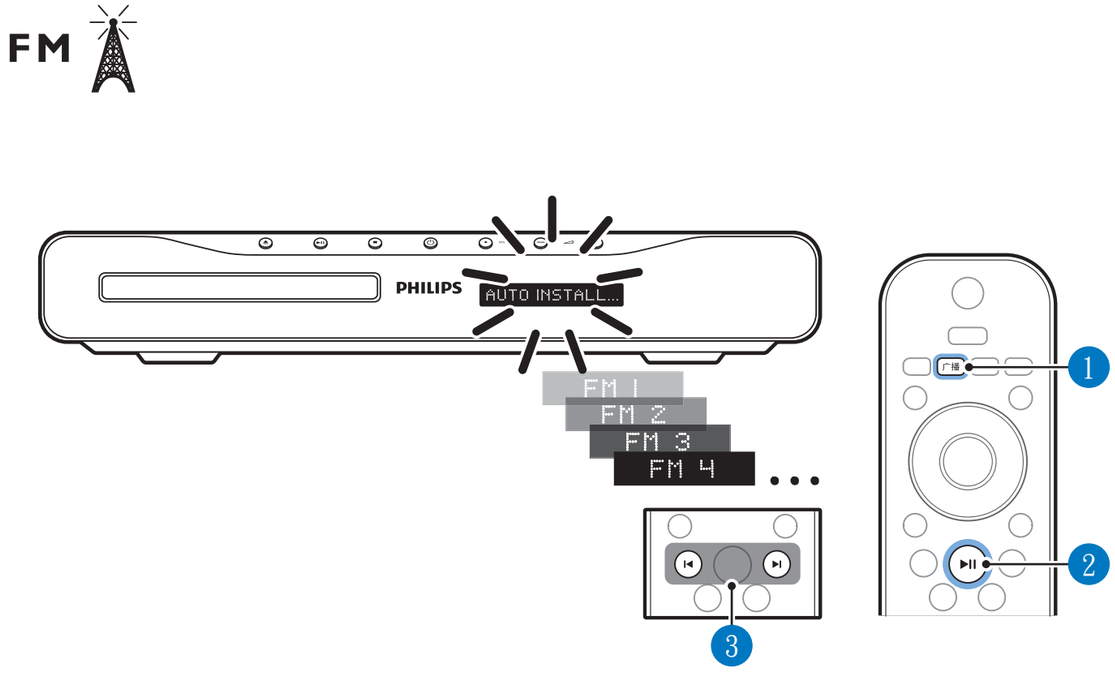
SOURCE
TV
AV


HTS
2
3
OK
HOME THEATER
General Setup
OSD Language
Screen Saver
DivX(R) VOD Code
4
5
OK
HOME THEATER
General Setup
OSD Language
English
中文（简体）
Screen Saver
DivX(R) VOD Code

4 - 3

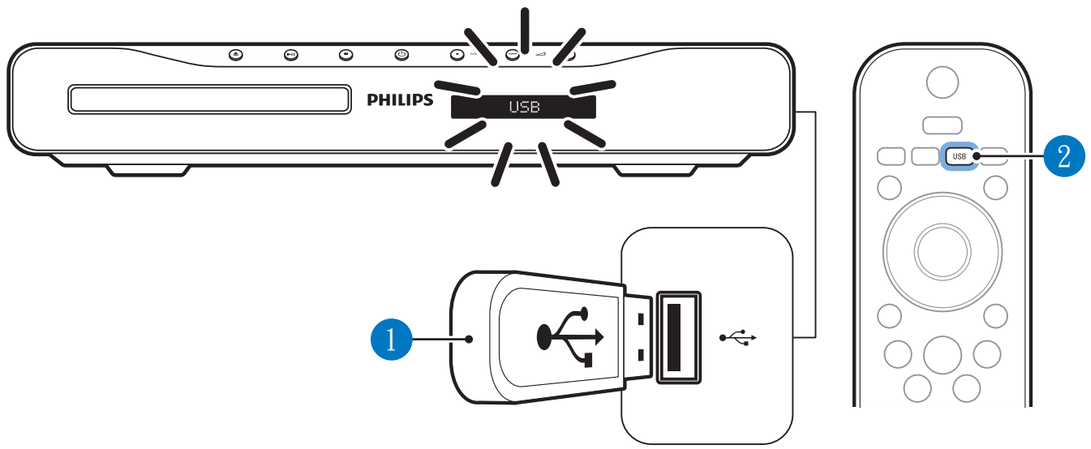
3


DISC
1
PHILIPS
DISC
2
3


FM
PHILIPS
AUTO INSTALL...
FM 1
FM 2
FM 3
FM 4
1
2
3

4 - 4

USB



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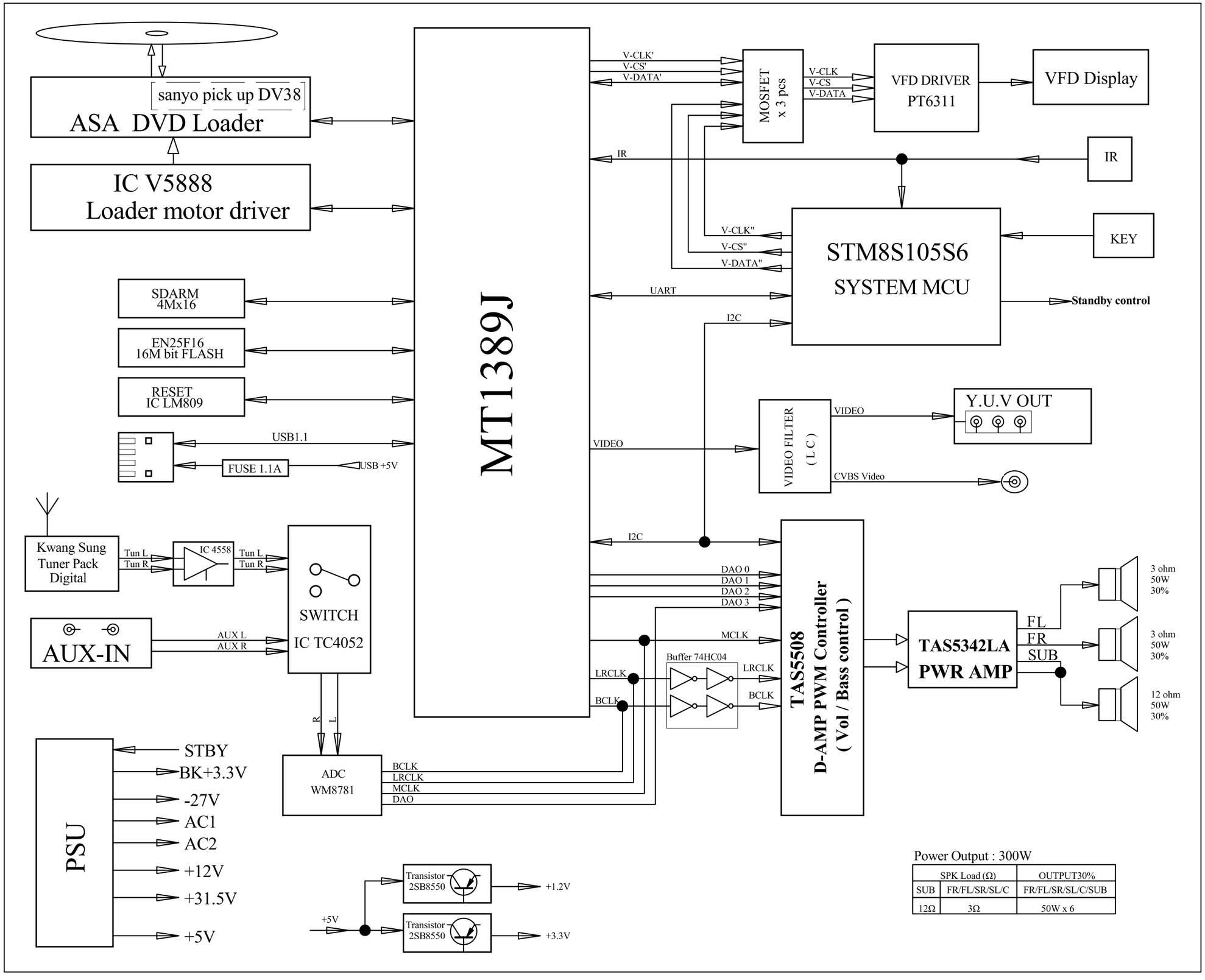
5 - 1

BLOCK DIAGRAM

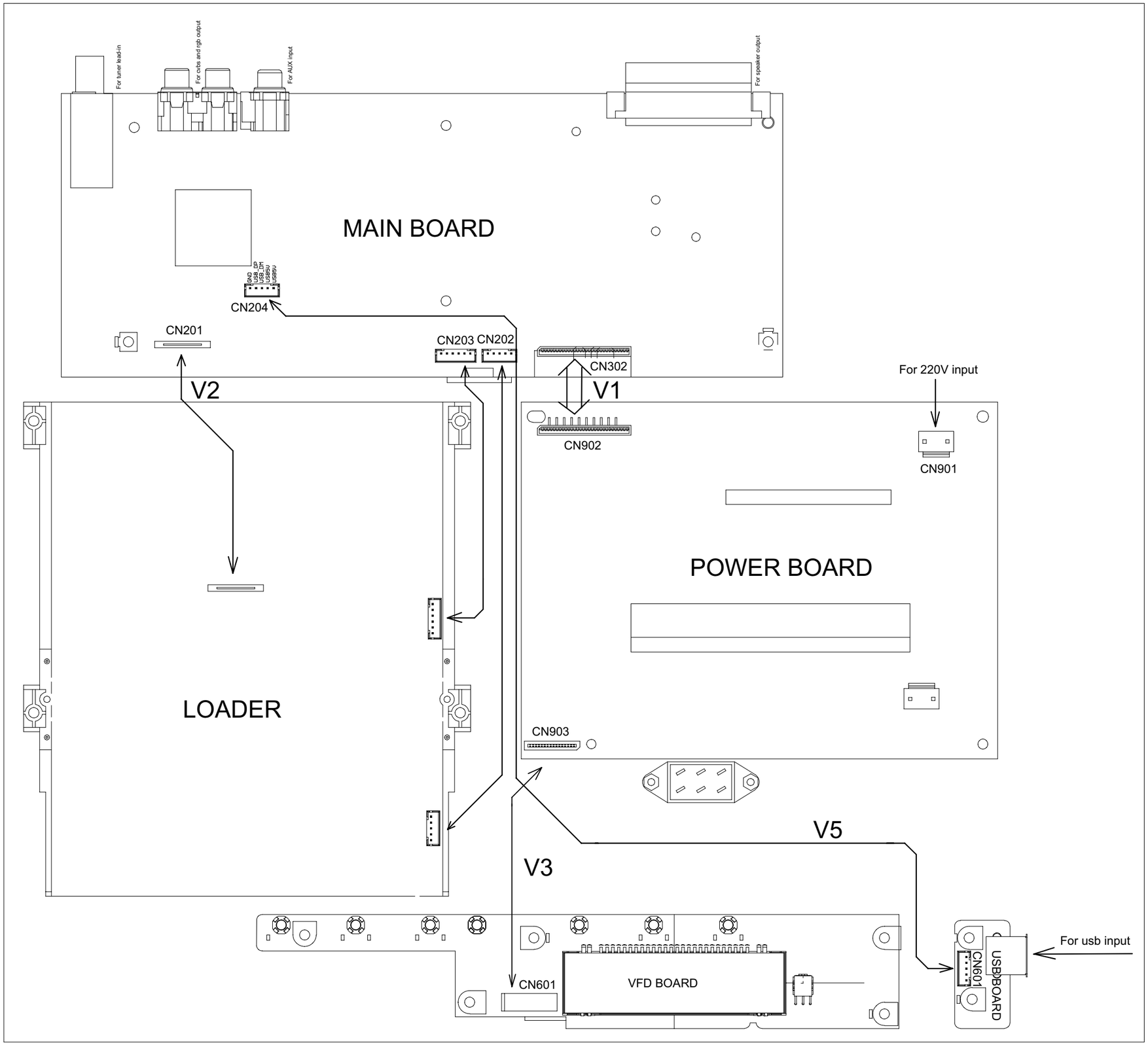


Power Output : 300W

SPK Load (Ω)		OUTPUT30%
SUB	FR/FL/SR/SL/C	FR/FL/SR/SL/C/SUB
12Ω	3Ω	50W x 6

5 - 2

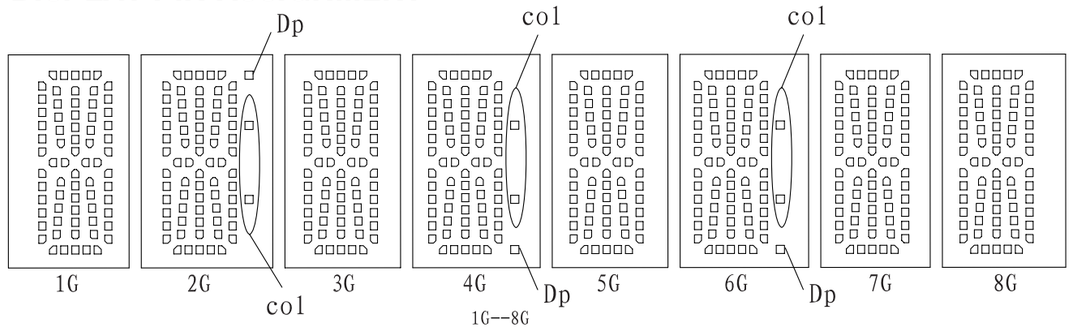
WIRING DIAGRAM



VFD+USB BOARD

TABLE OF CONTENTS

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		col		col		col		
P15		Dp		Dp		Dp		

PIN CONNECTION

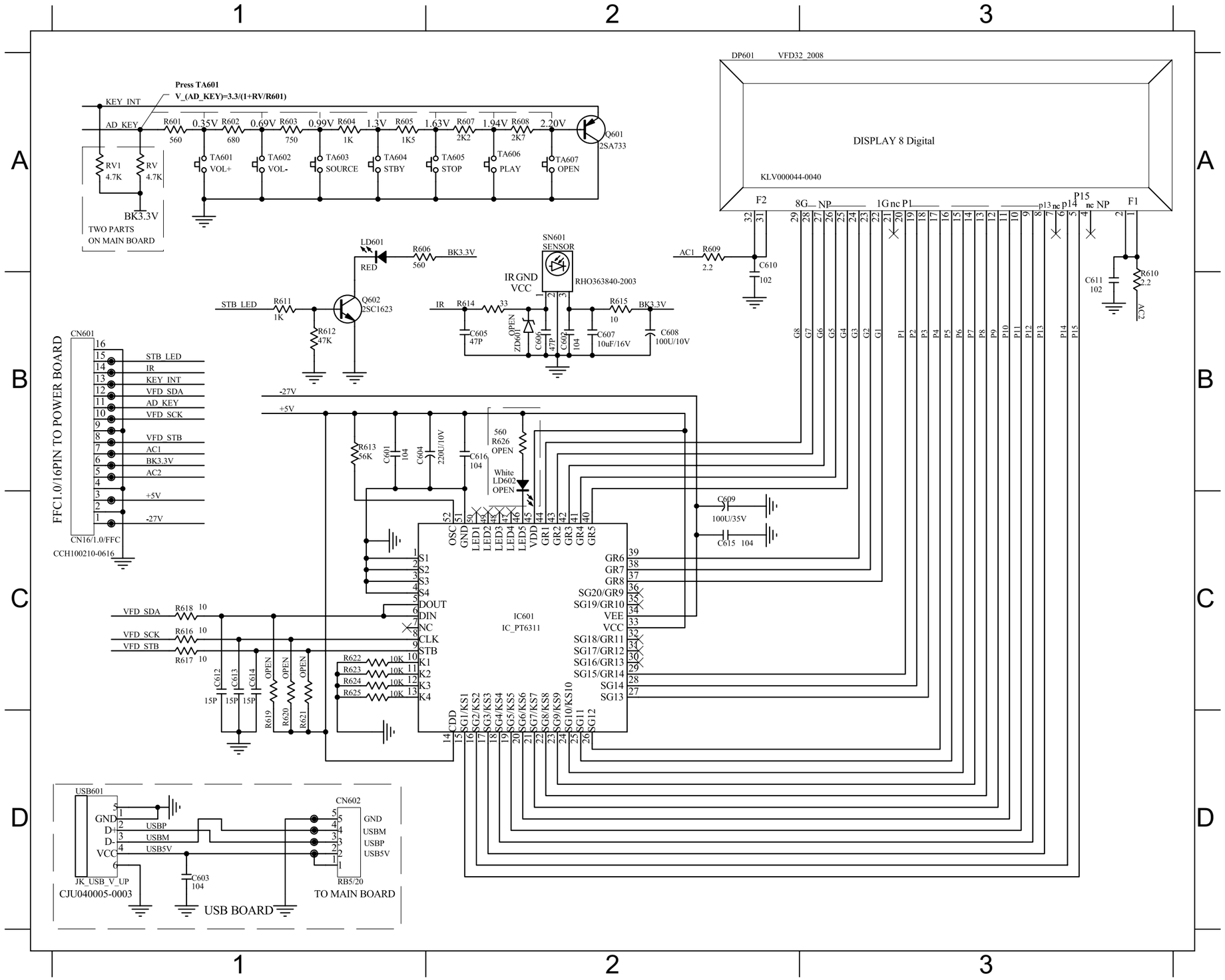
(Pin NO.)	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16
(Connection)	F1	F1	NP	NC	P15	P14	NC	P13	P12	P11	P10	P9	P8	P7	P6	P5
(Pin NO.)	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	32
(Connection)	P4	P3	P2	P1	NC	1G	2G	3G	4G	5G	6G	7G	8G	NP	F2	F2

(Notes) : Fn : (Filament Pin) nG : (Grid Pin)
Pn : (Anode Pin) NP : (No Pin)
NC : (No connection Pin)

6 - 2

CIRCUIT DIAGRAM

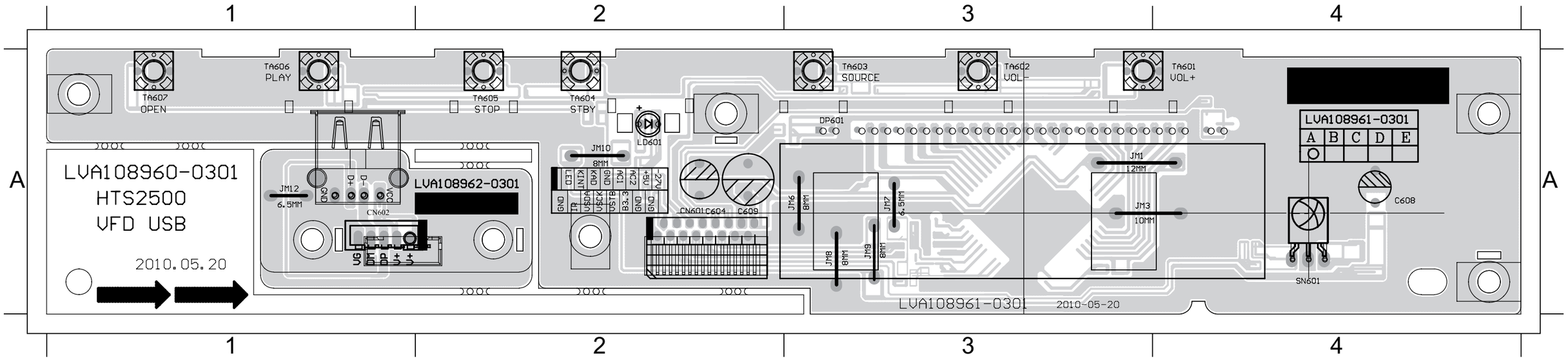
C601	B1	C604	B1	C607	B2	C610	A2	C613	C1	C616	B2	DP601	A2	Q601	A2	R602	A1	R605	A1	R608	A2	R611	B1	R614	B2	R617	C1	R620	D1	R623	C1	SN601	A2	TA603	A1	TA606	A2
C602	B2	C605	B2	C608	B2	C611	B3	C614	C1	CN601	B1	IC601	C2	Q602	B1	R603	A1	R606	A1	R609	A2	R612	B1	R615	B2	R618	C1	R621	D1	R624	C1	TA601	A1	TA604	A1	TA607	A2
C603	D1	C606	B2	C609	C2	C612	C1	C615	C2	CN602	D1	LD601	A1	R601	A1	R604	A1	R607	A2	R610	B3	R613	B1	R616	C1	R619	D1	R622	C1	R625	C1	TA602	A1	TA605	A2	USB601	D1



6 - 3

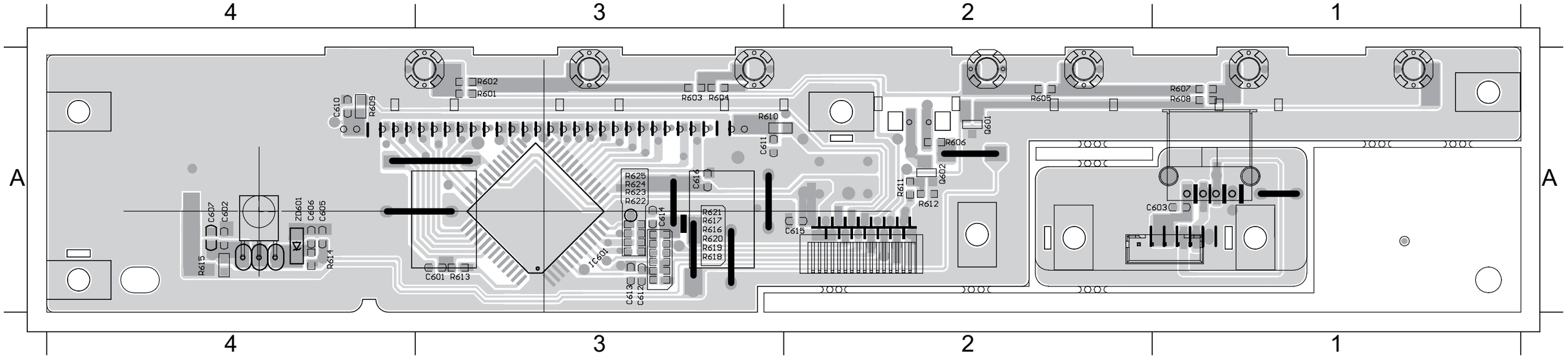
PCB LAYOUT - TOP VIEW

C604	A2	C609	A2	CN602	A1	JM1	A3	JM12	A2	JM6	A3	JM8	A3	LD601	A2	TA601	A4	TA603	A3	TA605	A2	TA607	A1
C608	A4	CN601	A2	DP601	A3	JM10	A2	JM3	A3	JM7	A3	JM9	A3	SN601	A4	TA602	A3	TA604	A2	TA606	A1	USB601	A1



PCB LAYOUT - BOTTOM VIEW

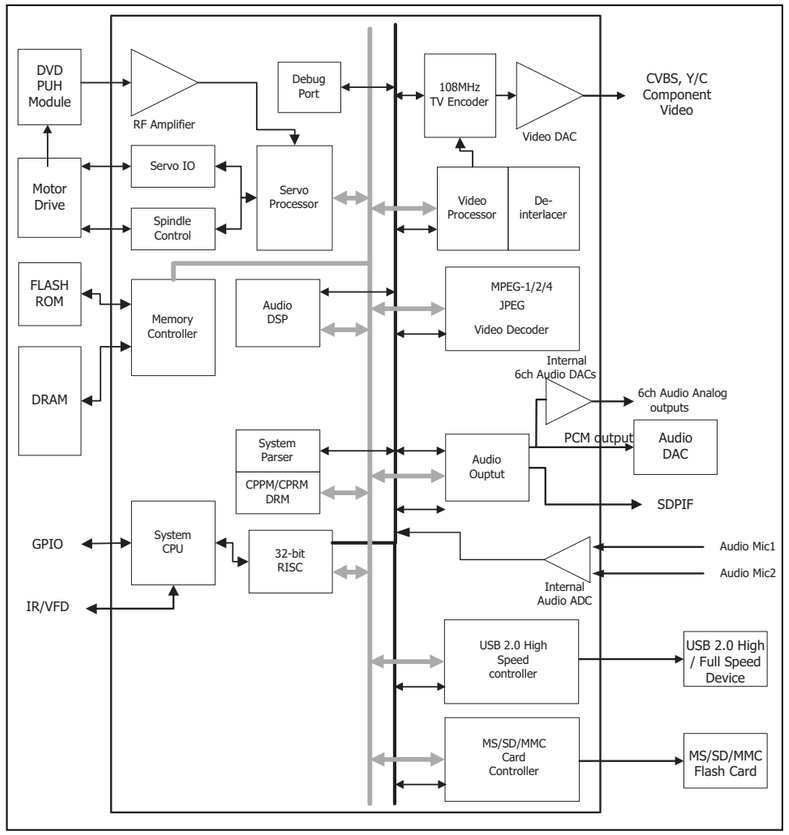
C601	A3	C603	A1	C606	A4	C610	A4	C612	A3	C614	A3	C616	A3	Q601	A2	R601	A3	R603	A3	R605	A2	R607	A1	R609	A4	R611	A2	R613	A3	R615	A4	R617	A3	R619	A3	R621	A3	R623	A3	R625	A3
C602	A4	C605	A4	C607	A4	C611	A3	C613	A3	C615	A2	IC601	A3	Q602	A2	R602	A3	R604	A3	R606	A2	R608	A1	R610	A3	R612	A2	R614	A4	R616	A3	R618	A3	R620	A3	R622	A3	R624	A3		



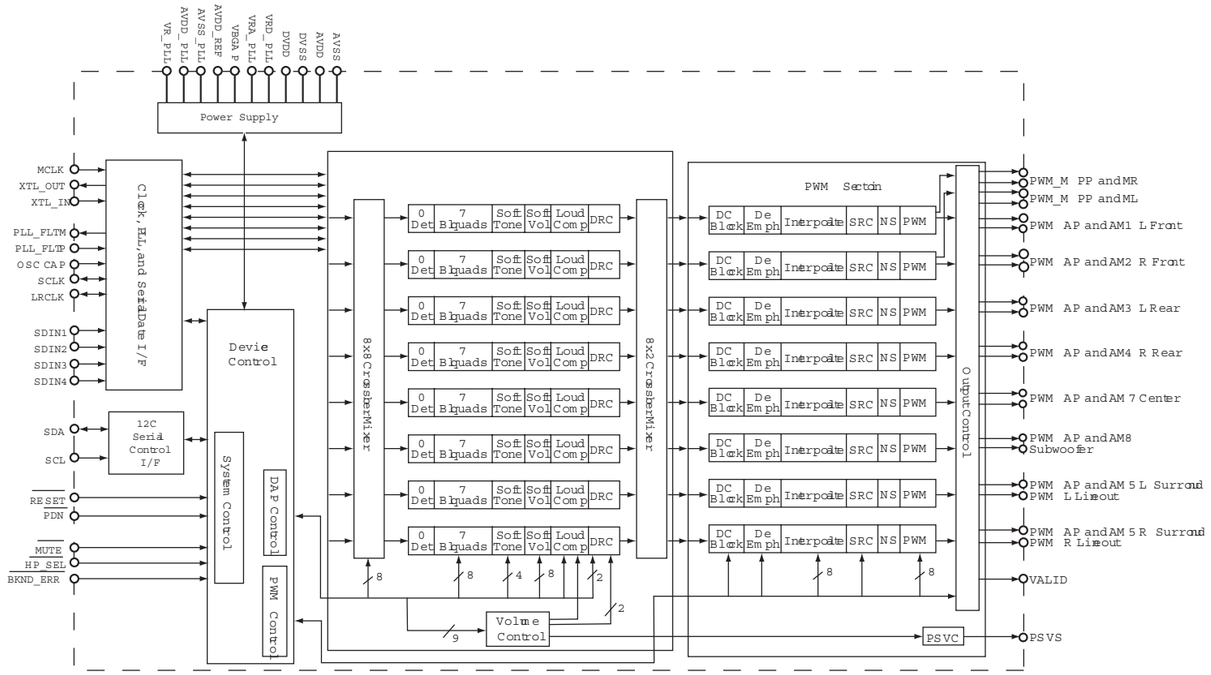
MAIN BOARD

TABLE OF CONTENTS

INTERNAL IC DIAGRAM - MT1389DXE/J



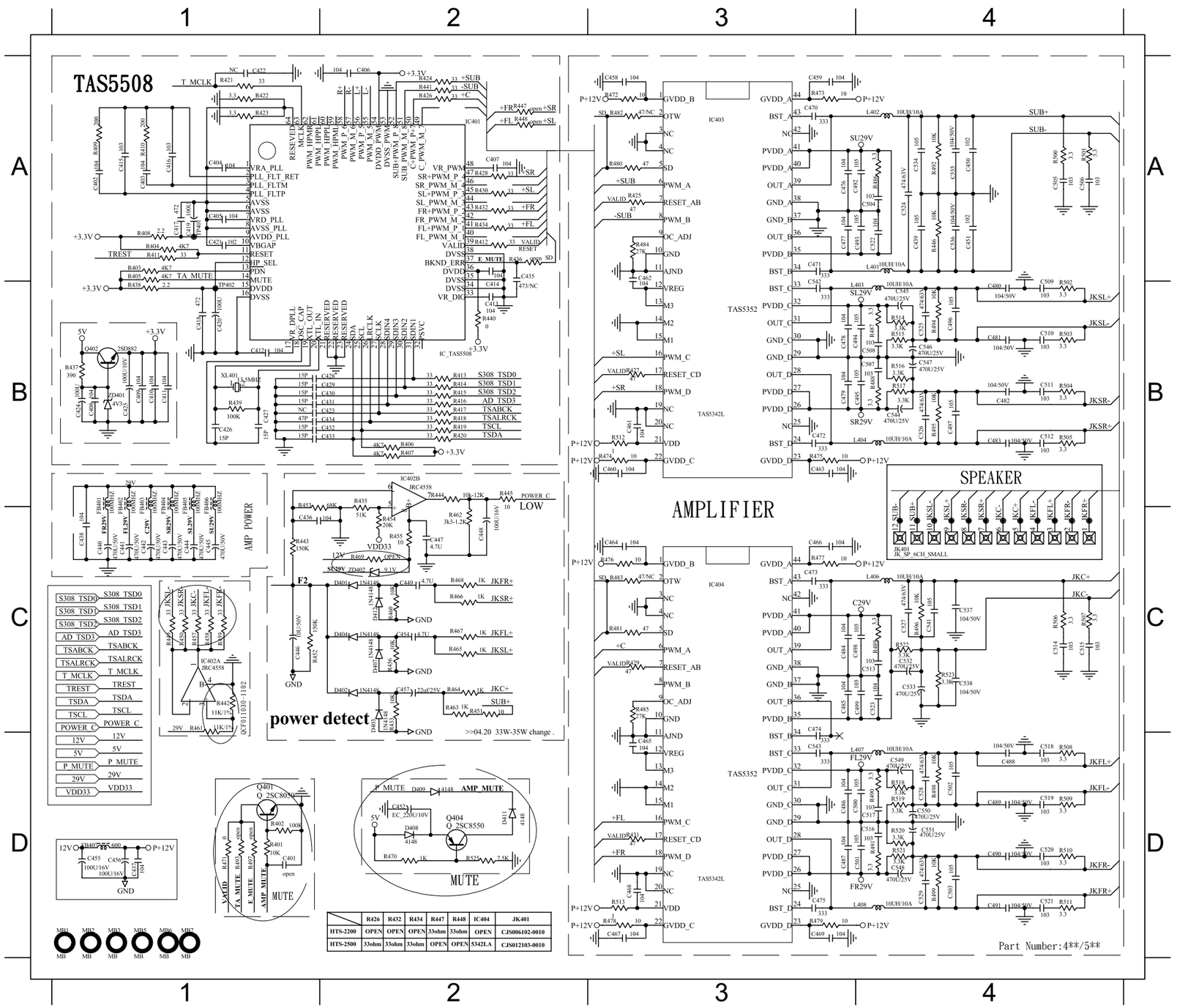
INTERNAL IC DIAGRAM - TAS5508BPAG



7 - 2

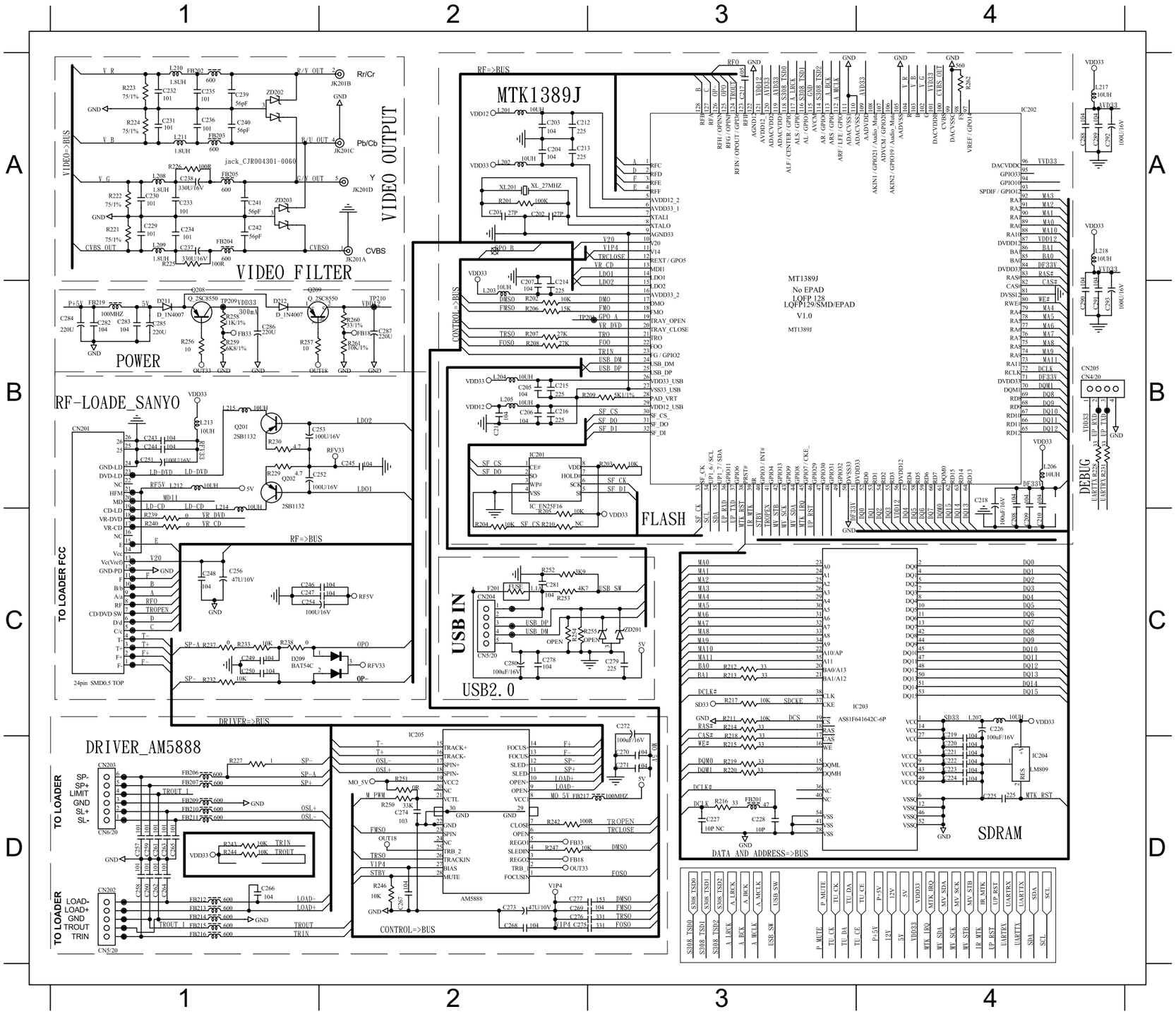
CIRCUIT DIAGRAM - part one

C401	D1	C412	B1	C425	B1	C437	D1	C448	C2	C460	B3	C480	B4	C505	A4	C526	B4	D403	C2	FB405	B1	Q401	D1	R409	A1	R420	B2	R437	B1	R448	A2	R459	C1	R471	D1	R494	B4	R516	B4
C402	A1	C413	B2	C426	B2	C438	C1	C449	C2	C461	B3	C481	B4	C506	A4	C534	A4	D404	C2	FB406	B1	Q402	B1	R410	A1	R421	A1	R438	B1	R449	C1	R460	C2	R472	A3	R495	B4	R517	B4
C403	A1	C414	B2	C427	B1	C439	A4	C450	A4	C462	A3	C482	B4	C507	B4	C535	A4	D407	C2	FB407	D1	Q404	D2	R411	A1	R422	A1	R439	B1	R450	C1	R461	C1	R473	A3	R500	A4	R525	D2
C404	A1	C415	A1	C428	B2	C440	C1	C451	A4	C463	B3	C483	B4	C508	B4	C536	A4	D408	D2	IC401	A2	R401	D1	R412	A2	R423	A1	R440	B2	R451	C2	R462	C2	R474	B3	R501	A4	XL401	B1
C405	A1	C416	A1	C429	B2	C441	C1	C452	D2	C470	A3	C492	A3	C509	B4	C542	A3	D409	D2	IC402	B2	R402	D1	R413	B2	R424	A2	R441	A2	R452	C1	R463	C2	R475	B3	R502	B4	ZD401	B1
C406	A2	C417	A1	C430	B2	C442	C1	C454	C2	C471	A3	C493	A3	C510	B4	C544	B4	D411	D2	IC403	A3	R403	A1	R414	B2	R425	A3	R442	C1	R453	B1	R464	C2	R480	A3	R503	B4	ZD402	C2
C407	A2	C418	B1	C431	B2	C443	C1	C455	D1	C472	B3	C494	B3	C511	B4	C545	B4	D412	C2	JK401	C4	R404	A1	R415	B2	R427	B3	R443	C1	R454	C2	R465	C2	R484	A3	R504	B4		
C408	B1	C419	A1	C432	B2	C444	C1	C456	D1	C476	A3	C495	B3	C512	B4	C546	B4	FB401	B1	L401	A4	R405	A1	R416	B2	R432	A2	R444	B2	R455	C2	R466	C2	R486	A4	R505	B4		
C409	B1	C420	B1	C433	B2	C445	C1	C457	C2	C477	A3	C496	B4	C522	A4	C547	B4	FB402	B1	L402	A4	R406	B2	R417	B2	R433	C2	R445	B2	R456	C2	R467	C2	R487	B4	R512	B3		
C410	B1	C421	A1	C434	B2	C446	C1	C458	A3	C478	B3	C497	B4	C524	A4	D401	C2	FB403	B1	L403	B4	R407	B2	R418	B2	R434	A2	R446	A4	R457	C1	R468	C2	R488	B4	R514	B4		
C411	B1	C424	B1	C436	C1	C447	C2	C459	A3	C479	B3	C504	A4	C525	B4	D402	C2	FB404	B1	L404	B4	R408	A1	R419	B2	R435	B2	R447	A2	R458	C1	R470	D2	R492	A4	R515	B4		



7 - 3

CIRCUIT DIAGRAM - part two



7 - 4

CIRCUIT DIAGRAM - part three

C301	A1	C309	A2	C317	A1	C325	A2	C333	A4	C341	D1	C349	B3	C357	D3	C365	D3	FB301	A4	FB309	C2	IC303	B4	Q302	C3	R304	A3	R312	A1	R320	A2	R328	A3	R338	B1	R351	C3	R359	C3	R367	D4	R375	C4	R386	D2	R394	D3	ZD301	B3
C302	A2	C310	B3	C318	B3	C326	A2	C334	B1	C342	D1	C350	B3	C358	D3	C366	A1	FB302	B1	FB310	C2	IC304	B4	Q303	C4	R305	A1	R313	A1	R321	A3	R329	A4	R339	B1	R352	D4	R360	C4	R368	D4	R376	C4	R387	D2	R395	D3	ZD302	B3
C303	A2	C311	B3	C319	B4	C327	A2	C335	B1	C343	C2	C351	B3	C359	D3	C367	A1	FB303	B1	FB311	C2	IC305	D4	Q304	C4	R306	A1	R314	A1	R322	A3	R330	A4	R340	B4	R353	D4	R361	D4	R369	D3	R377	D1	R388	D2	R396	C2	ZD305	C3
C304	A2	C312	B3	C320	A1	C328	A3	C336	C1	C344	C2	C352	A1	C360	D3	C368	C4	FB304	C2	FB312	C2	JK301	B1	Q305	C4	R307	A1	R315	A2	R323	A3	R331	C4	R345	B3	R354	D4	R362	D4	R370	D4	R378	D1	R389	C4	R397	D4		
C305	C2	C313	B4	C321	A1	C329	A3	C337	C1	C345	B3	C353	B3	C361	C3	C369	D3	FB305	D2	FB313	C2	L301	A1	Q306	D4	R308	A1	R316	A2	R324	A3	R332	A4	R346	B3	R355	D4	R363	D4	R371	D4	R379	D1	R390	C4	R398	C2		
C306	C2	C314	B4	C322	A1	C330	A3	C338	C1	C346	B3	C354	B3	C362	C3	C372	B3	FB306	C2	FB314	C2	L302	D3	Q307	D4	R309	A1	R317	A2	R325	A3	R333	A4	R347	C3	R356	D2	R364	D4	R372	D4	R383	D1	R391	C4	R399	C2		
C307	C2	C315	B4	C323	A1	C331	A3	C339	C1	C347	B4	C355	D3	C363	C3	C373	A1	FB307	C2	IC301	A2	L303	D3	R302	A1	R310	A1	R318	A2	R326	A3	R336	B1	R348	C3	R357	C3	R365	D4	R373	C4	R384	D1	R392	C4	TU301	D2		
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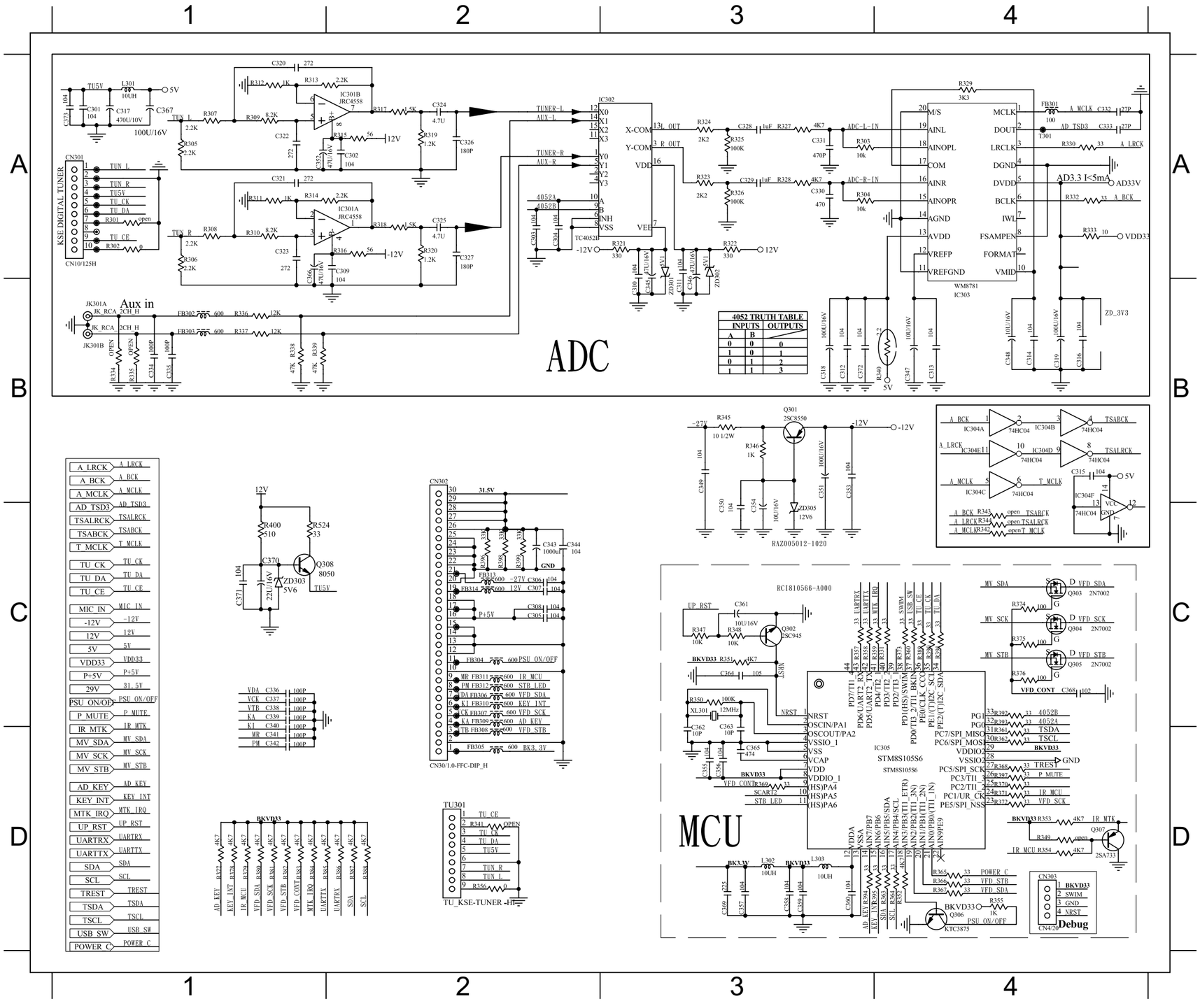
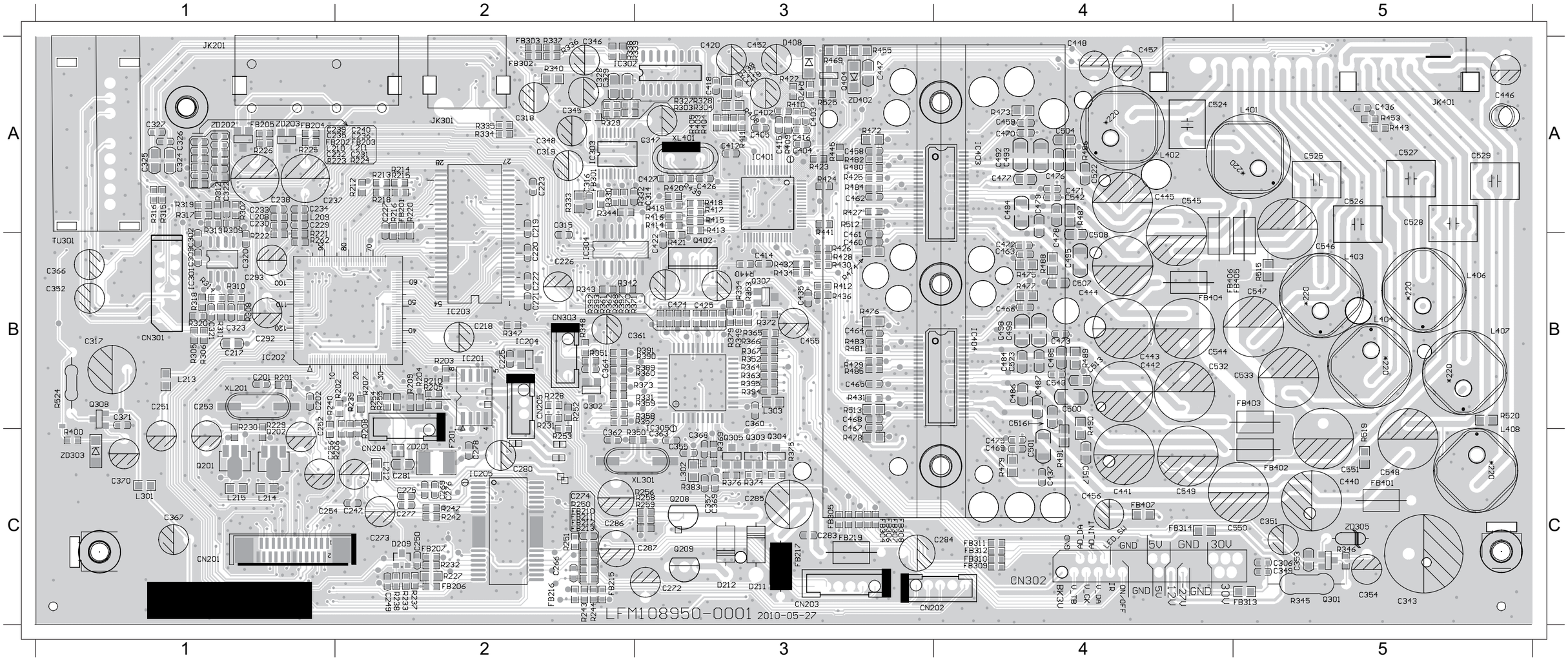


7 - 5

PCB LAYOUT - TOP VIEW

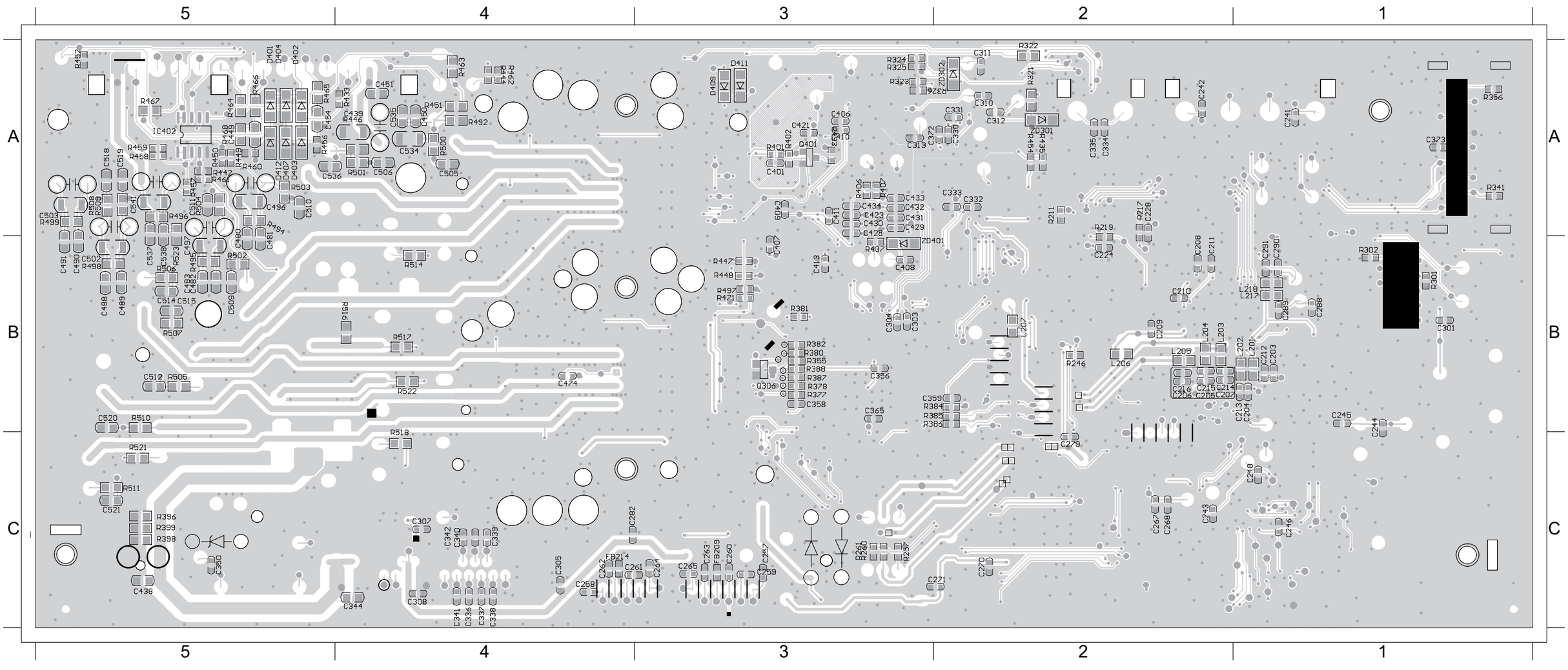
C201	B1	C235	A1	C273	C2	C309	B1	C343	C5	C366	B1	C425	B3	C457	A4	C495	B4	CN302	C4	FB215	C2	FB314	C4	IC305	B3	L401	A5	R202	B2	R223	A1	R244	C2	R310	B1	R333	A2	R359	B3	R376	C3	R411	A3	R434	B3	R487	A4
C202	B1	C236	A2	C274	C2	C314	A3	C345	A2	C367	C1	C426	A3	C458	A3	C504	A4	D209	C2	FB216	C2	FB401	C5	IC401	A3	L402	A4	R203	B2	R224	A2	R247	C2	R311	B1	R336	A2	R360	B3	R379	B3	R412	B3	R438	A3	R488	B4
C217	B1	C237	A1	C275	C2	C315	A2	C346	A2	C368	C3	C427	A3	C459	A4	C507	B4	D211	C3	FB217	C3	FB402	C5	IC403	A4	L403	B5	R204	B2	R225	A1	R250	C2	R312	A1	R337	A2	R361	B2	R383	C3	R413	A3	R439	A3	R512	A3
C218	B2	C238	A1	C276	C2	C316	A2	C347	A3	C369	C3	C436	A5	C460	B3	C508	A4	D212	C3	FB219	C3	FB403	B5	JK201	A1	L404	B5	R205	B2	R226	A1	R251	C2	R313	A1	R338	A2	R362	B2	R389	B3	R414	A3	R440	B3	R515	B5
C219	A2	C239	A1	C277	C2	C317	B1	C348	A2	C402	A3	C437	C4	C461	A3	C522	A4	D408	A3	FB301	A2	FB404	B4	JK301	A2	Q201	C1	R206	C2	R227	C2	R252	B2	R314	B1	R339	A3	R363	B3	R390	B3	R415	A3	R441	A3	R525	A3
C220	B2	C240	A2	C278	C2	C318	A2	C349	C5	C403	A3	C440	C5	C462	A3	C524	A4	F201	C2	FB302	A2	FB405	B5	JK401	A5	Q202	B1	R207	B2	R228	B2	R253	C2	R315	A1	R340	A2	R364	B3	R391	B3	R416	A3	R443	A5	TU301	B1
C221	B2	C247	C2	C280	C2	C319	A2	C351	C5	C404	A3	C441	C4	C463	B4	C525	A5	FB201	A2	FB303	A2	FB406	B4	L208	A1	Q208	C3	R208	B2	R229	B1	R256	C3	R316	A1	R345	C5	R365	B3	R392	B2	R417	A3	R445	A3	XL201	B1
C222	B2	C249	C2	C281	C2	C320	B1	C352	B1	C405	A3	C442	B4	C470	A4	C526	A5	FB202	A1	FB304	C3	FB407	C4	L209	A1	Q209	C3	R209	B2	R230	B1	R258	C3	R317	A1	R346	C5	R366	B3	R393	B2	R418	A3	R453	A5	XL301	C3
C223	A2	C250	C2	C283	C3	C321	B1	C353	C5	C412	A3	C443	B4	C471	A4	C542	A4	FB203	A2	FB305	C3	IC201	B2	L210	A1	Q301	C5	R212	A2	R231	B2	R259	C3	R318	B1	R347	B2	R367	B3	R394	B3	R419	A3	R455	A3	XL401	A3
C225	B2	C251	B1	C284	C4	C322	A1	C354	C5	C414	B3	C444	B4	C472	B4	C544	B4	FB204	A1	FB306	C3	IC202	B1	L211	A2	Q302	B2	R213	A2	R232	C2	R262	B1	R319	A1	R348	B2	R368	B2	R395	B3	R420	A3	R470	A3	ZD201	C2
C226	B2	C252	B1	C285	C3	C323	B1	C355	C3	C415	A3	C445	A4	C476	A4	C545	A4	FB205	A1	FB307	C3	IC203	B2	L212	C2	Q303	C3	R214	A2	R233	C2	R303	A3	R320	B1	R350	C3	R369	C3	R397	B2	R421	B3	R472	A3	ZD202	A1
C229	A1	C253	B1	C286	C2	C324	A1	C357	C3	C416	A3	C446	A5	C477	A4	C546	B5	FB206	C2	FB308	C3	IC204	B2	L213	B1	Q304	C3	R215	A2	R237	C2	R304	A3	R327	A3	R351	B2	R370	B2	R403	A3	R422	A3	R473	A4	ZD203	A1
C230	A1	C254	C1	C287	C3	C325	A1	C360	B3	C417	A3	C447	A3	C478	A4	C547	B5	FB207	C2	FB309	C4	IC205	C2	L214	C1	Q305	C3	R216	A2	R238	C2	R306	B1	R328	A3	R352	B3	R371	B3	R404	A3	R423	A3	R474	B3	ZD305	C5
C231	A2	C256	C1	C292	B1	C326	A1	C361	B3	C418	A3	C448	A4	C479	A4	CN201	C1	FB210	C2	FB310	C4	IC301	B1	L215	C1	Q307	B3	R218	A2	R239	B2	R306	B1	R329	A2	R353	B3	R372	B3	R405	A3	R424	A3	R475	B4	ZD402	A3
C232	A1	C266	C2	C293	B1	C327	A1	C362	C2	C419	A3	C452	A3	C492	A4	CN202	C3	FB211	C2	FB311	C4	IC302	A3	L301	C1	Q402	B3	R220	A2	R240	B1	R307	A1	R330	A2	R354	B3	R373	B3	R408	A3	R425	A3	R480	A3		
C233	A1	C269	C2	C302	A1	C328	A2	C363	C3	C420	A3	C455	B3	C493	A4	CN203	C3	FB212	C2	FB312	C4	IC303	A2	L302	C3	Q404	A3	R221	A1	R242	C2	R308	B1	R331	B3	R357	B3	R374	C3	R409	A3	R427	A3	R484	A3		
C234	A1	C272	C3	C306	C5	C329	A2	C364	B2	C424	B3	C456	C4	C494	A4	CN204	C2	FB213	C2	FB313	C5	IC304	B2	L303	B3	R201	B1	R222	A1	R243	C2	R309	A1	R332	A3	R358	B3	R375	C3	R410	A3	R432	A3	R486	A4		



7 - 6

PCB LAYOUT - BOTTOM VIEW

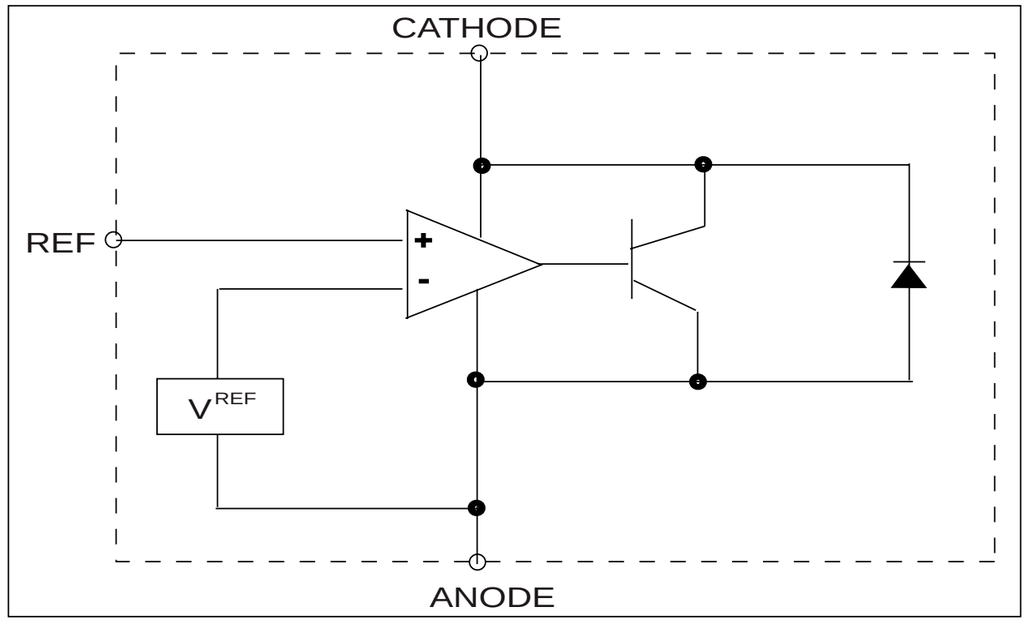
C203 B1 C212 B1 C243 C2 C261 C4 C279 C2 C305 C4 C332 A2 C341 C4 C373 A1 C421 A3 C439 A4 C496 A5 C535 A4 D412 A5 L206 B2 R246 B2 R325 A3 R387 B3 R433 A4 R450 A5 R461 A5 R492 A4 R514 B4
C204 B1 C213 B1 C244 B1 C262 C4 C282 C4 C307 C4 C333 A2 C342 C4 C401 A3 C428 A3 C449 A5 C497 B5 C536 A5 FB209 C3 L207 B2 R257 C3 R326 A3 R388 B3 R435 A2 R451 A4 R462 A4 R494 A5 R516 B4
C205 B2 C214 B2 C245 B1 C263 C3 C288 B1 C308 C4 C334 A2 C344 C4 C406 A3 C429 A3 C450 A4 C505 A4 D401 A5 FB214 C4 L217 B1 R260 C3 R355 B3 R396 C5 R437 B3 R452 A5 R463 A4 R495 B5 R517 B4
C206 B2 C215 B2 C246 C1 C264 C3 C289 B1 C310 A2 C335 A2 C350 C5 C407 B3 C430 A3 C451 A4 C506 A4 D402 A5 IC402 A5 L218 B1 R261 C3 R356 A1 R398 C5 R442 A5 R454 A2 R464 A5 R500 A4 ZD301 A2
C207 B2 C216 B2 C248 C1 C265 C3 C290 B1 C311 A2 C336 C4 C356 B3 C408 B3 C431 A3 C454 A5 C509 B5 D403 A5 L201 B1 Q306 B3 R302 B1 R377 B3 R399 C5 R444 A4 R456 A5 R465 A5 R501 A4 ZD302 A2
C208 B2 C224 B2 C257 C3 C267 C2 C291 B1 C312 A2 C337 C4 C358 B3 C409 A3 C432 A3 C480 A5 C510 A5 D404 A5 L202 B1 Q401 A3 R321 A2 R378 B3 R401 A3 R446 A4 R457 A5 R466 A5 R502 B5 ZD401 B3
C209 B2 C228 A2 C258 C4 C268 C2 C301 B1 C313 A3 C338 C4 C359 B3 C410 A3 C433 A3 C481 A5 C511 A5 D407 A5 L203 B1 R211 A2 R322 A2 R384 B3 R402 A3 R447 B3 R458 A5 R467 A5 R503 A5
C210 B2 C241 A1 C259 C3 C270 C2 C303 B3 C330 A2 C339 C4 C365 B3 C411 A3 C434 A3 C482 B5 C512 B5 D409 A3 L204 B2 R217 A2 R323 A3 R385 B3 R406 A3 R448 B3 R459 A5 R468 A5 R504 A5
C211 B2 C242 A2 C260 C3 C271 C3 C304 B3 C331 A2 C340 C4 C372 A3 C413 B3 C438 C5 C483 B5 C534 A4 D411 A3 L205 B2 R219 A2 R324 A3 R386 B3 R407 A3 R449 A5 R460 A5 R471 B3 R505 B5



POWER BOARD

TABLE OF CONTENTS

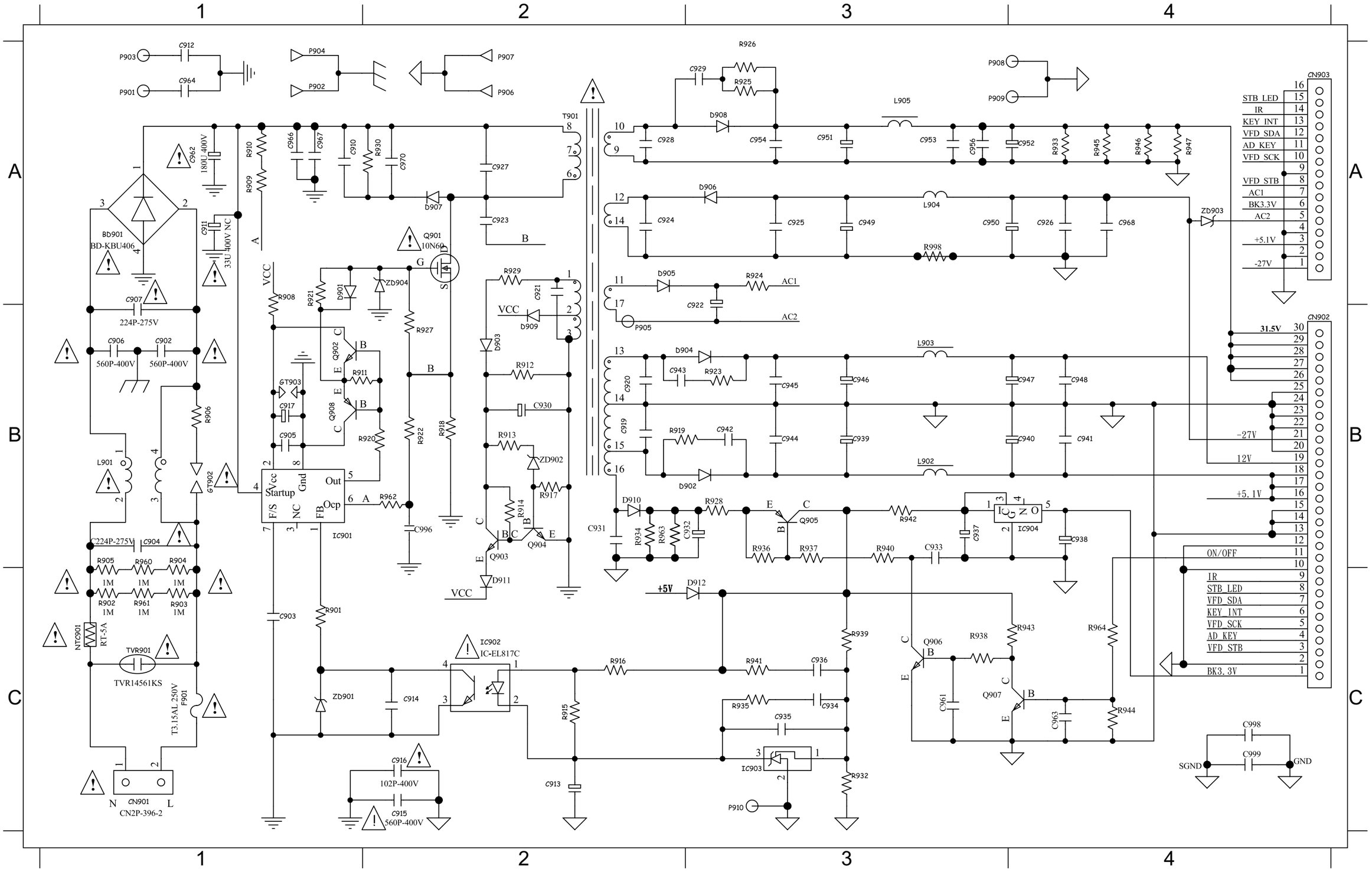
INTERNAL IC DIAGRAM - AZ431



8 - 2

CIRCUIT DIAGRAM

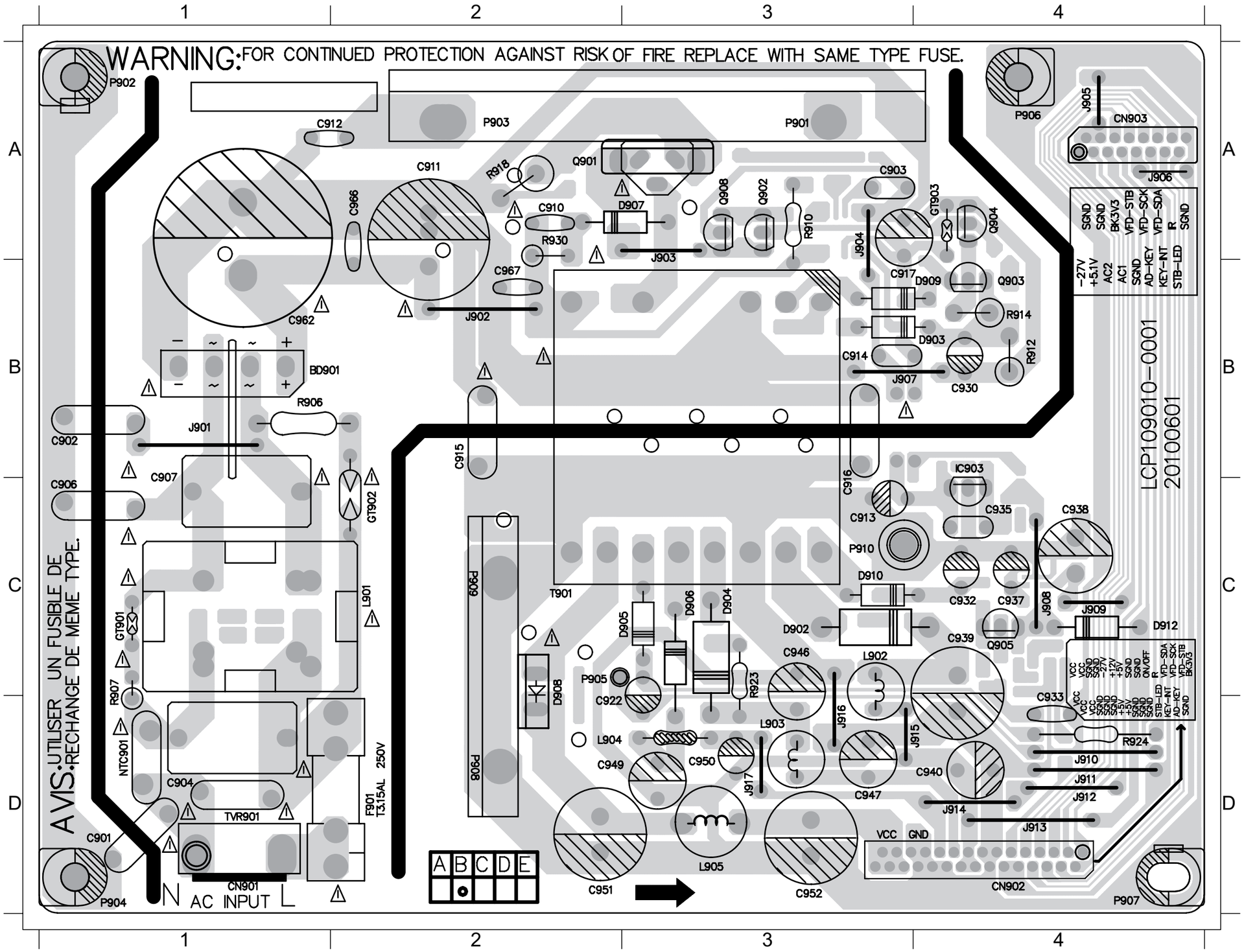
BD901	A1	C907	A1	C916	C2	C930	B2	C938	B4	C944	A3	C950	A3	C961	C3	C968	A4	D903	B2	D909	B2	IC901	B1	L902	A3	Q903	B2	R902	C1	R911	B1	R917	B2	R923	A3	R929	A2	R936	A3	R942	A3	R960	B1	T901	A2	ZD904	A2
C902	B1	C910	A1	C917	B1	C932	A3	C939	A3	C945	A3	C951	A3	C962	A1	CN901	C1	D904	A3	D910	B2	IC902	C2	L903	A3	Q904	B2	R903	C1	R912	B2	R918	B2	R924	A3	R930	A2	R937	A3	R943	C4	R961	C1	TVR901	C1		
C903	C1	C912	A1	C922	A3	C933	A3	C940	B4	C946	A3	C952	A4	C963	C4	CN902	B4	D905	A2	D911	C2	IC903	C3	L904	A3	Q905	A3	R904	B1	R913	B2	R919	B2	R925	A3	R932	C3	R938	C3	R944	C4	R962	B2	ZD901	C1		
C904	B1	C913	C2	C925	A3	C934	C3	C941	B4	C947	B4	C953	A3	C964	A1	CN903	A4	D906	A3	D912	C3	IC903	C3	L905	A3	Q906	C3	R905	B1	R914	B2	R920	B2	R926	A3	R933	A4	R939	C3	R945	A4	R963	B2	ZD901	C1		
C905	B1	C914	C2	C926	A4	C935	C3	C942	A3	C948	B4	C954	A3	C966	A1	D901	A1	D907	A2	F901	C1	IC904	B4	NTC901	C1	Q907	C3	R906	B1	R915	C2	R921	A1	R927	B2	R934	B2	R940	A3	R946	A4	R964	C4	ZD902	B2		
C906	B1	C915	C2	C929	A3	C936	C3	C943	B2	C949	A3	C956	A3	C967	A1	D902	A3	D908	A3	GT902	B1	L901	B1	Q901	A2	R901	C1	R908	A1	R916	C2	R922	B2	R928	A3	R935	C3	R941	C3	R947	A4	T901	A2	ZD903	A4		



8 - 3

PCB LAYOUT - TOP VIEW

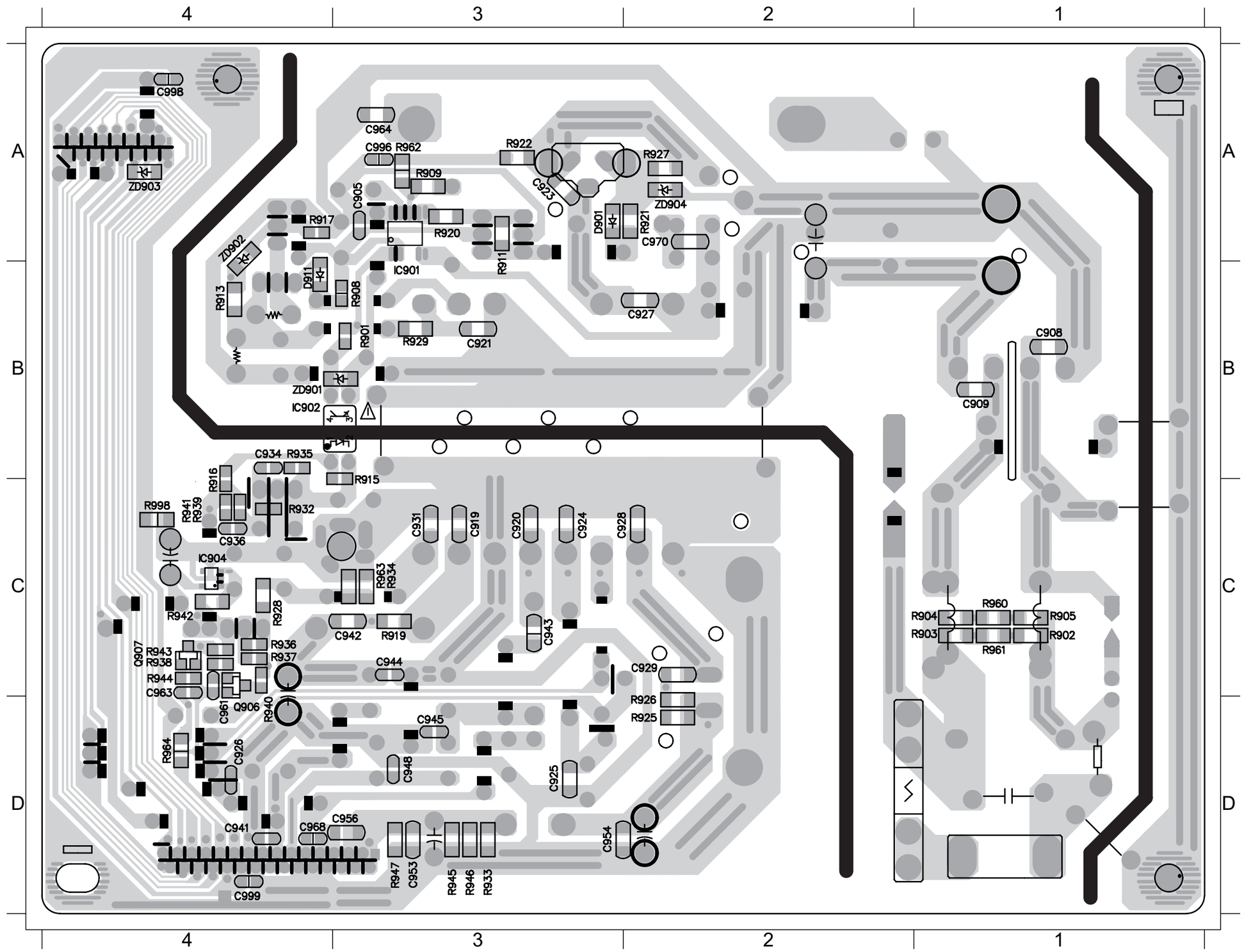
BD901	B1	C910	A2	C917	B3	C938	C4	C950	D3	CN901	D1	D905	C3	D912	C4	J902	B2	J908	C4	J915	D3	L904	D2	Q905	C4	R924	D4
C902	B1	C912	A1	C922	D2	C939	C4	C951	D2	CN902	D4	D906	C3	F901	D2	J903	A3	J909	C4	J916	D3	L905	D3	R906	B1	R930	A2
C903	A3	C913	C3	C930	B4	C940	D4	C952	D3	CN903	A4	D907	A3	GT902	C2	J904	A3	J910	D4	J917	D3	NTC901	D1	R912	B4	T901	C2
C904	D1	C914	B3	C932	C4	C946	C3	C962	B1	D902	C3	D908	D2	IC903	B4	J905	A4	J912	D4	L901	C2	Q901	A2	R914	B4	T901	C2
C906	C1	C915	B2	C933	D4	C947	D3	C966	A2	D903	B4	D909	B4	IC903	B4	J906	A4	J913	D4	L902	C3	Q903	B4	R918	A2	TVR901	D1
C907	B1	C916	B3	C935	C4	C949	D2	C967	B2	D904	C3	D910	C3	J901	B1	J907	B3	J914	D4	L903	D3	Q904	A4	R923	C3		



8 - 4

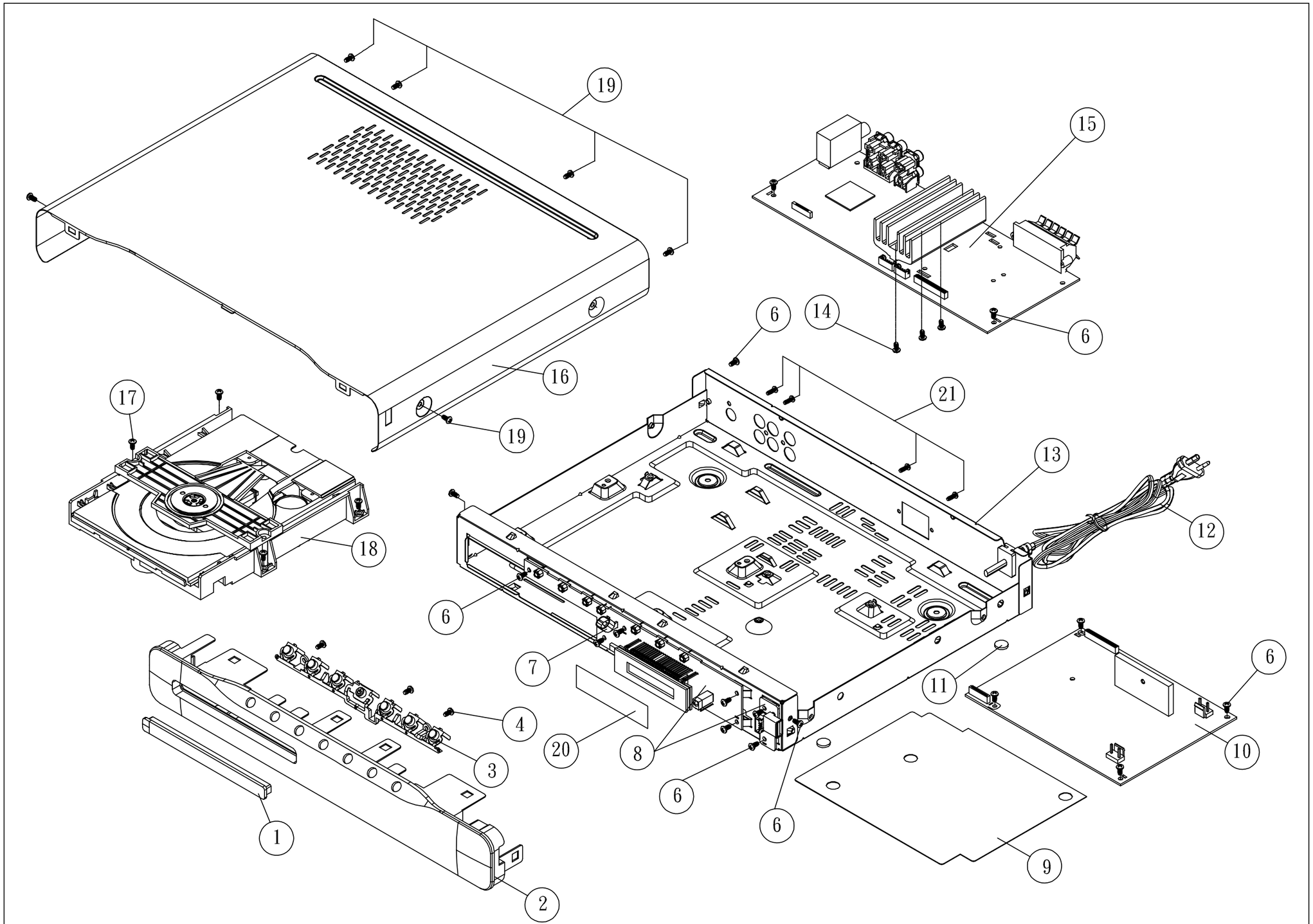
PCB LAYOUT - BOTTOM VIEW

C905	A3	C936	C4	C945	D3	C961	D4	D911	B4	Q907	C4	R905	C1	R916	B4	R922	A3	R929	B3	R936	C4	R941	C4	R946	D3	R963	C3	ZD903	A4
C925	D3	C941	D4	C948	D3	C963	C4	IC901	B3	R901	B3	R908	B3	R917	A4	R925	D2	R932	C4	R937	C4	R942	C4	R947	D3	R964	D4	ZD904	A2
C926	D4	C942	C3	C953	D3	C964	A3	IC902	B4	R902	C1	R911	B3	R919	C3	R926	D2	R933	D3	R938	C4	R943	C4	R960	C1	ZD901	B4		
C929	C2	C943	C3	C954	D3	C968	D4	IC904	C4	R903	C1	R913	B4	R920	A3	R927	A2	R934	C3	R939	C4	R944	C4	R961	C1	ZD901	B4		
C934	B4	C944	C3	C956	D3	D901	A3	Q906	D4	R904	C1	R915	C3	R921	A2	R928	C4	R935	B4	R940	D4	R945	D3	R962	A3	ZD902	A4		



9 - 1

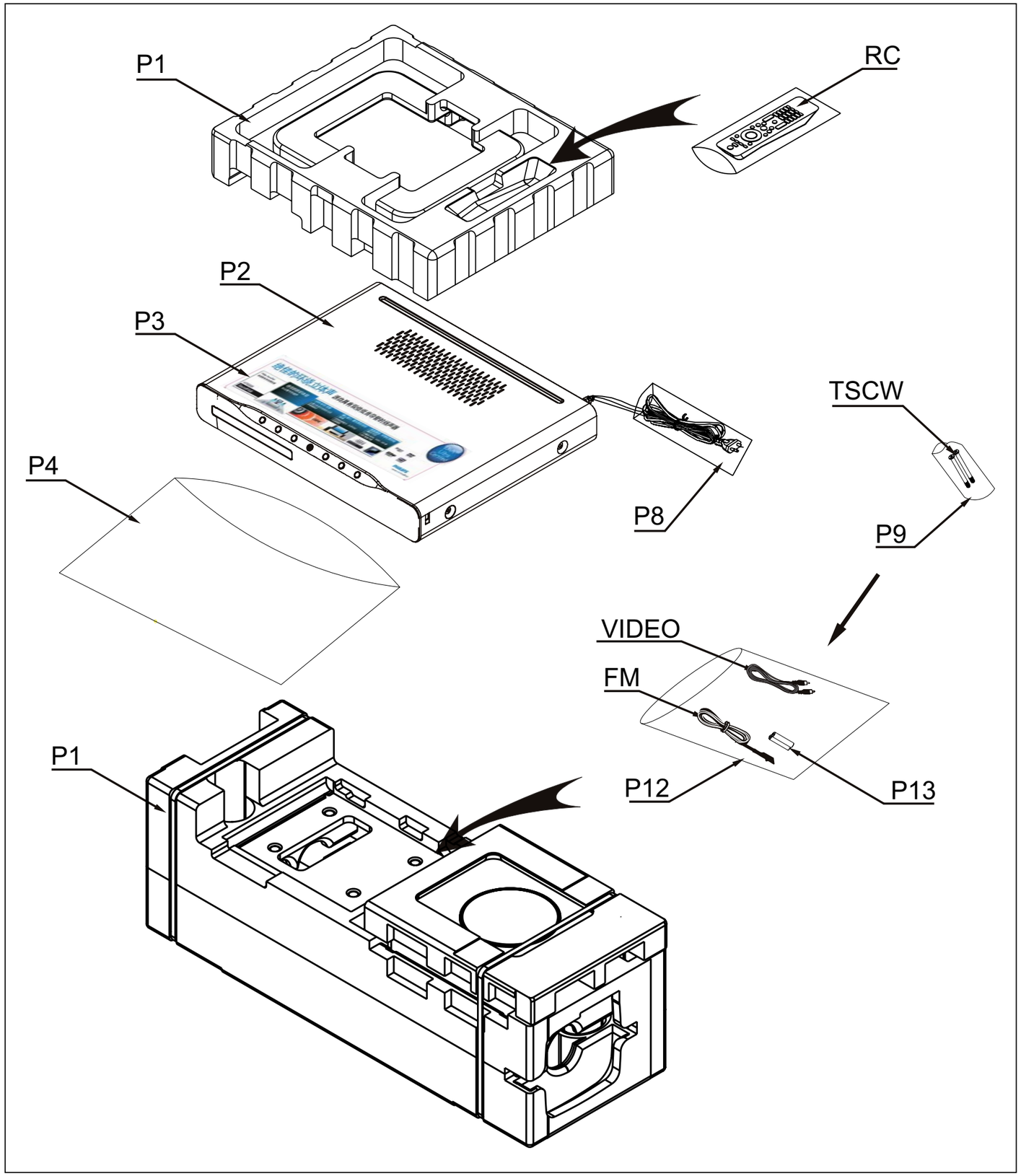
Mechanical Exploded View



4	HSP140054-1060	SCREW T3.0x1.06PxL6mm NICKEL	17	HST143084-1080	SCREW M3.0x0.5PxL8mm NICKEL
6	HST143084-1060	SCREW M3.0x0.5PxL6mm NICKEL	19	HST143084-3060	SCREW M3x0.5PxL6mm BLACK OXIDE
14	HSP140054-1100	SCREW T3.0x1.06PxL10mm NICKEL	21	HSP140054-1080	SCREW T3.0x1.06PxL8mm NICKEL

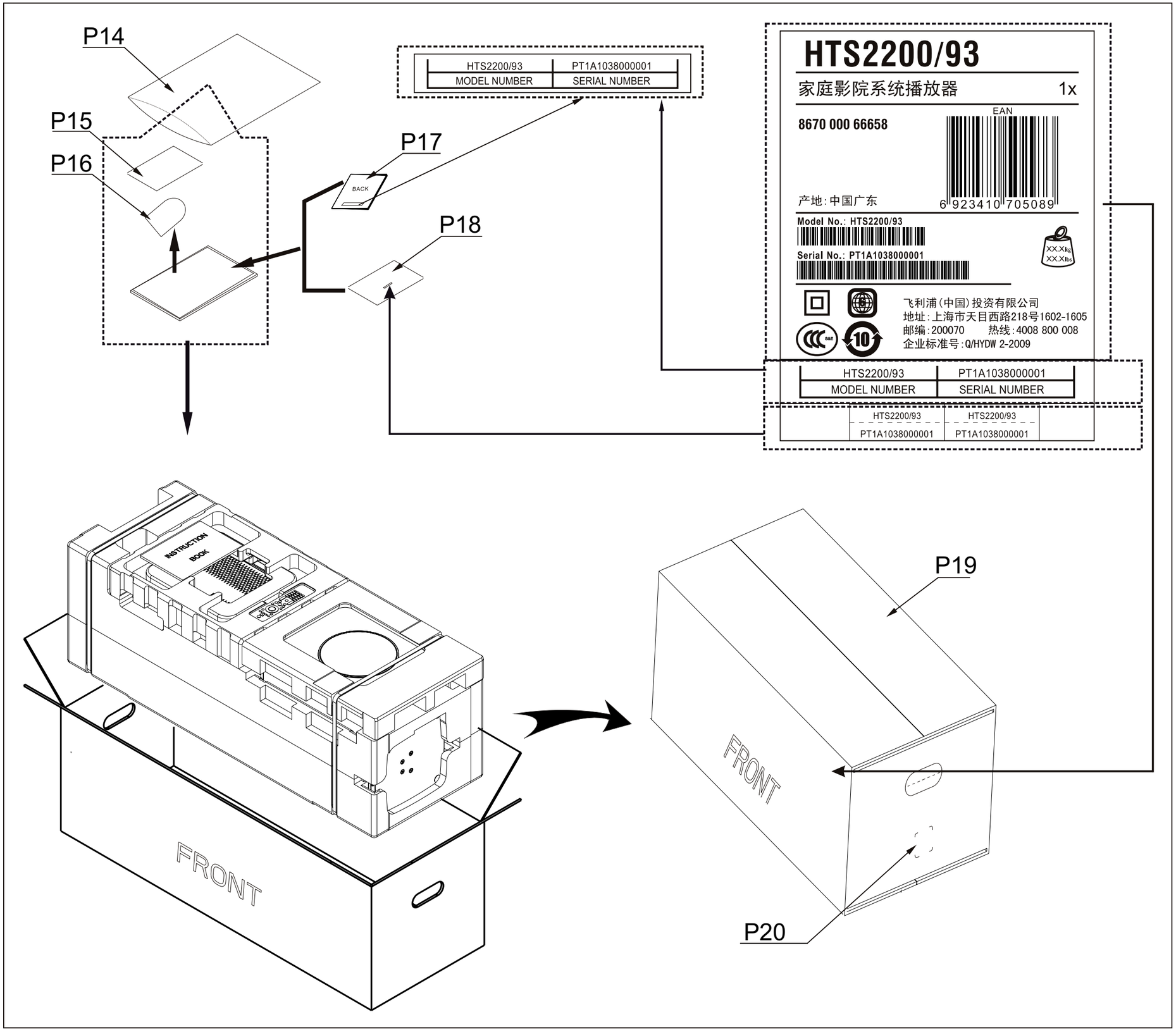
9 - 2

Packing View (part one)



9 - 3

Packing View (part two)



REVISION LIST

Version 1.0
*Initial release