Service
Service
Service

Service Manual

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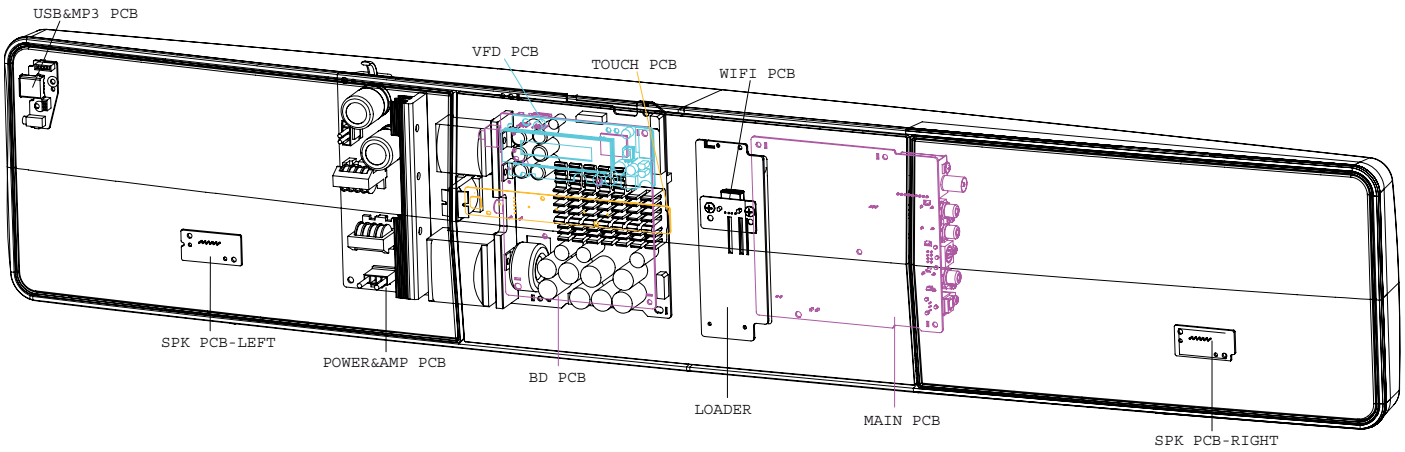
GB 3139 785 35755

Version 1.5

PHILIPS

LOCATION OF PCB BOARDS



VERSION VARIATION:

Type/Versions / Features	HTS5131				
	/12	/98	/51	/94	/78
Output Power - 400W	X	X	X	X	X
Voltage (220~240V)	X	X	X	X	X
Voltage (110~127V)		X			X
Music iLink	X	X	X	X	X

SERVICE SCENARIO MATRIX:

Type/Versions / Board in used	HTS5131				
	/12	/98	/51	/94	/78
Main+VFD+FR+FL+MP3+WIFI+Open+CLOS+RFS Board	C	C	C	C	C
Power & AMP Board	C	C	C	C	C
Touch Board	Bd	C	C	C	C
BD Board	Bd	Bd	Bd	Bd	Bd

*Bd= Board Level Replacement
*C = Component Level Repair

SPECIFICATIONS

Media formats

- AVCHD, BD-RE,BD-Video, DVD-Video, DVD+R/+RW, DVD-R/-RW, DVD+R/-R DL, CD-R/CD-RW, Audio CD, Video CD/ SVCD, Picture files, MP3-CD, WMA-CD, DivX (Ultra)-CD, USB storage device

File formats

- Audio: .aac, .mka, .mp3, .wma, .wav
- Video: .avi, .divx, .mp4, .mkv, .asf, .mpg, .mpeg
- Picture: .jpg, .jpeg, .gif, .png

Audio formats

Your home theater supports the folbwing audio files.

Extension	Container	Audio codec	Bit rate
.mp3	MP3	MP3	32 kbps ~ 320 kbps
.wma	ASF	WMA	64 kbps ~ 160 kbps
.aac	AAC	AAC, HE-AAC	192 kbps
.wav	WAV	PCM	1.4 Mbps
.m4a	MKV	AAC	192 kbps
.mka	MKA	PCM	27.648 Mbps
.mka	MKA	Dolby Digital	640 kbps
.mka	MKA	DTS core	1.54 Mbps
.mka	MKA	MPEG	912 kbps
.mka	MKA	MP3	32 kbps ~ 320 kbps
.mka	MKA	WMA	64 kbps ~ 160 kbps
.mka	MKA	AAC, HE-AAC	192 kbps

Video formats

If you have a high definition TV, your home theater allows you to play your video files with:

- Resolution: 1920 x 1080 pixels at
- Frame rate: 6 ~ 30 frames per second.

.avi files in AVI container

Audio codec	Video codec	Bit rate
PCM, Dolby Digital, DTS core, MP3, WMA	DivX 3.11, DivX 4.x, DivX 5.x, DivX 6.x	10 Mbps max
	MPEG 1, MPEG 2	20 Mbps (peak 40 Mbps)
	MPEG 4 ASP	10 Mbps max
	H.264/AVC HP@4.1/4.0; MP@3.2/3.1/3.0	20 Mbps (peak 40 Mbps)

.divx files in AVI container

Audio codec	Video codec	Bit rate
PCM, Dolby Digital, MP3, WMA	DivX 3.11, DivX 4.x, DivX 5.x, DivX 6.x	10 Mbps max
	MPEG 1, MPEG 2	20 Mbps (peak 40 Mbps)
	MPEG 4 ASP	10 Mbps max

.mp4 or .m4v files in MP4 container

Audio codec	Video codec	Bit rate
Dolby Digital, MPEG, MP3, AAC, HE-AAC	MPEG 1, MPEG 2	20 Mbps (peak 40 Mbps)
	MPEG 4 ASP	10 Mbps max
	H.264/AVC HP@4.1/4.0; MP@3.2/3.1/3.0	20 Mbps (peak 40 Mbps)

.mkv files in MKV container

Audio codec	Video codec	Bit rate
PCM, Dolby Digital, DTS core, MPEG, MP3, WMA, AAC, HE-AAC	MPEG 1, MPEG 2	20 Mbps (peak 40 Mbps)
	MPEG 4 ASP	10 Mbps max
	H.264/AVC HP@4.1/4.0; MP@3.2/3.1/3.0	20 Mbps (peak 40 Mbps)

.asf files in ASF container

Audio codec	Video codec	Bit rate
PCM, Dolby Digital, MP3, WMA	MPEG 4 ASP	10 Mbps max
	H.264/AVC HP@4.1/4.0; MP@3.2/3.1/3.0	20 Mbps (peak 40 Mbps)

.mpg and .mpeg files in PS container

Audio codec	Video codec	Bit rate
PCM, DTS core, MPEG, MP3	MPEG 1, MPEG 2	20 Mbps (peak 40 Mbps)
	MPEG 1, MPEG 2	20 Mbps (peak 40 Mbps)

Amplifier

- Total output power: 400W RMS (30% THD)/ 300W RMS (10% THD)
- Frequency response: 20 Hz-20 kHz / ±3 dB
- Signal-to-noise ratio: > 65 dB (CCIR) / (A-weighted)
- Input sensitivity:
  - AUX : 500 mV
  - Music iLink: 250 mV

Video

- Signal system: PAL / NTSC
- HDMI output: 480i/576i, 480p/576p, 720p, 1080i, 1080p, 1080p24

USB

- Compatibility: Hi-Speed USB (2.0)
- Class support: USB Mass Storage Class (MSC)
- File system: FAT16, FAT32, NTFS
- Maximum memory support: < 160 GB

Main unit

- Power supply:
  - Europe /China: 220-240 V~, 50 Hz
  - Latin America/Asia Pacific: 110-127 V/220-240 V~, 50-60 Hz
  - Russia/India: 220-240 V~, 50 Hz
- Power consumption: 75 W
- Standby power consumption:<=0.3 W
- Left/Right speakers:
  - Speaker impedance: 6 ohm
  - Speaker drivers: 2 x 64 mm (2.5") woofer + 1 x 25 mm (1") tweeter
  - Frequency response: 150 Hz-20 kHz
- Dimensions (W xHxD): 945 x 178.5 x 96mm
- Weight: 5.0 kg

Audio

- S/PDIF Digital audio input:
  - Coaxial: IEC 60958-3
  - Optical: TOSLINK
- Sampling frequency:
  - MP3: 32 kHz, 44.1 kHz, 48 kHz
  - WMA: 44.1 kHz, 48 kHz
- Constant bit rate:
  - MP3: 32 kbps - 320 kbps
  - WMA: 48 kbps - 192 kbps

Radio

- Tuning range:
  - Europe /China: FM 87.5-108 MHz (50 kHz)
  - Asia Pacific/Russia/Latin America: FM 87.5-108 MHz (50/100 kHz)
- Signal-to-noise ratio: FM 50 dB
- Frequency response: FM 180 Hz-12.5 kHz / ±3 dB

Subwoofer

- Power output: 200W RMS (30% THD)/ 150W RMS (10% THD)
- Impedance: 3 ohm
- Speaker drivers: 165 mm (6.5″) woofer
- Frequency response: 20 Hz-150 Hz
- Dimensions (WxHxD): 123 x 309 x 369 mm
- Weight: 3.6 kg
- Cable length: 3 m

Wall mount

- Dimensions (WxHxD): 37.6 x 50 x 46.4 mm
- Weight: 0.05 kg/each

Remote control batteries

- 2 x AAA-R03-1.5 V

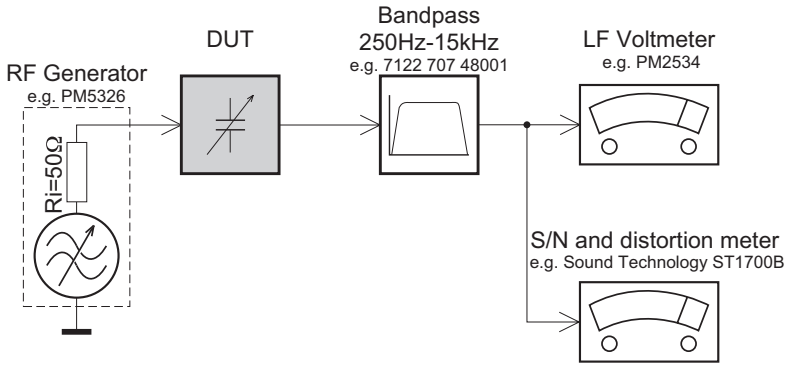
Laser

- Laser Type (Diode): InGaN/AIGaN (BD), AIGaInP(DVD/CD)
- Wave length: 405 +7 nm/-7 nm (BD), 655 +10 nm/-10 nm (DVD), 790 +10 nm/-20 nm (CD)
- Output power (Max. ratings): 20 mW (BD), 6 mW (DVD), 7 mW (CD)

Specifications subject to change without prior notice.

MEASUREMENT SETUP

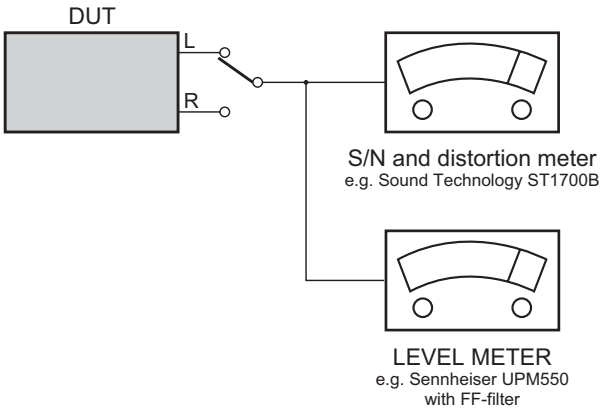
Tuner FM



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

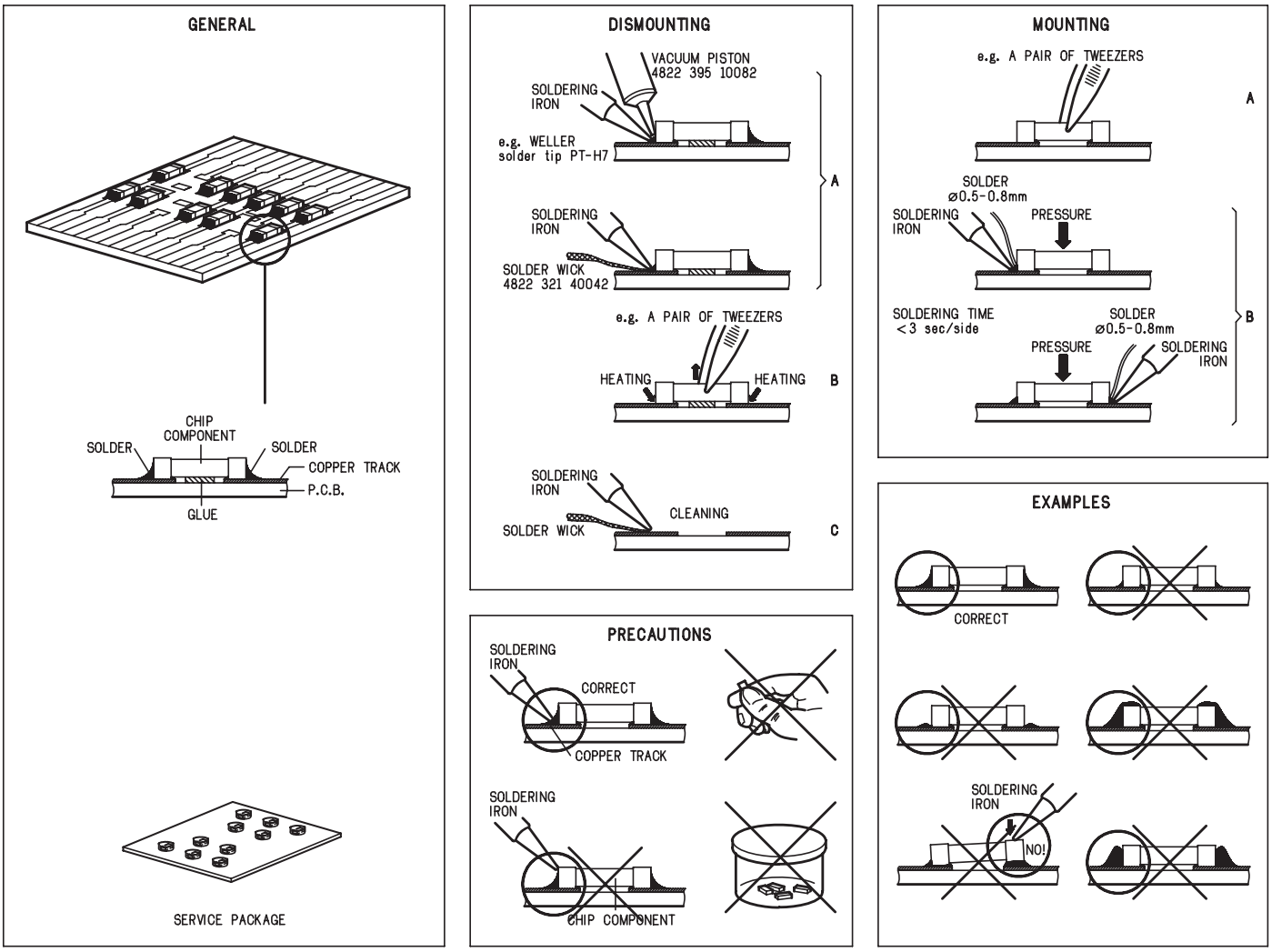
Service Tools:

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 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.

Software upgrade & Procedure to restore product setting

1) Restore factory setting

a) Press “⌂” <Home> button on R/C.
b) Select <Setup>, then press “OK” button on R/C.
c) Select <Advanced>, then press < OK > button on R/C.
d) Select <Restore default settings>,then press <OK> to confirm.

2) Password change

a) Press “⌂” <Home> button on R/C.
b) Select <Setup>, then press “OK” button on R/C.
c) Select <Preference>, then press <OK> button on R/C.
d) Select <Change Password> <Confirm>, then press <OK> button on R/C.
“0000” is default password supplied.

3) Trade mode

a) In open model,press “⌂” <Home> button on R/C.
b) Press “2” “5” “9” on R/C,VFD will display “TRA ON” or “TRA OFF”.

4) Check software version

a) Press “⌂” <Home> button on R/C
b) Select <Setup>, then press <OK> button on R/C.
c) Select <Advanced> <Version Info.>,then press <OK> button on R/C.
d) TV will show message as follow:

Model:HTS5131/12/98/51/94
Versions:
System SW:XXX
Subsystem SW:XX-XX-XX-XX
Ethernet MAC:XX:XX:XX:XX:XX:XX
http://www.philips.com/support

Close

e) Select <Close> on the version display screen and press <OK> button to exit .

5) Upgrading new software

Method 1: Update software from a USB storage device
a) Create a folder named “UPG_ALL” in your USB storage device, and Copy the latest upgrading software into the folder.
b) Connect the USB storage device to the home theater.
c) Press “⌂” <Home> button on R/C, and select <Setup>.
d) Select <Advanced> <Software Update> <USB>.
e) TV will show message as follow:

Now searching for upgrade software!
Please wait...!

Software updates for this player have been found. Do you want to upgrade?

Cancel Start

f) Select <Start>, press <OK> button on R/C.

Software upgrade will take 5 minutes

Do not switch off!

Package version: 000025.0

Software BE 80%

Software FE Completed

Software MCU1:

Software Dock:

Software MCU3:

2 - 1

Software upgrade will take 5 minutes

Do not switch off!

Package version: 000025.0

Software BE Completed

Software FE Completed

Software MCU1: Not started

Software Dock: 2%

Software MCU3: Not started

Software upgrade will take 5 minutes

Do not switch off!

Package version: 000025.0

Software BE Completed

Software FE Completed

Software MCU1: 1%

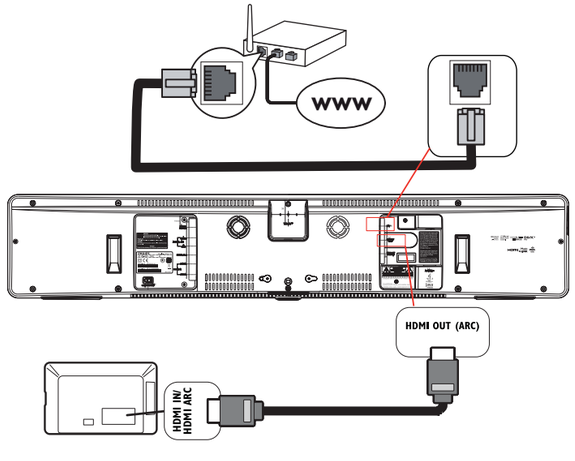
Software Dock: Failed

Software MCU3:

g)The set will shut down automatically when the software upgrade is completed.

Method 2: Update software from the internet

Note: To check for new updates, compare the current software version of your home theater with the latest software version (if available) on the Philips web site, and for BD-Live application and software update, make sure that the network router has access to the Internet and the firewall is disabled.
a) The “LAN” jack at the back panel of the set must be connect to the network router via network cable and the set connect to TV,
Prepare the connection as shown follow:



b) Press “⌂” <Home> button on R/C, and select <Setup>.
c) Select <Advance Setup> <Software Update> <Network>.
d) TV will show message as follow:

Now searching for upgrade software!
Please wait...!

Software updates for this player have been found. Do you want to upgrade?

Cancel Start

e) Select <Start>, press <OK> button on R/C.

Software upgrade will take 5 minutes

Do not switch off!

Package version: 000025.0

Software BE 80%

Software FE Completed

Software MCU1:

Software Dock:

Software MCU3:

Software upgrade will take 5 minutes

Do not switch off!

Package version: 000025.0

Software BE Completed

Software FE Completed

Software MCU1: Not started

Software Dock: 2%

Software MCU3: Not started

Software upgrade will take 5 minutes

Do not switch off!

Package version: 000025.0

Software BE Completed

Software FE Completed

Software MCU1: 1%

Software Dock: Failed

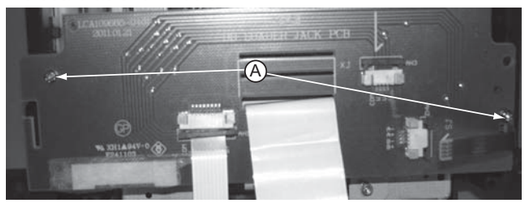
Software MCU3:

f) The set will shut down automatically when the software upgrade is completed.

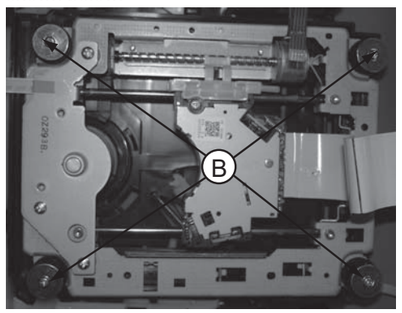
6) How to replace the defective Blu-ray Loader

a) Remove the defective Blu-ray Loader.

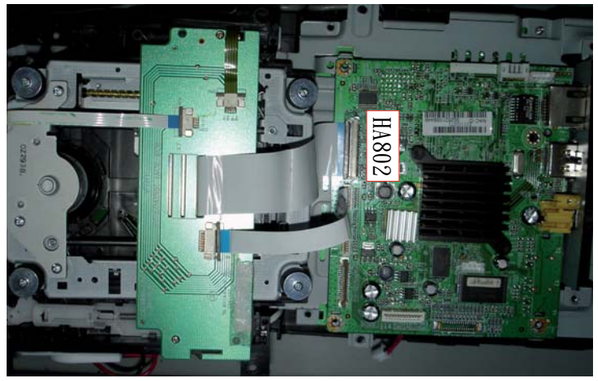
b) Loosen 2 screws “A” on the top of BD loader jack pcb to remove the board as shown below.



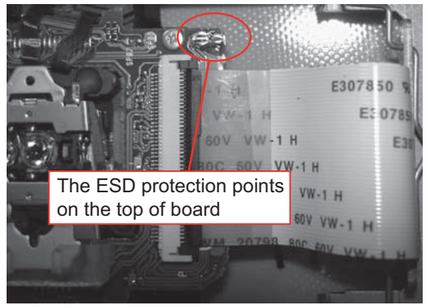
c) Loosen 4 screws “B” to take out the “Sanyo TRV-414H05” as shown below.



d) Blu-ray Loader to connect “HA802” on the top of BD Board as shown below.



e) Remove soldered joint on the ESD protection points.



Note: The 2 ESD protection points on any one side must be soldered if

- o the Blu-ray Loader is OK and needs to be disconnected from connector HA802 of the BD Board.
- o the defective Blu-ray Loader is needed to be send back to supplier for failure analysis and to support backcharging evidence.

7) OSD Language setup (only for 51 version)

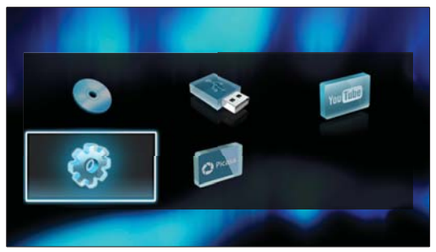
a) Press “ ” <Home> button on R/C.

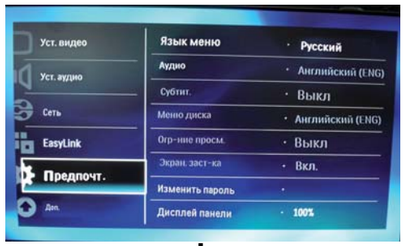
b) Select <Setup>, then press “OK” button on R/C.

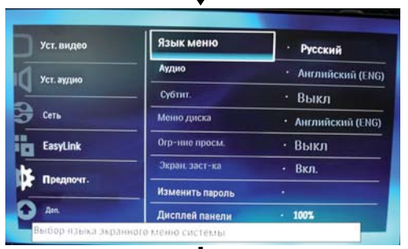
c) Select <Preference>, then press <OK> button on R/C.

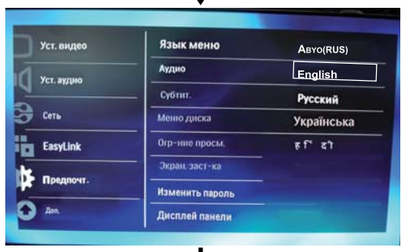
d) Select <Menu language>, then press <OK> button on R/C.

C) Select <English>, then press <OK> button on R/C.









CAUTION!

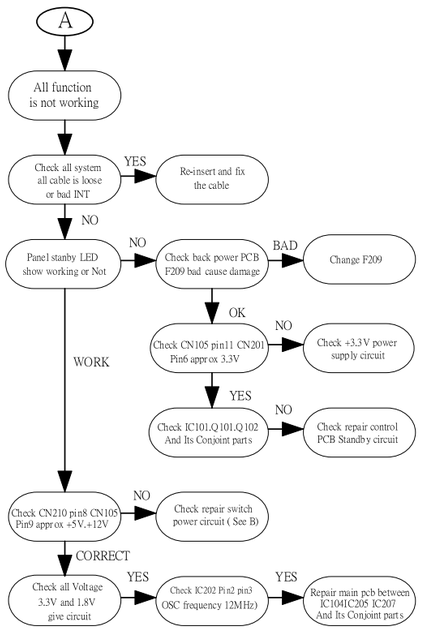
This information is confidential and may not be distributed.Only a qualified service person should reprogram the Region Code.

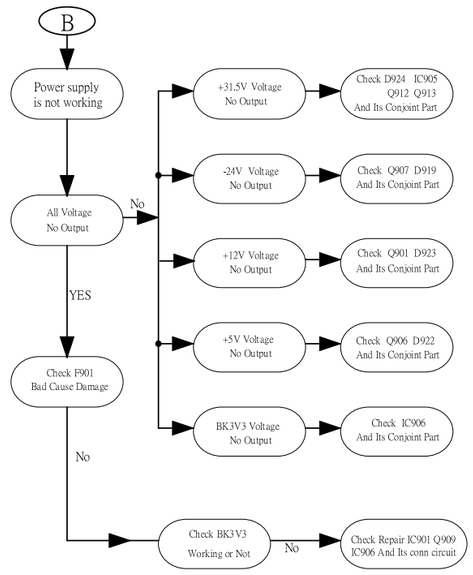
2 - 3

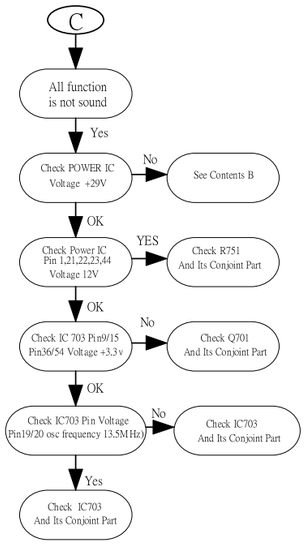
REPAIR INSTRUCTIONS-part one

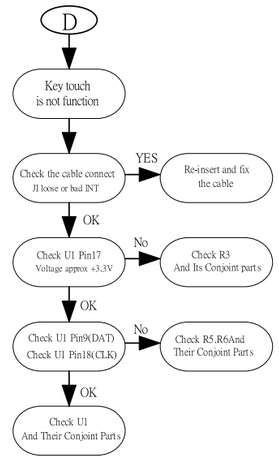
SCH5131REPAIR CHAR T

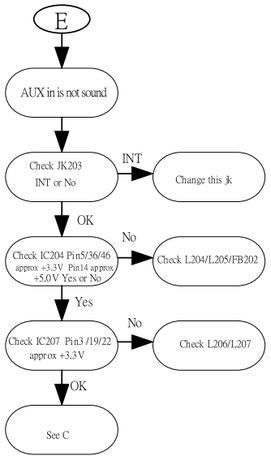
A — All function is not working
B — Power supply is not working
C — All function is not sound
D — Key touch is not function
E — AUX in is not sound
F — MP3 in is not sound
G — Coaxial in is not sound
H — Optical in is not sound
I — Tuner is not sound output

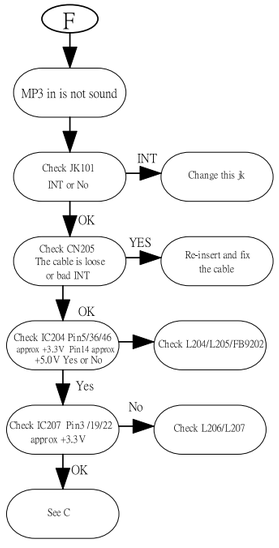


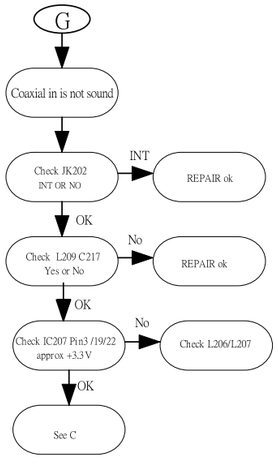


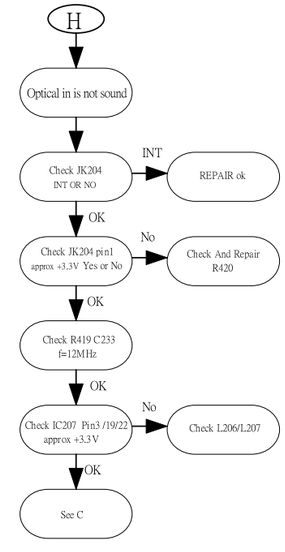


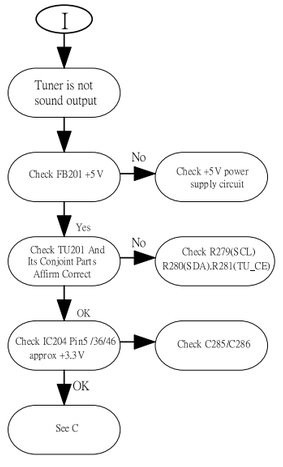












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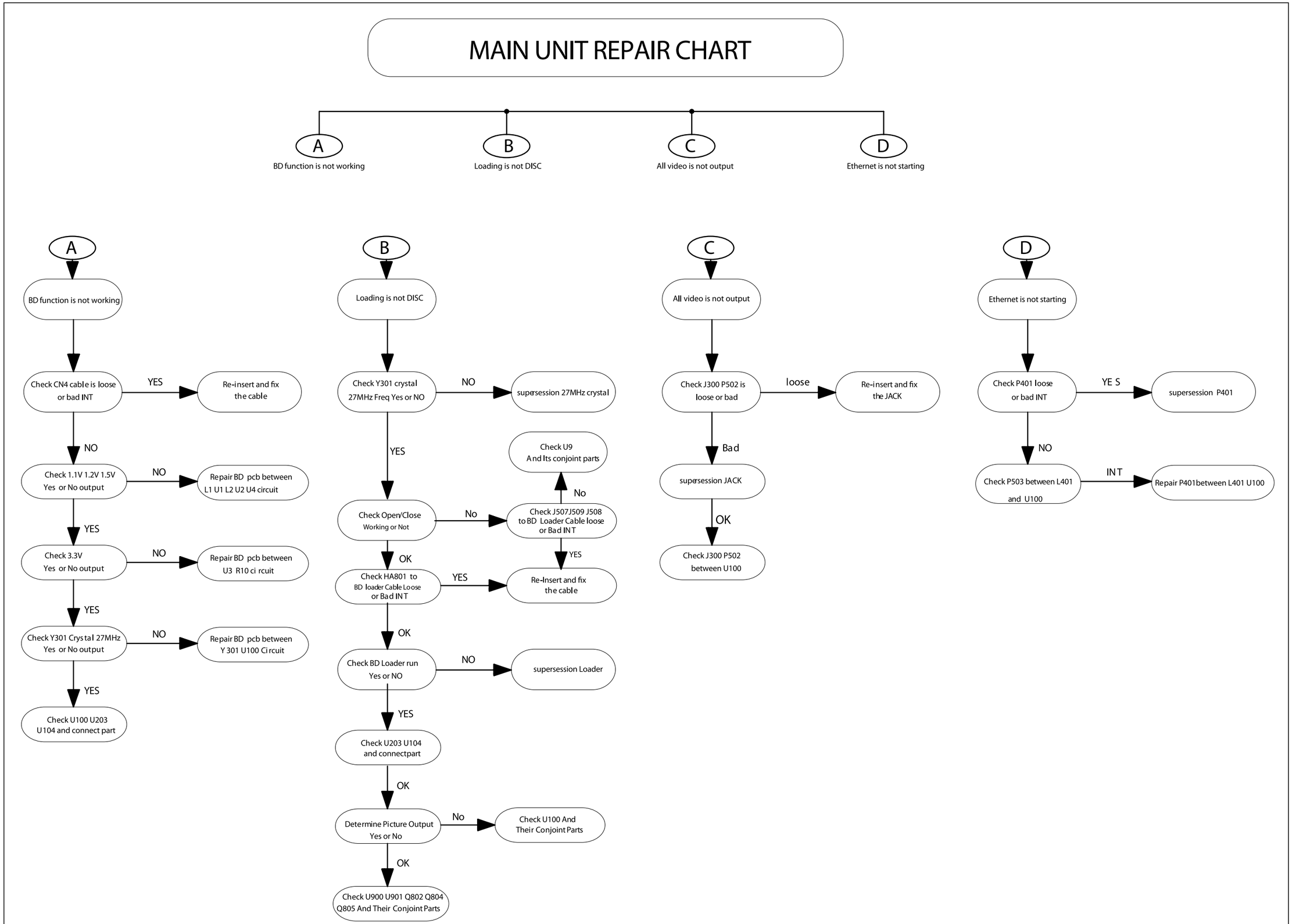
REPAIR INSTRUCTIONS-part two



DISASSEMBLY INSTRUCTIONS

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.

Dismantling of the Rear Panel Assemble

1) Loosen 2 screws “A” at the rear panel to remove rear stand as shown in figure 1.
2) Loosen 12 screws “B” at the rear panel to remove rear panel as shown in figure 2.

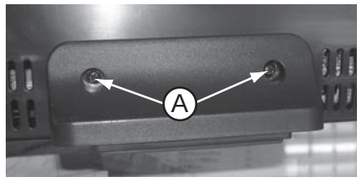


Figure 1

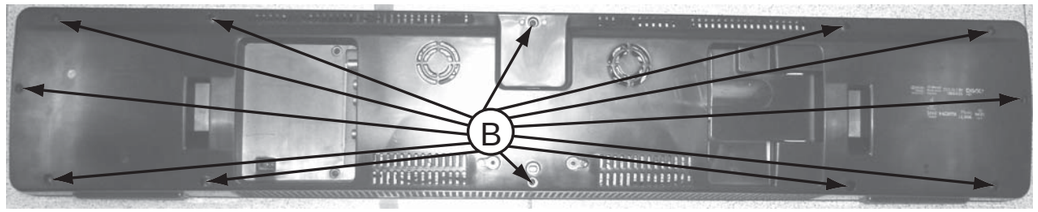


Figure 2

Dismantling of the WIFI & MP3 Board

1) Loosen 2 screws “C” on the top of WIFI board as shown in figure 3.
2) Loosen 2 screws “D” on the top of MP3 board as shown in figure 4.

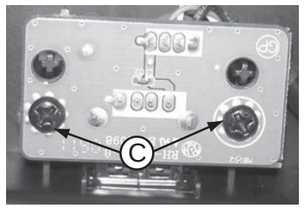


Figure 3

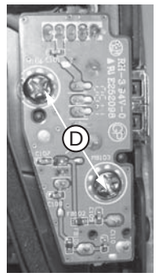


Figure 4

Dismantling of the PCB Bractket

1) Loosen 9 screws “E” at the PCB bracket as shown in figure 5.

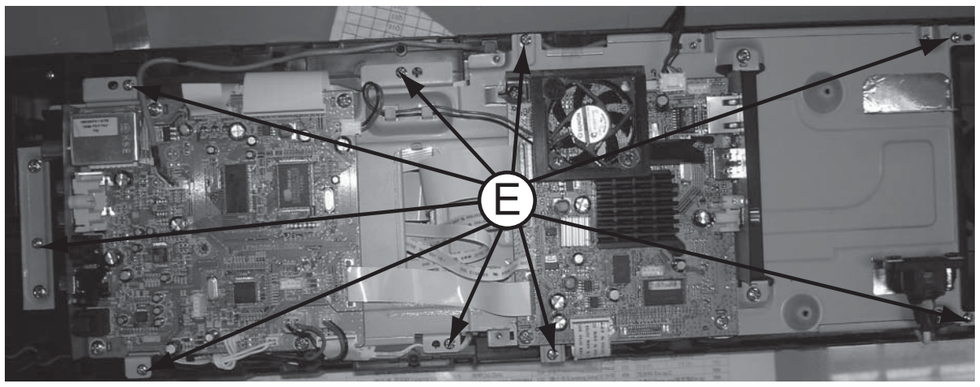


Figure 5

Dismantling of the Main Board

1) Loosen 6 screws “F” on the top of main board as shown in figure 6.
2) Loosen 5 screws “G” at the main board jack bracket to remove the main board as shown in figure 7.

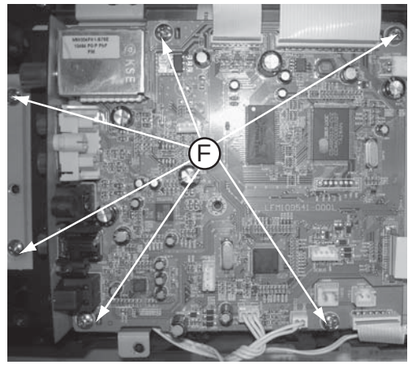


Figure 6

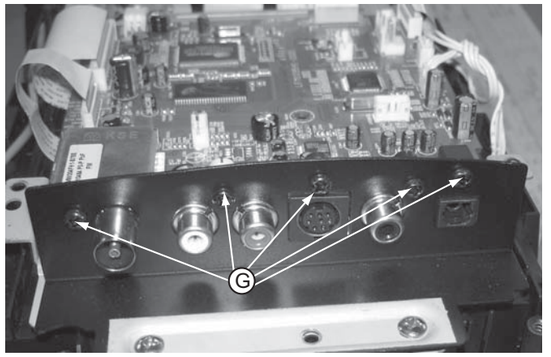


Figure 7

Dismantling of the BD Board

1) Loosen 2 screws “H” at the BD board jack bracket as shown in figure 8.
2) Loosen 6 screws “I” to remove BD board as shown if figure 9.

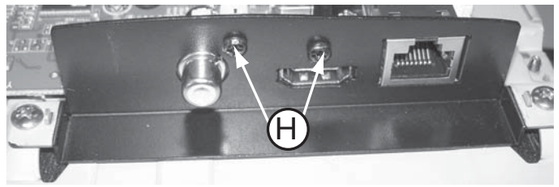


Figure 8

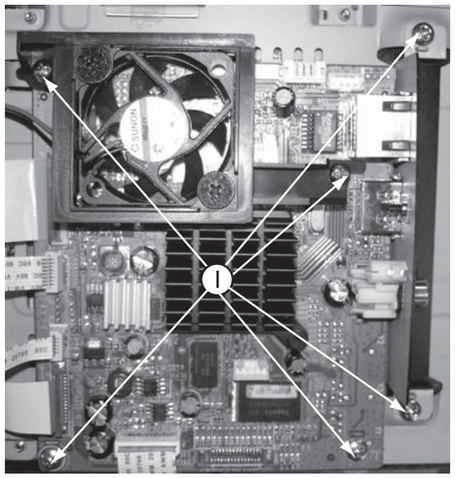


Figure 9

Dismantling of the Power Board

1) Loosen 6 screws “J” to remove the power board as shown in figure 10.
2) Loosen 2 screws “K” to remove the AC socket as shown in figure 11.

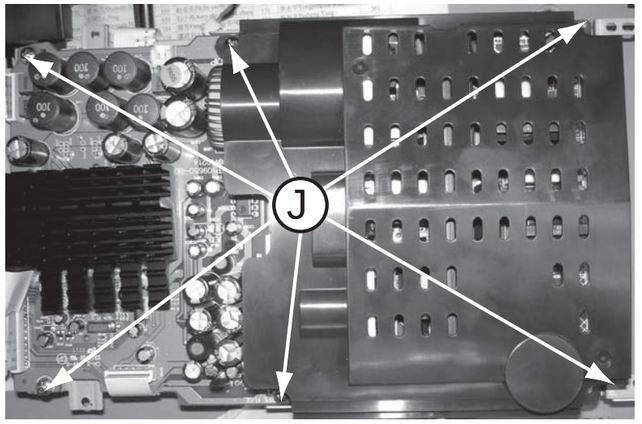


Figure 10

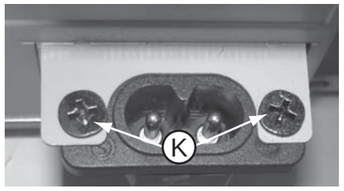


Figure 11

Dismantling of the BD Module

1) Loosen 6 screws “L” as shown in figure 12.
2) Loosen 2 screws “M” to remove the BD module as shown in figure 13.
Note: When install the BD module, please note the part of as shown in figure 14.

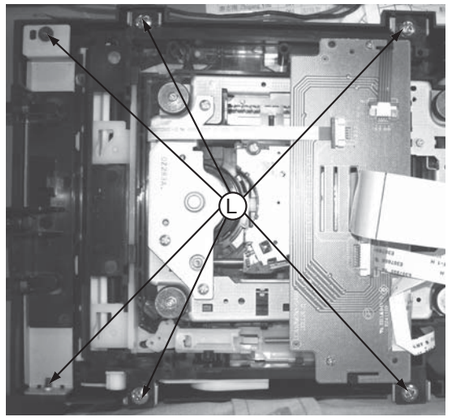


Figure 12

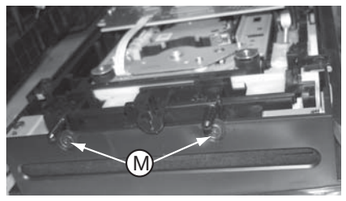


Figure 13

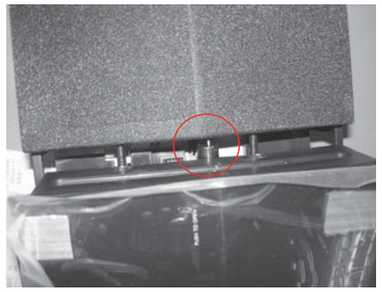


Figure 14

Dismantling of the VFD Board

1) Loosen 1 screw “N” on the top of VFD board to remove the VFD board as shown in figure 15.

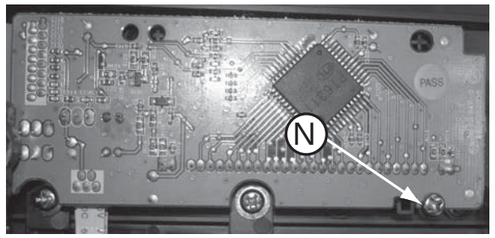


Figure 15

Dismantling of the Touch Board

1) Loosen 6 screws “O” to remove the Touch board as shown in figure 16.

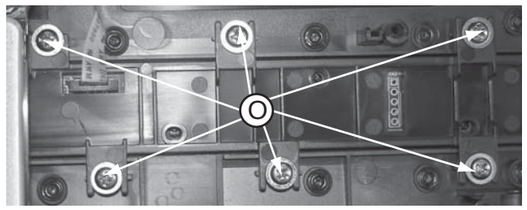


Figure 16

Dismantling of the Stop SW+Open SW+Close SW Board & Damper

1) Loosen 2 screws “P” to remove stop sw+open sw board as shown in figure 17.
2) Loosen 1 screws “Q” to remove close sw board as shown in figure 18.

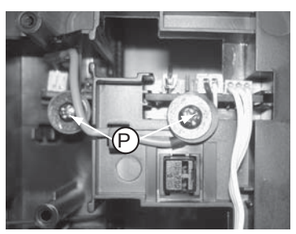


Figure 17

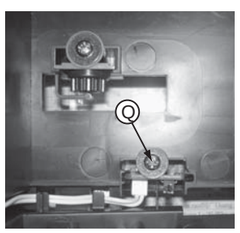
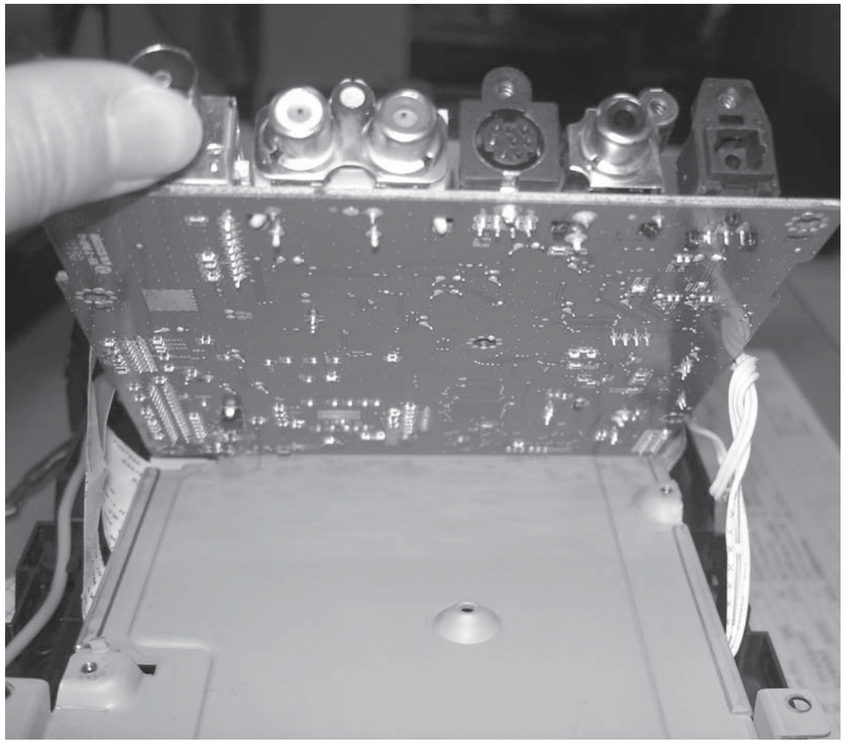


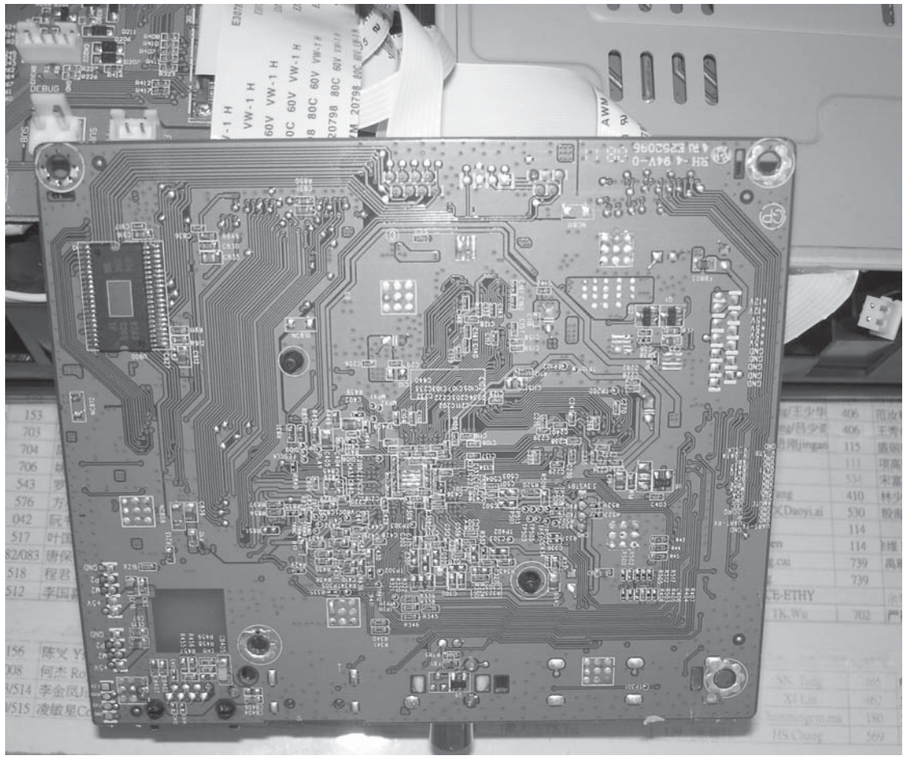
Figure 18

SERVICE POSITIONS

Service Position A - Main Board



Service Position B - BD Board



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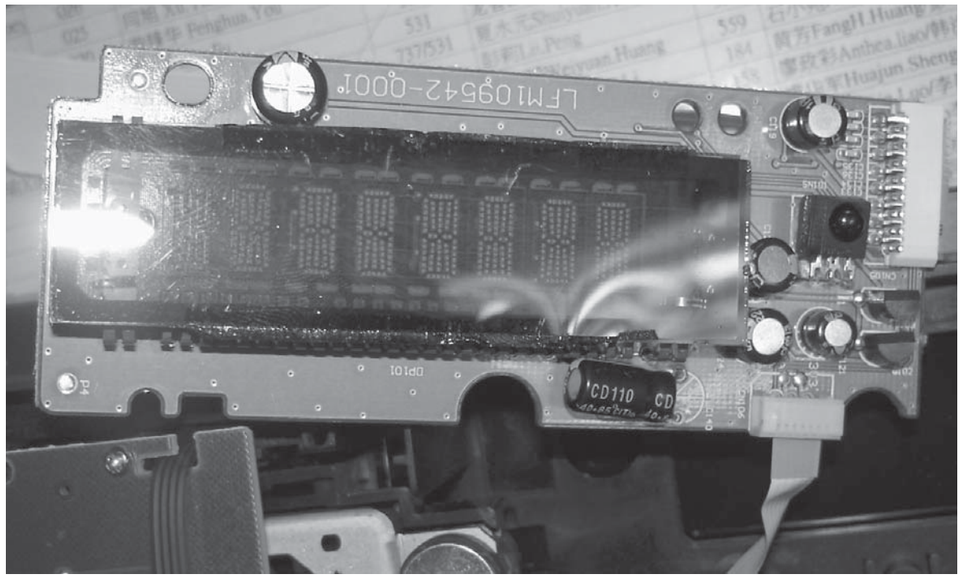
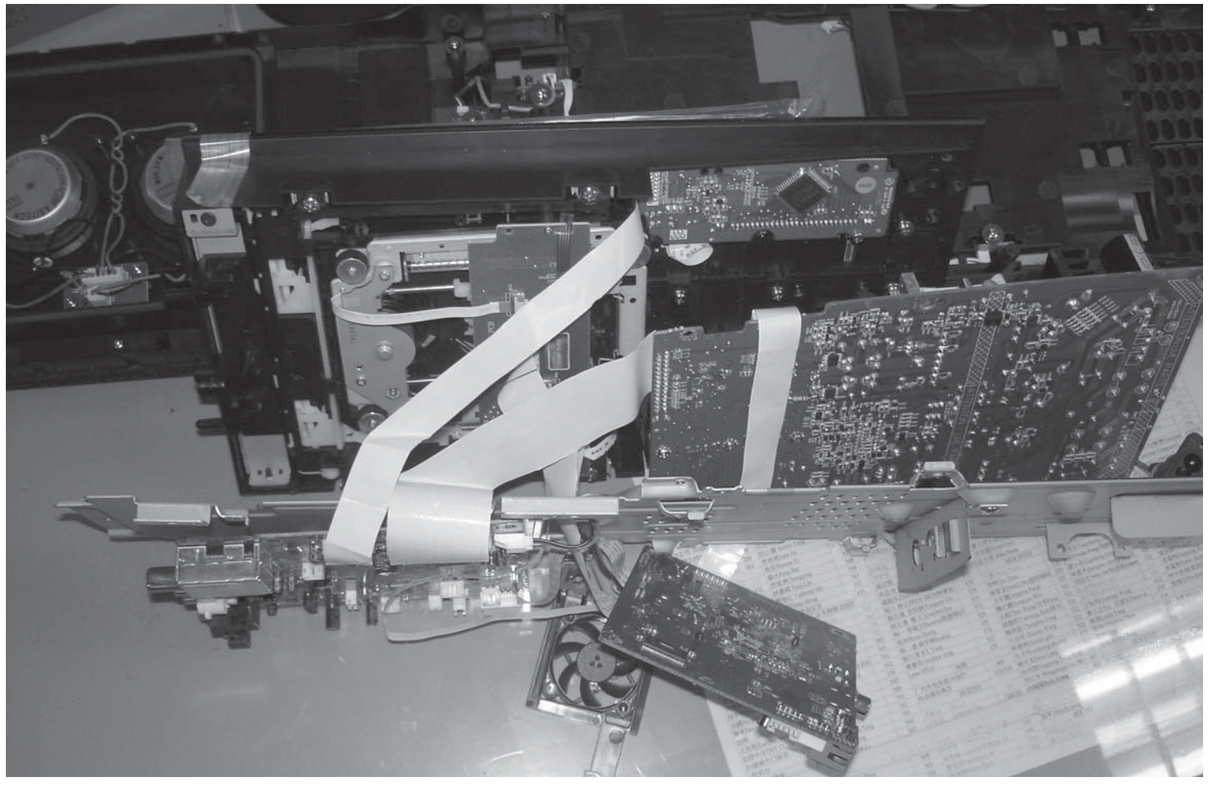
Service Position C - VFD Board

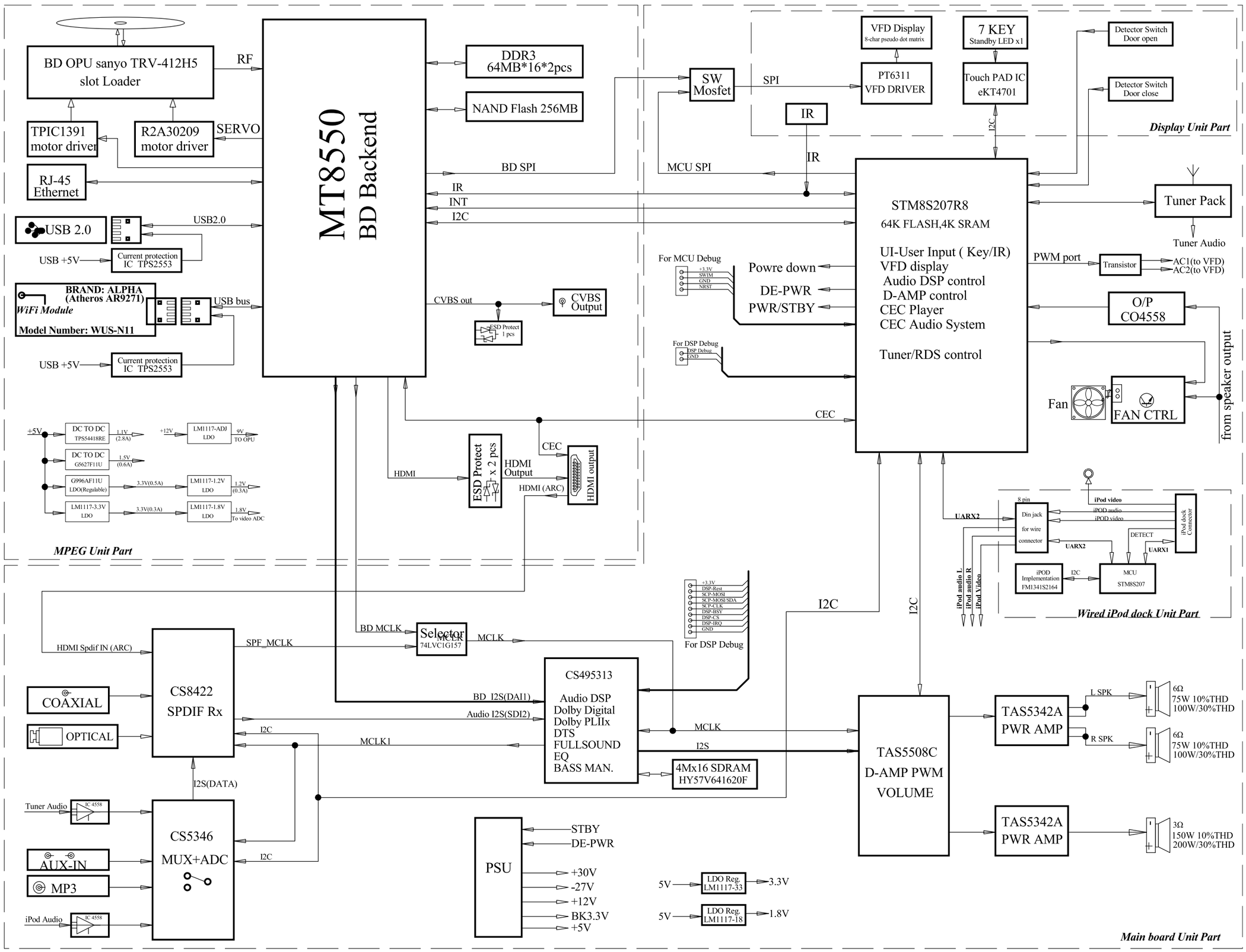


Service Position D - ALL Board



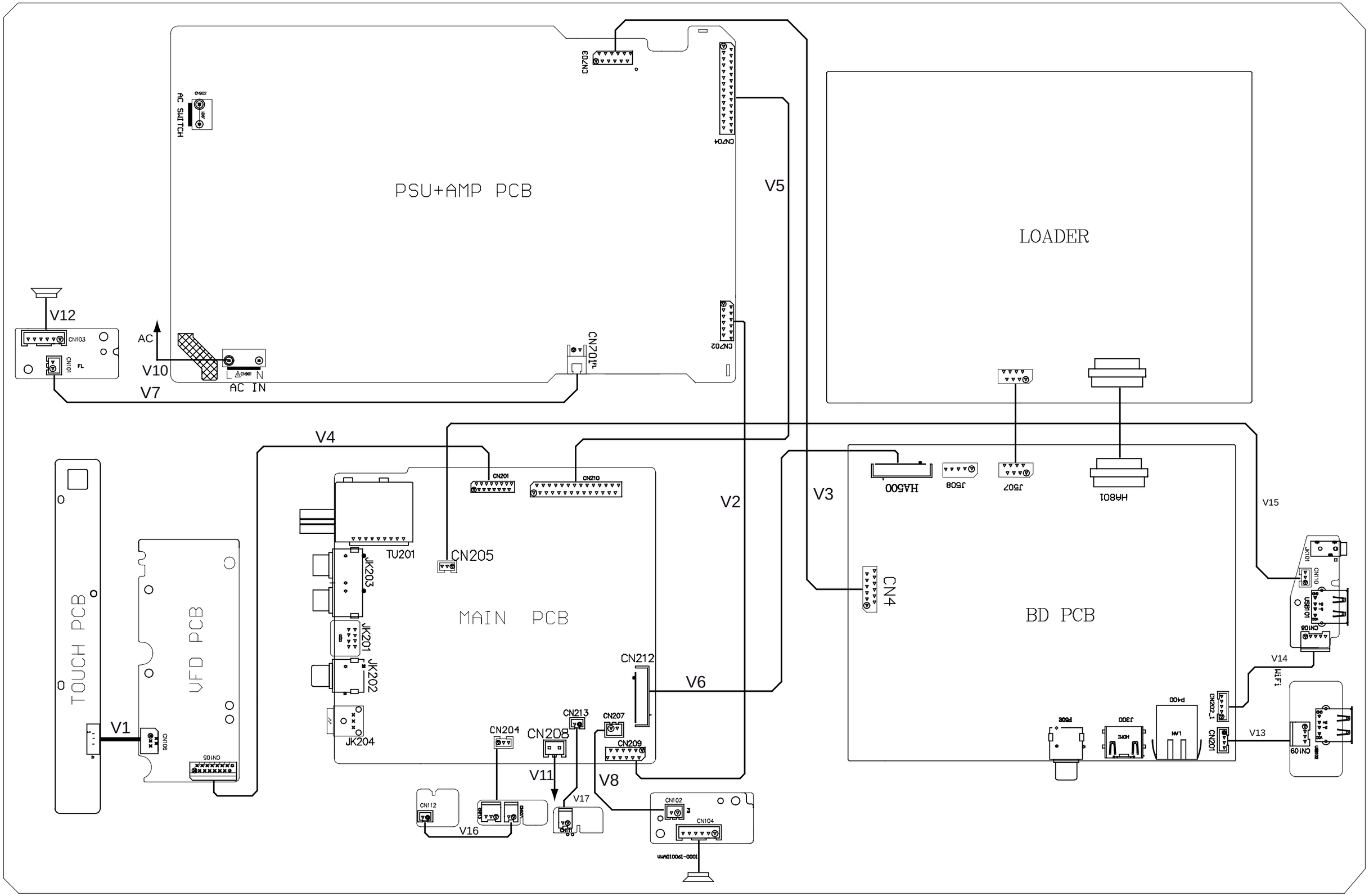
4 - 1

BLOCK DIAGRAM



4 - 2

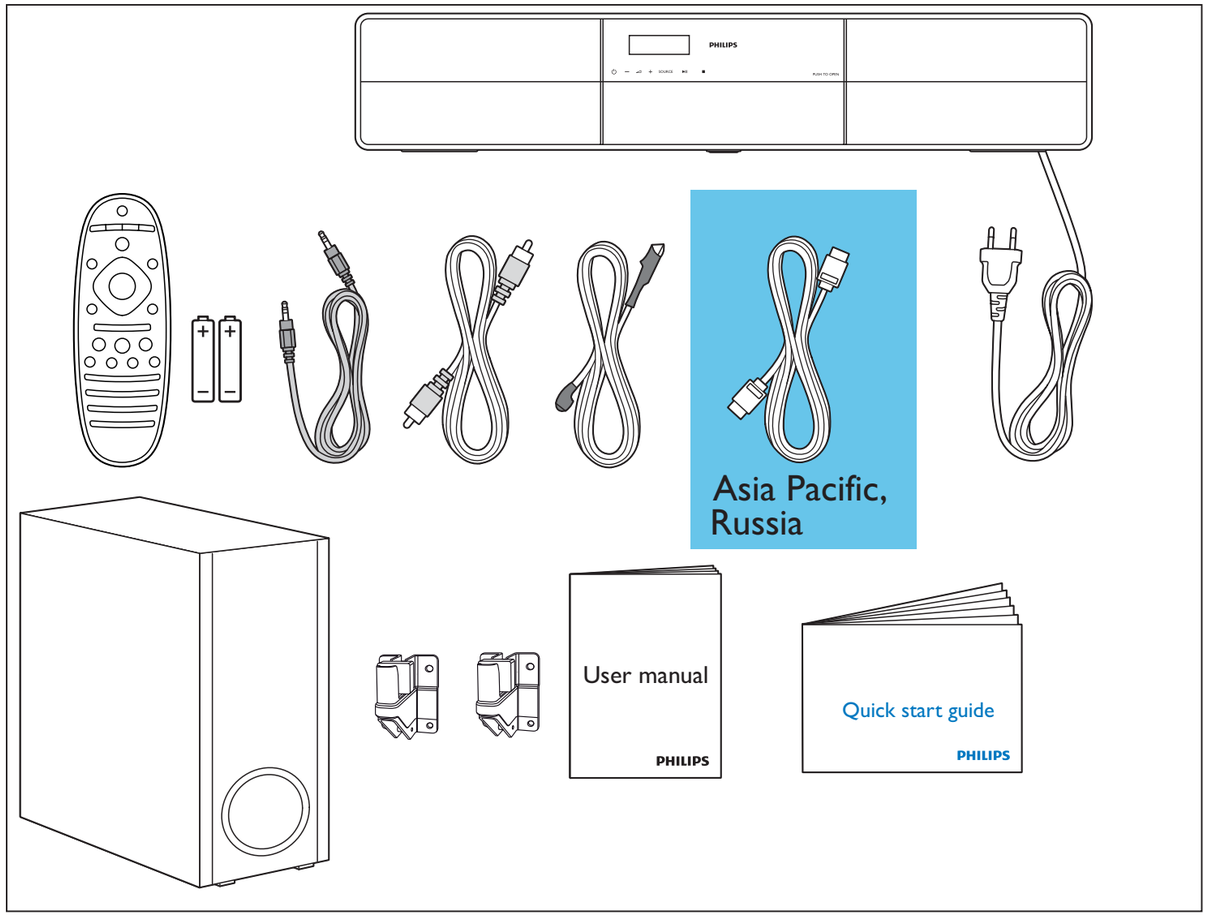
WIRING DIAGRAM



QUICK START GUIDE

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.



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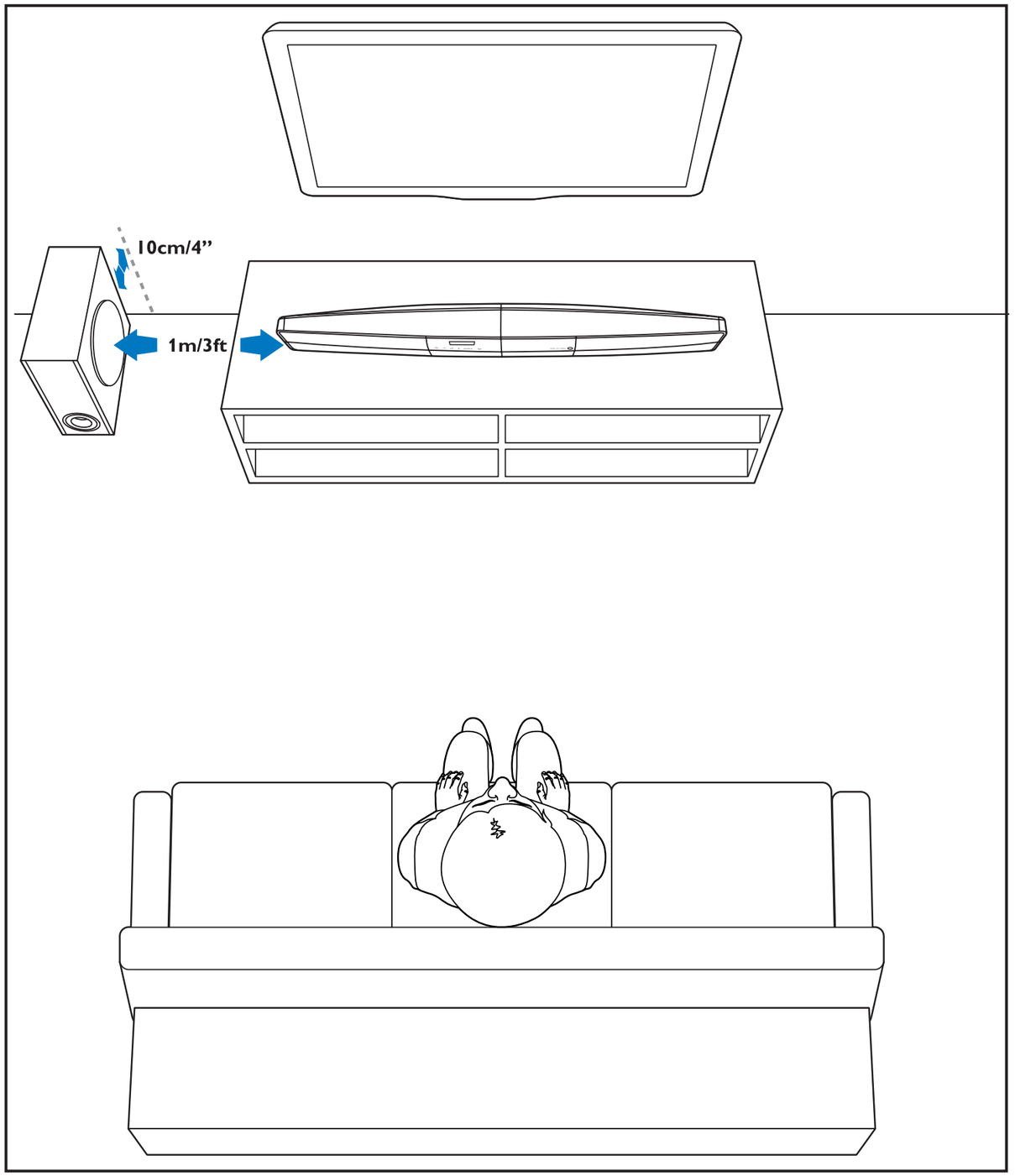

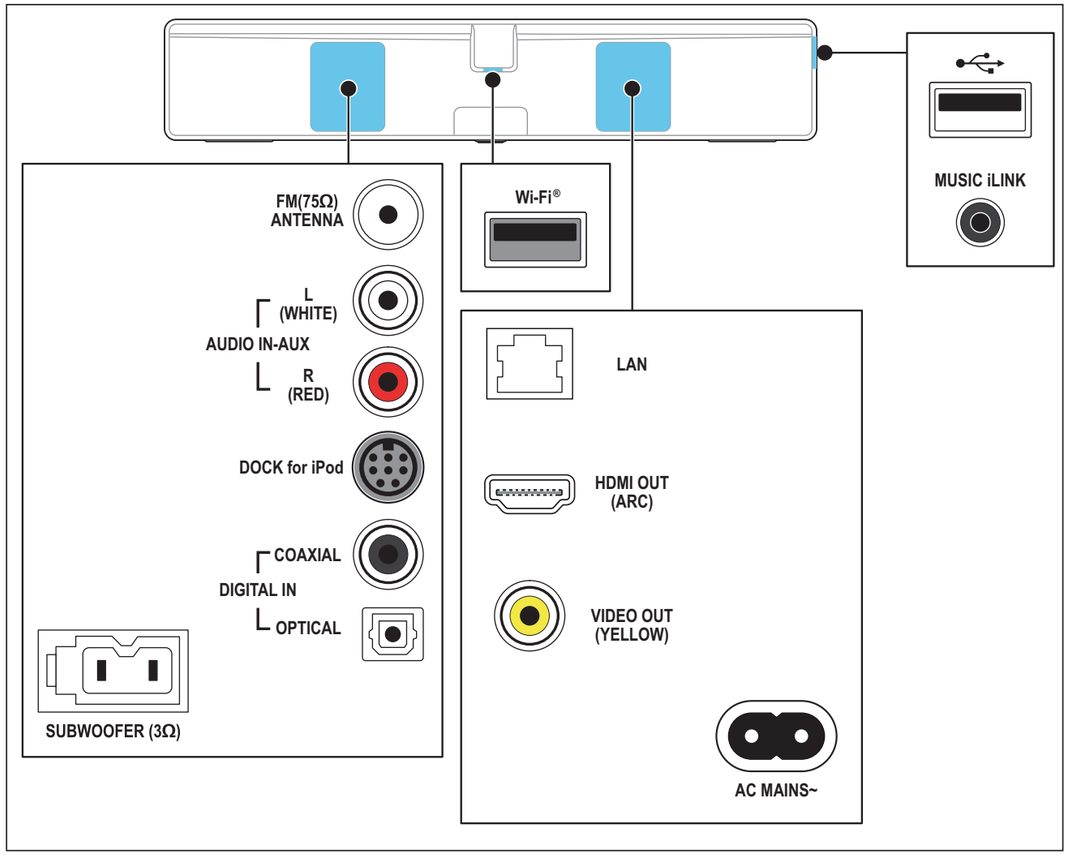
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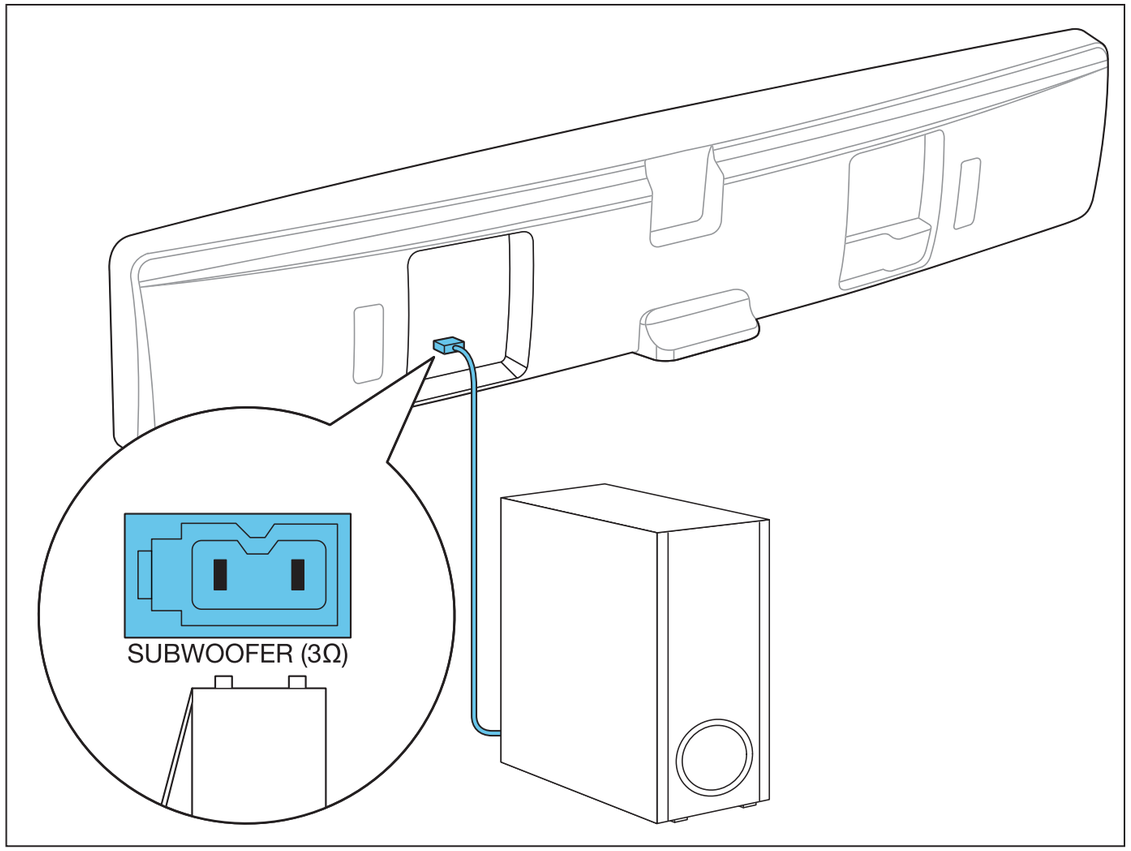
ANTENNA
L
(WHITE)
AUDIO IN-AUX
R
(RED)
DOCK for iPod
COAXIAL
DIGITAL IN
OPTICAL
SUBWOOFER (3Ω)
Wi-Fi®
LAN
HDMI OUT
(ARC)
VIDEO OUT
(YELLOW)
AC MAINS~
MUSIC iLINK

5 - 2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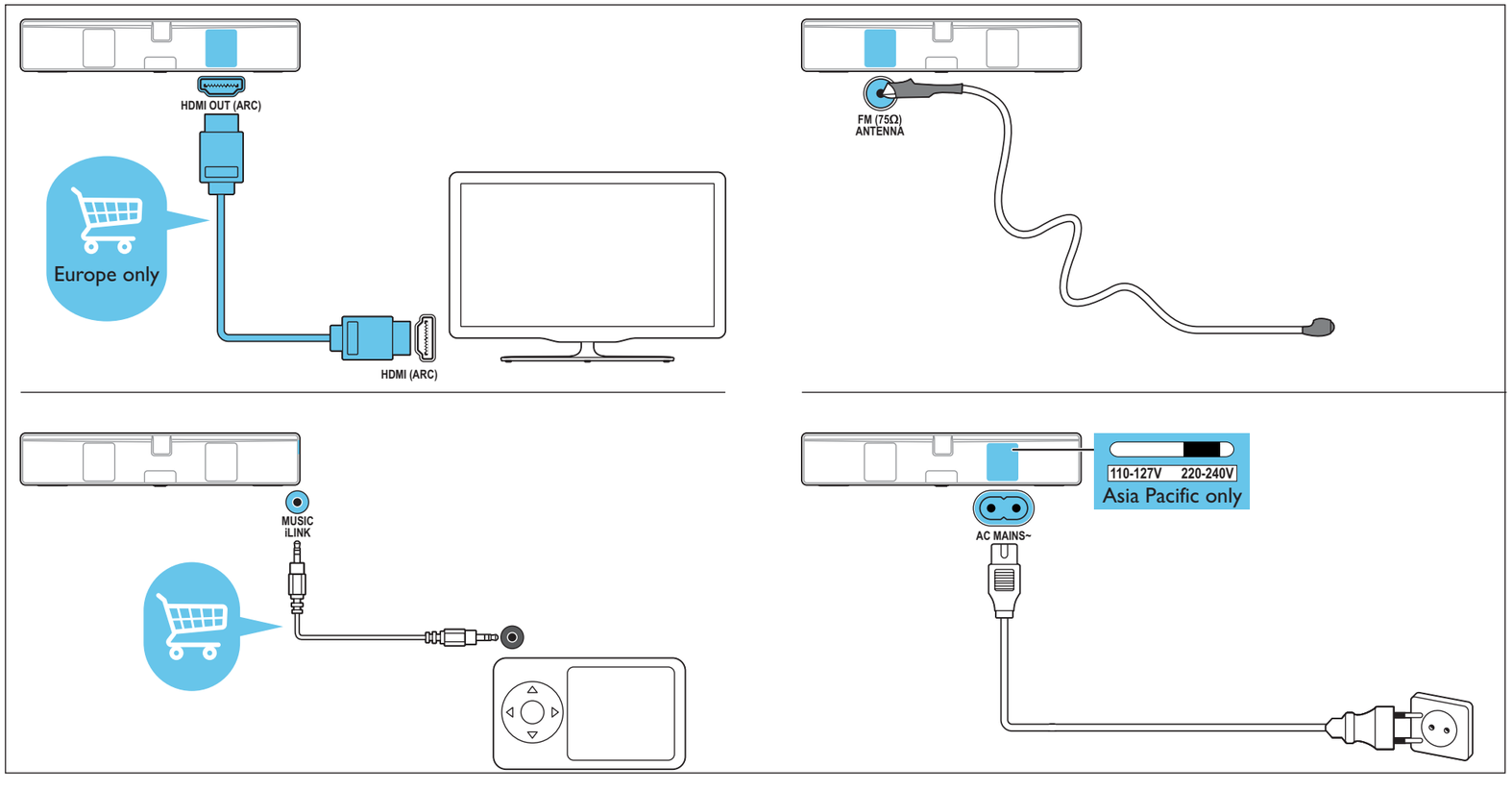
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Europe only
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FM (75Ω)
ANTENNA
MUSIC
iLINK
AC MAINS~
110-127V 220-240V
Asia Pacific only

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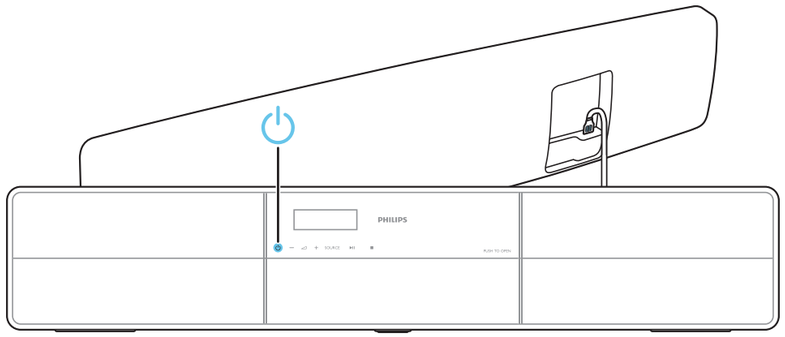

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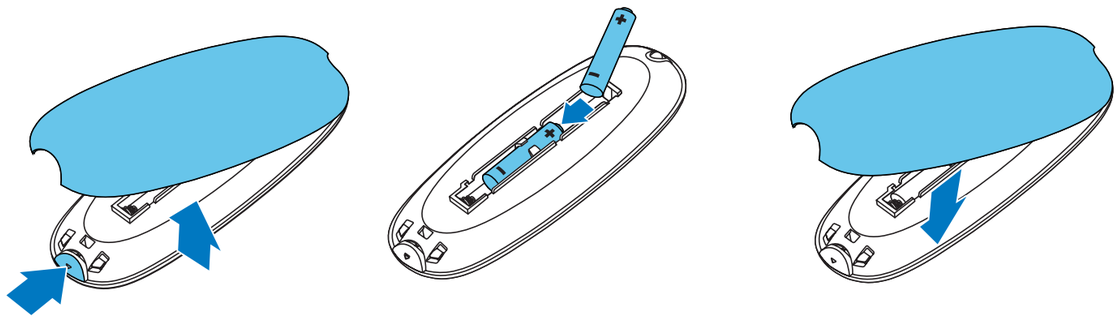

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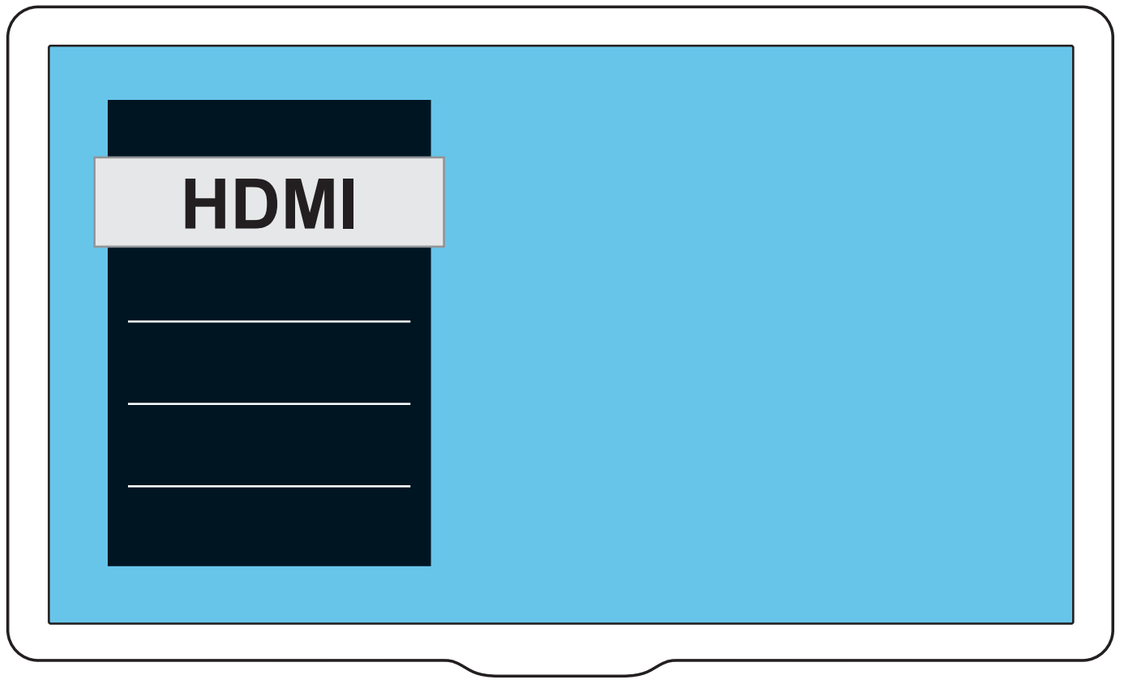

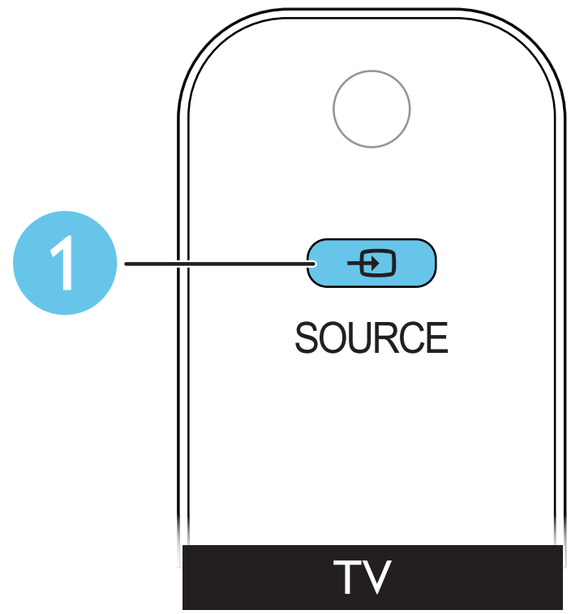

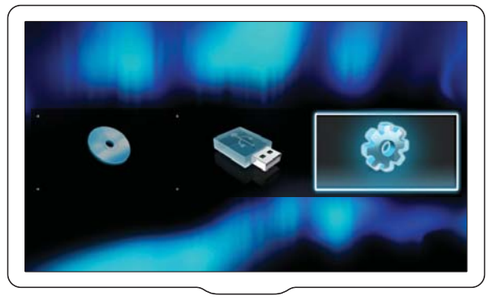

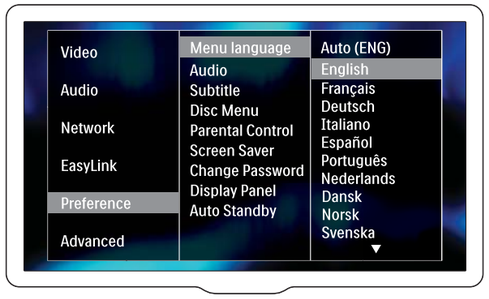
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EasyLink
Preference
Advanced
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Audio
Subtitle
Disc Menu
Parental Control
Screen Saver
Change Password
Display Panel
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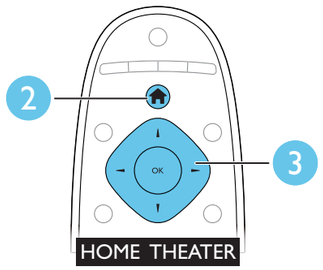
Norsk
Svenska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3
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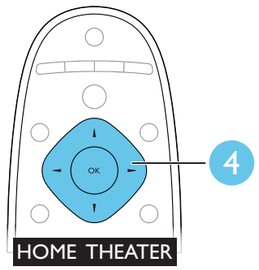
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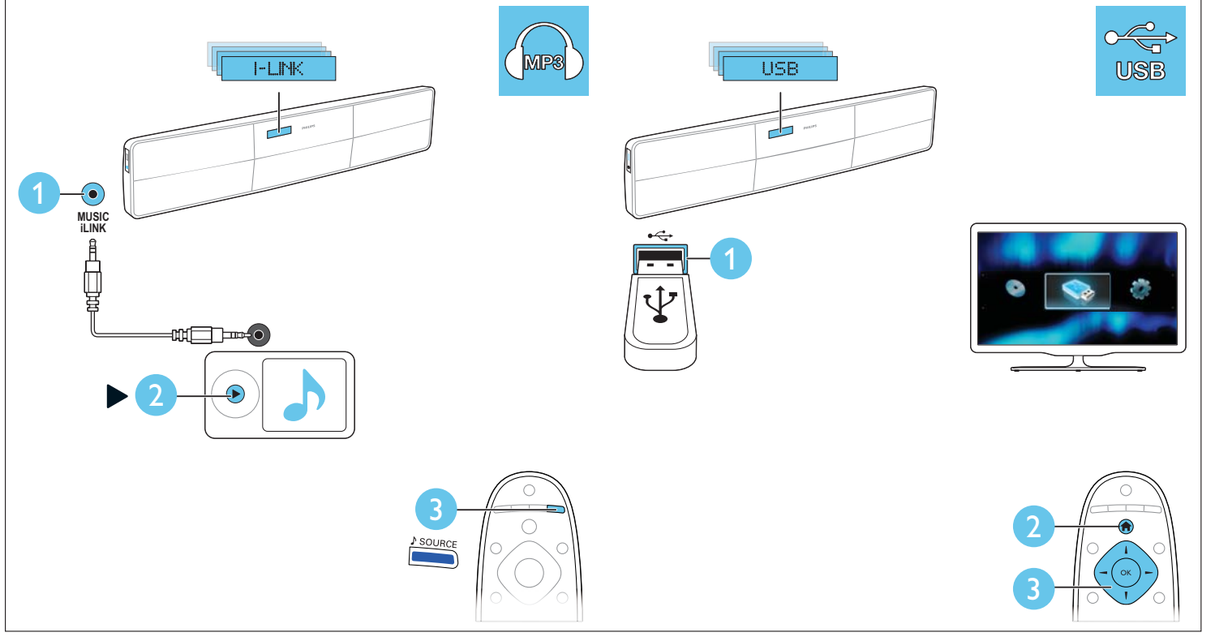
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3
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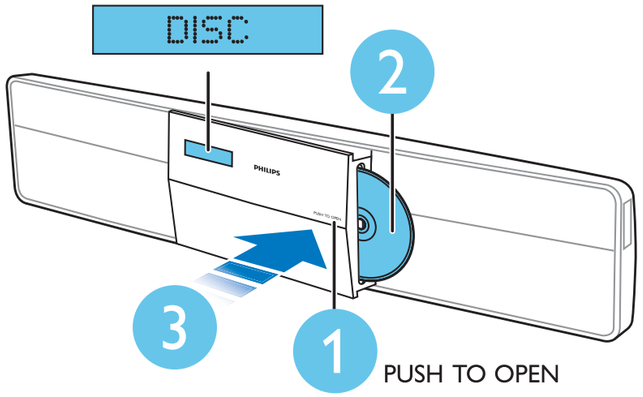
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PHILIPS
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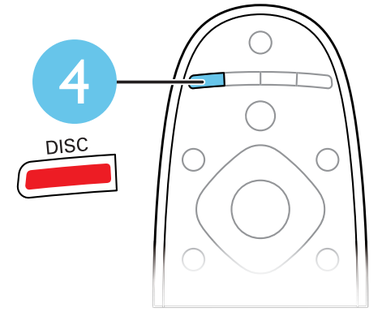
1
PUSH TO OPEN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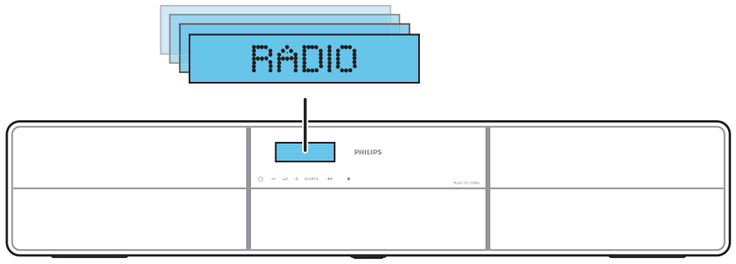
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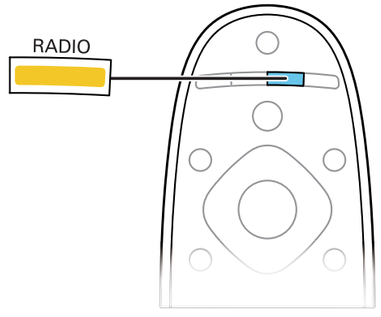
PHILIPS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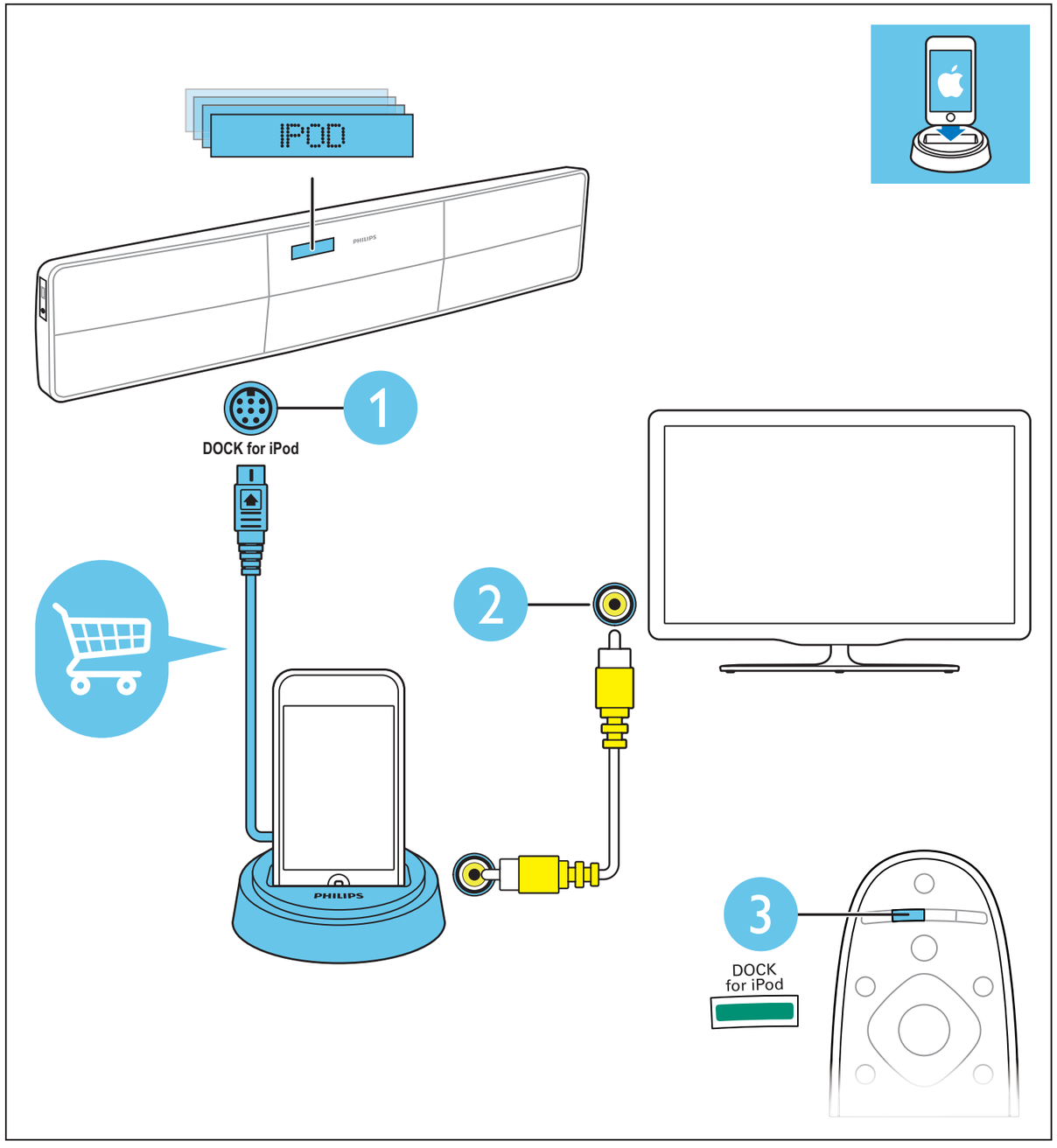
5 - 5



MAIN+VFD+FR+FL+MP3+WIFI+OPEN+CLOS+RFS BOARD

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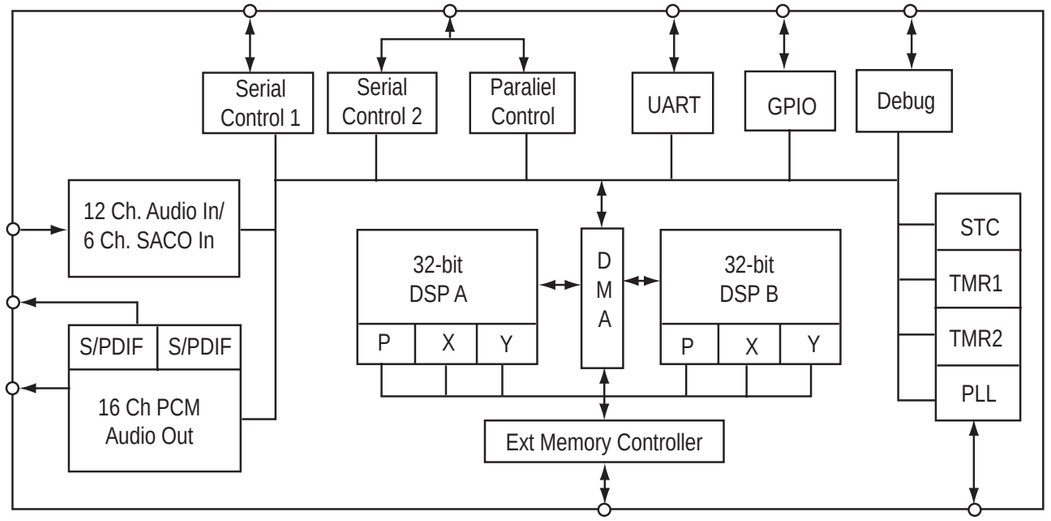
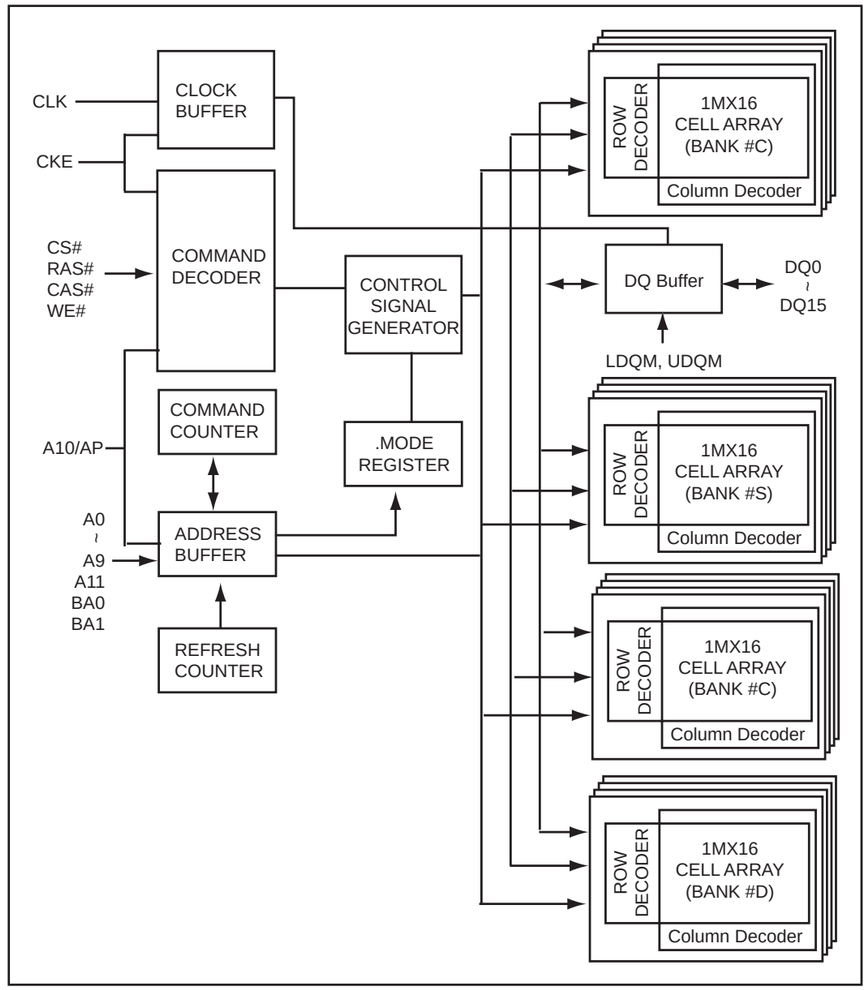
INTERNAL IC DIAGRAM - CS495313-CVZ



INTERNAL IC DIAGRAM - EM638165TS-6G



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CIRCUIT DIAGRAM-(part one)

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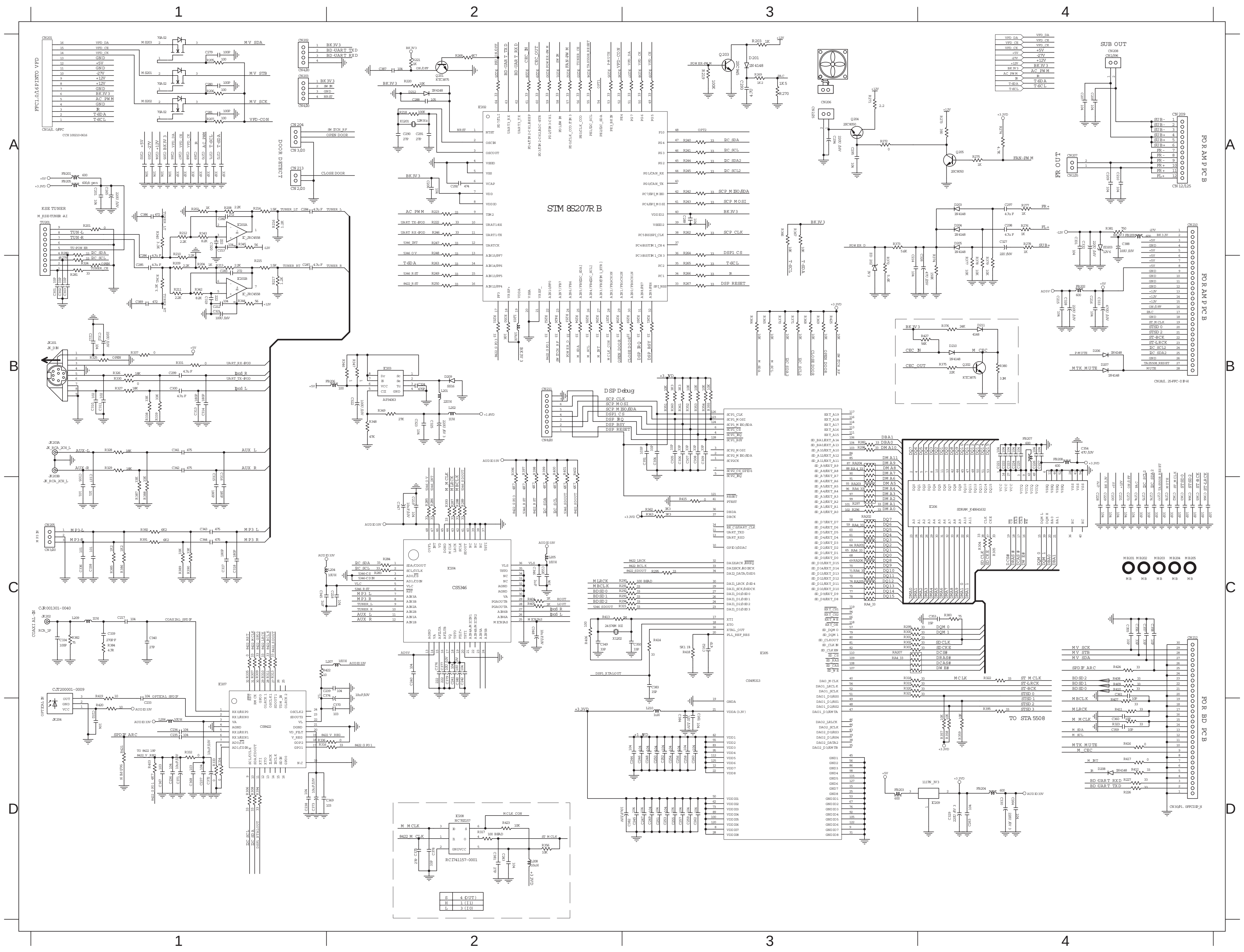
C202	A1	C221	B4	C238	D1	C255	D3	C272	A1	C291	A2	C309	B3	C329	D4	C348	C2	C365	C4	C382	D3	D201	A3	FB209	A4	L202	B2	Q205	A4	R230	A2	R247	A2	R264	A3	R280	A1	R297	C3	R316	D1	R335	C1	R356	D2	R373	A3	R391	C1	R408	C4	R427	B4
C203	A1	C222	B4	C239	C1	C256	D3	C273	C4	C292	A2	C310	B1	C330	D4	C349	C2	C366	C4	C383	C3	D203	A4	IC202	A2	L203	B2	R201	A1	R231	A2	R248	A2	R265	B3	R281	B1	R298	B3	R317	D2	R336	D1	R357	D4	R374	B4	R392	C1	R409	C4	RA201	C3
C204	A1	C223	B4	C240	C2	C257	D3	C274	C4	C293	A3	C311	B1	C333	B4	C350	C3	C367	D1	C384	D3	D204	A4	IC203	B2	L204	C2	R203	A3	R232	A2	R249	B2	R266	B3	R282	B3	R299	C3	R318	C3	R337	B1	R358	D4	R375	B4	R393	C2	R410	C4	RA202	C3
C205	A1	C224	B4	C241	C2	C258	D3	C275	C4	C294	A3	C312	B1	C334	C1	C351	B3	C368	D1	C387	A2	D205	A4	IC204	C2	L205	C2	R205	A1	R233	A2	R250	B2	R267	B3	R283	C2	R300	C3	R319	C3	R338	B1	R359	D4	R376	B4	R394	D1	R411	D4	RA203	C3
C206	A2	C225	B4	C242	C2	C259	D3	C276	C4	C295	A3	C313	B1	C335	C1	C352	C3	C369	D1	C388	A4	D206	B4	IC205	C3	L206	D1	R206	A1	R234	A2	R251	B2	R268	A2	R284	C2	R301	C3	R320	C3	R339	B1	R360	B3	R377	B4	R395	C3	R412	D4	RA204	B3
C207	A4	C226	B4	C243	D2	C260	D3	C277	C4	C297	A4	C314	B1	C336	C1	C353	C4	C370	D2	CN201	A1	D208	D4	IC206	C4	L207	C2	R207	A1	R235	A2	R252	B2	R269	A3	R285	C2	R302	C3	R321	C3	R340	A1	R361	B3	R378	B4	R396	C2	R413	C2	RA205	C3
C208	A4	C227	B4	C244	D3	C261	D3	C278	C4	C298	A4	C315	C1	C337	C1	C354	B4	C371	D1	CN202	A1	D209	B2	IC206	C4	L208	D2	R218	A2	R236	A2	R253	B2	R270	A3	R286	C2	R303	C3	R322	C4	R341	B1	R362	C3	R379	B4	R397	C2	R414	C3	RA206	C3
C209	A4	C228	C4	C245	D3	C262	D3	C279	A1	C299	B1	C316	C1	C338	C1	C355	C4	C372	D1	CN203	A1	D210	B4	IC207	C1	L209	C1	R219	A3	R237	A3	R254	B2	R271	A3	R287	C2	R304	C4	R323	D4	R346	B2	R363	C3	R380	B4	R398	C2	R415	C3	RA207	C3
C210	A4	C229	C4	C246	D3	C263	D4	C280	A1	C300	B1	C317	C1	C339	C1	C356	C4	C373	D1	CN204	A1	D211	B4	IC208	D2	L210	D3	R220	A2	R238	D1	R255	B2	R271	A3	R288	C2	R305	C4	R326	B1	R347	B2	R364	B3	R382	C1	R399	C2	R417	D4	TU201	A1
C211	B1	C230	C4	C247	D3	C264	D4	C281	A1	C301	B1	C318	C1	C340	C1	C357	C4	C374	C1	CN205	C1	D212	A2	IC209	D4	MS201	A1	R221	A2	R239	A3	R256	B2	R272	A3	R289	C2	R306	D1	R327	B1	R348	B2	R365	B3	R383	D1	R400	C2	R418	C3	XL201	A2
C214	A3	C231	C4	C248	D3	C265	A1	C284	A1	C302	B1	C322	B2	C341	B1	C358	C4	C375	D2	CN206	A3	FB201	A1	IC209	D4	MS202	A1	R222	A2	R240	A3	R257	B2	R273	A4	R290	C2	R307	C1	R328	B1	R349	B2	R366	A3	R384	C1	R401	C2	R419	C1	XL202	C2
C215	B4	C232	D1	C249	D3	C266	A1	C285	B1	C303	B1	C323	B2	C342	B1	C359	D4	C376	C2	CN207	A4	FB202	B4	IC209	D4	MS203	A1	R223	A2	R241	A3	R258	B2	R274	A4	R291	C2	R308	D1	R329	B1	R350	B2	R367	A3	R385	C1	R402	C2	R420	D1	ZD202	B3
C216	B4	C233	C1	C250	D3	C267	A1	C286	A1	C304	B3	C324	B2	C343	C1	C360	D4	C377	C2	CN208	A4	FB203	D3	JK201	B1	Q201	A2	R225	A2	R242	A3	R259	B2	R275	A4	R292	C2	R309	C1	R330	B1	R351	B3	R368	B3	R386	C1	R403	D1	R422	C1		
C217	C1	C234	D1	C251	D3	C268	A1	C287	B1	C305	B3	C325	B2	C344	C1	C361	C4	C378	D2	CN209	A4	FB204	D4	JK202	C1	Q202	B4	R226	D4	R243	A3	R260	B2	R276	A4	R293	C2	R310	C1	R331	B1	R352	B3	R369	B3	R387	C1	R404	C2	R423	D2		
C218	C2	C235	D1	C252	D3	C269	A1	C288	A2	C306	B3	C326	B4	C345	C1	C362	C4	C379	C2	CN210	A4	FB206	B2	JK203	B1	Q203	A3	R227	D4	R244	A3	R261	B2	R277	A4	R294	C2	R311	C1	R332	D1	R353	B3	R370	B3	R388	C1	R405	C2	R424	C4		
C219	C2	C236	D1	C253	D3	C270	A1	C289	A3	C307	B3	C327	A4	C346	C2	C363	C4	C380	C2	CN212	C4	FB207	B4	JK204	D1	Q203	A3	R228	A2	R245	A3	R262	A3	R278	A4	R295	C3	R313	C1	R333	D1	R354	B3	R371	B3	R389	C1	R406	C2	R425	B3		



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CIRCUIT DIAGRAM-(part two)

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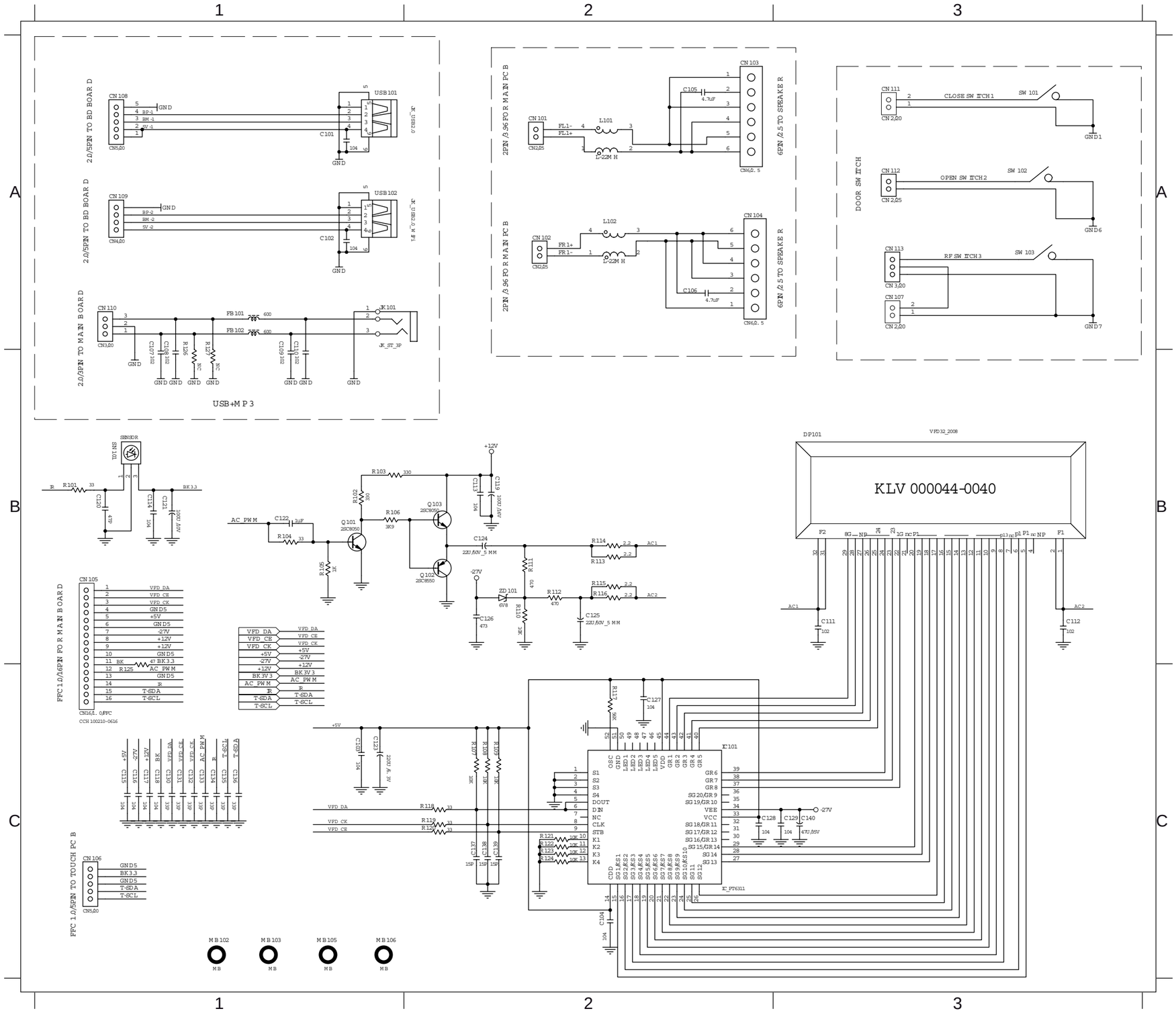
C102	A1	C107	A1	C112	B3	C117	C1	C122	B1	C127	C2	C132	C1	C137	C2	CN102	A2	CN107	A3	CN112	A3	IC101	C2	Q102	B2	R103	B1	R108	C2	R113	B2	R118	C2	R123	C2	SW102	A3	ZD101	B2
C103	C1	C108	A1	C113	B2	C118	C1	C123	C1	C128	C2	C133	C1	C138	C2	CN103	A2	CN108	A1	CN113	A3	JK101	A1	Q102	B2	R104	B1	R109	C2	R114	B2	R119	C2	R124	C2	SW103	A3		
C104	C2	C109	A1	C114	B1	C119	B2	C124	B2	C129	C3	C134	C1	C139	C2	CN104	A2	CN109	A1	DP101	B3	L101	A2	Q103	B2	R105	B1	R110	B2	R115	B2	R120	C2	R125	C1	USB101A1			
C105	A2	C110	A1	C115	C1	C120	B1	C125	B2	C130	C1	C135	C1	C140	C3	CN105	B1	CN110	A1	FB101	A1	L102	A2	R101	B1	R106	B1	R111	B2	R116	B2	R121	C2	SN101	B1	USB102A1			



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PCB LAYOUT - TOP VIEW

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C106 A1 C207 C2 C241 B2 C292 C2 C312 B2 C333 A3 C347 B2 C381 B3 CN109C1 CN210A3 FB203A2 IC209 A2 L206 C2 R122 B4 R227 C3 R242 C3 R256 C3 R279 A2 R293 A3 R307 C2 R323 C3 R340 B2 R374 C2 R390 B2 R404 B2 R422 C2 SW102A4
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C121 A4 C214 C2 C243 B3 C297 C3 C314 B2 C335 B2 C351 B3 C383 B3 CN111A4 CN213C3 FB206A3 IC209 A2 L209 C2 R124 B4 R229 B3 R244 C3 R258 C3 R281 A2 R295 A4 R309 C2 R327 B2 R346 A3 R377 B2 R392 B2 R406 B3 R424 C2 TU201A2
C123 C4 C215 B2 C261 A3 C298 C3 C315 B2 C336 B2 C353 A3 C384 B4 CN112A4 D203 C2 FB207A2 JK101 B1 MS201A2 R203 A3 R230 B3 R245 C3 R259 C3 R282 B3 R296 B3 R310 C2 R328 B2 R347 A3 R378 C2 R393 B2 R407 C3 R426 C3 USB101B1
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C133 A4 C218 B2 C279 A3 C304 B3 C318 B2 C339 C2 C372 C2 CN101A1 CN202C3 D206 C3 IC202 B3 JK203 A2 Q102 A4 R207 A2 R234 B3 R248 C2 R262 C3 R285 C2 R299 C3 R315 A3 R331 B2 R356 B4 R382 C2 R396 C2 R410 C3 RA202A3 XL202 B4
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C135 A4 C220 B2 C281 A2 C306 B3 C325 A3 C341 B2 C374 C2 CN103A1 CN204C3 D210 B3 IC204 B2 L101 A1 Q103 A4 R220 C2 R236 B3 R250 C2 R267 C3 R287 B2 R301 A3 R317 B4 R334 C2 R358 A4 R384 C2 R398 C2 R412 C3 RA204B3
C136 A4 C222 A3 C284 B2 C307 B3 C326 C2 C342 B2 C375 B3 CN104A1 CN205A2 D211 B3 IC205 A3 L102 A1 Q201 B3 R221 B3 R237 B3 R251 C2 R268 B3 R288 B2 R302 A3 R318 A4 R335 C2 R359 A4 R385 B2 R399 A3 R414 B3 RA205A3
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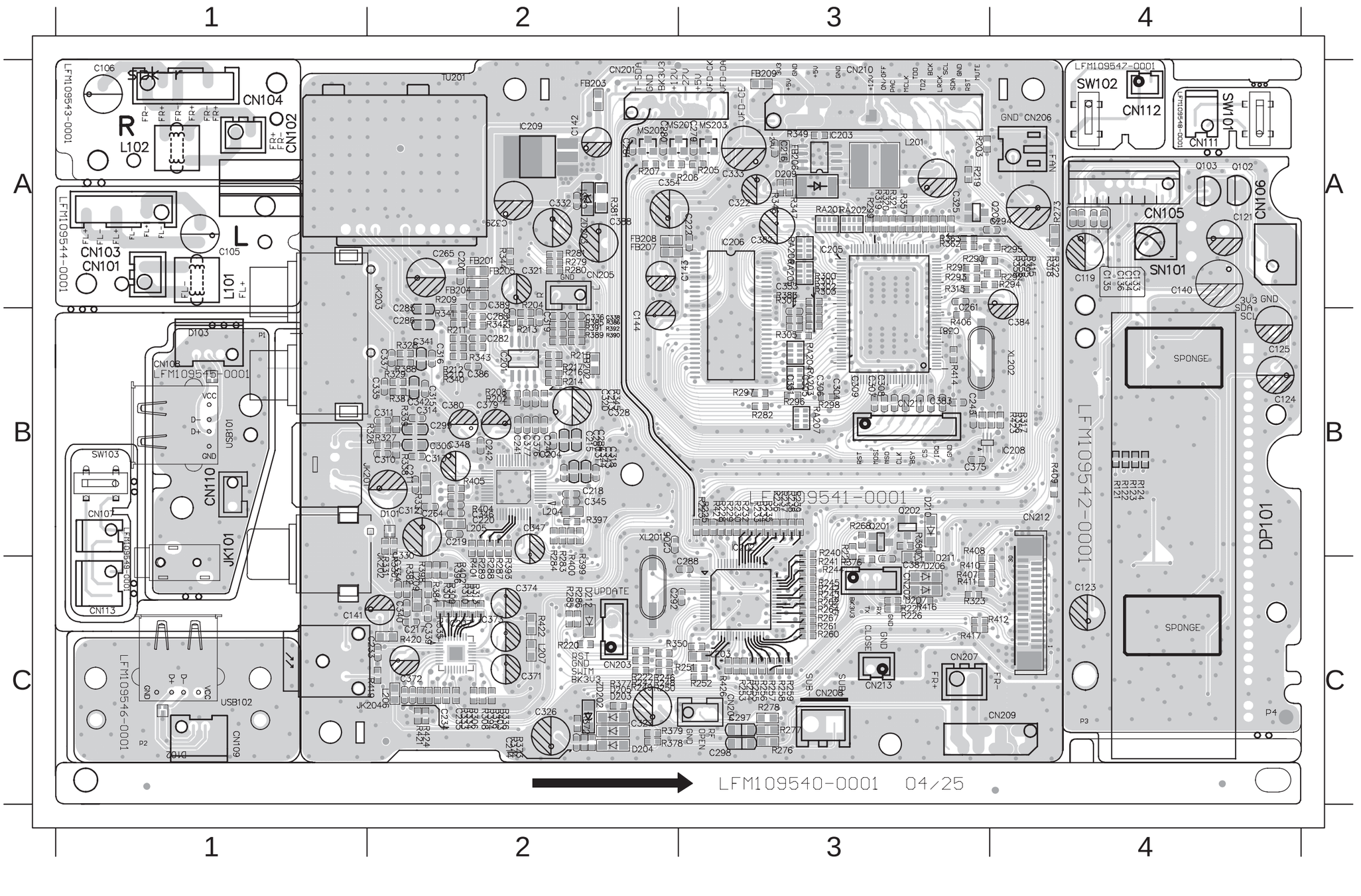
C204 B2 C235 C2 C287 B2 C310 B2 C329 A2 C345 B2 C379 B2 CN107B1 CN208C3 FB201A2 IC207 C2 L204 B2 Q203 A4 R225 B3 R240 B3 R254 C3 R277 C3 R291 A3 R305 B3 R321 A3 R338 B2 R372 C2 R388 B2 R402 C2 R419 C2 SN101A4



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PCB LAYOUT - BOTTOM VIEW

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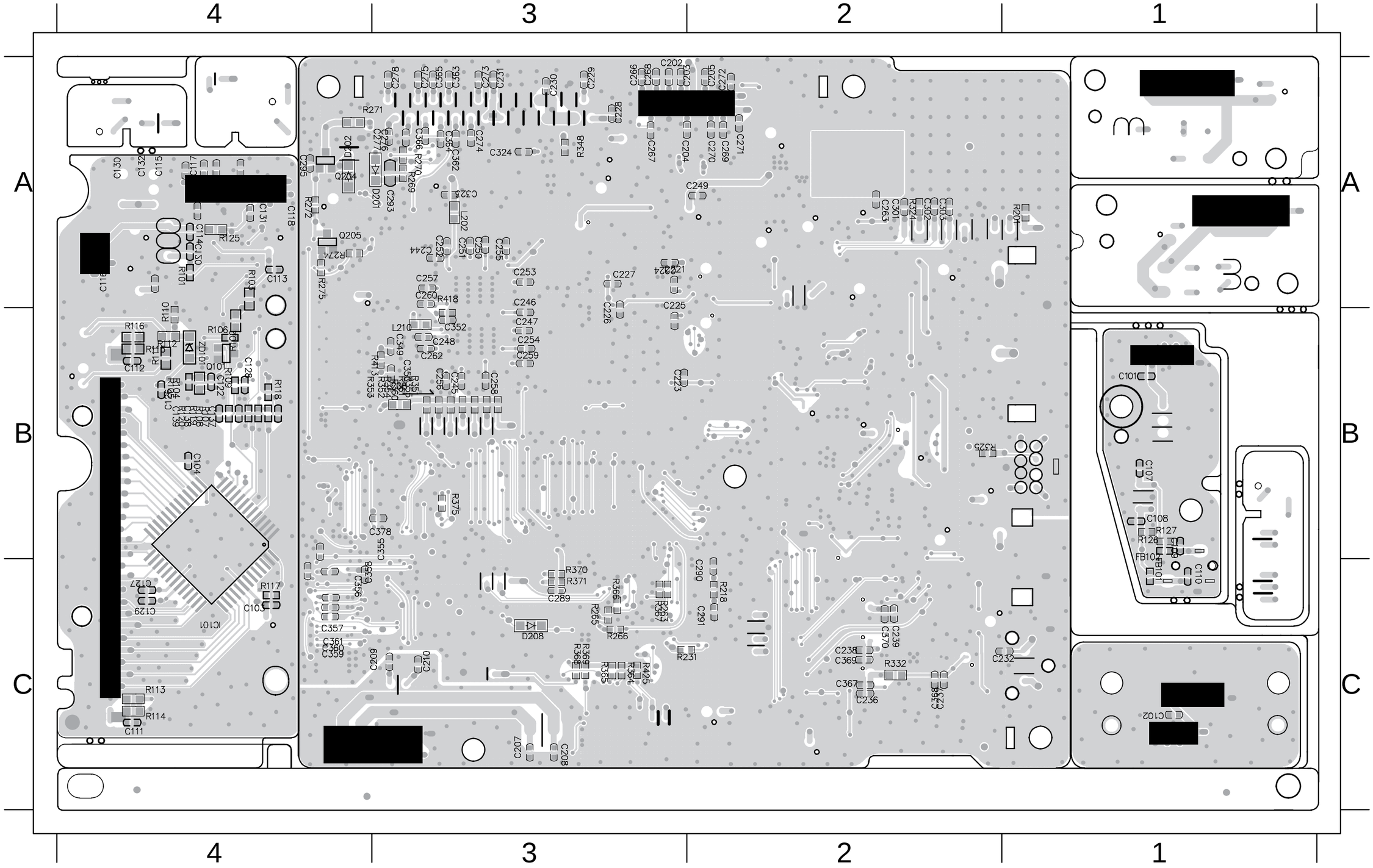
C102 C1 C112 B4 C122 B4 C137 B4 C208 C3 C227 A3 C238 C2 C250 A3 C258 B3 C269 A2 C277 A3 C302 A2 C356 C4 C364 A3 D201 A4 Q101 B4 R106 B4 R114 C4 R201 A1 R271 A4 R352 B3 R366 C3 R418 A3
C103 C4 C113 A4 C126 B4 C138 B4 C209 C4 C228 A3 C239 C2 C251 A3 C259 B3 C270 A2 C278 A3 C303 A2 C357 C4 C365 A3 D208 C3 Q204 A4 R107 B4 R115 B4 R218 C2 R271 A4 R353 B4 R367 C3 R425 C3
C104 B4 C114 A4 C127 C4 C139 B4 C210 C3 C229 A3 C244 A3 C252 A3 C260 A3 C271 A2 C289 C3 C323 A3 C358 C4 C366 A3 FB101B1 Q205 A4 R108 B4 R116 B4 R231 C3 R272 A4 R354 B3 R368 C3 ZD101B4
C107 B1 C115 A4 C128 B4 C202 A3 C221 A3 C230 A3 C245 B3 C253 A3 C262 B3 C272 A2 C290 C2 C324 A3 C359 C4 C367 C2 FB102B1 R101 A4 R109 B4 R117 B4 R263 C3 R274 A4 R355 B3 R369 C3 ZD101B4
C108 B1 C116 A4 C129 C4 C203 A3 C223 B3 C231 A3 C246 A3 C254 B3 C263 A2 C273 A3 C291 C2 C349 B3 C360 C4 C368 C2 IC101 C4 R102 B4 R110 A4 R118 B4 R265 C3 R275 A4 R360 B3 R370 C3
C109 B1 C117 A4 C130 A4 C204 A3 C224 A3 C232 C2 C247 B3 C255 A3 C266 A3 C274 A3 C293 A3 C350 B3 C361 C4 C369 C2 L202 A3 R103 A4 R111 B4 R119 B4 R266 C3 R332 C2 R361 B3 R371 C3
C110 C1 C118 A4 C131 A4 C205 A2 C225 A3 C236 C2 C248 B3 C256 B3 C267 A3 C275 A3 C295 A4 C352 B3 C362 A3 C370 C2 L208 B3 R104 B4 R112 B4 R120 B4 R269 A3 R348 A3 R364 C3 R375 B3



POWER & AMP BOARD

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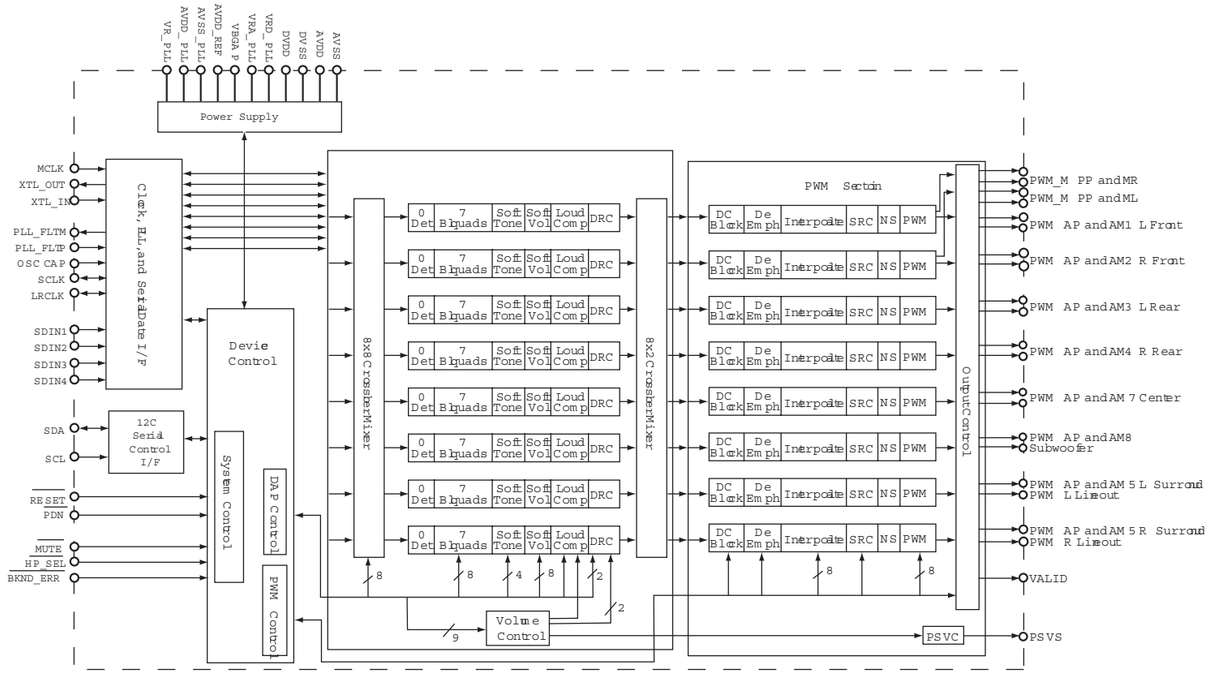
INTERNAL IC DIAGRAM - TAS5508BPAG



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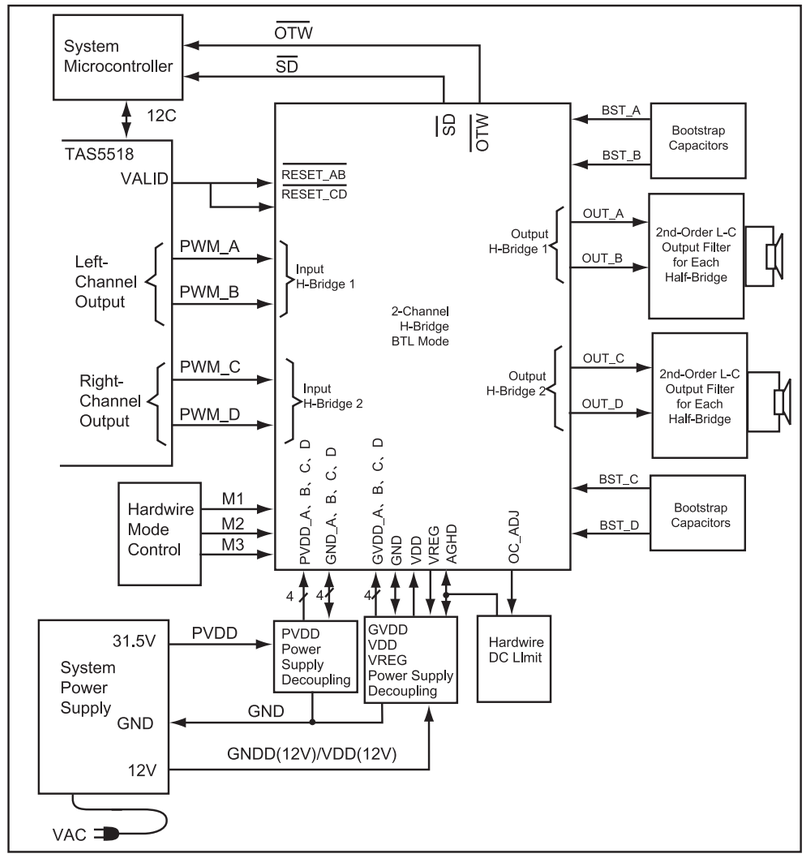

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CIRCUIT DIAGRAM - (AMP)

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C703 A2 C711 A3 C719 A3 C727 A2 C735 A2 C743 A2 C751 B3 C759 B1 C767 C3 C775 A3 C783 C3 C791 C3 C799 C1 C807 C2 C815 C3 IC701B1 L706 A4 R704 A2 R712 B3 R722 B2 R730 C4 R740 B4 R750 C2 R758 C3 R767 C2
C704 A2 C712 A4 C720 A3 C728 C1 C736 A2 C744 A4 C752 A3 C760 C2 C768 C4 C776 A4 C784 C3 C792 C3 C800 C1 C808 C2 CN701A1 IC702A3 Q701 C2 R705 A3 R713 A3 R723 B2 R731 C4 R741 B2 R751 B2 R759 C3 R768 C2
C705 A3 C713 A2 C721 A4 C729 C1 C737 A2 C745 A1 C753 B3 C761 C2 C769 C4 C777 A4 C785 C3 C793 C3 C801 C1 C809 C2 CN702A1 IC703C3 Q702 C2 R706 A3 R714 B3 R724 B3 R732 C4 R743 B3 R752 C2 R760 B3 R769 C2
C706 A4 C714 A2 C722 A4 C730 C1 C738 A4 C746 A1 C754 B4 C762 C3 C770 C4 C778 A4 C786 C3 C794 C3 C802 C1 C810 C2 CN703B1 L701 A1 Q703 C2 R707 A4 R715 B4 R725 B3 R733 C4 R744 B4 R753 C2 R761 B3 R770 C3
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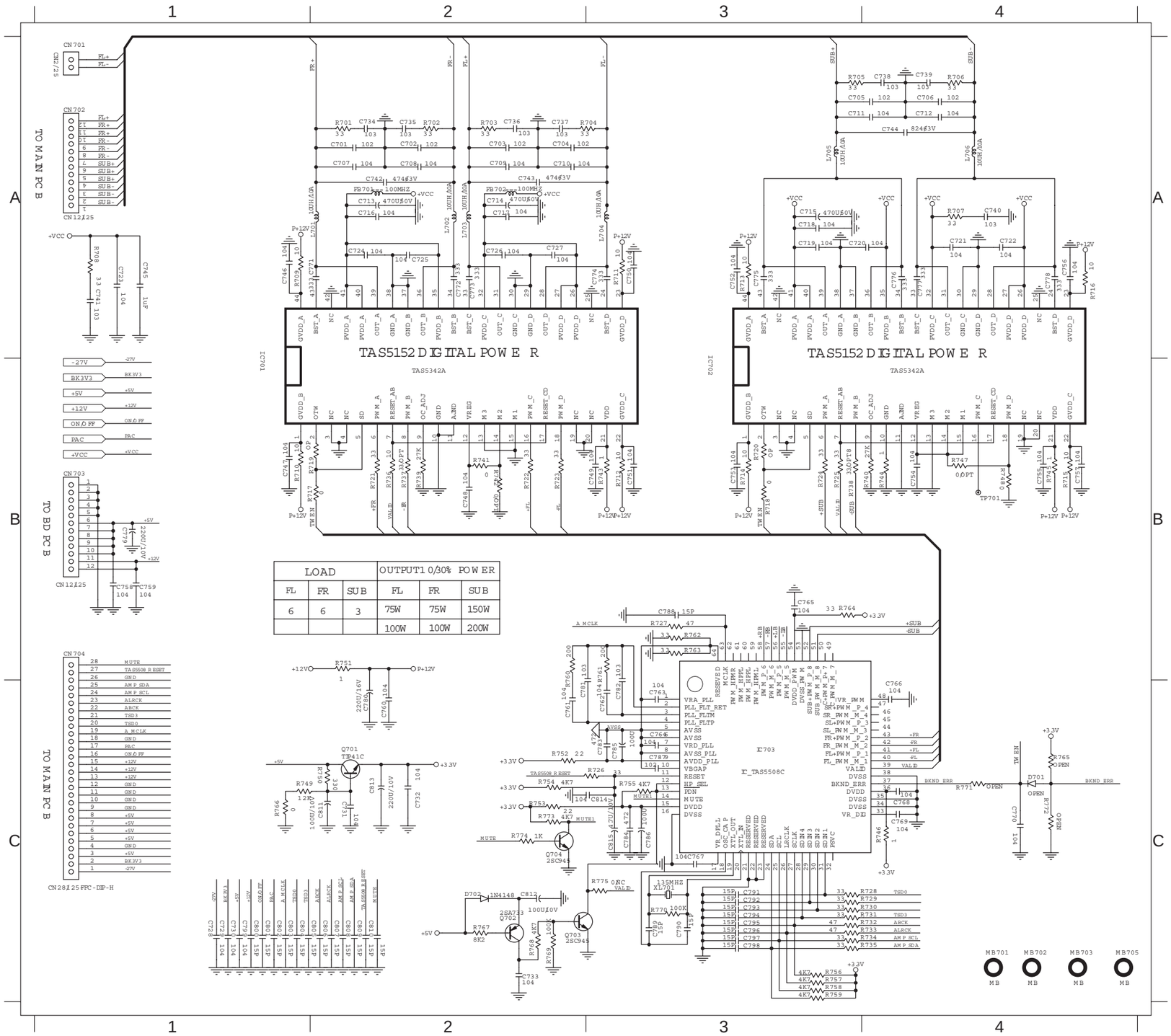
C708 A2 C716 A2 C724 A2 C732 C2 C740 A4 C748 B2 C756 A4 C764 C3 C772 A2 C780 C2 C788 B3 C796 C3 C804 C1 C812 C2 D702 C2 L703 A2 R701 A2 R709 A1 R717 B2 R727 B3 R735 C4 R746 C4 R755 C3 R763 B3 R774 C2



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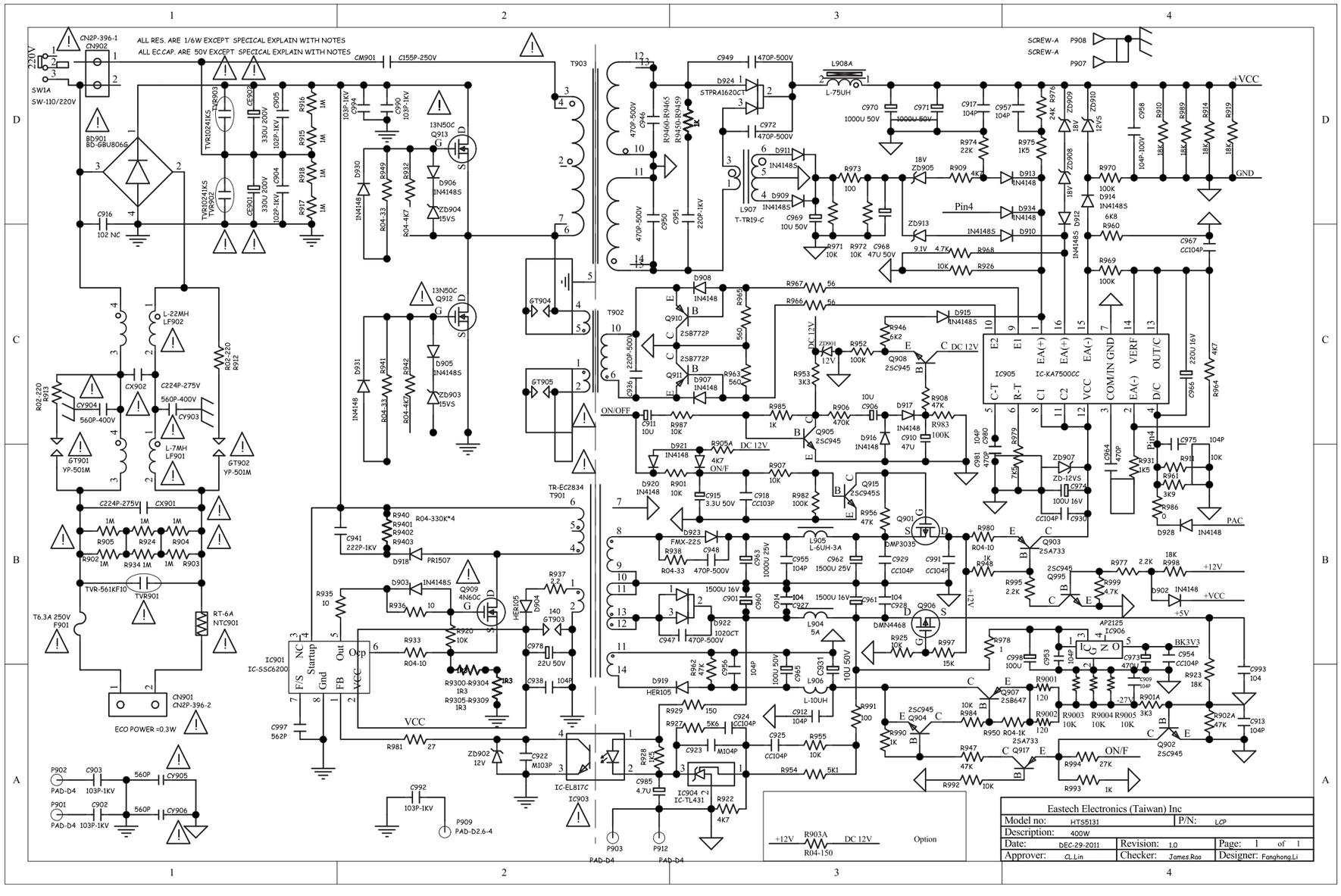
CIRCUIT DIAGRAM - (power)



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PCB LAYOUT - TOP VIEW

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C714 C3 C724 B4 C744 C4 C752 B4 C763 B4 C771 B4 C779 A4 C812 A4 C915 B3 C963 A3 C974 B3 CN701C3 CY903B1 D909 B2 D931 B2 HT901A1 L702 C4 L907 B3 Q704 B4 R707 C4 R715 B4 R725 B4 R733 A4 R744 B4 R755 A4 R929 A2 T903 B2
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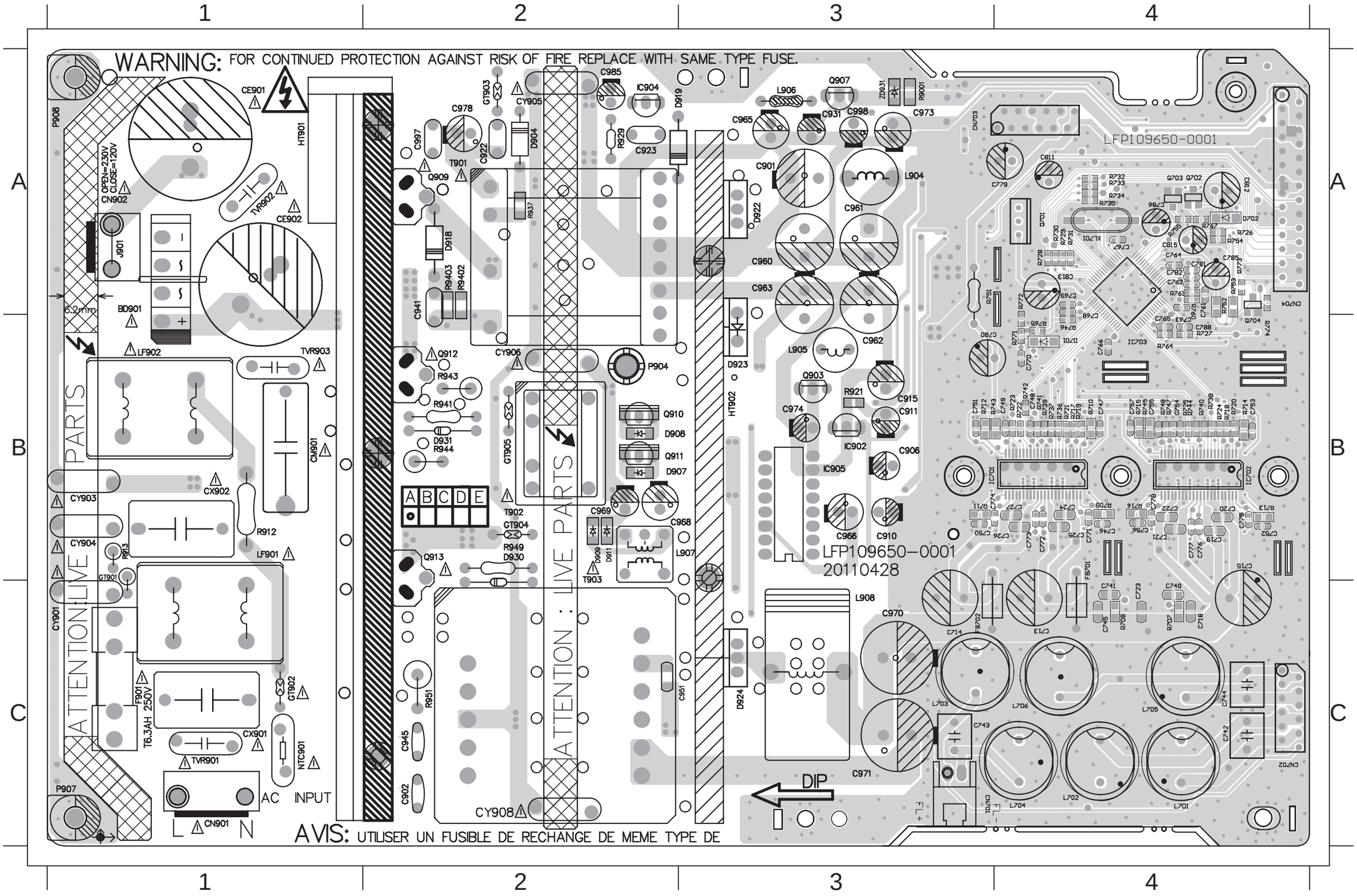
C720 B4 C740 C4 C748 B4 C756 B4 C767 A4 C775 B4 C785 A4 C902 C2 C951 C3 C969 B2 C998 A3 CN901C1 D702 A4 D922 A3 GT902C1 IC703 B4 L706 C4 NTC901C1 Q910 B3 R711 B3 R721 B4 R729 A4 R739 B4 R751 A3 R767 A4 R941 B2 XL701 A4
C721 B4 C741 C4 C749 B4 C757 B4 C768 A4 C776 B4 C786 A4 C906 B3 C960 A3 C970 C3 CE901A1 CN902A1 D904 A2 D923 B3 GT903A2 IC904 A2 L904 A3 Q701 A4 Q911 B3 R712 B3 R722 B4 R730 A4 R740 B4 R752 A4 R773 A4 R949 B2



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PCB LAYOUT - BOTTOM VIEW

C701 C4 C711 C4 C734 C4 C784 A4 C797 A4 C807 A4 C913 A3 C936 B2 C956 A3 C991 A3 D914 B3 IC906 A3 R701 C4 R758 A4 R902 C1 R908 B3 R920 A2 R9302A1 R933 A2 R9452C3 R9461C3 R954 A3 R967 B2 R977 B3 R987 B3 R999 B3 ZD913B2
C702 C4 C712 C4 C735 C4 C787 A4 C798 A4 C808 A4 C914 A3 C938 A2 C957 C3 C993 A3 D915 C3 Q901 A3 R702 C4 R759 A4 R902AA3 R909 B3 R922 A2 R9303A1 R934 C1 R9453C3 R9462C3 R955 A3 R968 B3 R978 A3 R989 C3 ZD901B3
C703 C3 C716 B4 C736 C3 C789 A4 C799 A4 C809 A4 C917 C3 C946 C2 C958 C3 C994 B2 D916 B3 Q902 A3 R703 C3 R762 A4 R903 C1 R910 C3 R923 A3 R9304A1 R935 A2 R9454C3 R9463C3 R956 B3 R969 B3 R979 B3 R990 A3 ZD902A2
C704 C3 C717 B3 C737 C4 C790 A4 C800 A4 C810 A4 C918 B3 C947 A3 C964 B3 D902 C3 D917 B3 Q904 A3 R704 C3 R763 A4 R903AB3 R911 B3 R924 C1 R9305A1 R936 A2 R9455C3 R9464C3 R960 C3 R970 B3 R980 B3 R991 A3 ZD903B2
C705 C4 C728 A4 C738 C4 C791 A4 C801 A4 C814 A4 C924 A2 C948 B3 C967 B3 D903 A2 D920 B3 Q905 B3 R705 C4 R766 A4 R904 C1 R914 C3 R925 A3 R9306A1 R938 B3 R9456C3 R9465C3 R961 B3 R971 B2 R981 A2 R992 A3 ZD904B2
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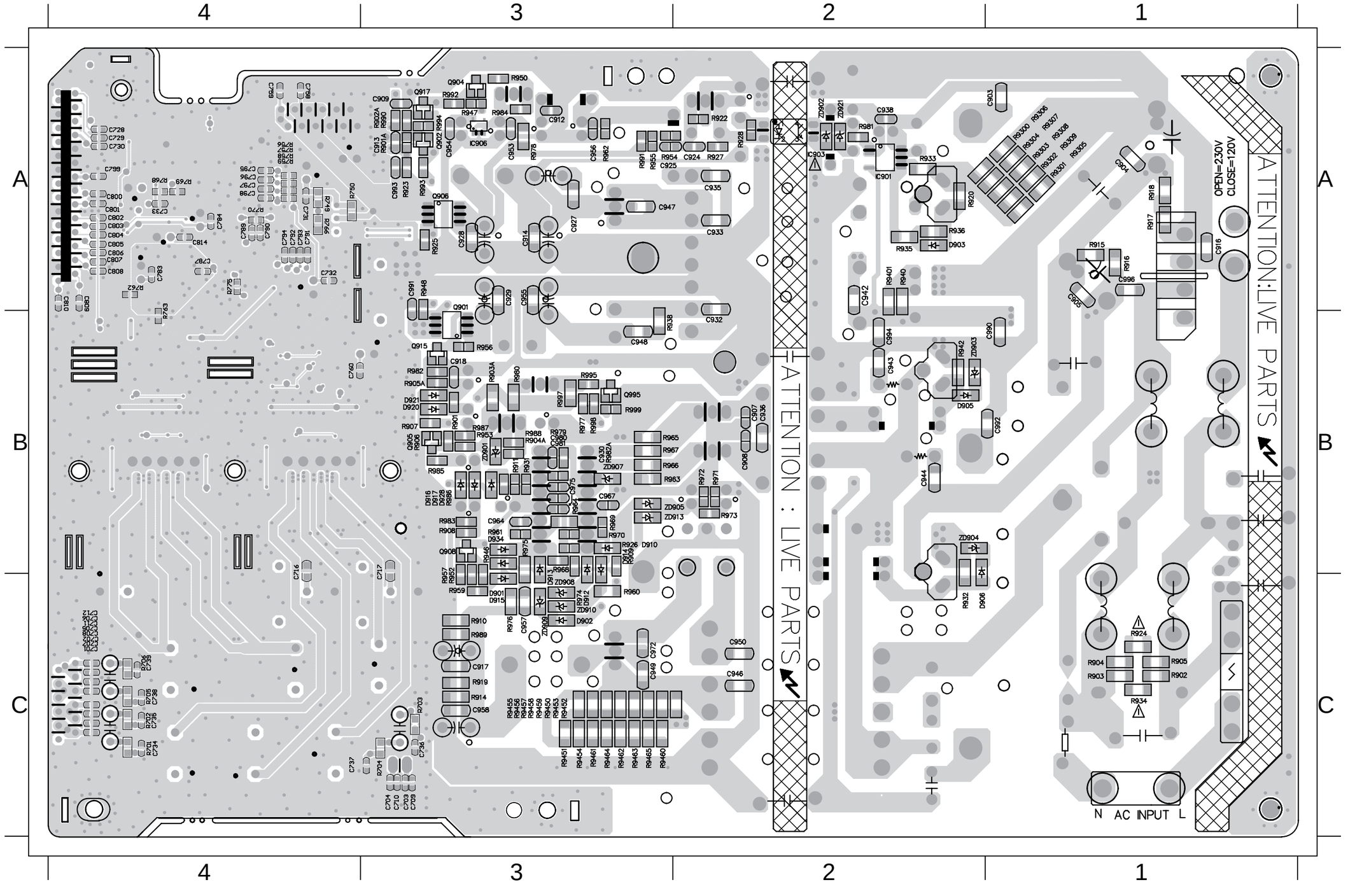
C710 C3 C733 A4 C783 A4 C796 A4 C806 A4 C912 A3 C930 B3 C955 A3 C990 B1 D913 B3 IC903 A2 Q995 B3 R757 A4 R901AA3 R907 B3 R919 C3 R9301A1 R932 C2 R9451C3 R9460C3 R953 B3 R966 B2 R976 C3 R986 B3 R998 B3 ZD910C3



BD BOARD

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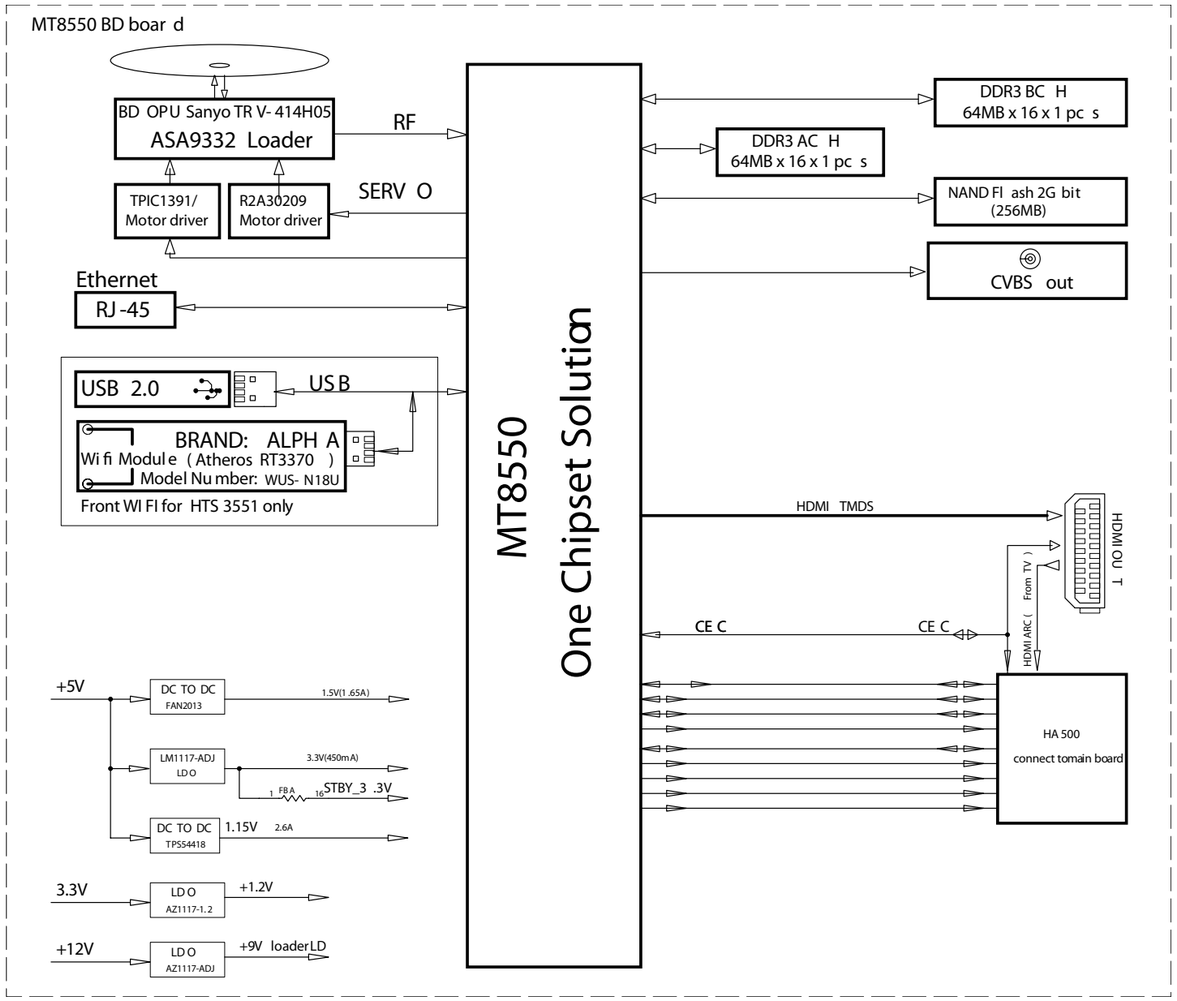
BLOCK DIAGRAM



8 - 2

Voltages for per connection pin

1. HA500--->>from BD board connect to main board

PIN NO	PIN Assign	Remarks
1	GND	
2	IPOD_TXD	
3	IPOD_RXD	
4	GND	
5	IR	
6	GND	
7	I2C_IRQ	
8	GND	
9	CEC	
10	AMUTE	
11	GND	
12	SCL	
13	SDA	
14	GND	
15	MCLK	
16	GND	
17	LRCK	
18	GND	
19	BCK	
20	GND	
21	DATA0	
22	DATA1	
23	DATA2	
24	GND	
25	HDMI_ARC	
26	GND	
27	V_DATA	N/A
28	V_STB	N/A
29	V_SCLK	N/A
30	GND	

2. CN202--->>from BD board connect to USB connect PCB

PIN NO	PIN Assig	Remarks
1	USB+5V	4.75V-5.25V
2	USB+5V	
3	USBP	High speed difference
4	USBM	
5	GND	

3. J507 --->>from BD board connect to BD loader(SERVO use)

PIN NO	PIN Assign	Remarks
1	A+	0-11.6V
2	A-	0-11.6V
3	B-	0-1.6V
4	B+	0-1.6V
5	U	4.52V
6	V	4.52V
7	W	4.52V
8	COMMON	4.52V

4. HA801--->>from BD board connect to BD loader(SERVO use)

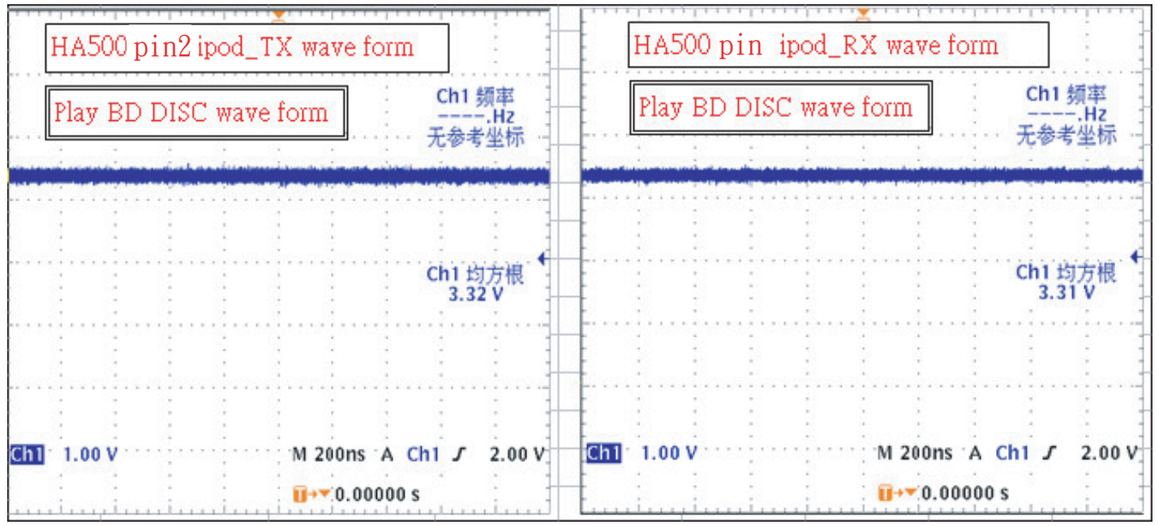
PIN NO	PIN Assign	Remarks		
Disc type voltage		CD	DVD	BD
1	FOC2+	2.66V	2.4V	2.68v
2	FOC2-	2.49V	2.8V	2.52v
3	TR-	2.58V	2.59V	2.55v
4	FOC1+	2.66V	2.59V	2.7v
5	TR+	2.59V	2.62V	2.58v
6	FOC1-	2.48V	2.66V	2.52v
7	A-	0.49V	0.26V	0.48v
8	B-	0.49V	0.35V	0.4v
9	A+	0.72V	0.26V	0.42v
10	B+	0.72V	0.35V	0.4v
11	GND	GND		
12	SIG_PO	n/a		
13	GND	GND		
14	B	2.22V	2.05V	2.36V
15	A	2.22V	2.05V	2.44V
16	D	2.26V	2.05V	2.45V
17	C	2.23V	2.06V	2.31V
18	G	2.09V	1.9V	2.37V
19	H	2.09V	1.9V	2.30V
20	F	2.09V	1.88V	2.43V
21	E	2.09V	1.9V	2.24V
22	LDO_SDIO	2.35V	2.15V	0V
23	RFO+	3.11V	2.82V	2.72V
24	RFO-	2.11V	1.92V	2.54V
25	LDO_CLK	3.25V	3.04V	0V
26	LDO_SEN	3.25V	3.02V	3.3V
27	HAVC	2.09V	1.8V	2.1V
28	VCC_PDIC	4.95V		
29	GND	GND		
30	GAIN_SW	3.25V	0V	1.65V
31	GND	GND		
32	BD_LD	0V	0V	4.54V
33	CD_LD	1.74V	0V	0V
34	DVD_LD	0V	1.96V	0V
35	GND	GND		
36	AUX1	1.55V	1.23V	1.48V
37	VCC_HFM	4.92V		
38	MDI_DVD	0.15V	0V	0.15V
39	MDI_BD	0V	0V	0.08V
40	DVD_VR	0.15V	0V	0.15V
41	CD_VR	0V	0V	0V
42	DVD_HFM	0V	0V	0V
43	CD_HFM	0V	0V	0V
44	GND	GND		
45	GND	GND		

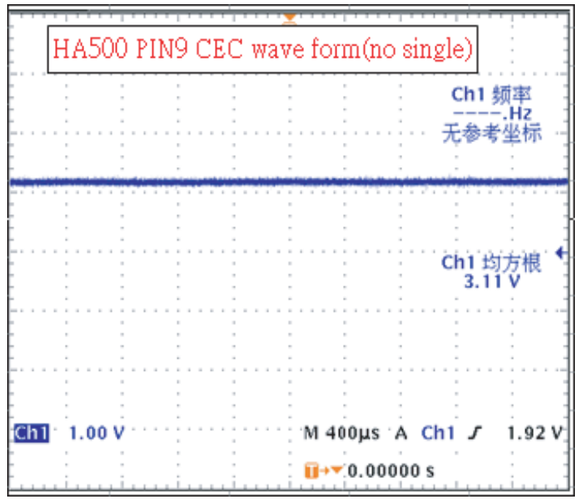
5. J508 --->>from BD board connect to BD loader(SERVO use)

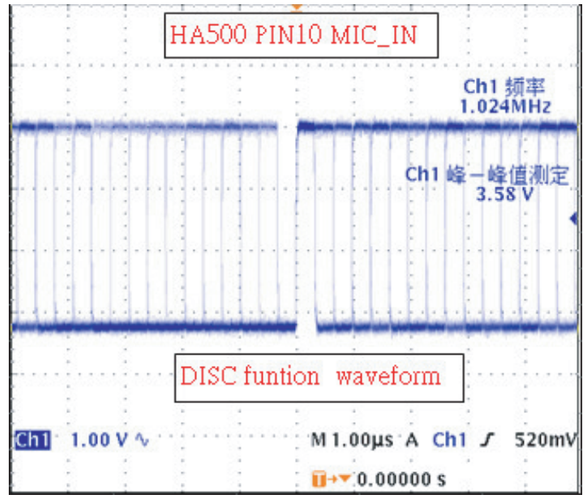
PIN NO	PIN Assign	Remarks
1	LOAD-	0.65V
2	LOAD+	0.65V
3	GND	GND
4	TRAY_IN	0V-->>open/close 3.3V
5	TRAY_OUT	N/A

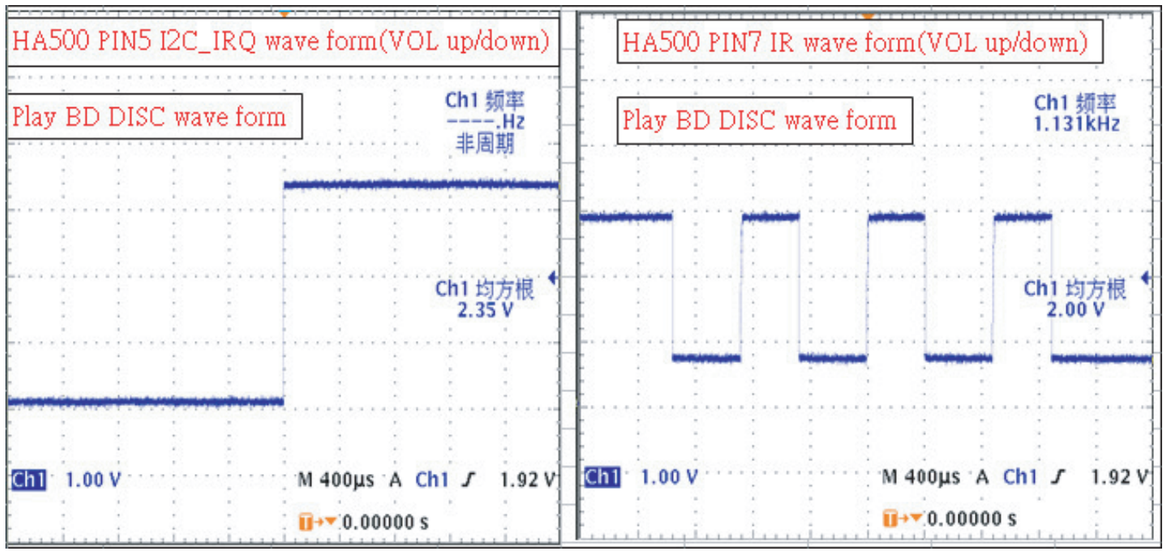
8 - 3

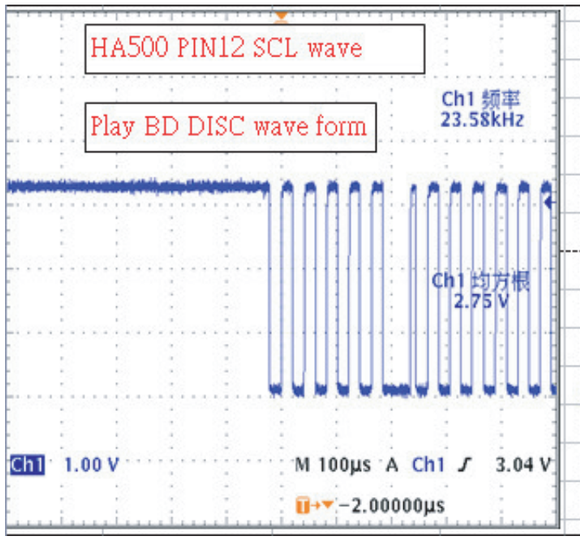
Waveforms for measure point

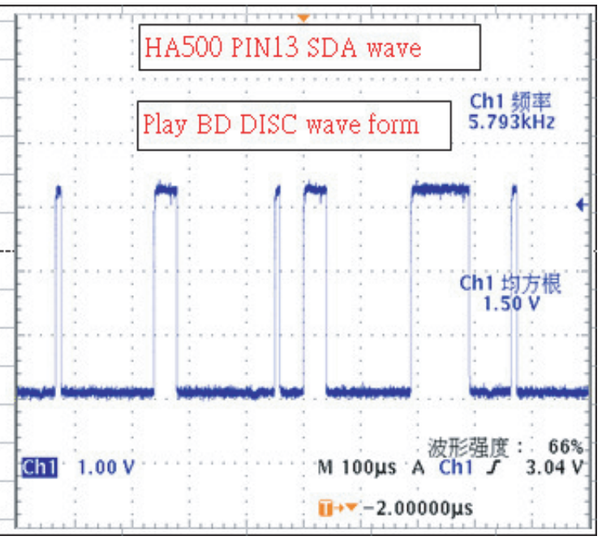


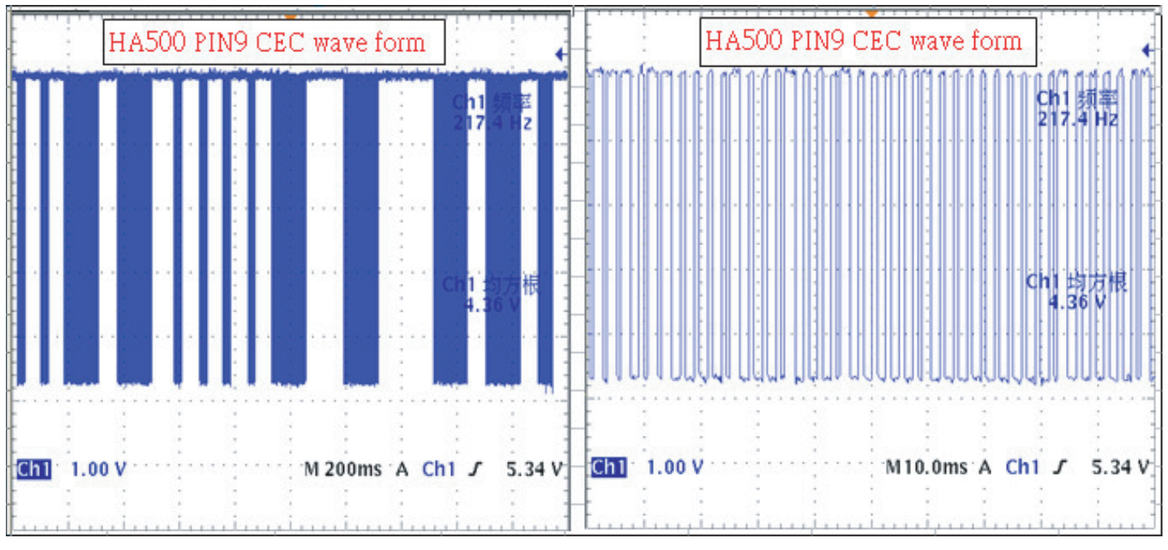


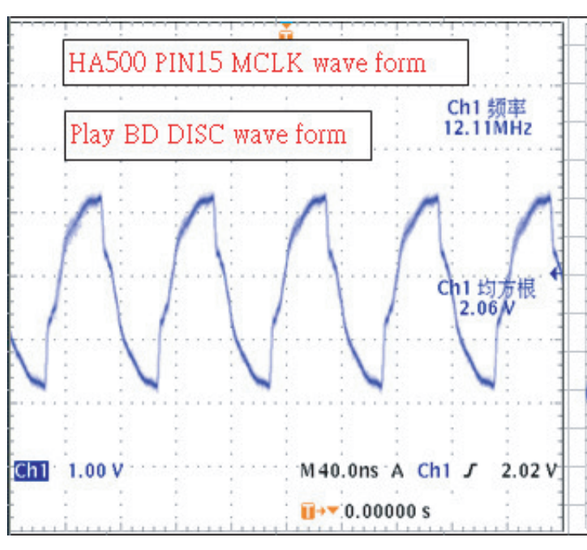


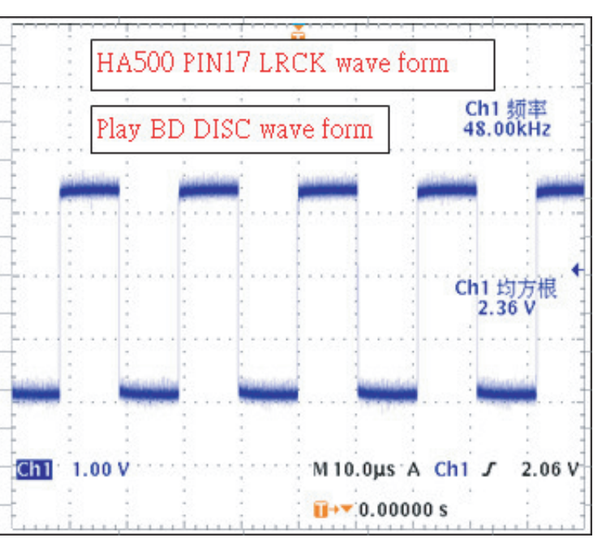




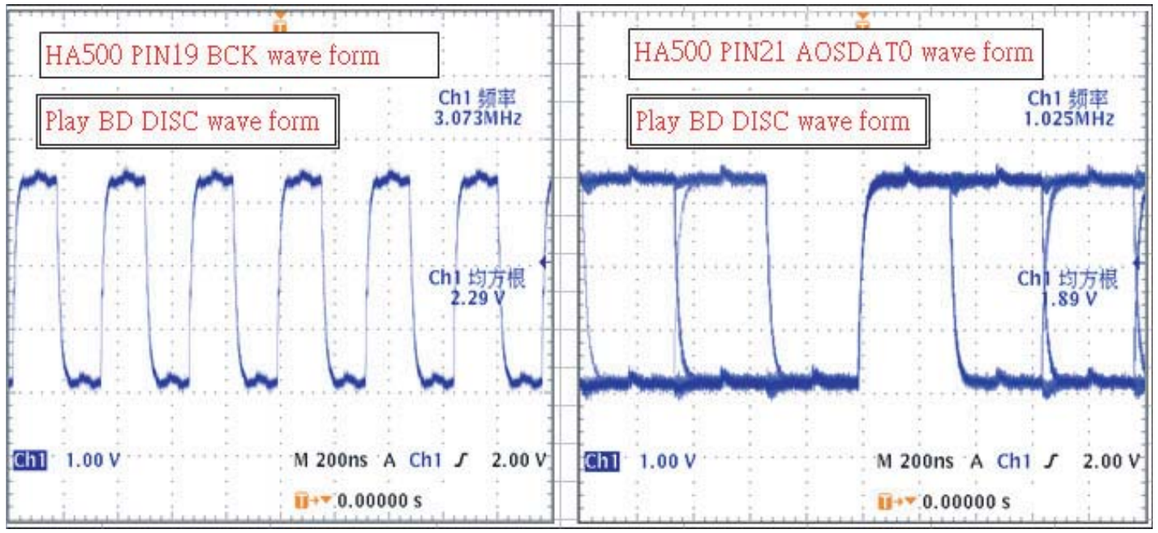


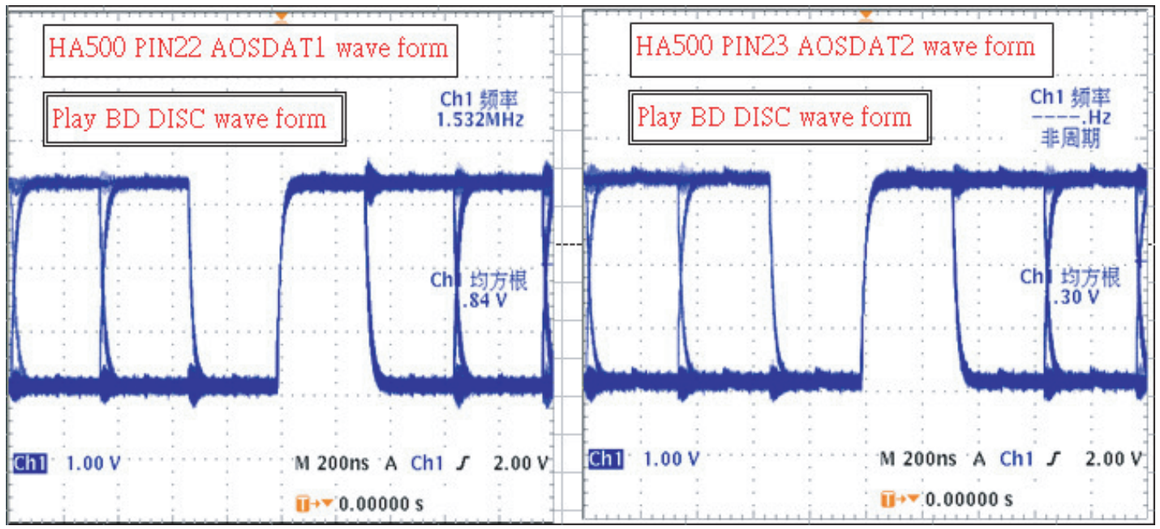


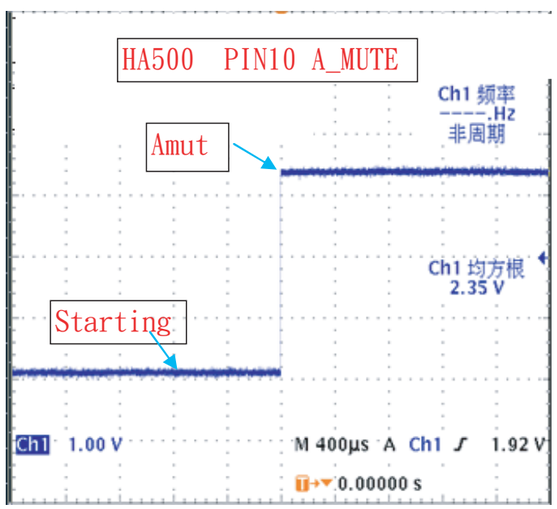


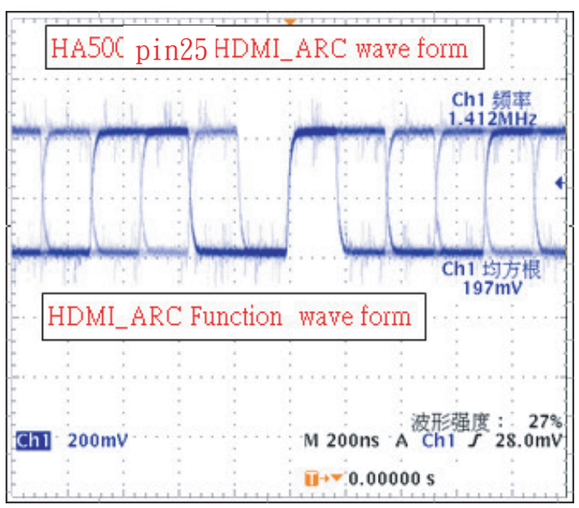


Waveforms for measure point









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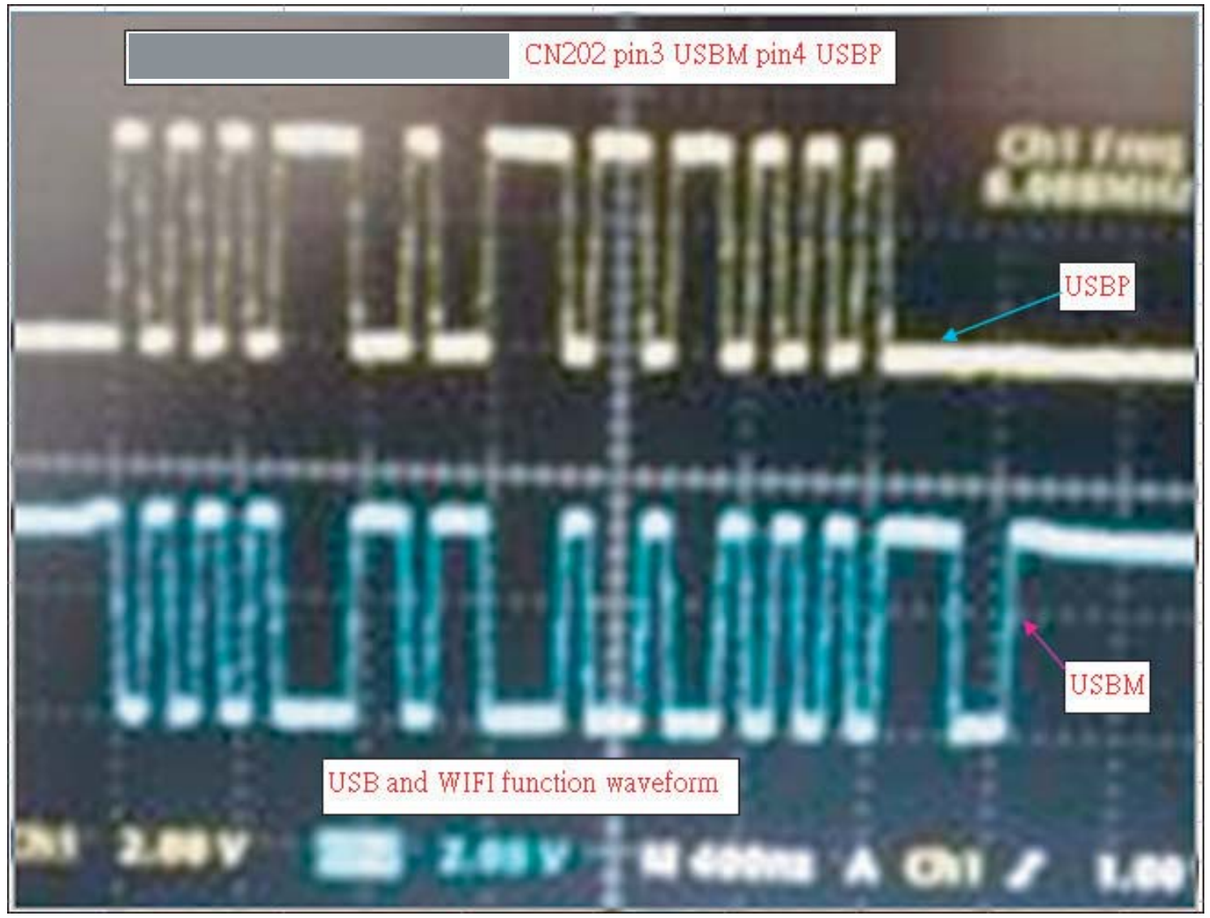

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TOUCH BOARD

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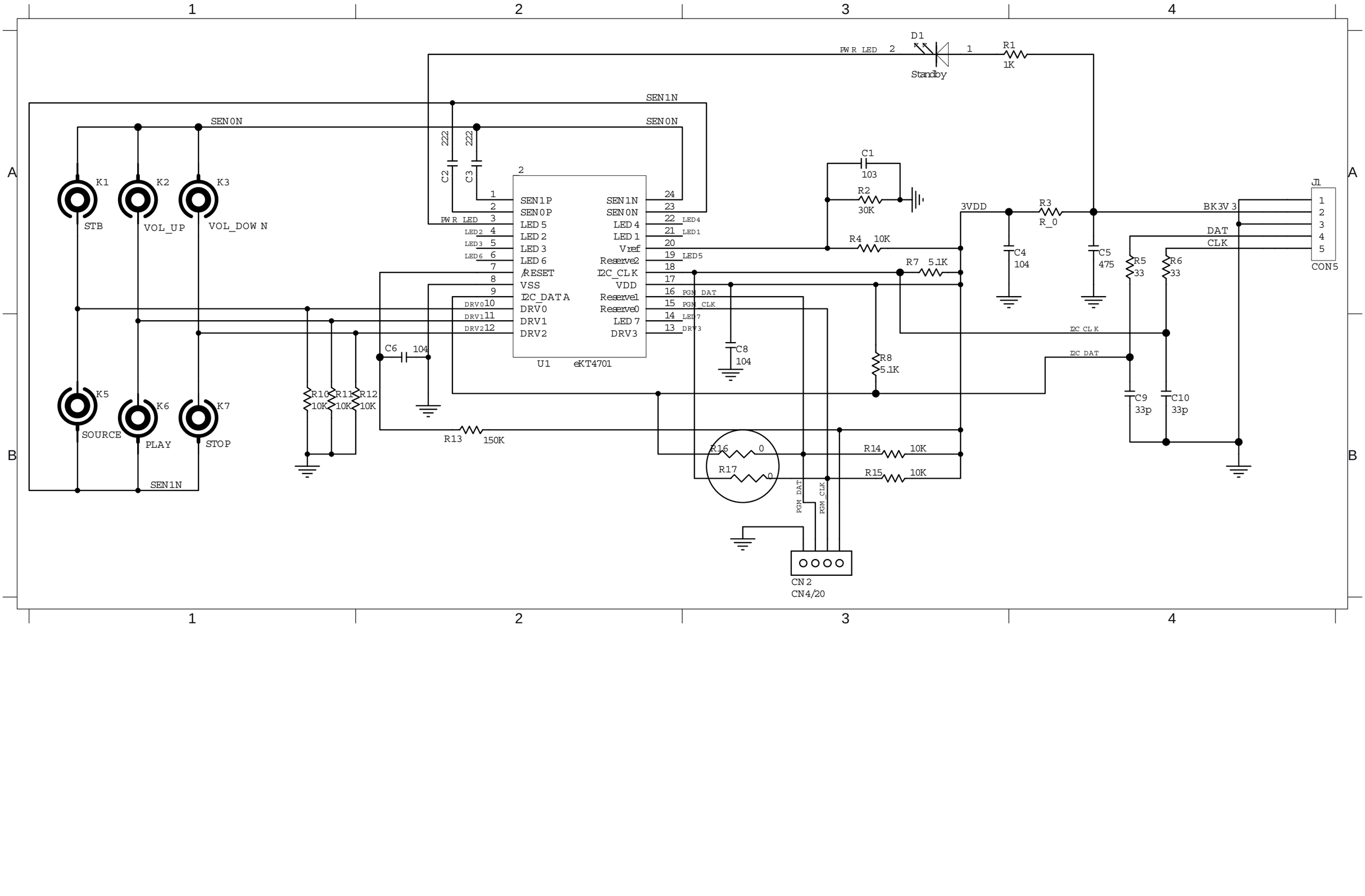
CIRCUIT DIAGRAM

C1 A3 C2 A2 C4 A4 C6 B2 C9 B4 J1 A4 R10 B1 R12 B2 R14 B3 R16 B3 R2 A3 R4 A3 R6 A4 R8 B3
C10 B4 C3 A2 C5 A4 C8 B3 D1 A3 R1 A3 R11 B1 R13 B2 R15 B3 R17 B3 R3 A4 R5 A4 R7 A3 U1 B2



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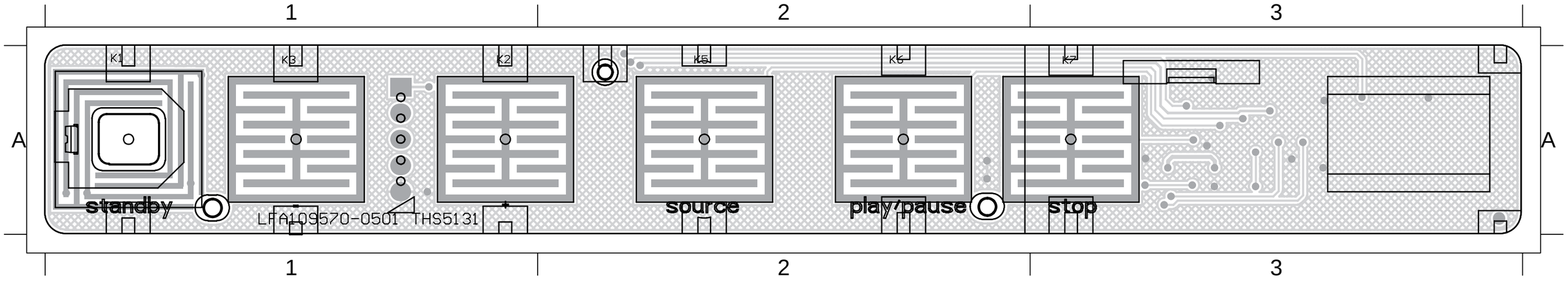
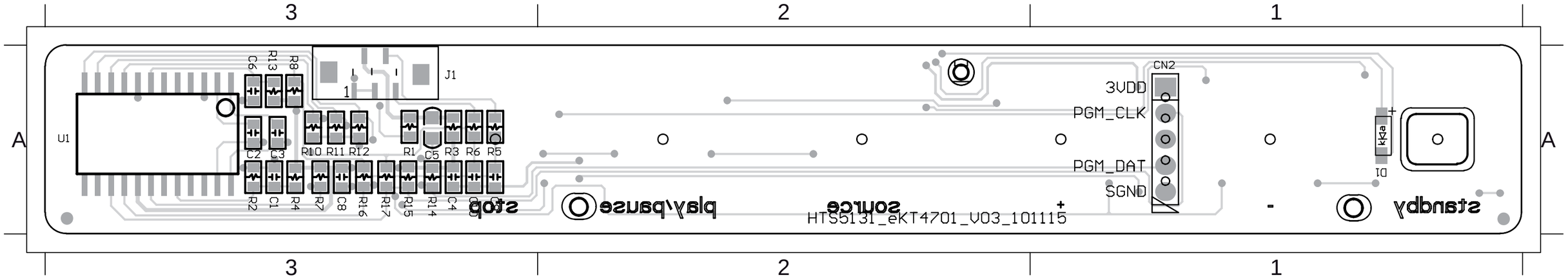
PCB LAYOUT - TOP VIEW



PCB LAYOUT - BOTTOM VIEW

C1	A3	C2	A3	C4	A3	C6	A3	C9	A3	J1	A3	R10	A3	R12	A3	R14	A3	R16	A3	R2	A3	R4	A3	R6	A3	R8	A3
C10	A3	C3	A3	C5	A3	C8	A3	D1	A1	R1	A3	R11	A3	R13	A3	R15	A3	R17	A3	R3	A3	R5	A3	R7	A3	U1	A3



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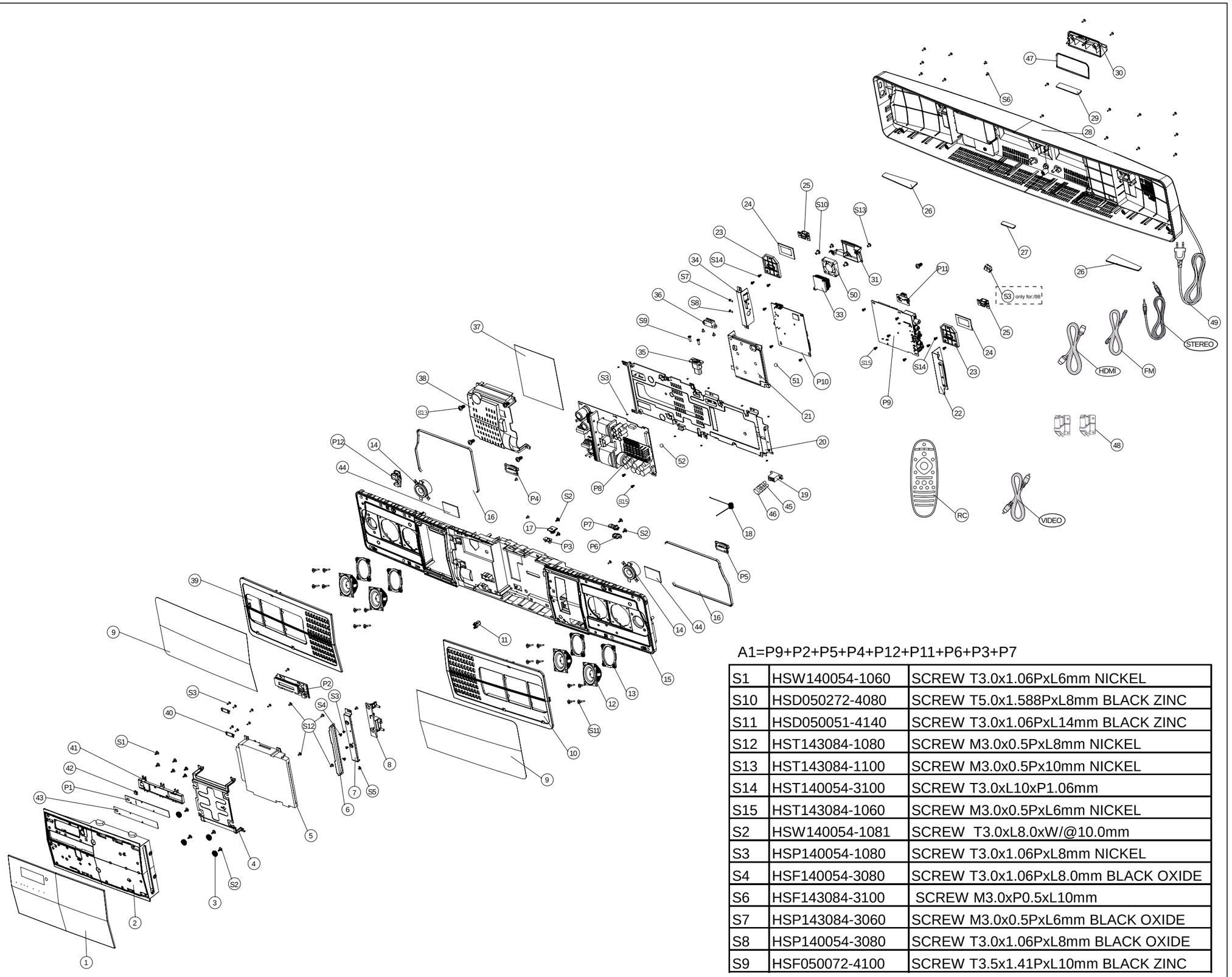
Mechanical Exploded View



A1=P9+P2+P5+P4+P12+P11+P6+P3+P7

S1	HSW140054-1060	SCREW T3.0x1.06PxL6mm NICKEL
S10	HSD050272-4080	SCREW T5.0x1.588PxL8mm BLACK ZINC
S11	HSD050051-4140	SCREW T3.0x1.06PxL14mm BLACK ZINC
S12	HST143084-1080	SCREW M3.0x0.5PxL8mm NICKEL
S13	HST143084-1100	SCREW M3.0x0.5Px10mm NICKEL
S14	HST140054-3100	SCREW T3.0xL10xP1.06mm
S15	HST143084-1060	SCREW M3.0x0.5PxL6mm NICKEL
S2	HSW140054-1081	SCREW T3.0xL8.0xW/@10.0mm
S3	HSP140054-1080	SCREW T3.0x1.06PxL8mm NICKEL
S4	HSF140054-3080	SCREW T3.0x1.06PxL8.0mm BLACK OXIDE
S6	HSF143084-3100	SCREW M3.0xP0.5xL10mm
S7	HSP143084-3060	SCREW M3.0x0.5PxL6mm BLACK OXIDE
S8	HSP140054-3080	SCREW T3.0x1.06PxL8mm BLACK OXIDE
S9	HSF050072-4100	SCREW T3.5x1.41PxL10mm BLACK ZINC

REVISION LIST

Version 1.0
*Initial release

Version 1.1
*Updated to include /98 version.

Version 1.2
*Updated to include /51 version.

Version 1.3
*Updated to include /94 version.

Version 1.4
*Updated to include /78 version.

Version 1.5
*Updated Circuit diagram f or power