

Service
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Service Manual



TABLE OF CONTENTS

	Chapter
Location Of PCB Boards	1-2
Versions Variation	1-2
Specifications	1-3
Measurement Setup	1-6
Service Aids	1-7
ESD & Safety Instruction	1-8
Lead-free Soldering Information	1-9
Setting Procedure & Repair Instructions	2
Disassembly Instructions & Service Positions	3
Block & Wiring	4
Diagram Quick Start Guide	5
MAIN+MP3+IR+TUNE AUX IN Board	6
Power Board	7
BD Board.....	8
Touch Board	9
VFD Board	10
Mechanical Exploded View.....	11
Revision List	12

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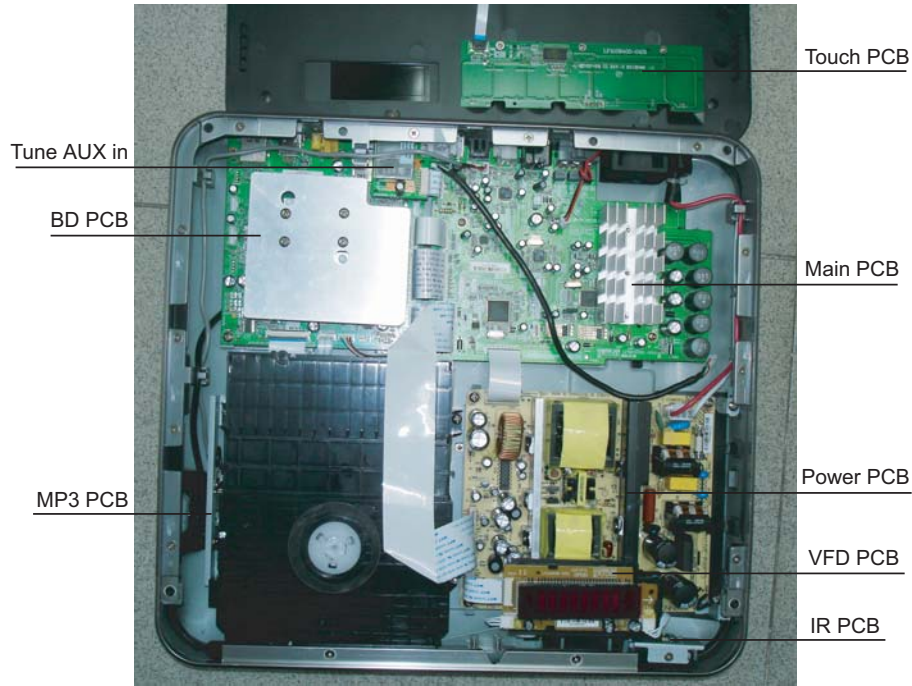
GB 3139 785 35621

Version 1.1



PHILIPS

LOCATION OF PCB BOARDS



VERSION VARIATION:

Type/Versions Features	HTS7202	HTS7212
	/12	/12
Output Power - 440W/350W	X	X
Voltage (220~240V)	X	X
Ipod Dock	X	X
Music iLink	X	X

SERVICE SCENARIO MATRIX:

Type/Versions Board in used	HTS7202	HTS7212
	/12	/12
MAIN+MP3+IR+TUNE AUX IN PCB Board	C	C
Power Board	C	C
VFD Board	Bd	Bd
BD Board	Bd	Bd
Touch Board	Bd	Bd
Ipod Dock Module	Bd	Bd

*Bd= Board Level Replacement

*C = Component Level Repair

SPECIFICATIONS

Media formats

- AVCHD, BD, BD-R/ 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 media, WMA media, DivX (Ultra)/ DivX Plus HD media, USB storage device

File formats

- Audio: .aac, .mka, .mp3, .wma, .wav, .mp4, .m4a
- Video:
 - .avi, .divx, .mp4, .mkv, .asf, .wmv, .mpg, .mpeg,
 - .rmvb, .rm (Available only in Asia Pacific and China)
- Picture: .jpg, .jpeg, .gif, .png

Audio formats

Your home theater supports the following audio files.

Extension	Container	Audio codec	Bit rate
.mp3	MP3	MP3	32kbps ~ 320kbps
.wma	ASF	WMA	64kbps ~ 160kbps
.aac	AAC	AAC, HE-AAC	192kbps
.wav	WAV	PCM	1.4Mbps
.m4a	MKV	AAC	192kbps
.mka	MKA	PCM	27.648 Mbps
.mka	MKA	AC-3	640kbps
.mka	MKA	DTS core	1.54Mbps
.mka	MKA	MPEG	912kbps
.mka	MKA	MP3	32kbps ~ 320kbps
.mka	MKA	WMA	64kbps ~ 160kbps
.mka	MKA	AAC, HE-AAC	192kbps

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, AC-3, DTS core, MP3, WMA	DivX 3.11, DivX 4.x, DivX 5.x, DivX 6.x	10Mbps max
	MPEG 1, MPEG 2	20Mbps (peak 40Mbps)
	MPEG 4 ASP	10Mbps max
	H.264/AVC HP@4.1/4.0; MP@3.2/3.1/3.0	20Mbps (peak 40Mbps)
	WMV9	20Mbps

.divx files in AVI container

Audio codec	Video codec	Bit rate
PCM, AC-3, MP3, WMA	DivX 3.11, DivX 4.x, DivX 5.x, DivX 6.x	10Mbps max
	MPEG 1, MPEG 2	20Mbps (peak 40Mbps)
	MPEG 4 ASP	10Mbps max

.mp4 or .m4v files in MP4 container

Audio codec	Video codec	Bit rate
AC-3, MPEG, MP3, AAC, HE-AAC	MPEG 1, MPEG 2	20Mbps (peak 40Mbps)
	MPEG 4 ASP	10Mbps max
	H.264/AVC HP@4.1/4.0; MP@3.2/3.1/3.0	20Mbps (peak 40Mbps)

.mkv files in MKV container

- Music iLink: 400 mV

Audio codec	Video codec	Bit rate
PCM, AC-3, DTS core, MPEG, MP3, WMA, AAC, HE-AAC	MPEG 1, MPEG 2	20Mbps (peak 40Mbps)
	MPEG 4 ASP	10Mbps max
	H.264/AVC HP@4.1/4.0; MP@3.2/3.1/3.0	20Mbps (peak 40Mbps)
	WMV9	20Mbps

.asf and .wmv files in ASF container

Audio codec	Video codec	Bit rate
PCM, AC-3, MP3, WMA	MPEG 4 ASP	10Mbps max
	H.264/AVC HP@4.1/4.0; MP@3.2/3.1/3.0	20Mbps (peak 40Mbps)
	WMV9	20Mbps

.mpg and .mpeg files in PS container

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

Amplifier

- Total output power: 440W RMS (30%THD), 350W RMS (10%THD)
- Frequency response: 20 Hz-20 kHz / ± 3 dB
- Signal-to-noise ratio: > 65 dB (CCIR) / (A-weighted)
- Input sensitivity:
 - AUX1, AUX2: 1100mV

Video

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

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: 112 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 55 dB
- Frequency response: FM 60 kHz-12.5 kHz / ± 3 dB

USB

- Compatibility: Hi-Speed USB (2.0)
- Class support: USB Mass Storage Class (UMS)
- 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: 85 W

- Standby power consumption: ≤ 0.5 W
- Dimensions (WxHxD): 360 x 70 x 345 mm
- Weight: 4.36 kg

Subwoofer

- Total output power: 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): 196 x 395 x 342 (mm)
- Weight: 5.29kg
- Cable length: 3 m

Speakers

- Total output power: 2 x 120W RMS (30%THD), 2 x 100W RMS (10%THD)
- Speaker impedance: 5 ohm
- Speaker drivers: 2 x 76.2 mm (3") woofer + 1 x 25.4 mm (1") tweeter
- Frequency response: 150 Hz-20 kHz
- Dimensions (WxHxD): 97 x 301 x 120 mm
- Weight: 1.45 kg/each
- Cable length: 3 m

Remote control batteries

- 2 x AAA-LR03-1.5V

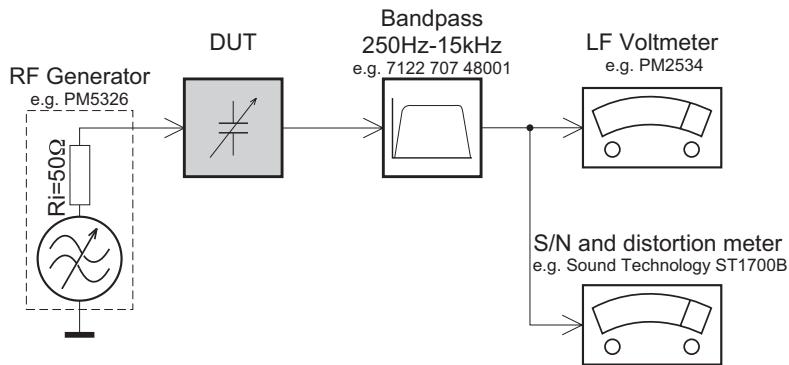
Laser

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

Specifications subject to change without prior notice.

MEASUREMENT SETUP

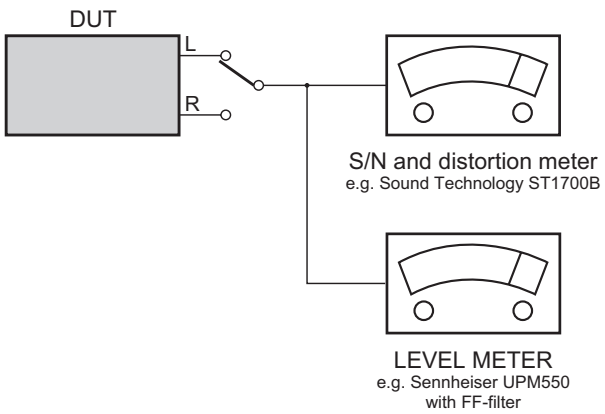
Tuner FM



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

GENERAL

SOLDER
CHIP COMPONENT
SOLDER
COPPER TRACK
P.C.B.
GLUE

SERVICE PACKAGE

DISMOUNTING

VACUUM PISTON
4822 395 10082

SOLDERING IRON
e.g. WELLER solder tip PT-H7

SOLDERING IRON
SOLDER WICK
4822 321 40042

e.g. A PAIR OF TWEEZERS

HEATING HEATING

SOLDERING IRON
SOLDER WICK
CLEANING

MOUNTING

e.g. A PAIR OF TWEEZERS

SOLDERING IRON
SOLDER
ø0.5-0.8mm
PRESSURE

SOLDERING TIME
< 3 sec/side

SOLDERING IRON
SOLDER
ø0.5-0.8mm
PRESSURE

PRECAUTIONS

SOLDERING IRON
CORRECT
COPPER TRACK

SOLDERING IRON
CHIP COMPONENT

EXAMPLES

CORRECT

SOLDERING IRON
NO!

ESD**GB WARNING**

All ICs and many other semi-conductors are susceptible to electrostatic discharges (ESD). Careless handling during repair can reduce life drastically.

When repairing, make sure that you are connected with the same potential as the mass of the set via a wrist wrap with resistance. Keep components and tools also at this potential.

F ATTENTION

Tous les IC et beaucoup d'autres semi-conducteurs sont sensibles aux décharges statiques (ESD).

Leur longévité pourrait être considérablement écourtée par le fait qu'aucune précaution n'est prise à leur manipulation.

Lors de réparations, s'assurer de bien être relié au même potentiel que la masse de l'appareil et enfiler le bracelet serti d'une résistance de sécurité.

Veiller à ce que les composants ainsi que les outils que l'on utilise soient également à ce potentiel.

D WARNUNG

Alle ICs und viele andere Halbleiter sind empfindlich gegenüber elektrostatischen Entladungen (ESD).

Unvorsichtige Behandlung im Reparaturfall kann die Lebensdauer drastisch reduzieren. Veranlassen Sie, dass Sie im Reparaturfall über ein Pulsarmband mit Widerstand verbunden sind mit dem gleichen Potential wie die Masse des Gerätes. Bauteile und Hilfsmittel auch auf dieses gleiche Potential halten.

NL WAARSCHUWING

Alle IC's en vele andere halfgeleiders zijn gevoelig voor electrostatische ontladingen (ESD).

Onzorgvuldig behandelen tijdens reparatie kan de levensduur drastisch doen verminderen. Zorg ervoor dat u tijdens reparatie via een polsband met weerstand verbonden bent met hetzelfde potentiaal als de massa van het apparaat.

Houd componenten en hulpmiddelen ook op ditzelfde potentiaal.

I AVVERTIMENTO

Tutti IC e parecchi semi-conduttori sono sensibili alle scariche statiche (ESD).

La loro longevità potrebbe essere fortemente ridatta in caso di non osservazione della più grande cauzione alla loro manipolazione. Durante le riparazioni occorre quindi essere collegato allo stesso potenziale che quello della massa dell'apparecchio tramite un braccialetto a resistenza.

Assicurarsi che i componenti e anche gli utensili con quali si lavora siano anche a questo potenziale.

GB ESD PROTECTION EQUIPMENT

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

GB

Safety regulations require that the set be restored to its original condition and that parts which are identical with those specified, be used.

Safety components are marked by the symbol Δ .

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 Δ .

F

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

Less composants de sécurité sont marqués Δ .

D

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

Sicherheitsbauteile sind durch das Symbol Δ 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.

Componenti di sicurezza sono marcati con Δ .

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 spårren är urkopplad. Betrakta ej strålen.

SF Varoitus !

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

DK Advarse !

Usynlig laserstrålning ved åbning når sikkerhedsafbrydere er ude af funktion. Undgå udsættelse for strålning.

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.

IDENTIFICATION:

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 desoldering 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

- Press “” <Home> button on R/C.
- Select <Setup>, then press “OK” button on R/C.
- Select <Advanced>, then press < OK > button on R/C.
- Select <Restore default settings>, then press <OK> to confirm.


2) Password change

- Press “” <Home> button on R/C.
 - Select <Setup>, then press “OK” button on R/C.
 - Select <Preference>, then press <OK> button on R/C.
 - Select <Change Password> <Confirm>, then press <OK> button on R/C.
- “0000” is default password supplied.

3) Trade mode

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

4) Check software version

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

Model: HTS7202/12

Versions:

System SW: 0.28.01

Subsystem SW: 20-00-00-00

Ethernet MAC: 00:25:D1:05:88:33


For more information, frequently asked questions and software updates, please visit philips.com/support

Close

- 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

- Create a folder named “UPG_ALL” in your USB storage device, and Copy the latest upgrading software into the folder.
- Connect the USB storage device to the home theater.
- Press “” <Home> button on R/C, and select <Setup>.
- Select <Advanced> <Software Update> <USB>.
- 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

- 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:	

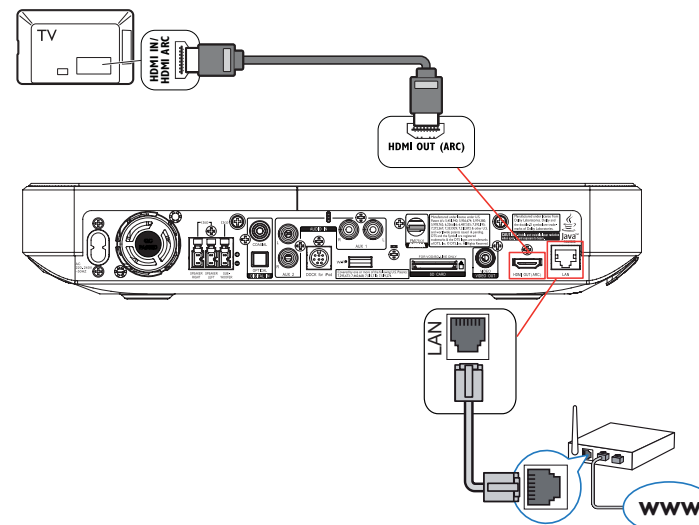
- The set will shut down automatically when the software upgrade is completed.


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.

- 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:



- Press “” <Home> button on R/C, and select <Setup>.
- Select <Advance Setup> <Software Update> <Network>.
- 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

- 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:	

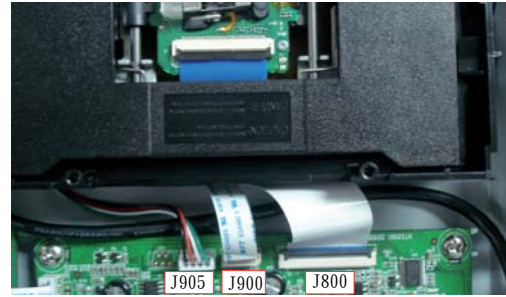
Software upgrade will take 5 minutes

Do not switch off!

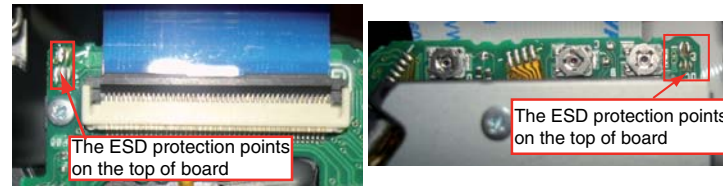
Package version: 000025.0

Software BE	Completed
Software FE	Completed
Software MCU1:	Not started
Software Dock:	2%
Software MCU3:	Not started

c) Assembly Blu-ray Loader to "J800", "J900", "J905" on the top of BD Board as shown below.



d) Remove soldered joint on the ESD protection points.



Top side view of OPU

Bottom side view of OPU

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 J800, J900 and J905 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.

CAUTION!

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

Software upgrade will take 5 minutes

Do not switch off!

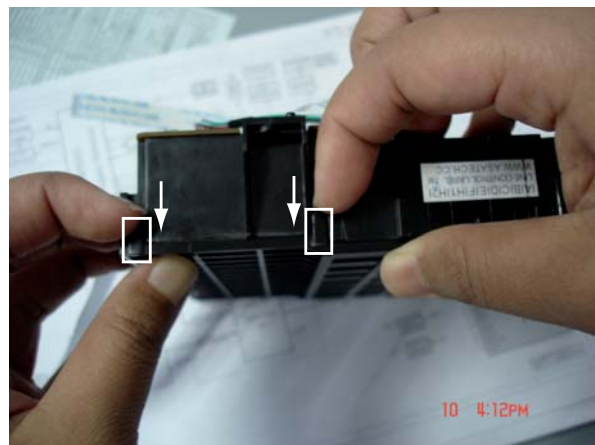
Package version: 000025.0

Software BE	Completed
Software FE	Completed
Software MCU1:	1%
Software Dock:	Failed
Software MCU3:	

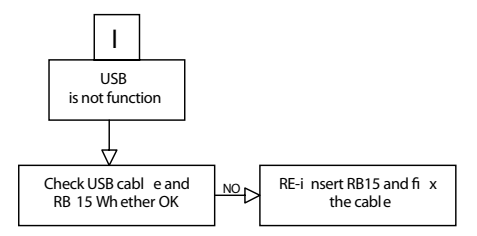
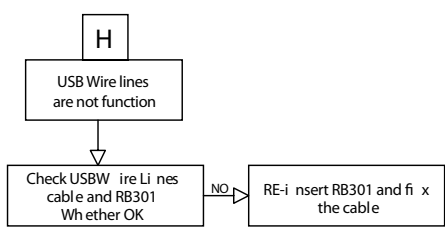
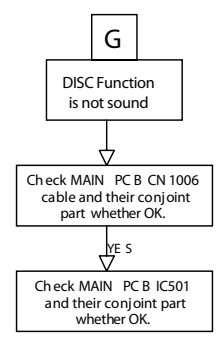
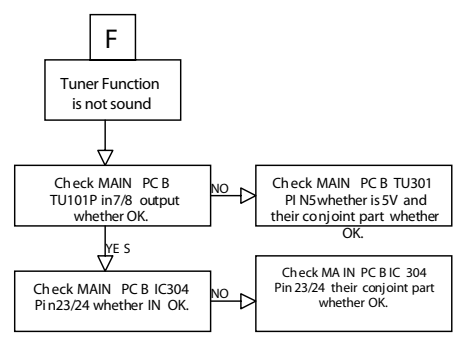
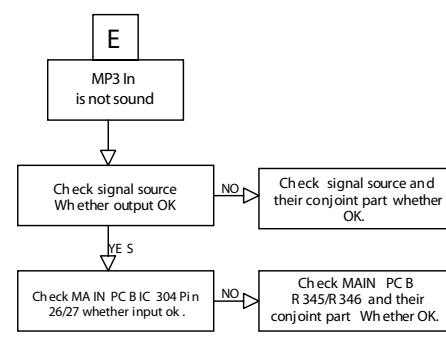
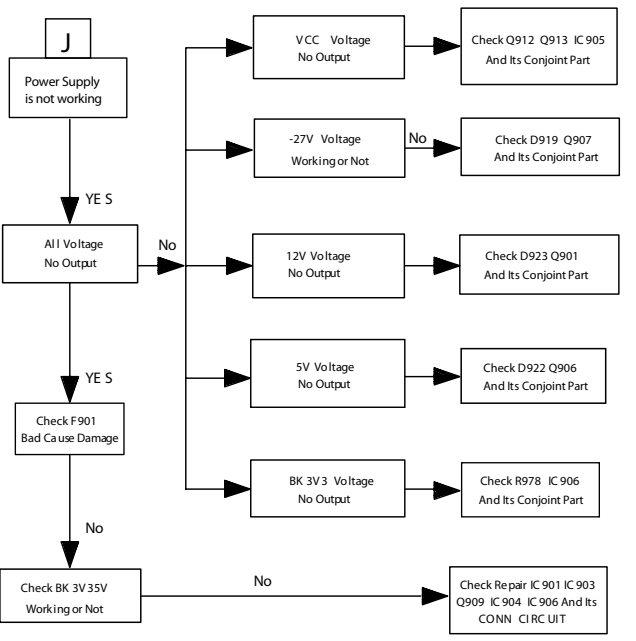
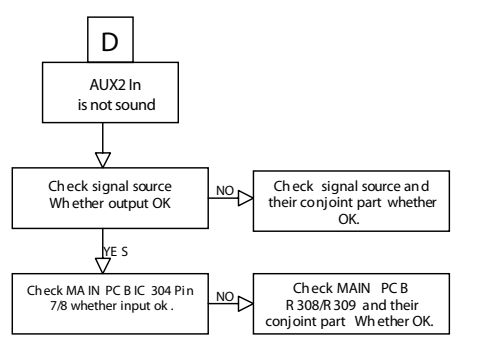
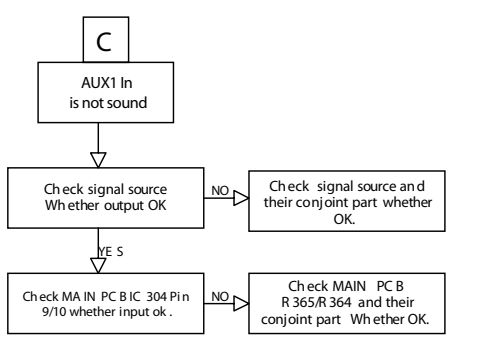
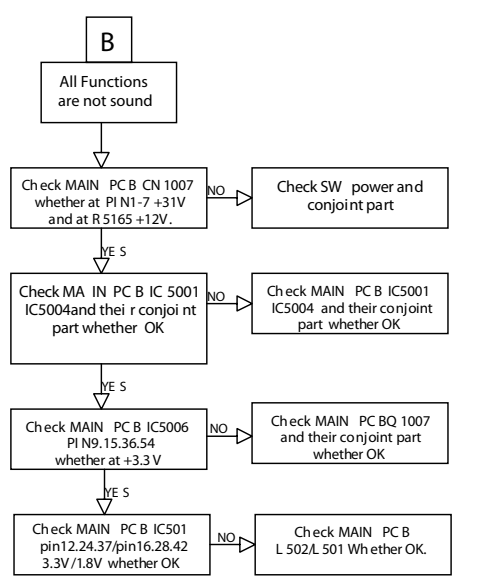
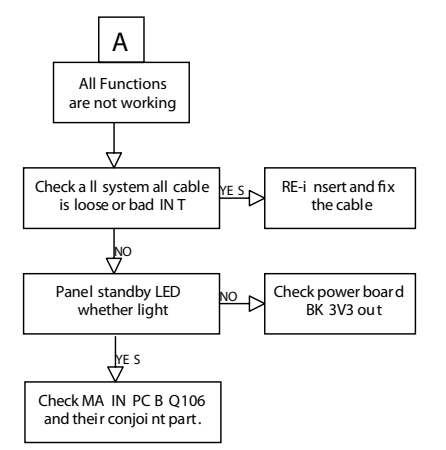
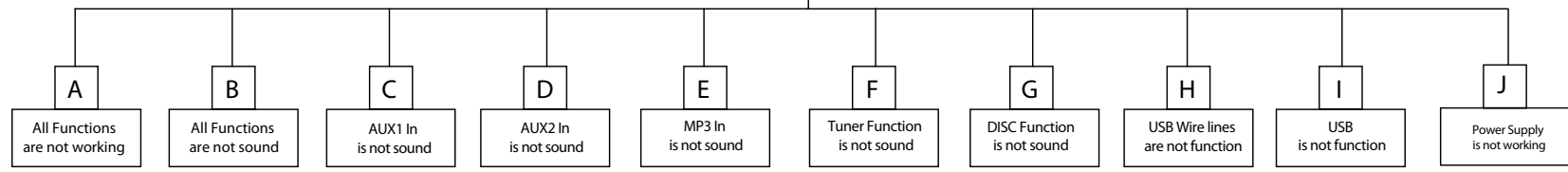
f) The set will shut down automatically when the software upgrade is completed.

6) How to replace the defective Blu-ray Loader

- a) Remove the defective Blu-ray Loader.
- b) Remove the shield cover at the top of Blu-ray Loader as shown below.



MAIN UNIT REPAIR CHART



DISASSEMBLY INSTRUCTIONS

Dismantling of the Top Cover

- 1) Loosen 2 screws "A" at the back panel to remove the top cover as shown in figure 1.

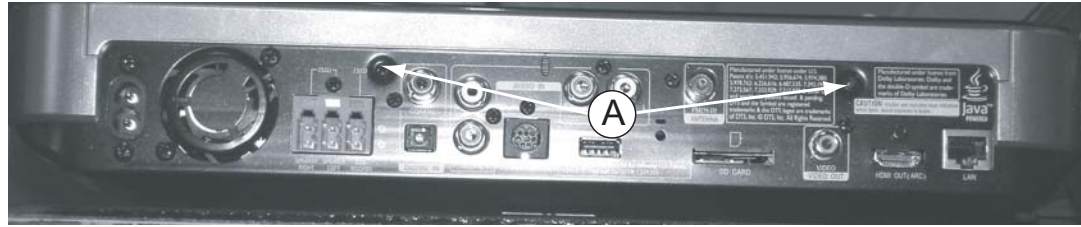


Figure 1

Dismantling of the Tune AUX in Board

- 1) Loosen 2 screws "B" at the back panel to remove the Tune AUX in Board as shown in figure 2.

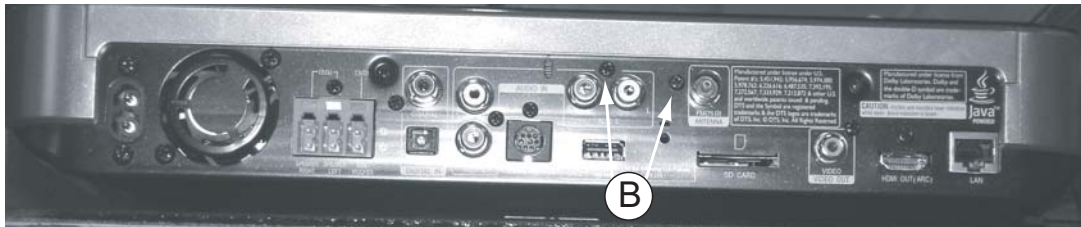


Figure 2

Dismantling of the Main Board

- 1) Loosen 4 screws "C" at the back panel as shown in figure 3.
- 2) Loosen 3 screws "D" on the top of Main Board as shown in figure 4.



Figure 3

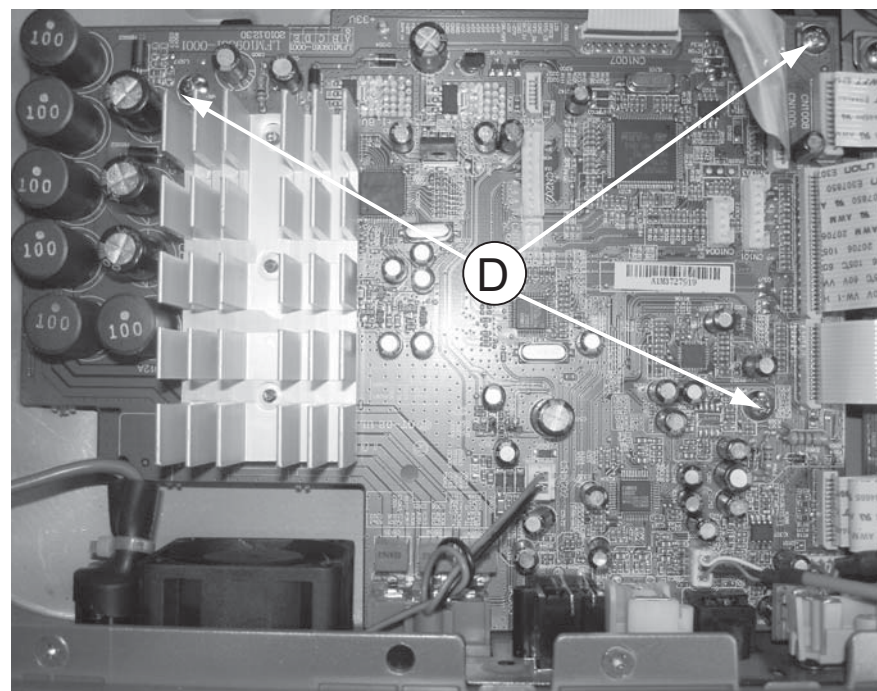


Figure 4

Dismantling of the BD Board

- 1) Loosen 2 screws "E" at the back panel as shown in figure 5.
- 2) Loosen 2 screws "F" on the top of BD Board as shown in figure 6.

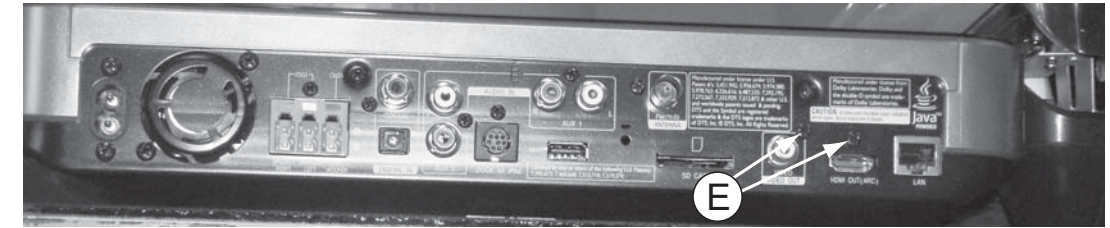


Figure 5

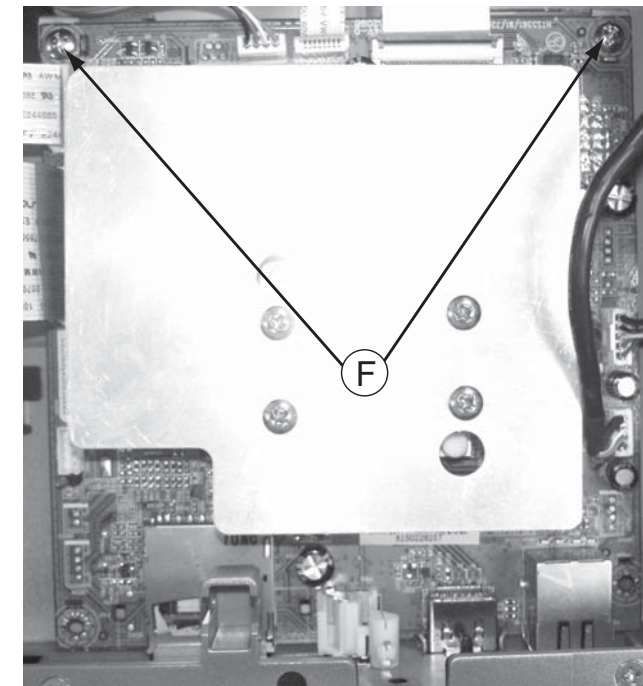


Figure 6

Dismantling of the DVD Module

- 1) Loosen 4 screws "G" at the DVD Module as shown in figure 7, then use hands according marking in figure 8 to remove the DVD Door as shown in figure 8. Tray Cover
- 2) According marking in figure 9 widershins circumrotate gear wheel to open the DISC as shown in figure 9.

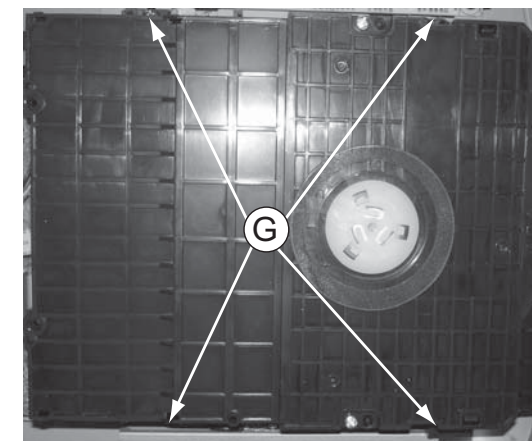


Figure 7



Figure 8



Figure 9

Dismantling of the IR Board

- 1) Loosen 1 screw "H" as shown in figure 10.
- 2) Loosen 1 screw "I" on the top of IR Board as shown in figure 11.

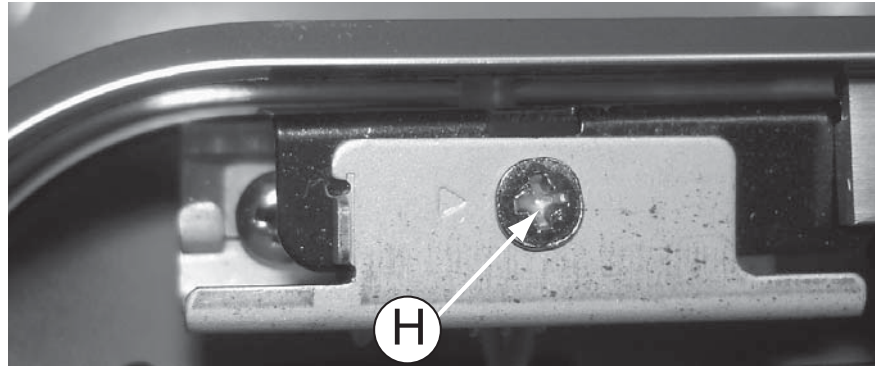


Figure 10

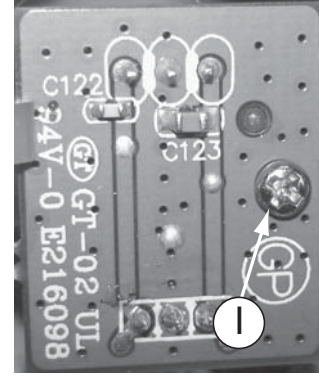


Figure 11

Dismantling of the VFD Board

- 1) Loosen 4 screws "J" as shown in figure 12.
- 2) Loosen 2 screws "K" to remove VFD Board as shown in figure 13.

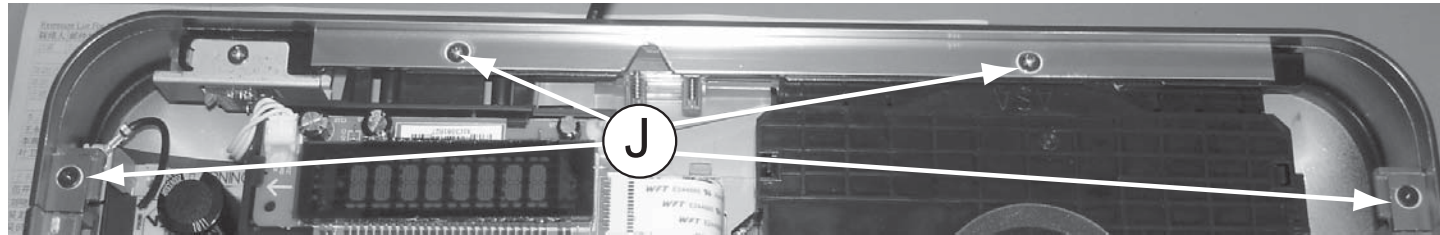


Figure 12

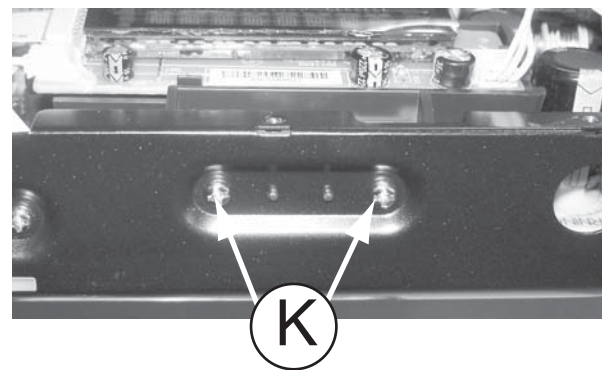


Figure 13

Dismantling of the MP3 Board

- 1) Loosen 2 screws "L" on the top of MP3 Board as shown in figure 14.

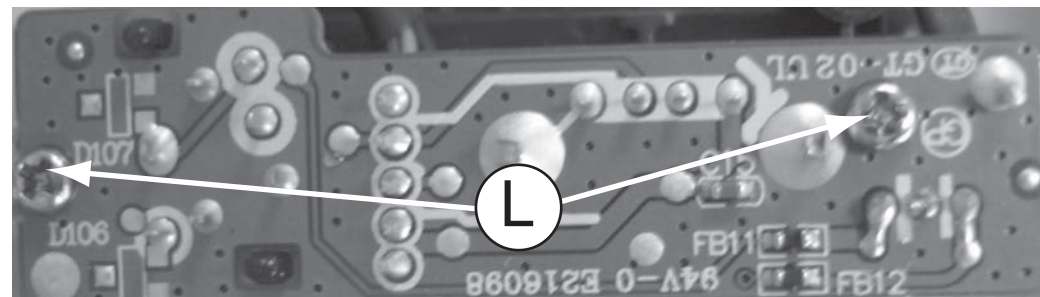


Figure 14

Dismantling of the Power Board

- 1) Loosen 5 screws "M" on the top of Power Board as shown in figure 15.
- 2) Using a noise plier to press the rubber space tightly, then you can take the power board out from the main unit as shown in figure 16.

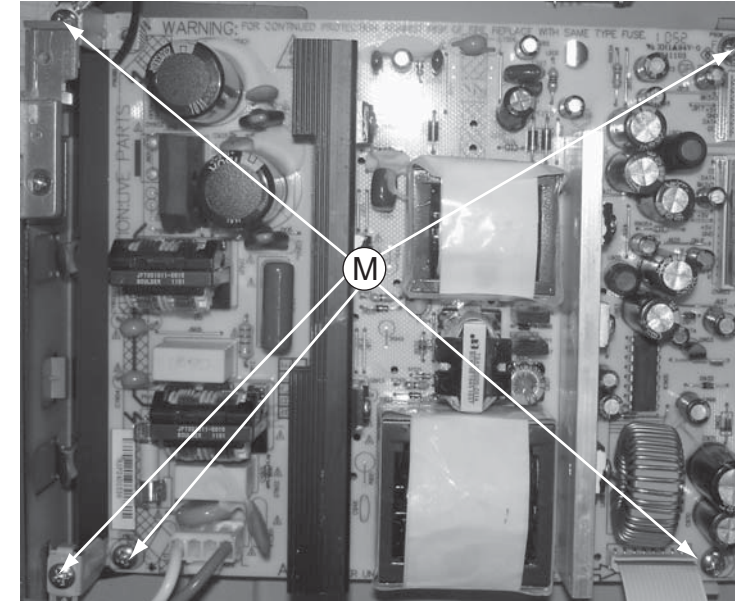


Figure 15

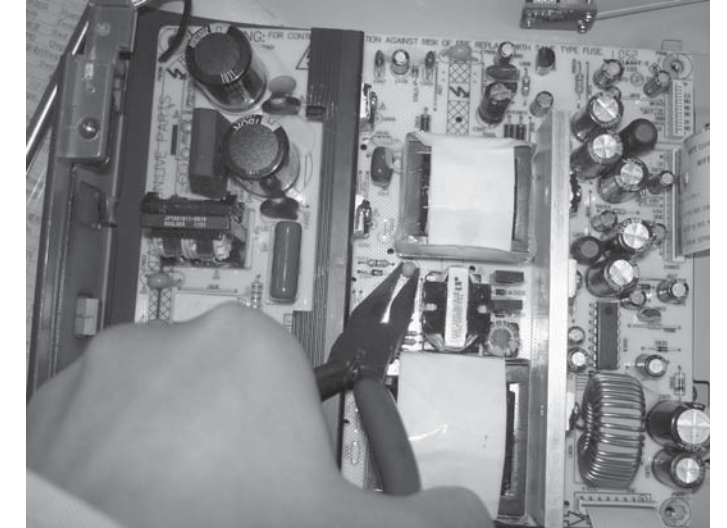


Figure 16

Dismantling of the Touch Board

- 1) Loosen 3 screws "N" on the top of Touch Board as shown in figure 17.

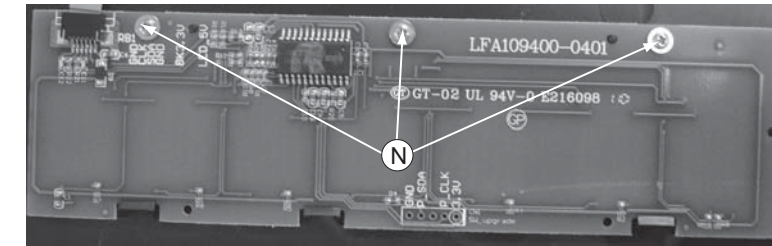
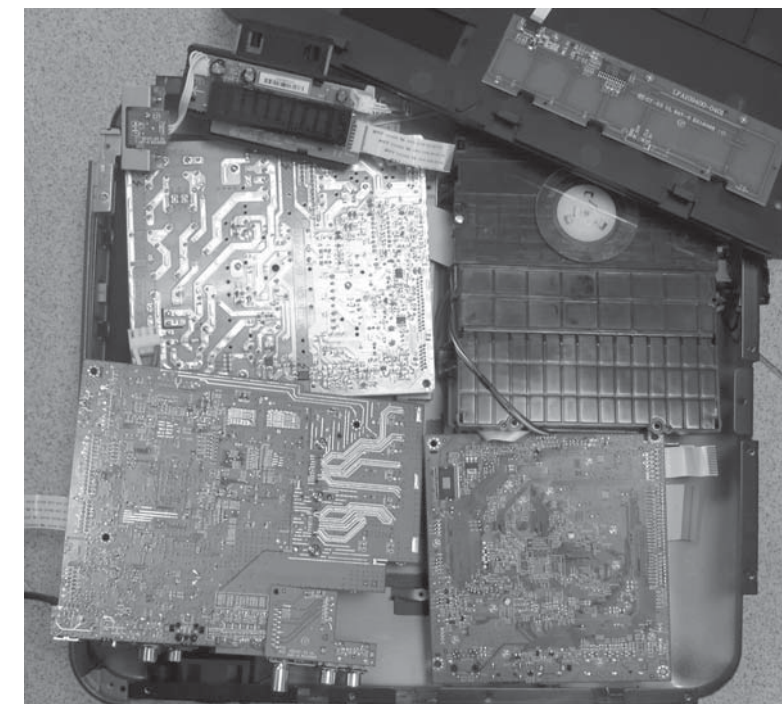
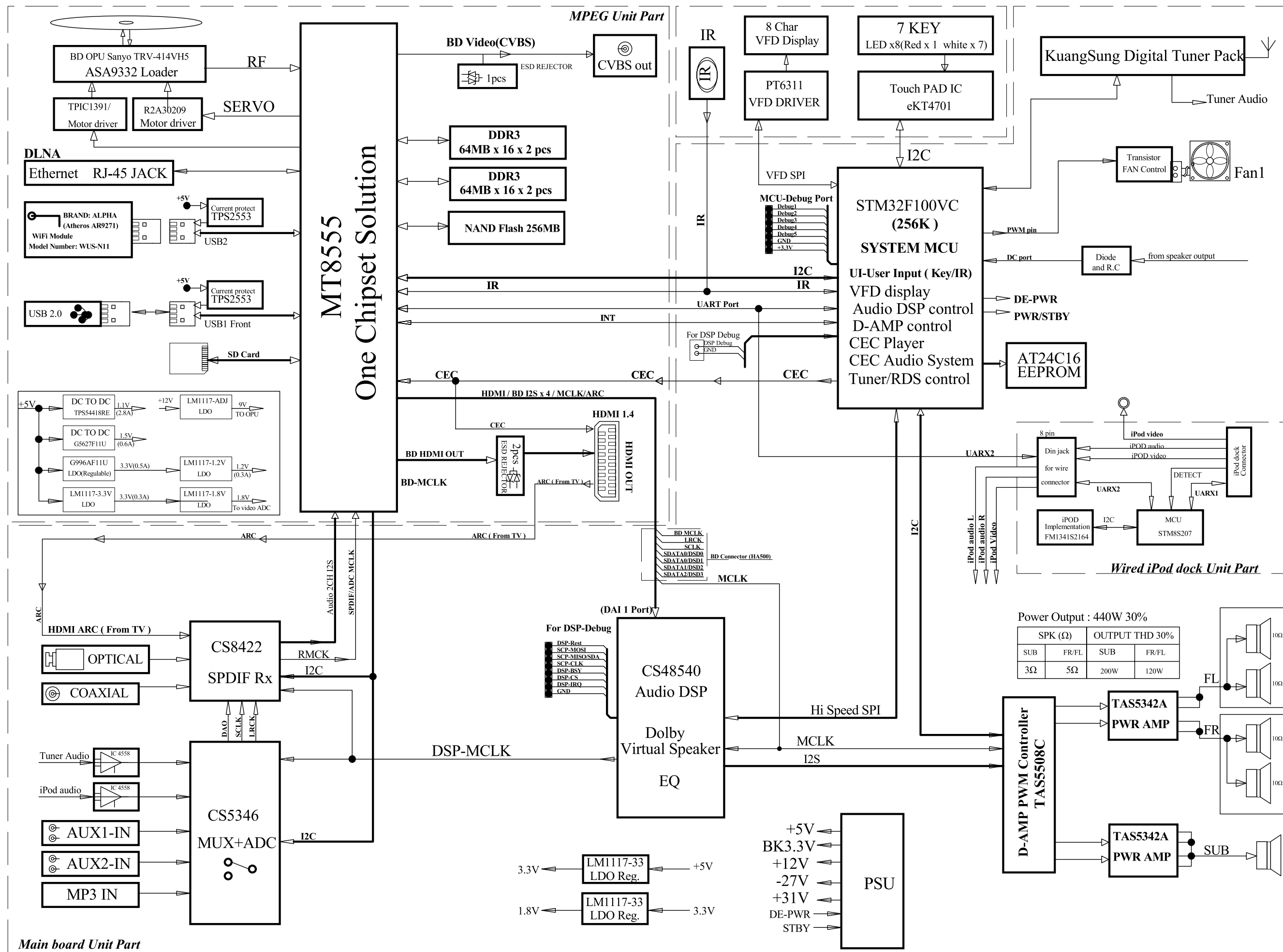


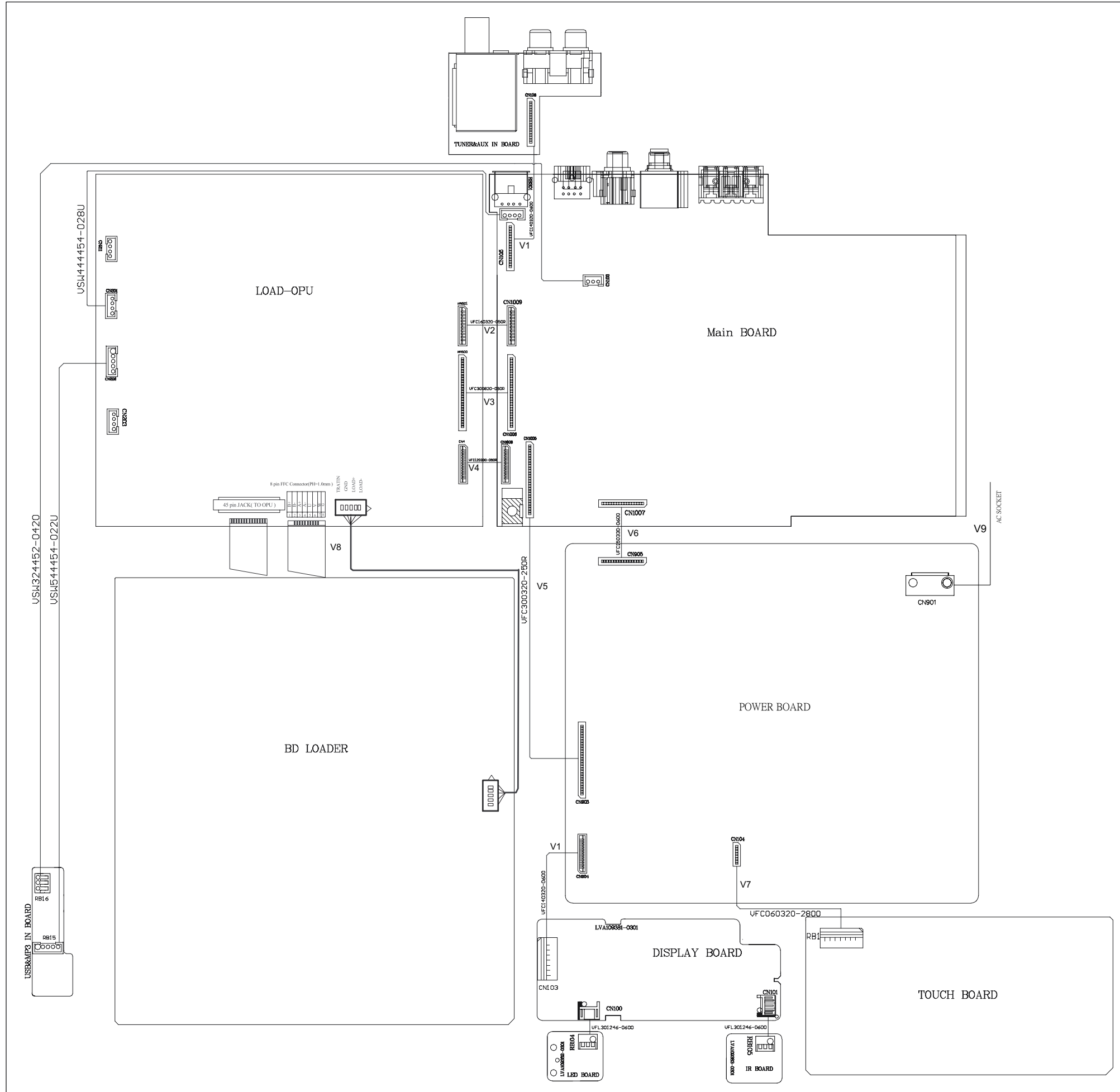
Figure 17

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.

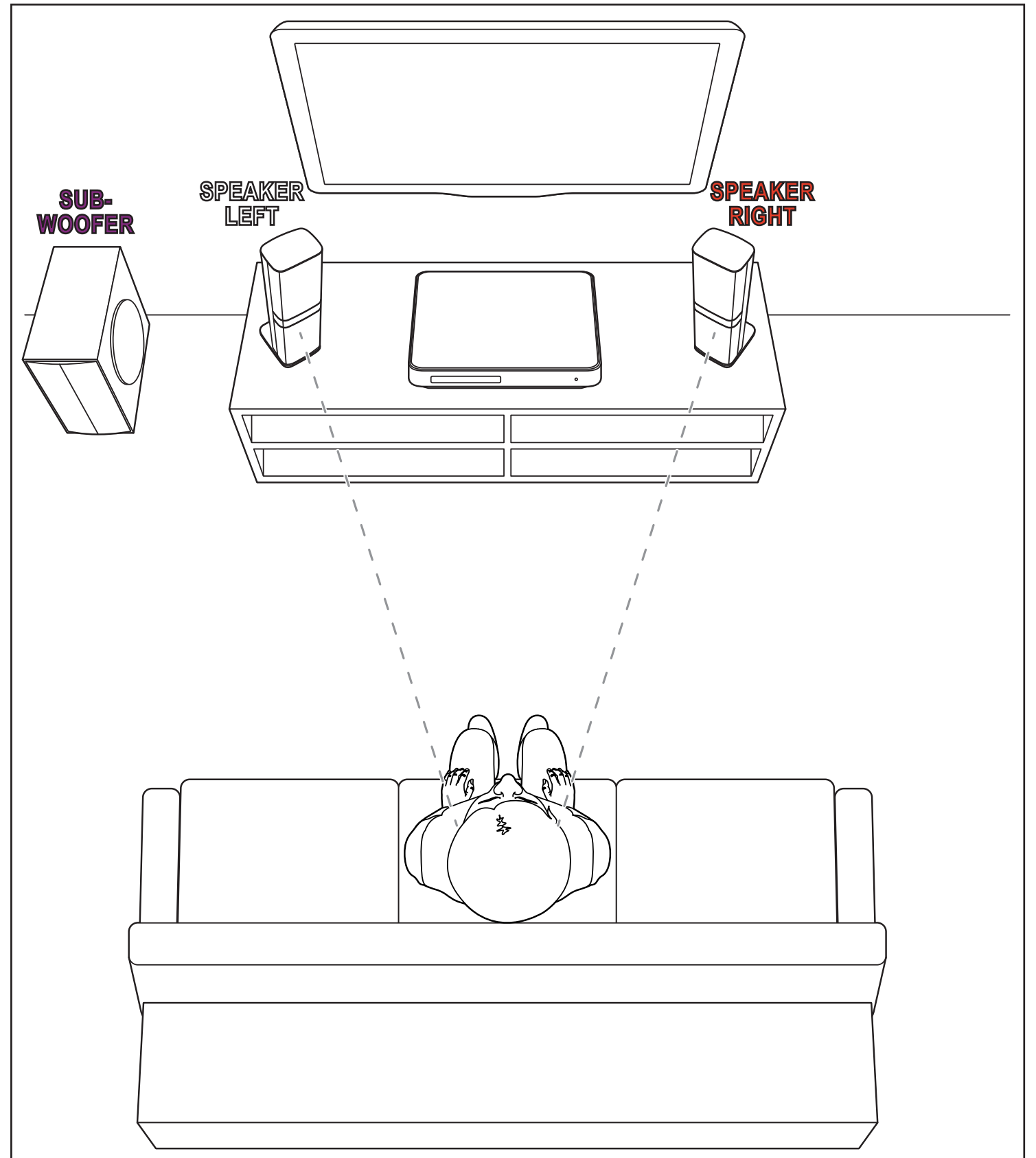
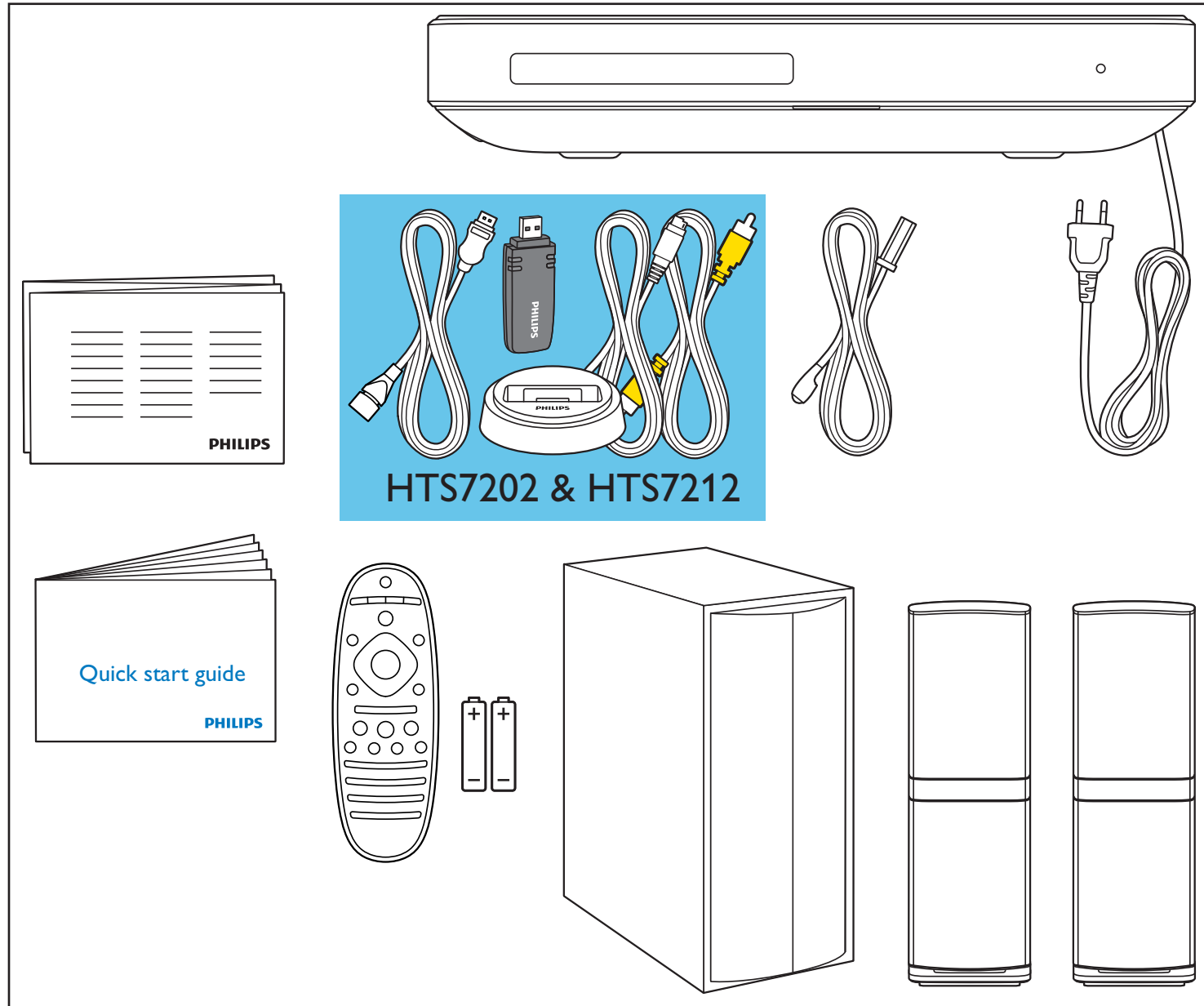


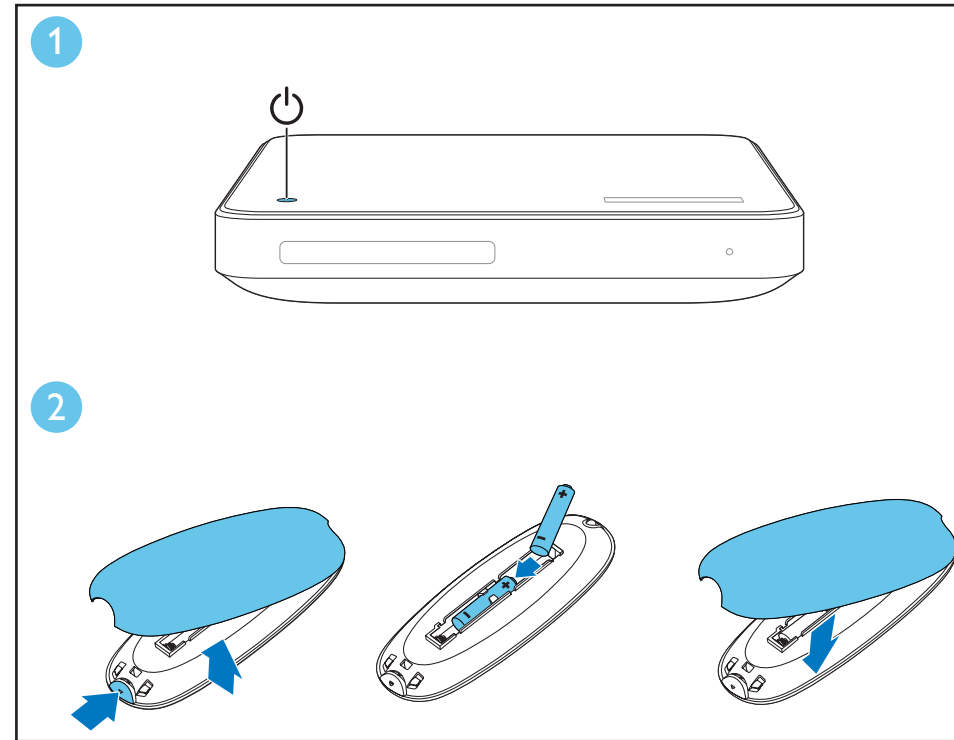
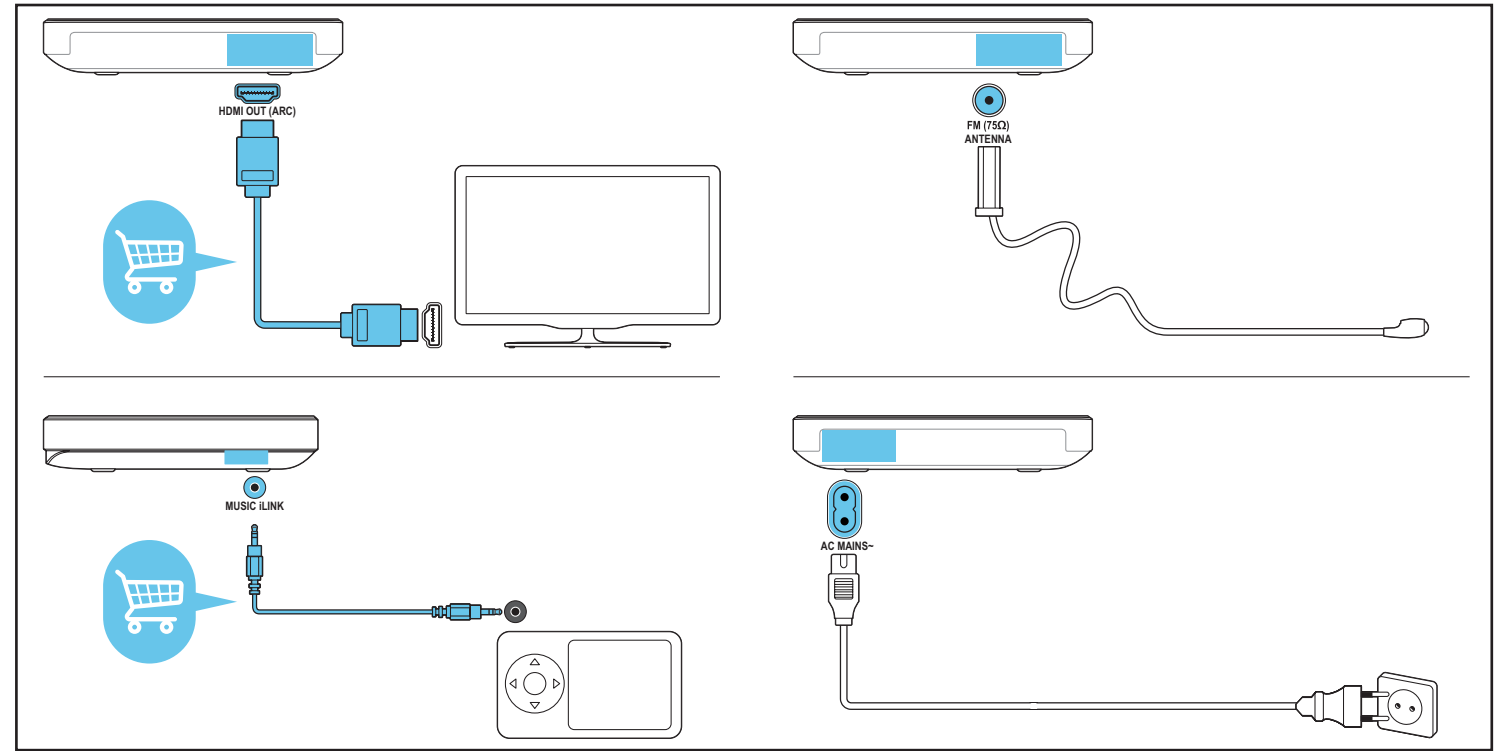
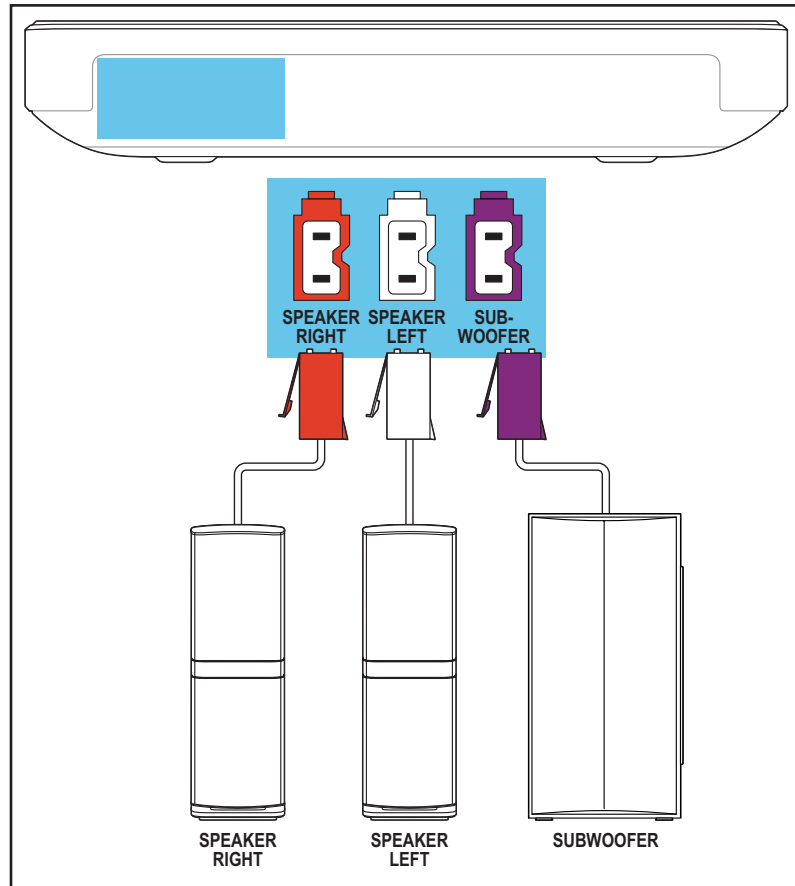
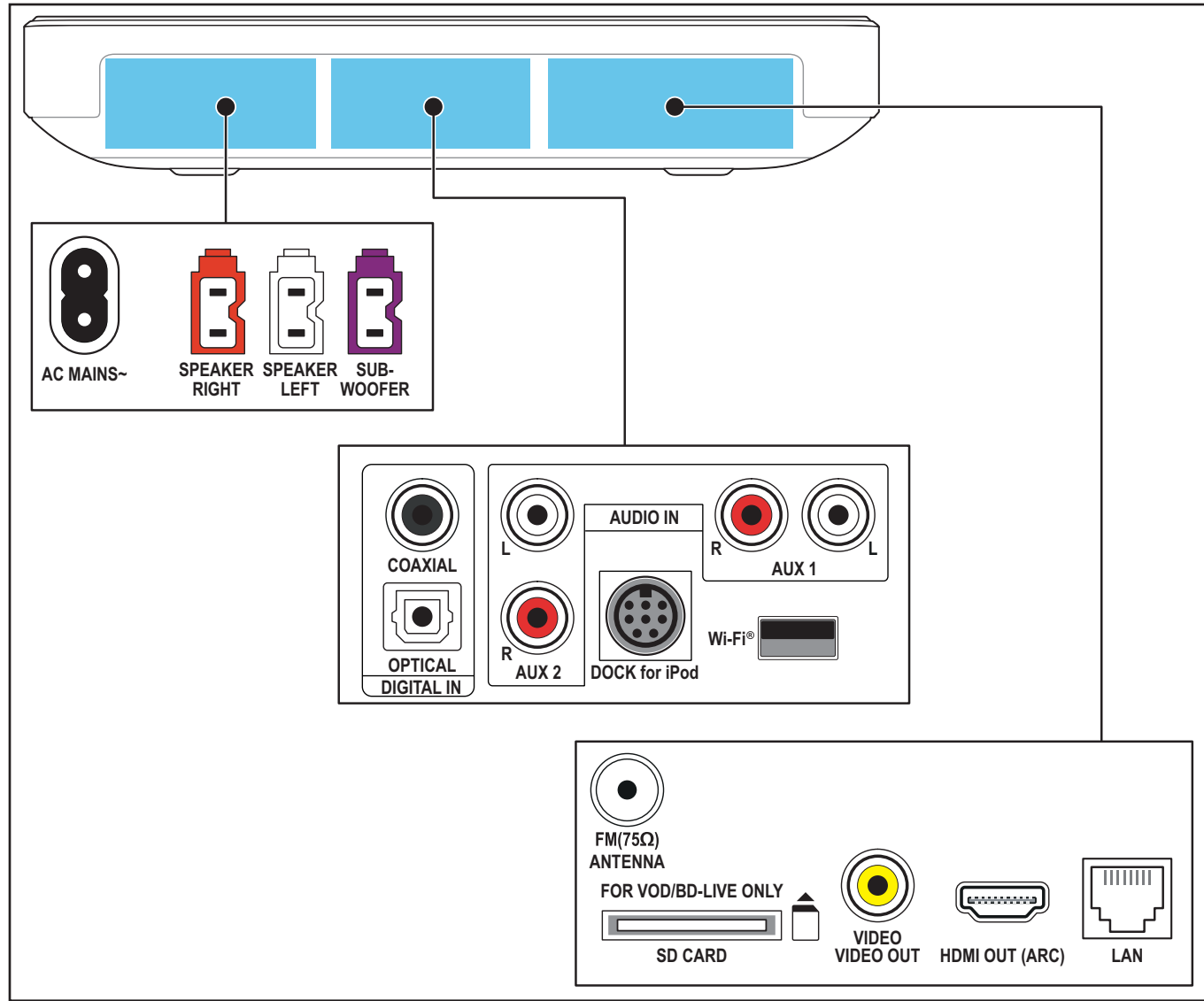


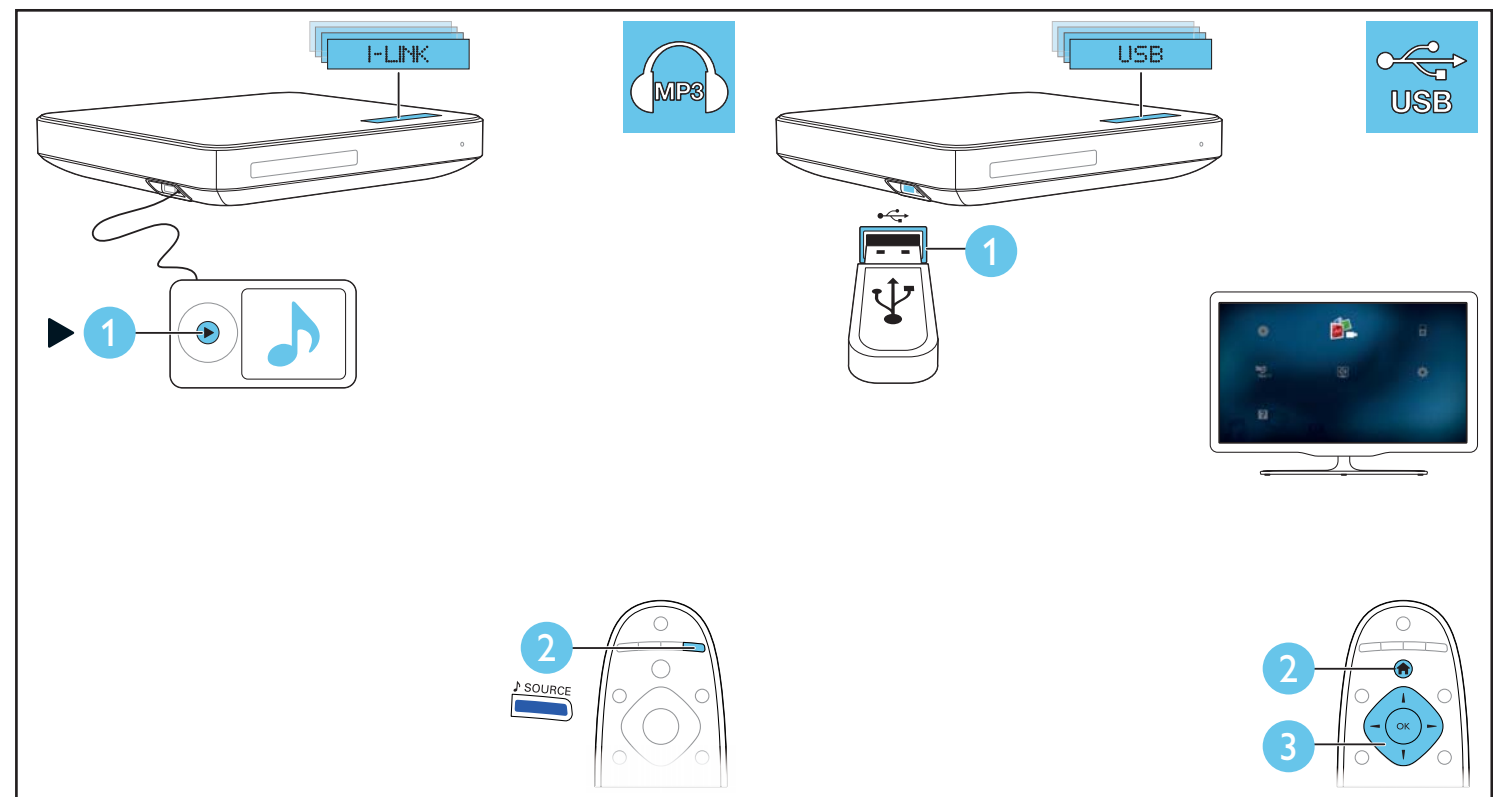
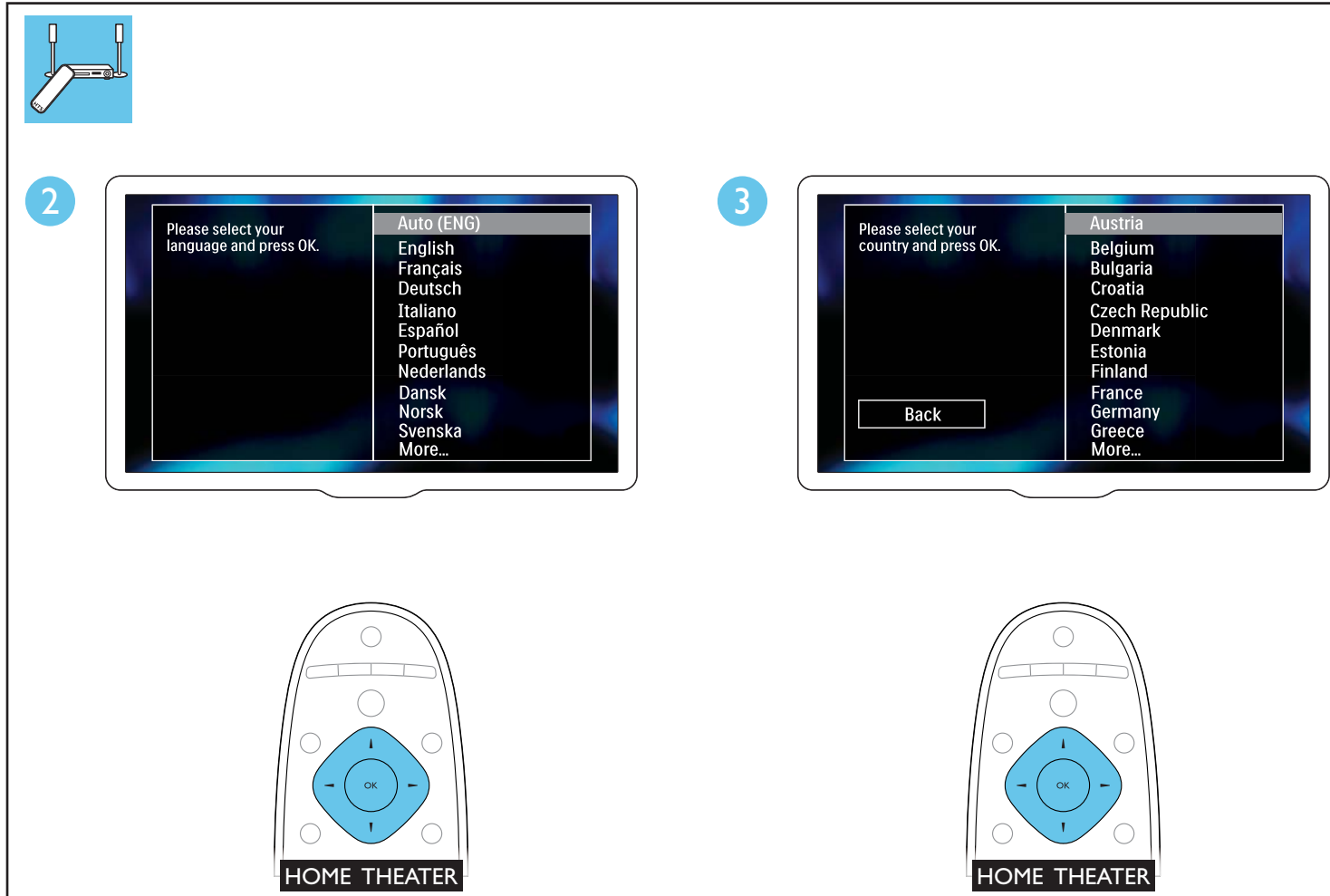
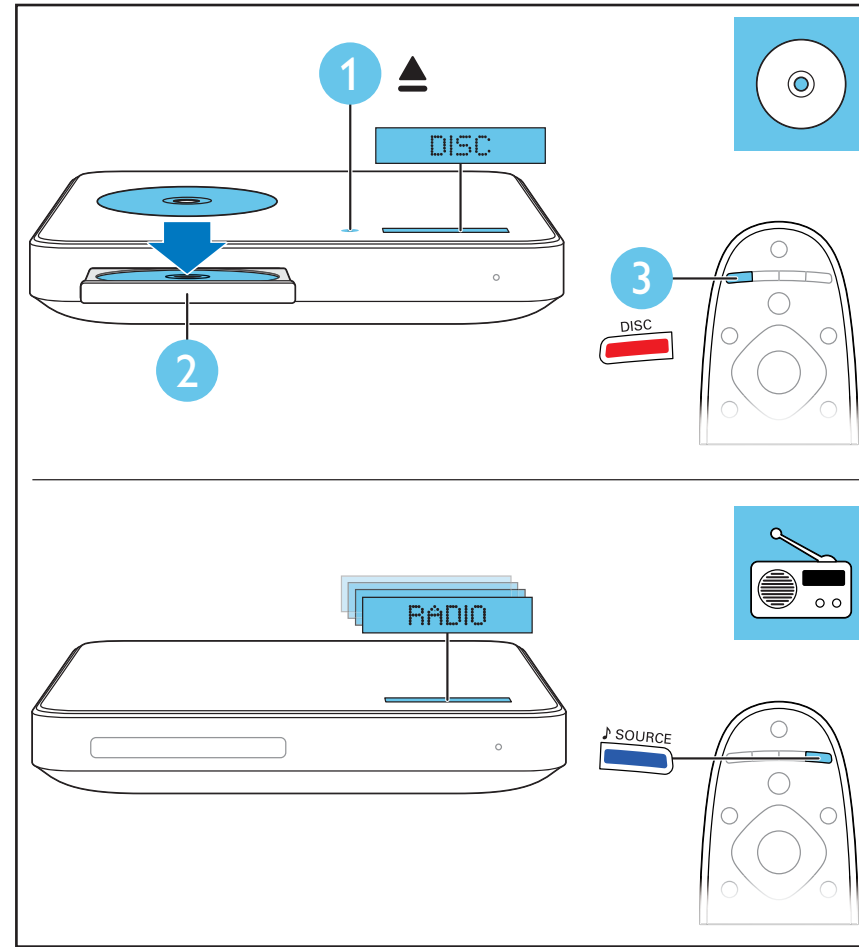
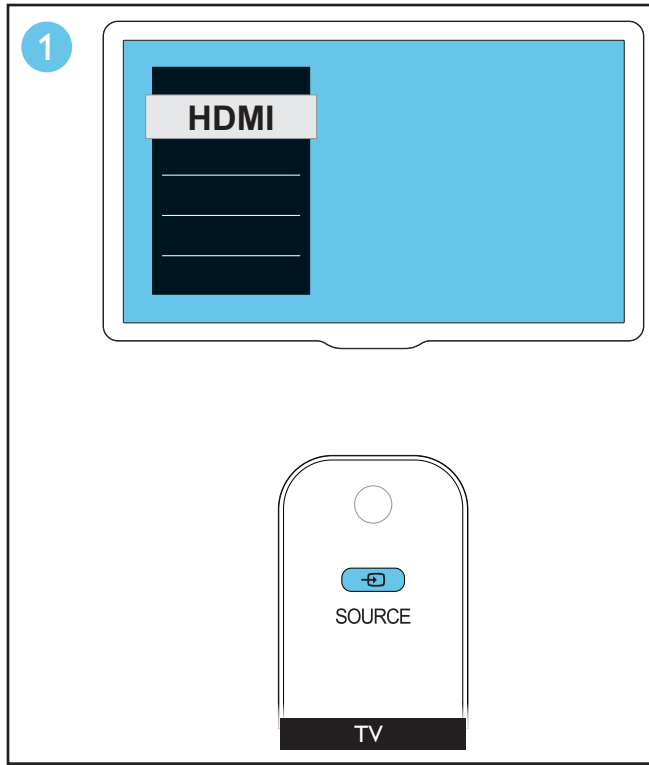
QUICK START GUIDE

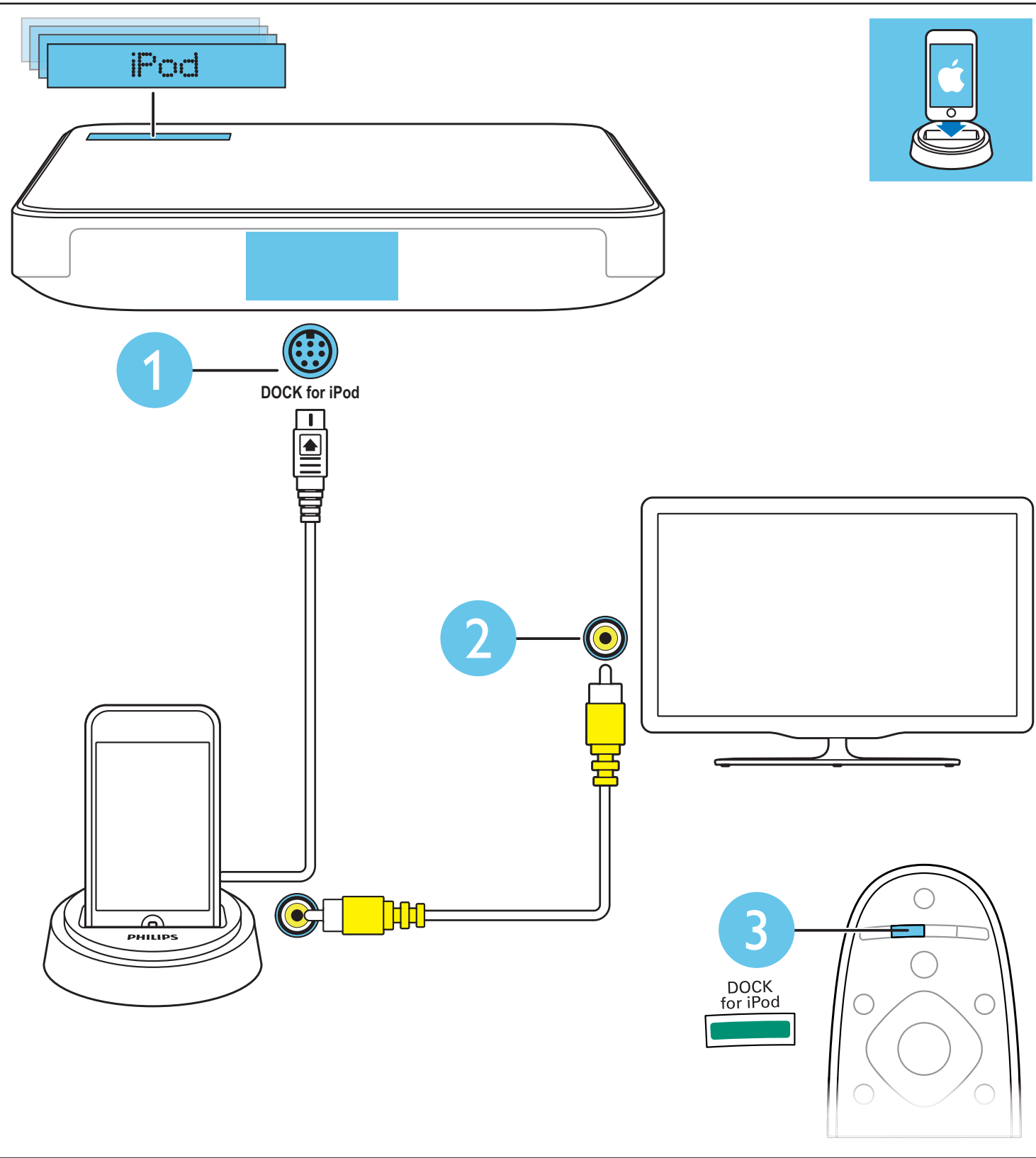
The following excerpt of the QSG/DFU serves as an introduction to the set.

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.







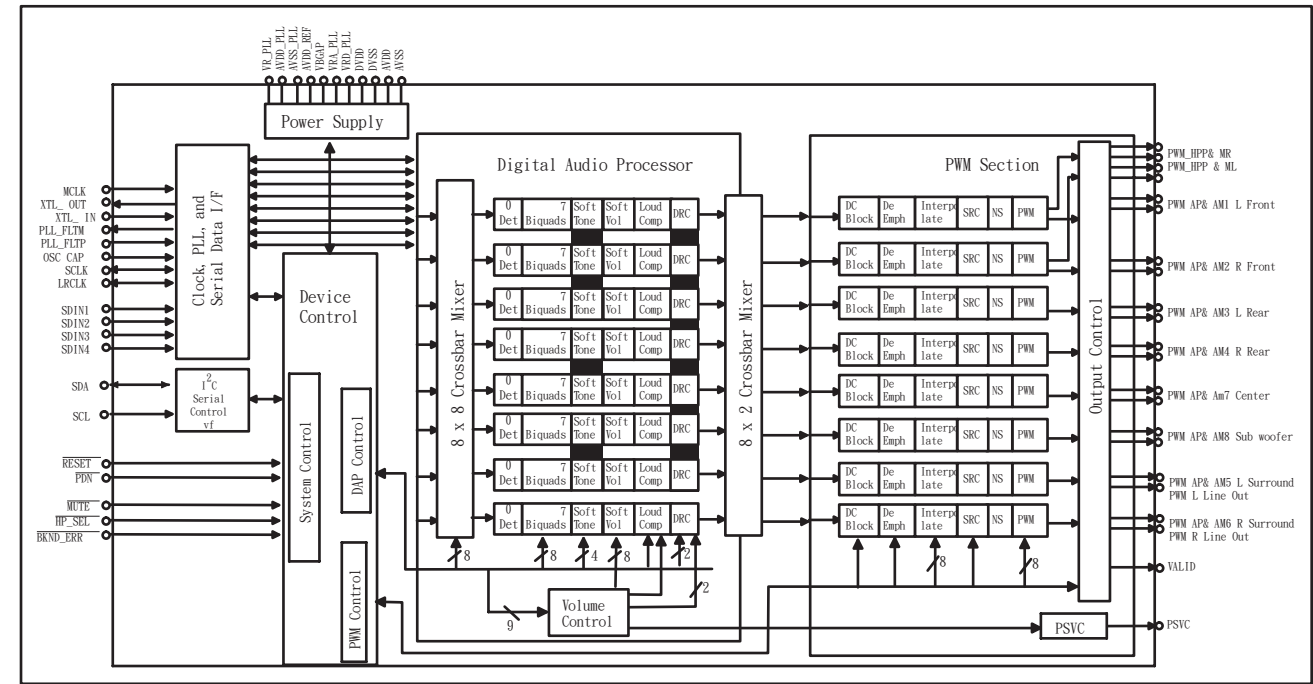


MAIN+MP3+IR+TUNE AUX IN BOARD

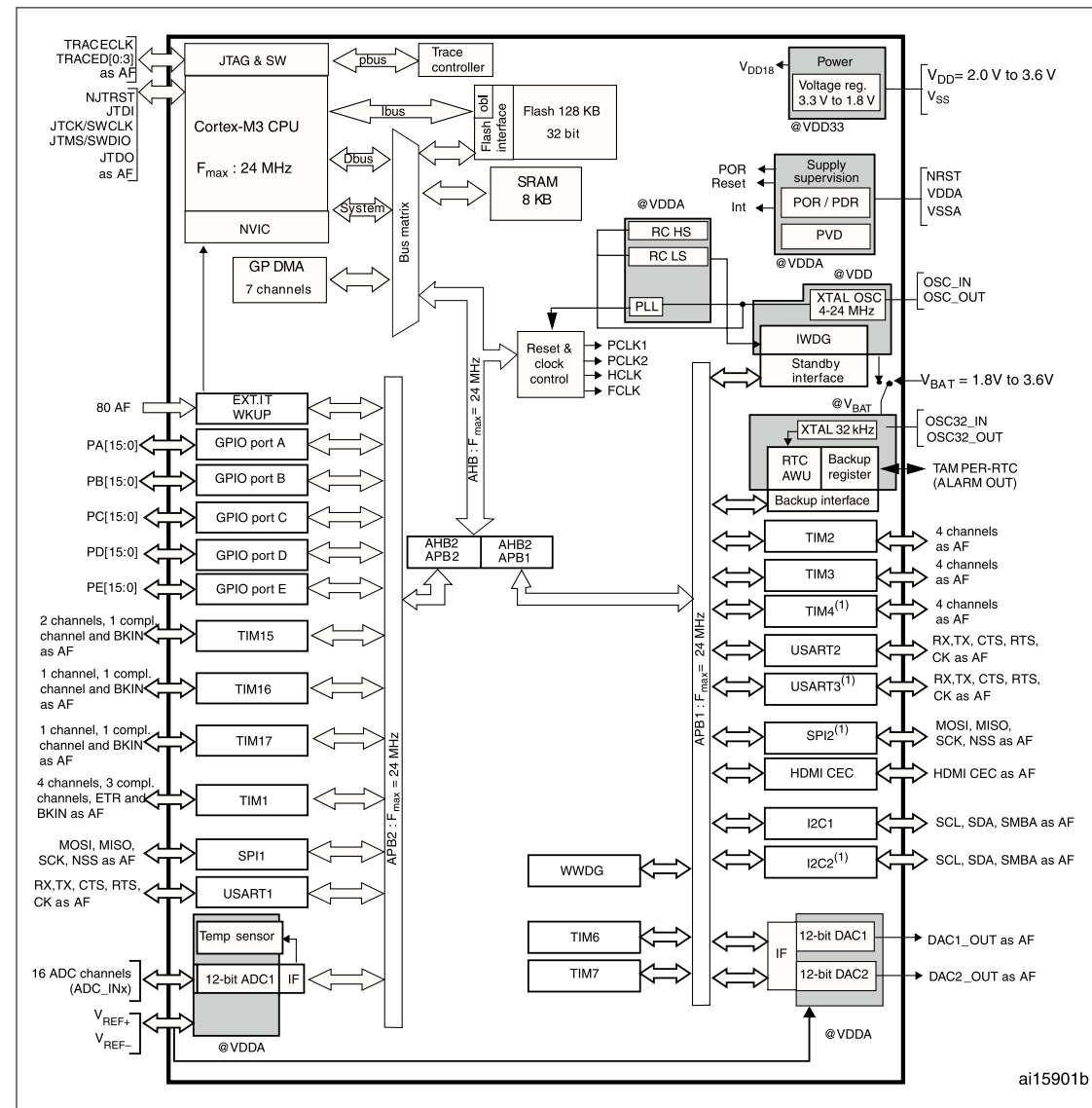
TABLE OF CONTENTS

Internal IC Diagram 6-1
 Circuit Diagram 6-2
 PCB Layout Top View 6-3
 PCB Layout Bottom View 6-4

INTERNAL IC DIAGRAM - TAS5508CPAG

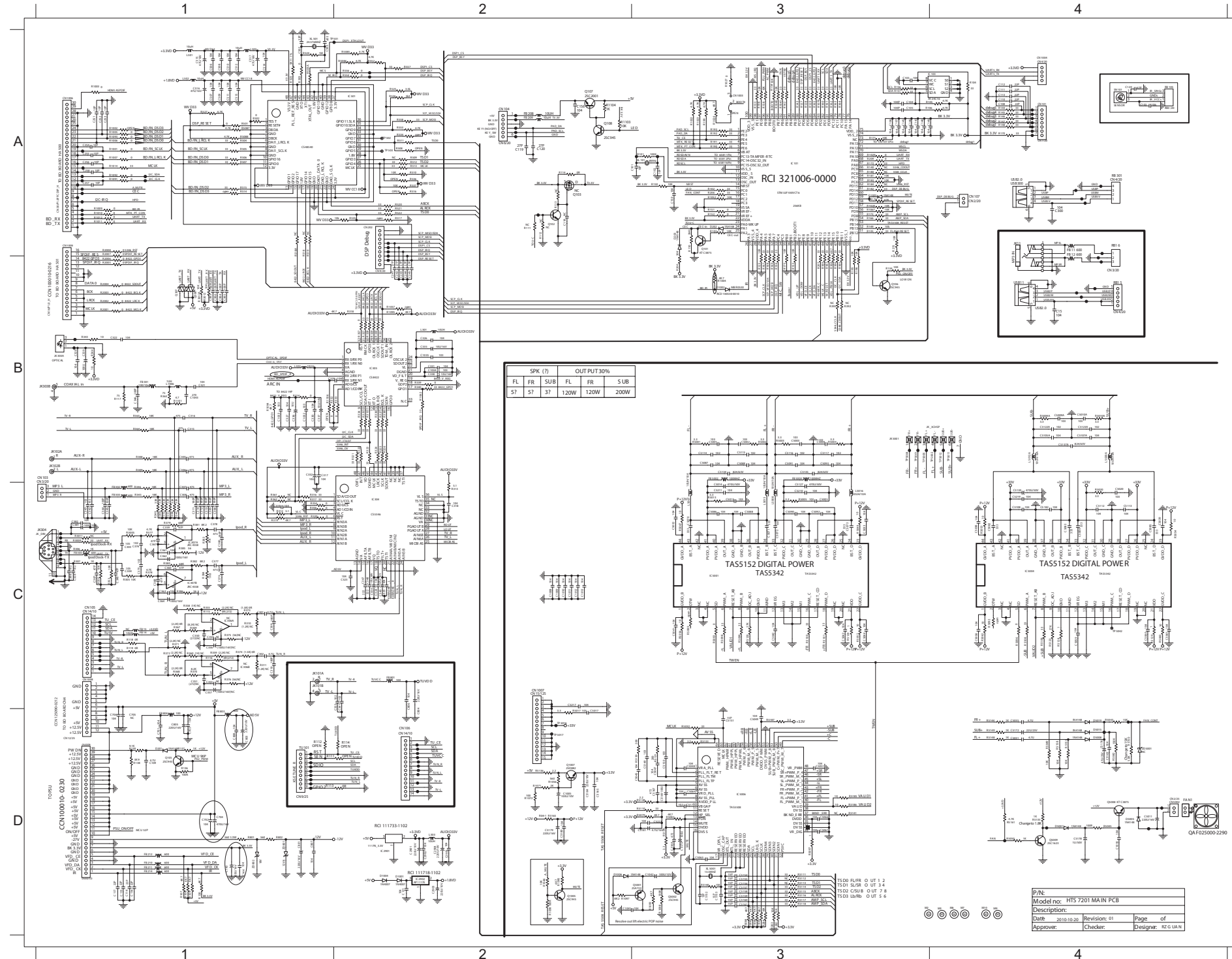


INTERNAL IC DIAGRAM - STM32F100VCT6



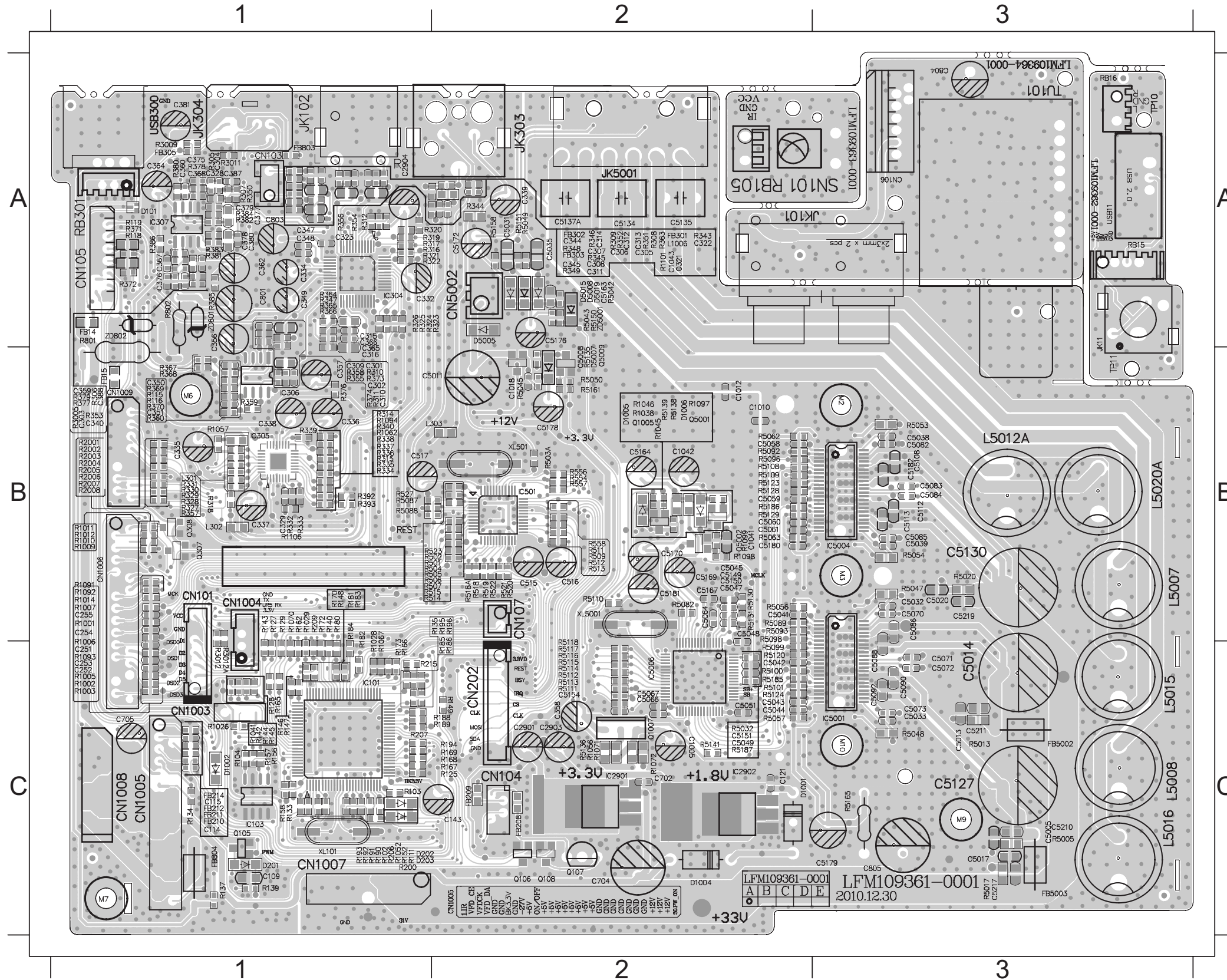
CIRCUIT DIAGRAM

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C1008 C2	C111 A4	C244 B2	C308 C1	C331 B2	C361 C1	C5002 B3	C5045 D3	C5085 C4	C5123AB4	C5163 D4	C703 D1	CN202 A2	FB214 D1	JK11 A4	Q108 A2	R1027 A3	R109 D1	R130 D1	R158 A3	R188 B3	R215 A3	R322 B2	R347 C1	R383 C1	R5047 C3	R5097 D3	R5131 D3	R524 A1	XL5001D3
C1009 C2	C112 A4	C245 B2	C309 C1	C332 B1	C362 C1	C5003 B3	C5047 D3	C5086 C3	C5127 C3	C5164 D2	C704 D1	CN5002D4	FB301 B1	JK303 B1	Q307 B1	R1028 A3	R1091 A1	R133 A3	R160 A3	R189 B3	R282 D3	R323 B2	R348 C1	R384 C1	R5048 C3	R5098 C3	R5133 D3	R525 A2	XL501 A1
C101 A3	C113 A4	C251 A1	C310 C1	C333 C2	C363 B1	C5004 B3	C5048 D3	C5087 B3	C513 A1	C5165 D2	C705 D1	D1001 D2	FB302 C1	JK304 C1	Q308 B1	R1029 A3	R1092 A1	R134 B3	R161 A3	R190 A3	R283 D3	R324 B2	R349 C1	R385 C1	R5049 D4	R5099 C3	R5135 D4	R526 A2	ZD801 D1
C1010 C2	C114 D1	C252 A1	C311 C1	C334 C2	C364 C1	C5005 C3	C5049 D3	C5088 C3	C5130 C4	C5167 D3	C706 D1	D1002 B3	FB303 C1	JK5001B3	Q5001 D3	R103 A3	R1093 A1	R135 A3	R162 A3	R191 A3	R284 D3	R325 B2	R350 C1	R386 C1	R505 A1	R510 A2	R5136 D2	R527 A1	ZD802 D1
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C1012 C2	C116 D1	C254 A1	C313 C1	C336 B1	C366 C1	C5010AB4	C5058 C4	C509 A1	C5135 B3	C5169 D3	C803 D1	D1005 A3	FB5002B3	L301 B2	Q5008 D4	R104 A4	R1095 B2	R137 D1	R164 A3	R193 A3	R3009 C1	R327 B2	R352 C1	R5002 B3	R5053 C4	R5101 C3	R5139 D2	R537 A2	
C1013 C2	C117 D1	C255 A1	C314 C1	C337 B1	C367 C1	C5011 D4	C5059 C4	C5090 C3	C5137AB4	C517 A1	C804 C2	D1006 D2	FB5003B3	L302 B1	Q5009 D4	R1040 A3	R1097 D2	R138 D1	R165 A3	R194 B3	R3012 B1	R328 B2	R353 C1	R5003 B3	R5054 C4	R5108 C4	R5140 D3	R552 A2	
C102 A3	C119 A2	C256 A1	C315 B1	C338 B2	C368 C1	C5013 C3	C506 A1	C5091 B3	C514 A1	C5170 D3	C805 D1	D201 D1	FB801 C2	L303 D2	R1001 A1	R1041 A3	R1098 D3	R139 D1	R166 A3	R195 B3	R3012AB1	R329 B2	R354 C1	R5004 B3	R5056 C3	R5109 C4	R5144 D4	R553 A2	
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C1032 B1	C121 D2	C258 A1	C317 B1	C340 C1	C376 C1	C5017 C2	C5061 C4	C5093 B3	C515 A1	C5172 D4	C807 D1	D203 A3	FB804 D1	L5008 C3	R1004 B3	R1046 D2	R110 A3	R143 A3	R168 B3	R198 A3	R306 C1	R331 B2	R357 B2	R5009AB4	R506 A1	R5111 D3	R5149 D4	R556 A2	
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C105 A3	C15 B4	C302 C1	C325 C2	C348 C2	C384 B1	C5038 C4	C5072 C3	C5114 B3	C5157 D3	C5211 C3	CN101 A4	FB14 C1	IC5001C3	Q1005 D2	R1012 A1	R1067 A3	R118 C1	R151 A3	R181 A3	R2006 B1	R316 C1	R339 B2	R377 C1	R5032 D3	R5085 A2	R5123 C4	R5186 D3	RB301 A4	
C106 A3	C150 A3	C303 C1	C326 B2	C349 C2	C385 B1	C5039 C4	C5073 C3	C5115 B3	C5158 D3	C5212 C2	CN103 B1	FB208 A2	IC5004C4	Q1007 D2	R1014 A1	R107 D1	R119 C1	R152 A3	R182 A3	R2007 A1	R317 C1	R340 B2	R378 C1	R503A A1	R5086 A2	R5124 C3	R5187 D3	SN101 A4	
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C109 D1	C242 B2	C306 B1	C329 B2	C359 C1	C388 C1	C5043 C3	C5083 C4	C512 A1	C5160 D3	C701 D1	CN106 D2	FB211 D1	JK101 C1	Q106 B3	R1023 A3	R1072 D2	R128 A3	R156 A3	R186 B3	R207 B3	R320 C1	R345 C1	R381 C1	R5043 D4	R5093 C3	R513 A2	R522 A2	USB300A4	



PCB LAYOUT - TOP VIEW

C1005 C2 C255 B1 C312 A2 C338 B1 C366 A1 C5014 C3 C5048 B2 C5083 B3 C5149 B2 C5179 C3 CN1004B1 D1002 C1 FB210 C1 IC2902C2 L301 B1 Q307 B1 R1014 B1 R1070 B1 R125 C2 R148 B1 R181 B1 R2001 B1 R3012A C1 R322 A1 R337 B1 R354 A1 R382 A1 R5042 A2 R507 B2 R5115 C2 R5138 B2 R527 B1 XL101 C1
 C1010 B2 C2901 C2 C313 A2 C339 A2 C367 A1 C5017 C3 C5049 C2 C5084 B3 C515 B2 C5180 B2 CN1005C2 D1004 C2 FB211 C1 IC304 A1 L302 B1 Q308 B1 R102 C1 R1071 C2 R127 C1 R152 C1 R183 B1 R2003 B1 R306 B1 R324 A2 R339 B1 R357 B1 R384 A1 R5045 B2 R5087 B1 R5117 C2 R515 B2 R556 B2 XL501 B2
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 C143 C2 C307 A2 C332 A1 C359 B1 C387 A1 C5042 C2 C5070 B3 C5127 C3 C517 B1 C705 C1 CN106 A3 D5015 A2 FB803 A1 JK11 A3 Q1007 C2 R1007 B1 R1046 B2 R1101 A2 R143 B1 R168 C2 R193 C1 R209 B1 R317 A1 R332 B1 R349 A2 R377 B1 R502 B2 R5056 B2 R5108 B2 R513 B2 R5187 C2 RB301 A1
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 C254 B1 C311 A2 C337 B1 C365 A1 C5013 C3 C5047 B2 C5082 B3 C5137AA2 C5178 B2 C805 C3 D1001 C2 FB209 C2 IC2901C2 L1006 A2 Q108 C2 R1012 B1 R1067 B1 R119 A1 R147 C1 R173 B1 R200 C1 R3012 C1 R321 A1 R336 B1 R353 B1 R381 A1 R504 B2 R5063 B2 R5114 C2 R5136 C2 R523 B2 USB300 A1

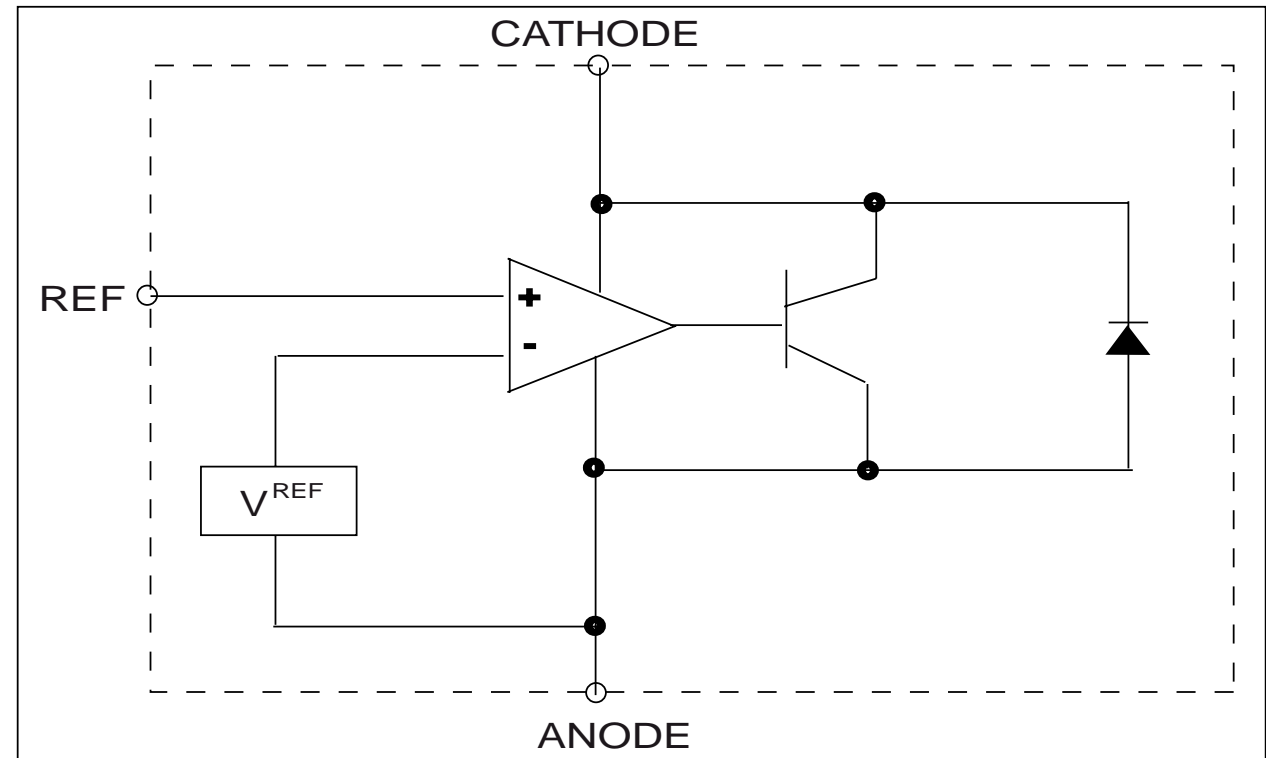


POWER BOARD

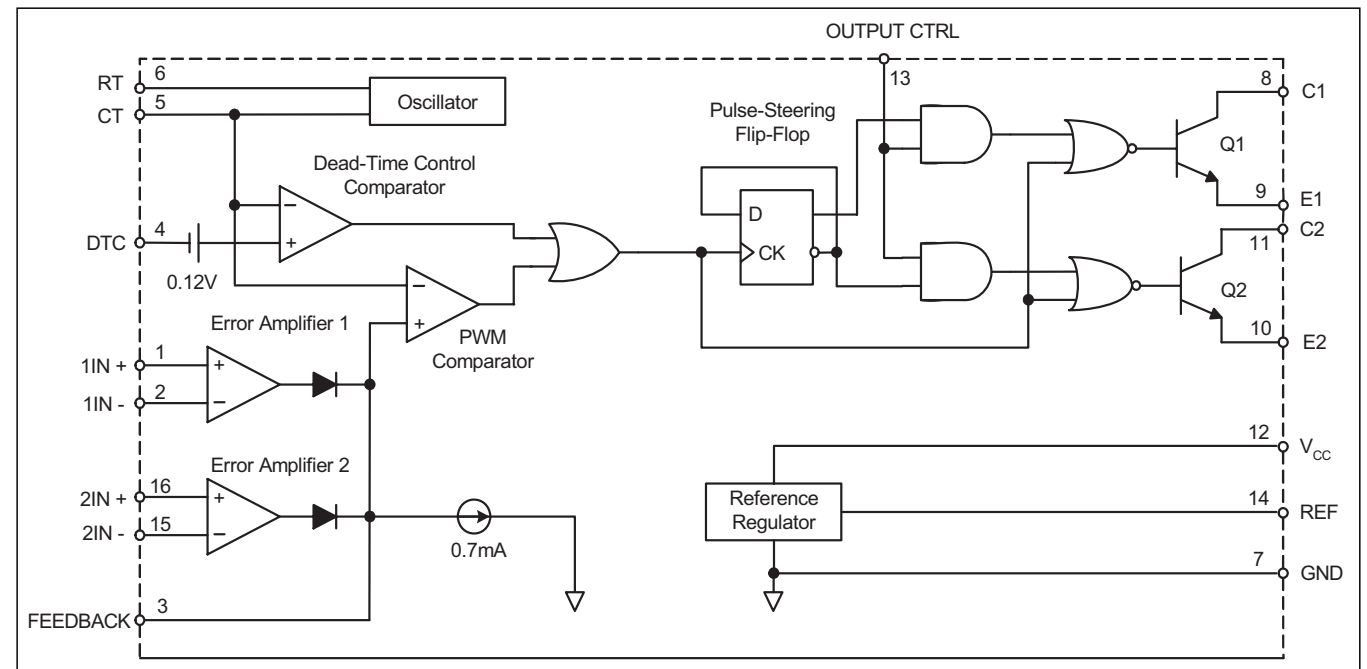
TABLE OF CONTENTS

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

INTERNAL IC DIAGRAM - AZ431

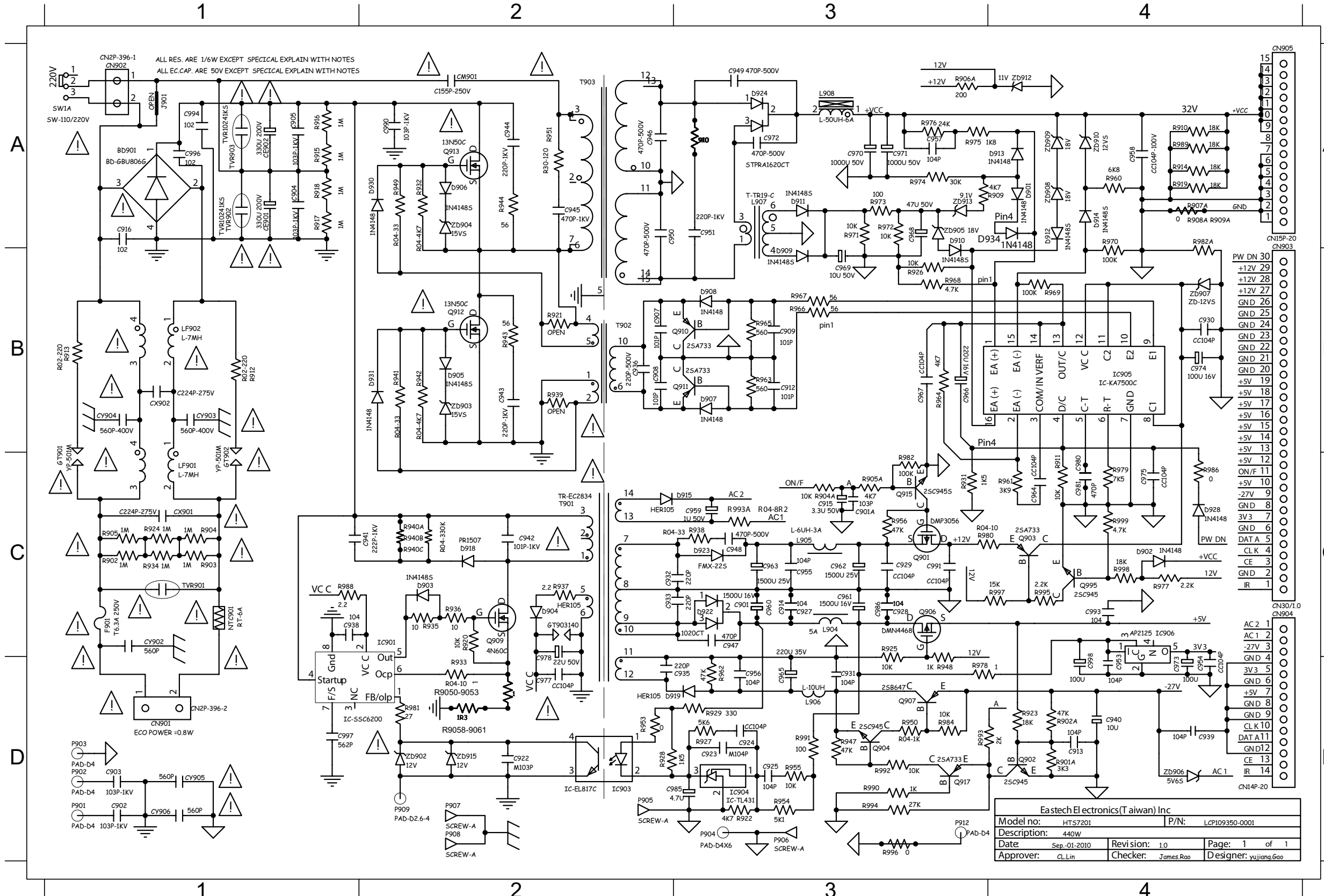


INTERNAL IC DIAGRAM - AZ7500BP



CIRCUIT DIAGRAM

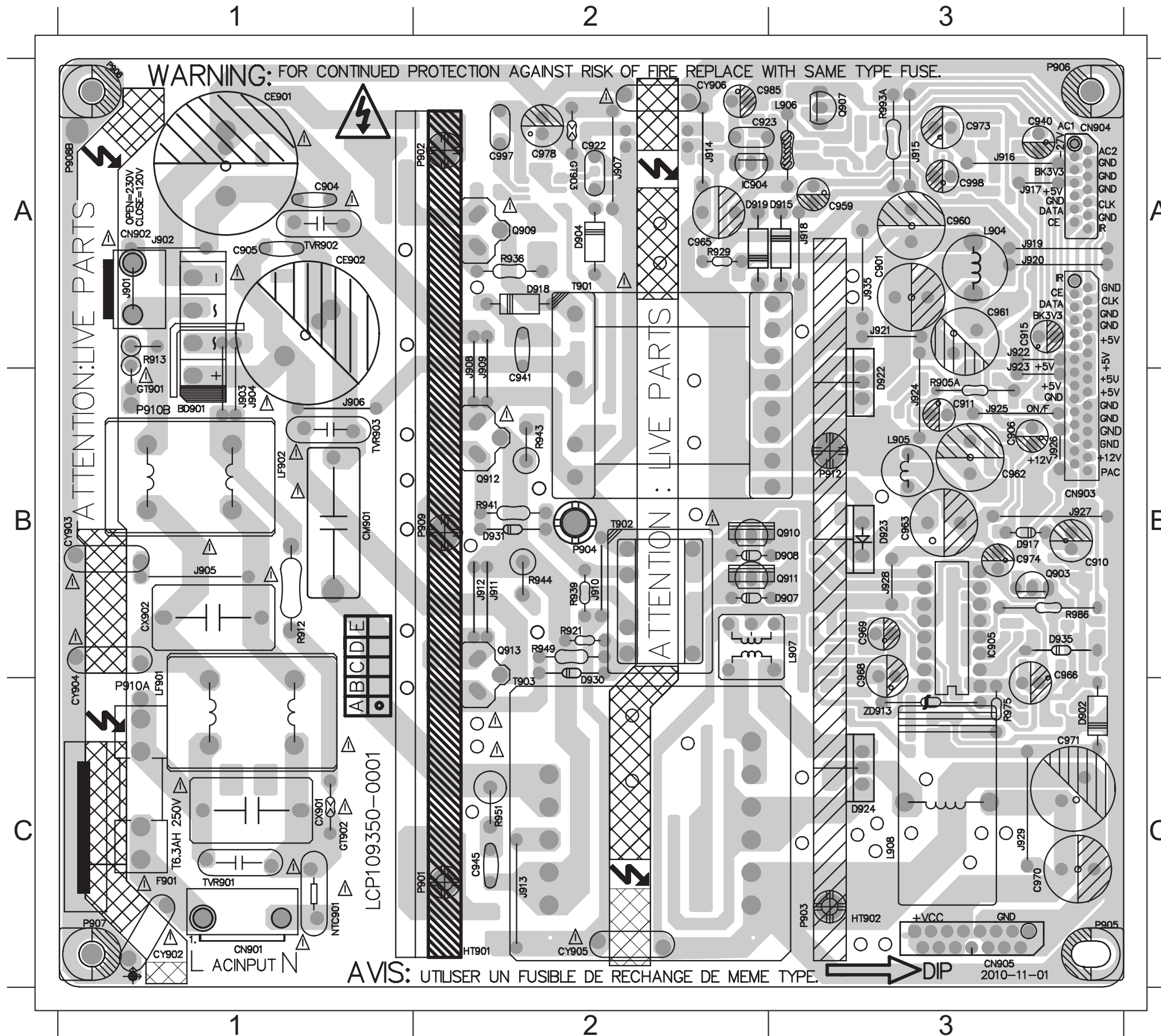
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 C901 C3 C924 D3 C941 C2 C957 A3 C968 A3 C981 C3 CM901A2 D902 C3 D913 A4 D934 A3 L906 D3 Q907 D3 R902A D4 R905A C3 R914 A4 R925 C3 R938 C3 R953 D2 R967 B3 R978 D3 R991 D3 T903 A2 ZD909 A4
 C901A C3 C925 D3 C946 A2 C958 A4 C969 B3 C985 D3 CN901 D1 D903 C2 D914 A4 F901 C1 L907 A3 Q909 C2 R903 C1 R9060 D2 R915 A1 R926 B3 R939 B2 R954 D3 R968 B3 R979 C3 R992 D3 TVR901 C1 ZD910 A4
 C902 D1 C927 C3 C947 C3 C959 C3 C970 A3 C986 C3 CN903 B4 D904 C2 D915 C3 GT902 B1 L908 A3 Q910 B3 R904 C1 R9061 D2 R916 A1 R927 D3 R940A C2 R955 D3 R969 B4 R980 C3 R993 D3 TVR902A1 ZD912 A4
 C903 D1 C928 C3 C948 C3 C960 C3 C971 A3 C990 A2 CN904 C3 D905 B2 D918 C2 GT903 C2 LF901 C1 Q911 B3 R904A C3 R906A A3 R917 A1 R928 D2 R940B C2 R956 C3 R970 A4 R981 D2 R993A C3 TVR903A1 ZD913 A3
 C904 A1 C929 C3 C949 A3 C961 C3 C972 A3 C991 C3 CN905 A4 D906 A2 D919 D3 IC901 C2 LF902 B1 Q912 B2 R905 C1 R907A A4 R918 A1 R929 D3 R940C C2 R960 A4 R971 A3 R982 C3 R995 C3 ZD902 D2
 C905 A1 C930 B4 C950 A2 C962 C3 C973 C3 C993 C3 CX901 C1 D907 B3 D922 C3 IC903 D2 NTC901 C1 Q913 A2 R9050 D2 R908A A4 R919 A4 R932 A2 R941 B2 R961 C3 R972 A3 R982A A4 R996 D3 ZD903 B2
 C913 D4 C931 D3 C951 A3 C963 C3 C974 B4 C994 A1 CX902 B1 D908 B3 D923 C3 IC904 D3 Q901 C3 Q915 C3 R9051 D2 R909 A3 R920 C2 R933 D2 R942 B2 R962 D3 R973 A3 R984 D3 R997 C3 ZD904 A2
 C914 C3 C936 B2 C953 C3 C964 C3 C975 C3 C997 D1 CY903 B1 D909 B3 D924 A3 IC905 B4 Q902 D4 Q917 D3 R9052 D2 R909A A4 R921 B2 R934 C1 R947 D3 R963 B3 R974 A3 R986 C3 R998 C3 ZD905 A3
 C915 C3 C938 C1 C954 C3 C965 D3 C977 D2 C998 C3 CY904 B1 D910 A3 D928 C3 IC906 C3 Q903 C3 Q995 C3 R9053 D2 R910 A4 R922 D3 R935 C2 R948 D3 R964 B3 R975 A3 R988 C1 R999 C3 ZD906 D4
 C922 D2 C939 D4 C955 C3 C966 B3 C978 C2 CE901 A1 CY905 D1 D911 A3 D930 A2 L904 C3 Q904 D3 R901A D4 R9058 D2 R911 C3 R923 D4 R936 C2 R949 A2 R965 B3 R976 A3 R989 A4 T901 C2 ZD907 B4



Eastech Electronics (Taiwan) Inc		
Model no:	HTS7201	P/N: LCP109350-0001
Description:	440W	
Date:	Sep-01-2010	Revision: 1.0
Approver:	CLLin	Checker: James Rao
		Designer: yujian.gao

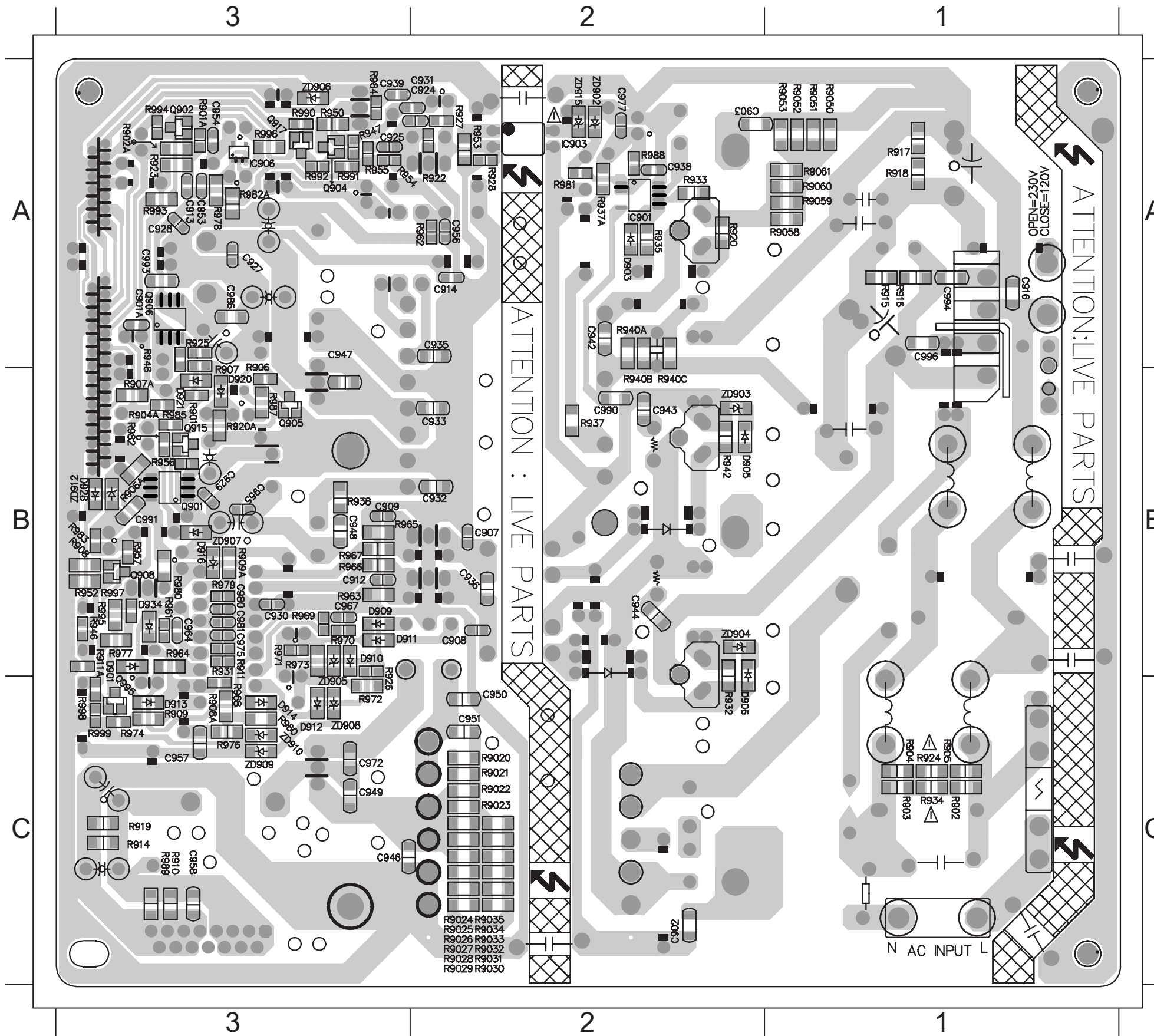
PCB LAYOUT - TOP VIEW

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 C901 A3 C915 A3 C960 A3 C968 B3 C985 A2 CN901 C1 CY903 B1 D904 A2 D919 A2 D935 B3 J903 B1 J909 A2 J915 A3 J921 A3 J927 B3 L906 A3 P908B A1 Q912 B2 R936 A2 R993A A3 TVR903B1
 C904 A1 C922 A2 C961 A3 C969 B3 C997 A2 CN903 B3 CY904 C1 D907 B3 D922 B3 F901 C1 J904 B1 J910 B2 J916 A3 J922 A3 J928 B3 L907 B3 Q903 B3 Q913 B2 R939 B2 T901 A2 ZD913 C3
 C905 A1 C923 A2 C962 B3 C970 C3 C998 A3 CN904 A3 CY905 C2 D908 B3 D923 B3 GT902 C1 J905 B1 J911 B2 J917 A3 J923 A3 J929 C3 L908 C3 Q907 A3 R905A B3 R941 B2 T902 B2
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 C910 B3 C941 B2 C965 A2 C974 B3 CE902 A1 CX901 C1 D902 C3 D917 B3 D930 C2 IC904 A2 J907 A2 J913 C2 J919 A3 J925 B3 L904 A3 LF902 B1 Q910 B3 R921 B2 R975 C3 TVR901C1



PCB LAYOUT - BOTTOM VIEW

C901A	A3	C928	A3	C947	A3	C956	A2	C977	A2	D905	B2	D916	B3	Q901	B3	Q995	C3	R9024	C2	R9030	C2	R905	C1	R9060	A1	R910	C3	R919	C3	R928	A2	R940B	B2	R953	A2	R963	B3	R971	B3	R980	B3	R988	A2	R997	B3	ZD907	B3
C902	C2	C929	B3	C948	B3	C957	C3	C980	B3	D906	C2	D920	B3	Q902	A3	R901	B3	R9025	C2	R9031	C2	R9050	A1	R9061	A1	R911	B3	R920	A2	R932	C2	R940C	B2	R954	A3	R964	B3	R972	C3	R981	A2	R989	C3	R998	C3	ZD908	C3
C903	A2	C930	B3	C949	C3	C958	C3	C981	B3	D909	B3	D921	B3	Q904	A3	R901A	A3	R9026	C2	R9032	C2	R9051	A1	R906A	B3	R911A	B3	R922	A2	R933	A2	R942	B2	R955	A3	R965	B3	R973	B3	R982	B3	R990	A3	R999	C3	ZD909	C3
C913	A3	C931	A2	C950	C2	C964	B3	C986	A3	D910	B3	D928	B3	Q905	B3	R902	C1	R9027	C2	R9033	C2	R9052	A1	R907	A3	R914	C3	R923	A3	R934	C1	R946	B3	R956	A2	R966	B3	R974	C3	R982A	A3	R991	A3	ZD902	A2	ZD910	C3
C914	A2	C936	B2	C951	C2	C967	B3	C990	B2	D911	B3	D934	B3	Q906	A3	R9020	C2	R9028	C2	R9034	C2	R9053	A1	R907A	B3	R915	A1	R924	C1	R935	A2	R947	A3	R957	B3	R967	B3	R976	C3	R983	B3	R992	A3	ZD903	B2	ZD912	B3
C924	A2	C938	A2	C953	A3	C971	B3	C991	B3	D912	C3	IC901	A2	Q908	B3	R9021	C2	R9029	C2	R9035	C2	R9058	A1	R908A	C3	R916	A1	R925	A3	R937	B2	R948	A3	R960	C3	R968	C3	R977	B3	R984	A3	R993	A3	ZD904	B2		
C925	A3	C939	A3	C954	A3	C972	C3	C993	A3	D913	C3	IC903	A2	Q915	B3	R9022	C2	R902A	A3	R904	C1	R9059	A1	R909	C3	R917	A1	R926	C3	R938	B3	R950	A3	R961	B3	R969	B3	R978	A3	R985	B3	R995	B3	ZD905	C3		
C927	A3	C946	C3	C955	B3	C975	B3	C994	A1	D914	C3	IC906	A3	Q917	A3	R9023	C2	R903	C1	R904A	B3	R906	A3	R909A	B3	R918	A1	R927	A2	R940A	A2	R952	B3	R962	A2	R970	B3	R979	B3	R987	B3	R996	A3	ZD906	A3		

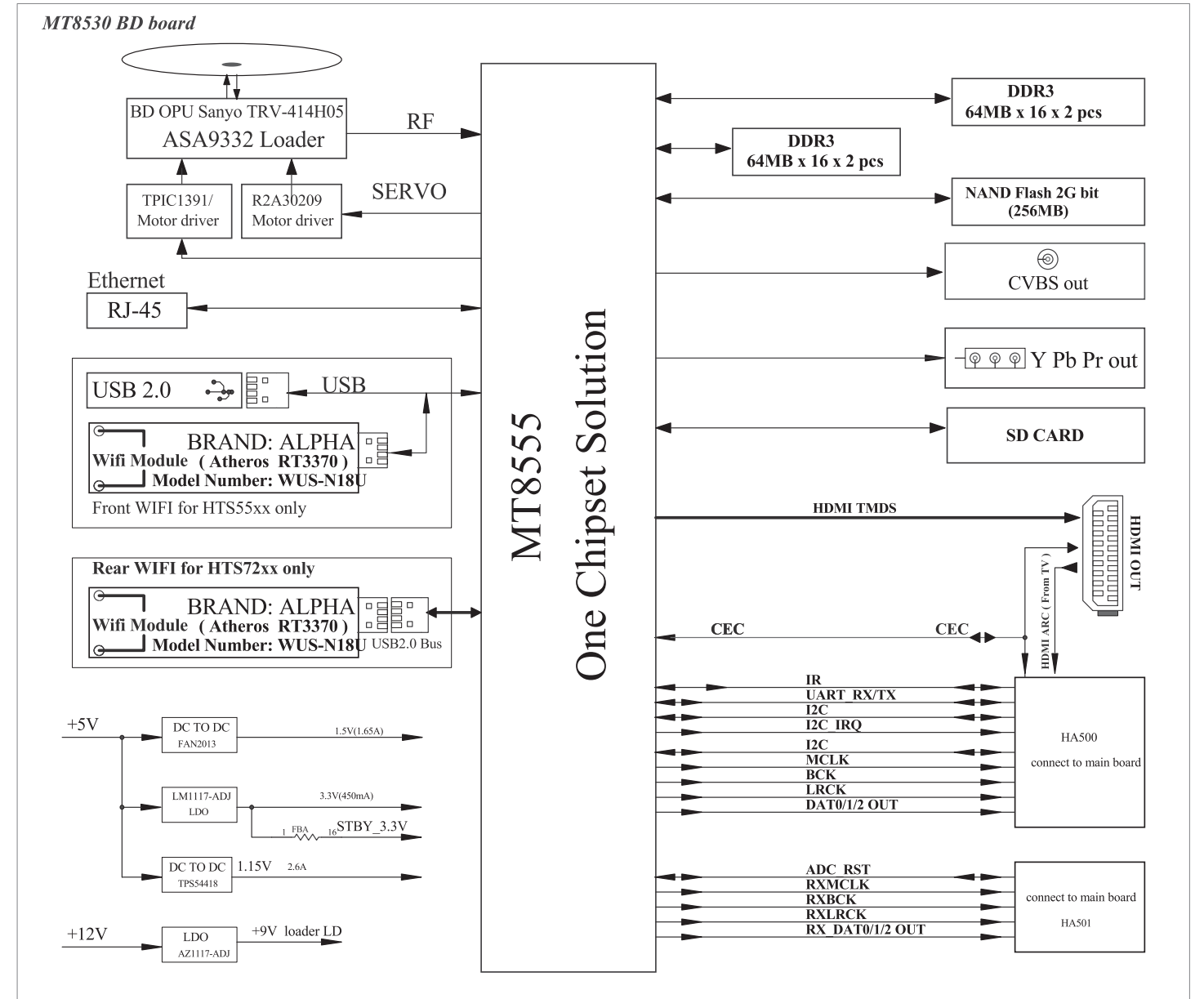


BLOCK DIAGRAM

BD BOARD

TABLE OF CONTENTS

Block Diagram(BD Board) 8-1
 Voltages for connector pin..... 8-2
 Waveforms for measure point 8-3



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	IPOD DET SW	
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	IPOD DET	N/A

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

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

3. CN203--->>from BD board connect to internal WIFI connect PCB

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

4. CN4--->>from BD board connect to main board

PIN NO	PIN Assign	Remarks
1	GND	
2	GND	
3	GND	
4	GND	
5	GND	
6	5V	4.75V-5.35V
7	5V	
8	5V	
9	5V	
10	5V	
11	12V	10.8V-13.2V
12	12V	

5. CN502--->>from BD board connect to main board

PIN NO	PIN Assign	Remarks
1	IPOD CVBS IN	
2	GND	

6. J800--->>from BD board connect to BD loader(SERVO use)

PIN NO	PIN Assign	Remarks
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
CD DVD BD		CD DVD BD

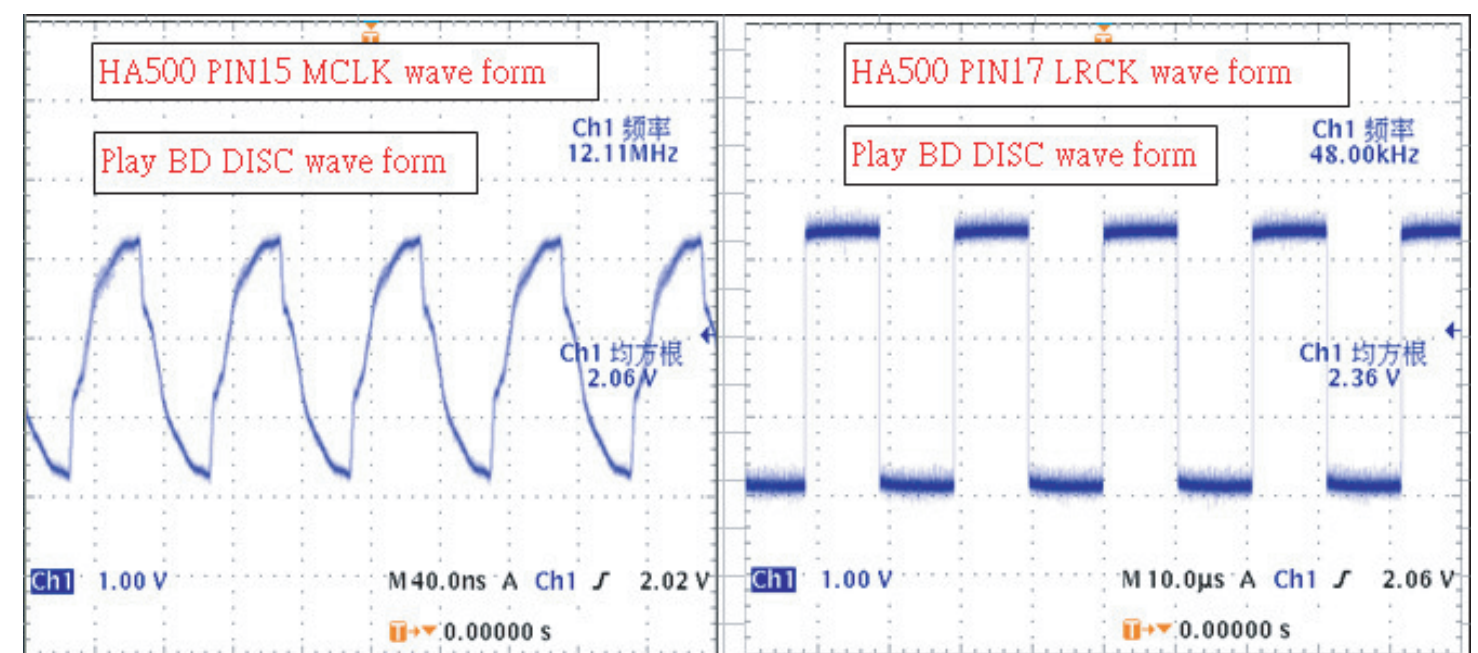
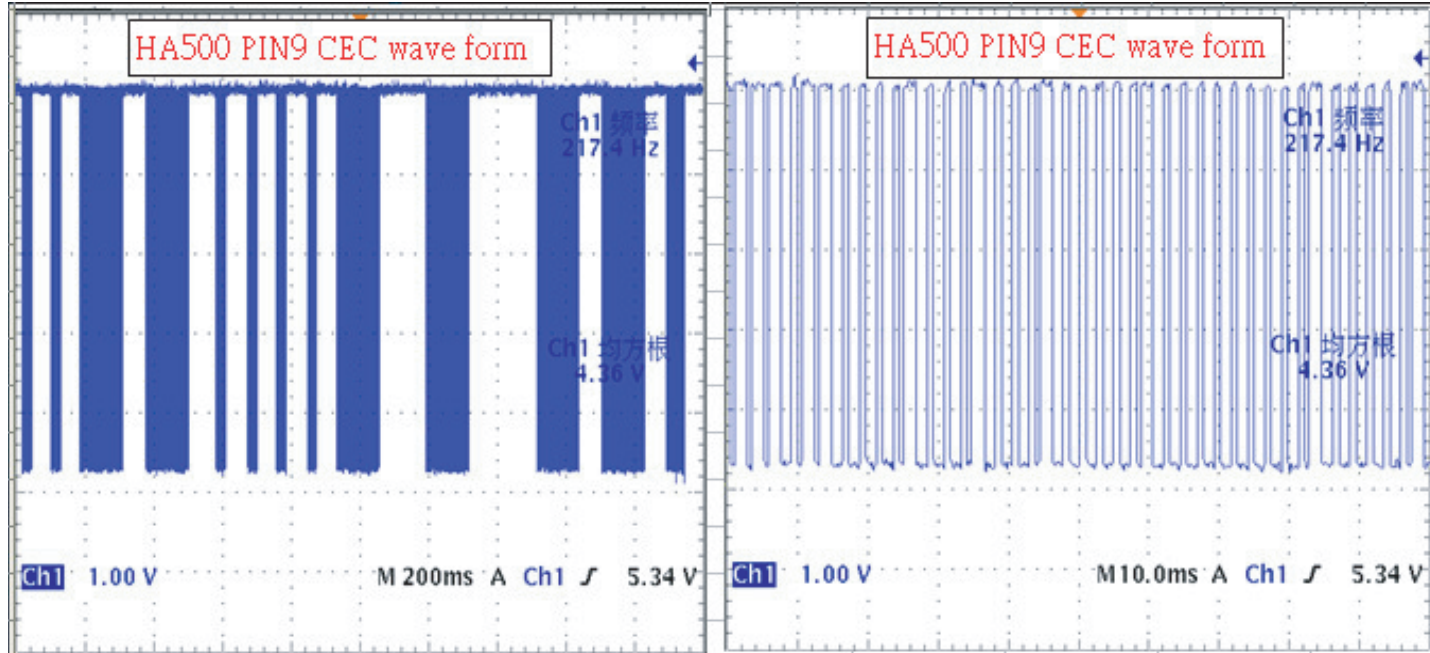
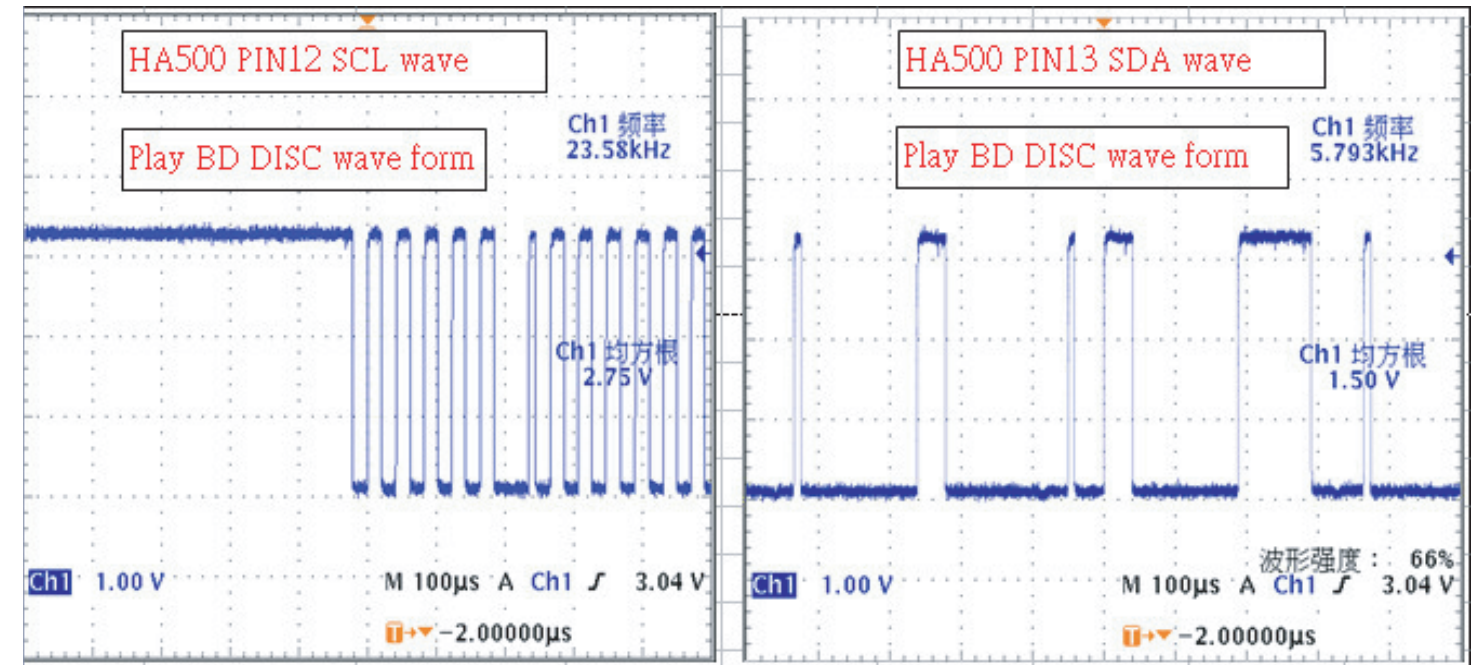
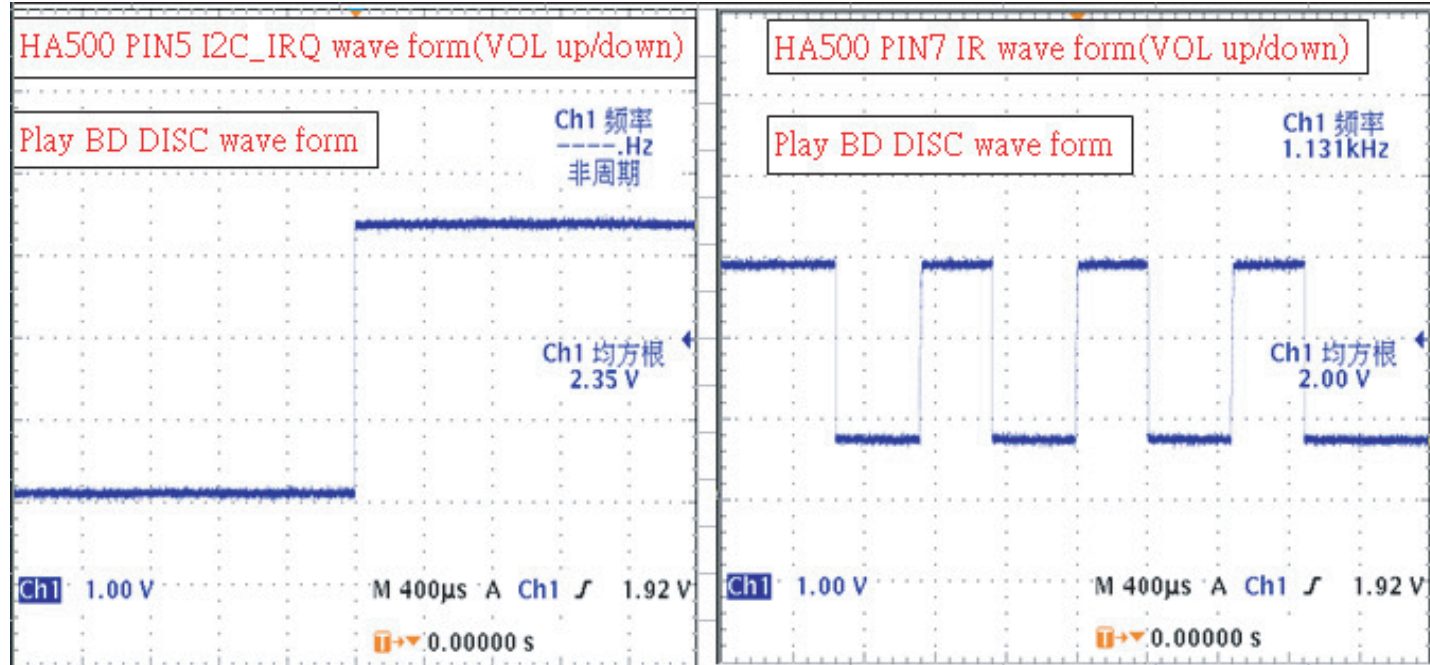
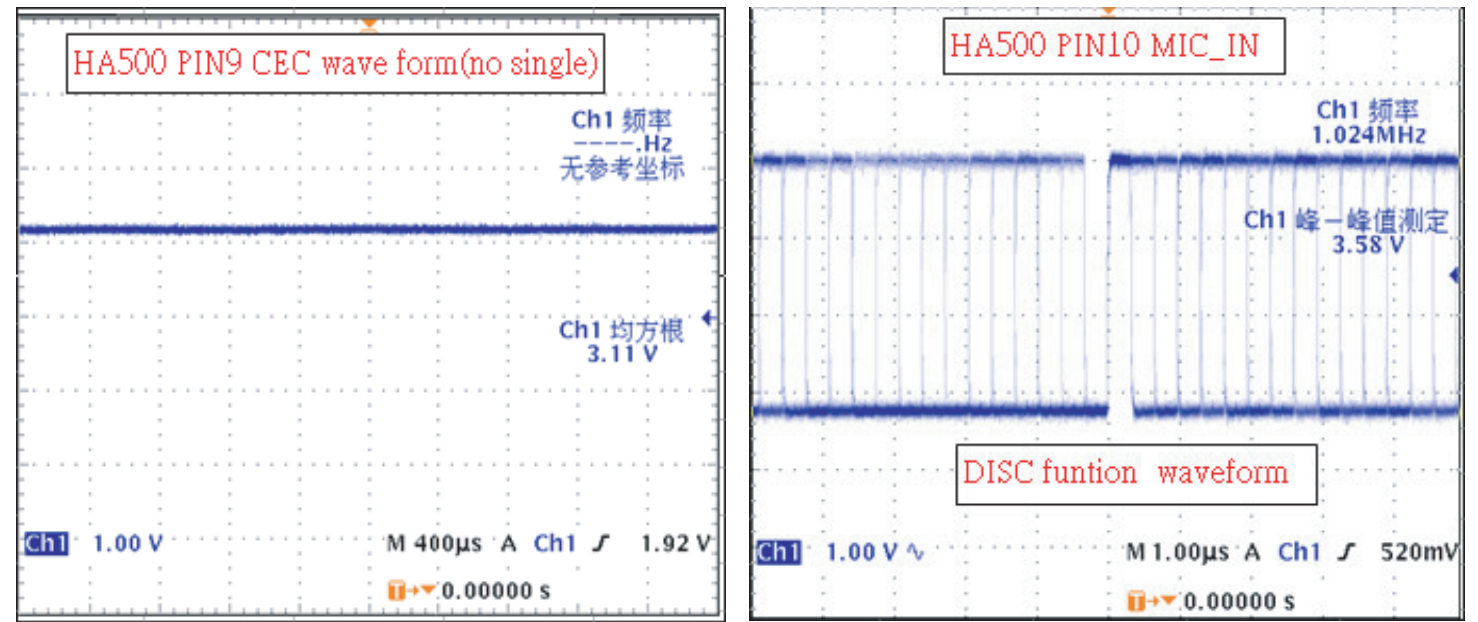
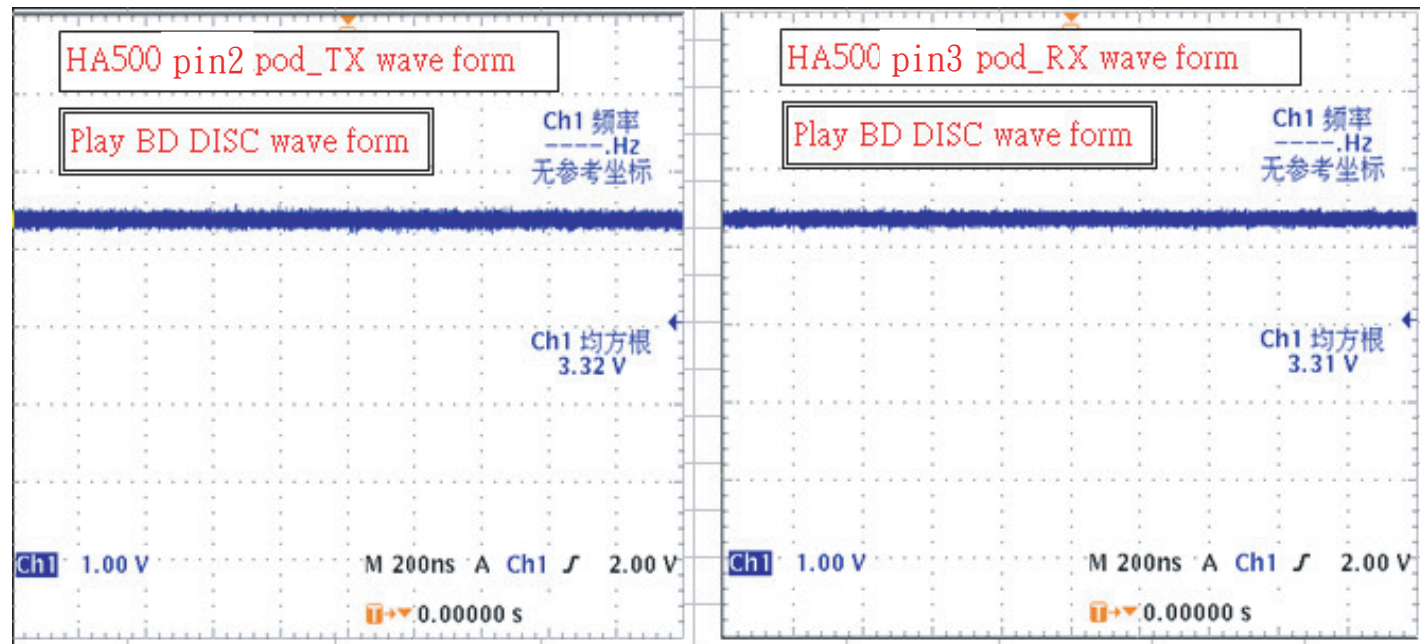
7. J900 --->>from BD board connect to BD loader(SERVO use)

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

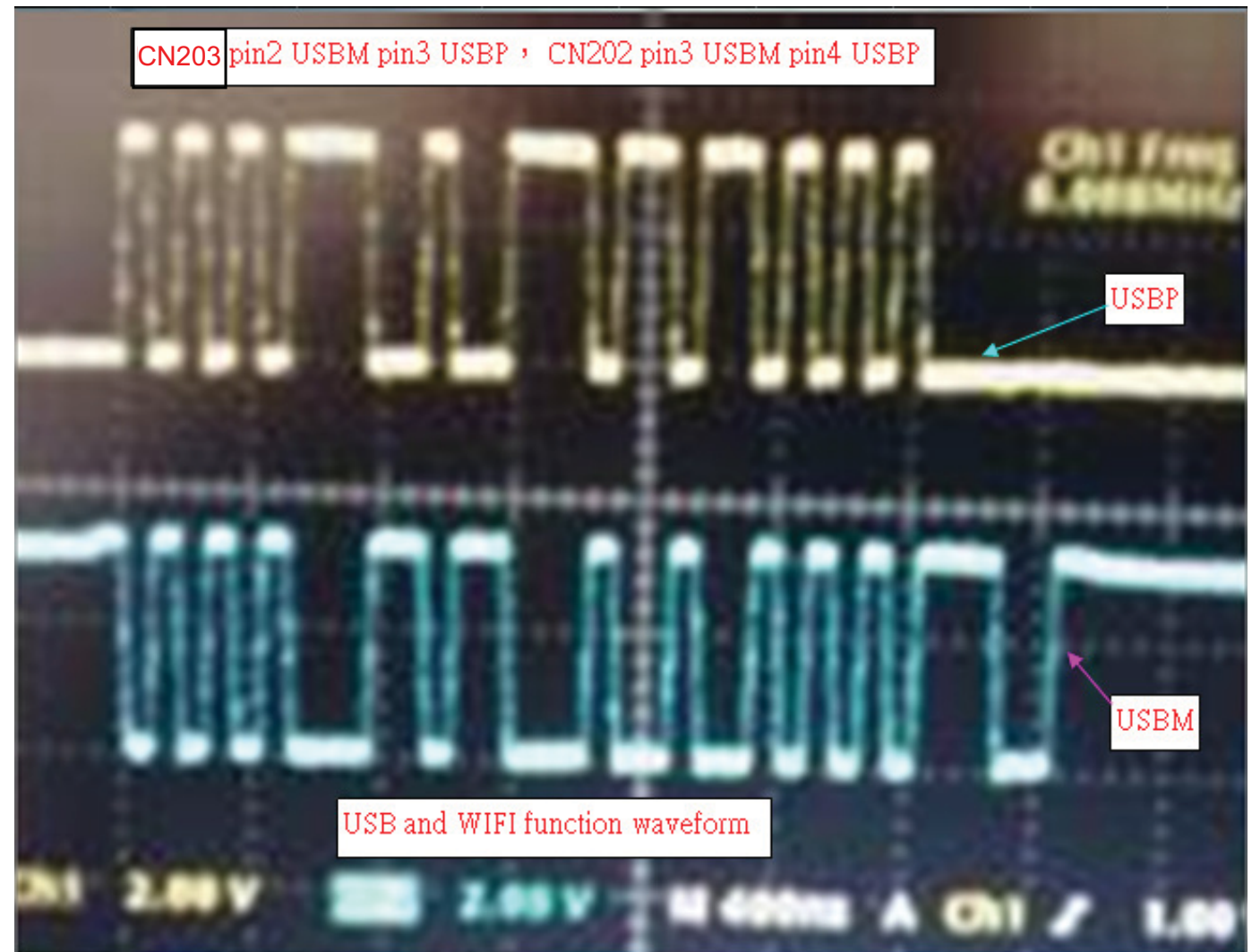
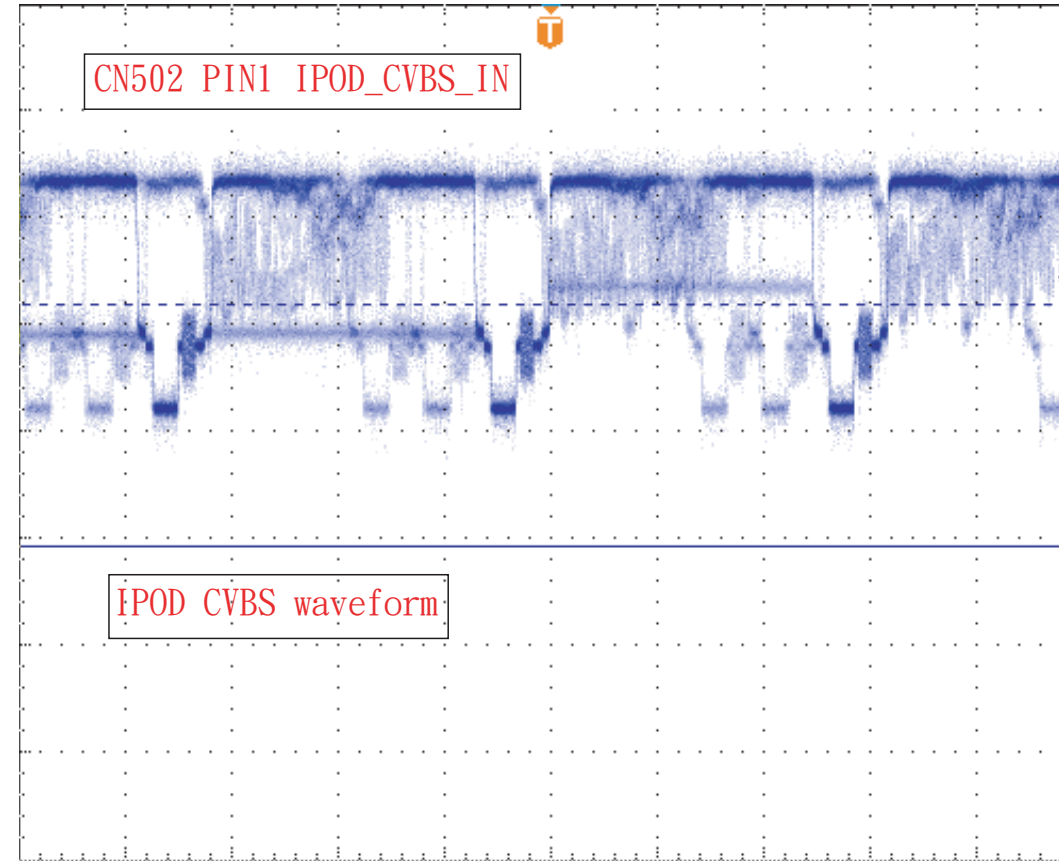
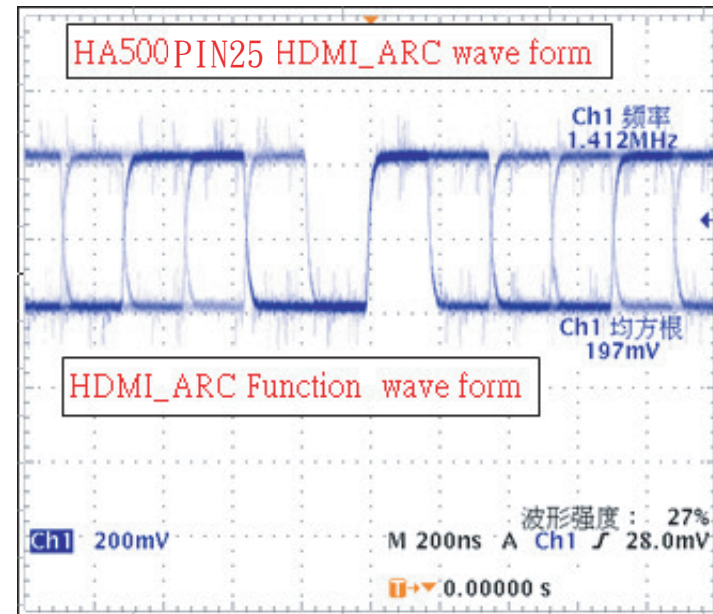
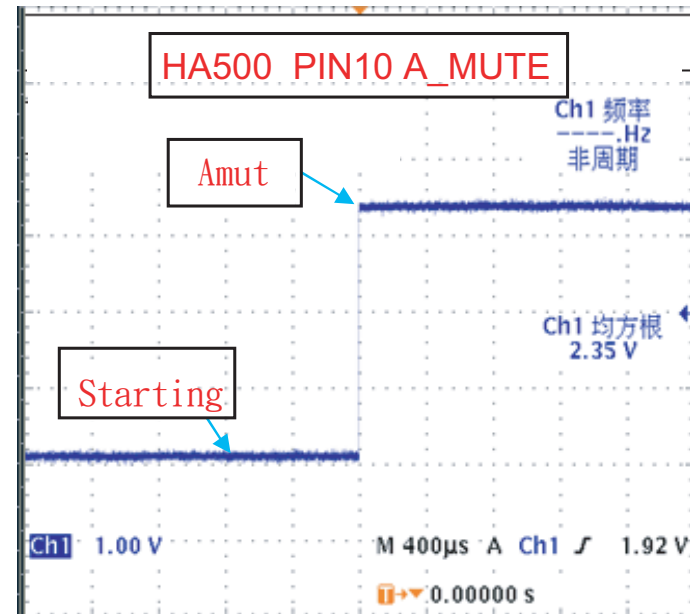
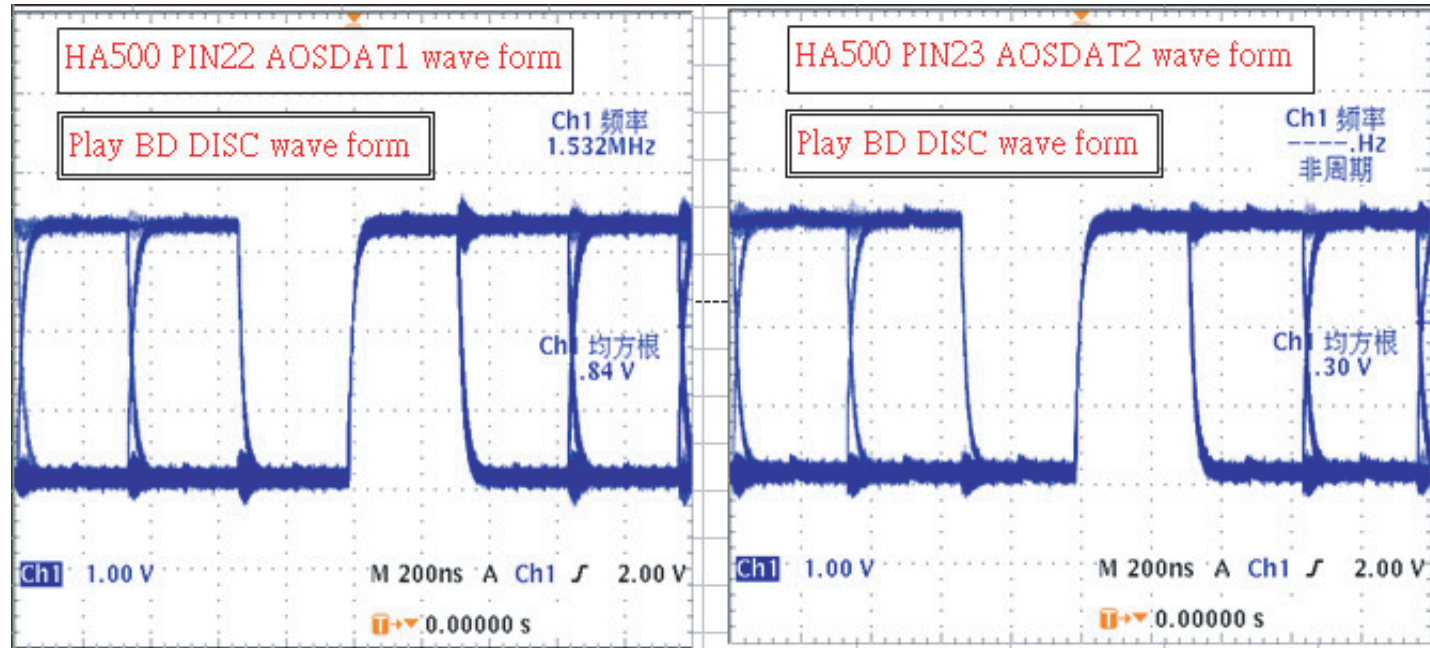
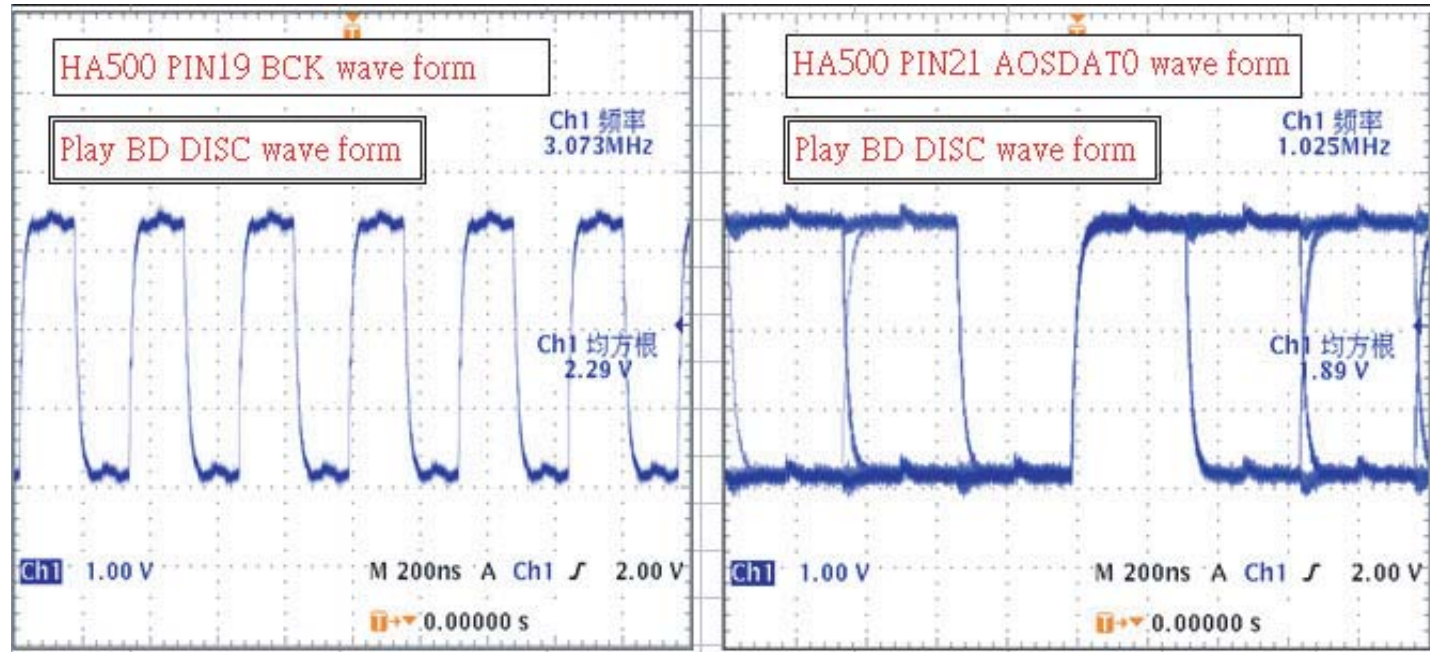
8. J905 --->>from BD board connect to BD loader(SERVO use)

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

Waveforms for measure point



Waveforms for measure point



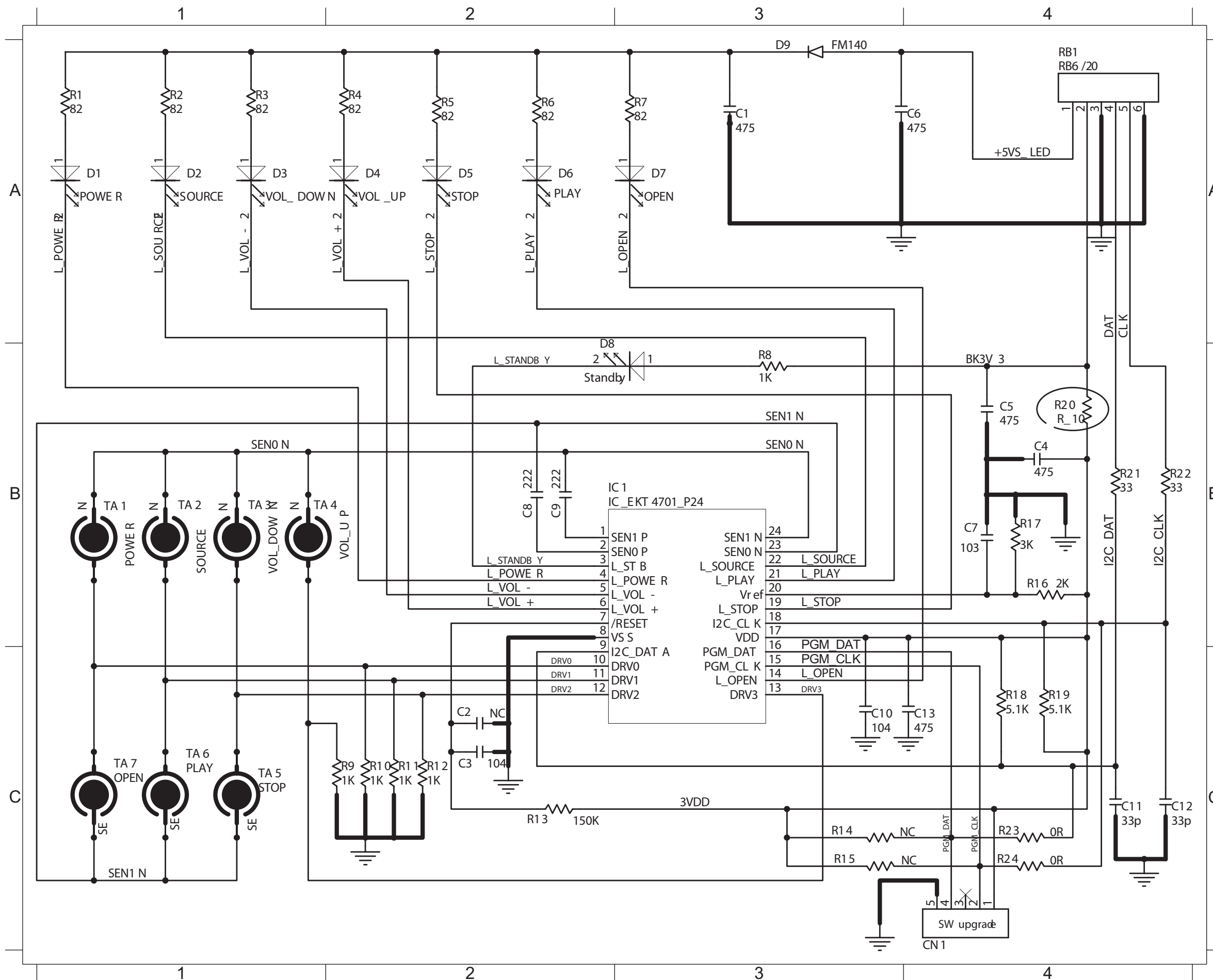
TOUCH BOARD

TABLE OF CONTENTS

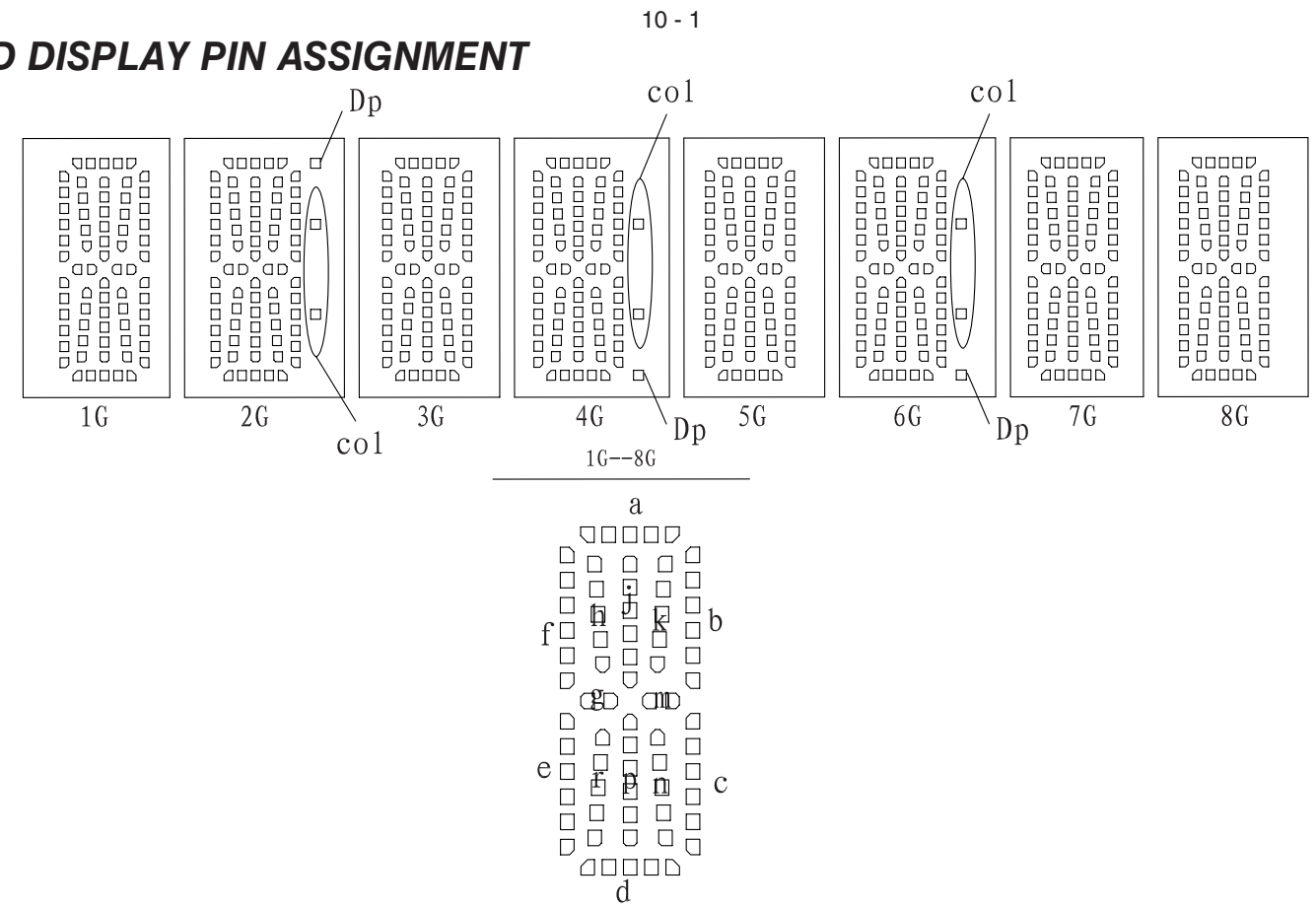
Circuit Diagram..... 9-2
PCB Layout Top & Bottom View..... 9-3

CIRCUIT DIAGRAM

C1 A3 C11 C4 C13 C4 C4 B4 C6 A4 C8 B2 D1 A1 D3 A1 D5 A2 D7 A3 D9 A3 R1 A1 R11 C2 R13 C2 R17 B4 R19 C4 R20 B4 R22 B4 R24 C4 R4 A2 R6 A2 R8 B3 RB1 A4
 C10 C3 C12 C4 C3 C2 C5 B4 C7 B4 C9 B2 D2 A1 D4 A2 D6 A2 D8 A2 IC1 B3 R10 C2 R12 C2 R16 B4 R18 C4 R2 A1 R21 B4 R23 C4 R3 A1 R5 A2 R7 A3 R9 C2



FTD DISPLAY PIN ASSIGNMENT



VFD BOARD

TABLE OF CONTENTS

FTD Display Pin Assignment..... 11-1
 Circuit Diagram 11-2
 PCB Layout Top & Bottom View..... 11-3

	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	/	/

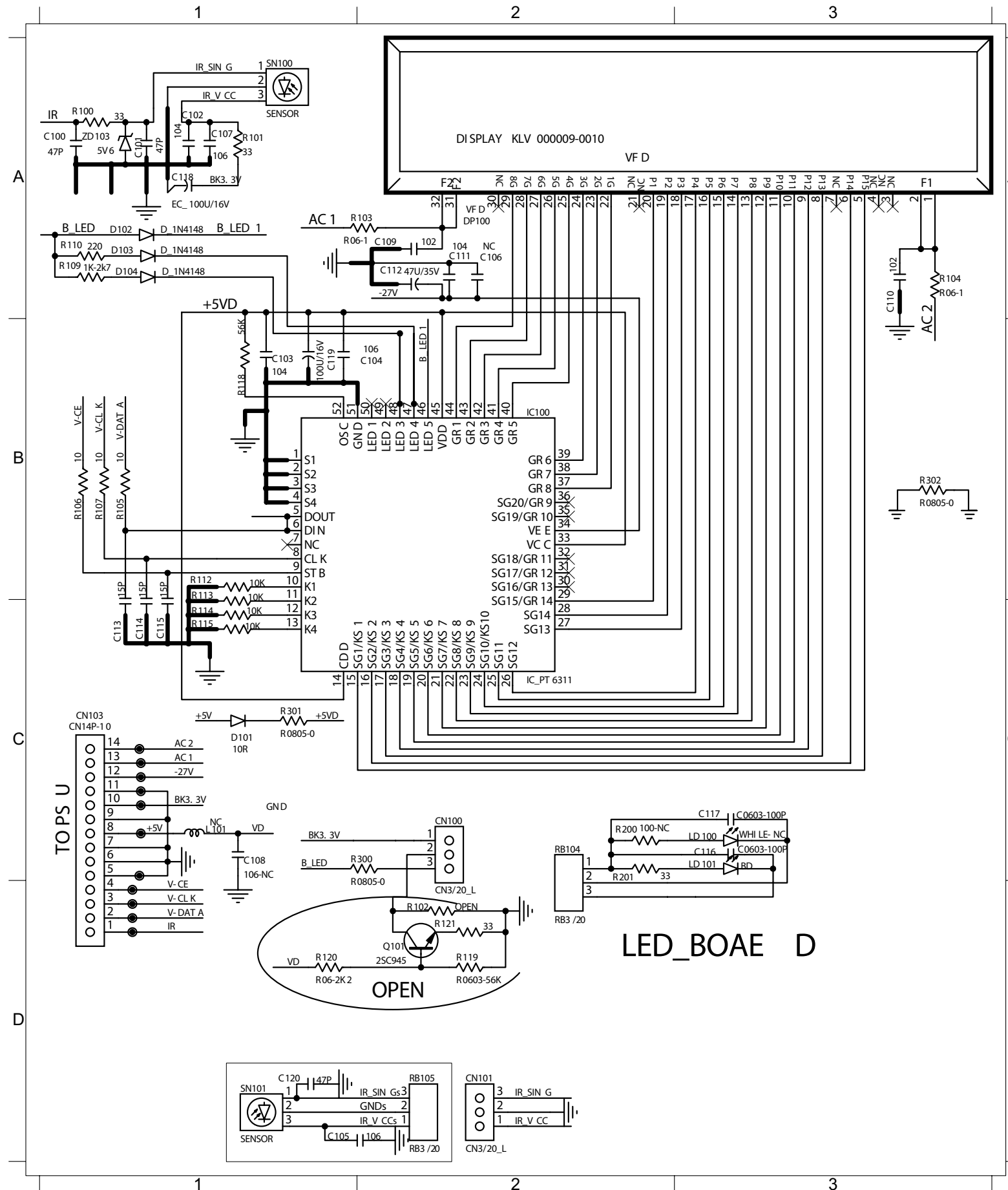
PIN CONNECTION

(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)

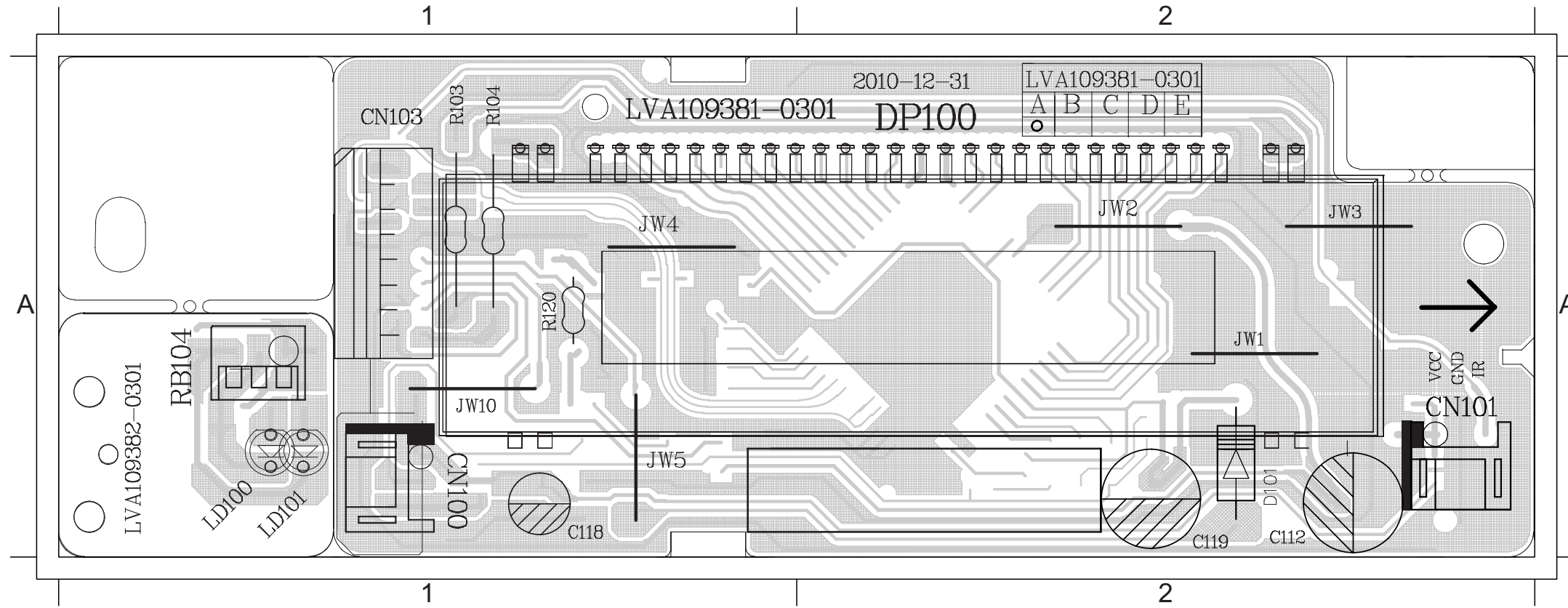
CIRCUIT DIAGRAM

C100 A1 C103 B1 C107 A1 C110 A3 C112 A2 C114 C1 C118 A1 CN100C2 CN103C1 D102 A1 D104 A1 IC100 B2 R100 A1 R103 A1 R105 B1 R107 B1 R110 A1 R113 B1 R115 C1 R201 C2 R301 C1 RB104C2
 C102 A1 C104 B2 C109 A2 C111 A2 C113 C1 C115 C1 C119 B1 CN101D2 D101 C1 D103 A1 DP100A2 LD101C3 R101 A1 R104 A3 R106 B1 R109 A1 R112 B1 R114 C1 R118 B1 R300 C1 R302 B3 ZD103A1



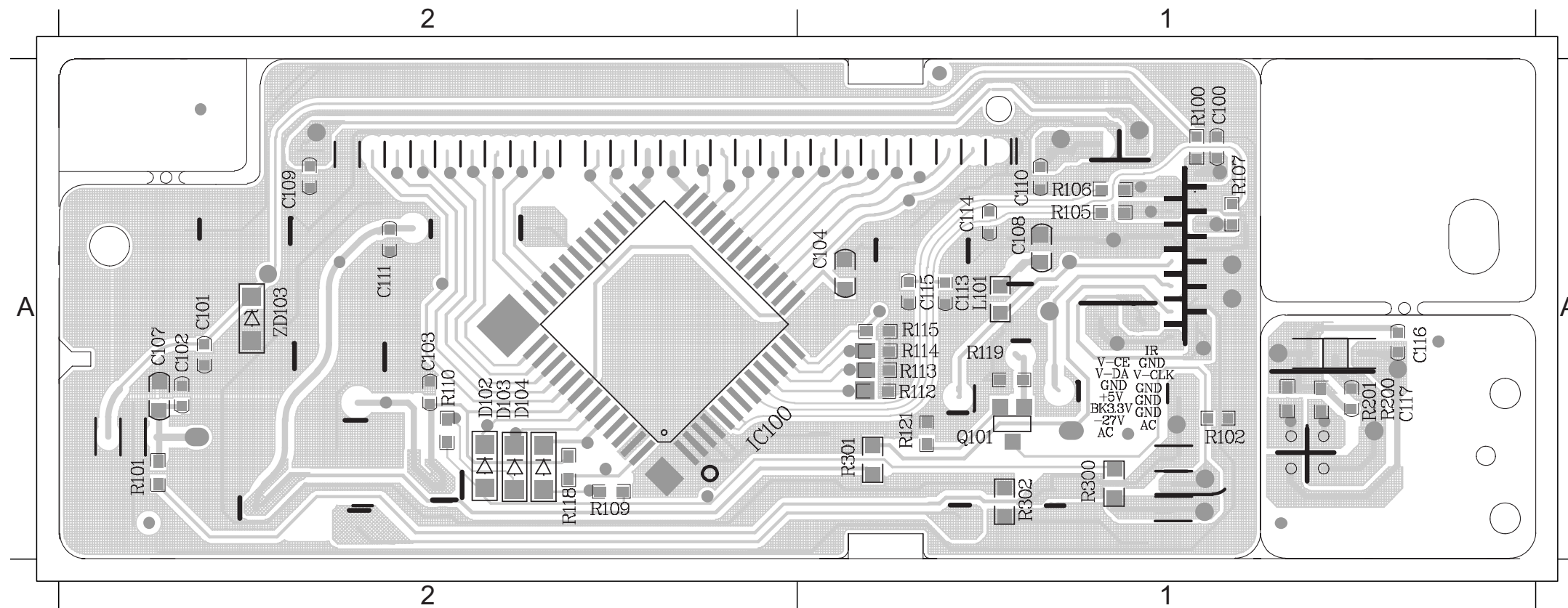
PCB LAYOUT - TOP VIEW

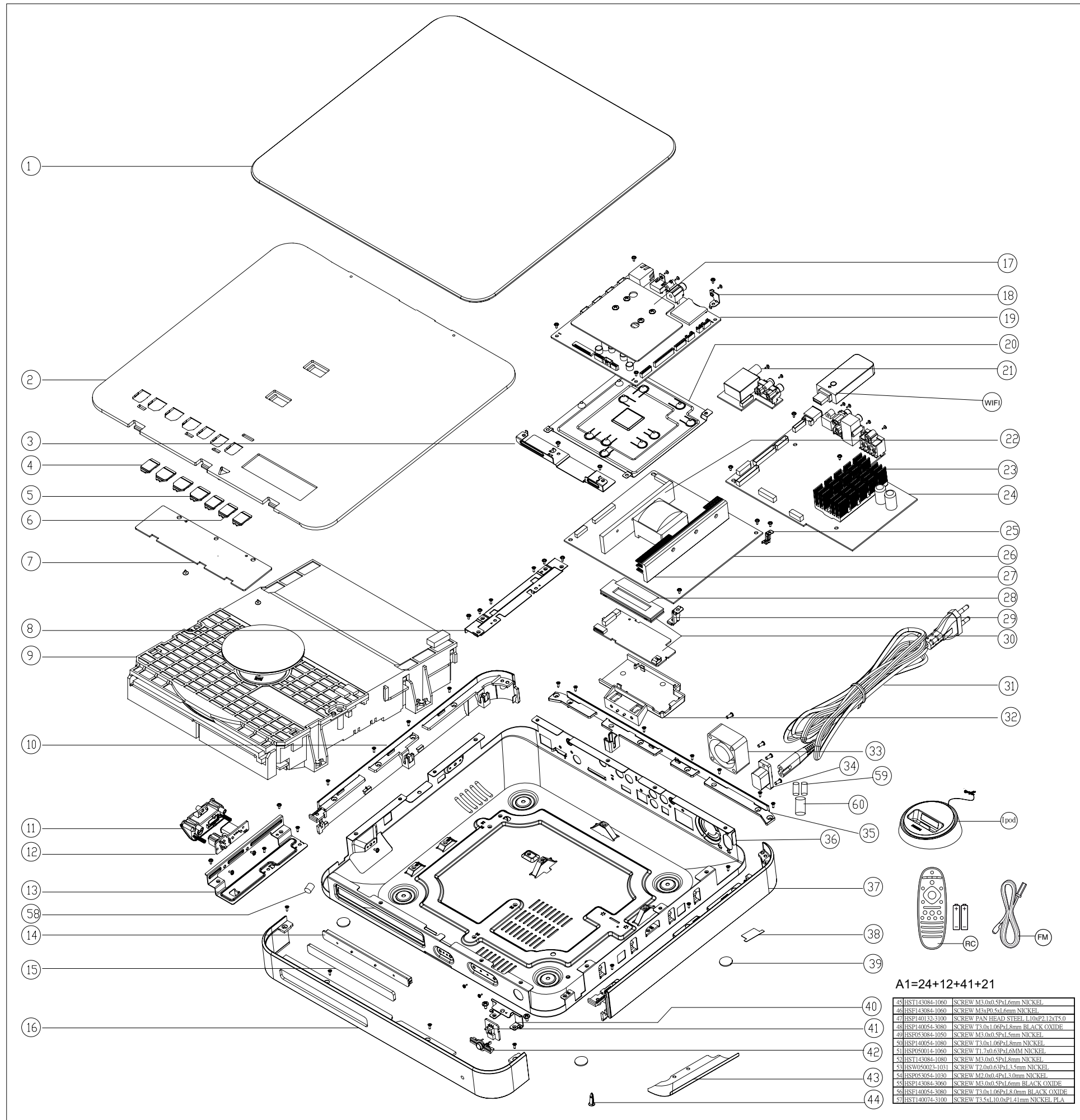
C118 A1 C112 A2 C119 A2 CN100A1 CN101A2 CN103A1 D101 A2 DP100A2 JW1 A2 JW10 A1 JW2 A2 JW3 A2 JW4 A1 JW5 A1 LD101A1 R103 A1 R104 A1 RB104A1



PCB LAYOUT - BOTTOM VIEW

C100 A1 C103 A2 C107 A2 C110 A1 C113 A1 C115 A1 D103 A2 IC100 A2 R101 A2 R106 A1 R109 A2 R112 A1 R114 A1 R118 A2 R300 A1 R302 A1 C102 A2 C104 A1 C109 A2 C111 A2 C114 A1 D102 A2 D104 A2 R100 A1 R105 A1 R107 A1 R110 A2 R113 A1 R115 A1 R201 A1 R301 A1 ZD103 A2





A1=24+12+41+21

43	HST143084-1060	SCREW M3.0x0.5Px1.6mm NICKEL
46	HSP143084-1060	SCREW M3xP0.5x1.6mm NICKEL
47	HSP140132-3100	SCREW PAN HEAD STEEL L1.0xP2.12xT5.0
48	HSP140054-3080	SCREW T3.0x1.06Px1.8mm BLACK OXIDE
49	HSP053084-1050	SCREW M3.0x0.5Px1.5mm NICKEL
50	HSP140054-1080	SCREW T3.0x1.06Px1.8mm NICKEL
51	HSP050014-1060	SCREW T1.7x0.63Px1.6mm NICKEL
52	HST143084-1080	SCREW M3.0x0.5Px1.8mm NICKEL
53	HSW050023-1051	SCREW T2.0x0.63Px1.35mm NICKEL
54	HSP053054-1030	SCREW M2.0x0.4Px1.30mm NICKEL
55	HSP143084-3080	SCREW M3.0x0.5Px1.6mm BLACK OXIDE
56	HST140054-3080	SCREW T3.0x1.06Px1.8mm BLACK OXIDE
57	HST140074-3100	SCREW T3.5x1.10Px1.41mm NICKEL PL.

REVISION LIST

Version 1.0

*Initial release

Version 1.1

Add HTS7212-12 version , update chapter 1-2 & 5-1