

Service Service Service



Service Manual



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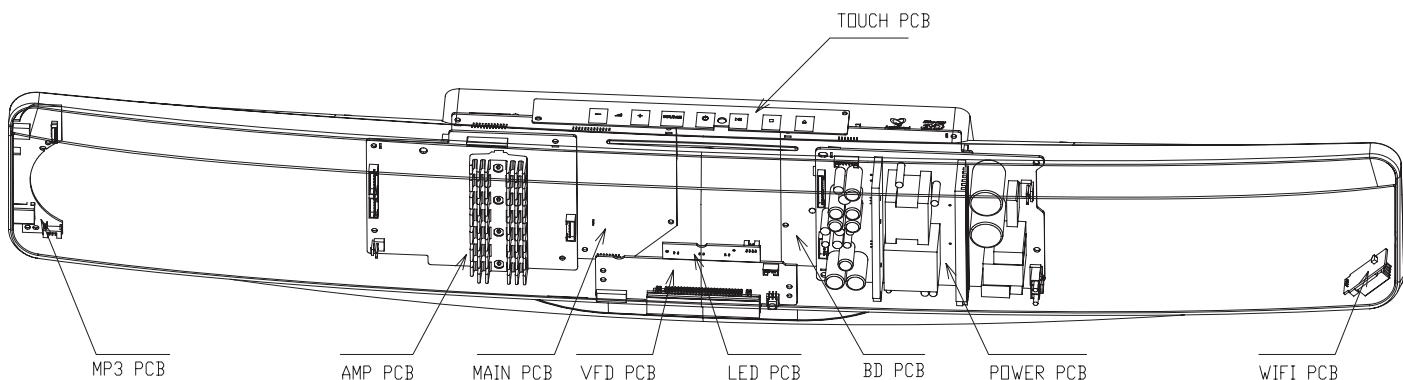
(GB) 3141 785 38232

Version 1.2



PHILIPS

LOCATION OF PCB BOARDS



VERSION VARIATION:

Type/Versions	HTB7150K	HTB7150		
Features	/51	/12	/98	/93
Output Power - 480W	X	X	X	X
Voltage (110-127V)			X	
Voltage (220-240V)	X	X	X	X

SERVICE SCENARIO MATRIX:

Type/Versions	HTB7150K	HTB7150		
Board in used	/51	/12	/98	/93
Main+AMP+Plate Board	CLR	CLR	CLR	CLR
Power Board	CLR	CLR	CLR	CLR
BD Board	MLR	MLR	MLR	MLR
MP3&USB&KARAOKE Board (For:/51)	CLR			
MP3&USB Board (For:/12/98/93)		MLR	CLR	CLR
VFD+LED Board	CLR	MLR	CLR	CLR
Touch Board	CLR	MLR	CLR	CLR

Remark:

*CLR = Component Level Repair

*MLR = Module 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 Plus HD media, USB storage device
-

File formats

- Audio: .aac, .mka, .mp3, .wma, .wav, .mp4, .m4a, .ra, .flac, .ogg
- Video:
 - .avi, .divx, .mp4, .m4v, .mov, .mkv, .m2ts, .ASF, .WMV, .MPG, .MPEG, .FLV, .3GP, .3G2
 - .rmvb, .rm, .rv (Available only in Asia Pacific and China)
- Picture: .jpg, .jpeg, .jpe, .jfif, .jfif, .gif, .png

Audio formats

Your home theater supports the following audio files.

Extension	Container	Audio codec	Bit rate
.mp3	MP3	MP3	Upto 320 kbps
.wma	ASF	WMA	Upto 192 kbps
		WMA Pro	Upto 768 kbps
.aac	AAC	AAC, HE-AAC	Upto 192 kbps
.wav	WAV	PCM	27.648 Mbps
.m4a	MKV	AAC	192 kbps
.mka	MKA	PCM	27.648 Mbps
		Dolby Digital	640 kbps
		DTS core	1.54 Mbps
		MPEG	912 kbps
		MP3	Upto 320 kbps
		WMA	Upto 192 kbps
		WMA Pro	Upto 768 kbps
		AAC, HE-AAC	Upto 192 kbps
.ra	RM	AAC, HE-AAC	Upto 192 kbps
		Cook	96469 bps
.flac	FLAC	FLAC	Upto 24 bps
.ogg	OGG	Vorbis	Variable bit rate, maximum block size 4096

Extension	Container	Audio codec	Bit rate
		FLAC	Upto 24 bps
		OGGPCM	No limit
		MP3	Upto 320 kbps

Video formats

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

- video files with a resolution of 1920 x 1080 pixels (except DivX, which has a resolution of 77220 x 576) and frame rate of 6 ~ 30 frames per second.
- photo files with a resolution of 18 M pixels.

.avi files in AVI container

Audio codec	Video codec	Bit rate
PCM,	DivX 3.11, DivX 4.x,	10 Mbps
Dolby Digital,	DivX 5.x, DivX 6.x	max
DTS core,		
MP3,		
WMA		
	MPEG 1, MPEG 2	40 Mbps
	MPEG 4 SP / ASP	38.4 Mbps
	H.264/AVC upto	25 Mbps
	HiP@5.1	
	WMV9	45 Mbps

.divx files in AVI container

Audio codec	Video codec	Bit rate
PCM, Dolby Digital,	DivX 3.11, DivX 4.x, DivX 5.x,	10 Mbps
MP3, WMA	DivX 6.x	max

.mp4 or .m4v files in MP4 container

Audio codec	Video codec	Bit rate
Dolby Digital, MPEG, MP3, AAC, HE-AAC, DD+	MPEG 1, MPEG 2	40 Mbps
	MPEG 4 ASP	38.4 Mbps
	H.264/AVC	25 Mbps
	HiP@5.1	

.mov files in MOV container

Audio codec	Video codec	Bit rate
Dolby Digital, MPEG, MP3, AAC, HE-AAC	MPEG 1, MPEG 2	40 Mbps
	MPEG 4 ASP	38.4 Mbps
	H.264/AVC	25 Mbps
	HiP@5.1	

.mkv files in MKV container

Audio codec	Video codec	Bit rate
PCM, Dolby Digital, DTS core, MPEG, MP3, WMA, AAC, HE-AAC, DD+	DivX Plus HD	30 Mbps
	MPEG 1, MPEG 2	40 Mbps
	MPEG 4 ASP	38.4 Mbps
	H.264/AVC	25 Mbps
	HiP@5.1	
	WMV9	45 Mbps

.m2ts files in MKV container

Audio codec	Video codec	Bit rate
PCM, Dolby Digital, DTS core, MPEG, MP3, WMA, AAC, HE-AAC, DD+	MPEG 1, MPEG 2	40 Mbps

Audio codec	Video codec	Bit rate
	MPEG 4 ASP	38.4 Mbps
	H.264/AVC	25 Mbps
	HiP@5.1	
	WMV9	45 Mbps

.asf and .wmv files in ASF container

Audio codec	Video codec	Bit rate
PCM, Dolby Digital, MP3, WMA, DD+	MPEG 4 ASP	38.4 Mbps
	H.264/AVC	25 Mbps
	HiP@5.1	
	WMV9	45 Mbps

.mpg and .mpeg files in PS container

Audio codec	Video codec	Bit rate
PCM, DTS core, MPEG, MP3	MPEG 1, MPEG 2	40 Mbps

.flv files in FLV container

Audio codec	Video codec	Bit rate
MP3, AAC	H.264/AVC upto HiP@5.1	25 Mbps
	H.263	38.4 Mbps
	On2 VP6	40 Mbps

.3gp files in 3GP container

Audio codec	Video codec	Bit rate
AAC, HE-AAC	MPEG 4 ASP	38.4 Mbps
	H.264/AVC upto HiP@5.1	25 Mbps
		max

.rm, .rv, and .rmvb files in RM container (Available only in Asia Pacific and China)

Audio codec	Video codec	Bit rate
AAC, COOK	RV30, RV40	40 Mbps

Amplifier

- Total output power:
 - HTB7150:** 480W RMS (+/- 0.5 dB, 30% THD) / 400W RMS (+/- 0.5 dB, 10% THD)
- Frequency response: 20 Hz-20 kHz / ±3 dB
- Signal-to-noise ratio: > 65 dB (CCIR) / (A-weighted)
- Input sensitivity:
 - AUX: 600 mV
 - Music iLink: 300 mV

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: 32 kbps - 320 kbps
 - WMA: 48 kbps - 192 kbps

Radio

- Tuning range:
 - Europe/Russia/China: FM 87.5-108 MHz (50 kHz)
 - Asia Pacific/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

USB

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

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
- Satellite speakers:
 - **HTB7150:** 4 x 2.5" woofer speakers
- Power consumption:
 - **HTB7150:** 80 W
- Standby power consumption: 0.2 - 0.25 W
- Dimensions (WxHxD): 927 x 150 x 87mm
- Weight:
 - **HTB7150:** 4.6 KG

Subwoofer

- Impedance: 4 ohm
- Speaker drivers: 1 x 6.5" woofer
- Dimensions (WxHxD): 196 x 392 x 300 mm
- Weight:
 - **HTB7150:** 4.5 KG

Remote control batteries

- 2 x AAA-R03-1.5 V

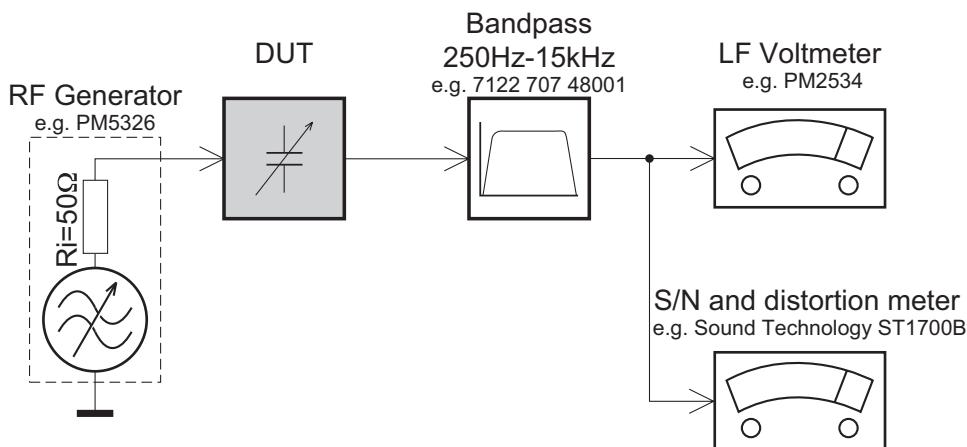
Laser

- Laser Type (Diode): InGaN/AlGaN (BD), AlGaInP (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

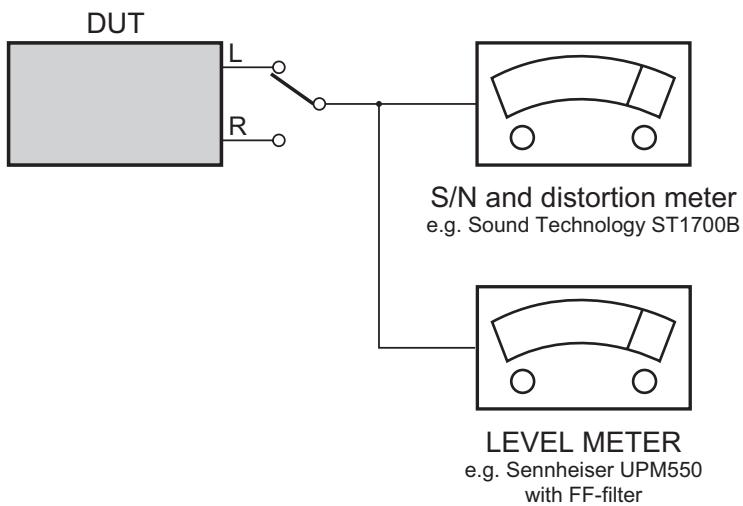
Tuner FM



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)



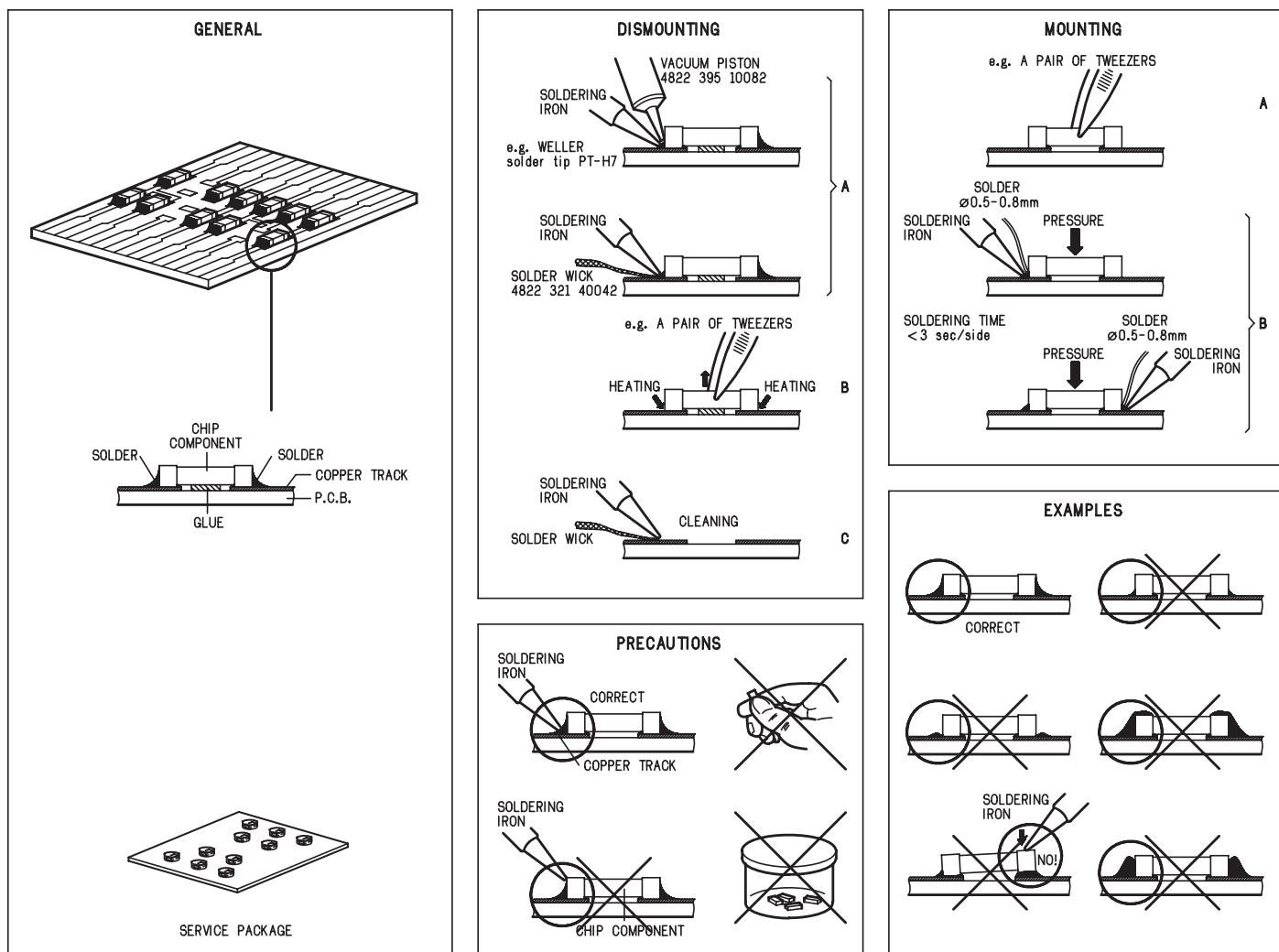
BG LE

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 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.

I**AVVERTIMENTO**

Tutti IC e parecchi semi-conduttori sono sensibili alle scariche statiche (ESD). La loro longevità potrebbe essere fortemente ridotta 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, test 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 \triangle .

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 \triangle .

F

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

Less composants de sécurité sont marqués \triangle .

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 \triangle 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 \triangle .

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.

**CLASS 1
LASER PRODUCT**

3122 110 03420

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 alittiina näkymättömälle laserisäteilylle. Älä katso säteeseen!

DK Advarse !

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

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 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

- 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.

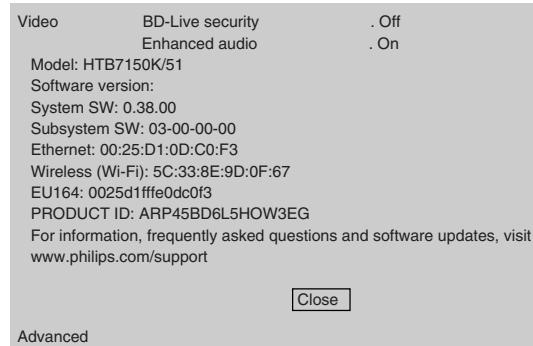
“0000” is default password supplied.

3) Trade mode

- Press <Open/Close> 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 Information>, then press <OK> button on R/C.
- TV will show message as follow (example):



**“System SW” displayed indicates the overall software version.

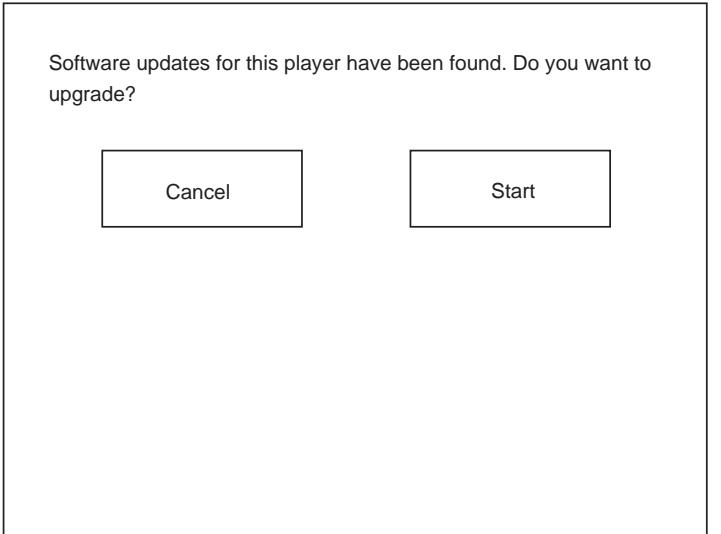
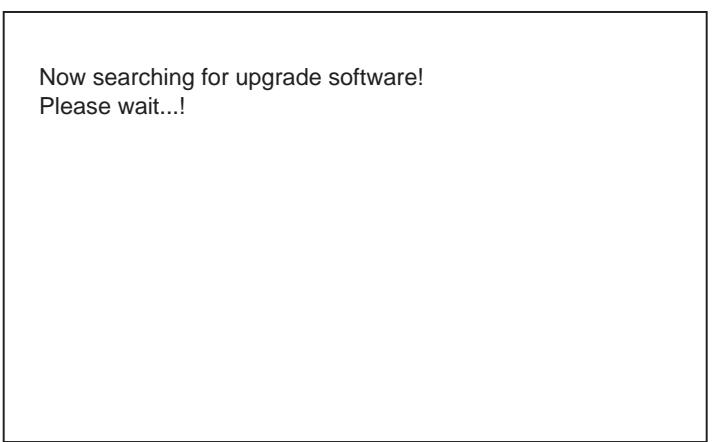
“Subsystem SW” indicates the version of different features. For example, if “Subsystem SW” is “35-00-00-05”, the last two digits (“05”) indicate the current version of the onscreen help installed on your home theater.

5) Upgrading new software

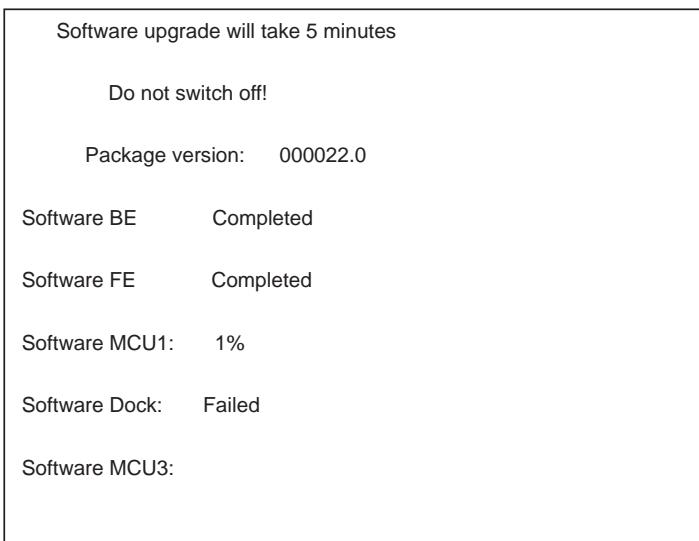
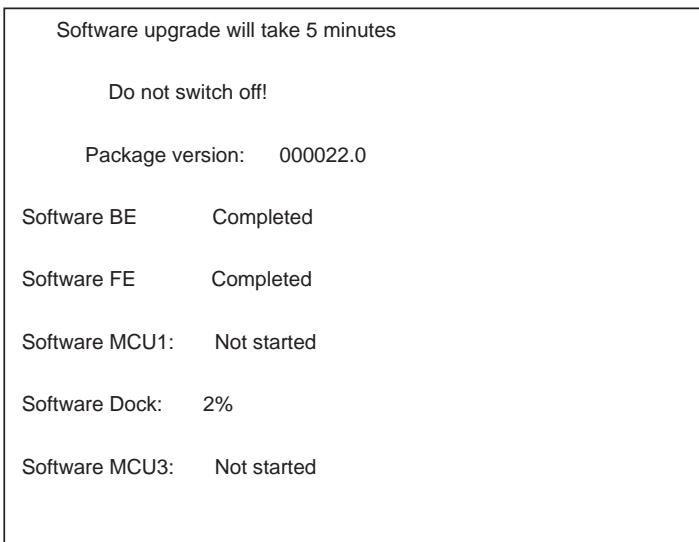
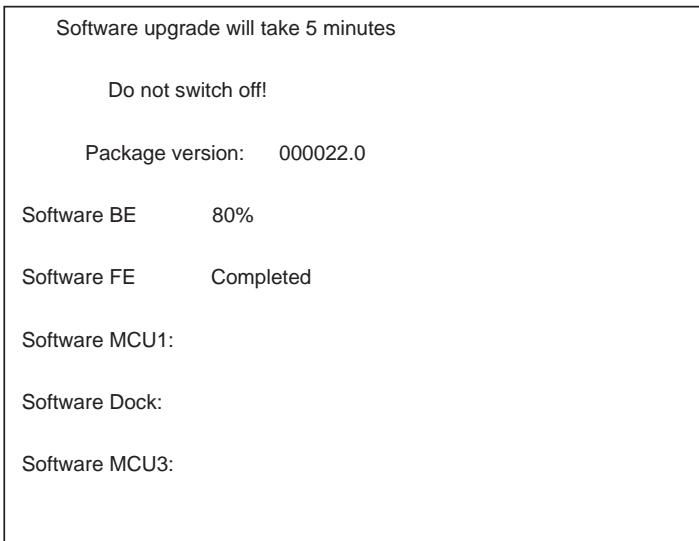
Note: After Update Blu-ray loader (see chapter 3-1), must upgrade software.

Method 1: Update software from a USB storage device or CD-R

- Create a folder named “UPG” in your CD-R or USB storage device, and Copy the latest upgrading software into the folder.
- Insert the CD-R program disc or connect the USB storage device to the set.
- Press “” <Home> button on R/C, and select <Setup>, then press <OK> button on R/C.
- Select <Advanced> <Software Update> <USB>.
- TV will show message as follow:



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

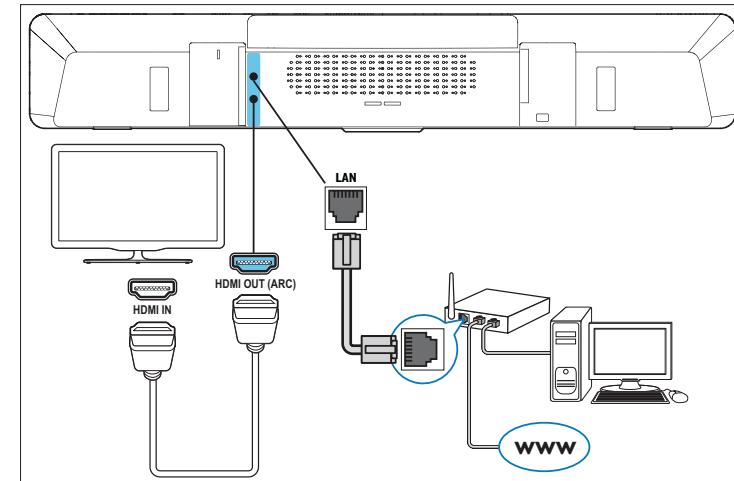


g) The set will shut down automatically when the software upgrade is completed.

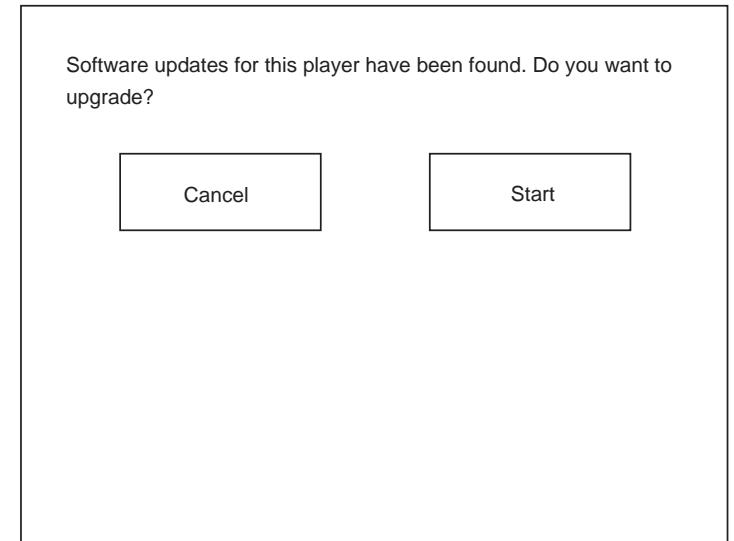
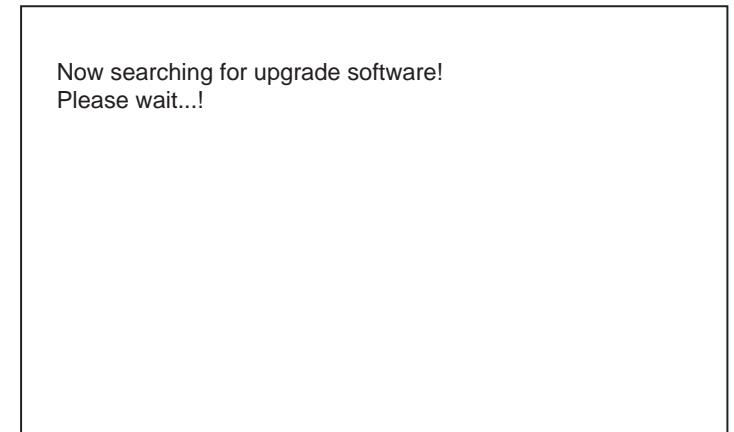
Method 2: Update software from the network

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 connected to the network router via network cables, and with the HDMI cable to connect to the set and TV. Prepare the internet connection as shown follow:



- Press “” <Home> button on R/C, and select <Setup>, then press <OK> button on R/C.
- Select <Advanced> <Software Update> <Network>.
- TV will show message as follow:



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

Software upgrade will take 5 minutes

Do not switch off!

Package version: 000022.0

Software BE 80%

Software FE Completed

Software MCU1:

Software Dock:

Software MCU3:

Software upgrade will take 5 minutes

Do not switch off!

Package version: 000022.0

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: 000022.0

Software BE Completed

Software FE Completed

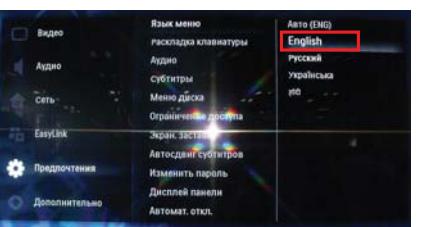
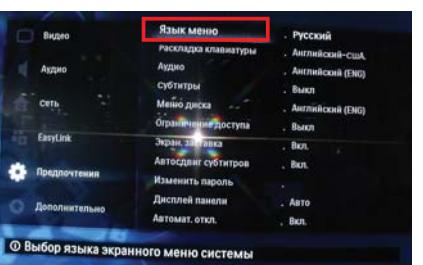
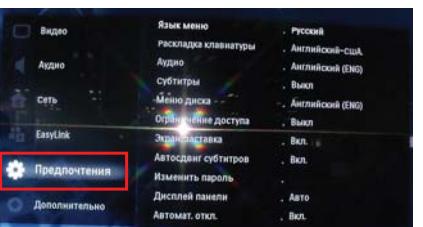
Software MCU1: 1%

Software Dock: Failed

Software MCU3:

6) OSD Language setup (only for 51 version)

- 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 <Menu language>, then press <OK> button on R/C.
- Select <English>, then press <OK> button on R/C.



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

7) Update the onscreen help

If the current version of the onscreen help is lower than the latest version available on www.philips.com/support, download and install the latest onscreen help.

* A USB flash drive that is FAT or NTFS formatted, with at least 35MB of memory. Do not use a USB hard drive.

* A computer with internet access.

* An archive utility that supports the ZIP file format

a) Connect a USB flash drive to your computer.

b) In your web browser, go to www.philips.com/support.

c) At the philips support website, find your product and click on User manuals, and then locate the User Manual Upgrade Software. (The help update is available as a zip file).

d) Save the zip file in the root directory of your USB flash drive.

e) Use the archive utility to extract the help update file in the root directory. (A file named "HTSXXXXeDFU.zip" is extracted under the UPG folder of your USB flash drive, "xxxx" being the model number of your home theater.)

f) Disconnect the USB flash drive from your computer.

Caution: Do not switch off the home theater or remove the USB flash drive during the update.

g) Connect the USB flash drive containing the downloaded file to your home theater. (Make sure that no disc is loaded inside the disc compartment)

h) Press “” <Home> button on R/C.

i) Enter 338 on the remote control.

j) Follow the onscreen instructions to confirm the update.

k) Disconnect the USB flash drive from the home theater.

8) Produce to change Tuner grid (only for /98 version)

In some countries, you can switch the FM tuning grid between 50 kHz and 100 kHz. Changing the tuning grid erases all preset radio stations.

a) Press <radio> button on R/C.

b) Press <Stop> button on R/C.

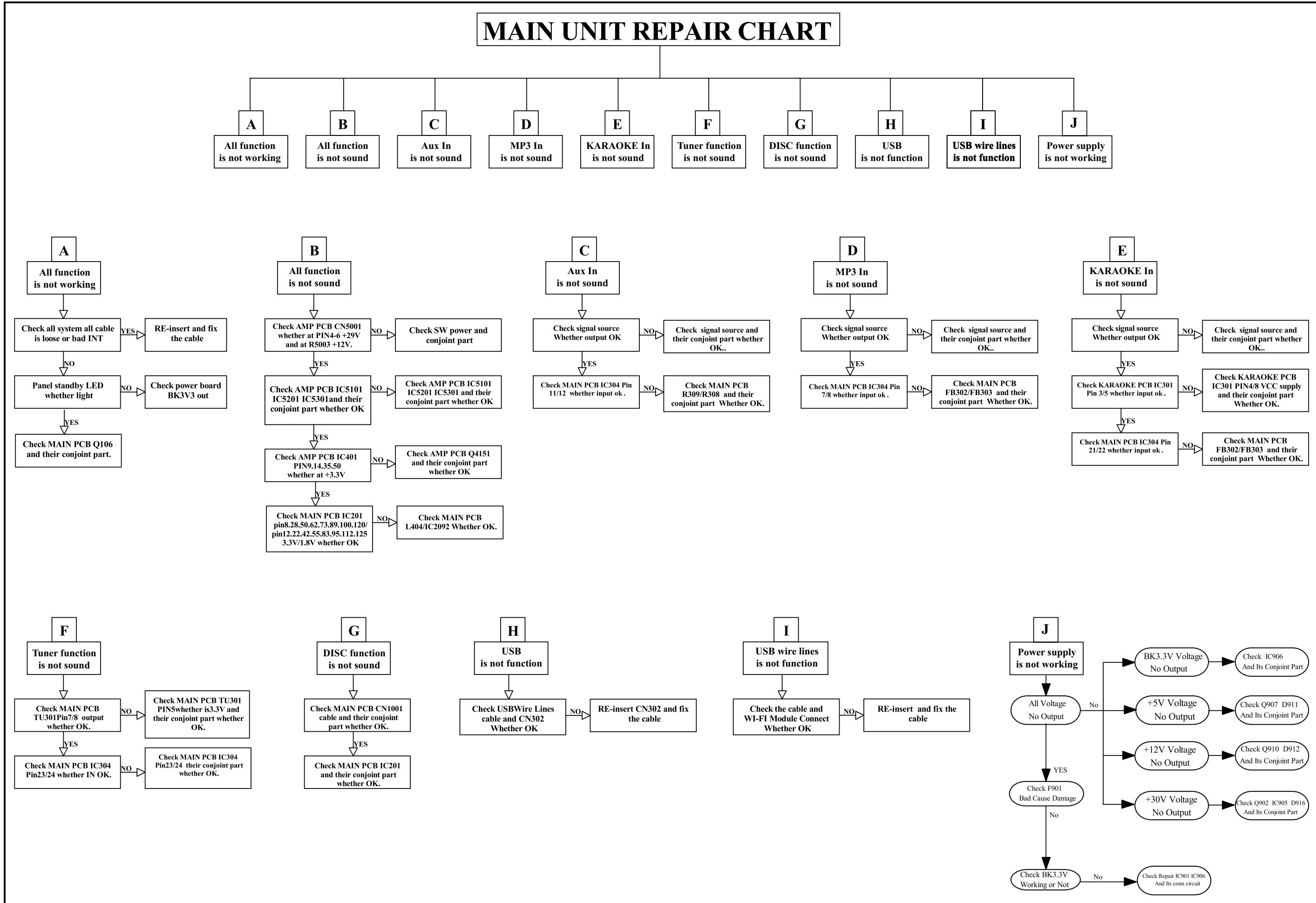
c) Press and hold <Play/Pause> until grid 9 (50 kHz) or grid (100 kHz) is displayed.

Note: Repeating the same action will toggle back to its previous tuning grid setting.

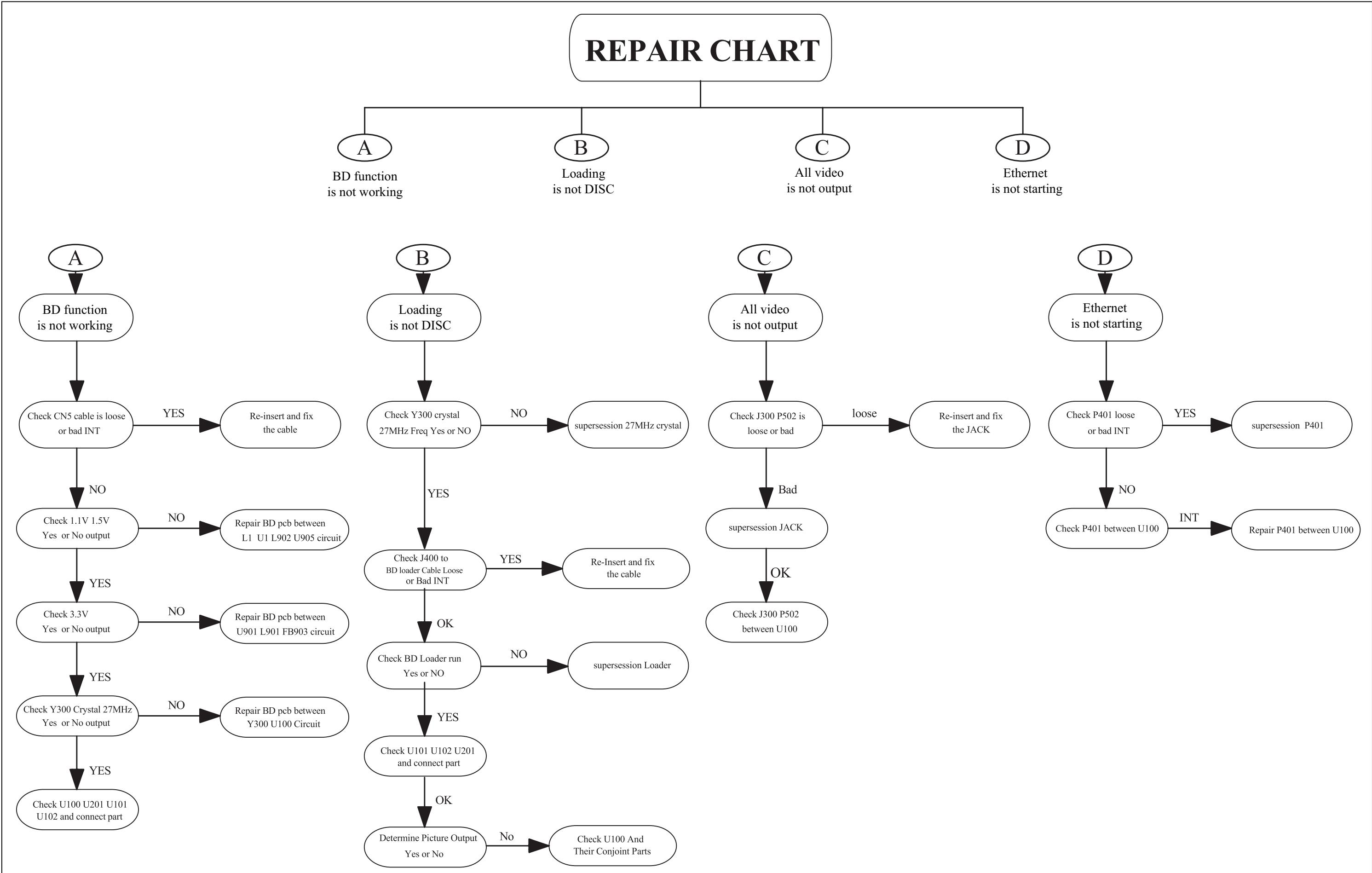
CAUTION!

This information is confidential and may not be distributed.

REPAIR INSTRUCTION-main unit



REPAIR INSTRUCTION-BD



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 Front Assembly

- 1) Loosen 11 screws "A" at the Back cover as shown in figure 1.
- 2) Loosen 5 screws "B" to remove the PCBA brackets assembly as shown in figure 2.

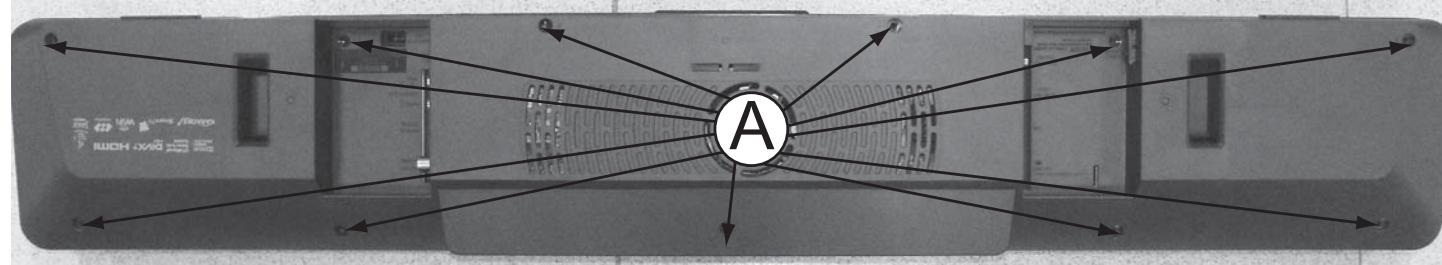


Figure 1

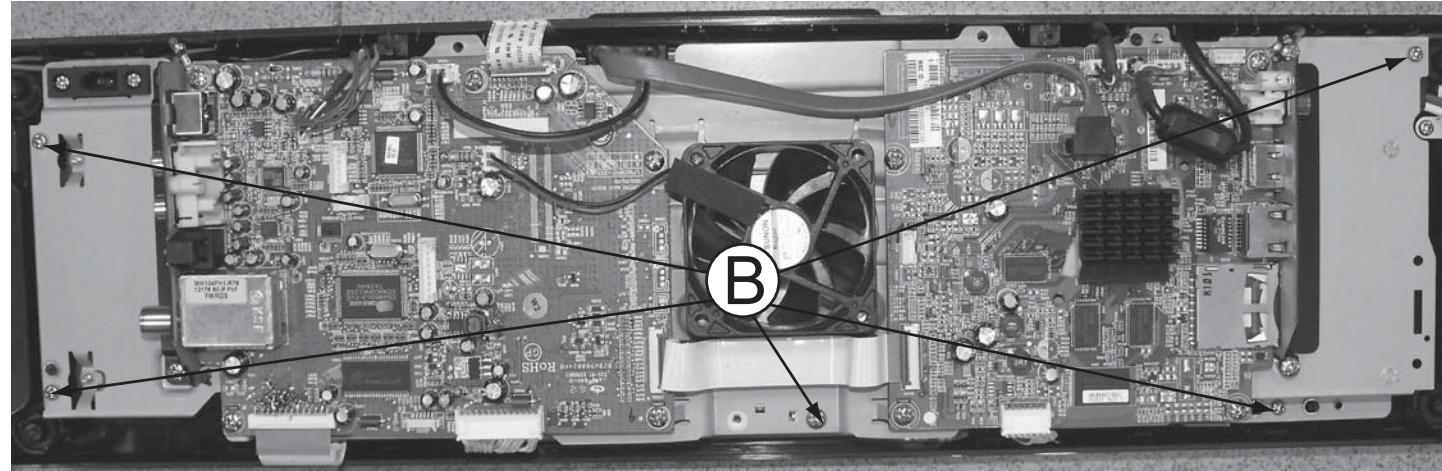


Figure 2

Dismantling of the Blu-ray Loader

- 1) Loosen 6 screws "C" as shown in figure 3 to remove the Blu-ray loader.

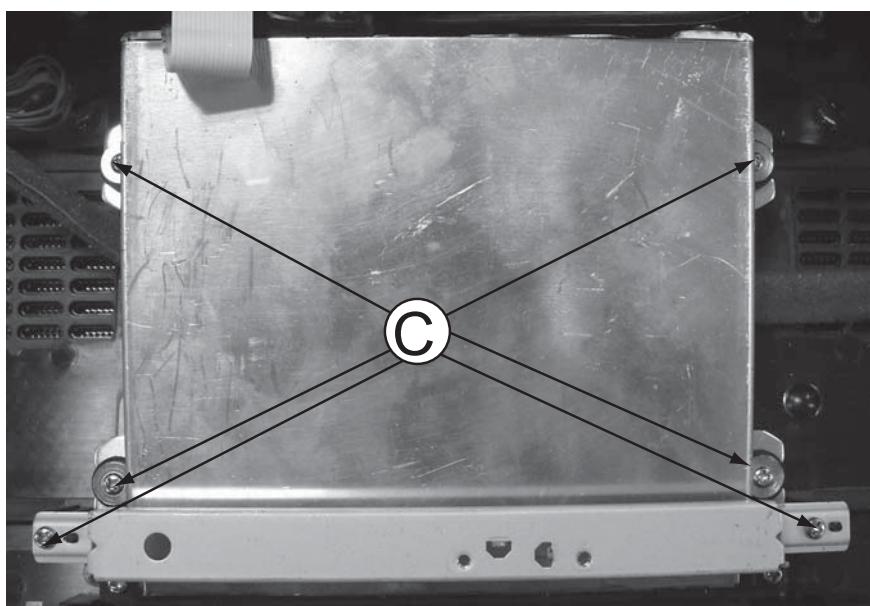


Figure 3

Dismantling of the Touch Board

- 1) Loosen 3 screws "D" to remove the Touch Board as shown in figure 4.

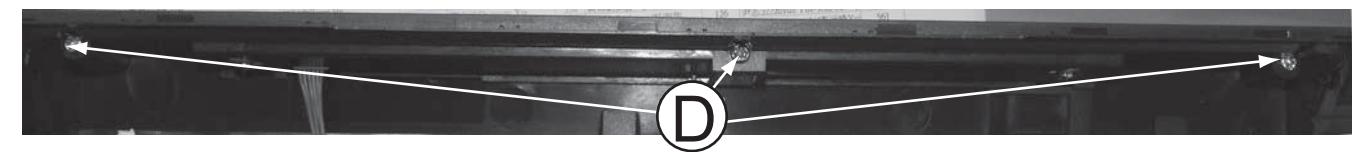


Figure 4

Dismantling of the MP3&USB&KARAOKE Board+Loudspeaker boxes+Wifi Board

- 1) Loosen 2 screws "E" on the top of MP3&USB&KARAOKE board as shown in figure 5 to remove it.
- 2) Loosen 10 screws "F" & "G" to remove the right & left Loudspeaker boxes as shown in figure 6 & 7, and loosen 4 screws "H" to remove the Speaker driver as shown in figure 8.
- 3) Loosen 2 screws "I" as shown in figure 9 to remove the Wifi board.

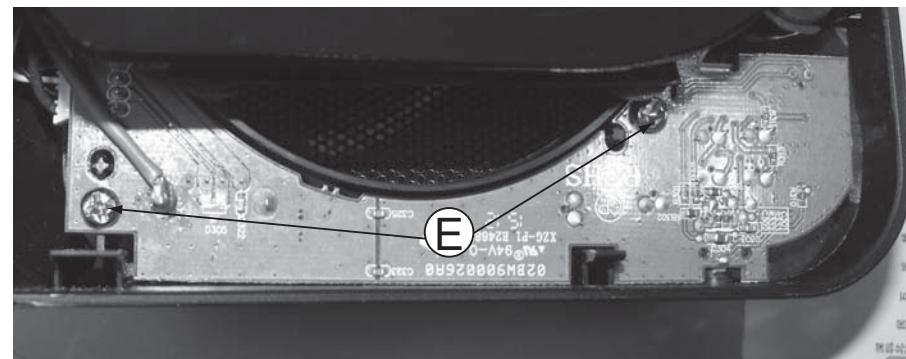


Figure 5

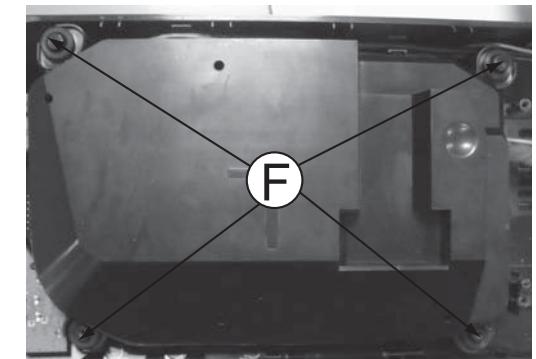


Figure 6

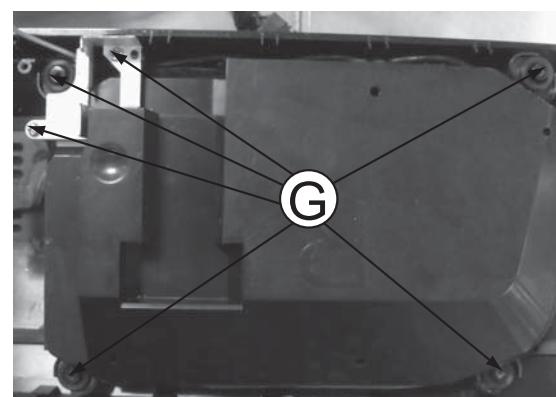


Figure 7



Figure 8

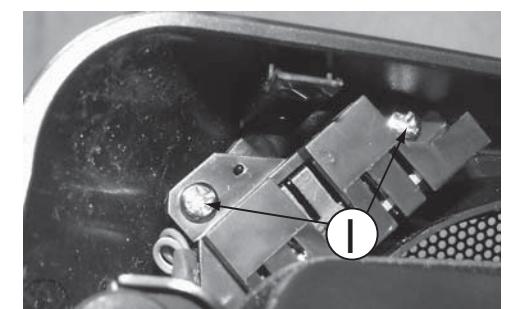


Figure 9

Dismantling of the VFD+LED Board

- 1) Loosen 2 screws "J" on the top of VFD Board as shown in figure 10 to remove it.
- 2) Loosen 3 screws "K" as shown in figure 11 to remove the LED board.

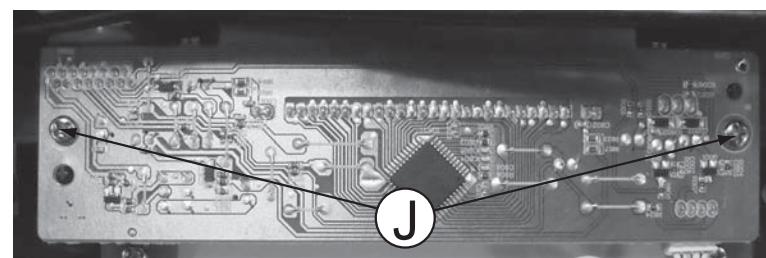


Figure 10

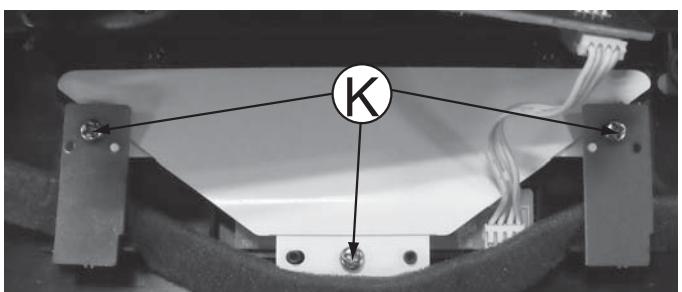


Figure 11

Dismantling of the BD Board

- 1) Loosen 1 screw "L" as shown in figure 12.
- 2) Loosen 4 screws "M" on the top of BD board as shown in figure 13 to remove the BD board.

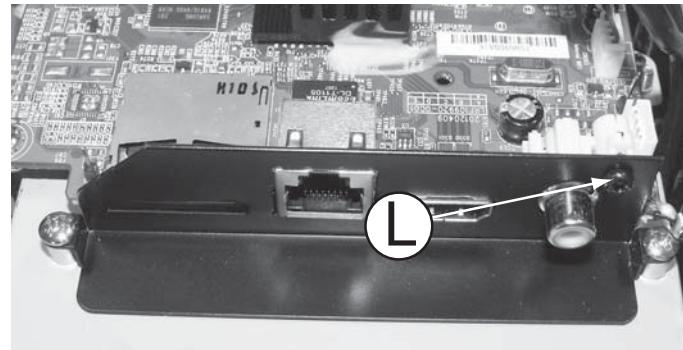


Figure 12

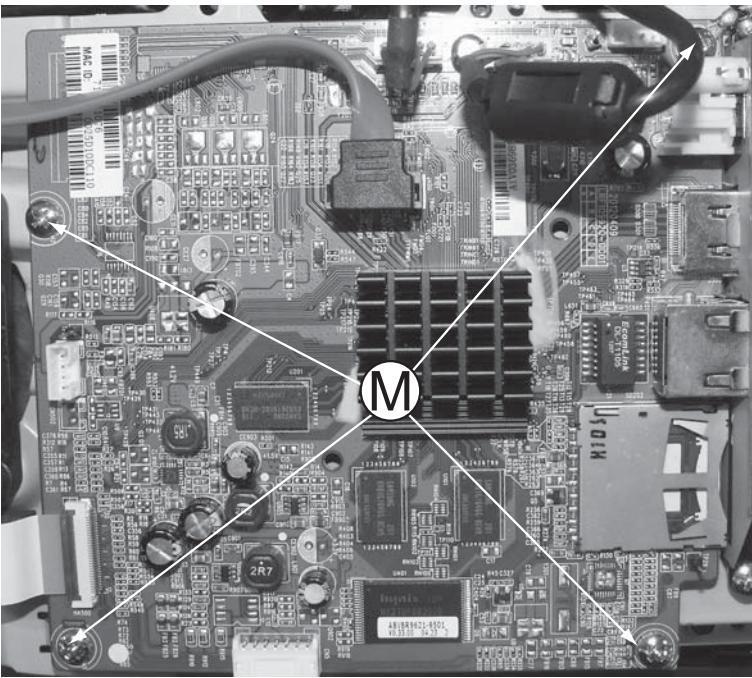


Figure 13

Dismantling of the Main Board

- 1) Loosen 3 screws "N" as shown in figure 14.
- 2) Loosen 5 screws "O" on the top of Main Board as shown in figure 15 to remove the Main Board.

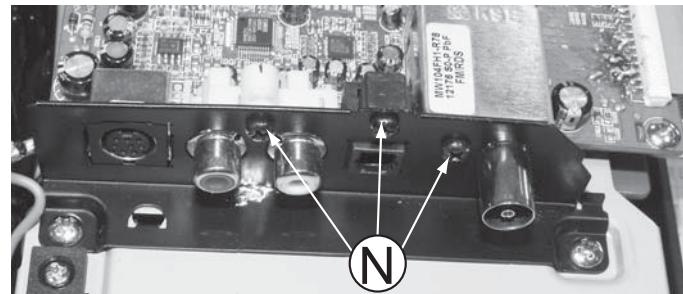


Figure 14

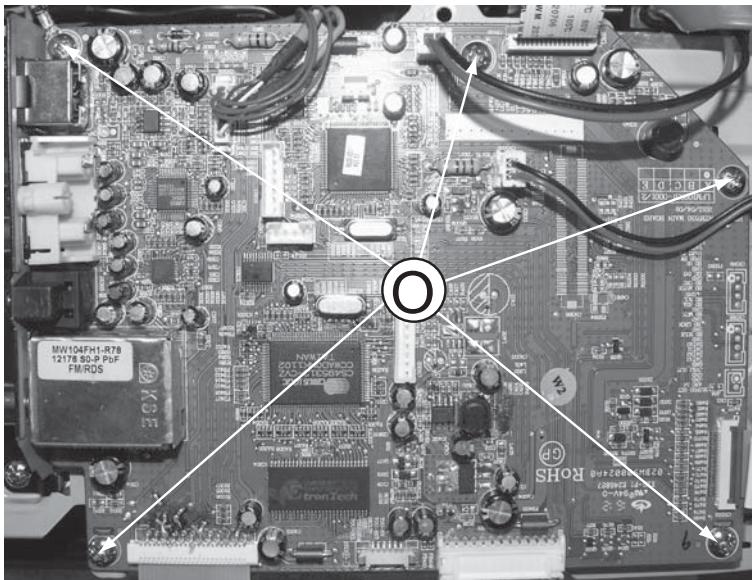


Figure 15

Dismantling of the AMP Board

- 1) Loosen 4 screws "P" on the top of AMP Bard as shown in figure 16.

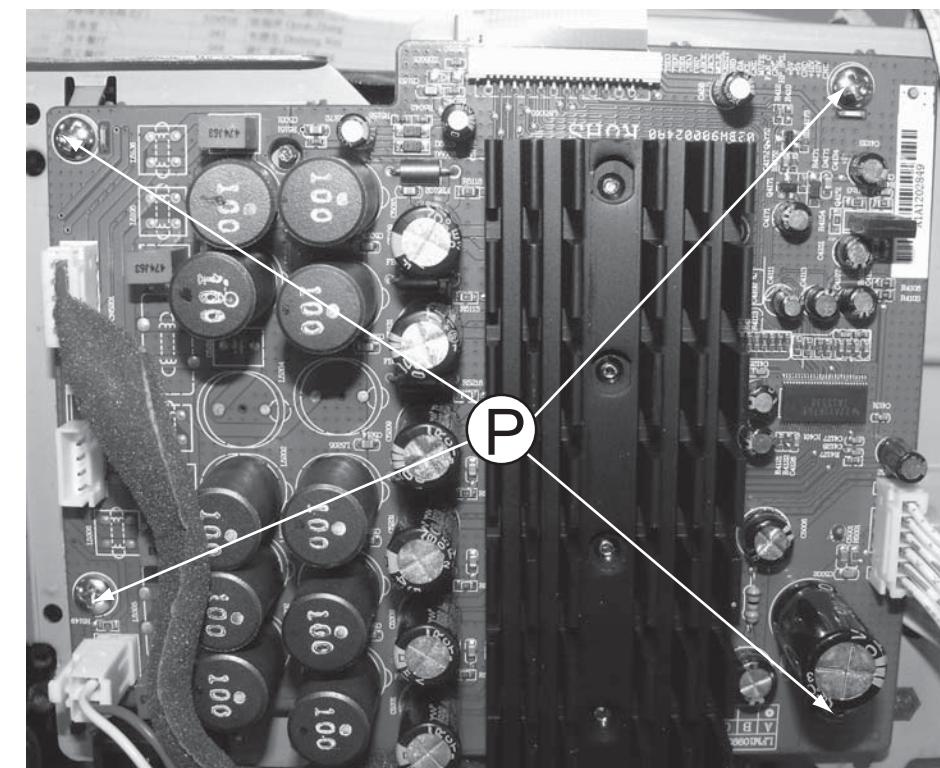


Figure 16

Dismantling of the Power Board

- 1) Loosen 6 screws "Q" as shown in figure 17 to remove the Power board.

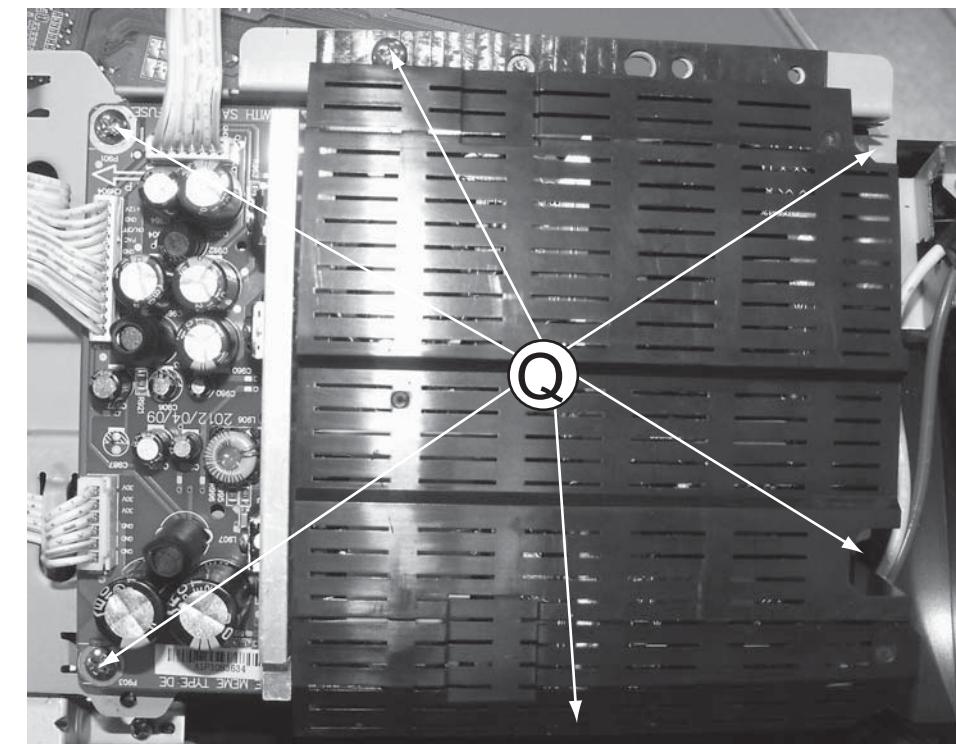
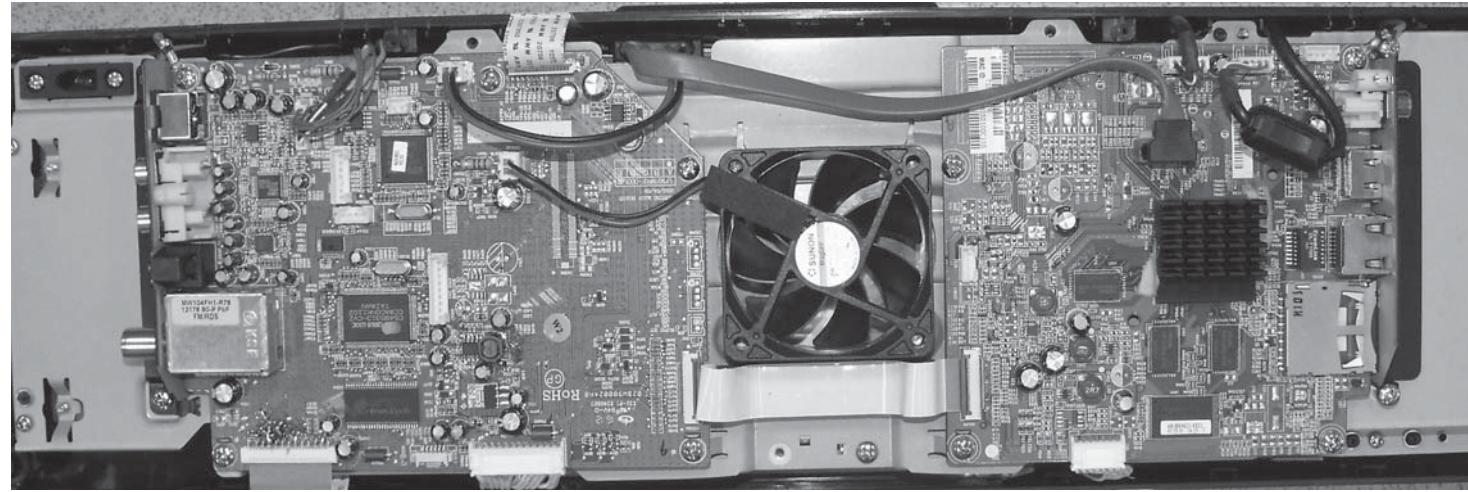


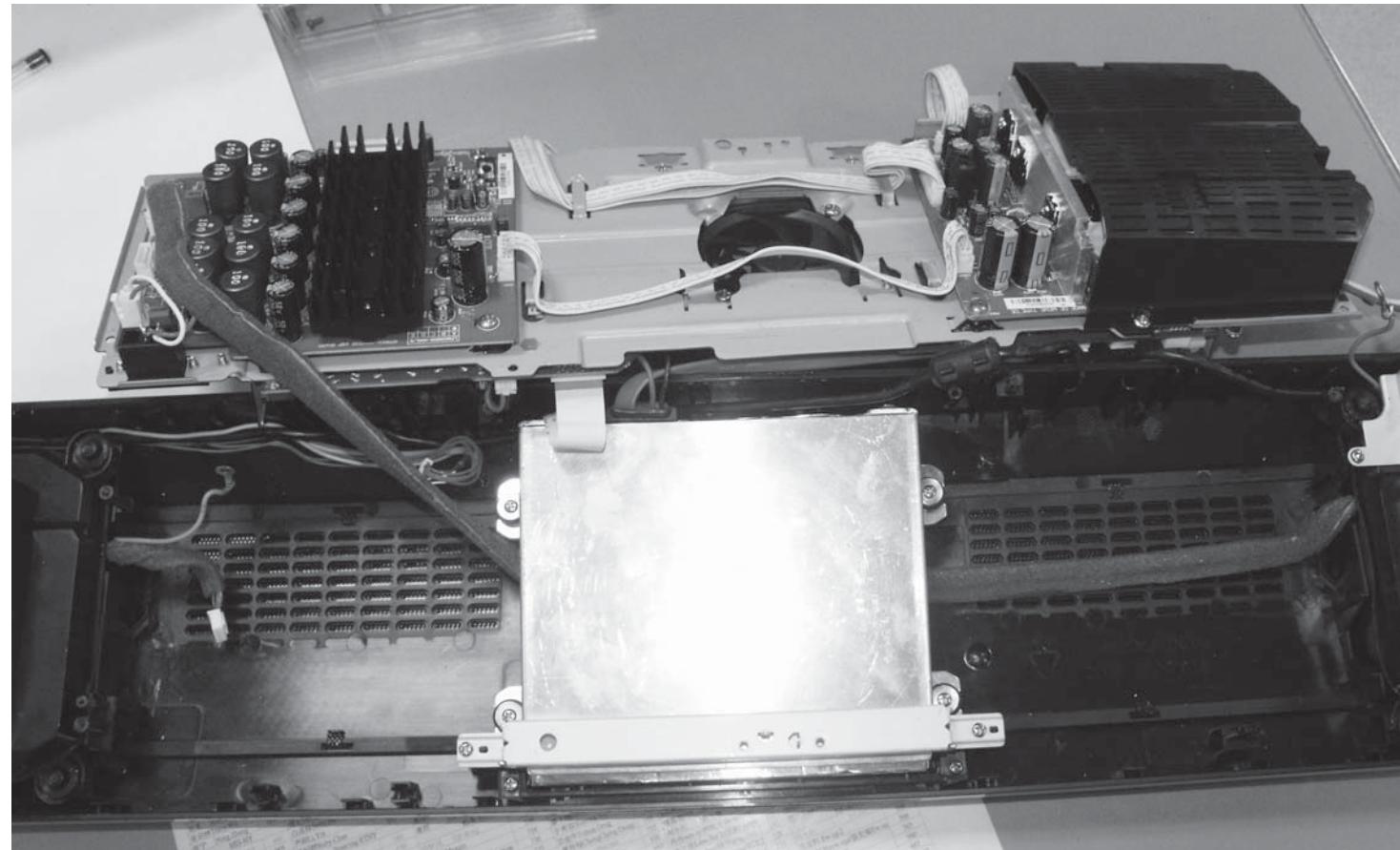
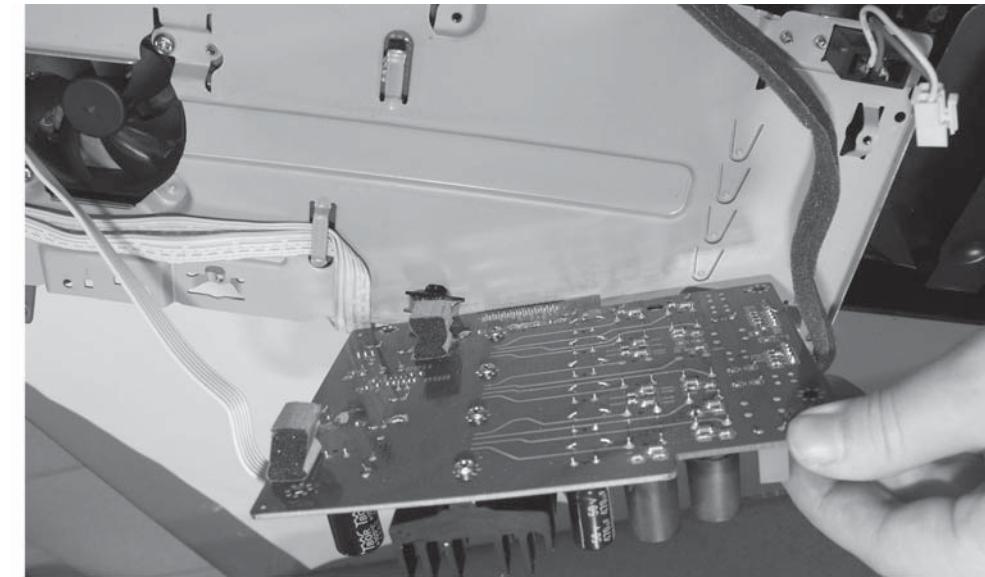
Figure 17

Service Positions

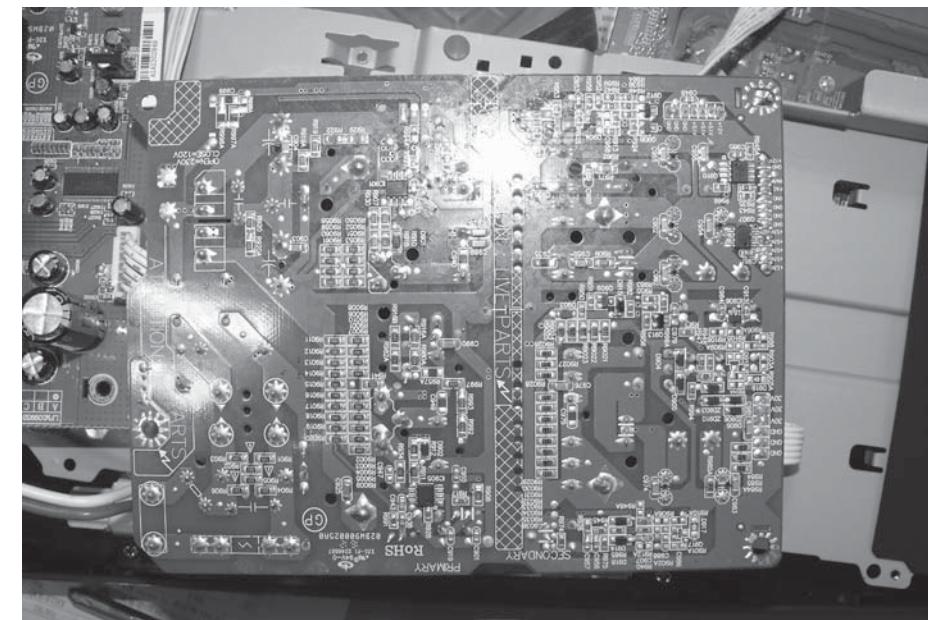
Service Position A - All Boards



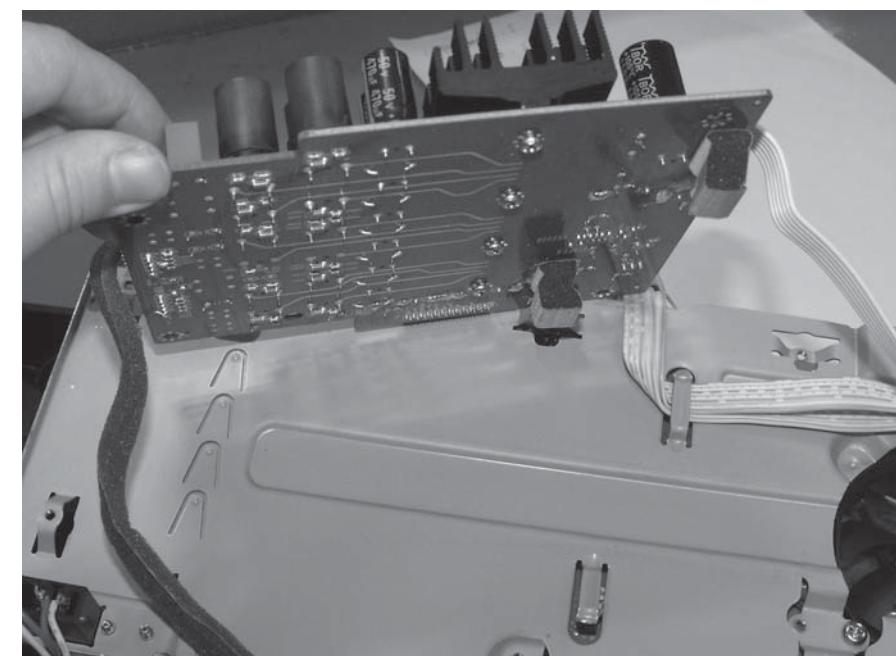
Service Position B - Main Board



Service Position C - Power Board



Service Position D - AMP Board



Blu-ray Loader mechanism handling

Note: This Manual describes how to handle TEAC BD-LN150 drives to prevent the unnecessary damages to the drives.

- 1) Loosen 4 screws "S" & "R" to remove Blu-ray Loader bracket as show in figure 19 & 20.

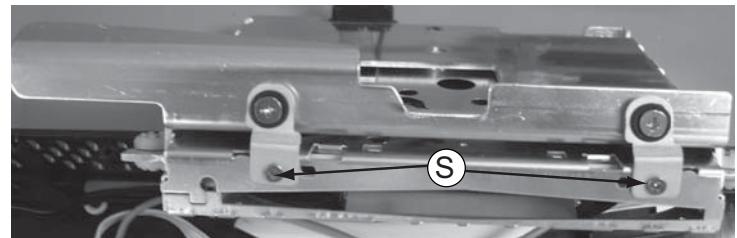


Figure 19

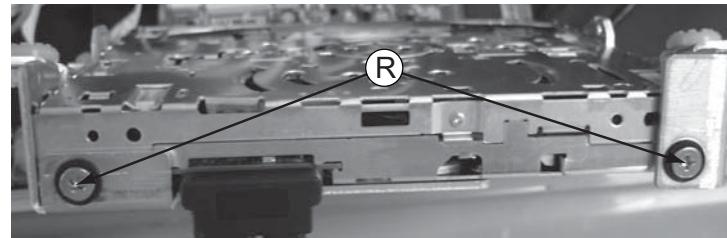
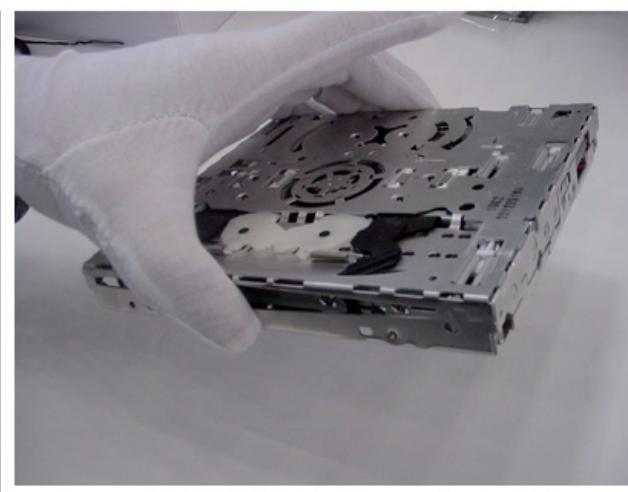
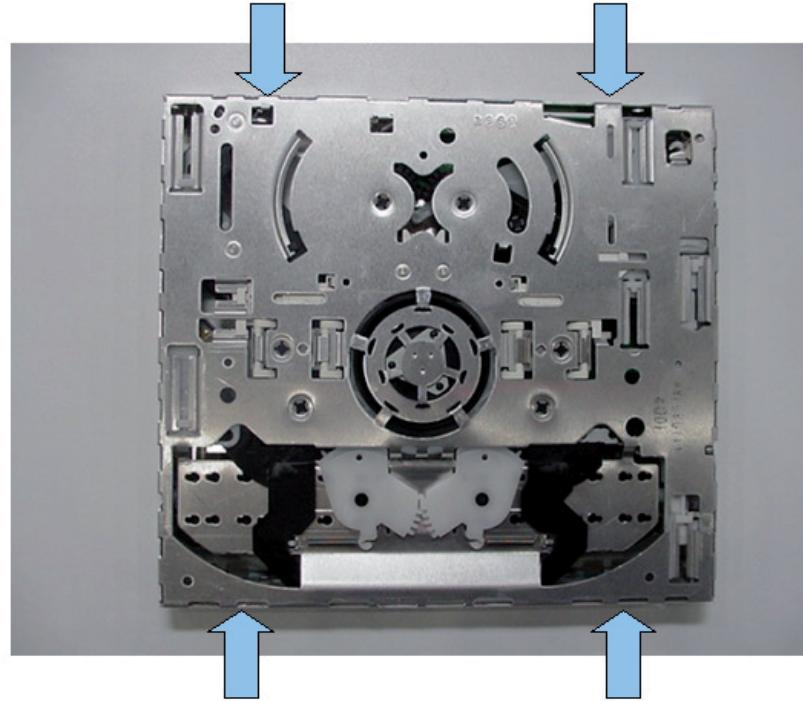


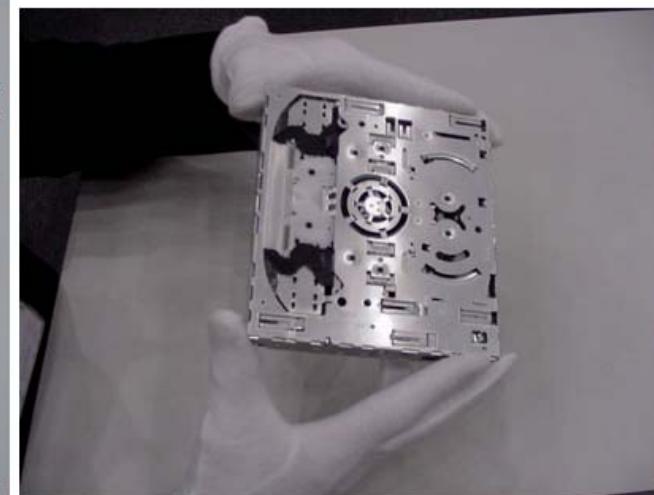
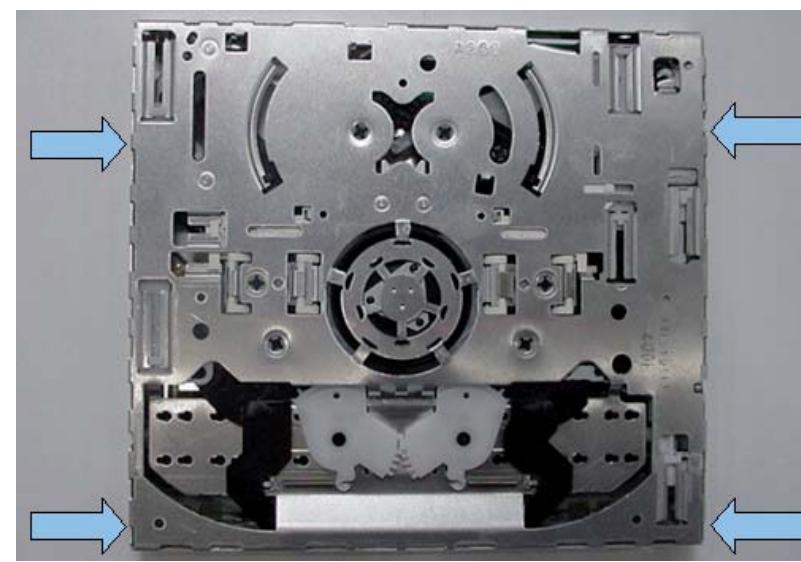
Figure 20

- 2) How to hold BD-LN150.

> Hold by the front and rear: hold the drive as indicated by arrow marks.



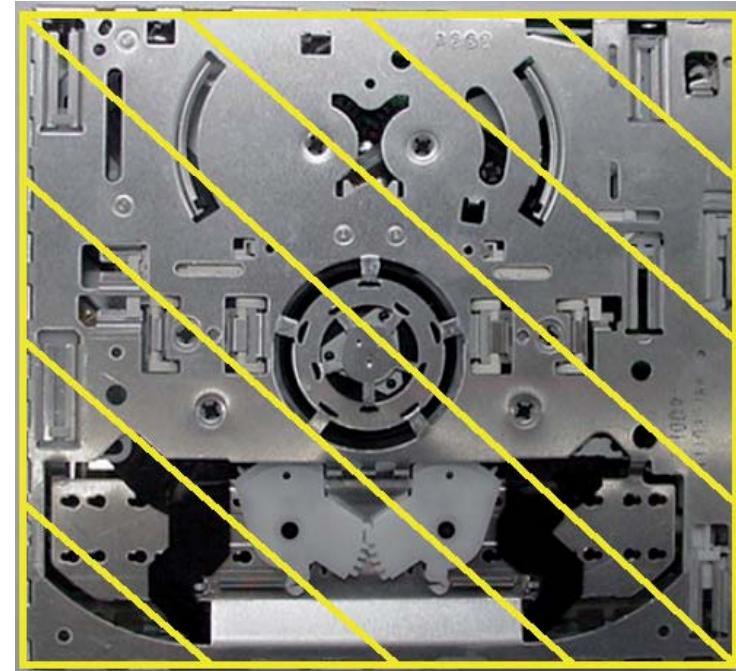
> Hold by the sides with your both hands if your hand is small to grab it with one hand at the front and rear: hold the drive as indicated by arrow marks.



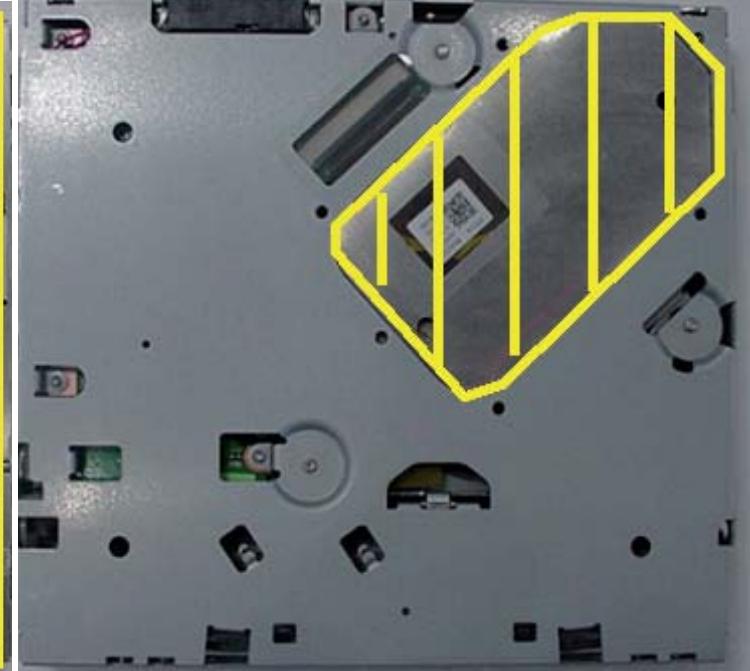
> Hold by the top and bottom: this holding method may cause damage of chassis since aluminum chassis is used and not recommended.
Note: Bottom chassis of BD-LN150 is steel.



> Do not touch any parts on the top and do not touch Spindle motor cover on the bottom.



Top



Bottom

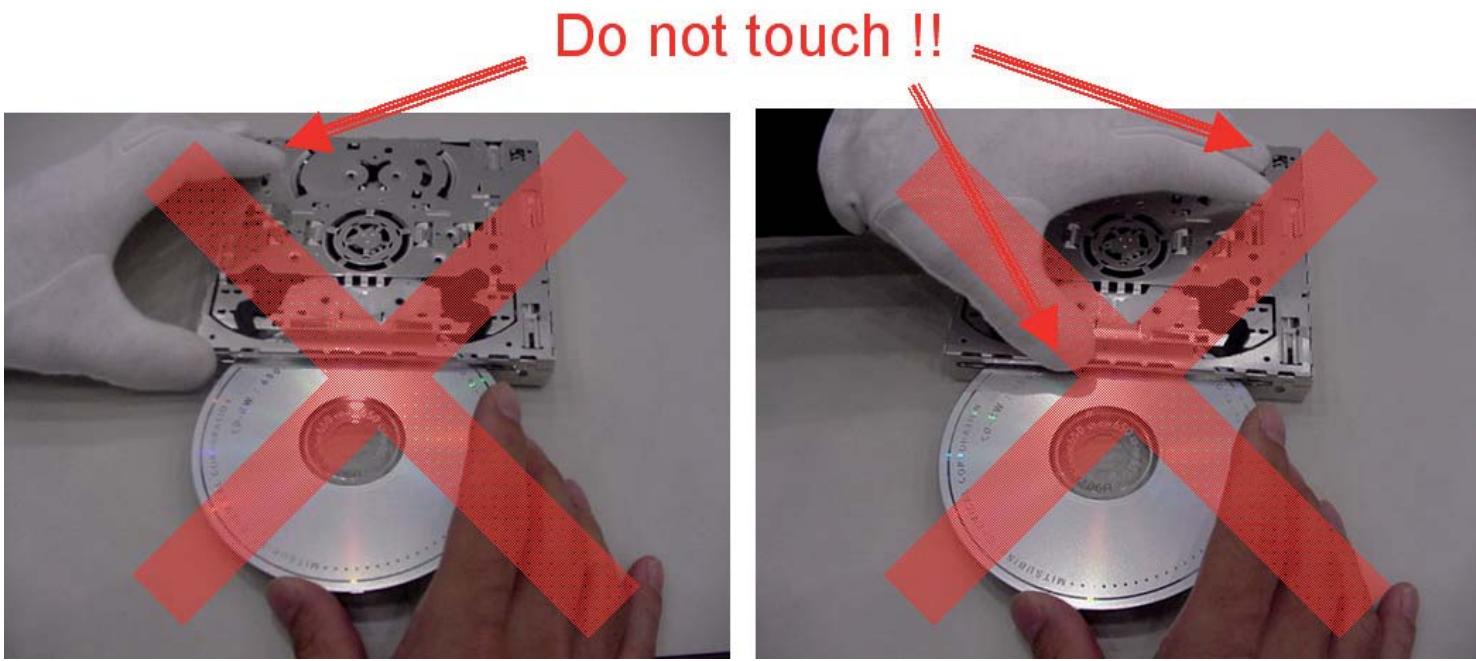
- 3) How to insert a disc into BD-LN150.

> Do not touch any parts on the top while inserting / ejecting a disc.

> Do not touch any parts on the top even after disc is loaded (while reading a disc).



> The other example of bad handling while inserting / ejecting a disc.



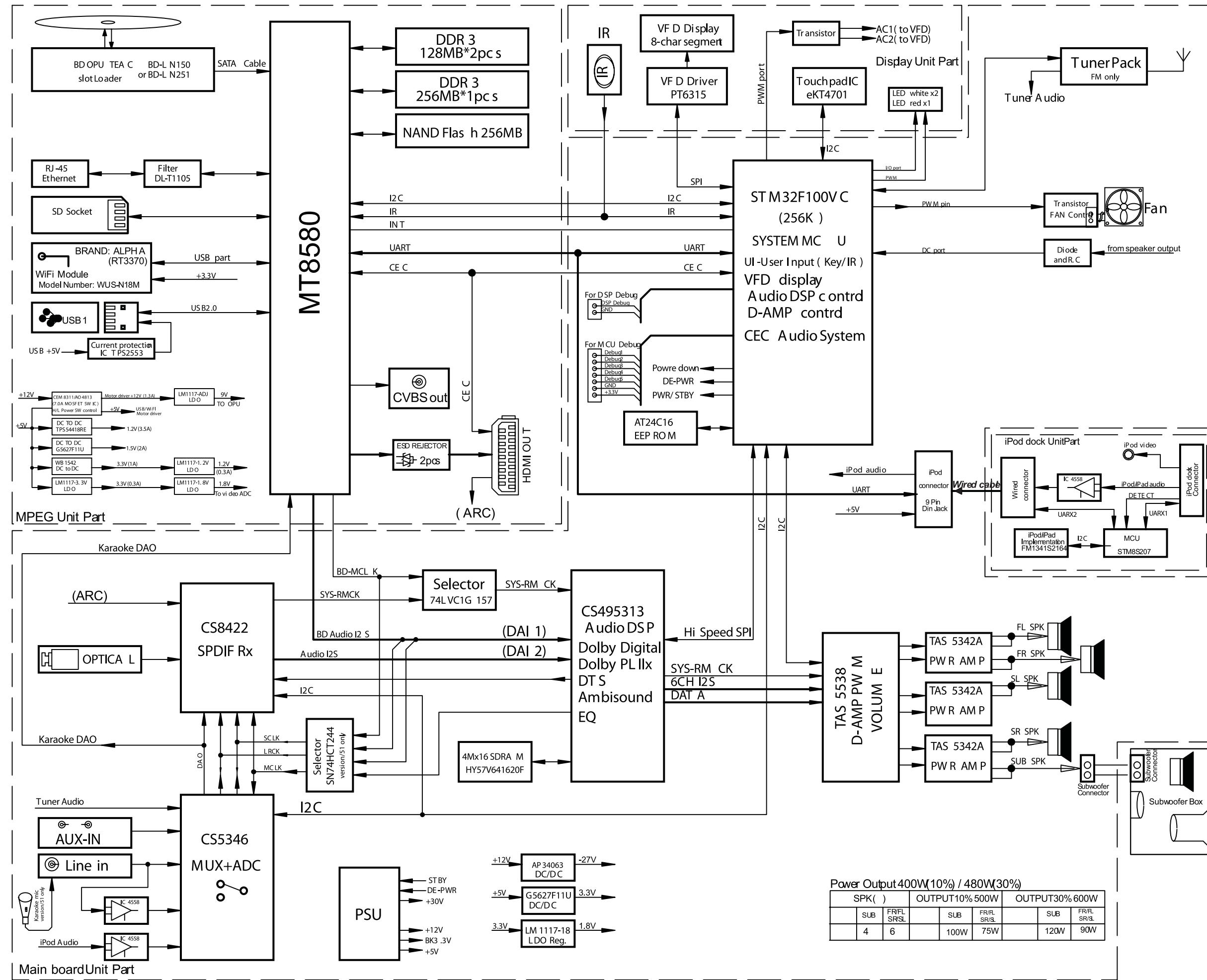
4) How to mount BD-LN150.

- > Utilize Self tap screw holes on the front and rear.
- > Do not use double side tape to fix it. It may cause frame deformation when it is removed.

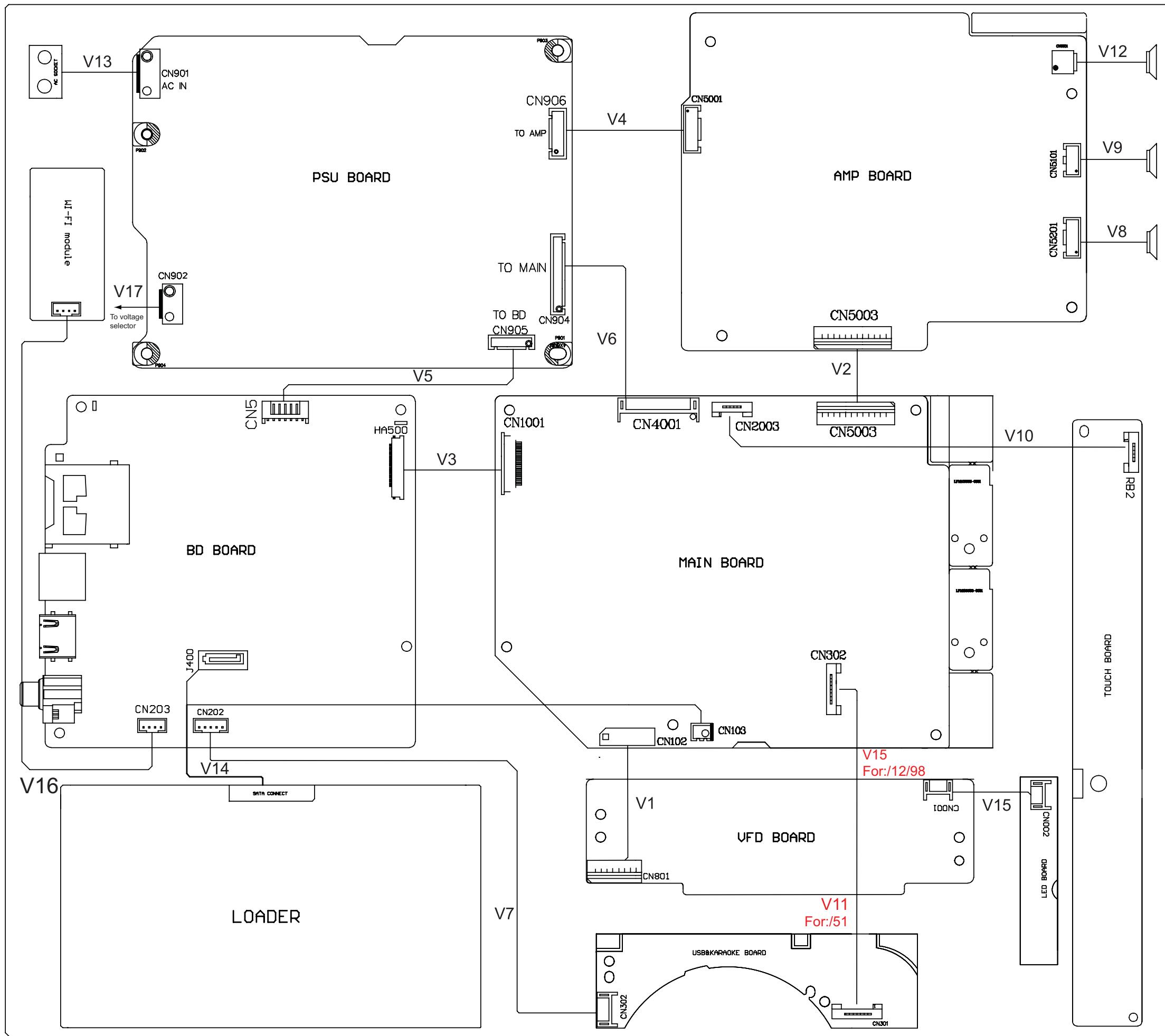


5) Application notes and design recommendation in mounting.

- > The drive frame is using 0.8t aluminum plate. Pay attention not to occur any distortion when mounting the drive. Any distortion may cause Load/Eject issue.
- > If the drive will be used in the dusty environment, cover the drive to avoid the dust. If the dust is stuck on the roller or OPU lens, it may cause Load/Eject issue or Read issue.
- > In case that drive is mounted with Disc opening up, pay caution not to insert foreign material such as coins.
- > Make sure that the drive is used in the specified temperature. (5 degree C to 50 degree C).
- > Make sure that the appropriate handling is applied to the drive as shown in Handling Manual. Applying to the parts may cause Load/Eject issue.

BLOCK DIAGRAM

WIRING DIAGRAM

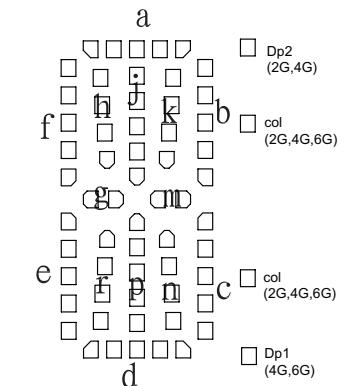
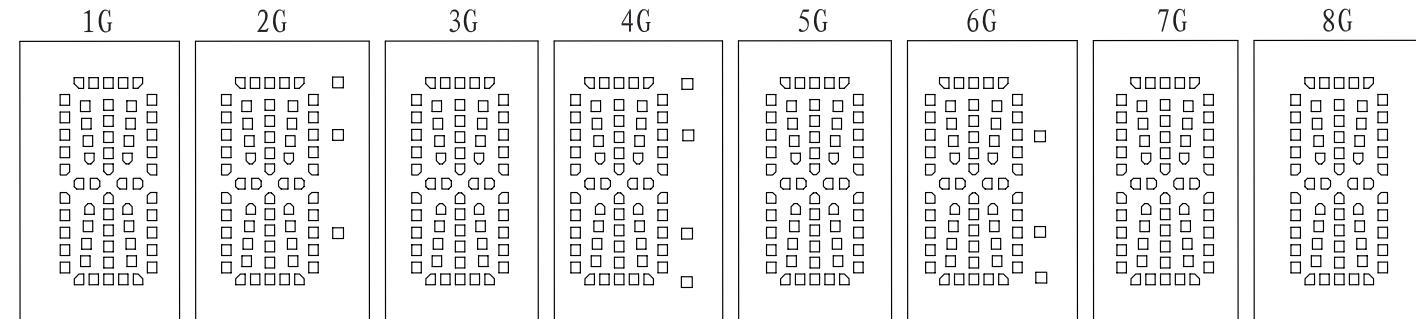


VFD+LED BOARD

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FTD DISPLAY PIN ASSIGNMENT



	1G	2G	3G	4G	5G	6G	7G	8G
P1	—	—	—	Dp1	—	Dp1	—	—
P2	—	col	—	col	—	col	—	—
P3	d	d	d	d	d	d	d	d
P4	n	n	n	n	n	n	n	n
P5	r	r	r	r	r	r	r	r
P6	e	e	e	e	e	e	e	e
P7	c	c	c	c	c	c	c	c
P8	g	g	g	g	g	g	g	g
P9	m	m	m	m	m	m	m	m
P10	f	f	f	f	f	f	f	f
P11	b	b	b	b	b	b	b	b
P12	k	k	k	k	k	k	k	k
P13	h	h	h	h	h	h	h	h
P14	p, j							
P15	a	a	a	a	a	a	a	a
P16	—	Dp2	—	Dp2	—	—	—	—

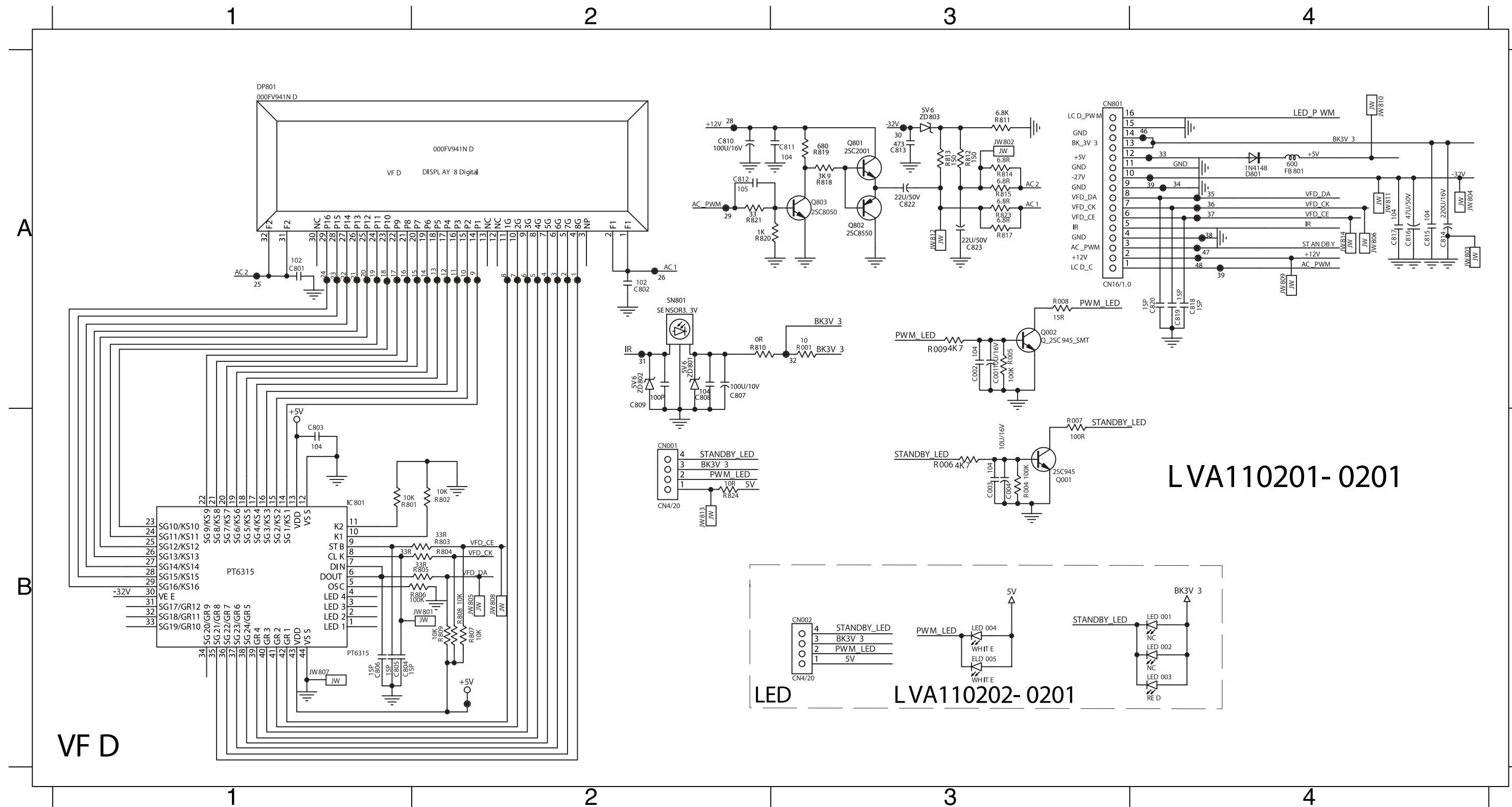
PIN CONNECTION

PIN NO.	3 2	3 1	3 0	2 9	2 8	2 7	2 6	2 5	2 4	2 3	2 2	2 1	2 0	1 9	1 8	1 7	1 6	1 5	1 4	1 3	1 2	1 1	1 0	9 9	8 8	7 7	6 6	5 5	4 4	3 3	2 2	1 1
CONNECTION	F 2	F 2	N P	1 6	1 5	1 4	1 3	1 2	1 1	1 0	1 9	1 8	1 7	1 6	1 5	1 4	1 3	1 2	1 1	N C	N C	1 G	2 G	3 G	4 G	5 G	6 G	7 G	8 G	P 1	F F	

NOTE 1) F1, F2 --- Filament
 2) NP ----- No pin
 3) DL ----- Datum Line
 4) 1G~8G --- Grid
 5) Solder composition is Sn-3Ag-0.5Cu
 6) 1.5MAX is applied to all the leads inside A area.
 0.8MAX is applied to all the leads inside B area.

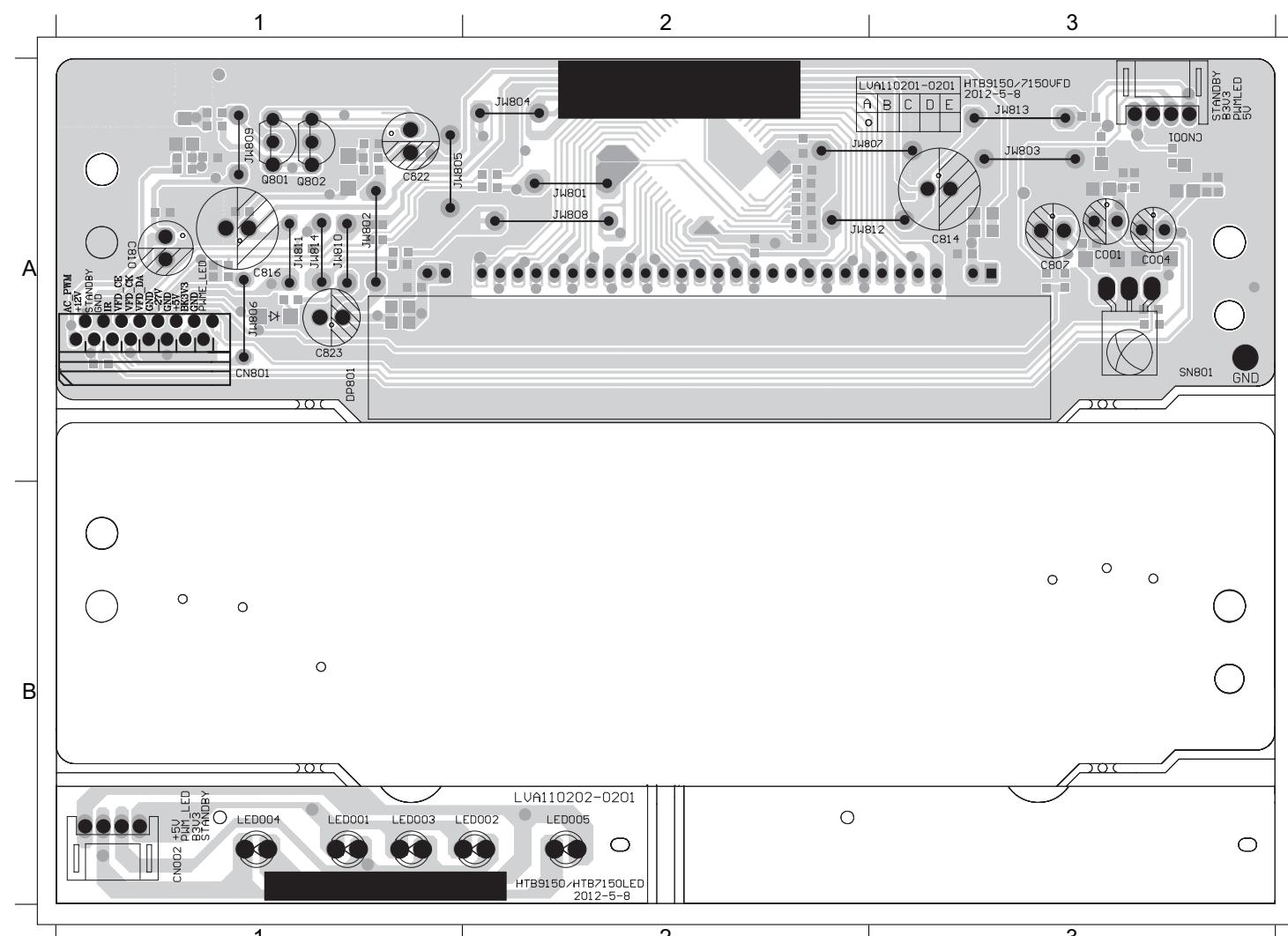
CIRCUIT DIAGRAM

C001	A3	C801	A1	C805	B1	C809	A2	C814	A4	C818	A4	C823	A3	D801	A4	LED003B4	Q002	A3	R001	A3	R007	B3	R802	B2	R806	B2	R810	A2	R814	A3	R819	A3	R824	B2	ZD803	A3
C002	A3	C802	A2	C806	B1	C810	A2	C815	A4	C819	A4	CN001	B2	DP801	A1	LED004B3	Q801	A3	R004	B3	R008	A3	R803	B2	R807	B2	R811	A3	R815	A3	R820	A2	SN801	A2		
C003	B3	C803	B1	C807	A2	C811	A3	C816	A4	C820	A4	CN002	B3	FB801	A4	LED005B3	Q802	A3	R005	A3	R009	A3	R804	B2	R808	B2	R812	A3	R817	A3	R821	A2	ZD801	A2		
C004	B3	C804	B1	C808	A2	C812	A2	C817	A4	C822	A3	CN801	A3	IC801	B1	Q001	B3	Q803	A3	R006	B3	R801	B2	R805	B2	R809	B2	R813	A3	R818	A3	R823	A3	ZD802	A2	



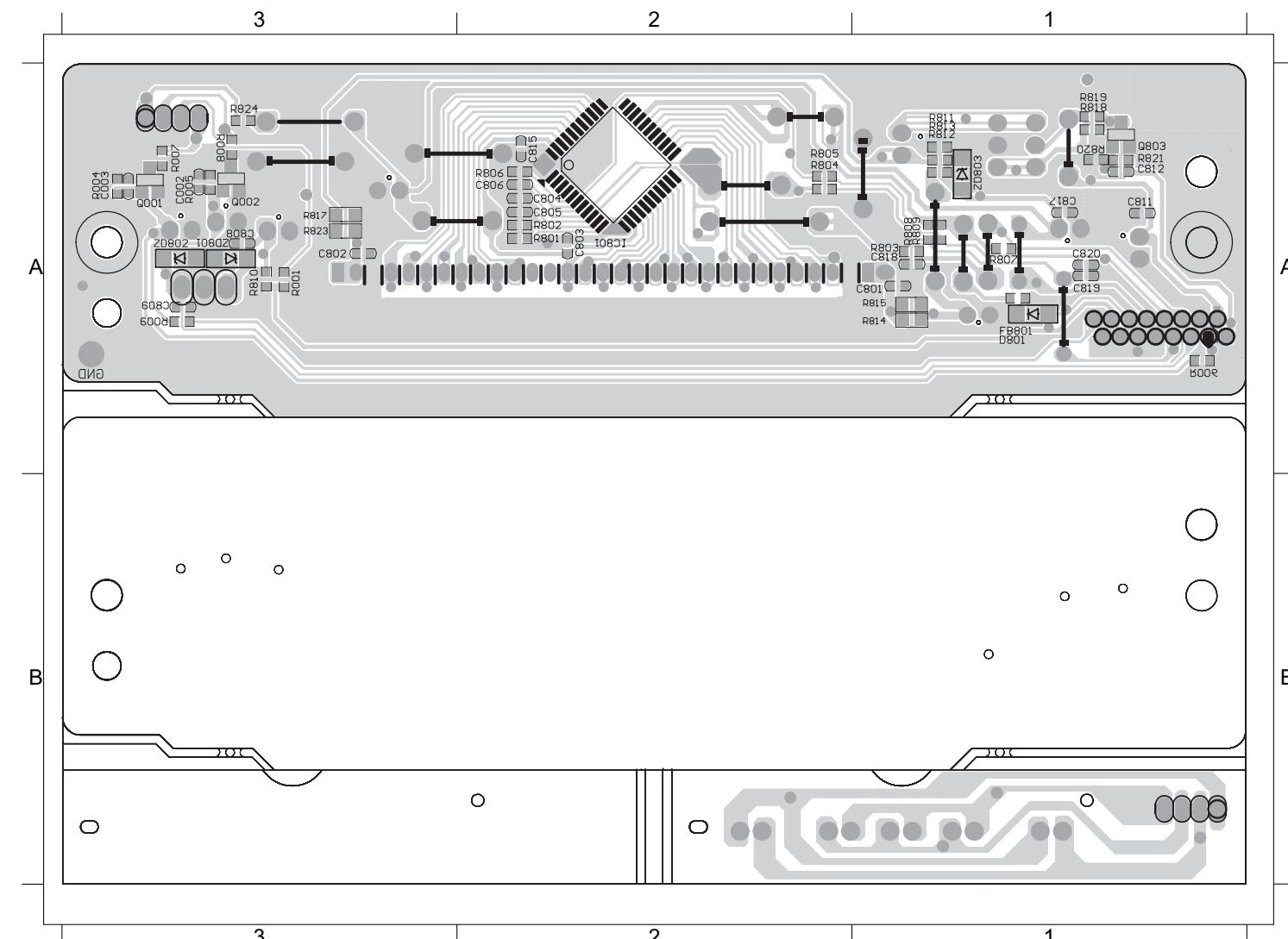
PCB LAYOUT - TOP VIEW

C001 A3 C807 A3 C814 A3 C822 A1 CN001 A3 CN801 A1 LED003B1 LED005B2 Q802 A1
 C004 A3 C810 A1 C816 A1 C823 A1 CN002 B1 DP801 A1 LED004B1 Q801 A1 SN801 A3



PCB LAYOUT - BOTTOM VIEW

C002 A3 C804 A2 C811 A1 C819 A1 Q001 A3 R005 A3 R801 A2 R806 A2 R811 A1 R817 A3 R823 A3
 C003 A3 C805 A2 C812 A1 C820 A1 Q002 A3 R006 A1 R802 A2 R807 A1 R812 A1 R818 A1 R824 A3
 C801 A1 C806 A2 C815 A2 D801 A1 Q803 A1 R007 A3 R803 A1 R808 A1 R813 A1 R819 A1 ZD801 A3
 C802 A3 C808 A3 C817 A1 FB801 A1 R001 A3 R008 A3 R804 A2 R809 A1 R814 A1 R820 A1 ZD802 A3
 C803 A2 C809 A3 C818 A1 IC801 A2 R004 A3 R009 A3 R805 A2 R810 A3 R815 A1 R821 A1 ZD803 A1

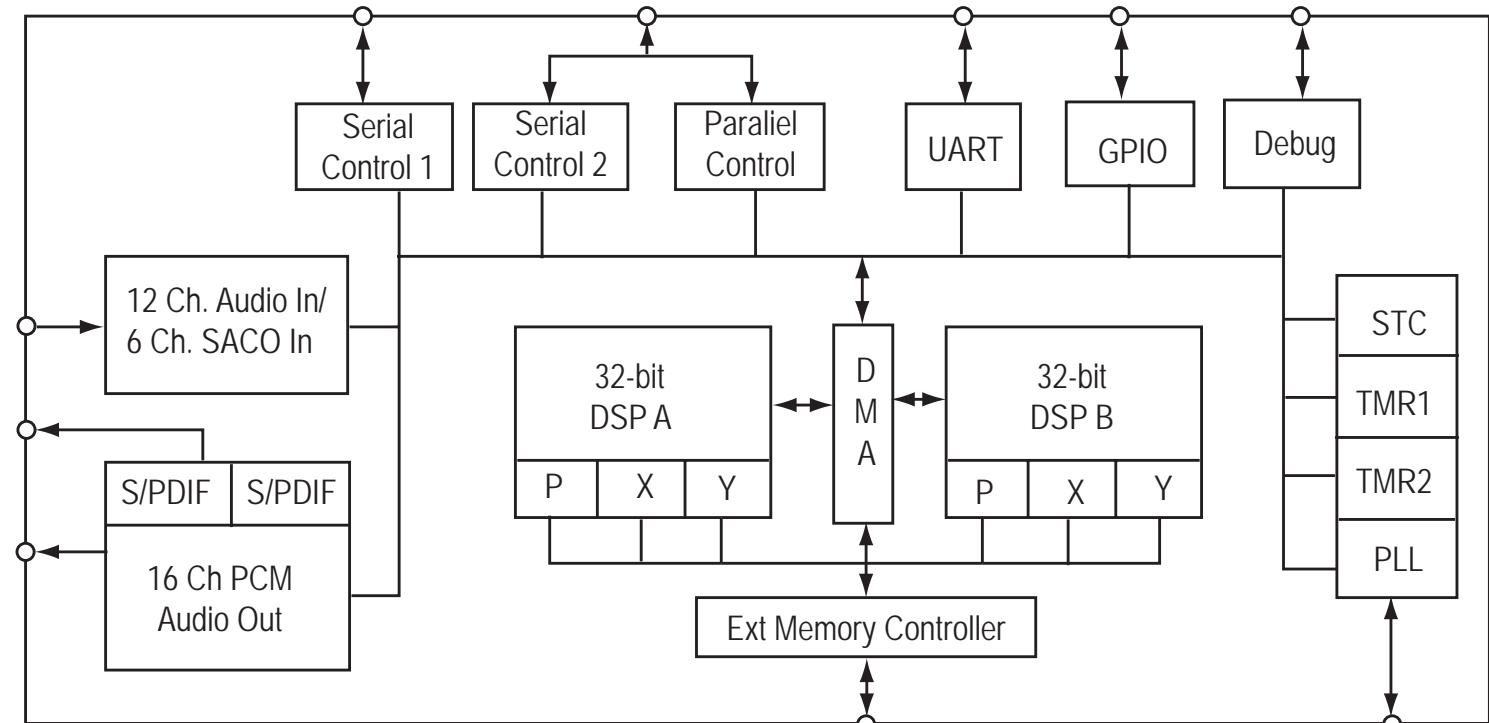


MAIN+AMP+PLATE BOARD

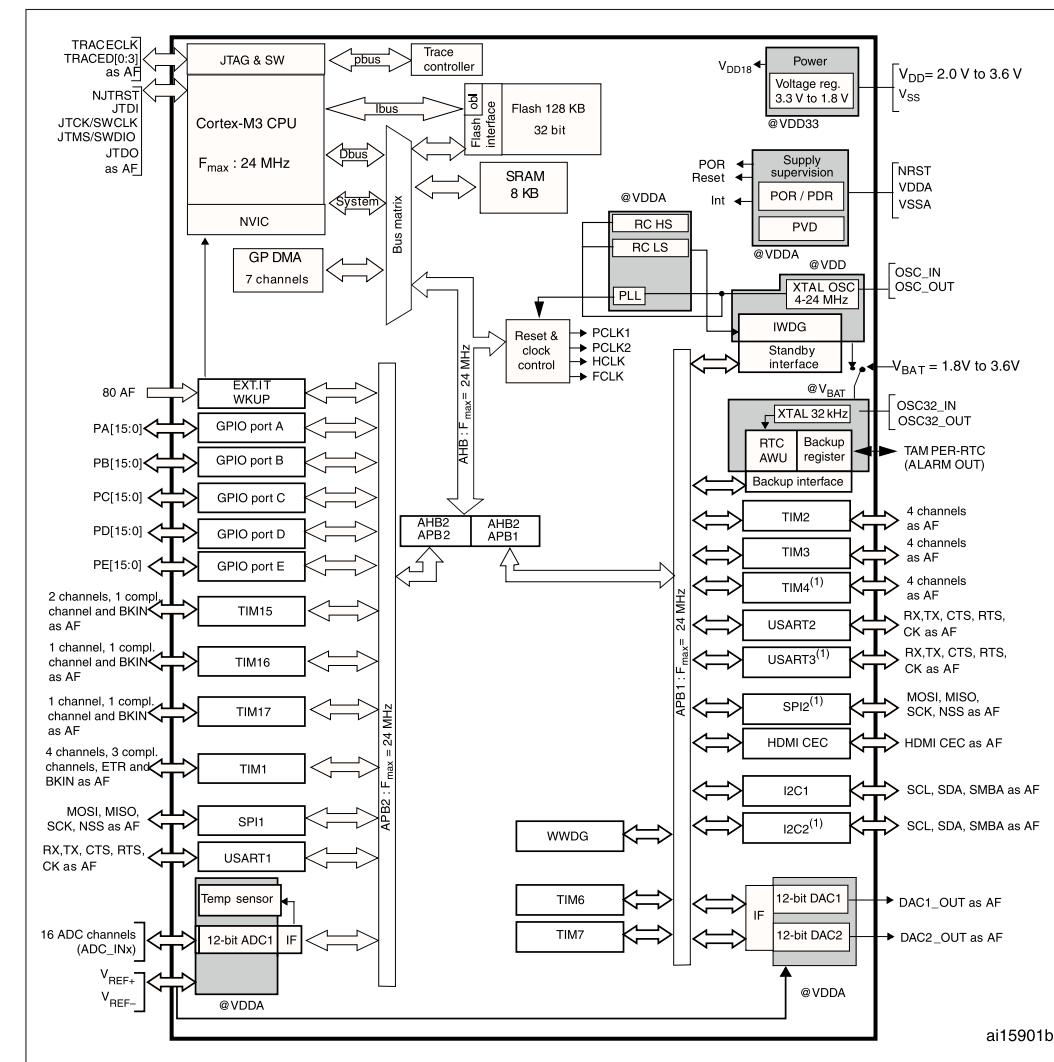
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INTERNAL IC DIAGRAM - CS495313-CVZ



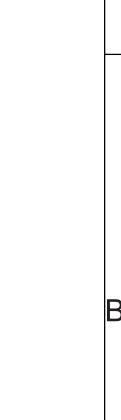
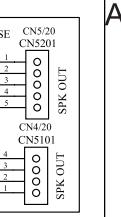
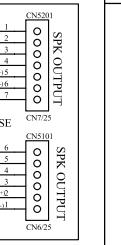
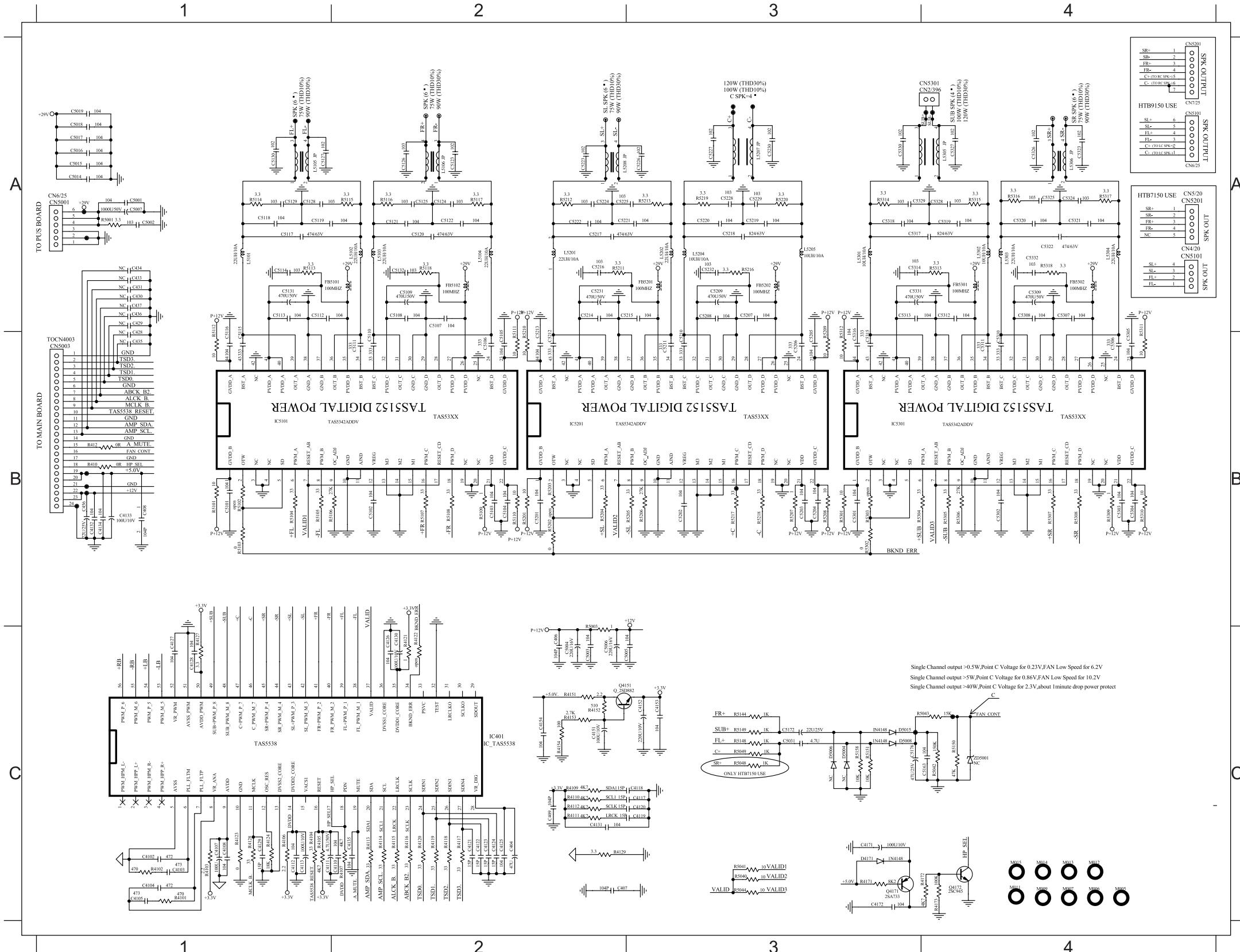
INTERNAL IC DIAGRAM - STM32F100VCT6TR



ai15901b

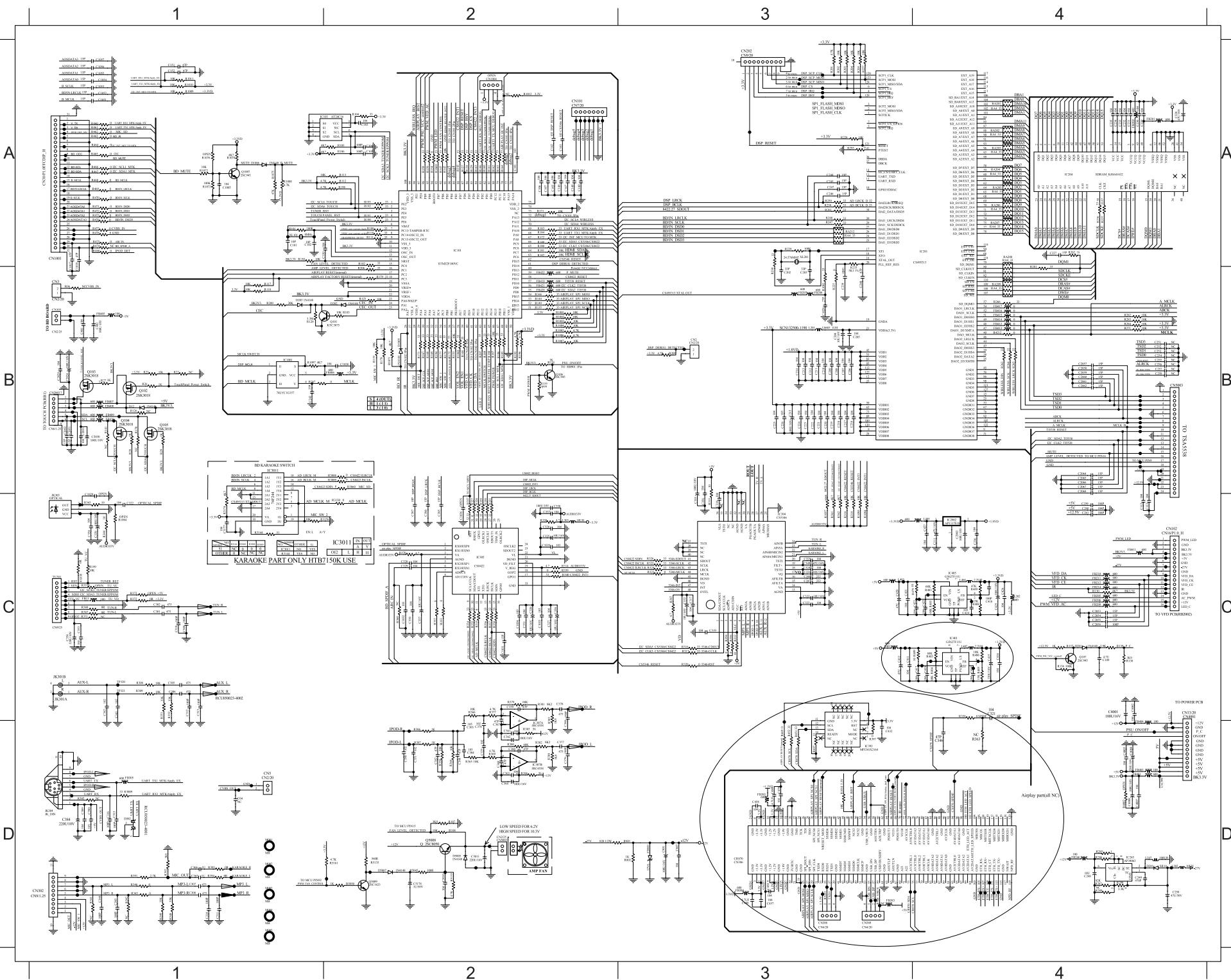
CIRCUIT DIAGRAM (part one)

C404 C2 C4111 C1 C4126 C2 C4153 C3 C5014 A1 C5106 B2 C5118 A1 C5130 A1 C5119 A1 C5131 A1 C5208 A3 C5223 A2 C5307 A4 C5319 A4 C5331 A4 FB5102A2 L5104 A2 R4103 C1 R4116 C2 R4151 C2 R5043 D4 R5111 B2 R5151 C3 R5212 A2 R5309 C4
C406 C2 C4112 C1 C4127 C1 C4154 C2 C5015 A1 C5107 A2 C5119 A1 C5130 A1 C5120 A2 C5132 A2 C5209 A3 C5224 A2 C5308 A4 C5320 A4 C5332 A4 FB5201A3 L5201 A2 R4104 C1 R4117 C2 R4152 C2 R5044 C3 R5112 A1 R5158 C3 R5213 A3 R5310 C4
C407 C2 C4113 C1 C4128 C1 C4171 C3 C5016 A1 C5108 A2 C5121 A2 C5163 D4 C5210 B3 C5225 A2 C5309 A4 C5321 A4 CN5001A1 FB5301A4 L5301 A3 R4106 C1 R4119 C2 R4154 C2 R5101 B2 R5217 B3 R5312 A3
C408 B1 C4117 C3 C4129 C1 C4172 C3 C5017 A1 C5109 A2 C5121 A2 C5163 D4 C5210 B3 C5225 A2 C5309 A4 C5321 A4 CN5001A1 FB5301A4 L5301 A3 R4106 C1 R4119 C2 R4154 C2 R5101 A1 R5202 B2 R5217 B3 R5312 A3
C409 C2 C4118 C3 C4130 C2 C456 B1 C5018 A1 C5110 B2 C5122 A2 C5172 C3 C5211 B3 C5226 A3 C5310 C4 C5322 A4 CN5003B1 FB5302A4 L5302 A4 R4107 C2 R412 B1 R4171 C3 R5103 B1 R5115 A2 R5204 B2 R5218 B3 R5313 A4
C4102 C1 C4119 C3 C4131 C2 C5001 A1 C5019 A1 B2 C5123 A2 C5176 C3 C5212 B2 C5231 A2 C5311 C4 C5323 A4 CN5101A4 IC401 C2 L5303 A4 R4109 C2 R4120 C2 R4172 D4 R5104 B1 R5116 A2 R5205 B2 R5301 B3 R5314 A3
C4103 C1 C4120 C3 C4132 B1 C5002 A1 C5031 C3 C5112 A1 C5124 A2 C5201 B2 C5213 B2 C5232 A3 C5312 A4 C5324 A4 CN5201A4 IC5101 B1 L5304 A4 R4110 C2 R4121 C2 R4173 D4 R5105 B1 R5117 A2 R5206 B3 R5302 C4 R5315 A4
C4104 C1 C4121 C2 C4133 B1 C5003 C2 C5101 B1 C5113 A1 C5125 A2 C5202 B3 C5214 A2 C5301 B3 C5313 A4 C5325 A4 CN5301A4 IC5201 B2 Q4151 C2 R4111 C2 R4123 C1 R5001 A1 R5106 B1 R5118 A2 R5207 B3 R5304 C4 R5316 A4
C4105 C1 C4122 C2 C4134 B1 C5004 C2 C5102 B2 C5114 A1 C5126 A2 C5203 B3 C5215 A2 C5302 C4 C5314 A4 C5326 A4 D4171 C3 IC5301 B3 Q4171 C3 R4112 C2 R4124 C1 R5003 C2 R5107 B2 R5144 C3 R5208 B3 R5305 C4 R5317 A4
C4107 C1 C4123 C2 C4135 C2 C5005 C2 C5103 B2 C5115 A1 C5127 A1 C5204 B3 C5216 A2 C5303 C4 C5315 B3 C5327 A4 D5008 C3 L5101 A1 Q4172 D4 R4113 C2 R4127 C1 R5040 C3 R5108 B2 R5148 C3 R5209 A3 R5306 C4 R5318 A4
C4108 C1 C4124 C2 C4151 C2 C5006 C2 C5104 B2 C5116 A1 C5128 A1 C5205 B3 C5217 A2 C5304 C4 C5316 A3 C5328 A4 D5015 C3 L5102 A2 R4101 C1 R4114 C2 R4128 C1 R5041 C3 R5109 B2 R5149 C3 R5210 B2 R5307 C4
C4110 C2 C4125 C2 C4152 C3 C5007 A1 C5105 B2 C5117 A1 C5129 A1 C5206 B3 C5221 A2 C5305 C4 C5317 A3 FB5101A1 L5103 A2 R4102 C1 R4115 C2 R4129 C2 R5042 D4 R5110 B2 R5150 D4 R5211 A2 R5308 C4



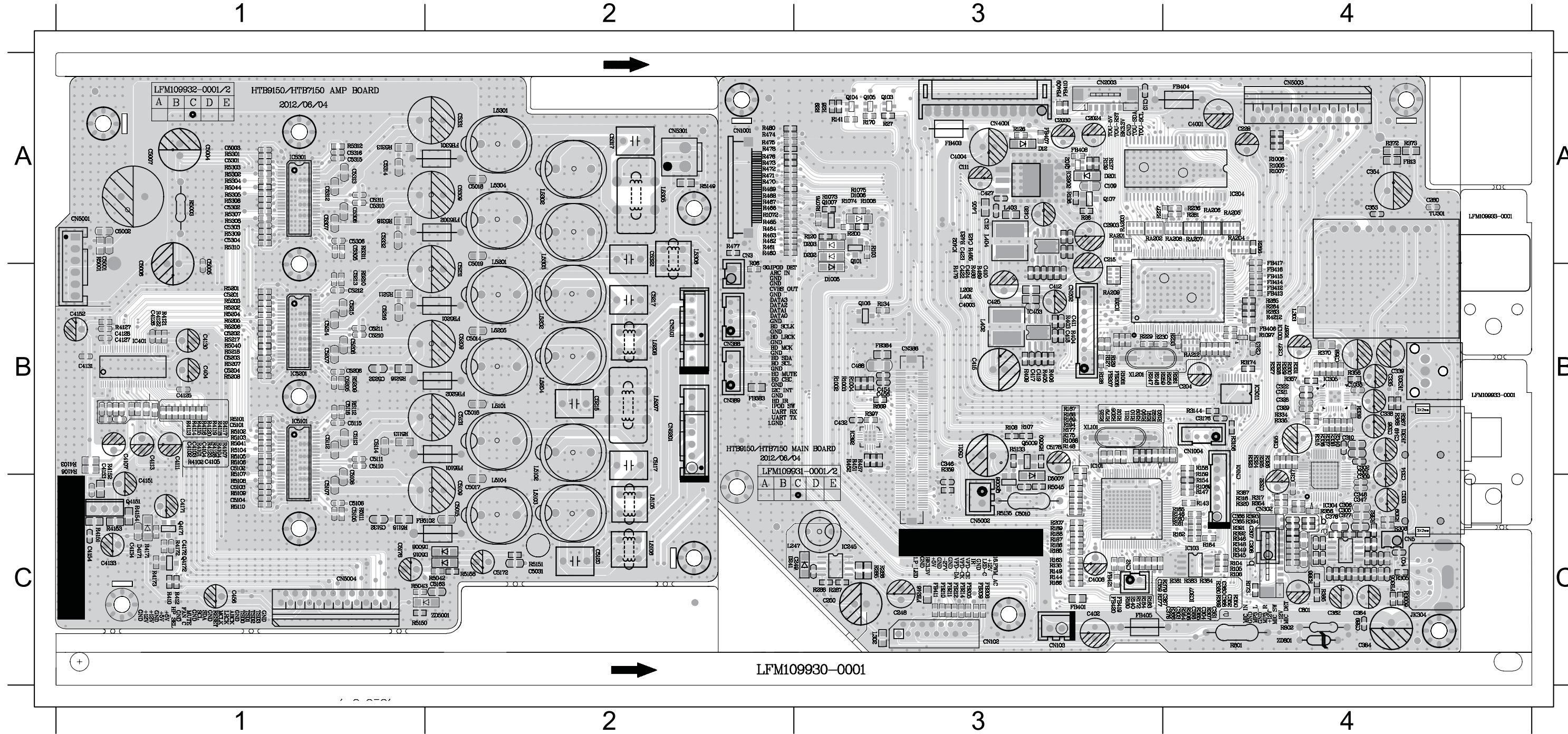
CIRCUIT DIAGRAM (part two)

C1005	A1	C1056	A1	C2024	B1	C2065	B4	C223	B3	C248	D4	C306	C1	C326	C2	C348	C3	C375	D2	C416	C4	CN2003	B1	FB208	B3	FB415	B4	JK303	C1	R1008	A1	R109	A2	R139	C4	R169	B2	R192	A2	R230	B3	R286	D4	R3174	C1	R339	C2	R366	C2	R4212	B4	R480	A1	RA212	A3
C101	A1	C1057	A1	C2029	B1	C2066	B4	C224	B3	C249	D4	C307	D1	C327	C2	C349	C3	C376	D2	C420	C3	CN202	A3	FB209	C4	FB416	B4	JK304	D1	R1009	A1	R1094	C3	R140	A2	R170	B1	R193	A2	R233	B3	R287	D4	R318	C3	R340	C2	R367	C1	R460	A1	R483	C4	TU301	C1
C1017	A1	C106	A2	C203	B3	C2067	B4	C225	B3	C250	D4	C308	D1	C328	C2	C351	D2	C377	D2	C421	C3	CN302	D1	FB210	C4	FB417	B4	L201	B3	R101	A1	R1095	C3	R141	B1	R171	A2	R194	B2	R236	A4	R288	D4	R319	C3	R343	C1	R368	C1	R461	A1	R485	C4	XL101	A1
C1018	A1	C107	A2	C2031	B1	C2068	B4	C226	B3	C251	B4	C309	C1	C329	C2	C352	D2	C378	C2	C422	C4	CN4001	C4	FB211	C4	FB419	B2	L202	C4	R1010	A1	R1097	B1	R142	A2	R172	A2	R195	B2	R237	A4	R293	A3	R320	C3	R344	C1	R369	D2	R462	A1	R488	C4	XL201	A3
C102	A1	C109	C4	C204	B3	C207	B3	C227	A4	C252	B4	C310	C1	C330	C2	C353	C1	C379	D2	C423	C4	CN5002	D2	FB212	C4	FB420	B2	L247	D4	R1011	A1	R110	A2	R143	A2	R173	B2	R196	B2	R247	A3	R3009	D1	R323	C3	R345	D1	R370	C2	R463	A1	R489	C4	ZD801	C4
C1028	B3	C111	C4	C205	B3	C208	B3	C228	A4	C253	B4	C311	D1	C331	C2	C354	C1	C380	D2	C424	C4	CN5003	B4	FB214	C4	FB421	B2	L302	D4	R102	A2	R111	A2	R146	A2	R176	B2	R198	A2	R248	A3	R306	D2	R324	C3	R346	D1	R372	C1	R464	A1	R5045	D2	R3144	C1
C103	A2	C112	C4	C2051	B1	C209	B3	C229	A4	C254	B4	C312	C1	C332	C3	C355	C3	C384	D1	C425	C4	D1005	B2	FB246	D4	FB422	B2	L303	C2	R103	B2	R112	A2	R177	B2	R199	C1	R258	A3	R3060	B2	R325	C3	R348	D1	R377	C2	R465	A1	R5050	D2	R341	D1		
C1031	C2	C113	C4	C2052	B1	C210	B3	C230	A4	C255	B4	C313	C1	C333	C3	C356	C3	C385	C2	C426	C4	D1006	A1	FB305	D1	IC1001	B1	L403	C3	R104	A2	R113	A2	R148	B2	R178	B2	R200	B1	R259	A3	R307	D2	R326	C3	R349	D1	R379	C2	R466	A1	R5135	D2	R342	D1
C1032	C2	C141	A2	C2053	C4	C211	B3	C231	A4	C256	B4	C314	D1	C334	C3	C357	C2	C386	C2	C427	C4	D201	C4	FB401	D4	IC101	A2	L404	C4	R105	A2	R119	B2	R150	A1	R180	A2	R201	A3	R261	A3	R308	C1	R327	C2	R350	D2	R380	D2	R467	A1	R5161	D2		
C1033	C2	C142	A2	C2054	C4	C212	B3	C232	A4	C257	B4	C315	D1	C335	C2	C358	C2	C387	C2	C5010	D2	D202	B2	FB403	D4	IC103	A1	L405	C4	R106	A2	R120	B1	R153	B2	R181	A2	R202	A3	R262	A4	R3088	B2	R328	C2	R351	C1	R381	C2	R468	A1	R801	C4		
C1034	C2	C143	A2	C2055	C4	C213	B3	C233	A4	C258	B4	C316	D1	C336	C2	C359	C2	C388	D2	C5011	D2	D203	B1	FB404	D4	IC201	A4	Q1007	A1	R1068	B2	R125	B2	R154	A2	R182	A2	R203	A3	R265	B4	R3089	B2	R329	C2	R3519	C1	R382	D2	R469	A1	R802	C4		
C1035	C2	C145	A2	C2056	C4	C214	B3	C234	A4	C259	C4	C317	C3	C337	C2	C360	D2	C389	D1	C5178	D2	D241	D4	FB405	B1	IC204	A4	Q101	B2	R1069	A2	R126	B1	R158	A2	R183	A2	R204	A3	R266	B4	R309	C1	R330	C2	R352	C1	R383	D2	R470	A1	RA201	A4		
C1038	B2	C146	A2	C2057	B4	C215	B3	C235	A4	C260	C4	C3177	C1	C338	C2	C361	D2	C390	D1	C801	C4	D5005	D2	FB406	B2	IC245	D4	Q103	B1	R107	D2	R127	A2	R159	A2	R184	A2	R205	A3	R267	B1	R312	C3	R331	C2	R354	C3	R384	D2	R471	A1	RA202	A4		
C104	A2	C147	A2	C2058	B4	C216	B3	C236	C4	C261	C4	C318	C3	C339	C1	C362	D2	C4001	C4	C807	C4	D5007	D2	FB408	B1	IC2902	C4	Q106	B2	R1071	B2	R128	A2	R160	A2	R185	B2	R206	B2	R27	B1	R313	C3	R332	C2	R356	C3	R385	D2	R472	A1	RA203	A4		
C105	A2	C148	A2	C2059	B4	C217	B3	C240	B3	C2903	C4	C319	C3	C340	D2	C363	D2	C4002	C4	CN1001	A1	FB13	C1	FB409	B1	IC3011	B1	Q107	C4	R1072	A1	R129	A2	R161	A2	R186	B2	R207	B2	R271	B4	R3130	C2	R333	C2	R357	C2	R386	D2	R473	A1	RA204	A4		
C1051	A1	C149	A2	C206	B3	C218	B3	C243	B1	C301	C1	C320	C1	C342	C1	C364	D2	C4004	D4	CN1004	A2	FB201	A4	FB410	B1	IC304	C3	Q5008	D2	R1073	A1	R130	C4	R162	A2	R187	B2	R209	B3	R281	B4	R314	C2	R334	C2	R358	C2	R387	C3	R475	A1	RA205	A4		
C1052	A1	C150	A1	C2060	B4	C219	B3	C244	A3	C302	C1	C322	C1	C343	C1	C365	D1	C4007	D4	CN101	A2	FB202	A4	FB411	C4	IC305	C2	Q5009	D2	R1074	A1	R134	B2	R164	A2	R188	B2	R225	B3	R282	B4	R315	C2	R335	C2	R361	C3	R391	D1	R476	A1	RA206	A4		
C1053	A1	C151	A1	C2061	B4	C220	B3	C245	A3	C303	D2	C323	C3	C344	D1	C366	D1	C4008	D4	CN102	C4	FB205	C4	FB412	B4	IC307	D2	R1005	B2	R1075	A1	R136	C4	R165	A2	R189	B2	R227	A3	R283	B4	R3156	C1	R336	C2	R362	C3	R392	D1	R477	A1	RA207	A4		
C1054	A1	C152	A1	C2062	B4	C221	B3	C246	A3	C304	D2	C324	C3	C345	D1	C367	D2	C401	B1	CN103	B1	FB206	C4	FB413	B4	IC401	C4	R1006	B2	R108	D2	R137	C4	R167	B2	R190	A2	R228	A3	R284	B4	R316	C3	R337	C2	R364	D2	R393	D1	R478	A1	RA208	A4		
C1055	A1	C202	B3	C2064	B4	C222	B3	C247	A3	C305	C1	C325	C3	C347	C3	C368	D2	C402	B1	CN2	B3	FB207	B3	FB414	B4	JK301	C1	R1007	B2	R1081	B3	R138	C4	R168	B2	R191	A2	R229	A3	R285	D4	R317	C3	R338	C2	R365	D2	R394	D1	R479	C4	RA209	B4		



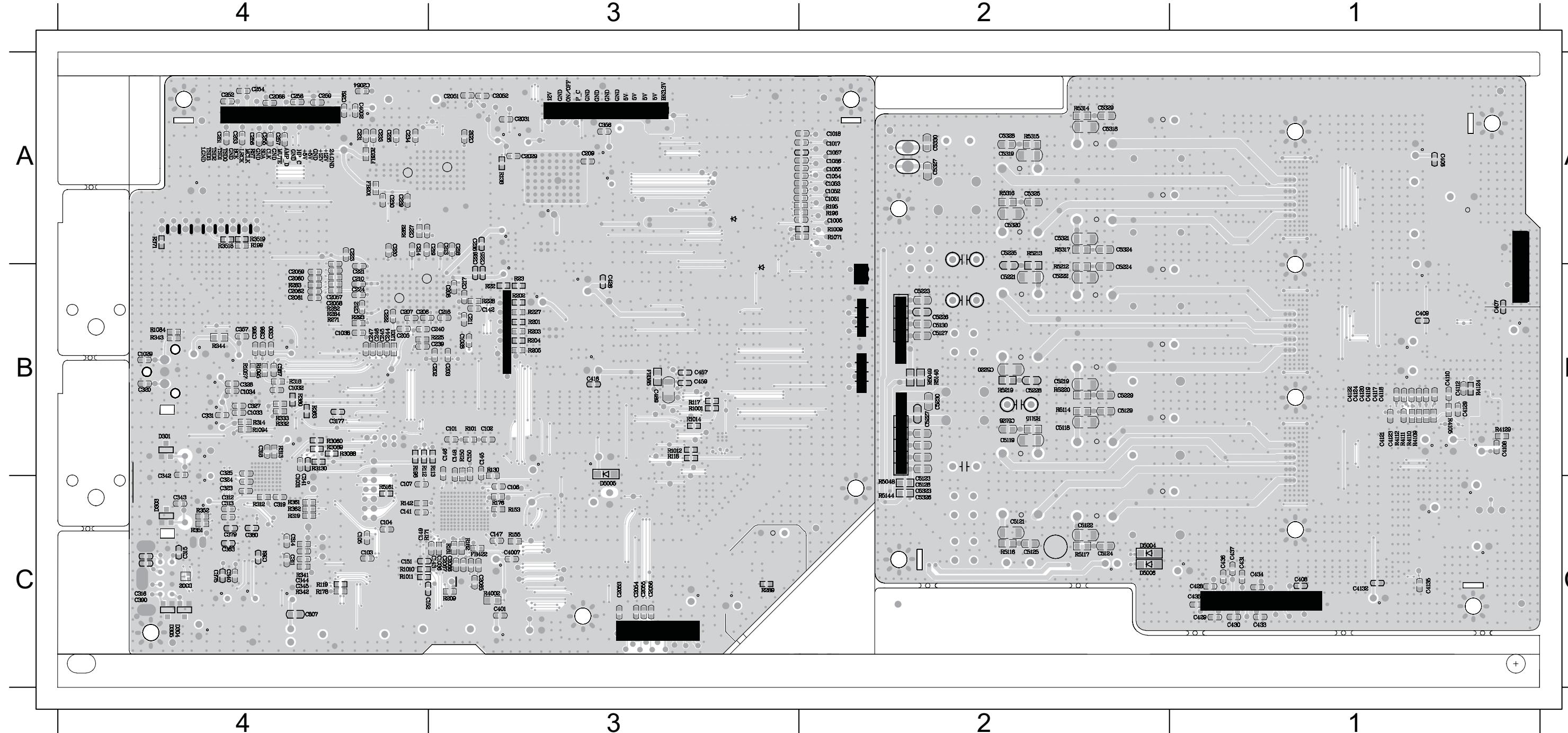
PCB LAYOUT - TOP VIEW

C1035	B4	C307	C4	C352	C4	C4008	C3	C4154	C1	C5015	C2	C5116	B1	C5213	B1	C5315	A1	CN5101B2	FB212	C3	FB421	C3	IC5201	B1	L5304	A2	R1069	C4	R139	A3	R177	B3	R237	A3	R3156	B4	R345	C4	R382	C4	R4118	B1	R465	A2	R5040	B1	R5149	A2	R5306	A1	TU301	A4
C109	A3	C308	C4	C353	A4	C402	C3	C4171	C1	C5016	B2	C5117	B2	C5214	B1	C5316	A1	CN5201B2	FB214	C3	FB5101B2	IC5301	A1	Q1007	A3	R107	B3	R140	C3	R180	C3	R247	B3	R316	C4	R346	C4	R383	C4	R4119	B1	R466	A2	R5041	B1	R5150	C1	R5307	A1	XL101	B3	
C111	A3	C309	C4	C354	A4	C404	B1	C4172	C1	C5017	C2	C5120	B2	C5215	B1	C5317	A2	CN5301A2	FB246	C3	FB5102C1	JK301	B4	Q101	A3	R1072	A2	R141	A3	R183	C3	R248	B3	R317	C4	R348	C4	R384	C4	R412	C1	R467	A2	R5042	C2	R5151	C2	R5308	A1	XL201	B3	
C112	A3	C310	B4	C355	B4	C4102	B1	C420	A3	C5018	A2	C5131	B2	C5216	B1	C5322	B2	D1005	B3	FB305	C4	FB5201B2	JK303	B4	Q103	A3	R1073	A3	R143	C4	R184	C3	R258	B4	R3174	B4	R349	C4	R385	C4	R4120	B1	R468	A2	R5043	C1	R5158	C2	R5309	A1	ZD801	C4
C113	A3	C317	C4	C358	B4	C4103	B1	C421	A3	C5019	B2	C5132	C1	C5217	B2	C5331	A2	D1006	A3	FB401	C3	FB5202B2	JK304	C4	Q106	B3	R1074	A3	R146	C4	R185	C3	R259	B3	R320	C4	R350	C4	R386	C4	R4121	B1	R469	A2	R5044	A1	R5201	B1	R5310	A1	R3144	B4
C2024	A3	C3176	B4	C359	C3	C4104	B1	C422	B3	C5031	C2	C5163	C2	C5231	B2	C5332	A1	D201	A3	FB403	A3	FB5301A2	L202	B3	Q107	A3	R1075	A3	R147	C4	R186	C3	R261	B4	R323	B4	R354	C4	R387	C4	R4123	B1	R470	A2	R5045	C3	R5202	B1	R5311	A1		
C204	B4	C322	B4	C360	C4	C4105	B1	C423	A3	C5101	B1	C5172	C2	C5232	B1	C801	C4	D202	A3	FB404	A4	FB5302A2	L247	C2	Q4151	C1	R108	B3	R148	B3	R187	C3	R265	B4	R324	B4	R356	C4	R391	C4	R4127	B1	R471	A2	R5050	B3	R5204	B1	R5312	A1		
C215	A3	C328	B4	C362	C4	C4107	B1	C424	B3	C5102	B1	C5176	C1	C5301	A1	CN1001A2	D203	A3	FB405	C3	IC1001	B4	L302	C3	Q4171	C1	R1081	B3	R154	C4	R188	C3	R266	A4	R325	B4	R357	B4	R392	C4	R4128	B1	R472	A2	R5101	B1	R5205	B1	R5313	A1		
C228	A4	C329	B4	C364	C4	C4111	B1	C425	B3	C5103	C1	C5178	B3	C5302	A1	CN1004B4	D241	C2	FB406	B4	IC101	B3	L303	B4	Q4172	C1	R109	B3	R158	B4	R189	C3	R267	B4	R326	B4	R358	B4	R393	C4	R4151	C1	R473	A2	R5103	B1	R5206	B1	R5318	A1		
C243	B4	C332	C4	C365	C4	C4113	B1	C427	A3	C5104	C1	C5201	B1	C5303	A1	CN101	C4	D4171	C1	FB408	A3	IC103	C4	L403	A3	Q5008	C3	R1097	B4	R159	C4	R190	B3	R27	A3	R327	B4	R364	C4	R394	C4	R4152	B1	R475	A2	R5104	B1	R5207	B1	R801	C4	
C248	C3	C333	C4	C366	C4	C4125	B1	C456	C1	C5105	C1	C5202	B1	C5304	A1	CN102	C3	D5007	C3	FB409	A3	IC201	B3	L404	A3	Q5009	B3	R110	B3	R160	C4	R191	B3	R281	A4	R328	B4	R365	C4	R4101	B1	R453	C1	R476	A2	R5105	B1	R5208	B1	R802	C4	
C249	C3	C334	C4	C367	C4	C4126	B1	C5001	A1	C5106	C1	C5203	B1	C5305	A1	CN103	C3	D5008	C1	FB410	A4	L405	A3	R1005	A4	R111	B3	R161	C4	R192	B3	R285	C3	R329	B4	R366	C4	R4102	B1	R454	C1	R477	A2	R5106	B1	R5209	B1	R4201	A3			
C250	C3	C335	B4	C368	C4	C4127	B1	C5002	A1	C5107	C1	C5204	B1	C5306	A1	CN2	C3	D5015	C1	FB411	C3	IC245	C3	L5101	B2	R1006	A4	R120	A3	R162	C4	R193	B3	R286	C3	R330	B4	R367	B4	R403	B1	R4171	C1	R478	A2	R5107	C1	R5210	B1	R4202	A3	
C260	A4	C336	B4	C376	C4	C4128	B1	C5003	A1	C5108	B1	C5205	B1	C5307	A1	CN2003A3	FB13	A4	FB412	B4	IC2902	A3	L5102	C2	R1007	A4	R125	B3	R164	C4	R194	B3	R287	C3	R331	B4	R368	B4	R404	B1	R4172	C1	R479	B3	R5108	C1	R5211	B1	R4203	A3		
C2903	A3	C337	B4	C377	C4	C4130	B1	C5004	A1	C5109	C2	C5206	B1	C5308	A1	CN202	B3	FB205	C3	FB413	B4	IC3011	B4	L5103	C2	R1008	A3	R126	A3	R165	C4	R200	A3	R288	C3	R334	B4	R369	C4	R4106	B1	R4173	C1	R480	A2	R5109	C1	R5216	B1	R4204	A4	
C301	C4	C338	B4	C378	C4	C4131	B1	C5005	A1	C5110	B1	C5207	B1	C5309	A2	CN302	C4	FB206	C3	FB414	B4	IC304	C4	L5104	C2	R102	B3	R127	B3	R167	B3	R206	B3	R3009	C4	R335	B4	R370	B4	R4107	B1	R4212	B4	R483	A3	R5110	C1	R5217	B1	R4205	A4	
C302	B4	C339	B4	C384	C4	C4133	C1	C5006	A1	C5111	B1	C5208	B1	C5310	A1	CN4001A3	FB207	B3	FB415	B4	IC305	B4	L5201	A2	R103	A3	R128	B3	R168	B3	R207	C3	R306	C4	R336	B4	R372	A4	R4113	B1	R460	A2	R485	A3	R5111	C1	R5218	B1	R4206	A4		
C303	C4	C347	C4	C388	C4	C4134	C1	C5007	A1	C5112	B1	C5209	B2	C5311	A1	CN5001A1	FB208	B3	FB416	B4	IC307	C4	L5202	B2	R104	C4	R129	B3	R169	B3	R229	B3	R307	C4	R337	B4	R377	C3	R4114	B1	R461	A2	R488	B3	R5112	B1	R5301	A1	RA207	A4		
C304	C4	C348	C4	C389	C4	C4151	C1	C5010	C3	C5113	B1	C5210	B1	C5312	A1	CN5002C3	FB209	C3	FB417	A4	IC401	B1	L5301	A2	R105	C4	R134	B3	R170	A3	R230	B3	R308	C4	R338	B4	R379	C4	R4115	B1	R462	A2	R489	B3	R5113	B1	R5302	A1	RA208	A4		
C305	C4	C349	B4	C4001	A4	C4152	B1	C5011	B3	C5114	B1	C5211	B1	C5313	A1	CN5003A4	FB210	C3	FB419	C3	IC402	A3	L5302	A2	R106	C4	R136	A3	R172	C3	R233	B4	R309	C4	R339	B4	R380	C4	R4116	B1	R463	A2	R5001	A1	R5118	C1	R5304	A1	RA209	B3		
C306	C4	C351	C4	C4004	A3	C4153	B1	C5014	B2	C5115	B1	C5212	B1	C5314	A1	CN5004C1	FB211	C3	FB420	C3	IC5101	B1	L5303	B2	R1068	B3	R137	A3	R173	C4	R236	A4	R315	B4	R340	B4	R381	C4	R4117	B1	R464	A2	R5003	A1	R5135	C3	R5305	A1	RA212	B4		



PCB LAYOUT - BOTTOM VIEW

C1005	A2 C104	C4 C142	B3 C203	B3 C206	B4 C210	B4 C223	A4 C236	A3 C257	A4 C319	C4 C344	C4 C390	C4 C4118	B1 C5118	B2 C5221	B2 C5325	A2 R1009	A2 R142	C4 R201	B3 R283	B4 R332	B4 R4111	B1 R5212	B2
C101	B3 C105	C4 C143	C3 C2031	A3 C2060	B4 C211	B3 C224	B4 C240	B3 C258	A4 C320	B4 C345	C4 C4002	A4 C4119	B1 C5119	B2 C5222	B2 C5326	C2 R101	B3 R150	B3 R202	B3 R284	B4 R333	B4 R4112	B1 R5213	A2
C1017	A2 C1051	A2 C145	B3 C205	B4 C2061	B4 C212	B4 C225	A3 C244	B4 C259	A4 C323	C4 C356	A3 C4007	C3 C4120	B1 C5121	C2 C5223	B2 C5327	A2 R1010	C4 R153	C3 R203	B3 R293	B4 R343	B4 R4124	B1 R5314	A2
C1018	A2 C1052	A2 C146	B3 C2051	A3 C2062	B4 C213	A3 C226	A3 C245	B4 C261	A4 C324	C4 C357	B4 C401	C3 C4121	B1 C5122	C2 C5224	B2 C5328	A2 R1011	C4 R171	C4 R204	B3 R3060	B4 R344	B4 R4129	B1 R5315	A2
C102	B3 C1053	A2 C147	C3 C2052	A3 C2064	A4 C214	A4 C227	A4 C246	B4 C311	C4 C325	B4 C361	C4 C406	A1 C4122	B1 C5123	C2 C5225	A2 C5329	A2 R1071	A2 R176	C3 R205	B3 R3088	B4 R351	C4 R5048	C2 R5316	A2
C1028	B3 C1054	A2 C148	B3 C2053	C3 C2065	C3 C216	B3 C229	A4 C247	B4 C312	C4 C326	B4 C363	C4 C407	B1 C4123	B1 C5124	C2 C5226	B2 C5330	A2 R1094	B4 R178	C4 R209	C3 R3089	B4 R3519	A4 R5114	B2 R5317	A2
C103	C4 C1055	A2 C149	C4 C2054	C3 C2066	C3 C217	B3 C230	A4 C251	A4 C313	C4 C327	B4 C375	C4 C408	C1 C4124	B1 C5125	C2 C5318	A2 C807	C4 R1095	B4 R181	C3 R225	B3 R312	C4 R352	C4 R5115	B2 R341	C4
C1031	C4 C1056	A2 C150	B3 C2055	C3 C2067	C3 C218	A3 C231	A4 C252	A4 C314	C4 C330	B4 C379	C4 C409	B1 C4129	B1 C5126	C2 C5319	A2 D5005	C3 R112	B4 R182	C3 R227	B3 R313	B4 R361	C4 R5116	C2 R342	C4
C1032	B4 C1057	A2 C151	C4 C2056	C3 C2068	A4 C219	A3 C232	A3 C253	A4 C315	C4 C331	B4 C380	C4 C4108	B1 C4132	C1 C5127	B2 C5320	A2 FB201	A4 R113	C3 R195	A2 R228	B3 R3130	B4 R362	C4 R5117	C2	
C1033	B4 C106	C3 C152	C4 C2057	B4 C207	B4 C220	A4 C233	A4 C254	A4 C316	C4 C340	C4 C385	B4 C4110	B1 C4135	C1 C5128	B2 C5321	A2 FB202	A4 R119	C4 R196	A2 R262	A4 R314	B4 R4105	B1 R5144	C2	
C1034	B4 C107	C4 C202	B3 C2058	B4 C208	B3 C221	B4 C234	A4 C255	A4 C3177	B4 C342	C4 C386	B4 C4112	B1 C416	B3 C5129	B2 C5323	C2 FB422	C3 C130	B3 R198	B4 R271	B4 R318	B4 R4109	B1 R5148	B2	
C1038	B4 C141	C4 C2029	A3 C2059	B4 C209	A3 C222	B4 C235	A4 C256	A4 C318	B4 C343	C4 C387	B4 C4117	B1 C426	B3 C5130	B2 C5324	A2 L201	B4 R138	A3 R199	A4 R282	B4 R319	C4 R4110	B1 R5161	C4	

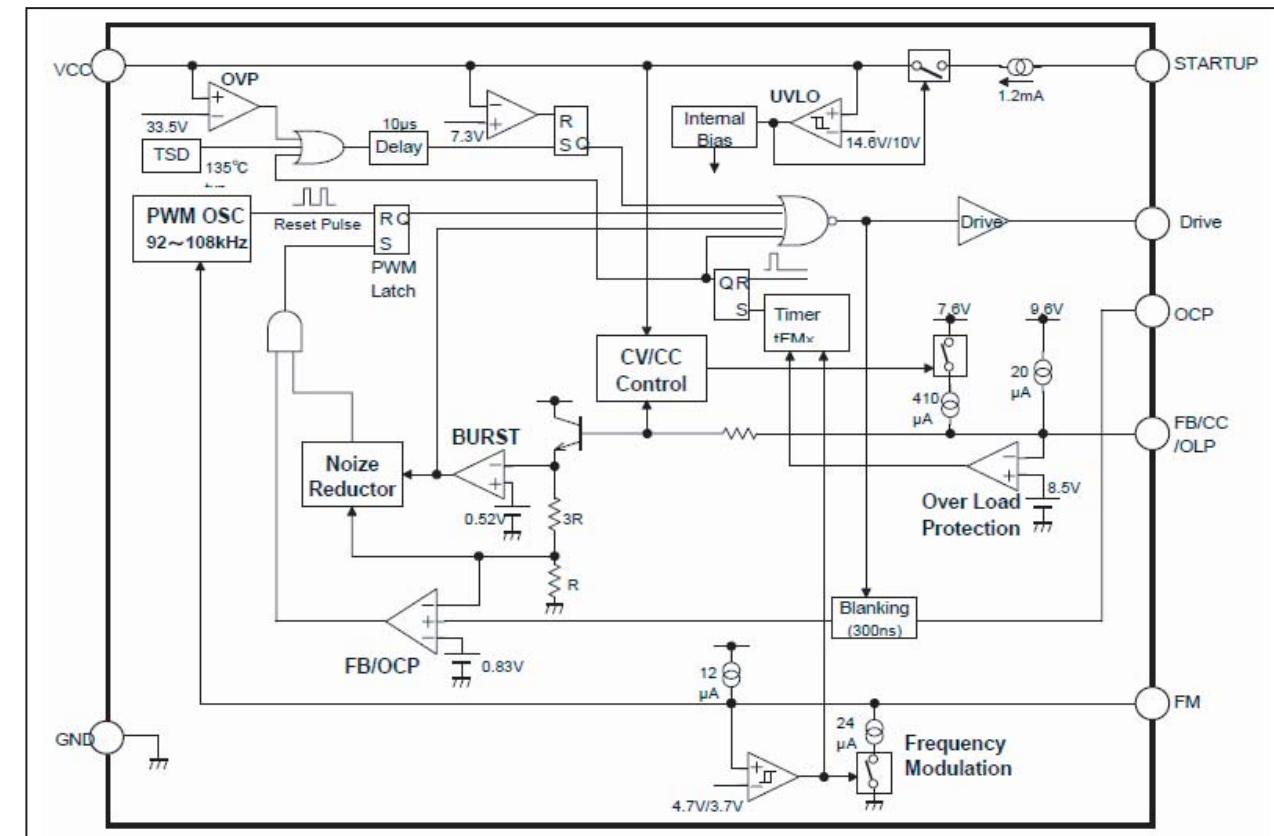


Power BOARD

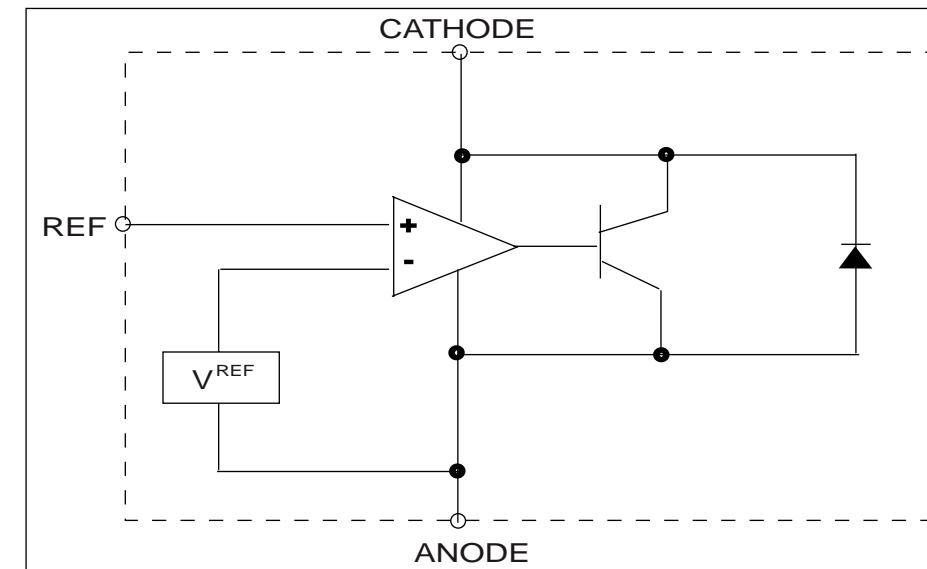
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INTERNAL IC DIAGRAM - SSC620S

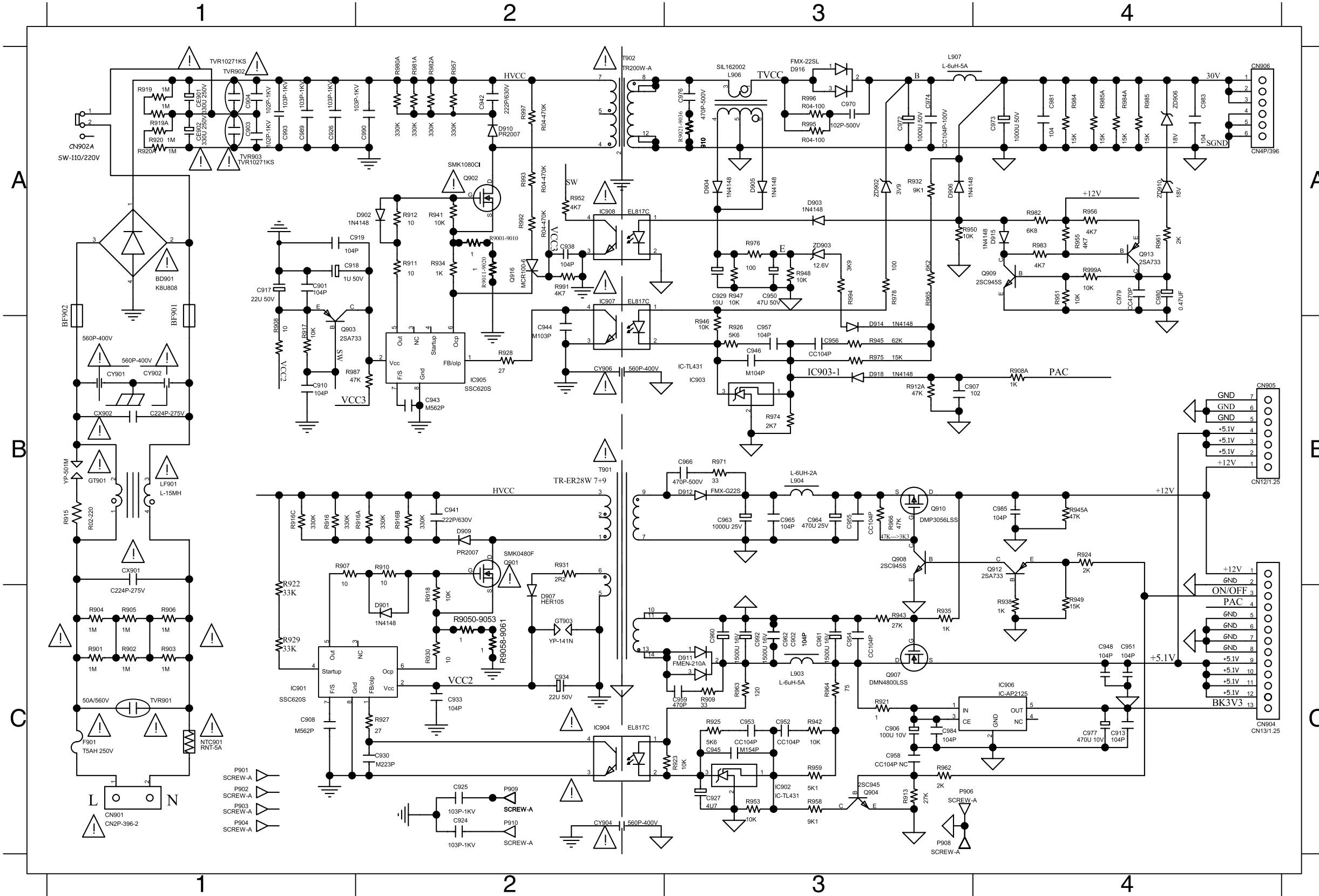


INTERNAL IC DIAGRAM - AZ431AZ



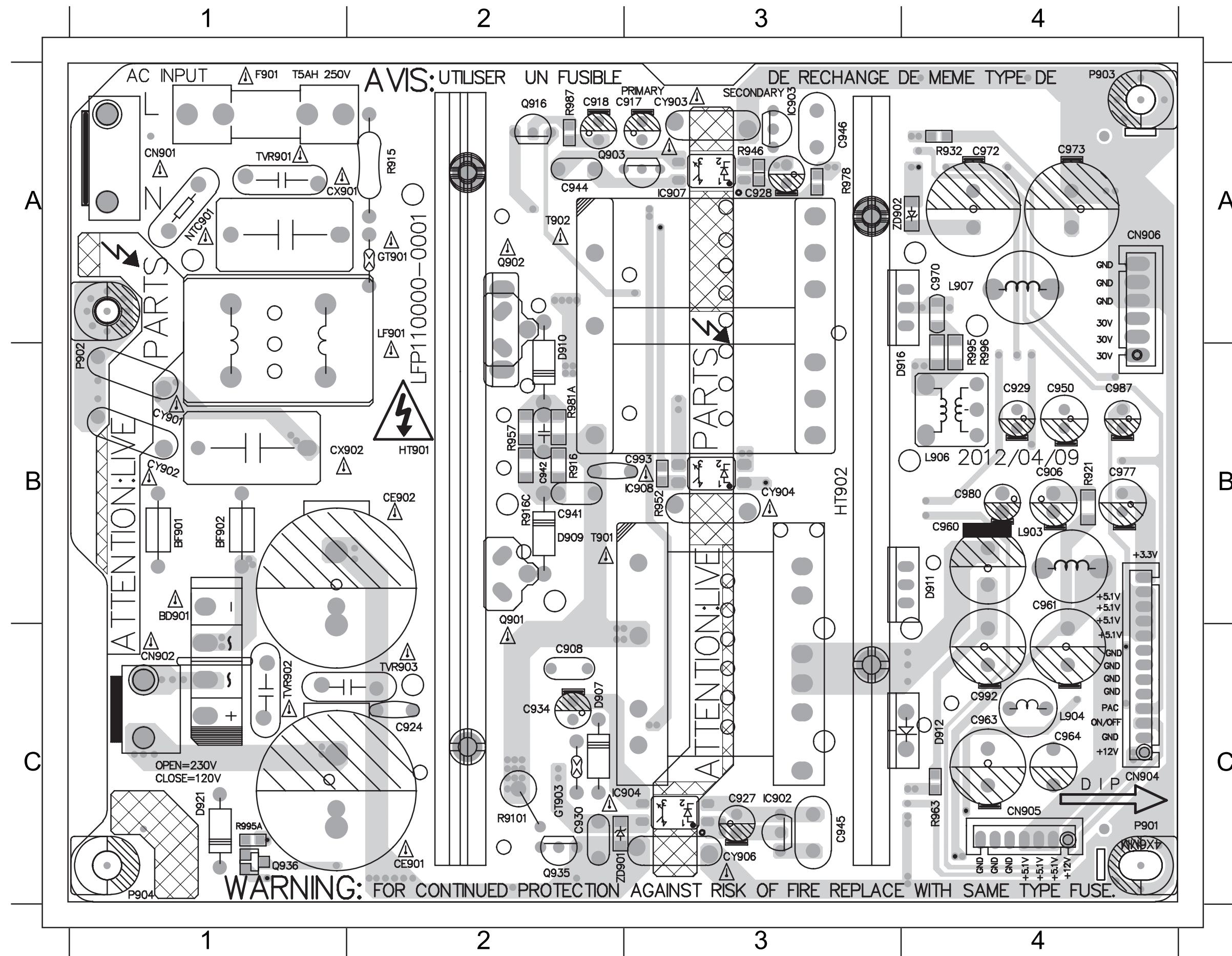
CIRCUIT DIAGRAM

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BF901A1 C918 A1 C942 A2 C956 B3 C972 A3 C990 A2 CX902B1 D909 B2 GT903C2 L907 A3 Q913 A4 R9010 A2 R9021 A3 R9032 A3 R9059 C2 R913 C3 R921 C3 R934 A2 R950 A3 R964 C3 R983 A4 R997 A2
BF902A1 C919 A1 C943 B2 C957 B3 C973 A4 C992 C3 CY901B1 D910 A2 IC901 C1 LF901 B1 Q916 A2 R9011 A2 R9022 A3 R9033 A3 R906 C1 R915 B1 R922 B1 R935 C3 R951 A4 R965 A3 R984 A4 R999AA4
C901 A1 C924 C2 C944 B2 C959 C3 C974 A3 C992 C3 CY902B1 D911 C3 IC902 C3 NTC901C1 R9001 A2 R9012 A2 R9023 A3 R9034 A3 R9060 C2 R916 B1 R923 C3 R938 C4 R952 A2 R966 B3 R984AA4 T901 B2
C902 C3 C925 C2 C945 C3 C960 C3 C976 A3 C993 A1 CY904C2 D911 C3 IC903 B3 Q901 B2 R9002 A2 R9013 A2 R9024 A3 R9035 A3 R9061 C2 R916AB2 R924 B4 R941 A2 R953 C3 R971 B3 R985 A4 T902 A2
C903 A1 C926 A1 C946 B3 C960 C3 C977 C4 CE901A1 CY906B2 D912 B3 IC904 C2 Q902 A2 R9003 A2 R9014 A2 R9025 A3 R9036 A3 R907 B1 R916BB2 R925 C3 R942 C3 R955 A4 R974 B3 R985AA4 TVR901C1
C904 A1 C927 C3 C948 C4 C961 C3 C979 A4 CE902A1 D901 C2 D912 B3 IC905 B2 Q903 B1 R9004 A2 R9015 A2 R9026 A3 R904 C1 R908 B1 R916CB1 R926 B3 R943 C3 R956 A4 R975 B3 R987 B1 TVR902A1
C906 C3 C929 A3 C950 A3 C962 C3 C980 A4 CN901C1 D902 A2 D914 B3 IC906 C4 Q904 C3 R9005 A2 R9016 A2 R9027 A3 R905 C1 R908AB4 R917 B1 R927 C2 R945 B3 R957 A2 R976 A3 R991 A2 TVR903A1
C907 B3 C930 C2 C951 C4 C963 B3 C981 A4 CN902A1 D903 A3 D915 A4 IC907 A2 Q907 C3 R9006 A2 R9017 A2 R9028 A3 R9050 C2 R909 C3 R918 C2 R928 B2 R945AB4 R958 C3 R978 A3 R992 A2 ZD902A3
C908 C1 C933 C2 C952 C3 C964 B3 C983 A4 CN904C4 D904 A3 D916 A3 IC908 A2 Q908 B3 R9007 A2 R9018 A2 R9029 A3 R9051 C2 R910 B2 R919 A1 R929 C1 R946 B3 R959 C3 R980AA2 R993 A2 ZD903A3
C910 B1 C934 C2 C953 C3 C965 B3 C984 C3 CN905B4 D905 A3 D918 B3 L903 C3 Q909 A4 R9008 A2 R9019 A2 R903 C1 R9052 C2 R911 A2 R919AA1 R930 C2 R947 A3 R961 A4 R981AA2 R994 A3 ZD906A4
C913 C4 C938 A2 C954 C3 C966 B3 C985 B4 CN906A4 D906 A3 F901 C1 L904 B3 R9009 A2 R902 C1 R9030 A3 R9053 C2 R912 A2 R920 A1 R931 B2 R948 A3 R962 C3 R982 A4 R995 A3 ZD910 A4



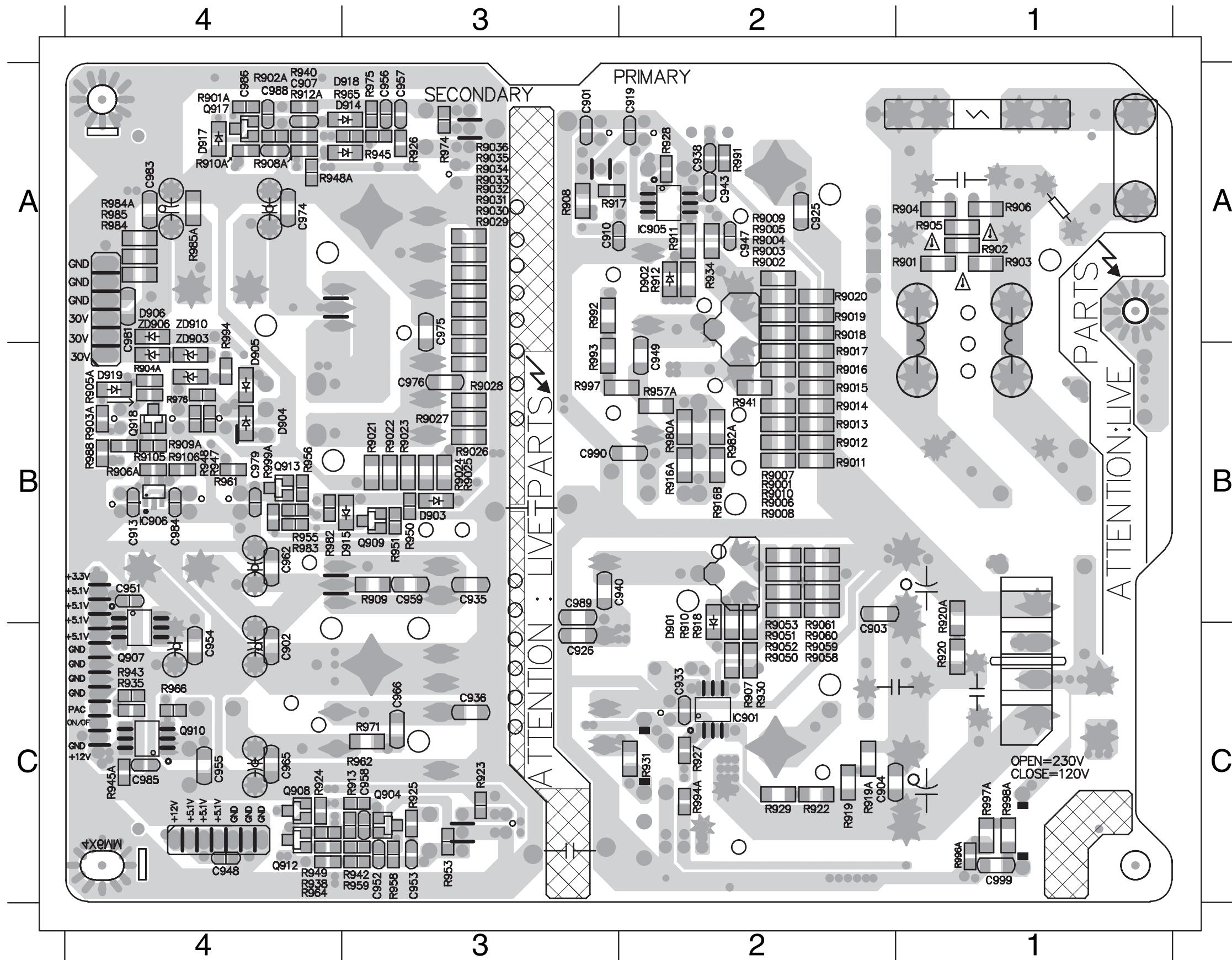
PCB LAYOUT - TOP VIEW

BD901 B1 C917 A2 C930 C2 C945 C3 C961 B4 C973 A4 C993 B3 CN904 C4 CY901 B1 D909 B2 D912 C4 HT901 B2 IC907 A3 L907 A4 Q903 A2 R921 B4 R963 C4 R996 A4 TVR903C2
 BF901 B1 C918 A2 C934 C2 C946 A3 C963 C4 C977 B4 CE901 C2 CN905 C4 CY902 B1 D910 A2 D916 B3 HT902 B3 IC908 A2 R932 A4 R978 A3 T901 B2 ZD902 A3
 BF902 B1 C924 C2 C941 B2 C950 B4 C964 C4 C980 B4 CE902 B2 CN906 A4 CY904 B3 D911 B4 F901 A1 IC902 C3 L903 B4 NTC901A1 R915 A2 R946 A3 R981A B2 T902 A2
 C906 B4 C927 C3 C942 B2 C960 B4 C970 A4 C992 C4 CN901 A1 CX901 A1 CY906 C3 D911 B4 GT901 A2 IC903 A3 L904 C4 Q901 B2 R916 B2 R952 B3 R987 A2 TVR901A1
 C908 C2 C929 B4 C944 A2 C960 B4 C972 A4 C992 C4 CN902 C1 CX902 B2 D907 C2 D912 C4 GT903 C2 IC904 C2 L906 B4 Q902 A2 R916C B2 R957 B2 R995 A4 TVR902C1



PCB LAYOUT - BOTTOM VIEW

C901 A3 C926 C3 C955 C4 C979 B4 D903 B3 IC906 B4 R9002 A2 R9010 B2 R9019 A2 R9027 B3 R9035 A3 R9059 C2 R911 A2 R919AC2 R928 A2 R943 C4 R955 B4 R971 C3 R984AA4 ZD903 A4
 C902 C4 C933 C2 C956 A3 C981 A4 D904 B4 Q904 C3 R9003 A2 R9011 B2 R902 A1 R9028 B3 R9036 A3 R906 A1 R912 A2 R920 C1 R929 C2 R945 A3 R956 B4 R974 A3 R985 A4 ZD906 A4
 C903 C2 C938 A2 C957 A3 C983 A4 D905 A4 Q907 C4 R9004 A2 R9012 B2 R9020 A3 R904 A1 R9060 C2 R912AA4 R920AB1 R930 C2 R945AC4 R958 C3 R975 A3 R985AA4 ZD910 A4
 C904 C2 C943 A2 C959 B3 C984 B4 D906 A4 Q908 C4 R9005 A2 R9013 B2 R9021 B3 R903 A1 R905 A1 R9061 C2 R913 C3 R922 C2 R931 C2 R947 B4 R959 C3 R976 B4 R991 A2
 C907 A4 C948 C4 C962 B4 C985 C4 D914 A4 Q909 B3 R9006 B2 R9014 B2 R9022 B3 R9030 A3 R9050 C2 R907 C2 R916AB2 R923 C3 R934 A2 R948 B4 R961 B4 R980AB2 R992 A3
 C910 A3 C951 B4 C965 C4 C989 B3 D915 B3 Q910 C4 R9007 B2 R9015 B2 R9023 B3 R9031 A3 R9051 C2 R908 A3 R916B B2 R924 C4 R935 C4 R949 C4 R962 C3 R982 B4 R993 B3
 C913 B4 C952 C3 C966 C3 C990 B3 D918 A4 Q912 C4 R9008 B2 R9016 B2 R9024 B3 R9032 A3 R9052 C2 R908AA4 R917 A3 R925 C3 R938 C4 R950 B3 R964 C4 R982AB2 R994 A4
 C919 A2 C953 C3 C974 A4 D901 C2 IC901 C2 Q913 B4 R9009 A2 R9017 B2 R9025 B3 R9033 A3 R9053 C2 R909 B3 R918 C2 R926 A3 R941 B2 R951 B3 R965 A4 R983 B4 R997 B3
 C925 A2 C954 C4 C976 B3 D902 A2 IC905 A2 R9001 B2 R901 A1 R9018 A2 R9026 B3 R9034 A3 R9058 C2 R910 C2 R919 C2 R927 C2 R942 C3 R953 C3 R966 C4 R984 A4 R999AB4

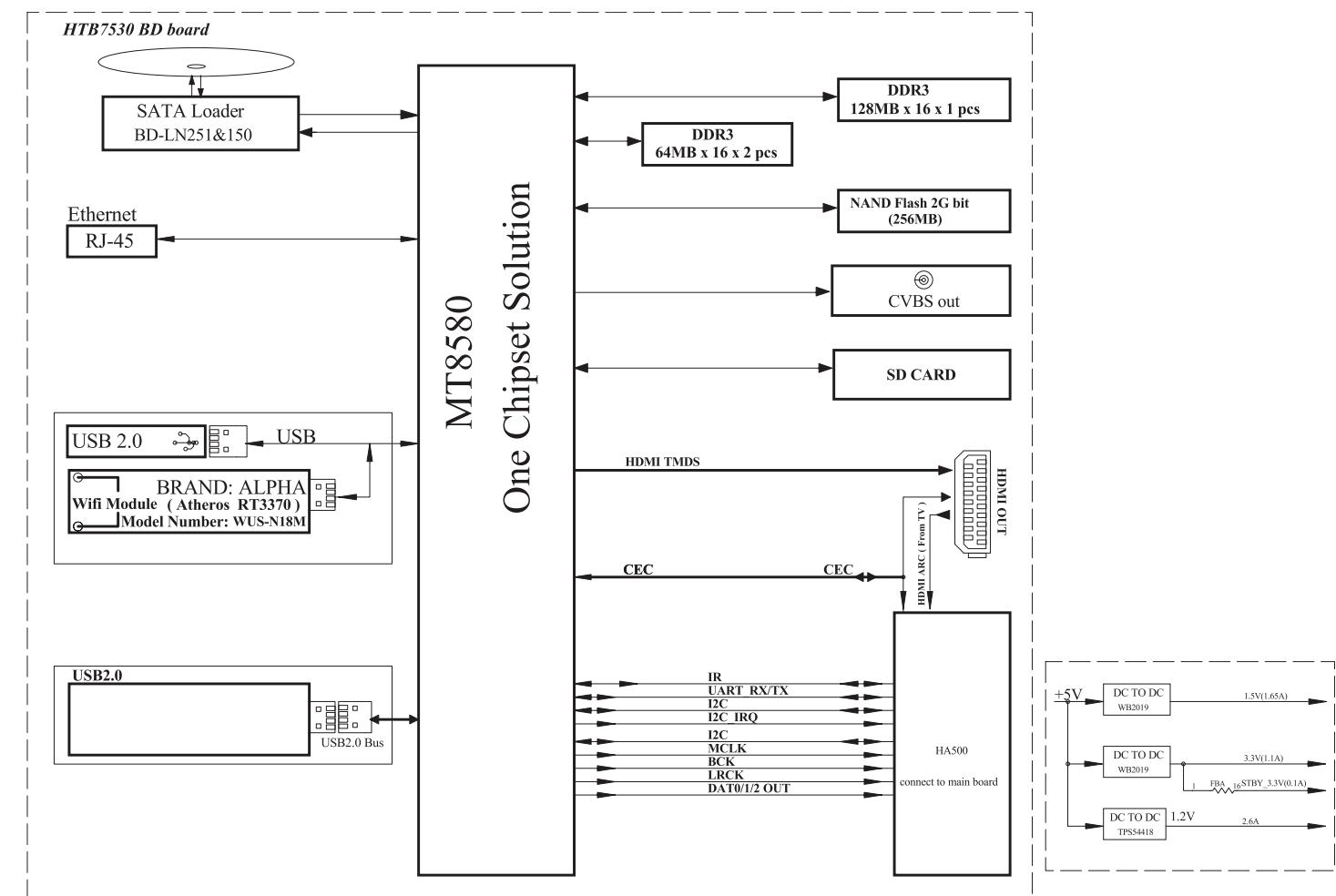


BD BOARD

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BLOCK DIAGRAM



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_SW	no use
5	IR	
6	GND	
7	I2C_IRQ	
8	GND	
9	CEC	
10	AMUTE	high and low control
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	
		no use
25	GND	
26	DATA4	no use
27	MIC_IN	
28	GND	
29	HDMI_ARC	
30	IPOD_DET	no use

2. CN203--->from BD board connect to WIFI connect PCB

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

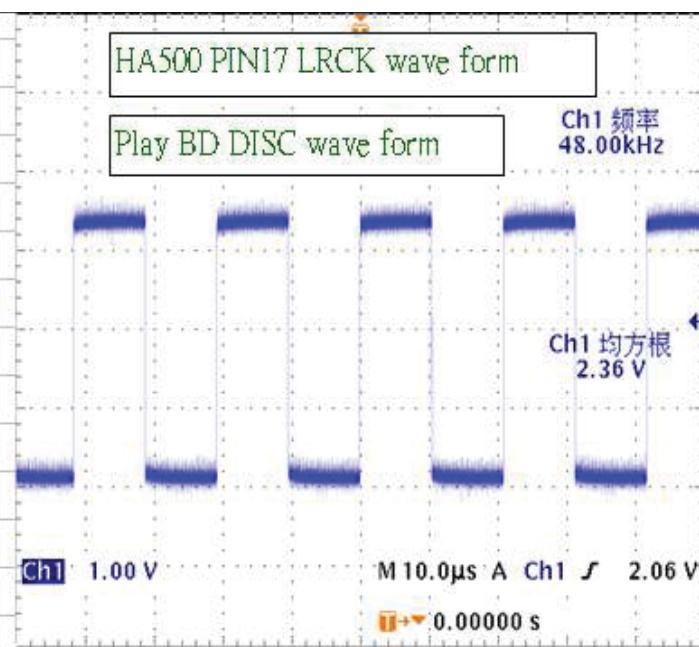
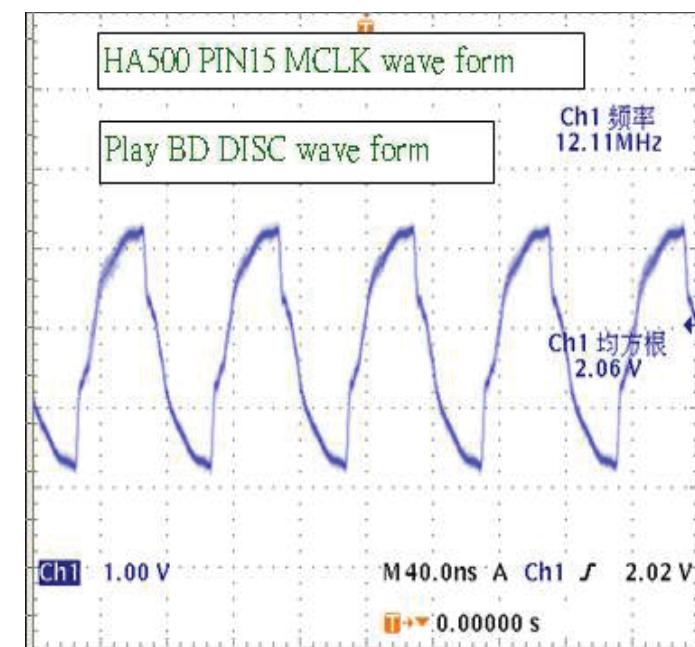
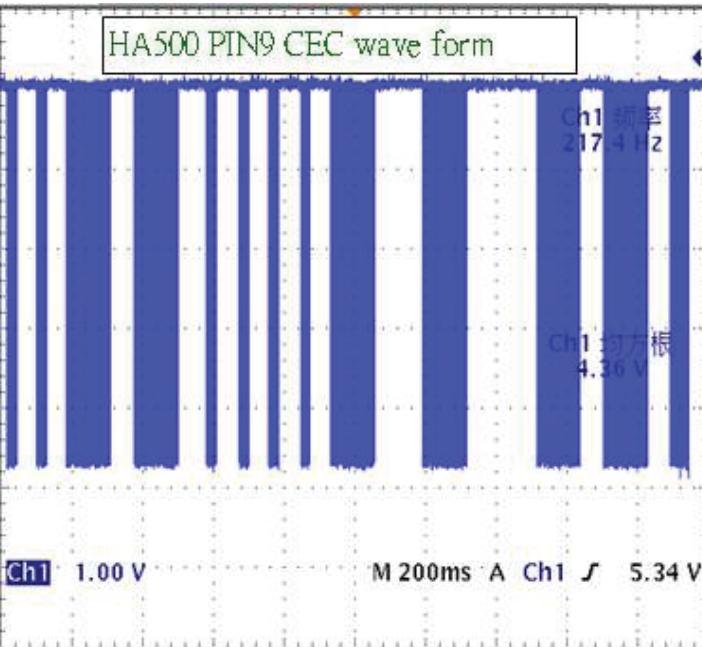
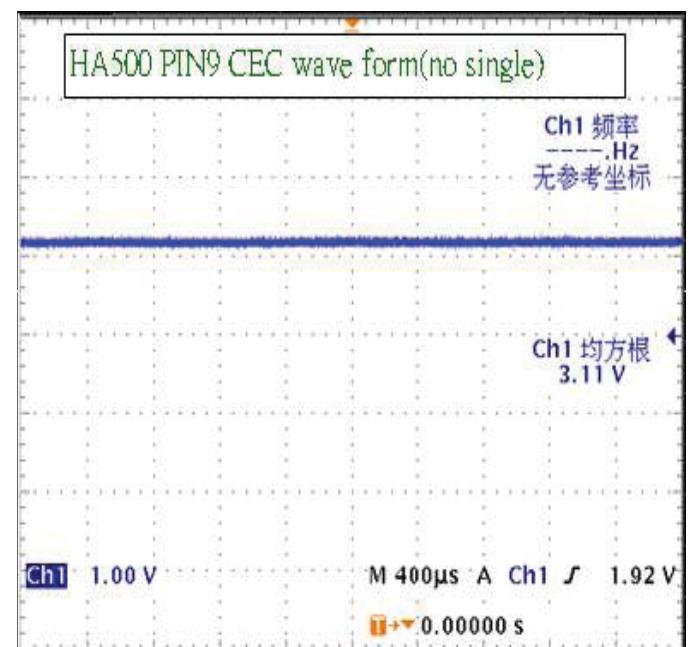
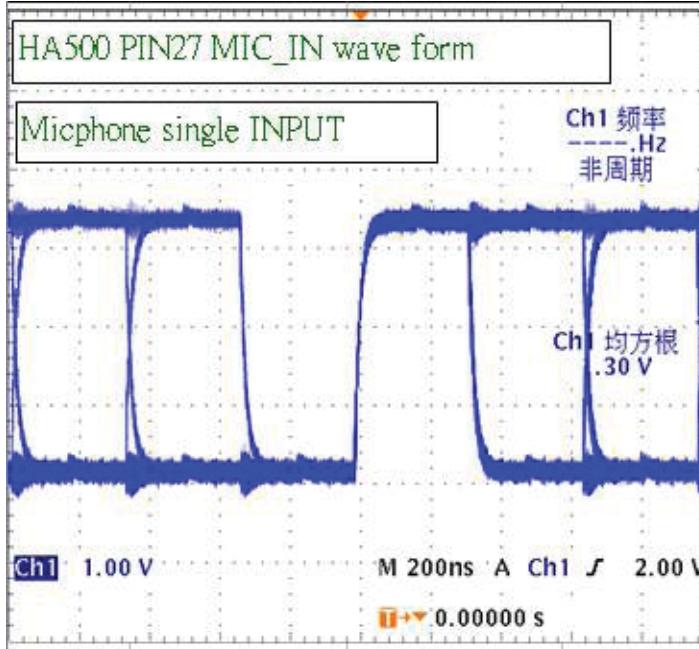
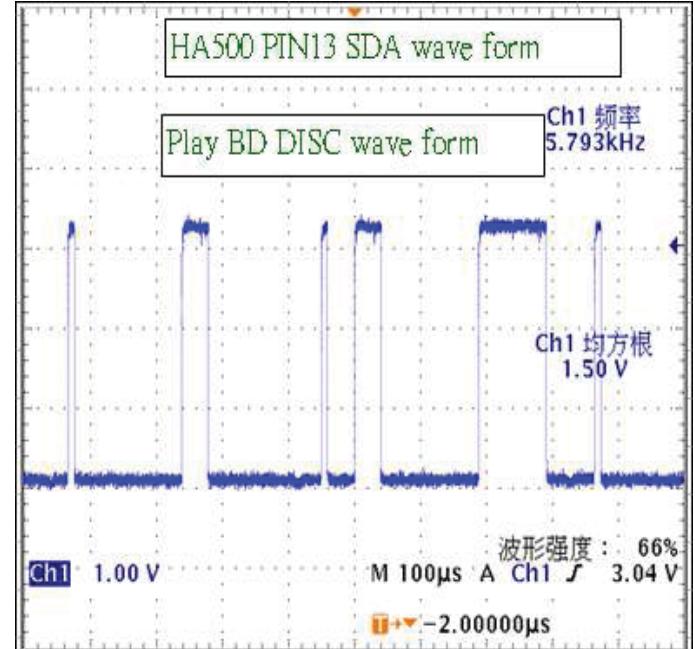
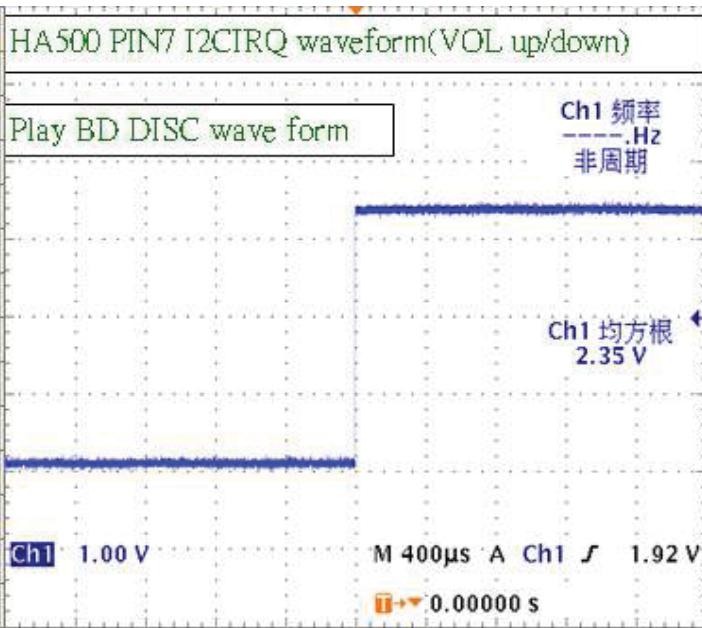
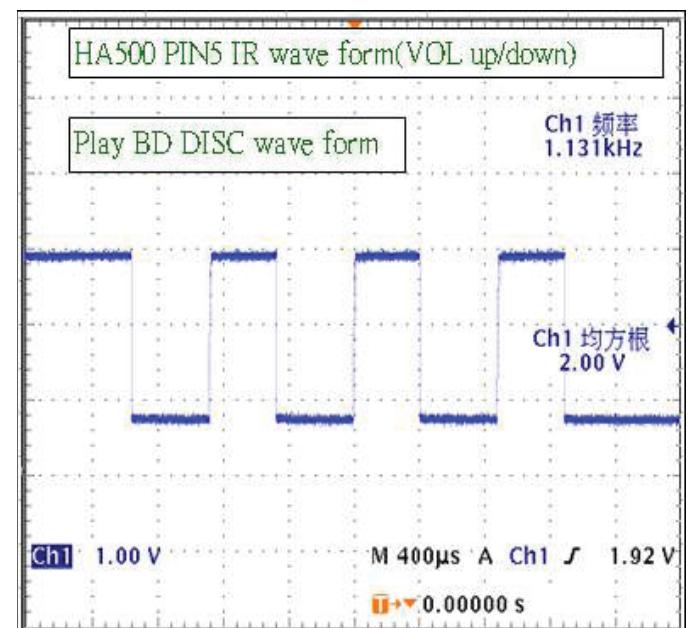
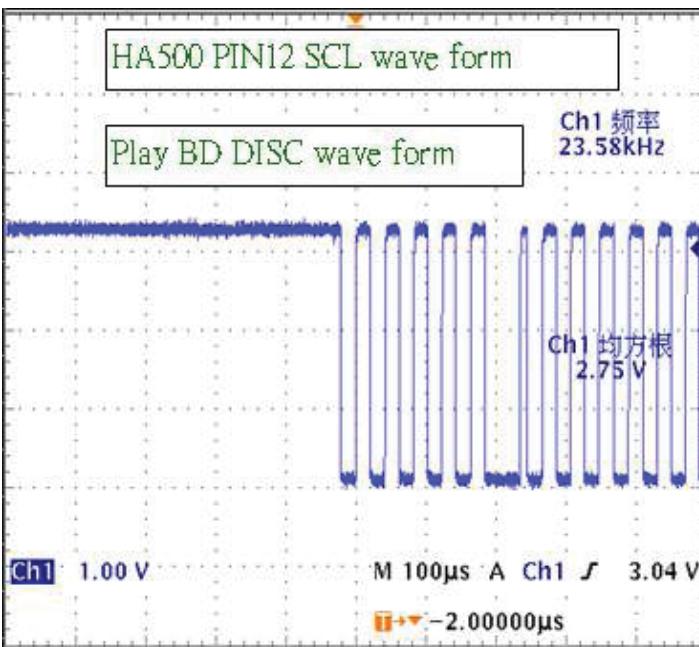
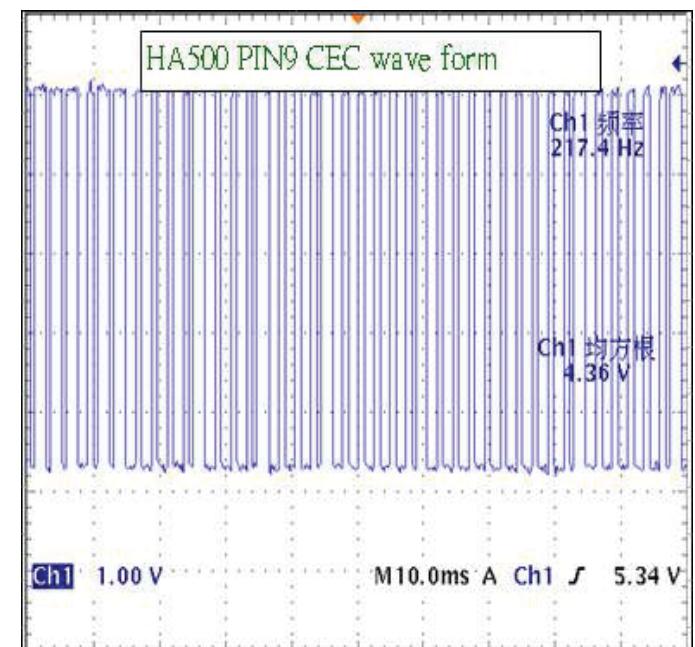
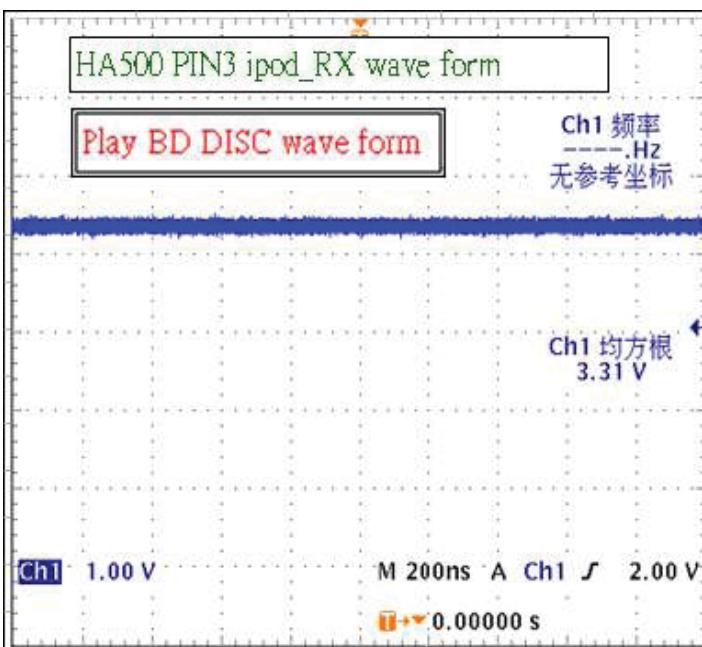
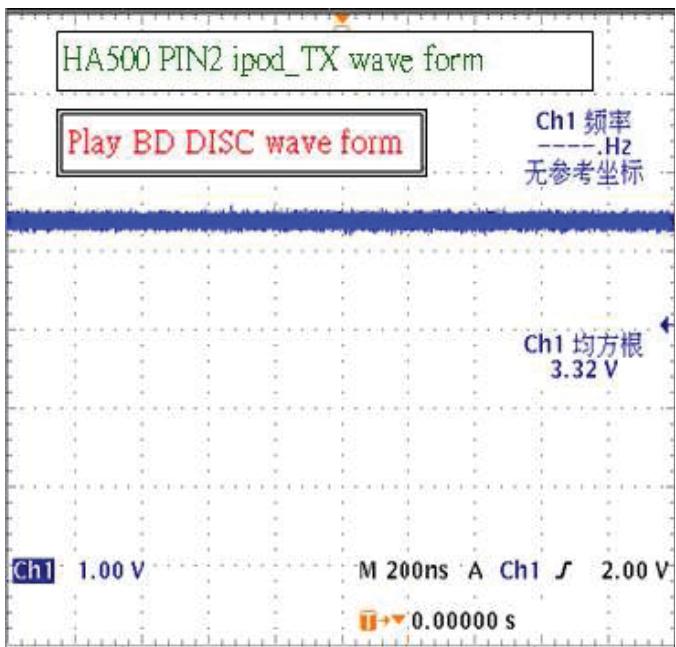
3. CN202--->from BD board connect to USB connect PCB

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

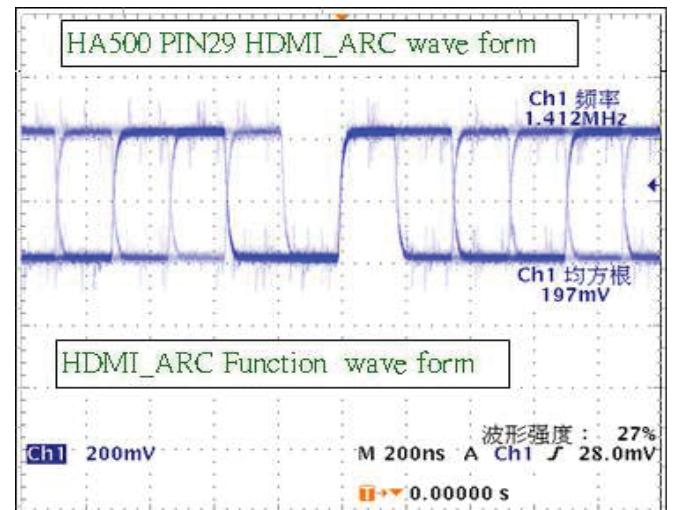
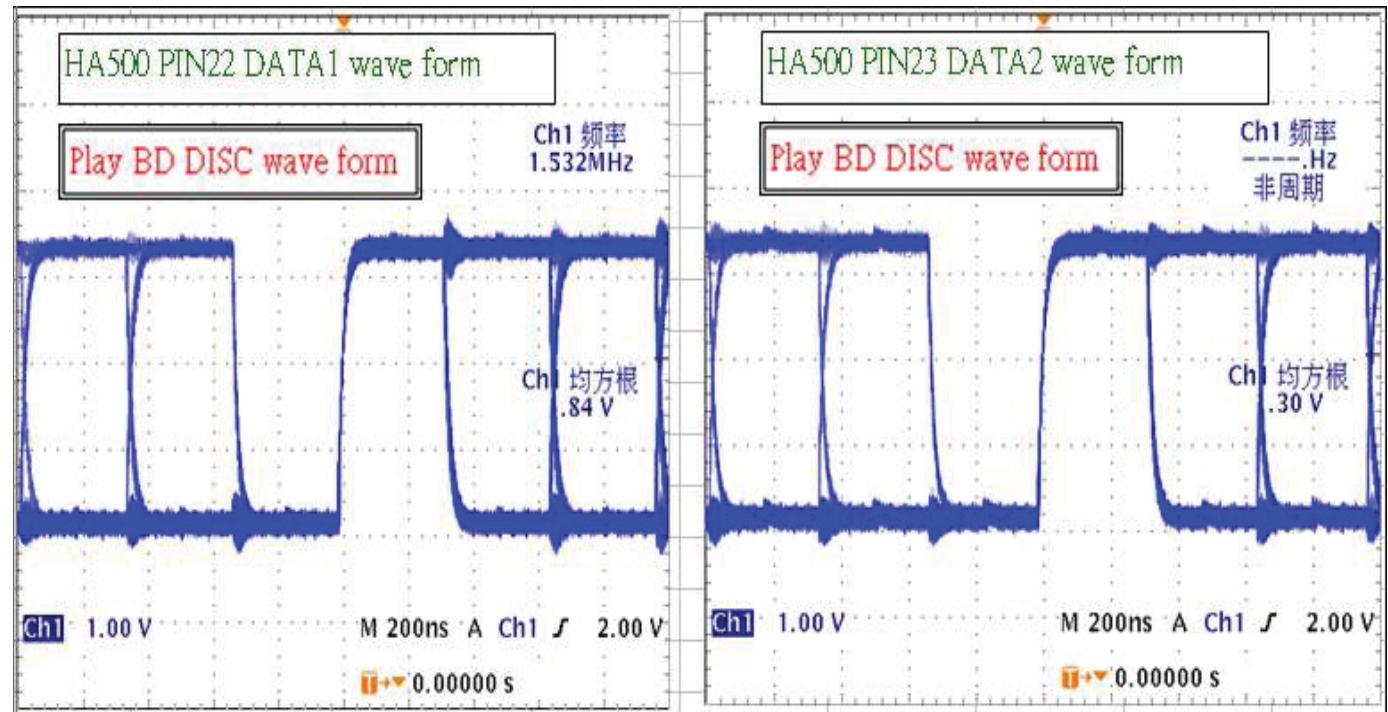
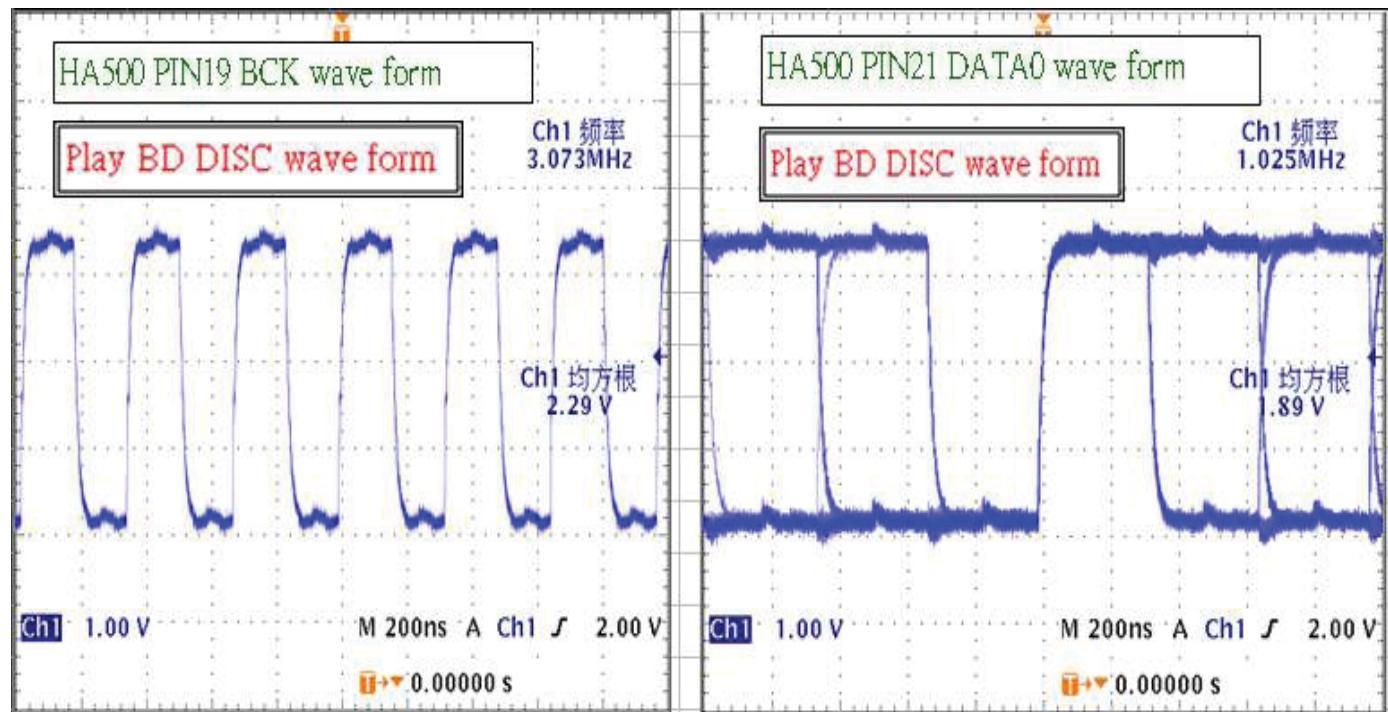
4. CN4 --->from BD board connect to MAIN board

PIN NO	PIN Assign	Remarks
1	+12V	motor driver VCC+12V :10.8-13.2V
2	+5V	BD main
3	+5V	VCC+5V:
4	+5V	4.75V-5.25V
5	GND	
6	GND	
7	GND	

Waveforms for measure point



Waveforms for measure point



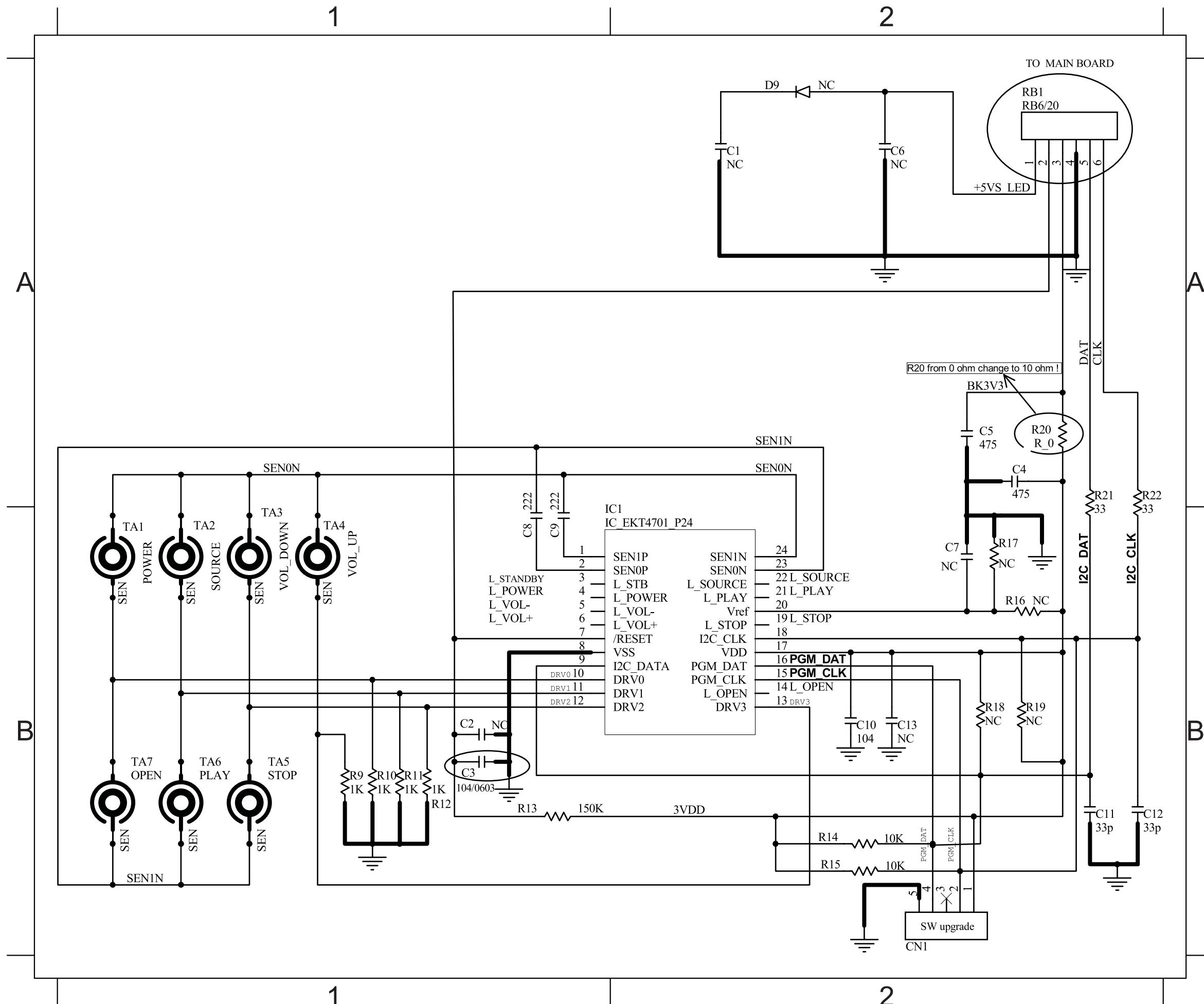
TOUCH BOARD

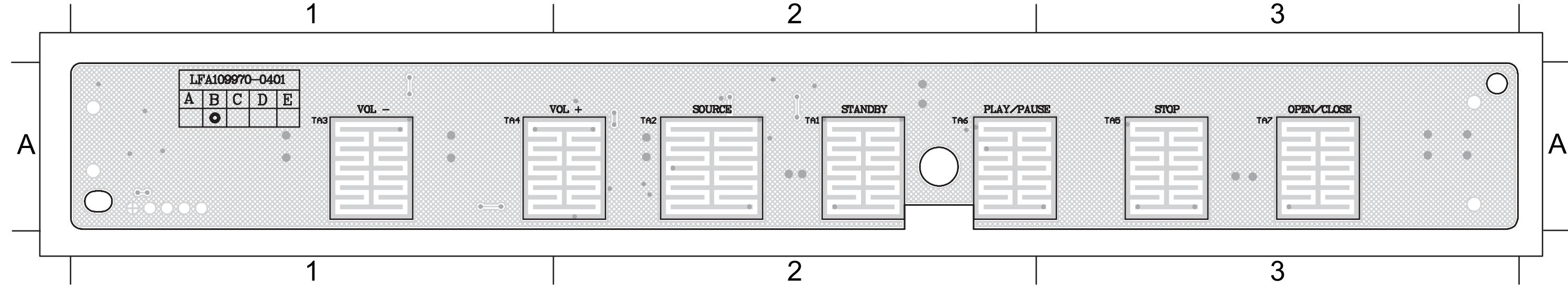
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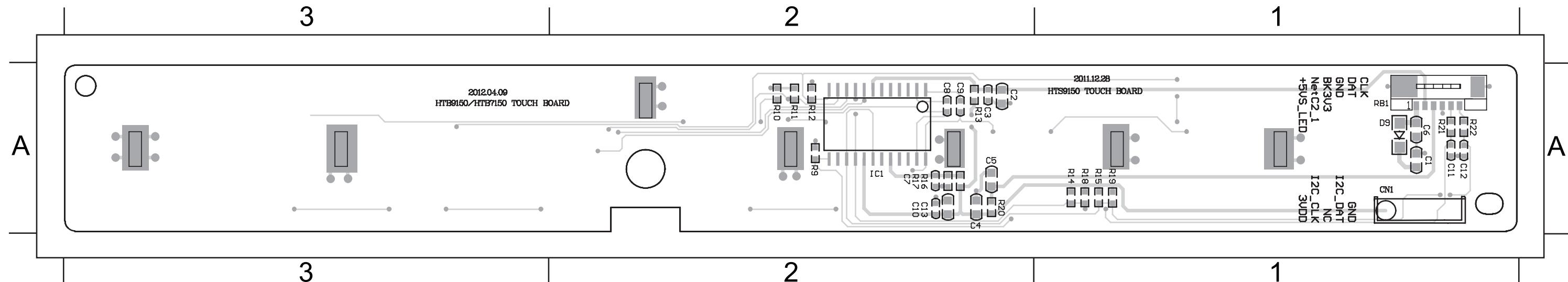
CIRCUIT DIAGRAM

C10 B2 C11 B2 C12 B2 C3 B1 C4 A2 C5 A2 C8 B1 C9 B1 IC1 B2 R10 B1 R11 B1 R12 B1 R13 B1 R14 B2 R15 B2 R20 A2 R21 A2 R22 A2 R9 B3 RB1 A2



PCB LAYOUT - TOP VIEW**PCB LAYOUT - BOTTOM VIEW**

C10 A2 C11 A1 C12 A1 C3 A2 C4 A2 C5 A2 C8 A2 C9 A2 IC1 A2 R10 A2 R11 A2 R12 A2 R13 A2 R14 A1 R15 A1 R20 A2 R21 A1 R22 A1 R9 A2 RB1 A1



MP3&USB&KARAOKE BOARD

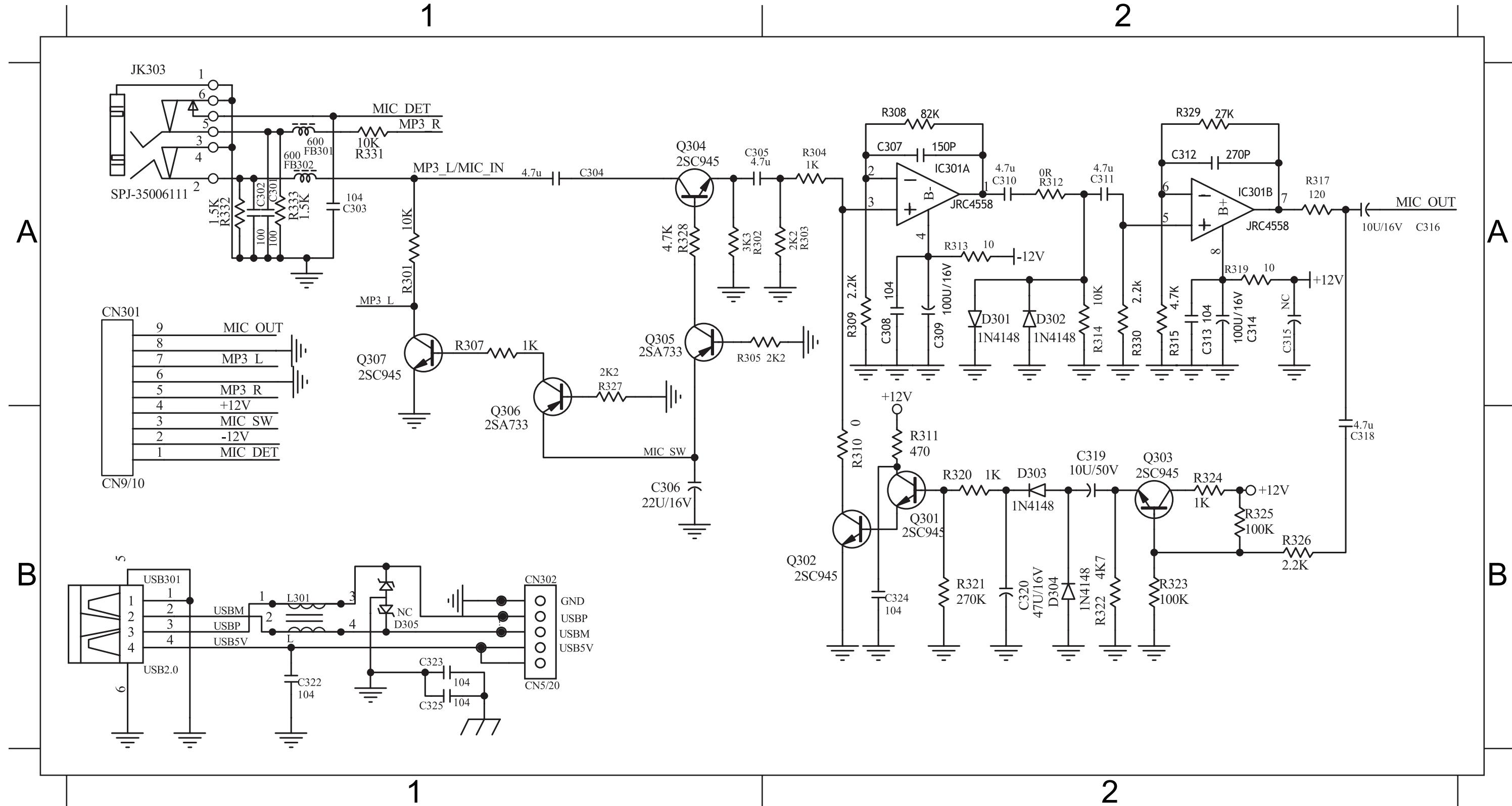
Only for /51 with KARAOKE board

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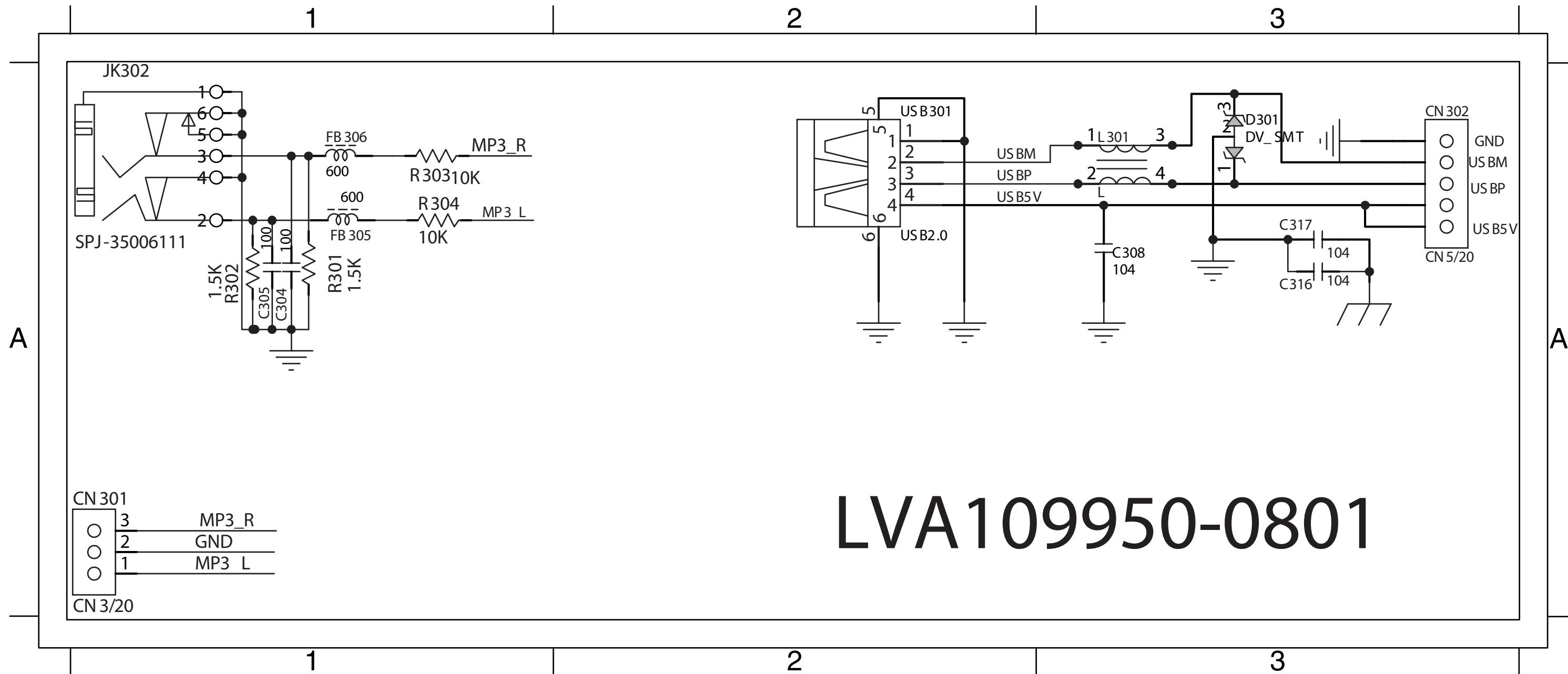
CIRCUIT DIAGRAM (For:/51)

C301	A1	C305	A1	C309	A2	C313	A2	C318	B2	C323	B1	CN302B1	D304	B2	JK303	A1	Q304	A1	R301	A1	R305	A1	R310	B2	R314	A2	R320	B2	R324	B2	R328	A1	R332	A1	
C302	A1	C306	B1	C310	A2	C314	A2	C319	B2	C324	B2	D301	A2	FB301	A1	Q301	B2	Q305	A1	R302	A1	R307	A1	R311	B2	R315	A2	R321	B2	R325	B2	R329	A2	R333	A1
C303	A1	C307	A2	C311	A2	C315	A2	C320	B2	C325	B1	D302	A2	FB302	A1	Q302	B2	Q306	B1	R303	A2	R308	A2	R312	A2	R317	A2	R322	B2	R326	B2	R330	A2	USB301	E1
C304	A1	C308	A2	C312	A2	C316	A2	C322	B1	CN301A1	D303	B2	IC301	A2	Q303	B2	Q307	A1	R304	A2	R309	A2	R313	A2	R319	A2	R323	B2	R327	A1	R331	A1			



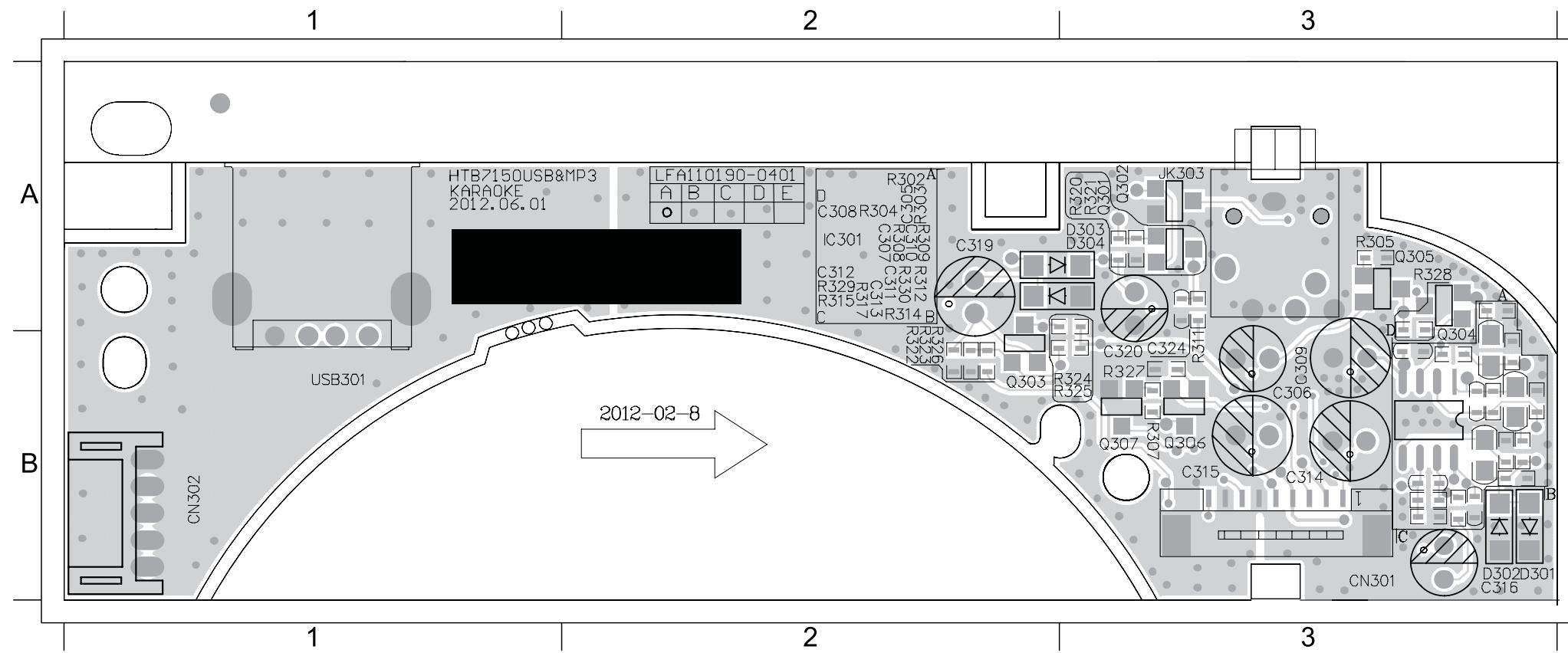
CIRCUIT DIAGRAM (For:12/98)

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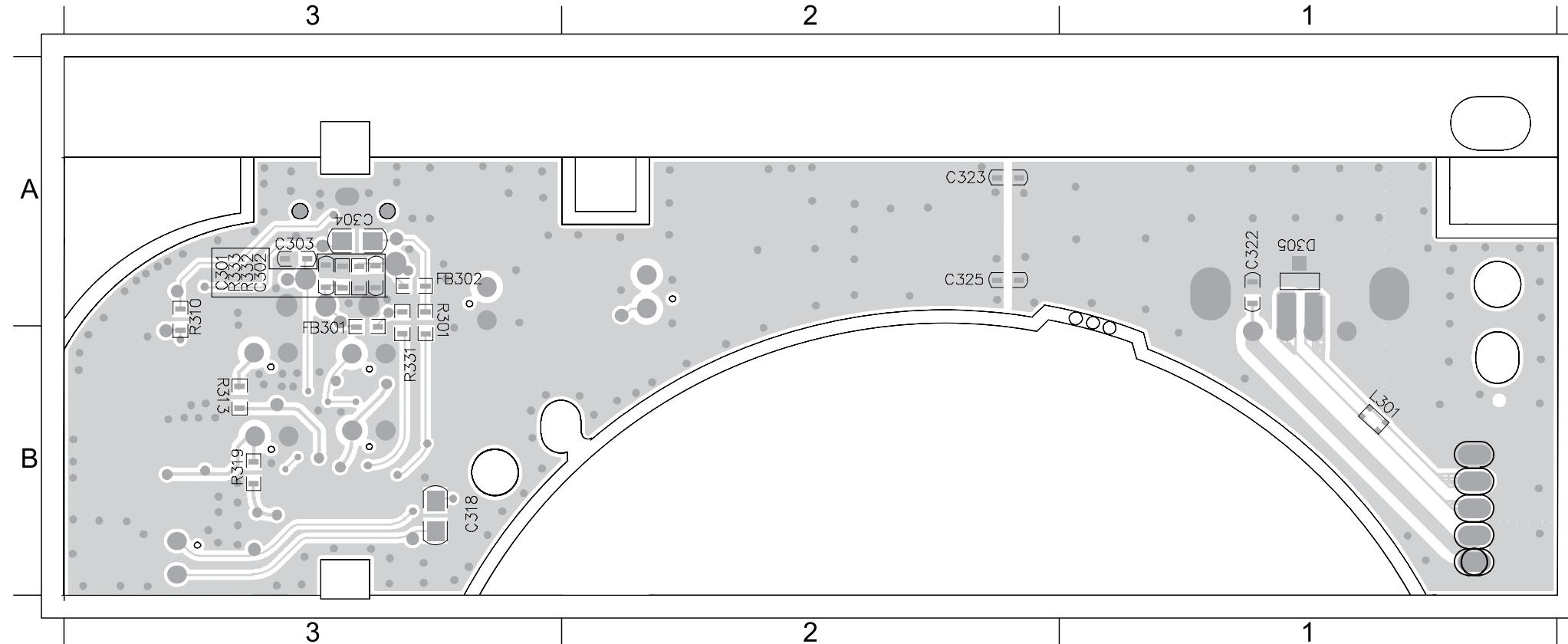
PCB LAYOUT - TOP VIEW (For:/51)

C305 A2 C308 A2 C311 A2 C314 B3 C319 A2 CN301B3 D302 B3 IC301 A2 Q302 A3 Q305 A3 R302 A2 R305 A3 R309 A2 R314 A2 R320 A3 R323 B2 R326 B2 R329 A2
 C306 B3 C309 B3 C312 A2 C315 B3 C320 B3 CN302B1 D303 A3 JK303 A3 Q303 B2 Q306 B3 R303 A2 R307 B3 R311 B3 R315 A2 R321 A3 R324 B3 R327 B3 R330 A2
 C307 A2 C310 A2 C313 A2 C316 B3 C324 B3 D301 B3 D304 A3 Q301 A3 Q304 B3 Q307 B3 R304 A2 R308 A2 R312 A2 R317 A2 R322 B2 R325 B3 R328 A3 USB301 B1



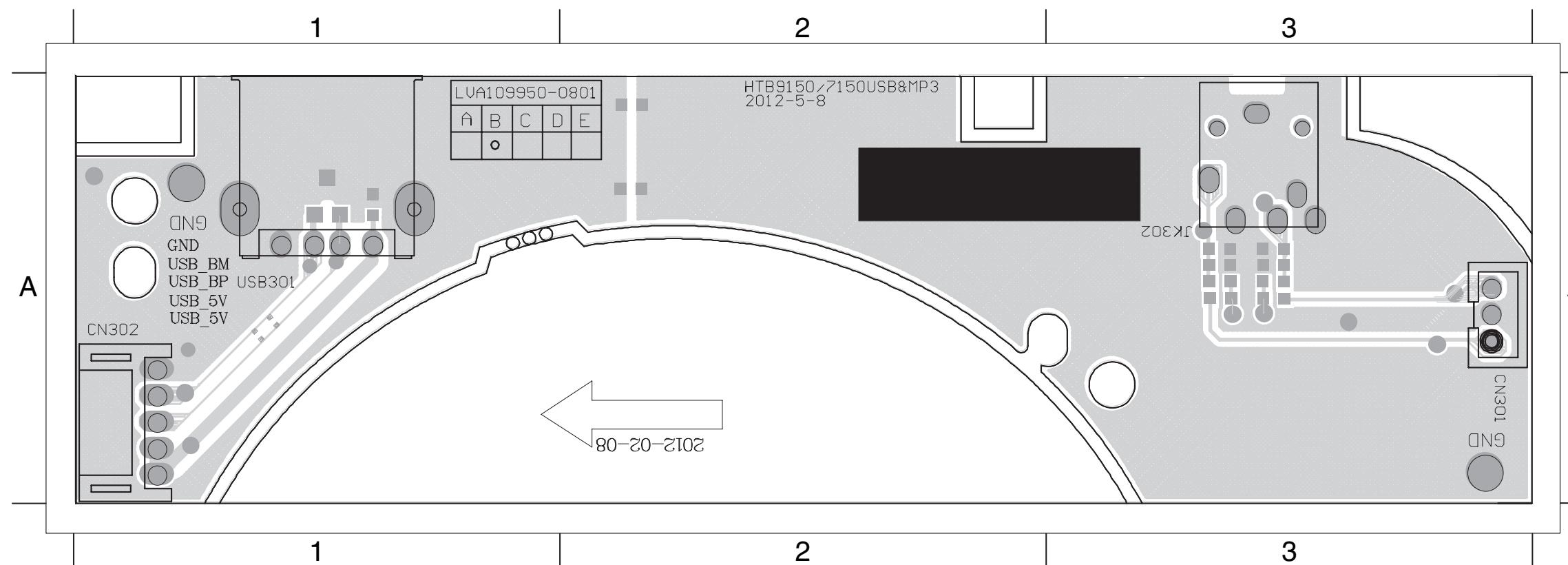
PCB LAYOUT - BOTTOM VIEW (For:/51)

C301 A3 C302 A3 C303 A3 C304 A3 C318 B3 C322 A1 C323 A2 C325 A2 FB301B3 FB302A3 R301 A3 R310 A3 R313 B3 R319 B3 R331 B3 R332 A3 R333 A3



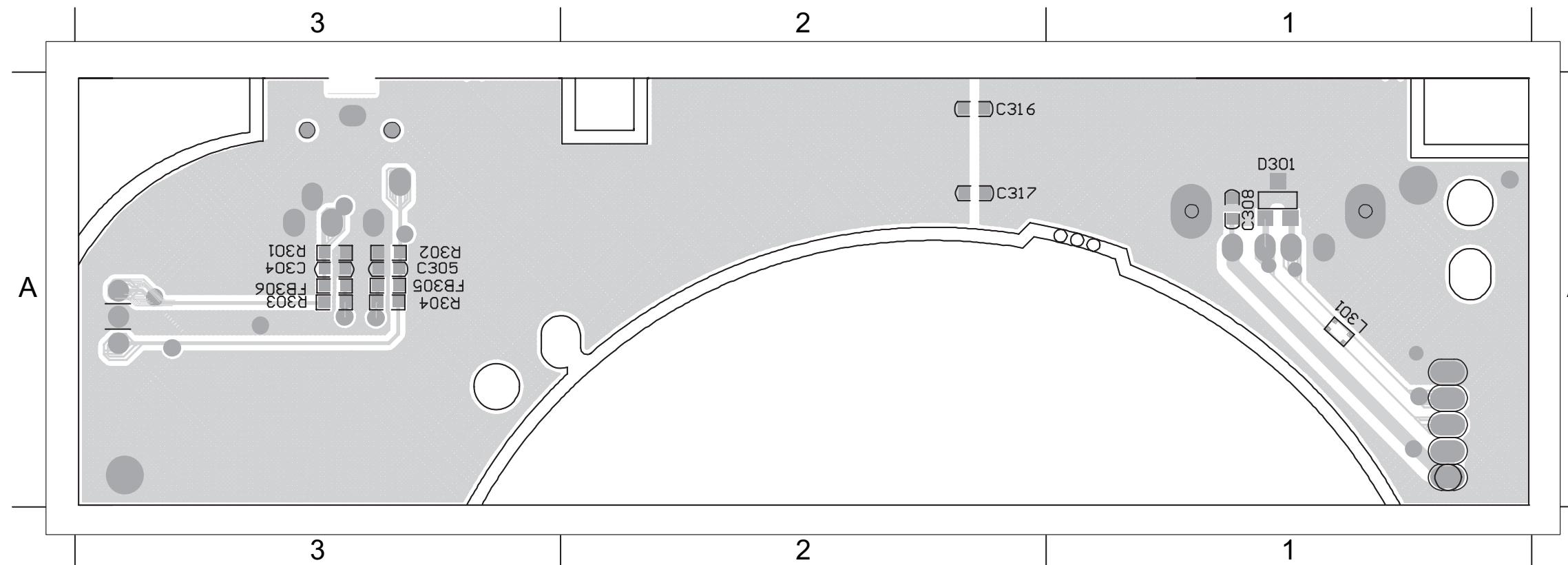
PCB LAYOUT - TOP VIEW (For:/12/98)

CN301 A3 JK302 A3 CN302 A1 USB301 A1

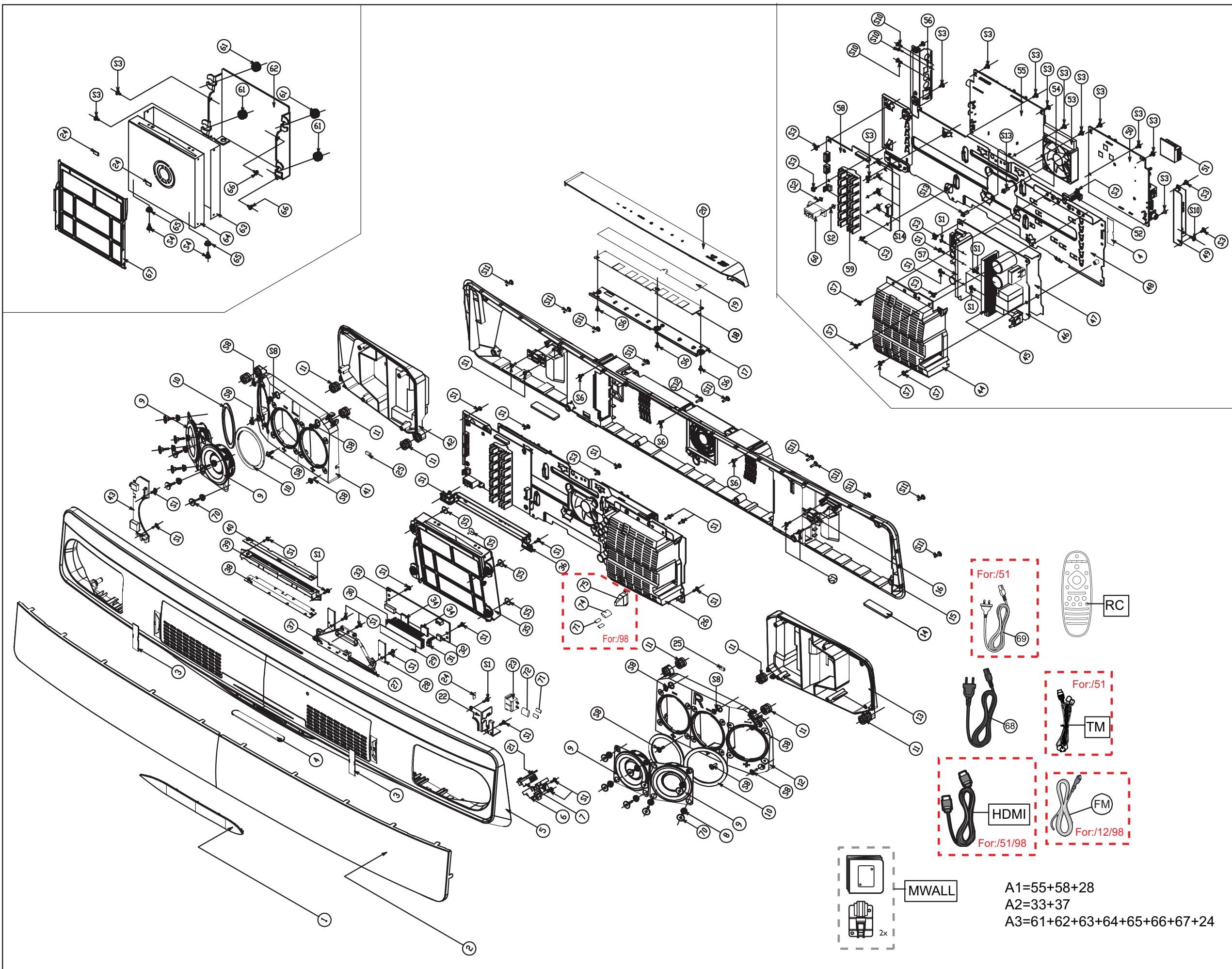


PCB LAYOUT - BOTTOM VIEW (For:/12/98)

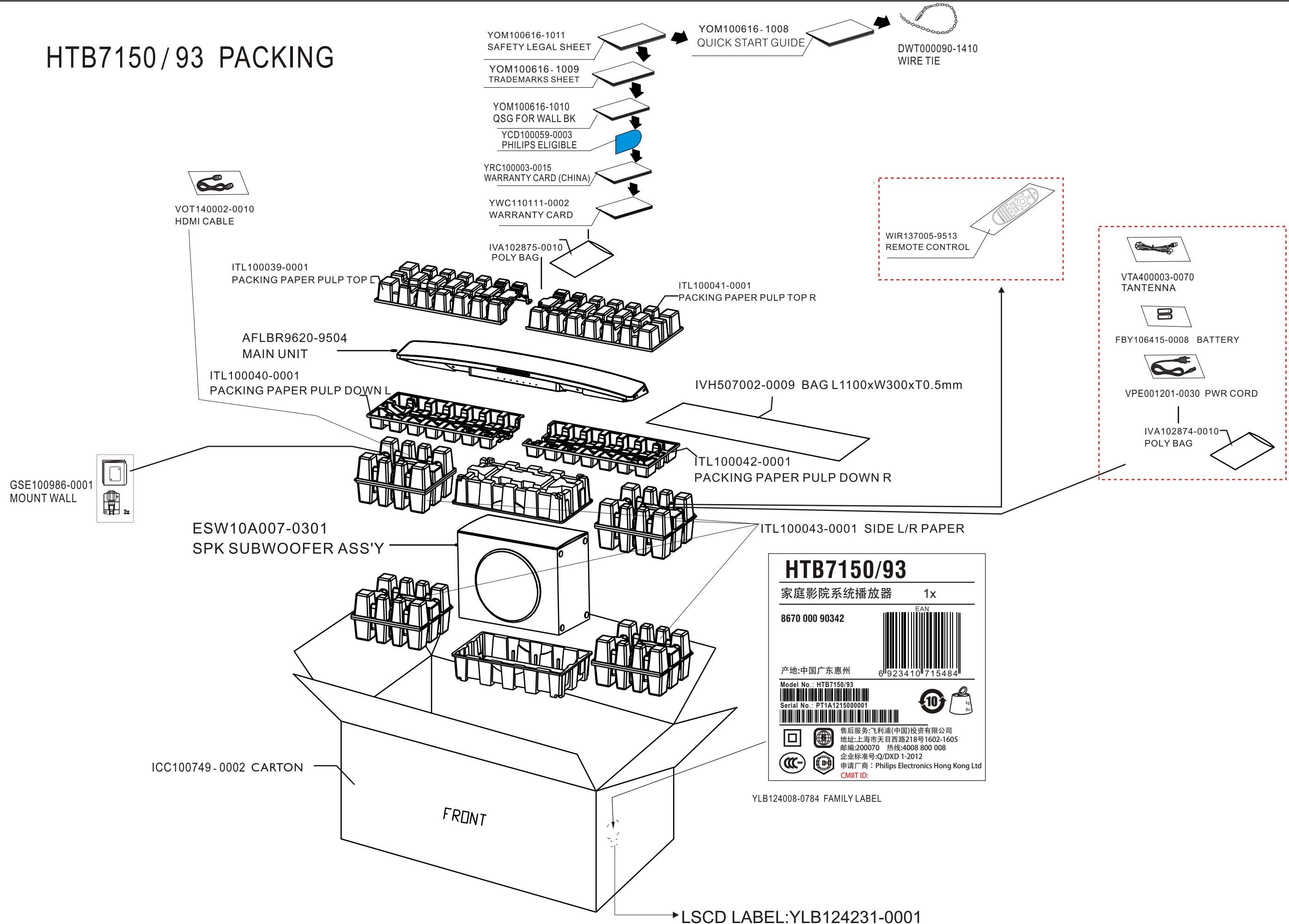
C304 A3 C305 A3 C308 A1 C316 A2 FB305 A3 FB306 A3 R303 A3 R304 A3



Mechanical Exploded View



HTB7150/93 PACKING



REVISION LIST

Version 1.0

*Initial release HTB7150K/51

Version 1.1

*Add initial release HTB7150/12/98

Version 1.2

*Add initial release HTB7150/93