

**Service  
Service  
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# Service Manual



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CLASS 1  
LASER PRODUCT

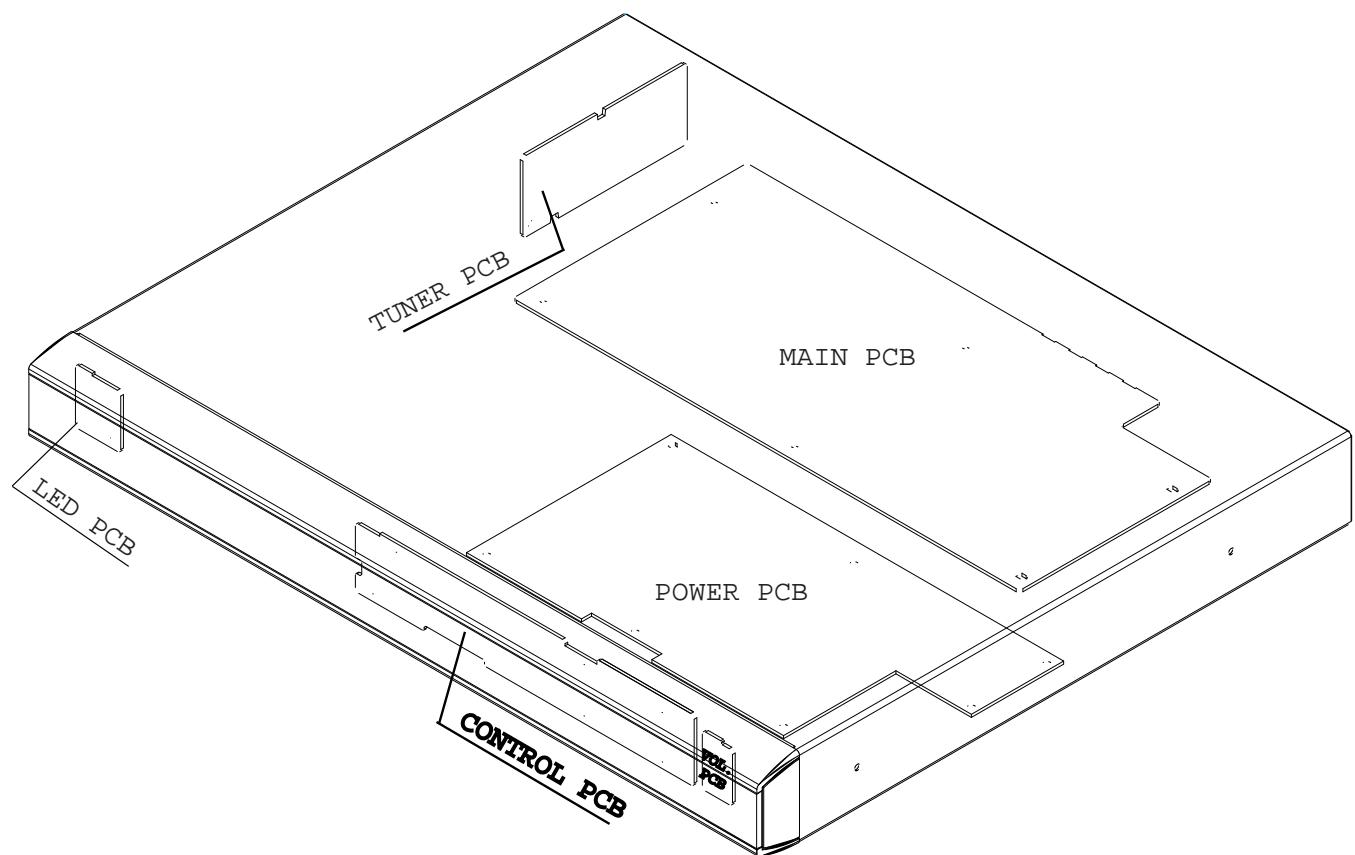
(GB) 3139 785 31070

**Version 1.0**



**PHILIPS**

## LOCATION OF PC BOARDS



## VERSION VARIATION:

Type /Versions:	HTS3400
Features & Board in used:	/ 37
RDS	
Rotary Encoder (volume control)	X
Aux Input	X
Digital Output	X
Line Output	X
Progressive scan	X
Power supply (120V)	X

# SPECIFICATIONS

## AMPLIFIER SECTION

Output power .....	500 W Total power
- Front .....	70 W RMS / channel
.....	60 W FTC①/channel
- Rear .....	70 W RMS / channel
- Center .....	70 W RMS
- Subwoofer .....	100 W RMS
Frequency Response .....	180 Hz - 14 kHz / ±3 dB
Signal-to-Noise Ratio.....	> 60 dB (A-weight)
Input Sensitivity	
AUX/TV In .....	400 mV

① 8ohm, 120Hz-12.5 kHz, 10% THD

## TUNER SECTION

Tuning Range .....	FM 87.5 – 108 MHz ( 100 kHz steps)
.....	AM 530 – 1710 kHz (10 kHz steps)
26 dB Quieting Sensitivity .....	FM 20 dBf
26 dB Quieting Sensitivity .....	AM 5000 µV/m
Image Rejection Radio .....	FM 25 dB
.....	AM 28 dB
IF Rejection Ratio .....	FM 60 dB
.....	AM 24 dB
Signal-to-Noise Ratio.....	FM 55 dB
.....	AM 40 dB
AM Suppression Ratio.....	FM 30 dB
Harmonic Distortion .....	FM Mono 3 %
.....	FM Stereo 3 %
.....	AM 5 %
Frequency Response .....	FM180 Hz – 10 kHz / ±6 dB
Stereo Separation .....	FM 26 dB (1 kHz)
Stereo Threshold .....	FM 23.5 dB

## DISC SECTION

Laser Type .....	Semiconductor
Disc Diameter .....	12cm / 8cm
Video Decoding .....	MPEG-2 / MPEG-1
Video DAC .....	10 Bits
Signal System .....	PAL / NTSC
Video Format .....	4:3 / 16:9
Video S/N .....	56 dB (minimum)
Composite Video Output .....	1.0 Vp-p, 75 Ω
S-Video Output .....	Y - 1.0 Vp-p, 75 Ω
.....	C - 0.286 Vp-p, 75 Ω
Audio DAC .....	24 Bits / 96 kHz
Frequency Response .....	4 Hz - 20 kHz (44.1kHz)
.....	4 Hz - 22 kHz (48kHz)
.....	4 Hz - 44 kHz (96kHz)
Digital Output .....	
.....	SPDIF (Sony Philips digital interface) Coaxial
- PCM .....	IEC 60958
- Dolby Digital .....	IEC 60958, IEC 61937

## MAIN UNIT

Power Supply Rating .....	120 V / 60 Hz
Power Consumption .....	160W
Dimensions (w × h × d) .....	435× 53 × 365 (mm)
Weight .....	4.35 kg

## SPEAKERS

Front/Rear speakers	
System .....	2-way, Not magnetically sheilded
Impedance .....	3 Ω
Speaker drivers .....	3" full-range woofer, 1" conical dome tweeter
Frequency response .....	140 Hz – 20 kHz
Dimensions (w × h × d) .....	93 × 169 × 65 (mm)
Weight .....	0.73 kg (Front speaker) 0.77 kg (Rear speaker)

## CENTER SPEAKERS

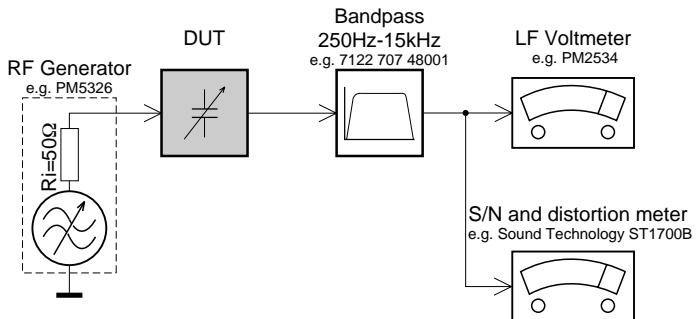
System .....	2-way, maganetically sheilded
Impedance .....	3 Ω
speaker drivers .....	2 x 3" full-range woofer, 1" conical dome tweeter
Frequency response .....	140 Hz – 20 kHz
Dimensions (w × h × d) .....	245 × 93 × 70 (mm)
Weight .....	1.37 kg

## PASSIVE SUBWOOFER

Impedance .....	3 Ω
speaker drivers .....	6 1/2" woofer
Frequency response .....	40 Hz – 120 kHz
Dimensions (w × h × d) .....	156 × 360 × 350 (mm)
Weight .....	4.3 kg

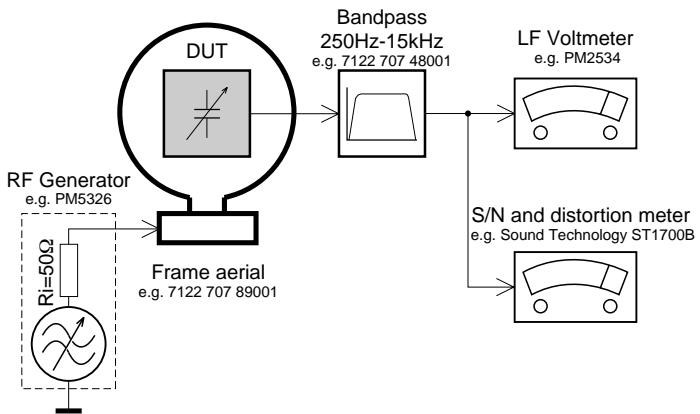
## MEASUREMENT SETUP

*Tuner FM*



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

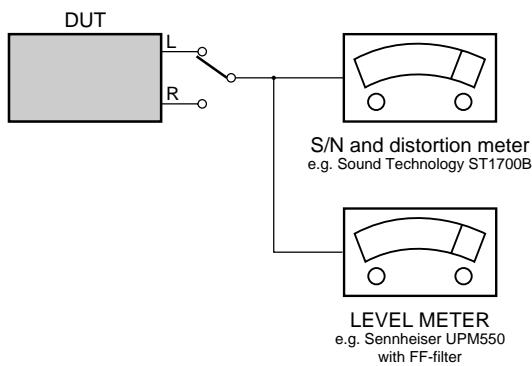
### **Tuner AM (MW,LW)**



To avoid atmospheric interference all AM-measurements have to be carried out in a Faraday's cage. Use a bandpass filter (or at least a high pass filter with 250Hz) to eliminate hum (50Hz, 100Hz).

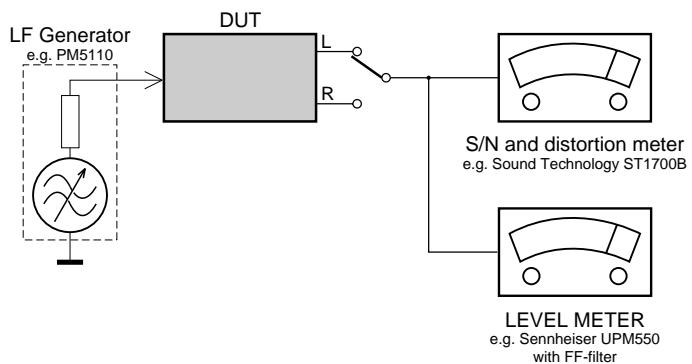
CD

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



## *Recorder*

Use Universal Test Cassette CrO<sub>2</sub> SBC419 4822 397 30069  
or Universal Test Cassette Fe SBC420 4822 397 30071



## SERVICE AIDS

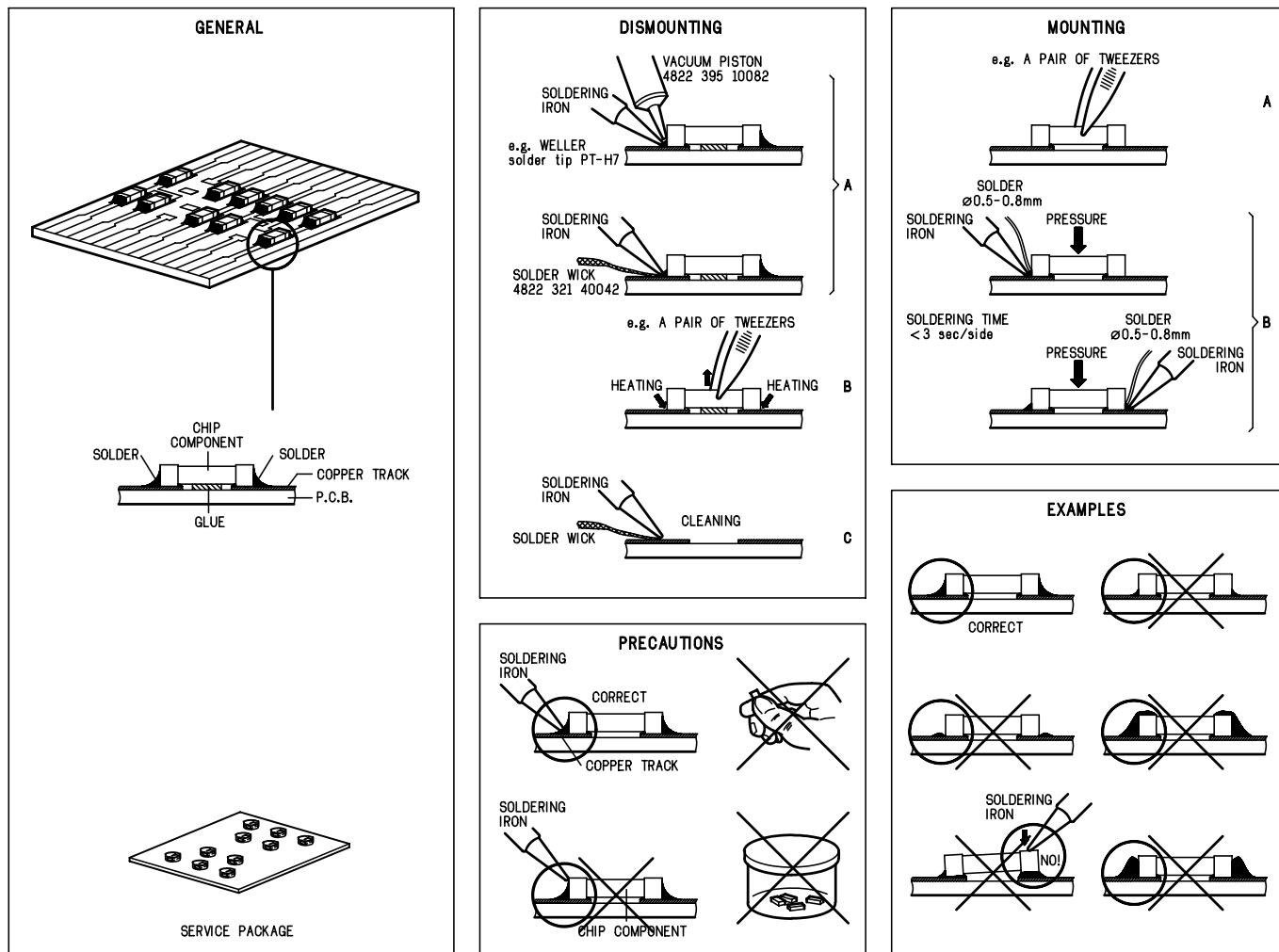
### Service Tools:

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



**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.

## ESD



**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, 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  $\triangle$ .

**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.



**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 ohittaa olet alttiina 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](http://www.atyourservice.ce.Philips.com) you find more information to:
  - BGA-de-/soldering (+ baking instructions)
  - Heating-profiles of BGAs and other ICs used in Philips-sets

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

For additional questions please contact your local repair-helpdesk.

## System, Region code, Tuner, etc. setting procedure

### 1) System Reset

- a) Press "SYSTEM" button on R/C. TV show "SETUP"
- b) Select the menu using the "▼" and "►" button on R/C
- c) Go feature setup page to do system reset

### 2) Region Code Change

After replacement / repair of the MPEG board, the customer setting and the region code may lost. Changing the Region code will put the player back in the state which it has left the factory.

#### Region Code

1	USA
2	EU
3	AP
4	Australia, NZ, Latam
5	RUSSIA, INDIA
6	CHINA

#### TV System

1	NTSC
2	PAL
3	AUTO

#### Menu/ Audio Subtitle (AS) Language

1	English
2	English
3	English
4	English

#### AFS

001	LX3000D/LX3500D /MRD200
002	MX3600D/MX3800
003	LX3700D/LX3750W
005	MRD210
006	MX3660D
008	FW-D550
010	MRD120/MX6050/ <a href="#">HTS3400</a>

#### oem derivative

08

- region code = 1 digit
- tv system = 1 digit
- "as/menu lang" = 1 digit
- "AFS" = "architechture Feature Set" = 3 digits

This field is used to define the architecture / features sets for each product.

- "oem derivative" = 2 digit

This field is use to define the OEM set. This will affect the background display.

### 3) Region code change timer reset

Press below key to reset the timer :

- a) In DISC source, stop mode and no disc in tray.
- b) Press R/C "Play -159-PLAY" to reset timer to 25

### 4) Tuner area change

- a) Press the "OPEN/CLOSE" button to open the set' s door
- b) Press "1" "5" "9" button by using R/C.
- c) TV Show "TUNER AREA"
- d) Select the tuner area you want by using the "▼" and "►" button on R/C, then press "OK" to confirm. TV show "TUNER AREA CHANGED"
- If you didn't press it in five seconds, the system will remain original status.

AREA	BAND	FREQUENCY ( Hz)	STEP( Hz)
USA (37)	FM	87.5M	108M
	AM	531K	1602K
		530K	1710K
			10K

Note :-

Please refer to the above different tuner area.

### CAUTION !

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

### 5. Video Out Change

- a) Press "SYSTEM" on R/C button
- b) Select the menu using the "▼" and "►" button on R/C
- c) Go picture setup page select Video out item.

### 6. Password Change

- a) Press "SYSTEM" on R/C button
- b) Select the menu using the "▼" and "►" button on R/C
- c) Go feature setup page select "PASSWORD". TV show "ENTER CODE". Press 4 times of "STOP" button on R/C.
- d) Select "PARENTAL" "8 ADULT" on TV.
- e) Enter PASSWORD to "1234".
- \* "1234" is a default password supplied.

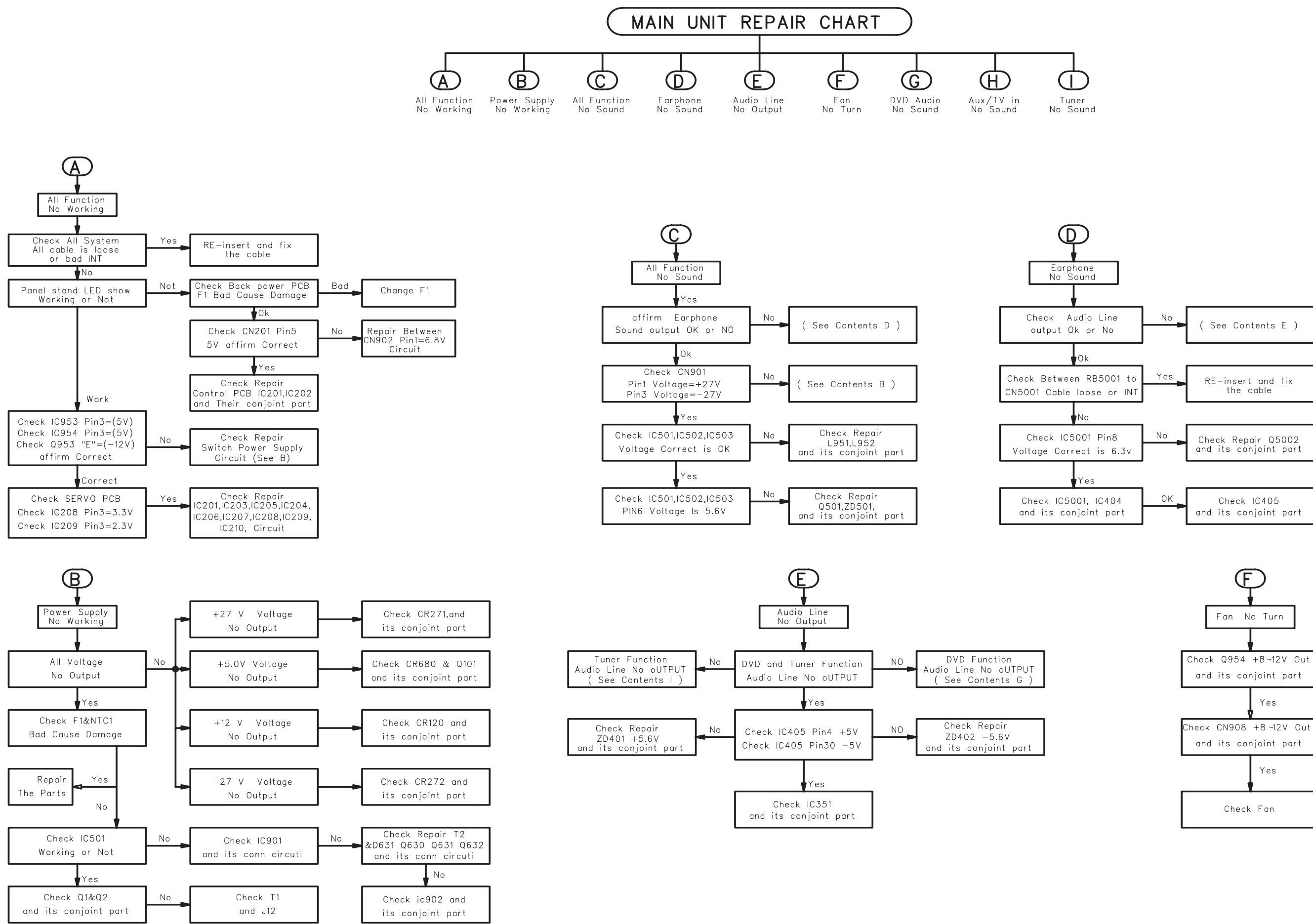
### 7. Checking on the Software version

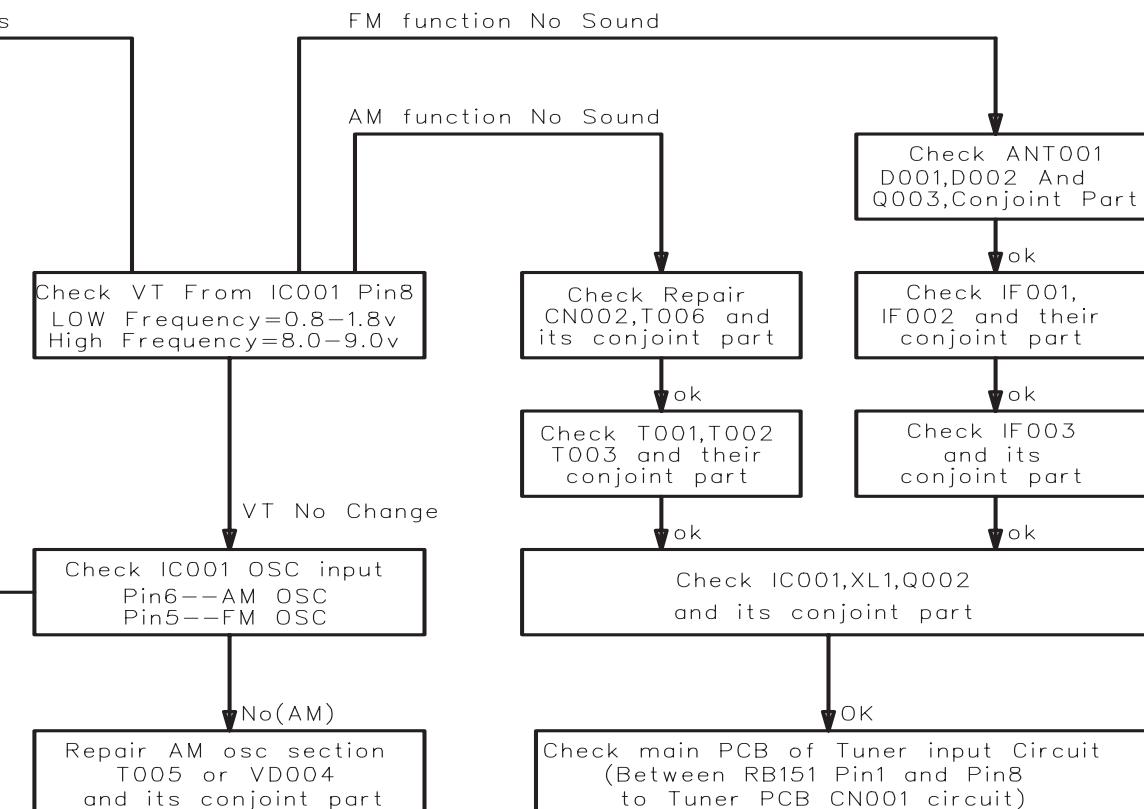
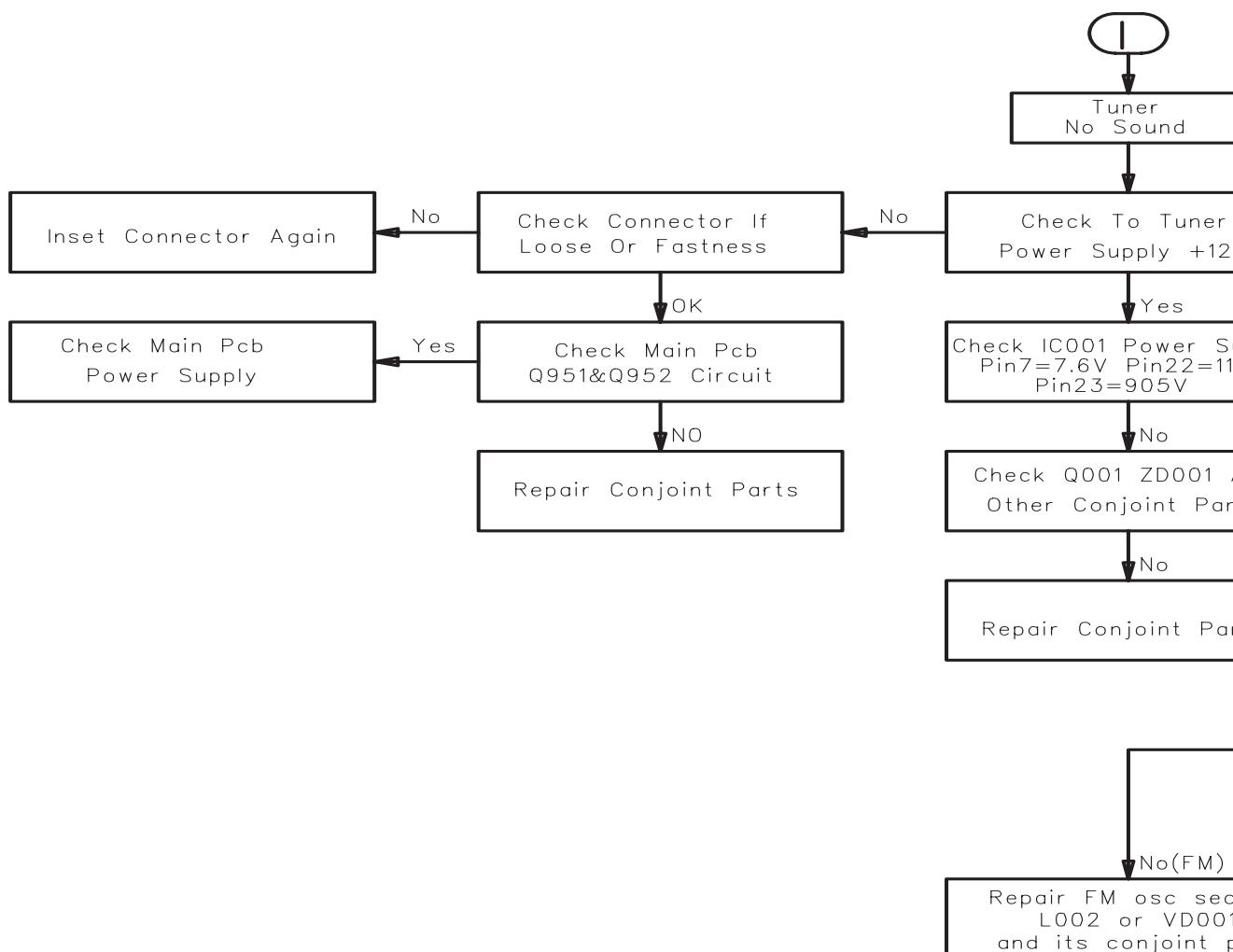
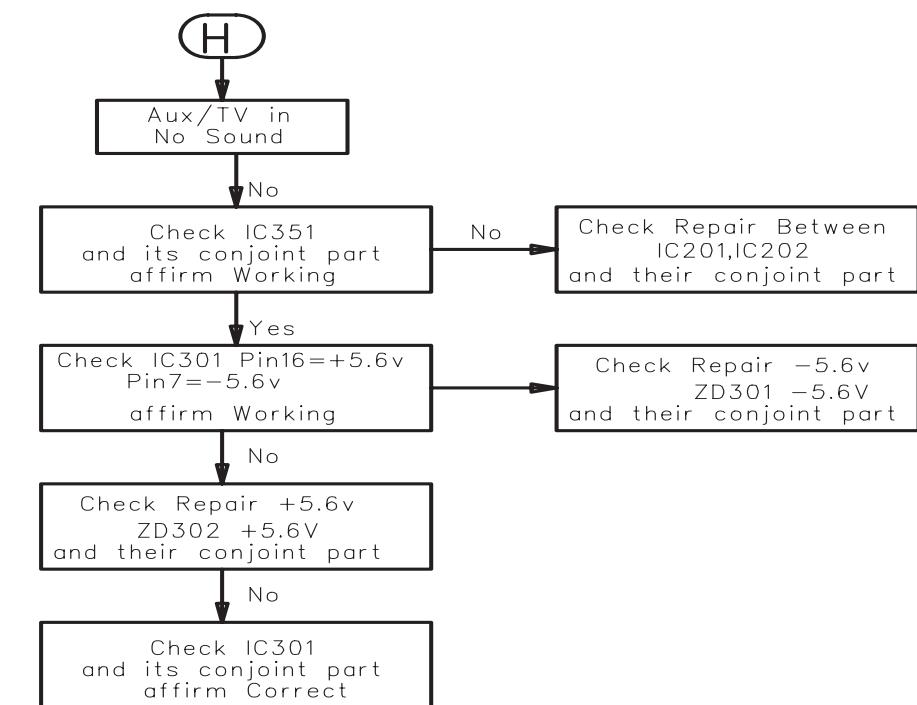
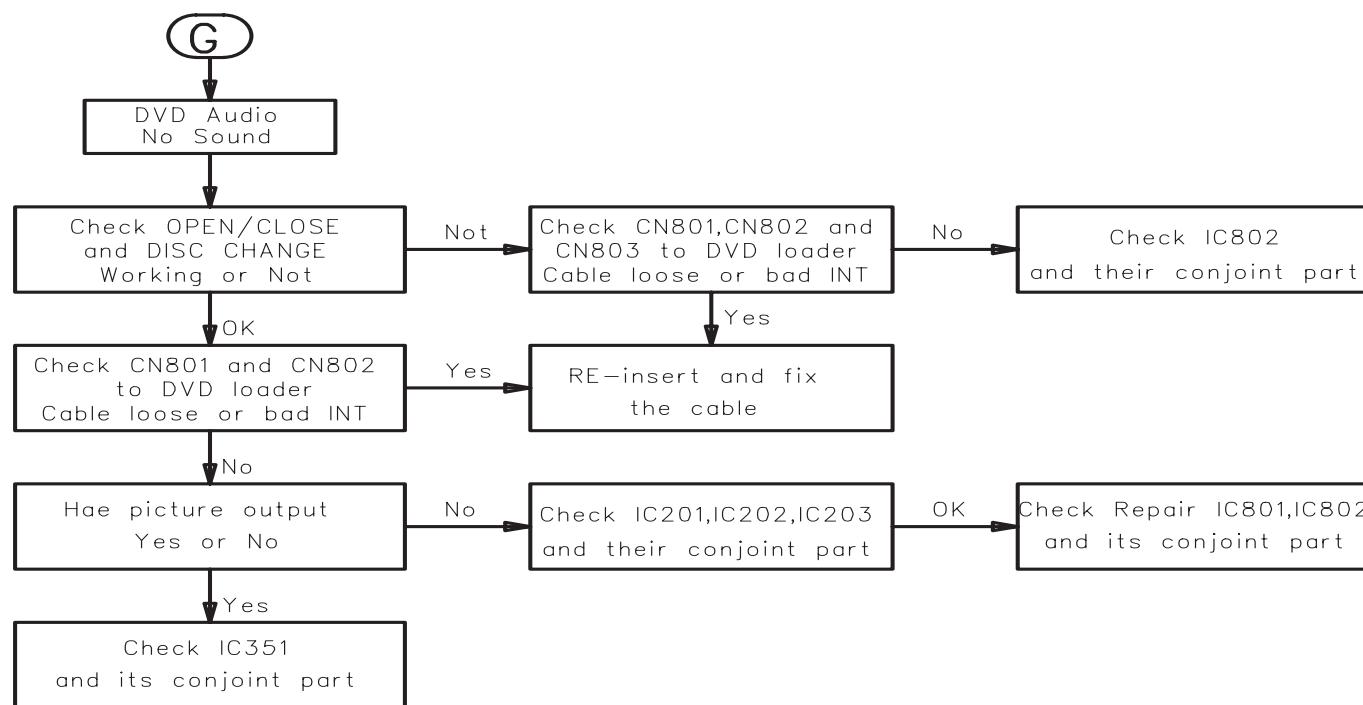
- a) Open the CD door.
- b) Press "123" and "OK" on the remote control.
- c) TV will show the version on screen.

### 8. Upgrading new software

- a) Open the door, then insert the CD-R program disc.
- b) Close the door.
- c) TV will show:-
- "disc loading"
- "bank30.rom"
- "writing" about 6 seconds.
- "Done"
- \* The latest upgraded is in version VER0226.

## REPAIR INSTRUCTIONS ( 1 of 2 )



**REPAIR INSTRUCTIONS ( 2 of 2 )**

## DISASSEMBLY INSTRUCTIONS

### Dismantling of the Front Panel Assembly

- 1) Open the DVD Tray by using the Open/Close Button while the Set is ON and disconnect the mains supply after removing the Tray Cover.

*Note: If this is not possible, the DVD Tray has to be open manually.*

Take a mini screw driver about 2mm diameter and make a marking 24mm from the tip as shown in figure 2. place the set on its side, insert the mini screw driver till the marking and slide it towards the right as shown in figure 1 until the Tray moves out of the Front Panel.

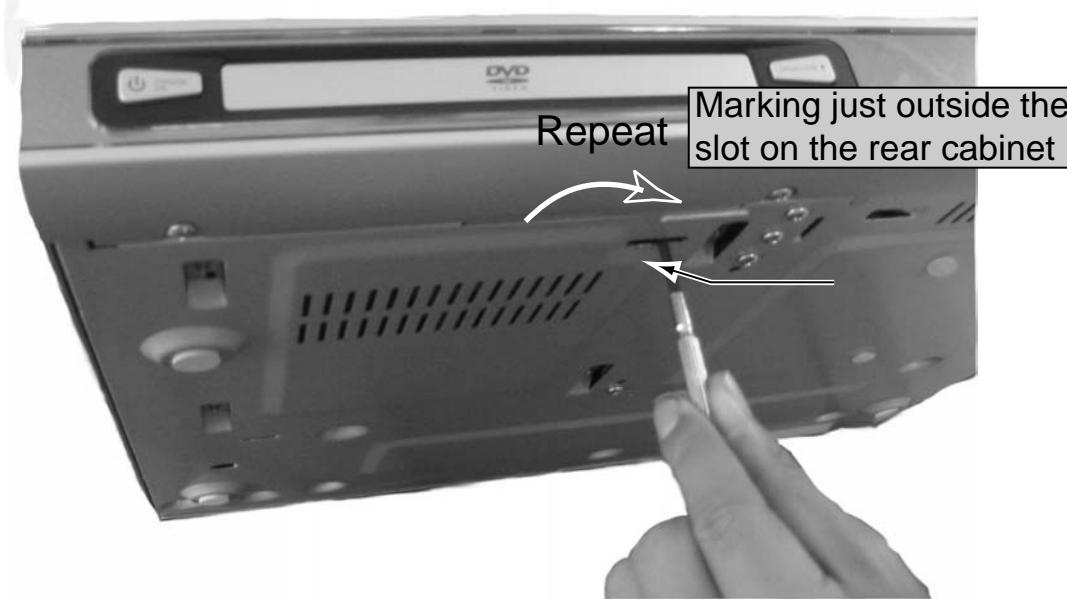


Figure 1



Figure 2

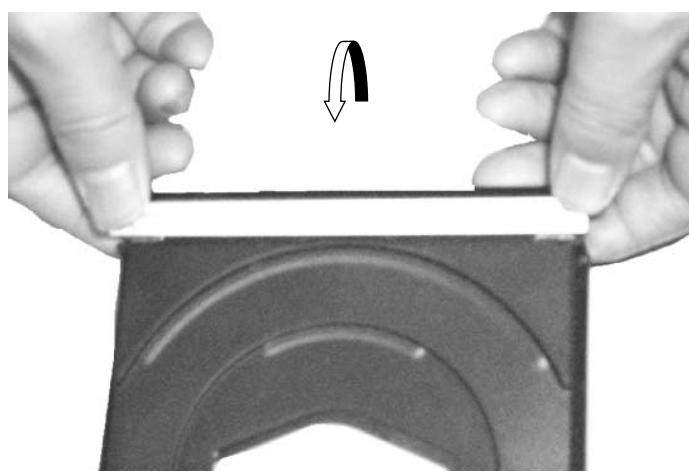


Figure 3

### Dismantling of the DVD Module

- 1) Loosen 4 screws "A" to remove the DVD Module as shown in figure 4.

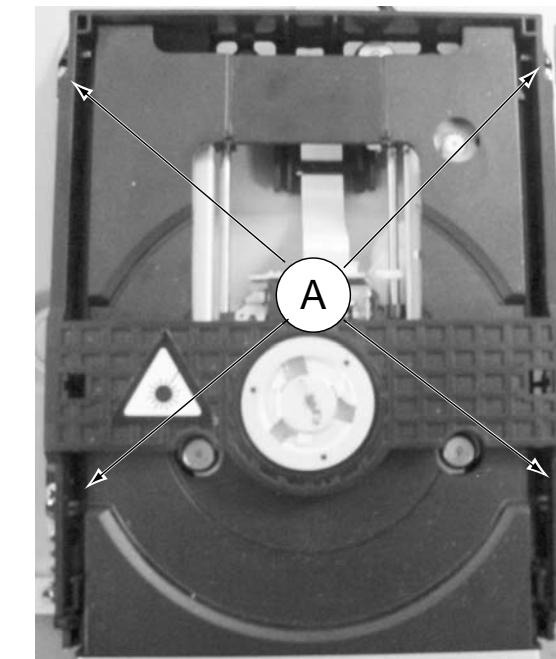


Figure 4

### Dismantling of the Power Board

- 1) Loosen 2 screws "B" on the bottom cover as shown in figure 5.
- 2) Loosen 4 screws "C" at the top of the Power Board as shown in figure 6.

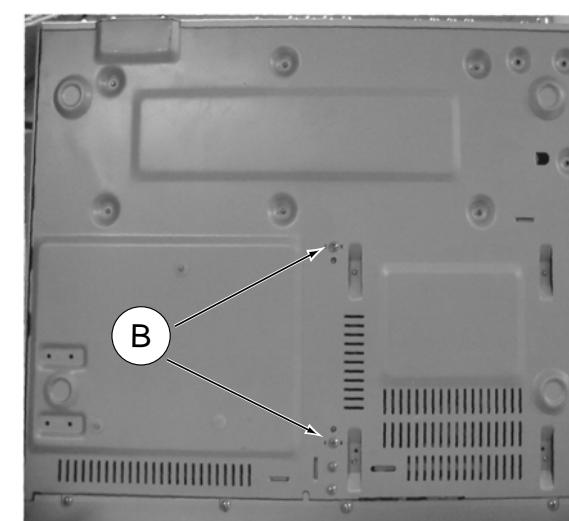


Figure 5

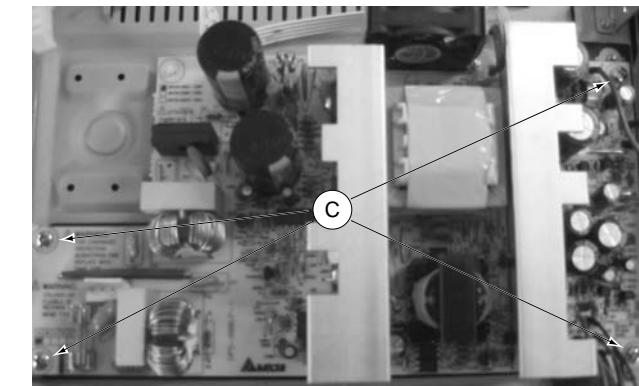


Figure 6

**Dismantling of the Tuner PCB**

- 1) Loosen 10 screw " D " at the back panel as shown in figure 7.
- 2) Loosen 6 screw " E " on the top of main board as shown in figure 8.

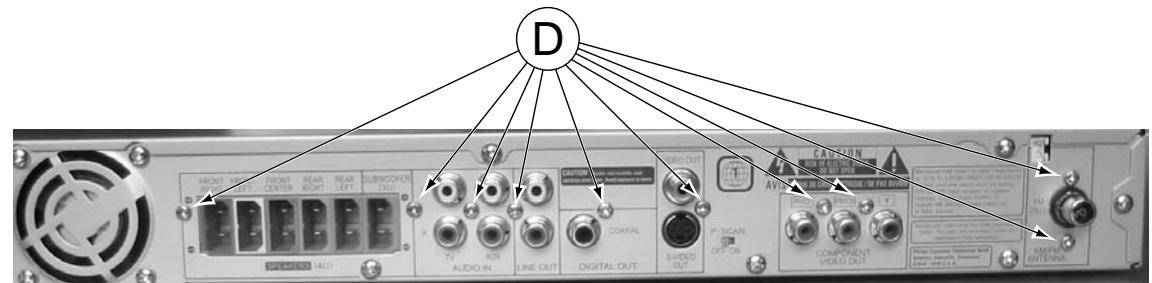


Figure 7

**SERVICE POSITIONS**

Service position A



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.

Service position B

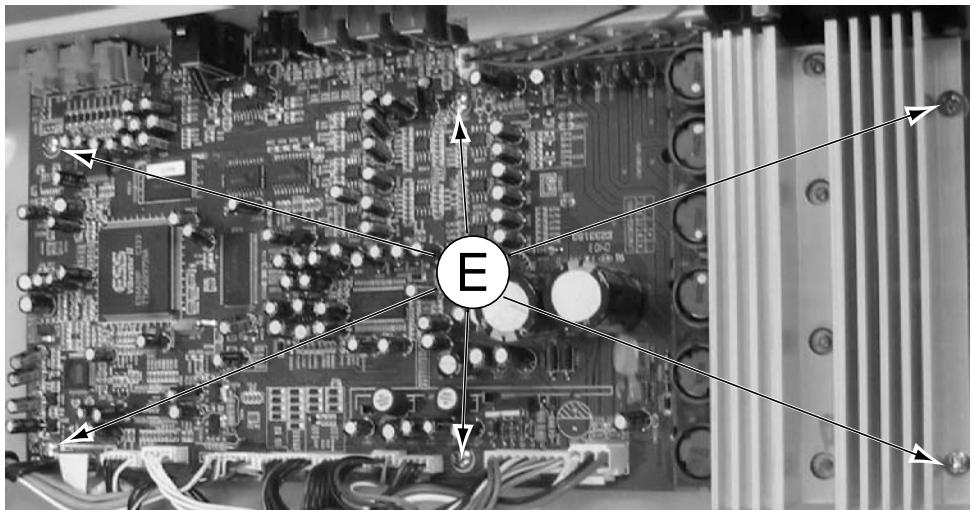
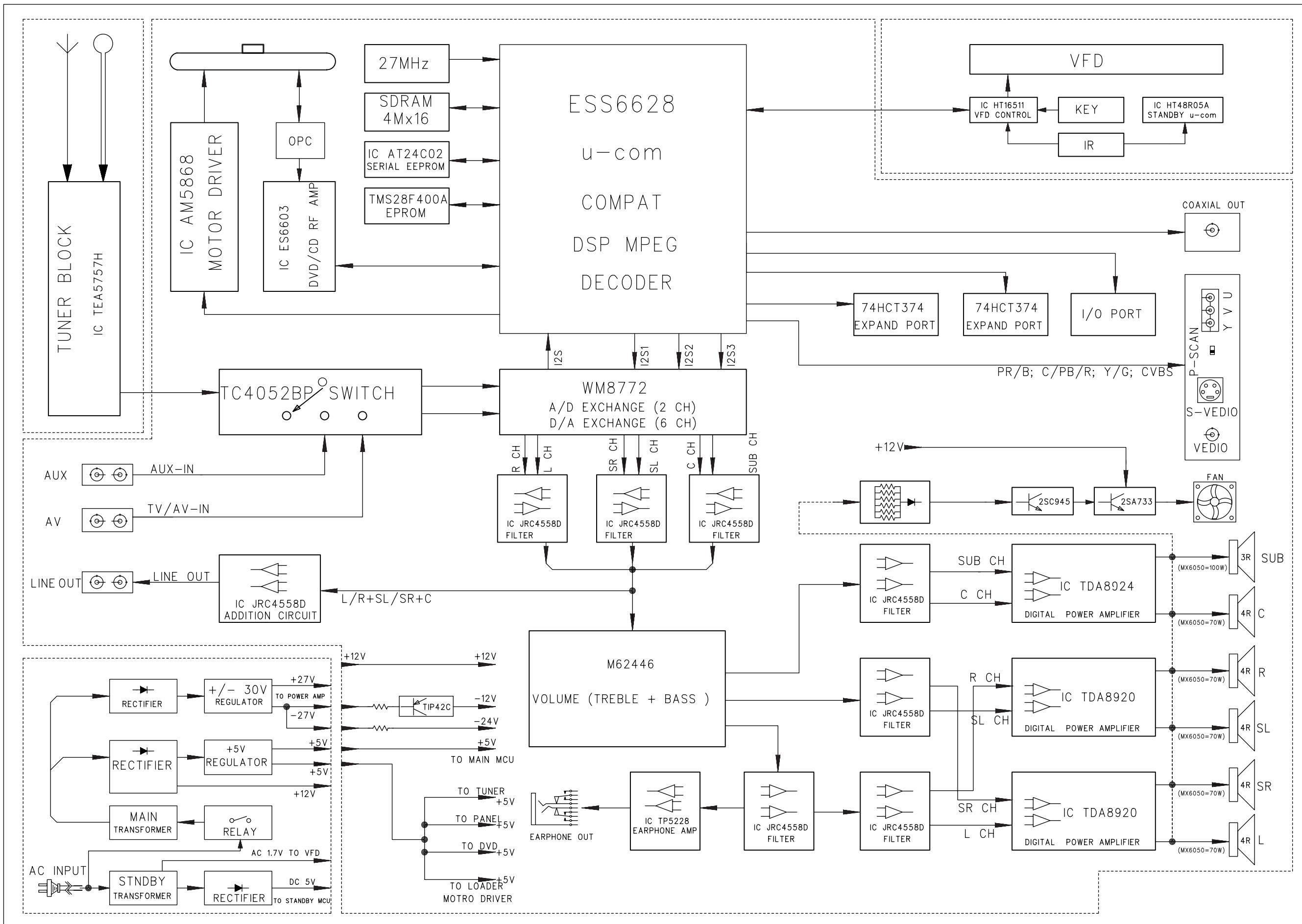
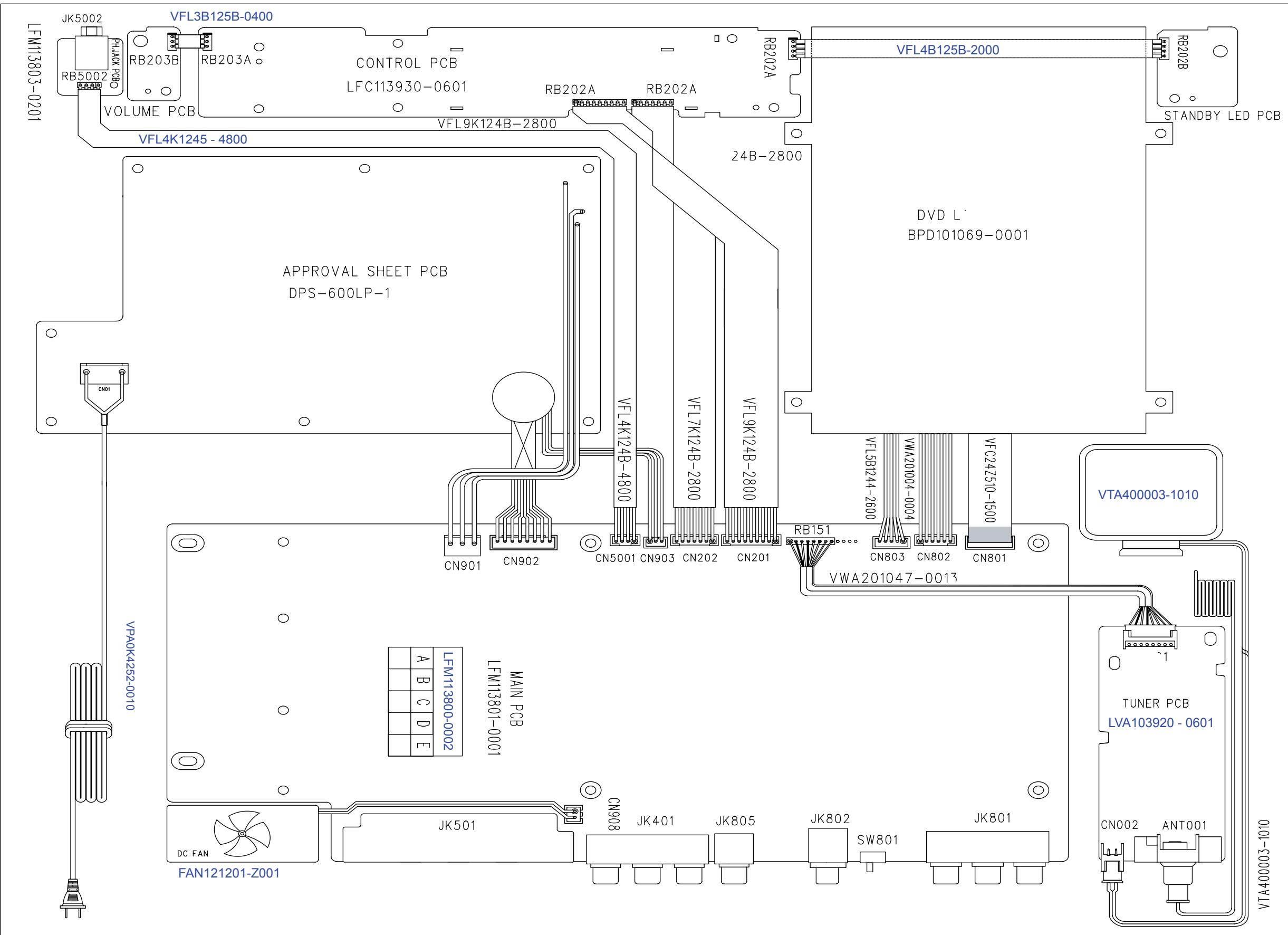


Figure 9



**BLOCK DIAGRAM**

## WIRING DIAGRAM

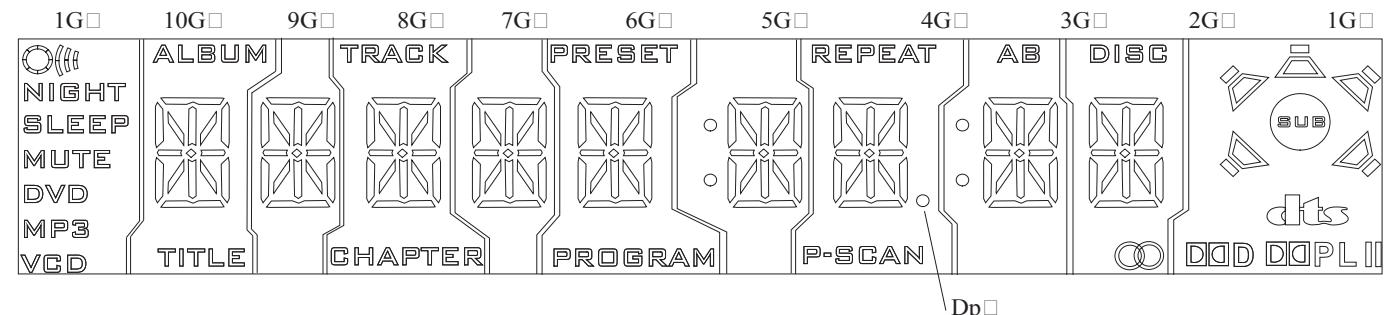


# KEY ( CONTROL / STANDBY / VOL) BOARD

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## FTD DISPLAY PIN ASSIGNMENT



	10G	9G	8G	7G	6G	5G	4G	3G	2G	1G
P1	a	a	a	a	a	a	a	a	a	OFF
P2	b	b	b	b	b	b	b	b	b	ALBUM
P3	f	f	f	f	f	f	f	f	f	TRACK
P4	h	h	h	h	h	h	h	h	h	PRESET
P5	j	j	j	j	j	j	j	j	j	REPEAT
P6	k	k	k	k	k	k	k	k	k	AB
P7	m	m	m	m	m	m	m	m	m	DISC
P8	s	s	s	s	s	s	s	s	s	SUB
P9	g	g	g	g	g	g	g	g	g	dts
P10	c	c	c	c	c	c	c	c	c	DDPL II
P11	e	e	e	e	e	e	e	e	e	DD
P12	r	r	r	r	r	r	r	r	r	NIGHT
P13	p	p	p	p	p	p	p	p	p	SLEEP
P14	n	n	n	n	n	n	n	n	n	MUTE
P15	d	d	d	d	d	d	d	d	d	DVD
P16						Col	Dp	Col		MP3
P17	ALBUM		TRACK		PRESET		REPEAT	A	DISC	V
P18	TITLE		CHAPTER		PROGRAM		P-SCAN	B	CD	CD

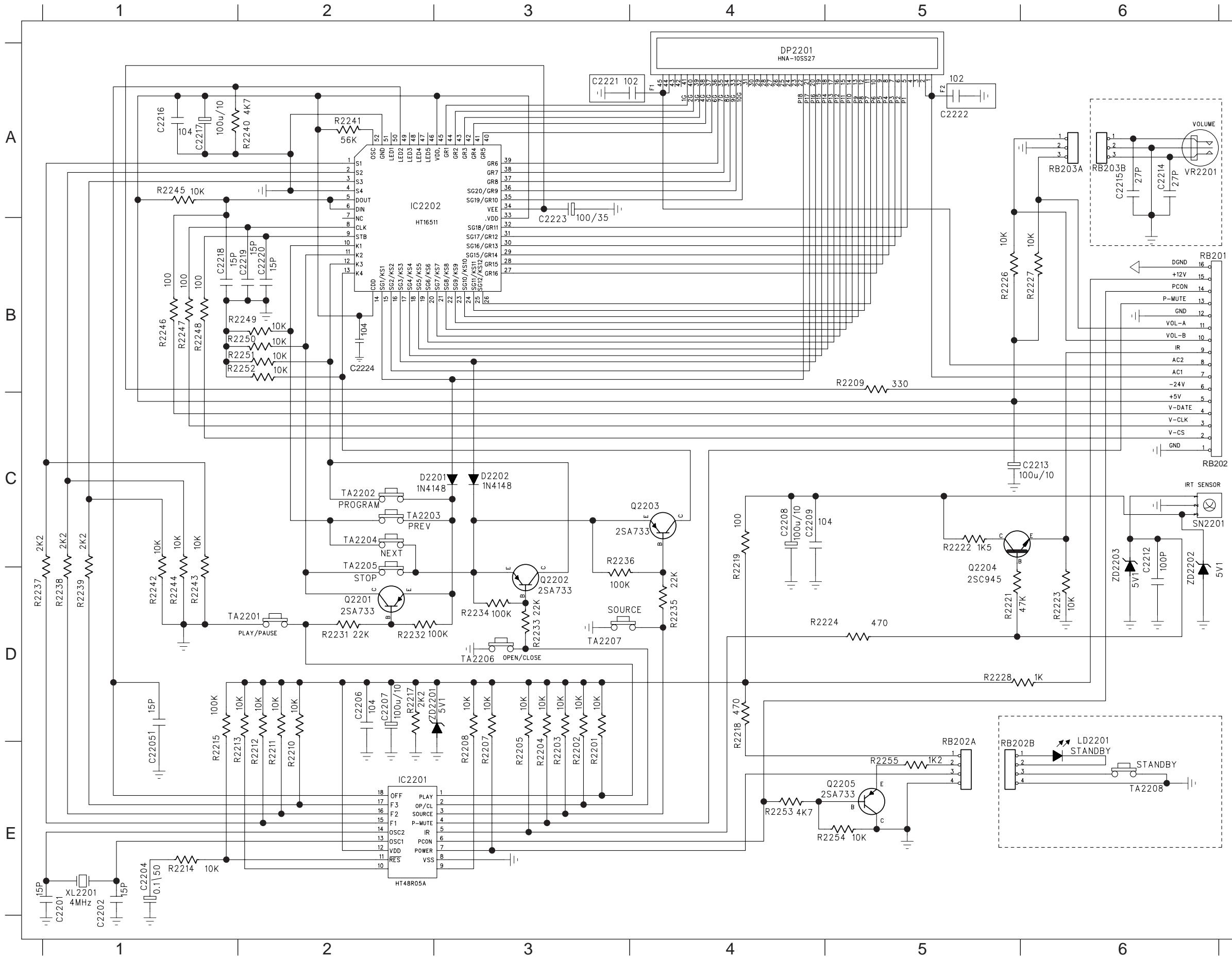
## PIN CONNECTION

PIN NO.	45	44	43	42	41	40	39	38	37	36	35	34	33	32	31	22	23	21	20	19	18	17	16	15	14	13	12	11	10	9	8	7	6	5	4	3	2	1
CONNECTION	F2	F2	NP	NP	1G	2G	3G	4G	5G	6G	7G	8G	9G	10G	NXP18	P17	P16	P15	P14	P13	P12	P11	PR9	P8	P7	P6	P5	P4	P3	P2	P1	NP	NP	F1	F1			

## Note ##

1. Fn: Filament pin
2. NP : No Pin
3. NX : No Extended Pin
4. NG : Grid Pin
5. PN : Anode Pin

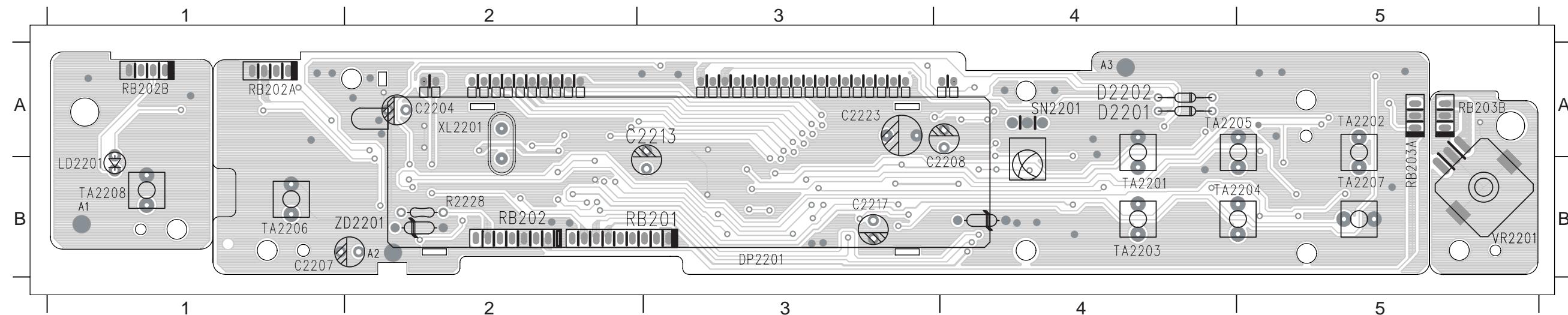
## CIRCUIT DIAGRAM - KEY BOARD



C2201	E1	R2251	B2
C2202	E1	R2252	B2
C2204	E1	R2253	E4
C2206	D2	R2254	E5
C2207	D2	R2255	E5
C2208	C4	RB201	B6
C2209	C4	RB202	C6
C2212	D6	RB202A	E5
C2213	C5	RB202B	E5
C2214	A6	RB203A	A6
C2215	A6	RB203B	A6
C2216	A1	SN2201	C6
C2217	A1	TA2201	D2
C2218	B1	TA2202	C2
C2219	B2	TA2203	C2
C2220	B2	TA2204	C2
C2221	A4	TA2205	D3
C2222	A5	TA2206	D3
C2223	A3	TA2207	D3
C2224	B2	TA2208	E6
C2225	D1	VR2201	A6
IC2201	E2	XL2201	E1
IC2202	E2	ZD2201	D3
LD2201	E2	ZD2202	D6
Q2201	E2	ZD2203	D6
Q2202	E2	SN2201	C6
Q2203	E1	IRT SENSOR	
Q2204	E1	SN2201	C6
Q2205	E1	LD2201	D3
TA2201	D1	STANDBY	
TA2202	D1	STANDBY	
TA2203	D2	STANDBY	
TA2204	D2	STANDBY	
TA2205	D2	STANDBY	
TA2206	D2	STANDBY	
TA2207	D2	STANDBY	
TA2208	D2	STANDBY	

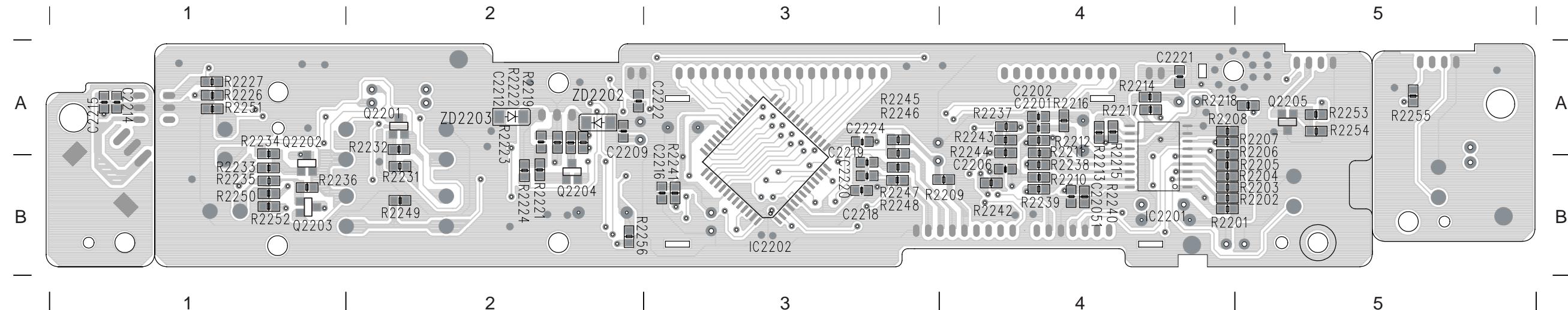
### PCB LAYOUT - KEY BOARD ( TOP)

C2204	A2	D2201	A4	RB202	B2	TA2201	B4	TA2207	B5	A2	B2
C2207	B1	D2202	A4	RB202A	A1	TA2202	A5	TA2208	B1	A3	A4
C2208	B4	DP2201	B3	RB202B	A1	TA2203	B4	VR2201	B5		
C2213	A3	LD2201	B1	RB203A	A5	TA2204	B4	XL2201	A2		
C2217	B3	R2228	B2	RB203B	A5	TA2205	A4	ZD2201	B2		
C2223	A3	RB201	B2	SN2201	A4	TA2206	B1	A1	B1		



### PCB LAYOUT - KEY BOARD ( BOTTOM)

C2201	A4	C2219	B3	Q2202	B1	R2207	A5	R2216	A4	R2227	A1	R2239	B4	R2248	B3	ZD2202	A2
C2202	A4	C2220	B3	Q2203	B1	R2208	A4	R2217	A4	R2231	B2	R2240	B4	R2249	B2	ZD2203	A2
C2206	B4	C2221	A4	Q2204	B2	R2209	B4	R2218	A4	R2232	A2	R2241	B3	R2250	B1		
C2209	A2	C2222	A3	Q2205	A5	R2210	B4	R2219	A2	R2233	B1	R2242	B4	R2251	A1		
C2212	A2	C2224	A3	R2201	B4	R2211	A4	R2221	B2	R2234	A1	R2243	A4	R2252	B1		
C2214	A1	C22051	B4	R2202	B5	R2212	A4	R2222	A2	R2235	B1	R2244	A4	R2253	A5		
C2215	A1	IC2201	B4	R2203	B5	R2213	A4	R2223	A2	R2236	B1	R2245	A3	R2254	A5		
C2216	B3	IC2202	B3	R2204	B5	R2214	A4	R2224	B2	R2237	A4	R2246	A3	R2255	A5		
C2218	B3	Q2201	A2	R2205	B5	SR2215	A4	R2226	A1	R2238	B4	R2247	B3	R2256	B2		

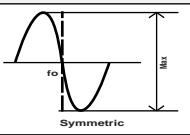
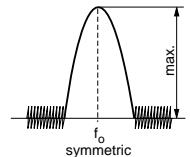
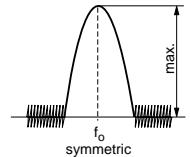


# TUNER BOARD

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## TUNER ADJUSTMENT TABLE

Waverange	Input frequency	Input	Tuned to	Adjust	Output	Scope/Voltmeter
<b>VARICAP ALIGNMENT</b>						
<b>FM</b> 87.5 - 108MHz (50kHz grid)			108MHz	check		6.5V ±0.2V
			87.5MHz	check		1.0V ±0.5V
			1602KHz	check		7.8V ±0.2V
			531KHz	T005		1.1V ±0.5V
<b>AM</b> 530-1710kHz (10kHz grid) ( 21L / 21L / 37S )			1700KHz	check		8.0V ±0.5V
			530KHz	T005		1.1V ±0.2V
<b>FM - IF</b>						
<b>FM</b>	10.7MHz, 50mV continuous wave		IC001 23 short circuit to block AFC	200P	No need to adjust	
<b>FM - RF</b>						
<b>FM</b>	108MHz 87.5MHz	mod=1kHz $\Delta f = \pm 2.5\text{kHz}$	106MHz 90.1MHz	VC001 L001	MAX	MAX
<b>AM IF</b>						
<b>AM</b>	450kHz	Connect pin 29 of IC001 (AM Osc.) with short wire to ground (pin 6)	IC001 24 R220 100nF	T001 T002	MAX	
<b>AM AFC MW</b>		$\Delta V = mV$		T003		
<b>AM RF</b> <sup>3)</sup>						
<b>MW</b>	1404kHz	$\Delta f = \pm 80\text{kHz}$ $V_{RF}$ as low as possible	1404kHz	VC001	MAX	
	576kHz		612kHz	T006		
	1400kHz		1400kHz	VC002		
	610kHz		610kHz	T006		

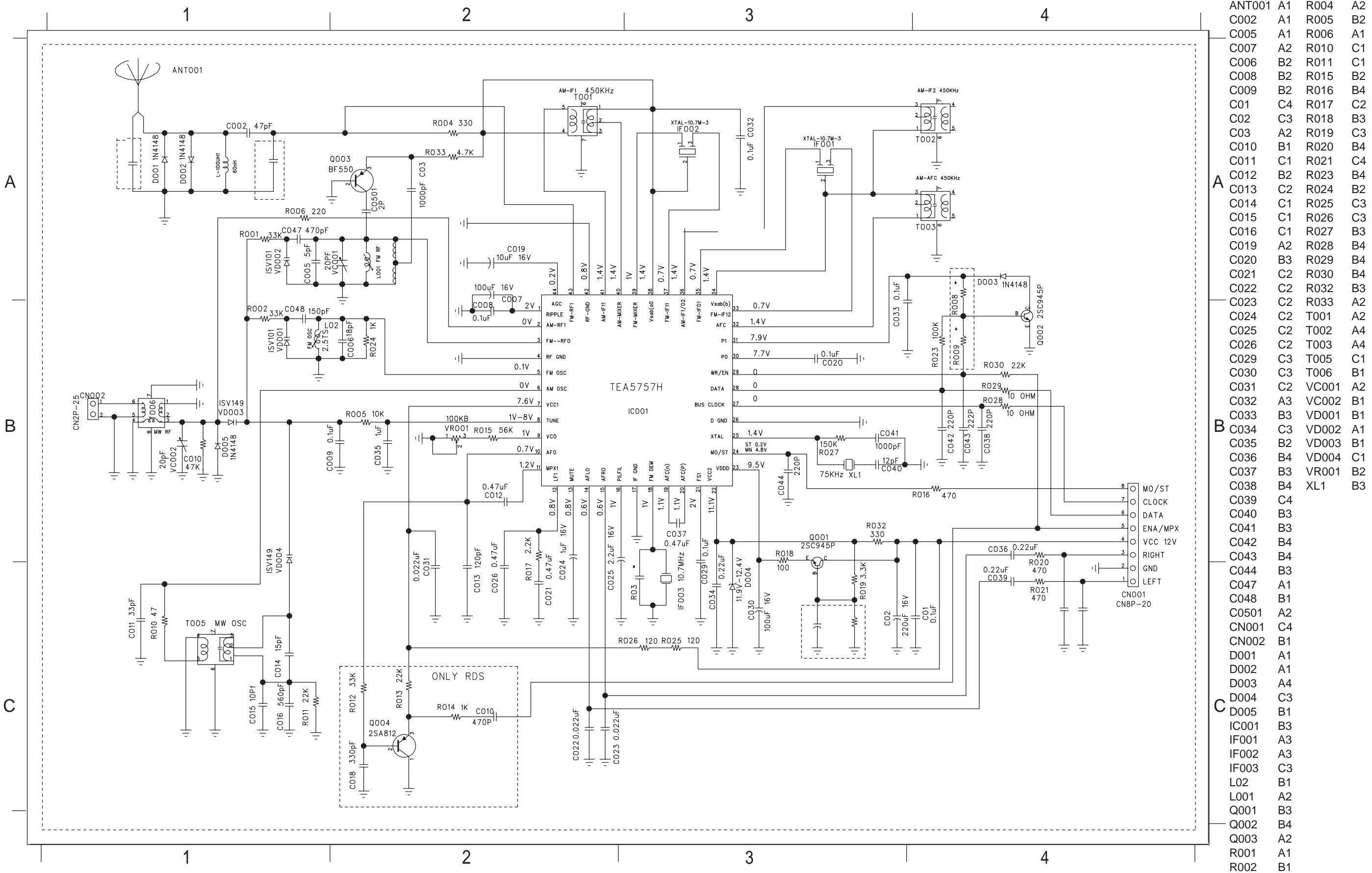
Use Service Testprogram. By selecting the TUNER TEST test frequencies will be stored as preset frequencies automatically.

1) If sensitivity of frequency counter is too low adjust to max. channel separation  
(input signal: stereo left 90% + 9%, adjust output on right channel to minimum)

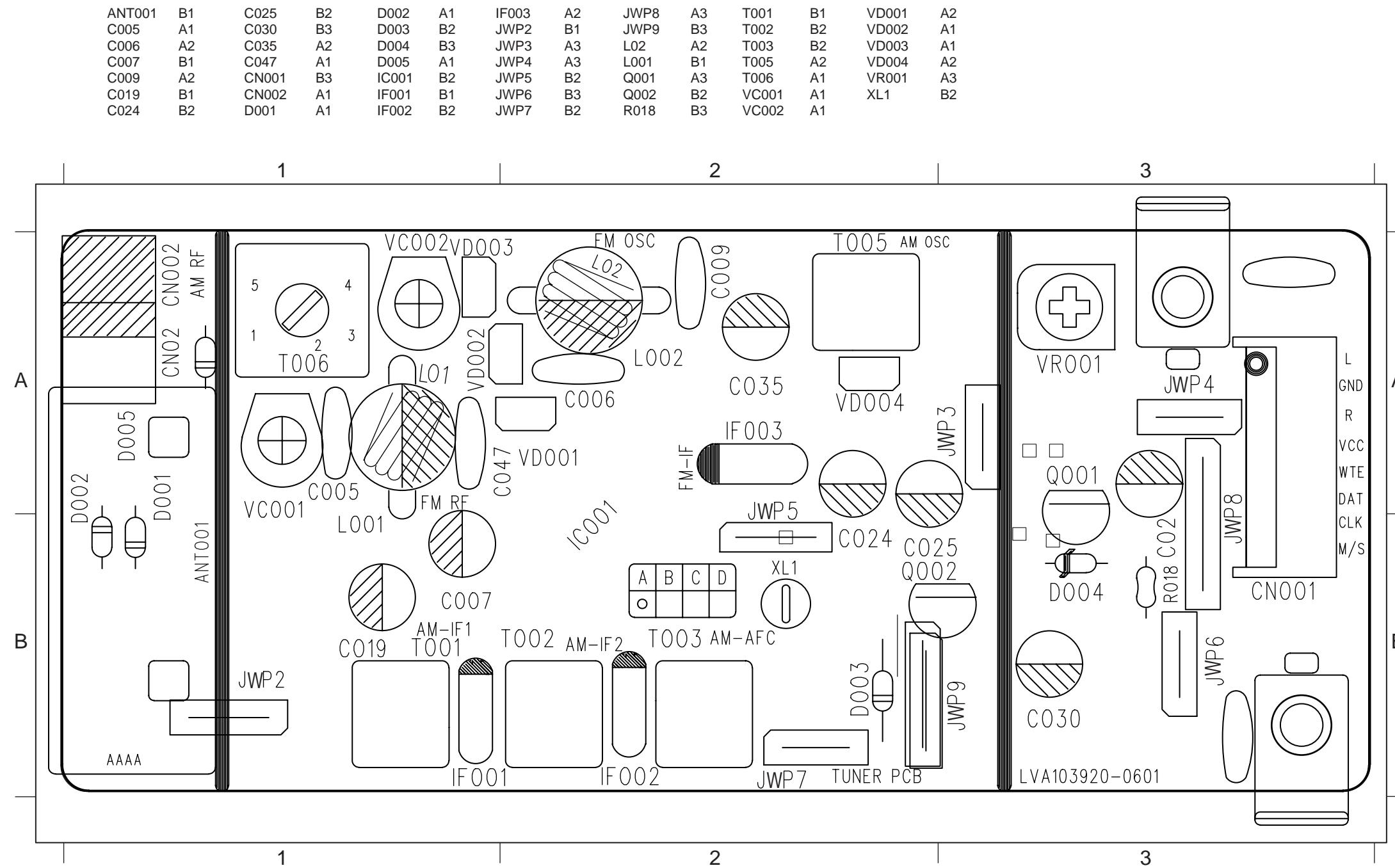
2) RC network serves for damping the IF-filter while  
adjusting the other one.

3) For AM RF adjustments the original frame antenna has to be used!

## CIRCUIT DIAGRAM - TUNER BOARD

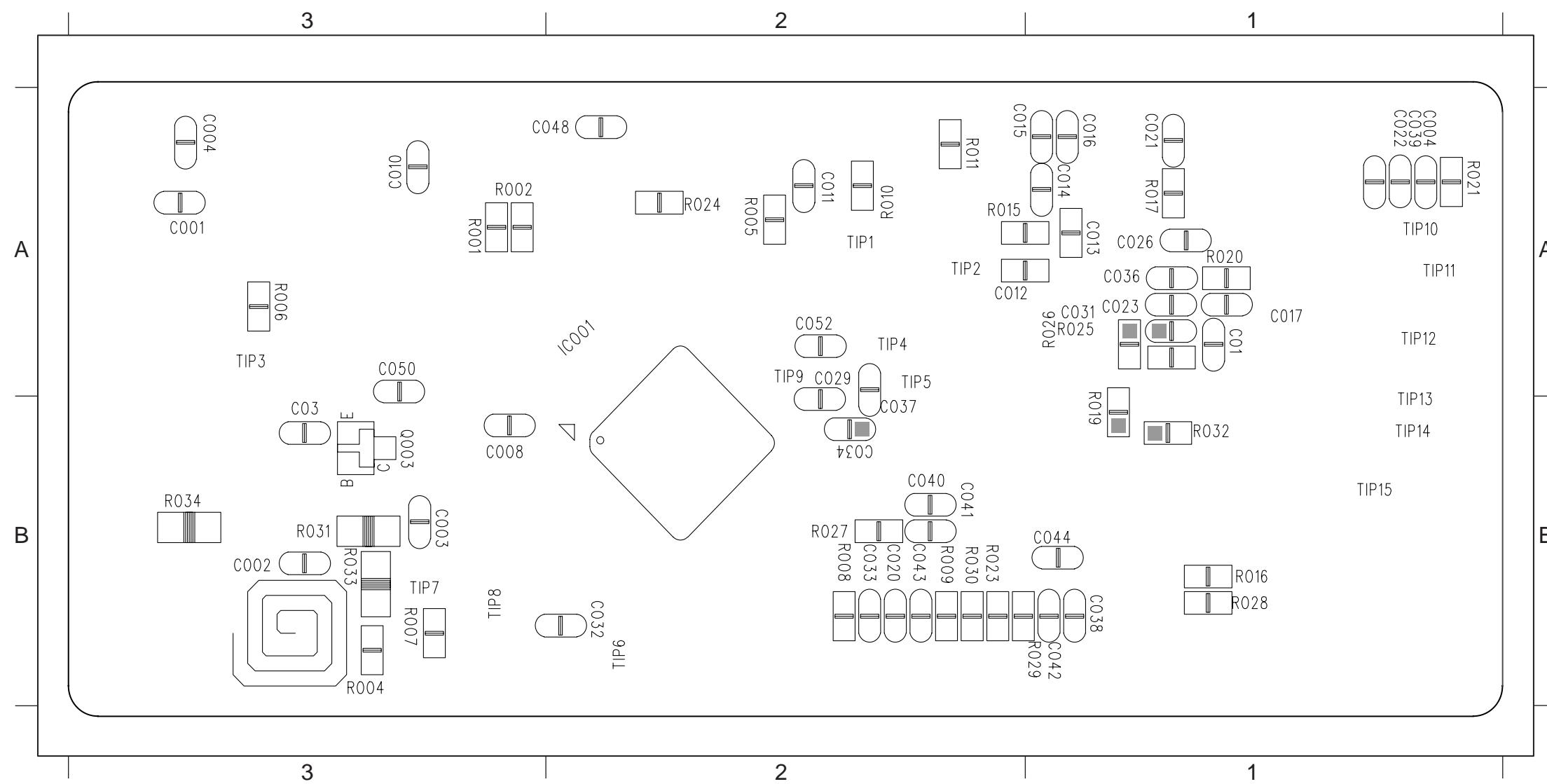


## PCB LAYOUT - TUNER BOARD (TOP)



## PCB LAYOUT - TUNER BOARD (BOTTOM)

C01	A3	C013	A3	C023	A3	C037	A2	C048	A2	R005	A2	R019	B3	R028	B3
C03	B3	C014	A3	C026	A3	C038	B3	C050	A3	R006	A3	R020	A3	R029	B3
C001	A3	C015	A2	C029	A2	C039	A3	C052	A2	R007	B3	R021	A3	R030	B2
C002	B3	C016	A3	C031	A3	C040	B2	IC001	A2	R010	A2	R023	B2	R031	B3
C008	B3	C020	B2	C032	A2	C041	B2	Q003	B3	R011	A2	R024	A2	R032	B3
C010	A3	C021	A3	C033	B2	C042	B3	R001	A3	R015	A2	R025	A3	R033	B3
C011	A2	C022	A3	C034	B2	C043	B2	R002	A3	R016	B3	R026	A3	R034	B3
C012	A2	C023	A3	C036	A3	C044	B3	R004	B3	R017	A3	R027	B2		



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# DVD LOADER

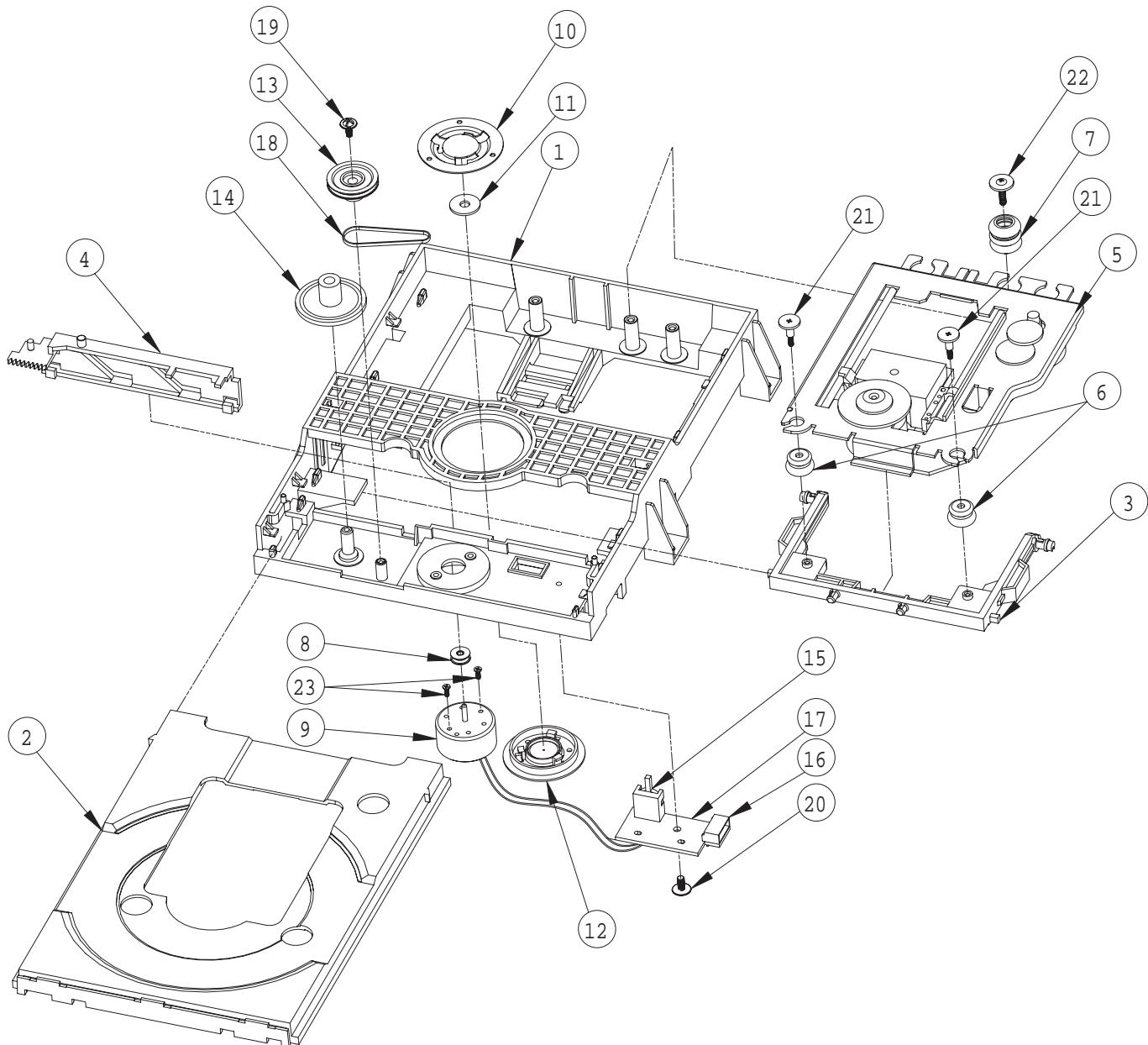
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It is not recommended for component repair on this Module but to replace the major assembly when it becomes defective. Therefore limited service parts list are published in this chapter.

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Explorer View (DVD Loader) .....	7-2
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## Exploded view

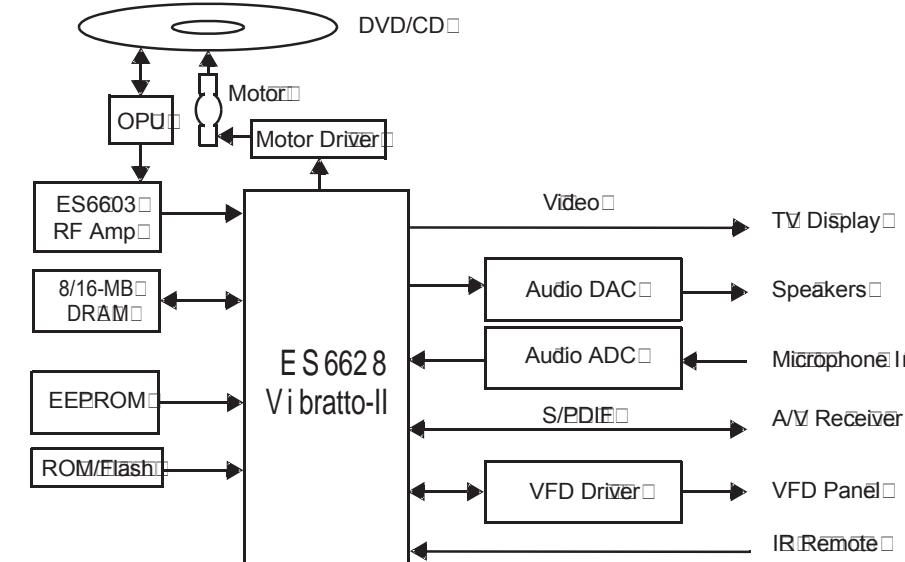


# MAIN BOARD

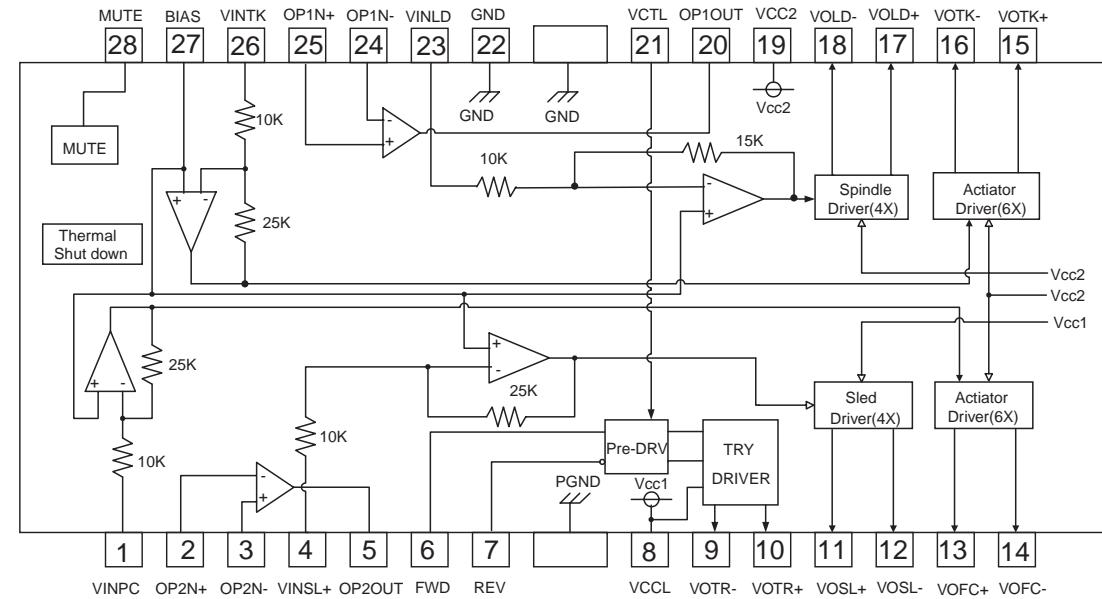
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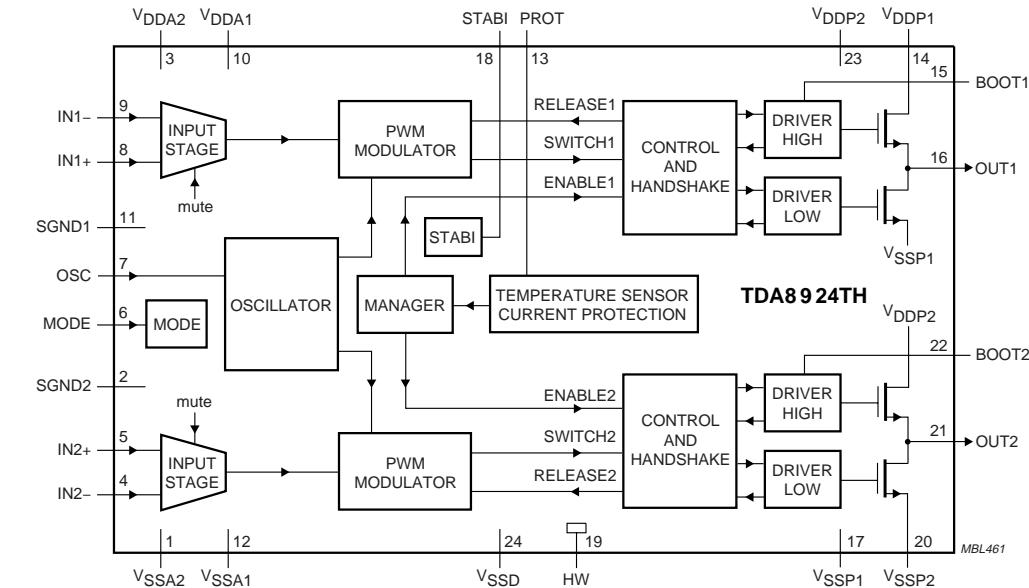
## ES6628 F INTERNAL IC DIAGRAM



## AM5868 S INTERNAL IC DIAGRAM



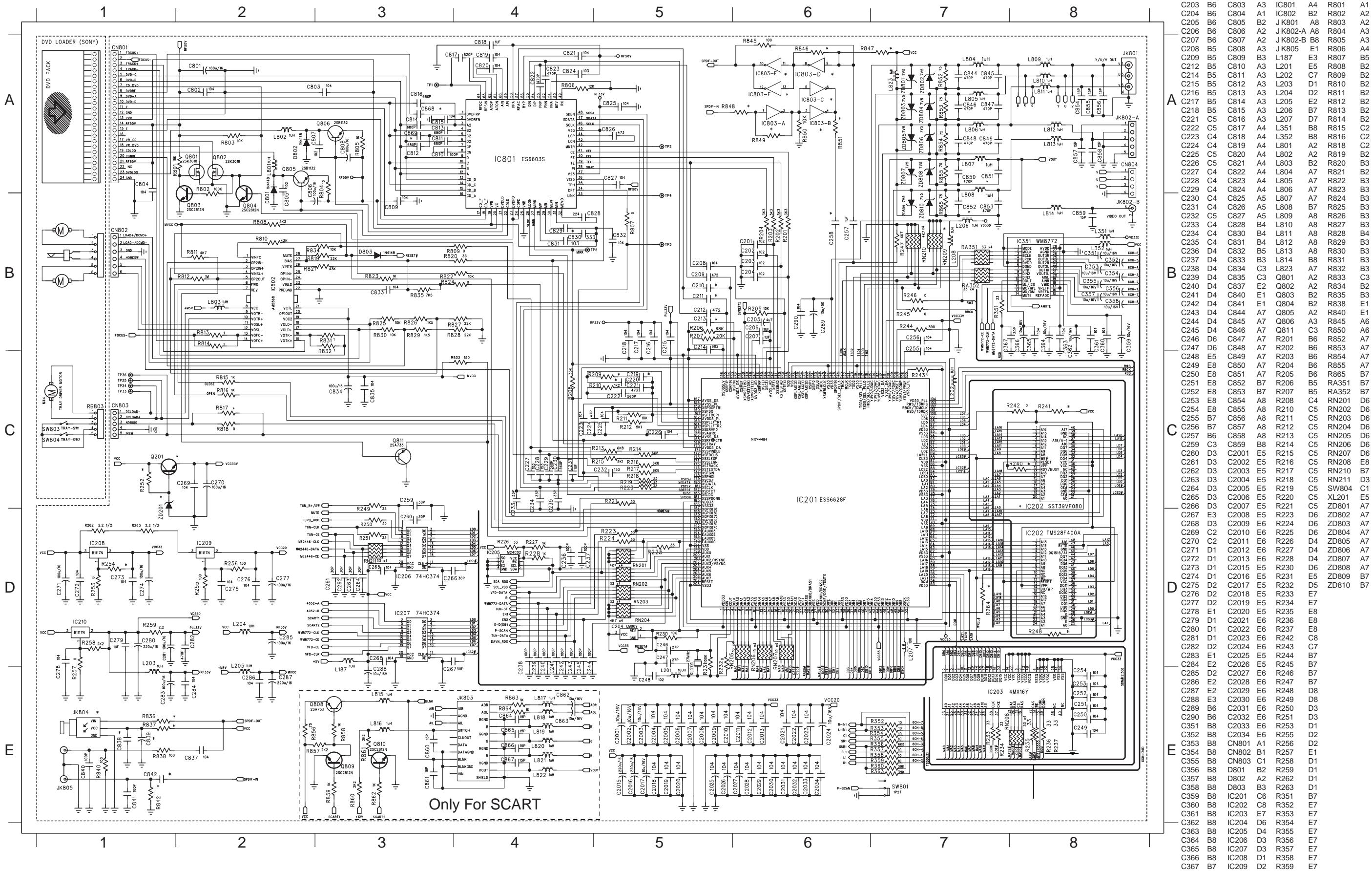
## TDA8924TH INTERNAL IC DIAGRAM



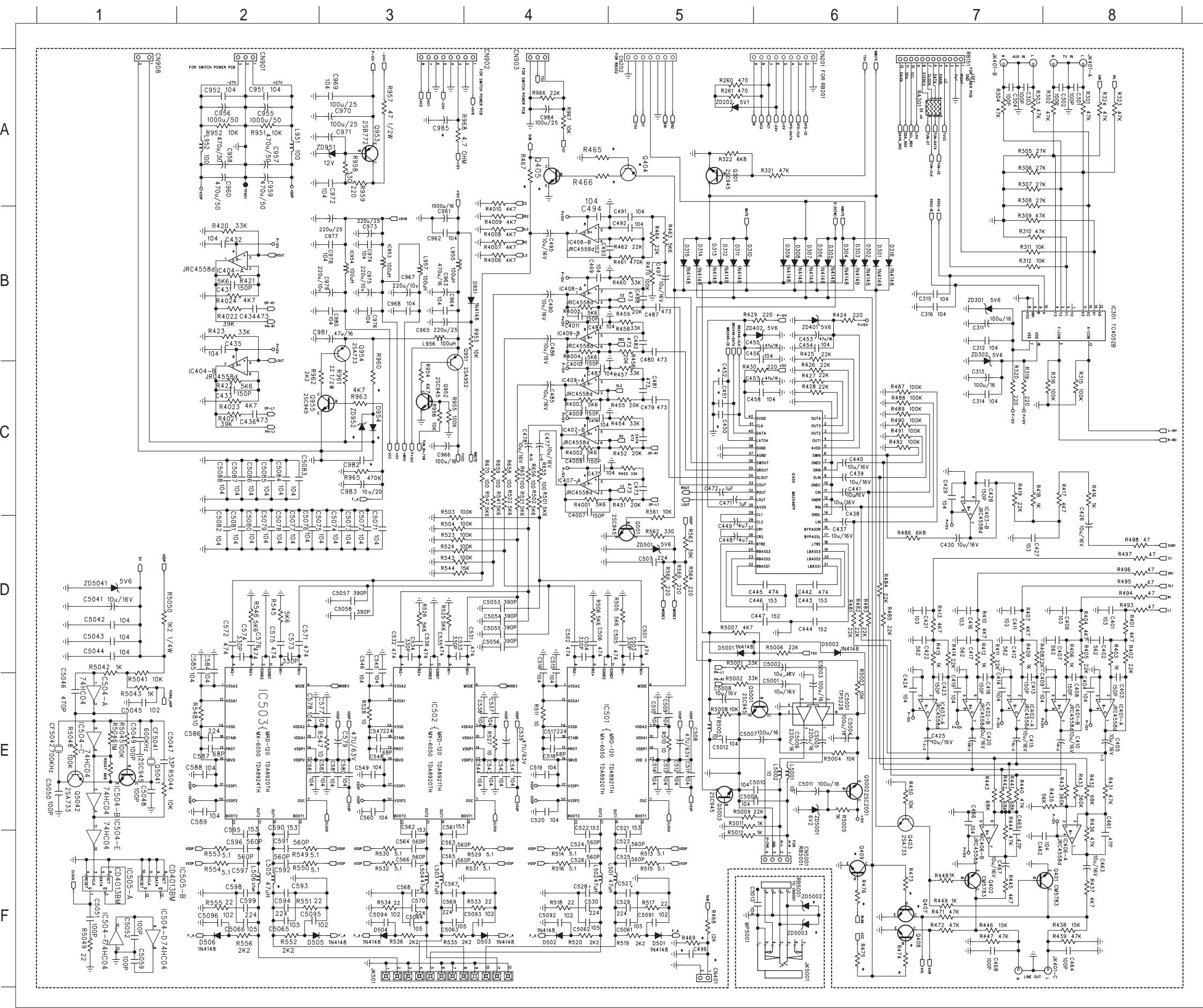
## VOLTAGES

IC405 (M62446FP)		
PIN NO	1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20	
Voltage	0 0 0 0 5.6 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0	
PIN NO	21 22 23 24 25 26 27 28 29 30 31 32 33 34 35 36 37 38 39 40	
Voltage	4.5 0 0 0 0 0 0 0 -6 0 0 0 0 0 0 0 0 0 0 0.1	
PIN NO	41 42	
Voltage	4.6 4.9	
IC406 (RC4558)		
PIN NO	1 2 3 4 5 6 7 8	
Voltage	0 0 0 -12 0 0 0 12	
IC407 (RC4558)		
PIN NO	1 2 3 4 5 6 7 8	
Voltage	0 0 0 -12 0 0 0 12	
IC408 (RC4558)		
PIN NO	1 2 3 4 5 6 7 8	
Voltage	0 0 0 -12 0 0 0 12	
IC409 (RC4558)		
PIN NO	1 2 3 4 5 6 7 8	
Voltage	0 0 0 -12 0 0 0 12	
IC501 (TDA8924TH)		
PIN NO	1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20	
Voltage	1.5 0.7 2 1.5 4.6 0 0 4.5 0 0 2.1 2.2 2.2 1.8 2.1 2.1 1.1 3.1 4.5 0.1	
PIN NO	21 22	
Voltage	1.2 1.1	
IC5001 (APA3541)		
PIN NO	1 2 3 4 5 6 7 8	
Voltage	2.7 0 2.7 0 2.7 2.7 5.7	
IC502 (TDA8924TH)		
PIN NO	1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20	
Voltage	1.5 0.7 2 1.5 4.6 0 0 4.5 0 0 2.1 2.2 2.2 1.8 2.1 2.1 1.1 3.1 4.5 0.1	
PIN NO	21 22	
Voltage	1.2 1.1	
IC503 (TDA8924TH)		
PIN NO	1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20	
Voltage	1.5 0.7 2 1.5 4.6 0 0 4.5 0 0 2.1 2.2 2.2 1.8 2.1 2.1 1.1 3.1 4.5 0.1	
PIN NO	21 22	
Voltage	1.2 1.1	
IC504 (74LVC04AD)		
PIN NO	1 2 3 4 5 6 7 8 9 10 11 12 13 14	
Voltage	4.1 0 2.6 3 2.5 2.6 0 0 5.7 2.6 3 5.7 0 5.7	
IC801 (ES6603)		
PIN NO	1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20	
Voltage	3.5 3.5 2.6 2.6 2.6 2.6 3.8 3.8 2.7 2.6 2.7 2.7 2.6 2.6 2.7 2.7 2.6 2.6 5.1 2.6	
PIN NO	21 22 23 24 25 26 27 28 29 30 31 32 33 34 35 36 37 38 39 40	
Voltage	3.9 5.1 0.2 0.2 0 3.3 0 2.6 0 0 0 1.5 2.4 0 3.9 1.6 3.3 2 1.5 1.6	
PIN NO	41 42 43 44 45 46 47 48 49 50 51 52 53 54 55 56 57 58 59 60	
Voltage	1.6 2 4.2 4.2 3.3 3.3 2.7 0 1.5 0 0 2.5 2.5 3.5 3.5 2.5 2.4 5.1 4.3 4.3	
PIN NO	61 62 63 64	
Voltage	3.2 3.1 0.8 3	
IC802 (AM5868)		
PIN NO	1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20	
Voltage	1.5 0.7 2 1.5 4.6 0 0 4.5 0 0 2.1 2.2 2.2 1.8 2.1 2.1 1.1 3.1 4.5 0.1	
PIN NO	21 22 23 24 25 26 27 28 29 30	
Voltage	0 0 1.2 1.1 1.2 1.5 1.5 2 0 0	
Q301 (2SC1623)		
Pin No.	1 2 3	
Voltage	0.6 0 0	
Q401 (CM5783GR)		
Pin No.	1 2 3	
Voltage	0.6 0 0	
Q5001 (2SC1623)		
Pin No.	1 2 3	
Voltage	0.6 0 0	
Q5042 (2SC1623)		
Pin No.	1 2 3	
Voltage	0.6 0 0	
Q803 (2SC1623)		
Pin No.	1 2 3	
Voltage	0 2.3 0	
Q811 (2SA812)		
Pin No.	1 2 3	
Voltage	0.1 0 0.8	
Q402 (CM5783GR)		
Pin No.	1 2 3	
Voltage	0.6 0 0	
Q5002 (2SL2001)		
Pin No.	1 2 3	
Voltage	5.6 14.4 6.2	
Q5003 (2SC1623)		
Pin No.	1 2 3	
Voltage	0 1.9 0	
Q501 (2SC1623)		
Pin No.	1 2 3	
Voltage	0.6 0 0	
Q804 (2SC1623)		
Pin No.	1 2 3	
Voltage	0.6 0 0	
Q805 (2SB1132Q)		
Pin No.	1 2 3	
Voltage	4.8 0 4.8	
Q806 (2SB1132Q)		
Pin No.	1 2 3	
Voltage	3.8 2.0 0	
Q952 (2SC1623)		
Pin No.	1 2 3	
Voltage	0.6 0 0	
Q953 (2SB772P)		
Pin No.	1 2 3	
Voltage	-12 -24 -13	

# CIRCUIT DIAGRAM ( 1 ) - MAIN BOARD



## **CIRCUIT DIAGRAM ( 2 ) - MAIN BOARD**



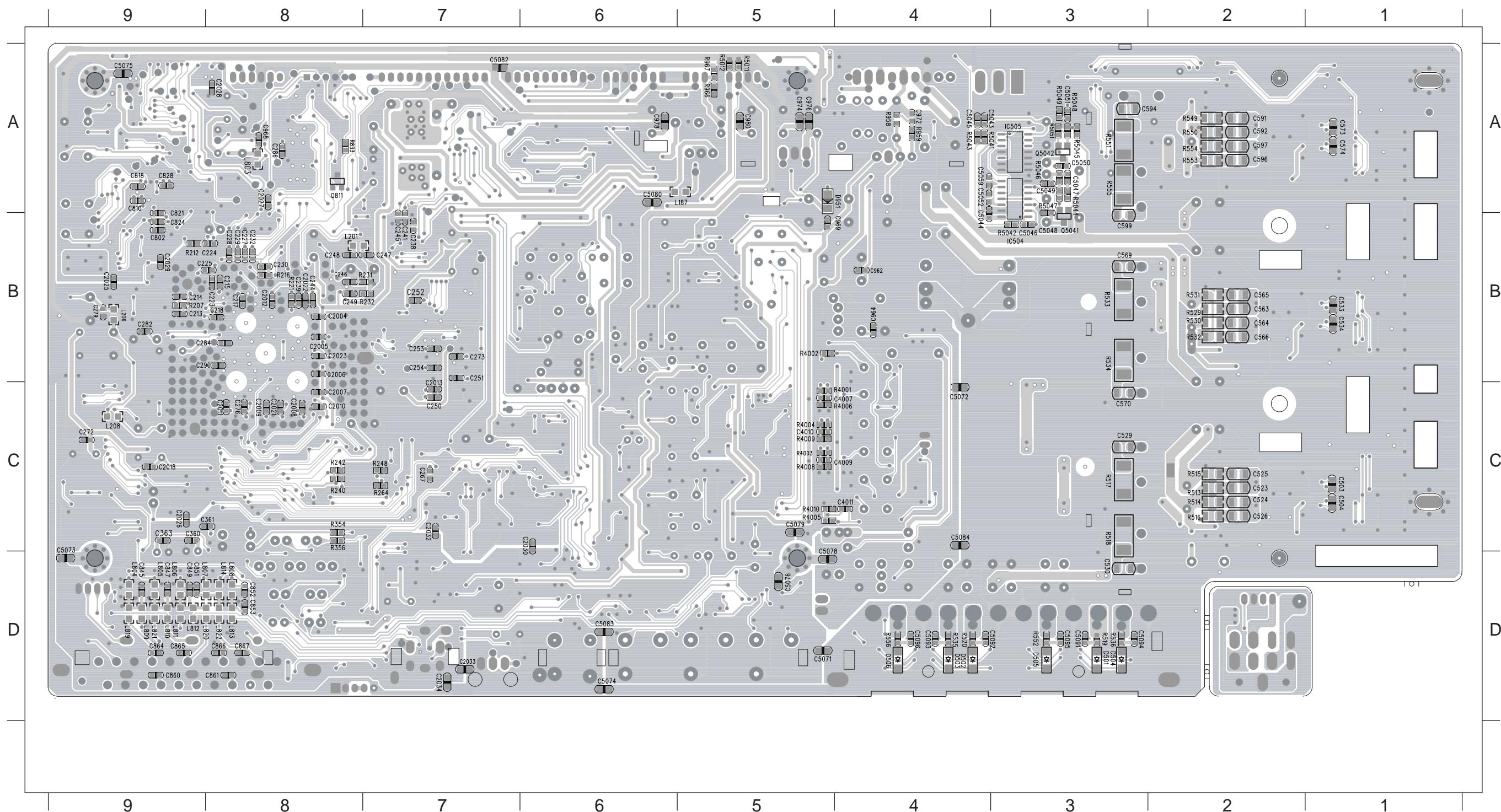
C301	A8	C515	D4	C5003	D6	IC504-C	E1	R451	C5	R4003	C4
C302	A8	C516	D4	C5004	E6	IC504-E	E1	R452	C5	R4004	B4
C303	A7	C517	E4	C5005	E6	IC505-A	F1	R453	C5	R4005	B4
C304	A7	C518	E4	C5006	E6	IC505-B	F1	R454	C5	R4006	B4
C311	A7	C519	E4	C5007	E5	IC505-D	F1	R455	C5	R4007	B4
C312	B7	C520	E4	C5008	E5	IC505-F	F1	R456	B5	R4008	B4
C313	C7	C521	F5	C5009	E5	IC593	B3	R457	C5	R4009	B4
C314	C7	C522	E4	C5010	E6	IC594	B3	R458	B5	R4010	B4
C315	B7	C523	F5	C5011	E6	IC5001	E6	R459	B5	R4021	C2
C316	B7	C523	F5	C5012	E5	JK401-A	B8	R460	B5	R4022	B2
C402	D6	C524	F4	C5041	D1	JK401-B	A7	R461	B5	R4023	C2
C403	E8	C525	F5	C5042	D1	JK401-C	A7	R462	B5	R4024	B2
C404	E8	C526	F4	C5043	D1	JK501	F3	R463	B5	R5001	D5
C405	E8	C527	F5	C5044	D1	JK5001	F6	R464	B5	R5002	E5
C406	D8	C528	F4	C5045	E1	L501	F5	R470	B5	R5003	E5
C407	E8	C529	F5	C5046	E1	L502	F4	R471	F7	R5004	E6
C408	E8	C530	F4	C5047	E1	L503	F3	R472	F7	R5005	E6
C409	E8	C531	D4	C5048	E1	L504	F3	R481	D6	R5006	D6
C410	E8	C532	D3	C5049	D1	L505	F2	R482	D6	R5007	D5
C411	D6	C533	D3	C5050	E1	L506	F2	R483	D6	R5008	E5
C412	D7	C534	D3	C5051	F1	L591	A2	R484	D6	R5009	E5
C413	E7	C535	D3	C5052	F1	L592	A2	R485	D6	R5011	E5
C414	E7	C536	D3	C5053	D4	L955	B3	R486	D7	R5012	F5
C415	E7	C537	E4	C5054	D4	L956	B3	R487	C7	R5041	E1
C416	D7	C538	E4	C5055	D4	L957	B3	R488	C7	R5042	D1
C417	D7	C539	E4	C5056	D4	L5001	E6	R489	C7	R5043	E1
C418	E7	C541	E4	C5057	D3	L5002	E6	R490	C7	R5044	E1
C419	E7	C542	E4	C5058	D3	Q301	A5	R491	C7	R5045	E1
C420	E7	C543	E4	C5059	F1	Q401	F8	R492	C7	R5046	D1
C421	D7	C544	E4	C5061	F5	Q402	F7	R493	D8	R5047	E1
C422	D7	C545	D3	C5062	F4	Q403	F7	R494	D8	R5048	D1
C423	E7	C546	D3	C5063	F3	Q501	D5	R495	D8	R5049	F1
C424	E7	C547	E3	C5064	F3	Q951	B4	R496	D8	R5050	D1
C425	E7	C548	E3	C5065	F2	Q952	C3	R497	D8	R301	A7
C426	C8	C549	E3	C5066	F2	Q953	A3	R498	D8	R151	A7
C427	D7	C560	E3	C5071	D3	Q954	B3	R501	C4	R58001	F6
C428	C7	C561	F3	C5072	D3	Q955	C2	R502	C4	ZD202	A5
C429	C7	C562	F3	C5073	D3	Q5001	E5	R503	D3	ZD301	B7
C430	D7	C563	F3	C5074	D3	Q5002	E6	R504	D3	ZD302	B7
C431	B2	C564	F3	C5075	D3	Q5003	E5	R505	D5	ZD401	B6
C432	B2	C565	F3	C5076	D2	Q5042	E1	R506	D4	ZD402	B6
C433	C2	C566	F3	C5077	D2	R260	A5	R510	E5	ZD501	D5
C434	B2	C567	F3	C5078	D2	R261	A5	R511	E4	ZD951	A3
C435	C2	C568	F3	C5079	D2	R301	A8	R513	F5	ZD5001	E6
C436	C2	C569	F3	C5080	D2	R302	A8	R514	F4	ZD5041	D1
C437	D6	C570	F3	C5081	D2	R303	A7	R515	F5		
C438	C6	C571	D2	C5082	D2	R304	A7	R516	F4		
C439	C6	C572	D2	C5083	C2	R305	A7	R517	F5		
C440	C6	C573	D2	C5084	C2	R306	A7	R518	F4		
C441	C6	C574	D2	C5085	C2	R307	A7	R519	F5		
C442	D6	C575	D2	C5086	C2	R308	A7	R520	F5		
C443	D6	C576	D2	C5087	C2	R309	B7	R521	C4		
C444	D6	C577	E3	C5091	F5	R310	B7	R522	C4		
C445	D6	C578	E2	C5092	F4	R311	B7	R523	D3		
C446	D6	C579	E3	C5093	F4	R312	B7	R524	D3		
C447	D6	C580	E3	C5094	F3	R315	C8	R525	D3		
C448	D5	C581	E3	C5095	F2	R316	C8	R526	D3		
C449	D5	C582	E3	C5096	F2	R317	C7	R527	E4		
C453	B6	C583	E2	C5F041	D1	R320	C7	R528	E3		
C454	B6	C584	D2	CF5042	E1	R321	A6	R529	F4		
C455	B6	C585	D2	CN201	A6	R322	A5	R530	F3		
C456	B6	C586	E2	CN202	A5	R323	A8	R531	F4		
C457	C6	C587	E2	CN901	A2	R324	A8	R532	F3		
C458	C6	C588	E2	CN902	A4	R401	D8	R533	F4		
C461	E8	C589	E2	CN903	A4	R402	D8	R534	F3		
C462	F8	C590	F2	CN908	A1	R403	D8	R535	F3		
C463	F8	C591	F2	CN5001	F6	R404	D8	R536	F3		
C464	F8	C592	F2	D301	B6	R405	D8	R541	C4		
C465	E7	C593	F2	D302	B6	R406	D8	R542	C4		
C466	E7	C594	F2	D303	B6	R407	D7	R543	D3		
C467	F7	C595	F2	D304	B6	R408	D7	R544	D3		
C468	F7	C596	F2	D305	B6	R409	D7	R545	D2		
C469	B4	C597	F2	D306	B6	R410	D7	R546	D2		
C471	C5	C598	F2	D307	B6	R411	D7	R547	E3		
C472	C5	C599	F2	D308	B6	R412	D7	R548	E2		
C473	C5	C591	A2	D309	B6	R413	D7	R549	F2		
C474	C5	C592	A2	D310	B5	R414	D7	R550	F2		
C475	C4	C595	A2	D311	B5	R415	D7	R551	F2		
C476	C4	C596	A2	D312	B5	R416	C8	R552	F2		
C477	C4	C597	A2	D313	B5	R417	C8	R553	F2		
C478	C4	C598	A2	D314	B5	R418	C7	R554	F2		
C479	C5	C599	A2	D315	B5	R419	C7	R555	F2		
C480	B5	C590	A2	D316	B6	R420	B2	R556	F2		
C481	C5	C591	B3	D501	F5	R421	B2	R561	D5		
C482	B5	C592	B3	D502	F4	R422	C2	R562	D5		
C483	C4	C593	B3	D503	F4	R423	B2	R563	D5		
C484	B4	C594	B3	D504	F3	R424	B6	R564	D5		
C485	C4	C595	B3	D505	F2	R425	B6	R565	D5		
C486	B4	C596	C3	D506	F2	R426	C6	R566	D5		
C487	B4	C597	B3	D507	B4	R427	C6	R655	C4		
C487	C4	C598	B3	D501	D5	R428	C6	R656	C4		
C488	B5	C599	A3	D5002	D6	R429	B6	R657	C4		
C490	B4	C5970	A3	D5007	D5	R430	C6	R658	C4		
C491	B5	C5971	A3	FB5003	E5	R431	E8	R659	C4		
C492	B4	C5972	A3	IC301	B8	R432	E8	R670	C4		
C493	B4	C5973	B3	IC401-A	E8	R433	E8	R951	A2		
C494	A4	C5974	B3	IC401-B	E8	R434	E8	R952	A2		
C495	B4	C5975	B3	IC402-A	E7	R435	E8	R953	B4		
C497	B5	C5976	B3	IC402-B	E7	R436	E8	R954	C3		
C501	D5	C5977	B3	IC403-A	E7	R437	F8	R955	C3		
C502	D4	C5978	B3	IC404-A	B2	R438	F8	R956	C3		
C503	D5	C5979	B3	IC404-B	C2	R439	F8	R957	A3		
C504	D4	C5980	B3	IC405	C6	R440	E7	R958	A3		
C505	D5	C5981	B3	IC406	F8	R441	E7	R959	A3		
C506	D4	C5983	C3	IC407	C4	R442	E7	R961	C3		
C507	D5	C5984	A4	IC408-A	B4	R443	E7	R962	C2		
C508	E5	C59007	C4	IC408-B	B4	R444	E7	R963	C3		
C509	E5	C59008	C4	IC409-A	C4	R445	F7	R965	C3		
C510	E5	C59009	C4	IC501	E4	R446	F7	R966	A4		
C511	M5	C59010	B4	IC502	E3	R447	F7	R967	A4		
C512	E5	C59011	B4	IC503	E2	R448	F7	R968	A3		
C513	E5	C59001	E6	IC504-A	E1	R449	F7	R4001	C4		
C514	M5	C59002	D6	IC504-B	E1	R450	E7	R4002	C4		

## PCB LAYOUT - MAIN BOARD ( TOP )

C201	B9	C261	C6	C314	D7	C412	C6	C440	B5	C474	C5	C509	C1	C546	B1	C595	A2	C834	A9	C970	A4	C5008	B6	CN201	A6	D803	A8	IC503	A2	L951	B4	R201	B9	R243	C9	R311	D6	R406	C6	R434	D5	R462	C4	R505	C1	R657	C4	R826	A8	R965	D4	XL201	B7
C202	B9	C262	C6	C315	D7	C413	C6	C441	B6	C475	C5	C510	C1	C547	B2	C598	D4	C835	A9	C971	A4	C5009	B6	CN202	A6	B7	IC801	B9	L952	B4	R202	B9	R244	C9	R312	D6	R407	C6	R435	C5	R463	C5	R506	C1	R658	C4	R827	A8	R968	A4	XL202	A4	
C203	C9	C263	C6	C316	D7	C414	C6	C442	B6	C476	B4	C511	C2	C548	B2	C801	B9	C837	D6	C973	A5	C5010	B6	CN5001	A5	B7	IC802	A8	L955	B4	R203	B9	R245	C9	R315	D7	R408	C6	R436	C5	R510	D2	R659	C4	R828	A8	R967	C4	ZD301	D7			
C204	C9	C264	C6	C351	D8	C415	C5	C443	B6	C477	C4	C512	C2	C549	B2	C803	A9	C840	D6	C975	A5	C5011	C6	CN801	A9	F85003	B7	IC953	A5	L956	B4	R204	B9	R246	C9	R316	D7	R409	C6	R437	D6	R470	B5	R511	C2	R670	C4	R829	B8	R5001	B6	ZD302	D7
C205	B8	C265	C6	C352	D8	C416	C6	C444	B6	C478	C4	C513	C2	C550	B2	C804	A9	C841	D6	C977	A6	C5012	B7	CN802	A8	IC201	B8	IC954	A5	L957	B4	R205	B9	R247	C9	R319	D7	R410	C6	R438	D6	R471	D6	R521	B1	R801	A8	R830	B8	R5002	B6	ZD401	B5
C206	B9	C266	C7	C353	D8	C417	C6	C445	B6	C479	C5	C514	C2	C561	B2	C805	A9	C844	D9	C979	A5	C5014	D2	CN803	A8	IC202	C8	IC5001	B6	L958	A5	R206	B9	R249	C6	R320	D7	R411	C6	R439	D6	R472	D6	R522	C1	R802	A8	R831	A8	R5003	B7	ZD402	B6
C207	B9	C268	C7	C354	D8	C418	C6	C446	B6	C480	B5	C515	C1	C562	B2	C806	B9	C846	D9	C981	D4	C5041	A3	CN901	A3	IC203	C7	JK401	D5	L5001	B6	R208	B9	R250	D6	R321	A6	R412	C6	R440	C5	R481	D5	R523	B1	R803	A8	R832	A8	R5004	B7	ZD501	D2
C208	B9	C269	C9	C355	D8	C419	C6	C447	B6	C481	C5	C516	C1	C567	D4	C807	A9	C848	D8	C982	D4	C5042	A3	CN902	A4	IC204	B7	JK501	D7	L5002	B6	R210	B8	R251	D7	R322	A6	R413	C6	R441	C5	R482	C6	R524	C1	R804	A9	R834	B8	R5005	C7	ZD801	D9
C209	C9	C270	C9	C356	D8	C420	C5	C448	B6	C482	C5	C517	C2	C568	D3	C808	A9	C850	D8	C983	D4	C5053	C1	CN903	A5	IC205	B7	JK801	D9	MP5002	D2	R211	B8	R253	A7	R323	D7	R414	C6	R442	C5	R483	C5	R525	B1	R805	A9	R835	A8	R5006	A6	ZD802	D9
C210	C9	C271	C9	C357	D8	C421	C6	C449	B6	C483	C5	C518	C2	C571	B1	C809	B9	C854	D9	C984	D4	C5054	B1	CN908	D4	IC206	C6	JK802	D7	Q301	A6	R213	B8	R255	A7	R324	D7	R415	C6	R443	C5	R484	C5	R526	B1	R806	B8	R838	D6	R5007	B6	ZD803	D9
C211	A8	C274	B7	C358	D8	C422	C6	C453	B5	C484	C4	C519	C2	C572	B1	C811	A9	C855	D9	C2001	A7	C5055	C1	D301	A6	IC207	C7	JK805	D6	R401	D5	R214	B8	R256	A7	R351	C8	R416	C6	R444	C5	R485	C5	R527	B2	R807	A9	R840	D6	R5008	B7	ZD804	D9
C221	B8	C275	A7	C359	D9	C423	C6	C454	B5	C485	C4	C520	C2	C575	B1	C812	A9	C856	D8	C2002	C7	C5056	B1	D302	A7	IC208	A7	JK5002	D2	R402	D6	R215	B8	R257	B9	R352	D7	R417	B6	R445	D6	R486	C5	R528	B2	R808	A8	R845	C9	R5009	B6	ZD805	D9
C222	B8	C277	A7	C362	D8	C424	C6	C455	B5	C486	C4	C521	C2	C576	B1	C813	B9	C857	D7	C2003	A7	C5057	B1	D303	A6	IC209	C7	L202	C8	Q403	D5	R217	B8	R258	B9	R353	D7	R418	C6	R446	D6	R487	C5	R541	B1	R809	B6	R850	C9	R5050	A3	ZD806	D9
C226	B8	C278	C7	C364	D8	C425	C5	C456	B6	C487	B5	C522	C2	C577	B1	C814	B9	C858	D7	C2015	C9	C5058	B1	D304	A6	IC210	B9	L203	C8	Q501	D2	R218	B8	R259	B9	R355	D7	R419	C6	R447	D6	R488	C6	R542	B1	R810	A8	R852	D9	R5010	A7	ZD807	D8
C231	B9	C280	B9	C365	C8	C426	C6	C457	B5	C488	C4	C527	D3	C578	B1	C815	B9	C859	D8	C2016	B9	C5061	C3	D305	A6	IC301	D7	L204	A9	Q801	A8	R219	B8	R260	A4	R448	D5	R489	B5	R543	B1	R811	A8	R853	D9	R5031	C9	ZD808	D8				
C233	B8	C281	B9	C366	C9	C427	C6	C458	A5	C490	C4	C528	D3	C579	A2	C816	A9	C951	A3	C2017	C7	C5062	D3	D306	A6	IC351	C8	L205	A9	Q802	A8	R220	B8	R261	A4	R449	D5	R490	B5	R544	B1	R812	A8	R854	D9	R352	C9	ZD809	D8				
C234	B8	C283	B9	C367	C9	C428	C6	C459	B5	C491	C5	C531	B1	C580	A2	C817	B9	C952	A4	C2019	B9	C5063	B3	D307	A7	IC401	C6	L207	C7	Q803	B9	R223	A8	R462	A7	R359	D7	R422	C8	R450	C5	R491	C5	R545	D9	R555	D9	R50502	D2	ZD810	D8		
C235	B8	C285	A9	C401	D6	C429	C6	C462	C5	C532	B1	C581	A2	C819	C9	C953	B3	C2020	B7	C5064	C3	D308	A7	IC402	C6	L351	C9	Q804	B8	R224	B7	R463	A7	R360	D7	R423	C8	R451	C5	R492	B5	R546	B1	R813	A8	R855	D9	R555	D9	R50502	D2	ZD810	D8
C236	A7	C287	A8	C402	D6	C430	C5	C463	C5	C533	B1	C582	C2	C820	C9	C954	B3	C2024	B8	C5065	B3	D309	A7	IC403	C6</																												

## PCB LAYOUT - MAIN BOARD ( BOTTOM )

C214	B9	C239	B8	C267	C7	C504	C1	C569	B3	C821	B9	C972	A4	C2012	B8	C4010	C5	C5071	D5	C5092	D3	IC505	A3	L811	D9	R242	C8	R529	B2	R555	A3	R4009	C5
C215	B8	C241	B7	C272	C9	C523	C2	C570	C3	C824	B9	C974	A5	C2013	C7	C4011	C4	C5072	C4	C5093	D3	L187	B8	L813	D8	R248	C7	R530	B2	R556	D4	R4010	C5
C217	B8	C244	B8	C273	B7	C524	C2	C573	A1	C828	A9	C976	A5	C2018	C9	C5043	A3	C5073	D9	C5094	D3	L201	B8	L814	D8	R354	C8	R531	B2	R833	A8	R5011	A5
C218	B8	C245	B7	C276	C8	C525	C2	C574	A1	C845	D9	C978	A6	C2021	C8	C5044	B4	C5074	D6	C5095	D3	L206	B9	L815	D8	R356	D8	R532	B2	R958	A4	R5012	A5
C223	B8	C246	B8	C279	B9	C526	C2	C591	A2	C847	D9	C980	A5	C2022	B8	C5045	A4	C5075	A9	C5096	D4	L208	C9	Q5041	B3	R513	C2	R533	B3	R959	A4	R5041	A3
C224	B8	C247	B7	C282	B9	C529	C3	C592	A2	C849	D9	C2004	B8	C2023	B8	C5046	B3	C5076	D5	D501	D3	L803	A8	Q5042	A3	R514	C2	R534	B3	R967	A5	R5042	B3
C225	B9	C248	B8	C284	B8	C530	D3	C594	A2	C851	D9	C2005	B8	C2025	B9	C5047	A3	C5078	D5	D502	D4	L804	D9	Q811	A8	R515	C2	R535	D4	R4001	C4	R5043	A4
C227	B8	C249	B8	C286	A8	C533	B1	C596	A2	C852	D8	C2006	C8	C2030	D6	C5048	B3	C5079	C5	D503	D4	L805	D9	R207	B9	R516	C2	R536	D3	R4002	B5	R5044	A3
C228	B8	C250	C7	C290	B8	C534	B1	C597	A2	C853	D8	C2007	C8	C2032	C7	C5049	A3	C5080	A6	D504	D3	L806	D9	R212	B9	R517	C3	R549	A2	R4003	C5	R5045	A3
C229	B8	C251	C7	C360	D9	C563	B2	C599	B3	C962	B4	C2008	C8	C2033	D7	C5050	A3	C5082	A7	D505	D3	L807	D8	R216	B8	R518	D3	R550	A2	R4004	C5	R5046	A3
C230	B8	C252	B7	C361	C8	C564	B2	C802	B9	C964	B4	C2009	C8	C2034	D7	C5051	A3	C5083	D6	D506	D4	L808	D8	R221	B8	R519	D3	R551	A3	R4005	C5	R5047	B3
C232	B8	C253	B7	C363	D9	C565	B2	C810	B9	C968	A8	C2010	C8	C4007	C4	C5052	A4	C5084	D4	D951	A4	L809	D9	R231	B7	R520	D4	R553	A2	R4006	C4	R5048	A3
C238	B7	C254	C7	C503	C1	C566	B2	C818	A9	C969	B4	C2011	C8	C4009	C4	C5059	A4	C5091	D3	IC504	B3	L810	D9	R232	B7	R522	D3	R554	A2	R4008	C5	R5049	A3



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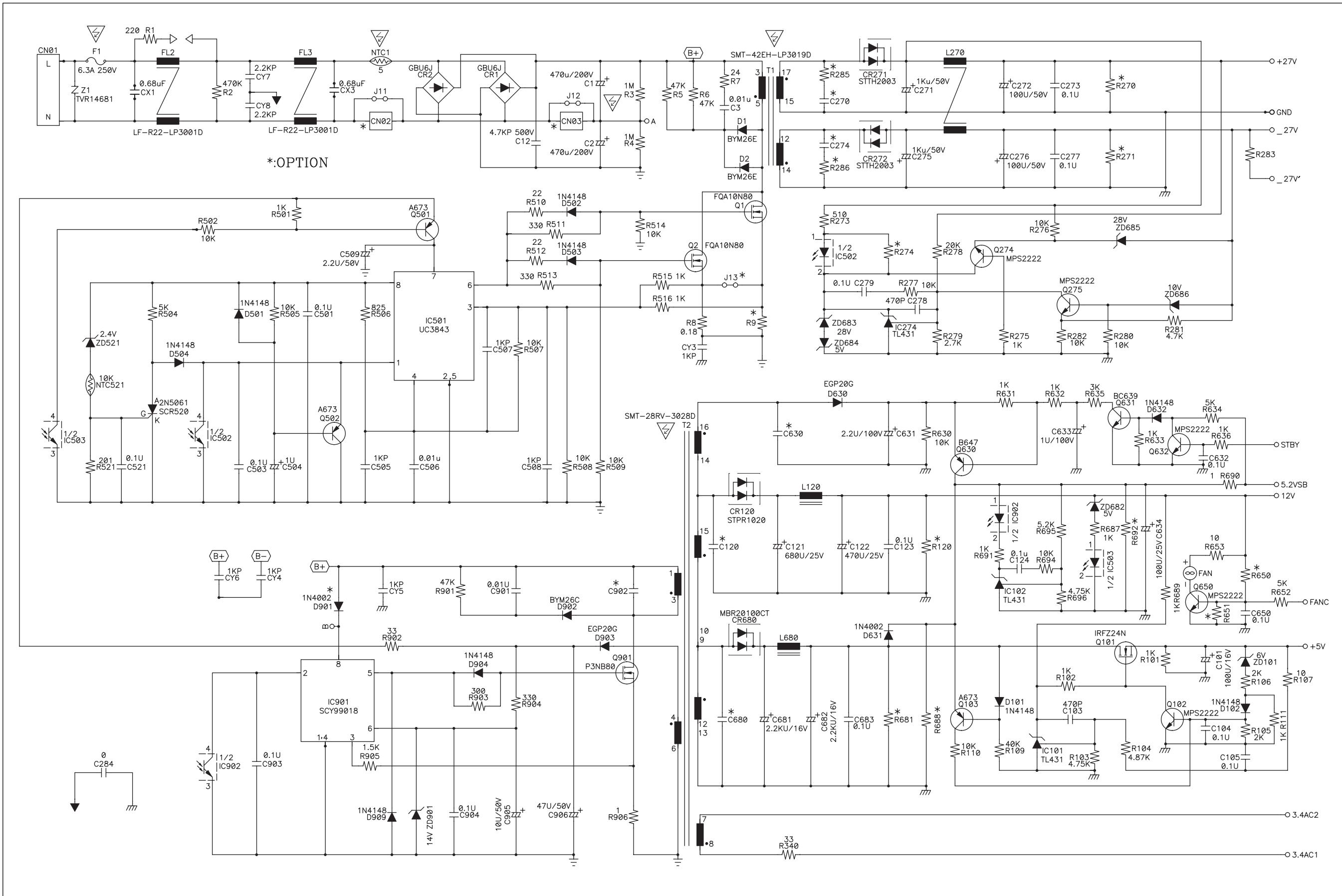
# POWER BOARD

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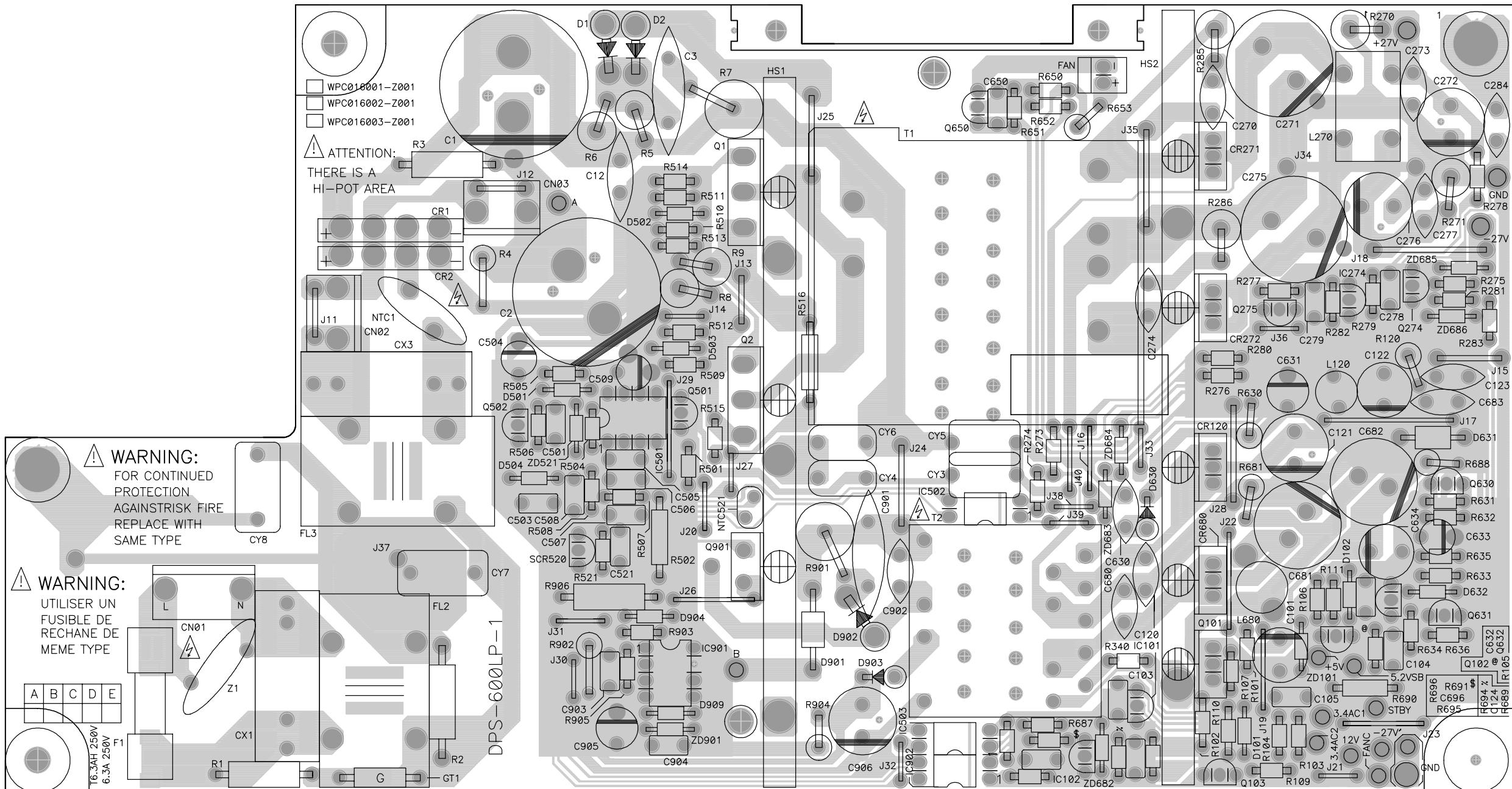
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## CIRCUIT DIAGRAM - POWER BOARD ( /17/37)

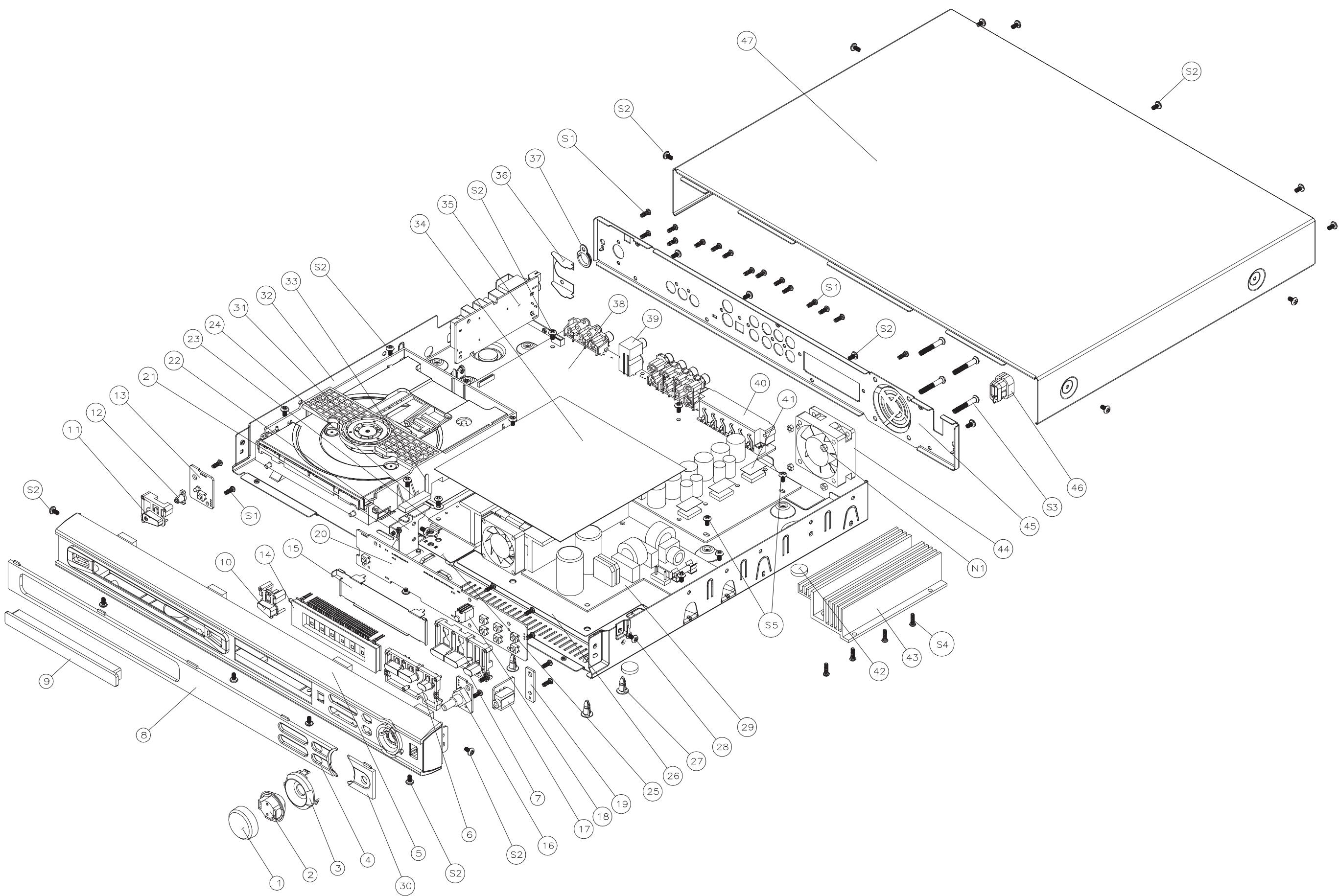


## PCB LAYOUT - POWER BOARD ( /17/37)



10-1

10-1

**MECHANICAL EXPLODED VIEW**

**MECHANICAL PARTS - MAIN UNIT (KN000XXXXXXXXX = BOM 1)**

<b>MISCELLANEOUS</b>	
9965 000 29272	IC18 PIN HT48R05A HOLTEK WITH SW
9965 000 23573	DVD MECHANICAL-DVD LOADER ASSY
9965 000 29271	SAT SPK ASS'Y HTS3400/37
9965 000 29270	SUBWOOFER ASS'Y 100W 3 OHM
9965 000 26968	DC FAN 12V 0.09A SPEED: 4000RPM
9965 000 23580	RCA CABLE 1500MM OD2.6MM BLK
9965 000 23889	RCA CABLE 1500MM BLK
9965 000 23582	LOOP ANT 1200MM 1007#26 6TS
9965 000 23583	FM ANTENNA 1000MM 1007#24 TC
9965 000 26916	REMOTE CONTROL 45KEY
9965 000 23652	SW PWR SUPPLY ASSY INPUT 110V
9965 000 23647	DVD DOOR HIPS
9965 000 27149	FRONT PANEL HIPS 94V2 PAINT S
9965 000 23575	FM ANTENNA HOLDER
9965 000 23639	VOLUME KNOB ABS
9965 000 27150	POWER BUTTON PAINT BLACK 8019
9965 000 23644	FUNCTION BUTTON 1 ABS
9965 000 27151	OPEN/CLOSE BUTTON PAINT BLACK
9965 000 23645	FUNCTION BUTTON 2 ABS
9965 000 27152	VOLMUR LENS PMMA LF
9965 000 27153	DISPLAY LENS PMMA L389.1XW28.7
9965 000 23650	POWER LED LENS PMMA
9965 000 23641	VOLUME RING ABS
9965 000 23640	VOLUME DOCKING ABS
9965 000 23571	FOOT RUBBER DIA14XT3MM WHITE

**SATELLITE SPEAKER ASSEMBLY BREAKDOWN**

9965 000 27122	SPEAKER BOX-L
9965 000 27183	SPEAKER BOX-R
9965 000 27184	SPEAKER BOX SURROUND-L
9965 000 27185	SPEAKER BOX SURROUND-R
9965 000 27186	FRAME A'SSY
9965 000 27187	FRAME
9965 000 27188	CLOTH
9965 000 27189	TW BRACKET
9965 000 26663	RUBBER FOOT
9965 000 27190	SPEAKER BOX
9965 000 27191	FRAME A'SSY
9965 000 27192	FRAME
9965 000 27193	CLOTH
9965 000 27194	TW BRACKET
9965 000 24036	BRACKET & SCREW PACKING
9965 000 28778	CABLE ASS'Y L5.2M-WHITE
9965 000 28784	CABLE ASS'Y L5.2M-RED
9965 000 28786	CABLE ASS'Y L15.2M-BLUE
9965 000 28787	CABLE ASS'Y L15.2M-GRAY

<b>SUBWOOFER ASSEMBLY BREAKDOWN</b>		
9965 000 27144	SUBWOOFER ASS'Y 100W 3OHM	
9965 000 27195	FRAME A'SSY	
9965 000 27196	CLOTH FRAME	
9965 000 27197	CLOTH	
9965 000 27198	PLASTIC FOOT	
9965 000 26668	RUBBER FOOT	
9965 000 28376	CABLE A'SSY 5.3M PURPLE SMK	

**ELECTRICAL PARTS LIST - CONTROL PCBA**

<b>MISCELLANEOUS</b>		
DP2201	9965 000 26957	VFD 100X25MM PIN
LD2201	9965 000 26953	LED 3 DIA RED ROUND HP HLMP
SN2201	9965 000 26956	IRT RECEIVER IRM-2638F4
TA2201	9965 000 26950	AI TACT SW SKHVBE3520 ALPS
TA2202	9965 000 26950	AI TACT SW SKHVBE3520 ALPS
TA2203	9965 000 26950	AI TACT SW SKHVBE3520 ALPS
TA2204	9965 000 26950	AI TACT SW SKHVBE3520 ALPS
TA2205	9965 000 26950	AI TACT SW SKHVBE3520 ALPS
TA2206	9965 000 26950	AI TACT SW SKHVBE3520 ALPS
TA2207	9965 000 26950	AI TACT SW SKHVBE3520 ALPS
TA2208	9965 000 26950	AI TACT SW SKHVBE3520 ALPS
VR2201	9965 000 26954	ENCODER L20 A=12 WITHOUTCC
XL2201	9965 000 23590	CRYSTAL 4MHZ HC-49US

**DIODES**

D2201	9965 000 26949	DIODE SW 1N4148 PB<1000PPM
D2202	9965 000 26949	DIODE SW 1N4148 PB<1000PPM
ZD2201	9965 000 26942	DIODE ZENR 5.0-5.2V 0.5W
ZD2202	9965 000 26930	CHIP ZENER 5.6V 0.05 0.5W (E2)
ZD2203	9965 000 26930	CHIP ZENER 5.6V 0.05 0.5W (E2)

**TRANSISTOR & INTEGRATED CIRCUIT**

Q2201	9940 000 00921	XISTR PNP 2SA812 HFE:200-400
Q2202	9940 000 00921	XISTR PNP 2SA812 HFE:200-400
Q2203	9940 000 00921	XISTR PNP 2SA812 HFE:200-400
Q2204	9940 000 00915	XISTR NPN 2SC1623
Q2205	9940 000 00921	XISTR PNP 2SA812 HFE:200-400
IC2201	9965 000 23592	IC 18PIN HT48R05A-1 SOP
IC2202	9940 000 00907	IC 52 PIN TP6311QH

**ELECTRICAL PARTS LIST - RADIO PCB ASSY (TUNER)**

<b>MISCELLANEOUS</b>		
ANT001	9965 000 24668	RF JACK MALE TYPE 75 OHM
CN001	9965 000 27093	CON/WIRE 8P 180MM
CN002	9965 000 25150	CONNECTOR S2B-XH-A 2 PIN
IF001	9965 000 24093	CERFILTER 3P 10.7MHZ
IF002	9965 000 24670	CER FILTER 10.7 MHZ
T001	9965 000 24672	AM IFT 450KHZ 180PF Q=80MIN
T002	9965 000 24673	AM IFT 450KHZ 180PF Q=80MIN
T003	9965 000 24673	AM IFT 450KHZ 180PF Q=80MIN
T005	9965 000 24674	OSC COIL AM 120UH (796KHZ)
T006	9965 000 26964	ANT OSC AM 4-6:10T 1-3:86T
VC001	9965 000 24676	CONDTRIM 3-10PF NPO
VC002	9965 000 24676	CONDTRIM 3-10PF NPO
VR001	9965 000 27005	CNTL TRIMR 30 K OHM
XL1	9965 000 23588	CRYSTAL 75KHZ +/-15

**DIODES**

D001	9965 000 26949	DIODE SW 1N4148 PB<1000PPM
D002	9965 000 26949	DIODE SW 1N4148 PB<1000PPM
D003	9965 000 26949	DIODE SW 1N4148 PB<1000PPM
D004	9965 000 26940	DIODE ZENR 11.9-12.4V 0.5W
D005	9965 000 26949	DIODE SW 1N4148 PB<1000PPM
VD001	9965 000 27006	DIODE TUNG FM TOSHIBA 1SV101
VD002	9965 000 27006	DIODE TUNG FM TOSHIBA 1SV101
VD003	9965 000 26965	DIODE TUNG AM 1SV149B
VD004	9965 000 26965	DIODE TUNG AM 1SV149B

**TRANSISTOR & INTEGRATED CIRCUIT**

Q001	4822 130 41198	2SC945P
Q002	4822 130 41198	2SC945P
Q003	9965 000 27004	XISTR PNP BF550 SOT23 PHILIPS
Q003	9940 000 00921	XISTR PNP 2SA812 HFE:200-400
IC001	9965 000 27003	IC 44 PIN TEA5757H QFP44

Note : Only the parts mentioned in this list are normal service spare parts.

**ELECTRICAL PARTS LIST - MAIN + PH.JACK PCB****MISCELLANEOUS**

CN801	9965 000 25152	CHIP CONNECTOR 24PIN
CN802	9965 000 26996	CONNECTOR 6 PIN
CN803	9965 000 26995	CONNECTOR 5 PIN
CN901	9965 000 25151	CONNECTOR 3 PIN CL3962WVO
CN902	9965 000 26997	CONNECTOR B9B-XH-A 9 PIN
CN903	9965 000 26993	CONNECTOR 3 PIN
CN908	9965 000 25145	CONNECTOR B2B-XH-A 2 PIN
RB151	9965 000 27001	CONNECTOR 8 PIN
FB5003	9965 000 26925	CHIP INDUC 10 UH 0.1 SMD 0805
IC953	9965 000 26649	INDUCTOR 6UH 14.5TS 2UEW
IC954	9965 000 26649	INDUCTOR 6UH 14.5TS 2UEW
JK401	9965 000 24074	RCA JACK 6P WHTX3/REDX3
JK5002	9965 000 25154	PHONE JACK D3.5 9 PIN NICKEL
JK501	9965 000 25157	SPK JACK 12PIN PUSH TERMI
JK801	9965 000 23598	RCA JACK 3P RED/BLU/GRN
JK802	9965 000 25153	RCA+DIN JK 1RCA+4P DIN YEL
JK805	9940 000 01576	RCA JACK 1P BLACK
L187	9965 000 23594	CHIP INDUC 1UH 10%
L202	9965 000 26926	CHIP INDUC 1 UH 0.1
L203	9965 000 26926	CHIP INDUC 1 UH 0.1
L204	9965 000 26926	CHIP INDUC 1 UH 0.1
L205	9965 000 26926	CHIP INDUC 1 UH 0.1
L206	9965 000 23594	CHIP INDUC 1UH 10%
L207	9965 000 26944	CHIP BEAD 60 OHM 100MHZ 0.25
L208	9965 000 23594	CHIP INDUC 1UH 10%
L351	9965 000 26926	CHIP INDUC 1 UH 0.1
L352	9965 000 26926	CHIP INDUC 1 UH 0.1
L5001	9965 000 26938	INDUCTOR 100 UH 0.1
L5002	9965 000 26938	INDUCTOR 100 UH 0.1
L501	9965 000 23893	INDUCTOR 33UH 20% 6A
L502	9965 000 23893	INDUCTOR 33UH 20% 6A
L503	9965 000 23893	INDUCTOR 33UH 20% 6A
L504	9965 000 23893	INDUCTOR 33UH 20% 6A
L5041	9965 000 23594	CHIP INDUC 1UH 10%
L505	9965 000 23893	INDUCTOR 33UH 20% 6A
L506	9965 000 26999	INDUCTOR 27 UH 0.2 4.3A
L801	9965 000 26926	CHIP INDUC 1 UH 0.1
L802	9965 000 26926	CHIP INDUC 1 UH 0.1
L803	9965 000 23594	CHIP INDUC 1UH 10%
L804	9965 000 23895	CHIP INDUC 2.4UH 5%
L805	9965 000 23895	CHIP INDUC 2.4UH 5%
L806	9965 000 23895	CHIP INDUC 2.4UH 5%
L807	9965 000 23895	CHIP INDUC 2.4UH 5%
L808	9965 000 23895	CHIP INDUC 2.4UH 5%
L809	9965 000 23594	CHIP INDUC 1UH 10%
L810	9965 000 23594	CHIP INDUC 1UH 10%
L811	9965 000 23594	CHIP INDUC 1UH 10%
L812	9965 000 23594	CHIP INDUC 1UH 10%
L813	9965 000 23594	CHIP INDUC 1UH 10%
L814	9965 000 23594	CHIP INDUC 1UH 10%
L823	9965 000 26926	CHIP INDUC 1 UH 0.1
L824	9965 000 26944	CHIP BEAD 60 OHM 100MHZ 0.25
L951	9965 000 26943	BEAD FERIT DIA3.5X6MM
L952	9965 000 26943	BEAD FERIT DIA3.5X6MM
L955	9965 000 26938	INDUCTOR 100 UH 0.1
L956	9965 000 26938	INDUCTOR 100 UH 0.1
L957	9965 000 26938	INDUCTOR 100 UH 0.1

**CAPCITORS**

CF5041	9965 000 23595	RES 2P 600KHZ ORANGE BOX
CF5042	9965 000 23596	RES 2P 700KHZ BLUE BOX TYPE
CN201	9965 000 27002	CONNECTOR 9 PIN
CN202	9965 000 27000	CONNECTOR 7 PIN
CN5001	9965 000 26994	CONNECTOR 4 PIN
C511	9965 000 26917	CHIP CAP 0.1UF/100V X7R /- 0.1
C512	9965 000 26917	CHIP CAP 0.1UF/100V X7R /- 0.1
C523	9965 000 23896	CHIP CAP 560PF 100V 10%
C524	9965 000 23896	CHIP CAP 560PF 100V 10%
C525	9965 000 23896	CHIP CAP 560PF 100V 10%
C526	9965 000 23896	CHIP CAP 560PF 100V 10%
C527	9965 000 23659	COND MYLAR 0.015UF 100V 5%
C528	9965 000 23659	COND MYLAR 0.015UF 100V 5%
C529	9965 000 29266	0.22UF 50V 80/-20%
C530	9965 000 29266	0.22UF 50V 80/-20%
C531	9965 000 29267	0.47 UF 50V 20%
C532	9965 000 29267	0.47 UF 50V 20%
C533	9965 000 29268	330 PF 50V 5%
C534	9965 000 29268	330 PF 50V 5%
C535	9965 000 29267	0.47 UF 50V 20%
C536	9965 000 29267	0.47 UF 50V 20%
C537	9965 000 29269	0.1 UF 50V 20%
C538	9965 000 29269	0.1 UF 50V 20%
C539	9965 000 24680	COND ELECT 47UF 63V 20% 85'C
C541	9965 000 26917	CHIP CAP 0.1UF/100V X7R /- 0.1
C563	9965 000 23896	CHIP CAP 560PF 100V 10%
C564	9965 000 23896	CHIP CAP 560PF 100V 10%
C565	9965 000 23896	CHIP CAP 560PF 100V 10%
C566	9965 000 23896	CHIP CAP 560PF 100V 10%
C567	9965 000 23659	COND MYLAR 0.015UF 100V 5%
C568	9965 000 23659	COND MYLAR 0.015UF 100V 5%
C580	9965 000 26917	CHIP CAP 0.1UF/100V X7R /- 0.1
C581	9965 000 26917	CHIP CAP 0.1UF/100V X7R /- 0.1
C591	9965 000 23896	CHIP CAP 560PF 100V 10%
C592	9965 000 23896	CHIP CAP 560PF 100V 10%
C593	9965 000 23659	COND MYLAR 0.015UF 100V 5%
C596	9965 000 23896	CHIP CAP 560PF 100V 10%
C597	9965 000 23896	CHIP CAP 560PF 100V 10%
C598	9965 000 23659	COND MYLAR 0.015UF 100V 5%
C951	9965 000 26917	CHIP CAP 0.1UF/100V X7R /- 0.1
C952	9965 000 26917	CHIP CAP 0.1UF/100V X7R /- 0.1
C955	9965 000 20101	CAP-E 4700U/35V 20% P=8MM R
C956	9965 000 20101	CAP-E 4700U/35V 20% P=8MM R
C961	9965 000 23606	COND ELECT 1000UF 16V 20%
R968	9965 000 27085	FUSEABLE RES 1/4W 5%
RA301	9940 000 00865	RES ARRAY 4X33R 1/10W 5%
RA351	9940 000 00865	RES ARRAY 4X33R 1/10W 5%
RA352	9940 000 00865	RES ARRAY 4X33R 1/10W 5%
RN201	9965 000 23613	CHIP ARRAY 4X4.7KOHM 1/16W
RN202	9940 000 00865	RES ARRAY 4X33R 1/10W 5%
RN203	9940 000 00865	RES ARRAY 4X33R 1/10W 5%
RN204	9965 000 23613	CHIP ARRAY 4X4.7KOHM 1/16W
RN205	9965 000 23614	CHIP ARRAY 10 OHMX4 1/16 W
RN206	9965 000 23614	CHIP ARRAY 10 OHMX4 1/16 W
RN207	9965 000 23614	CHIP ARRAY 10 OHMX4 1/16 W
RN208	9940 000 00865	RES ARRAY 4X33R 1/10W 5%
RN210	9965 000 23613	CHIP ARRAY 4X4.7KOHM 1/16W
RN211	9940 000 00865	RES ARRAY 4X33R 1/10W 5%

**DIODES**

D301	9965 000 19409	DIODE CHIP BAV16W/IN4148W
D302	9965 000 19409	DIODE CHIP BAV16W/IN4148W
D303	9965 000 19409	DIODE CHIP BAV16W/IN4148W
D304	9965 000 19409	DIODE CHIP BAV16W/IN4148W
D305	9965 000 19409	DIODE CHIP BAV16W/IN4148W
D306	9965 000 19409	DIODE CHIP BAV16W/IN4148W
D307	9965 000 19409	DIODE CHIP BAV16W/IN4148W
D308	9965 000 19409	DIODE CHIP BAV16W/IN4148W
D309	9965 000 19409	DIODE CHIP BAV16W/IN4148W
D310	9965 000 19409	DIODE CHIP BAV16W/IN4148W
D311	9965 000 19409	DIODE CHIP BAV16W/IN4148W
D312	9965 000 19409	DIODE CHIP BAV16W/IN4148W
D313	9965 000 19409	DIODE CHIP BAV16W/IN4148W
D314	9965 000 19409	DIODE CHIP BAV16W/IN4148W
D315	9965 000 19409	DIODE CHIP BAV16W/IN4148W
D316	9965 000 19409	DIODE CHIP BAV16W/IN4148W
D401	4822 130 83338	LL4148
D5001	9965 000 19409	DIODE CHIP BAV16W/IN4148W
D5002	9965 000 19409	DIODE CHIP BAV16W/IN4148W
D501	9965 000 19409	DIODE CHIP BAV16W/IN4148W
D502	9965 000 19409	DIODE CHIP BAV16W/IN4148W</td