

Service Service Service



LX3700D



LX3750W

Service Manual



TABLE OF CONTENTS

	Page
Location of PC Boards	1-2
Versions Variation & Package	1-2
Specifications	1-3
Measurement Setup	1-4
Service Aids	1-5
ESD & Safety Instruction	1-6
Functional Overview	1-7 to1-8
Preparations & Connections	1-9 to1-12
Connections & Troubleshooting	1-13
Wireless System Information	1-14
Setting Procedure & Repair Instructions	2
Disassembly Instructions & Service positions	3
Block & Wiring Diagram	4
Control & Speaker Jack Board	5
RGB & Scart Board	6
DVD Module	7
Main Board (Include Headphone Board)	8
Power Board	9
Mechanical Exploded View & Parts List	10
Wireless Surround Loudspeaker Boxes	11



DVD + ReWritable

**CLASS 1
LASER PRODUCT**

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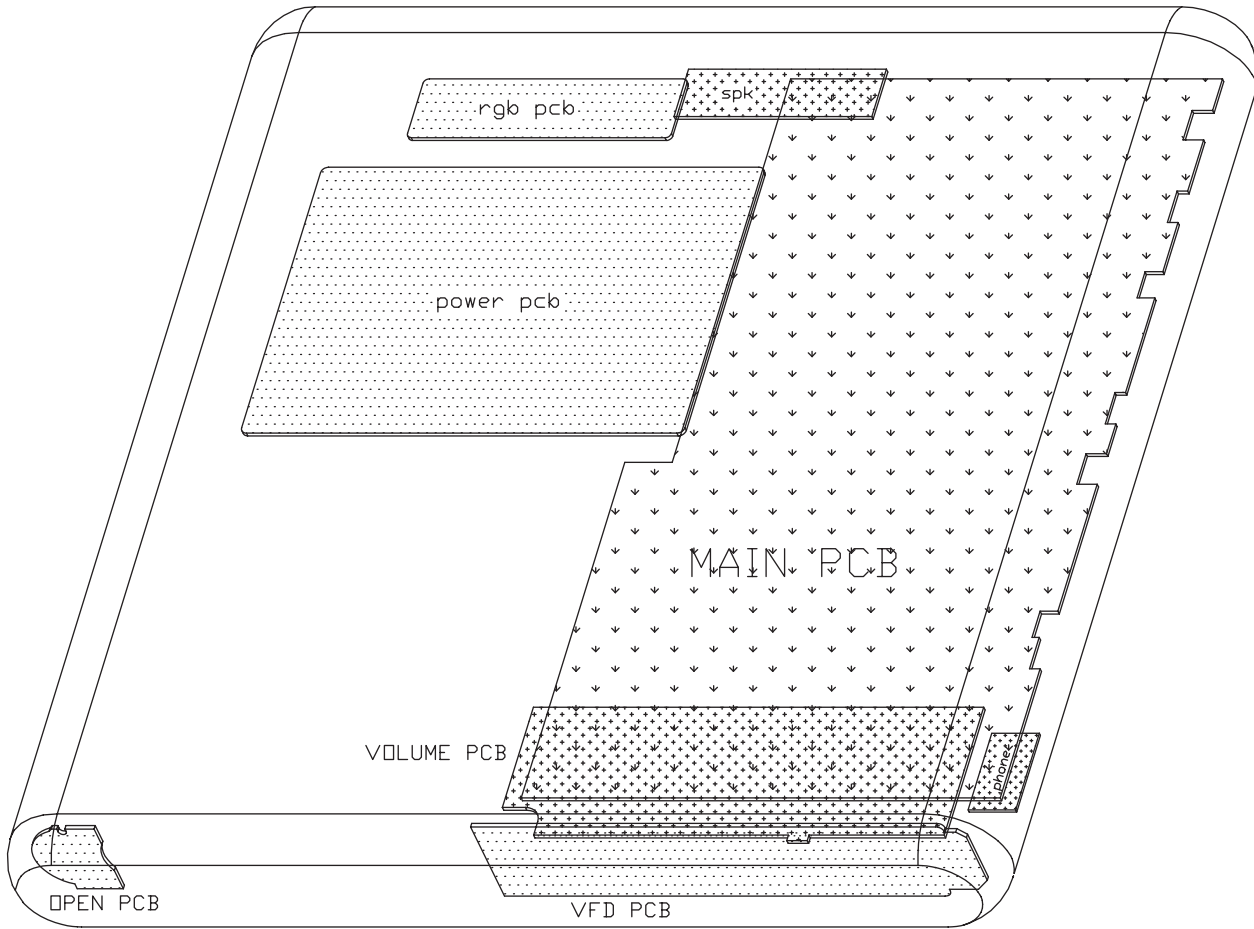
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Version 1.1



PHILIPS

LOCATION OF PC BOARDS



VERSION VARIATION:

Type/Versions	LX3700D	LX3700D	LX3700D	LX3700D	LX3750W	LX3750W	LX3750W
Features & Board in used	/21S	/21R	/22S	/25S	/37	/22S	/25S
RDS function			X	X		X	X
Progressive scan	X	X			X		
Scart board			X	X		X	X
RGB board	X	X			X		
Power PCB(120V)					X		
Power PCB(110V~127V/220V~240V)	X	X					
Power PCB(220V~240V)			X	X		X	X
AC Voltage Selector	X	X					
Line Cord (Detachable)	X	X	X	X		X	X
Line Cord (Fixed)					X		
Region Code	4	3	2	2	1	2	2

SPECIFICATIONS

AMPLIFIER SECTION

Power Output	
- Stereo mode (DIN).....	2 x 50 W
- Surround mode (1 kHz).....	50 WRMS/channel
Total Harmonic Distortion.....	10 % at rated power (1 kHz)
Frequency Response	180 Hz-14 kHz/±1 dB
Signal-to-Noise Ratio.....	> 65dB(CCIR)
Input Sensitivity.....	400 mV

DVD SECTION

Audio Performance :

Laser Type.....	Semiconductor
Disc Diameter.....	12cm/8cm
Video Decoding.....	Mpeg-2
Video DAC.....	10 Bits
Signal System.....	PAL/NTSC
Video Format.....	4:3 / 16:9
Video S/N.....	65 dB (minimum)
Composite Video Output.....	1.0Vp-p, 75 ohm
S-Video Output.....	Y - 1.0Vp-p, 75 ohm
.....	C - 0.286Vp-p, 75 ohm
Audio DAC.....	Direct Digital Amplification
Frequency Response.....	4 Hz-20 kHz (44.1kHz)
.....	4 Hz-22 kHz (48 kHz)
.....	4 Hz-44 kHz (96 kHz)
Digital Output.....	SPDIF Coaxial & Optical

TUNER SECTION

Tuning Range.....	FM 87.5-108 MHz
FM Grid.....	50 kHz /22S/25S
.....	50 kHz/100 kHz (Switchable) /21S/21R
.....	100 kHz /37
.....	AM (MW)531-1602 kHz /21S/21R/22S/25S
.....	AM (MW)530-1710 kHz /37
AM (MW) Grid.....	9 kHz /22S/25S
.....	9 kHz/10 kHz (Switchable) /21S/21R
.....	10 kHz /37
26 dB Quieting Sensitivity.....	FM 20 dB
26 dB Quieting Sensitivity.....	AM (MW)5000 uV/m
Image Rejection Ratio.....	FM 25 dB
.....	AM (MW) 28 dB
IF Rejection Ratio.....	FM 60 dB
.....	AM (MW) 24 dB
Signal-to-Noise Ratio.....	FM 55 dB
.....	AM (MW) 35 dB
AM Suppression Ratio.....	FM 30 dB
Harmonic Distortion.....	FM Mono 3%
.....	FM Stereo 3%
.....	AM (MW) 5%
Frequency Response.....	FM 180 Hz-10kHz/±6 dB
Stereo Separation.....	FM 26 dB(1 kHz)
Stereo threshold.....	FM 23.5 dB

MISCELLANEOUS / GENERAL SECTION

Power Supply Rating.....	110-127V/220-240V, 50/60Hz
.....	/21R/21S
.....	220-240V/50Hz /22S/25S
.....	110-127V/60Hz /37
Power Consumption.....	160 W
Dimensions (w x h x d).....	390 mm x 55 mm x 399mm
Weight.....	3.6 kg

IR REMOTE CZONTROL

Effective Range.....	> 8 Meter
Number of Keys.....	45
Battery (1.5V).....	AA x 2

SPEAKERS

Front Speakers

System.....	2-way shielded
Impedance/ohm.....	8Ω
Speaker drivers.....	2 x 2" woofer, 1.75" tw
Dimensions (w x h x d).....	88 mm x 293 mm x 88 mm
Weight.....	0.65 Kg

Center Speaker

System.....	2-way shielded
Impedance/ohm.....	8Ω
Speaker drivers.....	2 x 2" woofer, 1.75" tw
Dimensions (w x h x d).....	280 mm x 79 mm x 72 mm
Weight.....	0.72 Kg

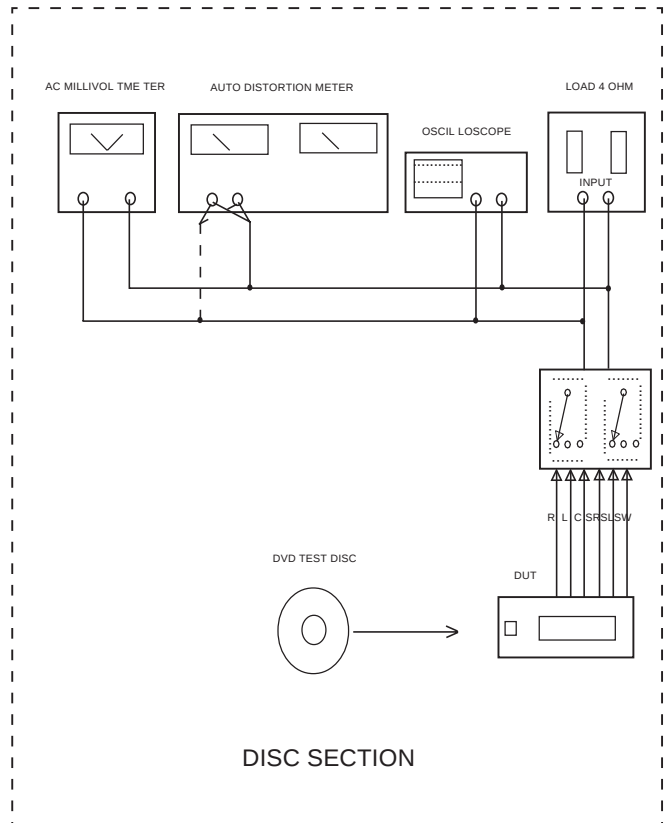
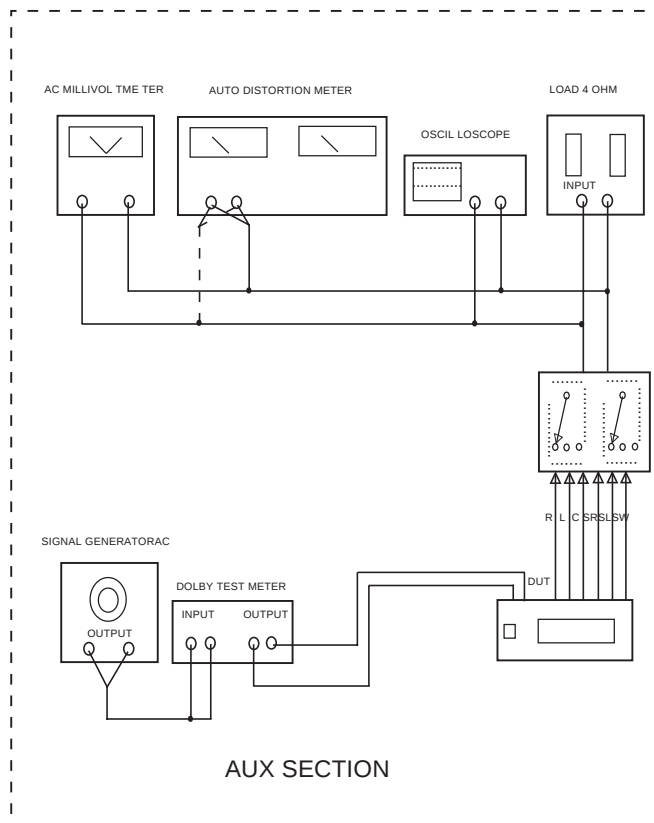
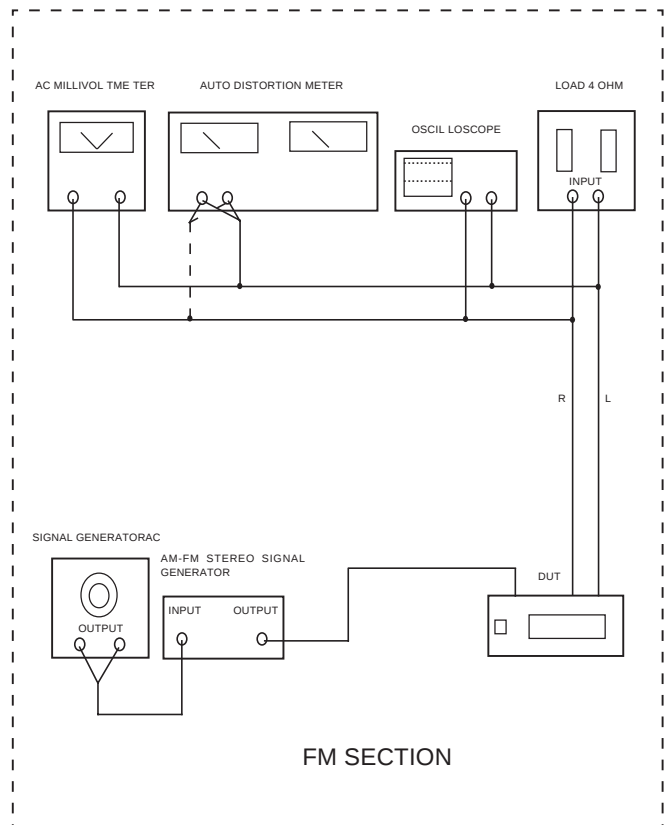
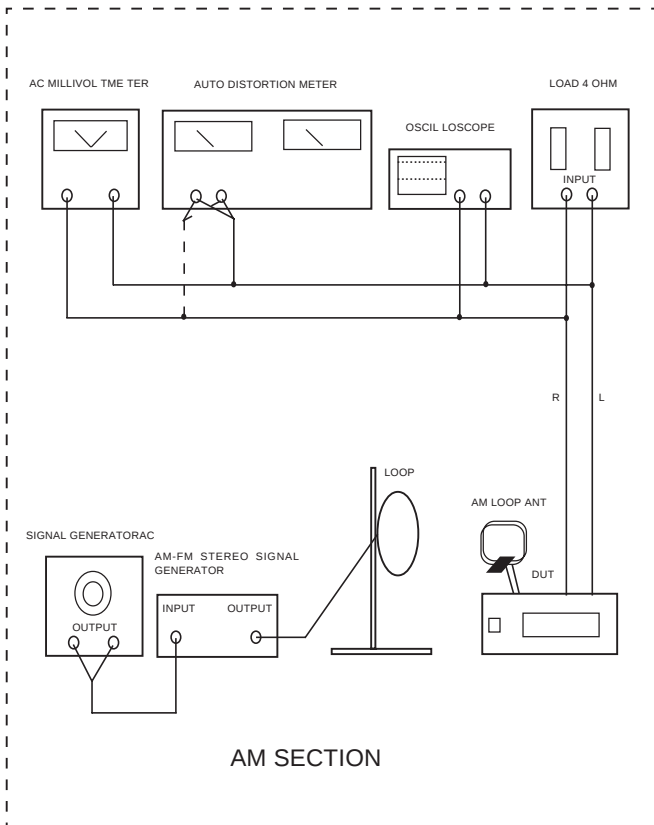
Surround Speakers

System.....	2-way shielded
Impedance/ohm.....	8Ω
Speaker drivers.....	2 x 2" woofer, 1.75" tw
Dimensions (w x h x d).....	72 mm x 283 mm x 376 mm
Weight.....	0.62 Kg

SUBWOOFER

Subwoofer (Not magnatically shielded design).....	6.5"
Input power.....	50W (8Ω,DIN)
Dimensions (w x h x d).....	130 mm x 328 mm x 376 mm
Weight.....	4.9 Kg

MEASUREMENT SETUP



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

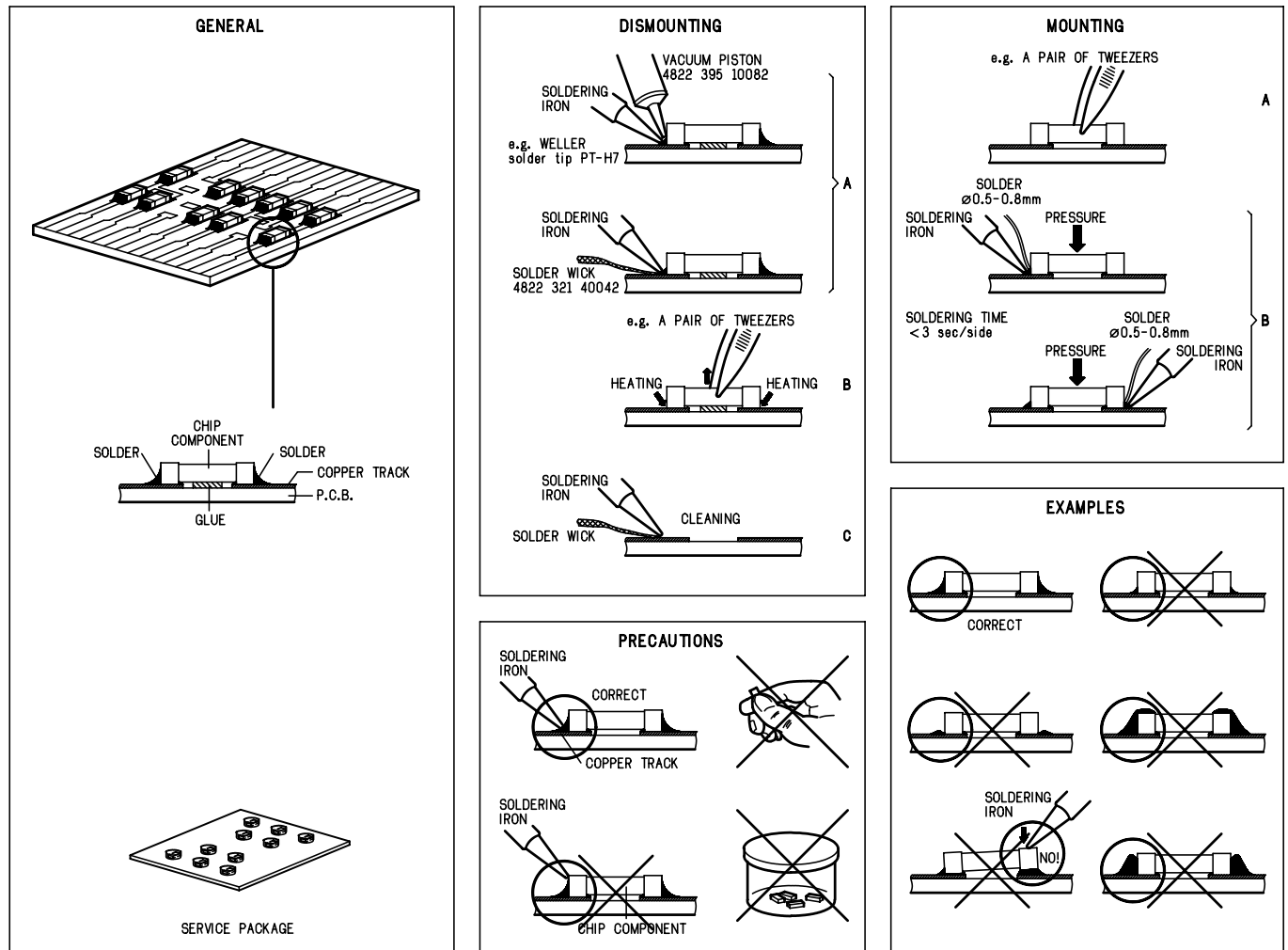
Compact Disc:

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

ESD Equipment:

Anti-static table mat - large 1200x650x1.25mm ...	4822 466 10953
anti-static table mat - small 600x650x1.25mm	4822 466 10958
Anti-static wristband	4822 395 10223
Connectorbox (1M Ω)	4822 395 11307
Extension cable (to connect wristband to conn.box)	4822 320 11305
Connecting cable (to connect table mat to conn.box)	4822 320 11306
Earth cable (to Connect product to mat or box) --	4822 320 11308
Complete kit ESD3 (combining all above products)	4822 320 10671
Wristband tester	4822 344 13999

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 hetzelfde 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) WARNING

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

Unvorsichtige Behandlung im Reparaturfall kann die Lebensdauer drastisch reduzieren.

Veranlassen Sie, dass Sie im Reparaturfall über ein Pulsarmband mit Widerstand verbunden sind mit dem gleichen Potential wie die Masse des Gerätes.

Bauteile und Hilfsmittel auch auf dieses gleiche Potential halten.

(I) AVVERTIMENTO

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

La loro longevità potrebbe essere fortemente ridatta in caso di non osservazione della più grande cauzione alla loro manipolazione.

Durante le riparazioni occorre quindi essere collegato allo stesso potenziale che quello della massa dell'apparecchio tramite un braccialetto a resistenza.

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

(GB)

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

"Pour votre sécurité, ces documents doivent être utilisés par des spécialistes agréés, seuls habilités à réparer votre appareil en panne".

(NL)

Veiligheidsbepalingen vereisen, dat het apparaat bij reparatie in zijn oorspronkelijke toestand wordt teruggebracht en dat onderdelen, identiek aan de gespecificeerde, worden toegepast.

(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.

(D)

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

(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.

"After servicing and before returning set to customer perform a leakage current measurement test from all exposed metal parts to earth ground to assure no shock hazard exist. The leakage current must not exceed 0.5mA."

**(GB) Warning !**

Invisible laser radiation when open.
Avoid direct exposure to beam.

(S) Varning !

Osynlig laserstrålning när apparaten är öppnad och spärren är urkopplad. Betrakta ej strålen.

(SF) Varoitus !

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

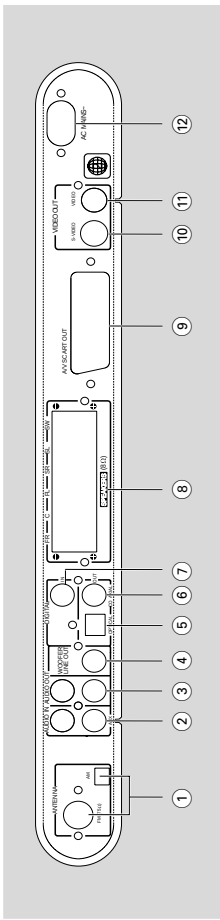
(DK) Advarse !

Usynlig laserstråling ved åbning når sikkerhedsafbrydere er ude af funktion. Undgå udsættelse for stråling.

FUNCTIONAL OVERVIEW

Functional Overview

Rear panel

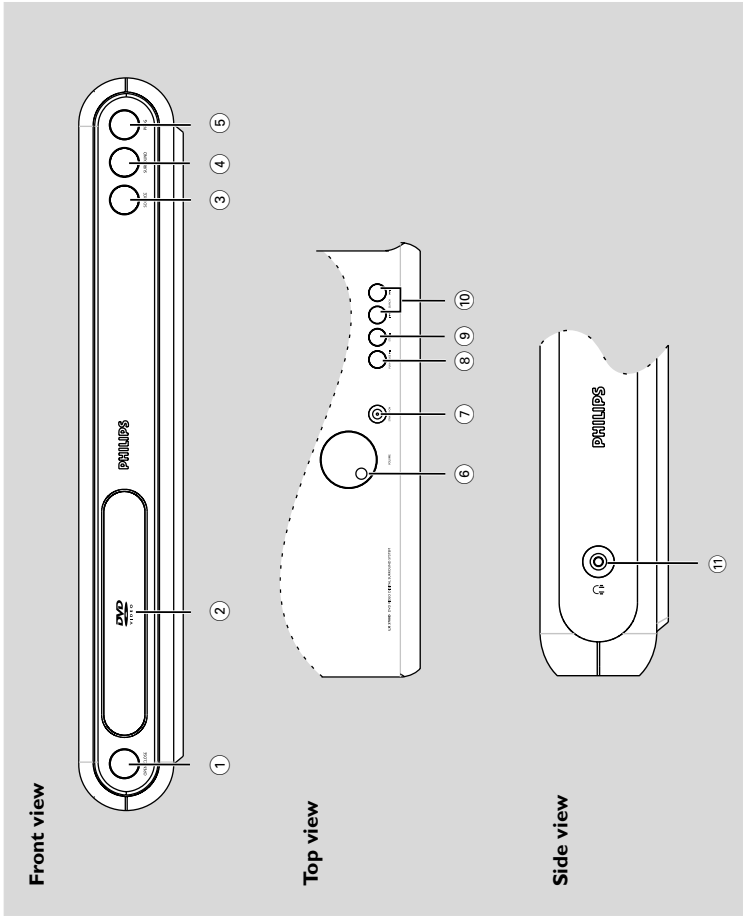


- 1 MW / FM ANTENNA**
 - connect to the MW loop antenna or FM antenna.
- 2 AUDIO IN - AUX**
 - connect to the analog audio outputs of a TV or VCR.
- 3 AUDIO OUT**
 - connect to the analog audio inputs of an external recording device or amplifier.
- 4 WOOFER LINE OUT**
 - connect to an active subwoofer (Optional).
- 5 DIGITAL OUT - OPTICAL**
 - connect to an audio equipment with digital (optical) audio input.
- 6 DIGITAL OUT - COAXIAL**
 - connect to an audio equipment with digital (coaxial) audio input.
- 7 DIGITAL IN**
 - connect from an audio equipment with digital audio output.
- 8 SPEAKERS**
 - connect to the front, center, rear (surround) and subwoofer speakers.
- 9 A/V SCART OUT**
 - connect to TV with SCART input.
- 10 S-VIDEO OUT**
 - connect to a TV with S-video input.
- 11 VIDEO OUT**
 - connect to a TV with video input.
- 12 AC Power Cord**
 - connect to a standard AC outlet.

Caution: Do not touch the inner pins of the jacks on the rear panel. Electrostatic discharge may cause permanent damage to the unit.

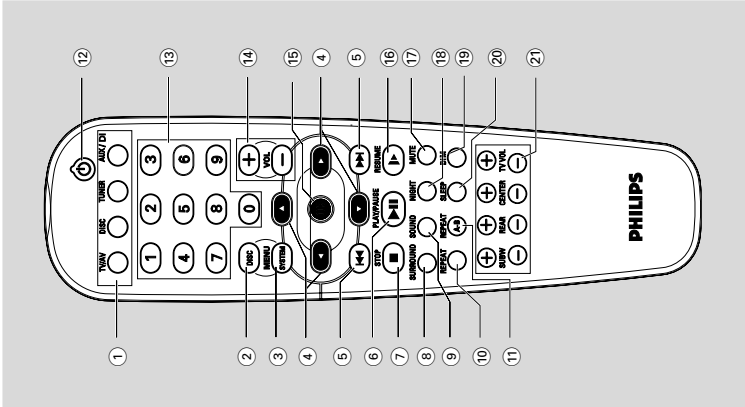
Functional Overview

Front panels



- 1 OPEN / CLOSE**
 - to open or close the disc tray.
- 2 Disc Tray**
- 3 SOURCE**
 - to select the relevant active mode: TV/AV, DISC, TUNER or AUX/DI.
- 4 SURROUND**
 - to select multichannel surround (Dolby Digital, DTS, VSS, Dolby ProLogic or Dolby ProLogic II) or stereo sound effect.
- 5 PROGRAM**
 - in Disc mode, to program disc tracks.
 - in Tuner mode, to program preset radio station.
- 6 VOLUME**
 - to adjust the master volume.
- 7 STANDBY-ON**
 - to switch between power on and standby modes.
- 8 PLAY / PAUSE**
 - to start or interrupt disc playback.
- 9 STOP**
 - to stop playing the disc.
- 10 SEARCH**
 - in Disc mode, press to skip to the previous/next chapter/track.
 - in Disc mode, hold down to fast reverse/forward the disc.
 - in Tuner mode, to tune to a lower or higher radio frequency.
- 11**
 - to connect headphones.

Remote Control



Notes for remote control:

- First, select the source you wish to control by pressing one of the source select keys on the remote control (DISC or TUNER, for example).
- Then select the desired function (▶, ◀◀, ▶▶▶ for example).

- ① **SOURCE**
 - to select the relevant active mode: TV/AV, DISC, TUNER or AUX/DI.
 - TUNER: toggles between FM and AM band.
 - AUX/DI: toggles between AUX-ANA and AUX-DIG (Digital Input) mode.
- ② **DISC MENU (disc mode only)**
 - to enter or exit the disc contents menu.
- ③ **SYSTEM MENU (disc mode only)**
 - to enter or exit the system menu bar.
- ④ **▲ / ▼ / ◀ / ▶**
 - in Tuner mode, to select a preset radio station number (◀ or ▶).

- to select movement direction in disc contents menu/system menu bar.
- ⑤ **◀◀ / ▶▶**
 - in Disc mode, press to skip to the previous/next chapter/track.
 - in Disc mode, hold down to fast reverse/forward the disc.
 - in Tuner mode, to tune to a lower or higher radio frequency.
- ⑥ **▶ II**
 - to start or interrupt disc playback.
- ⑦ **■**
 - to stop playing the disc.
- ⑧ **SURROUND**
 - to select multichannel surround (Dolby Digital, DTS, VSS, Dolby Pro Logic or Dolby Pro Logic II) or stereo sound effect.
- ⑨ **SOUND**
 - to select the various sound effect : CONCERT, DRAMA, ACTION, SCI-FI, CLASSIC, JAZZ, ROCK or DIGITAL.
- ⑩ **REPEAT**
 - to repeat chapter, title, track, album or disc.
- ⑪ **REPEAT A-B**
 - to repeat a specific section on a disc.
- ⑫ **POWER** 
 - to switch to standby mode.
- ⑬ **Numeric Keypad (0-9)**
 - to enter a track/title number of the disc.
 - to enter a number of preset radio stations.
- ⑭ **VOL + / -**
 - to adjust the volume level.
- ⑮ **OK**
 - to exit or confirm the selection.
- ⑯ **RESUME**
 - to continue disc playback after an interruption.
- ⑰ **MUTE**
 - to interrupt or resume sound reproduction.
- ⑱ **NIGHT (Dolby Digital mode only)**
 - to optimize the dynamic of the sound output.
- ⑲ **DIM**
 - to select different brightness for the display screen.
- ⑳ **SLEEP**
 - to set the sleep (auto-off) timer function.
- ㉑ **SUBW + / -**
 - to adjust the subwoofer's level.
- REAR + / -**
 - to adjust the rear speakers' level.
- CENTER + / -**
 - to adjust the center speakers' level.
- TV + / -**
 - to adjust Philips's television volume level.

PREPARATIONS AND CONNECTIONS

Preparations

Inserting batteries into the remote control



- 1 Open the battery compartment.
- 2 Place the batteries in the compartment with the correct polarity as indicated by "+" and "-" symbols.
- 3 Close the cover.

CAUTION!

- Remove batteries if they are exhausted or will not be used for a long time.
- Do not use old and new or different types of batteries in combination.
- Batteries contain chemical substances, so they should be disposed off properly.

Switching on the system

IMPORTANT!

Make sure you have completed all the necessary connections. (See page 10 "Connecting TV")

- 1 Press **STANDBY ON** to switch on the system.
- 2 Press **SOURCE** until "JISC" appears on the display panel (or press **DISC** on the remote).
- 3 Turn on the TV and set to the correct video-in channel. You should see the blue Philips DVD background screen on the TV.
 - Usually this channel is between the lowest and highest channels and may be called FRONT, AV IN, or VIDEO. See your TV manual for more details.
 - Or, you may go to channel 1 on your TV, then press the Channel down button repeatedly until you see the Video In channel.
 - Or, the TV remote control may have a button or switch that chooses different video modes.
 - Or, set the TV to channel 3 or 4 if you are using an RF modulator.

- If you do not get a proper picture or sound, please refer to "System Setup (DVD)" in order to change the pre-settings as necessary to accommodate your TV system or change to your preferred settings.

System Setup (DVD)

The system setup is carried out via the TV; it enables you to customize the DVD system to suit your particular requirement. If the preferred options selected are not available on a disc, then the disc's own preference will be used.

IMPORTANT !

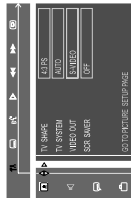
To access the **System Setup menu, playback must be stopped.**

The default setting is underlined.

General operation

- 1 Press **SYSTEM MENU**
 -  icon will be highlighted in the menu bar on the TV screen.
- 2 Press **▼** to activate the System Setup menu.
- 3 Use **◀ / ▶ ▲ / ▼** keys to toggle through the functions and select your preferred option.
- 4 Press **OK** to confirm a highlighted selection.
- 5 Press **OK** or **◀ / ▶ / ▲ / ▼** to quit menu to super menu. To exit the System Setup menu, press **SYSTEM MENU** or **OK**.

Setting the picture



- TV Shape

Select the aspect ratio of the TV to be connected.

4:3 PS (Pan and Scan mode)

- If you have a conventional TV set and your DVD is not formatted for widescreen viewing, use this setting. A wide picture is displayed on the whole TV screen with a portion automatically cut off.

4:3 LB (Letterbox mode)

- If you have a conventional TV set and your DVD is formatted for widescreen viewing, use this setting. A wide picture with bands displayed on the upper and lower portions of the TV screen.

16:9 (Wide screen mode)

- If you have a widescreen TV set, use this setting (you must also set your widescreen TV to "full size") available on a disc; then the disc's own preference will be used.

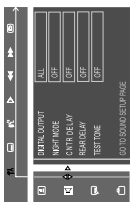
Notes:

The format you select must be available on the disc. If it is not, the setting for TV Shape will not affect the picture during playback.

PREPARATIONS AND CONNECTIONS

Preparations

Setting the sound



- Digital Output

Digital output selection enables you to specify the type of digital output suitable for your amplifier or receiver.

- Select **ALL** if you have connected the digital output (COAXIAL or OPTICAL) to a multichannel decoder receiver;
- Select **PCM 96K** if the external components is capable of processing digital signal input with sampling rates of 96 kHz.
- Select **PCM 48K** if the external components is incapable of processing 96 kHz digital signal input, then convert to standard signal with sampling rates of 48 kHz.
- Select **OFF** to deactivate the digital output (COAXIAL or OPTICAL).

- Night mode

Set night mode to on to level out the volume. For example, the disc will play at the same sound level throughout the movie. The default setting is OFF.

Night function can also be accessed via the remote control.

Off

Select this when you want to enjoy the surround sound with its full dynamic range.

On

Select this to level out the volume. High volume outputs will be softened and low volume outputs are brought upward to audible level. This feature is only available for movies with Dolby Digital mode.

- Center Delay

If the listening position is closer to the center speaker than the front speakers, you can set the center delay time to improve the surround sound effect.

Options : 5ms, 3ms, 2ms, 1ms or **OFF**.

- Rear Delay

If the listening position is closer to the rear surround speakers than the front speakers, you can set the rear delay time to improve the surround sound effect.

Options : 15ms, 12ms, 9ms, 6ms, 3ms or **OFF**.

- Test Tone (DISC mode only)

If set to ON, the system will test the speaker settings. The test signal is generated through the left, center, right, and rear (surround) speakers. The default setting is OFF.

**16:9
(Wide screen)**



**4:3 LB
(Letter Box)**



**4:3 PS
(Pan Scan)**

- TV System

Allows you to select the color system matching the connected TV set.

AUTO

- If the connected TV is multi system, select this mode. The output format will be in accordance with the video signal of the disc.

NTSC

- If the connected TV is NTSC system, select this mode. It will change the video signal of a PAL disc and output in NTSC format.

PAL

- If the connected TV is PAL system, select this mode. It will change the video signal of a NTSC disc and output in PAL format.

- Video Out

Video out. selection enables you to choose the type of video output suitable for your DVD system.

PR PB Y / SCART

- Select **PR PB Y / SCART** if you have connected the video output to your TV using SCART jack.

S-VIDEO

- Select **S-VIDEO** if you have connected the S-VIDEO output to your TV using S-VIDEO jack.

Note:

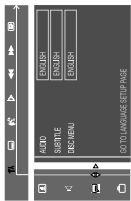
- You do not need to adjust the video output setting if you are using VIDEO jack (yellow) to connect the DVD system to your TV.

- Screen Saver

If set to ON, when you leave the system in stop or pause mode for more than five minutes, the screen saver will be activated. The default setting is ON.

Preparations

Setting the language



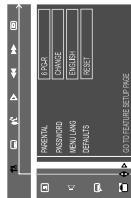
- **Audio**
- **Subtitle**
- **Disc Menu**

● This is to select the audio language, subtitle language and the language used on TV screen menus or DVD menus which will always be used for every disc to be played back. The default setting is English.

● If the language selected is not available on the disc, the original language designated by each disc will be selected.

Setting the features

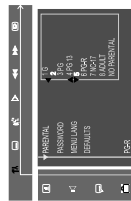
- **Parental**



Enables setting of playback limitation level. Some DVDs may have a parental level assigned to the complete disc or to certain scenes on the disc, the rating levels are from 1 to 9 and are country dependent. You can prohibit the playing of certain discs which are not suitable for your children or to have certain discs played with alternative scenes.

The parental default initial setting is 6 PG-R.

- 1 Enter the 4-digit code. If necessary, enter the code a second time.
- 2 Use **▲ / ▼** keys select a rating level.



- 3 Press **OK** to confirm.

Rating - NO PARENTAL

Parental control is not activated, it will play all discs.

Rating - 1 to 9

If the player's parental level is set below 9, only discs with a lower or equal level will play. For example, if the player is set to 5, only discs with ratings of 5, 4, 3, 2, and 1 will be played. Higher rated scenes will not be played unless an alternative which has the same rating or lower is available on the disc. For example, consider a disc that generally is suitable for most audiences, and it is rated at level 2 for the most part. However, in the middle, there are also scenes rated at 5 (not suitable for children).

NO PARENTAL – It will play all discs.

8 ADULT – Mature material; should be viewed only by adults due to graphic sexual material, violence, or language.

7 NC-17 – No children under age 17; not recommended viewing for children under age 17.

6 PG-R – Parental Guidance - Restricted; recommended that parents restrict children under 17 from viewing or allow to view only when supervised by a parent or adult guardian.

4 PG13 – Material is unsuitable for children under age 13.

3 PG – Parental Guidance suggested.

1 G – General Audience; recommended as acceptable for viewers of all ages.

To play a higher rated disc or scene than the level set

Enter the 4-digit code before resetting the rating level to a higher number (go to "Password").

If you forget the 4-digit code

- 1 Press **■** four times when forgotten the password and the system will change back to the default password.
- 2 Go to "Password" and enter your new code.

Notes:

- Some DVDs are not encoded with a rating though the movie rating is printed on the disc jacket. The rating level feature does not work for such discs.

- Password

To set a new password for the parental control or to change the password. The password supplied as default is 1234.

- Menu Language

Select the language for on screen display.

- Default

If RESET is selected, all the items in the setup menu will be reset to default setting except Parental Setting.

General Information

Care and safety information

Avoid high temperatures, moisture, water and dust.

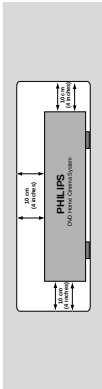
- Do not expose the system, batteries or discs to humidity, rain, sand or excessive heat (caused by heating equipment or direct sunlight). Always keep the disc tray closed to avoid dust on the lens.

Avoid condensation problem

- The lens may cloud over when the player is suddenly moved from cold to warm surroundings; making it impossible to play a disc. Leave the player in the warm environment until the moisture evaporates.

Do not block the vents

- Do not operate the DVD system in an enclosed cabinet, allow about 10 cm (4 inches) of free space all around the player for adequate ventilation.



Care of disc

- To clean a CD, wipe it in a straight line from the center towards the edge using a soft, lint-free cloth. A cleaning agent may damage the disc.
- Write only on the printed side of a CDR(W) and only with a soft felt-tipped pen.
- Handle the disc by its edge, do not touch the surface.



Care of cabinet

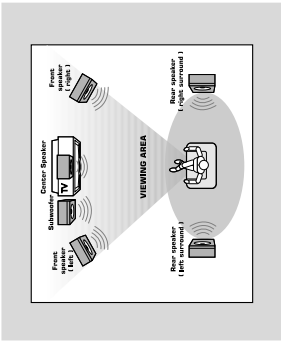
- Use a soft cloth slightly moistened with a mild detergent solution. Do not use a solution containing alcohol, spirits, ammonia or abrasives.

Finding a suitable location

- Place the player on a flat, hard, and stable surface.

Connections

Step 1: Placing the speakers and subwoofers



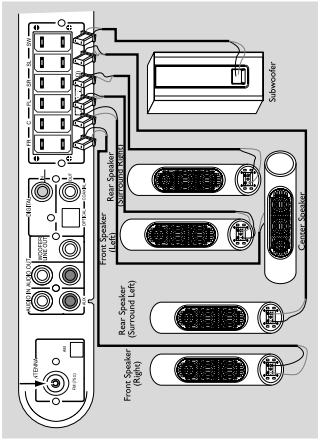
For best possible surround sound, all the speakers (except subwoofer) should be placed at the same distance from the listening position.

- Place the front left and right speakers at equal distances from the TV and at an angle of approximately 45 degrees from the listening position.
- Place the centre speaker above the TV or the DVD system so the centre channel's sound is localized.
- Place the surround speakers at normal listening ear level facing each other.
- Place the subwoofer on the floor near the TV.

Notes:

- To avoid magnetic interference, do not position the front speakers too close to your TV.
- Allow adequate ventilation around the DVD system.

Step 2: Connecting speakers and subwoofer



Connect the supplied speaker system using the supplied speaker cables by matching the colours of the jacks and speaker plugs. Fully insert the plugs of speaker wire into the jacks on the DVD system.

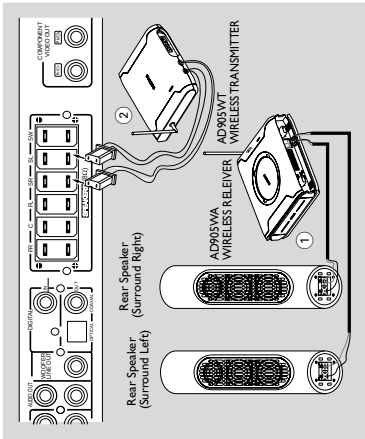
Speakers / Subwoofer	+	-
Front Left (L)	black	white
Front Right (R)	black	red
Center	black	green
Surround (Rear) Left (L)	black	blue
Surround (Rear) Right (R)	black	grey
Subwoofer	black	purple

Notes:

- Ensure that the speaker cables are correctly connected. Improper connections may damage the system due to short-circuit.
- Do not connect more than one speaker to any one pair of +/- speaker jacks.
- Do not connect speakers with an impedance lower than the speakers supplied. Please refer to the SPECIFICATIONS section of this manual.

Connections

Step 3: Connecting AD905W Wireless System (Only for LX3750W)

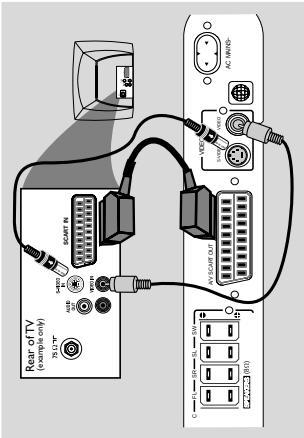


- Connect the supplied Surround Speaker system using the supplied speaker cables to the speaker jacks on the **AD905WA WIRELESS RECEIVER** by matching the colours of the jacks and speaker plugs. Extend the RECEIVER antenna.
- Connect the **AD905WT WIRELESS TRANSMITTER**'s speaker cables to the speaker jacks on the DVD system. Extend the TRANSMITTER antenna.

Notes

- Adjust the position of the antennas for optimal reception.
- Position the antennas as far as possible from your TV/VCR or other radiation sources to prevent unwanted interference.
- To prevent unwanted noise, do not place the AD905W wireless system too close to the DVD system, AC power adapter, TV or other radiation sources.

Step 4: Connecting TV



- IMPORTANT!**
- You only need to make one video connection from the following options, depending on the capabilities of your TV system.
 - Connect the DVD system directly to the TV.
 - SCART Video connection provides higher picture quality. This option must be available on your TV.
 - S-Video connection provides better picture quality. This option must be available on your TV.

Using Scart jack

Use the scart video cable (black) to connect the DVD system's **AV SCART OUT** jack to the corresponding Scart input jack on the TV.

OR

Using Composite Video jack (VIDEO)

Use the composite video cable (yellow) to connect the DVD system's **VIDEO** jack to the video input jack (or labelled as AV In, Video In, Composite or Baseband) on the TV.

OR

Using S-Video jack

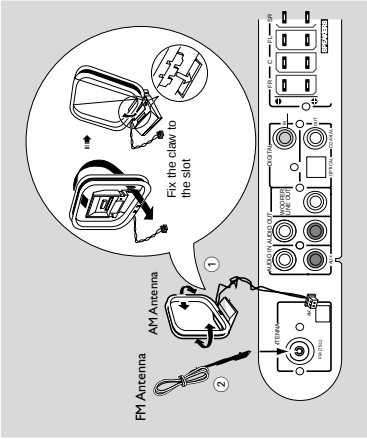
Use the S-video cable (not supplied) to connect the DVD system's **S-VIDEO** jack to the S-Video input jack (or labelled as Y/C or S-VHS) on the TV.

If your TV is not equipped with a SCART

To hear the TV channels through this DVD system, use the audio cables (white/red) to connect **AUDIO IN-AUX** jacks to the corresponding **AUDIO OUT** jacks on the TV.

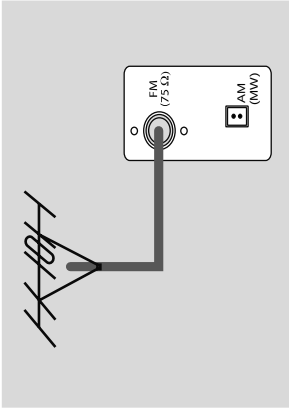
Before starting operation, press **AUX/DI** on the remote to select "RLI/-RI47" in order to activate the input source.

Step 5: Connecting FM/MW antennas



- 1 Connect the supplied **MW** loop antenna to the **MW** jack. Place the **MW** loop antenna on a shelf or attach it to a stand or wall.
- 2 Connect the supplied **FM** antenna to the **FM** jack. Extend the FM antenna and fix its ends to the wall.

For better FM stereo reception, connect an external FM antenna (not supplied).

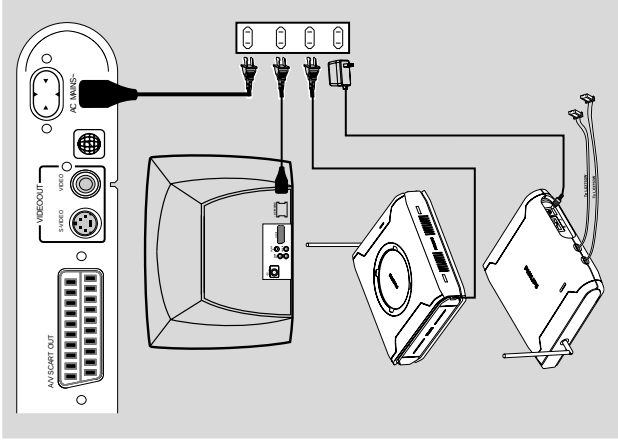


Notes:

- Adjust the position of the antennas for optimal reception.
- Position the antennas as far as possible from your TV/VCR or other radiation sources to prevent unwanted interference.

Step 6: Connecting the power cord

After everything is connected properly, plug in the **AC power cord to the power outlet**. Never make or change any connections with the power switched on.



IMPORTANT!

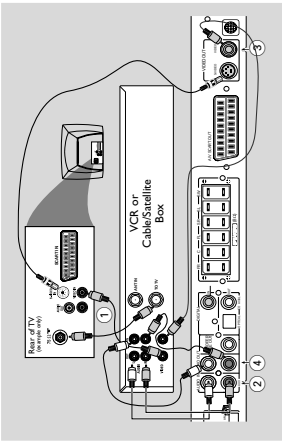
The type plate is located at the bottom of the system.

This product complies with the radio interference requirements of the European Community.

The apparatus shall not be exposed to dripping or splashing and that no objects filled with liquid such as vases shall be placed on the apparatus.

To avoid overheating of the system, a safety circuit has been built in. Therefore, your system may switch to Standby mode automatically under extreme conditions. If this happens, let the system cool down before reusing it.

Step 7: Connecting a VCR or Cable /Satellite Box



Viewing and listening to the playback

- 1 Connect the VCR or Cable/Satellite Box to the TV as shown.
- 2 Connect the DVD system's **AUDIO IN-AUX** jacks to the **AUDIO OUT** jacks on the VCR or cable / satellite box.

Before starting operation, press **AUX/DI** on the remote to select "RLI/-RI47" in order to activate the input source.

Recording DVDs

Some DVDs are copy-protected. You cannot record or dub protected discs using a VCR.

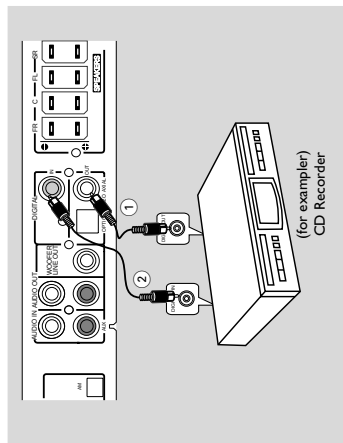
- 3 Connect the DVD system's **VIDEO** jack to the **VIDEO IN** jack on the VCR.

- 4 Connect the DVD system's **AUDIO OUT** jacks to the **AUDIO IN** jacks on the VCR. This will allow you to make analogue stereo (two channel, right and left) recordings.

To view DVD playback while recording, you must connect the DVD system to your TV using the **SCART** or the **S-VIDEO** connection.

Connections

Step 8: Connecting digital audio equipment



Listening to the playback

- 1 Connect the DVD system's **DIGITAL IN** jack to the DIGITAL OUT jack on a digital audio device.

Before starting operation, press **AUX/DI** on the remote to select "FLUKE-311" in order to activate the input source.

Recording (digital)

- 2 Connect the DVD system's **DIGITAL OUT** (**COAXIAL or OPTICAL**) jack to the DIGITAL IN jack on a digital recording device (DTS-Digital Theatre System compatible, with a Dolby Digital decoder for example).

Before starting operation, set the DIGITAL OUTPUT according to the audio connection. (See page 19 "Setting the Sound - Digital Output").

Notes:

- Always refer to the owner's manual of the other equipment for complete connection and use details.

Troubleshooting

WARNING!

Under no circumstances should you try to repair the system yourself, as this will invalidate the warranty. Do not open the system as there is a risk of electric shock.

If a fault occurs, first check the points listed below before taking the system for repair. If you are unable to solve a problem by following these hints, consult your dealer or service center.

Problem	Solution
No power. No picture.	– Check if the AC power cord is properly connected. – Select the appropriate video input mode on the TV. – Check if the TV is switched on. – Check the video connection. – Check the system is securely connected.
Distorted or poor picture.	– Sometimes a small amount of picture distortion may appear. This is not a malfunction. – Clean the disc. – Connect the system to TV's S-video input.
The aspect ratio of the screen cannot be changed even though you have set the TV shape.	– The aspect ratio is fixed on the DVD disc. – Depending on the TV, it may not allow to change the aspect ratio.
No sound or distorted sound.	– Adjust the volume. – Check that the speakers are connected correctly. – Replace the speaker cables. – Check the speaker settings. – The system is in pause, slow motion or fast forward/reverse mode, press PLAY to resume normal play mode.
No sound is heard from the center or rear speakers.	– Use the CENTER + / - or REAR + / - to adjust the volume level. – Check that the center or rear surround speakers is connected correctly. – Use surround mode.
The DVD player does not start playback.	– Insert a readable disc. – Check the disc type, color system and region code. – Clean the disc. – Place the disc with the playback side down. – Press SYSTEM MENU to turn off the setup menu screen. – Cancel the parental control rating function or change the rating level. – Moisture has condensed inside the system. Remove the disc and leave the system turned on for about an hour.
The DVD system does not respond when the buttons are pressed.	– Disconnect the power plug from the outlet, and insert again.
The language for the sound or subtitle cannot be changed when playing a DVD.	– Multi-language sound or subtitle is not recorded on the DVD. – Changing the language for the sound or subtitle is prohibited on the DVD.
No image is output when a function is selected.	– Make sure the component is connected correctly. – Press the correct function button for the input source.
Considerable noise in radio broadcasts.	– Tune in the correct frequency. – Connect the antenna. – Route RF (AC-3) and digital cables away from the antenna terminals and wires. – Fully extend the FM wire antenna. Position for best reception and secure to a wall. – Connect an outdoor FM antenna. – Adjust the direction and position for best reception. – Connect an additional or external AM antenna. – Turn off the equipment causing the noise or move it away from the DVD system.
The remote control does not function.	– Place the antenna farther away from the equipment causing the noise. – Point the remote control at the remote sensor of the unit. – Reduce the distance to the player. – Remove any possible obstacles. – Replace the batteries with new ones. – Check that the batteries are loaded correctly.
The display is dark.	– Press DIM again.
Low hum or buzz sound.	– Place the DVD system as far away as possible from electric devices with interference.
Low bass response.	– Check all speakers for correct polarity.

AD905W WIRELESS SYSTEM INFORMATION

Introduction and General Information

AD905W Wireless System (Only for LX3750W)

The **AD905W** accessory gives you the option for wireless speaker connection.
Please check you have all the supplied parts for your **AD905W** wireless set:

- 1 x **AD905WT WIRELESS TRANSMITTER**
- 1 x **AD905WA WIRELESS RECEIVER**
- 1 x 14V adapter
- 1 x table stand

1 Remove the PHILIPS cover from the **AD905WA WIRELESS RECEIVER** as shown in **Fig. (1)**, to access the connection terminal. Connect your rear speaker terminals with the corresponding color terminals on the **AD905WA WIRELESS RECEIVER**.

2 Insert the table stand into the brackets as shown in **Fig. (2)**.

3 Connect the **AD905WA WIRELESS RECEIVER** power cord to your power supply.

4 Check / adjust the **AD905WA WIRELESS RECEIVER OFF-ON** switch to the **ON** position (see **Fig. (1)**).
→ The **AD905WA WIRELESS RECEIVER** power indicator lights up green.

5 Connect the 14V power adapter to the **AD905WT WIRELESS TRANSMITTER** and power supply as shown in **Fig. (3)**.

6 Make sure you position both the **AD905WT WIRELESS TRANSMITTER** and **AD905WA WIRELESS RECEIVER** at least 2 meters apart.

7 Connect and carefully match the **AD905WT WIRELESS TRANSMITTER** inputs to the corresponding surround speaker jacks on your **LX3750W** DVD system.
→ The **AD905WT WIRELESS TRANSMITTER** power indicator lights up red.

8 Check and adjust the 4-channel toggle switch on the **AD905WT WIRELESS TRANSMITTER** and **AD905WA WIRELESS RECEIVER (CHANNEL SELECTOR switch)**, so that both units are using the same channel.

9 On your **LX3750W** DVD system, play an audio source and activate the surround sound mode option. Adjust the volume to reproduce surround sound in the rear speakers.

10 Extend the antenna vertically on both the **AD905WT WIRELESS TRANSMITTER** and **AD905WA WIRELESS RECEIVER** to improve reception. Check the antennas are safely positioned without obstruction.

To ensure quality sound production and transmission

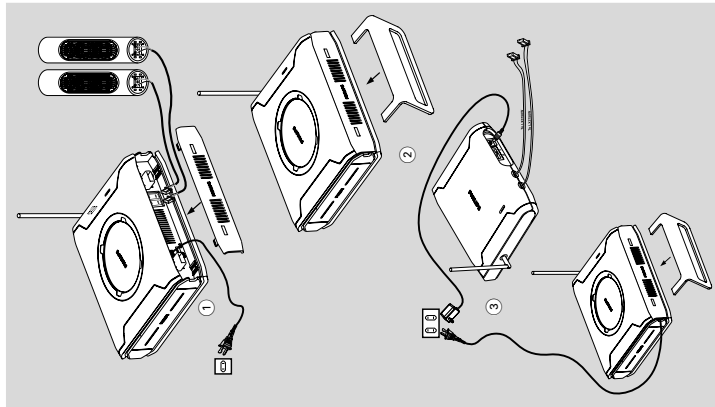
- Place both the **AD905WT WIRELESS TRANSMITTER** and **AD905WA WIRELESS RECEIVER** off the ground (recommended minimum height of 30cm).

- Avoid placing the **AD905WT WIRELESS TRANSMITTER** too close to your DVD receiver, AC power adapter, TV or other electrical equipment as it may cause electrical interference.

- In case of sound distortion, please select another channel for both the **AD905WA WIRELESS RECEIVER** and **AD905WT WIRELESS TRANSMITTER**. The distortion could be the result of interference caused by other equipment using same frequency channel in your house or neighbourhood.

Notes

- After you switch off your DVD system, the **AD905WT WIRELESS TRANSMITTER** automatically enters standby mode and the red power indicator eventually comes out. On receiving an incoming audio signal from your DVD system again, the **AD905WT WIRELESS TRANSMITTER** automatically powers up.
- When the **AD905WA WIRELESS RECEIVER** enters the Eco-power standby mode, the power indicator lights up red.



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, UK |
| 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 |
| 002 | MX3600D/MX3700D/MX3800/MX3550D |
| 003 | LX3700D/LX3750W |

oem derivative

08

- region code = 1 digit
 - tv system = 1 digit
 - "as/menu lang" = 1 digit
 - "AFS" = "architecture 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.

- Hence in total, reprograming will be done by way of the remote control. It should run as below :-
- a) Put the player in stop mode. No disc loaded.
 - b) Press the following key on remote control:

For LX3700D/22S (Europe)
<PLAY> <159> <221> <003> <08> PLAY

For LX3700D/21S (AU/NZ)
<PLAY> <159> <421> <003> <08> PLAY

For LX3700D/25S (UK)
<PLAY> <159> <221> <003> <08> PLAY

For LX3750W/37 (USA)
<PLAY> <159> <111> <003> <08> PLAY

- * After the Region Code is changed it is necessary to reset the system so that the new Region Code will be fully effective. All customer setting will be lost.
- * On top of the maximum number of times allowed for changing the region code is changed to 25.
- * When the counter reach 25, you will not be able to further change the code until you reset the timer by the Region Code timer reset procedure

CAUTION !

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

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 ADJUST"
 - 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	FM	87.5M	108M	100K
	AM	530K	1700K	10K
APAC	FM	87.5M	108M	50K
	AM	531K	1602K	9K
EUROPE	FM	87.5M	108M	50K
	AM	531K	1602K	9K
LATAM	FM	87.5M	108M	50K
	AM	530K	1710K	10K
AUSTRALIA / NZ	FM	87.5M	108M	50K
	AM	531K	1602K	9K

- Note :-
- (a) Please refer to the above different tuner area.

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.

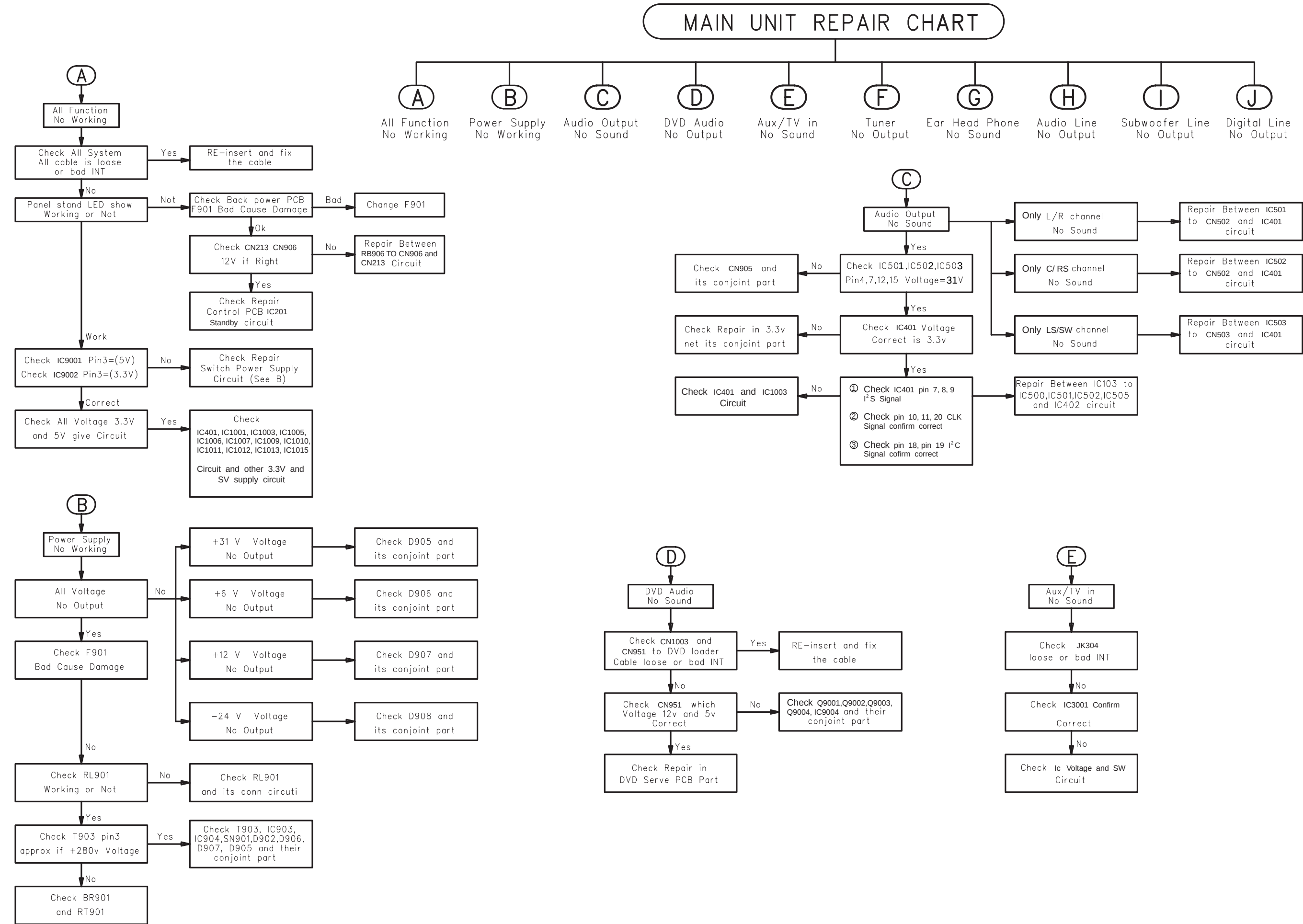
7. Checking on the Software version

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

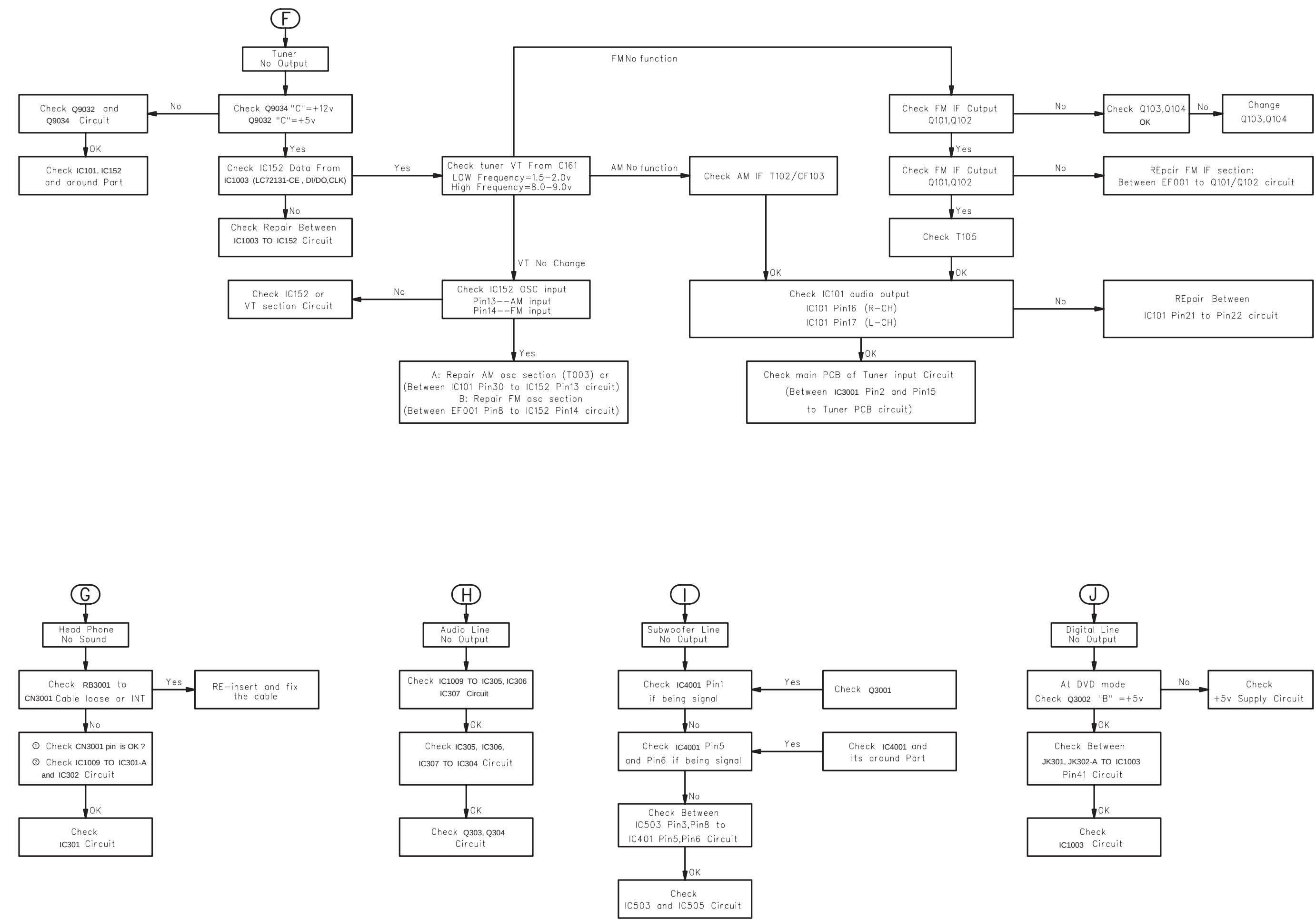
8. Upgrading new software

- a) Open the CD-door, then insert the CD-R program disc.
- b) Close the CD-door.
- c) TV will show:-
 - "disc loading"
 - "bank30.rom"
 - "writing" about 6 seconds.
 - "Done"

REPAIR INSTRUCTION



REPAIR INSTRUCTION



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 Pael.

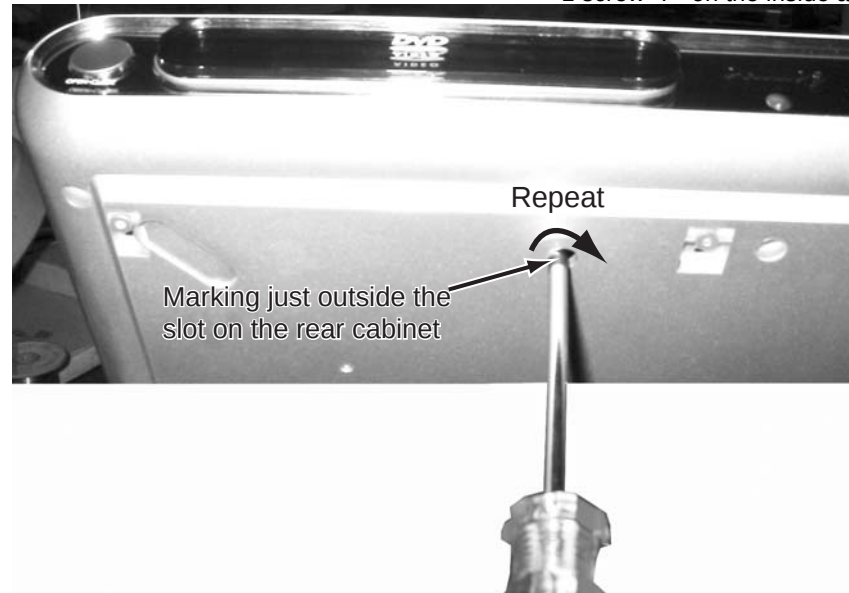


Figure 2

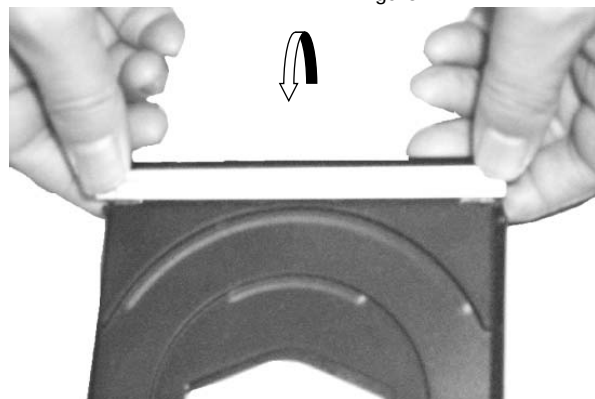


Figure 3

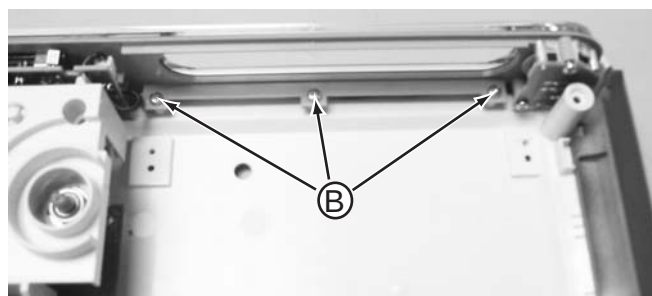


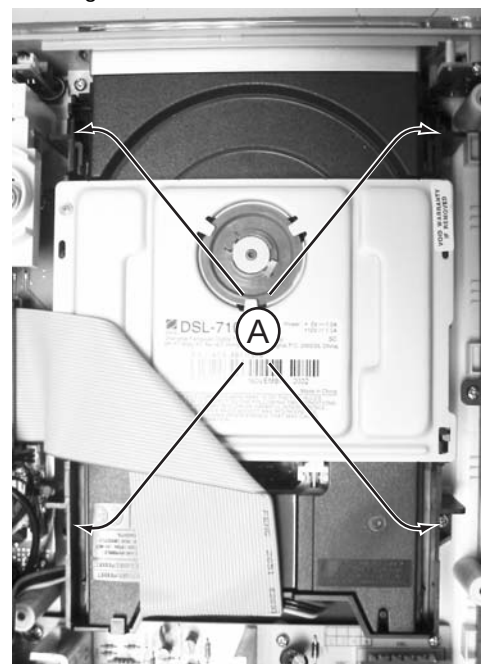
Figure 5

- 2) Return the set to its upright position and remove the Tray Cover as shown in Figure 3 and close the tray manually by pushing it back in.
- 3) Loosen 10 screws and remove the Top Cover by lifting the rear portion upwards before sliding it out towards the rear.
 - 10 screws on the bottom.
- 4) Loosen 3 screws & lift up the top edge of Front Panel assembly to free some catches before sliding it out towards the front.
 - 3 screws on the inside.
 - 1 screw "F" on the inside as indicated in Figure 5.

Figure 1

Dismantling of the Servo Board

- 1) Loosen 4 screws "A" to remove the DVD module as shown in figure 5.



Note: Do not lost the limited parts of the Servo board

Figure 4

Dismantling of the Key Board

- 1) Loosen 2 screws "C" at the top of the button as shown in figure 6.
- 2) Loosen 6 screws "D" at the top of the key board 1 as shown in figure 7.
- 3) Loosen 7 screws "E" on the button bottom of the key board 2 as shown in figure 8.

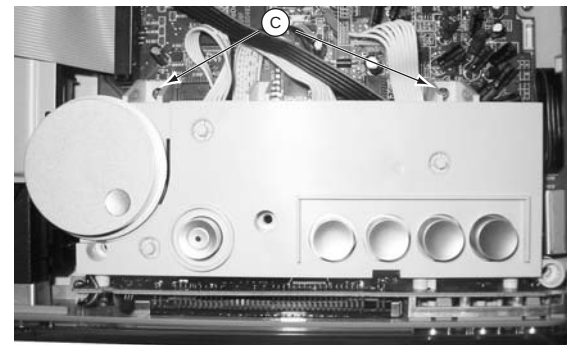


Figure 6

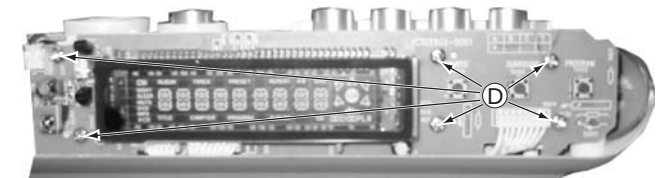


Figure 7

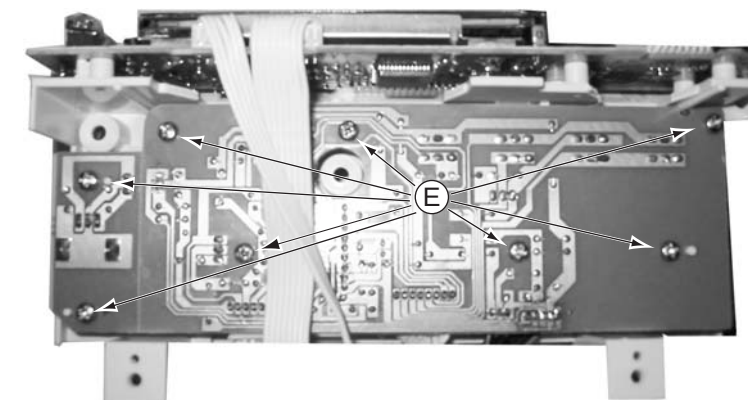


Figure 8

Dismantling of the Main Board

- 1) Loosen 6 screws "G" on the top of main board as shown in figure 9.
- 2) Loosen 4 screws "H" at the main bottom as shown in figure 10.
- 3) Loosen 8 screws "I" at the back panel as shown in figure 12.
(SCART : Loosen 8 screws)
(RGB : Loosen 9 screws)

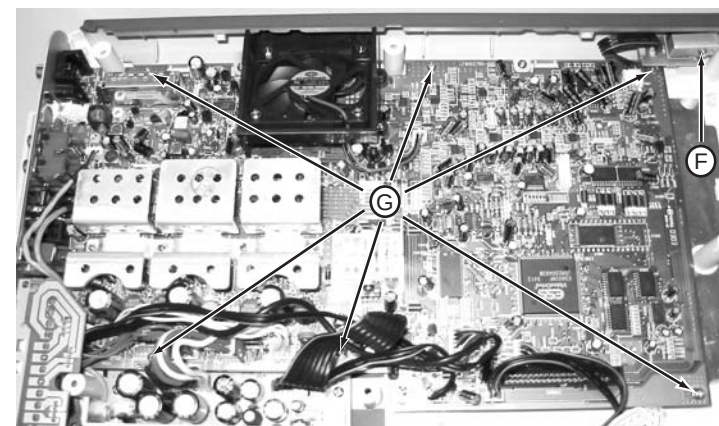


Figure 9

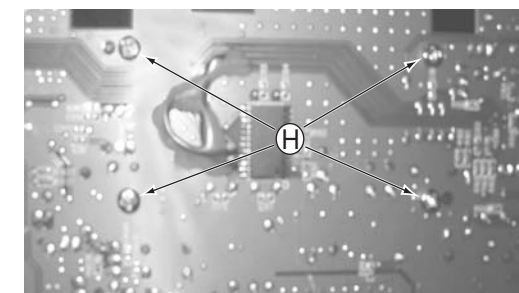
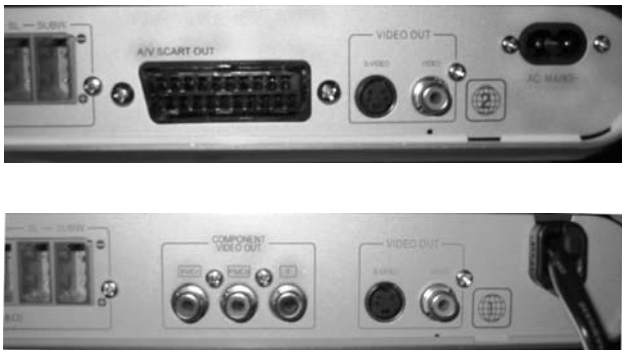


Figure 10



Scart Jack use for LX3700/22S ,/25S
RGB Jack use for LX3700/21S ,LX3750/37S

Figure 11



Figure 12

Dismantling of the Power Board

- 1) Loosen 6 screws "H" at the top of the Power Board as shown in figure 13

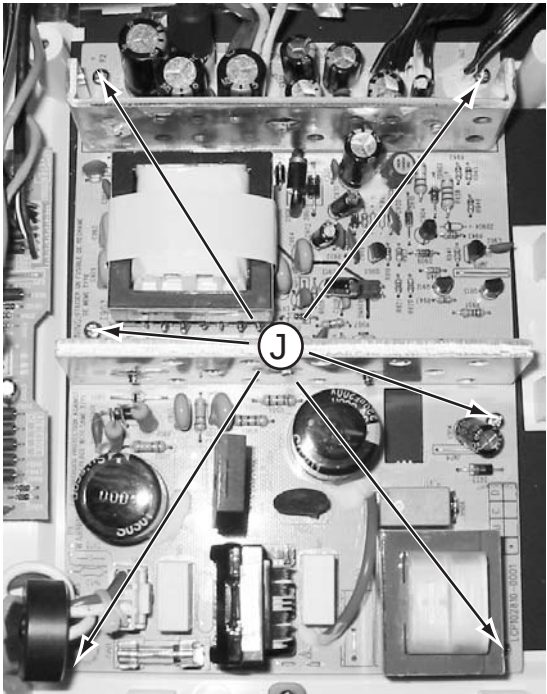
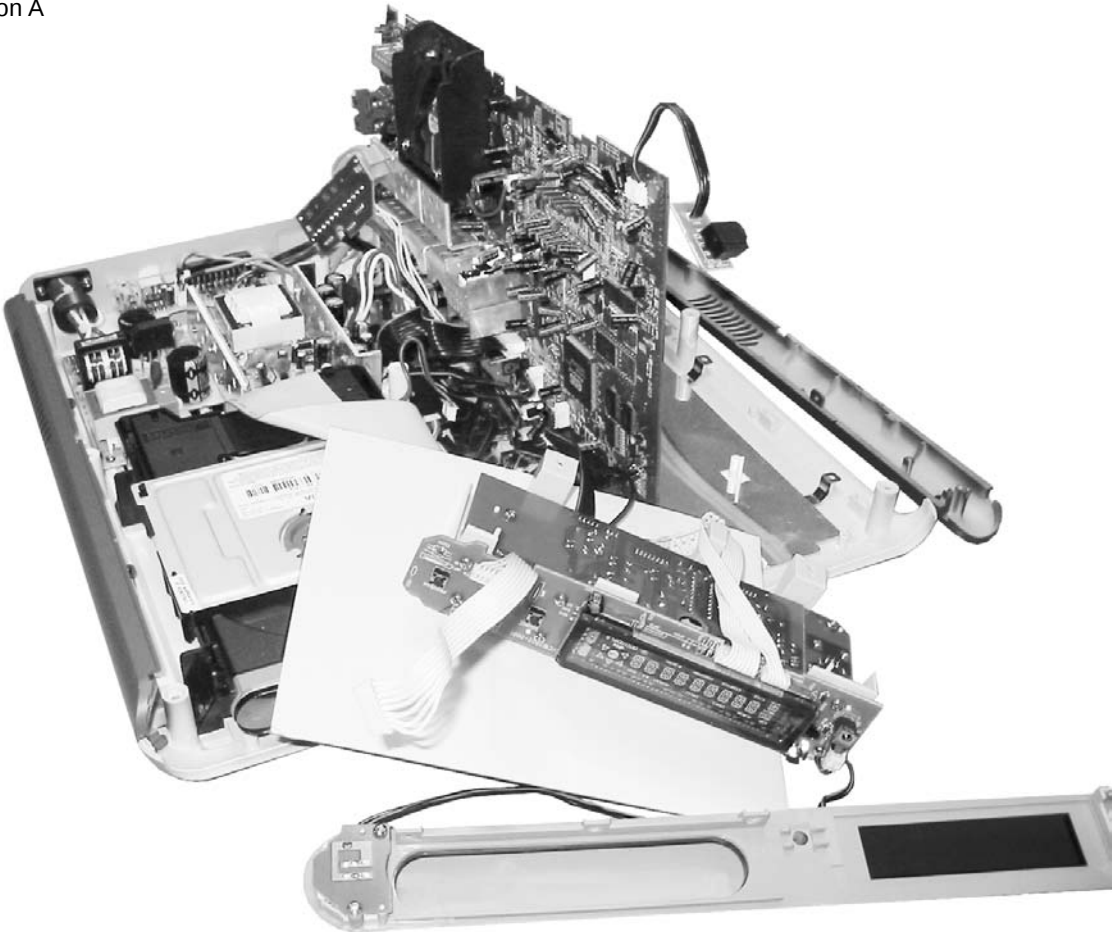


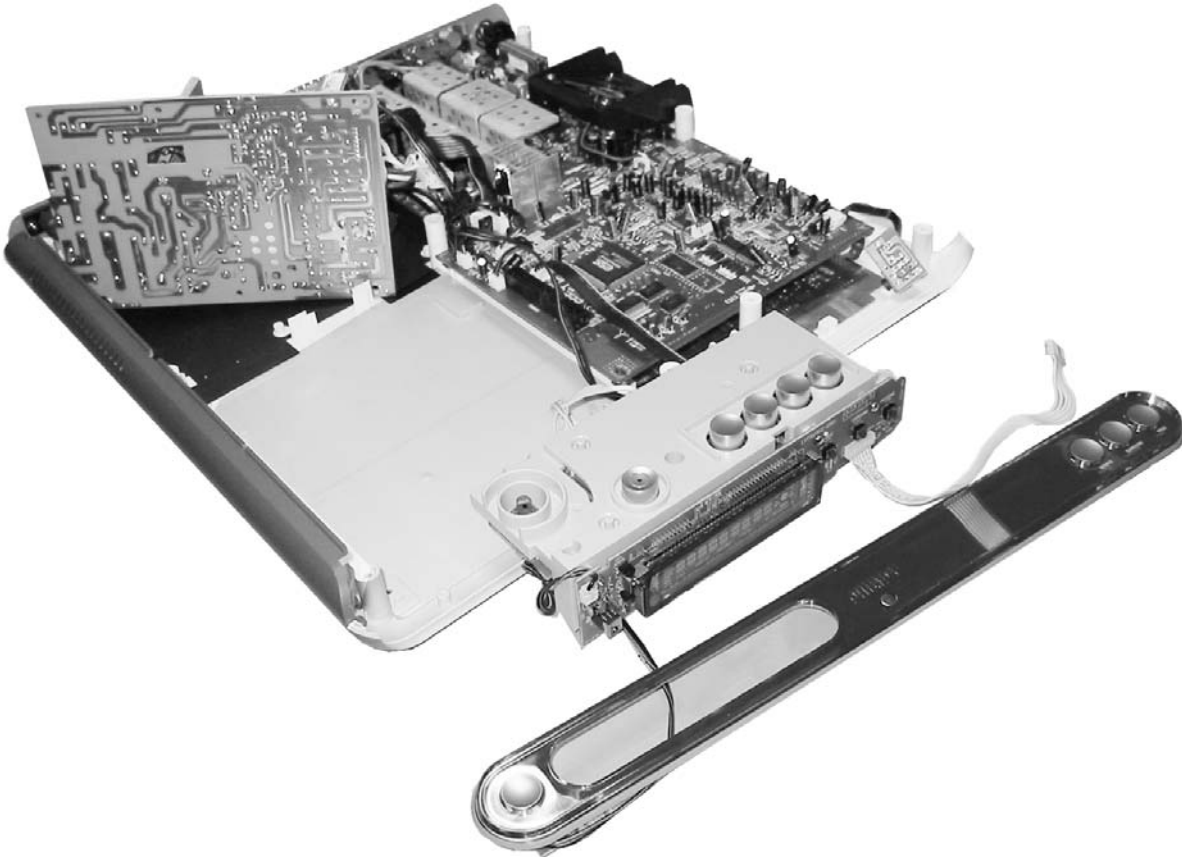
Figure 13

SERVICE POSITIONS

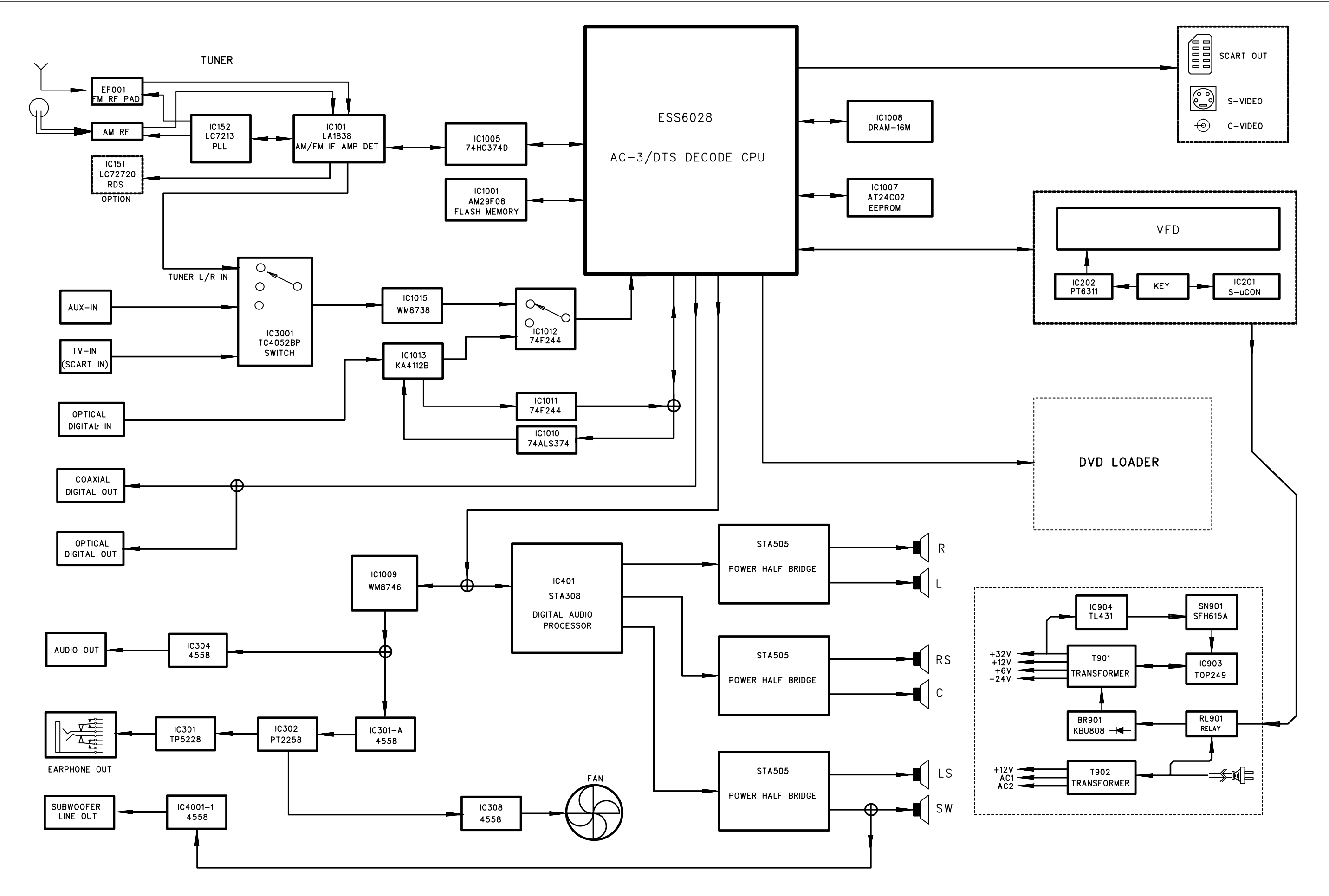
Service position A



Service position B



BLOCK DIAGRAM



WIRING DIAGRAM
MODEL :LX3700/LX3750 SERIES

120V/230V SW

~AC IN

POWER PCB

MAIN PCB

SCART PCB

YUV PCB

SPK PCB

KEY PCB-1

KEY PCB-2

PHONE JACK PCB

DVD LOADER

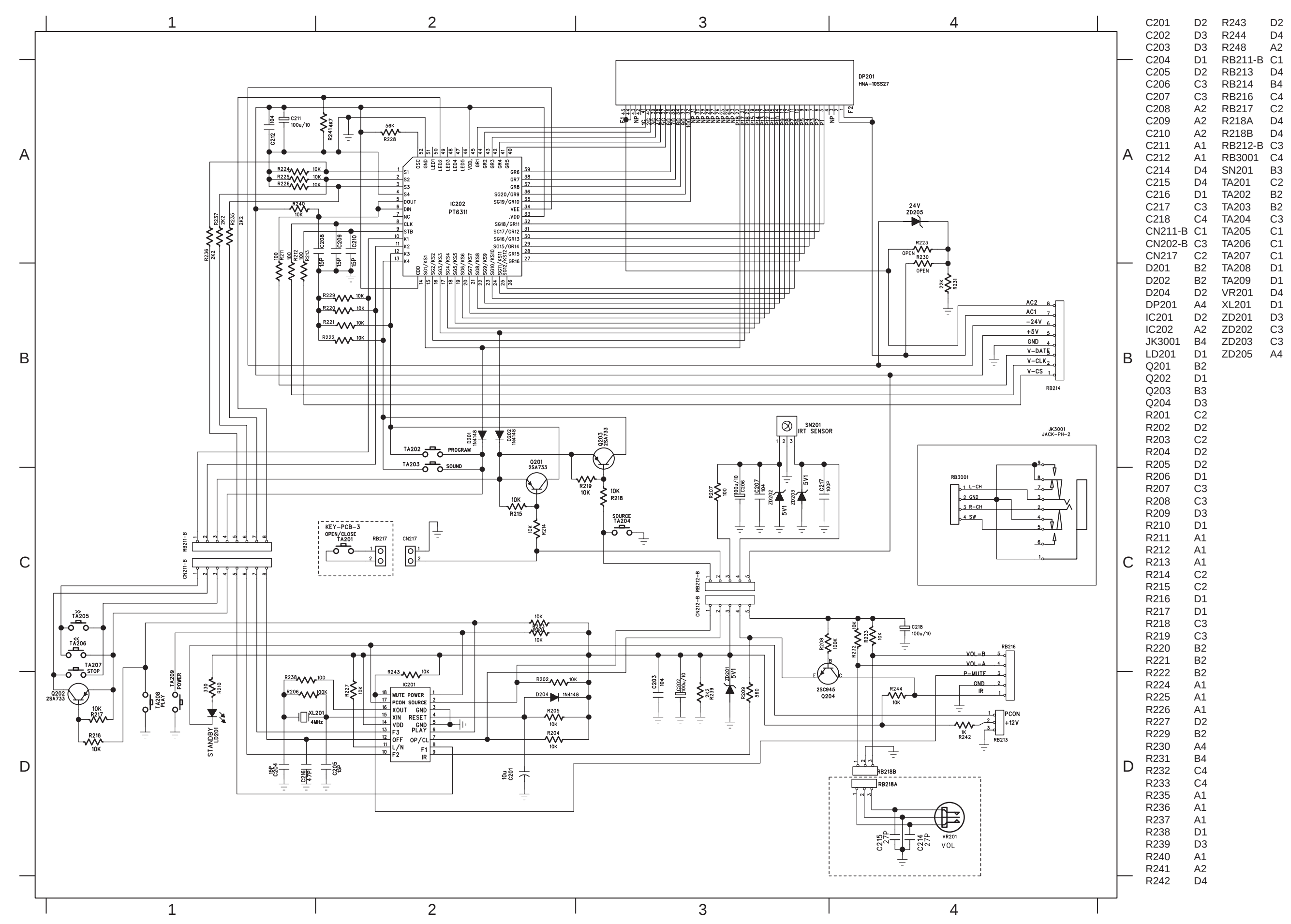
120V/230V POWER CHANGE SW ONLY FOR : LX3700D/21S
LX3700D/21R
LX3750W/22S

*** SCART PCB ONLY FOR : LX3700D/22S
LX3700D/25S
LX3750W/25S
LX3750W/22S

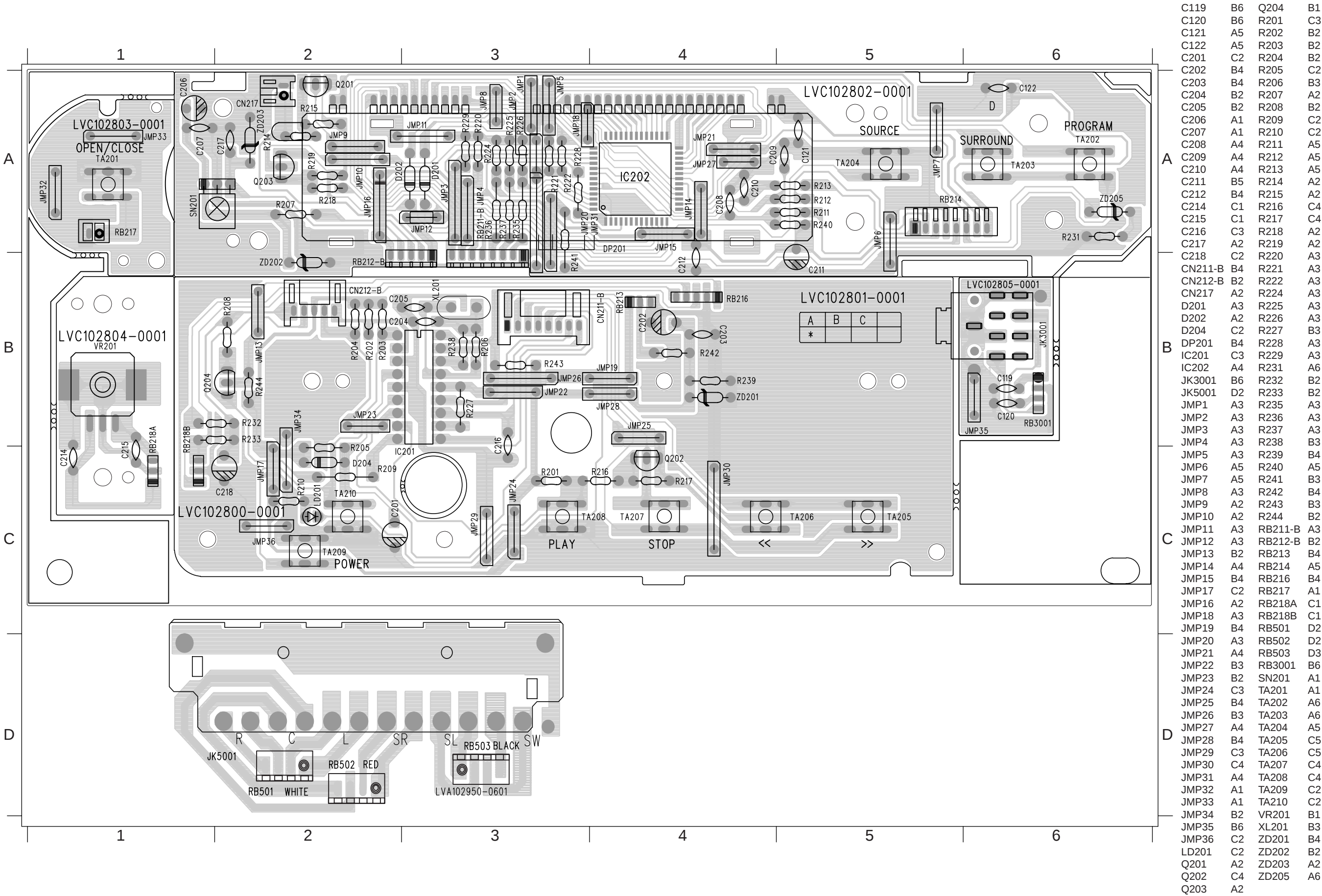
*** YUV PCB ONLY FOR : LX3700D/21S
LX3700D/21R
LX3700D/33S
LX3750W/37

Q204 (2SC945)				
PIN NO	b	c	e	
Voltage	4.6	4.1	4.1	

CIRCUIT DIAGRAM



PCB LAYOUT TOP VIEW



ELECTRICAL PARTSLIST - CONTROL BOARD**- MISCELLANEOUS -**

CN211B	9965 000 18027	CONNECTOR 8P
CN212B	9965 000 18028	CONNECTOR 5P
CN213	9965 000 18029	CONNECTOR 3P
CN217	9965 000 18030	CONNECTOR 2P
DP201	9965 000 18031	VFD 100X25MM
JK3001	9965 000 18032	D3.5 9P NICKEL
LD201	9965 000 17400	LED
RB211B	9965 000 18033	8P 140MM 2468# 26 RAINBOW
RB212B	9965 000 18033	8P 140MM 2468# 26 RAINBOW
RB213	9965 000 18034	CON/WIRE 3P 180MM
RB214	9965 000 18035	8P 160MM 2468# 26
RB216	9965 000 18036	5P 150MM
RB217	9965 000 18037	2P 280MM
RB3001	9965 000 18038	4P 100MM
SN201	9965 000 10897	IR SENSOR RPM6938-V4
TA201	4822 276 13648	SWITCH
TA202	4822 276 13648	SWITCH
TA203	4822 276 13648	SWITCH
TA204	4822 276 13648	SWITCH
TA205	4822 276 13648	SWITCH
TA206	4822 276 13648	SWITCH
TA207	4822 276 13648	SWITCH
TA208	4822 276 13648	SWITCH
TA209	4822 276 13648	SWITCH
VR201	△ 9965 000 18039	ENCODER L15XA7

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

- COILS & FILTERS -

XL201	9965 000 17405	CRYSTAL 4.00000MHZ
-------	----------------	--------------------

- DIODES -

D201	4822 130 30621	1N4148
D202	4822 130 30621	1N4148
D204	4822 130 30621	1N4148
ZD201	4822 130 34233	BZX79-B5V1
ZD202	4822 130 34233	BZX79-B5V1
ZD203	4822 130 34233	BZX79-B5V1
ZD205	9965 000 17373	23.6-24.7V 0.5W

- IC & TRANSISTORS -

IC201	9965 000 17447	IC S-CPU EM78P156ELP
IC251	9965 000 12550	PT6311(PTC)
Q201	4822 130 63876	2SA733R
Q202	4822 130 63876	2SA733R
Q203	4822 130 63876	2SA733R
Q204	4822 130 41198	2SC945P

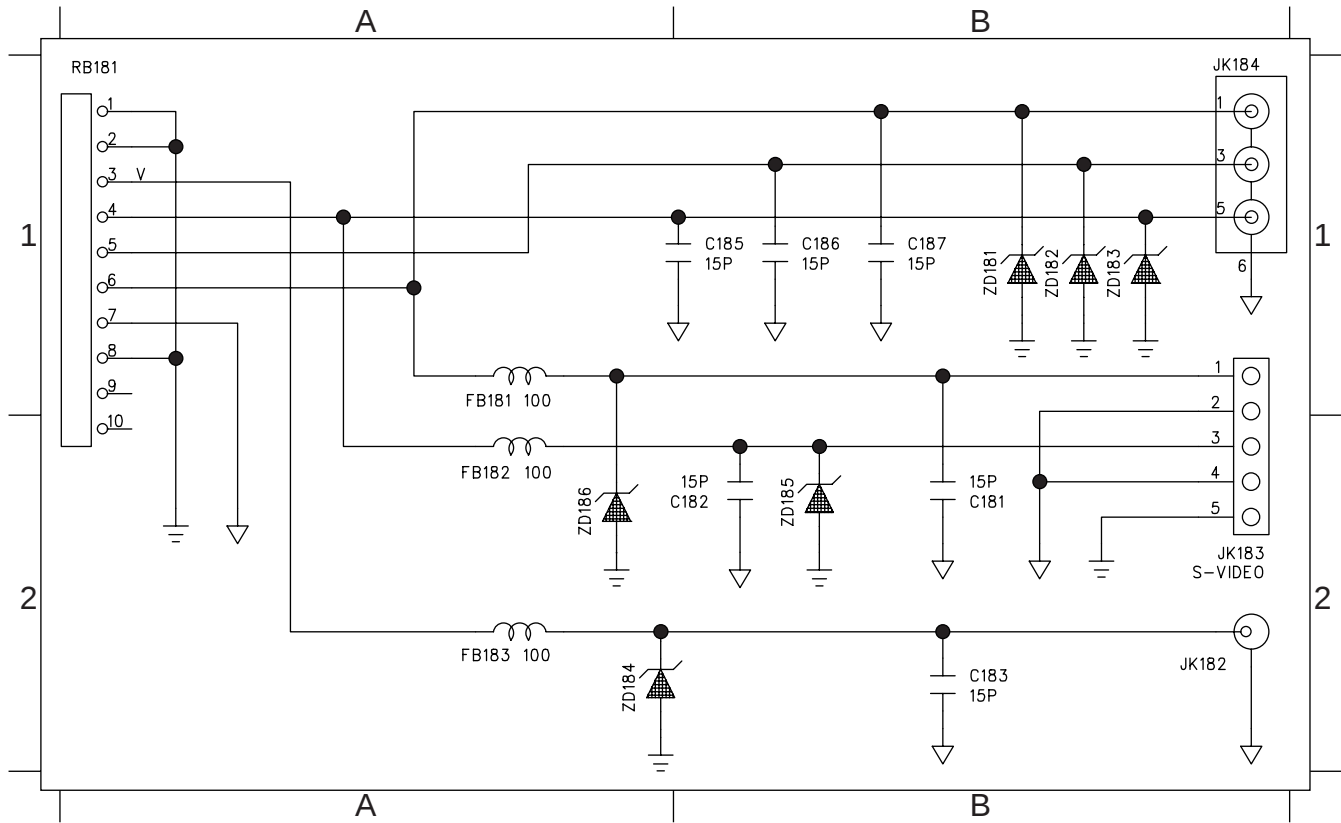
RGB & SCART BOARD

TABLE OF CONTENTS

RGB Circuit Diagram (For /21S/21R/37 only).....	6-2
RGB Board Layout (For /21S/21R/37 only)	6-2
Scart Circuit Diagram (For /22S/25S only)	6-3
Scart Board Layout (For /22S/25S only)	6-3
Electrical Parts List(RGB & SCART)	6-4

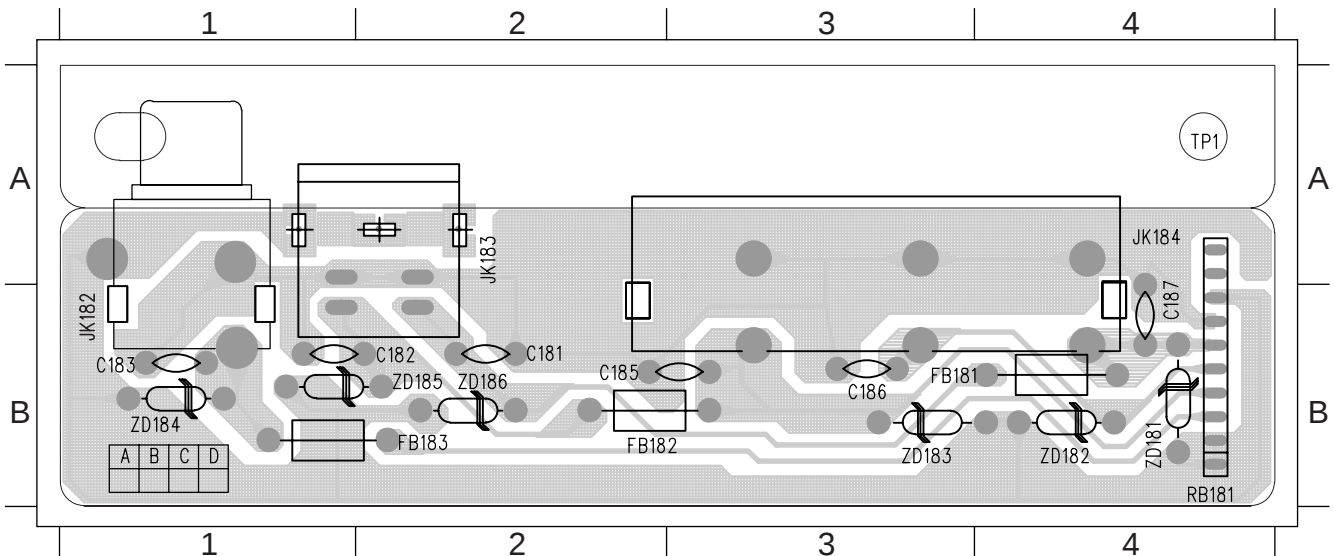
CIRCUIT DIAGRAM - RGB BOARD

C181	B2	C185	B1	FB181	A1	JK182	B2	RB181	A1	ZD183	B1	ZD186	A2
C182	B2	C186	B1	FB182	A2	JK183	B2	ZD181	B1	ZD184	A2		
C183	B2	C187	B1	FB183	A2	JK184	B1	ZD182	B1	ZD185	B2		

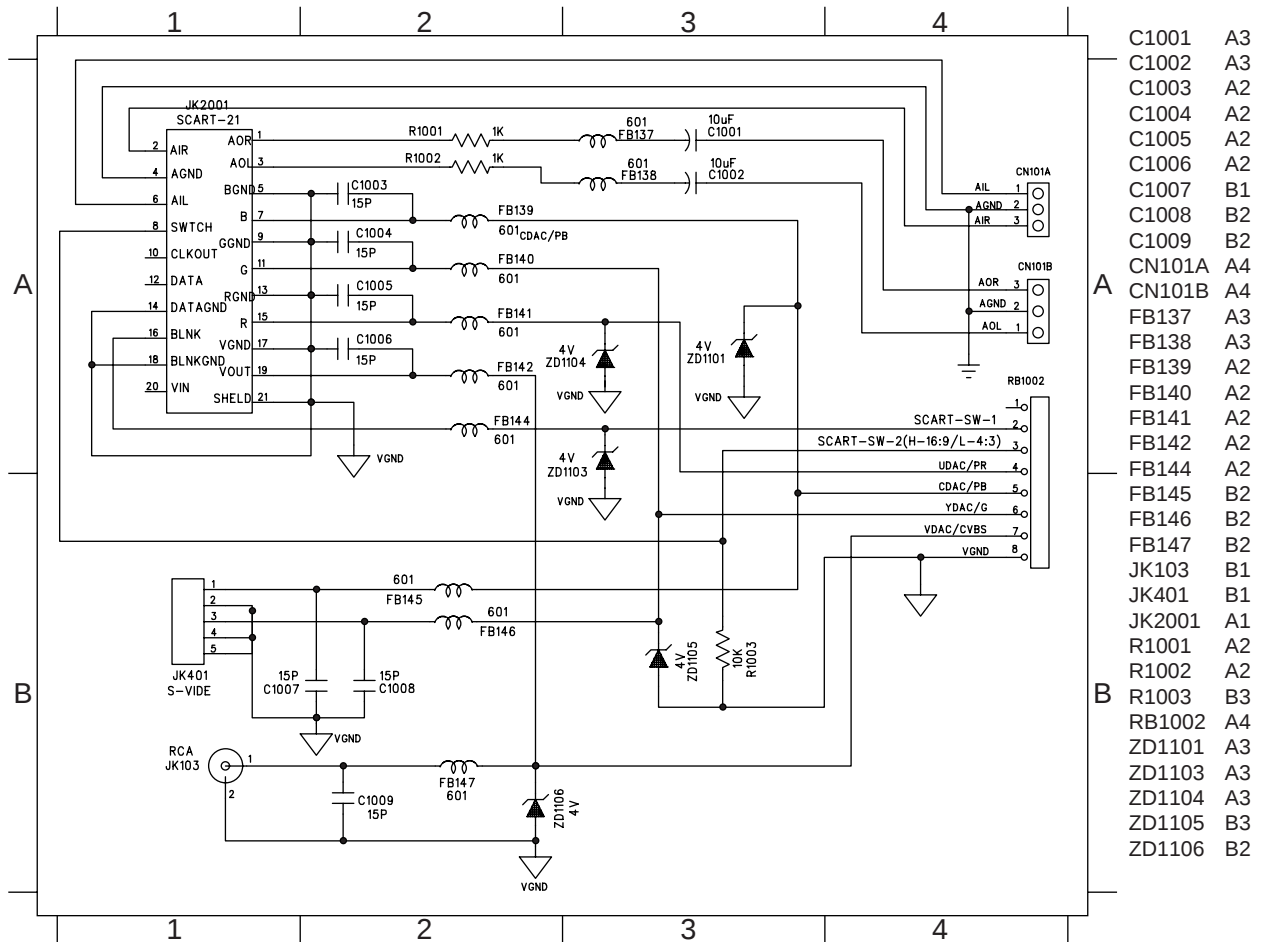


PCB LAYOUT - RGB BOARD

C181	B2	C185	B2	FB181	B3	JK182	B1	RB181	B4	ZD183	B3	ZD186	B2
C182	B2	C186	B3	FB182	B2	JK183	A2	ZD181	B4	ZD184	B1		
C183	B1	C187	B4	FB183	B2	JK184	A4	ZD182	B4	ZD185	B2		

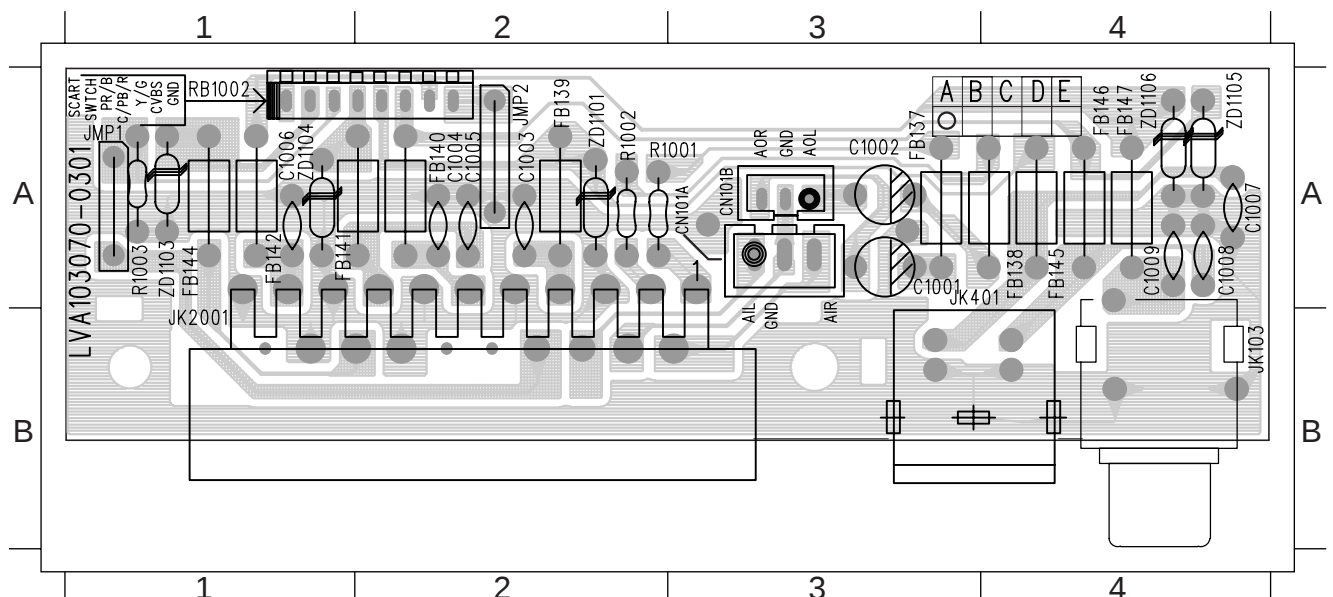


CIRCUIT DIAGRAM - SCART BOARD



PCB LAYOUT - SCART BOARD

C1001	A3	C1007	A4	FB138	A4	FB145	A4	JMP1	A1	ZD1101	A2
C1002	A3	C1008	A4	FB139	A2	FB146	A4	JMP2	A2	ZD1103	A1
C1003	A2	C1009	A4	FB140	A2	FB147	A4	R1001	A2	ZD1104	A1
C1004	A2	CN101A	A3	FB141	A1	JK103	B4	R1002	A2	ZD1105	A4
C1005	A2	CN101B	A3	FB142	A1	JK401	A4	R1003	A1	ZD1106	A4
C1006	A1	FB137	A3	FB144	A1	JK2001	B1	RB1002	A1		



ELECTRICAL PARTSLIST - RGB BOARD**- MISCELLANEOUS -**

JK182	9965 000 18044	JACK 1P W/GND
JK183	9965 000 12607	DIN JACK, S-VIDEO OUT
JK184	9965 000 12609	RCA JACK R/G/B
RB181	9965 000 18045	CON/WIRE UL2854# 30 5P

- COILS & FILTERS -

FB181	9965 000 12470	BEAD FERITE 100Ω/ at 100MHZ
FB182	9965 000 12470	BEAD FERITE 100Ω/ at 100MHZ
FB183	9965 000 12470	BEAD FERITE 100Ω/ at 100MHZ

- DIODES -

ZD181	4822 130 31554	BZX79-B4V3
ZD182	4822 130 31554	BZX79-B4V3
ZD183	4822 130 31554	BZX79-B4V3
ZD184	4822 130 31554	BZX79-B4V3
ZD185	4822 130 31554	BZX79-B4V3

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

ELECTRICAL PARTSLIST - SCART BOARD**- MISCELLANEOUS -**

CN101A	9965 000 18015	CONNECTOR 3P
CN101B	9965 000 15900	CONNECTOR 3P
FB137	9965 000 12470	BEAD FERITE 100R/ at 100MHZ
FB138	9965 000 12470	BEAD FERITE 100R/ at 100MHZ
FB139	9965 000 12470	BEAD FERITE 100R/ at 100MHZ

FB140	9965 000 12470	BEAD FERITE 100R/ at 100MHZ
FB141	9965 000 12470	BEAD FERITE 100R/ at 100MHZ
FB142	9965 000 12470	BEAD FERITE 100R/ at 100MHZ
FB144	9965 000 12470	BEAD FERITE 100R/ at 100MHZ
FB145	9965 000 12470	BEAD FERITE 100R/ at 100MHZ

FB146	9965 000 12470	BEAD FERITE 100R/ at 100MHZ
FB147	9965 000 12470	BEAD FERITE 100R/ at 100MHZ
JK103	9965 000 18044	JACK 1P W/GND
JK401	9965 000 12607	DIN JACK, S-VIDEO OUT
JK2001	9965 000 18051	21P P=3.81MM

RB1002	9965 000 18052	CABLE 8P 300MM A=2.0mm
--------	----------------	------------------------

- DIODES -

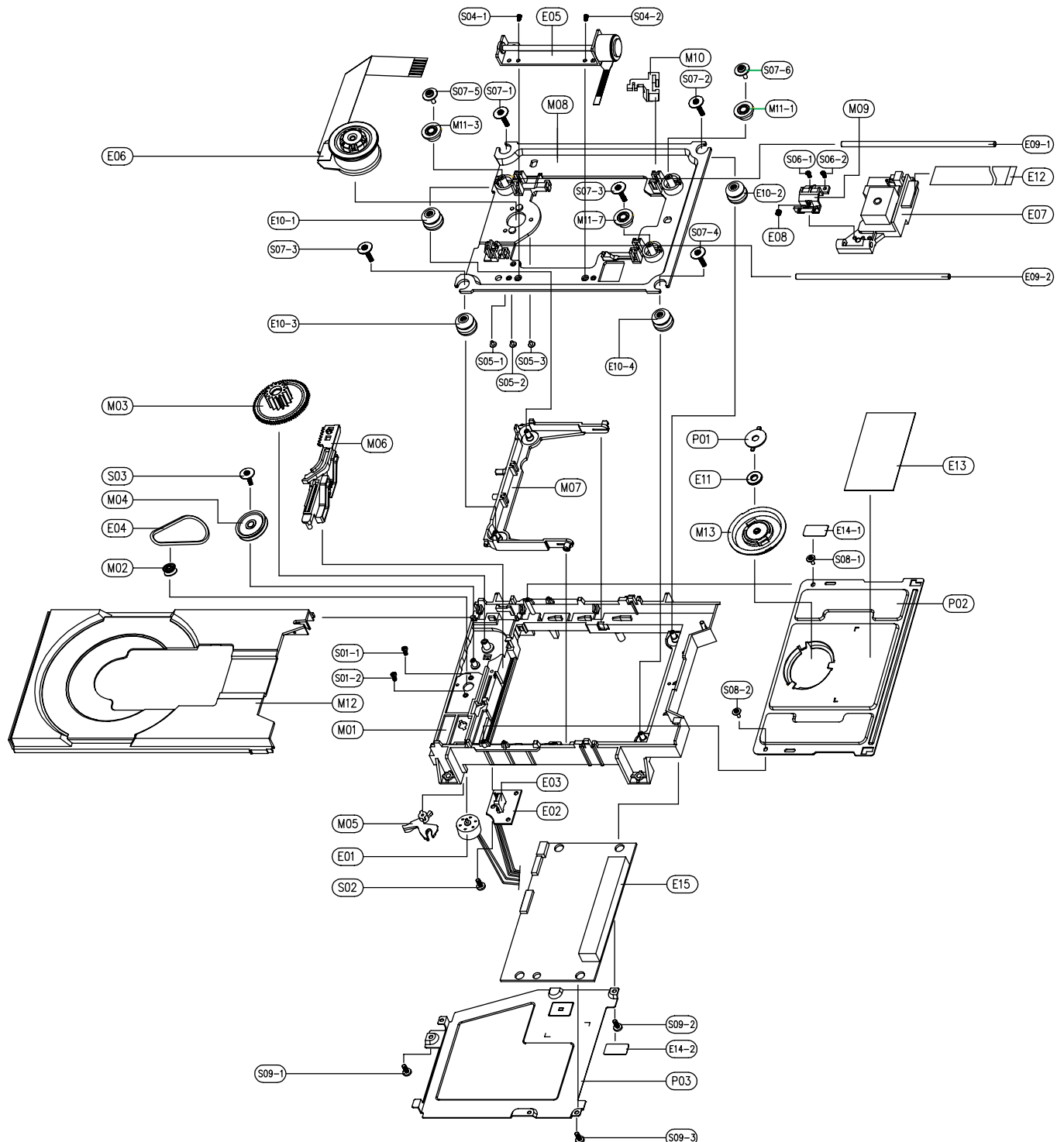
ZD1101	9965 000 12554	ZENER 3.8-4.0V 0.5W
ZD1103	9965 000 12554	ZENER 3.8-4.0V 0.5W
ZD1104	9965 000 12554	ZENER 3.8-4.0V 0.5W
ZD1105	9965 000 12554	ZENER 3.8-4.0V 0.5W
ZD1106	9965 000 12554	ZENER 3.8-4.0V 0.5W

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

DVD LOADER

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.

Explorer View - DVD Loader



MECHANICAL PARTS LIST

M01	M1010000013	MAIN BASE
M02	62300000100	PULLEY LOADING
M03	62300000200	GEAR LOADING
M04	62300000300	GEAR PULLEY
M05	62230000102	LEVER SWITCH
M06	62230000202	CAM SLIDE
M07	62230000304	LEVER LIFT PU
M08	61050000900	BASE P/U OUT
M09	62300001800	SLIDE STEP
M10	62230001800	SUPPORT PU
M11	62350000301	CAP G/S SKY
M12	62230000901	TRAY
M13	62230001700	CLAMP
P01	61050000200	PLATE CLAMP
P02	61010001501	COVER TOP
P03	61010001201	COVER BOTTOM
S01	50010000010	SCREW MC
S02	50020000005	SCREW TAP
S03	50020000010	SCREW TAP
S04	50040000007	SCREW TT
S05	50010000001	SCREW MC
S06	50040000009	SCREW TT
S07	50020000003	SCREW TAP
S08	50020000009	SCREW TAP
S09	50020000011	SCREW TAP
E01	30114000021	MOTOR GEAR
E02	30601000102	PCB BARE
E03	37012000003	SWITCH SENSTI
E04	62590000200	BELT PULLEY
E05	30114000012	MOTOR STEP
E06	30114000014	MOTOR SPINDLE
E07	35504000011	PICK UP
E08	61550000600	SPRING SLIDE
E09	61250000200	SHAFT P/U GUIDE
E10	62610000300	DAMPER
E11	35405000001	MAGNET CLAMP
E12	37590000005	FFC PU
E13	63140002100	LABEL MAIN
E14	63140000301	LABEL VOID
E15	E3000601502	PCB MAIN

MAIN BOARD

TABLE OF CONTENTS

Internal IC Diagram 8-1 to 8-9

Circuit Diagram (Top Left).....8-10

Circuit Diagram (Top Left)..... 8-11

Circuit Diagram (Bottom Left)8-12

Circuit Diagram (Bottom Right)8-13

PCB Layout(Component View)8-14

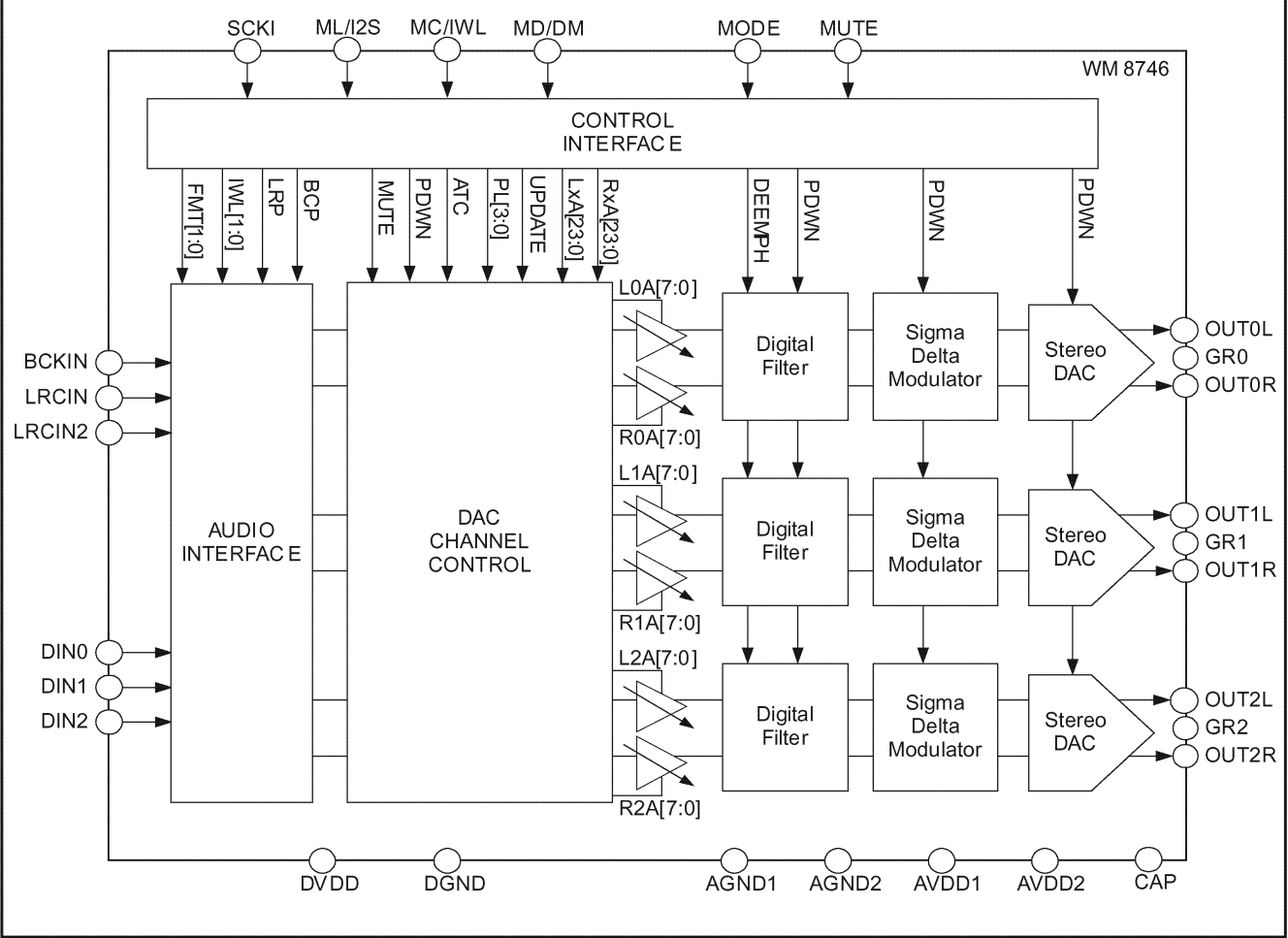
Layout Mapping(Component View)8-15

Layout Mapping(Copperside View)8-16

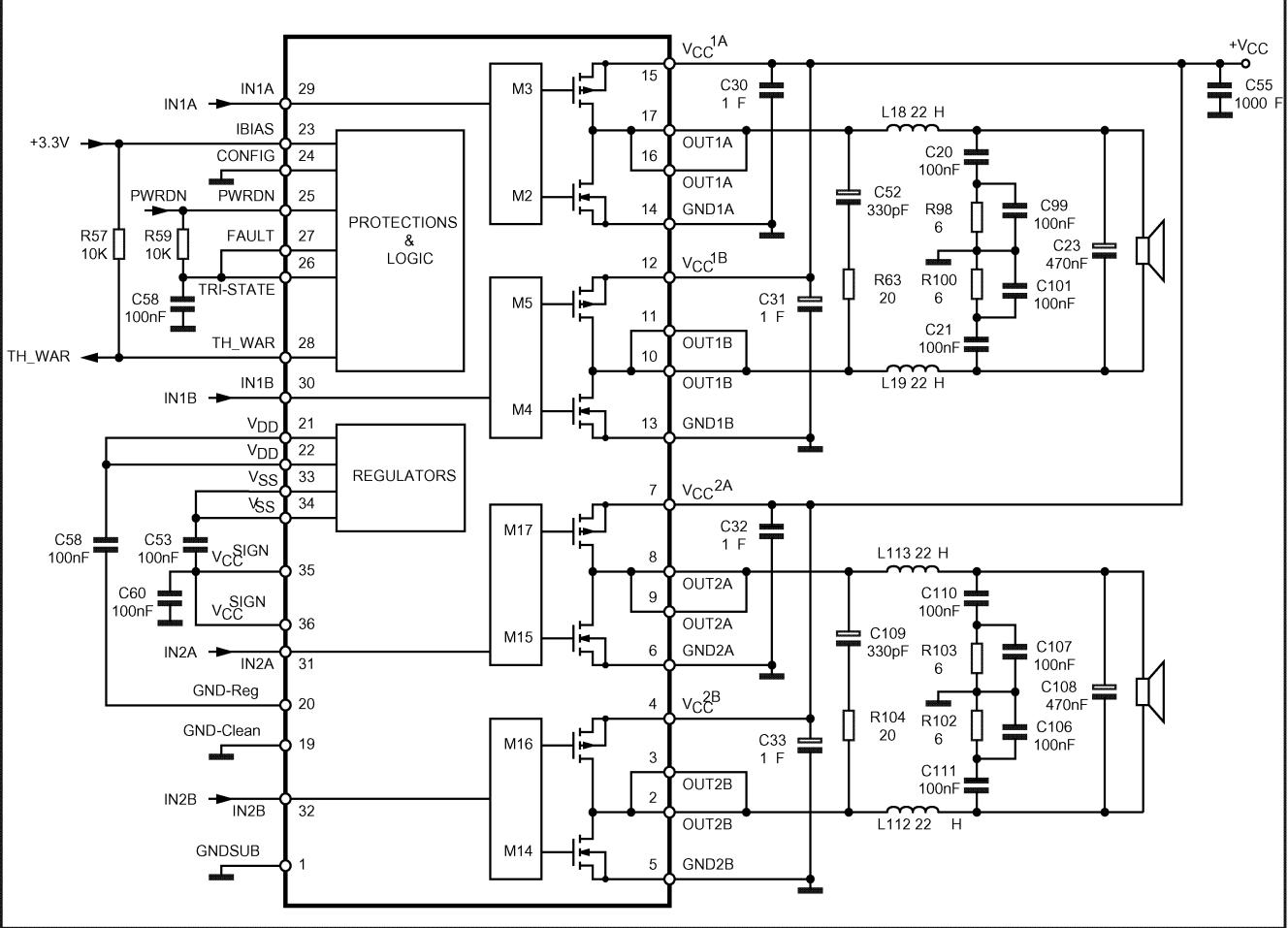
PCB Layout(Copperside View)8-17

Electrical Parts list8-18

WM8 746 INTERNAL IC DIAGRAM

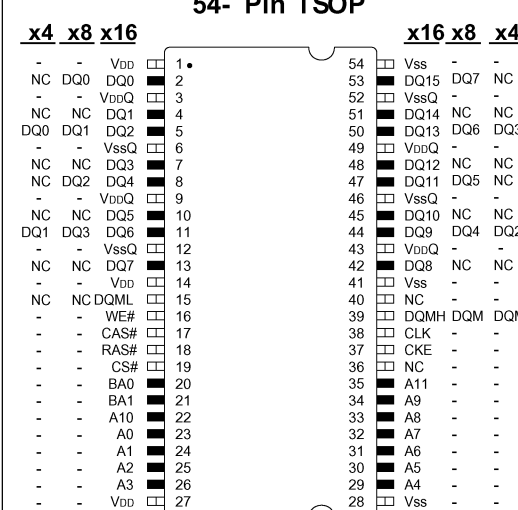


STA505 INTERNAL IC DIAGRAM



SYNCHRONOUS DRAM
4MX16 Y3VTW

PIN ASSIGNMENT (Top View)



	16 Meg x 48	Meg x 84	Meg x 16
Configuration	4 Meg x 4 x 4 banks	2 Meg x 8 x 4 banks	1 Meg x 16 x 4 banks
Refresh Count	4K	4K	4K
Row Addressing	4K(A0-A11)	4K(A0-A11)	4K(A0-A11)
Bank Addressing	4(BA0,BA1)	4(BA0,BA1)	4(BA0,BA1)
Column Addressing	1K(A0-A9)	512(A0-A8)	256(A0-A7)

The diagram illustrates the internal architecture of the memory device. It is divided into several functional blocks:

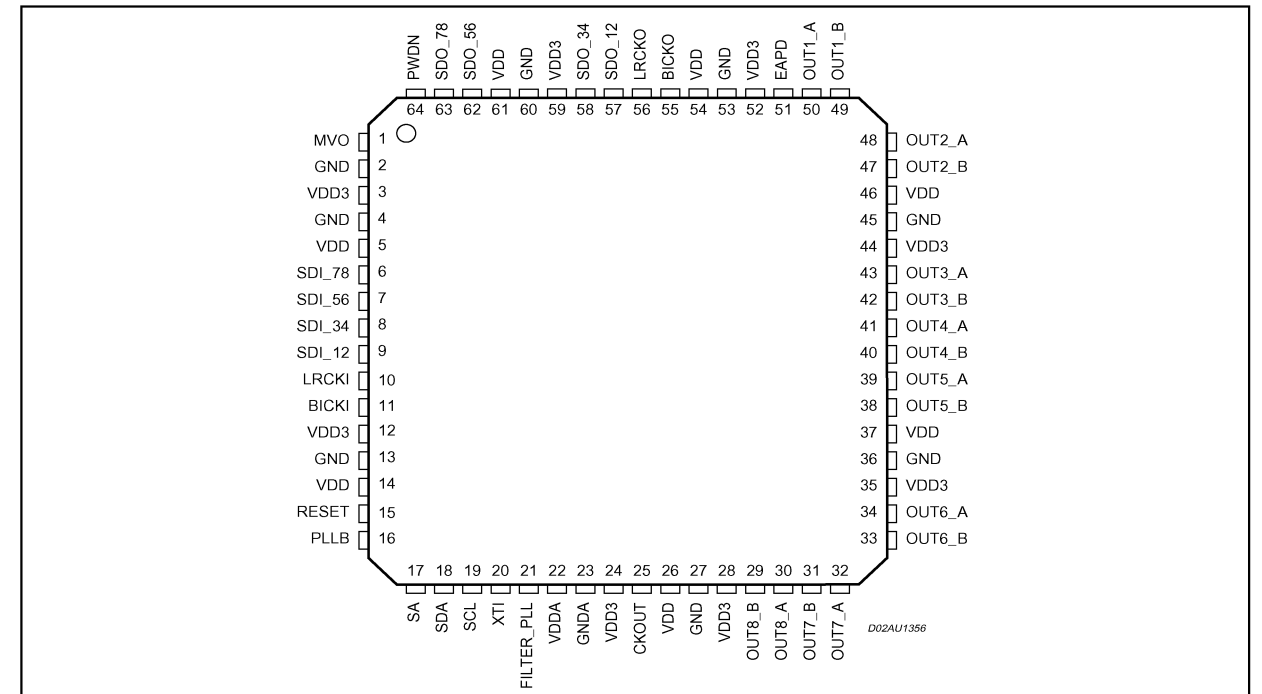
- Control and Command Interface:** Includes inputs for CKE, CLK, CS#, WE#, CAS#, and RAS#. These connect to the **COMMAND DECODE** and **CONTROL LOGIC** blocks. A **MODE REGISTER** is also present within the control logic.
- Addressing:** Inputs A0-A11, BA0, and BA1 are fed into the **ADDRESS REGISTER**. The output of this register is split: one path goes to the **BANK CONTROL LOGIC**, and another path goes to the **COLUMN-ADDRESS COUNTER/LATCH**.
- Refresh and Row Addressing:** A **REFRESH COUNTER** provides a signal to the **ROW-ADDRESS MUX**. The **ADDRESS REGISTER** also provides a 2-bit signal to this multiplexer.
- Bank Selection:** The **BANK CONTROL LOGIC** provides a 2-bit signal to the **BANK0 ROW-ADDRESS LATCH & DECODER**. This block, along with the **ROW-ADDRESS MUX**, selects one of four banks (BANK0, BANK1, BANK2, BANK3).
- Memory Array:** The selected bank's address is fed into the **BANK0 MEMORY ARRAY (4,096 x 256 x 16)**. The array outputs are connected to **SENSE AMPLIFIERS**.
- Data Path and Output:** The **SENSE AMPLIFIERS** output a 4096-bit signal to the **I/O GATING, DQM MASK LOGIC, READ DATA LATCH, and WRITE DRIVERS** block. This block also receives a 256-bit signal from the **COLUMN DECODER**. The output of this block is connected to the **DATA OUTPUT REGISTER** and the **DATA INPUT REGISTER**. The **DATA OUTPUT REGISTER** outputs the data as **DQML, DQMH** (2 bits) and **DQ0-DQ15** (16 bits).

The schematic diagram illustrates the internal and external components of the LA1837 integrated circuit. The chip is represented by a horizontal bar with pins numbered 1 through 30. Internal components include transistors T1, T2, and T3, various capacitors (e.g., 100pF, 39pF, 20pF, 0.047μF, 33μF, 3.3μF, 10μF, 100μF, 4.7μF, 1μF, 0.47μF, 500Ω, 51kΩ, 18kΩ, 910pF, 0.033μF, 3.3kΩ, 10μF, 100kΩ, 10kΩ, 68kΩ, 5kΩ, 1kΩ, 3kΩ, 5kΩ, 10kΩ), resistors (e.g., 500Ω, 18kΩ, 910pF, 0.033μF, 3.3kΩ, 10μF, 100kΩ, 10kΩ, 68kΩ, 5kΩ, 1kΩ, 3kΩ, 5kΩ, 10kΩ), and functional blocks like OSC, REG, L.P.F., and S.E.E.K. External components include an oscillator (OSC BUFF, 1.45MHz), an antenna (ANT), a regulator (REG), a filter (L.P.F.), and output drivers (L-OUT, R-OUT). The pinout table at the bottom right lists the functions for each pin.

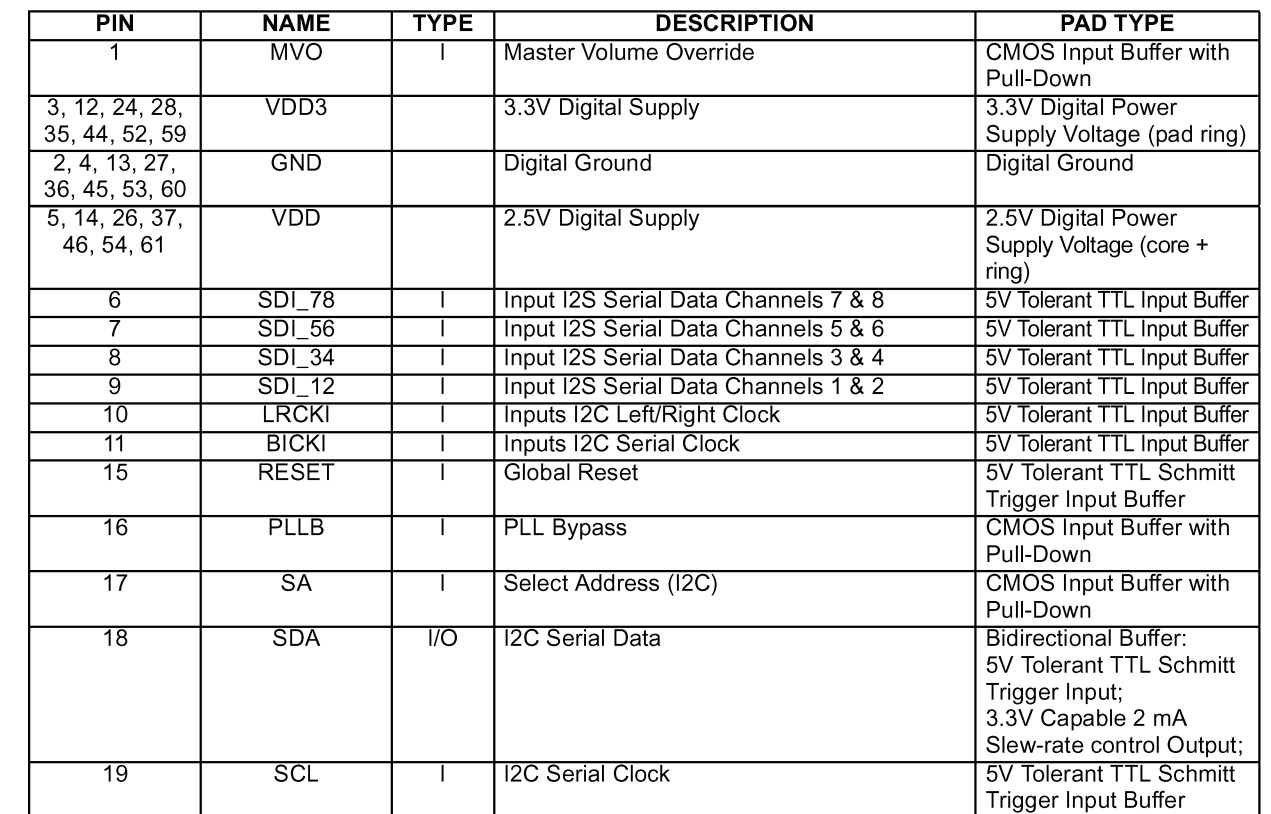
Pin	Function
1	FM IN (10.7MHz)
2	OSC BUFF (1.45MHz)
3	OSC
4	OSC
5	OSC
6	OSC
7	OSC
8	OSC
9	OSC
10	OSC
11	OSC
12	OSC
13	OSC
14	OSC
15	OSC
16	OSC
17	OSC
18	OSC
19	OSC
20	OSC
21	OSC
22	OSC
23	OSC
24	OSC
25	OSC
26	OSC
27	OSC
28	OSC
29	OSC
30	OSC

DIGITAL AUDIO PROCESSOR STA308

IN CONNECTION (Top view)



PIN FUNCTION



DIGITAL AUDIO PROCESSOR
STA308

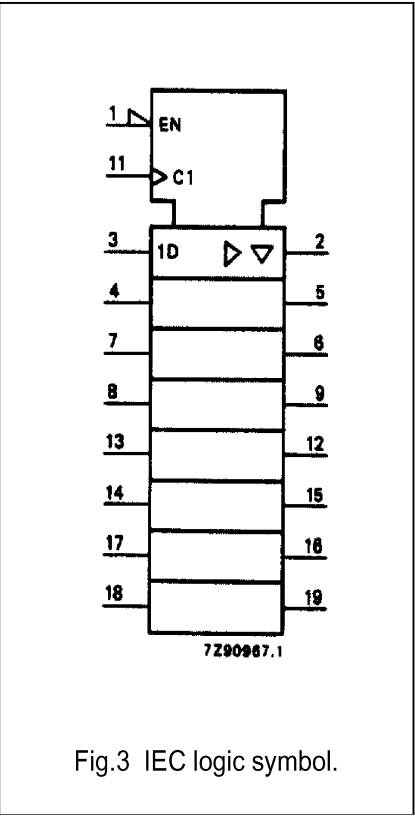
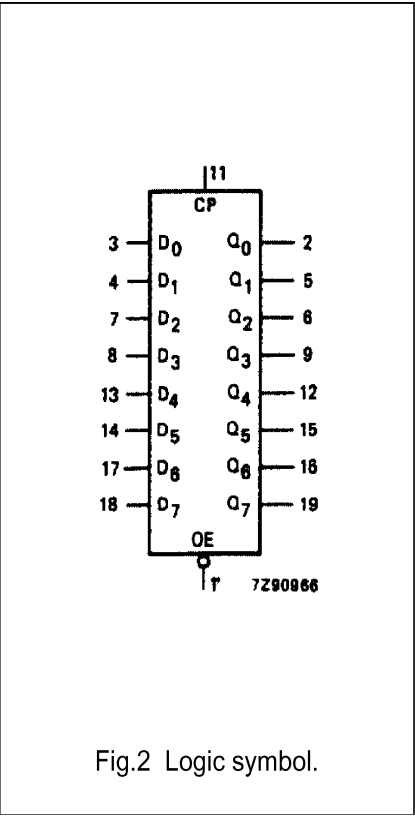
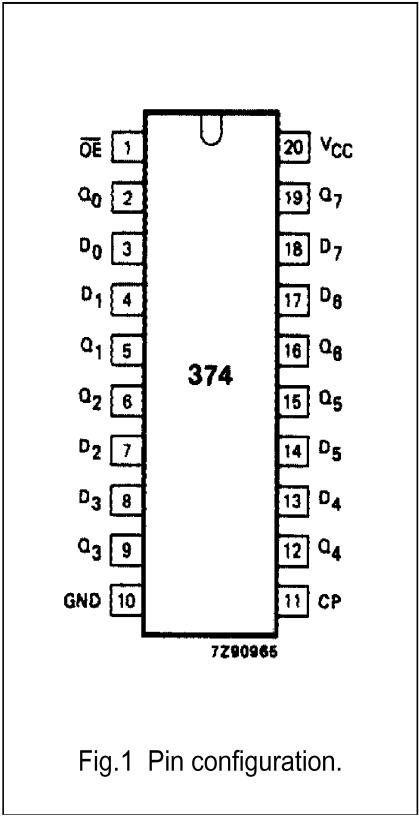
PIN FUNCTION (continued)

PIN	NAME	TYPE	DESCRIPTION	PAD TYPE
20	XTI	I	Crystal Oscillator Input (Clock Input)	3.3V Tolerant TTL Schmitt Trigger Input Buffer
21	FILTER_PLL		PLL Filter	Analog Pad
22	VDDA		PLL 2.5V Supply	2.5V Analog Power Supply Voltage
23	GNDA		PLL Ground	Analog Ground
25	CKOUT	O	Clock Output	3.3V Capable TTL Tristate 4mA Output Buffer
29	OUT8_B	O	PWM Channel 8 Output B	3.3V Capable TTL 2mA Output Buffer
30	OUT8_A	O	PWM Channel 8 Output A	3.3V Capable TTL 2mA Output Buffer
31	OUT7_B	O	PWM Channel 7 Output B	3.3V Capable TTL 2mA Output Buffer
32	OUT7_A	O	PWM Channel 7 Output A	3.3V Capable TTL 2mA Output Buffer
33	OUT6_B	O	PWM Channel 6 Output B	3.3V Capable TTL 2mA Output Buffer
34	OUT6_A	O	PWM Channel 6 Output A	3.3V Capable TTL 2mA Output Buffer
38	OUT5_B	O	PWM Channel 5 Output B	3.3V Capable TTL 2mA Output Buffer
39	OUT5_A	O	PWM Channel 5 Output A	3.3V Capable TTL 2mA Output Buffer
40	OUT4_B	O	PWM Channel 4 Output B	3.3V Capable TTL 2mA Output Buffer
41	OUT4_A	O	PWM Channel 4 Output A	3.3V Capable TTL 2mA Output Buffer
42	OUT3_B	O	PWM Channel 3 Output B	3.3V Capable TTL 2mA Output Buffer
43	OUT3_A	O	PWM Channel 3 Output A	3.3V Capable TTL 2mA Output Buffer
47	OUT2_B	O	PWM Channel 2 Output B	3.3V Capable TTL 2mA Output Buffer
48	OUT2_A	O	PWM Channel 2 Output A	3.3V Capable TTL 2mA Output Buffer
49	OUT1_B	O	PWM Channel 1 Output B	3.3V Capable TTL 2mA Output Buffer
50	OUT1_A	O	PWM Channel 1 Output A	3.3V Capable TTL 2mA Output Buffer
51	EAPD	O	External Amplifier Power Down	3.3V Capable TTL 2mA Output Buffer
55	BICKO	O	Output I2S Serial Clock	3.3V Capable TTL 2mA Output Buffer
56	LRCKO	O	Output I2S Left/Right Clock	3.3V Capable TTL 2mA Output Buffer
57	SDO_12	O	Output I2S Serial Data Channels 1 & 2	3.3V Capable TTL 2mA Output Buffer
58	SDO_34	O	Output I2S Serial Data Channels 3 & 4	3.3V Capable TTL 2mA Output Buffer
62	SDO_56	O	Output I2S Serial Data Channels 5 & 6	3.3V Capable TTL 2mA Output Buffer
63	SDO_78	O	Output I2S Serial Data Channels 7 & 8	3.3V Capable TTL 2mA Output Buffer
64	PWDN	I	Device Powerdown	5V Tolerant TTL Schmitt Trigger Input Buffer

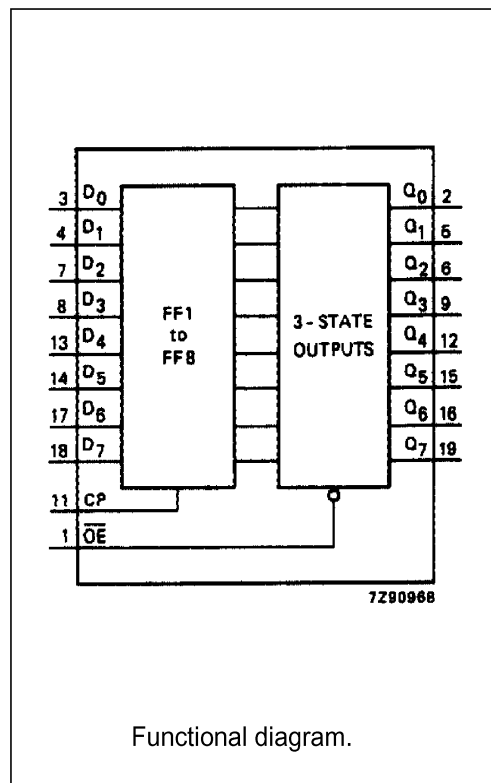
OCTAL D- TYPE FLIP- FLOP; POSITIVE EDGE- TRIGGER; 3- STATE
74HC/HCT374

PIN DESCRIPTION

PIN NO.	SYMBOL	NAME AND FUNCTION
1	$\overline{OE}$	3-state output enable input (active LOW)
2, 5, 6, 9, 12, 15, 16, 19	Q_0 to Q_7	3-state flip-flop outputs
3, 4, 7, 8, 13, 14, 17, 18	D_0 to D_7	data inputs
10	GND	ground (0 V)
11	CP	clock input (LOW-to-HIGH, edge-triggered)
20	V_{CC}	positive supply voltage



OCTAL D- TYPE FLIP- FLOP; POSITIVE EDGE- TRIGGER; 3- STATE 74HC/HCT374

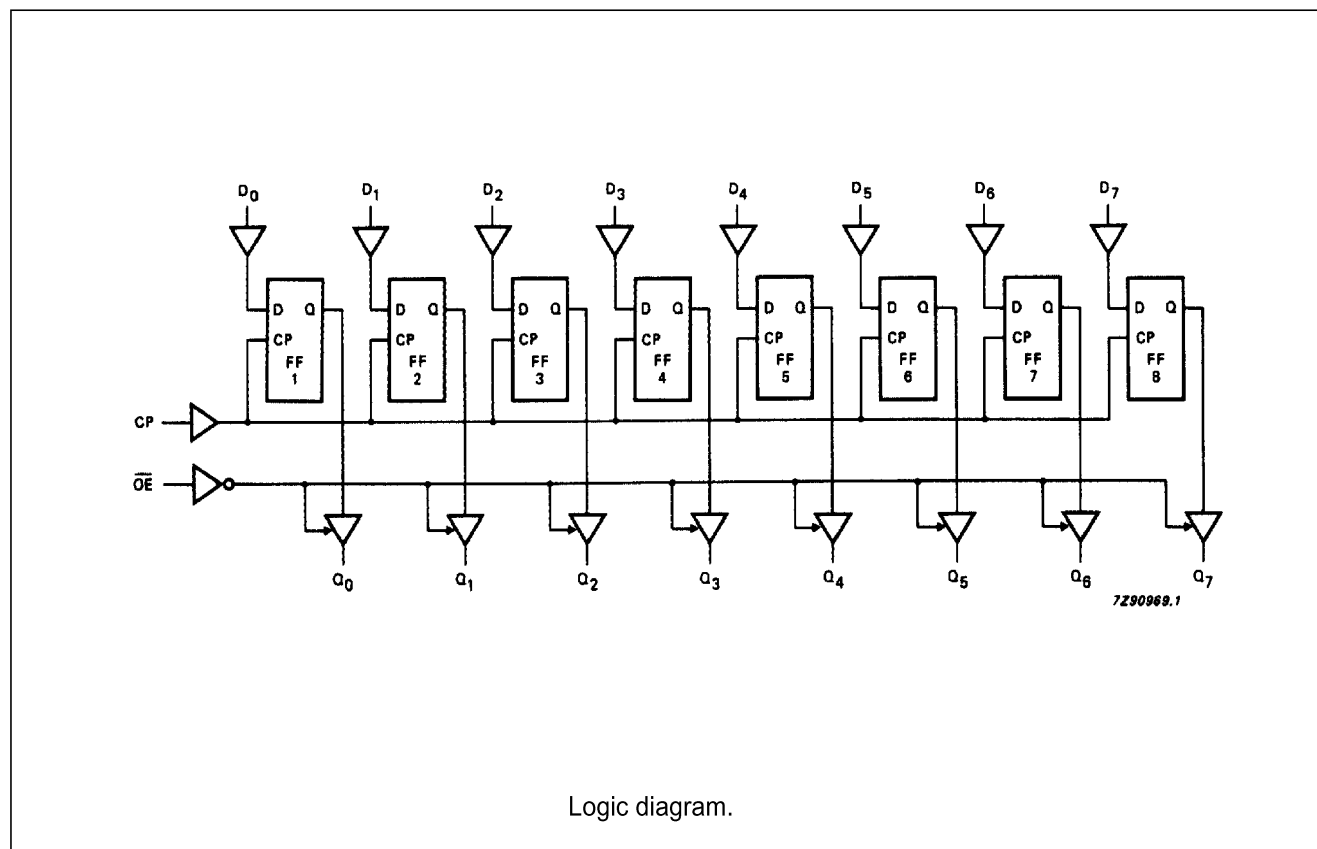


FUNCTION TABLE

OPERATING MODES	INPUTS			INTERNAL FLIP- FLOPS	OUTPUTS Q ₀ to Q ₇
	$\overline{OE}$	CP	D _n		
load and read register	L	$\uparrow$	L	L	L
	L	$\uparrow$	h	H	H
load register and disable outputs	H	$\uparrow$	L	L	Z
	H	$\uparrow$	h	H	Z

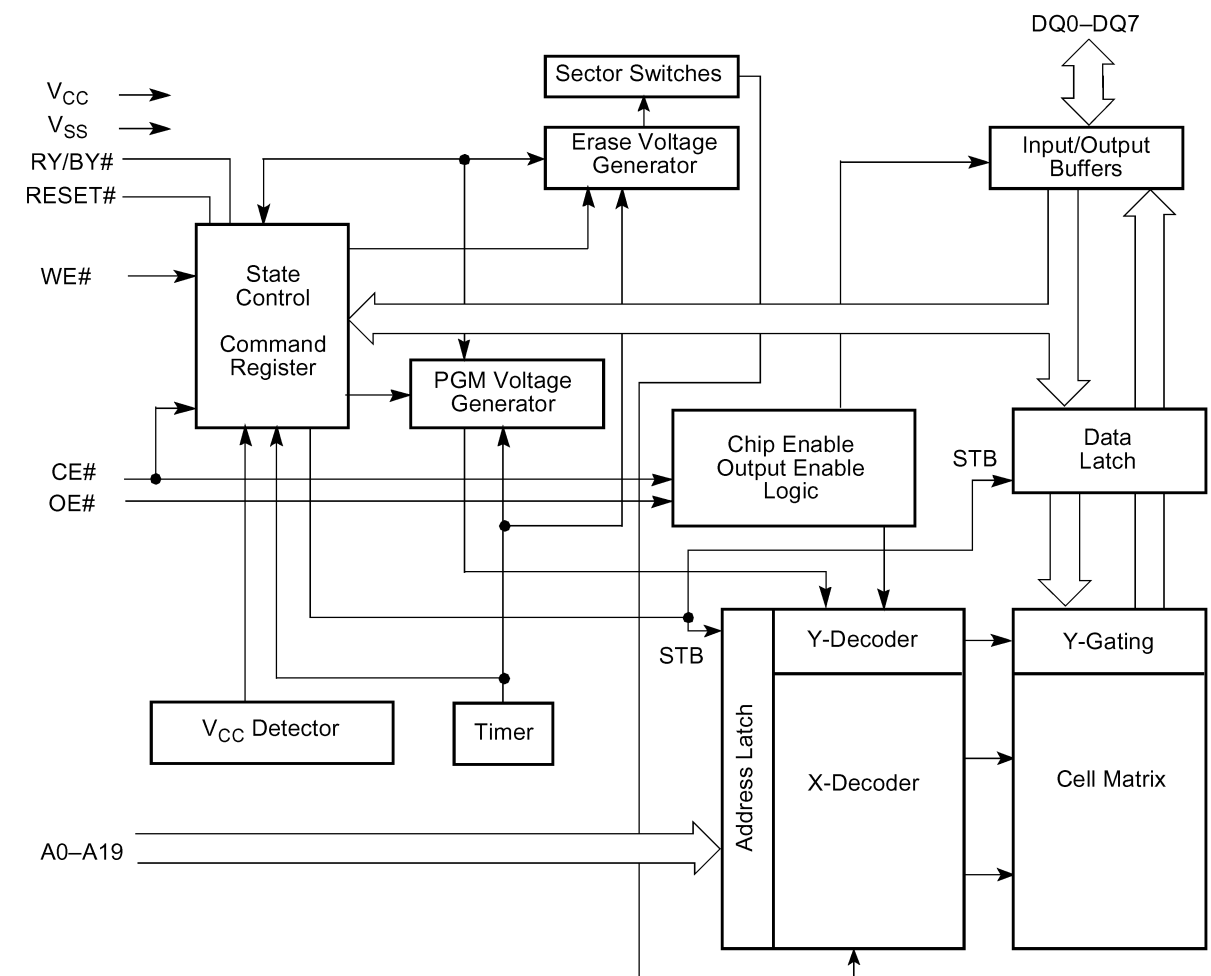
Notes

- H = HIGH voltage level
h = HIGH voltage level one set-up time prior to the LOW-to-HIGH CP transition
L = LOW voltage level
l = LOW voltage level one set-up time prior to the LOW-to-HIGH CP transition
Z = high impedance OFF-state
 $\uparrow$ LOW-to-HIGH CP transition



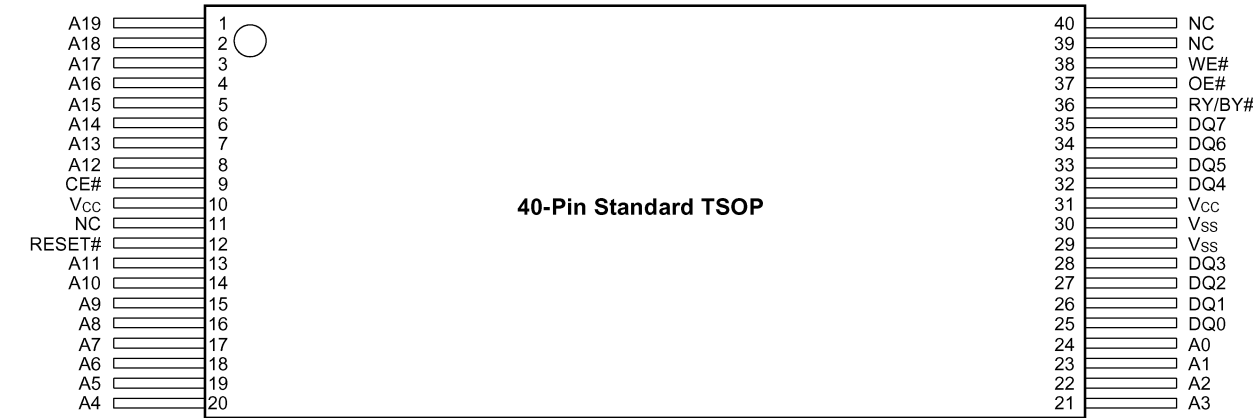
FLASH MEMORY Am29F08 0B- 90EC

BLOCK DIAGRAM



FLASH MEMORY
Am29F08 0B- 90EC

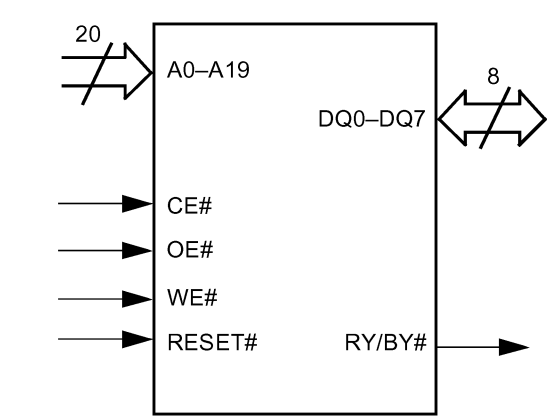
CONNECTION DIAGRAMS



PIN CONFIGURATION

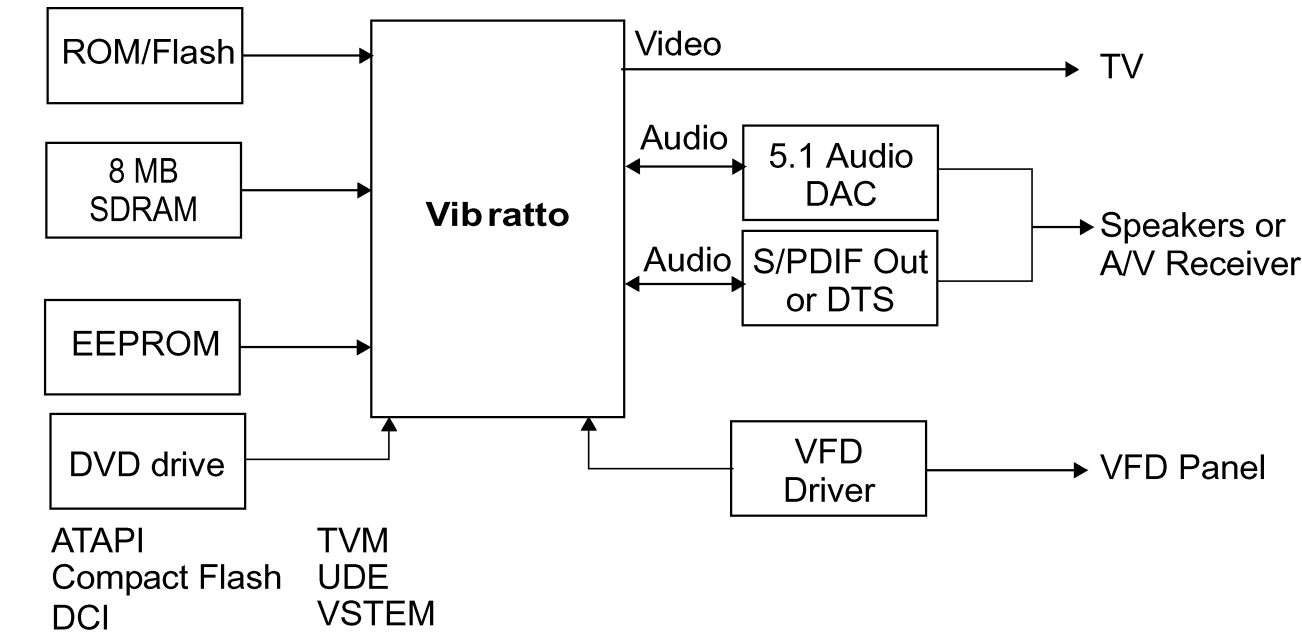
- A0–A19 = 20 Addresses
- DQ0–DQ7 = 8 Data Inputs/Outputs
- CE# = Chip Enable
- WE# = Write Enable
- OE# = Output Enable
- RESET# = Hardware Reset Pin, Active Low
- RY/BY# = Ready/Busy Output
- V_{CC} = +5.0 V single power supply (see Product Selector Guide for device speed ratings and voltage supply tolerances)
- V_{SS} = Device Ground
- NC = Pin Not Connected Internally

LOGIC SYMBOL



DVD PROCESSOR
ES6 028 F

SYSTEM BLOCK DIAGRAM

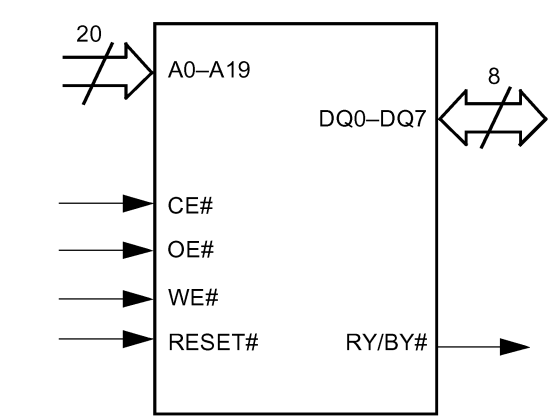


Vibratto System Block Diagram

PIN CONFIGURATION

- A0–A19 = 20 Addresses
- DQ0–DQ7 = 8 Data Inputs/Outputs
- CE# = Chip Enable
- WE# = Write Enable
- OE# = Output Enable
- RESET# = Hardware Reset Pin, Active Low
- RY/BY# = Ready/Busy Output
- V_{CC} = +5.0 V single power supply (see Product Selector Guide for device speed ratings and voltage supply tolerances)
- V_{SS} = Device Ground
- NC = Pin Not Connected Internally

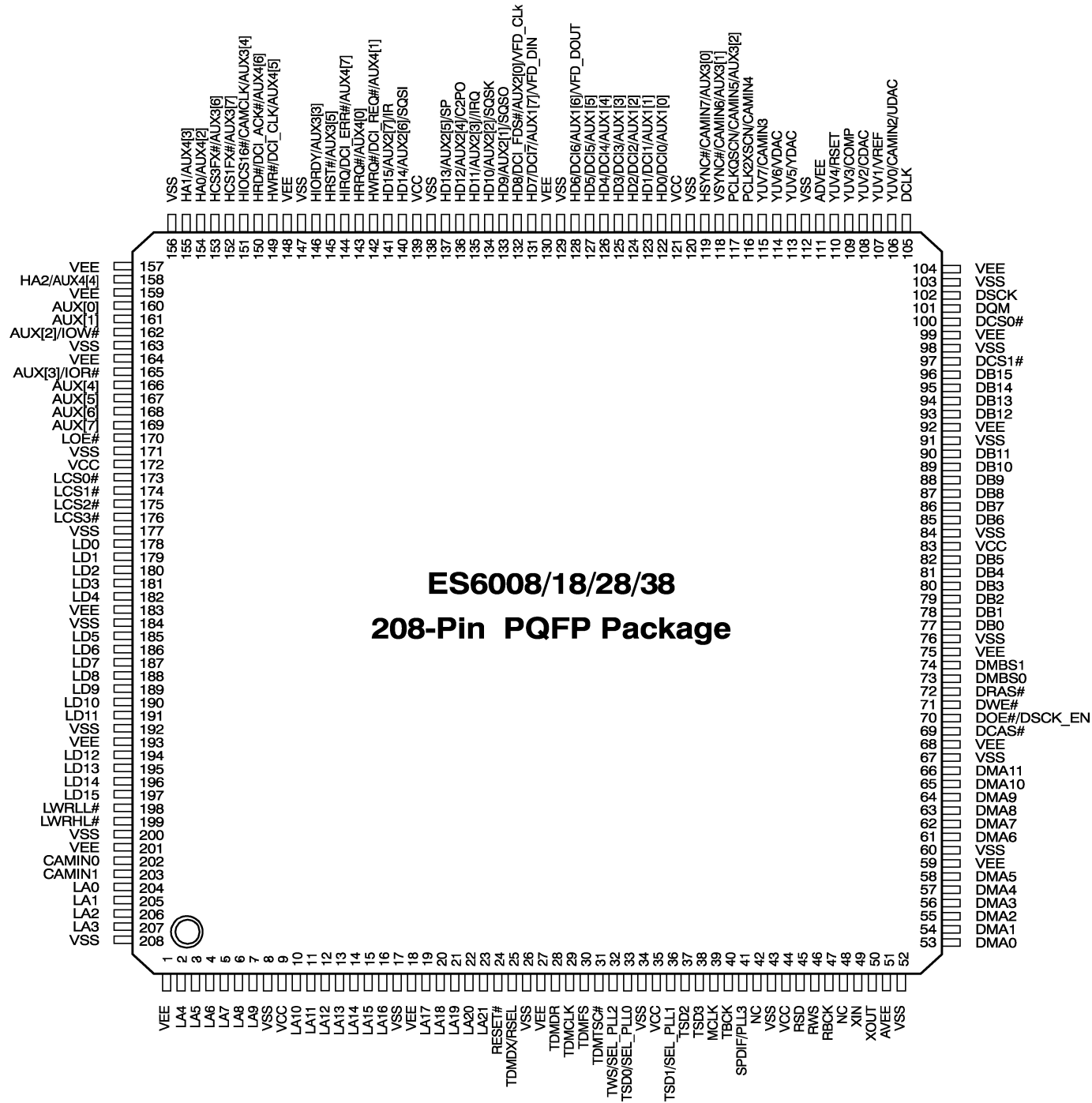
LOGIC SYMBOL



DVD PROCESSOR
ES6028F

ES60X8 PINOUT DIAGRAM

The identical device pinouts for the ES6008, ES6018, ES6028 and ES6038 are shown in Figure 2.



ES60x8 Pinout

DVD PROCESSOR
ES6028F

ES60x8 Pin Description (Continued)

Name	Number	I/O	Definition																								
MCLK	39	I/O	Audio master clock for audio DAC.																								
TBCK	40-	O	Audio-transmit bit clock.																								
SPDIF	41	O	S/PDIF output.																								
SEL_PLL3			Clock source select. <table><tr><th>SEL_PLL3</th><th>Clock Source</th></tr><tr><td>0</td><td>Crystal oscillator</td></tr><tr><td>1</td><td>DCLK input</td></tr></table>	SEL_PLL3	Clock Source	0	Crystal oscillator	1	DCLK input																		
SEL_PLL3	Clock Source																										
0	Crystal oscillator																										
1	DCLK input																										
NC	42, 48		No connect pins. Leave open.																								
RSD	45	I	Audio receive serial data.																								
RWS	46	I	Audio receive frame sync.																								
RBCK	47-	I	Audio receive bit clock.																								
XIN	49	I	Crystal input.																								
XOUT	50	O	Crystal output.																								
AVEE	51	I	Analog power for PLL.																								
DMA[11:0]	66:61, 58:53	O	DRAM address bus [11:0].																								
DCAS#	69-	O	DRAM column address strobe.																								
DOE#	70	O	DRAM output enable																								
DSCK_EN		O	DRAM clock enable.																								
DWE#	71	O	DRAM write enable.																								
DRAS#	72	O	DRAM row address strobe																								
DMBS0	73	O	SDRAM bank select 0.																								
DMBS1	74	O	SDRAM bank select 1.																								
DB[15:0]	96:93, 90:85, 82:77	I/O	DRAM data bus [15:0].																								
DCS[1:0]#	97,100	O	SDRAM chip select [1:0].																								
DQM	101	O	Data input/output mask.																								
DSCK	102	O	Output clock to SDRAM.																								
DCLK	105	I	27 MHz clock input to PLL.																								
YUV0	106	O	YUV0 pixel output data.																								
CAMIN2		I	Camera input 2.																								
UDAC		O	Video-DAC output. <table><tr><th>Mode</th><th>YDAC</th><th>UDAC</th><th>VDAC</th><th>CDAC</th></tr><tr><td>A</td><td>Y</td><td>C</td><td>Composite</td><td>C</td></tr><tr><td>B</td><td>Y</td><td>Composite</td><td>Composite</td><td>C</td></tr><tr><td>C</td><td>Y</td><td>U</td><td>Composite</td><td>V</td></tr><tr><td>D</td><td>Y</td><td>U</td><td>C</td><td>V</td></tr></table> Y: Luma component for YUV and Y/C processing. C: Chrominance signal for Y/C processing. U: Chrominance component signal for YUV mode. V: Chrominance component signal for YUV mode.	Mode	YDAC	UDAC	VDAC	CDAC	A	Y	C	Composite	C	B	Y	Composite	Composite	C	C	Y	U	Composite	V	D	Y	U	C
Mode	YDAC	UDAC	VDAC	CDAC																							
A	Y	C	Composite	C																							
B	Y	Composite	Composite	C																							
C	Y	U	Composite	V																							
D	Y	U	C	V																							

DVD PROCESSOR
ES6028F

ES60x8 Pin Description (Continued)

Name	Number	I/O	Definition
YUV1	107	O	YUV1 pixel output data.
VREF		I	Internal voltage reference to video DAC. Bypass to ground with 0.1 µF capacitor.
YUV2	108	O	YUV2 pixel output data.
CDAC		O	Video DAC output. Refer to description and matrix for UDAC pin 106.
YUV3	109	O	YUV3 pixel output data.
COMP		I	Compensation input. Bypass to ADVEE with 0.1 µF capacitor.
YUV4	110	O	YUV4 pixel output data.
RSET		I	DAC current adjustment resistor input.
ADVEE	111	I	Analog power for video DAC.
YUV5	113	O	YUV5 pixel output data.
YDAC		O	Video-DAC output. Refer to description and matrix for UDAC pin 106.
YUV6	114	O	YUV6 pixel output data.
VDAC		O	Video-DAC output. Refer to description and matrix for UDAC pin 106.
YUV7	115	O	YUV7 pixel output data.
CAMIN3		I	Camera YUV 3.
PCLK2XSCN	116	I/O	27-MHz video output pixel clock.
CAMIN4		I	Camera YUV 4.
PCLKQSCN	117	O	13.5-MHz video output pixel clock.
CAMIN5		I	Camera YUV 5.
VSYNC#	118	I/O	Vertical sync, active low.
CAMIN6		I	Camera YUV 6.
HSYNC#	119	I/O	Horizontal sync, active low.
CAMIN7		I	Camera YUV 7.
HD[5:0]	127:122	I/O	Host data I/O [5:0].
DCI[5:0]		I/O	DVD channel data I/O [5:0].
AUX1[5:0]		I/O	Aux1 data I/O [5:0].
HD[6]	128	I/O	Host data I/O [6].
DCI[6]		I/O	DVD channel data I/O [6].
AUX1[6]		I/O	Aux1 data I/O [6].
VFD_DOUT	128	I	VFD data output.
HD[7]	131	I/O	Host data I/O [7].
DCI[7]		I/O	DVD channel data I/O [7].
AUX1[7]		I/O	Aux1 data I/O [7:0].
VFD_DIN	131	I	VFD data input.
HD[8]	132	I/O	Host data bus 8.
DCI_FDS#		I/O	DVD input sector start.
AUX2[0]		I/O	Aux2 data I/O 0.
VFD_CLK	132	I	VFD clock input.
HD[9]	133	I/O	Host data bus line 9.
AUX2[1]		I/O	Aux2 data I/O [1] when selected.
SQSQ		I	Subcode-Q data.
HD[10]	134	I/O	Host data bus line10.
AUX2[2]		I/O	Aux2 data I/O [2] when selected.
SQSK		I	Subcode-Q clock.

DVD PROCESSOR
ES6028F

ES60x8 Pin Description (Continued)

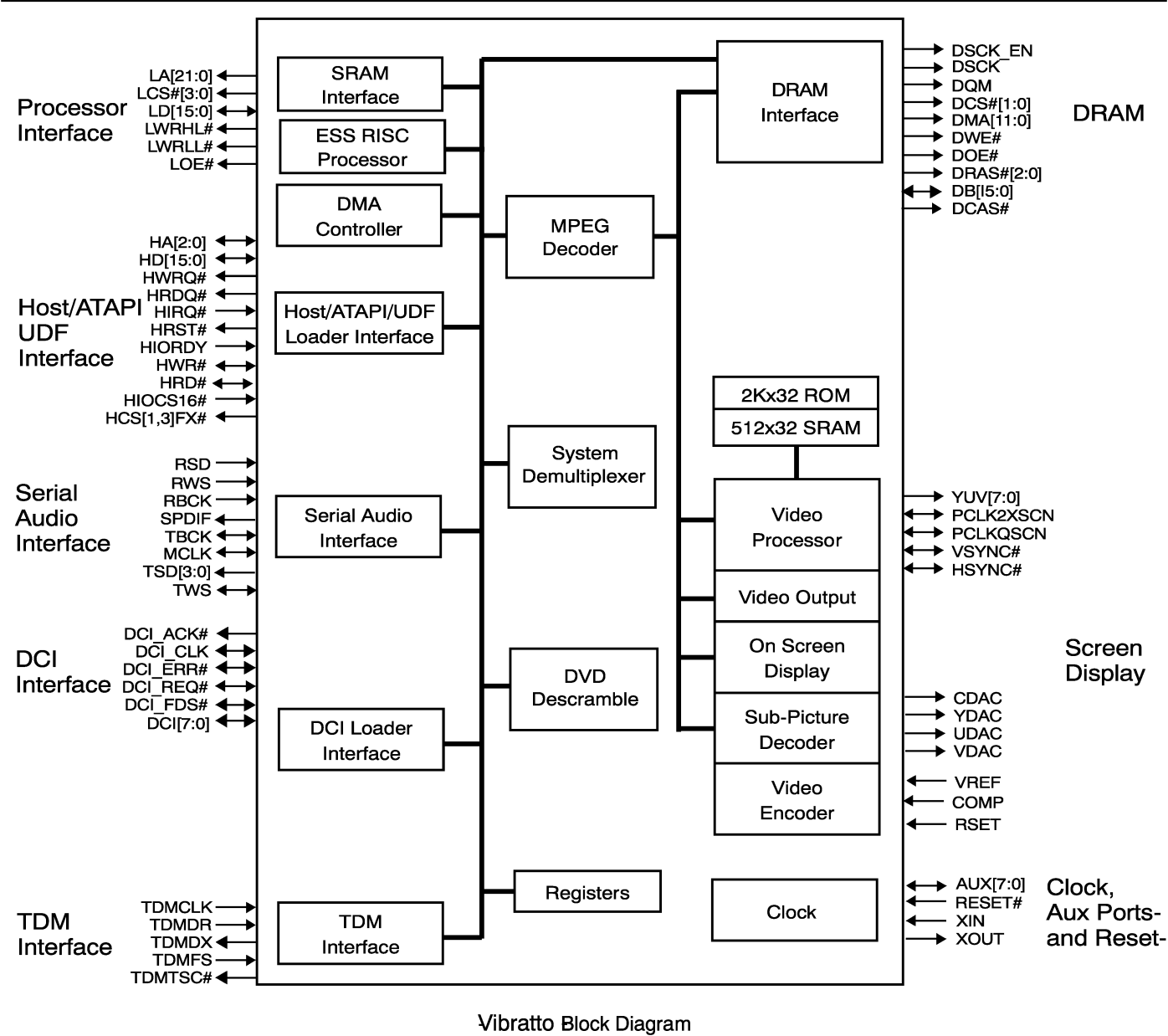
Name	Number	I/O	Definition
HD[11]	135	I/O	Host data bus line11.
AUX2[3]		I/O	Aux2 data I/O [3] when selected.
IRQ		O	IRQ output.
HD[12]	136	I/O	Host data bus line12.
AUX2[4]		I/O	Aux2 data I/O [4] when selected.
C2PO		I	C2PO-error correction flag from CD-ROM.
HD[13]	137	I/O	Host data bus line13.
AUX2[5]		I/O	Aux2 data I/O [5] when selected.
SP		I	16550-UART serial port input.
HD[14]	140	I/O	Host data bus line14.
AUX2[6]		I/O	Aux2 data I/O [6] when selected.
SQSI		I	Subcode-Q sync.
HD[15]	141	I/O	Host data bus line15.
AUX2[7]		I/O	Aux2 data I/O [7] when selected.
IR		I	IR remote control input.
HWRQ#	142	O	Host write request.
DCI_REQ#		O	DVD control interface request.
AUX4[1]		I/O	Aux4 data I/O 1.
HRRQ#	143	O	Host read request.
AUX4[0]		I/O	Aux4 data I/O 0.
HIRQ	144	I/O	Host interrupt.
DCI_ERR#		I/O	DVD channel data error.
AUX4[7]		I/O	Aux4 data I/O 7.
HRST#	145	O	Host reset.
AUX3[5]		I/O	Aux3 data I/O 5.
HIORDY	146	I	Host I/O ready.
AUX3[3]		I/O	Aux3 data I/O 3.
HWR#	149	I/O	Host write.
DCI_CLK		I/O	DVD channel data clock.
AUX4[5]		I/O	Aux4 data I/O 5.
HRD#	150	O	Host read.
DCI_ACK#		O	DVD channel data valid.
AUX4[6]		I/O	Aux4 data I/O 6.
HIOCS16#	151	I	Device 16-bit data transfer.
CAMCLK		I	Camera port pixel clock input.
AUX3[4]		I/O	Aux3 data I/O 4.
HCS1FX#	152	O	Host select 1.
AUX3[7]		I/O	Aux3 data I/O 7.
HCS3FX#	153	O	Host select 3.
AUX3[6]		I/O	Aux3 data I/O 6.
HA[2:0]	158, 155:154	I/O	Host address bus.
AUX4[4:2]		I/O	Aux4 data I/Os [4:2].
AUX[1:0]	160	I/O	Auxiliary ports 1:0.

DVD PROCESSOR
ES6028F

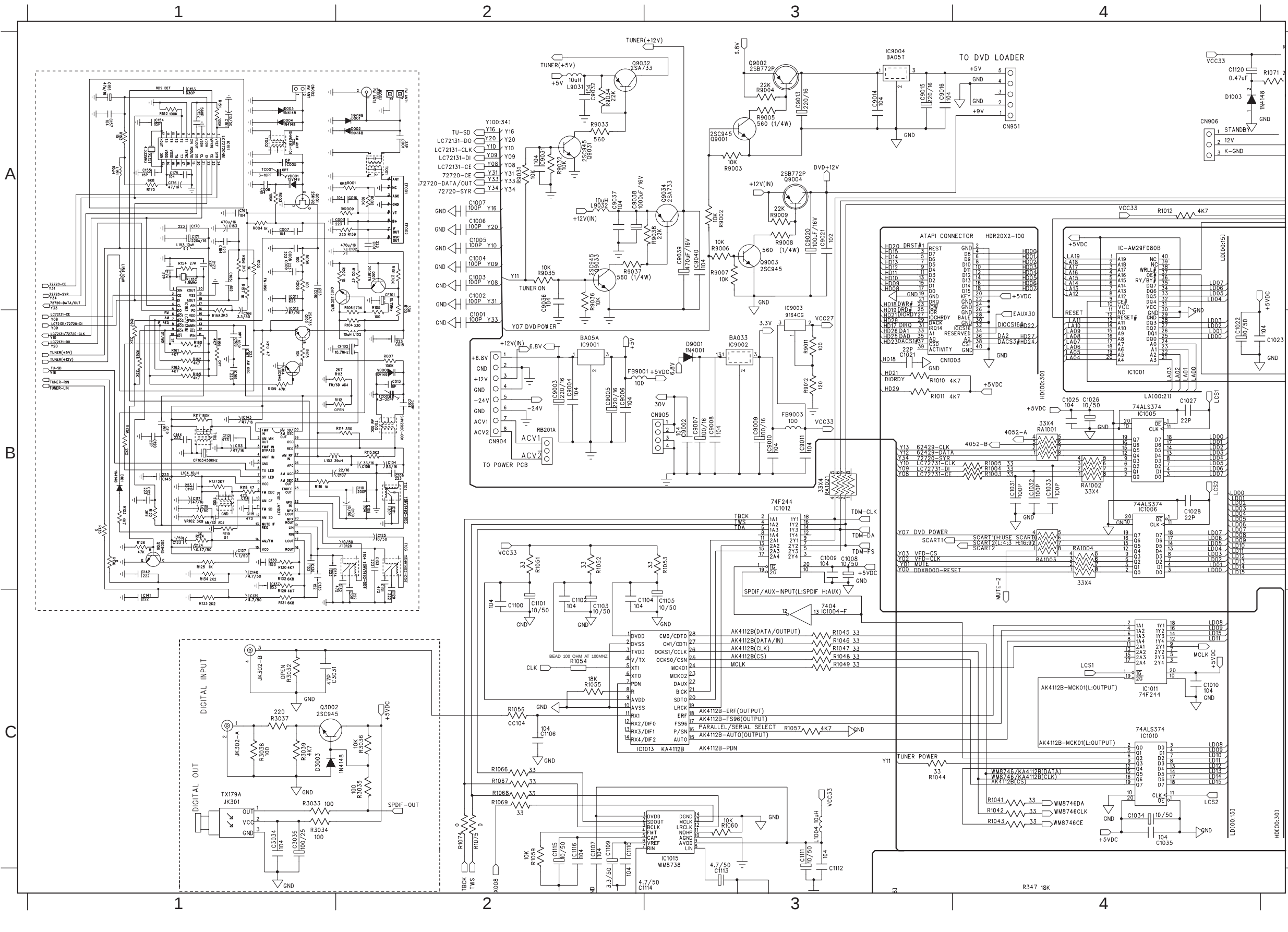
ES60x8 Pin Description (Continued)

Name	Number	I/O	Definition
AUX[2]	162	I/O	Auxiliary port 2.
IOW#		O	I/O Write strobe.
AUX[3]	165	I/O	Auxiliary port 3.
IOR#		O	I/O Read strobe.
AUX[7:3]	169:166	I/O	Auxiliary ports 7:3.
LOE#	170	O	Device output enable.
LCS[3:0]#	176:173	O	Chip select [3:0].
LD[15:0]	197:194, - 191:185, - 182:178	I/O	EPROM device data bus.
LWRLL#	198	O	Device low-byte write enable.
LWRHL#	199	O	Device high-byte write enable.
CAMINO	202	I	Camera YUV 0.
CAMIN1	203	I	Camera YUV 1.

DVD PROCESSOR
ES6028F

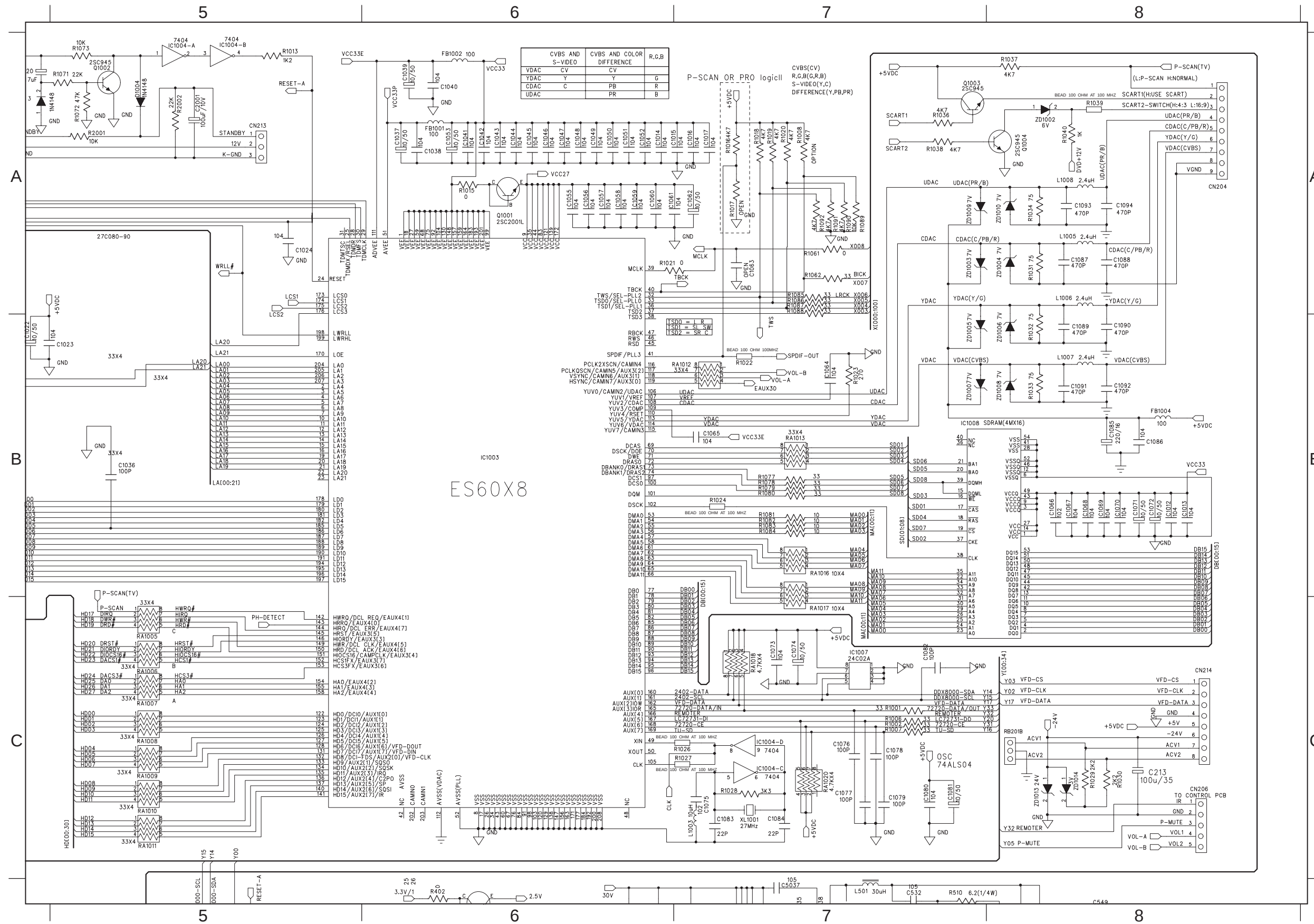


CIRCUIT DIAGRAM (TOP LEFT)



C001	A2	C3035	C1	R119	B1
C003	A2	C9002	B3	R122	B1
C005	A1	C9003	B2	R123	B1
C006	A1	C9004	B2	R124	B1
C007	A1	C9005	B2	R125	B1
C008	A1	C9006	B2	R126	B1
C009	A1	C9007	B3	R129	C1
C010	A1	C9008	B3	R130	B1
C011	A1	C9009	B3	R131	C1
C012	B1	C9010	B3	R132	B1
C014	B2	C9011	B3	R133	C1
C015	B2	C9013	A3	R134	B1
C016	A2	C9014	A3	R135	B1
C101	A2	C9015	A3	R136	B1
C102	A2	C9016	A3	R137	B1
C104	B2	C9020	A3	R138	B1
C106	B2	C9021	A3	R139	12
C107	B2	C9031	A2	R151	A1
C108	B2	C9032	A2	R154	A1
C109	B2	C9036	A2	R153	A1
C110	B2	C9037	A2	R155	A1
C111	B2	C9038	A2	R156	A1
C112	B1	C9039	A3	R157	A1
C113	B1	C9040	A3	R158	B1
C114	B1	CF101	A2	R159	B1
C115	B1	CF102	B2	R160	B1
C116	B1	CF103A	B1	R161	B1
C117	B1	CN002	A1	R162	B1
C118	B1	CN1003	B3	R163	B1
C119	B1	CN904	B2	R165	B1
C120	B1	CN905	B3	R167	B2
C122	B1	CN906	A4	R168	B2
C123	B1	CN951	A4	R170	A1
C124	B1	D001	A2	R1003	B4
C125	B2	D002	A2	R1004	B4
C126	B2	D003	A1	R1005	B4
C127	B1	D004	A1	R1010	B3
C129	C2	D101	B1	R1011	B3
C130	C2	D103	A4	R1012	A4
C131	B2	D3003	C4	R1012	C4
C132	B2	D9001	B3	R1042	C4
C133	B2	D9002	B2	R1043	C4
C134	B5	EF001	A2	R1044	C3
C135	B1	EF002	A2	R1045	C3
C136	B1	FB9001	B2	R1046	C3
C137	B1	FB9003	B3	R1047	C3
C138	B1	IC151	A1	R1048	C3
C139	C1	IC152	A1	R1049	C3
C140	B1	IC1001	B4	R1051	B2
C141	C1	IC1004-FC3	B3	R1052	B2
C142	B1	IC1005	B4	R1053	B3
C143	B1	IC1006	B4	R1054	C2
C144	B1	IC1010	C4	R1055	C2
C145	B1	IC1011	C4	R1056	C2
C151	A1	IC1012	B3	R1057	C3
C152	A1	IC1013	C3	R1058	C3
C154	A1	IC1015	C3	R1060	C3
C155	A1	IC9001	B2	R1066	C2
C156	A1	IC9002	B3	R1067	C2
C157	A1	IC9003	A3	R1068	C2
C163	A1	IC9004	A3	R1069	C2
C164	A1	JK001	A2	R1074	C2
C165	A1	JK002	A2	R1075	C2
C166	B1	JK301	C1	R3038	C1
C167	B1	JK302-A	C1	R3039	C1
C168	B1	JK302-B	C1	R9002	A3
C169	B1	L102	B2	R9003	A3
C170	A1	L103	B1	R9004	A3
C171	A1	L104	B1	R9005	A3
C173	A1	L151	A1	R9006	A3
C174	A1	L153	A1	R9007	A3
C175	A1	L154	A1	R9008	A3
C176	A1	L1004	C3	R9009	A3
C903	A2	L9031	A2	R9011	B3
C1001	B2	L9032	A2	R9012	B3
C1002	A2	Q001	A1	R3032	C1
C1003	A2	Q101	A2	R3033	C1
C1004	A2	Q102	A1	R3034	C1
C1005	A2	Q103	B1	R3035	C1
C1006	A2	Q104	B1	R3036	C1
C1007	A2	Q105	B1	R3037	C1
C1008	B3	Q3002	C1	R3037	A2
C1009	B3	Q9001	A3	R9032	A2
C1010	C4	Q9002	A3	R9033	A2
C1028	B4	Q9003	A3	R9034	A2
C1031	B4	Q9004	A3	R9035	A2
C1032	B4	Q9031	A2	R9036	A2
C1033	B4	Q9032	A2	R9037	A2
C1034	C4	Q9033	A2	R9038	A3
C1035	C4	Q9034	A3	RA1001	B4
C1100	C2	R001	A2	RA1002	B4
C1101	C2	R002	A2	RA1003	B4
C1102	C2	R003	A1	RA1004	B4
C1103	C2	R004	A1	RB201A	B2
C1104	C2	R005	A1	T001	A2
C1105	C3	R007	B2	T003	B2
C1106	C2	R101	A2	T101	B2
C1107	C2	R102	A2	T102	B1
C1109	C2	R103	A2	T103	B2
C1110	C2	R104	B2	T104	B2
C1111	C3	R105	A2	T105	B1
C1115	C2	R106	A2	T002	A1
C1116	C2	R107	A2	TC001	A1
C1021	B3	R108	B1	TC002	B2
C1022	B3	R109	B1	VD001	A1
C1023	B4	R110	B1	VD002	B2
C1025	B4	R112	B2	VR102	B1
C1026	B4	R113	B2	XL151	A1
C1027	B4	R114	B2	XL152	A1
C1120	A4	R115	B2		
C3031	C1	R116	B1		
C3034	C1	R117	B1		

CIRCUIT DIAGRAM (TOP RIGHT)



C301	F1	D9002	D4	R381	F3
C302	F1	IC301	F2	R382	E3
C303	F1	IC302	F3	R383	E3
C304	F1	IC301-A-A	F4	R384	F3
C305	F1	IC301-A-B	F4	R385	E3
C306	F2	IC304-A	E3	R386	E2
C307	F2	IC304-B	E3	R387	F2
C308	F2	IC305-A	D4	R390	F4
C309	F2	IC305-B	D4	R391	F3
C311	F2	IC306-A	E4	R392	F4
C312	F2	IC306-B	E4	R393	F4
C313	F2	IC307-A	E4	R394	F4
C314	F2	IC307-B	E4	R395	F4
C315	F3	IC308-A	F3	R396	F4
C316	F3	IC308-B	E3	R397	F4
C317	F3	IC1009	D4	R398	F4
C318	F3	IC3001	D2	R399	F4
C319	F3	IC3002-A	D3	R3001	D2
C320	E3	IC3002-B	D3	R3002	D2
C321	E3	JK303	E1	R3004	D1
C322	F3	JK304-A	D1	R3005	D1
C323	E1	JK304-B	D1	R3006	D1
C324	E1	JK304-C	E1	R3007	D1
C325	E3	L301	F1	R3009	D1
C326	E3	L302	F1	R3010	D1
C329	E3	L1009	D4	R3011	D1
C330	E3	Q301	F2	R3012	D1
C331	D3	Q302	F2	R3013	D2
C332	E3	Q303	E2	R3014	D1
C333	D3	Q304	E2	R3017	D2
C334	D3	Q305	E2	R3018	D2
C335	D4	Q306	E2	R3019	D2
C336	D4	Q307	F2	R3020	D2
C337	D4	Q3001	E1	R3021	D2
C338	D4	R301	F1	R3022	D2
C339	D4	R302	F1	R3023	D3
C340	D4	R303	F1	R3024	D3
C341	D4	R304	F1	R3025	D3
C342	D4	R305	F2	R3026	D3
C343	D4	R306	F2	R3027	D3
C344	D4	R307	F2	R3028	D3
C345	D3	R308	E2	R3041	E1
C346	E3	R309	F2	R3042	E1
C347	D4	R310	F2	R3044	E1
C348	E4	R311	F2	R3045	E2
C349	E4	R312	F2	R9010	E2
C350	E4	R313	F2	RB101A	D1
C351	E4	R314	F2	RB101B	E1
C352	E4	R315	F3	ZD301	F2
C353	E4	R316	E2	ZD302	F3
C354	E4	R317	F3	ZD303	D2
C355	D4	R318	F3	ZD304	F3
C356	E4	R319	F3	ZD305	D2
C357	E3	R320	F3	ZD306	F3
C358	E4	R321	F3	ZD307	E3
C359	E4	R322	F3		
C361	E4	R324	E1		
C362	E4	R325	E2		
C363	E3	R326	E2		
C364	E4	R327	E2		
C365	E4	R328	E2		
C366	F4	R329	E2		
C367	E4	R330	E2		
C368	E4	R331	E2		
C369	F4	R332	E2		
C370	F3	R333	E2		
C371	F3	R334	F2		
C372	F3	R335	D3		
C373	F3	R336	E3		
C374	E2	R337	D3		
C383	F3	R338	E3		
C384	F4	R339	D3		
C385	F3	R340	E3		
C386	F4	R341	E3		
C1112	D3	R342	E3		
C1113	D3	R343	E3		
C1114	D3	R344	E3		
C1130	D4	R345	E3		
C1131	D4	R346	E3		
C1132	E4	R347	D4		
C1135	E4	R348	D4		
C3001	D1	R349	D4		
C3002	D1	R350	D4		
C3003	D1	R351	D4		
C3004	D1	R352	D4		
C3005	D2	R353	D4		
C3006	D2	R354	D4		
C3007	D2	R355	D4		
C3008	D2	R356	E4		
C3009	D3	R357	D4		
C3010	D2	R358	E4		
C3011					

D	C401	D5	C1132	D5
	C402	D5	C1133	D5
	C403	D5	C2208	F7
	C404	D5	C4001	F6
	C405	E5	C4002	F6
	C406	E5	C4003	F6
	C407	E5	C4004	F6
	C408	E6	C4005	F5
	C409	E6	C4006	F5
	C410	E6	C4007	F5
	C411	E6	C4008	F5
	C412	D5	C5011	F7
	C413	E6	C5012	F7
	C414	E5	C5031	E7
	C415	E5	C5032	E7
	C416	E5	C5033	E7
	C417	E6	C5034	E7
	C418	E6	C5035	D7
	C419	E6	C5036	D7
	C418	E6	C5037	D7
C419	E6	C5038	D7	
C420	E6	C5039	E7	
C421	E6	C5040	E7	
C422	D6	C5041	D7	
C423	D6	C5042	E7	
C424	D6	CN501	D8	
C425	D6	CN502	E8	
C426	D6	CN503	E8	
C427	D6	D401	D5	
C501	D8	D402	D5	
C502	D8	IC401	D6	
C503	E8	IC501	D7	
C504	E8	IC502	E7	
C505	E8	IC503	F7	
C506	E8	IC4001-A	F6	
C511	D6	IC4001-B	F6	
C513	D6	L403	E6	
C514	D6	L404	E6	
C515	D7	L501	D7	
C516	D7	L502	D7	
C517	D6	L503	D7	
C518	D6	L504	D7	
C519	E7	L505	D7	
C520	E7	L506	E7	
C525	D7	L507	E7	
C526	D7	L508	E7	
C527	E7	L509	E7	
C528	D7	L510	F7	
C529	D7	L511	F7	
C530	D7	L512	F7	
C531	E7	L513	D8	
C532	D7	L514	D8	
C533	D7	L515	E8	
C534	D7	L516	E8	
C535	D7	L517	E8	
C536	E7	L518	F8	
C537	E7	L1010	D5	
C538	F7	Q401	D6	
C539	D7	R373	E5	
C540	D7	R374	E5	
C541	D7	R375	E5	
C542	D7	R376	E5	
C543	E7	R377	E5	
C544	E7	R378	E5	
C545	D8	R401	E5	
C546	D8	R402	D6	
C547	E8	R403	E5	
C548	D8	R406	D5	
C550	D8	R407	E5	
C555	D8	R410	E5	
C556	D8	R411	E6	
C557	D8	R412	D5	
C558	E8	R414	D5	
C559	E8	R415	E5	
C560	E8	R503	D6	
C561	E8	R504	F6	
C562	F8	R505	D7	
C563	F8	R506	D7	
C564	F8	R507	F7	
C566	E6	R508	D7	
C567	F6	R509	F7	
C568	F6	R510	D7	
C569	E6	R511	D7	
C570	E6	R512	E7	
C571	F6	R513	D7	
C572	F7	R514	E7	
C573	E7	R518	E6	
C574	E7	R519	E7	
C575	F7	R520	E7	
C576	E7	R521	F7	
C577	E7	R522	E7	
C579	F7	R523	E7	
C581	E7	R524	E7	
C582	F7	R525	F7	
C583	E7	R526	F7	
C584	E7	R1063	D5	
C585	E7	R1065	D5	
C586	E7	R4001	F6	
C587	F7	R4002	F6	
C588	E7	R4003	F6	
C589	E7	R4004	F6	
C590	F7	R4005	F6	
C591	E7	R4006	F6	
C592	F7	R4007	F6	
C593	F7	R4008	F6	
C594	E7	R4009	F5	
C595	E7	R4010	F5	
C596	F7	R4011	F5	
C598	F7	R4012	F5	
C599	E8	R9001	D5	

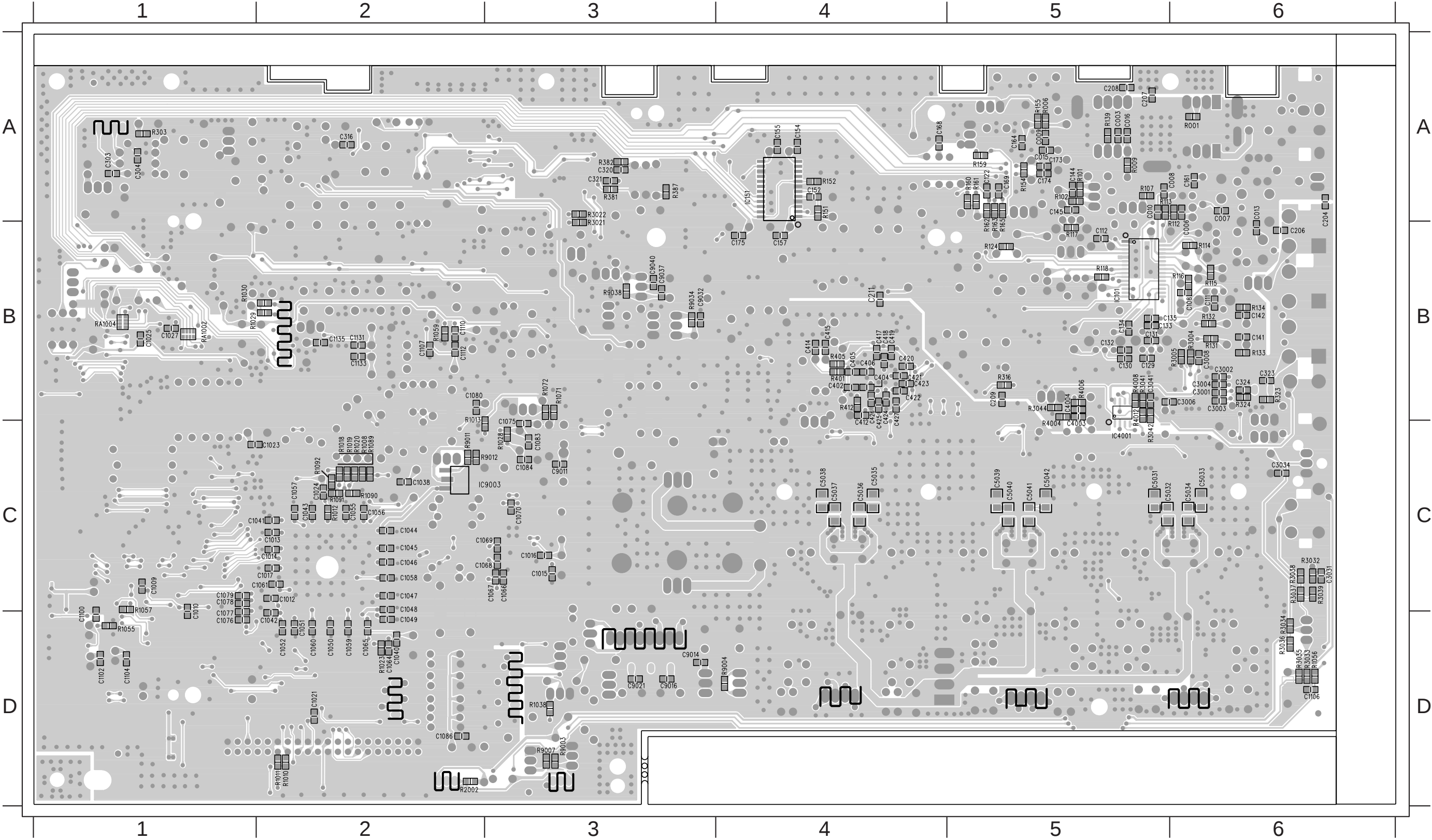
LAYOUT MAPPING (COMPONENT VIEW)

C001 A1	C369 A6	C1031 B6	D9002 C4	R007 B1	R395 A5	R3025 B4
C005 A1	C370 B4	C1032 B6	EF001 A2	R103 A2	R396 A5	R3026 A4
C011 A3	C371 A5	C1033 B6	FB1001 C5	R104 A2	R397 A5	R3027 B4
C012 A3	C372 A4	C1034 D6	FB1002 D5	R105 A2	R398 A5	R3028 A4
C014 B1	C373 A4	C1035 C6	FB1004 D4	R106 A2	R399 A5	R3045 B2
C101 A2	C374 B6	C1036 B6	FB9001 C4	R108 A2	R402 C3	R4001 C2
C102 A2	C383 A5	C1037 C5	FB9003 C4	R109 A2	R403 B3	R4002 C2
C104 B1	C384 A5	C1039 D5	IC152 A2	R110 A2	R406 C3	R4003 B2
C105 B1	C385 A5	C1053 C4	IC301 A6	R119 B2	R407 B3	R4005 B2
C106 B1	C386 A5	C1062 C5	IC301-A A5	R122 A2	R410 B3	R4007 B2
C107 A2	C401 B3	C1063 C5	IC302 A5	R123 B2	R411 B3	R4009 B2
C109 B2	C403 B3	C1071 C4	IC304 A4	R125 B2	R414 B3	R4010 B2
C110 B2	C407 B3	C1072 C4	IC305 B5	R126 B2	R415 B3	R4011 C2
C113 B2	C408 B3	C1073 D6	IC306 B5	R129 B1	R503 C3	R9001 C3
C114 B2	C409 B3	C1074 D6	IC307 B5	R130 B1	R504 C1	R9002 D4
C115 B2	C410 B3	C1081 B4	IC308 A4	R135 B1	R505 C3	R9005 D4
C116 B2	C411 B3	C1082 D5	IC401 B3	R136 B1	R506 C3	R9006 D4
C117 B2	C413 B3	C1085 D5	IC501 C3	R137 B2	R507 C1	R9008 D4
C118 B2	C416 B3	C1087 D4	IC502 C2	R138 A2	R508 C3	R9009 D4
C119 A2	C501 D3	C1089 D4	IC503 C2	R153 A3	R509 D1	R9010 B4
C120 A3	C502 D3	C1090 D4	IC1001 C6	R156 A2	R510 C3	R9031 B4
C123 B2	C503 D2	C1091 D4	IC1003 C6	R157 A2	R511 D3	R9032 B4
C124 B2	C504 D2	C1092 D4	IC1004 B5	R158 A2	R512 D3	R9033 B4
C125 B1	C505 D1	C1093 C4	IC1005 B6	R167 B2	R513 C2	R9035 B4
C126 B2	C506 D2	C1094 C4	IC1006 B6	R168 A2	R514 D2	R9036 B4
C127 A2	C511 C3	C1101 D6	IC1007 D5	R170 B3	R518 C2	R9037 B4
C136 B2	C513 C3	C1103 D6	IC1008 C5	R301 A6	R519 C2	RA1001 B6
C137 B1	C514 C3	C1105 D6	IC1009 B5	R302 A6	R520 C2	RA1003 B6
C138 B1	C515 C3	C1109 B5	IC1010 D6	R304 A6	R521 C2	RA1005 D5
C139 B1	C516 C3	C1120 B4	IC1011 C6	R305 A6	R522 D2	RA1006 D5
C140 B1	C517 C3	C1130 B5	IC1012 C6	R306 A6	R523 C2	RA1007 D5
C143 A2	C518 C3	C1132 B5	IC1013 D6	R307 A6	R524 C1	RA1008 D5
C151 A3	C519 C1	C1134 B5	IC1015 B5	R308 B6	R525 C2	RA1009 D5
C153 B2	C520 C1	C1111 B5	IC3001 B2	R309 A5	R526 D1	RA1010 D5
C156 A3	C525 C3	C1113 B4	IC3002 B4	R310 A5	R1001 D6	RA1011 D5
C163 A2	C526 D1	C1114 B5	IC9001 C4	R311 A5	R1002 D6	RA1012 D5
C165 A2	C527 D3	C1115 B5	IC9004 D3	R312 A5	R1003 B6	RA1013 C5
C166 A2	C528 C3	C1116 B5	JK001 A1	R313 A5	R1004 B6	RA1016 C5
C167 B2	C529 C3	C1134 B5	JK301 C1	R314 A5	R1005 B6	RA1017 C5
C170 B2	C530 C3	C2001 D4	JK302 C1	R315 A5	R1006 D6	RA1018 D5
C171 B2	C531 C1	C2208 D2	JK304 B1	R317 A5	R1007 D6	RA1020 B5
C176 A3	C532 C3	C3005 B3	JMP1 B6	R318 A5	R1015 C5	RA1021 C5
C201 C1	C533 D3	C3007 B2	JMP2 B6	R319 A5	R1016 D4	RB101A B1
C202 D1	C534 D3	C3009 B4	JMP3 C6	R320 A5	R1017 D4	RB101B B1
C203 A1	C535 C3	C3010 B4	JMP4 B6	R321 A5	R1021 C5	RB201A C4
C205 C1	C536 C2	C3011 B4	JMP5 C6	R322 A5	R1022 D4	RB201B B5
C210 C1	C537 D2	C3012 A4	JMP6 C6	R325 C1	R1024 D5	Q001 A2
C212 A5	C538 D1	C3013 B4	JMP7 C6	R326 B1	R1026 C5	Q101 A2
C213 B6	C539 C3	C3014 B5	JMP8 A3	R327 B2	R1027 C5	Q102 A2
C214 B4	C540 D3	C3015 B4	JMP9 B2	R328 B2	R1031 C4	Q103 A2
C215 B4	C541 D3	C3016 A4	JMP10 A3	R329 B1	R1032 D4	Q104 A2
C216 B5	C542 C3	C3035 C1	JMP11 C5	R330 C1	R1033 D4	Q105 A2
C217 B3	C543 C2	C4001 B2	JMP12 A3	R331 B3	R1034 C4	Q301 A6
C301 A6	C544 D2	C4002 B2	JMP13 B2	R332 B6	R1036 D4	Q302 A6
C302 A6	C545 C3	C4005 B2	JMP14 A3	R333 B6	R1037 D4	Q303 B1
C306 A6	C546 C3	C4006 C2	JMP15 B5	R334 A6	R1039 D4	Q304 C1
C305 A6	C547 C2	C4007 C2	JMP16 C4	R335 A4	R1040 D4	Q305 B6
C307 A6	C549 D3	C4008 B2	JMP17 B6	R336 A4	R1041 D6	Q306 B4
C308 A6	C550 D3	C5011 C1	JMP18 A2	R337 A4	R1042 D6	Q307 A5
C309 A6	C555 D3	C5012 C2	JMP19 B2	R338 A4	R1043 D6	Q401 B3
C311 A5	C556 D3	C9002 D3	JMP20 B4	R339 A4	R1044 D6	Q1001 C5
C312 A6	C557 D2	C9003 D3	JMP21 B4	R340 A4	R1045 D6	Q1002 B4
C313 A5	C558 D2	C9004 C4	JMP22 C4	R341 A4	R1046 D6	Q1003 D4
C314 A5	C559 D2	C9005 C4	JMP23 C2	R342 A4	R1047 D6	Q1004 D4
C315 A5	C560 D2	C9006 D4	JMP24 B4	R343 A4	R1048 D6	Q3001 B2
C317 A5	C561 D1	C9007 C4	JMP25 D4	R344 A4	R1049 D6	Q3002 D1
C318 A5	C562 D1	C9008 C4	JMP26 B6	R345 A4	R1051 D6	Q9001 D4
C319 A4	C563 D2	C9009 C4	JMP29 A5	R346 A4	R1052 D6	Q9002 D3
C322 A4	C564 D2	C9010 C4	JMP30 A5	R347 A5	R1053 D6	Q9003 D4
C325 B2	C566 C2	C9013 D4	JMP31 C5	R348 A5	R1054 C5	Q9004 D4
C326 B2	C567 C1	C9015 D4	L102 A2	R349 A5	R1060 B5	Q9031 B4
C329 A4	C568 C1	C9020 D4	L104 B2	R350 A5	R1061 C5	Q9032 B4
C330 A4	C569 C2	C9031 B4	L151 B3	R351 A5	R1062 B5	Q9033 B4
C331 A4	C570 C2	C9036 B4	L153 B3	R352 A5	R1063 B3	Q9034 B4
C332 A4	C571 C2	C9038 B4	L154 B3	R353 A5	R1065 B3	TC001 A1
C333 A5	C572 C2	C9039 B4	L301 A6	R354 A5	R1066 C5	TC002 B1
C334 B5	C573 C2	CF101 A2	L302 A6	R355 A5	R1067 B5	T001 A1
C335 A5	C574 C2	CF102 B2	L403 B3	R356 A5	R1068 B5	T002 A1
C336 A5	C575 C2	CN002 A1	L404 B3	R357 A5	R1069 B5	T003 B1
C337 A5	C576 C2	CN102 B4	L501 C3	R358 A5	R1073 C4	T101 B1
C338 A5	C577 C2	CN204 D4	L502 D3	R359 A5	R1074 C5	T102 B2
C339 A5	C579 C1	CN206 D5	L503 D3	R360 A5	R1075 C5	T103 B2
C340 A5	C581 C2	CN213 D5	L504 C3	R361 A5	R1077 C5	T104 B2
C341 A5	C582 C1	CN214 B5	L505 C2	R362 A5	R1078 C5	T105 B2
C342 A5	C583 D2	CN501 D3	L506 D2	R363 A6	R1079 C5	VD001 A1
C343 B5	C584 C2	CN502 D2	L507 D2	R364 B6	R1080 C5	VD002 B1
C344 B5	C585 C2	CN503 D1	L508 C2	R365 B6	R1081 C5	VR102 B2
C345 A5	C586 C2	CN904 D4	L509 C1	R366 B6	R1082 C5	XL151 A3
C346 B5	C587 C2	CN905 D3	L510 D1	R367 A6	R1083 C5	XL152 A2
C347 A5	C588 D2	CN906 D4	L511 D2	R368 B6	R1084 C5	XL1001 C4
C348 A5	C589 C3	CN951 D4	L512 C2	R369 B6	R1085 B5	ZD301 A6
C349 A5	C590 C1	CN1003 D5	L513 D3	R370 B6	R1086 B5	ZD302 A5
C350 A5	C591 D2	CN3001 A6	L514 D3	R371 A5	R1087 B5	ZD303 B3
C351 A5	C592 C2	D001 A1	L515 D2	R372 B4	R1088 B5	ZD304 B4
C352 A5	C593 D1	D002 A1	L516 D2	R373 B5	R2001 D4	ZD305 B2
C353 A5	C594 D2	D003 A1	L517 D1	R374 B5	R3001 B1	ZD306 A4
C354 A5	C595 C2	D004 A1	L518 D2	R375 B5	R3002 B1	ZD307 A4
C355 B5	C596 C2	D101 B2	L1003 B4	R376 B5	R3006 B1	ZD1002 D4
C356 B5	C598 C1	D301 B6	L1004 B5	R377 B5	R3007 B1	ZD1003 D5
C357 B5	C599 C3	D302 B6	L1005 C4	R378 B5	R3009 B1	ZD1004 D5
C358 A6	C1001 A3	D303 A4	L1006 D4	R379 A4	R3010 B1	ZD1005 D5
C359 B6	C1002 A4	D304 B6	L1007 D4	R380 A4	R3011 B1	ZD1006 D5
C360 B6	C1003 A3	D305 B6	L1008 C4	R383 A4	R3012 B1	ZD1007 D5
C361 B6	C1004 A4	D306 B6	L1009 B5	R384 A4	R3013 B1	ZD1008 D5
C362 B5	C1005 A3	D401 B6	L1010 B5	R385 A4	R3014 B1	ZD1009 D5
C363 A5	C1006 A3	D402 B4	L9031 B4	R386 B4	R3017 B4	ZD1010 D5
C364 B6	C1007 A3	D1003 C4	L9032 B4	R390 A5	R3018 A4	ZD1013 B5
C365 B6	C1008 C6	D1004 D5	R002 A2	R391 A5	R3019 B3	ZD1014 B6
C366 B6	C1022 B6	D3001 B4	R003 A1	R392 A5	R3020 B3	
C367 B6	C1026 B6	D3003 D1	R004 A1	R393 A5	R3023 B4	
C368 B5	C1028 B6	D9001 C3	R005 A2	R394 A5	R3024 B4	

LAYOUT MAPPING (COPPERSIDE VIEW)

C003	A5	C1077	C1	R1089	C2
C006	B6	C1078	C1	R1091	C2
C007	A6	C1079	C1	R1092	C2
C008	A6	C1080	B2	R1090	C2
C009	A5	C1083	C3	R2002	D2
C010	A5	C1084	C3	R3004	B6
C013	A6	C1086	D2	R3005	B6
C015	A5	C1100	C1	R3021	A3
C016	A5	C1102	D1	R3022	A3
C108	B6	C1104	D1	R3032	C6
C111	B6	C1106	D6	R3033	D6
C112	B5	C1107	B2	R3034	D6
C122	A5	C1110	B2	R3035	D6
C129	B5	C1112	B2	R3036	D6
C130	B5	C1131	B2	R3037	C6
C131	B5	C1133	B2	R3038	C6
C132	B5	C1135	B2	R3039	C6
C133	B5	C3001	B6	R3041	B5
C134	B5	C3002	B6	R3042	C5
C135	B5	C3003	B6	R3044	B5
C141	B6	C3004	B6	R4004	C5
C142	B6	C3006	B6	R4006	B5
C144	A5	C3008	B6	R4008	B5
C145	A5	C3031	C6	R4012	B5
C152	A4	C3034	C6	R9003	D3
C154	A4	C3041	B5	R9004	D4
C155	A4	C4003	C5	R9007	D3
C157	B4	C4004	B5	R9011	C2
C161	A6	C5031	C5	R9012	C3
C164	A4	C5032	C5	R9034	B3
C168	A4	C5033	C6	R9038	B3
C169	A5	C5034	C6	RA1002	B1
C173	A5	C5035	C4	RA1004	B1
C174	A5	C5036	C4		
C175	B4	C5037	C4		
C204	A6	C5038	C4		
C206	B6	C5039	C5		
C207	A5	C5040	C5		
C208	A5	C5041	C5		
C209	B5	C5042	C5		
C211	B4	C9011	C3		
C303	A1	C9014	D3		
C304	A1	C9016	D3		
C316	A2	C9021	D3		
C320	A3	C9032	B3		
C321	A3	C9037	B3		
C323	B6	C9040	B3		
C324	B6	IC101	B5		
C402	B4	IC151	A4		
C404	B4	IC4001	C5		
C405	B4	IC9003	C3		
C406	B4	R001	A6		
C412	B4	R006	A5		
C414	B4	R009	A5		
C415	B4	R101	A5		
C417	B4	R102	A5		
C418	B4	R107	D2		
C419	B4	R112	B6		
C420	B4	R113	A5		
C421	B4	R114	B6		
C422	B4	R115	B6		
C423	B4	R116	B6		
C424	B4	R117	B5		
C425	B4	R118	B5		
C426	B4	R124	B5		
C427	B4	R131	B6		
C1009	C1	R132	B6		
C1010	C1	R133	B6		
C1012	C2	R134	B6		
C1013	C2	R139	A5		
C1014	C2	R151	A4		
C1015	C3	R152	A4		
C1016	C3	R154	A5		
C1017	C2	R155	A5		
C1021	D2	R159	A5		
C1023	C2	R160	A5		
C1024	C2	R161	A5		
C1025	B1	R162	A5		
C1027	B1	R163	A5		
C1038	C2	R165	A5		
C1040	D2	R303	A1		
C1041	C2	R316	A5		
C1042	D2	R323	B6		
C1043	C2	R324	B6		
C1044	C2	R381	A3		
C1045	C2	R382	A3		
C1046	C2	R387	A3		
C1047	C2	R401	B4		
C1048	C2	R405	B4		
C1049	D2	R412	B4		
C1050	D2	R1008	C2		
C1051	D2	R1010	D2		
C1052	D2	R1011	D2		
C1055	C2	R1012	C2		
C1056	C2	R1013	B2		
C1057	C2	R1018	C2		
C1058	C2	R1019	C2		
C1059	D2	R1020	C2		
C1060	D2	R1023	D2		
C1061	C2	R1028	C3		
C1064	D2	R1029	B1		
C1065	D2	R1030	B1		
C1066	C3	R1038	D3		
C1067	C3	R1055	D1		
C1068	C3	R1056	D6		
C1069	C3	R1057	C1		
C1070	C3	R1059	B2		
C1075	C3	R1071	B3		
C1076	D1	R1072	B3		

PCB LAYOUT (COPPERSIDE VIEW)



ELECTRICAL PARTSLIST - MAIN BOARD

- MISCELLANEOUS -			- RESISTORS -		
CN002	9965 000 15855	CONNECTOR S2B-XH-A 2P	RA1006△9965 000 12486	RES ARRAY 4* 33Ω 1/10W 5%	
CN1003	9965 000 15856	CONNECTOR 20X2 P	RA1007△9965 000 12486	RES ARRAY 4* 33Ω 1/10W 5%	
CN101	9965 000 18015	CONNECTOR 3P	RA1008△9965 000 12486	RES ARRAY 4* 33Ω 1/10W 5%	
CN102	9965 000 18015	CONNECTOR 3P	RA1009△9965 000 12486	RES ARRAY 4* 33Ω 1/10W 5%	
CN204	9965 000 17367	CONNECTOR 8P /21S/21R /22S/25S	RA1010△9965 000 12486	RES ARRAY 4* 33Ω 1/10W 5%	
CN204	9965 000 15895	CONNECTOR 5P /37	RA1011△9965 000 12486	RES ARRAY 4* 33Ω 1/10W 5%	
CN206	9965 000 15895	CONNECTOR 5P	RA1012△9965 000 12486	RES ARRAY 4* 33Ω 1/10W 5%	
CN213	9965 000 15900	CONNECTOR 3P	RA1013△9965 000 12486	RES ARRAY 4* 33Ω 1/10W 5%	
CN214	9965 000 17367	CONNECTOR 8P	RA1016△9965 000 12487	RES ARRAY 4* 10Ω 1/10W 5%	
CN3001	9965 000 18016	CONNECTOR 4P	RA1017△9965 000 12487	RES ARRAY 4* 10Ω 1/10W 5%	
CN501	9965 000 18046	CONNECTOR 4P /22S/25S	RA1018△9965 000 12488	RES ARRAY 4* 4.7KΩ 1/10W 5%	
CN502	9965 000 18046	CONNECTOR 4P /22S/25S	RA1020△9965 000 12488	RES ARRAY 4* 4.7KΩ 1/10W 5%	
CN503	9965 000 18046	CONNECTOR 4P /22S/25S	RA1021△9965 000 12486	RES ARRAY 4* 33Ω 1/10W 5%	
CN904	9965 000 17359	CONNECTOR B8B-XH-A 8P	VR102	4822 051 20392	3K90 5% 0,1W
CN905	9965 000 17360	CONNECTOR 4P CL3962WVO			
CN906	9965 000 15900	CONNECTOR 3P	- COILS & FILTERS -		
CN951	9965 000 15863	CONNECTOR B5B-XH-A 5P	XL1001	9965 000 17371	27.0000MHZ HC-49US +/-20PPM
RB101A	9965 000 18048	CON/WIRE 3P 380mm /22S/25S	XL152	9965 000 15881	CRYSTAL 4.5 MHZ HC-49/U
RB101B	9965 000 18049	CON/WIRE 3P 250mm /22S/25S	L102	9965 000 15871	INDUCTOR 10μH 10%
JK001	9965 000 15852	FM ANT JACK	L103	9965 000 15872	COIL 39 MHZ
JK301	9965 000 18017	TOSK JACK DLT1130	L104	9965 000 15871	INDUCTOR 10μHZ 10%
JK302	9965 000 18024	RCA JACK 2P	L151	9965 000 15871	INDUCTOR 10μH 10%
JK303	9965 000 17363	RCA JACK 1P /21S/21R	L153	9965 000 15871	INDUCTOR 10μH 10%
JK304	9965 000 17364	AXIAL JACK 6P /21S/21R/37	L154	9965 000 15871	INDUCTOR 10μH 10%
JK304	9965 000 18047	AXIAL JACK 6P /22S/25S	L301	9965 000 15871	INDUCTOR 10μH 10%
			L302	9965 000 15871	INDUCTOR 10μH 10%
- CAPACITORS			L403	9965 000 17369	100Ω AT 100MHZ
TC001	9965 000 15865	COND TRIM 3 - 10PF NPO	L403	9965 000 15871	INDUCTOR 10μH 10%
TC002	9965 000 15866	COND TRIM 4.2 - 20PF N450	L404	9965 000 17369	100Ω AT 100MHZ
C549	9965 000 15930	COND MULTI 0.1μF 50V 20%	L404	9965 000 15871	INDUCTOR 10μH 10%
C550	9965 000 15930	COND MULTI 0.1μF 50V 20%	L501	9965 000 16695	30μH 15% 1KHZ 0.25V 2A
C555	9965 000 15930	COND MULTI 0.1μF 50V 20%	L502	9965 000 16695	30μH 15% 1KHZ 0.25V 2A
C556	9965 000 15930	COND MULTI 0.1μF 50V 20%	L503	9965 000 16695	30μH 15% 1KHZ 0.25V 2A
C557	9965 000 15930	COND MULTI 0.1μF 50V 20%	L504	9965 000 16695	30μH 15% 1KHZ 0.25V 2A
C558	9965 000 15930	COND MULTI 0.1μF 50V 20%	L505	9965 000 16695	30μH 15% 1KHZ 0.25V 2A
C559	9965 000 15930	COND MULTI 0.1μF 50V 20%	L506	9965 000 16695	30μH 15% 1KHZ 0.25V 2A
C560	9965 000 15930	COND MULTI 0.1μF 50V 20%	L507	9965 000 16695	30μH 15% 1KHZ 0.25V 2A
C561	9965 000 15930	COND MULTI 0.1μF 50V 20%	L508	9965 000 16695	30μH 15% 1KHZ 0.25V 2A
C562	9965 000 15930	COND MULTI 0.1μF 50V 20%	L509	9965 000 16695	30μH 15% 1KHZ 0.25V 2A
C563	9965 000 15930	COND MULTI 0.1μF 50V 20%	L510	9965 000 16695	30μH 15% 1KHZ 0.25V 2A
C564	9965 000 15930	COND MULTI 0.1μF 50V 20%	L511	9965 000 16695	30μH 15% 1KHZ 0.25V 2A
			L512	9965 000 16695	30μH 15% 1KHZ 0.25V 2A
			L513	9965 000 16692	20μH D0.5MM 4PIN
			L514	9965 000 16692	20μH D0.5MM 4PIN
			L515	9965 000 16692	20μH D0.5MM 4PIN
			L516	9965 000 16692	20μH D0.5MM 4PIN
			L517	9965 000 16692	20μH D0.5MM 4PIN
			L518	9965 000 16692	20μH D0.5MM 4PIN
RA1001△	9965 000 12486	RES ARRAY 4* 33Ω 1/10W 5%			
RA1002△	9965 000 12486	RES ARRAY 4* 33Ω 1/10W 5%			
RA1003△	9965 000 12486	RES ARRAY 4* 33Ω 1/10W 5%			
RA1004△	9965 000 12486	RES ARRAY 4* 33Ω 1/10W 5%			
RA1005△	9965 000 12486	RES ARRAY 4* 33Ω 1/10W 5%			

ELECTRICAL PARTSLIST - MAIN BOARD

- COILS & FILTERS - -			DIODES -		
L1003	9965 000 15871	INDUCTOR 10 μH 10%	ZD302	4822 130 34167	BZX79-B6V2
L1004	9965 000 15871	INDUCTOR 10 μH 10%	ZD303	9965 000 14658	ZENER 8.5-8.9V 0.5W
L1005	9965 000 18025	2.4 μH 5%	ZD304	9965 000 17375	11.9-12.4V 0.5W
L1006	9965 000 18025	2.4 μH 5%	ZD305	9965 000 14658	ZENER 8.5-8.9V 0.5W
L1007	9965 000 18025	2.4 μH 5%	ZD306	4822 130 34167	BZX79-B6V2
L1008	9965 000 18025	2.4 μH 5%	ZD1002	4822 130 34167	BZX79-B6V2 /21S/21R/22S/25S
L1009	9965 000 15871	INDUCTOR 10 μH 10%	ZD1003	4822 130 80272	MTZJ7.5C
L1010	9965 000 15871	INDUCTOR 10 μH 10%	ZD1004	4822 130 80272	MTZJ7.5C
L9031	9965 000 15871	INDUCTOR 10 μH 10%	ZD1005	4822 130 80272	MTZJ7.5C
L9032	9965 000 15871	INDUCTOR 10 μH 10%	ZD1006	4822 130 80272	MTZJ7.5C
T001	9965 000 15880	OSC COIL /21S/21R/22S/25S	ZD1007	4822 130 80272	MTZJ7.5C
T002	9965 000 15874	ANT OSC AM 4-6:10T 1-3:86T	ZD1008	4822 130 80272	MTZJ7.5C
T003	9965 000 17370	108μH (796 KHz) COIL	ZD1009	4822 130 80272	MTZJ7.5C
T101	9965 000 15877	BIAS COIL 78 KHz	ZD1010	4822 130 80272	MTZJ7.5C
T102	9965 000 15875	AM IFT 455KHz Q=130	ZD1013	9965 000 17373	23.6-24.7V 0.5W
T103	9965 000 15878	BIAS COIL 16 KHz	ZD1014	9965 000 17374	2.9-3.1V 0.5W
T104	9965 000 15878	BIAS COIL 16 KHz	ZD3001	4822 130 80272	DIODE ZENR 6.9-7.2V 0.5W /37
T105	9965 000 15879	FM IFT 10.7MHz Q=60 MIN	ZD3002	4822 130 80272	DIODE ZENR 6.9-7.2V 0.5W /37
FB1001	9965 000 17369	100Ω at 100MHZ	VD001	4822 130 81673	1SV149
FB1002	9965 000 17369	100Ω at 100MHZ	VD002	4822 130 81673	1SV149
FB1004	9965 000 12470	BEAD FERITE 100Ω/ at 100MHZ	- IC & TRANSISTORS -		
FB9001	9965 000 12470	BEAD FERITE 100Ω/ at 100MHZ	IC101	9965 000 01369	LA1837 FM/AM IF/MPX IC
FB9002	9965 000 12470	BEAD FERITE 100Ω/ at 100MHZ	IC151	9965 000 17382	LC72720NM /21S/21R/22S/25S
FB9003	9965 000 12470	BEAD FERITE 100Ω/ at 100MHZ	IC152	4822 209 15778	LC72131M
CF101	9965 000 15867	CER FILTER 10.7 MHZ	IC301	9965 000 17384	IC TP5228
CF102	9965 000 15868	CER FILTER 10.7 MHZ	IC301A	9965 000 15886	IC RC4558D
CF103	9965 000 15869	CER FILTER 450 KHz	IC302	9965 000 17385	IC PT2259
			IC304	9965 000 15886	IC RC4558D
			IC305	9965 000 15886	IC RC4558D
			IC306	9965 000 15886	IC RC4558D
			IC307	9965 000 15886	IC RC4558D
			IC308	9965 000 15886	IC RC4558D
			IC401	9965 000 17383	IC STA308
			IC501	9965 000 14154	STA505 50W X2
			IC502	9965 000 14154	STA505 50W X2
			IC503	9965 000 14154	STA505 50W X2
			IC902	9965 000 12493	BA033T REGULATOR 3.3V 1A
			IC1001	9965 000 12489	EEPROM AM29F080B-90EC
			IC1003	9965 000 18026	IC 208P ES6028FW
			IC1003	9965 000 18053	IC 208P ES6028 /37
			IC1004	9965 000 15883	IC TC74HC04AFN
			IC1005	9965 000 12494	74HC374
			IC1006	9965 000 12494	74HC374
			IC1007	9965 000 15884	IC AT24C02N-10SI-2.7
			IC1008	9965 000 12499	SYNCHRO. DRAM 4MX16 Y3V
			IC1009	9965 000 15885	IC WM8746 6CH D/A
			IC1010	9965 000 12494	74HC374
			IC1011	9965 000 17379	IC SN74HCT244DW
D001	4822 130 30621	1N4148			
D002	4822 130 30621	1N4148			
D003	4822 130 30621	1N4148			
D004	4822 130 30621	1N4148			
D101	4822 130 30621	1N4148			
D301	4822 130 30621	1N4148			
D302	4822 130 30621	1N4148			
D303	4822 130 30621	1N4148			
D304	4822 130 30621	1N4148			
D305	4822 130 30621	1N4148			
D306	4822 130 30621	1N4148			
D402	4822 130 30621	1N4148			
D1003	4822 130 30621	1N4148			
D1004	4822 130 30621	1N4148			
D3001	4822 130 30621	1N4148 /37			
D3002	4822 130 30621	1N4148 /37			
D3003	4822 130 30621	1N4148			
D9001	4822 130 31438	1N4001G			
D9002	4822 130 31438	1N4001G			
ZD301	4822 130 34167	BZX79-B6V2			

ELECTRICAL PARTSLIST - MAIN BOARD**- IC & TRANSISTORS -**

IC1012	9965 000 17379	IC SN74HCT244DW
IC1013	9965 000 17380	IC AK4112BVF
IC1015	9965 000 17381	IC WM8738ED
IC3001	9965 000 12510	TC4052BFN CHIP
IC3002	9965 000 15886	IC RC4558D

IC4001	9965 000 15886	IC RC4558D
IC9001	9965 000 12512	BA05T ROHM
IC9004	9965 000 12512	BA05T ROHM
Q001	4822 130 63173	2SK192AY
Q101	4822 130 41595	2SC1675L

Q102	4822 130 41595	2SC1675L
Q103	4822 130 63876	2SA733R
Q104	4822 130 41198	2SC945P
Q105	4822 130 41198	2SC945P
Q301	4822 130 41198	2SC945P

Q302	4822 130 43818	2SC2878-A
Q303	4822 130 43818	2SC2878-A
Q304	4822 130 43818	2SC2878-A
Q305	4822 130 63876	2SA733R /37
Q306	4822 130 41198	2SC945P

Q307	4822 130 43818	2SC2878-A
Q401	4822 130 41651	2SC2001L
Q1001	4822 130 41651	2SC2001L
Q1002	4822 130 41198	2SC945P
Q1003	4822 130 41198	2SC945P

Q1004	4822 130 41198	2SC945P
Q3001	4822 130 43818	2SC2878-A
Q3002	4822 130 41198	2SC945P
Q9001	4822 130 41198	2SC945P
Q9002	4822 130 10358	2SB772P/Q

Q9003	4822 130 41198	2SC945P
Q9004	4822 130 10358	2SB772P/Q
Q9031	4822 130 41198	2SC945P
Q9032	4822 130 63876	2SA733R
Q9033	4822 130 41198	2SC945P

Q9034	4822 130 63876	2SA733R
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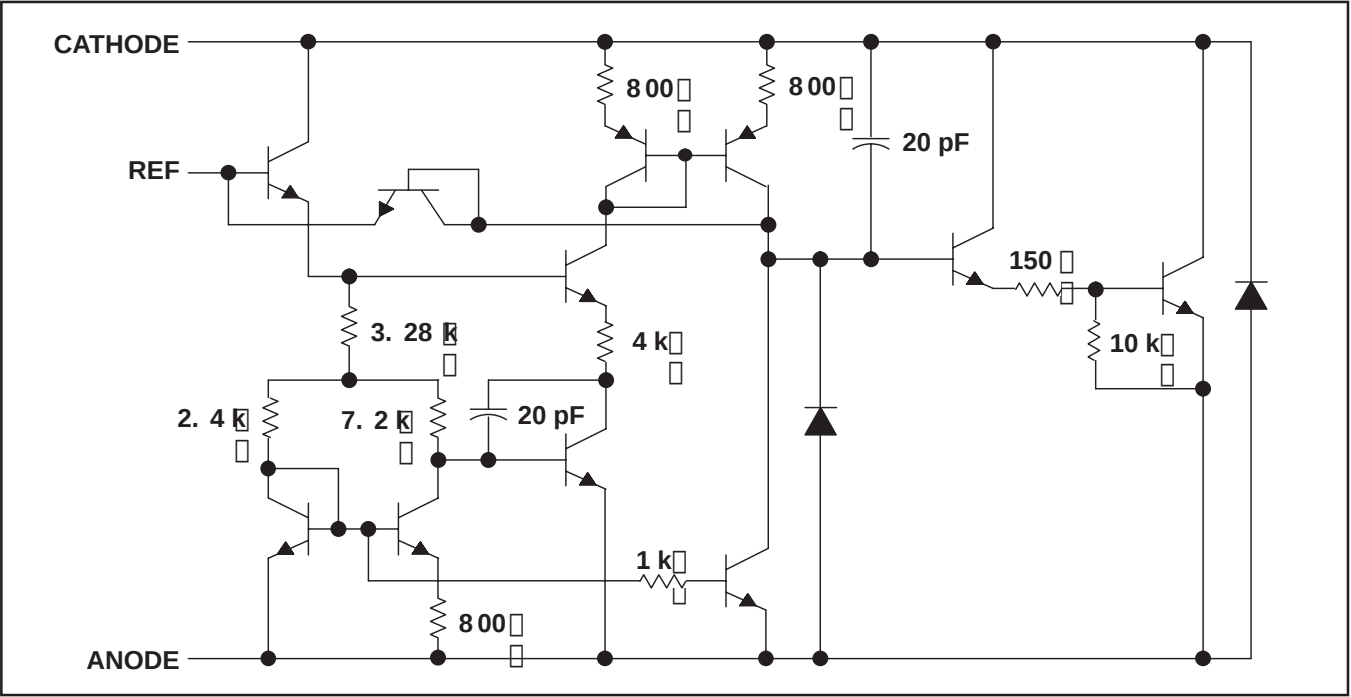
Note: Only these parts mentioned in the list are normal service parts.

POWER BOARD

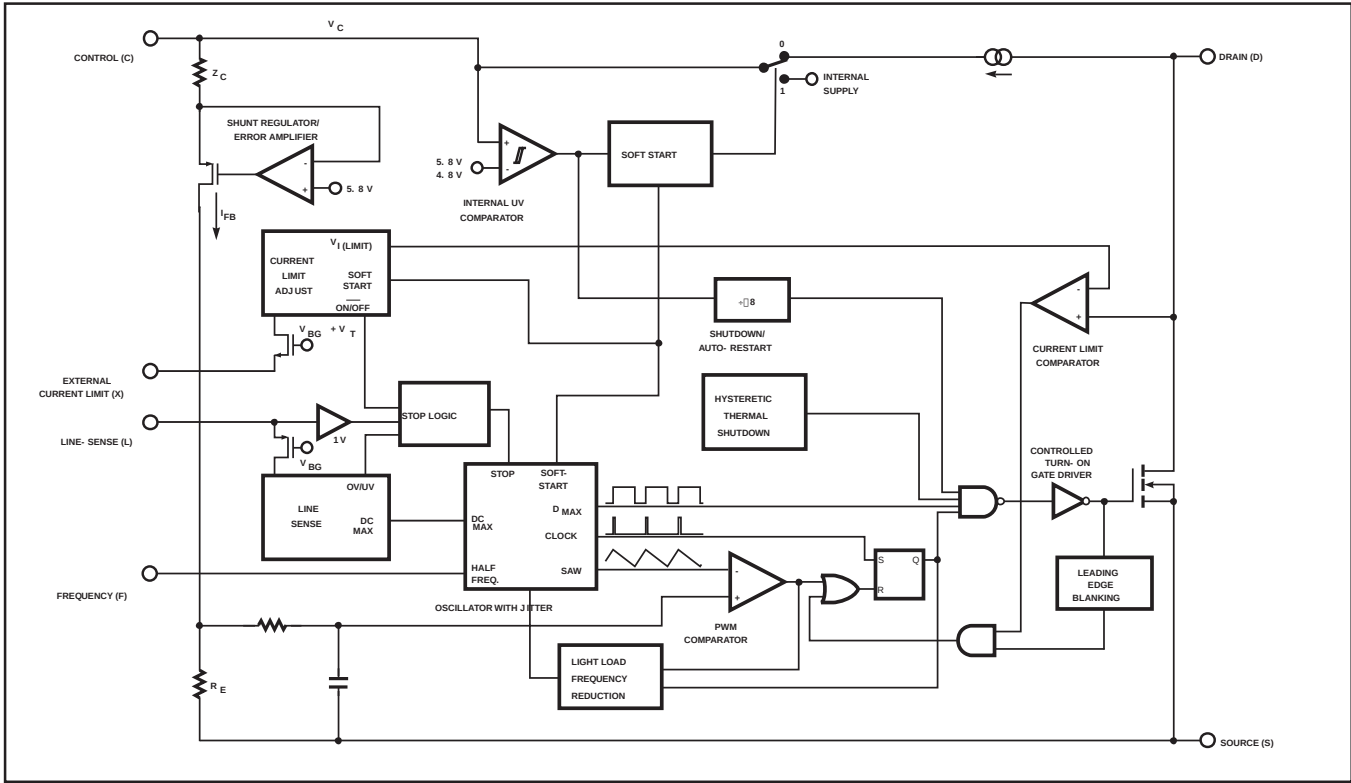
TABLE OF CONTENTS

Internal IC Diagram & Voltage.....	9-1
Circuit Diagram.....	9-2
PCB Layout	9-3
Electrical Parts List.....	9-4

TL431 EQUIVALENT SCHEMATIC

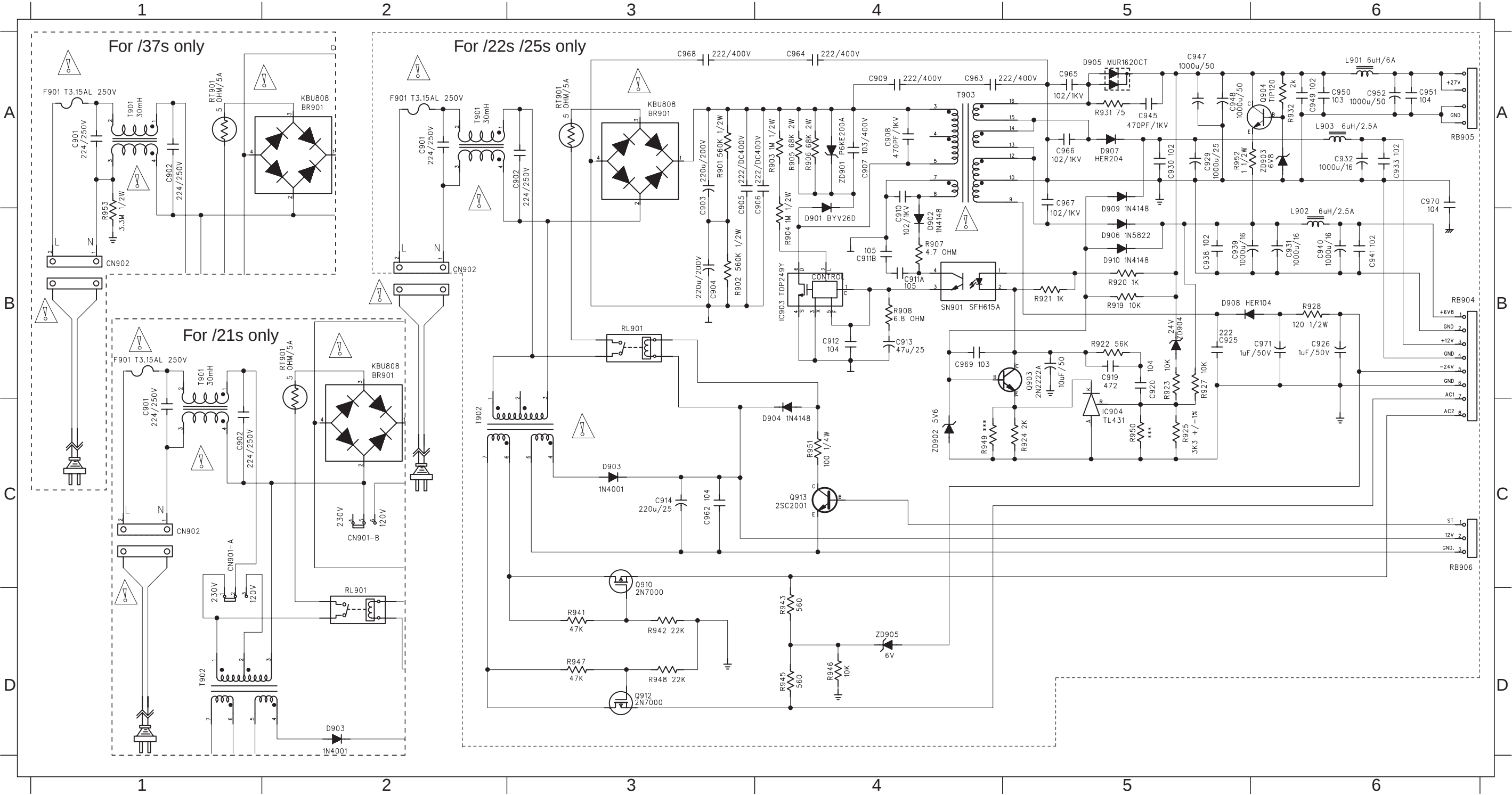


TOP249 BLOCK DIAGRAM

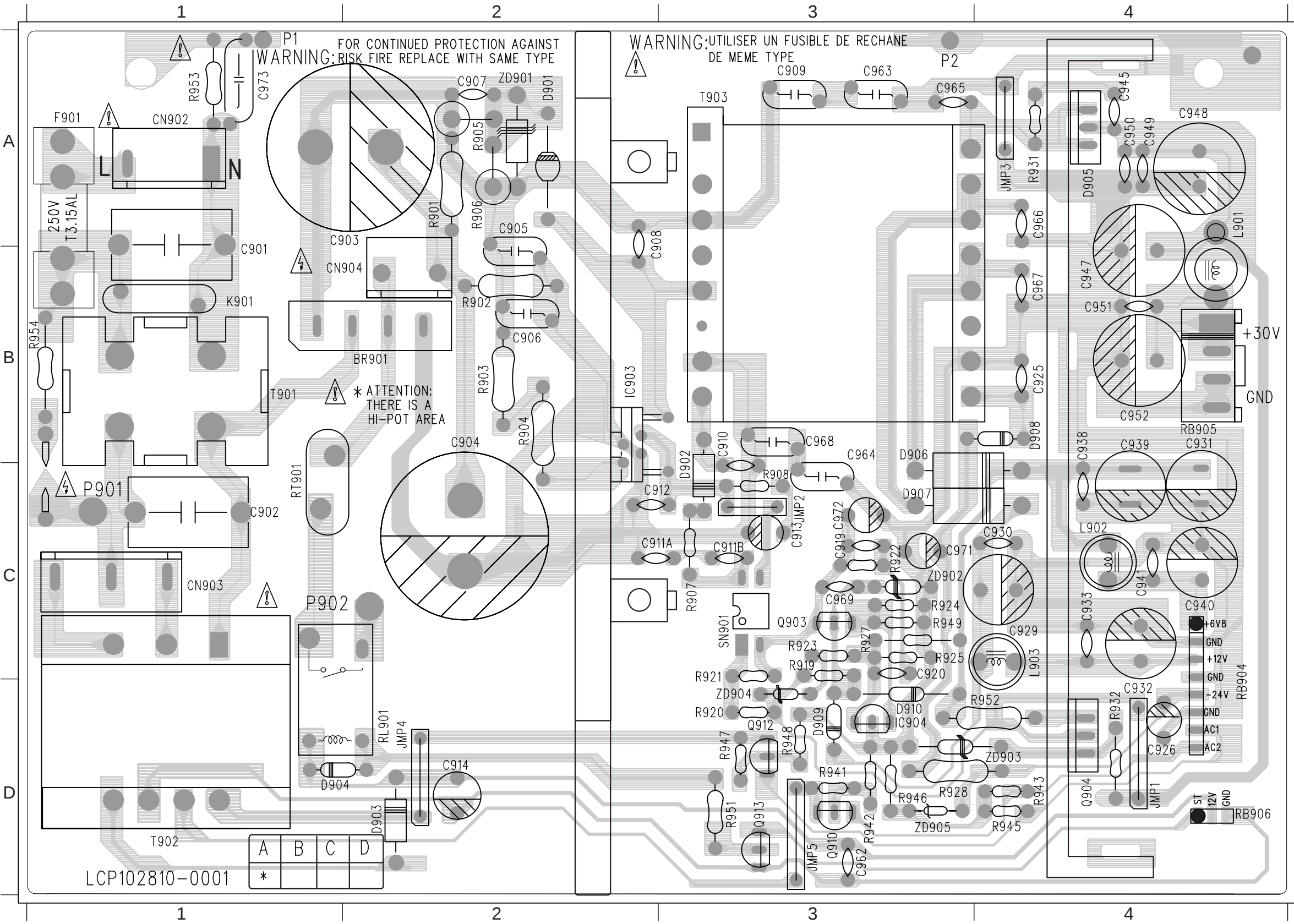


CIRCUIT DIAGRAM

BR901	A3	C908	A4	C919	B5	C933	A6	C949	A6	C966	A5	CN902	B2	D908	B5	L903	A6	R903	A4	R921	B5	R932	A6	R949	C4	RL901	B3	ZD903	A6
C901	A2	C909	A4	C920	B5	C938	B5	C950	A6	C967	A5	D901	B4	D909	A5	Q903	B5	R904	B4	R922	B5	R941	D3	R950	C5	RT901	A3	ZD904	B5
C902	A3	C910	B4	C925	B5	C939	B5	C951	A6	C968	A3	D902	B4	D910	B5	Q904	A6	R905	A4	R923	B5	R942	D3	R951	C4	SN901	B4	ZD905	D4
C903	A3	C911A	B4	C926	B6	C940	B6	C952	A6	C969	B4	D903	C3	F901	A2	Q910	C3	R906	A4	R924	C5	R943	D4	R952	A5	T901	A2		
C904	B3	C911B	B4	C929	A5	C941	B6	C962	C3	C970	A6	D904	C4	IC903	B4	Q912	D3	R907	B4	R925	C5	R945	D4	R953	B1	T902	C2		
C905	A3	C912	B4	C930	A5	C945	A5	C963	A4	C971	B6	D905	A5	IC904	C5	Q913	C4	R908	B4	R927	B5	R946	D4	RB904	B6	T903	A4		
C906	A4	C913	B4	C931	B6	C947	A5	C964	A4	CN901-A C1	D906	B5	L901	A6	R901	A3	R919	B5	R928	B6	R947	D3	RB905	A6	ZD901	A4			
C907	A4	C914	C3	C932	A6	C948	A5	C965	A5	CN901-B C2	D907	A5	L902	B6	R902	B3	R920	B5	R931	A5	R948	D3	RB906	C6	ZD902	C4			



POWER PCB LAYOUT



BR901	B2	JMP1	D4
C901	B1	JMP2	B3
C902	C1	JMP3	A4
C903	A2	JMP4	D2
C904	B2	JMP5	D3
C905	A2	JMP6	A4
C906	B2	K901	B1
C907	A2	L901	A4
C908	B2	L902	C4
C909	A3	L903	C4
C910	B3	P2	A3
C911A	C2	P901	C1
C911B	C3	P902	C1
C912	C2	Q903	C3
C913	C3	Q904	D4
C914	D2	Q910	D3
C919	C3	Q912	D3
C920	C3	Q913	D3
C925	B4	R901	A2
C926	D4	R902	B2
C929	C4	R903	B2
C930	C4	R904	B2
C931	B4	R905	A2
C932	C4	R906	A2
C933	C4	R907	C3
C938	B4	R908	C3
C939	B4	R919	C3
C940	C4	R920	D3
C941	C4	R921	C3
C945	A4	R922	C3
C947	B4	R923	C3
C948	A4	R924	C3
C949	A4	R925	C3
C950	A4	R927	C3
C951	B4	R928	D3
C952	B4	R931	A4
C962	D3	R932	C4
C963	A3	R941	D3
C964	B3	R942	D3
C965	A3	R943	D4
C966	A4	R945	D4
C967	B4	R946	D3
C968	B3	R947	D3
C969	C3	R948	D3
C971	C3	R949	C3
C972	C3	R951	D3
C973	A1	R952	C4
CN902	A1	R953	A1
CN903	C1	R954	B1
CN904	B2	RB904	C4
D901	A2	RB905	B4
D902	B3	RB906	D4
D903	D2	RL901	D2
D904	D1	RT901	C1
D905	A4	SN901	C3
D906	B3	T901	B1
D907	C3	T902	D1
D908	B4	T903	A3
D909	D3	ZD901	A2
D910	C3	ZD902	C3
F901	A1	ZD903	D4
IC903	B2	ZD904	D3
IC904	D3	ZD905	D3

ELECTRICAL PARTSLIST - POWER BOARD

- MISCELLANEOUS -

CN902	9965 000 15936	CONNECTOR 4P P=3.96MM
CN903	9965 000 17458	CONNECTOR 3P /21S/21R
CN904	9965 000 16340	CONNECTOR 5P /21S/21R
F901	△9965 000 17388	FUSE 3.15A 250V SLOW
F901	△9965 000 12637	FUSE 3.15A 250V UL /37
RB904	9965 000 18040	8P 100mm /22S/25S
RB904	9965 000 19195	8P 140mm /21S/21R/37
RB906	9965 000 18041	3P 100MM
RL901	△9965 000 16331	RELAY /22S/25S
RL901	△9965 000 15937	RELAY /21S/21R/37

SN901	9965 000 15769	PHOTO COUPLER
T901	△9965 000 17395	1.7A L1:86TS L2:86TS
T902	△9965 000 17391	PWR TRANS EI-35 /21S/21R
T902	△9965 000 18050	PWR TRANS 230V /22S/25S
T902	△9965 000 19196	PWR TRANS 120V /37
T903	△9965 000 18343	PWR TRANS /21S/21R/37
T903	△9965 000 17392	PWR TRANS /22S/25S

- CAPACITORS-

C907	9965 000 18042	COND DISC 0.01μF 1KV 20%
C905	9965 000 18043	0.0022μF 400V 20%
C906	9965 000 18043	0.0022μF 400V 20%
C909	9965 000 18043	0.0022μF 400V 20%
C963	9965 000 18043	0.0022μF 400V 20%
C964	9965 000 18043	0.0022μF 400V 20%
C968	9965 000 18043	0.0022μF 400V 20%

- RESISTORS -

R905	9965 000 17393	68KΩ 2W 5% W/KINK
R906	9965 000 17393	68KΩ 2W 5% W/KINK
R928	△9965 000 16691	120Ω 1/2W
R952	△9965 000 12517	1Ω 1/2W 5%

- COILS & FILTERS -

RT901	9965 000 17394	5Ω 5A
L901	9965 000 16693	6μH 10.5TS 6A
L902	9965 000 16694	6μH 13.5TS 2UEW
L903	9965 000 16694	6μH 13.5TS 2UEW

- DIODES -

BR901	9965 000 14146	ZENER 6.4-6.7V 0.5W
D901	4822 130 11044	BYV26D
D902	4822 130 30621	1N4148
D903	4822 130 31438	1N4001G
D904	4822 130 30621	1N4148

- DIODES -

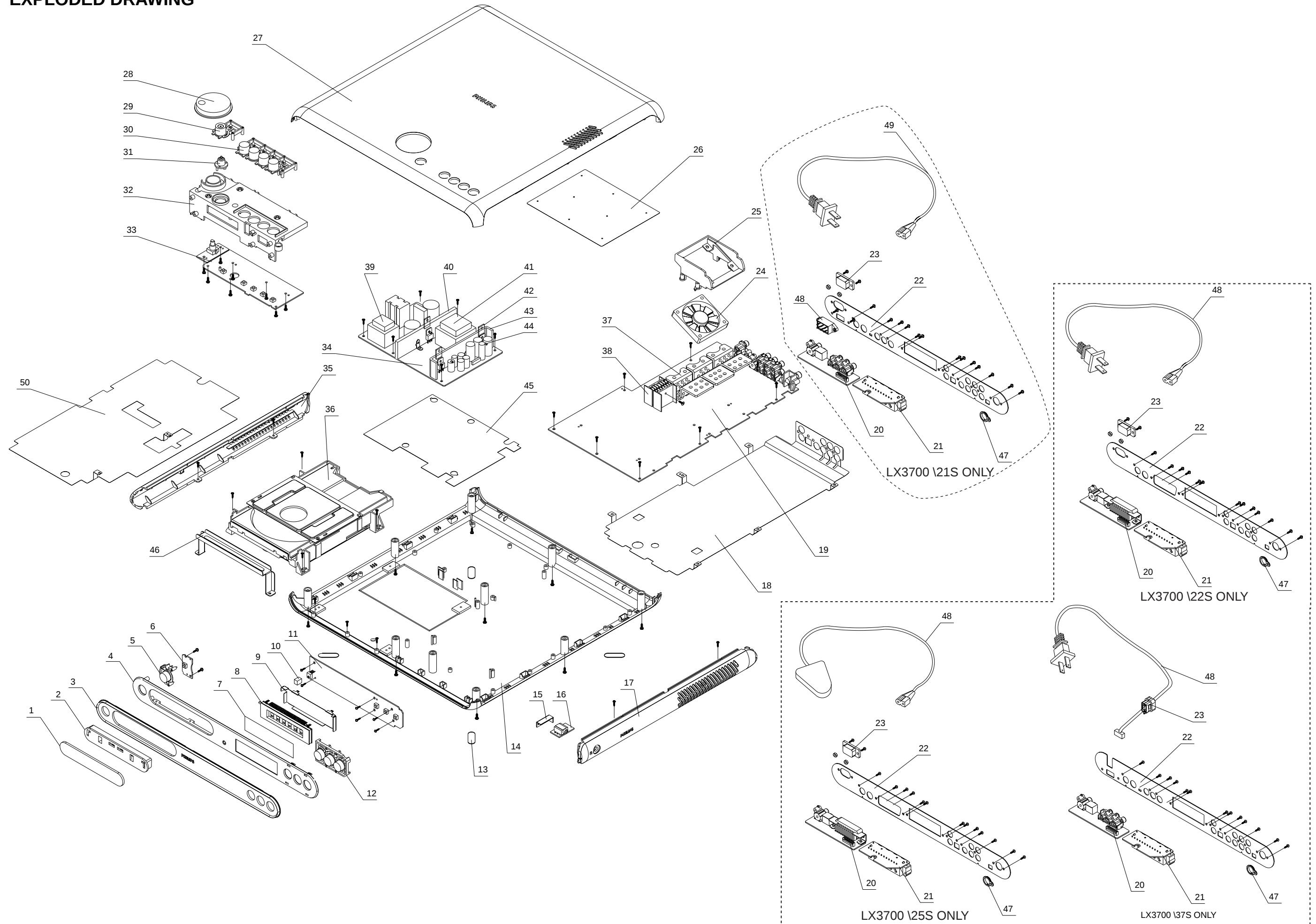
D905	9965 000 14186	MUR1620CT 8A 200V
D906	5322 130 32677	1N5822
D907	9965 000 14187	HER204 2A/300V 50NS
D908	9965 000 14188	HER104 1A/300V 50NS
D909	4822 130 30621	1N4148
D910	4822 130 30621	1N4148
ZD901	9965 000 14209	P6KE200A
ZD902	9965 000 15944	DIODE ZENR 5.6-5.9V 0.5W
ZD903	4822 130 80272	MTZJ7.5C

- IC & TRANSISTORS -

IC903	9965 000 14189	TOP249Y 250W
IC904	9965 000 17387	IC TL431
Q903	9965 000 17396	PN2222A FAIRCHILD
Q904	9965 000 17397	XISTR NPN TIP120
Q910	9965 000 16497	2N7000TA 60V/0.2A,
Q912	9965 000 16497	2N7000TA 60V/0.2A,
Q913	4822 130 41651	2SC2001L

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

EXPLODED DRAWING



MECHANICAL & ACCESSORIES PARTSLIST

01	9965 000 17998	DOOR LENS	2422 076 00528	SCART CABLE /22S/25S
	9965 000 18363	DOOR LENS / LX3750W/22S/25S/37	9965 000 18005	SATELLITE SPK
02	9965 000 17990	DVD DOOR	9965 000 18368	SATELLITE SPK/LX3750W/22S/25S
	9965 000 18359	DVD DOOR / LX3750W/22S/25S/37	9965 000 18367	SATELLITE SPK /LX3750W/37
03	9965 000 17999	FRONT LENS	9965 000 18006	SUBWOOFER /LX3700D/22S/25S
	9965 000 18364	FRONT LENS / LX3750W/22S/25S/37	9965 000 18370	SUBWOOFER /21S/21R
04	9965 000 17991	FRONT PANEL	9965 000 18371	SUBWOOFER / LX3750W/22S/25S
05	9965 000 17994	OPEN/CLOSE KNOB	9965 000 18369	SUBWOOFER / LX3750W/37
12	9965 000 17996	FRONT KNOB	9965 000 18007	REMOTE CONTROL
13	9965 000 18014	RUBBER FOOT		/ LX3700D/21S/21R/22S/25S
			9965 000 18376	REMOTE CONTROL
14	9965 000 17988	BOTTOM CAB		/ LX3750W/22S/25S/37
	9965 000 18357	BOTTOM CAB / LX3750W/37		
	9965 000 19346	BOTTOM CAB / LX3750W/22S/25S	9965 000 18012	OWNER MANUAL /22S/25S
17	9965 000 18003	SIDE PANEL(R)	9965 000 18378	OWNER MANUAL / LX3750W/37
	9965 000 18366	SIDE PANEL(R) / LX3750W/37	9965 000 18377	OWNER MANUAL
				/ LX3700D/21S/21R
	9965 000 19313	SIDE PANEL(R) / LX3750W/22S/25S		
22	9965 000 18013	BACK PANEL /22S/25S		
	9965 000 18372	BACK PANEL / LX3750W/37		
	9965 000 18373	BACK PANEL / LX3700D/21R		
	9965 000 18374	BACK PANEL / LX3700D/21S		
23	9965 000 12443	AC SLOT /21S/21R/22S/25S	Note: Only these parts mentioned in the list are normal service parts.	
24	9965 000 18000	FAN GM1206PFV3-A		
25	9965 000 18001	FAN PROTECTIVE WALL		
27	9965 000 17989	TOP CABINET / LX3700D/22S/25S		
	9965 000 19311	TOP CABINET / LX3700D/21S/21R		
	9965 000 18358	TOP CABINET / LX3750W/37		
	9965 000 19345	TOP CABINET / LX3750W/22S/25S		
28	9965 000 17992	VOLUME KNOB		
	9965 000 18360	VOLUME KNOB / LX3750W/22S/25S/37		
29	9965 000 17993	POWER KNOB		
	9965 000 18361	POWER KNOB / LX3750W/22S/25S/37		
30	9965 000 17995	FUNCTION KNOB		
	9965 000 18362	FUNCTION KNOB / LX3750W/22S/25S/37		
31	9965 000 17997	LED LENS		
32	9965 000 18004	TOP KNOB SUPPORT		
35	9965 000 18002	SIDE PANEL(L)		
	9965 000 18365	SIDE PANEL(L) / LX3750W/37		
	9965 000 19314	SIDE PANEL(L) / LX3750W/22S/25S		
36	△ 9965 000 18008	DVD LOADER DSL-710A		
47	9965 000 12441	FM HOLDER		
48	△ 9965 000 15983	MAINS CORD /22S		
	△ 9965 000 12818	MAINS CORD / LX3750W/37		
	△ 9965 000 18375	MAINS CORD /21S		
	△ 9965 000 18329	MAINS CORD /21R		
	△ 9965 000 17457	MAINS CORD /25S		
	9965 000 14228	TUNER KST-F404VA2FM (/22S)		
	4822 303 50063	FM ANTENNA		
	4822 303 50082	AM FRAME AERIAL		
	9965 000 13058	RCA CABLE 1200MM		
	9965 000 14636	RCA CABLE 1200MM		



WIRELESS SURROUND LOUDSPEAKER BOXES

TABLE OF CONTENTS

Introduction	11-1
Mechanical instructions - Mech. Partslist	11-1
Service hints	11-2
Blockdiagrams	11-4
Wiring	11-6
Electrical Diagrams	11-7
Circuit Descriptions	11-21
Spare Partslist	11-26

11. Wireless Surround Loudspeaker boxes

1.1. Introduction

With the Wireless surround system it is possible to connect rear speakers wireless with the main set. The system consists of:transmitter part Tx: interface-board and transmitter board receiver part RX: receiver board, amplifier board and SMPSupply part
Loudspeaker boxes left and right rear, per equipment defined.
The interface board can be an integrated part of a TV set (EM6E-chassis) or a separate board in the transmitter part in case of the AV Entertainment (DVD-receiver) application.
Transmitter and receiver can be seen as one system,
The amplifier board is per application (TV or AV) adapted.



Figure 1-1 Wireless transm. receiver cabinets

1.2. Mechanical Intructions

1.2.1. EV drawings + mechanical partslists

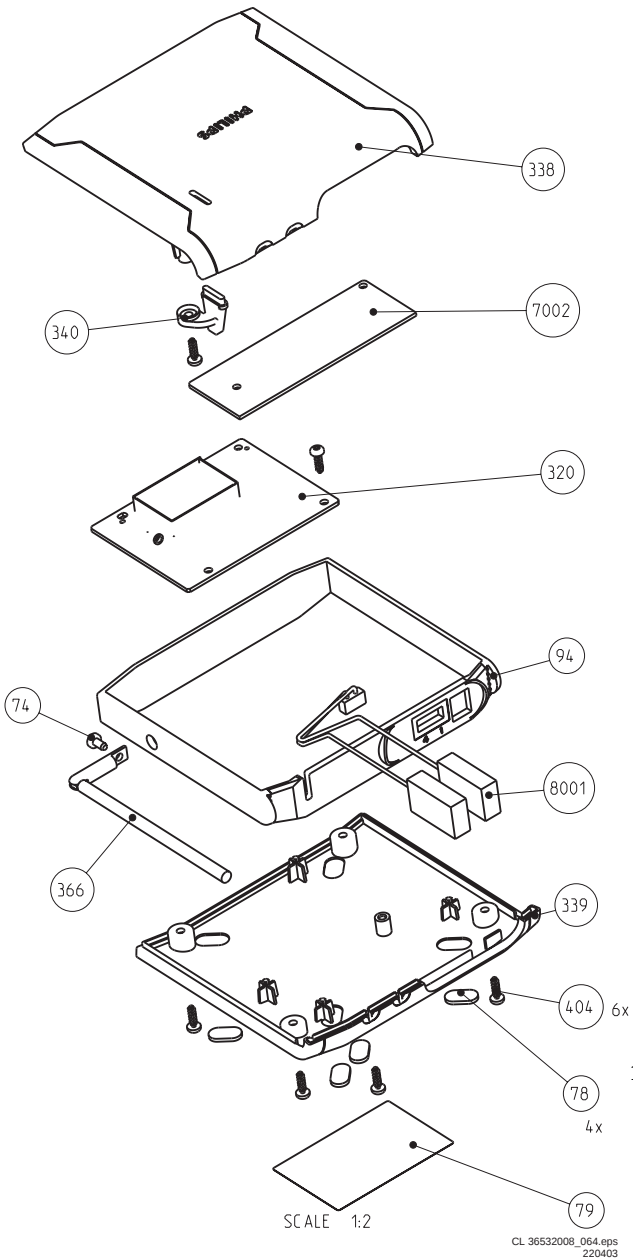


Figure 1-2 Transmitter

Partslist Transmitter

0074		Screw M3 x 6
0078	4304 074 19580	FEET
0320		TRANSMITTER BOARD
0338	4304 074 19520	TOP COVER TRANSMITTER
0339	4304 074 19530	BOTTOM COVER forTRANSMITTER
0340	4304 074 19560	LIGHT GUIDE TRANSMITTER
0366	3104 210 21710	ANTENNA
7002		INTERFACE BOARD TRANSMITTER
8001	4304 078 90060	CABLE ASSY LS INPUT INTERFACE

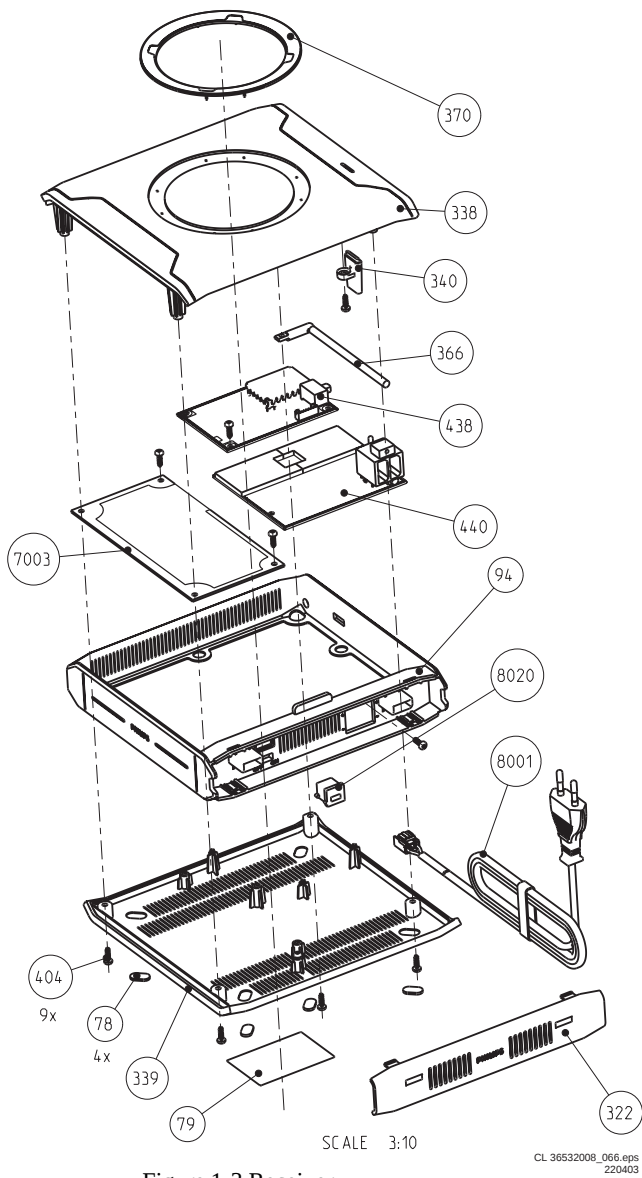


Figure 1-3 Receiver

Partslist Receiver

0078	4304 074 19580	FEET
0338	4304 074 19480	TOP COVER for RECEIVE
0339	4304 074 19470	BOTTOM COVER for RECEIVER
0340	4304 074 19570	LIGHT GUIDE RECEIVER
0366	3104 210 21710	ANTENNA
0370	4304 074 19510	DECORATIVE RING IN TOPCOVER
0438		RECEIVER BOARD
0440		AMPLIFIER
7003	4304 078 90130	SMPS board for amplifier
8001	4304 078 89080	CABLE ASSY POWER UK
8001	4304 078 90200	CABLE ASSY POWER USA

1.2.2. Demounting TX transmitter:

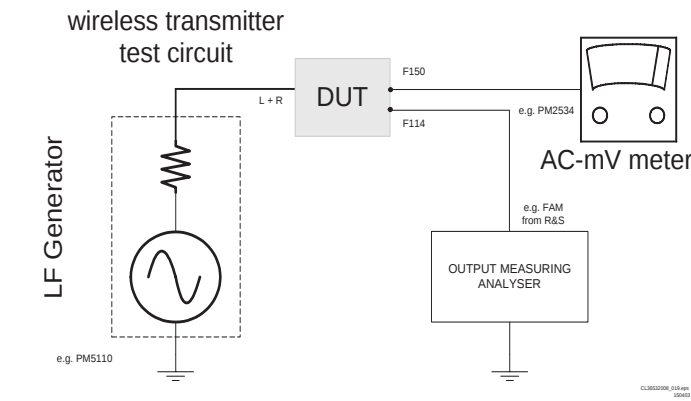
- Loosen 4 screws at bottom side.
- Now top cover can be removed
- The interface board can be removed after disconnecting cable 8003Tx.
- To remove the transmitter board loosen one screw, be careful for antenna which positioned through the mechanical "ring" and disconnect cable.
- To remount transmitter take care for LS cable 8001Tx to put it through the opening in the mechanical ring and through the wire inlays in the bottom part otherwise damaging of the wires may happen.

1.2.3. Demounting RX receiver:

- Loosen 4 screws at bottom side.
- Remove antenna
- Now the top cover can be removed
- The receiver board can be removed after loosening of one screw and connection cable 8004Rx.
- The amplifier board is fixed with 2 screws, one on board one on connector 1100. The screw which fits connector 1100 is behind the cable cover. After removing cables 8002Rx, 8003Rx and 8004Rx, the board can be taken out.
- The SMPowerSupply board is fixed with 2 screws, after loosening of these screws and disconnecting cables 8002Rx and 8003Rx the board can be removed.
- To remount receiver take care for correct positioning of the antenna, when fixing bottom cover.

1.3. Service hints, faultfinding and alignments

1.3.1 Measurement setup



Wireless Transmitter functional check and adjustment table Audio AD905W (LX3750W) versions

Powersupply check	Measurement ground	testpoint	Scope / Voltmeter
DC Check	F116	F119	+12V ± 0.5V
		F124	+ 8.35V ± 0.25V
		F126	+ 5V ± 0.25V
		F145	+ 2.52V ± 0.2V
		F144	+ 2.52V ± 0.2V
		F147	+ 4.2V ± 0.3V
		F149	+ 4.2V ± 0.3V

picture DUT:

LF input signal L = 400Hz; R = 400Hz, via	input level	testpoint	Input and Measurement ground	AC Voltmeter	Frequency counter
F117	410 mV L	F130	F116		23.4375 kHz ± 10 Hz
F118	410mV R				
F117	410 mV L	F131			46.875 kHz ± 20 Hz
F118	410mV R				
F117	410 mV L	F145		210 mV ± 20 mV	
F118	410mV R	F144		210 mV ± 20 mV	
F117	410 mV L	F147		200 mV ± 20 mV	
F118	410mV R				
F117	410 mV L	F149		205 mV ± 20 mV	
F118	410mV R				
F117	2100 mV L	F149		380 mV ± 40 mV	
F118	2100 mV R				

Check RF output signal

LF input signal L = 400Hz; R = 400Hz, via	input level	Input ground	channel	Measurement RF ground	Output signal	Frequency counter	Version
F117	0 mV L	F116	4	F115	F114	864.5 ± 0.025 MHz	for EUR and UK version
F118	0 mV R					915.3 ± 0.025 MHz	for USA version

Alignment of the modulation level *
Method 1

LF input signal L = 400Hz; R = 400Hz, via	input level	input ground	Connect RF Modulation Analyzer to testpoint	Measurement ground	Align	RF Modulation Analyser deviation
F117	410 mV L	F116	F114	F115	3179	50 kHz ± 3 Hz
F118	410 mV R					

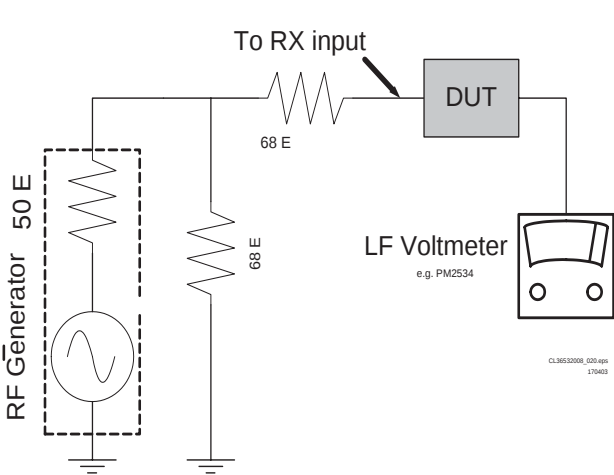
Method 2

LF input signal L = 400Hz; R = 400Hz, via	input level	input ground	Connect AC mV meter to testpoint	Measurement ground	Align	AC mV meter
F117	410 mV L	F116	F150	F116	3179	80mV rms (= 230mV pp)
F118	410 mV R					

* or Method 1 or Method 2 to be applied

Figure 1-4 Table AV transmitter

wireless receiver test circuit



WirelessReceiver functional check and adjustment table Audio AD905W (LX3750W) versions

Powersupply check	Measurement ground	testpoint	Scope / Voltmeter
DC Check	F701	F702	+10V ± 0.1V
		F740	+ 5.2V ± 0.5V
		F705	+ 8V ± 0.5V
		F707	+ 8V ± 0.5V
		F708	+3.6V ± 0.2V
		F709	+7.75V ± 0.5V
	F744	F740	+ 5.2V ± 0.2V
	F701	F712	+ 4.1V ± 0.3V
		F713	+ 4.1V ± 0.3V

Functional check

picture: receiver test circuit:

RF input signal, modulation = 50 kHz via adaptation network*	RF carrier frequency	Input signal	channel switch select	Output signal	Voltmeter	version
F748	863.3 MHz	1 mV rms	channel 1	F728	LF output	for EUR and UK version
F748	914.1 MHz	1 mV rms	channel 1	F728	LF output	for USA version

Alignment of the receiver EUR version

RF input signal, modulation = 50 kHz via adaptation network*	RF carrier frequency	Input signal	Testpoints grounded to F744	channel switch select	Alignment	Align	Output signal	Voltmeter	version
F748	863.3 MHz	1 mV rms	F724 & F725	channel 1	FM Detector coil	1710	F728	LF max output	for EUR and UK version
			Remove groundin gs F724 & F725						
F748	863.3 MHz	250 µV rms		channel 1	Sliding stereo signal	3743	F747	>3 V DC	for EUR and UK version
F748	863.3 MHz	250 µV rms		channel 1	Sliding stereo signal	reduce 3743 slowly	F747	between 0.2 and 3 V	for EUR and UK version
F748	863.3 MHz	10 µV rms		channel 1	Tuned/Muted level	3741	F724	>2.5 V DC	for EUR and UK version
F748	863.3 MHz	10 µV rms		channel 1	Tuned/Muted level	reduce 3741 slowly	F724	< 1 V	for EUR and UK version

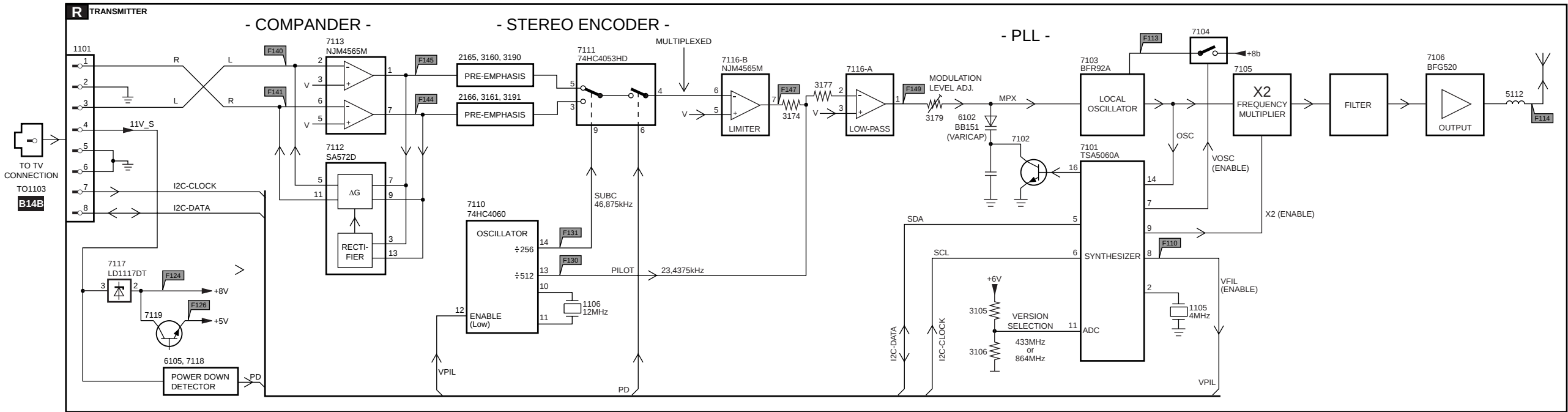
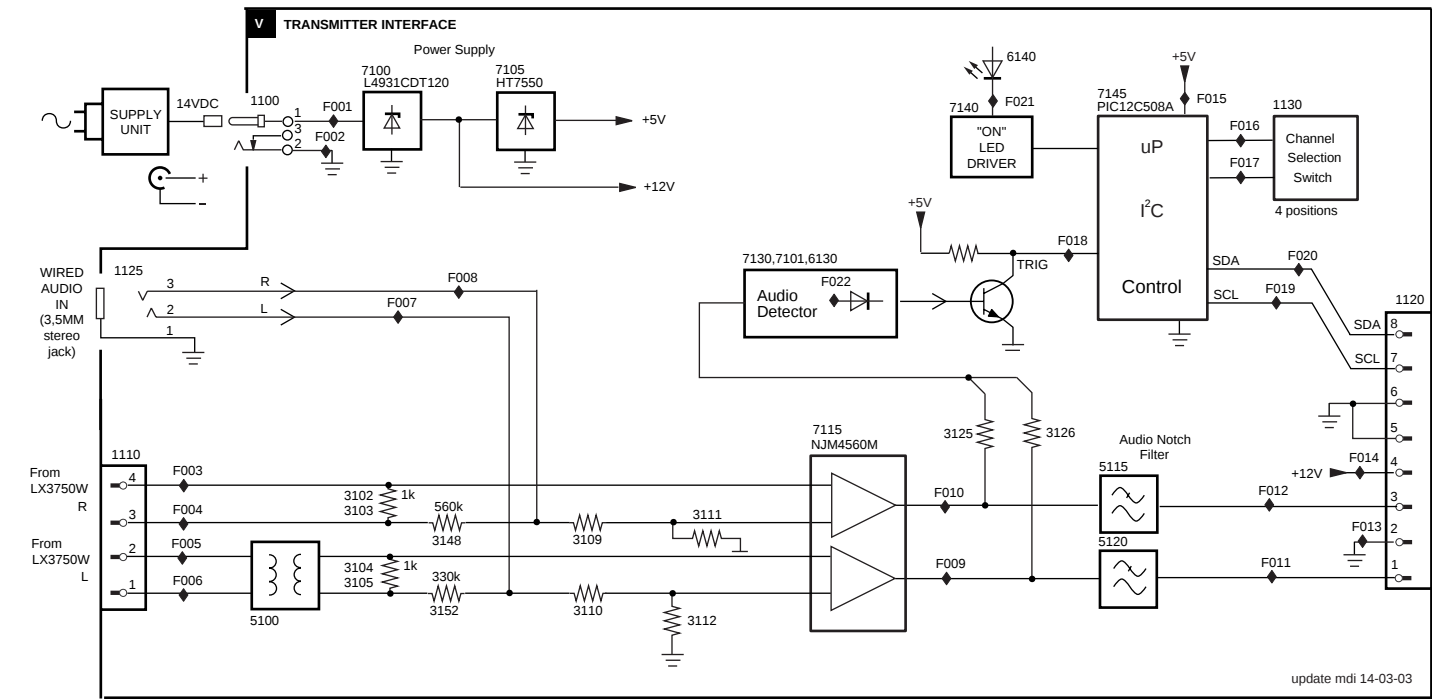
Alignment of the receiver USA version

RF input signal, modulation = 50 kHz via adaptation network*	RF carrier frequency	Input signal	Testpoints grounded to F744	channel switch select	Alignment	Align	Output signal	Voltmeter	version
F748	914.1 MHz	1 mV rms	F724 & F725	channel 1	FM Detector coil	1710	F728	LF max output	for USA version
			Remove groundin gs F724 & F725						
F748	914.1 MHz	250 µV rms		channel 1	Sliding stereo signal	3743	F747	>3 V DC	for USA version
F748	914.1 MHz	250 µV rms		channel 1	Sliding stereo signal	reduce 3743 slowly	F747	between 0.2 and 3 V	for USA version
F748	914.1 MHz	10 µV rms		channel 1	Tuned/Muted level	3741	F724	>2.5 V DC	for USA version
F748	914.1 MHz	10 µV rms		channel 1	Tuned/Muted level	reduce 3741 slowly	F724	< 1 V	for USA version

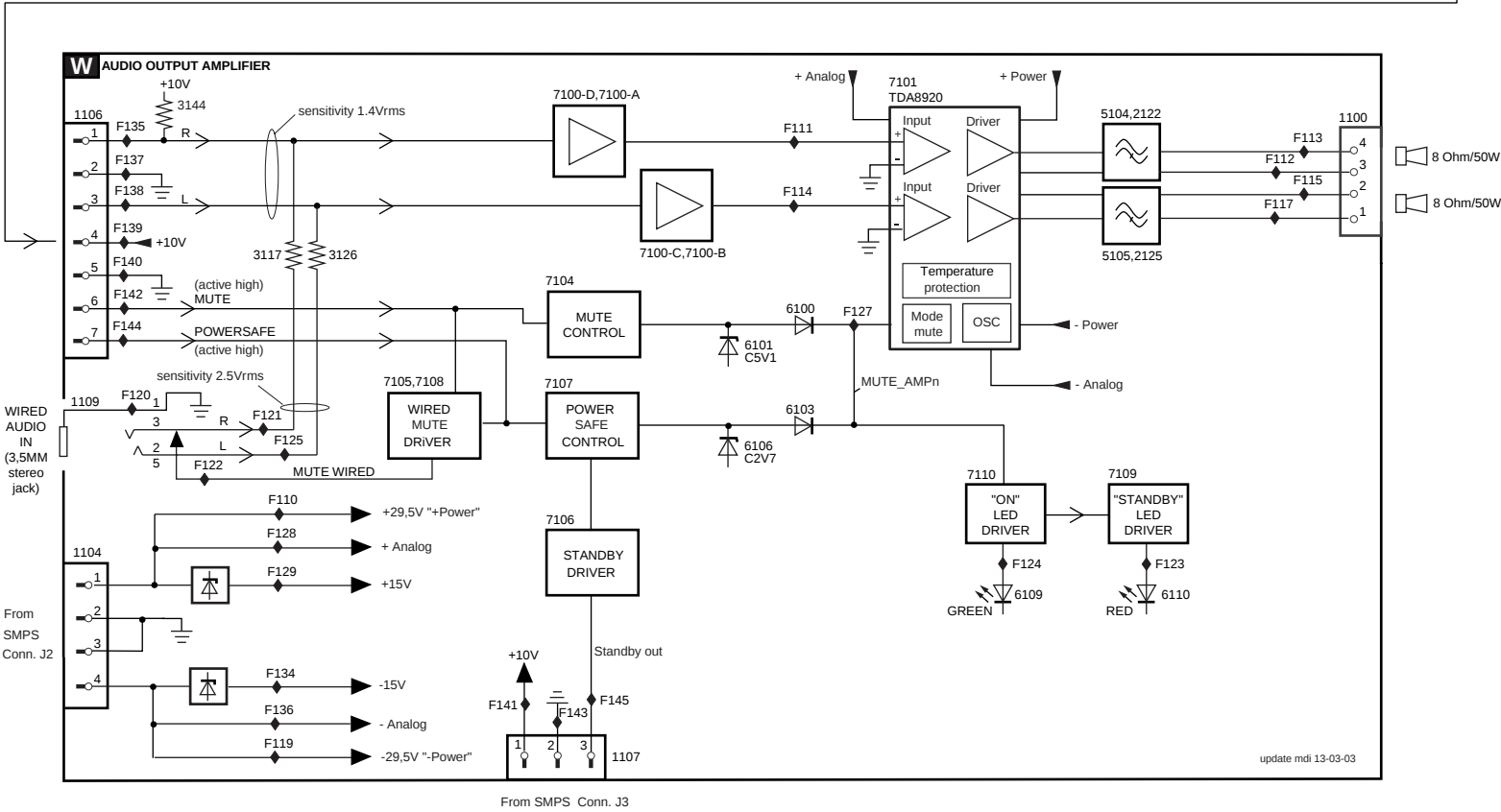
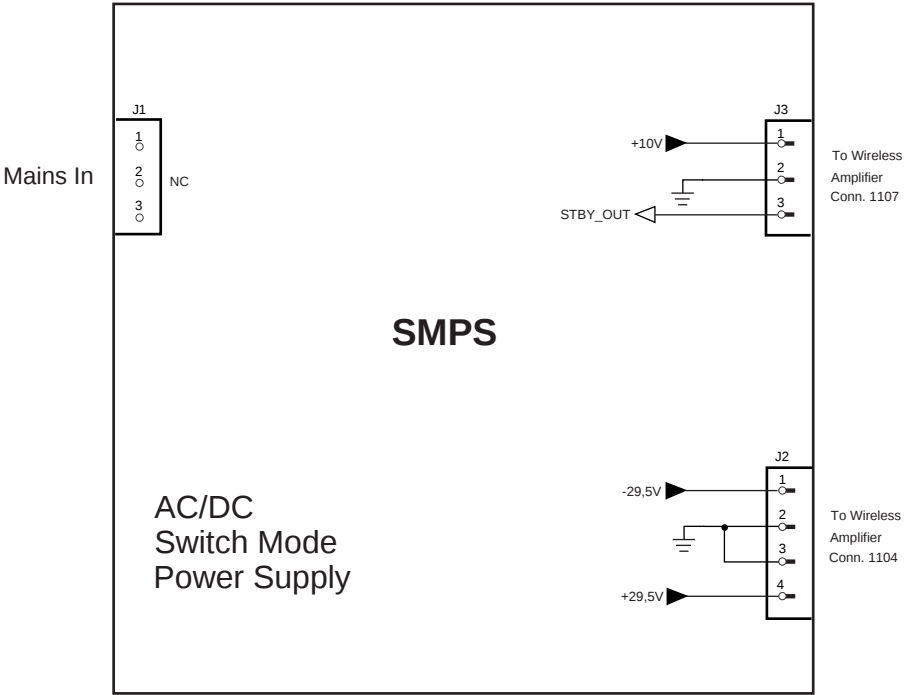
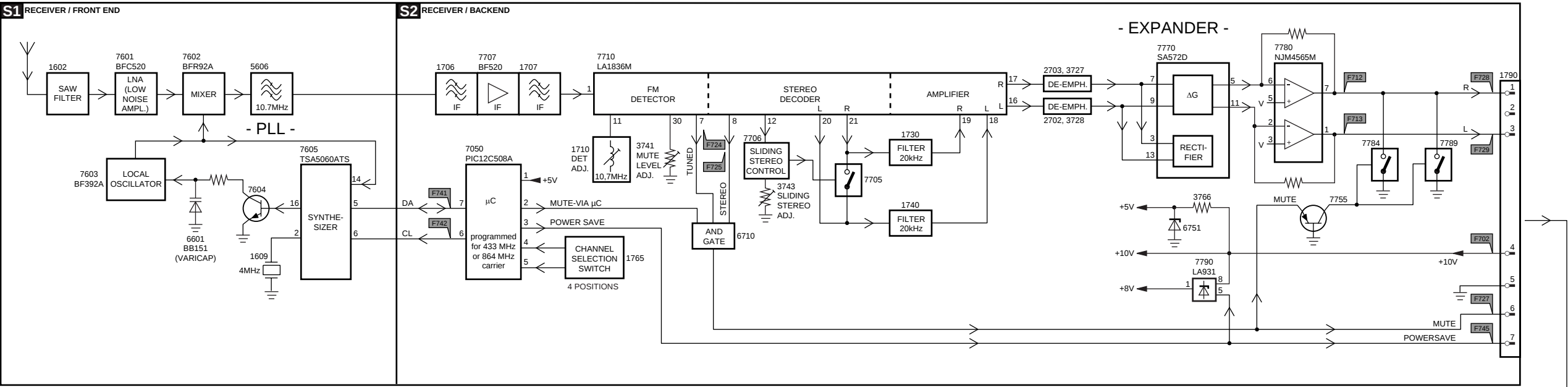
* e.g. SMT02 from Rohde & Schwarz

Figure 1-5 Table AV receiver

1.4 Block Diagram TX

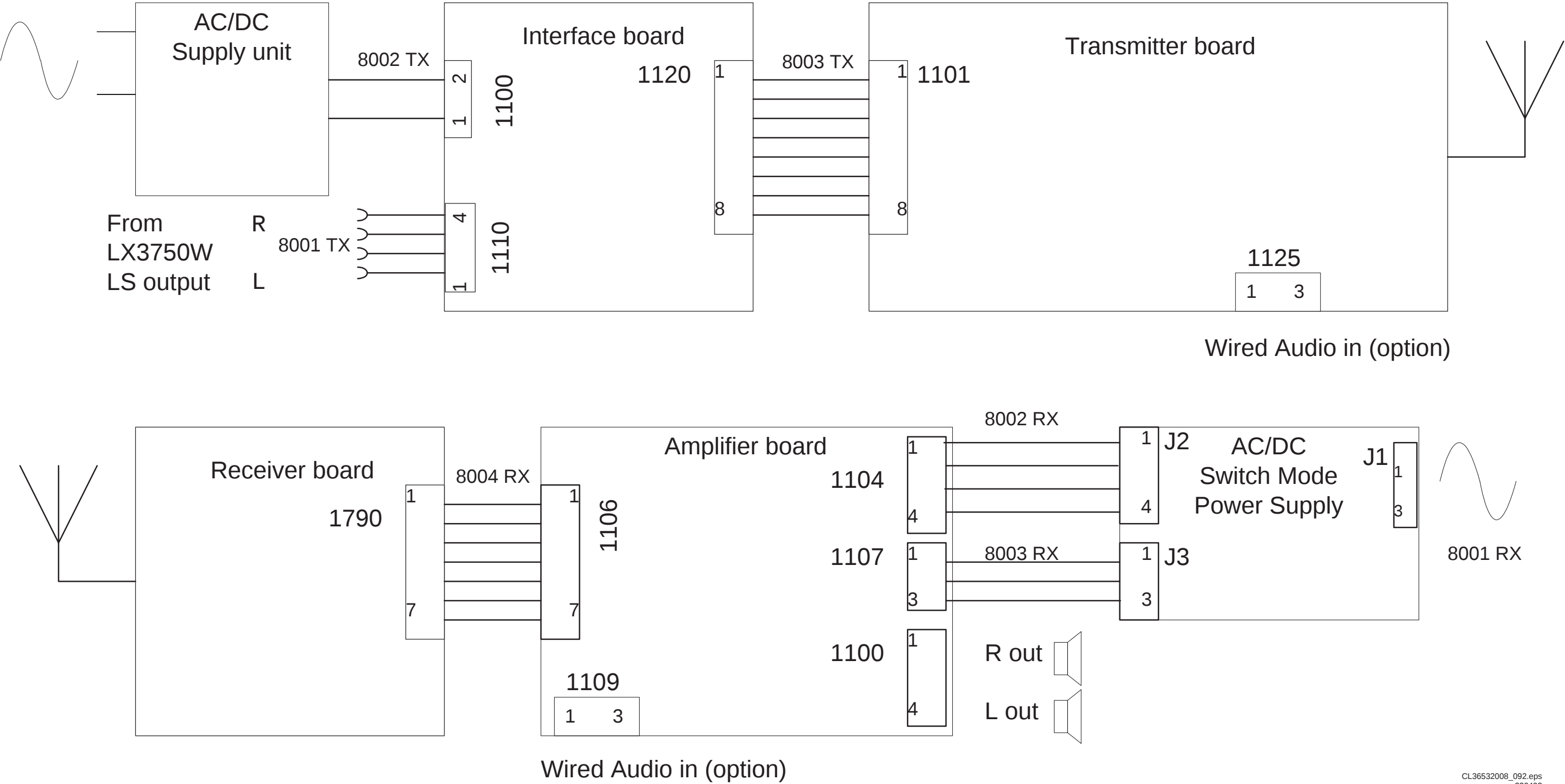


1.5 Block Diagram RX



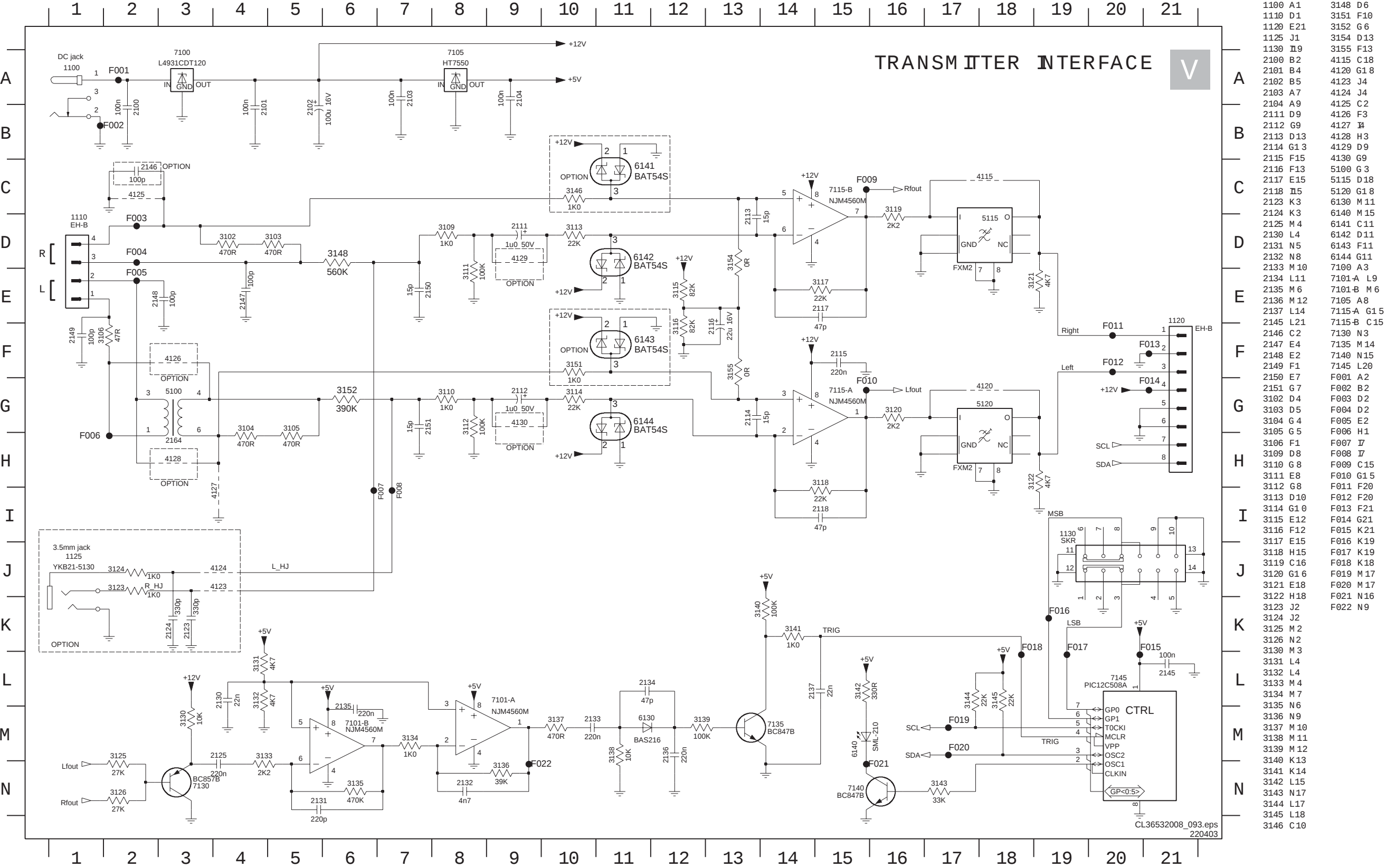
1.6 Wiring Diagram

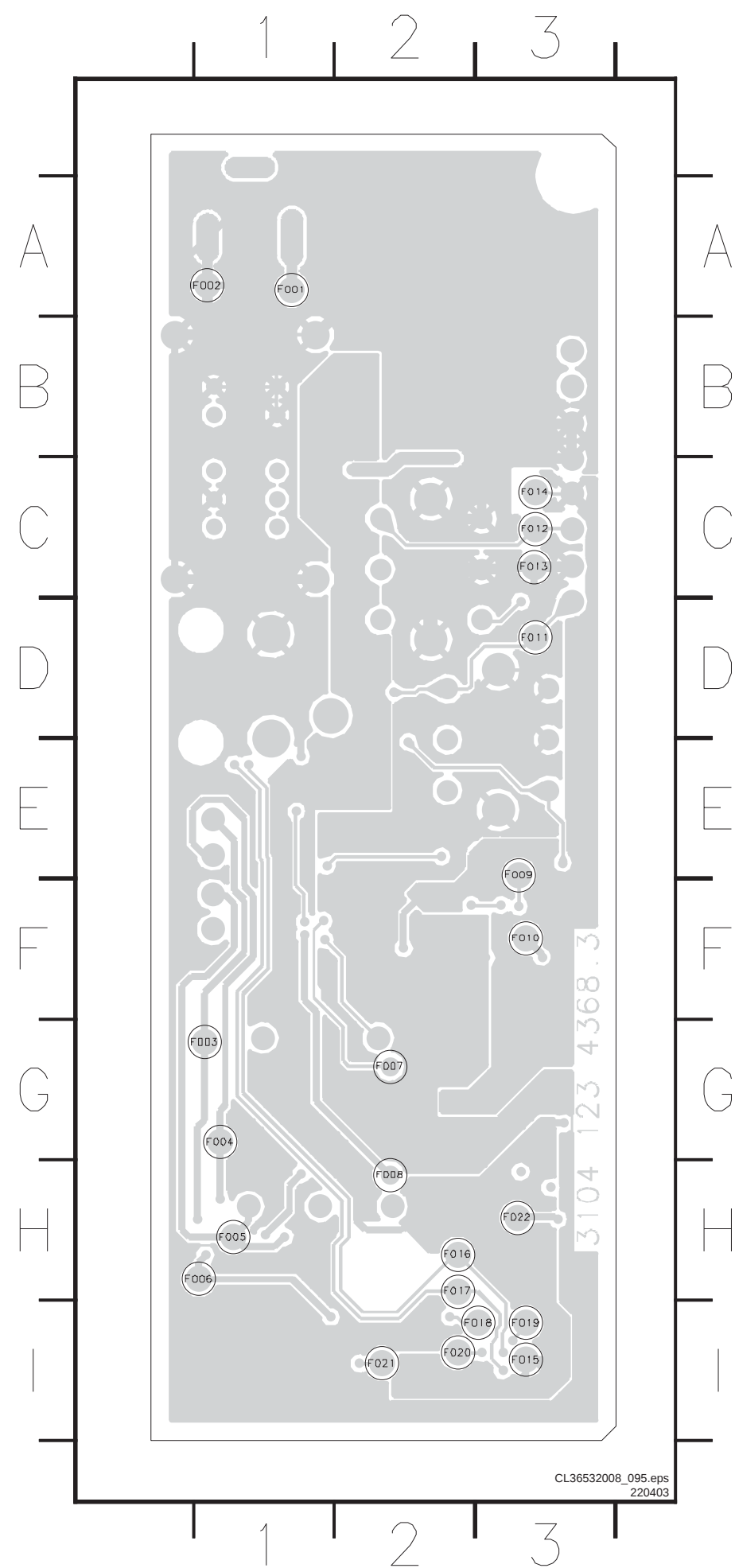
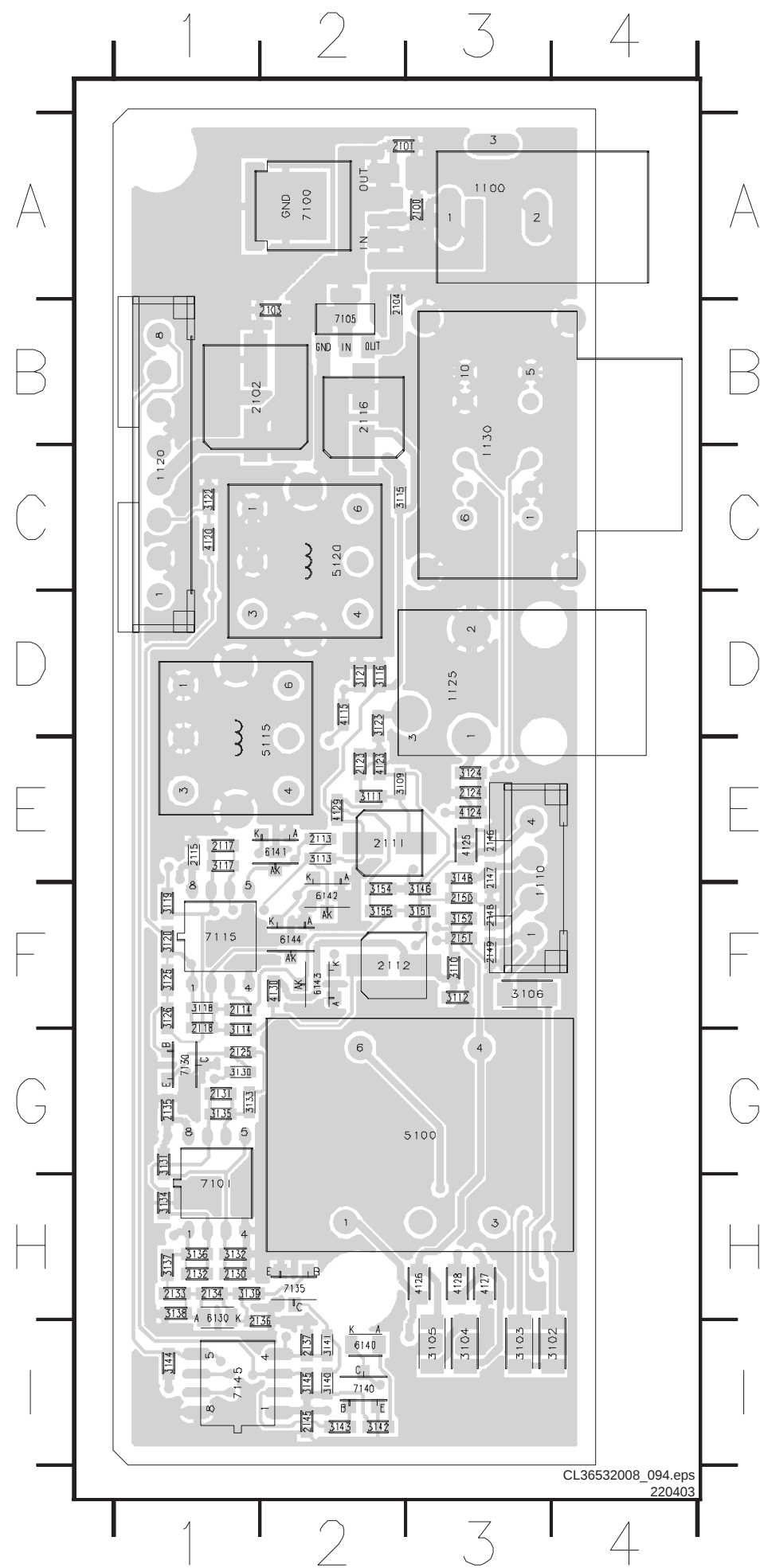
Wiring Diagram Wireless Transmitter/Receiver AD905W



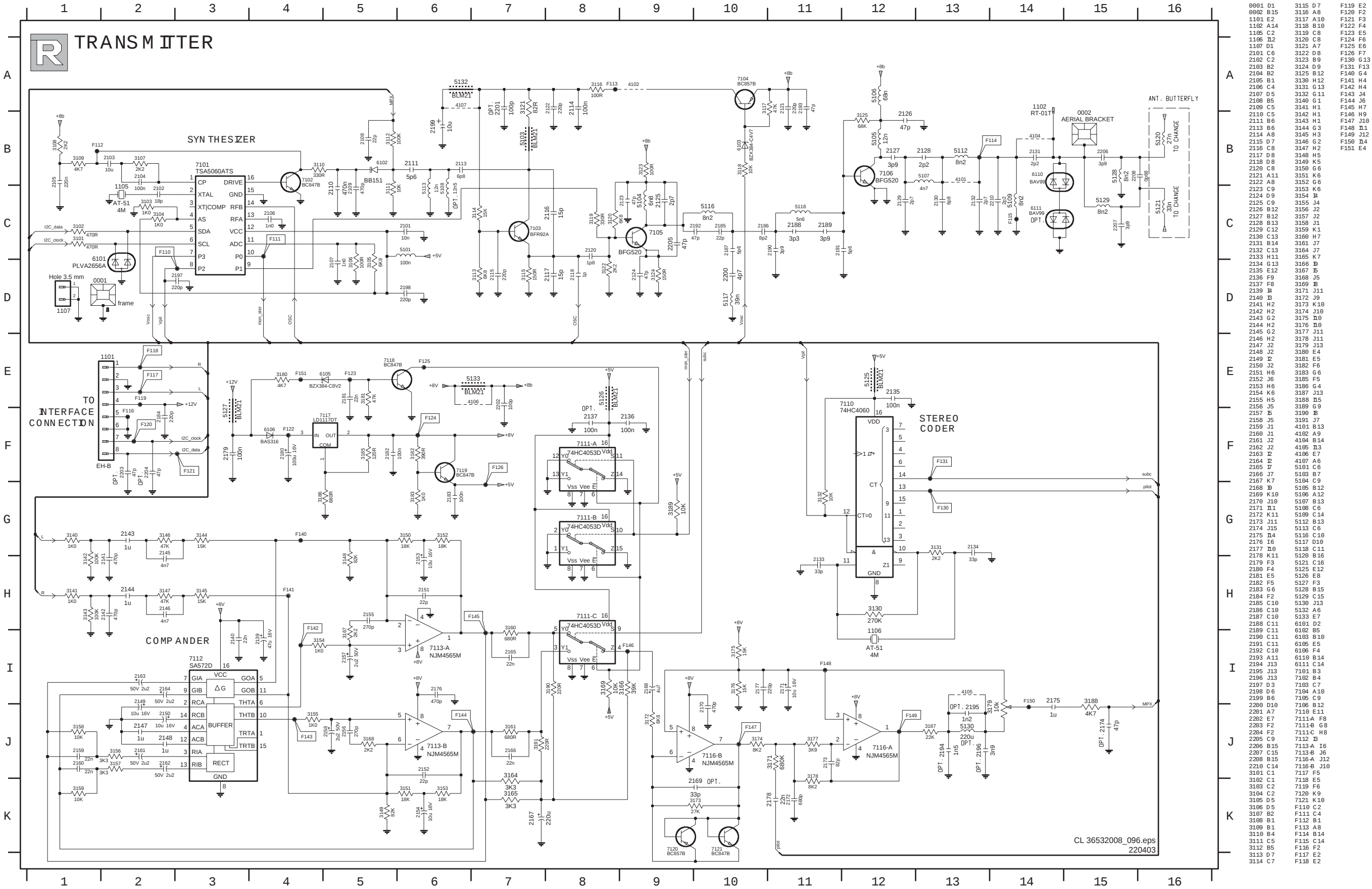
1.7 Electrical Diagrams

1.7.1 Wireless Interface Board





1.7.2 Wireless Transmitter Board

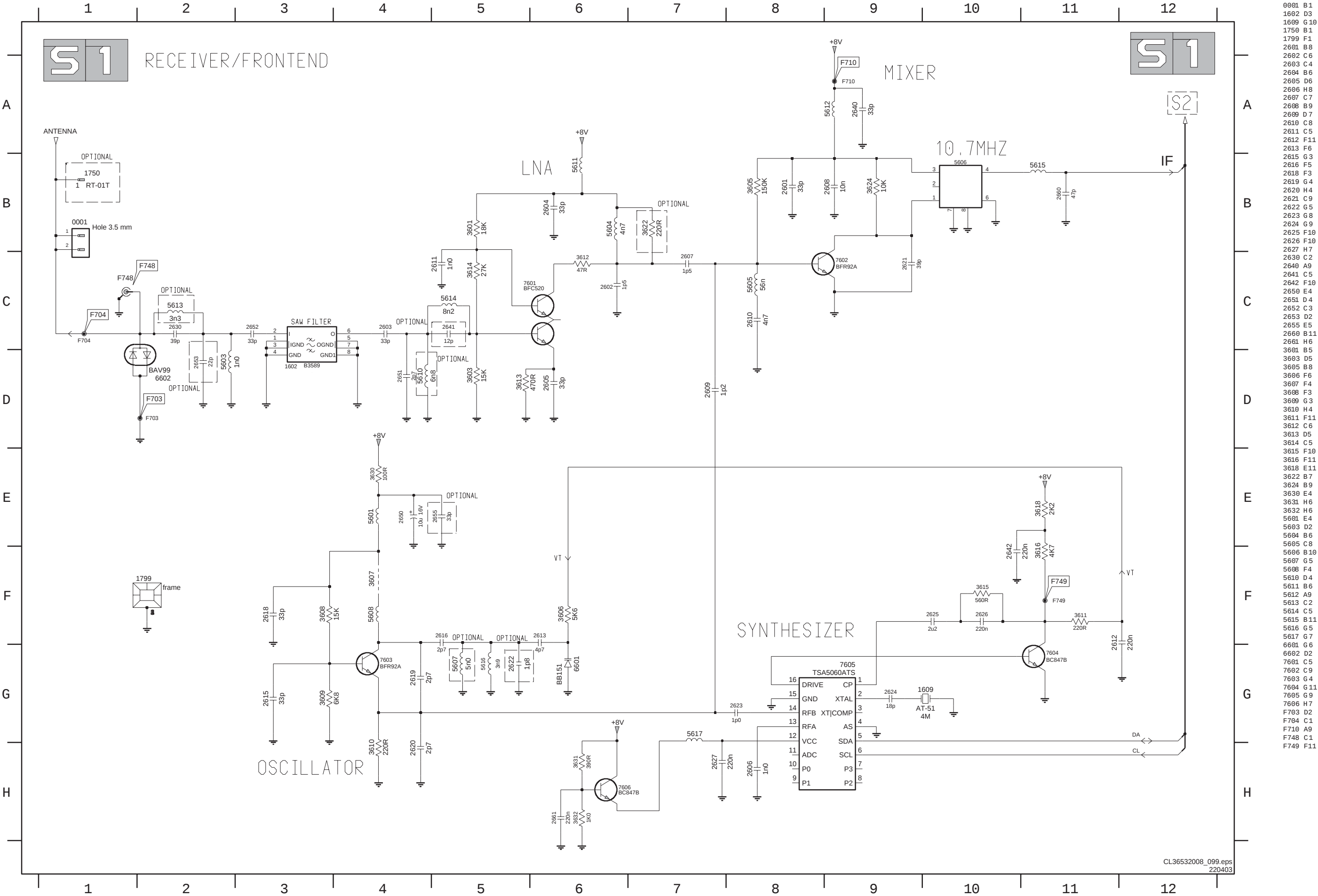


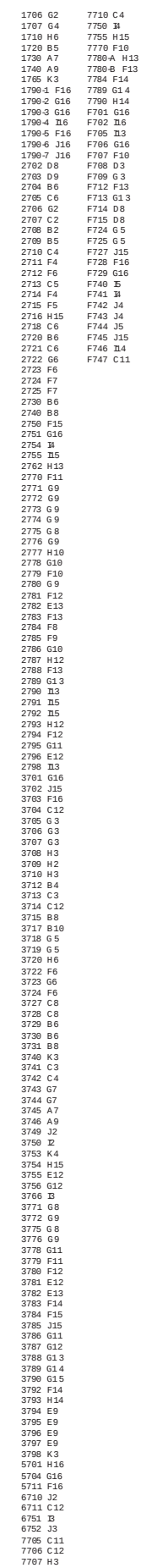
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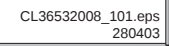
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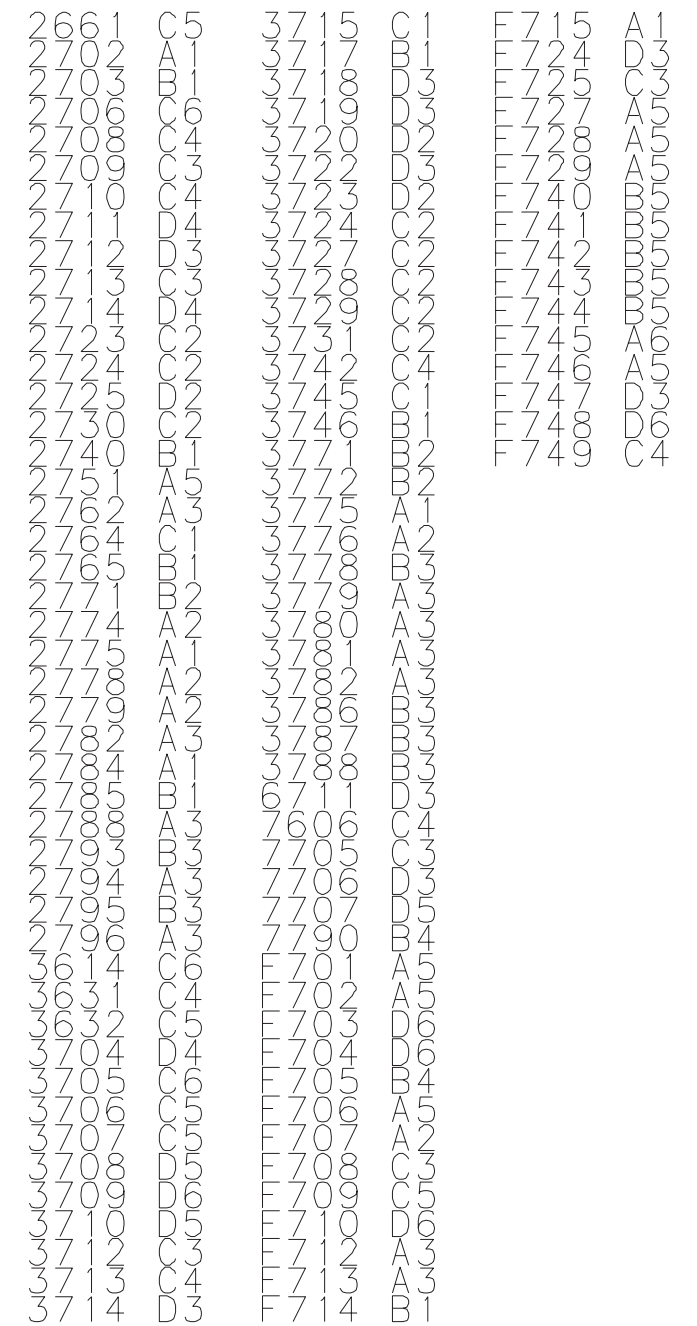
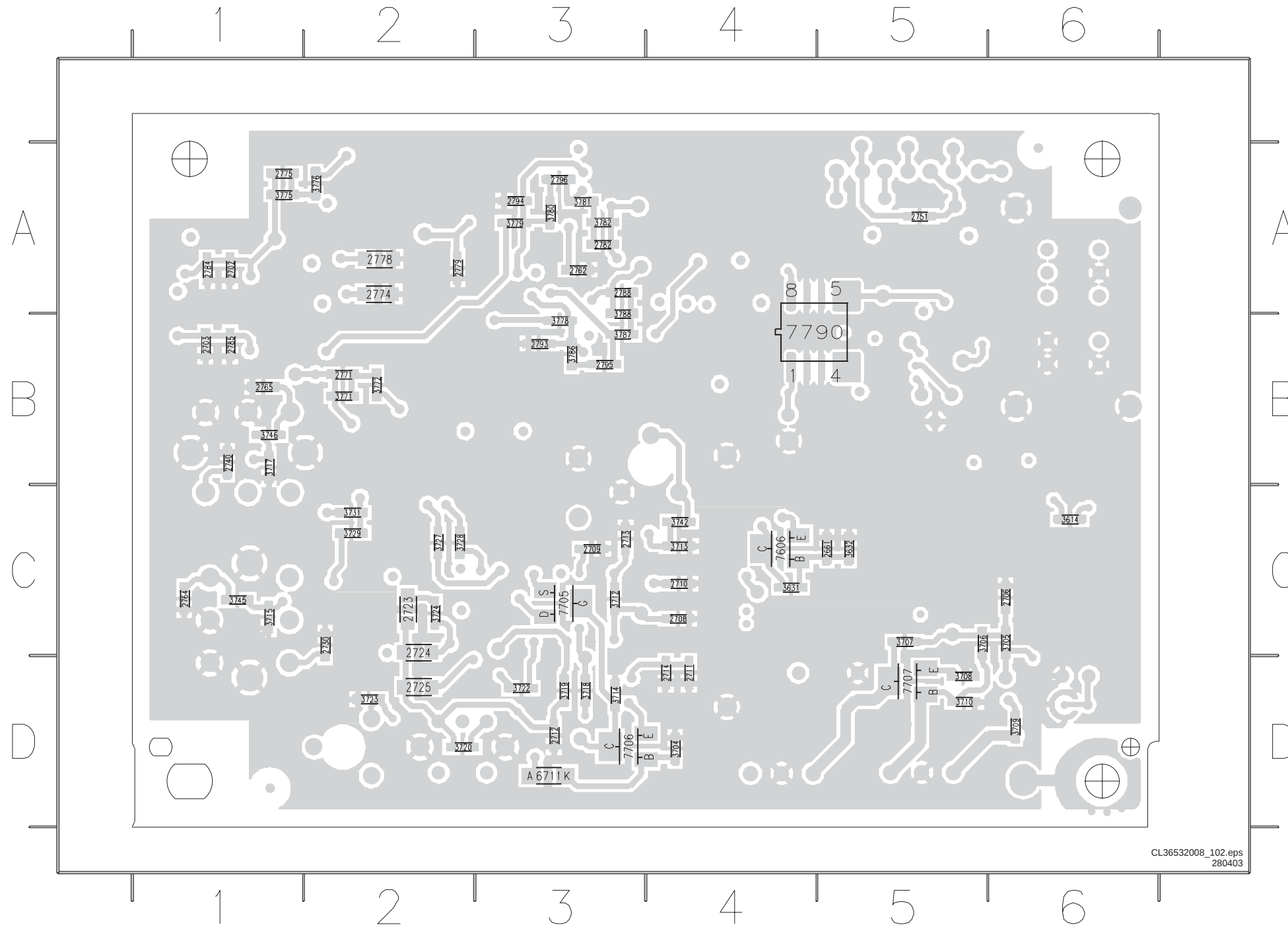
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2	1	3	5	A	7	3	1	5	8	A	3
2	1	3	7	A	6	3	1	5	9	C	4
2	1	4	0	B	3	3	1	6	0	B	5
2	1	4	1	B	2	3	1	6	1	B	5
2	1	4	2	A	2	3	1	6	4	B	5
2	1	4	3	B	3	3	1	6	5	A	5
2	1	4	4	B	2	3	1	6	6	B	6
2	1	4	5	B	3	3	1	6	9	B	7
2	1	4	6	B	3	3	1	7	3	C	6
2	1	5	9	A	3	3	1	8	0	B	7
2	1	6	0	C	4	3	1	8	1	C	7
2	1	6	5	B	5	3	1	8	2	F	7
2	1	6	6	B	5	3	1	8	3	F	7
2	1	7	0	C	7	3	1	8	8	E	6
2	1	7	4	F	6	3	1	8	9	A	6
2	1	7	6	B	4	3	1	9	0	B	6
2	1	8	1	C	7	3	1	9	1	B	5
2	1	8	3	F	6	4	1	0	4	C	2
2	1	8	4	C	8	4	1	0	6	D	3
2	1	9	7	D	6	4	1	0	7	F	5
2	1	9	8	E	6	5	1	0	1	E	6
2	2	0	1	F	4	5	1	0	9	D	2
2	2	0	2	D	4	5	1	2	0	E	1
2	2	0	3	D	7	5	1	2	1	B	1
2	2	0	4	C	7	5	1	2	5	B	7
2	2	0	6	D	1	5	1	2	6	A	6
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2	2	1	0	D	2	5	1	3	2	F	5
3	1	4	0	B	8	5	1	3	3	D	3
3	1	4	1	A	8	6	1	0	5	B	7
3	1	4	2	B	8	6	1	1	0	D	2
3	1	4	3	A	8	6	1	1	1	E	2
3	1	4	4	A	3	7	1	1	8	B	7
3	1	4	5	B	3	7	1	1	9	F	7
3	1	4	6	A	3	7	1	2	0	C	6
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1.7.3 Wireless Receiver Board

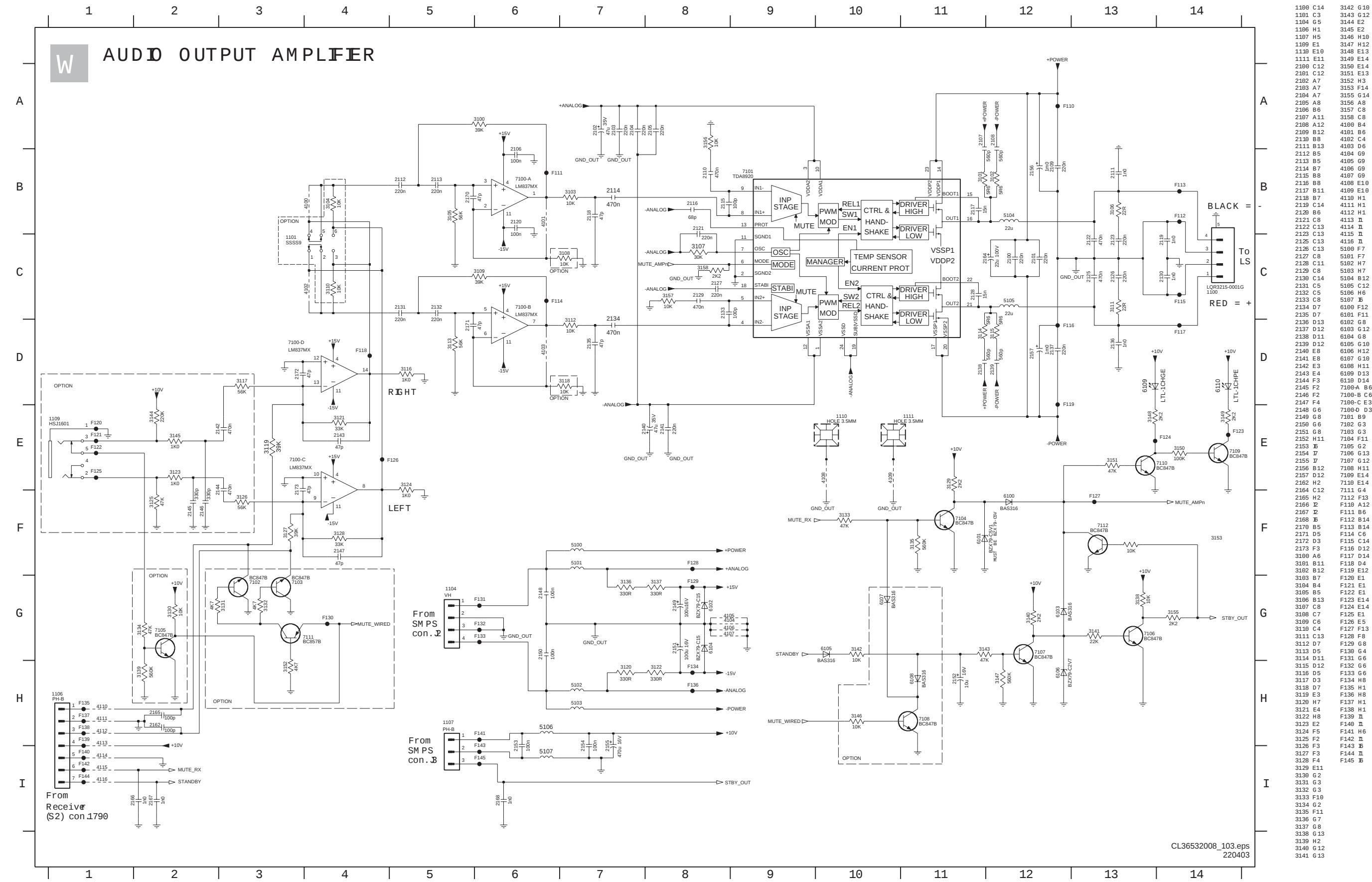


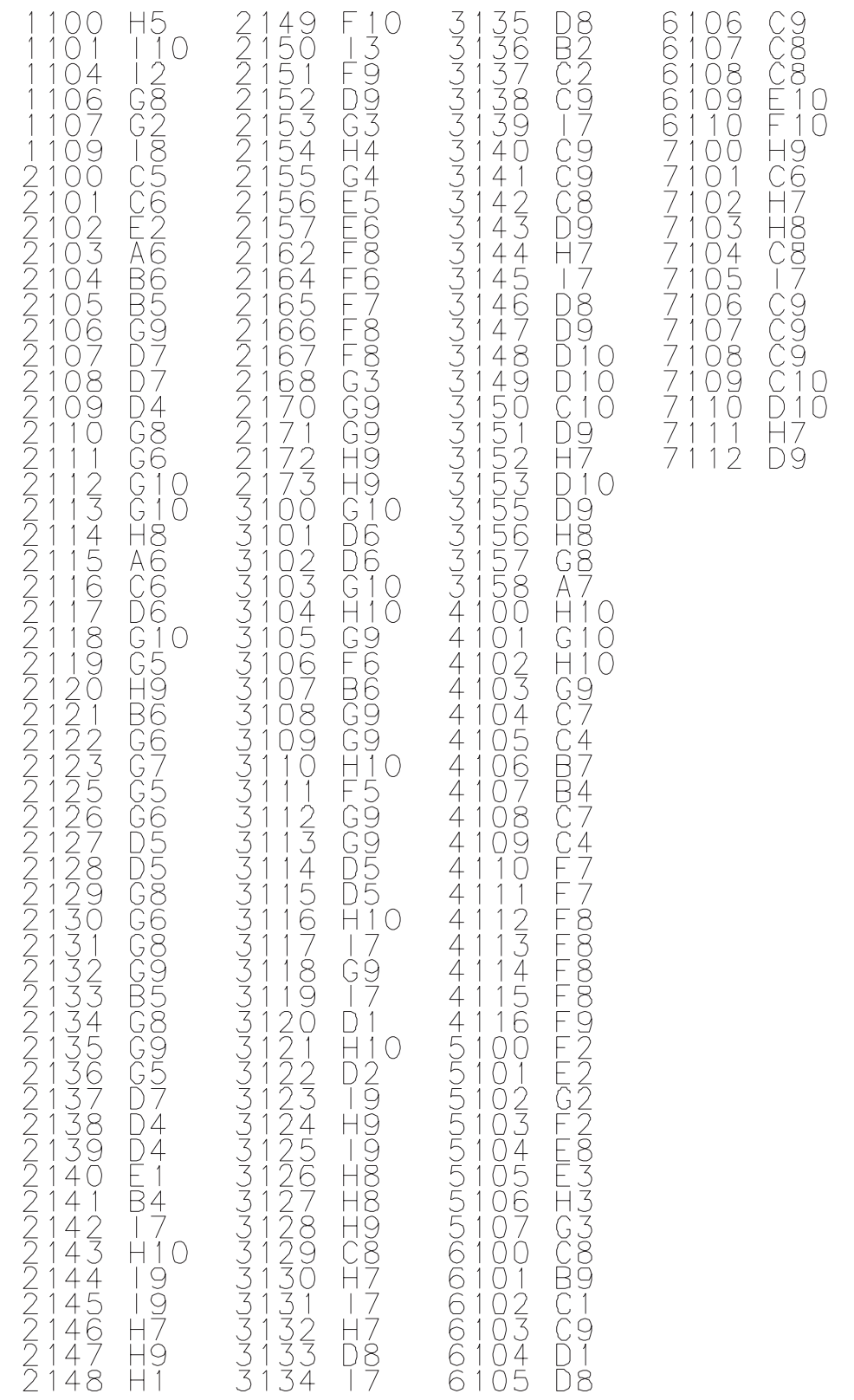


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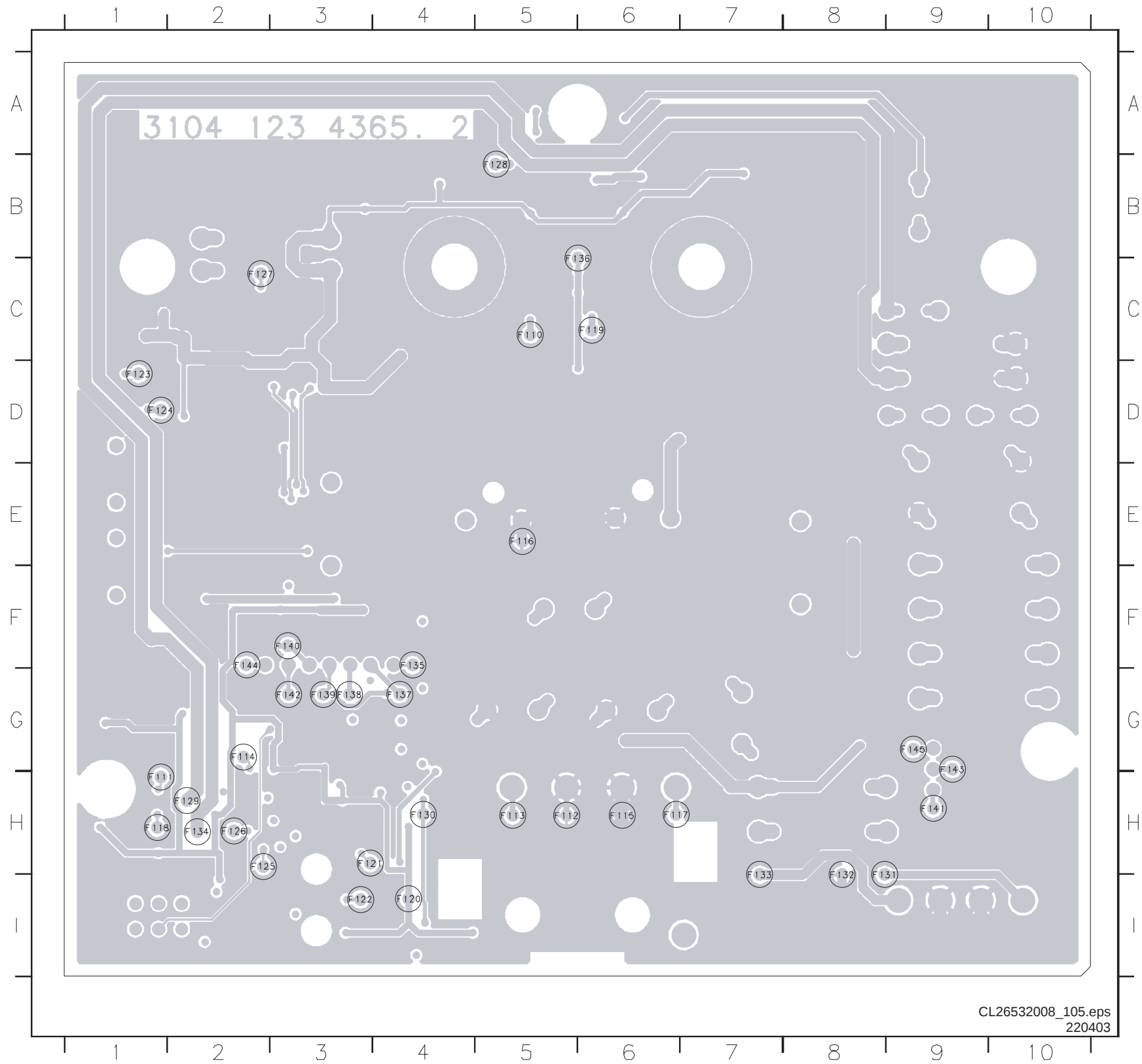


1.7.4 Wireless Audio Amplifier Board



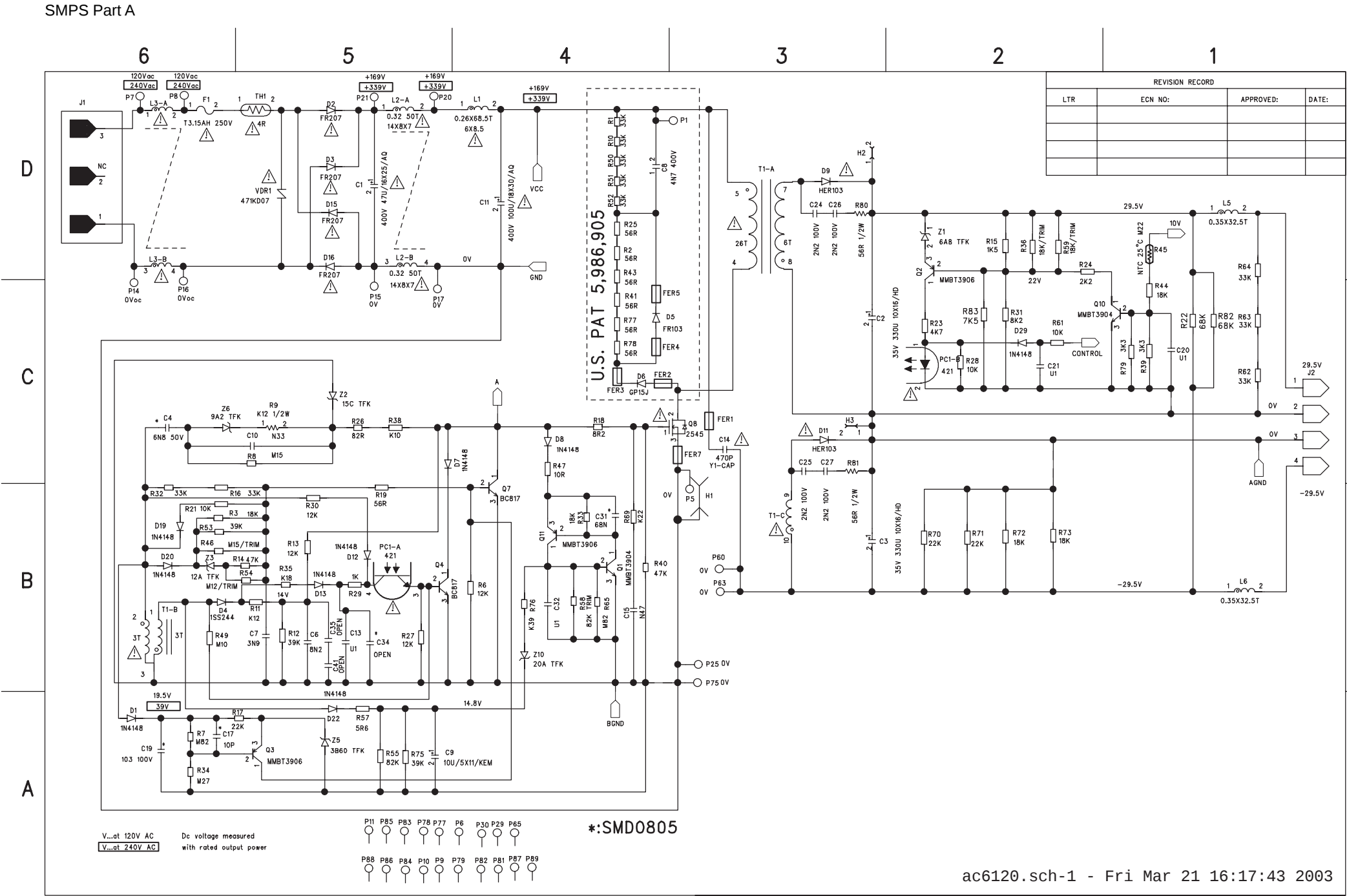


Layout Wireless Audio Amplifier Board (Bottom Side)



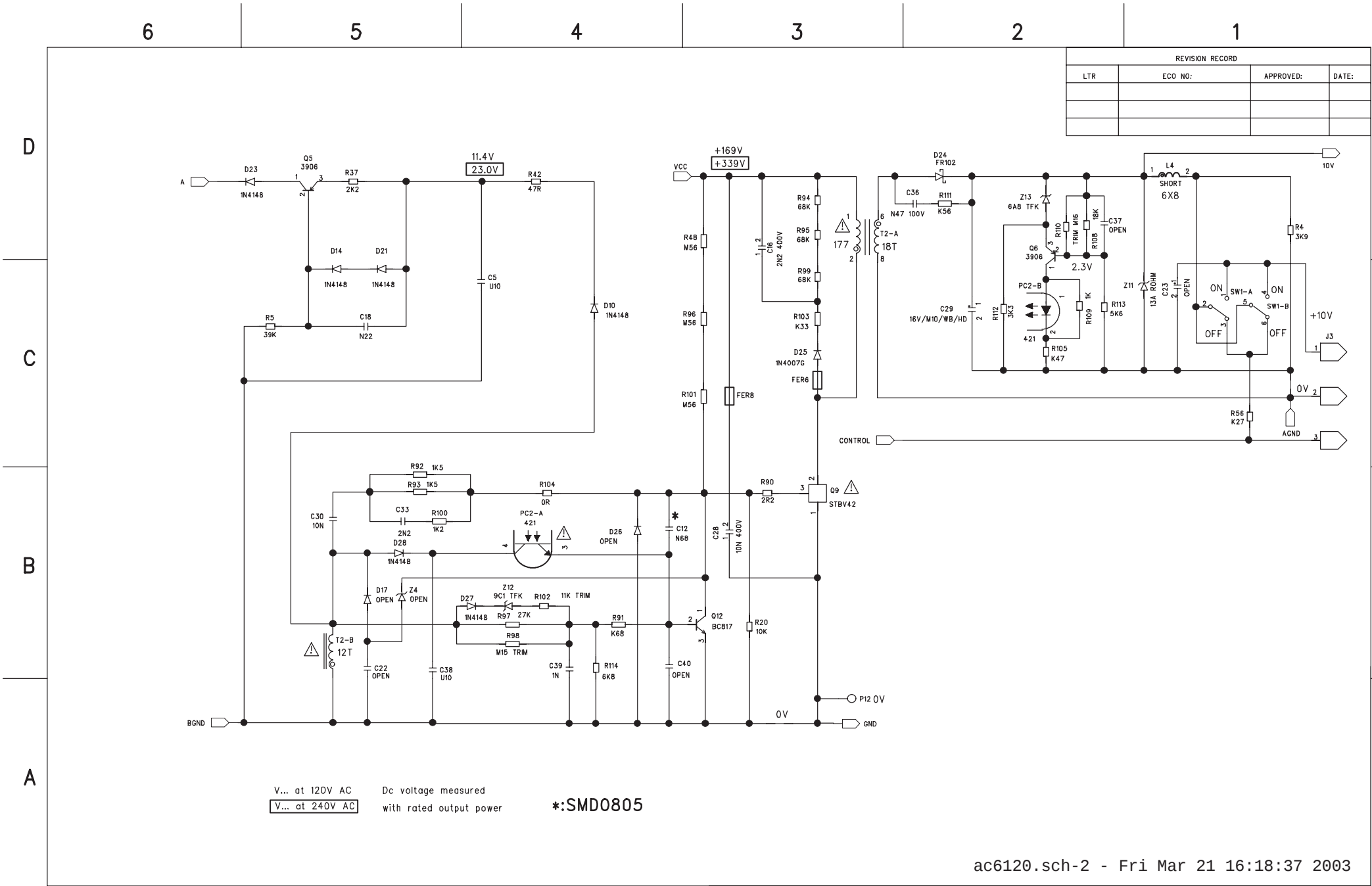
F111 F112 F113 F114 F115 F116 F117 F118 F119 F120 F121 F122 F123 F124 F125 F126 F127 F128 F129 F130 F131 F132 F133 F134 F135 F136 F137 F138 F139 F140 F141 F142 F143 F144 F145

1.7.5 Wireless SMPS Board



C1	D5	J1	D6	R40	B4
C3	B3	J2	C1	R41	C4
C4	C6	L1	D4	R43	D4
C6	B5	L2A	D5	R44	C1
C7	B5	L2B	D5	R45	D1
C8	D4	L3A	D6	R46	B6
C9	A5	L3B	D6	R47	C4
C10	C5	L5	D1	R49	B6
C11	D4	L6	B1	R50	D4
C13	B5	PC1A	B5	R51	D4
C14	C3	PC1B	C2	R52	D4
C15	B4	Q1	B4	R53	B6
C17	A6	Q2	D2	R54	B5
C19	A6	Q3	A5	R55	A5
C20	C1	Q4	B5	R57	A5
C21	C2	Q7	B4	R58	B4
C24	D3	Q8	C3	R59	D2
C25	C3	Q10	C1	R61	C2
C26	D3	Q11	B4	R62	C1
C27	C3	R1	D4	R63	C1
C31	B4	R2	D4	R64	D1
C32	B4	R3	B6	R65	B4
C34	B5	R6	B4	R69	B4
C35	B5	R7	A6	R70	B2
C41	B5	R8	C5	R71	B2
D1	A6	R9	C5	R72	B2
D2	D5	R10	D4	R73	B2
D3	D5	R12	B5	R75	A5
D4	B6	R13	B5	R76	B4
D5	C4	R14	B5	R77	C4
D6	C4	R15	D2	R78	C4
D7	C5	R16	B6	R79	C1
D8	C4	R17	A5	R80	D3
D9	D3	R18	C4	R81	C3
D11	C3	R19	B5	R82	C1
D12	B5	R21	B6	R83	C2
D13	B5	R22	C1	R11	B5
D15	D5	R23	C2	T1A	D3
D16	D5	R24	D2	T1B	B6
D19	B6	R25	D4	T1C	B3
D20	B6	R26	C5	TH1	D5
D22	A5	R27	B5	VDR1	D5
D29	C2	R28	C2	Z1	D2
F1	D6	R29	B5	Z2	C5
FER1	C3	R30	B5	Z3	B6
FER2	C4	R31	C2	Z5	A5
FER3	C4	R32	B6	Z6	C6
FER4	C4	R33	B4	Z10	B4
FER5	C4	R34	A6		
FER7	C3	R35	B5		
H1	B3	R36	D2		
H2	D3	R38	C5		
H3	C3	R39	C1		

SMPS Part B



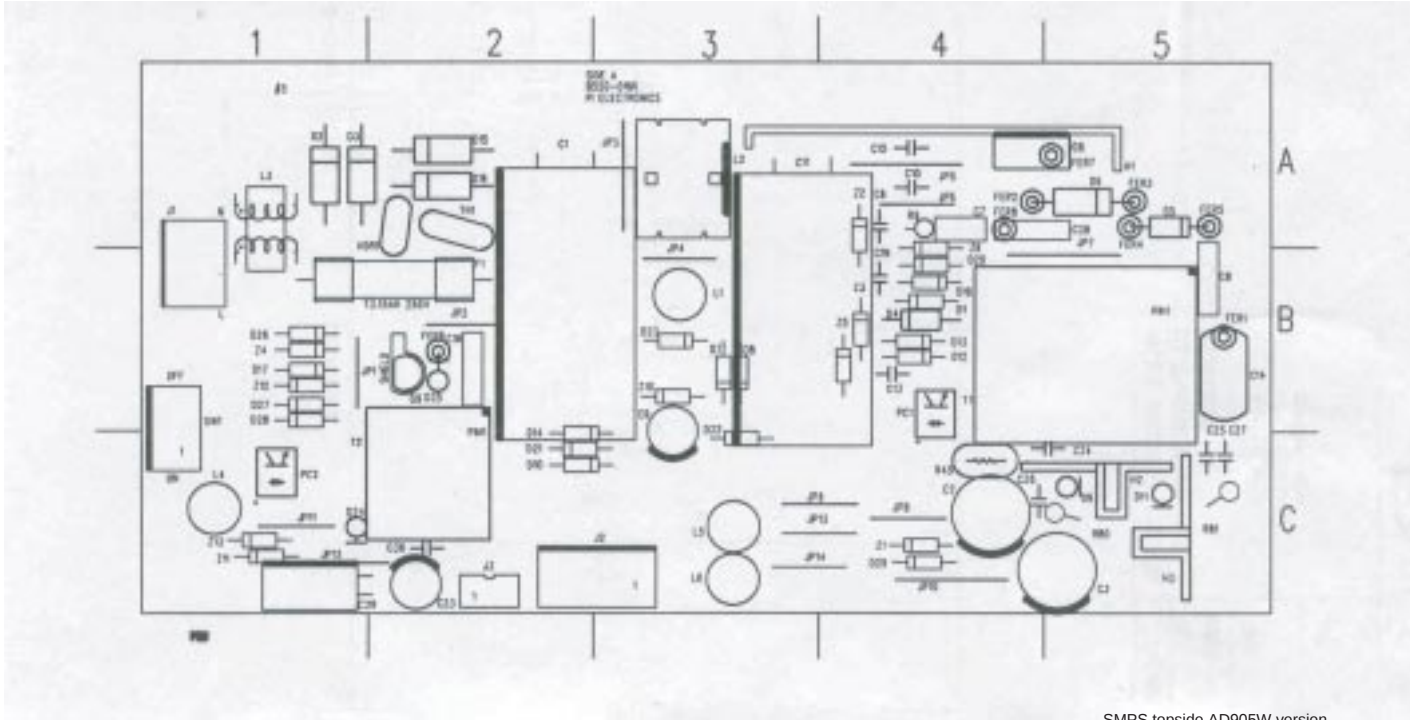
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C12	B4	R93	B5
C16	D3	R94	D3
C18	C5	R95	D3
C22	B5	R96	C3
C23	C1	R97	B4
C28	B3	R98	B4
C29	C2	R99	C3
C30	B5	R100	B5
C33	B5	R101	C3
C36	D2	R102	B4
C37	D2	R103	C3
C38	B5	R104	B4
C39	B4	R105	C2
C40	B4	R108	D2
D10	C4	R109	C2
D14	C5	R110	D2
D17	B5	R111	D2
D21	C5	R112	C2
D23	D6	R113	C2
D24	D2	R114	B4
D25	C3	SW1A	C1
D26	B4	T2A	D3
D27	B4	T2B	B5
D28	B5	Z4	B5
FER6	C3	Z11	C1
FER8	C3	Z12	B4
J3	C1	Z13	D2
L4	D1		
PC2A	B4		
PC2B	C2		
Q5	D5		
Q6	D2		
Q9	B3		
Q12	B3		
R4	D1		
R5	C5		
R20	B3		
R37	D5		
R42	D4		
R48	D3		
R56	C1		
R90	B3		
R91	B4		

Layout Wireless SMPS Board (Top Side)

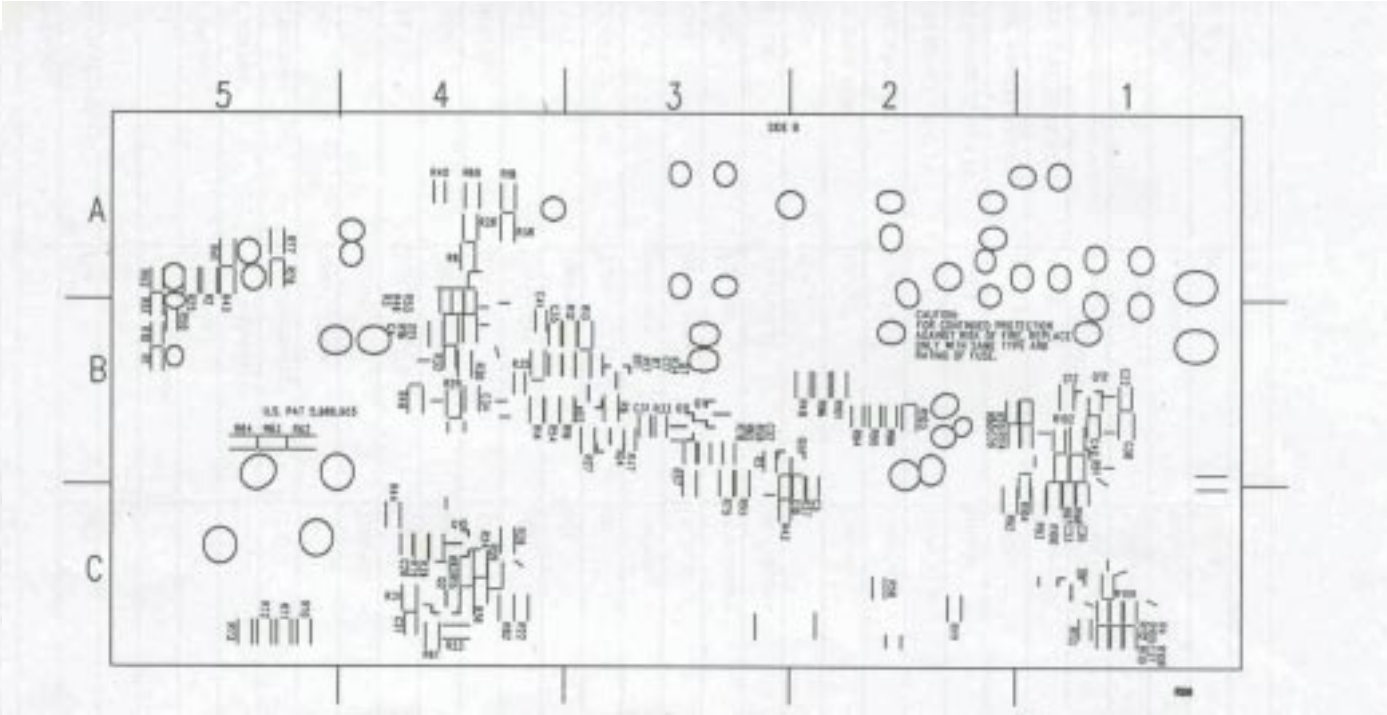
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C2	C4	C23	C2	D6	A5	D20	B4	FER3	A5	L2	A3	SW1	B1	Z12	B1
C3	C5	C24	C5	D7	B3	D21	C2	FER4	A5	L3	A1	T1	B5	Z13	C1
C6	A4	C25	C5	D8	B3	D22	C3	FER5	A5	L4	C1	T2	C2	SHIELD	B2
C7	A4	C26	C4	D9	C5	D23	B3	FER6	B2	L5	C3	TH1	A2		
C8	B5	C27	C5	D10	C2	D24	C1	FER7	A5	L6	C3	VDR1	A2		
C8	B5	C28	A5	D11	C5	D25	B2	FER8	A4	PC1	C4	Z1	C4		
C9	B3	C29	C1	D12	C5	D26	B1	H1	A5	PC2	C1	Z2	A4		
C11	A3	C36	C2	D13	B4	D27	B1	H2	C5	Q8	A5	Z3	B4		
C13	B4	D1	B4	D14	C2	D28	B1	H3	C5	Q9	B2	Z4	B1		
C14	B5	D2	A1	D15	A2	D29	C4	J1	A1	R9	A4	Z5	B4		
C15	A4	D3	A1	D16	A2	F1	B2	J2	C3	R45	A4	Z6	B4		
C16	B2	D4	B4	D17	B1	FER1	B5	J3	C2	R80	C5	Z10	B3		

Layout Wireless SMPS Board (Bottom Side)

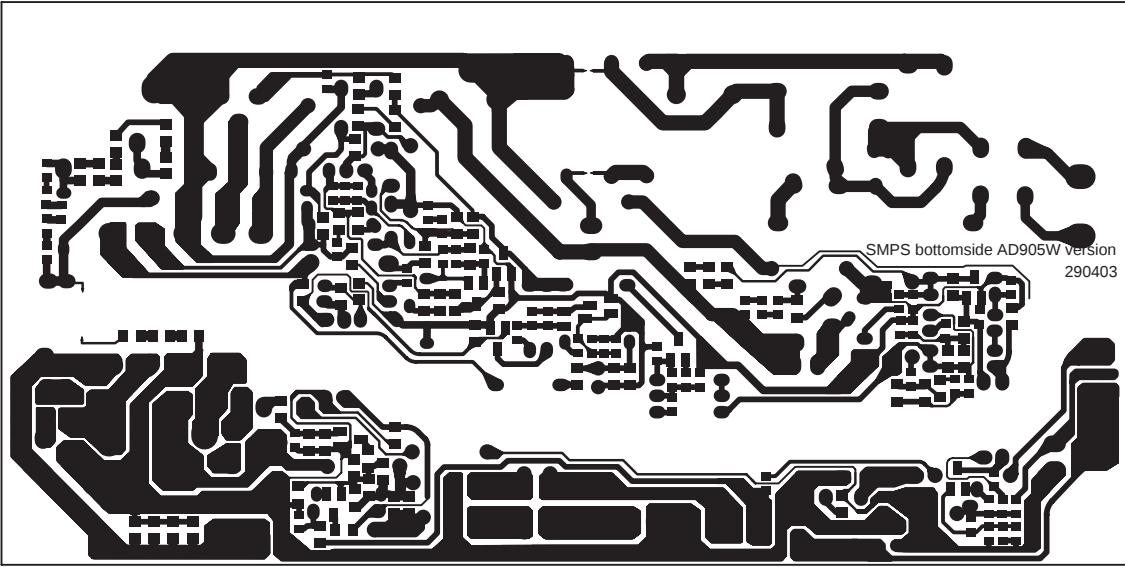
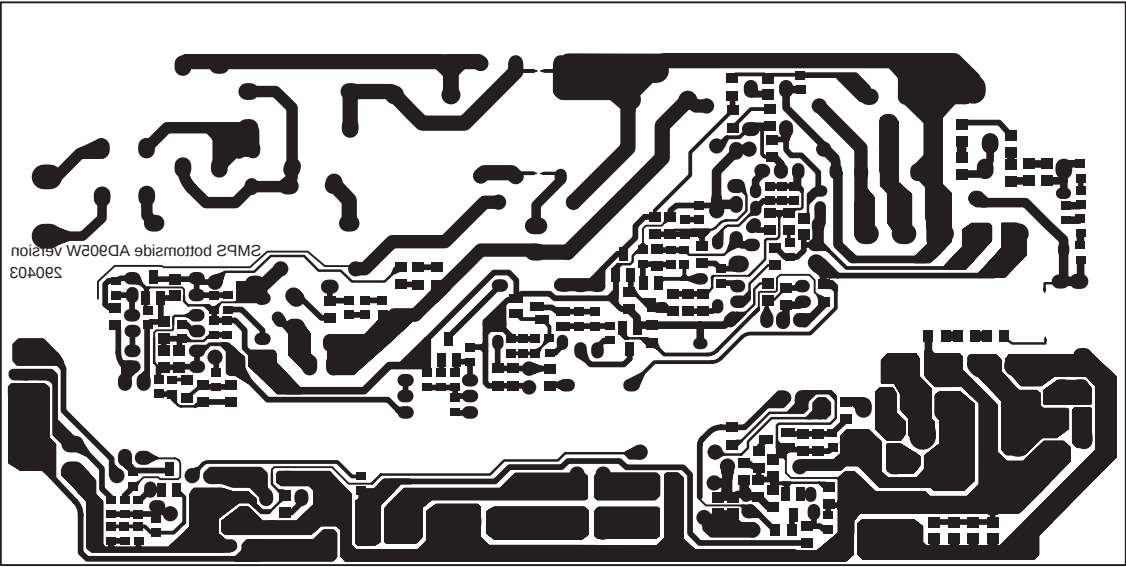
B3	B4	C32	B3	Q5	B2	R8	A4	R24	C4	R37	C2	R52	A5	R65	B3	R78	A5	R99	B2
B18	A4	C33	C1	Q6	C1	R10	B5	R25	A5	R38	A4	R53	B4	R66	C4	R79	C4	R100	C1
B49	B4	C34	B4	Q7	B3	R11	B4	R26	A4	R39	C4	R54	B4	R67	C5	R82	C4	R101	B2
C4	B4	C35	B4	Q10	C4	R12	B3	R27	B3	R40	A4	R55	C3	R68	B2	R83	C4	R102	B1
C5	C2	C37	C1	Q11	B3	R13	B3	R28	C4	R41	A5	R56	C2	R69	A4	R90	B2	R103	B2
C12	B1	C38	C1	Q12	B1	R14	B4	R29	B4	R42	C2	R57	B3	R70	C5	R91	B1	R104	C1
C17	B3	C39	B2	R1	B5	R15	C4	R30	B4	R43	A5	R58	B3	R71	C5	R92	C2	R105	C1
C18	C2	C40	B1	R2	A5	R16	B4	R31	C4	R44	C4	R59	C4	R72	C5	R93	C1	R108	C1
C20	C4	C41	B4	R2	C4	R17	B4	R32	C4	R46	B4	R60	A5	R73	C5	R94	B2	R109	C1
C21	C4	Q1	B3	R4	C1	R19	B3	R33	B3	R47	B3	R61	C4	R74	C2	R95	B2	R110	C1
C22	B4	Q2	C4	R5	B3	R20	B1	R34	B3	R48	B2	R62	B5	R75	C3	R96	B2	R111	C2
C30	C1	Q3	B3	R6	B3	R21	B4	R35	B4	R50	B5	R63	B5	R76	C3	R97	B1	R112	C1
C31	B3	Q4	B4	R7	B3	R23	B3	R36	C4	R51	B5	R64	B5	R77	A5	R98	B1	R113	C1
																		R114	B2



SMPS topside AD905W version 290403



SMPS bottomside AD905W version 290403



1.8 Circuit descriptions

The Circuit description of the wireless surround system. The complete Wireless surround system consists of: transmitter part Tx: interface-board and transmitter board receiver part RX: receiver board, amplifier board and SMPSupply part

Loudspeaker boxes, per equipment defined. The interface board can be part of a TV set (EM6E-chassis) or a separate board in the transmitter part in case of the AV Entertainment (DVD-receiver) application. transmitter and receiver are described as one system, amplifier board is per application (TV or AV) adapted.

1.8.1. Transmitter Interface board:

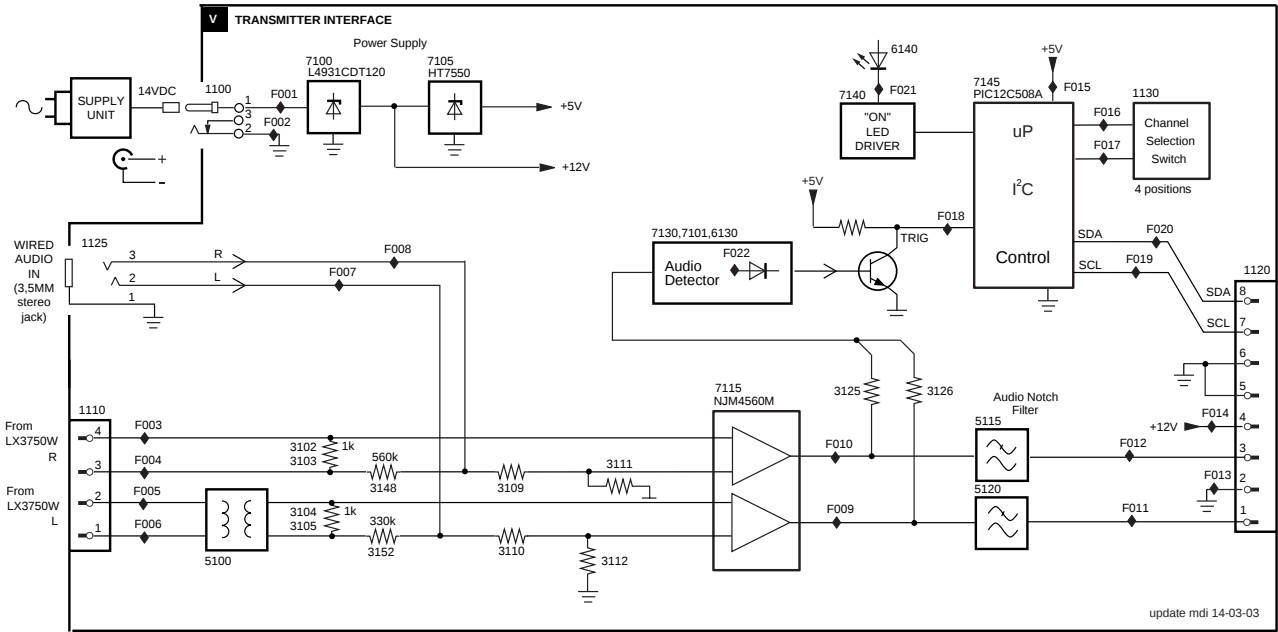


Figure 1-7 Block diagram transmitter interface

General

The transmitter interface (TX-interface) is intended to deliver all necessary audio and I²C control signals to the transmitter. The interface is capable to deliver the specific I²C protocols for the selection of the 4 channels, the power-up and power down sequence. Also an audio detector and a led control circuit is on the board, all controlled by the processor. The used microcontroller is a PIC12C508A. There is only one software version, which can handle automatically the 2 possible TX frequencies (864 and 914 MHz) in AV application. For TV application the interface function is integrated in the corresponding TV set and controls via I²C commands the 2 frequencies (433 and 864 MHz). Besides the I²C, all audioconditioning is done by a dual opamp NJM4560M. A 23 kHz pilot notch filter is formed by both coils 5115 and 5120, this to avoid interference with the used pilot of the TX. The AV interface transmitter combination has always to be used with the recommended mains power adaptor of 14Vdc/ 150mA. (There is a EUR, UK and USA version) Input / output - sense. : Full modulation of the TX transmitter: on both right and left out (pin 1 and 3 of connector 1120), 0.42V rms (or 1.1653V peak to peak), this means for the AV interface: 20 Vrms input on right and left input. For TV 3V rms input on right and left input. Start modulation: At power-up: auto start of the interface and TX transmitter for at least 4 minutes; when no audio on one of the inputs >0.1 V for a period of 4 minutes then the Processor shuts down the modulation of the TX transmitter (LED off) Tx in off mode: (TX transmitter powered, no modulation and LED off) Start of the modulation and LED on by applying minimum 0.1Vrms on left or right input

Audio-input section:

The right audio input channel is different from the left input: left uses a low cost audio transfo, since there has to be a complete separation between the left and right speaker outs of the DVD player LX3750. Of course this gives a small difference in frequency response, but absolutely not audible in its application. Input impedance: < 1 K ohm Led-functionality: built in led indication: Red = ON, power on, transmitter active Red = OFF, power on, no modulation

Audio detector:

A part of the audio info is fed to the audio detector built up around 7101-A and 7101-B. Basically it's a two-stage amplifier with a very high gain factor (3135/3133 and 3136/3134). A square signal has to be found on the output of 7101-A. This block-wave is fed to the rectifier/ integrator around 6130. In normal operation 7135 is always conducting, pulling down the level on the trig-input of the microprocessor 7145. As long this input is low the connected transmitter is enabled by the microprocessor. When no audio input, the trig input comes high (5V), and the internal timer of the processor counts down till 4 minutes have past away. After this four minutes (approx.) the transmitter will be disabled = no modulation and red led off. A very low audio input "trigs" the processor and the transmitter starts up again. (Led = red). Four-channel selection is done by 2 lines (LSB - MSB) on the processor.

Power supply:

The unit operates on a 14 Vdc mains power adaptor: 12Vdc, mainly for the transmitter, is furnished by 7100 -L4931CDT120, which is a low drop regulator. The 5 Vdc for the PIC is made by the HT7550 low power regulator.

1.8.2. Wireless System

GENERAL INTRODUCTION

The wireless system is intended for stereo sound in the range from 20 Hz to 20 kHz. It can be used for normal L/R stereo sound or for the surround channels in Dolby systems. The system has an analogue sound processing system (companding – expanding) and uses synthesised tuning at both the transmitter and receiver side. There are frequency executions

available in different frequency bands: 433 MHz (some EU), 864 MHz (EU) and 914 MHz (US). In each particular frequency band, there is a choice between 4 different channels or frequencies.

SYSTEM CONSIDERATIONS

The Wireless system uses a very high performance audio processing that allows up to 100 dB dynamic range to be transmitted over a classic analogue link. Through the companding effect at the transmitter (reducing the dynamic range by a factor of 2 in dB) and by an expanding effect in the receiver (increasing the dynamic range by a factor of 2 in dB). In addition the system has the possibility to maintain the high S/ N up to low RX fieldstrengths by applying sliding stereo (this means reducing the stereo effect at low signal fieldstrengths) Pre-emphasis (at TX) / de-emphasis (at RX) technique is with 15 µS time constance. Since the signal processing is analogue, there is a low latency in the system of < 15 µS between input TX and output RX. The receiver part has a power save mode that will be initiated automatically when no signal to reduce power consumption. The system uses normal FM modulation / demodulation and also uses the Zenith stereo principle. However, the frequencies used are different in this respect: Subcarrier freq. = 3 * 15625 Hz = 46.875 kHz (chosen because interference zero-beats with the TV line freq). Consequently the pilot freq. is 23.4375 kHz (half of subcarrier).

TRANSMITTER

The block diagram of the transmitter is as follows:

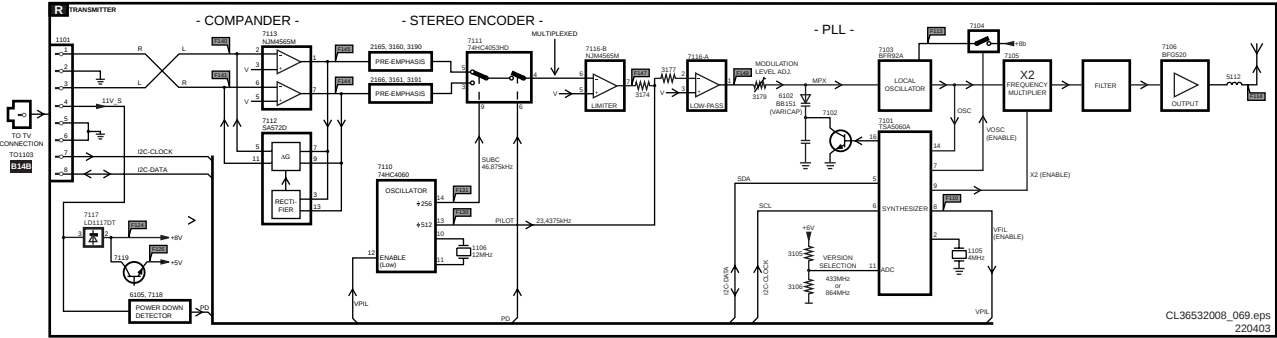


Figure 1-8 Block diagram transmitter

Synthesiser and local oscillator

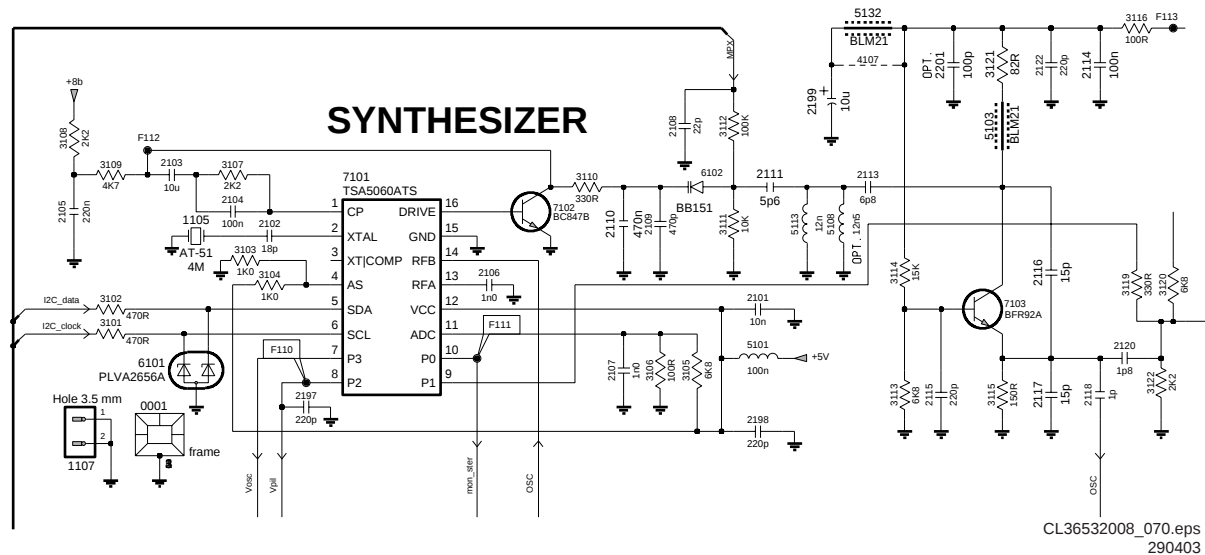


Figure 1-9 Synthesizer part of transmitter circuit diagram

The internal circuitry of the TSA5060A can be seen in below figure

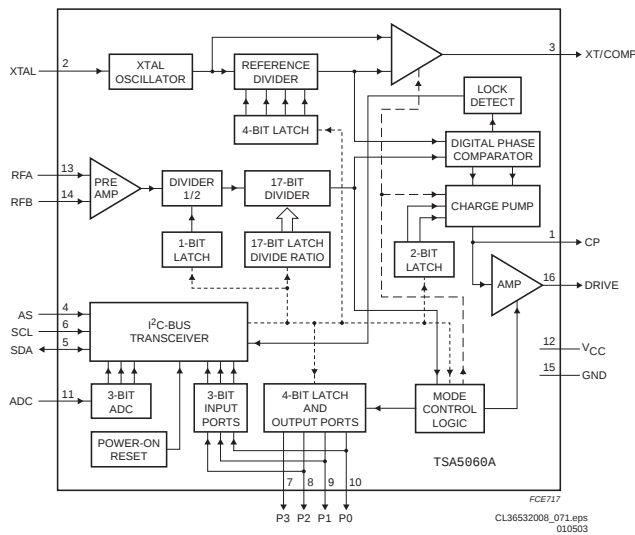


Figure 1-10 Block diagram TSA5060A

The TSA5060A is software controlled by the I2C bus. TV applications do send commands directly via the TV slow bus while the audio applications have a small interface board with a μP PIC12C508 to send the commands. To verify whether there is communication between the host device and the TSA 5060A one can check the supply voltage of the osc.transistor 7103 (TP F113) and should be about 7.5 V in normal conditions when the I2C signal is interpreted by the synthesiser. If there is improper communication the voltage remains at zero V. There is version recognition foreseen to discriminate between 433-864 and 914 MHz units. This feature will automatically load the correct frequency division words into the synthesiser at starting up and initialisation of the host device (e.g. TV set). The reference quartz is 4 MHz and is divided down to a lower reference frequency of 25 or 50 kHz (depending on the version). The PLL filter is passive and includes 2103 – 2104 – 3107. The transistor 7102 is part of the PLL current source and

allows connection to higher supply voltages as +5V. The TSA5060A has some output ports that are used to:

- Vosc (to switch the LO)
- Vpil (to switch the pilot)
- Port P1 to switch the PA

The oscillator (LO) is a common base transistor (7103) that is oscillating at half the output frequency. The frequency is tuned by the varicap 6102 until the tuning voltage is in the range of the loop filter (between 1 and 6 Vdc). If the voltage is outside this range then possibly the division ratio is chosen outside the normal range or some freq. dependant component around the transistor is faulty.

Multiplier and power amplifier

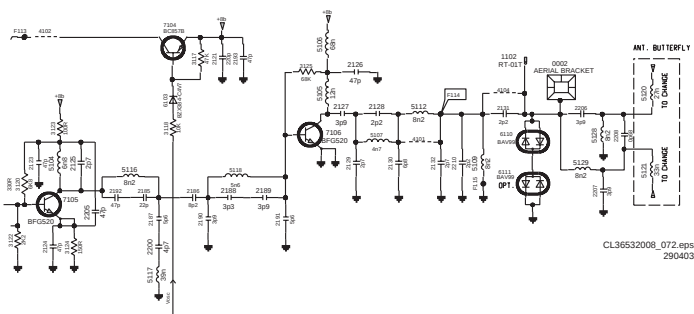


Figure 1-11 Multiplier and power amplifier

The LO signal is multiplied by two in a separate stage 7105 in order to get a high isolation between the LO and the antenna. There is quite some filtering necessary at the output because it is necessary to suppress the half freq. and its harmonics from reaching the PA stage. There is 2 stage bandstop filter followed by an elliptic low pass filter. This filtering has to do with the legal requirements for spurious radiation. The PA stage with 7106 increases the power level to about +15 dBm at the output of the filter. The transistor is polarised into class A for min. harmonic content and furthermore there is output filtering available to further reduce the harmonics. The configuration differs with the freq. version.

The 864 and 914 MHz versions for TV sets are using an integrated antenna on the board while the 433 TV version and all AV versions use a telescopic antenna. This results in different matching networks between TX and antenna. The printed dipole is driven symmetrically by a balun for optimum power transfer and symmetry. There are protection diodes (6110 & 6111) foreseen but not stuffed for ESD when applying to an external antenna.

The audio compander circuit

The audio compander uses a SA572 (7112), which is intended for high-end applications. It is to be used together with a low noise opamp (7113). There is no audio input filtering ahead of the compander. Therefore it can only be used when the source is having no frequency components above 20 kHz otherwise the compander linearity will be at risk. In the TV applications this is realised with a digital filter at the MDM board while for the AV applications there is additional low pass filtering to ensure good operation.

Graphically the operation of a companding expanding system can be understood from following figure:

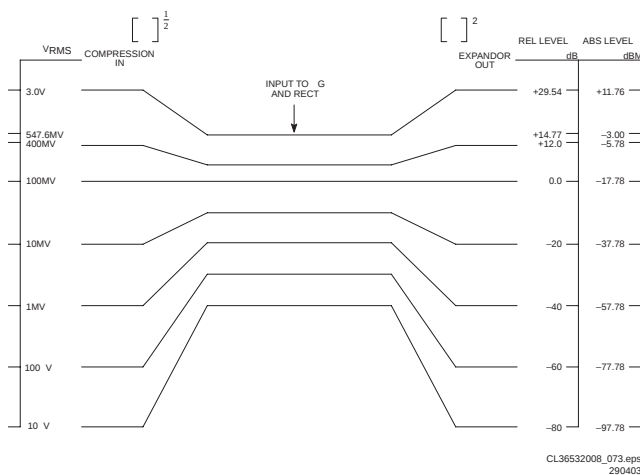


Figure 1-12 Compander graphics

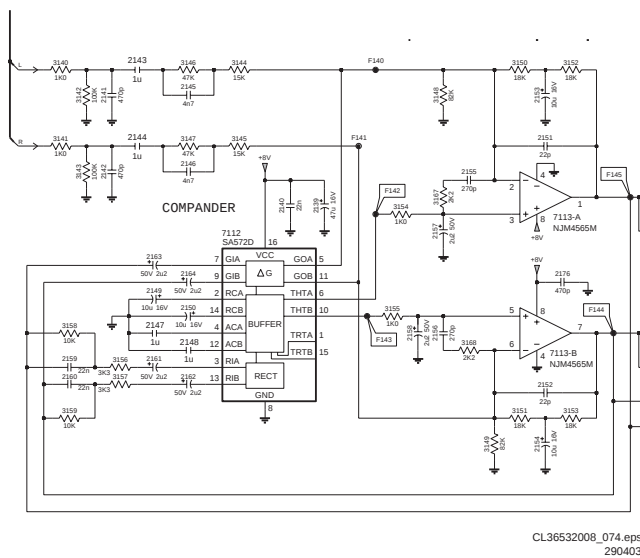


Figure 1-13 Compander circuit

Basically the circuit comes down to following simple circuit:

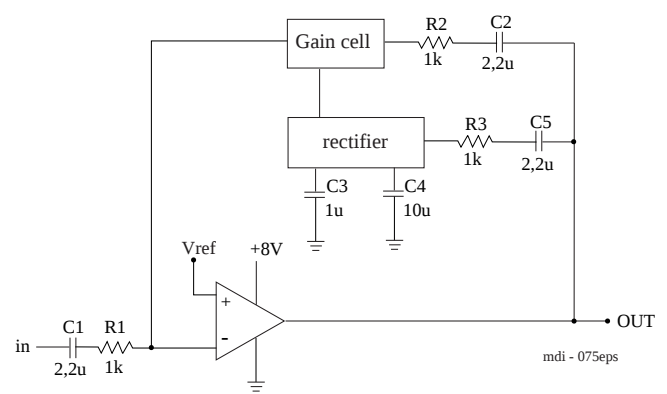


Figure 1-14 Gain cell

The basic compander configuration is given above. From the diagram one can understand the factor of 2 of companding as follows:

There is a variable gain cell (variable resistor) in the feedback loop of an opamp (NJM4565M). There is a rectifier cell that detects the output voltage of the opamp and translates it into a current send to the gain cell. The rectifier has an attack time constant (C3) and a decay time constant (C4), which is optimised to give the best auditive result.

If the input V_{in} rises with e.g. 4 times then the output can rise only 2 times. This is because the feedback resistor formed by the gain cell is decreased with a factor of 2. Remember for an opamp $V_{out} = V_{in} \cdot ((R_f + R_1)/R_1)$ where R_1 is constant. ($R_f = R_2 +$ internal gain cell res.)

The preemphasis, stereo coding and output filtering

The 2 channels available from the compander are now having pre-emphasis with a time constant of 12 μs . Too much time constant would give problems with the voltage rising too high at maximum Modulation frequency and hence occupied band width of the modulated signal. The pre-emphasis consist of a simple RC circuit. The stereocoder 7111C is in fact just an electronic switch, which is driven from the subcarrier frequency. By this operation the spectrum at the output of the switch is as follows in the frequency domain:

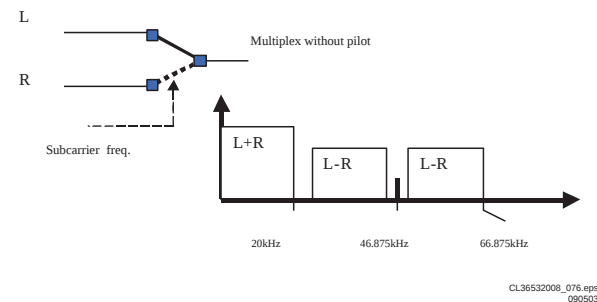


Figure 1-15 Multiplex without pilot

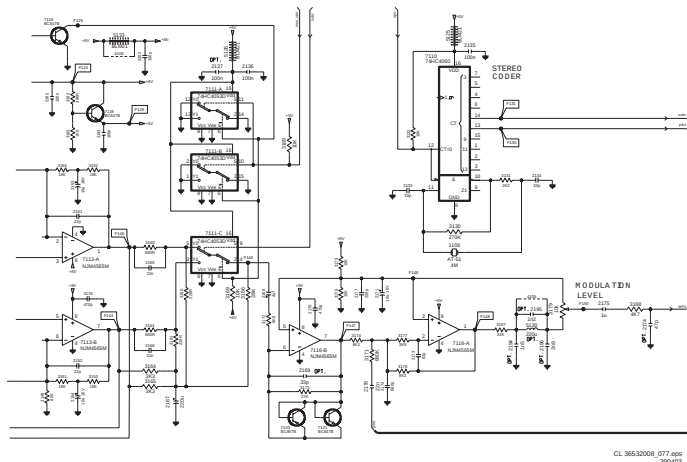


Figure 1-16 Stereocoder

Note that the other 2 switches of 7111 (respectively 7111A and 7111B) are unused.

Power supply and power down

The board is having a low drop voltage regulator 7117, which has an output voltage of 8.3Vdc. The 5 V supply is extracted via transistor 7119.

Receiver

The blockdiagram of the receiver is as follows:

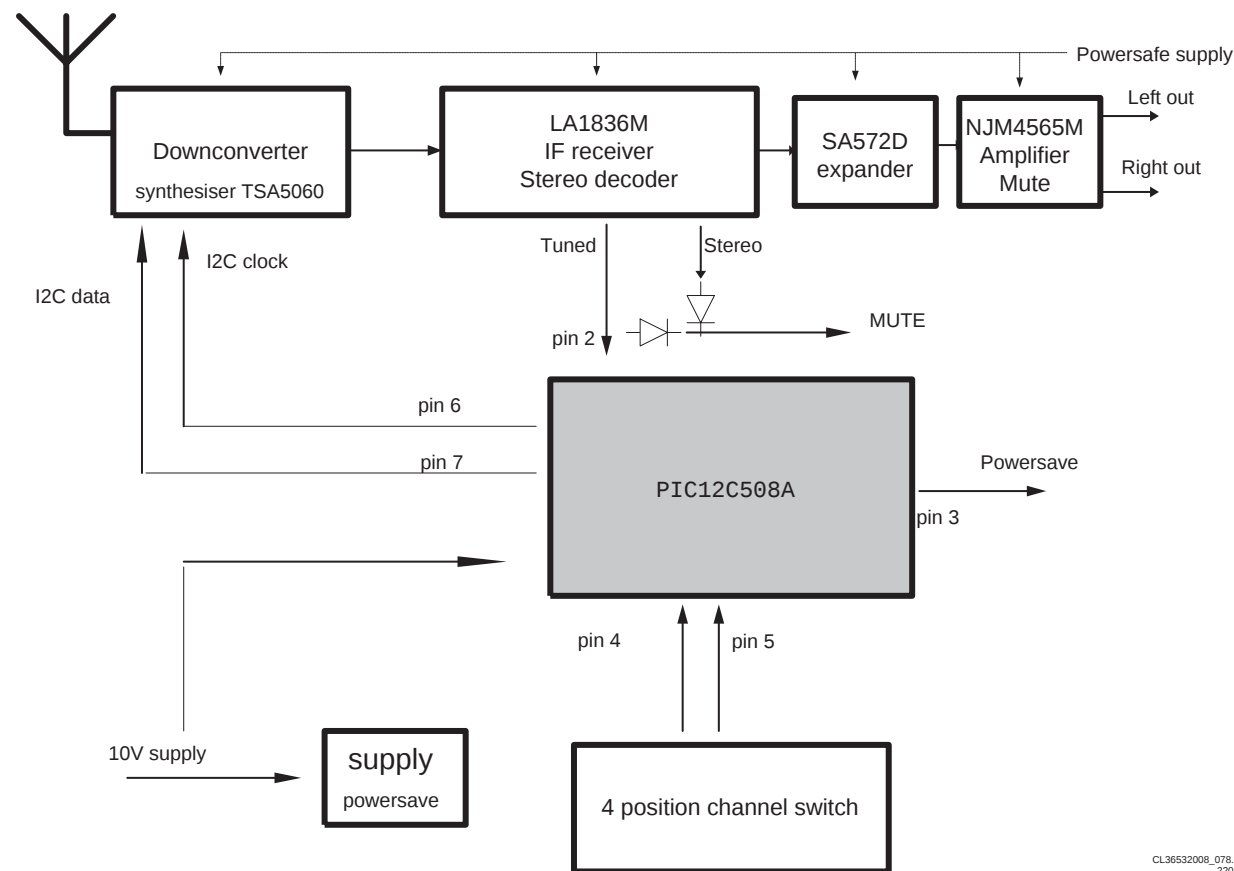


Figure 1-17 Block diagram receiver

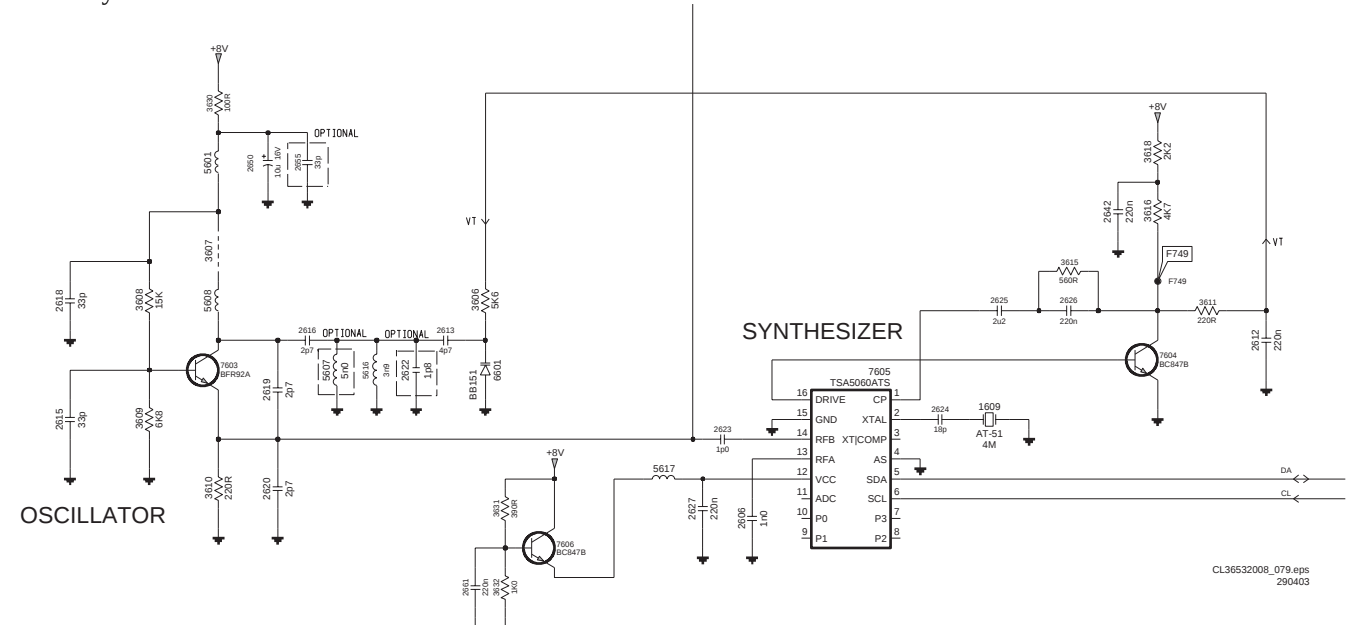
The power down detection is done via 6105 and 7118. When the voltage drops the transistor 7118 comes out of saturation rapidly thereby putting the stereocoder in Hi-Z position (idle) and no AF output will be there from the stereocoder. Suitable timing signals for the subcarrier and pilot frequency are extracted out of a 12 MHz crystal by division with 256 and 512 respectively. The whole chip 7110 can be enabled / disabled from the synthesiser port P2 (Vpil). (Low = enable). The outputs are square wave 5 V compatible.

The multiplex output from the stereocoder is fed into a limiter amplifier 7116B that sets a limit to the output voltage. In case the audio input signals increase towards 1.3 V the signal will be flat-topped and limited symmetrically. This of course introduces distortion but is necessary in order to observe the bandwidth limitations as set by legal standards. The base-emitter junctions of 7120 & 7121 form the limits.

This output signal is then summed with the pilot signal, which is injected just as a plain square wave. The amplifier 7116A forms a second order low pass filter that cuts at about 90 kHz. This reduces the harmonics present in the composite output signal. This signal is actually fed via trimpotmeter 3179 towards the varicap in order to achieve FM modulation. Trimpotmeter 3179 is aligned for a deviation of 50 kHz. There are 3 ways to align the trimpotmeter:

- Use a FM modulation analyser meter such as FAM (R&S) or similar.
- Put the RF output on a spectrum analyser and connect both audio inputs together at 0.41 V / 400Hz at the inputs of the TX. There are 2 peaks visible on the screen. Align until the difference between the peaks -3 dB is $2 \times 50\text{kHz}$ or 100 kHz.
- Use an accompanying receiver and while modulating both inputs of the TX align until the measured audio output of the RX is 1.3 Vrms.

Synthesiser and local oscillator



LNA and mixer

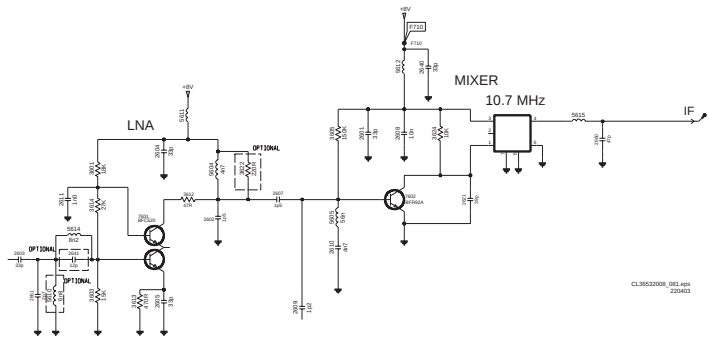


Figure 1-21 Mixer circuit

The LNA is a cascode configuration around the 7601. This circuit provides gain with a low noise figure while providing isolation from the oscillator to antenna. This isolation is necessary to comply with the legal requirements for radiated interference. The output of the LNA and the LO signal is mixed in 7602. This is a one transistor mixer that provides high conversion gain with low LO input signal. This level is only around 20 mV. The reason for this high conversion gain is that there is a 10.7 MHz trap at the base, 5605-2610. The output of the mixer is a tuned circuit at 10.7 MHz. The coil is pre-aligned at the factory.

The FM IF radio circuit

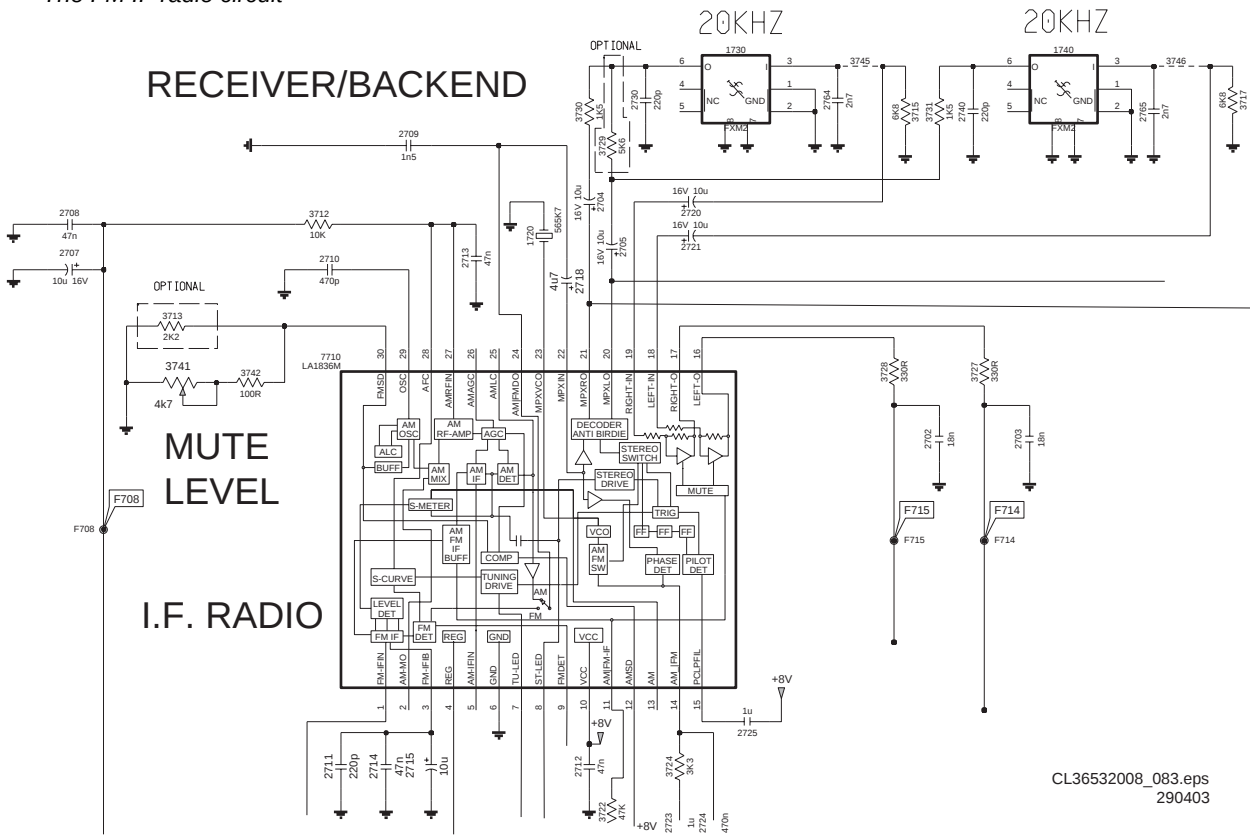


Figure 1-23 Receiver / backend circuit

FM Detector

The IF signal is demodulated in the 7710, LA1836M the IF radio IC. This IC has a coil FM detector that is aligned. In the alignment instructions this adjustment has been given. The stereodecoder is integrated and needs no adjustment. The demodulated signal is filtered with 1730-1740. These filters are pre-aligned and are reducing the pilot- and subcarrier frequency. This is necessary to prevent wrong operation of the expander circuit.

IF amplifier

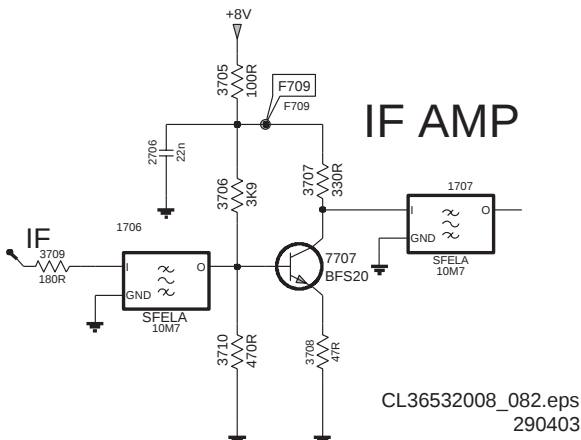


Figure 1-22 IF amp circuit

The mixer output signal is filtered by two ceramic IF filters. An IF amplifier 7707 is reducing the loss introduced by these filters.

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290403

SLIDING STEREO

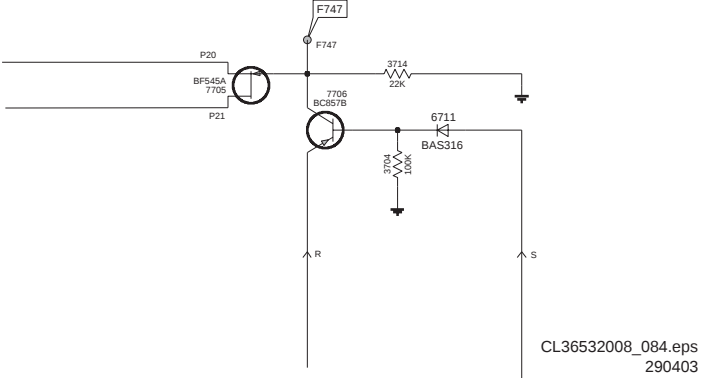


Figure 1-24 Receiver / backend circuit

There is a sliding stereo circuit for reducing the stereo noise at

low signal fieldstrengths. 7705 is short circuiting Audio left and Audio Right at low fieldstrengths. The level where the crossover happens is aligned. In the alignment instructions this adjustment has been given. There is also a MUTE LEVEL alignment, which is set at 10 µV RF input level. At this signal level the wireless audio link is muted.

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290403

The audio expander circuit

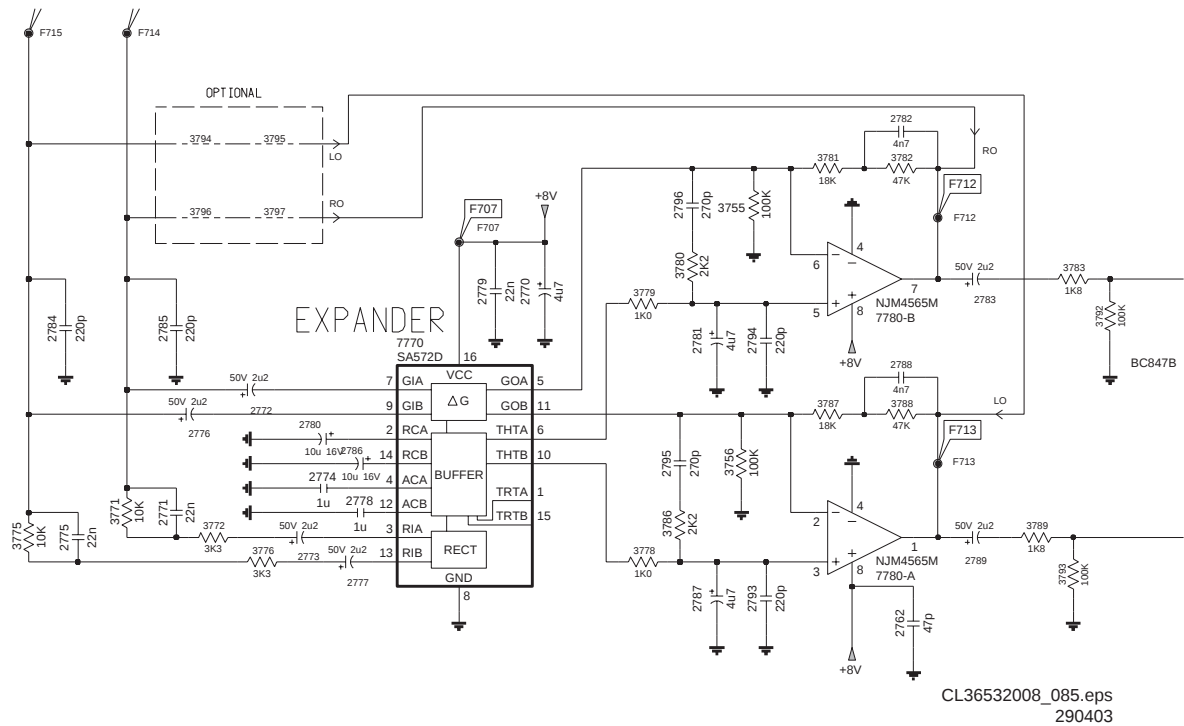


Figure 1-25 Expander circuit

The audio compander uses a device from SA572 (7770) that is intended for high-end applications. It is to be used together with a low noise opamp (7780). There is an expanding factor of 2 in dB. There is a variable gain cell (variable resistor) in the negative input of the opamp (NJM4565M). There is a rectifier cell that detects the input voltage and translates into a current send to the gain cell .The rectifier has an attack time constant and a decay timeconstant, which is optimised to give the best auditive result. If the input Vin rises with e.g. 2 times then the output rise 4 times. This is because the negative input resistor formed by the gain cell is decreased with a factor of 2. Remember for an opamp $V_{out} = V_{in} * ((R_f + R_{in}) / R_{in})$ where R_f is constant . (R_{in} = internal gain cell resistor)

Microcontroller functions

The microcontroller is an OTP Microchip PIC12C508A type with 512-bit EPROM and 6 I/O lines. The controller has to be programmed on the production line according the required version of 864, 914 MHz and 433 MHz. The main functions of the uP are reading the setting of the 4 position slide switch within every 250 milliseconds and read the Tuned info continuously and start the powersave mode if necessary.

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290403



Frequency setting is necessary when the 4-position slide switch is changed. In an internal look-up table the 4 required frequencies for the local oscillator are stored. The output towards the synthesiser chip in the frontend is in I²C form. The synthesizer is the only device on the bus. During frequency setting the Mute is active.

Scanning of the channel switch should occur within every 250 milliseconds in any mode.

General:
The amplifier module is intended to deliver 2 x 50 Watts into 8 ohm speakers. Speakers are connected through "easy-fit" connectors. See amplifier blockdiagram.



Additionally, the module is featured with a 2-colour indicator, green indicates the active state while red is standby. There is also an on-board 10 Vdc supply conditioning, specially intended for the TX receiver.

Muting

Powersave mode

The main supply can be switched off with the “powersave” control line to reduce the current consumption. The microcontroller is always powered by the power supply. All other electronics can be put into powersave mode. After approx. 10 minutes of no “Tuned” signal the receiver goes into powersave mode. Once in powersave mode, the receiver is operated in “listen-sleep” mode to reduce the average current consumption.

The board is having a low drop voltage regulator 7790, which has an output voltage of 8 Vdc. The 5 V supply for the micro controller is extracted from the 10 Vdc input supply via a zenerdiode 6751. The 5 Vdc supply of the synthesizer is extracted from transistor 7606. The powersave signal is also provided to the connector for the amplifier and for AV via the amplifierboard the SMPS is controlled.



+/- 15 Vdc preamp supply: The supply for the preamp is made by using a derived +/-15 Vdc from main power supply +/- 29.5 Vdc. Doing so assures a good symmetrical start-up on the power lines of the preamp, this suppresses possible plops. This supply is 15V for all operating conditions, except power save standby.

In normal operating circumstances, the voltage on the- "mode" pin of the amplifier IC7101 will be 4V5. This is the MUTE_AMPn signal.

+ 10Vdc receiver supply: Is always present, receiver stays always active
Note that all supplies have the same ground reference.

Amplifier

The amplifier TDA8920TH operates on ± 29.5 Vdc and can deliver 2 x 50 Watts into 8 ohm loads. Using the very efficient class D - technology, it minimizes the dissipation. The class - D chip runs on a ± 300 kHz oscillator, therefore a 12dB / octave output filter is needed (coil 5104 and 5105, and capacitor 2122 and 2125).

Input signals are 180° phase shifted by 7100-C and 7100-D, (the effect - speakers have to be in phase with left and right main speakers, otherwise bass reproduction will be poor) Input signals are filtered in the two-section high pass filter around 7100-B and 7100-A. The - 3 dB point is somewhere around 30Hz.

Input sensitivity of the amplifier for maximum output: typical 1.4V rms

11.9 Spare Parts List

Mechanical Parts List											
Various				3119	4822 051 30222	2.2k	5% 0.062W	2144	4822 126 14472	1µF 10% 10V 0805	
0074		Screw M3 x 6		3120	4822 051 30222	2.2k	5% 0.062W	2145	4822 126 13193	4.7nF 10% 63V	
0078	4304 074 19580	FEET		3121	4822 051 30472	4.7k	5% 0.062W	2146	4822 126 13193	4.7nF 10% 63V	
0320		TRANSMITTER BOARD		3122	4822 051 30472	4.7k	5% 0.062W	2147	4822 126 14472	1µF 10% 10V 0805	
0338	4304 074 19480	TOP COVERforRECEIVER		3125	4822 051 30273	27k	5% 0.062W	2148	4822 126 14472	1µF 10% 10V 0805	
0338	4304 074 19520	TOP COVER		3126	4822 051 30273	27k	5% 0.062W	2149	4822 124 23002	10µF 20% 16V	
		TRANSMITTER		3130	4822 051 30103	10k	5% 0.062W	2150	4822 124 23002	10µF 20% 16V	
0339	4304 074 19470	BOTTOM COVER for RECEIVER		3131	4822 051 30472	4.7k	5% 0.062W	2151	4822 122 33761	22pF 5% 50V	
0339	4304 074 19530	BOTTOM COVER for TRANSMITTER		3132	4822 051 30472	4.7k	5% 0.062W	2152	4822 122 33761	22pF 5% 50V	
0340	4304 074 19560	LIGHT GUIDE		3133	4822 051 30222	2.2k	5% 0.062W	2153	4822 124 23002	10µF 20% 16V	
		TRANSMITTER		3134	4822 051 30102	1k	5% 0.062W	2154	4822 124 23002	10µF 20% 16V	
0340	4304 074 19570	LIGHT GUIDE RECEIVER		3135	4822 051 30474	470k	5% 0.062W	2155	4822 126 14506	270pF 5% 50V 0603	
0366	3104 210 21710	ANTENNA		3136	4822 051 30393	39k	5% 0.062W	2156	4822 126 14506	270pF 5% 50V 0603	
0370	4304 074 19510	DECORATIVE RING IN TOPCOVER		3137	4822 051 30471	470	5% 0.062W	2157	3198 030 82280	2.2µF 20% 50V	
0438		RECEIVER BOARD		3138	4822 051 30103	10k	5% 0.062W	2158	3198 030 82280	2.2µF 20% 50V	
0440		AMPLIFIER		3139	4822 117 13632	100k	1% 0603 0.62W	2159	2238 916 15641	22nF 10% 25V 0603	
1501	4304 078 90120	POWER SUPPLY USA		3140	4822 117 13632	100k	1% 0603 0.62W	2160	2238 916 15641	22nF 10% 25V 0603	
1501	4304 078 90100	POWER SUPPLY EUR		3141	4822 051 30102	1k	5% 0.062W	2161	3198 030 82280	2.2µF 20% 50V	
1501	4304 078 90110	POWER SUPPLY UK		3142	4822 051 30331	330	5% 0.062W	2162	3198 030 82280	2.2µF 20% 50V	
7002		INTERFACE BOARD		3143	4822 051 30333	33k	5% 0.062W	2163	3198 030 82280	2.2µF 20% 50V	
		TRANSMITTER		3144	4822 051 30223	22k	5% 0.062W	2164	3198 030 82280	2.2µF 20% 50V	
7003	4304 078 90130	SMPS board for amplifier		3145	4822 051 30223	22k	5% 0.062W	2165	2238 916 15641	22nF 10% 25V 0603	
8001	4304 078 89080	CABLE ASSY POWER UK		3148	2322 702 60564	560k	5% 0603	2166	2238 916 15641	22nF 10% 25V 0603	
8001	4304 078 90200	CABLE ASSY POWER USA		3152	4822 117 12967	390k	5% 0.62W	2167	4822 124 81059	220µF 20% 4V	
8001TX	4304 078 90060	CABLE ASSY LS INPUT INTERFACE		3154	4822 051 30008	Jumper	0603	2168	2020 021 91729	4.7µF 20% 35V	
				3155	4822 051 30008	Jumper	0603	2170	4822 126 13881	470pF 5% 50V	
				4125	4822 051 20008	Jumper	0805	2171	4822 124 23002	10µF 20% 16V	
				4127	4822 051 20008	Jumper	0805	2172	4822 126 13909	680pF 10% 50V 0603	
				Diodes				2173	4822 126 14226	82pF 5% 50V 0603	
				6130	9340 255 30135	BAS216		2175	4822 126 14472	1µF 10% 10V 0805	
				6142	4822 130 82262	BAT54S		2176	4822 126 13881	470pF 5% 50V	
				6144	4822 130 82262	BAT54S		2177	4822 126 13883	220pF 5% 50V	
								2178	2238 916 15641	22nF 10% 25V 0603	
				Transistors & IC's				2179	2238 586 59812	100nF 20-80% 50V 0603	
				7101	4822 209 83357	NJM4560M		2181	2238 916 15641	22nF 10% 25V 0603	
				7115	4822 209 83357	NJM4560M		2182	2238 586 59812	100nF 20-80% 50V 0603	
				7130	4822 130 60373	BC856B		2183	2238 586 59812	100nF 20-80% 50V 0603	
				7135	5322 130 60159	BC846B		2184	4822 126 13883	220pF 5% 50V	
				7140	5322 130 60159	BC846B		2185	4822 122 33761	22pF 5% 50V	
				Transmitter Parts Eur + UK				2188	3198 016 33380	3.3pF 50V 0603	
								2192	4822 126 11785	47pF 5% 50V 0603	
								2193	4822 126 11785	47pF 5% 50V 0603	
								2197	4822 126 13883	220pF 5% 50V	
								2198	4822 126 13883	220pF 5% 50V	
								2199	4822 124 23002	10µF 20% 16V	
								2200	4822 126 13887	4.7pF 50V	
								2201	2020 552 94427	100pF 5% 50v 0603	
								2202	2020 552 94427	100pF 5% 50v 0603	
								2205	4822 126 11785	47pF 5% 50V 0603	
								Resistors			
Various				1101	4822 267 10574	Connector 8p		3101	4822 051 30471	470	5% 0.062W
				1106	4822 242 10694	Resonator 12MHz		3102	4822 051 30471	470	5% 0.062W
								3103	4822 051 30102	1k	5% 0.062W
								3104	4822 051 30102	1k	5% 0.062W
								3106	4822 051 30101	100	5% 0.062W
								3107	4822 051 30222	2.2k	5% 0.062W
								3108	4822 051 30222	2.2k	5% 0.062W
								3109	4822 051 30472	4.7k	5% 0.062W
								3110	4822 051 30331	330	5% 0.062W
								3111	4822 051 30103	10k	5% 0.062W
								3112	4822 117 13632	100k	1% 0603 0.62W
								3113	4822 051 30682	6.8k	5% 0.062W
								3114	4822 051 30153	15k	5% 0.062W
								3115	4822 051 30151	150	5% 0.062W
								3116	4822 051 30101	100	5% 0.062W
								3117	4822 117 12925	47k	1% 0.063W 0603
								3118	4822 051 30103	10k	5% 0.062W
								3119	4822 051 30331	330	5% 0.062W
								3120	4822 051 30682	6.8k	5% 0.062W
								3121	4822 117 13501	82	5% 0.62W 0603
								3122	4822 051 30222	2.2k	5% 0.062W
								3123	4822 051 30101	100	5% 0.062W
								3124	4822 051 30151	150	5% 0.062W
								3125	4822 051 30563	56k	5% 0.062W
								3127	4822 051 30689	68	5% 0.063W 0603
								3130	4822 117 12889	270k	1% 0.063W 0603
								3131	4822 051 30222	2.2k	5% 0.062W
								3132	4822 051 30103	10k	5% 0.062W
								3133	4822 051 30154	150k	5% 0.062W
								3140	4822 051 30102	1k	5% 0.062W
								3141	4822 051 30102	1k	5% 0.062W
								3142	4822 117 13632	100k	1% 0603 0.62W
								3143	4822 117 13632	100k	1% 0603 0.62W
								3144	4822 051 30153	15k	5% 0.062W
								3145	4822 051 30153	15k	5% 0.062W
								3146	4822 117 12925	47k	1% 0.063W 0603
								3147	4822 117 12925	47k	1% 0.063W 0603
Capacitors				2101	5322 126 11583	10nF 10% 50V 0603					
2100	2238 586 59812	100nF 20-80% 50V 0603		2102	4822 126 14507	18pF 5% 50V 0603					

3150	4822 051 30183	18k	5%	0.062W
3151	4822 051 30183	18k	5%	0.062W
3152	4822 051 30183	18k	5%	0.062W
3153	4822 051 30183	18k	5%	0.062W
3154	4822 051 30102	1k	5%	0.062W
3155	4822 051 30102	1k	5%	0.062W
3156	4822 051 30332	3.3k	5%	0.062W
3157	4822 051 30332	3.3k	5%	0.062W
3158	4822 051 30103	10k	5%	0.062W
3159	4822 051 30103	10k	5%	0.062W
3160	4822 051 30681	680	5%	0.062W
3161	4822 051 30681	680	5%	0.062W
3164	4822 051 30332	3.3k	5%	0.062W
3165	4822 051 30332	3.3k	5%	0.062W
3166	4822 051 30393	39k	5%	0.062W
3167	4822 051 30222	2.2k	5%	0.062W
3168	4822 051 30222	2.2k	5%	0.062W
3169	4822 051 30103	10k	5%	0.062W
3171	4822 051 30684	680k	5%	0.062W
3172	4822 051 30682	6.8k	5%	0.062W
3173	4822 051 30273	27k	5%	0.062W
3174	4822 117 12902	8.2k	1%	0.063W 0603
3175	4822 051 30153	15k	5%	0.062W
3176	4822 051 30153	15k	5%	0.062W
3177	4822 051 30392	3.9k	5%	0.063W 0603
3178	4822 117 12902	8.2k	1%	0.063W 0603
3179	4822 100 12157	Potm 10K	30%	
3180	4822 051 30472	4.7k	5%	0.062W
3181	4822 117 12925	47k	1%	0.063W 0603
3182	4822 051 30391	39k	5%	0.062W
3185	4822 051 30121	120	5%	0.062W
3186	4822 051 30681	680	5%	0.062W
3187	4822 051 30223	22k	5%	0.062W
3188	4822 051 30472	4.7k	5%	0.062W
3189	4822 051 30103	10k	5%	0.062W
3190	4822 051 30221	220	5%	0.062W
3191	4822 051 30221	220	5%	0.062W
4102	4822 051 30008	Jumper 0603		
4105	4822 051 30008	Jumper 0603		
4106	4822 051 20008	Jumper 0805		
4107	4822 051 20008	Jumper 0805		
4108	4822 051 30008	Jumper 0603		

Filters				
5103	4822 157 71206	Bead 600	at	100MHz
5125	4822 157 71206	Bead 600	at	100MHz
5126	4822 157 71206	Bead 600	at	100MHz
5127	4822 157 71206	Bead 600	at	100MHz

Diodes				
6101	4822 130 11423	PLVA2656A		
6103	4822 130 11148	UDZ4.7B		
6105	4822 130 11551	UDZS10B		
6106	4822 130 11397	BAS316		
6107	3198 020 55680	BZX384-C5V6		
6108	5322 130 34331	BAV70		

Transistors & IC's				
7102	5322 130 60159	BC846B		
7103	5322 130 60647	BFR92A SM		
7104	4822 130 60373	BC856B		
7110	5322 209 71591	PC74HC4060T		
7111	4822 209 60792	74HC4053D		
7117	9322 144 97668	LD1117DT		
7118	5322 130 60159	BC846B		
7119	5322 130 60159	BC846B		
7120	4822 130 60373	BC856B		
7121	5322 130 60159	BC846B		

Receiver Parts Eur + UK				
Various				
1602	2422 549 45394	SAW 864MHz	B3589	
1706	4822 242 70665	Filter 10.7M		
1707	4822 242 70665	Filter 10.7M		
1710	2422 549 43868	Coil var.	10.7MHz	
1720	2422 540 98572	Resonator 565kHz		
		CSBLA562		
1730	2422 549 45464	Filter 20KHz		
1740	2422 549 45464	Filter 20KHz		
1765	2422 127 00552	Switch slide 4 positions		
1790	4822 267 10618	Connector 7p		

Capacitors				
2601	2222 867 15339	33pF 5%	50V 0603	

2602	3198 016 31580	1.5pF 50V	0603	
2603	2222 867 15339	33pF 5%	50V 0603	
2604	2222 867 15339	33pF 5%	50V 0603	
2605	2222 867 15339	33pF 5%	50V 0603	
2606	5322 126 11578	1nF 10%	50V 0603	
2607	3198 016 31580	1.5pF 50V	0603	
2608	5322 126 11583	10nF 10%	50V 0603	
2609	3198 016 31280	1.2pF 50V	0603	
2610	4822 126 13193	4.7nF 10%	63V	
2611	5322 126 11578	1nF 10%	50V 0603	
2612	4822 126 13879	220nF 20%	16V	
2613	4822 126 13887	4.7pF 50V		
2615	2222 867 15339	33pF 5%	50V 0603	
2616	3198 016 32780	2.7pF 50V	0603 NPO	
2618	2222 867 15339	33pF 5%	50V 0603	
2619	3198 016 32780	2.7pF 50V	0603 NPO	
2620	3198 016 32780	2.7pF 50V	0603 NPO	
2621	2020 552 93645	39pF 5%	50V	
2623	3198 016 31080	1pF 25%	50V 0603	
2624	4822 126 14507	18pF 5%	50V 0603	
2626	4822 126 13879	220nF 20%	16V	
2627	4822 126 13879	220nF 20%	16V	
2630	2020 552 93645	39pF 5%	50V	
2640	2222 867 15339	33pF 5%	50V 0603	
2642	4822 126 13879	220nF 20%	16V	
2650	4822 124 23002	10µF 20%	16V	
2651	3198 016 32780	2.7pF 50V	0603 NPO	
2652	2222 867 15339	33pF 5%	50V 0603	
2660	4822 126 11785	47pF 5%	50V 0603	
2661	4822 126 13879	220nF 20%	16V	
2704	4822 124 23002	10µF 20%	16V	
2705	4822 124 23002	10µF 20%	16V	
2706	2238 916 15641	12nF 10%	25V 0603	
2707	4822 124 23002	10µF 20%	16V	
2708	3198 017 34730	47nF 16V	0603	
2709	4822 126 14247	1.5nF 50V	0603	
2710	4822 126 13881	470pF 5%	50V	
2711	4822 126 13883	220pF 5%	50V	
2712	3198 017 34730	47nF 16V	0603	
2713	3198 017 34730	47nF 16V	0603	
2714	3198 017 34730	47nF 16V	0603	
2715	4822 124 23002	10µF 20%	16V	
2716	2020 552 94427	100pF 5%	50v 0603	
2718	2020 021 91729	4.7µF 20%	35V	
2720	4822 124 23002	10µF 20%	16V	
2721	4822 124 23002	10µF 20%	16V	
2722	4822 124 23002	10µF 20%	16V	
2723	4822 126 14472	1µF 10%	10V 0805	
2724	4822 126 14583	470nF 10%	16V 0805	
2725	4822 126 14472	1µF 10%	10V 0805	
2730	4822 126 13883	220pF 5%	50V	
2740	4822 126 13883	220pF 5%	50V	
2750	2020 552 94427	100pF 5%	50v 0603	
2751	4822 126 13881	470pF 5%	50V	
2754	2020 021 91729	4.7µF 20%	35V	
2755	4822 124 12095	100µF 20%	16V	
2762	4822 126 11785	47pF 5%	50V 0603	
2764	2238 586 15628	2n7 10%	50V 0603	
2765	2238 586 15628	2n7 10%	50V 0603	
2770	2020 021 91729	4.7µF 20%	35V	
2771	2238 916 15641	22nF 10%	25V 0603	
2772	3198 030 82280	2.2µF 20%	50V	
2773	3198 030 82280	2.2µF 20%	50V	
2774	4822 126 14472	1µF 10%	10V 0805	
2775	2238 916 15641	22nF 10%	25V 0603	
2776	3198 030 82280	2.2µF 20%	50V	
2777	3198 030 82280	2.2µF 20%	50V	
2778	4822 126 14472	1µF 10%	10V 0805	
2779	2238 916 15641	22nF 10%	25V 0603	
2780	4822 124 23002	10µF 20%	16V	
2781	2020 021 91729	4.7µF 20%	35V	
2782	4822 126 13193	4.7nF 10%	63V	
2783	3198 030 82280	2.2µF 20%	50V	
2784	4822 126 13883	220pF 5%	50V	
2785	4822 126 13883	220pF 5%	50V	
2786	4822 124 23002	10µF 20%	16V	
2787	2020 021 91729	4.7µF 20%	35V	
2788	4822 126 13193	4.7nF 10%	63V	
2789	3198 030 82280	2.2µF 20%	50V	
2790	3198 030 82280	2.2µF 20%	50V	
2791	4822 126 13879	220nF 20%	16V	
2792	4822 126 13883	220pF 5%	50V	
2793	4822 126 13883	220pF 5%	50V	
2794	4822 126 13883	220pF 5%	50V	
2795	4822 126 14506	270pF 5%	50V 0603	
2796	4822 126 14506	270pF 5%	50V 0603	
2798	2020 552 94427	100pF 5%	50v 0603	

Resistors				
3601	4822 051 30183	18k	5%	0.062W
3603	4822 051 30153	15k	5%	0.062W
3605	4822 051 30154	150k	5%	0.062W

3606	4822 051 30562	5.6k	5%	0.063W 0603
3607	4822 051 30008	Jumper 0603		
3608	4822 051 30153	15k	5%	0.062W
3609	4822 051 30682	6.8k	5%	0.062W
3610	4822 051 30221	220	5%	0.062W
3611	4822 051 30221	220	5%	0.062W
3612	4822 051 30479	47	5%	0.062W
3613	4822 051 30471	470	5%	0.062W
3614	4822 051 30273	27k	5%	0.062W
3615	4822 051 30561	560	5%	0.062W
3616	4822 051 30472	4.7k	5%	0.062W
3618	4822 051 30222	2.2k	5%	0.062W
3624	4822 051 30103	10k	5%	0.062W
3630	4822 051 30101	100	5%	0.062W
3631	4822 051 30391	390	5%	0.062W
3632	4822 051 30102	1k	5%	0.062W
3701	4822 051 30471	470	5%	0.062W
3702	4822 051 30222	2.2k	5%	0.062W
3703	4822 051 30471	470	5%	0.062W
3704	4822 117 13632	100k	1%	0603 0.62W
3705	4822 051 30101	100	5%	0.062W
3706	4822 051 30392	3.9k	5%	0.063W 0603
3707	4822 051 30331	330	5%	0.062W
3708	4822 051 30479	47	5%	0.062W
3709	4822 051 30181	180	5%	0.062W
3710	4822 051 30471	470	5%	0.062W
3712	4822 051 30103	10k	5%	0.062W
3714	4822 051 30223	22k	5%	0.062W
3715	4822 051 30682	6.8k	5%	0.062W
3717	4822 051 30682	6.8k	5%	0.062W
3718	4822 051 30332	3.3k	5%	0.062W
3719	4822 051 30332	3.3k	5%	0.062W
3720	4822 051 30392	3.9k	5%	0.063W 0603
3722	4822 117 12925	47k	1%	0.063W 0603
3724	4822 051 30332	3.3k	5%	0.062W
3727	4822 051 30331	330	5%	0.062W
3728	4822 051 30331	330	5%	0.062W
3730	4822 051 30152	1.5k	5%	0.062W
3731	4822 051 30152	1.5k	5%	0.062W
3740	4822 117 13632	100k	1%	0603 0.62W
3741	4822 100 11088	Potm 5K	30% LIN	0.1W
3742	4822 051 30101	100	5%	0.

6752	4822 130 11397	BAS316			
Transistors & IC's					
7602	5322 130 60647	BFR92A SM			
7603	5322 130 60647	BFR92A SM			
7604	5322 130 60159	BC846B			
7606	5322 130 60159	BC846B			
7706	4822 130 60373	BC856B			
7707	5322 130 42718	BFS20			
7755	4822 130 60373	BC856B			
7784	5322 130 60159	BC846B			
7789	5322 130 60159	BC846B			
Transmitter Parts USA					
Various					
1101	4822 267 10574	Connector 8p			
1105	2422 543 00723	Resonator 4MHz 20%			
1106	4822 242 10694	Resonator 12MHz			
Capacitors					
2101	5322 126 11583	10nF 10% 50V 0603			
2102	4822 126 14507	18pF 5% 50V 0603			
2103	2020 552 96675	10µF 10% 16V 1210			
2104	4822 126 14585	100nF 10% 50V			
2105	4822 126 13879	220nF 20% 16V			
2106	3198 016 31020	1nF 25V 0603			
2107	3198 016 31020	1nF 25V 0603			
2108	4822 122 33761	22pF 5% 50V			
2109	4822 126 13883	220pF 5% 50V			
2110	2020 552 96684	470nF 10% 25V			
2111	2020 552 96384	5.6pF 25% 50V 0603			
2113	4822 126 13887	4.7pF 50V			
2114	2238 586 59812	100nF 20-80% 50V 0603			
2115	4822 126 13883	220pF 5% 50V			
2116	4822 126 11663	12pF 5% 50V 0603			
2117	4822 122 33752	15pF 5% 50V			
2118	3198 016 31080	1pF 25% 50V 0603			
2120	3198 016 31080	1pF 25% 50V 0603			
2121	4822 126 13883	220pF 5% 50V			
2122	4822 126 13883	220pF 5% 50V			
2123	4822 126 11785	47pF 5% 50V 0603			
2124	4822 126 11785	47pF 5% 50V 0603			
2126	4822 126 11785	47pF 5% 50V 0603			
2127	3198 016 32780	2.7pF 50V 0603 NPO			
2129	4822 126 13956	68pF 5% 63V 0603			
2130	4822 126 13956	68pF 5% 63V 0603			
2131	4822 122 33752	15pF 5% 50V			
2133	2222 867 15339	33pF 5% 50V 0603			
2134	2222 867 15339	33pF 5% 50V 0603			
2135	2238 586 59812	100nF 20-80% 50V 0603			
2136	2238 586 59812	100nF 20-80% 50V 0603			
2139	4822 124 80151	47µF 20% 16V			
2140	2238 916 15641	22nF 10% 25V 0603			
2141	4822 126 13881	470pF 5% 50V			
2142	4822 126 13881	470pF 5% 50V			
2143	4822 126 14472	1µF 10% 10V 0805			
2144	4822 126 14472	1µF 10% 10V 0805			
2145	4822 126 13193	4.7nF 10% 63V			
2146	4822 126 13193	4.7nF 10% 63V			
2147	4822 126 14472	1µF 10% 10V 0805			
2148	4822 126 14472	1µF 10% 10V 0805			
2149	4822 124 23002	10µF 20% 16V			
2150	4822 124 23002	10µF 20% 16V			
2151	4822 122 33761	22pF 5% 50V			
2152	4822 122 33761	22pF 5% 50V			
2153	4822 124 23002	10µF 20% 16V			
2154	4822 124 23002	10µF 20% 16V			
2155	4822 126 14506	270pF 5% 50V 0603			
2156	4822 126 14506	270pF 5% 50V 0603			
2157	3198 030 82280	2.2µF 20% 50V			
2158	3198 030 82280	2.2µF 20% 50V			
2159	2238 916 15641	22nF 10% 25V 0603			
2160	2238 916 15641	22nF 10% 25V 0603			
2161	3198 030 82280	2.2µF 20% 50V			
2162	3198 030 82280	2.2µF 20% 50V			
2163	3198 030 82280	2.2µF 20% 50V			
2164	3198 030 82280	2.2µF 20% 50V			
2165	2238 916 15641	22nF 10% 25V 0603			
2166	2238 916 15641	22nF 10% 25V 0603			
2167	4822 124 81059	220µF 20% 4V			
2168	2020 021 91729	4.7µF 20% 35V			
2170	4822 126 13881	470pF 5% 50V			
2171	4822 124 23002	10µF 20% 16V			
2172	4822 126 13909	680pF 10% 50V 0603			
2173	4822 126 14226	82pF 5% 50V 0603			
2175	4822 126 14472	1µF 10% 10V 0805			
2176	4822 126 13881	470pF 5% 50V			
2177	4822 126 13883	220pF 5% 50V			
2178	2238 916 15641	22nF 10% 25V 0603			
2179	2238 586 59812	100nF 20-80% 50V 0603			
2180	2020 021 91817	470µF 16V 20%			
2181	2238 916 15641	22nF 10% 25V 0603			
2182	2238 586 59812	100nF 20-80% 50V 0603			
2183	2238 586 59812	100nF 20-80% 50V 0603			
2184	4822 126 13883	220pF 5% 50V			
2185	2020 552 96384	5.6pF 25% 50V 0603			
2186	4822 126 14218	3.9pF 6% 50V 0603			
2187	4822 126 13887	4.7pF 50V			
2188	4822 126 14218	3.9pF 6% 50V 0603			
2189	2020 552 96384	5.6pF 25% 50V 0603			
2190	4822 126 14218	3.9pF 6% 50V 0603			
2191	4822 126 14218	3.9pF 6% 50V 0603			
2192	2020 552 96384	5.6pF 25% 50V 0603			
2193	4822 126 11785	47pF 5% 50V 0603			
2197	4822 126 13883	220pF 5% 50V			
2198	4822 126 13883	220pF 5% 50V			
2199	4822 124 23002	10µF 20% 16V			
2200	2020 552 96384	5.6pF 25% 50V 0603			
2201	2020 552 94427	100pF 5% 50v 0603			
2202	2020 552 94427	100pF 5% 50v 0603			
2205	4822 126 11785	47pF 5% 50V 0603			
Resistors					
3101	4822 051 30471	470. 5% 0.062W			
3102	4822 051 30471	470. 5% 0.062W			
3103	4822 051 30102	1k. 5% 0.062W			
3104	4822 051 30102	1k. 5% 0.062W			
3105	4822 051 30101	100. 5% 0.062W			
3107	4822 051 30222	2.2k. 5% 0.062W			
3108	4822 051 30222	2.2k. 5% 0.062W			
3109	4822 051 30472	4.7k. 5% 0.062W			
3110	4822 051 30331	330. 5% 0.062W			
3111	4822 051 30103	10k. 5% 0.062W			
3112	4822 117 13632	100k. 1% 0603 0.62W			
3113	4822 051 30682	6.8k. 5% 0.062W			
3114	4822 051 30153	15k. 5% 0.062W			
3115	4822 051 30271	270. 5% 0.062W			
3116	4822 051 30101	100. 5% 0.062W			
3117	4822 117 12925	47k. 1% 0.063W 0603			
3118	4822 051 30103	10k. 5% 0.062W			
3119	4822 051 30331	330. 5% 0.062W			
3120	4822 051 30682	6.8k. 5% 0.062W			
3121	4822 117 13501	82. 5% 0.62W 0603			
3122	4822 051 30222	2.2k. 5% 0.062W			
3123	4822 051 30101	100. 5% 0.062W			
3124	4822 051 30151	150. 5% 0.062W			
3125	4822 051 30563	56k. 5% 0.062W			
3127	4822 051 30689	68. 5% 0.063W 0603			
3130	4822 117 12889	270k. 1% 0.063W 0603			
3131	4822 051 30222	2.2k. 5% 0.062W			
3132	4822 051 30103	10k. 5% 0.062W			
3133	4822 051 30154	150k 5% 0.062W			
3140	4822 051 30102	1k. 5% 0.062W			
3141	4822 051 30102	1k. 5% 0.062W			
3142	4822 117 13632	100k. 1% 0603 0.62W			
3143	4822 117 13632	100k. 1% 0603 0.62W			
3144	4822 051 30153	15k. 5% 0.062W			
3145	4822 051 30153	15k. 5% 0.062W			
3146	4822 117 12925	47k. 1% 0.063W 0603			
3147	4822 117 12925	47k. 1% 0.063W 0603			
3150	4822 051 30183	18k. 5% 0.062W			
3151	4822 051 30183	18k. 5% 0.062W			
3152	4822 051 30183	18k. 5% 0.062W			
3153	4822 051 30183	18k. 5% 0.062W			
3154	4822 051 30102	1k. 5% 0.062W			
3155	4822 051 30102	1k. 5% 0.062W			
3156	4822 051 30332	3.3k. 5% 0.062W			
3157	4822 051 30332	3.3k. 5% 0.062W			
3158	4822 051 30103	10k. 5% 0.062W			
3159	4822 051 30103	10k. 5% 0.062W			
3160	4822 051 30681	680. 5% 0.062W			
3161	4822 051 30681	680.			

2621	2020 552 93645	39pF 5% 50V
2623	3198 016 31080	1pF 25% 50V 0603
2624	4822 126 14507	18pF 5% 50V 0603
2625	4822 123 14018	2.2μF 10% 10V
2626	4822 126 13879	220nF 20% 16V
2627	4822 126 13879	220nF 20% 16V
2630	4822 122 33761	22pF 5% 50V
2640	2222 867 15339	33pF 5% 50V 0603
2642	4822 126 13879	220nF 20% 16V
2650	4822 124 23002	10μF 20% 16V
2651	3198 016 32780	2.7pF 50V 0603 NPO
2652	2222 867 15339	33pF 5% 50V 0603
2660	4822 126 11785	47pF 5% 50V 0603
2661	4822 126 13879	220nF 20% 16V
2702	2238 586 55639	18nF 10% 50V 0603
2703	2238 586 55639	18nF 10% 50V 0603
2704	4822 124 23002	10μF 20% 16V
2705	4822 124 23002	10μF 20% 16V
2706	2238 916 15641	22nF 10% 25V 0603
2707	4822 124 23002	10μF 20% 16V
2708	3198 017 34730	47nF 16V 0603
2709	4822 126 14247	1.5nF 50V 0603
2713	3198 017 34730	47nF 16V 0603
2714	3198 017 34730	47nF 16V 0603
2715	4822 124 23002	10μF 20% 16V
2716	2020 552 94427	100pF 5% 50v 0603
2718	2020 021 91729	4.7μF 20% 35V
2720	4822 124 23002	10μF 20% 16V
2721	4822 124 23002	10μF 20% 16V
2722	4822 124 23002	10μF 20% 16V
2723	4822 126 14472	1μF 10% 10V 0805
2724	4822 126 14583	470nF 10% 16V 0805
2725	4822 126 14472	1μF 10% 10V 0805
2730	4822 126 13883	220pF 5% 50V
2740	4822 126 13883	220pF 5% 50V
2750	2020 552 94427	100pF 5% 50v 0603
2751	4822 126 13881	470pF 5% 50V
2754	2020 021 91729	4.7μF 20% 35V
2755	4822 124 12095	100μF 20% 16V
2762	4822 126 11785	47pF 5% 50V 0603
2764	2238 586 15628	2n7 10% 50V 0603
2765	2238 586 15628	2n7 10% 50V 0603
2770	2020 021 91729	4.7μF 20% 35V
2771	2238 916 15641	22nF 10% 25V 0603
2772	3198 030 82280	2.2μF 20% 50V
2773	3198 030 82280	2.2μF 20% 50V
2774	4822 126 14472	1μF 10% 10V 0805
2775	2238 916 15641	22nF 10% 25V 0603
2776	3198 030 82280	2.2μF 20% 50V
2777	3198 030 82280	2.2μF 20% 50V
2778	4822 126 14472	1μF 10% 10V 0805
2779	2238 916 15641	22nF 10% 25V 0603
2780	4822 124 23002	10μF 20% 16V
2781	2020 021 91729	4.7μF 20% 35V
2782	4822 126 13193	4.7nF 10% 63V
2783	3198 030 82280	2.2μF 20% 50V
2784	4822 126 13883	220pF 5% 50V
2785	4822 126 13883	220pF 5% 50V
2786	4822 124 23002	10μF 20% 16V
2787	2020 021 91729	4.7μF 20% 35V
2788	4822 126 13193	4.7nF 10% 63V
2789	3198 030 82280	2.2μF 20% 50V
2790	3198 030 82280	2.2μF 20% 50V
2791	4822 126 13879	220nF 20% 16V
2792	4822 126 13883	220pF 5% 50V
2793	4822 126 13883	220pF 5% 50V
2794	4822 126 13883	220pF 5% 50V
2795	4822 126 14506	270pF 5% 50V 0603
2796	4822 126 14506	270pF 5% 50V 0603
2798	2020 552 94427	100pF 5% 50v 0603

Resistors

3601	4822 051 30183	18k 5% 0.062W
3603	4822 051 30153	15k 5% 0.062W
3605	4822 051 30154	150k 5% 0.062W
3606	4822 051 30562	5.6k 5% 0.063W 0603
3607	4822 051 30008	Jumper 0603
3608	4822 051 30153	15k 5% 0.062W
3609	4822 051 30682	6.8k 5% 0.062W
3610	4822 051 30221	220 5% 0.062W
3611	4822 051 30221	220 5% 0.062W
3612	4822 051 30479	47 5% 0.062W
3613	4822 051 30471	470 5% 0.062W
3614	4822 051 30273	27k 5% 0.062W
3615	4822 051 30561	560 5% 0.062W
3616	4822 051 30472	4.7k 5% 0.062W
3618	4822 051 30222	2.2k 5% 0.062W
3624	4822 051 30103	10k 5% 0.062W
3630	4822 051 30101	100 5% 0.062W
3631	4822 051 30391	390 5% 0.062W
3632	4822 051 30102	1k 5% 0.062W
3701	4822 051 30471	470 5% 0.062W

3702	4822 051 30222	2.2k 5% 0.062W
3703	4822 051 30471	470 5% 0.062W
3704	4822 117 13632	100k 1% 0603 0.62W
3705	4822 051 30101	100 5% 0.062W
3706	4822 051 30392	3.9k 5% 0.063W 0603
3707	4822 051 30331	330 5% 0.062W
3708	4822 051 30479	47 5% 0.062W
3709	4822 051 30181	180 5% 0.062W
3710	4822 051 30471	470 5% 0.062W
3712	4822 051 30103	10k 5% 0.062W
3714	4822 051 30223	22k 5% 0.062W
3715	4822 051 30682	6.8k 5% 0.062W
3717	4822 051 30682	6.8k 5% 0.062W
3718	4822 051 30332	3.3k 5% 0.062W
3719	4822 051 30332	3.3k 5% 0.062W
3720	4822 051 30392	3.9k 5% 0.063W 0603
3722	4822 117 12925	47k 1% 0.063W 0603
3724	4822 051 30332	3.3k 5% 0.062W
3727	4822 051 30331	330 5% 0.062W
3728	4822 051 30331	330 5% 0.062W
3730	4822 051 30152	1.5k 5% 0.062W
3731	4822 051 30152	1.5k 5% 0.062W
3740	4822 117 13632	100k 1% 0603 0.62W
3741	4822 100 11088	Potm 5K 30% LIN 0.1W
3742	4822 051 30101	100 5% 0.062W
3743	4822 100 12157	Potm 10K 30%
3744	4822 051 30392	3.9k 5% 0.063W 0603
3745	4822 051 30008	Jumper 0603
3746	4822 051 30008	Jumper 0603
3749	4822 051 30102	1k 5% 0.062W
3750	4822 051 30102	1k 5% 0.062W
3753	4822 051 30102	1k 5% 0.062W
3754	4822 051 30472	4.7k 5% 0.062W
3755	4822 117 13632	100k 1% 0603 0.62W
3756	4822 117 13632	100k 1% 0603 0.62W
3766	4822 117 12968	820 5% 0.62W
3771	4822 051 30103	10k 5% 0.062W
3772	4822 051 30332	3.3k 5% 0.062W
3775	4822 051 30103	10k 5% 0.062W
3776	4822 051 30332	3.3k 5% 0.062W
3778	4822 051 30102	1k 5% 0.062W
3779	4822 051 30102	1k 5% 0.062W
3780	4822 051 30222	2.2k 5% 0.062W
3781	4822 051 30183	18k 5% 0.062W
3782	4822 117 12925	47k 1% 0.063W 0603
3783	4822 117 12903	1.8k 1% 0.063W 0603
3784	4822 051 30472	4.7k 5% 0.062W
3785	4822 051 30472	4.7k 5% 0.062W
3786	4822 051 30222	2.2k 5% 0.062W
3787	4822 051 30183	18k 5% 0.062W
3788	4822 117 12925	47k 1% 0.063W 0603
3789	4822 117 12903	1.8k 1% 0.063W 0603
3790	4822 051 30472	4.7k 5% 0.062W
3792	4822 117 13632	100k 1% 0603 0.62W
3793	4822 117 13632	100k 1% 0603 0.62W
3798	4822 051 30223	22k 5% 0.062W

Filters

5601	2422 549 44607	Bead 600 at 100MHz
5603	2422 535 94785	1nH 3% 0603
5604	2422 535 94776	4.7nH 3% 0603
5605	2422 535 94782	56nH 5% 0603
5606	2422 549 45299	Trimmer 10mH
5608	2422 549 44607	Bead 600 at 100MHz
5611	2422 549 44607	Bead 600 at 100MHz
5612	2422 549 44607	Bead 600 at 100MHz
5614	2422 535 94613	6.8nH 5% 0603
5615	2422 549 44607	Bead 600 at 100MHz
5616	2422 535 94614	3.9nH 3% 0603
5617	2422 549 44607	Bead 600 at 100MHz
5701	4822 157 71206	Bead 600 at 100MHz
5704	4822 157 71206	Bead 600 at 100MHz
5711	4822 157 71206	Bead 600 at 100MHz

Diodes

6601	9340 550 65115	BB151
6602	5322 130 34337	BAV99
6710	5322 130 34331	BAV70
6711	4822 130 11397	BAS316
6751	9340 548 52115	PDZ5.1B
6752	4822 130 11397	BAS316

Transistors & IC's

7601	9340 414 20115	BFC520
7602	5322 130 60647	BFR92A SM
7603	5322 130 60647	BFR92A SM
7604	5322 130 60159	BC846B
7605	9352 675 58118	ТСА5060АТС/С1
7606	5322 130 60159	BC846B

7705	4822 130 63087	BF545A
7706	4822 130 60373	BC856B
7707	5322 130 42718	BFS20
7710	9322 183 01668	LA1836M
7750	9322 183 39668	PIC12C508A
7755	4822 130 60373	BC856B
7770	9337 725 40623	SA572D
7780	9322 180 21668	NJM4565M
7784	5322 130 60159	BC846B
7789	5322 130 60159	BC846B
7790	9322 140 09668	L4931CD80

Amplifier Parts

Various

1104	2422 025 10647	1P Male
1106	4822 267 10618	Connector 7p
1107	2422 025 10768	Connector 3p m

Capacitors

2100	2222 581 15654	220nF 10% 50V 1206
2101	2222 581 15654	220nF 10% 50V 1206
2102	3198 028 44790	47μF 20% 35V
2103	2222 581 15654	220nF 10% 50V 1206
2104	2222 581 15654	220nF 10% 50V 1206
2105	2222 581 15654	220nF 10% 50V 1206
2106	2222 586 18812	100nF 10% 50V 0603
2107	5322 116 80853	560pF 5% 63V
2108	5322 116 80853	560pF 5% 63V
2109	2222 581 15654	220nF 10% 50V 1206
2110	2020 552 96684	470nF 10% 25V
2111	5322 122 31647	1nF 10% 63V
2112	4822 126 14076	220nF 25V. 20%
2113	4822 126 14076	220nF 25V. 20%
2114	2020 552 96684	470nF 10% 25V
2115	2020 552 94427	100pF 5% 50v 0603
2116	4822 126 13956	68pF 5% 63V 0603
2117	4822 126 13188	15nF 5% 63V
2118	4822 126 11785	47pF 5% 50V 0603
2119	5322 122 31647	1nF 10% 63V
2121	4822 126 14076	220nF 25V. 20%
2122	4822 121 51252	470nF 5% 63V
2123	2222 581 15654	220nF 10% 50V 1206
2125	4822 121 51252	470nF 5% 63V
2126	2222 581 15654	220nF 10% 50V 1206
2127	2222 581 15654	220nF 10% 50V 1206
2128	4822 126 13188	15nF 5% 63V
2129	2020 552 96684	470nF 10% 25V
2130	5322 122 31647	1nF 10% 63V
2131	4822 126 14076	220nF 25V. 20%
2132	4822 126 14076	220nF 25V. 20%
2133	2020 552 94427	100pF 5% 50v 0603
2134	2020 552 96684	470nF 10% 25V
2135	4822 126 11785	47pF 5% 50V 0603
2136	5322 122 31647	1nF 10% 63V
2137	2222 581 15654	220nF 10% 50V 1206
2138	5322 116 80853	560pF 5% 63V
2139	5322 116 80853	560pF 5% 63V
2140	3198 028 44790	47μF 20% 35V
2141	2222 581 15654	220nF 10% 50V 1206
2143	4822 126 11785	47pF 5% 50V 0603
2147	4822 126 11785	47pF 5% 50V 0603
2148	2222 580 15649	100nF 10% 50V 0805
2149	4822 124 12095	100μF 20% 16V
2150	2222 580 15649	100nF 10% 50V 0805
2151	4822 124 12095	100μF 20% 16V
2152	4822 124 23002	10μF 20% 16V
2155	4822 124 80791	470μF 20% 16V
2156	4822 124 12056	1000?F 20% 35V
2157	4822 124 12056	1000?F 20% 35V
2162	2020 552 94427	100pF 5% 50v 0603
2164	4822 124 40764	22μF 100 V
2165	2020 552 94427	100pF 5% 50v 0603
2166	3198 016 31020	1nF 25V 0603
2167	3198 016 31020	1nF 25V 0603
2168	3198 016 31020	1nF 25V 0603
2170	4822 126 11785	47pF 5% 50V 0603
2171	4822 126 11785	47pF 5% 50V 0603
2172	4822 126 11785	47pF 5% 50V 0603
2173	4822 126 11785	47pF 5% 50V 0603

3109	4822 051 30393	39k	5% 0.062W
3111	2322 762 60229	22	5% 1005
3112	4822 051 30103	10k	5% 0.062W
3113	4822 051 30563	56k	5% 0.062W
3114	4822 051 10568	5.6	5% 0.25W
3115	4822 051 10568	5.6	5% 0.25W
3116	4822 051 30102	1k	5% 0.062W
3119	4822 051 30393	39k	5% 0.062W
3120	4822 116 52219	330	5% 0.5W
3121	4822 051 30333	33k	5% 0.062W
3122	4822 116 52219	330	5% 0.5W
3124	4822 051 30102	1k	5% 0.062W
3127	4822 051 30393	39k	5% 0.062W
3128	4822 051 30333	33k	5% 0.062W
3129	4822 051 30222	2.2k	5% 0.062W
3133	4822 117 12925	47k	1% 0.063W 0603
3135	2322 704 65604	560k	1% 0603
3136	4822 116 52219	330	5% 0.5W
3137	4822 116 52219	330	5% 0.5W
3138	4822 051 30103	10k	5% 0.062W
3140	4822 051 30222	2.2k	5% 0.062W
3141	4822 051 30223	22k	5% 0.062W
3142	4822 051 30103	10k	5% 0.062W
3143	4822 117 12925	47k	1% 0.063W 0603
3147	2322 704 65604	560k	1% 0603
3148	4822 051 30222	2.2k	5% 0.062W
3149	4822 051 30222	2.2k	5% 0.062W
3150	4822 117 13632	100k	1% 0603 0.62W
3151	4822 117 12925	47k	1% 0.063W 0603
3153	4822 051 30103	10k	5% 0.062W
3155	4822 051 30222	2.2k	5% 0.062W
3156	4822 051 30103	10k	5% 0.062W
3157	4822 051 30103	10k	5% 0.062W
3158	4822 051 30222	2.2k	5% 0.062W
4100	4822 051 30008	Jumper	0603
4101	4822 051 30008	Jumper	0603
4102	4822 051 30008	Jumper	0603
4103	4822 051 30008	Jumper	0603
4104	4822 051 20008	Jumper	0805
4105	4822 051 20008	Jumper	0805
4106	4822 051 20008	Jumper	0805
4107	4822 051 20008	Jumper	0805
4108	4822 051 30008	Jumper	0603
4109	4822 051 30008	Jumper	0603
4110	4822 051 30008	Jumper	0603
4111	4822 051 30008	Jumper	0603
4112	4822 051 30008	Jumper	0603
4113	4822 051 30008	Jumper	0603
4114	4822 051 30008	Jumper	0603
4115	4822 051 30008	Jumper	0603
4116	4822 051 30008	Jumper	0603

Filters

5104	2422 536 00496	22μH	10%
5105	2422 536 00496	22μH	10%

Diodes

6100	4822 130 11397	BAS316	
6101	4822 130 34233	BZX79-B5V1	
6102	4822 130 34281	BZX79-B15	
6103	4822 130 11397	BAS316	
6104	4822 130 34281	BZX79-B15	
6105	4822 130 11397	BAS316	
6106	4822 130 82714	BZX79-B2V7	
6109	4822 130 10791	LTL-1CHGE	
6110	4822 130 82978	LTL-16KPE-P	

Transistors

7104	5322 130 60159	BC846B	
7106	5322 130 60159	BC846B	
7107	5322 130 60159	BC846B	
7109	5322 130 60159	BC846B	
7110	5322 130 60159	BC846B	
7112	5322 130 60159	BC846B	