Mini System

FWM377/05/12/55

Service
Service
Service

Service Manual

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CLASS 1
LASER PRODUCT

Published by SL0706 Service Audio Printed in The Netherlands Subject to modification.

GB 3141 785 31630

Version 1.0

PHILIPS

SPECIFICATION

AMPLIFIER

RMS output power
- 1KHz (Low channel-both channels driven) ..... 60 W per channel
- 10KHz (High channel-both channels driven) .... 60 W per channel
- Total output power ..... 240 W

Signal-to-noise ratio ..... 67 dB A (IEC)
Frequency response ..... 50 – 16000 Hz
Input sensitivity
- AUX 1500mV/2000mV

Output
- Speakers ..... 6 Ω
- Headphones ..... 32 Ω

(1) (8 Ω, 1 kHz, 10% THD)

CD/MP3-CD PLAYER

Number of programmable tracks 40
Frequency response ..... 50 – 20000 Hz -3dB
Signal-to-noise ratio ..... 75 dB A
Channel separation ..... 50 dB (1 kHz)
Total harmonic distortion ..... < 1.5%
MPEG 1 Layer 3 (MP3-CD) ..... MPEG AUDIO
MP3-CD bit rate ..... 32-256 kbps (128 kbps advised)
Sampling frequencies ..... 32, 44.1, 48 kHz

TUNER

FM wave range ..... 87.5 – 108 MHz
MW wave range ..... 531 – 1602 kHz
Number of presets 40
Antenna
- FM ..... 75 Ω wire
- MW ..... Loop antenna

USB PLAYER

USB ..... 12Mb/s, V1.1 ..... support MP3 and WMA files
Number of albums/folders ..... maximum 99
Number of tracks/titles ..... maximum 400

TAPE PLAYER

Frequency response
- Normal tape (type I) ..... 125 – 8000 Hz (8 dB)

Signal-to-noise ratio
- Normal tape (type I) ..... 48 dB A

Wow and flutter ..... ≤ 0.4% DIN

SPEAKERS

System 2-way; double port bass reflex
Impedance ..... 6 Ω
Woofer ..... 1 x 13cm
Tweeter ..... 1 x 5cm
Dimensions (w x h x d) .... 27.3 x 31 x 20.4 (cm)
Weight ..... 3.65 kg each

GENERAL

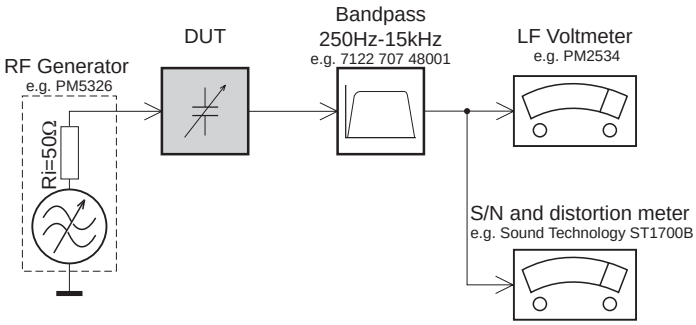
Material/finish ..... Polystyrene/Metal
AC Power ..... 220 – 230 V / 50 Hz
Power Consumption
- Active ..... 120 W
- Standby ..... ≤ 15 W
- Eco Power standby ..... ≤ 1 W

Dimensions (w x h x d) ..... 26.5 x 31 x 38.4 (cm)
Weight (without speakers) ..... 9.1 kg

Specifications and external appearance are subject to change without notice.

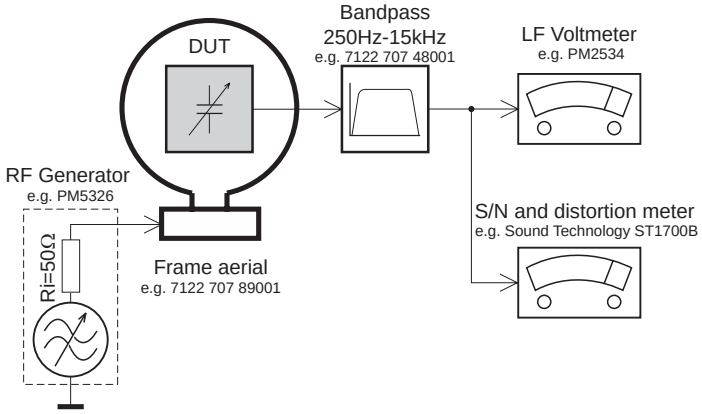
MEASUREMENT SETUP

Tuner FM



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

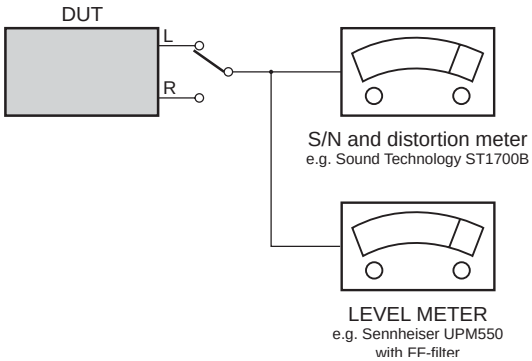
Tuner AM (MW,LW)



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

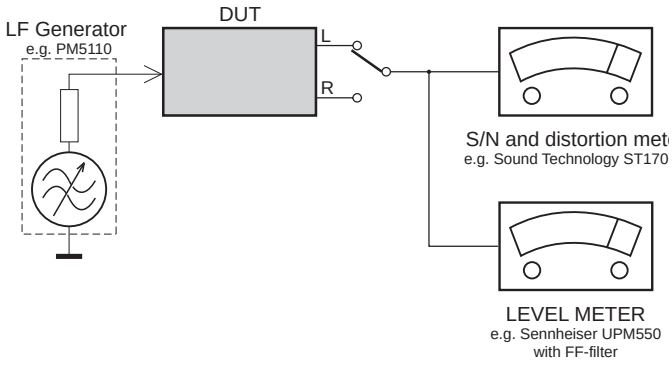
CD

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



Recorder

Use Universal Test Cassette **CrO2** SBC419 4822 397 30069
or Universal Test Cassette **Fe** SBC420 4822 397 30071



SERVICE AIDS

Service Tools:

Universal Torx driver holder 4822 395 91019
Torx bit T10 150mm 4822 395 50456
Torx driver set T6-T20 .....4822 395 50145
Torx driver T10 extended 4822 395 50423

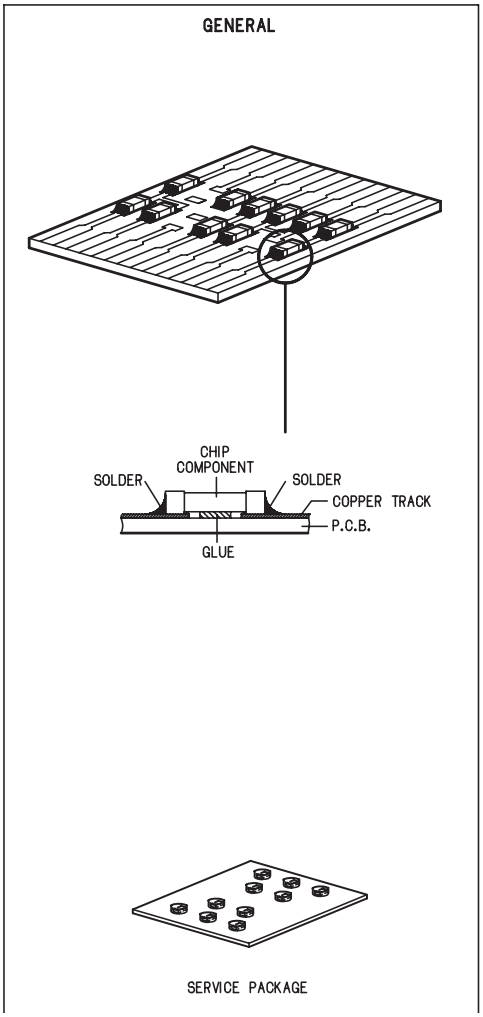
Compact Disc:

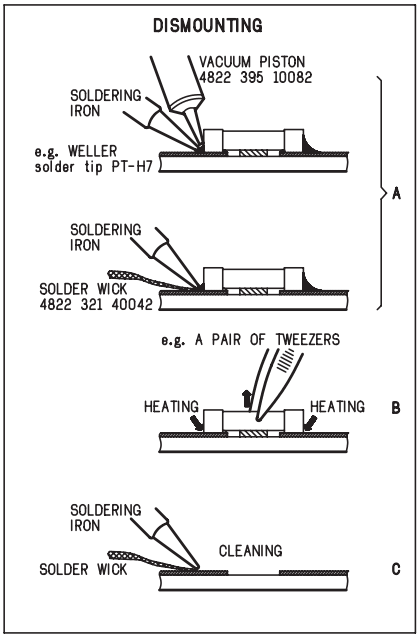
SBC426/426A Test disc 5 + 5A 4822 397 30096
SBC442 Audio Burn-in test disc 1kHz 4822 397 30155
SBC429 Audio Signals disc 4822 397 30184
Dolby Pro-logic Test Disc 4822 395 10216

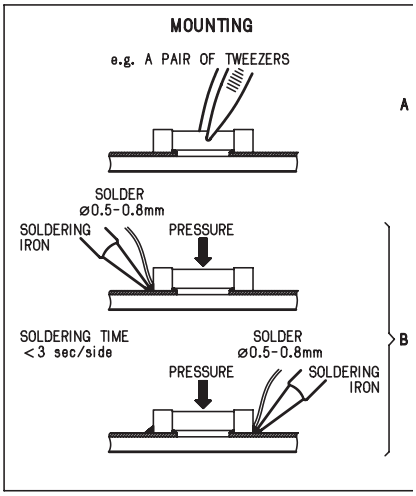
ESD Equipment:

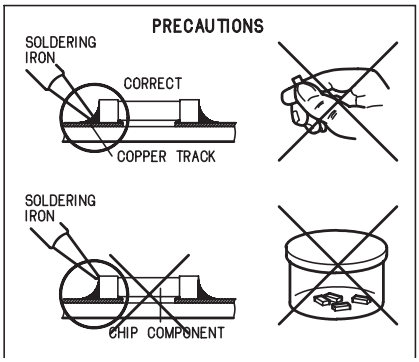
Anti-static table mat - large 1200x650x1.25mm ...4822 466 10953
anti-static table mat - small 600x650x1.25mm 4822 466 10958
Anti-static wristband 4822 395 10223
Connectorbox (1MΩ) 4822 395 11307
Extension cable
(to connect wristband to conn.box) 4822 320 11305
Connecting cable
(to connect table mat to 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

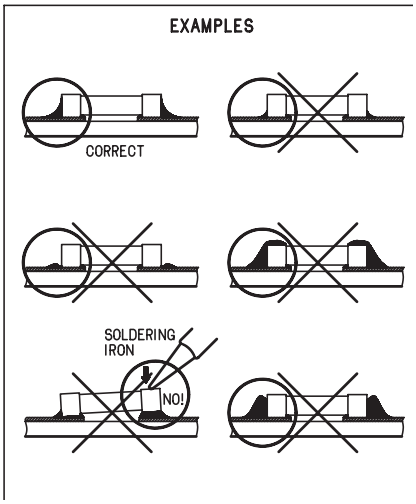
HANDLING CHIP COMPONENTS











ESD

GB **WARNING**

All ICs and many other semi-conductors are susceptible to electrostatic discharges (ESD). Careless handling during repair can reduce life drastically.
When repairing, make sure that you are connected with the same potential as the mass of the set via a wrist wrap with resistance. Keep components and tools also at this potential.

F **ATTENTION**

Tous les IC et beaucoup d'autres semi-conducteurs sont sensibles aux décharges statiques (ESD).
Leur longévité pourrait être considérablement écourtée par le fait qu'aucune précaution n'est prise à leur manipulation.
Lors de réparations, s'assurer de bien être relié au même potentiel que la masse de l'appareil et enfiler le bracelet serti d'une résistance de sécurité.
Veiller à ce que les composants ainsi que les outils que l'on utilise soient également à ce potentiel.

D **WARNUNG**

Alle ICs und viele andere Halbleiter sind empfindlich gegenüber elektrostatischen Entladungen (ESD).
Unsorgfältige Behandlung im Reparaturfall kan die Lebensdauer drastisch reduzieren.
Veranlassen Sie, dass Sie im Reparaturfall über ein Pulsarmband mit Widerstand verbunden sind mit dem gleichen Potential wie die Masse des Gerätes.
Bauteile und Hilfsmittel auch auf dieses gleiche Potential halten.

NL **WAARSCHUWING**

Alle IC's en vele andere halfgeleiders zijn gevoelig voor electrostatische ontladingen (ESD).
Onzorgvuldig behandelen tijdens reparatie kan de levensduur drastisch doen verminderen.
Zorg ervoor dat u tijdens reparatie via een polsband met weerstand verbonden bent met hetzelfde potentiaal als de massa van het apparaat.
Houd componenten en hulpmiddelen ook op ditzelfde potentiaal.

I **AVVERTIMENTO**

Tutti IC e parecchi semi-conduttori sono sensibili alle scariche statiche (ESD).
La loro longevità potrebbe essere fortemente ridatta in caso di non osservazione della più grande cauzione alla loro manipolazione.
Durante le riparazioni occorre quindi essere collegato allo stesso potenziale che quello della massa dell'apparecchio tramite un braccialetto a resistenza.
Assicurarsi che i componenti e anche gli utensili con quali si lavora siano anche a questo potenziale.

GB

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

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 utiliséés les piéces de rechange identiques à celles spécifiées.

D

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

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."

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

CLASS 1
LASER PRODUCT
3122 110 03420

GB **Warning !**

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

S **Varning !**

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

SF **Varoitus !**

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

DK **Advarse !**

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

INFORMATION ABOUT LEAD-FREE SOLDERING

Philips CE is producing lead-free sets from 1.1.2005 onwards.
IDENTIFICATION:

Regardless of special logo (not always indicated) one must treat all sets from 1 Jan 2005 onwards, according next rules:

Example S/N:

Bottom line of typeplate gives a 14-digit S/N. Digit 5&6 is the year, digit 7&8 is the week number, so in this case 2005 wk12

So from 0501 onwards = from 1 Jan 2005 onwards

***Important note*: In fact also products of year 2004 must be treated in this way as long as you avoid mixing solder-alloys (leaded/ lead-free). So best to always use SAC305 and the higher temperatures belong to this.**

Due to lead-free technology some rules have to be respected by the workshop during a repair:

- Use only lead-free solder alloy Philips SAC305 with order code 0622 149 00106. If lead-free solder-paste is required, please contact the manufacturer of your solder-equipment. In general use of solder-paste within workshops should be avoided because paste is not easy to store and to handle.

- Use only adequate solder tools applicable for lead-free solder alloy. The solder tool must be able
  - To reach at least a solder-temperature of 400∞C,
  - To stabilize the adjusted temperature at the solder-tip
  - To exchange solder-tips for different applications.
- Adjust your solder tool so that a temperature around 360∞Cñ 380∞Cis reached and stabilized at the solder joint. Heating-time of the solder-joint should not exceed ~ 4 sec. Avoid temperatures above 400∞C otherwise wear-out of tips will rise drastically and flux-fluid will be destroyed. To avoid wear-out of tips switch off un-used equipment, or reduce heat.
- Mix of lead-free solder alloy / parts with leaded solder alloy / parts is possible but PHILIPS recommends strongly to avoid mixed solder alloy types (leaded and lead-free).
  If one cannot avoid or does not know whether product is lead-free, clean carefully the solder-joint from old solder alloy and re-solder with new solder alloy (SAC305).
- Use only original spare-parts listed in the Service-Manuals. Not listed standard-material (commodities) has to be purchased at external companies.
- Special information for BGA-ICs:
  - always use the 12nc-recognizable soldering temperature profile of the specific BGA (for de-soldering always use the lead-free temperature profile, in case of doubt)
  - lead free BGA-ICs will be delivered in so-called ëdry-packagingí (sealed pack including a silica gel pack) to protect the IC against moisture. After opening, dependent of MSL-level seen on indicator-label in the bag, the BGA-IC possibly still has to be baked dry. (MSL=Moisture Sensitivity Level). This will be communicated via AYS-website.
  Do not re-use BGAs at all.

- For sets produced before 1.1.2005 (except products of 2004), containing leaded solder-alloy and components, all needed spare-parts will be available till the end of the service-period. For repair of such sets nothing changes.

- On our website **www.atyourservice.ce.Philips.com** you find more information to:

  - BGA-de-/soldering (+ baking instructions)
  - Heating-profiles of BGAs and other ICs used in Philips-sets

  You will find this and more technical information within the ìmagazineî, chapter ìworkshop newsî.

For additional questions please contact your local repair-helpdesk.

SERVICE INSTRUCTION

Safety regulations require that after a repair, the set must be returned in its original condition. Pay in particular attention to the following points:

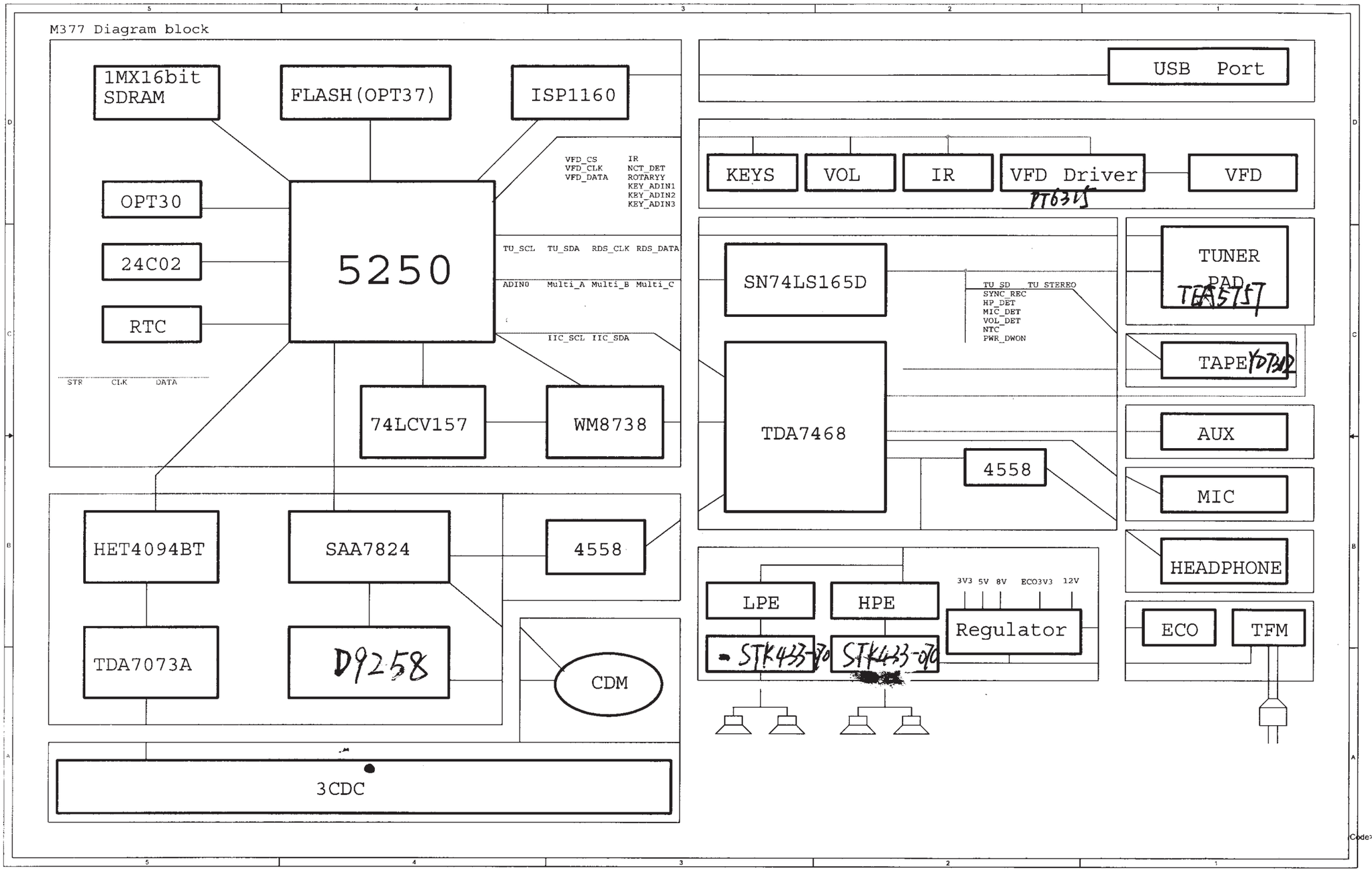
- Route the wire trees correctly and fix them with the mounted cable clamps.
- Check the insulation of the AC Power lead for external damage.
- Check the strain relief of the AC Power cord for proper function.
- Check the electrical DC resistance between the AC Power Plug and the secondary side (only for sets which have a AC Power isolated power supply):

1. Unplug the AC Power cord and connect a wire between the two pins of the AC Power plug.
2. Set the AC Power switch to the "on" position (keep the AC Power cord unplugged!).
3. Measure the resistance value between the pins of the AC Power plug and the metal shielding of the tuner or the aerial connection on the set. The reading should be larger than 4.5 Mohm(For U.S. it should be between 4.2 Mohm and 12 Mohm.
4. Switch "off" the set, and remove the wire between the two pins of the AC Power plug.

- Check the cabinet for defects, to avoid touching of any inner parts by the customer.

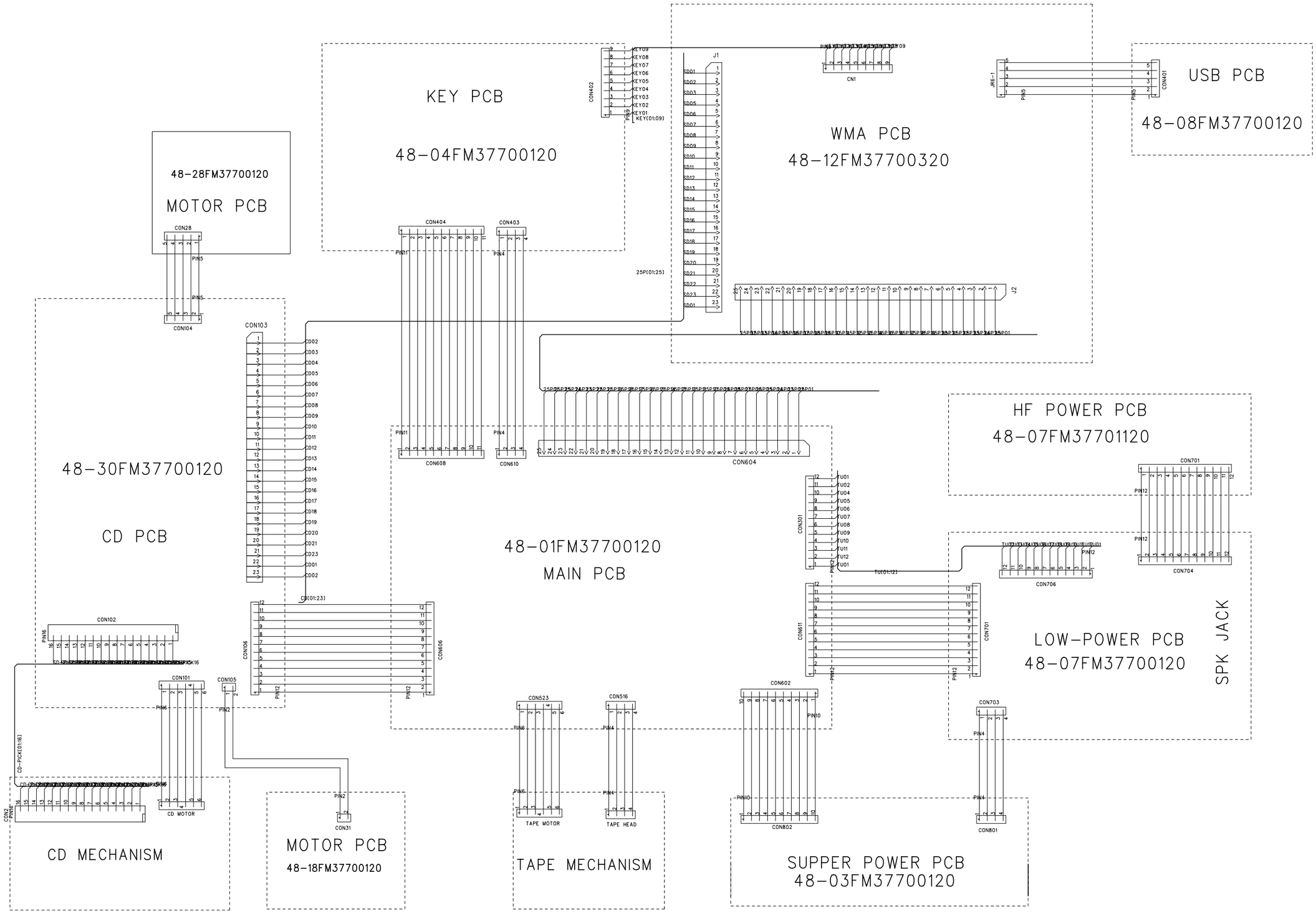
2-1

SET BLOCK DIAGRAM



3-1

SET WIRING DIAGRAM



4-1

FRONT & USB BOARD

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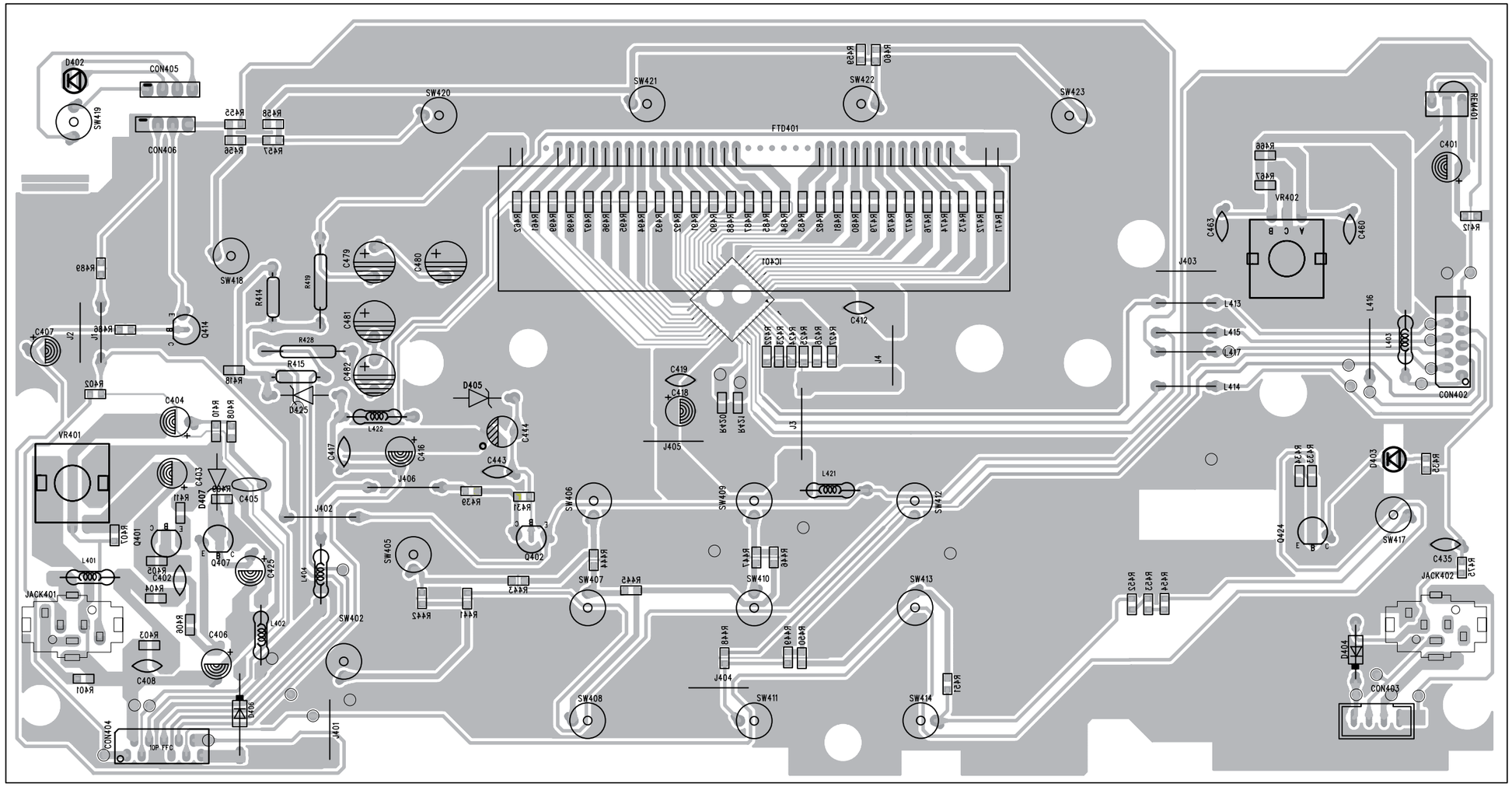
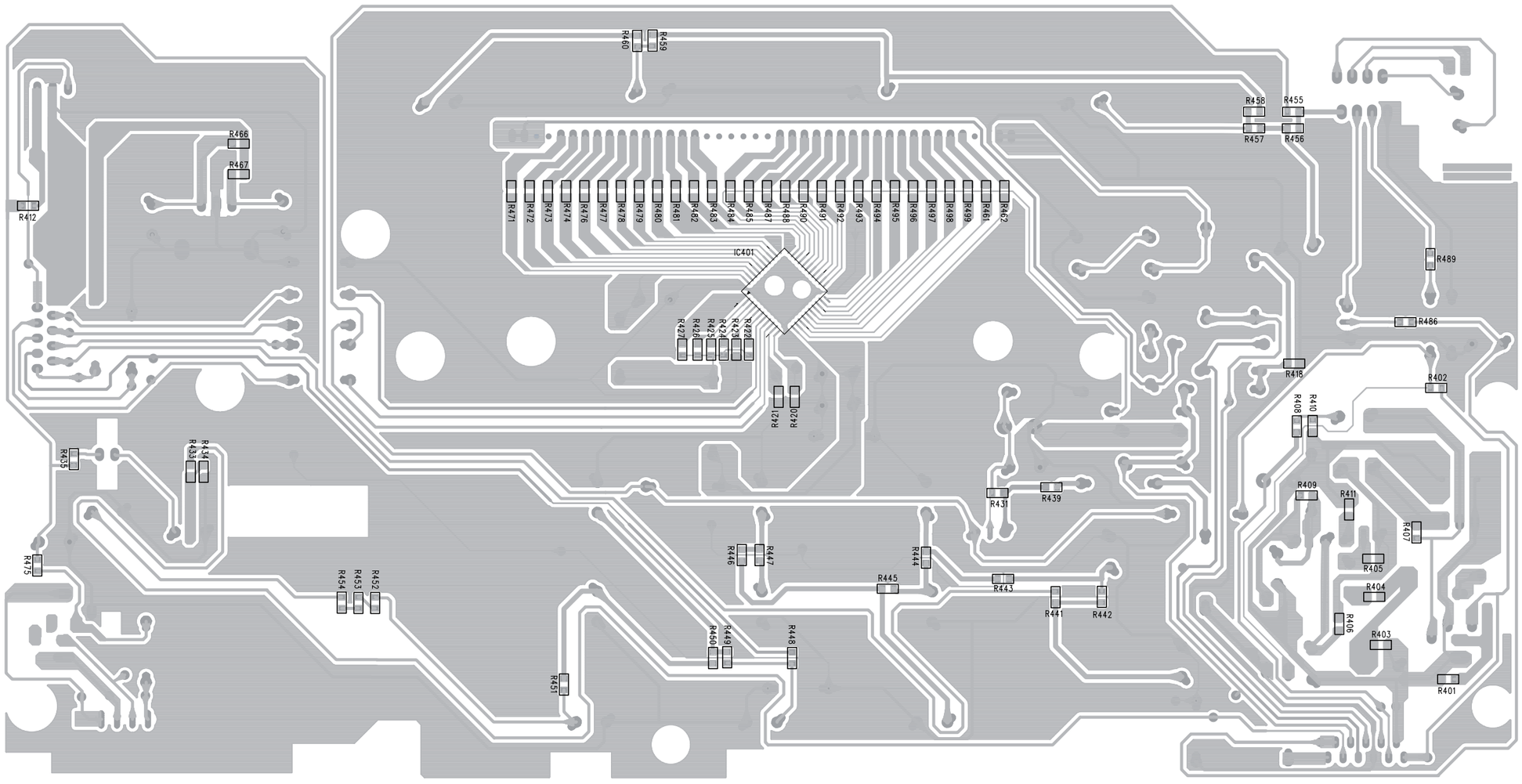
PCB LAYOUT - FRONT BOARD (TOP VIEW)



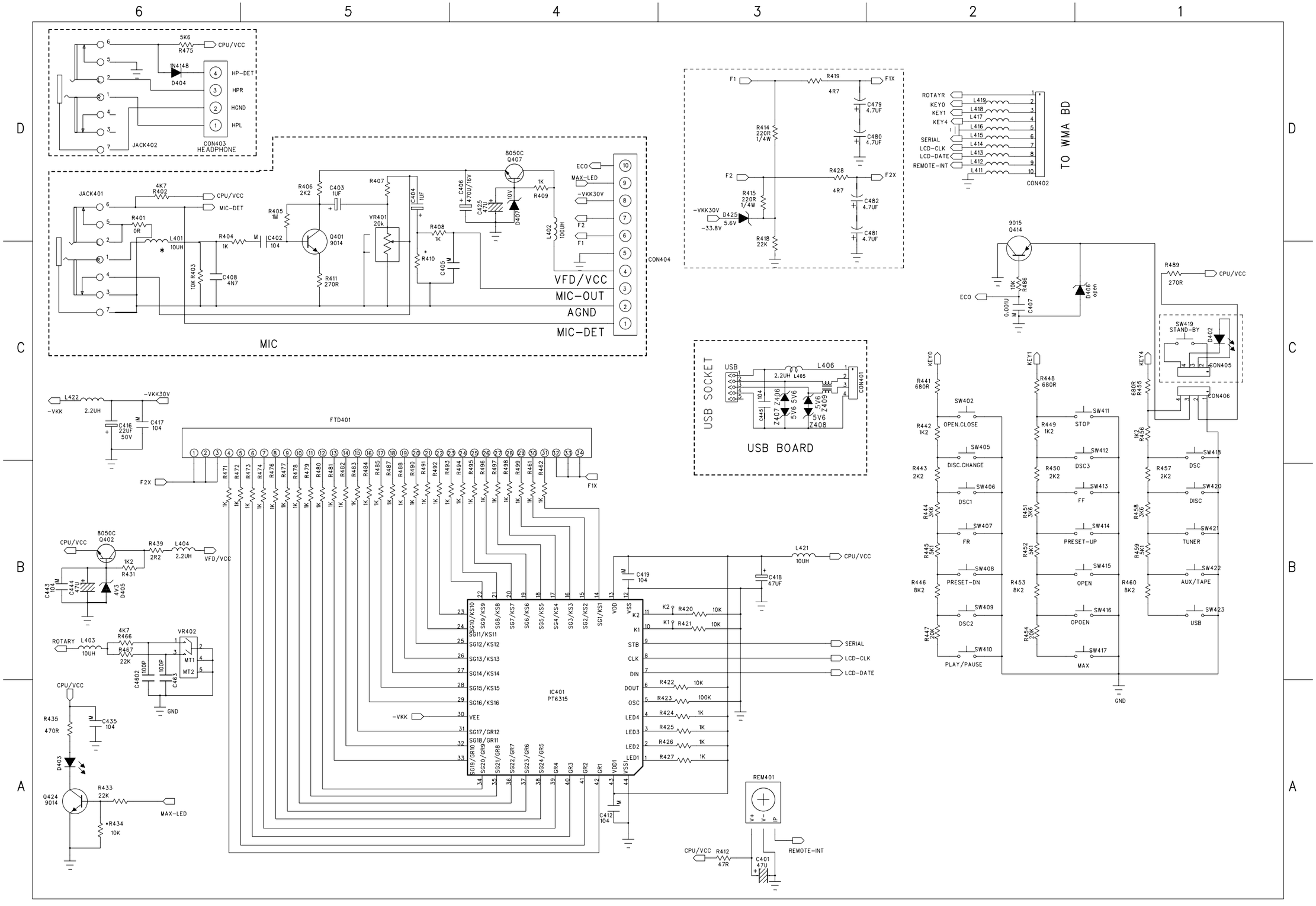
4-3

PCB LAYOUT - FRONT BOARD (BOTTOM VIEW)



4-4

CIRCUIT DIAGRAM - FRONT BOARD



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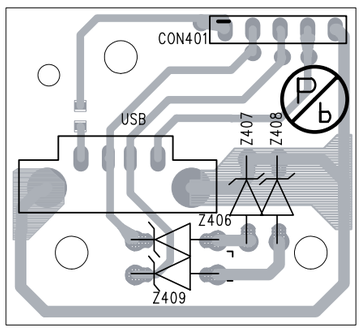
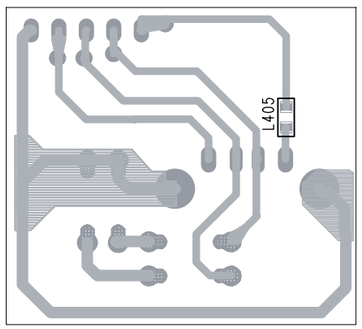
PCB LAYOUT - USB BOARD





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CPU/WMA BOARD

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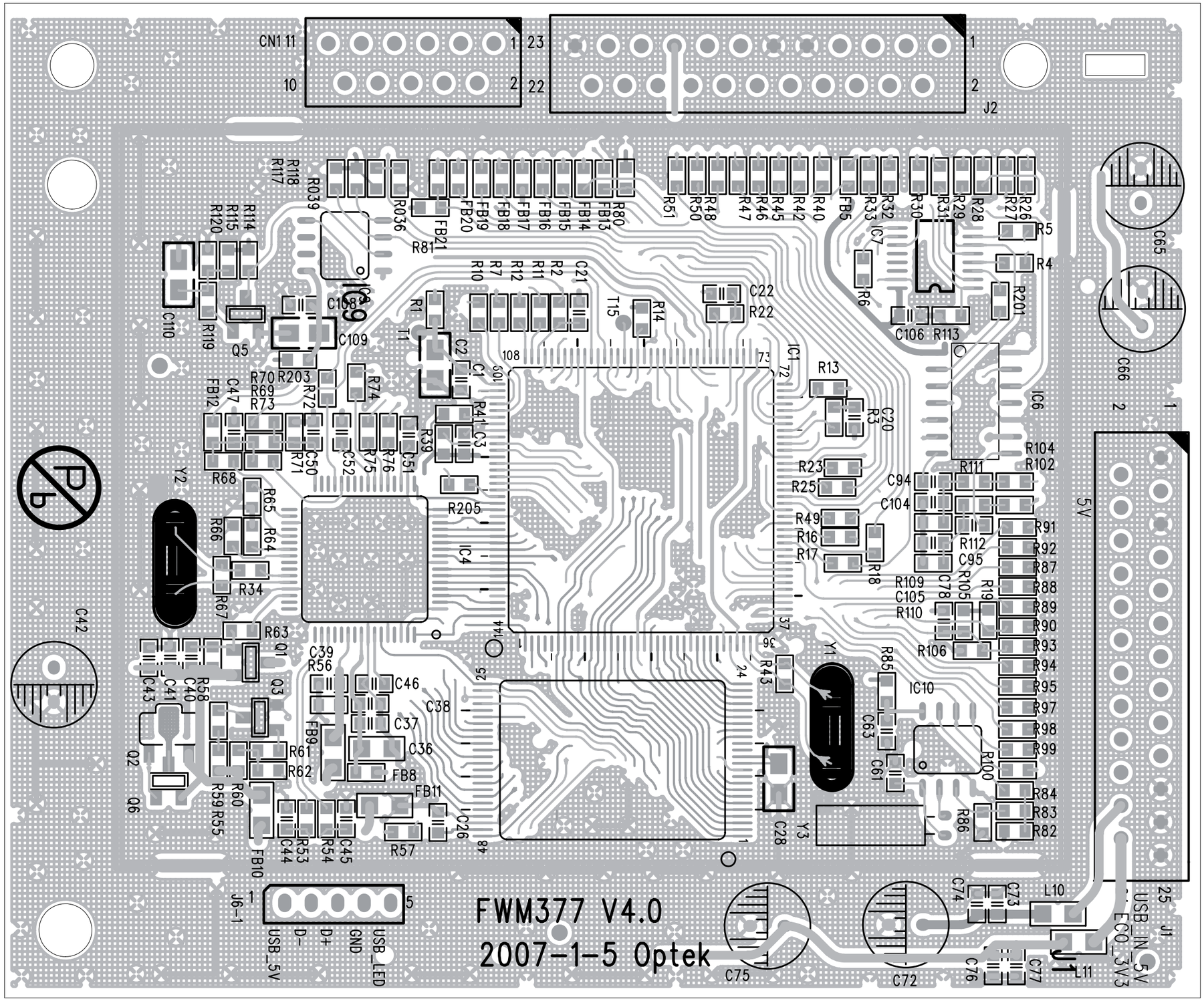
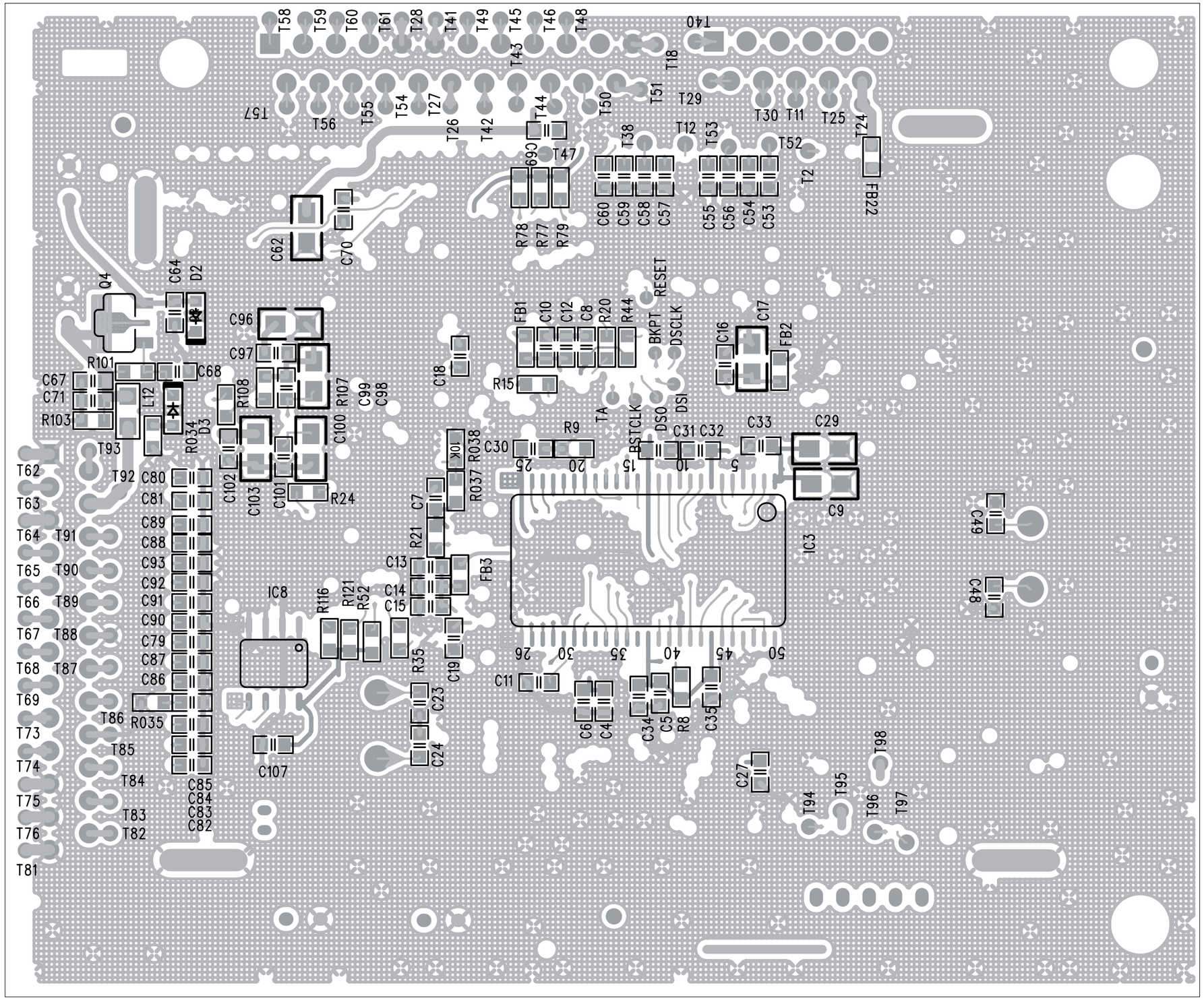
PCB LAYOUT - CPU/WMA BOARD (TOP VIEW)



5-3

PCB LAYOUT - CPU/WMA BOARD (BOTTOM VIEW)



5-4

CIRCUIT DIAGRAM - CPU/WMA BOARD

WMA5250 Module&USB2.0 Host

IC1

Amadeus_Plus (SCF5250LAG100)

FB1 2K7@100MHz
FB2 2K7@100MHz
FB3 2K7@100MHz
R1 0R
1.2V
MAIN_VCC
T1
T2
FB=Ferrite Bead
Package 0603
C9 47uF/6.3V

/RESET R2 100R
SE=Servo
SE_RESET R3 47R
DATAIN
BLCKIN
LRCKIN
SE_CLK R7 1K
SE_CFLG
SE_EF
MAIN_VCC
DAC_DATA R10 47R
DAC_BLCK R11 47R
DAC_LRCK R12 47R
AUDIO_CLK R13 1K
SE_SDA
SE_SCL
SDA1
SCL1
R14 4K7
R15 4K7
52pin changed from power_key to standby
RELAY_CTRL R16 4K7
SHR_CLK R17 1K
SHR_DOUT R18 1K
KEY0and KEY1 VOLUME RESISTOR VALUE AS BELOW IS RECOMMENDED
KEY VOLUME:680R 1K1 2K2 3K6 5K
1 8K2 20K
MAIN_VCC R039 open
ECO_LED R036 10K
Print point
R20 100R
RXD
TXD
Note:Tn= test point (pad 0.8mm)
Print port:
T15 TXD
KEY0
KEY1
KEY2
NTC_DET
ROTARY
SPK_LEVEL
C22 10nF
R22 10K
SHR_DIN
LCD_DATA R23 100R
LCD_CLK R25 100R
Serial LCD interface
Serial LCD_CS0
TUNER_RW
POWER_ON R037 OPEN
R038 10K
C20 10nF
C21 10nF

RSTI#
SDATAO1/TOUT1/GPIO18
SDATAI1/GPIO17
SCLK1/GPIO20
LRCK1/GPIO19
MCLK1/GPIO11
CFLG/GPIO5
EF/GPIO6
SDATAO2/GPIO34
SCLK2/GPIO22
LRCK2/GPIO23
MCLK2/QSPI_CS2/GPIO24
SDA0/SDATA3/GPIO42
SCL0/SDATA1_BS1/GPIO41
SDA1/RXD1/GPIO44
SCL1/TXD1/GPIO10
EBUIN1/GPIO36
EBUIN2/SCLK_OUT/GPIO13
EBUIN3/CMD_SDIO2/GPIO14
RXD0/GPI046
TXD0/GPIO45
ADIN0/GPI52
ADIN1/GPI53
ADIN2/GPI54
ADIN3/GPI55
ADIN4/GPI56
ADIN5/GPI57
ADREF
ADOUT/SCLK4/GPIO58
RCK/QSPI_DIN/QSPI_DOUT/GPIO26
SFSY/QSPI_DOUT/GPIO27
SUBR/QSPI_CLK/GPIO25
EBUIN4/QSPI_CS0/GPI015
EBUOUT2/QSPI_CS1/GPIO16
EBUOUT1/GPIO37
CROUT
CRIN
SDATAI3/GPIO8
LRCK3/GPIO43/AudioClock
SCLK3/GPIO35
XTRIM/GPIO0
IDEDIOR_GPIO31
IDEDIOW_GPIO32
IDEIORDY_GPIO33
WAKEUP#/GPIO21
BUFENB1_GPIO29
BUFENB2_GPIO30
PSTCLK/GPIO51
PST0/GPIO50
PST1/GPIO49
PST2/INTMON2/GPIO48
PST3/INTMON1/GPIO47
DDATA0/CTS1_B/SDATA0
DDATA1/RTS1_B/SDATA2
DDATA2/CTS0_B/GPIO3
DDATA3/RTS0_B/GPIO4
TA_GPIO12
TDO/DSO
TDI/DSI
TMS/PKPT
TRST/DSCLK
TCK
HI-Z
TEST0
TEST1
TEST2
CORE-VDD-2
CORE-GND-2
CORE-VDD-1
CORE-GND-1
PLLCORE2VDD
PLLCORE2GND
PLLCORE1VDD
PLLCORE1GND
LINGND
LINOUT
LIN
OSCPAD-VDD
OSCPAD-GND
ADVDD
ADGND
VDD-6
GND-6
VDD-5
GND-5
VDD-4
GND-4
VDD-3
GND-3
VDD-2
GND-2
VDD-1
GND-1

A[23:1]
A23 pull down : boot from on-chip boot ROM,
A23 pull up : boot from external flash ROM.
A23 R8 100K I/OVDD
A20 R9 100K
A20 Pull down :audio clock taken form crin.
D[31:16]
I/OVDD
R21 10K
/TA

SDRAM_CS0/GPIO60
CS1/QSPI_CS3/GPIO28
CS0/CS4
SDRAS/GPIO59
SDCAS/GPIO39
SDWE/GPIO38
SDUDQM/GPO53
SDLDQM/GPO52
BCLKE/GPIO63
BCLK/GPIO40
SD_CS
CS0
SD_RAS
SD_CAS
SD_WE
SD_UDQM
SD_LDQM
SD_CKE
SD_CLK
R205 47R
RW
OE
R/W
OEB
CD_MUTE
R24 0R
AMP_Mute
TO SERVO interface
J2
pitch1.27/23pin
FB5 2K7@100MHz
3V3
5V
SE_SCL
SE_SDA
SE_RESET
SE_BLCK
SE_LRCK
SE_DATA
SE_EF
SE_CFLG
SE_CLK
DAC_BLCK
DAC_LRCK
DAC_DATA
CD_MUTE
SHR_CLK
SHR_STR
SHR_DOUT
SHR_DIN
T26
T46
C70 10uF/10V
C69 0.1uF
T40

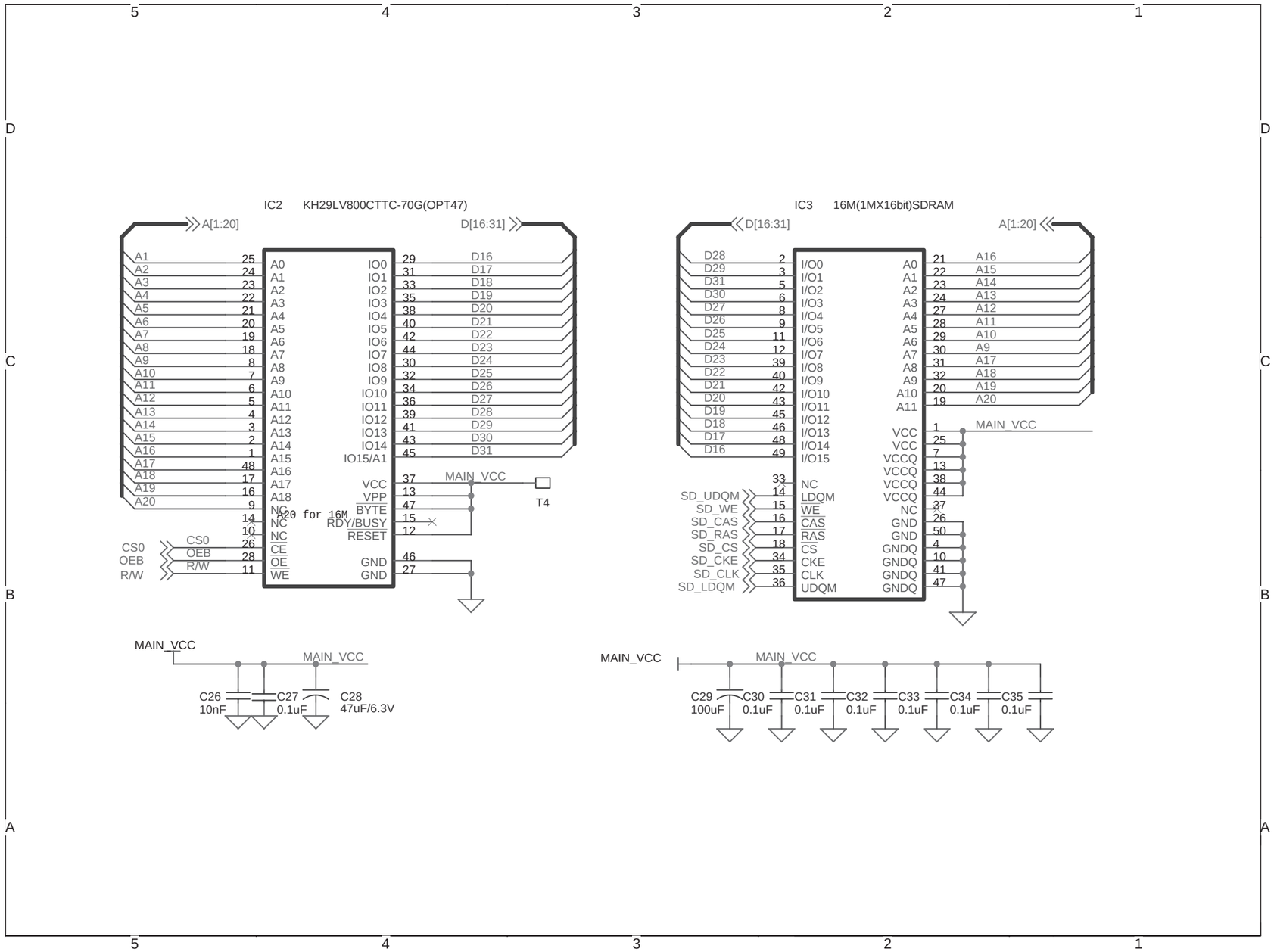
Only for BDM interface
NOTE:PIN 1 must be front pcb outside
DIP
pitch:2.54mm
JP1
/BKPT
DSCLK
DSI
DSO
PSTCLK
/TA
BDM HEADER
C25 22P
Cancel PST0-3
Pin13 PST2
PIN15 PST0
PIN12 PST3
PIN14 PST1

Y1 16.9344MHz
C23 22pF
R43 1M
C24 22pF
REMOTE_INT
47R R49
5250_IDE_R
5250_IDE_W
USB_/OFF
USB_H_WAKEUP
TUNER_ST_MO
D2
D1
USB_CS
TUNER_CLK
TUNER_DATA
USB_INT
SHR_STR
R39 4K7
R41 4K7
R44 4K7
DSCLK
/BKPT
DSI
DSO
/TA
PSTCLK
RDS_CLK
RDS_DATA
R35 0R
POWER_ON
USB_/RESET
ADC_SELECT
USB_LED

DATA_16
DATA_17
DATA_18
DATA_19
DATA_20
DATA_21
DATA_22
DATA_23
DATA_24
DATA_25
DATA_26
DATA_27
DATA_28
DATA_29
DATA_30
DATA_31

5-5

CIRCUIT DIAGRAM - CPU/WMA BOARD



5-6

CIRCUIT DIAGRAM - CPU/WMA BOARD

WMA5250 Module&USB2.0 Host

IC1

Amadeus_Plus (SCF5250LAG100)

FB1 2K7@100MHz
FB2 2K7@100MHz
FB3 2K7@100MHz
R1 0R
1.2V
MAIN_VCC
T1
T2
FB=Ferrite Bead
Package 0603
C9 47uF/6.3V

/RESET R2 100R
SE_RESET
SE=Servo
DATAIN
BLCKIN
LRCKIN
SE_CLK
SE_CFLG
SE_EF
DAC_DATA
DAC_BLCK
DAC_LRCK
AUDIO_CLK
SDA1
SCL1
RELAY_CTRL
SHR_CLK
SHR_DOUT
SDA0/SDATA3/GPIO42
SCL0/SDATA1_BS1/GPIO41
SDA1/RXD1/GPIO44
SCL1/TXD1/GPIO10
EBUIN1/GPIO36
EBUIN2/SCLK_OUT/GPIO13
EBUIN3/CMD_SDIO2/GPIO14

52pin changed from power_key to standby

KEY0and KEY1 VOLUME RESISTOR VALUE AS BELOW IS RECOMMENDED
KEY VOLUME:680R 1K1 2K2 3K6 5K

MAIN_VCC R039 open R036 10K ECO_LED
R20 100R
Print point
RXD TXD
RXD0/GPI046
TXD0/GPIO45

Note:Tn= test point (pad 0.8mm)
Print port:
T15 TXD

KEY0
KEY1
KEY2
NTC_DET
ROTARY
SPK_LEVEL
ADIN0/GPI52
ADIN1/GPI53
ADIN2/GPI54
ADIN3/GPI55
ADIN4/GPI56
ADIN5/GPI57
ADREF
ADOUT/SCLK4/GPIO58
C22 10nF R22 10K

SHR_DIN
LCD_DATA R23 100R
LCD_CLK R25 100R
Serial LCD interface
RCK/QSPI_DIN/QSPI_DOUT/GPIO26
SFSY/QSPI_DOUT/GPIO27
SUBR/QSPI_CLK/GPIO25

Serial LCD_CS0
TUNER_RW
EBUIN4/QSPI_CS0/GPI015
EBUOUT2/QSPI_CS1/GPIO16

POWER_ON R037 OPEN
R038 10K
EBUOUT1/GPIO37

CROUT
CRIN
Y1 16.9344MHz
C23 22pF
R43 1M
C24 22pF

REMOTE_INT R49 47R
5250_IDE_R
5250_IDE_W
USB_/OFF
USB_H_WAKEUP

SDATAI3/GPIO8
LRCK3/GPIO43/AudioClock
SCLK3/GPIO35
TUNER_ST_MO
D2
D1

XTRIM/GPIO0
IDEDIOR_GPIO31
IDEDIOW_GPIO32
IDEIORDY_GPIO33
WAKEUP#/GPIO21

BUFENB1_GPIO29
BUFENB2_GPIO30
USB_CS
TUNER_CLK
TUNER_DATA

USB_INT
SHR_STR

PSTCLK/GPIO51
PST0/GPIO50
PST1/GPIO49
PST2/INTMON2/GPIO48
PST3/INTMON1/GPIO47
DDATA0/CTS1_B/SDATA0
DDATA1/RTS1_B/SDATA2
DDATA2/CTS0_B/GPIO3
DDATA3/RTS0_B/GPIO4
TA_GPIO12

TDO/DSO
TDI/DSI
TMS/BKPT
TRST/DSCLK

TCK
HI-Z
TEST0
TEST1
TEST2

R39 4K7
R41 4K7
R44 4K7
MAIN_VCC
DSCLK
/BKPT
DSI
DSO
/TA
PSTCLK
RDS_CLK
RDS_DATA
R35 0R
POWER_ON
USB_/RESET
ADC_SELECT
USB_LED

A[23:1]
A23 pull down : boot from on-chip boot ROM,
A23 pull up : boot from external flash ROM.
A23 R8 100K
A20 R9 100K
I/OVDD
A20 Pull down :audio clock taken form crin.

D[31:16]
DATA_16 DATA_17 DATA_18 DATA_19 DATA_20 DATA_21 DATA_22 DATA_23 DATA_24 DATA_25 DATA_26 DATA_27 DATA_28 DATA_29 DATA_30 DATA_31

I/OVDD
R21 10K
/TA

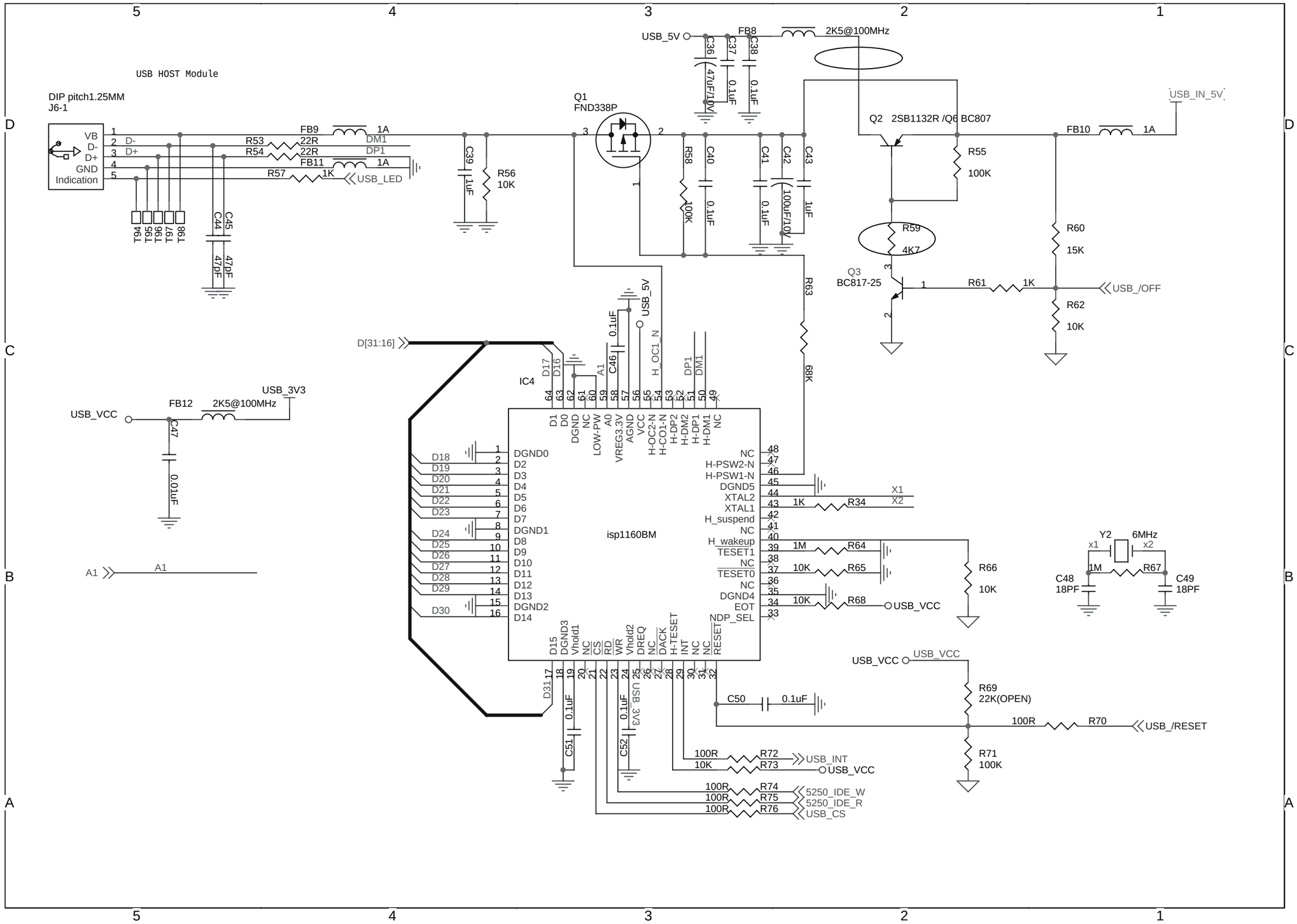
SDRAM_CS0/GPIO60
CS1/QSPI_CS3/GPIO28
CS0/CS4
SDRAS/GPIO59
SDCAS/GPIO39
SDWE/GPIO38
SDUDQM/GPO53
SDLDQM/GPO52
BCLKE/GPIO63
BCLK/GPIO40
SD_CS
CS0
SD_RAS
SD_CAS
SD_WE
SD_UDQM
SD_LDQM
SD_CKE
SD_CLK
R205 47R
RW
OE
R/W
OEB

CD_MUTE
R24 0R
AMP_Mute
TO SERVO interface
J2
pitch1.27/23pin
SE_SCL
SE_SDA
SE_RESET
SE_BLCK
SE_LRCK
SE_DATA
SE_EF
SE_CFLG
FB5 2K7@100MHz
SE_CLK
3V3
DAC_BLCK
DAC_LRCK
DAC_DATA
CD_MUTE
5V
SHR_CLK
SHR_STR
SHR_DOUT
SHR_DIN
T26
T46
T40

Only for BDM interface
NOTE:PIN 1 must be front pcb outside
DIP
pitch:2.54mm
JP1
/BKPT
DSCLK
DSI
DSO
/RESET
PSTCLK
/TA
MAIN_VCC
BDM HEADER
C25 22P
Cancel PST0-3
Pin13 PST2
PIN15 PST0
PIN12 PST3
PIN14 PST1

5-7

CIRCUIT DIAGRAM - CPU/WMA BOARD



5-8

CIRCUIT DIAGRAM - CPU/WMA BOARD

WMA5250 Module&USB2.0 Host

IC1

Amadeus_Plus (SCF5250LAG100)

FB1 2K7@100MHz
FB2 2K7@100MHz
FB3 2K7@100MHz
FB=Ferrite Bead
Package 0603
MAIN_VCC
1.2V
SE=Servo
/RESET
SE_RESET
DATAIN
BLCKIN
LRCKIN
SE_CLK
SE_CFLG
SE_EF
DAC_DATA
DAC_BLCK
DAC_LRCK
AUDIO_CLK
SDA1
SCL1
RELAY_CTRL
SHR_CLK
SHR_DOUT
52pin changed from power_key to standby
KEY0and KEY1 VOLUME RESISTOR VALUE AS BELOW IS RECOMMENDED
KEY VOLUME:680R 1K1 2K2 3K6 5K
ECO_LED
Print point
Note:Tn= test point (pad 0.8mm)
Print port:
KEY0
KEY1
KEY2
NTC_DET
ROTARY
SPK_LEVEL
SHR_DIN
LCD_DATA
LCD_CLK
Serial LCD interface
Serial LCD_CS0
TUNER_RW
POWER_ON
Only for BDM interface
NOTE:PIN 1 must be front pcb outside
DIP
pitch:2.54mm
JP1
BDM HEADER
Cancel PST0-3
Pin13 PST2
PIN15 PST0
PIN12 PST3
PIN14 PST1
TUNER_ST_MO
REMOTE_INT
USB_CS
TUNER_CLK
TUNER_DATA
USB_INT
SHR_STR
5250_IDE_R
5250_IDE_W
USB_/OFF
USB_H_WAKEUP
RDS_CLK
RDS_DATA
ADC_SELECT
USB_LED
USB_/RESET
A[23:1]
D[31:16]
A23 pull down : boot from on-chip boot ROM,
A23 pull up : boot from external flash ROM.
A20 Pull down :audio clock taken form crin.
I/OVDD
/TA
SDRAM_CS0/GPIO60
CS1/QSPI_CS3/GPIO28
CS0/CS4
SDRAS/GPIO59
SDCAS/GPIO39
SDWE/GPIO38
SDUDQM/GPO53
SDLDQM/GPO52
BCLKE/GPIO63
BCLK/GPIO40
SD_CS
SD_RAS
SD_CAS
SD_WE
SD_UDQM
SD_LDQM
SD_CKE
SD_CLK
R/W
OEB
CD_MUTE
AMP_Mute
TO SERVO interface
SE_SCL
SE_SDA
SE_RESET
SE_BLCK
SE_LRCK
SE_DATA
SE_EF
SE_CFLG
SE_CLK
3V3
DAC_BLCK
DAC_LRCK
DAC_DATA
CD_MUTE
5V
SHR_CLK
SHR_STR
SHR_DOUT
SHR_DIN
pitch1.27/23pin
DSCLK
/BKPT
DSI
DSO
/TA
PSTCLK
R35 0R POWER_ON
T40

5-9

CIRCUIT DIAGRAM - CPU/WMA BOARD

WMA 5250 Module &USB2.0 HOST

Change lists date: 19-10-2006

1. changed R94 from 1K to 0R
2. add R19 to 10K for stereo_detection
3. add R034 to 22R
4. changed C84 form 100p to 2.2uF
5. added R34 1K in 6MHz crystal input pin
6. changed C78 from 1uF to 2.2uF
7. changed R16 from 1k to 4k7
8. ~~R116 from 15k to 680R for NTC~~
9. changed R121 form 15k to open for speak_level
10. add R035 to 100K
11. changed R20 from open to 100R
12. add R036 to 10K to GND
13. added R35 OR to Power On
14. ~~change R59 from 4K7 to 470R~~
15. ~~increase USB input voltage form 5V to 5.5V~~
16. use Q6 BC807 instead of Q2 for cost down

TO AMP BOARD
interface

J1

CON25/Pitch1.27

T62 T93 T63 T92 T64 T91 T65 T90 T66 T89 T67 T88 T68 T87 T69 T86 T85 T73 T74 T84 T75 T83 T76 T82 T81

AGND

R104 1K MUX_L
R102 1K MUX_R
L12 1A 5V Mini current 500mA

R91 1K RDS_CLK
R92 1K RDS_DATA
R87 1K TUNER_RW
R88 1K TUNER_CLK
R89 1K TUNER_DATA
R90 1K TUNER_ST_MO

C71 1uF
R103 100K

R93 1K

R94 0R RELAY_CTRL
R95 1K NTC_DET
R97 1K SPK_LEVEL
R98 1K POWER_ON
AMP_Mute

R99 470R SDA1
R100 100R SCL1

ECO_3V3
Mini current 200mA
L11 1A MAIN_VCC
L10 1A USB_IN_5V
Mini current 600mA

C75 100uF/16V
C76 0.1uF
C77 1uF
C72 100uF/16V
C73 0.1uF
C74 1uF

R105 10K ECO_3V3
R106 100K
C78 2.2uF
C79 0.1uF
C80 100pF
C81 100pF
C89 100pF
C88 100pF
C93 100pF
C92 100pF
C91 100pF
C90 100pF
C87 100pF
C86 100pF
C85 100pF
C83 100pF
C82 100pF

R19 10K
R52 10K
new added
ECO_3V3

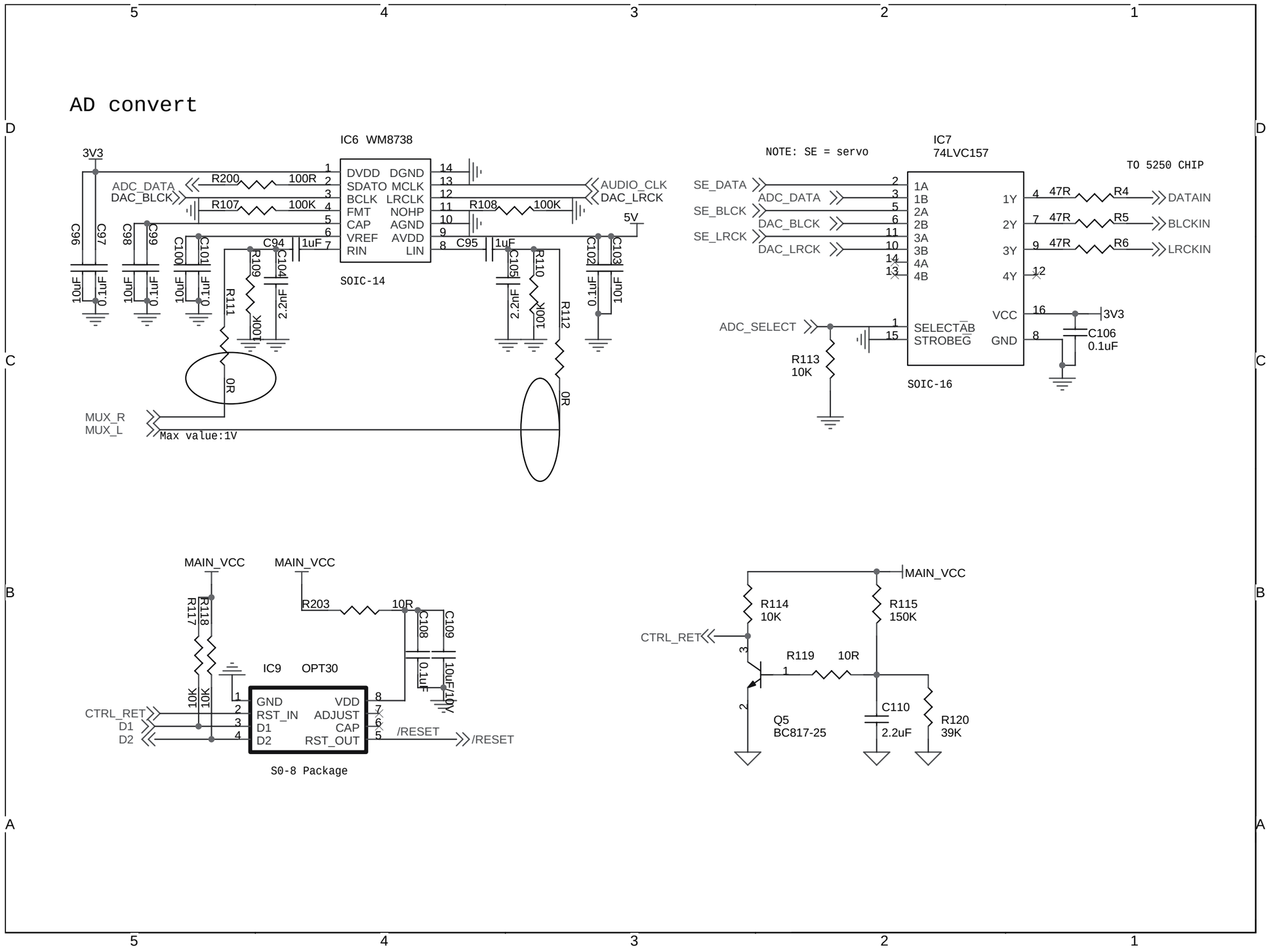
R035 100K
C84 2.2uF

no ECO stanby selection
OR
D2 PMEG2010EA or 0R
3V3 MAIN_VCC

5V
Q4 2SD1664R 3V3
R101 220R
C66 220uF/16V
C67 0.1uF
D3 PDZ3.9B SOT-323
C68 0.1uF
C64 0.1uF
C65 220uF/10V
R034 22R

5-10

CIRCUIT DIAGRAM - CPU/WMA BOARD



6-1

MAIN & POWER BOARD

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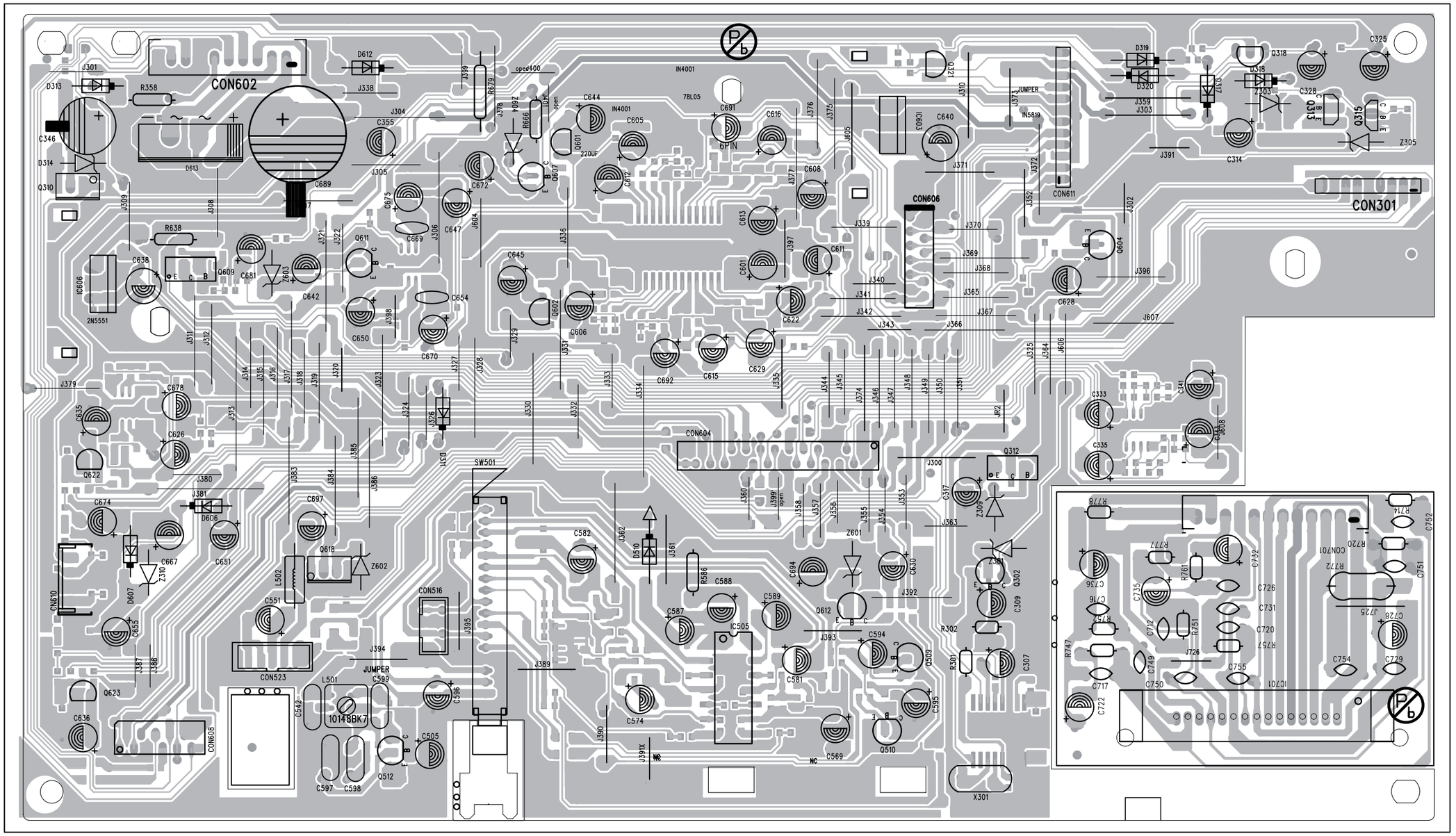
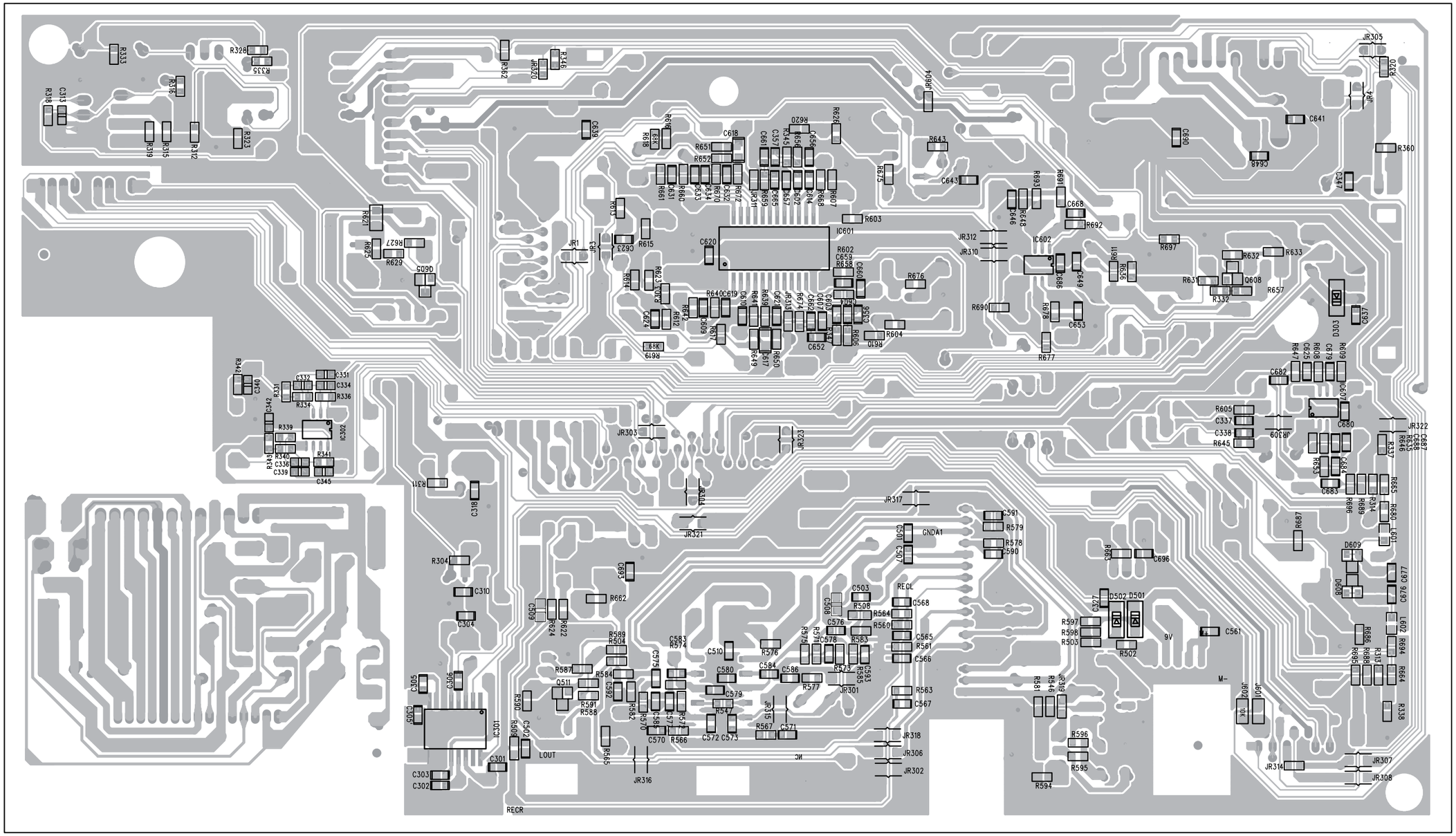
PCB LAYOUT - MAIN & HF POWER BOARD (TOP VIEW)



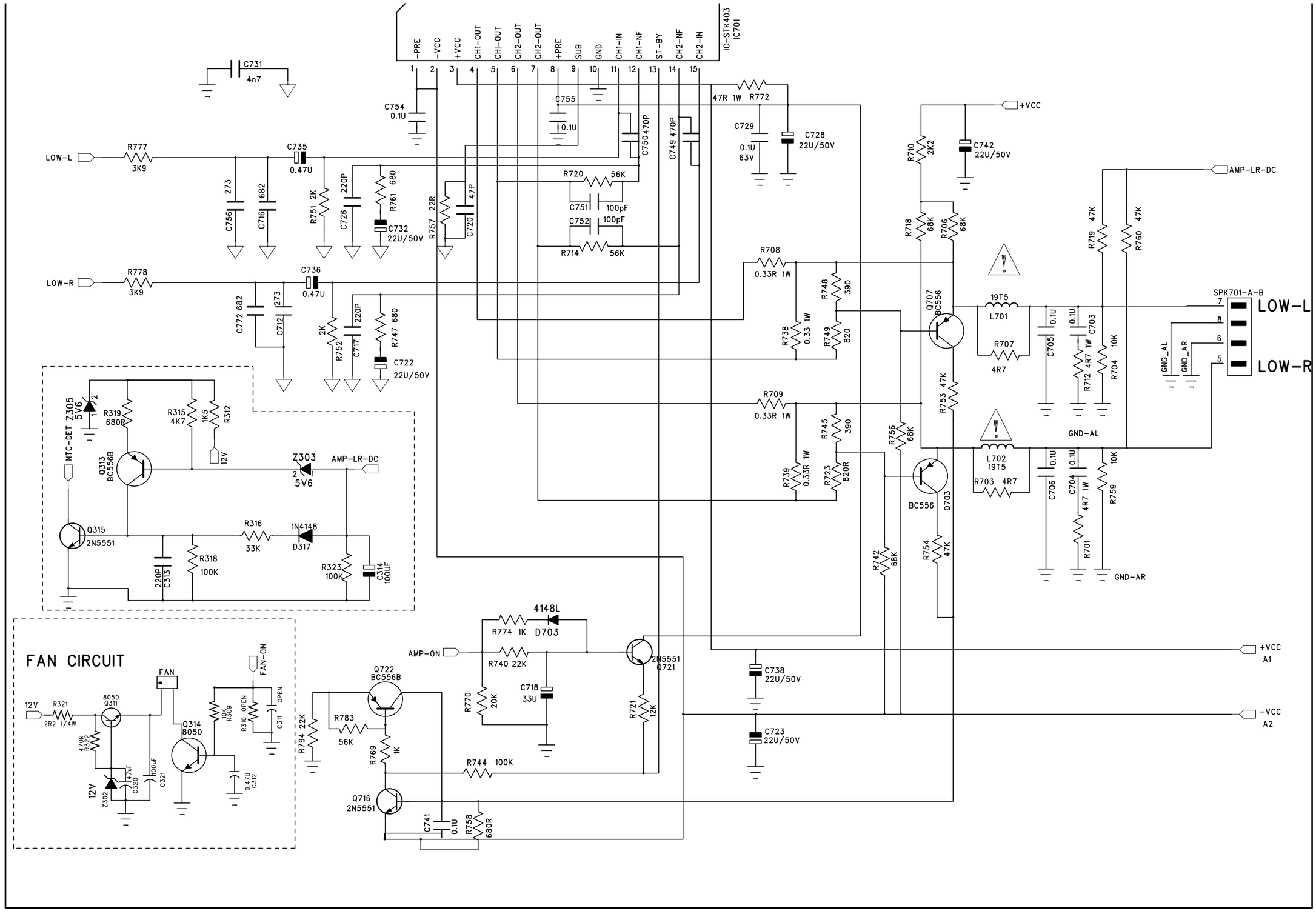
6-3

PCB LAYOUT - MAIN & HF POWER BOARD (BOTTOM VIEW)



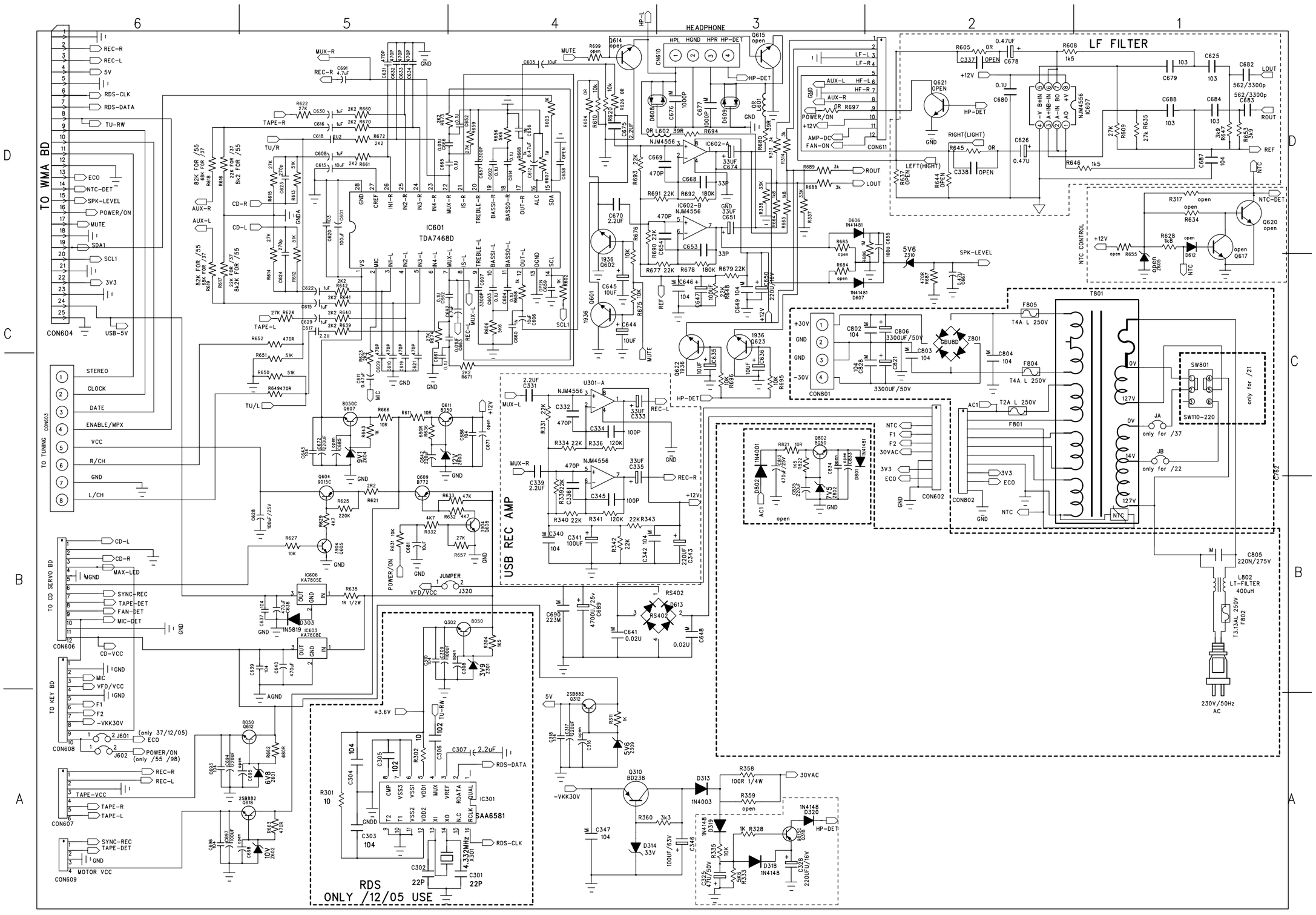
6-4

CIRCUIT DIAGRAM - HF POWER BOARD

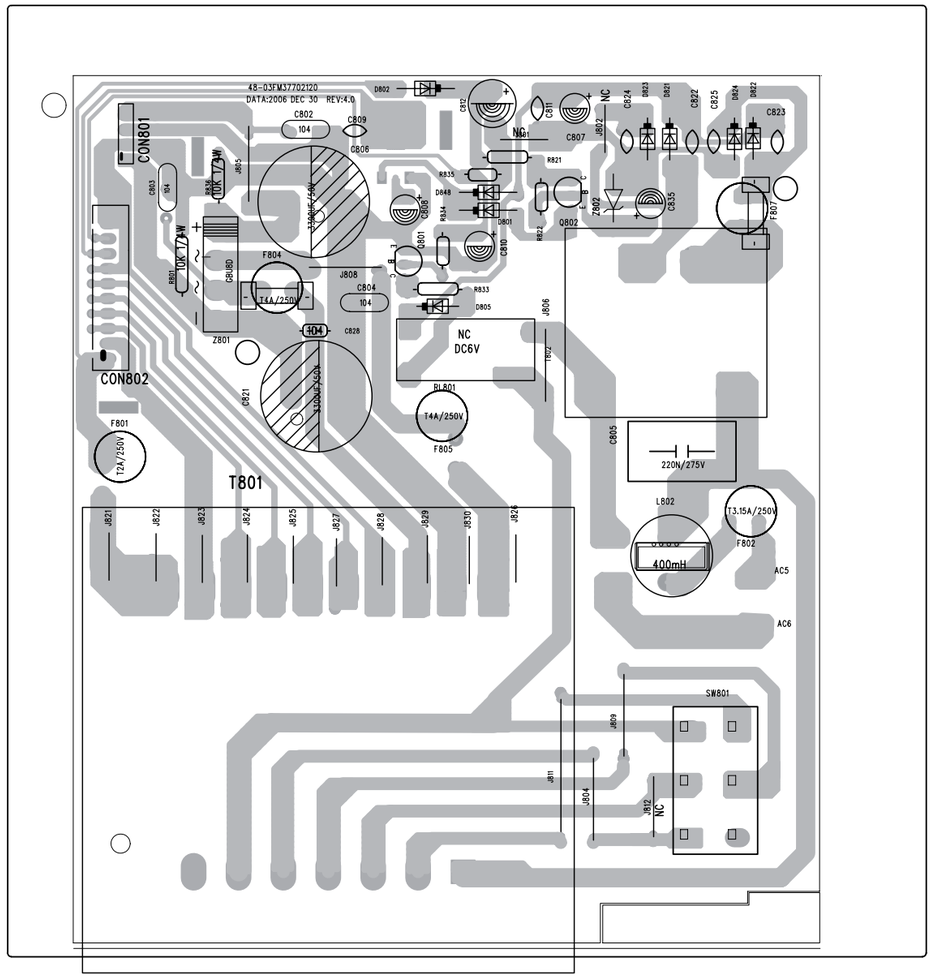


6-5

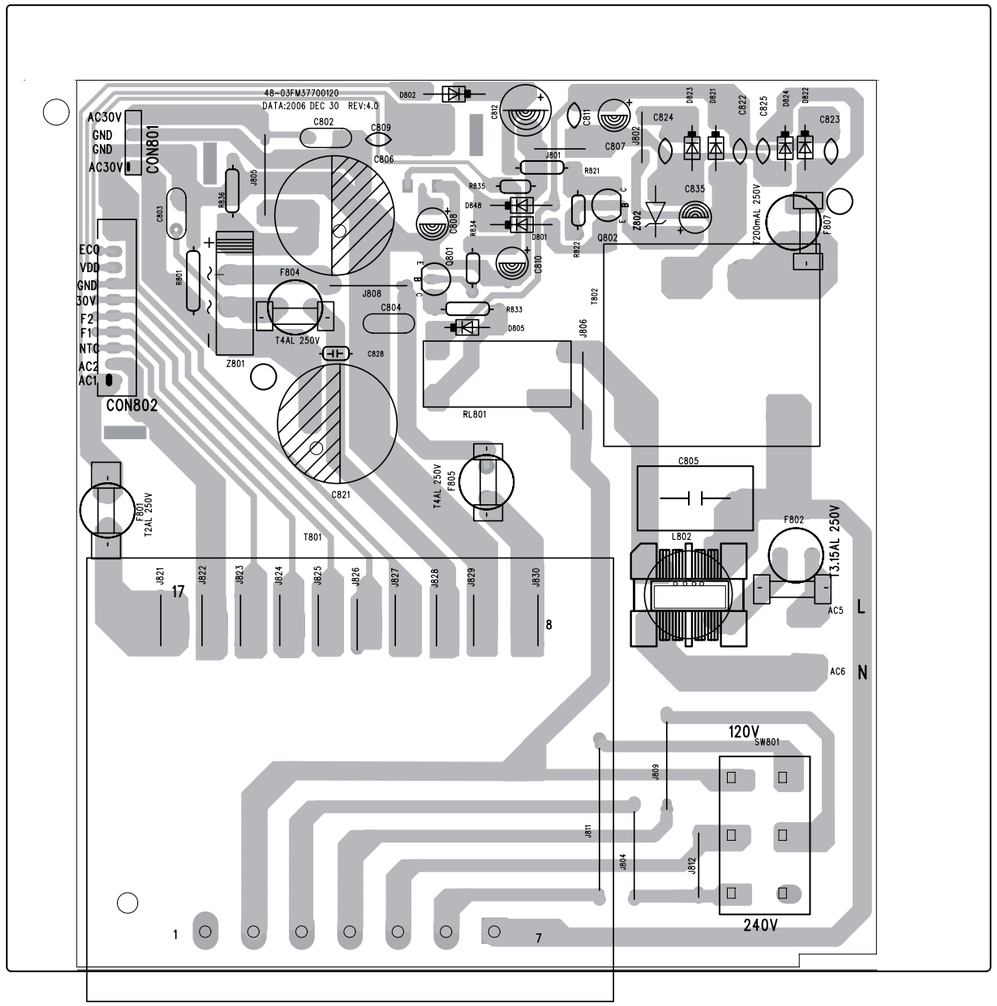
CIRCUIT DIAGRAM - MAIN & SUPER POWER BOARD



PCB LAYOUT - SUPER POWER BOARD (ONLY FOR /12/05)

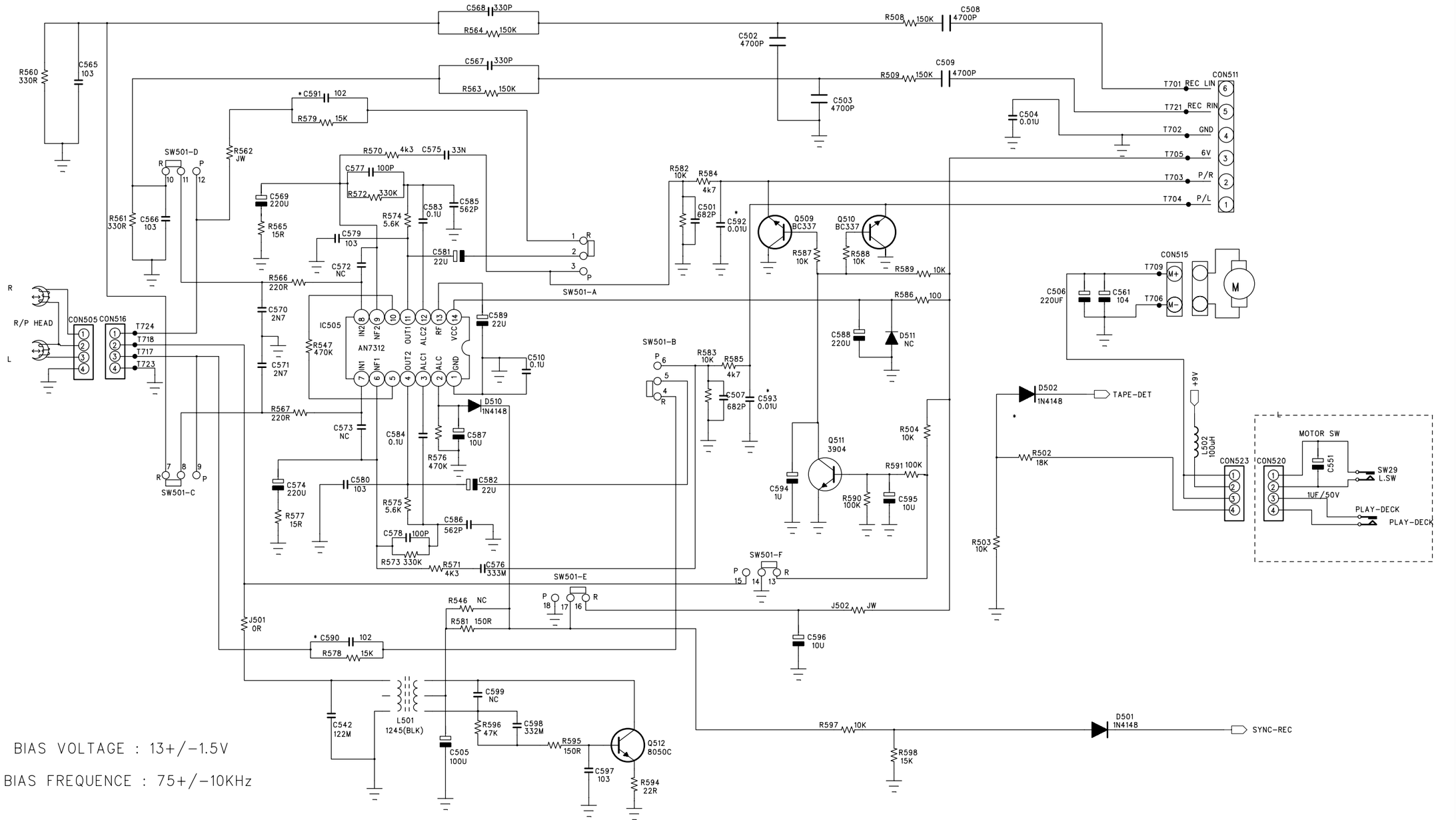


PCB LAYOUT - SUPER POWER BOARD (ONLY FOR /55)



6-7

CIRCUIT DIAGRAM - TAPE PART



BIAS VOLTAGE : 13+/−1.5V

BIAS FREQUENCE : 75+/−10KHz

* FOR PROVISION ONLY

7-1

AMP (LOW POWER) BOARD

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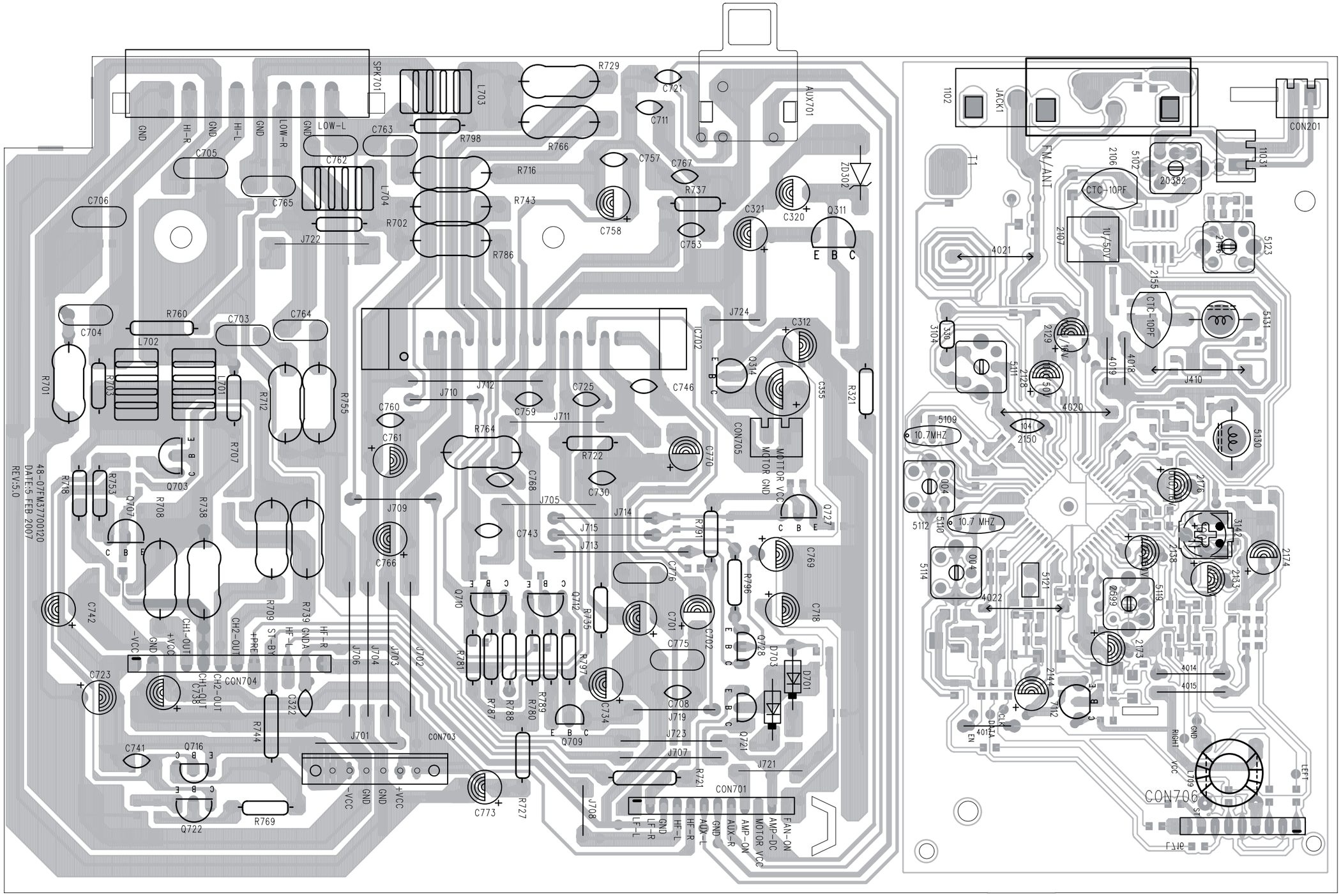
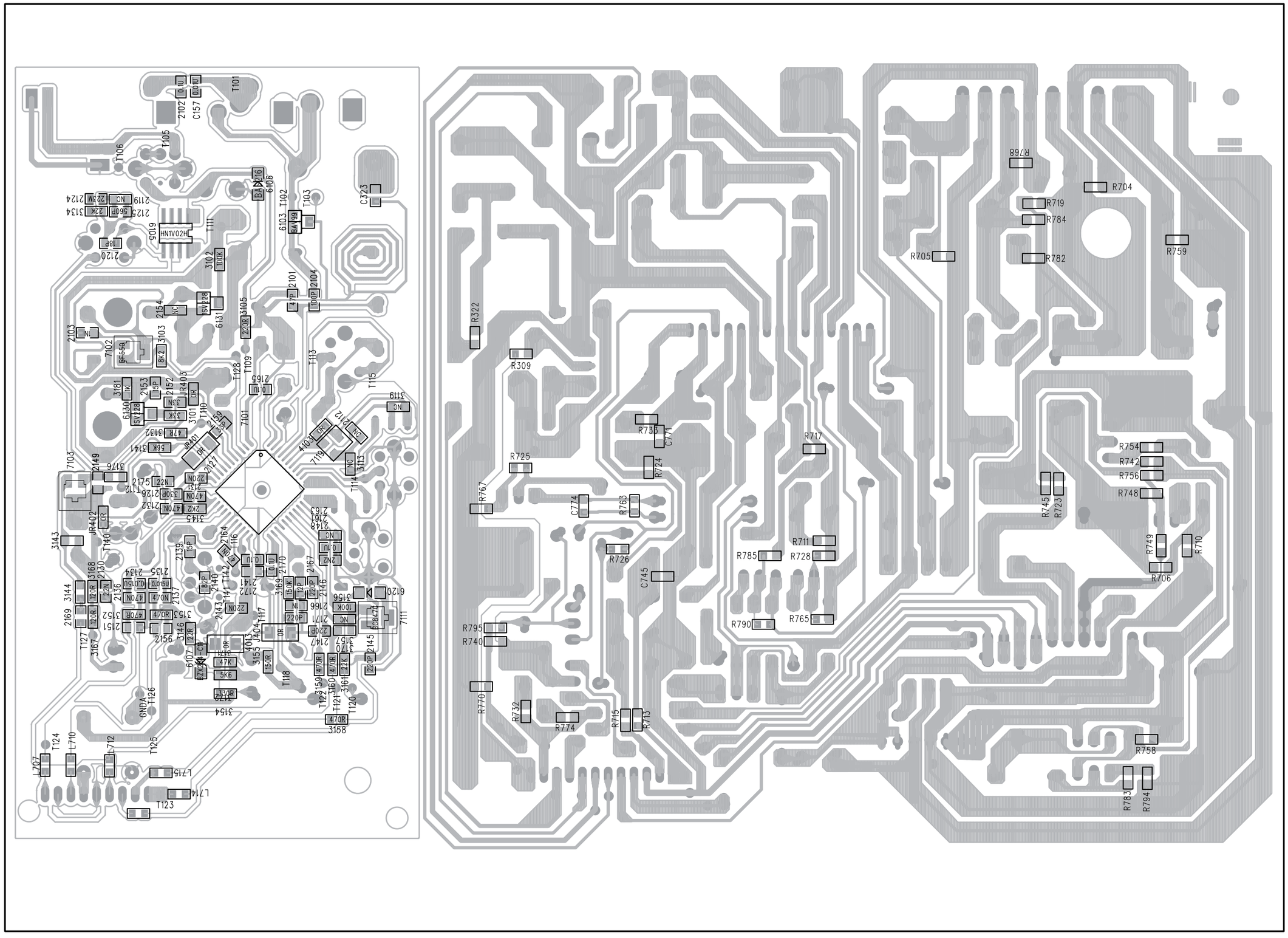
7-2

PCB LAYOUT - AMP (LOW POWER) BOARD (TOP VIEW)



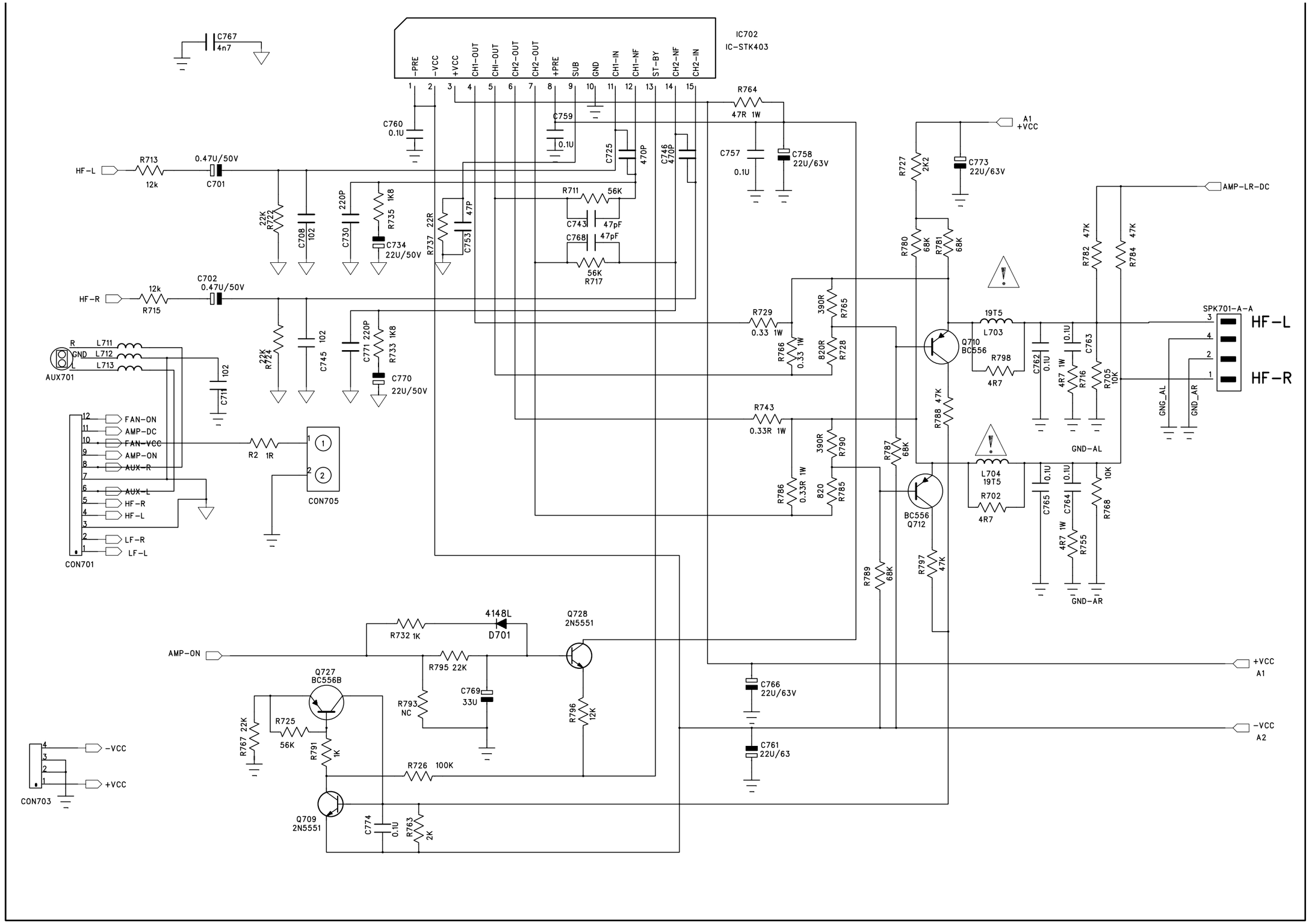
7-3

PCB LAYOUT - AMP (LOW POWER) BOARD (BOTTOM VIEW)



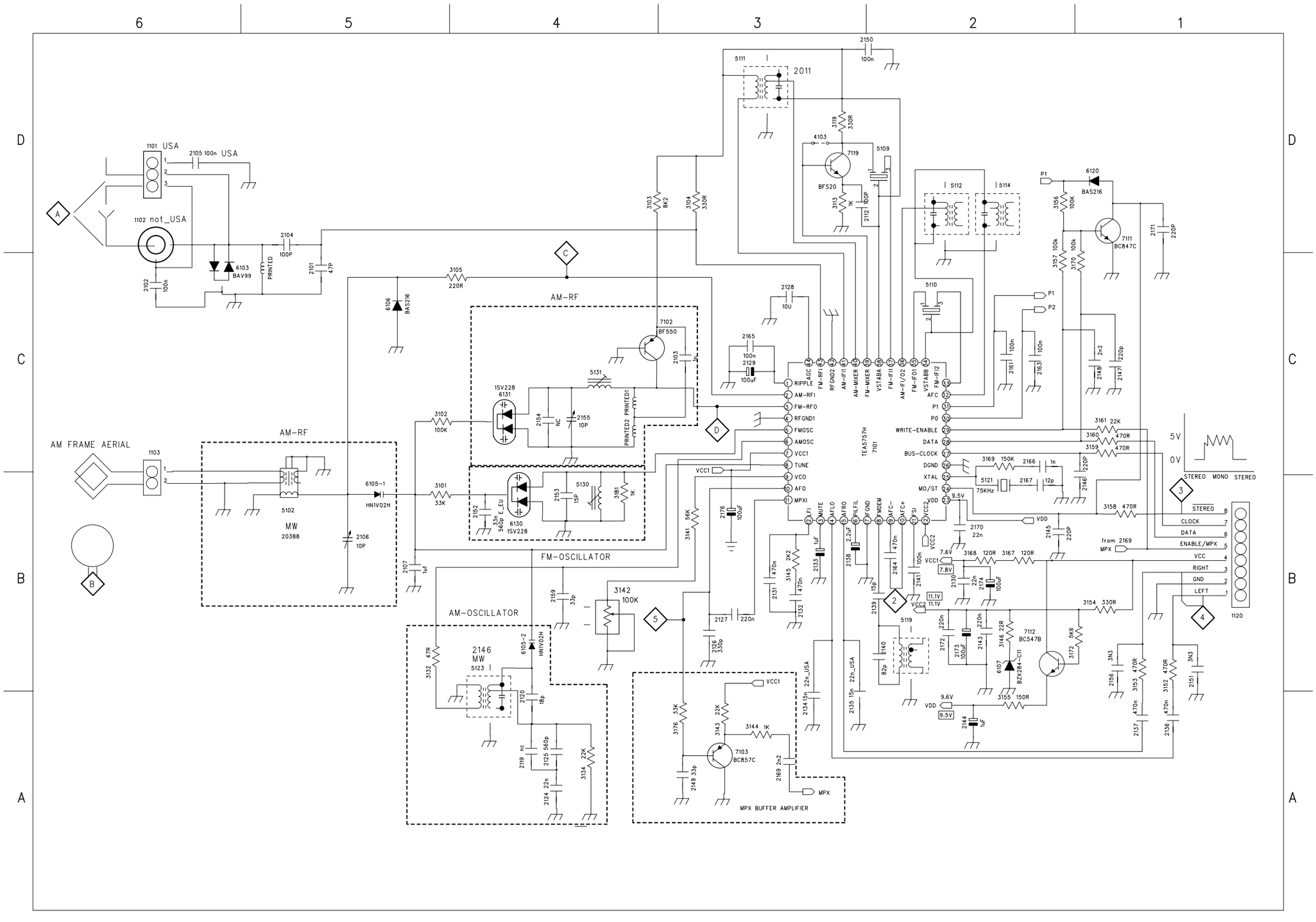
7-4

CIRCUIT DIAGRAM - AMP (LOW POWER) BOARD

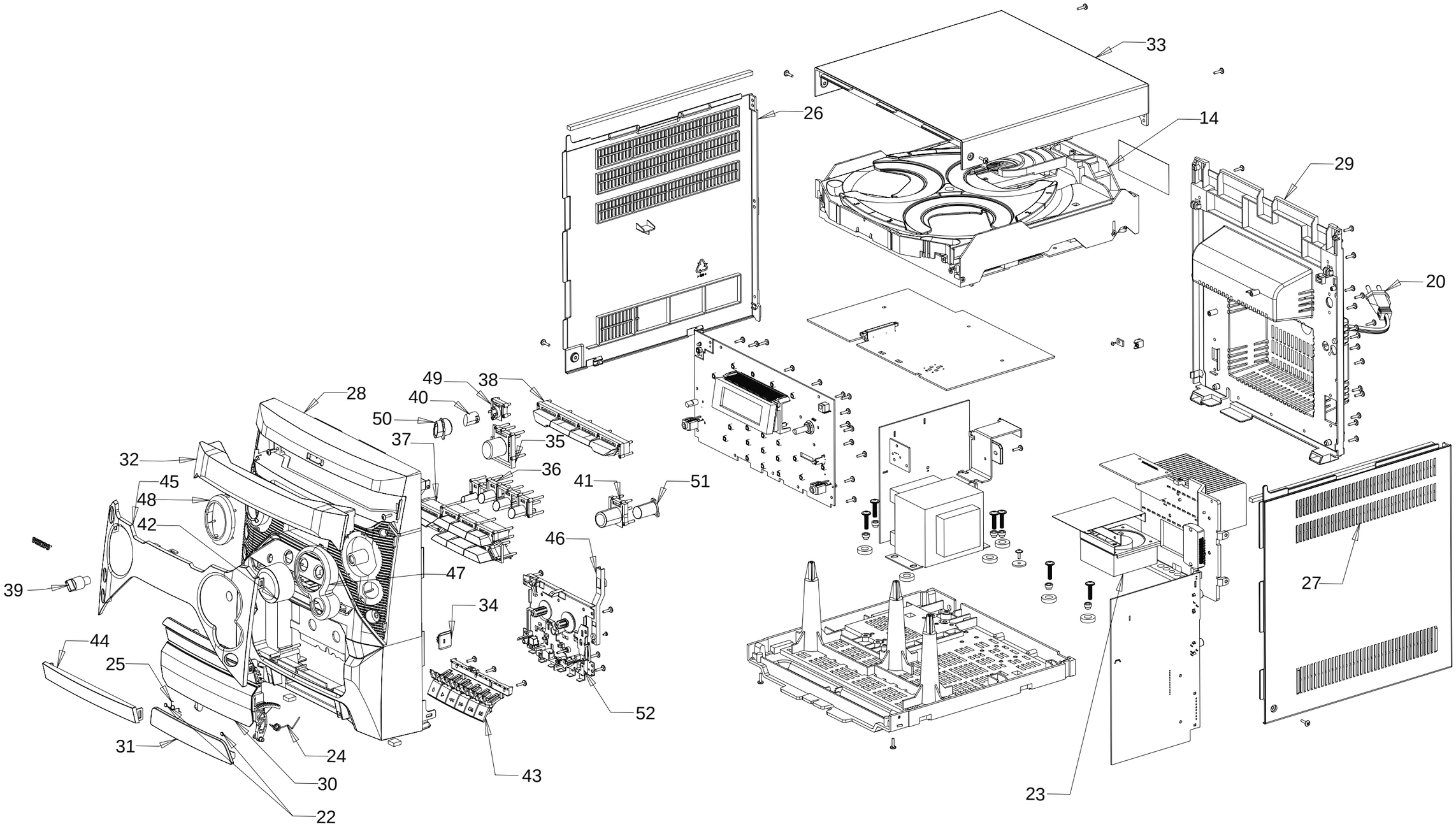


7-5

CIRCUIT DIAGRAM - TUNING PART



8-1


33
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23

MECHANICAL & ACCESSORIES PARTS LIST

2	996510001306	REMOTE CONTROL
3	996510001307	SPK BOX L+R
4	994000001192	AM LOOP ANTENNA LAN-031
13	996510001323	3CD BD ASS'Y (55)
14	996510001324	3CDC MECHA CASING ASS'Y
15	994000003669	CD MECHANISM DA11VF
15A	996510001326	11P FFC 1.25mm L80mm
16	994000004487	16P FFC 1MM L=170MM
16A	996510001327	23P FFC 1.25mm L80mm
17	994000004457	5P FFC L=200MM(AA)
17A	996510001328	10P FFC 1.25mm L160mm
18	996510001329	12P FFC 1.25mm L180mm
19	996510001330	25P FFC 1.25mm L180mm
20	⚠996510000909	AC CORD VDE APP 2M /12/55
20	⚠996510001345	AC CORD BS PLUG CORD 2M /05
21	994000001381	FM ANT (BLACK) 1M
22	996510001331	CASSETTE KEY COVER FOOT
23	996500041827	FAN KD1206PTS3
24	994000001267	SPRING -RIGHT
25	994000004379	CASSETTE KEY COVER SPRING
26	994000001276	PANEL LEFT
27	994000001277	PANEL RIGHT
28	996510001477	FRONT CABINET /55
28	996510001332	FRONT CABINET /05/12
29	996510001478	REAR CABINET /55
29	996510001333	REAR CABINET /05/12
30	996510001334	CASSETTE DOOR
31	996510001335	CASS KEYS DOOR
32	996510001336	3CDC DOOR
33	994000001285	TOP COVER
34	994000001295	DAMPER GEAR ASS'Y
35	996510001337	PLAY BUTTON
36	996510001338	CONTROL KEYS
37	996510001339	PROGRAM KEYS
38	996510001340	SOURCE BUTTON
39	996510001341	MIC KNOB
40	994000004579	POWER BUTTON
41	996510001342	DBB BUTTON
42	994000004582	VOLUME KNOB
43	994000004583	CASSETTE KEY WITH HOLDER
44	994000004584	CASSETTE DOOR LENS
45	996510001479	DISPLAY LENS /55
45	996510001343	DISPLAY LENS /05/12
46	994000004586	RECORD ARM
47	994000004587	VOLUME DECORTIVE RING
48	994000004588	KEYS DECORTIVE RING
49	994000004589	POWER BUTTON BASE
50	994000004591	RING POWER
51	996510001344	DBB LIGHT GUIDE
52	994000004374	CASS DECK CS-21SC-820DT
T801	⚠996510001325	TRASFO EI76 230V T08481A /05/12
T801	⚠996510001475	TRANSFORMER EI76 127/240V /55

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

ELECTRICAL PARTSLIST

MAIN BOARD

C689	996510001309	E.CAP 4700UF 25V +-20% (PH)
D303	996500042437	CH-DIODE SS14 SMA/DO-214AC
D613	994000002446	RECTIFIER BRIDGE RS402
IC301	994000001237	IC (PHILIPS) SAA6581T
IC302	994000001201	IC NJM4556AM
IC505	994000004533	IC YD7312
IC601	994000001202	IC TDA7468D
IC602	994000001201	IC NJM4556AM
IC603	994000000253	IC (SAMSUNG) KA7808
IC606	994000004549	IC KA7805E
IC607	994000001201	IC NJM4556AM
Q302	996500038609	TRANSISTORS 2W 8050C
Q312	994000001194	TRANSISTORS KSD882Y
Q318	994000004144	PNP TRANSISTORS 9015C
Q321	996500038610	TRANSISTORS 2W 8550C
Q511	994000004338	TRANSISTORS PMBT3904
Q512	996500038609	TRANSISTORS 2W 8050C
Q601	996510001308	TRANS. 2SD1936U
Q602	996510001308	TRANS. 2SD1936U
Q604	994000004144	PNP TRANSISTORS 9015C
Q605	994000004338	TRANSISTORS PMBT3904
Q607	996500038609	TRANSISTORS 2W 8050C
Q608	994000004338	TRANSISTORS PMBT3904
Q609	994000004145	TRANSISTORS B772Y (160-320)
Q611	996500038609	TRANSISTORS 2W 8050C
Q612	996500038609	TRANSISTORS 2W 8050C
Q618	994000001194	TRANSISTORS KSD882Y
SW501	994000004539	PUSH SWITCH
X301	996510001310	XTAL 4.332MHZ +-20PPM

POWER BOARD

C805	⚠994000001225	SAFETY CAP 275V 0.22UF -20%
C806	996510001312	E.CAP 3300UF 50V +-20% (PH)
C821	996510001312	E.CAP 3300UF 50V +-20% (PH)
F801	⚠994000001222	FUSE RADIAL LT 2A 250V
F802	⚠994000004599	FUSE RADIAL T3.15A 250V
F804	⚠994000001351	FUSE RADIAL T4A 250V
F805	⚠994000001351	FUSE RADIAL T4A 250V
F807	⚠994000001229	FUSE RADIAL T200MA/250V
IC801	994000002839	IC LM1117S-3.3
L802	994000001226	AC LINE FILTER IND. 400UH 3A
Q801	996500038609	TRANSISTORS 2W 8050C
Q802	996500038609	TRANSISTORS 2W 8050C
RL801	⚠996500039818	RELAY ME-7-006-HSL DC6V 10A
SW801	994000001323	SWITCH /55

POWER BOARD

T802	⚠996510001311	TRASFO EI28 230V T08512A
Z801	994000001196	BRIDGE RECT 8A GBU8D-E3/72

FRONT (KEY) BOARD

D402	994000001234	LED LAMP 3MM (RED)
D403	994000001234	LED LAMP 3MM (RED)
FTD401	996510001313	FTD DISPLAY VFD33-1220N
IC401	994000004542	IC PT6315
JACK401	994000004543	V/PHONE JACK (BLK)
JACK402	994000004543	V/PHONE JACK (BLK)
Q401	996510000849	NPN TRANSISTORS 9014C
Q402	996500038609	TRANSISTORS 2W 8050C
Q407	996500038609	TRANSISTORS 2W 8050C
Q414	994000004144	PNP TRANSISTORS 9015C
Q424	996510000849	NPN TRANSISTORS 9014C
REM401	994000004367	OPTIC SENSER FM-6038TM2-5AN
SW402	994000001243	TACT SWITCH
SW405	994000001243	TACT SWITCH
SW406	994000001243	TACT SWITCH
SW407	994000001243	TACT SWITCH
SW408	994000001243	TACT SWITCH
SW409	994000001243	TACT SWITCH
SW410	994000001243	TACT SWITCH
SW411	994000001243	TACT SWITCH
SW412	994000001243	TACT SWITCH
SW413	994000001243	TACT SWITCH
SW414	994000001243	TACT SWITCH
SW417	994000001243	TACT SWITCH
SW418	994000001243	TACT SWITCH
SW420	994000001243	TACT SWITCH
SW421	994000001243	TACT SWITCH
SW422	994000001243	TACT SWITCH
SW423	994000001243	TACT SWITCH
VF401	994000001324	ROTARY VOLUME 20K
VR402	994000001241	ROTARY ENCODER

AMP BD ASS'Y

1102	994000001353	COAXIAL JACK IF-01A
1110	994000004442	TUNER (MITSUMI) FE450-G11
2106	994000000254	TRIMMER 10PF 6MM (WH)
5102	994000001212	AM IFT (BLACK) 7MM
5109	994000001208	CER. FILTER SFELA10M7HA00-B0

ELECTRICAL PARTSLIST

AMP BOARD ASS'Y for /12/05

5110	994000001208	CER. FILTER SFELA10M7HA00-B0
5111	996500042436	I.F.T 7mm #7M4A2011N (B)
5112	996500042434	I.F.T 7mm #C712KC-004 (Y)
5114	996500042434	I.F.T 7mm #C712KC-004 (Y)
5115	994000001352	BIRDIE COIL IFT (BLK)
5119	996500042433	I.F.T 7mm #KS2599 (BLK)
5121	994000004352	CRYSTAL 75KHZ 12.5PF DT-381
5123	996500042435	I.F.T 7mm #7M1A2146 (B)
6105	994000002454	VARIABLE CAP DIODE HN-1V02H
6107	996500042431	ZENER DIODE 11V #PDZ11B
7101	994000001204	IC (PHILIPS) TEA5762H
7112	996500039345	TRANSISTORS 2W 8050D
AUX701	994000001221	V/RCA JACK 2P
IC702	996510001314	IC (SANYO) STK433-070
L701	994000001217	AIR COIL 6X18.5T (0.5MM)
L702	994000001217	AIR COIL 6X18.5T (0.5MM)
L703	994000001217	AIR COIL 6X18.5T (0.5MM)
L704	994000001217	AIR COIL 6X18.5T (0.5MM)
Q311	996500038609	TRANSISTORS 2W 8050C
Q314	996500038609	TRANSISTORS 2W 8050C
R708	994000004473	RES. METAL 0.33R 1W +-1%
R709	994000004473	RES. METAL 0.33R 1W +-1%
R729	994000004473	RES. METAL 0.33R 1W +-1%
R738	994000004473	RES. METAL 0.33R 1W +-1%
R739	994000004473	RES. METAL 0.33R 1W +-1%
R743	994000004473	RES. METAL 0.33R 1W +-1%
R764	⚠ 994000004472	RESISTORS FUSIBLE 47R 1W +-1%
R766	994000004473	RES. METAL 0.33R 1W +-1%
R786	994000004473	RES. METAL 0.33R 1W +-1%
SPK701	996510001315	SPK JACK (R/R/B/B/BLKx4)

AMP BOARD ASS'Y FOR /55

1102	994000001353	COAXIAL JACK IF-01A
1110	994000004442	TUNER (MITSUMI) FE450-G11
2106	994000000254	TRIMMER 10PF 6MM (WH)
5102	994000001212	AM IFT (BLACK) 7MM
5109	994000001208	CER. FILTER SFELA10M7HA00-B0
5110	994000001208	CER. FILTER SFELA10M7HA00-B0
5111	996500042436	I.F.T 7mm #7M4A2011N (B)
5112	996500042434	I.F.T 7mm #C712KC-004 (Y)
5114	996500042434	I.F.T 7mm #C712KC-004 (Y)
5115	994000001352	BIRDIE COIL IFT (BLK)
5119	996500042433	I.F.T 7mm #KS2599 (BLK)
5121	994000004352	CRYSTAL 75KHZ 12.5PF DT-381

AMP BOARD ASS'Y for /12/05

5123	996500042435	I.F.T 7mm #7M1A2146 (B)
6105	994000002454	VARIABLE CAP DIODE HN-1V02H
6107	996500042431	ZENER DIODE 11V #PDZ11B
6130	994000001479	VARICAP DIODE ISV228
6131	994000001479	VARICAP DIODE ISV228
7101	994000001321	IC (Philips) TEA5757H/V1
7112	996500039345	TRANSISTORS 2W 8050D
AUX701	994000001221	V/RCA JACK 2P
IC702	996510001314	IC (SANYO) STK433-070
L701	994000001217	AIR COIL 6X18.5T (0.5MM)
L702	994000001217	AIR COIL 6X18.5T (0.5MM)
L703	994000001217	AIR COIL 6X18.5T (0.5MM)
L704	994000001217	AIR COIL 6X18.5T (0.5MM)
Q311	996500038609	TRANSISTORS 2W 8050C
Q314	996500038609	TRANSISTORS 2W 8050C
R708	994000004473	RES. METAL 0.33R 1W +-1%
R709	994000004473	RES. METAL 0.33R 1W +-1%
R729	994000004473	RES. METAL 0.33R 1W +-1%
R738	994000004473	RES. METAL 0.33R 1W +-1%
R739	994000004473	RES. METAL 0.33R 1W +-1%
R743	994000004473	RES. METAL 0.33R 1W +-1%
R764	⚠ 994000004472	RESISTORS FUSIBLE 47R 1W +-1%
R766	994000004473	RES. METAL 0.33R 1W +-1%
R786	994000004473	RES. METAL 0.33R 1W +-1%
SPK701	996510001315	SPK JACK (R/R/B/B/BLKx4)

HF BD ASS'Y

IC701	996510001314	IC (SANYO) STK433-070
R772	994000004472	RESISTORS FUSIBLE 47R 1W +-1%

USB BD ASS'Y

11	996510001316	USB SOCKET 4P

CPU BD ASS'Y

D3	996510000321	ZENER DIODE PDZ3.9B
IC10	996510000329	IC PCF8563T CLOCK SOP8
IC1	996510001321	IC SCF5250AG120
IC2	996510001320	IC KH29LV800C TTC W/S.W.
IC3	996510001319	IC 16M SDRAM K4S161622H-UC60
IC4	996510000326	IC USB HOST CTR
IC6	996510001322	IC WM8738 GDE SOP
IC7	996510001318	IC 74LVC157APW
IC8	994000004541	IC M24C02-WMN6
IC9	996510000328	IC OPT30 (SOP8)

ELECTRICAL PARTSLIST

CPU BD ASS'Y

Q1	996510000319	TRANSISTORS FDN338P
Q2	996510001317	TRANSISTOR 2SB1132R
Q4	996510000314	TRANSISTOR 2SD1664R
Y1	994000004551	CRYSTAL 16.9344MHZ +-20PPM
Y2	996510000333	CRYSTAL 6.000MHz
Y3	994000004615	CRYSTAL 32.768KHZ 12.5PF

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