CD Micro System MCM302

Service
Service
Service

Service Manual

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CLASS 1
LASER PRODUCT

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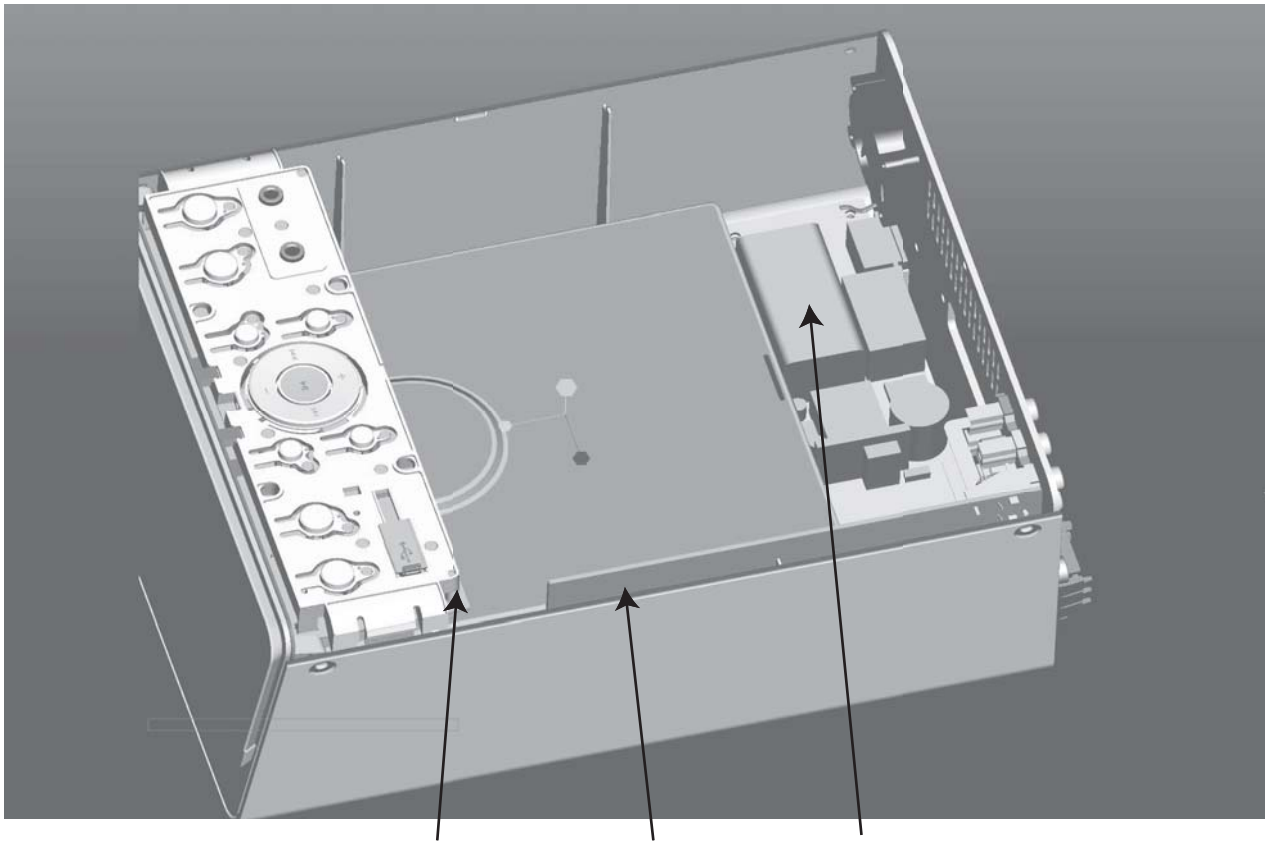
Version 1.0

PHILIPS

Location of PC Boards



VERSION VARIATIONS :

Type /Versions: / Board in used: / Service policy	MCM302										
	/05	/12	/37	/55	/58	/61	/79	/93	/94	/96	/98
LCD DISPLAY BOARD		C		C							
CD DECODER BOARD		M		M							
POWER BOARD		M		M							

Type /Versions: / Features / Feature diffrence	MCM302										
	/05	/12	/37	/55	/58	/61	/79	/93	/94	/96	/98
RDS											
VOLTAGE SELECTOR											
ECO STANDBY - DARK		√									
TDS											

* TIPS : C -- Component Level Repair.
M -- Module Level Repair
√ -- Used

Electronic Specification

AMPLIFIER

Rated Output Power .....25W x 2RMS
Signal-to-noise ratio .....≥65dBA
Frequency response..... 60Hz~20KHz ±3.0db
Aux Input .....0.5V RMS 20k ohm

DISC

Laser Type .....Semiconductor
Disc Diameter 12cm/8cm
Support Disc .....
CD-DA,CD-R,CD-RW,MP3
Audio DAC 24Bits/44.1kHz
Total Harmonic Distortion .....＜0.1%(1kHz)
Frequency Response .....20Hz~20kHz
Signal to Noise Ratio .....≥65dBA

TUNER

FM Tuning Range .....87.5~108MHz
Tuning grid 100k/50kHz

Sensitivity

- Mono, 26db S/N Ratio 5uV
– Stereo, 50dB S/N Ratio 100uV
Selectivity .....>33dB
Image Rejection .....>25dB
Total Harmonic Distortion 3%
Signal to Noise Ration .....≥65dBA

SPEAKERS

Speaker Impedance 4ohm
Speaker Driver, base .....4"
Speaker Driver, tweeter .....NA
Frequency Response .....60Hz~20kHz ±3.0db

GENERAL INFORMATION

Total Output power ..... 5 0 W R M S
AC Power ..... 230 V / 50Hz
Operation Power Consumption 25W
Standby Power Consumption ..... <4W
Eco Standby Power Consumption .....<1W
Headphone Output 2X15mV 32ohm
USB Direct .....Version 1.1

Dimensions

– Main unit (w x h x d) 200x115x250mm
– Speaker box (w x h x d) 150x250x165mm
– SUBwoofer(w x h x d) .....NA

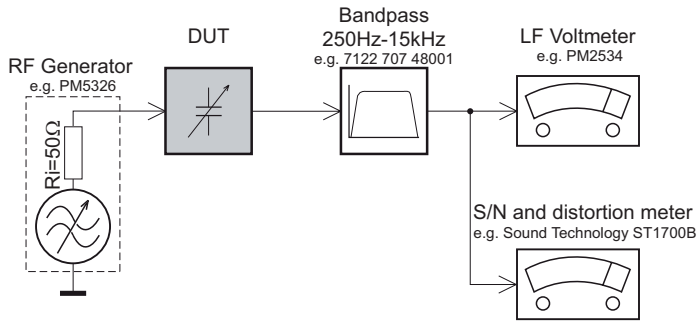
Weight

– With Packing 6.75KG
– Main Unit 2.55KG
– Speaker box 2X1.7KG
– SUBwoofer.....NA

Specifications and external appearance are subject to change without notice.

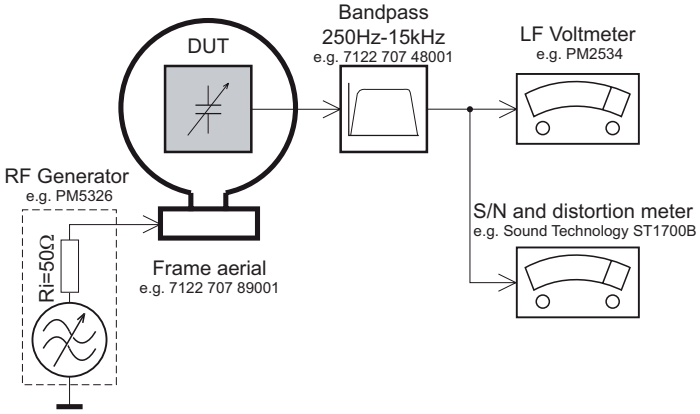
MEASUREMENT SETUP

Tuner FM



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

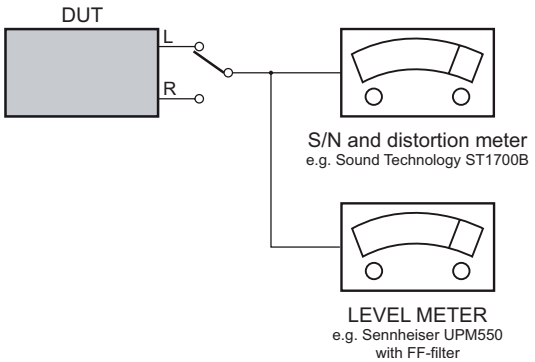
Tuner AM (MW,LW)



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).

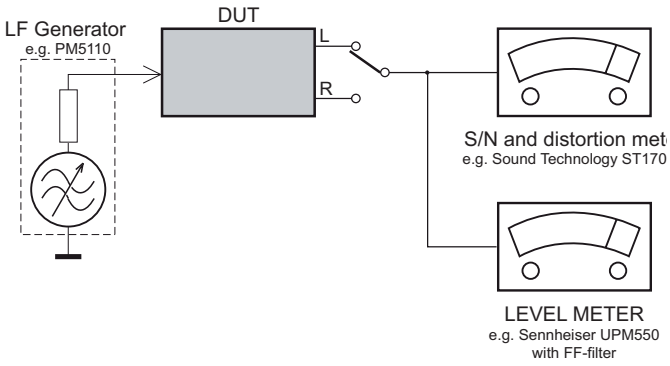
CD

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

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

GB

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

Safety components are marked by the symbol ⚠.

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:

- 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
  - Lead free

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

For additional questions please contact your local repair-helpdesk.

SERVICE INSTRUCTION

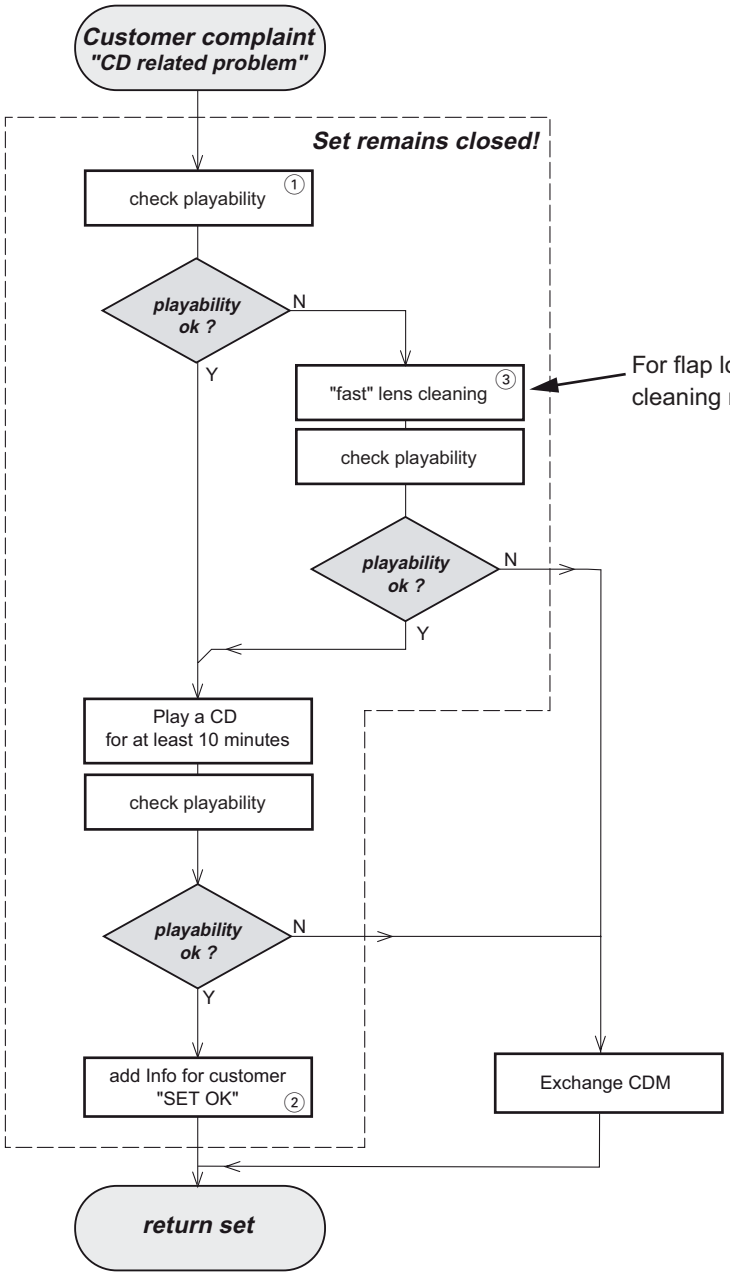
Safety regulations require that after a repair, the set must be returned in its original condition. Pay in particular attention to the following points:

- 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.

INSTRUCTIONS ON CD PLAYABILITY



For flap loaders (= access to CD drive possible) cleaning method ④ is recommended

① - ④ For description - see following pages

INSTRUCTIONS ON CD PLAYABILITY

①

PLAYABILITY CHECK

For sets which are compatible with **CD-RW** discs
use CD-RW Printed Audio Disc.....7104 099 96611
TR 3 (Fingerprint)
TR 8 (600µ Black dot) **maximum at 01:00**

- playback of these two tracks without audible disturbance
  playing time for: Fingerprint ≥10seconds
  Black dot from 00:50 to 01:10
- jump forward/backward (search) within a reasonable time

For all other sets
use CD-DA SBC 444A.....4822 397 30245
TR 14 (600µ Black dot) **maximum at 01:15**
TR 19 (Fingerprint)
TR 10 (1000µ wedge)

- playback of all these tracks without audible disturbance
  playing time for: 1000µ wedge ≥10seconds
  Fingerprint ≥10seconds
  Black dot from 01:05 to 01:25
- jump forward/backward (search) within a reasonable time

②

CUSTOMER INFORMATION

It is proposed to add an addendum sheet to the set which informs the customer that the set has been checked carefully - but no fault was found.
The problem was obviously caused by a scratched, dirty or copy-protected CD. In case problems remain, the customer is requested to contact the workshop directly.
The lens cleaning (method ③) should be mentioned in the addendum sheet.

The final wording in national language as well as the printing is under responsibility of the Regional Service Organizations.

④

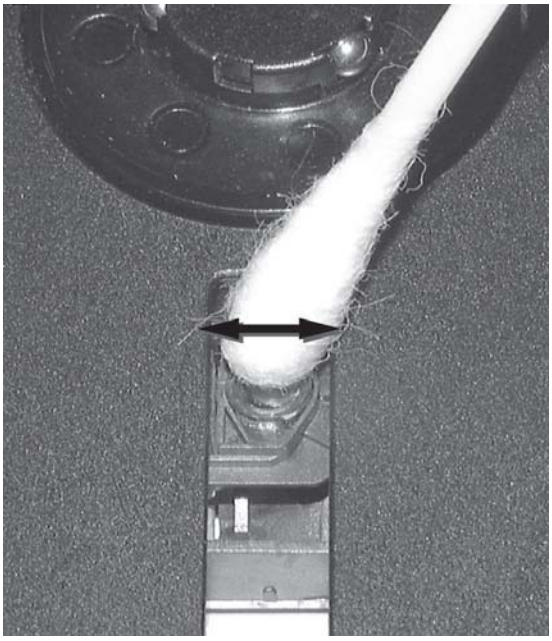
LIQUID LENS CLEANING

Before touching the lens it is advised to clean the surface of the lens by blowing clean air over it. This to avoid that little particles make scratches on the lens.

Because the material of the lens is synthetic and coated with a special anti-reflectivity layer, cleaning must be done with a non-aggressive cleaning fluid. It is advised to use “Cleaning Solvent

The actuator is a very precise mechanical component and may not be damaged in order to guarantee its full function. Clean the lens gently (don’t press too hard) with a soft and clean cotton bud moistened with the special lens cleaner.

The direction of cleaning must be in the way as indicated in the picture below.



Software Version Check & Upgrade

Upgrade software

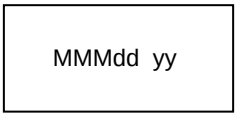
1.Download the software from Philips support website
http://www.philips.com/support

2.Load the Software CD Disc or USB device with software, software upgrade procedure starts automatically and it will be finish until you hear a long ‘ding’ voice.

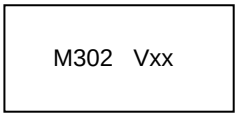
Software check

1, Make sure that the unit is disconnected with the AC supplier.

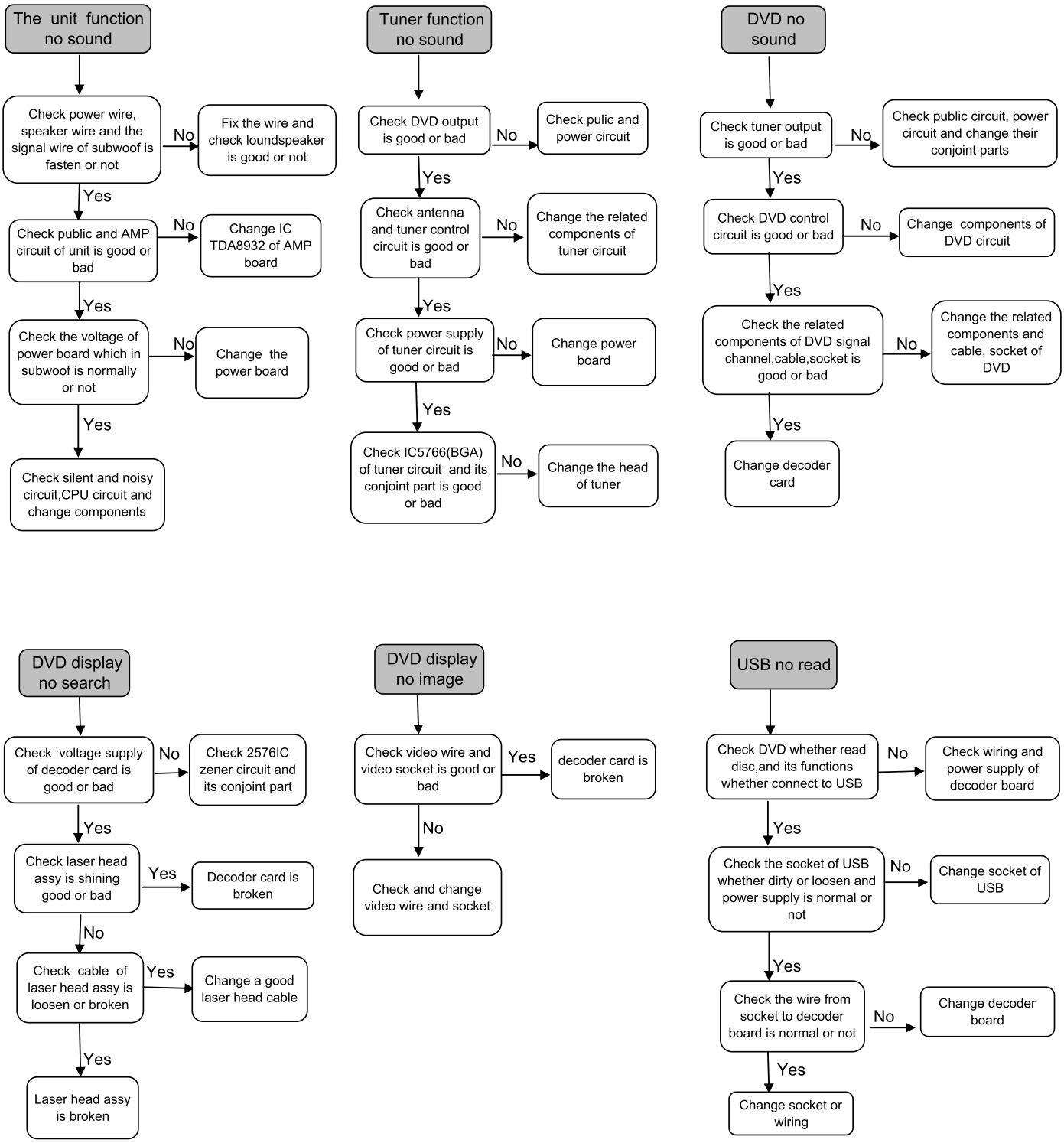
2, Keep the “PLAY/PAUSE”and“STOP” buttons depressed at the same time while plugging the AC cord. the LCD Display shows:



3, Press the “PLAY/PAUSE” button once again , the LCD Display will shows:



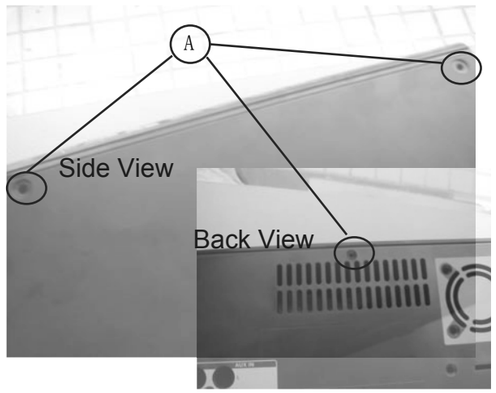
Malfunction follow check chart



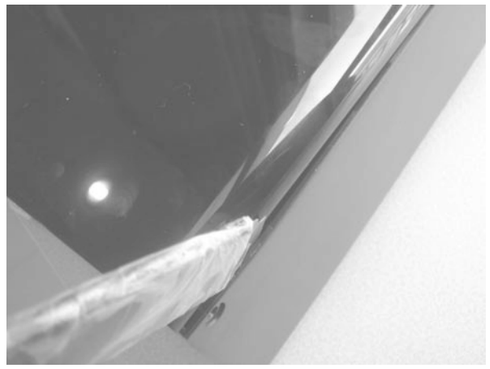
3-1

Disassembly Diagram

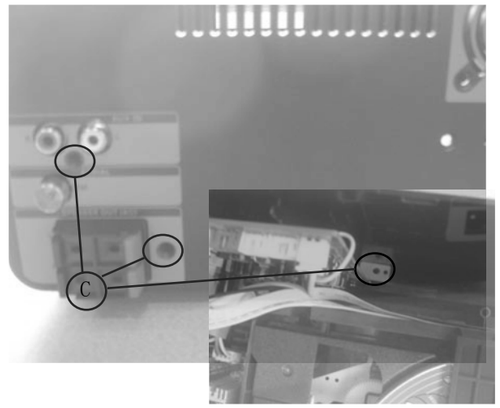
A.Loosen these Screws(both sides & back)



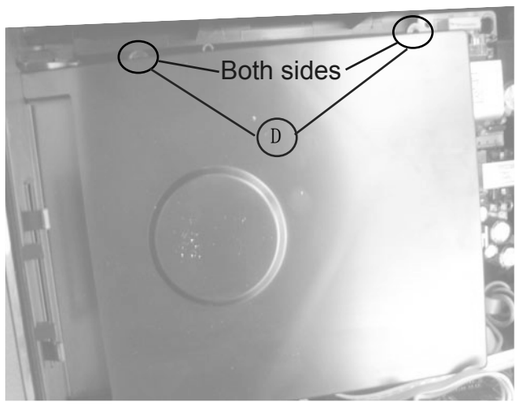
B.Use thin screwdriver to unclench Top Cover



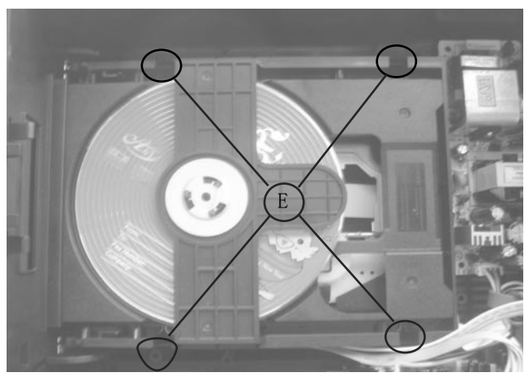
C.Loosen these screws to remove Decoder Board



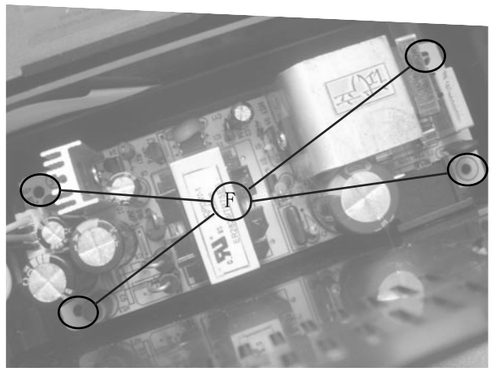
D.Loosen these screws to remove Dustproof Cover



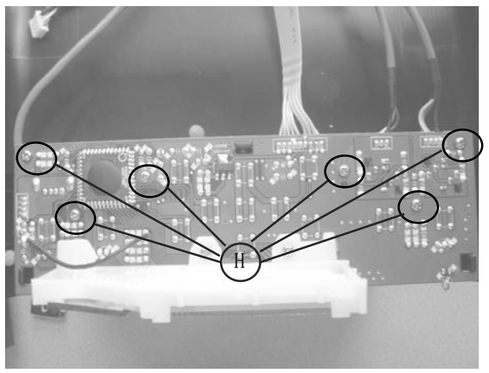
E. Loosen these screws to remove CD Loader Dirver



F.Loosen these screws to remove Power Board

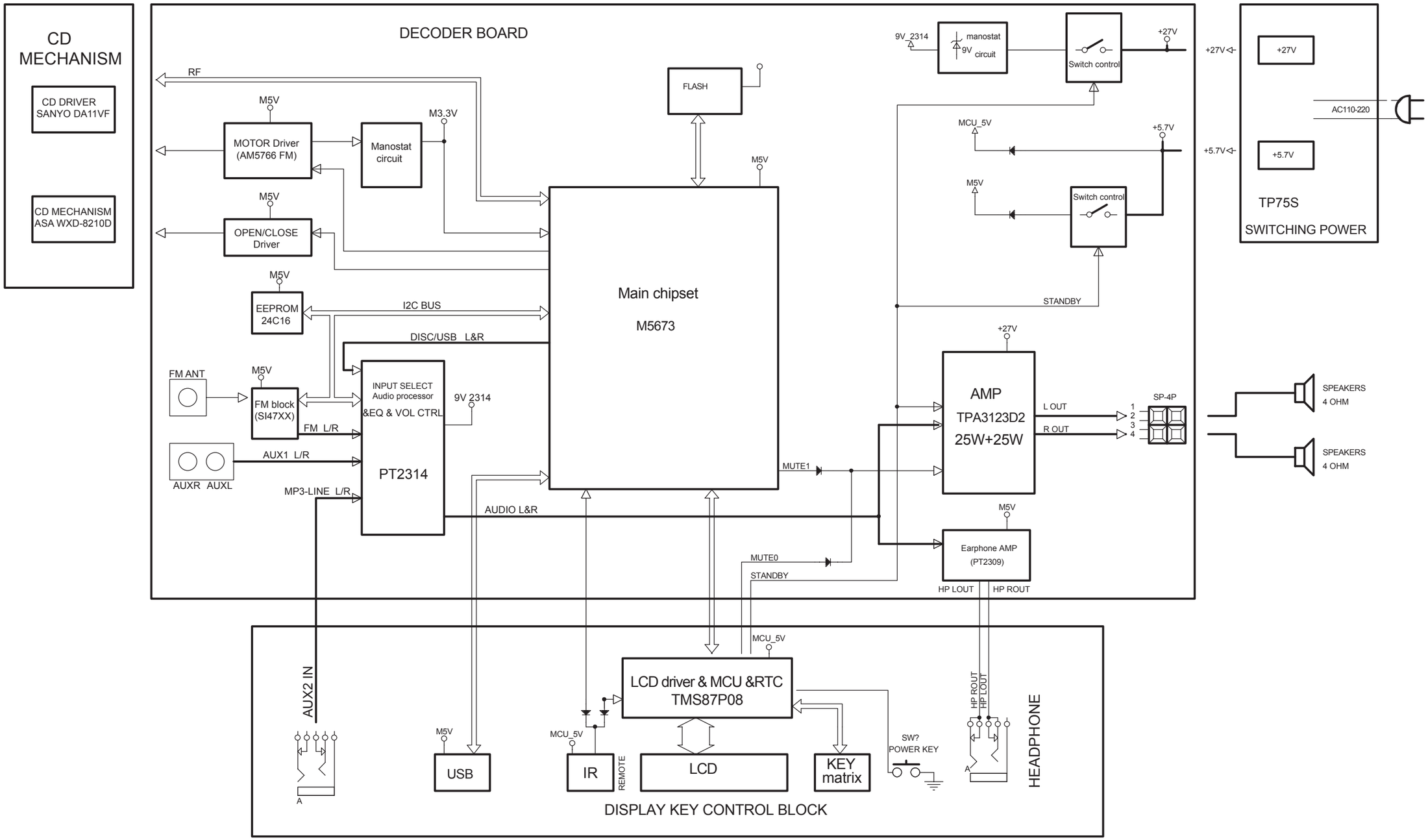


H.Loosen these screws to remove Display Board



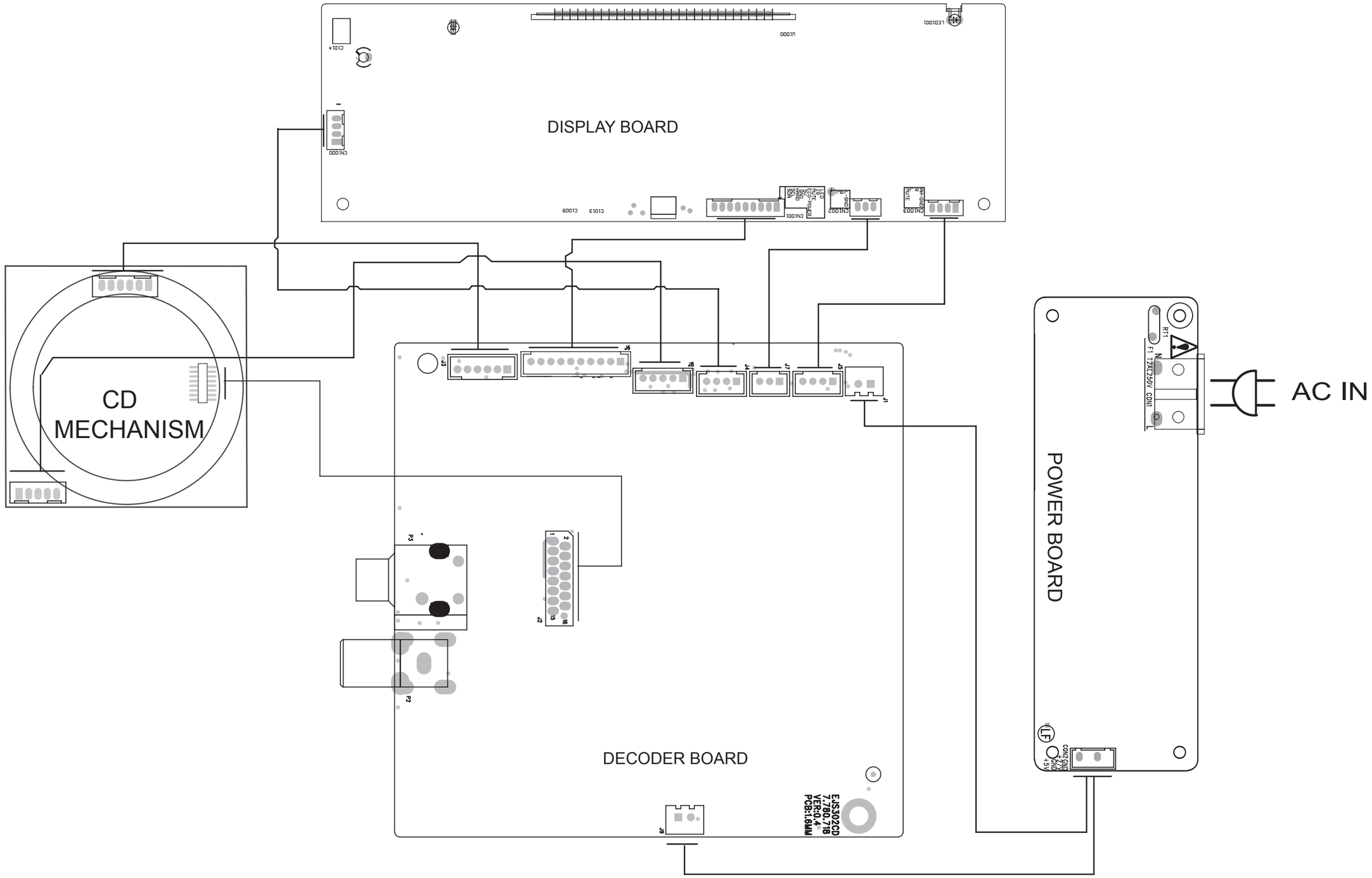
4-1

Block Diagram



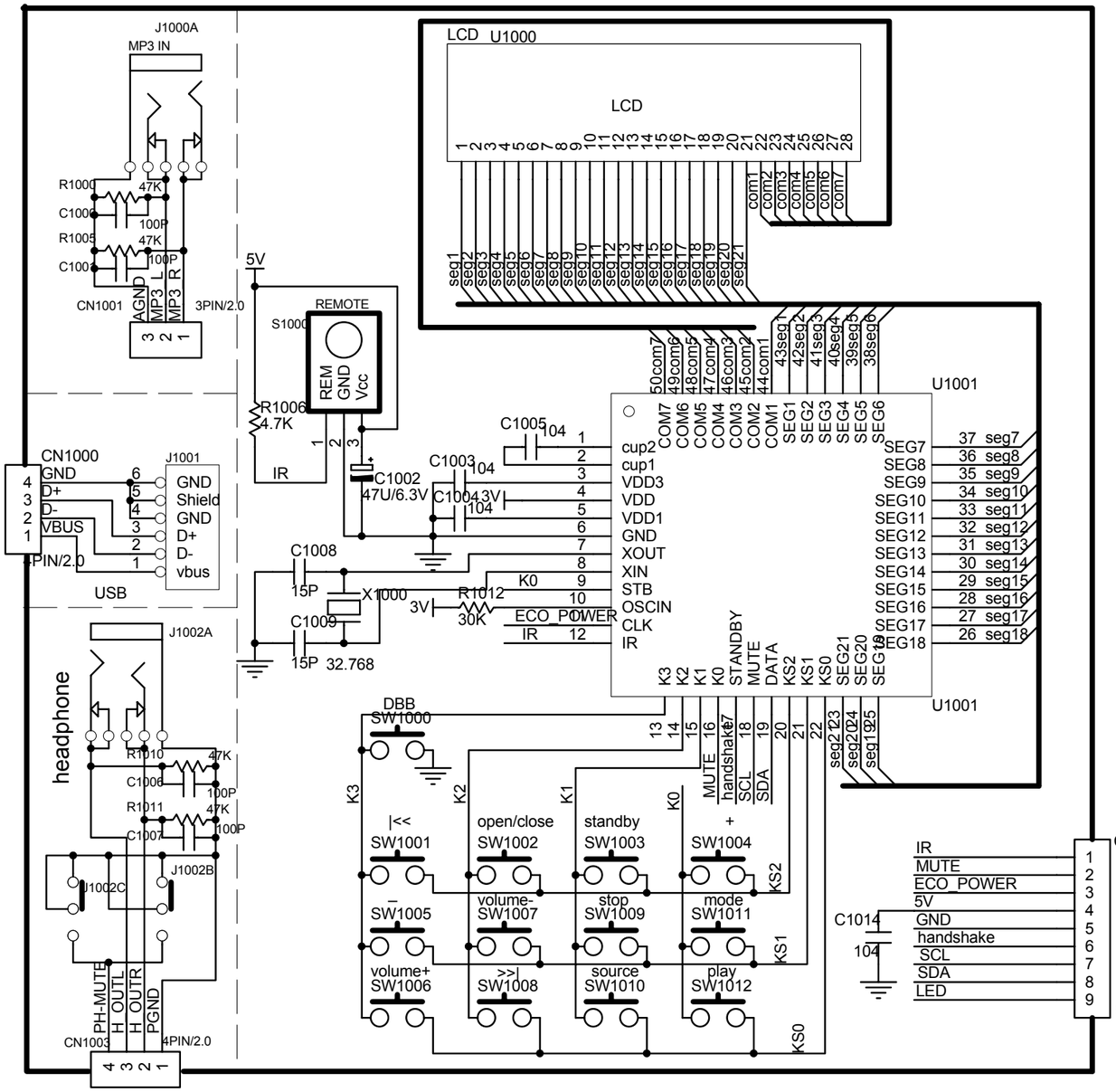
4-2

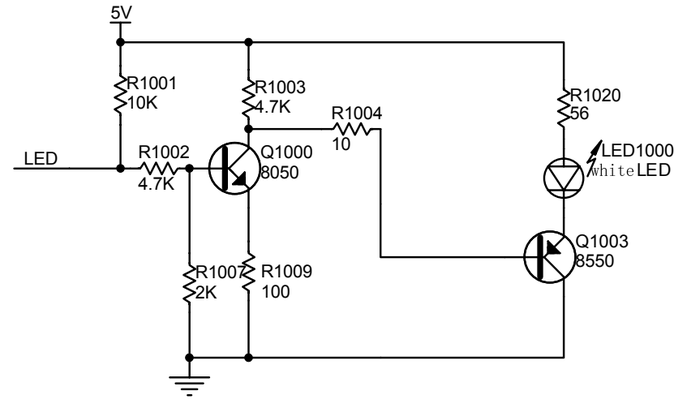
Wiring Diagram

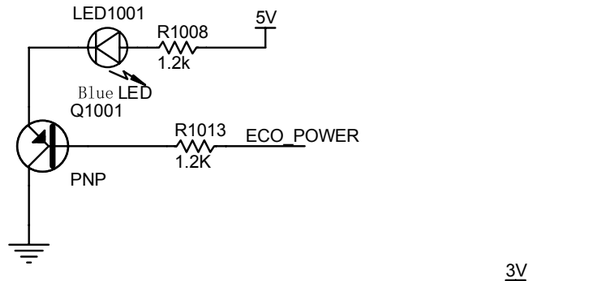


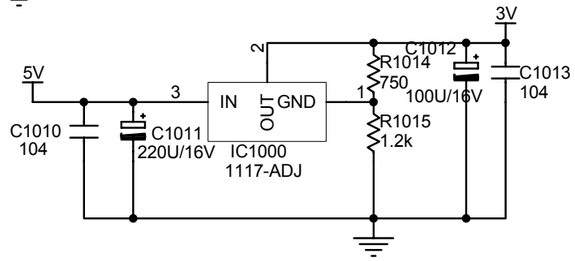
5-1

Display Board -- Circuit Diagram



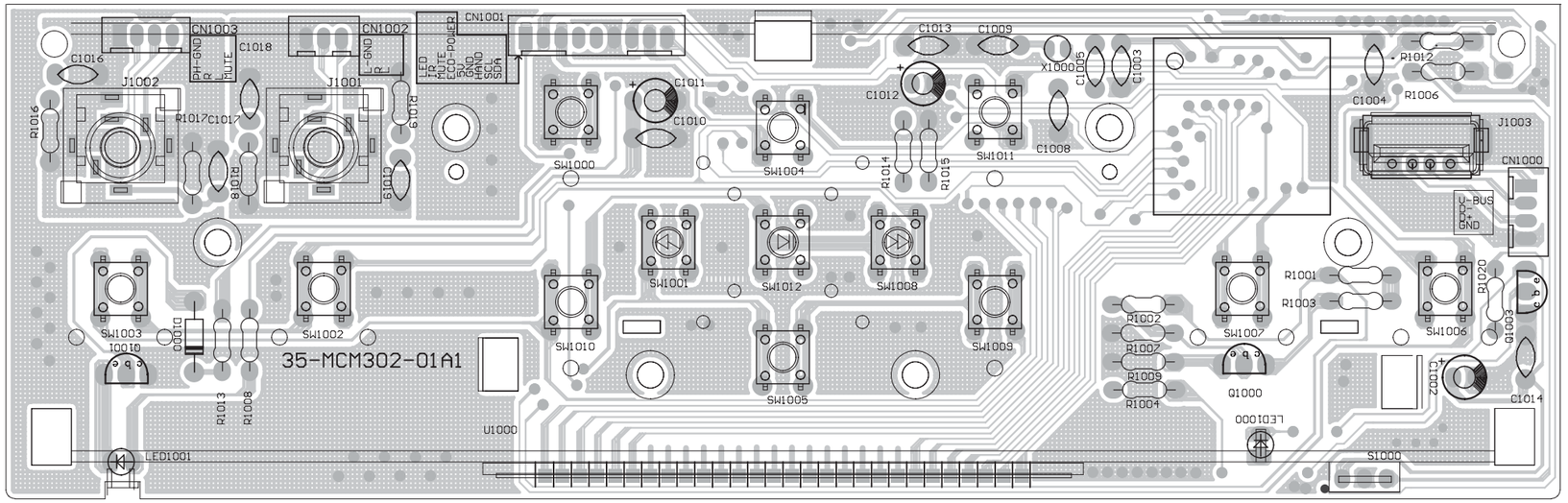


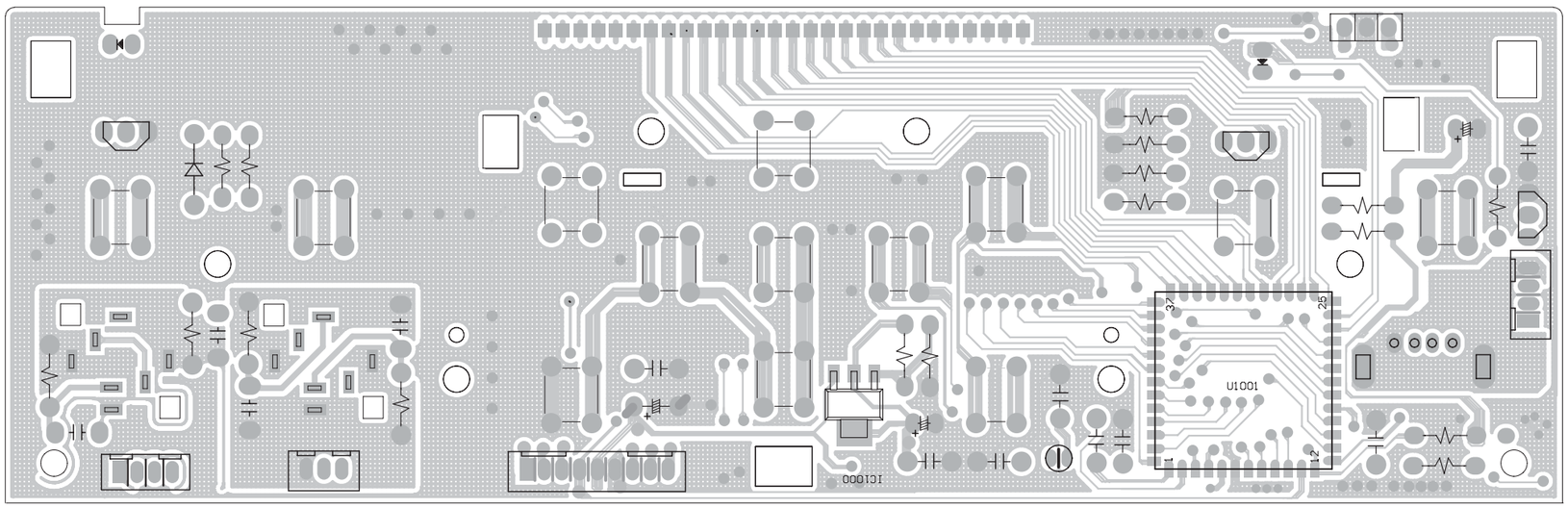




5-2

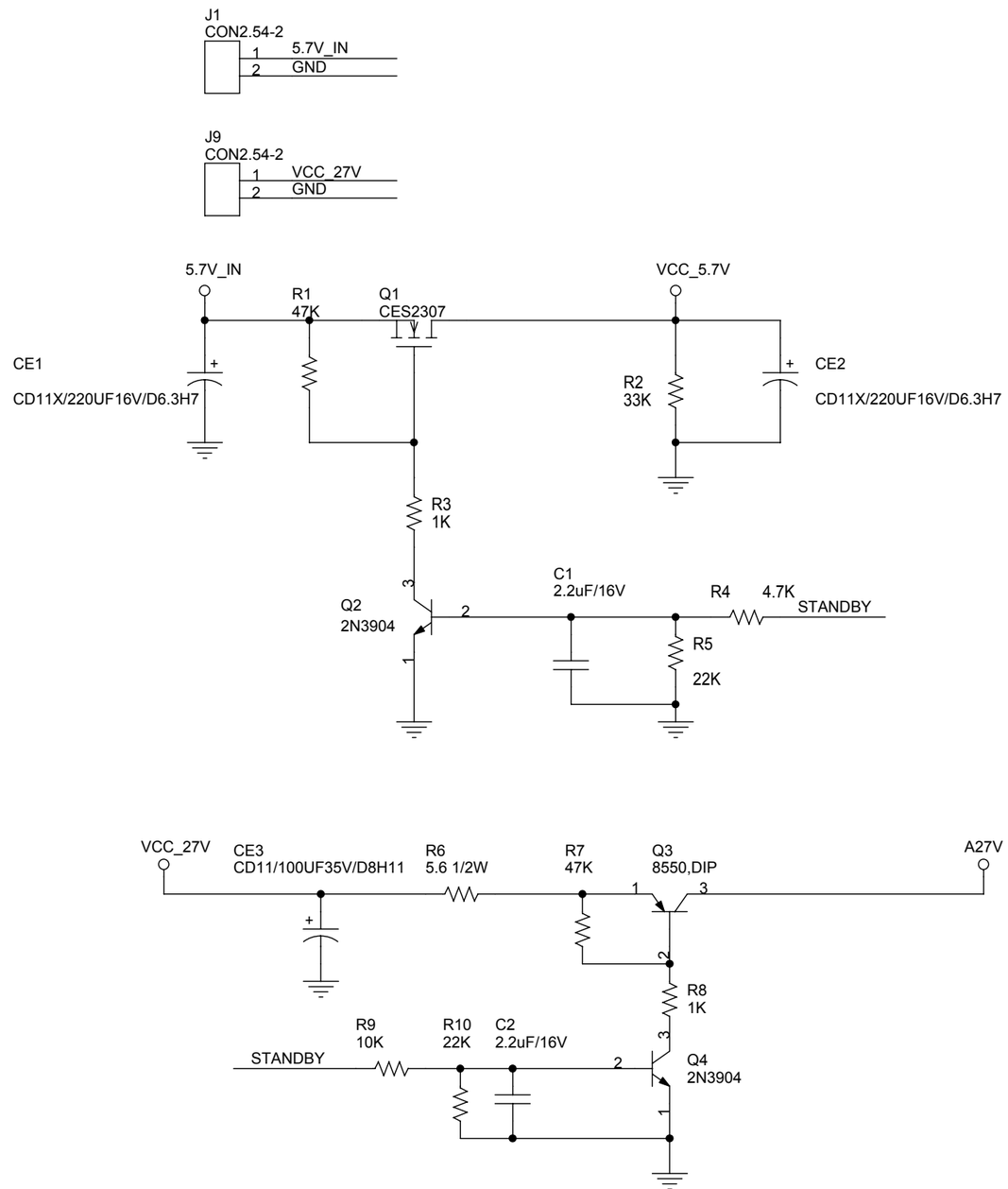
Display Board -- Layout Diagram

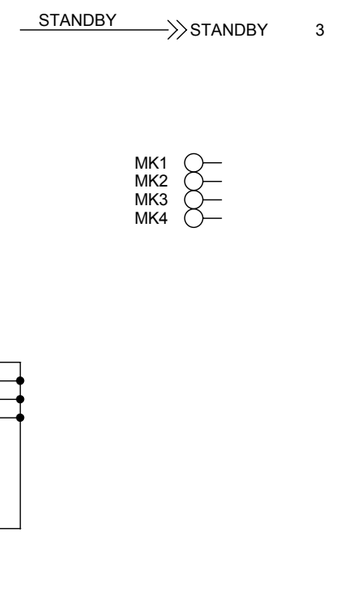




6-1

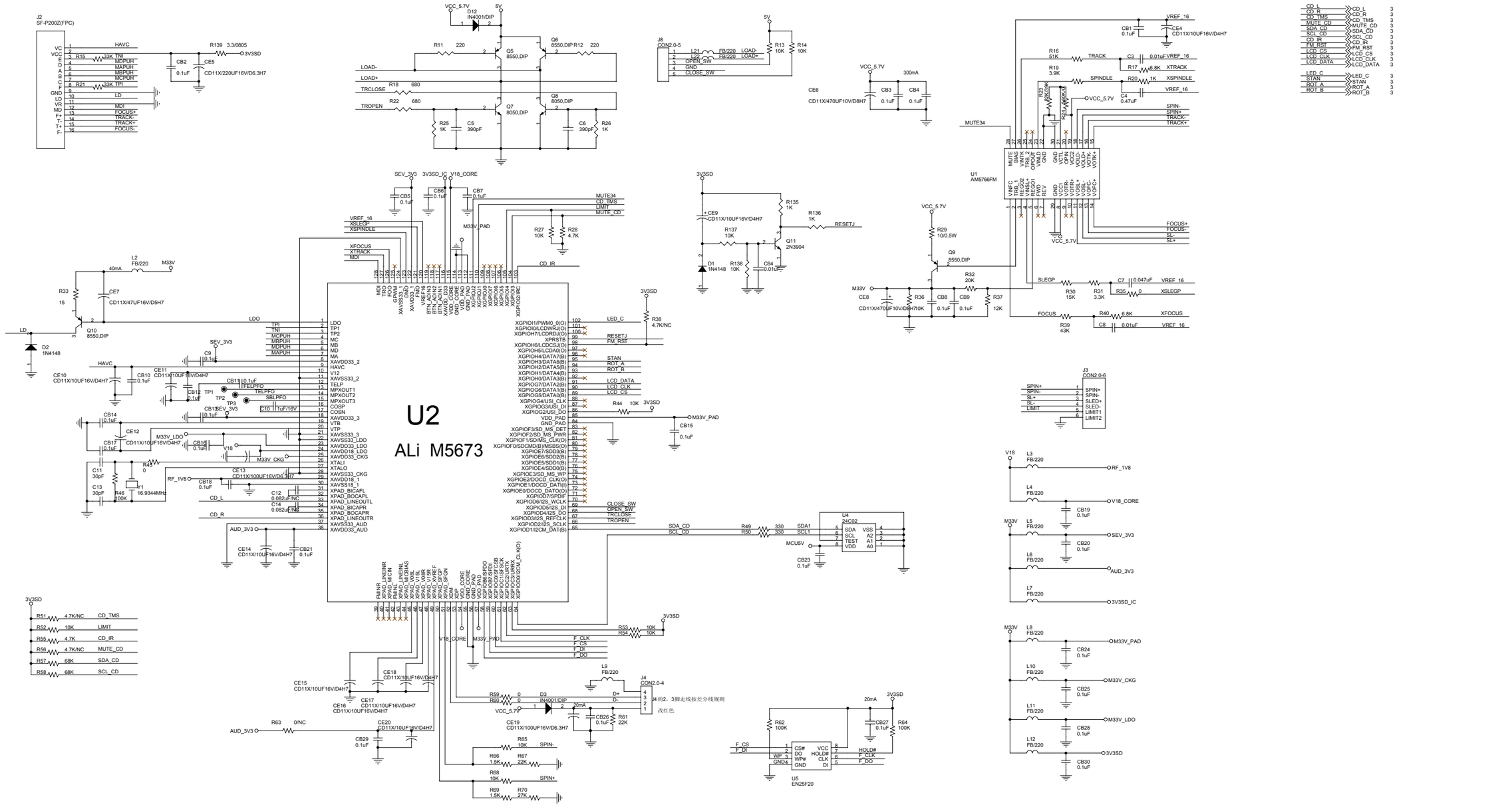
Decoder board -- Circuit Diagram -- Part1





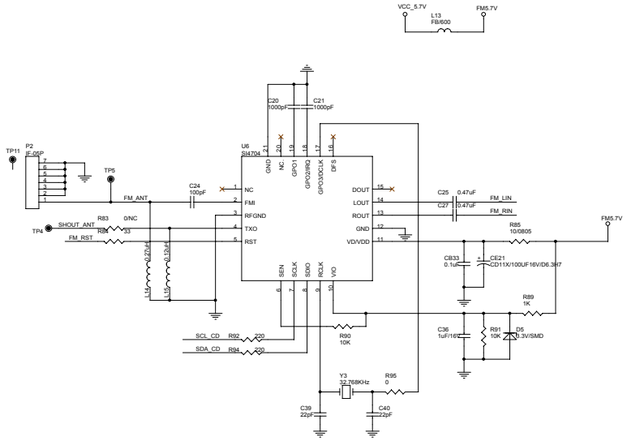
6-2

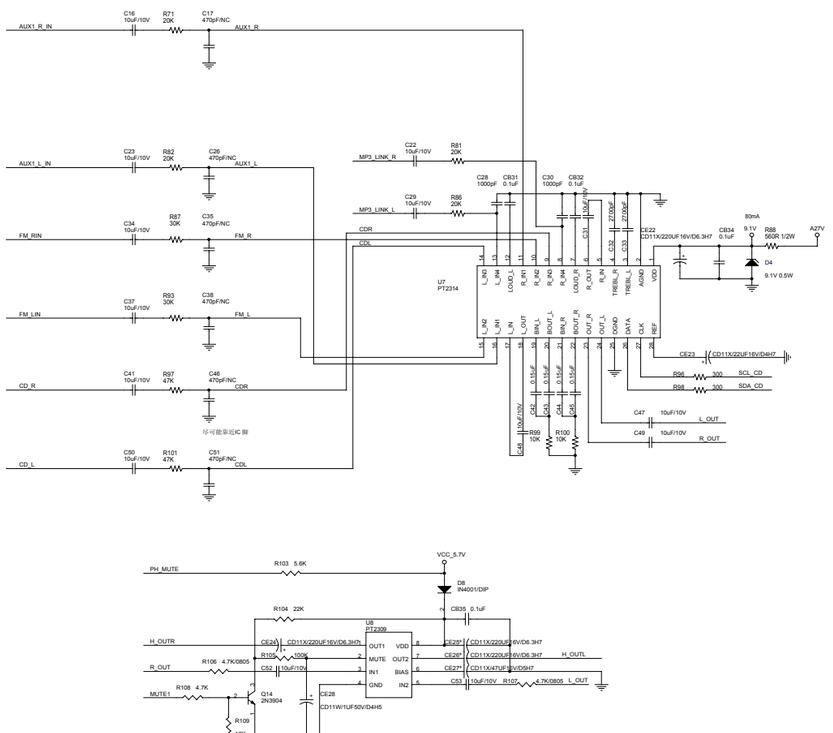
Decoder Board -- Circuit Diagram -- Part2

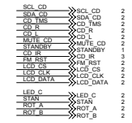


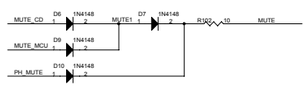
6-3

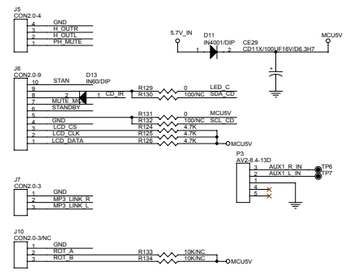
Decoder Board -- Circuit Diagram -- Part3



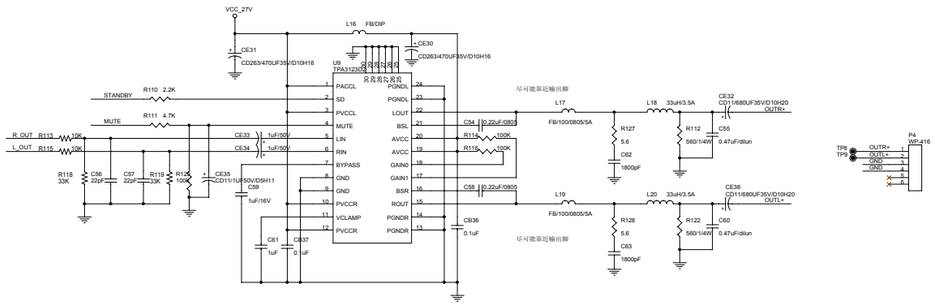






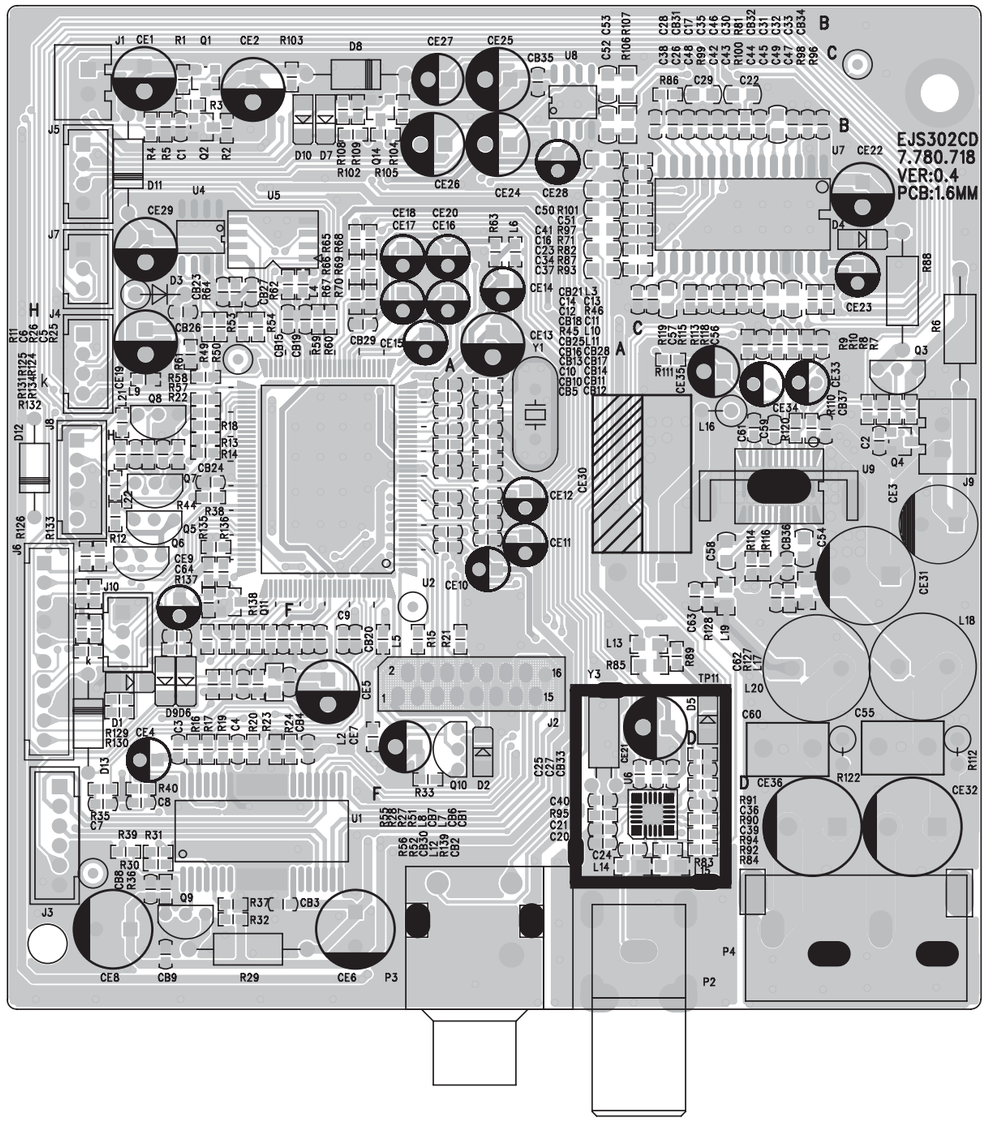


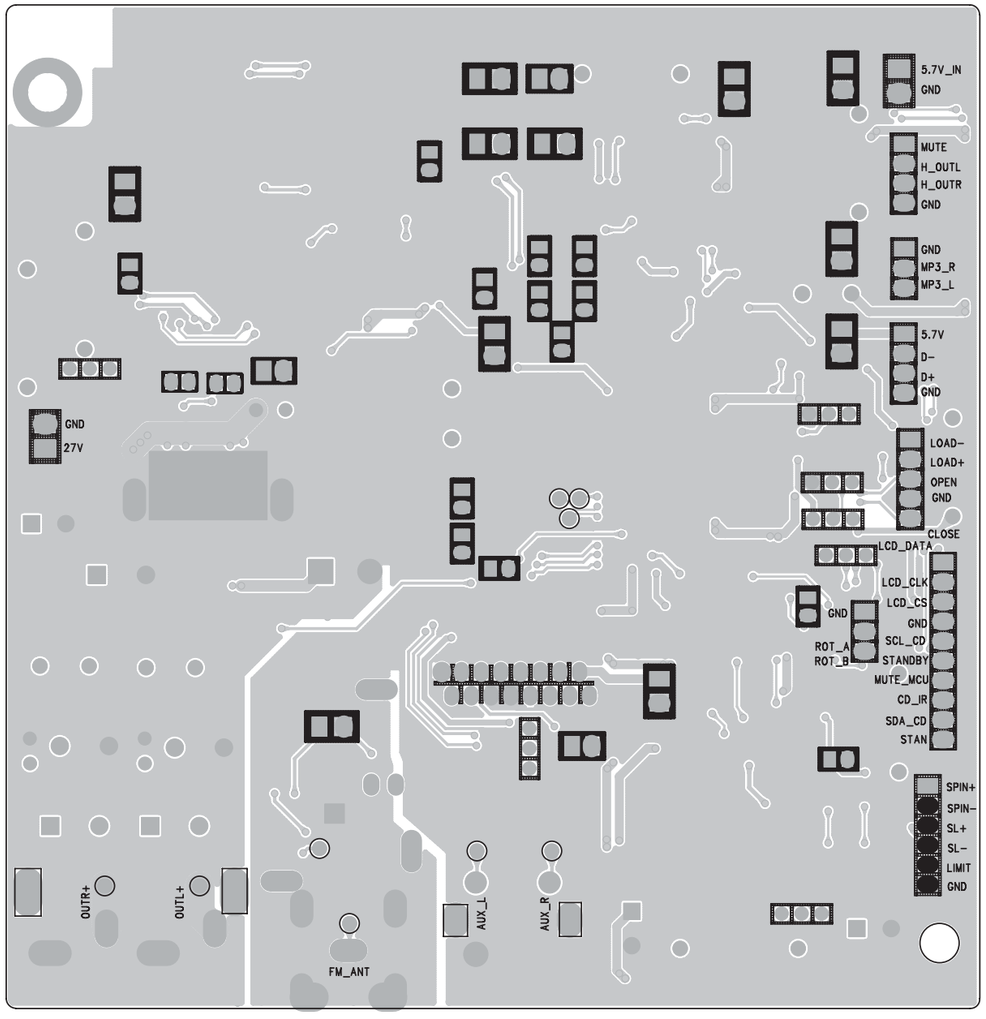
	MCM302	CD1503
R129	0	NC
R130	NC	100
R131	0	NC
R132	NC	100
R133	NC	10K
R134	NC	10K
J10	NC	CON2.0-3



6-4

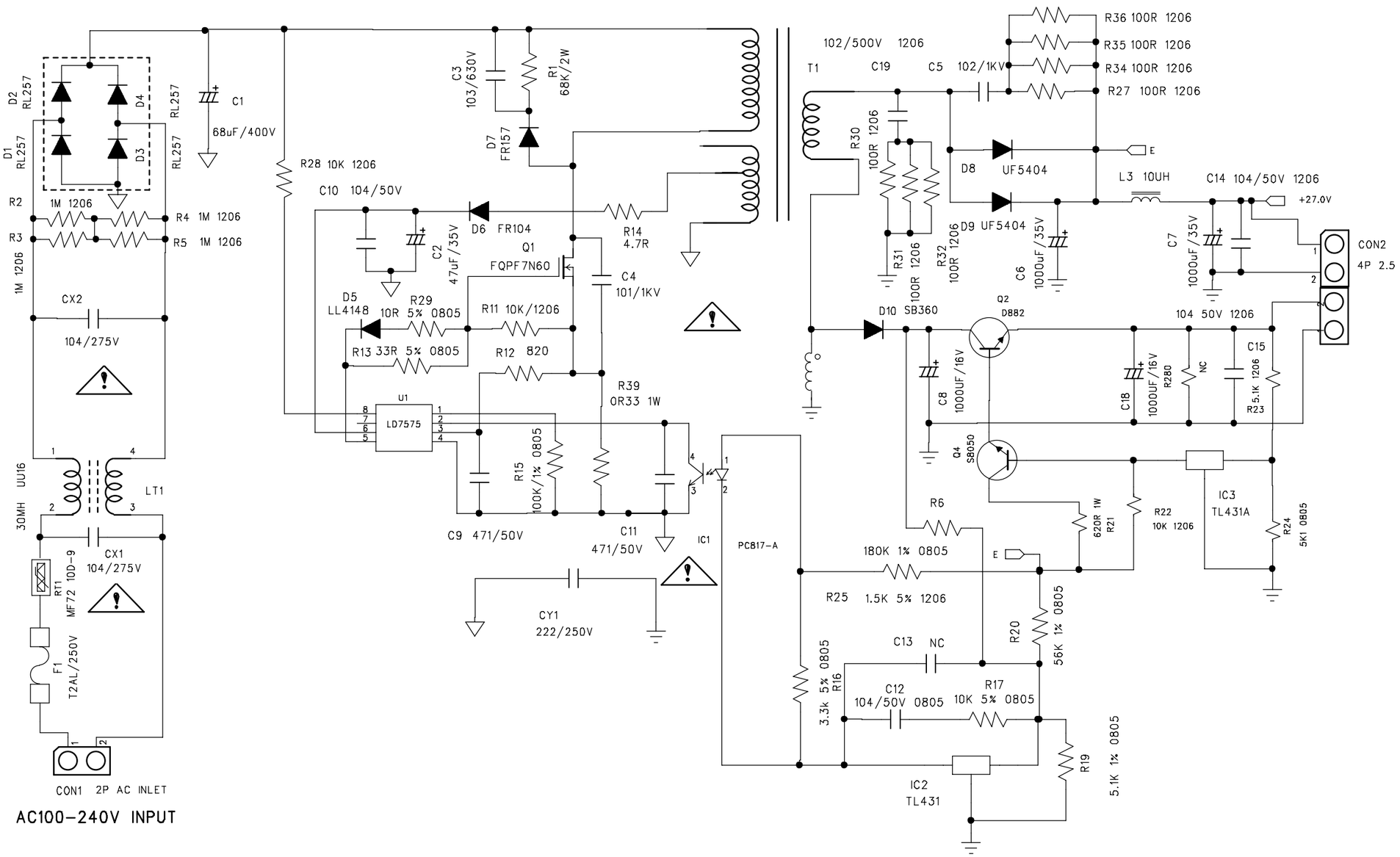
Decoder Board -- Layout Diagram





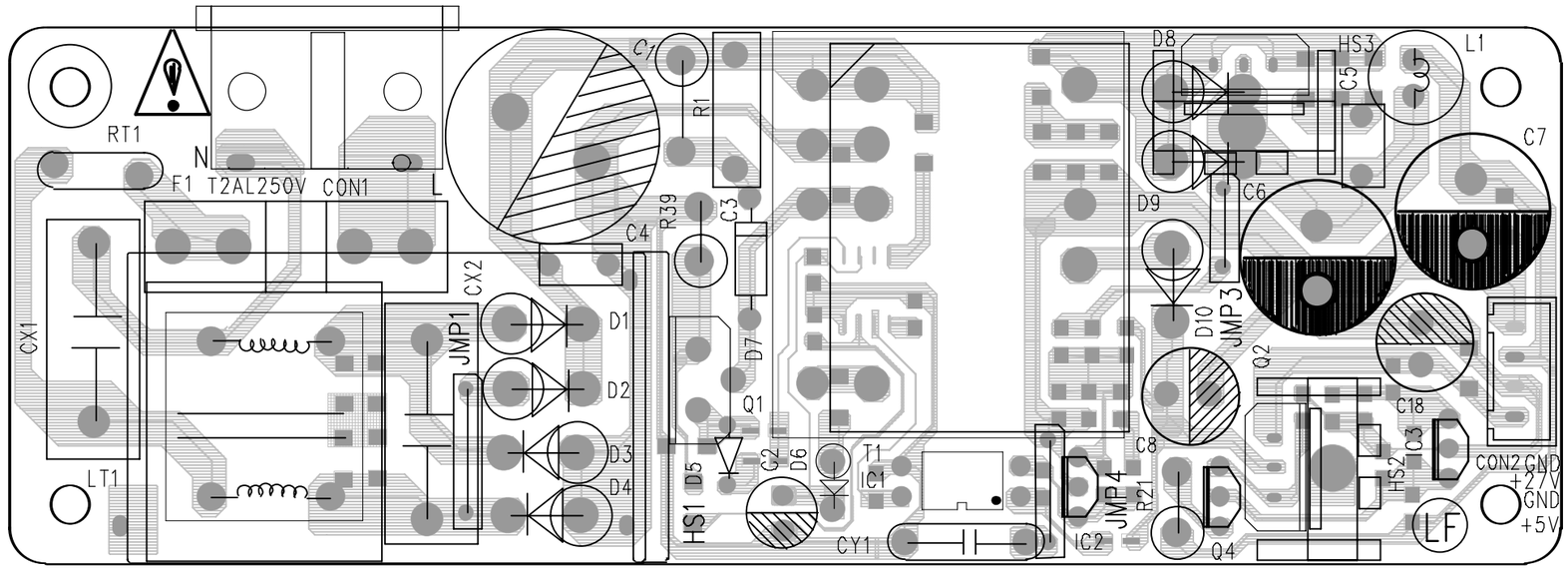
7-1

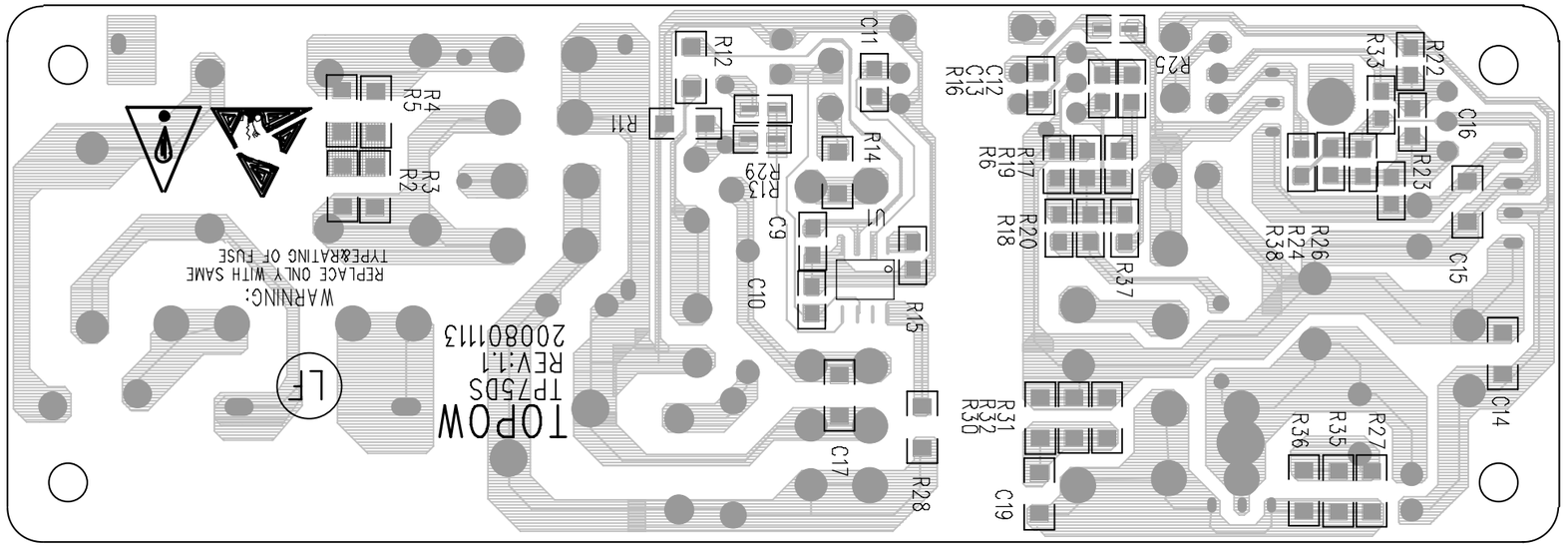
Power Board -- Circuit Diagram



7-2

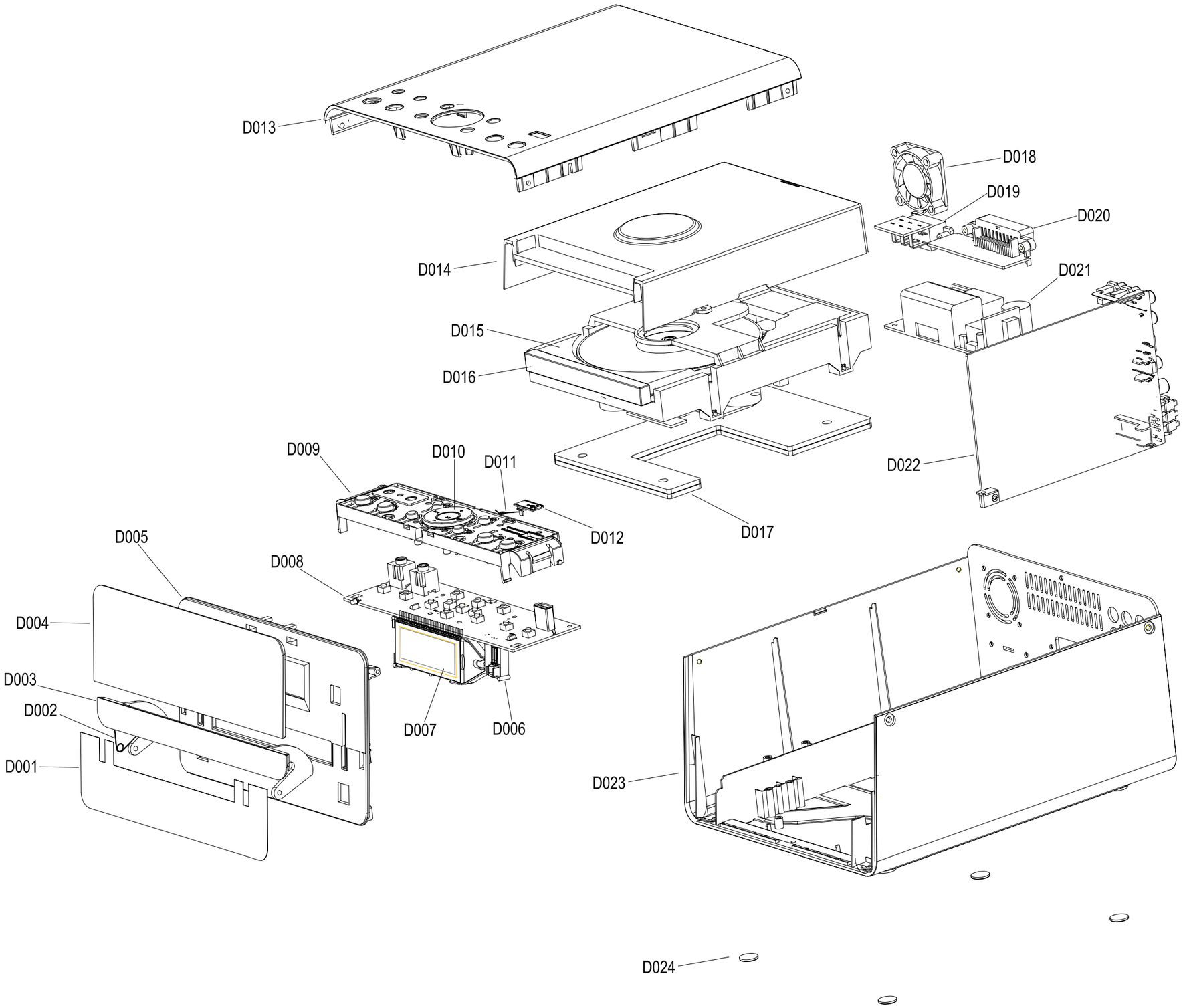
Power Board -- Layout Diagram





8-1

Exploded View



ACCESSORIES PARTS LIST

	996520035692	MCM302/12 ACCESSORY PARTS
	996500041018	FM ANTENNA WIRE 1.5m
	994000004988	AC LINE CORD 1.8M(/12)
	996510028347	AC LINE CORD 1.8M/ROUND PLUG VDE(/05)
	996510019410	POWER CORD 1.8m UC/INMETRO(/55)
	996500038637	POWER PLUG ADAPTOR(/55)
	996510021101	PRC500-54 REMOTE CONTROL(/12)
	996510022839	PRC500-54 REMOTE CONTROL(/55)
	996510021098	MCM302/12 MAIN SPEAKER BOX(/12)
	996510022841	MCM302/55 MAIN SPEAKER BOX(/55)

MECHNICAL&MISCELLANEOUS PARTS

CASING1	996510024636	FLAT FLEXIBLE CABLE 16PX230
D001	996510024658	MCD302 FUNCTION AL. SHEET
D002	996510021113	MCD302 DVD DOOR SPRING
D003	996510021111	MCD302 DVD DOOR(M302)
D004	996510021137	MCD302 DISPLAY LENS(LCD)
D005	996510021105	MCD302 FRONT CABINET
D009	996510021094	MCM302/12 CD CENTER BUTTON
D013	996510024718	MCD302 TOP COVER/ABS718
D014	996510021102	MCD302 DUSTPROOF COVER
D016	996510021108	MCD302 DVD DOOR BACKET
D023	996510021099	MCD302 BOTTOM CABINET
D024	996520033990	RUBBER PAD
D015	996510021096	DA11VF/WXD-8210D CD MECHANISM
D021	996510021106	POWER BOARD TP75ES-12(TP75ES)
D022	996510021095	DECODER EJS302CDBA-12(EJS302CD(/12)
	996510022849	CD/MP3 DECODER EJS302CDB-55(/55)

ELECTRICAL PARTS - DISPLAY BOARD

D006	996510021134	MCD302 LCD BRACKET/ABS
D006A	996510021116	MCD302 LIGHT-GUIDE(PMMA)
IC1000	996510014857	IC AMC1117-0333J(SMD)
J1001	996510021114	HEADPHONE JACK/D.3.5/CKX-28A
J1003	996510021103	USB JACK A-TYPE 4P/VERTICAL
LED1000	996510021107	LED D3X4 1L034XW31B0CT201
LED1001	994000004947	LED DIODE D3 3B4SCB01 (BLUE)
S1000	996510021115	IR SENSOR 1MA81P14D1TD0001/36k
SW1000	994000004963	LIGHT TOUCH SW. TC103 H5
U1000	996510021135	LCD DISPLAY LCD-MCM302
U1001	996510021138	LCD DRIVER MODUL ZX935P-302
X1001	996510021097	CRYSTAL OSCILLATOR 32.768KHZ

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

Factory Parts List

D008	MCM302/12 DISPLAY BOARD(LCD)
R1008	CARBON FILM RESISTOR 1.2K 1/8W J-52
R1020	CARBON FILM RESISTOR 10 1/8W J-52
R1004	CARBON FILM RESISTOR 10 1/8W J-52
R1001	CARBON FILM RESISTOR 10K 1/8W J-52
R1006	CARBON FILM RESISTOR 1.2K 1/8W J-52
R1007	CARBON FILM RESISTOR 2K 1/8W J-52
R1009	CARBON FILM RESISTOR 100 1/8W J-52
R1012	CARBON FILM RESISTOR 30K 1/8W J
R1015	CARBON FILM RESISTOR 1.2K 1/8W J-52
R1013	CARBON FILM RESISTOR 4.7K 1/8W J-52
R1002	CARBON FILM RESISTOR 4.7K 1/8W J-52
R1003	CARBON FILM RESISTOR 4.7K 1/8W J-52
R1016	CARBON FILM RESISTOR 47K 1/8W J-52
R1017	CARBON FILM RESISTOR 47K 1/8W J-52
R1018	CARBON FILM RESISTOR 47K 1/8W J-52
R1019	CARBON FILM RESISTOR 47K 1/8W J-52
R1014	CARBON FILM RESISTOR 680 1/8W J-52
C1016	CHIP CERAMIC CAP.100p 50V K-5 H<7
C1017	CHIP CERAMIC CAP.100p 50V K-5 H<7
C1018	CHIP CERAMIC CAP.100p 50V K-5 H<7
C1019	CHIP CERAMIC CAP.100p 50V K-5 H<7
C1003	CHIP CERAMIC CAP.104p 50V K-5
C1004	CHIP CERAMIC CAP.104p 50V K-5
C1005	CHIP CERAMIC CAP.104p 50V K-5
C1	CHIP CERAMIC CAP.104p 50V K-5
C1010	CHIP CERAMIC CAP.104p 50V K-5
C1013	CHIP CERAMIC CAP.104p 50V K-5
C1008	CHIP CERAMIC CAP.15p 50V ±1p-5
C1009	CHIP CERAMIC CAP.15p 50V ±1p-5
C1002	ELECTROLYTIC CAP. 47u 6.3V M-5 4X6
C1012	ELECTROLYTIC CAP.100u 10V L-5 5X7
C1011	ELECTROLYTIC CAP.220u 10V M 6.3X7
D1000	DIODE 4148-52
LED1001	LED Φ3 3B4SCB01 (HIGH-BLUE)
LED1000	LED Φ3X4 1L034XW31B0CT201(CRYSTAL)
Q1000	TRANSISTOR 8050D-5
Q1001	TRANSISTOR 8550C-5
Q1003	TRANSISTOR 8550C-5
IC1000	IC AMC1117-0333J(SMD)
U1001	LCD DRIVER MODUL ZX935P-302
S1000	IR SENSOR 1MA81P14D1TD0001 (36kHz)
X1001	CRYSTAL OSCILLATOR 32.768KHZ φ2X6
SW1000	TACT SWITCH TC103 6X6X5 170G
SW1001	TACT SWITCH TC103 6X6X5 170G
SW1002	TACT SWITCH TC103 6X6X5 170G
SW1003	TACT SWITCH TC103 6X6X5 170G
SW1004	TACT SWITCH TC103 6X6X5 170G
SW1005	TACT SWITCH TC103 6X6X5 170G
SW1006	TACT SWITCH TC103 6X6X5 170G
SW1007	TACT SWITCH TC103 6X6X5 170G
SW1008	TACT SWITCH TC103 6X6X5 170G
SW1009	TACT SWITCH TC103 6X6X5 170G
SW1010	TACT SWITCH TC103 6X6X5 170G
SW1011	TACT SWITCH TC103 6X6X5 170G
SW1012	TACT SWITCH TC103 6X6X5 170G
J1003	USB JACK A-TYPE 4P/VERTICAL