CD playback Compact design Micro Hi-Fi System MC127

-/05/12

Service
Service
Service

Service Manual

CONTENTS

CLASS 1
LASER PRODUCT

Published by SW 1125 Service Audio Subject to modification

3141 785 36420

Version 1.0

PHILIPS

General description: MC127- PORTABLE CD SOUNDMACHINE TUNER 1

LIFETIME : 5 YEARS (ACC. TO UAN-D1611) 2

PERFORMANCE CLASSES :

	TUNER	SUPPLY, AMPLIFIER	SPEAKER BOXES	RECORDER	CLOCK	CD	DCC	TELEPHONE	REC. PLAYER	
I	X	X		X						3
II						X				4
III										5

SAFETY REQUIREMENTS: 6

IEC 60065:2001(SEVENTH EDITION)+AI:2005------SAFETY

RADIATION, IMMUNITY REQUIREMENTS: (EMC) 7

EN55013:2001+A1:2003+A2:2006;EN55020:2007 EN61000-3-2:2006+A2:2009;EN61000-3-3:2008 EN61000-4-5:2006; EN61000-4-11:2004

CLIMATIC REQUIREMENTS: (acc. to UAN-D1590)

All climates: -10 °C till +50 °C (Functional); Set has to be pre-conditioned for 2 hour, except CD function 8

For all measurements: 25 °C 9

POWER SUPPLY:

MAINS (AC) operation		**DC (int. or ext.) operation / Backup Buffer**	
Voltage selection:		Battery type:	10
Selection:	See table below		11
Frequency:		External DC: No	12
POWER CONSUMPTION: Standby: Less than ＜1W		Standby:	13
Maximum: 12W		Maximum:	14

General:

Q and R according to production division rules : Q ≤ 1% (Major), Q ≤ 4% (Minor)

Measured according to: R ≤ 3% (CE52)

DERIVED VERSIONS: **APPROBATION** 15

Version	Voltage on typeplate	Tolerance	Frequency	Tuner	
93	240V, 50Hz	10% (216V – 264V);	50Hz	FM,	UK

REMARKS: 16

TUNER PART

TECHNICAL description:

	(circuitry) FM		(active components) FM		
RF			SI4704	SI4704	1
IF			SI4704	SI4704	2
Detector		QD			3
Decoder				SI4704	4

GENERAL part:

WAVE RANGE		TOLERANCES	TUNING	
				5
FM	87.5MHz - 0.3 MHz		1MHz	6
	108MHz + 0.5 MHz		1MHz	7
				8
				9
				10

AERIAL:

	FM telescope - 540 mm	12
FM wire : N/A	Execution - Rotational 180°	13

INDICATORS:

Pointer stroke:	Execution pointer:	14
Knob indication over:	Field Strength:	15

ELECTRICAL DATA:

AM:	nom.	limit	FM:	nom.	limit	
						16
			-3dB limiting point	20	26 dBf	17
			Amplification reserve	0	-4 dB	18
			AFC holding range	-		19
			Distortion (RF 1mV, Δf 67.5kHz)	1	7 %	20
			Stereo -46dB quieting	48	52	21
						22
			Cross-talk (RF 1mV, Δf 40kHz, 1kHz)	25	20 dB	23
			IF			24

wave range		Sensitivity for 50mW			noise limited sensitivity (26dB)			Image rejection	IF rejection	large signal			
FM	nom.					18		24	55	122dBf			25
	lim.					22		20	50	111dBf			26
													27
													28
													29
													30
													31
unit		µV/m	µV	dBf	dBµV/m	dBf	dB	dB	dB	mV/m			

REMARKS:

SUPPLY, AF-AMPLIFIER & LOUDSPEAKER (Boxes) PART:

TECHNICAL description:

			SET SPECIFICATION	
2011-04-01	1	**CDSM WITH MC127**		
	2			
	3			

	Power supply	Tone Control	AF-Amplifier	Loudspeaker	
Active components			UTC8227		1
Passive components				2 X 8Ω, 2W	3
					4

GENERAL part:		
Aux in jack type	Ø 3.5mm	5
Loudspeaker filter, high pass	None	6
Loudspeaker filter, low pass	None	7
Power stage protection	Temperature – YES; Short circuit – YES	8
Public address	No	9
INDICATORS:		
Output power or VU-meter	No	11
Frequency response	No	12
Low power (battery)	No	13
		14

ELECTRICAL DATA: TONE/EQUALIZER/DBB			
DSC	Balance control	No	15
	Mechanical noise (ISO 1996)		16
	Noise overall (ISO)		17
	Channel difference at -46dB	Type: < 3 dB	18
	Hum (vol.max.-20dB to vol.min.)	Limit: 2mV	19
	Residual noise(volume min)	Limit: 2mV	20
DBB on (Vol.max.-20dB): 100Hz, +6dB (±2dB) w.r.t. 1kHz at DBB on		DBB has no dynamic, fixed to 6dB	21
DBB off (Vol.max.-20dB): 100Hz, -2dB (±2dB) w.r.t. 1kHz at DBB on			22

Input sens.:Nom.	500	mV					23
for 50mW Limit:	600	mV					24
Line outp.: Nom.		mV					25
voltage Limit:		mV					26

OUTPUT POWER:			
Mains operation: D=10%	2 X 1W 8Ω	Limit: -1dB	27
			28
Music power (MPO) / (PMPO):	(acc. to DIN45324)		29
Short term maximum output power:	-	(acc. to IEC 60268-15)	30
Long term maximum output power:	-	(acc. to IEC 60268-15)	31
Headphone output voltage/power:	n.a.		32
Bandwidth FTC – 1dB at:	n.a.	(acc. to FTC/16/1/D/432)	33
Bandwidth DIN – 3dB at:	-	(acc. to IEC 60268-15)	34
Frequency response at Vol. max – 20dB:	typ. 60Hz to 20kHz (±3dB)		35
LOUDSPEAKER (output):			
Low pass crossover frequency:	-- kHz tolerance:	Hz	36
High pass crossover frequency:	-- kHz tolerance:	Hz	37
Short term maximum output power:	-- W (acc. to IEC 60268-15)		38
Long term maximum output power:	-- W (acc. to IEC 60268-15)		39
Frequency response at:	-- – Hz	kHz	41
REMARKS: 27 : Measured in Tuner mode; 28: CD or Tape mode.			42

TAPE function: (ECO-MTF-PA-SD-MS (FE) Module)

General description:					
					1
					2
					3
					4
					5
					6
					7
					8
Mechanical specification:					
					9
					10
					11
					12
					13
					14
					15
					16
					17
					18
					19
					20
Indicators:					
Recording level	No				21
Play back level	No				22
Tape counter	No				23
Electrical data:					
Bias system FM/AM					24
RIF switch	No				25
Erase system FM/AM					26
Erasing damping					27
Channel separation (IEC1)					28
Track separation (IEC1)					29
Frequency response (PB)					30
SNR 250nWb/m					31
Signal/hiss 250nWb/m					32
Signal/hum 250nWb/m					33
Channel difference (PB)					34
Distortion 250nWb/m					35
ALC attack time					36
ALC release time					37
Crosstalk		Between forward to reverse track			38
REMARKS: 31: * not according to PQR clause 18.5 class I 31: ** Chromium performance not fulfilled Amplification Reserve for Tape = 1dB ±2dB For details, please see specification SH-190 of ECO-MTF-PA-SD (3140 117 14890).					39

CD-PART: (CD MECHAISM-DA11B3VF)(SANYO)

Technical description:					
	Input	Output	Motor/control	Logic control	1

Active components			MMSA9258(Mitsumi)	SC9640	2
Passive components					3
	Signal processing		HF-preamplifier	Servoprocessor	4
Active components	SC9614		SC9614	SC9640	5
Passive components					6

Indicators/Display/Keys:

Display: Digits LCD for Track No. display	7
Keys: one 4-position slider switch, 6 tact switches on unit, 6 for CD-: Play, Stop, Previous/Search down, Next/Search up, Program/Program review, CD-modes (Repeat/Shuffle)	8

Playability: (acc. To AR 30-05-239)

	Limit	Typical	Testdisc	
Wedge	500 µm	700 µm	TNO 7,9 of SBC 444A (7104 099 24990)	9
Eccentric	150 µm	200 µm	TNO 1,24 of 200µm disc (7104 099 24960)	10
Fingerprint	No audible defect		TNO 11of Subchassis 8A	11
Black dot	500 µm	600 µm	TNO 13 of SBC 444A (7104 099 24990)	12
Skew 0.6mm	No audible defect		TNO 1,6 of 0.6mm skew (7104 099 28260)	13
Bad HF track	No audible defect		TNO 8 of Subchassis 8A	14
Heavy fingerprint	No track jumps/plops		TNO 10 of Subchassis 8A	15
Playback position	Horizontal, Normal position (Set is located on a flat surface, floor)			16

- Playback of above mentioned tracks possible without track loss or audible defects. - Double black dot, max. diameter, thin/thick disk is according to PQR or AR 30-05-239) - This unit can playback (only) CD-R or CD-RW discs. For performance specification, please refer to module specification of CD99 (3103 308 52190)	17

Shock resistance: (acc. to AR 13-A6-CD-068)

± Z axis	5 G	18
± X or Y axis	5 G m	19

Acoustical noise:

Mode: Play/Pause	35 dBA max. (45 dbA in Search mode)	20
Mode: Jump (Next)	45 dBA max.	21

AUDIO part: (Measured with Audio Signals Disc-1, 7104 078 04911 on Speakers or Headphone socket with nom. load)

	Typ.	Limit	
Output level (TNO1)			22
SNR unwtd.	60 dB	48 dB	23
SNR wtd. dBA	65 dBA	57 dBA	24
Crosstalk (1kHz)	40 dB	26 dB	25
Crosstalk (10kHz)	30 dB	16 dB	26
Frequency response Vol.max.–20dB (DBB on)	+9dB +3dB	±2dB at 100Hz ±2dB at 10kHz	27
THD (1kHz, -6 dB)	0.2 %	2 %	28
THD (10 kHz, -20 dB)	< 1 %	< 3 %	29
Channel difference	2 dB	3 dB	30
Frequency accuracy	-	+/-0.5 %	31
De-emphasis	15µs / 50µs Switchable via Subcode information		32

REMARKS:
- Amplification reserve for CD = +2dB (±2dB); Ref. Level for CD is a 0dB track instead of a –6dB track. 33

Feature Specification of MP3 CD

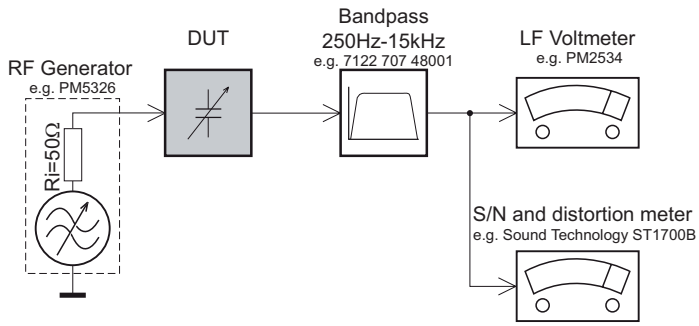
CODEC / COMPRESSION Format Compatibility			

MP3	X				35
MPEG 2.5	X				36
MP3 Pro	X				37
WMA	X				38
AAC	X				39
Playback CAPACITY					
Maximum number of tracks per CD	X				40
Maximum number of albums per CD	X				41
DISC TYPE					
CD-RW	√				42
CD-R	√				43
8 cm	√				44
12 cm	√				45
DISC SIZE (MB)					
185	√				46
225	√				47
650	√				48
680	√				49
700	√				50
ISO-9660 + Joliet	X				51
Joliet	X				52
UDF (Direct CD from	X				53
ID3	X				54
Packet writing	X				55
Multi-session CDDA	X				56
Multi-session MP3	X				57
Closed session	√				58
Open session	√				59
Finalized disc	√				60
Unfinalized disc	√				61
CDDA + MP3/WMA	X				62
MP3/WMA + CDDA	X				63
MP3/WMA + CDDA + MP3/WMA	X				64
CDDA + MP3/WMA + CDDA	X				65
Video + CDDA	X				66
CDDA + Data	X				67
MP3/WMA + Data	X				68

BITRATE (kbps)					
64 -192	X				70
8 – 320	X				71
Variable	X				72
Sampling RATE (kHz)					
8	X				73
11.025	X				74
12	X				75
16	X				76
22.05	X				77
24	X				78
32	X				79
44.1	X				80
48	X				81
96	X				82
UPGRADE ABILITY					
MP3	X				83
MP3 Pro	X				84
WMA	X				85
AAC	X				86
SOUND					
Single Channel	√				87
Dual Channel	√				88
Stereo & joint Stereo	√				89
Intensity Stereo	√				90
MS Stereo	√				91
LANGUAGE SUPPORT					
English	X				92
Chinese	X				93
Playlist Compatibility					
WinAmp	X				94
Realjukebox	X				95
MS Mediaplayer	X				96
MusicMatch	X				97

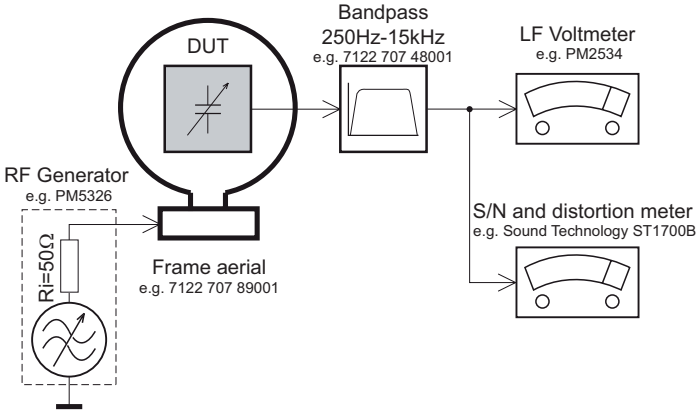
MEASUREMENT SETUP

Tuner FM



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

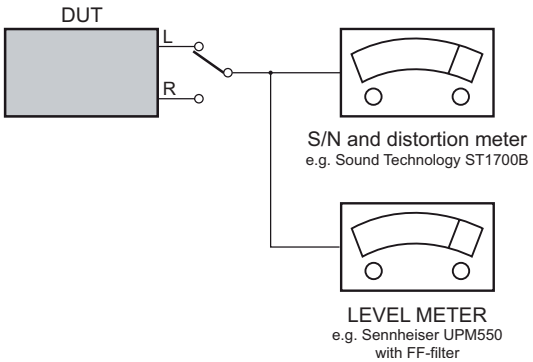
Tuner AM (MW,LW)



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).

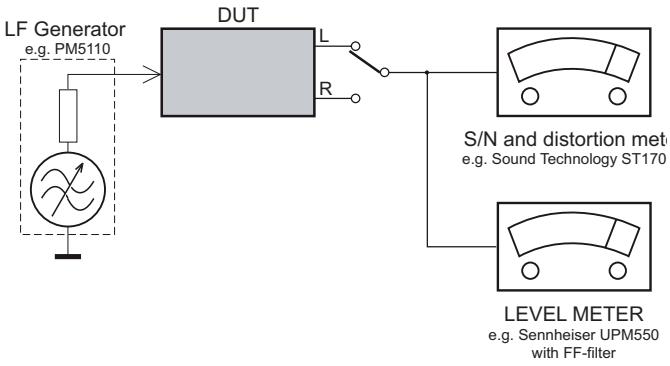
CD

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

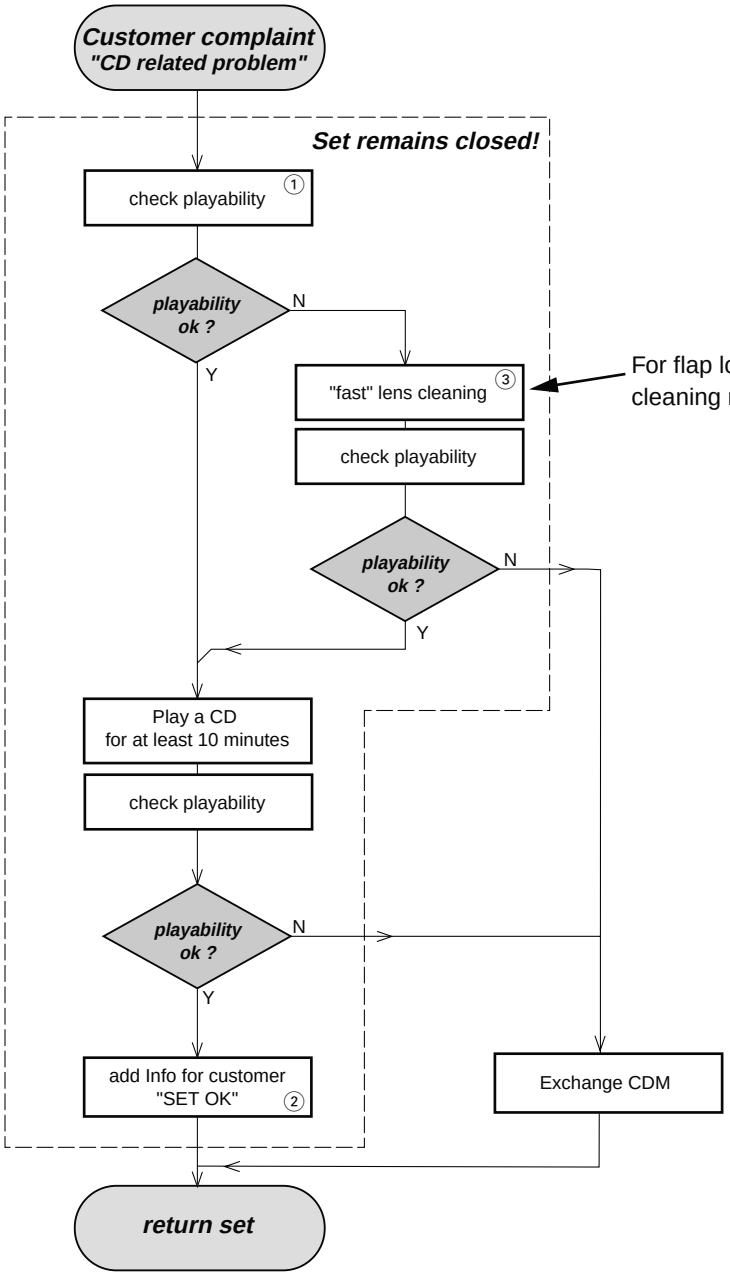


Recorder

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



INSTRUCTIONS ON CD PLAYABILITY



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)

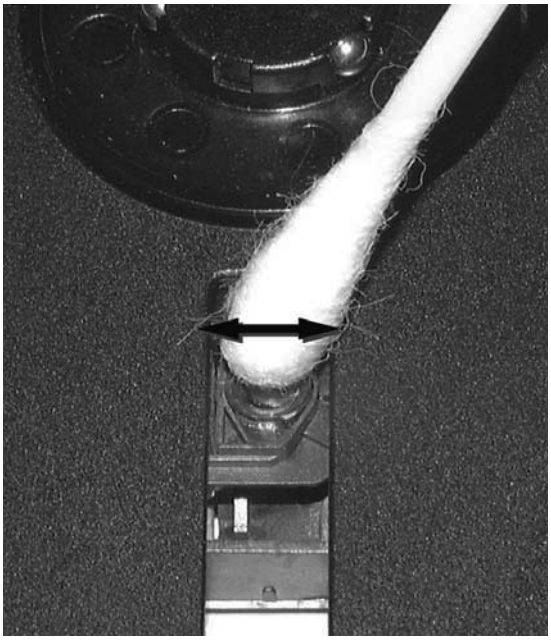
LIQUID LENS CLEANING

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.



2.0 SAFTETY INSTRUCTIONS

(GB) WARNING

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

ESD

(NL) WAARSCHUWING

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

(F) ATTENTION

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

(D) WARNUNG

Alle ICs und viele andere Halbleiter sind empfindlich gegenüber elektrostatischen Entladungen (ESD).
Unsorgfältige Behandlung im Reparaturfall 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.

(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".

(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.

Caution: These servicing instructions are for use by qualified service personnel only.
To reduce the risk of electric shock do not perform any servicing other than that contained in the operating instructions unless you are qualified to do so.

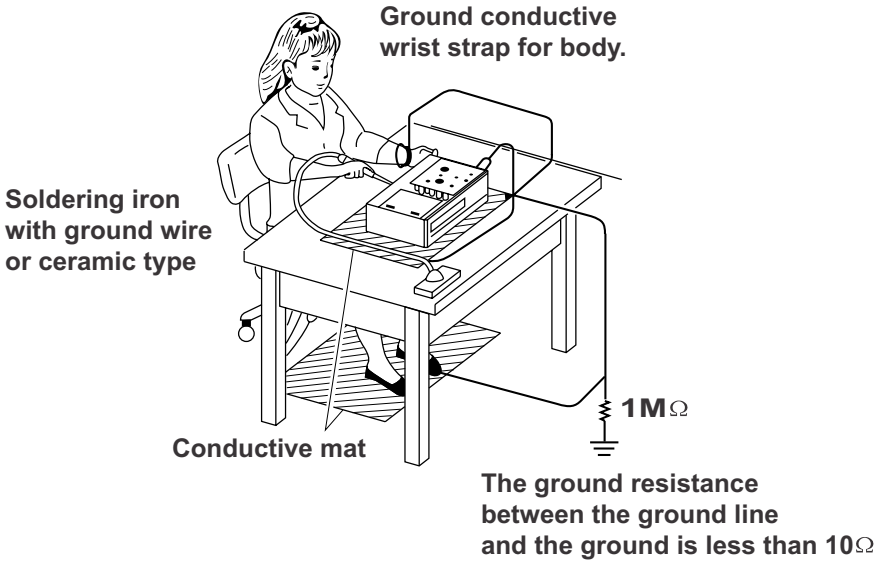
2.1 ESD PROTECTION

- レンズには絶対に触れないでください。
- DO NOT TOUCH THE LENS.
- LINSE NICHT BRÜHREN.
- NE PAS TOUCHER LA LENTILLE.

When the power supply is being turned on, you may not remove this laser cautions label. If it removes, radiation of laser may be received.

PREPARATION OF SERVICING

Pickup Head consists of a laser diode that is very susceptible to external static electrocity.
Although it operates properly after replacement, if it was subject to electrostatic discharge during replacement, its life might be shortened. When replacing, use a conductive mat, soldering iron with ground wire,etc. to protect the laser diode form damage by static electricity.
And also, the LSI and IC are same as above.



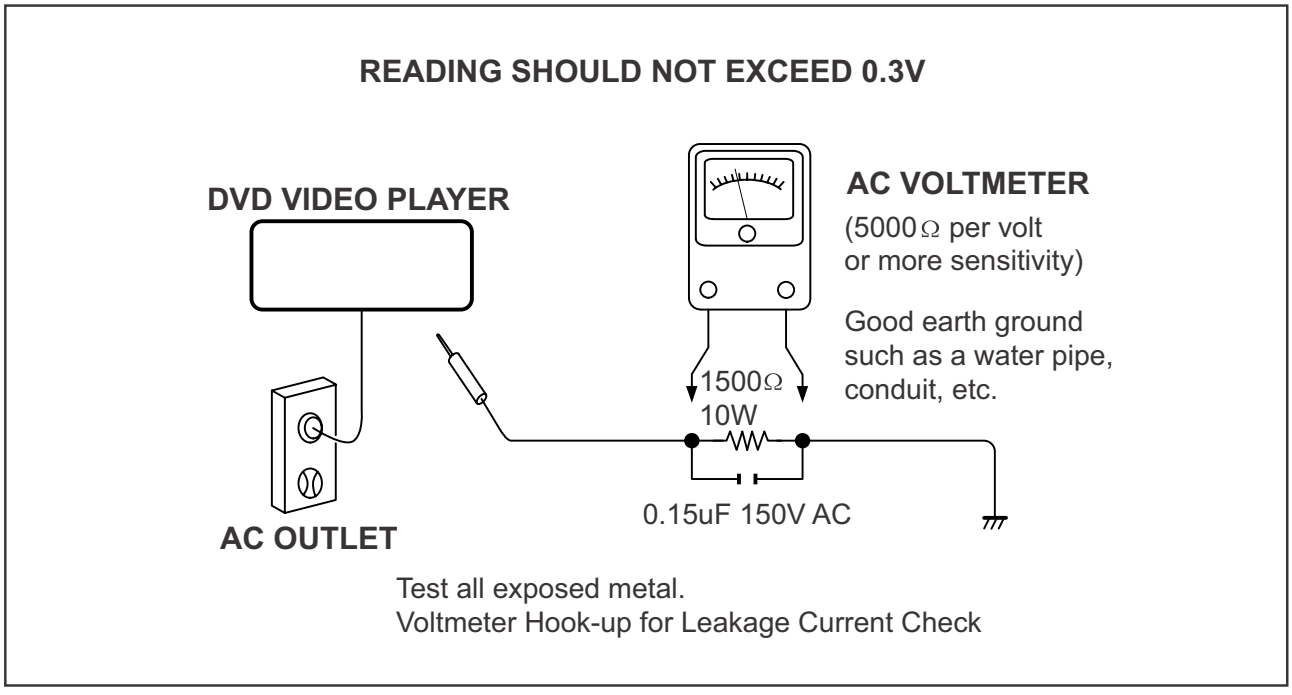
SAFTY NOTICE

SAFTY PRECAUTIONS

LEAKAGE CURRENT CHECK

Plug the AC line cord directly into a 120V AC outlet (do not use an isolation transformer for this check). Use an AC voltmeter, having 5000Ω per volt or more sensitivity. Connect a 1500Ω 10W resistor,paralleled by a 0.15uF 150V AC capacitor between a knomn good earth ground (water pipe, conduit, etc.) and all exposed metal parts of cabinet (antennas, handle bracket, metal cabinet screwheads, metal overlays, control shafts, etc.).

Measure the AC voltage across the 1500Ω resistor. The test must be conducted with the AC switch on and then repeated with the AC switch off. The AC voltage indicated by the meter may not exceed 0.3V.A reading exceeding 0.3V indicates that a dangerous potential exists, the fault must be located and corrected. Repeat the above test with the DVD VIDEO PLAYER power plug reversed.
NEVER RETURN A DVD VIDEO PLAYER TO THE CUSTOMER WITHOUT TAKING NECESSARY CORRECTIVE ACTION.



Test all exposed metal.
Voltmeter Hook-up for Leakage Current Check

The lightning flash with arrowhead symbol, within an equilateral triangle, is intended to alert the user to the presence of uninsulated "dangerous voltage" within the product's enclosure that may be of sufficient magnitude to constitute a risk of electric shock to persons.

The exclamation point within an equilateral triangle is intended to alert the user to the presence of important operating and maintenance (servicing) instructions in the literature accompanying the appliance.

2.2 SAFETY INSTRUCTIONS

Battery Handling Guideline

Since the battery is packed in soft package, to ensure its better performance, it's very important to carefully handle the battery

2.2.1 Soft Aluminium foil

The soft aluminum packing foil is very easily damaged by sharp edge parts such as Ni-tabs, pins and needles.

- Don't strike battery with any sharp edge parts
- Trim your nail or wear glove before taking battery
- Clean worktable to make sure no any sharp particle

2.2.2 Sealed edge

Sealing edge is very flimsy

- Don't bend or fold sealing edge

2.2.3 Folding edge

The folding edge is form in battery process and passed all hermetic test.

- Don't open or deform folding edge

2.2.4 Tabs

The battery tabs are not so stubborn especially for aluminum tab.

- Don't bend tab

2.2.5 Mechanical shock

- Don't Fall, hit, bend battery body

2.2.6 Short

Short terminals of battery is strictly prohibited, it may damage battery.

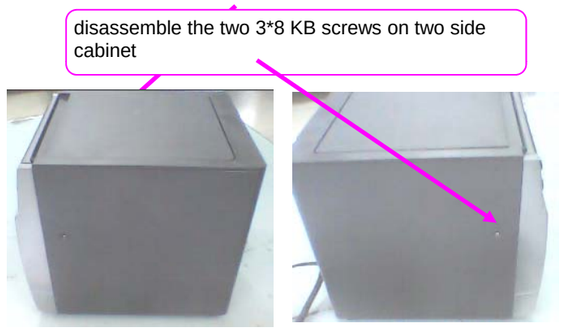
Caution: Danger of explosion if battery is incorrectly replaced.
Replace only with the same or equivalent type.

Disassemble diagrams:

Notes: don't touch the power board when the machine is power on, pls unplug the power cord then disassemble the machine to avoid shock!!

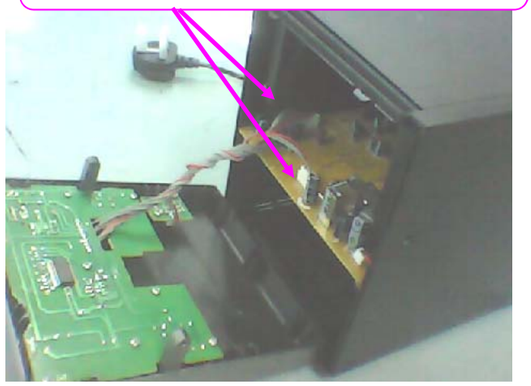
1、Disassemble the front cabinet

1-A

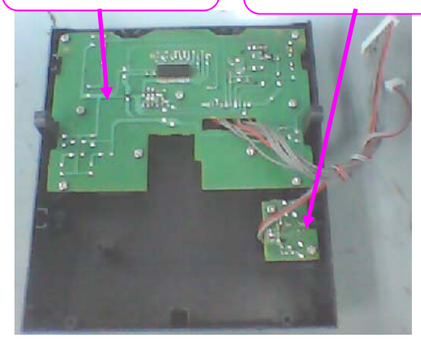


1-B

1-C



1-D



2、Disassemble the top cabinet and Main BD

2-A

disassemble the two 3*8 PB screws on s-video port

disassemble the three 3*8 PB screws on bottom cabinet

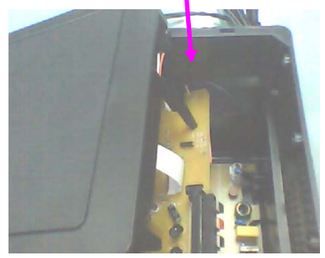
2-B

unplug the 2pin cable between Main BD and power BD

2-C

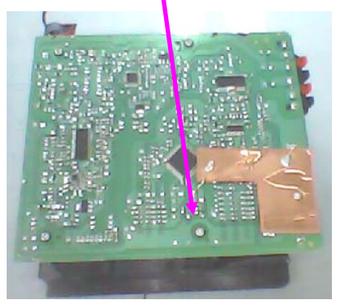
45° put up top cabinet and Main BD

unplug the FM-ANT line and apart it from bottom cabinet

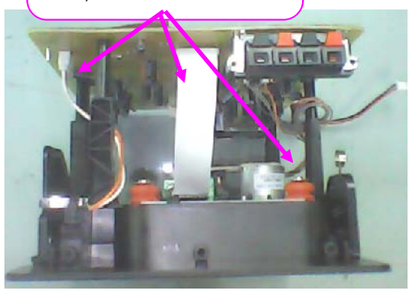


2-D disassemble Main BD

disassemble the five 2.6X8PB screws on Main BD

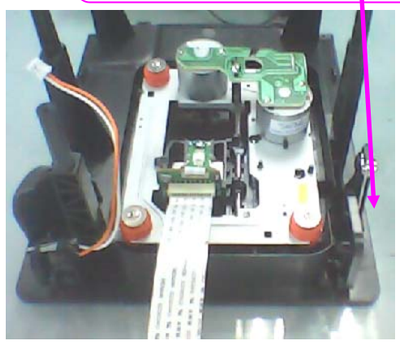


unplug the open-close cable,6pin cable to CD deck,FFC cable on CD deck ,take out the Main BD



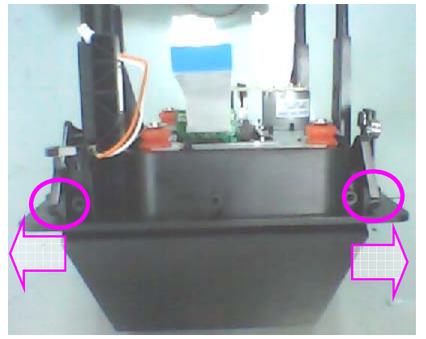
2-E disassemble CD deck

disassemble the four 2.6X8PWA screws on CD deck and take out it

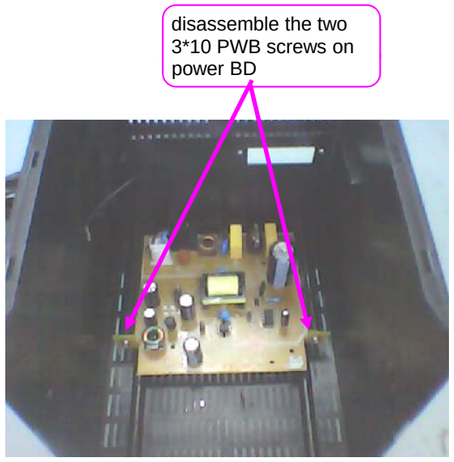


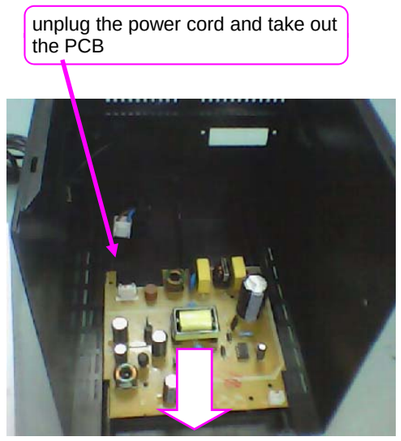
2-F disassemble CD door

take out the spring first ,then remove the fastener on two CD door sides and remove the CD door



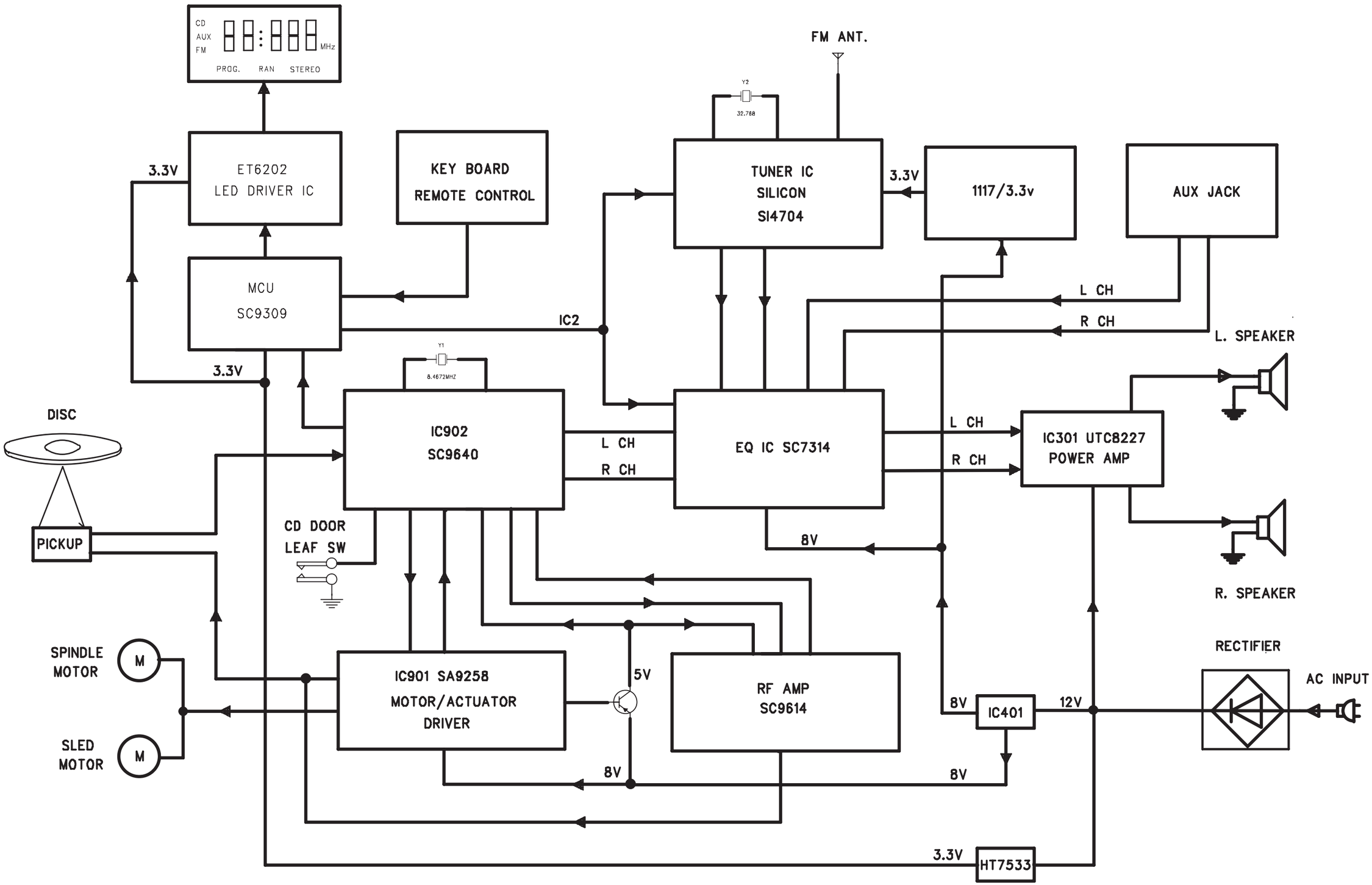
3、Disassemble the power BD





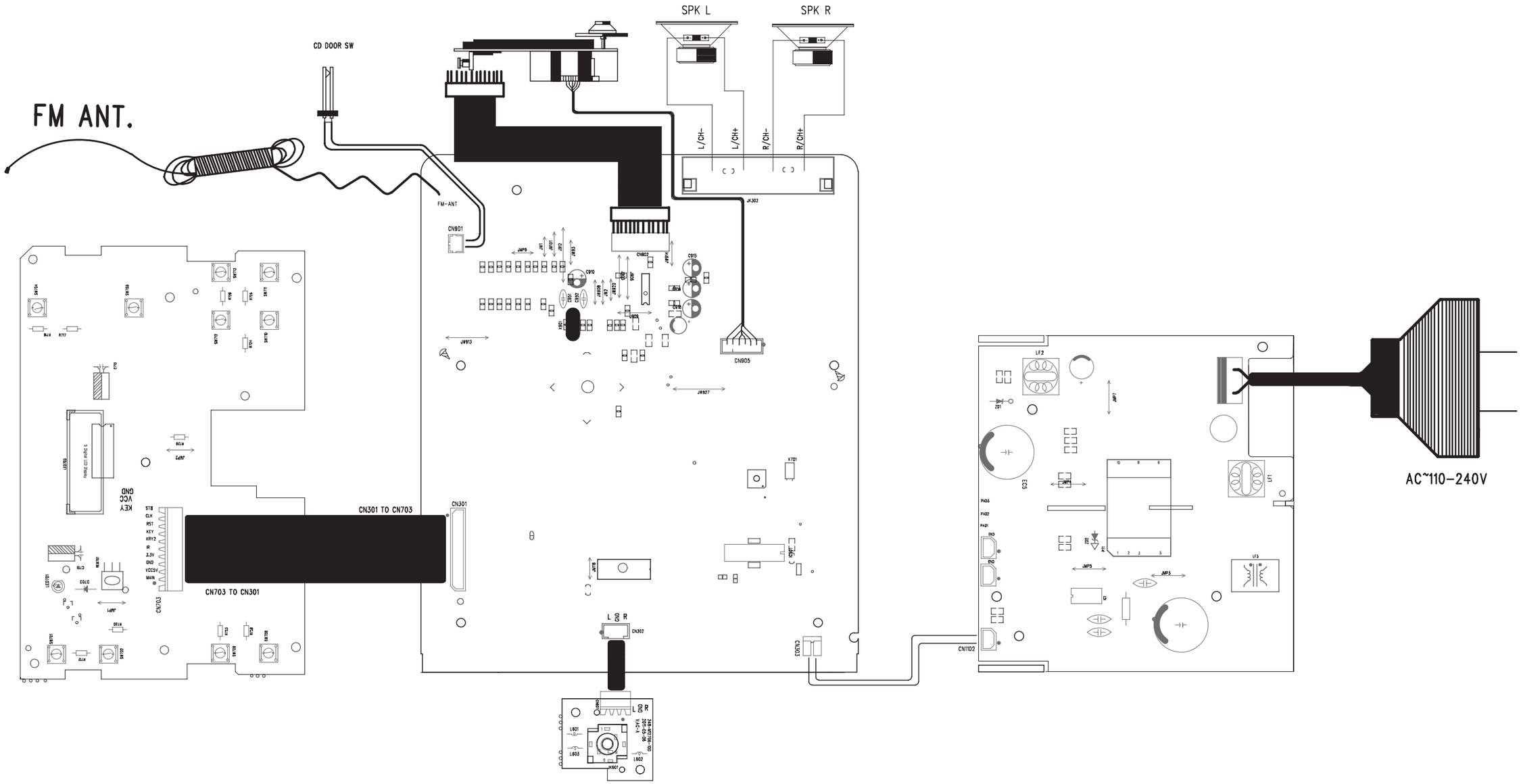
3 - 1

SET BLOCK DIAGRAM



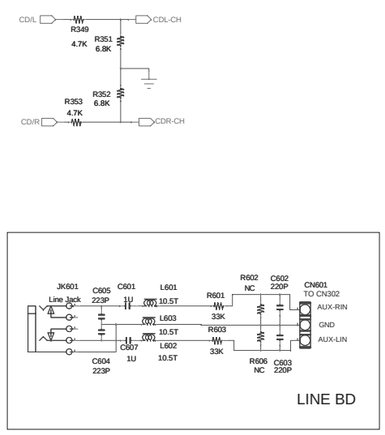
4- 1

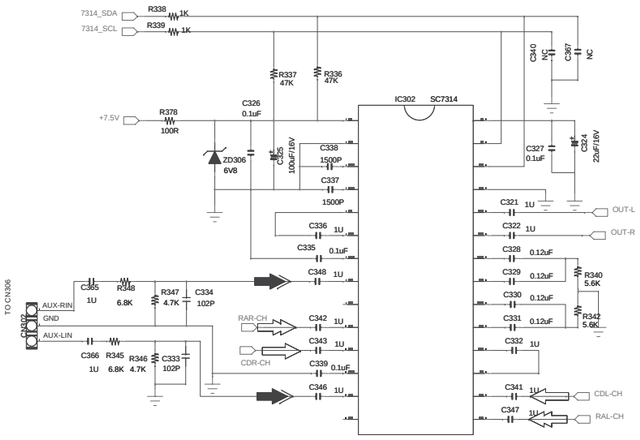
SET WIRING DIAGRAM

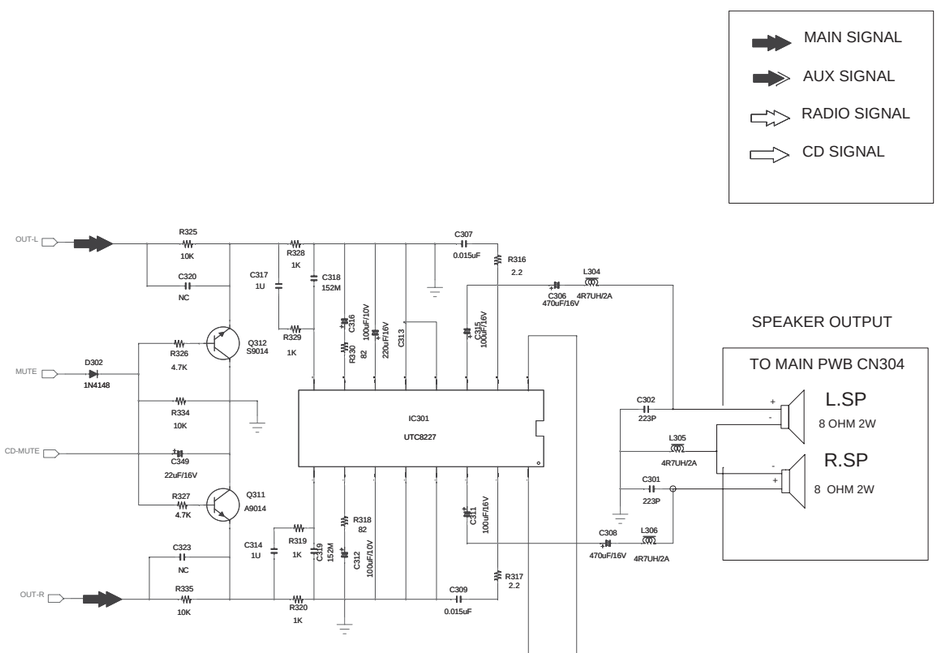


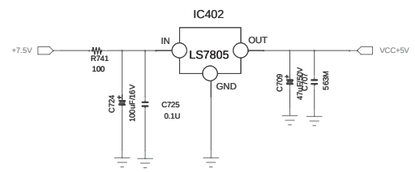
5 - 1

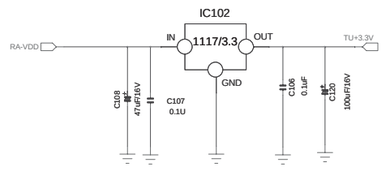
CIRCUIT DIAGRAM - DISPLAY+MAIN+TUNER+LINE IN board
PART 1

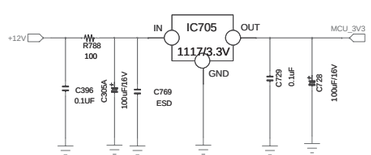


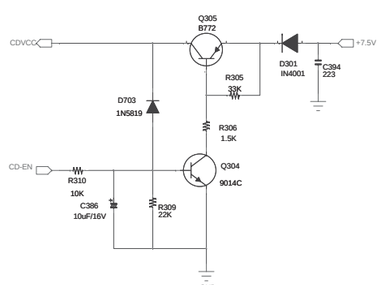


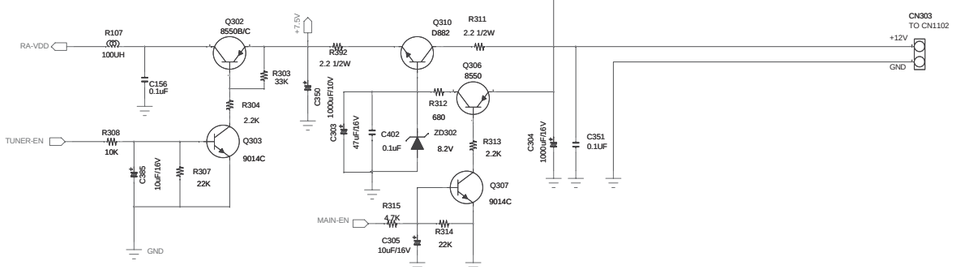






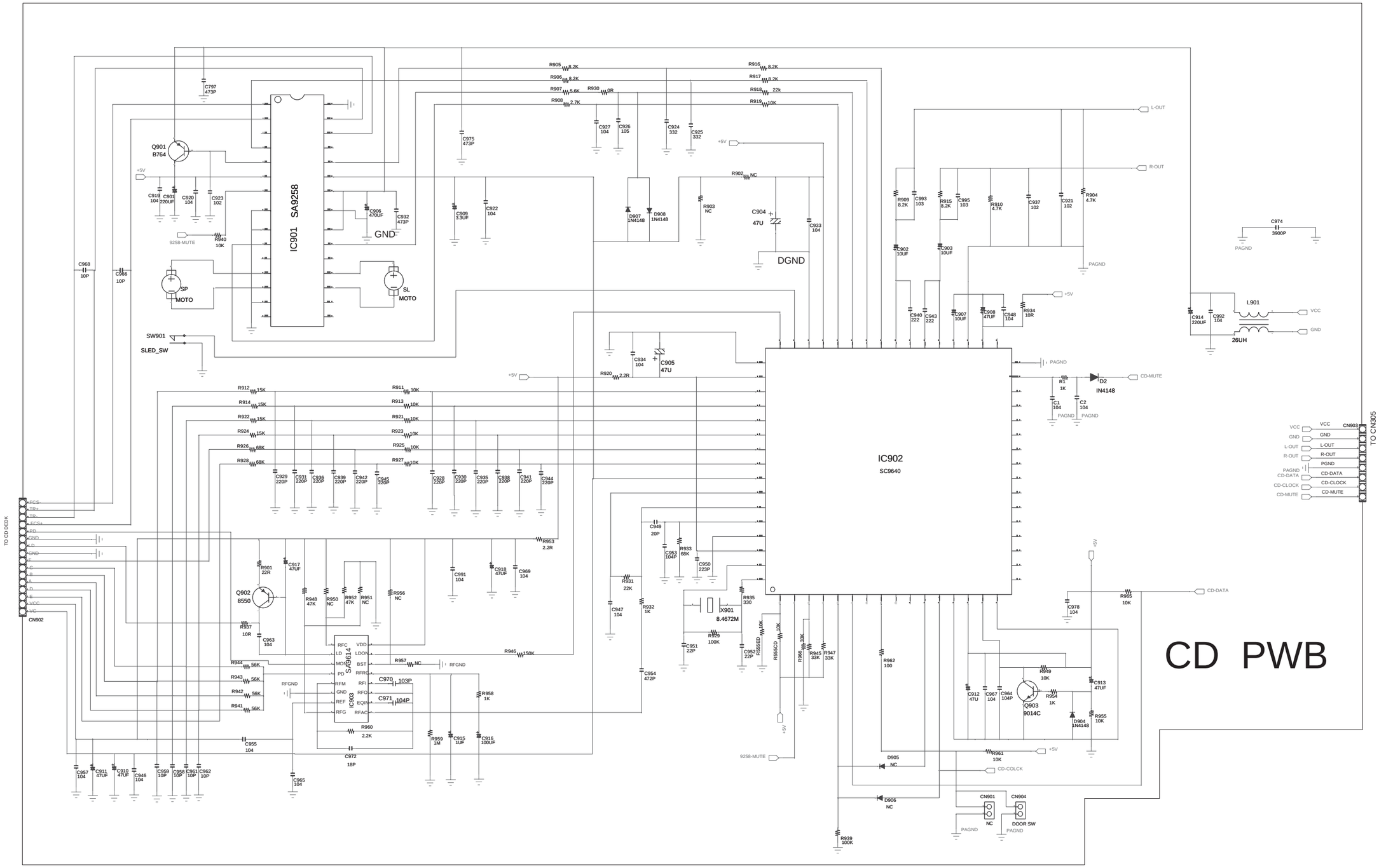




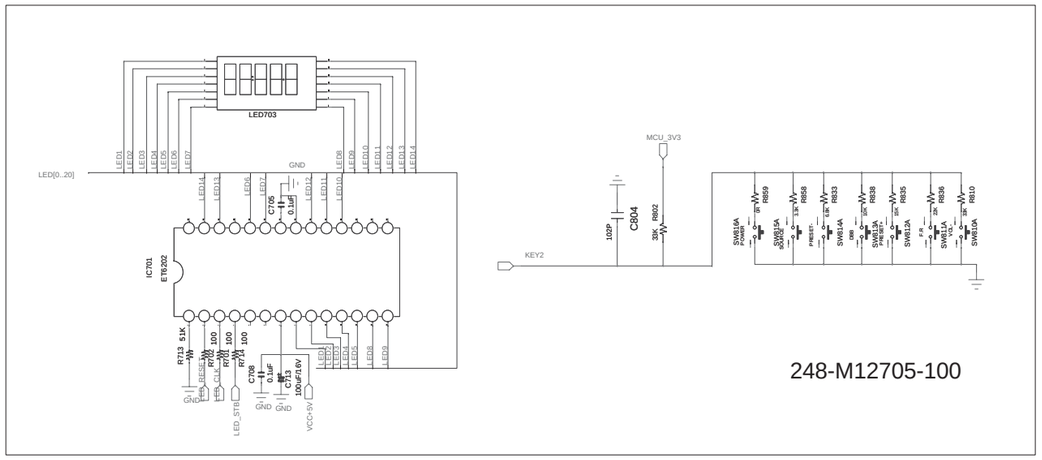


5 - 2

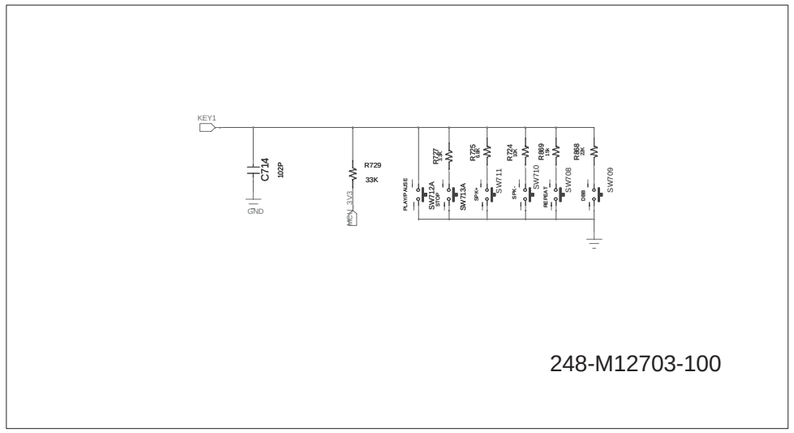
CIRCUIT DIAGRAM - DISPLAY+MAIN+TUNER+LINE IN board
PART 2

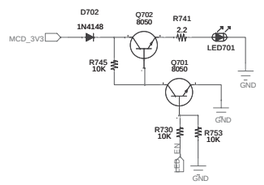


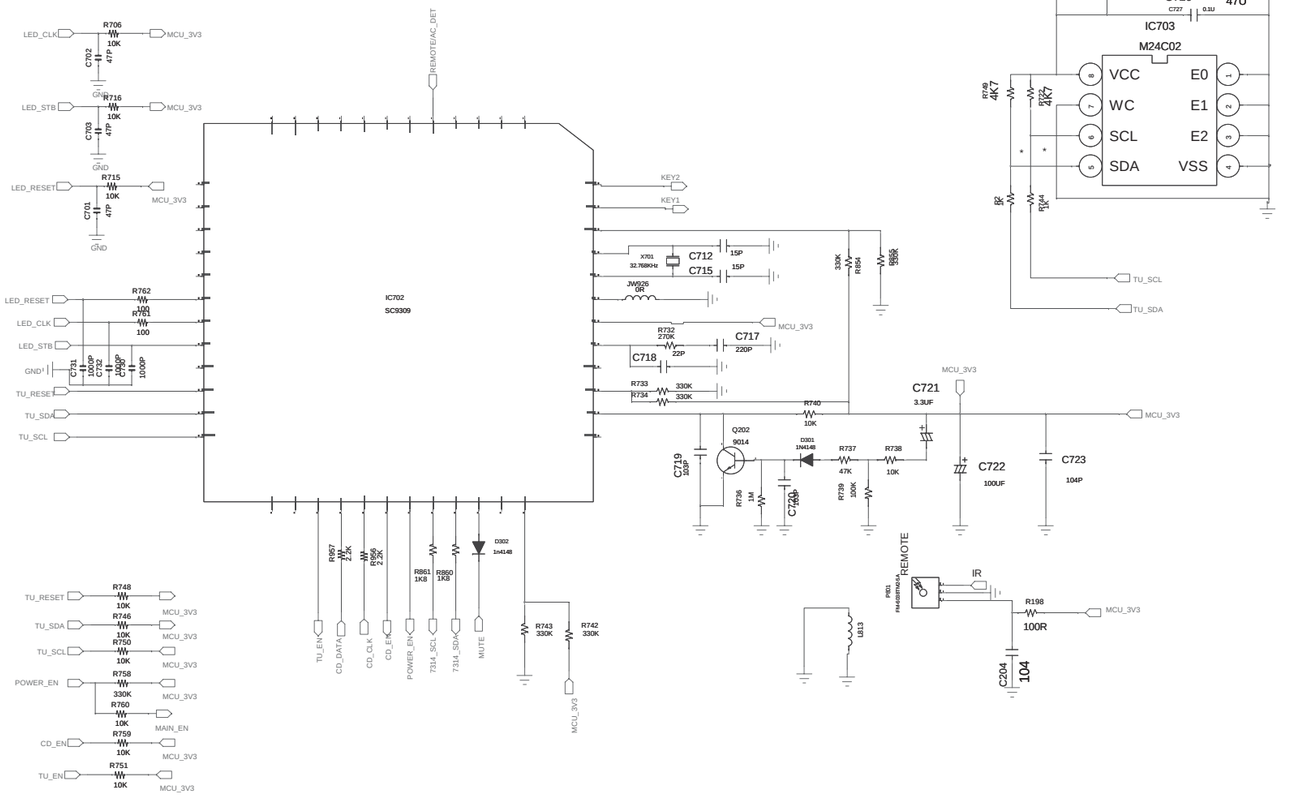
CIRCUIT DIAGRAM - DISPLAY+MAIN+TUNER+LINE IN board
PART 3

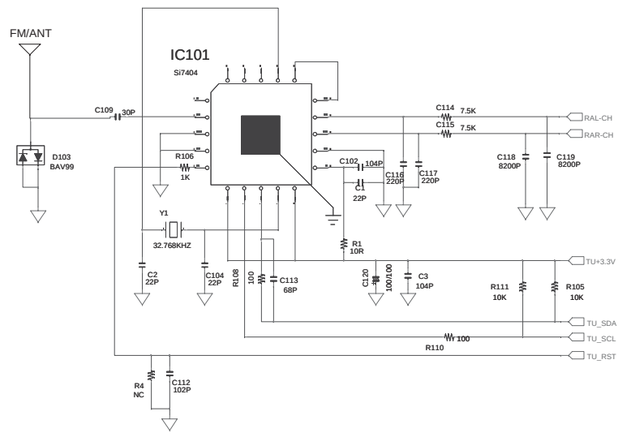


5 - 3



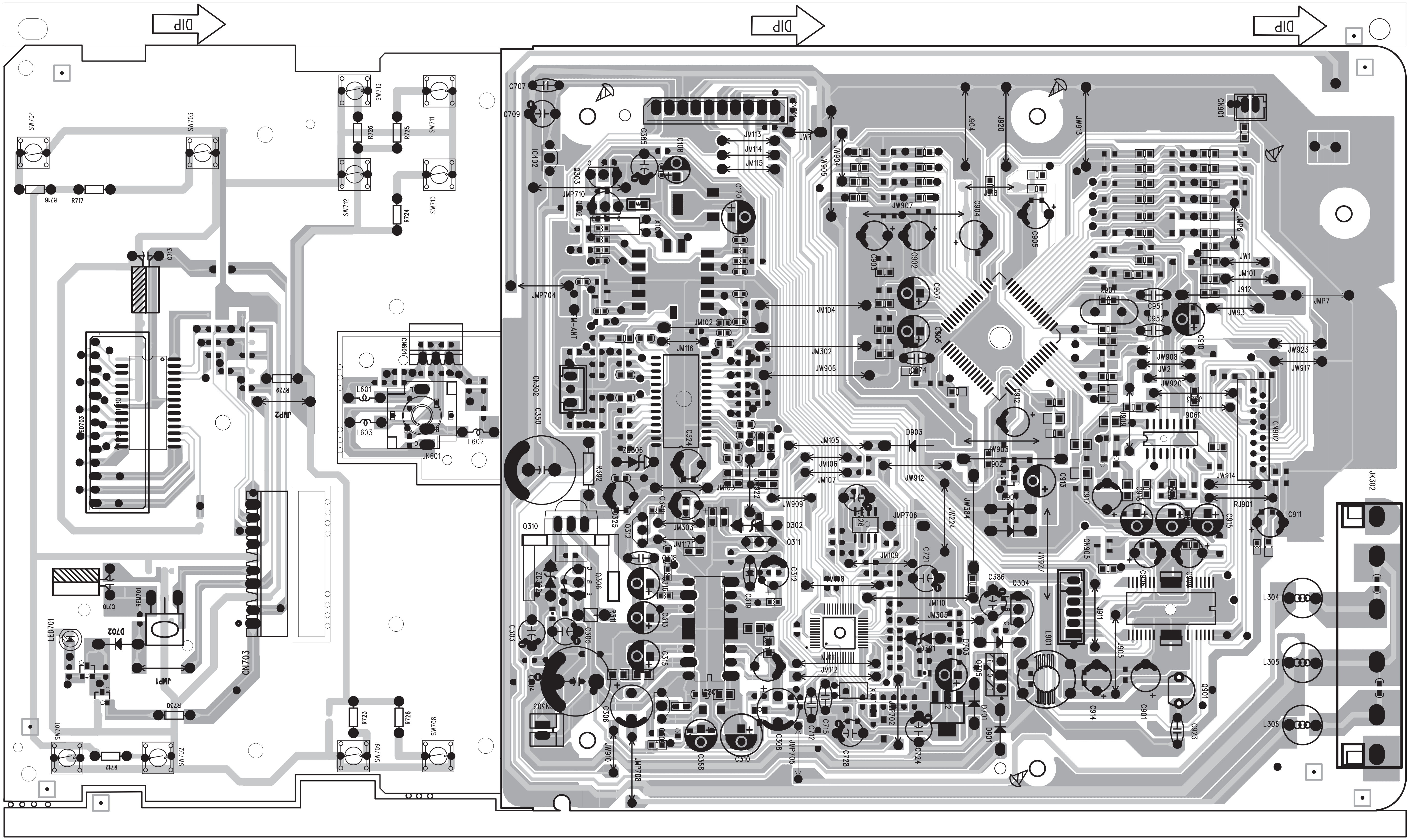






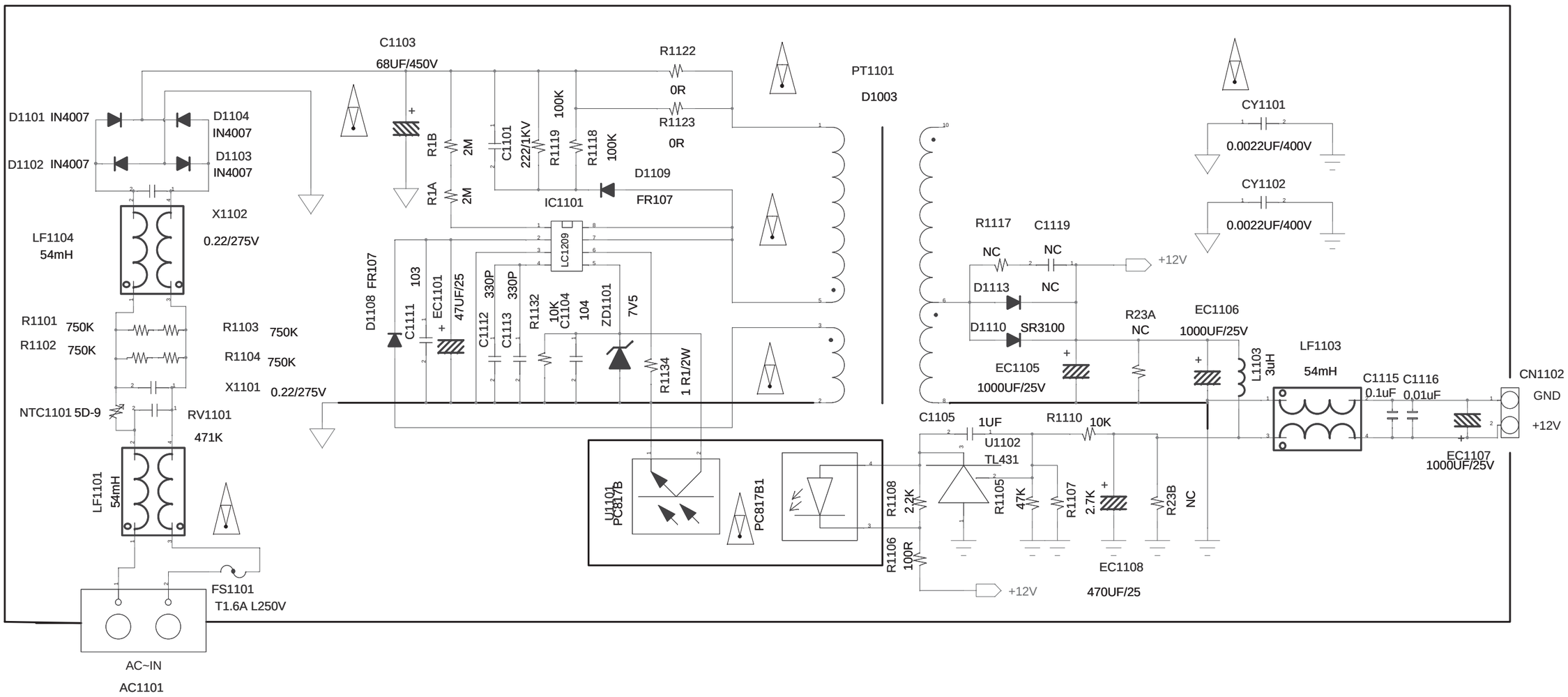
5 - 4

LAYOUT DIAGRAM - DISPLAY+MAIN+TUNER+LINE IN board



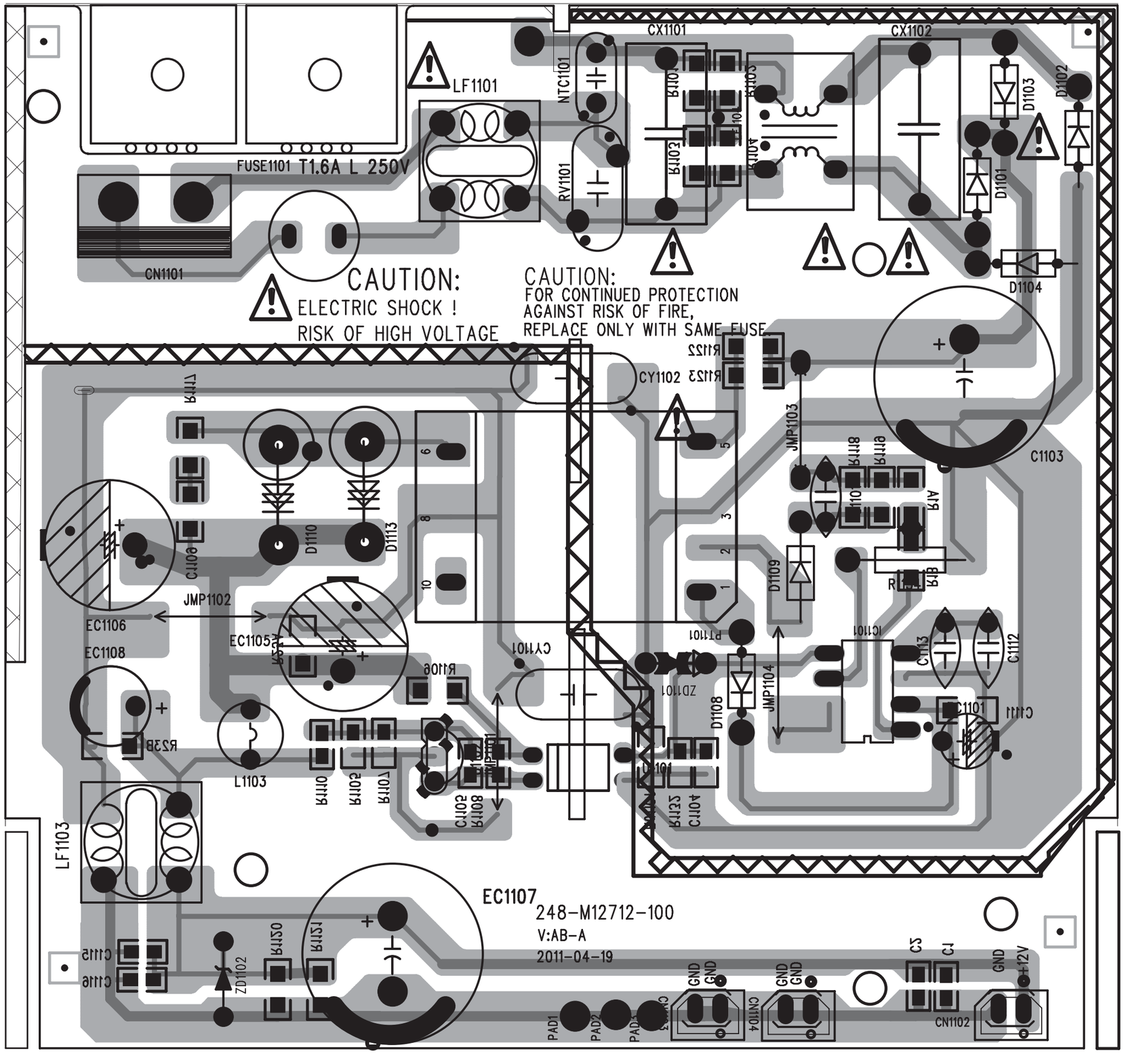
6 - 1

CIRCUIT DIAGRAM - POWER BOARD



6 - 2

LAYOUT DIAGRAM - POWER BOARD



7 - 1

EXPLODED VIEW DIAGRAM