CD Soundmachine

AZD208/05/12/79

Service
Service
Service

Service Manual

COMPACT disc DIGITAL AUDIO ReWritable

COMPACT disc DIGITAL AUDIO Recordable

CONTENTS

CLASS 1
LASER PRODUCT

Published by LZ 1120 Service Audio Subject to modification

3141 785 360360

Version 1.0

PHILIPS

TECHNICAL SPECIFICATION

General description: 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								3
II						x				4
III										5

SAFETY REQUIREMENTS: 6
EN 60065 (IEC 65) CE , UL approbation for version 37

RADIATION, IMMUNITY REQUIREMENTS: (EMC/FCC) 7
EN55013, EN55020 .FOR VERSION 05/12/79/98 FCC FOR /37 VERSION

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:	See table below	Battery type: R14, UM2, C-cell x 6; nom.: 9V minimum operating voltage : 6.3V for CD 5.2V for TU	10
Selection:	See table below	Lifetime: CD ≥ 10 hours, TU ≥ **20** hours, (400mW, R14 alkaline batteries)	11
Frequency:	See table below	External DC: No	12

POWER CONSUMPTION:

Standby: ≤5W typ. 1W (power off mode)	Standby: 0nW (power off mode)	13
Maximum: 14 W	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**

Version	AC Voltage/ Frequency on typeplate	Safety Tolerance	Tuner		
/05/79	240VAC/50HZ	+/-10%	FM, MW		
/12/	230VAC/50HZ	+/-10%	FM, MW		

15

REMARKS: 16
For operation and thermal stability test :
220/230/240Vac setting : 198Vac to 264Vac
120Vac setting : 99Vac to 140Vac
dual voltage ac setting (120Vac / 230Vac) : 99Vac to 140Vac and 196Vac to 264Vac

TECHNICAL SPECIFICATION

TUNER PART

TECHNICAL description:

	AM (circuitry)	FM	AM (active components)	FM	
RF			CD2111	CD2111	1
IF			CD2111	CD2111	2
Detector					3
Decoder					4

GENERAL part:

WAVE RANGE		TOLERANCES	TUNING STEP(mm/10khz)	
				5
				6
FM (05/12/79 version)	87.5----108MHZ	LOW : +0/- 0.3 MHZ HIGH : +0.8/ -0MHZ	0.025	7
MW (05/12/79version)	530 –1600KHZ	LOW: +0/-23KHZ HIGH: +60KHZ/-0	0.54	8
				9
				10

AERIAL:

MW Ferrite Bar : 60 mm / D10mm	FM telescope : 442 mm	11
FM wire : N/A	Execution - N/A	12

INDICATORS:

Pointer stroke:	Execution pointer:	13
Knob indication over:	Field Strength:	14

ELECTRICAL DATA:

AM:	Nom.	limit	FM:	nom.	limit	
			AM Suppression	30	25 dB	15
			-3dB limiting point	12	18 dB	16
Amplification reserve	2	+/- 3dB	Amplification reserve	2	+/-2 dB	17
AGC figure of merit	31	25 dB	AFC holding range (average)	300	+/- 150	18
Distortion (RF 74 to 94 dBuV/m, m=80%)	5	7%	Distortion (RF 32 to 72 dBuV, mono Δf 100kHz, Stereo : 90% + 9%)	5	7 %	19
			Stereo -46dB quieting	40	44 dBuV	20
			Cross-talk (RF 1mV, Δf 40kHz, 400Hz /1kHz / 5kHz)	21/25/18	18/20/15 dB	21
Strong S/N radio RF 94dBuV/m, m=80%	45	40	S/N radio (A-Weighted, RF 4mV)	53	50 dBA	22
Channel difference	0	3 dB	Channel unbalance (250Hz to 6300Hz)	0	3 dB	23
Modulation hum (30% mod)	45	40	Modulation hum (22.5kHz dev)	44	40 dB	24
2, 3th IF harmonics rejection (RF 64 to 94dBuV/m)	21	18	8, 9,10th harmonics whistle	35	30 dB	25
Overall frequency response (-3dB)（1*）	60 1.5	120 Hz 1.1k Hz	Overall frequency response (+/- 3dB, 1kHz ref) - 50us（1*）	 70 9k	 80Hz 10k Hz	26
Oscillator stop voltage 120V setting 230V setting	 90 190	 96 Vac 192 Vac	Oscillator stop voltage 120V setting 230V setting	 90 190	 96 Vac 192 Vac	27
Search tuning sensitivity	/	N/A	Search tuning sensitivity	/	N/A	28
Search tuning stop accuracy RF ≥ α26 to 1mV RF ≥ 1V/m	/ / / /	N/A	Search tuning stop accuracy - 20uV ~ 20mV - 20mV ~ 500mV with step size = 50kH - 20mV ~ 500mV with step size > 50kHz	/ / /	N/A	29
Search time of total tuning range	/	N/A	Search time of total tuning range		N/A	30

TECHNICAL SPECIFICATION

IF			455KHZ	± 3kHz	IF					10.7MHZ	± 0.3MHz		31
Frequency drift vs temp. -10°C to 10°C 10°C to 30°C 30° to 50°C			0.7 / 1000 * operating frequency		Frequency drift vs temp.					15KHZ/° C 10KHZ/° C 15KHZ/° C			32
Dial calibration			5	7%	Dial calibration					-1.2	+/- 1.5MHz		33
					Stereo On point (Pilot deviation : 6kHz)					14	15.5 dBuV		34
										Switching on – 6dB			35
wave range		Sensitivity for 50mW			noise limited sensitivity (26dB)			Image rejection	IF rejection	large signal	Selectivity S9/300kHz	bandwidthB+3 dB	
FM	nom.					19		21	55	126dBf	21		36
	lim.					22		19	50	125dBf	19		37
MW	nom.				1500			35	28	1000	21	3.0	38
	lim.				4000			28	24	500	16	>2.5	39
unit		µV/m	µV	dBf	µV/m	dBf	dB	dB	dB	mV/m	dB	kHz	

REMARKS:

1* 对使用 45 磁喇叭 Frequency response FM nom 220HZ-9KHZ; limit 320HZ-10KHZ

AM NOM 280HZ-1.5KHZ; LIMIT 320HZ-1.2KHZ

TECHNICAL SPECIFICATION

SUPPLY, AF-AMPLIFIER & LOUDSPEAKER PART:

TECHNICAL description:

	Power supply	Tone Control	AF-Amplifier	Loudspeaker	
Active components			CD8227GP		1
Passive components				2 X 1 W, 8ohm	2
					3

GENERAL part:

Headphone type	None	4
Loudspeaker filter, high pass	None	5
Loudspeaker filter, low pass	None	6
Power stage protection	AC – NO; DC - NO; Temperature – YES; Short circuit – NO	7
Public address	No	8

INDICATORS:

Output power or VU-meter	No : digits:	9
Frequency response	No : digits:	10
Low power (battery)	No	11

ELECTRICAL DATA:

TONE/EQUALIZER/DBB

Balance control	No		12
Mechanical noise (ISO 1996)			13
Noise overall (ISO)			14
Channel difference at 50mW			15
Hum (vol.max.-20dB to vol.min.)	Limit: 500	nW	16
Residual noise (volume minimum)	Limit: 125	nW	17

Input sens.: Nom.			500mV		mV		
for 50mW Limit:					mV		
Line outp.: Nom.					mV		
voltage Limit:					mV		

OUTPUT POWER:

Mains operation:	D=10%	≥1W	Limit: - 3dB	18
Battery operation:	D=10%	≥1W	Limit: - 3dB	19
Music power (MPO) / Peak-MPO (PMPO):			(acc. to DIN45324)	20
Short term maximum output power:			(acc. to IEC 60268-15)	21
Long term maximum output power:		-	(acc. to IEC 60268-15)	22
Headphone output voltage/power:				23
Bandwidth FTC – 1dB at:		n.a.	(acc. to FTC/16/1/D/432)	24
Bandwidth DIN – 3dB at:		-	(acc. to IEC 60268-15)	25
Frequency response at Vol. max – 20dB:2*		typ. 60Hz to 16kHz (±3dB)		26
DBB raise level		10db at125hz vol max-20db	Disc SBC429 Track 12	

LOUDSPEAKER (output):

Low pass crossover frequency:	-	kHz	tolerance:	Hz	27
High pass crossover frequency:	-	kHz	tolerance:	Hz	28
Short term maximum output power:	-	W (acc. to IEC 60268-15)			29
Long term maximum output power:	-	W (acc. to IEC 60268-15)			30
Frequency response at:	-	Hz		kHz	31

REMARKS:

2* 对使用 45 磁喇叭 Frequency response MP3- LINK 100HZ nom -9 BD; limit -10 BD
10KHZ nom +/-1 BD; limit +/-2 BD

对使用 40 磁喇叭 Frequency response MP3- LINK 10KHZ nom +/-3 BD; limit +5/-0 BD

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TECHNICAL SPECIFICATION

Acoustical noise:			
Mode: Play/Pause	35 dBA max. (45 dbA in Search mode)		26
Mode: Jump (Next)	45 dBA max.		27
Acoustic feedback:	Acoustical feedback is not allowed.	Test disc TNO 2,6,11,18,19,20 of SBC444 , 10% THD o/p , DBB on	
AUDIO part: (Measured with Audio Signals Disc-1, 7104 078 04911 on Speakers or Headphone socket with nom. load)			
	Typ.	Limit	
Output level (TNO1)	3.1V		28
SNR unwtd.	60 dB	50 dB	29
SNR wtd. dBA	62 dBA	57 dBA	30
Crosstalk (1kHz) TNO 67, 71	35 dB	30 dB	31
Crosstalk (other range) TNO 66 – 73 (16 TO 16KhZ)	40 dB	40 dB	32
Frequency response Vol.max.–20dB (DBB on)3*	-1.5dB -1dB	±3dB at 100Hz ±3dB at 10kHz	33
Frequency response at DBB off (+/- 3dB)	100 10k	80 Hz 12.5 kHz	34
THD (1kHz, 0 dB)	1%	1.5 %	35
THD (overall frequency response range, 0dB)	2 %	3 %	36
Channel difference	0.5 dB	2 dB	37
Frequency accuracy	-	+/-0.5 %	38
De-emphasis	15µs / 50µs Switchable via Subcode information		39
REMARKS: 3*对使用 45 磁喇叭 Frequency response CD 100HZ nom -9 BD; limit -10 BD 10KHZ nom +/-1 BD; limit +/-2 BD 对使用 40 磁喇叭 Frequency response 10KHZ nom +/-3 BD; limit +5/-0 BD			40

		CD-RW Test discs :							
	(A)	Audio signal disc 1			(N)				
	(B)	SBC444A			(O)				
	(G)	Burn-in SBC 442			(P)				
	(K)	Printed CD-RW			(Q)				
	(L)	Low reflect CD-RW			(R)				
	(M)	High reflected CD-RW			(S)				
					(T)				
	Description	condition (test disc)		Noraml	limit				
	CD-RW playability								
1	Fingerprint	“K” TNO 18		No audible disturbance					
2	Black dot	“K” 13, 17	um	800	400				
3	Low reflection	“L”		No audible disturbance					
4	High reflection	“M”		Startup					

TECHNICAL SPECIFICATION

Acoustical noise:			
Mode: Play/Pause	35 dBA max. (45 dbA in Search mode)		26
Mode: Jump (Next)	45 dBA max.		27
Acoustic feedback:	Acoustical feedback is not allowed.	Test disc TNO 2,6,11,18,19,20 of SBC444 , 10% THD o/p , DBB on	
AUDIO part: (Measured with Audio Signals Disc-1, 7104 078 04911 on Speakers or Headphone socket with nom. load)			
	Typ.	Limit	
Output level (TNO1)	3.1V		28
SNR unwtd.	60 dB	50 dB	29
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Crosstalk (1kHz) TNO 67, 71	35 dB	30 dB	31
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Frequency accuracy	-	+/-0.5 %	38
De-emphasis	15µs / 50µs Switchable via Subcode information		39
REMARKS: 3*对使用 45 磁喇叭 Frequency response CD 100HZ nom -9 BD; limit -10 BD 10KHZ nom +/-1 BD; limit +/-2 BD 对使用 40 磁喇叭 Frequency response 10KHZ nom +/-3 BD; limit +5/-0 BD			40

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	(K)	Printed CD-RW			(Q)				
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					(T)				
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2	Black dot	“K” 13, 17	um	800	400				
3	Low reflection	“L”		No audible disturbance					
4	High reflection	“M”		Startup					

TECHNICAL SPECIFICATION

IPOD Part:

TECHNIAL DESCRIPTION				
iPod Docking - Part Specifications				
GENERAL PART				
Description	Extern Filter	Nom	Lim	Unit
Output Resistance			N/A	Ohms
Channel Unbalance			< ± 2	dB
Frequency Response (125 Hz - 16 kHz)4*			+5/−0	dB
Signal to Noise Ration (Unweighted)(*1)		55	50	dB
Signal to Noise Ration (A - weighted)(*1)		60	52	dBA
Charge Supply Voltage (DC +5V 500mA)(only iPod)		+5	5 +/- 10%	V
Remark : ipod standard output level 1V rms.				

REMARKS:

4*对使用 45 磁喇叭 Frequency response IPOD 100HZ nom -9 BD; limit -10 BD
10KHZ nom +/-1 BD; limit +/-2 BD
对使用 40 磁喇叭 Frequency response 10KHZ nom +/-3 BD; limit +5/-0 BD

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.

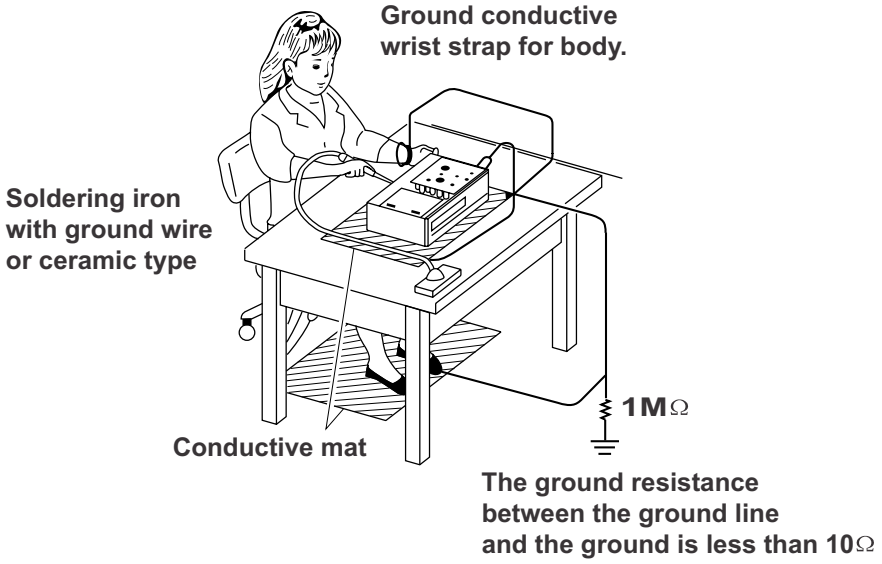
2.1 ESD PROTECTION

- 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.



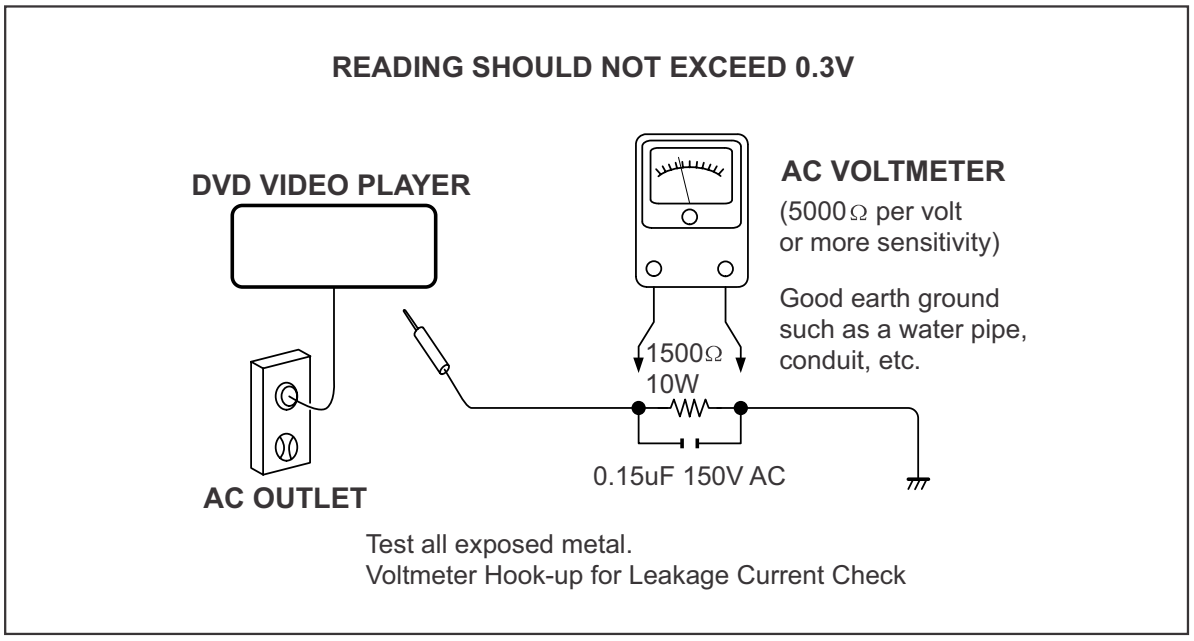
SAFTY NOTICE

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.



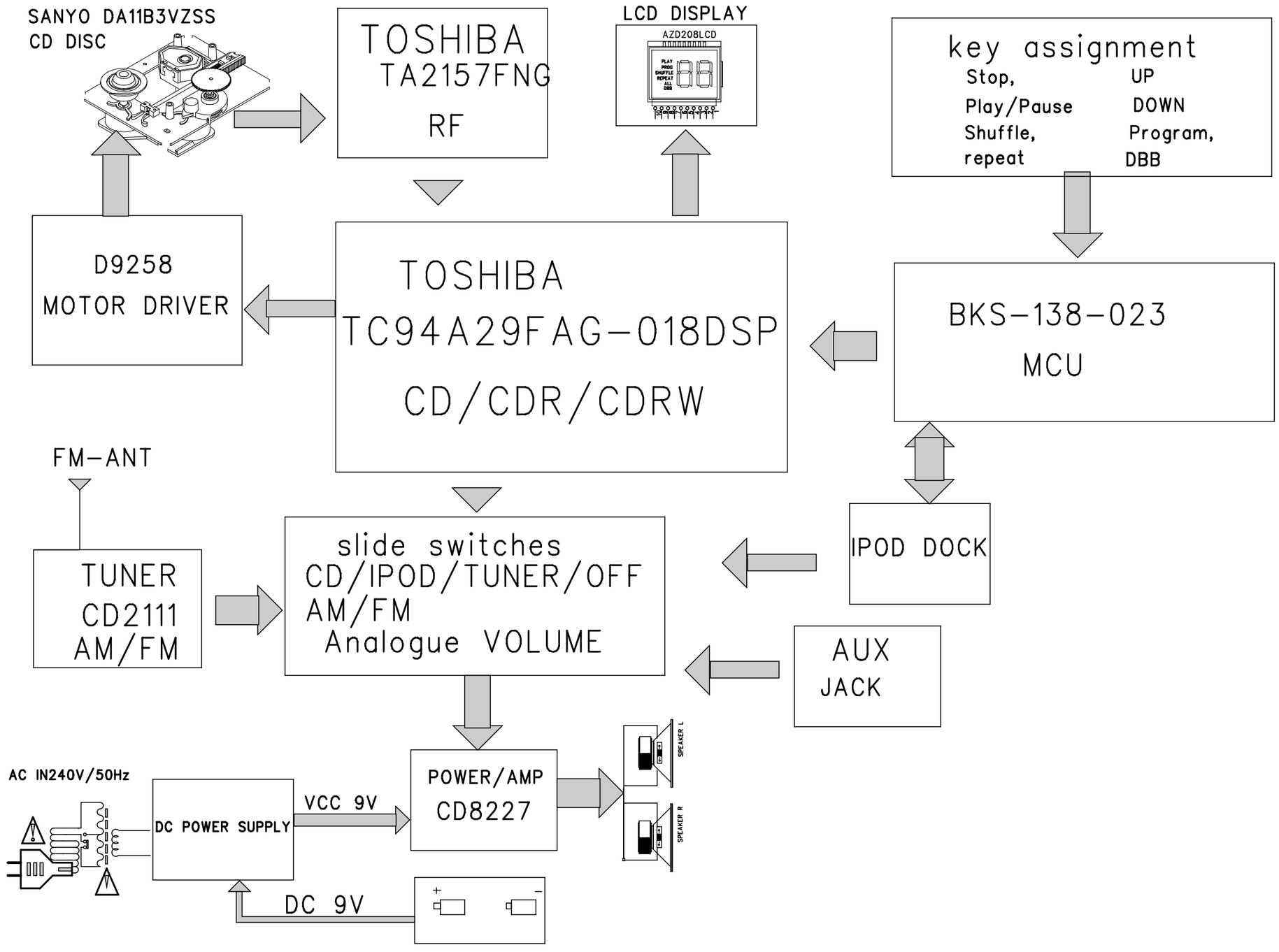
Test all exposed metal.
Voltmeter Hook-up for Leakage Current Check

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.

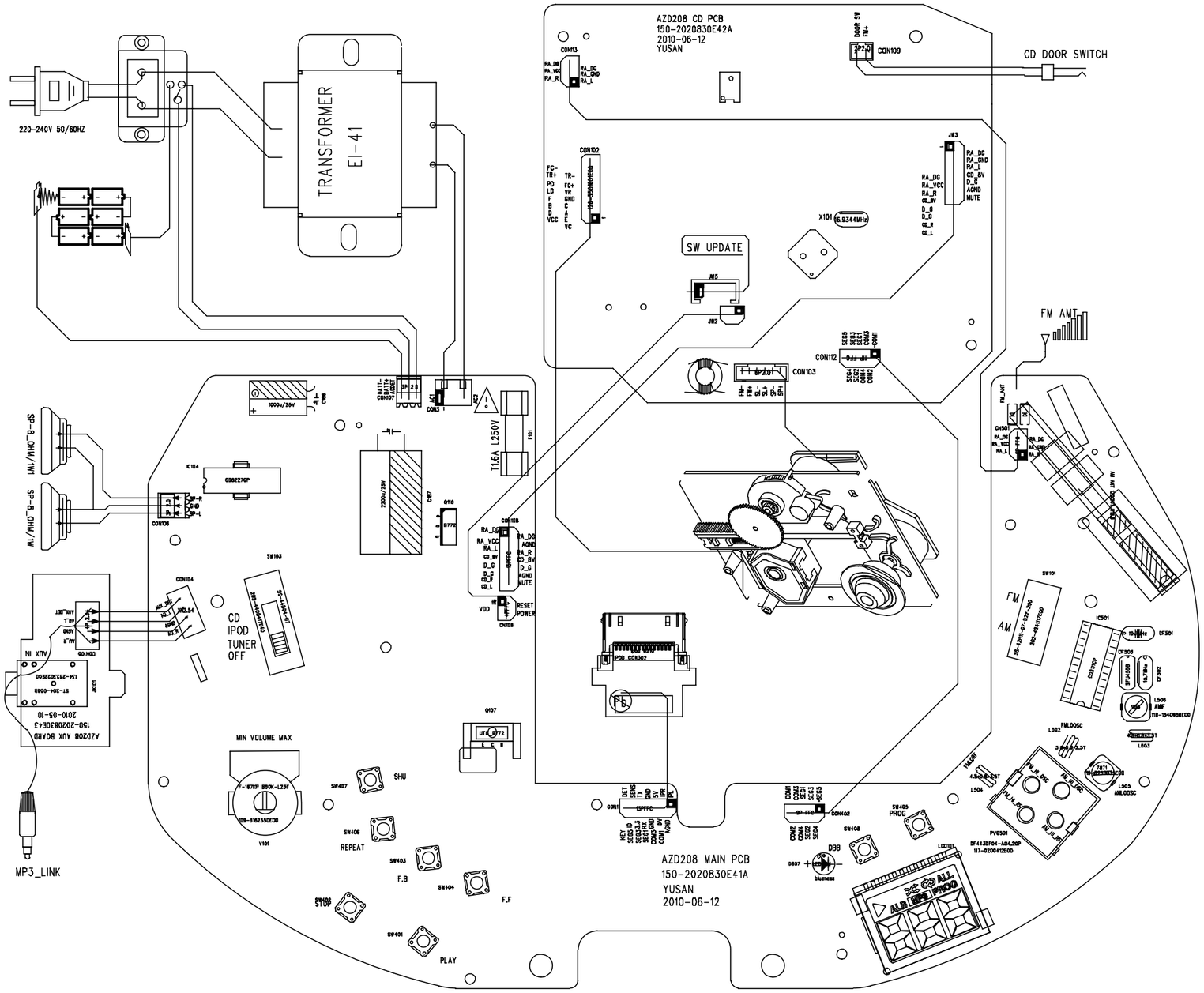
3 - 1

SET BLOCK DIAGRAM



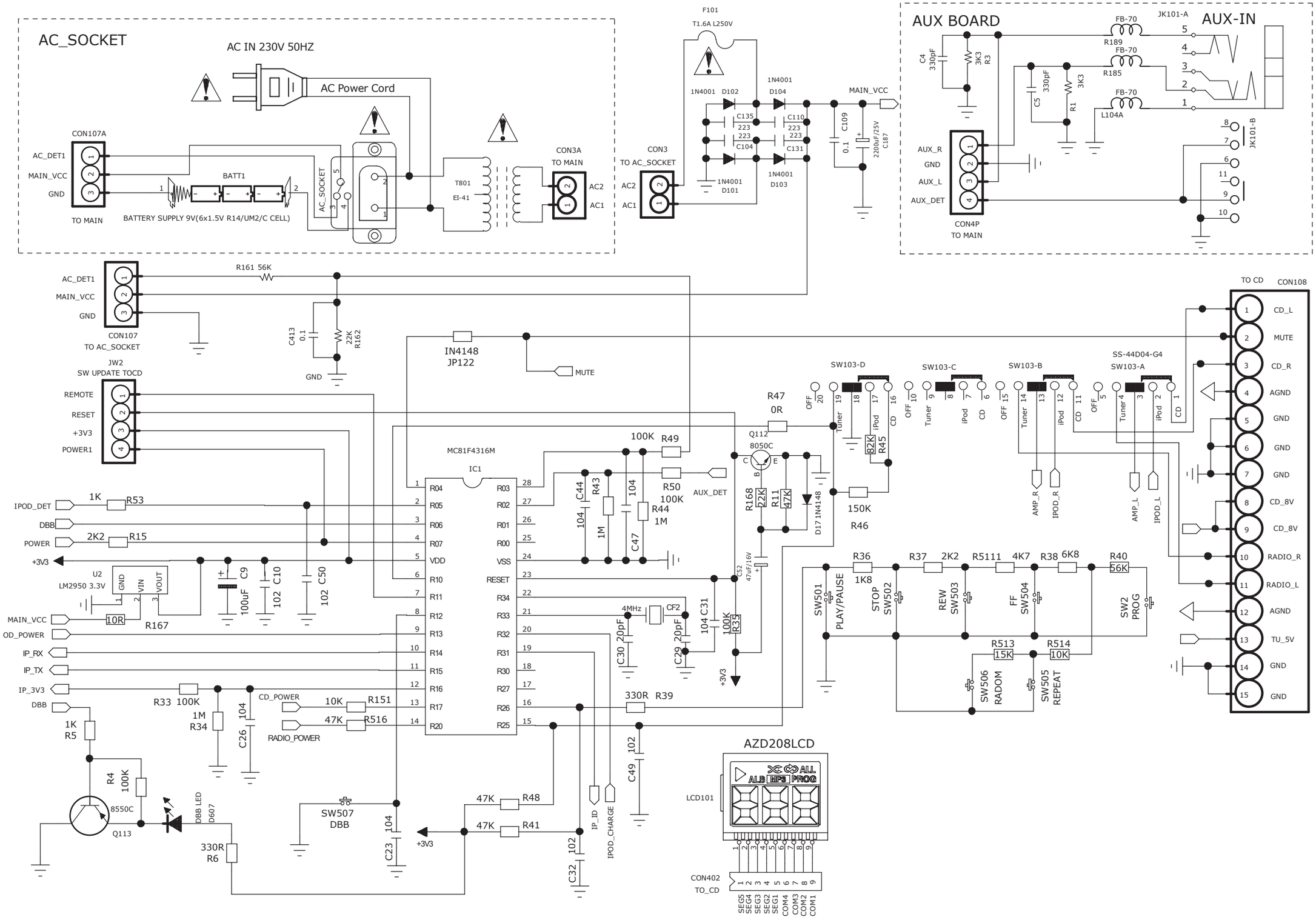
4-1

WIRE CONNECT DIAGRAM



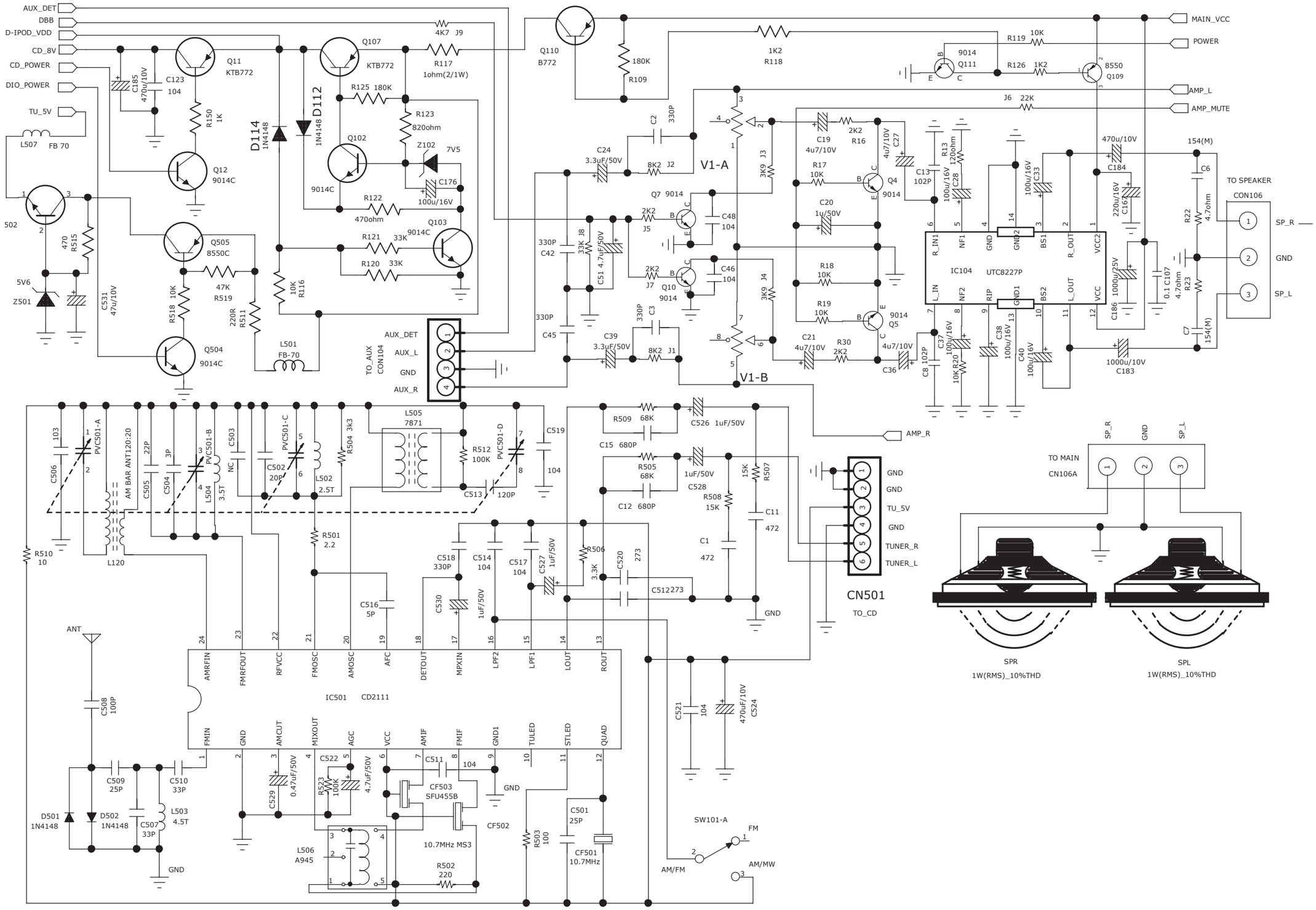
5-1

CIRCUIT DIAGRAM - AUX + CD BOARD



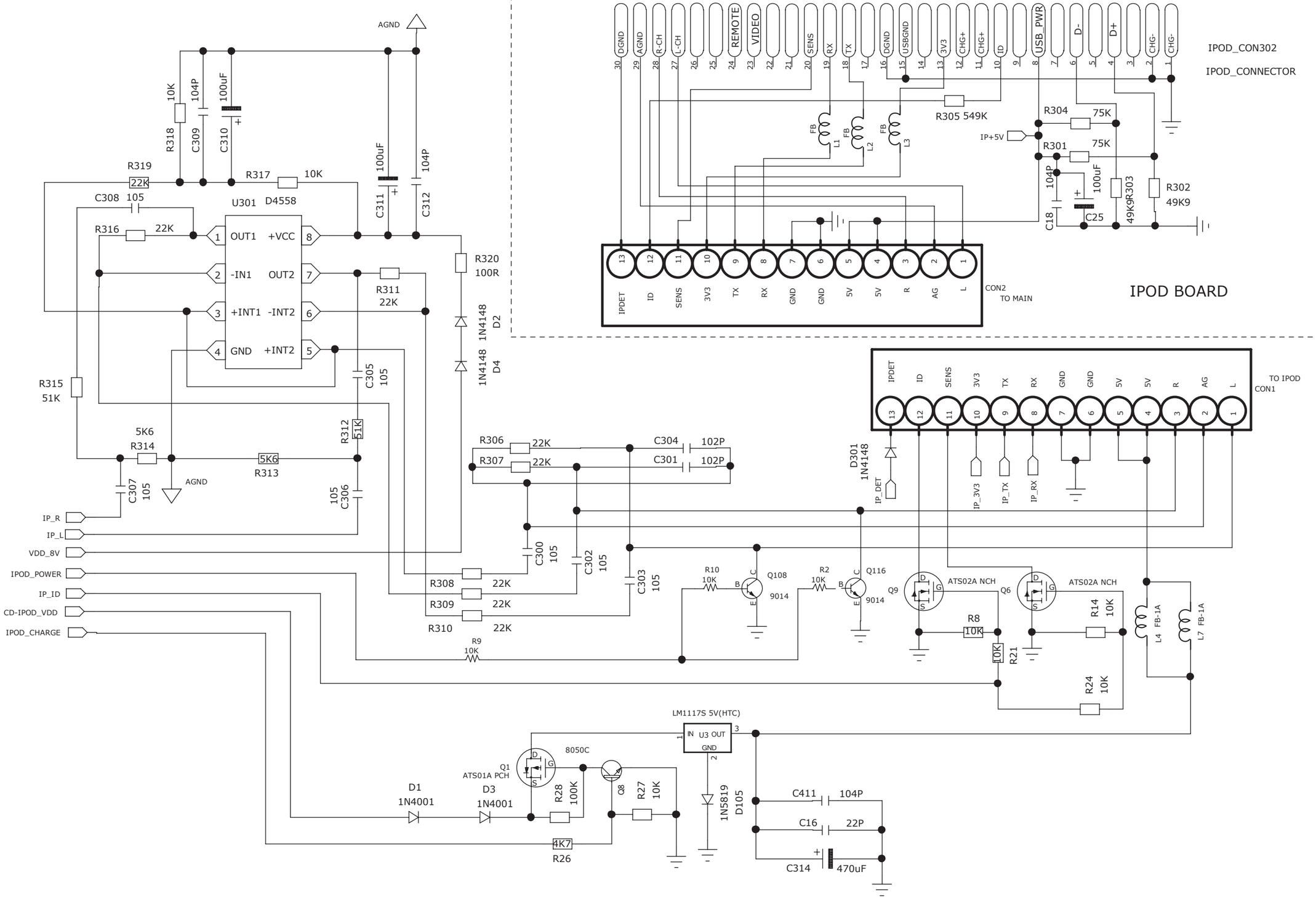
5 - 2

CIRCUIT DIAGARM - MAIN BOARD



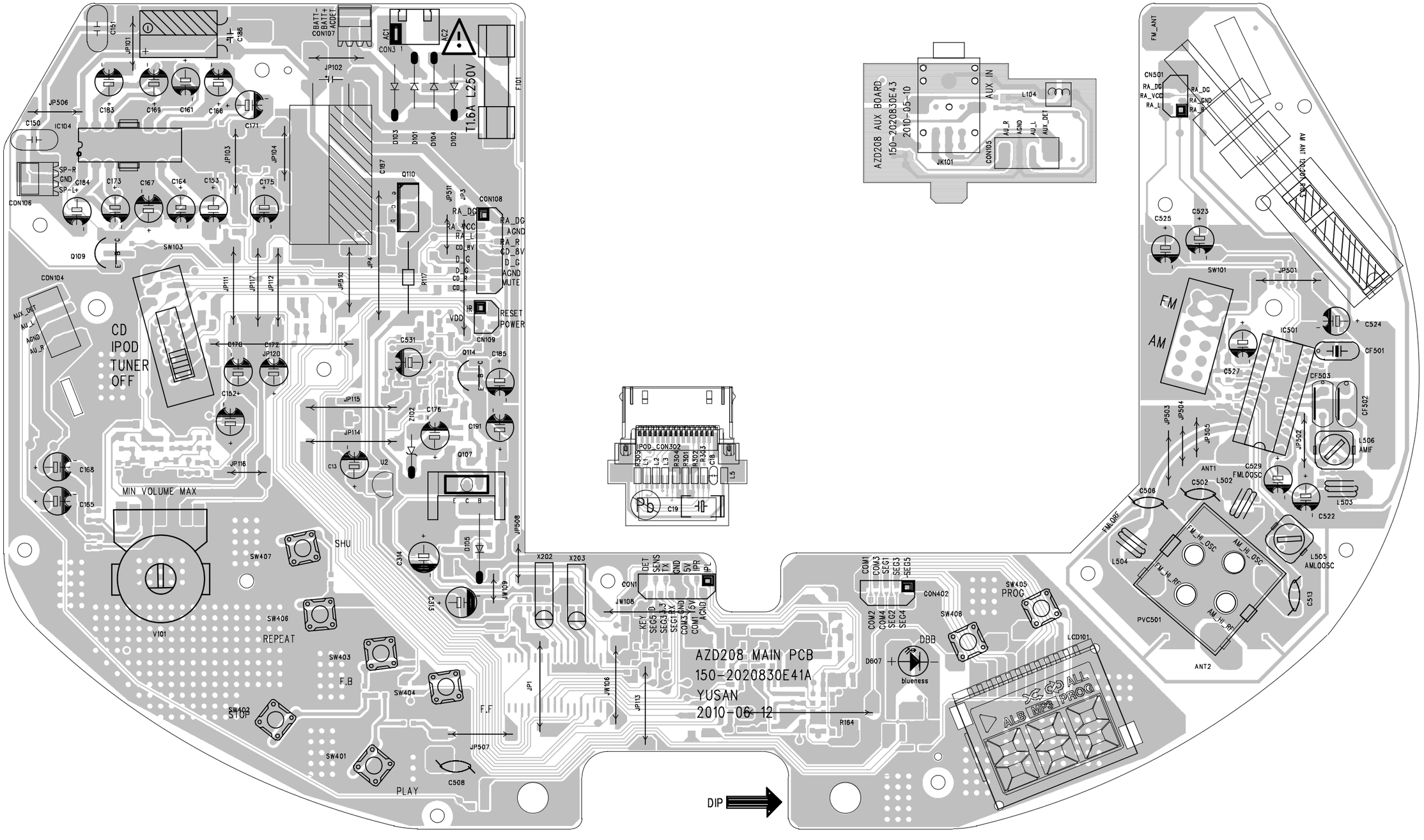
5 - 3

CIRCUIT DIAGARM - IPOD BOARD



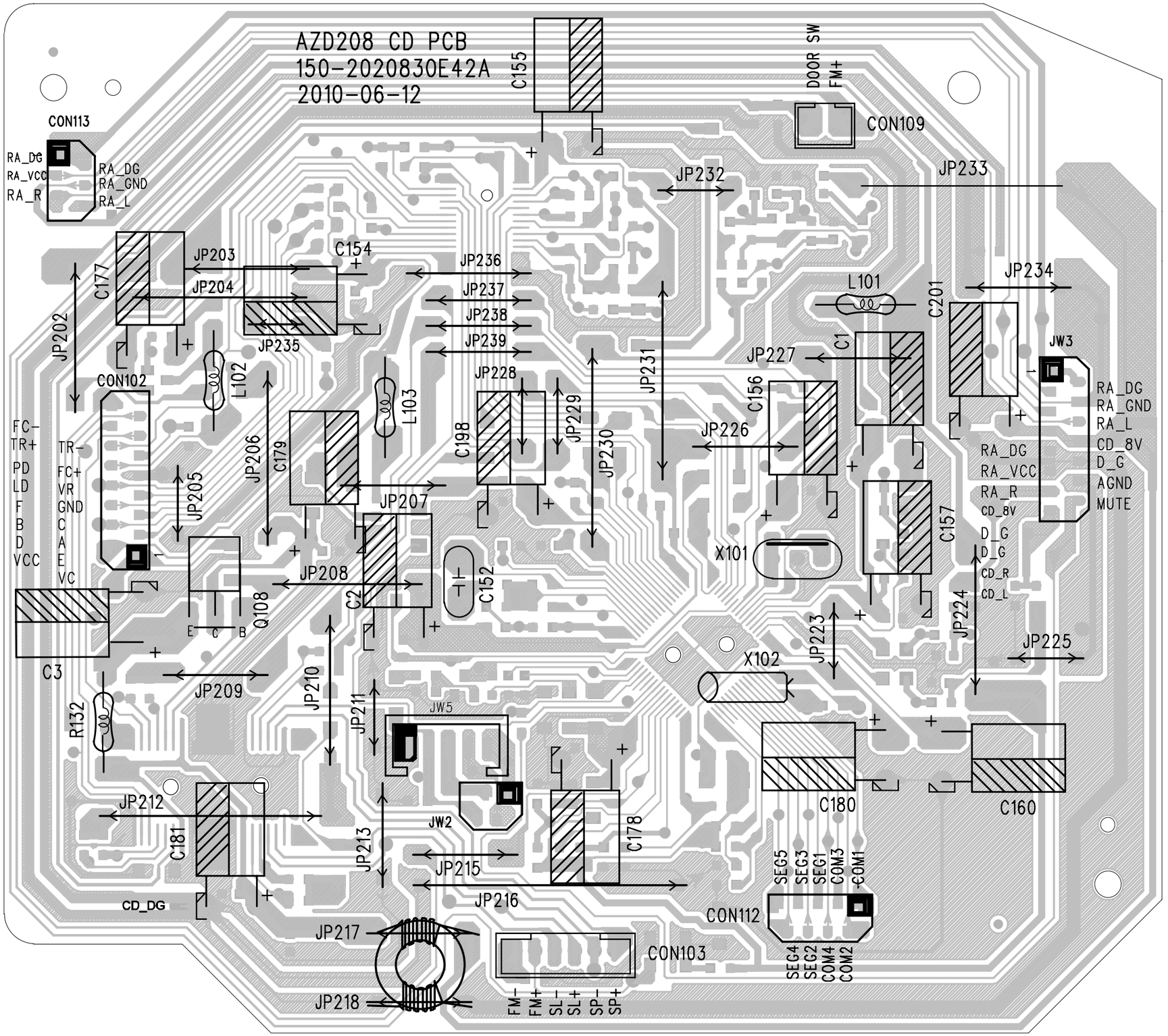
6-1

LAYOUT DIAGARM -AUX + MAIN + CD BOARD



6-2

LAYOUT DIAGARM - CD BOARD



7-1

EXPLODED VIEW DIAGRAM