

Service
Service
Service



Service Manual



TABLE OF CONTENTS

	Page
Technical specification	1-15
Safety instruction.....	2-1
ESD protection.....	2-2
Set Block diagram	3-1
Set Wiring diagram.....	4-1
Disassembly diagram	5-1-2
Main & Amp board	
Circuit diagram.....	6-1..6-3
Layout diagram.....	6-4..6-7
Key & Display board	
Circuit diagram.....	7-1
Layout diagram.....	7-2..7-3
Tuner board	
Circuit diagram.....	8-1
Layout diagram.....	8-2
Mcu & CD board	
Circuit diagram.....	9-1..9-2
Layout diagram.....	9-3..9-5
Mechanical Exploded view.....	10-1

**CLASS 1
LASER PRODUCT**

© Copyright 2012 Philips Consumer Electronics B.V. Eindhoven, The Netherlands
All rights reserved. No part of this publication may be reproduced, stored in a retrieval system or transmitted, in any form or by any means, electronic, mechanical, photocopying, or otherwise without the prior permission of Philips.

Published by LX 1215 Service Audio

Printed in The Netherlands

Subject to modification

3141 785 37540

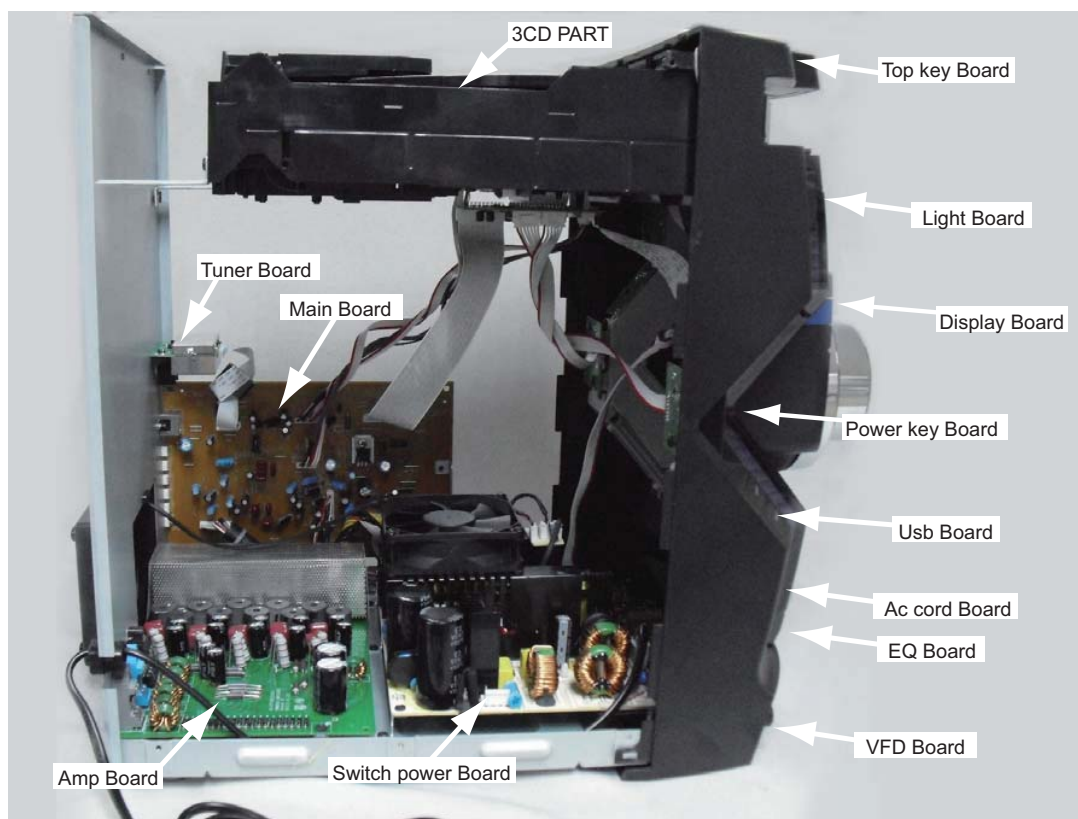
Version 1.0



PHILIPS

Technical Specification and Connection Facilities

Location of PC Boards



VERSION VARIATION

Type /Versions:		FWM9000									
Board in used:	Service policy	/55 (LATAM)	x/77 (ARGENTINA)	x/78 (BRAZIL)							
Main BOARD		C/M	C/M	C/M							
display BOARD		C/M	C/M	C/M							
amp BOARD		C/M	C/M	C/M							
key BOARD		C/M	C/M	C/M							
mic BOARD		C/M	C/M	C/M							
tuner BOARD		C/M	C/M	C/M							
Switch Power BOARD		M	M	M							
cd BOARD		C/M									
mcu BOARD		C/M									
Type /Versions:		FWM9000									
Features	Feature diffrence	/55	x/77	x/78							
RDS											
VOLTAGE SELECTOR											
ECO STANDBY - DARK											

* TIPS : C -- Component Lever Repair. C/M

M -- Module Lever Repair C/M

√ -- Used

FWM9000 SH 190 content List

No.	Descrptopn	Page
1	GENERAL PART 1 - FRONT PANNEL SPECICFICATION	1
2	GENERAL PART 2 - BACK PANNEL SPECICFICATION	2
3	GENERAL PART 3 - GENERAL SPECICFICATION	3
4	GENERAL PART 4 - TECHNICAL SPECICFICATION	4
5	GENERAL PART 5 - AUDIO SIGNAL SPECICFICATION	5
6	GENERAL PART 6 - AUDIO SIGNAL SPECICFICATION	6
7	GENERAL PART 7 - CLOCK / TIMER SPECICFICATION	7
8	GENERAL PART 8 USB/SD-Card SPECICFICATION	8
9	GENERAL PART 9 - TUNER SPECICFICATION (A11)	9
10	GENERAL PART 10 - CD / MP3 SPECICFICATION	10
11	GENERAL PART 11 - Ipod SPECICFICATION	11
12	GENERAL PART 12 - Microhone SPECICFICATION	12
13	GENERAL PART 12 - VERSION OVERVIEW SPECICFICATION	13

DEPICTION					Pos	Description	Page					
					CABINET							
					Diemensions with Boxes (wxhxd) 265mm X 382mm X 345mm					Material : HIPS / ABS / POM / V2 / SAN		
					Diemensions without Boxes (wxhxd) 1250mm X 340mm X 495					Finshing : Chrome Plate		
					Weight (inclusive packing)8.505KG					Units in Masstercarton		
Weight (exclusive packing & batery)26KG					Units in Dealercarton							
Remarks :												
1	used into											
Remark :												
GENERAL PART 1 - FRONT PANNEL SPECIFICATION												
Class No		FWM9000 All Version					Ver	Issued Date				
							1	12-Feb-09				
							2					
							3					
NAME :		11	11	SH 190 - 1		A4						
KT	CHECK:	DATE :										

DEPICTION				Pos	Description	Page				
				CABINET						
				Diemensions with Boxes (wxhxd)265mm X 382 mm X 345 mm				Material :HIPS		
Diemensions without Boxes (wxhxd) 1250mm X 340mm X 495mm				Finshing : Chrome Plate						
Weight (inclusive packing)8.5Kg				Units in Masstercarton						
Weight (exclusive packing & batery)26Kg				Units in Dealercarton						
GENERAL PART 1 - BACK PANNEL SPECIFICATION										
Class No		FWM9000 All Version			Ver	Issued Date				
					1					
					2					
					3					
NAME :		10	10	SH 190 - 2	A4					
KT		CHECK:	DATE :							

GENERAL DESCRIPTION						
MP3-USB Mini Hi Fi System with Digital Tuner, 3CD/MP3 (2x350W+2x300W+2x150W) For FWM9000 Power Amplifier, VFD Display, Aux in, Remote control Subwoofer Boxes of 8 Ohm x 2 LIFETIME : 7 Years						
Class	Tuner	Supply + Amplifier	USB	Recorder	Clock	CD-mp3
I						
II	X	X	X	X	X	X
III						
Page	10	3-6	9		8	11
SAFETY requirements						
Version	Safety			EMC		
/98	EN 60065,			CISPR 13		
/55	EN 60065, EN61000-3-2/EN61000-3-3			CISPR 13		
/12	EN 60065			EN 55013 / EN 55020		
/05	EN 60065			EN 55013 / EN 55020		
/79	EN 60065			CISPR 13		
/37	UL 60065			FCC99		
RADIATION / IMMUNITY requirements (EMC) for 12 version only						
CLIMATIC requirements						
ALL climates : + 5 Degree till + 35 Degree						
MODERATE climates : + N.A till N.A Degree						
PERFORMANCE CLASSES						
POWER SUPPLY (SWITCHING MODE POWER SUPPLY)						
MAINS (A.C.)		SWITCH POWER FOR AC100V TO 250V				
Version						
Voltage Selection						
Frequency						
POWER CONSUMPTION						
	/ 12/ 05	/ 55/77/78/98	/61 /93	/ 37		
Standby(with display) :	< 1W	Ref. to CRS	Ref. to CRS	< 1W		
(DEMO mode " OFF ") , NOM. A, INPUT						
Maximum :						
@ 1/8 Prated , NOM. A, INPUT	< 250W					
ECO Power mode(Without display):	< 0.5W	Ref. to CRS	Ref. to CRS	< 0.5W		
Quality : 0.8 % (Major) 2.0 % (Mirror) Reliability : 3.0 % (C 42) Tested according to General Test Instruction refer to PHILIPS standary (UAN -D1591) Measured according to PHILIPS standary (UAN - L1059) unless other wise stated All not mentioned date, please refer to PHILIPS standary (XUW - 0010 - JUNE 2001)						
DERIVED		REMARKS		APPROBATION		
Remarks						
GENERAL PART 1 - GENERAL SPECIFICATION						
Class No				Ver	Issued Date	
	FWM9000 All Version			1	08-09-2011	
				2		
				3		
NAME : Andy Lai		10	10	SH 190 - 3	A4	
KT		CHECK	DATE :			

TECHNIAL DESCRIPTION											
Total power 1500W, matching LOUDSPEAKER of 4 x 8 Ohm +2 x 4 Ohm. INPUT SOURCE, CD/MP TUNER USB AUX 3DSC (Digital Sound Control). IS (Incredible Sound)											
GENERAL PART											
OUTPUT stage Protection		: Yes		Temperature		: Yes.		Shorcircuit		: Yes	
LoudSpeaker D.C. Protection		: Yes.									
INDICATORS											
Standby Mode Indicator		: FTD display Clock active									
ECO Mode Indiicator		: FTD turns off, ECO - Standby LED turn on									
ELECTRICAL DATA (Main computer)											
DSC :	Rock, Pop, Jazz, Optimal			Channel Differencer at -40dB			3		dB		
MAX	YES			Hum (Volume control from min. till max. - 20 dB)			< 200		nW		
IS :	YES			Residual Noise (Volume Minium)			< 60		nW		
VAC :	N/A			Channel Separation (at 1 kHz)			≥ 45		dB		
WOOX :	N/A			Signal / Noise (unweighted)			≥ 55		dB		
				Subwoofer Out Hum(Volume minmun)			<4		μW		
INTERCONNECTS											
Input Sensitivity(±2 dB)rated ouput power at 1 kHz and 10kHz. Line Output Voltage (*1)											
Tuner	:	FM 67.5KHZ AM80% Modulation			Line Out (Left / Right)			N.A			
CD	:	0 dB track (Audio Disc 1, Trk 35)			Subwoofer Out			Yes			
USB	:	0 dB track (Audio Disc 1, Trk 35)			Headphone			0.7V +/- 0.2% at 32 Ohm			
AUX	:	Nor: 600mV Lim: 350mV ~ 900mV for /37			Digital Coaxial Out			N.A			
	:	Nor: 2V Lim: 1.5V ~ 2.5V for /55			Booster Out			N.A			
Microphone	:	input leven 1mv rms(lim:2.5mv rms) Rs=600ohm			Frequency response @±4dB	Main Channnel		40HZ~16KHZ (reference 1KHZ)			
	SUB. Channel					40HZ~125HZ (reference 63HZ)					
	Rear channel					200HZ~16KHZ (reference 1KHZ)					
	output power 1kHz										
OUTPUT POWER (* 1)At THD = 10% (Measured with 20Hz-20KHZ filter),(Per Channel measuremend)											
Power output (RMS)				L/R channel		300W (Lim '-1dB)					
Power output (RMS)											
Power output (RMS)				L/R Subwoofer channel		300W (Lim '-1dB)					
Power output (RMS)				L/R Rear channel		150W (Lim '-1dB)					
Tuner output (Lim '-6dB)											
LOUDSPEAKER (BOXES)											
Please to package document of Speaker Box Assy											
Rated Impedance											
FRONT:L/R : 8 Ohms X2 at 40Hz to 16 KHz											
Subwoofer L/R : 8 Ohm x2 at 40HZ to 100HZ											
Rear: L/R : 4 Ohms X2 at 200Hz to 16 KHz											
Remarks											
(*1) Measurement output power just connect 2 channel loads. Electrical parameters are to be measuremend at specker terminals across 8 Ohm load (pure resistor) with rated input signal in AUX mode; DSC setting in Jazz mode with DBB OFF IS off and OSM unless specified otherwise Measurement output power only for AUX model and CD model of used audio analyzer equipment.											
(*2) All speaker "R" channel "+" connect to equipment "+" for measurement. All speaker "L" channel "-" connect to equipment "-" for measurement (because all "L"channel output are reverse).											
GENERAL PART 1 - TECHNICAL SPECIFICATION											
Class No		FWM9000 All Version				Ver		Issued Date			
						1		08-09-2011			
						2					
						3					
NAME : Andy Lai		10		10		SH 190 - 4		A4			
KT		CHECK	DATE :								

AUDIO SIGNAL PROCESSING

MP3-USB Mini Hi Fi System with Digital Tuner , 3 CDC-MP3,(Main:2×350W+Rear:2×150W+SUB:2×300W) Universal Class D Power Amplifier

1) DSC (Digital Sound Control)

Select AUX as input source with the following set conditions:

Inject sine wave 500mV at 1 KHz to L/R channels of AUX-IN socket.

Set DSC to JAZZ(Flat) mode and switch off DBB.

Reference level for DSC's without DBB on=1W.

Reference level for DSC'S with DBB on=1.2V at the speaker terminal .

Inject sine wave 500mV-2.4V to AUX-IN socket with frequencies indicated in Table 1.

For FWM998 Subwoofer in put 500mW 60HZ @ 3R (Main computer)

Tabel 1a (Tolerance \pm 3dB)

Frequency	DSC Modes with DBB Off			
	JAZZ	POP	TECHNO	OPTIMAL
60 Hz (SUB)	0	4	6	2
1K((SUB)	0	0	0	0
1 kHz (host computer)	0	0	0	0
10 kHz(host computer)	0	2	-4	2

Tabel 1b (Tolerance \pm 3dB)

Frequency	DSC Modes with DBB 1 ON			
	JAZZ	POP	TECHNO	OPTIMAL
60 Hz (SUB)	4	8	8	6
1khz(SUB)	0	0	0	0
1 kHz (host computer)	0	0	0	0
10 kHz (host computer)	0	2	-4	2

Tabel 1b (Tolerance \pm 3dB)

Frequency	DSC Modes with DBB 2 ON			
	JAZZ	POP	TECHNO	OPTIMAL
60 Hz (SUB)	10	16	16	13
1 kHz(SUB)	0	0	0	0
1khz (host computer)	0	0	0	0
10 kHz (host computer)	0	4	-2	2

Tabel 1b (Tolerance \pm 3dB)

Frequency	DSC Modes with DBB 3 ON			
	JAZZ	POP	TECHNO	OPTIMAL
60 Hz (SUB)	16	20	20	20
1khz(SUB)	0	0	0	0
1 kHz(host computer)	0	0	0	0
10 kHz(host computer)	2	6	0	4

2) DBB (Dynamic Bass Boot)

Select AUX as input source with the following set conditions :

Inject sine wave 500mV at 1kHz to L/R channels of AUX - IN socket.

Set DSC to JAZZ(Flat) mode and switch off DBB,

Reference level for the test is 500mW on the speaker terminals.

Tabel 2 of FWM998(Tolerance \pm 3dB)

Frequency	DBB OFF	DBB 1	DBB 2	DBB 3
60 Hz(SUB)	0	4	8	12
1 Hz(SUB)	0	0	0	0
1khz(host computer)	0	0	0	0
10K Hz(host computer)	0	0	0	2

GENERAL PART 1 - GENERAL SPECIFICATION

Class No	FWM9000 All Version				Ver	Issued Date
					1	08-09-2011
					2	
					3	
NAME : Andy Lai	10	10	SH 190 - 5			A4
KT	CHECK	DATE :				

AUDIO SIGNAL PROCESSING

MP3 - USB Mini Hi Fi System with Digital Tuner , 3 CDC-MP3, (Main:2×350W+SUB:2×300W+Rear:2x150W) Universal Class D Power Amplifier

3) IS (Incredible Sound)

Select AUX as input source.

Inject sine wave 2V at 1kHz to AUX-IN socket, two channel at a time (input level 600mV for /37,2V for /55).

Set DSC to JAZZ (Flat) mode and switch of DBB, OSM & INCREDIBLE SURROUND.

Adjust volume level to obtain 1W across 3 OHM load at L/R speaker output.

Inject sine wave 2V to AUX-IN socket with frequency indicated in Table 3 (input level 600mV for /37,2V for /55).

Table 3 (Tolerance ± 3 dB)

FREQ	INPUT LEVEL		OUTPUT LEVEL			
			IS OFF		IS ON	
	LEFT	RIGHT	LEFT	RIGHT	LEFT	RIGHT
60 Hz	2V	-	- 1.0 dB	-	+2.0 dB	- 15 dB
1 kHz	2V	-	0	-	+ 3.5 dB	0 dB
10 kHz	2V	-	- 0.5 dB	-	+ 3.0 dB	-5 dB

Note : The above specs also apply to right channel.

4) DSC Mode (Jazz , Rock, Techno and Optimal)

The VEC modes are software controlled by switching the combination between DBB and DSC modes as show in Table 4.

VEC MODE	DBB Level preset
Jazz	DBB OFF
POP	DBB 3
Techno	DBB 3
Optimal	DBB 2

Note : When these modes are active DBB and DSC will not be displayed

5) MAX (Maximum Sound)

Select AUX as input source.

Inject sine wave 2V at 1kHz to AUX-IN socket, one channel at a time (input level 600mV for /37,2V for /55).

Set DSC to JAZZ (Flat) mode and switch of DBB, OSM & INCREDIBLE SURROUND.

Adjust volume level to obtain 1W across 3 OHM load at L/R speaker output.

The 1W level will be used as 0 dB reference

Inject sine wave 2V to AUX-IN socket with frequency indicated in Table 5 (input level 600mV for /37,2V for /55).

FREQ	Max OFF	Max ON		
60 Hz	-1	+19		
1 kHz	0	+5		
10 kHz	-1	+7		

GENERAL PART 1 - AUDIO SIGNAL SPECIFICATION (2)

Class No	FWM9000 All Version				Ver	Issued Date
					1	08-09-2011
					2	
					3	
NAME : Andy Lai		10	10	SH 190 - 6		A4
KT		CHECK	DATE :			

TECHNIAL DESCRIPTION

SOFTWARE IMPLEMENTED CLOCK / TIMER FUNCTION WITH 12MHZ QUARTZ OSCILLATOR.

GENERAL PART

Timer Setting	:	Clock and Timer
Timer Wakeup Mode	:	CD or Tuner or USB
Remarks Time Setting	:	12hr for /37 version, 24hrs for other version.
Volume at Wakeup	:	Last Setting
No of Timer Settings	:	1
Clock Accuracy	:	Nom : 1 sec/day Limit : 2 sec/day

INDICATORS

Display Type	:	VFD
--------------	---	-----

Remark

CLOCK / TIMMER SPECIFICATION

Class No	FWM9000 All Version				Ver	Issued Date
					1	08-09-2011
					2	
					3	
NAME : Andy Lai			10	10	SH 190 - 7	A4
KT		CHECK	DATE :			

TECHNIAL DESCRIPTION

USB

See also SH 190 USB Audio Module (300605)

Measurment are directly done at the coonector on the board

GENERAL PART

Measurement are directly done at the connector on CDC board

Description	Specification
Output Resistance	$\leq 1.5 \text{ k}\Omega$
Output Voltage $R_L = 33 \text{ k}\Omega$ ()dB, 1 KHz)	830mV/- 1dB
Channel Unbalance	$\leq \pm 3 \text{ dB}$
THD + Noise (0dB, 1KHz)	$\leq 2\%$
Channel Crosstalk ((0 dB, 1 KHz))	$\geq 45 \text{ dB}$
(0 dB, 1 KHz)	$\geq 45 \text{ dB}$
Signal to Noise Ratio (0dB,1kHz) (A - weighted)	$\geq 55 \text{ dB}$ (A - weighted)
FWM9000 Frequency response @±4	40HZ-16KHZ(reference 1KHZ)
	40HZ-100HZ(Reference 63HZ)
	200HZ-16KHZ(Reference 1KHZ)

USB Measurement at Set Level (*2)

Electrical Parameters are to be measured at speaker teminals across 3 ohm load with 500mW output and DSC setting in Jazz Mode

Description	Specification
Channel Crosstalk (0 dB, 1 KHz)	$\geq 45 \text{ dB}$ (with 1 KHz filter)
Signal to Noise Ratio (0 dB, 1 KHz)	$\geq 55 \text{ dB}$ (A - weighted)
Channel Unbalance (0 dB, 1 KHz)	$\leq \pm 3 \text{ dB}$

SD-CARD Measurement at Set Level (*2)

Electrical Parameters are to be measured at speaker teminals across 3 ohm load with 500mW output and DSC setting in Jazz Mode

Description	Specification
Channel Crosstalk (0 dB, 1 KHz)	$\geq 45 \text{ dB}$ (with 1 KHz filter)
Signal to Noise Ratio (0 dB, 1 KHz)	$\geq 55 \text{ dB}$ (A - weighted)
Channel Unbalance (0 dB, 1 KHz)	$\leq \pm 3 \text{ dB}$

Remarks :

(*2) All speaker "R" channel "+" connect to equipment "+" for
All speaker "L" channel "-" connect to equipment "+" for measurement

USB AND SD-CARD SPECIFICATION

Class No	FWM9000 All Version				Ver	Issued Date
					1	08-09-2011
					2	
					3	
NAME : Andy Lai		10	10	SH 190 -8		A4
	CHECK	DATE :				

TECHNIAL DESCRIPTION									
TUNER used SI4730 solution									
GENERAL PART									
WAVE RANGE				TOLERANCE			TUNING GRID		
FM(55/37) 87.5 - 108.00 MHz				QUARTZ PRECISION			100 kHz		
FM(12) 87.5 - 108.00 MHz							50KHZ		
AM (55/37) 530 - 1700 kHz				QUARTZ PRECISION			10 kHz		
AM (12) 531 - 1602 kHz				QUARTZ PRECISION			9 kHz		
AERIAL									
FM : PIGTAIL ANT WIRE 300 Ohm(for/37) 75ohm for 55/12									
AM : FRAME ANT. 18.1 uH with shielding									
INDICATORS									
VFD									
A.M		Nom	Limit	Unit	F.M.		Nom	Limit	Unit
					- 3 dB Limiting Point		: 17	23.5	dBf
Amplification Reverse		: - 2	-4	dB	Amplification Reverse		: 0	-4	dB
AGC Figure of Merit		: 30	25	dB	Distortion (RF 1mV, Frq Dev.75 kHz)		: 2	3	%
Distortion (RF 50mV, M 80%)		: 3	5	%	Stereo - 46 dB Quieting		: 46	49	dBf
IF		: 450	± 3	kHz	Crosstalk (RF1mV, Freq Dev.40kHz)		: 25	18	dB
					IF		: 10.7	± 0.03	MHz
Search Tuning Sensitivity		: α26	+/-10	dB			24-30	19-35	dBf
S/N Ratio		45	40	dB			50	45	dB
Wave Range		Noise Limited Sensitivity α26 dB			Image Rejection	IF Rejection	Large Signal	Selectivity S9 / 300kHz	
MW 610 kHz	Nom.	3500		uV/m	32 db	28db	1000mv/m	22db	
	Lim.	4000		Uv/m	28db	24db	500mv/m	18db	
MW 1440 kHz	Nom.	1500		uV/m	32db	28db	1000mv/m	22db	
	Lim.	4000		uV/m	28db	24db	500mv/m	18db	
FM 98 MHz	Nom.	18		dBf	40db	65db	116 dBu	30db	
	Lim.	22		dBf	30db	60db	108 dBu	25db	
FM 108 MHz	Nom.	18		dBf	40db	65db	116 dBu	45db	
	Lim.	22		dBf	30db	60db	108 dBu	25db	
Remarks: MAX.Sens -6dB									
TUNER SPECIFICATION									
Class No		FWM9000 All Version				Ver		Issued Date	
						1		30-Nov-09	
						2			
						3			
NAME : Andy Lai				10	10	SH 190 - 9		A4	
KT			CHECK	DATE :					

TECHNIAL DESCRIPTION

CD + MP3 - Part Specifications (CD MECHAISM DA11VF OF SANYO)

	Input	Output	Motor	Logic control
Active components				
	Signal processsing	D/A converter	HF-preamplifier	Servo processor
Active components				

AUDIO part: Measurement with Audio Signals Disc-783 7104 078 04911 on speakers or Headphone socket with nom.load

Description	Extern Filter	Nom	Lim	Unit
De-emphasis	15us / 50us Switchable via Subcode information			
Frequency accuracy		N/A	± 0.5	%
Channel Unbalance		1	3	dB
Frequency Response (40 Hz - 16 kHz) reference 1kHz	L/R		± 4	dB
	FRONT CH.			
Frequency Response (200Hz - 16 kHz)reference 1kHz	Rear CH.)		± 4	dB
Frequency Response (40Hz - 100Hz) reference 63Hz	SUB. CH.			dB
Signal to Noise Ration (Unweighted)		60	50	dBA
Signal to Noise Ration (A - weighted)		65	55	dBA
Crosstalk (1kHz) (A - weighted)		>= 45dB		dB
				dB
Hum & Noise (filer 20kHz) (*1)		1	1.5	mV
THD (1KHz -6dB)		0.2	<1	%
THD (10KHz -20dB)		<1	<3	%

REMARKS:

1. Amplification reserve for CD = +2dB (±2dB),Ref.Level for CD is a 0dB track instead of a .-6dB track.

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

	Limit	Typical	Test disc
Wedge	600um	900um	TNO 7, 9 of SBC 444A(7104 099 24990)
Eccentric	150um	200um	TNO 1, 24 of 200um disc (7104 099 24960)
Fingerprint	No audible defect		TNO 11 of Sub chassis 8A
Black dot	500um	800um	TNO 13 of SBC 444A (7104 099 24990)
Skew 0.6mm	No audible defect		TNO 1,6 of 0.6mm skew (7104 099 28260)
Bad HF track	No audible defect		TNO 8 of Sub chassis 8A
Hwavy fingerprint	No track jumper/plops		TNO 10 of Sub chassis 8A
Playback position	Solid, Normal position (Set is located on a flat surface, floor)		

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

Remarks :

4. (1)All speaker "R" channel "+" connect to equipment "+" for measurement.
(2) All speaker "L" channel "-" connect to equipment "+" for measurement (because all "L"channel output are reverse).

CD / MP3 SPECIFICATION

Class No	FWM9000 All Version				Ver	Issued Date
					1	08-09-2011
					2	
					3	
NAME : Andy Lai	10	10	SH 190 -10			A4
KT		CHECK	DATE :			

TECHNIAL DESCRIPTION

iPOD - Part Specifications

GENERAL PART

Measurement are directly done at the for support DCK3060 Dock (*2)

Description	Extern Filter	Nom	Lim	Unit
Output Resistance			N/A	Ohms
Channel Unbalance			< ± 2	dB
Frequency Response (125 Hz - 16 kHz)		0	± 4	dB
Signal to Noise Ration (Unweighted)(*1)		50	45	dB
Signal to Noise Ration (A - weighted)(*1)		55	50	dBA
input sensitivity		500	900	mV
Charge Supply Voltage (DC +5V 800mA)(only Ipod)		+5		V

Remark :

(*1) Measured at iPOD level

(*2) All speaker "R" channel "+" connect to equipment " + "for measurement.

All speaker "L" channel "-" connect to equipment " + "for measurement (because all "L"channel output are reverse).

iPOD SPECIFICATION

Class No	FWM9000 All Version					Ver	Issued Date
						1	08-09-2011
						2	
						3	
NAME : Andy Lai	11	5	SH 190 -11				A4
KT			CHECK				

2.0 SAFETY INSTRUCTIONS



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



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.



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.



WARNUNG

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



AVVERTIMENTO

Tutti IC e parecchi semi-conduttori sono sensibili alle scariche statiche (ESD).
La loro longevità potrebbe essere fortemente ridotta 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.



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

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



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



Les normes de sécurité exigent que l'appareil soit remis à l'état d'origine et que soient utilisées les pièces de rechange identiques à celles spécifiées.



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



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.



Warning !

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



Varning !

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



Varoitus !

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

DK Advarsel !

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

"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."

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.

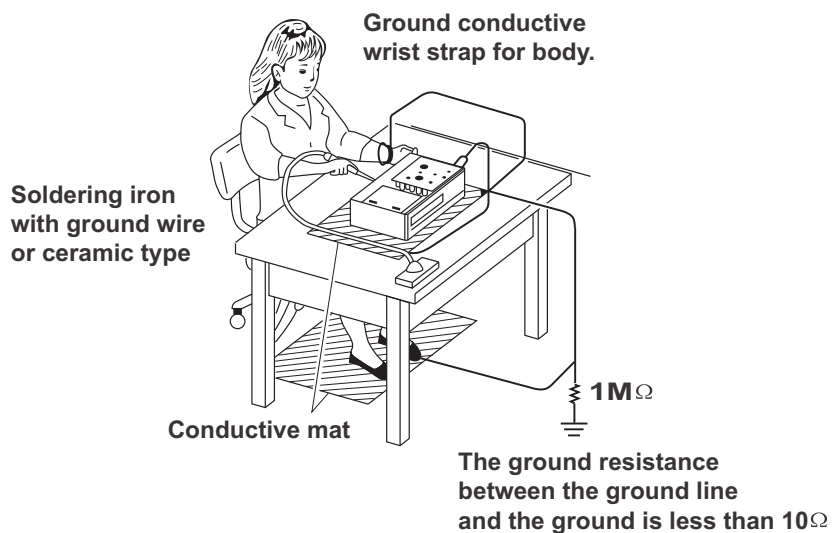
When the power supply is being turned on, you may not remove this laser cautions label. If it removes, radiation of laser may be received.

PREPARATION OF SERVICING

Pickup Head consists of a laser diode that is very susceptible to external static electricity.

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 from damage by static electricity.

And also, the LSI and IC are same as above.



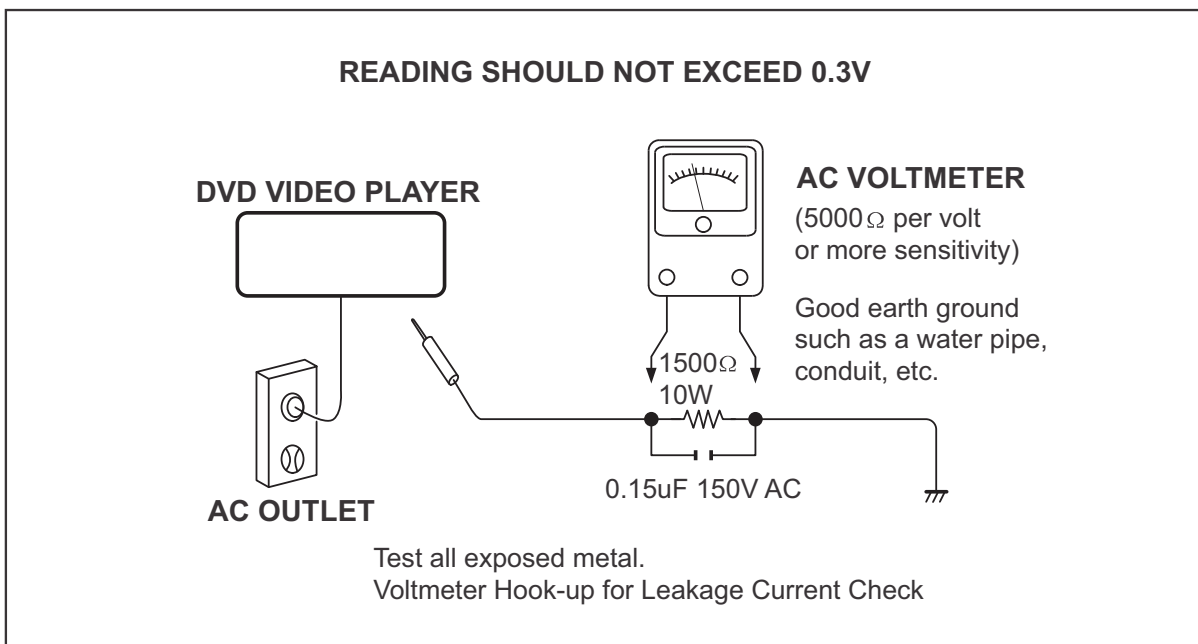
SAFTY NOTICE

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 $0.15\mu\text{F}$ 150V AC capacitor between a known 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.).

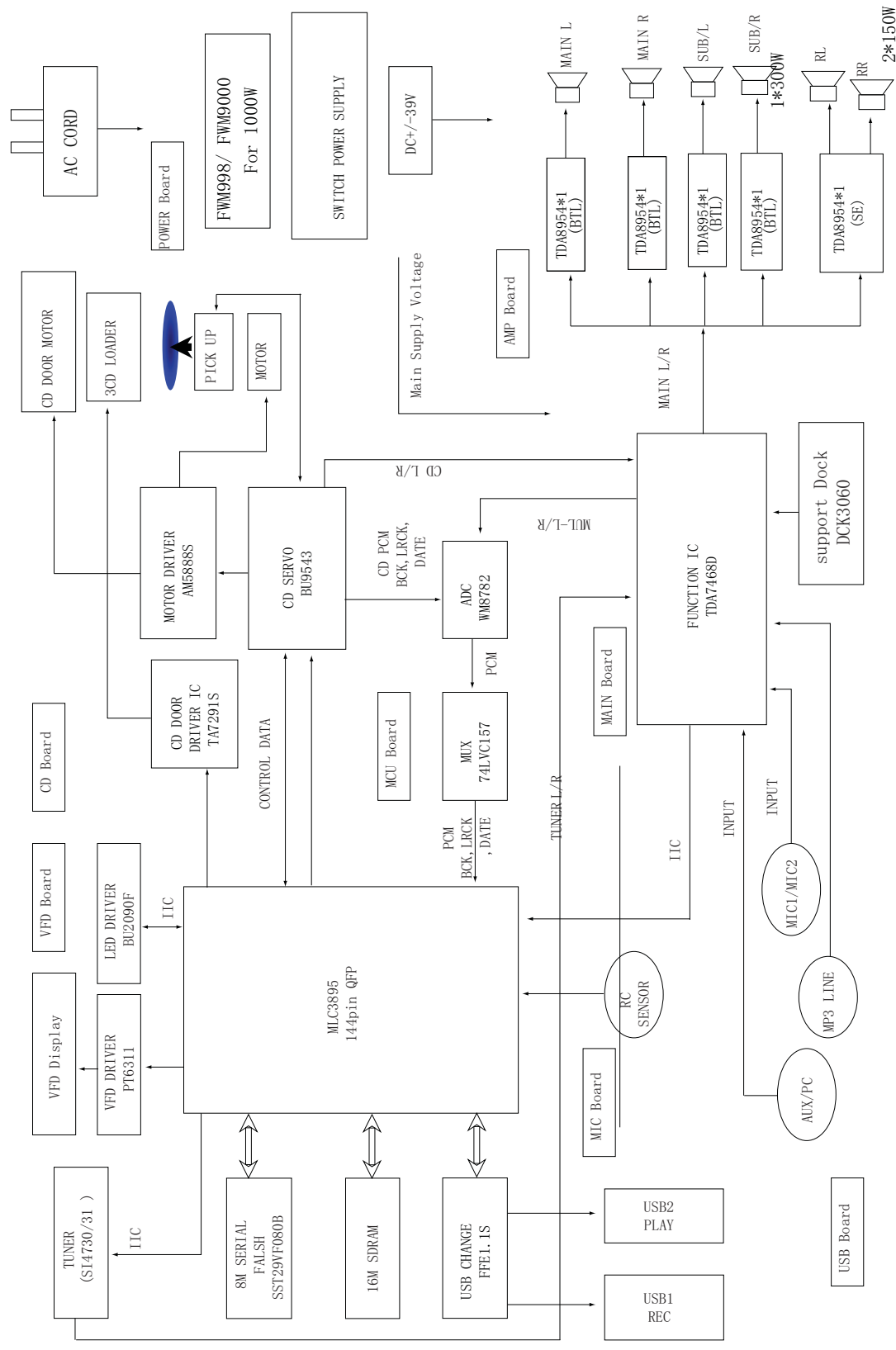
Measure the AC voltage across the 1500Ω resistor. The test must be conducted with the AC switch on and then repeated with the AC switch off. The AC voltage indicated by the meter may not exceed 0.3V. A reading exceeding 0.3V indicates that a dangerous potential exists, the fault must be located and corrected. 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.

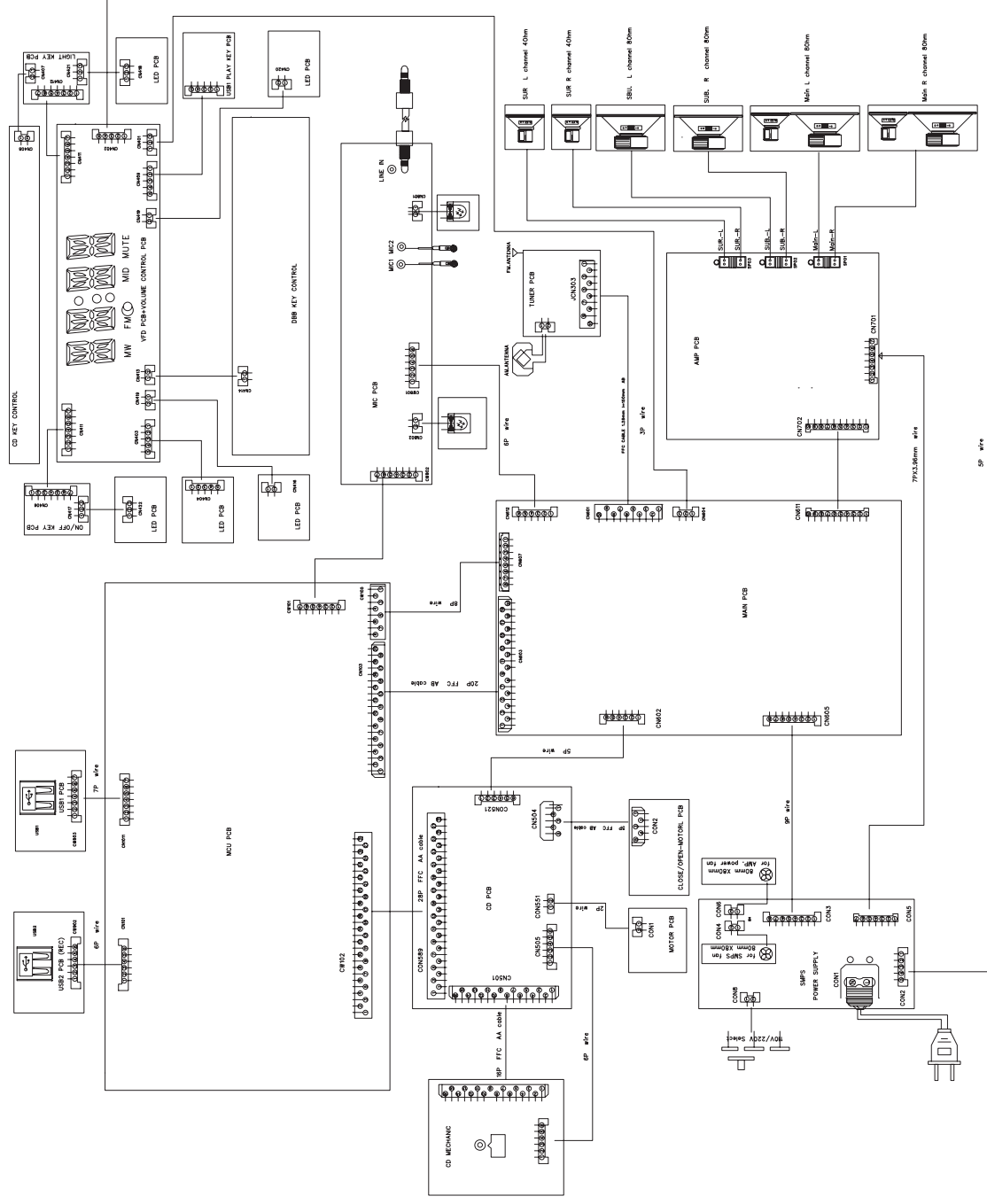


The lightning flash with arrowhead symbol, within an equilateral triangle, is intended to alert the user to the presence of uninsulated "dangerous voltage" within the product's enclosure that may be of sufficient magnitude to constitute a risk of electric shock to persons.



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.

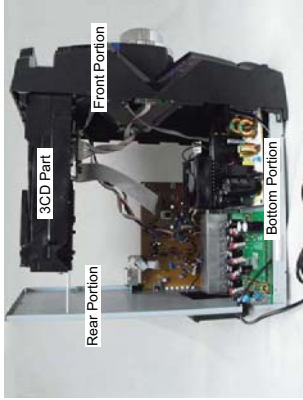
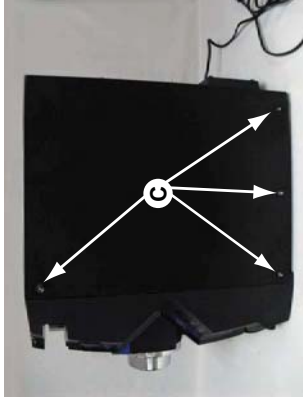
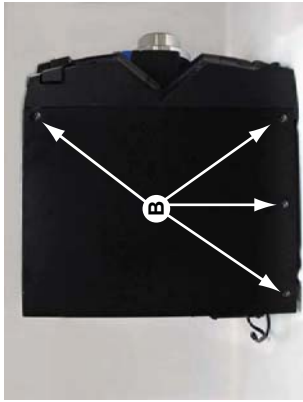
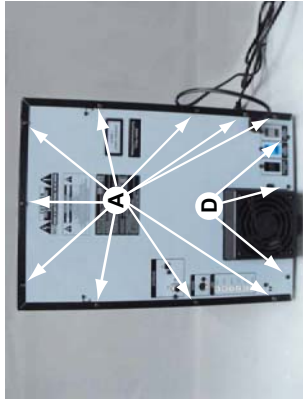




DISASSEMBLY INSTRUCTIONS

Dismantling of Rear Portion

- 1)Remove 10 screws A and 8 screws B/C as indicated to loosen the outer plate.
- 2)Remove 3 screws D as indicated to loosen the Rear portion .

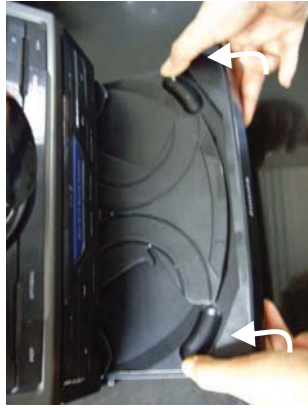


Dismantling of the CDC Module

- 1)Slide out the CDC Tray as shown in the diagram below with the help of a flat head screw driver.
- 2)Remove the Cover Tray CDC as indicated.
- 3)Loosen 2 screws E and 2 screws F to remove the CDC Module as indicated.



Remove Cover Tray CDC

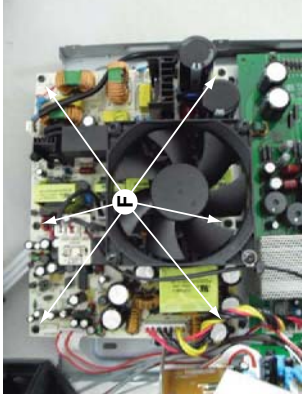
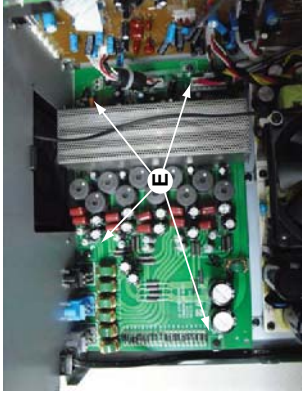
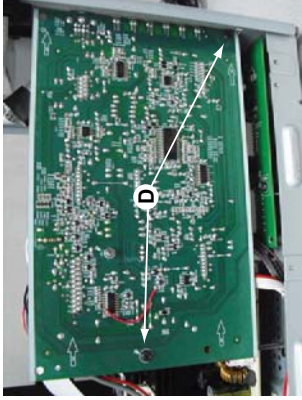
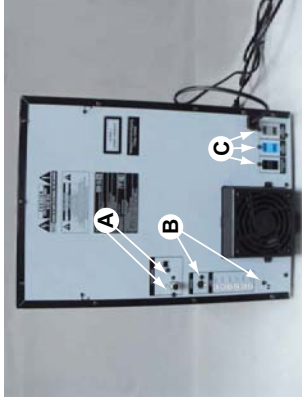


Sliding Out The CDC Tray

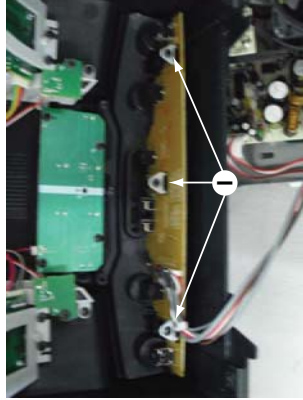
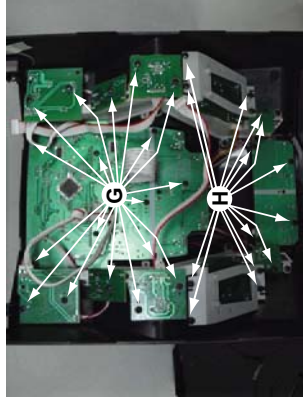


Dismantling of the PCB Board

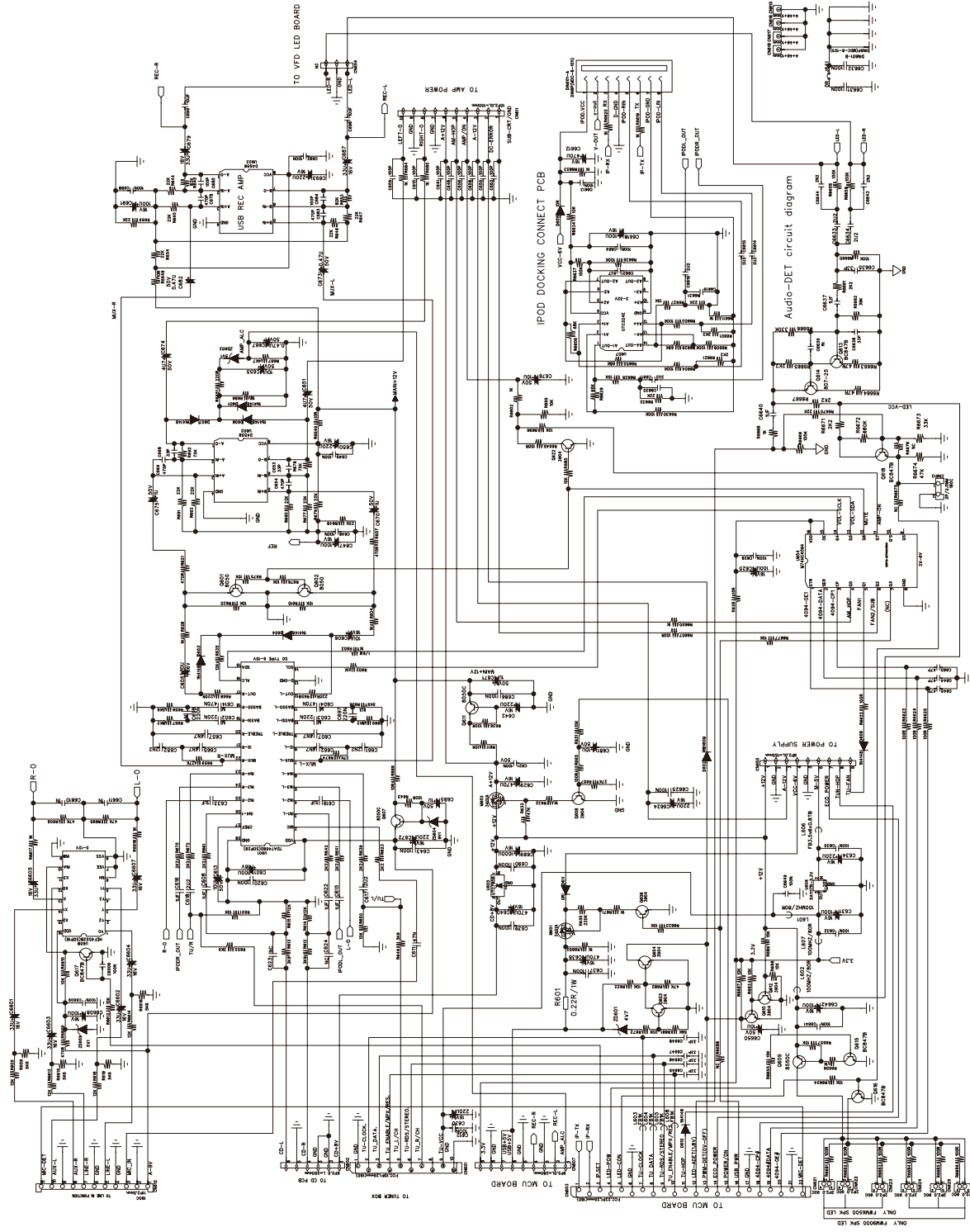
- 1) Remove 2 screws A as indicated to loosen the Tuner Board.
- 2) Remove 2 screws B and 2 screws D as indicated to loosen the Main Board.
- 3) Remove 3 screws C and 4 screws E as indicated to loosen the Amp Board.
- 4) Remove 6 screws F as indicated to loosen the AC power Board.



- 5) Remove screws G and H as indicated to loosen the MIC/KEY/USB/LED/SW Board.
- 6) Remove 3 screws I as indicated to loosen the VFD Board.
- 7) Remove Top panel and 6 screws J as indicated to loosen the Top key Board.



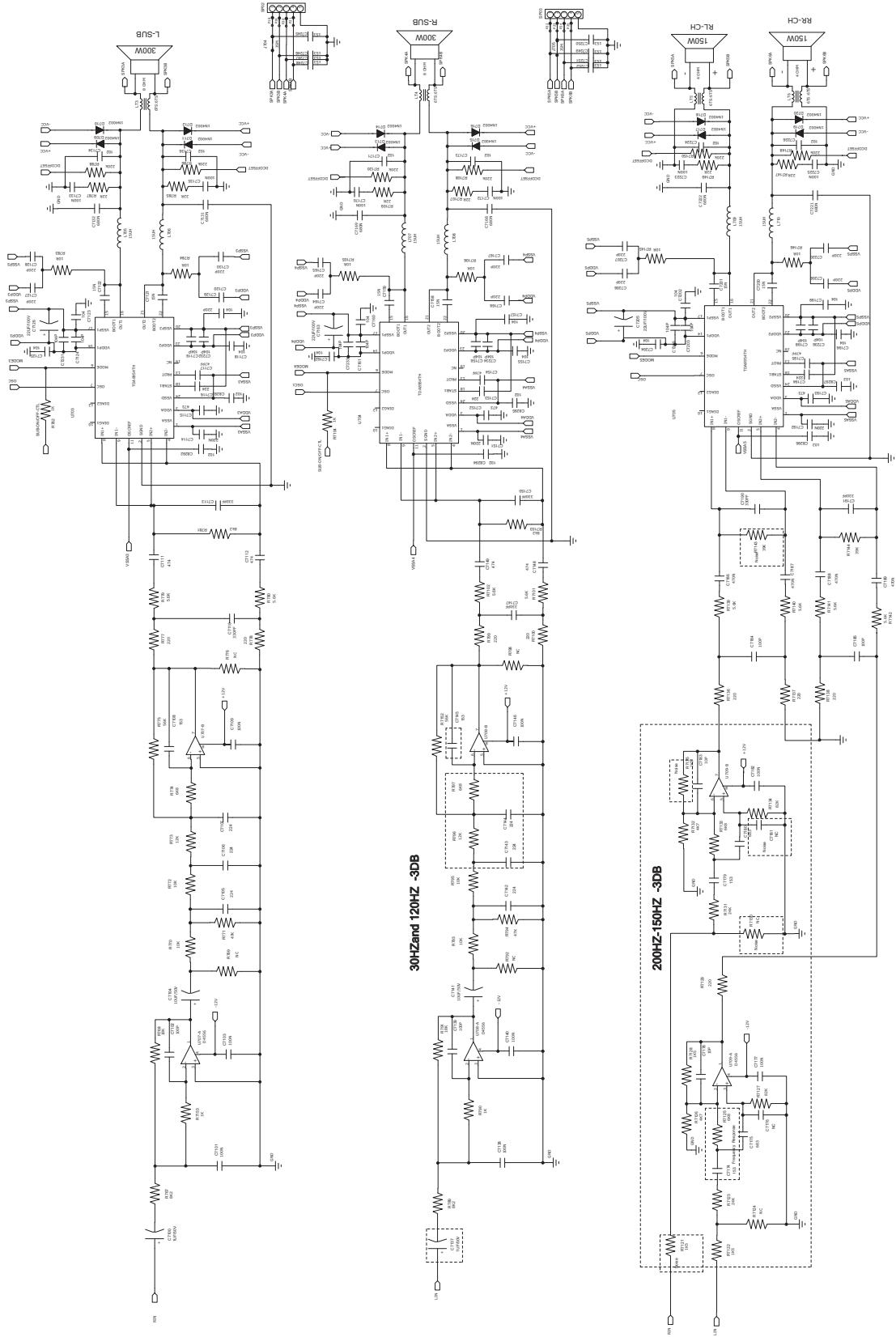
CIRCUIT DIAGRAM - MAIN BOARD



6-2



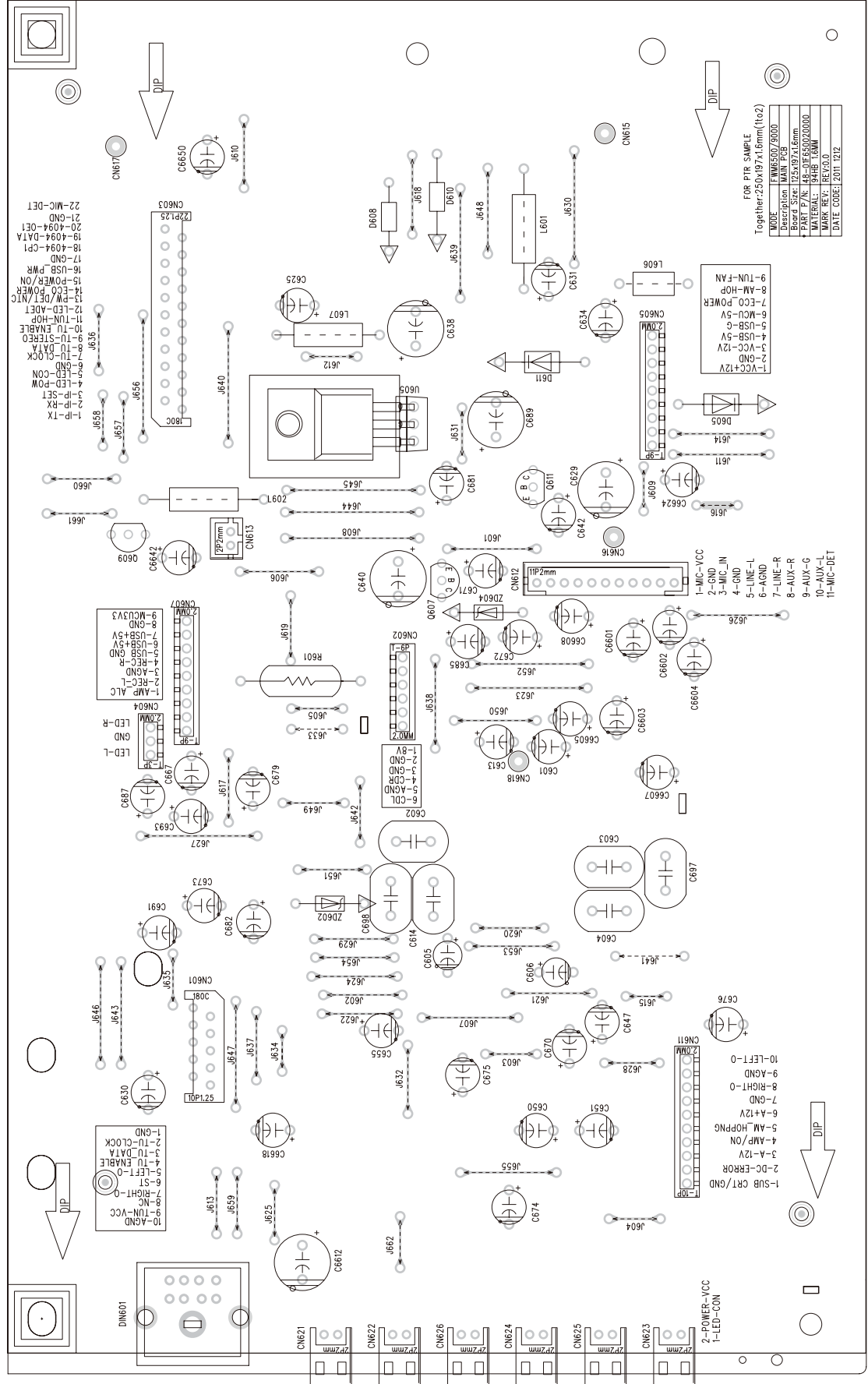
CIRCUIT DIAGRAM - AMP BOARD



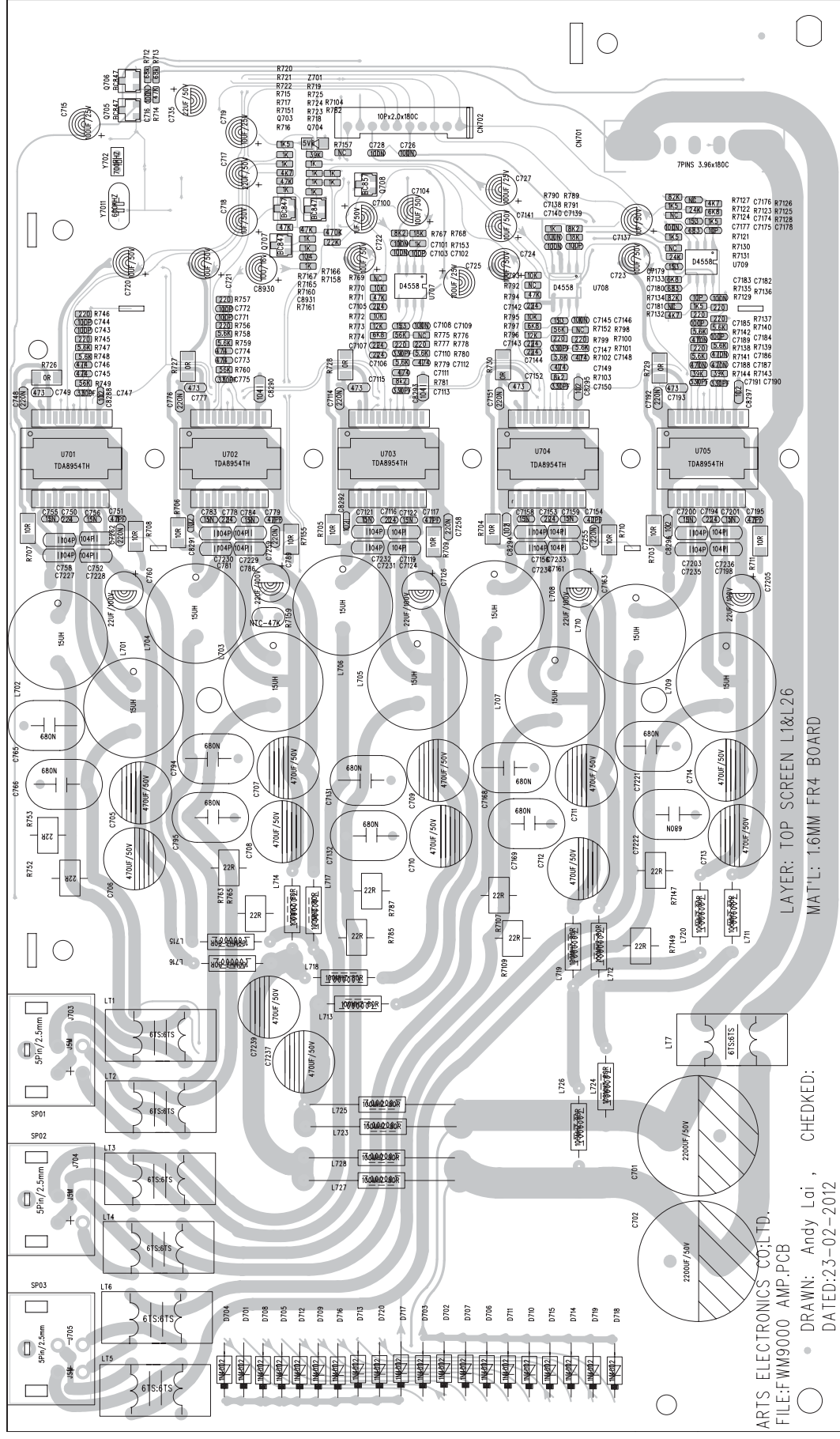
PCB LAYOUT - MAIN BOARD TOP SIDE

6-4

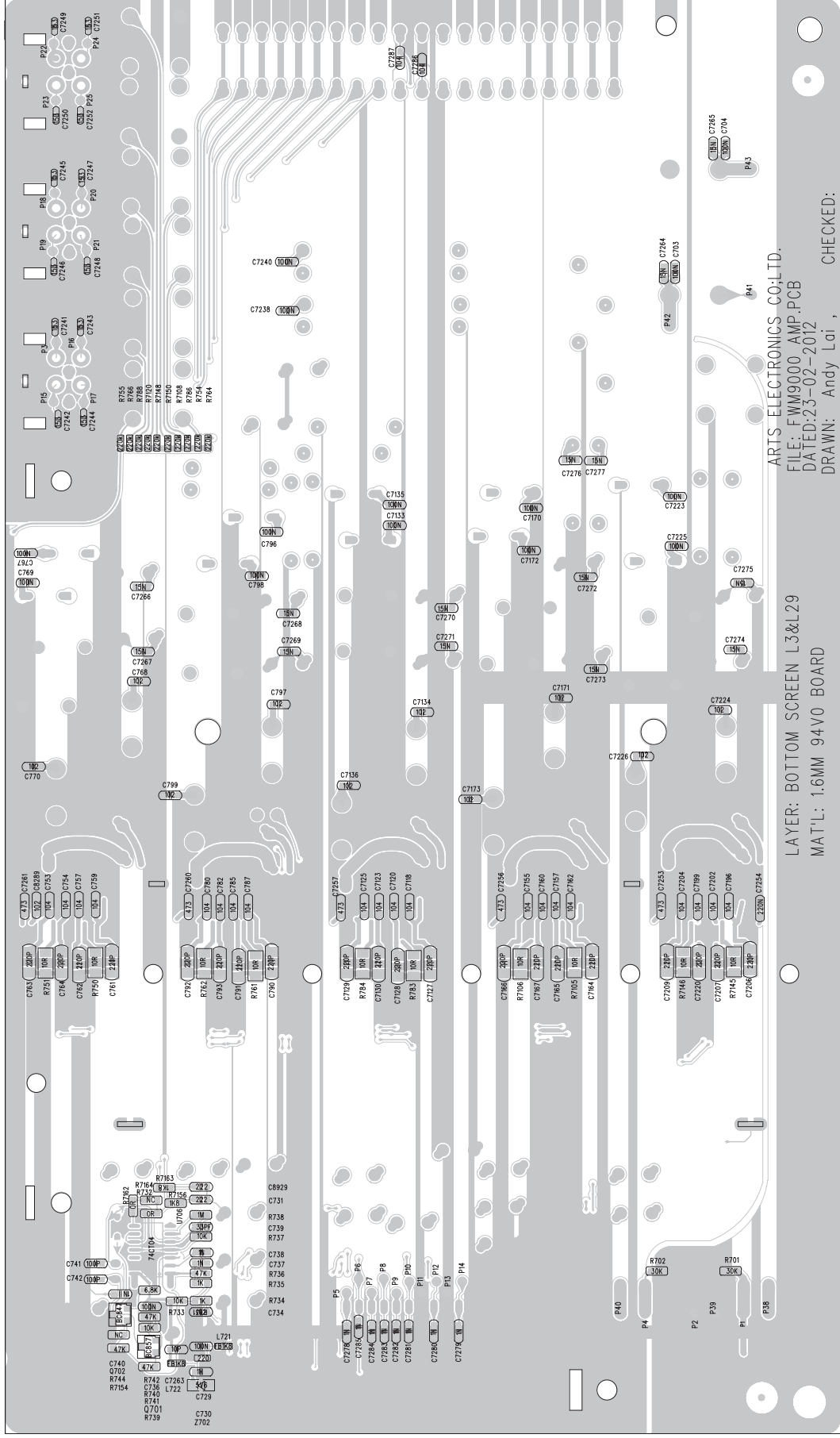
6-4



PCB LAYOUT - AMP BOARD TOP SIDE



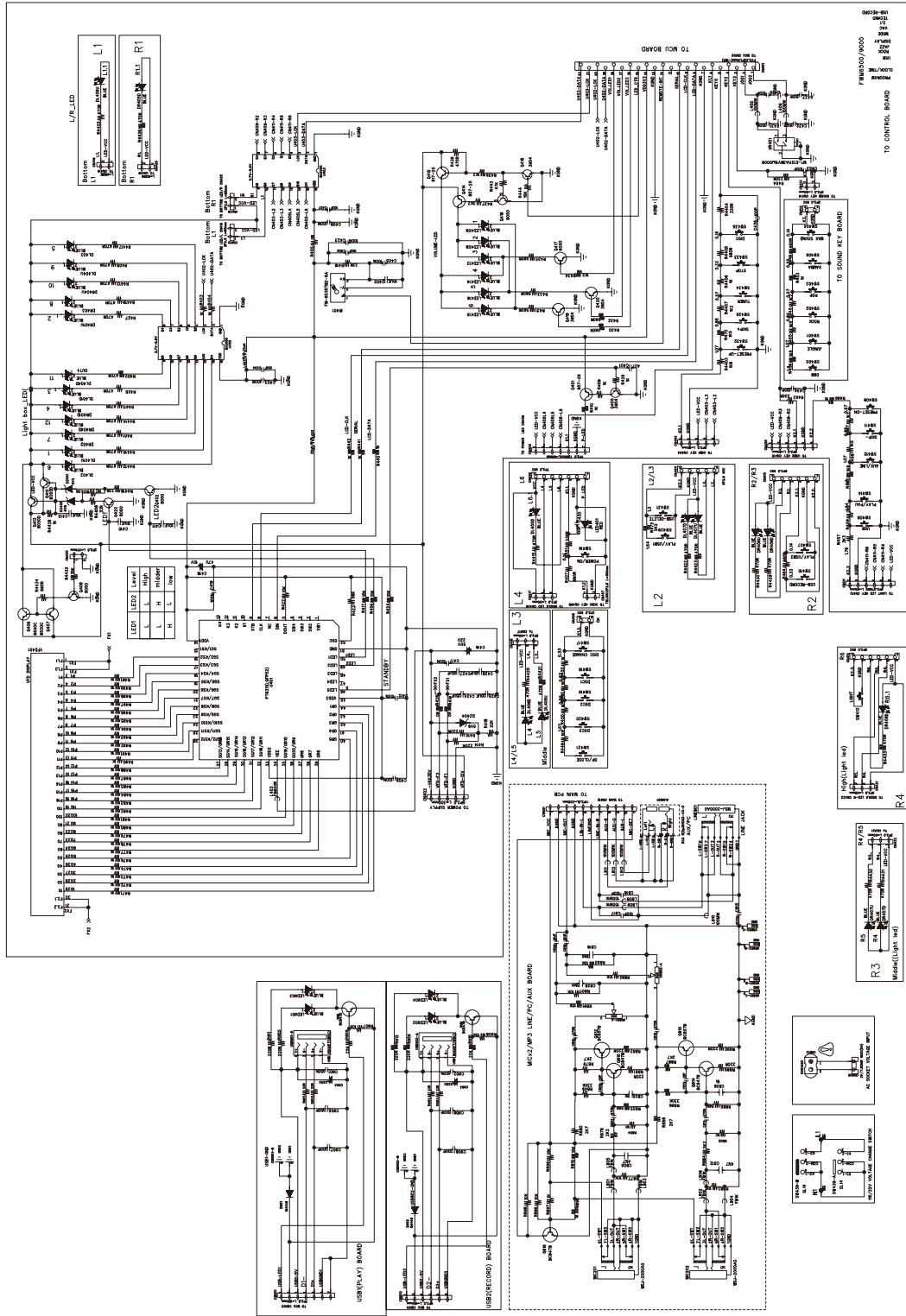
PCB LAYOUT - AMP BOARD
BOTTOM SIDE



ARTS ELECTRONICS CO.,LTD.
FILE: FWM9000 AMP.PCB
DATED:23-02-2012
DRAWN: Andy Lai ,
CHECKED:

LAYER: BOTTOM SCREEN L3&L29
MAT'L: 16MM 94V0 BOARD

CIRCUIT DIAGRAM - DISPLAY BOARD



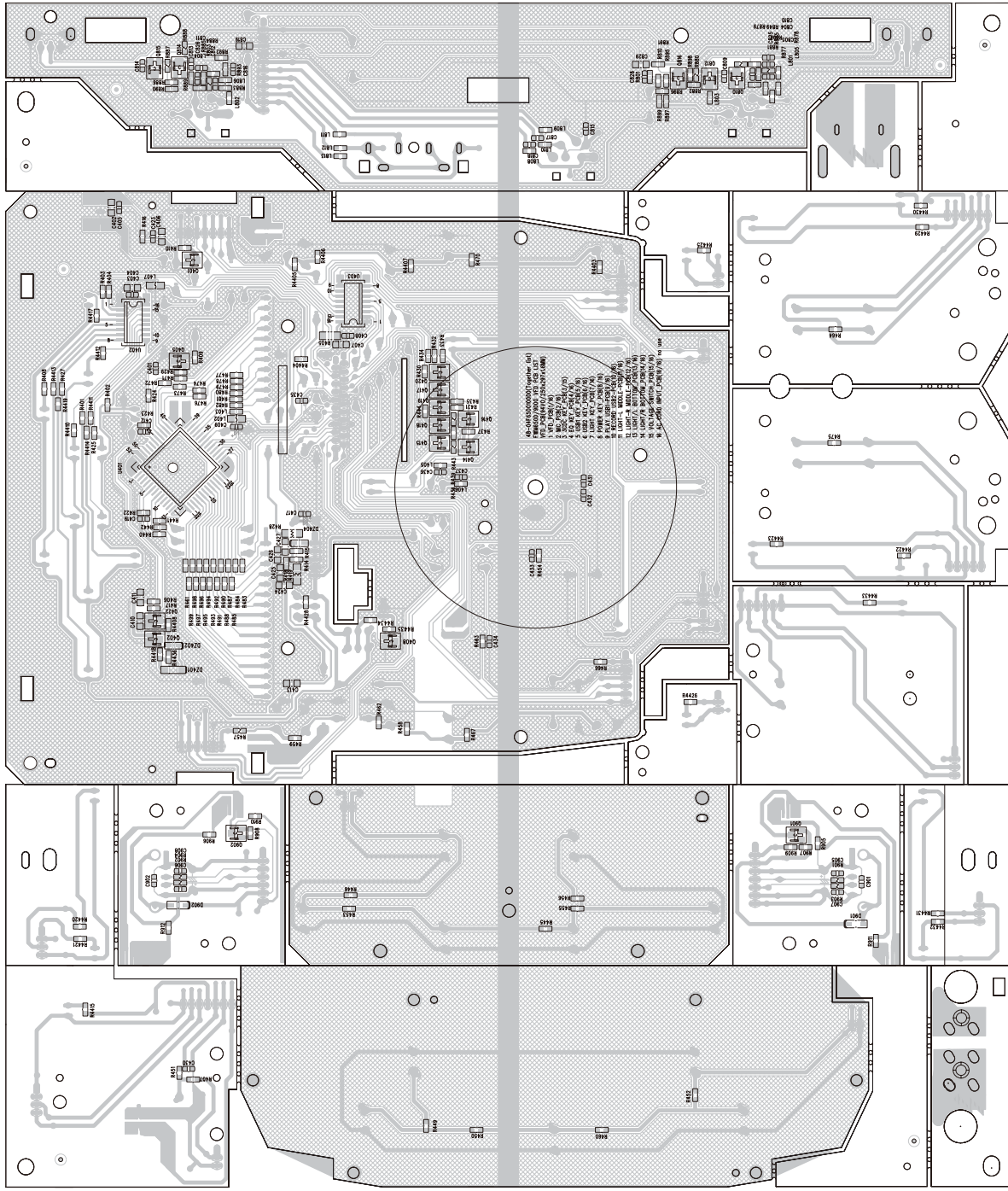
This is a detailed architectural floor plan of a large, circular building, likely a stadium or arena. The plan shows a central circular area with a smaller square structure in the middle, surrounded by concentric seating or service areas. The outer ring of the building contains various rooms, including restrooms, service counters, and utility spaces. Numerous labels are scattered throughout the plan, identifying specific rooms and equipment. A scale bar at the bottom left indicates a distance of 10 meters. A north arrow is located at the bottom right. The plan is oriented with the entrance at the top.

Key features and labels include:

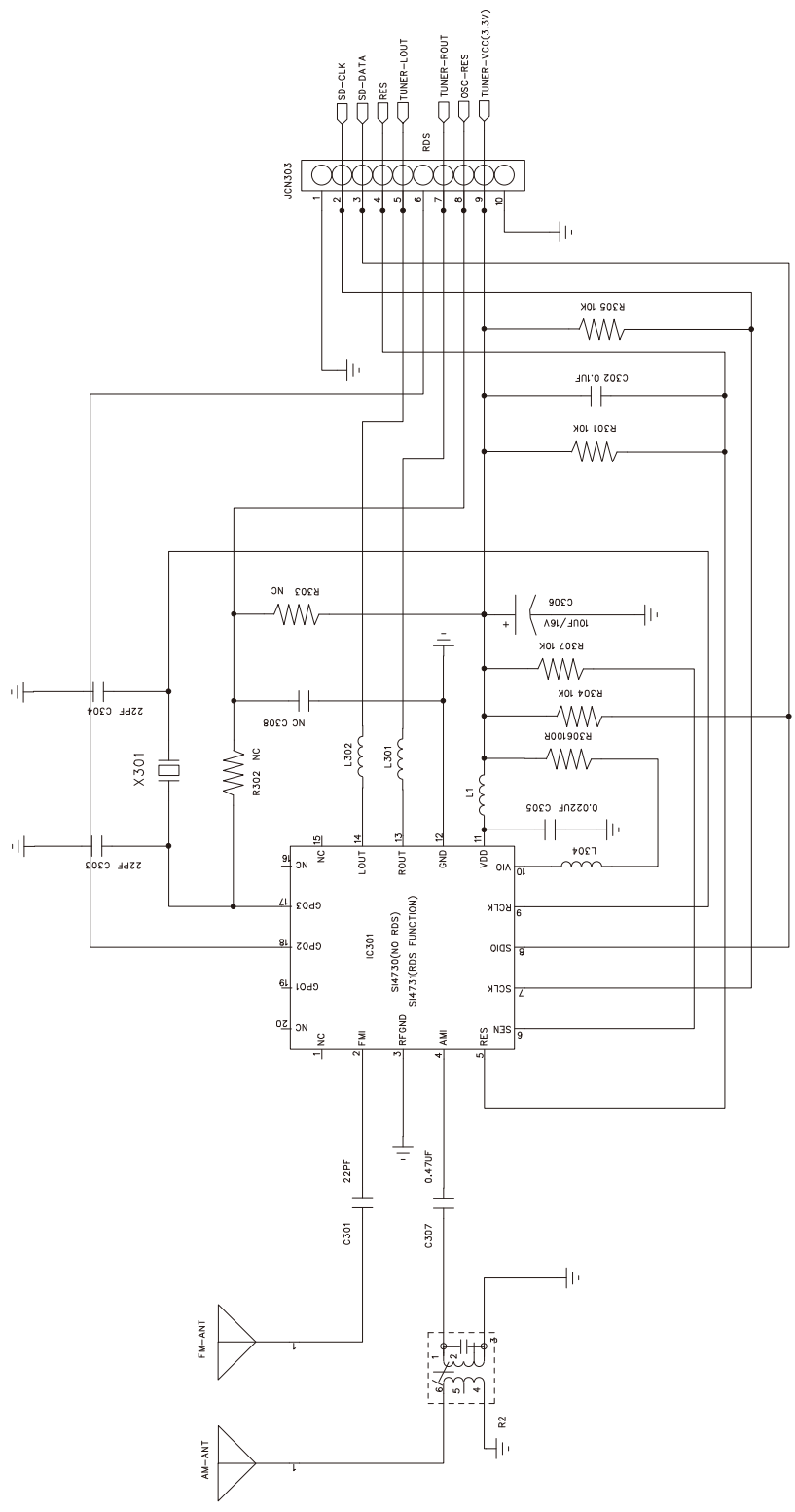
- Central Area:** A large circular space with a central square structure, possibly a stage or a large service counter.
- Outer Ring:** A series of rooms surrounding the central area, including restrooms, service counters, and utility spaces.
- Restrooms:** Labeled as "WC" (Men) and "WC" (Women) in various locations.
- Service Counters:** Labeled as "SERVICE" in several areas.
- Utility Rooms:** Labeled as "ELECTRIC", "PLUMBING", and "MECHANICAL" in various locations.
- Entrance:** Located at the top of the plan, with a large open area for people to gather.
- Scale Bar:** Located at the bottom left, indicating a distance of 10 meters.
- North Arrow:** Located at the bottom right, pointing towards the top of the plan.

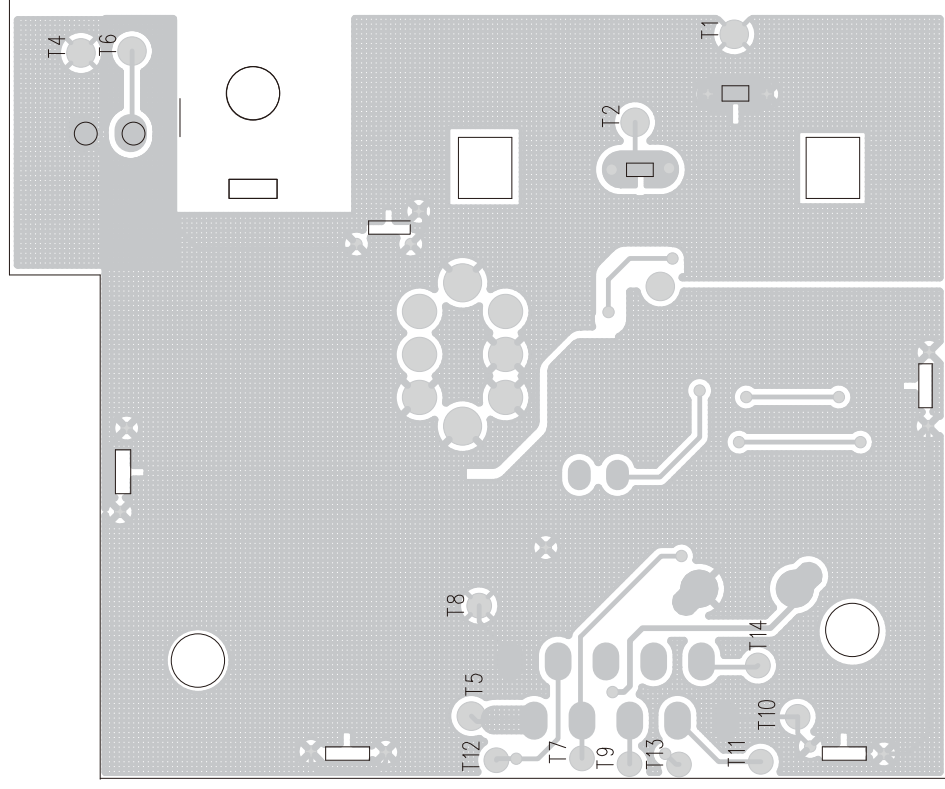
The plan is oriented with the entrance at the top. The outer ring of the building contains various rooms, including restrooms, service counters, and utility spaces. Numerous labels are scattered throughout the plan, identifying specific rooms and equipment. A scale bar at the bottom left indicates a distance of 10 meters. A north arrow is located at the bottom right. The plan is oriented with the entrance at the top.

PCB LAYOUT - DISPLAY/KEY BOARD
BOTTOM SIDE



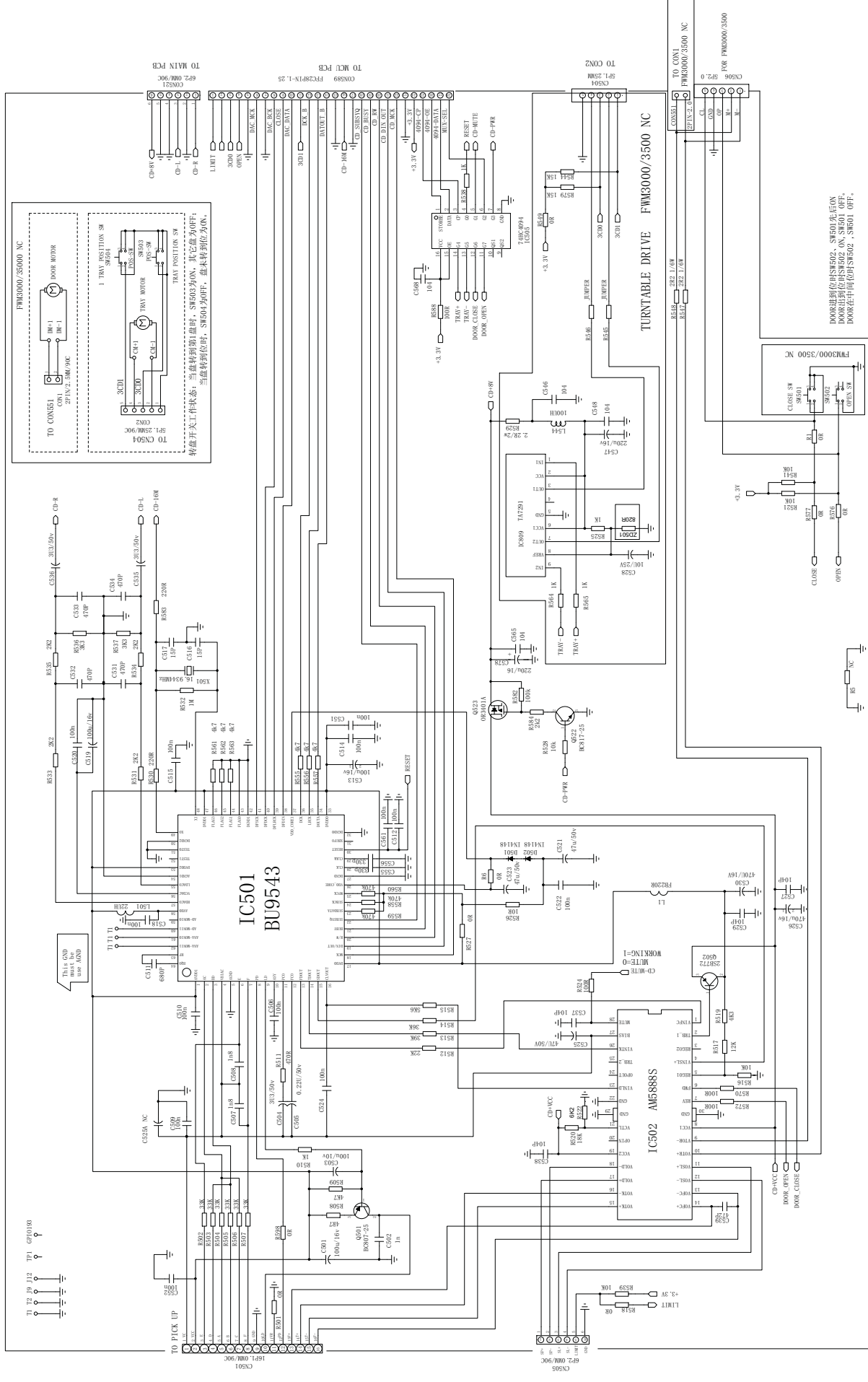
CIRCUIT DIAGRAM - TUNER BOARD



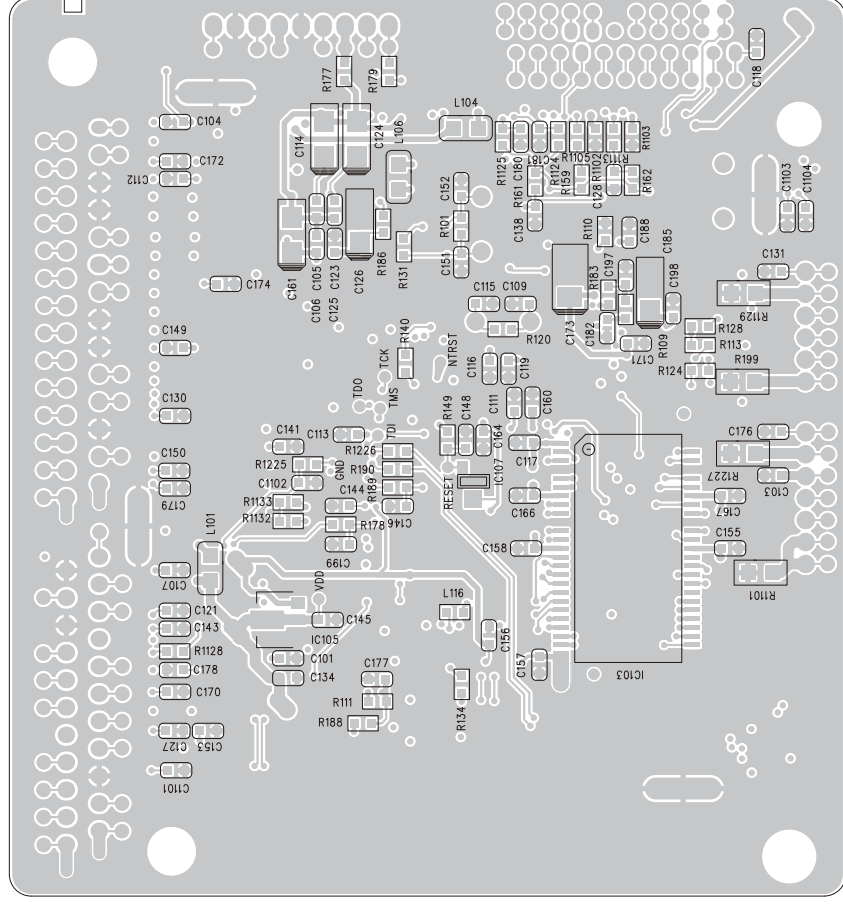
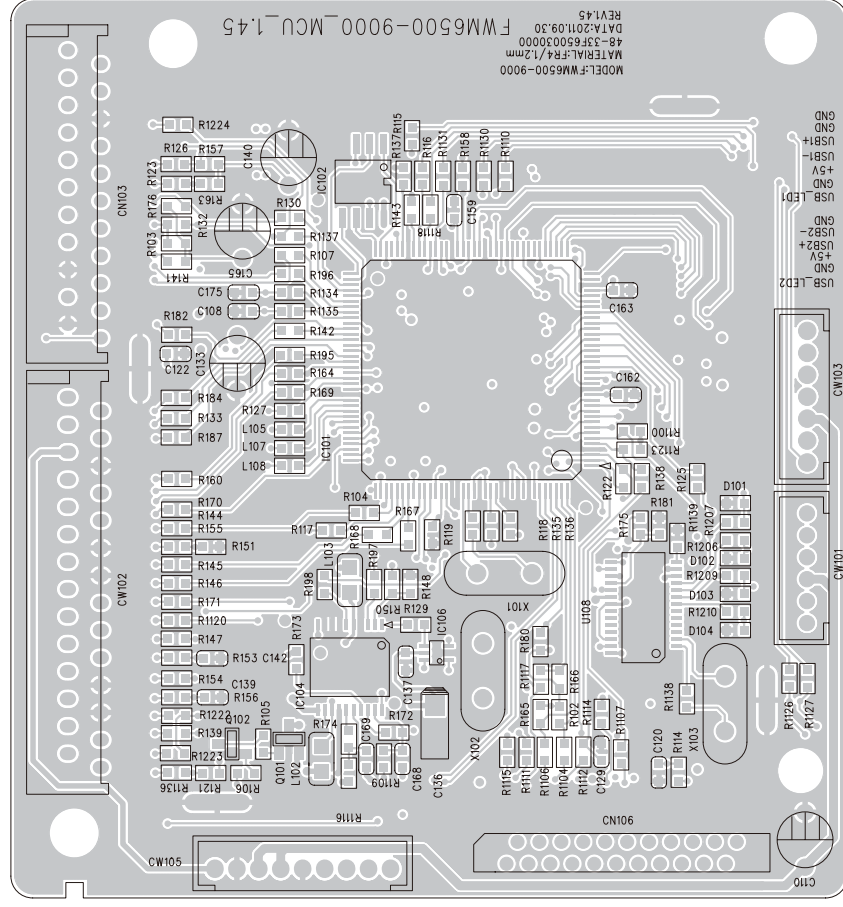


[illegible]

CIRCUIT DIAGRAM - CD BOARD

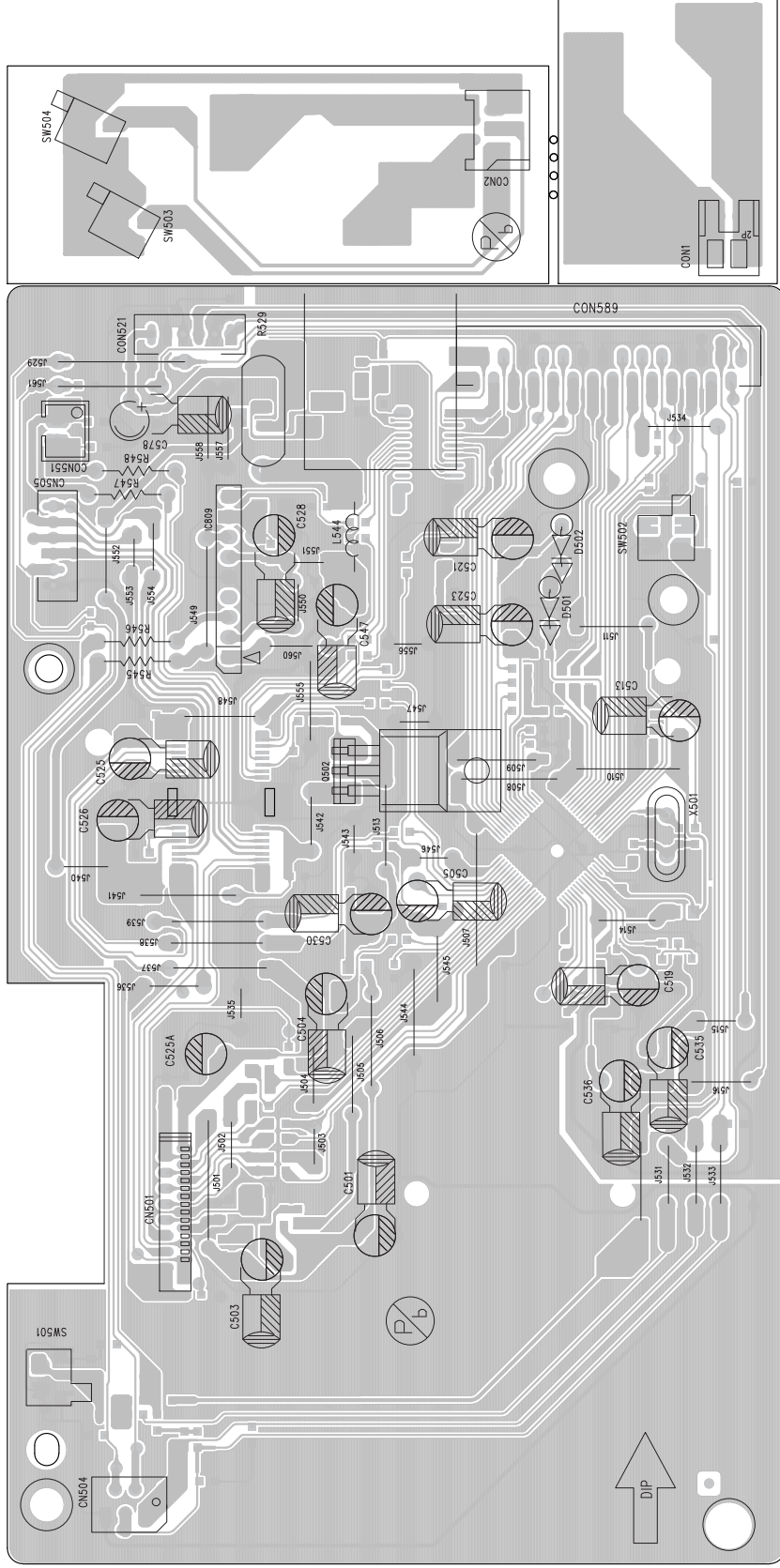


9-3



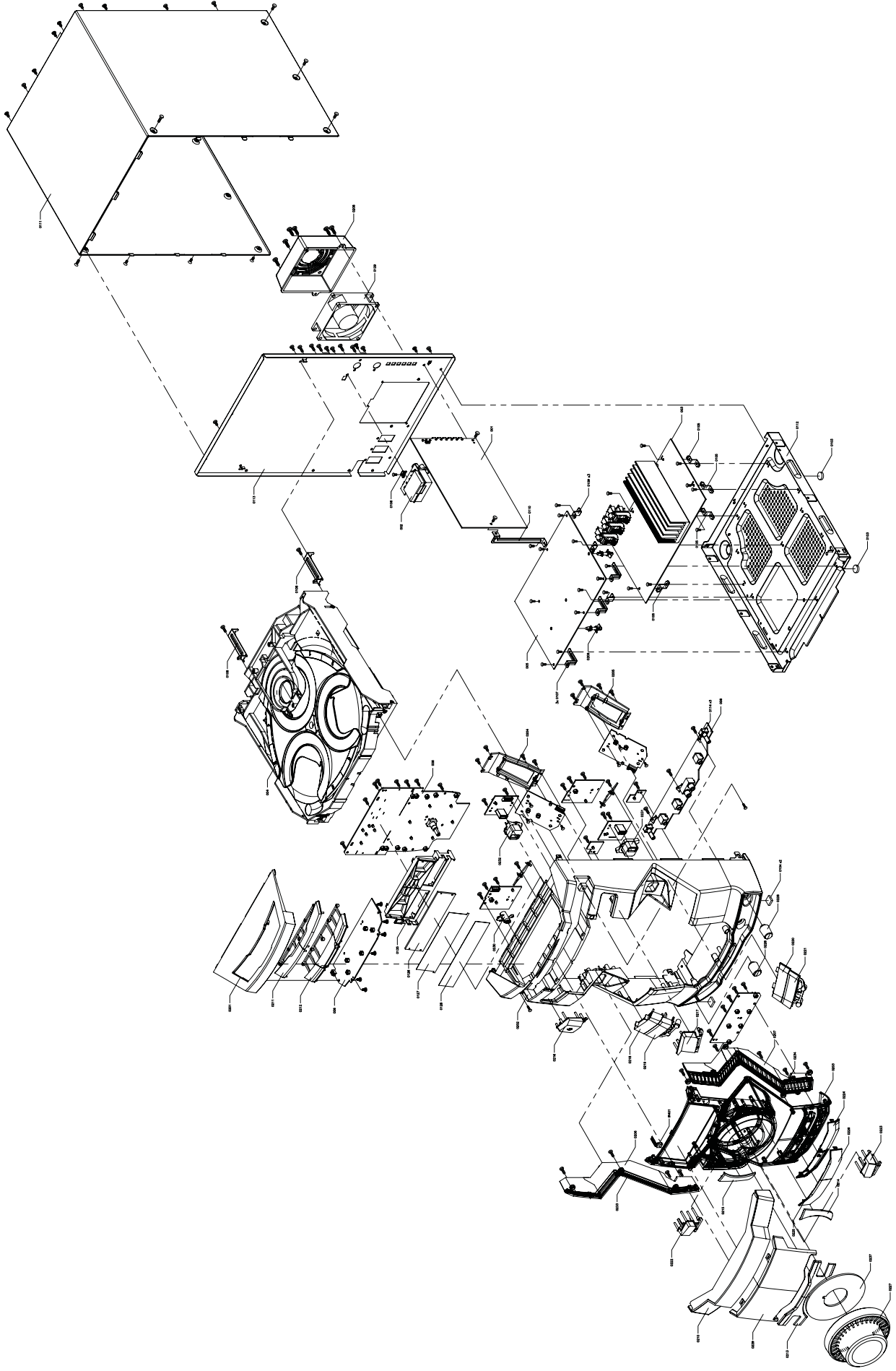
PCB LAYOUT - CD BOARD
TOP SIDE

9-4



9-4

10-1



10-1

EXPLODED VIEW