

Service
Service
Service



Service Manual

CONTENTS

Technical specification-----	1-1--1-10
Safety Instruction-----	2-1
Version variation -----	2-2
Block diagram-----	3-1
Wiring diagram -----	3-2
Circuit diagram-----	4-1--4-4
LCD+KEY LINE IN+AUX CD+USB BOARD	
top & bottom layout-----	5-1--5-5
Exploded diagram -----	6-1
Disassembly drawing-----	7-1--7-5

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Published by LZ 1312 Subject to modification

3140 038 60120

Version 1.0



**CLASS 1
LASER PRODUCT**

PHILIPS

DEPICTION		Pos	Description	Page
			FRONT CABINET	
		1	OPEN/CLOSE (BUTTON)	
		2	ALBUM PRESET + (BUTTON)	
		3	(BUTTON)>> (BUTTON)	
		4	TUNER (BUTTON)	
		5	AUX/MP3 LINK (BUTTON)	
		6	(BUTTON)MAX SOUND (BUTTON)	
		7	DSC (BUTTON)	
		8	USB (JACK)	
		9	POWER ON/OFF (BUTTON)	
		10	ALBUM PRESET -	
		11	STOP (BUTTON)	
		12	DISC (BUTTON)	
		13	USB (BUTTON)	
		14	VOLUME (KNOB)	
		15	DBB (BUTTON)	
		16	MP3 LINK(JACK)	
		17	PLAY (BUTTON)	
		18	<< (BUTTON)	
		19	SPK(LEFT)	
20	SPK(RIGHT)			
</				

[illegible]

GENERAL DESCRIPTION

MP3-USB Mini Hi Fi System with Digital PLL Tuner , CD-MP3, 100 W+-1dB *2 /per channel Universal Class D Power Amplifier
Aux In, mp3 paly in , Remote Control

LIFETIME : 7 Years

Class	Tuner	Supply + Amplifier	Loudspeaker Boxes	USB	Clock	CD / MP3
I			X			
II	X	X			X	X
III						
Page	8	4,5	4	9	6	7

SAFETY requirements

Version	Safety	EMC
55	EN 60065	
78	EN 60065	

RADIATION / IMMUNITY requirments (EMC)

CLIMATIC requirements

ALL climates : + 5 Degree till + 35 Degree
MODERATE climates : + N.A till N.A Degree

PERFORMANCE CLASSES

POWER SUPPLY

MAINS (A.C.)	120/230 Vac	230VAC			
Version	55/78	/			
Voltage Selection	yes				
Frequency	50/60Hz				

POWER CONSUMER

	FWM2200/55/77/78			
Standby :	< = 10W			
(DEMO mode " OFF ") , NOM. A, INPUT				
Maximum :	/			
@ 1/8 Prated , NOM. A, INPUT				
ECO Power mode :	< = 2W			

Q and R according to Product Division Rules

Quality : 0.4 % (Major) 1.5 % (Mirror)
Reliability : 2.0 % (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 - jun 2001)

DERIVED	REMARKS	APPROBATION

Remarks

* power out 100W+-1dB * /per channel

GENERAL PART 1 - GENERAL SPECIFICATION

Class No	FWM2200 MICRO SYSTEM			Ver	Issued Date
				1	2013-3-22"
				2	
				3	
NAME : Luochide	10		SH 190 - 3		A4
CHECK: Douglas	DATE :2013-3-22"	YUSAN INDUSTRIES LTD			

TECHNIAL DESCRIPTION				
Total power 200W, matching SPEAKER of 100W+-1dB x 2 channel 6 ohm load.				
GENERAL PART				
OUTPUT stage Protection		: Yes	Temperature : YES	
LoudSpeaker D.C. Protection		: Yes. Shorcircuit : Yes		
INDICATORS				
Standby Mode Indicator		: LCD display Clock active		
ECO Mode Indiicator		: LCD turns off, ECO - Standby LED turn on (Only for 12/05/37)		
ELECTRICAL DATA				
DSC :	Rock, Jazz, Optimal, Techno	Channel Differencer at -46dB	3	dB
DBB	OFF	Hum (Volume Minimun -)	< 0.6	μW
SIS :	N/A	Residual Noise (Volume Minimun)	<0.07	μW
VAC :	N/A	Channel Separation (at 1 kHz)	i 35	dB
WOOX :	N/A	Signal / Noise (weighted)	i 55	dB
INTERCONNECTS				
Input Sensitivity(±2 dB)rated ouput power at 1 kHz and 10kHz. Line Output Voltage (*1)				
Tuner	: FM MODE 75KZH -CD 6dB	Line Out (Left / Right)	N.A	
CD	: 0 dB track (Audio Disc 1, Trk 35)	Subwoofer Out	N.A	
USB	: 0 dB track (1K 0dB)	Headphone	700mV, RL = 32§	
AUX	: Nor:2000mV	Digital Coaxial Out	N.A	
TAPE	: NC	Booster Out	N.A	
mp3 in	: Nor:650mV Lim: 350mV ~ 800mV	Digital Coaxial Out	N.A	
OUTPUT POWER (* 1ch) At THD = 10% (Measured with 20Hz-22KHz filter),				
Power output (RMS)		2 channel	100W*2 Measure 1ch	
SOURCE BALANCE (Measured with 20Hz-22KHz filter) BiAmp				
Location	Condition	Normal	Limit	
MP3 LINK	650mV 1KHz Ref	0dB	REF	
FM	Euro 40KHz Dev. USA 75KHz Dev.	i ±-4dB	i ±-5dB	
CD	0dB	i ±-4dB	i ±-5dB	
USB	0dB	i ±-4dB	i ±-5dB	
Rated Impedance :4 ohm				
Remarks				
(*1) Electrical parameters are to be measuremend at specker terminals across 6 Ohm load (pure resistor) with rated input signal in AUX mode; DSC OFF mode with DBB OFF IS off unless specified otherwise				
GENERAL PART 1 - TECHNICAL SPECIFICATION				
Class No	FWM2200 MICRO SYSTEM		Ver	Issued Date
			1	2013-3-22"
			2	
			3	
NAME : Luochide		10	SH 190 - 4	
	CHECK: Douglas	DATE : 2013-3-22"	YUSAN INDUSTRIES LTD	
A4				

AUDIO SIGNAL PROCESSING

Micro Hi-Fi System with PLL Tuner ,USB, CD-MP3, 100W+-1dB*2 channel (1speaker load) Class D Digital Power Amplifier

1) DSC (Digital Sound Control)

Input sinewave 2000mV at 1kHz to R/L channel of AUX-IN socket

Set DSC to Flat mode

Adjust volume to obtain 500mW across 6 ohm load at 1ch speaker output

The 500mW will be used as 0dB reference

Inject sinewave 2000MV to AUX - IN socket with frequencies indicated below :

Inject sinewave 650MV to MP3-LINK socket with frequencies indicated below :

Tabel 1a (Tolerance ± 3 dB)

Frequency	DSC Modes with DBB Off			
	JAZZ DBB Off	ROCK DBB Off	TECHNO DBB ON	OPTIMAL DBB ON
100 Hz	-5dB	+5 dB	-2 dB	+ 5 dB
1 kHz	0	+ 2 dB	-2 dB	0
10 kHz	+2dB	+ 6 dB	-4 dB	0dB

2) DBB (Dynamic Bass Boot)

Play CD testing signal of 1KHZ

Set DSC to FLAT mode and switch off DBB

Adjust volume level will be as 0 dB reference.

Tabel 2 (Tolerance ± 3 dB)

Frequency	DBB OFF	DBB ON		
100HZ	0	+5dB		

Remarks

GENERAL PART 1 - AUDIO SIGNAL SPECIFICATION (1)

Class No	FWM2200 MICRO SYSTEM				Ver	Issued Date
					1	2013-3-22日
					2	
					3	
NAME : Luochide		10		SH 190 - 5		A4
	CHECK: Douglas	DATE : 2013-3-22日		YUSAN INDUSTRIES LTD		

TECHNICAL DESCRIPTION					
SOFTWARE IMPLEMENTED CLOCK / TIMER FUNCTION WITH 32.768Khz QUARTZ OSCILLATOR.					
GENERAL PART					
Timer Setting	:	Clock and Timer			
Timer Wakeup Mode	:	LAST SETTING (MODE)			
Remarks Time Setting	:	for 24hrs (05/12/98/55/79/96/77/78) ,for 12 hrs (37/)			
Volume at Wakeup	:	Last Setting			
No of Timer Settings	:	1			
Clock Accuracy	:	Normal: 1 sec/day Limit : 2 sec/day			
INDICATORS					
Display Type	:	LCD			
Remark					
CLOCK / TIMMER SPECIFICATION					
Class No	FWM2200 MICRO SYSTEM			Ver	Issued Date
				1	2013-3-22日
				2	
				3	
NAME : Luochide		10	SH 190 - 6	A4	
	CHECK: Douglas	DATE : 2013-3-22日	YUSAN INDUSTRIES LTD		

TECHNICAL DESCRIPTION

CD + MP3 - Part Specifications

CD mechanism refer to Philips standard specification

GENERAL PART

Measurement are directly done at the connector on CDC board

Description	External Filter	Nom	Lim	Unit
Output Resistance	No	/	/	Ohms
Output Voltage - Unloaded (0dB , 1 kHz)	No	/	/	Vrms
Channel Unbalance	YES	0	-3	dB
Frequency Response (125 Hz - 16 kHz)	YES	0	-3	dB
Signal to Noise Ratio (Unweighted)	Yes	60	50	dB
Signal to Noise Ratio (A - weighted)	Yes	65	55	dBA
Crosstalk (1kHz)	Yes	60	50	dB
Crosstalk (125Hz to 16kHz)	No	36	30	dB
Hum & Noise (*1)	No	400	500	nW
Emphasis	-	/	/	/

Remark

CD / MP3 SPECIFICATION

Class No		FWM2200 MICRO SYSTEM						Ver	Issued Date	
								1	2013-3-22日	
								2		
								3		
NAME :Luochide				10		SH 190 - 7				A4
		CHECK: Douglas	DATE :2013-3-22日		YUSAN INDUSTRIES LTD					

TECHNIAL DESCRIPTION									
TUNER using Digital PLL Tuner SI4730D60									
GENERAL PART									
WAVE RANGE			TOLERANCE			TUNING GRID			
FM 87.5 - 108 MHz						50KHZ			
MW 530 - 1710 kHz						10KHz			
AERIAL									
FM : PIGTAIL ANT 1200MM									
MW : AM LOOP ANTENNA AH42-20001P-A D145x120mm									
INDICATORS									
ELECTRICAL DATA									
A.M		Nom	Limit	Unit	F.M.		Nom	Limit	Unit
					- 3 dB Limiting Point		/	/	dBf
Channel Unbalance		: 0	-3	dB	Channel Unbalance		: 0	-3	dB
AGC Figure of Merit		: 30	25	dB	Distortion (RF 1mV, Frq Dev.75 kHz)		: 3	7	%
Distortion (RF 50mV, M 80%)		: 3	7	%	Stereo - 46 dB Quieting		: 46	49	dBf
IF		/	/	kHz	Crosstalk (RF1mV, Freq Dev.40kHz)		: 25	18	dB
					IF		/	/	MHz
Search tuning sensitivity		60	72	dBV/m	Search tuning sensitivity		28	37	dBf
Wave Range		Noise Limited Sensitivity 26 dB		Image Rejection dB	IF Rejection dB	Large Signal	Selectivity S3 / S9 / 300kHz dB		
MW 600 kHz		Nom.	1500uV/M	/	/	1000mV/M	/		
		Lim.	4000uV/M	/	/	500mV/M	/		
MW 1400 kHz		Nom.	1500uV/M	/	/	1000mV/M	/		
		Lim.	4000uV/M	/	/	500mV/M	/		
FM 98 MHz		Nom.	18dBf	/	/	116 dBf	30		
		Lim.	22dBf	/	/	108 dBf	25		
Remarks									
TUNER SPECIFICATION									
Class No		FWM2200 MICRO SYSTEM						Ver	Issued Date
								1	2013-3-22"
								2	
								3	
NAME : Luochide			10	SH 190 - 8				A4	
CHECK: Douglas		DATE : 2013-3-22"		YUSAN INDUSTRIES LTD					

TECHNIAL DESCRIPTION										
USB										
Measurment are directly done at the connector on the board										
GENERAL PART										
Measurement are directly done at the connector on CDC board										
Description					Specification					
Output Resistance					<= 1.5 kOhm					
Output Voltage RL = 33 k ohm ()dB, 1 KHz)					830mVrms +/- 1.5dB					
Channel Unbalance					<= +/- 3 dB					
THD + Noise (0dB, 1KHz)					<= 0.7 %					
Channel Crosstalk (100Hz - 16,000 Hz)					>= 35 dB					
(0 dB, 1 KHz)					>= 40 dB					
Signal to Noise Ratio (0dB,1kHz)					>= 65dBA (A - weighted)					
Frequency Response (+/- 3dB), reference 1kHz					100Hz - 10kHz					
Description					Specification					
Remarks :										
USB SPECIFICATION										
Class No		FWM2200 MICRO SYSTEM				Ver		Issued Date		
						1		2013-3-22日		
						2				
						3				
NAME : Luochide			10		SH 190 - 9				A4	
CHECK: Douglas			DATE :2013-3-22日		YUSAN INDUSTRIES LTD					

TECHNIAL DESCRIPTION									
AUX IN									
AUX Part									
		Nom.		Limit		Condition			
THD 10% Output Power		100W		90W		2000mV 1KHz input			
SNR unwt'd.		60dB		50dB		2000mV 1KHz input			
SNR wtd. dBA		65dBA		55dBA		2000mV 1KHz input			
Crosstalk (1KHz)		60dB		50dB		2000mV input			
Crosstalk (10KHz)		60dB		50dB		2000mV input			
Frequency response (-3dB)		100 to 10KHz (overall)				2000mV input			
THD (1KHz, 0dB)		2%		3%		2000mV 1KHz input			
MP3 LINK									
		Nom.		Limit		Condition			
THD 10% Output Power		100W		90W		650mV 1KHz input			
SNR unwt'd.		60dB		50dB		650mV 1KHz input			
SNR wtd. dBA		65dBA		55dBA		650mV 1KHz input			
Crosstalk (1KHz)		60dB		50dB		650mV input			
Crosstalk (10KHz)		60dB		50dB		650mV input			
Frequency response (-3dB)		100 to 10KHz (overall)				650mV input			
THD (1KHz, 0dB)		2%		3%		650mV 1KHz input			
Description					Specification				
Remarks :									
USB SPECIFICATION									
Class No		FWM2200 MICRO SYSTEM						Ver	Issued Date
								1	2013-3-22日
								2	
								3	
NAME : Luochide			10			SH 190 - 10			A4
		CHECK: Douglas	DATE : 2013-3-22日		YUSAN INDUSTRIES LTD				

Board / nu sed:	Type /Versions:	FWM2200							
	Service policy	/55							
LCD+KEY BOARD	M+C								
LINE IN+AUX BOARD	M+C								
USB+CD BOARD	M+C								
Features	Type /Versions:	FWM2200							
	Feature difference	/55							
RDS									
VOLTAGE SELECTOR									
ECO STANDBY - DARK									

*T IPS :C -- Component Lever Repair.
M -- Module Lever Repair
√ -- Used

2.0 SAFETY 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 hetzelfde 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 enfilier le bracelet muni 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).
Unvorsichtige 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.

(I) AVVERTIMENTO

Tutti i C 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 cautela 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.

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

(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 utilisées les pièces de rechange identiques à celles spécifiées.

(D)

Bei jeder Reparatur sind die geltenden Sicherheitsvorschriften zu beachten. Der Originalzustand 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 ricambi identici a quelli specificati.

**CLASS 1
LASER PRODUCT**

0122 1 10 0342 0

(GB) Warning !

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

(S) Varning !

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

(SF) Varoituis !

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

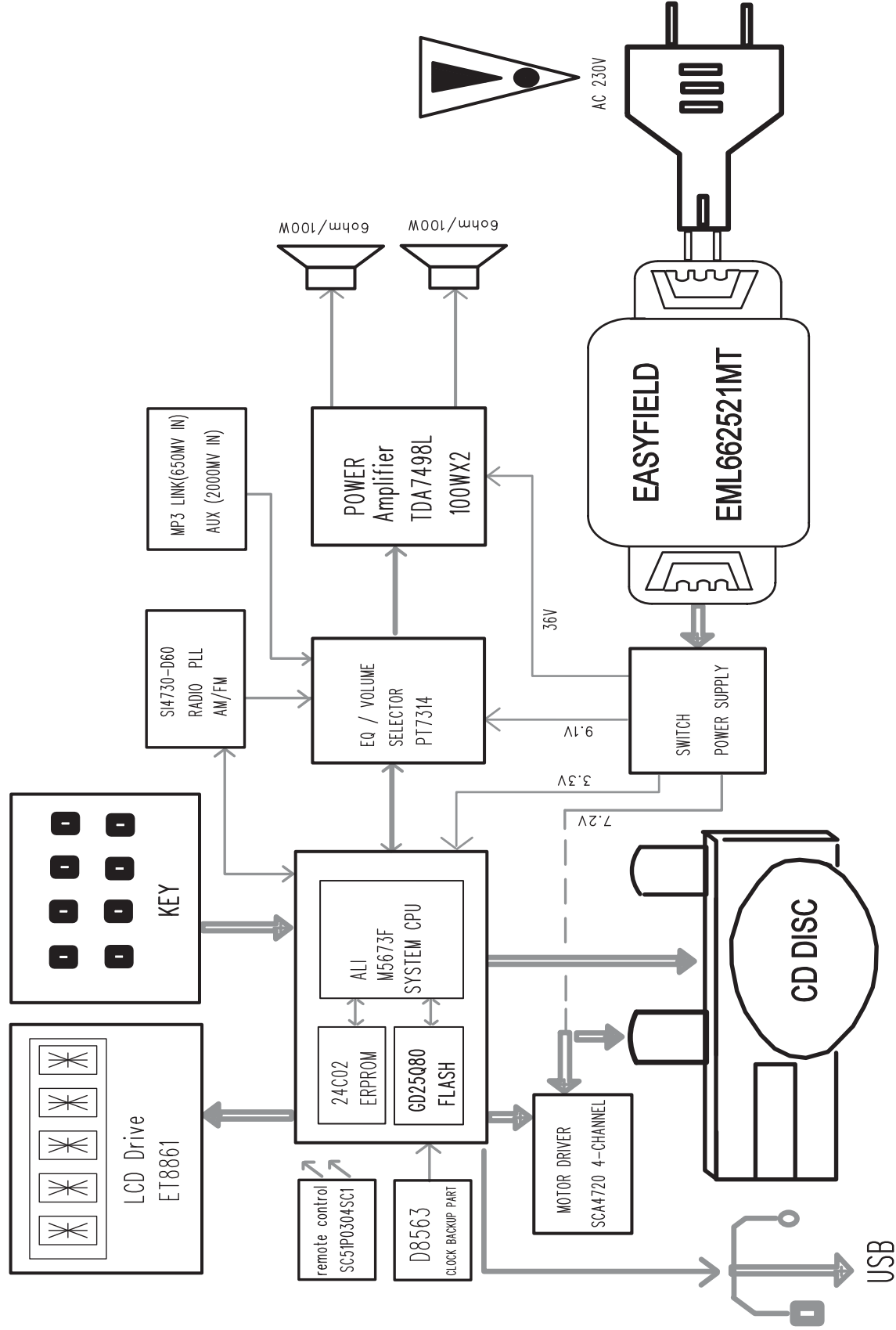
DK Advarsel !

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

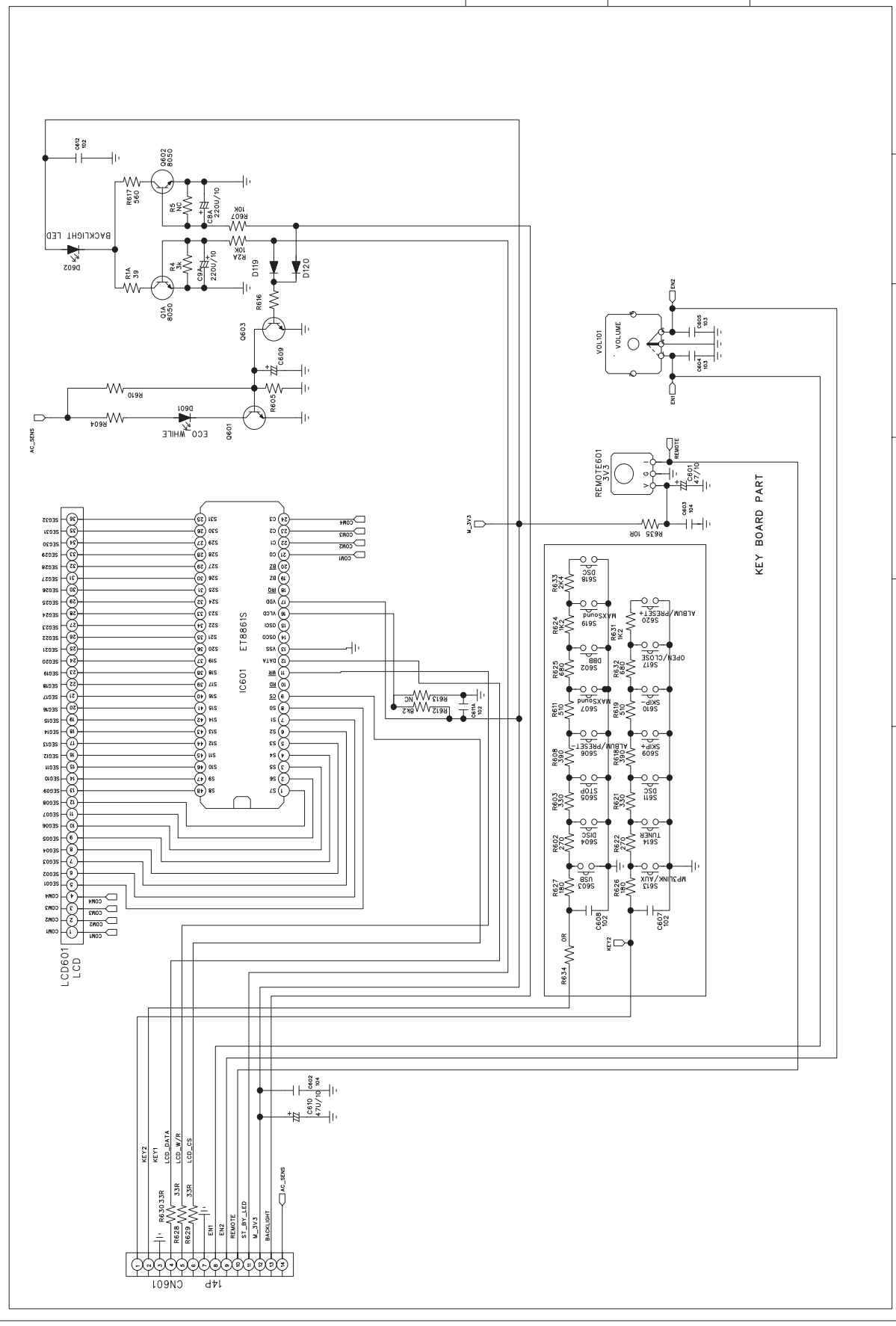
"After servicing and before returning set to customer perform a leakage current measurement test from all exposed metal parts to earth ground to assure no shock hazard exist. The leakage current must not exceed 0.5mA."

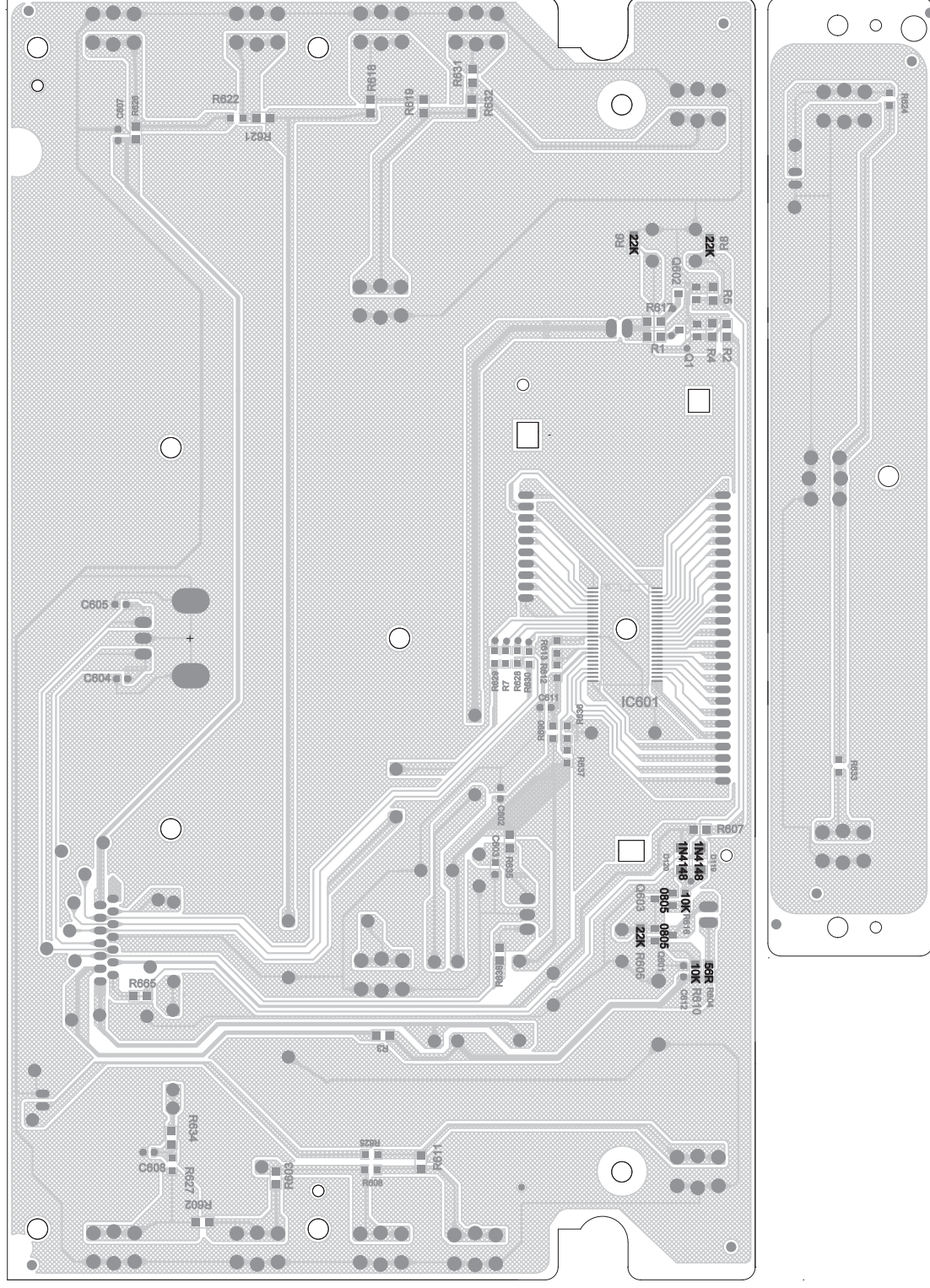
Caution: These servicing instructions are for use by qualified service personnel only.

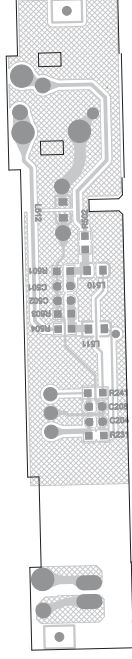
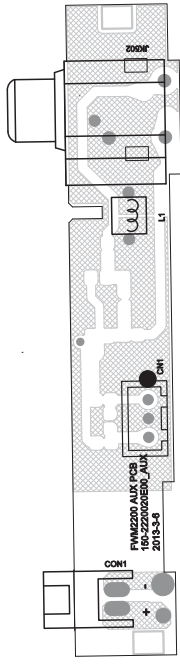
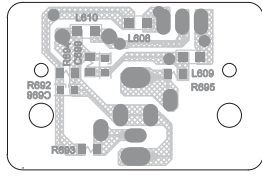
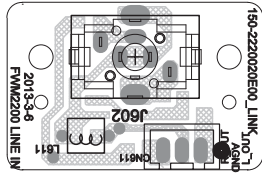
To reduce the risk of electric shock do not perform any servicing other than that contained in the operating instructions unless you are qualified to do so.

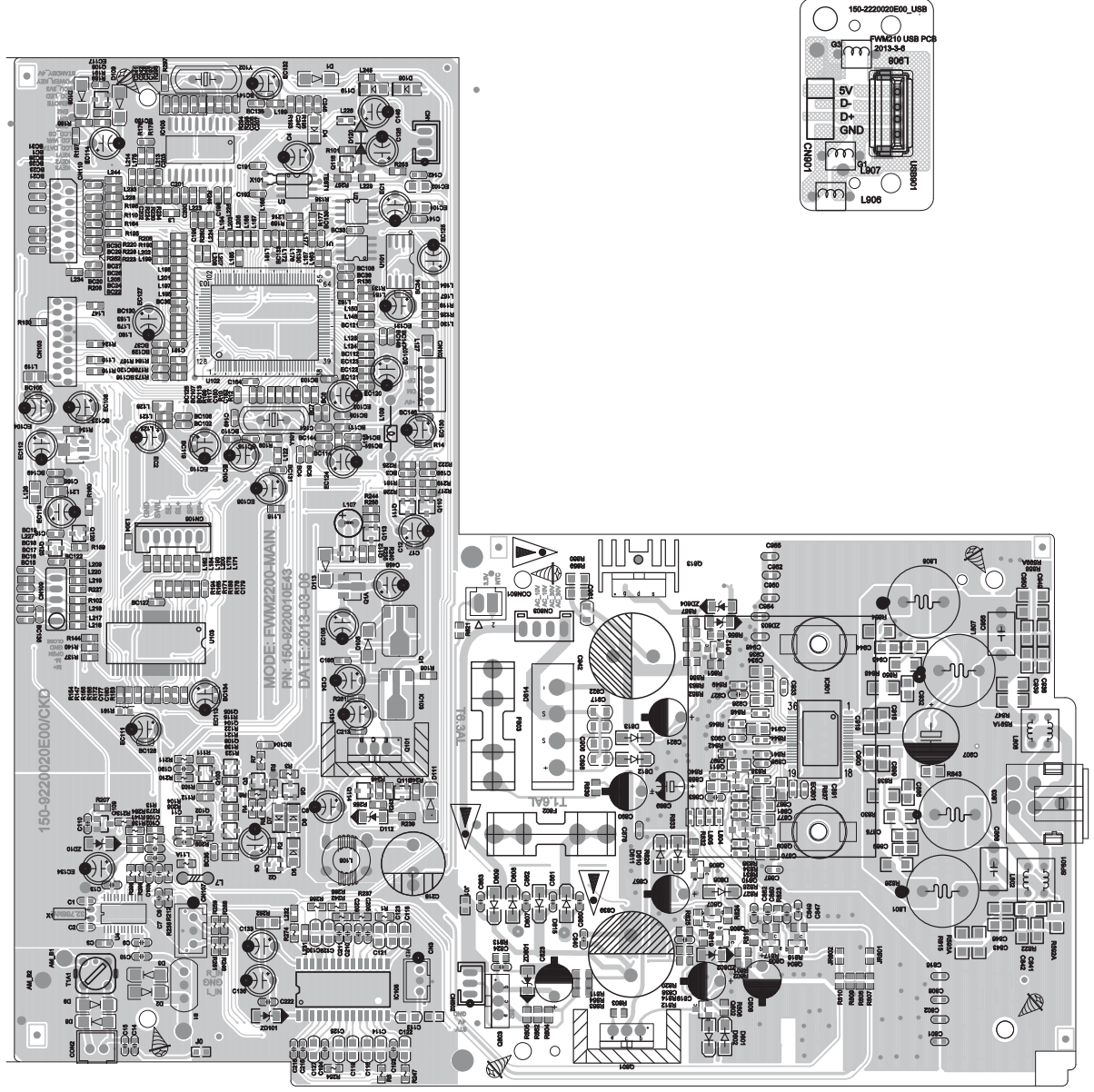


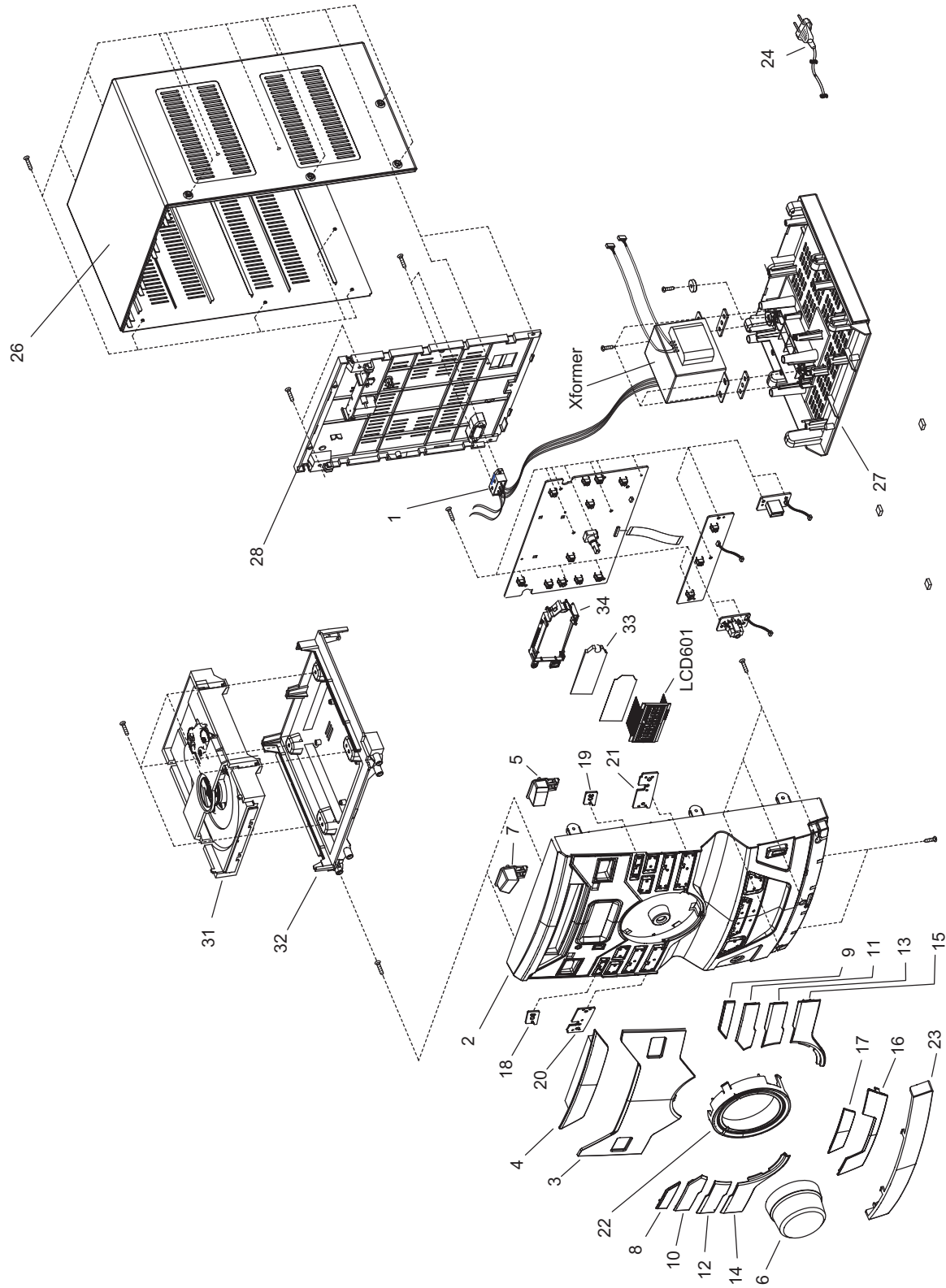


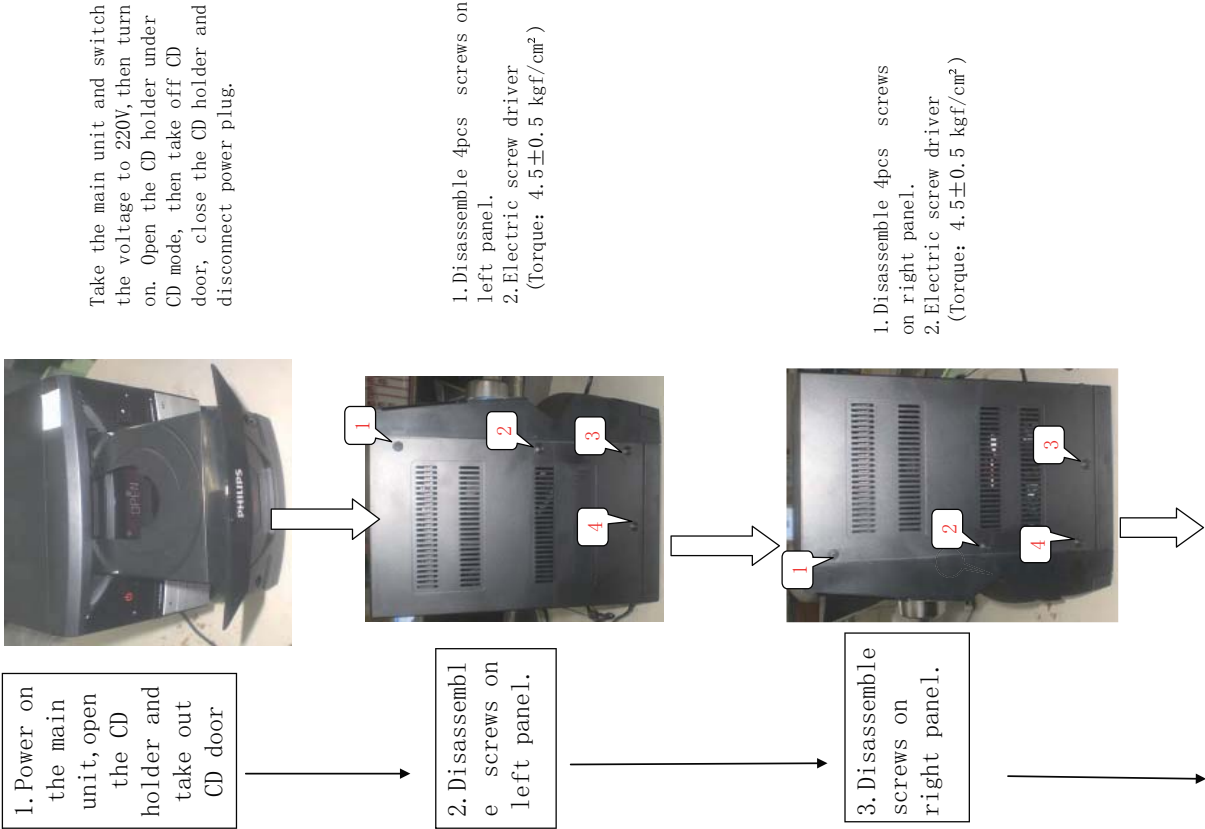


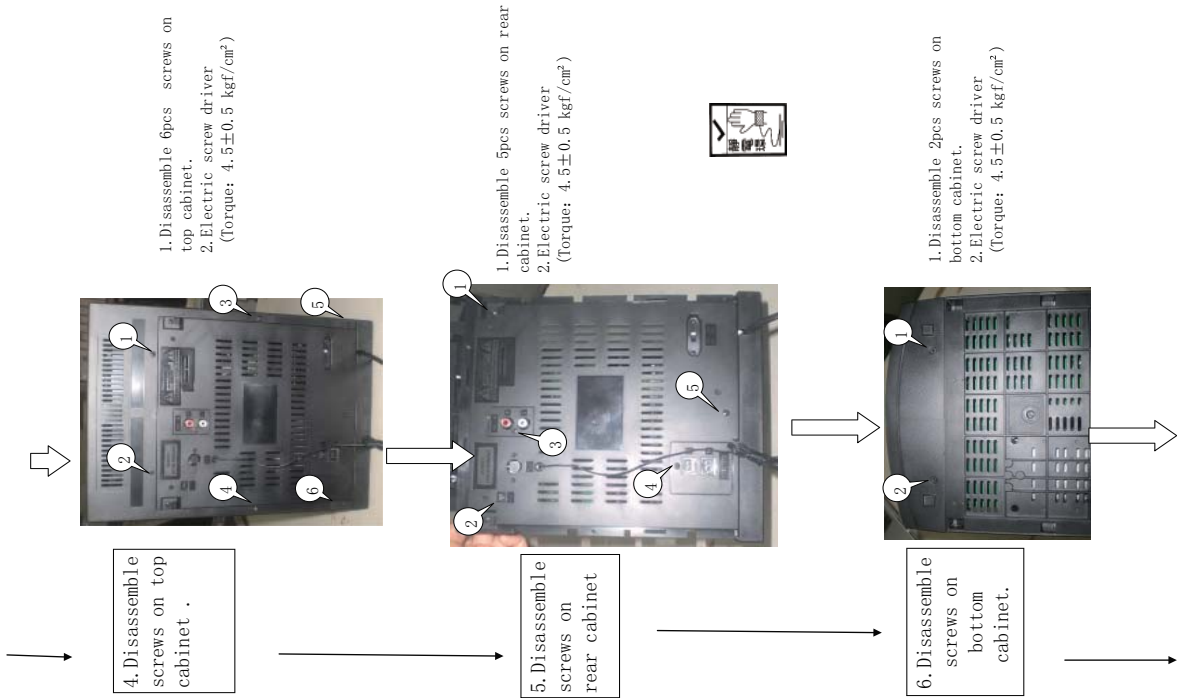


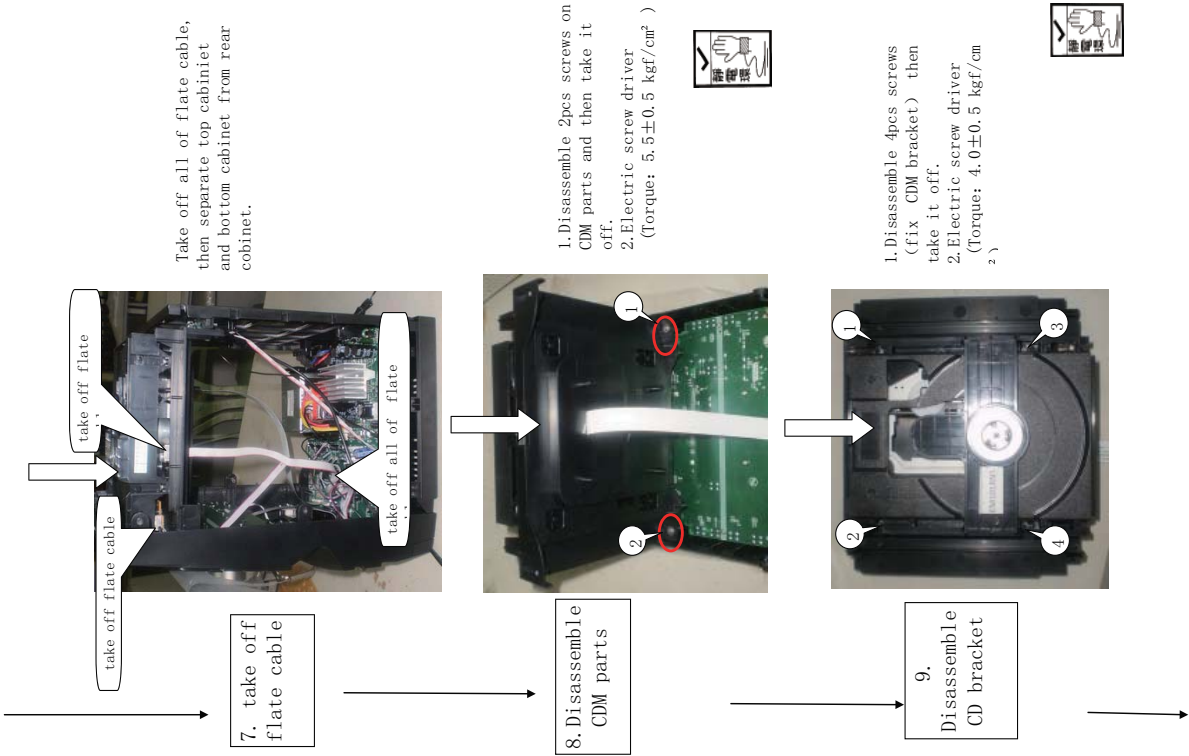


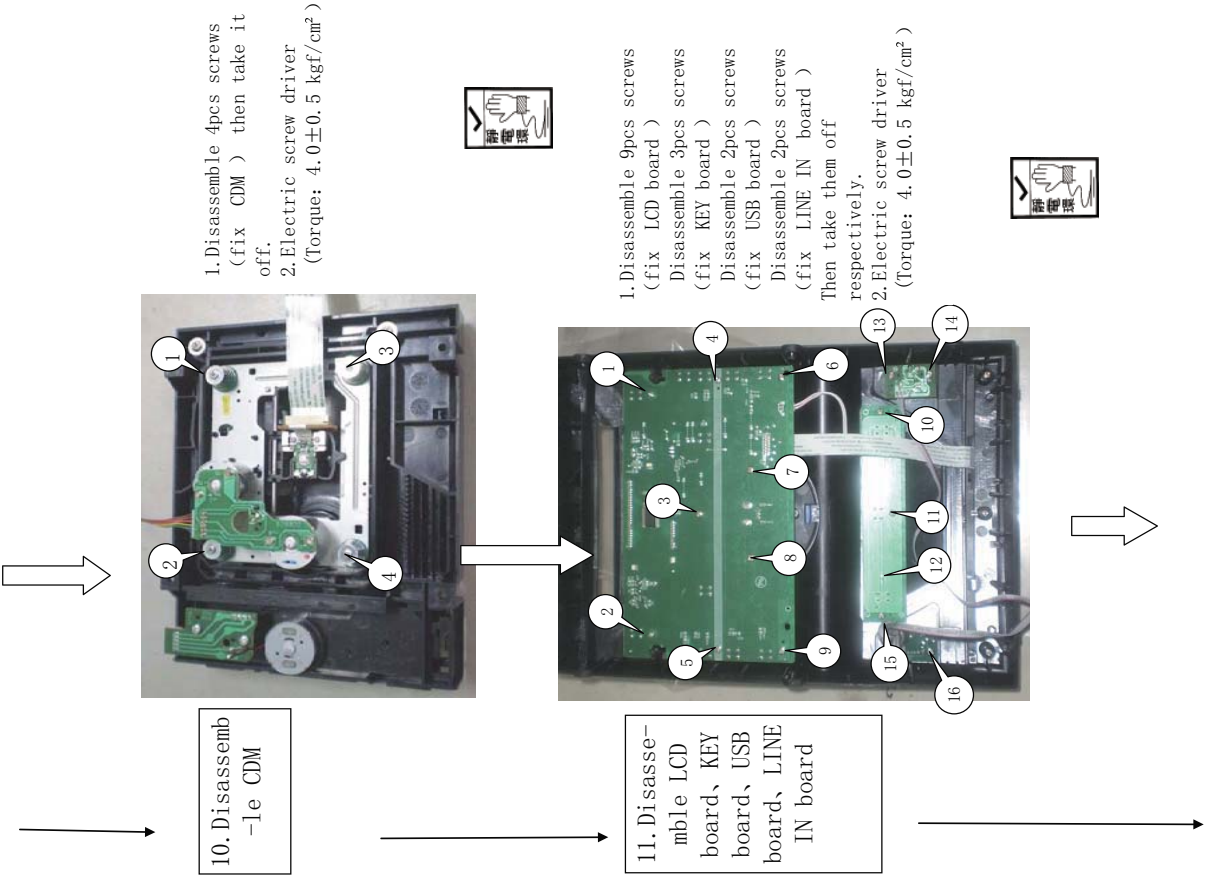






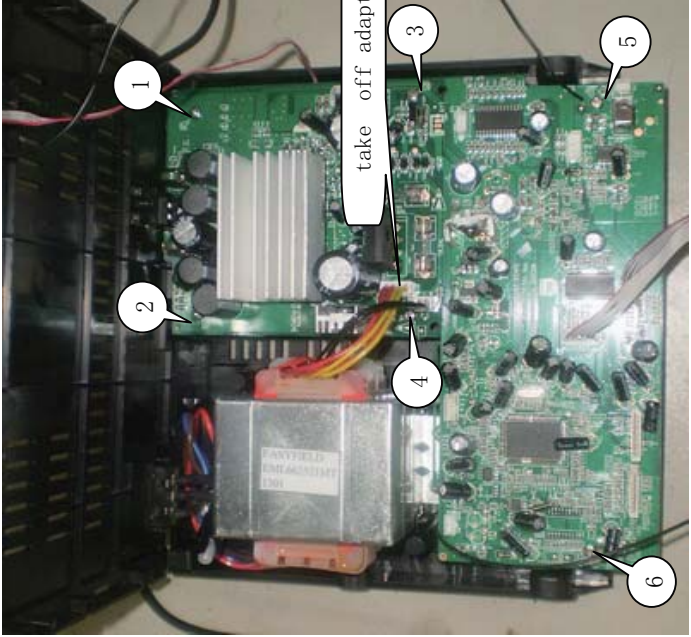
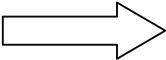








12. Disassemble DC board



1. Disassemble 6pcs screws (fix DC board) Then take off adaptor cord and take off the DC board.
2. Electric screw driver (Torque: $4.0 \pm 0.5 \text{ kgf/cm}^2$)

