Micro Hi-Fi system

BTM2180/all

Service
Service
Service

Service Manual

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CLASS 1
LASER PRODUCT

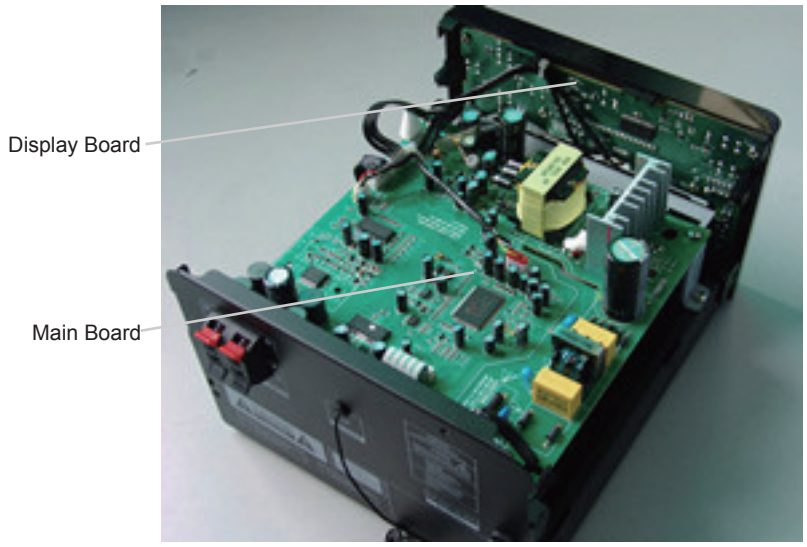
Published by LX 1210 Service Audio Printed in The Netherlands Subject to modification

3141 785 37480

Version 1.0

PHILIPS

Location of PCB Boards



VERSION VARIATION

Type /Versions: / Board in used: / Service policy	BTM 2180									
	/05 (GREAT BRITAIN)	/12 (EUROPE)	/37 (UL)							
Main BOARD	C/M	C	C							
Display BOARD	C/M	C	C							

Type /Versions: / Features / Feature diffrence	BTM 2180									
	/05	/12	/37							
RDS										
VOLTAGE SELECTOR										
ECO STANDBY - DARK										

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

Technical Specification

BTM2180 Elec parameter Test Report

TEST CONDITIONS:

1.POWER SUPPLY: AC.Accordiing to Ver

2.REF OUTPUT:8Ω 1W , Sound effect off

3.FM MONO: 22.5KHz Dev,1KHz MODULATION ,75Ω IMPEDANCE ,60dBu

4.FM STEREO : MAIN+SUB = 50KHz, PILOT : 10KHz,COMPOSITE: 40.0KHz

FM SECTION:

NO	TEST ITEMS		UNIT	NOM.	LIMIT	TEST DATA	
						1#	**2#**
1	Fvequency Range		MHz		87.5	87.5	87.5
					108	108	108
2	26dB QUENTING SENSITIVITY	90	dBf	18	22	20	20
		98		18	22	17	19
		106		18	22	18	18
3	-3dB LIMITING POINT		dBf	17	25	17	19
4	FM IF REJECTION 98MHZ S/N=26dB		dB	55	50	>55	>55
5	IMAGE REJECT 98MHZ S/N=26dB		dB	24	20	>24	>24
6	SELECTIVITY S 0.3		dB	40	33	/	/
7	S/N	MONO		55	50	58	58
		ST		55	50	/	/
8	OVERALL DISTERTION		%	3	5	0.4	0.4
9	MODULATION HUM		dB	45	40	46	43
10	FREQUENCY RSEPOUSE	63Hz	dB	±3		/	/
		12.5K		±3		/	/
11	TUNING SENS	90MHz	dBf	24-32	19 - 35	31	31
		98MHz	dBf	24-32	19 - 35	31	31
		106MHz	dBf	24-32	19 - 35	31	31
12	AUTO TUNING SENG	ALL	dBf	24-32	19 - 35	31	31
13	TUNING ACCURAY	＜91	MHz		0	0	0
		＞91	MHz		0.5	0	0
14	STEREO CHANNEL SEPARATION	400Hz	dB	21	18	48	48
		1KHz	dB	25	20	33	36
		5KHz	dB	18	15	26	26
15	THD 10% POWER		W	25	"+/-10%	27w	27w

CD SECTION:

NO	TEST ITEMS			UNIT	NOM.	LIMIT	TEST DATA	
							1#	**2#**
1	TOTAL HARMONIC DISTORTION		1KHz	%	≤1.5	≤2	0.3	0.3
2	S/N (1KHz,A-weightde)			dBA	76	70	94	95
3	FREQUENCY RESPONSE AT LOUDSPEAKER OUT	L/R	40Hz	dB		±3	-2.9	-2.4
			16KHz	dB		±3	-2.9	-1.0
4	CHANNEL DIFFERENCE (1KHz)			dB	0	≤2	0.1	0.1
5	CHANNEL SEPARATION	1K	L	dB	40	26	73	75
			R	dB	40	26	61	65
		10K	L	dB	30	16	57	68
			R	dB	30	16	42	53

Technical Specification

6	Residual noise (Vol min)			nW		≤40	2.4	2.4
7	HUM			nW		≤200	2.4	2.4
8	10% THE POWER			W	25	"+/-10%	26W	26W

AUX SECTION:

NO	TEST ITEMS			UNIT	NOM.	LIMIT	TEST DATA	
							1#	**2#**
1	L/R OUTPUT POWER (10% THD, Ohm,1KHz)			W	25		26w	26w
2	FREQUENCY RESPONSE AT LOUDSPEAKER OUT	L/R	40Hz	dB		±3	-3	-3.5
			16KHz	dB		±3	-0.9	1.7
3	AMPLIFIER DISTORTION			%	≤1.5	≤2	0.37	0.46
4	CHANNEL SEPARATION	1K	L	dB	40	26	75	68
			R	dB	40	26	71	57
		10K	L	dB	30	16	58	53
			R	dB	30	16	56	52
5	CHANNEL DIFFERENCE（1KHz）			dB	0	≤2	0	0
6	LEVEL DIFFERENCE (RATED OUTPUT POWER AT 1KHz)	FM 1KHz 67.5KHz DEV,68dBf		dB	-	±5	4	4
		CD disc1-6dB track35		dB	-	±3	3	3
7	INPUT SENSITIVITY(RATED OUTPUT POWER AT 1KHz,10%THD			mV	600	±200	660	640
8	S/N RATIO (1KHz,A-WEIGHTED)			dBA	≧76	≧70	86	78
9	HUM (VOL.MIN-MAX-20dB,without signal)			nW	-	≤200	80	125
10	RESIDUAL NOISE (VOL.MIN.with signal) A-WEIGHTED			nW	-	≤40	6	11

BT SECTION:

NO	TEST ITEMS			UNIT	NOM.	LIMIT	TEST DATA	
							1#	**2#**
1	TOTAL HARMONIC DISTORTION		1KHz	%	≤1.5	≤2	0.5	0.5
2	S/N (1KHz,A-weightde)			dBA	76	70	84	81
3	FREQUENCY RESPONSE AT LOUDSPEAKER OUT	L/R	40Hz	dB		±3	3	3
			16KHz	dB		±3	3	2.9
4	CHANNEL DIFFERENCE (1KHz)			dB	0	≤2	0.1	0.1
5	CHANNEL SEPARATION	1K	L	dB	40	26	70	65
			R	dB	40	26	69	65
		10K	L	dB	30	16	63	61
			R	dB	30	16	62	62
6	Residual noise (Vol min)			nW		≤40	1	1.5
7	HUM			nW		≤200	2.8	3
8	10% THE POWER			W	25	"+/-10%	26.4	26.3

Safety instruction

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.

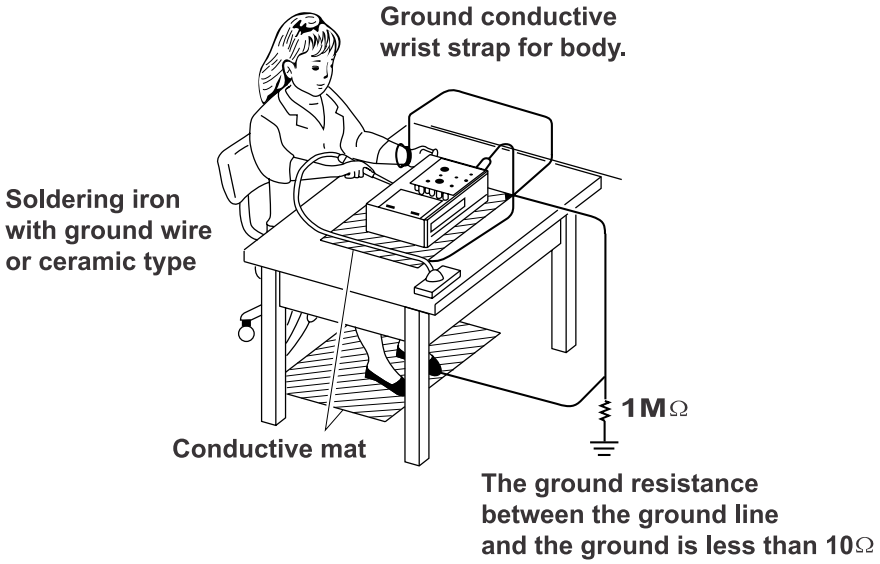
ESD PROTECTION

- 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.

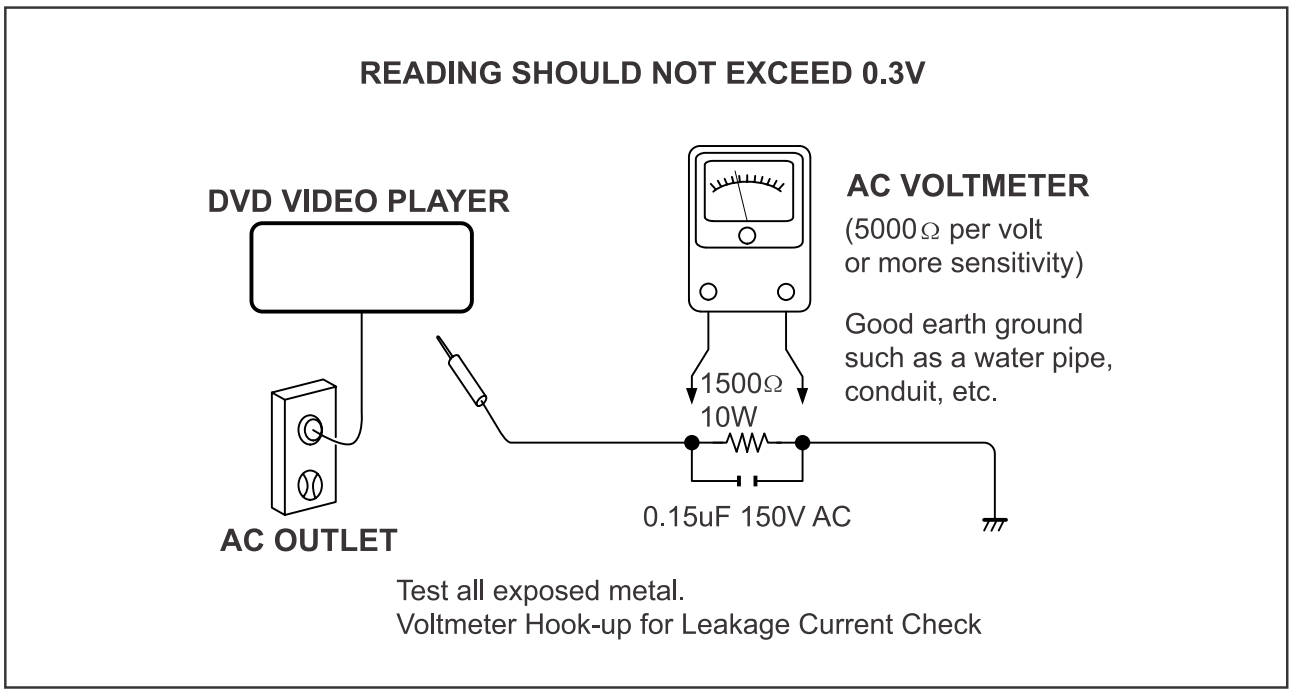


SAFTY NOTICE

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.



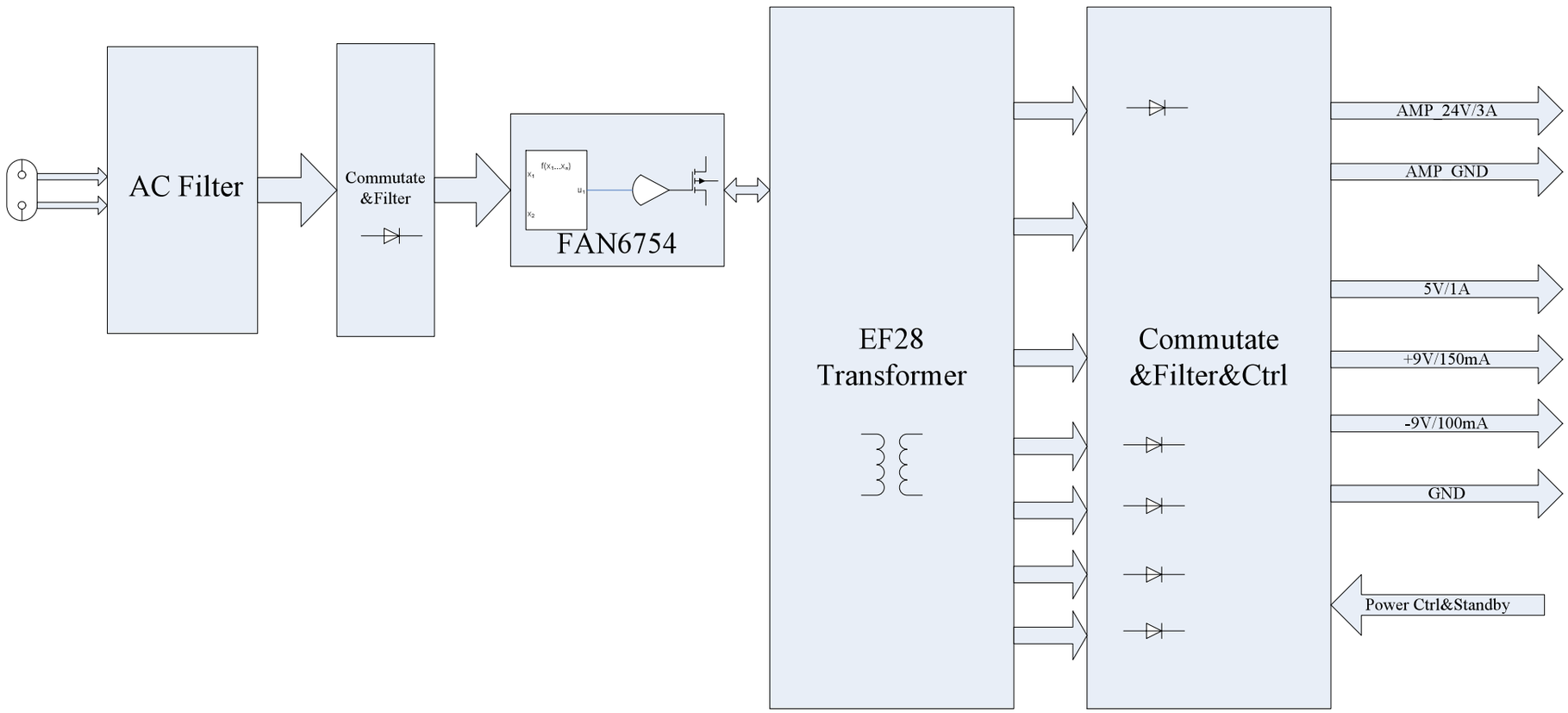
Test all exposed metal.
Voltmeter Hook-up for Leakage Current Check

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.

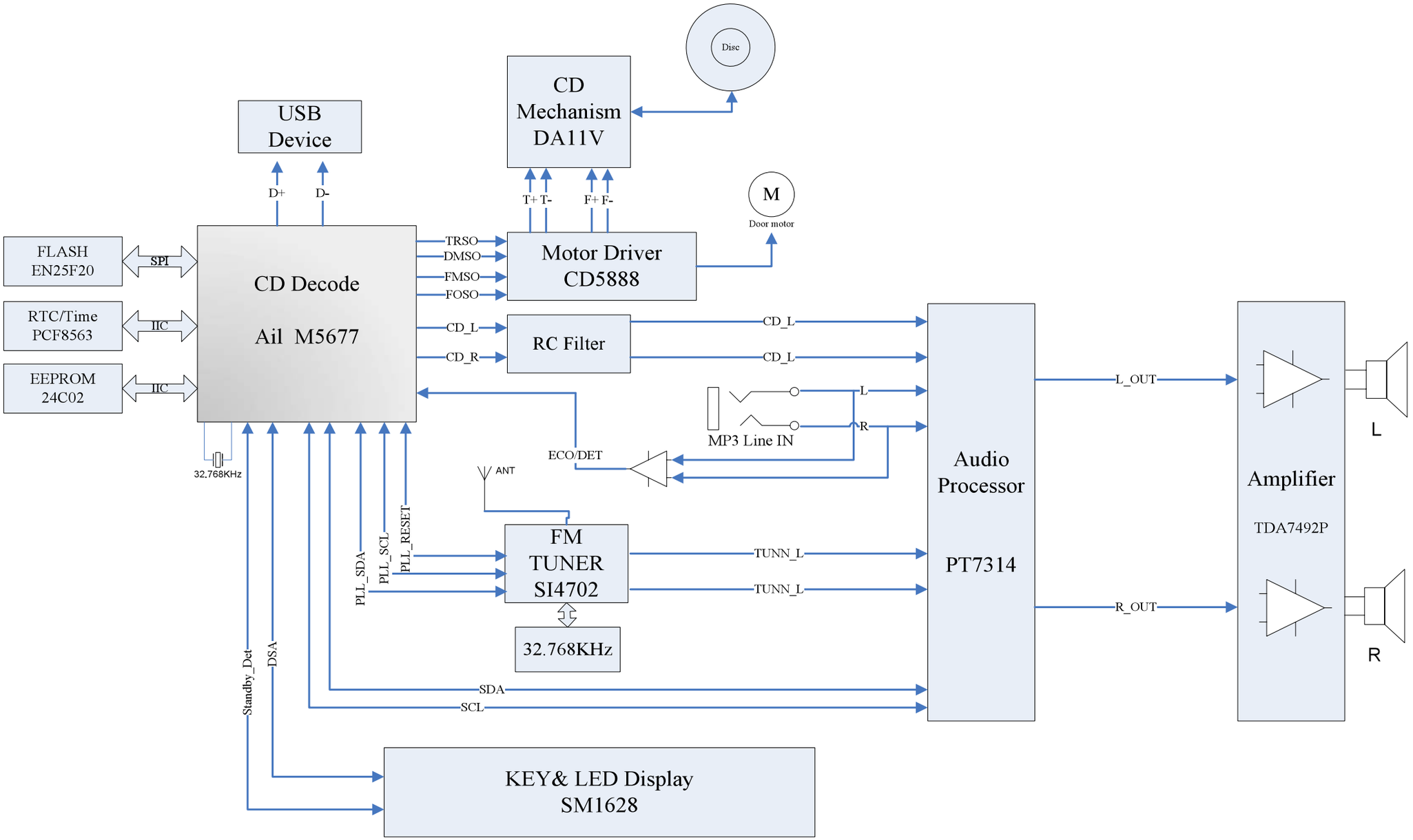
The exclamation point within an equilateral triangle is intended to alert the user to the presence of important operating and maintenance (servicing) instructions in the literature accompanying the appliance.

Set Block diagram

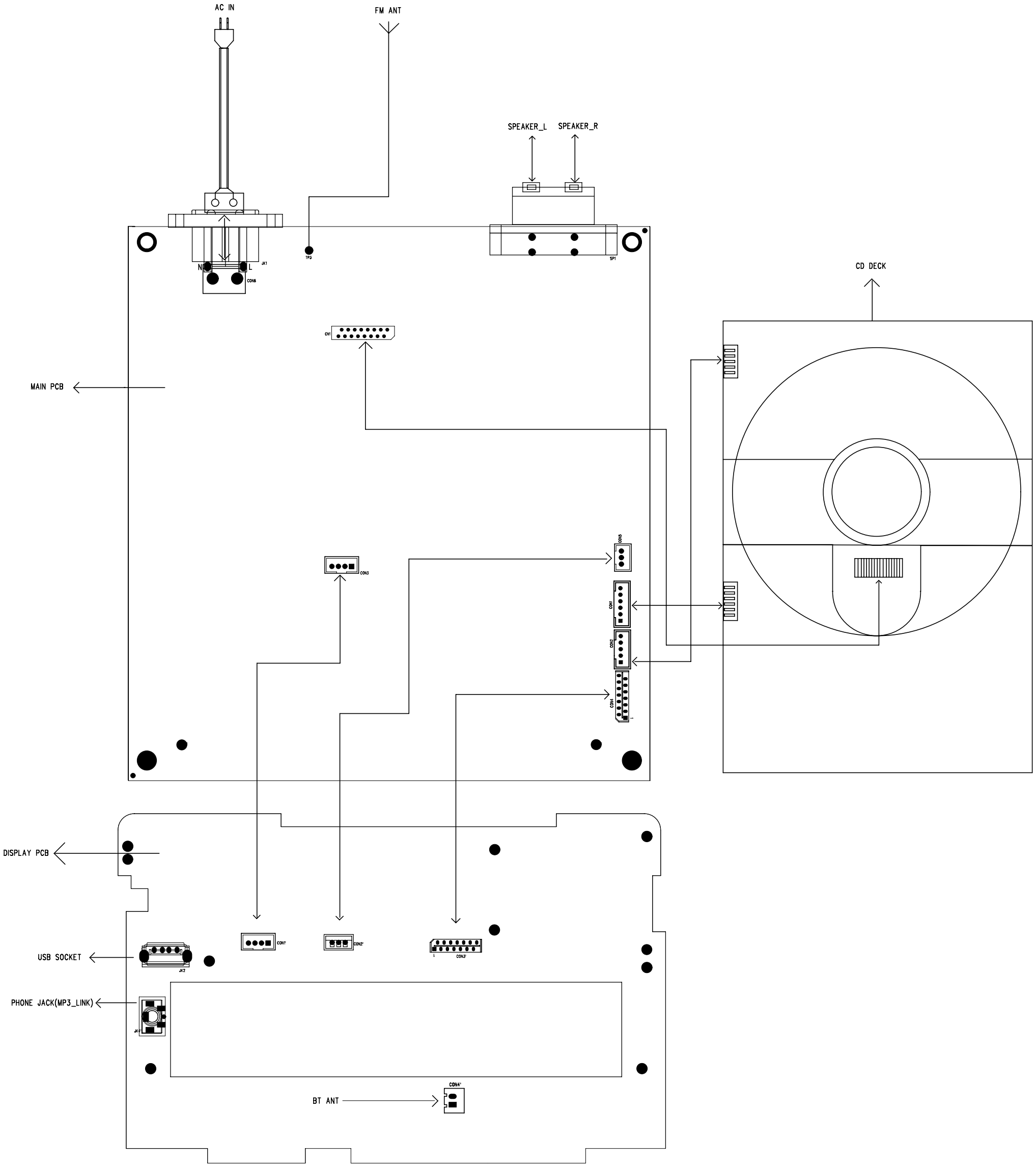
System Block Diagram



Set Block diagram

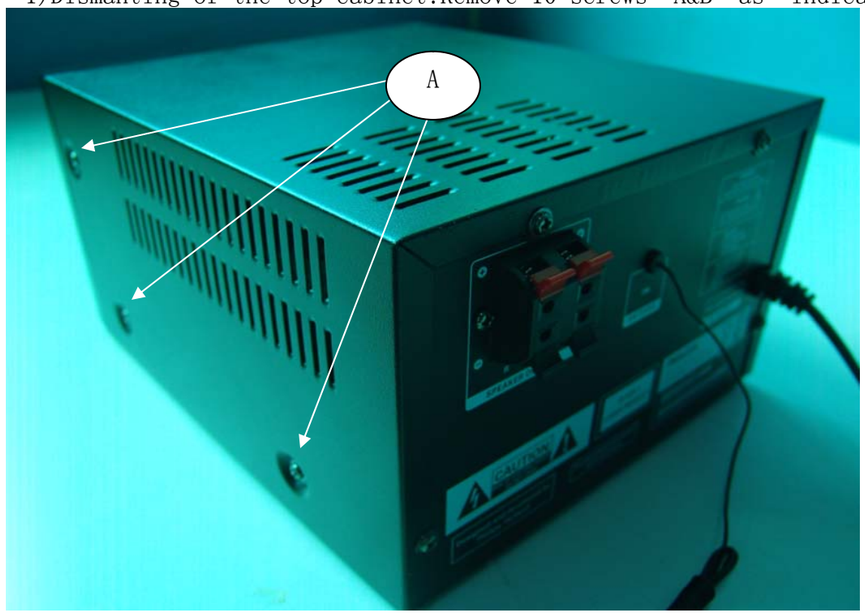


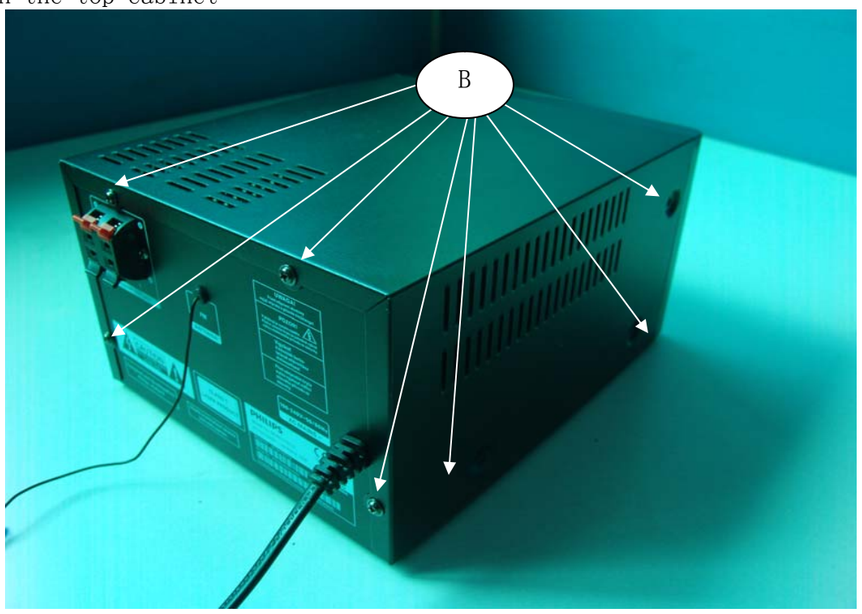
Disassembly diagram



DISMANTING DIAGRAM

1)Dismanting of the top cabinet:Remove 10 screws A&B as indicated to loosen the top cabinet

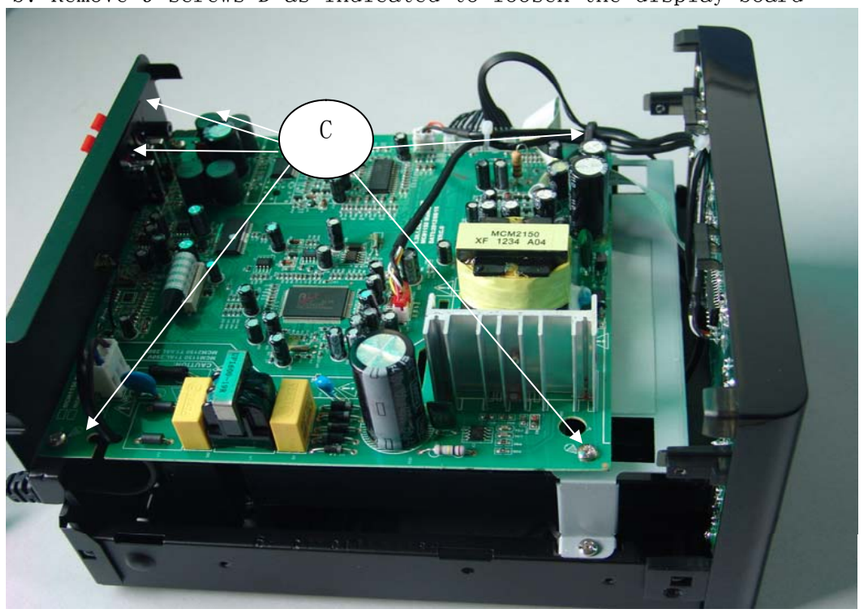


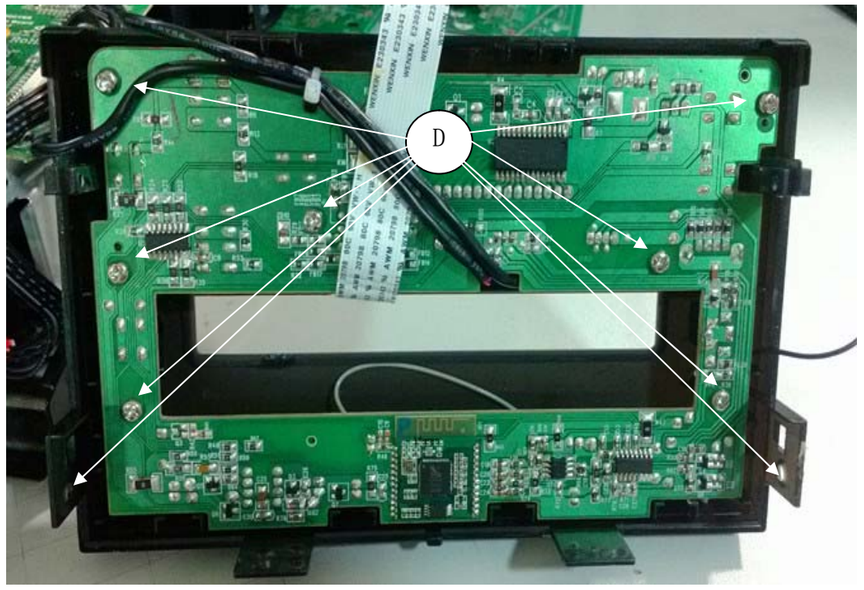


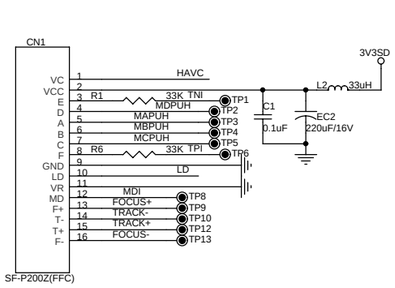
2)Dismanting of the PCB board:

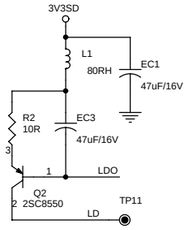
a: Remove 6 screws C as indicated to loosen the main board

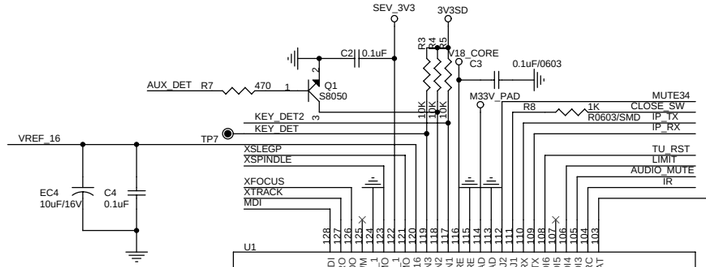
b: Remove 9 screws D as indicated to loosen the display board

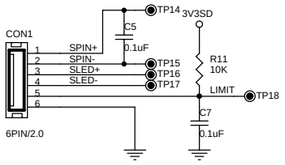


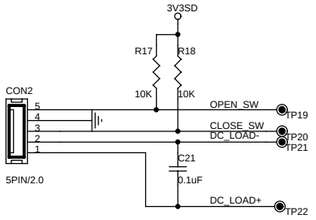


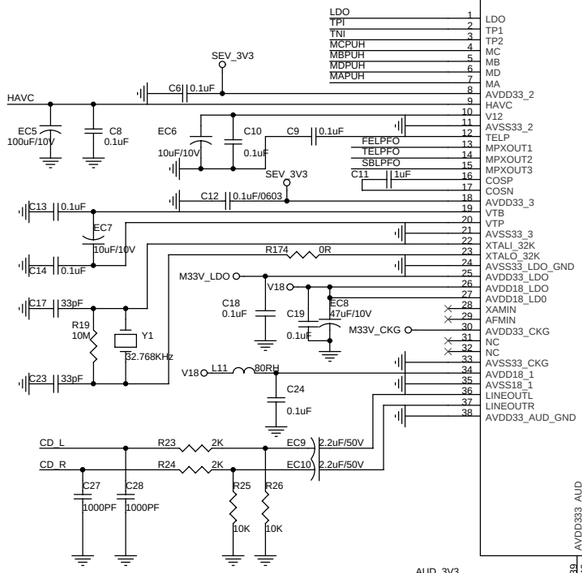


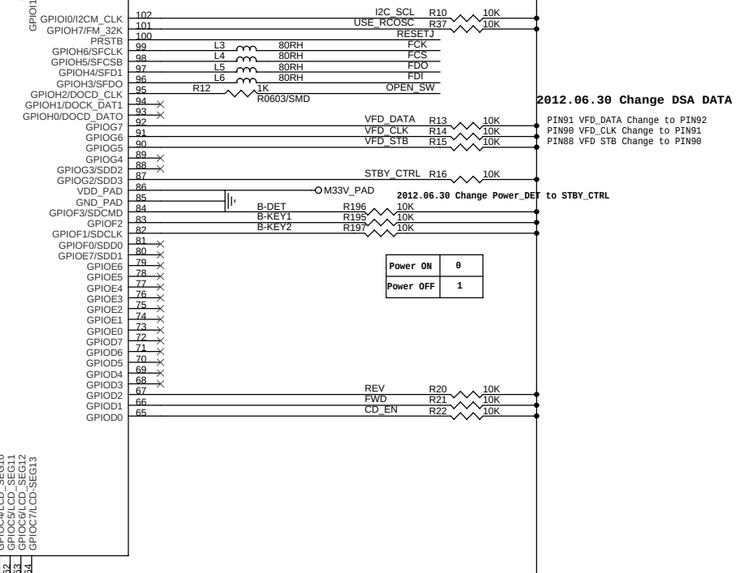










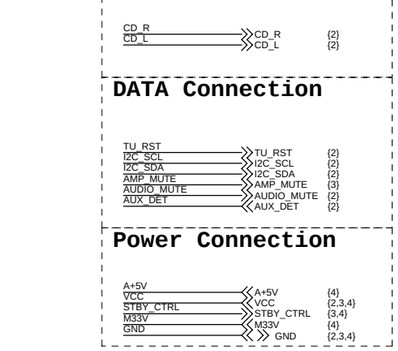


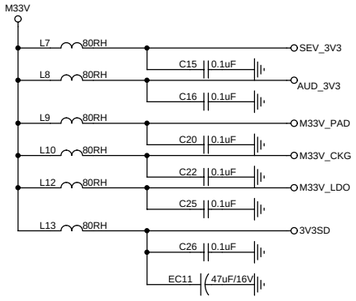
Power ON	0
Power OFF	1

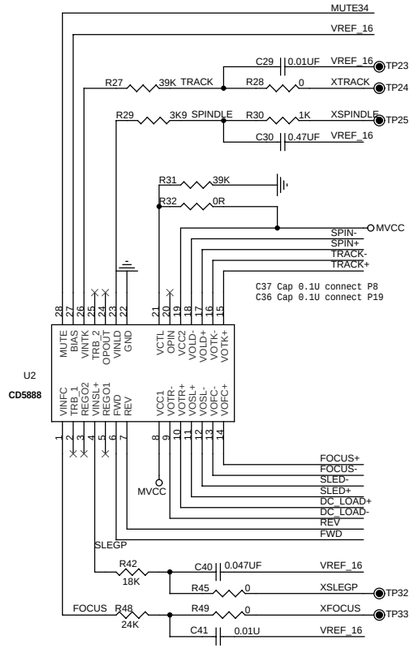
2012.06.30 Change DSA DATA

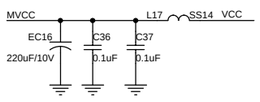
PIN91 VFD_DATA Change to PIN92
PIN90 VFD_CLK Change to PIN91
PIN88 VFD_STB Change to PIN90

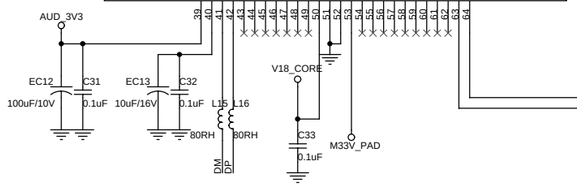
2012.06.30 Change Power_DET to STBY_CTRL

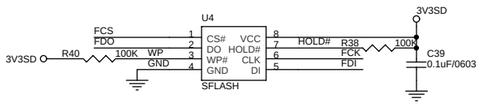


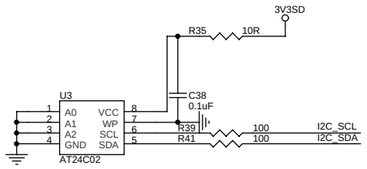


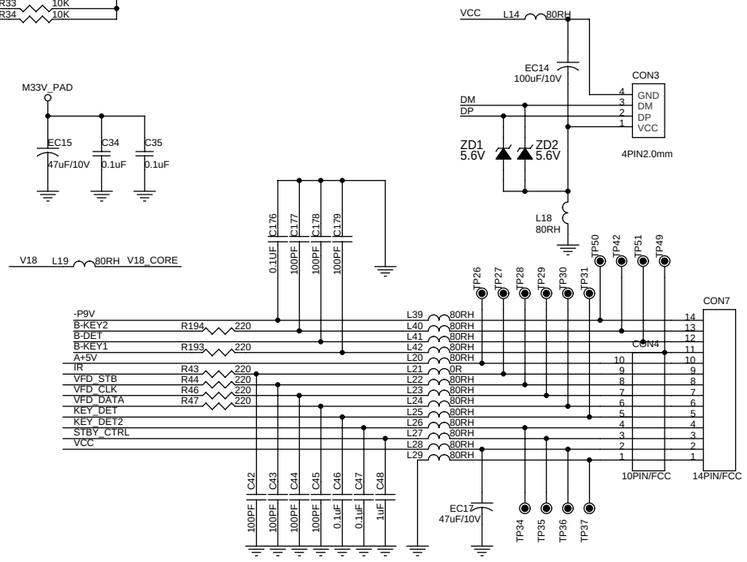


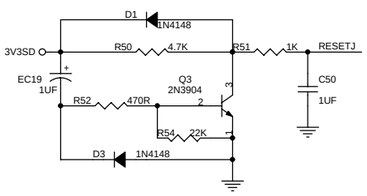


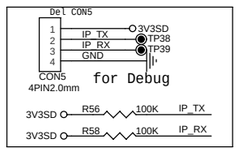


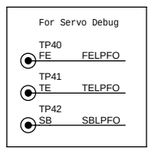


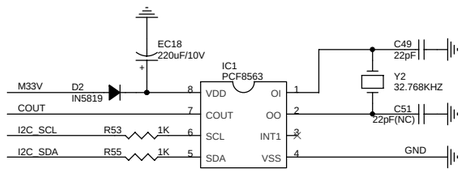




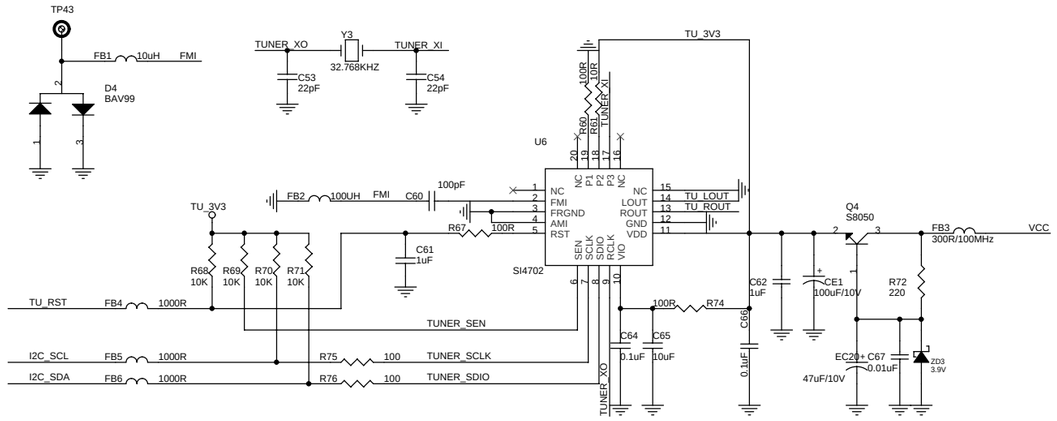


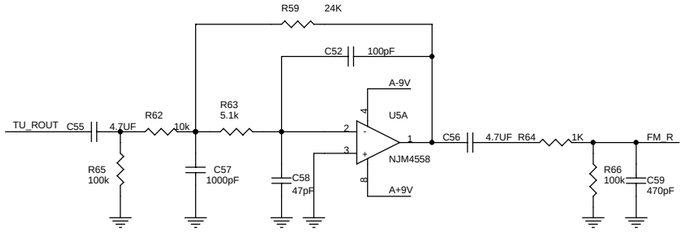


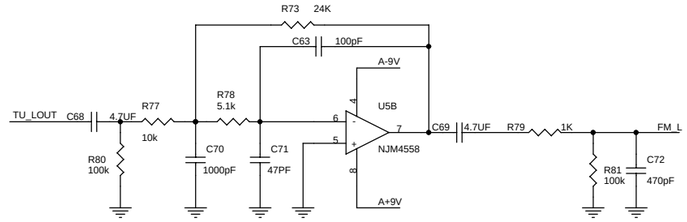




TUNER Audio OP







OFF-PAGE

DATA CONNECTION

TU_RST	TU_RST	{1}
I2C_SCL	I2C_SCL	{1}
I2C_SDA	I2C_SDA	{1}

AUDIO CONNECTION

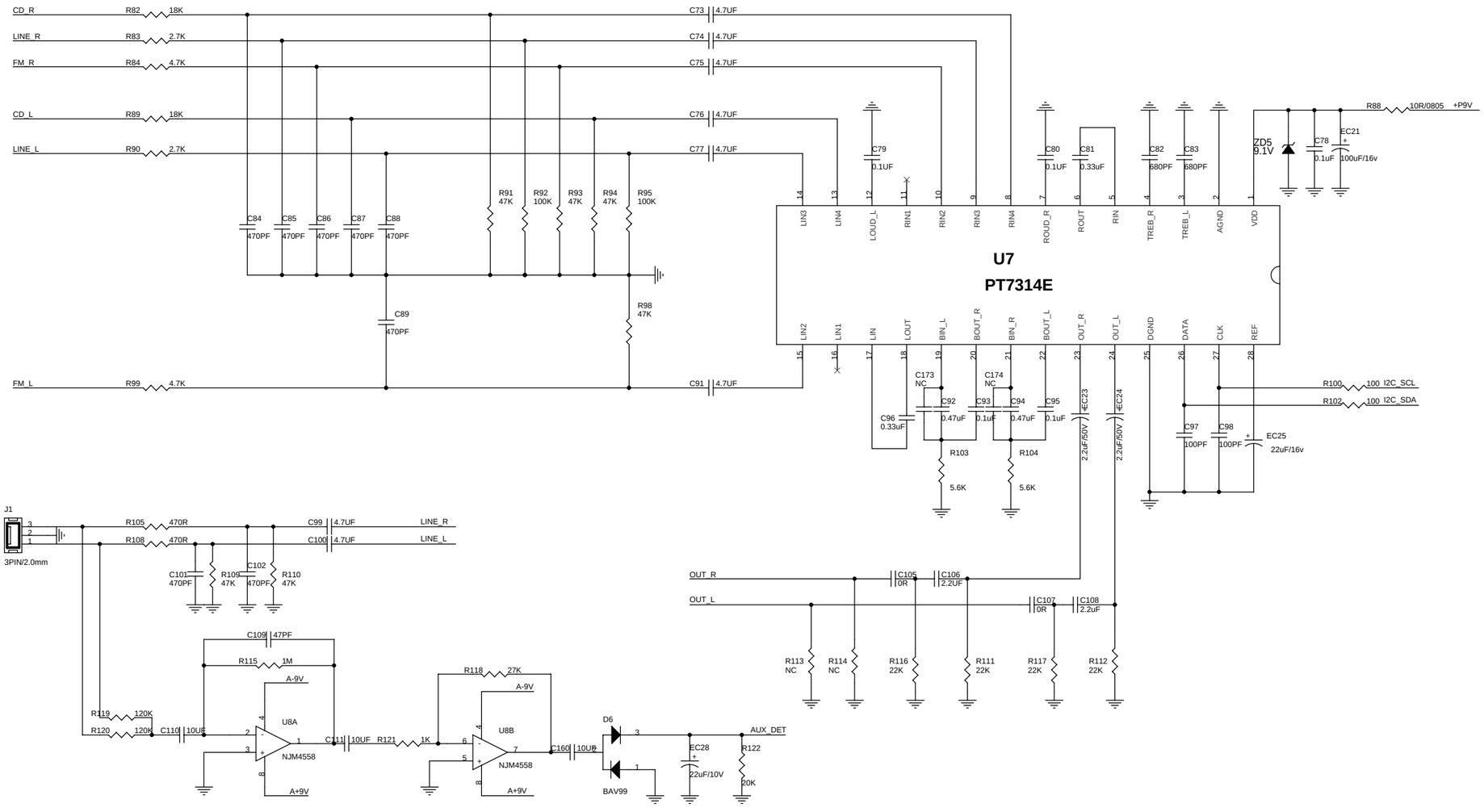
OUT_R	OUT_R	{3}
OUT_L	OUT_L	{3}
CD_L	CD_L	{1}
CD_R	CD_R	{1}

CTRL CONNECTION

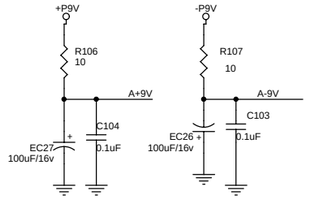
AUDIO_MUTE	AUDIO_MUTE	{1}
A_MUTE	A_MUTE	{3}
AUX_DET	AUX_DET	{1}

POWER CONNECTION

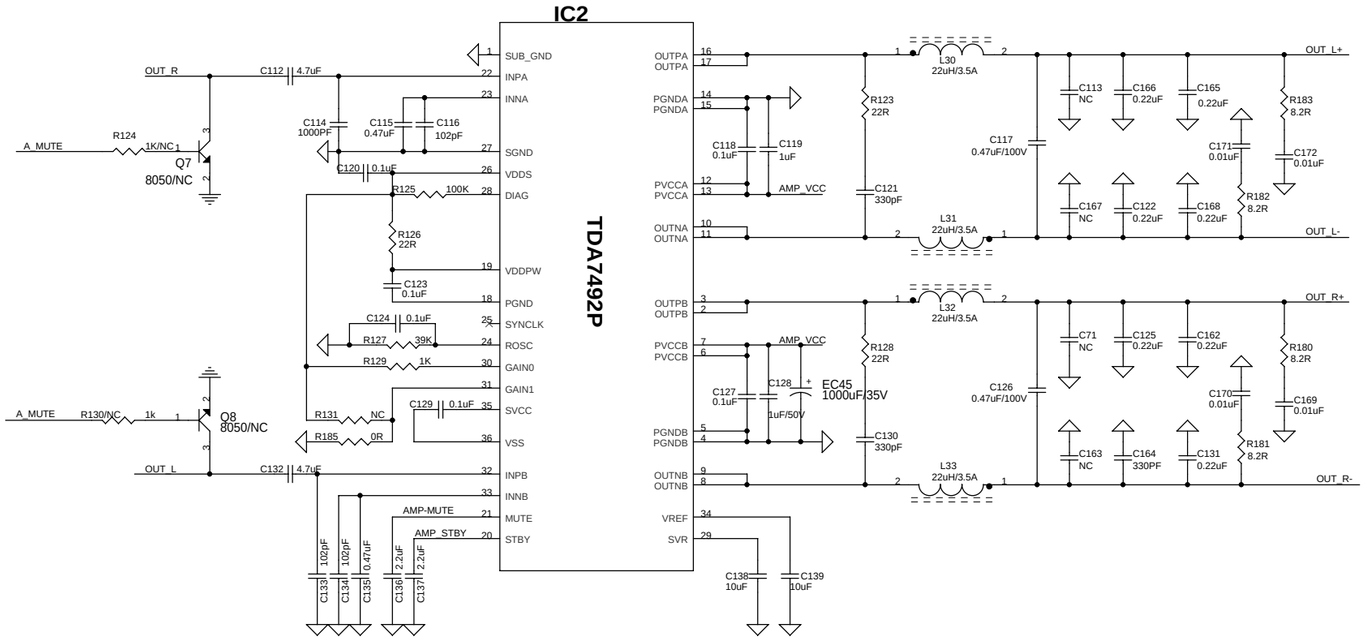
+P9V	+P9V	{4}
-P9V	-P9V	{4}
VCC	VCC	{1,3,4}
GND	GND	{1,3,4}

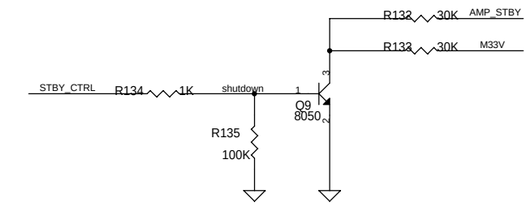


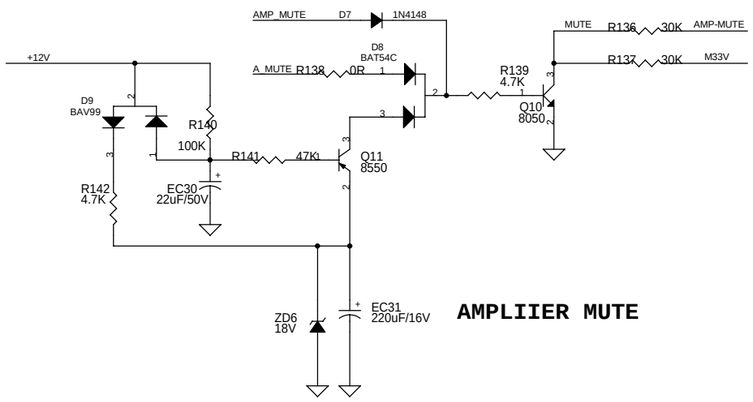
MUTE_CIRCUIT



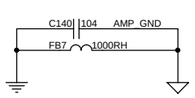
Utrek 巨大 广州番禺巨大汽车音响设备有限公司	
Design: WangChao	Mode: BTM2180 CD MINI SYSTEM
Check:	Block: TUNER&PT7314 Rev 1
Approve: general manager	Date: Wednesday, February 20, 2013 Sheet 2 of 4







AMPLIIER MUTE



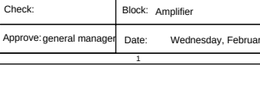
OFF PAGE

DATA CONNECTION

OUT_R	OUT_R	{2}
OUT_L	OUT_L	{2}
AMP_MUTE	AMP_MUTE	{1}
A_MUTE	A_MUTE	{2}
STBY_CTRL	STBY_CTRL	{1,4}

POWER CONNECTION

M33V	M33V	{1,2,4}
AMP_VCC	AMP_VCC	{4}
GND	GND	{1,2,4}
AMP_GND	AMP_GND	{4}

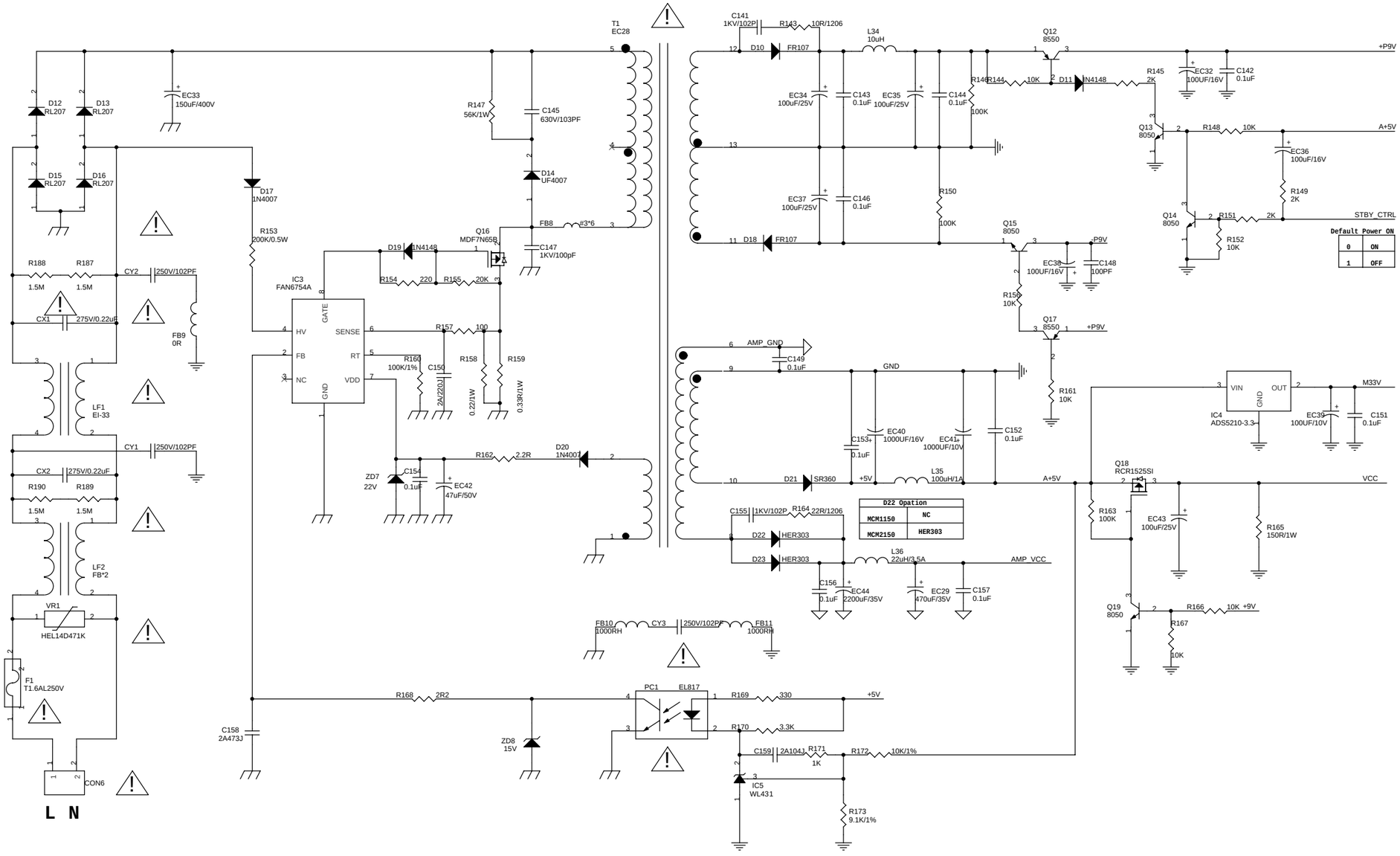


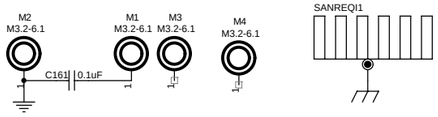
VTREK 巨大 广州番禺巨大汽车音响设备有限公司	
Design: WangChao	Mode: BTM2180 CD MINI SYSTEM
Check:	Block: Amplifier Rev 1
Approve: general manager	Date: Wednesday, February 20, 2013 Sheet 3 of 4

*** CAUTION :**

THE PARTS MARKED WITH ⚠ ARE IMPORTANT PARTS ON THE SAFETY.

PLEASE USE THE PARTS HAVING THE DESIGNATED PARTS NUMBER WITHOUT FAIL.





OFF PAGE

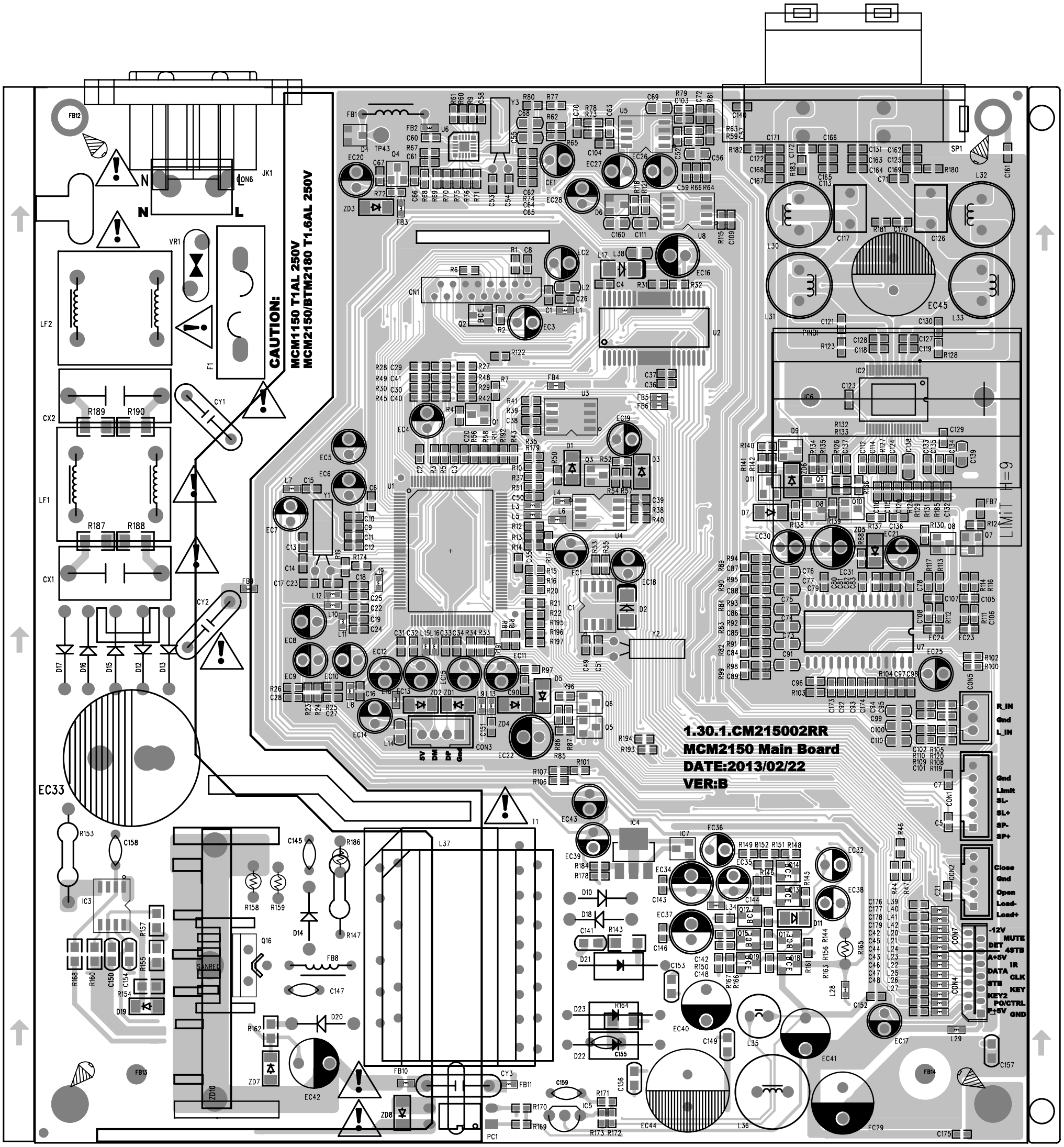
POWER CONNECTION

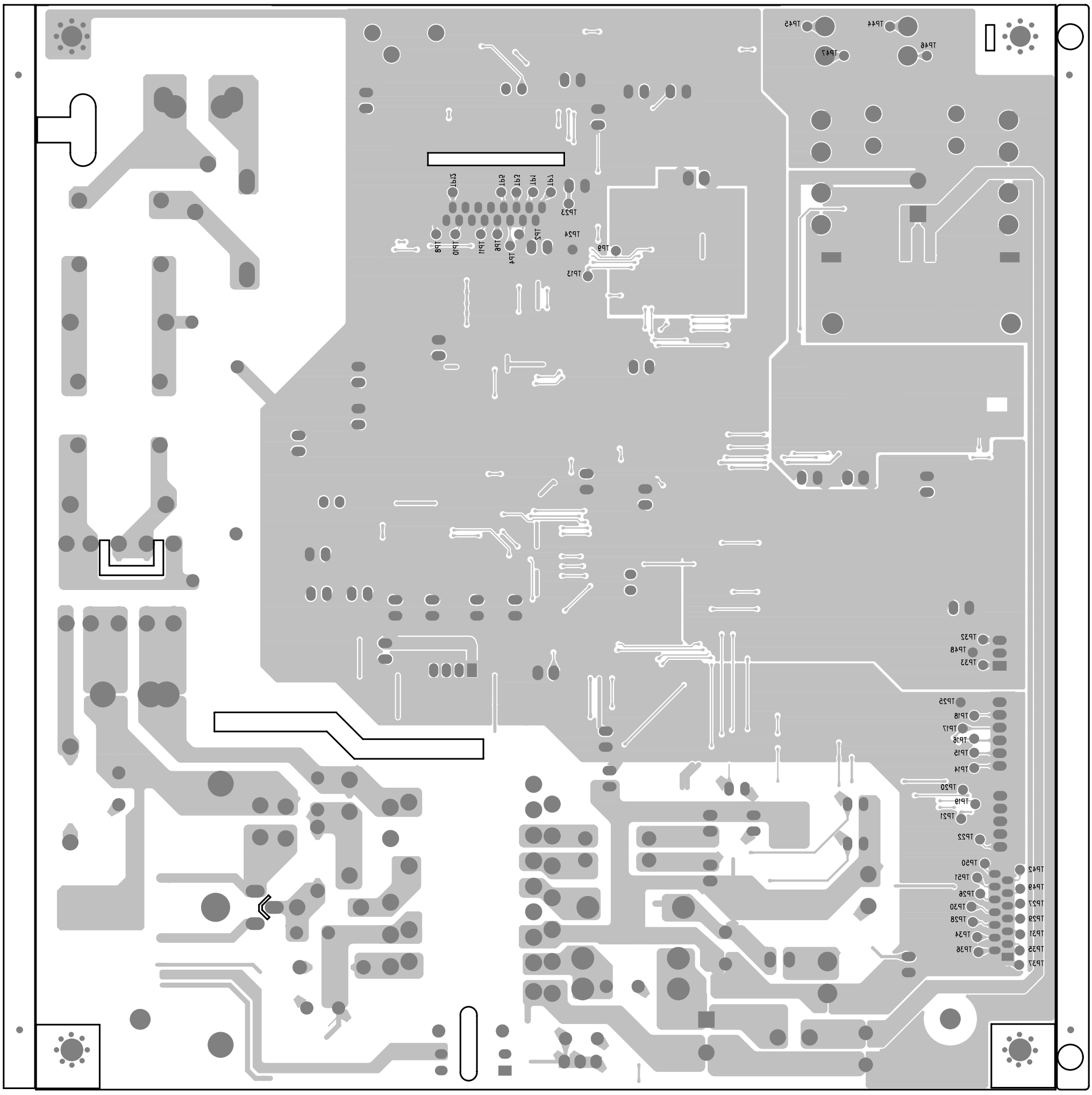
+P9V	+P9V	{2}
-P9V	-P9V	{1,2}
VCC	VCC	{1,2,3}
A+5V	A+5V	{1}
AMP_VCC	AMP_VCC	{3}
M33V	M33V	{1}
Stby_ctrl	STBY_CTRL	{1,3}
GND	GND	{1,2,3}
AMP_GND	AMP_GND	{3}

Design standard

+9V	0.2A
-9V	0.1A
M33V	0.8A
VCC	1A
AMP_VCC	2A

Vtrek 巨大 广州番禺巨大汽车音响设备有限公司	
Design: WangChao	Mode: BTM2180 CD MINI SYSTEM
Check:	Block: TUNER&PT7314 Rev 1
Approve: general manager	Date: Thursday, February 21, 2013 Sheet 4 of 4


CAUTION:
MCM1150 T1AL 250V
MCM2150/BTM2180 T1.6AL 250V
1.30.1.CM215002RR
MCM2150 Main Board
DATE:2013/02/22
VER:B
LIMIT H=9
R_IN
Gnd
L_IN
Gnd
Limit
SL-
SL+
SP-
SP+
Close
Gnd
Open
Load-
Load+
-12V
MUTE
DET
4STB
A+5V
IR
DATA
CLK
STB
KEY
KEY2
PO/CTRL
+5V
GND
N
L
CON6
JK1
VR1
LF2
LF1
CX2
CX1
CY1
CY2
F1
R189
R190
R187
R188
EC33
FB12
D17
D16
D15
D12
D13
SANREX


TP45
TP44
TP46
TP47
TP15
TP5
TP2
TP1
TP3
TP23
TP24
TP8
TP13
TP9
TP10
TP11
TP4
TP12
TP32
TP48
TP33
TP25
TP18
TP17
TP16
TP15
TP14
TP20
TP19
TP21
TP22
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TP26
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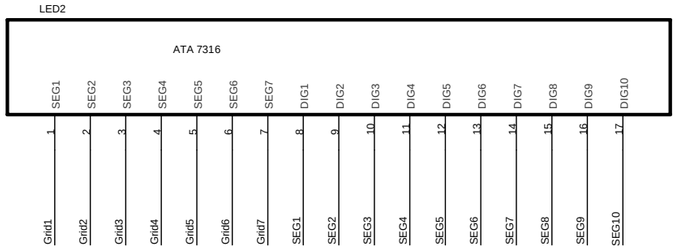
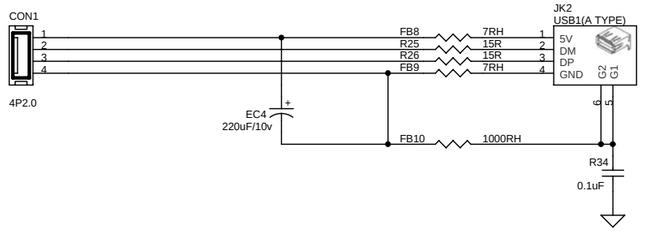
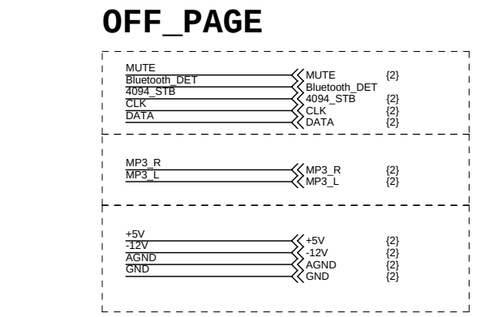
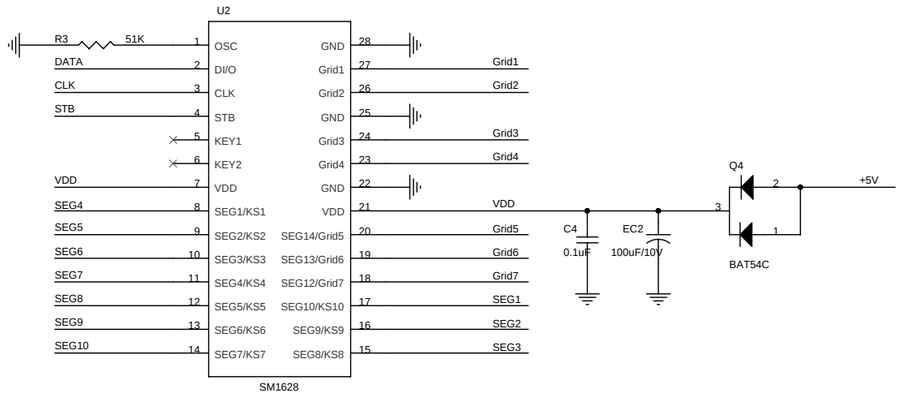
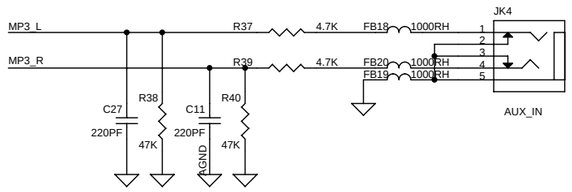
TP29
TP28
TP31
TP34
TP35
TP36
TP37
TP42

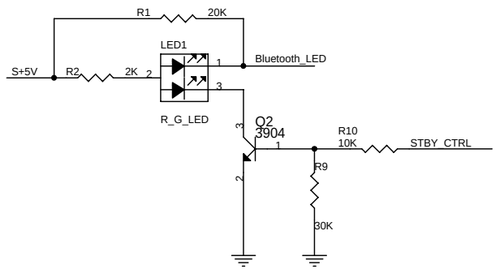


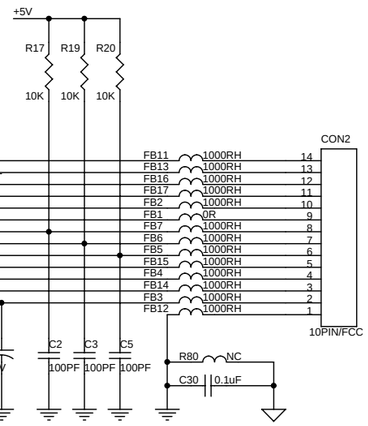


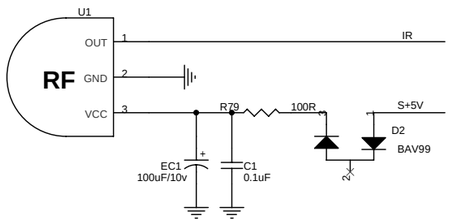


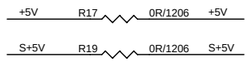


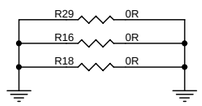


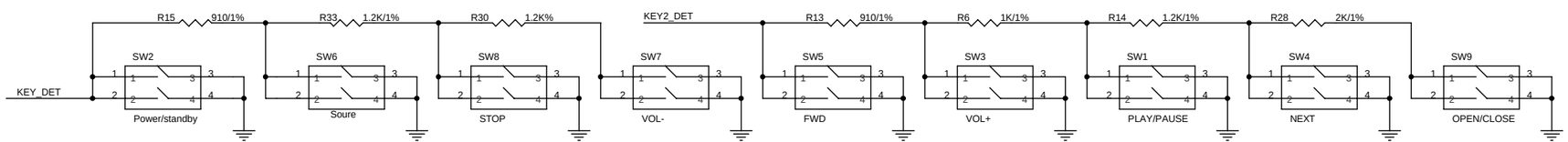








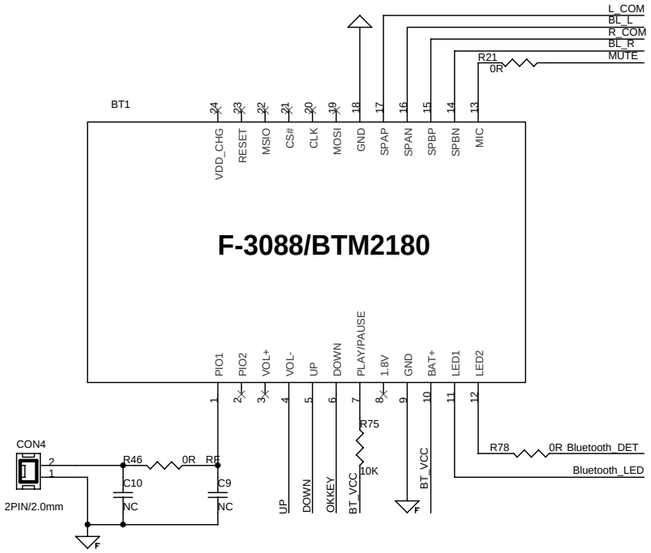


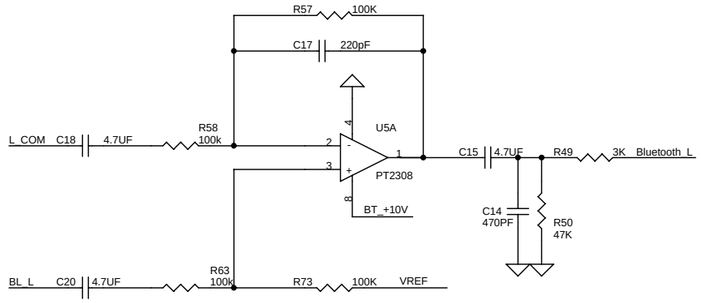


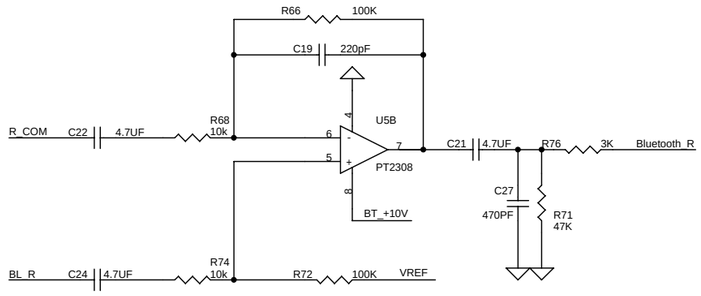
BTM2180 Project

Title	Dsiplay Schematic	
Size C	Document Number <Doc>	Rev A.0
Date: Monday, March 11, 2013	Sheet 1 of 2	

Bluetooth Module







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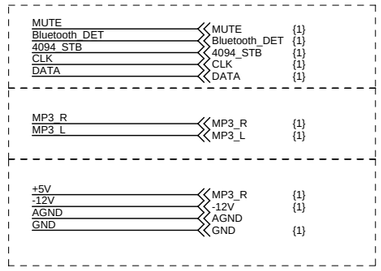
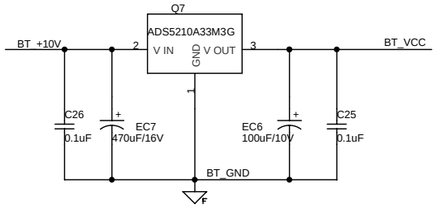
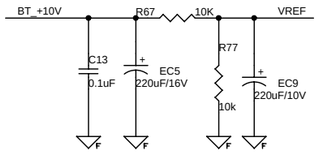
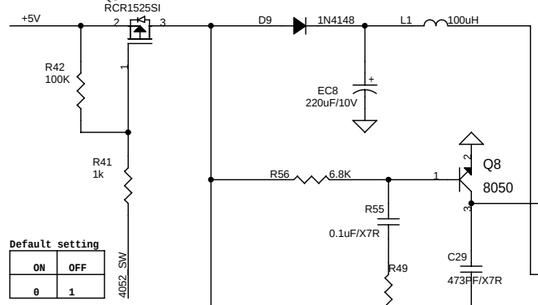
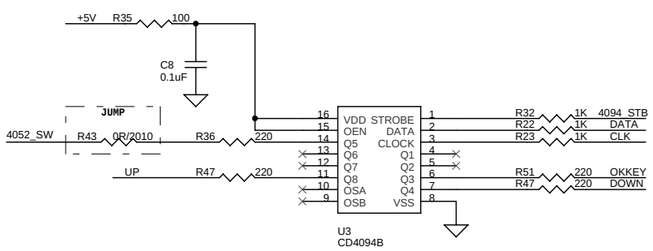


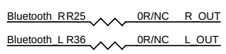


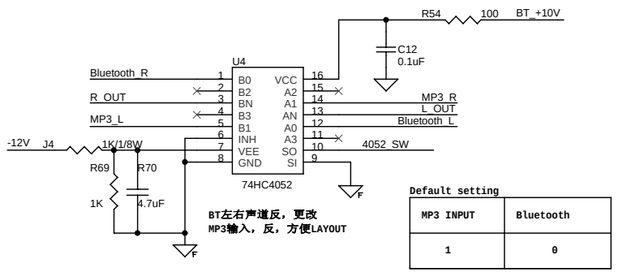






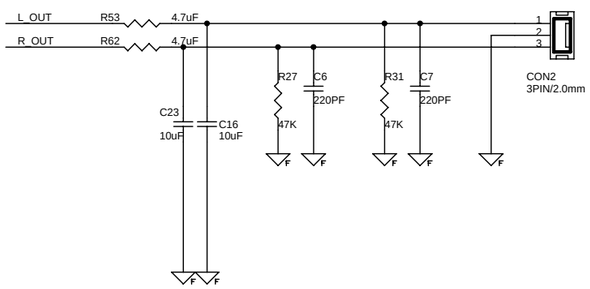
Spare



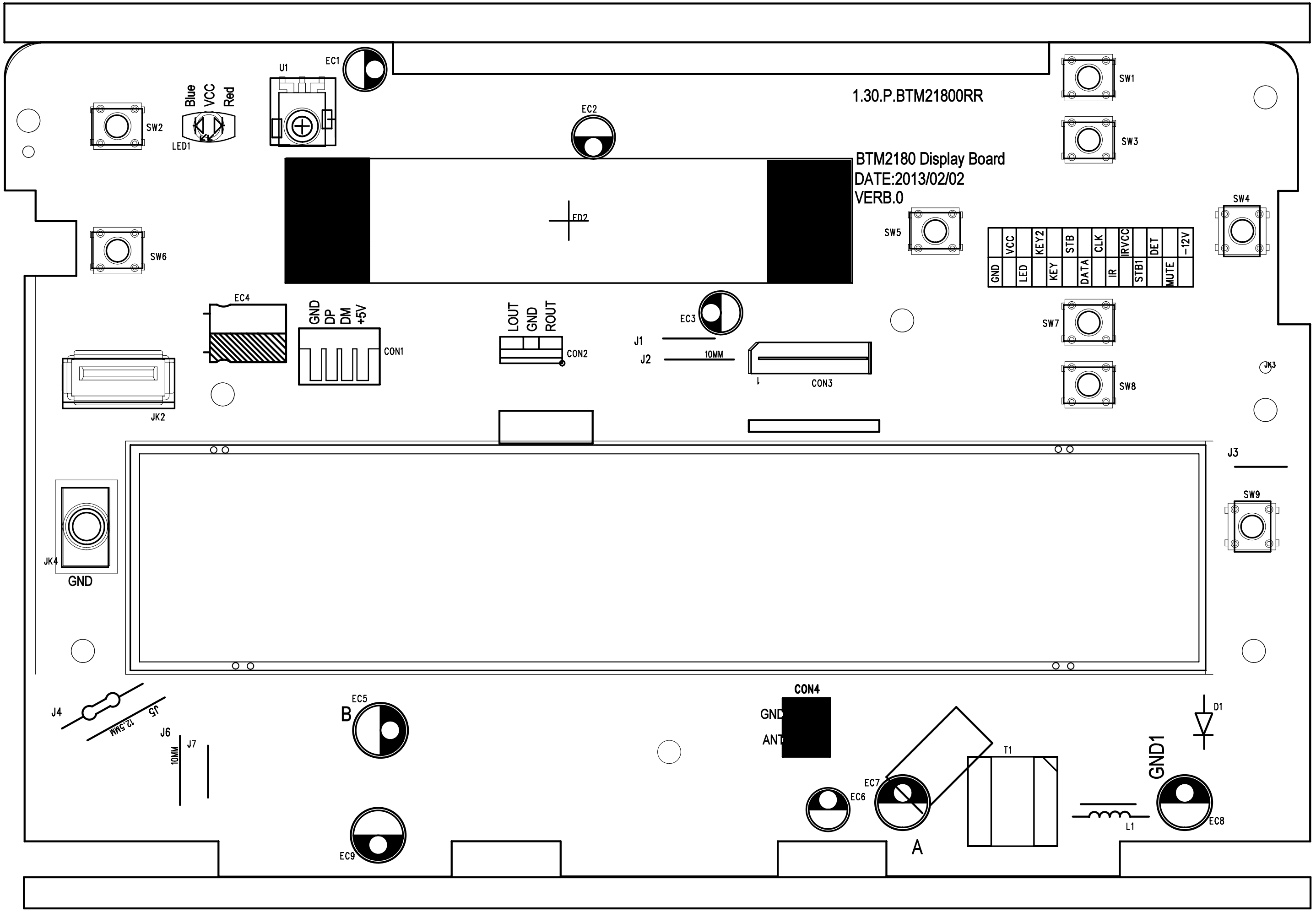


Default setting

MP3 INPUT	Bluetooth
1	0



BTM2180 PROJECT			
Title	MEDIO product		
Size C	Document Number <Doc>		Rev
Date: Monday, March 11, 2013		Sheet 2 of 2	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BTM2180 Display Board
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VERB.0
U1
EC1
EC2
EC3
EC4
EC5
EC6
EC7
EC8
EC9
SW1
SW2
SW3
SW4
SW5
SW6
SW7
SW8
SW9
LED1
Blue
VCC
Red
FD2
GND
DP
DM
+5V
CON1
LOUT
GND
ROUT
CON2
J1
J2
10MM
CON3
JK2
JK3
J3
JK4
GND
J4
12.5MM
J5
J6
10MM
J7
CON4
GND
ANT
T1
L1
D1
GND1
A
B
GND
VCC
LED
KEY2
KEY
STB
DATA
CLK
IR
IRVCC
STB1
DET
MUTE
-12V

Mechanical Exploded view