

Service
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Service Manual

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Published by Xu & Kelly wk1404 Subject to modification

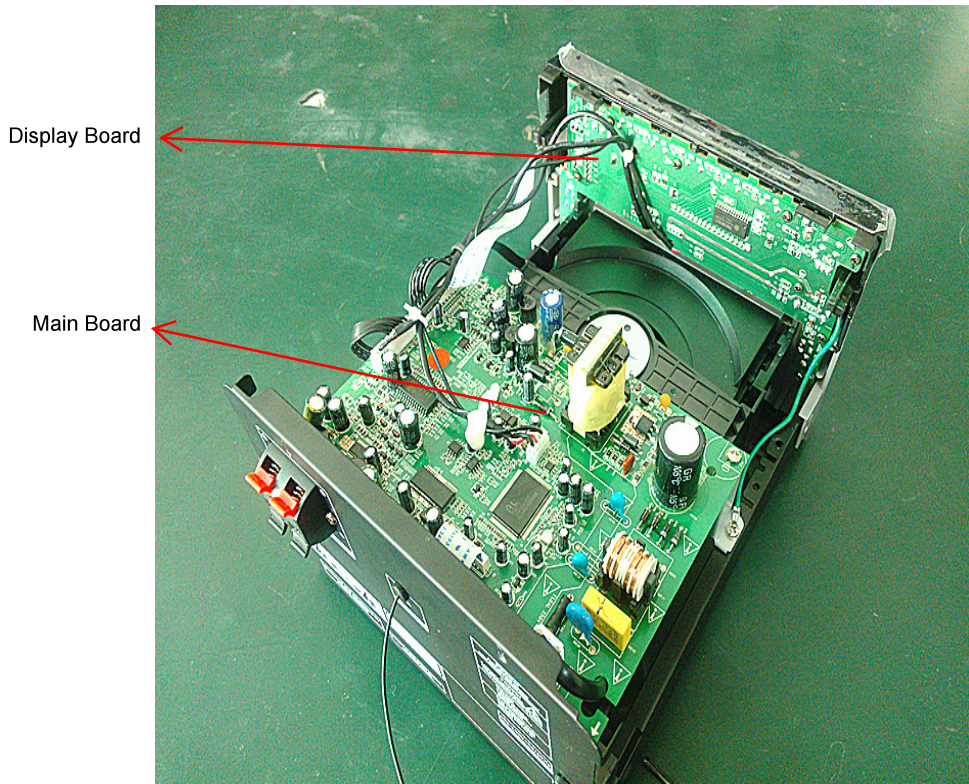
3140 038 61520

Version 1.0

PHILIPS

1.Location of PC Boards & Versions Variation

Location of PC Boards



Versions Variation

Type/Version Service Policy		BTM2310						
		/12 (EU)	/12 (APMEA)	/55	/96	/93	/05	/77
Board in used								
Main board		M	M+C	M+C	M+C	M+C	M	M+C
Display board		M	M+C	M+C	M+C	M+C	M	M+C

Tips: C--Component Level Repair
M--Module Level Rpair

2. Technical Specification

Module: BTM2310

TEST CONDITIONS:

1. POWER SUPPLY: AC. According to Ver
2. REF OUTPUT: 6 Ω 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	Frequency Range		MHz		87.5	87.5	87.5	
					108	108	108	
2	26dB QUENTING SENSITIVITY		dBf	16	22	16	16	
				16	22	16	15	
				16	22	16	16	
3	-3dB LIMITING POINT		dBf	20	26	12	12	
3	FM IF REJECTION 98MHZ S/N=26dB		dB	65	60	110	110	
4	IMAGE REJECT 98MHZ S/N=26dB		dB	40	25	110	110	
5	S/N		MONO	50	45	68	69	
			ST	50	45	64	64	
6	OVERALL DISTORTION		%	2	5	0.2	0.2	
7	MODULATION HUM		dB	50	45	57	57	
9	TUNING SENS		90.1MHz	dBf	-	16-36	20	20
			98.1MHz	dBf	-	16-36	20	20
			106.1MHz	dBf	-	16-36	20	20
10	STEREO CHANNEL SEPARATION		1KHz	dB	25	18	39	38
11	THD 10% POWER		1KHz	W	-	6±1db	5.9/5.8	5.7/5.8

CD SECTION:

NO	TEST ITEMS		UNIT	NOM.	LIMIT	TEST DATA			
						1#	2#		
1	TOTAL HARMONIC DISTORTION	1KHz	%	≤0.8	≤1	0.3/0.3	0.3/0.3		
2	S/N (1KHz, A-weighted)		dB	87	77	86	85		
3	FREQUENCY RESPONSE AT LOUDSPEAKER OUT	L/R	30Hz	dB	0±3	/	/		
			20KHz	dB	0±3	/	/		
4	CHANNEL DIFFERENCE (1KHz)		dB	0	≤2	0.1/0.1	0.1/0.1		
5	CHANNEL SEPARATION		1K	L	dB	40	-	68	69
				R	dB	40	-	68	69
			10K	L	dB	35	-	54	54
				R	dB	35	-	54	54
6	Residual noise (Vol min)		nW	-	≤40	1	1		
7	HUM		nW	-	≤150	15	15		
8	10% THE POWER		W	-	6±1db	5.8/5.9	5.8/5.8		

AUX SECTION:

NO	TEST ITEMS		UNIT	NOM.	LIMIT	TEST DATA	
						1#	2#
1	L/R OUTPUT POWER (10% THD, Ohm, 1KHz)		W	-	6±1db	5.7/5.6	5.6/5.6
2	FREQUENCY RESPONSE AT LOUDSPEAKER OUT	L/R	30Hz	dB	0'±3	/	/
			20KHz	dB	0'±3	/	/

Technical Specification

3	AMPLIFIER DISTORTION			%	≤0.8	≤1	0.1/0.1	0.1/0.1
4	CHANNEL SEPARATION	1K	L	dB	40	—	49	49
			R	dB	40	—	49	49
		10K	L	dB	35	—	50	52
			R	dB	35	—	50	52
5	CHANNEL DIFFERENCE (1KHz)			dB	0	≤3	0.1/0.1	0.1/0.1
6	LEVEL DIFFERENCE (RATED OUTPUT POWER AT 1KHz)	FM 1KHz 67.5KHz DEV,68dBf		dB	-	±5	-1	-1
		CD disc1-0dB track35		dB	-	±3	0.6	0.5
7	INPUT SENSITIVITY(RATED OUTPUT POWER AT 1KHz,10%THD)			mV	600	±200	700	700
8	S/N RATIO (1KHz,A-WEIGHTED)			dBA	76	70	84	84
9	HUM (VOL.MIN-MAX-20dB,without signal)			nW	-	≤150	15	15
10	RESIDUAL NOISE (VOL.MIN.with signal) A-WEIGHTED			nW	-	≤40	1	1

BT SECTION:

NO	TEST ITEMS	UNIT	NOM.	LIMIT	TEST DATA			
					1#	2#		
1	TOTAL HARMONIC DISTORTION	1KHz	%	≤0.8	≤1	0.4/0.4	0.4/0.4	
2	S/N (1KHz,A-weightde)		dBA	67	65	75	76	
3	FREQUENCY RESPONSE AT LOUDSPEAKER OUT	L/R	125Hz	dB	—	0'±3	/	/
			16KHz	dB	—	0±3	/	/
4	CHANNEL DIFFERENCE (1KHz)		dB	0	≤2	0.1/0.1	0.1/0.1	
5	CHANNEL SEPARATION	1K	L	dB	40	—	45	45
			R	dB	40	—	45	45
		10K	L	dB	35	—	49	49
			R	dB	35	—	49	49
6	Residual noise (Vol min)		nW	—	≤40	1	1	
7	HUM		nW	—	≤150	15	15	
8	10% THE POWER		W	—	5±10%	5.8/5.8	5.8/5.7	

USB SECTION:

NO	TEST ITEMS	UNIT	NOM.	LIMIT	TEST DATA			
					1#	2#		
1	TOTAL HARMONIC DISTORTION	1KHz	%	≤0.8	≤1	0.2/0.2	0.2/0.2	
2	S/N (1KHz,A-weightde)		dBA	67	65	84	85	
3	FREQUENCY RESPONSE AT LOUDSPEAKER OUT	L/R	125Hz	dB	—	0'±3	/	/
			16KHz	dB	—	0±3	/	/
4	CHANNEL DIFFERENCE (1KHz)		dB	0	≤2	0.1/0.1	0.1/0.1	
5	CHANNEL SEPARATION	1K	L	dB	40	—	67	67
			R	dB	40	—	67	67
		10K	L	dB	35	—	57	56
			R	dB	35	—	57	56
6	Residual noise (Vol min)		nW	—	≤40	1	1	
7	HUM		nW	—	≤150	15	15	
8	10% THE POWER		W	—	5±10%	5.8/5.7	5.7/5.8	

3.Safety instruction

1. General safety

Safety regulations require that during a repair:

- . Connect the unit to the mains via an isolation transformer.
- . Replace safety components indicated by the symbol ▲, only by components identical to the original ones. Any other component substitution (other than original type) may increase risk of fire or electrical shock hazard.

Safety regulations require that after a repair, you must return the unit in its original condition. Pay, in particular, attention to the following points:

- . Route the wires/cables correctly, and fix them with the mounted cable clamps.
- . Check the insulation of the mains lead for external damage.
- . Check the electrical DC resistance between the mains plug and the secondary side:
 - 1) Unplug the mains cord, and connect a wire between the two pins of the mains plug.
 - 2) Set the mains switch the "on" position (keep the mains cord unplug).
 - 3) Measure the resistance value between the mains plug and the front panel, controls, and chassis bottom.
 - 4) Repair or correct unit when the resistance measurement is less than 1M Ω .
 - 5) Verify this, before you return the unit to the customer/user (ref. UL-standard no. 1492).
 - 6) Switch the unit "off", and remove the wire between the two pins of the mains plug.

2.Laser safety

This unit employs a laser. Only qualified service personnel may remove the cover, or attempt to service this device (due to possible eye injury).

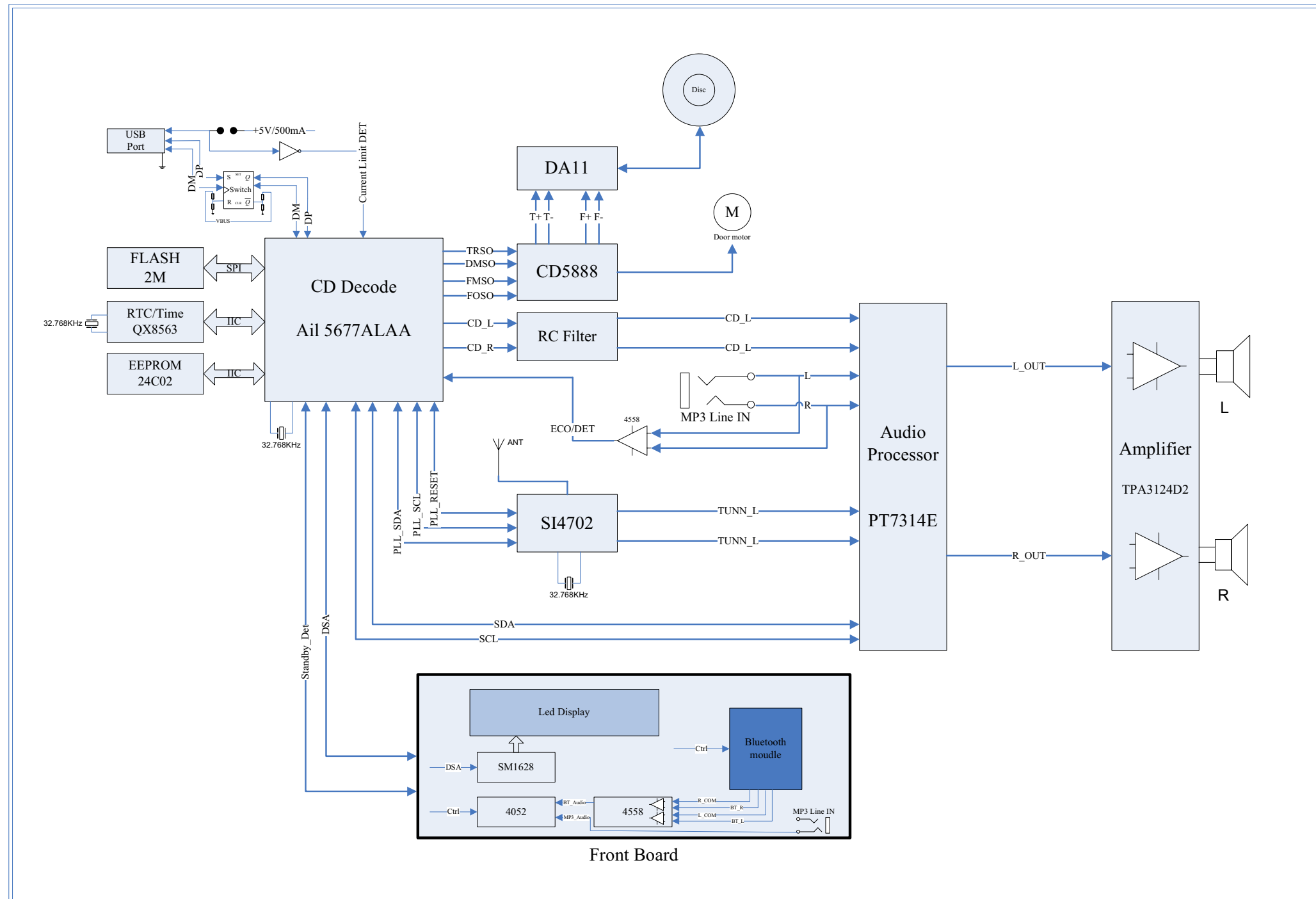
Laser device unit

Type	: Semiconductor laser GaAlAs
Wavelength	: 650nm (DVD)
	: 780nm (VCD/CD)
Output power	: 7mW (DVD)
	: 10mW (DVD /CD)

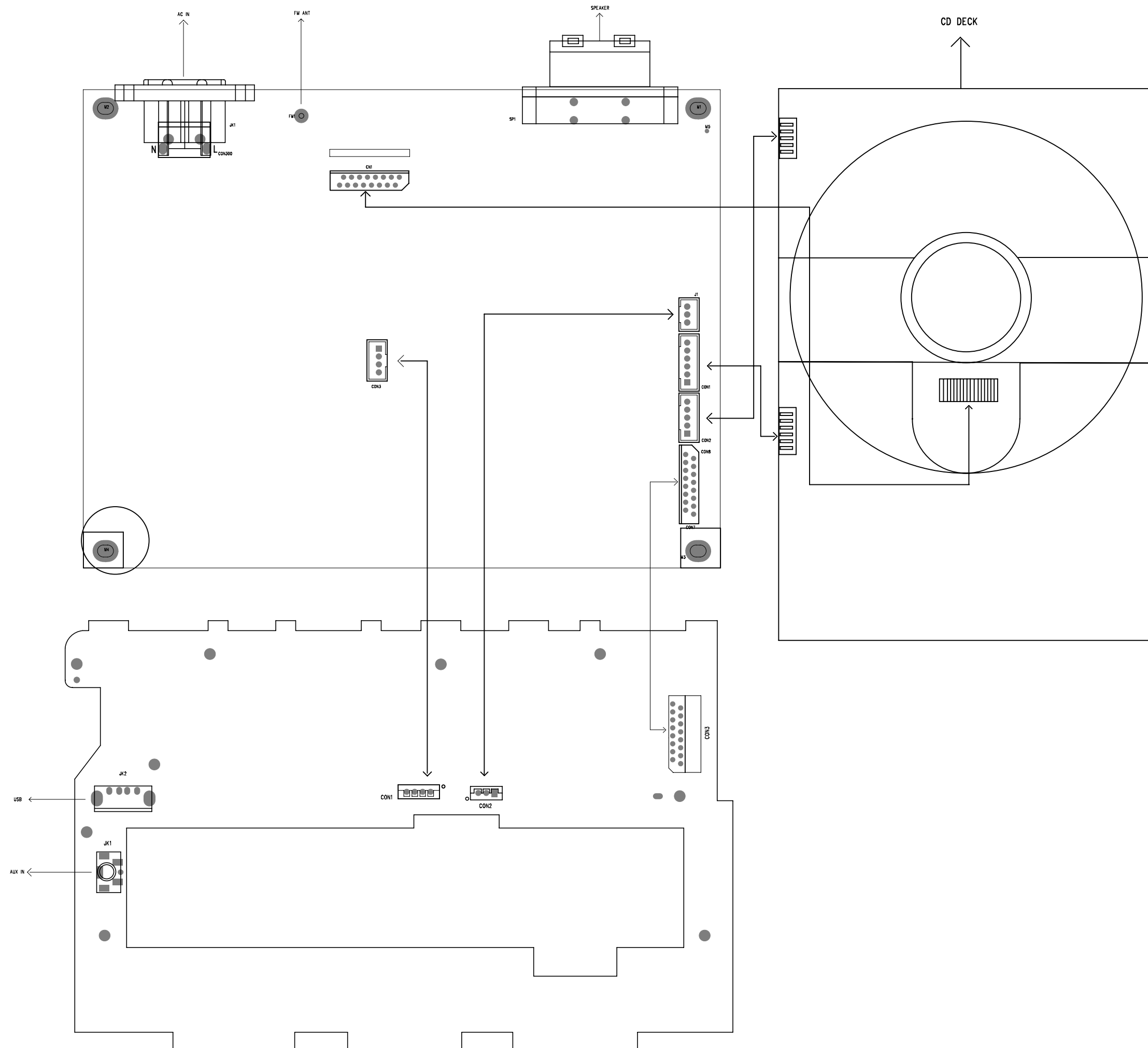
Beam divergence: 60 degree

Note: Use of controls or adjustments or performance of procedure other than those specified herein, may result in hazardous radiation exposure. Avoid direct exposure to beam.

4. SET BLOCK DIAGRAM

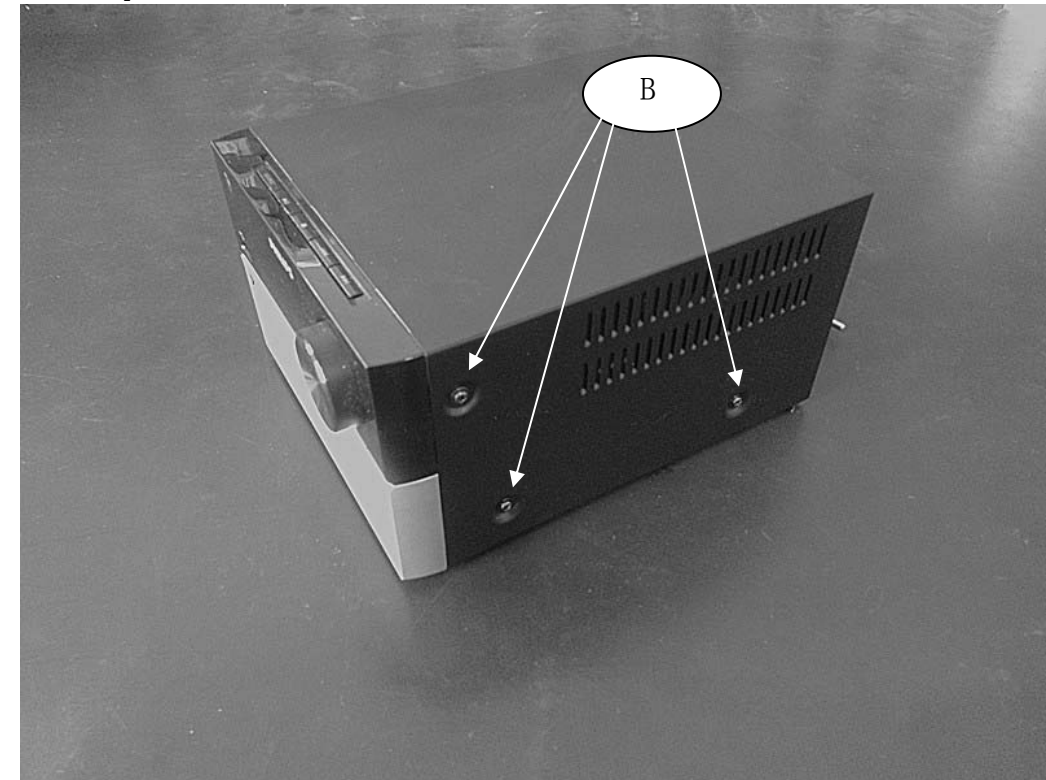
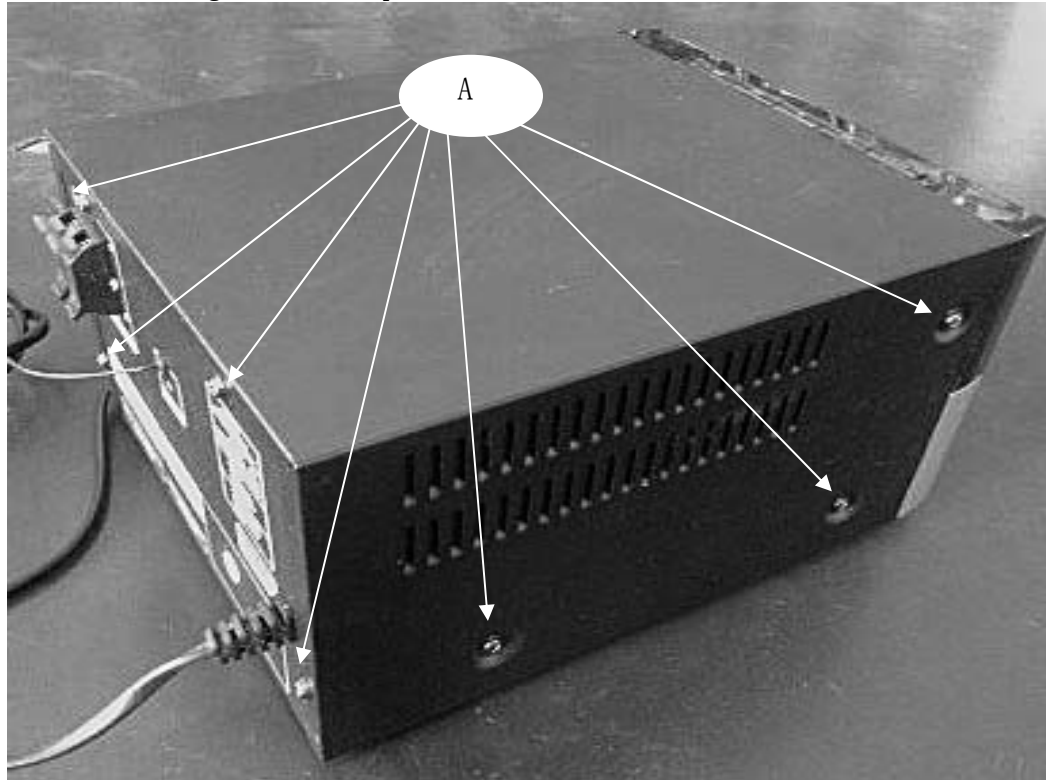


5. SET WIRING DIAGRAM



6.DISMANTLING DIAGRAM

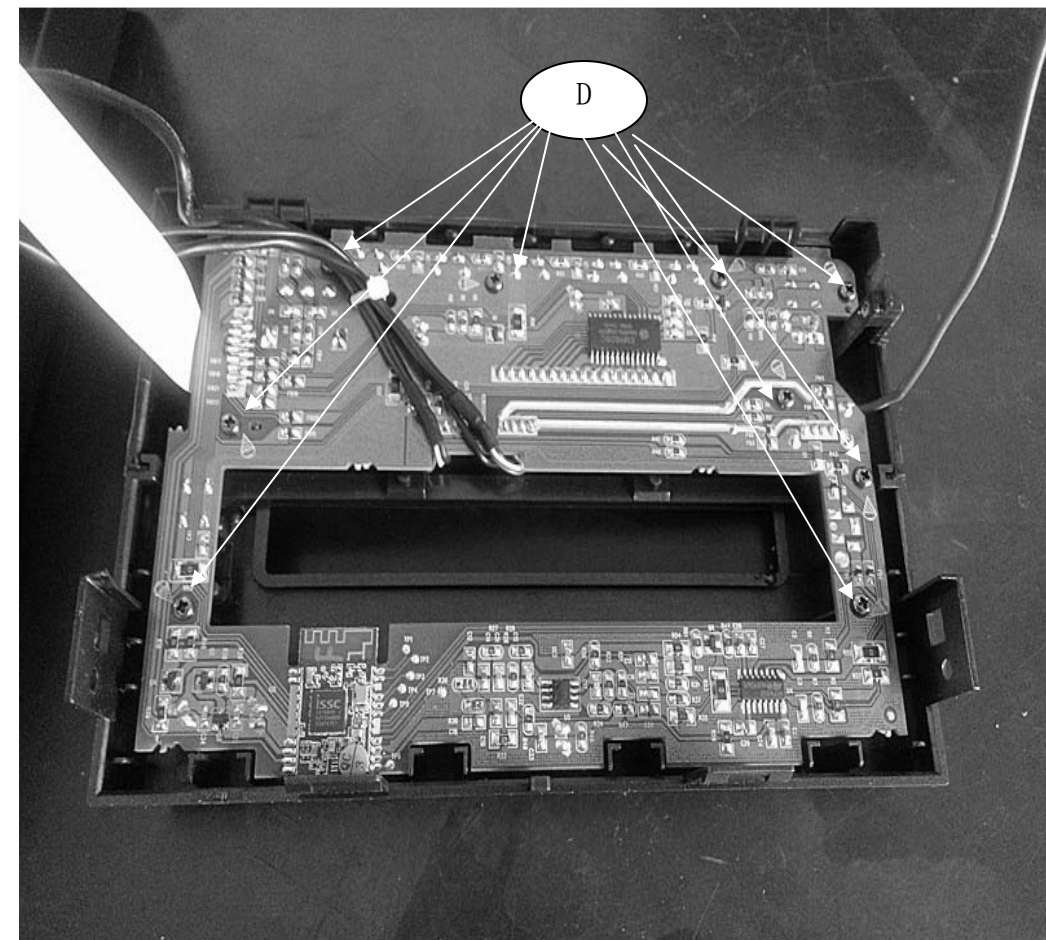
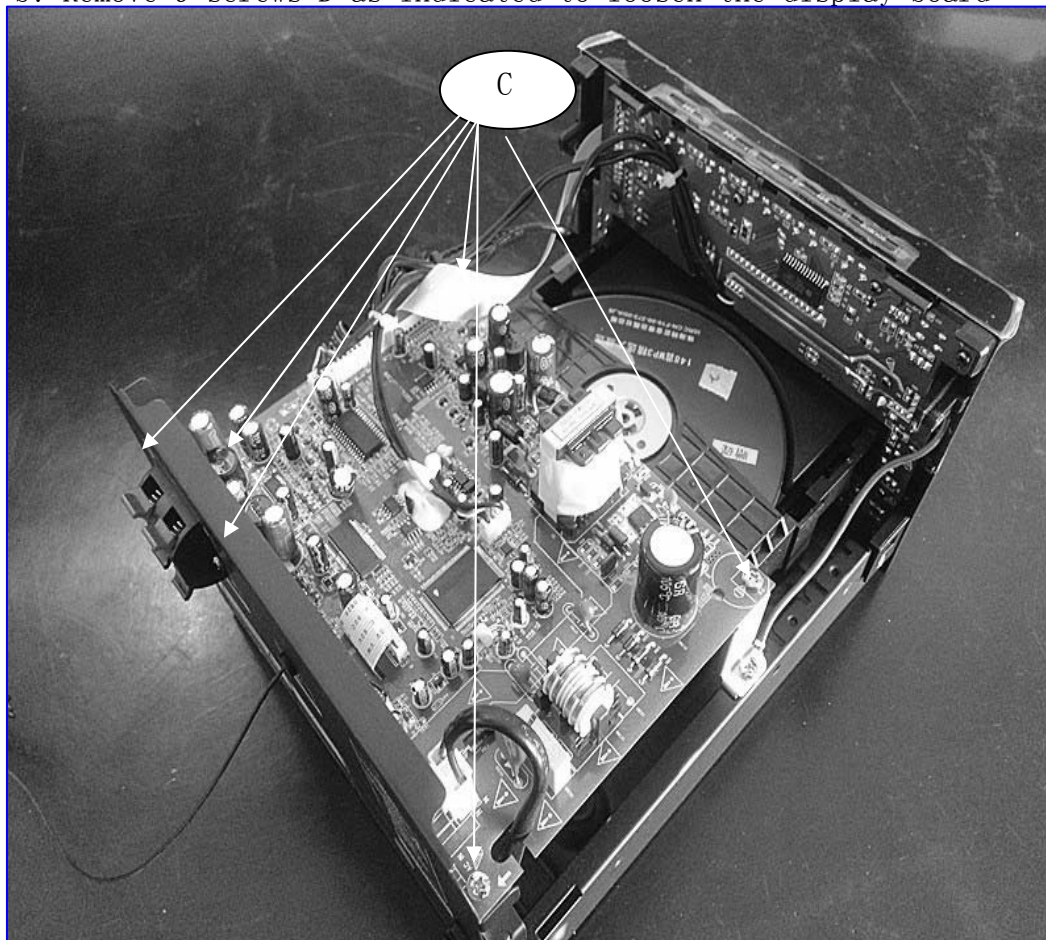
1)Dismantling of the top cabinet:Remove 10 screws A&B as indicated to loosen the top cabinet




2)Dismantling of the PCB board:

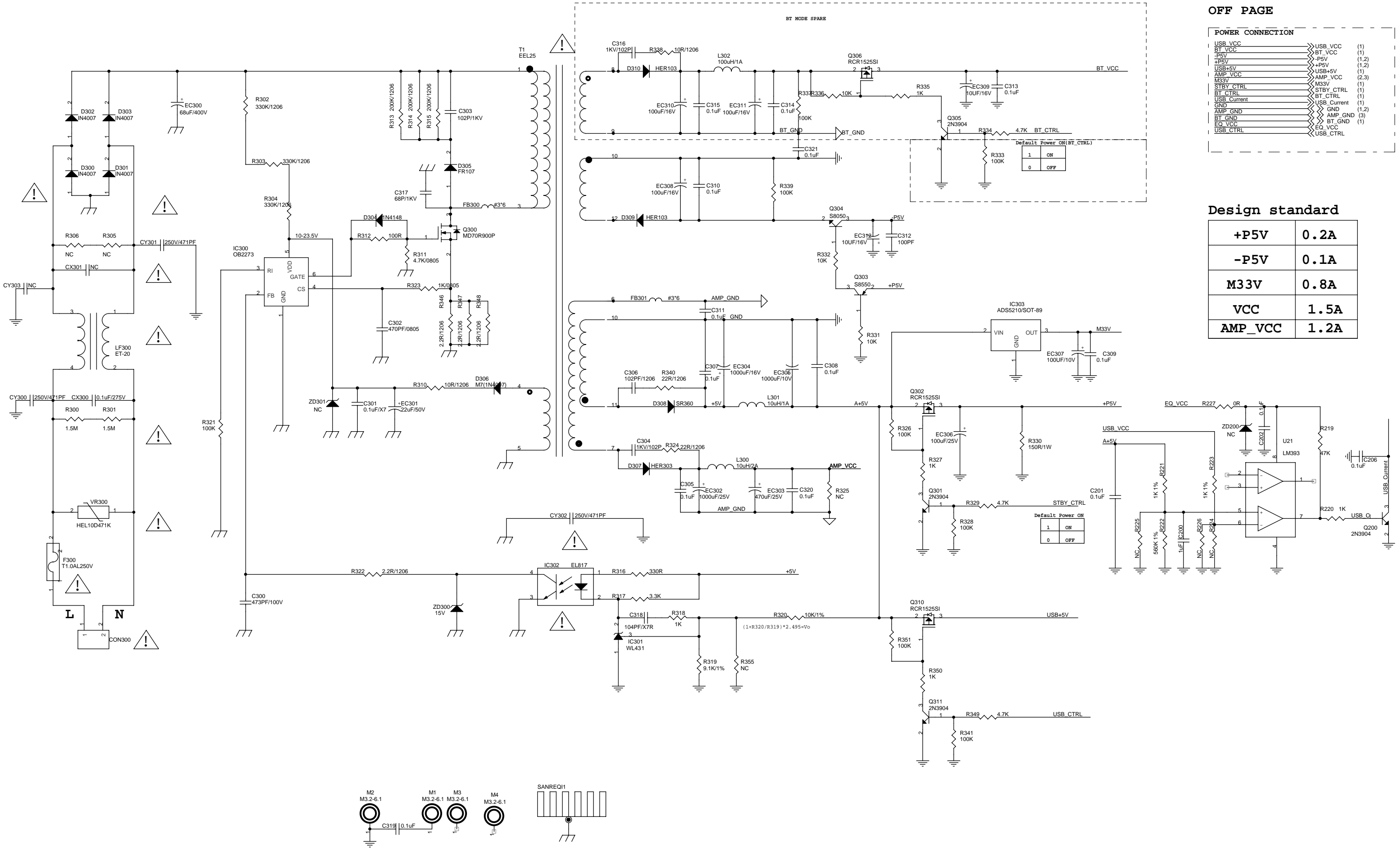
a: Remove 6 screws C as indicated to loosen the main board

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



7-1. MAIN BOARD CIRCUIT DIAGRAM

*** CAUTION :**
 THE PARTS MARKED WITH  ARE IMPORTANT PARTS ON THE SAFETY.
 PLEASE USE THE PARTS HAVING THE DESIGNATED PARTS NUMBER WITHOUT FAIL.



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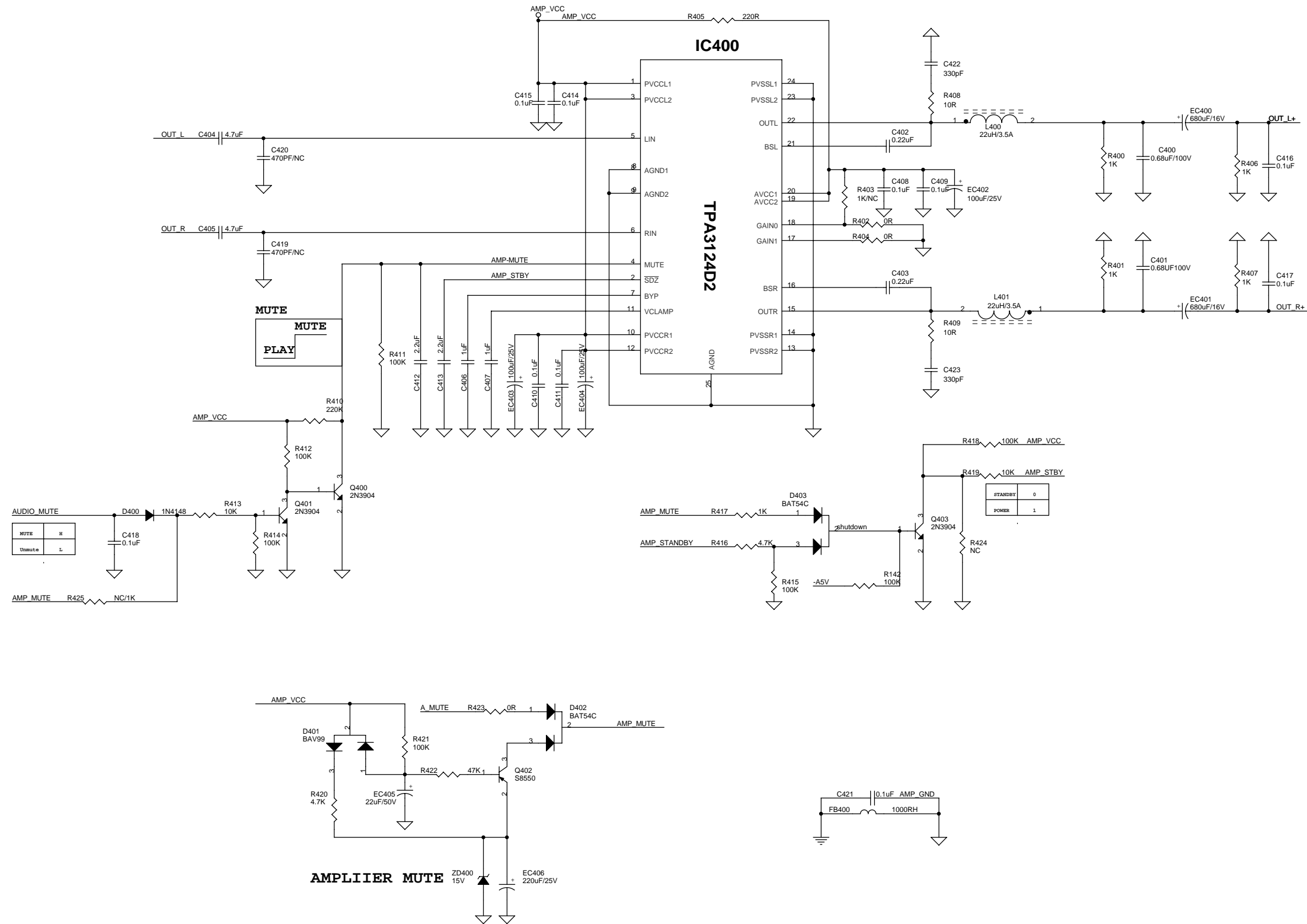
POWER CONNECTION

USB_VCC	USB_VCC	(1)
BT_VCC	BT_VCC	(1)
+P5V	+P5V	(1,2)
+P5V	+P5V	(1,2)
USB+5V	USB+5V	(1)
AMP_VCC	AMP_VCC	(2,3)
M33V	M33V	(1)
STBY_CTRL	STBY_CTRL	(1)
BT_CTRL	BT_CTRL	(1)
USB_Current	USB_Current	(1)
GND	GND	(1,2)
AMP_GND	AMP_GND	(3)
BT_GND	BT_GND	(1)
EQ_VCC	EQ_VCC	(1)
USB_CTRL	USB_CTRL	(1)

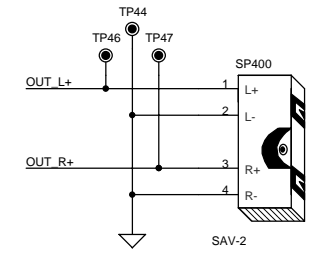
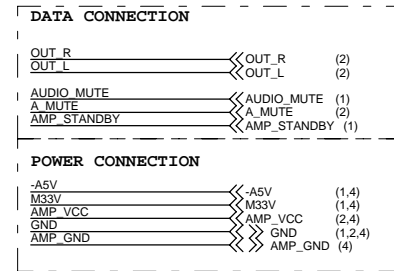
Design standard

+P5V	0.2A
-P5V	0.1A
M33V	0.8A
VCC	1.5A
AMP_VCC	1.2A

MAIN BOARD CIRCUIT DIAGRAM

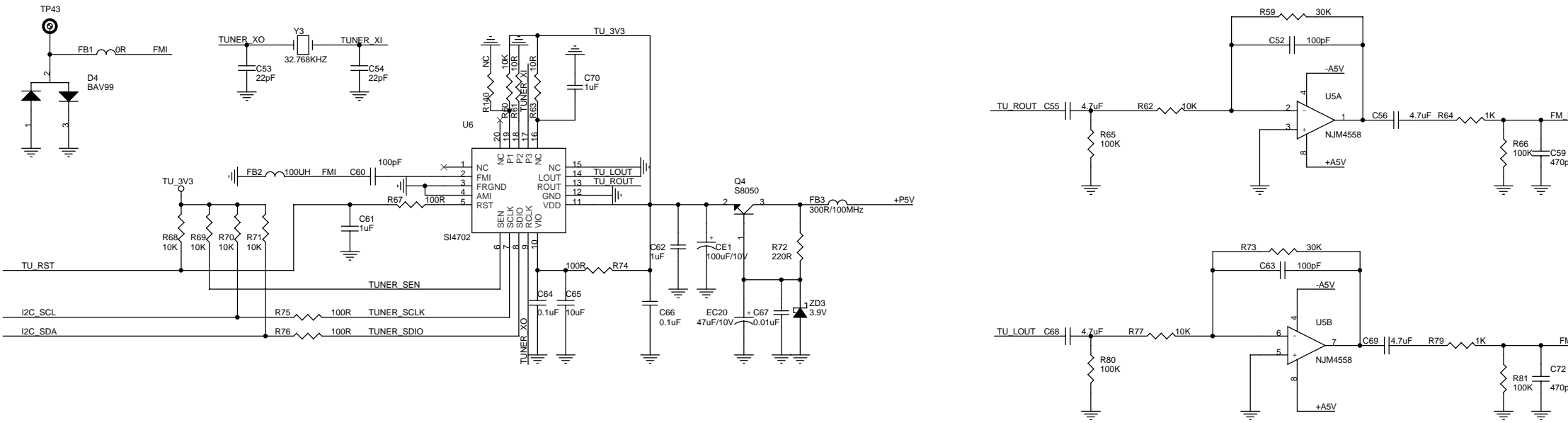


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MAIN BOARD CIRCUIT DIAGRAM

TUNER Audio OP

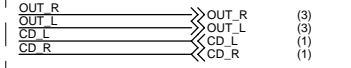


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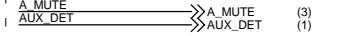
DATA CONNECTION



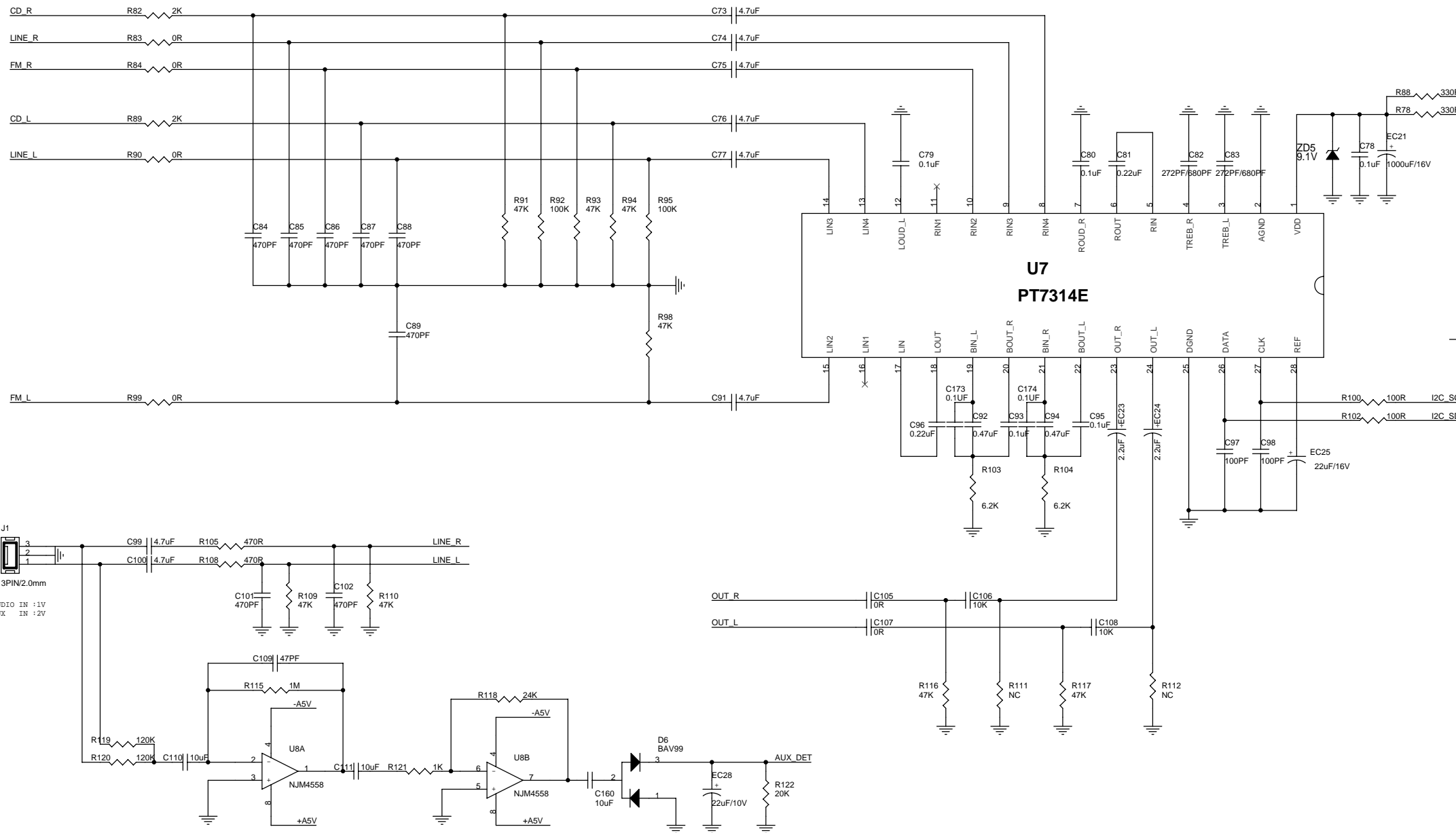
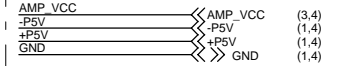
AUDIO CONNECTION



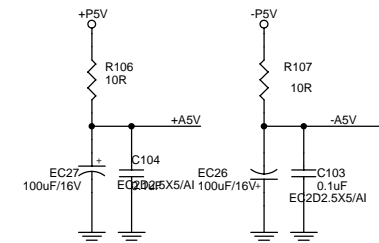
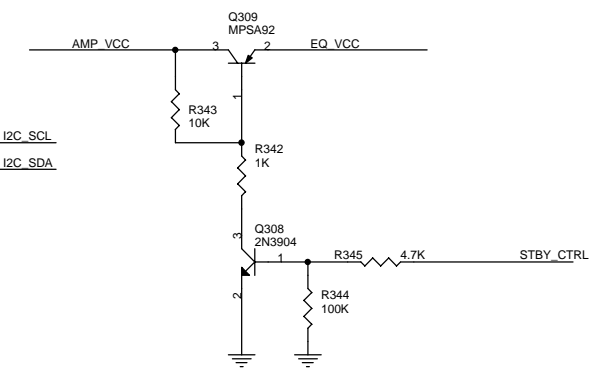
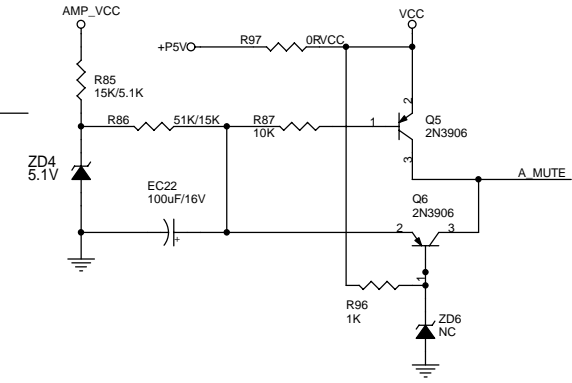
CTRL CONNECTION



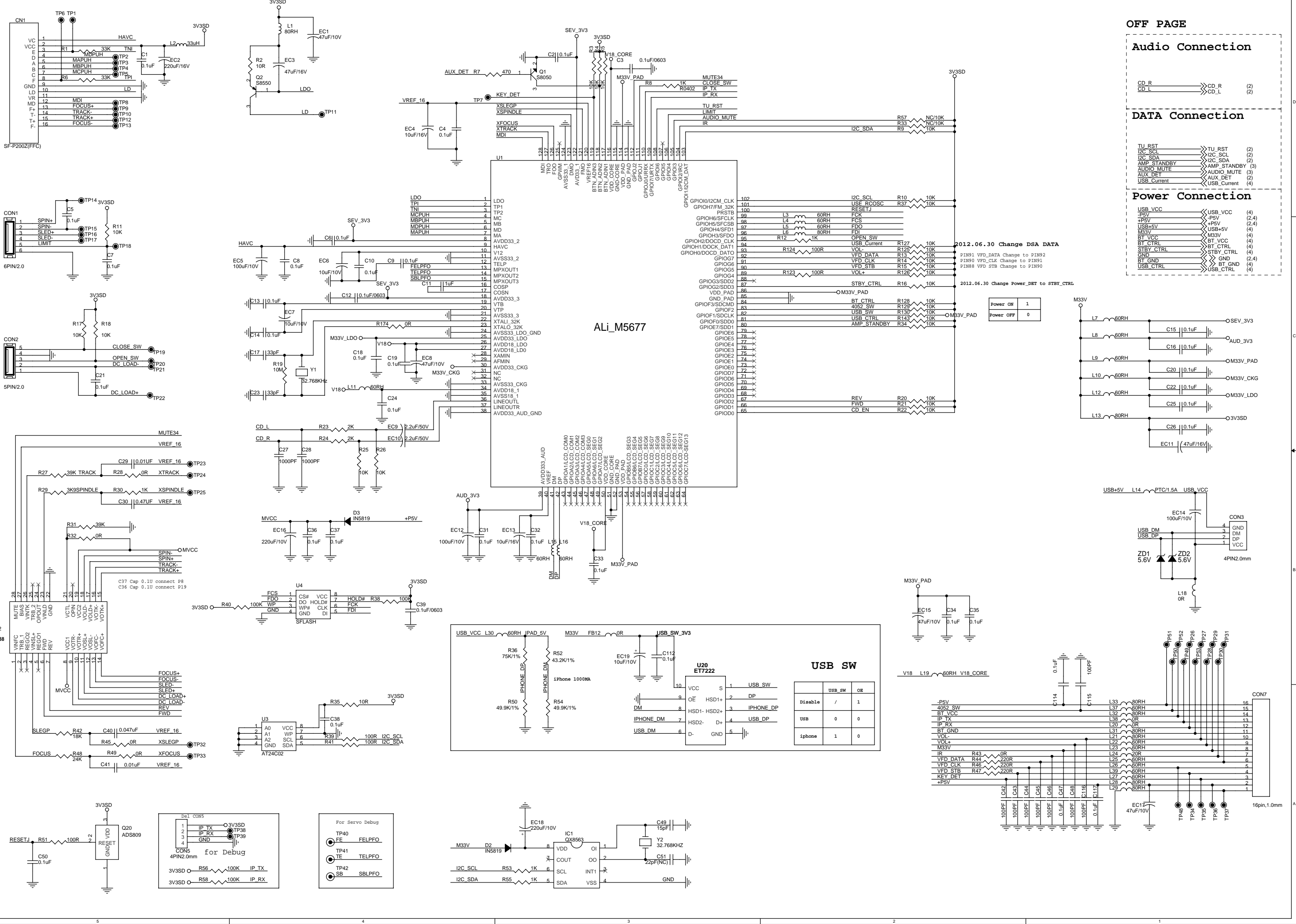
POWER CONNECTION



MUTE_CIRCUIT

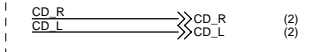


MAIN BOARD CIRCUIT DIAGRAM

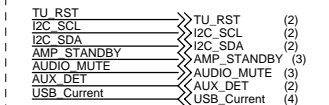


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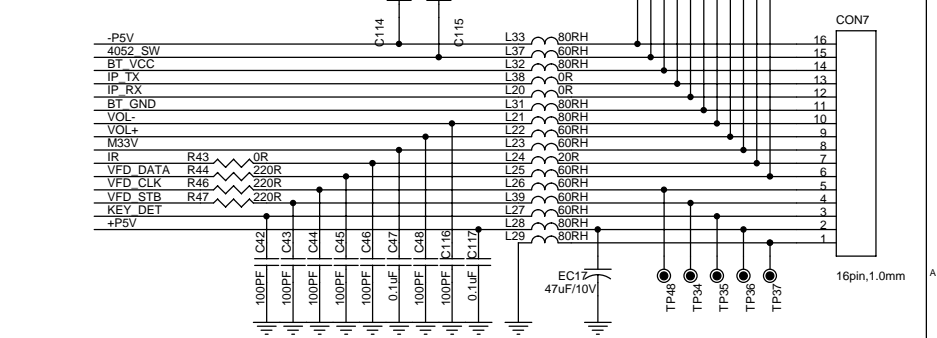
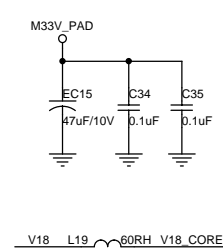
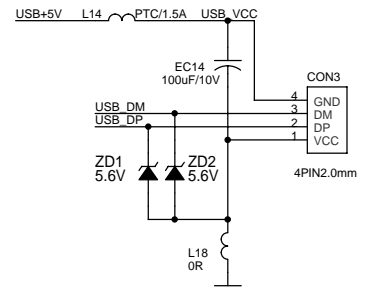
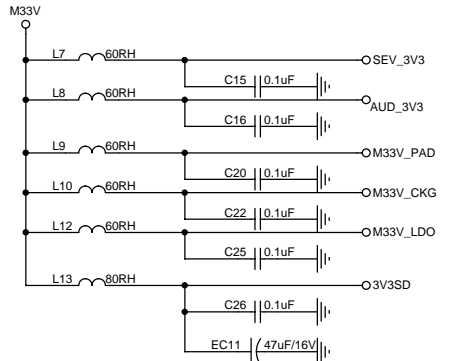
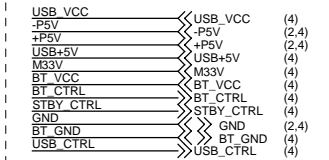
Audio Connection



DATA Connection



Power Connection



ALI_M5677



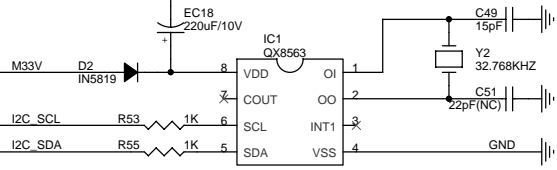
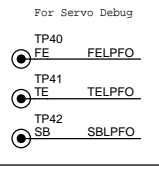
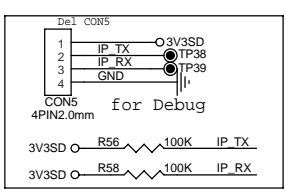
2012.06.30 Change DSA DATA
PIN91 VFD_DATA Change to PIN92
PIN90 VFD_CLK Change to PIN91
PIN88 VFD_STB Change to PIN90

2012.06.30 Change Power_DET to STBY_CTRL

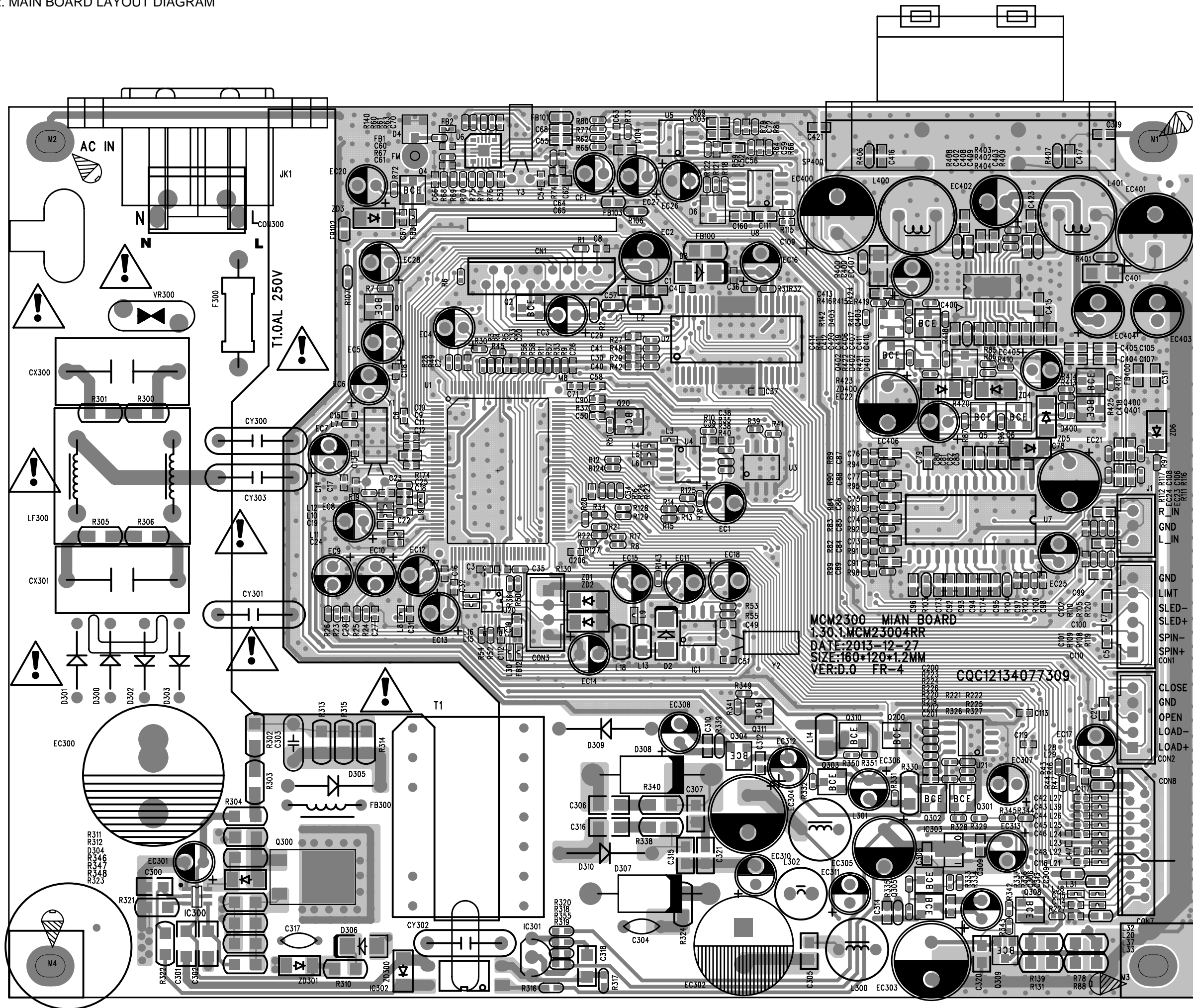
Power ON	1
Power OFF	0

USB SW

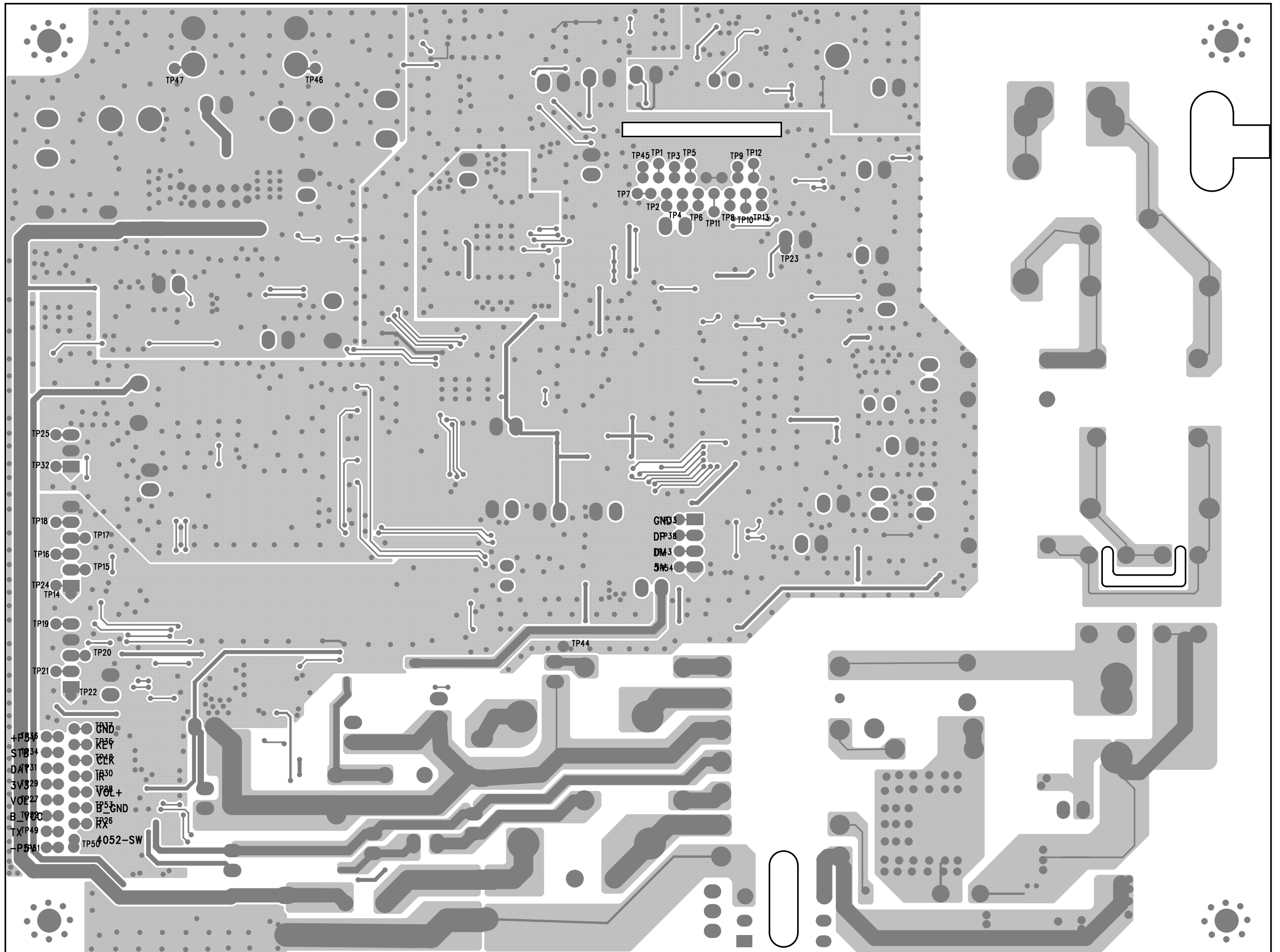
	USB_SW	OE
Disable	/	1
USB	0	0
iphone	1	0



7-2. MAIN BOARD LAYOUT DIAGRAM

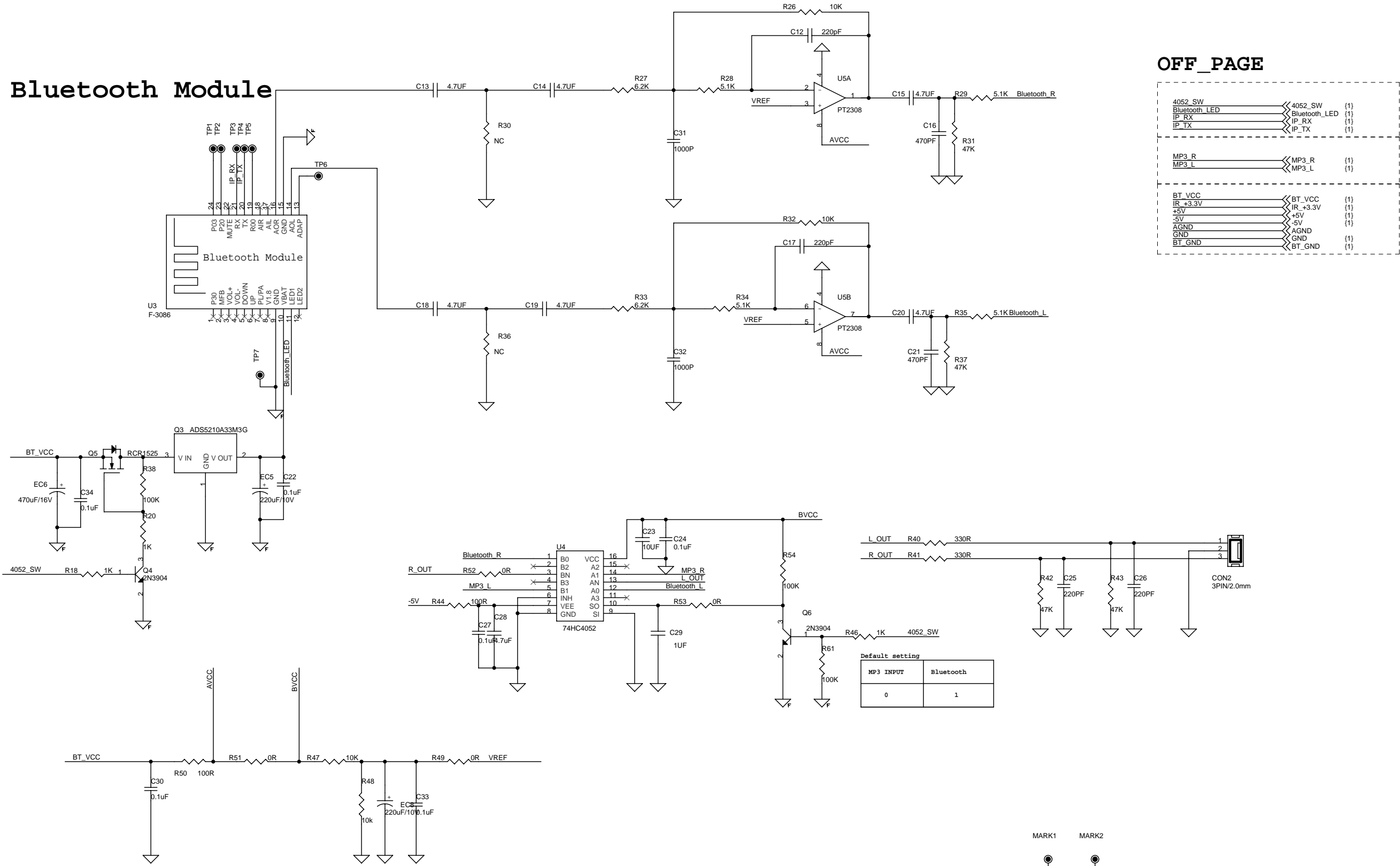


MAIN BOARD LAYOUT DIAGRAM



8-1. DISPLAY BOARD CIRCUIT DIAGRAM

Bluetooth Module

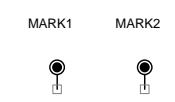


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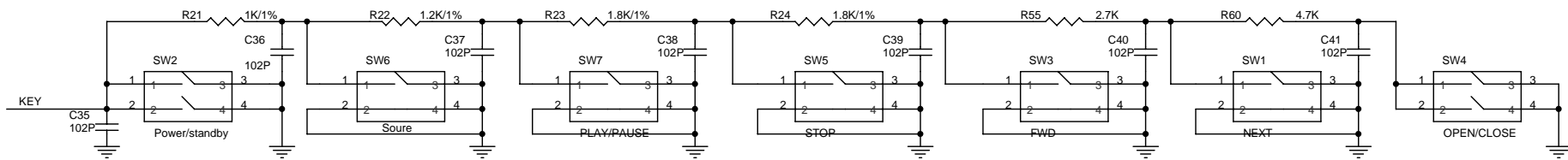
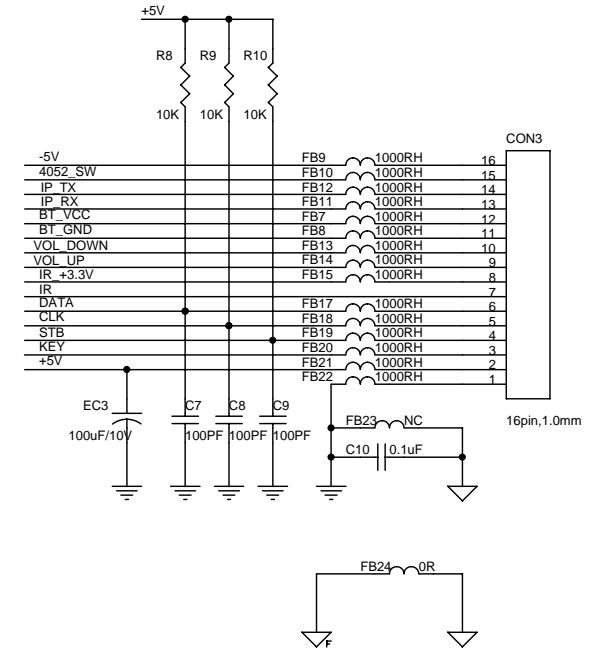
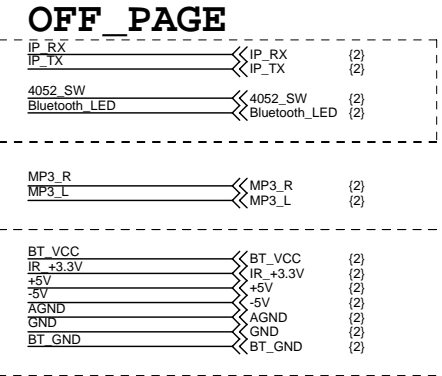
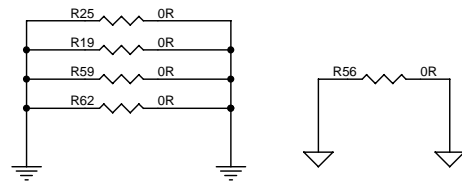
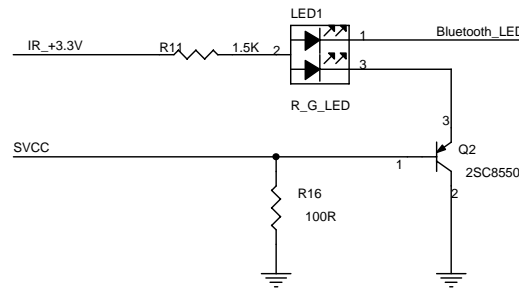
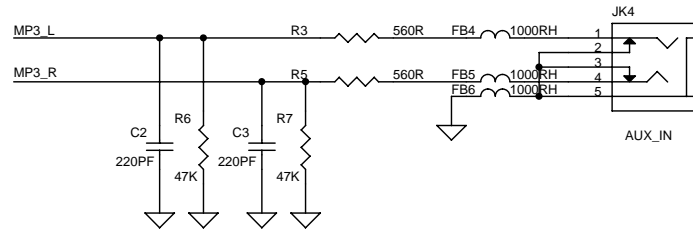
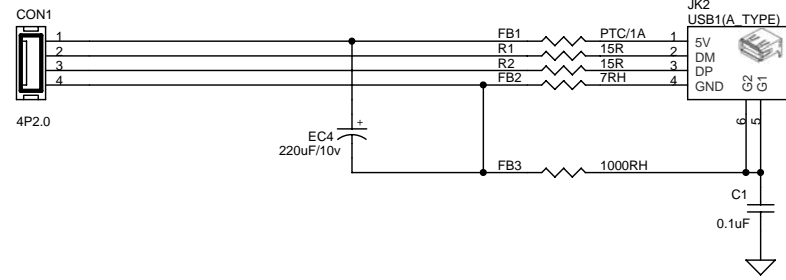
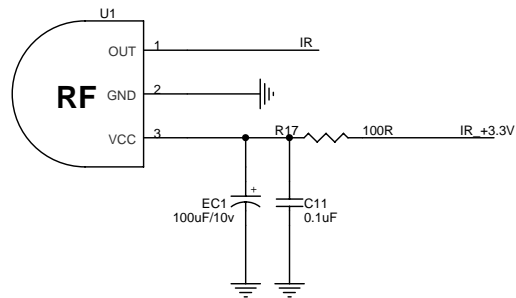
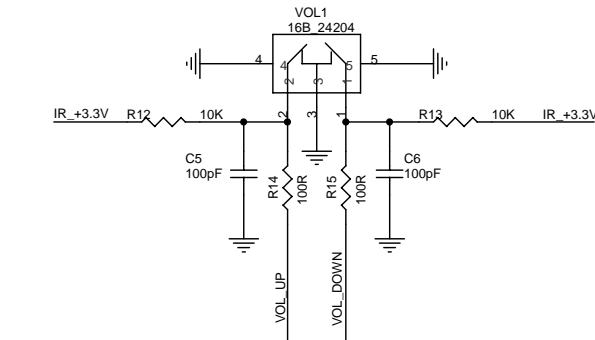
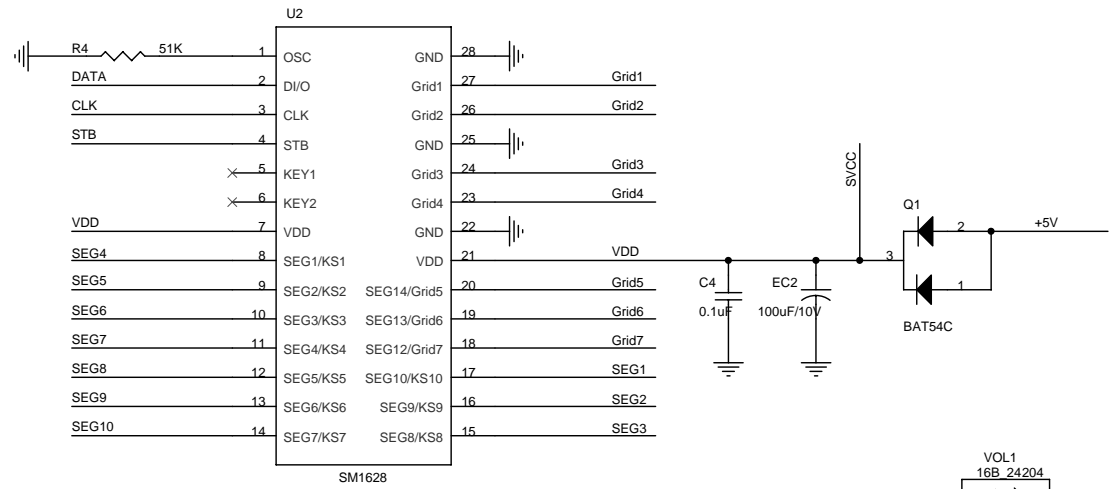
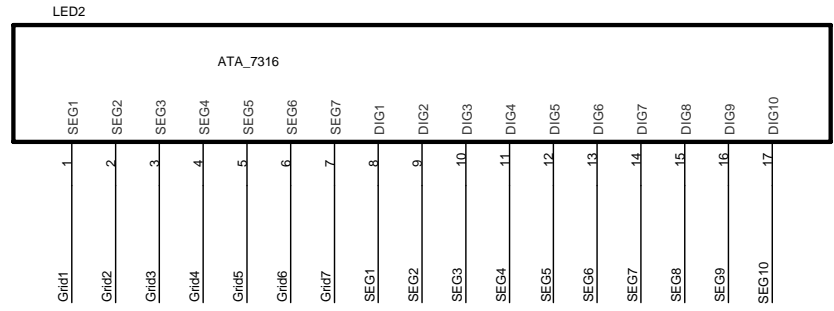
4052_SW	4052_SW	(1)
Bluetooth_LED	Bluetooth_LED	(1)
IP_RX	IP_RX	(1)
IP_TX	IP_TX	(1)
MP3_R	MP3_R	(1)
MP3_L	MP3_L	(1)
BT_VCC	BT_VCC	(1)
IR_+3.3V	IR_+3.3V	(1)
+5V	+5V	(1)
-5V	+5V	(1)
AGND	-5V	(1)
GND	GND	(1)
BT_GND	BT_GND	(1)

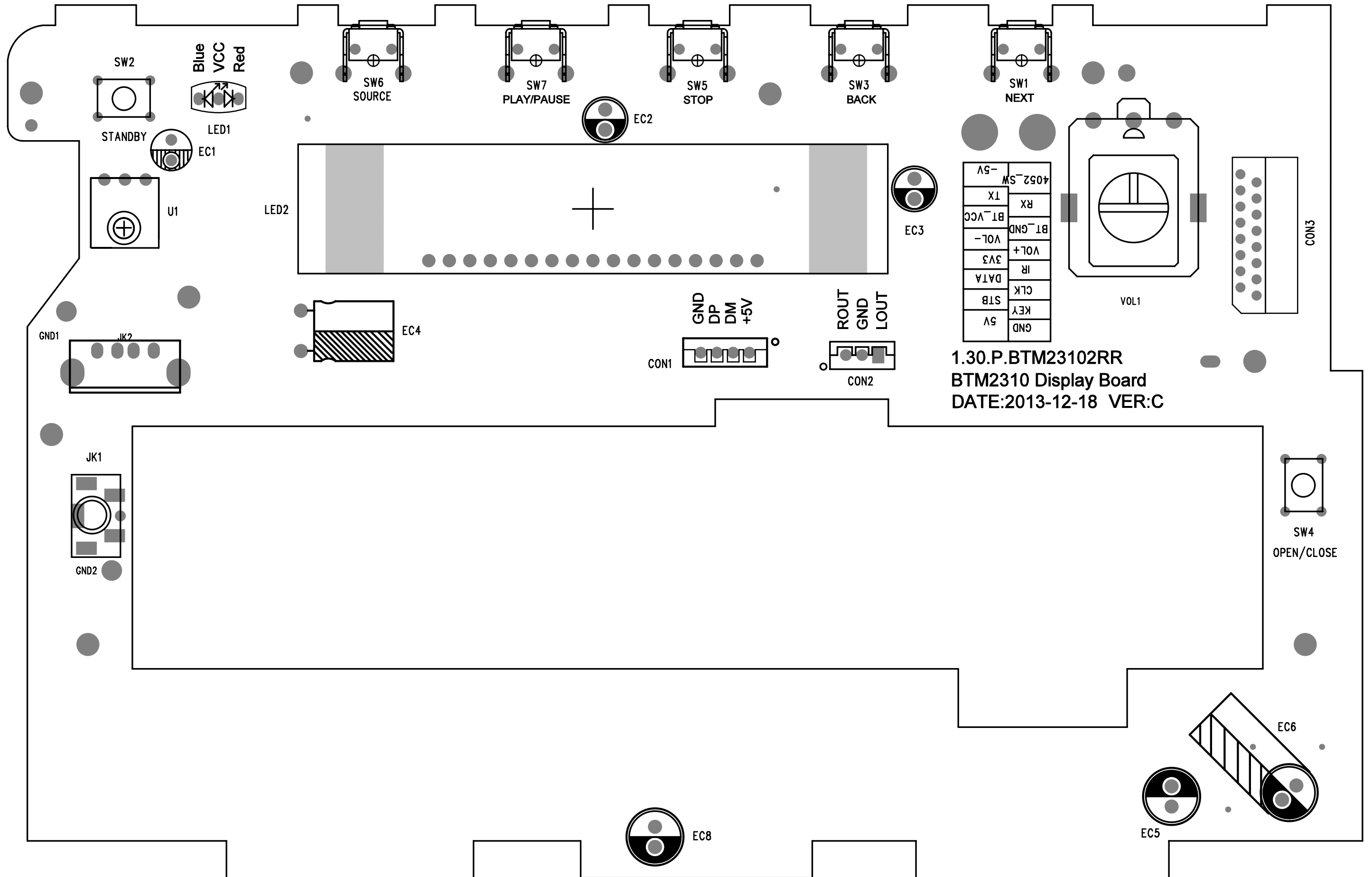
Default setting

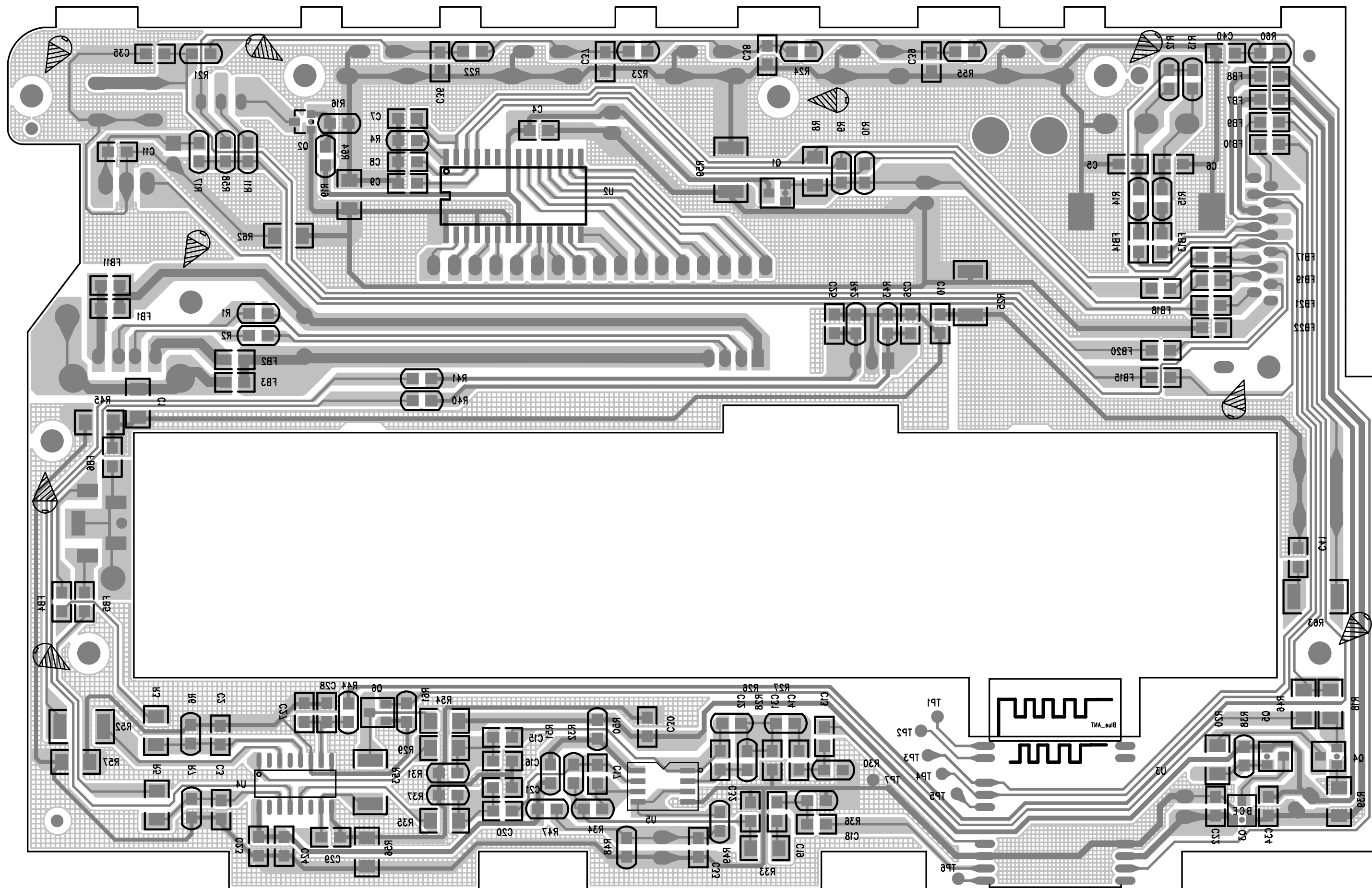
MP3 INPUT	Bluetooth
0	1

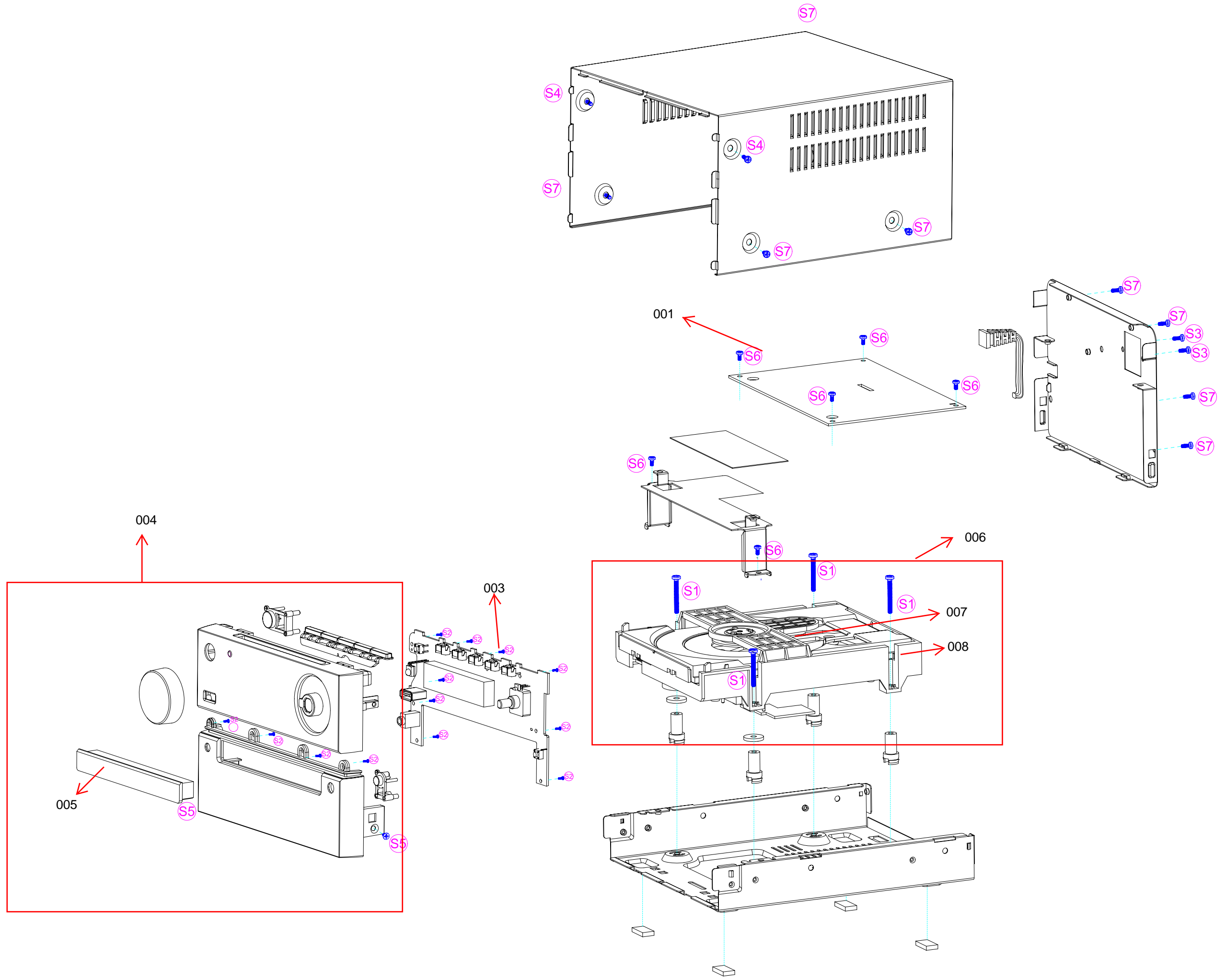


DISPLAY BOARD CIRCUIT DIAGRAM

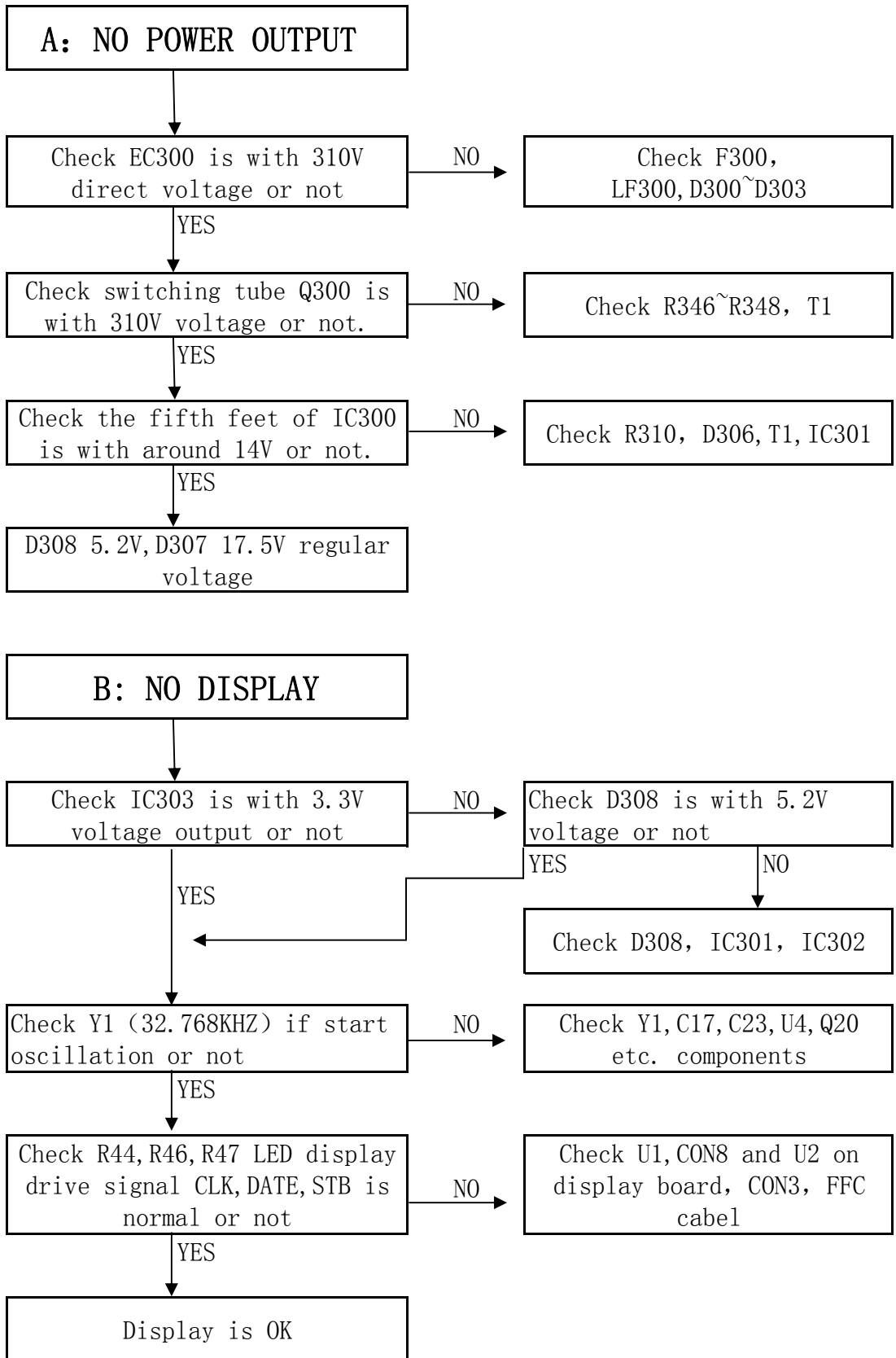




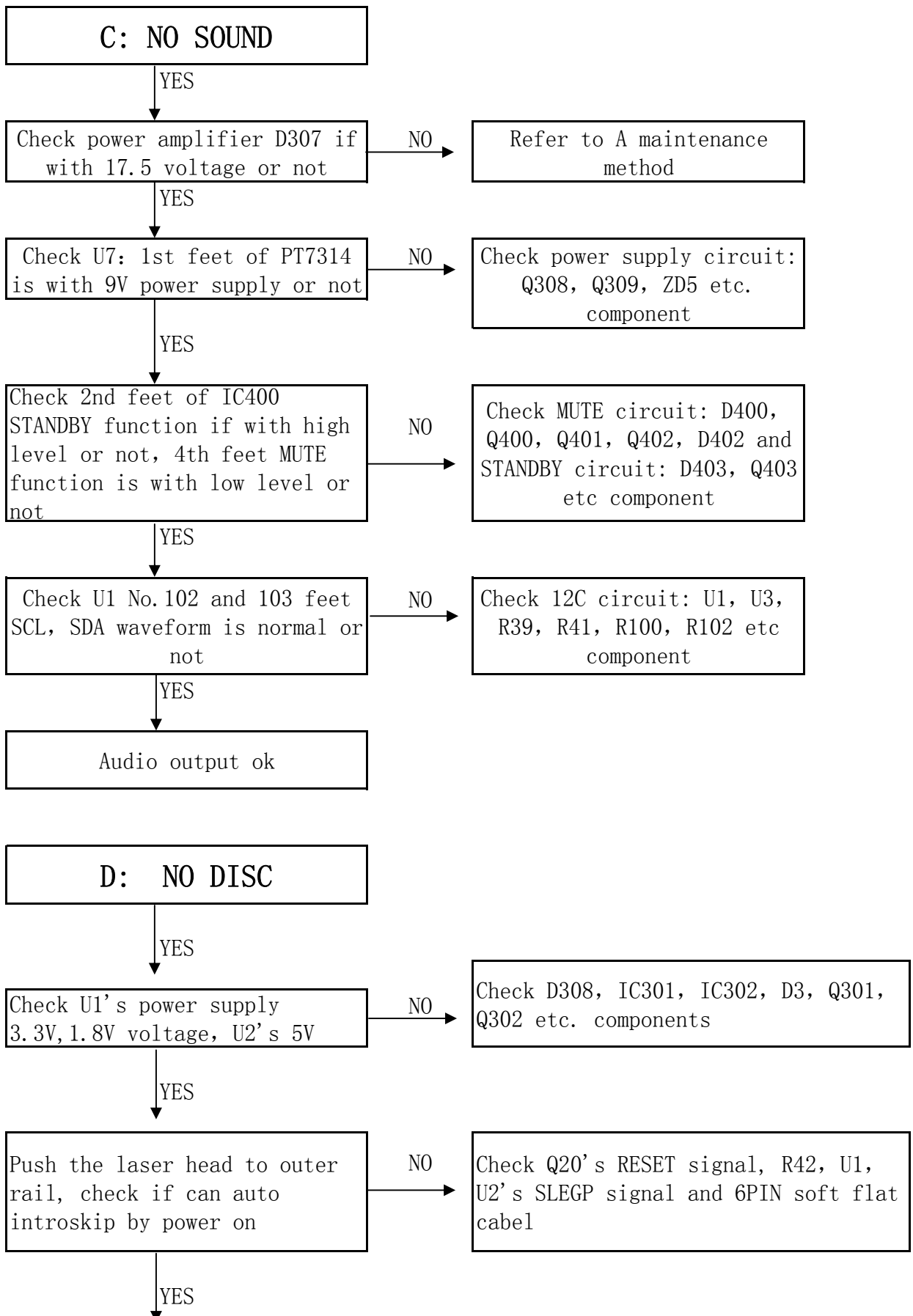




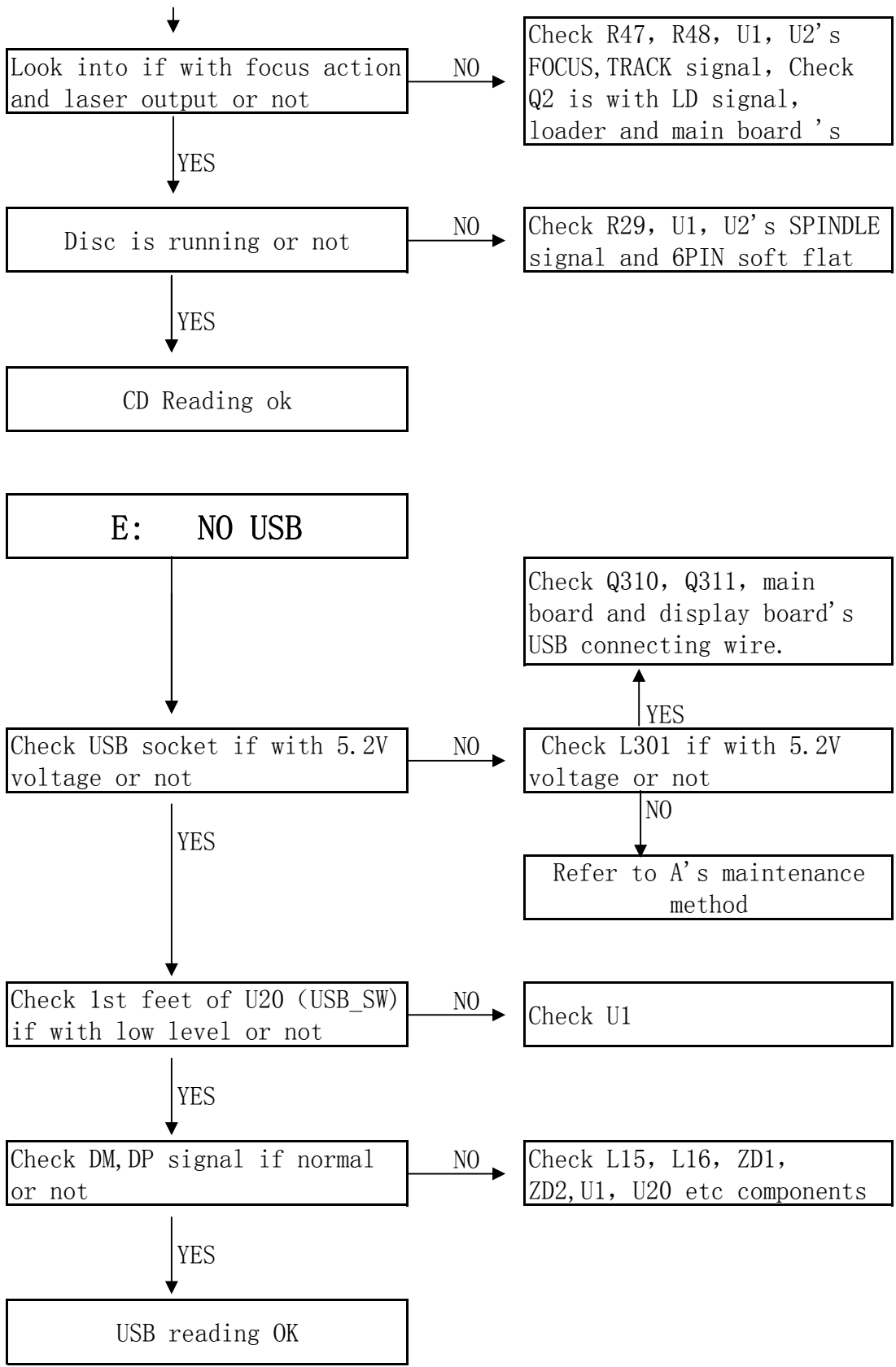
10. TROUBLE SHOOTING



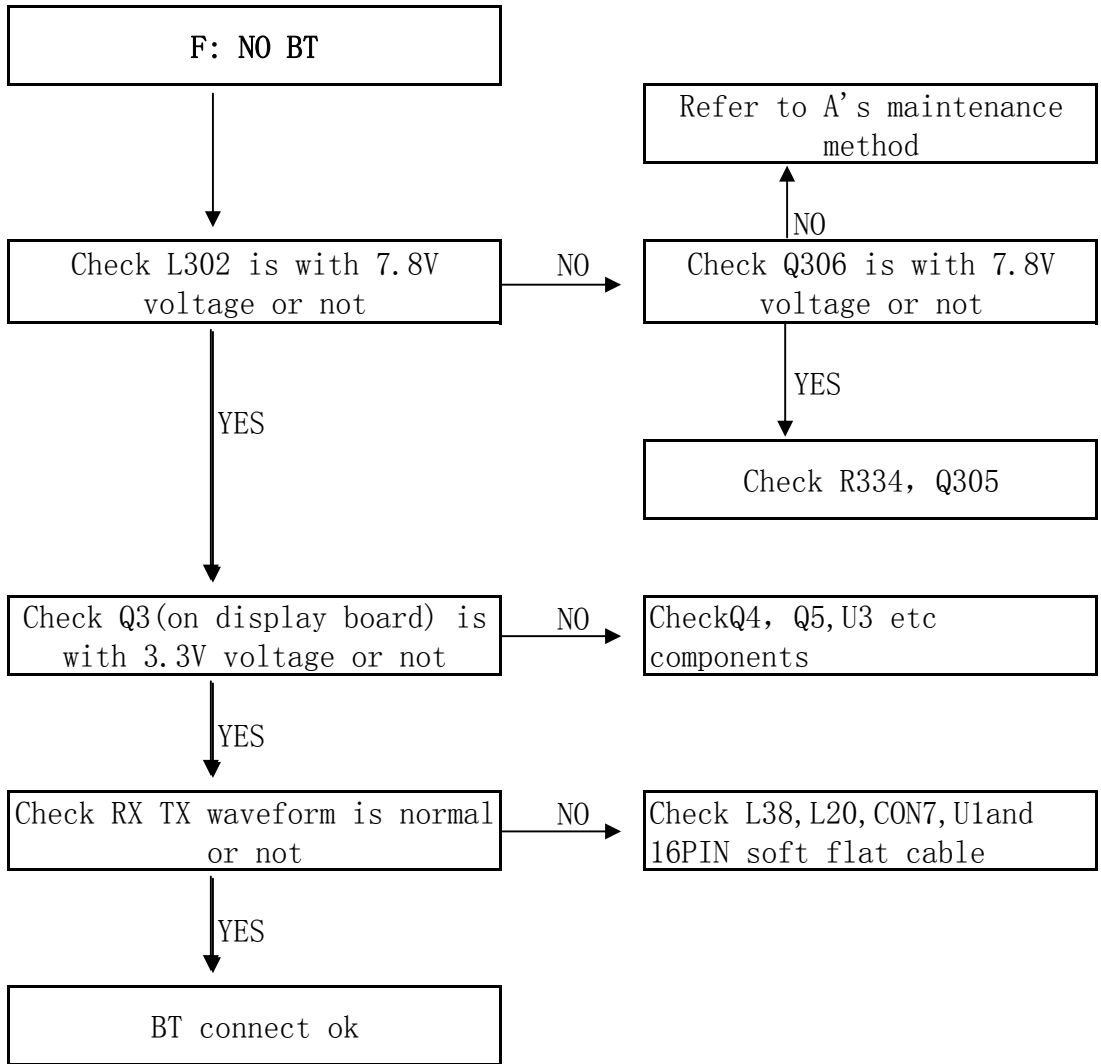
TROUBLE SHOOTING



TROUBLE SHOOTING



TROUBLE SHOOTING



11. Software upgrade & procedure to restore product setting

1. Reset to defaults:

Plug in, long press “Stop” button quickly, it will display the software version. Then short press the “Stop” button, it will display “Reset”, and access “STANDBY” in a while. When it displays “--”, it has been reset to defaults.

2. Check the software version:

Plug in, long press the “STOP” button quickly, it will display the software version.

3. Software-upgrade method:

Copy the updated software (boot.ali and nemo.bin) into USB, insert it into the CD MINI, you will hear “Do” sound for two times, which means it starts to upgrade. About 40 seconds later, you will keep hearing “Do” sound which means the upgrade is done. At this time you can unplug the power and remove the USB. Noted: Should not blackout during the upgrade, otherwise the machine will crash (it can not start up and the display shows nothing.). After the crash, the only solution is to remove the FLASH IC (U4, EN25F20), rewrite the software on programmer or directly replace a new FLASH with effective program.

12.REVITON LIST

V1.0 2012.01.24 initial release