Mini Speaker

FX55/77/12

Service
Service
Service

Service Manual

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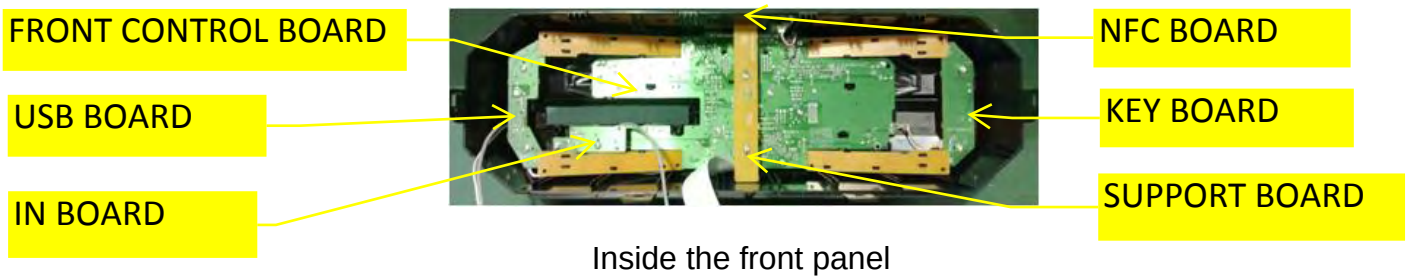
Published by Niki &Kelly WK1431 Subject to modification

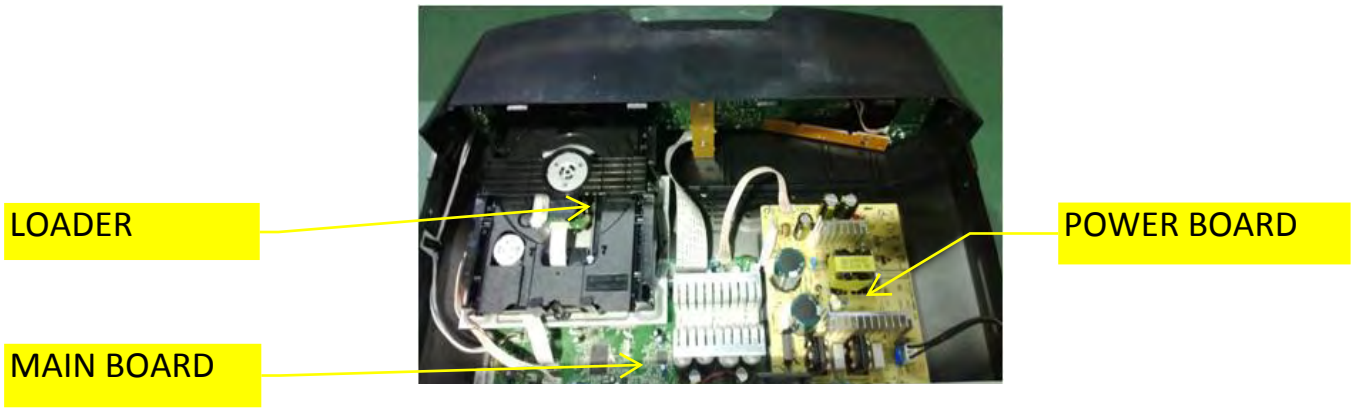
3140 038 62270

Version 1.1

PCB Board Locations



Inside the front panel



On the bottom plate

VERSION VARIATIONS

Type / Versions / Service Policy / Board in used	FX55			
	/77	/12		
MAIN BOARD	C	M		
POWER BOARD	C	M		
FRONT CONTROL BOARD	C	M		
BLUETOOTH BOARD	C	M		
IN BOARD	C	M		
NFC BOARD	M	M		
KEY BOARD	M	M		
USB BOARD	M	M		
LOADER	M	M		
SUPPORT BOARD	M	M		

⋆Tips:	C -- Component Lever Repair M -- Module Lever Repair

1. Introduction

1.1 Purpose and Scope of Document

TheProduct Performance Specificationis the leading specification and is the response of development. Whenever the specification cannot be met, Product Management is to be informed as early as possible in order to make sure the marketing can respond in time.

This Product Performance Specificationdoes not cover software specifications. Software is described in the URS documents and in the version matrix owned by Product Management. Product Management is responsible for maintaining, distributing and updating the version matrix.

All changes to Product Performance Specificationhave to be submitted via Change Proposals. Changes have to be marked in bold and/ or colours in the document for easy recognition in at least the update right after the change. Deletion of text is done by strike through in order to make changes obvious in at least the update after the change took place.

Note:
The Product Performance Specificationis a only a document to list out key-parameters / specification points. It also describes product specific / unique parameters.For product performance, not mentioned or specified in this document, such as: Electrical/ Mechanical / safety/Sound/ Quality Performance /reliability requirement. Please refer to the PQR (Performance Quality Reliability) and product sound specification.

This Product Performance Specificationdoes not cover software specifications. Software is described in the URS documents and in the version matrix owned by Product Management. Product Management is responsible for maintaining, distributing and updating the version matrix.

In case there are conflicting requirements between the Product Performance Specification (Set specification) and the PQR document, then the Product Performance Specificationis the leading requirement / dictates the valid parameters.

2. General Information and Requirement

2.1 Product Family Features

2.1.1 Identity and Key Features

FX15 FX25 FX55 is a MiniAudio Systemthat incorporates CD player with USB and Tuner FM/AM, and Blue Tooth support.

Elements to include as generic requirements:

1. Safety certification (cUL/FCC and CB/EMC/CE)

Following is a list of key features:

1. BT module:BM830
2. MCU: STM8S005C6T6 LQFP48
3. CD disc /USB/MP3 MPEG (Sunplus SPH8104)
4. FM/AM tuner Module:KST-MW004MV1-R78W2 IC : RN5B800
5. Audio DSP:STA311B
6. AMP:FX15STA518*2; FX25STA518*2; FX55STA516B*2
7. Rated output power
   FX15180W - 30% (4 x 45W)
   FX25300W - 30% (4 x 75W)
   FX55600W - 30% (3 x 200W),200W x 2 + 200W

2.1.2 Styling, Forms and Functions

FX15 FX25FX55can be placed on a tabletop which should have a form factor and footprint that can be easily be located in a 2nd room such as in thebedroom or small study room.

Features	Products	FX15 FX25FX55
	Stroke versions	All
	Design	Refer to MUS[3] for details
Front	Optical Drive Loading	Tray
	Tray Location	below
	Tray Orientation	HORIZONTAL
	VFD	UP
Dimension	Height of feet	3mm
	Apparatus tray closed W x D x H (mm)	mm (include rear connectors)
Weight	Main set	kg
	speaker	kg
Cosmetics	Color	Black
	Buttons	Black

2.1.3 ACCESSORIES

Model	FX15 FX25FX55			
Stroke Version	12			
Region	EU			
Power Cord				
Audio cable (3.5mm audio)	NA			
Tuner Antenna				
Speaker cable				
USB cable	NA			
Remote Control	21keys			
Battery	1xAAA			

2.1.4 Controls, Local Display and LED Indications

Control keys on the set are:

1. Standby-On
2. Eject
3. Play/Pause
4. Next
5. Pre
6. FF
7. FB
8. Source (Disc, USB, FM, AM,Aux, BT)
9. Stop
10. Volume Knob

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2.2 Mechanical General Information

The productappearances and functions are defined in their respective MUS. Product management approves the MUS and it is a leading document where product appearance is applicable.

Please refer to Sh560 for mechanical information.

2.3 Safety Standards

Where applicable:

/12, /05 – EN-60065:2002 (Edition 7.0) +A1 +A11 +C11 +C12, UL-6500:2006 (Edition 2), other strokes IEC-60065:2005 (Edition 7.1), or
/12, /05 – EN-60950:2006 +A1, /37 – UL-60950 (Edition 2), /55 /79 /97 (other strokes than /12, /05, /37) – IEC-60950 +A1 (Edition 2)

2.4 EMC Requirements

Where applicable:

/12 – Audio functions: EN55013:2001; +A1:2003, +A2:2006, EN55020:2007
IT-functions: EN55022:2006,+A1:2007, EN55024:1998, +A1:2001, +A2:2003
WiFi-function: ETSI EN 300 328 (V1.7.1.), ETSI EN 301 489-1 (V1.8.1.) & -17 (V1.3.2), EN 62311:2008
Generic functions: EN 61000-3-2:2006, EN 61000-3-3:1995; +A1:2001; +A2:2005 or alternatively EN61000-3-3:2008
/97 (/55) – Audio functions: CISPR-13:2006 (or alternatively CISPR-13:2009), CISPR-20:2005;
IT-functions: CISPR-22;2008, CISPR-24:1997; +A1:2001, +A2:2002; IEC 62311:2007
Generic functions: IEC 61000-3-2:2005,+A1:2008,+A2:2009 or alternatively IEC 61000-3-2:2009, IEC 61000-3-3:2008
/37 – FCC-15.247 (Part B, C), OET Bulletin 65, Edition 97-01 Table 1; RSS-210 Issue 7

Where applicable:

For /12(EU), /05(UK), /51(Russia)	EN/IEC 60065 7th Edition
For /37 (US, Canada)	UL 60065
For /55 (LATAM), /78 (Brazil)	IEC 60065 7th Edition
For /98 (AP), /69 (Singapore), /75 (Australia)	IEC 60065 7th Edition
For /93 (China)	GB 8898 (IEC 60065 7th Edition)
For /61 (Korea)	K 60065 6th Edition
For /96 (Taiwan)	CNS 14408 (IEC 60065 7th Edition)

2.5 ESD Requirements

The product shall withstand electro static discharges on all user accessible parts of the product.
Reference: IEC61000-4-2.

For contact discharges:

Level	General (kV)	USA (kV)	Requirement
1	0-2	0-3	No deviations allowed.
2	>2-4	>3-4	Short perceptible deviations allowed.
3	~~>4-5~~	~~>4-5~~	~~Normal recallable functions function changes allowed.~~
4	~~>5-7~~	~~>5-7~~	~~Control recallable functions function changes allowed.~~
5	8	8	Components damage not allowed.

For air discharge:

Level	General (kV)	USA (kV)	Requirement
1	0-4	0-6	No deviations allowed.
2	>4-8	>6-8	Short perceptible deviations allowed.
3	~~>8-10~~	~~>8-10~~	~~Normal recallable functions function changes allowed.~~
4	~~>10-15~~	~~>10-15~~	~~Control recallable functions function changes allowed.~~
5	15-18	>15-18	Components damage not allowed.

General requirement:
1. 10 arcs for positive and negative polarity for unit “on” and “off” for 1kV incremental steps.
2. Component or mechanical damage is not allowed. No loss of fixed stored data (stored in EEPROMs).
3. Hang-ups and malfunctions are allowed, as long as the customer can “recover” from the hang-up by pressing theStandby or ON/OFF button of the set.
4. Failures that disappear only by unplugging the AC mains cord and/orpower sources are not acceptable.

2.6 Environmental Condition

The environmental condition requirements and test method is according to UAN-D1590.

Ambient temperature : max. 40 ° C - all climates
Apparatus acc. to spec. : +5 to + 35 ° C

Vibration test (acc. IEC 60 068/2/6) : operational vibration test to be proceeded in operating position of the set.

2.7 Quality

PQR-class: class III according toBLC A&MA PQR handbook V2.1 (2006-10-02)

Lifetime: 7 years

Tested According to: General Test Instruction UAN-D 1591
Measured According to: UAN_L 1059 unless otherwise stated

3. Technical Specifications

3.1 Power Supply

3.1.1 Type and versions

3.1.1.1 Main set

Build-inSMPS will be used for all models and stroke versions.

Versions	Region/Country	SMPS	Detachable mains cords
10	EUROPE / UK	230~240Vac nom. Frequency: 50Hz.	EU (/12) round 2-pin & UK (/05) 3-pin
~~37~~	~~NAFTA~~	~~90~132Vac limit.~~ ~~Frequency: 60Hz.~~	~~UL flat pin (polarized)~~
~~55~~	~~LATAM~~	~~90~132Vac & 220-240Vac selectable~~ ~~Frequency: 50/60Hz.~~	~~INMETRO certified round 2-pin~~
~~98~~	~~APAC~~	~~90~132Vac & 220-240Vac selectable~~ ~~Frequency: 50/60Hz.~~	~~EU round 2-pin~~
~~94~~	~~India~~	~~2) 100 ~310Vac limit (India compatible with up cost) used only for India.~~ ~~Frequency: 47~63Hz.~~	~~EU (/12) round 2-pin~~

All requirements per defined for each country should be met with sufficient testing.

3.1.2 Surge Immunity (Lightning Test)

The product shall withstand mains interference's of:

Differential mode:

- 2kV/2 ohm criteria C for Europe.
- 6kV/12 ohm criteria C for NAFTA.

Parameters:

- Bi-wave
- Open circuit voltage: 2/50us
- Short circuit current: 8/20us
- From +/1kV to +/-2kV (for Europe) or +/-6kV (for Nafta) in steps of 1kV.
- 10 shots per combination.
- One shot per minute.
- Serial impedance: 2 Ohm for Europe, 12Ohm for Nafta.

- Polarity and phase: Positive (phase 90º) & Negative (phase 270º)

Common mode:
- 6kV/2 ohm criteria C for Europe.
- 6kV/12 ohm criteria C for Nafta.

Parameters:
- Ring-wave (100kHz)
- From +/3kV to +/-6kV in steps of 1 kV.
- 10 shots per combination.
- One shot per minute.
- Serial impedance: 2 Ohm for Europe, 12Ohm for Nafta
- Polarity and phase: Positive (phase 90º) & Negative (phase 270º)

Reference: IEC61000-4-5 and for USA: 3135 019 8029 Reliability evaluation.

Requirements:
- Apparatus should fulfil the leakage current requirements of IEC60065 point 9.1.1 (UAN-D1631)
- Defects or permanent deviations are not allowed.

3.1.3 Mains Drop-out Immunity

The product shall withstand mains failures of:
- Variation 0%(=100% dip) at T-event = 50 mSec. Performance criterion B
- Variation 40%(=60% dip) at T-event = 100 mSec. Performance criterion B
- Variation 0%(=100% dip) at T-event = 5 Sec. Performance criterion C

Additional for USA apparatus: See 3135 019 8029 Reliability evaluation.
- Variation 0%(=100% dip) at T-event = 100 mSec in standby mode. Performancecriterion B

Requirement:

No misoperation and no interference of user in order to guarantee continuation of performed function.
Reference: IEC61000-4-11 For measuring method refer to UAN-D1724, as far as applicable.
Performance criterions according to IEC61000-4-4 Amendment 1
Performance Requirement
Criterion A - No any degradation of specification.
Criterion B - Temporary degradation / self recoverable.
Criterion C - No damage, resolvable hang-up.
Criterion D - Not recoverable loss of function.

3.1.4 Power Consumption

Power consumption at nominal AC input:
1. Docking mode at 1/8 P-rated output power : ⩽ W
2. Low Power Standby Mode : ⩽ 0.5 W

3.2 Audio

3.2.1 Analog Audio Input/Outputs

Gerneral Part			
Output Stage Protection:	NA	Temperature : Yes	Short Circuit: Yes
Indicators			
Standby Mode Indicator:		Clock Display Active	
Power Standby Mode:		LED Turns Off	
Electrical Data			
DSC:	NA	Channel Difference:	±3dB
DBB:	NA	Hum (Vol_{min} --- Vol_{max}-20dB	200nW
Bass:	Y	Residual Noise(Volume Minimum)	60nW
Treble:	Y	Channel Seperation: 1kHz/10kHz	40dB/35dB
Loudness:	Y	THD,Maximal	<1%
		SNR @standard output(A-weighted)(*1):	≥70dBA
		SNR @standard output(Un-weighted):	≥60dBA
		Crostalk:	≥45dB
		Amplification Reserve	1dB
Audio Inputputs			

Audio Input Sensitivity(±3dB) rated output power at 1kHz		Audio Output(*1)	
Tuner	FM 67.5kHz, Modulation (Limit:-6dB)	Line Out(Left/Right)	NA
CD/MP3	0dB track (Audio Disc 1, Track 1)	Headphone	NA
USB	0dB 1KHz sinewave(2.0HS)		
AUX1(back)	1V±100mV; Rin≥22kΩ		
MP3_link(front)	600mV±100mV; Rin≥22kΩ		

Output Power(*1)	At THD=10%, 1kHz sinewave	
Main Operation for FX series/ all version (rms)	FX15 180W - 30% (4 x 45W) FX25300W - 30% (4 x 75W) FX55600W - 30% (3 x 200W),200W x 2 + 200W	(At Cold Condition with 10% THD,)
Frequency Response	FX55 40Hz-20kHz +0 dB /-3dB FX25 50Hz-20kHz +0 dB /-3dB FX15 60Hz-20kHz +0 dB /-3dB	

Speaker driver Impedance:	Right/Left:	FX15/FX25 8Ω FX55 4Ω	
	Subwoofer:		

REMARKS:
Electrical Parameters are to be measured at Speaker Terminals across rated impedance Loadwith Rated Input Signalin CD Mode setting in DBB/Loudness Off and Pre-eq at Flat unless specified otherwise.

3.3 Bluetooth

Gerneral Part				
Bluetooth module	Sunitec_BM153			
BT Specification				
Operating Frequency Band		2.4GHz ~ 2.48GHz unlicensed ISM band		
Operating Voltage		1.8V / 3.3V		
RF Output Power		3dBm	0dBm	
Sensitivity at 0.1% BER		-90dBm	-70dBm	
Bluetooth version	Ver2.1 + EDR			
Receive A2DP:	NA			
Transmit A2DP:	NA			
Receive HSP	NA			
Bluetooth Flashing				
Display				

BT Audio				
Description	Normal	Limited	unit	remark
Frequency Response 80 Hz ~16kHz	+ / -3dB		dB	
S/N (Unweighted)				
S/N (A-weighted)	≥75		dB	
Channel Separation	45	35	dB	
THD + Noise (0dB, 1Khz)	<1%			
Bluetooth at Set Level				
30%THD OUTPUT POWER(EQ:FLAT)	FX15 180W - 30% FX25 300W - 30% FX55 600W - 30%		W	
Connected distance	10	8	meter	
NFC				
Connected distance	2.5cm	2CM	CM	

3.4TUNER

FM/AM tuner Module: KST-MW004MV1-R78W2 IC : RN5B800

GENARAL PART

WAVE RANGE	VERSION	TOLERANCE	TUNING GRID
FM 87.5 – 108.00 MHz	/05/12	QUARTZ PRECISION	50kHz
AM 530 -1700kHz	/55/37	QUARTZ PRECISION	10 kHz

AERIAL

FM : PIGTAILTYPE ANT WIRE 75Ω

FRAME ANT. 18.1 uH with shielding

ELECTRICAL DATA

A.M	Nom	Limit	Unit	FM	Nom	Limit	Unit
				- 3 dB Limiting Point	20	26	dBf
				Search Tuning Sensitivity(at stereo mode)	35	41	
Amplification Reverse	- 2	-4	dB	Search time digital tuning system.	-	60	S
AGC Figure of Merit	30	25	dB				
Distortion (RF 50mV, M 80%)	3	5	%	IF	10.7		MHz
IF	450	± 3	kHz	Stereo - 46 dB Quieting	48	51	dB
				Modulation Hum	50	45	
Search Tuning Sensitivity	α26	+/-10	dB	S/N Ratio	50	45	
S/N Ratio	45	40	dB	Amplification Reverse	0	-4	dB
				Distortion (RF 1mV, Frq Dev.75 kHz)	2	3	%
				Overall Frequency Response: 63Hz – 12.5KHz	-	±3	dB
				Channel separation:400 / 1000 / 5000 Hz. RF input: 68 dBf	26/30/ 20	20/26/ 18	dB

FM Frequency (MHz)		Noise Limited Sensitivity 26 dB	Image Rejection	IF Rejection	Large Signal Handling		
FM	Nom.	18			116 dBf		
88.0	Lim.	22			108 dBf		
FM	Nom.	18			116 dBf		
98.0	Lim.	22			108 dBf		
FM	Nom.	18			116 dBf		
107.0	Lim.	22			108 dBf		
	Units	dBf	dB	dB	dBf		
AM Frequency (KHz)		Noise Limited Sensitivity 26 dB	Image Rejection	IF Rejection	Large Signal Handling		
MW	Nom.	70			1000		
610KHz	Lim.	75			500		
MW	Nom.	65			1000		
1000KHz	Lim.	73			500		
MW	Nom.	65			1000		
1440 kHz	Lim.	73			500		
	Units	dBuV	dB	dB	mV/m		

Susceptibility to unwanted signals(CPU,SMPS,AMP,DSP …):	Limited(dB)	Normal (dB)	Remark
	-15dB	-20dB	Refer to selfpollution curve

3.3 Infra Red Receiver

Parameters	Requirement	
Receiver Sensitivity	Receiver sensitivity • E(0°) = 0.70 mW/m^2 • E(30°,h) = 1.12 mW/m^2, γ= ± 30° off horizontal or vertical axis • E(45°,h) = 2.19 mW/m^2, γ= ± 45° off horizontal axis	Max Distance 10m 7.92m 5.65m
Short Operating Distance	≤ 0.1 m	
Minimum Optical Viewing Angle	Horizontal (γ) ≥ ± 60° Vertical (δ) ≥ ± 30°	
Electromagnetic Interference	Field-strength: E_q≤ 100 V/m at nominal 36KHz carrier frequency.	

Refer to Appendix A for the remote control code.

3.4 clock SPECIFICATION

TECHNIAL DESCRIPTION SOFTWARE IMPLEMENTED CLOCK / TIMER FUNCTION WITH 32.768kHz QUARTZ OSCILLATOR. GENERAL PART		
Timer Setting	:	Clock and Timer
Timer Wakeup Mode	:	CD/USB/Tuner
Remarks Time Setting	:	/12 version for 24hrs /37 version for 12hrs
Volume at Wakeup	:	12 level Volume
No of Alarm Timer Settings	:	1 Alarm timer,
Clock Accuracy	:	Nom : 1 sec/day Limit : 2 sec/day
INDICATORS		
Display Type	:	

REMARKS:

3.5 MECHANICAL

3.5.1 Shock Sensitivity

Refer to Quality plan for the details of the test discs and testing method.

Requirement:

No muting, plop sounds, picture freeze/jerk or audible/visible interference when impacting with force of -

- **In the ±X and ±Y directions:** F ≥ 6g / 3ms, ΔV = 0.06ms
- **In the ± Z direction:** F ≥ 4g / 3ms, ΔV = 0.04ms

Where g = acceleration due to gravity.

3.5.2 Thermal Performance

Refer to Quality plan for the details of the testing method.

Requirements:

1. Set should function normally
2. Temperature rise of accessible parts such as metallic enclosures (casing) shall not exceed 40˚C above the ambient temperature.
3. Temperature rise of PCB prints shall not exceed 85˚C
4. Temperature readings of all mechanical / electrical components and modules shall not exceed their specification limits. The calculated junction temperature of semiconductors shall also not exceed spec limits.

3.5.3 Noise Specifications

Test Conditions:

Measurements are to be made inside an Anechoic Chamber (echo-free environment) with ambient noise of less than 16dBA.

Measurements are to be taken at the following positions: -

(a) Top-Surface and at center of Front-Cabinet

(b) Front-Surface and at center of Front-Cabinet.

The microphone is to be positioned **10cm** from abovementioned surfaces.

Set Functional State		**Requirement**
		Normal
Idle State	Standby Mode Set On and "No Disc" mode	< 20 dBA < 20 dBA
Tray Open/Close	Start/End peak noise Tray running noise (RMS)	< 65 dBA < 50 dBA
CDDA & SACD **(Stereo & Multichannel)**	 Play (first & last tracks) Search Forward & Backward (all speeds) Pause (first & last tracks) Jump Forward (first to last track) Jump Backwards (last to first track)	< 35 dBA <30dBA <33dBA < 28dBA < 38 dBA < 38dBA

Service Hints

CAUTION

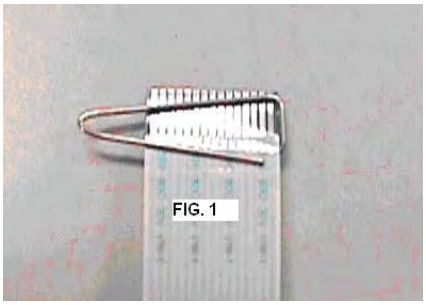
CHARGED CAPACITORS ON THE SERVO BOARD MAY DAMAGE THE DRIVE ELECTRONICS WHEN CONNECTING A NEW DRIVE.THAT'S WHY, BESIDES THE SAFETY MEASURES LIKE

- **SWITCH OFF POWER SUPPLY**
- **ESD PROTECTION**

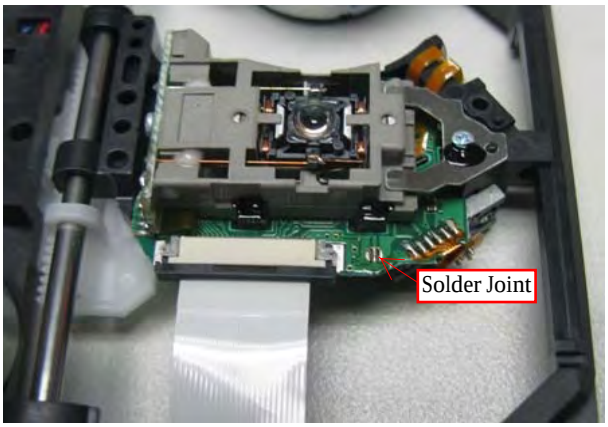
ADDITIONAL ACTIONS MUST BE TAKEN BY THE REPAIR TECHNICIAN.

The following steps have to be done when replacing the defective loader :

1. Dismantling of the loader to access the ESD protection point if necessary.
2. **Solder the ESD protection point*.**
3. Disconnect flexfoil cable from the defective loader.
4. Put a paper clip on the flexfoil to short-circuit the contacts (fig.1)
5. Replace the defective loader with a new loader.
6. Remove paperclip from the flexfoil and connect it to the new loader.
7. Remove solder joint on the ESD protection point.



ATTENTION: The laser diode of this loader is protected against ESD by a solder joint which shortcircuits the laserdiode to ground. For proper functionality of the loader this solder joint must be remove **after** connection loader to the set.



(ESD protection point is accessible from top of loader)

Only applicable for defective loader needed to be sent back to supplier for failure analysis and to support backcharging evidence.
This is also applicable for all partnership workshops.

The Guide of Software Operation for Philips Mini FX Series

The Software Upgrade way (Update software via USB):

1.> Download the Software into the root directory of a USB storage device.

2.>Rename the download software file, such as rename the "PCM_MCU_V12.bin"to"PCM_MCU.bin".

3.>Turn on the unit and switch to the USB source. -->"NO USB" is displayed.

4.>Connect the USB storage device to the USB socket on the unit. -->"MCU UPD"(MCU update) is displayed.

5.>Press "▶II" key to start upgrade. -->"UPGING"(upgrading) is displayed during upgrade. At completion of upgrade, the unit reboots automatically.

6.> Delete the "PCM_MCU.bin" in the USB storage device, and repeat step 1.>/2.>/3.>/4.>/5.> to upgrade MPEG S/W, Rename software file, such as rename "PCM_MPEG_FX20_55_V13.bin"to"PCM_MPEG.bin". -->"MPEG UPD" is display.

Caution:

Do not turn off the power or remove the USB storage device when the software update is in progress because you might damage the unit.

The Software Version to view:

1.>Turn on the unit and switch to the DISC source. -->"NO DISC" is displayed.

2.>Press "EJECT" key to open the door. -->"OPEN" is displayed.

3.>Press the key STOP (■) ->PROG->NEXT (►►I) in turn on RC. -->the VFD will show such as "M1220P13".

Note: When view software version type, VFD can be show below information, eg:

M0820P16

M08: MCU version

20 : FX20 model, if this unit is 15/25/30/50/55,mean is FX15/FX25/FX30/FX50/FX55 model.

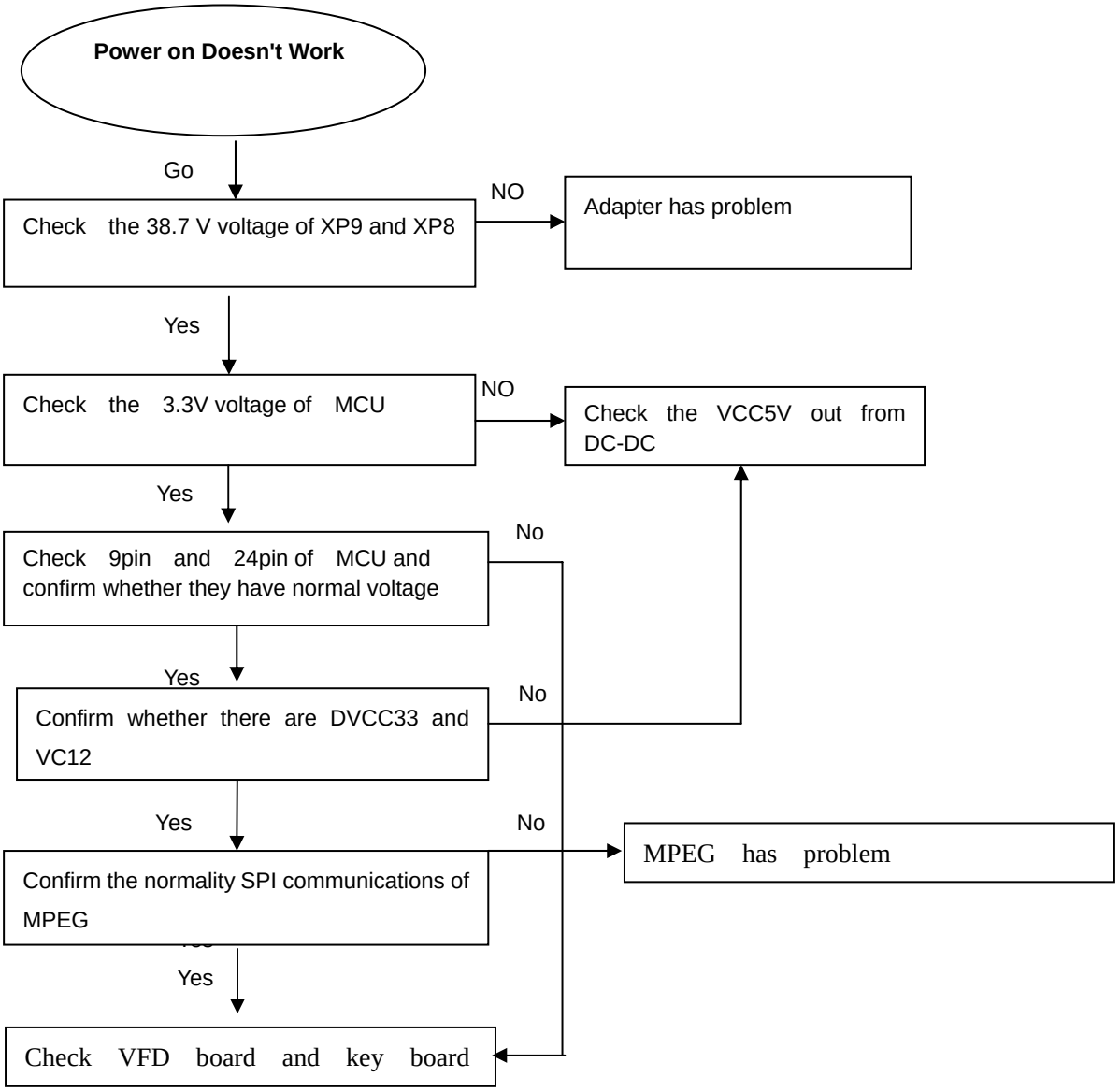
P16: Mpeg version.

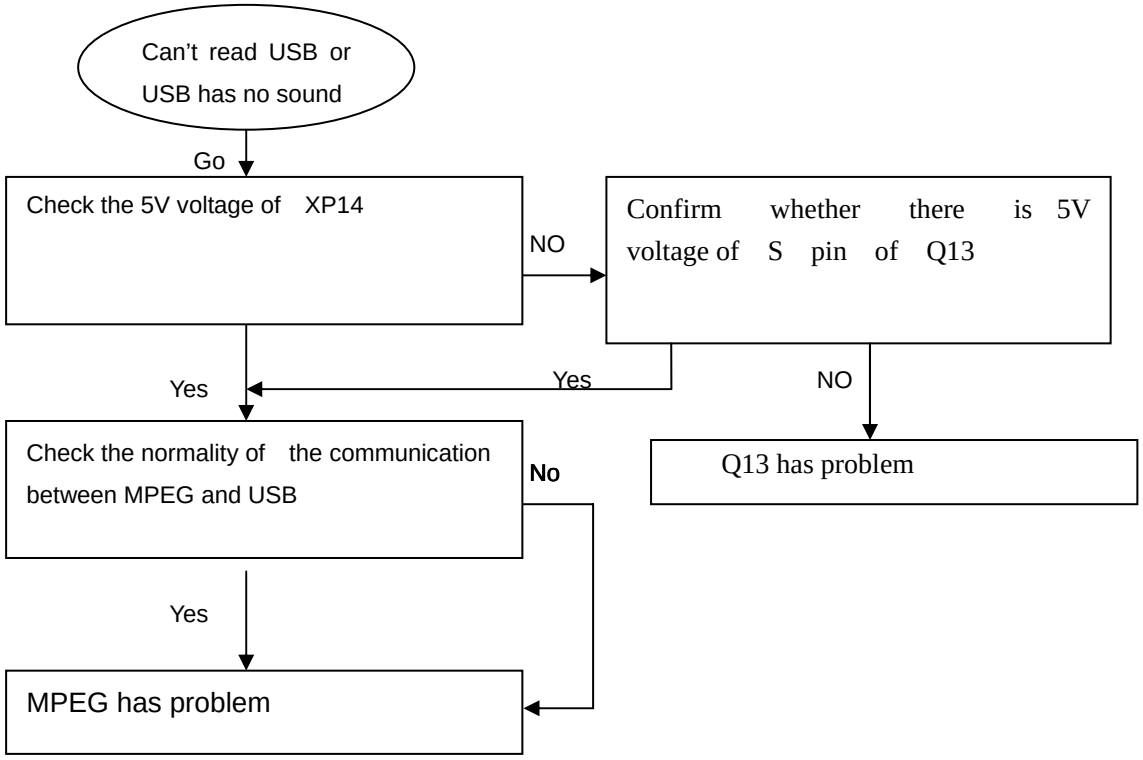
Restore default settings:

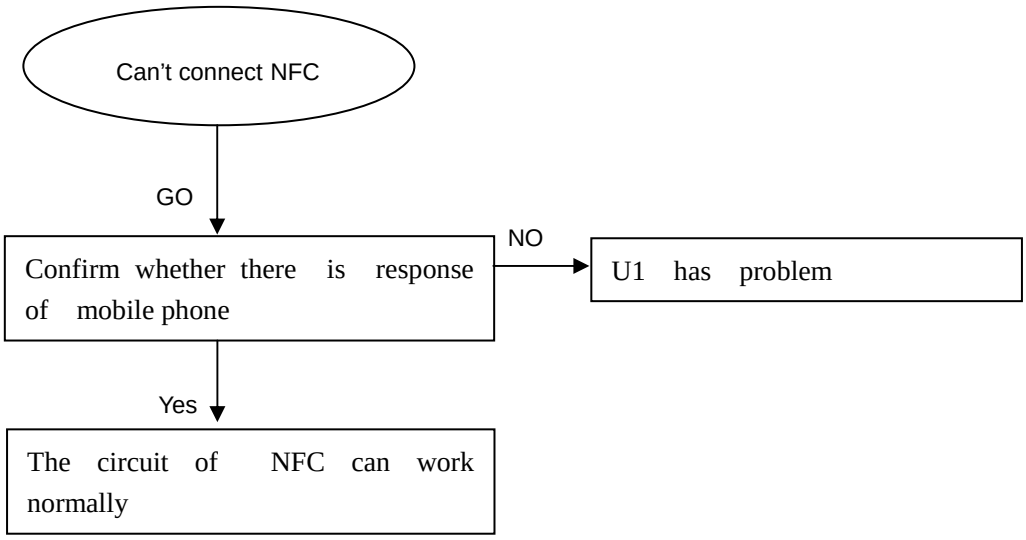
You can also restore the default settings of the unit.

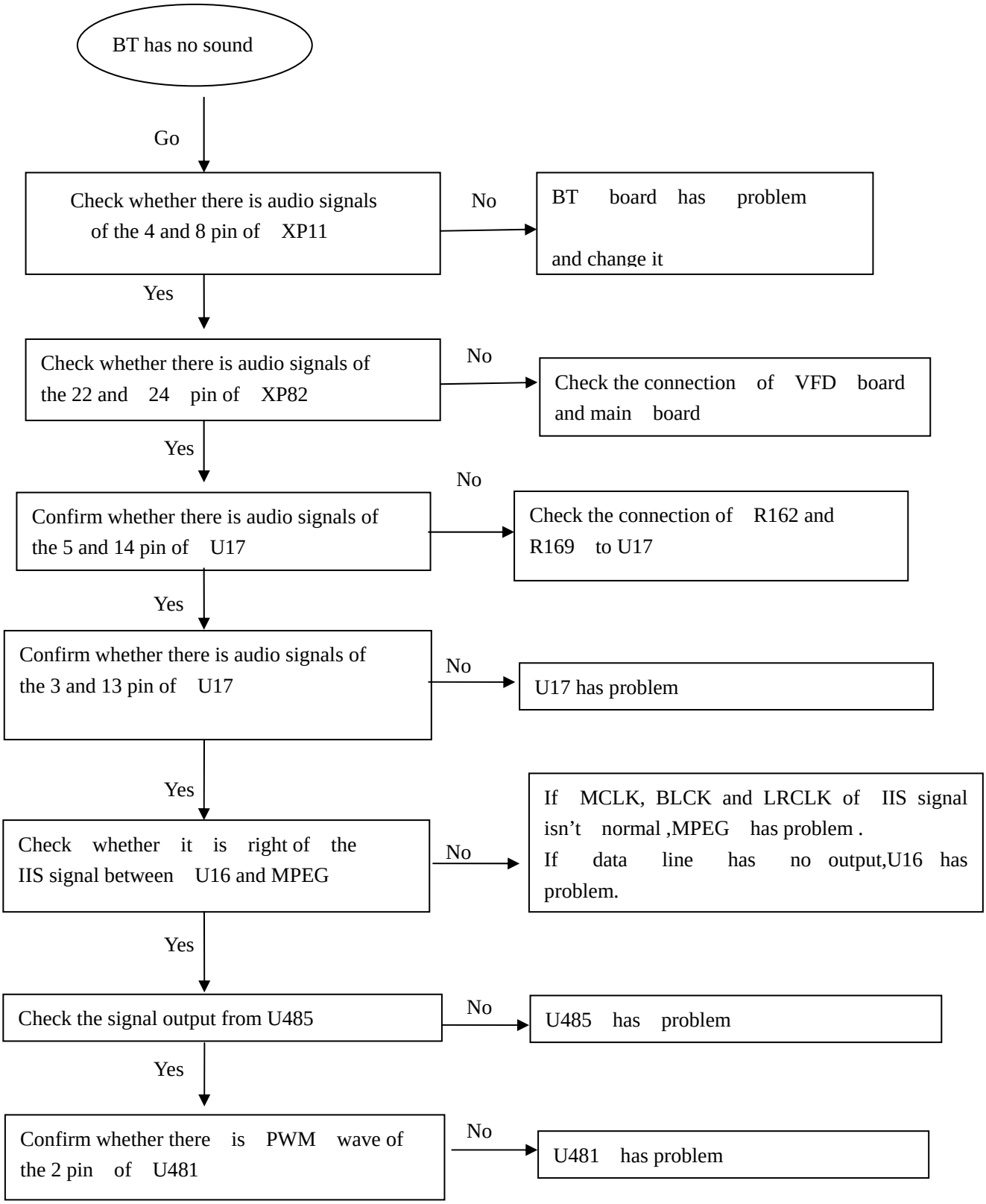
Turn on the unit, in any source, press and hold both the key ▶II and PRESET- on the front panel for more than three seconds. -->After a while, "RESET OK" is displayed. Then, the unit reboots automatically.

Power onDoesn't Work




Can't read USB or USB has no sound
Go
Check the 5V voltage of XP14
NO
Confirm whether there is 5V voltage of S pin of Q13
Yes
Yes
NO
Check the normality of the communication between MPEG and USB
No
Q13 has problem
Yes
MPEG has problem


Can't connect NFC
GO
Confirm whether there is response of mobile phone
NO
U1 has problem
Yes
The circuit of NFC can work normally


BT has no sound
Go
Check whether there is audio signals of the 4 and 8 pin of XP11
No
BT board has problem and change it
Yes
Check whether there is audio signals of the 22 and 24 pin of XP82
No
Check the connection of VFD board and main board
Yes
Confirm whether there is audio signals of the 5 and 14 pin of U17
No
Check the connection of R162 and R169 to U17
Yes
Confirm whether there is audio signals of the 3 and 13 pin of U17
No
U17 has problem
Yes
Check whether it is right of the IIS signal between U16 and MPEG
No
If MCLK, BLCK and LRCLK of IIS signal isn't normal ,MPEG has problem .
If data line has no output,U16 has problem.
Yes
Check the signal output from U485
No
U485 has problem
Yes
Confirm whether there is PWM wave of the 2 pin of U481
No
U481 has problem

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Mechanical and Dismantling Instructions

Dismantling Instruction

Detailed information please refer to the model set.

The following guidelines show how to dismantle the player.

Step 1:Open the top cover.Remove 5 screws on the back panel and 2 screw on the left and right sides, then open the cover from the back panel side.(Figure 1)

(Figure 1)

Step 2:Dismantle the loader.Disconnect the connectors on main board.Remove 2 screws besides the loader.Pull up the loader from the back panel side,the CD door will be separated at the same time.(Figure 2)

Step 3:Dismantle the loader bracket.Remove 1 screw on the bracket then remove the bracket directly. (Figure 2)

(Figure 2)

Mechanical and Dismantling Instructions

Dismantling Instruction

Detailed information please refer to the model set.

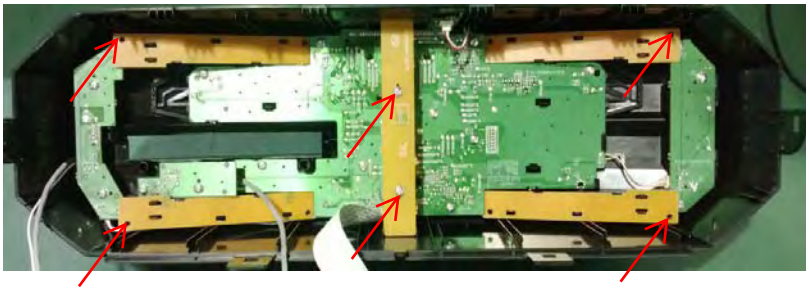
The following guidelines show how to dismantle the player.

Step 4:Dismantle the front panel.Disconnect the connectors on the main and power board. Release 2 buckles under the bottom plate and 2 screws on the left and right sides.(Figure 3)

(Figure 3)

Step 5:Dismantle the support board.Remove 2 screws on the board.(Figure 4)

Step 6:Dismantle 4 LED baffles.Remove 1 screw on a baffle,then release the buckles. (Figure 4)



(Figure 4)

Step 7:Dismantle the USB board.Remove 2 screws on the board.(Figure 5)

Step 8:Dismantle the IN board.Remove 2 screws on the board.(Figure 5)

Step 9:Dismantle the key board.Remove 2 screws on the board and disconnect the connector.(Figure 5)

(Figure 5)

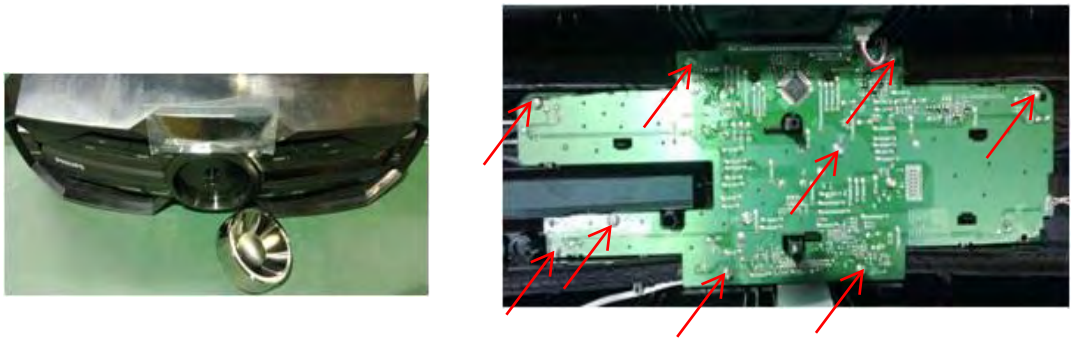
Mechanical and Dismantling Instructions

Dismantling Instruction

Detailed information please refer to the model set.

The following guidelines show how to dismantle the player.

Step 10:Dismantle the front control board.pull out the volume knob. Remove 9 screws on the board. Release the buckles on the board.Then pull out the board.(Figure 6)



(Figure 6)

Step 11:Dismantle the power board. Remove 4 screws on the board.(Figure 7)

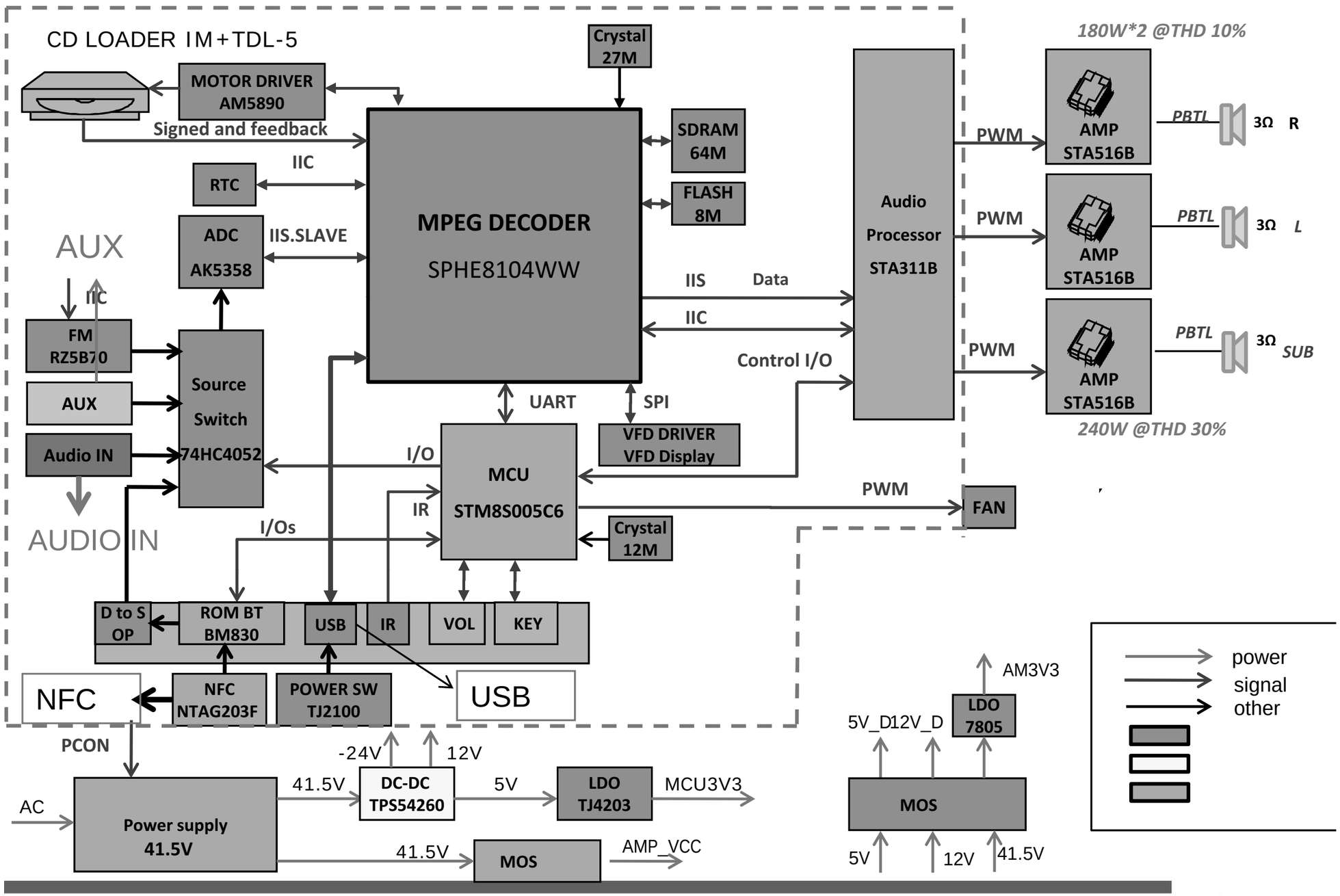
(Figure 7)

Step 12:Dismantle the main board. Remove 4 screws on the back panel and 2 screws on the board. (Figure 8)

(Figure 8)

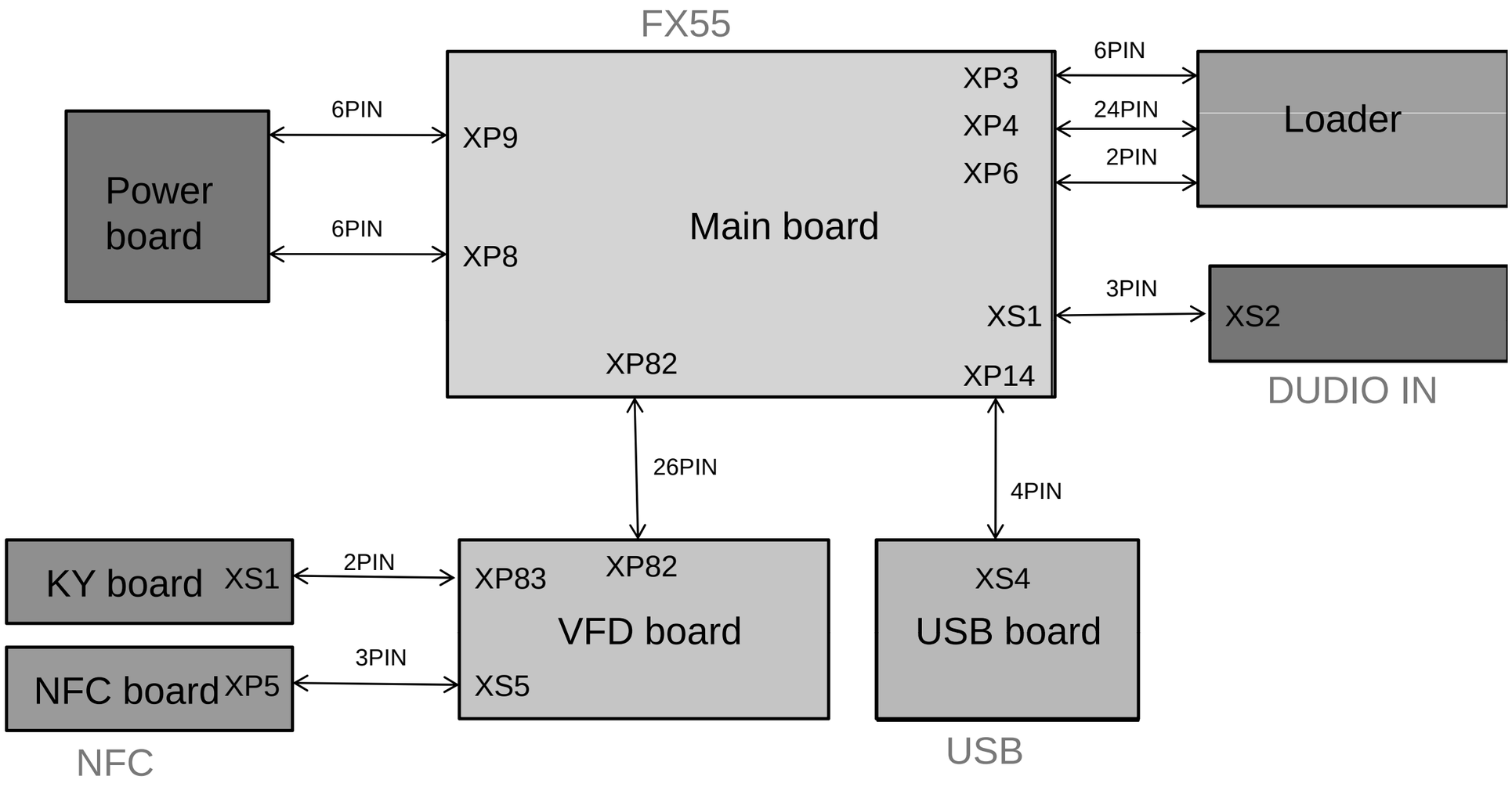
7-1

PHILIPS MINI FX55



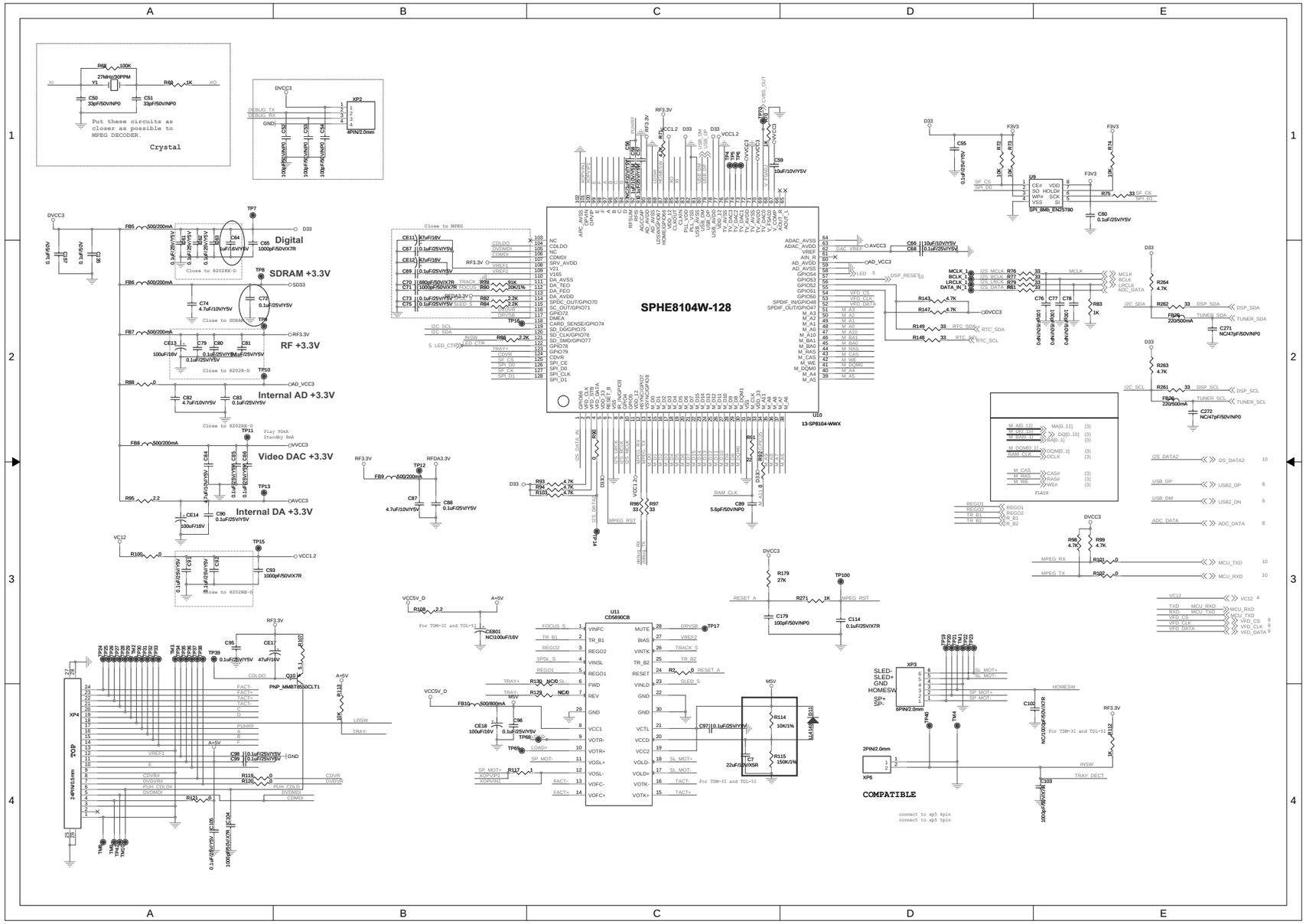
7-2

Wiring Diagram:FOR FX55/77/12



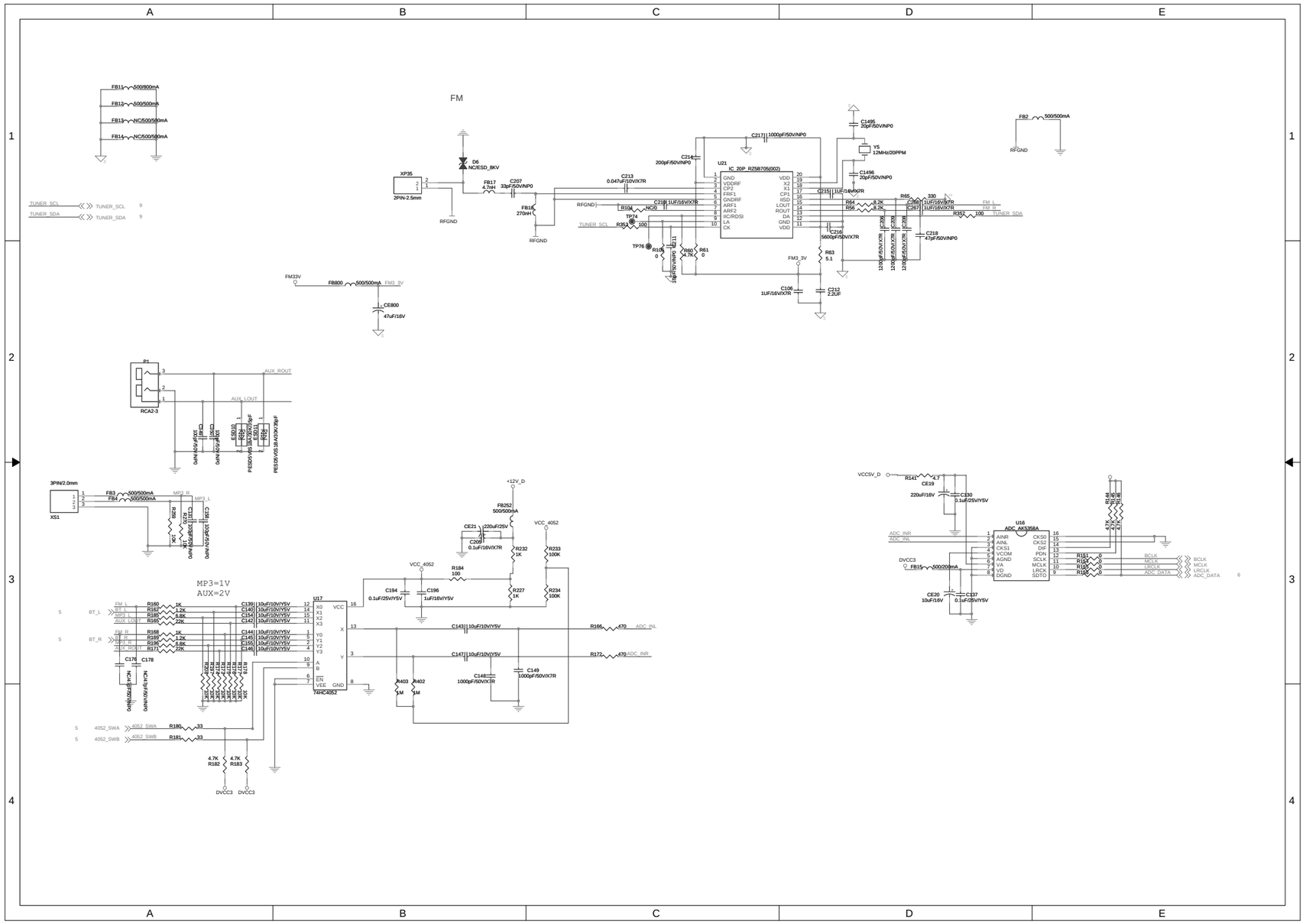
8-1

Circult Diagram:Main Board



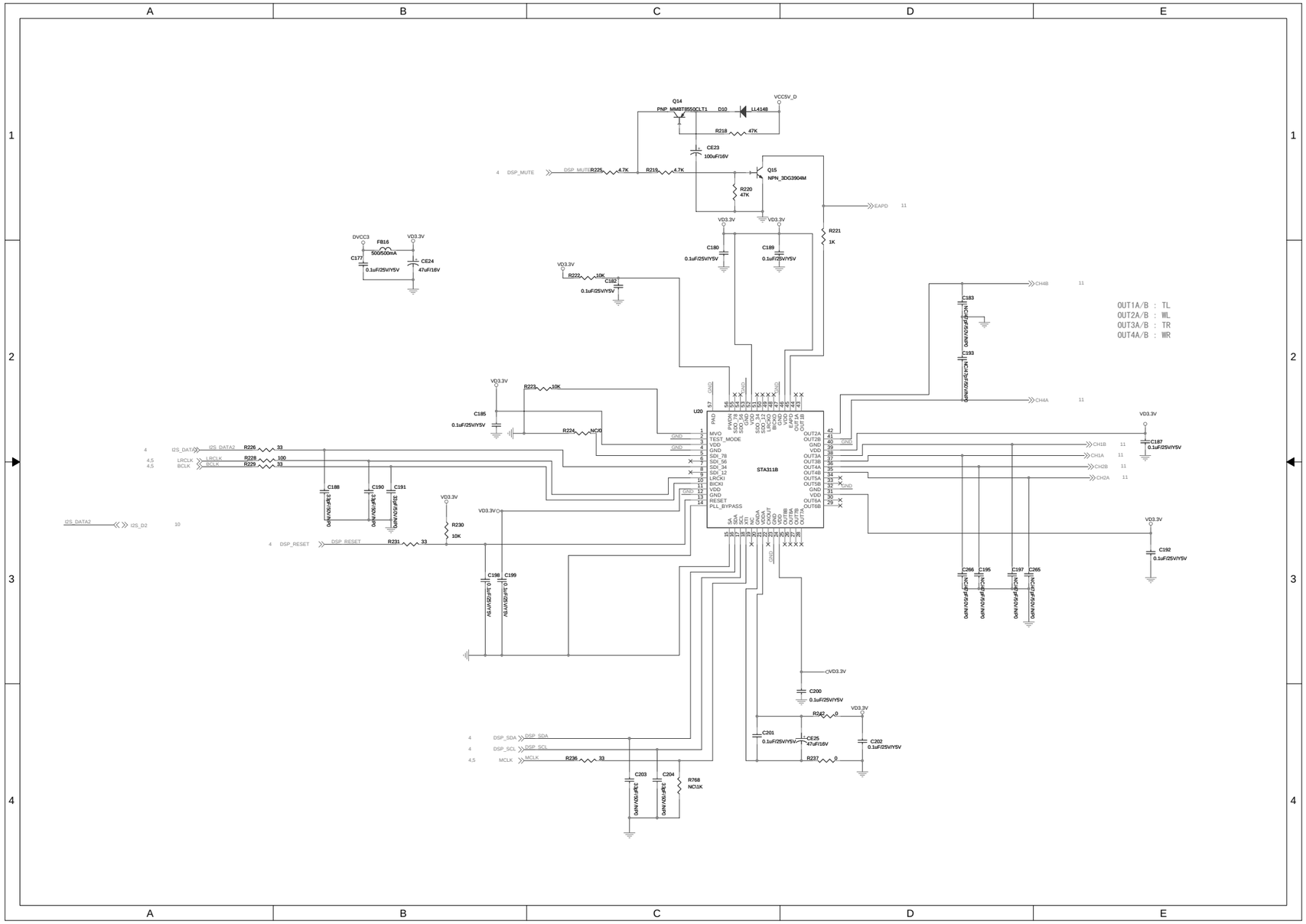
8-2

Circult Diagram:Main Board



8-3

Circult Diagram:Main Board



8-4

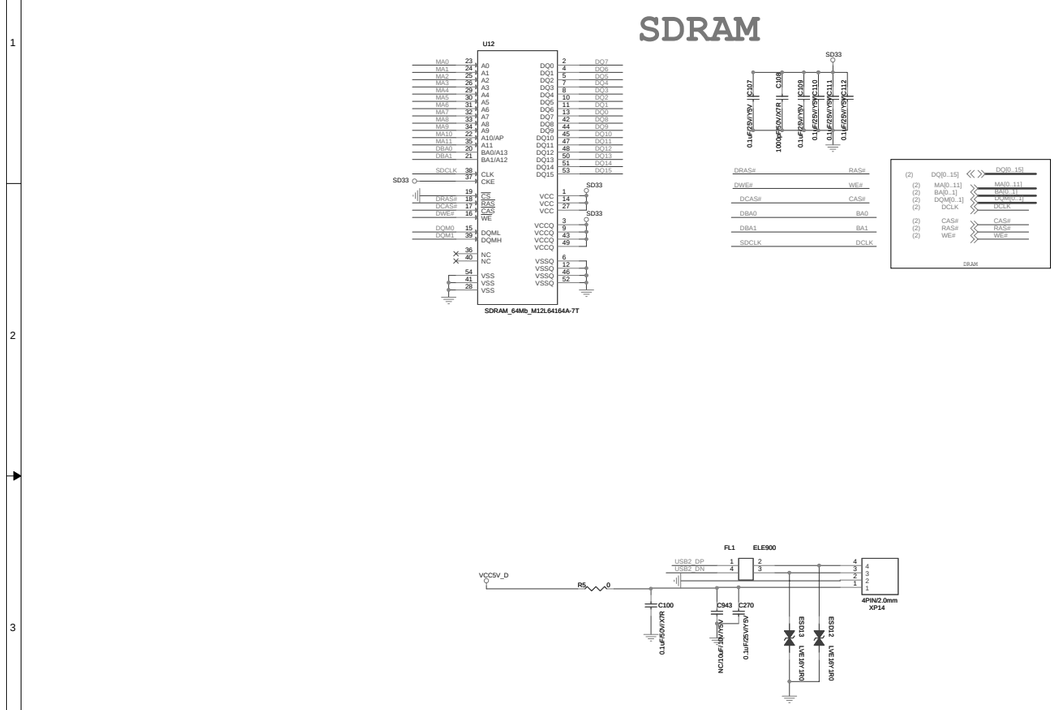
Circuit Diagram:Main Board

8-5

Circult Diagram:Main Board

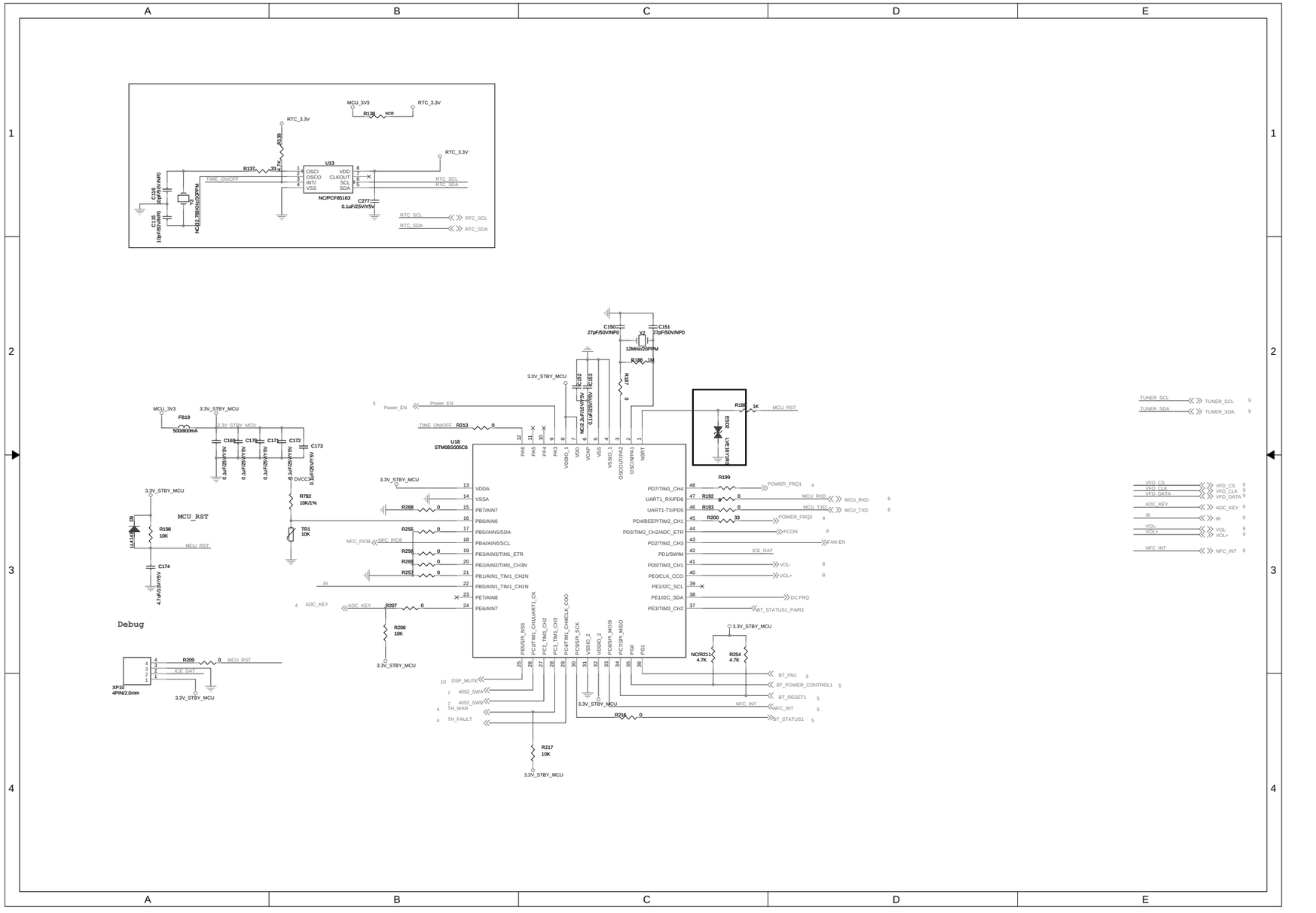
8-6

Circult Diagram:Main Board



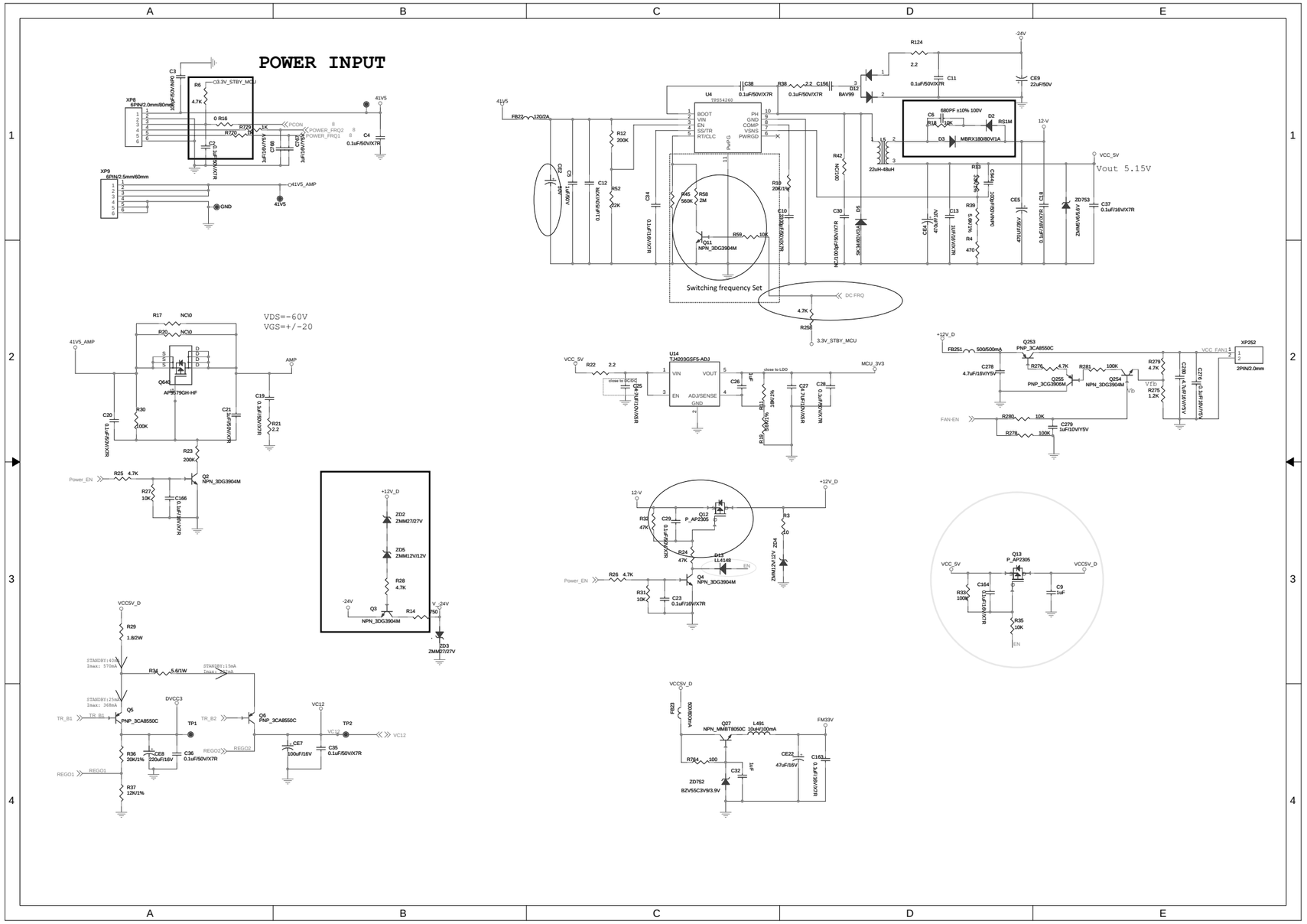
8-7

Circult Diagram:Main Board



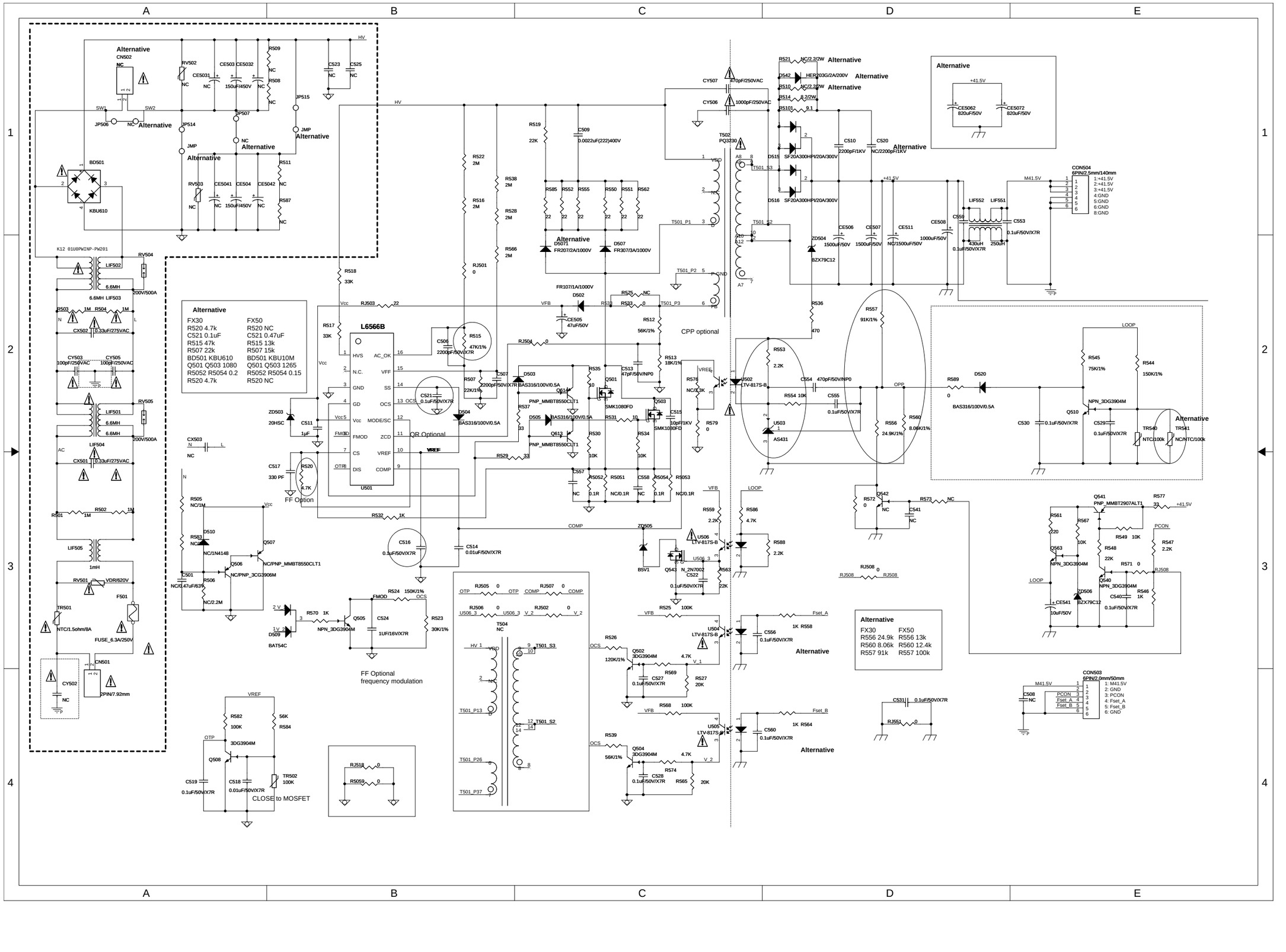
8-8

Circuit Diagram:Main Board



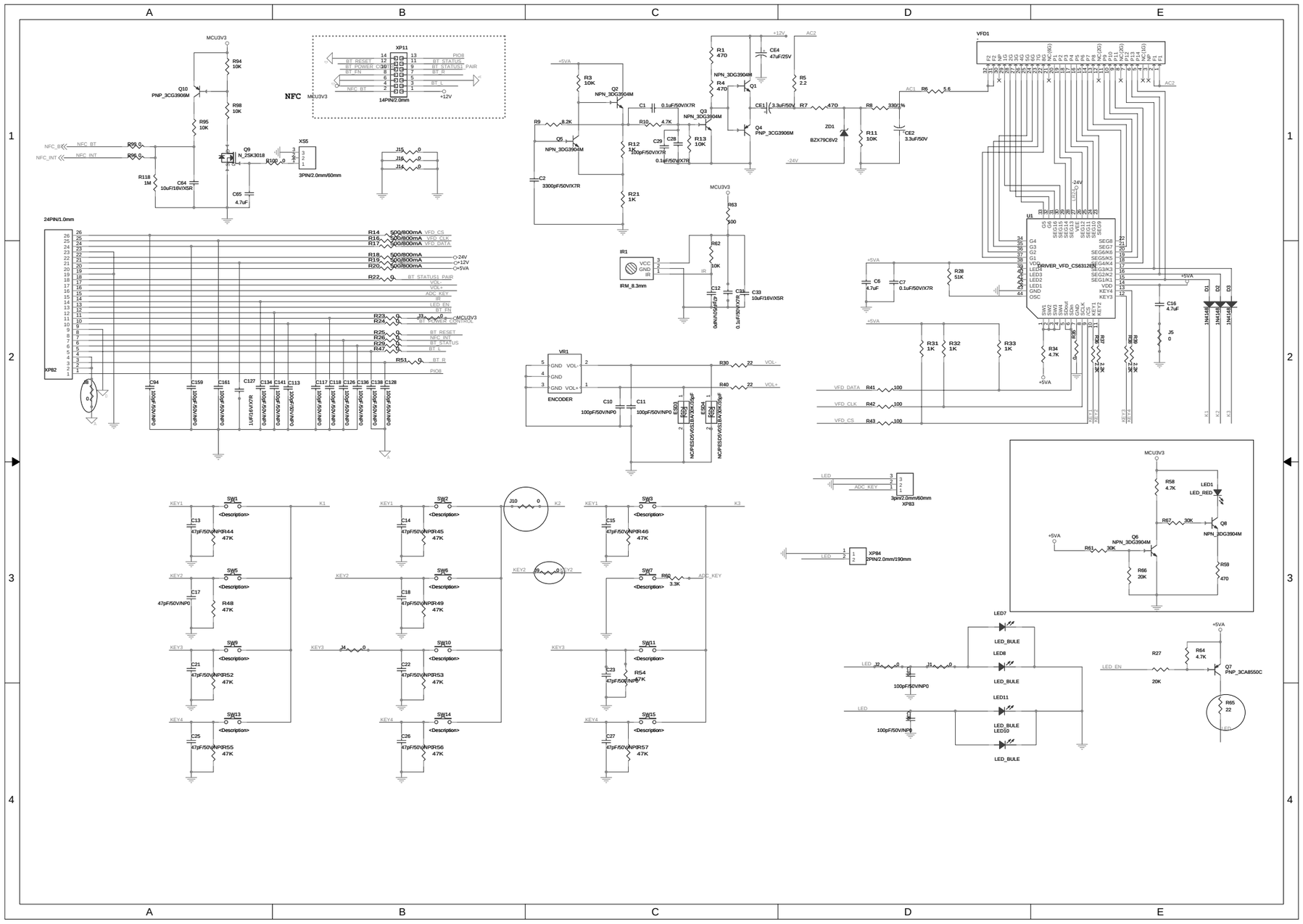
8-9

Circuit Diagram - Power board



8-10

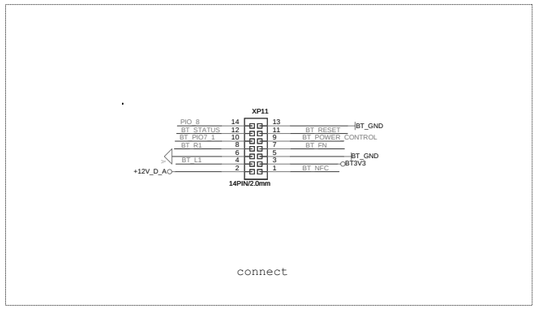
Circuit Diagram:Front Control Board



8-10

Circult Diagram:BT Board

Bluetooth

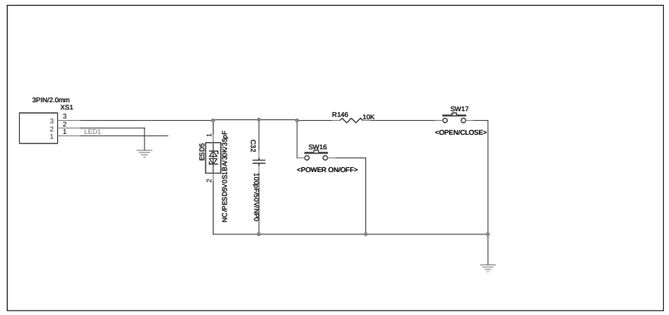


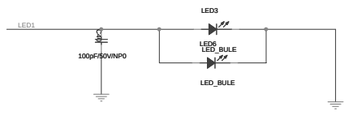
8-11

Circult Diagram:NFC Board

8-12

Circult Diagram:KEY Board



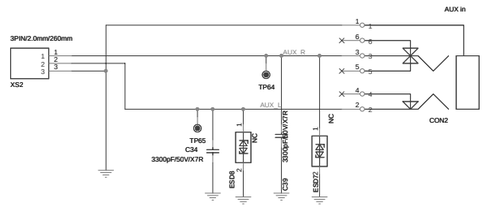


8-13

Circuit Diagram:USB Board

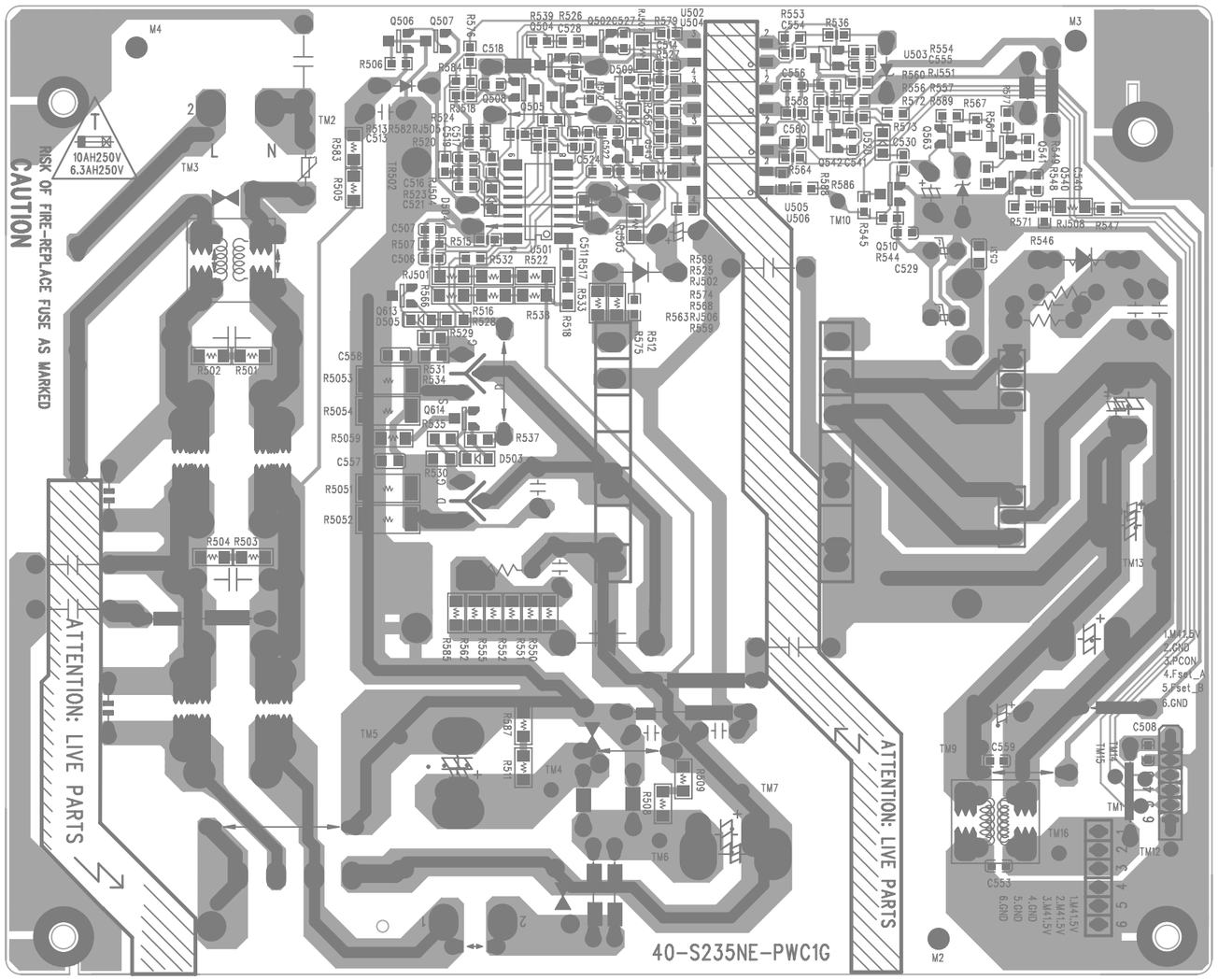
8-14

Circult Diagram:AUDIO IN Board



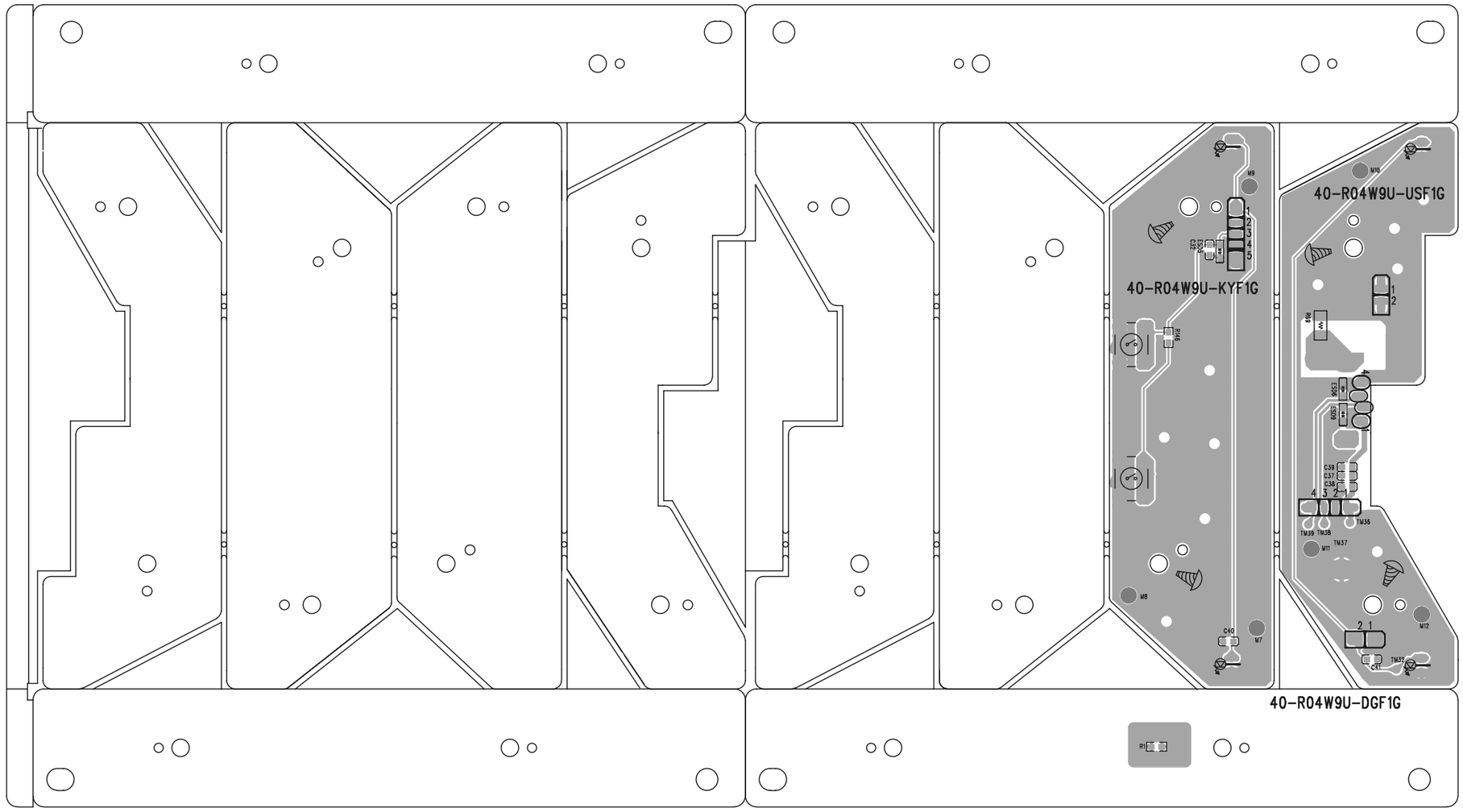
8-15

Print-layout - Power Board (bottom side)



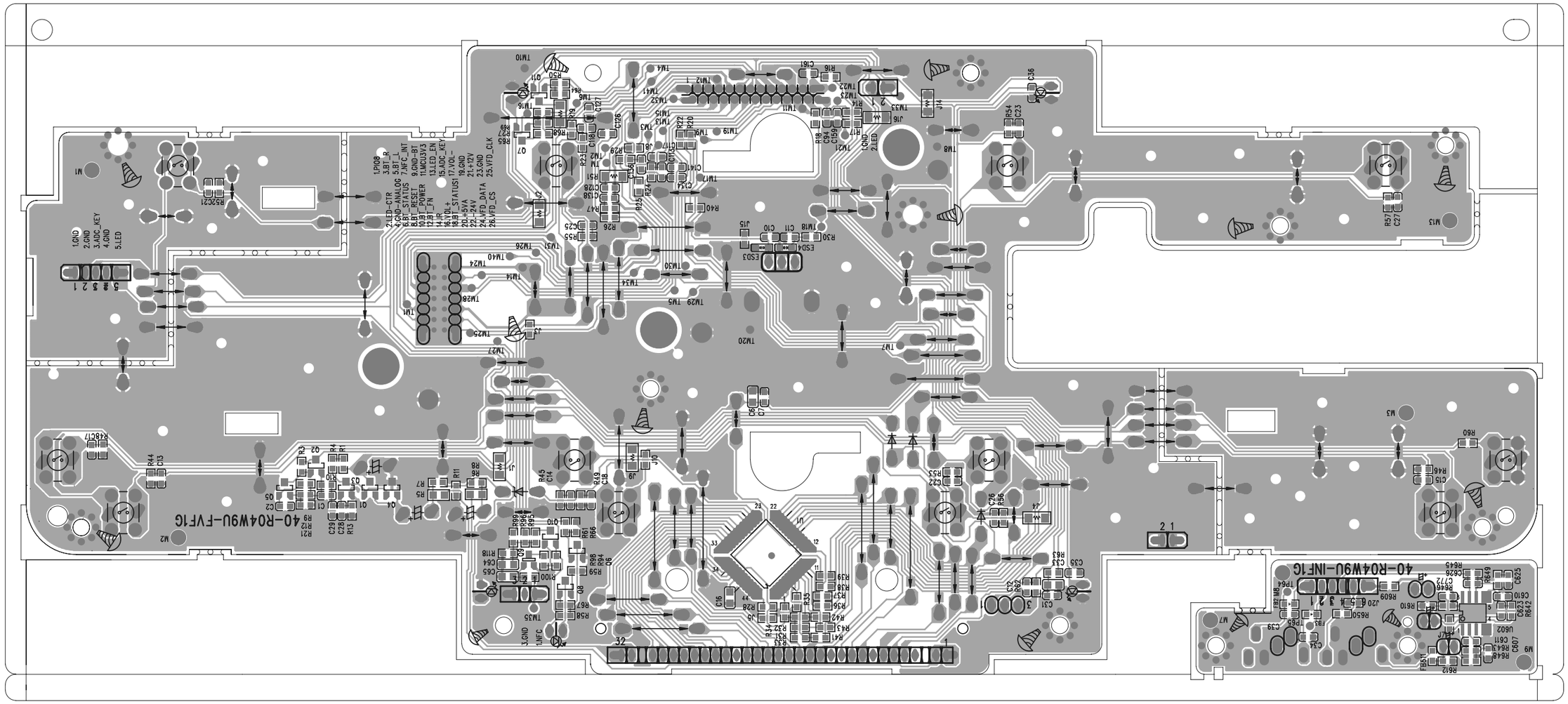
8-16

Print-layout-USB Board-KEY Board_Support Board:Bottom View

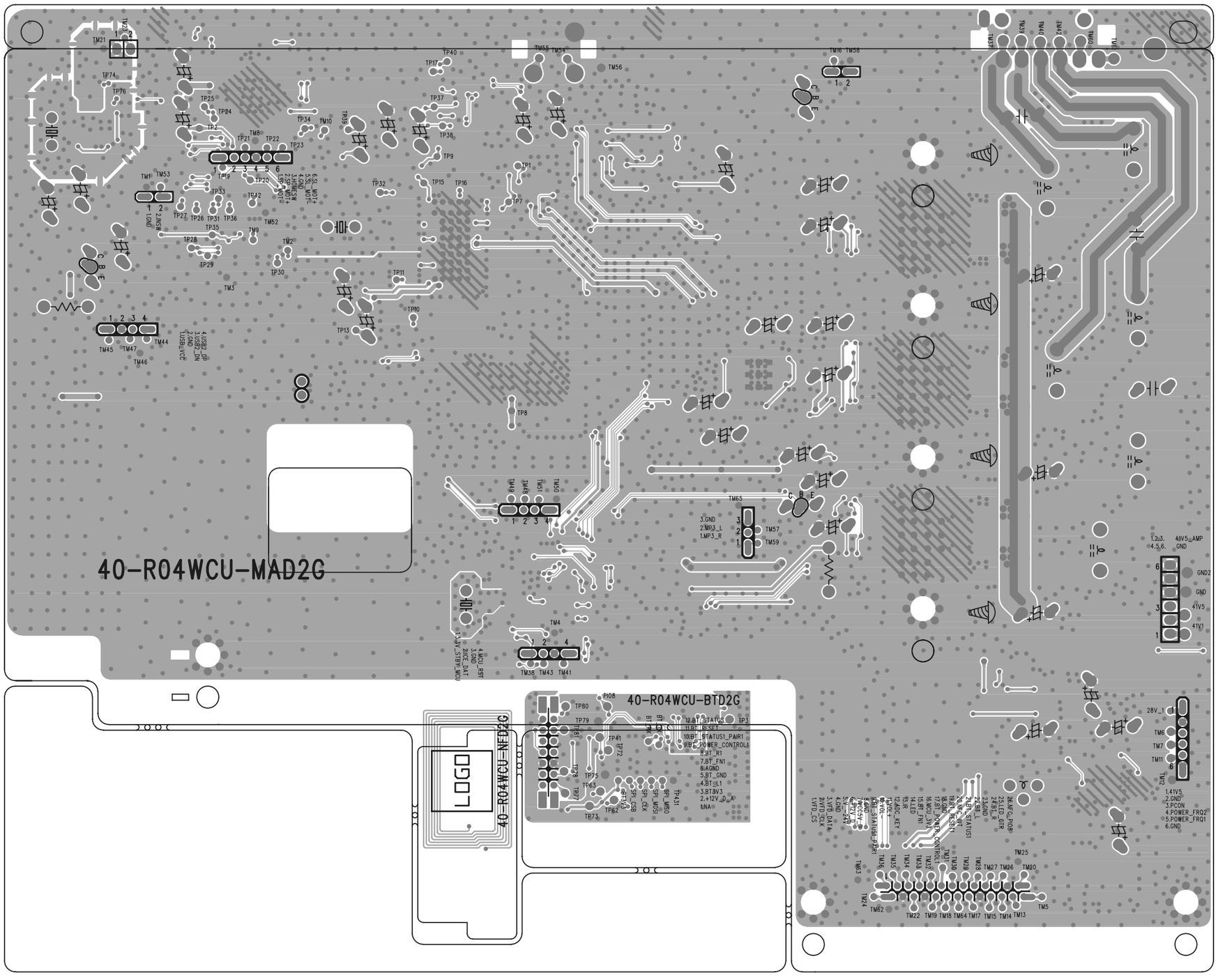


8-17

Print-layout-Front Control Board- In Board:Bottom View

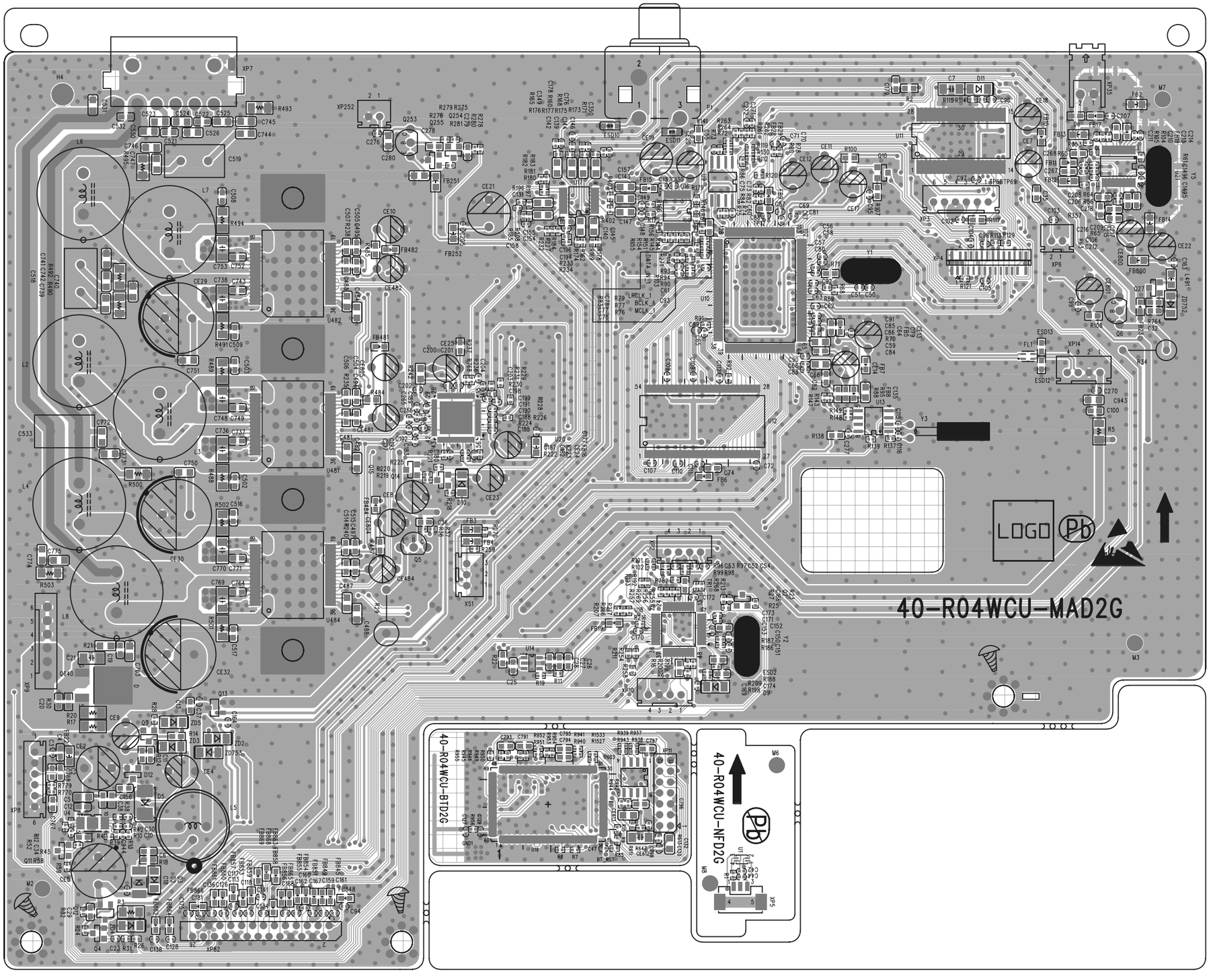


Print-layout-Main Board-BT Board_NFC Board:Bottom View



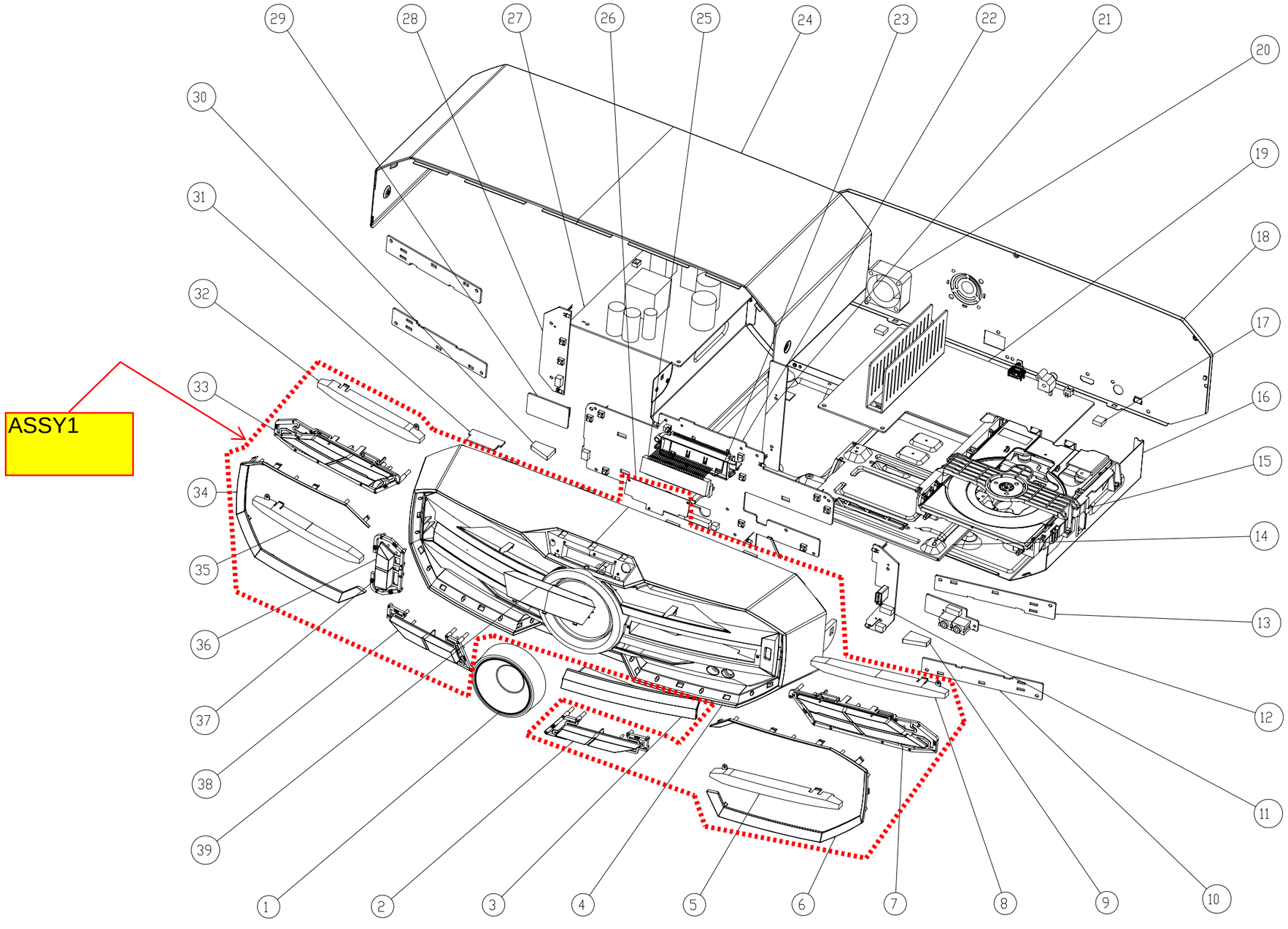
8-19

Print-layout-Main Board-BT Board_NFC Board:Top View



9-1

Exploded View for FX55



Remarks: ASSY1 includes 2,4,5,6,7,8,26,32,33,34,35,36,37,38,39.
Partlist refer to a separated excel file on FYP

REVISION LIST

V 1.0	2014-8-1	Initial release for FX 55/77
V 1.1	2014-8-1	Initial release for FX 55/12