**KT1025X Hardware Description and Design Notes**

1. If the chip is used alone and the DEM direct LAYOUT has not been tested, the experience is not very rich at this time, and the bottom noise is likely to occur.So first, compare the test boards of the manufacturer.**First, please provide the test DEMO as the standard "BT201" module.**

**Note: Bluetooth audio products, background noise or murmur is very common, when laying out, please do not be very casual, basic knowledge is not solid, online learning, do not take it for granted casual, the result of murmur is a natural thing.**

2. The encapsulation of antenna and some components, please refer to the PCB file of DEMO module directly. The database contains

3. Attention should also be paid to power supply:

(1) BT201 test board actually has bottom noise, but it&apos;s very small, and it&apos;s hard for human ears to recognize it.

(2) Can use mobile phone charger power supply try, there will be no big noise.

(3) It&apos;s better to use batteries for power supply, because the batteries are DC that feels right, so they are very clean.

(4) The USB output of desktop computers may produce large ripple and background noise.

(5) If there is DCDC in the board, it is easy to produce bottom noise. The optimal power supply is LDO such as 7805.

4. If the board has bottom noise, how to check it?

(1) First of all, the board power supply, choose a clean, best battery power supply, disconnect all the power supply circuit of the front stage.

(2) Then connect the output of the chip&apos;s earphone, listen with the earphone, whether there is background noise, if not, check the back-stage power amplifier circuit.

(3) If the playing U disk has no background noise, and the playing Bluetooth has background noise, this can not explain what the problem is.

Bluetooth itself belongs to high frequency radio frequency, which radiates energy to the outside world. The bottom noise can only be as small as possible. It can&apos;t be without it.But with a good design, you don&apos;t sound like you can feel the bottom noise unless the instrument measures it.

5Improvement of Bluetooth Background Noise:

(1) Bluetooth antenna and Bluetooth module should be as far away from analog circuit as possible.

(2) The analog chip must be connected to the input of the power source.

(3) Check the capacitance of the socket around the chip, short circuit or virtual welding.

(4) The GND of Bluetooth should pass through more holes.

6The selection of crystal oscillator and its index requirements?

    Because Bluetooth requires high frequency offset, the quality of crystal oscillator is very important to the performance of Bluetooth.

The consistency and stability of crystal oscillation must be guaranteed.Frequency deviation of crystal oscillator must be < 10 ppm. Load CL recommends 12 pF.

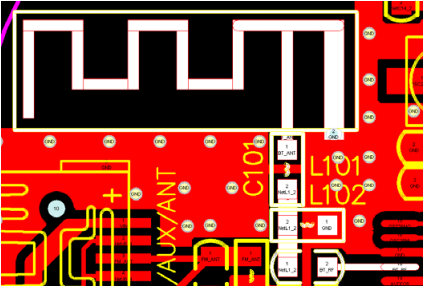
    Note: Crystal-to-ground capacitance C102 = C103? = 2\*CL -(4pF~6pF), of which CL is the crystal-to-ground capacitance.

(1) The crystal oscillator on DEMO is recommended for its low cost and good performance.

(2) Small volume requirements, recommended 24M-3225, slightly higher cost, good performance

**It is suggested that the original crystal should be used directly. It is believed that the preferential price and quality assurance are better than those purchased at will outside.**

7PCB Layout Notes



1) The input voltage of LDO\_IN should not exceed + 5.5V.

2) The chip must strictly distinguish between digital GND and analog AGND.(Refer to the figure above to distinguish GND from AGND)

1) Digital GND and analog AGND must be separated and connected at the battery entrance.If Fang

   In the case of power amplifier preamplifier, please connect AGND to power amplifier preamplifier

2) All decoupling capacitors on the main control chip must be placed as close as possible to the pin of the chip, and the loop of the decoupling capacitor ground should be as short as possible.

3) Priority should be given to the placement of Bluetooth antenna. RF antenna must be close to the edge of the board (some structures may not be able to do it, but they must.

    Find an open area.Bluetooth antenna matching circuit must be placed close to the RF pin, and the antenna route should be as short as possible.

   Bluetooth antenna is laid on the ground with yellow lines inside and outside the encapsulation of the antenna as the reference. The space of the left and right sides of the antenna is allowed.

   In case, try to be as wide as possible.Refer to the following figure:

4) FM antenna matching network should be placed as close as possible to the chip pins, and antenna wiring should be far away from interference sources (such as LCD/LED screen number).

      According to the line.

5) The 24M crystal oscillator must be placed close to the clock pins (BTOSCO and BTOSCI) of the chip.24M Crystal Vibration Wiring Must Be

      Do three-dimensional enclosure, away from interference sources, do not go parallel with other data lines when routing.

6) When routing audio signals such as DACL, DACR, AUXL, AUXR, MIC, pay attention to keeping away from digital signals (LCD/LED).

      Signals, USB, SD, etc.