Specification of RFID antenna

Radio Frequency Identification basic characteristics are as follows:

(1) Frequency band: 13.56MHz

(2) Standard specifications:

- ISO14443A/B: The reading distance is less than 20cm, and the communication rate is 106kbit/s. Both of them adopt 423KHz subcarrier technology. Their differences mainly lie in the modulation depth of the carrier and the bit encoding method.

	ISO14443-A	ISO14443-B
Frequency	13.56MHz	13.56MHz
Allowable frequency offset	± 7KHz	± 7KHz
Bandwidth	1.921MHz	1.921MHz
Subcarrier frequency	847.5 kHz	847.5 kHz
Data rate	106kbps	106kbps

RFID antenna type adopts PCB coil antenna with simple process and low cost. The coil antenna uses copper wire to wind several times according to a certain shape, and the signal can be transmitted by adding excitation at both ends of the copper wire. The coil antenna communicates through inductance coupling, and the coupling inductance is the ideal model of the coil antenna. When a changing current passes through the coil, a responding magnetic field will be established around the coil. If the magnetic fields of two coils interact, they are said to be magnetic coupled coils. PCB on-board coil antenna is as follows:

Fig. 1 diagram of PCB on-board antenna

The inductance of antenna is calculated by NXP NFC Tool. For RFID antenna design, it is estimated that the target value of design inductance is 1uH, and the parameter calculated by software is 881nH. The sensitivity range related to the corner is 825nH~1086nH.

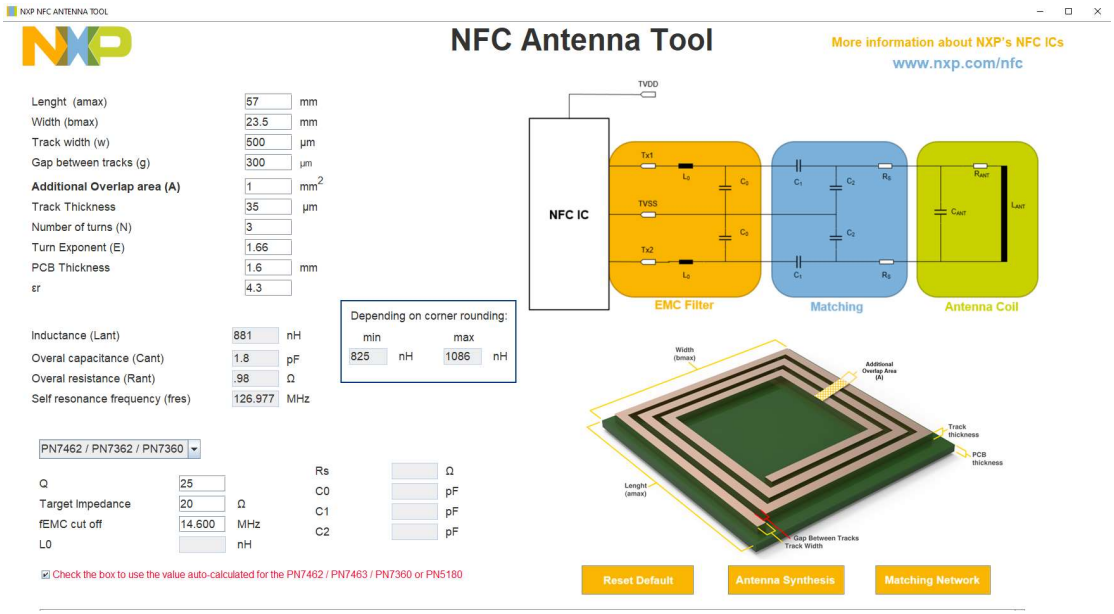

图 1 NXP Antenna Tool