



S-RockMite QRP Kit

User Manual

Revision V161101

Welcome to visit the home page www.lxqgy.com to obtain the latest data.

1. Introduction

This is a very small volume of simple 40 meter band micro-power amplitude telegraph transceiver, Despite it's small size and DC receiver limitations, it is capable of working several hundred miles when connected to a good 40 meter antenna.

There are many versions of "RockMite", "RockMite SWL", "RockMite PIC", "RockMite 51", and "S-RockMite". "S-RockMite" is so far the latest version. "RockMite 51" and "S-RockMite" is designed by "LXQQFY.com". The new product adds the following new features.

- The vertical resistance changed to horizontal resistance.
- It do not distinguish between positive and negative input power.
- Provide acrylic case.
- Provide WIFI module options. Support automatic key and automatic transmitter.
- Can connect the phone to change the configuration.

2. Specifications

Power supply: 9~13.8 Volts DC, >1A (Recommend the use of batteries)

Antenna: 50ohm, 7MHz, SWR<2.0

Receive: static current 60mA

Transmission power: 5W

Frequency: launch the vibration frequency,7023 KHZ

Receives the local oscillator frequency: about

7023-7023 KHZ work mode: the CW

KEY: Manual and automatic auto-detection

Automatic sending: ok

Config: the mobile phone application(WIFI)

case: acrylic

3. Circuit principle

Reference schematic diagram. Receiving part is the core of a NE602, inside it includes an oscillating circuit and a balanced mixer, antenna in the signal after 2 crystal filter, into the mixer, The basic oscillation signal is sent out by the 9018 oscillation circuit, two signals through mixing, directly put the CW signal frequency conversion for audio, NE602 output audio and then sent to the NE5532 to do the active low-pass filter and audio amplification, so that the whole process of the reception. it is called "DC receiver". 2N7000 field effect tube is used for closing reception at launch. At the same time, the WIFI module generates the side sound, which is output to the earphone. The launch part uses 9018 to do the oscillation circuit, then the 8050 makes the buffer enlargement. 8050 is also used as a launch key control, control transceiver circuit and signal switching. The last stage is composed of a D882 class C amplifier, matched by 1:4 transformer, after LPF filter is connected with the antenna.

The WIFI module is optional. If you do not use the WIFI module, you need to short circuit the JP1, then "S-RockMite" == "RockMite" == Ordinary CW radio. If you use the WIFI module, you need to unplug the JP1, then you can use the mobile phone configuration data.

4. Component selection

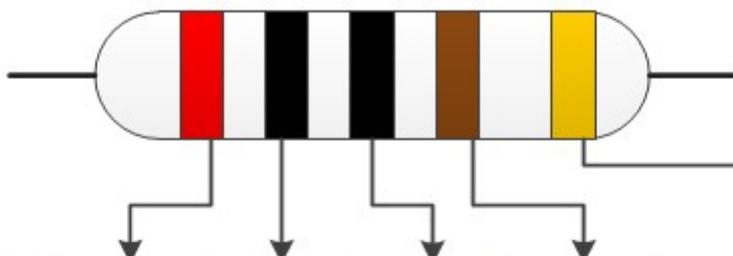
9018 magnification is about 130, D882 magnification is about 200. T1 is 1:4 transmission line transformer, in FT37-43 iron and oxygen magnet ring bodies (black) using 0.51 mm paint envelope double hinge line in and around six times, then connecting a coil with a head and a tail. T2 is the high frequency transformer, in FT37-43 iron and oxygen magnet ring bodies (black) using 0.51 mm paint covered wire for winding, Primary 8 turn, secondary 2 turn. L1 L2 is the high frequency filter inductance in T37-2 on the iron core is circular and (red) using 16 to 0.5 mm enameled wire around.

5. Production process

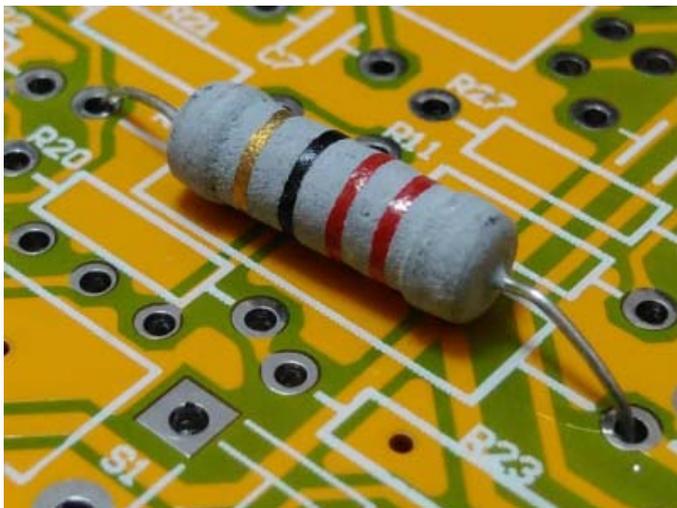
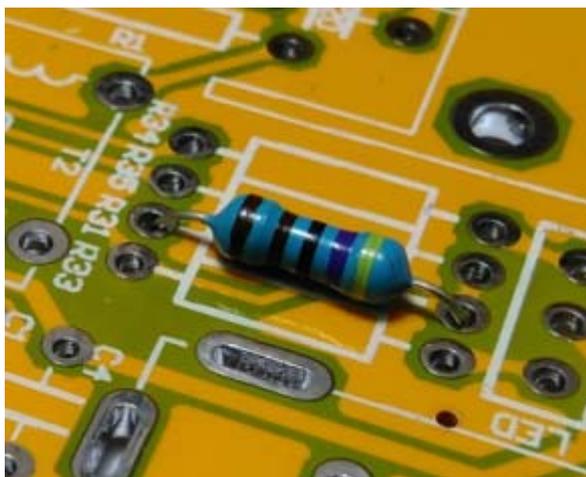
5.1 According to the list of components, check the number of components. Have tools, Electric iron, Solder wire, and A multimeter on hand. Take welding from low to high order, Recommend: Resistance -> Diode -> Capacitance -> Triode -> Crystal oscillator -> LED -> Bridge rectifier -> Electrolytic capacitor -> Ic -> Inductor -> Magnet ring -> D882 -> Other.



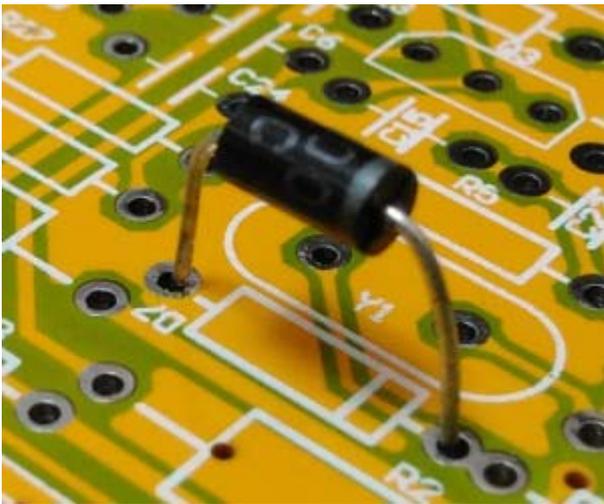
5.2 Resistance.



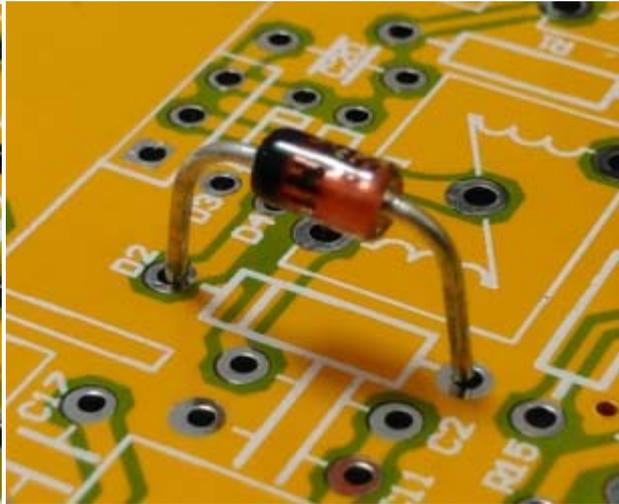
颜色	百位	十位	个位	倍数	精度
黑	0	0	0	1	
棕	1	1	1	10^1	±1%
红	2	2	2	10^2	±2%
橙	3	3	3	10^3	
黄	4	4	4	10^4	
绿	5	5	5	10^5	±0.5%
蓝	6	6	6	10^6	±0.25%
紫	7	7	7	10^7	±0.1%
灰	8	8	8	10^8	±0.05%
白	9	9	9	10^9	±50%
金				10^{-1}	±5%
银				10^{-2}	±10%
透明					±20%



5.3 Diode.



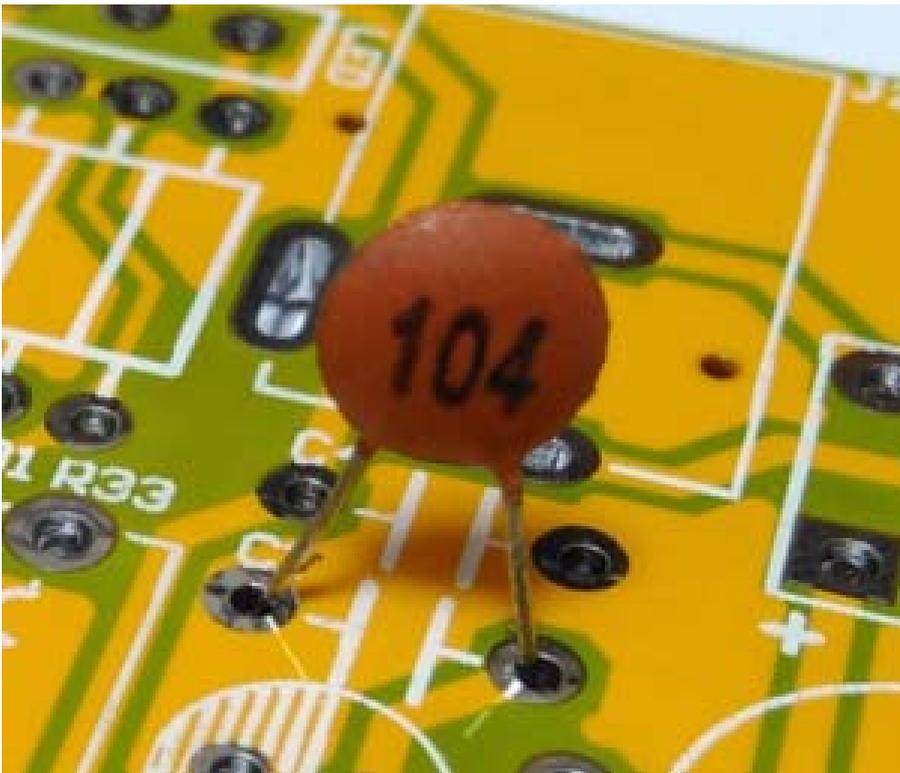
1N4001



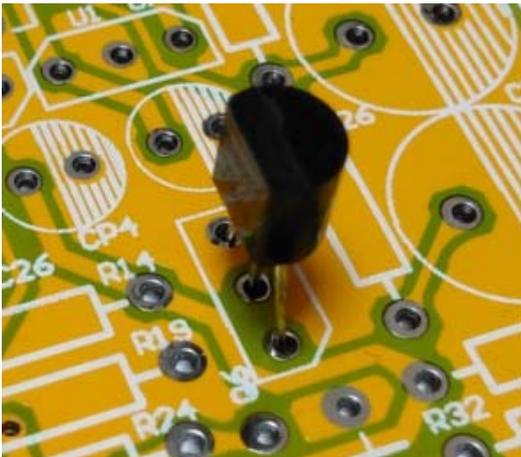
1N4148

5.4 Capacitance.

0.1uF(104) 10nF(103) 1nF(102) 100pF(101) 33pF(33) 56pF(56) 470pF(471)



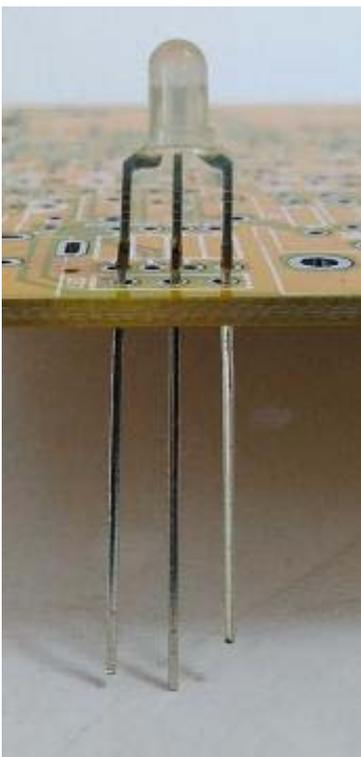
5.5 Triode and FET.



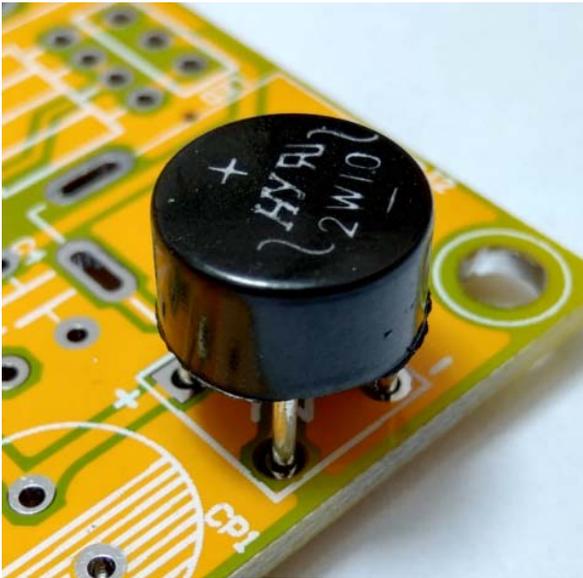
5.6 Crystal oscillator.



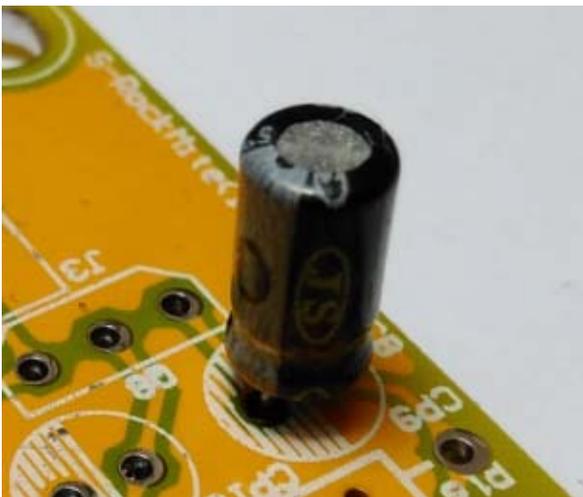
5.7 LED.



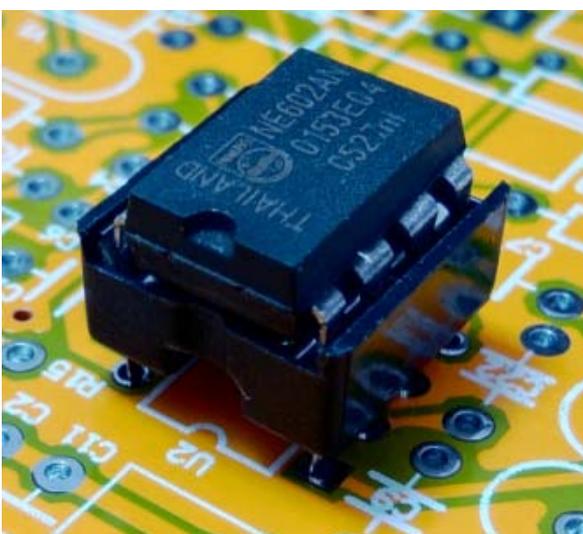
5.8 Bridge rectifier.



5.9 Electrolytic capacitor.

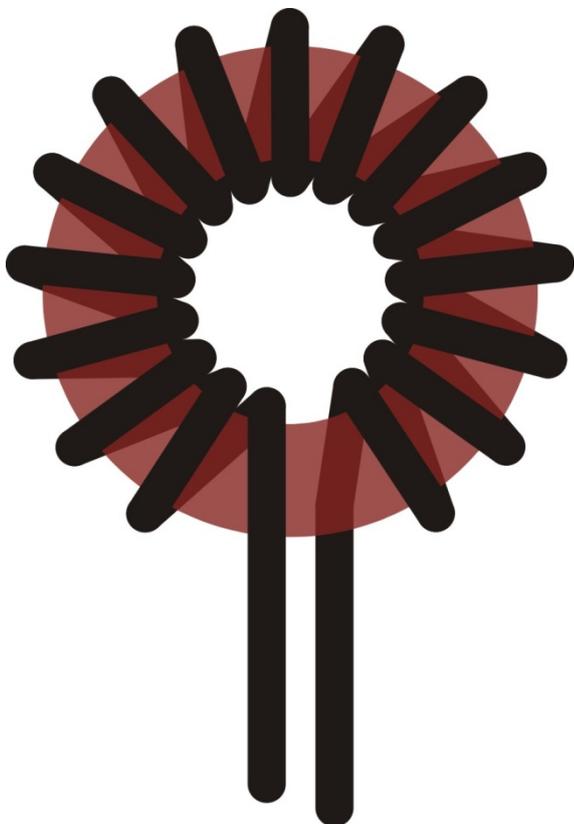


5.10 Ic.

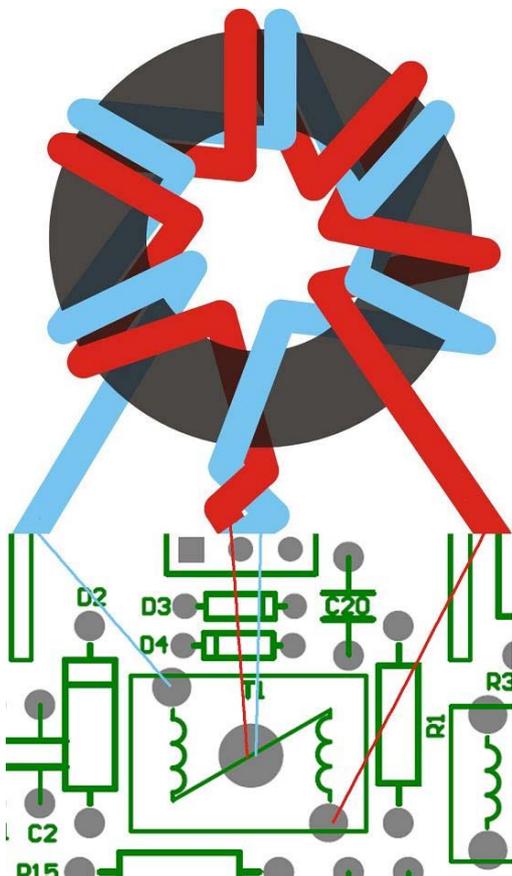


5.11 Inductance.

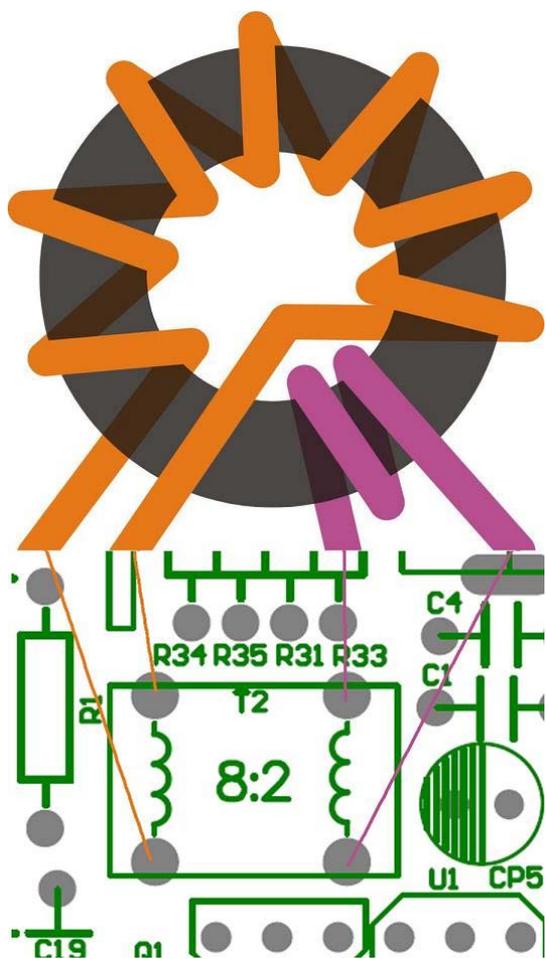
5.11.1 L1 L2, 1uH(T37-2 16 turns)



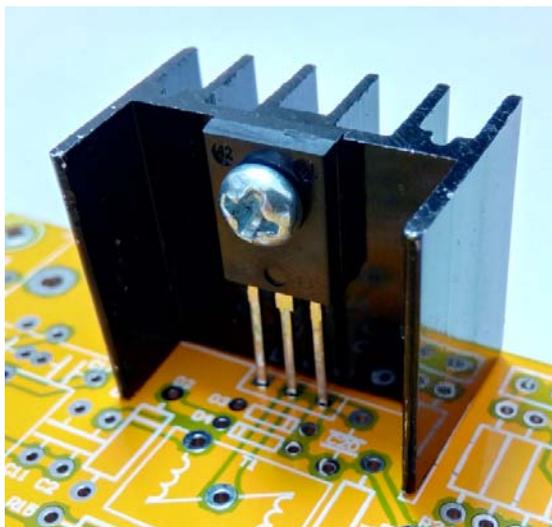
5.11.2 T1, 1:4 transformer (FT37-43 6 turns)



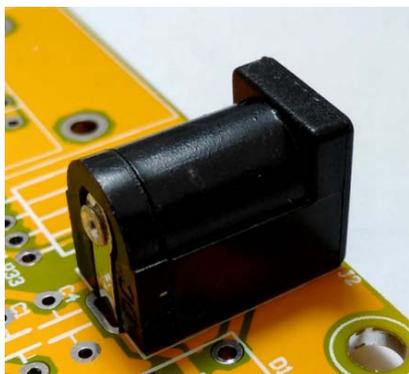
5.11.3 T2, Transformer(FT37-43 8 turns : 2 turns)



5.12 D882.



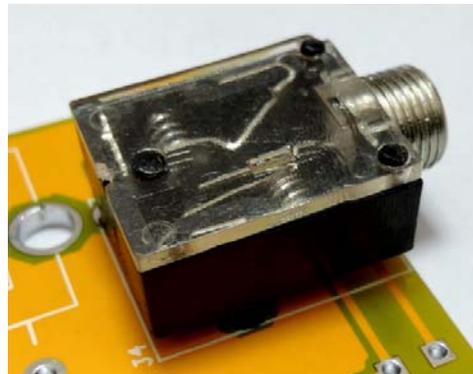
5.13 Other.



DC Jack



Q9(BNC)



3.5mm Socket(Key and Phone)



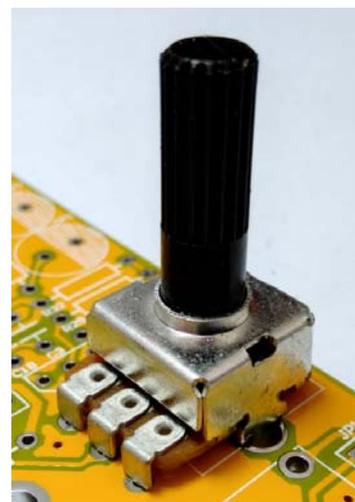
Key



Pin

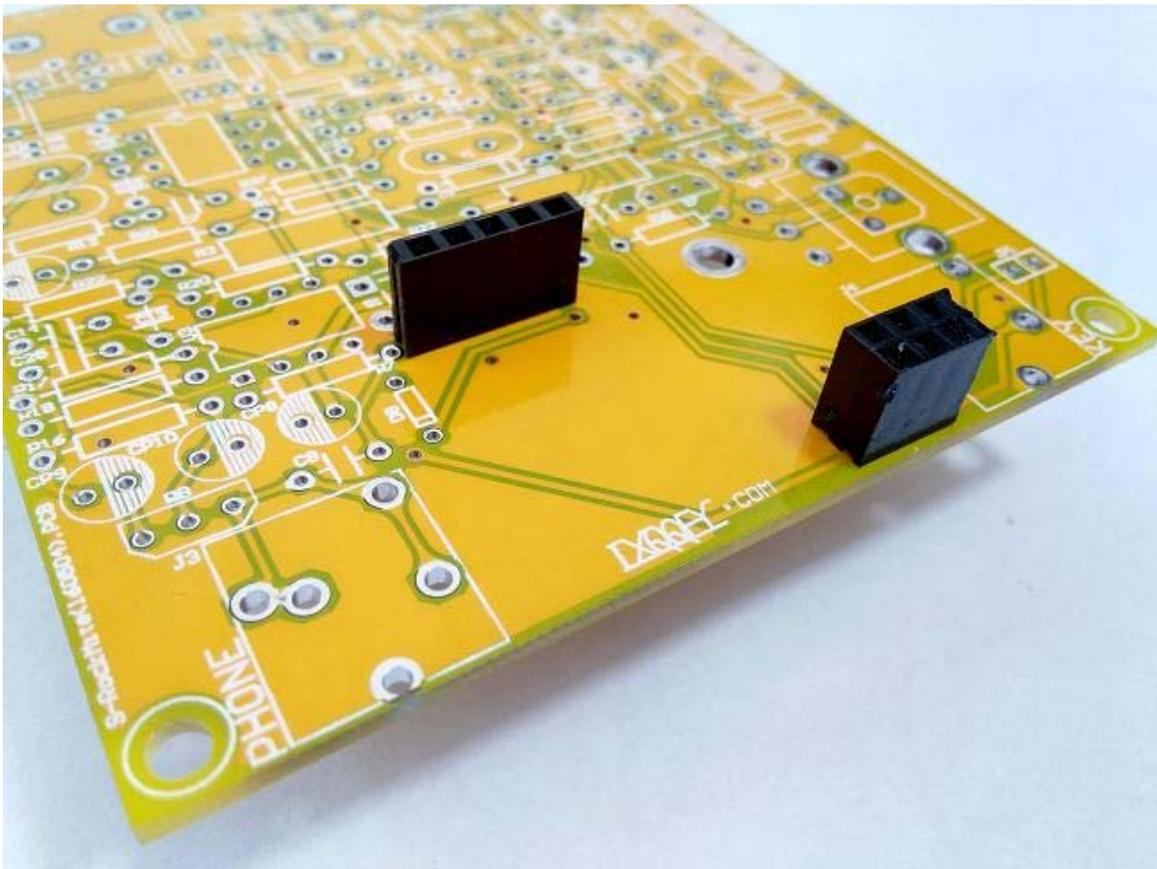


Jumper Cap

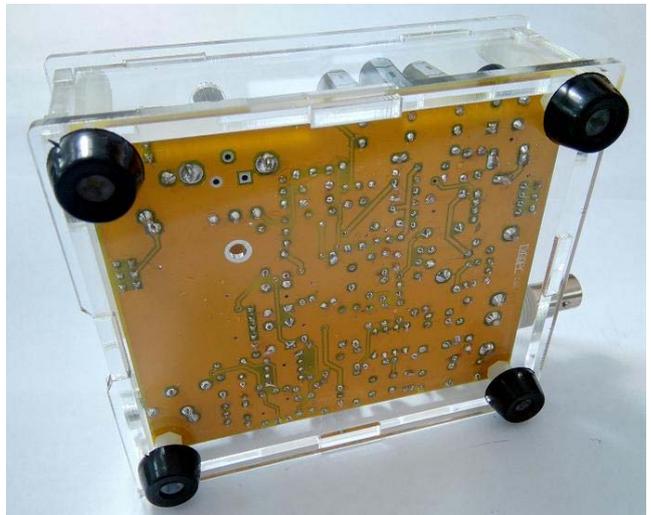
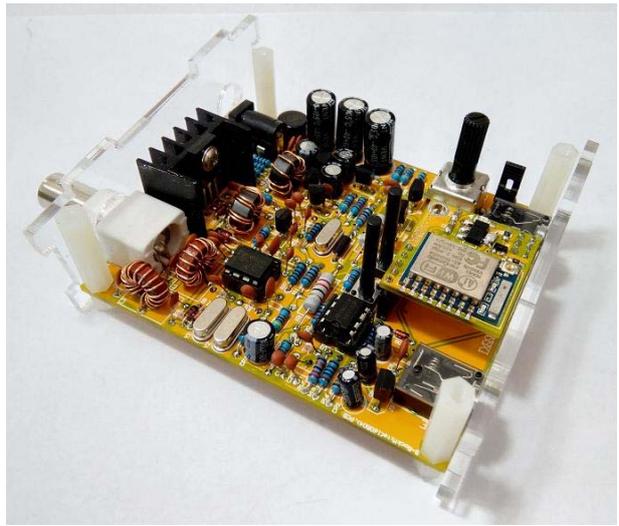
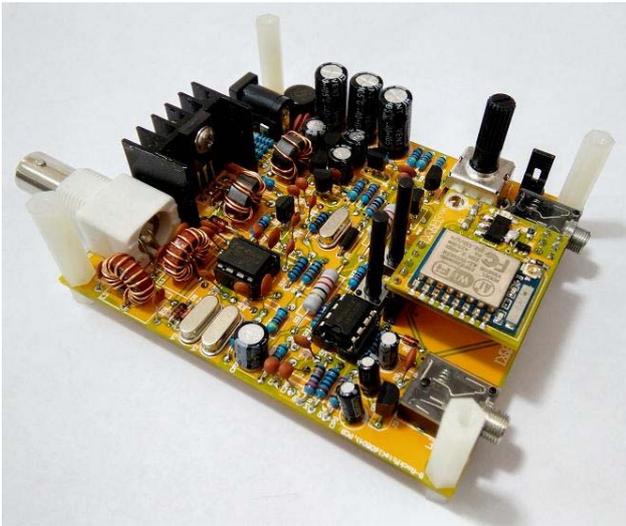


Variable resistor

5.14 WIFI Module.



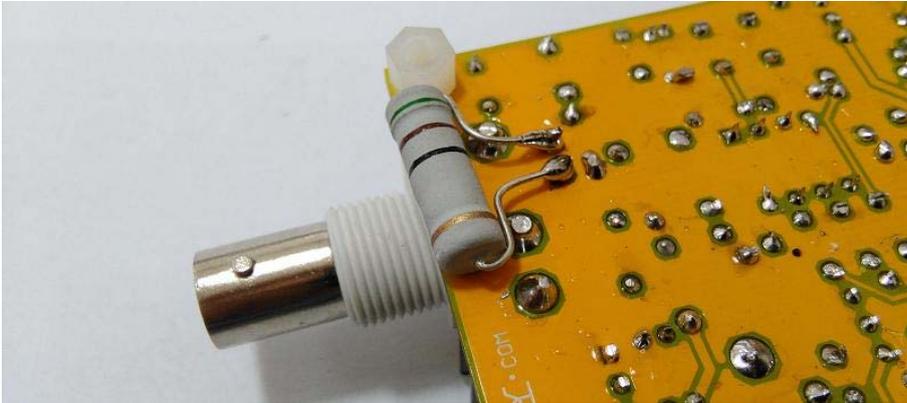
5.15 Install the acrylic case.



6. Debug

6.1 The power before installation of dummy load.

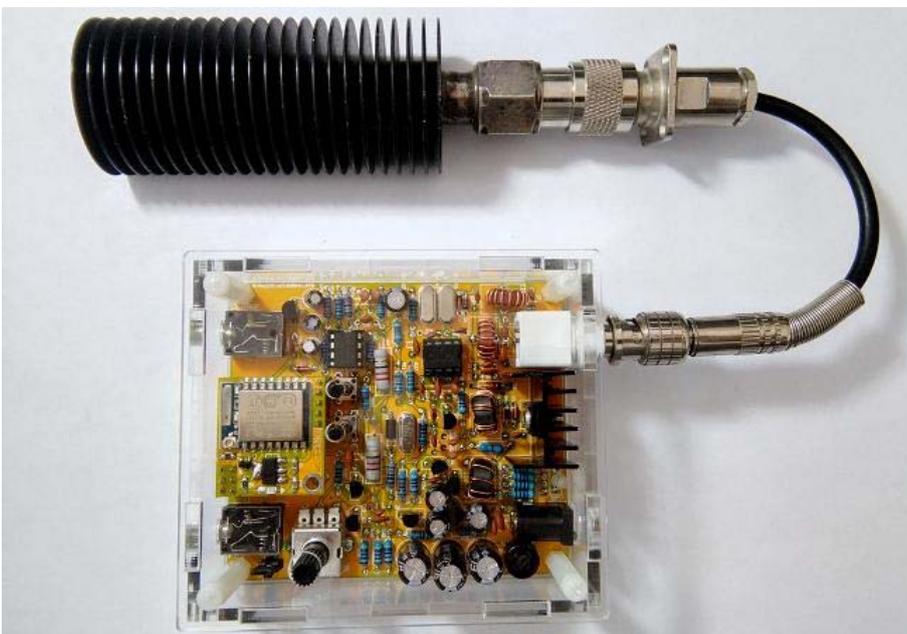
Method 1:



Method 2:



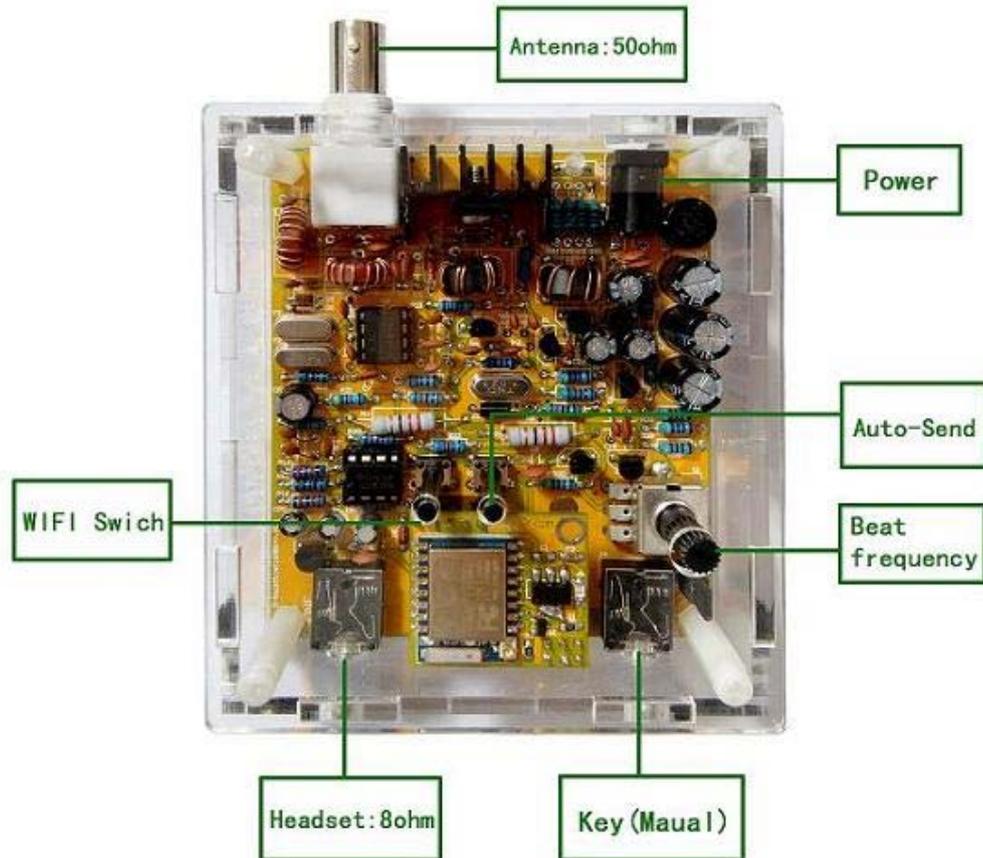
Method 3:



- 6.2 Power on: **Do not distinguish between positive electrode and negative electrode(Internal rectification)**, Recommend the use of battery, Can also use the DC linear voltage stabilized power supply. If power on after tens of seconds without abnormal heating,then it's normal.
- 6.3 Listen to the base noise: Connect the 8ohm headset, after power will hear a slight voice, then it's normal.
- 6.4 The receiving circuit test: If connect the antenna to hear the voice and do not connect the antenna to hear the voice of a great difference,then it's normal.
- 6.5 The sending circuit test: Connect dummy load, don't install WIFI module, short circuit JP1, connect the key, and power on. Now you can use the key control to send, Static current:40~100mA, Sending current:400mA, In the sending state under the virtual load will be fever. **Note: it is not a long time to send.**
- 6.6 The WIFI module test: Connect dummy load, install WIFI module, **circuit breaker JP1**, connect the 8ohm headset, connect the key, and power on. Click "WIFI button" to open a WIFI connection, would you hear "ka ka" sound, then WIFI is opened. Download the APP from the [www.lxqqfy](http://www.lxqqfy.com/), using APP to connect the WiFi module to communicate.

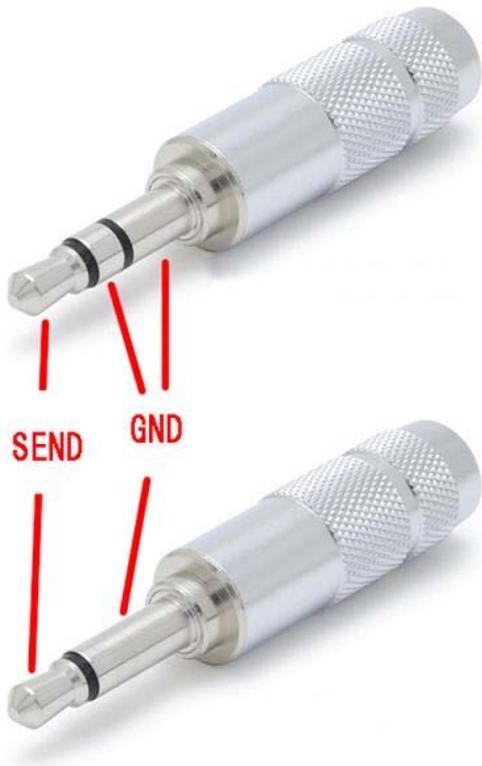
7. Usage method

7.1 Function diagram



7.2 Key.

Manual-Key Wiring diagram



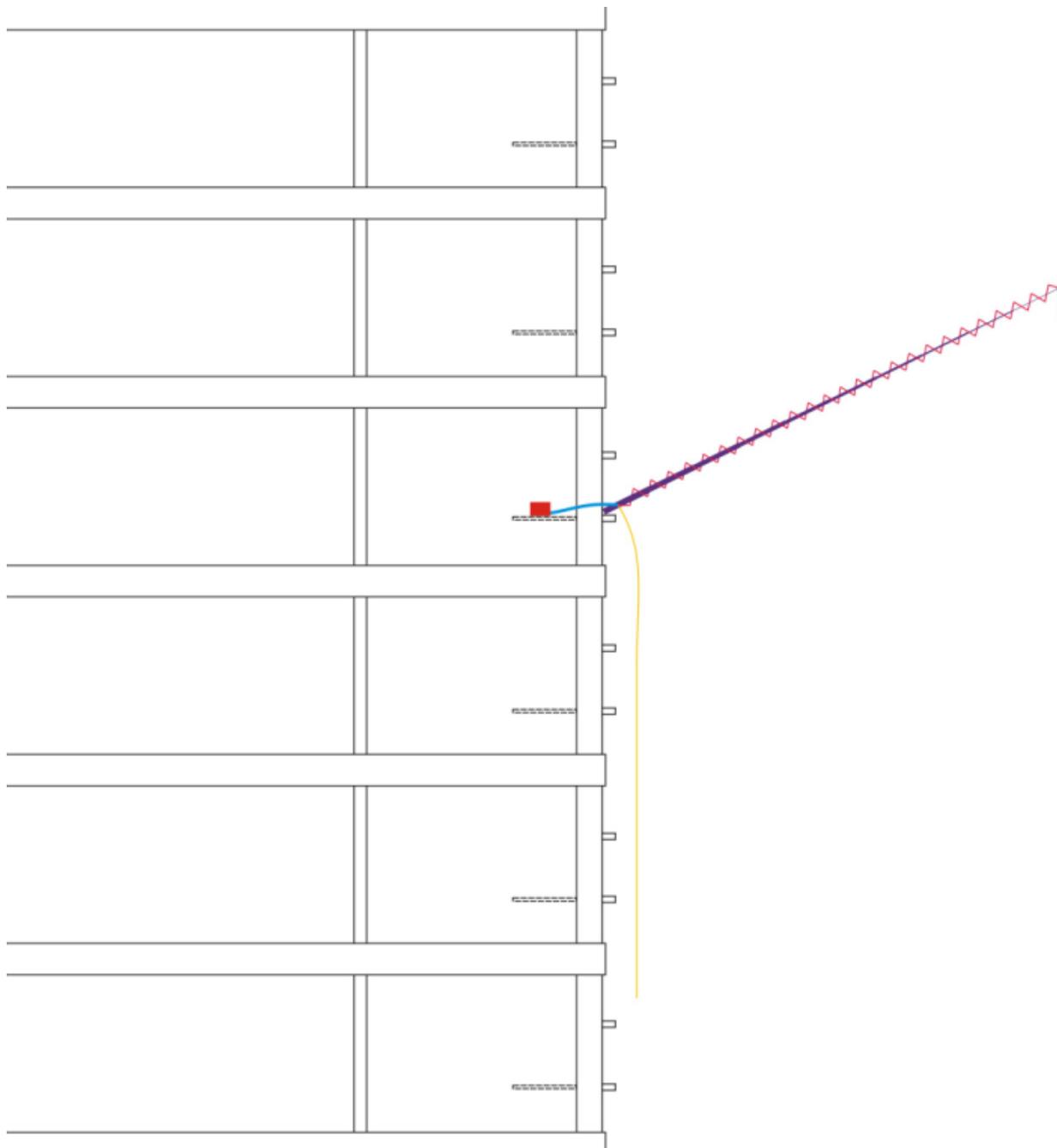
Auto-Key Wiring diagram



7.3 Using the most common 8ohm headset.

7.4 The antenna is the key of the shortwave station, Requirements: frequency 7MHz, impedance 50ohm, SWR <1.5. Recommend the following:

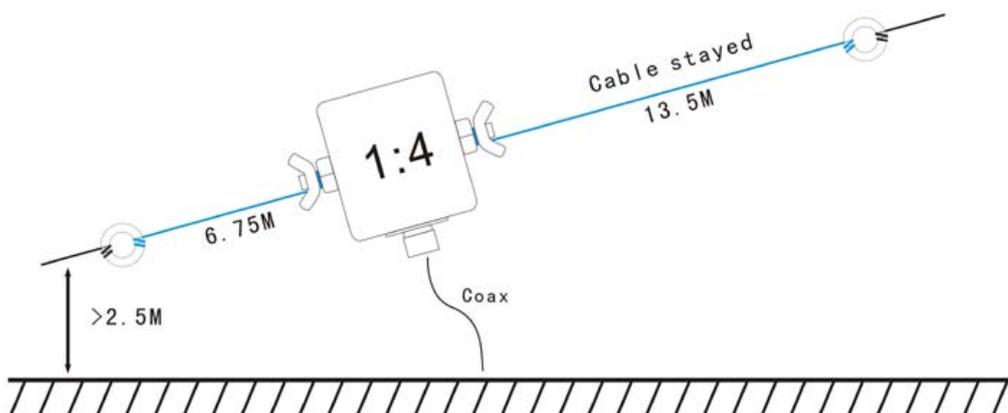
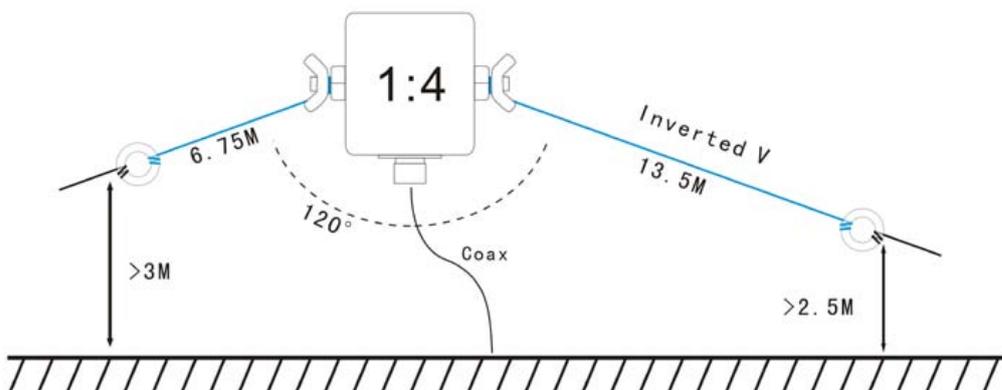
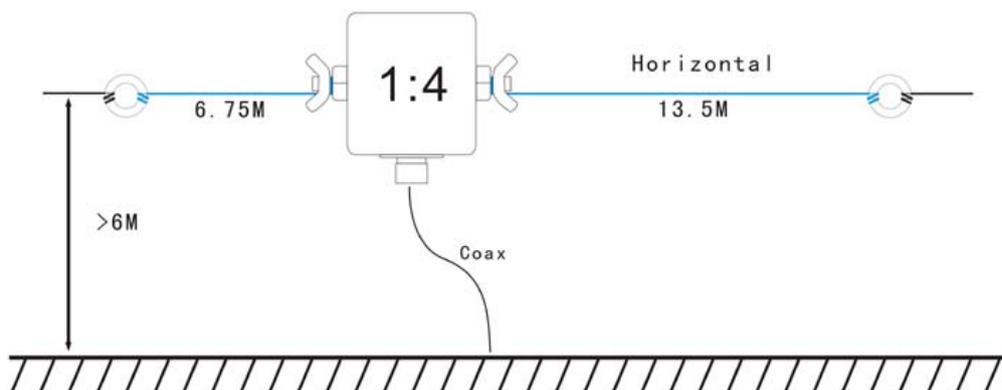
7.3.1 GP Antenna.



Red: Radio; Bule: Feeder(50ohm); Violet: Fishing rod(9 meters); Yellow: Dummy grounds(9 meters); Pink:: Oscillator(10.1 meters);

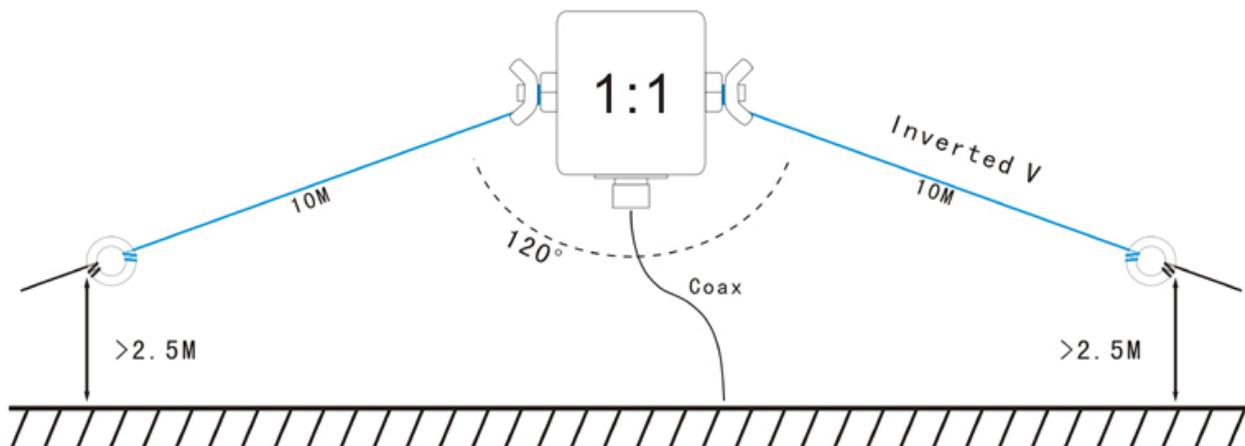
7.3.1 Windom Antenna.

Winton antenna can be good to work in the three 40m/20m/10m band, the use of 1:4 Balun, according to the actual environment can have a variety of different installation methods.

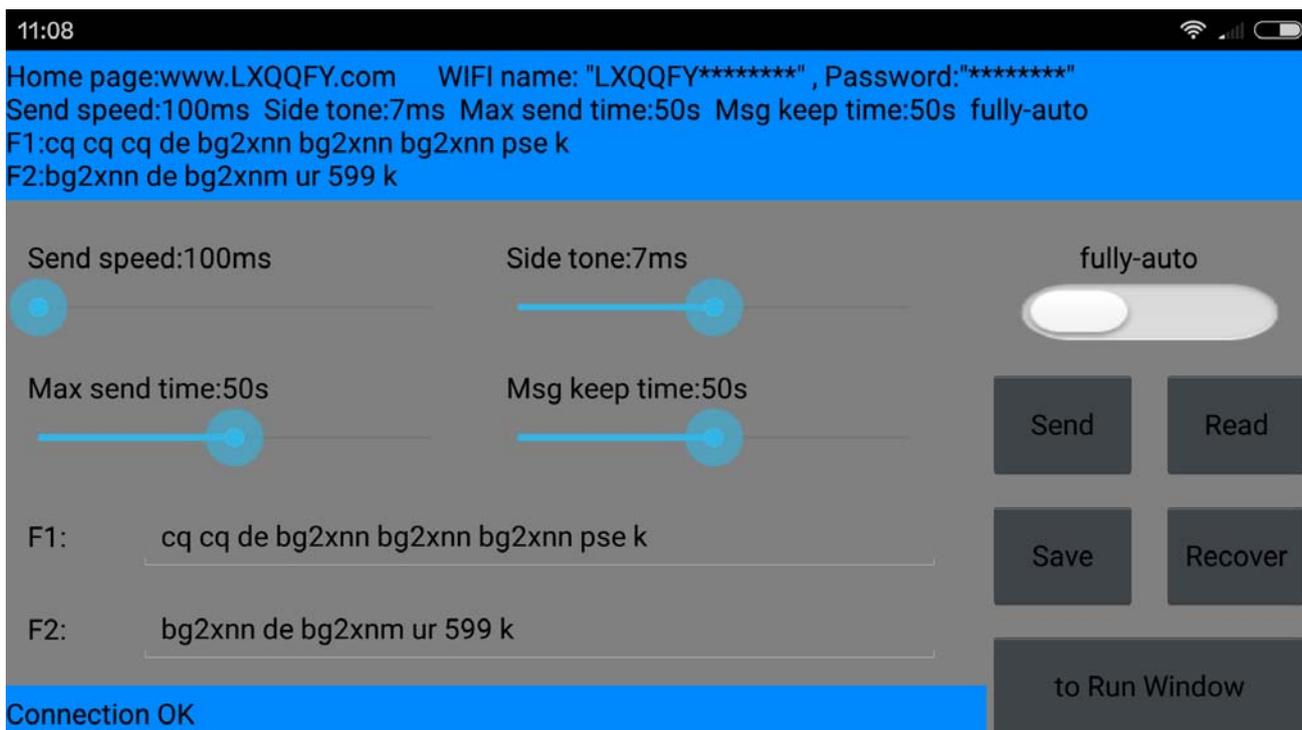


7.3.1 DP Antenna.

The DP antenna is adopted skywave communication, long distance communication effect is very good, the use to 1:1 balun, usually V installation.



7.4.6 Config Window.



7.4.6.1 "Send speed ":The time unit of send, the time unit is also identified.

7.4.6.2 "Update": The current information send to the radio; "Read": The current information read from the radio; "Save": The current information save to Mobile phone; "Recover": The current information recover from Mobile phone;

8 List of components

1/4W Resistor		Capacitor	
R1	0 ohm	C1 C2 C3 C4 C5 C6 C7 C8	0.1uF(104)
R25 R26	10 ohm	C18 C19 C20 C21 C22 C23 C24 C25	10nF(103)
R2 R3	22ohm/1 W	C17	1nF(102)
R27	100 ohm	C15 C16	100pF(101)
R18	200 ohm	C9 C10	33pF(33)
R5 R7	1K	C27 C26	56pF (56)
R23	2K2	C13 C11 C14 C12	470pF(471)
R11 R12	10K	Electrolytic capacitor	
R29 R30 R32 R31 R33 R34 R35 R28	4K7	CP1 CP2 CP3	1000uF/16V
R19 R20	22K	CP4 CP5 CP6 CP7	100uF/25V
R14 R15	47K	CP8 CP9	10uF/16V
R24	100K	CP10	1uF/16V
R16 R17	220K	Inductance	
R21 R22	470K	T1	1:4 transformer (FT37-43 6)
Transistor		T2	Transformer(FT37-43 8:2)
D1	2W10(Bridge rectifier)	L1 L2	1uH(T37-2 16)
D2	1N4755A(Diode)	IC	
D7	1N4001(Diode)	U1	78L06
D3 D4 D5 D6 D8	1N4148(Diode)	U2	NE602
Q8	2N7000(FET)	U3	NE5532
Q1	9018(Triode)	Crystal oscillator	
Q2	D882(Triode)	Y1 Y2 Y3	7.023MHz
Q3 Q4 Q5 Q6	8050(Triode)	Variable resistor	
Q7	8550(Triode)	W1	47K(473)
LED	Two color LED	Other	
PCB * 1		JP1	Pin and Jumper Cap
0.5mm Enameled wire		J1	Q9(BNC)
The heat sink and screw (for D882)		J2	DC Jack
51ohm 2W Resistor(for dummy load)		J3 J4	3.5mm Socket(Key and Phone)
Acrylic case		S1 S2	Key
SIP5 DIP6(for WIFI Module)		WIFI Module(Optional)	

