Mini-Whip Instruction

Parameter name	Parameter value	Remark
Module model	Mini-Whip	
Module type	Active Antenna	
Module power supply	DC+9~15V	
Operating frequency range	10KHz~30MHz	
Maximum output power	> -15dBm	
Module input and output interface	SMA	
Module application	Various	Medium and short wave SDR antenna, RTL-SDR receiver antenna, etc.
Module interface type		Output SMA interface

Mini-Whip Instructions:

On the open field, there is a small metal plate on top and an amplifier, together in a plastic enclosure (the actual MiniWhip). The coaxial cable runs from the MiniWhip down the mast to the receiver. The amplifier is a voltage follower with very high input impedance to not load the metal plates, and low output impedance to be able to deliver enough power to 50 ohm coax.

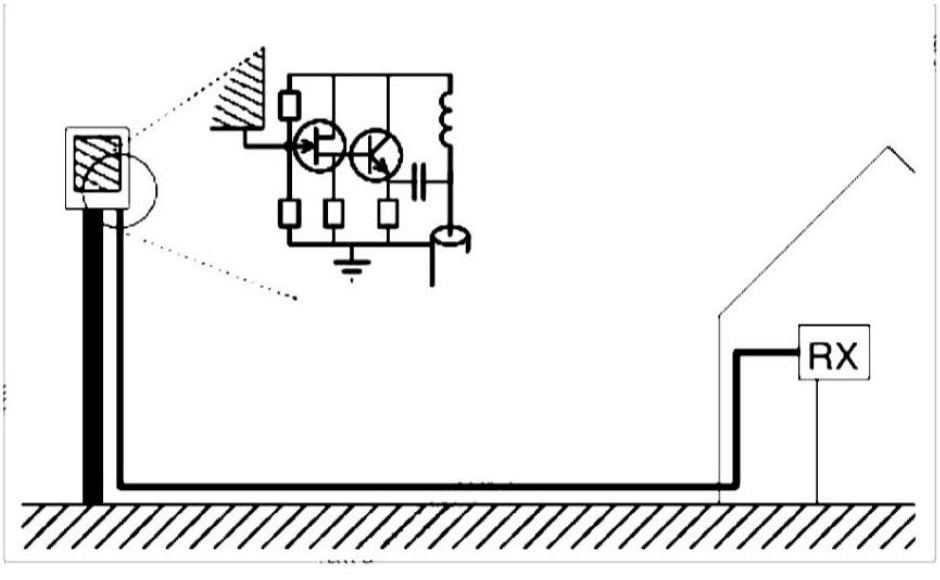

Figure 1 Illustration of MiniWhip

Figure 2 shows what the twisted surface looks like (calculated by computer solving the relevant Maxwell equations into the bottom black line representing the Earth. Above it, there is a (rather thick cylindrical) mast, a metal block floating on it, two are shown in black. The metal blocks are the metal plates of the MiniWhip. The red lines are the equipotential surfaces, or rather, run through them. Each of these lines corresponds to a potential, expressed in volts: The equipotential surface Voltage to ground. The earth and the mast itself are at ground potential, say 0 volts. The lowest red line could be eg 1 HV, the next 2 nV, etc. Away from the mast, the equipotential lines/surfaces are almost horizontal, as As one would expect for a vertically polarized electric field. Around the mast, they are twisted because the whole mast is at ground potential. And around the metal block above it, the lines twist because the potential on the conductor is the same everywhere Yes. But actually the distortion isn't too bad; at the metal block the potential is almost indistinguishable from the mast further away from the same height. Further calculations show that the distortion decreases as the mast gets thinner.

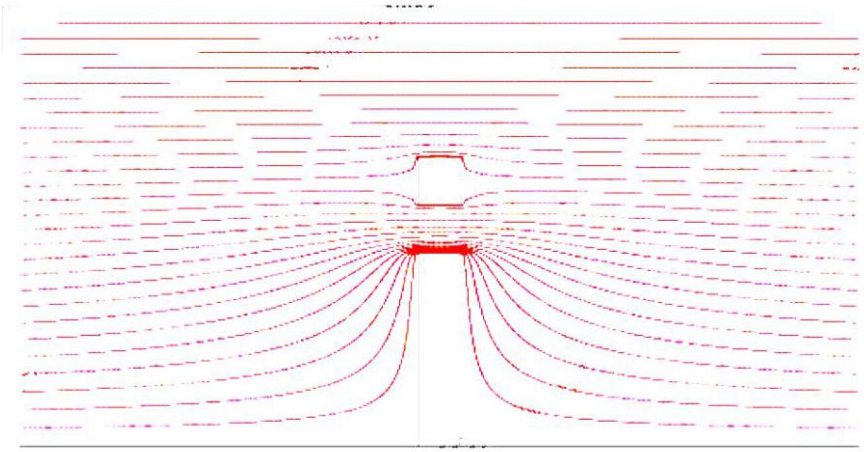

Figure 2 MiniWhip electric field diagram

Figure 3 shows a vertically polarized transmit antenna and the electric and magnetic field lines that this antenna produces at great distances (the so-called far field). It can be seen that the electric field lines are vertical because the electric field is caused by, for example, a dipole having a positive charge in the upper half and a negative charge in the lower half (or vice versa, half a period later).

In addition to this, it can be seen that the magnetic field lines are horizontal, forming a large circle around the antenna; the so-called Poinduct vector is also shown in Figure 3.

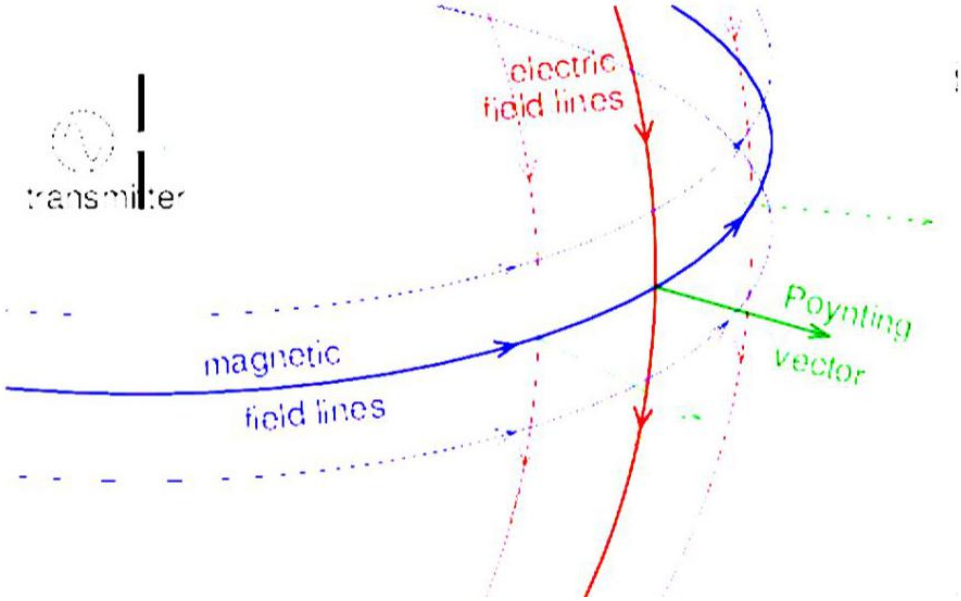

Figure 3 Directivity of MiniWhip

Mini-Whip wiring instructions

As shown in Figures 4 and 5, Figure 4 is the theoretical wiring description, and Figure 5 is the actual wiring description. The yellow square in Figure 4 corresponds to the receiving board of the Mini-Whip product in Figure 5, the blue square corresponds to the biaser of the Mini-Whip product, and the middle part of the yellow and blue squares corresponds to the actual SMA RF cable.

Power supply wiring instructions: black to GND, red to positive.

Note: When this product is shipped, a label will be attached to the biaser with the side facing towards itself, the upper SMA interface is connected to the antenna board, and the lower SMA interface is connected to the To Receiver.

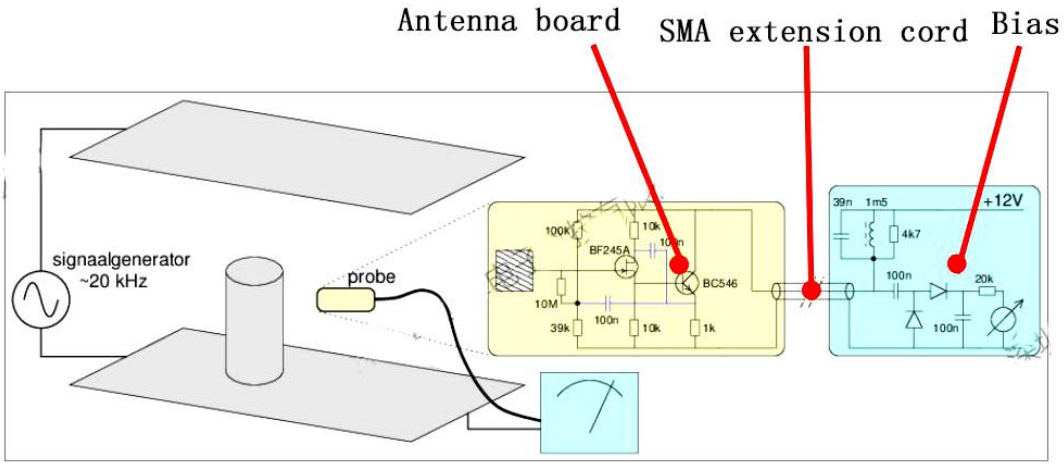

Figure 4 Theoretical wiring diagram of the Mini-Whip

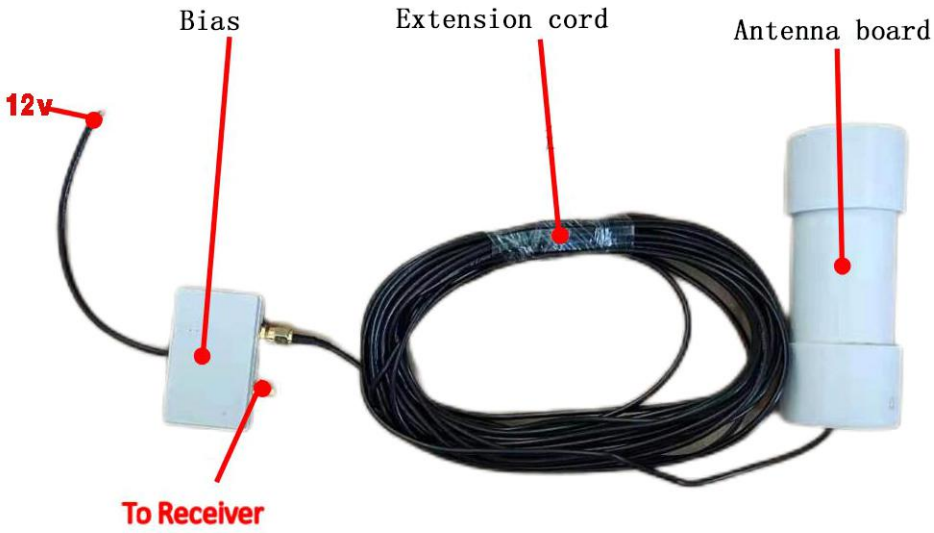

Figure 5 Actual wiring diagram

Note: This picture has a shell, but it does not actually have a shell.