ANTSDR Unpacking and Test Rev. 1.1

Chapter 1 Unpacking and Inspection

1.1 List of items

Thank you for purchasing the ANTSDR series software radio platform from HAMGEEK. When you get the ANTSDR E310 (standard version), open the accessory package, which should include the following:

ANTSDR Software Defined Radio: X1
USB Data Cable: X2
Short Rubber Antenna: X4
Network Cable: X1

Please ensure that the current package contains all the listed items if you have purchased the ANTSDR E310 (Standard Edition). If any items are missing, please contact customer service promptly.

After opening the package, you can proceed with the inspection of the SDR device.

1.2 ANTSDR Driver Installation

ANTSDR operates with the PlutoSDR firmware and is mainly operated using software supported by PlutoSDR during use.

Run the PlutoSDR-M2K-USB-Drivers.exe file in the windows_driver directory to begin installing the ANTSDR driver.
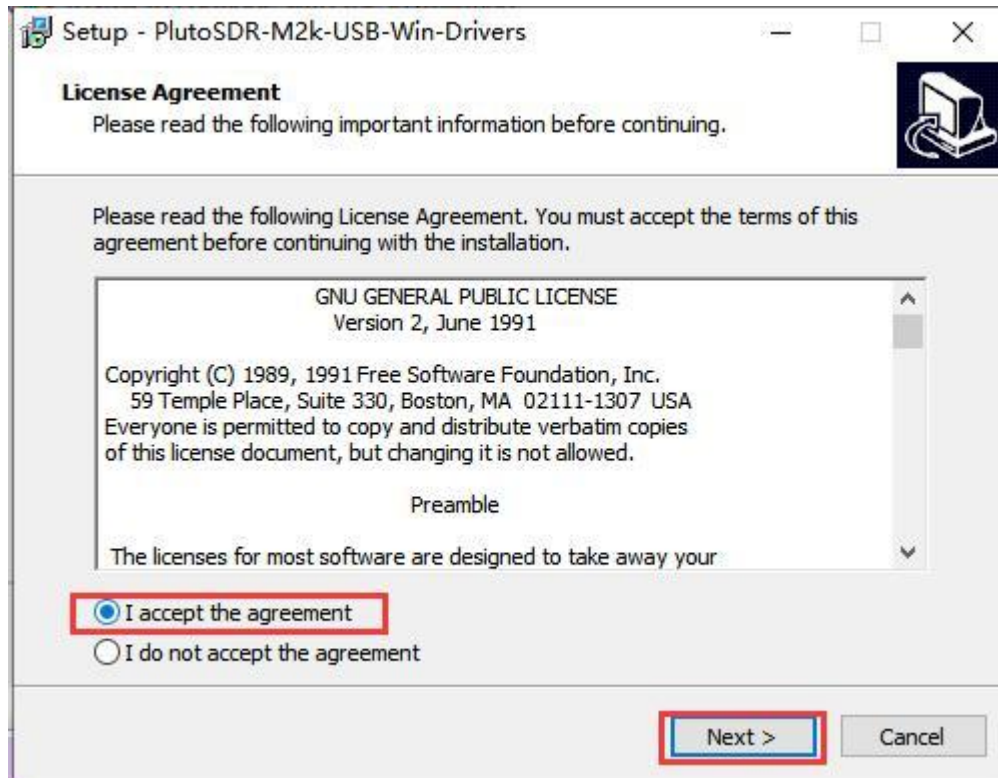

Figure 1: Driver Software

Figure 2: PlutoSDR Driver Software Installation Interface
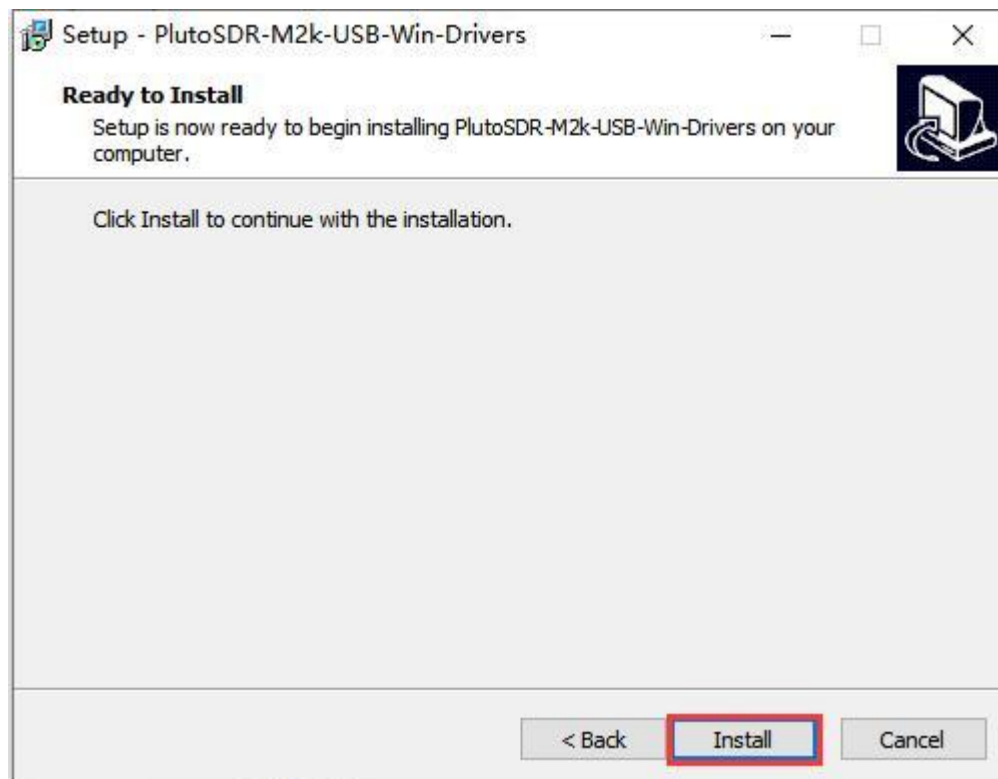
Next, click "Next," and then click "Install."

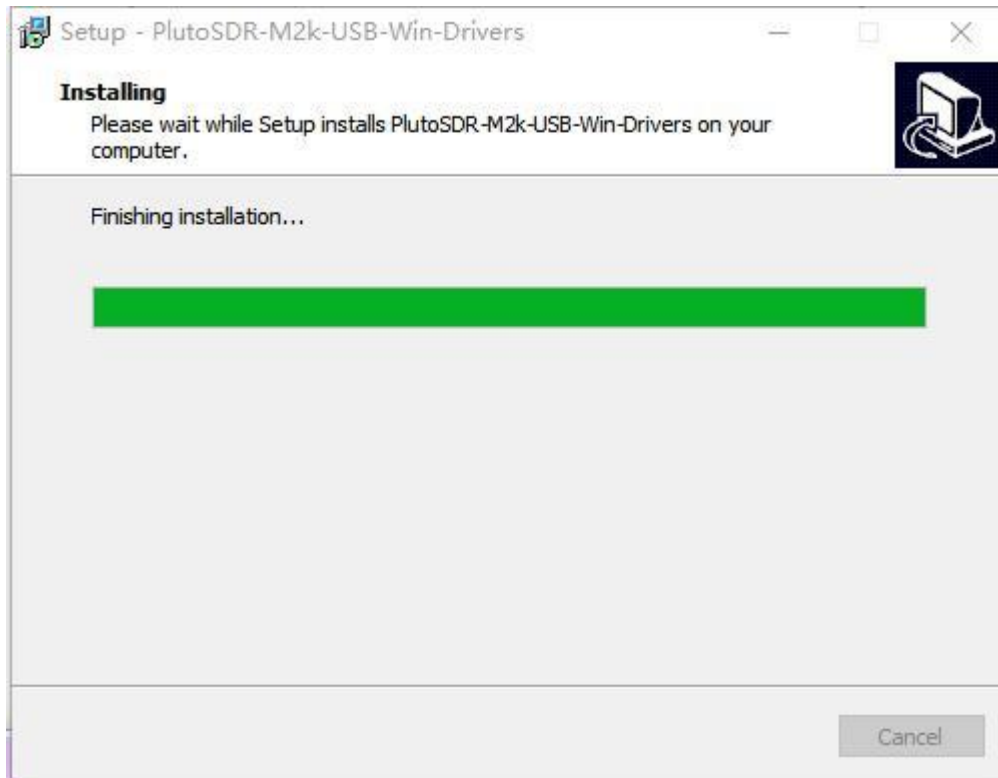Figure 3: PlutoSDR Driver Software Installation Interface

Figure 4: PlutoSDR Driver Software Installation Interface

Figure 5: PlutoSDR Installation Completed Interface

Once all drivers are successfully installed, you can connect the ANTSDR to your

computer for testing.

1.3 Installing the Serial Port Driver

The ANTSDR features a JTAG & UART (FT2232) chip. To facilitate viewing printed information and operating the operating system running on the ANTSDR, you first need to install the driver corresponding to the JTAG serial port. This driver is already installed when you install Vivado. If Vivado is not installed, you can start the installation by running the driver software provided in the materials.

Figure 6: Serial Port Driver Installation Interface

Double-click the driver software to begin the installation.

Figure 7: Serial Port Driver Installation Interface

Click "Next" to continue.

Figure 8: Serial Port Driver Installation Interface

Select "I accept the agreement."

Figure 9: Serial Port Driver Installation Interface

Figure 10: Serial Port Driver Installation Completed Interface

As shown in the image, connect the USB cable to the ANTSDR, then plug in the network cable. Connect one end of the network cable to the ANTSDR and the other end to the computer. If your computer does not have an Ethernet port, it is recommended to purchase a high-quality USB to Ethernet adapter and then connect them:

Figure 11: Connecting ANTSDR

Next, right-click on the menu interface and enter Device Manager.

Figure 12: Device Manager

After opening Device Manager, you should see the PlutoSDR device and the serial port. This indicates that the driver has been successfully installed.
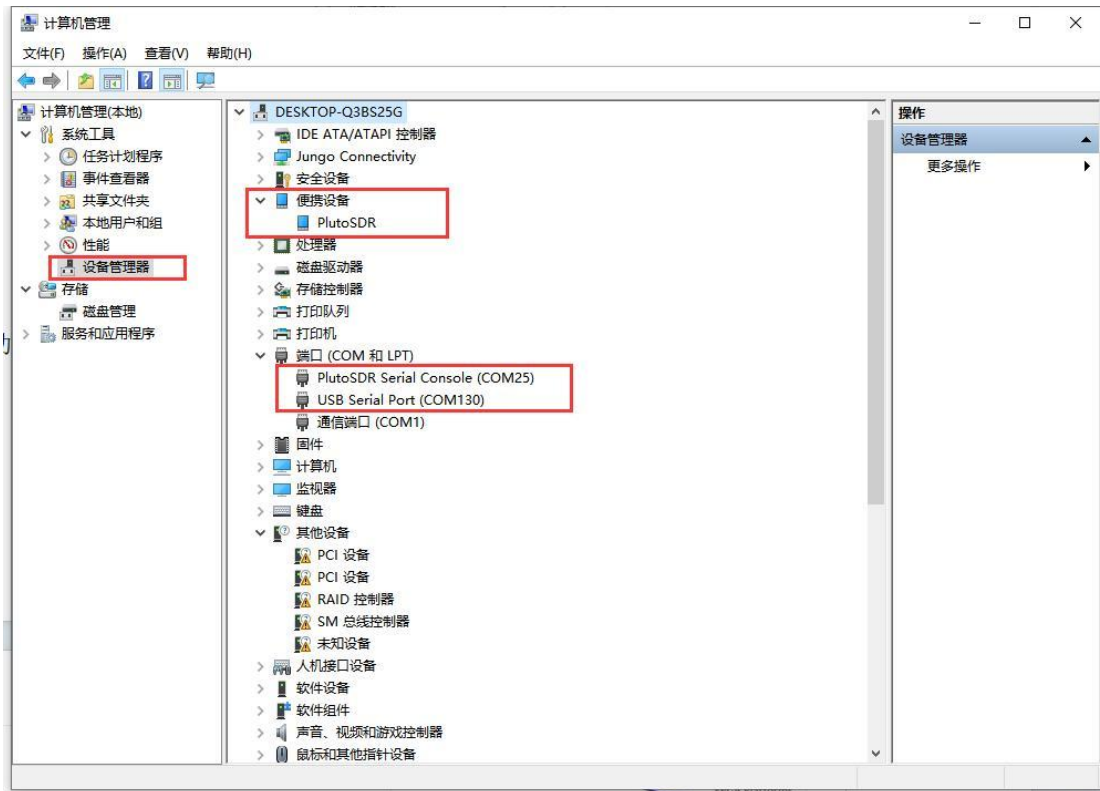
Figure 13: Device Manager

1.4 Installing Serial Port Tool

The software package includes the MobaXTerm terminal tool. After extracting it, simply click "Next" to install the terminal tool.
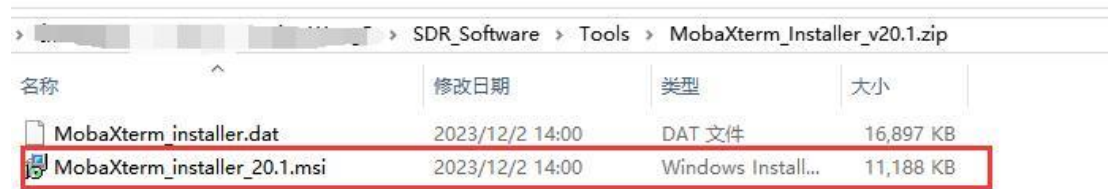

Figure 14: Installing Serial Port Software

The interface after installation is shown below:
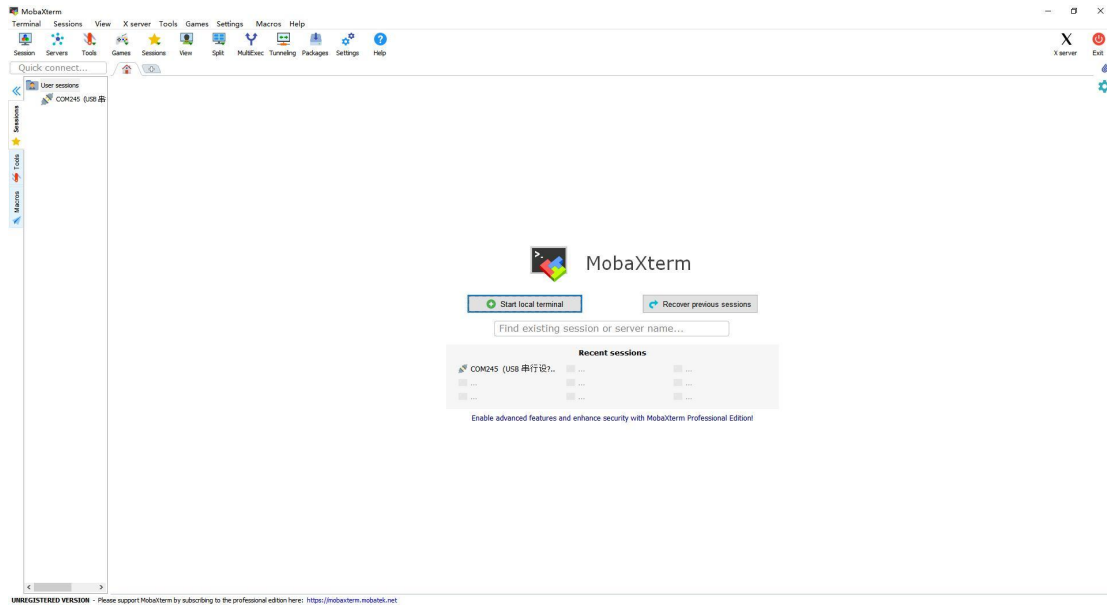
Figure 15: Installation Completed Interface

1.5 ANTSDR Network Port Testing

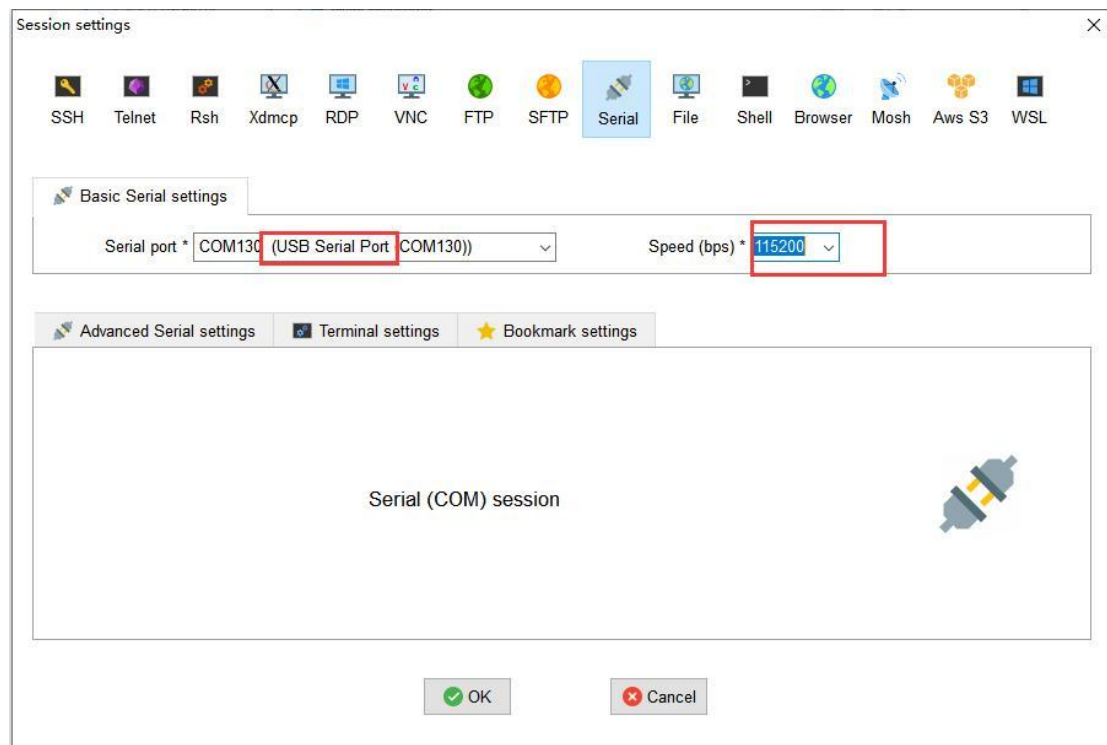Open the serial port software, select the serial port, and set the baud rate to 115200.

Figure 16: Open Serial Port

Double-click the newly created serial port connection, then connect the power supply. At this point, you will see the startup information of the ANTSDR printed on the terminal, followed by the login information.

HAMGEEK E310 AD9361 70MHz-6GHz SDR Software Defined Radio

Figure 17: Login to the system

After waiting for the startup to complete, you can see the login interface, and then enter the username root and the password analog.
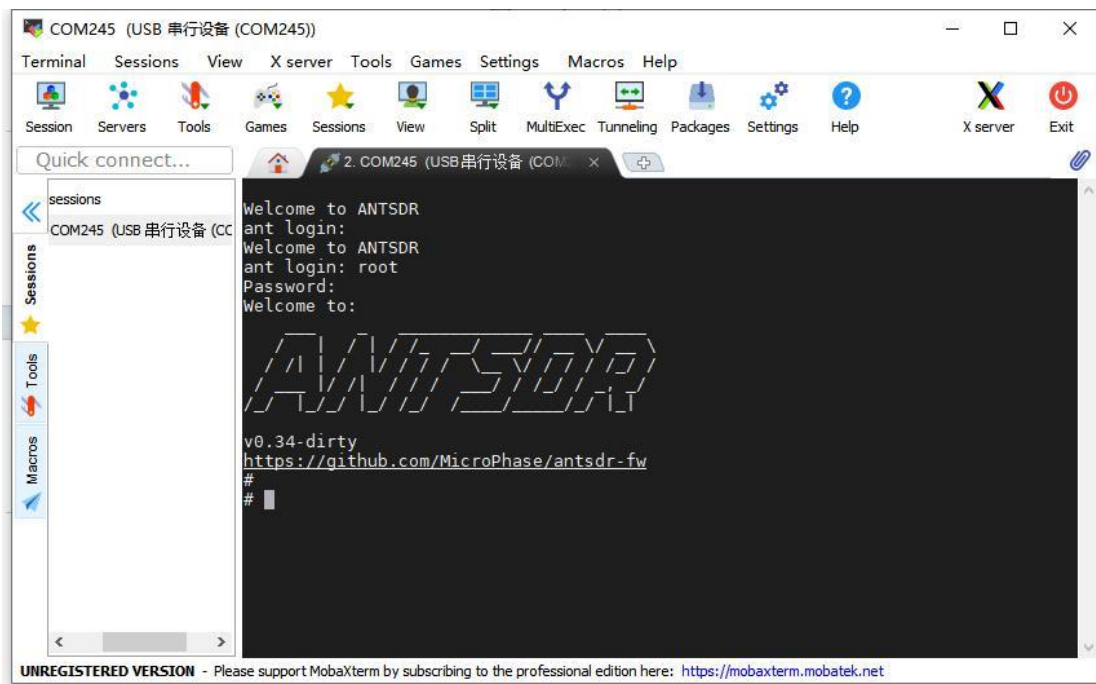

Figure 18: Successful System Login

After logging in, you can check if the Ethernet has been successfully loaded. Use the ifconfig command to view the current network interface.

Execute the ifconfig command to check the device's IP address.

Figure 19: View Network Information

You can see that there is a network port eth0, which corresponds to the Ethernet on ANTSDR.

ANTSDR supports network port data transmission. Compared with USB OTG, it can provide a larger data transmission bandwidth. When using it, you first need to perform a simple configuration.

Use the ifconfig command to set the network port IP address to 192.168.1.10.

ifconfig eth0 192.168.1.10

Figure 20: Set the network IP address

Execute the ifconfig command and see that the IP address of eth0 is 192.168.1.10, which means that the IP address is set successfully.

Figure 21: IP address is set successfully

On the host, set the host IP address device to the same network segment as the ANTSDR network port, such as 192.168.1.100.

Open network settings

Figure 22: Set Network

Next, select the Ethernet settings:

Figure 23: Set Network

In the relevant settings, select Change Adapter Settings.

Figure 24: Set Network

Next, select the Ethernet Connection on your host that is connected to the ANTSDR's Ethernet port (connect one end of the network cable to the ANTSDR and the other end to the computer. If your computer does not have an Ethernet port, it is recommended to purchase a high-quality USB to Ethernet adapter and connect them together).
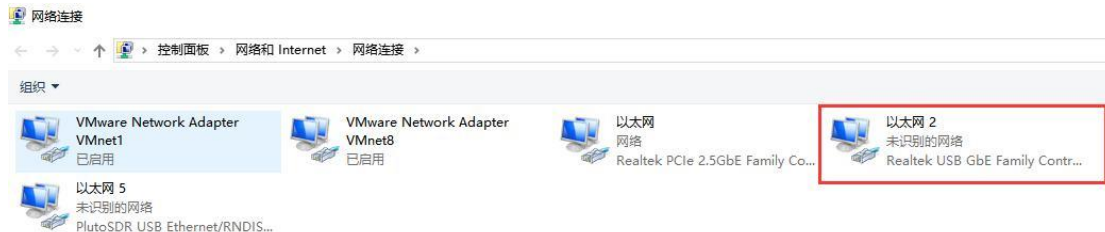

Figure 25: Set Network

Next, select Properties to configure the Ethernet settings.

Figure 26: Set Network

In the Ethernet properties settings, double-click on IPv4 settings to open the network IP address configuration window.

Figure 27: Set Network

Set the computer's IP address, subnet mask, and gateway in sequence. The

computer's IP address should be in the same subnet as the ANTSDR, for example, 192.168.1.100 as shown in the figure below. Set the subnet mask to 255.255.255.0 and the default gateway to 192.168.1.1.
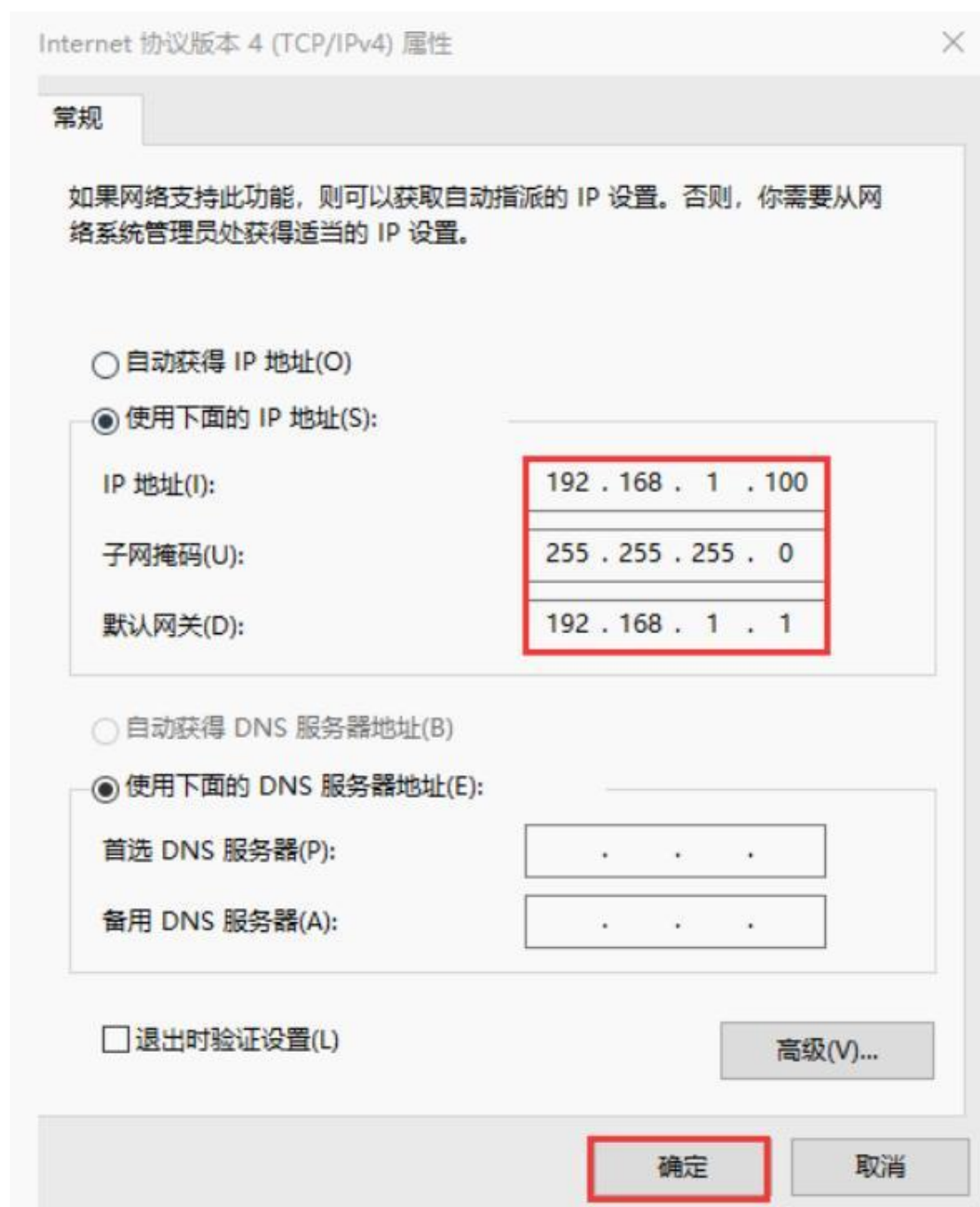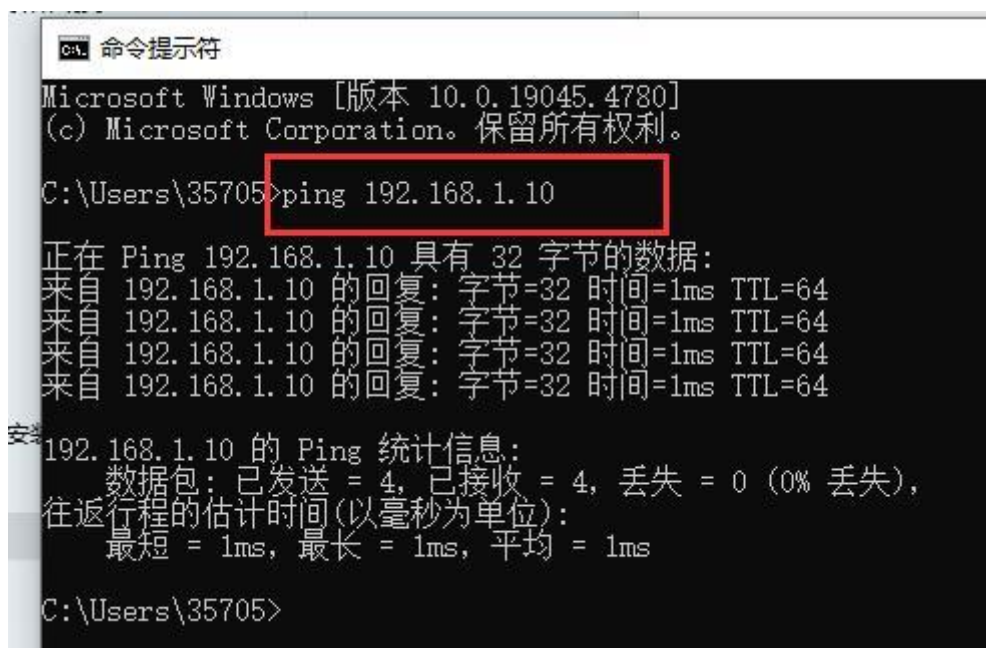

Figure 28: Set Network

In the search box in the lower right corner, enter cmd and use the computer to ping the device to see if it can be pinged successfully.

Figure 29: Command Prompt

Figure 30: Computer Pinging the Device

You can see that the computer is able to ping the ANTSDR device, indicating that our network setup is successful.

1.6 Network Data Transmission

Next, you can use SDR software to listen to some radio broadcasts and test the RF part of the ANTSDR.

Open the SDR# software located in the Software/SDR_Software/SDR#/sdrsharp-x86-noskin folder.

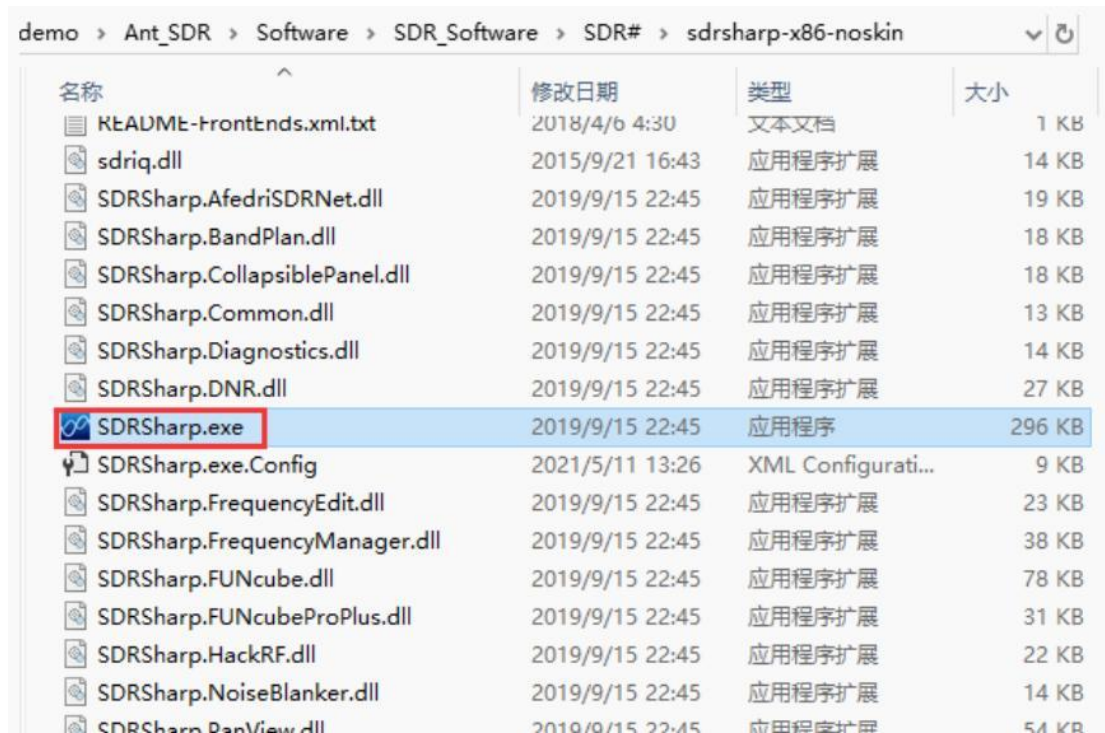HAMGEEK E310 AD9361 70MHz-6GHz SDR Software Defined Radio

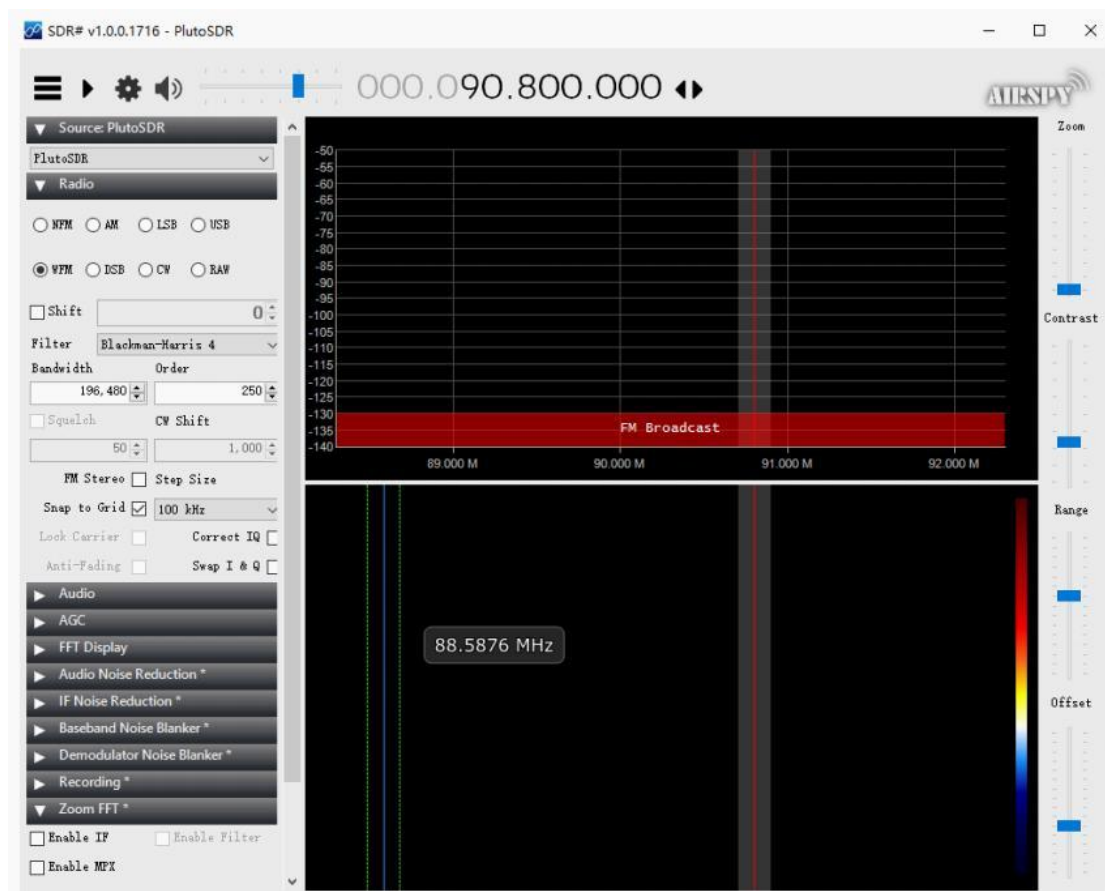Figure 31: Open SDRSharp Software

Figure 32: Open SDRSharp Software

Click the settings button in the upper-left corner. In the pop-up window, the first item displayed is the IP address context. Here, we need to change it to the IP address of the ANTSDR network interface, changing the address to 192.168.1.10, and then click Connect. This will allow connection to the ANTSDR via the network interface, as shown in the figure below.
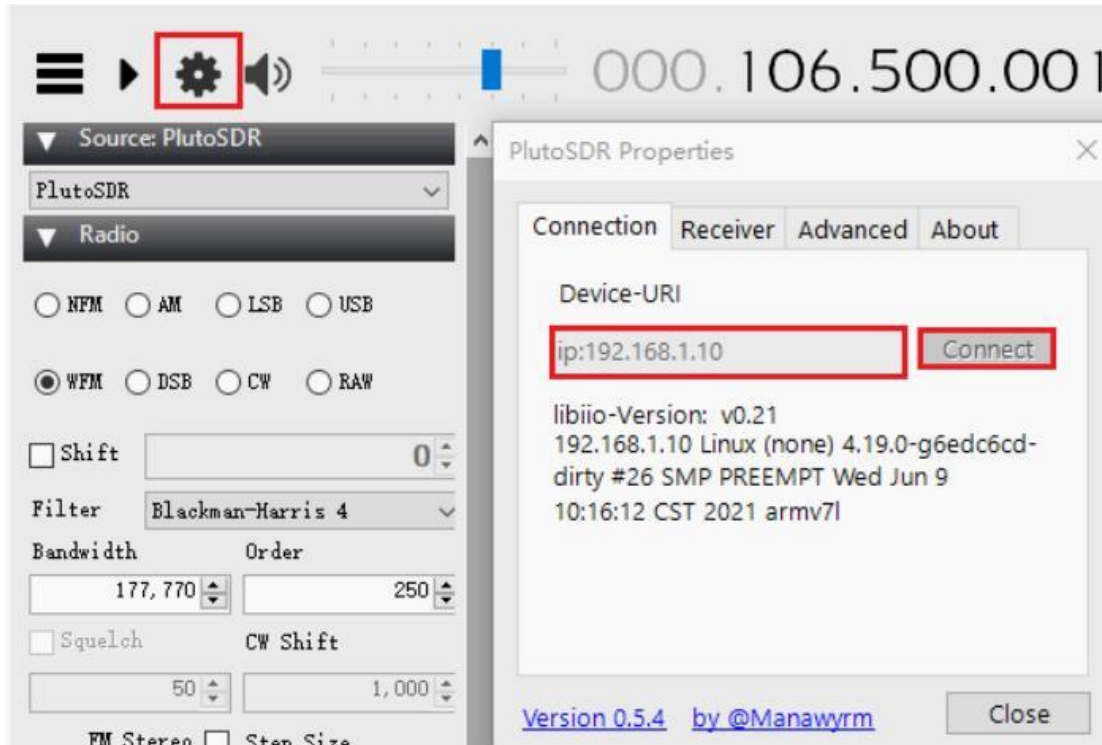

Figure 33: Connect to ANTSDR

Once it is connected, you will be able to receive IQ data via the network interface. Set the demodulation mode to WFM (Wideband FM), and click Run. You will then see the received spectrum information.

You can adjust the frequency above. The FM radio band ranges from 88 MHz to 108 MHz. Within this range, you can listen to local commercial radio stations.

Connect an antenna to the ANTSDR, as shown in the figure below.

Figure 34: ANTSDR Connected to Antenna

During the test, I used a tray antenna connected to the SMA of the RX1 interface, as shown in the figure below. At this point, you can scan for areas with significant frequency fluctuations above, and the antenna will receive the radio signal, allowing you to listen to the broadcast.
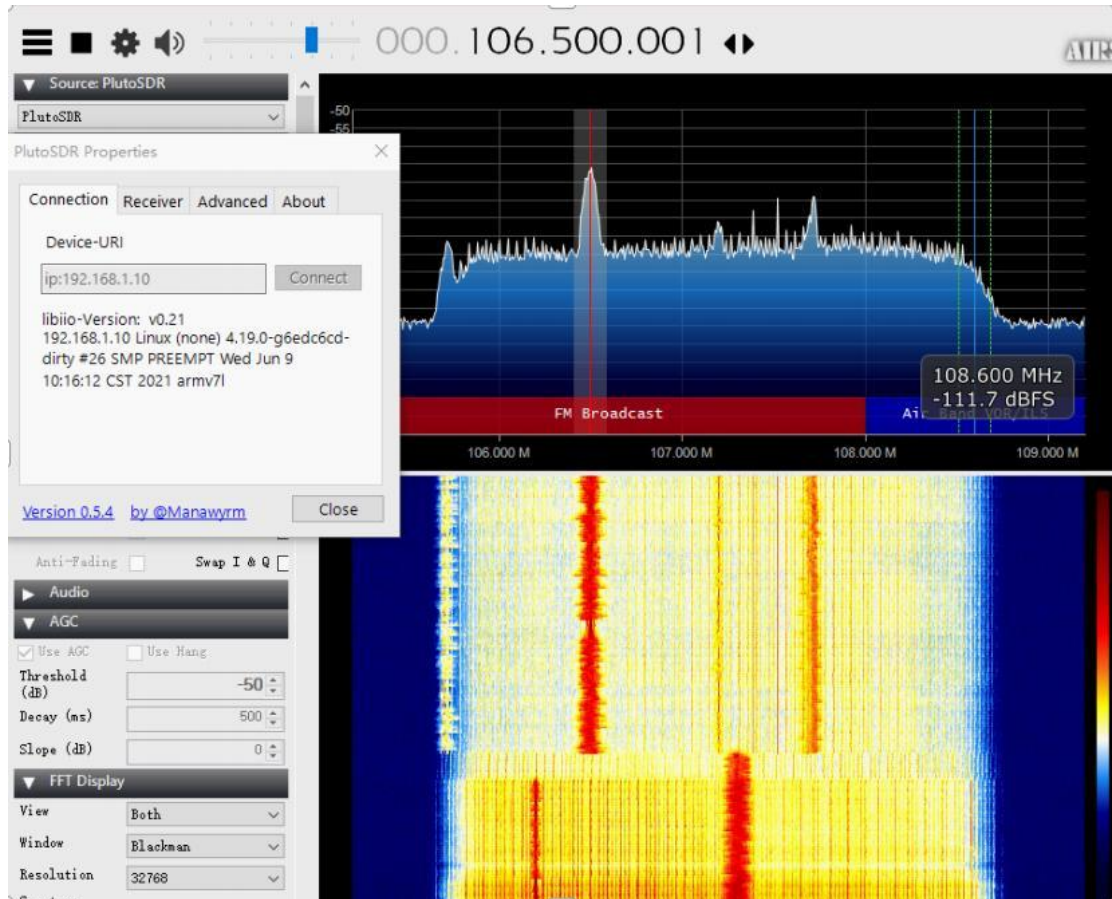
Figure 35: ANTSDR listening to the radio