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

Setup - PlutoSDR-N	vizk-USB-win-Drivers	2) -000	
License Agreement			
Please read the follo	owing <mark>im</mark> portant information before continuin	ıg.	Ċ
Please read the follo agreement before o	owing License Agreement. You must accept t continuing with the installation.	the terms of	this
	GNU GENERAL PUBLIC LICENSE Version 2, June 1991		^
Copyright (C) 1989 59 Temple Place Everyone is permit of this license docu	9, 1991 Free Software Foundation, Inc. e, Suite 330, Boston, MA 02111-1307 USA tted to copy and distribute verbatim copies ument, but changing it is not allowed.		
	Preamble		
The licenses for m	nost software are designed to take away you	ır	~
 I accept the agroup of the agro	eement the agreement		
I accept the agroup of the	eement the agreement	NEXES	

Figure 2: PlutoSDR Driver Software Installation Interface

Next, click "Next," and then click "Install."

🛃 Setu	p - PlutoSDR-M2k-USB-Win-Drivers	2 <u>1111</u>		×
Read	ly to Install			
Se	tup is now ready to begin installing PlutoSDR-M2k-USB-Win-Dr. mputer.	ivers on your		
di	ick Install to continue with the installation.			
	< Back	Install	Car	ncel
		<u></u>		

Figure 3: PlutoSDR Driver Software Installation Interface

Setup - PlutoSDR-M2k-USB-Win-Drivers	122		×
Installing		ſ	
Please wait while Setup installs PlutoSDR-M2k-USB-Win-Drive computer.	ers on your	Ć	
Finishing installation			
		Cano	el





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.

名称	^	修改日期	类型	大小
CDN	1212364_Setup.exe	2021/7/12 13:11	应用程序	2,212 KB
Plute	SDR-M2k-USB-Drivers.exe	2023/12/2 13:59	应用程序	5,480 KB



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."

H 92-43120 31-94	
许可协议	
Ż	要继续,请接受以下许可协议。 要阅读全部协议,请使用滚动条 或按 Page Down 键。
	IMPORTANT NOTICE: PLEASE READ CAREFULLY BEFORE INSTALLING THE RELEVANT SOFTWARE: This licence agreement (Licence) is a legal agreement between you (Licensee or you) and Future Technology Devices International Limited of 2 Seaward Place, Centurion Business Park, Glasgow G41 1HH, Scotland (UK Company Number SC136640) (Licensor or we) for use of driver software provided by the Licensor(Software).
C	 ● 我接受这个协议(A) ○ 我不接受这个协议(D)

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.

	应用和功能(F)	
	电源选项(O)	
	事件查看器(V)	
	系统(Y)	
	设备管理器(M)	
	网络连接(W)	
	磁盘管理(K)	
	计算机管理(G)	
	Windows PowerShell(I)	
	Windows PowerShell (管理员)(A)	
	任务管理器(T)	_
	设置(N)	
	文件资源管理器(E)	
	搜索(S)	
	运行(R)	
-	关机或注销(U)	>
	桌面(D)	
_	6.10	-

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.

and 计算机管理	=	
文件(F) 操作(A) 查看(V) 帮助(H)		
🗢 🔿 🖄 📰 📓 🛒		
・ ・	場 Console (COM25) (COM130))	

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.

	> SDR_Software > Tool	s → MobaXterm_Insta	ller_v20.1.zip
名称	修改日期	类型	大小
] MobaXterm_installer.dat	2023/12/2 14:00	DAT 文件	16,897 KB
🛃 MobaXterm_installer_20.1.msi	2023/12/2 14:00	Windows Install	11,188 KB

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.

ion setti	ings		50 SC												
٩.		æ	X		V Ĉ	8		1	8	>	3	R	99		
SSH	Telnet	Rsh	Xdmcp	RDP	VNC	FTP	SFTP	Serial	File	Shell	Browser	Mosh	Aws S3	WSL	
💉 Bas	sic Serial	settings													
	Serial por	t * CON	1130 (USB	Serial Po	rt COM1	(30))	~		Speed (br	(115	200 🗸				
	Senar por		130 (000	Senai Pu		130//	×	3	oheed (nh		200 0				
Adv	vanced Se	erial setti	nas 📑	Terminal	settings	🔶 E	3ookmark	settinas							
			· · · · ·		3			3							
				S	erial (C	COM) se	ession						\sim		
						📀 ОК		8	Cancel						

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.



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.





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:

设置			
首	战设置		
网络	鋓 Interne	t	
₽	状态		
(ii	WLAN		
貯	以太网		
¢	拨号		



In the relevant settings, select Change Adapter Settings.



Figure 24: Set Network

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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

57/2		
连接 —		
IPv4 连接:	无工	Internet 访问权限
IPv6 连接:		无网络访问权限
媒体状态:		已启用
持续时间:		00:00:45
速度:		1.0 Gbps
详细信息	(E)	
详细信息	(E) 已发送 —— 🔍 .	已接收
详细信息 活动 字节:	(E) 已发送 — 41,358,809	—— 已接收 10,810,532,757

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.

7	Realtek PCIe GBE Family Controller	
	配置(C)	
连	妾使用下列项目(O):	
	 Microsoft 网络各户病 Microsoft 网络的文件和打印机共享 VirtualBox NDIS6 Bridged Networking Driver Npcap Packet Driver (NPCAP) Npcap Packet Driver (NPCAP) (Wi-Fi) QoS 数据包计划程序 Internet 协议版本 4 (TCP/IPv4) Microsoft 网络话配器多路传送器协议 	~
	安装(N) 卸载(U) 属性(R)	
■2 传 于	≌ 輸控制协议/Internet 协议。该协议是默认的广域网络协议,序 在不同的相互连接的网络上通信。	Ŧ

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.

Internet 协议版本 4 (TCP/IPv4) 属性		\times
常规		
如果网络支持此功能,则可以获取自动指 络系统管理员处获得适当的 IP 设置。	派的 IP 设置。否则,你需要从网	
○ 自动获得 IP 地址(O)		
● 使用下面的 IP 地址(S):		
IP 地址(I):	192.168.1.100	
子网掩码(U):	255 . 255 . 255 . 0	
默认网关(D):	192.168.1.1	
○ 自动获得 DNS 服务器地址(B)		
● 使用下面的 DNS 服务器地址(E):		-
首选 DNS 服务器(P):	• • •	
备用 DNS 服务器(A):	· · ·	
□ 退出时验证设置(L)	高级(V)	
	确定 取消	

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.

OpentheSDR#softwarelocatedintheSoftware/SDR_Software/SDR#/sdrsharp-x86-noskin folder.

emo > Ant_SDR > Software > SDR_Sof	tware > SDR# > sdr	sharp-x86-noskin	~ Ō
名称 ^	修改日期	类型	大小
KEADME-FrontEnds.xml.txt	2018/4/6 4:30	又本又档	1 KB
🗟 sdriq.dll	2015/9/21 16:43	应用程序扩展	14 KB
SDRSharp.AfedriSDRNet.dll	2019/9/15 22:45	应用程序扩展	19 KB
SDRSharp.BandPlan.dll	2019/9/15 22:45	应用程序扩展	18 KB
SDRSharp.CollapsiblePanel.dll	2019/9/15 22:45	应用程序扩展	18 KB
SDRSharp.Common.dll	2019/9/15 22:45	应用程序扩展	13 KB
SDRSharp.Diagnostics.dll	2019/9/15 22:45	应用程序扩展	14 KB
SDRSharp.DNR.dll	2019/9/15 22:45	应用程序扩展	27 KB
SDRSharp.exe	2019/9/15 22:45	应用程序	296 KB
SDRSharp.exe.Config	2021/5/11 13:26	XML Configurati	9 KB
SDRSharp.FrequencyEdit.dll	2019/9/15 22:45	应用程序扩展	23 KB
SDRSharp.FrequencyManager.dll	2019/9/15 22:45	应用程序扩展	38 KB
SDRSharp.FUNcube.dll	2019/9/15 22:45	应用程序扩展	78 KB
SDRSharp.FUNcubeProPlus.dll	2019/9/15 22:45	应用程序扩展	31 KB
SDRSharp.HackRF.dll	2019/9/15 22:45	应用程序扩展	22 KB
SDRSharp.NoiseBlanker.dll	2019/9/15 22:45	应用程序扩展	14 KB
SDRCharn DanView dll	2010/0/15 22:45	应田程度扩展	54 KB

Figure 31: Open SDRSharp Software



Figure 32: Open SDRSharp Software

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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.

≡ • 🐡	A A A A A A A	00	0.10	06.50	0.00	01
▼ Source: PlutoSD	R	PlutoSDR Prop	perties			×
PlutoSDR	~					
🔻 Radio		Connection	Receiver	Advanced	About	
O NFM O AM O	LSB 🔿 USB	Device-UF	RI 8.1.10		Connect	
● WFM ○ DSB ○	CW ORAW	libiio-Vers	ion: v0.21			
Shift	0 ‡	192.168.1. dirty #26 9	10 Linux (n	one) 4.19.0- APT Wed Ju	g6edc6cd- n 9	•
Filter Blackman	-Harris 4 🗸 🗸	10:16:12 C	ST 2021 ar	mv7l		
Bandwi dth	Order					
177, 770 🜲	250 🜲					
Squelch	CW Shift					
50 🌲	1,000		and the second			1
W Stores	Sh Si	Version 0.5.4	by @Ma	nawyrm	Clos	se

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.

	* • >	0	00.106.50	(100.00		ATT
V Source: P FlutoSDR	lutoSDR ~	-50				
PlutoSDR Proj	perties					
Connection Device-U	Receiver Advanced RI 8.1.10	About	A CHARLE MARKED	Ammunitum	ulit hannananan	L,
libiio-Vers	sion: v0.21	n6edc6cd-	~~~/			human
dirty #26 10:16:12 (SMP PREEMPT Wed Jur CST 2021 armv7l	19	FM	Broadcast	10 Ai	8.600 MHz 11.7 dBFS
			106.000 M	107.000 M	108.000 M	109.000 M
Version 0.5.4 Anti-Fadin ▶ Audio ▼ AGC	<u>by @Manawyrm</u> s Swap I& Q	Close				
V Use AGC	Use Hang		1111111			
(dB)	-50 :			and the second		
lone (dB)	500			一部的影响中于不可		
▼ FFT Displ	ay				A CALIFACTORIA CONTRACTORIA CONTRACTORIA CONTRACTORIA CONTRACTORIA CONTRACTORIA CONTRACTORIA CONTRACTORIA CONT	
View	Both ~					
Window	Blackman 🗸					
			the second of the second second		terte terte an and that the statement of the second	

Figure 35: ANTSDR listening to the radio