EWT104-BT52 User Manual

Bluetooth Test Kit



成都亿佰特电子科技有限公司
Chengdu Ebyte Electronic Technology Co.,Ltd.

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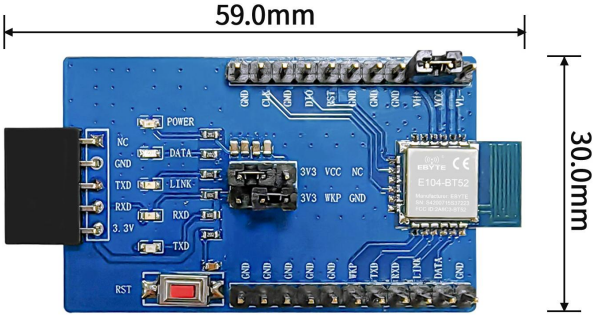
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Chapter 1 Overview

1.1 Product Introduction

EWT104-BT52 is a Bluetooth test kit based on the E104-BT52 module , which can significantly reduce the user's development cycle. For detailed information about E104- BT52 , please visit the official website to download relevant information about this model .



1.2 Module Features

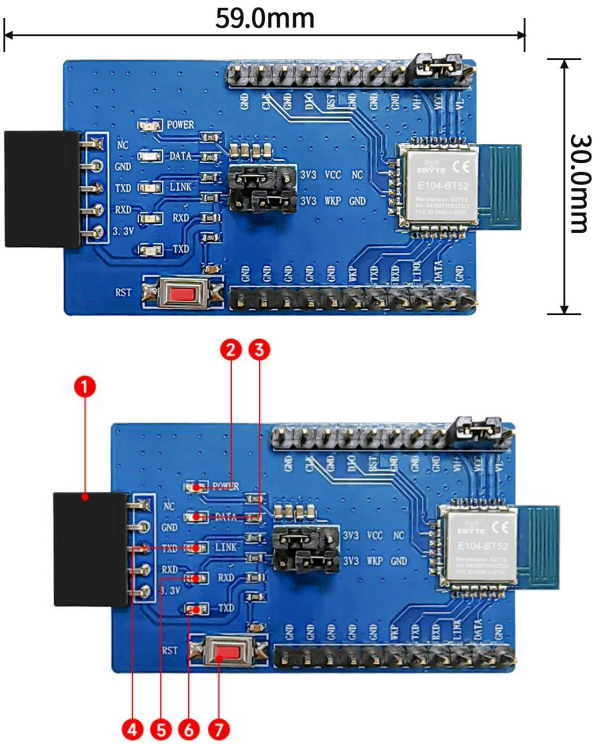
- Support BLE 5.0 ;
- Supports master, slave, observer, and master-slave integration ;
- Supports multiple masters and multiple slaves, with a maximum of two connections ;
- Support ultra-low power sleep and synchronous broadcast ;
- Switch between normal broadcast and ibeacon broadcast , etc.
- Communication interface: UART.

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Chapter 2 Hardware Description

2.1 Product size and pin definition

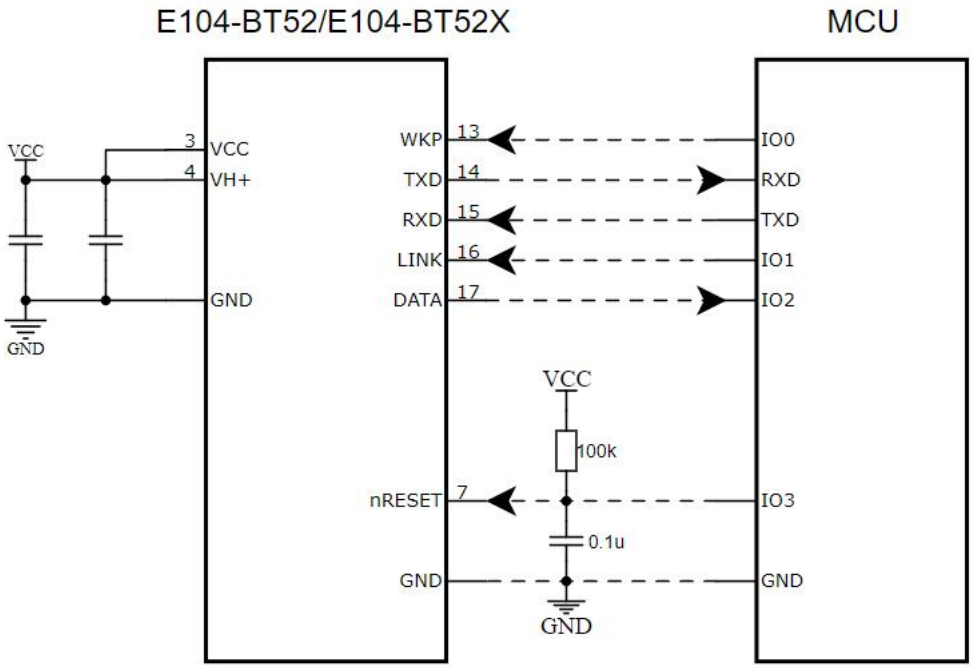


Serial number	Definition	Description	Remark
1	NC	-	2.54mm pitch female header
	GND	Power Ground	
	TXD	Serial port output pin	
	RXD	Serial port input pin	
	3.3V	DC 3.3V input pin	
2	POWER	Power indicator	-
3	DATA	Data sending and receiving indicator light	
4	LINK	Connection status indicator	-
5	RXD	Serial port receiving indicator	-
6	TXD	Serial port sending indicator	-
7	RST	Reset button	

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2.2 Module recommended wiring diagram



2.3 Special pin function description

PIN \ Level	High level	Low level
LINK	Output high level after establishing connection	Output high level after disconnection
DATA	Receive Bluetooth data: DATA pin has Bluetooth data in the air through E104-BT52 When the TXD pin is sent out, it will be pulled high and then pulled low again after a frame of data is sent. Sending Bluetooth data: After the RXD pin of E104-BT52 receives data, the buffer size of BUFF is 2K. As long as there is data in BUFF that has not been sent out through Bluetooth, DATA will be pulled high and will not be pulled low again until the data in BUFF is sent.	Usually output low level when there is no data
WKP	The module enters sleep mode on rising edge	The module is awakened by the falling edge
RST	Normal operation is high level state	Input low level module reset (maintain 500ms)

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Chapter 3 Software Functions

It is recommended to use Xcom serial port debugging assistant for communication testing.

3.1 Common-used commands

- Restore factory settings

  Send: AT+RESTORE
  Return: +OK

- Restart device

  Send: AT+RESET
  Return: +OK

- Access to log information

  Send: AT+LOGMS=1
  Return: +OK

- Set the module as master

  Send: AT+ROLE=1
  Return: +OK

- Start Scanning

  Send: AT+SCAN=1
  Return: +OK

- Set the module to transparent mode

  Send: AT+TRANMD=1
  Return: +OK

- Add the device mac that needs to be connected

41 54 2B 42 4F 4E 44 4D 41 43 3D CC 34 27 1A 0C D4 (the last 6 bytes sent in hexadecimal are the corresponding address of the slave mac)
+OK

- Query the address of the bound mac

  Send: AT+BONDMAC?
  Return: 2B 4F 4B 3D 03 CC 34 27 1A 0C D4 3D AC 82 16 0F 58 D2 D4 C3 07 0E C 4 (hexadecimal)

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- Delete the address of the bound specified mac

  Send: AT+BONDDEL=[mac] / 41 54 2B 42 4F 4E 44 44 45 4C 3D CC 34 27 1A 0C D4 (hexadecimal)
  Return: +OK

- Set the module as slave

  Send: AT+ROLE=0
  Return: +OK

- Set the module to enable broadcast function

  Send: AT+ADV=1
  Return: +OK

- Modify the module broadcast name

  Send: AT+NAME=quick_start
  Return: +OK

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Chapter 4 Quick Use

This chapter introduces how the module can communicate with the mobile phone as a slave .

And how the communication between modules is realized when module as master and slave respectively;

This chapter introduces how the module is connected in multiple methods.

4.1 Working Mode

The modules are mainly work in below modes:

1. Configuration mode ;
2. Transmission mode .

- Transparent transmission mode: Data transparent transmission means that the data received by the serial port is sent to the other device through BLE without any processing, and the data received by BLE is sent out through the serial port without any processing. It is set by the "AT+TRANMD" command.
- Protocol transmission:
  The so-called format transmission means that the data sent to the module through the serial port and the data transmitted by the module through the serial port must conform to the defined format before they can be transmitted.

The serial port sends "AT+TRANMD=0" to the device to switch the device to format transmission. The data format is as follows:

Slave Number	Valid data
1byte	Max:243bytes
0~1	

- Slave number: 0~1 is the target device number. This number comes from the "STA:connect,1<mac>" printed by the device after the slave successfully connects to the master.
- If the connection specified by the slave number does not exist, the module directly discards the packet data.

Mode switch:

After the module enters transparent transmission mode, send "+++" to exit transparent transmission mode ;
after the module is in configuration mode, send "AT+EXIT" to exit AT configuration mode .

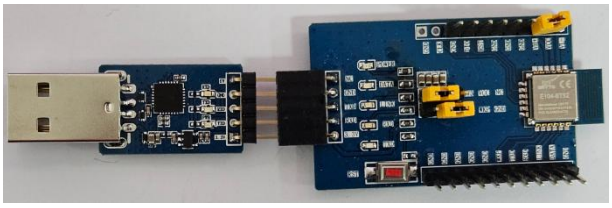
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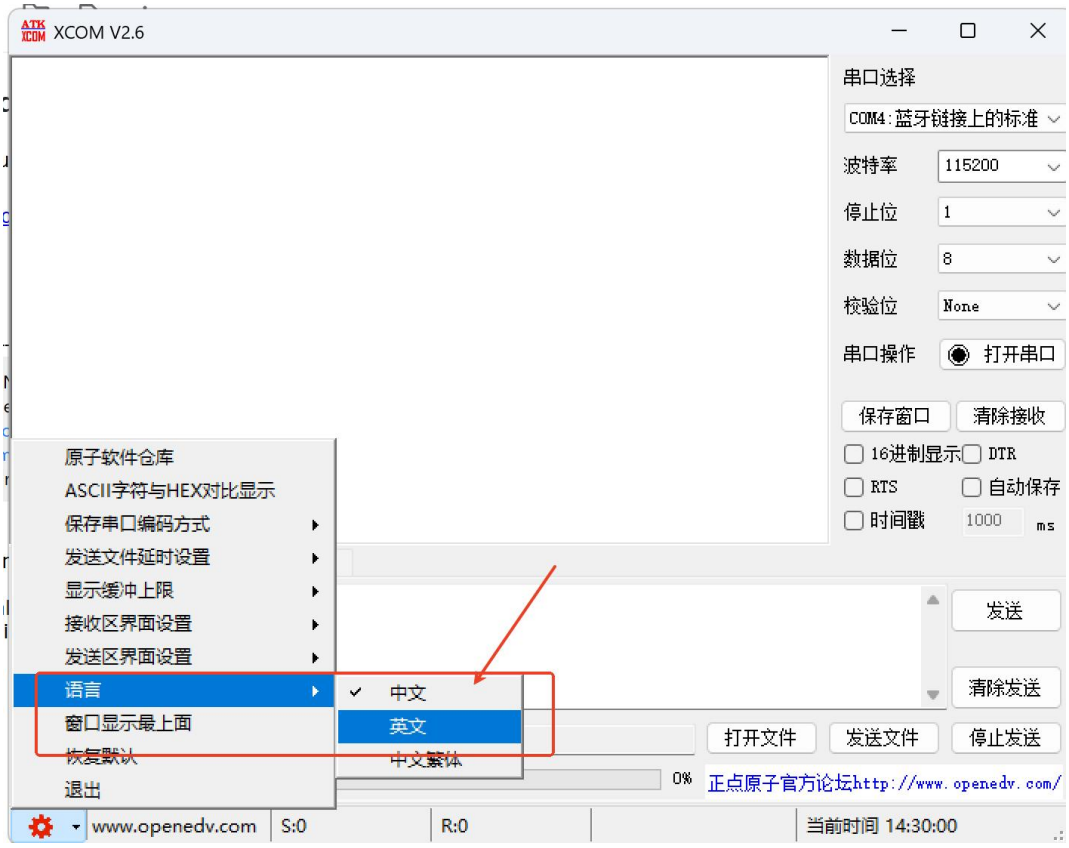
4.2 The module communicates with the mobile phone nrf connect app as a slave

4.2.1 Preparation

- Prepare 2pcs EWT 104- BT52 kits and 2pcs E15-USB-T3 serial converters and connect them as shown below .

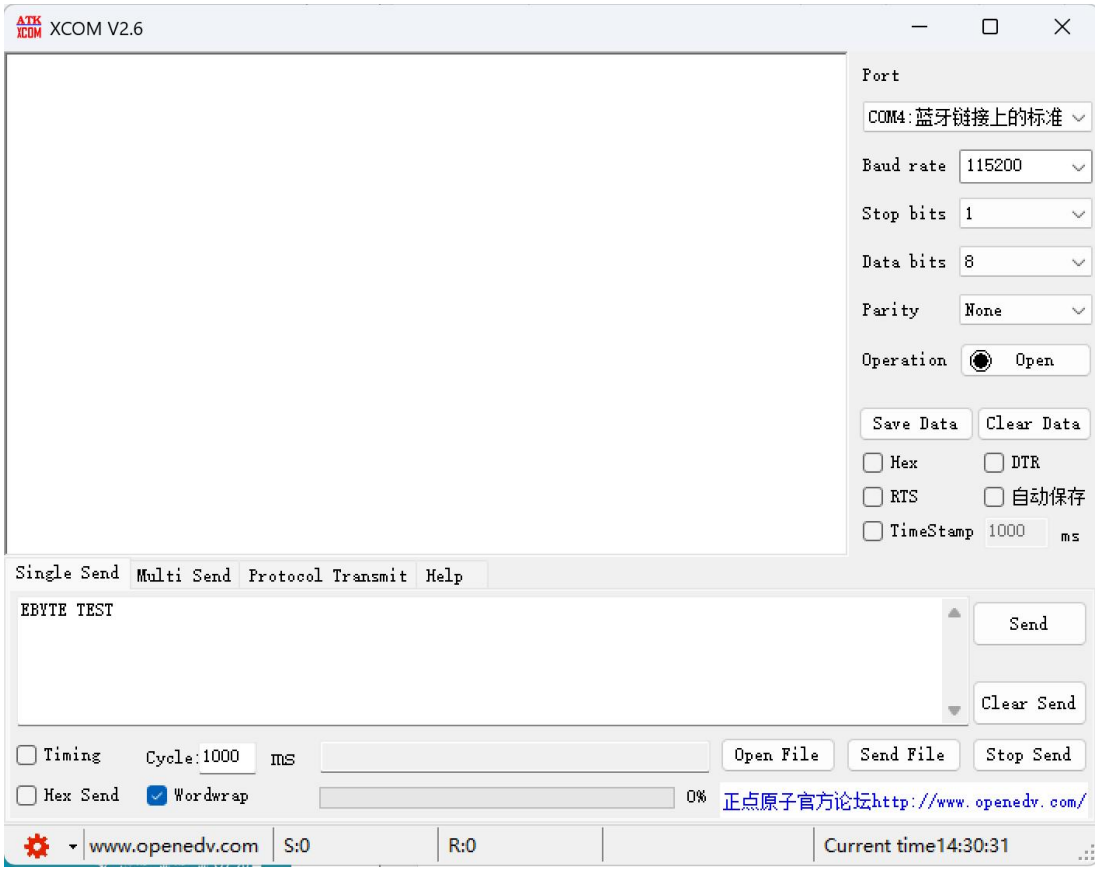


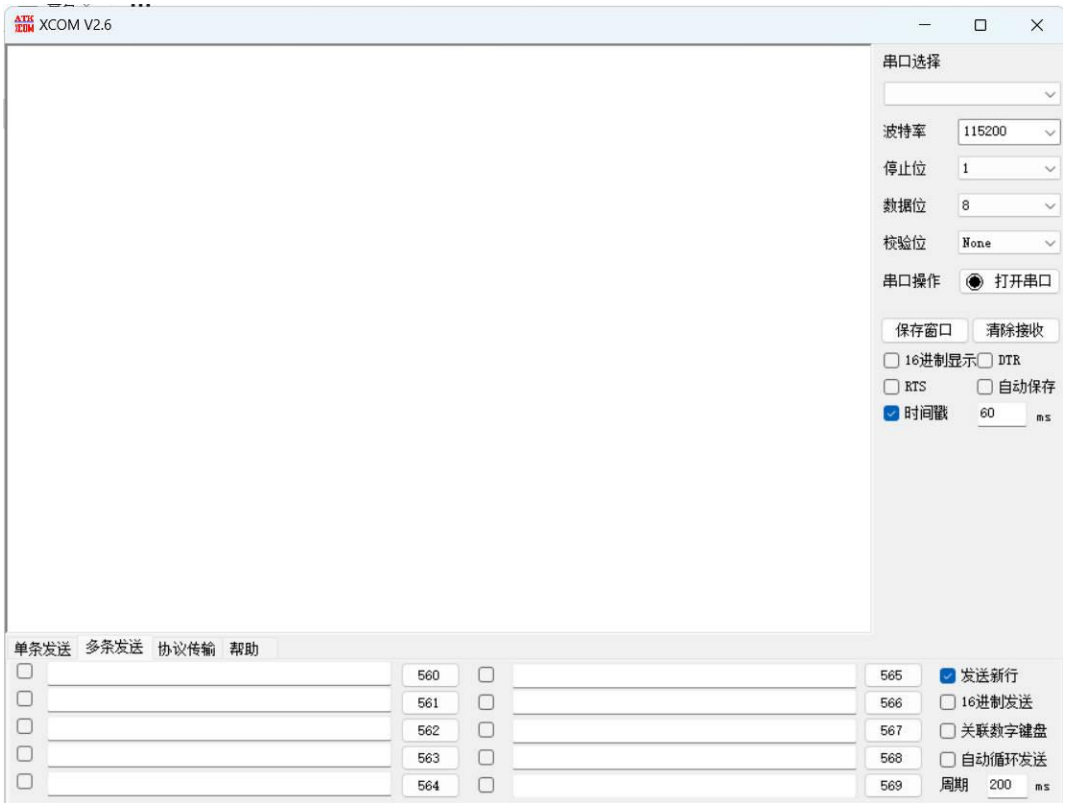
- Open the X com serial port debugging assistant .



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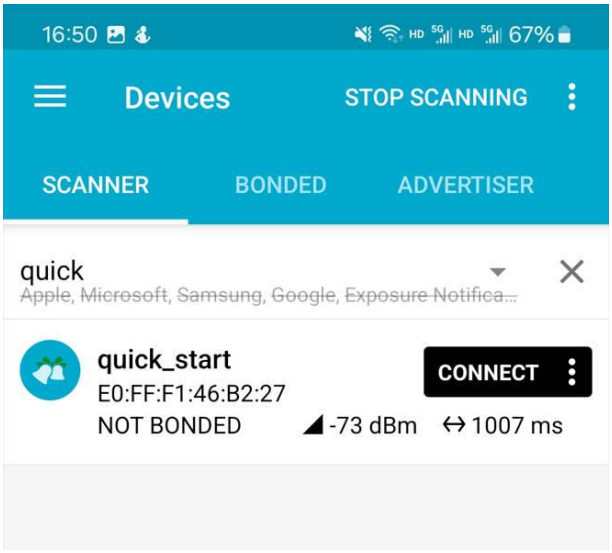
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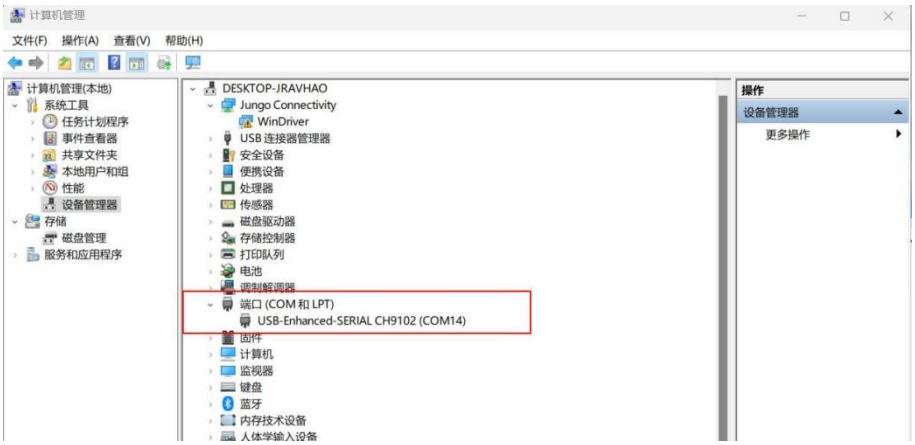
- Mobile phone and nrf connect app

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- After connecting the test kit to the computer, you can see the following ports in the device manager



- Usually, PC with Windows 10 and above will automatically install the serial port driver, but if no corresponding port appears after the test kit is connected to the computer through the USB port, you can try to install the serial port driver first .

4.2.2 Connection steps

1. Connect the test kit to the computer via the USB port. After the test is connected to the computer, you can see the corresponding port number in "My Computer->Properties->Device Management->Port"
2. Open the Xcom assistant, select the corresponding port number , select the serial port parameters, and click to open the serial port .

   Baud rate: 115200

   Stop bit: 1 bit

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Data bits: 8 bits

Check digit: NONE

3. Configure the module according to the steps below .

① Factory reset

② Restart module

③ Enable functional information output

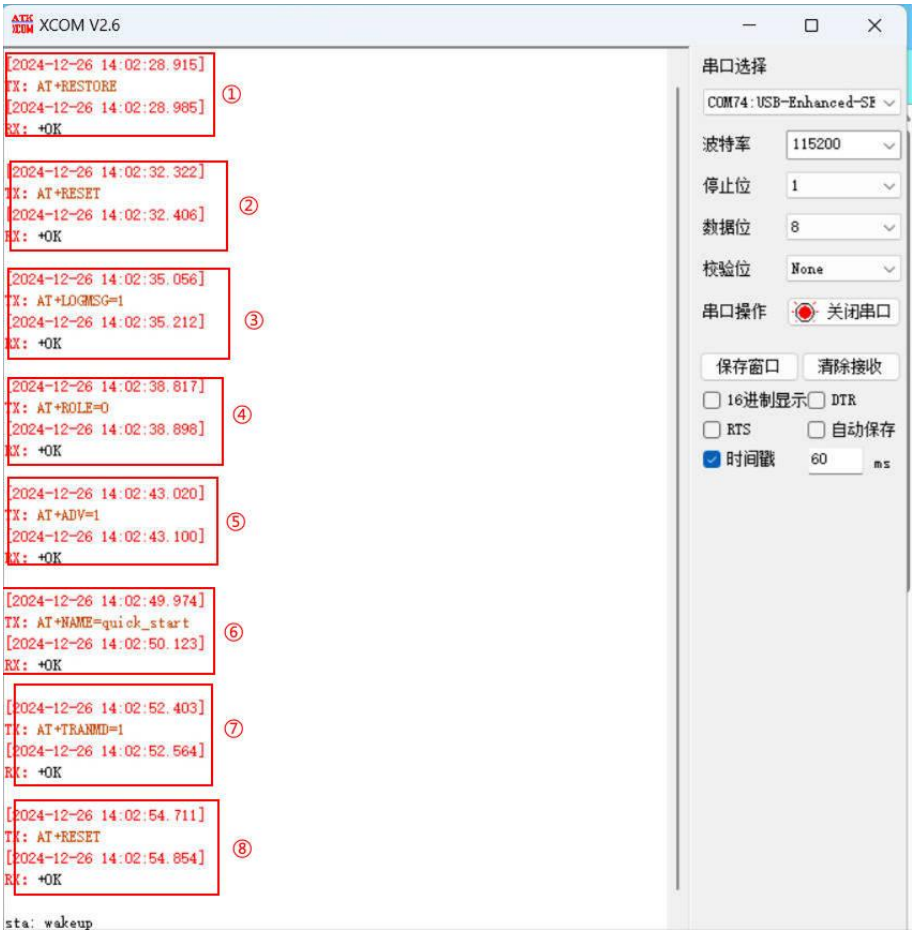
④ Set the module to work in slave mode

⑤ Open the normal broadcast function of the slave device

⑥ Modify the name of the slave broadcast

⑦ Enable transparent transmission

⑧ Restart module



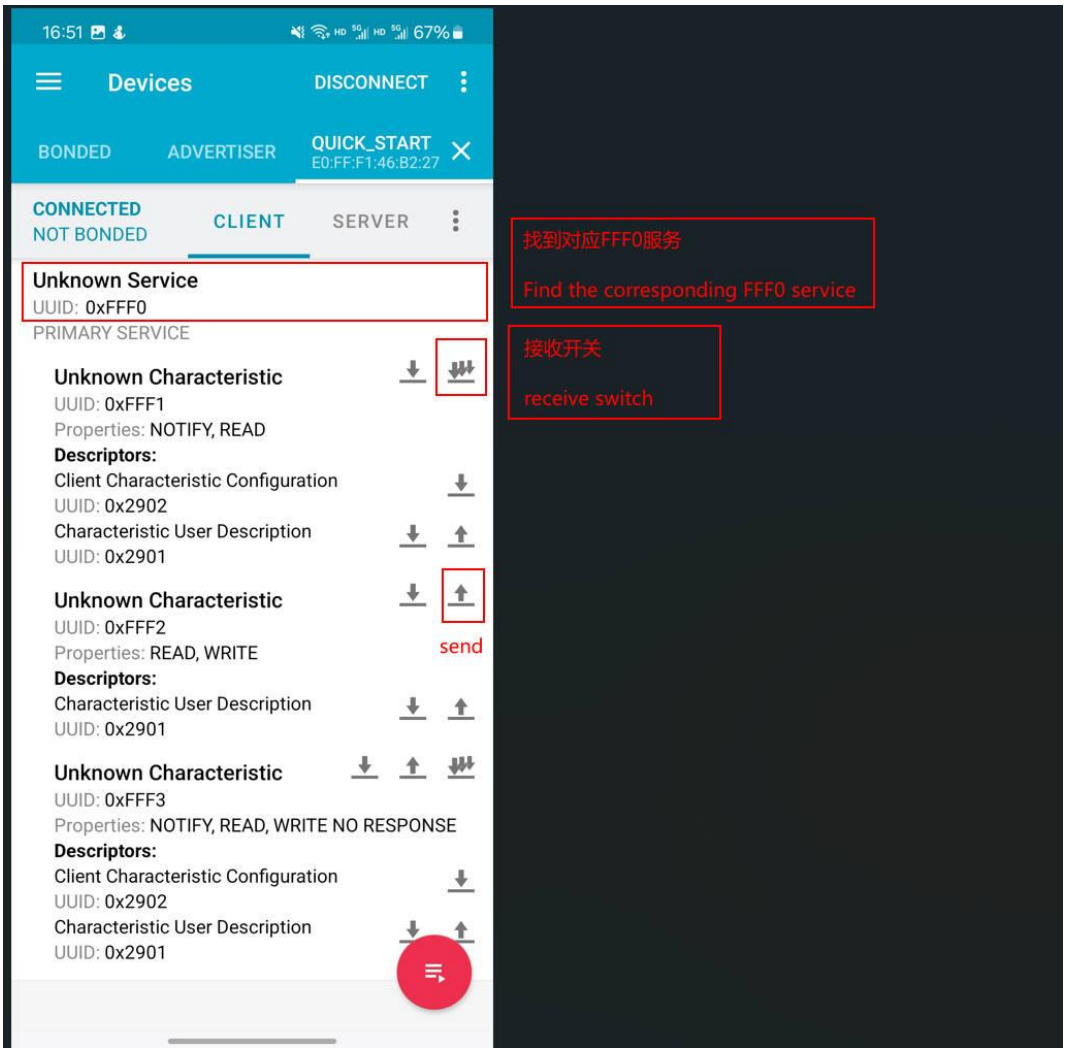
4. Open the "nrf connect" app on your phone .

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5. Find the corresponding Bluetooth module and click the "connect" button to connect the module.

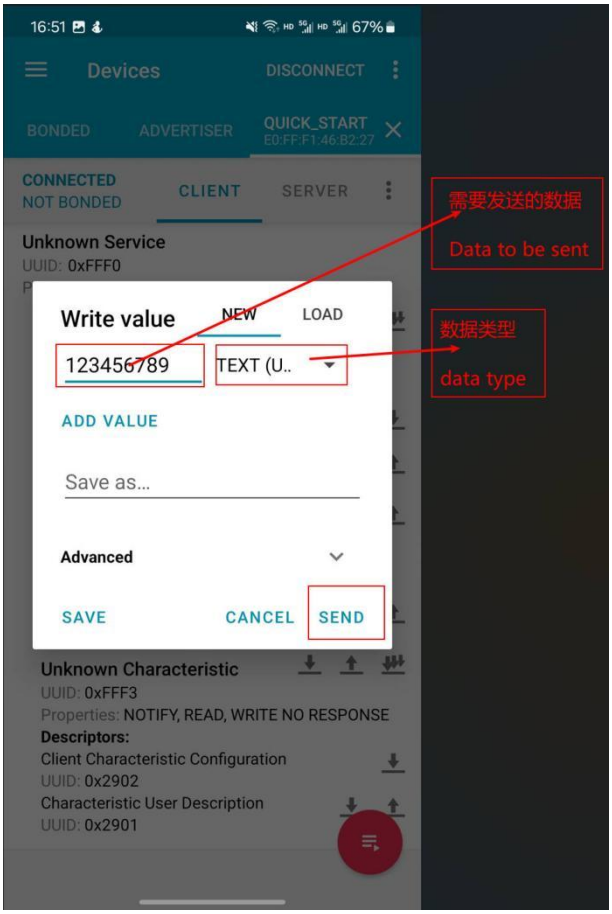
6. Find the corresponding service , turn on the corresponding receiving switch , and click "send" .



7. Enter the data 123456789, select the data type, and click the Send button

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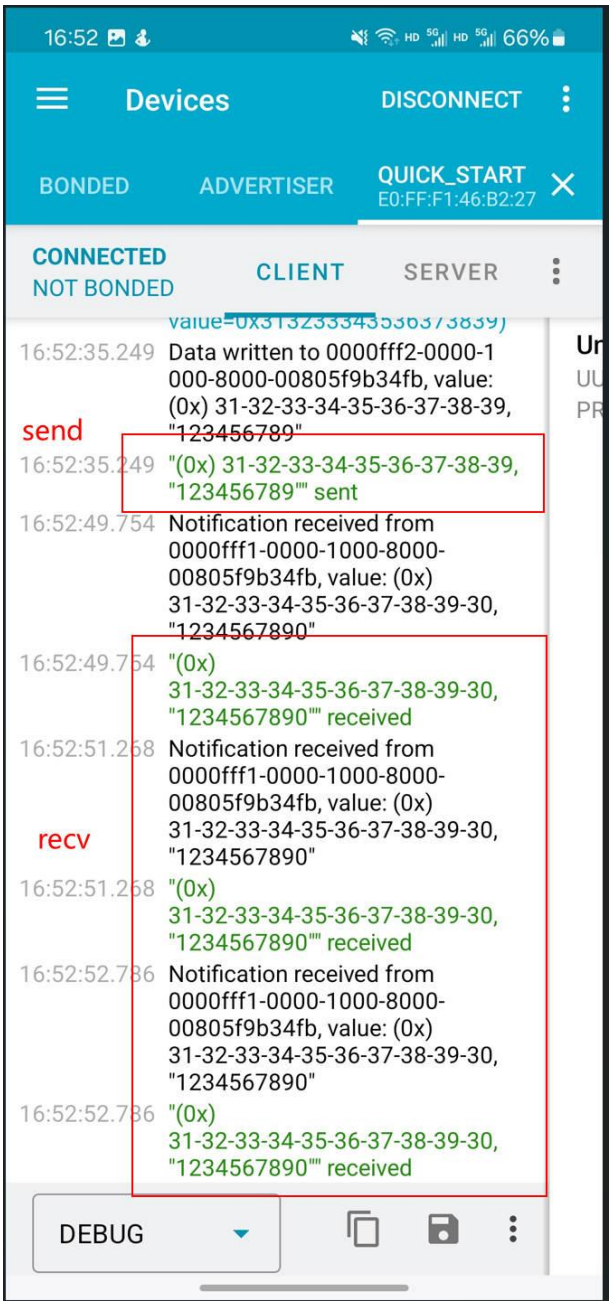
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8. Swipe right on the interface to enter the log interface .

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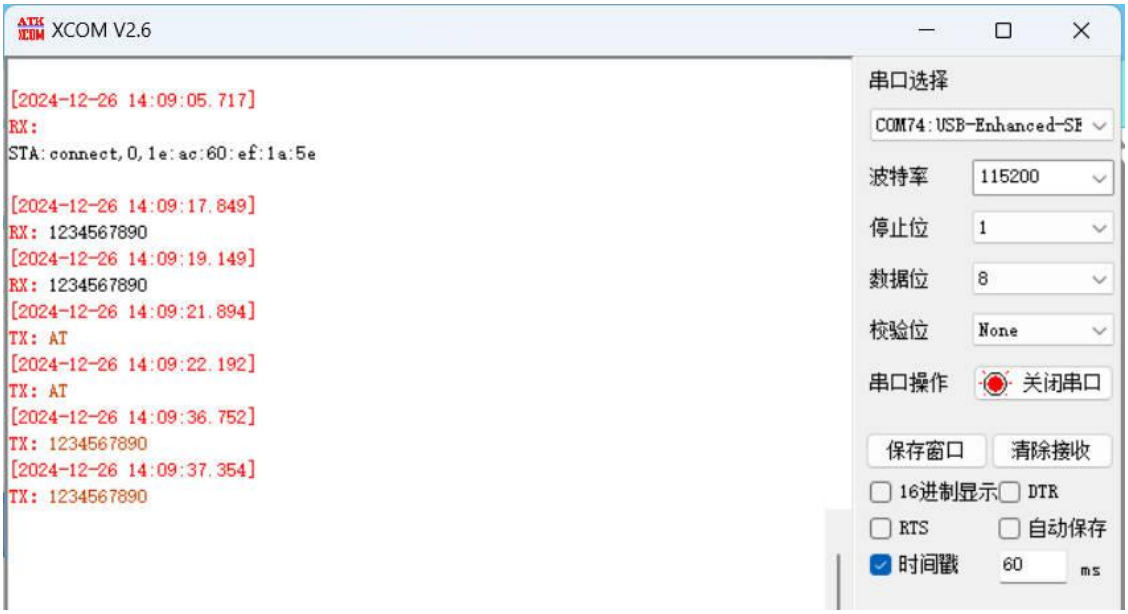
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9. Test kit receiving and sending display .

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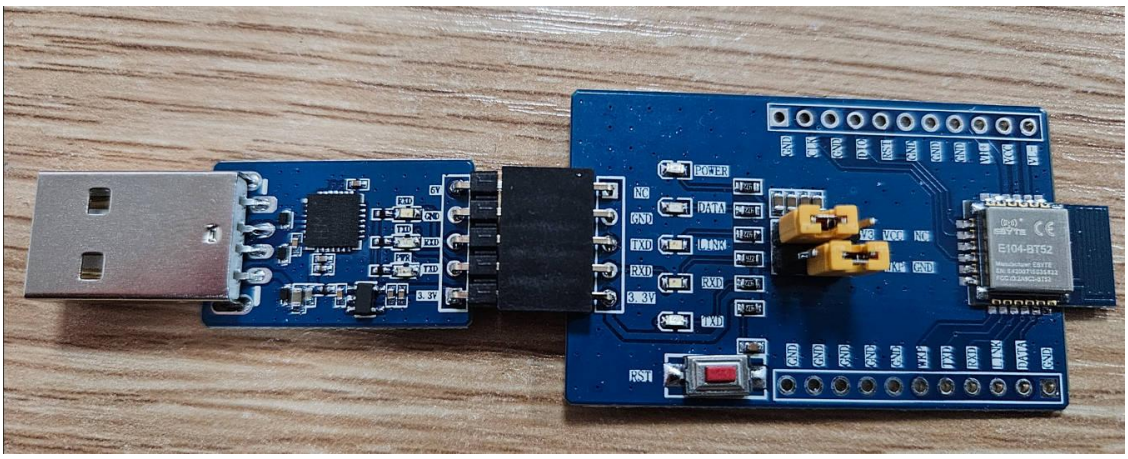


4.3 Transparent transmission demonstration

The modules are configured as the master and slave respectively to complete the data transmission between modules . The following describes the process of connection and communication between modules.

4.3.1 Preparation

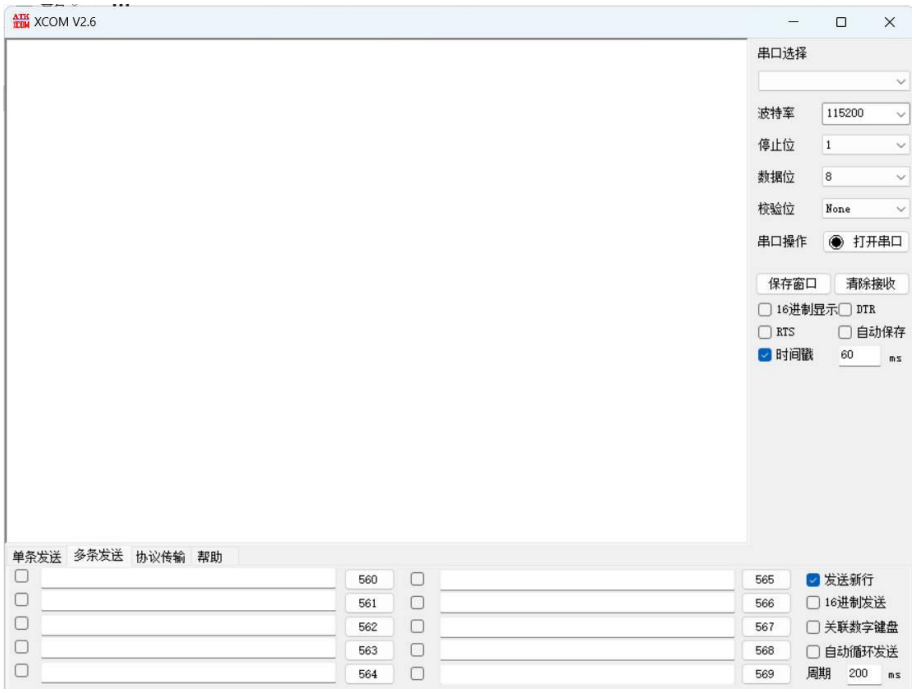
- Prepare 2pcs EWT 104- BT52 test kit and 2pcs E15-USB-T3 , and connect them as shown below .



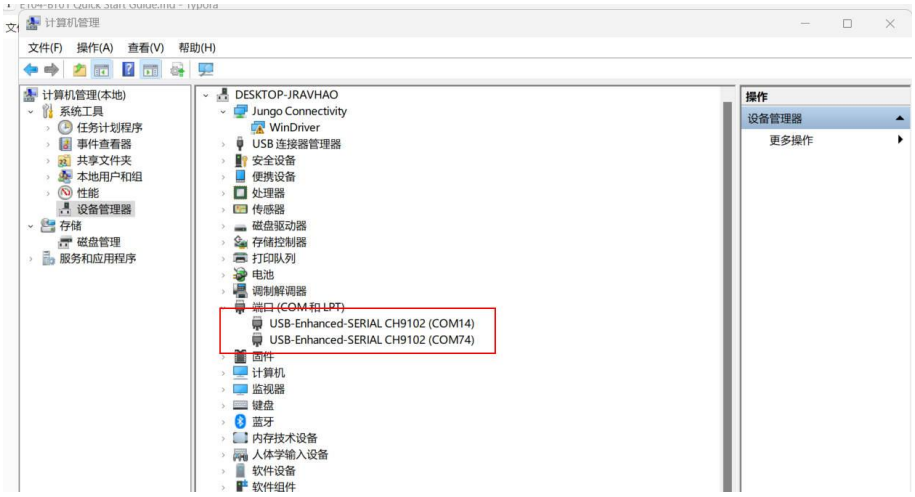
- Open X com serial port debugging assistant

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- After connecting the test kit to the computer, you can see the following ports in the device manager



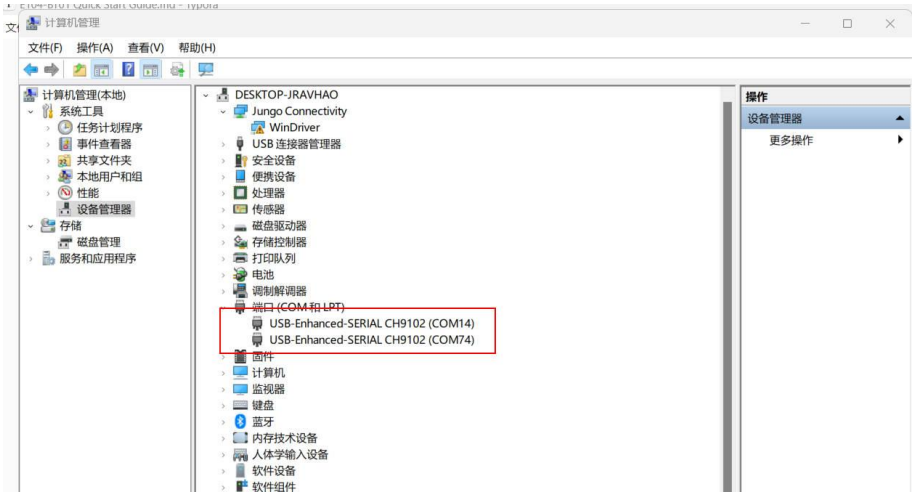
- Usually, PC with Windows 10 and above will automatically install the serial port driver, but if the test kit is connected to the computer through the USB port and no corresponding port appears, you can try to install the serial port driver first.

4.3.2 Connection steps

1. the test kit to the computer via the USB port. After the test kite is connected to the computer, you can see the corresponding port number in "My Computer->Properties->Device Management->Port". Here, connect test kite A and test kite B to the computer and you can see two ports .

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2. Open two XCOM serial port debugging assistant software, select two corresponding serial port numbers respectively, select serial port parameters , and click to open the serial port.

   Baud rate: 115200

   Stop bit: 1 bit

   Data bits: 8 bits

   Check digit: NONE

3. Follow the steps in the figure below to configure test kite B as a slave .

   ① Factory reset

   ② Restart module

   ③ Enable functional information output

   ④ Set the module to work in slave mode

   ⑤ Open the normal broadcast function of the slave device

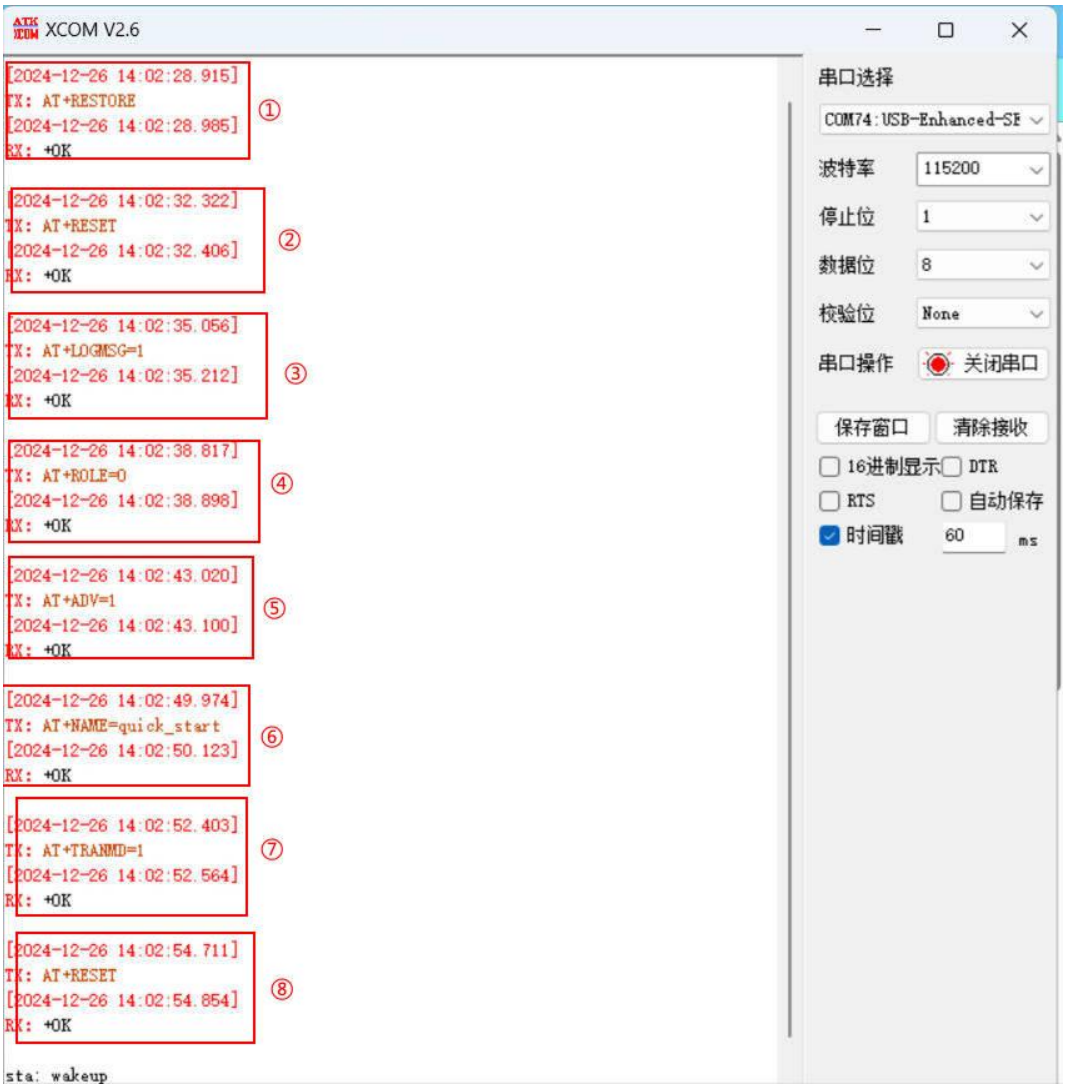
   ⑥ Modify the name of the slave broadcast

   ⑦ Enable transparent transmission

   ⑧ Restart module

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4. Follow these steps to configure Test kit A as a master.

① Restore to factory mode (factory reset)

② Restart module

③ Enable functional information output

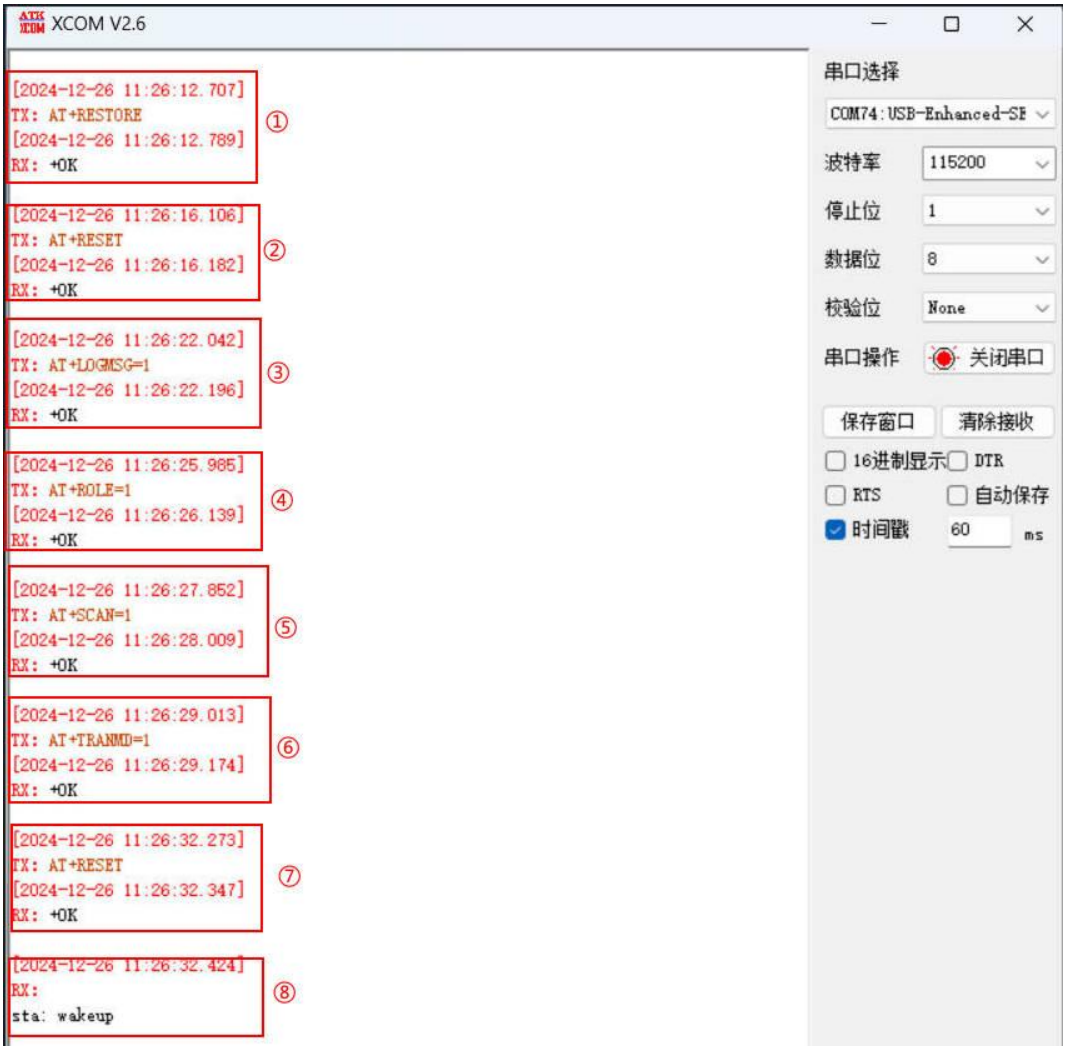
④ Set the module to work as a master

⑤ Enable master scanning function

⑥ Enable transparent transmission

⑦ Restart module

⑧ Module configuration completed



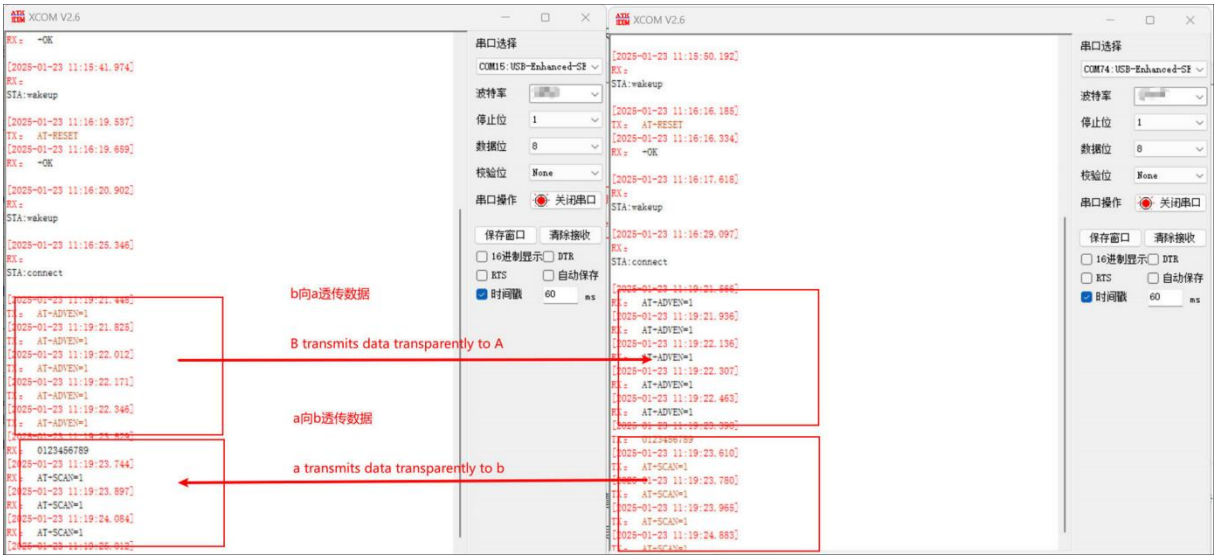
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5. After configuration is complete, wait for the module to automatically connect .



6. Data transmission test.



4.4 Master bond function, use MAC address to filter slaves

Based on Section 4.3 , master A enables the binding function , as shown in the figure :

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Display: STA: connect style output

4.5 Module multi-connection usage

- The module supports multi-master connection when used as a slave (supports connection to up to two masters)
- When the module is used as a master, it supports multiple slaves (up to two slaves can be connected)
- The module supports multiple connection modes when used as both master-slave (one master and one slave, two slaves, two masters)

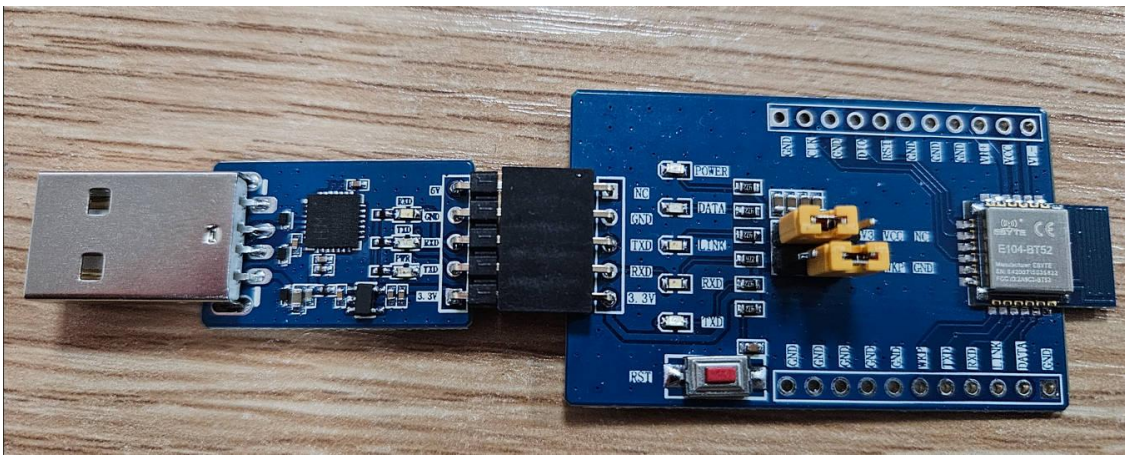
implements multiple connections with one master and one slave in master-slave mode .

4.5.1 Preparation

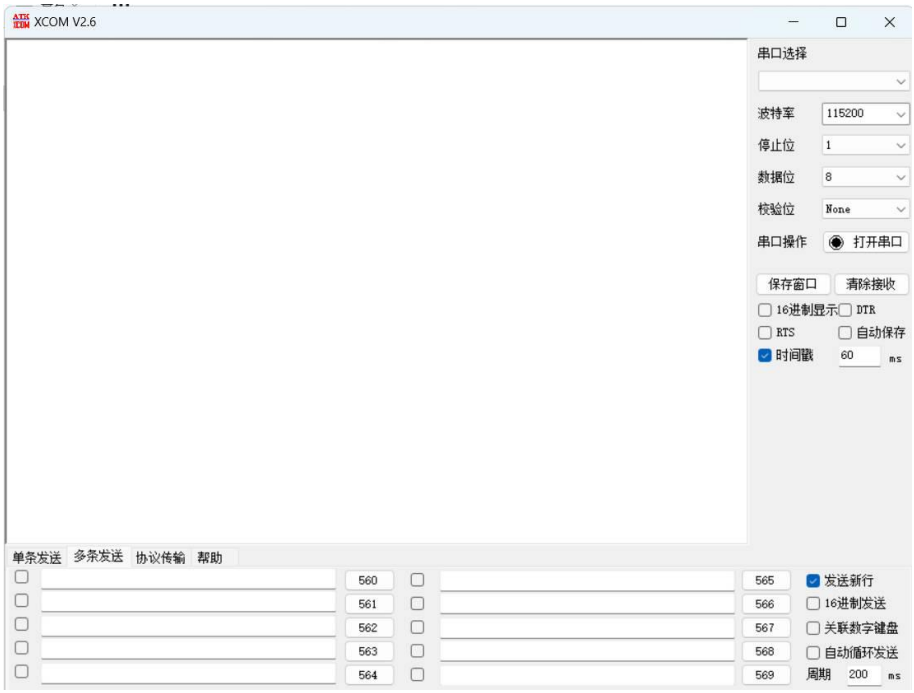
- Prepare 2pcs EWT 104- BT52 test kit and 2pcs E15-USB-T3 , and connect them as shown below .

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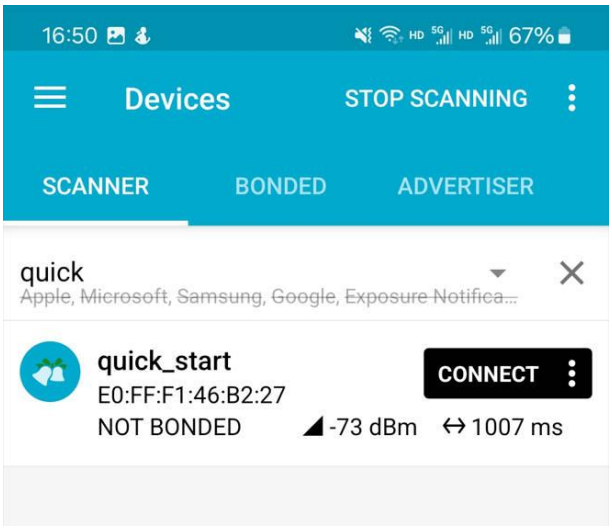
- Open X com serial port debugging assistant



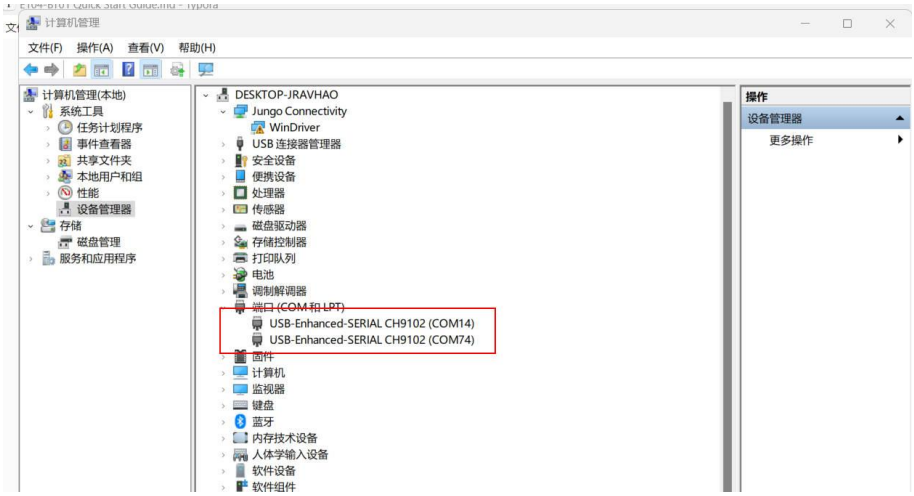
- Open the nrf connect app on your phone

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- After connecting the test kit to the computer, you can see the following ports in the device manager



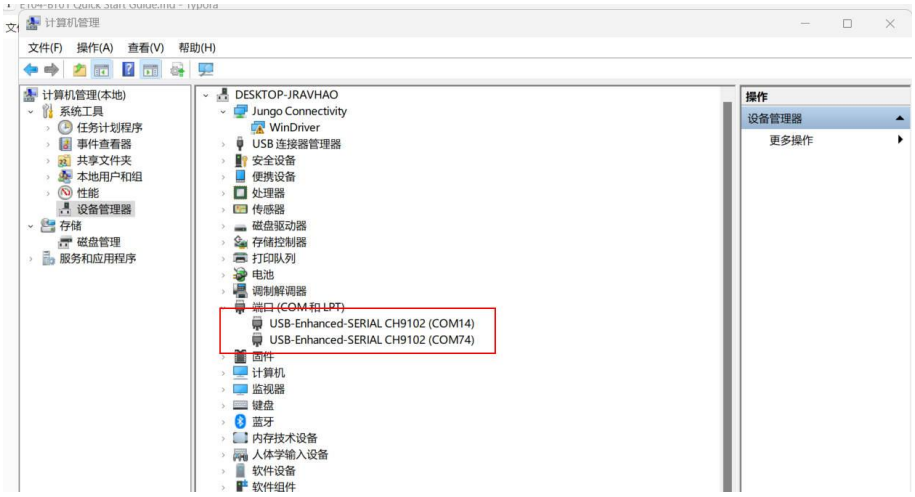
- Usually, PC with Windows 10 and above will automatically install the serial port driver, but if the test kit is connected to the computer through the USB port and no corresponding port appears, you can try to install the serial port driver first.

4.5.2 Connection steps

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2. Open two XCOM serial port debugging assistant software, select two corresponding serial port numbers respectively, select serial port parameters , and click to open the serial port.

   Baud rate: 115200

   Stop bit: 1 bit

   Data bits: 8 bits

   Check digit: NONE

3. Follow the steps in the figure below to configure test kit B as a slave .

   ① Factory reset

   ② Restart module

   ③ Enable functional information output

   ④ Set the module to work as a slave

   ⑤ Open the normal broadcast function of the slave device

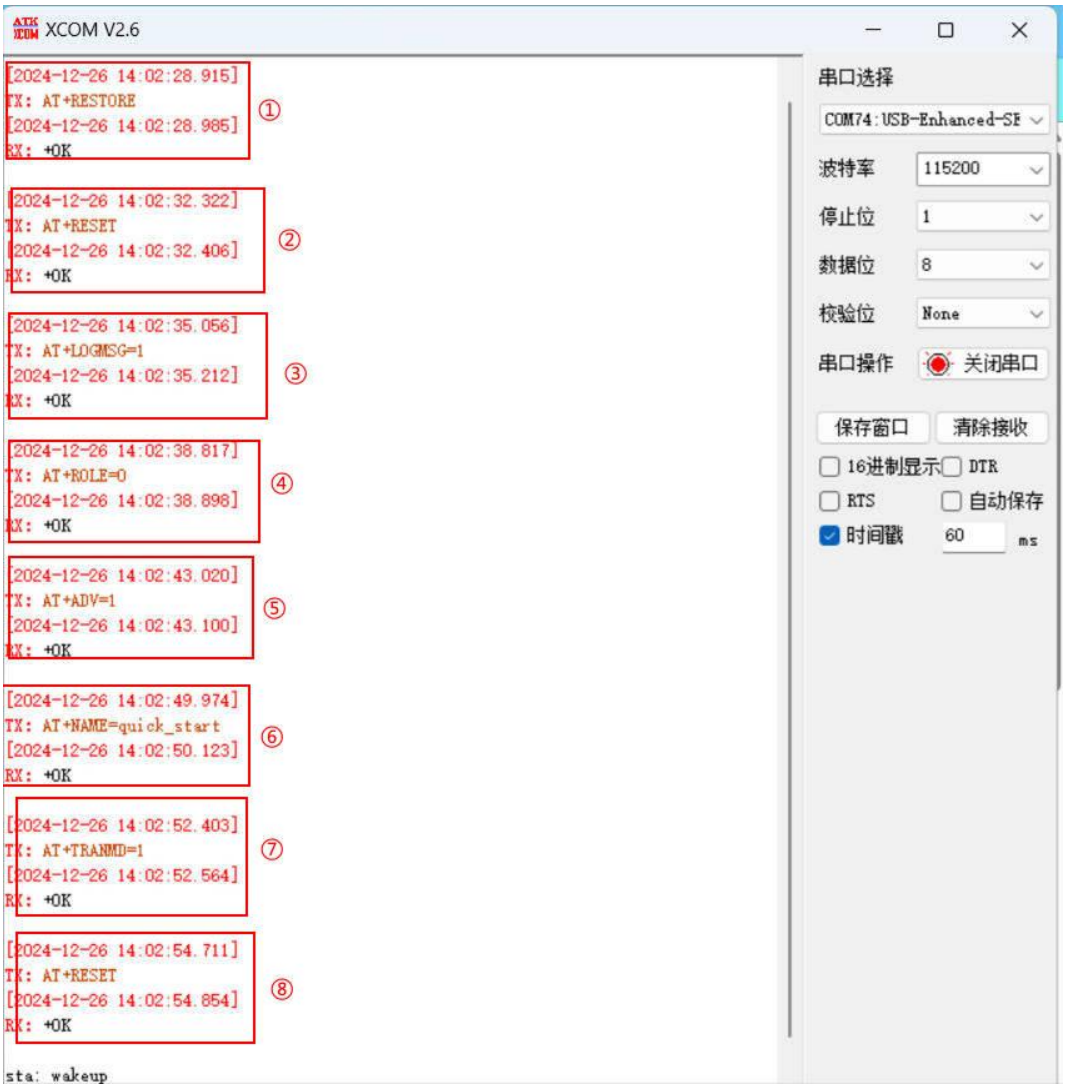
   ⑥ Modify the name of the slave broadcast

   ⑦ Enable transparent transmission

   ⑧ Restart module

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7. Follow the steps below to configure test kite A in master-slave mode.

① Restore to factory mode (factory reset)

② Restart module

③ Enable functional information output

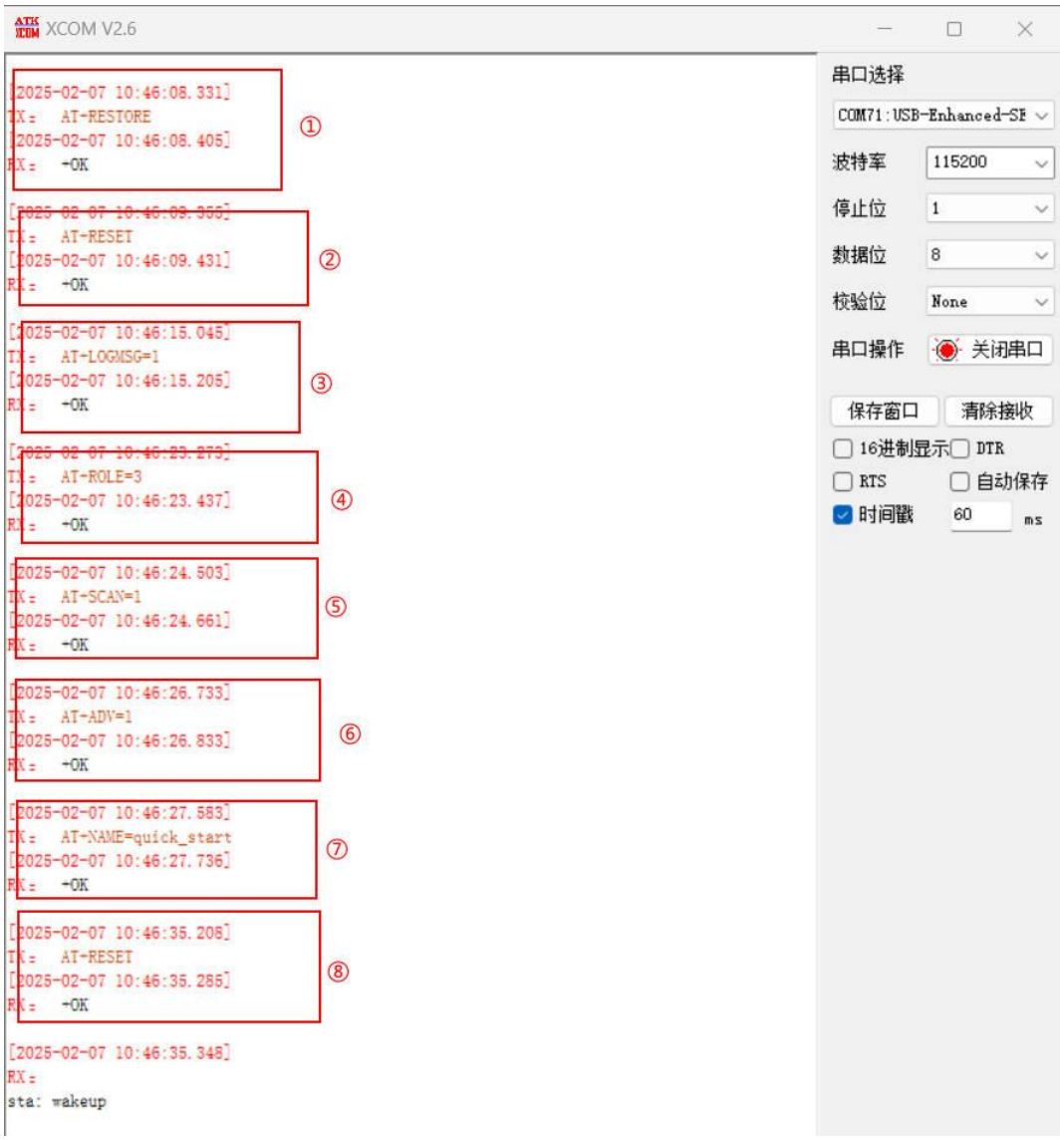
④ Set the module to work on master-slave-in-one mode

⑤ Enable master scanning function

⑥ Open the normal broadcast function of the slave device

⑦ Modify the name of the slave broadcast

⑧ Restart module



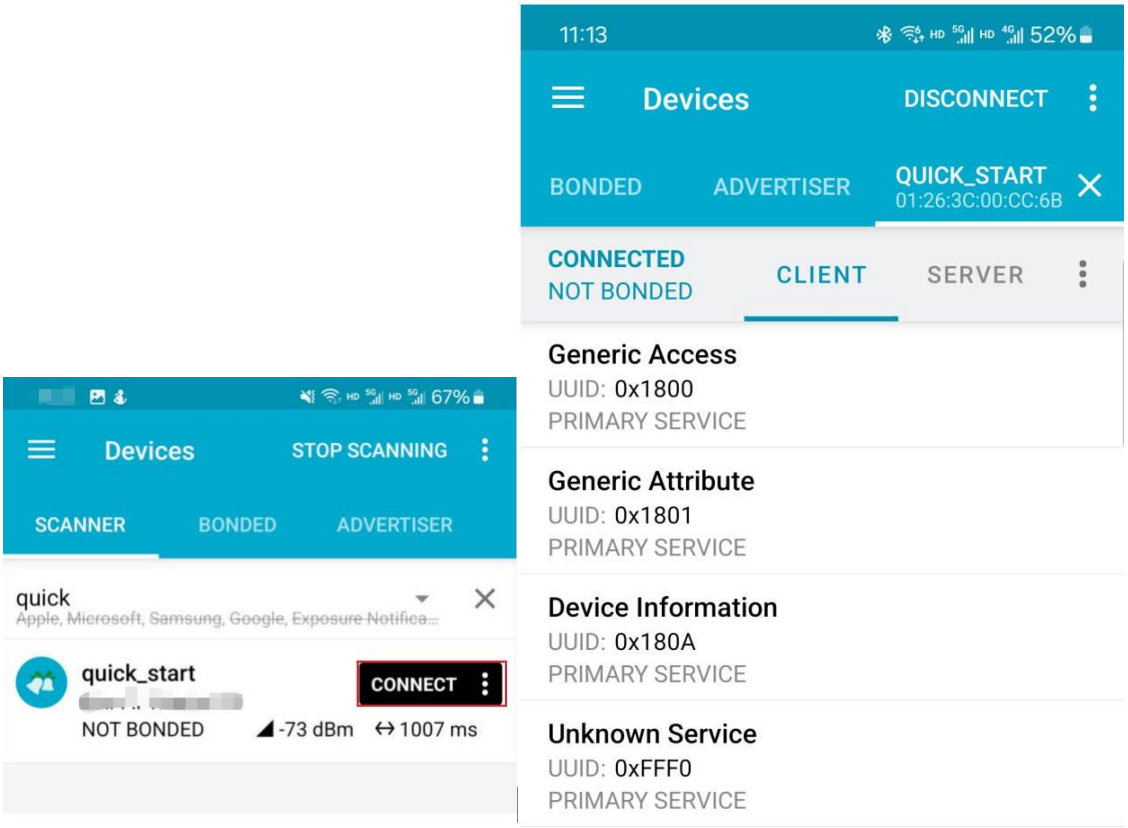
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8. After the configuration is completed, wait for the module to automatically connect , where 0 represents the ID number of this connection, and the following is the MAC address of the connected device .



9. At this time, you can also use the mobile app nrf connect to scan the device with the broadcast name quick_start and click CONNECT.



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10. After clicking Connect, the serial port can see the output printing the new connection link with id 1 .



11. Send data . Be noted that the data needs to be sent in hexadecimal .

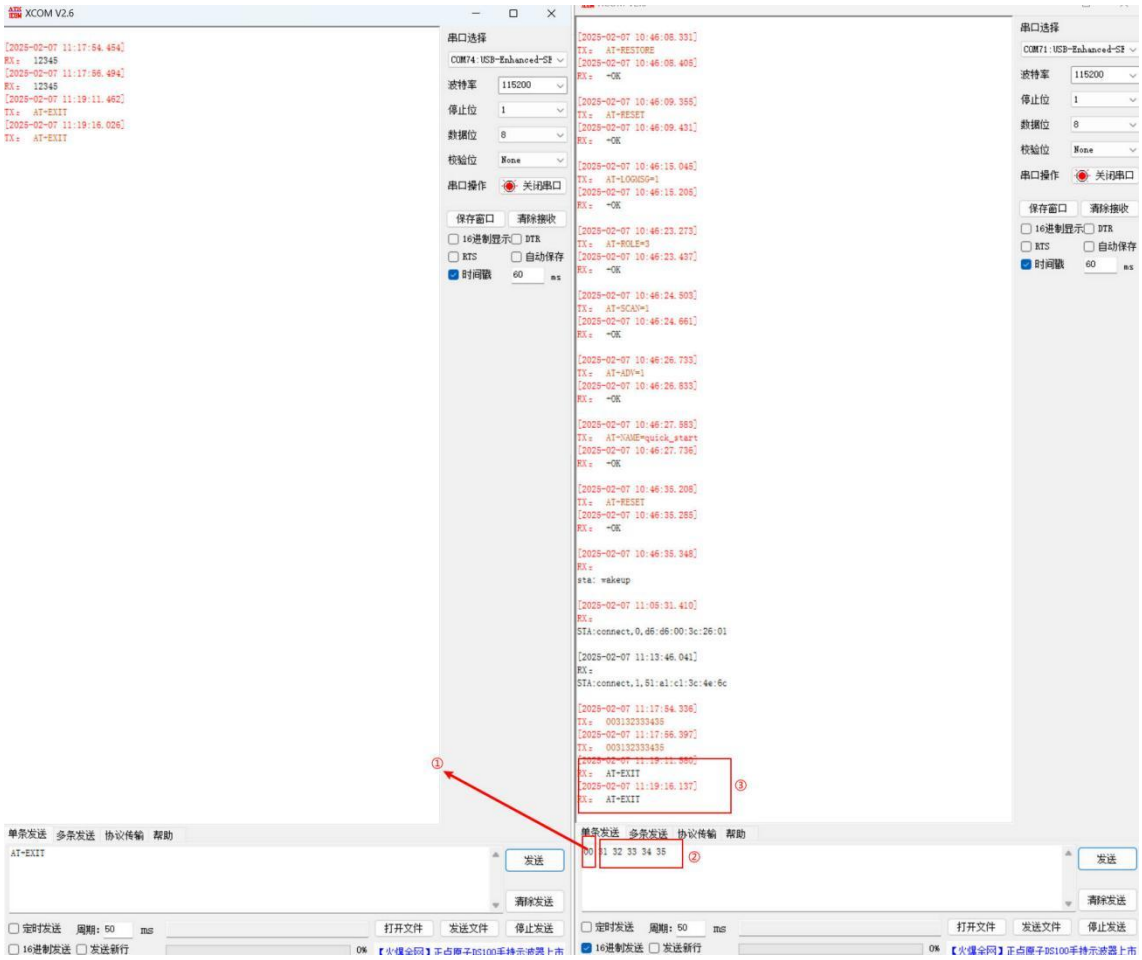
① Link ID required for multi-connection transmission ;

② The data that the customer needs to send ;

③The data received by the module is not distinguished by index ID, and the user needs to add a protocol to distinguish it .

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Chapter 5 Frequently Asked Questions

- The serial port baud rate of the E104-BT52 module is 115200 ;
- When the command displays an ERR prompt, user can refer to the E104- BT52 user manual. If other serial port assistants are used for debugging, please check the string length ;
- Note that some commands use a mixture of ASCII and hex codes, so garbled characters may appear. For example, AT+MAC ?;
- When binding a MAC, please switch to hexadecimal format .
- Note that this module can be connected by two masters ;
- Note that there are no other symbols at the end of the command (some serial port assistants, or the user has selected the function of sending new line, which will cause the software to automatically add special symbols to the end of the command) .

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Revision History

Version	Revision Date	Revision Notes	Maintainer
1.0	2025-3-26	Initial release	Bin

About Us

Sales hotline: 4000-330-990

Technical support: support@cdebyte.com

Official website: https://www.cdebyte.com

Address: Building B2, Mould Industrial Park, 199# Xiqu Ave, High-tech Zone, Chengdu, 611731, Sichuan, China

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