# RAK8213 With Mini PCIe EVB User Manual

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# 1. Required materials(hardware,tools)

- RAK8213 x1
- Mini PCIe EVB x1
- PC x1


## 2. Introduction

This document mainly describes how to use the Mini PCIe EVB to test the RAK8213. This document may involve some information about the BG96 module. Please check the BG96 related documentation for this information.

The main contents of this document include:

1. How to use the USB interface to send commands to the BG96 module?
2. How to use the UART serial port to send commands to the BG96 module?
3. How to use the Hologram SIM card to connect to the network?

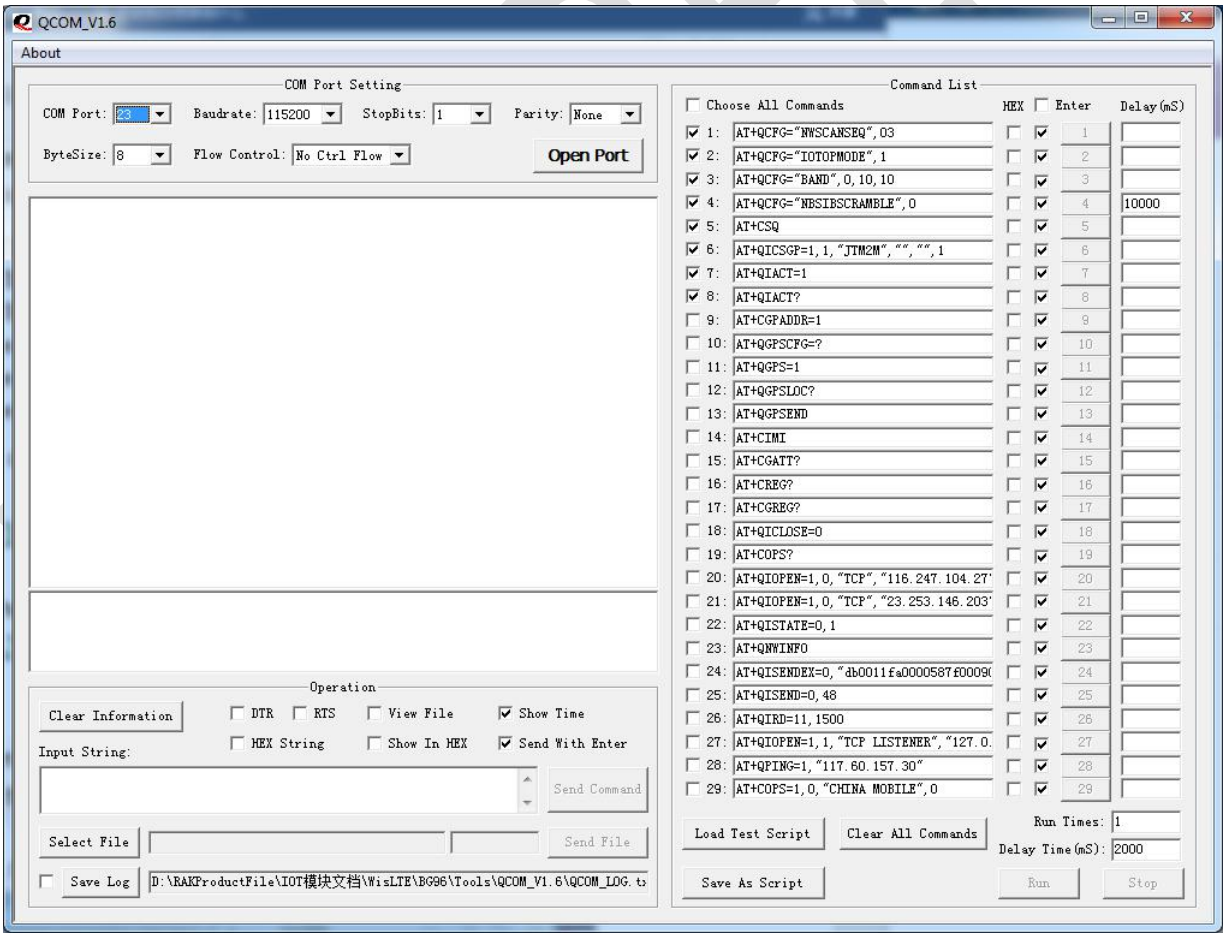
## 3. Use USB Control RAK8213

Plug the RAK8213 into the corresponding interface of the Mini PCIe EVB. Then use a Micro USB cable to connect the EVB to your computer. (Currently only supports Windows), Then, in your computer device management you can see the device shown below.

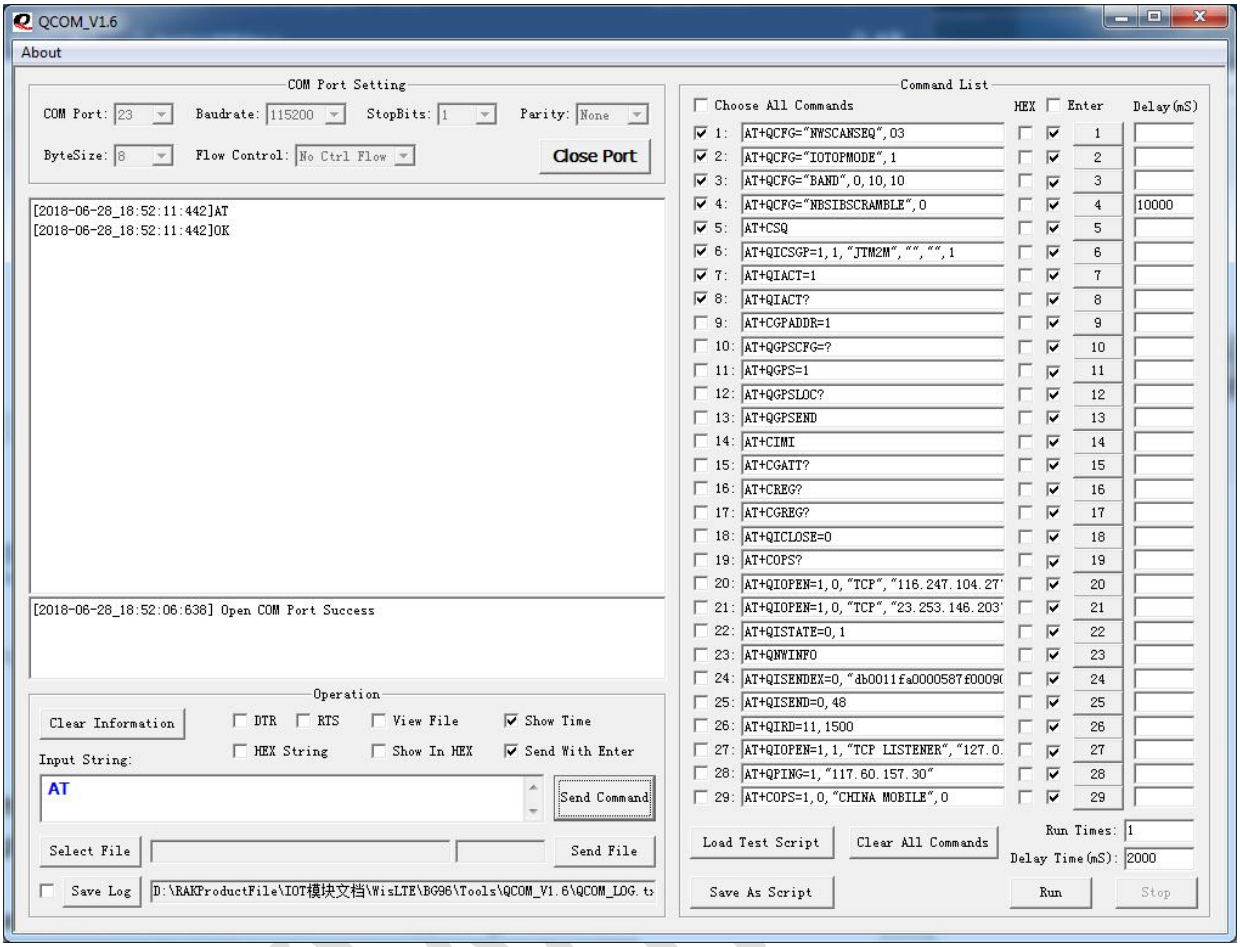

If your computer does not have this device, you may need to install the BG96 USB driver. Driver download address see official website:

http://docs.rakwireless.com/en/WisLTE/Tools/Quectel_BG96_Windows_USB_Driver_V1.0.zip

Open the serial port tool and select the serial port number of AT Port. This tool can be downloaded here: http://docs.rakwireless.com/en/WisLTE/Tools/QCOM_V1.6.zip



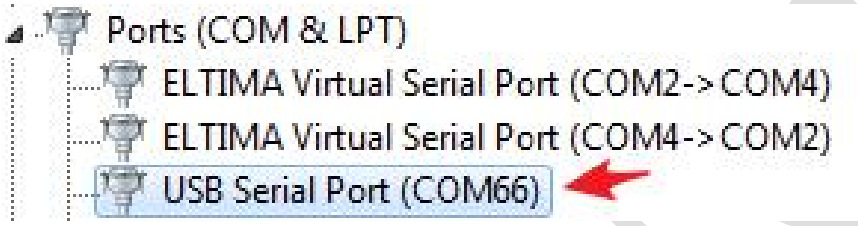
Send AT, the device returns OK to prove that the device is normal, detailed AT commands refer to BG96's AT manual.



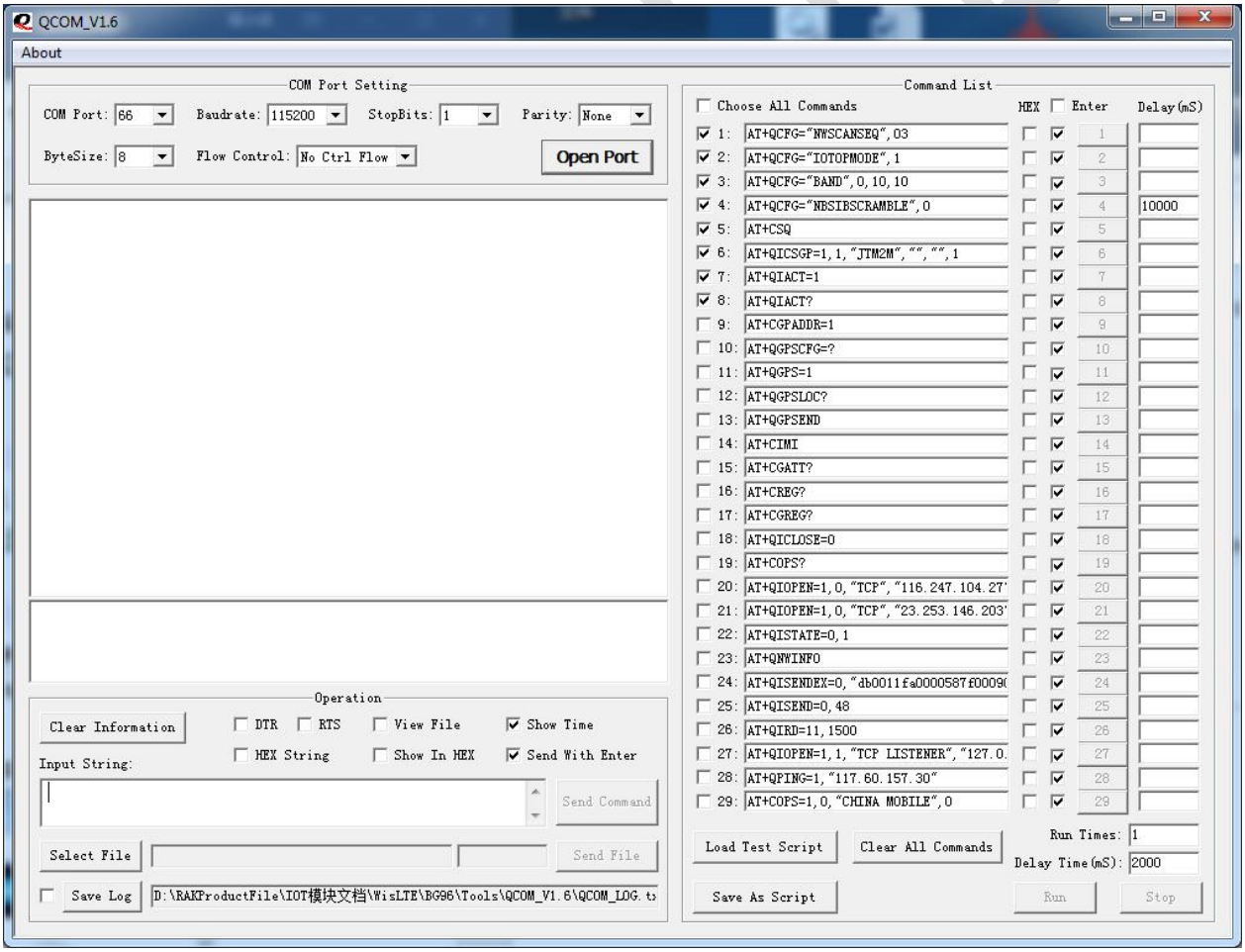
# 4. Use UART Control RAK8213

Use a USB to RS232 serial cable to connect the Mini PCIe EVB to your computer.( Computer supports Windows and MAC, Linux)

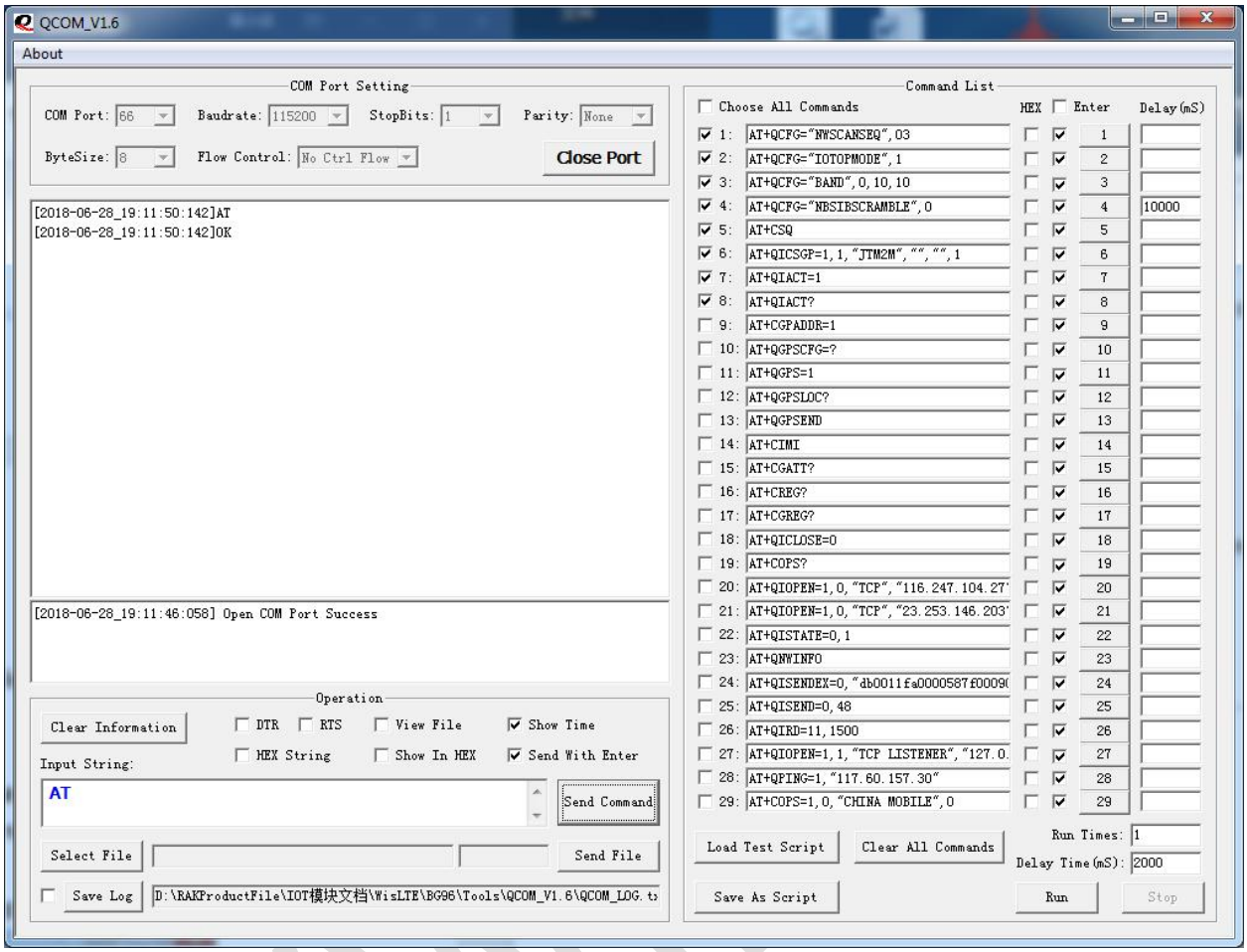
This device will appear in your computer's device management interface at this time.( Different computers, different serial line drivers may not be the same, this time the user needs to follow Google's own environment to search for the corresponding driver installation)




After your computer recognizes the serial port, open the serial port tool. The serial port tool can be downloaded here: http://docs.rakwireless.com/en/WisLTE/Tools/QCOM_V1.6.zip. This tool is limited to Windows, MAC users recommend CoolTerm.



Serial port settings see below ,Send AT, the device returns OK to prove that the device is normal, detailed AT commands refer to BG96's AT manual.

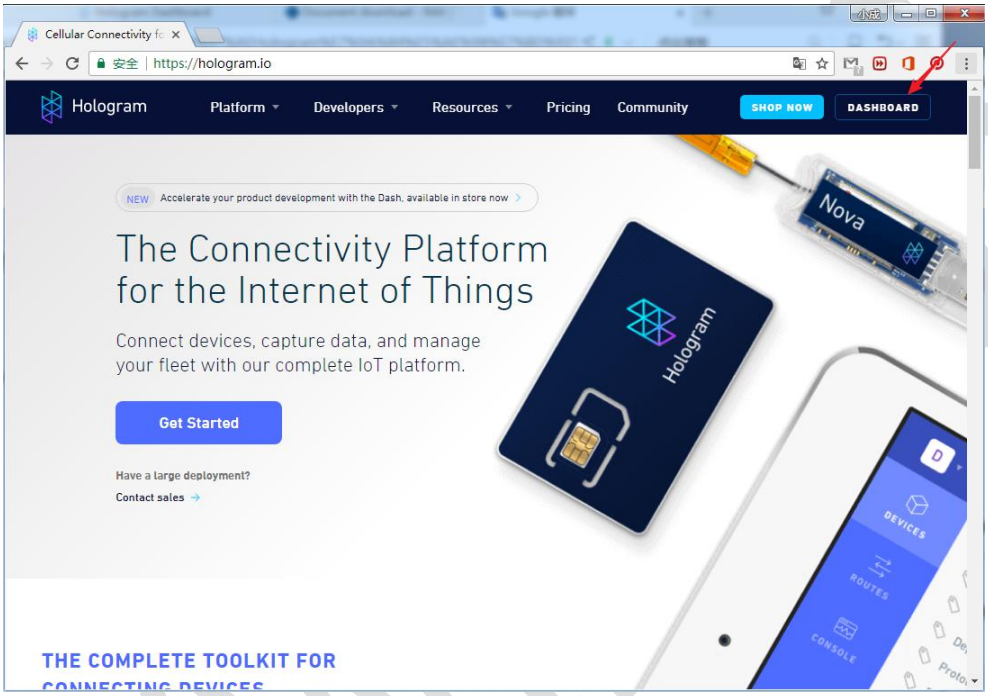


# 5. Use Hologram SIM Card Connrct Network

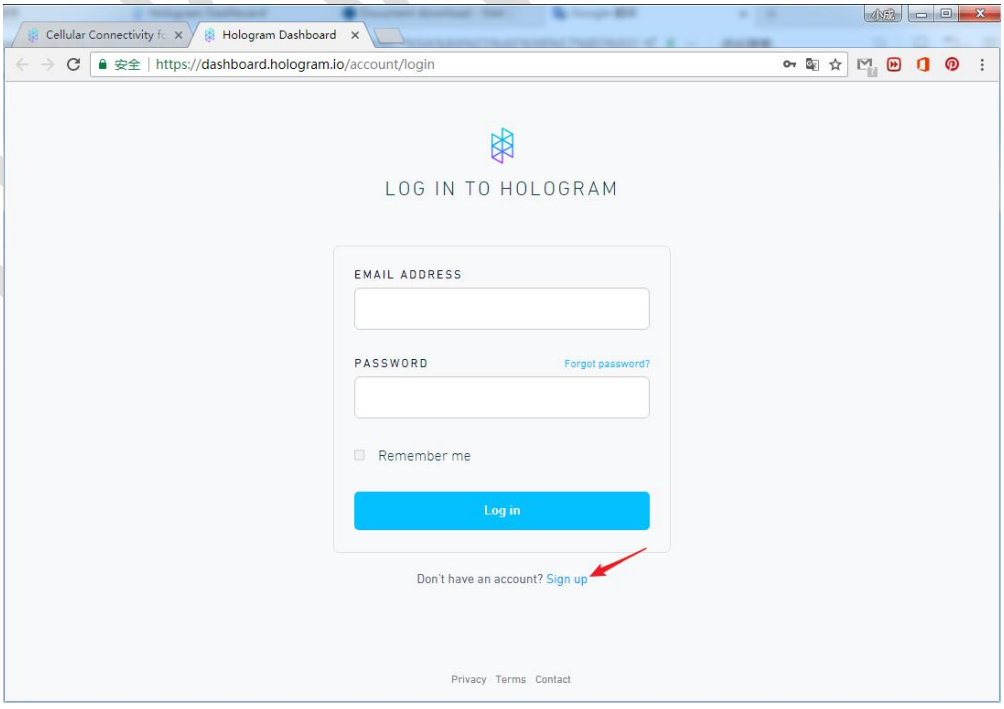
## 5.1 Region Hologram

Hologram is the Connectivity Platform for the Internet of Things. You can connect devices, capture data, and manage your fleet through their complete IoT platform. Here is their official website: https://hologram.io/

Visit the official website of Hologram. Click on "DASHBOARD" in the upper right corner.

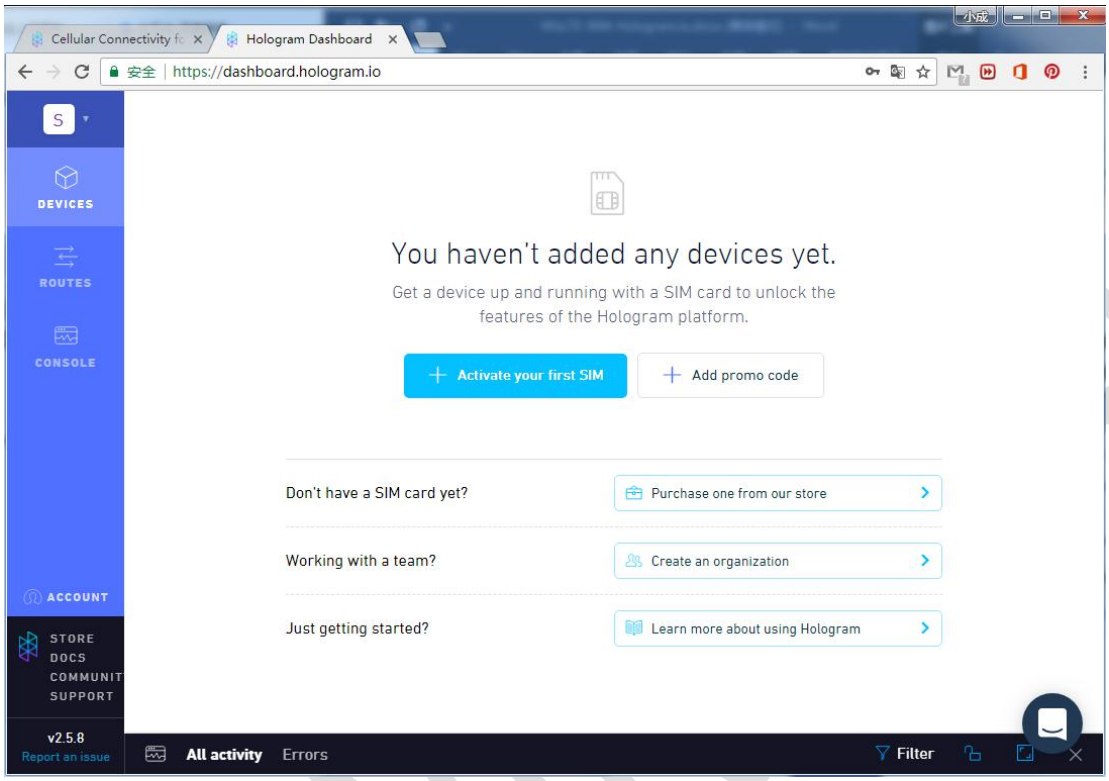



Then click on "sign up" at the bottom of the page. Enter the registration interface. Follow the prompts to fill in the information to register.

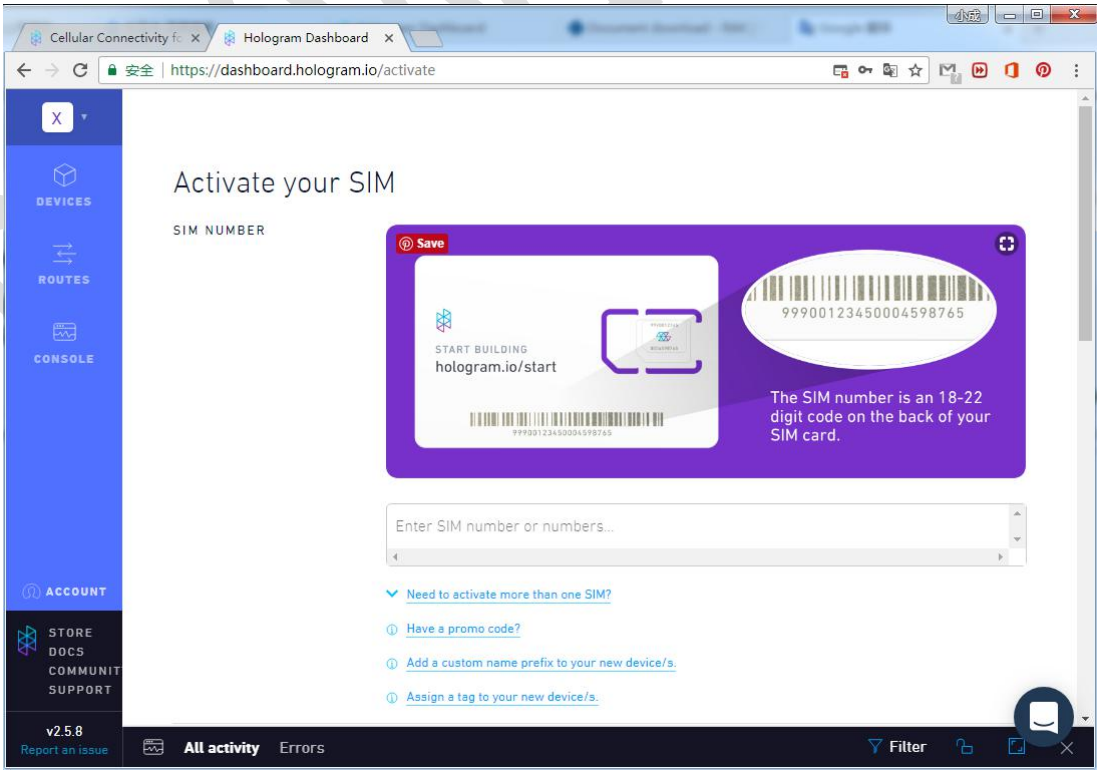


## 5.2 Activate SIM card

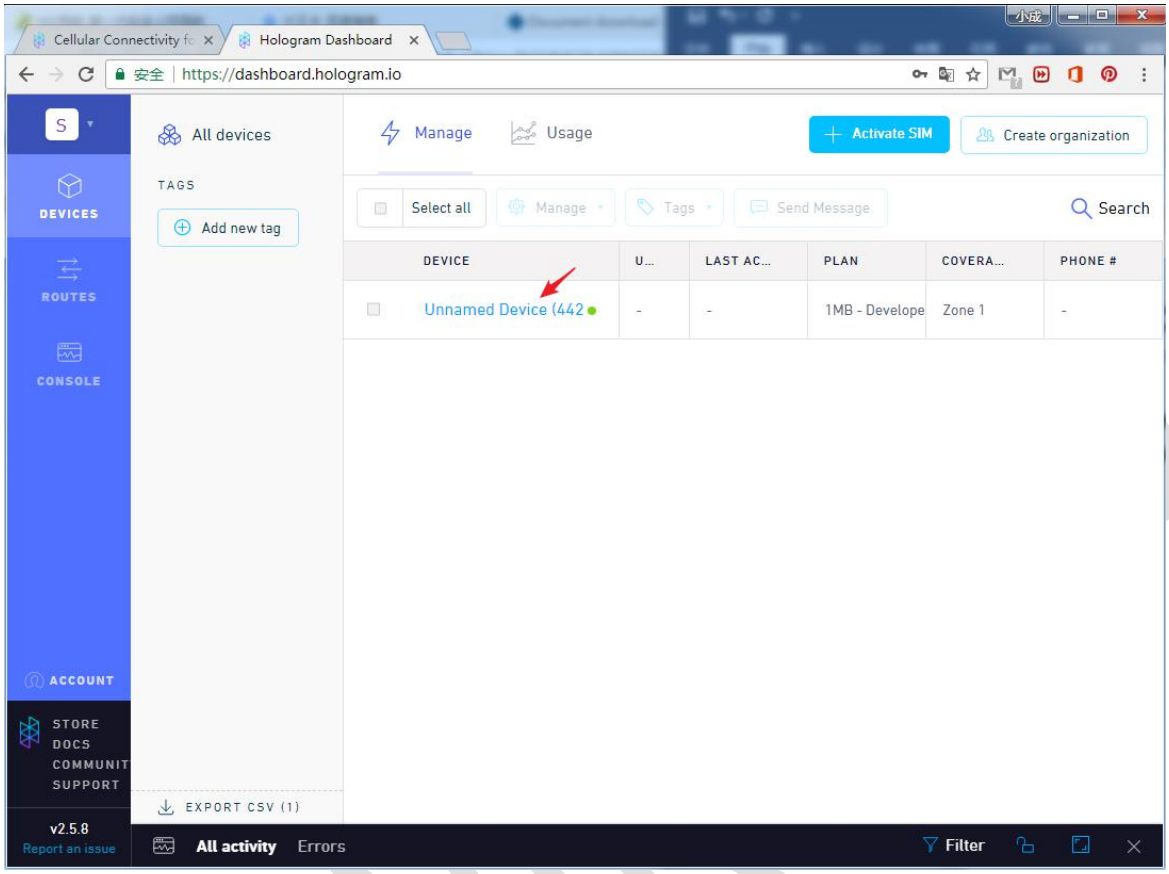
After successful registration, log into your Hologram account and enter your Dashboard interface. Next you need to activate your purchased Hologram SIM card. Click on "Activate you first SIM" in the upper right.

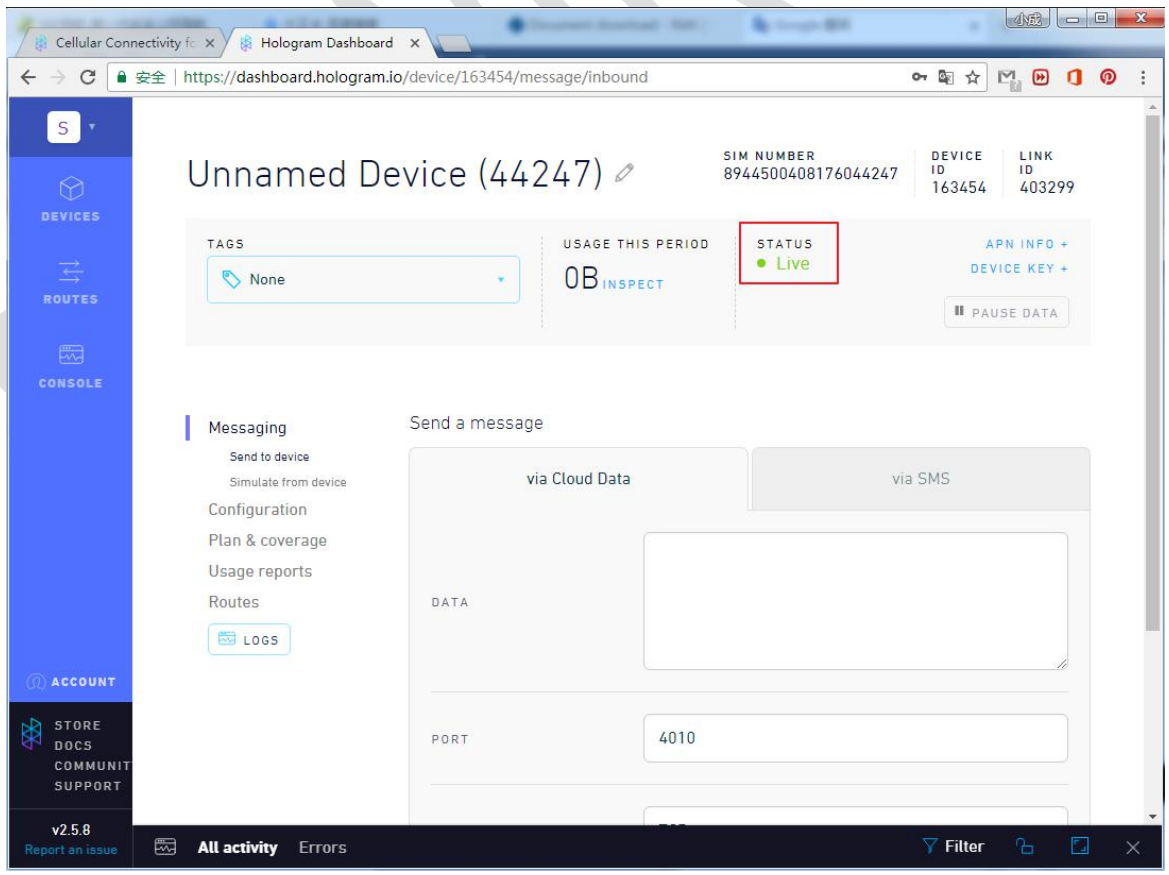



Enter the activation interface, according to the given prompts, fill in the information, you can complete the activation of the SIM card.



After successful registration, enter the SIM card information interface. After waiting for a period of time, you will see the “Live” status.



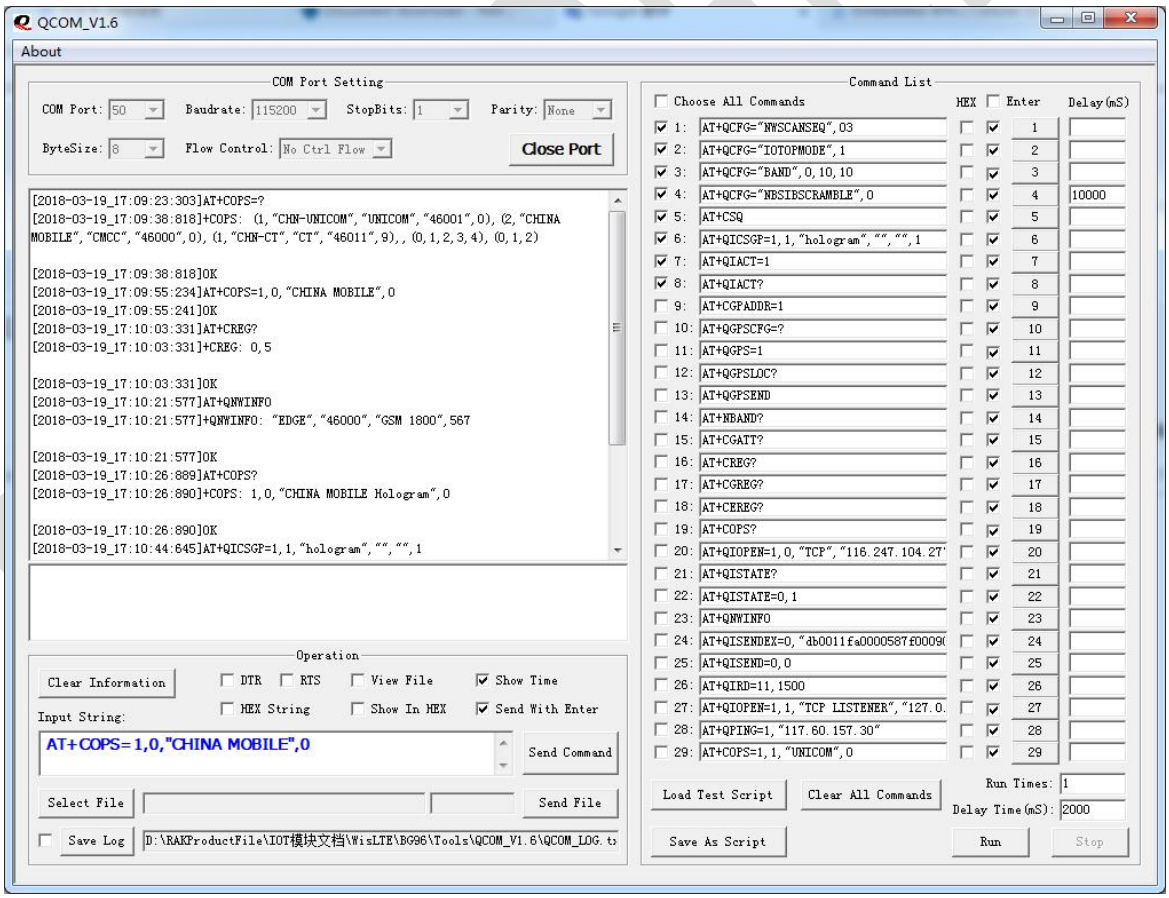



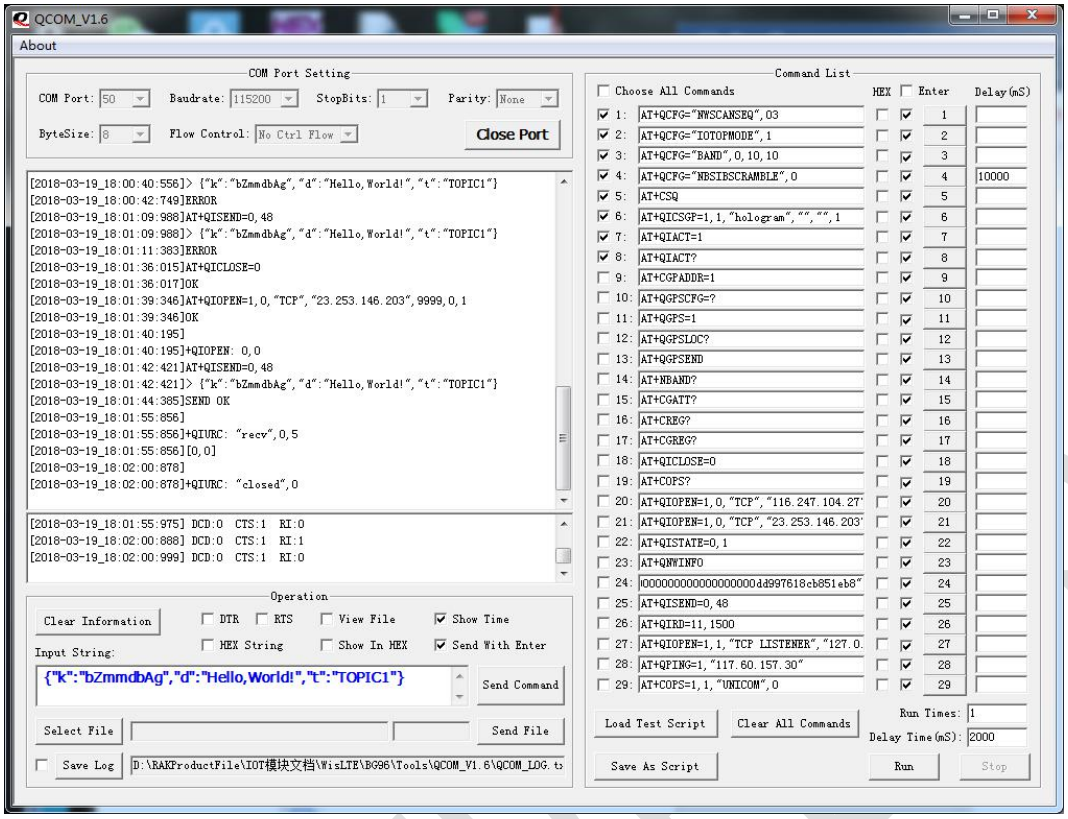
## 5.3 Send Data

Insert the card into the RAK8213's SIM card slot. Note that the default SIM card connection is the RAN8213's own card slot.

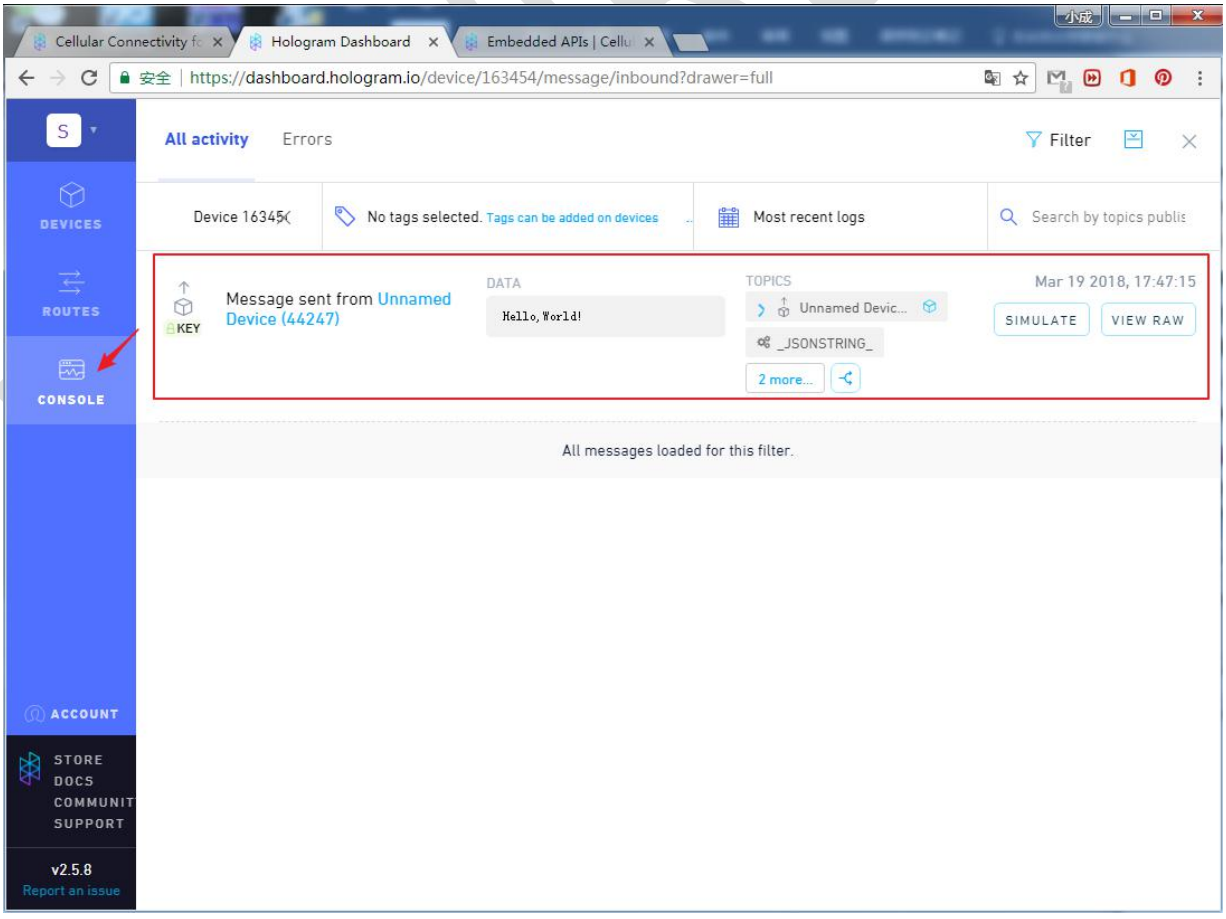
Find the port number of the AT Port and use the QCOM serial port tool to connect. Then send the following AT command.( For AT command details, see the AT command manual)

AT+COPS=? // Find nearby network information
AT+COPS=1,0,"CHINA MOBILE",0 // Manually set up a connected network
AT+CREG? // Check whether the device is registered on the network
AT+QNWINFO // Query connected network information
AT+COPS? // Query the connected web server information
AT+QICSGP=1,1,"hologram","","",1 // Set APN network to hologram
AT+QIACT=1 // Activate the APN network
AT+QIACT? // Query the APN assigned IP address
AT+QIOPEN=1,0,"TCP","23.253.146.203",9999,0,1 // Create a TCP, connection hologram test server
AT+QISEND=0,48 // Send data, send data length is 48
{"k":"bZmmdbAg","d":"Hello,World!","t":"TOPIC1"} //Send Packets.The data format is a hologram-defined format.( For details, please see: https://hologram.io/docs/reference/cloud/embedded/ )
AT+QISEND=0,0 // Query data is sent successfully





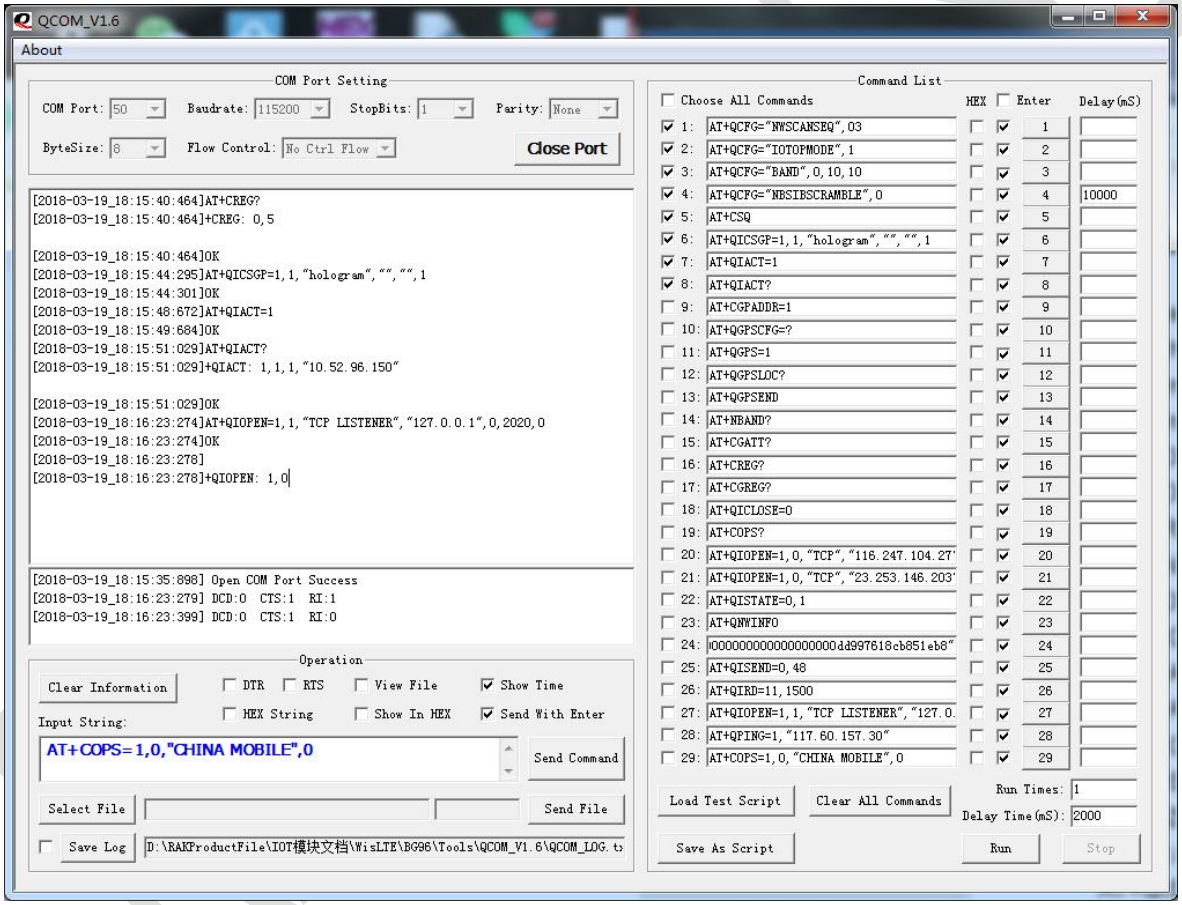

After the device is sent successfully, you can see the sent information on your interface of the Hologram Dashboard



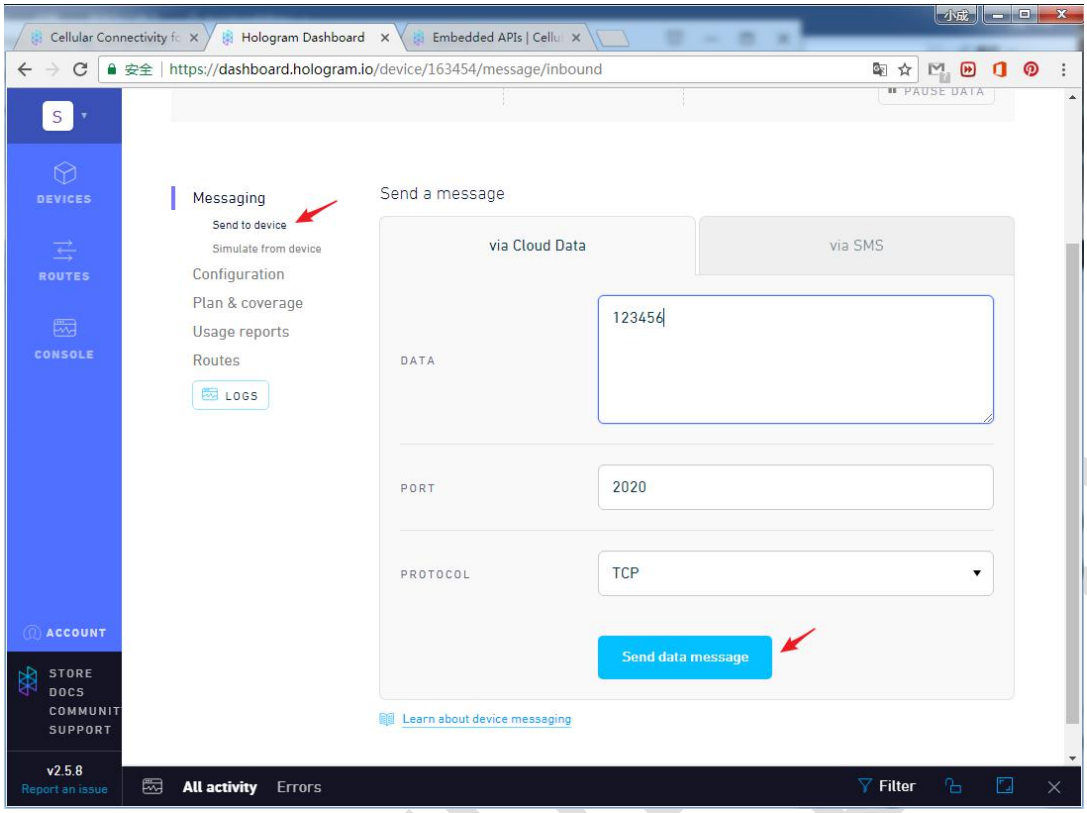
## 5.4 Receive Data

Receiving data is similar to sending data, except that the established socket is different. The receiving data is established as a TCP server. The AT commands sent are shown below:

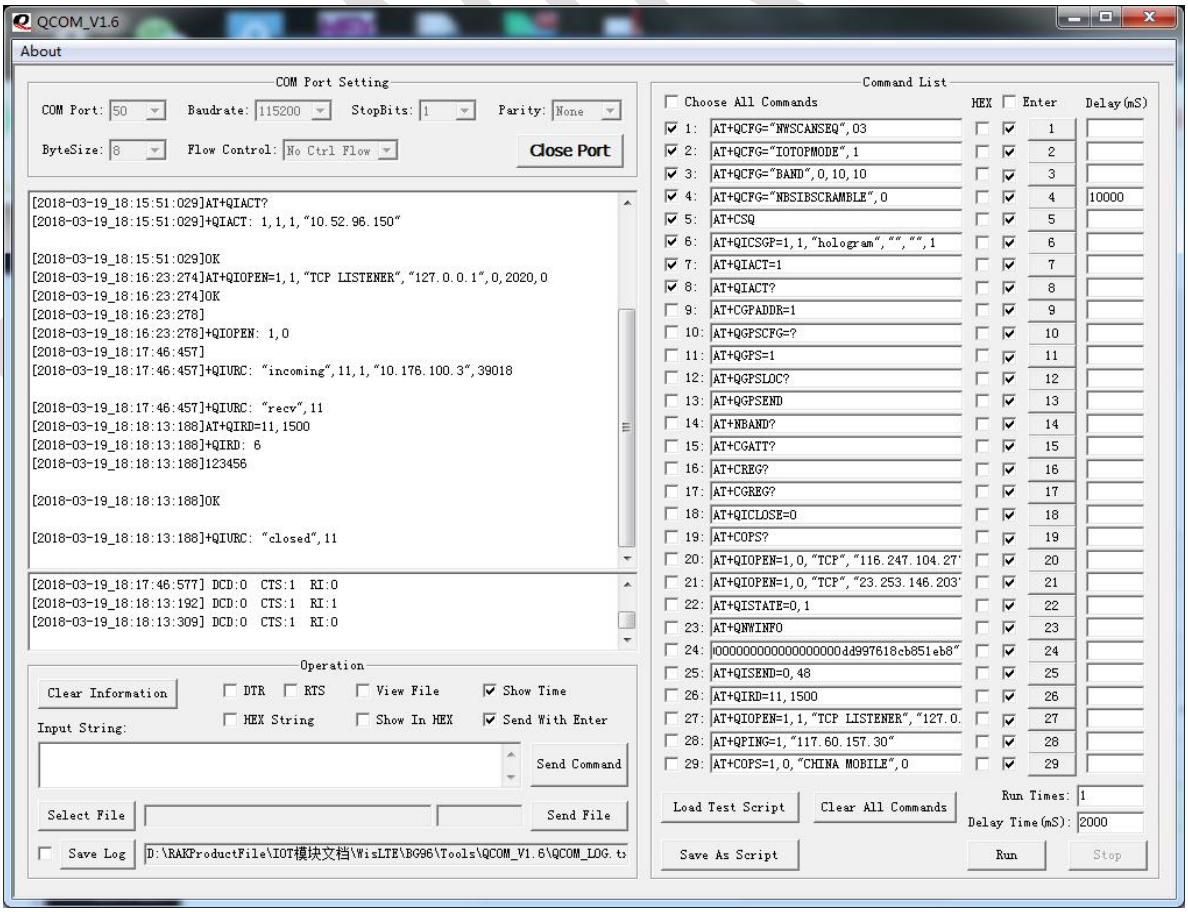
AT+COPS=? // Find nearby network information
AT+COPS=1,0,”CHINA MOBILE”,0 // Manually set up a connected network
AT+CREG? // Check whether the device is registered on the network
AT+QNWINFO // Query connected network information
AT+COPS? // Query the connected web server information
AT+QICSGP=1,1,"hologram","","",1 // Set APN network to hologram
AT+QIACT=1 // Activate the APN network
AT+QIACT? // Query the APN assigned IP address
AT+QIOPEN=1,1,"TCP LISTENER","127.0.0.1",0,2020,0 // Create a TCP server, use local IP, port 2020
AT+QIRD=11,1500 // Read the received data, 11 is the returned Socket identifier




After creating a successful TCP server, the user needs to return to the Hologram Dashboard interface, click on the "send to device" button, and then fill in the data to be sent. PORT is the TCP server port of the device. Fill in and click "Send data message".




After the Hologram Dashboard is sent, the device will receive a message of “recv, 11” indicating that the device received the data. At this time, the AT+QIRD=11,1500 command is sent to obtain the received data.



# 6. Contact information

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# 7. Change Note

| Version | Author | Date | Modify content |
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| V1.0 | Chace | 2018/06/25 | Create Document |