RGx00U&RM500U Series

Log Capture Guide

5G Module Series

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About the Document

Revision History

Version	Date	Author	Description
-	2023-03-22	Xudong MAO	Creation of the document
1.0	2023-11-06	Jeffery JIANG	First official released

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1 Introduction

This document outlines how to capture AP log, CP log and dump file on Quectel 5G RG200U series, RG500U series and RM500U series modules through QLog, USB virtual port, ADB and Logel, as well as how to capture CP log and dump file through socket.

When the module is in an abnormal condition, you can check the current network state of the module through AT commands (see ***Chapter 4.2*** for details) to determine the cause of the issue based on the query results. If it is determined that the module is misconfigured, you can reconfigure the module with the corresponding AT command to resolve the issue. If the cause cannot be determined or the issue persists, you can capture corresponding logs and send the logs to Quectel for further analysis and processing.

NOTE

1. QLog is a log capture tool developed by Quectel. You can contact Quectel Technical Support to obtain the installation package if necessary.
2. ADB is a tool developed by Google. You can install it with the assistance of Quectel Technical Support.
3. The installation and use of the Logel tool requires authorization from Spreadtrum. You can contact Quectel Technical Support for assistance in installing Logel.

2 Capture AP Log and Dump File

2.1. Windows System

This chapter explains how to capture logs and dump files on module AP in Windows.

2.1.1. Capture AP Log Through ADB

Step 1: Open the QCOM tool, execute **AT+QADBKEY?** to get the module chip_uid, contact Quectel technical support for corresponding password, and then execute **AT+QADBKEY=<passwd>** with the obtained password.

Step 2: After Step 1, execute **AT+QCFG="usbcfg",0x2c7c,0x0900,1,1,1,1,1,1,0** to configure the USB port and enable ADB. For detailed information of the above AT command, see ***document [1]***.

Step 3: Execute **AT+QTEST="debug"** to query the current debug mode. If the return value is not **1**, execute **AT+QTEST="debug",1** to enter debug mode. After that, execute **reboot** on the module's debug UART to restart the module. At this point, the AP log is enabled. The log information of the module will be saved to the *yocto.log* file. After obtaining the log file, execute **AT+QTEST="debug",0** to exit debug mode.

Step 4: After the AP log file is completely collected, execute **adb pull /data/yocto.log <host_path>** to obtain the log file.

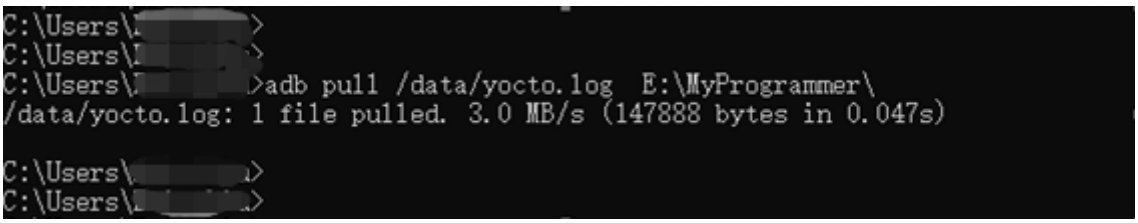

Figure 1: Obtain AP Log File

2.1.2. Capture AP Log Through USB Virtual Port

Step 1: Open the QCOM tool, and then execute **AT+QCFG="usbcfg",0x2c7c,0x0900,1,1,1,1,1,1,0** to configure the USB port and enable ADB. For detailed information of the above AT command, see ***document [1]***.

Step 2: Execute **AT+QTEST="debug"** to query the current debug mode. If the return value is not **4**,

please execute **AT+QTEST="debug",4** to enter AP log capture mode.

Step 3: Save the log file. Select the COM port corresponding to the NMEA port on the QCOM tool, as shown in ***Figure 2***. Then, open the "COM Port Setting" interface on the QCOM tool, check "**Save Log**" and specify the log file storage location. After that, the tool will start saving the log directly. See an example in ***Figure 3***.

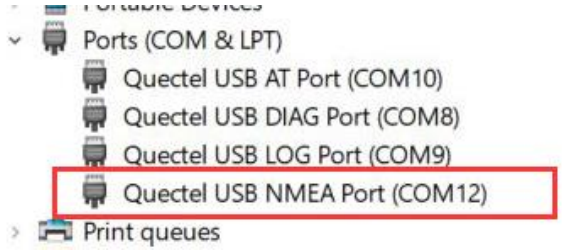

Figure 2: Select NMEA Port

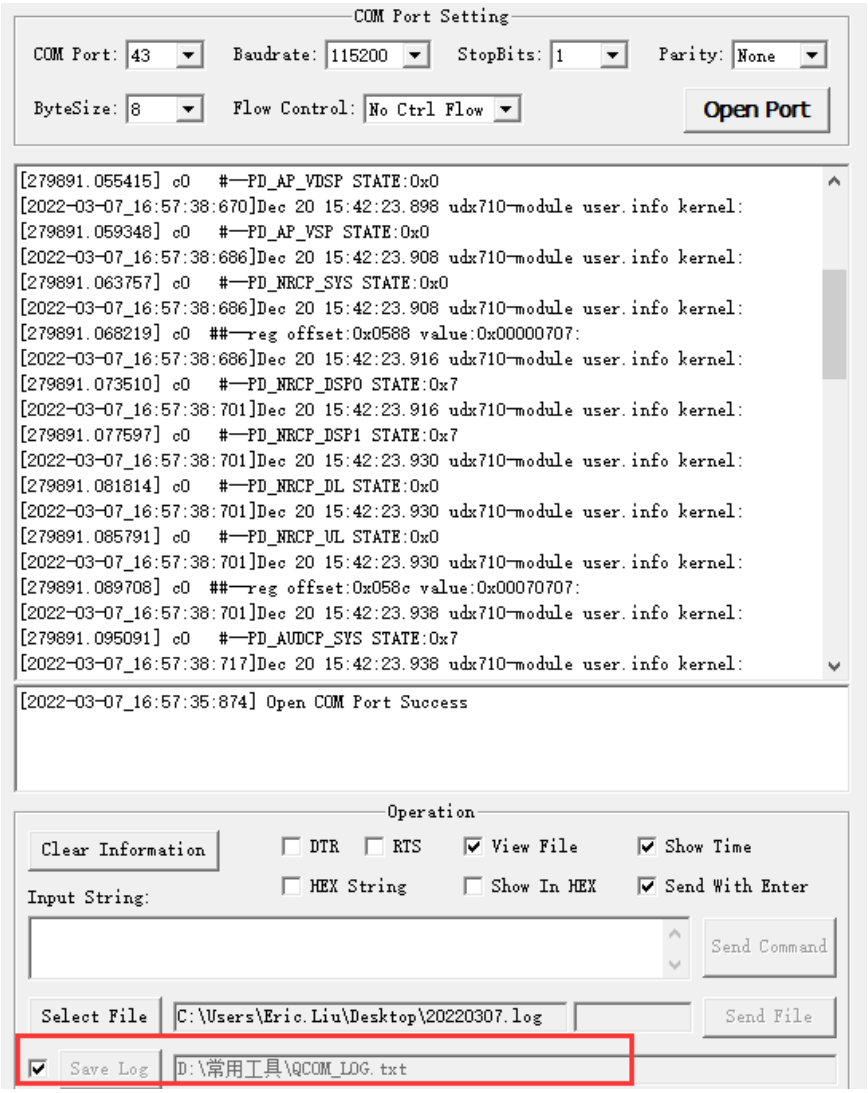

Figure 3: Print AP Log Through NMEA Port

2.1.3. Capture AP Log Through Debug UART

Step 1: Open the QCOM tool, execute **AT+QTEST="debug"** to query the current debug mode. If the return value is not **3**, please execute **AT+QTEST="debug",3** to open module log.

Step 2: Use the serial port tool on the Windows device to receive the module AP log, and then save it as a file. Take the MobaXterm tool as an example:

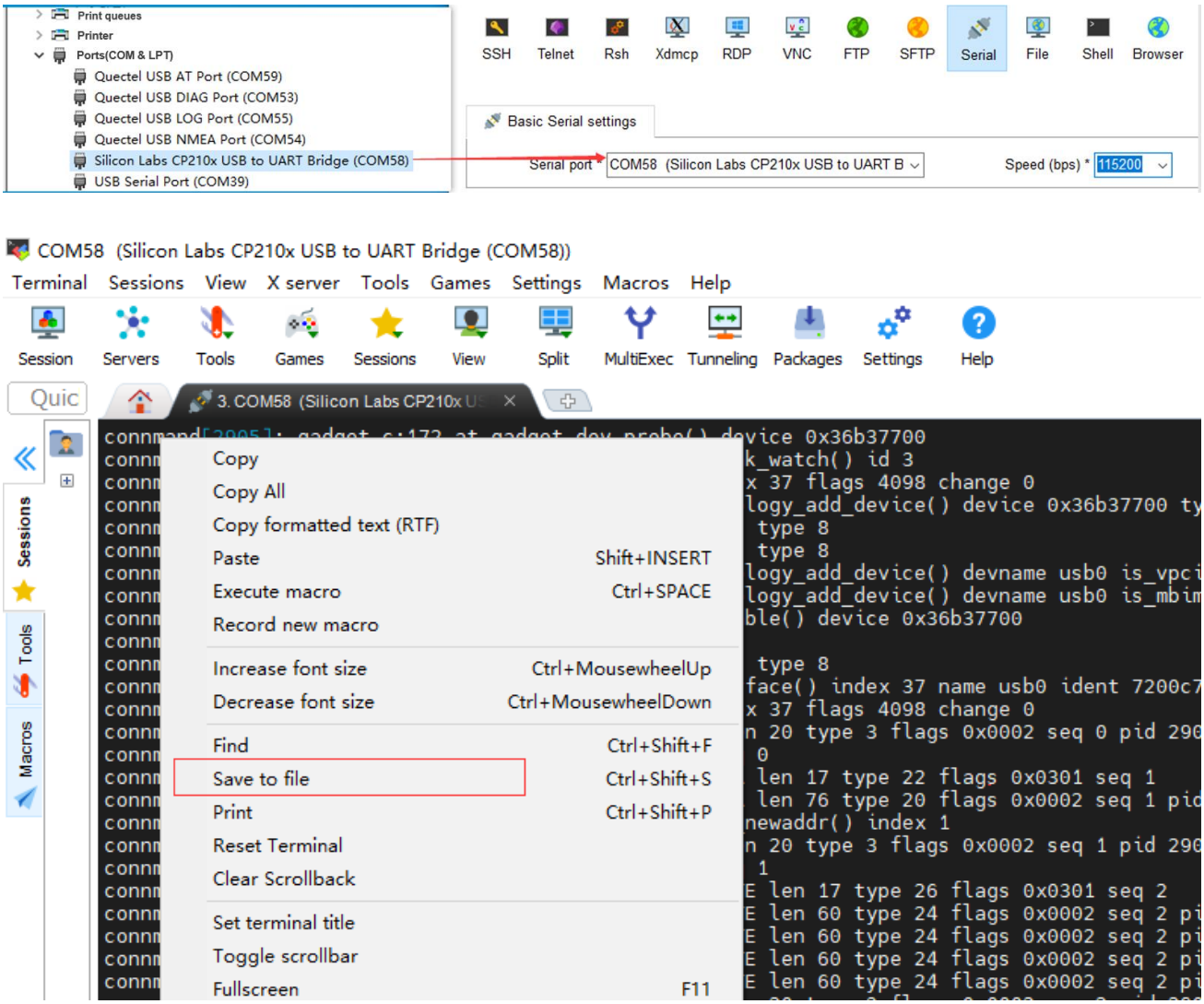

Figure 4: Print AP Log Through Debug UART

2.1.4. Capture AP Dump File Through Logel

Step 1: To capture an AP dump file, execute **AT+ARMLOG=1**, **AT+QCFG="modemrstlevel",0** and **AT+QCFG="aprstlevel",0** in sequence to prevent the module from restarting due to a dump, thus ensuring the successful dump file capture.

In Windows system, in case of a dump on the module AP, the module will immediately disconnect from the host but it will not restart. The logs will be printed through the module's debug UART as follows:

Figure 5: Print AP Dump Log

After a dump occurs on the module AP, the following ports will be displayed on the host.

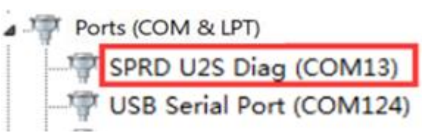

Figure 6: Detect Port

Step 2: To capture the AP dump file, it is also necessary to configure the Logel tool. "Auto Identify AP Dump Pt" is disabled by default on the versions after Logel_R9.19.1002_P1. To enable it, click "**Option**" → "**Tool Configure**" on the menu of the Logel tool, and check the box to enable "Auto Identify AP Dump Pt".

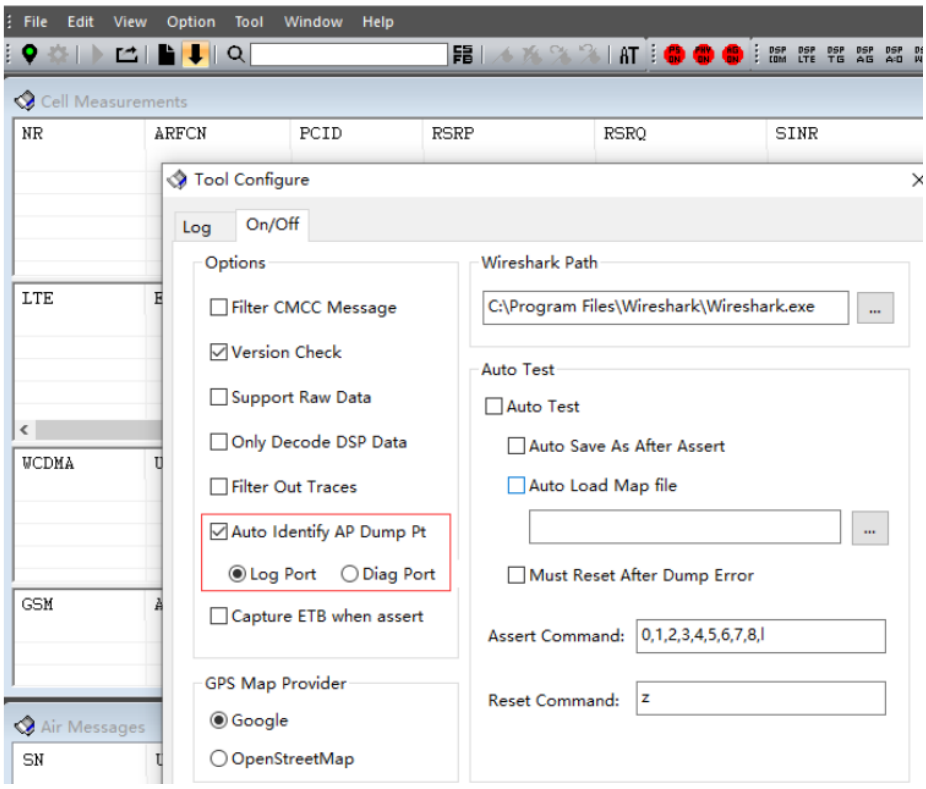

Figure 7: Configure Logel Tool

Step 3: After the U2S Diag port is displayed on the host, the Logel tool will automatically identify the port, connect to the module, and open a data frame to capture the dump file. The captured dump files are stored in the */Bin/History/* directory of the Logel tool on the host system.

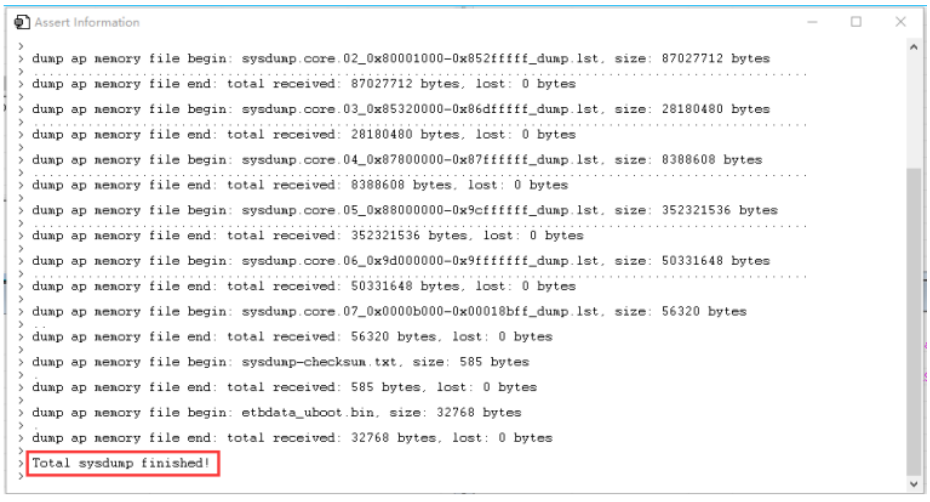

Figure 8: Capture AP Dump File with Logel

2.2. Linux System

This chapter explains how to capture logs and dump files on module AP in Linux through QLog.

2.2.1. Capture AP Log Through QLog

Step 1: See ***document [2]*** *and* ***[3]*** to install the USB and PCIe drivers of the Linux system.

Step 2: Open the Linux terminal in the QLog tool directory, and execute **make** to generate an executable file *Qlog* in the QLog tool directory. Execute **dmesg -w** in Linux terminal to list the module ports.

- If no serial ports are displayed when the module is successfully connected to Linux device, it may indicate USB driver installation issues. Please install the Linux USB driver again.
- If the module ports are loaded successfully, QLog can be launched. Module information will be printed after successful port loading.

Step 3: If the module is connected to your Linux device through USB interface, execute **AT+QTEST="debug"** to query the current debug mode. If the return value is not **4**, open the minicom tool and execute **AT+QTEST="debug",4** to enable module log. Then execute **./QLog –s log -x** in the Linux terminal to open QLog for log capture. Once log capture is completed, click "**Ctrl**" **+** "**C**" to end the QLog process.

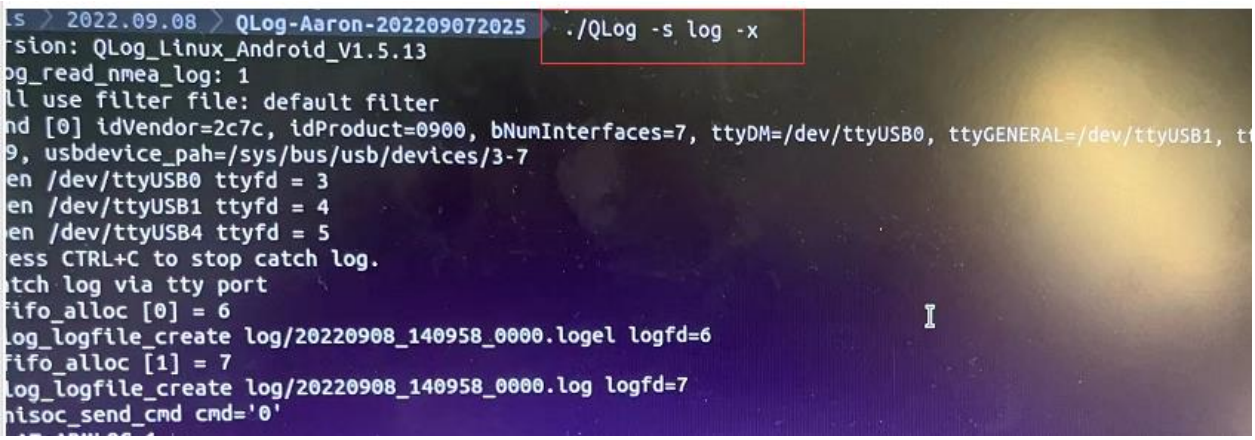

Figure 9: Capture AP Log in Linux Through USB

If the module is connected to your Linux device through the PCIe interface, execute **AT+QTEST="debug"** to query the current debug mode. If the return value is not **5**, open the minicom tool and execute **AT+QTEST="debug",5** to enable module log. Then execute **./QLog -s log -p /dev/sdiag_nr -x** in Linux terminal to open QLog for log capture. Once the log capture is completed, click "**Ctrl**" **+** "**C**" to end the QLog process.

Step 4: View the corresponding log file. You can save and send the log file to Quectel Technical Support for further analysis. Take viewing the log file *20220908_140725_0000.log* as an example:

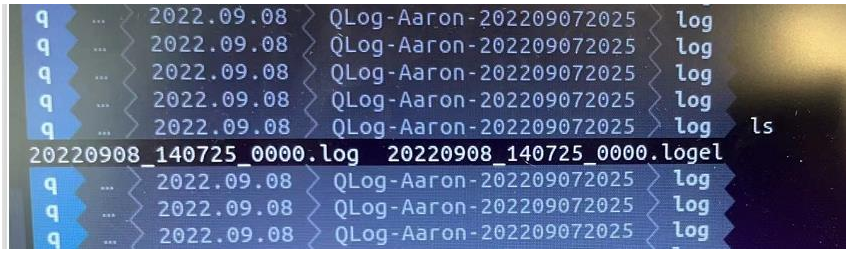

Figure 10: View AP Log in Linux

NOTE

Common parameters of QLog commands:

1. ***-s*** specifies the storage path for log.
2. ***-p*** specifies the port for log capture.
3. ***-f*** specifies the configuration file path for logs of different services and levels. The *.conf* file will not be stored in the *QLog* folder. Please specify the absolute or relative path of the file when using it. Different file names represent different log sets. For example:

- *unisoc_ps_cap_dsp_important_log.conf* represents printing ps (signaling), cap (IP packets), and dsp important level logs;
- *unisoc_ps_cap_dsp_normal_log.conf* represents printing ps (signaling), cap (IP packets), and dsp normal logs.

4. ***-x*** indicates to capture AP log.

2.2.2. Capture AP Dump File Through QLog

In Linux, in case of a dump on the module AP, you can use the QLog tool to capture the dump information. The steps are shown as follows.

Step 1: See **document *[2]*** to install the USB diver of the Linux system.

Step 2: Open the Linux terminal in the QLog tool directory, and execute **make** to generate an executable file *Qlog* in the QLog tool directory. Execute **dmesg -w** in Linux terminal to list the module ports.

- If no serial ports are displayed when the module is successfully connected to Linux device, it may indicate USB driver installation issues. Please install the Linux USB driver again.
- If the module ports are loaded successfully, the QLog tool can be launched. Module information will be printed after successful port loading as shown in the figure below.

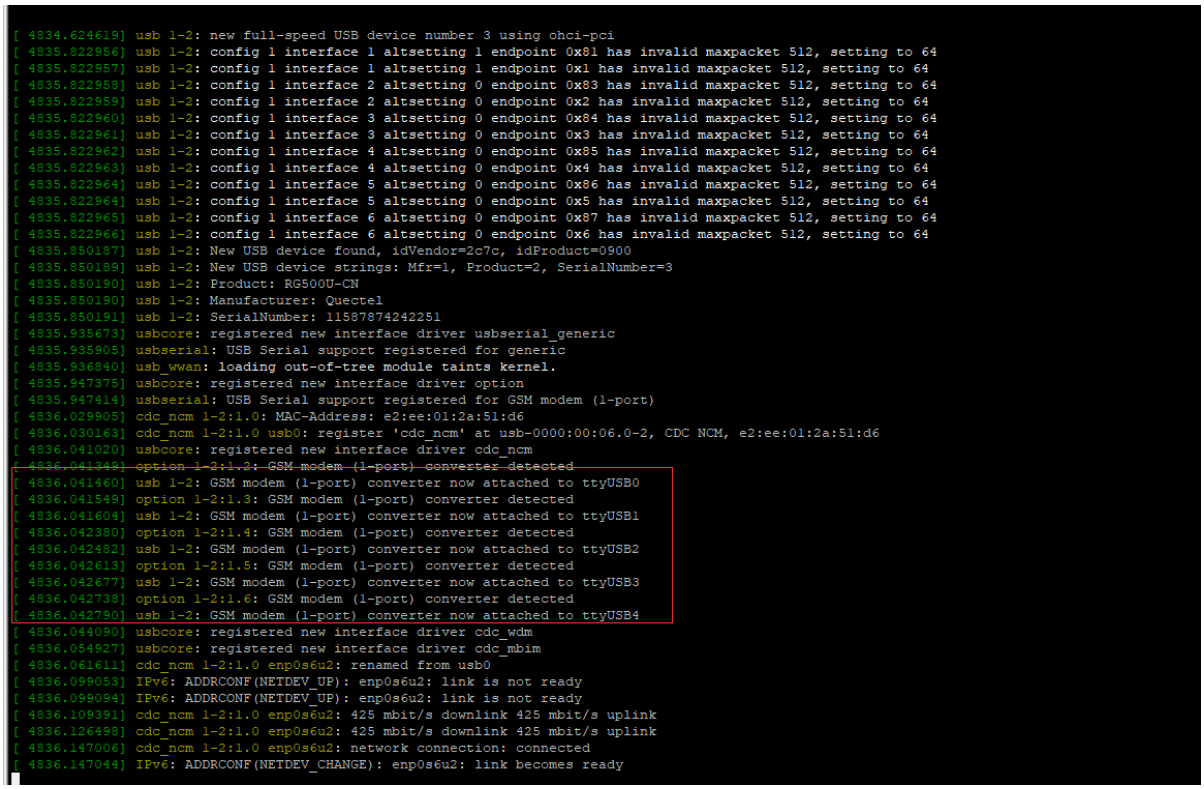

Figure 11: Load Module Ports

Step 3: Open the minicom tool, execute **AT+ARMLOG=1** to enable module log, and then send **AT+QCFG="modemrstlevel",0** and **AT+QCFG="aprstlevel",0** to prevent the module from restarting due to a dump, thus ensuring the successful dump file capture.

Step 4: Execute **./QLog -s apdump** in the Linux terminal to capture the module's dump file. The captured dump file will be stored in the same QLog tool directory.

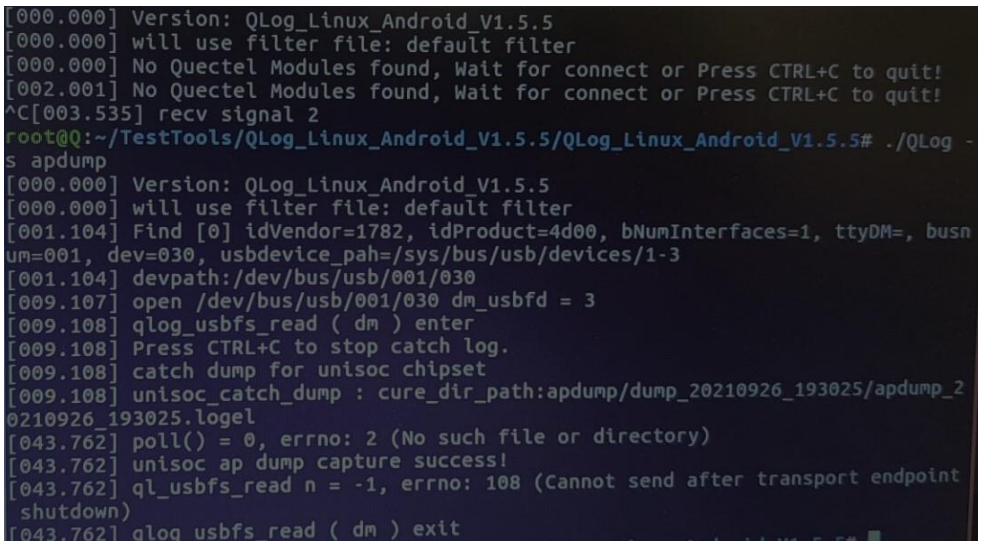

Figure 12: Capture AP Dump File with QLog

3 Capture CP Log and Dump File

3.1. Windows System

This chapter explains how to capture logs and dump files on module CP in Windows with Logel.

3.1.1. Capture CP Log Through Logel

Step 1: See ***document [4]*** to install the latest version of Quectel_Windows_USB_Driver(U)_For_ECM_RNDIS driver provided by Quectel to ensure that the serial ports can be identified.

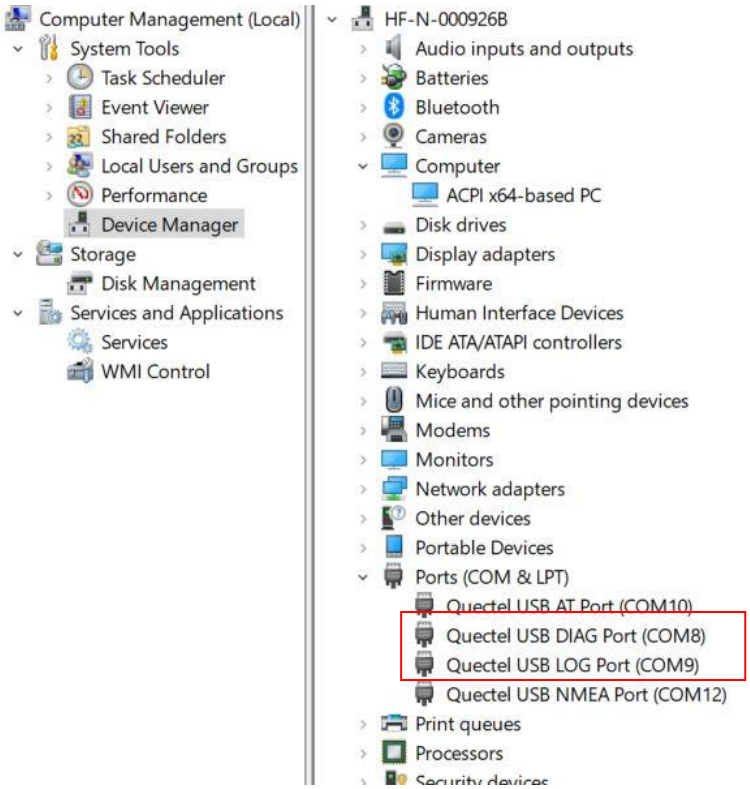

Figure 13: Identify Serial Ports Successfully

Step 2: Open the QCOM tool, select the corresponding AT port, set the default baud rate and connect the module. After that, send **AT+ARMLOG=1** to enable module log.

Step 3: Open the Logel tool, select the log output directory in the figure below to set the log storage path, select the corresponding "Diag Port" and "Log Port", and then click "**OK**". An example is as follows:

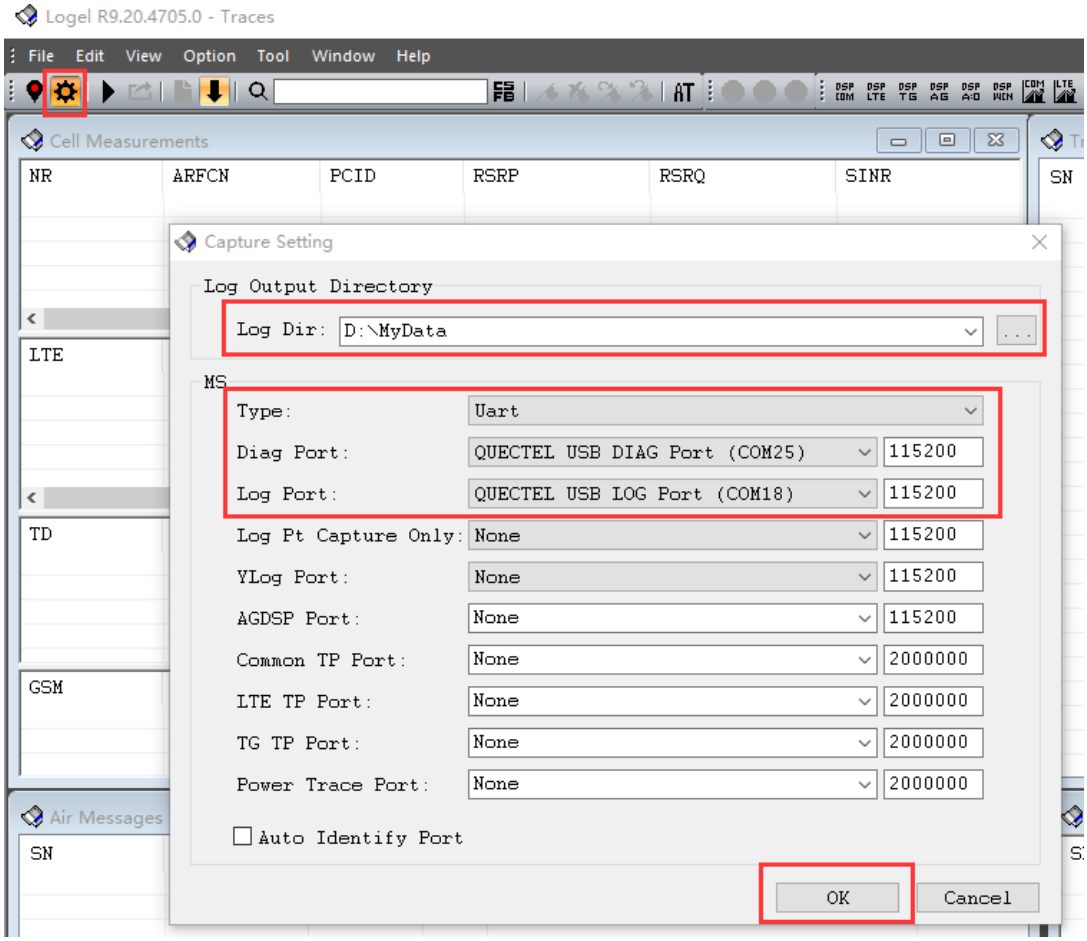

Figure 14: Select Diag Port and Log Port

NOTE

1. Since the log file is generally very large, it is recommended not to store it in the C drive.
2. If some log file packets are lost, send **AT+QCFG="iq_vser",1** to restart the module and then re-capture the CP log. For detailed information of the AT command, see ***document [1]***.

Step 4: Click  to capture logs. When the button turns to  , it means that the logs are captured successfully.

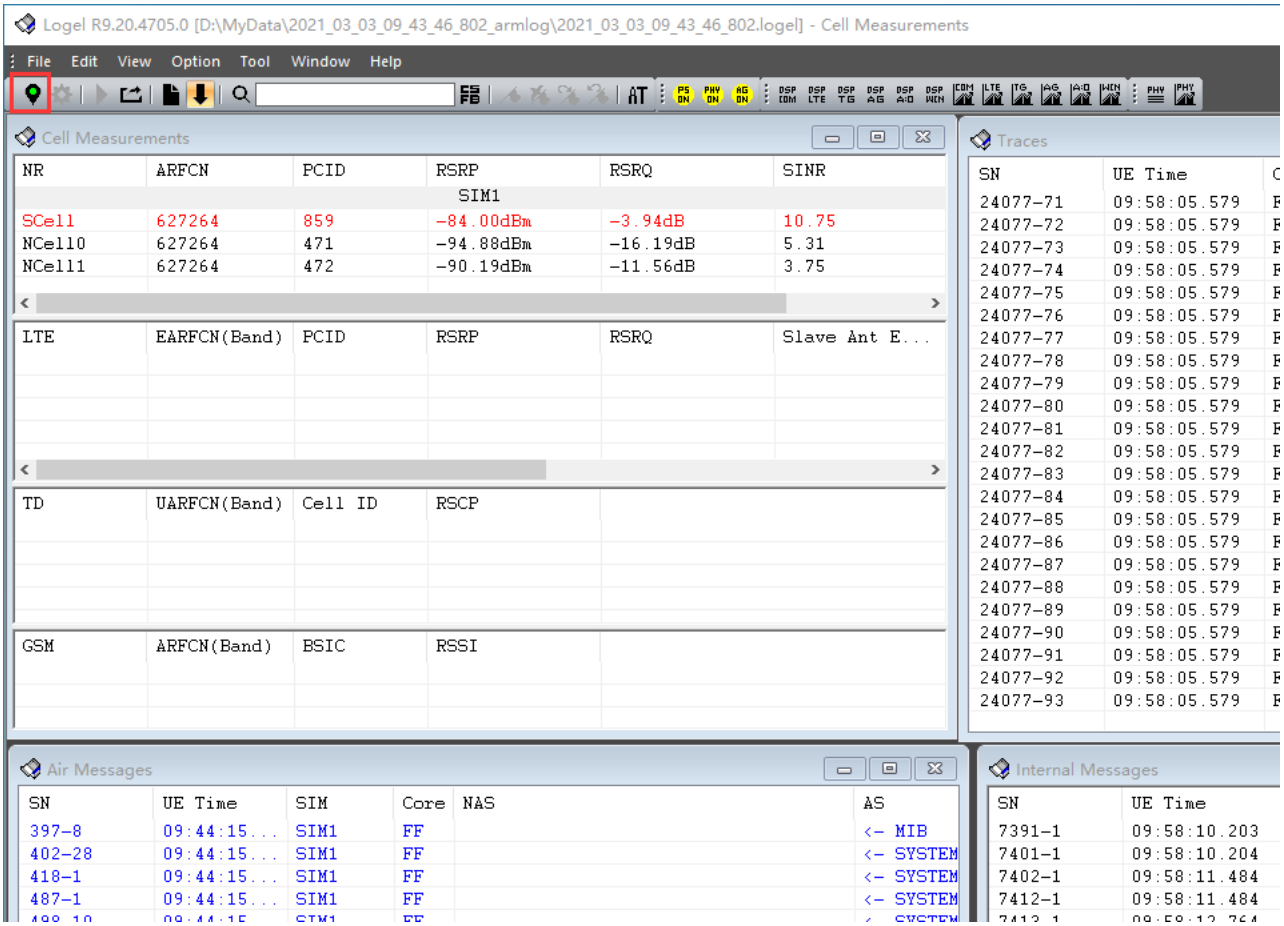

Figure 15: Capture CP Log in Windows

Step 5: After the log is successfully captured, enter the corresponding storage path to obtain the log. If you need to analyze the captured log (only files with .logel, .lst and .log suffixes can be analyzed), click the  button as shown in the figure below, and select the file to be analyzed. During the loading process,  will turn to  . After log analysis is completed, the button will turn back to  .

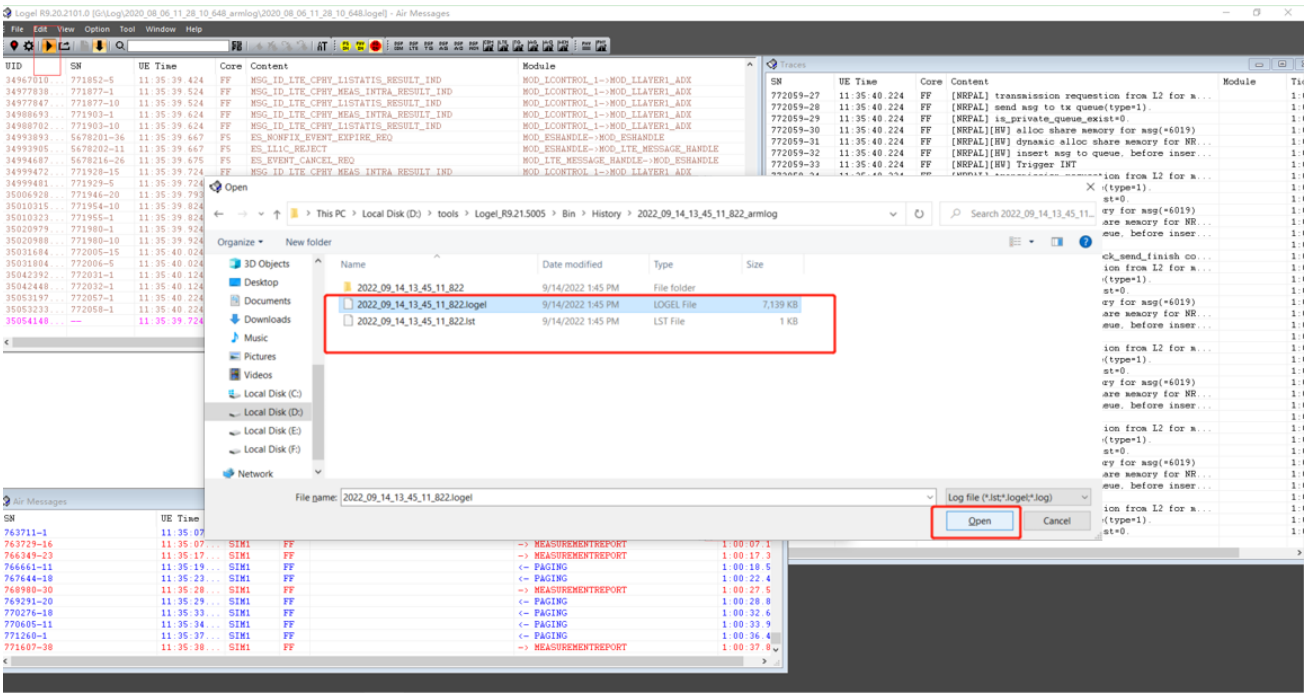

Figure 16: Select File to be Analysed

NOTE

To capture the CP log with Logel, execute **AT+ARMLOG=1** to enable module log (Step 2), and **AT+SPLOGLEVEL=1,<log_level>,"FFFFFFFFFFFFFFFF","FFFFFFFFFFFFFFFFFFFFFFFFFFFFFFFF"** to configure the log level through the QCOM tool. Except **<log_level>**, other parameters do not need to be modified.

<log_level> Integer type. Log level.

1 Print important logs only

3 Only print logs of normal level

5 Print all logs

3.1.2. Capture CP Dump File Through Logel

Step 1: Based on Step 1–3 in ***Chapter 3.1.1***, open the QCOM tool and send **AT+QCFG="modemrstlevel",0** and **AT+QCFG="aprstlevel",0** to prevent the module from restarting due to a dump, thus ensuring the successful dump file capture.

Step 2: In the Logel tool, start capturing the dump file after checking the configuration. The configuration is shown in the following figure:

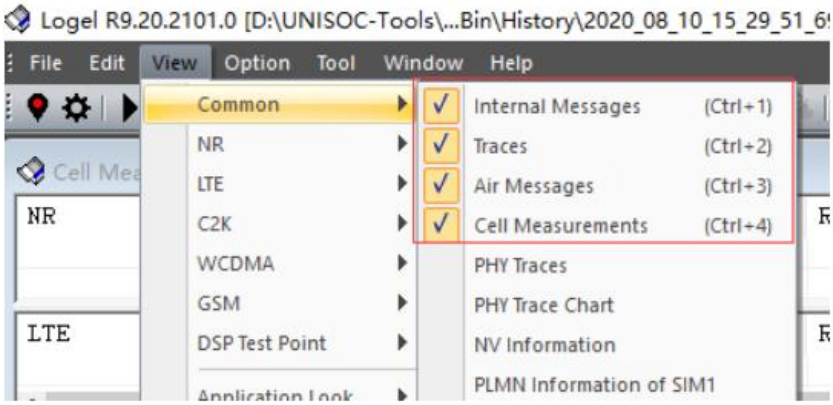

Figure 17: Check Configuration in Logel

Step 3: In case of a dump on module CP, there will be no response when executing the network-related AT commands on CP, indicating that the AT port is blocked. After the Logel tool is opened, the following dialog box will automatically pop up. The tool will automatically export the dump file after clicking "**Cancel**". You can capture the dump file manually by clicking "**OK**", and you will be prompted to enter **3** for confirmation. After capturing the dump file, a file with a .mem suffix will be generated in the log storage directory.

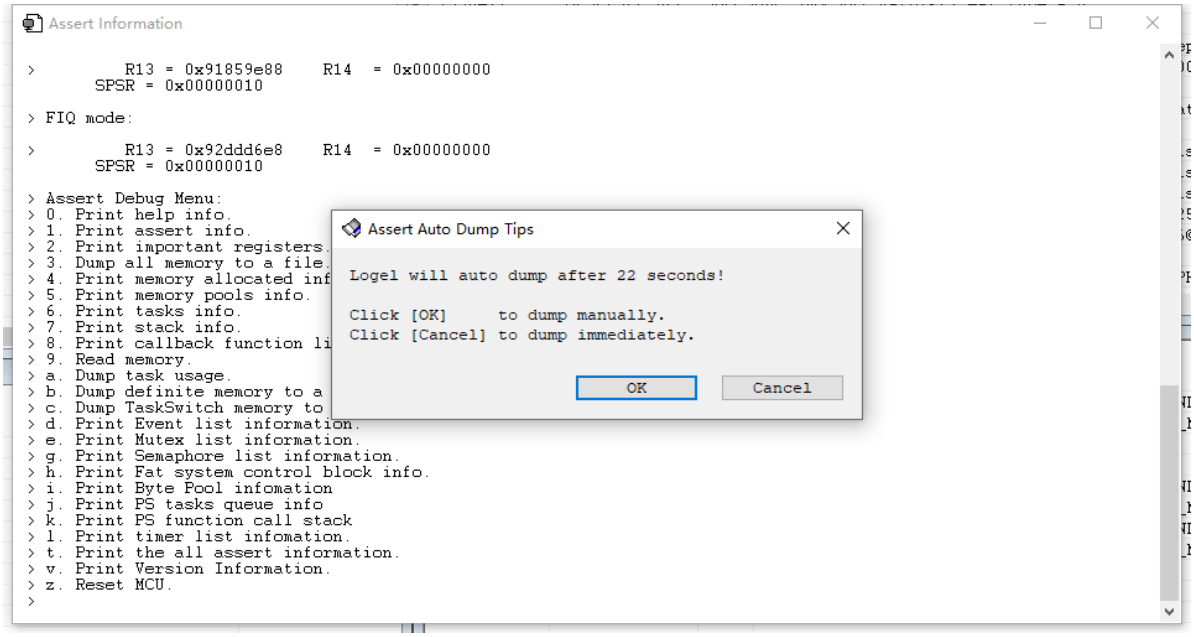

Figure 18: Capture CP Dump File in Windows

NOTE

If some CP dump file packets are lost, send **AT+QCFG="quecdumptime",<delay>** to re-capture the CP dump file (**<delay>** represents the delay time after capturing the dump file. Range: 0–5000; Unit: microsecond.). For detailed information of the AT command, see ***document [1]***.

3.2. Linux System

This chapter explains how to capture logs and dump files on module CP in Linux with QLog.

3.2.1. Capture CP Log Through QLog

Step 1: See ***document [2]*** *and* ***[3]*** to install the USB and PCIe drivers of the Linux system.

Step 2: Open the Linux terminal in the QLog tool directory, and execute **make** to generate an executable file *Qlog* in the QLog tool directory. Execute **dmesg -w** in Linux terminal to list the module ports.

- If no serial ports are displayed when the module is successfully connected to Linux device, it may indicate USB driver installation issues. Please install the Linux USB driver again.
- If the module ports are loaded successfully, QLog be launched. Module information will be printed after successful port loading.

Step 3: Open the minicom tool and execute **AT+ARMLOG=1** to enable module log.

Step 4: If the module is connected to your Linux device through USB interface, execute **./QLog -s log -f** (for example, **./QLog –s log -f ../unisoc_ps_cap_dsp_important_log.conf**) in Linux terminal to open QLog for log capture. Once the log capture is completed, click "**Ctrl**" **+** "**C**" to end the QLog process.

If the module is connected to your Linux device through the PCIe interface, execute **./QLog -s log -p -f** (for example, **./QLog – s log -p /dev/sdiag_nr -f ./unisoc_ps_cap_dsp_normal_log.conf**) in Linux terminal to open QLog for log capture. Once the log capture is completed, click "**Ctrl**" **+** "**C**" to end the QLog process.

For example, the module is connected to your Linux device through USB interface:

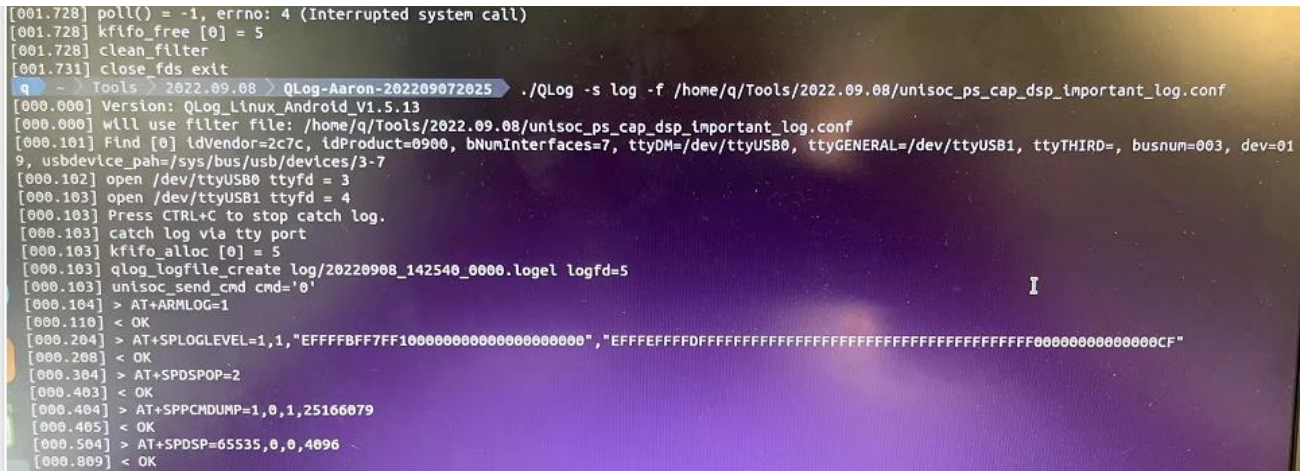

Figure 19: Capture CP Log in Linux

Step 5: View the corresponding log file. You can save and send the log file to Quectel Technical Support for further analysis. Take viewing the log file *20220908_143049_0000.logel* as an example:

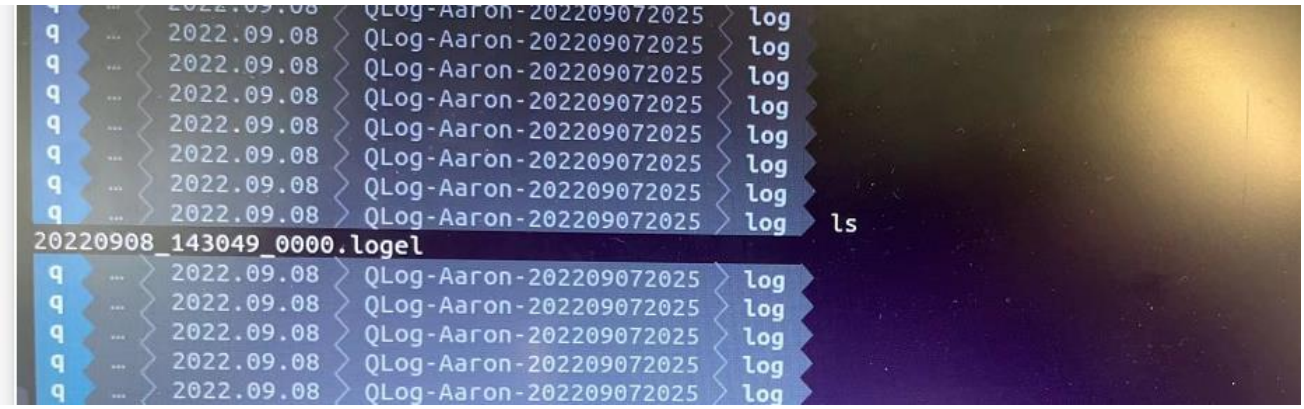

Figure 20: View CP Log in Linux

NOTE

1. If some log file packets are lost, send **AT+QCFG="iq_vser",1** to restart the module and then re-capture the CP log. For detailed information of the AT command, see ***document [1]***.
2. ***-f*** specifies the configuration file path for logs of different services and levels. The *.conf* file will not be stored in the *QLog* folder. Please specify the absolute or relative path of the file when using it. Different file names represent different log sets, for example:
   - *unisoc_ps_cap_dsp_important_log.conf* represents printing ps (signaling), cap (IP packets), and dsp important level logs;
   - *unisoc_ps_cap_dsp_normal_log.conf* represents printing ps (signaling), cap (IP packets), and dsp normal logs.

3.2.2. Capture CP Dump Log Through QLog

Based on Step 1–3 in ***Chapter 3.2.1***, open the minicom tool and execute **AT+QCFG="modemrstlevel",0** and **AT+QCFG="aprstlevel",0** to prevent the module from restarting due to a dump, thus ensuring the successful dump file capture.

If the module is connected to your Linux device through USB interface, execute **./QLog -s dump** in the Linux terminal to capture the module dump file. Once the log capture is completed, click "**Ctrl**" **+** "**C**" to end the QLog process. The captured dump file is stored in the same QLog tool directory.

If the module is connected to your Linux device through PCIe interface, execute **./QLog -s dump -p /dev/sdiag_nr** in the Linux terminal to capture the module dump file. Once the log capture is completed, click "**Ctrl**" **+** "**C**" to end the QLog process. The captured dump file is stored in the same QLog tool directory.

NOTE

If some CP dump file packets are lost, send **AT+QCFG="quecdumptime",<delay>** to re-capture the CP dump file (**<delay>** represents the delay time after capturing the dump file. Range: 0–5000; Unit: microsecond.). For detailed information of the AT command, see ***document [1]***.

3.3. Socket

The module can capture log files through a socket connection in the following situations. However, it is necessary to ensure that the host and the module are on the same local area network, and the network connection is unobstructed.

- CP log cannot be captured through the USB/PCIe connection
- There is no USB/PCIe interface in the module
- CP log needs to be captured remotely

NOTE

1. Currently, the socket method is used to capture the CP logs on the Windows system's host.
2. The module firmware versions released by Quectel after June 2021 support the CP log capture through a socket.
3. It is recommended to use a wired network for log data capture and sending, since the amount of log data is large and must be transmitted in real-time. Wi-Fi network is generally unstable.

3.3.1. Capture CP Log Directly Through a Network Cable

This chapter explains how to capture CP logs on a Windows host through a socket when the module is connected to the host through a USB cable and the wired network is established.

Step 1: Open the QCOM tool, and execute **AT+QCFG="nat",2** and **AT+QCFG="usbnet",3**.
Step 2: Restart the module for the configurations to take effect.
Step 3: After that, execute **AT+ARMLOG=1** to enable module log.
Step 4: Open the Logel tool on the host, select "**Socket**" for "**Type**", and click "**OK**" after checking the following configurations:
- Address (Diag): 192.168.42.1
- Port (Diag): 10056
- Address (SMP): 192.168.42.1
- Port (SMP): 10057

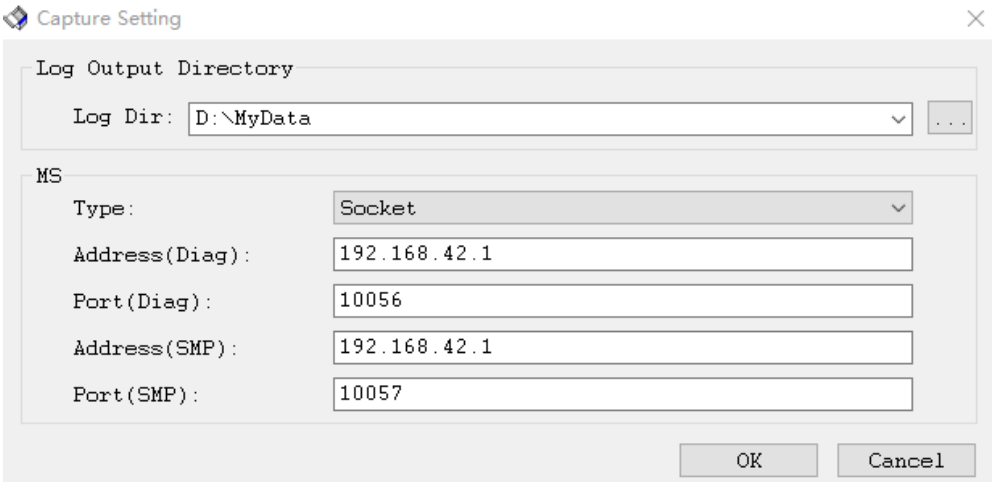

Figure 21: Configure Socket in Logel (Directly Through Network Cable)

Step 5: Click on Logel to capture logs.

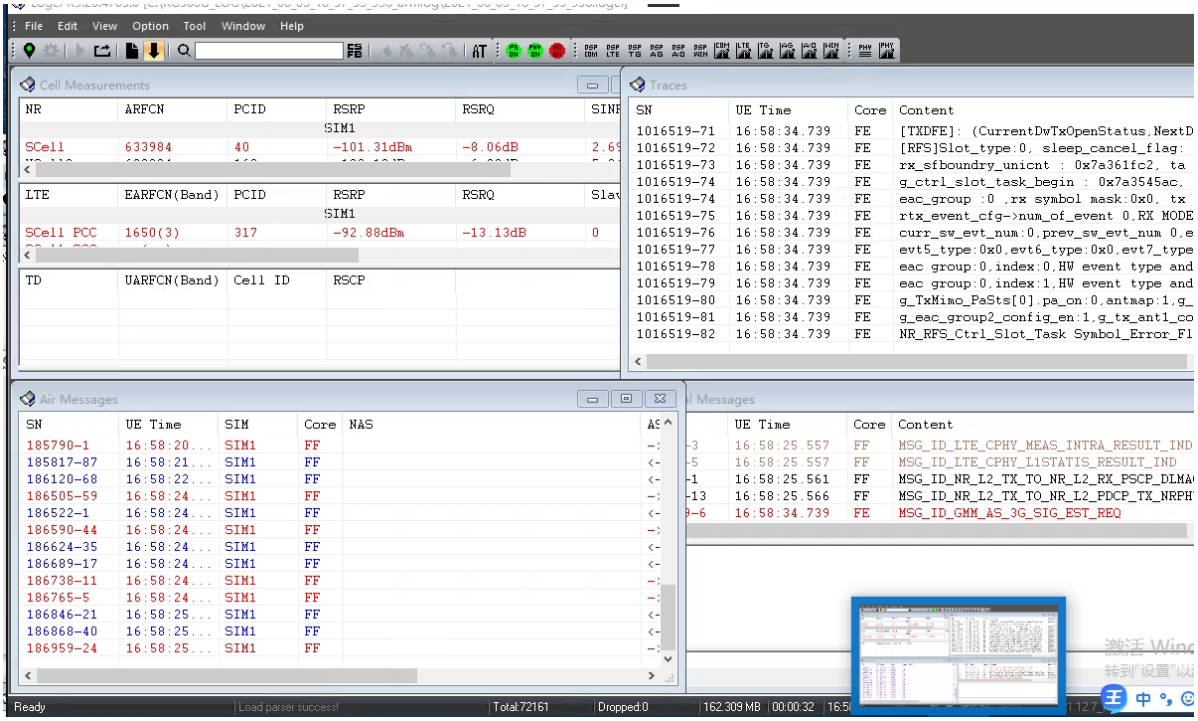

Figure 22: Result of Log Capture via Socket in Logel

NOTE

1. Address (SMP) varies depending on the different network card dial-up modes. Please fill in the actual address accordingly.
2. If some log file packets are lost, send **AT+QCFG="iq_vser",1** to restart the module and then re-capture the CP log. For detailed information of the AT command, see ***document [1]***.

3.3.2. Capture CP Dump File Directly Through a Network Cable

Step 1: Open the QCOM tool, and execute **AT+QCFG="nat",2** and **AT+QCFG="usbnet",3**

Step 2: Restart the module for the configurations to take effect.

Step 3: After that, send **AT+ARMLOG=1**, **AT+QCFG="aprstlevel",0**, **AT+QCFG="modemrstlevel",0** and **AT+QCFG="aprstlevel",0** from the host to the module in sequence to prevent the module from restarting due to a dump, thus ensuring successful dump file capture.

Step 4: Open the Logel tool of the host, select "**Socket**" for "**Type**", and click "**OK**" after checking the following configurations:

- Address (Diag): 192.168.42.1
- Port (Diag): 10056
- Address (SMP): 192.168.42.1
- Port (SMP): 10057

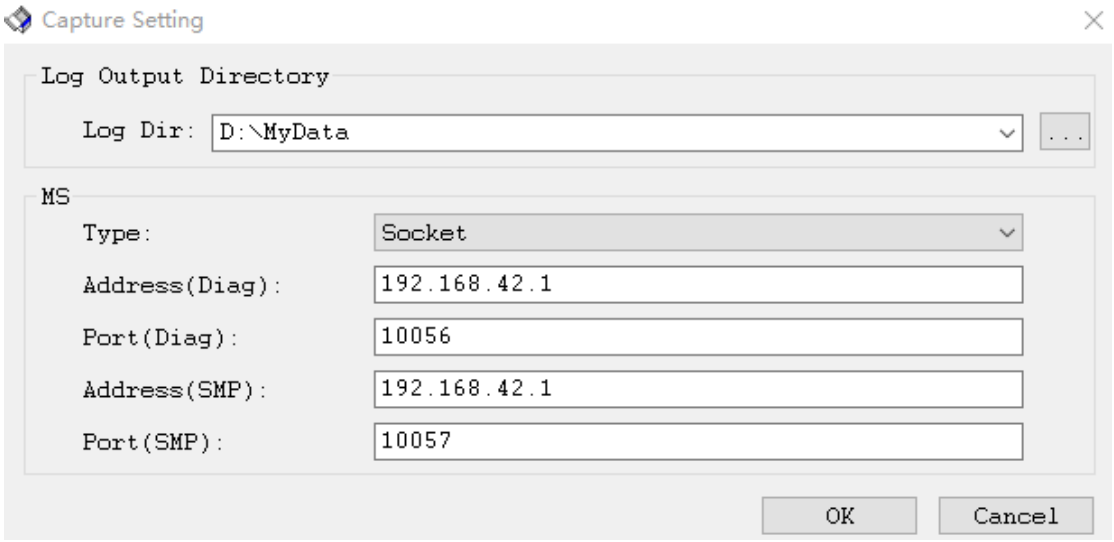

Figure 23: Configure Socket in Logel (Directly Through Network Cable)

Step 5: Click  on Logel to capture dump files.

Step 6: In case of a dump on module CP, the following dialog box will automatically pop up after the Logel tool is opened. The tool will automatically export the dump file after clicking "**Cancel**". You can capture the dump file manually by clicking "**OK**", and you will be prompted to enter **3** for confirmation. After capturing the dump file, a file with a .mem suffix will be generated in the log storage directory.

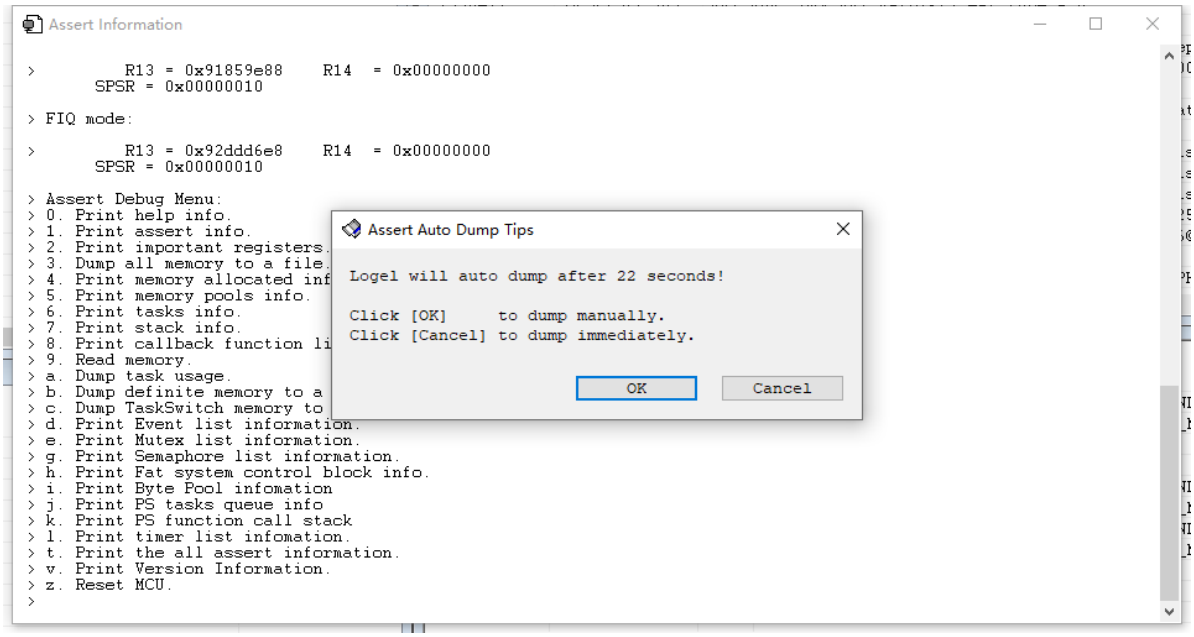

Figure 24: Capture CP Dump File in Windows

NOTE

1. When you capture CP dump files through socket, the module's network card dial-up mode can only be set to either router mode (by **AT+QCFG="nat",1**) or bridge mode (by **AT+QCFG="nat",2**). Please fill in the corresponding address accordingly.
2. If some CP dump file packets are lost, send **AT+QCFG="quecdumptime",<delay>** to re-capture the CP dump file (**<delay>** specifies the delay time after capturing dump file. Range: 0–5000; Unit: microsecond.). For detailed information of the AT command, see ***document [1]***.

3.3.3. Capture CP Log Indirectly Through a Network Cable

This chapter explains how to capture CP logs on a Windows host through a socket when the module is connected to the your Linux device instead of directly to the host. This approach involves multiple network topologies. Here is an example of the most commonly used network topology.

When the module is directly connected to a Linux device, you can capture CP logs only by routing them indirectly to the host's Logel tool through a network connection because the storage capacity of the Linux device is limited. In this case, the Linux device should run QLog to capture the CP logs from the module, and then send them to the host's Logel tool through a socket connection. The detailed steps are as follows:

Step 1: The module can connect to a Linux device via USB or PCIe interface. Then the Linux device creates a TCP connection with the Logel on the PC via the network cable or the same local area network. The specific hardware connection diagram is as follows.

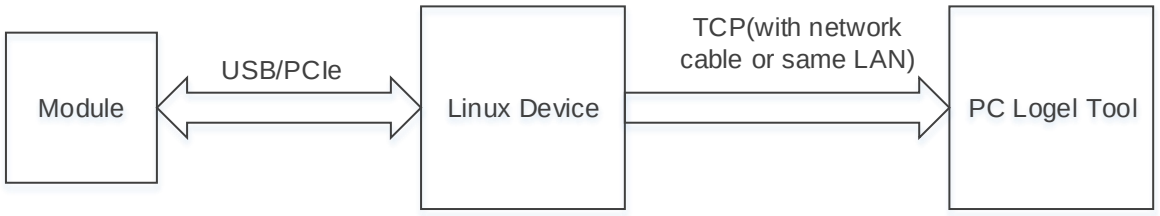

Figure 25: Device Structure

Step 2: If the module is connected to your Linux device through USB interface, execute **./QLog -s 9000 &** on your Linux device to capture logs. This command captures logs by default, and the default port is */dev/ttyUSB1*.

If the module is connected to your Linux device through the PCIe interface, execute **./QLog -s 9000 -p /dev/sdiag_nr &** on yourLinux device, and **-p** in the command specifies the port */dev/sdiag_nr* for log capture.

```
root@IPQ8072:/tmp# ./QLog -s 9000 &
root@IPQ8072:/tmp# [000.000] QLog Version: Quectel_QLog_Linux&Android_V1.5
[000.000] will save log into dir: 9000
[000.000] will use filter file: default filter
[000.101] Find [0] idVendor=2c7c, idProduct=0900, bNumInterfaces=7, ttyDM=/dev/ttyUSB0, busnum=004, dev=003, usbdevice_pah=/sys/bu
usb/devices/4-1
[000.101] ttyLOG=/dev/ttyUSB1
[000.102] open /dev/ttyUSB0 ttyfd = 3
[000.102] open /dev/ttyUSB1 ttyfd = 4
[000.102] Press CTRL+C to stop catch log.
[000.102] catch log via tty port
[000.103] Starting the TCP server(9000)...
[000.103] bind OK!
[000.103] listen OK!
Waiting the TCP Client...
[001.535] recv: 16M 0K 704B  in 1433 msec
[005.568] recv: 16M 1K 136B  in 4033 msec
[009.363] recv: 16M 0K 188B  in 3795 msec
```

Figure 26: Running Result of QLog

NOTE

1. Before running the QLog tool on the Linux device, make sure that the USB or PCIe driver is installed, and the serial ports are successfully loaded. For more details, see ***document [2]*** and ***[3]***.
2. If the host has limited performance capabilities, reduce the size of CP log data with **./Qlog -s 9000 -f xxxx.conf &**. Replace *xxxx.conf* in the command with the appropriate .conf configuration file based on your specific application to filter out unnecessary logs.
3. If some log file packets are lost, send **AT+QCFG="iq_vser",1** to restart the module and then re-capture the CP log. For detailed information of the AT command, see ***document [1]***.

Step 3: Open the minicom tool, select the corresponding AT port, set the default baud rate and connect the module. After that, send **AT+ARMLOG=1** to enable module log.

Step 4: Open the Logel tool on the host, select "**Socket**" for "**Type**", and click "**OK**" after checking the following configurations:

- Address (Diag): Address of Linux device (such as 192.168.100.1，check Linux host IP address through **ifconfig**)
- Port (Diag): 9000
- Address (SMP): Address of Linux device (such as 192.168.100.1)
- Port (SMP): 9001

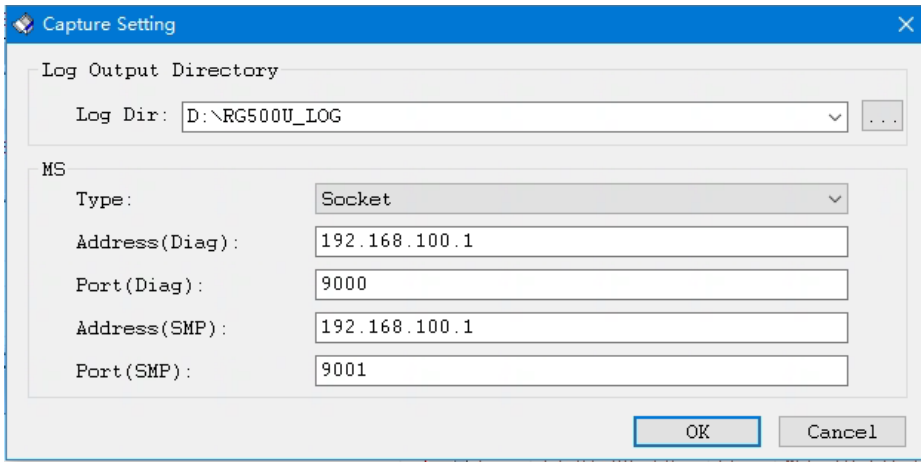

Figure 27: Configure Socket on Logel (Indirectly Through Network Cable)

Step 5: Click on Logel to capture logs, which are transmitted by QLog, on user's Linux device through TCP connection.

3.3.4. Capture CP Dump File Indirectly Through a Network Cable

This chapter explains how to capture CP logs on a Windows host through a socket when the module is connected to the host through a Linux device instead of directly to the host. This approach involves multiple network topologies. Here is an example of the most commonly used network topology.

When the module is directly connected to the Linux device, you can capture CP logs only by routing them indirectly to the host's Logel tool through the network connection because the storage capacity of the Linux device is limited. In this case, the Linux device should run QLog to capture the CP dump files from the module, and then send them to the host's Logel tool through a socket connection. The detailed steps are as follows:

Step 1: Send **AT+ARMLOG=1**, **AT+QCFG="modemrstlevel",0** and **AT+QCFG="aprstlevel",0** in sequence from the host to the module to set the module to dump mode to prevent it from restarting due to a dump, thus ensuring the successful dump file capture.

Step 2: The module can connect to a Linux device via USB or PCIe interface. Then the Linux host creates a TCP connection with the Logel on the PC via the network cable or the same local area network. See the specific hardware connection diagram in ***Figure 25***.

If the module is connected to your Linux device through the USB interface, run **./QLog -s 9000 &**

on your Linux device. This command captures logs by default, and the default port is */dev/ttyUSB1*.

If the module is connected to your Linux device through the PCIe interface, run **./QLog -s 9000-p /dev/sdiag_nr &** on your Linux device, and **-p** in the command specifies the port */dev/sdiag_nr* for log capture.

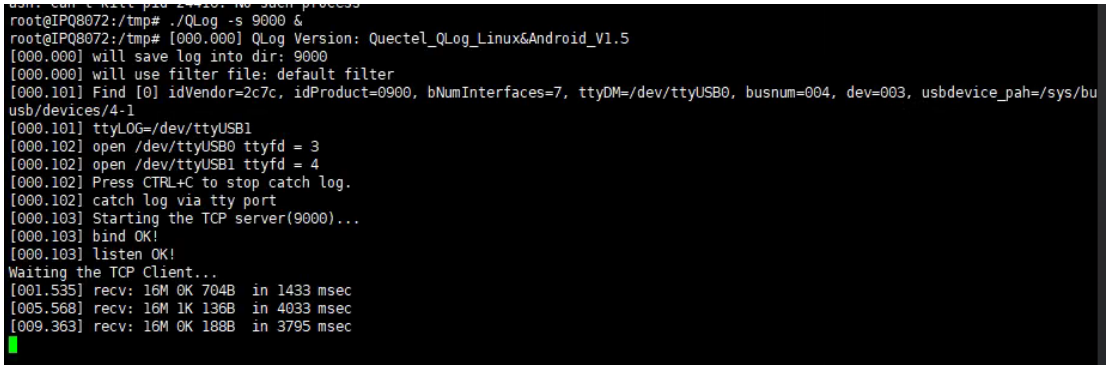

Figure 28: Running Result of QLog

NOTE

1. Before running the QLog tool on the Linux device, make sure that the USB or PCIe driver is installed, and the serial ports are successfully loaded. For more details, see ***document [2]*** and ***[3]***.
2. If some CP dump file packets are lost, send **AT+QCFG="quecdumptime",<delay>** to re-capture the CP dump files (**<delay>** represents the delay time after capturing the dump file. Range: 0–5000; Unit: microsecond.). For detailed information of the AT command, see ***document [1]***.

Step 3: Open the minicom tool, select the corresponding AT port, set the default baud rate and connect the module. After that, send **AT+ARMLOG=1** to enable module log.

Step 4: Open the Logel tool on the host, select "**Socket**" for "**Type**", and click "**OK**" after checking the following configurations:

- Address (Diag): Address of Linux device (such as 192.168.100.1)
- Port (Diag): 9000
- Address (SMP): Address of Linux device (such as 192.168.100.1)
- Port (SMP): 9001

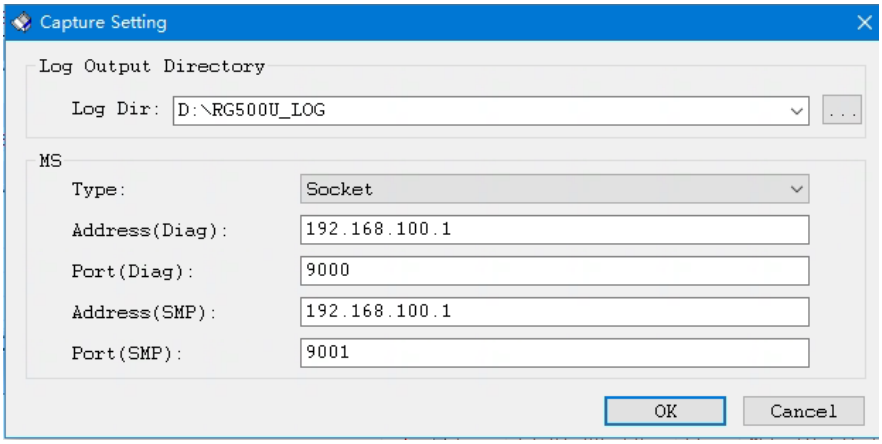

Figure 29: Configure Socket on Logel (Through a Network Cable Indirectly)

Step 5: Click on Logel to start capture dump files, which are transmitted by QLog, on user's Linux device through TCP connection.

Step 6: In case of a dump on module CP, the following dialog box will automatically pop up after the Logel tool is opened. The tool will automatically export the dump file if you click "**Cancel**". You can capture the dump file manually by clicking "**OK**", and you will be prompted to enter **3** for confirmation. After capturing the dump file, a file with a .mem suffix will be generated in the log storage directory.

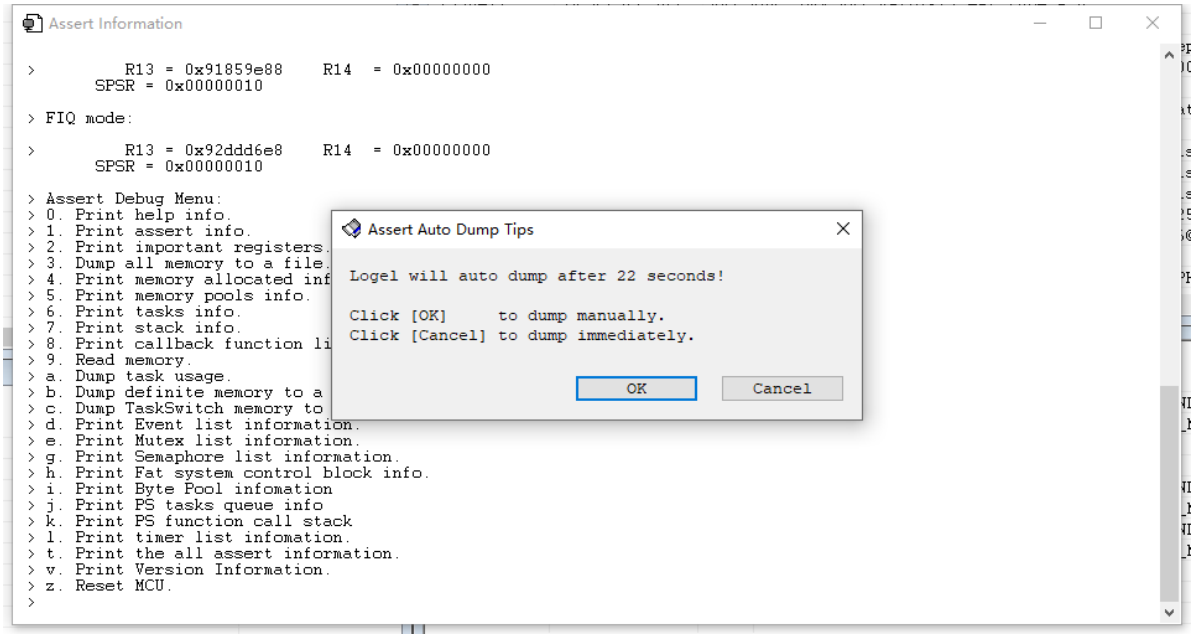

Figure 30: Capture CP Dump File in Windows

4 Matters Needing Attention

4.1. Log Capture when AT Port is Blocked

Step 1: Check for a dump on module CP according to the response to AT commands on CP. If there is no response to any AT command and the module AP is in normal state, it means a high probability of a dump occurring on the module CP.

Step 2: If no dump occurs on module CP, connect the host to the module's debug UART, and execute **ps|grep atrouter** to check for the atrouter process. If the process is still running, maintain it operational.

Step 3: Export the *yocto.log* and *yocto.log.tmp* files from the */data* directory with ADB. The primary log file is named *yocto.log,* and it contains both kernel and application logs. If this log file exceeds its size limit, a supplementary *yocto.log.tmp* file will be automatically generated. Open the cmd window and execute **adb devices** to verify if the device is successfully identified. Once your device is successfully identified, execute **adb pull /data/yocto.log <host_path>** and **adb pull /data/yocto.log.tmp <host_path>** to retrieve the log files from the module and save them to a specified location on the host. If necessary, you can save and send the log file to Quectel Technical Support for further analysis.

Figure 31: Identify Device

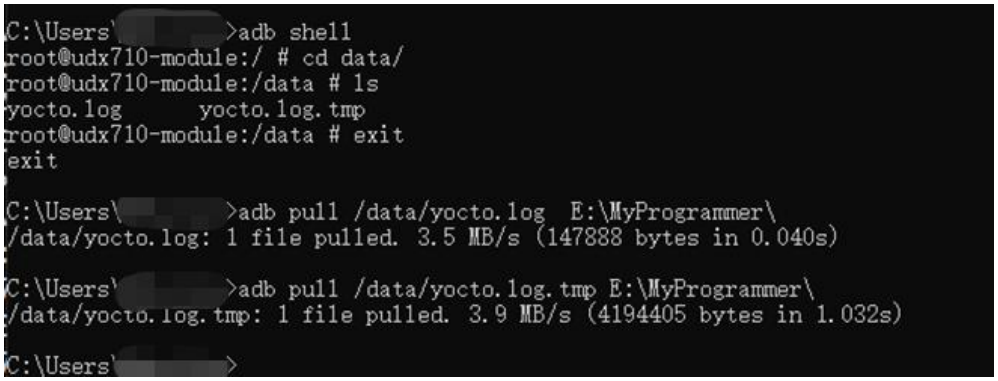

Figure 32: Export AP Log File

4.2. Network State Checking-Related AT Commands

1. **AT+CFUN?**: Query the function mode of the module
2. **AT+CPIN?**: Query the status of (U)SIM PIN
3. **AT+CEREG?**: Query EPS network registration status
4. **AT+COPS?**: Query network status
5. **AT+QENG="servingcell"**: Query serving cell information
6. **AT+CGDCONT?**: Query PDP configuration
7. **AT+CGPADDR**: Query PDP address, **<cid>** is the specified PDP context ID
8. **AT+CGACT?**: Query PDP activation status

NOTE

For more details about the above AT commands, see ***document [1]***.

5 Typical Applications

To capture AP and CP logs synchronously, connect the module to your Linux device via USB port or PCIe interface, and use the QLog tool, as follows:

Step 1: If the module is connected to customer's Linux device through USB interface, execute **AT+QTEST="debug"** to query the current debug mode. If the return value is not **4**, open the QCOM tool, then execute **AT+QTEST="debug",4** to enable module log.

If the module is connected to your Linux device through the PCIe interface, execute **AT+QTEST="debug"** to query the current debug mode. If the return value is not **5**, open the QCOM tool, and then execute **AT+QTEST="debug",5** to enable module log.

Step 2: Enable simultaneous capture of AP and CP logs by referring to the command shown in the following figure.

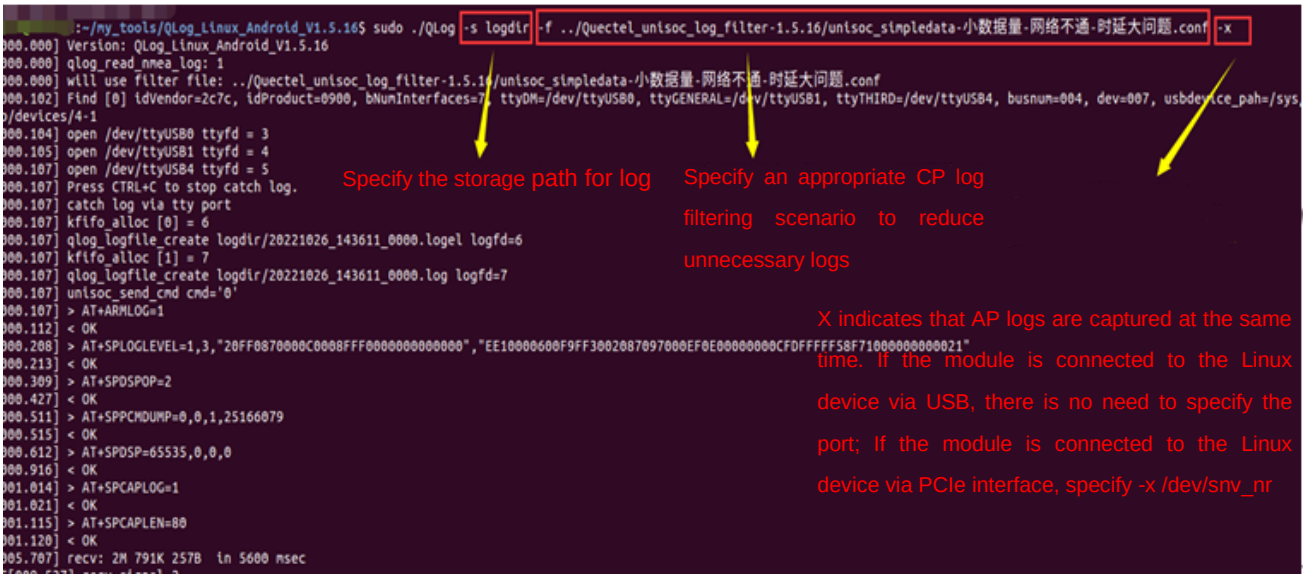

Figure 33: Example of Capturing Log with QLog

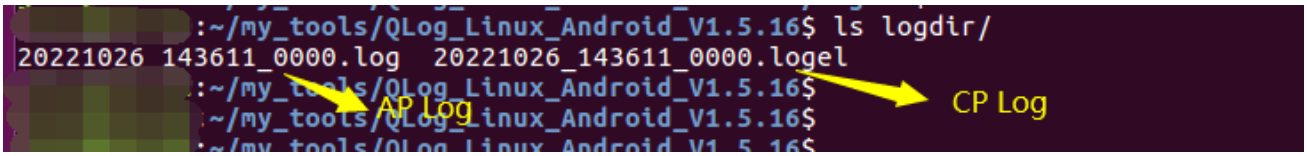

Figure 34: Log Generated by QLog Host

6 Appendix References

Table 1: Related Documents

Document Name
[1] Quectel_RGx00U&RM500U_Series_AT_Commands_Manual
[2] Quectel_UMTS_LTE_5G_Linux_USB_Driver_User_Guide
[3] Quectel_RGx00U&RM500U_Series_PCIe_Driver_User_Guide
[4] Quectel_Windows_USB_Driver(U)_For_ECM_RNDIS_Installation_Guide

Table 2: Terms and Abbreviations

Abbreviation	Description
ADB	Android Debug Bridge
AP	Application Processor
CP	Central Processor
COM	Communication
EPS	Evolved Packet System
IP	Internet Protocol
PDP	Packet Data Protocol
PIN	Personal Identification Number
USB	Universal Serial Bus
(U)SIM	(Universal) Subscriber Identity Module