BC66&BC66-NA QuecOpen Genie Log Capture Guide

NB-IoT Module Series

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GENERAL NOTES

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About the Document

Revision History

Version	Date	Author	Description
1.0	2020-06-19	Sheffer GU	Initial

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1 Introduction

This document mainly introduces how to capture Genie logs of BC66 and BC66-NA modules with a Genie tool in QuecOpen® solution.

If there is an abnormal restart, network registration error, data service error or even system crash in module debugging, refer to this document to capture the Genie logs for further analysis of the causes.

2 Environment Setup

This chapter mainly introduces how to set up the software and hardware environment before capturing Genie logs.

2.1. Software Environment

The software environment setup involves the installation of USB drivers and the Genie tool. The specific operation steps are as follows.

2.1.1. Driver Installation

Please contact Quectel Technical Support for the latest USB driver (*MT2625_MS_USB_ComPort_Driver*) and USB to UART bridge VCP driver (*CP210x_Windows_Drivers*). Unzip the packages and install them separately.

2.1.2. Driver Check

After the drivers are installed, check whether the drivers can work normally or not.

Step 1: Check the USB to UART bridge VCP driver: Open "**Device Manager**" → "**Ports**", and supply power to the module. If the ports shown in the figure below are detected, the serial port driver is successfully installed and can work normally.

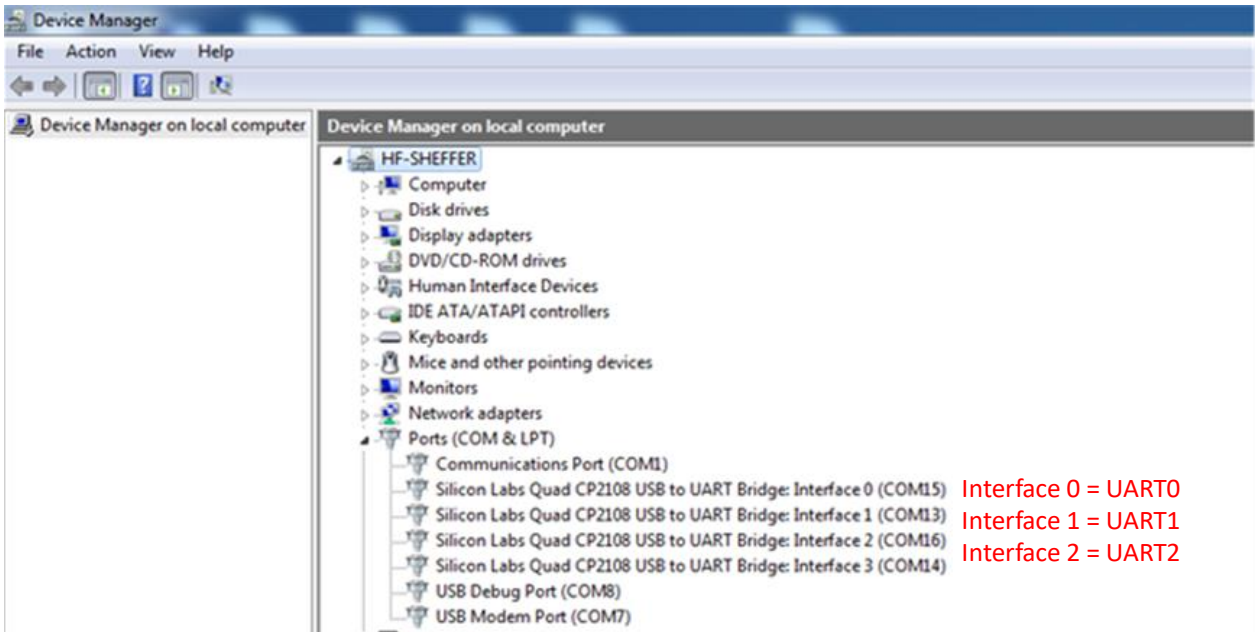

Figure 1: USB to UART Bridge Virtual COM Ports

Step 2: Check the USB driver: Open "**Device Manager**" → "**Ports**", and connect the module to your PC with a USB cable. After the module is powered on, if the USB ports shown in the figure below are detected, the USB driver is successfully installed and can work normally.

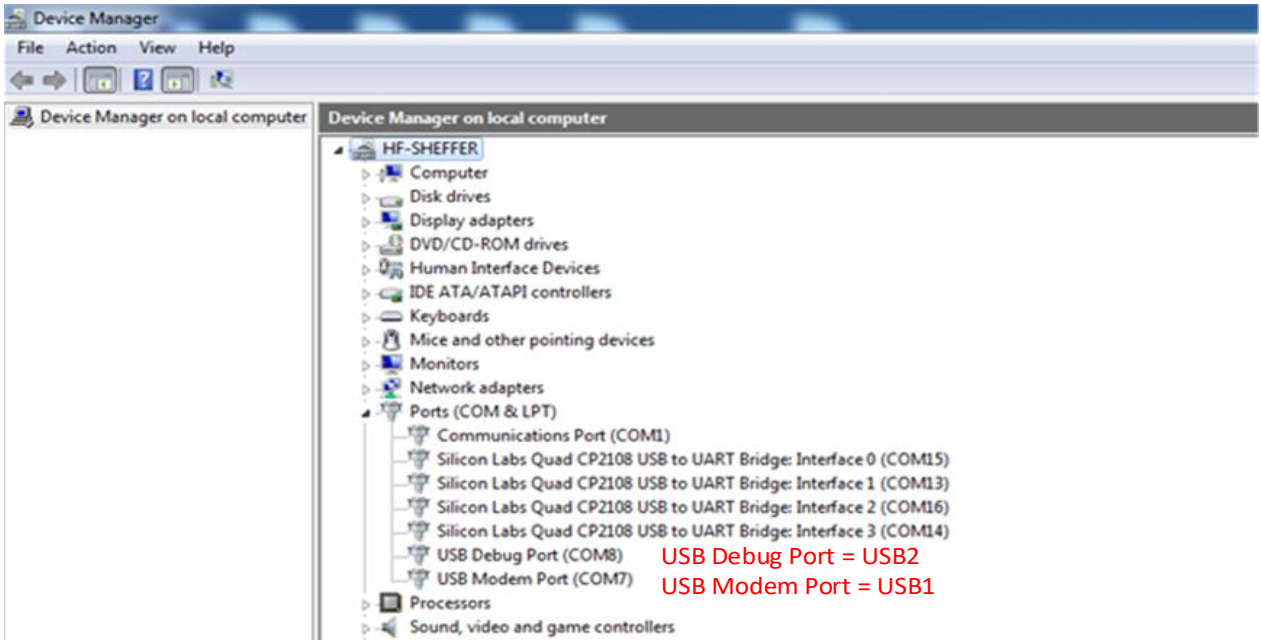

Figure 2: USB Serial Ports

2.1.3. Genie Tool Installation

Please contact Quectel Technical Support for the latest Genie toolkit. Unzip the toolkit and click *genie.exe* in the *nbiot\tools\core\genie* path to install it. Note to open the Genie tool with administration permission for the first time.

NOTES

1. The Genie tool and the drivers are updated irregularly without notification. Unexpired Genie tool of different versions still can capture the logs. Please contact Quectel Technical Support for the latest version of the tool if it is expired.
2. If your antivirus software reports a risk warning, please select "**Allow all actions of the program**".
3. In the USB to UART bridge virtual COM ports, the interface number corresponds with the UART port number of the module, for example, Interface 0 corresponds with UART0 (Main UART Port).

2.2. Hardware Environment

Use BC66/BC66-NA TE-B or a user device to capture Genie logs.

To use the user device for capturing the logs, reserve a corresponding serial port in your device. It is recommended to reserve test points in advance in designing hardware circuits. If the test points are not reserved, use a jump wire to connect them to a USB to UART Bridge for capturing logs.

3 Genie Log Capture

This chapter introduces detailed steps for capturing GKI logs and HSL logs with the Genie tool.

3.1. QuecOpen Configuration

Step 1: Open the *custom/config/custom_sys_cfg.c* file in the QuecOpen SDK package.

Step 2: Configure the serial port mode and the corresponding port for capturing the logs. An example is provided here in the following figure.

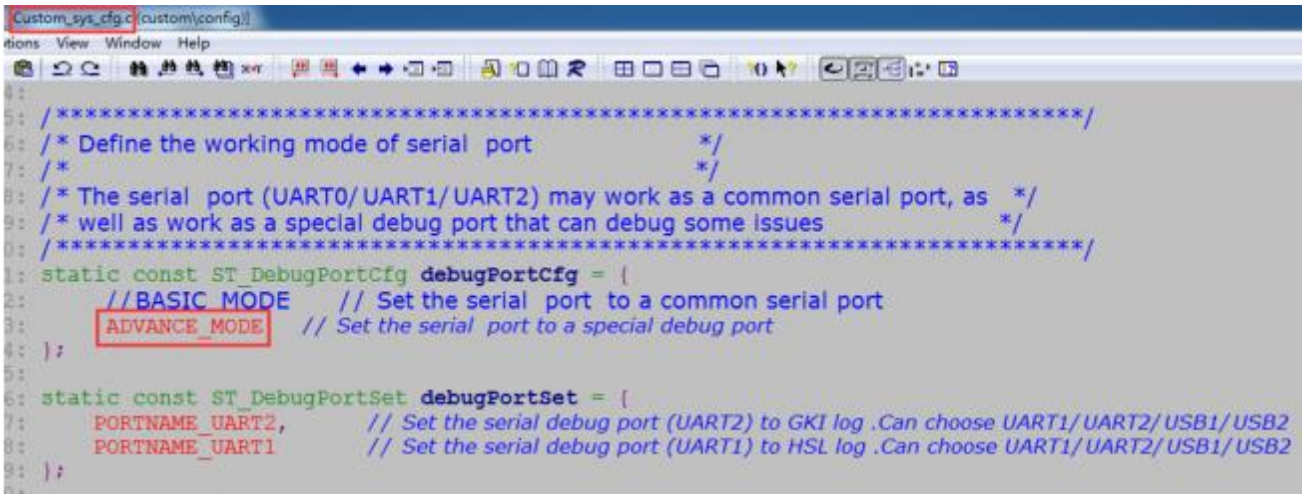

Figure 3: Configure the Serial Port Mode and the Corresponding Port

1. Configure the serial port mode to ADVANCE_MODE.
2. Configure the serial ports (UART1/UART2/USB1/USB2) to capture logs:
   - Preferably set UART0 for capturing App logs and UART1/UART2 for Genie logs;
   - The example sets UART2 for capturing GKI logs and UART1 for capturing HSL logs.

Step 3: After the code is changed, execute commands **make clean** and **make new** to clear the existing App and compile a new App, then download the compiled App bin file by Quectel QFlash.

NOTES

1. BC66 QuecOpen and BC66-NA QuecOpen modules also support capturing Genie logs through the USB port; however, if the USB port is used to capture logs, the module is not able to enter a Deep Sleep mode.
2. When the serial port is set to the BASIC_MODE, only the USB port can be used to capture Genie logs.

3.2. Genie Tool Configuration

3.2.1. Open the Genie Tool

Open the Genie tool. Its main interface is shown below:

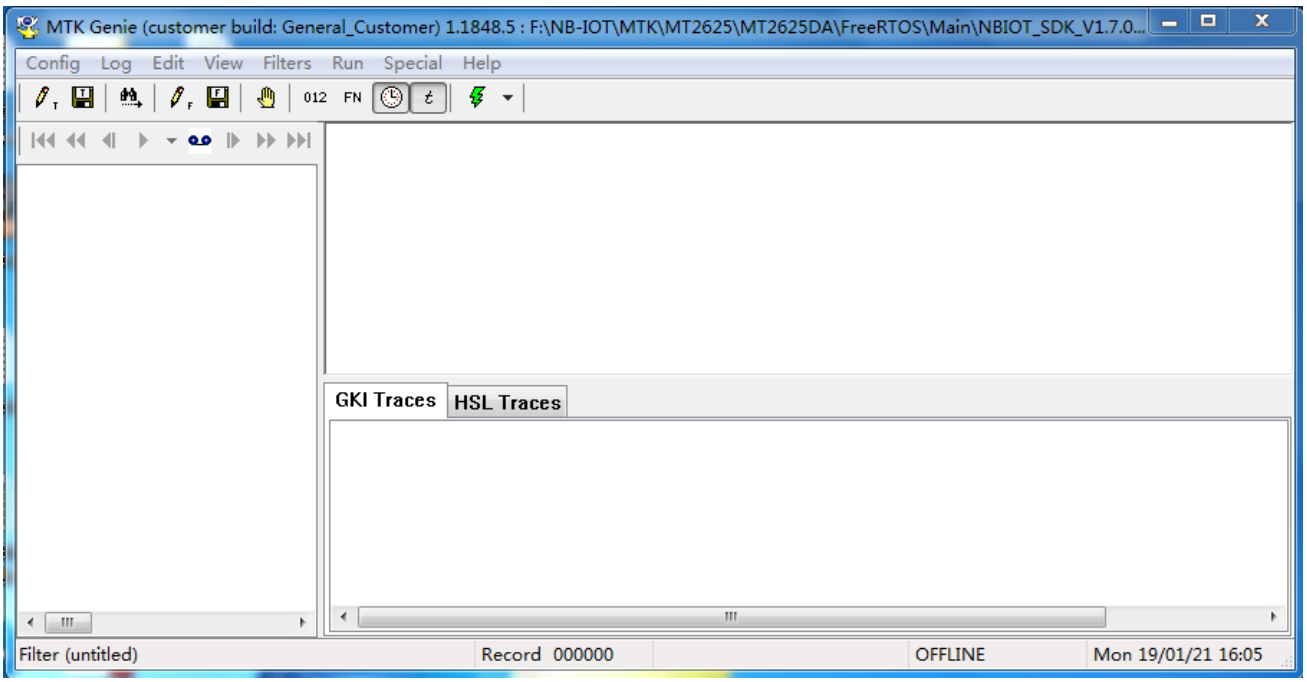

Figure 4: Main Interface of Genie Tool

3.2.2. Configure Genie Tool Parameters

Select "**Config**" → "**New Config**" in the main interface of the Genie tool.

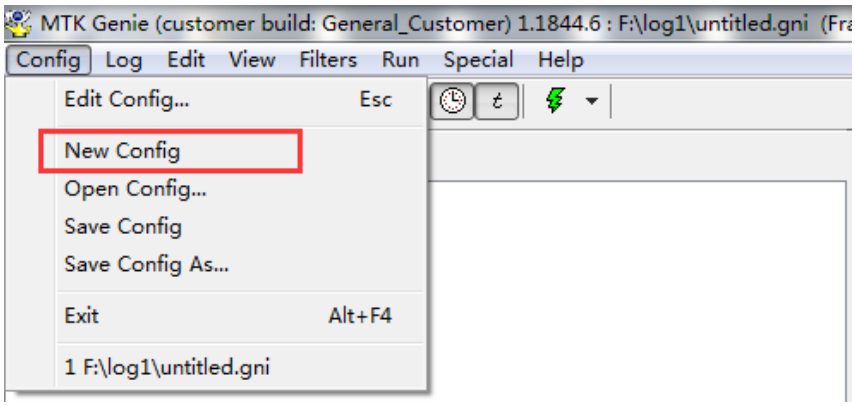

Figure 5: Select "New Config"

Click "**New Config**" to pop up the interface of Genie tool parameter settings (**Settings**).

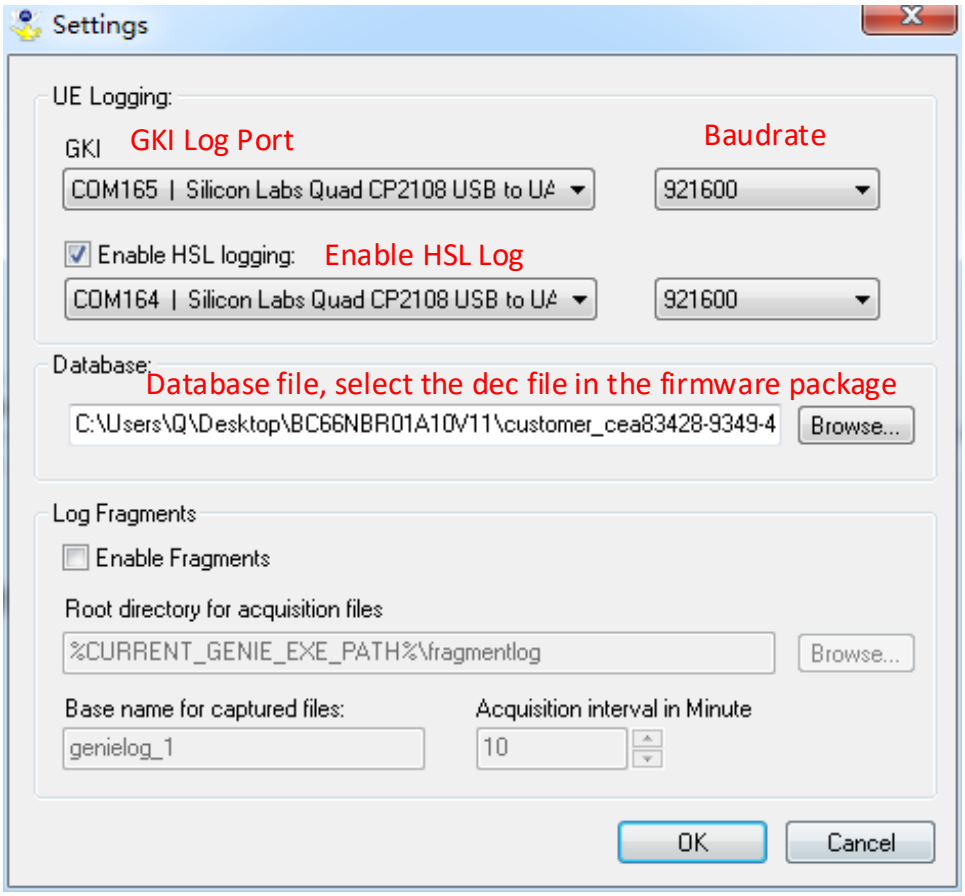

Figure 6: Interface of Genie Tool Parameter Settings

Genie tool parameter configuration:

1. According to the serial port configuration (see ***Chapter 3.1***), select the corresponding GKI/HSL log port and its baud rate; if you need to capture HSL logs, select "**Enable HSL logging**" to enable capturing HSL logs.
   - The default baud rate is 921600 bps;
   - If the default baud rate has been updated, the current baud rate of the serial port can be queried by **AT+EPORT=4**. For details about the AT command, see ***Appendix A***.

2. Click the "**Browse…**" button to upload the database file (the .dec file in the firmware package).

NOTES

1. If you do not have the firmware package currently running in the module, please execute **ATI** to check the version number of the firmware package in your module, and then contact Quectel Technical Support to obtain the firmware package.
2. If the HSL logs are needed only, set the GKI log port to any other serial port (such as COM1) which can be detected by the PC, and send the following AT command:
   AT*MNVMW=0,"log_ctrl","log_ctrl_flag",0,12,"000101000000000000000000".

3.2.3. Configure Signal Filter

After configuring the Genie tool parameters, click "**Filters**" → "**Edit Filter**" in the main interface of the Genie tool, and then click "**Set**" in the pop-up box as shown in the figure below, and click "**OK**".

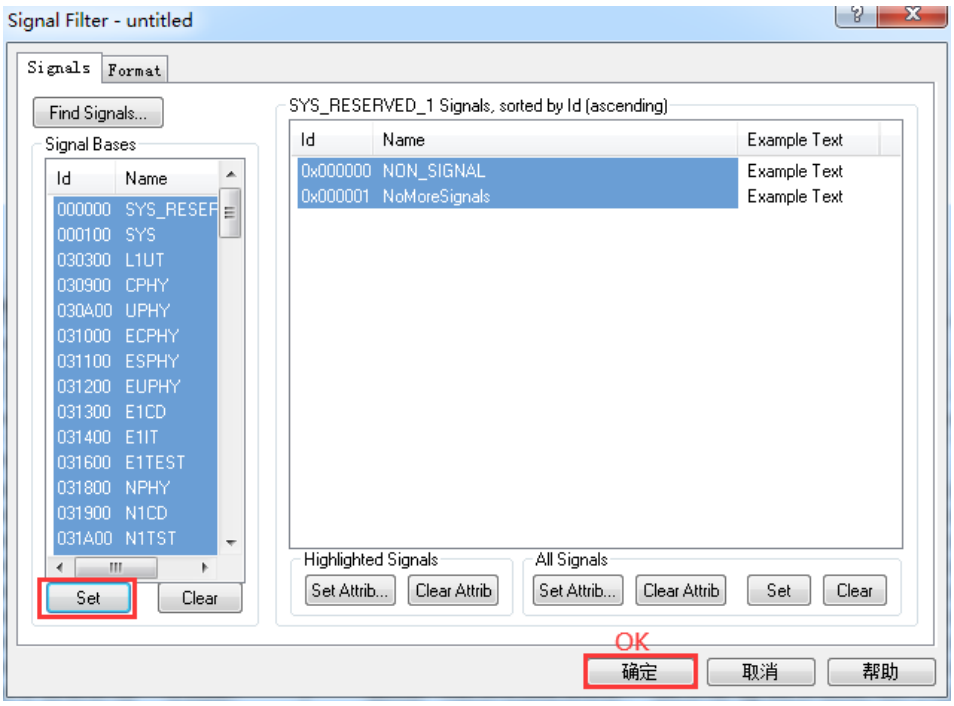

Figure 7: Interface of Genie Tool Signal Filter

NOTES

1. If the Signal Filter setting is omitted, by default, the Genie tool outputs logs with strikethroughs.
2. The Genie tool does not support Signal ID selection currently. By clicking "**Set**", all Signal IDs are selected by default.

3.3. Genie Log Capture

3.3.1. Check Port Configuration

Step 1: Click "**Start Test**" button to capture Genie logs.

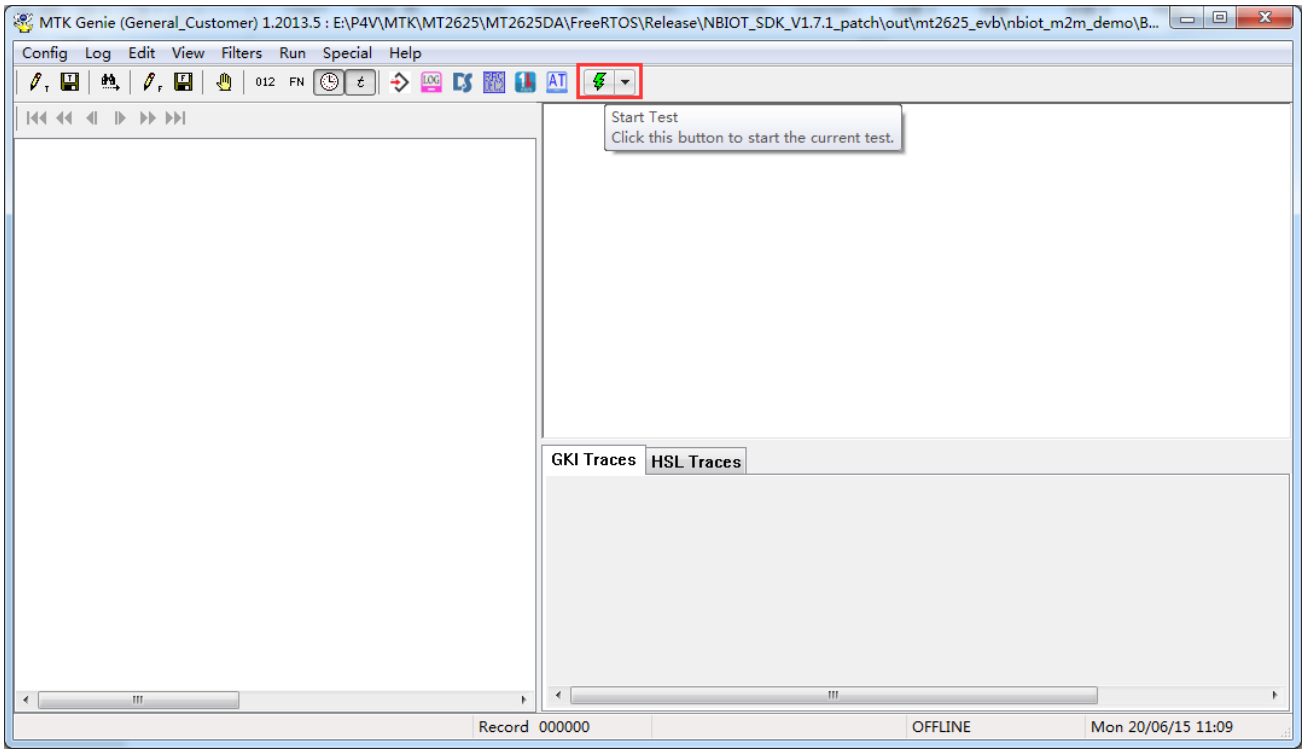

Figure 8: Click the "Start Test" Button

Step 2: Check the configurations

When the module is restarted, if the logs are output on the Genie tool interface as shown below, it indicates that the Genie log capture ports are configured successfully and the logs can be captured normally.

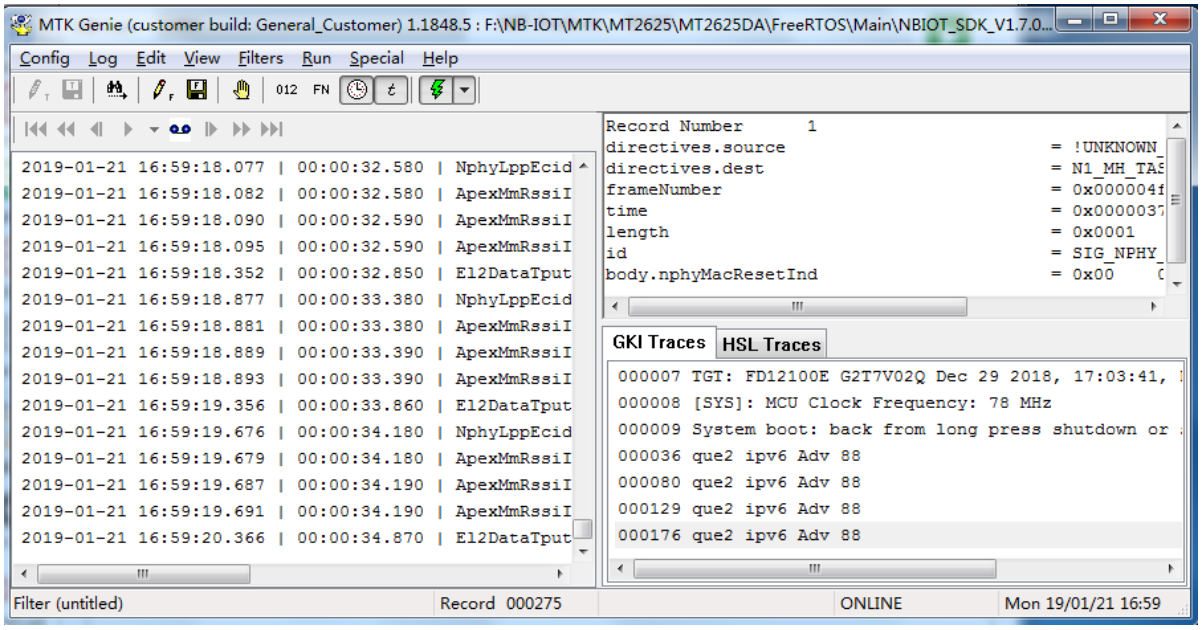

Figure 9: Log Output Interface of the Genie Tool

3.3.2. Save Genie Logs

When a software bug is reproduced, select "**Log**" → "**Save As…**" to save the Genie logs.

When the logs are saved for the first time, the Genie tool may report an error. In this case, select "**Config**" → "**Save Config**" to save the configuration, and then select "**Log**" → "**Save As...**" to save the logs.

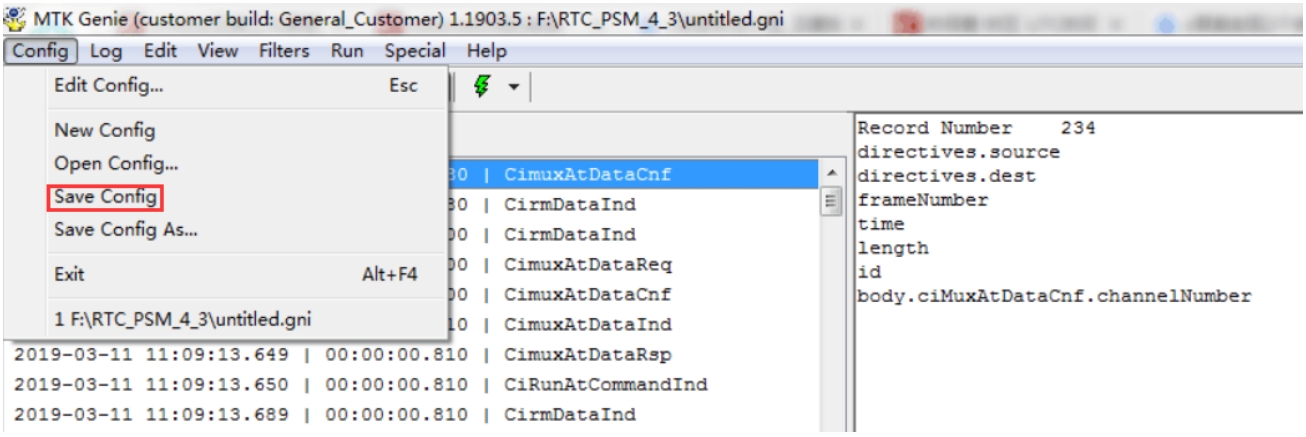

Figure 10: Click "Save Config" to Save the Configuration

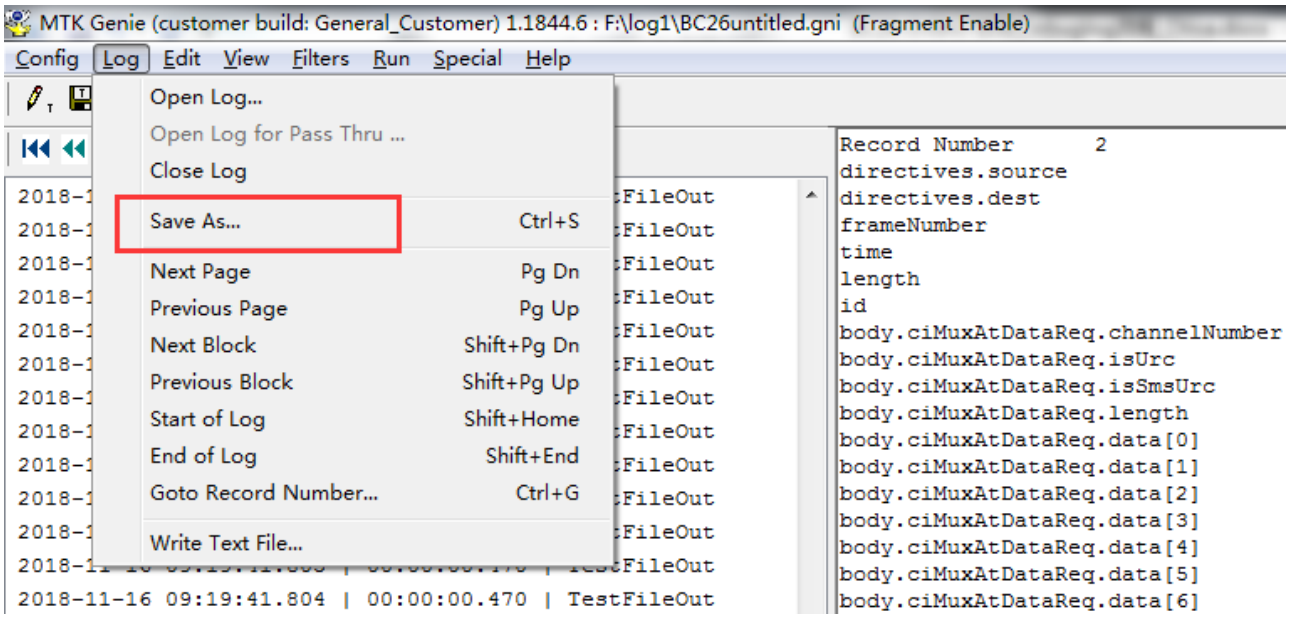

Figure 11: Save Genie Logs

NOTES

1. The serial port configurations of BC66 QuecOpen and BC66-NA QuecOpen take effect after restart. When the configuration of the Genie tool is completed, restart the module to capture all the logs from the start.
2. In the QuecOpen solution, it is recommended to capture the App logs synchronously (with Quectel QCOM tool and check "**Show Time**"). The QCOM tool can save and run the logs in real time. Click "**Save Log**" on the QCOM tool interface to set the saving path and file name and then check the box in front of the "**Save Log**" button.

4 FAQ

This chapter answers frequently asked questions in capturing Genie logs.

4.1. Why Is the Serial Port Not Displayed?

If the hardware connection is abnormal and the drivers are installed incorrectly, the serial port is not able to be displayed. Ensure that the hardware and the drivers are ready for capturing logs. If the Genie logs are captured through the USB port, please make sure the module is powered on.

4.2. Why Does the Genie Log Stop Outputting?

A UART port cannot be configured to capture Genie logs when the port is used for App registration. If the port is configured for Genie log capture and App registration at the same time, the Genie tool stops outputting logs.

4.3. Why There Is No Genie Log Output?

Incorrect selection of a baud rate of the UART port or the port number results in no log output. You can check the current UART port number and its baud rate configuration with **AT+EPORT=0** and **AT+EPORT=4**. For more information about the AT commands, see ***Appendix A***.

4.4. Why Does the Genie Tool Stop Running and a Test Aborted Window Pops Up?

The TeraHSL application in the tool detects disk space for saving log in real time. When the disk space is less than 200 MB, the tool automatically stops capturing logs to ensure the integrity of the logs. Please reserve sufficient disk space to ensure a complete storage of logs.

4.5. Why Does the Module Fail to Enter Deep Sleep Mode?

When the USB port is used to capture the logs and the USB is powered, the module is not able to enter the Deep Sleep mode.

In addition, when the USB cable is plugged in for the first time while the USB is not powered, the PC cannot detect the USB port. To ensure the normal operation of the USB port, power on or wake up or restart the module to power the USB.

4.6. What If Genie Tool Expires?

The Genie tool is updated irregularly. If the following prompt appears after opening the tool, it means that the current version of the Genie tool expires. Please contact Quectel Technical Support for the latest version.

Figure 12: Prompt of an Expired Genie Tool

4.7. Where Can I Get Detailed Introduction of the Genie Tool?

For more information about the tool, see *Genie_Logging_Tool_Users_Guide* in the Genie tool package.

5 Appendix A Description of AT+EPORT Commands

5.1. AT+EPORT=0 Query Function of the Serial Ports

AT+EPORT=0 Query Function of the Serial Ports	
Write Command **AT+EPORT=0**	Response **+EPORT: <owner_name> = <port>** **[…]** **OK**

Parameter

<owner_name>	String type. Indicates the function of the serial ports.	
	uls	HSL log port
	connl	AT port
	emmi	GKI log port
<port>	Integer type. Port number.	
	0	UART0
	1	UART1
	2	UART2
	3	UART3
	4	USB1
	5	USB2

Example

```
// Run main.c in the QuecOpen SDK package. AT commands received by the serial port are sent to the core for further processing. You can also add logic codes to handle AT commands in your project for sending AT commands to the core.
AT+EPORT=0                                  //Query the function of the serial port
[ATResponse_Handler] +EPORT: uls = 5        //Configure USB2 as the HSL log port
[ATResponse_Handler] +EPORT: emmi = 4       //Configure USB1 as the GKI log port
```

```
[ATResponse_Handler] +EPORT: connI = 3
[ATResponse_Handler]
[ATResponse_Handler] OK
```

5.2. AT+EPORT=4 Query Baud Rate of the Serial Ports

AT+EPORT=4 Query Baud Rate of the Serial Ports	
Write Command **AT+EPORT=4**	response **+EPORT: <port>** **baudrate = <baudrate>** **[…]** **OK**

Parameter

<port>	Integer type. Port number.	
	0	UART0
	1	UART1
	2	UART2
	3	UART3
	4	USB1
	5	USB2
<baudrate>	Baud rate.	
	9	115200 bps
	12	921600 bps
	none	USB port, no baud rate configuration

Example

// Run *main.c* in the QuecOpen SDK package. AT commands received by the serial port are sent to the core for further processing. You can also add logic codes to handle AT commands in your project for sending AT commands to the core.
//The *main.c* can be run first to configure or query the serial port information, and then run the App.

```
AT+EPORT=4                              //Query the baud rate of the serial port
[ATResponse_Handler] +EPORT: 0
[ATResponse_Handler] baudrate = 9       //The baud rate of UART0 is 115200 bps
[ATResponse_Handler] +EPORT: 1
[ATResponse_Handler] baudrate = 9       //The baud rate of UART1 is 115200 bps
[ATResponse_Handler] +EPORT: 2
```

```
[ATResponse_Handler] baudrate = 12          //The baud rate of UART2 is 921600 bps
[ATResponse_Handler] +EPORT: 3
[ATResponse_Handler] baudrate = 12          // The baud rate of UART3 is 921600 bps
[ATResponse_Handler] +EPORT: 4
[ATResponse_Handler] none                   //USB1 port. No baud rate configuration
[ATResponse_Handler] +EPORT: 5
[ATResponse_Handler] none                   //USB2 port. No baud rate configuration
[ATResponse_Handler]
[ATResponse_Handler] OK
```

6 Appendix B Reference

Table 1：Terms and Abbreviations

Abbreviation	Description
App	Application
PC	Personal Computer
SDK	Software Development Kit
TTL	Transistor-Transistor Logic
UART	Universal Asynchronous Receiver/Transmitter
USB	Universal Serial Bus