

RGx00U&RM500U Series Log Capture Guide

5G Module Series

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About the Document

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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

COM Port: 43 💌 Baudrate: 115200 💌 StopBits: 1 💌]	Parit	y: Non	• 💌
ByteSize: 8 💌 Flow Control: No Ctrl Flow 💌			Open	Port
[279891.055415] c0 #PD_AP_VDSP_STATE:0x0				~
[2022-03-07_16:57:38:670]Dec 20 15:42:23.898 udx710-module user.	inf	o ker:	nel:	
[279891.059348] c0 #-PD_AP_VSP_STATE:0x0				
[2022-03-07_16:57:38:686]Dec 20 15:42:23.908 udx710-module user.	inf	o ker:	nel:	
[279891.063757] c0 #-PD_NRCP_SYS STATE:0x0		_	_	
[2022-03-07_16:57:38:686]Dec 20 15:42:23.908 udx710-module user.	inf	o ker:	nel:	
[279891.068219] c0 ##-reg offset:0x0588 value:0x00000707:			-	
[2022-03-07_16:57:38:686]Bec 20 15:42:23.916 udx710-module user.	inf	o ker:	nel:	
[279891.073510] d0 #PD_NKCP_DSPU STATE:0x7		,		
[2022=03=07_16:57:38:70]]Dec 20 15:42:23.916 udx/10=module user. [070001 077507] -0 = #PD NPCP DCP1 CTATE:0.7	int	o ker:	nel:	
[2/9091.07/597] CU # TP_MALF_DSFI SIALE.0X7		. 1	. 1.	
[22022-03-07_10.57.30.701]Dec 20 15.42.23.930 udx710-module user. [220201 091914] =0 #	INI	o ker:	nei.	
[2022-03-07 16:57:38:701]Deg 20 15:42:23 930 ndv710-module user	inf.	o kor	. l	
[279891 085791] c0 #-PD NRCP II. STATE:0x0		o Ker.	LICE .	
[2022-03-07 16:57:38:701]Dec 20 15:42:23 930 udx710-module user	inf	o keri	nel·	
[279891.089708] c0 ##-reg offset:0x058c value:0x00070707:				
[2022-03-07 16:57:38:701]Dec 20 15:42:23.938 udx710-module user.	inf	o ker:	nel:	
[279891.095091] c0 #-PD_AUDCP_SYS STATE:0x7				
[2022-03-07_16:57:38:717]Dec 20 15:42:23.938 udx710-module user.	inf	o ker:	nel:	~
[2022-02-07 16:E7:3E:274] Open COM Part Support				_
[2022 03 01_10.01.35.014] Open Com fort Success				
Operation				
Clear Information DTR ERS View File		Show	Time	
	_			
Input String: HEX String Show In HEX	V	Send	With E	nter
	-			1
			Send C	ommand
1		_		
Select File C:\Users\Eric.Liu\Desktop\20220307.log			Send	File
		_		
▼ Save Log D:\常用工具\QCOM_LOG.txt				

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:

 > Im Print queues > Im Printer Ports(COM & LPT)					SSH	Telnet asic Serial s Serial port	Rsh settings	Xdmcp	RDP	VNC P210x USB	FTP to UAR	SFTP	Serial	File Speed (bp	>	Image: Second s
COM5 Terminal	8 (Silicon I Sessions	abs CP2 View View Tools	210x USB X server	to UART E Tools \to Sessions	Bridge (CO Games S Q View	M58)) ettings III Split	Macr Y MultiE	ros He I Xec Tu	elp ••••••••••••••••••••••••••••••••••••	Package	s Set	tings	? Help			
A Macros of Tools	conna conn conn conn conn conn conn conn	3. CO Copy Copy Copy Paste Execu Recor	M58 (Silico All formatted te macro rd new ma	taot d	Shift+ Ctrl-	INSERT +SPACE	L devi k_ la t t la E la bl	evice 0x36b37700 k_watch() id 3 x 37 flags 4098 change 0 logy_add_device() device 0x36b37700 ty type 8 type 8 logy_add_device() devname usb0 is_vpci logy_add_device() devname usb0 is_mbin ble() device 0x36b37700								
	connn connn connn connn connn connn connn connn connn connn connn	Increa Decre Find Save 1 Print Reset Clear	ase font s ease font s to file : Terminal Scrollbac	ize size k	c	Ctrl+M trl+Mou	lousew sewhe Ctrl+ Ctrl+ Ctrl+	rheelUp elDowr Shift+I Shift+S Shift+F	b t fan F e S 1 p n f n f f f f f f f f f f f f f f f f f	type 8 ace() 7 37 fla 20 typ len 17 len 76 ewaddru 20 typ l len 17	index ags 4 be 3 type type () in be 3 7 typ	<pre>37 r 098 d flags 22 f 20 f idex 2 flags e 26</pre>	name u change s 0x00 flags flags s 0x00 flags	usb0 i 002 se 0x030 0x030 0x000 002 se 002 se	ident eq 0 01 se 02 se eq 1 301 se	7200c7 pid 290 q 1 q 1 pid pid 290 eq 2
	connn connn connn connn	Set te Toggi Fullsci	erminal titl le scrollba reen	e ar				F11	E E E	len 60 len 60 len 60	9 typ 9 typ 9 typ 9 typ	e 24 e 24 e 24 e 24 e 24	flags flags flags flags	0 x 0 0 0 x 0 0 0 x 0 0 0 x 0 0	02 s 02 s 02 s 02 s 02 s	eq 2 pi eq 2 pi eq 2 pi eq 2 pi

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:

```
bat:charger_connected(): eica status 1
board_key_scan(): gpio_volumeup = 0
board_key_scan(): [gpio keys] no key pressed!
(sprd_dump): (write_sysdump_before_boot): check usb cable's statu
bat:charger_connected(): eica status 1
board_key_scan(): gpio_volumeup = 0
board_key_scan(): [gpio keys] no key pressed!
(sprd_dump): (write_sysdump_before_boot): check usb cable's statu
bat:charger_connected(): eica status 1
board_key_scan(): gpio_volumeup = 0
board_key_scan(): gpio_volumeup = 0
board_key_scan(): gpio_volumeup = 0
board_key_scan(): [gpio keys] no key pressed!
(sprd_dump): (write_sysdump_before_boot): check usb cable's statu
bat:charger_connected(): eica status 1
board_key_scan(): [gpio_volumeup = 0
board_key_scan(): [gpio_volumeup = 0
board_key_scan(): gpio_volumedown = 1
board_key_scan(): gpio_volumeup = 0
board_key_scan(): gpio_volumeup = 0
board_key_scan(): [gpio keys] no key pressed!
(sprd_dump): (write_sysdump_before_boot): check usb cable's statu
bat:charger_connected(): eica status 1
board_key_scan(): [gpio_volumedown = 1
board_key_scan(): gpio_volumedown = 1
board_key_scan(): [gpio_volumeup = 0
board_key_scan(): [gpio_volumeup = 1
board_key_scan(): [gpio_volumeup = 0
board_key_scan(): [gpio_volumeup = 0
board_key_scan(): [gpio_volumeup = 0
board_key_scan(): [gpio_volumeup = 0
board_key_scan(): [gpio_volumeup = 1
board_key_scan(): [gpio_volumeup = 0
board_key_scan(): [gpio_keys] no
```

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".



File Edit Vi	iew Opti	ion Tool V	Vindow Help							
! ♥ ☆ ▶ Ľ	2 🖿 🗏	<u>।</u> २		F	1 16 76 78 78	AT 🗄 🔀	COM LTE T	SP DSP DSP DS G AG A:O W		
🔇 Cell Measu	rements									
NR	ARFC	N	PCID	RSRE	2	RSRQ				
	3	Tool Configure								
	Lo	og On/O	ff							
		Options			Wireshark Path					
LTE	E	☐ Filter CMCC Message ☑ Version Check			C:\Program Files\Wireshark\Wireshark.exe					
			t Raw Data		Auto Test					
<		Only De	code DSP Data							
WCDMA	υ	Filter O	ut Traces		Auto Loa	d Map file				
		Auto Identify AP Dump Pt		Pt						
		Log F	Port O Diag Po	ort	Must Res	et After Dun	np Error			
GSM	A	Capture FTB when assert								
	_				Assert Comma	ind: 0,1,2,3	,4,5,6,7,8,1			
		GPS Map P	rovider		Reset Command: Z					
🔇 Air Messag	jes	Google								
SN	τ	OpenSt	reetMap							

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.

ę	Assert Information -	 X	٦
1) dump ap memory file begin: sysdump.core.02_0x80001000-0x852fffff_dump.lst, size: 87027712 bytes) dump ap memory file end: total received: 87027712 bytes, lost: 0 bytes	,	~
	dump ap memory file begin: sysdump.core.03_0x85320000-0x86dfffff_dump.lst, size: 28180480 bytes dump ap memory file end: total received: 28180480 bytes, lost: 0 bytes		
	dump ap nemory file begin: sysdump.core.04_0x87800000-0x87ffffff_dump.lst, size: 8388608 bytes dump ap memory file end: total received: 8388608 bytes, lost: 0 bytes		
	o dump ap memory file begin: sysdump.core.05_0x88000000-0x9cfffff_dump.lst, size: 352321536 bytes o dump ap memory file end: total received: 352321536 bytes, lost: 0 bytes		
	> dump ap memory file begin: sysdump.core.06_0x9d00000-0x9ffffff_dump.lst, size: 50331648 bytes > dump ap memory file end: total received: 50331648 bytes, lost: 0 bytes		ł
2	> dump ap memory file begin: sysdump.core.07_0x0000b000-0x00018bff_dump.lst, size: 56320 bytes > dump ap memory file end: total received: 56320 bytes, lost: 0 bytes		
2222	> dump ap memory file begin: sysdump-checksum.txt, size: 585 bytes > dump ap memory file end: total received: 585 bytes, lost: 0 bytes		
2	dump ap memory file begin: etbdata_uboot.bin, size: 32768 bytes dump ap memory file end: total received: 32768 bytes, lost: 0 bytes		
	Total sysdump finished!		

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:



q	2 2	2022.09.08	QLog-Aaron-202209072025 log	
P		2022.09.08	QLog-Aaron-202209072025 log	
P		2022.09.08	QLog-Aaron-202209072025 log	
P		2022.09.08	📎 QLog-Aaron-202209072025 🔪 log 🖉	
P		2022.09.08	💙 QLog-Aaron-202209072025 🔪 log	ls
203	220908	_140725_0000	log 20220908_140725_0000.logel	
P		2022.09.08	🔰 QLog-Aaron-202209072025 🖉 log	
q		2022.09.08	QLog-Aaron-202209072025 log	
q) >	2022.09.08	QLog-Aaron-202209072025 Log	

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.
- -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.



[4834.624619] usb 1-2: new full-speed USB device number 3 using ohci-pci
[4835.822956] usb 1-2: config 1 interface 1 altsetting 1 endpoint 0x81 has invalid maxpacket 512, setting to 64
[4835.822957] usb 1-2: config 1 interface 1 altsetting 1 endpoint 0x1 has invalid maxpacket 512, setting to 64
[4835.822958] usb 1-2: config 1 interface 2 altsetting 0 endpoint 0x83 has invalid maxpacket 512, setting to 64
[4835.822959] usb 1-2: config 1 interface 2 altsetting 0 endpoint 0x2 has invalid maxpacket 512, setting to 64
[4835.822960] usb 1-2: config 1 interface 3 altsetting 0 endpoint 0x84 has invalid maxpacket 512, setting to 64
[4835.822961] usb 1-2: config 1 interface 3 altsetting 0 endpoint 0x3 has invalid maxpacket 512, setting to 64
[4835.822962] usb 1-2: config 1 interface 4 altsetting 0 endpoint 0x85 has invalid maxpacket 512, setting to 64
[4835.822963] usb 1-2: config 1 interface 4 altsetting 0 endpoint 0x4 has invalid maxpacket 512, setting to 64
[4835.822964] usb 1-2: config 1 interface 5 altsetting 0 endpoint 0x86 has invalid maxpacket 512, setting to 64
[4835.822964] usb 1-2: config 1 interface 5 altsetting 0 endpoint 0x5 has invalid maxpacket 512, setting to 64
[4835.822965] usb 1-2: config l interface 6 altsetting 0 endpoint 0x87 has invalid maxpacket 512, setting to 64
[4835.822966] usb 1-2: config 1 interface 6 altsetting 0 endpoint 0x6 has invalid maxpacket 512, setting to 64
[4835.850187] usb 1-2: New USB device found, idVendor=2c7c, idProduct=0900
[4835.850189] usb 1-2: New USB device strings: Mfr=1, Product=2, SerialNumber=3
[4835.850190] usb 1-2: Product: RG500U-CN
(4835.850190) usb 1-2: Manufacturer: Quectel
[4835.850191] usb 1-2: SerialNumber: 11587874242251
[4335.935673] usbcore: registered new interface driver usbserial_generic
[4835,935905] usbserial: USB Serial support registered for generic
[4835,936340] usb_wwan: loading out-of-tree module taints kernel.
[4835.9473/5] usbcore: registered new interface driver option
[4835.94/414] usbserial: USB Serial support registered for GSM modem (1-port)
[4836.029905] dd nom 1-2:1.0: MAC-Address: e2:ee:01:2a:51:d6
[4330.030163] CdC ncm 1-2:1.0 uSDU: register 'cdC ncm' at usb-0000:00:06.0-2, CDC NCM, 62:66:01:28:51:d6
(4936, 041240) depicer registered new interface driver dat nom
(4936 041460) upb 1-2 (CSW modem (1-port) contexts pour stached to trutSR0
(4936, 041540) usb 1-2: Gam modem (1-port) converter now attached to ttyusbu
(4936 (41604) ush 1-2. SM modem (1-port) converter actested to truffSB1
(4936 (41396) and (1-2.) But Holdern (1-port) converter detected
(4936 (49492) ush 1-2: CSM modem (Leport) converter pay attached to ttuIISB2
(4836.042613) aption 1-211.5: GSM modem (1-nort) converter detected
(4836.042677) usb 1-2: GSM modem (1-port) converter now attached to tryUSB3
(4836-042738) option 1-2:1.6: GSW models (1-port) converter detected
(4836.042790) usb 1-2; GSM modem (1-north) converter now attached to ttyUSB4
(4836.044090) ushcore: registered new interface driver cdc wdm
[4836,054927] usbcore: registered new interface driver cdc mbim
4836.061611] cdc ncm 1-2:1.0 enp0s6u2: renamed from usb0
4836.099053] IPve: ADDRCONF(NETDEV UP): enp0s6u2: link is not ready
(4836.099094) IPv6: ADDRCONF(NETDEV UP): enp0s6u2: link is not ready
[4836,109391] cdc ncm 1-2:1.0 enp0s6u2: 425 mbit/s downlink 425 mbit/s uplink
4836.126498 cdc ncm 1-2:1.0 enp0s6u2: 425 mbit/s downlink 425 mbit/s uplink
[4836.147006] cdc ncm 1-2:1.0 enp0s6u2: network connection: connected
[4836.147044] IPv6: ADDRCONF(NETDEV CHANGE): enp0s6u2: link becomes ready

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.

[000.000] Version: QLog_Linux_Android V1.5.5
[000.000] will use filter file: default filter
[000.000] No Quectel Modules found. Wait for connect or Press CTRL+C to guit!
[002.001] No Ouectel Modules found. Wait for connect or Press CTRL+C to guilt
^C[003.535] recy signal 2
root@0:~/TestTools/OLog Linux Android V1.5.5/OLog Linux Android V1.5.5# ./OLog -
s apdump
[000.000] Version: OLog Linux Android V1.5.5
[000.000] will use filter file: default filter
[001.104] Find [0] idVendor=1782. idProduct=4d00. bNumInterfaces=1. ttvDM=. bush
um=001, dev=030, usbdevice pah=/sys/bus/usb/devices/1-3
[001.104] devpath:/dev/bus/usb/001/030
[009.107] open /dev/bus/usb/001/030 dm_usbfd = 3
[009.108] glog usbfs read (dm) enter
[009.108] Press CTRL+C to stop catch log.
[009.108] catch dump for unisoc chipset
[009.108] unisoc catch_dump : cure_dir_path:apdump/dump_20210926_193025/apdump_2
0210926 193025.logel
[043.762] poll() = 0, errno: 2 (No such file or directory)
[043.762] unisoc ap dump capture success!
[043.762] ql_usbfs_read n = -1, errno: 108 (Cannot send after transport endpoint
shutdown)
[043,762] alog usbfs read (dm) exit

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_EC M_RNDIS driver provided by Quectel to ensure that the serial ports can be identified.



Figure 13: Identify Serial Ports Successfully

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- 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.
- 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.

🔇 Logel R9.	20.4705.0 [D:\MyData\	2021_03_03_0)9_43_46	_802_armlog\2	021_03_03_09_43_46_8	802.logel] - Cell I	Veasurement	is		
File Edit	View Option Tool	Window He	lp							
♥☆ ▶	🖆 🖿 📕 Q 📃			稿 🦽 🌾 🤇	🍇 🌤 I AT 🗄 🛱 🚻 🕯	NG DSP DSP DSP ON COM LTE TG	DSP DSP DSP C AG A:0 WIN			
🔇 Cell Meas	urements							Traces		
NR	ARFCN	PCID	RS	SRP	RSRQ	SINR		SN	UE Time	C
				SIM1				24077-71	09:58:05 579	F
SCell	627264	859	-8	84.00dBm	-3.94dB	10.75		24077-72	09:58:05.579	F
NCell0	627264	471	-9	94.88dBm	-16.19dB	5.31		24077-73	09:58:05.579	F
NCell1	627264	472	-9	90.19dBm	-11.56dB	3.75		24077-74	09:58:05.579	F
								24077-75	09:58:05.579	F
<							<u> </u>	24077-76	09:58:05.579	F
LTE	EARFCN(Band)	PCID	RS	SRP	RSRQ	Slave A	nt E	24077-77	09:58:05.579	F
								24077-78	09:58:05.579	F
								24077-79	09:58:05.579	F
								24077-80	09:58:05.579	F
								24077-81	09:58:05.579	F
								24077-82	09:58:05.579	F
<							>	24077-83	09:58:05.579	F
TD	UARFCN(Band)	Cell ID	RS	6CP				24077-84	09:58:05.579	F
								24077-85	09:58:05.579	F
								24077-86	09:58:05.579	F
								24077-87	09:58:05.579	F
								24077-88	09:58:05.579	F
								24077-89	09:58:05.579	F
GSM	ARECN(Band)	BSIC	R	3ST				24077-90	09:58:05.579	F
	mil on (Dond)	2010						24077-91	09:58:05.579	F
								24077-92	09:58:05.579	F
								24077-93	09:58:05.579	F
Air Mess	ages							Internal M	lessages	
SN	UE Time	SIM	Core	NAS			AS	SN	UE Time	_
397-8	09:44:15	SIM1	FF				<- MIB	7391-1	09:58:10 20:	3
402-28	09:44:15	SIM1	FF				<- SYSTEM	7401-1	09:58:10.20	4
418-1	09:44:15	SIM1	FF				<- SYSTEM	7402-1	09:58:11.48	4
487-1	09:44:15	SIM1	FF				<- SYSTEM	7412-1	09:58:11.48	4
400 10	00-44-10	CTM1	CC.				· CVCTEM	7410 1	NG-E0-10 74	4

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 .



S Logel R9.20	.2101.0 (G:\Log\20	020_08_06_11_28_10	648_arm	log\2020_08_06	5_11_28_10	0_648.logel] - A	ir Messages											-	0 ×
File Edit V	iew Option Too	Window Help																	
🕈 🔅 🕨	21 🖹 🖡 🏹		58	114 16 76 78	at i	🔉 🕿 🜒 i 🛛													
UID	SN	UE Time	Core	Content				Ho	dule		^	Traces							
34967010	771852-5	11:35:39.424	FF	MSG_ID_LTE	_CPHY_I	LISTATIS_RES	ULT_IND	HO	D_LCONTROL_1->MO	D_LLAVER1_ADX		SN	UE Time	Cor	e Content			Module	e Tie
34977838	771877-1	11:35:39.524	FF	MSG_ID_LTE	_CPHY_M	EAS_INTRA_B	RESULT_IND	MO	<pre>D_LCONTROL_1->MOD</pre>	D_LLAYER1_ADX		772059-2	7 11:35:40	224 FF	[NRPAL] trans	mission reque	stion from L2 for m		1:1
34977847	771877-10	11:35:39.524	FF	MSG_ID_LTE	_CPHY_I	LISTATIS_RES	SULT_IND	MO	<pre>J_LCONTROL_1->MOI</pre>	D_LLAYER1_ADX		772059-2	8 11:35:40	224 FF	[NRPAL] send	asg to tx que	sue(type=1).		1:1
34988693	. 771903-1	11:35:39.624	FF	MSG_ID_LTE	_CPHY_H	EAS_INTRA_I	RESULT_IND	MO)_LCONTROL_1->MOI	D_LLAYER1_ADX		772059-2	9 11:35:40	224 FF	[NRPAL] is_pa	rivate_queue_e	mist=0.		1:
34988702	C670201_26	11:35:39.624	22	ES NOWETY	CPHI_I EVENT E	TATISTATIS_RES	SOLI_IND	MO	D_DCONTROL_1-SHOL	D_LLATERI_ADA		772059-3	0 11:35:40.	224 FF	[NRPAL][HV] a	alloc share me	mory for msg(=6019)		1:
34993905	5678202-11	11:35:39.667	FS	ES LLIC RE	JECT	and anti-navy		MO	D ESHANDLE->HOD 7	LTE MESSAGE HANDI	2	772059-3	1 11:35:40.	224 FF	[NRPAL][HV] o	dynamic alloc	share memory for NR		1:
34994687	5678216-26	11:35:39.675	FS	ES_EVENT_C	ANCEL R	QES		MO	D LTE MESSAGE HAP	NDLE->MOD_ESHANDL	5	772059-3	2 11:35:40.	224 FF	[NRPAL][HV] 3	insert asg to	queue, before inser		1:
34999472	771928-15	11:35:39.724	FF	MSG ID LTE	CPHY M	EAS INTRA B	RESULT IND	MO	D LCONTROL 1->MOR	D LLAVER1 ADX		222050-2	4 11.35.40	224 22	[MRFAL][HU] :	irigger ini	ction from 12 for a		1.1
34999481	771929-5	11:35:39.724	Oper	n												>	< (type=1).		1:
35006928	. 771946-20	11:35:39.793															st=0.		1:
35010315	. 771954-10	11:35:39.824	←	· · · 1	> This Pl	C > Local Dis	k (D:) > tools > Loo	sel R9.21.50	05 > Bin > History	> 2022 09 14 13 45	11 822 an	mloa		v O	.9 Search 2022	2 09 14 13 45 11.	ry for asg(=6019)		1:
35020323	771980-1	11:35:37.024		. –													are seavry for NR		1:
35020988	771980-10	11:35:39.924	Oranoi	iza z New	folder										100	· · · 0	eue, before inser		1:
35031684	772005-15	11:35:40.024	organ	100	longer		0								8		ck and finish co		1.1
35031804	772006-5	11:35:40.024		3D Objects	^	Name			Date modified	Type	Siz	e					ion from L2 for m		1:
35042392	772031-1	11:35:40.124		Deckton													(type=1).		1:
35042448	. 772032-1	11:35:40.124		Desktop	_	2022_09_1	4_13_45_11_822		9/14/2022 1:45 PM	File folder			_				st=0.		1:
35053197	772057-1	11:35:40.224	1	Documents		2022_09_1	4_13_45_11_822.logel		9/14/2022 1:45 PM	LOGEL File		7,139 KB					ry for asg(=6019)		1:
35054148	772050-1	11-35-39 724		Downloads		2022 09 1	4 12 45 11 822 let		9/14/2022 1-45 PM	LST File		1 KB					are memory for NR		1:
						O	10,40,11,022.01		STITLESEE 1753 FIN	Contine		1 60					sue, before inser		1:
<			- P	Music													ion from T2 for m		1.
			-	Pictures					,								(type=1)		1.
		_		Midaaa													st=0.		1:
		_		videos													ry for asg(=6019)		1:
		_		Local Disk (C:)													are memory for NR		1:
				Local Disk (D:)													eue, before inser		1:
			~	Eucor Bran (Bi)													· · · · · · · · · · · · · · · · · · ·		1:
		_	-	Local Disk (E:)													(turner1)		1.1
		_	-	Local Disk (F:)													st=0.		1:
		_															ry for asg(=6019)		1:1
			🥩 N	letwork	~												are memory for NR		1:
																	eue, before inser		1:
🤉 Air Message				Fil	e name:	2022_09_14_1	3_45_11_822.logel							Ý	Log file (*.lst;*.log	el;*.log) ~	1		1:
CN		UE Tine												<u>ا</u>		Creat	ion from L2 for m		1:
762711-1		11:25:07													Qpen	Cancel	st=0		1.
763729-16		11:35:07	SIM	1 FF				->	MEASUREMENTREPOR	т	1:00:07	1							
766349-23		11:35:17	SIM	1 FF				->	MEASUREMENTREPOR	T	1:00:13	7.3							>
766661-11		11:35:19.	SIM	11 FF				<-	PAGING		1:00:10	1.5							
767644-18		11:35:23.	SIM	11 FF				<-	PAGING		1:00:22	2.4							
768980-30		11:35:28.	SIM	11 FF				->	MEASUREMENTREPOR	Т	1:00:21	7.5							
769291-20		11:35:29.	SIM	I FF				<-	PAGING		1:00:20								
770605-11		11:35:34	STM	1 FF				4-	PAGING		1.00-33								
771260-1		11:35:37	SIM	1 FF				- i	PAGING		1:00:3								
771607-38		11:35:38.	SIM	11 FF				->	MEASUREMENTREPOR'	т	1:00:31	7.8.							
¢												2.1							

Figure 16: Select File to be Analysed

NOTE

<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:

File Edit	View Option Tool	Win	dow	Help	
♥☆)	Common NR	+	✓ ✓	Internal Messages Traces	(Ctrl+1) (Ctrl+2)
Sell Me NR	LTE C2K	*	✓ ✓	Air Messages Cell Measurements	(Ctrl+3) (Ctrl+4)
TTE	WCDMA GSM	*		PHY Traces PHY Trace Chart	
	DSP Test Point	+		NV Information PLMN Information of 1	SIM1

1 00 00 01 01 0 10 11 00 00 T - 14 0 0 11 1 - 1 2000 00 10 15 20 51 C

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.

	Assert Information	– 🗆 X
_	> R13 = 0x91859e88 R14 = 0x0000000 SPSR = 0x00000010	^) (
	> FIQ mode:	at
_	> R13 = 0x92ddd6e8 R14 = 0x0000000 SPSR = 0x00000010	e. .e
	> Assert Debug Menu: > 0. Frint help info. > 1. Frint assert info. > 2. Print important registers	: : :
	 > 3. Dump all memory to a file > 4. Print memory allocated inf > 5. Frint memory pools info. > 5. Frint memory pools info. 	۶Ł
	<pre>> 7. Frint tasks info. > 7. Frint stack info. > 8. Frint callback function li > 9. Read memory.</pre>	
	<pre>> a. Dump task usage. > b. Dump definite memory to a > c. Dump TaskSwitch memory to > d. Print Furent list information</pre>	ĮĮ
	 > e. Frint Mutex list information. > g. Frint Semaphore list information. > h. Frint Fat system control block info. 	<u>_</u>
	> i. Print Byte Pool infomation	11
	>]. Frint P5 tasks queue into > k. Print P5 function call stack	_1
	> 1. Print timer list infomation.	11
	> t. Print the all assert information.	1-
	> z. Reset MCU.	
	>	~

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:

	Seattle Sea	2022.09.08	QL0g-Aaron-202209072025	loa	
P		2022.09.08	QLog-Aaron-202209072025	log	
P		2022.09.08	QLog-Aaron-202209072025	100	
P		2022.09.08	QLog-Aaron-202209072025	100	
P		2022.09.08	QLog-Aaron-202209072025	100	
P		2022.09.08	QLog-Aaron-202209072025	100	
P		2022.09.08	QLog-Aaron-202209072025	log	
9		2022.09.08	QLog-Aaron-202209072025	log	15
2022	20908	_143049_0000	logel		
P		2022.09.08	QLog-Aaron-202209072025	loa	
P		2022.09.08	QLog-Aaron-202209072025	log	A REAL PROPERTY AND A REAL PROPERTY A REAL PROPERTY AND A REAL PROPERTY AND A REAL PRO
P		2022.09.08	QLog-Aaron-202209072025	log	
P		2022.09.08	QLog-Aaron-202209072025	log	
D		2022.09.08	OLog-Aaron-202209072025	loa	

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].
- -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.

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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/PCle 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

\$ Capture Setting			\times
Log Output Directory			
Log Dir: D:\MyData		~	• • • •
MS			_
Type:	Socket	~	
Address(Diag):	192.168.42.1		
<pre>Port(Diag):</pre>	10056		
Address(SMP):	192.168.42.1		
Port(SMP):	10057		
	[OK Can	icel

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

Step 5: Click **9** on Logel to capture logs.

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; File Edit Viev	W Option Tool	window Help									
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Cell Measure	ements						Irace	s			
NR	ARFCN	PCID	RSF	2P	RSRQ	SINF	SN		UE Time	Core	Content
			SIM1				101651	9-71	16:58:34.739	FE	[TXDFE]: (CurrentDwTxOpenStatus.NextD
SCell	633984	40	-10	1.31dBm	-8.06dB	2.69	101651	9-72	16:58:34.739	FE	[RFS]Slot type:0. sleep cancel flag:
	100001				4 00 m		101651	9-73	16:58:34.739	FE	rx sfboundry unicnt : 0x7a361fc2, ta
							101651	9-74	16:58:34.739	FE	g ctrl slot task begin : 0x7a3545ac,
LTE	EARFCN(Band)	PCID	RSF	2P	RSRQ	Slav	101651	9-74	16:58:34.739	FE	eac_group :0 ,rx symbol mask:0x0, tx
			SIM1				101651	9-75	16:58:34.739	FE	rtx event cfq->num of event 0.RX MODE
SCell PCC	1650(3)	317	-92	.88dBm	-13.13dB	0	101651	9-76	16:58:34.739	FE	curr sw evt num:0.prev sw evt num 0.e
20.11.000						1	101651	9-77	16:58:34.739	FE	evt5 type:0x0.evt6 type:0x0.evt7 type
							101651	9-78	16:58:34.739	FE	eac group:0, index:0, HW event type and
TD	UARFCN(Band)	Cell ID	RSC	P		_	101651	9-79	16:58:34.739	FE	eac group:0, index:1, HW event type and
							101651	9-80	16:58:34.739	FE	g TxMimo PaSts[0].pa on:0,antmap:1,g
							101651	9-81	16:58:34.739	FE	g eac group2 config en:1,g tx ant1 co
							101651	9-82	16:58:34.739	FE	NR RFS Ctrl Slot Task Symbol Error Fl
							<				
A								<u>]</u>			
Air Message	is							I Mess	sages		
SN	UE Time	SIM	Core 1	IAS			A6 🗸		UE Time	Core	Content
185790-1	16:58:20	SIM1 I	FF				-:	-3	16:58:25.557	FF	MSG_ID_LTE_CPHY_MEAS_INTRA_RESULT_IND
185817-87	16:58:21	SIM1 I	FF				<-	-5	16:58:25.557	FF	MSG_ID_LTE_CPHY_L1STATIS_RESULT_IND
186120-68	16:58:22	SIM1 I	FF				<-	-1	16:58:25.561	FF	MSG_ID_NR_L2_TX_TO_NR_L2_RX_PSCP_DLMA
186505-59	16:58:24	SIM1 I	FF				-:	-13	16:58:25.566	FF	MSG_ID_NR_L2_TX_TO_NR_L2_PDCP_TX_NRPH
186522-1	16:58:24	SIM1 I	FF				<-	9-6	16:58:34.739	FE	MSG_ID_GMM_AS_3G_SIG_EST_REQ
186590-44	16:58:24	SIM1 I	FF				-:				
186624-35	16:58:24	SIM1 I	FF				<-				
186689-17	16:58:24	SIM1 I	FF				<-				
186738-11	16:58:24	SIM1 I	FF				-:				
186765-5	16:58:24	SIM1 I	FF				-:				
186846-21	16:58:25	SIM1 I	FF				<-			Annual Sector	A CONTRACTOR OF A CONTRACTOR O
186868-40	16:58:25	SIM1 J	FF				<-			1 11 11 11 11 11 11 11 11 11 11 11 11 1	
186959-24	16:58:25	SIM1 I	FF				-:				····································
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Beadu		l oad parser si	incessi		Total 72161	Duor	ned:0	162	309 MB 00:00:32 16:	145 555 I	└──── <mark> 27</mark> 달 中 % ☺

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.
- 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

I Capture Setting				×
Log Output Di	irectory			
Log Dir:	D:\MyData			×
MS				
Type:		Socket		\sim
Address(Di	iag):	192.168.42.1		
Port(Diag)):	10056		
Address(SM	1P):	192.168.42.1		
Port(SMP):	:	10057		
			OK	Cancel

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

- **Step 5:** Click **9** 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.



Assert Information	- 🗆 X
> R13 = 0x91859=88 R14 = 0x0000000 SPSR = 0x00000010	^
> FIQ mode:	
> R13 = 0x92ddd6e8 R14 = 0x00000000 SPSR = 0x00000010	
> Assert Debug Menu: > 0. Print help info. > 1. Print assert info.	×
 > 2. Print important registers. > 3. Dump all memory to a file. > 4. Print memory allocated inf Logel will auto dump after 22 seconds! > 5. Print memory poel info 	
> 6. Frint tasks info. > 7. Print tasks info. > 7. Print stack info. > 8. Print callback function li > 9. Print callback function li	
<pre>> a. Dump task usage. > b. Dump definite memory to a > c. Dump TaskSwitch memory to > d. Print Event list information. > e. Print Mutex list information. > g. Print Semphore list information.</pre>	cel
<pre>> h. Frint Fat system control block info. > i. Print Byte Pool infomation > j. Print Pyte Pool infomation > k. Print PS function call stack > l. Print timer list infomation. > t. Print the all assert information.</pre>	
> z. Reset MCU.	v

Figure 24: Capture CP Dump File in Windows

NOTE

- 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.
- 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 PCle 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.



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].
- 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.
- 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

🚸 Capture Setting			×
Log Output Directory			
Log Dir: D:\RG500	U_LOG		×
MS			
Type:	Socket		\sim
Address(Diag):	192.168.100.1		
Port(Diag):	9000		
Address(SMP):	192.168.100.1		
Port(SMP):	9001		
		OK	Cancel

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

Step 5: Click **S** 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 PCle 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].
- 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



🤣 Capture Setting			X
Log Output Directory Log Dir: D:\RG500U	LOG		✓
MS			
Type:	Socket		~
Address(Diag):	192.168.100.1		
Port(Diag):	9000		
Address(SMP):	192.168.100.1		
Port(SMP):	9001		
		OK	Cancel

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

- **Step 5:** Click **S** 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.

Assert Information >	×
> R13 = 0x91859e88 R14 = 0x0000000 SPSR = 0x00000010	^)(
> FIQ mode:	a t
> R13 = 0x92ddd6e8 R14 = 0x0000000 SPSR = 0x00000010	.e. .e
<pre>> Assert Debug Menu: > 0. Print help info. > 1. Print assert info. > 2. Print important registers. > 3. Dung all memory to a file. > 4. Print memory allocated inf Logel will auto dump after 22 seconds!</pre>)()();
> 5. Frint memory pols info. > 6. Frint tasks info. > 7. Frint stack info. > 7. Frint stack info. > 8. Print callback function in > 9. Read memory. > a. Dunp task usage.	
<pre>> b. Dump definite memory to a OKCancel > c. Dump TaskSwitch memory to a > d. Print Event list information. > e. Print Mutex list information.</pre>	_1 11
<pre>> g. Print Semaphore list information. > h. Print Fat system control block info. > i. Print Byte Pool information > j. Print PS tasks queue info > k. Print PS function call stack > l. Print timer list infomation. > t. Print the all assert information. > v. Print Version Information. > z. Reset MCU.</pre>	

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 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_PCle_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
СР	Central Processor
СОМ	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