EC2x&EG9x&EG25-G Series

QuecOpen UART Forwarding Application Note

LTE Standard Module Series

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GENERAL NOTES

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About the Document

Revision History

Version	Date	Author	Description
1.0	2020-07-15	Tinker Sun	Initial

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1 Introduction

Quectel LTE Standard EC2x&EG9x&EG25-G series modules support QuecOpen® solution. This document mainly introduces the UART forwarding function, which forwards data between the designated UART port and virtual port through Quectel modules, including sending and receiving AT commands and outputting NMEA data.

1.1. Applicable Modules

Table 1: Applicable Modules

Module Series	Module
EC2x series	EC25 series
	EC21 series
	EC20 R2.1
EG9x series	EG95 series
	EG91 series
EG25-G	EG25-G

2 Ports for UART Forwarding

EC2x&EG9x&EG25-G series QuecOpen modules provide USB AT port and SMD virtual port for sending and receiving AT commands, and USB NMEA port and SMD virtual port for transmitting NMEA data. For more details, please refer to ***Chapter 3***.

2.1. USB AT Port

When USB is connected to the PC, the USB AT port, COM27 as shown below, will be listed in the device manager:

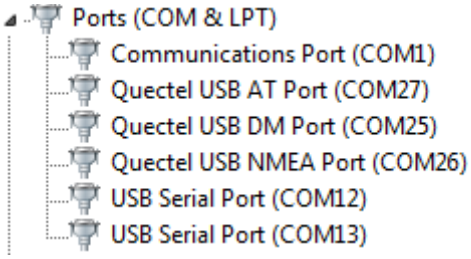


Figure 1: View the USB Ports Enumerated Through the Device Manager in Windows

The QCOM tool in Windows can open the USB AT port and send/receive AT commands, as shown in the following figure:

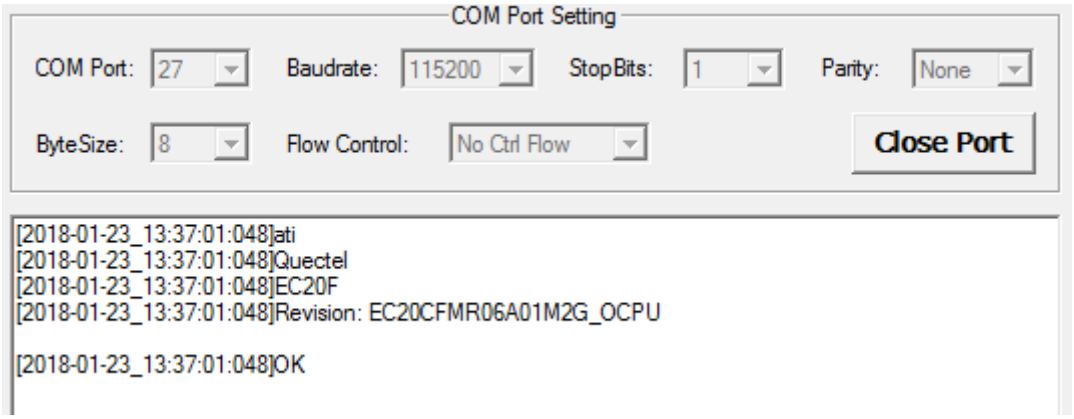


Figure 2: Open the USB AT Port in the Windows Through the QCOM Tool

NOTE

COM13 needs to be connected to Main UART, and COM12 needs to be connected to Debug UART.

2.2. Virtual SMD Port

SMD virtual ports include SMD7, SMD8, SMD9, etc.

Taking the SMD8 virtual port as an example, the device file name is /dev/smd8, as shown in the following figure. The device file names of other virtual port can be deduced by analogy.

```
root@mdm9607-perf:/# ls /dev/smd
smd21               smd7                smd_pkt_loopback
smd22               smd8                smdcntl0
smd36               smd9                smdcntl8
```

The SMD virtual port can be used to send AT commands in users' internal codes. The following figure also uses SMD8 as an example.

```
root@mdm9607-perf:/# cat /dev/smd8 &
root@mdm9607-perf:/# echo -e "ATI\r\n" > /dev/smd8
root@mdm9607-perf:/# ATI
Quectel
EC20F
Revision: EC20CFMR06A01M2G_OCPU

OK
```

NOTE

A virtual port cannot perform AT command sending/receiving and NMEA data output at the same time. Therefore, in order to avoid users performing AT command sending/receiving and NMEA data output at the same time, ***Chapters 3.1*** and ***3.2*** take SMD8 and SMD7 as examples respectively to introduce the UART forwarding function.

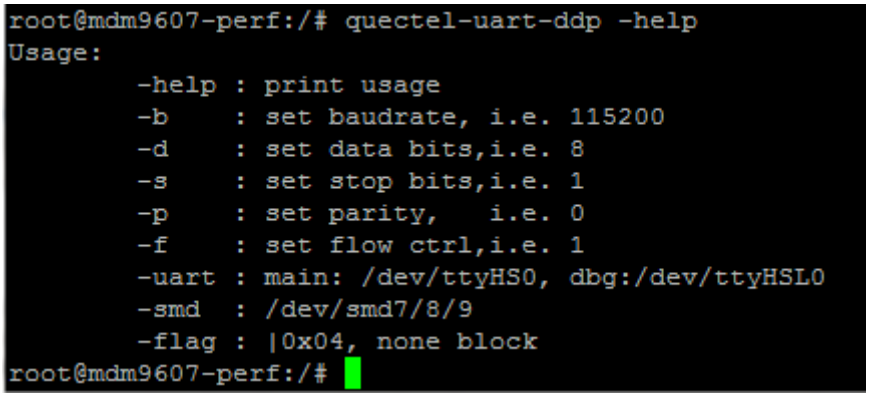
3 UART Forwarding Function Introduction

For terminal products, the USB AT port is usually not used, and the main UART or the debug UART can be used to send and receive AT commands; and the main UART, debug UART, or USB NMEA port can be used to output NMEA data.

3.1. Send/Receive AT Commands Over UART

Exexute the following command to view the help information of application quectel-uart-ddp:

```
quectel-uart-ddp  -help
```



3.1.1. Send/Receive AT Commands Over Main UART

Execute the following command to forward data between main UART and SMD8:

```
quectel-uart-ddp –uart  /dev/ttyHS0  -smd  /dev/smd8
```

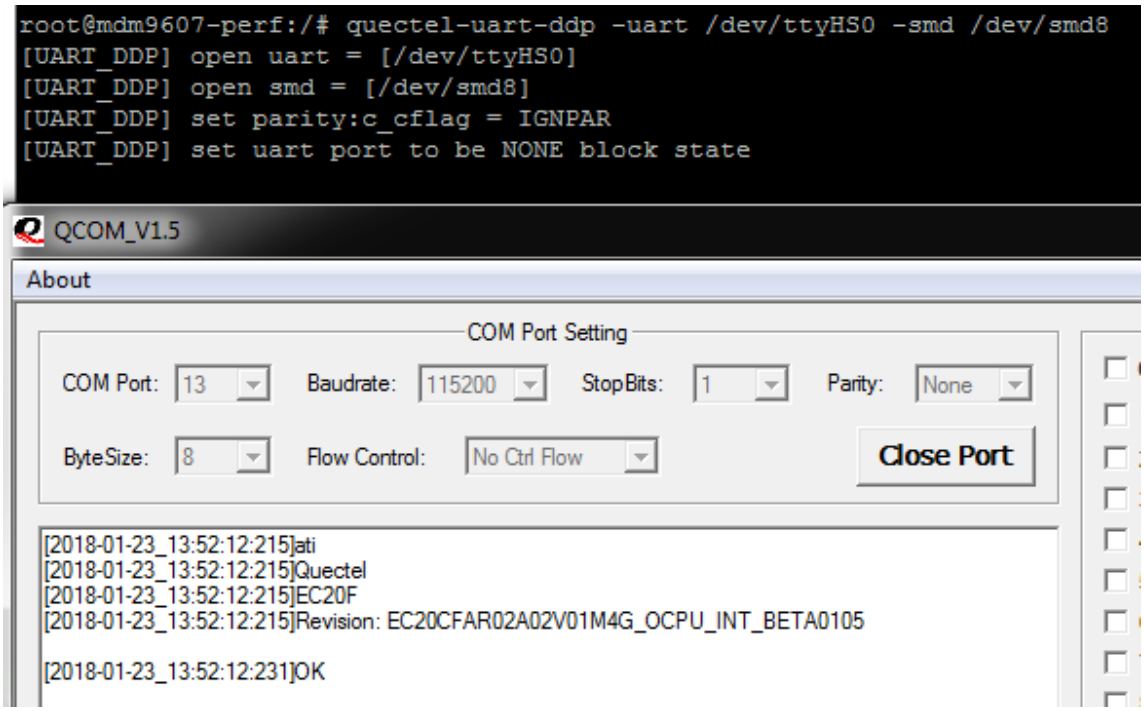


Figure 3: Data Forwarding Between Main UART and SMD8

3.1.2. Send/Receive AT Commands Over Debug UART

Execute the following command to forward data between debug UART and SMD8:

```
quectel-uart-ddp –uart  /dev/ttyHSL0  -smd  /dev/smd8
```

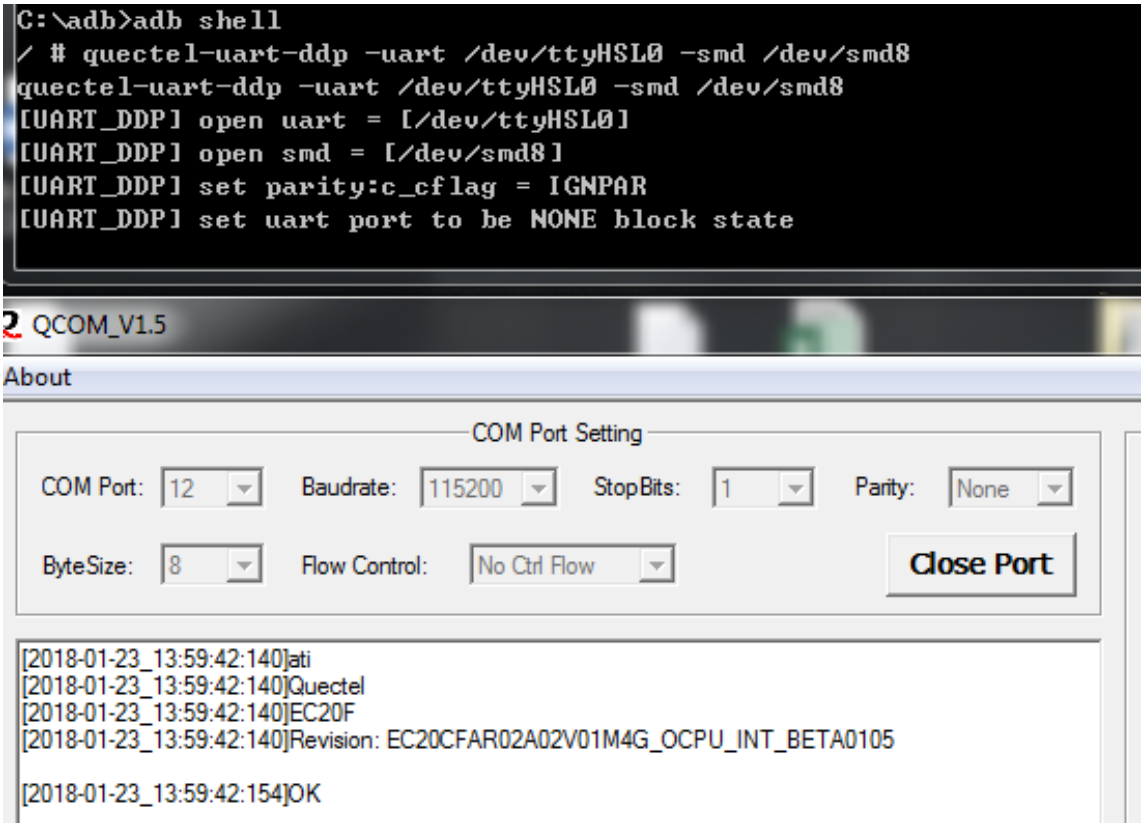


Figure 4: Data Forwarding Between Debug UART and SMD8

3.2. Output NMEA Data Over UART or USB NMEA Port

3.2.1. Output NMEA Data Over Main UART

Use the main serial port to output NMEA data, that is, set the NMEA data output function through the quectel-uart-ddp application.

Execute the following command to forward data between main UART and SMD7:

```
quectel-uart-ddp –uart  /dev/ttyHS0  -smd  /dev/smd7
```

Then after sending **AT+QGPS=1** to enable the GNSS function, you can output NMEA data through the main UART port COM13, as shown in the following figure. For more details of the AT command, please refer to ***document [1]***.

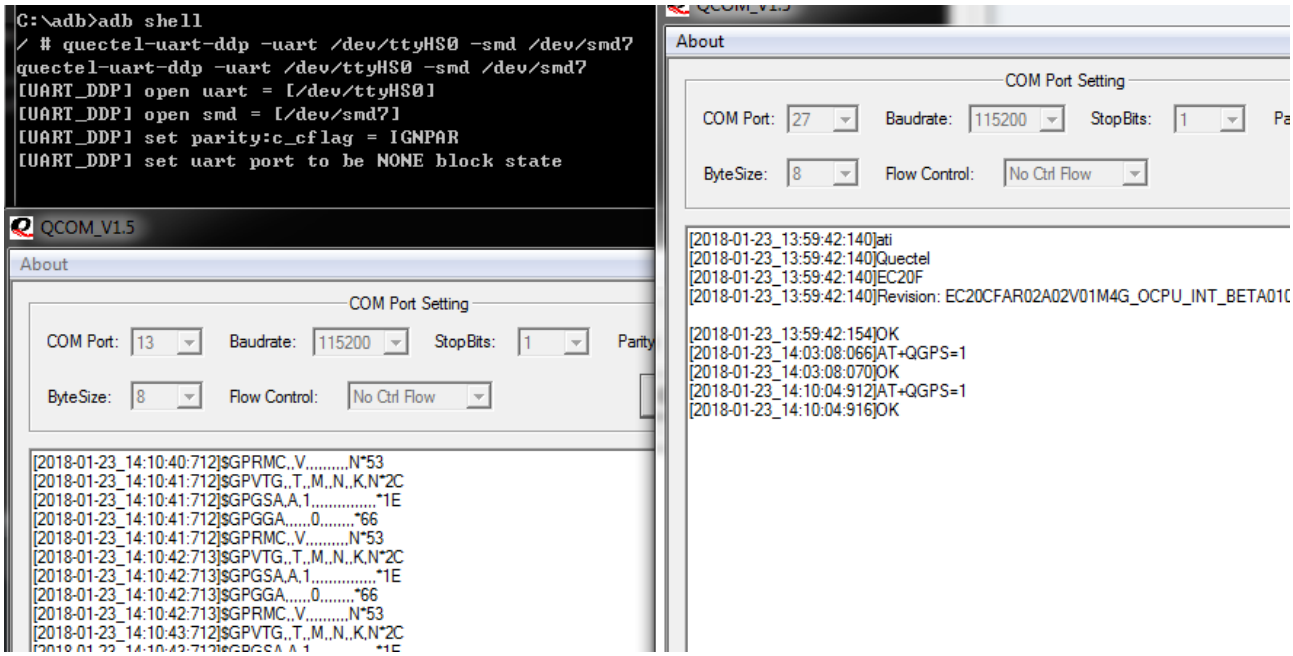


Figure 5: Data Forwarding Between Main UART and SMD7

3.2.2. Output NMEA Data Over Debug UART

Execute the following command to forward data between debug UART and SMD7:

```
quectel-uart-ddp –uart    /dev/ttyHSL0 -smd /dev/smd7
```

Then after sending **AT+QGPS=1** to enable the GNSS function, you can output NMEA data through the debug UART port COM12, as shown in the following figure.

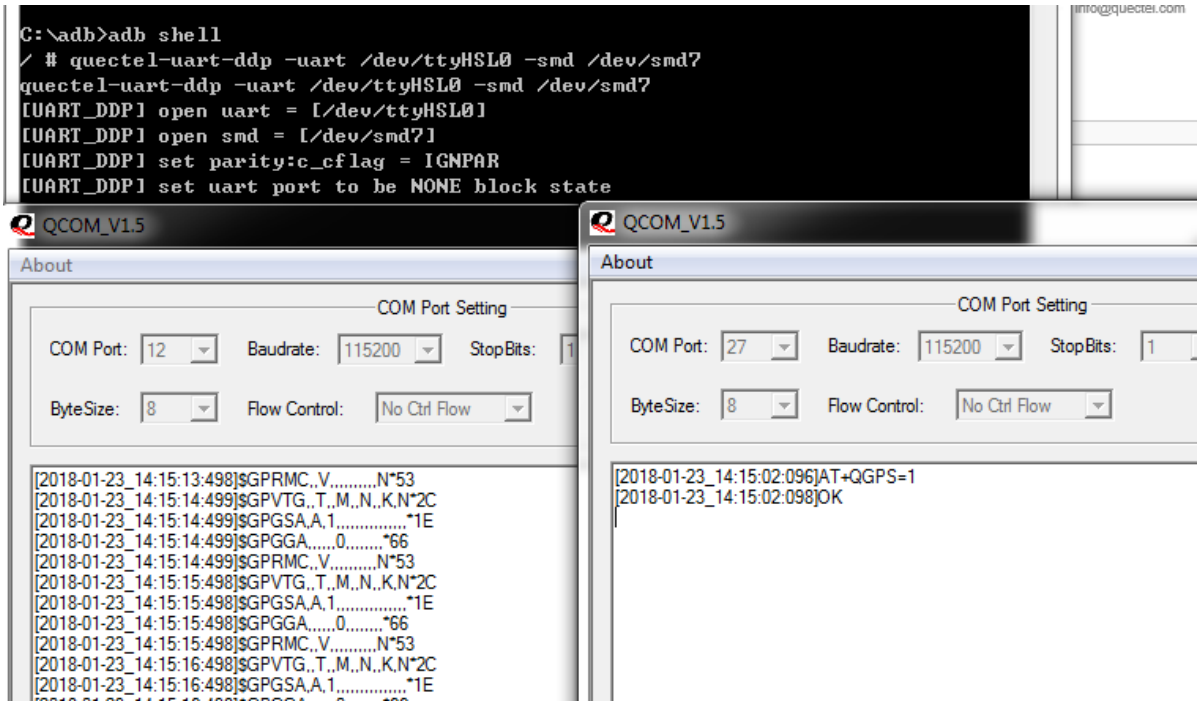


Figure 6: Data Forwarding Between Debug UART and SMD7

3.2.3. Output NMEA Data via USB NMEA Port

Execute the following command to forward data between NMEA port COM26 and SMD7:

```
quectel-uart-ddp –uart    /dev/ttyGS0 -smd /dev/smd7
```

Then after sending **AT+QGPS=1** to enable the GNSS function, you can output NMEA data through the USB NMEA port COM26, as shown in the following figure.

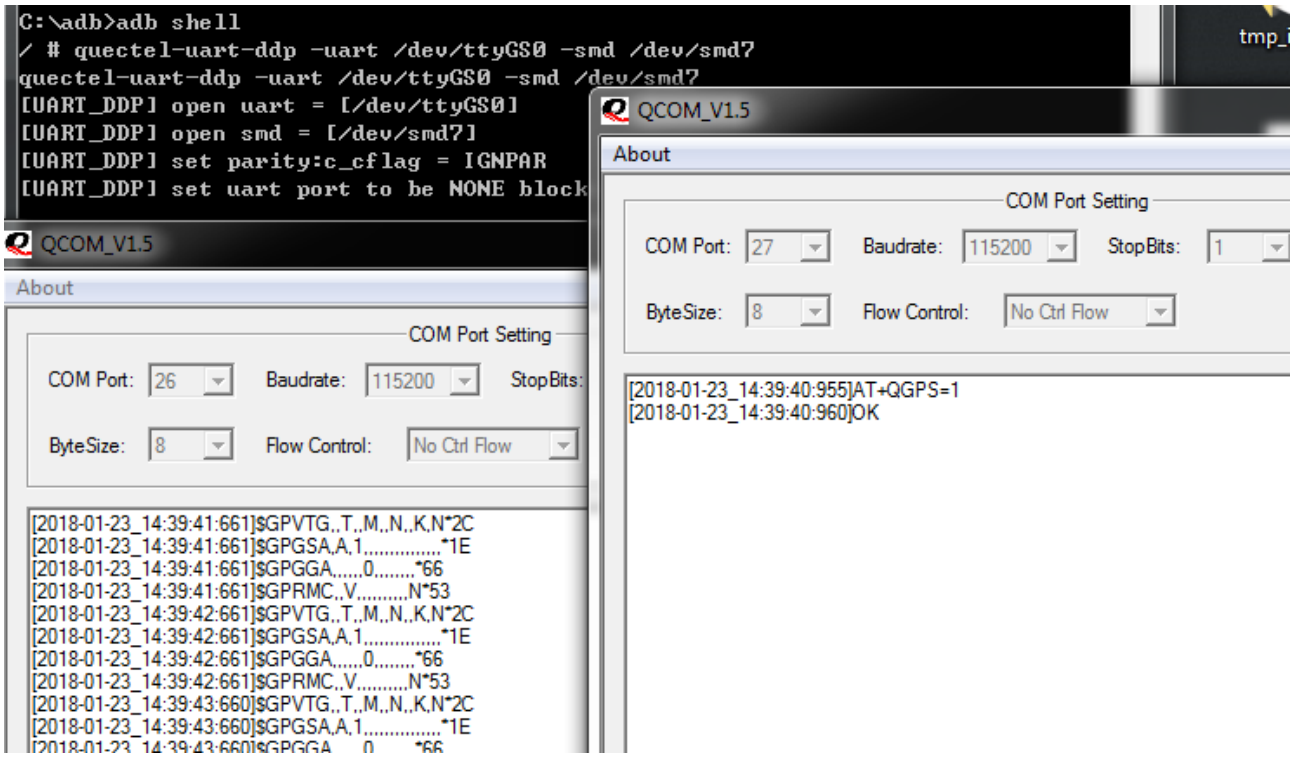


Figure 7: Data Forwarding Between USB NMEA Port and SMD7

4 Appendix A References

Table 2: Related Document

SN	Document Name	Remark
[1]	Quectel_LTE_Standard_GNSS_Application_Note	GNSS application note applicable to EC2x series, EG9x series and EG25-G modules.

Table 3: Terms and Abbreviations

Abbreviation	Description
GNSS	Global Navigation Satellite System
NMEA	NMEA (National Marine Electronics Association) 0183 Interface Standard
PC	Personal Computer
SMD	Surface Mounted Devices
UART	Universal Asynchronous Receiver/Transmitter
USB	Universal Serial Bus