

# Guide on Capturing **GNSS** **Module Log on L-Series**

**GNSS L- Series**

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**Quectel Wireless Solutions Co., Ltd.**

Building 5, Shanghai Business Park Phase III (Area B), No.1016 Tianlin Road, Minhang District, Shanghai 200233, China

Tel: +86 21 5108 6236

Email: [info@quectel.com](mailto:info@quectel.com)

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# About Document

## Revision History

Version	Date	Author	Description
1.0	2023-1-13	Raphael Wu	Creation of the document

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## Contents

<b>About Document .....</b>	<b>3</b>
<b>Contents .....</b>	<b>4</b>
<b>1 Preface .....</b>	<b>5</b>
<b>2 Specification.....</b>	<b>6</b>
<b>3 Introduction on QGNSS Viewer.....</b>	<b>6</b>
3.1. Signal Level Window.....	6
3.2. Text Window.....	7
3.3. Original Data Window .....	8
3.4. Command Debugging Console.....	8
3.5. Sky View.....	9
3.6. Online Map Window.....	9
<b>4 Obtain NMEA log via QGNSS .....</b>	<b>10</b>
4.1. Connect to module.....	10
4.2. Capture NMEA Log .....	11
<b>5 Capture RTCM log via QGNSS .....</b>	<b>12</b>
5.1. Connect to module.....	12
5.2. Read RTCM .....	12
5.3. Read RTCM Log .....	15
<b>6 Capture RTK log via Ntrip Client Terminal.....</b>	<b>16</b>
6.1. Carry out RTK test via Ntrip client terminal .....	16
6.2. Capture RTK log .....	18
<b>7 Capture Debug Log.....</b>	<b>19</b>
7.1. Configure & Output Debug log.....	19
7.2. Capture Debug Log.....	21

# 1 Preface

In this document, it mainly illustrates how to capture different logs on GNSS modules of L Series such as L76/L26-DR/LC76G/LG69T in a fast and effective way. By this way, it will facilitate searching via module type and do a great favor on capturing relevant logs and analyzing issues for users.

All specifications in this document shall be aligned with [<QGNSS\\_V1.7\\_Build1202>](#).

## 2 Specification

As one SW to test serial port, the QGNSS plays a role to connect Quectel GNSS module or EVB for systematical integration manufacturer and terminal user in a fast and simple way, which is available to evaluate, test, develop and debug GNSS smoothly.

In order to facilitate the connection between module and user device, a series of features are provided in QGNSS to query, record or analyze, including:

- Communicate with receiver via Quectel Protocol or NMEA-0183 Standard Specification.
- Receiver that deploying Standard NMEA string
- All info collected when running GNSS device, including position, time, speed and relevant constellations. Moreover, it is available to analyze the collected data and performance such as accuracy, position, constellations trace and TTFF. All above data can be captured in a format of ASCII or Binary.
- AGNSS Feature
- Record data and playback logs in a format of NMEA and RTCM
- Real-time or playback structure and visualized graphical data
- Download FW to GNSS module
- NTRIP Server and NTRIP client terminal
- Online map

Download [QGNSS](#)

All specifications in this document shall be aligned with < [QGNSS\\_V1.7\\_Build1202](#)>.

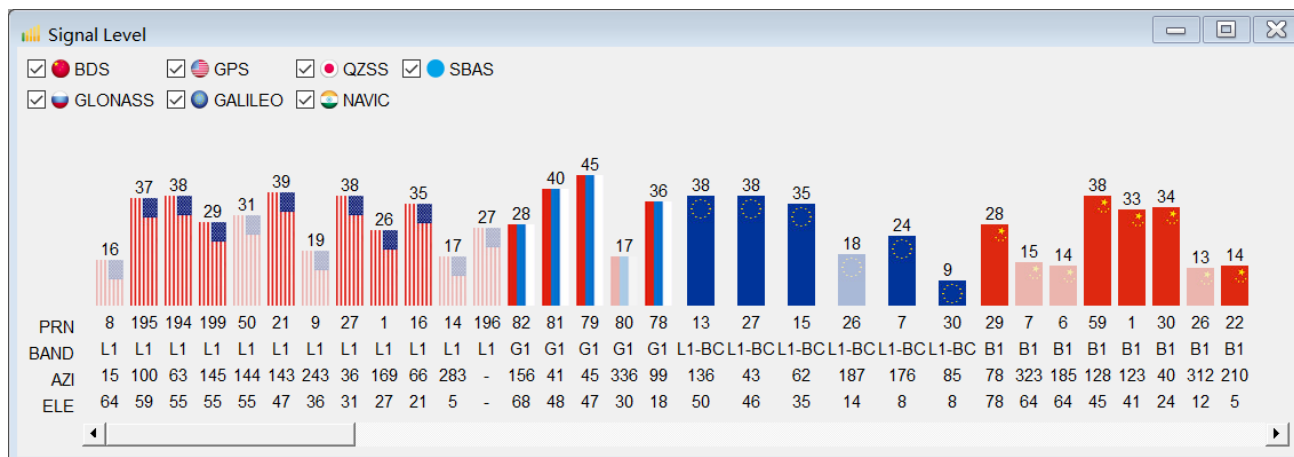
## 3 Introduction on QGNSS Viewer

### 3.1. Signal Level Window

In this window, it displays the constellation signal level received by module.

The number above the flag icon refers to the CN of signal level.

Untick the checkbox ahead of the indicator to filter constellation system.



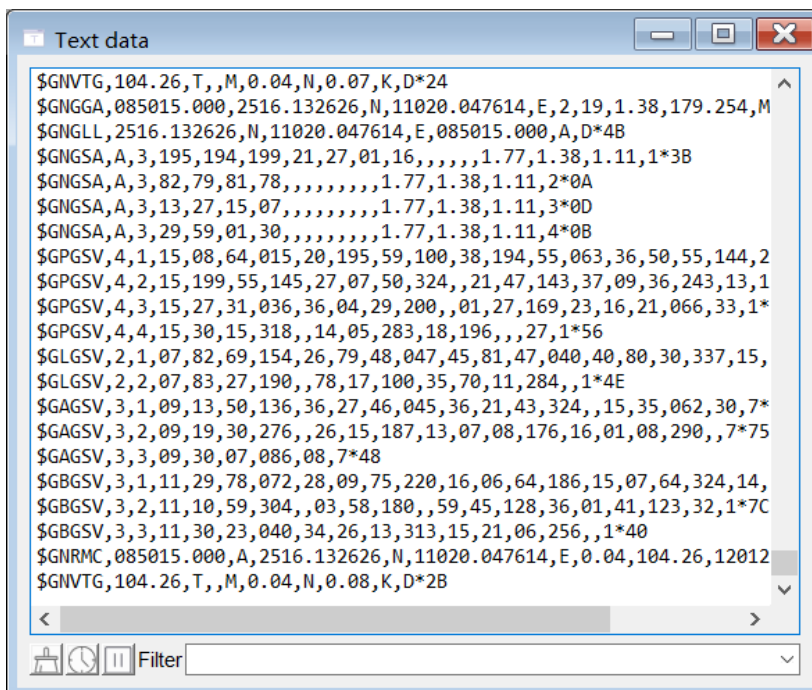
### 3.2. Text Window

This window displays NMEA data.

: Click icon to manifest the local time when outputting each data.

: Click icon to stop updating data in window. (The module data will be updated continuously)

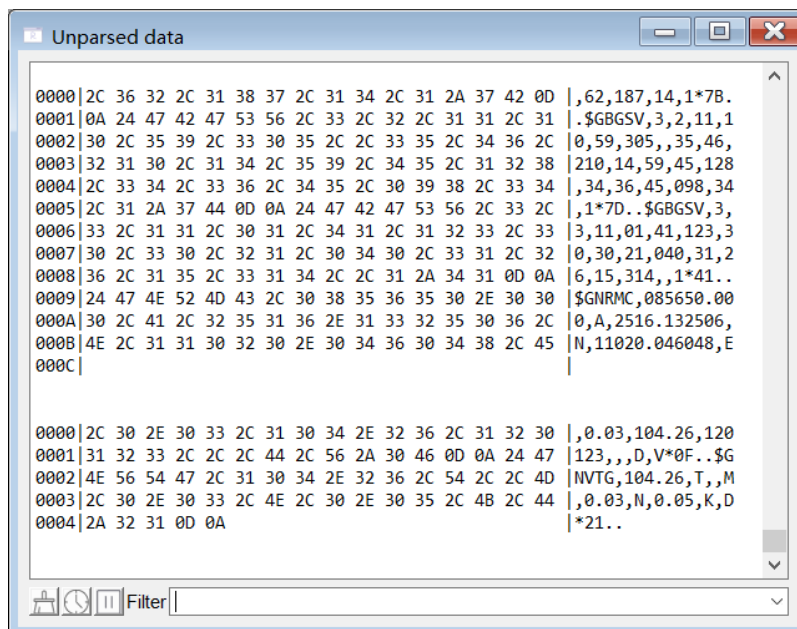
Input keywords in option **Filter** to filter the outputted NMEA data.





### 3.3. Original Data Window

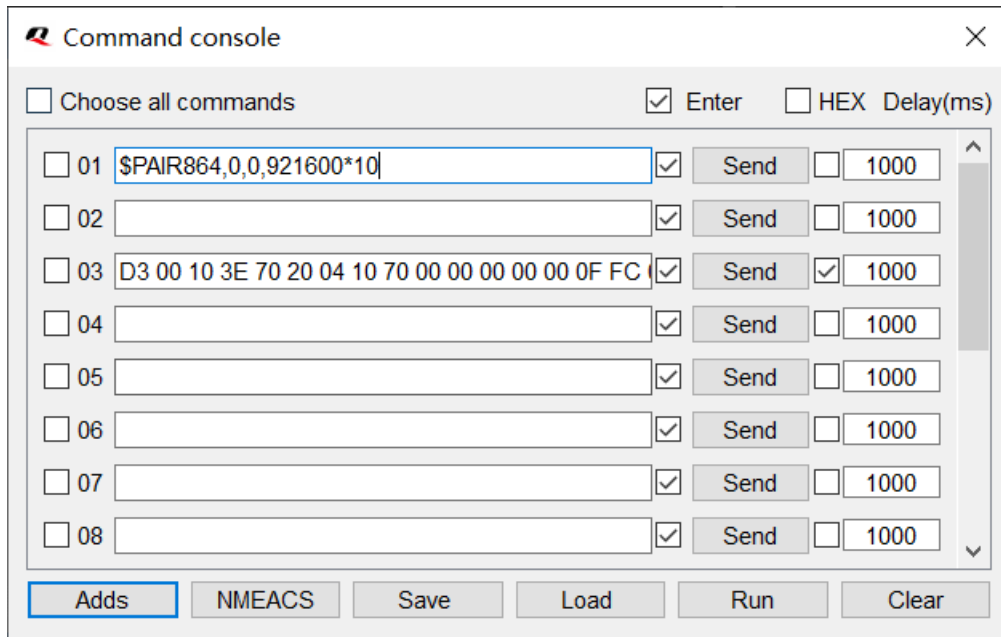
This window illustrates the raw GNSS data.



### 3.4. Command Debugging Console

Open command debugging console via **Command console** in the drop-list of **View**.

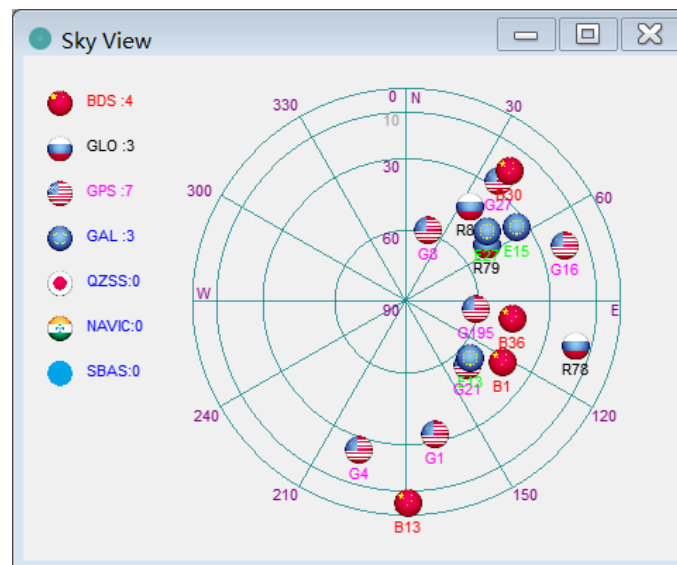
- **Enter** --The <CR><LF> is appended after inputting command
- **Adds** --Add command textbox
- **NMEACS** --Auto Checksum calculation, the \*<checksum> is not implemented when inputting NMEA command
- **Run** --Cooperate with the checkbox ahead of number, which is available to transfer multiple commands for one time
- **Save**  **Load** --Save/Load command configuration
- **HEX** --If it is needed to transfer command in HEX to module, please tick it.



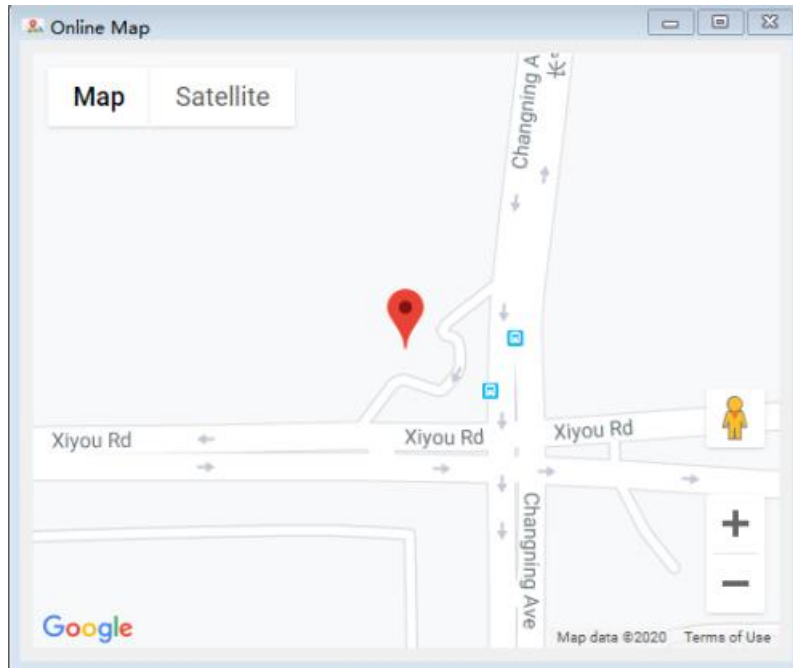
### 3.5. Sky View

Following items are shown in this window

- Visible constellation counts
- Azimuth of the constellation (0~359.99° )
- Elevation of the constellation (0~90.00° )






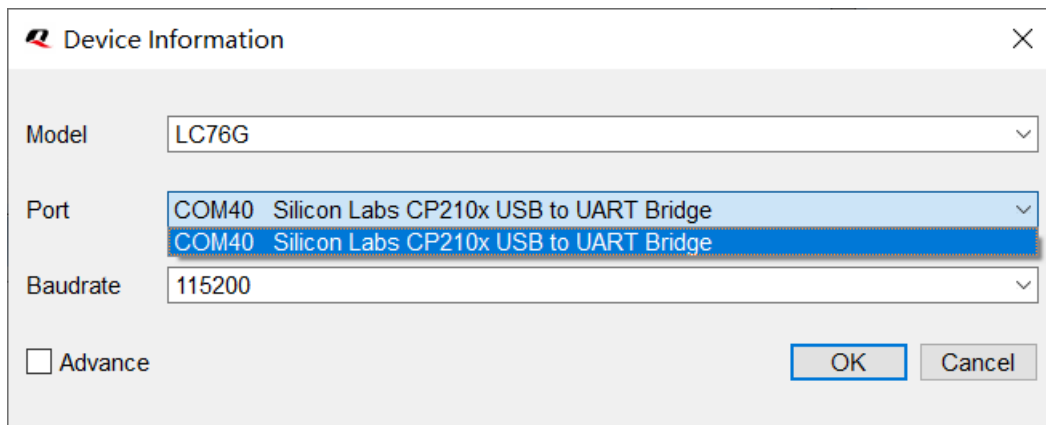
### 3.6. Online Map Window



# 4 Obtain NMEA log via QGNSS

## 4.1. Connect to module

- Click **Device Information** under **Device** or click icon  to configure port
- Input or select corresponding module type in **Model**
- Select corresponding serial port number in **Port** (If 2 ports number are detected by one GNSS module, please connect via **Enhanced Port**)
- Select corresponding value in **Baud-rate**
- Click **OK** to connect to module (In terms of V1.7 or before, after configuring port, it is needed to click icon . Once it turns to , which means it is connected to module successfully.)



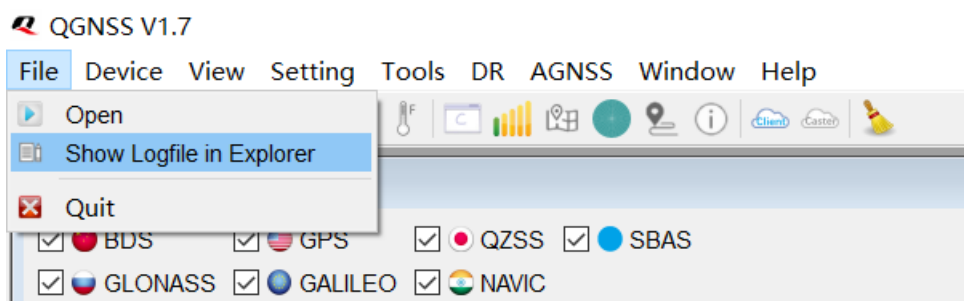
## 4.2. Capture NMEA Log

The QGNSS will record and generate **.log** file automatically after connecting to module and outputting NMEA data normally.



: Click to disconnect tool and port to interrupt recording log

Click **Show Logfile in Explorer** under **File**, the **logfile folder** under the directory of QGNSS will be opened automatically. Please select corresponding log in accordance with configured type and time when generating log.



名称	修改日期	类型	大小
LC76G-0112_163610_COM40.log	2023/1/12 17:07	文本文档	2,135 KB

# 5 Capture RTCM log via QGNSS

## 5.1. Connect to module

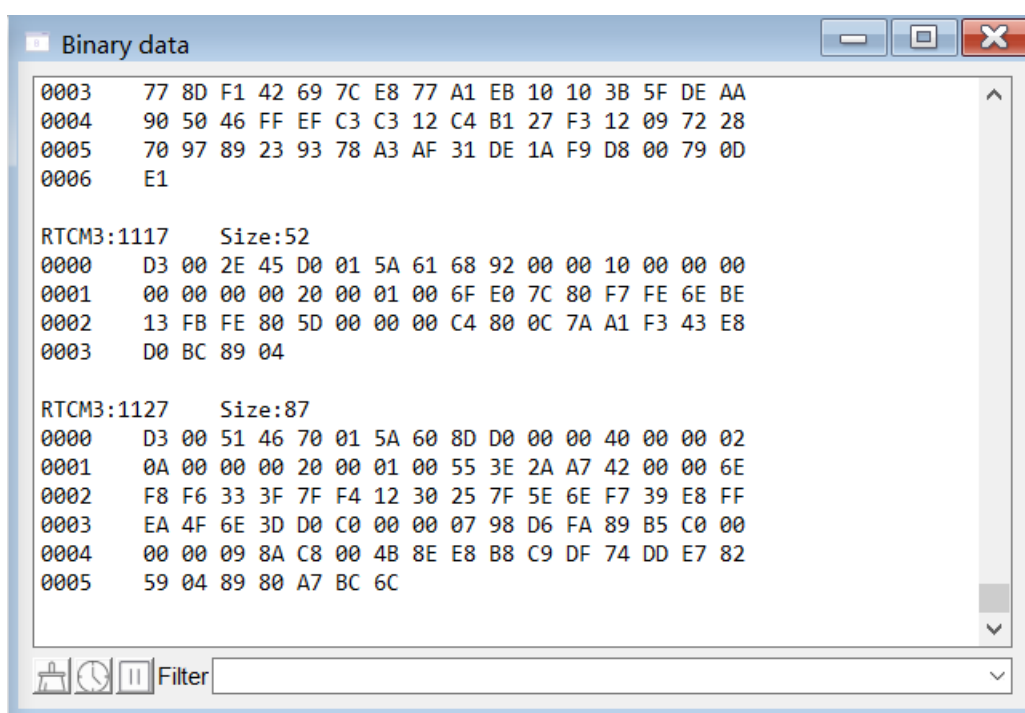
See Chapter 4.1

## 5.2. Read RTCM

Click **Binary data** under **View**

This viewer displays the outputted RTCM in module.

- RTCM Version
- RTCM Message Type
- Size of each RTCM message



Click “Message View” under the menu of “View”.

In this viewer, it displays the encrypted message based on original observation, including:

RTCM3 1006: Module position message (ECEF coordinate)

The screenshot shows a 'Messages View' window with a tree view on the left and a data table on the right. The tree view shows 'RTCM3' expanded to '1006' (7 messages). The data table is titled 'RTCM3 - 1006' and contains the following information:

Parameter	Value	Unit	Description
1 X	-2005567.941500	m	
2 Y	5411834.054600	m	
3 Z	2706114.343700	m	
4 Antenna Height	0.000000	m	

RSS (Receiver Status and Safety)

The screenshot shows a 'Messages View' window with a tree view on the left and a data table on the right. The tree view shows 'RTCM3' expanded to '999' and then '1 (RSS)' (287 messages). The data table is titled 'RTCM3 - 999 - 1 (RSS)' and contains the following information:

Parameter	Value	Unit	Description
1 TOW	379804200	ms	
2 GPS Ext. Week Number	2244		Best time converted to GPS system time
3 Leap Seconds	18	s	
4 Safety info	0		0 = not available
5 ProtocolVersionFlags	3		0, 1 or 2
6 Firmware Version	0xfffff		0xfffff = N/A
7 PPS Status	1		0=ok 1=not available
8 Time Validity	1		
9 Constellation Alarm Mask	0x0		0=ok 1=excluded
10 GNSS Constellation Mask	0x1588d		

RCC (Receiver Configuration and Control)

Messages View


Protocol	Count	RTCM3 - 999 - 2 (RCC)			
RTCM3					
1006	22				
999					
1 (RSS)	351				
2 (RCC)	64	1	Version	LG69TADNR01A03V03_ASG	
21 (EPVT)	353	2	Response ID	0x0	
		3	Config. Page Number	63	
		4	Continue	0	

EPVT (Extended Process Verification Test)

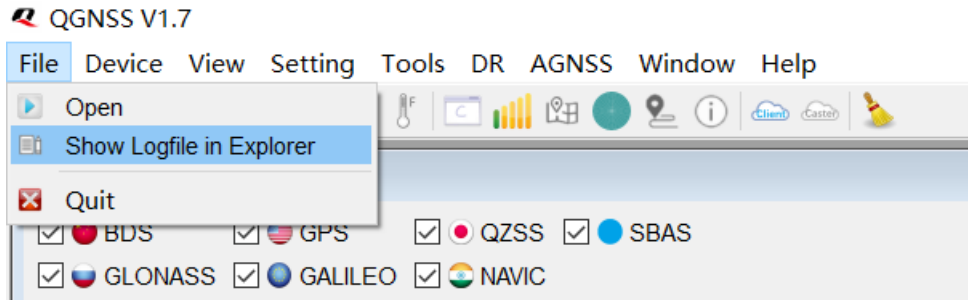
Messages View

Protocol	Count	RTCM3 - 999 - 21 (EPVT)			
RTCM3					
1006	39				
999					
1 (RSS)	518				
2 (RCC)	64				
21 (EPVT)	521	1	Reference Station ID	0x1	Invalid = 0x3FF
		2	ITRF Realization Year	63	
		3	GPS Quality Indicator	1	
		4	Data status	0	0 = Data valid, 1 = Navigation receiver warning
		5	Fix frequency mode	0	
		6	Fix integrity	1	
		7	RFU	0	
		8	Number of satellites in use	13	
		9	Number of satellites in view	42	
		10	HDOP	14	
		11	VDOP	10	

### 5.3. Read RTCM Log

: Click to disconnect tool and port to interrupt recording log.

Click **Show Logfile in Explorer** under **File**, the **logfile folder** under the directory of QGNSS will be opened automatically. Please select corresponding log in accordance with configured type and time when generating log.




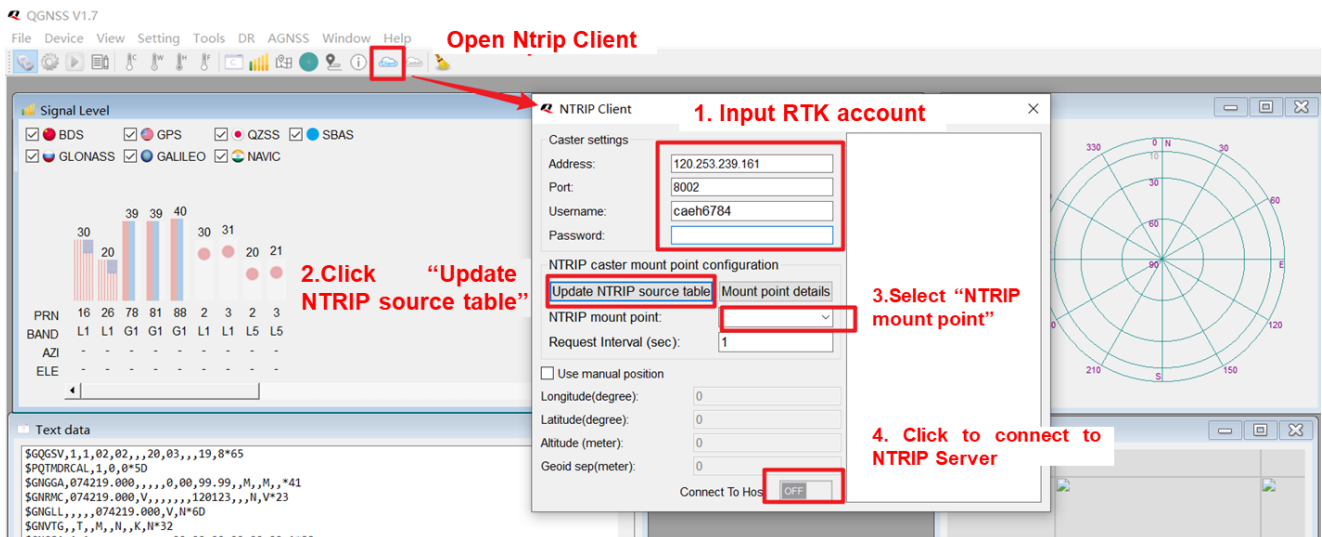
名称	修改日期	类型	大小
 LG69TAD-0112_172713_COM4.log	2023/1/12 17:27	文本文档	4 KB



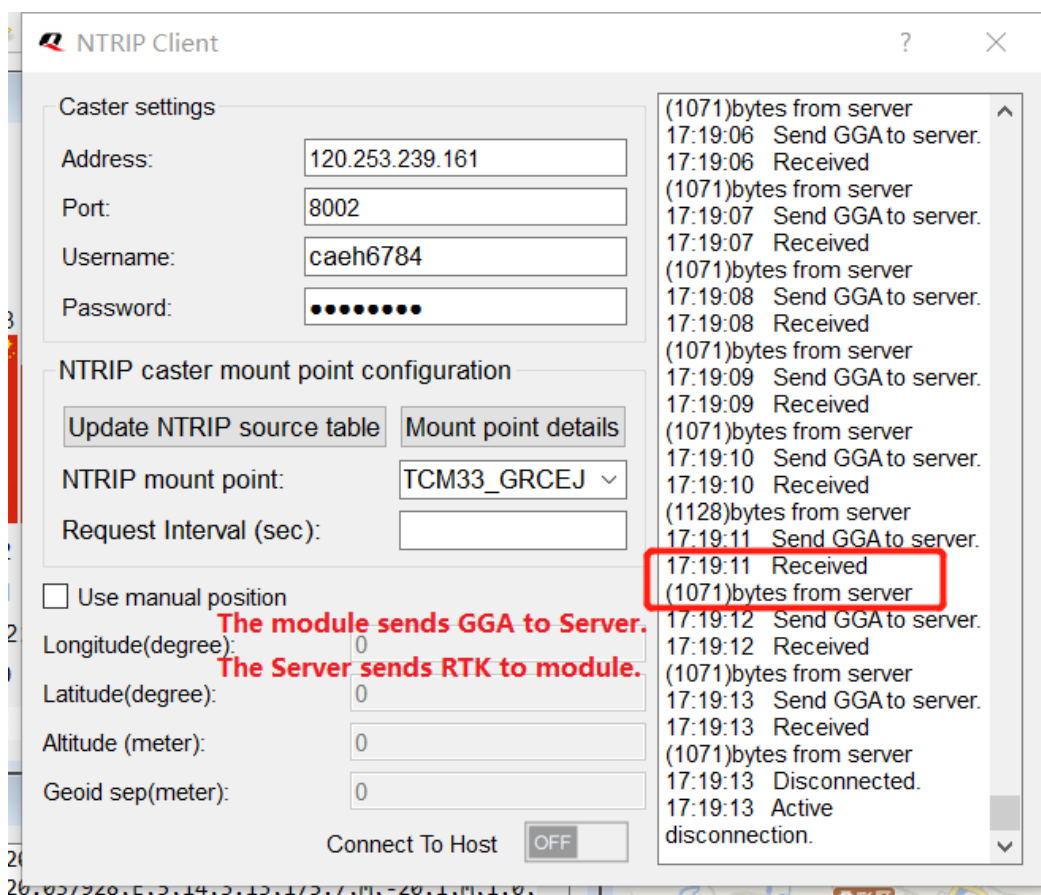
# 6 Capture RTK log via Ntrip Client Terminal

## 6.1. Carry out RTK test via Ntrip client terminal

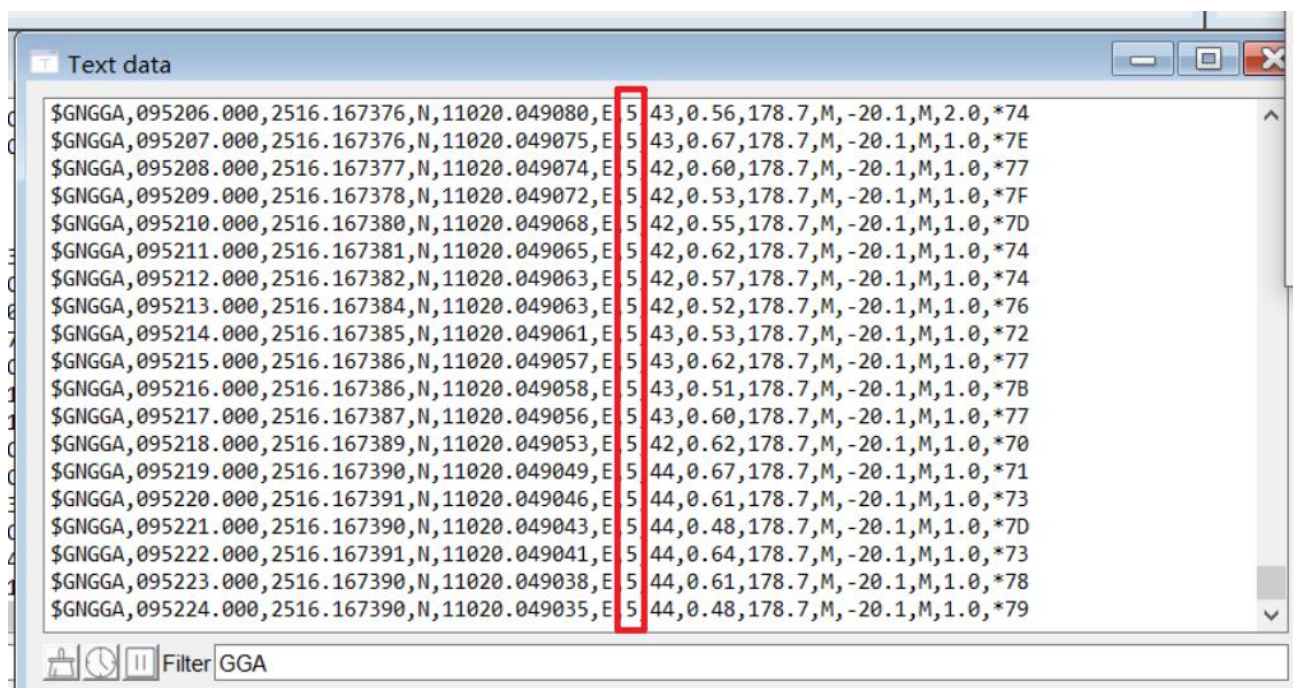
- After connecting to the module that supportig RTK, click  to open Ntrip Client
- Configure RTK Server account
- Click **Update NTRIP source table**
- Select corresponding value in **NTRIP mount point**
- Click **Connect to host** to connect to Ntrip Server



Query data window in the right. Meanwhile, if the GGA of the module is sent to server and relevant RTK data delivered by server is received, which means the connection between module and Ntrip is a success.




Observe the <Quality> bit of GGA sentence in **Text data**. If the value is 4 or 5, which means the module has entered the RTK encryption status.






## 6.2. Capture RTK log



:Click to disconnect tool and port to interrupt recording log

Click **Show Logfile in Explorer** under **File**, the **logfile folder** under the directory of QGNSS will be opened automatically. Please select corresponding log in accordance with configured type and time when generating log.

The Ntrip\_Server file that adjacent to the time of test module indicates the RTK log been tested synchronously.

名称	修改日期 	类型	大小
 LC29HBA-1213_171011_COM16.log	2022/12/13 17:19	文本文档	527 KB
 NTRIP_Server1213_171017.log	2022/12/13 17:19	文本文档	247 KB

# 7 Capture Debug Log

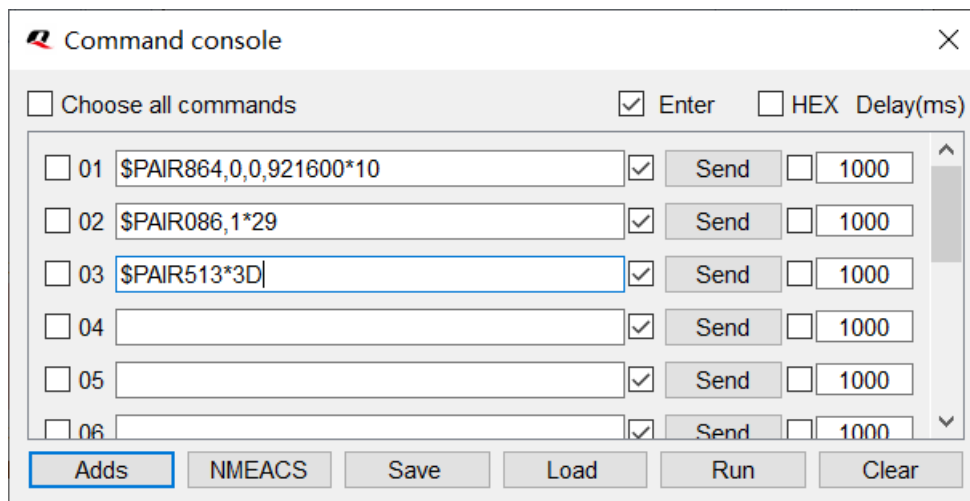
## 7.1. Configure & Output Debug log

Please note the methods to enable Debug mode on modules of individual platform are varied. In this article, it just takes LC76GAB module as an example. For specific configurations on certain type, please apply for SW development engineer.

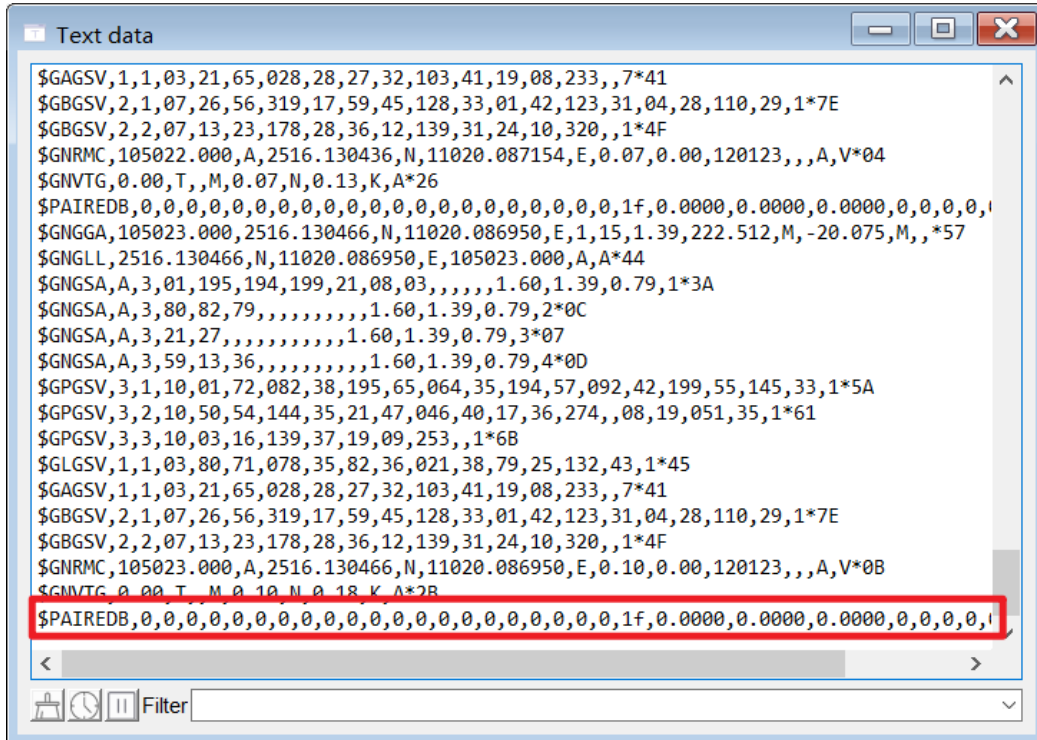
Due to the huge quantity on Debug data, the module can only work in high baud-rate (Normally, 921600 is suggested). Meanwhile, the size of Debug log file that generated by module is huger than ordinary log, please pay attention to the storage space of HDD under the circumstance of long-time test.

### Procedure to enable Debug mode of LC76GAB via QGNSS

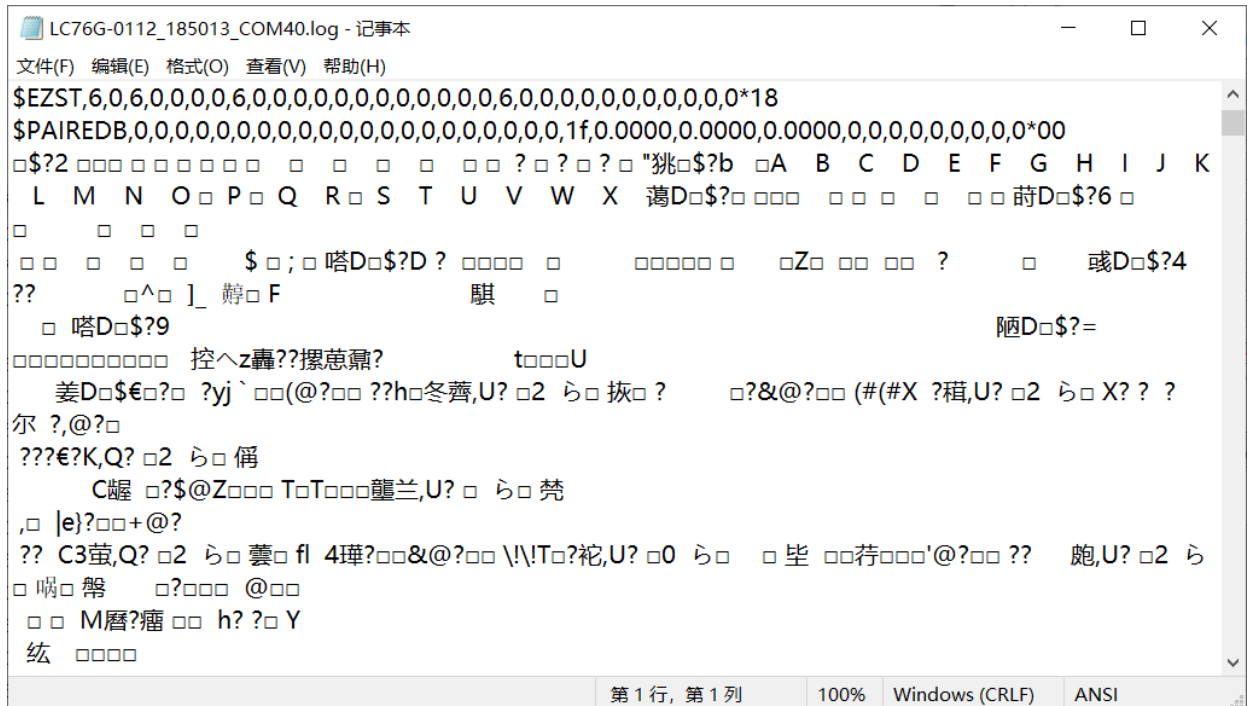
- 1) \$PAIR864,0,0,921600\*10 //Set baud-rate as 921600
- 2) \$PAIR086,1\*29 //Output Debug log
- 3) \$PAIR513\*3D //Save Setting
- 4) Reboot to take effect



After enabling Debug mode, the feedback of Debug message in **Text data** viewer is vivid.



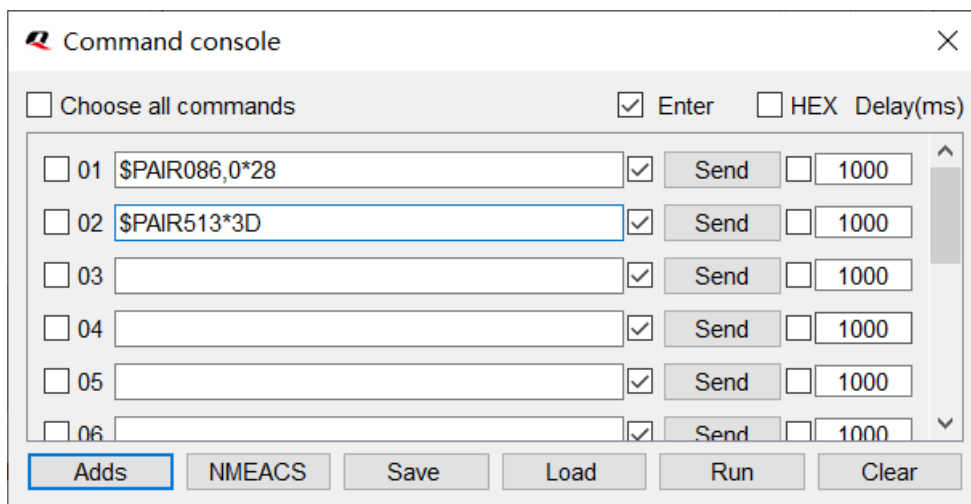
By investigating log, the error codes are obvious, which indicates Debug data.



Disable Debug mode

1) \$PAIR086,0\*28 //Disable Debug mode

2) \$PAIR513\*3D //Save Setting



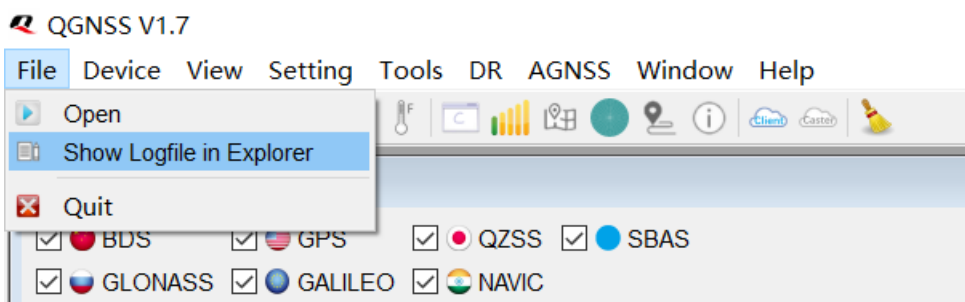
## 7.2. Capture Debug Log

The QGNSS will record and generate **.log** file automatically after connecting to module and outputting NMEA data normally.



: Click to disconnect tool and port to interrupt recording log

Click **Show Logfile in Explorer** under **File**, the logfile folder under the directory of QGNSS will be opened automatically. Please select corresponding log in accordance with configured type and time when generating log.



名称	修改日期	类型	大小
LC76G-0112_163610_COM40.log	2023/1/12 17:07	文本文档	2,135 KB