L26-LB EVB User Guide

GNSS Module 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

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Safety Information

The following safety precautions must be observed during all phases of operation, such as usage, service or repair of any terminal incorporating Quectel L26-LB module. Manufacturers of the terminal should distribute the following safety precautions to users and operating personnel, and incorporate them into all manuals supplied with the product. Otherwise, Quectel assumes no liability for customer failure to comply with these precautions.

	Ensure that the product may be used in the country and the required environment, as well as that it conforms to the local safety and environmental regulations.
	Keep away from explosive and flammable materials. The use of electronic products in extreme power supply conditions and locations with potentially explosive atmospheres may cause fire and explosion accidents.
	The product must be powered by a stable voltage source, while the wiring must conform to security precautions and fire prevention regulations.
	Proper ESD handling procedures must be followed throughout the mounting, handling and operation of any devices and equipment incorporating the module to avoid ESD damages.

About the Document

Document Information	
Title	**L26-LB EVB User Guide**
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Revision History

Version	Date	Description
1.0	2020-01-20	Initial
1.1	2022-08-01	1. Completely reorganized the structure of the document. 2. Detailed the steps of communication via QCOM tool (Chapter 4). 3. Updated the test tool from PowerGPS to QGNSS (Chapter 5.1). 4. Updated the firmware upgrade tool from Flash tool to QGNSS (Chapter 5.2).

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1 Introduction

This document provides information on the steps needed to evaluate the Quectel L26-LB module using the Evaluation Board (EVB). The EVB is a convenient tool that allows you to become familiar with the L26-LB module.

Specifically, the document is divided into several sections:

- Chapter 2 provides the general overview of EVB kit.
- Chapter 3 describes the EVB user interfaces.
- Chapter 4 describes how to communicate with the module via QCOM tool.
- Chapter 5 describes how to test and upgrade module via QGNSS tool.
- Chapter 6 is an appendix, which summarizes the relevant documents, and terms and abbreviations appearing herein.

NOTE

1. For EVB schematic and PCB layout design files, contact Quectel Technical Support (support@quectel.com).
2. Download QCOM tool from our website Download Zone or request it from Quectel Technical Support; Request QGNSS tool from Quectel Technical Support.

2 General Overview

2.1. EVB Kit

The EVB kit includes: Evaluation Board (EVB), active GNSS antenna, Micro-USB cable, USB flash drive, bolts and coupling nuts.

The EVB kit components are shown in the figure below. Check ***Table 1*** for details.

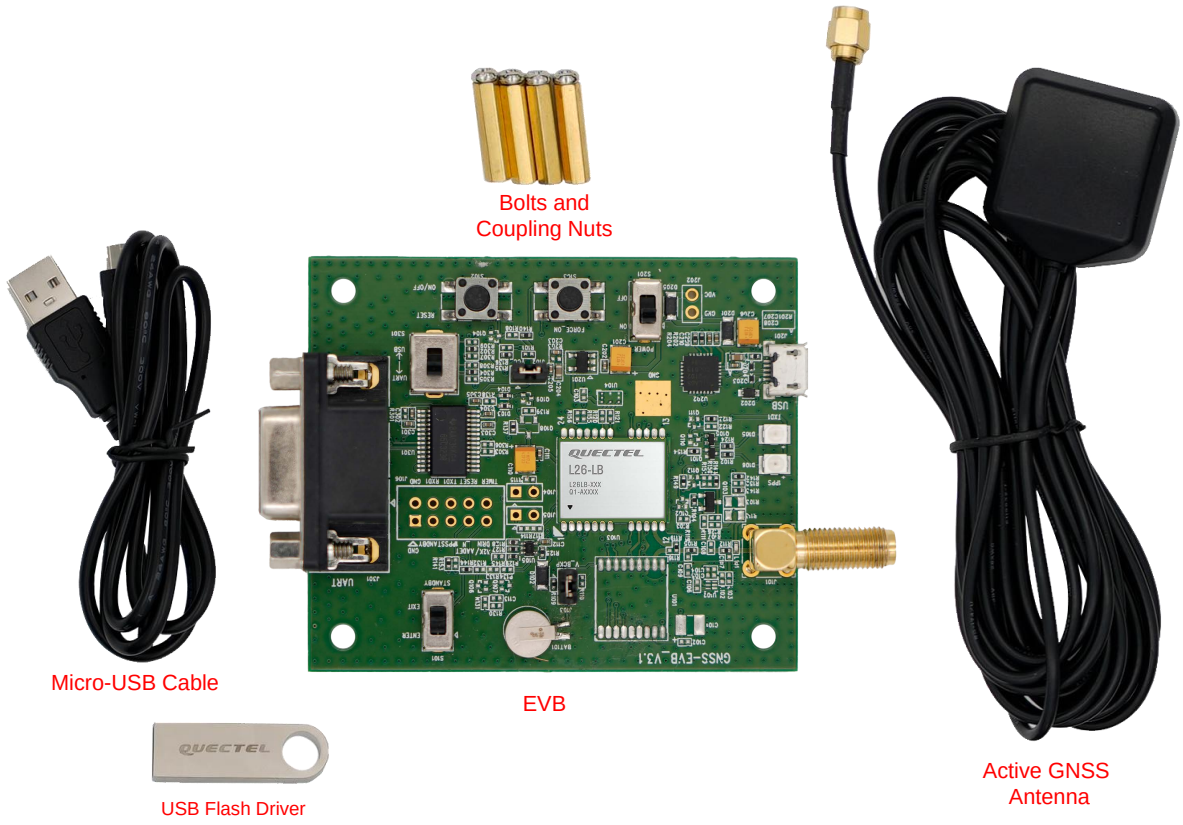


Figure 1: EVB and Components

Table 1: List of Kit Components

Items	Description	Quantity
EVB	Evaluation Board Size: 60 mm × 70 mm	1
USB Cable	Micro-USB Cable	1
USB Flash Drive	8 GB USB Flash Drive (including the module-related documents, tools, and drivers)	1
GNSS Antenna	Active GNSS Antenna Request the antenna datasheet from Quectel Technical Support.	1
Instruction Sheet	Sheet providing instructions on how to connect the EVB and its components, detailed information on EVB components, etc.	1
Others	Bolts and Coupling Nuts	4 pairs

2.2. Connect Cables and Antenna to EVB

The connection between the EVB and its components is shown in the figure below. For more information on how to connect the EVB and its components, refer to the instruction sheet inside the EVB kit.

Figure 2: EVB and Components Assembly

NOTE

Make sure that the active GNSS antenna is placed with a clear line of sight to the sky.

3 EVB Interfaces

3.1. EVB Top View

EVB top view is shown in the figure below.

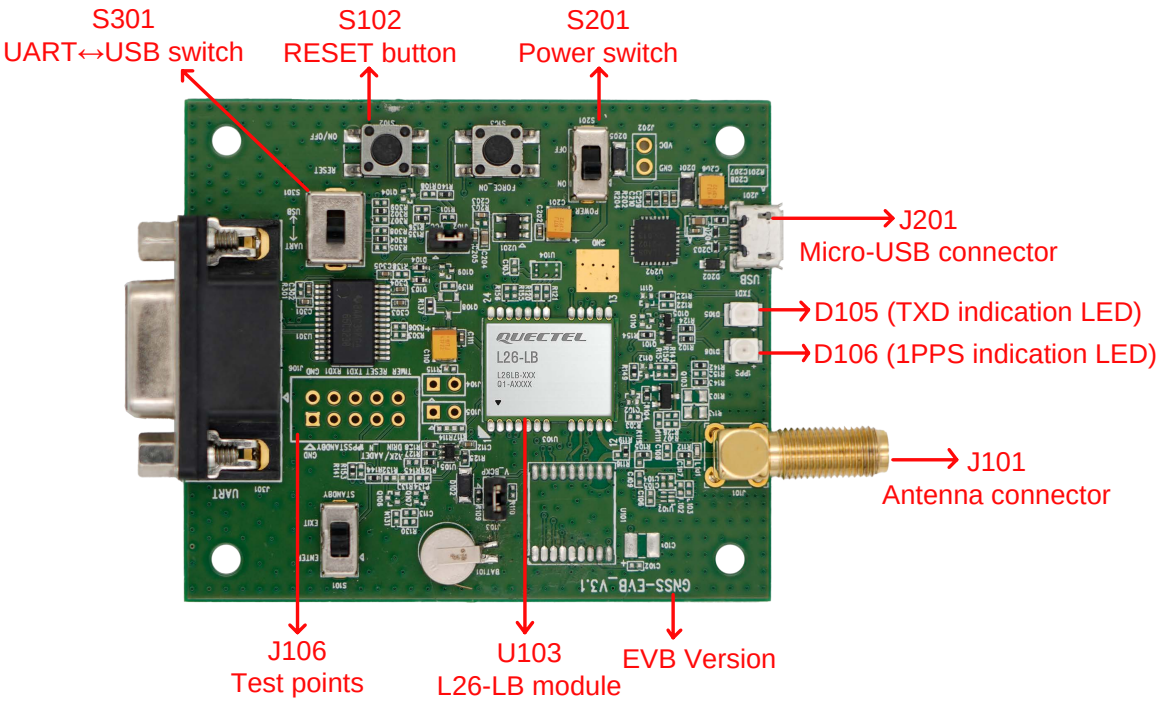


Figure 3: EVB Top View

3.2. EVB Interfaces

The EVB interfaces are detailed in the table below.

Table 2: Detailed EVB Interfaces

Function	Interfaces	Description
Power Supply	J201 Micro-USB Connector	Power supply input: ● DC power supply: 4.5–5.5 V, typ. 5.0 V ● Current capability should be > 100 mA
Communication Interface	J201 Micro-USB Connector	Standard NMEA message output, PMTK/PQ command input and output, and firmware upgrade.
RF Input	J101 Antenna Connector	The antenna in the kit supports: ● GPS L1 C/A ● GLONASS L1 ● BDS B1I ● QZSS L1 C/A ● SBAS
Signal Indication	D105 TXD Indication LED (Blue LED)	Flashing: Data are output from UART TXD pin. Extinct or Bright: No data are output from UART TXD pin.
	D106 1PPS Indication LED (Red LED)	Flashing: Successful position fix. Frequency: 1 Hz. Extinct: No position fix.
Switches and Buttons	S201 Power Switch	Powers the EVB on/off.
	S301 UART↔USB Switch	Switch between USB data transfer and UART data transfer.
	S102 RESET Button	Short press on the button to reset the module.
Test Points	J106 Test Points	Pins are detailed in ***Table 3*** and ***Table 4*** below.

J106 pin assignment is shown below:

Table 3: J106 Pin Assignment

32K/DRIN	AADET_N	1PPS	STANDBY	GND
TIMER	RESET	TXD1	RXD1	GND

Table 4: J106 Pin Detailed Description

Pin Name	I/O	Description
32K/DRIN	-	Not connected
AADET_N	DI	Detects active antenna open-circuit
1PPS	DO	1 pulse per second
STANDBY	DI	Enters or exits Standby mode
GND	-	Ground
TIMER	-	Not connected
RESET	DI	Resets the module
TXD1	DO	Transmits data
RXD1	DI	Receives data
GND	-	Ground

4 Communication via QCOM Tool

This chapter explains how to use the QCOM tool to communicate with the module via the Micro-USB connector. For more information, see ***document [1]***.

The detailed steps for communicating with the module via QCOM tool:

Step 1: Connect the EVB and the PC with a Micro-USB cable via the Micro-USB connector. Flip the power switch (S201) to **ON** position to power on the EVB and flip the UART↔USB switch (S301) to **USB** position.

Step 2: Run the provided driver installer to install the USB driver. View the USB port number in the Device Manager, as shown in the figure below.

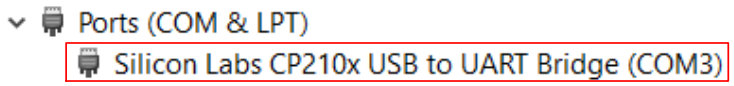


Figure 4: USB Port

Step 3: Install the QCOM tool provided by Quectel. The QCOM interface for COM Port Setting is shown in the figure below (default baud rate: 9600 bps [1]).

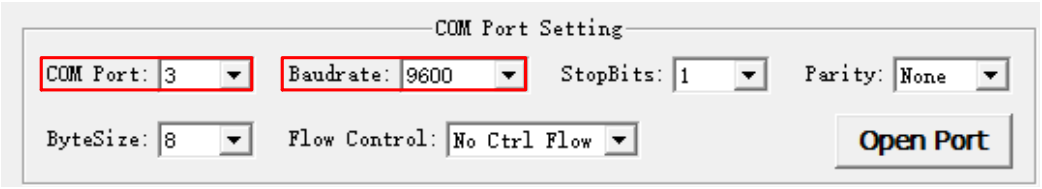


Figure 5: QCOM Interface for COM Port Setting

Step 4: Select the correct "**COM Port**" (USB Port shown in ***Figure 4*** above) and set the correct "**Baudrate**".

Step 5: Click "**Open Port**" to establish communication with the EVB. The NMEA sentences output by the module will be displayed in the receiving bar of the QCOM tool, as shown in the figure below.

[1] UART interface default settings may vary depending on software versions.

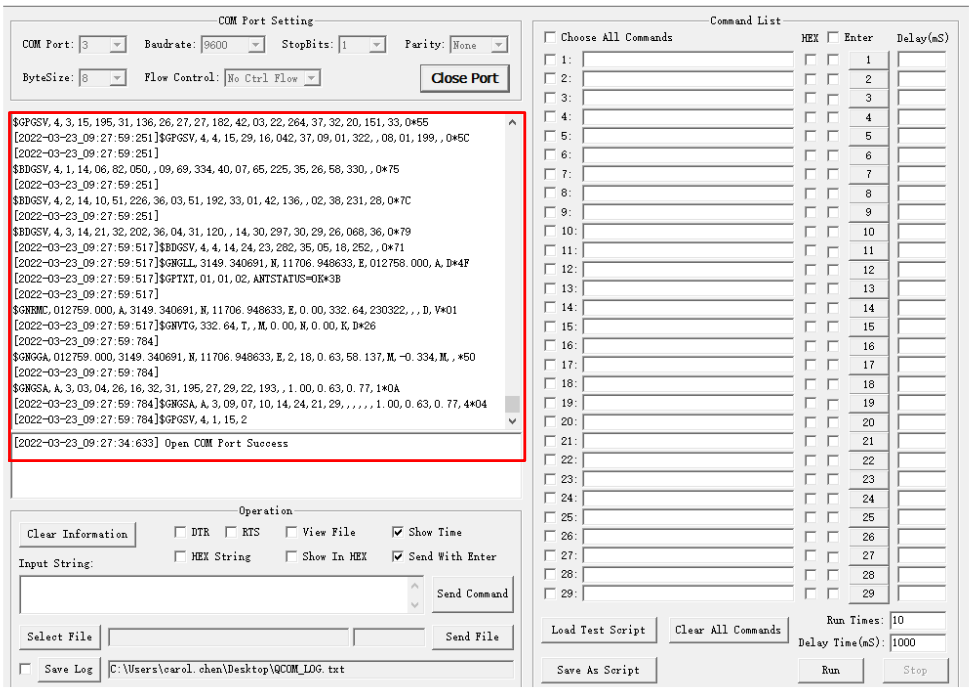


Figure 6: NMEA Sentence Output – Displayed on QCOM Tool Interface

5 Test and Upgrade via QGNSS Tool

This chapter explains how to use the QGNSS software tool for verifying the status of GNSS L26-LB module and upgrading the module firmware. For more information about QGNSS use, see ***document [2]***.

5.1. QGNSS Setting

Step 1: Assemble the EVB components.

Step 2: Connect the EVB and the PC with a Micro-USB cable. Flip the Power switch (S201) to **ON** position to power on the EVB and flip the UART↔USB switch (S301) to **USB** position.

Step 3: Start the QGNSS and click "**Setting**" and "**Serial Port Configuration**" (default baud rate: 9600 bps [2]).

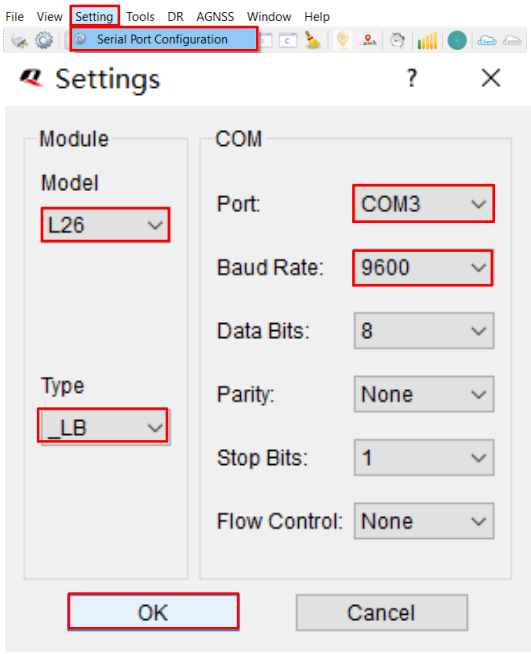


Figure 7: COM Port and Baud Rate Setting

Step 4: Click the  "**Connect or disconnect**" button. The interface shown in the figure below appears once the module is connected.

[2] UART interface default settings may vary depending on software versions.

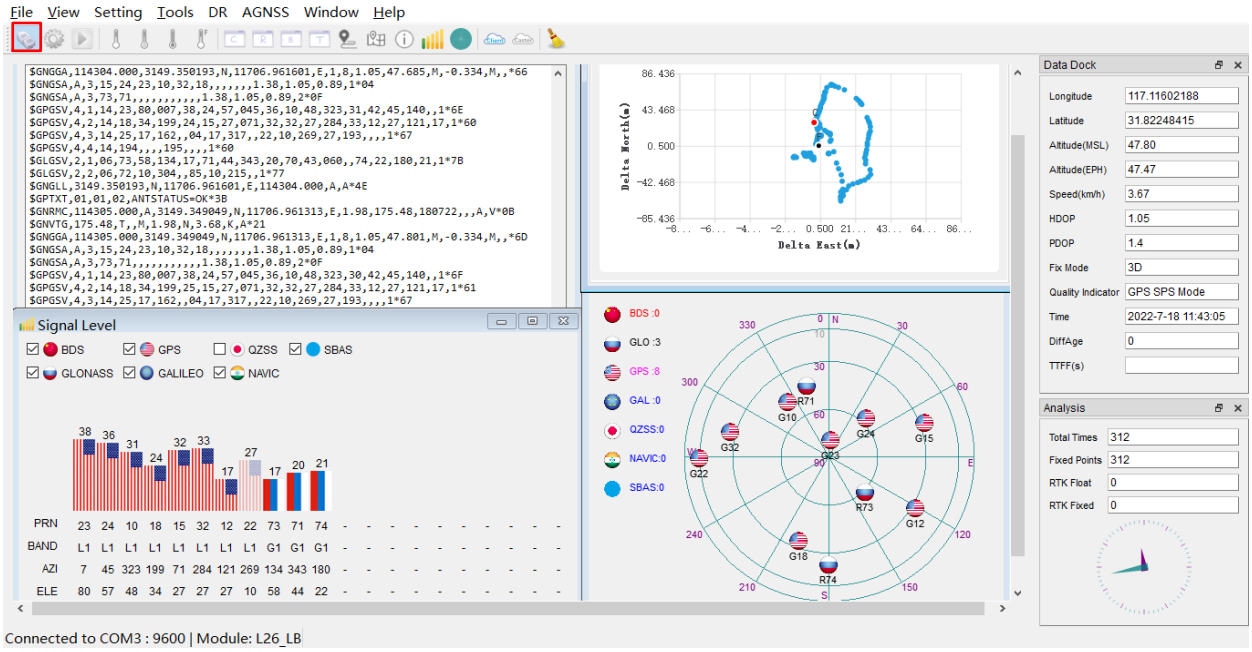
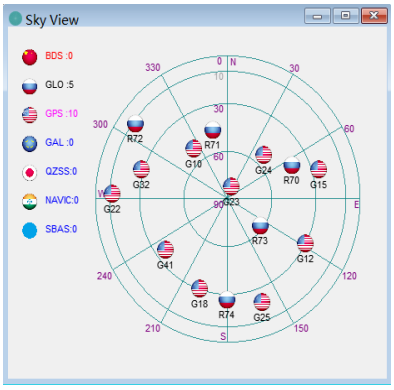


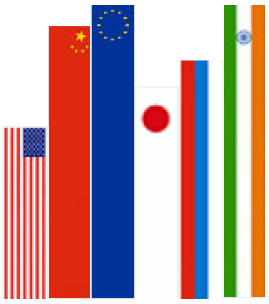
Figure 8: QGNSS Interface (Connected)

5.1.1. QGNSS Interface Explanation

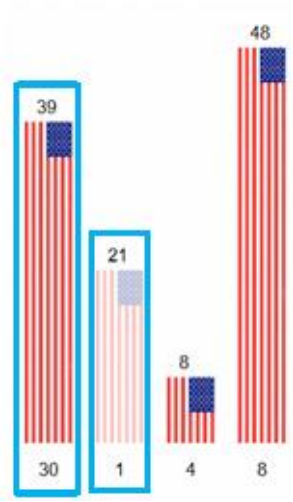
You can view GNSS information, such as C/N_0 message, time, position, speed, and precision in the QGNSS interface. See the following table to find out more about these parameters.

Table 5: QGNSS Interface Explanation

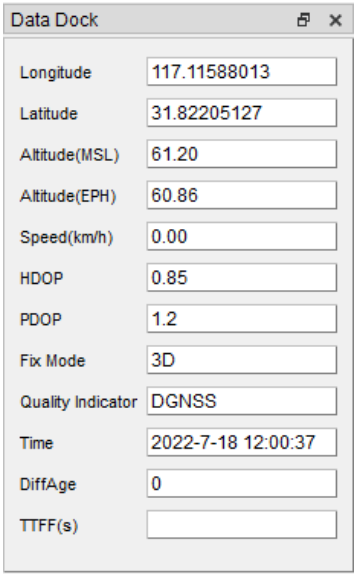
Icon	Explanation
	This sky view interface shows the position of the satellites in use. 1) The left column icons show the satellites in use and their number. ● BDS: 0 ● GLO (GLONASS): 5 ● GPS: 10 ● GAL (Galileo): 0 ● QZSS: 0 ● NAVIC (IRNSS): 0 ● SBAS: 0 2) The grid map on the right shows the position of the satellites in use.



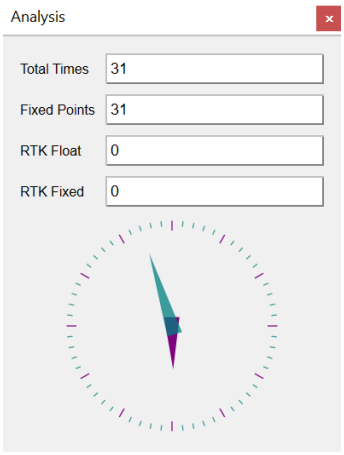
- GPS satellite
- BDS satellite
- GLONASS satellite
- Galileo satellite
- QZSS satellite
- NavIC (IRNSS) satellite



- PRN 30 C/N_0 is 39 dB-Hz.
- Column in bright red means that the navigation data of the satellites are in use.
- PRN 1 C/N_0 is 21 dB-Hz.
- Column in light red means that the navigation data of the satellites are not in use.



- Longitude (unit: degree)
- Latitude (unit: degree)
- Altitude (MSL) (unit: m)
- Altitude (EPH) (unit: m)
- Receiver speed (unit: km/h)
- Horizontal dilution of precision
- Position dilution of precision
- Fix Mode: 2D, 3D
- Quality Indicator: DGNSS, DGPS, GPS SPS mode
- UTC date and time
- Age of differential GPS data
- Last TTFF (unit: second)



- Total Times
- Fixed Points
- RTK Float
- RTK Fixed

5.2. Firmware Upgrade

Firmware upgrade steps:

Step 1: Click "**Tools**" and select "**Firmware Download**" in QGNSS tool.

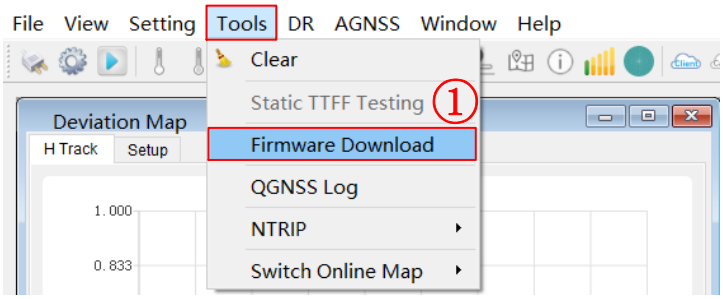


Figure 9: Tool Startup

Step 2: Select "**Download Baudrate**" (baud rate will affect firmware download speed).

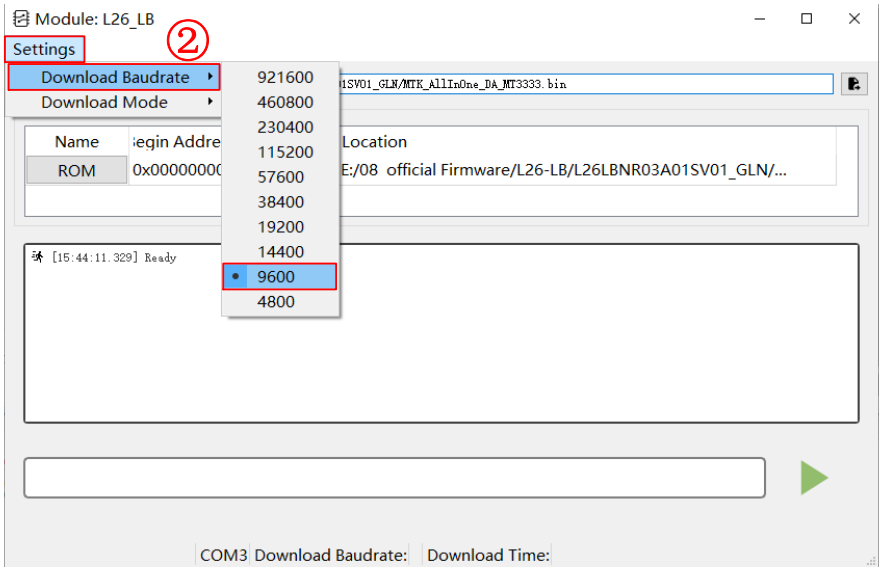


Figure 10: Baud Rate Setting

Step 3: Click the  "**Open DA File**" button to select DA file, e.g., "**MTK_AllInOne_DA_MT3333.bin**" and then click "**ROM**" file to select ROM file, e.g., "**L26LBNR03A01SV01_GLN.bin**".

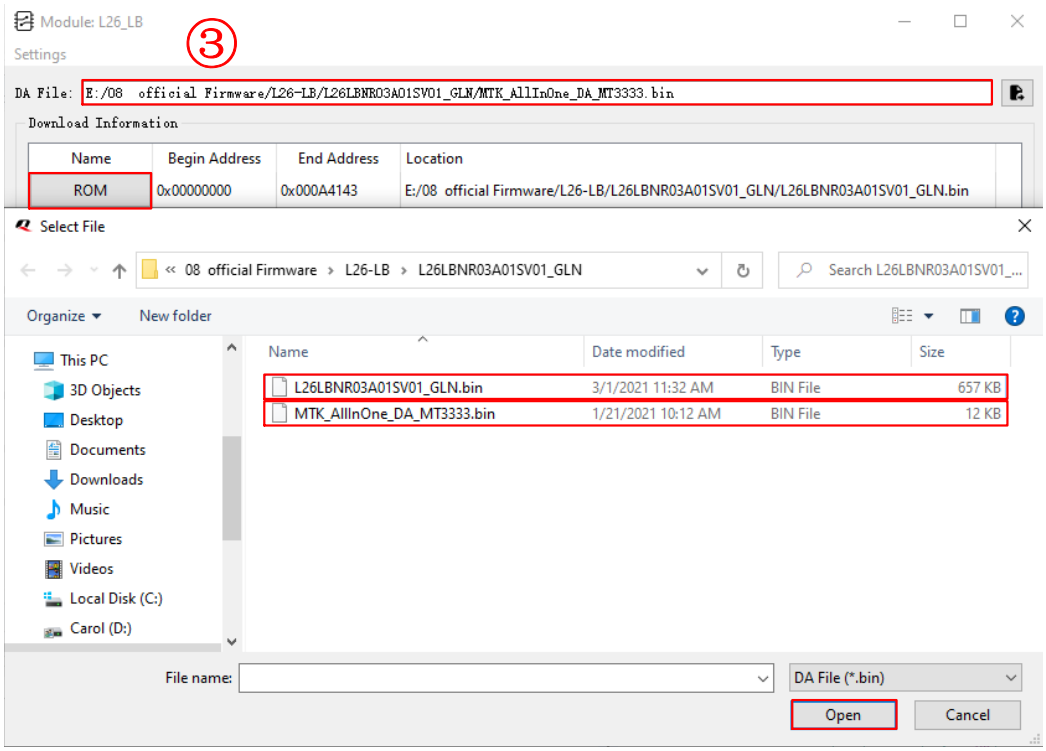


Figure 11: Firmware Selecting

Step 4: Click the "**Run**" button and then press the Reset button for a short time to reset the module after the following window pops up. Finally, click "**Yes**" button to start downloading the firmware.

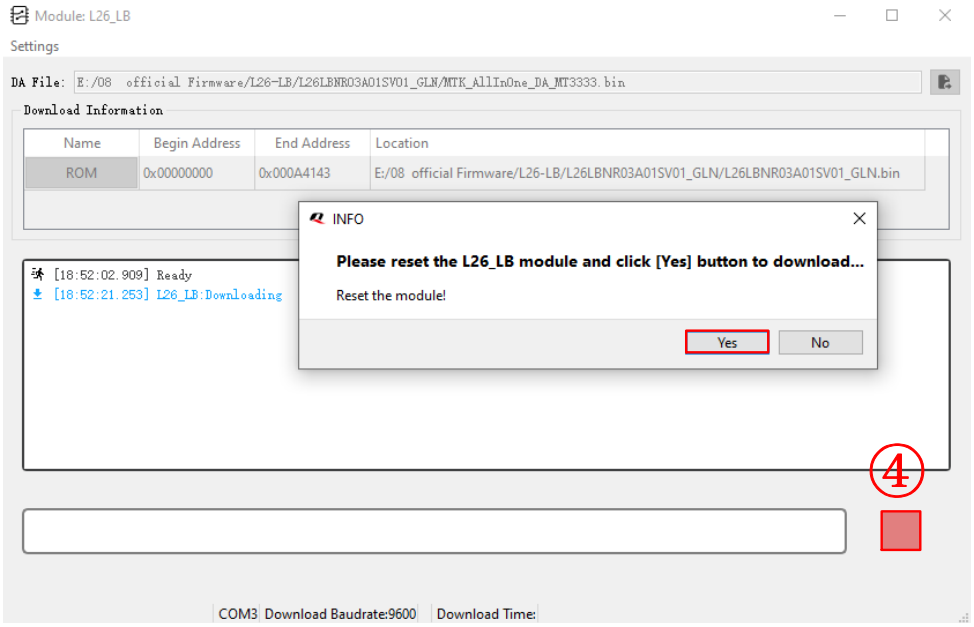


Figure 12: Firmware Upgrade

Step 5: Upon successful firmware upgrade, the QGNSS tool's progress bar on the screen will indicate "100 %".

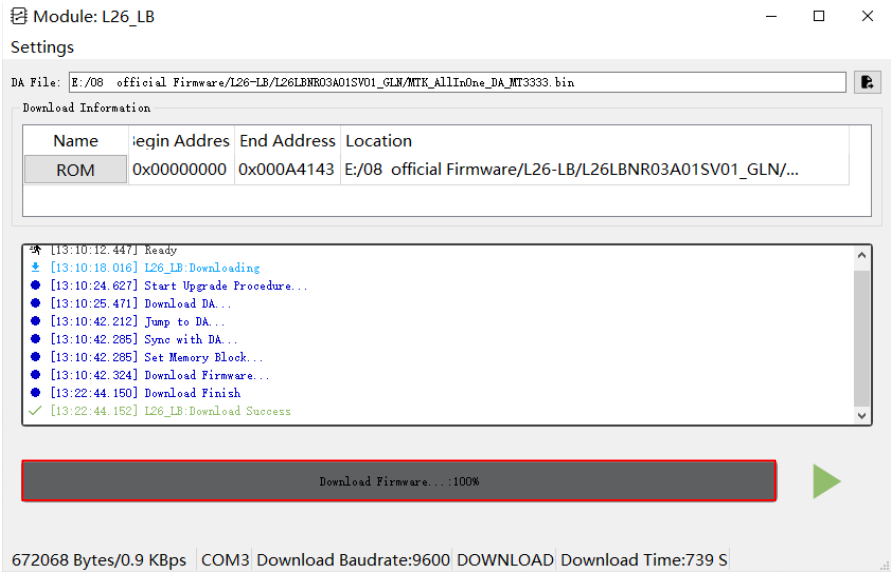


Figure 13: Successful Firmware Upgrade

NOTE

Make sure the module is in Continuous mode before upgrading firmware.

6 Appendix References

Table 6: Related Documents

Document Name
[1] Quectel_QCOM_User_Guide
[2] Quectel_QGNSS_User_Guide

Table 7: Terms and Abbreviations

Abbreviation	Description
2D	2 Dimension
3D	3 Dimension
BDS	BeiDou Navigation Satellite System
CEP	Circular Error Probable
COM Port	Communication Port
DC	Direct Current
DGNSS	Differential GNSS
DGPS	Differential GPS
DI	Digital Input
DO	Digital Output
EPH	Ellipsoidal Height
ESD	Electrostatic Discharge
EVB	Evaluation Board
Galileo	Galileo Satellite Navigation System (EU)

GLONASS	Global Navigation Satellite System (Russia)
GND	Ground
GNSS	Global Navigation Satellite System
GPS	Global Positioning System
I/O	Input/Output
IRNSS	Indian Regional Navigation Satellite System
LED	Light Emitting Diode
LNA	Low-Noise Amplifier
Micro-USB	Micro Universal Serial Bus
NavIC	Indian Regional Navigation Satellite System
NMEA	NMEA (National Marine Electronics Association) 0183 Interface Standard
PC	Personal Computer
PCB	Printed Circuit Board
PPS	Pulse Per Second
PRN	Pseudo Random Noise
QZSS	Quasi-Zenith Satellite System
RF	Radio Frequency
RMS	Root Mean Square
RTK	Real Time Kinematic
RXD	Receive Data (Pin)
SBAS	Satellite-Based Augmentation System
SPS	Standard Positioning Service
TTFF	Time to First Fix
TXD	Transmit Data (Pin)
UART	Universal Asynchronous Receiver/Transmitter

USB	Universal Serial Bus
UTC	Coordinated Universal Time