L10

Quectel GPS Engine

EVB User Guide

L10_EVB_UGD_V1.00

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0. Revision history

Revision	Date	Author	Description of change
1.00	2009-7-20	Tracy ZHANG	Initial

1. Introduction

This document defines and specifies the usage of L10 EVB (Evaluation Board). Customer can get useful information about L10 EVB and GPS demo tool from this document.

1.1. Reference

Table 1: Reference

SN	Document name	Remark
[1]	L10_HD	Hardware Design

1.2. Abbreviations

Table 2: Abbreviations

Abbreviation	Description
CNR	Carrier-to-Noise Ratio
GPS	Global Positioning System
PRN	Pseudorandom Noise
SPS	Standard Positioning Service
SV	Satellite Vehicle
UART	Universal Asynchronous Receiver & Transmitter
USB	Universal Serial Bus
UTC	Universal Time Coordinated
WGS84	World Geodetic System 1984

2. EVB Kit Introduction

2.1. EVB Top and Bottom View

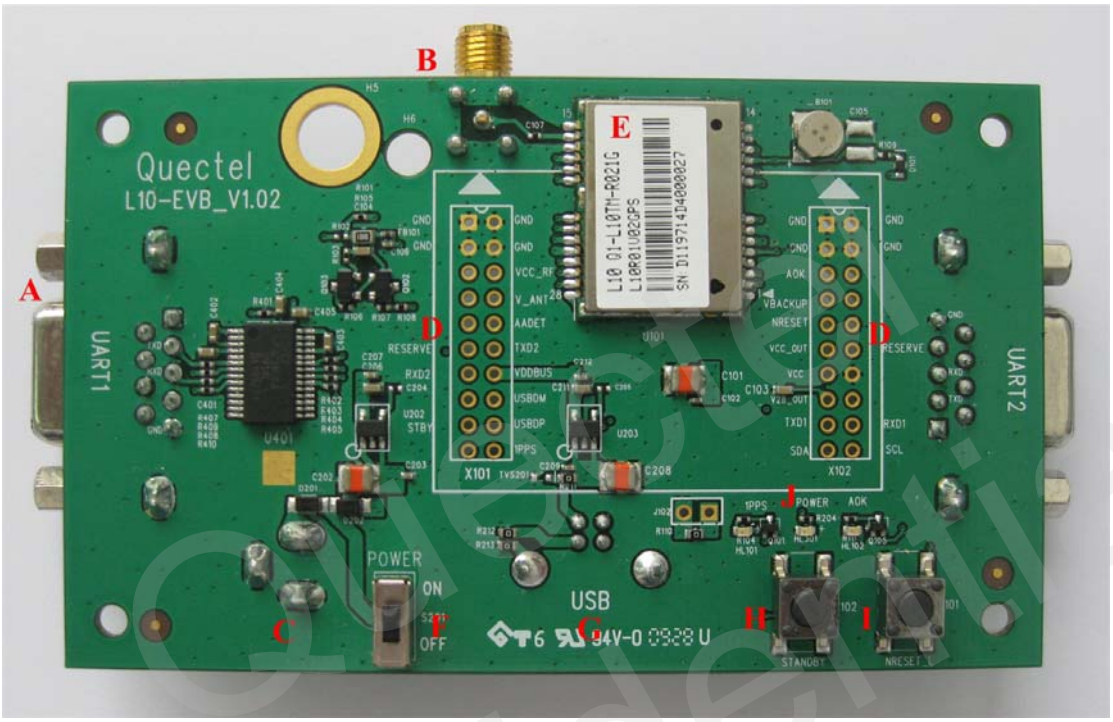


Figure 1: EVB top view

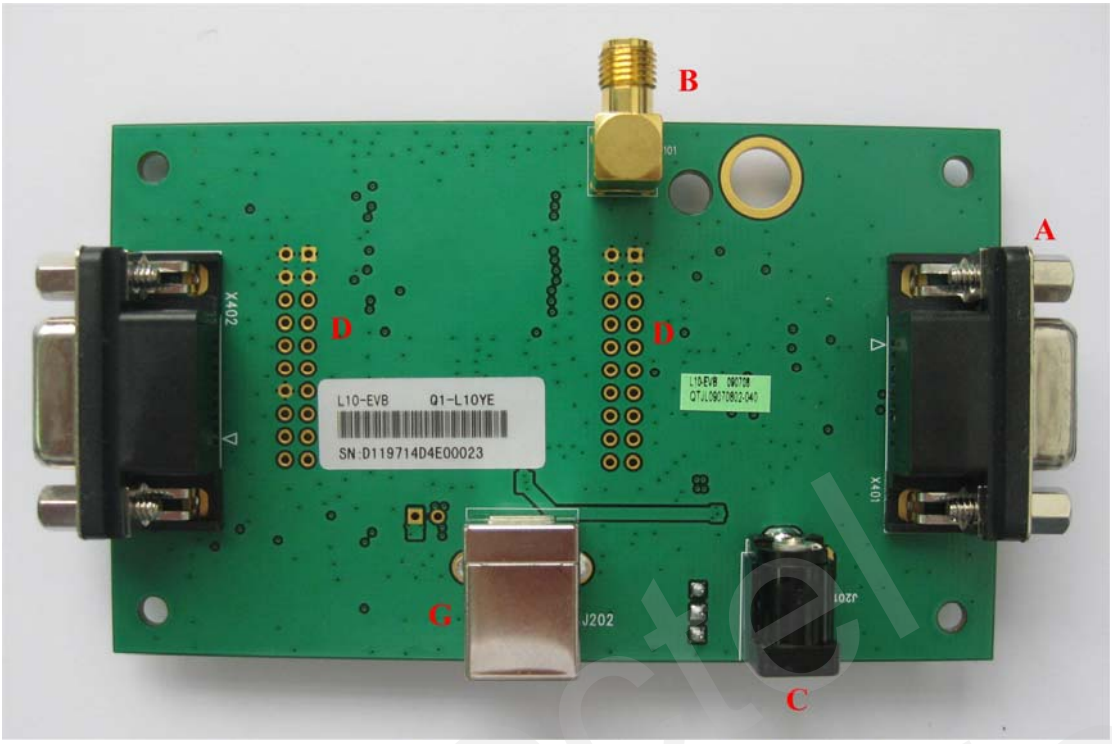


Figure 2: EVB bottom view

A: UART port
B: Antenna interface
C: Adapter interface
D: Test points
E: L10 Module
F: POWER switch
G: USB interface
H: STANDBY button
I: RESET button
J: Indication LEDs

2.2. EVB Accessories

Figure 3: EVB accessories

A: GPS active antenna (3.3V)
B: DC5V/2A power adapter
C: Serial port cable (USB 2.0)
D: USB cable

3. Interface Application

3.1. Power Interface

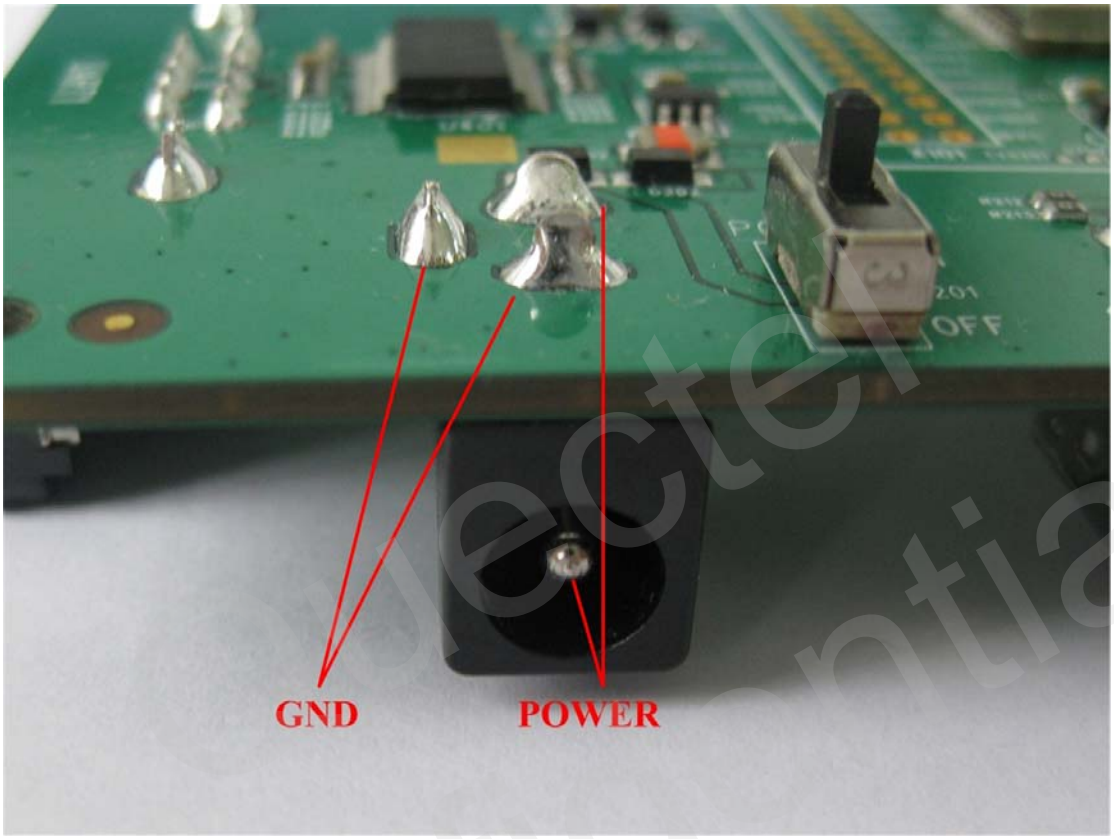


Figure 4: Power interface

3.2. UART Interface

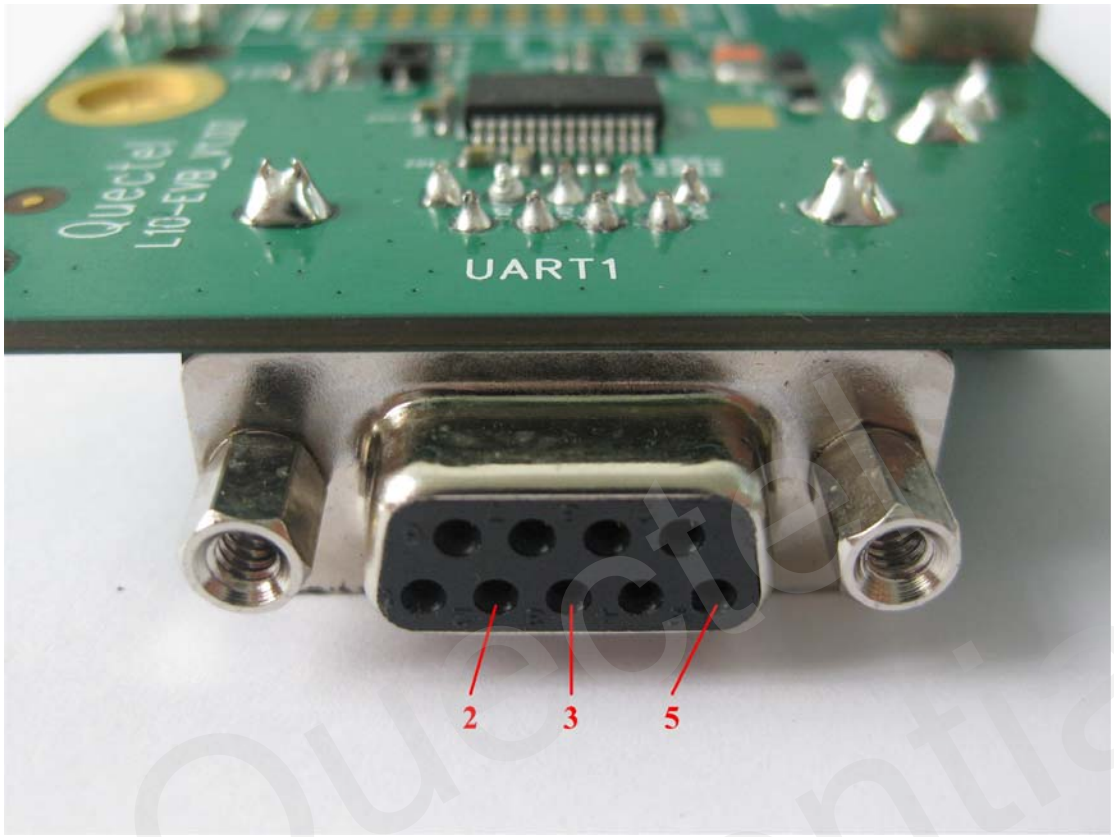


Figure 5: UART interface

Table 3: Pins of UART port

Pin	Signal	I/O	Description
2	TXD	O	Transmit data
3	RXD	I	Receive data
5	GND		GND

3.3. USB Interface

Figure 6: USB interface

Table 4: Pins of USB port

Pin	Signal	I/O	Description
1	USB_5V	I	Power supply from USB
2	GND		GND
3	USB_DP	I/O	USB data positive
4	USB_DM	I/O	USB data negative

3.4. Antenna Interface

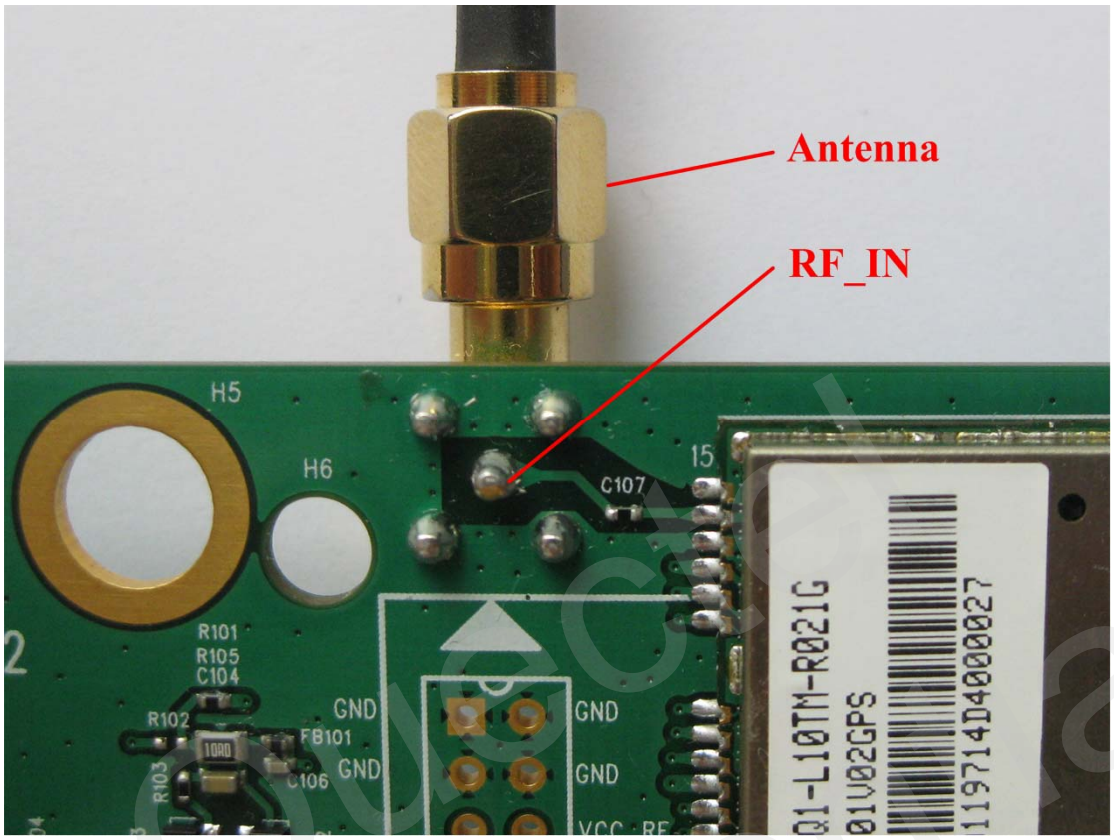


Figure 7: Antenna interface

3.5. Switches and Buttons

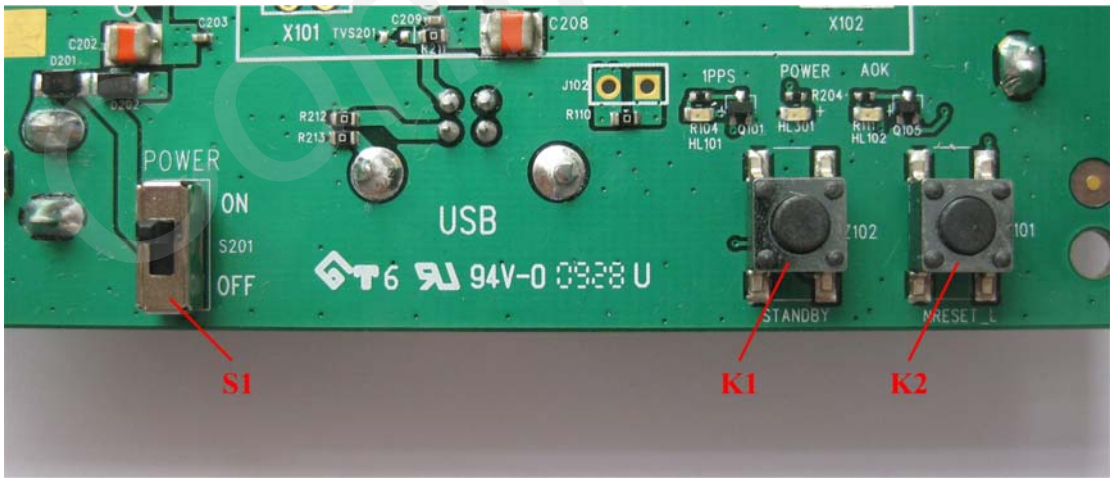


Figure 8: Switches and buttons

Table 5: Switches and buttons

Part	Name	I/O	Description
S1	POWER	I	Control power supply from adapter
K1	STANDBY	I	The module will enter into standby mode when pressing this button, and exit standby mode when releasing this button.
K2	RESET_N	I	Press and release this button. Then the module will reset.

3.6. Operating Status LEDs

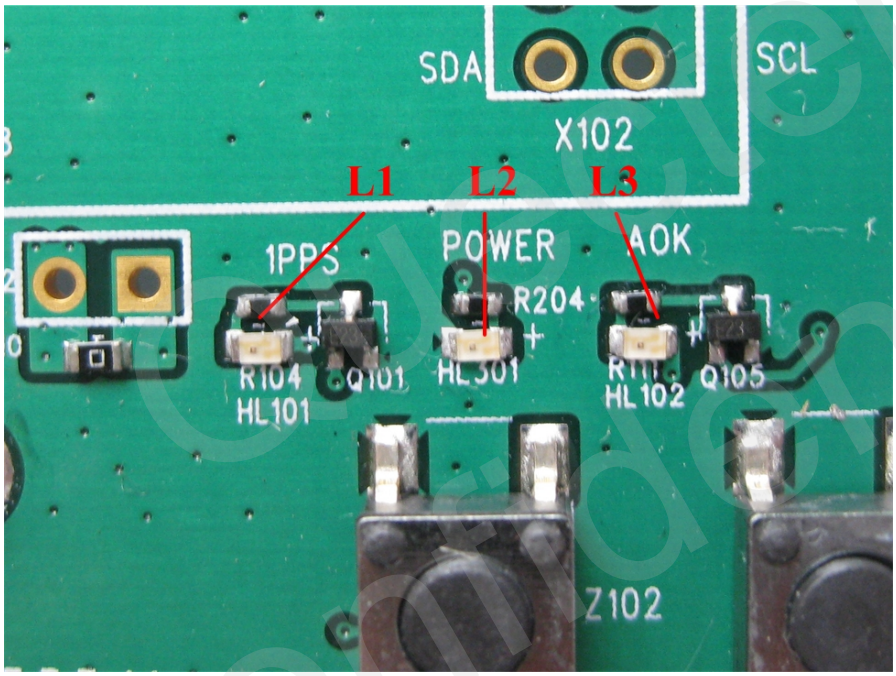


Figure 9: Operating status LEDs

Table 6: Operating status LEDs

Part	Name	I/O	Description
L1	1PPS	O	Flash: fix successfully, the frequency is 1Hz Extinct: no fix
L2	POWER	O	Bright: Power on Extinct: Power off
L3	AOK	O	Bright: Active antenna is short-circuit or not assembled Extinct: Active antenna operates normally

3.7. Test Points

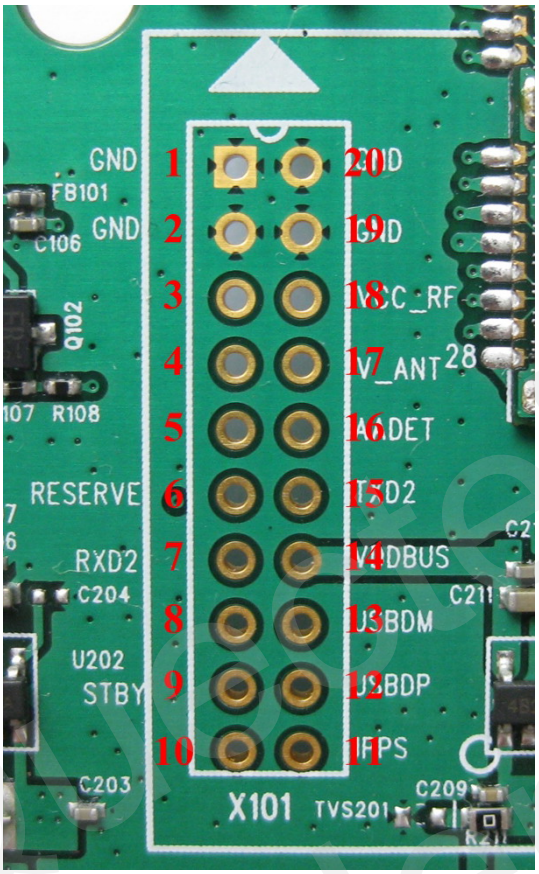


Figure 10: Test points X101

Table 7: Pins of X101

Pin	Signal	I/O	Description
1	GND		Ground
2	GND		
3	NC		Not connected
4	NC		
5	NC		
6	RESERVE		
7	RESERVE		
8	NC		
9	EXTINT0	I	Enter or exit standby mode
10	NC		
11	TIMEPULSE	O	Time pulse
12	USB_DP	I/O	USB data positive
13	USB_DM	I/O	USB data negative
14	VDDUSB	I	Voltage supply for USB port

15	RESERVE		
16	AADET_N	I	Active antenna open-circuit detection
17	V_ANT	I	Antenna bias voltage
18	VCC_RF	O	Output voltage for RF section
19	GND		
20	GND		

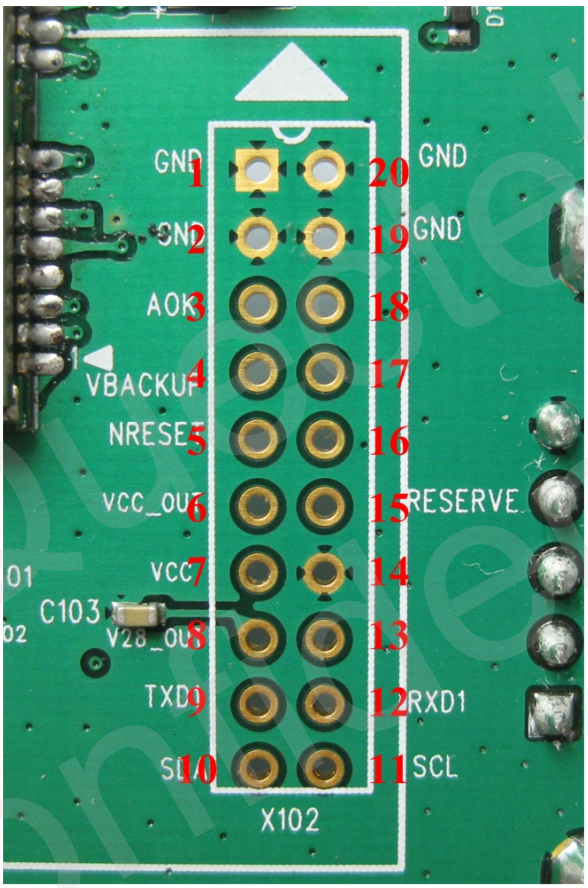


Figure 11: Test points X102

Table 8: Pins of X102

Pin	Signal	I/O	Description
1	GND		Ground
2	GND		
3	AOK	O	Antenna status report
4	V_BCKP	I	Backup voltage supply
5	RESET_N	I	System reset, low level active.
6	VCC_OUT	O	Output voltage. VCC_OUT pin is directly connected to VCC pin within

			the module.
7	VCC	I	Supply voltage
8	RESERVE		
9	TXD1	O	Transmit data
10	SDA2	I/O	I2C interface
11	SCL2	I/O	I2C interface
12	RXD1	I	Receive data
13	NC		Not connected
14	GND		
15	RESERVE		
16	NC		
17	NC		
18	NC		
19	GND		
20	GND		

4. EVB and Accessories

When USB to RS232 cable is used, the EVB and its accessories are equipped as shown in Figure 12.

Figure 12: EVB and accessory equipments with serial cable

When USB cable is used, the EVB and its accessories are equipped as shown in Figure 13.

Figure 13: EVB and accessory equipments with USB cable

5. Installing Device Driver

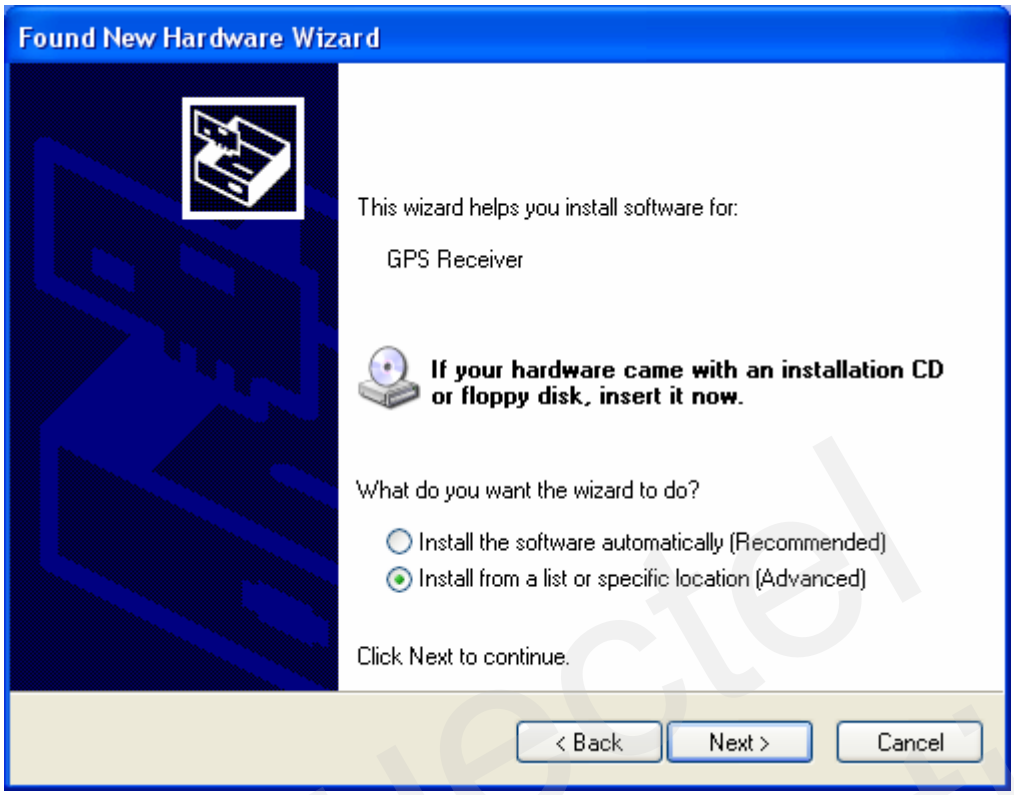
Customer can get NMEA message through UART port or USB port.

Before using UART port, please install the driver of USB 2.0 to RS232 cable from the attached CD.

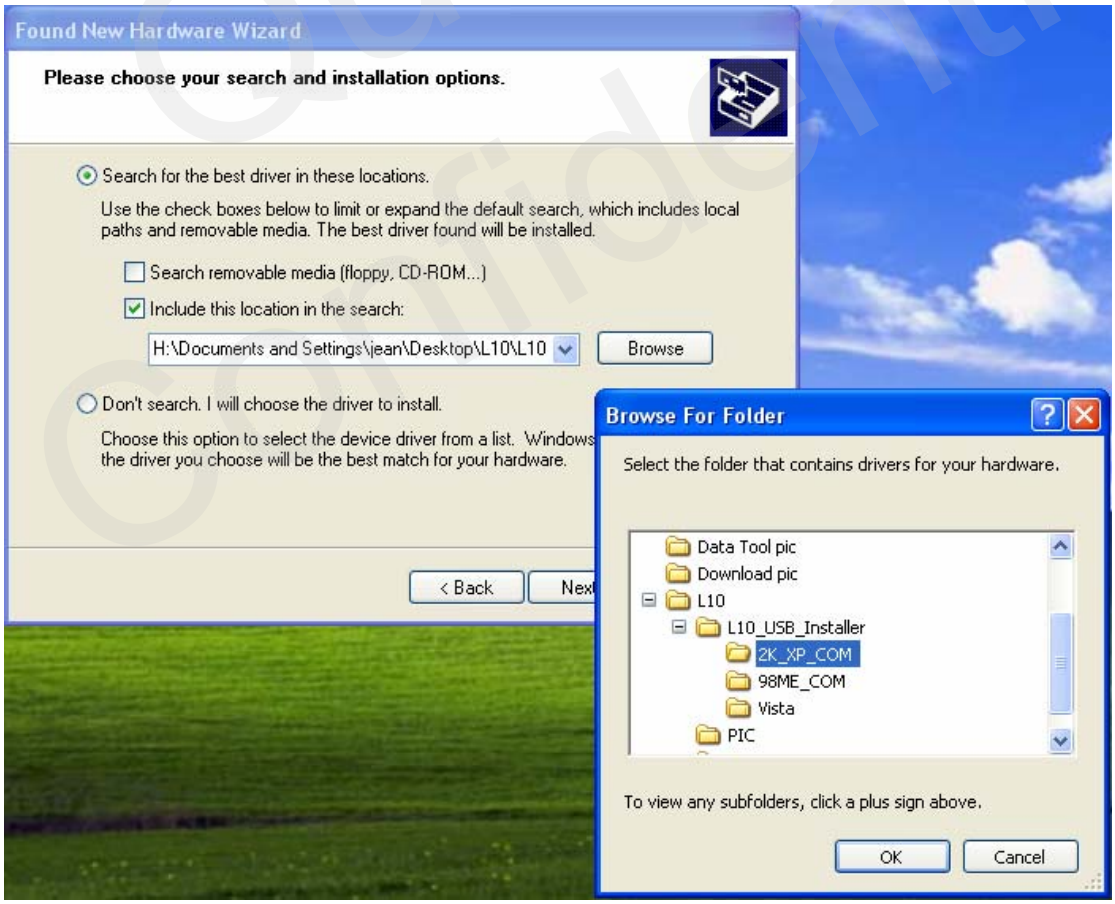
Before using USB port, please install the USB driver included in Quectel L10 CD. Installation steps are as follows:

Step 1: Connect L10-EVB to PC with USB cable. Then PC will request installing the virtual COM port driver.

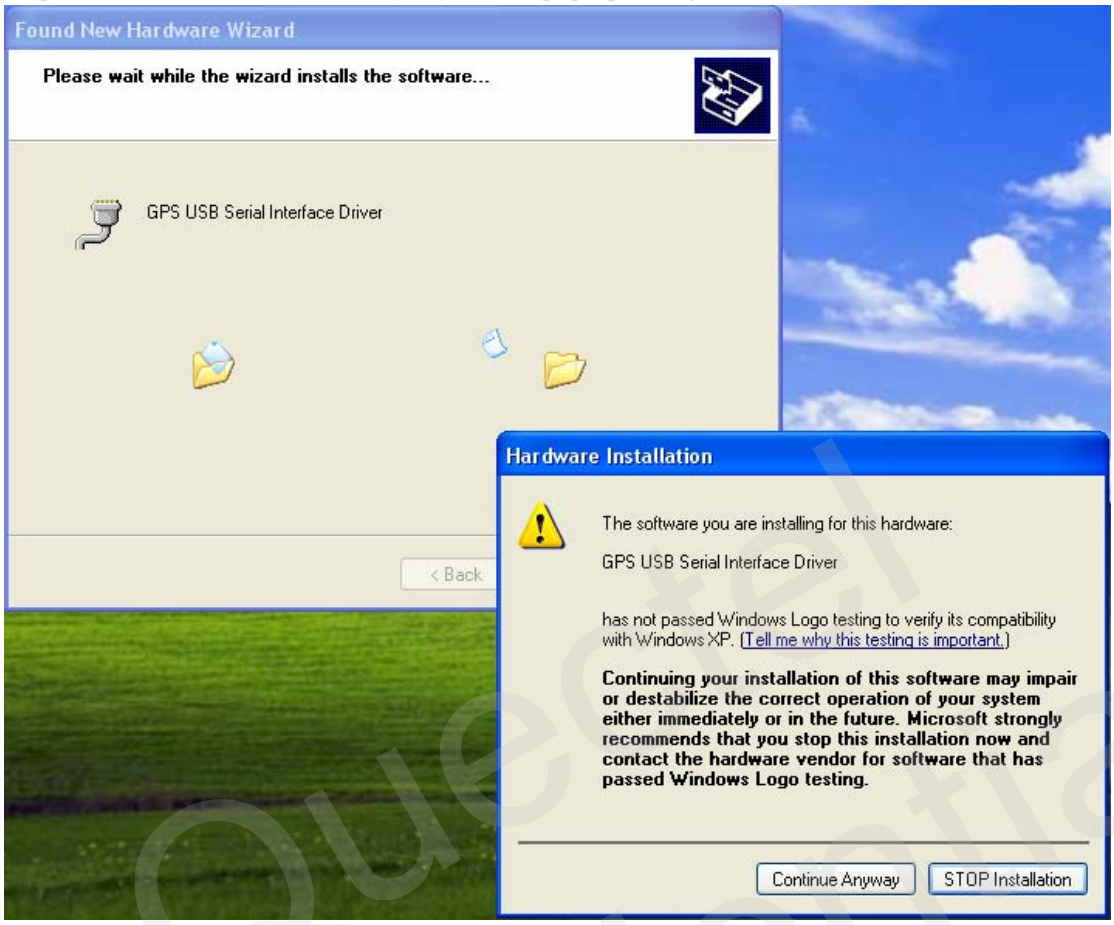
Step 2: Choose “Install from a list or specific location”.



Step 3: Choose the right folder according to PC’s OS.

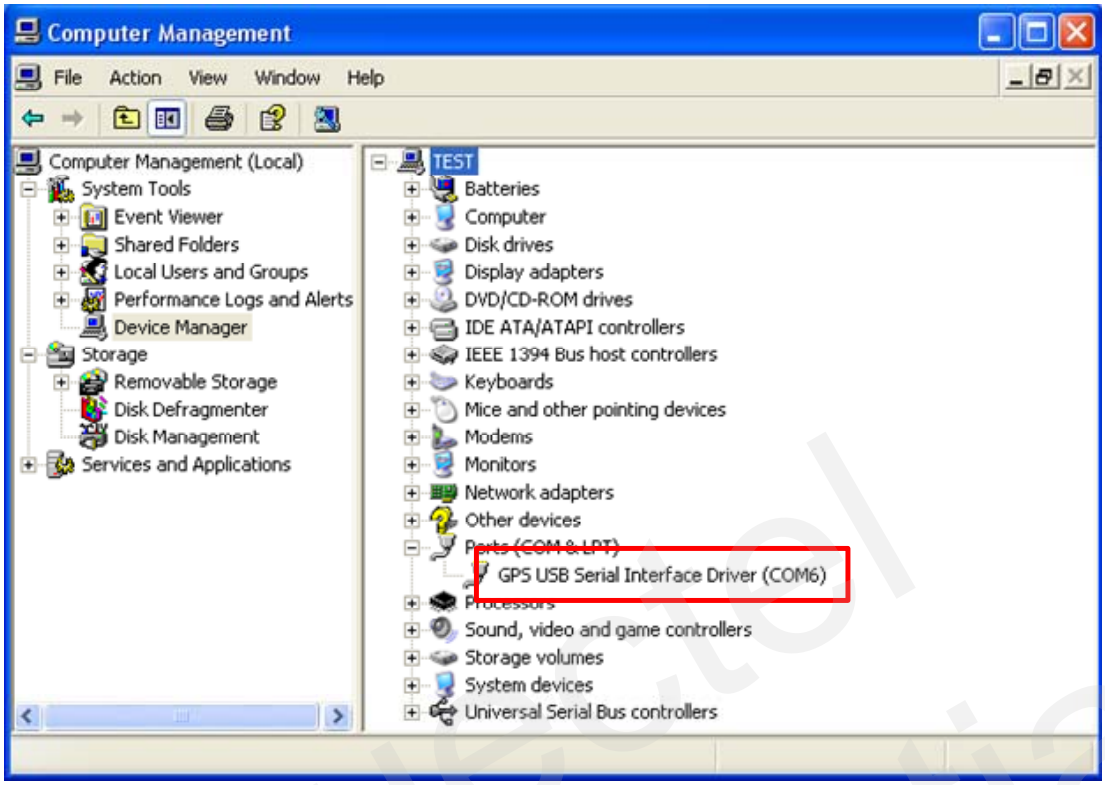


Step 4: Click button “Continue Anyway” in the pop-up dialog box.



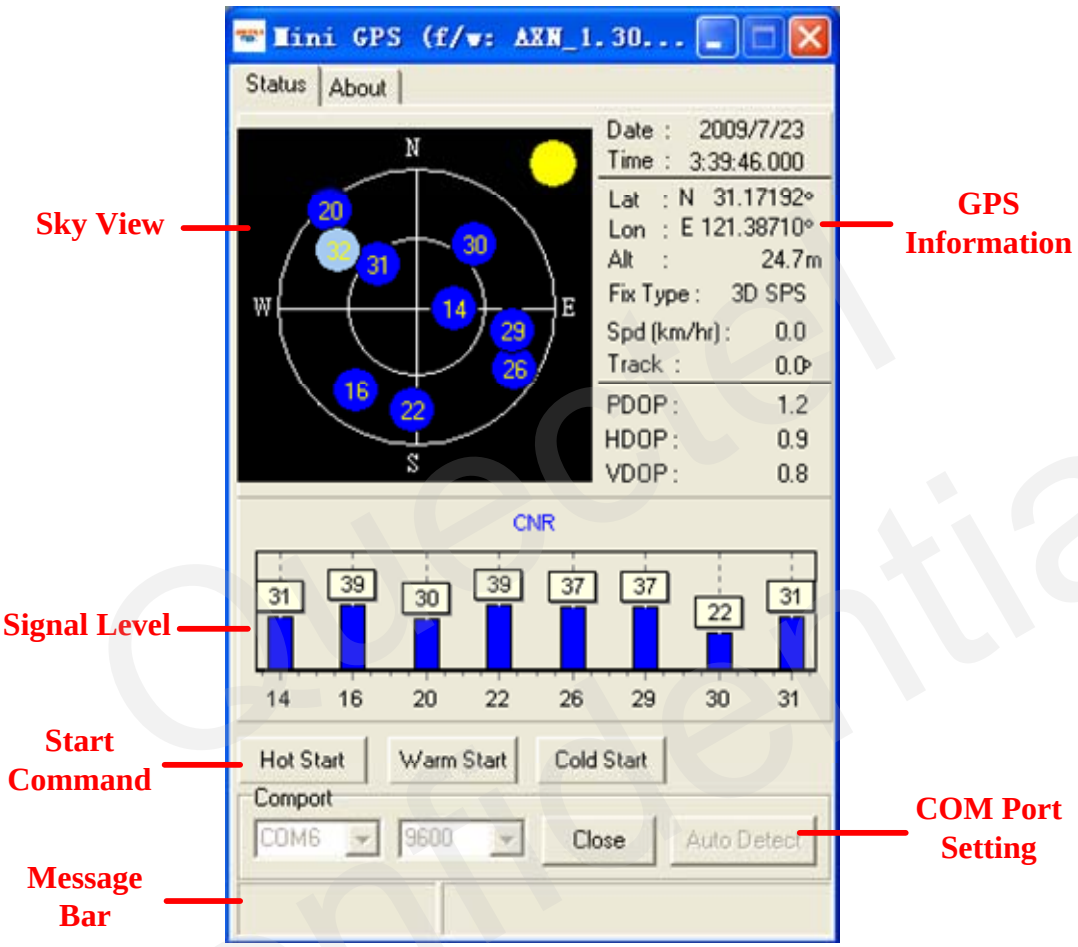
Step 5: GPS USB driver installation finishes.

User will find a new virtual COM port in the Device Manager of PC as shown below:



6. Starting MiniGPS

The MiniGPS tool can help user to view the status of GPS receiver conveniently. The operation window is shown below:

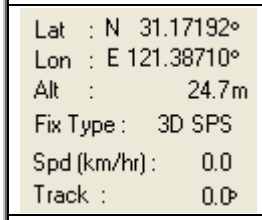
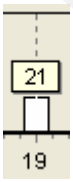


When USB to RS232 cable is used, power must be supplied through DC adapter, and the default baud rate is 9600bps. When USB cable is used, external DC adapter is unnecessary. In this case, power can be supplied through USB port from PC. The baud rate of the USB port is auto-adaptive. After assembling EVB accessories, start up the MiniGPS. Select a correct COM port and baud rate, click the button “Open”.

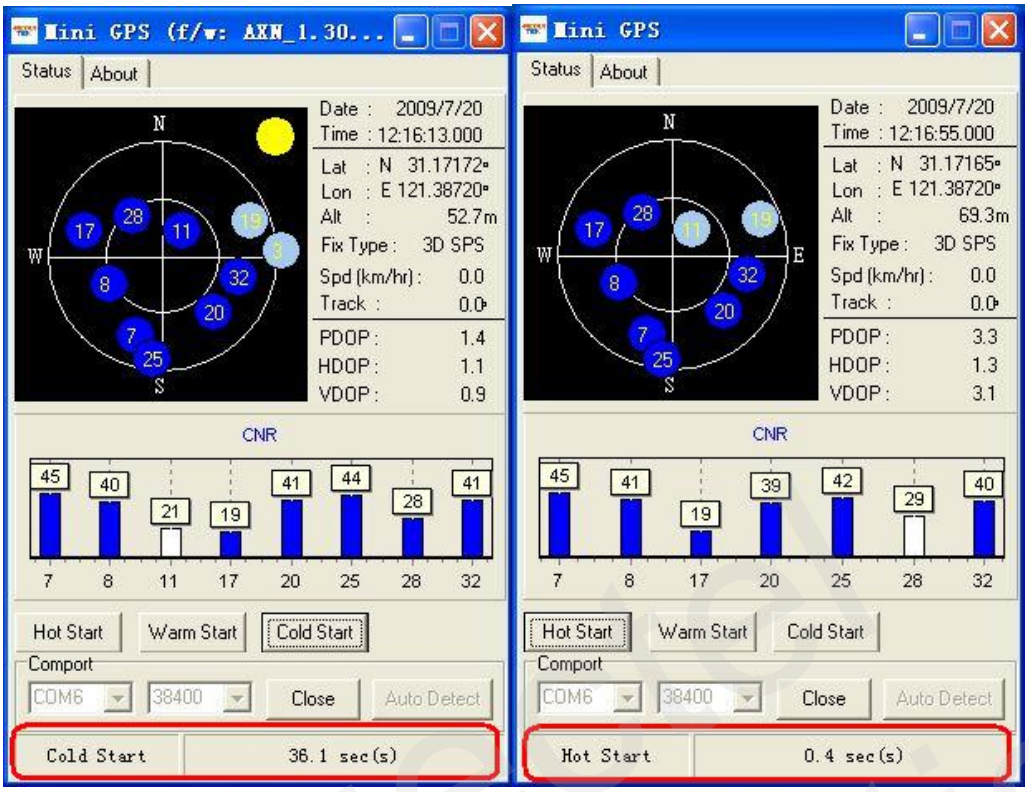
When PC gets any message from the COM port, a yellow dot will be flashing at the upper right corner of the Sky Chart.

From the MiniGPS window, user can view CNR message, time, position, speed, precision and so on. Explanations are listed in Table 8.

Table 9: Explanations of MiniGPS window

Icon	Explanation
	SV with PRN 30. If the position of SV is near to the centre of the Sky View, the elevation angle of SV is close to 90°. Dark blue means this satellite is in tracking, i.e., the CNR of the satellite is greater than 0.
	Light blue means this satellite is not in tracking, i.e., its CNR is less than 0.
	UTC time
	Latitude and longitude degree Altitude based on WGS84 Datum Fix type: NoFix, 3D or 2D SPS Speed of receiver Track degree of receiver
	Position Dilution of Precision Horizontal Dilution of Precision Vertical Dilution of Precision
	The CNR of PRN 26 is 37dB/Hz. Blue column means the navigation data of this satellite is in use.
	The CNR of PRN 19 is 21dB/Hz. White column means the navigation data of this satellite is not in use.

User can drive L10 to implement Hot Start, Warm Start or Cold Start via Start Command buttons. Fix time will be indicated in the Message Bar as shown in the 2 screenshots below:



Shanghai Quectel Wireless Solutions Co., Ltd.

Room 801, Building E, No.1618, Yishan Road, Shanghai, China 201103

Tel: +86 21 5108 2965

Mail: info@quectel.com