



L10

Quectel GPS Engine

EVB User Guide

L10_EVB_UGD_V1.00



Document Title	L10 EVB User Guide
Version	1.00
Date	2009-7-20
Status	Release
Document Control ID	L10_EVB_UGD_V1.00

General Notes

Quectel offers this information as a service to its customers, to support application and engineering efforts that use the products designed by Quectel. The information provided is based upon requirements specifically provided to Quectel by the customers. Quectel has not undertaken any independent search for additional relevant information, including any information that may be in the customer's possession. Furthermore, system validation of this product designed by Quectel within a larger electronic system remains the responsibility of the customer or the customer's system integrator. All specifications supplied herein are subject to change.

Copyright

This document contains proprietary technical information which is the property of Quectel Limited., copying of this document and giving it to others and the using or communication of the contents thereof, are forbidden without express authority. Offenders are liable to the payment of damages. All rights reserved in the event of grant of a patent or the registration of a utility model or design. All specification supplied herein are subject to change without notice at any time.

Copyright © Shanghai Quectel Wireless Solutions Co., Ltd. 2009

Contents

Contents	2
Table Index.....	3
Figure Index	4
0. Revision history	5
1. Introduction.....	6
1.1. Reference.....	6
1.2. Abbreviations	6
2. EVB Kit Introduction.....	7
2.1. EVB Top and Bottom View.....	7
2.2. EVB Accessories.....	9
3. Interface Application.....	10
3.1. Power Interface	10
3.2. UART Interface	11
3.3. USB Interface.....	12
3.4. Antenna Interface	13
3.5. Switches and Buttons	13
3.6. Operating Status LEDs.....	14
3.7. Test Points	15
4. EVB and Accessories.....	18
5. Installing Device Driver.....	20
6. Starting MiniGPS.....	24

Table Index

TABLE 1: REFERENCE.....	6
TABLE 2: ABBREVIATIONS	6
TABLE 3: PINS OF UART PORT	11
TABLE 4: PINS OF USB PORT	12
TABLE 5: SWITCHES AND BUTTONS	14
TABLE 6: OPERATING STATUS LEDS	14
TABLE 7: PINS OF X101	15
TABLE 8: PINS OF X102.....	16
TABLE 9: EXPLANATIONS OF MINIGPS WINDOW	25

Figure Index

FIGURE 1: EVB TOP VIEW	7
FIGURE 2: EVB BOTTOM VIEW.....	8
FIGURE 3: EVB ACCESSORIES	9
FIGURE 4: POWER INTERFACE.....	10
FIGURE 5: UART INTERFACE	11
FIGURE 6: USB INTERFACE	12
FIGURE 7: ANTENNA INTERFACE	13
FIGURE 8: SWITCHES AND BUTTONS.....	13
FIGURE 9: OPERATING STATUS LEDES	14
FIGURE 10: TEST POINTS X101	15
FIGURE 11: TEST POINTS X102.....	16
FIGURE 12: EVB AND ACCESSORY EQUIPMENTS WITH SERIAL CABLE	18
FIGURE 13: EVB AND ACCESSORY EQUIPMENTS WITH USB CABLE	19

0. Revision history

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

Quectel

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

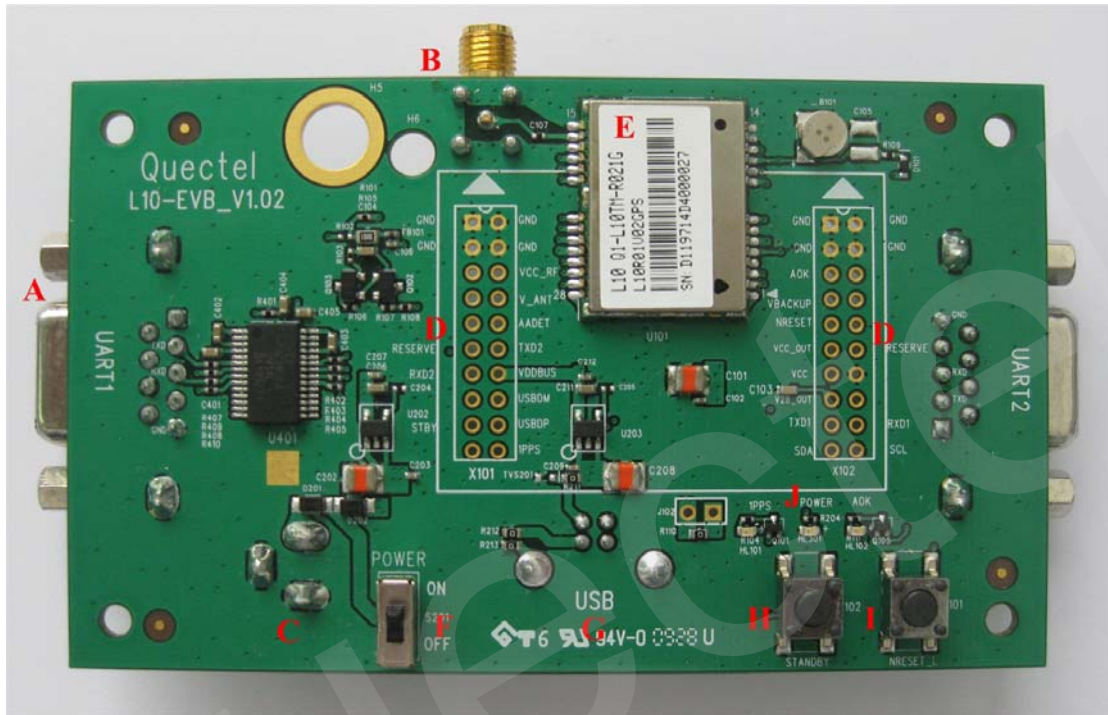


Figure 1: EVB top view

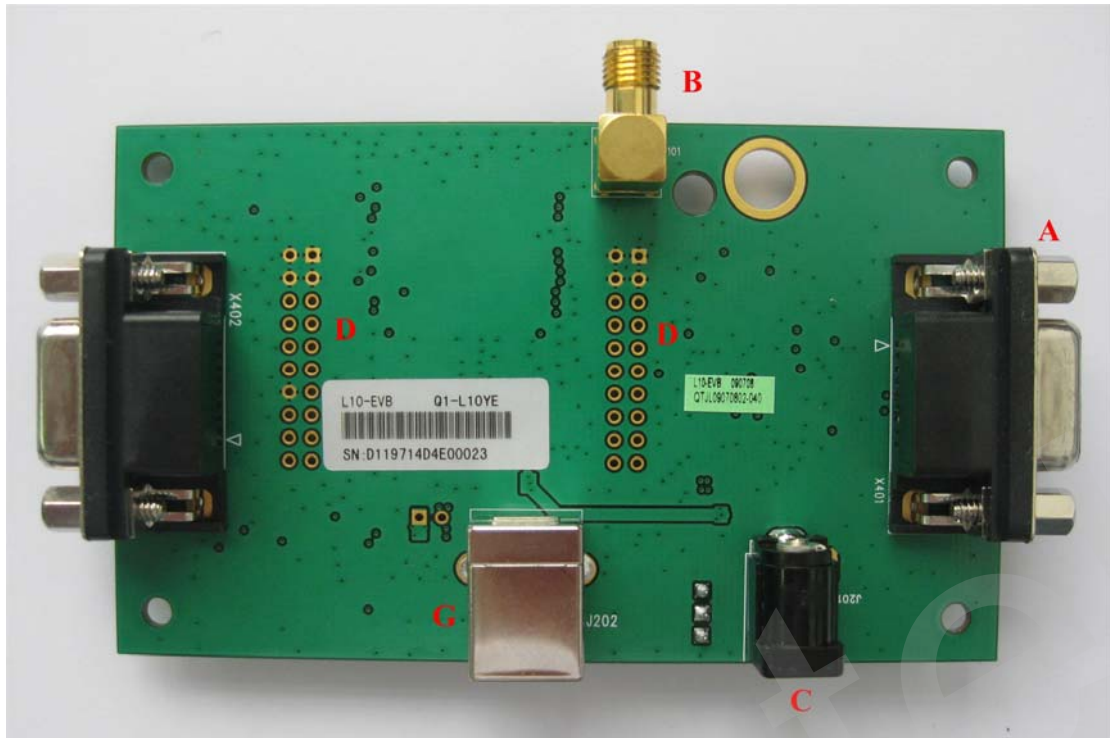


Figure 2: EVB bottom view

- 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

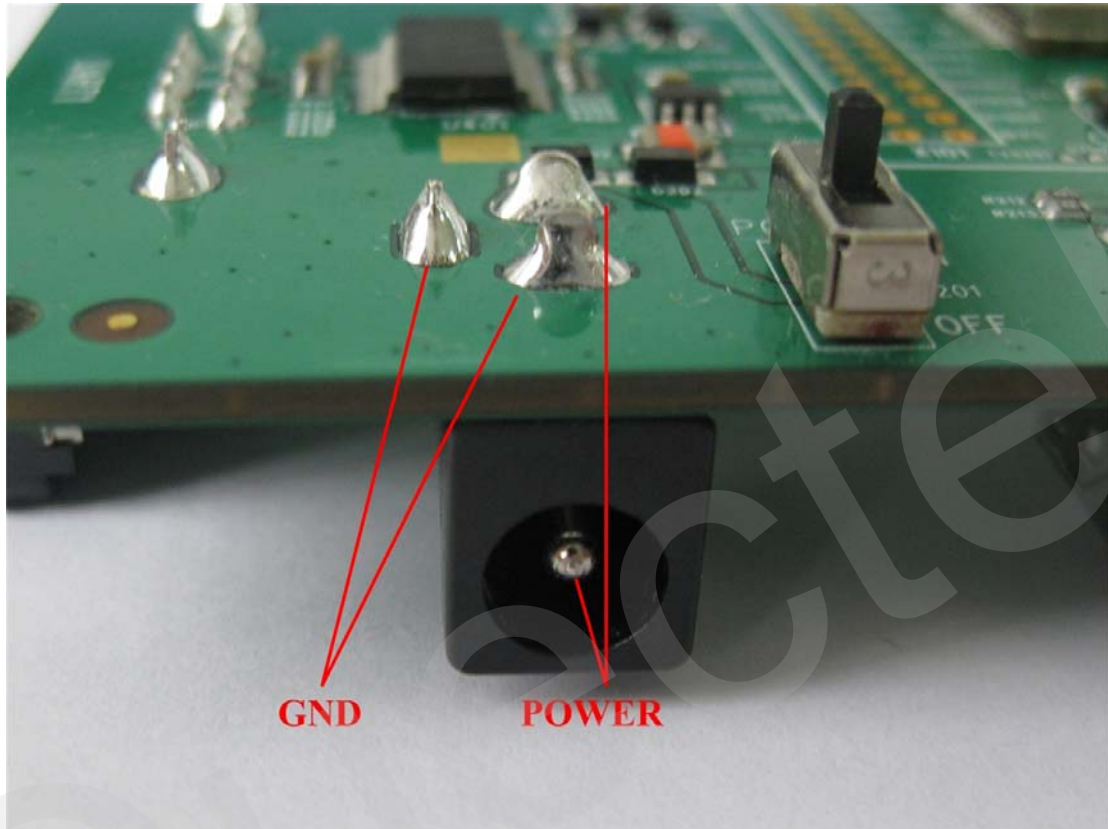


Figure 4: Power interface

3.2. UART Interface

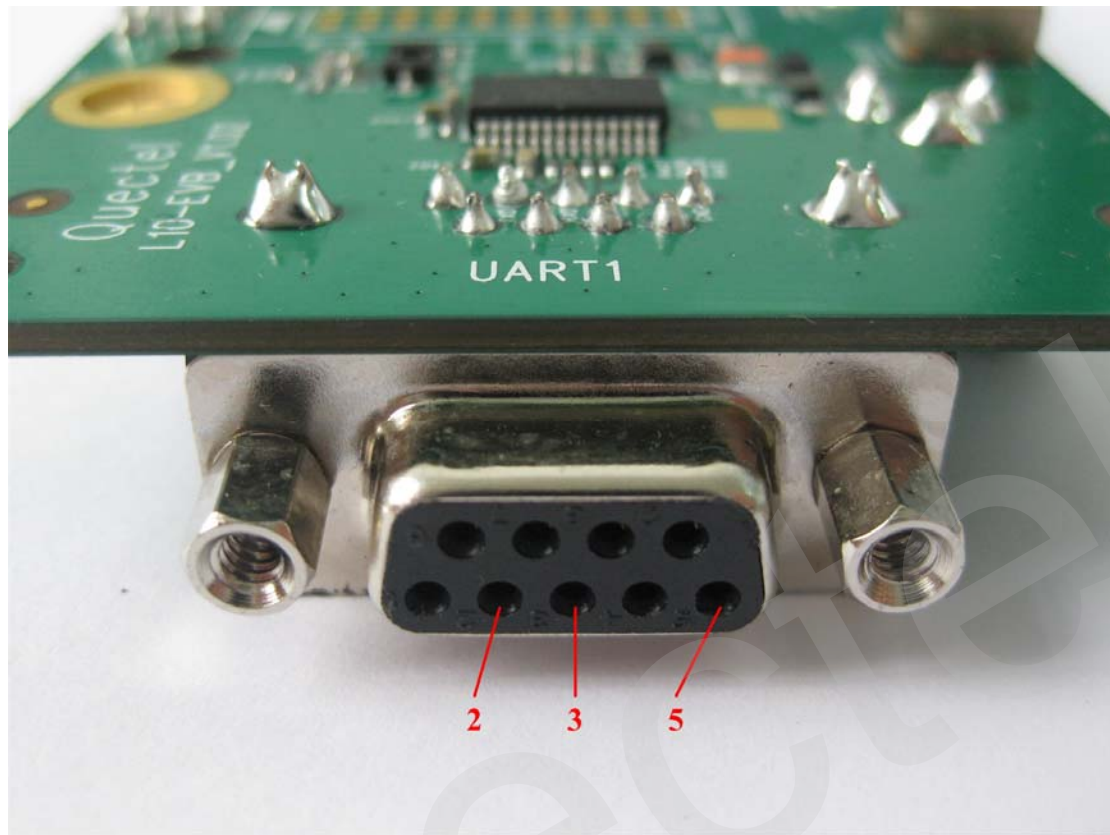


Figure 5: UART interface

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

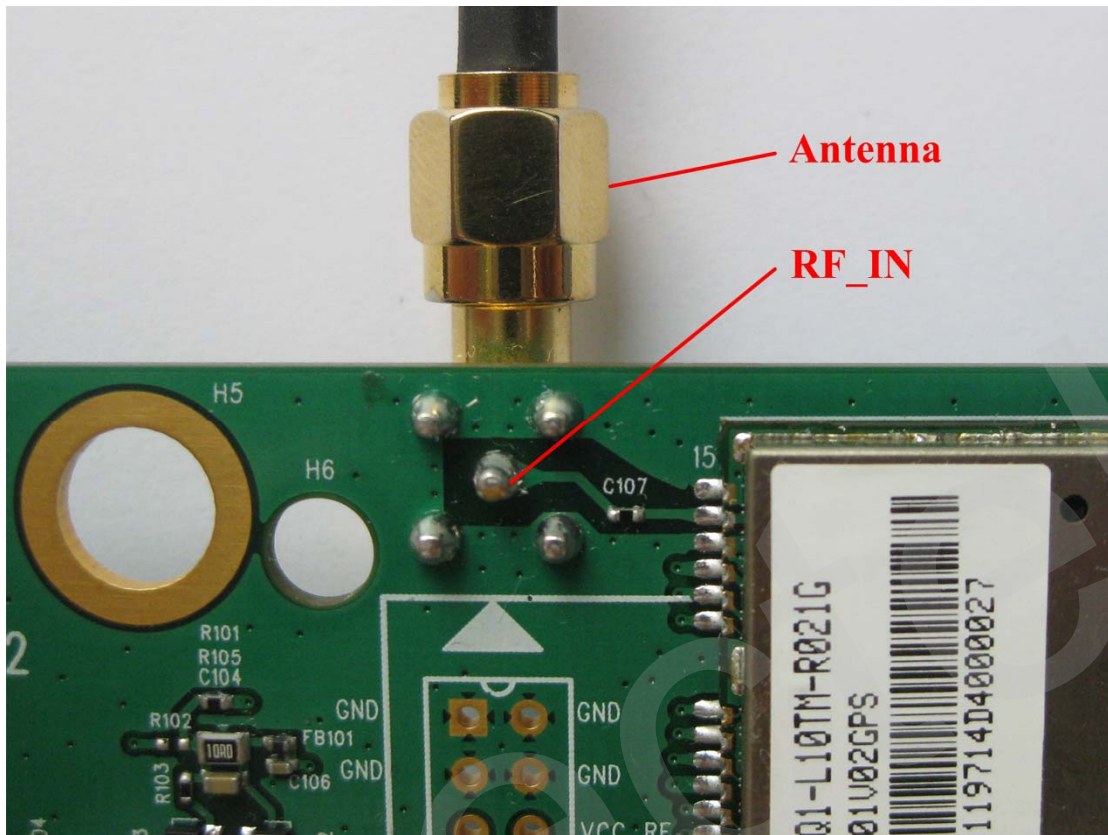


Figure 7: Antenna interface

3.5. Switches and Buttons

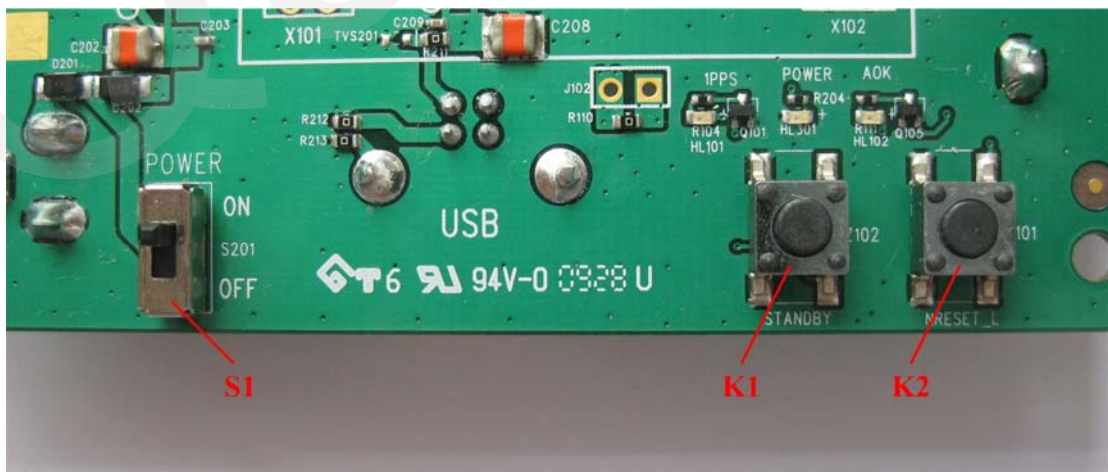


Figure 8: Switches and buttons

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

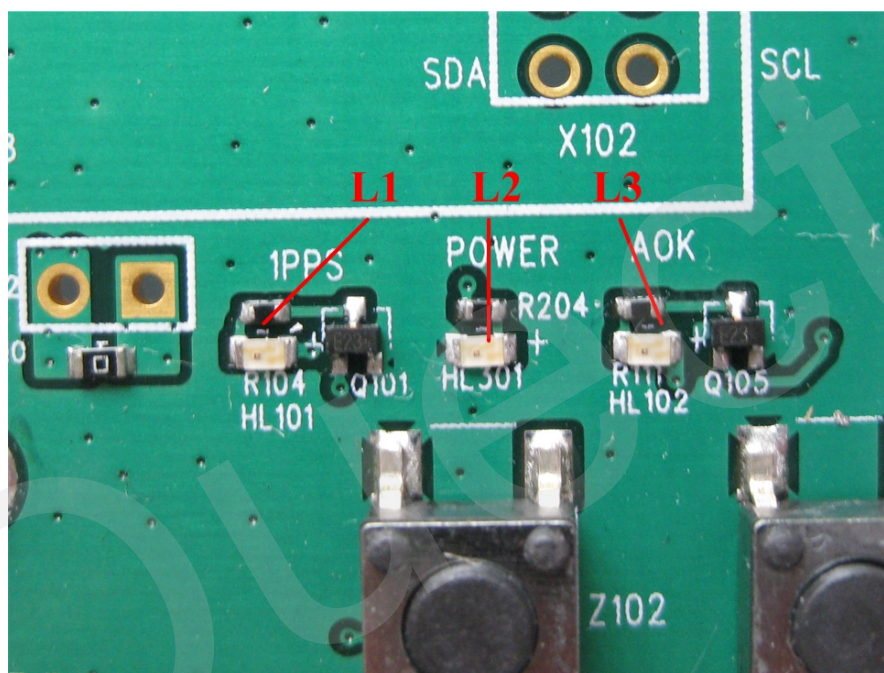


Figure 9: Operating status LEDs

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

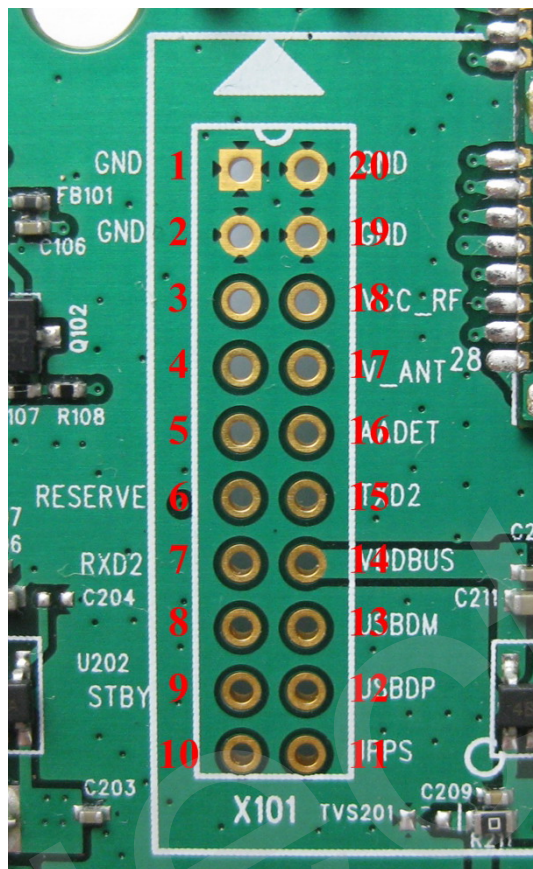


Figure 10: Test points X101

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		

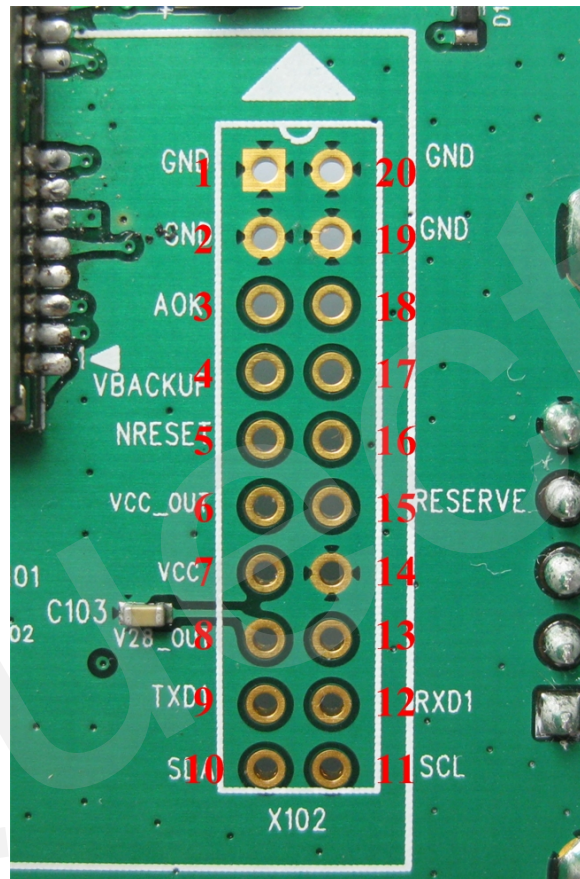


Figure 11: Test points X102

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

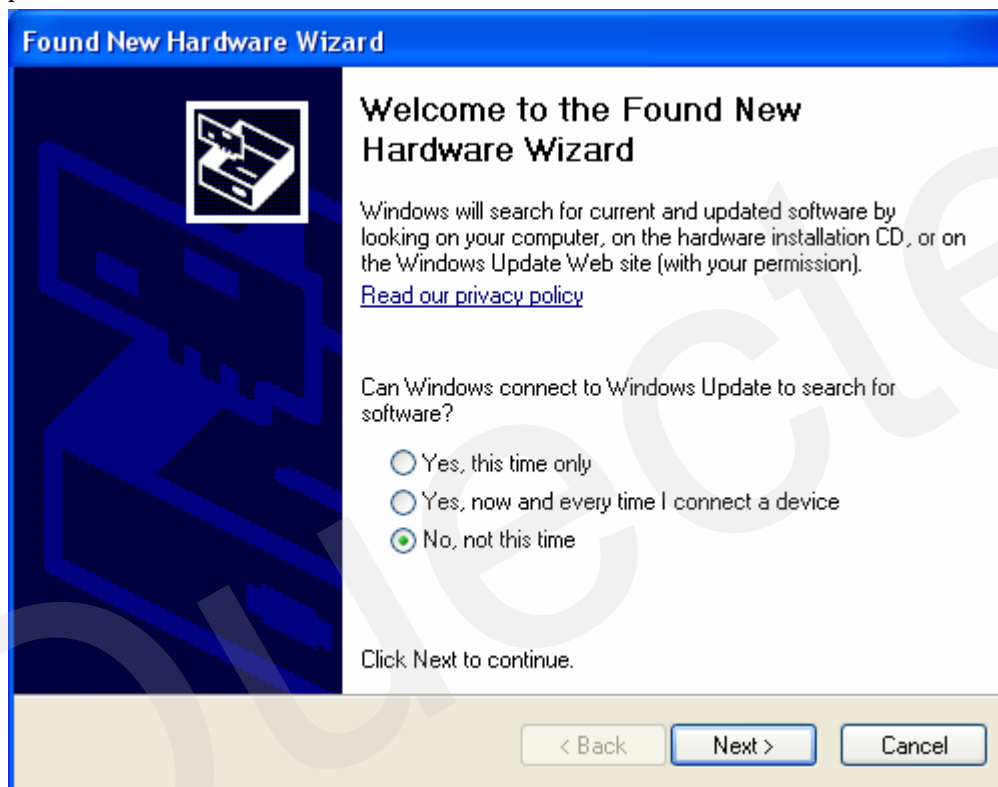
5. Installing Device Driver

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

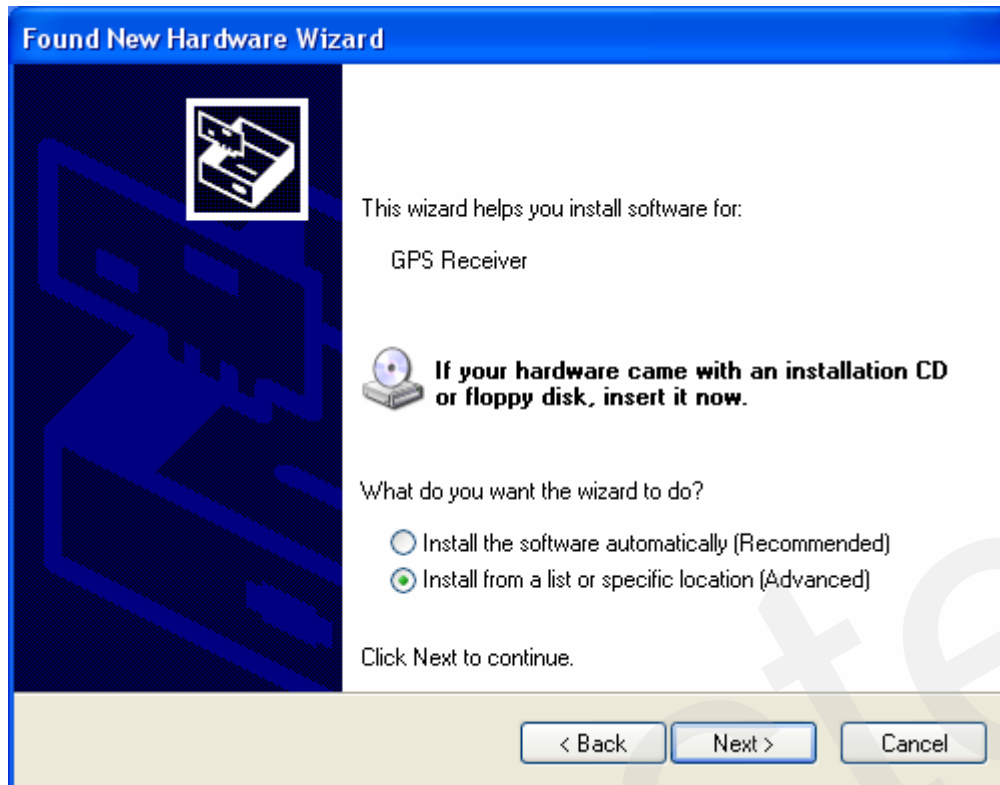
Before using UART port, please install the driver of USB 2.0 to RS232 cable from the attached CD.

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

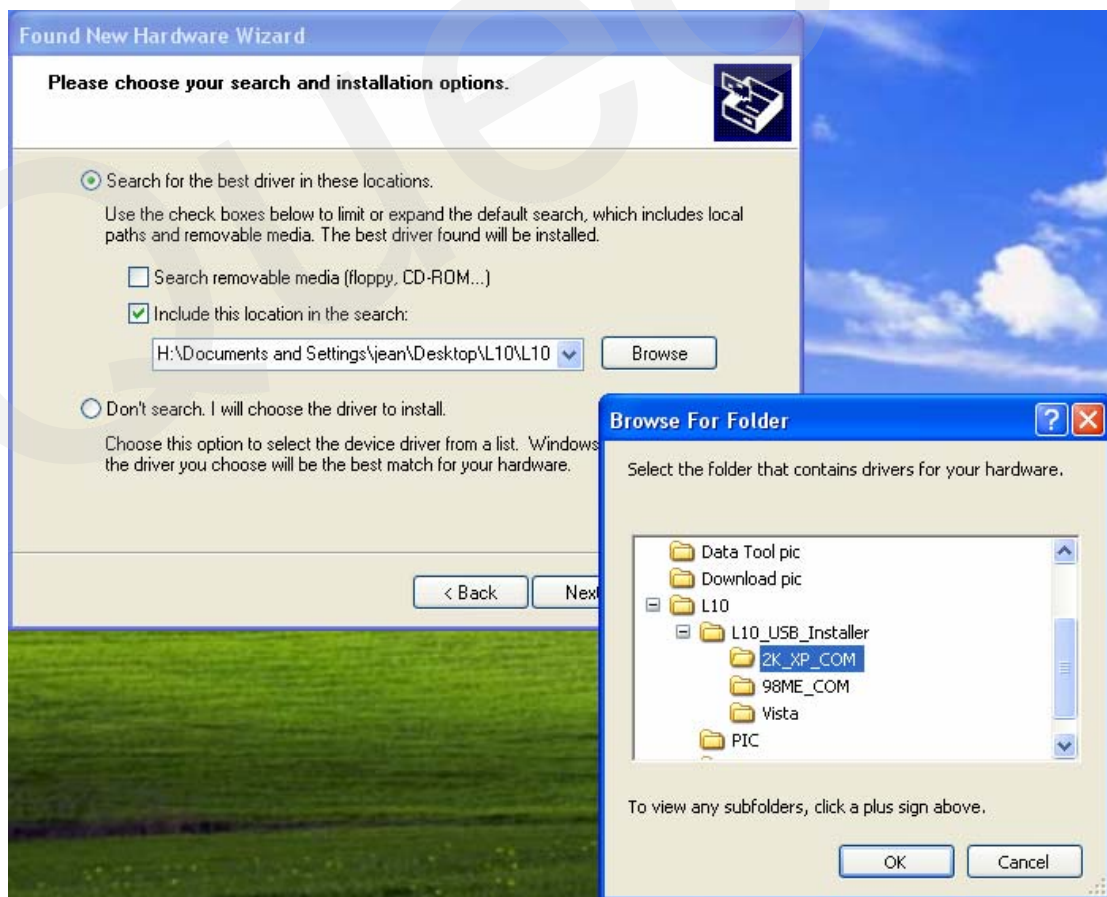
Step 1: Connect L10-EVB to PC with USB cable. Then PC will request installing the virtual COM port driver.



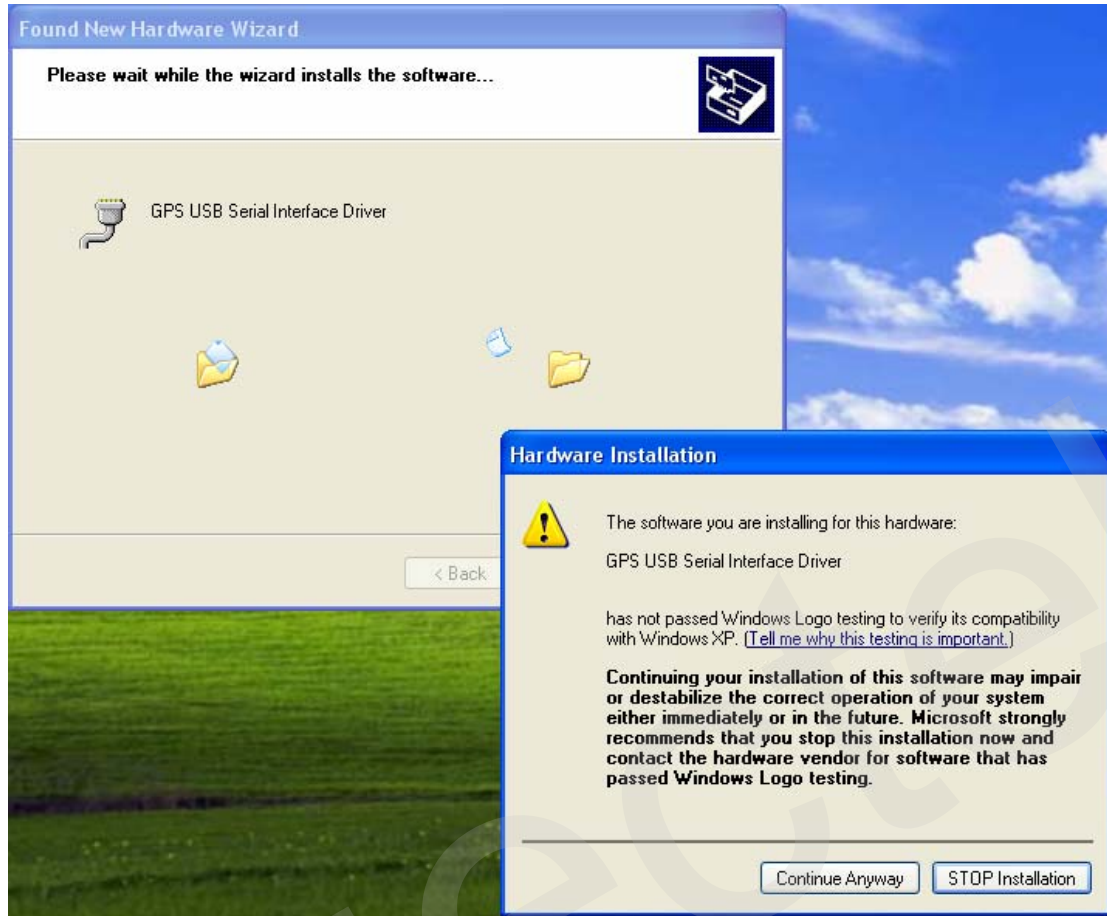
Step 2: Choose “Install from a list or specific location”.



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



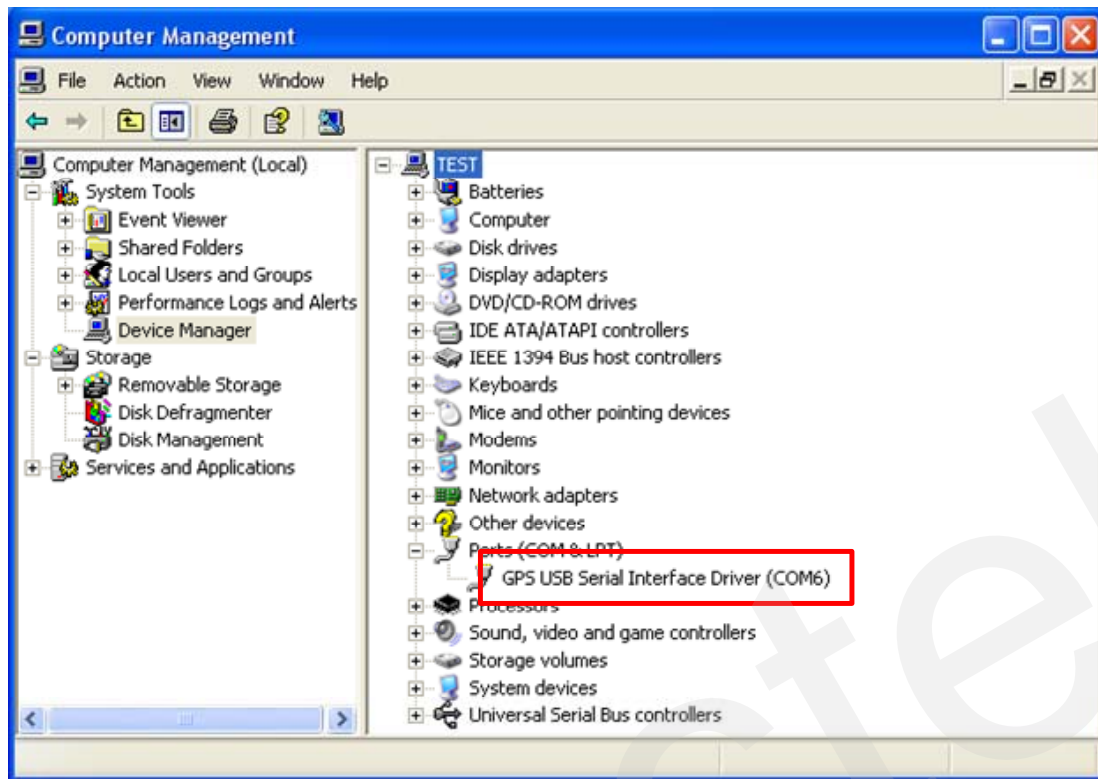
Step 4: Click button “Continue Anyway” in the pop-up dialog box.



Step 5: GPS USB driver installation finishes.

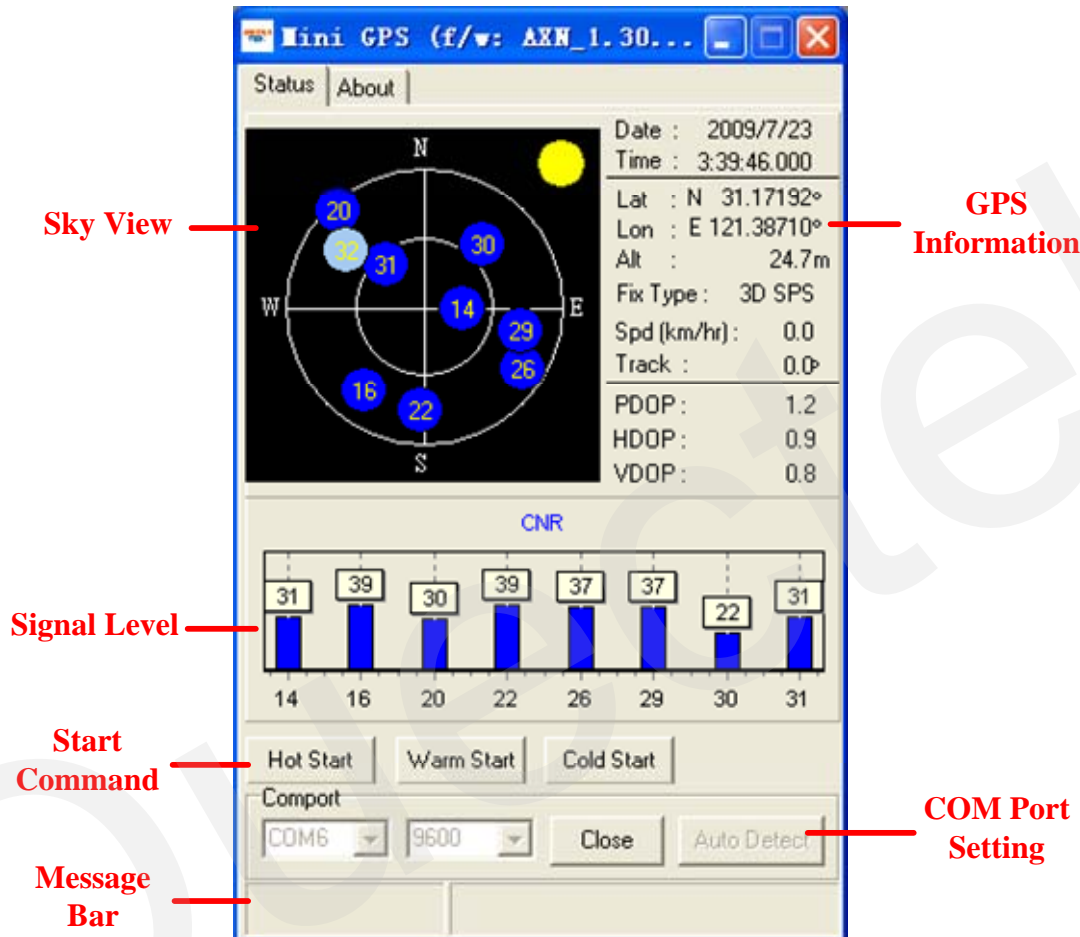


User will find a new virtual COM port in the Device Manager of PC as shown below:

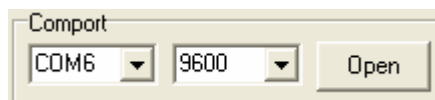


6. Starting MiniGPS

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.

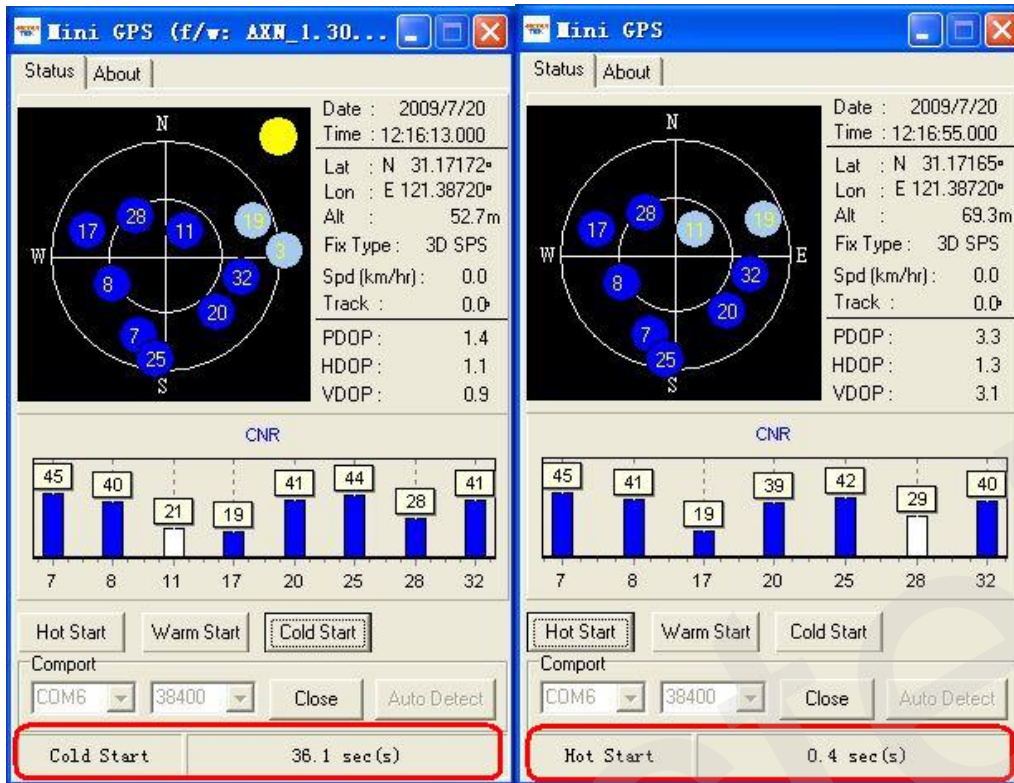


From the MiniGPS window, user can view CNR message, time, position, speed, precision and so on. Explanations are listed in Table 8.

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.
Date : 2009/7/23 Time : 3:39:46.000	UTC time
Lat : N 31.17192° Lon : E 121.38710° Alt : 24.7m Fix Type : 3D SPS Spd (km/hr) : 0.0 Track : 0.0°	Latitude and longitude degree Altitude based on WGS84 Datum Fix type: NoFix, 3D or 2D SPS Speed of receiver Track degree of receiver
PDOP : 1.2 HDOP : 0.9 VDOP : 0.8	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:



QUECTEL



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