L70

Quectel GPS Engine

EVB User Guide

L70_EVB_UGD_V1.0

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Contents

Table Index

Figure Index

0. Revision history

Revision	Date	Author	Description of change
1.0	2012-07-13	King HAO	Initial

1. Introduction

This document defines and specifies the usage of L70 EVB (Evaluation Board). Customer can get useful information about L70 EVB and GPS demo tool from this document.

1.1. htReference

Table 1: Reference

SN	Document name	Remark
[1]	L70_HD	L70 Hardware Design
[2]	L70_GPS_Protocol	L70 GPS Protocol Specification
[3]	L70_Reference Design	L70 Reference Design

1.2. Abbreviations

Table 2: Abbreviations

Abbreviation	Description
CNR	Carrier-to-Noise Ratio
GPS	Global Positioning System
LED	Light Emitting Diode
PPS	Pulse Per Second
PRN	Pseudorandom Noise
SPS	Standard Positioning Service
SV	Satellite Vehicle
UART	Universal Asynchronous Receiver & Transmitter
UTC	Universal Time Coordinated
WGS84	World Geodetic System 1984

2. EVB Kit Introduction

2.1. EVB Top and Bottom View

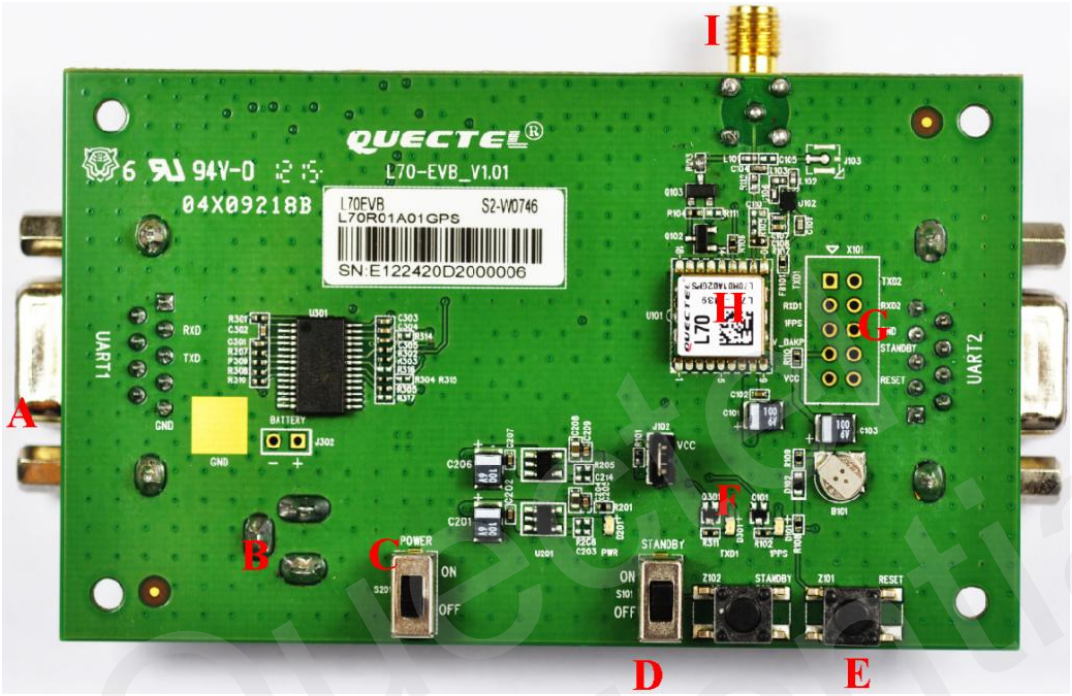


Figure 1: EVB top view

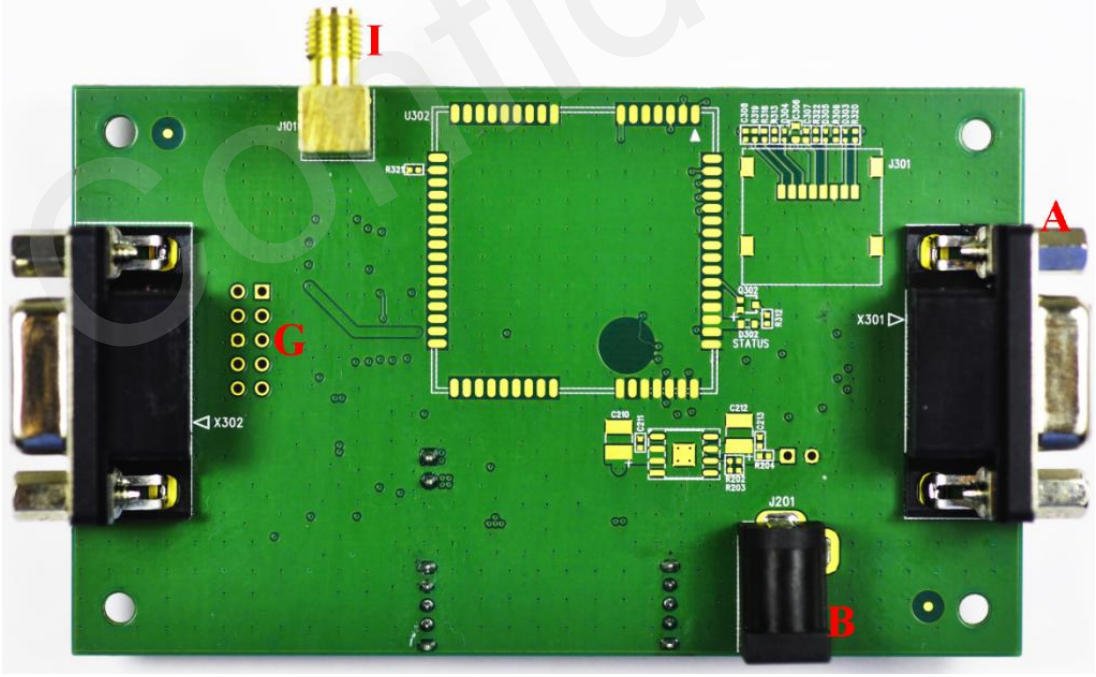


Figure 2: EVB bottom view

A: UART port
B: Adapter interface
C: POWER switch
D: STANDBY switch
E: RESET button
F: Indication LEDs
G: Test points
H: L70 Module
I: Antenna interface

2.2. EVB Accessories

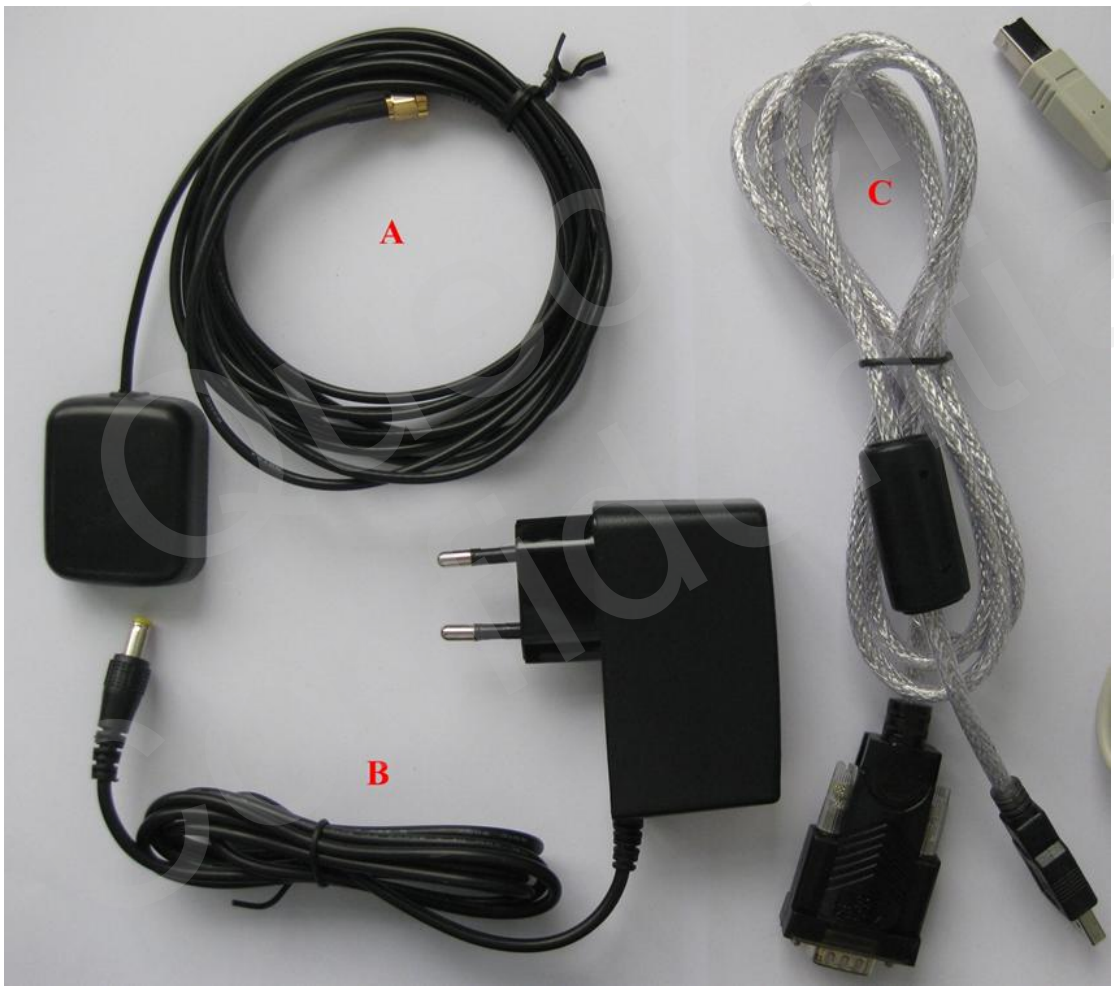


Figure 3: EVB accessories

A: GPS active antenna (3.3V)
B: DC5V/2A power adapter
C: USB to RS232 converter cable

3. Interface Application

3.1. Power Interface

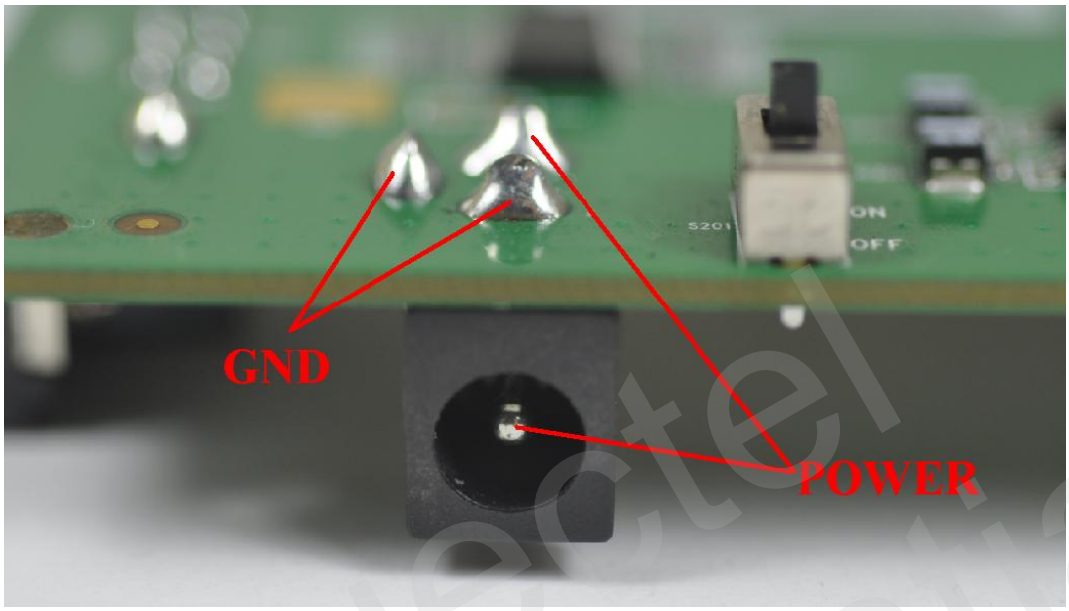


Figure 4: Power interface

3.2. UART Interface

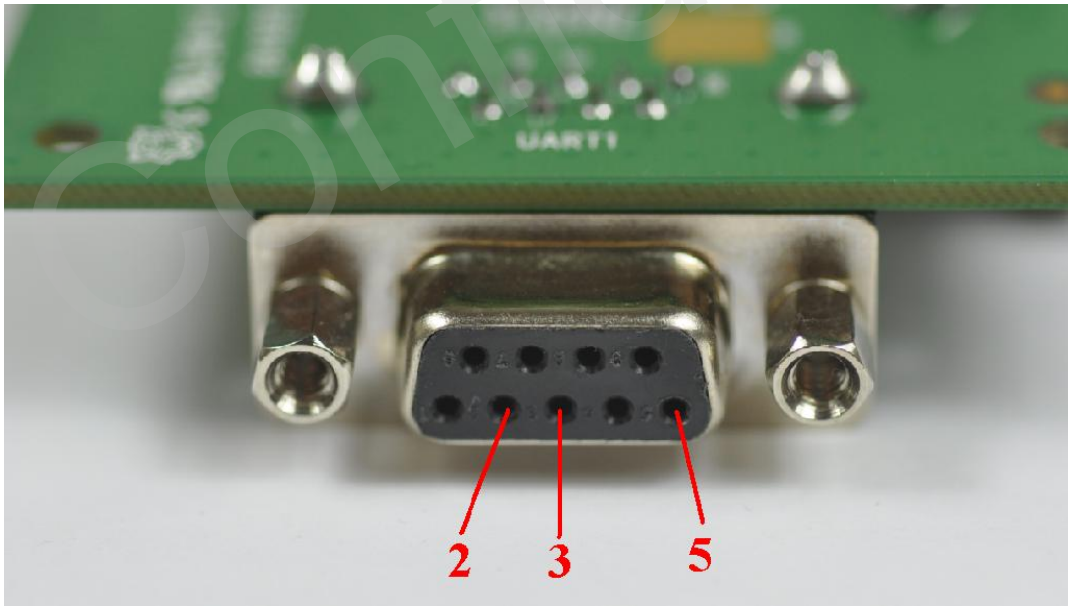


Figure 5: UART interface

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. Antenna Interface

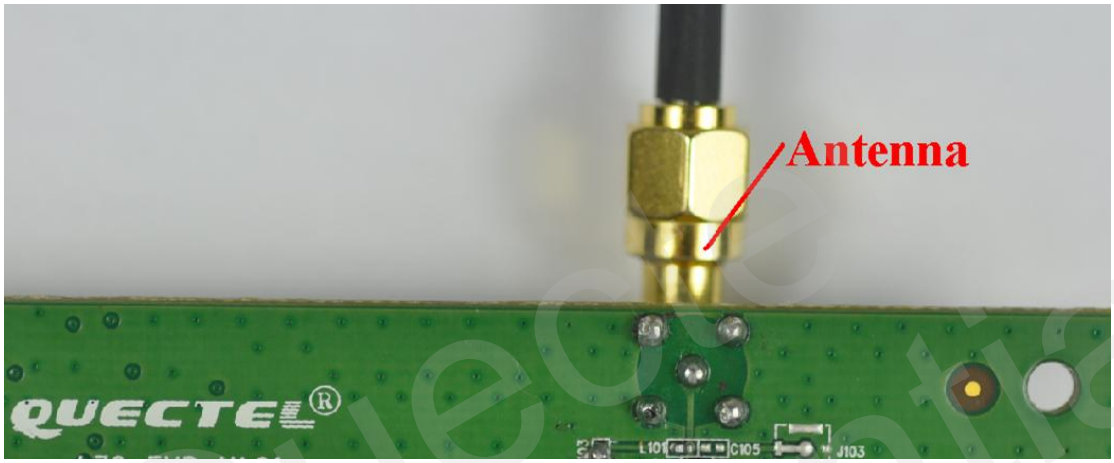


Figure 6: Antenna interface

3.4. Switches and Buttons

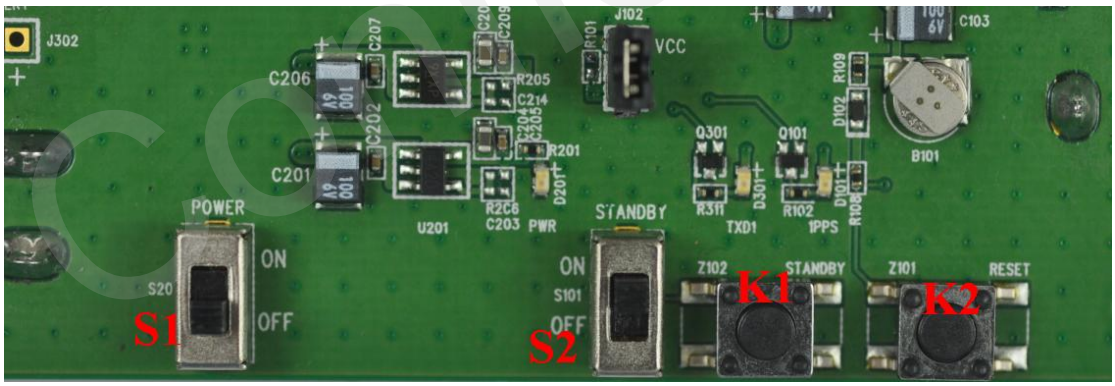


Figure 7: Switches and buttons

Table 4: Switches and buttons

Part	Name	I/O	Description
S1	POWER	I	Control power supply from adapter
S2	STANDBY	I	The module will enter into standby mode when switching from OFF to ON, and exit from standby mode in the opposite operation.
K1	STANDBY	I	The module will enter into standby mode when pressing this button, and exit from standby mode when releasing this button.
K2	RESET	I	Press and release this button, then the module will reset.

3.5. Operating Status LEDs

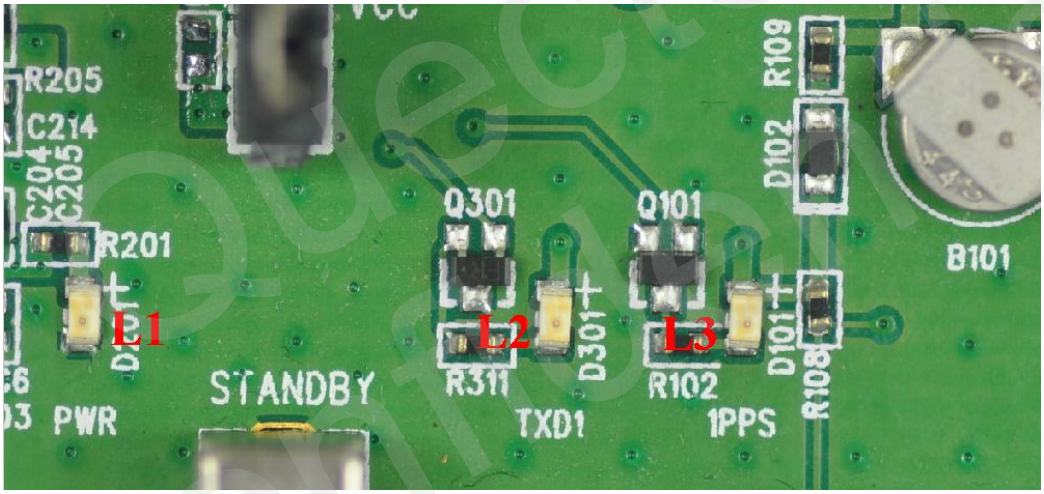


Figure 8: Operating status LEDs

Table 5: Operating status LEDs

Part	Name	I/O	Description
L1	PWR	O	Bright: Power on Extinct: Power off
L2	TXD1	O	Flash: turn on successfully,UART1 port can output messages Extinct: failed to turn on the module
L3	1PPS	O	Flash: fix successfully, the frequency is 1Hz Extinct: no fix

3.6. Test Points

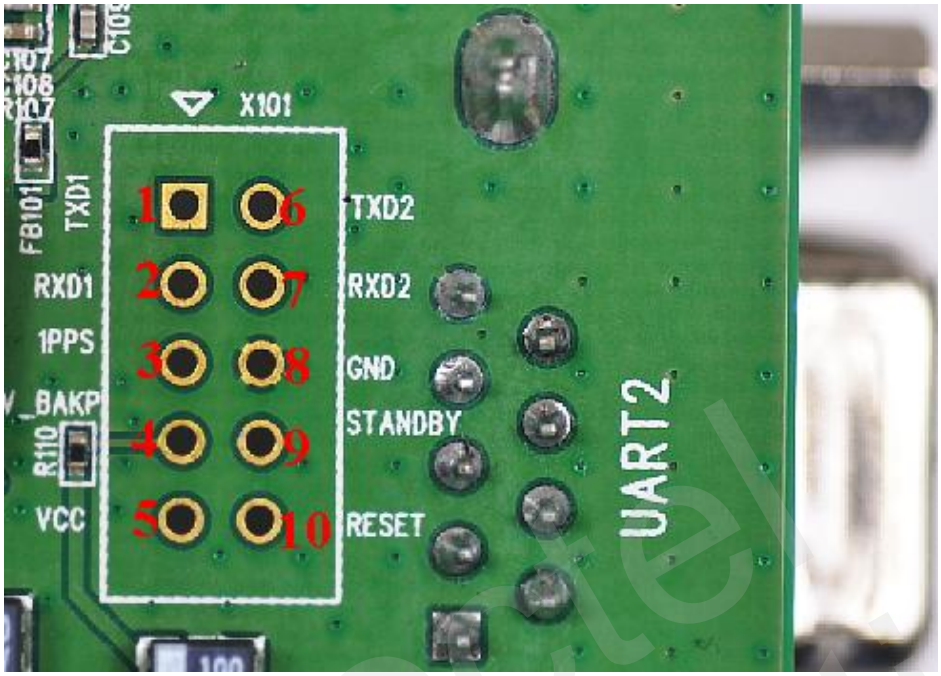


Figure 9: Test points X101

Table 6: Pins of X101

Pin	Signal	I/O	Description
1	TXD1	O	Transmit data
2	RXD1	I	Receive data
3	1PPS	O	1 pulse per second
4	V_BAKP	I	Backup voltage supply
5	VCC	I	Voltage supply for L70 module
6	TXD2	O	Transmit data
7	RXD2	I	Receive data
8	GND		Ground
9	STANDBY	I	Enter or exit from standby mode
10	RESET	I	System reset

4. EVB and Accessories

The EVB and its accessories are equipped as shown in Figure 10.

Figure 10: EVB and accessory equipments

5. Installing Device Driver

Before using UART1 port, please install the driver of USB 2.0 to RS232 converter in the attached CD.

6. Starting MiniGPS

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

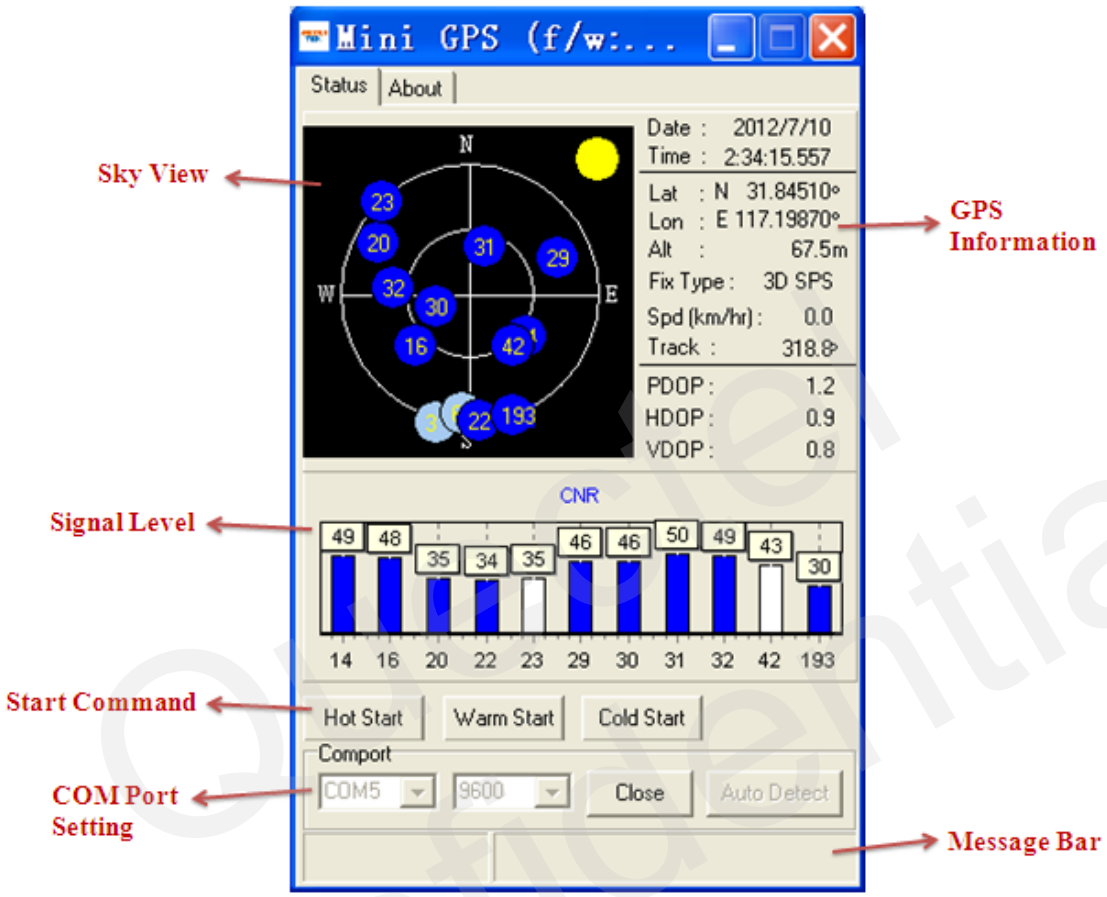


Figure 11: MiniGPS tool

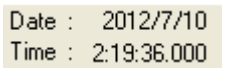
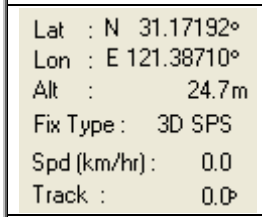
After assembling EVB accessories, turn on the module and start up the MiniGPS. Select a correct COM port and baud rate (L70 module supports 9600bps by default), click the button "Open".

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 7.

Table 7: 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 L70 to implement Hot Start, Warm Start or Cold Start via Start Command buttons. Positioning time will be indicated in the Message Bar as shown in the 2 screenshots below:

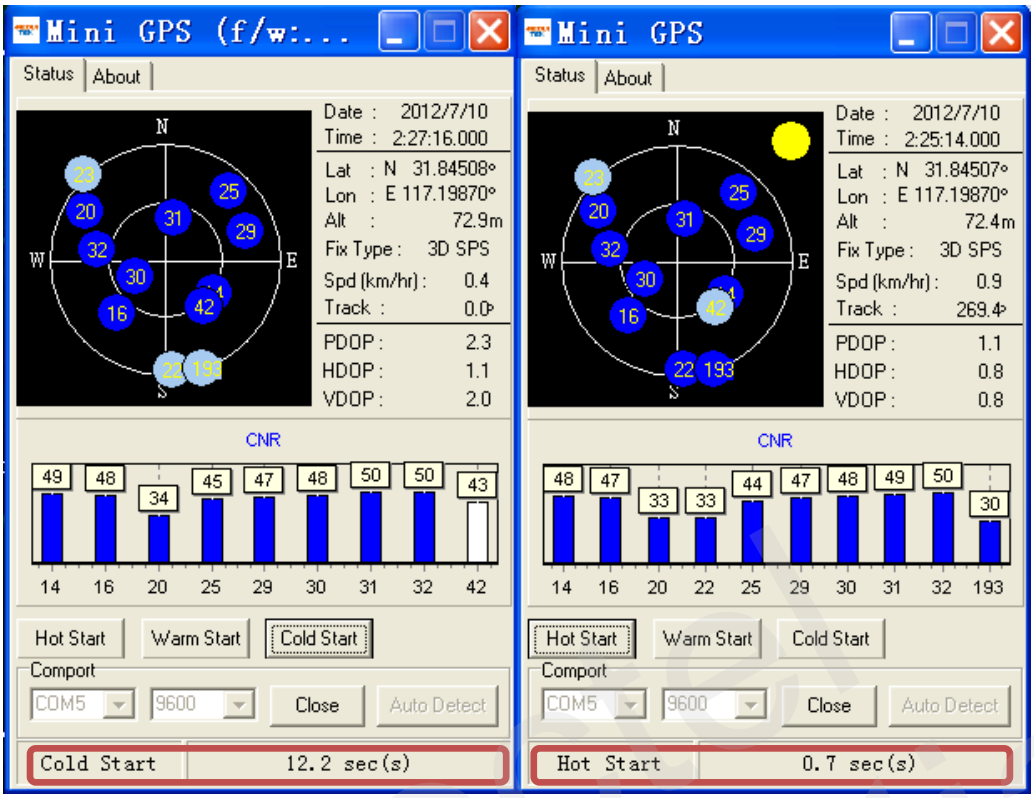


Figure 12: Cold Start and Hot Start

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