

L80 EVB User Guide

GPS Module Series

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About the document

History

Revision	Date	Author	Description
1.0	2013-07-25	Ada LI	Initial

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1 Introduction

This document defines and specifies the usage of L80 EVB (Evaluation Board). You can get useful information about L80 EVB and GPS demo tool from this document.

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2 Introduction to EVB Kit

2.1. EVB Top and Bottom View

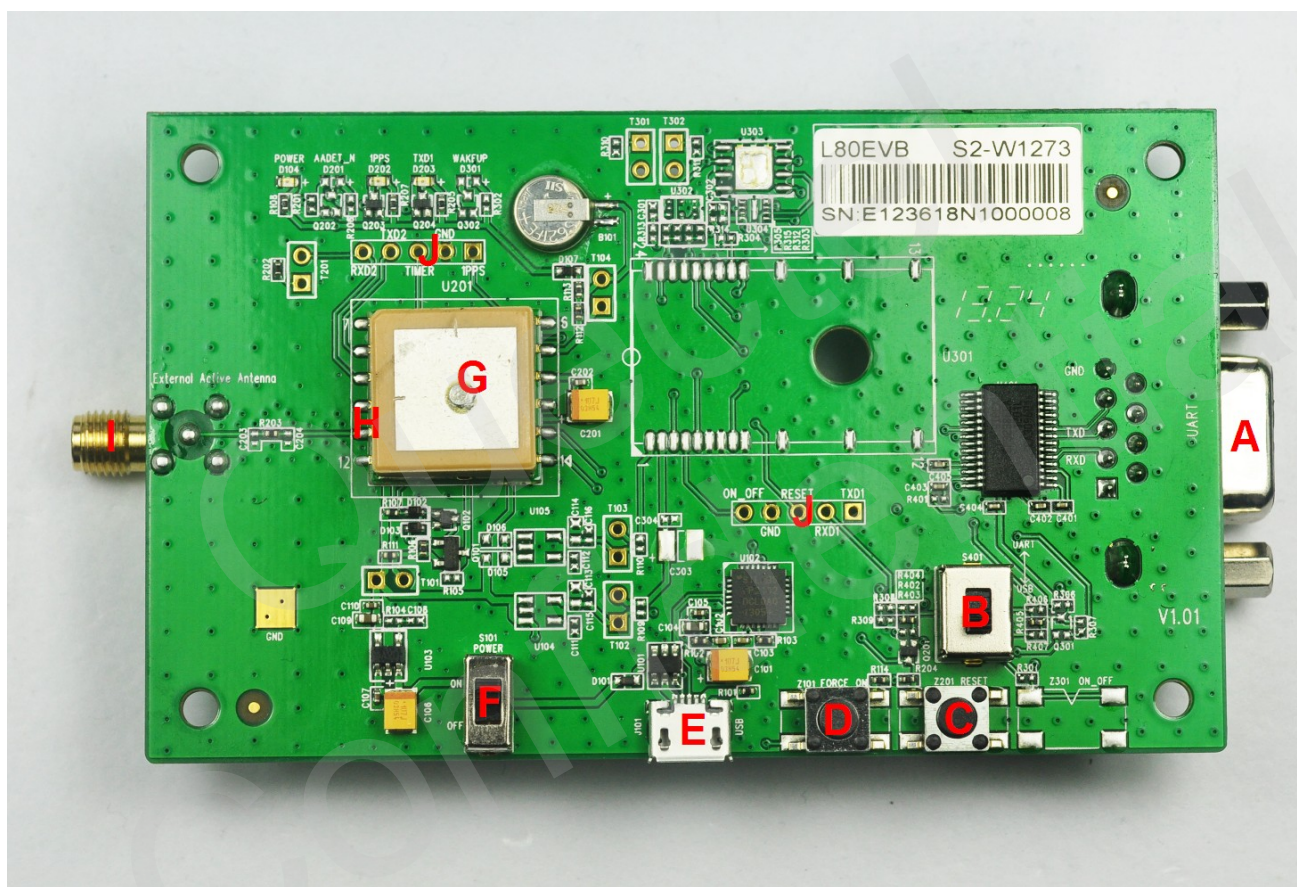


Figure 1: EVB Top View

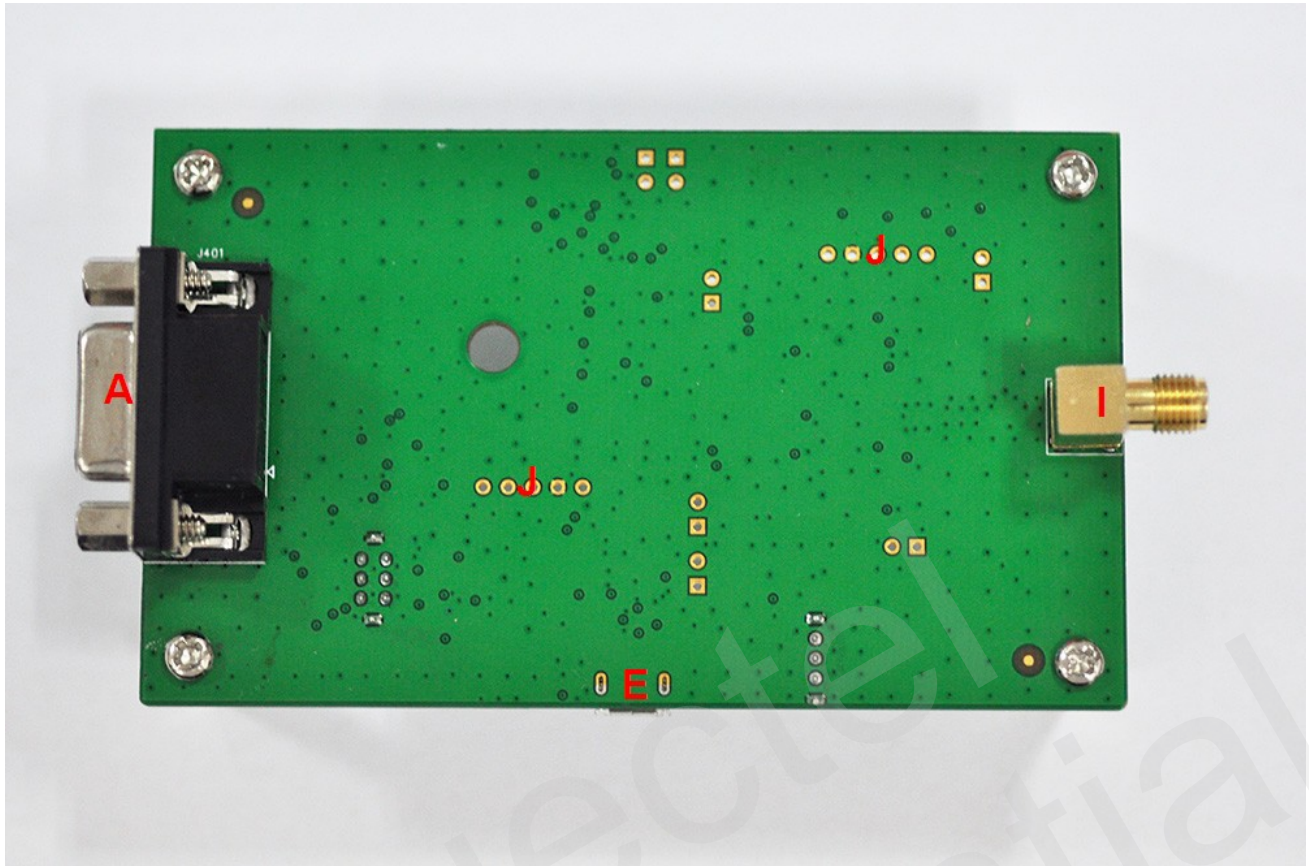


Figure 2: EVB Bottom View

Table 1: EVB Bottom View

Index	Description
A	UART port
B	Serial port alternation switch
C	RESET button
D	FORCE_ON
E	Micro-USB port
F	POWER switch
G	PATCH Antenna
H	L80 Module
I	Active Antenna interface

J

Test points

2.2. EVB Accessories



Figure 3: EVB Accessories

Table 2: EVB Accessories

Index	Description
A	USB cable

3 Interface Application

3.1. USB Interface

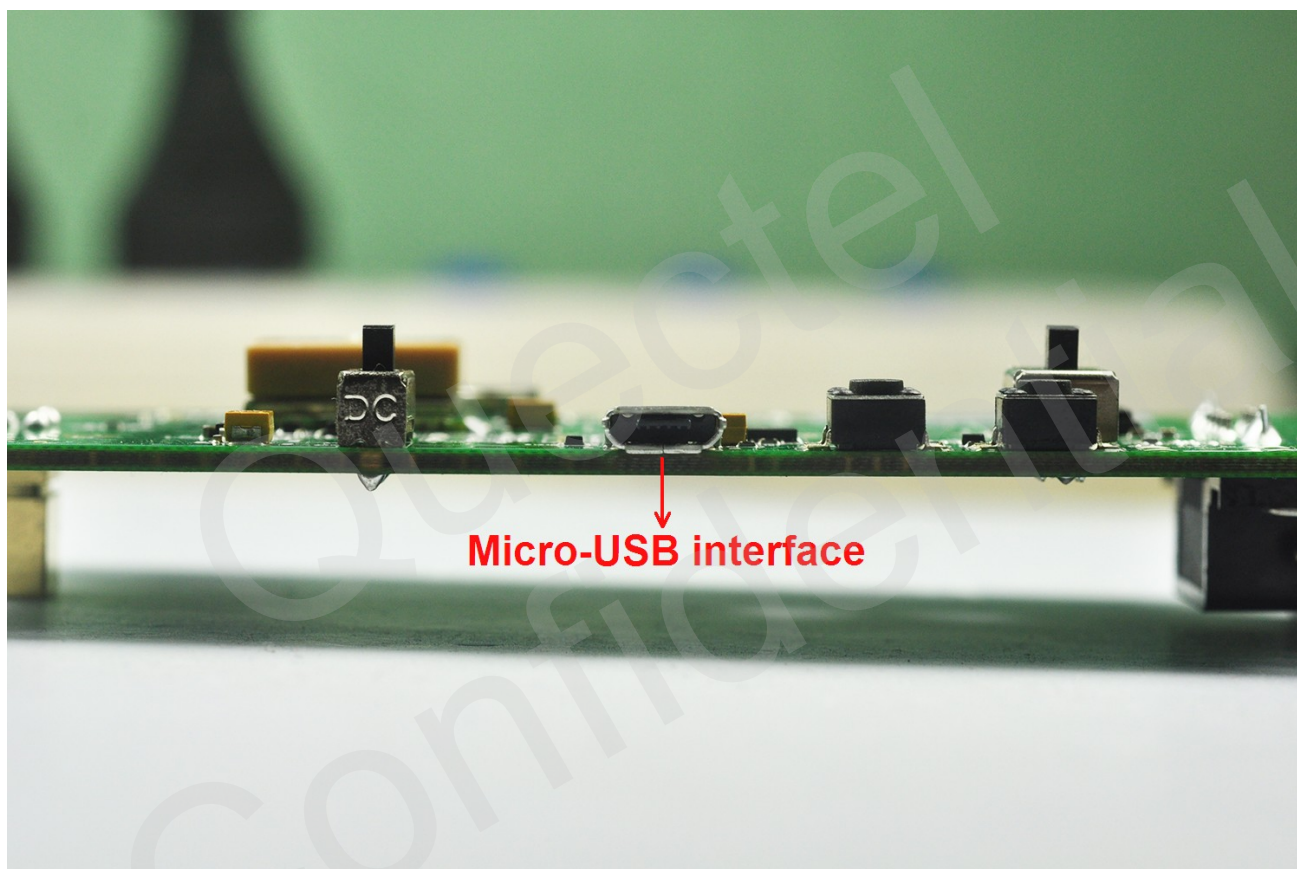


Figure 4: Micro-USB Interface

The main power is supplied via Micro-USB interface. Quectel provides two ways for data communication: Micro-USB and UART interface which are controlled by serial port alternation switch (S401). Both of RS232 and Micro-USB cable are necessary, if you want to use UART in order to output NEMA. So the easy way is that use Micro-USB cable which both provides the power and output NEMA. You can make alternation between UART port and Micro-USB interface via switch (S401).

3.2. UART Interface

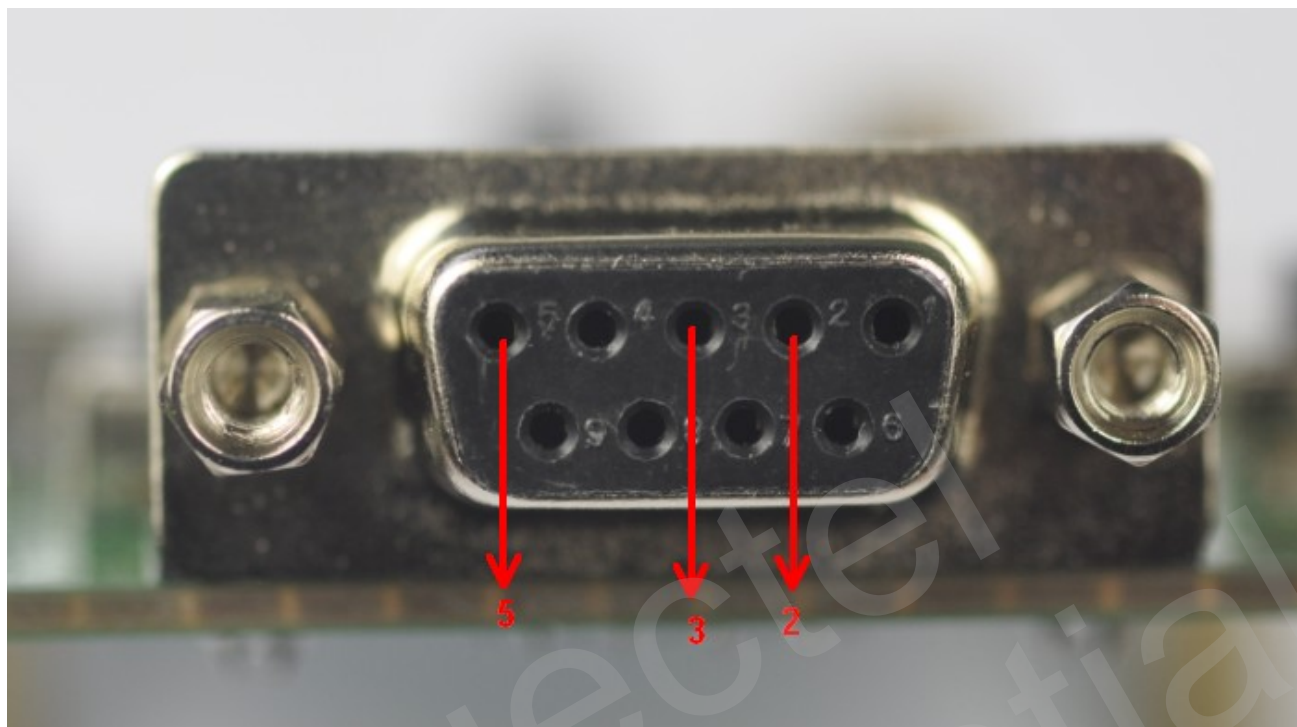


Figure 5: UART Interface

Table 3: Pins of UART Port

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

3.3. Antenna Interface

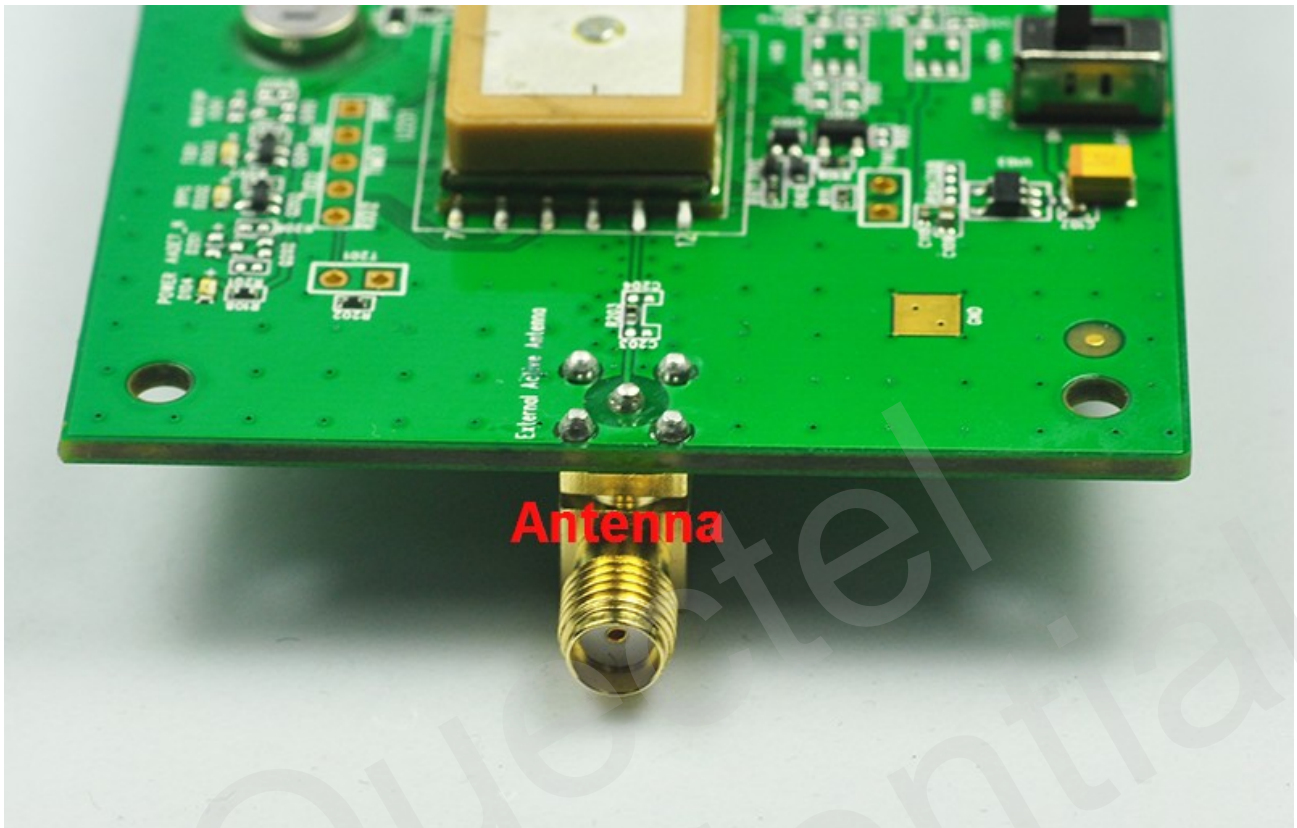


Figure 6: Antenna Interface

3.4. Switches and Buttons

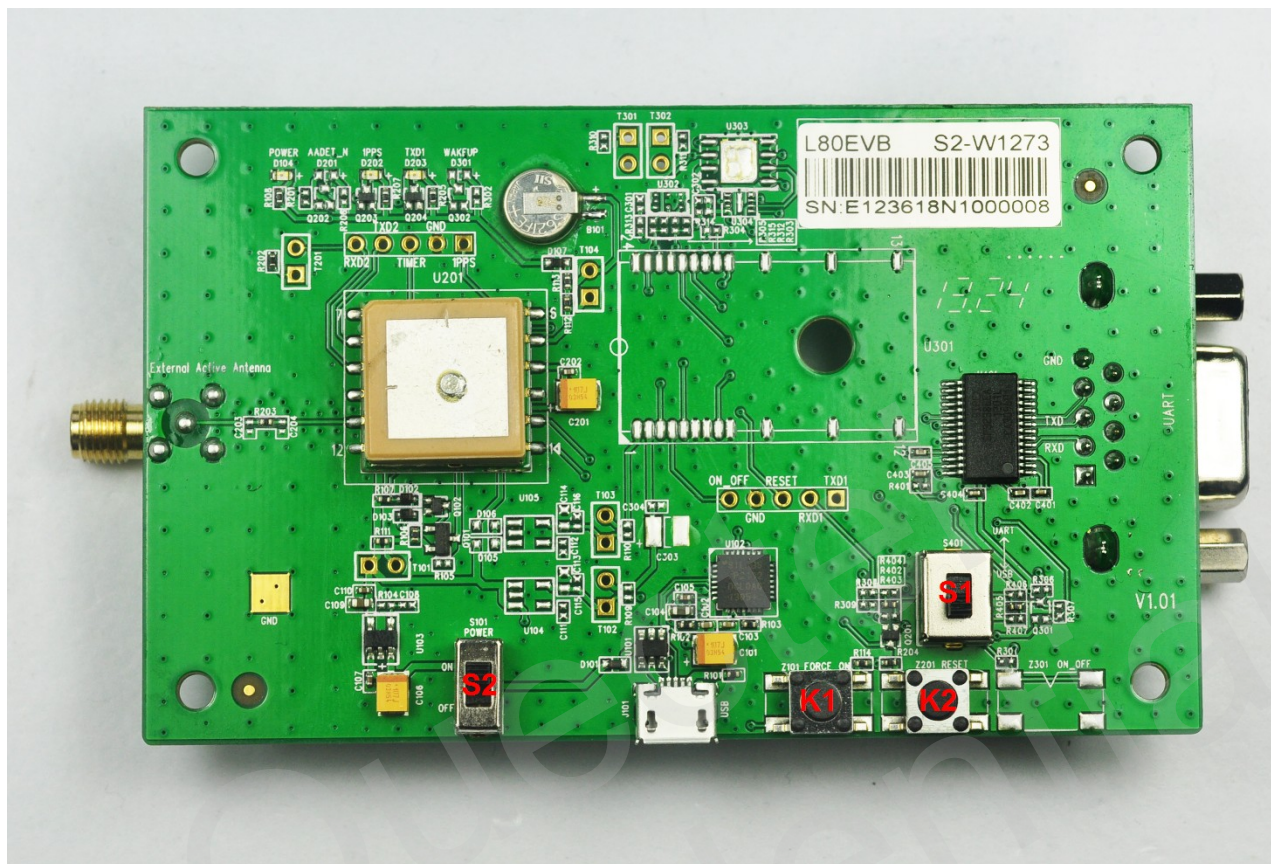


Figure 7: Switches and Buttons

Table 4: Switches and Buttons

Part	Name	I/O	Description
S1	Serial port alternation switch	I	QUECTEL EVB supplies two communicative ways: Micro-USB and UART which are controlled by switch.
S2	POWER	I	Control power supply via Micro-USB.
K1	FORCE_ON		Logic high will force module to be waked up from backup mode.
K2	RESET	I	Press and release this button, then the module will reset.

3.5. Test Point

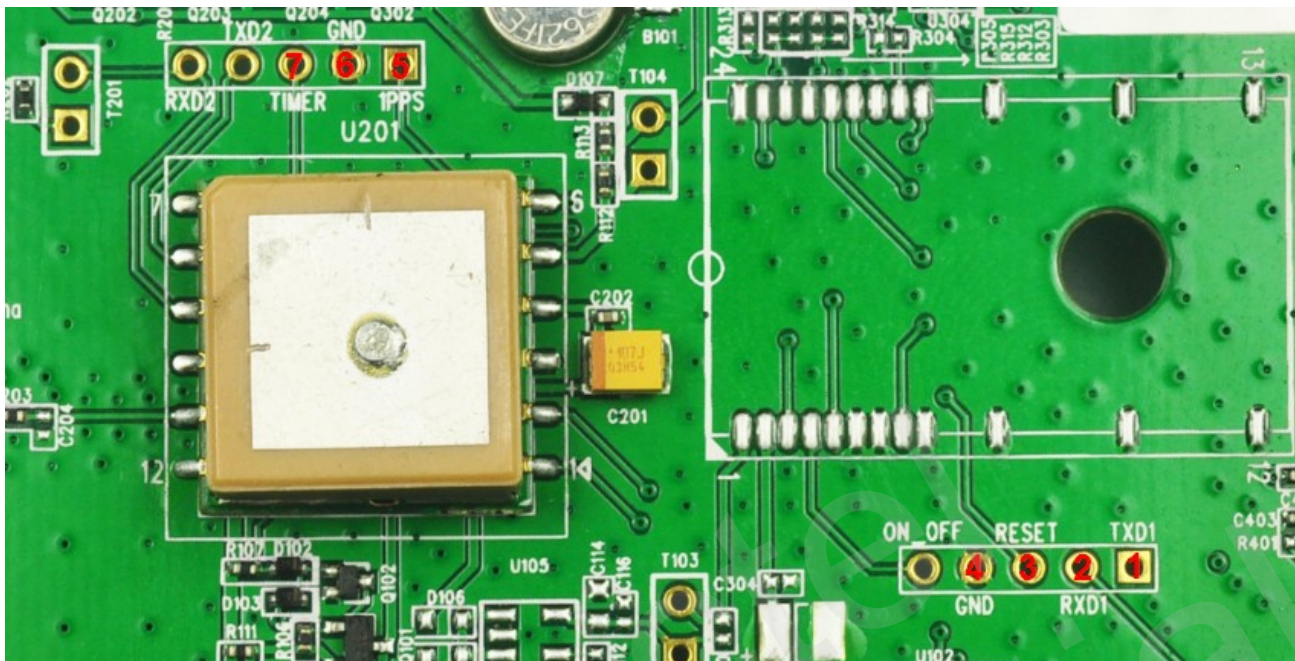


Figure 8: Test Points

Table 5: The Description of Test Points

Pin	Signal	I/O	Description
1	TXD1	O	Transmit data
2	RXD1	I	Receive data
3	RESET	I	System reset
4/6	GND		Ground
5	1PPS	O	1 pulse per second
7	TIMER	O	Logic high will force module to be waked up from backup mode. Keep this pin open or pulled low before entering into backup mode. If unused, keep this pin open.

4 EVB and Accessories

The EVB and its accessories are equipped as shown in Figure 9.



Figure 9: EVB and Accessory Equipments

NOTE

The GPS active antenna is not included in L80EVB-KIT. It can be purchased separately by Quectel Sales Team, if it is necessary for your application.

5 Install Device Driver

Please note that you need to install the driver of Micro-USB, when using Micro-USB for data communication. The driver has been stored in our FTP server. The driver of CP210x also can be downloaded from internet. The download path of our FTP server is shown as below:

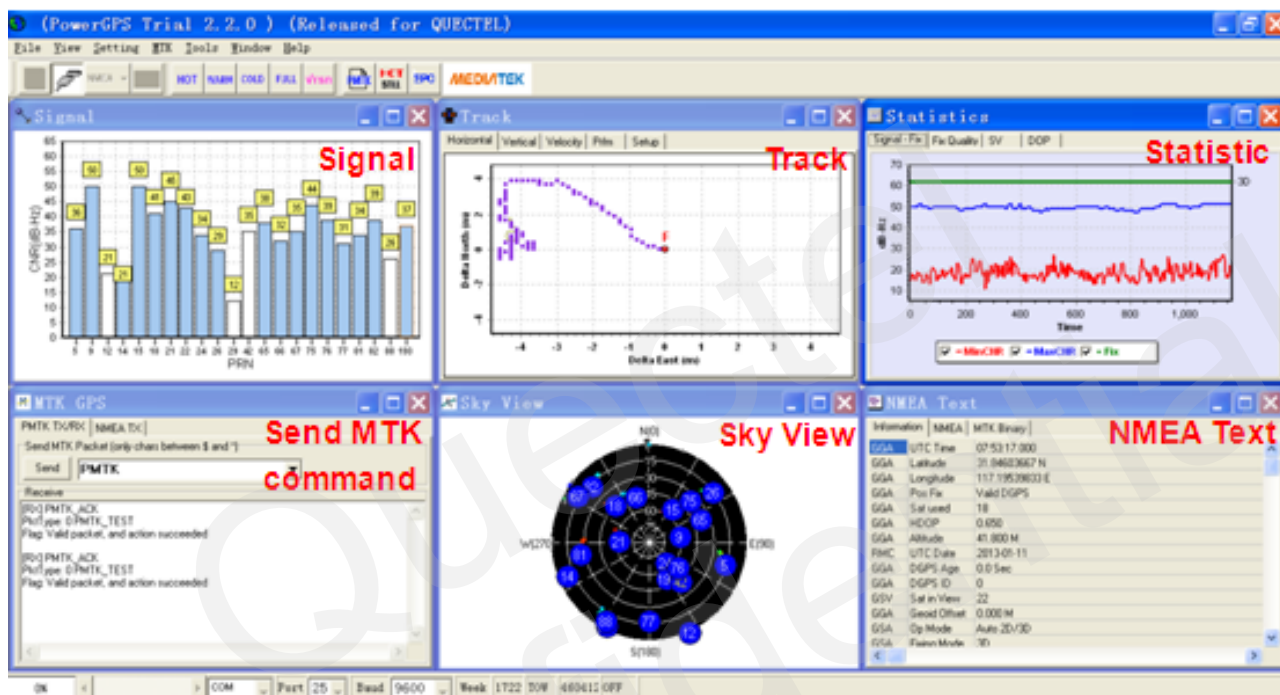
Overseas customer: */d:/FTP/OC/Overseas_Technical/Overseas_Module Official Documents/GNSS Module/Common/04 Tool Kit/ GNSS_EVB_Micro-USB_Driver_CP210x.*

Domestic customer: */d:/FTP/CC/Domestic_Technical/Domestic_Module Official Documents/GNSS Module/Common/04 Tool Kit/ GNSS_EVB_Micro-USB_Driver_CP210x.*

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6 Starting PowerGPS

The PowerGPS version is V2.2.0. The PowerGPS tool can help user to view the status of GPS receiver conveniently. When the tool is opened, the following window will be displayed:



Com port setting

Figure 10: PowerGPS Tool


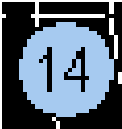
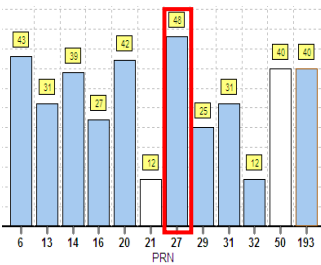
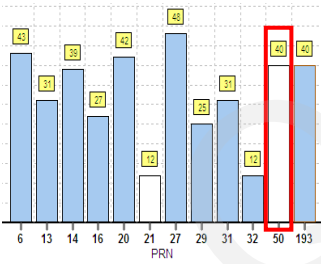
After EVB accessories are assembled, turn on the module and start up the PowerGPS. Select a correct COM port and baud rate (L80 module supports 9600bps by default), then click the button “Create Connection”.



Figure 11: COM Port and Baud

From the PowerGPS window, user can view CNR message, time, position, speed, precision and so on. Explanations are listed in Table 6.

Table 6: Explanations of PowerGPS Window

Icon	Explanation																
	SV with PRN 20. 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.																
	Light blue means this satellite is not in tracking.																
	The CNR of PRN 27 is 48dB/Hz. Light blue column means the navigation data of this satellite is in use.																
	The CNR of PRN 50 is 40dB/Hz. White column means the navigation data of this satellite is not in use.																
<table border="1" data-bbox="150 1294 472 1547"> <tr><td>UTC Time</td><td>08:54:07.000</td></tr> <tr><td>Latitude</td><td>31.84580167 N</td></tr> <tr><td>Longitude</td><td>117.19548500 E</td></tr> <tr><td>Pos Fix</td><td>Valid DGPS</td></tr> <tr><td>Sat used</td><td>17</td></tr> <tr><td>HDOP</td><td>0.630</td></tr> <tr><td>Altitude</td><td>16.200 M</td></tr> <tr><td>UTC Date</td><td>2013-01-11</td></tr> </table>	UTC Time	08:54:07.000	Latitude	31.84580167 N	Longitude	117.19548500 E	Pos Fix	Valid DGPS	Sat used	17	HDOP	0.630	Altitude	16.200 M	UTC Date	2013-01-11	<p>UTC time</p> <p>Latitude degree</p> <p>longitude degree</p> <p>Positing fix</p> <p>Using the number of satellites</p> <p>Horizontal Dilution of Precision</p> <p>Altitude based on WGS84 Datum</p> <p>UTC date</p>
UTC Time	08:54:07.000																
Latitude	31.84580167 N																
Longitude	117.19548500 E																
Pos Fix	Valid DGPS																
Sat used	17																
HDOP	0.630																
Altitude	16.200 M																
UTC Date	2013-01-11																
<table border="1" data-bbox="150 1615 472 1778"> <tr><td>Fixing Mode</td><td>3D</td></tr> <tr><td>Sat Used</td><td>18 25 14 21 15 31</td></tr> <tr><td>PDOP</td><td>1.680</td></tr> <tr><td>VDOP</td><td>1.410</td></tr> <tr><td>Speed (m/s)</td><td>0.005</td></tr> </table>	Fixing Mode	3D	Sat Used	18 25 14 21 15 31	PDOP	1.680	VDOP	1.410	Speed (m/s)	0.005	<p>Fix type: No-Fix, 3D or 2D SPS</p> <p>Using satellite</p> <p>Position Dilution of Precision</p> <p>Vertical Dilution of Precision</p> <p>Speed of receiver</p>						
Fixing Mode	3D																
Sat Used	18 25 14 21 15 31																
PDOP	1.680																
VDOP	1.410																
Speed (m/s)	0.005																

You can send PMTK command by PowerGPS. The format of PMTK command is included only characters between '\$' and '*', for example: PMTK869,0.

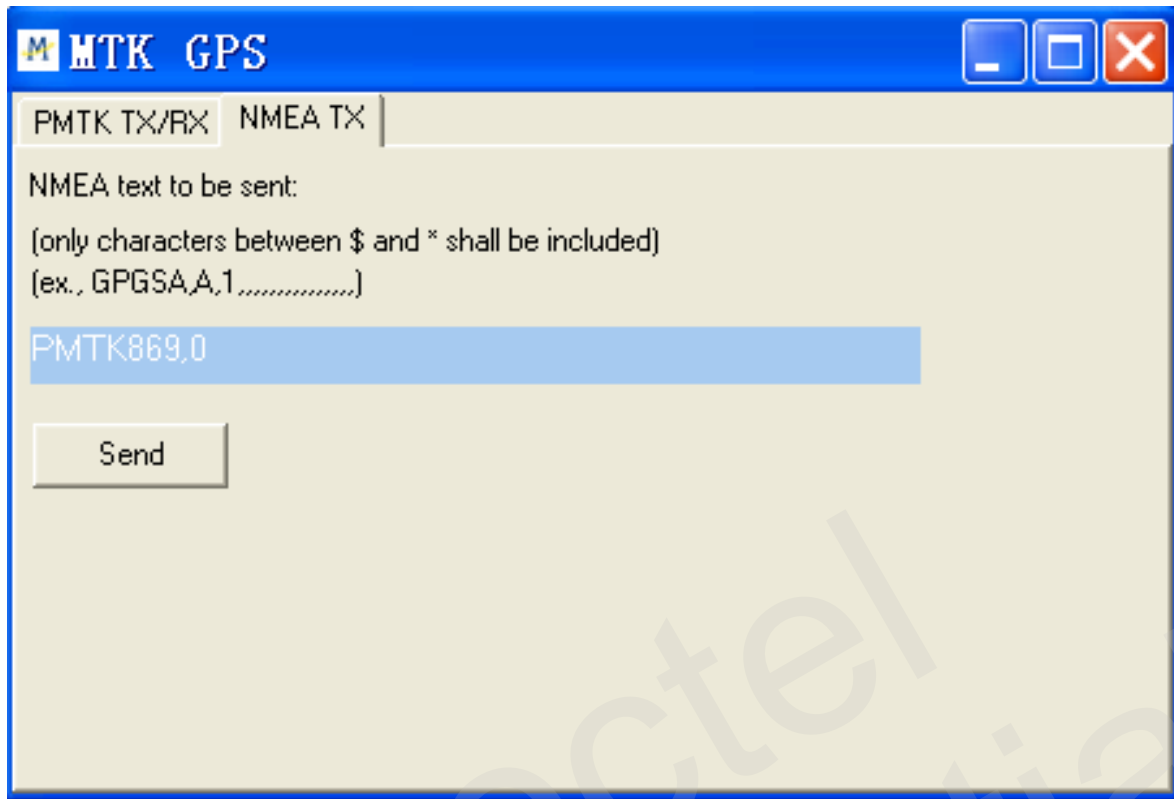


Figure 12: MTK Command

7 Appendix A Reference

Table 7: Reference

SN	Document name	Remark
[1]	L80_Hardware_Design	L80 Hardware Design
[2]	L80_Protocol_Specification	L80 Protocol Specification
[3]	L80_Reference Design	L80 Reference Design

Table 8: Abbreviations

Abbreviation	Description
CNR	Carrier-to-Noise Ratio
GPS	Global Positioning System
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