



# GPS Evaluation Kit A1080

A description of an evaluation system  
for Vincotech's GPS Receiver Module A1080-A/B

## User's Manual

Version 4.0  
Hardware Revision 02



## Revision History

Rev.	Date	Description
1.0	12-05-06	Initial Draft.
2.0	04-01-07	Minor changes; new design
3.0	08-04-08	Removed A1037; new layout; moved to Vincotech
4.0	11-24-08	Change to Hardware Revision 02 (EVA1080-A51)
	mm-dd-yy	

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# 1 Introduction

## 1.1 Purpose

The GPS Evaluation Kit EVA1080 allows an easy evaluation of Vincotech's GPS receiver module A1080-A by offering quick access to the ports of the module.

The EVA1080 serves three major purposes:

1. As a demonstration package of the module's capabilities

Powering the module via the USB connector and connecting the GPS antenna with sufficient view to the sky will result in an NMEA output with position information.

2. As an example how to integrate the module into a system

The schematic in chapter "10 Board schematics" is a basic example how to integrate the GPS module into an application or system.

3. To support an easy temporary design in

The signals provided on the Evaluation Kit allow direct integration into a surrounding system and is therefore an ideal development tool.

A Supercap is used to continue RTC operation during power off periods. The firmware provided on the A1080-A delivered with the EVA1080 is identical to the standard firmware delivered on single A1080 GPS receiver modules.

## 1.2 Contents

The EVA1080 includes the following components:

- Demonstration board (labeled EVA1080) with one A1080-A GPS receiver
- Active GPS antenna
- USB cable to connect to your PC
- CD with complete documentation and Vincotech's GPS Cockpit software

Please check your package for completeness and connect the components properly.

## 2 Handling Precautions

The EVA1080 contains components that are sensitive to electrostatic discharge (ESD). Please handle with appropriate care.

## 3 Quick Start (using USB connection)

- (1) Connect the EVA1080 with your PC using the included USB cable.
- (2) When the PC asks for drivers select the folder “[Tools\Drivers](#)” of the included CD ROM. Note that two drivers need to be installed, the [EVA1080 FTDI driver](#) and the [USB serial driver](#).

**Note:** During the driver installation process your Windows system will probably notify you, that the driver did not pass Windows logo testing with a warning:

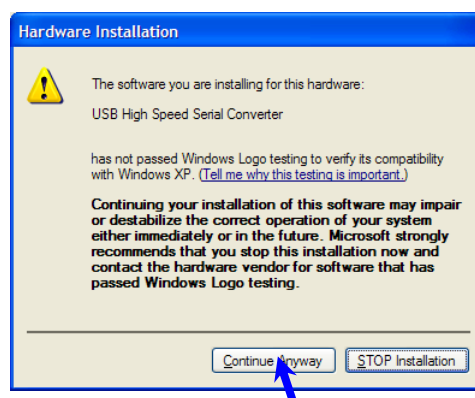


Figure 1: Windows driver installation warning

**Note:** After successful driver installation Windows might interpret the data coming over the serial interface as a serial ballpoint mouse! Your mouse pointer can start jumping around. To stop this, disable the according device using your device manager. Leave the EVA1080 kit connected and press and keep pressing the reset button. You will find the device under “Mice and other pointing devices”. Use a right click to open the sub-menu and disable the device.

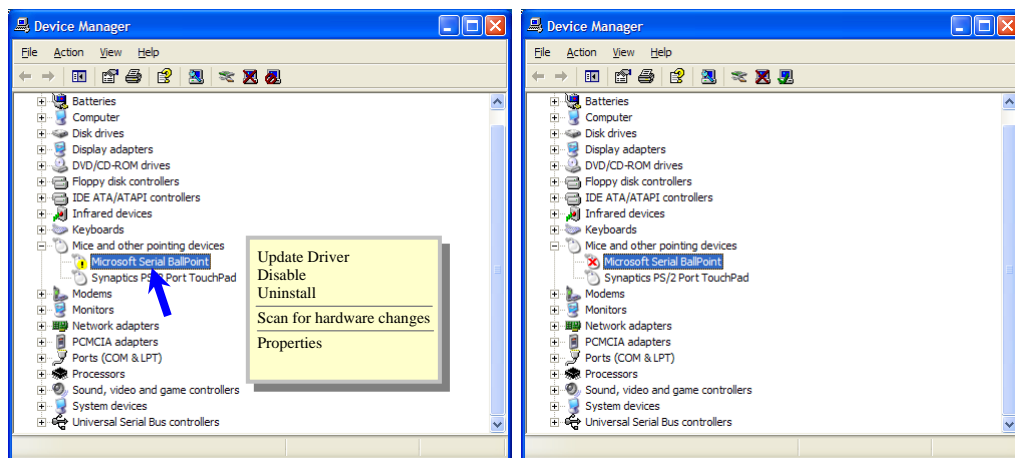


Figure 2: Disabling of Microsoft Serial BallPoint

- (3) Connect the included GPS antenna to the EVA1080 and make sure that the antenna has a good view to the sky!

To start the GPS Cockpit software which visualizes the NMEA output data coming from the GPS receiver, copy all files from the included CD ROM “Tools/GPS Cockpit” to a folder of your choice on your PC. Then double click the GPSC.exe file. The GPS cockpit software starts without additional software installation.

- (4) Now you need to activate the correct port within GPS Cockpit. You can do this by selecting “COM port connection”. A detailed description of the GPS Cockpit software is included on the CD ROM. In any case, the following window will appear:

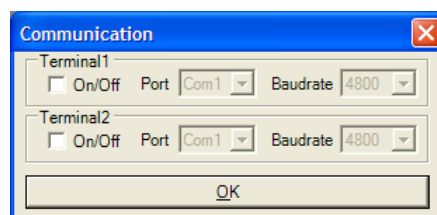


Figure 3: GPS Cockpit communication window - blank

Activate “Terminal 1”, choose the COM port to which the GPS receiver is connected (verify in your system settings - device manager, which communication port is used for this USB serial connection), in our example COM2 at 4800 baud (default setting for the USB1082-A), and click on “OK”:

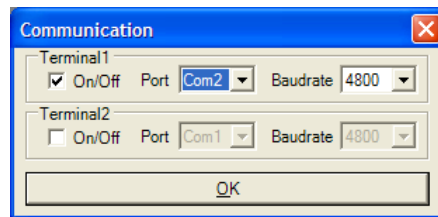


Figure 4: GPS Cockpit communication window – COM2

The connection is established now.

- (5) Open a terminal window to see NMEA sentences by using the “NMEA Terminal” window button. You should then see messages like this:

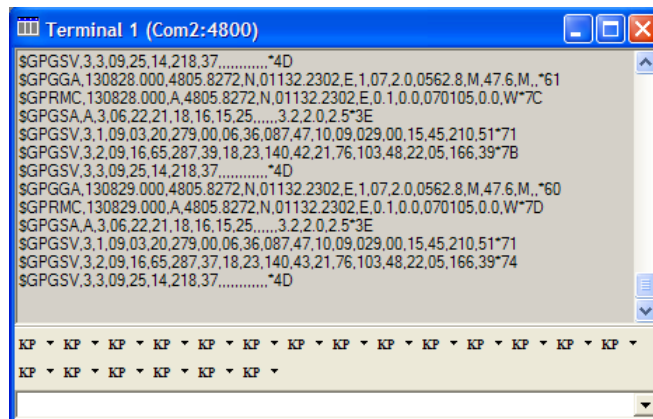


Figure 5: GPS Cockpit NMEA terminal with NMEA data

Now you can start using all the other windows and features of GPS Cockpit. Please refer also to the GPS Cockpit manual and the online help within GPS Cockpit.

## 4 On-Board Peripherals

- RESET push-button (nRST)
- ON\_OFF push-button

The RESET button is used to get a full reset of the GPS module. All parameters are stored in non-volatile memory. After pushing this button the module starts again from the beginning.

The ON\_OFF button puts the A1080 GPS receiver into hibernate state if it is on and wake up if it is in sleep state. During sleep state the receiver draws 20µA typically and maintains RTC and SRAM.

Hibernate mode is supported by Firmware version 3.2.5 and later.



## 5 LEDs

There are 6 LEDs on the EVA1080 that visualize different signals of the GPS receiver:

(Order of LEDs on EVA1080 from left to right)

LED	Name	Function	Description
LD2	RX1	Receive	Serial data traffic (into GPS receiver)
LD1	TX1	Transceive	Serial data traffic (from GPS receiver)
LD4	ON_OFF	Hibernate	Toggle hibernate mode / position request during PTF cycle (the LED visualizes the ON_OFF pulse)
LD5	1PPS	Timing	1PPS signal at rising edge (1 pulse per second, duration 500ms typ.) Note: The original pulse width provided by the GPS receiver is 1 $\mu$ s typically. (see also AppNote 1PPS Pulse Width)
LD5	RFPWUP	RF/analog status	Status of analog section (LED on = ON, LED off = OFF) / controls power supply to the analog section
LD6	Power / VCC	POWER	Power on LED

Table 1: LEDs function and description

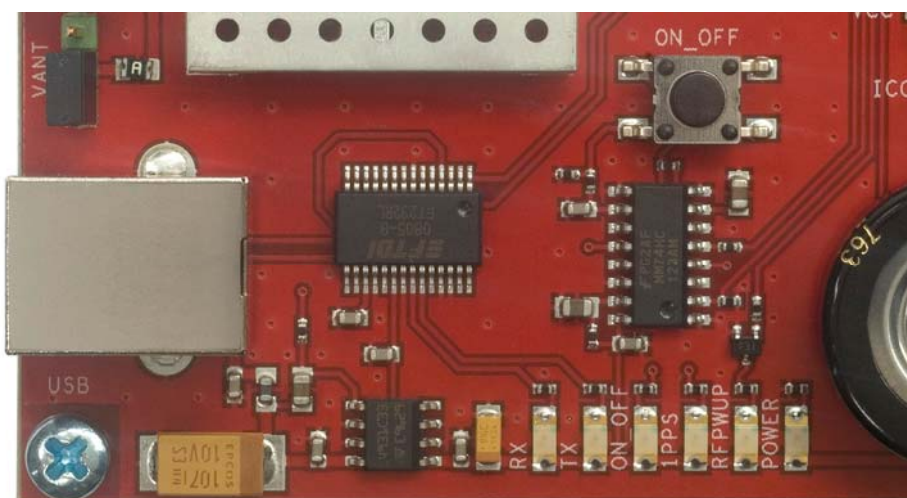


Figure 6: EVA 1080 LEDs

## 6 Design in support

### 6.1 Power Supply

The EVA1080 demo board offers the possibility to implement A1080-A GPS receiver module temporarily into your design by using the screw connectors J3, J4 J5. To operate the EVA1080 via the screw connectors, please check table 2: Switch settings.

Please note:

- VCC power input is **not** protected against reversed polarity
- External supply has to be within the range of 3.3 to 3.6 VDC
- RTC backup: Supercap soldered to the board can be used (\*1)

### 6.2 DIP Switch Settings

Switch	Function	Operation via USB connector (default settings)	Operation via screw connector
S1	BOOTSEL	OFF	OFF (*2)
S2	RFPWUP	ON	OFF
S3	ON_OFF	ON	OFF
S4	RX0	ON	OFF
S5	TX0	ON	OFF
S6	1PPS	ON	OFF
S7	VBAK	ON	OFF (*1)
S8	VCC	ON	OFF

Table 2: Switch settings

\*1: S1 have to be OFF to use an external VBAK supply.  
S1 have to be ON to use the onboard Supercap.



Figure 7: DIP Switches with default settings (SW3)

(\*2)

The BOOT switch can be set to flash Firmware to the A1080-A GPS receiver. Switch the BOOTSEL switch to “ON”, press the RESET (nRST) button and release RESET button . The A1080-A is now waiting to receive new firmware data via UART.

After upgrading the firmware switch the BOOTSEL switch to “OFF” and press the RESET button for continuing normal GPS receiver operation.

Related software tool and documentation: SIRFFlash

### 6.3 Screw connector

Pin	1	2	3	4	5	6	7	8	9
Port	nRST (Reset)	RFPWUP (Status of analog section)	ON_OFF (hibernate mode / PTF mode)	RX0	TX0	1PPS (Pulse Per Second)	VBAK (backup supply)	VCC	GND

Table 3: J3, J4, J5 screw connector description

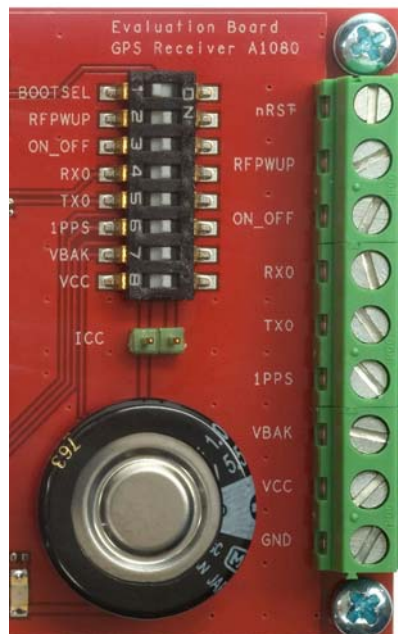


Figure 8: Screw connectors J3,J4,J5

## 6.4 VANT jumper

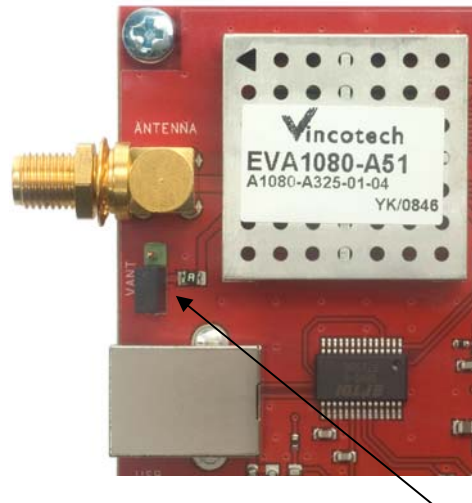


Figure 9: VANT jumper

Figure 9 shows the VANT jumper configured to feed an active antenna connected to the SMA connector with 3.3V and max. 50mA. By leaving off the jumper no antenna supply is provided to the SMA connector.

To feed an external antenna supply voltage to the SMA connector:  
Leave off the jumper and connect the upper pole to GND and connect the middle pole to the external antenna supply voltage. (max. 5V / max. 50mA)

## 6.5 ICC jumper

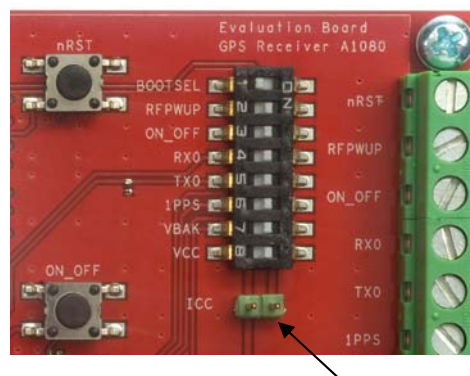


Figure 10: ICC jumper

As long as the VCC DIP switch is in “on” the ICC jumper is bridged. By switching off the VCC switch the current draw of the A1080 GPS receiver can be measured directly by connecting a low resistance measurement device to the ICC jumper.

The low resistance measurement device should be connected before VCC is switched off!

## 7 NMEA Port

- Default setting: 4800 baud, 8 data bits, no parity, 1 stop bit, no flow control!
- Standard NMEA-0183 output on NMEA, baud rate selectable.
- Standard USB connectors.

## 8 EVA1080 Firmware and NMEA Sentences

See separate document **GPS Firmware** for a detailed description of the standard firmware loaded onto the modules delivered with the EVA1080.

## 9 Board Overview

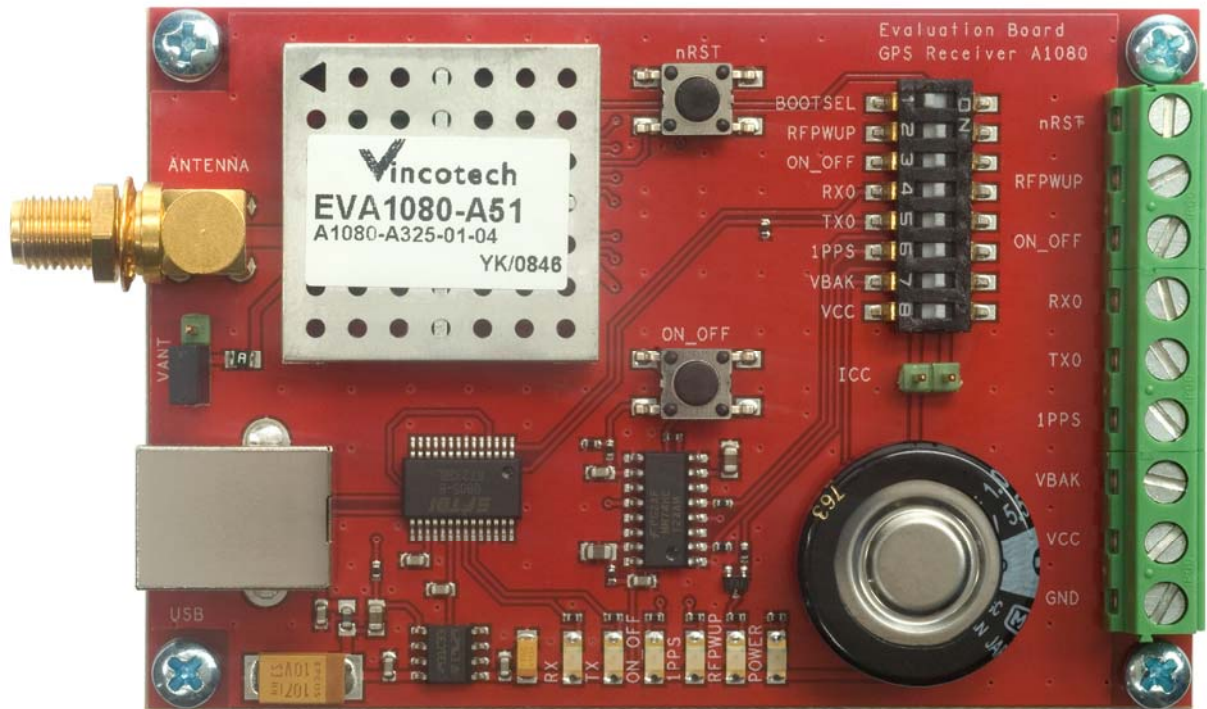


Figure 11: Board Overview





## 11 Related Information

### 11.1 Contact

This manual was created with due diligence. We hope that it will be helpful to the user to get the most out of the GPS module.

Anyway, inputs about errors or mistakable verbalizations and comments or proposals to Vincotech, Germany, for further improvements are highly appreciated.

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### 11.2 Related Documents

- GPS Firmware A1080 (Vincotech)
- GPS Receiver A1080 (Vincotech)
- GPS AppNote EDLC-Backup A1080 (Vincotech)
- GPS AppNote Backup A1080 (Vincotech)
- GPS AppNote GeoHelix Antenna A1080 (Vincotech)
- GPS AppNote Firmware A1080 (Vincotech)
- GPS AppNote nRST A1080 (Vincotech)
- GPS AppNote RF-shield A1080 (Vincotech)
- GPS AppNote 1PPS Pulse Width (Vincotech)
- GPS AppNote ResetControl A1080 (Vincotech)

### 11.3 Related Tools

- GPS Cockpit (Vincotech)
- SiRF Demo
- SiRF Flash



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