SE867-AGPS Evaluation Board User Guide

1VV0300864 Rev. 0 – 2009-11-06

Making machines talk.

Applicability Table

This document is relating to the following products:

PRODUCT
SE867-AGPS EVB

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1. Introduction

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1.1. Audience

This document is intended for customers who are evaluating one or more products in the applicability table.

1.2. Contact Information, Support

For general contact, technical support, to report documentation errors and to order manuals, contact Telit Technical Support Center (TTSC) at:

TS-EMEA@telit.com
TS-NORTHAMERICA@telit.com
TS-LATINAMERICA@telit.com
TS-APAC@telit.com

Alternatively, use:
http://www.telit.com/en/products/technical-support-center/contact.php
For detailed information about where you can buy the Telit modules or for recommendations on accessories and components visit:
http://www.telit.com
To register for product news and announcements or for product questions contact Telit's Technical Support Center (TTSC).
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1.3. Text Conventions

Danger – This information MUST be followed or catastrophic equipment failure or bodily injury may occur.

Caution or Warning – Alerts the user to important points about integrating the module, if these points are not followed, the module and end user equipment may fail or malfunction.

Tip or Information – Provides advice and suggestions that may be useful when integrating the module.

All dates are in ISO 8601 format, i.e. YYYY-MM-DD.

1.4. Related Documents

The following documents are related to this user guide:

[1] "SE867-AGPS Product description"
[2] "SE867-AGPS User Guide"

All documentation can be downloaded from Telit official web site www.telit.com if not otherwise indicated.

1.5. Document change log

Revision	Date	Changes
ISSUE#0	2009-11-06	First Release

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2. Overview

The aim of this document is to supply a description and a user guide of the evaluation board available for Telit GPS stand alone module SE867-AGPS.
This board has been developed in order to allow the customers to evaluate and test all the SE867-AGPS functionalities in all the available configurations, giving them, at the same time, a reference design to start their design from.

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3. General product description

3.1. Main features

The SE867-AGPS evaluation board main features are:

- Mini-USB connector for data transfer and power supply
- FTDI chip for UART to USB conversion
- SMA connector for use with an external active antenna or connection to an instrument
- On board passive antenna plus LNA to be used as an alternative to the external active antenna
- DIP switches for configuration selection
- On-board power-on-reset and manual reset button

The on-board FTDI chip is used for UART to USB connection allowing the use of simple mini-USB cable for data transfer in place of a RS232 connection. The USB connection is exploited also to power the module avoiding the need for an external power supply and increasing the handiness of the kit (important for field tests).

The double option for the antenna (active external or passive internal + LNA) gives the possibility to test the two different antenna configurations that customers could implement in their design.

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3.2. Board overview

3.2.1. Top Side

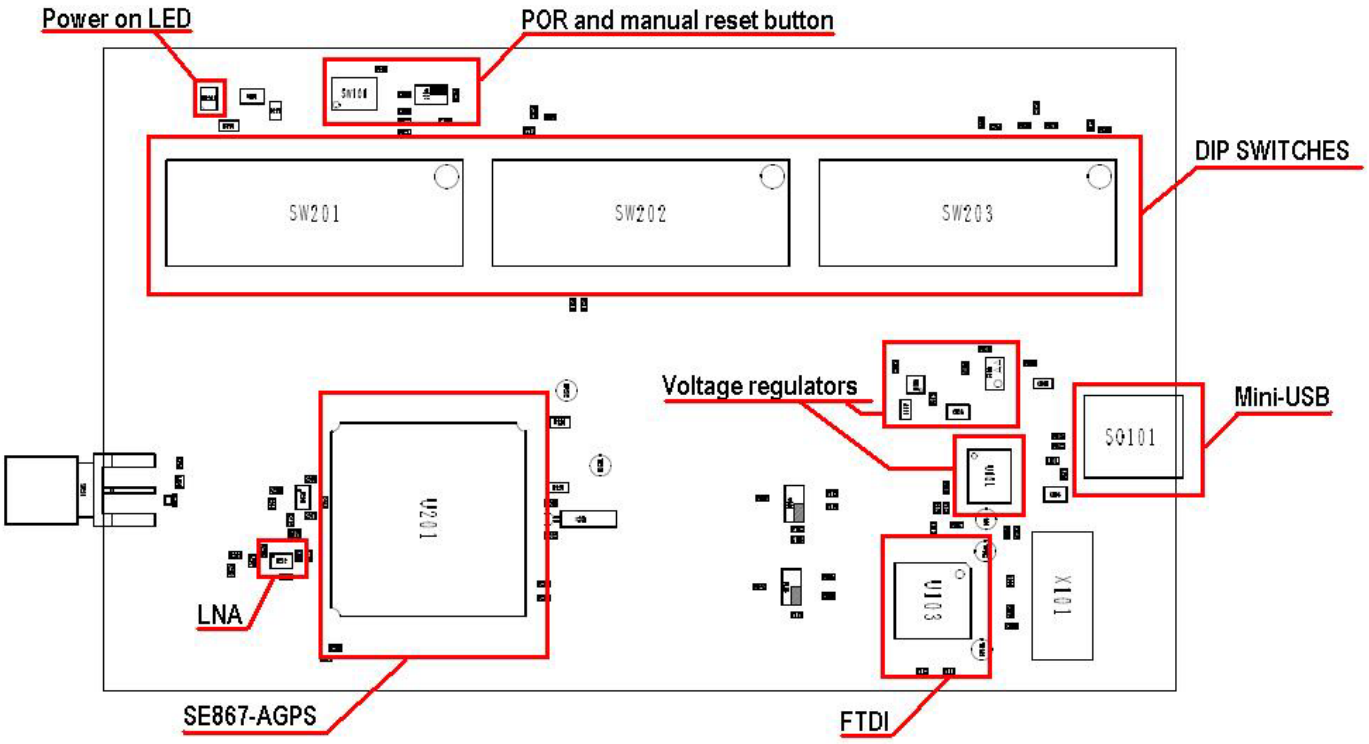

Figure 1

3.2.2. Bottom side

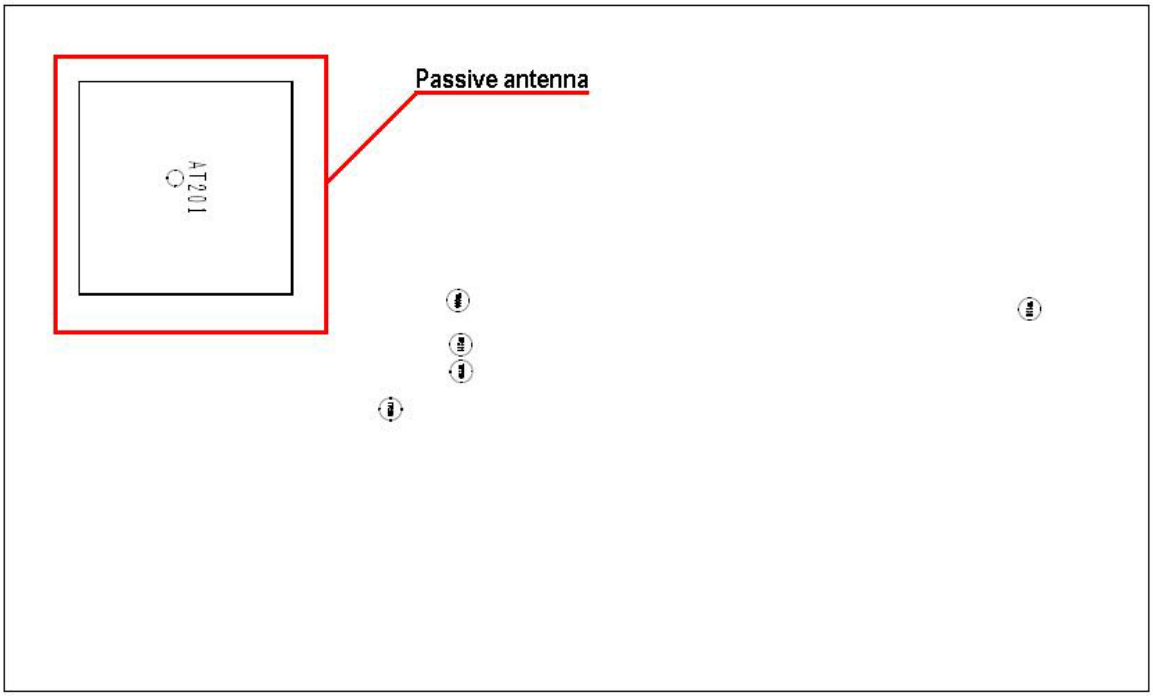

Figure 2

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3.3. Content of the kit

Please check the content of your SE 867 EVB kit, if any of the items is missing, please contact your supplier.

Description	Quantity
EVB Motherboard	1
ASSEMBLED USB-A- mini USB-B CABLE	1
RED & BLACK CABLE WITH PLUGS L-60cm	1

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4. DIP switches configuration

4.1. Numbering and symbols

This chapter explains with images and tables the possible switches configuration for a correct use of the board.
The images will show the switches positions and numbering in reference to the placement in the board (so that the "up" and "down" status of the switch are univocally referred to a precise point of the board).
Please note that the numbers assigned in this chapter differs from the numbers reported on the switch package in order to give continuity to the numbering and make clearer the configurations description.
The symbols used to describe the switch position are:

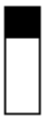	Switch in UP position (the actuator is in the black area)
	Switch in DOWN position (the actuator is in the black area)
	Switch can be put either in up or down position depending on the customer needs (see tables notes for details)

Table 1

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4.2. Configuration 1

In the following image and table it's reported the switch configuration necessary to work with the power configuration 1 described in the "SE867-AGPS User guide" (paragraph 4.1.1).

IMPORTANT: switch 15 controls the enable of the internal 1V8_DIG regulator. It's important to keep it in DOWN position (as showed in the figure) as long as switch 4 (V_IO reference voltage selection) is in DOWN position. Disabling the 1V8_DIG regulator while the V_IO is enabled could cause improper internal biasing of the module (as indicated also in the user guide, paragraph 4.1.4). If it's necessary disabling the 1V8_DIG switch 4 must be placed in UP position before putting switch 15 in UP position as well.

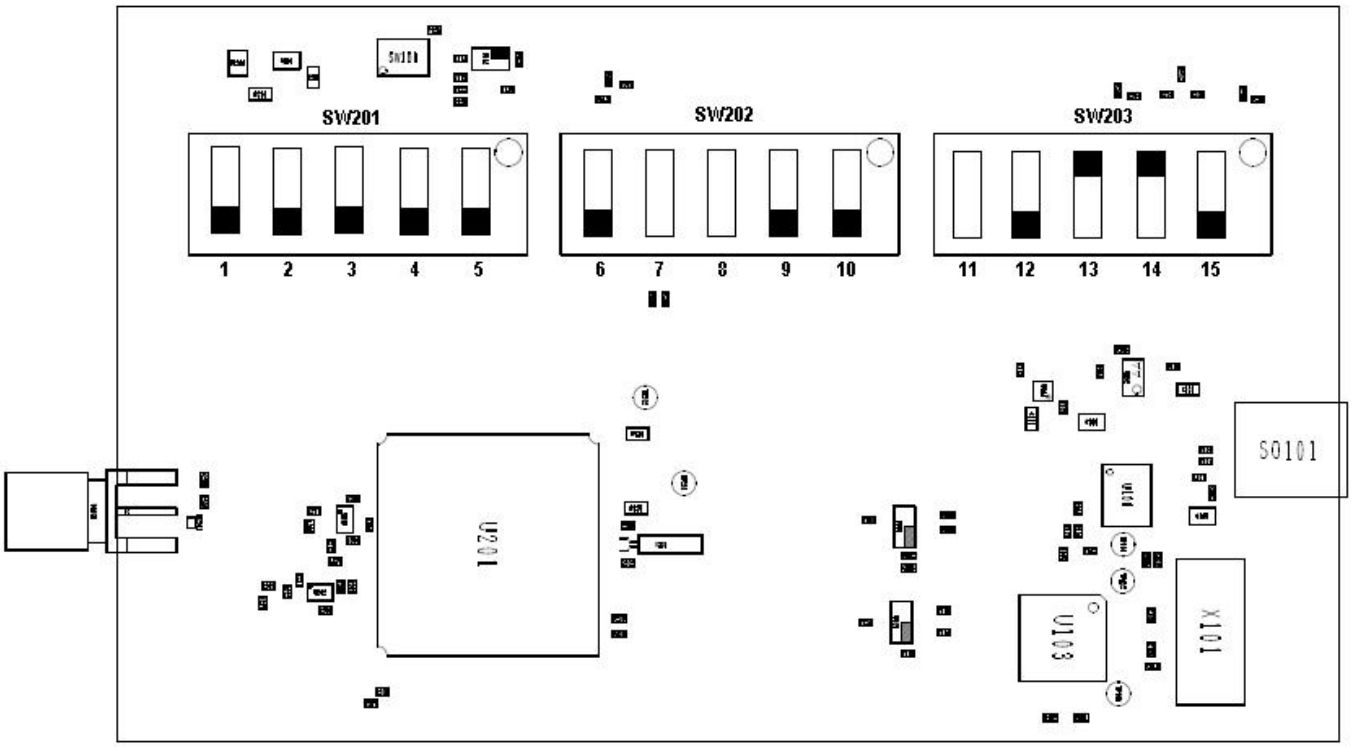

Figure 3

Switch	Position	Notes
1	DOWN	
2	DOWN	
3	DOWN	
4	DOWN	
5	DOWN	
6	DOWN	
7	-	Antenna selection. UP for internal antenna. DOWN for external antenna.
8	-	Bootsel control. DOWN during normal working. UP to perform module flashing.
9	DOWN	
10	DOWN	
11	-	Unconnected switch
12	DOWN	
13	UP	
14	UP	
15	DOWN	

Table 2

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4.3. Configuration 2

In the following image and table it's reported the switch configuration necessary to work with the power configuration 2 described in the "SE867-AGPS User guide" (paragraph 4.1.2).

NOTE: in this configuration V_IO is connected to 1V8_DIG (switch 4 in UP position), so it's possible to disable the 1V8_DIG regulator without risk of improper biasing.

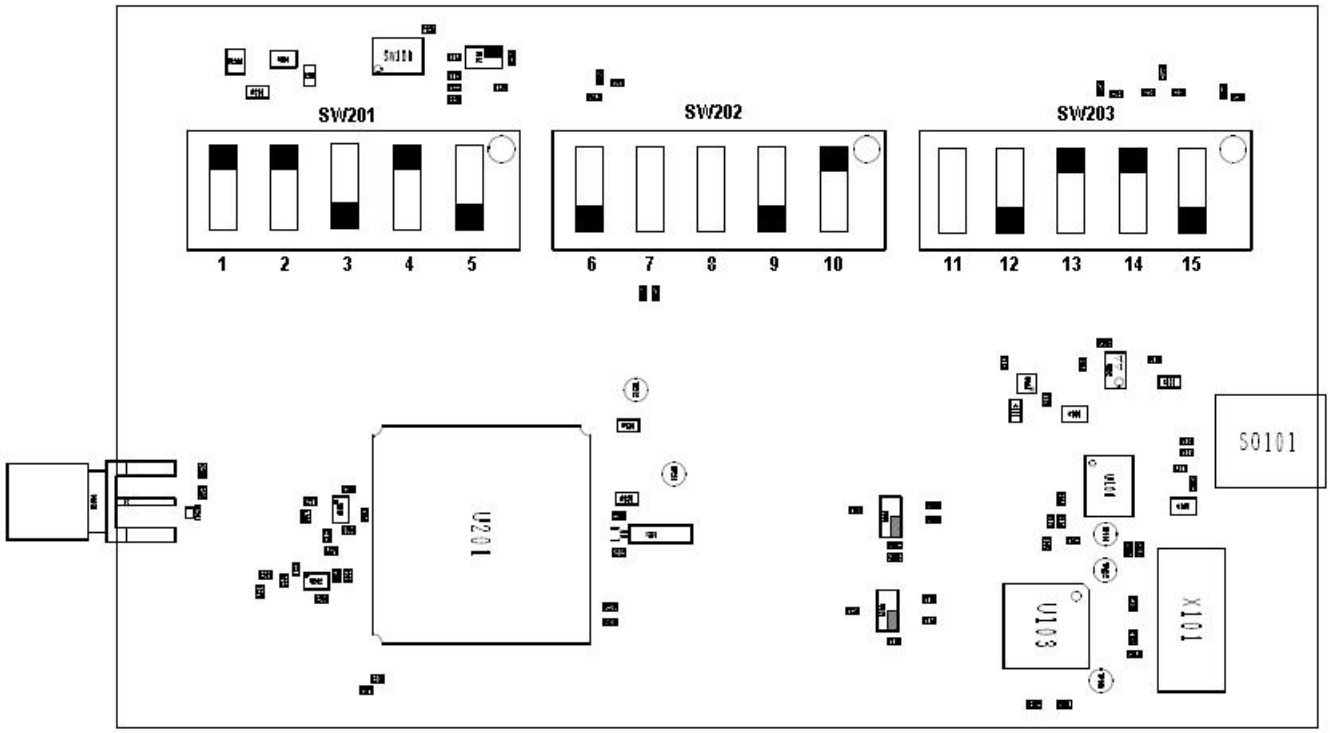

Figure 4

Switch	Position	Notes
1	UP	
2	UP	
3	DOWN	
4	UP	
5	DOWN	
6	DOWN	
7	-	Antenna selection. UP for internal antenna. DOWN for external antenna.
8	-	Bootsel control. DOWN during normal working. UP to perform module flashing.
9	DOWN	
10	UP	
11	-	Unconnected switch
12	DOWN	
13	UP	
14	UP	
15	DOWN	

Table 3

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4.4. Configuration 3

In the following image and table it's reported the switch configuration necessary to work with the power configuration 2 described in the "SE867-AGPS User guide" (paragraph 4.1.2). This configuration allows two different options for the interfaces logic levels: 3V and 1.8V.

4.4.1. Option A (interfaces at 3V)

IMPORTANT: also in this configuration attention must be paid in keeping 1V8_DIG enabled (in this case this voltage is externally generated and enabled by switch 13 in DOWN position, as showed in the figure) as long as switch 4 (V_IO reference voltage selection) is in DOWN position.

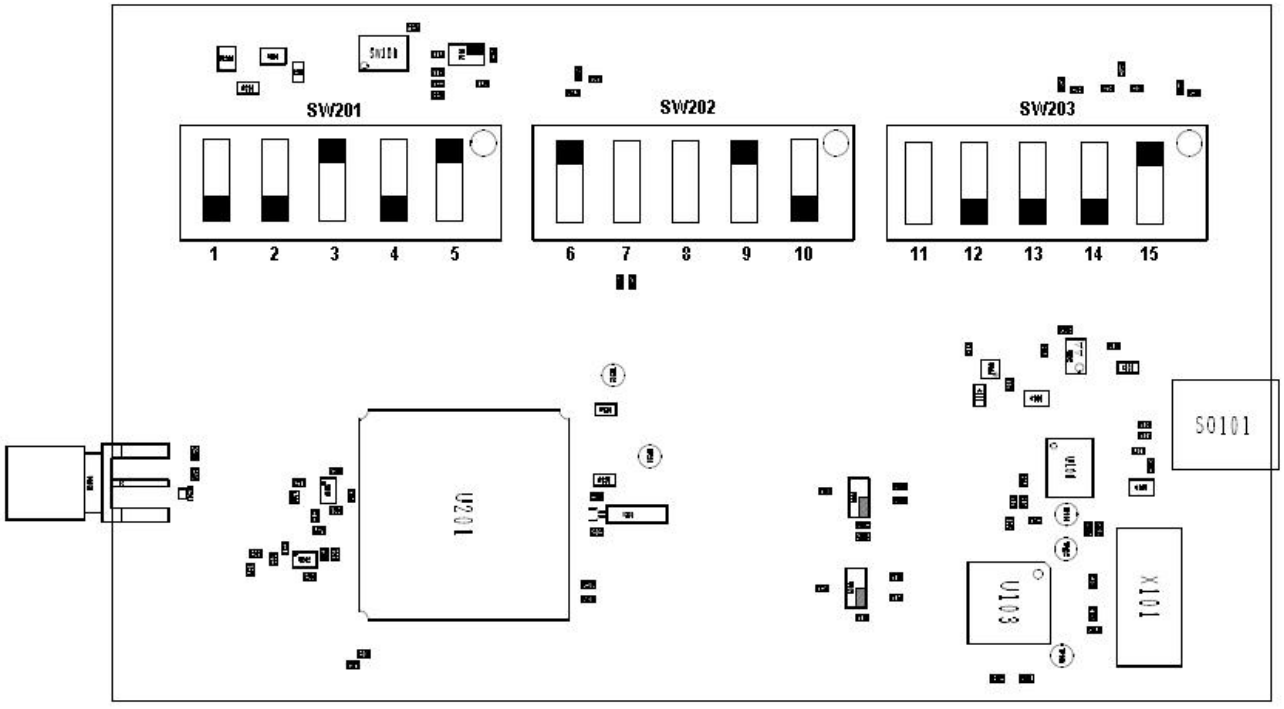

Figure 5

Switch	Position	Notes
1	DOWN	
2	DOWN	
3	UP	
4	DOWN	
5	UP	
6	UP	
7	-	Antenna selection. UP for internal antenna. DOWN for external antenna.
8	-	Bootsel control. DOWN during normal working. UP to perform module flashing.
9	UP	
10	DOWN	
11	-	Unconnected switch
12	DOWN	
13	DOWN	
14	DOWN	
15	UP	

Table 4

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4.4.2. Option B (interfaces at 1.8V)

NOTE: in this configuration V_IO is connected to 1V8_DIG (switch 4 in UP position), so it's possible to disable the 1V8_DIG regulator without risk of improper biasing. 1V8_DIG is still externally generated and enabled by switch 13.

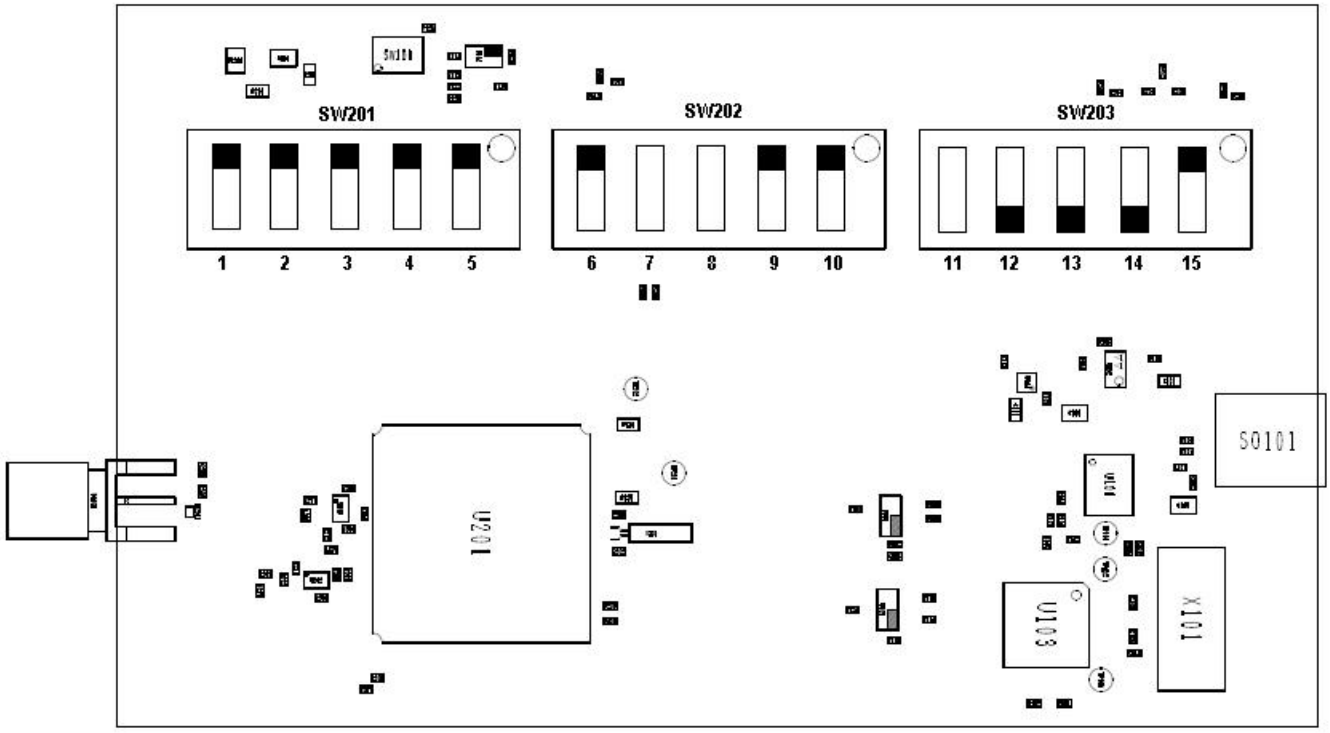

Figure 6

Switch	Position	Notes
1	UP	
2	UP	
3	UP	
4	UP	
5	UP	
6	UP	
7	-	Antenna selection. UP for internal antenna. DOWN for external antenna.
8	-	Bootsel control. DOWN during normal working. UP to perform module flashing.
9	UP	
10	UP	
11	-	Unconnected switch
12	DOWN	
13	DOWN	
14	DOWN	
15	UP	

Table 5

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5. Board connection and usage

5.1. Connections and start-up

The only connections needed are an EVB to PC USB connection and the external antenna connection (via SMA connection and only if not using the internal antenna). Before connecting the EVB to the PC a correct switches configuration must be set (see chapter 3 for available configurations).

In order to start working FTDI virtual COM port drivers must be installed in the PC. The latest version of these drivers is available at http://www.ftdichip.com/Drivers/VCP.htm.

When first connecting the EVB to a PC without the FTDI drivers installed a window will appear asking to install the FTDI, the option "Install from a list or specific location (Advanced)" must be chosen and then the location of the downloaded driver must be supplied to the installation program in order to start the driver installation. After the driver installation has been completed the EVB to PC USB connection will be seen as a virtual COM port connection.

5.2. Usage

After the connections and the FTDI drivers installation have been performed the EVB and the module on it are ready and can start working making a fix and outputting NMEA sentences. However, in order to process NMEA sentences, an analysis tool must be installed (e.g, VisualGPS,VisualGPSXP,etc.). This tool will allow users to view:

- Navigation Data (2D/3D Fix, Latitude, Longitude, Altitude, Speed, Heading, TTFF, Date, Time, HDOP, VDOP, PDOP)
- Position Plot
- Sky Plot
- History
- Signal Strength
- NMEA Output Stream

NOTE: in these tools the baud rate of the Virtual COM Port connection must be set to 4800.

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